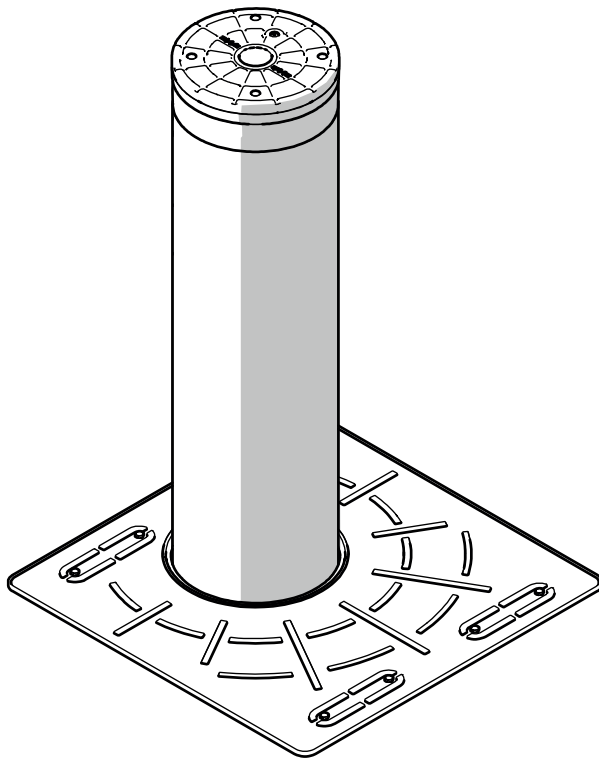


JS 48 HA JS 80 HA



IT

EN

FR

DE

ES

NL

FAAC

Translation of the original instructions

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De handleiding werd in 2021 gepubliceerd.



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EU DECLARATION OF CONFORMITY

The Manufacturer

Company name: FAAC S.p.A. Soc. Unipersonale

Address: Via Calari, 10 - 40069 Zola Predosa BOLOGNA - ITALY

hereby declares on his sole responsibility that the following products:

Description: Automatic retractable bollard

Models: JS 48 HA, JS 80 HA, JS 48 HA EFO, JS 80 HA EFO

comply with the following applicable EU legislations:

2014/30/EU

2011/65/EU

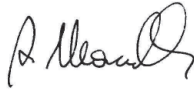
Furthermore, the following harmonised standards have been applied:

EN61000-6-2:2005

EN61000-6-3:2007 + A1:2011

Bologna, Italy, 07-06-2021 CEO

A. Marcellan

**DECLARATION OF INCORPORATION FOR PARTLY COMPLETED MACHINERY**

(2006/42/EC ANNEX II P.1, B)

Manufacturer and person authorised to prepare the relevant technical documentation

Company name: FAAC S.p.A. Soc. Unipersonale

Address: Via Calari, 10 - 40069 Zola Predosa BOLOGNA - ITALY

hereby declares that for the partly completed machinery:

Description: Automatic retractable bollard

Models: JS 48 HA, JS 80 HA, JS 48 HA EFO, JS 80 HA EFO

The essential requirements of the Machinery Directive 2006/42/EC (including all applicable amendments) that have been applied and fulfilled are as follows:

1.1.2, 1.1.3, 1.1.5, 1.3.1, 1.3.2, 1.3.4, 1.3.7, 1.5.1, 1.5.3,
1.5.5, 1.5.6, 1.5.7, 1.5.15, 1.6.1, 1.6.2, 1.6.3, 1.6.4, 1.7.1,
1.7.2, 1.7.3, 1.7.4.1, 1.7.4.2, 1.7.4.3

and that the relevant technical documentation has been compiled in compliance with part B of Annex VII.

Furthermore, the following harmonised standards have been applied:

EN 60335-1:2012 + A11:2014 + A13:2017

EN 12100:2010

And also undertakes to transmit, in response to a reasoned request by the national authorities, relevant information on the partly completed machinery by mail or e-mail.

Finally, the manufacturer declares that the above-mentioned partly completed machinery must not be put into service until the final machine in which it is to be incorporated has been declared compliant with the requirements of the above-mentioned Machinery Directive 2006/42/EC.

Bologna, 07-06-2021

CEO

A. Marcellan



1. INTRODUCTION TO THIS INSTRUCTION MANUAL

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

When drafting the manual, the results of the risk assessment conducted by FAAC S.p.A. on the entire product life cycle have been taken into account in order to implement effective risk reduction measures. The following stages of the life cycle of the product have been considered:

- Delivery/handling
- Assembly and installation
- Set-up and putting into service
- Operation
- Maintenance/troubleshooting
- Disposal at the end of the product's life cycle

Risks arising from installation and using the product have been taken into consideration; these include:

- Risks for the installation/maintenance technician (technical personnel)
- Risks for the user of the automation
- Risks to product integrity (damage)

In Europe, the automation of a bollard falls within the scope of the Machinery Directive 2006/42/EC and the relative harmonised regulations. Anyone automating a new or existing bollard becomes the Manufacturer of the Machine. By law, it is therefore obligatory, among other things, to carry out a risk assessment of the machine (bollard in its entirety) and to adopt 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 standard EN 12453, and in particular that you adopt the safety criteria and devices indicated, without exception, including the dead-man function.

This manual also contains general information and guidelines, which are purely illustrative and not exhaustive, in order to facilitate the activities carried out by the Manufacturer of the Machine in all respects with regard to carrying out the risk analysis and drafting the instructions for use and maintenance of the machine. It should be clearly understood that FAAC S.p.A. accepts no liability for the reliability and/or completeness of the above instructions. As such, the manufacturer of the machine must carry out all the activities required by the Machinery Directive and the corresponding harmonised standards on the basis of the actual condition of the locations and structures where the product JS HA will be installed before the machine is put into service. These activities include the analysis of all the risks associated with the machine and subsequent implementation of all safety measures intended to fulfil the essential safety requirements.

This manual contains references to European standards. The automation of a bollard must fully comply with any local 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.

1.1 MEANING OF THE SYMBOLS USED

NOTES AND WARNINGS IN THE INSTRUCTIONS



WARNING ELECTRIC SHOCK HAZARD - The operation or step described must be carried out following the instructions provided and according to the safety regulations.



WARNING, personal injury hazard or risk of damage to components - The operation or step described must be carried out following the instructions provided and according to the safety regulations.



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



RECYCLING AND DISPOSAL - The materials used in manufacturing, the batteries and any electronic components must not be sent to landfill. They must be taken to authorised recycling and disposal centres.



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.



STATUS OF THE LEDS ON THE BOARD

○ LED off ● LED on * LED flashing

SAFETY INSTRUCTIONS



GENERIC HAZARD

Personal injury hazard or risk of damage to components.



ELECTROCUTION HAZARD

Risk of electric shock from live parts.



EXPLOSION HAZARD



CRUSHING HAZARD

Risk of crushing to the hands/feet due to the presence of heavy parts.



CUTTING/AMPUTATION/PUNCTURE HAZARD

Cutting hazard due to the presence of sharp components or the use of pointed/sharp tools (drill).



SHEARING/TRAPPING HAZARD

Risk of fingers and hands being sheared or trapped due to moving parts.



RISK OF IMPACT/CRUSHING

Risk of impact or crushing due to moving parts.



RISK OF COLLISION/IMPACT

Risk of collision/impact with forklift trucks.



RISK OF FALLING WITH A DIFFERENCE IN HEIGHT



RISK OF OBJECTS FALLING FROM ABOVE

PERSONAL PROTECTIVE EQUIPMENT



Obligation to wear work gloves.



Obligation to wear safety footwear.



Obligation to wear head protection helmet.

2. SAFETY RECOMMENDATIONS

This product is placed onto the market as “partly completed machinery”, therefore it cannot be commissioned until the machine in which it has been incorporated has been identified and declared to conform to the Machinery Directive 2006/42/EC by the actual Manufacturer.



Incorrect installation and/or incorrect use of the product might cause serious harm to people. Read and comply with all the instructions before starting any activity on the product. Keep these instructions for future reference.

Perform installation and other activities adhering to the sequences provided in the instructions manual.

Always comply with all the requirements contained in the instructions and warning tables at the beginning of the paragraphs. Always comply with the safety recommendations.

Only the installer and/or maintenance technician is authorised to work on the automation components. Do not modify the original components in any way.

Close off the work site (even temporarily) and prevent access/transit. EC countries must comply with the legislation that transposes the European Construction Site Directive 92/57/EC.

The installer is responsible for the installation/testing of the automation and for completing the Register of the system.

The installer must prove or declare to possess technical and professional proficiency to perform installation, testing and maintenance activities according to the requirements in these instructions.

2.1 INSTALLER SAFETY

Installation requires special working conditions in order to minimise the risk of accidents and serious damage. Furthermore, the suitable precautions must be taken to prevent risks of injury to persons or damage.



The installer must be in good physical and mental health and be aware of the dangers that the use of the product can cause.

The work area must be kept tidy and must not be left unattended.

Do not wear clothing or accessories (scarves, bracelets etc.) that could become caught in moving parts.

Always wear personal protective equipment suitable for the type of work to be carried out.

The required level of workplace lighting must be equal to at least 200 lux.

Use CE marked machinery and equipment and follow the manufacturer's instructions. Use work instruments in good conditions.

Use the transport and lifting equipment recommended in the instructions manual.

2.2 TRANSPORT AND STORAGE



Follow the instructions on the package.

It is prohibited to transport the EFO accumulator by air.

SYMBOLS ON PACKAGING



Up indication.



Keep away from water and moisture.



Use a pallet truck.



Use a forklift truck.



Read the instructions.



Wear work gloves.



Wear safety footwear.

Kg 700

WEIGHT of the load.



CE marking.



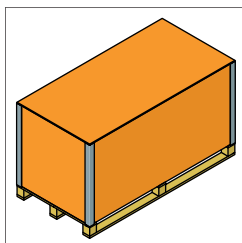
Maximum stackable weight on pallet (max. 250 kg).

PALLETISED SUPPLY

RISKS



PERSONAL PROTECTIVE EQUIPMENT



Follow the instructions on the packaging during handling.

Use a forklift truck in compliance with the safety regulations to avoid the risk of collision/impact. The forklift truck must be suitable for the weight indicated on the packaging.

Place the pallet on a flat surface.

Do not stack the pallets containing bollards.

STORAGE

Keep the product in its original packaging, in a dry place indoors, away from direct sunlight and other heat sources, dust and corrosive substances. Protect from mechanical stresses. If storing for longer than 3 months, periodically check the condition of the components and the packaging.

- Storage temperature: from 10 °C to 25 °C.
- Maximum storage humidity: 65%.



The EFO accumulator can be stored for a maximum of 2 years, starting from the date of production stamped on the accumulator. In case of longer storage times, the accumulator should be returned to FAAC in order to be re-tested.

2.3 UNPACKING AND HANDLING

RISKS



PERSONAL PROTECTIVE EQUIPMENT



! Use a crane and two chains suitable for the weight indicated on the packaging. The crane and chains must be fitted with safety hooks. Use the two M20 DIN 580 eyebolts supplied with the bollard.

1. Remove all the sides of the packaging and cut the straps.
2. Unscrew the M8 x 20 hex head screws and remove the cover and its base (1).
3. Make sure that all the components are present and intact (5 Component identification).

i If the goods supplied are non-compliant, proceed as indicated in the General Conditions of Sale listed in the Sales catalogue.

4. Screw the two eyebolts onto the bollard (2-1).
5. Connect the two chains to the eyebolts (2-2).
6. Connect the two chains to the crane (3).
7. Remove all the components supplied with the bollard from the pallet.
8. Lift the bollard and position it vertically on a flat surface (4).

X When you have finished with them, dispose of the packaging in the appropriate containers, as per applicable waste disposal regulations.

2.4 DISPOSAL OF THE PRODUCT

! Before removing the bollard from the pit:

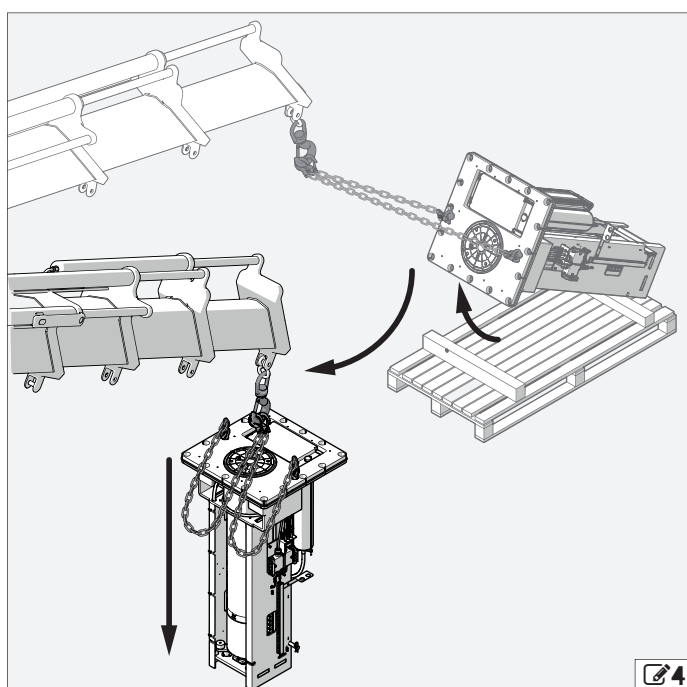
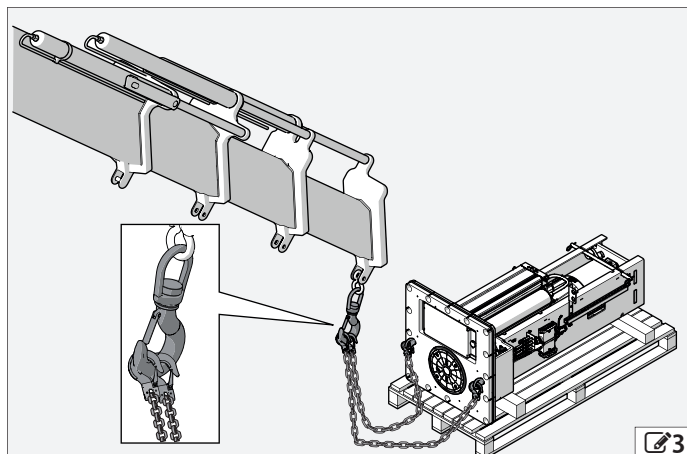
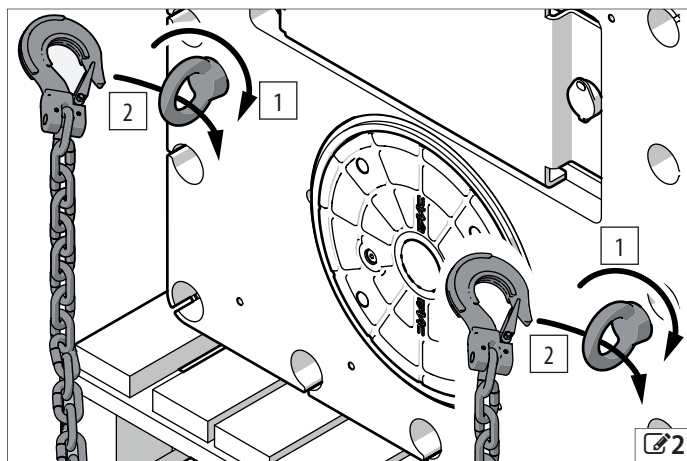
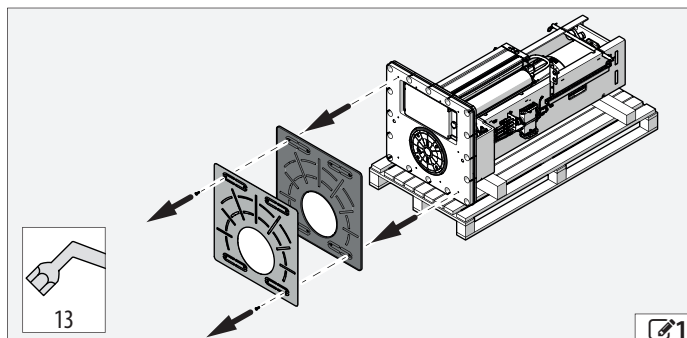
- disconnect the mains power supply
- manually unlock the hydraulic circuit (5 Maintenance)

Before transporting the bollard, reinstall the safety bar with the split pins (5 Preliminary operations).

After having dismantled the product, dispose of it in compliance with the current waste disposal regulations.

X 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.

The oil must be gathered in a watertight container and given to an authorised disposal and recycling centre. Do not mix with other substances such as antifreeze or transmission fluids. Keep the used oil away from sources of heat and out of the children's reach. The oil is not hazardous to health. In case of contact with eyes, skin or clothing, wash and rinse the affected parts. The safety data sheet for the oil is available in the FAAC spare parts catalogue.



3. JS HA

3.1 INTENDED USE

The JS HA hydraulic bollard has been designed to control access to areas delimited by vehicle accesses. JS HA it can be installed as a single unit or in a multiple unit configuration. Transit is permitted only when the cylinder is completely lowered. Perimeter protection is only ensured when the cylinder is completely raised.



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.

3.2 LIMITATIONS OF USE

- When installing the bollard, you must comply with the Installation requirements. In particular, you have to install the required foundation plinth.
- Comply with the load class and usage frequency limits indicated in the Technical specifications.
- Weather conditions such as ice and snow, even if occasional, could affect the correct operation of the automation system, the integrity of the components and be a potential source of danger. In case of temperatures between -40 and -15°C, the Heater accessory should be installed.
- The bollard must be visible during the day and at night. If it is not, appropriate solutions must be provided in order to make the fixed and moving parts visible.
- The bollard must be connected to a FAAC electronic board as indicated in this manual. An electronic board has to be installed for each bollard.
- It is up to the installer to choose the required safety devices and the operating logic of the electronic board by carrying out an appropriate risk assessment of the installation site.

3.3 UNAUTHORISED USE

- Uses other than the intended use are prohibited. Risks relating to applications other than those intended have not been considered.
- It is prohibited to use the automation to lift loads, people or animals.
- It is prohibited to install the automation outside of the limits specified in the Technical Data and Installation Requirements sections.
- It is prohibited to use the automation in a constructional configuration other than the one intended by the manufacturer.
- No component part of the product may be modified.
- It is prohibited to install the automation 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.
- It is prohibited to use and/or install accessories which have not been specifically authorised by FAAC S.p.A.
- It is prohibited to use the automation before it has been put into service.
- It is prohibited to use the automation in the presence of faults which could compromise safety.
- Do not enter/remain in the area of operation of the automation while it is moving.
- Do not expose the automation to corrosive chemicals or atmospheric agents.
- Do not allow children to approach or play in the area of operation of the automation.
- Do not allow the control devices to be used by anyone who is not specifically authorised and trained to do so.

3.4 COMPONENT IDENTIFICATION

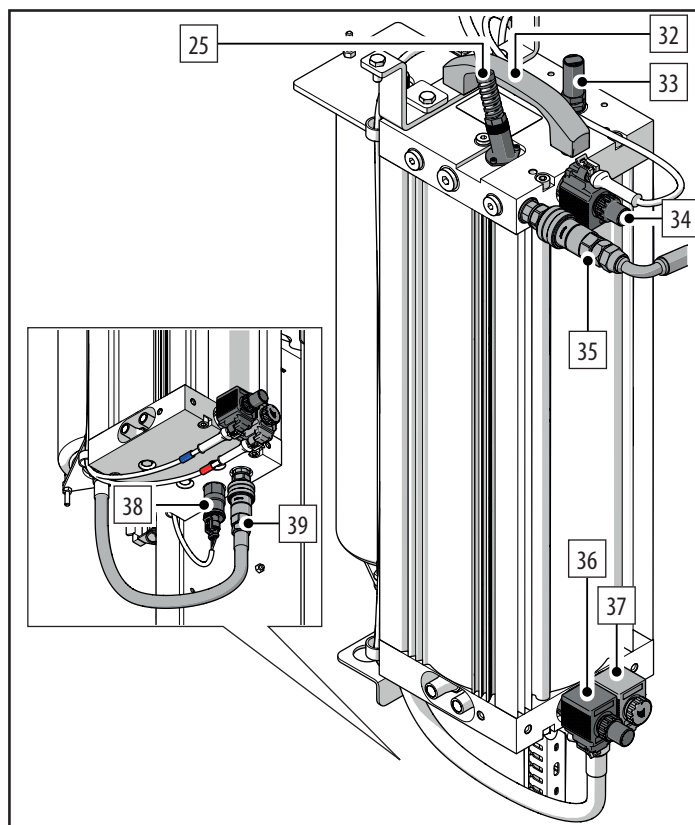
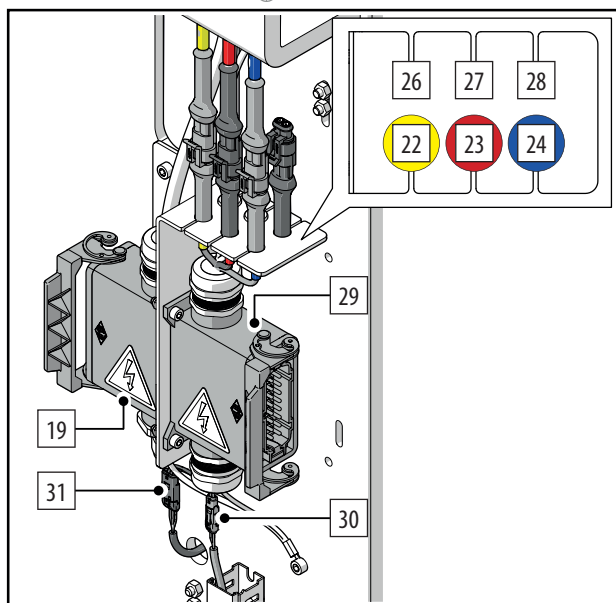
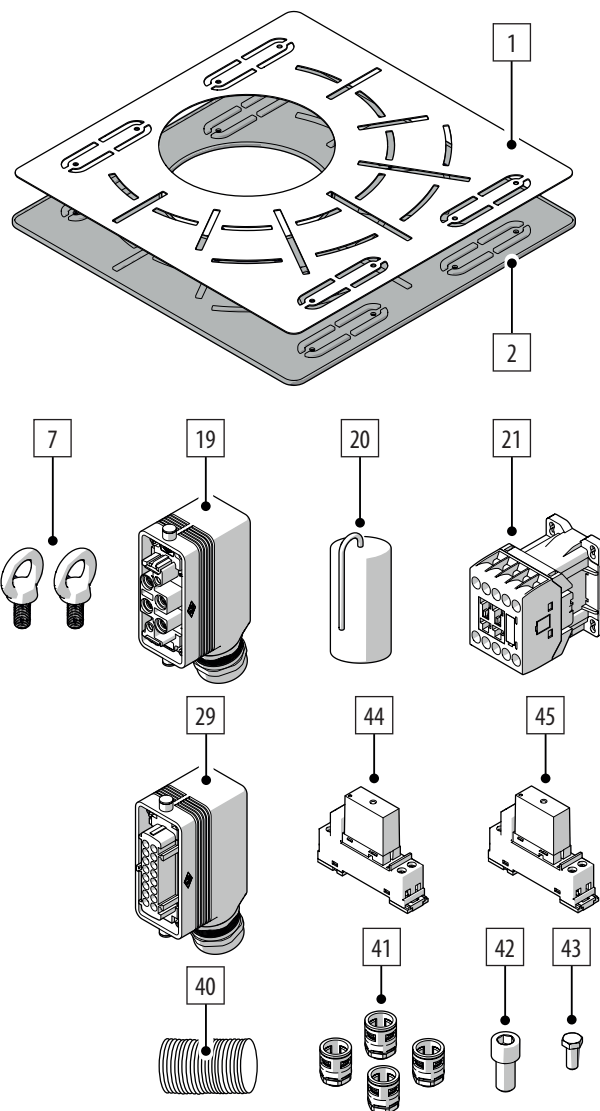
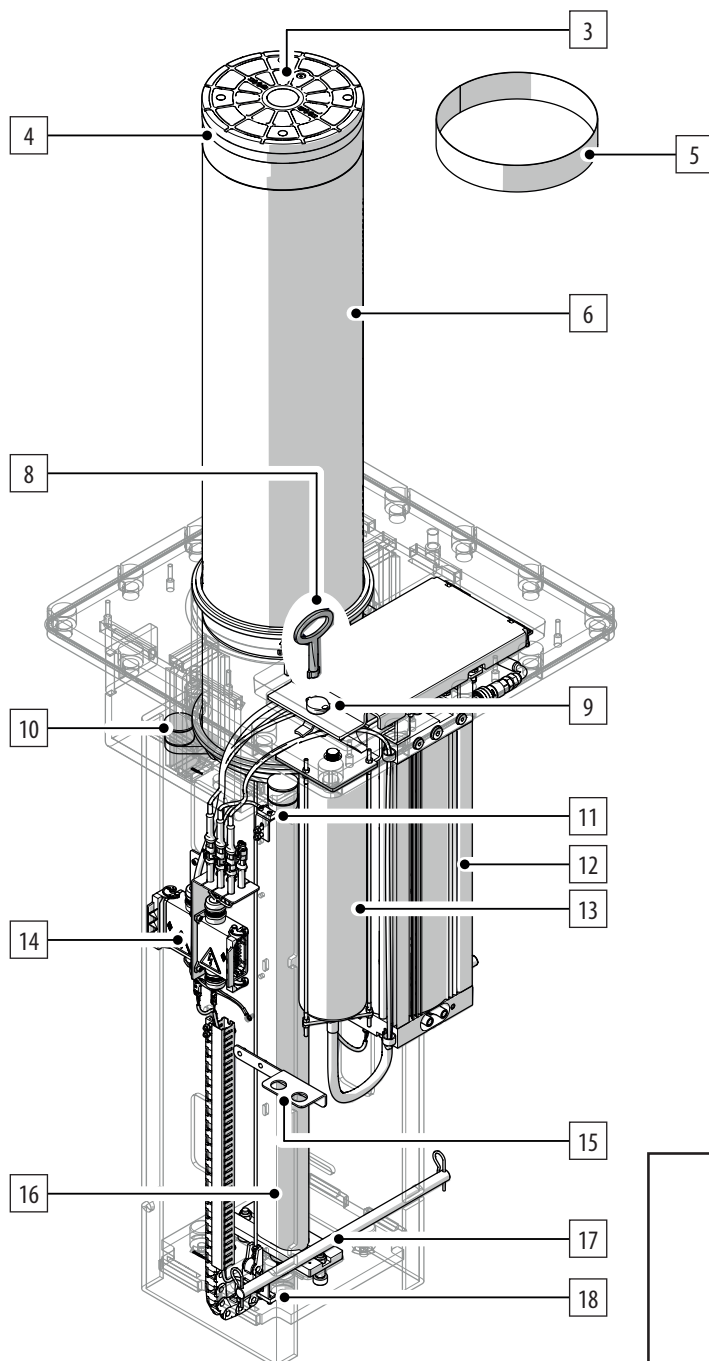
See 5.

1 Parts supplied in all versions

1	Stainless steel cover
2	Cover base in mDure™
3	Cylinder head
4	LED lights and buzzer
5	Reflective film
6	Cylinder with mDure™ or stainless steel liner
7	2 eyebolts M20 DIN 580
8	Door key
9	Door with lock
10	4 end stops
11	Magnetic limit switch sensor - up
12	Hydraulic control unit
14	Junction box
15	Fixing plate for electric cables
16	Plunger piston
17	Safety bar with the split pins
18	Magnetic limit switch sensor - down
19	4-pin connector
20	Thrust capacitor
21	Contact
22	Lowering solenoid valve connector (yellow)
25	Hydraulic control unit connector
27	Magnetic limit switch connector - up
28	Connector for Heater (optional accessory)
29	16-pin connector
30	Magnetic limit switch connector - down
31	Connector for LED lights and buzzer
32	Handle for hydraulic control unit and EFO
33	Oil filler and breather plug
34	Lowering solenoid valve
35	Plunger piston hose
40	Corrugated pipe (5 m)
41	4 corrugated pipe fittings
42	16 M24 x 50 cylinder head screws with hexagon socket
43	8 M8 x 20 hex head screws

2 Components supplied with JS HA EFO

13	EFO accumulator
23	EFO locking solenoid valve connector (red)
24	EFO activation solenoid valve connector (blue)
26	EFO pressure switch connector
36	EFO activation solenoid valve
37	EFO locking solenoid valve
38	EFO pressure switch
39	EFO pipe
44	Coil relay 230 V~ and support for DIN rail
45	Coil relay 24 V== and support for DIN rail



3.5 PRODUCT IDENTIFICATION

i To access the nameplates of the bollard and hydraulic control unit after installation, carry out the preliminary maintenance operations (§ Maintenance).

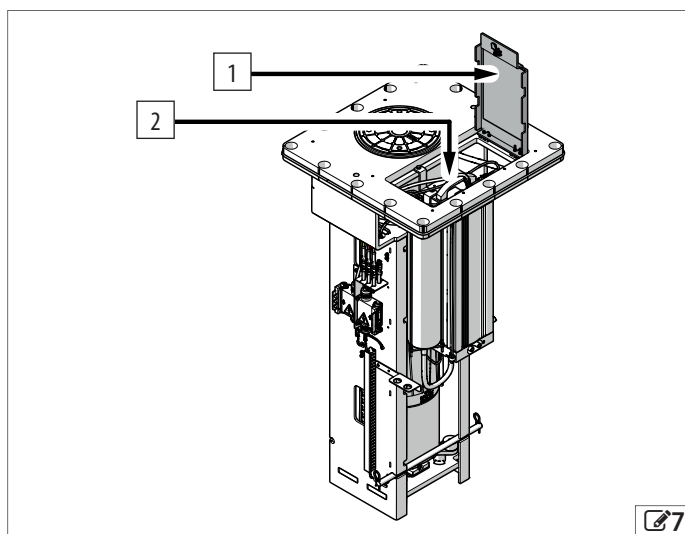
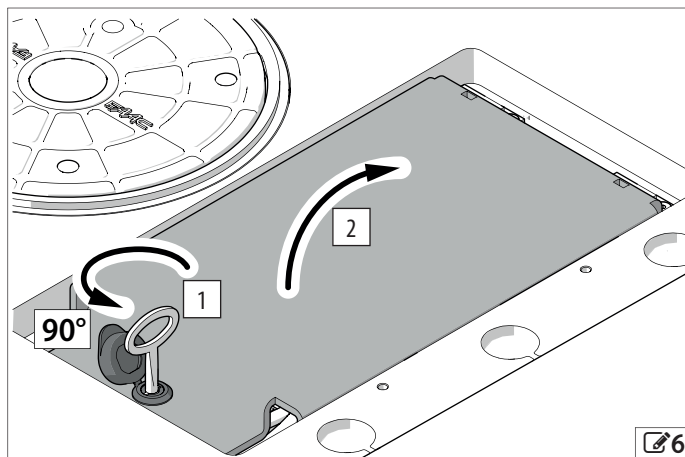
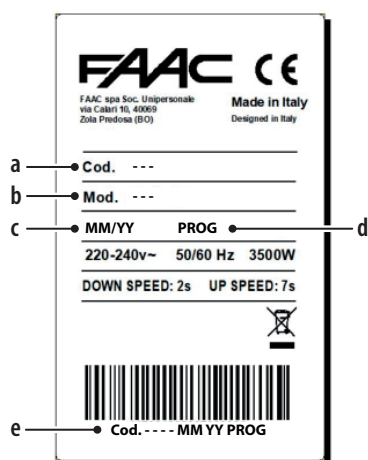
6-1 Unlock the door using the key.

6-2 Open the door.

NAMEPLATE OF THE COMPLETE BOLLARD

See 7-1.

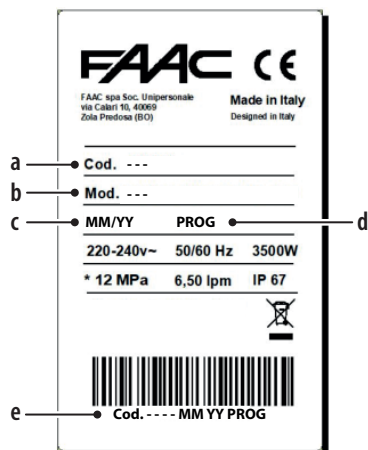
a	Sales code of the complete bollard
b	Name of the complete bollard
c	Month/year of production
d	Progressive number of the month of production
e	Serial number composed of a+c+d



NAMEPLATE OF THE HYDRAULIC CONTROL UNIT

See 7-2

a	Hydraulic control unit code
b	Name of hydraulic control unit
c	Month/year of production
d	Progressive number of the month of production
e	Serial number composed of a+c+d



3.6 MARKINGS ON THE PRODUCT



To access the warning sticker after installation, carry out the preliminary maintenance operations (§ Maintenance).

✎6-1 Unlock the door using the key.

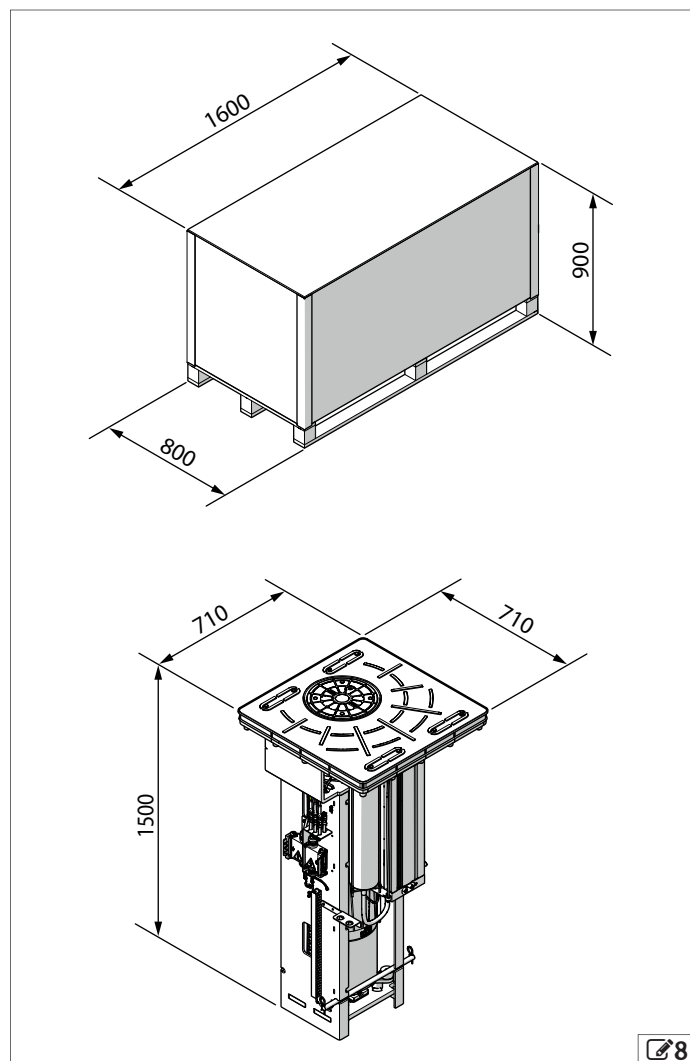
✎6-2 Open the door.

WARNING STICKER

See ✎7-1.



3.7 DIMENSIONS



3.8 TECHNICAL CHARACTERISTICS

Certifications The JS HA bollard is certified according to the following standards and relative performance levels.

JS 48 HA:

- PAS 68:2013: Movable Bollard V/7500 (N3)/48/90:0.7/0.7
- IWA 14-1:2013: Movable Bollard V/7200 [N3C]/48/90:0.9
- ASTM F2656/F2656M - 18: Test Method F2656 C730-P1

JS 80 HA:

- PAS 68:2013: Movable Bollard V/7500 (N3)/80/90:1.0/0.8
- IWA 14-1:2013: Movable Bollard V/7200 [N3C]/80/90:1.3
- ASTM F2656/F2656M - 18: Test Method F2656 C750-P1

Standard equipment

- LED lights and reflective film for remote visibility
- buzzer active during movement
- replaceable mDure™ or stainless steel cylinder liner
- aluminium head with protective plastic treatment Rilsan™
- stainless steel cover with base in mDure™

Irreversible system The cylinder is operated by a hydraulic control unit by means of a plunger piston. The cylinder maintains its position in the event of a power failure:

- the cylinder can be lowered manually if necessary
- the Manual pump accessory has to be installed in order to raise the cylinder manually (see specific instructions)

End of travel The bollard is fitted with four mechanical end stops and two magnetic sensors (up and down) to limit the travel of the cylinder.

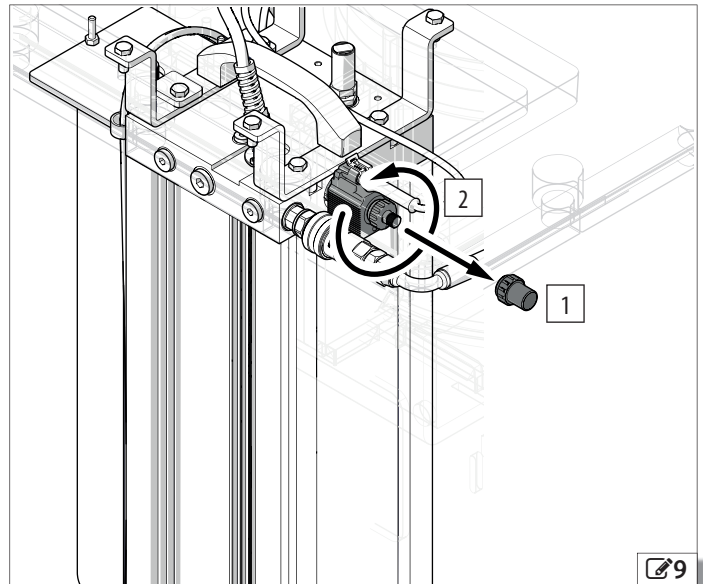
JS HA EFO the bollard is available in an EFO (Emergency Fast Operation) version that allows the cylinder to be raised quickly in case of an emergency. Read § EFO for further information.

Electronic board A JE275 electronic board has to be installed for each bollard.

3.9 MANUAL LOWERING

In the event of a power failure, the cylinder can be lowered manually:

1. Carry out the preliminary maintenance operations (§ Maintenance).
2. Unscrew and remove the plug of the lowering solenoid valve (🔧 9-1).
3. Unlock the lowering solenoid valve manually by loosening the knurled knob (🔧 9-2).
4. To restore automatic operation, re-lock the lowering solenoid valve.



3 Technical data

	JS 48 HA	JS 48 HA EFO	JS 80 HA	JS 80 HA EFO
Power supply voltage	207... 243 V~ 50/60 Hz	207... 243 V~ 50/60 Hz	207... 243 V~ 50/60 Hz	207... 243 V~ 50/60 Hz
Max absorbed power	2700 W	4000 W	2700 W	4000 W
Thrust capacitor	50 µF	50 µF	50 µF	50 µF
Ambient operating temperature ¹	-40 °C ... +55 °C	-40 °C ... +55 °C	-40 °C ... +55 °C	-40 °C ... +55 °C
Max. permitted frequency of use (Ambient temperature ≤ 30 °C)	1 cycle every 19 s ²	1 cycle every 19 s ²	1 cycle every 19 s ²	1 cycle every 19 s ²
Max. permitted frequency of use (Ambient temperature > 30 °C)	1 cycle every 19 s ²	1 cycle every 19 s ²	1 cycle every 30 s ³	1 cycle every 30 s ³
Load class (EN 124)	C250	C250	C250	C250
Bollard IP protection rating	IP67	IP67	IP67	IP67
Standard upstroke time	6 s	6 s	6 s	6 s
EFO upstroke time	-	2 s	-	2 s
Lowering time	4 s	4 s	4 s	4 s
Total weight of bollard	530 kg	560 kg	670 kg	700 kg
Cylinder height	1000 mm	1000 mm	1000 mm	1000 mm
Cylinder diameter	275 mm	275 mm	275 mm	275 mm
Oil	FAAC Bio Oil	FAAC Bio Oil	FAAC Bio Oil	FAAC Bio Oil



¹ In case of temperatures between -40 and -15 °C, the Heater accessory should be installed.

² As per IWA 14-2; Tab.1, 11.3.5.2 - Single line of VSBs

³ As per IWA 14-2; Tab.1, 11.3.5.2 - Single-vehicle interlocked VSBs

4. INSTALLATION REQUIREMENTS

4.1 MECHANICAL REQUIREMENTS

The essential mechanical requirements for each bollard are as follows:

- a pit as indicated in the foundation diagram
- a flexible conduit suitable for electrical connections
- an adequate drainage system
- a cage and foundation plinth
- flat ground

4.2 ELECTRICAL SYSTEM



Always shut off the power supply before performing any work. If the disconnect switch is not in view, apply a warning sign stating "WARNING - Maintenance in Progress".



The electrical system must comply with applicable legislation in the country of installation. In Europe, the electrical system must comply with standard EN 60335.

Use components and materials with a CE marking that are compliant with the Low Voltage Directive 2014/35/EU and EMC Directive 2014/30/EU.

The electrical cables of the system must be of a size and insulation class that is compliant with current legislation and laid in appropriate rigid or flexible conduits, either above or below ground.

The automation power supply for each bollard must be fitted with:

- a 16 A C-curve multi-pole circuit breaker with a contact opening distance of at least 3 mm and a breaking capacity that complies with current regulations
- a 0.03 A differential switch
- a dedicated line with 4 mm² section wires

The thermal magnetic and differential circuit breakers must be located in areas that are only accessible to authorized personnel.

The metal parts of the structure must be earthed.

Check that the protective earthing system complies with applicable regulations in the country of installation.

Provide the following for each bollard:

- an electronic board
- a FG16OR16-0.6/1kV-16G1.5 cable, maximum length 50 m. This code refers to European standards and describes a cable with ethylene propylene rubber insulated conductors, PVC outer sheath, nominal voltage 0.6 kV, maximum voltage 1 kV, 16 conductors, one of which is an earth, section of conductor 1.5 mm²
- a FG16OR16-0.6/1kV-4G4 cable, maximum length 50 m. This code refers to European standards and describes a cable with ethylene propylene rubber insulated conductors, PVC outer sheath, nominal voltage 0.6 kV, maximum voltage 1 kV, 4 conductors, one of which is an earth, section of conductor 4 mm²

Provide suitable enclosures for the installation of electronic boards and electrical components. The containers must have a minimum IP44 protection and must be fitted with a lock or other device to prevent access by unauthorized persons. The cable outlets must face downwards.

Check buried cable plans to ensure that there are no other electrical cables in proximity to the planned digging/drilling locations to prevent the risk of electrocution.

Check that there are no pipes in the vicinity as well.

The conduit fittings and the cable glands must prevent the entry of moisture, insects and small animals.

Protect extension cable connections using junction boxes with an IP67 protection rating or higher.

The bollard must always be visible to prevent it from being hit accidentally. An adequate lighting system is required.

It is recommended to position the control devices within the field of view of the automation. This is mandatory in the case of hold-to-run controls.

The maintained action controls in the hold-to-run mode of operation, must comply with standard EN 60947-5-1.

The EFO activation devices, must comply with standard EN 60947-5-1.

The control devices must be located in areas that are only accessible to

authorized personnel.

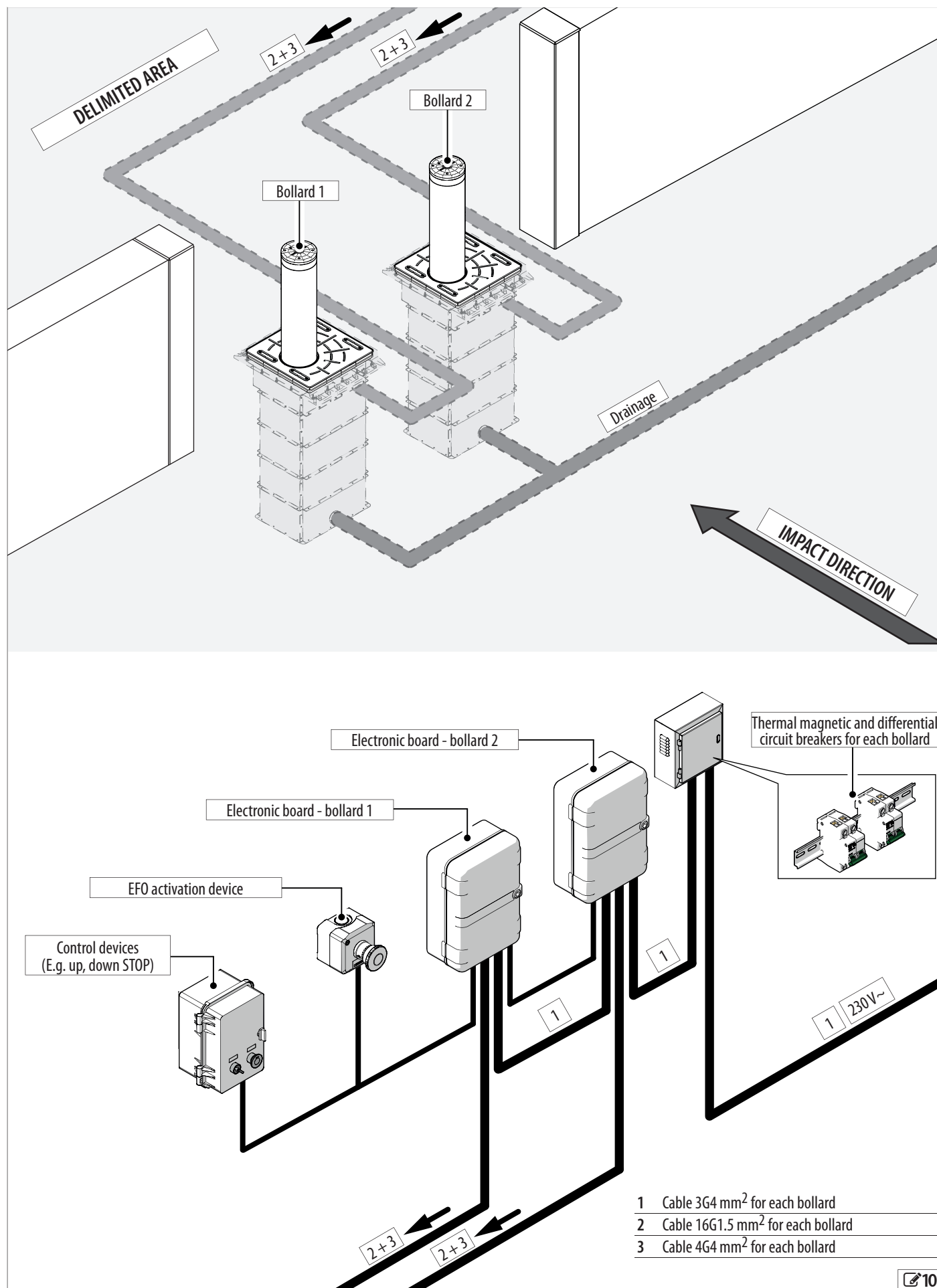
If an emergency stop button has been installed, it must be EN13850 compliant.

Comply with the following heights from the ground:

- control accessories = minimum 150 cm
- emergency button = maximum 120 cm

4.3 EXAMPLE SYSTEM

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



5. INSTALLATION

PERSONAL PROTECTIVE EQUIPMENT

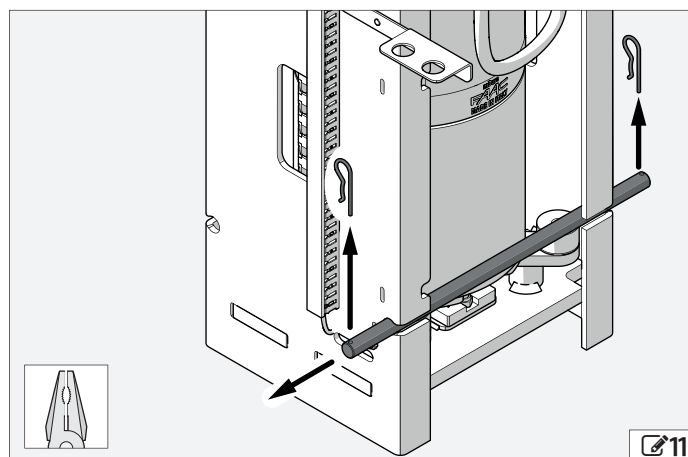


5.1 TOOLS REQUIRED

	FORKLIFT TRUCK - MINIMUM CAPACITY 700 kg
	CRANE, CHAINS AND SAFETY HOOKS - MINIMUM CAPACITY 700 kg
	ELECTRICIAN'S SCISSORS
	WIRE STRIPPERS
	PAIR OF PLIERS
	SET OF SLOTTED SCREWDRIVERS
	SET OF PHILLIPS SCREWDRIVERS
	SET OF ALLEN KEYS
	SET OF TAMPER TORX WRENCHES
	ADJUSTABLE SPANNER
	SET OF HEXAGONAL SPANNERS
	SET OF BOX SPANNERS
	TORQUE WRENCH - if necessary for safety, a torque wrench and the TIGHTENING TORQUE will be specified

5.2 PRELIMINARY OPERATIONS

1. Remove the split pins and the safety bar (11).
2. Install the Heater accessory if necessary (see specific instructions).
3. Manually lock the hydraulic circuit (§ Maintenance).
4. Remove the pit cover.
5. Record the serial number of the bollard, the serial number of the hydraulic control unit and the month/year and production lot of the EFO accumulator in the system's maintenance logbook.

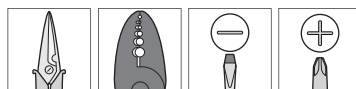
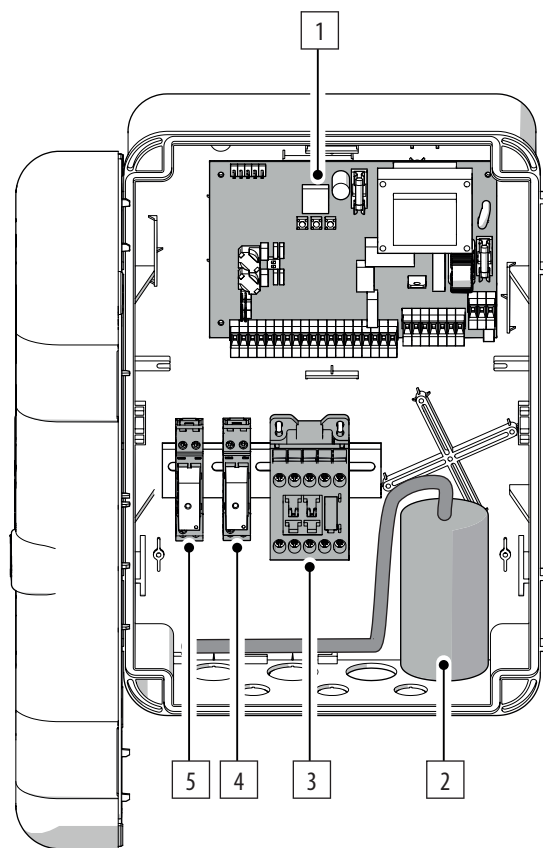


5.3 PREPARING THE ELECTRONIC BOARD

i It is recommended to use a FAAC L-M model enclosure (12).

With reference to 12, for each bollard:

- install the JE275 electronic board (1) inside the enclosure.
- position the thrust capacitor (2) close to the electronic board
- fasten the contactor (3) to a DIN rail (not supplied).
- in the case of JS HA EFO mount the 24 V coil relay on the DIN rail support. Fasten the assembly to the DIN rail (4).
- in the case of JS HA EFO mount the 230 V~ coil relay on the DIN rail support. Fasten the assembly to the DIN rail (5).



12

5.4 LAYING THE CABLES OF THE BOLLARD

RISKS

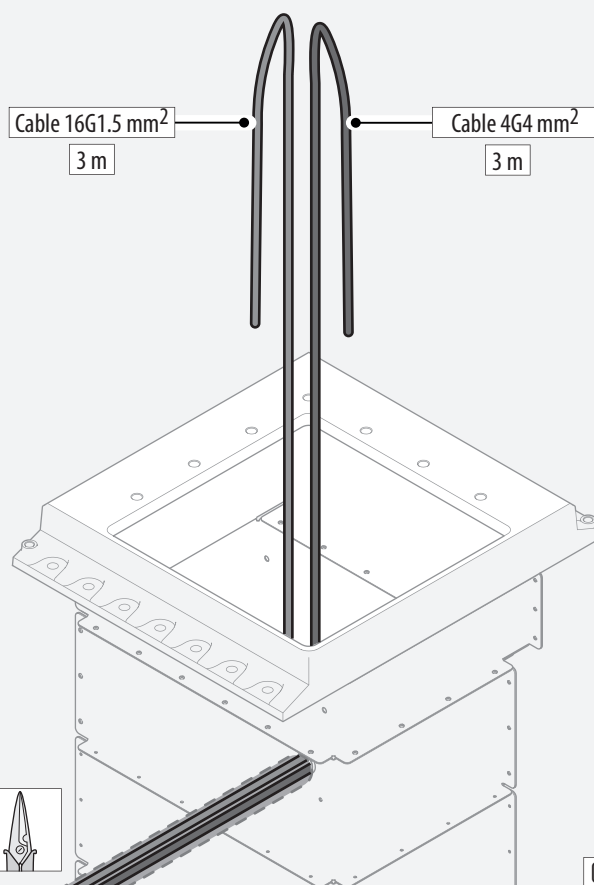


i The maximum length of each cable is 50 m.

The cables for the bollard must be laid in the flexible conduit connected to the pit (see foundation diagram).

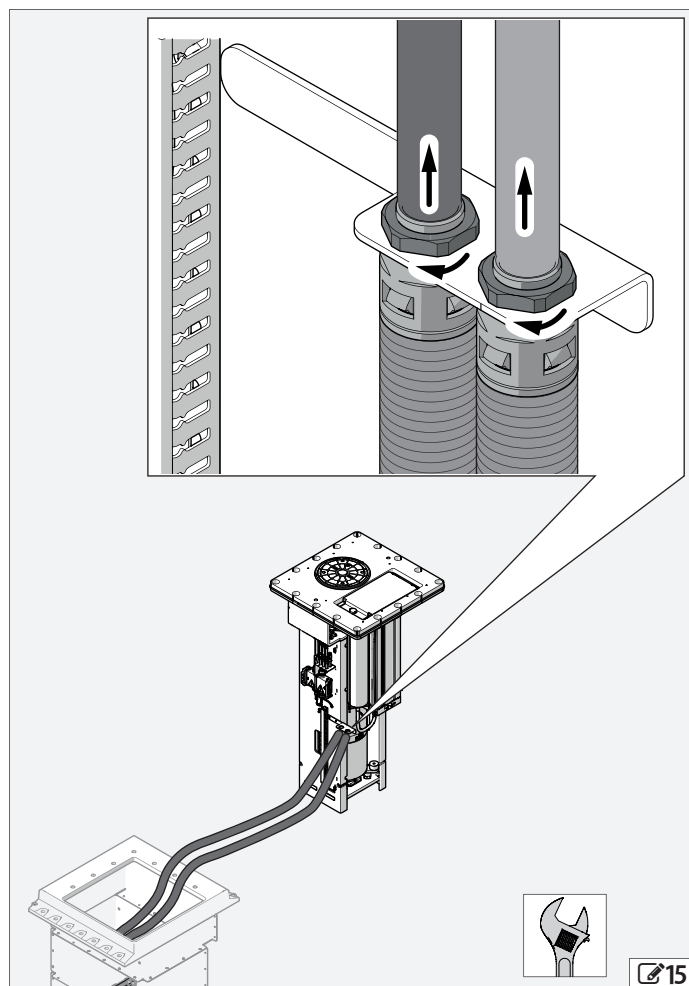
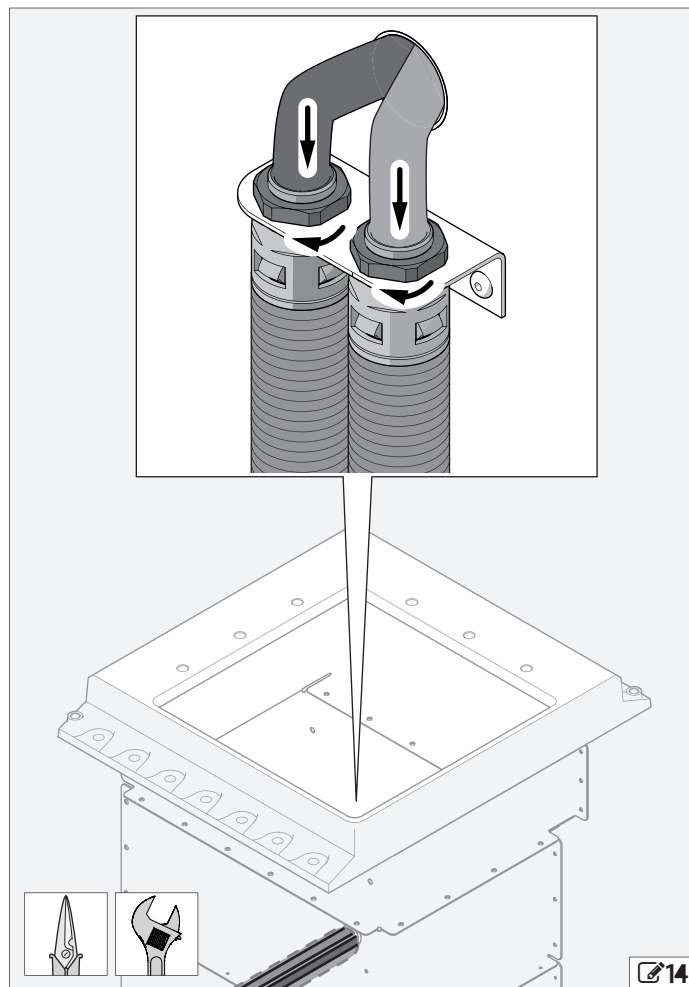
Carry out the following for each bollard:

1. Lay the cables.
2. The cables should protrude 3 m from the opening of the pit (13).



13

3. Cut the corrugated pipe into two equal parts.
4. Fasten the corrugated pipes, the corrugated pipe fittings and the relative nuts to the fixing plate on the pit (14).
5. Lay the cables in the corrugated pipes (14).
6. Bring the corrugated pipes to the bollard (15).
7. Fasten the corrugated pipe fittings and the relative nuts to the fixing plate on the bollard (15).
8. Insert the cables and fasten the corrugated pipes to the fittings (15).



5.5 ELECTRICAL CONNECTIONS



Disconnect the mains power supply until it is put into service.

Carry out the following for each bollard:

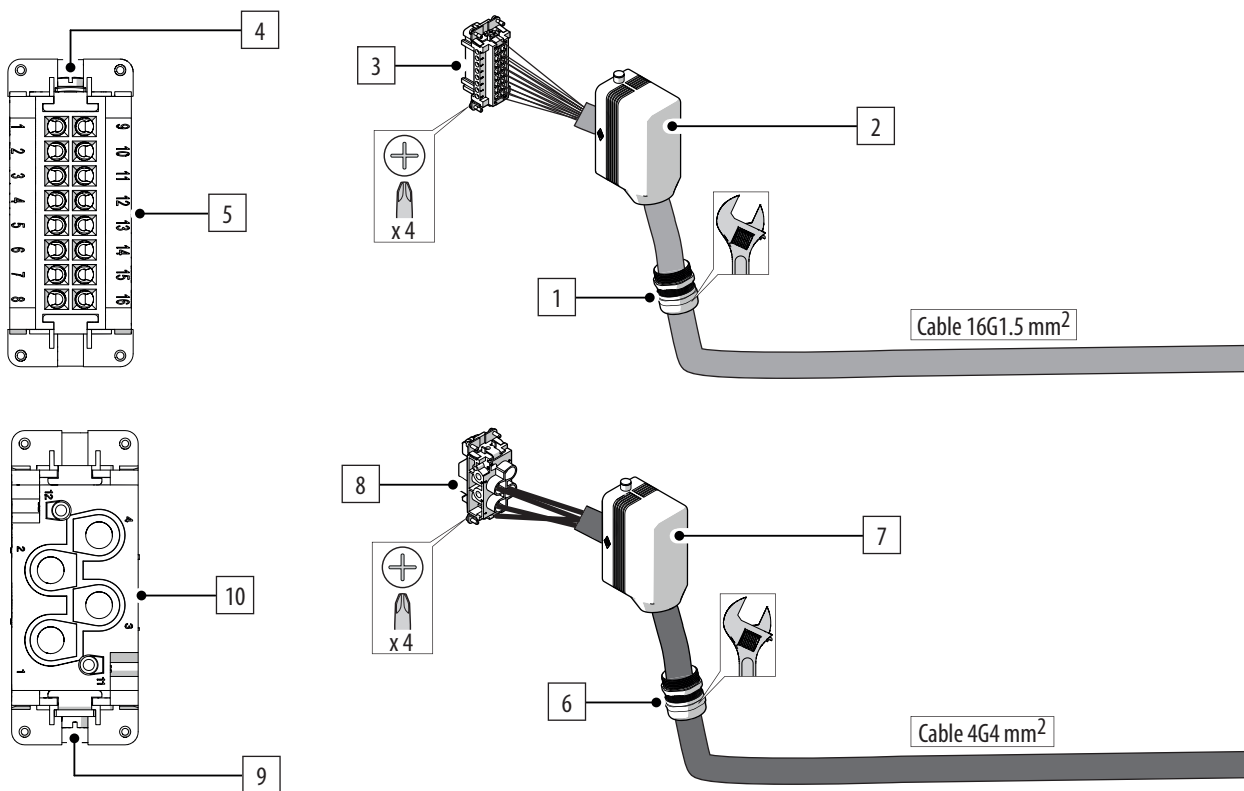
1. Wire up the 16-pin connector (16):

- remove the cable gland (1), the cap (2), and the terminal board (3)
- insert the 16-wire cable into the cable gland and cap
- connect the yellow-green wire to the earth terminal (4)
- connect the other wires to terminals 1 to 15 (5). Follow the numbering on the wires or make a note of the wire colours for subsequent connections
- reinstall the terminal board, the cap and the cable gland

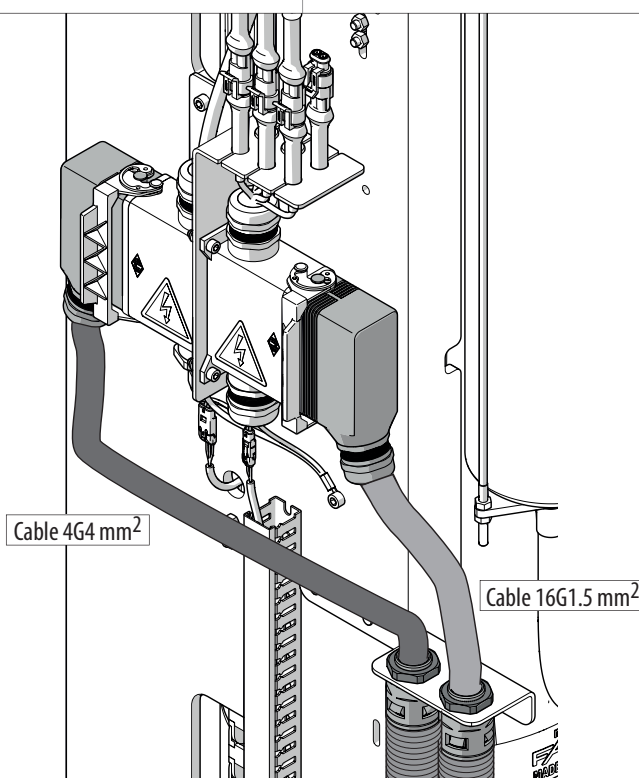
2. Wire up the 4-pin connector (16):

- remove the cable gland (6), the cap (7), and the terminal board (8)
- insert the 4-wire cable into the cable gland and cap.
- connect the yellow-green wire to the earth terminal (9)
- connect the other wires to terminals 1 to 3 (10). Follow the numbering on the wires or make a note of the wire colours for subsequent connections
- reinstall the terminal board, the cap and the cable gland

3. Connect and secure the connectors to the junction box (17).



16



17

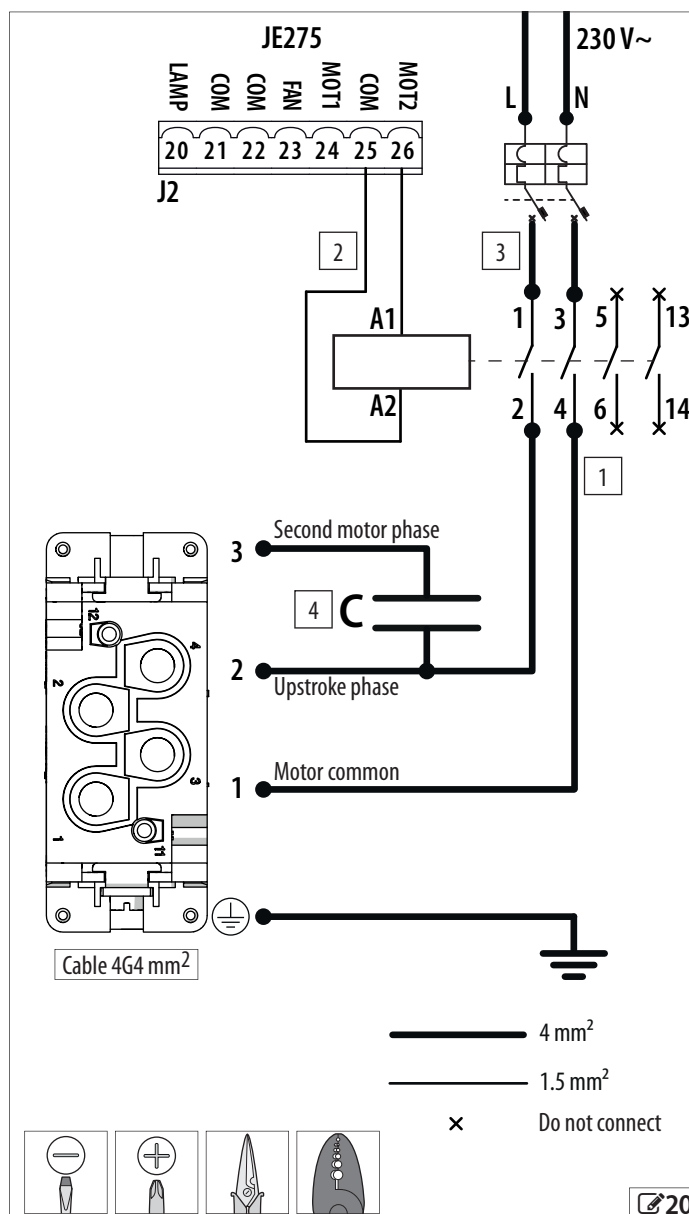
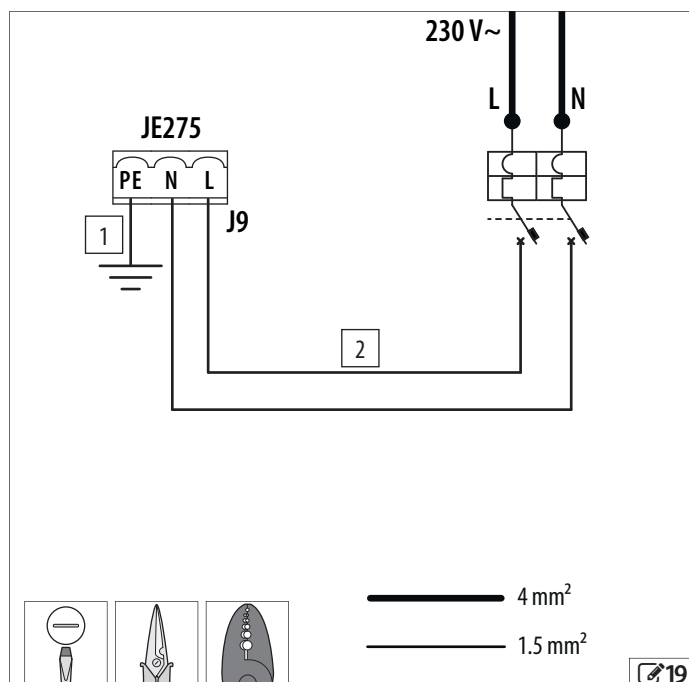
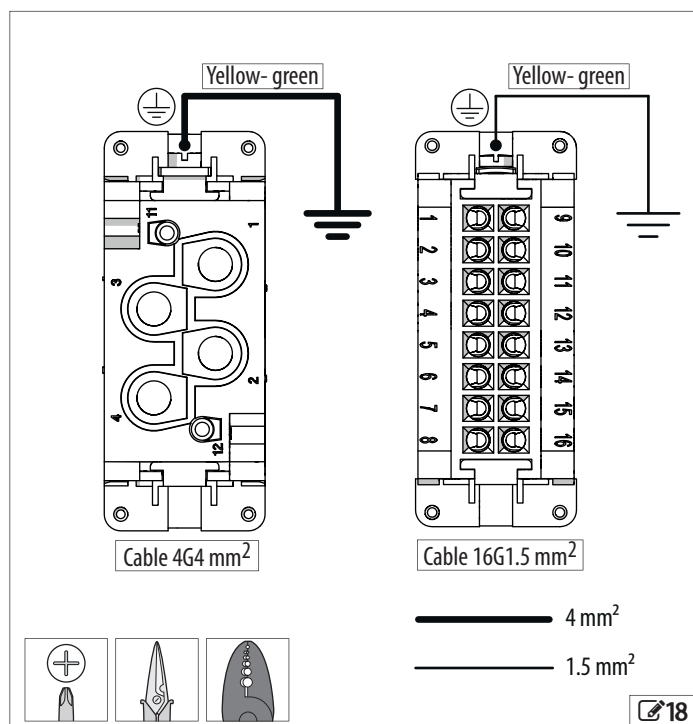
4. Earth the system.
5. Connect the wires of the mains power supply: do not switch on power until putting into service.
6. Connect the contactor to the thrust capacitor.
7. Connect the electronic board.
8. In the case of JS HA EFO:
 - connect the 230 V~ coil relay
 - connect the 24 V== coil relay
 - connect the EFO activation device
9. For a multiple installation, connect the Master Slave.

EARTHING AND POWER SUPPLY

1. Connect the yellow-green wires to earth (✎18).
2. Connect the PE terminal of the electronic board to earth (✎19-1).
3. Prepare the mains power supply. Connect the mains power supply to the electronic board (✎19-2).

CONNECTING THE CONTACTOR TO THE THRUST CAPACITOR

1. Connect the 4-wire cable to the contactor (✎20-1).
2. Connect the contactor to the electronic board (✎20-2) and the mains power supply (✎20-3).
3. Connect the thrust capacitor (✎20-4).

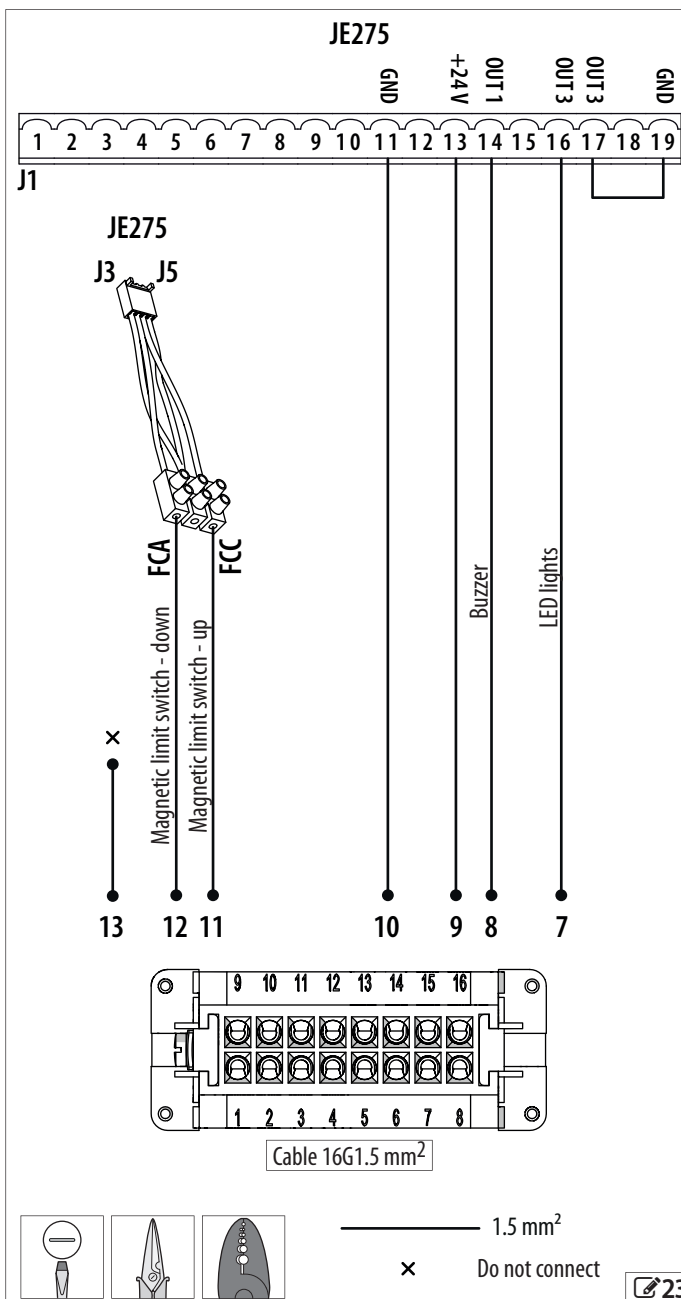
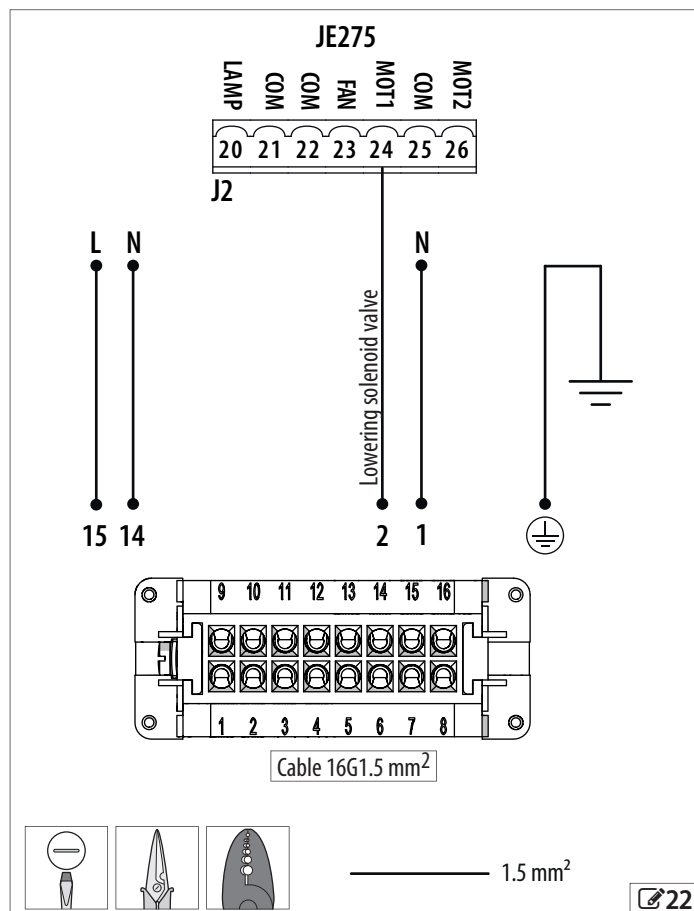
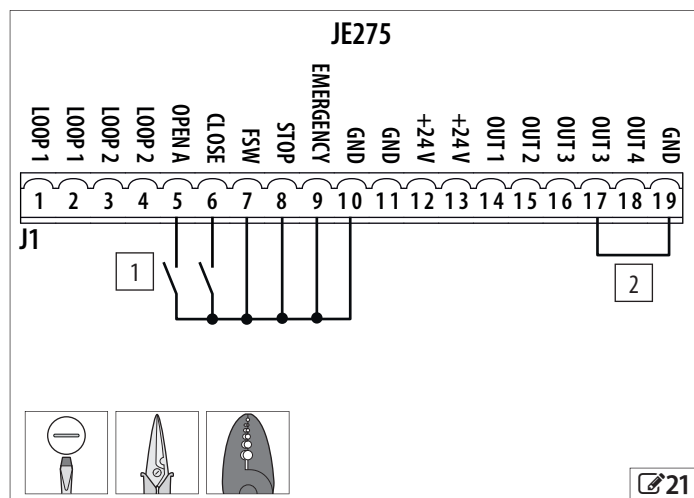


CONNECTING THE ELECTRONIC BOARD



For a multiple installation, see § Master Slave.

1. Connect the control devices to the electronic board (21-1).
2. Bridge terminals 17 (OUT3) and 19 (GND) of the electronic board (21-2).
3. Connect the lowering solenoid valve (22).
4. Connect the phase and neutral wires (22).
5. Connect the magnetic limit switches (23).
6. Connect +24 V and GND (23).
7. Connect the buzzer (23).
8. Connect the LED lights (23).



CONNECTING THE RELAYS

In the case of JS HA EFO:

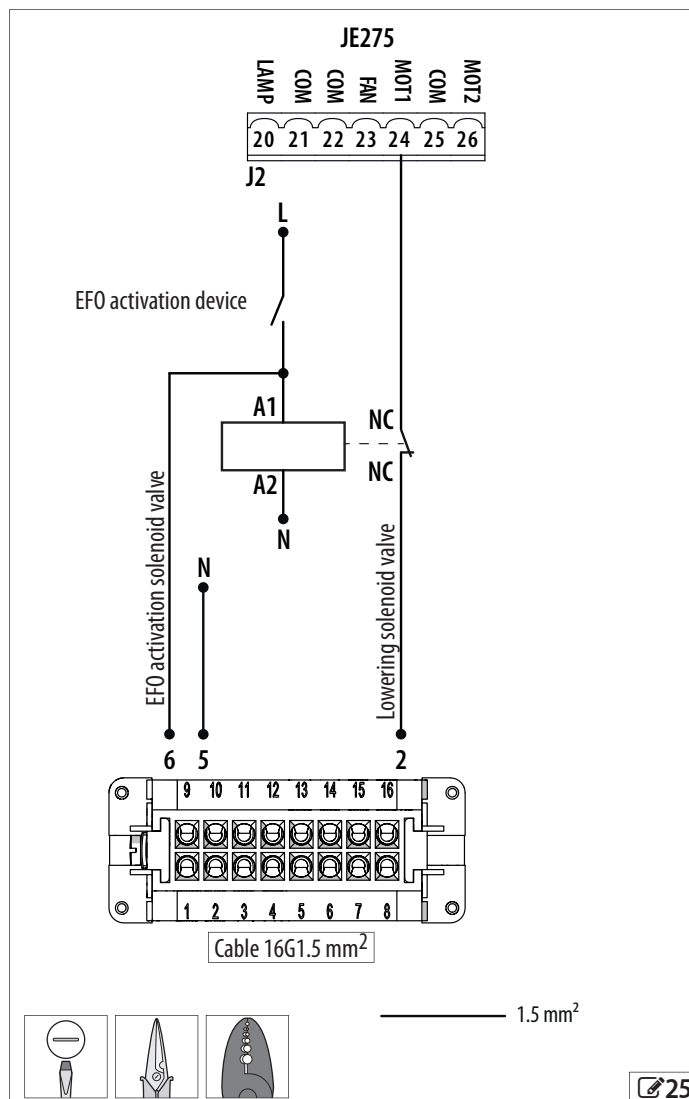
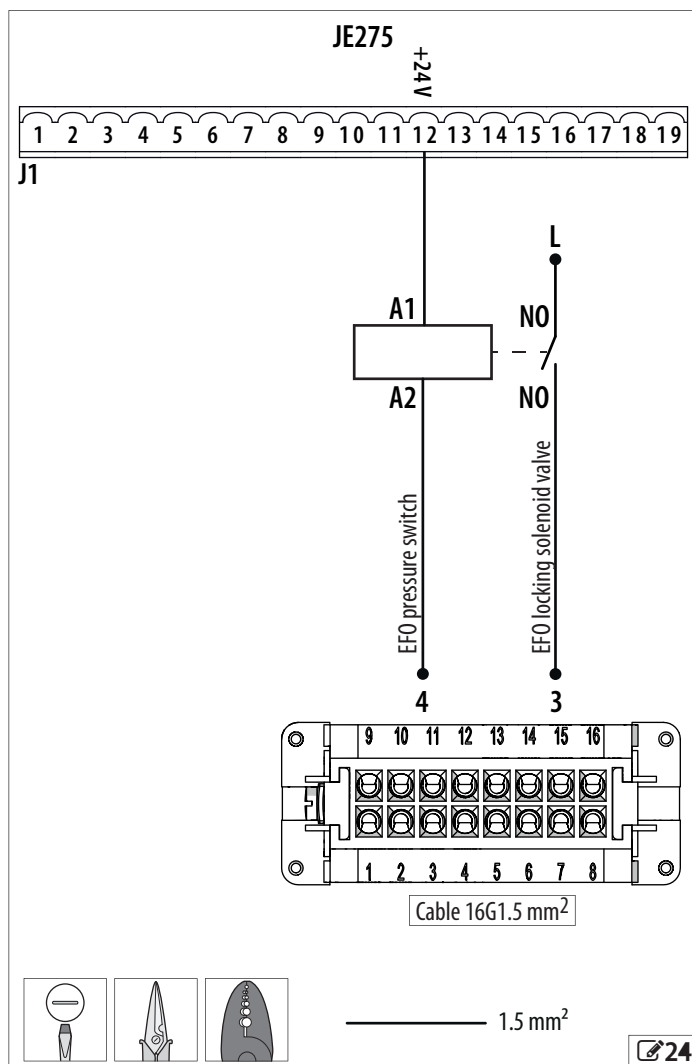
1. Connect the 24 V $\equiv$ coil relay (24).
2. Connect the 230 V $\sim$ coil relay (25).

CONNECTING THE EFO ACTIVATION DEVICE



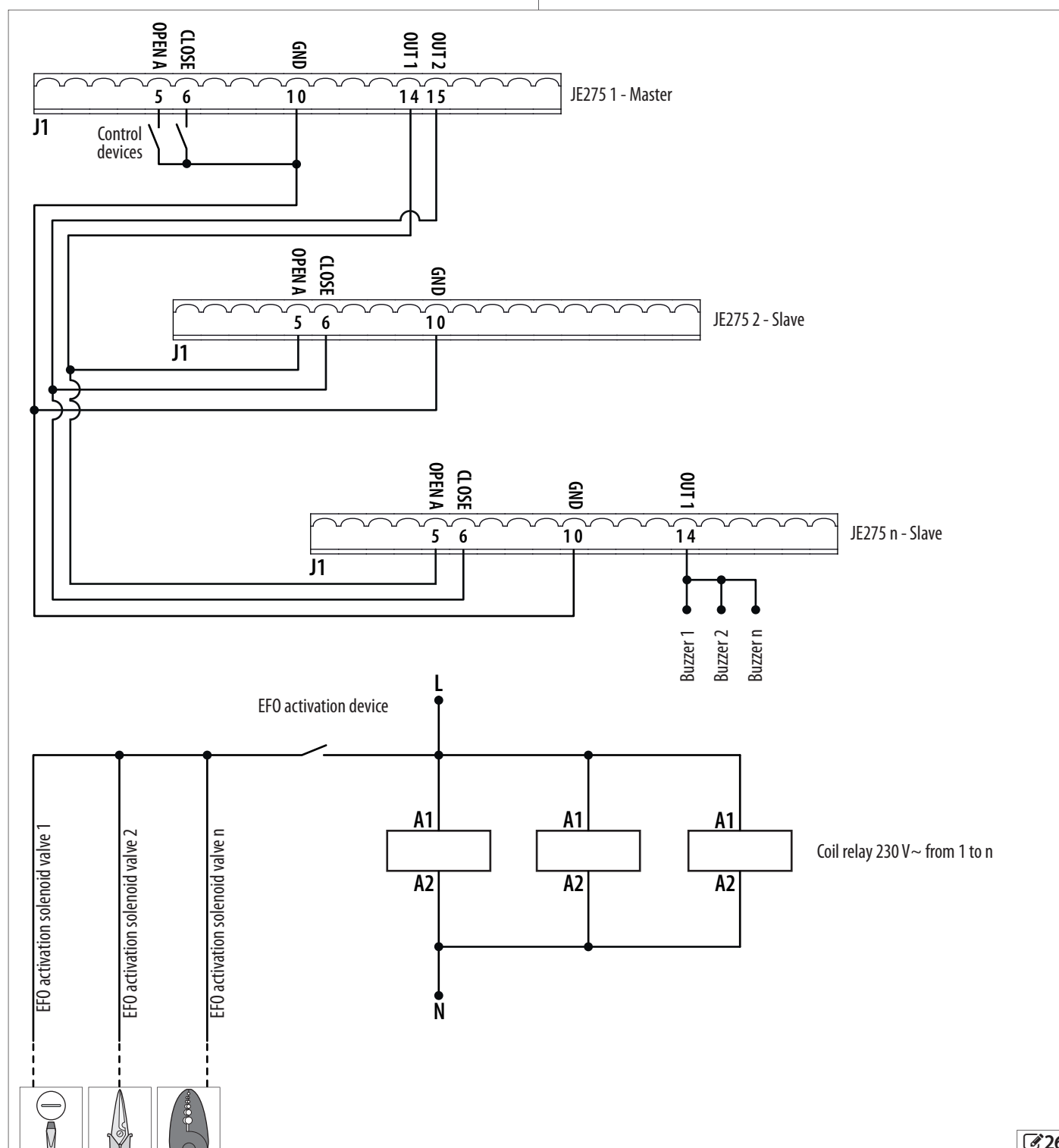
The EFO activation device must have a bistable NO contact.

In the case of JS HA EFO connect the EFO activation device (25). In the case of multiple devices, connect the contacts in parallel.





1. Connect each bollard as illustrated above.
2. Connect the electronic boards together (26):
 - connect all the control devices to only one electronic board (called the Master). The other boards are called Slave
 - connect all the buzzers to one Slave board
3. In the case of JS HA EFO (26):
 - all EFOs have to be activated from the same device
 - connect the 230 V~ relay coils of in parallel



6. PUTTING INTO SERVICE

PERSONAL PROTECTIVE EQUIPMENT



6.1 PROGRAMMING THE ELECTRONIC BOARD

RISKS



Switch on power to the automation.



Read the instructions for electronic boards JE275 and 624BLD.

SINGLE BOARD PROGRAMMING

- Go to programming level 1:
 - set $dF = 08$
 - save and exit

MASTER SLAVE PROGRAMMING

Master electronic board

- Go to programming level 1:
 - set $dF = 08$
 - save and exit
- Go to programming level 2:
 - set $\alpha 1 = 11$
 - set $P1 = n0$
 - set $\alpha 2 = 12$
 - set $P2 = n0$
 - save and exit

Slave electronic board

- Go to programming level 1:
 - set $dF = 08$
 - save and exit
- Go to programming level 1:
 - set $L0 = C$
 - save and exit
- Go to programming level 3:
 - set $03 = 4$
 - save and exit
- Go to programming level 1:
 - set $L0 = CU$
 - save and exit

6.2 CHECKING CORRECT OPERATION

RISKS



Use a crane, eyebolts and chains to anchor the bollard and prevent overturning during operational tests.



Read § EFO before continuing (if present).

For a multiple installation, check the status of the LEDs for all the electronic boards.

- Temporarily set the logic to semiautomatic on the Master electronic board ($L0 = E$). Set the required logic after Putting into service.
- Use the open command (OPEN). Check the status of the display (03) and the LEDs:

LED	✓	✗
EMERG-DL5	●	○ Check the EMERG (NC) input
STOP-DL4	●	○ Check the STOP (NC) input
FSW-DL3	●	○ Check the FSW (NC) input
CLOSE-DL2	*	
OPEN-DL1	*	
PIVOT-DL8	●	○ Place a jumper on J6 (NC)
FCA-DL6	○	● Check the magnetic limit switches (NC)
FCC-DL7	●	○ Check the magnetic limit switches (NC)

* Master Board CLOSE-DL2 ○ OPEN-DL1 ○

* Slave Boards CLOSE-DL2 ○ OPEN-DL1 ●

- Use the close command (CLOSE). If the cylinder does not move:
 - make sure that the hydraulic circuit is locked manually (§ Maintenance).
 - check the motor, contactor and thrust capacitor connections
 - check the connections and programming of the electronic board
- When the cylinder is fully raised, check the status of the display (03) and the LEDs:

LED	✓	✗
EMERG-DL5	●	○ Check the EMERG (NC) input
STOP-DL4	●	○ Check the STOP (NC) input
FSW-DL3	●	○ Check the FSW (NC) input
CLOSE-DL2	**	
OPEN-DL1	**	
PIVOT-DL8	●	○ Place a jumper on J6 (NC)
FCA-DL6	●	○ Check the magnetic limit switches (NC)
FCC-DL7	○	● Check the magnetic limit switches (NC)

** Master Board CLOSE-DL2 ○ OPEN-DL1 ○

** Slave Boards CLOSE-DL2 ● OPEN-DL1 ○

- Use the open command (OPEN). If the cylinder does not move:
 - check the lowering solenoid valve connections
 - check the connections and programming of the electronic board
 - check the 230 V~ coil relay connections, if present
- Check the activation of the EFO, if present
- Use the open command (OPEN).

6.3 INSTALLING THE BOLLARD

RISKS



Disconnect the mains power supply.



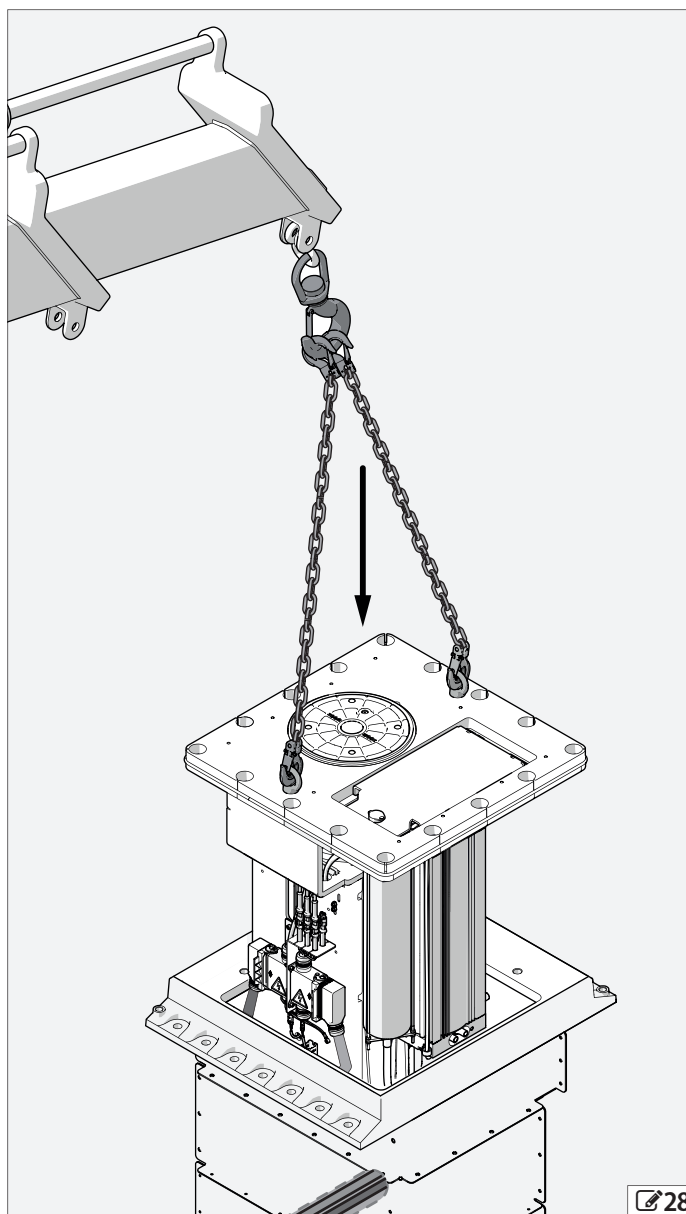
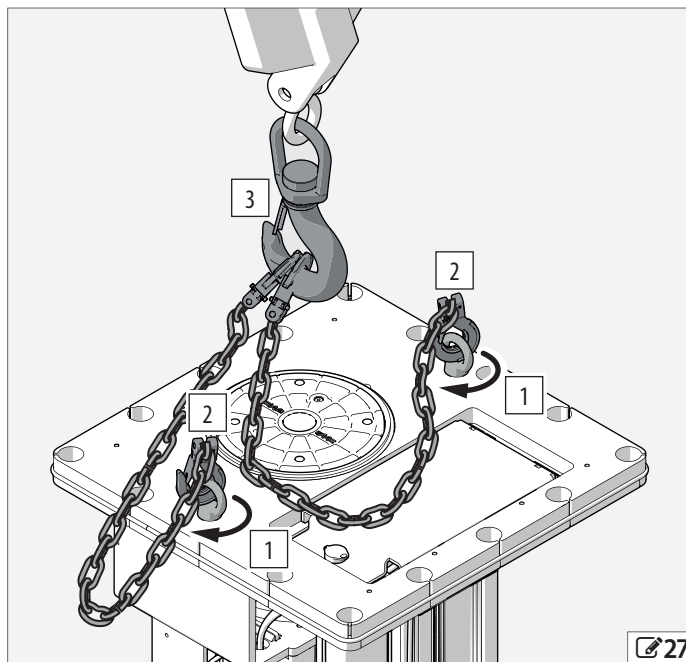
Use a crane and two chains suitable for the weight indicated on the packaging. The crane and chains must be fitted with safety hooks. Use the two M20 DIN 580 eyebolts supplied with the bollard.

Take care not to damage the electrical cables or other components when installing the bollard.

1. With reference to  27:

- screw the two eyebolts onto the frame of the bollard (1)
- connect the two chains to the eyebolts (2)
- connect the two chains to the crane (3)

2. Lift the bollard and place it in the pit ( 28).



6.4 FINAL OPERATIONS

RISKS

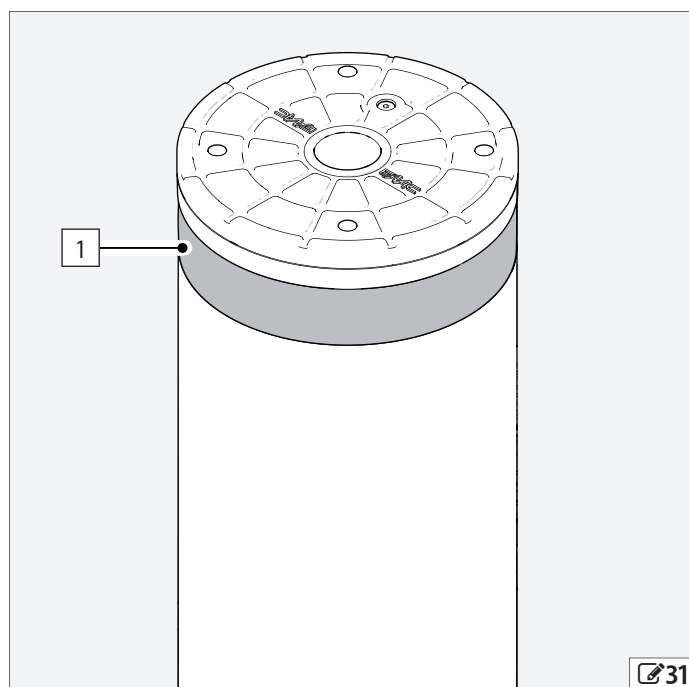
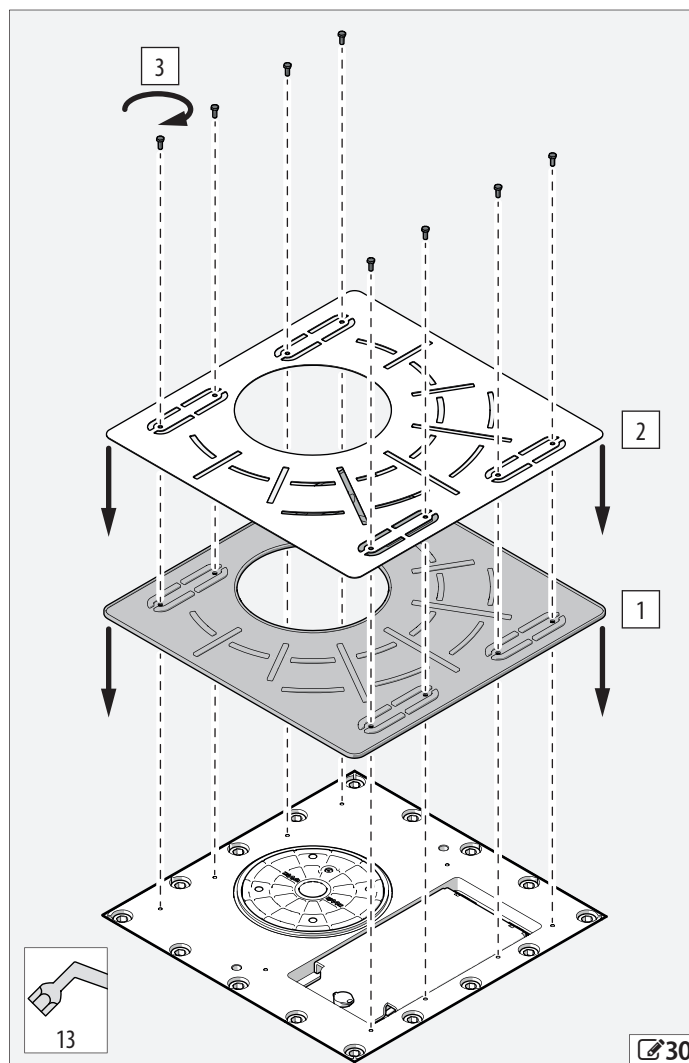
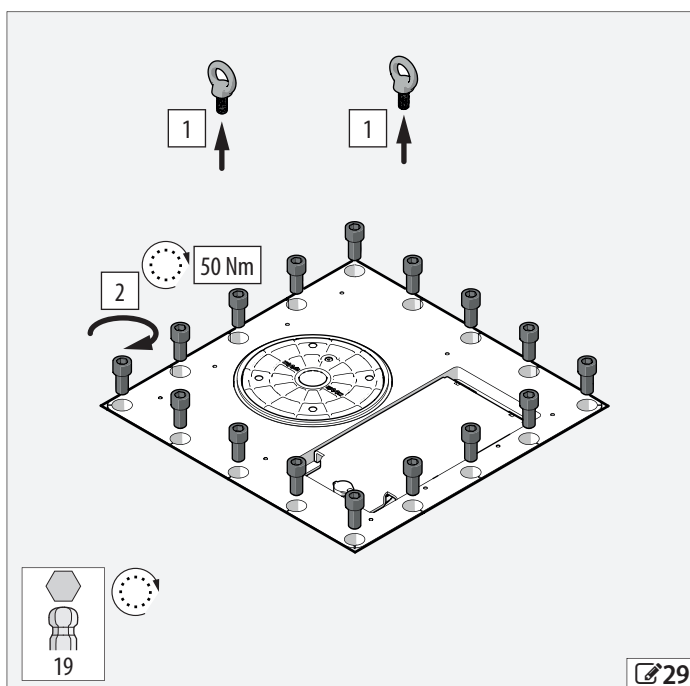


1. Unscrew and remove the two eyebolts from the bollard (🔧29-1). Keep the eyebolts for when carrying out maintenance on the bollard.
2. Fasten the bollard to the pit by tightening the 16 M24 x 50 screws with a torque of 50 Nm (🔧29-2).
3. Install the cover base in mDure™ (🔧30-1).
4. Install the stainless steel cover (🔧30-2).
5. Tighten the 8 M8 x 20 (🔧30-3) screws.



Switch on power to the automation.

6. Use the close command (CLOSE).
7. Apply the reflective film (🔧31).



7.1 DESCRIPTION

i The EFO components are illustrated in § Component identification.

The JS HA EFO (Emergency Fast Operation) bollard has an additional hydraulic system that allows the cylinder to be raised quickly in case of an emergency.

The EFO hydraulic system is composed of:

- an **accumulator** that is charged with pressurized oil by the hydraulic control unit.
- an oil **hose** that connects the accumulator to the hydraulic control unit
- a **pressure switch** installed on the hydraulic control unit. It has a NC contact that opens when the oil pressure in the accumulator reaches the charge level
- an **EFO locking solenoid valve** installed on the hydraulic control unit that prevents oil from entering the accumulator when the charge pressure is reached.
- an **EFO activation solenoid valve** installed on the hydraulic control unit. If excited by the EFO activation device, the solenoid valve releases the pressurized oil in the accumulator and allows the cylinder to raise rapidly.

7.2 CHARGING THE EFO

i The EFO is supplied discharged: the EFO has to be charged when putting into service and after each activation.

Check the status of the LEDs when the cylinder is fully lowered (32).

When putting into service:

- manually lock the hydraulic circuit (§ Maintenance)
- use the (CLOSE) command: the EFO starts to charge when the cylinder is fully raised

After each EFO activation:

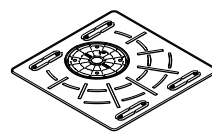
- use the open command (OPEN) or close command (CLOSE) to start charging the EFO

During the EFO charging cycle (33):

- the pressure switch contact is closed
- the hydraulic control unit remains in operation
- the FCC LED remains lit
- the 24 V coil relay contact is closed
- status 06 is shown on the display of the electronic board

charging is complete when (34):

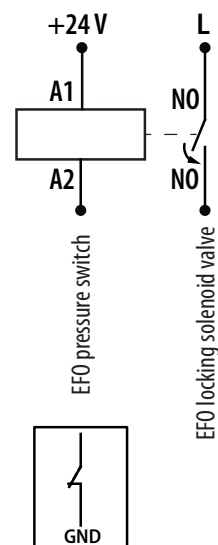
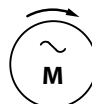
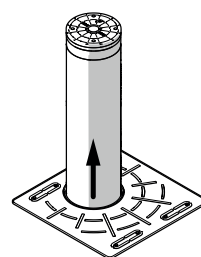
- the pressure switch contact opens
- the hydraulic control unit stops running
- the FCC LED turns off
- the 24 V relay contact opens
- status 00 is shown on the display of the electronic board



LED	
FCA-DL6	○
FCC-DL7	●

32

CHARGING IN PROGRESS

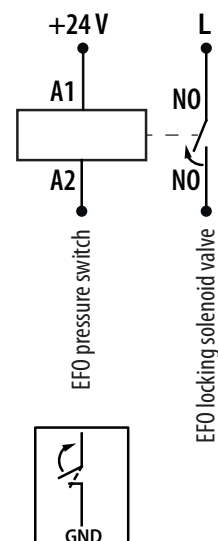
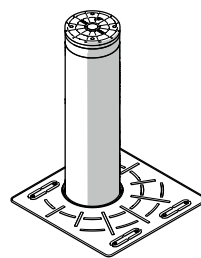


LED	
FCA-DL6	●
FCC-DL7	●

06

33

CHARGING COMPLETE



LED	
FCA-DL6	●
FCC-DL7	○

00

34

7.3 ACTIVATING THE EFO



The EFO has to be charged in order to be activated.
The EFO activation device must have a bistable NO contact.
When the EFO is activated, the opening movement is inhibited.

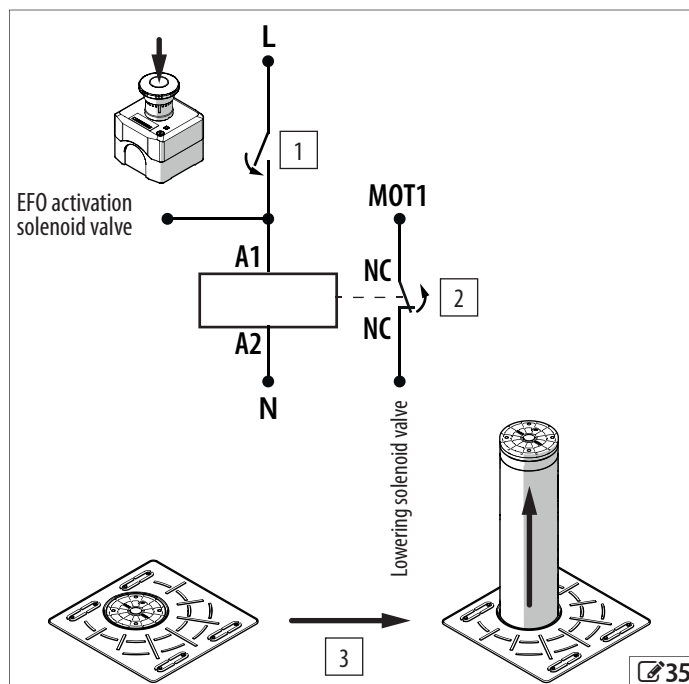
Close the contact of the EFO activation device (35-1):

- the EFO activation solenoid valve is excited
- the contact of the 230 V~ coil relay opens (35-2)
- the pressurized oil in the EFO accumulator is discharged into the hydraulic circuit and causes the cylinder to raise rapidly (35-3)

7.4 EFO IDENTIFICATION



The month and year of production (MM/YY) and the production lot (LOT) is stamped on the EFO accumulator.



8. MAINTENANCE

PERSONAL PROTECTIVE EQUIPMENT



Carry out maintenance according to the sequences provided in the instructions manual.

Only the installer and/or maintenance technician is/are authorised to carry out work on the components of the automation. Do not make any modifications to the original components.

Cordon off the work site (even temporarily) and prohibit access/transit. For EC countries, comply with the national legislation that transposes the European Directive on Construction sites 92/57/EC.

Maintenance requires special working conditions in order to minimise the risk of accidents and serious damage. Furthermore, the suitable precautions must be taken to prevent risks of injury to persons or damage.

The maintenance technician must be in good physical and mental health and be aware of the dangers that the use of the product can cause.

The work area must be kept tidy and must not be left unattended.

Do not wear clothing or accessories (scarves, bracelets etc.) that could become caught in moving parts.

Always wear the personal protective equipment indicated.

The required level of workplace lighting must be equal to at least 200 lux.

Use CE marked machinery and equipment and follow the manufacturer's instructions. Use work instruments in good conditions.

Use the transport and lifting equipment recommended in the instructions manual.

8.1 SCHEDULED MAINTENANCE

It is mandatory to carry out the operations indicated in **4** in order to keep the bollard working reliably and safely.

The installer/machine manufacturer is responsible for drawing up the maintenance plan for the machine, supplementing this list or shortening maintenance intervals according to the machine characteristics and current local regulations.

The installer/machine manufacturer is responsible for updating the system maintenance logbook: if the hydraulic control unit or the EFO accumulator is replaced:

- record the serial number of the hydraulic control unit
- record the month/year and production lot of the new EFO accumulator

4 Scheduled maintenance

Operations	Frequency
Replace the breather plug (only for EFO versions)	10 years
Replace the oil	250000 cycles or 10 years
Replace the hydraulic control unit filters	250000 cycles or 10 years
Replace the EFO accumulator	10 years
Check the hoses	5 years
Replace the upper ring of the cylinder	250000 cycles. Check every 5 years
Check the end stops	5 years
Replace the cylinder guide	250000 cycles. Check every 5 years
Check the reflective film	5 years
Check the LED lights	5 years
Check the buzzer	5 years

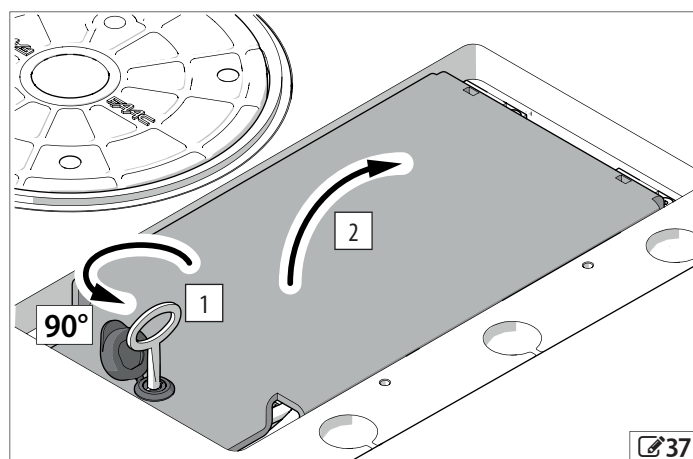
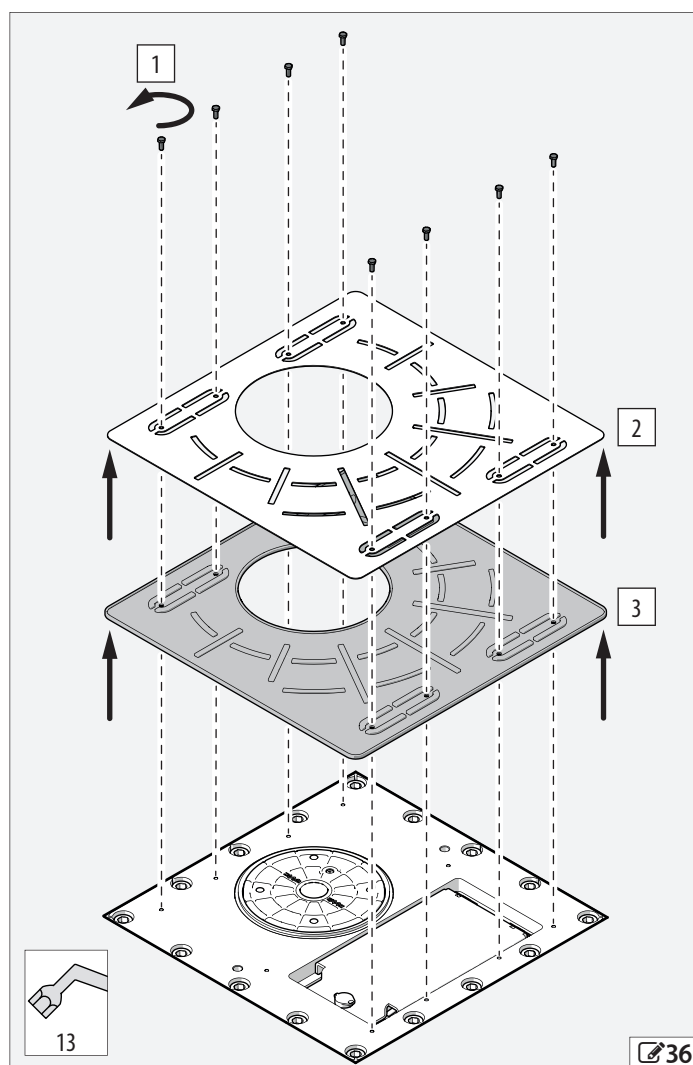
8.2 PRELIMINARY MAINTENANCE OPERATIONS

RISKS



Disconnect the mains power supply.

1. Loosen the 8 M8 x 20 (36-1) screws.
2. Remove the stainless steel cover (36-2).
3. Remove the cover base in mDure™ (36-3).
4. Unlock the door using the key (37-1).
5. Open the door (37-2).

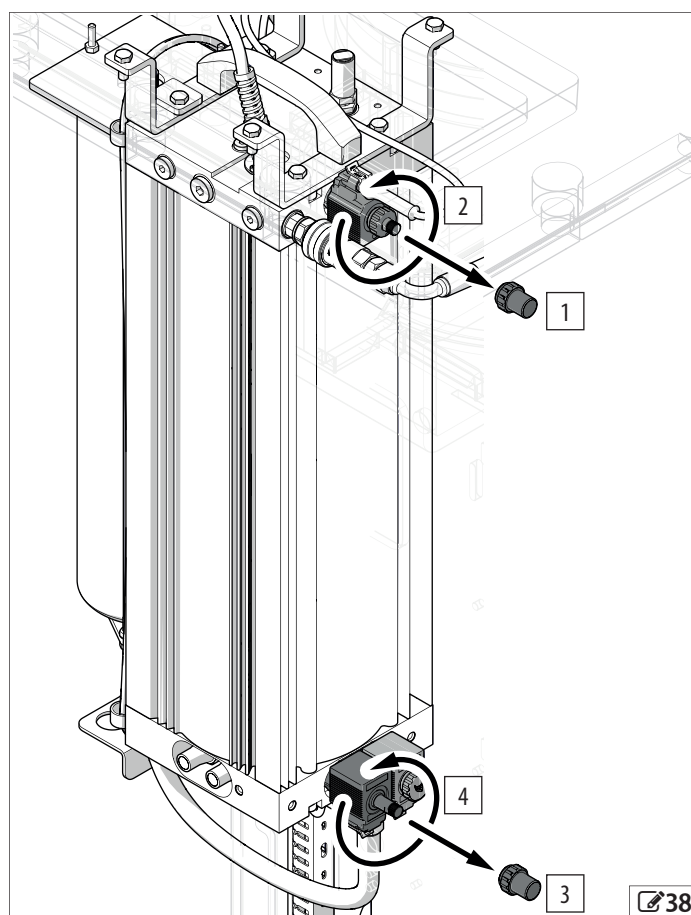


8.3 MANUALLY UNLOCK THE HYDRAULIC CIRCUIT



First release the lowering solenoid valve and then the EFO activation solenoid valve. The EFO activation solenoid valve should be released slowly because the cylinder could partially rise.

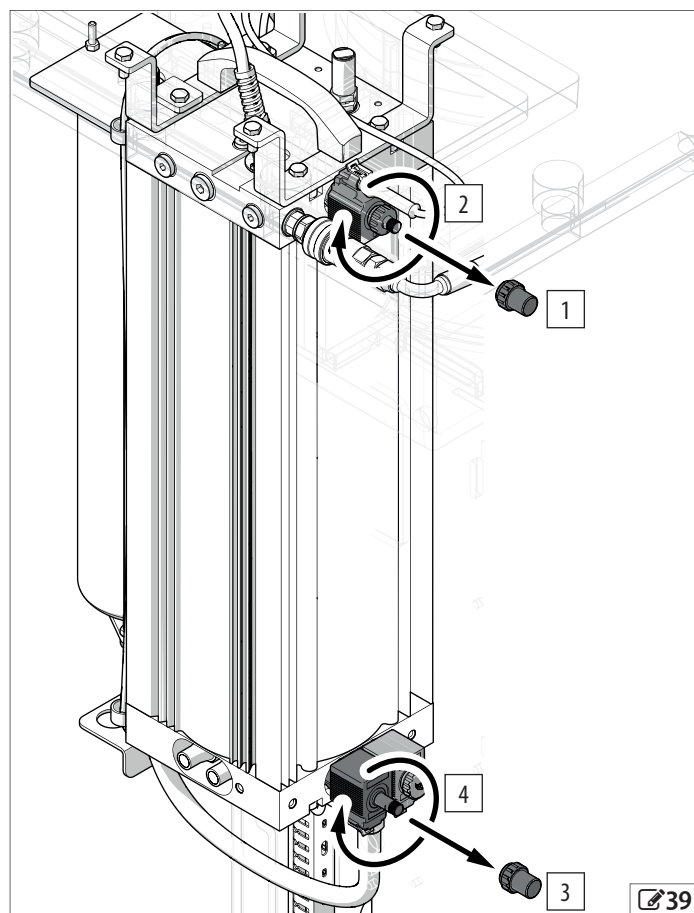
1. Carry out the preliminary maintenance operations.
2. Unscrew and remove the plug of the lowering solenoid valve (38-1).
3. Unlock the lowering solenoid valve manually by loosening the knurled knob (38-2).
4. Unscrew and remove the plug of the EFO activation solenoid valve, if present (38-3).
5. Unlock the EFO activation valve manually, if present, by tightening the knurled knob (38-4).
6. Screw the caps of the solenoid valves back on.



8.4 MANUALLY LOCKING THE HYDRAULIC CIRCUIT

i The lowering solenoid valve and the EFO activation solenoid valve are unlocked when supplied.

1. Carry out the preliminary maintenance operations.
2. Unscrew and remove the plug of the lowering solenoid valve (🔧 39-1).
3. Lock the solenoid valve manually by tightening the knurled knob (🔧 39-2).
4. Unscrew and remove the plug of the EFO activation solenoid valve, if present (🔧 39-3).
5. Lock the EFO activation valve manually, if present, by tightening the knurled knob (🔧 39-4).
6. Screw the caps of the solenoid valves back on.



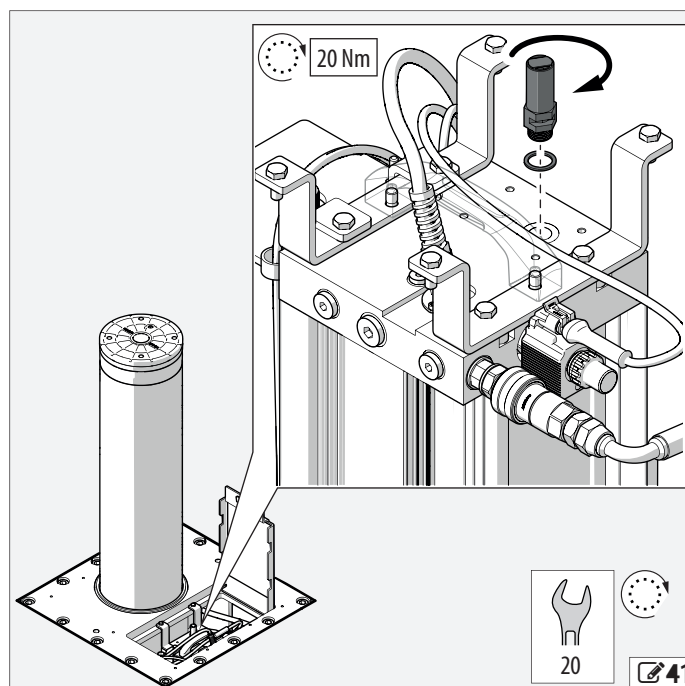
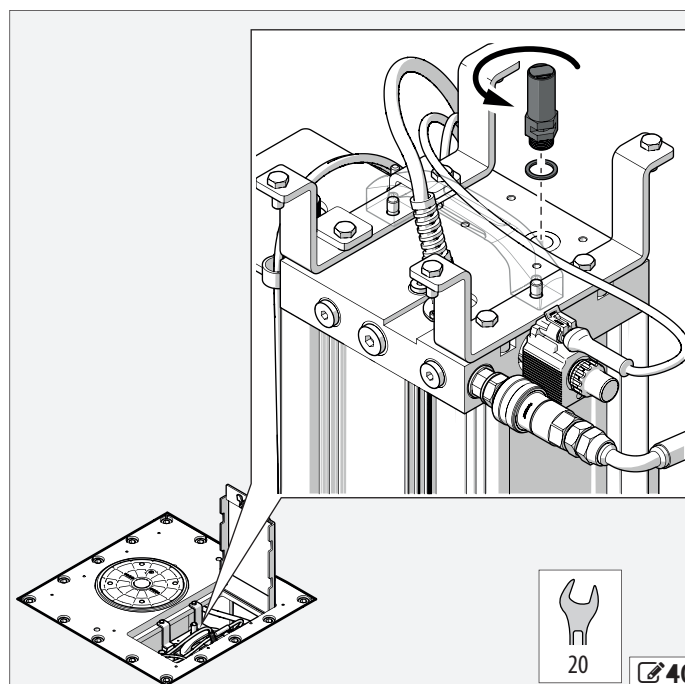
8.5 REPLACING THE BREATHER PLUG

i The breather plug has to be screwed on when the cylinder is in the raised position and the EFO is charged.

1. Use the open command (OPEN).
2. Carry out the preliminary maintenance operations.
3. Unscrew and remove the breather plug and copper washer (🔧 40).
4. Make sure that the hydraulic circuit is locked manually.

⚠ Switch on power to the automation.

5. Use the close command (CLOSE). Charge the EFO if present.
6. Install the new breather plug and new copper washer (🔧 41); tighten the plug with a torque of 20 Nm.



8.6 REPLACING THE OIL

- i** The hydraulic control unit tank is fitted with a system that prevents overfilling. The breather plug has to be screwed on when the cylinder is in the raised position and the EFO is charged.

1. Carry out the preliminary maintenance operations.
2. Manually unlock the hydraulic circuit.
3. Remove the hydraulic control unit (§ Replacing the hydraulic control unit).
4. Unscrew and remove the breather plug and copper washer (🔧 40).
5. Pour the oil in the control unit into a container.
6. Reinstall the hydraulic control unit.
7. Add new oil until the hydraulic control unit is full.
8. Manually lock the hydraulic circuit.



Switch on power to the automation.

9. Use the close command (CLOSE). Charge the EFO if present.
10. Reinstall the copper washer and breather plug (🔧 41): tighten the plug with a torque of 20 Nm.

8.7 TOPPING UP AND BLEEDING THE HYDRAULIC CIRCUIT

- i** Do this only in the event of oil leaks or if indicated in the replacement procedures. The hydraulic control unit must be correctly installed and connected to the plunger piston of the EFO, if present.

The hydraulic control unit tank is fitted with a system that prevents overfilling. The breather plug has to be screwed on when the cylinder is in the raised position and the EFO is charged.

1. Carry out the preliminary maintenance operations.
2. Manually unlock the hydraulic circuit.
3. Remove the cylinder (§ Replacing the cylinder).
4. Unscrew and remove the breather plug and copper washer (🔧 40).
5. Add oil until the hydraulic unit is completely full.
6. Unscrew the plunger piston bleed screw and remove the seal (🔧 42-1).
7. Connect a pneumatic hose and a M5 threaded quick coupling. Screw the threaded fitting onto the plunger piston (🔧 42-2).
8. Insert the hose into the tank of the hydraulic control unit (🔧 43): keep the hose below the oil level.
9. Manually lock the hydraulic circuit.

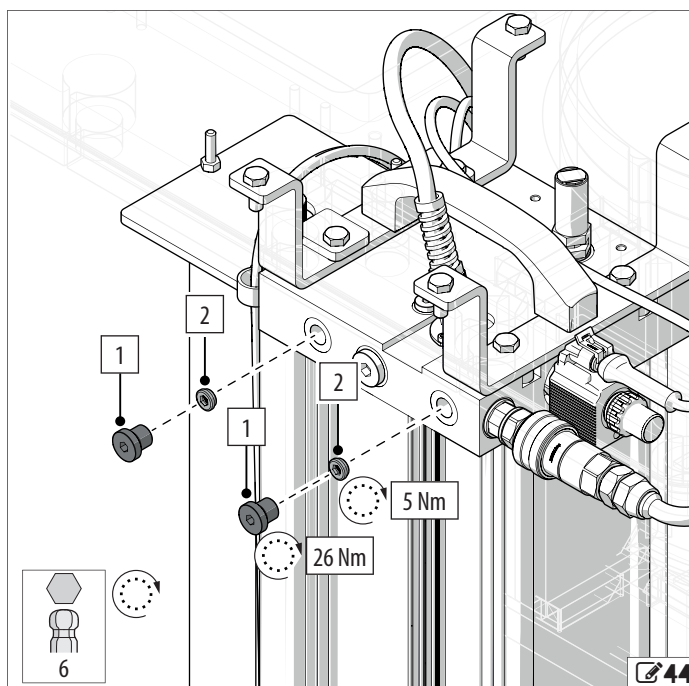
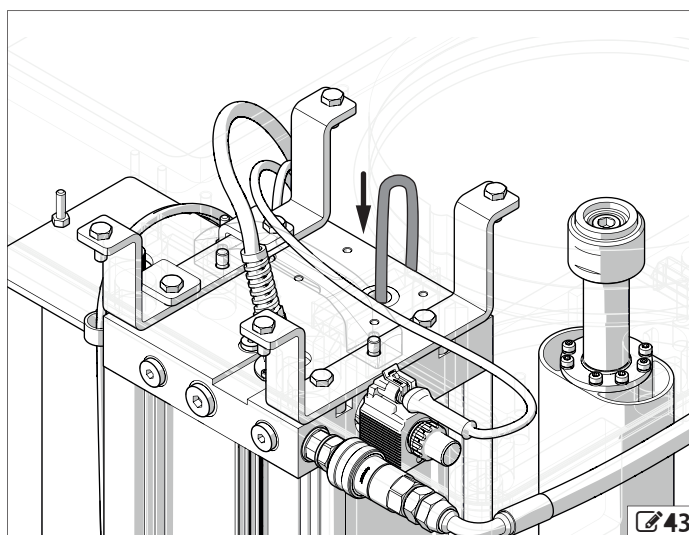
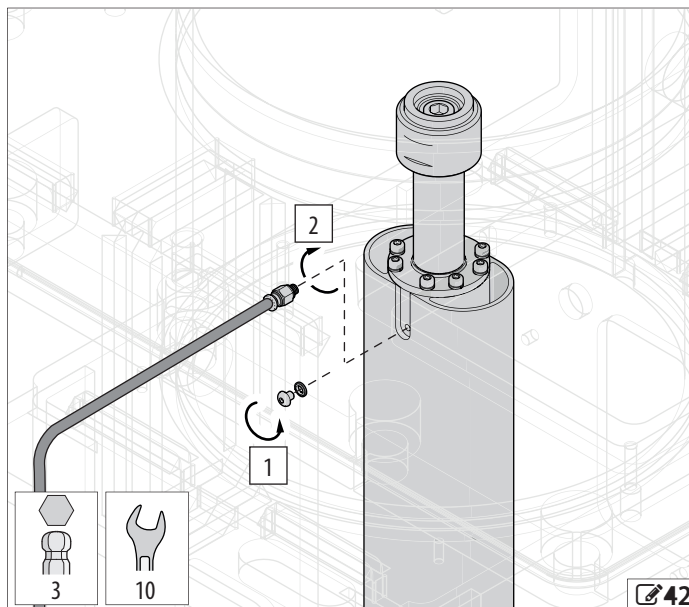


Switch on power to the automation.

10. Use the close command (CLOSE).
11. Purge all the air from the plunger piston: only oil should flow into the hose.
12. Use the open command (OPEN).
13. Unscrew the threaded connection from the plunger piston. Insert the seal and reinstall the bleed screw.
14. Use the close command (CLOSE).
15. Reinstall the copper washer and breather plug (🔧 41): tighten the plug with a torque of 20 Nm.

8.8 REPLACE THE HYDRAULIC CONTROL UNIT FILTERS

1. Carry out the preliminary maintenance operations.
2. Manually unlock the hydraulic circuit.
3. Unscrew the two ring-nuts and remove them (🔧 44-1).
4. Unscrew the two filters and remove them (🔧 44-2).
5. Insert two new filters and tighten them with a torque of 5 Nm.
6. Insert the two ring-nuts and tighten them with a torque of 26 Nm.
7. Manually lock the hydraulic circuit.



8.9 REPLACING THE HYDRAULIC CONTROL UNIT

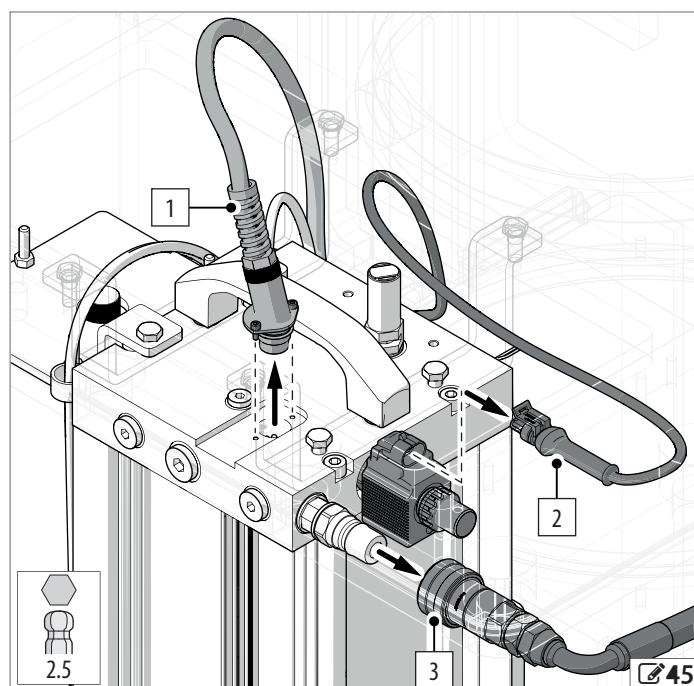
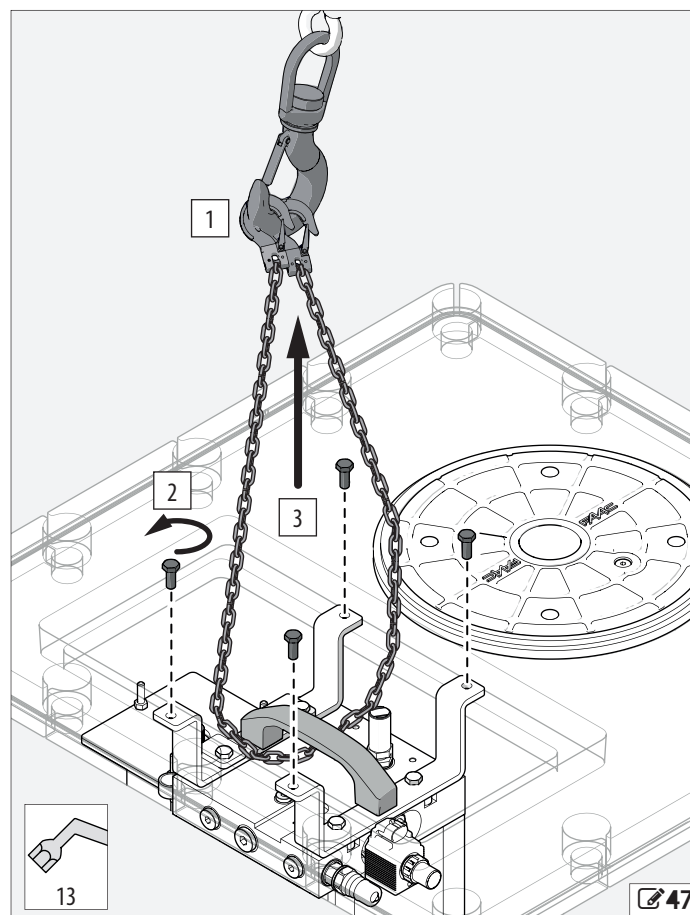
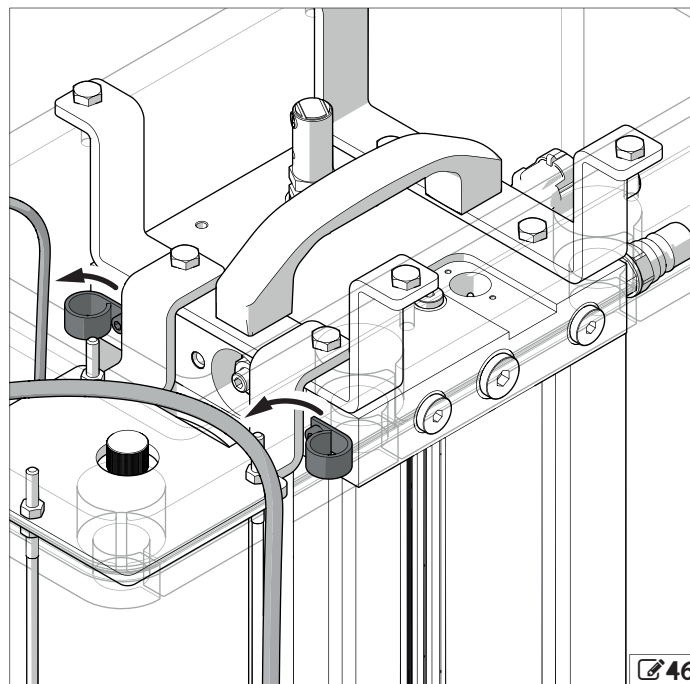
RISKS



Use a forklift truck and chains with a minimum capacity of 50 kg. The chains must be fitted with safety hooks.

Place the hydraulic control unit on a flat surface, taking care not to damage the EFO pressure switch.

1. Carry out the preliminary maintenance operations.
2. Manually unlock the hydraulic circuit.
3. Unscrew the two Allen screws and connect the connector to the hydraulic control unit (45-1).
4. Disconnect the lowering solenoid valve connector (45-2).
5. Disconnect the quick coupling of the plunger piston hose (45-3).
6. In the case of JS HA EFO, pass the cables through the cable glands on the upper flange of the hydraulic control unit (46).
7. Pass the chain under the handle of the hydraulic control unit (47).
8. Hook the chain onto the forklift truck (47-1).
9. Unscrew the 4 M8 x 20 screws that secure the hydraulic control unit to the frame of the bollard (47-2):
10. Slowly raise the hydraulic control unit (47-3). In the case of JS HA EFO:
 - pass the cables through the cable glands on the lower flange of the hydraulic control unit (48).
 - disconnect the EFO pressure switch connector (49-1)
 - disconnect the EFO solenoid valve connectors (49-2)
11. Install the new hydraulic control unit following the above procedure in reverse.



8.10 REPLACING THE EFO ACCUMULATOR

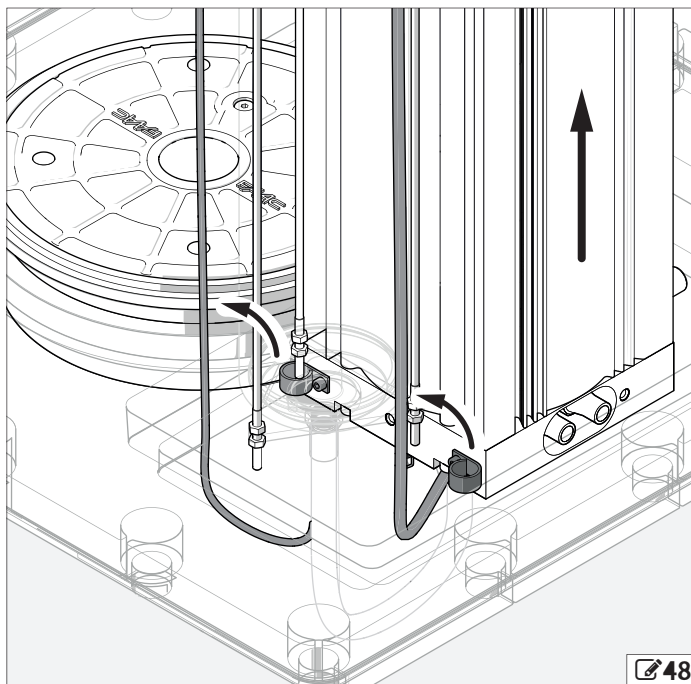
RISKS



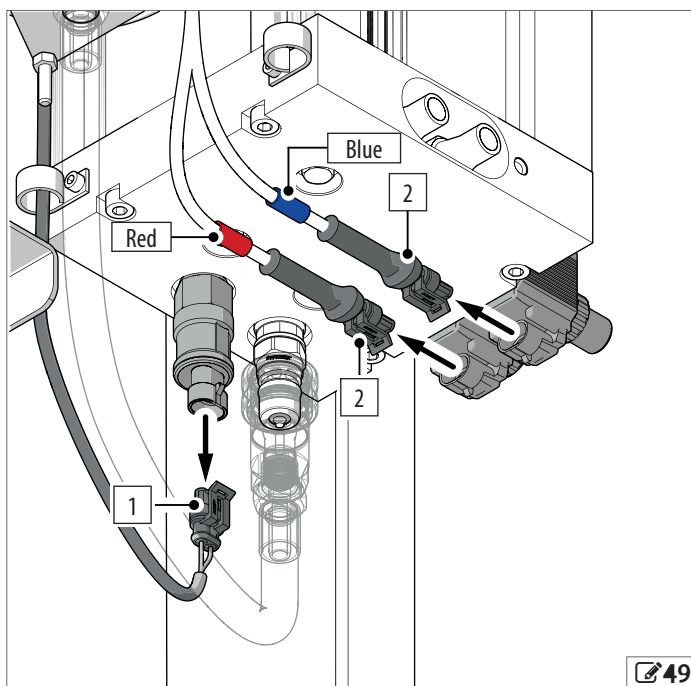
Use a forklift truck and chains with a minimum capacity of 50 kg. The chains must be fitted with safety hooks.

Place the hydraulic control unit on a flat surface, taking care not to damage the EFO pressure switch.

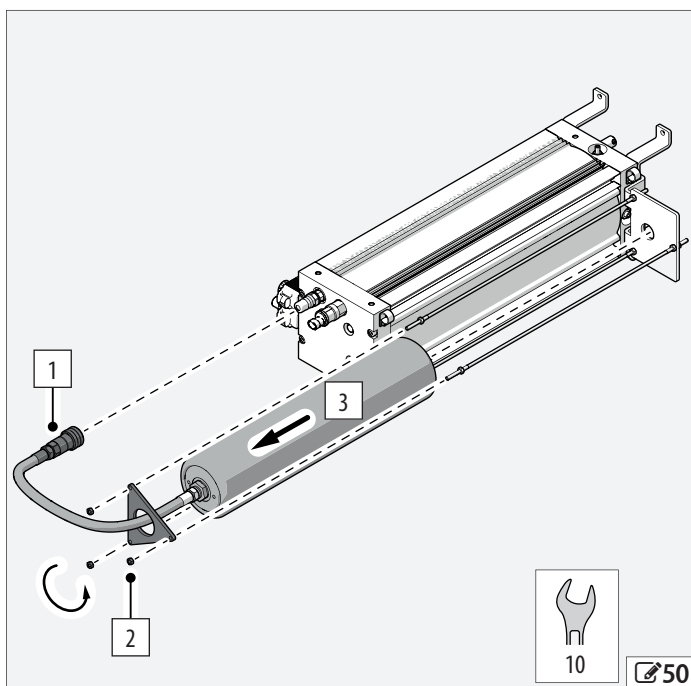
1. Carry out the preliminary maintenance operations.
2. Manually unlock the hydraulic circuit.
3. Remove the hydraulic control unit (§ Replacing the hydraulic control unit).
4. Disconnect the quick coupling of the EFO pipe (↗50-1).
5. Loosen the 3 M6 nuts (↗50-2).
6. Remove the EFO accumulator (↗50-3).
7. Install the new EFO accumulator following the above procedure in reverse.
8. Reinstall the hydraulic control unit.



↗48



↗49



↗50

8.11 REPLACING THE UPPER RING OF THE CYLINDER

1. Carry out the preliminary maintenance operations.
2. Remove the upper ring of the cylinder (↗ 51).
3. Install the new upper ring of the cylinder.

8.12 REPLACING THE CYLINDER

RISKS



- !** Use a crane and two chains suitable for the weight indicated on the packaging. The crane and chains must be fitted with safety hooks. Use the two M20 DIN 580 eyebolts supplied with the bollard. Place the bollard and the cylinder on a flat surface.

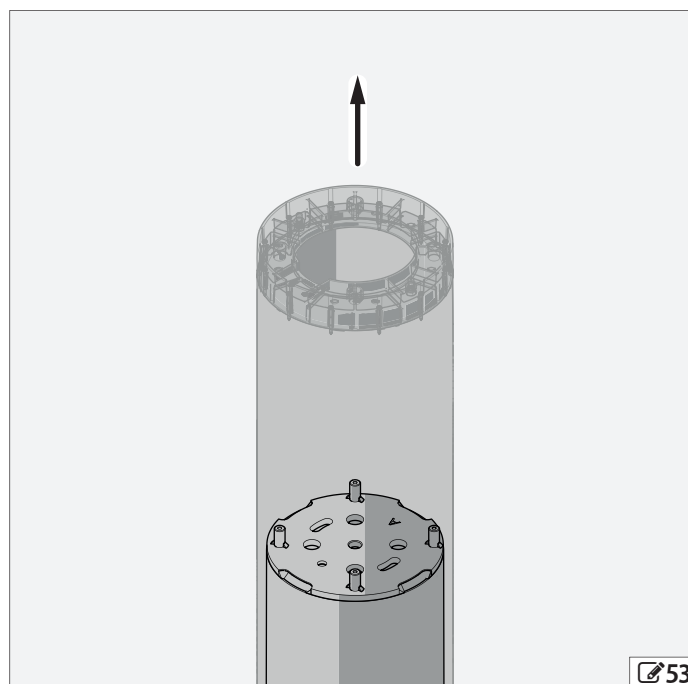
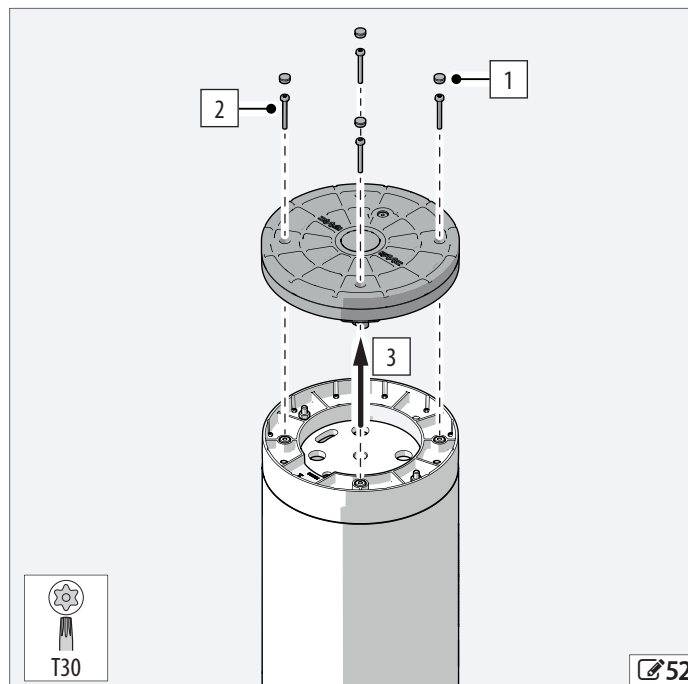
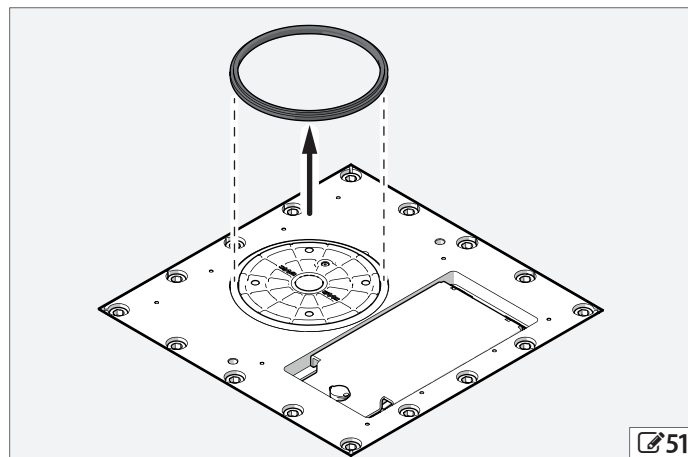
1. Remove the stainless steel cover and the mDure™ cover base (§ Preliminary maintenance operations).
2. Use the close command (CLOSE).
3. Remove the head of the cylinder:
 - remove the 4 plastic plugs (↗ 52-1)
 - loosen the 4 M6 x 50 screws (↗ 52-2)
 - raise the head and disconnect the LED lights and buzzer connector (↗ 52-3)
4. Remove the cylinder sleeve by lifting it upwards (↗ 53).
5. Use the open command (OPEN).

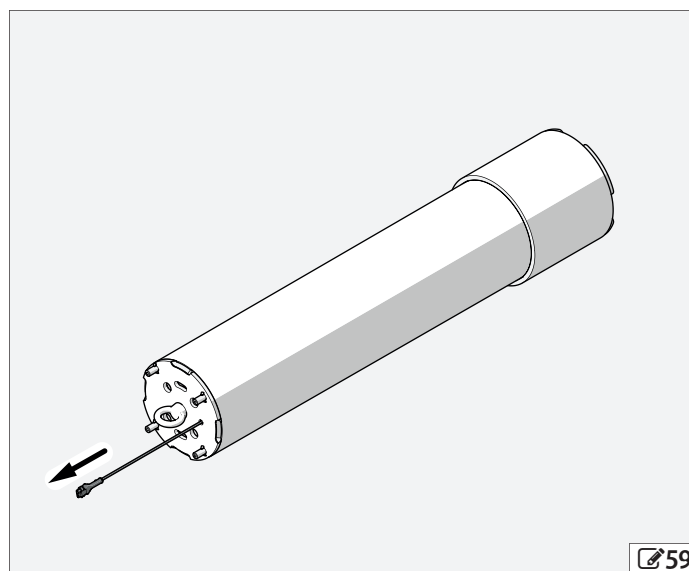
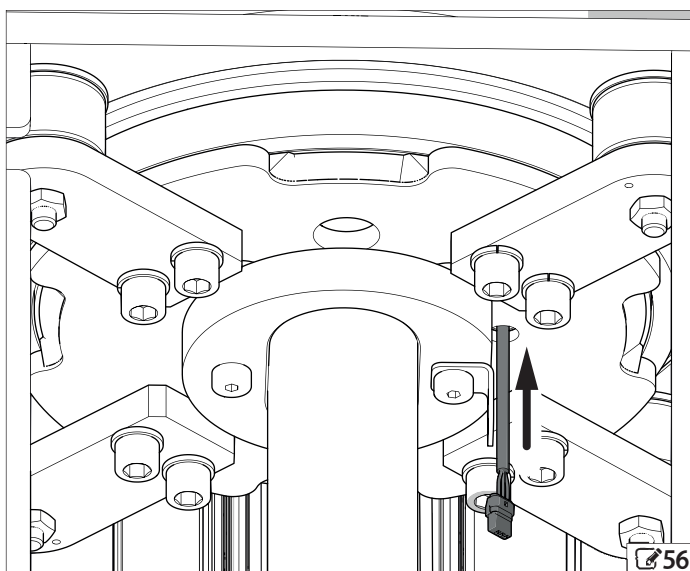
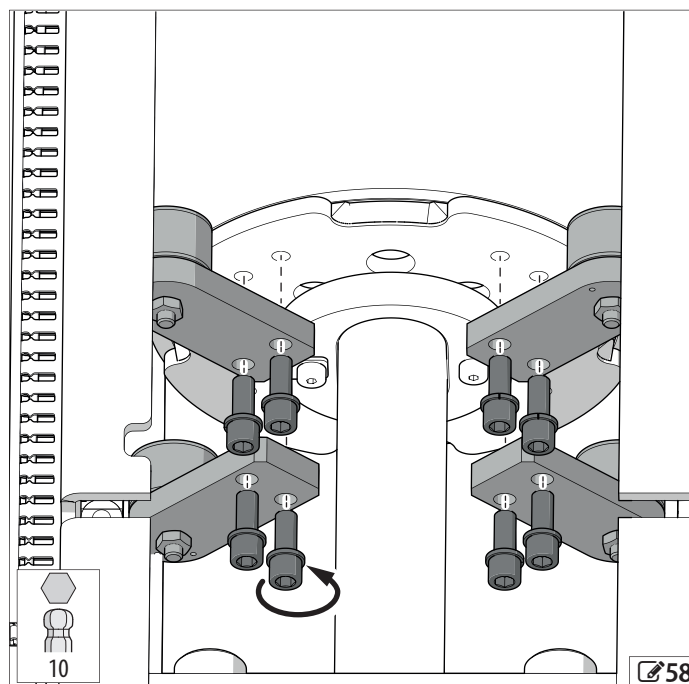
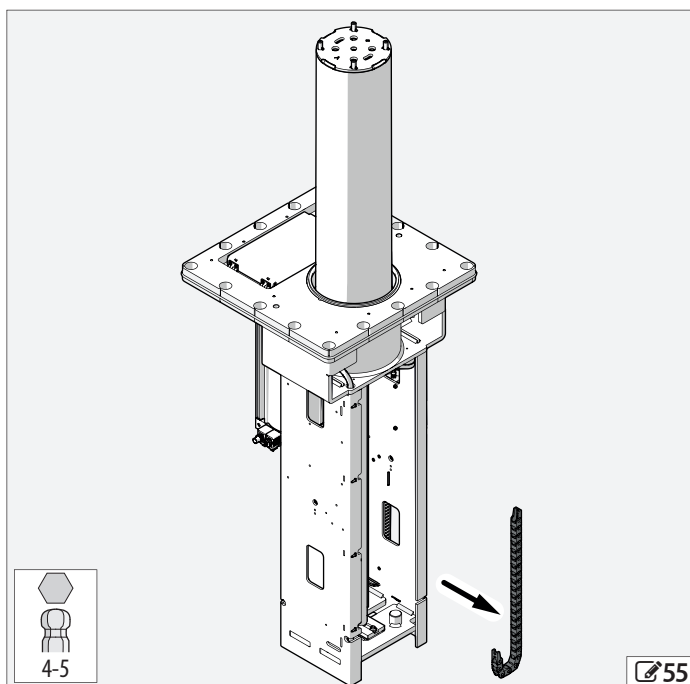
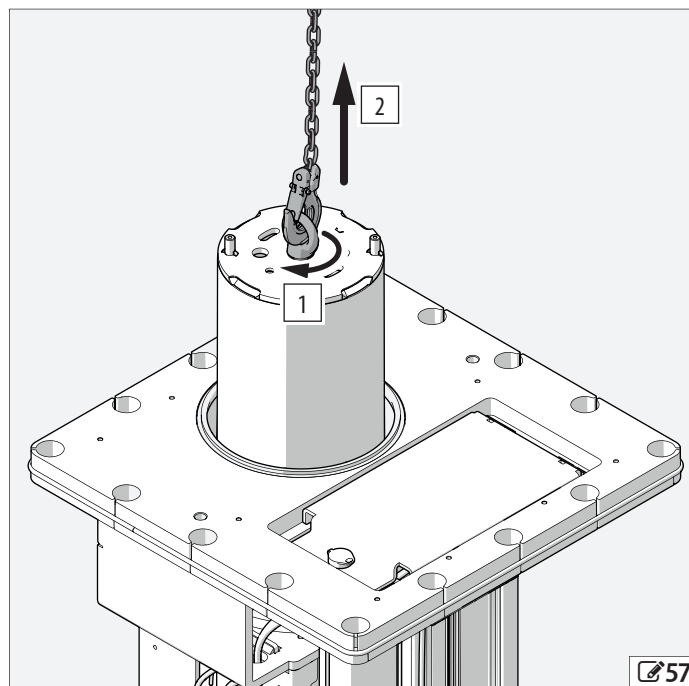
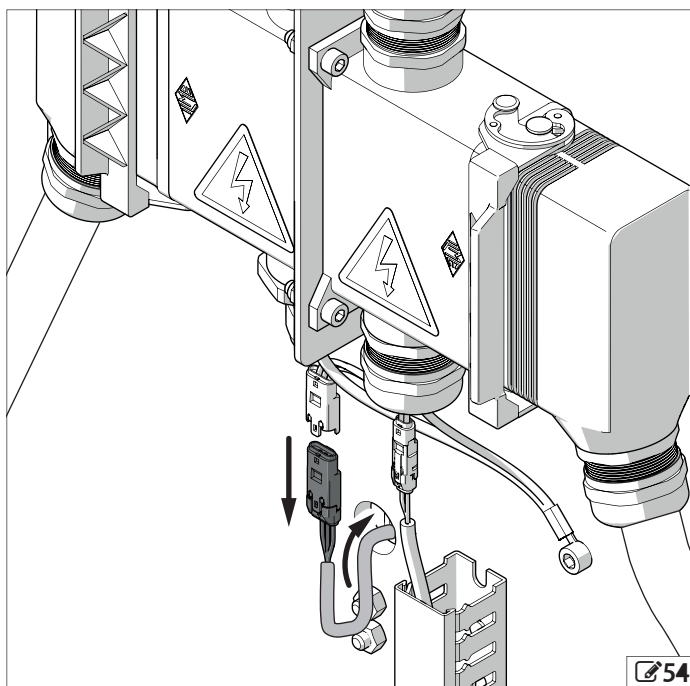
- ⚡** Disconnect the mains power supply.
6. Remove the bollard from the pit as illustrated in § Putting into service.
 7. Disconnect the LED lights and buzzer connector from the junction box. Insert the connector into the hole in the frame (↗ 54).

- ⚡** Switch on power to the automation.
8. Use the close command (CLOSE).

- ⚡** Disconnect the mains power supply.

9. Remove the cable carrier chain (↗ 55):
 - unscrew the 2 M6 screws and nuts that fasten the chain to the frame
 - unscrew the 2 M6 screws and nuts that fasten the chain to the cylinder
 - remove the cable for the LED lights and buzzer from the cable carrier chain
10. Insert the cable for the LED lights and buzzer into the hole under the cylinder (↗ 56).
11. Manually unlock the hydraulic circuit.
12. Screw an eyebolt onto the cylinder (↗ 57-1).
13. Hook the chain to the eyebolt and to the crane.
14. Partially raise the cylinder (↗ 57-2).
15. Remove the 4 end stops by unscrewing the 8 M12 x 30 screws (↗ 58).
16. Raise the cylinder and remove it.
17. Remove the cable for the LED lights and buzzer from the cylinder (↗ 59).
18. Install the new cylinder following the above procedure in reverse.





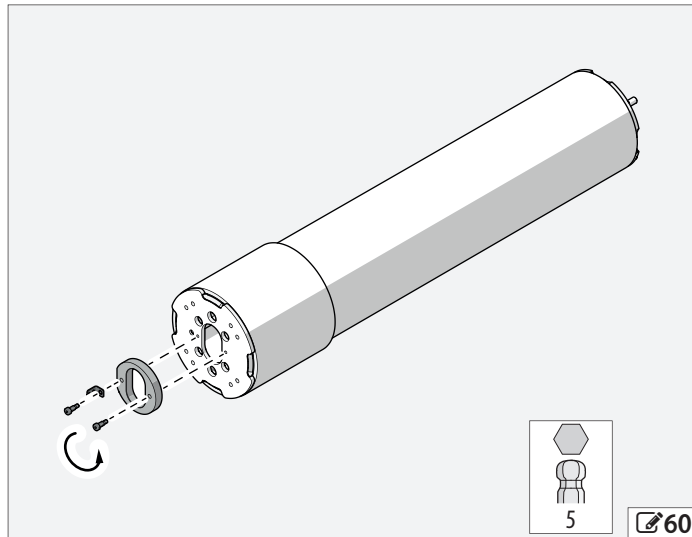
8.13 REPLACE THE CYLINDER GUIDE



Use a crane and two chains suitable for the weight indicated on the packaging. The crane and chains must be fitted with safety hooks. Use the two M20 DIN 580 eyebolts supplied with the bollard.

Place the bollard and the cylinder on a flat surface.

1. Remove the cylinder (§ Replacing the cylinder).
2. Remove the cylinder guide by unscrewing the 2 M8 x 16 screws (🔧 60).
3. Install the new cylinder guide.
4. Reinstall the cylinder.



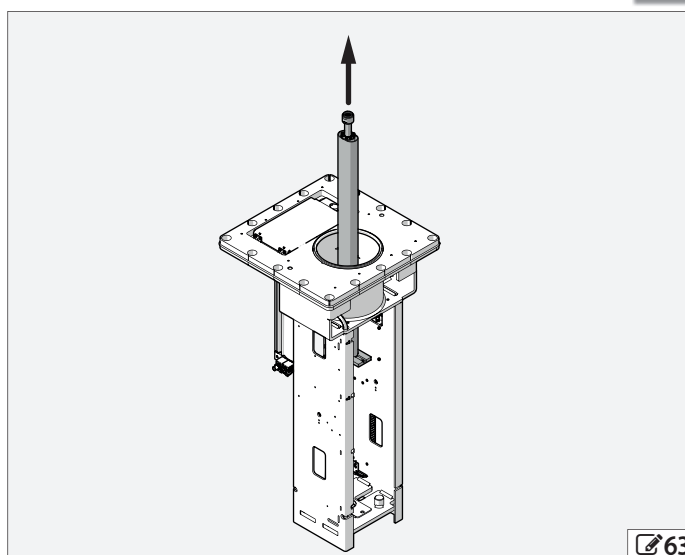
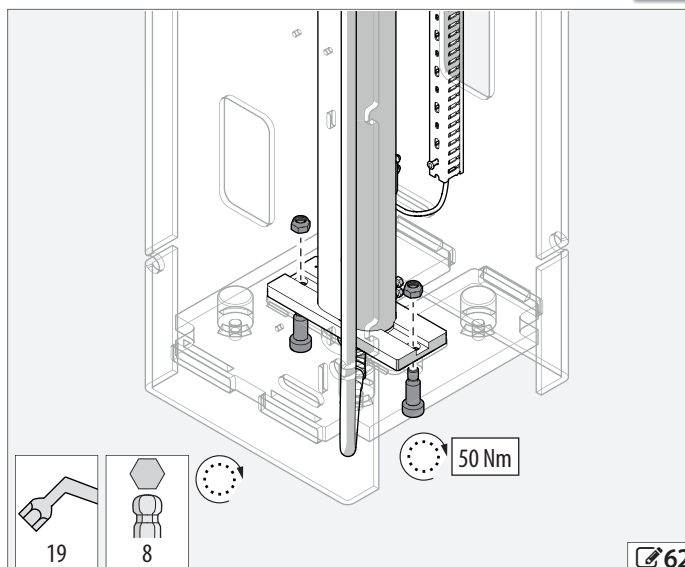
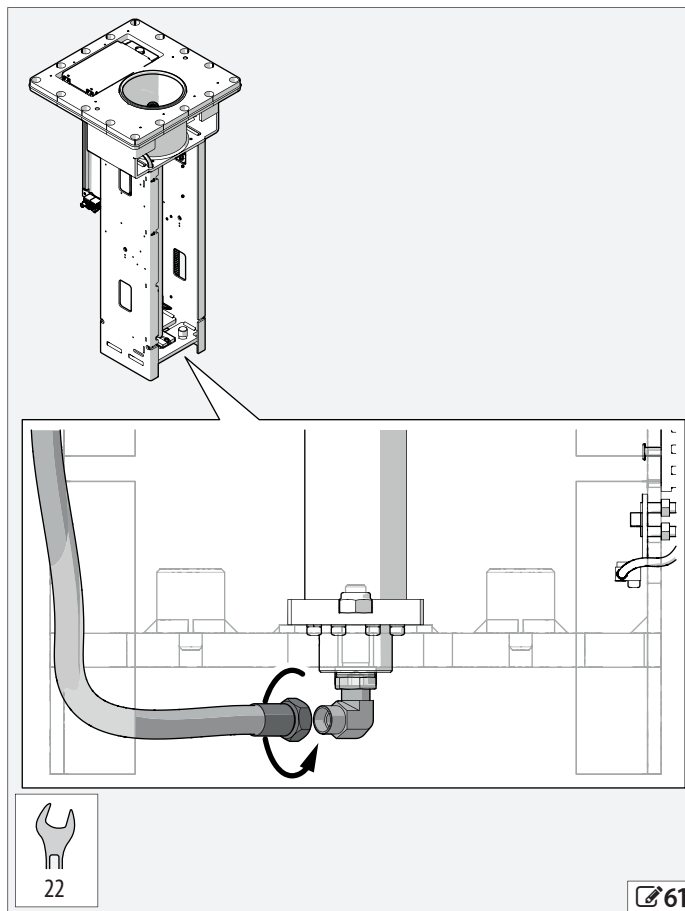
8.14 REPLACING THE PLUNGER PISTON



Place the bollard on a raised flat surface so that you can access the components under the base.

Place the cylinder on a flat surface.

1. Carry out the preliminary maintenance operations.
2. Remove the cylinder (§ Replacing the cylinder).
3. Manually unlock the hydraulic circuit.
4. Unscrew the threaded fitting and remove the hose from the plunger piston (🔧 61). Collect the oil from the hose and plunger piston in a container.
5. Unscrew the 2 screws and the two fixing nuts of the plunger piston (🔧 62).
6. Remove the plunger piston (🔧 63).
7. Install the new plunger piston:
 - tighten the 2 screws and nuts with a torque of 50 Nm (🔧 62)
 - screw the threaded fitting onto the plunger piston
8. Top up and bleed the hydraulic circuit.
9. Reinstall the cylinder.





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