CAME

CAME.COM

AUTOMATIC AND MECHANICAL RETRACTABLE BOLLARD

NTBEAG6N

RISK OF ELECTROCUTION!
Possible presence of live electrical parts

RISK OF CRUSHING
Follow the user safety and protection instructions.

CIRCUIT UNDER PRESSURE
Depressurize the circuit prior to commencing work.

NEVER PERFORM NO LOAD TESTS (without oil)!
Risk of pump damage.

G6N

INSTALLATION AND USER MANUAL

EN English

1. GENERAL WARNINGS FOR THE USER

WARNING! Important safety instructions.

Strictly follow these instructions for your personal safety.

Save these instructions.

- The product must be used only for the purpose for which it was expressly intended. Any other use must therefore be considered dangerous. CAME S.p.A. ant CAME FRANCE - URBACO DIVISION are not liables for damages caused by inappropriate, incorrect and unreasonable use.
- The safety of the product and, therefore, its correct installation is subject to compliance with the technical characteristics and correct installation methods according to the professional rules, safety and conformity of use expressly indicated in the technical documentation of the products.
- Keep these warnings with the installation and operating manuals of the automation system components.
- Keep the sliding areas of the moving element free of clutter and clean. Keep the view of the photocells and vertical signage free of vegetation. Leave the action area of the magnetic loops free of any foreign metal matter.
- Do not enter the range of action of the moving automated system.
- Do not resist the movement of the automatic system since this could lead to hazardous situations.
- Keep children away from the operating area of the bollard, prevent them from using the fixed controls. Keep remote controls (transmitters) out of their reach.
- Check the system frequently for defects and signs of wear and tear or damage to moving structures, automation components, and all mounting points and fasteners. Keep the area between the fixed and mobile parts of the bollard clean.
- If repairs or changes to system specifications are required, clear the passageway and do not use the system until original safety conditions are restored.
- In the event of a malfunction, disconnect the power supply and request technical intervention by qualified technical personnel. Consult the instructions.
- It is strictly forbidden for the user to carry out operations that are not expressly requested and indicated in the manuals. For repairs, changes in regulations and for extraordinary maintenance, please contact the technical service.
- Record the performance of checks and the presence of faults in the periodic maintenance logbook.
- Avoid working near moving bollards.
- Do not touch the moving part while it is moving. Do not attempt transits while the bollards are rising or before movement.
- Do not resist the movement of the bollard as this can cause hazardous situations.
- Always pay special attention to the hazardous points indicated by the special pictograms and/or yellow-black stripes.
- When using a selector switch or control in "hold action" mode, always check that there is no one within the range of moving parts until the operation is completed.
- The bollard may be moved at any time without notice.
- Always disconnect the power supply and release the pressure in the pneumatic system before performing or having any cleaning or maintenance performed.

SUMMARY

INTRODUCTION

Thank you for trusting CAME FRANCE - URBACO DIVISION by choosing the G6N Bollard for the control and security of your access.
In addition to providing all the details of the product and its installation, this document has been created to accompany the installer, the user, the system integrator and the system operator.
Please contact us for more information.
Each step must be carefully followed to ensure that the system is working properly.
The purpose of this document is to support all stakeholders in complying with security requirements.

WARNINGS

• Each step must be followed carefully to ensure that the system works properly.

This symbol indicates an important point

General warning for the installer

- This product must only be used for the purpose for which it is intended.
- Any other use will be considered hazardous.
- CAME FRANCE - URBACO DIVISION can not be held liable for any damage caused by improper, erroneous or unreasonable use.
- The safety of the product, and consequently its correct installation, is dependent on compliance with the technical characteristics and methods of installation according to the best practices and conformity of use, which are expressly indicated in the technical documentation of the products.

Recommendations

- Before installation and commissioning, carefully read all instructions in the manuals.
- This manual is intended only for professional installers or authorized personnel.
- It is intended as a logbook and must be filled in for each intervention from the date of commissioning.
- Keep all instructions supplied with the system.
- The system must be installed in accordance with the standards in force.
- We advise you to contact specialist personnel for the installation of our bollards to ensure that they operate safely and correctly.

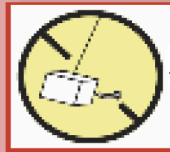
Safety rules and warnings

- All safety instructions described in the manual are important. They refer to staff and materials.
- The bollard is made up of heavy elements and moving parts that can cause injuries if the safety conditions are not respected.
- Should it become necessary to make repairs or changes to the system settings, close the passageway and do not use it until the original safety conditions have been restored.
- In the event of faults of any kind, cut off the power supply and request the technical intervention of specialist personnel.
- It is ABSOLUTELY PROHIBITED for the user to carry out OPERATIONS THAT ARE NOT EXPRESSLY REQUESTED AND INDICATED in the manuals. For repairs, setting changes and extraordinary maintenance operations, PLEASE CONTACT THE SPECIALIST TECHNICAL ASSISTANCE.
- Avoid working near moving bollards.
- Do not touch the moving part while it is moving. Do not attempt to pass when the bollards are rising.
- Do not resist the movement of the bollard since this could lead to hazardous situations.
- Always disconnect the power supply before performing any cleaning or maintenance operations.

Never remove the bollard head when the bollard is in the raised position. Any replacement of the cap, sleeve, luminous crown or other components, and any intervention must be carried out with the bollard in the lowered position and the power supply switched off.

The user of the equipment is responsible for its use.
The user must be qualified and must ensure that the equipment is appropriate for its intended use after having read the instruction manual.

› DO NOT!

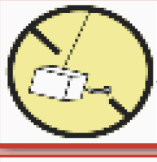


NEVER lift a load greater than the Working Load Limit (WLL)

NEVER stand under the load!

NEVER modify the device components or shorten a strap if you do not have an appropriate system

NEVER place your hands or feet under the load or the device in use



NEVER swing the load while lifting

NEVER place a strap in contact with a sharp angle!

It is strictly PROHIBITED to hoist people

NEVER make knots with the straps

NEVER lower the load without controlling the speed

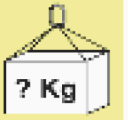
NEVER engage the straps on the tips of the hooks

NEVER unhook a load before it is completely free and stable!

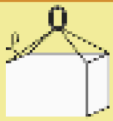
NEVER commission a device or accessory showing defects or damage!

NEVER leave lifting devices and accessories in bad weather!

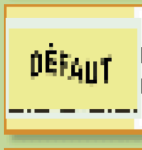
› WHAT TO DO ...



Check the weight of the load; Comply with the maximum load capacity!



Take the slinging method and the inclination angles into account



Remove any defective equipment or accessories

Proper use and regular maintenance ensure durability and safety.

Protect the slings from cutting edges and sharp edges

Always consider the load's center of gravity

Periodically conduct a visual check of the product's general condition

Use the equipment on a hard, horizontal and smooth surface

Residual risks

The automatic system has been designed and built in compliance with the MACHINES DIRECTIVE in force. The risk analysis revealed the following residual risks that cannot be completely eliminated:

- Risk of tripping.
- Danger of impact due to reduced visibility if the presence of the bollards is not correctly signaled.
- Danger of entanglement on the vertical axis if the bollard is caught during movement.

Terms of use

- A vertical "retractable bollard" sign must be installed to warn the user of the presence of the obstacle and to inform the user of the traffic rules.
- The addition of traffic lights enhances safety (red light and flashing yellow light).
- The implementation of magnetic loops in the ground combined with an operating logic makes it possible to make a perimeter around the bollard safe.
- For safety reasons, CAME FRANCE - URBACO DIVISION recommends that vehicles stop in front of the bollard and wait for the bollard to be completely lowered (and the passage from red to flashing yellow light if the access is equipped with a light) before passing.
- The access operator must inform the users about the use and functioning of the access, as CAME FRANCE - URBACO DIVISION cannot be held liable for any misuse or failure to follow the safety rules.
- Frequently check the installation according to the periodic maintenance manual, to detect possible defects and signs of wear or damage to the moving parts and all fastening points and devices.
- Perform checks on the operation of the detection loops every six months.
- It is mandatory to note the performance of the inspections and the presence of defects in the maintenance logbook.

Usage restrictions

- CAME FRANCE - URBACO DIVISION declines all liability for safe and correct operation of the bollard if components not supplied by CAME FRANCE - URBACO DIVISION are used or replaced (unless CAME FRANCE - URBACO DIVISION has given its written authorization).
- Never modify original parts inside the system.
- It is absolutely forbidden to use the bollard to lift weights or for any other use not expressly described.

Instruments and equipment

Make sure you have all the common equipment needed for assembly.
The weight of the bollard necessarily implies the use of an appropriate lifting device to ensure the safety of people and avoid damaging the bollard when it is installed. Choose equipment that complies with the standards in force and with characteristics adapted to those of the bollard to be installed:

	Ø250 H550				Ø250 H750			
Actuator	M	HE	HD	P	M	HE	HD	P
Total bollard weight	~100 kg	~134 kg	~124 kg	~105 kg	~150 kg	~175 kg	~165 kg	~165 kg
Height of the retracted bollard	550 mm / cover				750 mm / cover			

M = Mechanical
HE = Embedded hydraulics
HD = Remote Hydraulics
P = Pneumatic

See previous table (P7): "Not to do I What to do"

Directives and Standards

2014/30/EU Electro-Magnetic Compatibility Directive (EMC)
2014/35/EU Low Voltage Directive
With reference to the following Standards:
NF P 98 310
NF EN 124 Class F
EN 61000-6-2 et EN 61000-6-3 Electromagnetic compatibility
EN1050 Risk assessment principles
EN60529 Test methods for verifying the IP degree of protection of equipment
EN11201 Method for measuring the sound power of a machine
EN60068-2-1 and EN60068-2-2 Environmental test methods of equipment
Prime Minister's decree PMR No. 2006-1657,
EN13849-1 and EN13849-2 Machinery safety.

Warranty & Liabilities

Please see our general sales terms for more information.

System overview

A traffic control system with G6^{N} CAME FRANCE - URBACO DIVISION bollards makes it possible to obstruct and/or select the passage of vehicles (cars, light trucks, etc.) in public (city centers) or private environments (access to buildings, for example), at the same time requiring freedom of passage for pedestrians and bicycles.

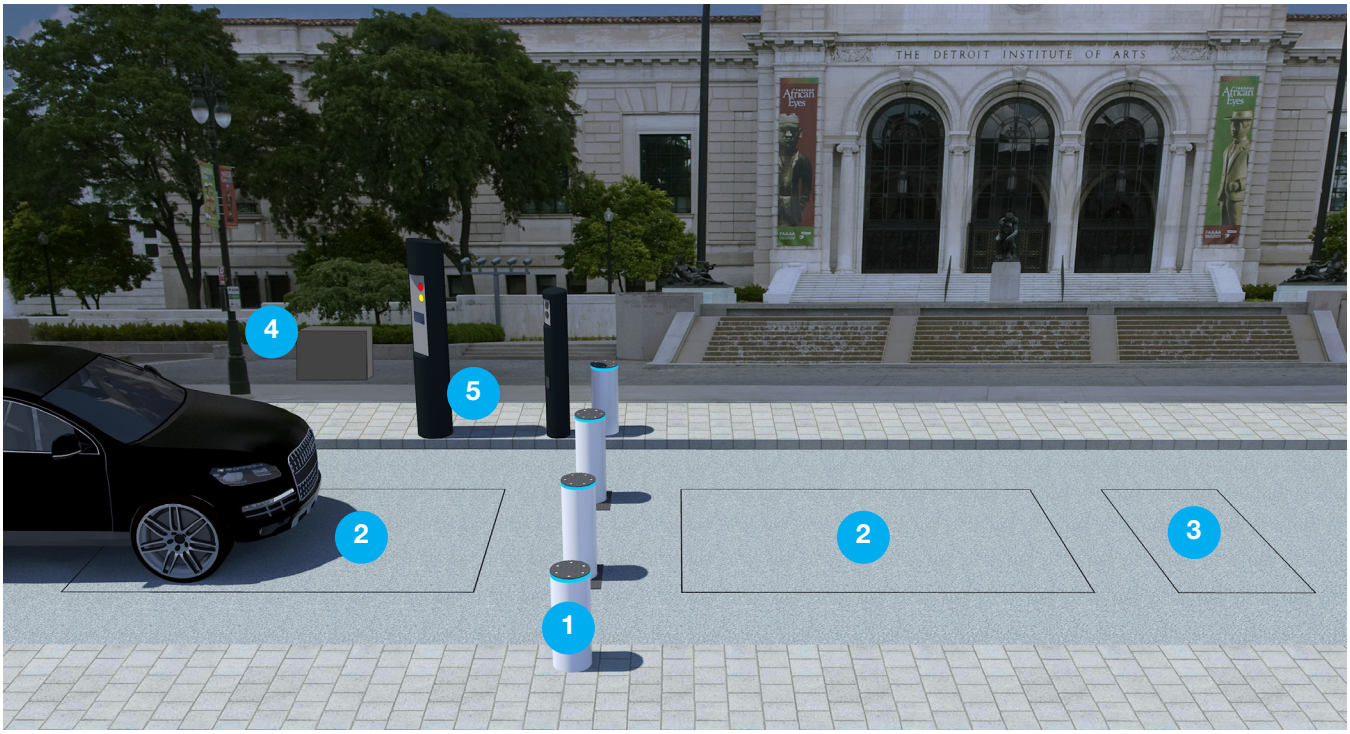
An access equipped with automatic retractable bollards generally consists of three sets of equipment connected to each other, which are:
These 3 sets are:
1. Automatic retractable bollards, installed in the vehicle lane, which allow or prohibit access (one or more bollards).
2. Safety loops (electromagnetic detection), placed in the ground on either side of the bollards, which form a safety perimeter around the bollards.
3. The management system that includes the automatic system integrated in the controller (City type or box) and that controls the movements of the bollards. It can also include an access control device (such as a badge reader, radio receiver, etc.).

For the installation of the safety loops, please refer to the corresponding manual:

NT-BCL(FR) - Magnetic Detection Loop Placement Rule.

The positioning of the security loops conditions the proper functioning of the access. Thus, CAME FRANCE - URBACO DIVISION recommends to first determine the location of the security loops, then those of the bollards and the control system.

Note:
Of course, Mechanical Retractable Bollards (BEM) do not have safety loops and technical control unit in its installation.



ITEM	NAME
1	Retractable bollards
2	Safety loops
3	Automatic detection loop
4	Technical control unit
5	Access Control Totem

Recommendations to be observed for the proper use of access controlled by retractable bollards

To ensure the proper functioning of the access equipped with automatic bollards, CAME FRANCE - URBACO DIVISION recommends:

- installing a vertical sign indicating the "retractable bollard" obstacle;
- equipping automatic systems with bollard position lights (flashing red and yellow).

For access control systems, CAME FRANCE - URBACO DIVISION advises, for safety reasons, that vehicles must stop in front of the bollard and wait for it to be completely lowered (and the passage from red to flashing yellow light if the access is equipped with a light) before passing.

In automatic bollard ascent mode after the vehicle has passed, vehicles must not pass the access one behind the other without stopping in front of the bollard. They must ensure that the bollard is in the lowered position and must respect the positioning light if installed.

Note:
Only the vertical signaling of its presence is strongly recommended for Manual Mechanical Bollards (MMB).

User information and training

The access operator must inform the users about the use and functioning of the access, since CAME FRANCE - URBACO DIVISION cannot be held liable for a misuse or failure to follow the safety rules.

Training sessions are regularly proposed to inform operators of safety rules and the latest updates on the solutions proposed by CAME FRANCE - URBACO DIVISION.

GLOSSARY

TERM AND ABBREVIATION	DEFINITION
M	*(Actuator)* Mechanical
HE	*(Actuator)* Embedded hydraulics
HD	*(Actuator)* Remote hydraulic
P	*(Actuator)* Pneumatic
BEM	Mechanical Retractable Bollard (manual)
SHG	Frost Protection System

I. BOLLARD, CIVIL ENGINEERING, INSTALLATION AND COMMISSIONING

1. GENERAL DESCRIPTION

The G6^{N} retractable bollard is designed to protect accesses with a normal level of anti-intrusion protection.
The bollard offers moderate shock resistance with an intensive operating rate.
Maintenance is limited due to the use of simple and robust parts.
The G6^{N} bollard is made up of:

Sub-unit		Item	Name	Material and specificity	Q.ty
BASE		1	Permanent casing	Galvanized sheet metal	1
		2	Housing	Spheroidal cast iron (+machining)	1
		3	Crossbar	Spheroidal cast iron (+machining)	1
		4	Bollard head	Spheroidal cast iron (+machining)	1
		5	Cover	Spheroidal Cast Iron	1
		6	Diffusion crown	White PMMA	1
		7	Head	2 Possibilities to choose from	1
		8	Brush gasket	/	1
		9	Reflective strip	/	1
OPTIONS	MOTOR POWER	M0	Mechanical System (manual)	/	(1)
		M1	Embedded Hydraulic System	/	(1)
		M2	Remote hydraulic system	/	(1)
		M3	Pneumatic System (2 Types)	/	(1)
		A	Limit switch support terminal strip	Galvanized sheet metal	(1)
		B	LED strip	3 colors to choose from	(1)
		C	Diffusers	White PMMA	(9)
	CUSTOMIZATION	P1	Painted head	/	(1)
		P2	Polished stainless steel sleeve	316L stainless steel	(1)
		P3	Stainless steel painted or customized sleeve	304L stainless steel	(1)
SECONDARY OPTION		OS3	Vandal-proof screws	/	

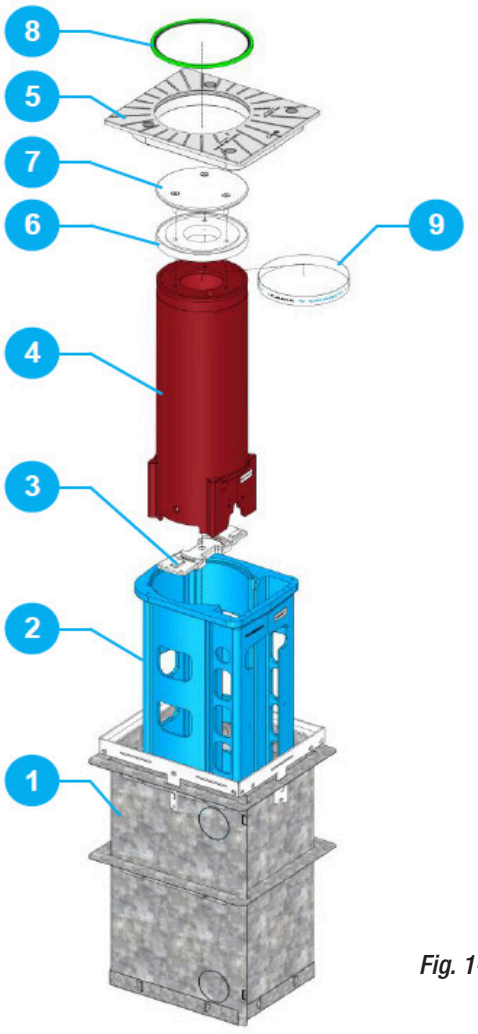


Fig. 1- Common base

MOTOR POWER:

Each motor power system can be broadly broken down as follows:
1. Movement cylinder.
2. "Control" support and/or other options.
3. Automatic control system, with external or manual connection.

Motor Power	Unit installation	Operation
Mechanical	NC	NC
Remote hydraulic	In the technical control unit	Automatic, 1 ascent speed
Embedded hydraulics	In the bollard	Automatic, 1 ascent speed
Pneumatic	In the technical control unit	Automatic, 1 ascent speed

M0 - Mechanical actuator
(2 sizes - same principle)

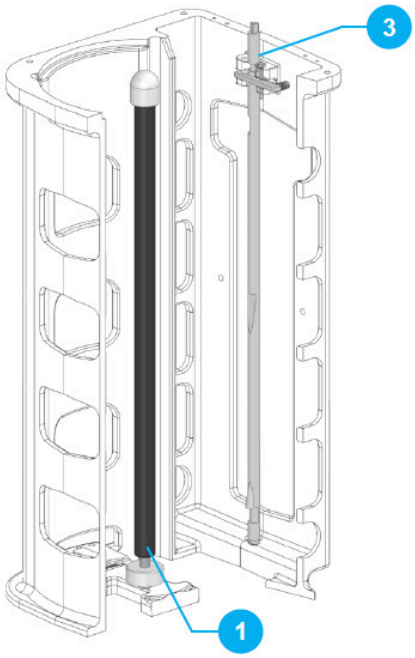


Fig. M0 – Mechanical system

M1 - Embedded Hydraulic Motor Power
(2 sizes - same principle)

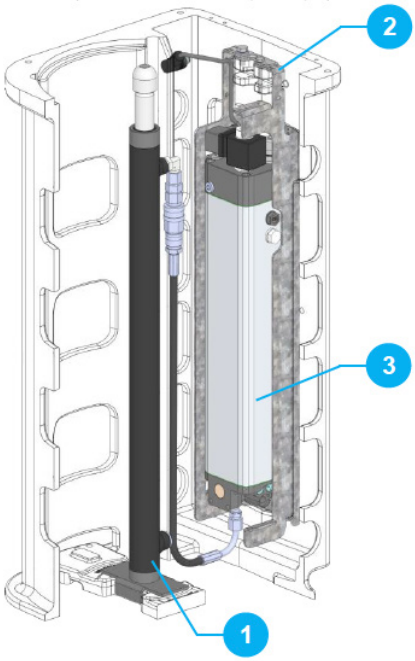


Fig. M1– embedded hydraulics

M2 -Remote Hydraulic Motor Power
(2 sizes - same principle)

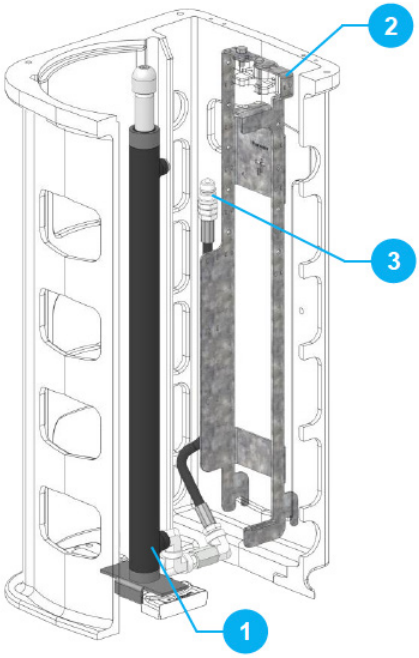


Fig. M2– Remote Hydraulic

M3 -Pneumatic Motor Power
(2 sizes x 2 types)

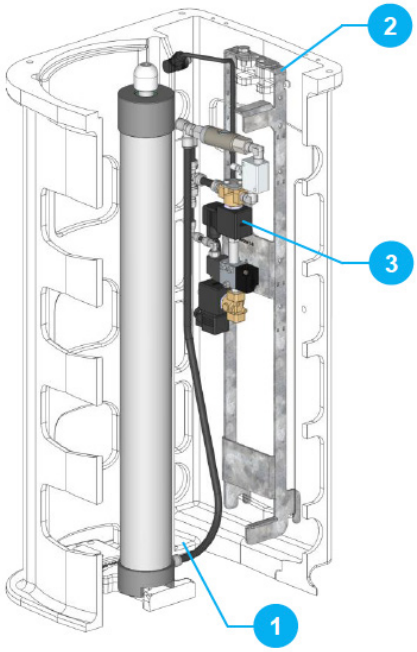


Fig. M3– Pneumatic

OTHER MAIN OPTIONS:

A – Limit Switch (FDC)
(2 sizes - same principle)

1. Limit Switch support terminal strip
2. FDC x2
3. Connection cable with connector

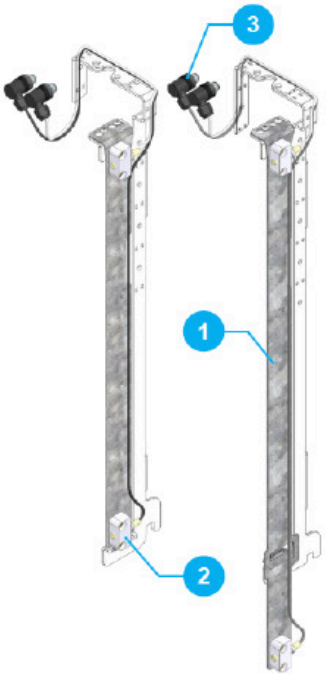


Fig. 2 – Limit Switch terminal strip

B – LED strip
(3 colors - 2 sizes - same principle)

4. LED strip
5. Cable Guide Chain
6. Connection cable with connector

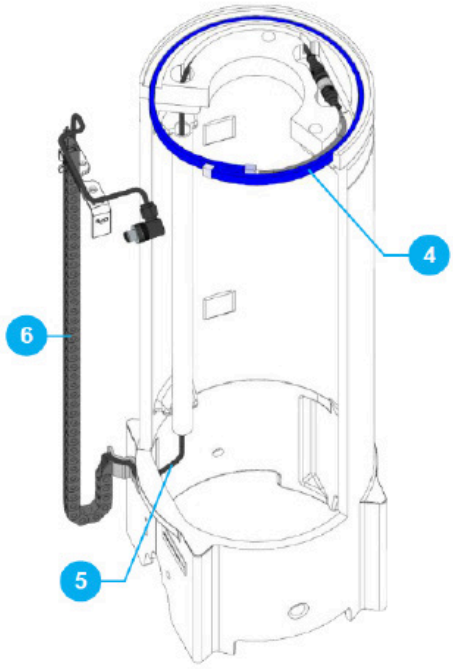


Fig. 3– LED strip

C - Diffusers on the head
Diffuse the color emitted by the LED strip

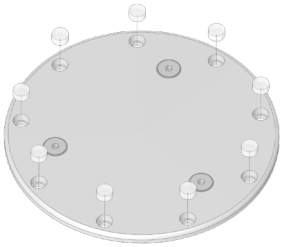
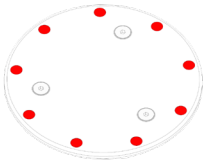


Fig. 4 – Diffusers



Example

CUSTOMIZATIONS:

P1 –Painted Rough Head
(without sleeve)

Fig. P1 – Painted Head

P2 – Polished Stainless Steel Sleeve
(2 sizes - same principle)

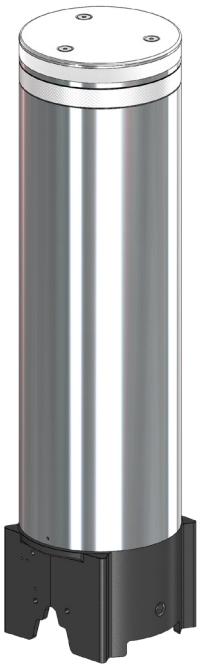


Fig. P2 – Stainless Steel Sleeve

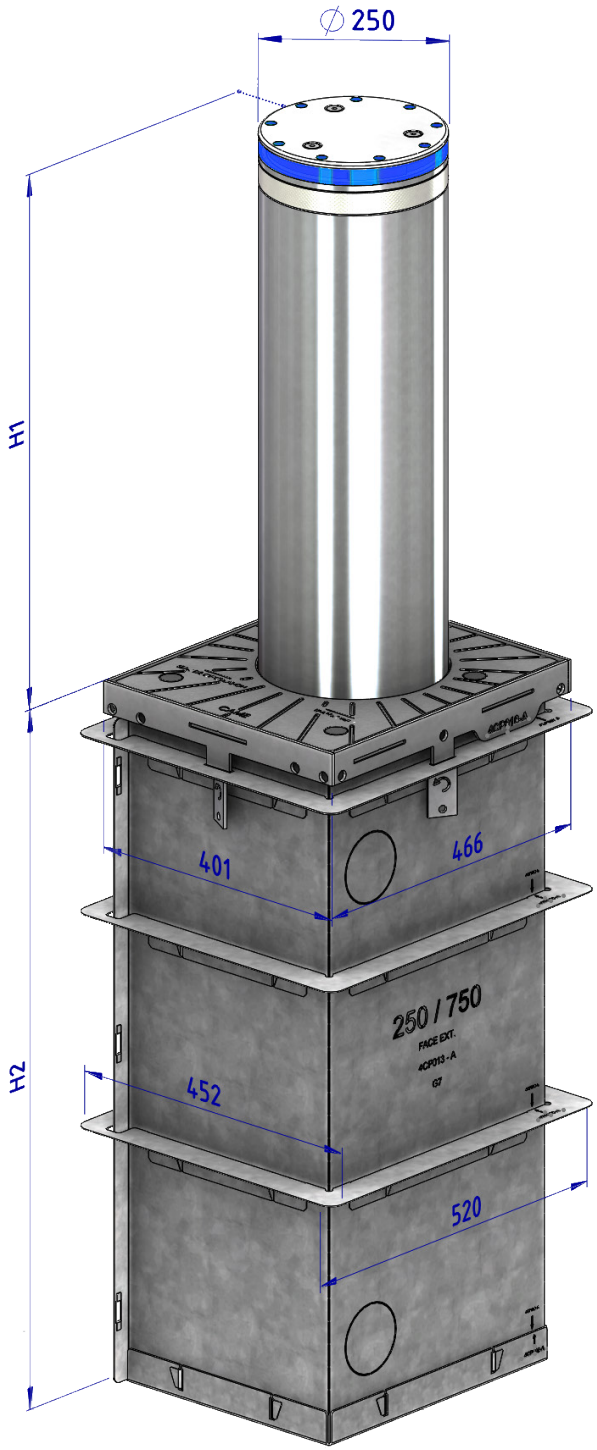
P1 – Painted Stainless Steel Sleeve
According to choice
(2 sizes - same principle)

Example of customization

Fig. P3 – Customized Stainless Steel

2. SIZE & WEIGHT OF THE BOLLARD

Actuator	M		HE		HD		P	
	Mechanical		Embedded hydraulics		Remote Hydraulic		Pneumatic	
Characteristics	**Gas cylinder** With manual release		**Embedded hydraulic unit** Directly in the bollard		**Remote hydraulic control unit** External to the bollard		**Pneumatic cylinder** 2 possible types of safety	
H1 High (mm)	550	750	550	750	550	750	550	750
H2 High (mm)	780	980	780	980	780	980	780	980
Total weight (Kg)	100	150	134	175	124	165	105	165
Average Head Weight (Kg)	61	76	61	76	61	76	61	76



3. OTHER IMPORTANT TECHNICAL DATA

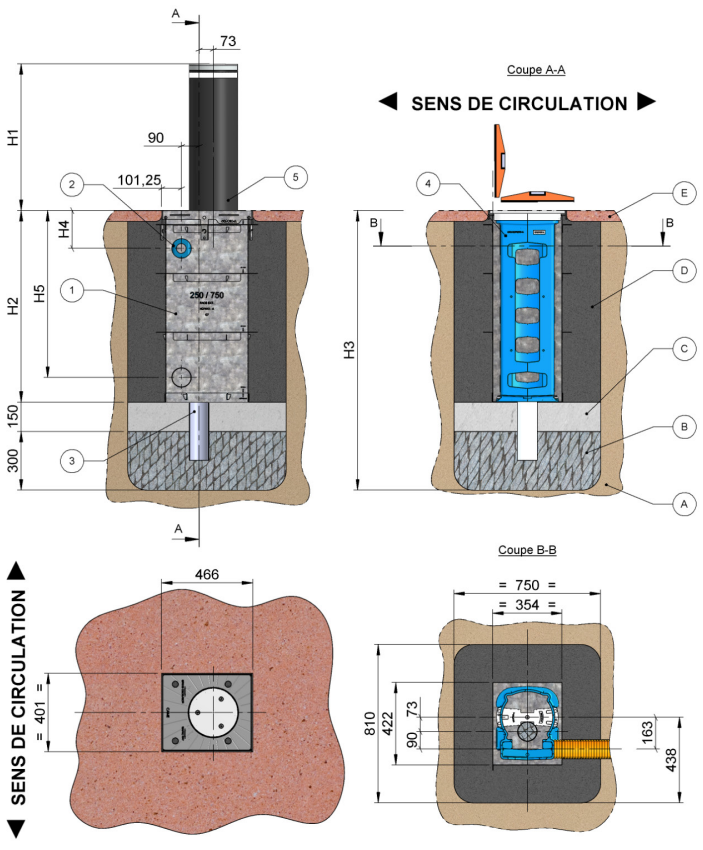
Actuator	M		HE		HD		P	
	Mechanical		Embedded hydraulics		Remote Hydraulic		Pneumatic	
H1 Height (mm)	550	750	550	750	550	750	550	750
Electrical hazard	-	-	230 V		-	-	-	-
Protection class	-	-	IP67				IP45	
Working pressure	-	-	55 bar	55 bar	60 bar	60 bar	7 bar	7 bar
T°C use without SHG	>0°C => 50°C							
T°C use with SHG	-20°C => 50°C							

4. DIMENSIONS AND CHARACTERISTICS OF THE CONCRETE FOUNDATION BLOCK FOR A BOLLARD

GENERAL DATA:

Civil engineering data		H3 (mm) Excavation depth (excluding drain)	H2 (mm) Base plate	Depth of duct exits / finished base (mm)		Size of the foundation block	Volume (m3)			Concrete type (Kg/m3)
				High exit H4 (mm)	Low exit H5 (mm)		Drain (B)	Base plate (C)	Concrete (D)	
H1 (mm)	550	1230	780	168	680	810x750	0.18	0.09	0.35	350 to 400
	750	1430	980	193	853				0.45	

WARNING: The semi-automatic bollards must not be placed at the wheel housings.
Please observe the directions of travel also indicated on the cover



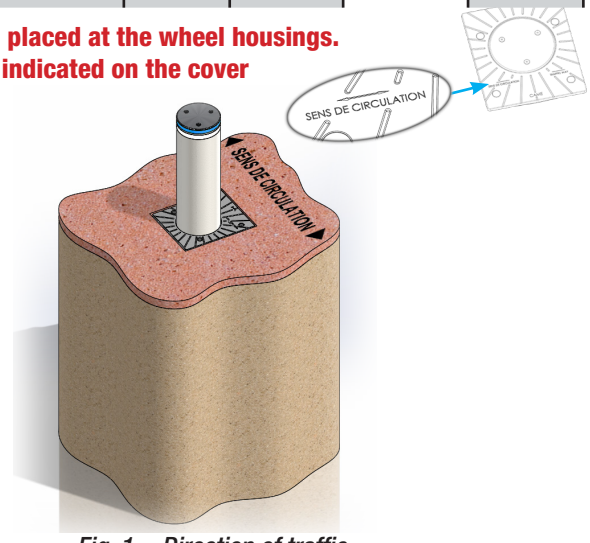


Fig. 1 - Direction of traffic

Item	NAME
	MATERIAL
1	Permanent casing
2	Arrival of the Ø90 sheath (at H4 or H5)
3	Ø100 PVC
4	Bollard housing
5	Bollard head
	CIVIL ENGINEERING
A	Natural flooring
B	Natural drain covered with geo-textile fabric
C	Reinforced base plate
D	Highly dosed concrete
E	Road surfacing (optional)

5. DRAINAGE SYSTEM

Storm water that flows into the bollard must be drained through a natural drain under the bollard.
This drain is built under the concrete foundation block. It is made of **rolled and washed 20/40mm gravel** or equivalent, surrounded by a geo-textile felt. A PVC pipe connects the bottom of the housing to the drain.
Depending on the permeability of the soil, the volume of the drain will be of varying size but must have a **minimum height of 300mm**.
The soil must be able to drain a minimum of 20 liters of water in 5 minutes.
Discharge flow rate at 2 meters: ~120L/min

6. BOLLARD INSTALLATION

6.1. Receiving

The bollard is delivered on a pallet (processed according to ISPM15 standard), strapped and filmed with the identification of the order number and documents.
It is also equipped with a transport plate fastened with the lifting rings needed for its installation.
This plate must only be removed at the time of commissioning and the lifting rings replaced by the screws and plugs delivered separately in their packaging.

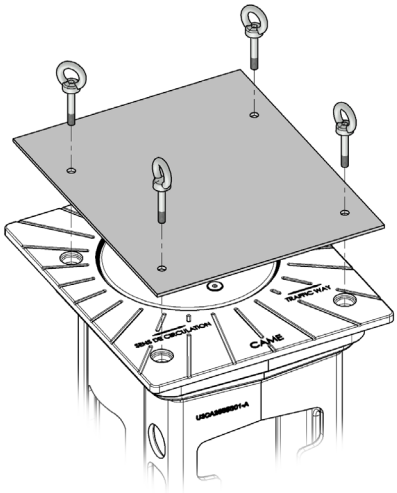


Fig. 1 - Transport plate

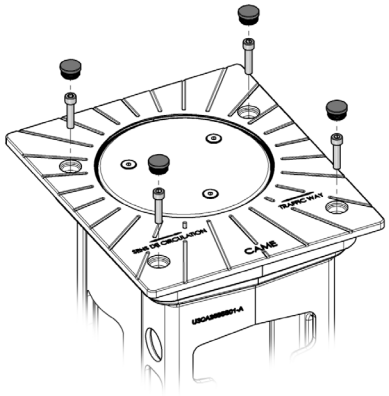


Fig. 2 - Definitive fixing of the cover

The technical control unit is delivered on another pallet (also handled according to the ISPM15 standard) with options and accessories not integrated in the hardware.
The material is strapped and filmed on the pallet and is also identified.
Upon arrival, the material must be checked (items, quantity, condition) and stored on the original pallets in a clean and dry room until installation.

6.2. Precautions before installation and making the building site safe

When choosing a building site, verify:
- Resistance and firmness of the soil.
- The absence of networks (gas, telecom, electricity, water, etc.).
- The possibility of burying the sheath between the technical control unit and the bollard at the depth required by the standards in force in the country.
- To be able to connect a power line to the technical control unit.
- Provide adequate ducts for the passage of cables.
- That the distance between the bollard and the technical control unit and/or the City is no more than 25 meters.
- That the maximum length of the connection cables between the housing and each bollard does not exceed 25 meters.
- That the maximum distance of the connection cable between the metal mass detection sensor and the loop does not exceed 50 meters.
- That the power supply line and network voltage comply with the requirements for the system (see electrical diagram of the entire system to be installed).
- to be able to recover runoff water under the bollard.
- That the location of the technical control unit and/or the City is sufficiently protected from the risk of accidental impacts.
- That the chosen location must not be below the usual wheel path of the vehicles.
- The correct positioning of the safety loops. Reminder: The positioning of the security loops conditions the proper functioning of the access. Therefore, CAME FRANCE - URBACO DIVISION recommends to first determine the locations of the loops, as a priority, then those of the bollards and the control system.
- The absence of obstacles that could prevent the normal movement of the bollard.
- The absence of obstacles around the bollard that could cause pedestrians or cyclists to stumble when it is in the lowered position.

• For installation on floors that are not level, the bollard must always remain in a vertical position.
• If necessary, provide additional optical and/or audible warning systems to indicate the danger of moving parts. In particular, horizontal and vertical warning signs can be provided in accordance with the current provisions of the decree for the enforcement of the Highway Code (signs with the words "automatic safety bollards", speed limits, etc.) and everything else required to guarantee the safety of users.
• Always check that the components have been properly installed and are stable. In case of problems, contact CAME FRANCE - URBACO DIVISION for corrective measures to be taken.

The construction site is prohibited to the public and must be closed and marked with appropriate means throughout the duration of the work, installation and testing.

Protections will be removed after the commissioning tests.

6.3. Unpacking

Unpacking precautions:

Before cutting the ties that hold it on the pallet, check that the bollard is correctly seated on the pallet, and that the pallet is in good condition, given the heavy weight of the bollard.
Each bollard is surrounded, at the top and bottom, by a strip of yellow tape indicating in 5 languages "do not remove the plastic film".

IT IS MANDATORY TO KEEP THE PLASTIC PACKAGING AROUND THE BOX to be able to spray polyurethane foam between the box and the casing. This prevents foam from entering the housing.

1 – Using a cutter, cut the plastic film at the top, just below the cover and remove the upper part (above the cover).

2 – In the same way, cut the film underneath the housing and remove the bottom part to allow for future water drainage.
This operation requires 2 people. One cuts the film, the other holds the bollard at a slight angle, on one side and then the other.

Fig. 3 – Bollard wrapped in film when receiving

6.4. Maintenance

As the bollard is already equipped with lifting rings when received, they must be used for handling.
Also use all appropriate means to handle the bollard safely.
Refer to the table in § 1-2 for the weights to be lifted.
Reminder: the plate must only be removed at commissioning and the lifting rings replaced by the screws and plugs delivered separately in their packaging (see Fig. 4).

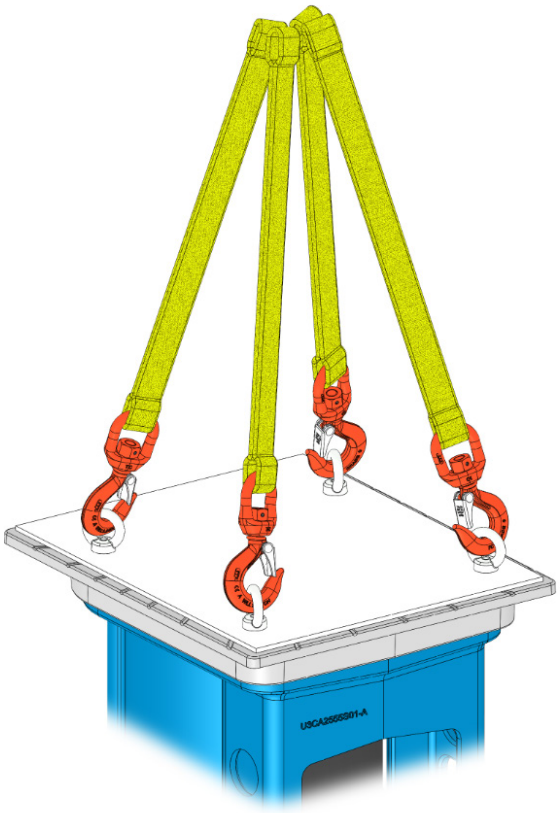


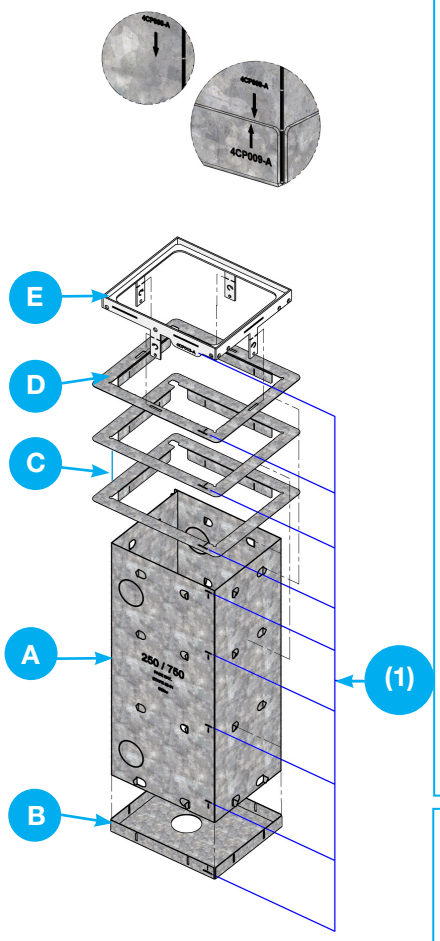
Fig. 4 – Handling with rings

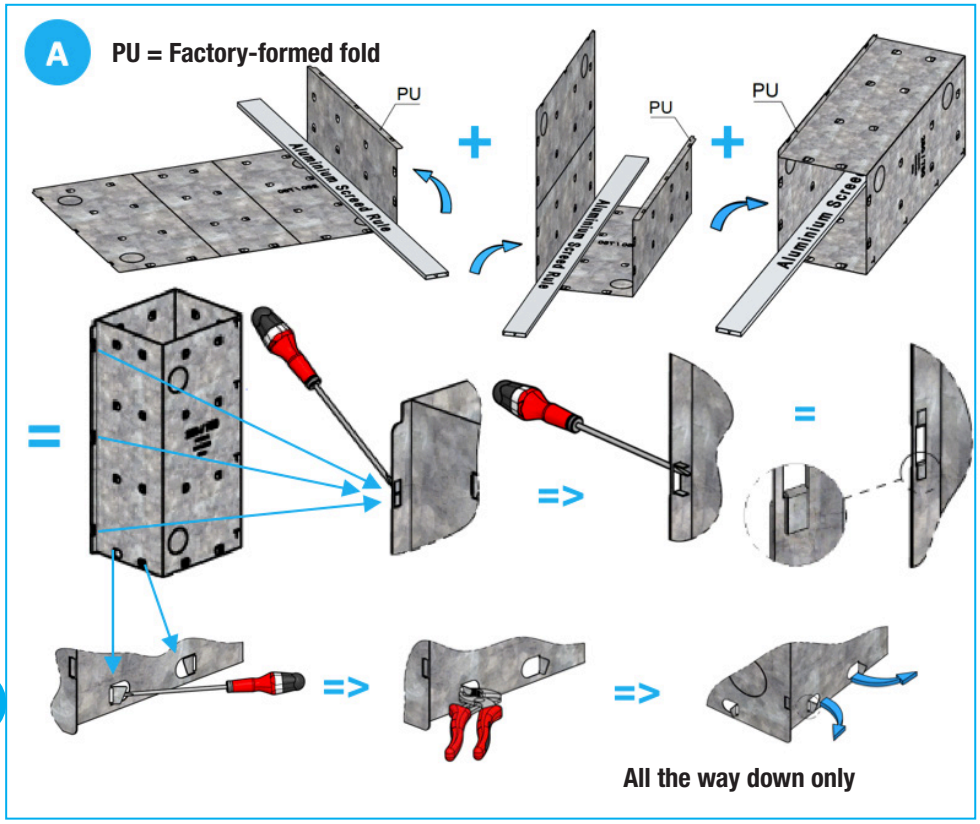
6.5. The installation steps

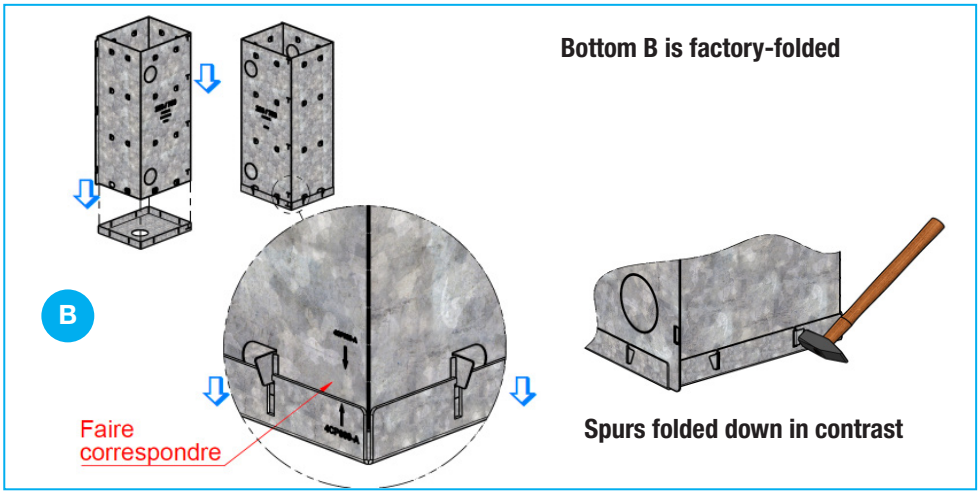
6.5.1. Assembly of the permanent casing:

All the operations represented here are included in the document : PM-824AL-0070&0080.

(1)
After assembly, all entries must be legible and on the same side.
The references engraved on the parts must match.



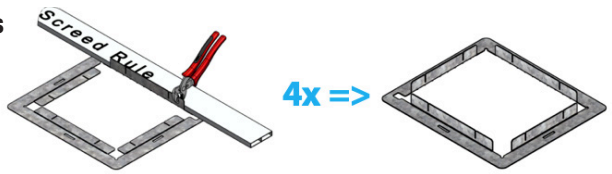




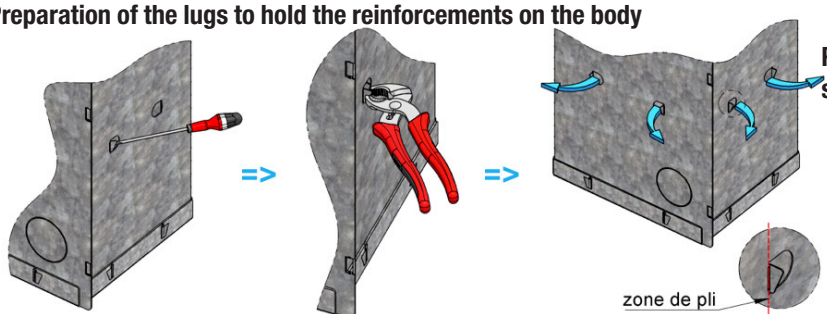
Folding of reinforcements

C & **D**

= same folding principle.

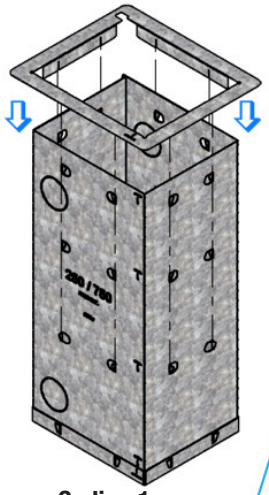


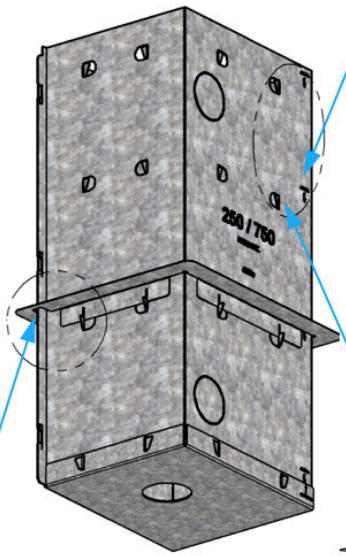
Preparation of the lugs to hold the reinforcements on the body



Proceed level by level, starting at the bottom.

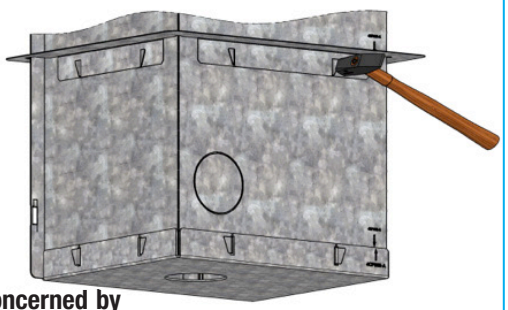
Mounting of reinforcements C plus D (always level by level):





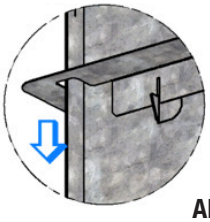
Coding 2

Spurs folded down in contrast

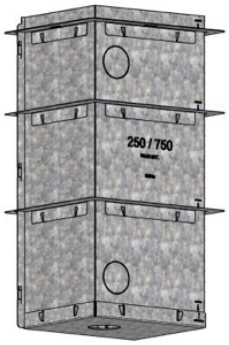


The lugs not concerned by the reinforcement to be put in place remain "closed".

Coding 1

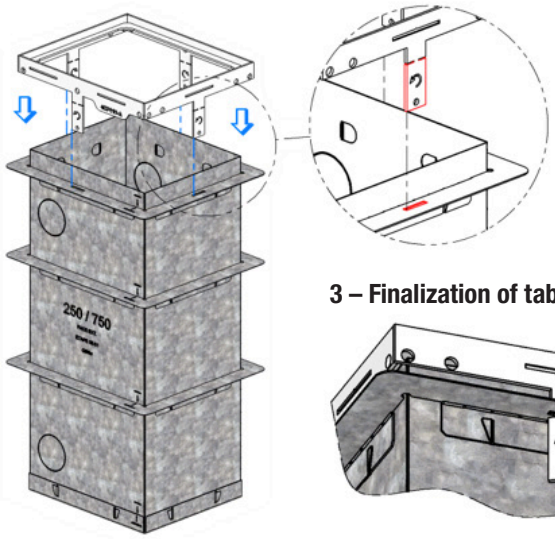


All reinforcements are in place >

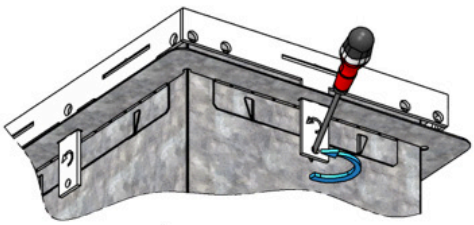


E Installation and locking of the finishing frame

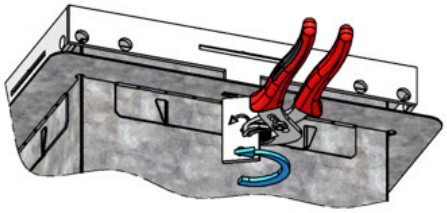
1 – Insertion and abutment against the body



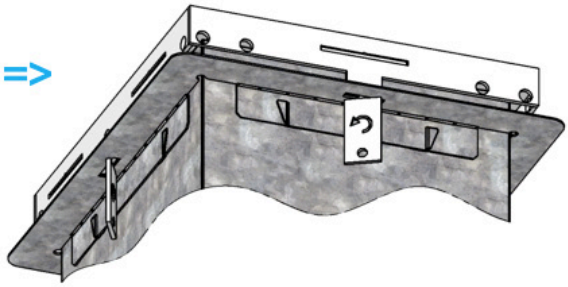
2 – Rotation of the locking tabs. Small sides first



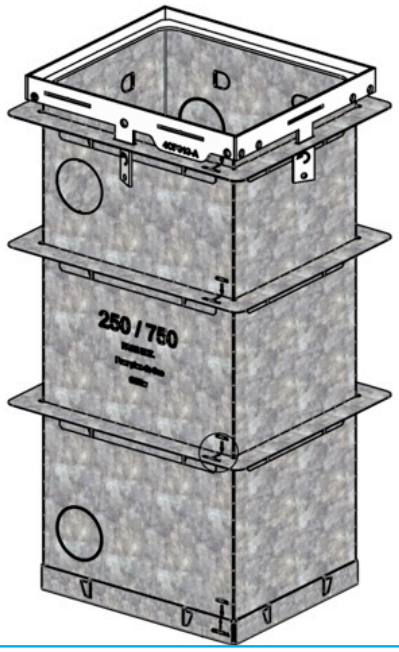
3 – Finalization of tab rotation



4 – Tab in locked position



ASSEMBLED PERMANENT CASING



6.5.2. Civil Engineering:

The following sections complete the indications and dimensions given in the sealing plan:
PS-824AL-0070 or PS-824AL-0080 (according to the height of the bollard to be installed).

The creation of the concrete foundation block is the biggest part of the installation.

Specific recommendations:
- The reinforcement steels to be used will be of HLE type only (TOR steel).
- The stainless steel connections will be made by wire or welded connections.
- Concrete will have to be particularly controlled. It must be dosed from 350 to 450kg/m3 minimum and the drying time must be respected
- (28 minimum days for standard concrete).
- The use of fast-setting concrete is recommended to limit the duration of the work (e.g. Lafarge Chronolia 45MPa concrete to 10 days)
- A test by taking a sample is recommended with a concrete certificate.

Be sure to position the bollard with respect to the direction of vehicle traffic.
The direction of travel is indicated on the cover See §1.4

The permanent casing is positioned in a way that the side openings are in the direction of traffic and opposite to those on the housing.

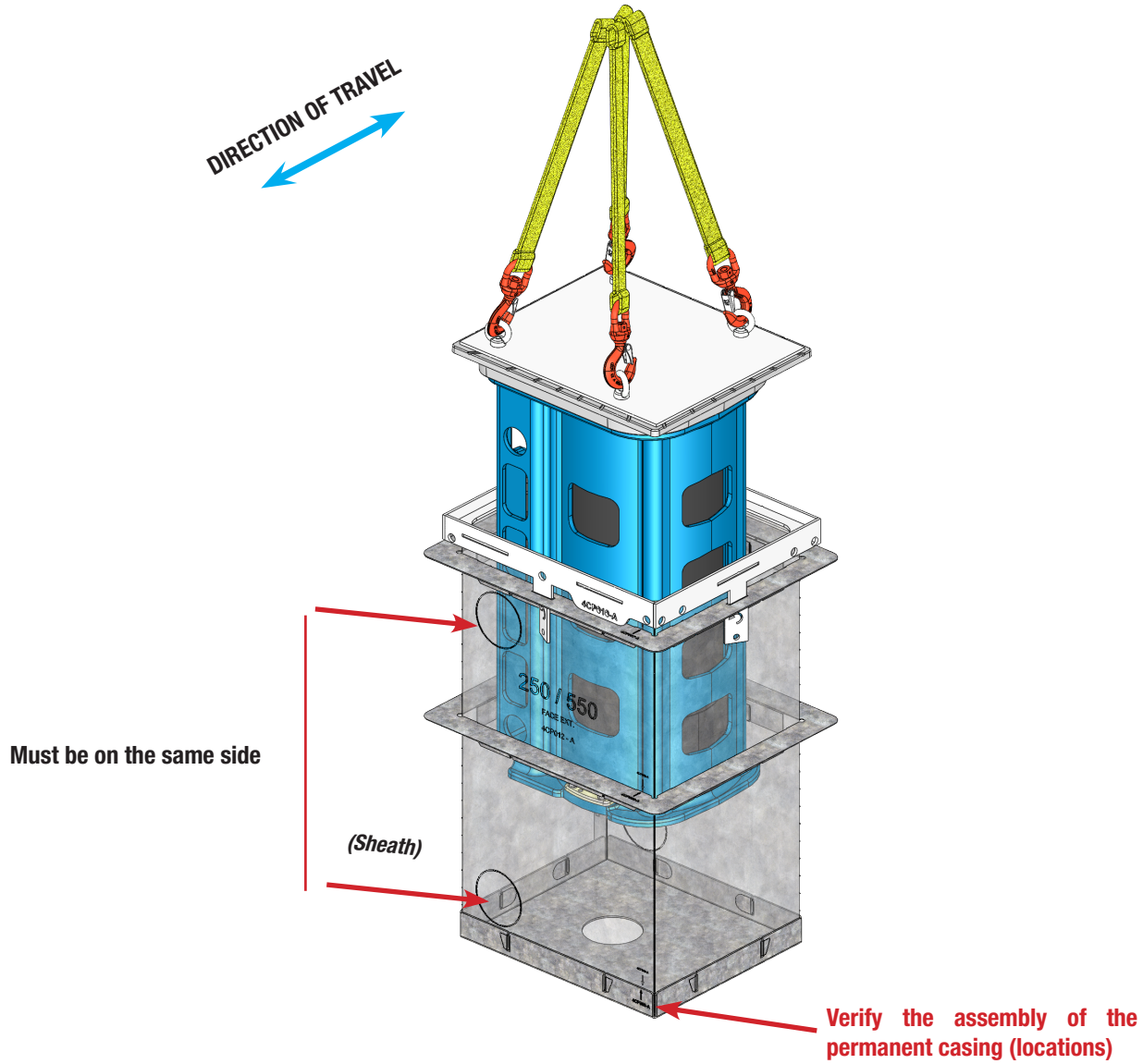


Fig. 5 – Direction of the permanent casing

The steps:

Beforehand, after defining the location and direction of the bollard, mark the x and y axes of the bollard.
Depending on the nature of the original surface, you may need to cut the surface or lay the paving stones.
In the case of the installation of several bollards side by side, the construction of a trench may be preferable.
Then proceed as follows:

> **STEP 01**: Dig the hole according to the dimensions mentioned in the table in § 1.4.

> **STEP 02**: Make the drain with the installation of geo-textile fabric or connection to storm water or waste water if the soil is not very permeable.

> **STEP 03**: Pour the reinforced base plate at the requested height, without omitting the PVC pipe.

Base plate drying time.

> **STEP 04** : Cut the PVC pipe flush to the base plate and install the pre-assembled permanent casing (§ I.6.5.1) according to the instructions given in drawing **PS-824AL-0070 or PS-824AL-0080** (according to the height of the bollard to be installed), always paying attention to the direction of travel and its leveling.

> **STEP 05**: Install the reinforcement and connection sleeve so that they protrude sufficiently inside the casing in preparation for STEP 10 (minimum 40mm).

> **STEP 06**: Securely support the inside of the casing to prevent any deformation of the latter (as shown in the example).

> **STEP 07**: Pour the concrete up to the finished level and according to the chosen covering (the use of a vibrating needle may be necessary).

Checks:☐Inside dimensions of the casing over the entire ☐Height dimension and depending on the thickness of the final coating chosen.☐Positioning in relation to the previously traced bollard axes ☐No voids under the casing☐Drainage efficien cy (20L/5mn)☐No concrete inside the casing.

Concrete drying time = Minimum 28 days.

> **STEP 08**: Remove the supports and carefully clean the inside of the casing.

Checks:☐Presence of the transport plate and lifting rings (§I.6.1) ☐Correct unpacking of the bollard (§I.6.2) Adequate handling means available.

> **STEP 09** : If necessary, re-cut the liner of the sheath so that it comes up against the housing. The theoretical dimension inside the casing is 39 mm. Place the bollard inside the casing and in the right position (according to the traced axes) and always surrounded by the plastic film (§ I.6.3).

> **STEP 10**: Remove the cover and inject polyurethane foam between the housing and the casing to stabilize it vertically (the film prevents material from entering the housing).

Drying time of the foam: fast.

> **STEP 11**: Put back the cover with the transport plate and the lifting rings. This will protect the bollard until commissioning is not completed.

> **STEP 12**: Backfill and apply the final coating.

Drying time of the coating before proceeding with the wiring. This time depends on the chosen coating.

STEPS 01 ▷ STEPS 02 ▷ STEPS 03 ▷ STEPS 04

Fig. 1 – Spare

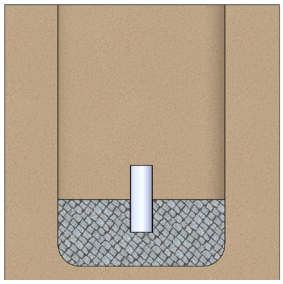


Fig. 2 – Drain

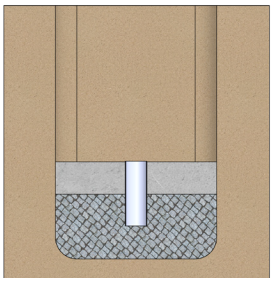


Fig. 3 – Base plate

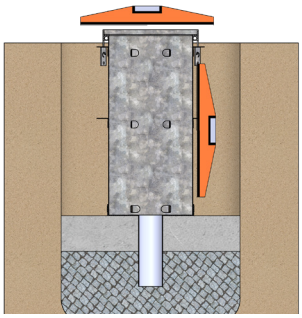


Fig. 4 – Casing installation

STEPS 05 ▷ STEPS 06 ▷ STEPS 07 ▷ STEPS 08

28 DAYS

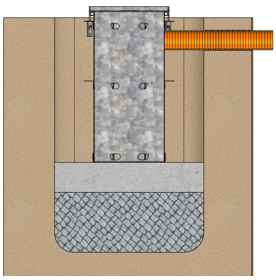


Fig. 5 – Sheathing and reinforcement

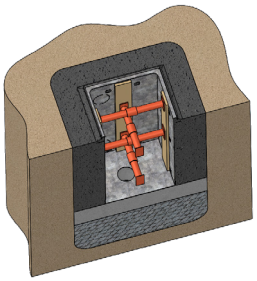


Fig. 6 – Shoring

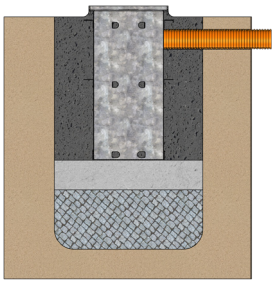
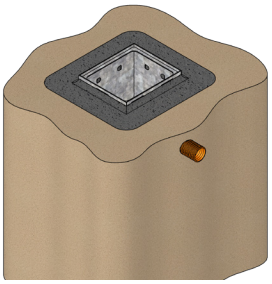


Fig. 7 – Concrete

CHECK



CHECK BOLLARDS AND MEANS

Fig. 8 – Cleaning

STEPS 09 ▷ STEPS 10 ▷ STEPS 11 ▷ STEPS 12

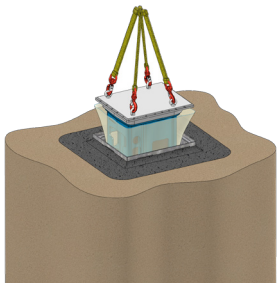


Fig. 9 – Installation of the bollard

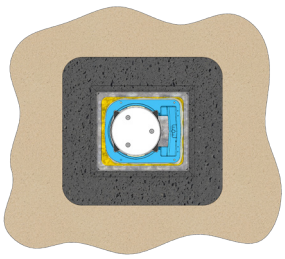


Fig. 10 – Polyurethane foam

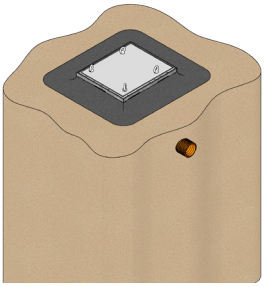


Fig. 11 - Cover with plate and rings

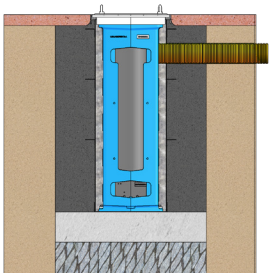
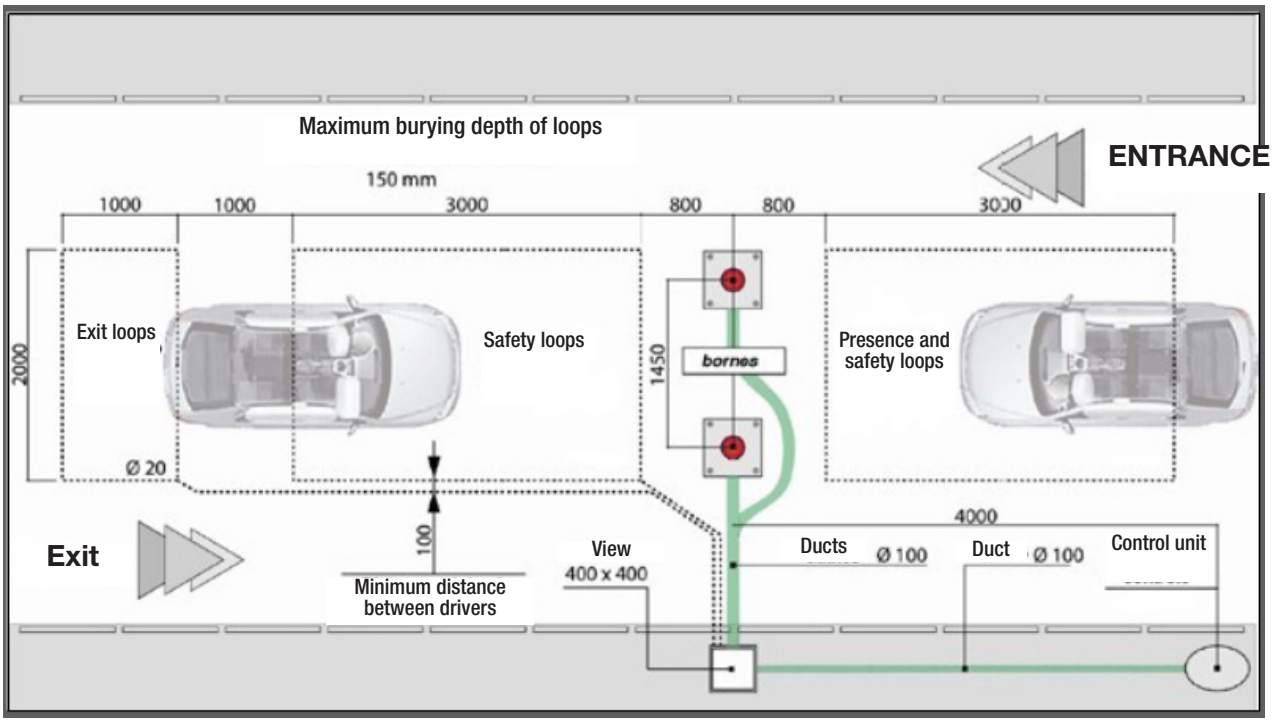


Fig. 12– Coating

7. INSTALLATION OF THE DETECTION LOOPS

The positioning of the detection loops determines the proper functioning of the access control system.
Consult the complete installation manual of the safety loops according to the chosen operating logic, road conformation and conditions in terms of vehicle speed.

Example of classic configuration:



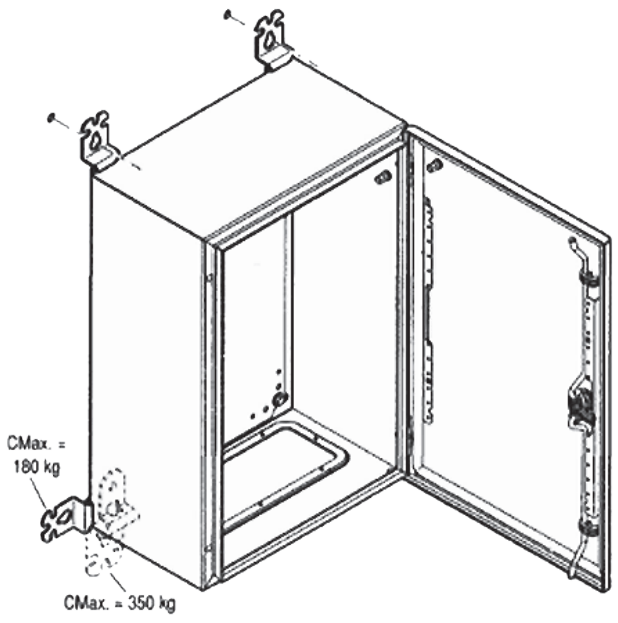
8. INSTALLATION OF THE TECHNICAL CONTROL UNIT

8.1. Wall-mounted cabinet

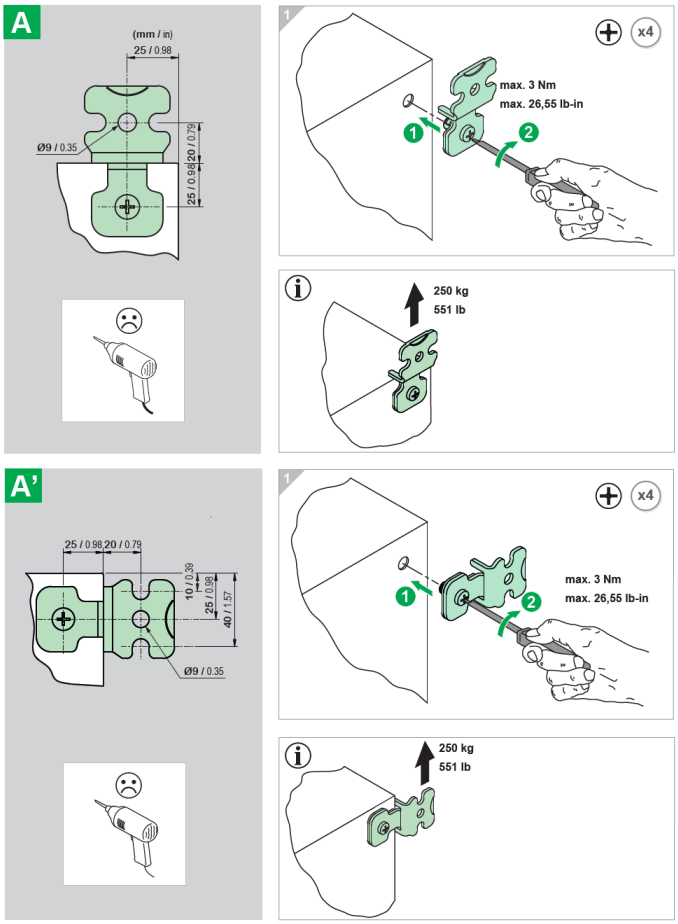
The wall-mounted cabinet is preferably placed in a place near the bollards.
A set of mounting brackets is supplied with the box and the installation surface.
According to the system configuration, the cabinet will be of different dimensions or will have to be replaced by a locker.

Standard characteristics for a 1 access plate with 1 to 3 bollards with embedded motor power (other formats according to configuration):

Dimensions: H600 x L400 x P250
Material: Steel
Thickness: 1.5mm
Paint: gray RAL7035
Insulation: Class I
Weight: 25 kg (variable according to equipment)
Closure: 3-point lock with removable handle
Protection index: IP44 / IK10
Ventilation: forced 230V
Power supply: 230V single-phase
Electrical protection: C16 – 30mA



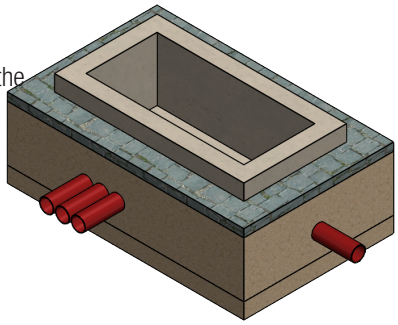
Mounting the S3D wall brackets:

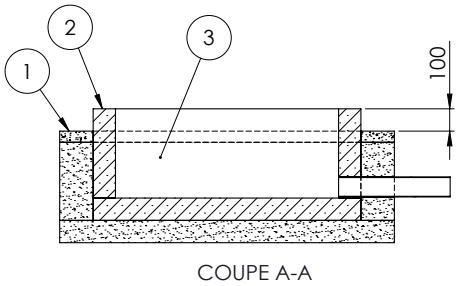


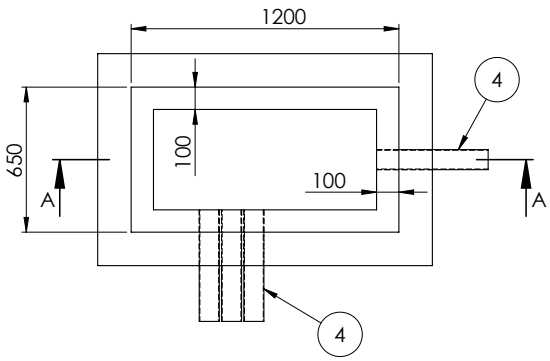
8.2. Street cabinet

The street cabinet is placed outside on a masonry base that receives all the necessary sheaths.
It will be positioned away from vehicular and pedestrian traffic, against a wall for example.

Standard characteristics for a 1 access plate with 1 to 3 bollards with any motor power (other formats according to configuration):
Dimensions: L1130 x P641 x H1045
Material: Aluminum
Thickness: 2mm
Paint: RAL7016
Insulation: Class I
Weight: 40 to 80 kg (variable depending on the equipment)
Closure: 3-point lock with wrench
Protection index: IP44 / IK10
Ventilation: forced 230V
Power supply: 230V single-phase
Electrical protection: C16 – 30mA







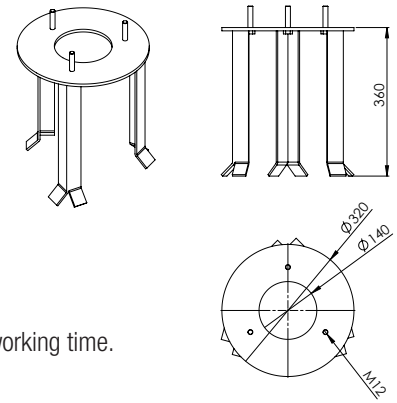
Item	NAME
1	Finished floor
2	Cabinet installation surface
3	Reserved for hoses
4	Power supply sheaths

8.3. 6EVO City Controller

The City controller is placed close to the bollards to allow access and visibility to the drivers.
It is suitable for the integration of embedded motor power.
A supplied sealing base will be embedded in the concrete. Studs are used to fix the controller to the base plate.

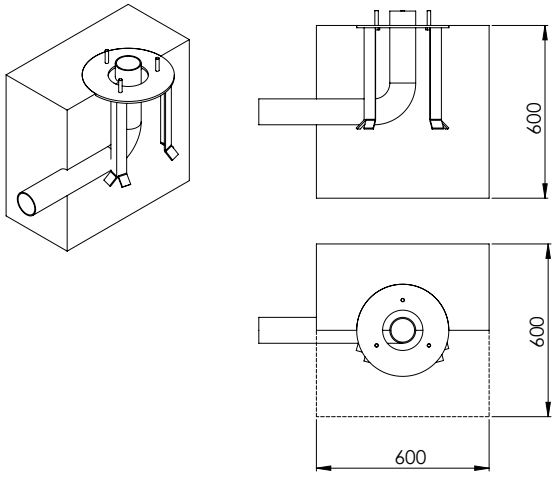
Fig. 1 – CITY 6 EVO (example)

The sheath will first be positioned through the base plate (we suggest to pass 3 sheaths).
A manhole can be placed around the controller to facilitate passage of sheaths and cables.



General installation data:

Excavation depth: 0.6m
Foundation block surface: 0.6 x 0.6m
Concrete type: C35/45
Concrete volume: ~0.2m3
Drying time: 28 days before installing the controller.
Possibility of using concrete with additives to reduce the working time.



9. CONNECTIONS & COMMISSIONING

9.1. Preparing the bollard

When the work is finished and the site is cleaned, the bollard must be opened to proceed with:
- Pulling the power cables.
- Pulling of the hydraulic hose (only for a remote motor power).
- Electrical/hydraulic connection.
- Installation of the cladding (depending on the chosen finish).

Important: do not put the fast connectors in the sheaths. Risk of stagnant water and therefore loss of watertightness of the connectors.

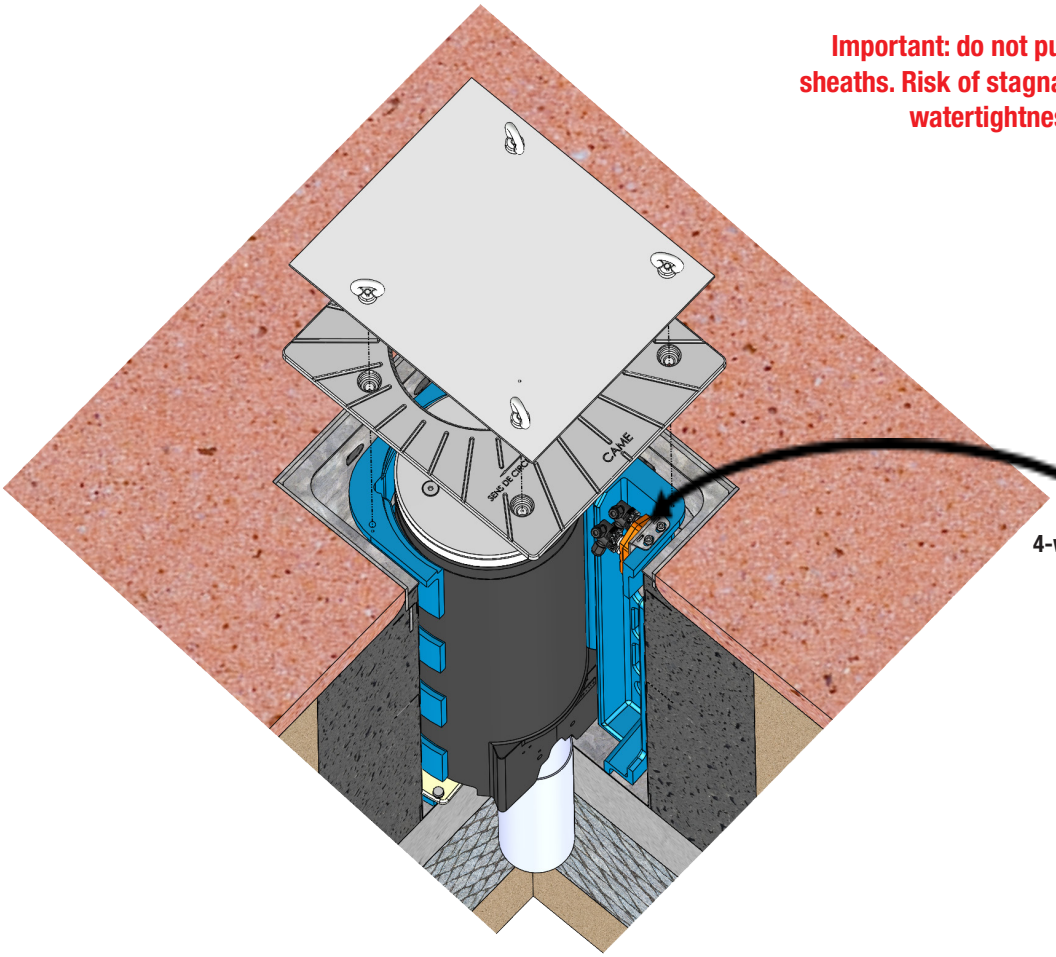
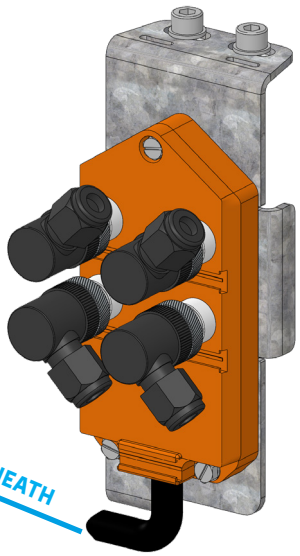
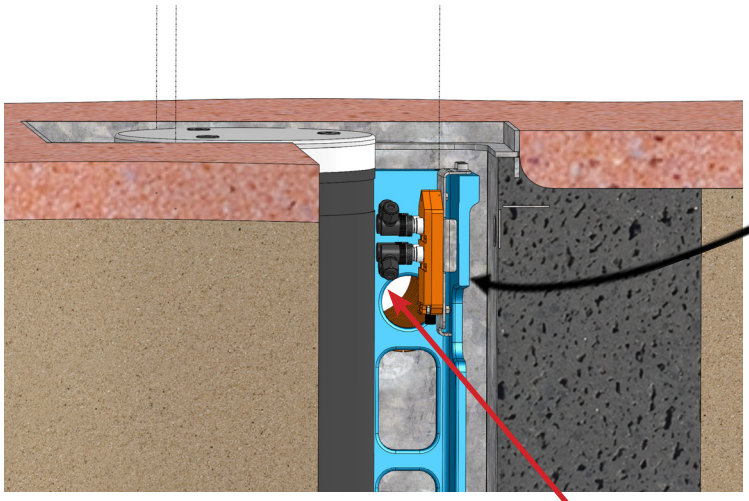


Fig. 1 – Bollard connections

4-way splitter with elbow connectors (for electrical connections)



TO THE SHEATH



All exterior connections pass through the sheath

9.2. Drawing from the networks and connection

9.2.1. Electrical connection all types of bollards:

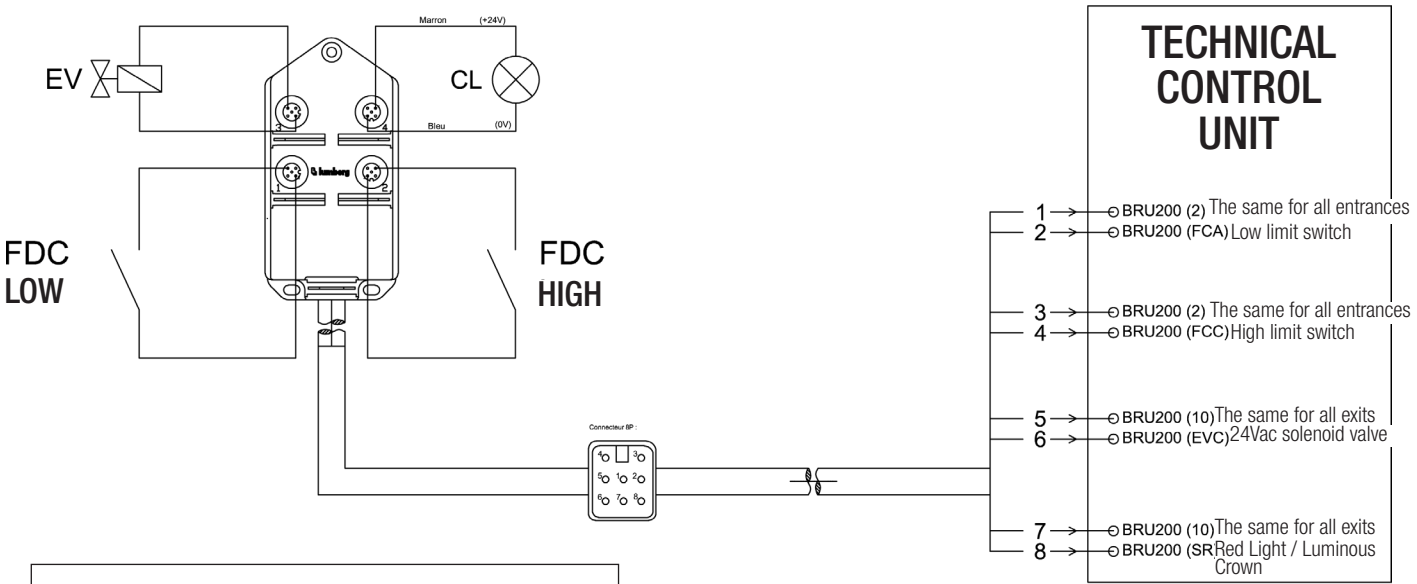
The main components of the bollard are connected at the factory to a sealed quick connector (see §I.9.1).
A bollard/control unit wiring kit with waterproof quick connector allows a quick and correct connection to the connector in the bollard.
The main cable from the quick connector to the control unit should have a small extra length so that the connector (mounted on a removable terminal strip) can be pulled out of the housing more easily.
The kit's cables must be connected:
In the bollard, to the connector present (according to options).
In the control unit, classically on the terminal block.

Components in the bollard	Number of wires needed	Voltage	Wire type	Bollard type			
				M	HE	HD	P
Embedded motor unit	4 wires	230 VAC	4G1.5 with connector (kit)	-	✓	-	-
Embedded unit solenoid valve	2 wires	24 VAC	8x1 with connector (kit)	-		-	-
High limit switch	2 wires	-		(1)	✓		
Low limit switch	2 wires	-		(1)	✓	✓	✓
Luminous Crown	2 wires	24 VDC		(1)	(1)	(1)	(1)

(1) According to the option

In addition to the general wiring, refer to the wiring supplied with the technical control unit.

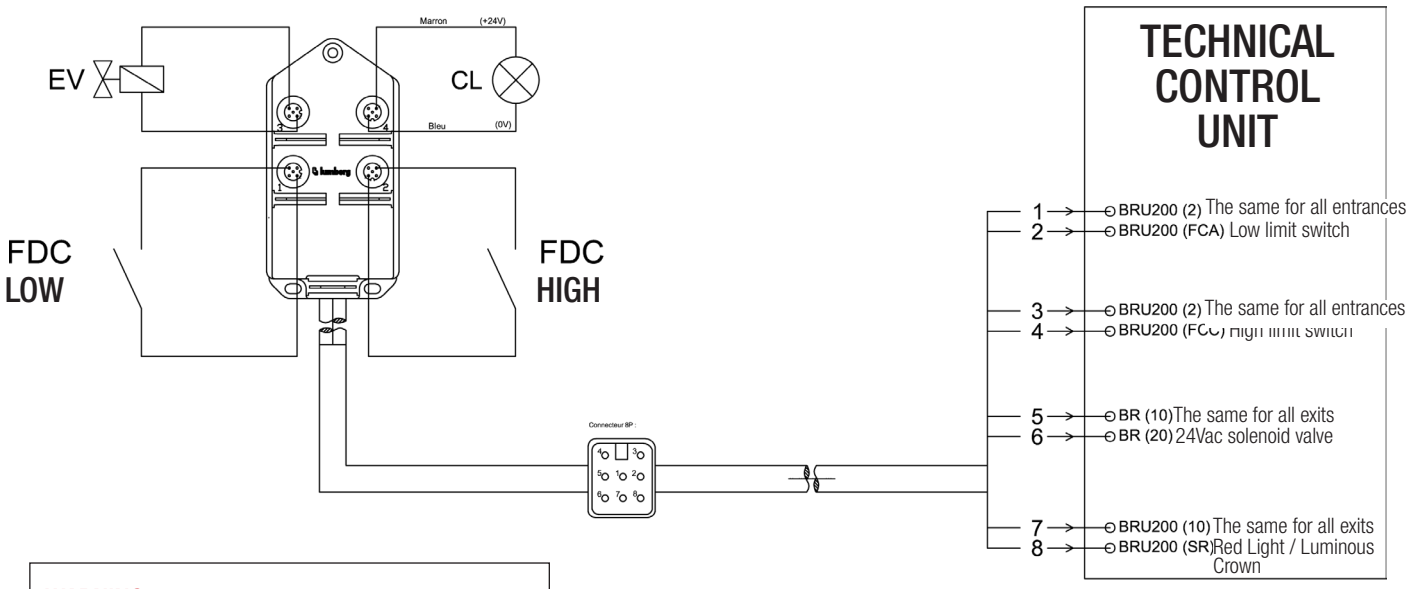
9.2.2. Electrical connection with a U200



WARNING:

Wiring to be carried out in the event of more than one bollard
*** Low limit switch wiring in series**
*** High limit switch wiring in series**

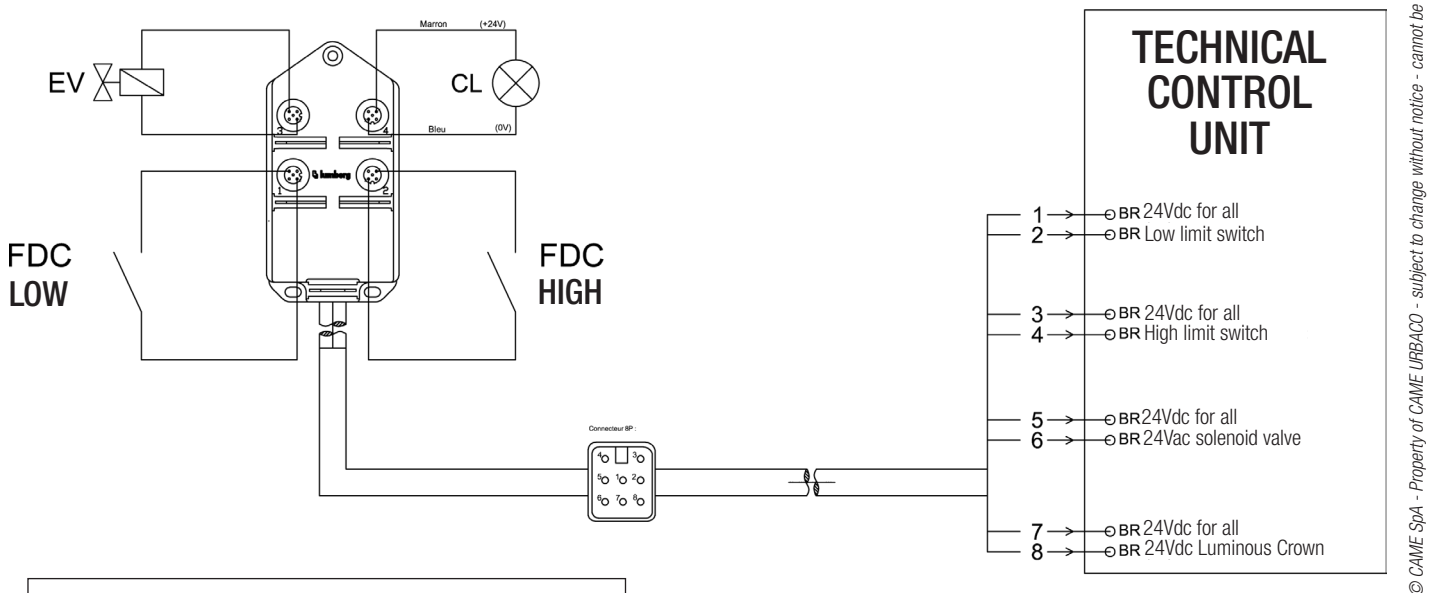
9.2.3. *Electrical connection with a U20T:*



WARNING:

Wiring to be carried out in the event of more than one bollard
* Low limit switch wiring in series
* High limit switch wiring in series

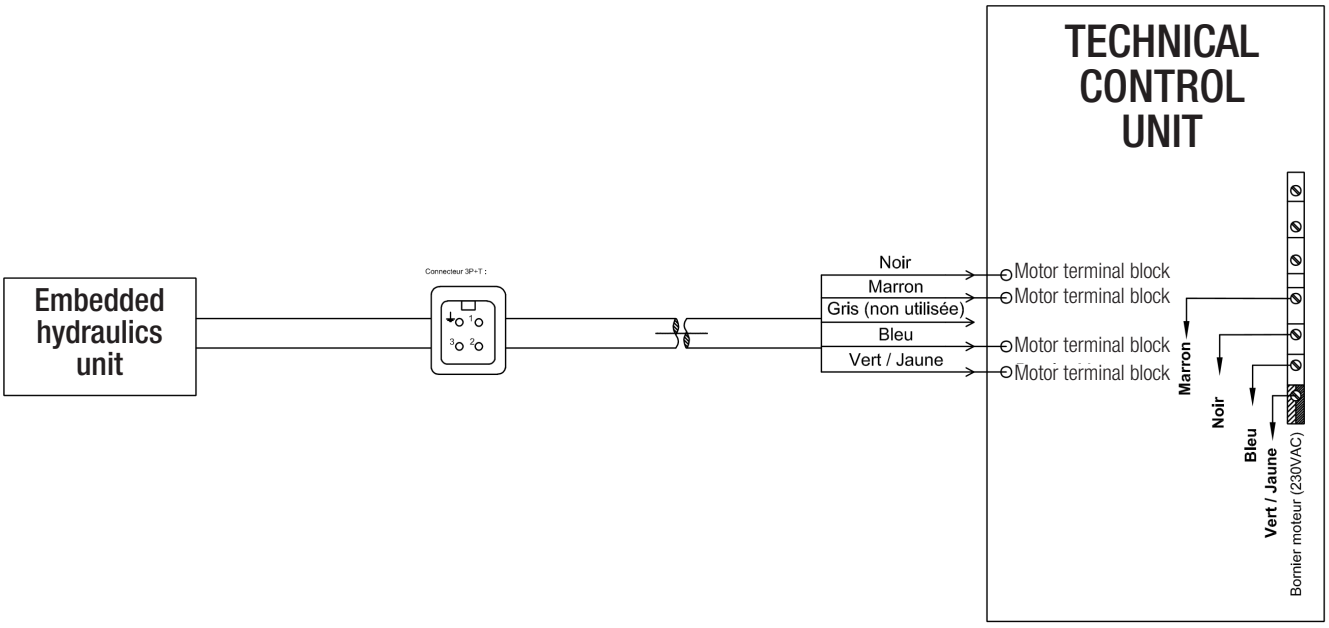
9.2.4. *Electrical connection with LOGO-PC INDUS:*



WARNING:

Wiring to be carried out in the event of more than one bollard
* Low limit switch wiring in series
* High limit switch wiring in series

9.2.5. Embedded hydraulic connection for unit:

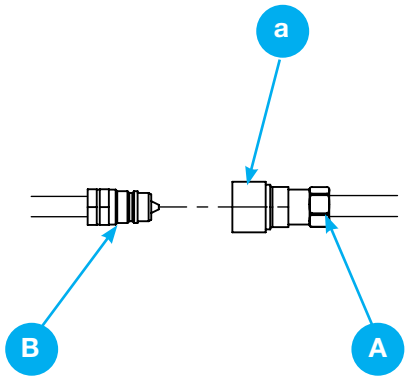


9.2.6. *Hydraulic connection for remote motor power:*

The hydraulic hose has a straight male end (control unit side) and a bent female end (bollard side).
Pull the hose in the sheath in the bollard towards the control unit.

The bollard/control unit hose must be connected:
- in the bollard on the cylinder connector
- in the control unit on the hydraulic unit connector

To connect:
- Push back the ring (a) of the female coupler (A)
- Insert the male coupler (B)
- Release the ring (a)



Under certain conditions, it is possible that the couplings may be under pressure due to an increase in temperature, for example. The couplers will be very hard to engage.
To release the pressure, press the coupler ball for a moment.
Place the hose so that it is free to move.
The connections must be wiped off before being connected.

9.2.7. *Pneumatic connection:*

With this type of motor power, whatever the pneumatic assembly (standard or stand-by current relay), simply pull a pipe to the quick coupling provided in the bollard, passing through the sheath.

The flexible air tube Ø10, length of 25m or 50m, must not be cut or shortened.
The excess length will be used as air reserve, coiled and lodged inside manhole where cables are drawn from.

9.3. Before switching on the power for the first tests and settings:

Before switching on for the first tests and adjustments it is imperative to remove the transport plate and replace the lifting rings with the final screws. The protective plugs will only be fitted at the final start-up.

Perform a complete visual check to ensure that all the elements provided for in the make-up of the bollard are present and correctly placed.

General control points	✓
Low limit switch connected to the terminal block (in the case of several bollards: series connection or connection order)	
High limit switch connected to the terminal block (in the case of several bollards: series connection or connection order)	
Safety loops connected to an operating logic (if not provided, the 3 inputs must be shunted).	
“Loop tail” cables tied to prevent them from moving during operation.	
Luminous crown connected (if provided).	
Floor around the bollard cleaned to avoid any risk of scratching by gravel during testing.	

Pneumatic control points	✓
The correct connection of the pneumatic hose to the solenoid valve in the bollard and to the compressor in the technical control unit.	
The correct connection of the control wire of the solenoid valve in the bollard and in the control unit to the correct bollards.	
The pressure in the mains with the compressor pressure gauge.	
The absence of air leakage in the housing. Using the ear, a finger or a leak detection device.	
No contact between the hose and the head	

Remote Hydraulic check points	✓
Transport plug replaced by the vent plug on the tank of the remote hydraulic power unit. S board hydraulic unit Technical Data Sheet.	
The connections of the hydraulic hose to the cylinder in the bollard and to the hydraulic unit in the technical control unit.	
The oil level in the tank of the hydraulic unit.	
The absence of oil leakage in the housing.	
No contact between the hose and the head	

Embedded hydraulics check points	✓
The correct connection of the control wire of the solenoid valve in the bollard and in the control unit to the correct bollards.	
The correct connection of the hydraulic unit power cable.	
The absence of oil leakage in the housing	
No contact between the hose and the head	

The test operations depend on the chosen management system and the desired functions. Therefore commissioning can only be performed according to the specifications.

9.4. Installation of cladding

This can be done at the end of testing.

9.5. Removal of site protections

Once all control points have been validated and access is operational, the site protections can be removed.

II. MOTOR POWER

1. STANDARD EMBEDDED HYDRAULIC MOTOR POWER

Item	NAME
29	Hydraulic unit
B	Filler cap
30	Coupler pressure test point
31/32	Complete solenoid valve
38-1 & 2	Connection hose (2 types depending on the bollard height)

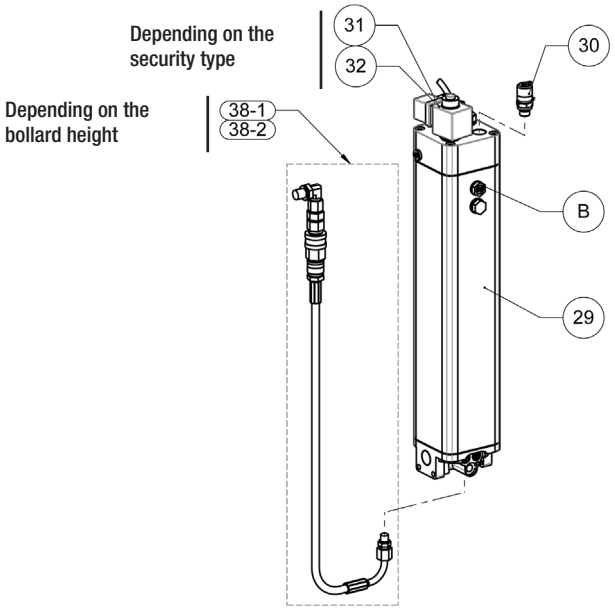


Fig. 1 – Embedded hydraulic unit

1.1. Characteristics

Dimensions: 800 x 120 x 104 mm
Weight: 9 kg
Protection index: IP67
Ascent time: 4 to 6 seconds
Descent time: 4 to 6 seconds

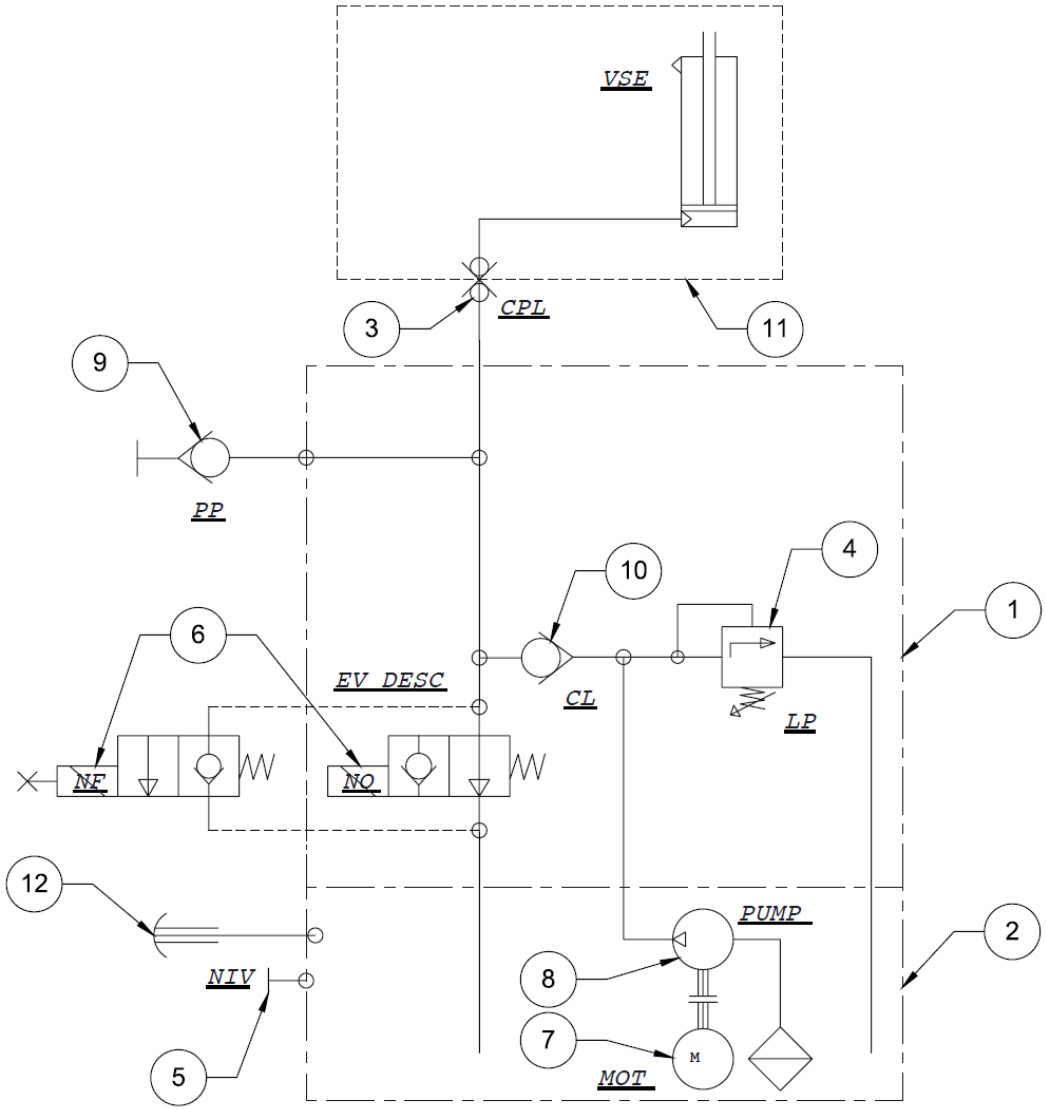
1.2. Electric characteristics

Hydraulic unit motor: 230V (1P+N+T)
: 50/60Hz
: 2A
Motor capacitor: 20µF
Solenoid valve coil unit: 24VDC

1.3. Hydraulic characteristics

Maximum pressure: 55 bars
Pump flow rate: 4 l/min
Oil type : Specific BIO
Tank: 2 liters
Type of cylinder: single acting
Cylinder rod diameter: 25mm
Cylinder stroke: 770mm
Operation: Operating current relay or stand-by current relay
Unit/cylinder connection: coupler

1.4. Hydraulic diagram



Item	DESCRIPTION	ABBREVIATION
1	Hydraulic foundation	-
2	Tank	-
3	Hydraulic connector	CPL
4	Pressure relief valve	LP
5	Oil level plug	NIV
6	Descending solenoid valve (NO / NF)	Descent Solenoid Valve
7	Submersible electric motor	MOT
8	Hydraulic pump	PUMP
9	Pressure tap	PP
10	Non-return valve	CL
11	Bollard cylinder	
12	Filler cap	

1.5. Operation

1.5.1. Operating current relay:

The bollard descends by its own weight in the event of a power failure.

COMPONENT	Abbreviation	Low Bollard Standby	Normal climb	High Stop	Locking	Descent
High Limit Switch	H Limit Switch	Off	Off	ON	ON	Off
Low Limit Switch	Low Limit Switch	ON	Off	Off	Off	Off
Descent solenoid valve	Descent Solenoid Valve	Off	ON	ON	ON	Off
Motor / Pump	MOTOR / PUMP	Off	ON	ON	Off	Off
Pressure relief valve	LP	-	-	ON	-	-

1.5.2. Stand-by current relay:

The bollard remains in its position in the event of a power failure.

COMPONENT	Abbreviation	Low Bollard Standby	Normal climb	High Stop	Locking	Descent
High Limit Switch	H Limit Switch	Off	Off	ON	ON	Off
Low Limit Switch	Low Limit Switch	ON	Off	Off	Off	Off
Descent solenoid valve	Descent Solenoid Valve	Off	Off	Off	Off	ON
Motor / Pump	MOTOR / PUMP	Off	ON	ON	Off	Off
Pressure relief valve	LP	-	-	ON	-	-

1.6. Installation and connection

The hydraulic unit is embedded in the housing by means of a dedicated terminal strip.
Note that this terminal strip is used to fasten the limit switch support terminal strip (see § I.1).
First the electrical and hydraulic connections must be made.

Item	NAME	Q.TY
1	Housing	1
2	Support terminal strip for Embedded Hydraulic Unit	1
3	Fastening screw for the terminal strip (/housing)	1
4	Anti-rotation screw	1
5	Hose	1
6	Hydraulic cylinder	1
7	Elbow connector on 4-way splitter	1
a	Limit switch [FDC] terminal strip fastening position	-
9	Pressure tap	PP
10	Non-return valve	CL
11	Bollard cylinder	
12	Filler cap	

The unit is attached on the terminal strip 2 using 4 screws (see §II.9.3)

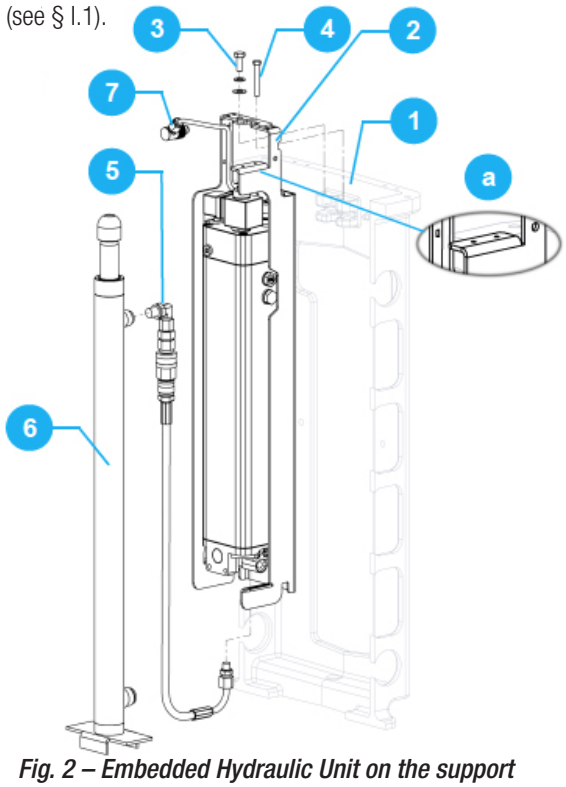
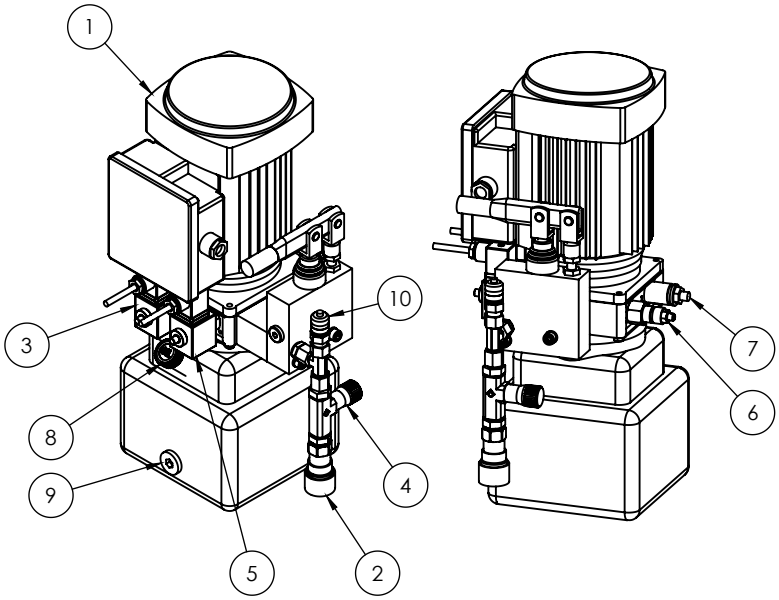


Fig. 2 – Embedded Hydraulic Unit on the support terminal strip

1.7. Degraded modes

With **operating current relay**, there is no degradation mode, the bollard is lowered in the event of a power failure. The PLC will raise or lower the bollard when power is restored.
With **stand-by current relay**, the degraded mode is the possibility to manually lower the bollard in case of a power failure: either directly on the unit by unscrewing the manual emergency release from the solenoid valve, or with a battery option to supply the lowering solenoid valve. This manoeuvre will block the lowered bollard until power is restored. There is no way to raise the bollard without electricity.

2. STANDARD REMOTE HYDRAULIC MOTOR POWER



Item	DESCRIPTION
1	Full unit
2	Bollard connection
3	Descent solenoid valve
4	Descent regulator (depending on the version)
5	Slow motion solenoid valve (depending on the version)
6	Slow motion controller (depending on the version)
7	Pressure relief valve
8	Filler cap/filter
9	Drain plug
10	Pressure tap (depending on version)

2.1. General characteristics (for 1 unit per bollard version)

Dimensions: H500 x L245 x P300 mm
Weight: 20 kg
Protection index: IP44
Ascent time: 4 to 6 seconds
Descent time: 4 to 6 seconds
Rising: vertical only

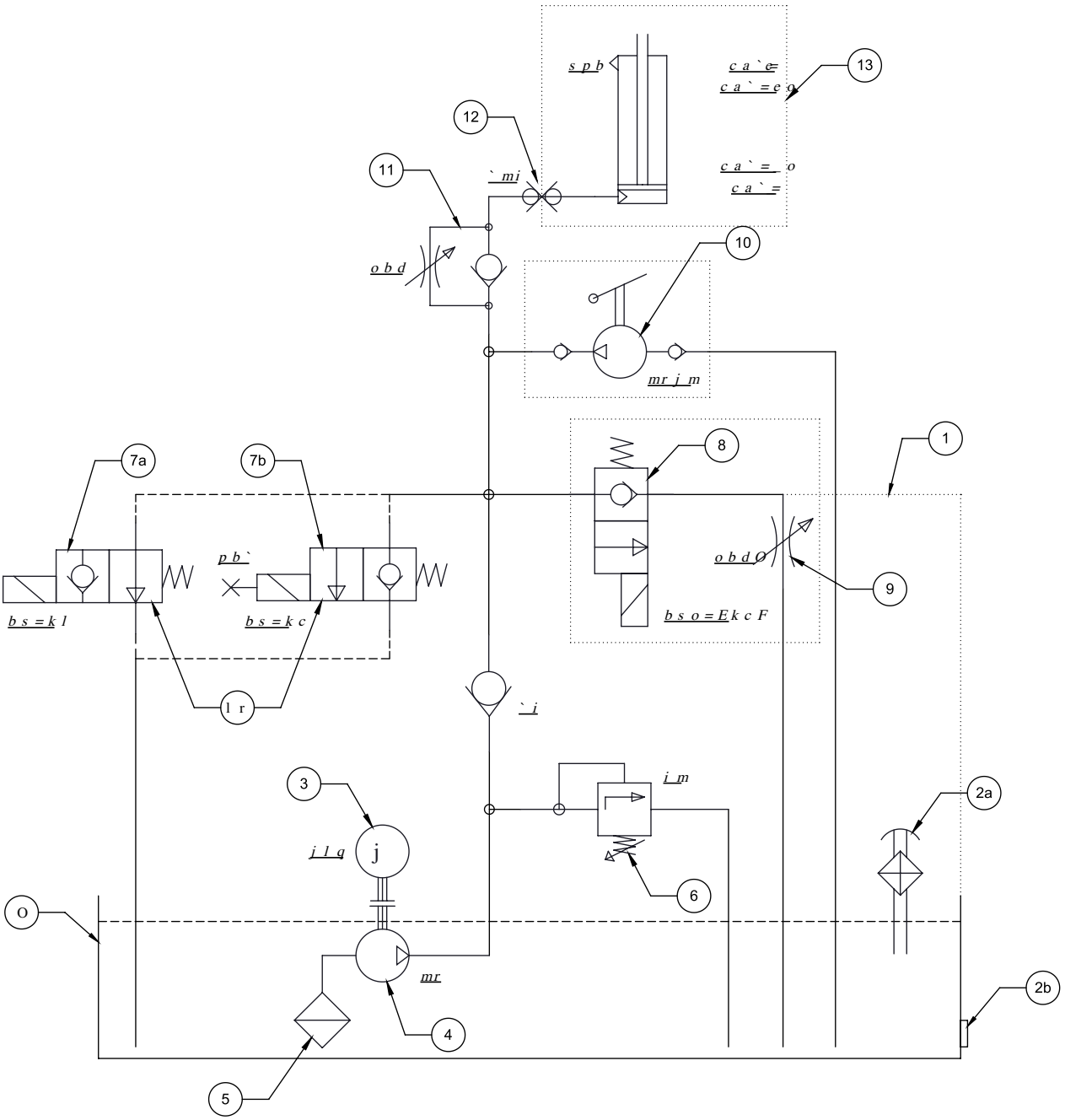
2.2. Electric characteristics

Hydraulic unit motor: 550W
: 230V (1P+N+T)
: 50/60Hz
: 3.8 A
Motor capacitor: 25 µF
Solenoid valve coil unit: 24VDC 18W (use connector with or without rectifier depending on power voltage)

2.3. Hydraulic characteristics

Maximum pressure: 50 bars
Pump flow rate: 5.4 l/min
Oil type: TOTAL BIOHYDRAN TMP46 or equivalent
Tank: 4 liters
Type of cylinder: single acting
Cylinder rod diameter: 25mm
Cylinder stroke: 770mm
Operation: Operating current relay or standby current relay (depending on the version)
Unit/cylinder connection: coupler

2.4. Hydraulic diagram



Item	DESCRIPTION	ABBREVIATION
1	Hydraulic foundation	-
2	Tank	-
2a	Filling Plug/Filter	-
2b	Drain plug	-
3	External electric motor	MOT
4	Hydraulic pump	PU
5	Suction inlet filter	-
6	Pressure relief valve	LP
7a	Operating Current Relay Solenoid Valve	EV NO
7b	Stand-by Current Relay	NC EV
8	Slow motion solenoid valve	EVR
9	Slow motion controller	REG2
10	Hand pump	PUMP
11	Lowering regulator	REG
12	Coupler	CPL
13	Bollard cylinder	

2.5. Operation

2.5.1. Operating current relay:

The bollard descends by its own weight in the event of a power failure.

COMPONENTS	Item	Low bollard standby	Normal climb	High stop	Locking	Descent
High limit switch	H Limit Switch	Off	Off	ON	ON	Off
Low limit switch	Low Limit Switch	ON	Off	Off	Off	Off
Descent solenoid valve	Descent Solenoid Valve	Off	ON	ON	ON	Off
Motor/pump	MOT/PUMP	Off	ON	ON	Off	Off
Pressure relief valve	LP	-	-	ON	-	-

2.5.2. Stand-by current relay:

The bollard remains in its position in the event of a power failure.

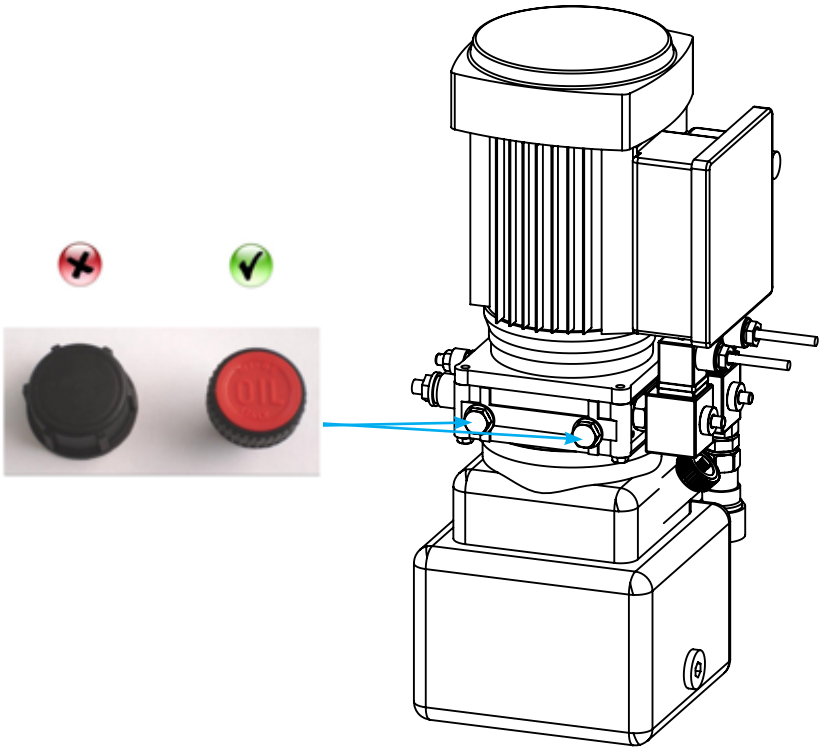
COMPONENTS	Item	Low bollard standby	Normal climb	High stop	Locking	Descent
High limit switch	H Limit Switch	Off	Off	ON	ON	Off
Low limit switch	Low Limit Switch	ON	Off	Off	Off	Off
Descent solenoid valve	Descent Solenoid Valve	Off	Off	Off	Off	ON
Motor/pump	MOT/PUMP	Off	ON	ON	Off	Off
Pressure relief valve	LP	-	-	ON	-	-

2.6. Installation and connection

The hydraulic unit is fixed by 2 M10 screws. It is usually fixed on a plate inside the cabinet.
Hydraulic connection :
- Connect the bollard/control unit hose to the hydraulic unit.
- The hoses must be free to move.
- Connections must be wiped off before being connected.
- For the same access to several bollards, use identical hoses of the same length.

Electric connection:
- The unit is pre-wired.
- If this has not already been done in the factory, connect the motor and the solenoid valves to the PLC board terminal block (refer to the drawings supplied with the control unit).

WARNING: A transport plug is installed on the unit to prevent oil spillage.
It must be replaced with the filter plug before commissioning.



2.7. Degraded modes

With **operating current relay**, there is no degradation mode, the bollard is lowered in the event of a power failure. The PLC will raise or lower the bollard when power is restored.

With **stand-by current relay**, the degraded mode is the possibility to manually lower the bollard in case of a power failure: either directly on the unit by unscrewing the manual emergency release from the solenoid valve, or with a “battery” option to supply the lowering solenoid valve. This manoeuvre will block the lower bollard until power is restored. A manual pump option allows the bollard to rise without electricity.

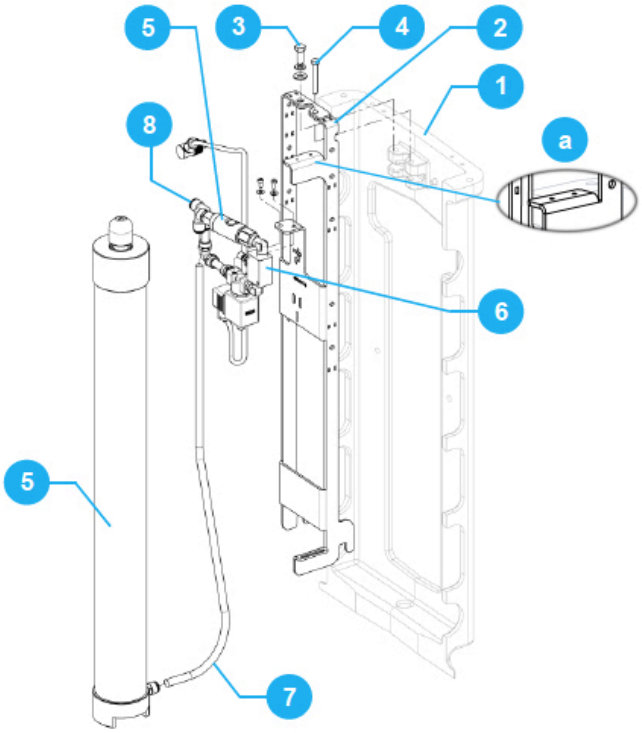
3. PNEUMATIC MOTOR POWER

There are 2 factory-assembled kits, delivered, tested and guaranteed by the supplier.
CAME FRANCE - URBACO DIVISION therefore declines all liability in the event of modification or disassembly/assembly of its kits.
No spare parts will be provided.

These kits have identical parts:
- The support terminal strip and the method of attachment by means of the solenoid valve. (see §II.9.5 for kit fasteners)

Note that this terminal strip is used to fasten the limit switch support terminal strip (see § II.9.4).
- The fastening of this terminal strip to the entire housing.
- A quick-coupler makes it easy to disconnect the assembly inside the bollard.
- A flow limiter.
- The position of the connection to the cylinder, which is achieved by means of a pre-formed rigid pipe.
- Position of the air inlet.

Item	NAME	Q.TY
1	Housing	1
2	Pneumatic kit support terminal strip	1
3	Fastening screw for the terminal strip (/housing)	1
4	Anti-rotation screw	1
5	Quick coupling	1
6	Flow limiter	1
7	Rigid pipe	1
8	Air inlet	-
9	Pneumatic cylinder	1
a	Limit switch [FDC] terminal strip fastening position	-



3.1. Standard kit

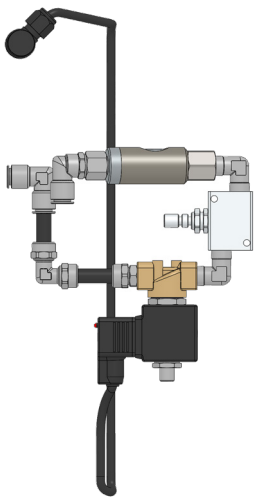


Fig. 3 – Operating current relay pneumatic kit

3.2. Kit with stand-by current relay

The bollard remains in the upper position during an air shortage.
You will need to enter the cabinet to release the air and lower the bollard.

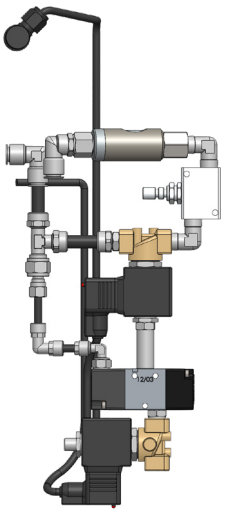


Fig. 4 – stand-by current relay pneumatic kit

III. MECHANICAL BOLLARD

The high position of the head: it is ensured by a gas cylinder.

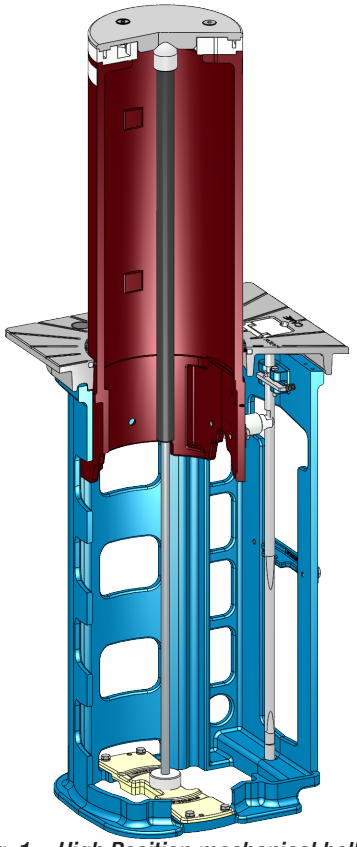


Fig. 1 – High Position mechanical bollard

The low position of the head: contrary to automatic bollards, the bollard head is lowered manually by pressing on it.
This position is locked by a "quarter-turn lock rod".

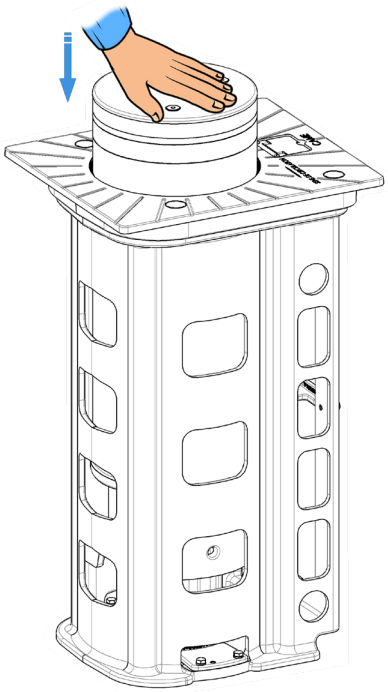


Fig. 2 – Lowered mechanical bollard

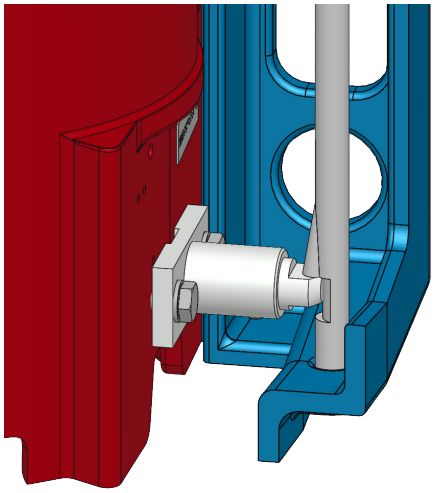
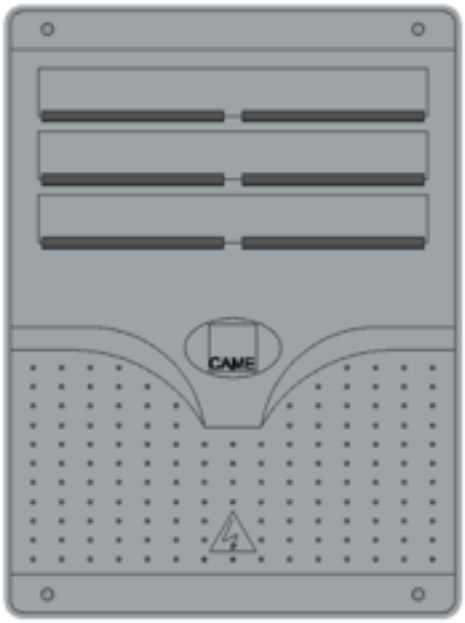


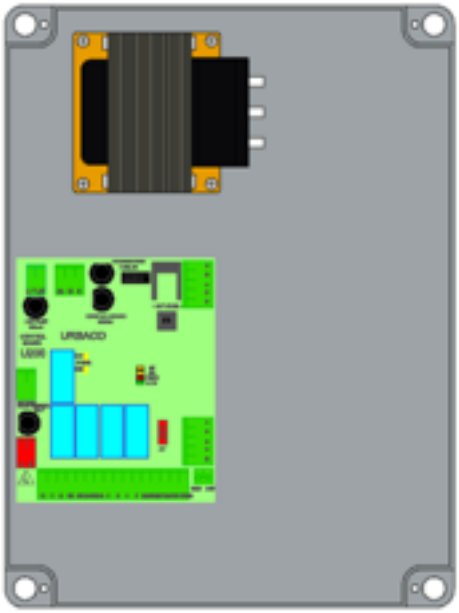
Fig. 3 – Mechanical bollard Locking

IV. U200 AUTOMATION

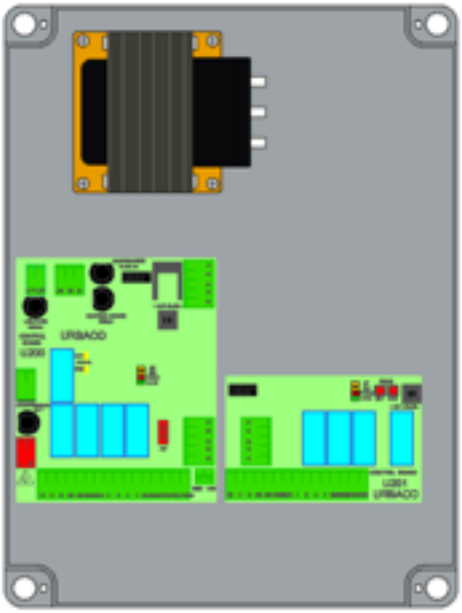
1. Installing the box:



Closed box



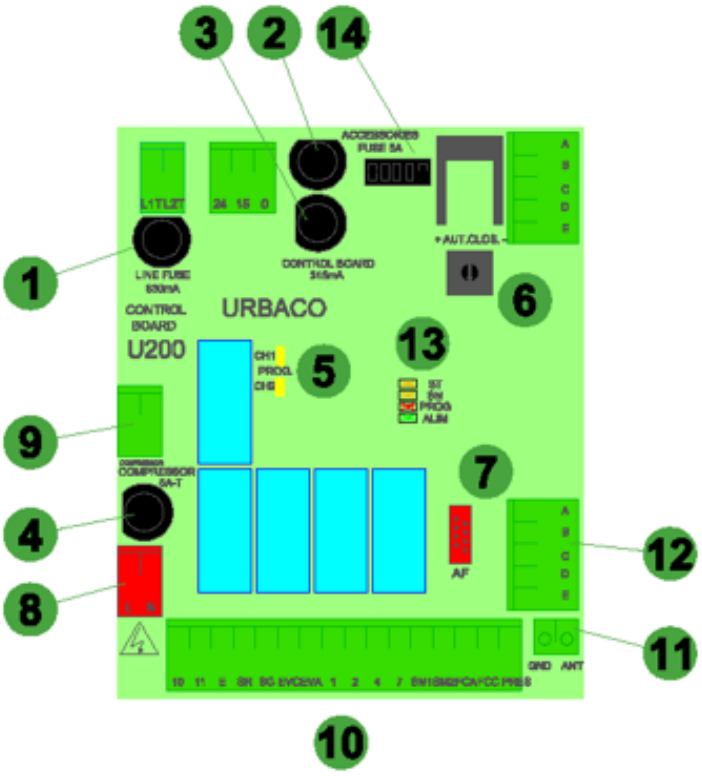
Box with U200 board



Box with U200 and U201 board

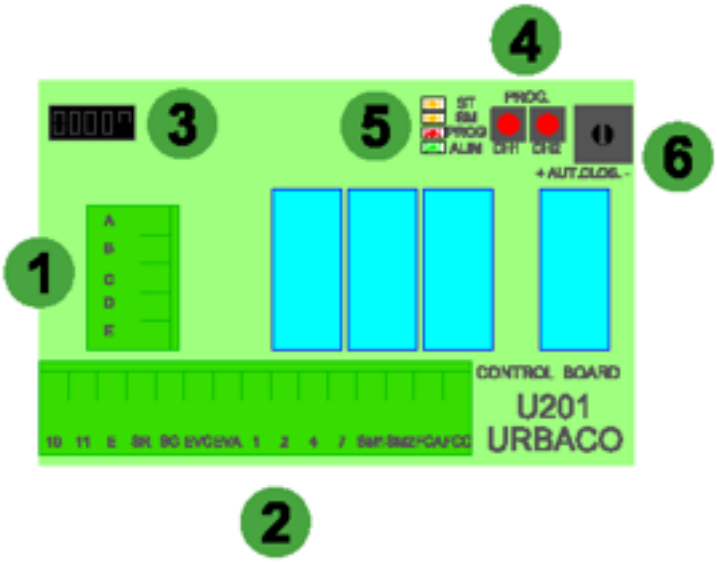
2. Description of the U200 and U201 board:

2.1. The U200 motherboard:



Item	NAME
1	1A line fuse
2	5A accessory fuse and solenoid valve
3	1A motherboard fuse
4	5A T compressor fuse
5	Buttons for programming the CH1 and CH2 radio transmitters
6	Setting the time delay before the automatic ascent
7	CAME pluggable radio card sockets: AF43S, AF43SM, AF43SR, AF30, AF150
8	General 230V power supply terminal block
9	Compressor 230V power supply terminal block
10	Connection terminal block
11	Radio antenna terminal block
12	Connection terminal block to U201
13	Display LEDs
14	Parameter setting switches

2.2. The 2nd U201 access board:



Item	NAME
1	Connection terminal block to U200
2	Connection terminal block
3	2nd access parameter setting switches
4	Button for programming the CH1 and CH2 radio transmitters
5	Display LEDs
6	Adjusting the time delay before the bollard is raised

3. TECHNICAL CHARACTERISTICS

General characteristics:
Box: ABS plastic
IP: IP 54
IK: IK 8
Cable inlet: 4 slots for PE Ø10 (not supplied)
Weight: 3.5 kg
Dimensions (H x W x D): 320 x 240 x 150 mm

Electrical Features:
Supply voltage: 230 V single-phase
Power consumption: <1A (U200 only)
Frequency: 50 Hz
Electrical insulation: class II
class I (Box not hooded)

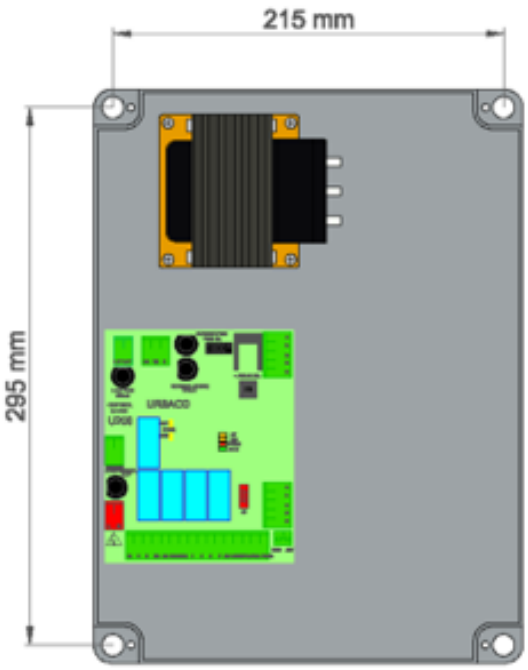
Characteristics:

The U200 and U201 control boards allow to
- the management of 1 to 5 automatic retractable bollards in pneumatic version (with or without counter solenoid valve)
- manage the URBACO up and down limit switches
- manage inductive loops via 1 or 2 single or dual-channel detectors (depending on the operating logic)
- monitor the compressor
- manage external control devices by dry contacts
- control 5 URBACO G6 (8W) type solenoid valves and up to 8 LUXOR (8W) type solenoid valves.

A maximum power of 20 W is available on the accessory power supply output.
The U200 and U201 control boards do not have a malfunction diagnosis except for the compressor monitoring fault.
The limit switches are managed but no faults can be detected and diagnosed.

4. INSTALLATION AND CONNECTION

4.1. Mounting the case:

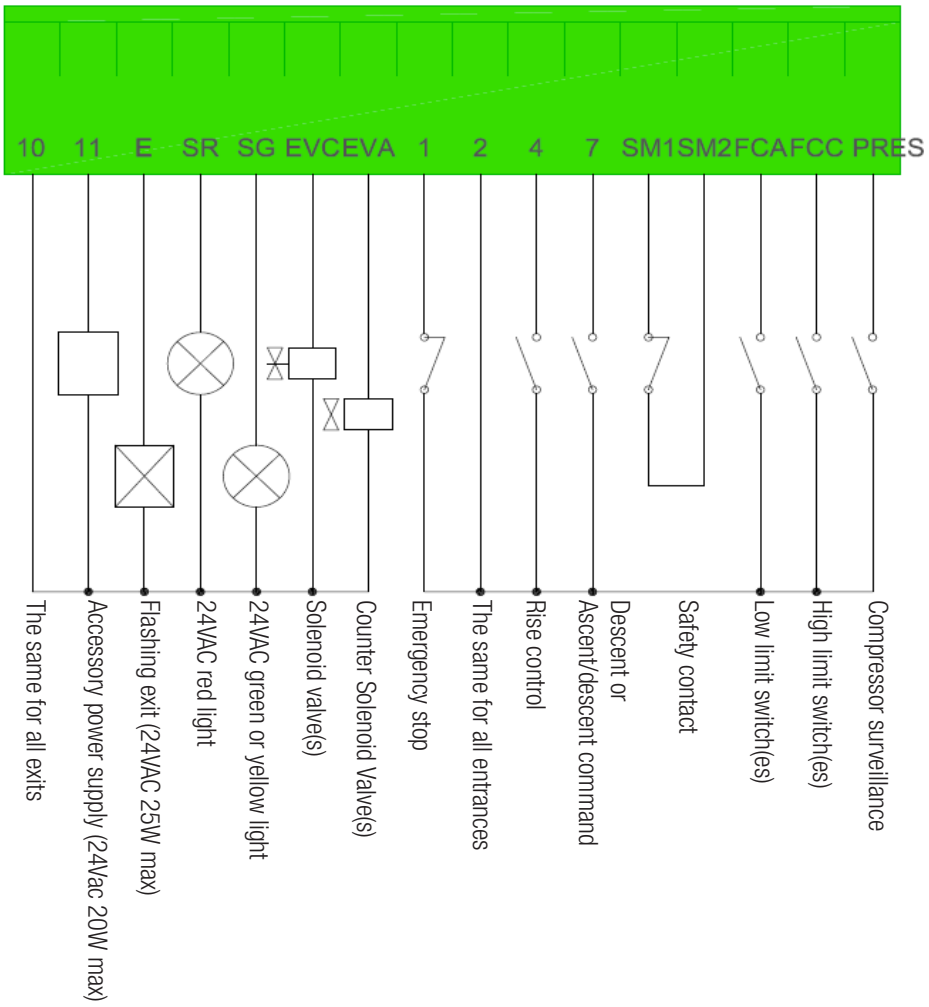


4.2. Connection of the U200 motherboard and the 2nd U201 access board:

4.2.1. Connection of the bollard and accessories:

If there are more than one bollard on 1 access, connect the solenoid valves in parallel and the limit switches in series. The compressor surveillance is not available on the U201 control boards.

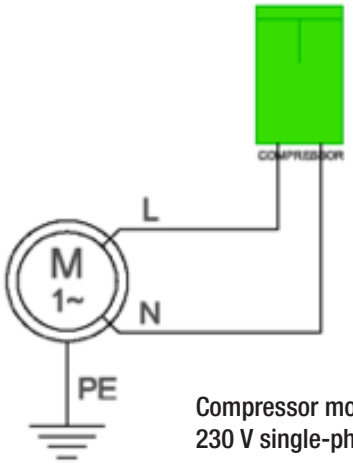
If the bollard has a luminous crown, connect it to the red light.



Dans le cas de plusieurs bornes sur 1 accès, raccorder les électrovannes en parallèle et les fins de course en série. La surveillance compresseur n'est pas disponible sur les cartes U201.

Dans le cas d'une borne avec couronne lumineuse, la raccorder sur le feu rouge.

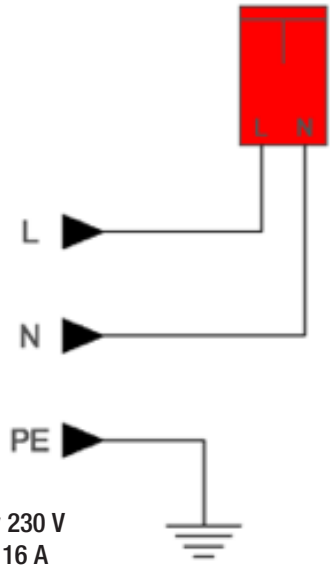
4.2.2. Connection of the compressor:



Compressor motor
230 V single-phase

This power supply terminal block enables the compressor to be switched off during extended operation if the compressor surveillance contact is connected.

4.2.3. Power supply connection:



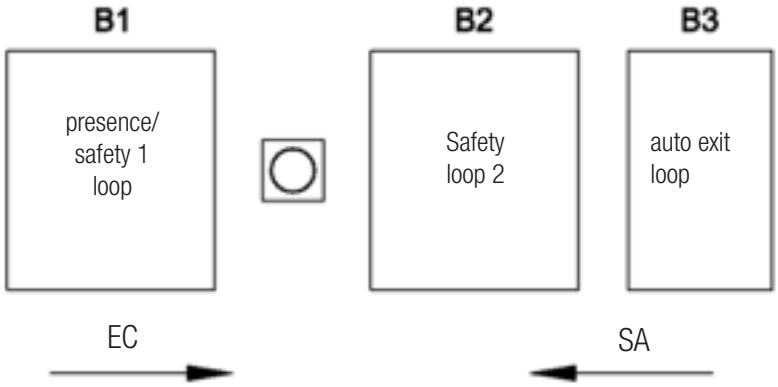
Power supply 230 V
single-phase 16 A

The power supply must be protected by a 16A differential 30 mA circuit breaker.
The earthing wire will be connected to all units with an earthing connection (compressor).
The metal casing must be earthed if the U200 is not covered (class I).

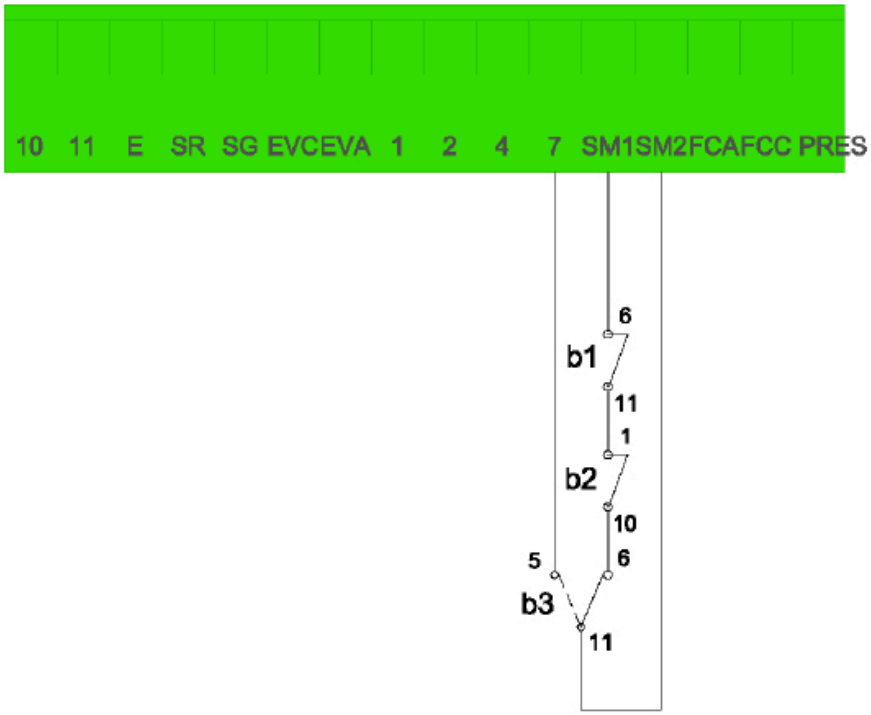
4.3. Connecting the operating logic:

4.3.1. Controlled entry and automatic exit:

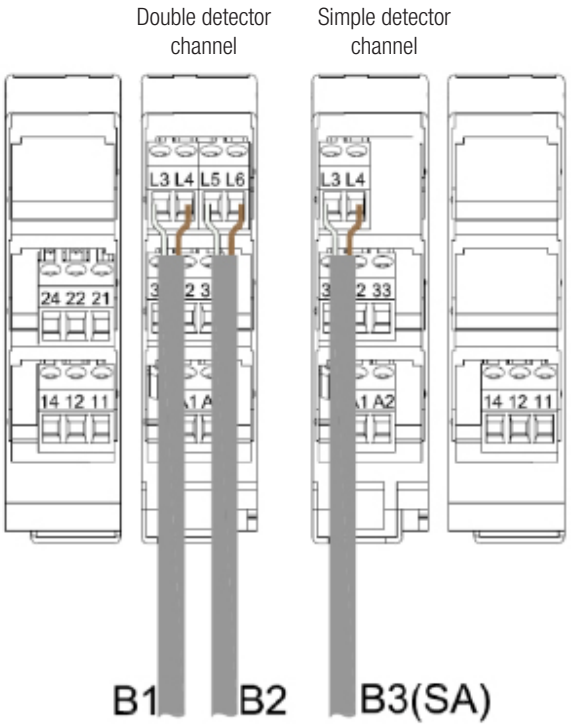
a) Implementation of loops:



b) Connecting detector contacts:

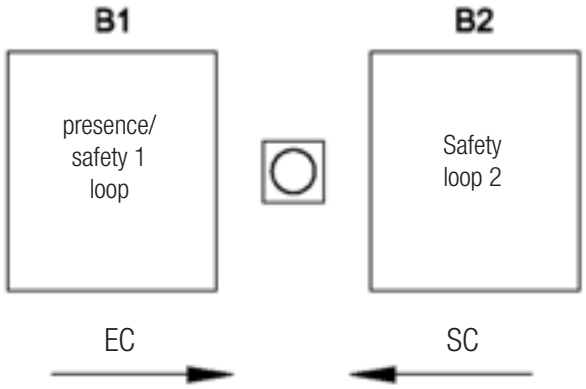


c) Connecting loops:

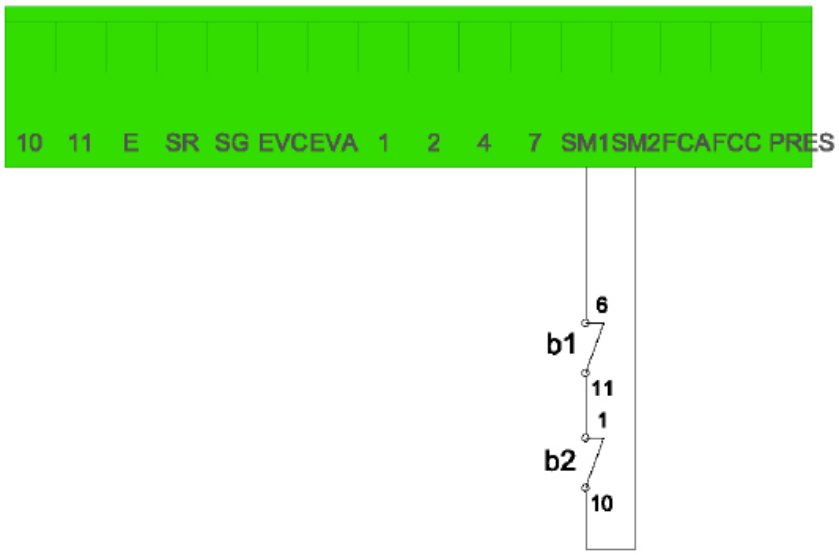


4.3.2. Controlled entry and exit:

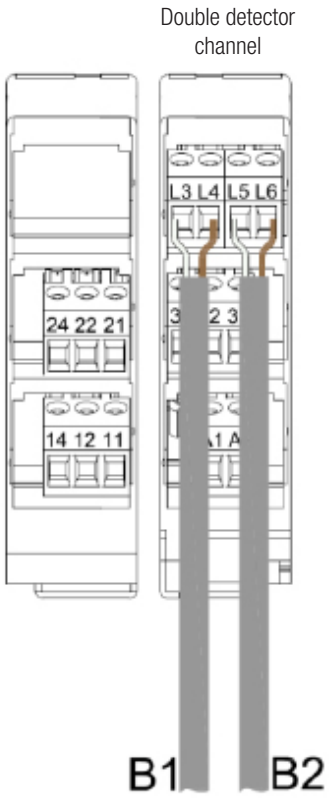
a) Implementation of loops:



b) Connecting detector contacts:

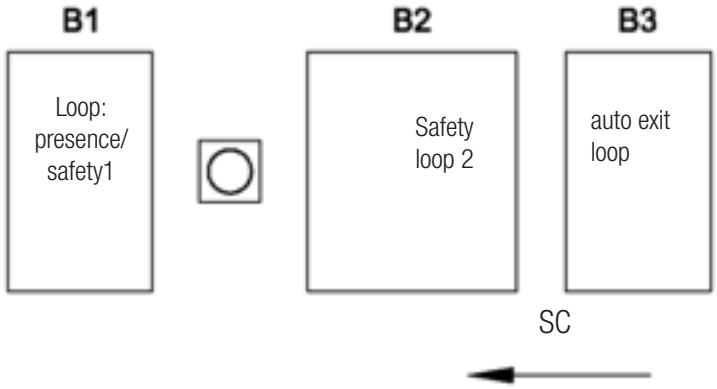


c) Connecting loops:

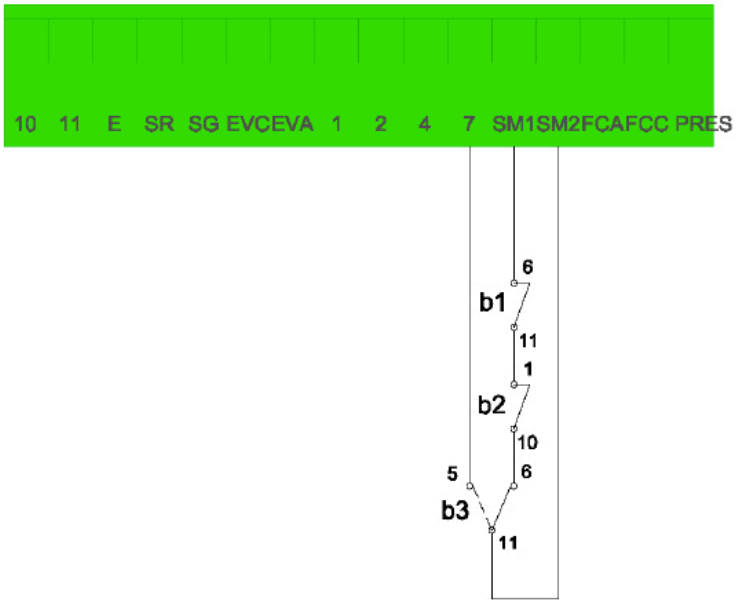


4.3.3. Automatic exit:

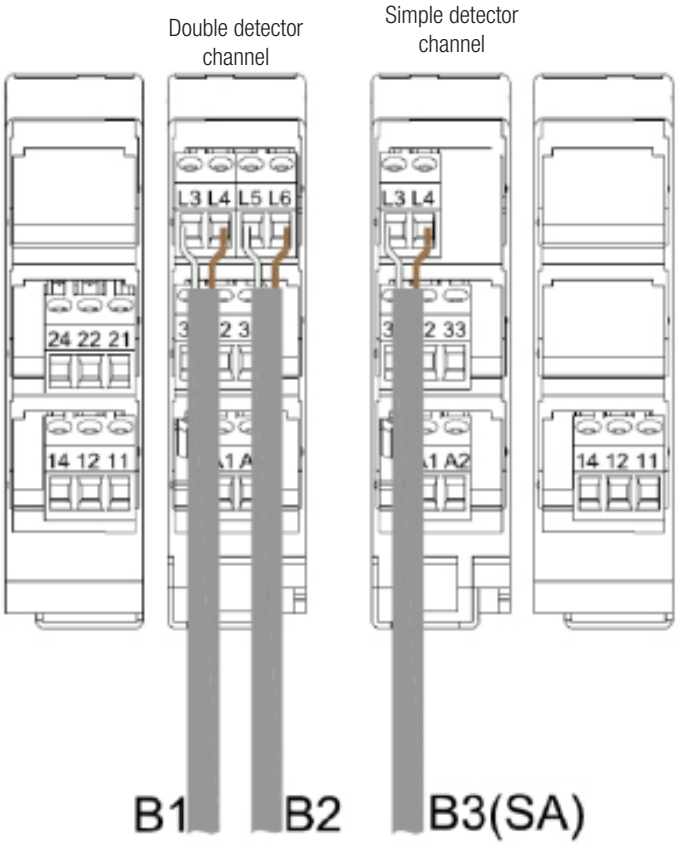
a) Implementation of loops:



b) Connecting detector contacts:

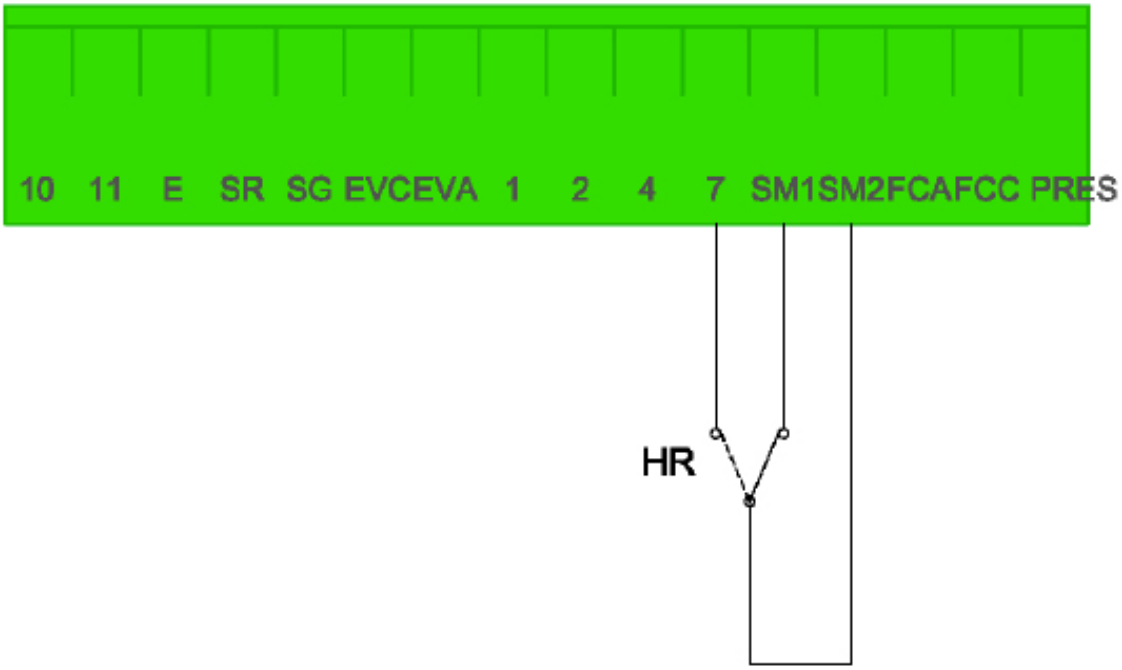


c) Connecting loops:



4.3.4. None of the above:

4.4. Connecting an external clock or forced descent:



5. PARAMETER SETTING AND ADJUSMENT

5.1. Parameter setting:

5 switches are used to configure the board:

	ON	OFF
DIP n° 1	Fermeture automatique activée	Fermeture automatique désactivée
DIP n° 2	Commande Ouverture seule activée	Commande Ouverture seule désactivée
DIP n° 3	Préclignotement 3" activé	Préclignotement désactivé
DIP n° 4	Programmation (voir tableau ci-dessous)	
DIP n° 5		

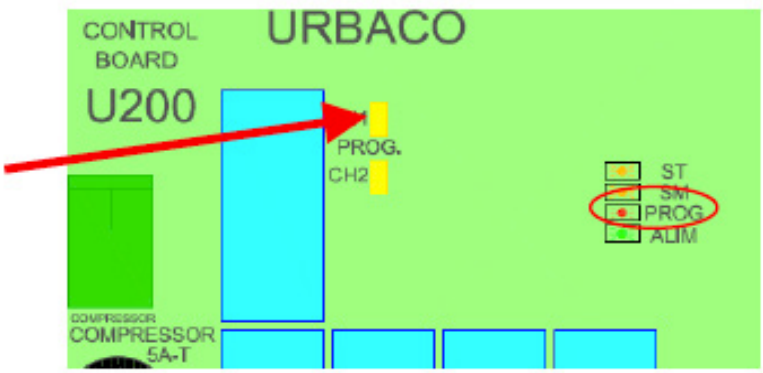
Switch		Bouton		Led"	Option
N°4	N°5	CH1	CH2	Après 5"	
ON		ON		ON	Electrovanne bistable en service
ON		ON		OFF	Electrovanne monostable en service
ON			ON	ON	Dispositif sonore et clignotement du feu rouge activé
ON			ON	OFF	Dispositif sonore désactivé
	ON	ON		ON	Feu vert activé
	ON	ON		OFF	Feu orange activé
	ON		ON	ON	Fonction de « présence » activée (il est possible de baisser la borne seulement lorsque la boucle magnétique détecte la masse métallique)
	ON		ON	OFF	Fonction « présence » désactivée

Placez les dip switch 4 et 5 sur ON, appuyez sur CH1 ou CH2. La led commence à clignoter.
Si après 5",la led reste allumée, cela signifie que l'option a été activée,
si elle reste éteinte cela signifie que l'option est désactivée.

Potentiometer 6 is used to set the time delay before the bollard is raised. The setting is between 0 and 2 minutes.

5.2. Programming a TOP or TAM remote control with AF43S receiver:

With the power on, hold down the CH1 memory key on the U200 (the PROG LED flashes), and record the code by pressing the button on the remote control (the PROG LED stays on to indicate that the memory has been stored).



6. OPERATION

6.1. Powering up the board : (when all connections are made)

The bollard goes up if the board is set to Auto and if the safety loops are free.
In manual configuration (step-by-step) the bollard remains low waiting for an up command.

6.2. Power outage:

The bollard descends to the lower position and rises again when the power supply returns if the board is set to Auto and if the safety loops are free.
The bollard remains low in manual configuration (step by step).
If the bollard(s) has (have) the stand-ny current relay option (keep high when no voltage is present), then when the voltage returns, the normal cycle resumes according to the position of the bollard(s).

6.3. Operation on a descent command (normal passage):

SW1 = ON and set the bollard raising delay time.
- Lowering command with presence (see table).
The descent command is only taken into account if a vehicle is present on presence/safety loop 1 (SM1/SM2 open).
In this case, the bollard goes up after release of the safety(SM1/SM2 closed), the ascent time delay and the warning loops (if SW3 = ON).
- Lowering command without presence (see table)
The bollard descends immediately on each descent command and ascends again after release of the safety (SM1/1M2 closed), ascent delay and warning loops (if SW3 = ON).

6.4. Operation in manual mode (raising and lowering by command):

SW1 = OFF and SW2 = OFF
Input 7 allows the bollard to be raised and lowered.
One impulse out of 7 makes the bollard descend immediately (see table), a second impulse out of 7 makes the bollard ascend if no vehicle is present on the safety (SM1/SM2 closed) and after the warning loops (if SW3 = ON).

SW1 = OFF and SW2 = ON
Input 7 allows the bollard to be lowered and input 4 allows the bollard to be raised.
One impulse out of 7 makes the bollard descend immediately (see table), one impulse out of 4 makes the bollard ascend if no vehicle is present on the safety (SM1/SM2 closed) and after the warning loops (if SW3 = ON).

6.5. Emergency stop operation:

Wiring an emergency stop (NF) button between 1 and 2 causes the terminal to be lowered.
As long as the button is pressed, the bollard cannot be raised.
When the emergency stop button is released, the bollard remains low. A bollard command action must be performed to raise it. This operation complies with the Machine Directive.
If, however, it is necessary to have an upward movement when the emergency stop button is released, then wiring must be carried out page 12

6.6. Operation on an automatic output:

The wiring of an automatic exit detector creates an immediate descent command as soon as the vehicle enters the loop. The ascent of the bollard is identical to a normal passage.

6.7. Safety during ascent:

- The upper and lower limit switches of the bollard(s) must be connected.
- The safety device (SM1-SM2) remains active as long as the high limit switch is not activated.

6.8. Locking the bollard in the high position:

Once the high limit switch is activated, access is locked.

6.1. Fonctionnement de la surveillance compresseur :

Un contact sec du pressostat est utilisé pour contrôler le temps de fonctionnement du compresseur.
Lorsque le moteur tourne, le contact est fermé.
Lorsque le moteur s'arrête, le contact s'ouvre.
Si le compresseur tourne 5 minutes, le fonctionnement est arrêté par coupure de tension sur la sortie COMP. Dans ce cas, les bornes descendent, et une intervention technique est nécessaire.

6.2. Gestion du compresseur :

Le compresseur est autonome.
L'alimentation 230V est permanente en fonctionnement normal.
Le pressostat intégré au compresseur gère la mise en marche et l'arrêt du compresseur pour maintenir la pression d'air dans le circuit.

6.3. Perte du FDC haut en verrouillage borne haute :

Aucune réaction du système.

6.4. Leds de visualisation :

ST = Allumée > STOP en cours de montée – Eteint > normal
SM = Allumée > SECURITE activée – Eteint > NORMAL
PROG = programmation d'émetteur radio et clignotement pendant le temps de fermeture automatique. Voir aussi §4.1.
ALIM = Allumée > carte sous tension

6.5. Sécurité négative :

Fonction permettant de maintenir la borne en position haute en cas de coupure de courant.
Cette fonction est gérée directement par l'U200v6, en connectant la Contre Electrovanne entre 10 et EVA.

6.6. Nombre de bornes maxi :

5 BORNES, quelque soit le diamètre et la hauteur.
NB : le type de compresseur utilisé détermine aussi le nombre de bornes (voir documentation compresseur).

6.7. Feux de position :

Feu rouge = fixe lorsque la borne est haute
Clignotant lorsque la borne est en mouvement (voir tableau).
Fixe lorsque la borne est en mouvement (voir tableau).
Feu jaune = (voir tableau).

V. U20T AUTOMATION

The U20T is designed to manage the G6^{N} Embedded Hydraulic bollard(s).

1. CONNECTION AND GENERAL DESCRIPTION

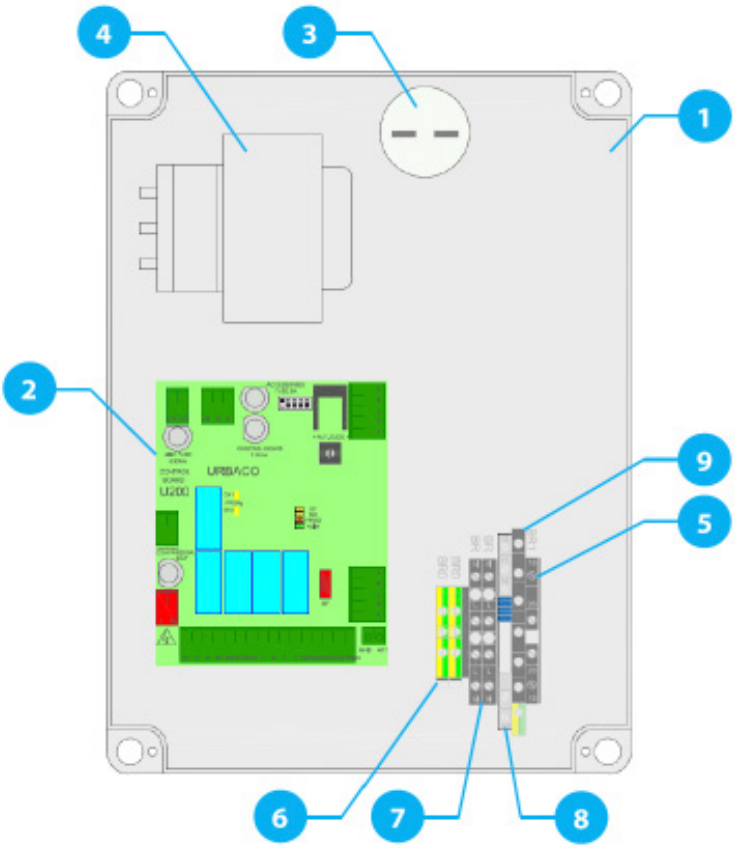


Fig. 1 – U20T box

Item	Name
1	ABS box
2	U200 board
3	Capacitor
4	Transformer
5	Solenoid valve terminal block
6	Earthing terminal block
7	230Vac power supply terminal block
8	Time-delay relay
9	Motor connection terminal block

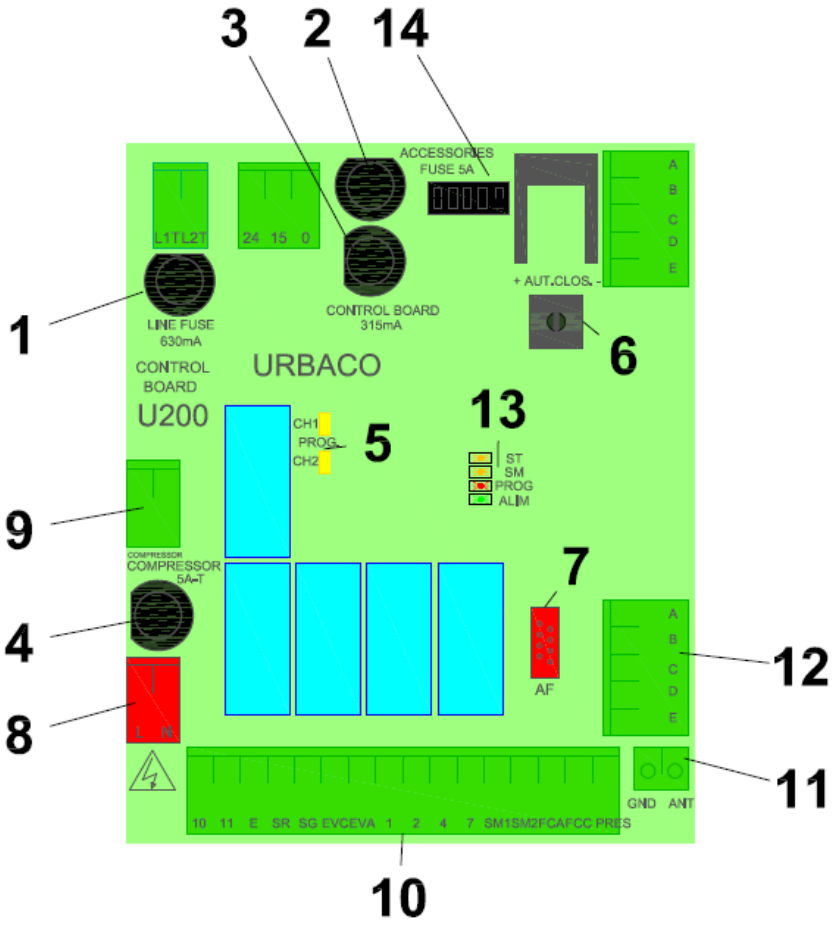
General characteristics:
Box: ABS plastic
IP: IP54
IK: IK8
Cable inlet: 4 Cable gland locations
Ø10 (Not supplied)
Weight: 3.6Kg
Dimensions (H x W x D): 320 x 240 x 150 mm

Electrical Characteristics:
Supply voltage: 230V single phase
Power consumption: <1A (U200 only)
Frequency: 50Hz
Electrical insulation: Class II
Class I (Box not hooded)

The U200 control board allows to:
- Manage CAME FRANCE - URBACO DIVISION high and low limit switches
- Manage inductive loops through 1 or 2 single or dual channel detectors
- Manage external control devices by dry contact
- Manage the signaling light
- Control CAME FRANCE - URBACO DIVISION bollards

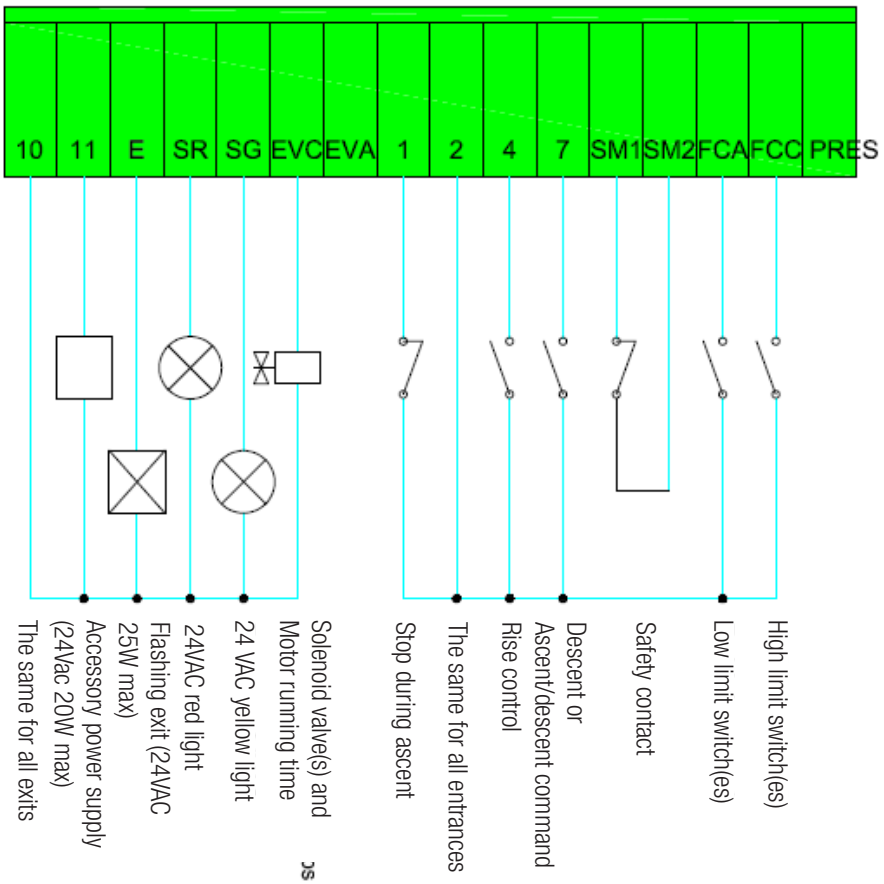
A maximum power of 20W is available on the accessory power output.
The U200 control boards do not have a malfunction diagnosis.
The limit switches are managed but no faults can be detected and diagnosed.

1.1. Description of the U200 motherboard



Item	Name
1	1A line fuse
2	5A accessory fuse and solenoid valve
3	1A motherboard fuse
4	5A T Motor Fuse
5	CH1 and CH2 programming buttons
6	Setting the time delay before automatic ascent
7	CAME pluggable radio board sockets
8	General 230V power supply terminal block
9	230V Motor terminal block
10	Connection terminal block
11	Radio antenna terminal block
12	Terminal block not used
13	Display LEDs
14	Parameter setting switches

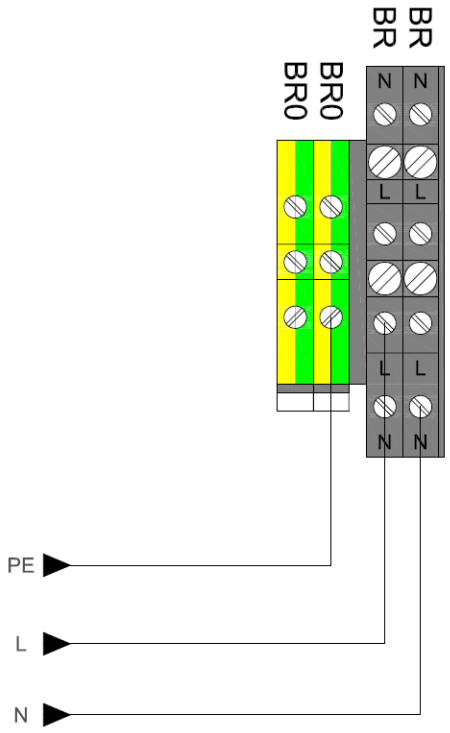
1.2. Connection of the bollard and accessories:



- If there is more than one bollard on 1 access, connect the limit switches in series.
- If the bollard has a luminous crown, connect it to the red light.
- A maximum power of 20W is available for yellow light output.
- A maximum power of 20W is available for red light output.

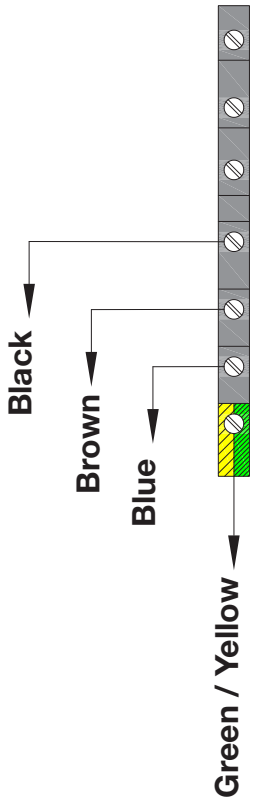
1.3. Connection and general description:

The power supply must be protected by a 16A 30mA earth leakage circuit breaker.



1.4. Hydraulic unit connection

It is possible that the brown and black need to be reversed on some Embedded hydraulic units.
There will be one terminal block per bollard depending on the configuration of the U20T



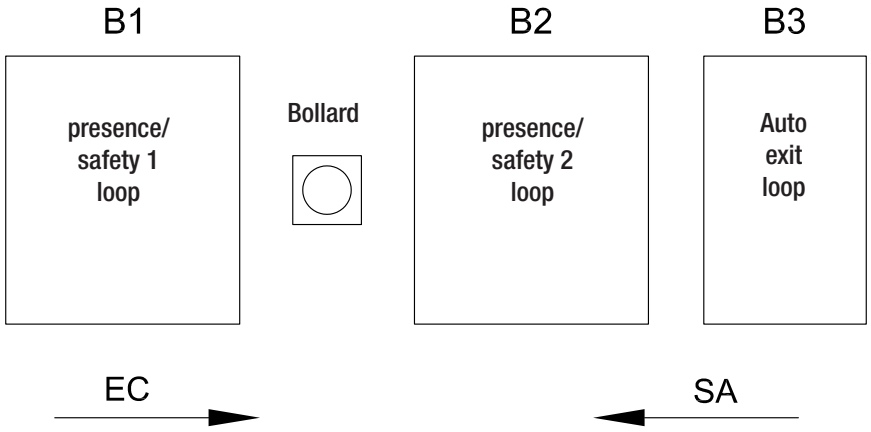
1.5. Solenoid valve connection

Solenoid valve connection between 10 and 20.
There will be one terminal block per bollard depending on the configuration of the U20T.

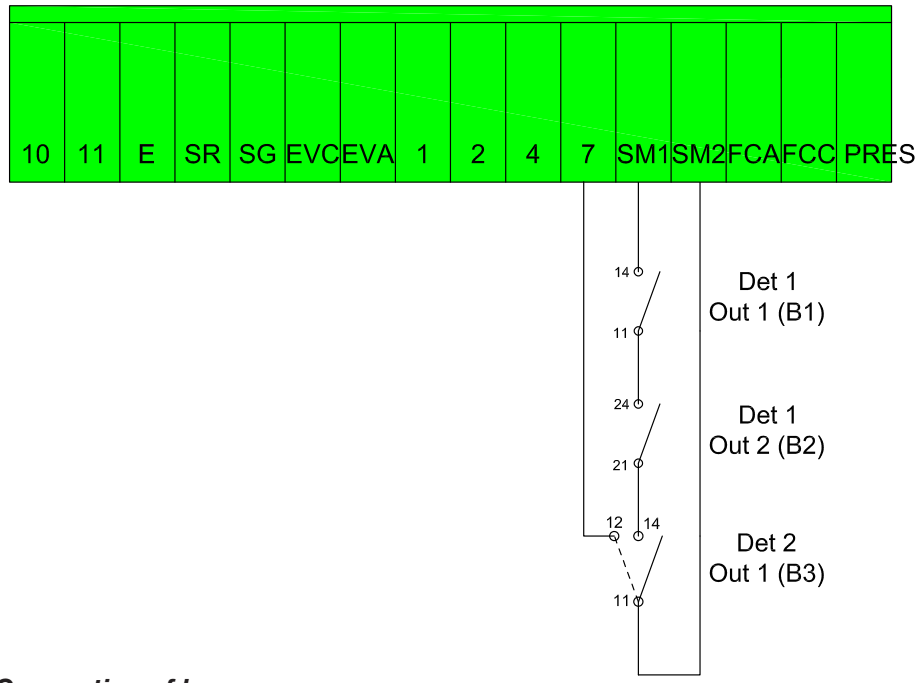
2. OPERATION AND EMERGENCY STOP LOGICAL CONNECTION

2.1. Controlled entry and automatic exit

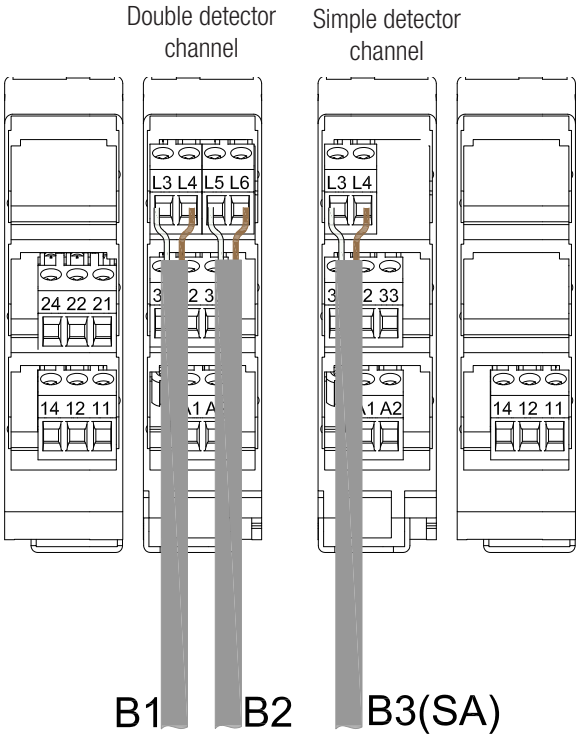
2.1.1. Implementation of loops



1.5.1. Connection of detector contacts

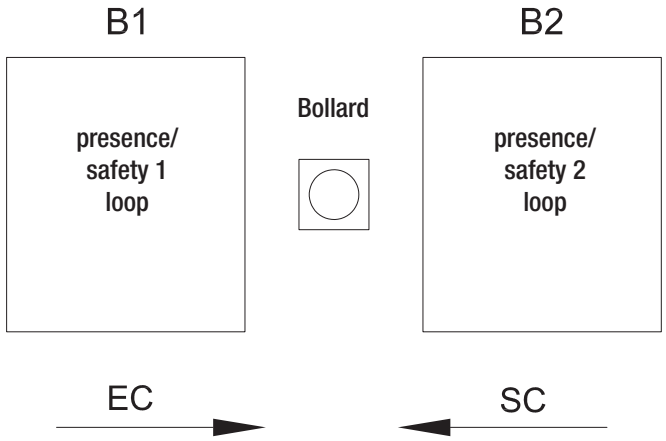


1.5.2. Connection of loops

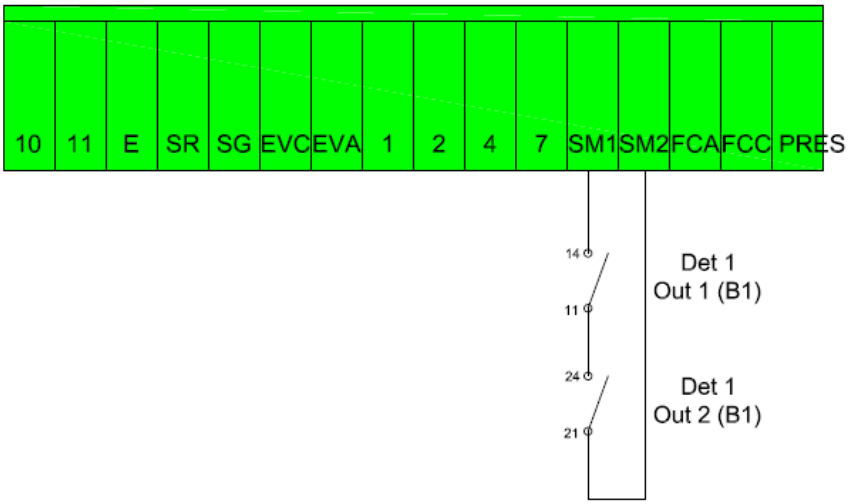


2.2. Controlled entry and exit

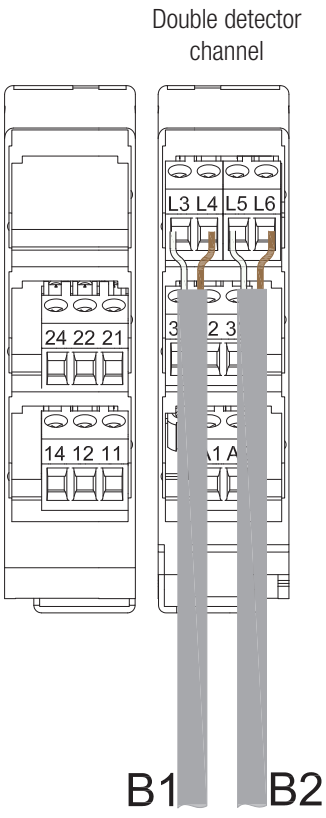
2.2.1. Implementation of loops



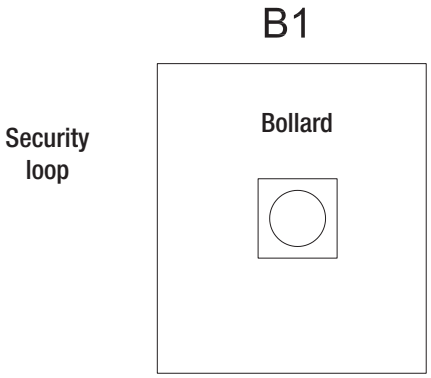
2.2.2. Connection of detector contact



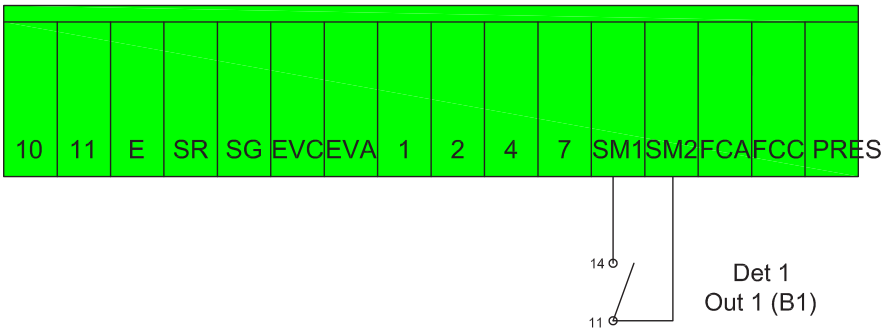
2.2.3. Connection of loops



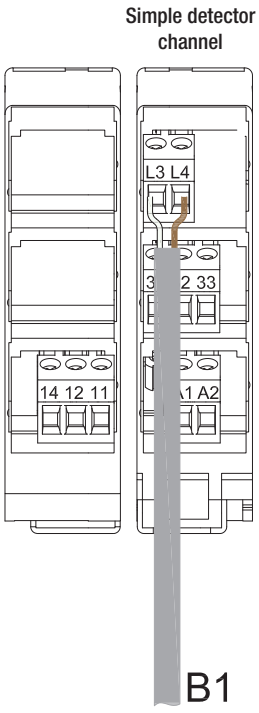
2.3.1. Implementation of loops



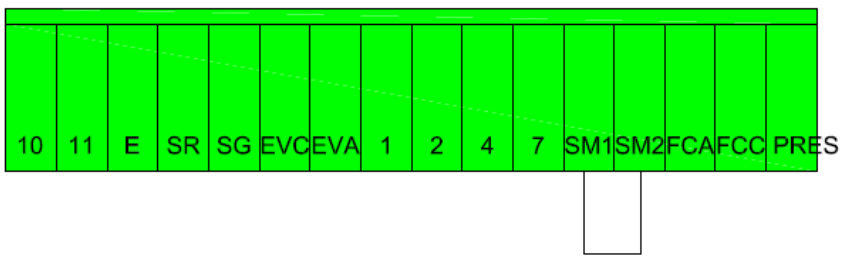
2.3.2. Connection of detector contact



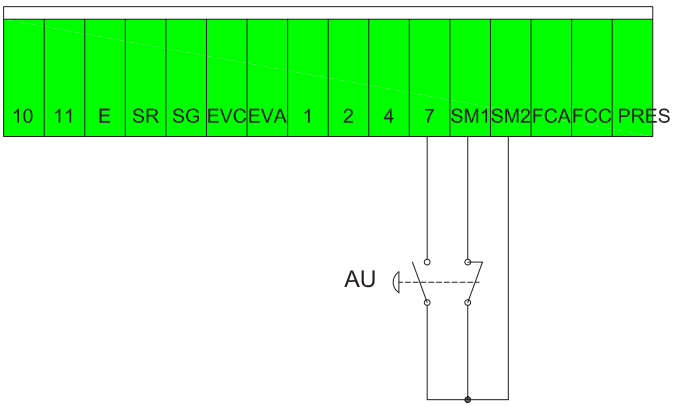
2.3.3. Connection of the loop



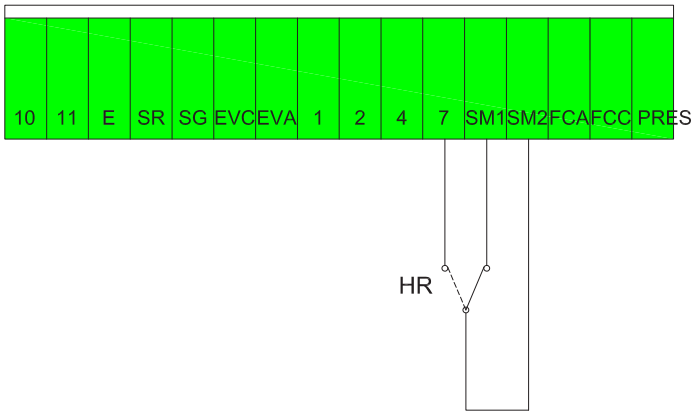
2.3.4. No security



2.3.5. Emergency stop wiring



2.3.6. Clock wiring



3. Parameter setting and adjusting

3.1. U200 parameter setting

The 5 switches on the top of the U200 board allow you to set the board's parameters:

	ON	OFF
DIP No. 1	Auto-close enabled	Auto-close deactivated
DIP No. 2	Open only command enabled	Open only command deactivated
DIP NO. 3	Pre-flashing 3" activated	Pre-flashing deactivated
DIP No. 4	Programming (see table below)	
DIP No. 5		

Automatic closing is prohibited if the access is not equipped with a safety loop.

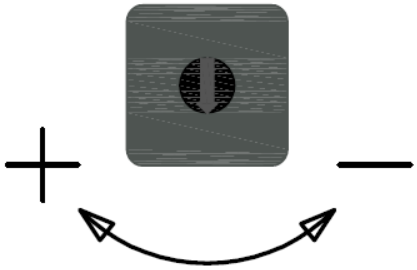
Switch		Button		Led" After 5"	Option
No. 4	No. 5	CH1	CH2		
ON		ON		ON	Bistable solenoid valve in operation
ON		ON		OFF	Not used
ON			ON	ON	Buzzer and flashing red light activated
ON			ON	OFF	Buzzer deactivated
	ON	ON		ON	Green light (steady) activated
	ON	ON		OFF	Yellow light (flashing) activated
	ON		ON	ON	“Presence” function activated (it is possible to lower the bollard only when the magnetic loop detects the metallic mass)
	ON		ON	OFF	“Presence” function deactivated

- Place dip switch 4 or 5 on ON,
- press CH1 or CH2.

> The LED starts to flash.

- If after 5", the LED remains on, it means that the option has been activated,
- if it remains off it means that the option is deactivated.

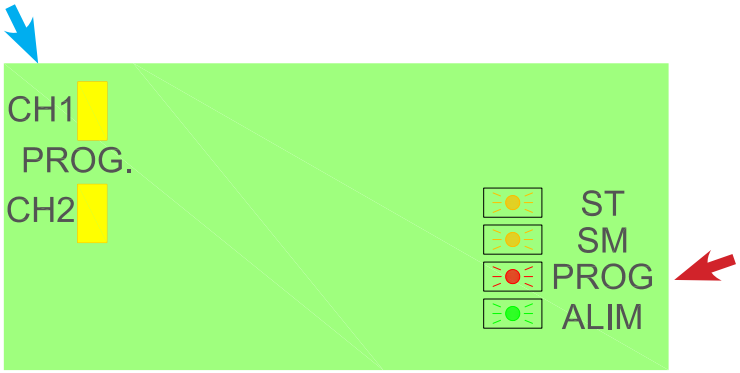
>Set dip switches 4 and 5 to OFF after setting the parameters



The potentiometer is used to set the time delay before the bollard is raised.
The adjustment is between 0 and 2 minutes

3.2. Programming a remote control

If the U200 us equipped with an AF43S radio board, you can then program remote controls.
With the power on, hold down the CH1 memory key on the U200 (the PROG LED flashes), and record the code by pressing the button on the remote control (the PROG LED stays on to indicate that the memory has been stored).



4. OPERATION

- **Powering up the board:**

The bollard goes up if the board is set to Auto and if the safety loops are free.
In manual configuration (step-by-step) the bollard remains low waiting for a rise command.

- **Operation on a lowering control (normal passage):**

SW1 = ON and setting of the bollard rise time delay.
-Lowering command with presence (see table).
The descent command is only taken into account if a vehicle is present on presence/safety loop 1 (SM1/SM2 open).
In this case, the bollard goes up after release of the safety (SM1/SM2 closed), the ascent time delay and the warning loops (if SW3=ON).
-Descend command without presence (see table).
The bollard goes down immediately on each descent command and goes up again after release of the safety (SM1/SM2 closed), ascent time delay and warning loops (if SW3=ON).

- **Operation in manual mode (ascent and descent by command):**

SW1 = OFF and SW2 = OFF
Input 7 allows the bollard to be raised and lowered.
One impulse out of 7 makes the bollard immediately descend (see table), a second impulse out of è makes the bollard rise again if no vehicle is present on the safety (SM1/SM2 closed) and after warning loops (if SW3 = ON).
SW1 = OFF and SW2 = ON
Input 7 allows the bollard to be lowered and input 4 allows the bollard to be raised.
One impulse out of 7 makes the bollard descend immediately (see table), one impulse out of 4 makes the bollard ascend if no vehicle is present on the safety (SM1/SM3 closed) and after warning loops (if SW3 = ON).

- **Emergency stop function:**

Wiring an emergency stop (NF) button between 1 and 2 causes the terminal to be lowered.
As long as the button is pressed, the bollard cannot be raised.
When the emergency stop button is released, the bollard remains low. A bollard command must be performed to raise it. This operation is in accordance with the machine directive.
if ascent when the emergency stop button is released is required, then the wiring in Ch5.1 P.52 must be carried out.

- **Operation on an automatic exit:**

The wiring of an automatic exit detector creates an immediate descent command as soon as the vehicle enters the loop. The raising of the bollard is identical to a normal passage.

- **Safety during ascent:**

When the bollard is raised as long as it has not reached the top, the safety device (SM1 - SM2) remains active and will lower the bollard if a metallic mass is present on the loops, once the top limit switch has been reached the access is locked.

- **Hydraulic unit management:**

The power supply to the solenoid valve on the U200 also controls the trip delay relay that controls the power supply to the hydraulic unit.

- **Loss of high FDC [limit switch] in high bollard lock:**

No response from the system.

- **Display LEDs:**

ST = On > Stop during ascent - Off > Normal
SM = On > Safety On - Off > Normal
PROG = See Ch 2.3.5 P.61 And flashing during the automatic closing time.
POWER = On > Board powered

- **Position lights:**

Red light = Fixed when the bollard is high.
Flashing or fixed can be set when the bollard is in motion see table Ch 2.3.5 P.61
Yellow light = Fixed or flashing when the bollard is low, see table Ch 2.3.5 P.61.

- **Access default:**

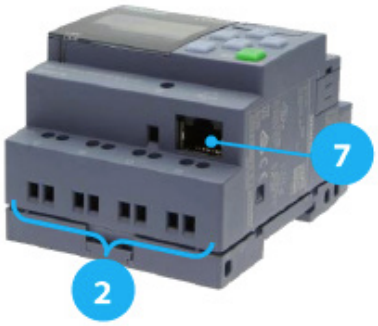
No fault management is performed.

5. Maintenance:

No particular maintenance is prescribed for the U20T. However, regular technical visits are recommended to check the general condition of the equipment (absence of dust, humidity, etc.), the operation of the safety elements (loop detector), the operation of the control devices (radio receiver, badge reader, etc.) and to tighten the connections in the housing.

VI. LOGO AUTOMATION

Item	NAME
1	Input connection terminal block
2	Out connection terminal block
3	P1/P2 PLC power supply terminal block 24VAC/DC
4	LCD screen
5	6-key keyboard
6	Standard Micro-SD card holder
7	RJ45 port



1. ENTRY/EXIT DETAILS:

> Stand-alone version 2 Standard access

Extensions 1 and 2 are not integrated in the standard systems without options.

Device	Entry	Function	Type	No. of wires
LOGO base	I1	Safety loop contact 1	NF	55
	I2	Safety loop contact 2	NF	56
	I3	Automatic exit loop contact	NF	57
	I4	Low Limit Switches of all bollards (in series)	NO	59
	I5	High Limit switches of all bollards (in series)	NO	60
	I6	Descent Command	NO	61
	I7	Forced Descent Command (Emergency button)	NF	62
	I8	Not used		
EXTENSION 1	I9 (I1 ext1)	Rise control	NO	63
	I10 (I2 ext1)	Forcing up	NO	64
	I11 (I3 ext1)	Safety device	NF	65
	I12 (I4 ext1)	Loop detector fault	NF	66
EXTENSION 2	I13 (I1 ext2)	Not used		
	I14 (I2 ext2)	Not used		
	I15 (I3 ext2)	Not used		
	I16 (I4 ext2)	Not used		

Device	Out	Function	Type	No. of wires
LOGO base	Q1	Solenoid valves of all units	NO	20
	Q2	Yellow light	NO	21
	Q3	Red light	NO	22
	Q4	Motors	NO	39
EXTENTION 1	Q5 (Q1 ext1)	Current fault	NO	31/32
	Q6 (Q2 ext1)	Low limit switch image	NO	25/26
	Q7 (Q3 ext1)	High limit switch image	NO	27/28
	Q8 (Q4 ext1)	Presence on loop or buzzer (configurable in menu)	NO	29/30 or 24
EXTENSION 2	Q9 (Q1 ext2)	Buzzer of all bollards	NO	24
	Q10 (Q2 ext2)	Not used	NO	
	Q11 (Q3 ext2)	Not used	NO	
	Q12 (Q4 ext2)	Not used	NO	

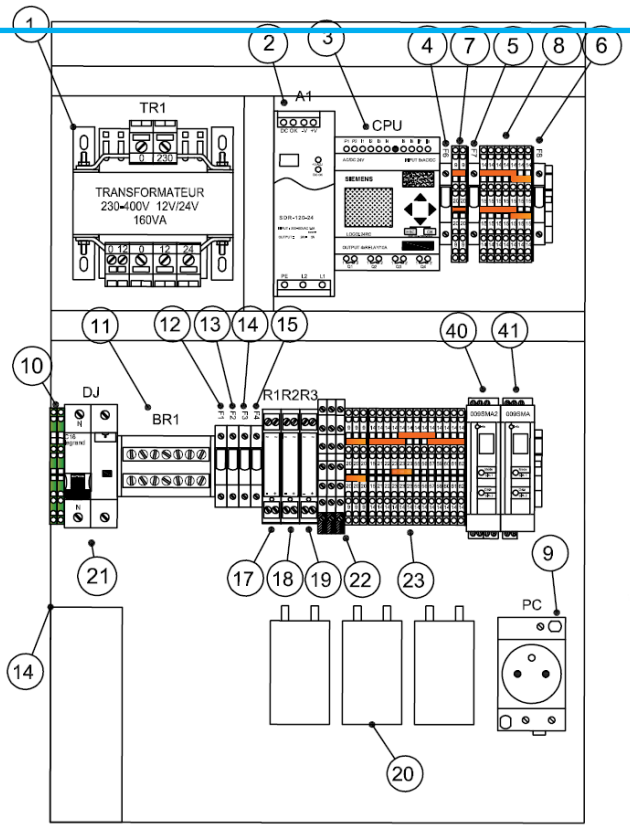
> PC Version INDUS 1 Standard Access

Extensions 2 are not integrated in the standard PC Indus system without options.

Device	Entry	Function	Type	No. of wires
LOGO base	I1	Safety loop contact 1	NF	55
	I2	Safety loop contact 2	NF	56
	I3	Automatic exit loop contact	NF	57
	I4	Low limit switches of all bollards (in series)	NO	59
	I5	High limit switches of all bollards (in series)	NO	60
	I6	Descent command	NO	61
	I7	Forced descent command (Emergency button)	NF	62
	I8	Not used		
EXTENSION 1	I9 (I1 ext1)	Door open contact	NO	64
	I10 (I2 ext1)	Delivery button	NO	65
	I11 (I3 ext1)	Totem red light monitoring	NO	66
	I12 (I4 ext1)	No voltage contact	NO	67
EXTENSION 2	I13 (I1 ext2)	Not used		
	I14 (I2 ext2)	Red light 2 monitoring	NO	68
	I15 (I3 ext2)	Loop fault	NO	69
	I16 (I4 ext2)	Not used		

Device	Out	Function	Type	No. of wires
LOGO base	Q1	Solenoid valves of all units	NO	20
	Q2	Yellow light	NO	21
	Q3	Red light	NO	22
	Q4	Motors	NO	39
EXTENTION 1	Q5 (Q1 ext1)	Not used		
	Q6 (Q2 ext1)	Audible warning (buzzer)	NO	24
	Q7 (Q3 ext1)	Luminous Crown	NO	23
	Q8 (Q4 ext1)	Not used	NO	
EXTENSION 2	Q9 (Q1 ext2)	Not used	NO	
	Q10 (Q2 ext2)	Not used	NO	
	Q11 (Q3 ext2)	Not used	NO	
	Q12 (Q4 ext2)	Not used	NO	

2. BUILT-IN HYDRAULIC TYPE LAYOUT 1 ACCESS FROM 1 TO 3 BOLLARDS PER CABINET

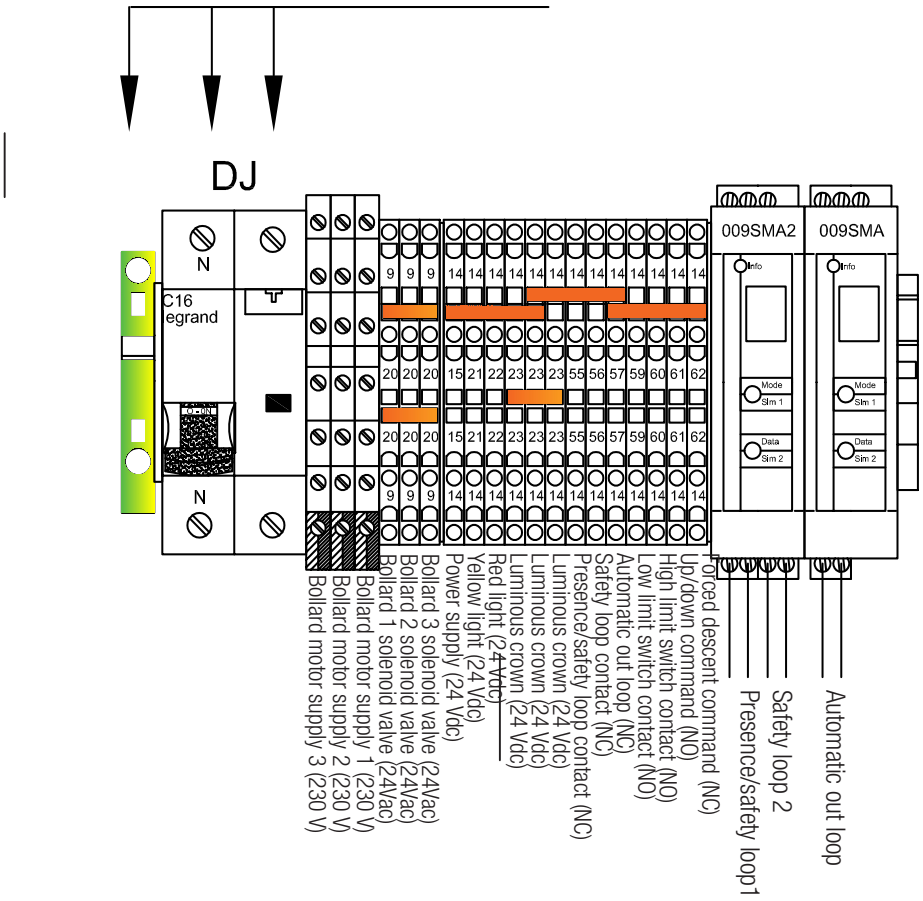


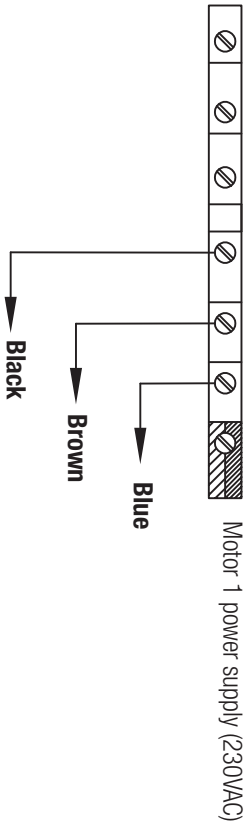
Item	Name	ABBREVIATION
1	24Vac transformer (160VA)	TR
2	24Vdc power supply	A1
3	Logo PLC	PLC
4	24Vac (6A) fuse	F6
5	24Vdc (5A) fuse	F7
6	24Vdc luminous crown fuse (2A)	F8
7	24Vac distribution terminal block (2 Bollards 9-10)	BR2
8	24Vdc distribution terminal block (7 Bollards 14-15)	BR3
9	Power outlet	PC
10	230 Vac earth distributor terminal block (2 Bollards)	BR0
11	230Vac distribution terminal block	BR1
12	Hydraulic unit fuse 1 (5AI)	F1
13	Hydraulic unit fuse 2 (5AI)	F2
14	Hydraulic unit fuse 3 (5AI)	F3
15	Primary transformer fuse (2A)	F4
16	Power socket fuse (6A)	F5
17	Hydraulic unit contactor	CT1
18	Hydraulic unit contactor	CT2
19	Hydraulic unit contactor	CT3
20	Capacitor	CD
21	Differential circuit breaker 230Vac -16A-	DJ1
22	230Vac hydraulic unit connection terminal block	BR
23	Connection terminal block	BR
	OPTIONS	
40	2-channel detector	DET1
41	1-channel detector	DET2

Refer to the drawings supplied with the technical control unit.

3. DETAIL OF THE CONNECTION BOLALRD BUILT-IN HYDRAULIC TYPE 1 ACCESS FROM 1 TO 3 BOLLARDS PER CABINET

230V 2P+T16A POWER SUPPLY

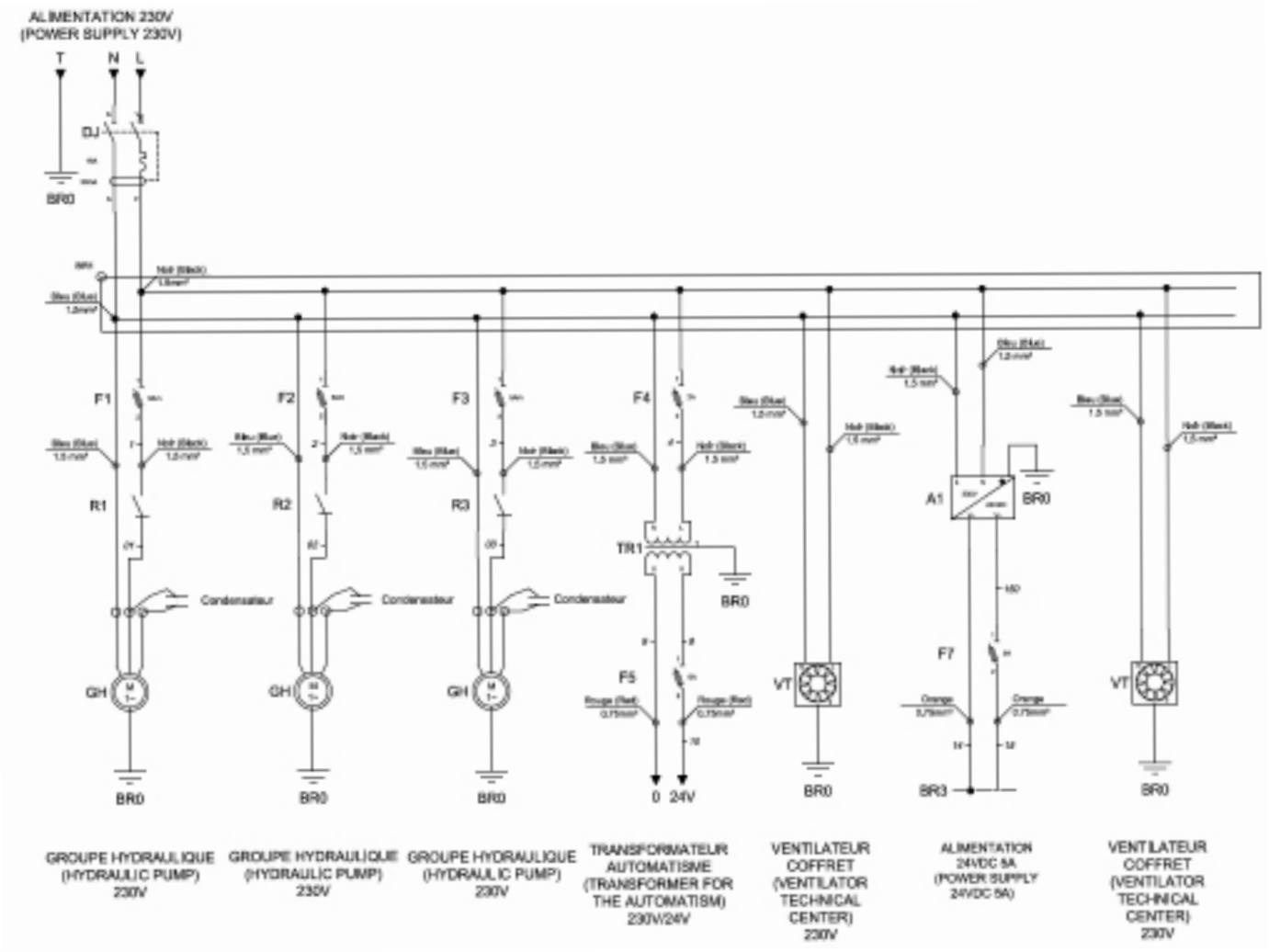


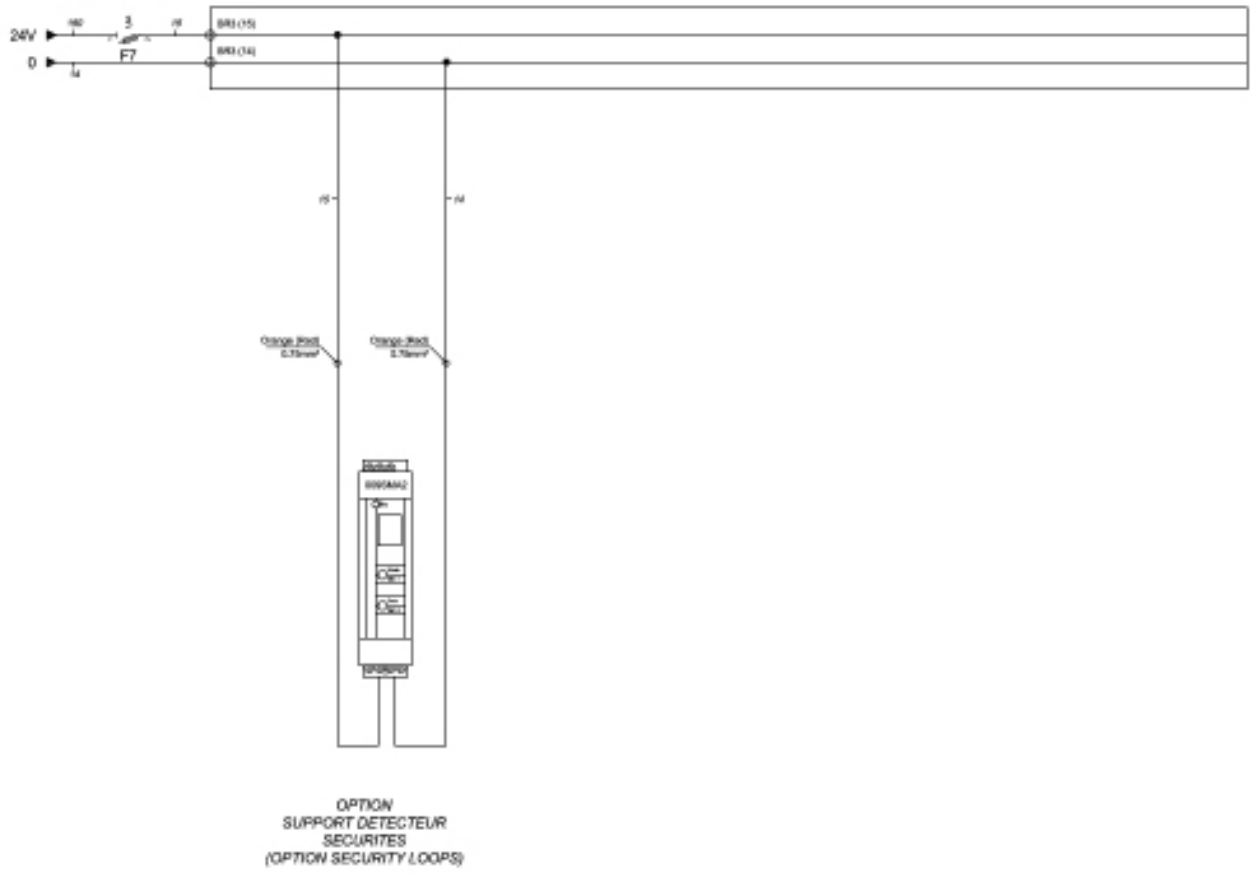


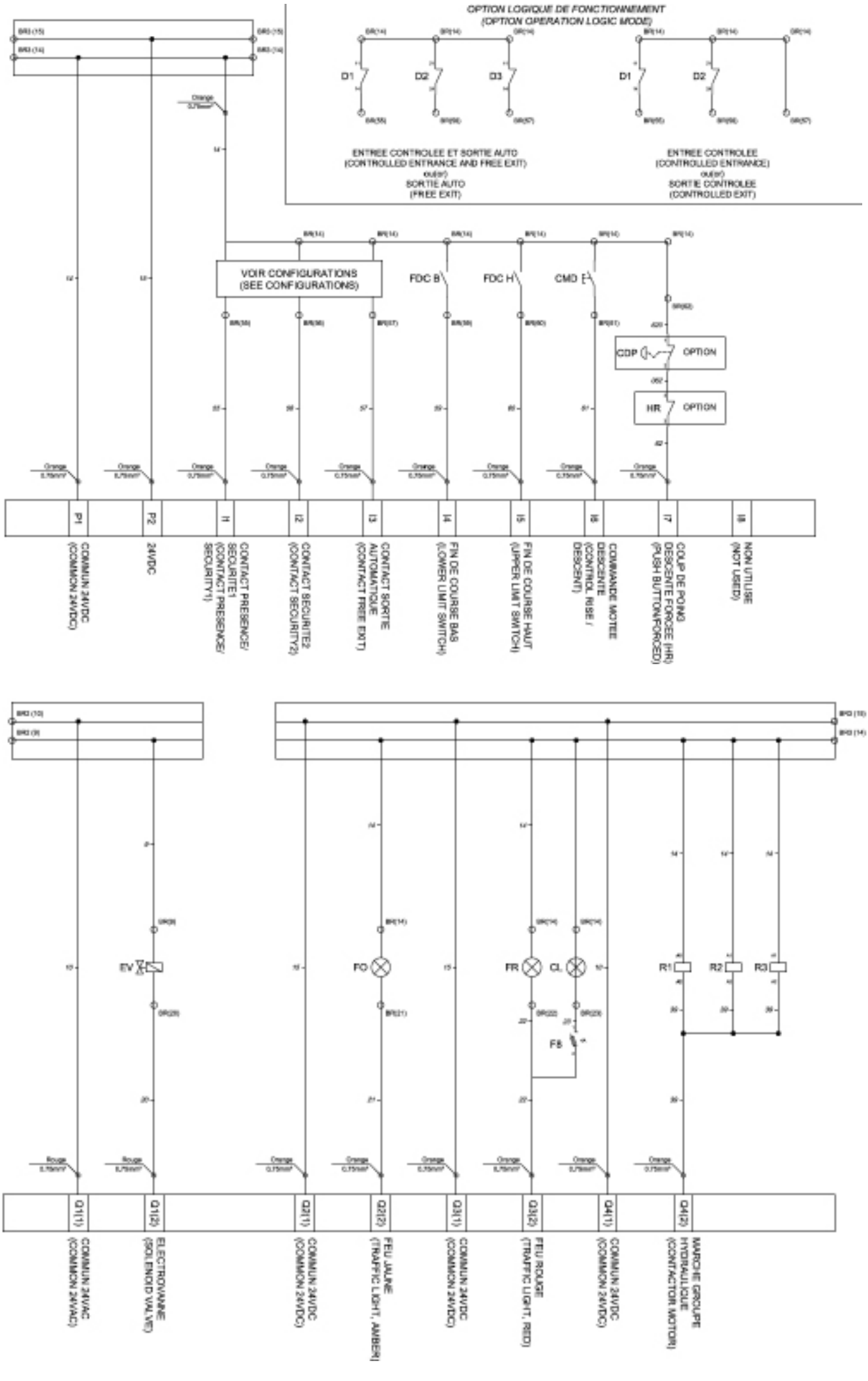
Wiring to be carried out in the event of more than one bollard
* Low limit switch wiring in series
* High limit switch wiring in series

4. GENERAL WIRING

Se référer au plan fourni avec la centrale technique.

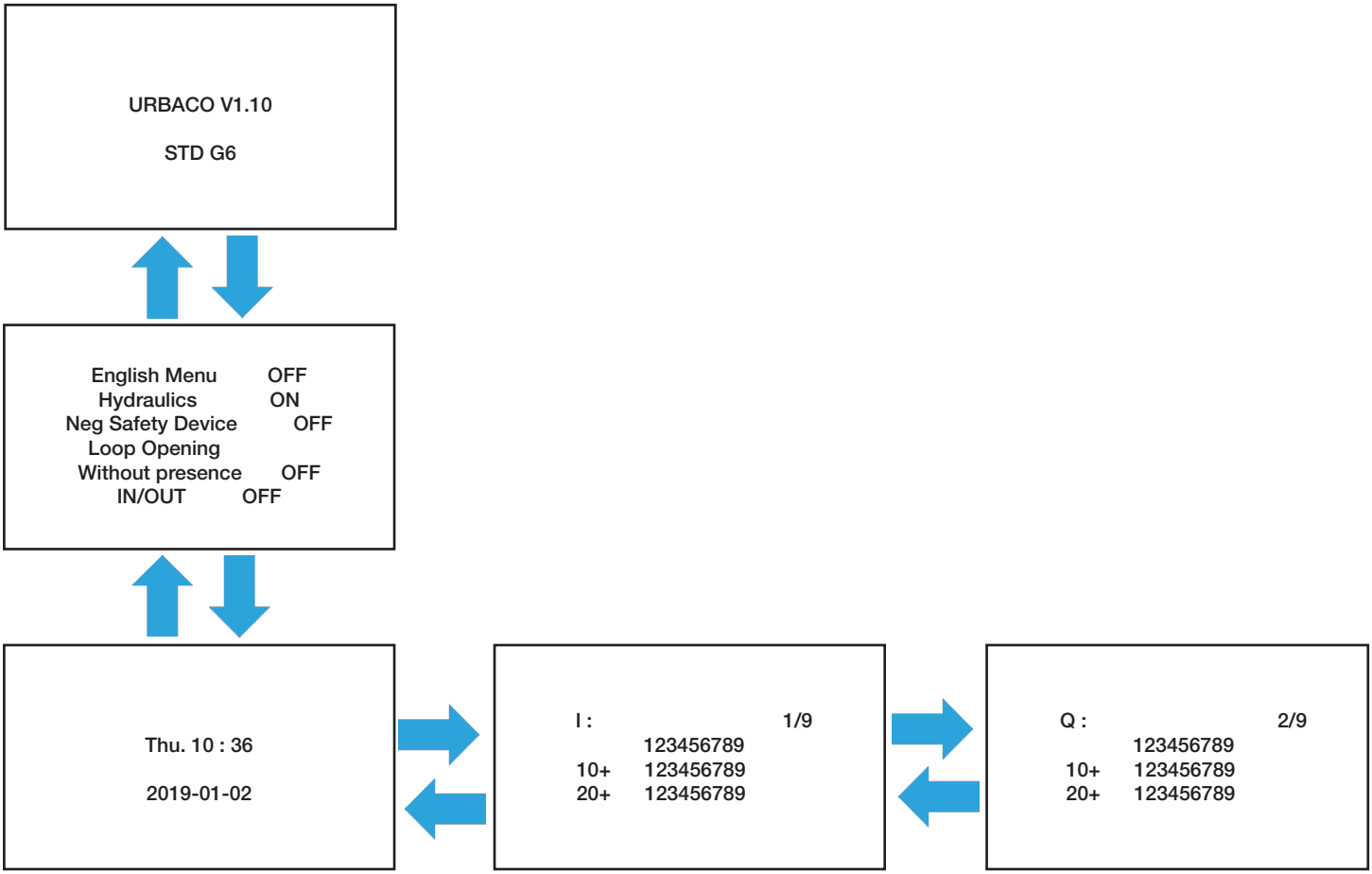





OPTION LOGIQUE DE FONCTIONNEMENT
(OPTION OPERATION LOGIC MODE)
D1
D2
D3
ENTREE CONTROLEE ET SORTIE AUTO
(CONTROLLED ENTRANCE AND FREE EXIT)
ou(or)
SORTIE AUTO
(FREE EXIT)
ENTREE CONTROLEE
(CONTROLLED ENTRANCE)
ou(or)
SORTIE CONTROLEE
(CONTROLLED EXIT)
VOIR CONFIGURATIONS
(SEE CONFIGURATIONS)
FDC B
FDC H
CMD
CDP
OPTION
HR
OPTION
P1
COMMUN 24VDC
(COMMON 24VDC)
P2
24VDC
I1
CONTACT PRESENCE/
SECURITE1
(CONTACT PRESENCE/
SECURITY1)
I2
CONTACT SECURITE2
(CONTACT SECURITY2)
I3
CONTACT SORTIE
AUTOMATIQUE
(CONTACT FREE EXIT)
I4
FIN DE COURSE BAS
(LOWER LIMIT SWITCH)
I5
FIN DE COURSE HAUT
(UPPER LIMIT SWITCH)
I6
COMMANDE MOTEE
DESCENTE
(CONTROL RISE /
DESCENT)
I7
COUP DE POING
DESCENTE FORCEE (HR)
(PUSH BUTTON FORCED)
I8
NON UTILISE
(NOT USED)
EV
FC
FR
CL
F5
R1
R2
R3
Q1(1)
COMMUN 24VAC
(COMMON 24VAC)
Q1(2)
ELECTROVANNE
(SOLENOID VALVE)
Q2(1)
COMMUN 24VDC
(COMMON 24VDC)
Q2(2)
FEU JAUNE
(TRAFFIC LIGHT, AMBER)
Q3(1)
COMMUN 24VDC
(COMMON 24VDC)
Q3(2)
FEU ROUGE
(TRAFFIC LIGHT, RED)
Q4(1)
COMMUN 24VDC
(COMMON 24VDC)
Q4(2)
MARCHE GROUPE
HYDRAULIQUE
(CONTACTOR MOTOR)

5. MENU AND SETTINGS

The keyboard keys allow navigation between the different pages.



To switch to parameter setting mode, go to the page of the parameter in question using the up and down arrows, then once you have arrived on the page in question keep ESC pressed for about 3 seconds, you can then navigate the page and change the desired parameter by selecting the right line and pressing OK. Then use the directional arrows to change the parameter and press OK, then ESC when the setting is complete.

Repeat the operation as many times as necessary.

5.1. STAND-ALONE program parameters

English Menu:
ON the programming section is in English
OFF the programming section is in French

Hydraulics:
ON the program is in embedded or remote hydraulic mode
OFF the program is in pneumatic mode

Standby current relay:
This parameter is only useful when using hydraulics.
ON operation with a negative solenoid valve
OFF operation with a positive solenoid valve (and in pneumatic mode)

Without presence:
ON descent command without presence on the loop
OFF descent command with presence on loop

ENTER/EXIT:
ON descent command with the presence of a vehicle on the entry and exit loop
OFF descent command only with vehicle presence on the entry loop

Open&Close CMD
ON command used for the ascent and descent of the bollard
OFF command only used for the descent of the bollard

Closed by CMD:
ON the access is closed only after a close command
OFF access is automatic

Warning: If the access does not have a safety loop, this parameter must be set to ON.

Steady Green Light:
ON the green/yellow light remain steady when the access is open
OFF the green/orange light flashes when the access is open

Warning time:
Warning time allowing pre-signaling (red lights) for the time set before the bollard is raised.
Factory value: 2s

High Def Time:
Time before access failure if a bollard has not reached the high limit switch.
Factory value: 20s

Low Def Time:
Time before access failure if a bollard has not reached the low limit switch.
Factory value: 20s

Compressor:
Operating time:
Time before access failure if the compressor runs for more than the set time.
Factory value: 5 minutes
In operation: Displays the time that has elapsed since the compressor was switched on.

Hydraulics
Operating time:
Time before access failure if the hydraulic power unit runs for more than the set time.
Factory value: 30s
In operation: Display of the time that has elapsed since the hydraulic unit was switched on.

5.2. PC INDUS program parameters

English Menu:
ON the programming section is in English
OFF the programming section is in French

Hydraulics:
ON the program is in embedded or remote hydraulic mode
OFF the program is in pneumatic mode

Standby current relay:
This parameter is only useful when using hydraulics.
ON operation with a negative solenoid valve
OFF operation with a positive solenoid valve (and in pneumatic mode)

OpenNotComPc :
ON the program automatically opens the access when a vehicle is found on the loops when the LOGO no longer interfaces with the Industrial PC
OFF the program will be in stand-alone mode, a down command will then be required in addition to the presence on the loop to open the access.

StatusCom:
Indicates the interaction status between the LOGO and the Industrial PC.

Steady Green Light:
ON the green/yellow light remain steady when the access is open
OFF the green/orange light flashes when the access is open

Warning time:
Warning time allowing pre-signaling (red lights) for the time set before the bollard is raised.
Factory value: 2s

High Def Time:
Time before access failure if a bollard has not reached the high limit switch.
Factory value: 20s

Low Def Time:
Time before access failure if a bollard has not reached the low limit switch.
Factory value: 20s

Compressor:
Operating time:
Time before access failure if the compressor runs for more than the set time.
Factory value: 5 minutes
In operation: Display of the time that has elapsed since the compressor was switched on.

Hydraulics
Operating time:
Time before access failure if the hydraulic power unit runs for more than the set time.
Factory value: 30s
In operation: Display of the time that has elapsed since the hydraulic unit was switched on.

6. FAULTS

Fault detected by the PLC	PLC reaction
Hydraulic unit monitoring time reached	Unit shutdown Bollard held in position Unit fault display
Loss of the upper limit switch in high locking	The red light flashes The hydraulic unit starts up again
Detection of the upper and lower limit switches at the same time	The bollard remains in position Steady red light
No detection of the lower limit switch on descent or loss of the lower limit switch at the lower limit	Steady red light Low Limit Switch Default Display
No detection of the top limit switch when rising	Descent of the bollard Flashing yellow light High Limit Switch Default Display

VII. DISASSEMBLY/ASSEMBLY PRECAUTIONS

Never remove the bollard head when the bollard is in the raised position. Any replacement of the head, sleeve, luminous crown or other components, as well as any operation must be carried out with the bollard in the lowered position and with the power supply switched off.

1. COVER

When you have to dismantle the cover after commissioning, i.e. when the fixing screws and the plug are in place, you have to remove them carefully with a small screwdriver.
If they are deteriorated, they should be changed during this operation. Their retention on the cover would be insecure and their function would not be preserved.

2. LED STRIP

If you need to replace the LED strip, you should preferably remove the head and then access directly to the strip connector inside the crown.

3. LED STRIP CONNECTION CABLE

High bollard with dismantled cover:
Loosen (orange removable) or remove the clamps.
Disconnect the elbow connector.
Uncouple it from the cable.
Disconnect the LED strip according to § 7.2
Unscrew the cable guide chain support on the housing and then the one on the head.
Pull the chain out by gently feeding the cable through the bollard head.
Pull the cable out of the chain with the chain spreader tool.
To insert the spare connecting cable, insert the stripped part through the hole in the crown. This will lead directly into the cable feed-through tube in the head.

4. LOCK PIN for FDC option

If you opt for a BEM bollard with FDC, the presence of the magnet support forces you to clamp the lock pin between its fixing plate and the bollard head, so that the pin is always perpendicular to the lock rod.

5. TERMINAL STRIPS and SUPPORTS (wiring, HE unit, pneumatic)

Make sure that the M6 anti-rotation screw is always present, whatever the type of support.

6. Aluminum sheathed RIGID TUBE (Pneumatic)

This tube is factory pre-shaped but remains malleable. It is strongly advised to handle it with care.
If the deformation is excessive, creating interference with the bollard head, it would require replacement.

7. CABLE RUNNING COUPLING TIP and fasteners

In any case, make sure that the cable routing originally planned at the factory is as much as possible the same after disassembly and reassembly to ensure that no interference occurs with moving parts. All cable ties must be replaced.

VIII. MAINTENANCE

Never remove the bollard head when the bollard is in the raised position. Any replacement of the head, sleeve, luminous crown or other components, as well as any operation must be carried out with the bollard in the lowered position and with the power supply switched off.

1. PERIODIC BEM MAINTEANCNE

1.1. PERIODIC BEM maintenance schedule:

Before commissioning for the first time, please refer to § 1.9.1
(**1**) According to the option(s).

If the system is not in use, maintenance must still be carried out.
For installations by the sea or in saline environments, it is recommended to carry out maintenance every 4 months.

PC	MAINTENANCE	COMMISSIONING PERIOD			MAINTENANCE		
		Same day	1 week after commissioning	1 month after commissioning	Every 6 months	Every year	Every 2 years
1	**Cover:**						
	Tightening of screws		O		O		
	Condition of screws and threads				O		
	Greasing of screws				O		
2	**Luminous crown:**						
	Crown conditions					O	
	Operation of the LED strip (1)					O	
	Cable guide chain (1)					O	
3	**Head:**						
	Tightening of screws		O		O		
	Condition of screws and threading ON THE HEAD				O		
	Greasing of screws				O		
	Condition of the insulating sleeves				O		
	Surface condition of the centering cone				O		
4	**Sleeve: (1)**						
	General condition of the sleeve					O	
	Condition of silicone seal					O	
5	**Bollard head:**						
	Fastening of the Lock Pin					O	
	Condition of the FDC [limit switch] magnet (1)					O	
6	**Housing:**						
	Slide surface condition				O		
	Slide greasing				O		
7	**4-way splitter: (1)**						
	Fastening of and to the support		O			O	
	Sealing		O			O	
	Cable conditions		O			O	
	Cable routing and presence of cable ties		O			O	
8	**Limit switch [FDC] terminal strip: (1)**						
	Conditions and placement		O			O	
	Tightening of fasteners		O			O	
	Detection test		O			O	
9	**Drainage / Cleanliness:**						
	Cleanliness of the housing bottom		O		O		
	Absence of water		O		O		
	Drain efficiency	O			O		
10	**Floor covering:**						
	Cleanliness					O	
	No shortage					O	

PC	MAINTENANCE	COMMISSIONING PERIOD			MAINTENANCE		
		Same day	1 week after commissioning	1 month after commissioning	Every 6 months	Every year	Every 2 years
11	**Gas Cylinder:**						
	Visual quality of compressions				O		
	Tightening of the High and Low centering devices				O		
	High centering surface conditions				O		
12	**Locking rod:**						
	State and effectiveness of the spring		O		O		
	Attachment of the connecting rod		O		O		
13	**Wiring terminal strip: (1)**						
	Fastening on the housing		O		O		
	Presence of the M6 (anti-rotation) screw		O		O		

2. BEM PERIODIC MAINTENANCE PROCEDURES

For more details, see disassembly procedures.

PC1: COVER

- Screw tightening: check that each screw is tight
- Threads: clean and use an M14 tap to clean the threads
- Greasing: use water resistant grease

PC2: LUMINOUS CROWN

- Check that the entire LED strip works and the transparency of the diffuser.
- Led strip connection cable guide chain: Check the fastening of the two chain brackets, especially the one on the top of the strip. This should be as horizontal as possible to avoid any risk of interaction with the housing. The support on the housing must be positioned (by its lights) so that the axes of the two strands of the chain are on the same vertical plane.

PC3: HEAD

- Tightening of screws: check that each screw is tightened
- Head threading: clean and use an M10 thread tap to clean the threads
- Greasing: Use water-resistant grease.
- Insulating sleeve: check the general condition and replace if worn or cracked.
- Centering cone under the head: Depending on the surface condition, cleaning with WD40 type lubricating degreaser or, if the wear is excessive, complete replacement of the head (rare).

PC4: SLEEVE

- Check the conditions of the silicon gasket. Replace if needed
- Check the sleeve conditions: Replace it if it is too damaged (bumps, sharp parts that can cause injuries)

PC5: BOLLARD HEAD

- Check the correct tightening and positioning of the lock pin on the head. It must be visually level.
- Condition of the FDC [[limit switch] magnet: Check that the magnet is in good condition and that its support is correctly attached to the head

PC6: HOUSING

- Check that the clearance with the bollard head is correct and that the housing slides are free of dirt and are adequately greased.
- Greasing: Pull out the bollard head completely, clean if necessary and lubricate using water-resistant grease applied over the entire height of the 4 slides.

PC7: 4-WAY SPLITTER (1)

- Check the tightness of the connections and the condition of the cables.
- Check that different cables connected to it are not in the passages of moving parts and that they are held by clamps.

PC8: FDC [LIMIT SWITCH] CLAMP
- Condition and position: check that it is securely fastened and held in the lower housing provided and that the FDC [limit switches] are positioned correctly.
- Detection test: make a test from the control unit

PC9: DRAINAGE
- Check that there is no stagnant water, that the bottom of the housing is not filled with sand, dust, etc.
- Otherwise, a thorough cleaning is recommended.
- Clean internal walls and components.

PC10: FLOOR COVERING
- Check the cleanliness around the bollard (absence of sand, gravel, leaves, etc.)
- Check that there is no lack of coating around the housing that could damage the bollard while moving.

PC11: GAS CYLINDER
- Compression: Check that the cylinder is working properly both when descending and ascending.
- Check that the Bottom centering device is properly fitted to the cylinder, that it is still in the crosshead housing, that no dirt has slipped between it and the crossbar so that the vertical positioning of the cylinder is acceptable.
- Check that the Up Centering Device is properly tightened on the cylinder and check (as for the head cone) its surface conditions. Replace if needed.

PC12: LOCK ROD
- Check that the spring is fitted correctly and that it responds correctly. Replace it if necessary.
- Check the presence and correct positioning of the M6 screw.

PC13: WIRING TERMINAL STRIP
- Check that it is properly seated on the housing: H-M8 screw (fastening) + H-M6 screw (anti-rotation).

3. BEA EMBEDDED HYCRAULICS PERIODIC MAINTENANCE

3.1. PERIODIC HE maintenance schedule:

Before commissioning for the first time, please refer to § 1.9.1
(**1**) According to option(s).

If the system is not in use, maintenance must still be carried out.
For installations by the sea or in saline environments, it is recommended to carry out maintenance every 4 months.

PC	MAINTENANCE	COMMISSIONING PERIOD			MAINTENANCE		
		Same day	1 week after commissioning	1 month after commissioning	Every 6 months	Every year	Every 2 years
1	**Cover:**						
	Tightening of screws		O		O		
	Condition of screws and threads				O		
	Greasing of screws				O		
2	**Luminous crown:**						
	Crown conditions					O	
	Operation of the LED strip (1)					O	
	Cable guide chain (1)					O	
3	**Head:**						
	Tightening of screws		O		O		
	Conditions of screws and threading on the head				O		
	Greasing of screws				O		
	Condition of the insulating sleeves				O		
	Surface condition of the centering cone				O		
4	**Sleeve: (1)**						
	General condition of the sleeve					O	
	Condition of silicone seal					O	
5	**Bollard head:**						
	Hose and cable routing					O	
	Condition of the FDC [limit switch] magnet					O	

PC	MAINTENANCE	COMMISSIONING PERIOD			MAINTENANCE		
		Same day	1 week after commissioning	1 month after commissioning	Every 6 months	Every year	Every 2 years
6	**Housing:**						
	Slide surface condition				O		
	Slide greasing				O		
7	**4-way splitter:**						
	Fastening of and to the support		O			O	
	Sealing		O			O	
	Cable conditions		O			O	
	Cable routing and presence of cable ties		O			O	
8	**Limit switch [FDC] terminal strip:**						
	Conditions and placement		O			O	
	Tightening of fasteners		O			O	
	Detection test		O			O	
9	**Drainage / Cleanliness:**						
	Cleanliness of the housing bottom		O		O		
	Absence of water		O		O		
	Drain efficiency	O					
10	**Detection loops:**						
	Conditions of the loops		O		O		
	Impedance		O		O		
	Connections		O		O		
	Detector test		O		O		
11	**Floor covering:**						
	Cleanliness					O	
	No shortage					O	
12	**Hydraulic cylinder:**						
	Absence of leakage		O		O		
	Position on the crossbar		O		O		
	High cylinder (fastening and surface condition)		O		O		
13	**Embedded hydraulic unit:**						
	Fastening on its support		O			O	
	Absence of leakage		O		O		
	Oil level		O		O		
	Oil quality					O	
	Sealing of the solenoid valve		O			O	
14	**Embedded Unit support terminal strip:**						
	Fastening on the housing		O			O	
	Presence of the M6 (anti-rotation) screw		O			O	
15	**Technical control unit:**						
	Re-tightening (with power off)		O			O	
	30mA test		O			O	
	General condition and cleanliness		O			O	
	Ventilation / filters		O			O	
	Fastening of the control unit		O			O	

4. HE PERIODIC MAINTENANCE PROCEDURES

For more details, see disassembly procedures.

PC1: COVER

- Screw tightening: check that each screw is tight
- Threads: clean and use an M14 tap to clean the threads
- Greasing: use water resistant grease

PC2: LUMINOUS CROWN

- Check that the entire LED strip works and the transparency of the diffuser.
- Led strip connection cable guide chain: Check the fastening of the two chain brackets, especially the one on the top of the strip. This should be as horizontal as possible to avoid any risk of interaction with the housing. The support on the housing must be positioned (by its lights) so that the axes of the two strands of the chain are on the same vertical plane.

PC3: HEAD

- Tightening of screws: check that each screw is tightened
- Head threading: clean and use an M10 thread tap to clean the threads
- Greasing: Use water-resistant grease.
- Insulating sleeve: check the general condition and replace if worn or cracked.
- Centering cone under the head: Depending on the surface condition, cleaning with WD40 type lubricating degreaser or, if the wear is excessive, complete replacement of the head (rare).

PC4: SLEEVE

- Check the conditions of the silicon gasket. Replace if needed
- Check the sleeve conditions: Replace it if it is too damaged (bumps, sharp parts that can cause injuries)

PC5: BOLLARD HEAD

- Check the correct tightening and positioning of the lock pin on the head. It must be visually level.
- Condition of the FDC [[limit switch] magnet: Check that the magnet is in good condition and that its support is correctly attached to the head

PC6: HOUSING

- Check that the clearance with the bollard head is correct and that the housing slides are free of dirt and are adequately greased.
- Greasing: Pull out the bollard head completely, clean if necessary and lubricate using water-resistant grease applied over the entire height of the 4 slides.

PC7: 4-WAY SPLITTER (1)

- Check the tightness of the connections and the condition of the cables.
- Check that different cables connected to it are not in the passages of moving parts and that they are held by clamps.

PC8: FDC [LIMIT SWITCH] CLAMP

- Condition and position: check that it is securely fastened and held in the lower housing provided and that the FDC [limit switches] are positioned correctly.
- Detection test: make a test from the control unit

PC9: DRAINAGE

- Check that there is no stagnant water, that the bottom of the housing is not filled with sand, dust, etc.
- Otherwise, a thorough cleaning is recommended.
- Clean internal walls and components.

PC10: DETECTION LOOPS

- Condition of the loops: check the masonry on the periphery of the loops (any lack of covering, loose paving stones must be reworked).
- Impedance: measure the impedance (refer to the loop instructions)
- Connections: check the stability of the wiring and the connection in the technical control unit
- Detector test: checking that a vehicle is detected and price taken into account by the PLC.

PC11: FLOOR COVERING

- Check the cleanliness around the bollard (absence of sand, gravel, leaves, etc.)
- Check that there is no lack of coating around the housing that could damage the bollard while moving.

PC12: HYDRALIC CYLINDER

- No leakage: if the oil level in the unit drops or if the bottom of the casing appears greasy, it is possible that there is a leak on the cylinder (assuming the unit has been checked).
- Extend the cylinder. Depending on the origin of the leak (rod seal, hose, fitting), replace the complete cylinder.
- Position in the crossbar: check that the bottom of the cylinder (Ø16 nib) is in the crossbar seat and that no dirt has slipped between it and the crossbar so that the vertical positioning of the cylinder is acceptable.
- Check that the Up Centering Device is properly tightened on the cylinder and check (as for the head cone) its surface conditions. Replace if needed.

PC13: EMBEDDED HYDRAULIC UNIT

- Check that it is correctly attached to its support.
- No leakage: if the oil level in the unit drops or if the bottom of the casing appears greasy, it is possible that there is a leak on the unit (assuming the unit has been checked).
- Oil level: use the level plug
- Oil quality: a foamy or very dark oil must be replaced
- Tightness of the solenoid valve: check that the bollard head remains flush with the cover. If the head tends to descend very slowly, the solenoid valve may have a micro leak. Refer to the paragraph on hydraulic motor power.

PC14: EMBEDDED UNIT SUPPORT TERMINAL STRIP

- Check that it is properly seated on the housing: H-M8 screw (fastening) + H-M6 screw (anti-rotation).

PC15: TECHNICAL CONTROL UNIT

- Re-tightening: TO BE DONE WITHOUT VOLTAGE: check the tightness of the electrical terminal blocks
- 30mA test: check the TEST on the main circuit breaker
- General condition and cleanliness: check the casing, locks, hinges, absence of moisture and clean if necessary
- Ventilation / filters: check the ventilation flow and replace filters if necessary (and depending on the installation).
- Fastening of the control unit: check the fixing points to the wall or to the ground according to the type of technical control unit.

5. PERIODIC MAINTENANCE REMOTE HYDRAULIC BEA

5.1. PERIODIC HD maintenance schedule:

Before commissioning for the first time, please refer to § 1.9.1

(**1**) According to option(s).

If the system is not in use, maintenance must still be carried out.

For installations by the sea or in saline environments, it is recommended to carry out maintenance every 4 months.

PC	MAINTENANCE	COMMISSIONING PERIOD			MAINTENANCE		
		Same day	1 week after commissioning	1 month after commissioning	Every 6 months	Every year	Every 2 years
1	**Cover:**						
	Tightening of screws		O		O		
	Condition of screws and threads				O		
	Greasing of screws				O		
2	**Luminous crown:**						
	Crown conditions					O	
	Operation of the LED strip (1)					O	
	Cable guide chain (1)					O	
3	**Head:**						
	Tightening of screws		O		O		
	Conditions of screws and threading on the head				O		
	Greasing of screws				O		
	Condition of the insulating sleeves				O		
	Surface condition of the centering cone				O		
4	**Sleeve: (1)**						
	General condition of the sleeve					O	
	Condition of silicone seal					O	
5	**Bollard head:**						
	Hose and cable routing					O	
	Condition of the FDC [limit switch] magnet					O	

PC	MAINTENANCE	COMMISSIONING PERIOD			MAINTENANCE		
		Same day	1 week after commissioning	1 month after commissioning	Every 6 months	Every year	Every 2 years
6	**Housing:**						
	Slide surface condition				O		
	Slide greasing				O		
7	**4-way splitter:**						
	Fastening of and to the support		O			O	
	Sealing		O			O	
	Cable conditions		O			O	
	Cable routing and presence of cable ties		O			O	
8	**Limit switch [FDC] terminal strip:**						
	Conditions and placement		O			O	
	Tightening of fasteners		O			O	
	Detection test		O			O	
9	**Drainage / Cleanliness:**						
	Cleanliness of the housing bottom		O		O		
	Absence of water		O		O		
	Drain efficiency	O					
10	**Detection loops:**						
	Conditions of the loops		O		O		
	Impedance		O		O		
	Connections		O		O		
	Detector test		O		O		
11	**Floor covering:**						
	Cleanliness					O	
	No shortage					O	
12	**Hydraulic cylinder:**						
	Absence of leakage		O		O		
	Position on the crossbar		O		O		
	High cylinder (fastening and surface condition)		O		O		
13	**Remote hydraulic unit:**						
	Fastening on its support		O			O	
	Absence of leakage		O		O		
	Oil level		O		O		
	Oil quality					O	
	Sealing of the solenoid valve		O			O	
			O			O	
	Filler cap		O			O	
14	**Remote Unit support terminal strip:**						
	Fastening on the housing		O			O	
	Presence of the M6 (anti-rotation) screw		O			O	
15	**Technical control unit:**						
	Re-tightening (with power off)		O			O	
	30mA test		O			O	
	General condition and cleanliness		O			O	
	Ventilation / filters		O			O	
	Fastening of the control unit		O			O	

6. HD PERIODIC MAINTENANCE PROCEDURES

For more details, see disassembly procedures.

PC1: COVER

- Screw tightening: check that each screw is tight
- Threads: clean and use an M14 tap to clean the threads
- Greasing: use water resistant grease

PC2: LUMINOUS CROWN

- Check that the entire LED strip works and the transparency of the diffuser.
- Led strip connection cable guide chain: Check the fastening of the two chain brackets, especially the one on the top of the strip. This should be as horizontal as possible to avoid any risk of interaction with the housing. The support on the housing must be positioned (by its lights) so that the axes of the two strands of the chain are on the same vertical plane.

PC3: HEAD

- Tightening of screws: check that each screw is tightened
- Head threading: clean and use an M10 thread tap to clean the threads
- Greasing: Use water-resistant grease.
- Insulating sleeve: check the general condition and replace if worn or cracked.
- Centering cone under the head: Depending on the surface condition, cleaning with WD40 type lubricating degreaser or, if the wear is excessive, complete replacement of the head (rare).

PC4: SLEEVE

- Check the conditions of the silicon gasket. Replace if needed
- Check the sleeve conditions: Replace it if it is too damaged (bumps, sharp parts that can cause injuries)

PC5: BOLLARD HEAD

- Check the correct tightening and positioning of the lock pin on the head. It must be visually level.
- Condition of the FDC [[limit switch] magnet: Check that the magnet is in good condition and that its support is correctly attached to the head

PC6: HOUSING

- Check that the clearance with the bollard head is correct and that the housing slides are free of dirt and are adequately greased.
- Greasing: Pull out the bollard head completely, clean if necessary and lubricate using water-resistant grease applied over the entire height of the 4 slides.

PC7: 4-WAY SPLITTER (1)

- Check the tightness of the connections and the condition of the cables.
- Check that different cables connected to it are not in the passages of moving parts and that they are held by clamps.

PC8: FDC [LIMIT SWITCH] CLAMP

- Condition and position: check that it is securely fastened and held in the lower housing provided and that the FDC [limit switches] are positioned correctly.
- Detection test: make a test from the control unit

PC9: DRAINAGE

- Check that there is no stagnant water, that the bottom of the housing is not filled with sand, dust, etc.
- Otherwise, a thorough cleaning is recommended.
- Clean internal walls and components.

PC10: DETECTION LOOPS

- Condition of the loops: check the masonry on the periphery of the loops (any lack of covering, loose paving stones must be reworked).
- Impedance: measure the impedance (refer to the loop instructions)
- Connections: check the stability of the wiring and the connection in the technical control unit
- Detector test: checking that a vehicle is detected and price taken into account by the PLC.

PC11: FLOOR COVERING

- Check the cleanliness around the bollard (absence of sand, gravel, leaves, etc.)
- Check that there is no lack of coating around the housing that could damage the bollard while moving.

PC12: HYDRALIC CYLINDER

- No leakage: if the oil level in the unit drops or if the bottom of the casing appears greasy, it is possible that there is a leak on the cylinder (assuming the unit has been checked).
- Extend the cylinder. Depending on the origin of the leak (rod seal, hose, fitting), replace the complete cylinder.

- Position in the crossbar: check that the bottom of the cylinder (Ø16 nib) is in the crossbar seat and that no dirt has slipped between it and the crossbar so that the vertical positioning of the cylinder is acceptable.
- Check that the Up Centering Device is properly tightened on the cylinder and check (as for the head cone) its surface conditions. Replace if needed.

PC13: REMOTE HYDRAULIC UNIT
- Check that it is correctly attached to its support.
- No leakage: if the oil level in the unit drops or if the bottom of the casing appears greasy, it is possible that there is a leak on the unit (assuming the unit has been checked).
- Oil level: use the level plug
- Oil quality: a foamy or very dark oil must be replaced
- Tightness of the solenoid valve: check that the bollard head remains flush with the cover. If the head tends to descend very slowly, the solenoid valve may have a micro leak. Refer to the paragraph on hydraulic motor power.
- Hoses for connection to the bollard : The hoses must be free to move.
- Filling plug: A transport plug is installed on the unit to prevent oil spillage. It must be replaced with the filter plug before commissioning.

PC14: WIRING TERMINAL STRIP
- Check that it is properly seated on the housing: H-M8 screw (fastening) + H-M6 screw (anti-rotation).

PC15: TECHNICAL CONTROL UNIT
- Re-tightening: TO BE DONE WITHOUT VOLTAGE: check the tightness of the electrical terminal blocks
- 30mA test: check the TEST on the main circuit breaker
- General condition and cleanliness: check the casing, locks, hinges, absence of moisture and clean if necessary
- Ventilation / filters: check the ventilation flow and replace filters if necessary (and depending on the installation).
- Fastening of the control unit: check the fixing points to the wall or to the ground according to the type of technical control unit.

7. PNEUMATIC BEA PERIODIC MAINTENANCE

7.1. Pneumatic periodic maintenance calendar:

Before commissioning for the first time, please refer to § 1.9.1
(1) According to option(s).

If the system is not in use, maintenance must still be carried out.
For installations by the sea or in saline environments, it is recommended to carry out maintenance every 4 months.

PC	MAINTENANCE	COMMISSIONING PERIOD			MAINTENANCE		
		Same day	1 week after commissioning	1 month after commissioning	Every 6 months	Every year	Every 2 years
1	**Cover:**						
	Tightening of screws		O		O		
	Condition of screws and threads				O		
	Greasing of screws				O		
2	**Luminous crown:**						
	Crown conditions					O	
	Operation of the LED strip (1)					O	
	Cable guide chain (1)					O	
3	**Head:**						
	Tightening of screws		O		O		
	Conditions of screws and threading on the head				O		
	Greasing of screws				O		
	Condition of the insulating sleeves				O		
	Surface condition of the centering cone				O		
4	**Sleeve: (1)**						
	General condition of the sleeve					O	
	Condition of silicone seal					O	
5	**Bollard head:**						
	Hose and cable routing					O	
	Condition of the FDC [limit switch] magnet					O	

PC	MAINTENANCE	COMMISSIONING PERIOD			MAINTENANCE		
		Same day	1 week after commissioning	1 month after commissioning	Every 6 months	Every year	Every 2 years
6	**Housing:**						
	Slide surface condition				O		
	Slide greasing				O		
7	**4-way splitter:**						
	Fastening of and to the support		O			O	
	Sealing		O			O	
	Cable conditions		O			O	
	Cable routing and presence of cable ties		O			O	
8	**Limit switch [FDC] terminal strip:**						
	Conditions and placement		O			O	
	Tightening of fasteners		O			O	
	Detection test		O			O	
9	**Drainage / Cleanliness:**						
	Cleanliness of the housing bottom		O		O		
	Absence of water		O		O		
	Drain efficiency	O					
10	**Detection loops:**						
	Conditions of the loops		O		O		
	Impedance		O		O		
	Connections		O		O		
	Detector test		O		O		
11	**Floor covering:**						
	Cleanliness					O	
	No shortage					O	
12	**Pneumatic cylinder:**						
	Absence of leakage		O		O		
	Position on the crossbar		O		O		
	High cylinder (fastening and surface condition)		O		O		
	Pre-formed pipe		O				O
13	**Pneumatic control assembly:**						
	Fastening on its support		O		O		
	Absence of leakage		O		O		
14	**Pneumatic support terminal strip:**						
	Fastening on the housing		O			O	
	Presence of the M6 (anti-rotation) screw		O			O	
15	**Technical control unit:**						
	Re-tightening (with power off)		O			O	
	30mA test		O			O	
	General condition and cleanliness		O			O	
	Ventilation / filters		O			O	
	Fastening of the control unit		O			O	

8. PNEUMATIC PERIODOIC MAITNENANCE PROCEDURES

For more details, see disassembly procedures.

PC1: COVER

- Screw tightening: check that each screw is tight
- Threads: clean and use an M14 tap to clean the threads
- Greasing: use water resistant grease

PC2: LUMINIOUS CROWN

- Check that the entire LED strip works and the transparency of the diffuser.
- Led strip connection cable guide chain: Check the fastening of the two chain brackets, especially the one on the top of the strip. This should be as horizontal as possible to avoid any risk of interaction with the housing. The support on the housing must be positioned (by its lights) so that the axes of the two strands of the chain are on the same vertical plane.

PC3: HEAD

- Tightening of screws: check that each screw is tightened
- Head threading: clean and use an M10 thread tap to clean the threads
- Greasing: Use water-resistant grease.
- Insulating sleeve: check the general condition and replace if worn or cracked.
- Centering cone under the head: Depending on the surface condition, cleaning with WD40 type lubricating degreaser or, if the wear is excessive, complete replacement of the head (rare).

PC4: SLEEVE

- Check the conditions of the silicon gasket. Replace if needed
- Check the sleeve conditions: Replace it if it is too damaged (bumps, sharp parts that can cause injuries)

PC5: BOLLARD HEAD

- Check the correct tightening and positioning of the lock pin on the head. It must be visually level.
- Condition of the FDC [[limit switch] magnet: Check that the magnet is in good condition and that its support is correctly attached to the head

PC6: HOUSING

- Check that the clearance with the bollard head is correct and that the housing slides are free of dirt and are adequately greased.
- Greasing: Pull out the bollard head completely, clean if necessary and lubricate using water-resistant grease applied over the entire height of the 4 slides.

PC7: 4-WAY SPLITTER (1)

- Check the tightness of the connections and the condition of the cables.
- Check that different cables connected to it are not in the passages of moving parts and that they are held by clamps.

PC8: FDC [LIMIT SWITCH] CLAMP

- Condition and position: check that it is securely fastened and held in the lower housing provided and that the FDC [limit switches] are positioned correctly.
- Detection test: make a test from the control unit

PC9: DRAINAGE

- Check that there is no stagnant water, that the bottom of the housing is not filled with sand, dust, etc.
- Otherwise, a thorough cleaning is recommended.
- Clean internal walls and components.

PC10: DETECTION LOOPS

- Condition of the loops: check the masonry on the periphery of the loops (any lack of covering, loose paving stones must be reworked).
- Impedance: measure the impedance (refer to the loop instructions)
- Connections: check the stability of the wiring and the connection in the technical control unit
- Detector test: checking that a vehicle is detected and price taken into account by the PLC.

PC11: FLOOR COVERING

- Check the cleanliness around the bollard (absence of sand, gravel, leaves, etc.)
- Check that there is no lack of coating around the housing that could damage the bollard while moving.

PC12: PNEUAMATIC CYLINDER

- No leakage: if the oil level in the unit drops or if the bottom of the casing appears greasy, it is possible that there is a leak on the cylinder (assuming the unit has been checked).
- Extend the cylinder. Depending on the origin of the leak (rod seal, hose, fitting), replace the complete cylinder.
- Position in the crossbar: check that the bottom of the cylinder (Ø16 nib) is in the crossbar seat and that no dirt has slipped between it and the crossbar so that the vertical positioning of the cylinder is acceptable.
- Check that the Up Centering Device is properly tightened on the cylinder and check (as for the head cone) its surface conditions. Replace if needed.
- Check the correct connection of the pre-formed rigid pipe with the cylinder and with the pneumatic control mountings (2 types). Also check that the underside of the bollard head slips out of the bollard. Otherwise, the pipe has been accidentally deformed and must be replaced.

PC13: PNEUMATIC ASSEMBLY

- Check that it is securely fastened to its support (several points depending on the model)
- The pneumatic assembly delivered with the bollard is factory tested. In case of leakage, repairs or modifications to the bollard will not be covered by the warranty. If a leak appears, you will have to change the entire assem

PC14: PNEUAMTIC COMMAND SUPPORT TERMINAL STRIP

Check that it is properly seated on the housing: H-M8 screw (fastening) + H-M6 screw (anti-rotation).

PC15: TECHNICAL CONTROL UNIT

- Re-tightening: TO BE DONE WITHOUT VOLTAGE: check the tightness of the electrical terminal blocks
- 30mA test: check the TEST on the main circuit breaker
- General condition and cleanliness: check the casing, locks, hinges, absence of moisture and clean if necessary
- Ventilation / filters: check the ventilation flow and replace filters if necessary (and depending on the installation).
- Fastening of the control unit: check the fixing points to the wall or to the ground according to the type of technical control unit.

9. 1ST LEVEL TROUBLESHOOTING GUIDE

ANOMALIES	TYPE	POSSIBLE CAUSES	ACTIONS
The bollard does not rise (the electrical part in the CT is checked)	HE	The embedded hydraulic unit is not powered.	Check the connections. Check the unit.
	HE	The solenoid valve is open Not powered with “fail-safe” Powered with “fail-open”	Check the NO/NC function. Check coil power Check the solenoid valve.
	HE/HD	The hydraulic hose is disconnected under the unit	Check the connection
	HE	There is no oil in the unit	Check the level
		The Hydraulic Pump is broken	Replace the hydraulic groups
	P	Air does not reach the solenoid valve	Check the compressor and the air circuit
	P	The flow regulator is closed	Loosen the flow regulator
	P	The coil is broken	Replace the relative complete Pneumatic kit
	P	The compressor is broken	Replace the compressor
	All	The bollard is mechanically blocked	Check the assembly
The bollard does not go down (the electrical part in the CT is checked)	All	The solenoid valve is closed. Powered with “fail-safe” Not powered with “fail-open”	Check the NO/NC function. Check coil power Check the solenoid valve.
	All	The bollard is mechanically blocked	Check the assembly
The bollard does not rise at the correct speed	All	There is no pressure	Check the pressure with a pressure gauge and adjust it
	HE/HD	Oil leak inside or outside the unit	Check for leaks: if there is a leak, see instructions. Check the solenoid valve: tightness
The bollard does not descend at the right speed	All	The bollard is mechanically blocked	Check the assembly
The bollard ascends irregularly	P	Air in the circuit	Drain
	All	Presence of foreign bodies in the slides	Check the condition of the slides and lubricate them
	All	The cylinder is jammed or buckled	Check the cylinder conditions.
	All		Replace it if needed
	P	Air pressure is not sufficient	Check and adjust the pressure switch pressure (4 to 6 bar)
	HE/HD	Oil pressure is not sufficient	Check that there are no oil leaks
The bollard does not rise to the top	HE/HD	There is no oil in the unit	Check the level
	All	Incorrect high limit switch detection	Check the limit switches and magnet
	All	Presence of foreign bodies in the slides	Check the condition of the slides and lubricate them
The bollard does not descend all the way	All	The bollard is mechanically blocked	Check the bottom of the housing Check the bollard head contact surfaces Check the position of the cylinder on the crossbar
	All	Incorrect low limit switch detection	Check the limit switches and magnet
The bollard “yoyos” in the high position	All	The solenoid valve is not waterproof	Check the solenoid valve
	HE/HD	Oil leak	Check the circuit
The hydraulic unit does not stop when the bollard reaches the top and the red light remains flashing	HE/HD	The high limit switch is not detected	Check the limit switches and magnet
The luminous crown does not work	All	Reverse polarity Wrong connection on the terminal block	Revise connections

10. INTERVENTION LOG

Photocopy the log whenever intervention is required and complete it in its entirety.

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INTERVENTION AND MAINTENANCE LOG

Product reference:	Customer name:
Intervention date:	Technician's name:

Reason for intervention:

Intervention description

Code	Checks and maintenance points during the intervention	X
1	Fastening of the cover	
2	Limit switch sensor	
3	Solenoid Valve	
4	No air leakage	
5	Drainage efficiency	
6	Cover adjustment	
7	Luminous crown	
8	Detection loops	
9		
10		

Installer's stamp:	Technician's signature:
	Customer's signature:

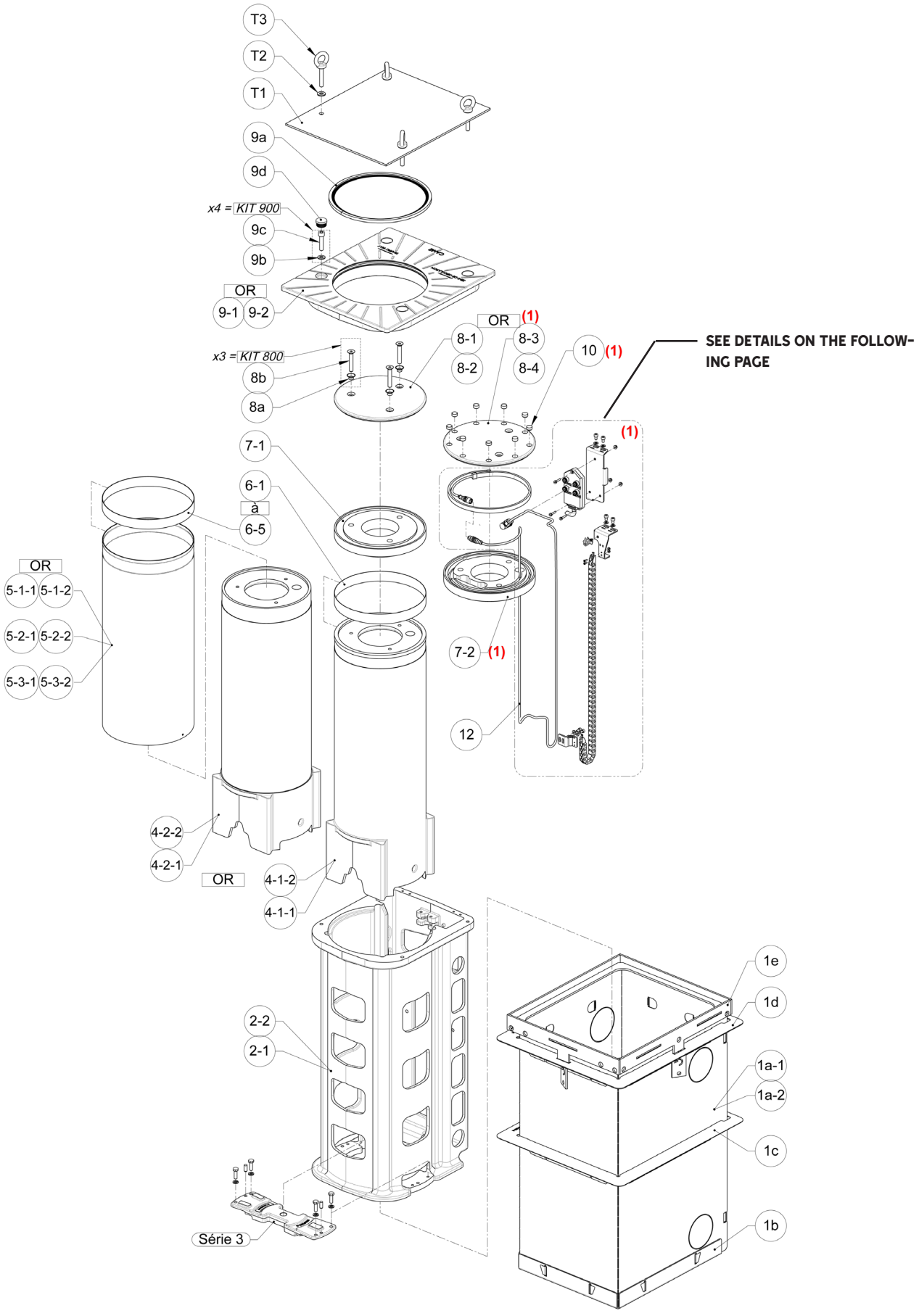
11. IMPLEMENTATION DIAGRAM

No.	Description / Reference	Batch	Quantity	Access

IX. SPARE PARTS

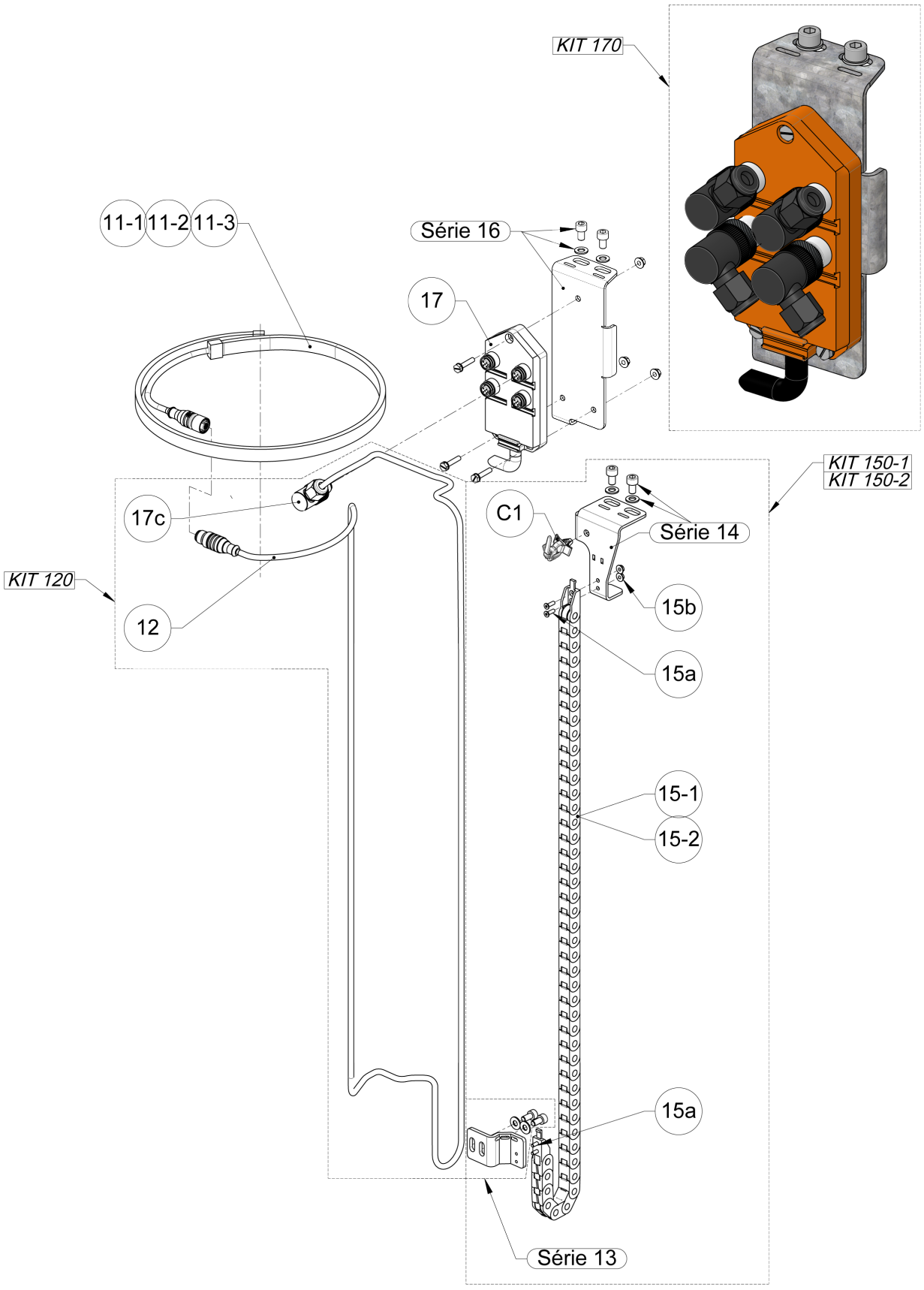
1. BOLLARD

1.1. Standard and optional spare parts



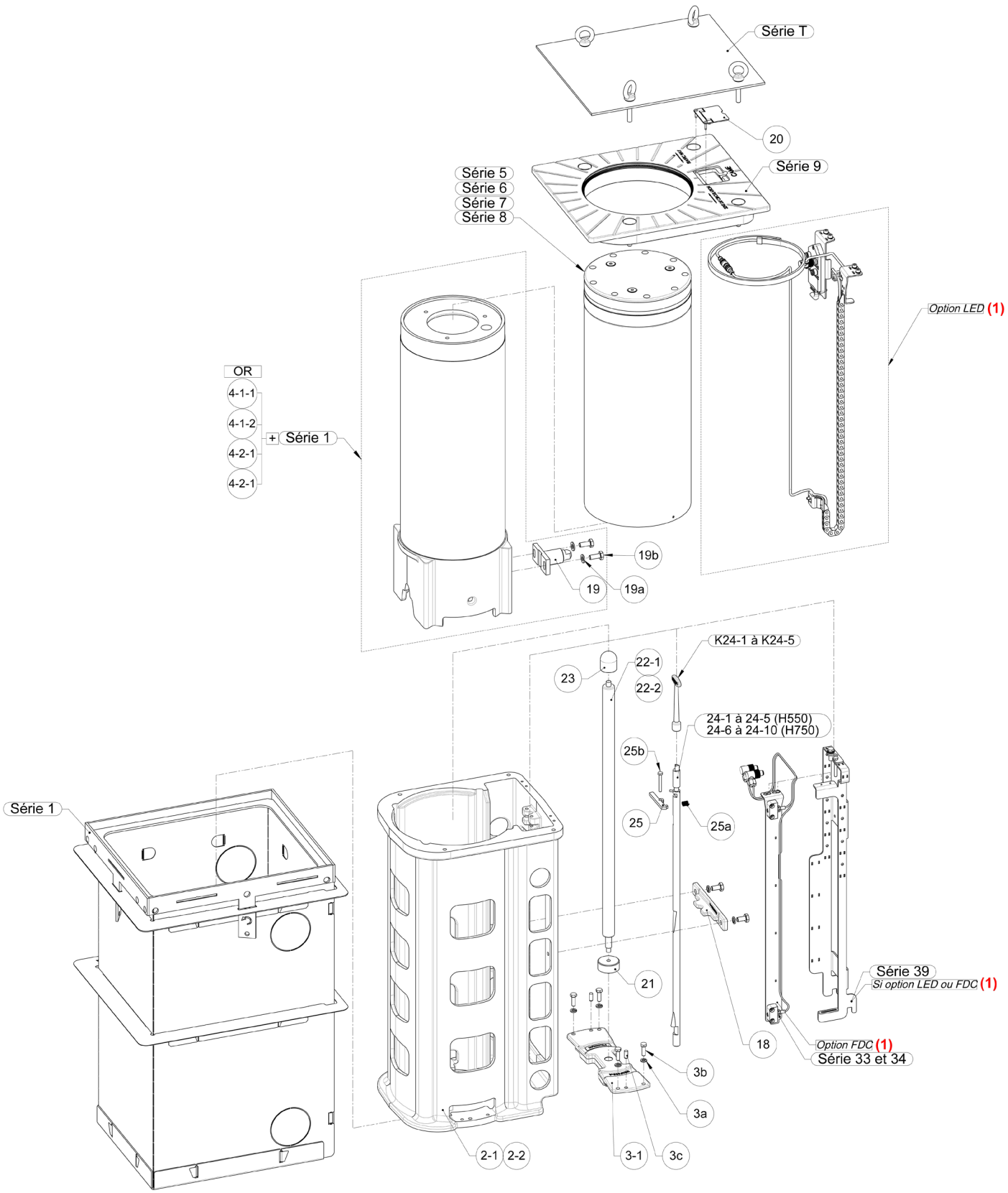
KIT	Item	NAME	Q.TY	HEIGHT	SPARE PARTS REFERENCE
	1a-1	Permanent Casing Body	1	550	88024-0619
	1a-2	Permanent Casing Body	1	750	88024-0695
	1b	Permanent Casing Bottom	1	All	88024-0616
	1c	REINFORCEMENT of the Permanent Casing	1	All	88024-0615
	1d	STRENGTHENING of the Permanent Casing FRAME	1	All	88024-0614
	1e	Permanent Casing TRIM FRAME	1	All	88024-0617
	2-1	FACTORY PAINTED HOUSING	1	550	88024-0698
	2-2	FACTORY PAINTED HOUSING	1	750	88024-0710
	3 Series	CROSSBAR: model according to the type of bollard - see following §	-	all	-
	4-1-1	Bollard Head CYLINDER - PAINTED (only)	1	550	ND
	4-1-2	Bollard HEAD CYLINDER - PAINTED (only)	1	750	ND
	4-2-1	INSULATABLE Bollard HEAD - PAINTED (only)	1	550	ND
	4-2-2	INSULATABLE Bollard HEAD - PAINTED (only)	1	750	ND
	5-1-1	316L sleeve With screw machining	1	550	88024-0786
	5-1-2	316L sleeve With screw machining	1	750	88024-0720
	5-2-1	304L SLEEVE With screw machining - PAINTED	1	550	88024-0201
	5-2-2	304L SLEEVE With screw machining - PAINTED	1	750	88024-0202
	5-3-1	304L SLEEVE With screw machining - CUSTOM PAINTED	1	550	88024-0358
	5-3-2	304L SLEEVE With screw machining - CUSTOM PAINTED	1	750	88024-0359
	6-1	RETRO-REFLECTIVE STRIPS - WHITE	Batch of 5	all	88024-0726
	6-2	RETRO-REFLECTIVE STRIPS - YELLOW	Batch of 5	all	88024-0727
	6-3	RETRO-REFLECTIVE STRIPS - RED	Batch of 5	all	88024-0728
	6-4	RETRO-REFLECTIVE STRIPS - WHITE & CAME logo	Batch of 5	all	88024-0236
	6-5	RETRO-REFLECTIVE STRIPS - YELLOW & CAME logo	Batch of 5	all	88024-0237
	7-1	DIFFUSING CROWN - "NO LED"	1	all	88024-0738
	7-2	DIFFUSING CROWN - For LED STRIP (1)	1	all	88024-0739
800	8a	Insulating Sleeves (Head 8)	3	all	88024-0730
	8b	M10 FHC screw (Head 8)	3		
	8-1	STEEL HEADER - PAINTED - Version WITHOUT Diffuser	1	all	88024-0729
	800 kit	Fastening kit			
	8-2	316L STAINLESS STEEL HEAD - Version WITHOUT Diffuser (single)	1	all	88024-0783
	8-3	STEEL HEADER - PAINTED - Version WITH Diffuser (1)	1	all	88024-0736
	10	DIFFUSEUR	9		
	8-4	316L HEAD - Version WITH Diffuser (1)	1	all	88024-0737
	10	DIFFUSEUR	9		
	9-1 or 2	COVER: model according to type of bollard - see § below		all	-
	9a	BALAI BRUSH	Batch of 3	all	88024-0705
900	9b	Narrow washer Ø10 (Cover 9)	Batch of 12	all	88024-0706
	9c	M10 CHC Screw (Cover 9)			
	9d	Purity cap for Cover		all	88024-0707
	10	DIFFUSERS (1)		all	ND
	T1	Transport plate		all	ND
	T2	Medium flat washer Ø10		all	ND
	T3	M10x60 lifting rings		all	ND
	11-1	S.A.V. KIT - BLUE LED STRIP + ½ connector (1)		all	88024-0742
	11-2	S.A.V. KIT - WHITE LED STRIP + ½ connector (1)		all	88024-0744
	11-3	S.A.V. KIT - RED LED STRIP + ½ connector (1)		all	88024-0745
120	12	S.A.V. KIT: LED STRIP CONNECTION (nude) (1)	2m	all	88024-0743
	17c	M12 elbow connector (not mounted)	1		

KIT	Item	NAME	Q.TY	HEIGHT	SPARE PARTS REFERENCE
	11-1	BLUE LED STRIP KIT (1)	1	all	88024-0755
	120 kit	Connection			
	11-2 +	WHITE LED STRIP COMPLETE KIT (1)	1	all	88024-0758
	120 kit	Connection			
	11-3 +	RED LED STRIP COMPLETE KIT (1)	1	all	88024-0759
	120 kit	Connection			
	13 Series	Chain Guide Cable Support Bollard head side (only) + fastenings (1)		all	ND
	14 Series	Chain Guide Cable Support Housing side (only) + fastening (1)		all	ND
(1)	15-1	CABLE GUIDE CHAIN (Bare) + 2 clamps (Dismountable) + bases	1	550	88024-0741
(1)	15-2	CABLE GUIDE CHAIN (Bare) + 2 clamps (Dismountable) + bases	1	550	88024-0757
150-1	15-1	COMPLETE KIT FOR CABLE GUIDE CHAIN (= 13 and 14 + 15-1 series) (1)	1	550	88024-0740
	15a	Screws for fastening on support	4		
	15b	Nuts for fastening on support	2		
150-2	15-1	COMPLETE KIT FOR CABLE GUIDE CHAIN (= 13 and 14 + 15-1 series) (1)	1	750	88024-0756
	15a	Screws for fastening on support	4		
	15b	Nuts for fastening on support	2		
	16 Series	4-way SPLITTER SUPPORT + fastening / housing (2 washers + 2 screws) (1)	1	all	88024-0746
	17 Series	4-WAY SPLITTER + 4 connectors + support fastenings (only) (1)		all	ND
170	16+17	4-WAY SPLITTER COMPLETE ON SUPPORT (= 16 + 17 series) (1)		all	88024-0716
	N/A=	**NOT AVAILABLE (in spare parts)**			
	(1)	**OPTIONAL ON BEM**			


KIT 170
11-1
11-2
11-3
Série 16
17
17c
KIT 120
12
KIT 150-1
KIT 150-2
C1
Série 14
15b
15a
15-1
15-2
15a
Série 13

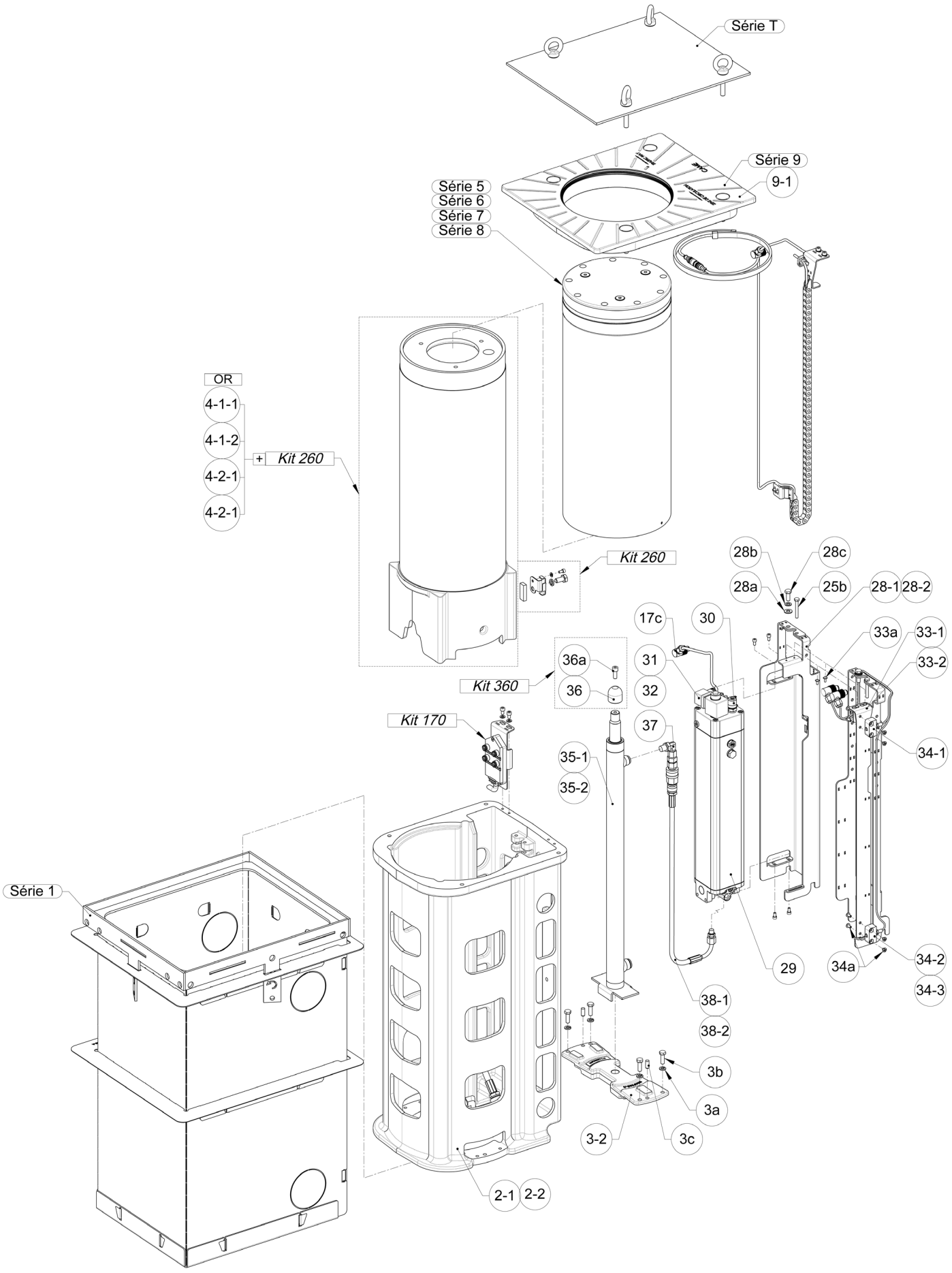
1.2. BEM bollard specific spare parts

Details of the spare part series for BEM (1) options: refer to the BEA spare parts tables.
Details of the other series (common parts): see § 9.1-1



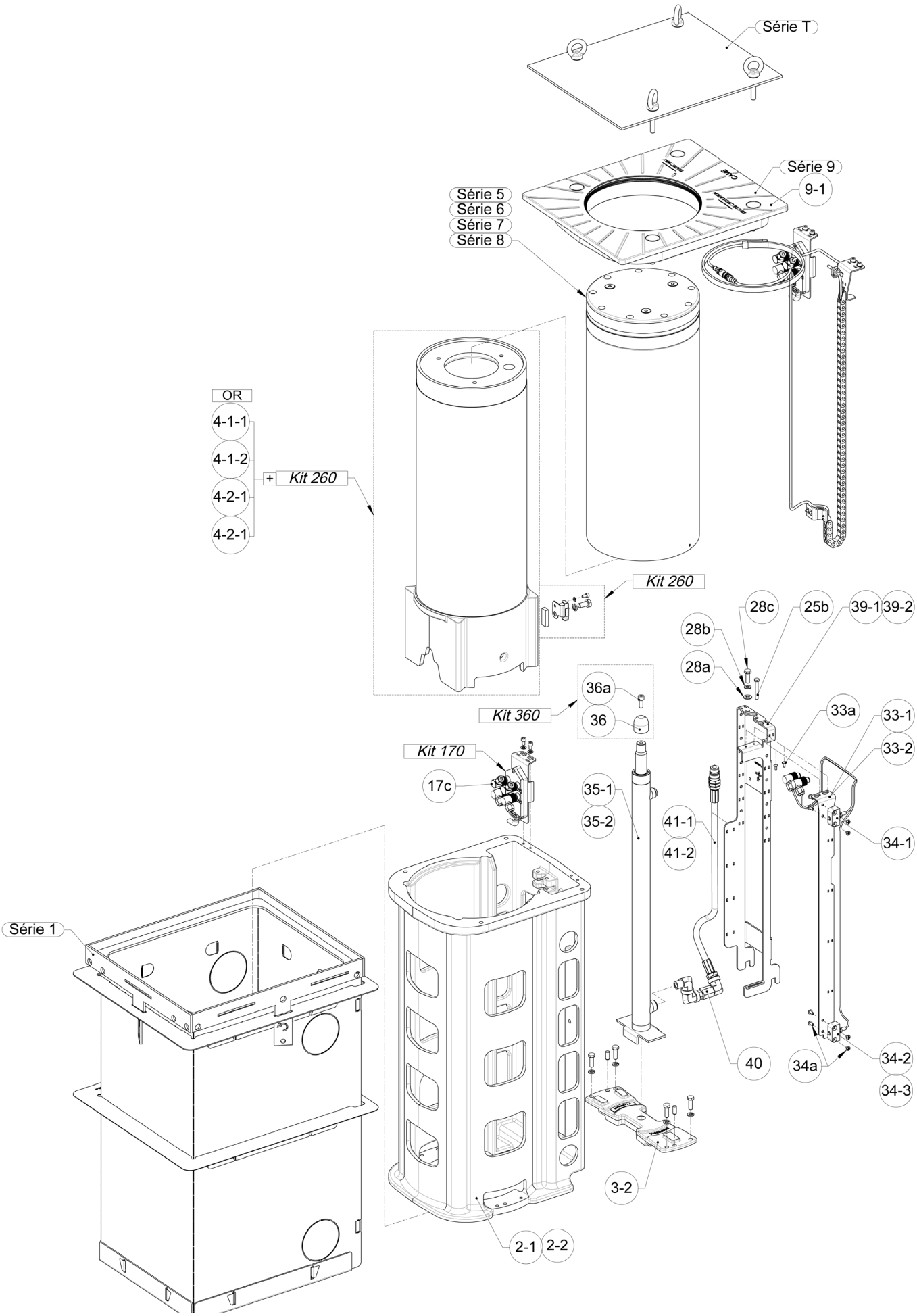
KIT	Item	NAME	Q.TY	HEIGHT	SPARE PARTS REFERENCE
	3-1	YELLOW ELECTRO-GALVANIZED MACHINED BEM CROSSBAR	1		
	3a	Ø8 Grower washer	4	all	88024-0700
	3b	H M8 screw	4		
	3c	Centering foot	2		
	18	ROUGH LOCK ROD SUPPORT (quantity according to bollard height)	1 or 2	all	88024-0699
	19	LOCK PIN (only)	1		
	19a	Ø10 washer	2	all	RPENR
	19b	H M10 screw	2		
	4-1-1	CYLINDER bollard HEAD - PAINTED	1	550	88024-0708
	19 Series	Mounted lock pin	1		
	4-1-2	CYLINDER bollard HEAD - PAINTED	1	750	88024-0711
	19 Series	Mounted lock pin	1		
	4-2-1	INSULATABLE Bollard HEAD - PAINTED	1	550	88024-0709
	19 Series	Mounted lock pin	1		
	4-2-2	INSULATABLE Bollard HEAD - PAINTED	1	750	88024-0712
	19 Series	Mounted lock pin	1		
	20	DUST CABINET Complete with studs	1	all	RKITCAP
	9-1	COMPLETE BEM MOUNTED COVER	1		
	9a	BALAI BRUSH	1		
	9b +9b	Cover fastening kit (Kit 900)	1	all	88024-0704
	9d	Purity cap for Cover	4		
	20	DUST CABINET Complete with studs	1		
	21	GAS CYLINDER LOW CENTRING DEVICE	1		88024-0703
	22-1	GAS CYLINDER	1	550	88024-0702
	22-2	GAS CYLINDER	1	750	88024-0830
	23	GAS CYLINDER HIGH CENTRING DEVICE	1		88024-0701
	24-1	LOCK ROD - triangle Allen wrench	1	550	88024-0721
	K24-1	SERVICE WRENCH - Long series - triangle Allen wrench recess	1	all	BOCLESL11
	24-2	LOCK ROD - 14 TRIANGLE - Ø250 H550 Bollard	1	550	88024-0722
	K24-2	SERVICE WRENCH - Long series - 14 triangle wrench recess	1	all	BOCLESL14
	24-3	LOCK ROD - HALF-MOON - Ø250 H550 Bollard	1	550	88024-0723
	K24-3	SERVICE WRENCH - Long series - HALF-MOON recess	1	all	BOCLESLDL
	24-4	LOCK ROD - FIREMAN SQUARE HALF MOON - Ø250 H550 Bollard	1	550	88024-0724
	K24-3	SERVICE WRENCH - Long series - FIREMAN SQUARE HALF MOON recess	1	all	RCLECARAL
	24-5	LOCK ROD - TYPE A - Ø250 H550 Bollard	1	550	88024-0725
	K24-5	SERVICE WRENCH - Long series - TYPE A recess	1	all	BOCLESLESA
	24-6	LOCK ROD - triangle Allen wrench	1	750	88024-0731
	24-7	LOCK ROD - 14 TRIANGLE	1	750	88024-0732
	24-8	LOCK ROD - HALF-MOON	1	750	88024-0733
	24-9	LOCK ROD - FIREMAN SQUARE HALF MOON	1	750	88024-0734
	24-10	LOCK ROD - TYPE A	1	750	88024-0735
	25	LATCH + SPRING + FASTENING for LATCH ROD	1		
	25a	Spring	1	all	RBIEL1B
	25b	M6 fastening screw ((or anti-rotation screws depending on the installation, see § below)	1		

1.3. BUILT-IN HYDRAULIC PUMP Bollard specific spare parts

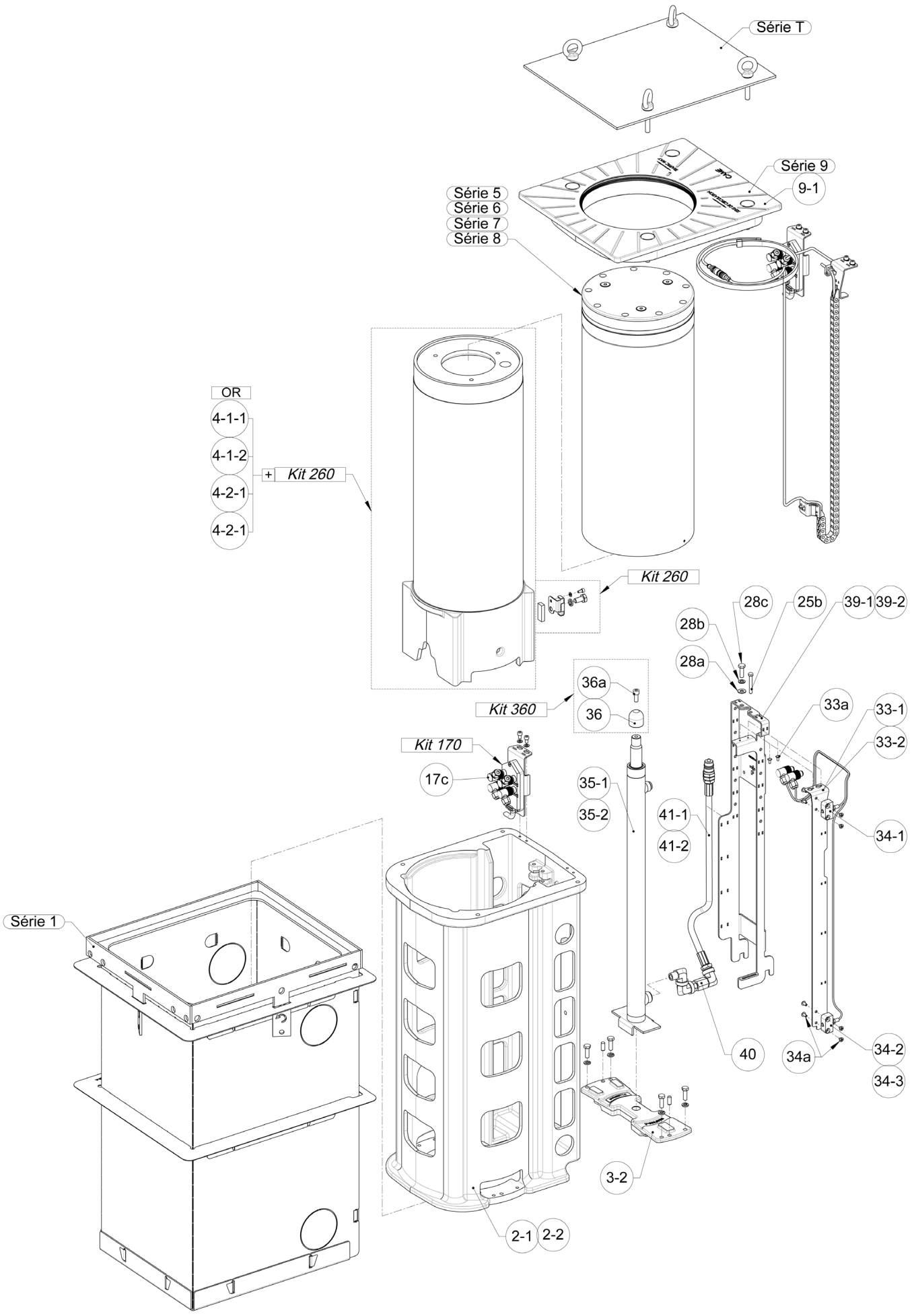


KIT	Item	NAME	Q.TY	HEIGHT	SPARE PARTS REFERENCE
	3-2	WHITE ELECTRO-GALVANIZED MACHINED BEA CROSSBAR	1	all	88024-0785
	3a	Ø8 Grower washer	4		
	3b	H M8 screw	4		
	3c	Centering foot	2		
260	26	FDC [limit switch] MAGNET KIT - Support (1)	1	all	88024-0715
	27	Magnet	1		
	26a	M10 Grower washer	1		
	26b	H M10 screw	1		
	26c	Ø5 washer	1		
	26d	CHC M5 screw	1		
	4-1-1	CYLINDER Bollard HEAD	1	550	88024-0714
	260 kit	Assembled FDC [limit switch] MAGNET KIT	1		
	4-1-2	CYLINDER Bollard HEAD	1	750	88024-0718
	260 kit	Assembled FDC [limit switch] MAGNET KIT	1		
	4-2-1	INSULATABLE Bollard HEAD	1	550	88024-0717
	260 kit	Assembled FDC [limit switch] MAGNET KIT	1		
	4-2-2	INSULATABLE Bollard HEAD	1	750	88024-0719
	260 kit	Assembled FDC [limit switch] MAGNET KIT	1		
	9-1	COMPELTE BEA COVER	1	all	88024-0713
	9a	BALAI BRUSH	1		
	9b +9b	Cover fastening kit (Kit 900) (see § 9.1.1)	1		
	9d	Purity cap for Cover	4		
	28-1	EMBEDDED HYDRAULIC UNIT SUPPORT	1	550	88024-0771
	28a	Ø8 washer	1		
	28b	Ø8 Eventail washer	1		
	28c	H M8 screw	1		
	25b	M6 fastening screw ((or anti-rotation screws depending on the installation, see § below)	1		
	28-2	EMBEDDED HYDRAULIC UNIT SUPPORT	1	750	88024-0777
	28a	Ø8 washer	1		
	28b	Ø8 Eventail washer	1		
	28c	H M8 screw	1		
	25b	M6 fastening screw ((or anti-rotation screws depending on the installation, see § below)	1		
	29	Bare EMBEDDED HYDRAULIC UNIT	-	all	ND
	30	PRESSURE TAP	1	all	88024-0141
	31	OPERATING CURRENT RELAY SOLENOID VALVE	1	all	88024-0301
	32	STAND-BY CURRENT RELAY SOLENOID VALVE	1	all	88024-0302
	C1	Orange removable clamp + mounting base	-	all	ND
	C2	SEA lubricant	5L	all	88024-0436
	29	OPERATING CURRENT relay EMBEDDED HYDRAULIC UNIT	1	all	88024-0774
	30	PRESSURE TAP	1		
	31	OPERATING CURRENT RELAY SOLENOID VALVE	1		
	29a	CHC M5 Unit fastening screw	4		
	C1	Orange removable clamp + mounting base	1		
	C2	SEA lubricant	5L		
	17c	M12 elbow joint (assembled)	1		

KIT	Item	NAME	Q.TY	HEIGHT	SPARE PARTS REFERENCE
	29	STAND-BY CURRENT relay EMBEDDED HYDRAULIC UNIT	1		
	30	PRESSURE TAP	1		
	32	STAND-BY CURRENT RELAY SOLENOID VALVE	1		
	29a	CHC M5 Unit fastening screw	4	all	88024-0775
	C1	Orange removable clamp + mounting base	1		
	C2	SEA lubricant	5L		
	17c	M12 elbow joint (assembled)	1		
	33-1	LIMIT SWITCH SUPPORT TERMINAL STRIP(1)	1	550	88024-0748
	33a	TB screw with M4 flange	2		
	33-2	LIMIT SWITCH SUPPORT TERMINAL STRIP(1)	1	750	88024-0753
	33a	TB screw with M4 flange	2		
	34-1	FDC [Limit Switch] MAGNETIC REED SENSOR (with support) - HIGH point (1) WHITE cable	1	all	88024-0749
	17c	M12 angled connector (assembled)	1		
	34a	Binder screw for fastening on the FDC [limit switch] terminal strip 33	2		
	34-2	FDC [Limit Switch] MAGNETIC REED SENSOR (with support) - LOW point (1) BLACK cable	1	550	88024-0750
	17c	M12 angled connector (assembled)	1		
	34a	Binder screw (Male/Female) for fastening on the terminal strip 33	2		
	34-3	FDC [Limit Switch] MAGNETIC REED SENSOR (with support) - LOW point (1) Grey cable	1	750	88024-0754
	17c	M12 angled connector (assembled)	1		
	34a	Binder screw for fastening on the FDC [limit switch] terminal strip 33	2		
	34a	Binder screw (Male/Female) for fastening the FDC [limit switch] on the terminal strip 33 (1)	Batch of 20	all	88024-0751
	33-1	FDC [limit switch] kit for ASSEMBLY on the TERMINAL STRIP - Terminal Strip + screws (33a) (1)	1	550	88024-0796
	34-1	COMPLETE HIGH FDC [limit switch] + FASTENERS + Connector			
	34-2	COMPLETE LOW FDC [limit switch] + FASTENERS + Connector			
	33-2	FDC [limit switch] kit for ASSEMBLY on the TERMINAL STRIP - Terminal Strip + screws (33a) (1)	1	750	88024-0797
	34-1	COMPLETE HIGH FDC [limit switch] + FASTENERS + Connector			
	34-3	COMPLETE LOW FDC [limit switch] + FASTENERS + Connector			
	35-1	HYDRAULIC CYLINDER	-	550	ND
	35-2	HYDRAULIC CYLINDER	-	750	ND
360	36	UP CENTERING DEVICE for HYDRAULIC & PNEUMATIC cylinder	1	all	88024-0784
	36a	CHC M8 screw	1		
	37	Coupling for EMBEDDED HYDRAULIC cylinder	1 set	all	88024-0809
	38-1	EMBEDDED HYDRAULIC HOSE + unit jack	1	550	88024-0773
	38-2	EMBEDDED HYDRAULIC HOSE + unit jack	1	750	88024-0779
	35-1	HYDRAULIC CYLINDER	1		
	360 kit	High centering + fastening	1	550	88024-0772
	37+ 38-1	Connection + complete hose	1		
	35-2	HYDRAULIC CYLINDER	1		
	360 kit	High centering + fastening	1		
	37+ 38-2	Connection + complete hose	1	750	88024-0778
	C2	SEA lubricant	5L		
	17c	M12 elbow joint (assembled)	1		
		ND = NOT AVAILABLE (in spare parts) - (1) OPTIONAL ON BEM			

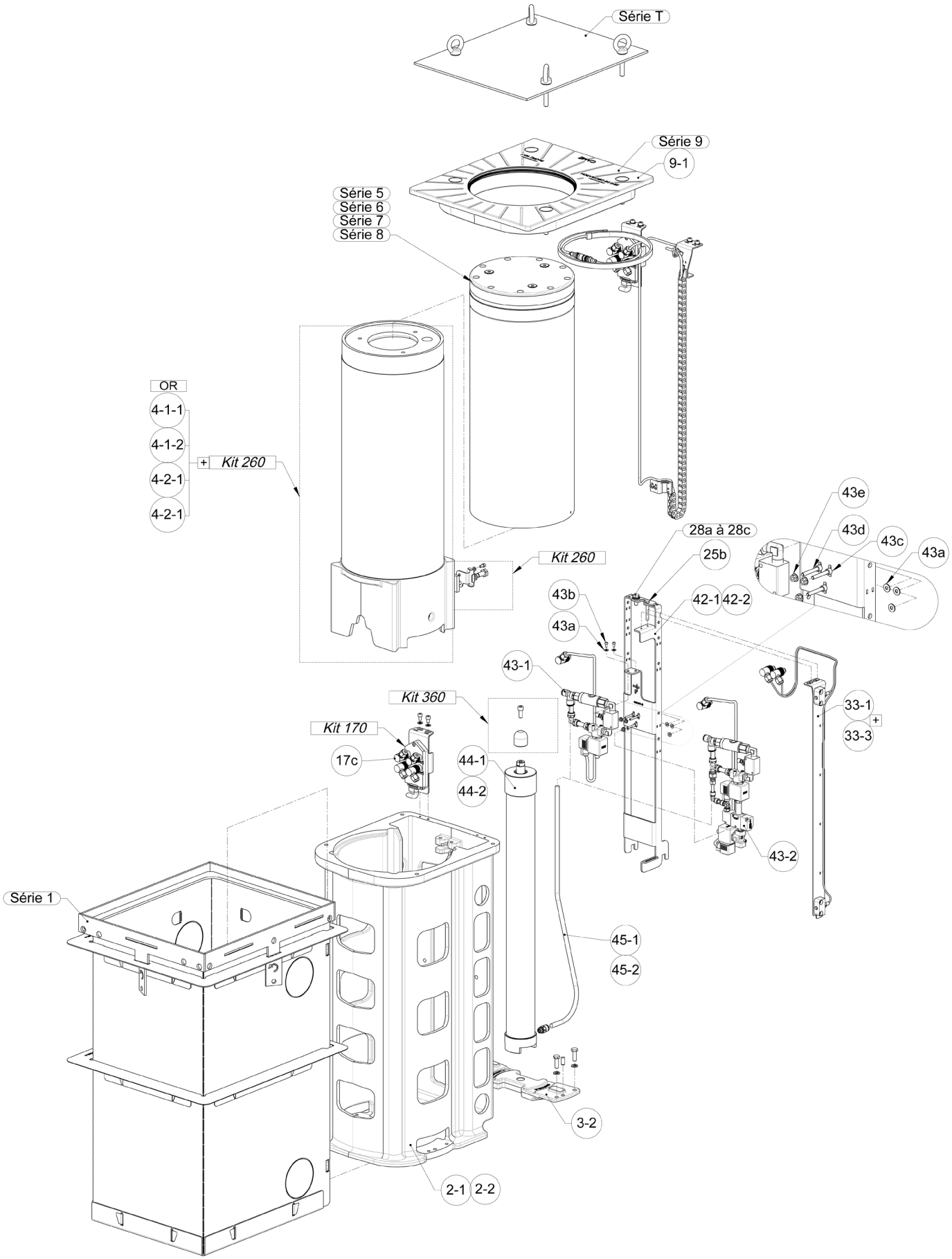

Série T
Série 9
9-1
Série 5
Série 6
Série 7
Série 8
OR
4-1-1
4-1-2
4-2-1
4-2-1
+
Kit 260
Kit 260
28c
25b
39-1
39-2
28b
28a
36a
36
Kit 360
33a
33-1
33-2
Kit 170
17c
35-1
35-2
41-1
41-2
34-1
Série 1
40
34a
34-2
34-3
3-2
2-1
2-2

1.4. Specific spare parts for the REMOTE HYDRAULIC Bollard



KIT	Item	NAME	Q.TY	HEIGHT	SPARE PARTS REFERENCE
	3-2 +	WHITE ELECTRO-GALVANIZED MACHINED BEA CROSSBAR + fastener	1	all	88024-0785
	26	FDC [limit switch] MAGNET KIT	1	all	88024-0715
	4-1-1 +	CYLINDER Bollard HEAD + 260 kit	1	550	88024-0714
	4-1-2 +	CYLINDER Bollard HEAD + 260 kit	1	750	88024-0718
	4-2-1 +	INSULATABLE Bollard HEAD + 260 kit	1	550	88024-0717
	4-2-2 +	INSULATABLE Bollard HEAD + 260 kit	1	750	88024-0719
	9-1 +	BEA COMPLETE COVER complete with fasteners	1	all	88024-0713
	33-1 +	LIMIT SWITCH support terminal strip + Fasteners (1)	1	550	88024-0748
	33-2 +	LIMIT SWITCH support terminal strip + Fasteners (1)	1	750	88024-0753
	34-1 +	REED MAGNETIC FDC [limit switch] SENSOR + fastening + HIGH + WHITE CABLE (1)	1	all	88024-0749
	34-2 +	REED MAGNETIC FDC [limit switch] SENSOR + fastening + LOW + BLACK CABLE (1)	1	550	88024-0750
	34-3 +	REED MAGNETIC FDC [limit switch] SENSOR + fastening + LOW + GREY CABLE (1)	1	750	88024-0754
	34a	Binder screw (Male/Female) for fastening FDC [limit switch] on the terminal strip 33 (1)	Batch of 20	all	88024-0751
	33-1 +	FDC [limit switch] kit for ASSEMBLY on the TERMINAL STRIP - Terminal Strip + screws (1)	1	550	88024-0796
	33-2 +	FDC [limit switch] kit for ASSEMBLY on the TERMINAL STRIP - Terminal Strip + screws (1)	1	750	88024-0797
360	36	UP CENTERING DEVICE for HYDRAULIC & PNEUMATIC cylinder + screw		all	88024-0784
	39-1	WIRING TERMINAL STRIP (can be used for HD and BEM) (1)	1	550	88024-0747
	28a	Ø8 washer	1		
	28b	Ø8 Eventail washer	1		
	28c	H M8 screw	1		
	25b	M6 fastening screw ((or anti-rotation screws depending on the installation, see § below)	1		
	39-2	WIRING TERMINAL STRIP (can be used for HD and BEM) (1)	1	750	88024-0752
	28a	Ø8 washer	1		
	28b	Ø8 Eventail washer	1		
	28c	H M8 screw	1		
	25b	M6 fastening screw ((or anti-rotation screws depending on the installation, see § below)	1		
	40	CONNECTION for the REMOTE HYDRAULIC cylinder	1 set	all	88024-0806
	41-1	REMOTE HYDRAULIC HOSE	1	550	88024-0761
	41-2	REMOTE HYDRAULIC HOSE	1	750	88024-0763
	35-1	HYDRAULIC CYLINDER	-	550	ND
	35-2	HYDRAULIC CYLINDER	-	750	ND
	35-1	HYDRAULIC CYLINDER	1	550	88024-0760
	360 kit	High centering + fastening	1		
	37+ 41-1	Connection + complete hose	1		
	35-2	HYDRAULIC CYLINDER	1	750	88024-0762
	360 kit	High centering + fastening	1		
	37+ 41-2	Connection + complete hose	1		
	C1	Orange removable clamp + mounting base	-	all	ND
	ND	**(+) = added elements: See details in the previous paragraph for the same item.**			
	(1)	**= NOT AVAILABLE (in spare parts)** **OPTIONAL ON BEM**			

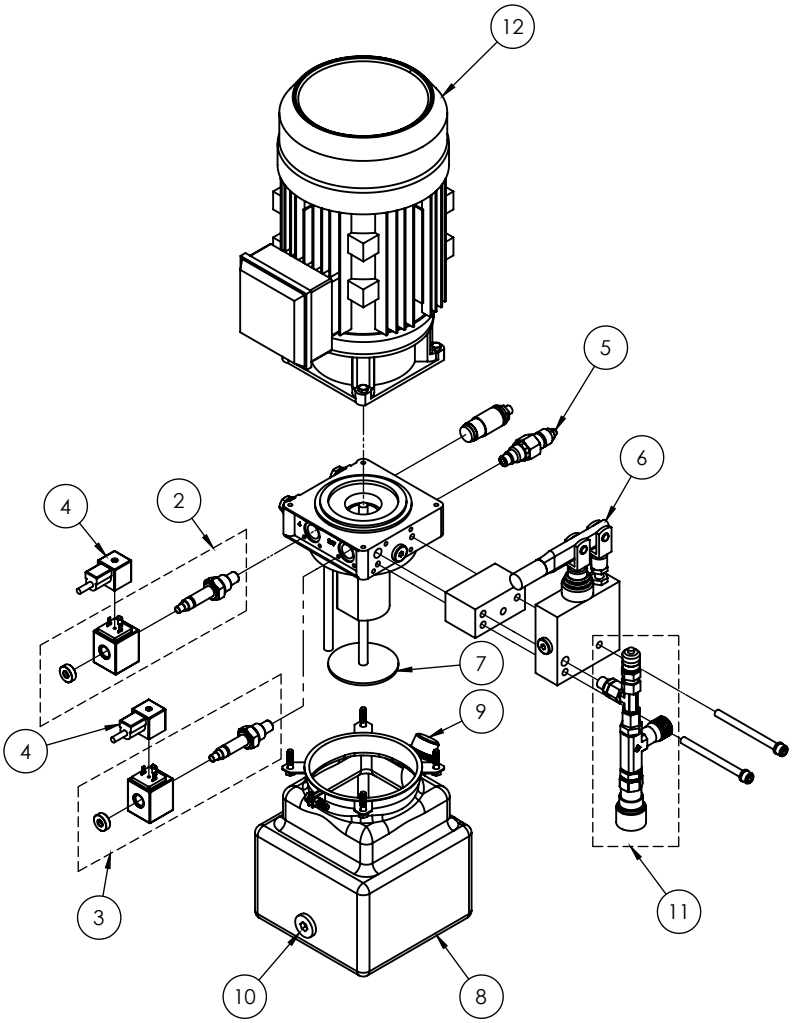
1.5. PNEUMATIC Bollard specific spare parts



KIT	Item	NAME	Q.TY	HEIGHT	SPARE PARTS REFERENCE
	3-2 +	WHITE ELECTRO-GALVANIZED MACHINED BEA CROSSBAR + fastener	1	all	88024-0785
260	26	FDC [limit switch] MAGNET KIT	1	all	88024-0715
	4-1-1 +	CYLINDER Bollard HEAD + 260 kit	1	550	88024-0714
	4-1-2 +	CYLINDER Bollard HEAD + 260 kit	1	750	88024-0718
	4-2-1 +	INSULATABLE Bollard HEAD + 260 kit	1	550	88024-0717
	4-2-2 +	INSULATABLE Bollard HEAD + 260 kit	1	750	88024-0719
	9-1 +	BEA COMPLETE COVER complete with fasteners	1	all	88024-0713
	33-1 +	LIMIT SWITCH support terminal strip + Fasteners (1)	1	550	88024-0748
	33-2 +	LIMIT SWITCH support terminal strip + Fasteners (1)	1	750	88024-0753
	34-1 +	REED MAGNETIC FDC [limit switch] SENSOR + fastening + HIGH + WHITE CABLE (1)	1	all	88024-0749
	34-2 +	REED MAGNETIC FDC [limit switch] SENSOR + fastening + LOW + BLACK cable (1)	1	550	88024-0750
	34-3 +	REED MAGNETIC FDC [limit switch] SENSOR + fastening + LOW + Grey cable (1)	1	750	88024-0754
	34a	Binder screw (Male/Female) for fastening the FDC [limit switch] on terminal strip 33 (1)	Batch of 20	all	88024-0751
	33-1 +	FDC [limit switch] kit for ASSEMBLY on the TERMINAL STRIP - Terminal Strip + screws (1)	1	550	88024-0796
	33-2 +	FDC [limit switch] kit for ASSEMBLY on the TERMINAL STRIP - Terminal Strip + screws (1)	1	750	88024-0797
360	36	UP CENTERING DEVICE for HYDRAULIC & PNEUMATIC cylinder + screw		all	88024-0784
	C1	Orange removable clamp + mounting base	-	all	ND
	42-1	PNEUMATIC DISTRIBUTION TERMINAL STRIP	1		
	28a	Ø8 washer	1		
	28b	Ø8 Eventail washer	1	550	88024-0764
	28c	H M8 screw	1		
	25b	M6 fastening screw ((or anti-rotation screws depending on the installation, see § below)	1		
	42-2	PNEUMATIC DISTRIBUTION TERMINAL STRIP	1		
	28a	Ø8 washer	1		
	28b	Ø8 Eventail washer	1	750	88024-0768
	28c	H M8 screw	1		
	25b	M6 fastening screw ((or anti-rotation screws depending on the installation, see § below)	1		
	43-1	STANDARD PNEUMATIC DISTRIBUTION ASSEMBLY	1		
	43a	Ø4 washer	2	all	88024-0767
	43b	CHC M4 screw	2		
	C1	Orange removable clamp + mounting base	1		
	43-2	STAND-BY CURRENT PNEUMATIC DISTRIBUTION ASSEMBLY	1		
	43a	Ø4 washer	5		
	43b	CHC M4 screw	2		
	43c	Nylon spacer	3	all	88024-0776
	43d	CHC M4 screw	3		
	43e	Nut Serrated base plate	3		
	C1	Orange removable clamp + mounting base	1		
	44-1	PNEUAMATIC CYLINDER + CONNECTION	-	550	ND
	44-2	PNEUAMATIC CYLINDER + CONNECTION	-	750	ND
	44-1	PNEUAMATIC CYLINDER + CONNECTION	1	550	88024-0765
	360 kit	High centering + fastening	1		
	44-1	PNEUAMATIC CYLINDER + CONNECTION	1	750	88024-0769
	360 kit	High centering + fastening	1		
	45-1	PREFORMED ALU COATED PNEUMATIC TUBE	1	550	88024-0766
	45-1	PREFORMED ALU COATED PNEUMATIC TUBE	1	750	88024-0770
		(+) = added elements: See details in the previous paragraph for the same item.			
	ND	**= NOT AVAILABLE (in spare parts)**			
	(1)	**OPTIONAL ON BEM**			

KIT	Item	NAME	Q.TY	HEIGHT	SPARE PARTS REFERENCE
		VANDL-PROOF SCREWS AND BOLTS KIT for HEAD			
	8a	Insulating Sleeves	3		88024-0782
	AV8	M10 vandal-proof screws	3		
	E1	Adapter tip for vandal-proof screws	2		
		VANDL-PROOF SCREWS AND BOLTS KIT for COVER			
	9b	M10 narrow washer	4		88024-0185
	AV9	CHC M10 screws with nib	4		
	KAV	Spanner for CHC vandal-proof CHC with nib	2		
	KAV	SPANNER FOR VANDAL-PROOF SCREWS WITH NIB	Batch of 2		88024-0186
		KIT FOR MANUAL RELEASE - STAND-BY CURRENT RELAY VERSION HE			
	32	Stand-by current relay solenoid valve	1		88024-0795
	9-1	Cover with opening (BEM type)	1		
	9a	Balai Brush	1		
	20	Dust cabinet Complete with studs	1		
	KDV	Unlocking rod (extension) assembly for Allen wrench	1		

2. REMOTE STANDARD HYDRAULIC UNIT



Item	DESCRIPTION	REPLACEMENT REF
1	Complete NF hydraulic unit + PUMP	RONE-GH14M1
	Complete NF hydraulic unit	88024-0658
	Nude hydraulic unit (without solenoid valve)	RONE-GH14
2	NO descent solenoid valve + reel	RONE-GH03
	NF descent solenoid valve + reel	RONE-GH04
3	Slow motion solenoid valve + reel	RONE-GH05
4	Coil supply connector without rectifier	88024-0623
5	Slow-motion flow limiter	88024-0138
6	Hand pump	RONE-GH08
7	Suction inlet filter	RONE-GH07
8	Complete tank	88024-0332
9	Air filter cap	RONE-GH12
10	Drain plug (x2)	
11	Complete oil distribution	88024-0679
12	1500W electric motor	On request
-	Hydraulic oil - 20 liter canister	88024-0034

X. DEMOLITION&DISPOSAL

The user is requested to continue this effort to safeguard the environment that CAME FRANCE - URBACO DIVISION considers as one of the factors in the development of its manufacturing and commercial strategies, by following these brief guidelines concerning recycling:
Disposal of the packaging: The packaging components (paper, plastic, etc.) are considered to be solid urban waste. They can therefore be disposed off without any problem, simply by sorting them so that they can be recycled. Prior to proceeding, you must learn about the applicable legislation in the country in which the device has been installed.

DO NOT THROW WASTE JUST ANYWHERE!

Disposal of the device: Our products are made of different materials. Most of these materials (aluminum, plastic, steel, electric cables) are solid urban waste. They can therefore be recycled by sorting them and bringing them to specialized waste collection centers. Other components (electronic boards, radio control batteries, etc.) may contain polluting substances. They must therefore be delivered to companies that process and dispose of this type of waste. Prior to proceeding, you must learn about the applicable legislation in the country in which the device has been installed.

DO NOT THROW WASTE JUST ANYWHERE!

XI. DECLARATION OF CONFORMITY

CAME FRANCE - URBACO DIVISION, 73 Allée de Gromelle - Lot A1, 84270 VEDENE, declares that the G6N Bollard is built to be incorporated into equipment or to be assembled with other elements, in order to constitute a product complying with Directive 2006/42/EC.

CAME FRANCE - URBACO DIVISION also declares that the G6N Bollard complies with the essential safety requirements of the following Directives:
NC P 98 310,
NC EN 124 Class E
2004/30/EU Electro Magnetic Compatibility (EMC) Directive,
2006/35/UE Low Voltage Directive

It is forbidden to commission the Bollard until the machine in which it will be incorporated or of which it will become a component has been identified and until compliance with the conditions of EC Directive 2006/42 has been declared.

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