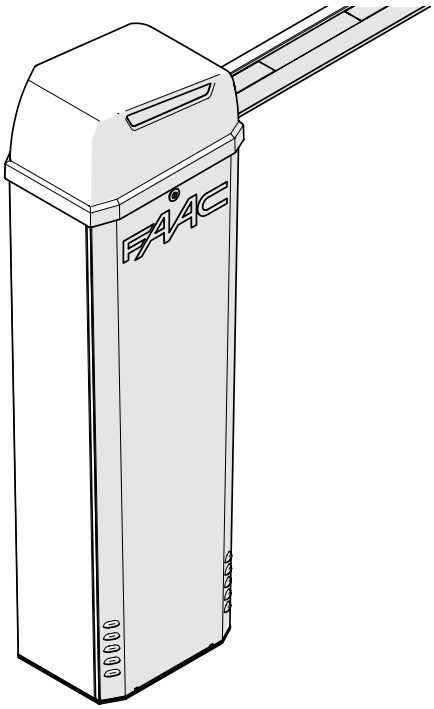
B614

EN



safe zone omni DEC 2easy green tech

FAAC

EN

Translation of the original instructions

These instructions are for boards starting from firmware version **1.0**. They will then be valid until a new version is released.

This manual was published in 2025.

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CONTENTS

TABLES

ADDENDUM

1. INTRODUCTION TO THIS INSTRUCTIONS MANUAL

This manual provides the correct procedures and requirements for installing B614 and maintaining it in a safe condition.

In Europe, the automation of a barrier falls under the Machinery Directive 2006/42/EC and the corresponding harmonised standards. Anyone automating a barrier (new or existing) is classified as the Manufacturer of the Machine. They are therefore required by law, among other things, to carry out a risk analysis of the machine (automatic barrier in its entirety) and take protective measures to fulfil the essential safety requirements specified in Annex I of the Machinery Directive.

FAAC S.p.A. recommends that you always comply with the EN 12453 standard and in particular that you adopt the safety criteria and devices indicated, without exception, including the dead-man function.

This manual contains references to European standards. The automation of a barrier must fully comply with any laws, standards and regulations applicable in the country where installation will take place.

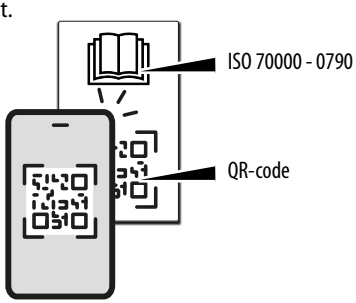
Unless otherwise specified, the measurements provided in the instructions are in mm.

SAFETY WARNINGS FOR THE INSTALLER

Before installation, start-up or maintenance, read and follow the "Safety Instructions for the Installer" booklet supplied.

ONLINE INSTRUCTIONS

When you receive your goods, scan the QR code associated with the ISO 70000 - 0790 icon on the product to go directly to the specific instructions page for the product.



1.1 MEANING OF THE SYMBOLS USED

WARNING - Details and specifications that must be complied with in order to ensure that the system operates correctly.

RECYCLING and DISPOSAL - Components and structural materials, batteries and electronic components must not be disposed of together with household waste. They must be taken to authorised disposal and recycling centres

For manual lifting, there should be 1 person for every 20 kg to be lifted

PAGE E.g.: **6** see Page 6

FIGURE E.g.: **1**-3 see Figure 1 - item 3

TABLE E.g.: **1** see Table 1

§ CHAPTER/SECTION E.g.: §1.1 see section 1.1

APPENDIX E.g.: **1** see Appendix 1

Automatic operation - automation locked

Manual operation - automation unlocked

2. B614

2.1 UNPACKING AND HANDLING

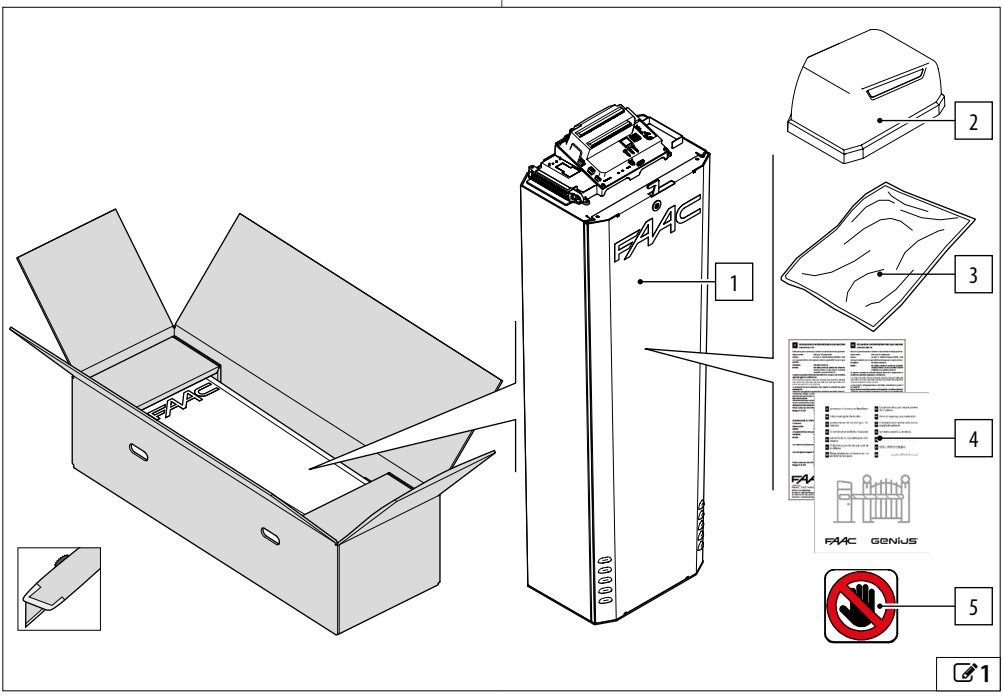
Two people are required to handle the package. Use the handles.

1. Carefully set the package down on the ground.
2. Cut the packaging to open it right up and remove all the packaging material.
3. Stand the barrier on the base.

Never manage the barrier by holding the board holder.

4. Check that all components are present and intact.

1	B614 barrier body
2	Top cover
3	Installation accessories
4	Supplied documentation
5	Risk signalling



2.2 PRODUCT IDENTIFICATION

The product is identified by the plate (✎ 2).

MARKINGS ON THE PRODUCT

Risk of crushing between the moving parts. Present on the balancer

Risk of cutting, crushing or shearing of fingers or a hand between the beam and the barrier body. It must be placed on the trunk by the installation engineer.

"DANGER OF AUTOMATIC MOVEMENT" (not supplied) It must be placed on the trunk by the installation engineer.

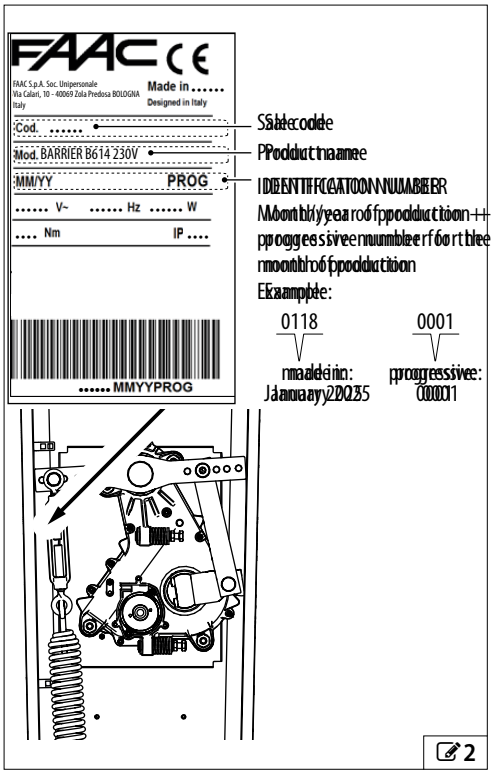
2.3 INTENDED USE

The B614 barriers are designed for vehicular access control in residential buildings/apartment complexes.
To move the beam manually, follow the instructions for manual functioning.

Any other use that is not expressly specified in these instructions is prohibited and could affect the integrity of the product and/or represent a source of danger.

2.4 LIMITATIONS OF USE

Comply with the limitations on frequency of use listed in the technical data section.
The B614 requires the use of a specific FAAC beam that conforms to the dimensions indicated in this manual. Only the FAAC accessories indicated in this manual should be installed on the beam.
The B614 requires the use of a FAAC spring that is adequate for counterbalancing the weight of the beam and the relative accessories.
The barriers with exclusively vehicle access control must be fitted with suitable visible signs prohibiting foot traffic. A separate route for foot traffic outside the range of the beam must be provided and properly indicated.
If foot traffic cannot be ruled out, the barrier falls within the scope of the EN 12453 standard.
The presence of weather conditions such as snow, ice and strong wind, even occasional, could affect the correct operation of the automation, the integrity of the components and be a potential source of danger (see § Emergency use). The limitations of use of the B614 in wind is equivalent to grade 10 on the Beaufort Scale (max. speed: 102 km/h).
The installation must be visible during the day and at night. If it is not, appropriate solutions must be provided to make the fixed and moving parts visible.
Implementing the automation requires the installation of the necessary safety devices, identified by the installer through an appropriate risk assessment of the installation site.



2.5 UNAUTHORISED USE

- Uses other than the intended use are prohibited.
- It is prohibited to install the automation system outside of the limits specified in the Technical Data and in the Mechanical and Electrical Installation Requirements.
- It is forbidden to use B614 in a constructional configuration other than the one provided by the manufacturer.
- No component part of the product may be modified.
- It is prohibited to install the automation system on escape routes.
- It is prohibited to install the automation system in environments in which there is a risk of explosion and/or fire: the presence of flammable gases or fumes is a serious safety hazard (the product is not ATEX certified).
- It is prohibited to power the system with energy sources other than those specified.
- It is prohibited to integrate commercial systems and/or equipment other than those specified, or use them for purposes not intended and authorised by their respective manufacturers.
- Do not expose the barrier to direct jets of water of any type and size.
- Do not expose the barrier to aggressive chemical or environmental agents.
- The barrier may not be used to move moving parts other than the beams produced by FAAC specified in this manual.
- Use to control pedestrian access, bicycle traffic and the passage of animals is prohibited.
- Use of the barrier at level crossings is prohibited.
- Use of the barrier on public thoroughfares is prohibited.
- It is prohibited to use and/or install accessories which have not been specifically approved by FAAC S.p.A.
- It is prohibited to use the automation system before performing commissioning.
- It is prohibited to use the automation system in the presence of faults which could compromise safety.
- It is prohibited to use the automation system with the fixed and/or mobile guards removed or altered.
- Do not use the automation system unless the area of operation is free of persons, animals or objects.
- Do not enter/remain in the area of operation of the automation system while it is moving.
- Do not try to prevent the movement of the automation system.
- Do not climb or catch on to the beam or lift yourself up on it. Do not climb on the barrier cabinet.
- Do not allow children to approach or play in the area of operation of the automation system.
- Do not allow the control devices to be used by anyone who is not specifically authorised and trained to do so.
- Do not allow the control devices to be used by children or persons with mental and physical deficiencies unless they are supervised by an adult who is responsible for their safety.
- During manual handling, accompany the beam slowly for the entire stroke. Do not let the beam travel freely.

2.6 EMERGENCY USE

In emergencies or if there is a fault, turn off the power supply to the automation and disconnect the buffer batteries if there are any. If the beam can be moved safely by hand, use the MANUAL OPERATION mode; otherwise place the automation out of service until it has been reset/repaired.
In the case of a breakdown, the automation must be reset/repaired exclusively by the installer/maintenance technician.

2.7 MANUAL OPERATION

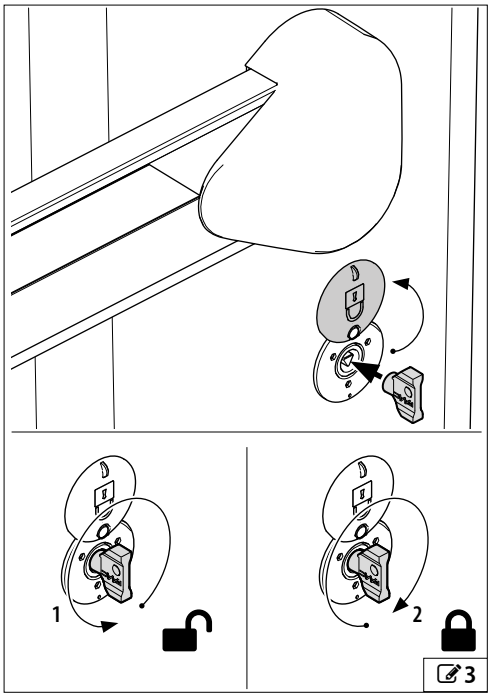
- Performing the release manoeuvre when there is no electrical power.
- Performing the release manoeuvre only when the beam is at a standstill.
- During manual handling, accompany the beam slowly for the entire stroke. Do not let the beam travel freely.
- Do not leave the barrier unblocked: after carrying out the manual movement, restore automatic operation.

RELEASE PROCEDURE

1. ✎ **3** Open the lock cover. Insert the key and turn it once anticlockwise until it stops (**1**).
2. Move the barrier manually.
3. Restore the operation.

OPERATION RESTORATION

1. ✎ **3** Insert the key and turn it twice clockwise until it stops (**2**).
2. Check that manual movement is inhibited.
3. Remove the key and close the cover.



2.8 TECHNICAL SPECIFICATIONS

The B614 is an electromechanical barrier with a E614 electronic board fitted. The B614 must be installed on the specific foundation plate and set onto a plinth.

RH/LH barrier B614 makes it possible to build a right hand or left hand barrier without modifying the barrier body.

The barrier will be installed with the door towards the inside of the property.
The barrier is defined by observing it from the door side:
- **RH barrier** (right): the beam closes towards the right (in a clockwise direction)
- **LH barrier** (left): the beam closes towards the left (in an anticlockwise direction)

Irreversible system To allow manual operation, the release manoeuvre must be performed.

Encoder B614 is fitted with an encoder. The encoder constantly detects the precise position of the beam and makes it possible to manage the end of stroke and slowing downs stored with the set up.

Anticrushing operation The encoder allows the board to create the anticrushing feature:
- the recognition of an obstacle during closure causes the manoeuvre to be reversed
- the recognition of an obstacle during opening causes the beam to stop.

Adjustable end of stroke The barrier is fitted with an adjustable mechanical end of opening and closing stroke feature.

Equipment A rectangular or round beam can be installed. The components necessary for the installation and the optional equipment are listed in the dedicated sections.

Balancing system The balancing spring must be used FAAC. The single, double or double 6m spring, depending on the length and configuration of the installed beam, must be installed in the specified installation positions.

The balancing system is important for safety reasons to ensure the stability and control of the beam during movement and keep it operating properly over time.

Primary-Secondary Configuration To install two barriers that open in opposite directions, it is necessary to create the Primary-Secondary configuration.

1 Technical data

	B614 220-240 V ~	B614 115 V ~
Power supply voltage	220-240 V~ 50/60 Hz	115V~ +/-10% 50/60 Hz
Electric motor	24 V ⎓	24 V ⎓
Max power	165 W	165 W
Max torque	300 Nm	300 Nm
Opening time (80°)		
- beam 3 m	< 2 sec.	< 2 sec.
- beam 6 m	< 3 sec.	< 3 sec.
Use frequency	Continuous use	Continuous use
Ambient operating temperature	-20 °C to +55 °C	-20 °C to +55 °C
Protection rating	IP 55 (control board)- IP 44	IP 55 (control board)- IP 44
Dimensions (L x D x H)	247 x 357 x 1163 mm	247 x 357 x 1163 mm
Weight	40 kg	40 kg

FAAC foundation plate	
Dimensions (L x H)	230 x 305 mm

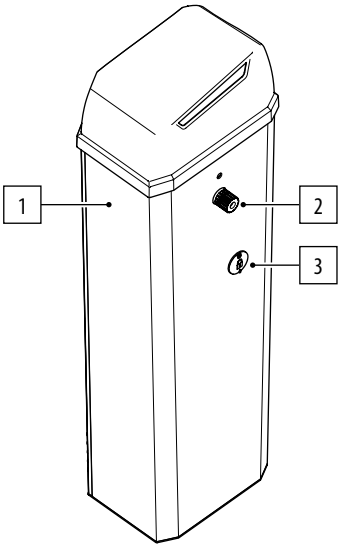
FAAC beam	Beam length
Rectangular beam	1.35 ... 4.85 m max
Round beam	1.40 ... 6.03 m max

2.9 COMPONENT IDENTIFICATION

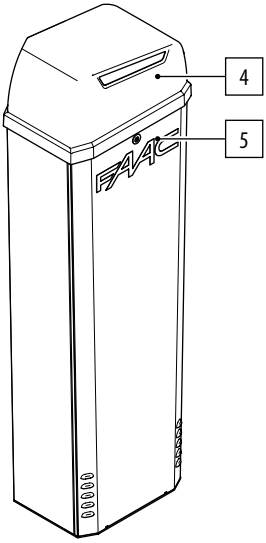
Standard equipment on the barrier body (✎ **4**):

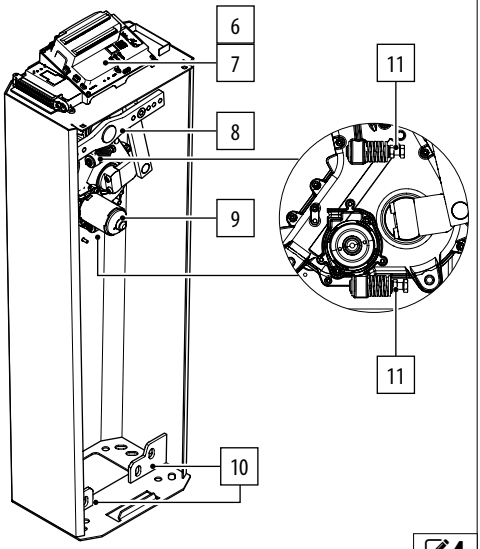
1	Bearing trunk
2	Drive shaft
3	Beam release device (triangular key)
4	Top cover
5	Door with lock
6	E614 control board
7	E614 control board cover
8	Balancer/ upper spring fixing
9	Electromechanical gearmotor with Encoder
10	Slot for lower spring fixing
11	Limit switches

B614 beam side



B614 door side





✎ **4**

2.10 INSTALLATION COMPONENTS (SUPPLIED SEPARATELY)

The installation requires the following FAAC components supplied separately (✎ **5**):

1 Foundation plate

2 Rectangular or round beam S
Supplied separately:
- S JOINT allows you to create a modular S beam longer than 4.9 m up to 6.0 m.
- adhesive reflectors for round beam

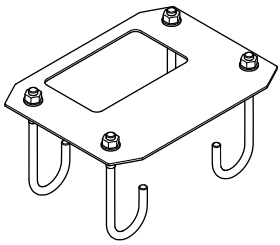
3 Fixing pocket for the installed beam (rectangular or round)

4 Single or double or double 6 m balancing spring

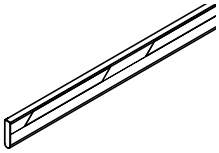
2.11 OPTIONAL ACCESSORIES

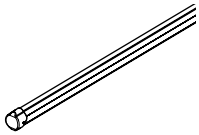
For the FAAC accessories for B614 see section § 7.

1 **Foundation plate**

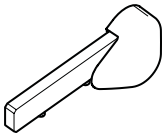


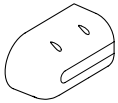
2 **Rectangular beam** **Round beam***



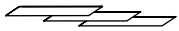


3 **Pocket for rectangular beam** **Pocket for round beam**





Adhesive reflectors for round beam



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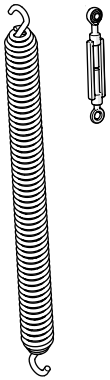
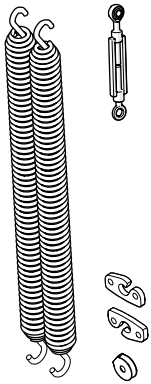
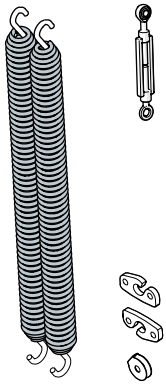
Single spring



Double spring

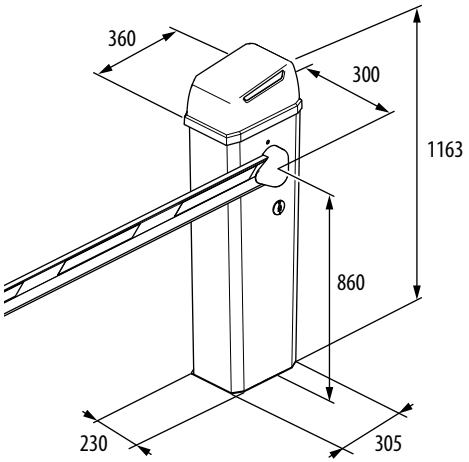


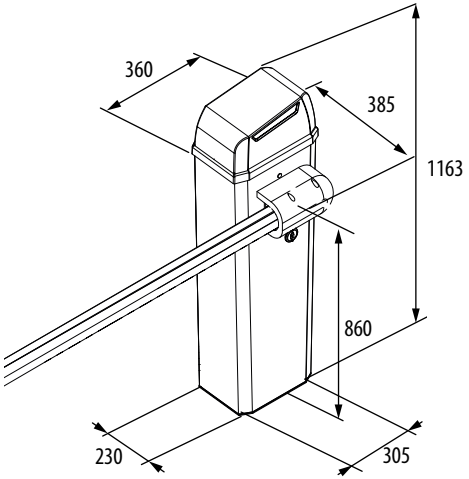
Double spring 6 m



✎ **5**

2.12 DIMENSIONS





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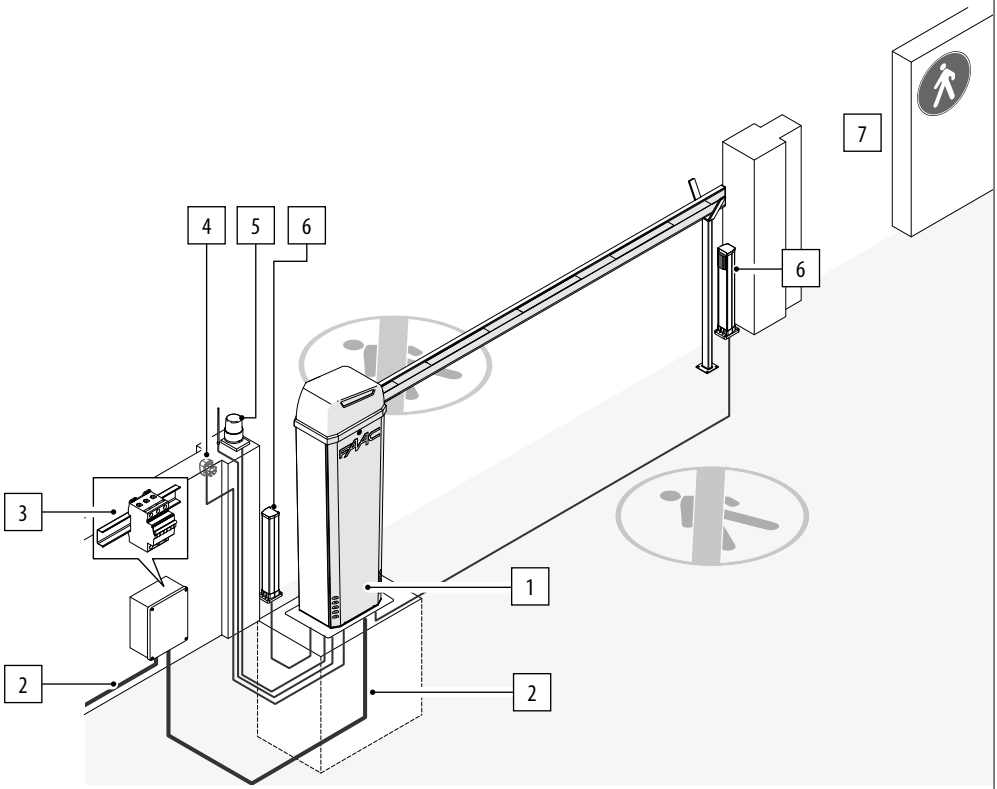
2.13 EXAMPLE SYSTEM

The example is purely an illustration and is only one of the possible applications of the B614.

Example system		Minimum wire cross section
1	Barrier B614	
2	Mains power supply	3G 1.5 sq. mm
3	Circuit breaker	
4	Key button	
5	Flashing light	
6	Photocells BUS 2easy	2 x 0.5 sq.mm
7	Foot traffic route	



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3. MECHANICAL INSTALLATION

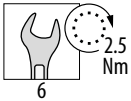
3.1 TOOLS REQUIRED


Spanner
8-13-17-19


Level


Allen key
4-6


TOOL with TORQUE ADJUSTMENT
If necessary, a torque wrench and the FASTENING TORQUE are specified
E.g. Spanner 6 set at 2.5 Nm:



3.2 INSTALLING THE FOUNDATION PLATE

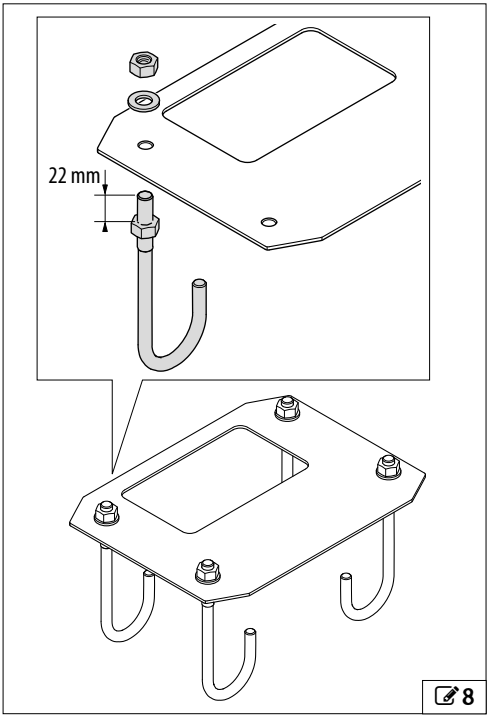
The barrier must be installed with the base plate. It is the responsibility of the installer to assess the dimensions and foundation materials according to the characteristics of the ground and place of installation. Perform structural calculations where necessary.

The characteristics of the foundation, indicated in the diagram in the appendix to this manual, are provided as a guideline only. The schematic considers the barrier applied to the maximum limits indicated in this manual and under the most arduous conditions.

1. Make the hole in the ground. Fill it with concrete, allowing the cable conduits to protrude.
2. (**8**) Assemble the base plate.
3. (**9**) Immerse the base plate in the foundation leaving the surface exposed.

The plate must be in the centre of the plinth.
The hole for the cables to pass through must correspond with the orientation planned for the barrier (barrier side, door side).
The cable conduits must protrude from the hole in the plate by approximately 20 cm.
Check the plate is horizontal using a spirit level.
Clean the concrete off the surface of the plate and the nuts with washers so they can be removed when necessary.

4. Wait for the concrete to set.



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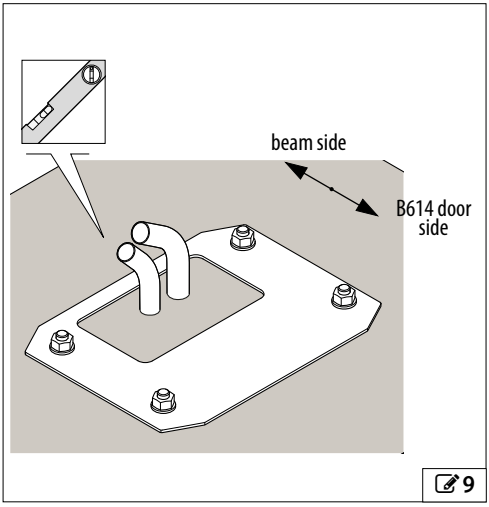

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3.3 INSTALLING THE BARRIER BODY

Carry out the work with the power supply disconnected.

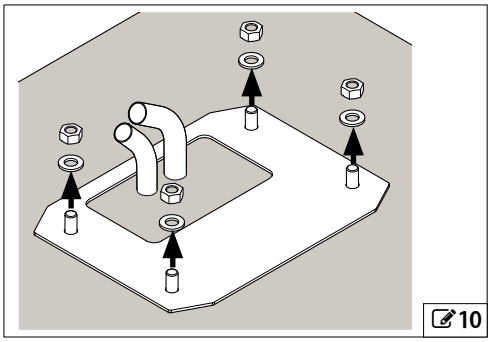
Before you start, make sure that the plinth's concrete has solidified.
In this phase the barrier must be locked.
Never manage the barrier by holding the board holder.

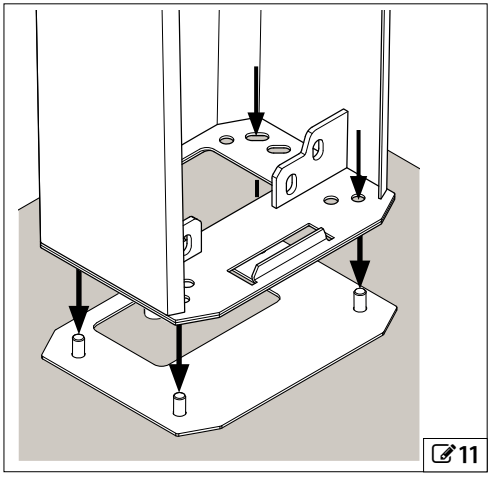
1. (**10**) Remove the 4 nuts with washers from the plate
2. (**11**) Place the barrier body on the foundation, at the four fixing points.

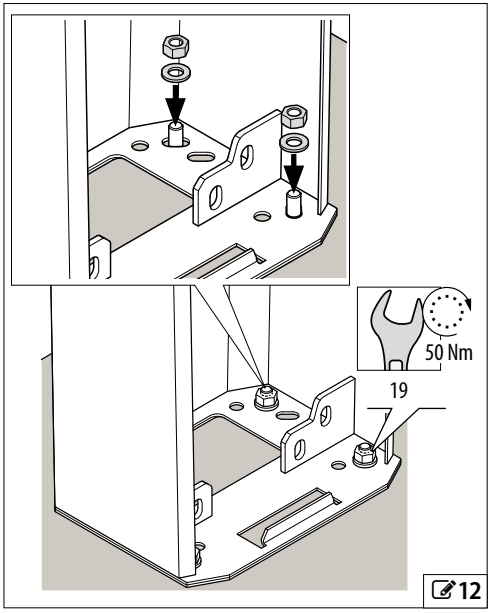
Be careful not to damage the electrical cable tubes.

3. (**12**) Fix the body of the barrier in post ion using a nut with washer on every fixing point of the foundation.

Use the torque wrench to tighten to the torque shown in the figure.





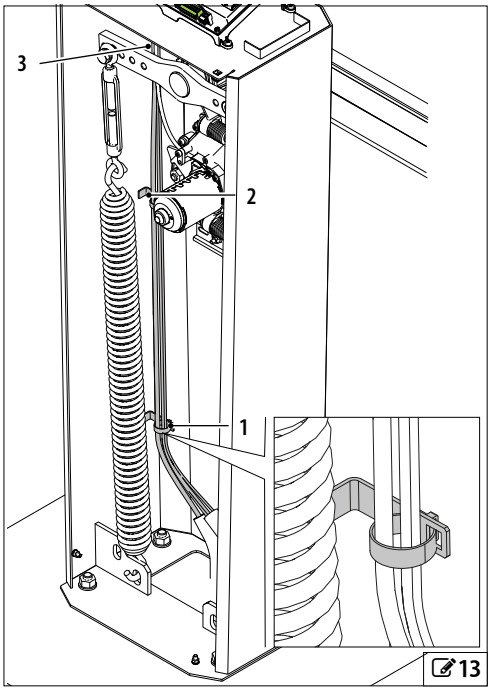


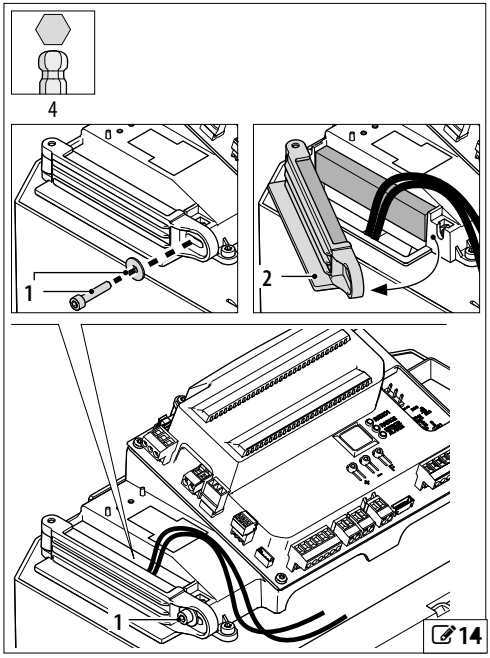
FIXING THE CABLES INSIDE THE BARRIER

130 cm of cable are necessary.

1. (✎**13**) Arrange the cables inside the barrier. Fix the cables with the cable ties provided **1**, **2** and **3**.
2. (✎**14**) Remove bolt with washer **1**. Open cable tie **2**. Bring the cables to the board.
3. Use the screw and washer **1** to close the cable tie.

The electrical connections must be made after completing the mechanical installation





3.4 FITTING THE BEAM

Two people are required to move the beam.

Before installing the beam, check that the barrier body is secured to the specified tightening torques and check that the lower rubber protection edging is in place

If the beam needs to be shortened, cut the end opposite the one with the fixing hole.
After the cutting remove any sharp borders and burs.

PREPARING THE BALANCER

Before installing the beam, it is necessary to turn the balancer in the closed beam position.

This phase requires the release of the barrier.

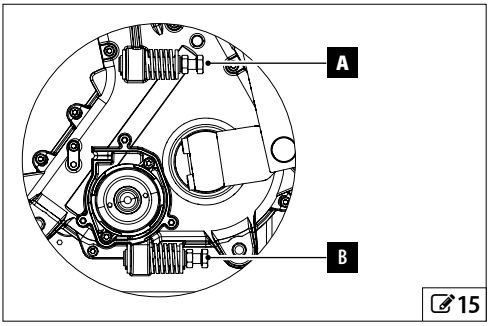
Keep away from the moving elements inside the cabinet.

To move the balancer, turn the drive shaft, using the beam fixing lever if necessary. Do not use other tools

1. Perform the release manoeuvre.
2. Turn the shaft so that the balancer is in contact with the closing limit switch (✎**15**).

Closing limit switch	
LH barrier	**A**
RH barrier	**B**

3. Restore the automatic operation.

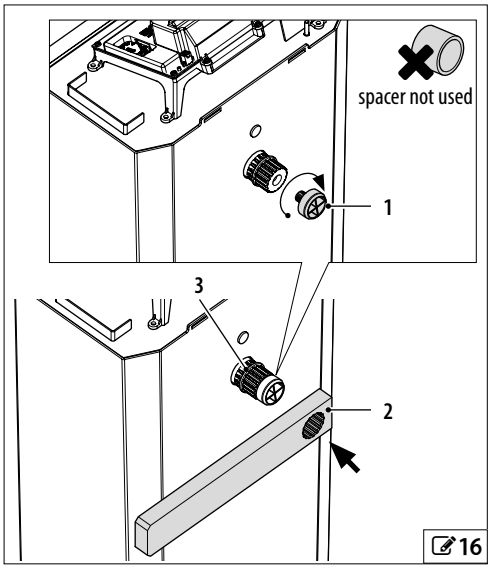


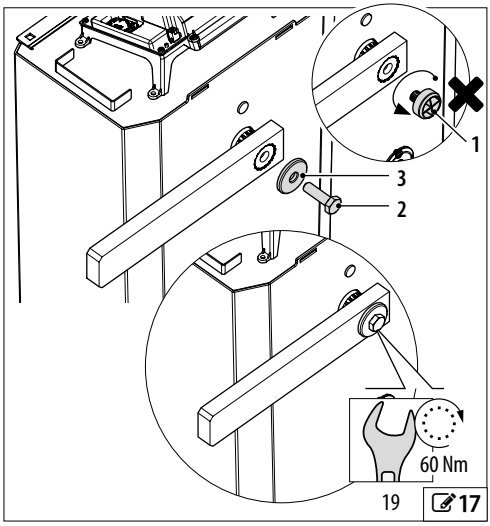
RECTANGULAR BEAM

1. (✎**16**) Screw the guide **1** in the drive shaft.
2. Insert lever **2** in the drive shaft horizontally in contact with seeger ring **3**.

The spacer must not be used and must be eliminated.

3. (✎**17**) Removing guide **1** and replacing it.
4. Fix with screw **2**, interposing washer **3** and tighten to the fastening torque indicated.



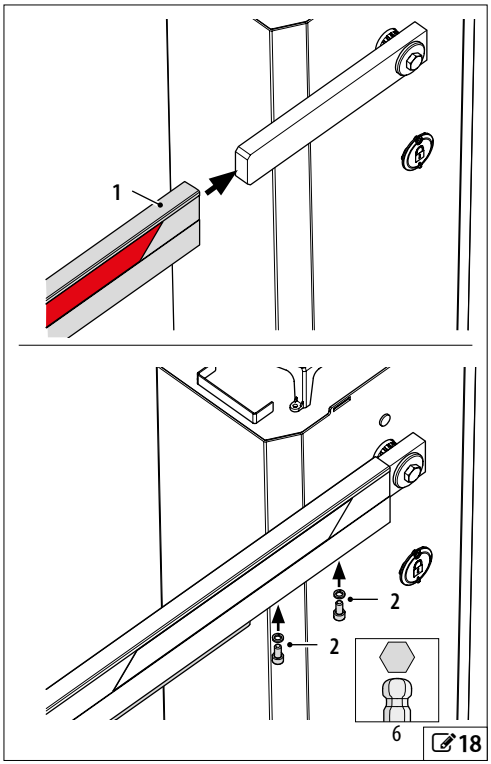


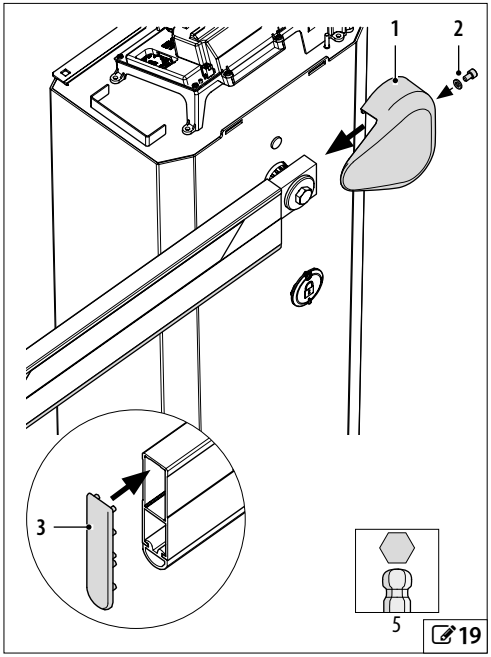
5. (✎18) Insert beam **1** in the lever.

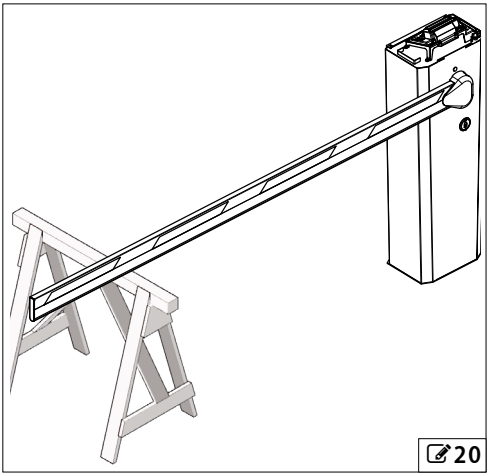
To make the insertion of the beam easier, use a stand for resting it at the end.

6. Line up the two holes underneath (slide the lower edging temporarily to uncover the holes).
7. Fix the beam with screws **2**, interposing the washers (reposition the lower edging).
8. (✎19) Insert the cover **1** and fix it with screw **2**, interposing the washer.
9. Insert the cover **3** at the end of the beam.

Leave the beam supported to take the weight until the installation of the spring is complete (✎**20**).







ROUND BEAM

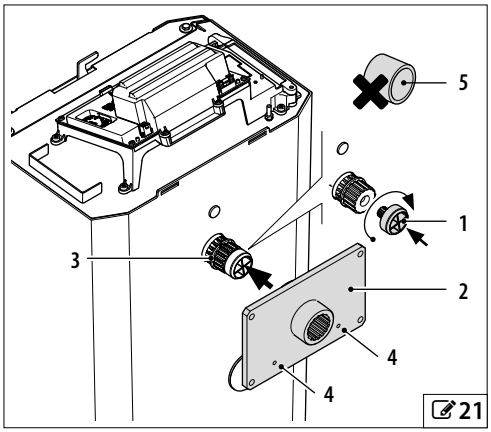
1. (✎**21**) Screw the guide **1** in the drive shaft.
2. Insert plate **2** in the drive shaft horizontally in contact with seeger ring **3**. Position the plate with the holes 4 at the bottom.

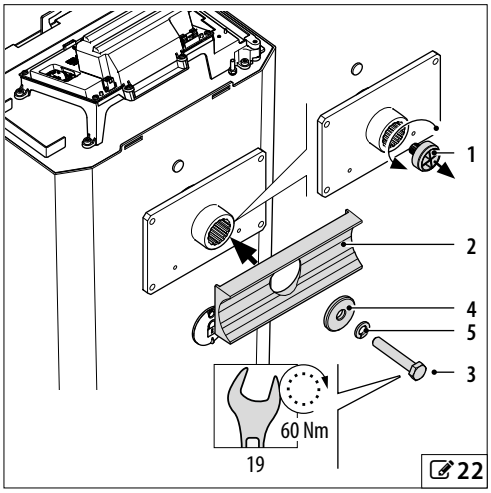
> The spacer **5** must not be used and must be eliminated.

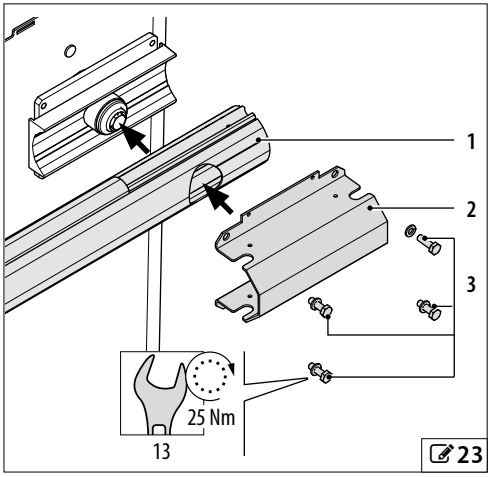
3. (✎**22**) Removing guide **1** and replacing it.
4. Insert the adaptor **2**, horizontally.
5. Fix with screw **3**, interposing washers **4** and **5** and tighten to the fastening torque indicated.
6. (✎**23**) Insert the beam **1** in a horizontal position.

> To make the insertion of the beam easier, use a stand for resting it at the end.

7. Insert counter plate **2**.
8. Fix with the screws **3**, interposing the washers and tighten to the fastening torque indicated.





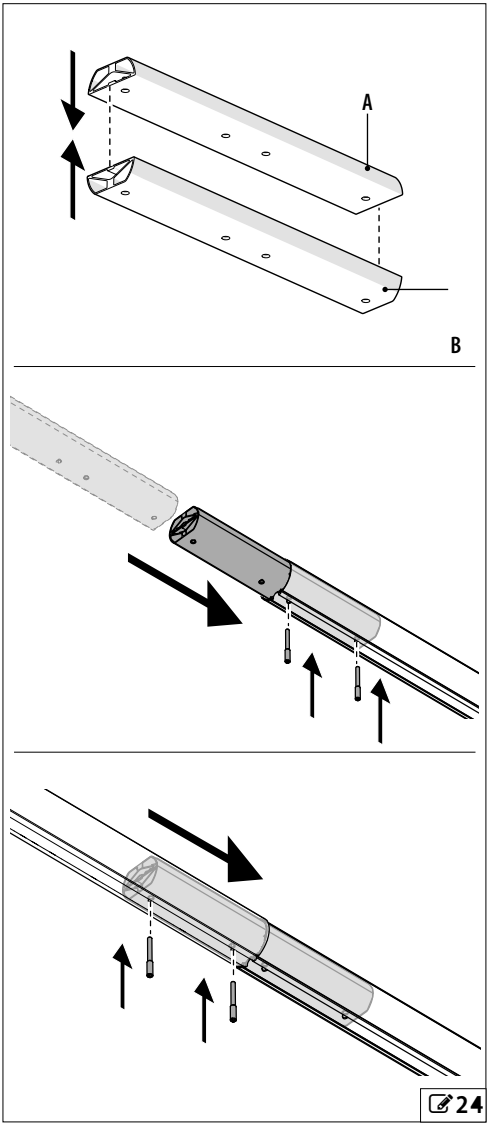


MODULAR S BEAM

1. (✎24) Connect joint **A** to joint **B**.

> Joint **B** has holes on both sides and must be positioned as shown in the figure.

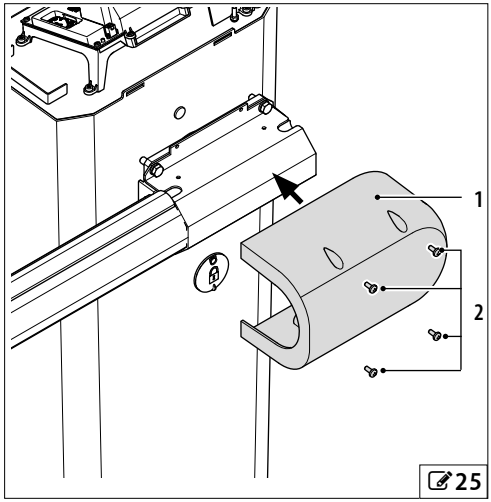
2. Insert the joints into the beam and insert the fixing screws, but without tightening them.
3. Install the extension onto the joints and insert the screws.
4. Tighten the screws.

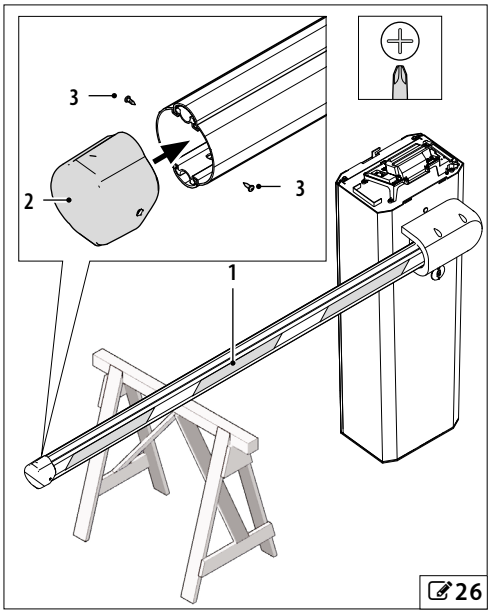


COMPLETING THE ROUND BEAM

1. (✎25) Insert the cover **1** and fix it with the screws **2**.
2. (✎26) Apply the reflective papers **1** on both sides of the beam.
3. Insert cover **2** at the end of beam and fix with screws **3**.

> Leave the beam supported to take the weight until the assembly of the spring is complete.





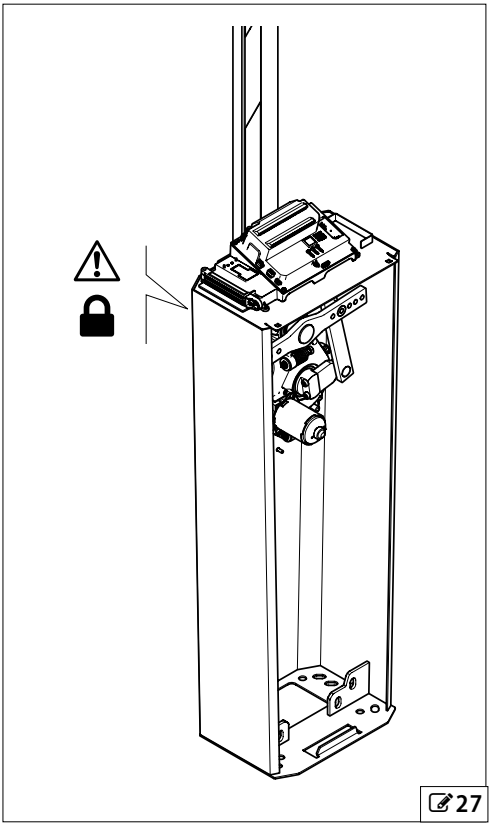
3.5 FITTING THE SPRING

The balancing of the barrier requires:

- fitting of the turnbuckle in the appropriate position
- fitting the appropriate spring: single, or double, or double 6 m
- manual adjustment of the turnbuckle

The following steps require the barrier to be unlocked. Keep away from the moving parts inside the cabinet and the spring coils.
Do not leave the beam vertical when the barrier is unlocked.

- The spring appropriate for the configuration and length of the beam is defined in the balancing charts (see 2). Respect the holes for hooking to the balancer and the base indicated.
- The accessories on the beam must be considered when choosing the balancing spring (single or double). Following the addition or elimination of the accessories at a later time, it might be necessary to change the spring.

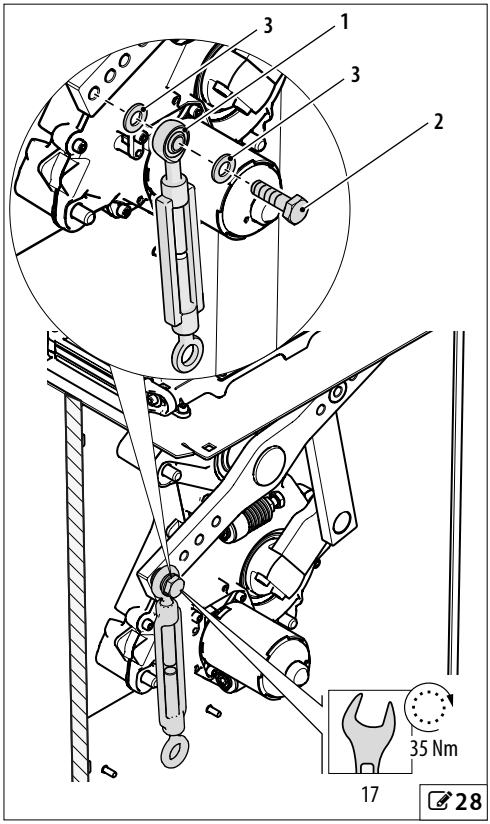


27

FASTENING THE SPRING TURNBUCKLE

1. With the barrier unlocked, raise the beam so that it is vertical and support it in this position.
2. Restore the automatic operation and then release the beam (27).
3. (28)Align the ball joint **1** of the turnbuckle with the hole (see 2). Fix with the screw **2**, interposing the washers **3** and tighten to the fastening torque indicated.

In the case of a 6 M BEAM, the turnbuckle must be fixed to the balancer, again in position **5**.



28

FITTING THE SINGLE SPRING

1. Lengthen the turnbuckle by manually unscrewing it to facilitate the operation.
2. (✎ **29**) Hook the spring onto the turnbuckle and the appropriate slot at the bottom of the barrier body (see ✎ **2**).
3. Shorten the turnbuckle by screwing it up manually to place the spring under tension.

⚠ Keep away from the spring coils.

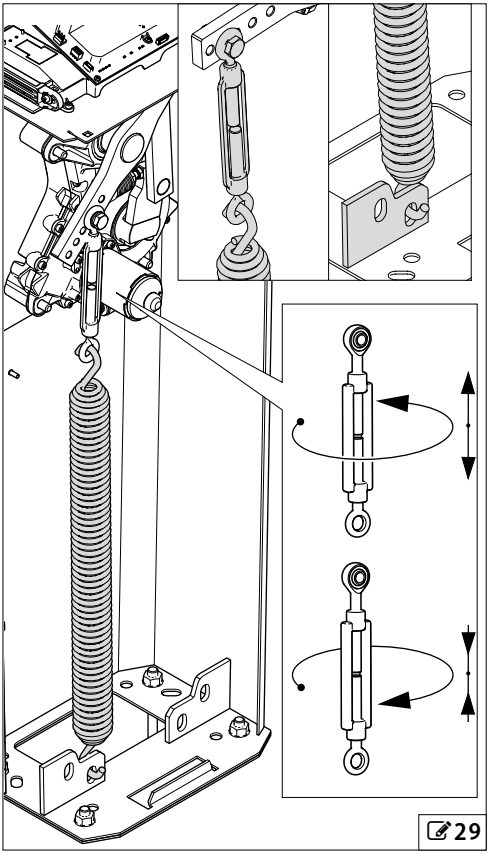
FITTING THE DOUBLE SPRING

1. Lengthen the turnbuckle by manually unscrewing it to facilitate the operation.
2. **Lower bracket** (✎ **30**): Connect the plate **1** to the slot (**A** or **B**) on the base of the barrier body as shown in ✎ **2** and lock it in place with element **x.** Connect the 2 springs.

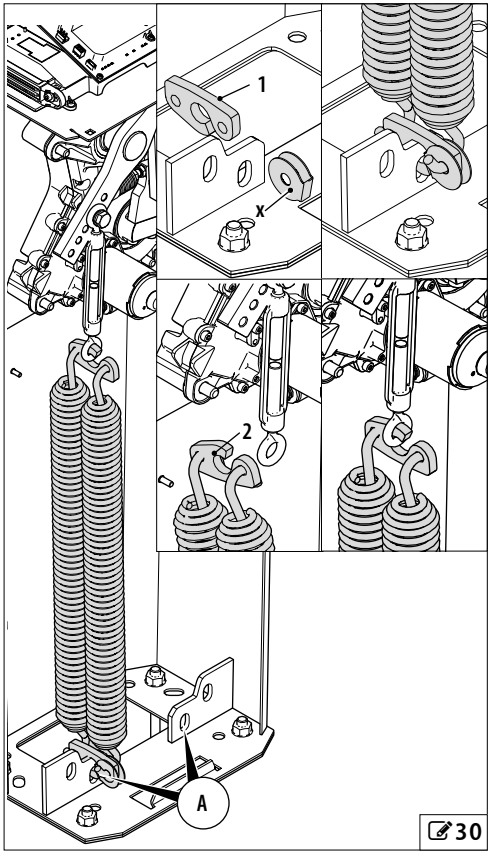
ⓘ In the case of a 6 M BEAM, the plate **1** must be fixed to the bottom of the barrier body, again in position **A** (RH or LH).

3. **Upper bracket** (✎ **30**): Connect the plate **2** to the springs and then to the turnbuckle.
4. Shorten the turnbuckle by screwing it up manually to place the spring under tension.

⚠ Keep away from the spring coils.



✎ **29**



✎ **30**

3.6 ACCESSORIES ON THE BEAM

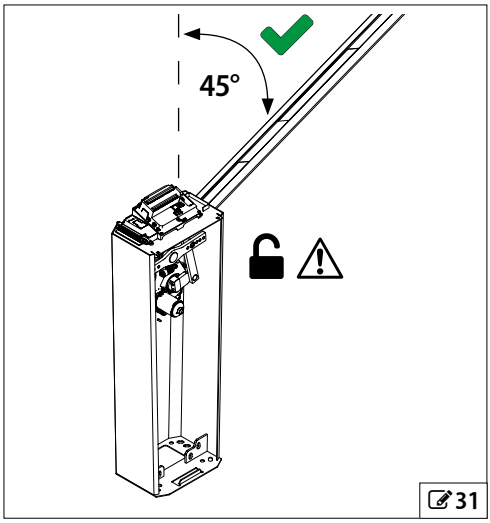
The accessories on the beam must be considered when choosing the balancer spring (single or double).
The accessories on the beam must be fitted before balancing the beam.
If the accessories are added or removed later it may be necessary to change the spring. After a modification of the beam, it is necessary to balance it again.
The spring appropriate for the configuration and length of the beam is defined in the balancing charts (see **2**).
See § 7 for fitting accessories to the beam.

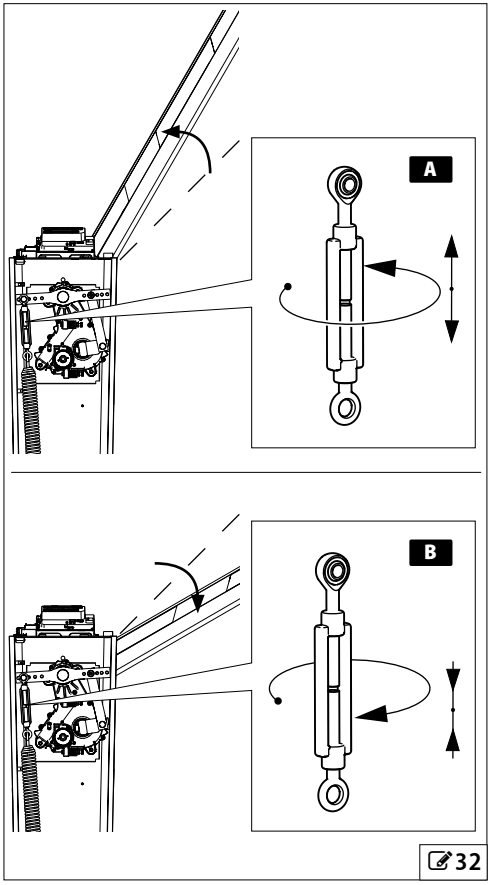
3.7 BALANCING THE BEAM

This phase requires the release of the barrier.
Keep away from the moving parts inside the cabinet and the spring coils.
Do not leave the beam vertical when the barrier is unlocked.

See the specific instructions for balancing a jointed beam.

1. With the barrier unlocked, bring the beam to 45° and release it: the beam is balanced correctly when it stays in position (**31**).
2. Make the adjustment, if necessary:
   - if the beam tends to open, the turnbuckle should be extended (**32**-A)
   - if the beam tends to close, the turnbuckle should be shortened (**32**-B)
   - repeat the adjustment until it is correctly balanced
3. Restore the automatic operation.





3.8 LIMIT SWITCH ADJUSTMENT

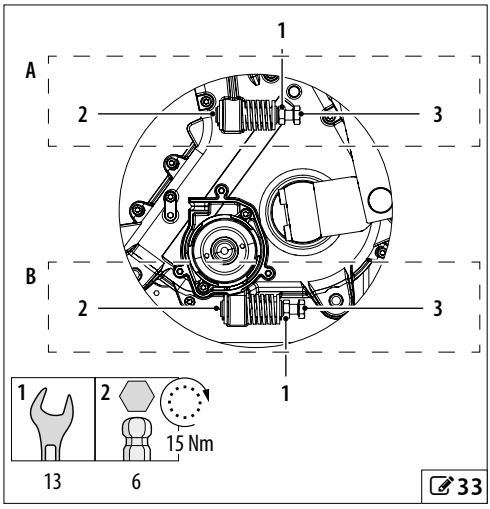
The gearmotor is supplied with the limit switches already adjusted.

The limit switches can be used to adjust the horizontal and vertical position of the beam (✎ **33**).

	Limit switch A	**Limit switch B**
RH barrier	vertical beam	horizontal beam
LH barrier	horizontal beam	vertical beam

⚠ This phase requires the release of the barrier.
Keep away from the moving parts inside the cabinet and the spring coils.
Do not leave the beam vertical when the barrier is unlocked.

1. With the barrier unlocked, loosen the lock nut **1** and the screw **2** at the same time.
2. Keep the lock nut **1** still and manually regulate the stop with screw **3**.
3. Tighten the lock nut **1** with the spanner and tighten the screw with Allen key **2**.
4. Check the correct adjustment of the limit switch. Repeat the sequence if necessary. Finally, tighten the screw **2** to the fastening torque indicated.



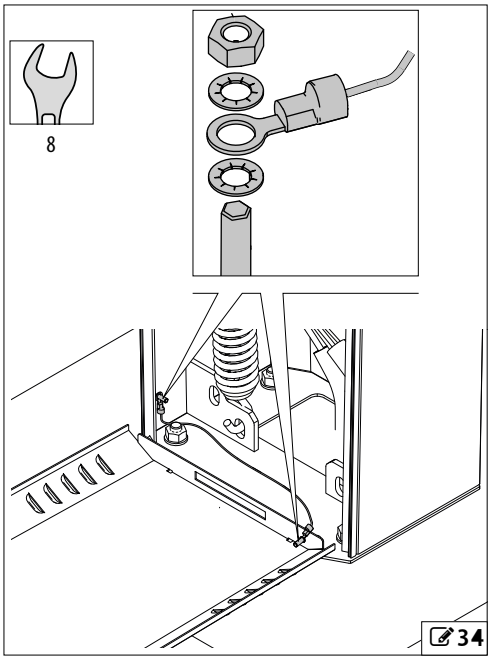
3.9 EARTHING THE DOOR

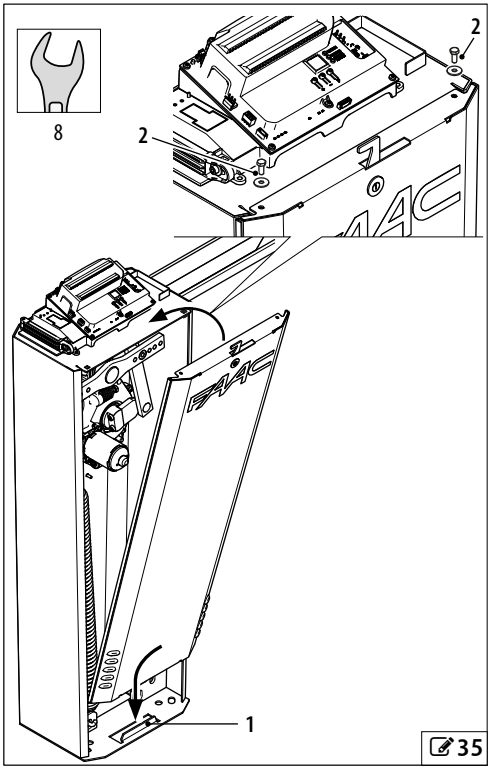
1. (✎34) Use the cable supplied and fix it using the toothed washer and nut on the base and on the door. Respect the insertion order indicated in the figure.

3.10 CLOSING THE DOOR

The door must be closed before any manoeuvres are performed, even manually.
Handle the door carefully so as not to damage the earth cable.

1. (✎35) Insert the lower slot of the door in its place **1**, at the bottom of the box.
2. Close the door and fix it in place with screws **2** (provided).



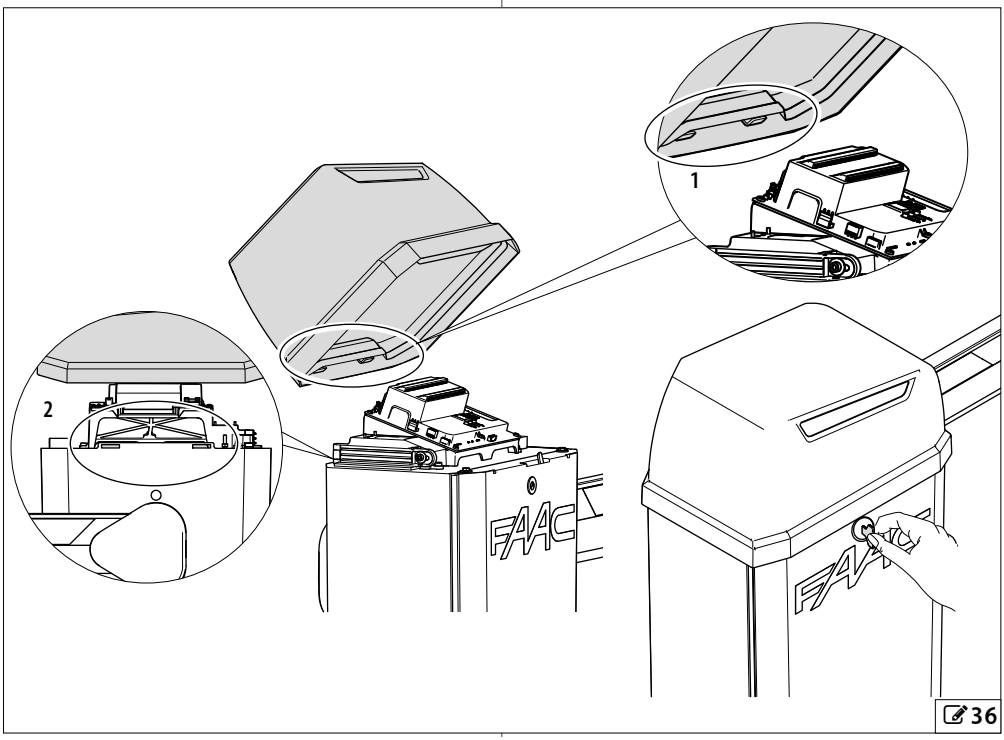


3.11 CLOSING THE UPPER LID

If there is a flashing light kit, insert the connector before closing the cover (see § 7).

1. (✎36) With the cover inclined, insert markers **1** in slots **2** on the box (rod side), then lower it on the opposite side.
2. Close with the key: turn in an anticlockwise direction.
3. Check the closure of the cover: try to lift it from the two beam ends at the same time and then on the opposite side.

For the closure seal to be effective, it is necessary for the door of the barrier to be closed and fixed definitively.



✎36

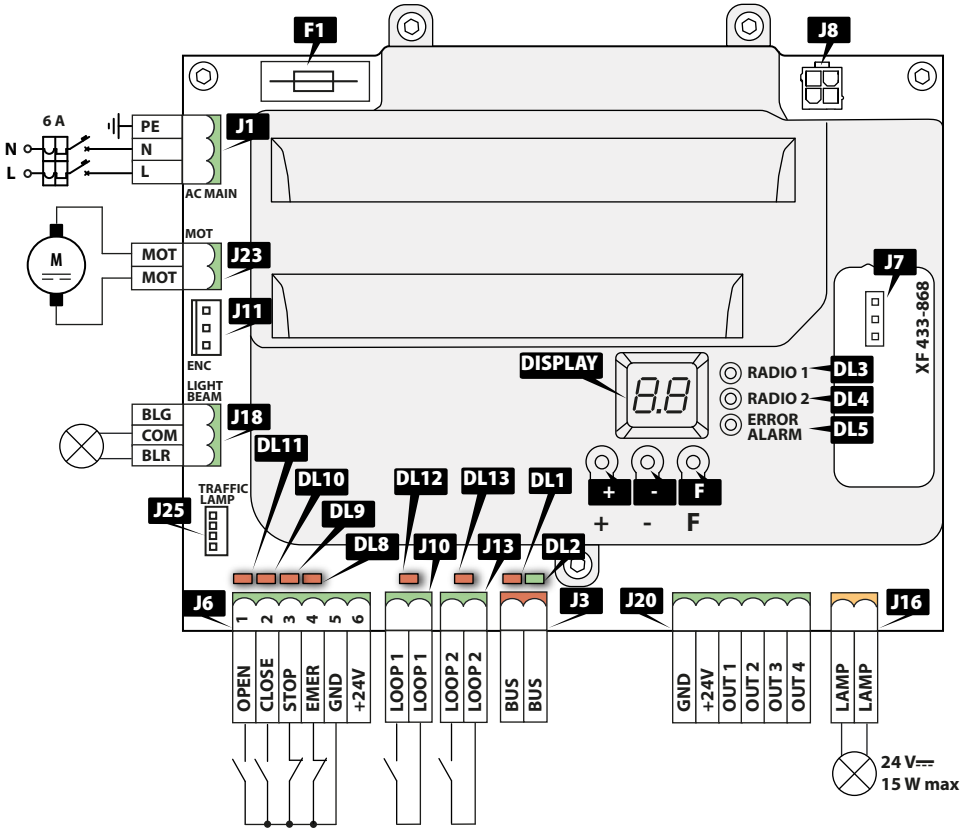
4. ELECTRONIC INSTALLATION

The board cover must never be removed unless the board is to be replaced. No installation operation requires the removal of the cover.

4.1 BOARD E614

2 Technical data E614

	230V~	115V~
Power supply voltage	220-240 V~ 50/60 Hz	115V~ +/-10% 50/60 Hz
Max power	150 W	150 W
Accessories output voltage	24 V ⎓	24 V ⎓
Max. accessories load	500 mA	500 mA
Max. BUS 2easy accessories load	500 mA	500 mA
Max. flashing light load	24 V ⎓ 15 W	24 V ⎓ 15 W
Ambient operating temperature	-20 °C to +55 °C	-20 °C to +55 °C



E614 COMPONENTS

J1	Mains power supply terminal board
J3	BUS 2easy terminal board
J6	Accessory/input terminal board
J7	Connector for XF radio module
J8	Connector for XBAT 24 battery
J10	Terminal board for external detector LOOP1
J11	Connector for encoder
J13	Terminal board for external detector LOOP2
J16	Terminal board for external flashing light
J18	Terminal board for the beam lights
J20	Terminal board for outputs
J25	Connector for integrated flasher
J23	Connector for motor
F1	Board protection fuse (F1 = T2.5A)
DISPLAY	Programming display

DL1	Device signalling LED to BUS 2easy ACTIVE
DL2	BUS 2easy "BUS MON" diagnostic signalling LED (GREEN)
DL3	"RADIO1" (OMNIDEC) signalling LED
DL4	"RADIO2" (OMNIDEC) signalling LED
DL5	Error/alarm signalling LED
DL8	EMER status LED
DL9	STOP/FSW-CL status LED
DL10	CLOSE status LED
DL11	OPEN status LED
DL12	LOOP1 status LED
DL13	LOOP2 status LED

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4.2 CONNECTIONS

Before making electrical connections, cut off the automation power supply. If the disconnect switch is not in view, apply a warning sign stating "WARNING - Maintenance in Progress".

In Primary-Secondary configuration see § 8.

CONTROL DEVICES

(✎38) Connect the devices to the terminal board J6 of the board.

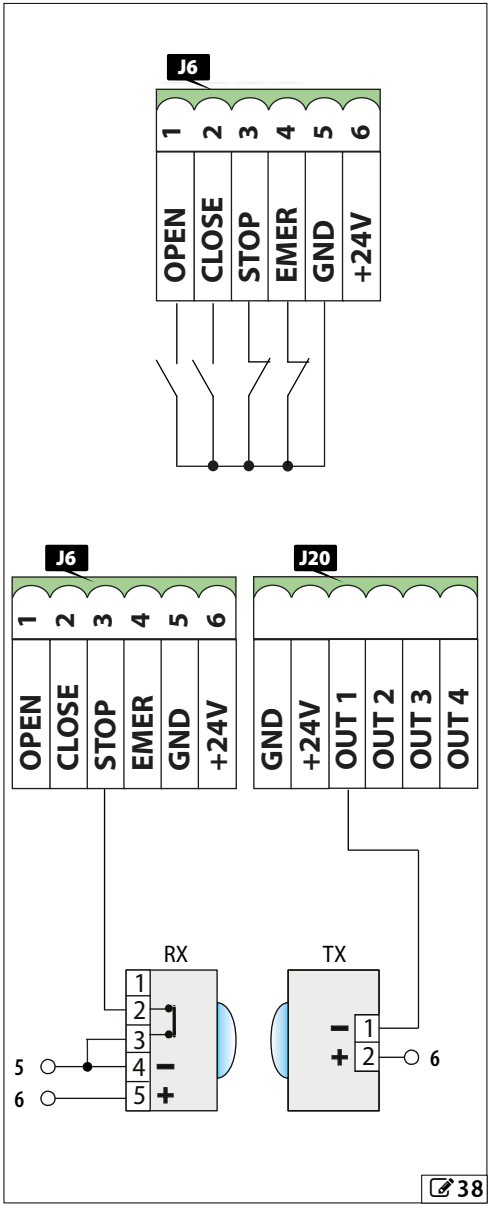
Multiple NO contacts on same input must be connected in parallel. Multiple NC contacts on same input must be connected in series.

TERMINAL BOARD J6:

1	**OPEN**	NO contact, connect a button or other pulse giver that commands the opening of the barrier, by closing a contact
2	**CLOSE**	NO contact, connect a button or other pulse giver that commands the closure of the barrier, by closing a contact
	STOP	Configured as STOP (default): NC contact, connect a button or other pulse giver that commands the stopping of the barrier, by opening a contact If NO device is connected, make a jump with GND
3	**FSW-CL**	Configured as FSW-CL (see SP function in Advanced programming): NC contact, connect a photoelectric cell or other device that commands the inversion on opening, by opening a contact during the closure If NO device is connected, make a jump with GND
4	**EMER**	NC contact, connect a button or other pulse giver that commands the emergency opening of the barrier, by opening a contact If NO device is connected, make a jump with GND
7	GND	Accessories power supply negative and common contact (1 A max.)
8-9	+	Accessories power supply positive 24 V ⎓ (1 A max.).

STOP input configured as FSW-CL

For the connection of photocells with relay contact, it is necessary to configure the STOP input as FSW-CL. Connect the negative of the transmitter (TX) power supply of the photocells to an OUT output configured as Fail-Safe. In this way the functioning of the photocells is checked before each closure: the test consists in breaking the power supply to the TX momentarily and checking the change of status of the input. If the test fails the electronic board does not command the movement.



EXTERNAL LOOPS

The magnetic coil detectors must not be used to detect pedestrians, cycles and motorbikes. If it is not possible to prevent them passing, other devices such as photocells are necessary.

(✎ **39**) Connect the magnetic coil detectors to terminal boards J10 (LOOP 1) or J13 (LOOP 2).

LOOP 1	Opening loop NO contact Connect a detector that commands the barrier to open by closing the contact (loop engaged)
LOOP 2	Transit loop NO contact Connect a detector which, by closing the contact (loop engaged), works according to the set operating logic: **in all logics except P** If the loop is engaged, it prevents closing. If the loop is engaged during closing, it commands the inversion on opening. **only in logic P** The loop commands the closing when disengaged. If the loop is engaged during closing, it stops the barrier (disengage the coil to complete closing)

BUS DEVICES

If no BUS 2easy devices are used, leave the BUS 2easy terminal board free.

See § 7.4 for the connection and orientation.

OUT OUTPUTS

Respect the 100mA max load for each output.

Open Collector Outputs: the activation of the output and its polarity can be configured by Advanced programming.

	OUT active	OUT not active
NO polarity	0 V ⎓	open circuit
NC polarity	open circuit	0 V ⎓

(✎ **40**) Connect the devices required to terminal board J20.

24 V ⎓ FLASHING LIGHT

See § 7.1 for the connection.

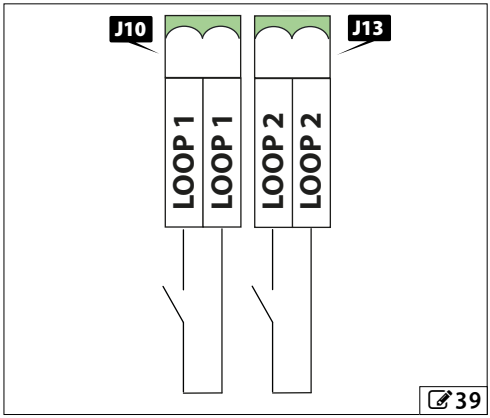
MOTOR

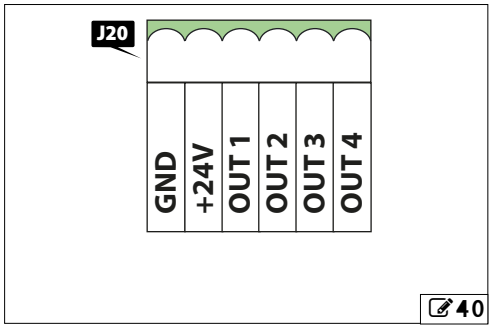
(✎ **41**) The motor wire is connected in the factory for a RH barrier.
Invert the wires if a LH barrier is being installed.

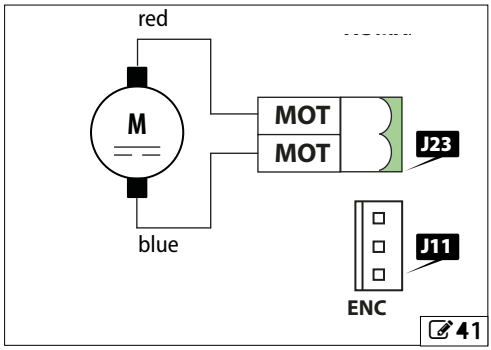
ENCODER

The encoder wire is connected in the factory.

The encoder must always be connected in order for the automation system to operate.







BEAM LIGHTS
42 See § 7.6 and § 7.7 for the connection.

INTEGRATED FLASHING LIGHT
42 See § 7.7 for the connection.

XBAT 24 BATTERY
43 See § 7.2 for the connection.

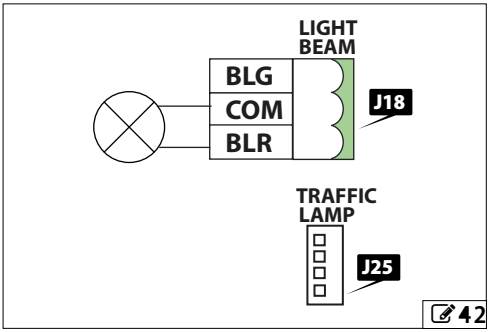
XF RADIO MODULE
43 See § 7.3 for the activation.

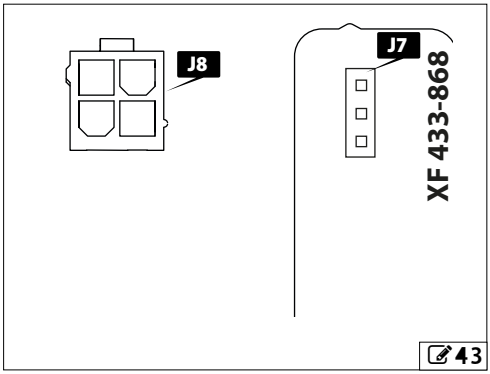
MAINS SUPPLY AND EARTHING

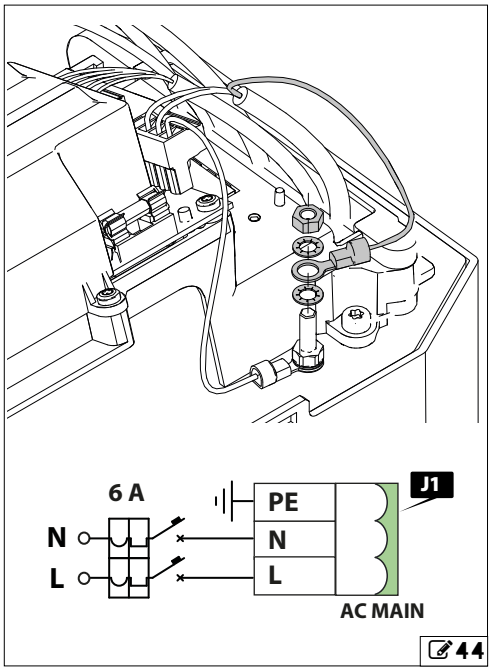
Use a 3G 1.5 mm2 wire (not supplied).

The grounding between board and box is done in the factory. Do not remove the connection.

1. Crimp the earth wire of the power cable to the cable terminal provided.
2. (44) Insert 2 washers, the cable terminal and the nut provided on the earth plug respecting the insertion order.
3. Tighten the nut.
4. Connect the phase wires and neutral to J1.







5. START-UP

If two barriers are installed in a Primary-Secondary configuration, the Secondary barrier has to be configured before you start to set up the Primary barrier (see § 8).

1. Check that the B614 is locked.
2. Power up the system (Primary barrier). The board lights up and the display then comes on:
   - firmware version (2 digits separated by a point)
   - SO flashing if a set-up or the automation status is requested
3. Check the status of the LEDs in standby (see § 9.1)

The BUS 2easy LEDs must be checked after the devices have been registered.

4. Memorise the radio controls present on the plant (sees § 7.3).
5. Program E614 without performing the set-up.

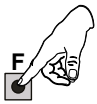
For the barrier to work properly, set the parameter cF dependent on the beam length.

6. Register the BUS 2easy devices, if they are installed (see § 7.4).
7. Check the barrier's direction of travel (see § 9.2).
8. Perform the set-up (see § 5.3).
9. If the XBAT 24 battery is being used:
   - Cut off the plant's power supply
   - Connect the XBAT 24 battery
   - Switch on power to the system.

5.1 PROGRAMMING

BASIC PROGRAMMING

1. Press and hold down **F** until the first basic function appears. (Each function is displayed as long as **F** remains pressed).



2. Release: the value of the function appears (default or programmed).

3. Use the **+** or **−** button to modify the value.

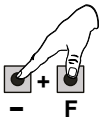
4. Press **F** to confirm the value displayed. Go to the next function. The modified value becomes effective immediately.

Proceed in the same way for all the functions. The last function (St) allows you to close the program.

5. In St select Y or no using the **+/−** buttons:
   Y = save the new program
   no = DO NOT save the new program

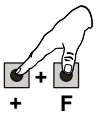
6. Press **F** to confirm and close the program. It returns to the automation status view.

To **exit from the programming mode at any time**:
press and hold down **F** and then **−** as well to move directly to St.

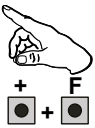


ADVANCED PROGRAMMING

1. Press and hold down **F** and then **+** as well, until the first advanced function appears. (Each function is displayed as long as **F** remains pressed).

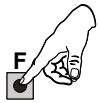


2. Release: the value of the function appears (default or programmed).



3. Use the **+** or **−** button to modify the value.

4. Press **F** to confirm the value displayed. Go to the next function. The modified value becomes effective immediately.

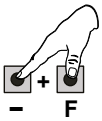


Proceed in the same way for all the functions. The last function (St) allows you to close the program.

5. In St select Y or no using the **+/−** buttons:
Y = save the new program
no = DO NOT save the new program

6. Press **F** to confirm and close the program. It returns to the automation status view.

To **exit from the programming mode at any time**:
press and hold down **F** and then **−** as well to move directly to St.



3 Basic programming

Basic function	Default
cF BARRIER CONFIGURATION Set functional parameters (including opening and closing speed) dependent on the beam length. 01 beam up to 3m 02 beam from 3m to 4m 03 beam from 4 m to 6 m	03
dF DEFAULT Displayed if the board is configured with the factory settings (default). Y indicates that all set values correspond to the defaults no indicates that one or more set values are different from the defaults Select Y if you wish to restore the default configuration.	Y
Ct PRIMARY / SECONDARY CONFIGURATION MA Configures the board in Primary mode SL Configures the board in Secondary mode ⓘ The following parameters are not displayed on the Secondary board: LO-PA-bu-tL-PF-t-bF. See the relative section.	MA
LO FUNCTIONING LOGIC EP Semi-automatic step by step A Automatic AP Automatic step by step b Semi-automatic B bC Semiautomatic B on opening/person present C on closure C Hold-to-run P Car park PA Automatic Parking ⓘ See the dedicated section for the functioning of the logics	EP
PA PAUSE TIME Adjustable from 00 a 59 s, to 1 sec steps. If 59 is exceeded, the display changes to indicate minutes and tens of seconds (separated by a dot) and can be adjusted in steps of 10 seconds, up to a maximum of 9.5 minutes. ⓘ E.g.: if the display indicates 2.5, the time is 2 min and 50 sec.	20
So OPENING SPEED 01 minimum speed 10 maximum speed	See table Default speed
Sc CLOSURE SPEED 01 minimum speed 10 maximum speed	
bu BUS 2easy DEVICE REGISTRATION ⓘ See the relative section.	no

Basic function	Default
n1 Dead-man MOTOR OPERATION mode **+** OPENS (displaying oP) as long as the button remains pressed. **–** CLOSES (displaying cL) as long as the button remains pressed.	– –
tL SETUP Acquire the limit switch positions. See the relative section.	no
SE LEAVING THE PROGRAMMING MODE Y save and exit from programming mode no exit from programming mode without saving Press **F** to confirm. After exiting, the display indicates the status of the automation system: 00 = Closed 01 = Open 02 = Stationary then opens 03 = Stationary then closes 04 = Pausing 05 = Opening 06 = Closing 07 = Failsafe in progress 08 = Check of BUS 2easy device in progress 09 = Pre-flashing and then opens 10 = Pre-flashing and then closes 11 = Opening in emergency	Y

4 Default speed

	cF 01	cF 02	cF 03
So	10	06	02
Sc	08	04	02

5 Advanced programming

Advanced function	Default
PF PRE-FLASHING no disabled 0C preflashing 3 sec. before each movement	no
FO DRIVING FORCE ON OPENING 01 minimum power 50 maximum power	50
FC DRIVING FORCE ON CLOSURE 01 minimum power 50 maximum power	50
SP STOP INPUT CONFIGURATION It defines the function of the STOP input 00 (STOP) Stop 02 (FSW-CL) Closure photoelectric cell	00
t OPERATING TIME (time-out) Set a higher value than the time the barrier needs to open/close completely. This can be regulated from 20 to 59 secs. in 1 sec steps. Afterwards, the display changes to minutes and tens of seconds (separated by a dot) and the time is regulated in 10 sec. steps, up to a maximum value of 9.5 minutes. E.g. if the display indicates 2.5, the pause time is 2 minutes and 50 seconds. In the case of a system with a Primary/Secondary configuration, an operating time that takes account of the movement of both the barriers must be set on the Primary control unit.	5.0
o1 OUT OUTPUT 1 CONFIGURATION 00 Always active 01 failsafe 02 indicator light (on during opening/pause/open, flashing on closure, off when closed) 03 courtesy light 05 barrier open or in pause mode 06 barrier closed 07 barrier moving 08 barrier in emergency mode 09 barrier opening 10 barrier closing 12 safety device active 13 light column (active in pause mode/open, turns off on closure) 15 step by step activation through second radio channel 19 battery operation 20 Loop1 engaged 21 Loop2 engaged	00

Advanced function	Default
P1 **OUT OUTPUT 1 POLARITY** Y NC output no NO output If output o1 = 01 (Fail-safe) configure P1 = no.	no
o2 see o1	
P2 see P1	
o3 see o1	
P3 see P1	
o4 see o1	
P4 see P1	
to **OUT OUTPUT 1 TIMING** **(only displayed if one of the outputs is configured as courtesy light)** This defines the timing of the output from 1 to 59 minutes in 1 minute steps.	02
bF **BATTERY OPERATION** 01 continues to function until completely dead 02 the barrier opens when the mains power is interrupted 03 the barrier closes when the mains power is interrupted	01
oS **INTEGRATED flashing light OPERATING MODE** 01 light column (steady green with barrier in pause mode/open, red flashing during movement, red steady with barrier closed) 02 flashing light (flashing red during movement, off in all other states)	01
bL **BEAM LIGHT OPERATIONAL MODE** 01 lights on with barrier closed, off with barrier in pause mode/open, flashing during the movement 02 lights off with barrier in pause mode/open, flashing in all other states	01
AS **MAINTENANCE REQUEST - CYCLE COUNTER (linked to the next two functions)** This can be useful to set scheduled maintenance interventions. Y Active no Excluded	no
nc **CYCLE PROGRAMMING IN THOUSANDS** This makes it possible to set a countdown of the plant operating cycles from 0 to 99 (thousands of cycles). The function can be used in combination with nC, to verify the use of the system and for the "Request for assistance". 00…99 (thousands of cycles)	00

Advanced function	Default
nC **CYCLE PROGRAMMING IN HUNDREDS OF THOUSANDS** This makes it possible to set a countdown of the plant operating cycles from 0 to 99 (hundreds of thousands of cycles). The value displayed is updated a the cycles progress, integrating with the nc value. (1 nC decease corresponds to 99 nc decreases). The function can be used in combination with nc, to verify the use of the system and for the "Request for assistance".	00
St **AUTOMATION SYSTEM STATUS:** See St in the Basic programming	Y

5.2 OPERATING LOGICS

In all the logics:
- the STOP command has the priority and stops the automation system from working
- the EMER command has the priority and opens the automation system.

EP - SEMI-AUTOMATIC STEP BY STEP

The EP logic requires the use of just the OPEN command:
- OPEN when the barrier is closed, it commands the opening.
- OPEN when the barrier is open it commands the closure.
- OPEN during the movement it stops
- OPEN after the stop, it reverses in movement.

The CLOSE command always commands the closure.

A - AUTOMATIC

Logic A only requires the OPEN command:
- OPEN when the barrier is closed, it commands the opening. After the pause time, the barrier closes again automatically.
- OPEN when the barrier is open in pause mode, it reloads the pause time. (Even the intervention of the photocells reloads the pause time)
- OPEN during opening is ignored.
- OPEN during opening causes it to open again.

The CLOSE command always commands the closure.

AP - AUTOMATIC STEP-BY-STEP

The AP logic requires the use of just the OPEN command:
- OPEN when the barrier is closed, it commands the opening. After the pause time, the barrier closes again automatically.
- OPEN when the barrier is open in pause mode it locks. (Even the intervention of the photocells during the pause mode reloads the pause time)
- OPEN during the opening locks.
- OPEN during opening causes it to open again.

The CLOSE command always commands the closure.

B - SEMI-AUTOMATIC B

Logic b requires the use of the OPEN and CLOSE commands:
- OPEN when the barrier is closed, it commands the opening.
- CLOSE when the barrier is open it commands the closure.
- CLOSE during opening it causes reclosure.
- OPEN during opening causes it to open again.

BC - SEMIAUTOMATIC B ON OPENING/ PERSON PRESENT C ON CLOSURE

bC logic requires the use of the OPEN jog command on opening and CLOSE maintained on closure. The activation of the CLOSE command on closure must be intentional and the barrier must be visible.
- OPEN when the barrier is closed, it commands the opening.
- Maintained CLOSE commands the closure.

C - DEAD-MAN

Logic C requires the use of maintained OPEN and CLOSE commands. The control must be activated intentionally and the barrier must be visible.
- Maintained OPEN commands the opening.
- Maintained CLOSE commands the closure.
- If the photocells are triggered, movement is stopped.

P - CAR PARK

Logic P requires the use of the OPEN and CLOSE commands:
- OPEN when the barrier is closed, it commands the opening.
- CLOSE when the barrier is open it commands the closure.
- CLOSE during opening it causes reclosure after opening.
- OPEN during opening causes it to open again.
- The triggering of the photocells during closure stops the movement, on disengagement the barrier continues to close.

PA - AUTOMATIC PARKING

Logic PA requires the OPEN and CLOSE commands to be used.
- OPEN when the barrier is closed, it commands the opening. After the pause time, the barrier closes again automatically.
- OPEN when the barrier is open in pause mode, it reloads the pause time. (Even the intervention of the photocells reloads the pause time)
- CLOSE when the barrier is open it commands the closure.
- CLOSE during opening it causes reclosure after opening.
- OPEN during opening causes it to open again.
- The triggering of the photocells during closure stops the movement, on disengagement the barrier continues to close.

5.3 SETUP

The set-up procedure enables the limit switch positions to be memorised.

The system needs to be set-up:

- When the automation system is first started
- When the board has been replaced
- Each time the display shows 50 flashing and the automation system does not work
- Following any variation in the position of the limit switch.

How to perform the set-up:

During the SET-UP, the safety devices are ignored, keep away and stop anyone from approaching the automation system until the end of the procedure

The SET-UP MUST be performed:
- with the mains power switched on
- with the automation system functioning automatically
- with the STOP/EMER inputs not active

1. Select parameter tL in Basic Programming, the display shows --.:
2. Keep the buttons pressed **+** and **-** around 3 seconds. When 51 appears flashing, release the buttons. The beam begins to close and stops when it reaches the stop.
3. 52 flashes on the display. The beam remains in the closure position for a couple of seconds.
4. 53 flashes on the display. The beam begins to open and stops when it reaches the stop.
5. The procedure has come to an end and the display shows the status of the open automation system (01).

6. PUTTING INTO SERVICE

6.1 FINAL CHECKS

1. If foot traffic cannot be excluded, check that the forces generated by the beam fall within the limits permitted by the standard. Use an impact force tester in accordance with standards EN 12453 and EN 12445. For non-EU countries, of there are no specific local regulations, the force must be less than 150 N. Check that the maximum force required to move the beam by hand is less than 220 N.
2. Check the automation system is working properly with all the devices installed.

6.2 FINAL OPERATIONS

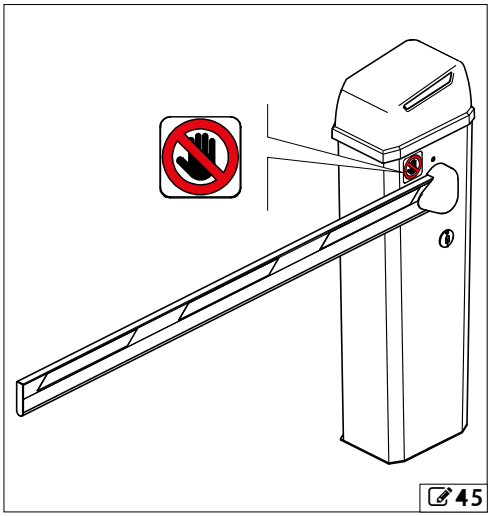
1. Fit the upper cover (see the relative section).
2. (✎ **45**) Apply the notice supplied warning against the risk of cutting, crushing or the loss of fingers or a hand between the beam and the body of the barrier.

> ⚠ The indication of the RISK must be visible even with the beam closed.

3. Highlight all areas with adequate warning signs in which there are still residual risks, even if all possible safety measures having been adopted.
4. Exhibit the sign prohibiting foot traffic.
5. Place the "DANGER - AUTOMATIC MOVEMENT" sign where it is clearly visible. Place the EC marking on the barrier.

> ⚠ Use adhesive signs so as not to perforate the box.

6. Fill out the EC declaration of conformity and the system register.
7. Give the EC Declaration, the system register with the maintenance plan and the instructions for use of the automation to the system owner/operator.



7. ACCESSORIES

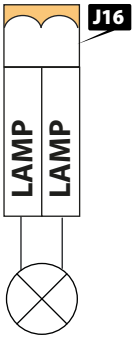
The installation must comply with Standards EN 12453 and EN 12445.
When working in the box there are risks of cutting, shearing, crushing hands due to the presence of moving parts. Until the installation is completed, the partially installed barrier must always be left blocked and with the door and upper lid always closed to prevent access to the electronic parts and the moving mechanical pars.
Never install the beam before fixing the barrier body and checking it. Until the installation is complete never leave the barrier unguarded with the beam fitted. Mark off the work site and prohibit access/transit. If installation is outside, it must be done in good weather without rain or gusts of wind. If it is raining, an adequate shelter for the barrier must be made until the mechanical and electronic installation is complete.
Never manage the barrier by holding the board holder.

7.1 24V⎓ FLASHING LIGHT

The flashing light indicates that the automation is moving. In addition, if this function has been programmed, the external flashing light signals the need for maintenance by flashing for at least 3 seconds before each movement.

Install the flashing light in an easily visible position.

1. Connect the flashing light to terminal board J16 (3 W max).



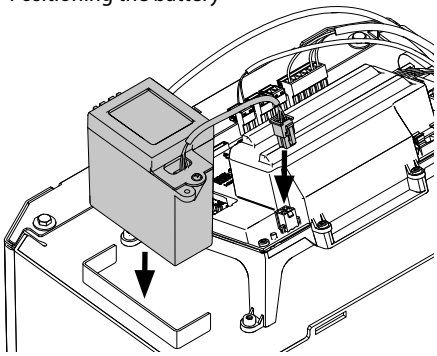
2. If required, set the preflash (PF Advanced programming)
3. Check that the device is working properly.

7.2 XBAT 24 EMERGENCY BATTERY

The XBAT 24 provides power to the automation system in the event of a mains power supply failure. The number of cycles that can be carried out with the battery depends on various factors (state of battery charge, time elapsing since the power outage, room temperature etc.).

Recharge the battery before starting the system. The full charging cycle of the XBAT 24 battery is 72 hours.

1. Positioning the battery



2. Connect the battery to clamp J8 on the board
3. Set battery operation (bF Advanced programming)

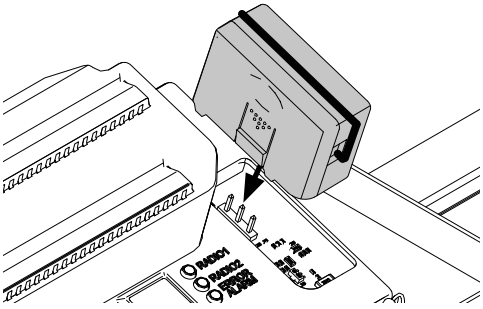
Disconnect the emergency battery if the automation system is taken out of use.

7.3 XF RADIO MODULE

The E614 is fitted with an OMNIDEC integrated two channel decoding system that can memorise, via the XF radio module, FAAC radio controls that use the following types of radio code: SLH/SLH LR, LC/RC, DS.

The three types of radio codes can coexist simultaneously.
A maximum of 256 codes can be memorised.
The codes memorised act as an OPEN or CLOSE command.
The radio controls and the XF radio module must have the same frequency.
When memorising the codes, keep the radio control approximately one meter from the XF radio module.

1. Insert the XF radio module into connector J3, taking care to insert it the right way round.



2. Memorise the radio controls.

Ensure that there are no obstacles (persons or things) while the automation is moving.

SLH/SLH LR - MEMORISING THE FIRST RADIO CONTROL

1. Press and keep pressed the + key (OPEN programming) or - (CLOSE programming). After pressing the button for about 5 seconds, the corresponding radio LED (DL4 or DL5) will start to flash to indicate that the radio code learning phase has started.
2. Release the button. From this moment E614 stays in the learning phase for around 20 secs.
3. Press and hold down buttons P1 and P2 simultaneously on the SLH/SLH LR radio control (master version only). The LED on the radio control starts to flash.
4. Release both buttons; the LED on the radio control continues to flash.
5. Make sure that the LED DL4 or DL5 on the board is still flashing and press the button of the radio control that you wish to memorise for a few seconds (the LED becomes steady). Release the button of the radio control.
6. Press the same button that was used in the previous step twice in succession to complete the memorisation process. If the procedure was carried out correctly, the B614 will open the gate, if permitted by the operating mode that has been set.

SLH/SLH LR - MEMORISING OTHER RADIO CONTROLS

1. Press and hold down buttons P1 and P2 simultaneously on the SLH/SLH LR radio control that has already been memorised (master version only). The LED on the radio control starts to flash.
2. Release both buttons; the LED on the radio control continues to flash.
3. Press and hold down the button that has already been memorised (the LED becomes steady).
4. Place the remote control that has already been memorised close to the remote control to be memorised (keeping the button in the previous step pressed).
5. Press the button of the radio control to be memorised and make sure that its LED flashes twice before going off, to indicate that the procedure was completed successfully.
6. Release all buttons.
7. Press the button used in step 5 twice in succession to complete the memorisation process for the new radio control. If the procedure was carried out correctly, the B614 will open the gate, if permitted by the operating mode that has been set.

LC/RC - MEMORISING THE FIRST RADIO CONTROL

1. Press and keep pressed the + key (OPEN programming) or - (CLOSE programming). After pressing the button for about 5 seconds, the corresponding radio LED (DL4 or DL5) will start to flash to indicate that the radio code learning phase has started.
2. Release the button, from this moment E614 stays in the learning phase for around 20 secs.
3. Make sure that the LED DL4 or DL5 on the board is still flashing and press the button of the LC/RC radio control that you wish to memorise for a few seconds (the LED becomes steady). The LED (DL4 or DL5) on the board goes on as a steady light for 1 sec to then start flashing again for another 20 seconds during which it is possible to memorise another radio control.
4. To memorise additional radio controls at a later stage, repeat the procedure from the beginning or carry out the remote memorisation procedure.

LC/RC - REMOTE CODE MEMORISATION PROCEDURE

Additional radio controls can be memorised remotely, i.e. without having to use the board directly, by using a radio control that has already been memorised.

1. Near the E614 press buttons P1 and P2 if the radio control already memorised (as OPEN or CLOSE at the same time). The LED of the radio control and LED DL4 or DL5 of the board begin to flash for 5 secs.
2. Release both the buttons then press the button already memorised within five seconds. From this moment E614 stays in the learning phase for around 20 secs.
3. Make sure that the LED DL4 or DL5 on the board is still flashing and press the button of the radio control that you wish to memorise. The LED (DL4 or DL5) on the board goes on as a steady light for 2 sec to then start flashing again for another 20 seconds during which it is possible to memorise another radio control.
4. Wait for LED DL4 or DL5 on the board to turn off before using the new radio control.

DS - MEMORISING RADIO CONTROLS

1. Set the required ON/OFF combination of the 12 dip-switches on the DS radio control, avoiding setting all of them to ON or all to OFF.
2. Press and keep pressed the + key (OPEN programming) or - (CLOSE programming). After pressing the button for about 5 seconds, the corresponding radio LED (DL4 or DL5) will start to flash to indicate that the radio code learning phase has started.
3. Release the button, from this moment E614 stays in the learning phase for around 20 secs.
4. Make sure that the LED DL4 or DL5 on the board is still flashing and press the button of the DS radio control that you wish to memorise for a few seconds. The corresponding LED (DL4 or DL5) on the board will turn on with a steady light for 1 second and then turn off to indicate that the procedure was completed successfully.
5. To add different codes, repeat the procedure starting from point 1.
6. For additional radio controls, use the same ON/OFF combination for the 12 DIP switches on the radio control that has been memorised.

DELETING RADIO CONTROLS FROM MEMORY

⚠ This procedure cannot be reversed and cancels ALL the codes of the radio controls memorised both as OPEN and as CLOSE. The deletion procedure is only active in the barrier status display mode.

1. Press and hold down the - button.

- After holding LED DL5 down for approx 5 seconds it begins to flash slowly, after another 5 seconds flashing slowly and pressure maintained LEDs DL4 and DL5 begin to flash more quickly (beginning cancellation).
- At the end of the rapid flashing LEDs DL4 and DL5 come on and remain steady to confirm the successful cancellation of all the (OPEN and CLOSE) radio codes in the board.

2. Release the - button. The LEDs turn off, indicating that the codes were deleted correctly.

7.4 BUS 2EASY DEVICES

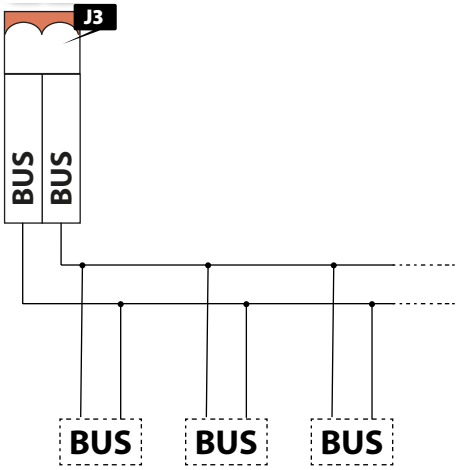
This board has a BUS 2easy circuit for connecting BUS 2easy devices (photocells, control devices).

If no BUS 2easy accessories are used, leave the BUS 2easy connector free. Do not bridge.

CONNECTION

Connect any BUS 2easy devices (photocells and control devices) to terminal J3.

The overall length of the BUS 2easy cables must not exceed 100 m.
The BUS line does not require a matching polarity connection.



PHOTOCELLS BUS 2EASY

Type of use:

Closing photocells	Active during closing	When an obstacle is detected, they stop the gate and reopen it.
Photocells used as pulse generators	Always active	When an obstacle is detected, they send an OPEN command

1. Assign an address to the BUS 2easy photocells.

6 Orientating the photocells

		ON – – – – 1 2 3 4
1 0 0 0	CL FSW	
1 0 0 1		
1 0 1 0		
1 0 1 1		
1 1 0 0		
1 1 1 0		
1 1 1 1	OPEN	

Assign an address to each pair of photocells by setting the four DIP switches (DS1) on the transmitter and the corresponding receiver.

The transmitter and receiver of a pair of photocells must have the same DIP switch settings.
There must never be two or more pairs of photocells with the same DIP switch settings. If there is more than one pair of photocells with the same address, a conflict error is generated.

2. Register the BUS 2easy photocells (bu Basic programming).
3. Check the status of LEDs DL1 and DL2 (▦).
4. Check that the photocells are operating correctly. When the gate is moving, interrupt the beam with an obstacle and check the LEDs on the photocells, the status of the bus on the display and the automation system operate according to the type of photocell installed.

CONTROL DEVICES

1. Position the DIP switches to assign the commands.

Stop NC also generates a stop when the device is disconnected. A command (e.g.: OPEN A_1) must be used on only one of the connected devices.

7 Addressing control devices

1 command
DIP switch 5 = 0 (OFF)

0 0 0 0	Open A_1
0 0 0 1	Open A_2
0 0 1 0	Open A_3
0 0 1 1	Open A_4
0 1 0 0	Open A_5
0 1 0 1	Stop
0 1 1 0	Stop NC_1
0 1 1 1	Stop NC_2
1 0 0 0	Close
1 0 0 1	Open B_1
1 0 1 0	Open B_2
1 0 1 1	Open B_3
1 1 0 0	Open B_4
1 1 0 1	Open B_5
1 1 1 0	/
1 1 1 1	/

2 commands
DIP switch 5 = 1 (ON)

0 0 0 0	Open A_1	Open B_1
0 0 0 1	Open A_1	Open B_2
0 0 1 0	Open A_1	Stop
0 0 1 1	Open A_1	Close
0 1 0 0	Open A_2	Open B_1
0 1 0 1	Open A_2	Open B_2
0 1 1 0	Open A_2	Stop
0 1 1 1	Open A_2	Close
1 0 0 0	Open A_3	Open B_3
1 0 0 1	Open A_3	Open B_4
1 0 1 0	Open A_3	StopNC_1
1 0 1 1	Open A_3	Close
1 1 0 0	Open A_4	Open B_3
1 1 0 1	Open A_4	Open B_4
1 1 1 0	Open A_4	StopNC_2
1 1 1 1	Open A_4	Close

2. Register the BUS 2easy control devices (Basic programming).
3. Check the status of LEDs DL1 and DL2 ( ).
4. Check that the devices are working properly. Use the controls to make the gate move. Check the LEDs on the devices, the status of the bus on the display and make sure that the automation system operates according to the type of device installed.

BUS 2EASY DEVICE REGISTRATION

Registration is required:

- When the automation system is first started or after the board has been replaced.
- Following any changes (addition, replacement or removal) to the BUS 2easy devices.

Registration procedure:

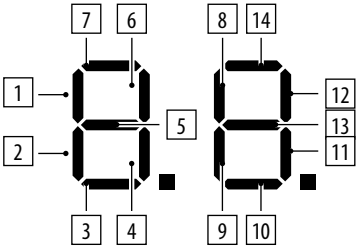
1. Select parameter bu in Basic programming. When **F** is released, the display shows the status of the BUS 2easy devices (▦).
2. Press and hold down the **+** and **-** buttons simultaneously for at least 5 seconds until U appears (the display flashes during this time). Registration has been completed.
3. Release the **+** and **-** buttons. The display shows the status of the BUS 2easy devices
4. Check the status of the LEDs on the board:

LED DL1 (Red) - BUS 2easy devices	
●	At least one device is engaged/active
○	No device is engaged/active

LED DL2 (Green) - BUS 2easy line	
●	Line monitoring. LED always on (off with board in Sleep mode)
✱	Line short-circuited
✱	Device error: check the ERROR LED

Registered device verification procedure:

1. Select parameter bu in Basic programming. After registering one or more devices, bu displays segment 13 on.
2. Press the **+** button and keep it pressed; the segments relative to the registered devices will come on. Each segment of the display corresponds to a type of device:



1	Open A control device
2	Open B control device
3	Closing photocells
4	Photocells for Open impulse
5	Not used
6	Close control device
7	Not used
8	Stop control device
9	Not used
10	Not used
11	Not used
12	Not used
13	BUS 2easy status
14	Not used

no	No device registered
cc	BUS 2easy line short-circuited
Er	BUS 2easy line error

7.5 RECTANGULAR BEAM LIGHT KIT

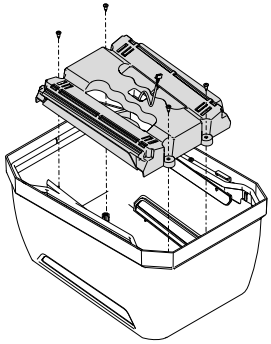
Follow the assembly instructions supplied with the accessory, observing all the safety precautions indicated in this manual.

7.6 ROUND BEAM LIGHT KIT

Follow the assembly instructions supplied with the accessory, observing all the safety precautions indicated in this manual.

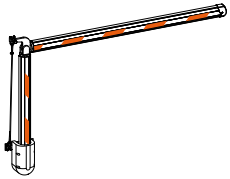
7.7 INTEGRATED FLASHING TRAFFIC LIGHT

1. Open the upper cover.
2. Fasten the flashing light with the screws provided.



3. Connect the flashing light to terminal J25.
4. Set the operating mode (o5 in Advanced programming).
5. Close the upper cover.
6. Check that the device is working properly.

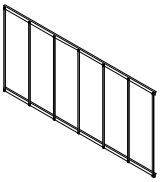
7.8 BEAM JOINT KIT



Follow the assembly instructions provided with the product respecting all the safety precautions indicated in this manual.

The installation of a jointed beam must take the specific risks into consideration:
- IMPACT on the horizontal section of the beam, when the beam is open
- CRUSHING in the jointed area, when the beam is moving.
- Do not use joint to limit the height of the vehicles passing.
- Indicate the maximum height of the vehicles considering the height of the beam itself.
- Apply a danger of crushing sticker on the beam in the jointed area.
- Check the integrity of the wire during the half-yearly scheduled maintenance.

7.9 HEDGE



Follow the assembly instructions provided with the product respecting all the safety precautions indicated in this manual.

Check that it has been fastened to the specified torque.

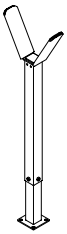
7.10 FOOT

Follow the assembly instructions provided with the product respecting all the safety precautions indicated in this manual.

- Check that it has been fastened to the specified torque.
- Check the lower protection is present and is in good condition.
- You should install a beeper or similar to indicate the beam is closing.
- Apply the reflector on the stem.

On the rectangular beam, it is not possible to install the foot when there are lights on the beam.

7.11 FORK

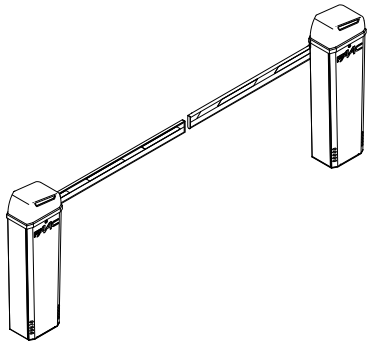


Follow the assembly instructions provided with the product respecting all the safety precautions indicated in this manual.

- Check that it has been fastened to the specified torque.
- You should install a beeper or similar to indicate the beam is closing.
- Provide for a clearance area or signals to prevent pedestrians being knocked. The area must be adequately lit.

8. PRIMARY-SECONDARY

The Primary-Secondary configuration makes it possible to install two counterposed barriers with synchronous movement.



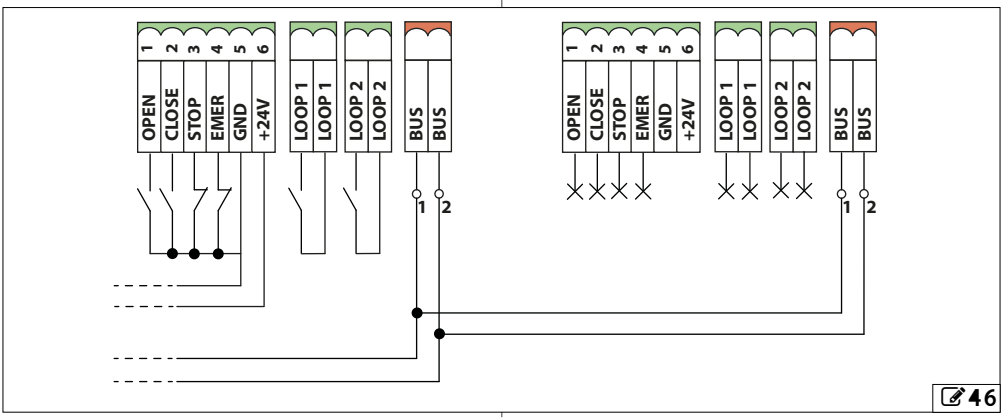
When programming, one barrier must be defined as Primary and the other as Secondary. The Primary barrier manages all the controls and movements.
The control devices and any external loops must be connected to the Primary barrier.
Each barrier must be programmed on the basis of the length and configuration of the beam. The operating logic should only be programmed on the Primary board. The anticrushing function is active on each barrier and commands the inversion of both.

CONNECTION

1. Connect the barrier with BUS 2easy polarised connection (✎ **46**).
2. Connect the devices (see § 4.2). The inputs for the command devices and any external loop are disabled on the Secondary board.

Connections	Primary	Secondary
Power supply	✔	✔
Motor	✔	✔
Encoder	✔	✔
Integrated flashing traffic light	✔	✔
Beam lights	✔	✔
Control devices	✔	✖
Loop	✔	✖
Outputs	✔	✔
Flashing light	✔	✖

3. The BUS 2easy devices can be connected to the Primary or Secondary board. The devices must be registered on the Primary barrier.



✎ **46**

SECONDARY BARRIER CONFIGURATION

1. Power the Secondary barrier. The board turns on. The display reads in sequence:
   - firmware version (2 digits separated by a point)
   - SO flashing if a set-up or the automation status is requested
2. Access the Basic programming and set:
   - cF depending on the beam configuration and length
   - Ct=SL for configuring the board as Secondary.
3. Check the status of the LEDs on the board:

LED DL1 (Red)

*	No Primary-Secondary synchronisation or the line is short-circuited.

LED DL2 (Green)

*	Primary-Secondary synchronization present.

4. Check the direction of travel (see § 9.2). The barrier must not be in manual functioning mode.
5. Start up (see § 5).

During setup, the Primary board controls the Secondary board and the two beams move synchronously.

9. DIAGNOSTICS

9.1 LEDS CHECK

LED		STATUS	IDLE
DL1	BUS	● active ○ not active	○
DL2	BUS MON	See BUS 2easy device registration	●
DL3	RADIO1	● active ○ not active	○
DL4	RADIO2	● active ○ not active	○
DL5	Error/alarm "ERROR"	● active ○ not active	○
DL8	EMER	● not active ○ active	●
DL9	STOP	● not active ○ active	●
DL10	CLOSE	● active ○ not active	○
DL11	OPEN	○	○
DL12	LOOP1	● active ○ not active	○
DL13	LOOP2	● active ○ not active	○

In Primary-Secondary configuration see § 8.

9.2 DIRECTION OF MOVEMENT CHECK

1. Select parameter Π1 in the Basic programming. The display shows - -.
2. Keep the + button pressed. The display shows oP and the barrier opens.
3. Keep the - button pressed. The display shows cL and the barrier closes.
4. If the conditions in points 2 and 3 are not respected, invert the motor wires.

9.3 ENCODER OPERATION CHECK

1. Select parameter Π1 in Basic Programming, the display shows - -.
2. Keep the + button pressed. The display shows oP and the barrier opens. The flashing point between the two letters indicates that the encoder is operating correctly.
3. Keep the - button pressed. The display shows cL and the barrier closes. The flashing point between the two letters indicates that the encoder is operating correctly.

9.4 AUTOMATION SYSTEM STATUS CHECK

The E614 display if not in the programming, shows a code indicating the status the automation is in:

00	Closed
01	Open
02	Stationary then opens
03	Stationary then closes
04	In pause mode
05	Opening
06	Closing
07	Failsafe in progress
08	BUS 2easy device verification in progress
09	Pre-flashing and then opens
10	Pre-flashing and then closes
11	Opening in Emergency

9.5 CHECK FIRMWARE VERSION

When the display of the E614 is switched on, it shows the following in succession:

- firmware version (2 digits separated by a point)
- automation system status

9.6 CHECK OF THE REGISTERED BUS 2EASY DEVICES

1. Select parameter bu in Basic programming.
2. Press and hold the + button; the corresponding segments to the registered devices light up (see **44**).

10. MAINTENANCE

- Maintenance must be performed by the installer or a maintenance technician.
- Mark off the work site and prohibit access/transit. Do not leave the work site unattended. The work area must be kept tidy and cleared after maintenance has been completed.
- Always shut off the power supply before performing any maintenance operations. If the disconnect switch is not in view, apply a warning sign stating "WARNING - Maintenance in Progress". Restore the power supply only after finishing any maintenance work and restoring the area to normal.
- Before starting work, wait for any hot components to cool down.
- Do not make any modifications to the original components. FAAC S.p.A. shall bear no liability for damage or injury due to components that have been modified or otherwise tampered with. The warranty shall be forfeited in the event of tampering with components. Only use original FAAC spare parts.
- Do not remove the board cover. No maintenance requires the removal of the cover.
- The barrier must not be left released.
- If the barrier is put out of order for a long time, the beam needs to be removed.

10.1 SCHEDULED MAINTENANCE

The ⊞ **Scheduled maintenance** lists, purely for guidance which is not intended to be exhaustive, the operations which must be performed on a regular basis to keep the automation system safe and in good working order. The installer/machine manufacturer is responsible for drawing up the maintenance plan for the automation, supplementing this list or modifying the maintenance intervals according to the machine characteristics.

⊞ **8** Scheduled maintenance

If the tests listed below turn up conditions that are other than expected, repair or restoration is necessary. The plant must not be put back into operation until all the safety precautions specified in this manual and in the documentation of all the other components installed have been complied with.

Operations	Frequency in months
Structures	
Check the plinth and built/fenced parts around the automation system: make sure there is no damage, cracking, breaks or subsidence.	12
Check the area the beam moves in: make sure there are no objects/deposits that reduce the uncluttered safety areas and obstacles to the movement of the beam such as branches, overhead wires etc.	12
Ensure that there are no sharp protrusions which could represent a perforation or hooking hazard.	12
Barrier	
Check the fixing of the bearing box to the foundation plate.	6
Check the barrier and its fixings: integrity, absence of deformation, rust etc. Check that screws and bolts are correctly tightened.	12
Check the condition of the beam and that it is fastened properly.	12
Check the condition of the beam and that it is fastened properly.	12
Check the presence and integrity of the reflectors on the beam and all the other signs and markings necessary.	6
Check the integrity and proper fixing of the spring and tie rods.	12
Check the configuration and the balancing of the barrier.	12
Check the integrity, proper functioning and adjustment of the limit switch.	12
Check the integrity of all the cables, cable glands and junction boxes.	12
Check that it is irreversible.	12
Clean the gearmotor and the bearing box.	12
Do a general cleaning of the barrier manoeuvre area.	12
Electronic equipment	
Check the integrity of the upper cover and the plastic electronic board protection.	12
Check that the connectors and wiring are intact.	12
Check that the earth connections are intact.	12
Check that there are no signs of overheating, burning etc. of electronic components.	12
Check the operation of the circuit breaker and differential switch.	12
Control devices	

Check that the installed devices and radio controls are in good condition and that they operate correctly.	12
Deformable edges	
Check that they are intact and correctly fastened.	12
Photocells	
Check condition, fastening and correct operation.	6
Check the posts, ensuring that they are intact, correctly fastened and free of deformation etc.	6
Flashing light	
Check condition, fastening and correct operation.	12
Access control	
Check the proper opening of the barrier only with authorised user recognition.	12
Hedge	
Check: the integrity and fixing of the beam.	6
Foot	
Check: the integrity and fixing of the beam.	6
Check the presence and integrity of the reflectors on the foot and all the other signs and markings necessary.	6
Check the presence and integrity of the lower foot guard.	6
Fork	
Check that they are intact and correctly fastened.	6
Check the presence and integrity of all the signs and markings necessary.	6
Jointed beam	
Check that they are intact and correctly fastened.	6
Check the integrity of the wire and the relative signs (max height allowed, risk of crushing in the beam joint).	6
Complete automation system	
Check that the automation operates correctly, following the set logic, when using the various control devices.	12
Check the proper fluid, smooth movement of the beam without strange noises. Check the correct speed during opening and closing and the respect for the intended slow downs.	12
Check the correct functioning of the manual release: when the release is activated it must only be possible to move the beam manually. Check the presence of the lock cover.	6
Check that the maximum force required to move the beam by hand is less than 220 N.	6
Check that the encoder is working properly.	6
Check that each pair of photocells is working correctly.	6
Check there is no optical/light interference between the photocells.	6
If the pedestrian transit cannot be excluded, check the force limitation curve (EN 12453 and EN 12445 standards). For non-EU countries, of there are no specific local regulations, the force must be less than 150 N.	6
Check that all necessary signage and warnings are present, intact and legible: residual risks, exclusive use etc.	12
Check the presence, integrity, legibility of the EC marking covering the automation system and the DANGER AUTOMATIC MOVEMENT warning sign	12

9 Periodic replacements

Component	Work cycle periodicity
Spring	200 000
Spring 6 m	150 000
Electromechanical gearmotor	500 000

10.2 SPRING REPLACEMENT

With the barrier unlocked, raise the beam so that it is vertical and support it in this position. Restore automatic operation and release the beam.

1. (**47**) Extend the turnbuckle by unscrewing it manually and then remove the spring. If it is necessary to move the turnbuckle, disassemble it and reposition it in the appropriate hole (see **2**).
2. Install the new spring.
3. Balance the beam

10.3 REPLACING THE GEARMOTOR

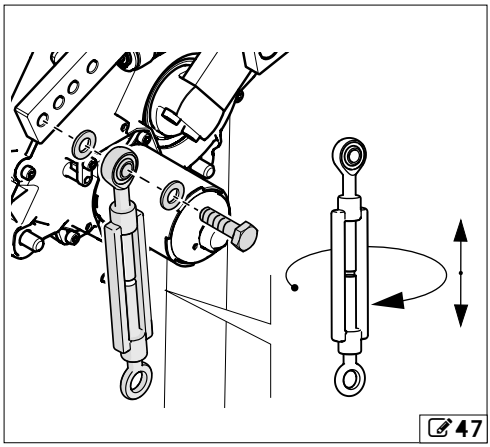
With the barrier unlocked, raise the beam so that it is vertical and support it in this position. Restore automatic operation and release the beam.

1. Extend the turnbuckle by unscrewing it by hand and then remove the spring.
2. Perform the release manoeuvre and bring the beam into the horizontal position.
3. Remove the beam.
4. Position the balancer as shown in the figure (**48**) .
5. Restore the automatic operation.
6. Remove the seeger ring on the drive shaft.
7. Unscrew the 4 nuts and remove the washers.
8. Remove the gearmotor.
9. Remove the electric motor, taking care not to damage its cable.
10. Mount the electric motor to the new gearmotor, follow the procedure in reverse and balance the beam.

10.4 FUSE REPLACEMENT

1. (**49**) Remove the fuse F1 cover by gently prising it off with a screwdriver.
2. Remove the fuse.
3. Assemble the new fuse.
4. Refit the fuse cover.

Only use a T 2.5A (delayed) fuse.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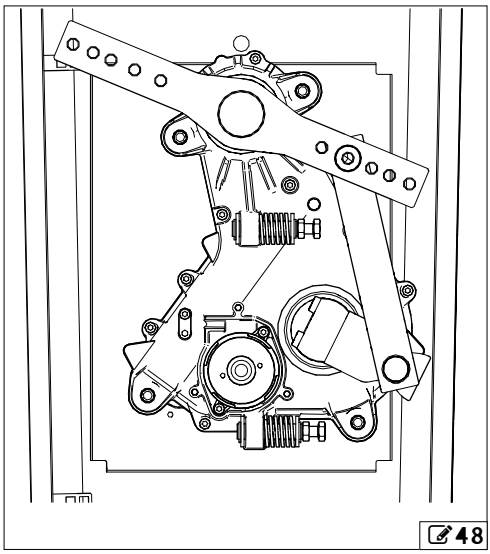
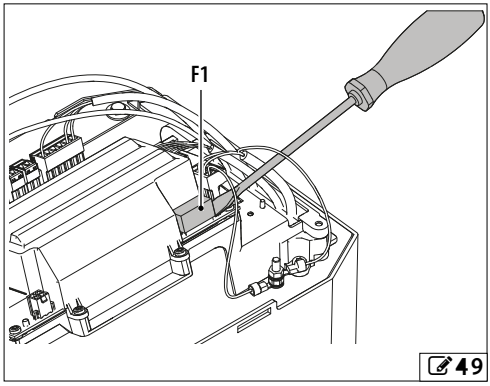

48



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10.5 OPERATIONAL PROBLEMS

10 Troubleshooting

CONDITION	FINDING SOLUTIONS
The barrier does not perform the SET-UP	check the automation is not released check there is power
The barrier does NOT OPEN	check the motor and encoder connection
The barrier CLOSES rather than OPENING and vice versa.	invert the phases in the motor connection and perform a SET-UP
The barrier makes very slow movements	check the force set check the balancing of the beam check the parameter cF has been set in accordance with the beam length if the barrier is being battery operated make sure the battery is charged.
The barrier moves irregularly	check the motor connection and make sure that the encoder is working correctly
The barrier does NOT OPEN	check the automation is not released check the motor direction of travel
The barrier does NOT CLOSE	check the automation is not released check the motor direction of travel Check the LED status of the controls, loops, safety devices and EMER are not active
The barrier does NOT OPEN and does NOT CLOSE	check the automation is not released Check the status of the STOP LED is not active check the motor and encoder connection

11. INSTRUCTIONS FOR USE

It is the responsibility of the machine installer/manufacturer to draft the user instructions of the automation in accordance with the Machinery Directive, including all the required information and instructions based on the characteristics of the automation.
The guidelines below, which are purely indicative and in no way exhaustive, help the installer draft the user instructions.

The installer must provide the owner/operator of the automation with the EC Declaration, the system Logbook with the maintenance schedule and the user instructions of the automation.
The installer must inform the owner/operator of any residual risks and the intended use and ways in which the machine should not be used.
The owner is responsible for operating the automation and must:
- comply with all User instructions provided by the installer/maintenance technician and the Safety recommendations
- keep the user instructions
- have the maintenance schedule implemented
- keep the system Logbook, which must be completed by the maintenance technician at the end of all servicing

11.1 SAFETY RECOMMENDATIONS

The plants made with FAAC buried actuators B614 series are intended for vehicular traffic.
The user must be in good physical and mental health and be aware of and responsible for the dangers which use of the product can lead to.

- Do not use the automation when the area of operation is not free of persons, animals or objects.
- Do not remain in or walk/drive through the area of operation of the automation while it is moving.
- Do not allow children to approach or play in the area of operation of the automation.
- Do not try to prevent the movement of the automation.
Do not climb or catch on to the beam or let yourself be pulled by it.
- Do not allow the devices to be used by anyone who is not specifically authorised and trained to do so.
- Do not allow the devices to be controlled by children or persons with mental and physical deficiencies unless they are supervised by an adult who is responsible for their safety.
- Do not use the automation in the presence of faults which could compromise safety.
- Do not expose the automation system to corrosive chemical or atmospheric agents; do not expose the automation to water jets of any type or size.
- Do not perform any work on the components of the automation.

Risk of cutting, crushing or losing fingers or a hand between the beam and the cabinet when the beam is moving. Do not approach the barrier, do not put your hands in the danger area during movement.

11.2 EMERGENCY USE

In emergencies or if there is a fault, turn off the power supply to the automation and disconnect the buffer batteries if there are any. If the beam can be moved safely by hand, use the MANUAL OPERATION mode; otherwise place the automation out of service until it has been reset/repaired.
In the case of a breakdown, the automation must be reset/repaired exclusively by the installer/maintenance technician.

For atmospheric events outside the resistance to wind limits indicated in the table in alert situations it is necessary to put the barrier out of service with closed, locked beam and request the asssistance of the installation engineer to remove the beam.

11.3 MANUAL OPERATION

- Performing the release manoeuvre when there is no electrical power.
- Performing the release manoeuvre only when the beam is at a standstill.
- During manual handling, accompany the beam slowly for the entire stroke. Do not let the beam travel freely.
- Do not leave the barrier unblocked: after carrying out the manual movement, restore automatic operation.

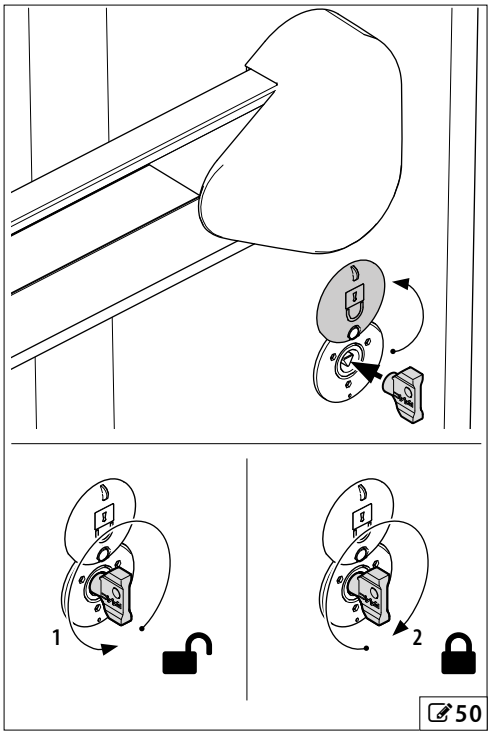
RELEASE PROCEDURE

1. ✎ **50** Open the lock cover. Insert the key and turn it once anticlockwise until it stops (**1**).
2. Move the barrier manually.
3. Restore the operation.

Do not leave the barrier unlocked when the beam is in the vertical position.

OPERATION RESTORATION

1. ✎ **50** Insert the key and turn it twice clockwise until it stops (**2**).
2. Check that manual movement is inhibited.
3. Remove the key and close the cover.



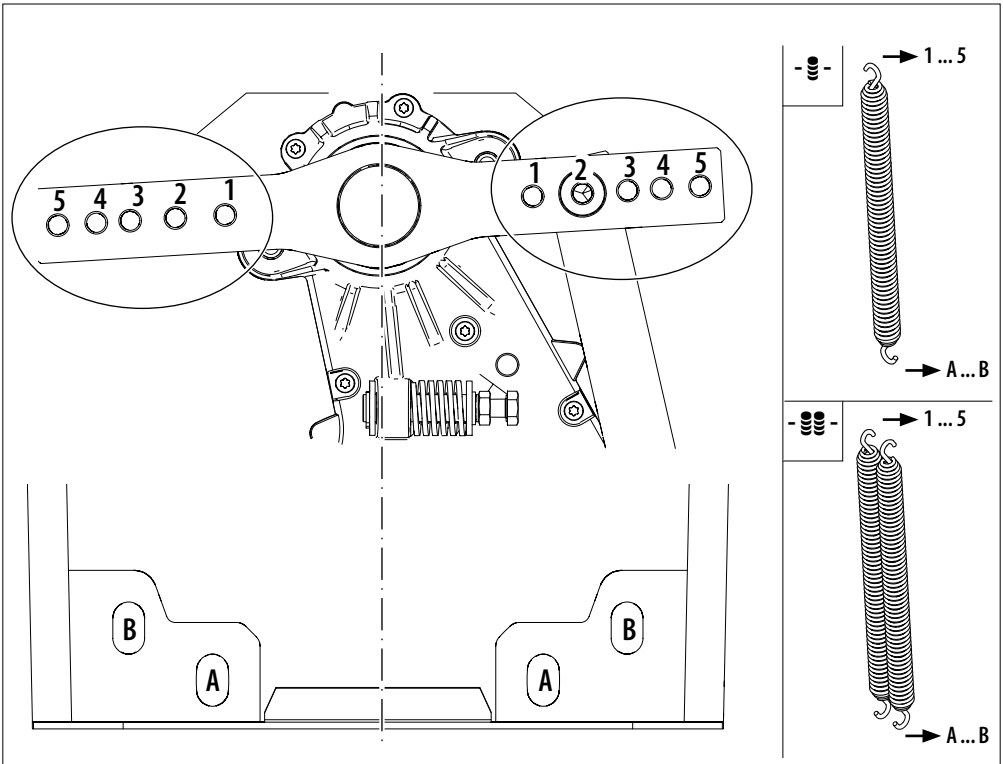
11.4 SCHEDULED MAINTENANCE REQUEST ALERT

When the scheduled MAINTENANCE REQUEST alert is enabled (function AS - advanced programming), the external flashing light signals that maintenance is required by flashing for at least 3 seconds before each movement. Ask an installer to carry out the scheduled maintenance.

1 Foundation (barrier in maximum configuration)

MATERIALS

CONCRETE	RESISTANCE CLASS	EXPOSURE CLASS
	C 28/35	XF4
REINFORCED CONCRETE STEEL		B 450C

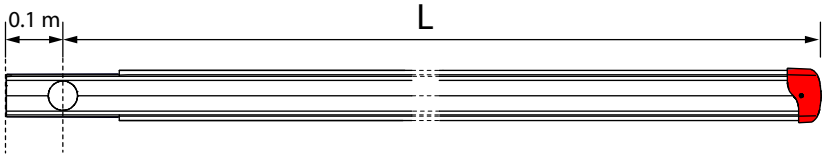


2 Balancing system

11 Rectangular beam balancing

L	min 1.85 m max 2.44 m	min 2.45 m max 2.99 m	min 3.00 m max 3.49 m	min 3.50 m max 3.89 m	min 3.90 m max 4.30 m	min 4.31 m max 4.81 m	
beam (no accessory)	1 B	2 B	3 A	4 A	5 A	3 A	
L	**min 1.80 m max 2.34 m**	**min 2.35 m max 2.89 m**	**min 2.90 m max 3.34 m**	**min 3.35 m max 3.79 m**	**min 3.80 m max 4.10 m**	**min 4.11 m max 4.64 m**	**min 4.65 m max 4.81 m**
beam and lights	1 B	2 B	3 A	4 A	5 A	3 A	4 A
L	**min 1.65 m max 2.19 m**	**min 2.20 m max 2.69 m**	**min 2.70 m max 3.09 m**	**min 3.10 m max 3.49 m**	**min 3.50 m max 3.80 m**	**min 3.81 m max 4.30 m**	**min 4.31 m max 4.81 m**
beam and hedge	1 B	2 B	3 A	4 A	5 A	3 A	4 A
L	**min 1.35 m max 1.89 m**	**min 1.90 m max 2.44 m**	**min 2.45 m max 2.89 m**	**min 2.90 m max 3.34 m**	**min 3.35 m max 3.70 m**	**min 3.71 m max 4.30 m**	**min 4.31 m max 4.81 m**
beam and foot	1 B	2 B	3 A	4 A	5 A	3 A	4 A
L	**min 1.75 m max 2.24 m**	**min 2.25 m max 2.64 m**	**min 2.65 m max 3.04 m**	**min 3.05 m max 3.35 m**	**min 3.36 m max 3.89 m**	**min 3.90 m max 4.40 m**	**min 4.41 m max 4.70 m**
beam, hedge and foot	2 A	3 A	4 A	5 A	3 A	4 A	5 A

12 Round beam S balancing



L	min 1.90 m max 2.44 m	min 2.45 m max 3.04 m	min 3.05 m max 3.54 m	min 3.55 m max 3.99 m	min 4.00 m max 4.40 m	min 4.41 m max 4.89 m	min 4.91 m max 6.03 m
beam (without accessories)	1 B	2 B	3 A	4 A	5 A	3 A	5 A (SPRING 6 m)

L	min 1.80 m max 2.34 m	min 2.35 m max 2.94 m	min 2.95 m max 3.39 m	min 3.40 m max 3.79 m	min 3.80 m max 4.15 m	min 4.16 m max 4.75 m	min 4.76 m max 4.89 m	min 4.91 m max 6.03 m
beam and lights	1 B	2 B	3 A	4 A	5 A	3 A	4 A	5 A (SPRING 6 m)

L	min 1.70 m max 2.14 m	min 2.15 m max 2.59 m	min 2.60 m max 2.99 m	min 3.00 m max 3.39 m	min 3.40 m max 3.74 m	min 3.75 m max 4.24 m	min 4.25 m max 4.74 m	min 4.75 m max 4.89 m
beam and hedge	1 B	2 B	3 A	4 A	5 A	3 A	4 A	5 A

L	min 1.40 m max 1.94 m	min 1.95 m max 2.49 m	min 2.50 m max 2.94 m	min 2.95 m max 3.39 m	min 3.40 m max 3.75 m	min 3.76 m max 4.40 m	min 4.41 m max 4.89 m
beam and foot	1 B	2 B	3 A	4 A	5 A	3 A	4 A

L	min 1.40 m max 1.89 m	min 1.90 m max 2.39 m	min 2.40 m max 2.84 m	min 2.85 m max 3.29 m	min 3.30 m max 3.65 m	min 3.66 m max 4.25 m	min 4.29 m max 4.75 m	min 4.76 m max 4.90 m
beam, lights and foot	1 B	2 B	3 A	4 A	5 A	3 A	4 A	5 A

L	min 1.55 m max 2.04 m	min 2.05 m max 2.54 m	min 2.55 m max 2.95 m	min 2.96 m max 3.25 m	min 3.26 m max 3.55 m	min 3.56 m max 4.10 m	min 4.11 m max 4.59 m	min 4.60 m max 4.90 m
beam, lights and hedge	1 B	2 B	3 A	4 A	5 A	3 A	4 A	5 A

L	min 1.75 m max 2.19 m	min 2.20 m max 2.59 m	min 2.60 m max 2.99 m	min 3.00 m max 3.25 m	min 3.26 m max 3.79 m	min 3.80 m max 4.27 m	min 4.28 m max 4.55 m
beam, hedge and foot	2 B	3 A	4 A	5 A	3 A	4 A	5 A

L	min 1.75 m max 2.14 m	min 2.15 m max 2.54 m	min 2.55 m max 3.14 m	min 3.15 m max 3.69 m	min 3.70 m max 4.10 m
beam, lights, hedge and foot	2 B	3 A	2 A	3 A	4 A

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