URBACO
AUTOMATIC BOLLARDS

INSTALLATION AND OPERATION MANUAL

G6 EVO

AUTOMATIC RETRACTABLE BOLLARD

ISO 9001
ISO 14001
BUREAU VERITAS
Certification

URBACO
AUTOMATIC BOLLARDS

SUMMARY

i. INTRODUCTION

Thank you to have been relying to URBACO by purchasing the G6EVO access control bollard.
In addition to provide details on operating instructions, this installation and operation manual is design to assist the Users, Installers, Maintainers and Operators Staff.
Should you require any further information or specific assistance, please contact us.

ii. FIELD OF APPLICATION AND AIMS

This manual is covering all steps that must be carefully follow while installing, maintaining and operating the equipment, to ensure the good functioning and safe of product and personne.
It is intended for specifying implementation site and adequate equipment, design the secure entry system, install, connect, test and maintain the whole equipment.
The purpose is to insure that all risks are controlled to keep safe any individual, owner, users or any personnel that could carry out any installation, maintain or repair task on this equipment.

This symbol indicates strict attention must be given to the instructions. 

The product must be used only for its intended use. Any other use is considered dangerous. The company URBACO S.A. is not liable for any damage caused by improper, wrong or unreasonable use.
The product's safety and, consequently, its proper installation are tied to the respect of it technical characteristics and of its installation and use, which are specifically shown in this manual.

iii. DECLARATION OF CONFORMITY

URBACO, 457 avenue du Clapier, 84320 Entraigues sur la Sorgues, certify that the G6EVO bollard is intended to be incorporated into other equipment or to be assembled to other machinery, for the purpose of constituting machinery that complies with EC Machinery Directive 2006/42/CE.

URBACO also certify that the G6EVO bollard complies with the fundamental safety requirements of the following Directives:
2004/108/CE - Electromagnetic Compatibility Directive (CEM),
2006/95/CE - Low Voltage Directive
And that it is forbidden to commission the bollard until the machinery into which it will be integrated or of which it will become a component is identified and until the declaration of conformity to the conditions established by Directive 2006/42/CE.
As well as the following regulations:
NF P 98 310,
NF EN 124 Class F
EN 61000-6-2 and EN 61000-6-3 - Electromagnetic compatibility,
EN1050 - Risk assessment principles,
EN60529 - Methods for testing the IP protection rating equipment,
EN11201 - Method for measuring machinery's sound power levels,
EN60068-2-1 and EN60068-2-2 - Machinery's environmental testing methods,
Decree PMR No. 2006-1657,
EN13849-1 and EN13849-2 - Machinery safety.

iv. GUARANTEE AND RESPONSIBILITIES

The owner of the system is responsible for the proper performance of the associate works, as well as the proper use, and must check that the instructions in this manual will be follow strictly.
Warning! For the safety of people, it is important to strictly follow all of the instructions contained in this installation and operation manual. Before installing, carefully read all instructions and recommendations.
It is the responsibility of the owner of the equipment to establish which legislation is applicable to the country in which the equipment is installed, and to ensure compliance with all national and local regulations.
Where associated equipment is supplied or fitted by others, the owner of the equipment is responsible for insuring that the equipment complies with all safety requirements, norms and compliance and any associated equipment does not adversely affect the operation or safety of equipment supplied by URBACO.

URBACO is not liable for any consequences resulting from installation, commissioning and system maintenance jobs that are non compliant with the instructions in this manual.
URBACO warrants this system for 12 months from the delivery date. This guarantee can be extended with a specific agreement.

URBACO undertakes, within the limits of the guarantee, to replace, free of charge, any faulty components that are returned to the factory, provided that:
1 - The owner informs URBACO in writing about any system anomalies during the guarantee period.
2 - No element has been damaged due to improper installation, use, maintenance, negligence or accident.
3 - No non-approved by URBACO components have been used.

NO OTHER WARRANTY IS EXPRESSED AND NONE SHALL BE IMPLIED, INCLUDING WITHOUT THE WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR USE.
THE FOREGOING STATES THE ENTIRE LIABILITY OF URBACO WITH RESPECT TO THE PRODUCTS.
IN NO EVENT SHALL URBACO BE LIABLE FOR ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES WHICH RESULT FROM USE BY BUYER OR ANY OTHER PARTY, OF THE PRODUCTS, AND IN NO EVENT SHALL URBACO LIABILITY EXCEED THE AMOUNTS PAID BY THE OWNER FOR THE PRODUCTS THEREUNDER.

1. WARNINGS

1.1. Recommendations

- Before installing and commissioning the bollard, carefully read the present manual.
- Improper fitting may result in serious damage. Carefully follow all instruction.
- This manual is exclusively intended for professional installers or authorized personnel.
- It is also a maintenance log that must be kept up to date after each maintenance task performed after commissioning.
- Keep all of the instructions and documents suplied together with the system.
- Install the bollards in compliance with the Country installation laws and rules. Please, make sure that the grounding connections have been made in complying with the acknowledged rules-of-the-art.
- To install our bollards, we suggest you to hire skilled technicians that can ensure of safe and proper operation.
- Before starting the job, read paragraph 3.1 for installation site study.

1.2. Health and safety

- All the safety precautions mentioned in present manual are important and are related to both, people and material.
- The bollards are made of very heavy elements including moving parts that could result in severe injuries unless the safety provisions are met.
- The technical control units are powered with 230 V. it is definitely forbidden to unauthorized staff to access them. Before performing any kind of job on the installation, double check that main power supply is shut off.
- The electrical installation must include upstream of power supply line, a protection circuit breaker able to absorb the current, in compliance with the laws and rules of the country where the system is to be installed with the country's laws where the system is install. All electrical connections must be performed by skilled electricians.
- Respect the general safety provision for hoisting and handling the bollard (doc.: NT-CGS).
- Make sure that no object obstructs the area of operation of any of devices and that vegetation does not hide the vertical signage.
- Do not enter into the field of action of the bollard when it is moving.
- Do not work close to bollards in movement.
- Do not touch the moving element while it is in movement.
- Do not obstruct the operator's movements as this could result in hazardous situations.
- Please, prevent unauthorized persons from accessing to the retractable bollards' manoeuvre field, and also prevent them to activate the fixed control actuators. Keep also any remote control device, such as transmitters, away from unauthorized persons.
- If the system needs any maintenance, repair or adjustment, close the access and do not use it until safety conditions have been restored. Always cut off the power supply before any intervention.
- In case of malfunction, first of all turn off power, and then call skilled personnel for technical assistance.
- Users are ABSOLUTELY PROHIBITED from performing any kind of JOB THAT IS NOT EXPRESSLY REQUESTED TO THEM in present manual. For any repairs, modifications and adjustments, as well as, any extraordinary maintenance jobs, EXCLUSIVELY CALL SKILLED TECHNICAL ASSISTANCE.
- When using a hold-to-run control, constantly check, that no person is inside the operating field of the bollard, during all duration of the movement.
- In automatic operating mode, the bollard may move at any time, without warning.
- The system must be fitted with warning lights to warn the user about the bollard's position.
- All excavation must be protected by a safety barrier.

1.3 Residual risks

- This equipment has been designed and built in conformity with the current MACHINERY DIRECTIVE. The risk analysis has resulted in the following residual risks, which are the risks that cannot be eliminated:
    - Rick of tripping for pedestrian.
    - Danger of collision if visibility is limited, or when the presence of the bollards is not clearly signalled.
    - Danger of dragging along the vertical axis when passing over the moving bollard.

1.4 Conditions of use

- To warn users of the presence of the obstacle and tell them about the travel directions, fit a vertical sign that reads "retractable bollard".
- Adding red and yellow flashing warning-lights increases safety. Installing magnetic loops into the ground that are associated to an operating logic, protects the perimeter around the bollard.

- Unauthorized users must never try to enter the area squeezing in behind an authorized vehicle because they risk colliding with the bollard.
- For safety reasons, URBACO recommends that vehicles, before passing through, should stop in front of the bollard and wait for it to be totally retracted (when the red light turns to flashing yellow, if the access point is fitted with light).

- Those managing the access point must inform users on the way to use it and how it works, as URBACO cannot be held liable for improper installation or non-respect of safety rules.
- The bollard must not be operated unless it can be plainly seen, directly or via CCTV (closed-circuit television) for example.
- Frequently check the system, refer to the periodic maintenance manual, to check for any anomalies, signs of wear and tear or damage to the moving parts of the operator and all of the fastening points and devices. Keep clean and grease the area between the fixed and moving part of the bollard.
- Every six months check the detection loops to see if they work properly.

1.5 Limits of use

- This product must be used only for the purpose it was designed for.
- Any other use is considered improper and therefore dangerous.
- Any use other than the one described in this manual is forbidden.
- URBACO declines any liability in case of improper use of the system.
- URBACO declines any liability as concerns the security and proper functioning of the operator if non URBACO components are used (unless otherwise stated in writing by URBACO).
- Never modify the original components of the system.

It is expressly prohibited to use this device to lift weights and for any other uses that is not expressly stated.
The manufacturer declines any liability for any damage caused by people or things in case of "improper use" of the whole system.

1.6 Tools and materials

Here after are the necessary tools for assembling/disassembling the bollard.

Plastic hamer
Allen keys size 2.5 ; 3 ; 4 ; 6 and 8
Spanner size 10 ; 13 ; 17 and 19
Crosshead screwdriver
Heater (for heat shrinkable tune)
Wire stripper
Wire cutter

The bollard's weight means that you must use a suitable hoisting method to ensure people safety and prevent the bollard from being damaged during installation or maintenance. Choose equipment that is compliant with the law and that has suitable characteristics:
There is an optional hoisting kit available for handling all heavy elements (bollard head, cover, casing).
See appendix No. NT-CGS - of the general safety conditions for hoisting and hadling products.

2. GENERAL DESCRIPTION

2.1 Presentation

URBACO's G6EVO access control bollards are designed to prevent and/or select the passage of vehicles or trucks in areas, such as town centers, private areas or building access, while keeping free access to pedestrian or bicycle traffic.

Access points equipped with automatic retractable bollards are generally composed by three systems that are interconnected by electric cables and/or hydraulic/pneumatic hoses.

These three systems are:

- Safety magnetic detection loops - positioned into the ground in front of and behind the bollard, form a safety perimeter around the bollards.
- Automatic retractable bollards - installed on the vehicles passage way, either authorizes or prevents access (one or more bollards).
- Management system (access control unit) - It is the technical control unit where all components are install to control the bollard, the security and can integrate multiple control device such as badge reader, radio receiver, etc.

For safety loops installation please refer to the corresponding manual: NT-BCL - Instruction on laying the magnetic detection loops.

The positioning of the safety loops determines the proper functioning of the access point. Also, URBACO suggests that you first establish the position of the loops, then the bollards and lastly the technical control unit.

Recommendations to respect the proper use of an access point that is controlled by automatic retractable bollards:

To ensure proper functioning of the access point, URBACO suggests:

- To install a vertical sign that warns people of the obstruction and that reads "Retractable bollard";
- To add to the automatic systems, a bollard's position lights (red and yellow flashing light)

For safety reasons, URBACO recommends that vehicles, before passing through an access control systems, should stop in front of the bollard and wait for it to completely retract (when the light turns from red to flashing yellow, if the system is fitted with lights).

When the bollards operate in automatic mode, vehicles must not go through the access point in single file without stopping in front of the bollard. They must check that it is fully retracted before driving through and must respect the bollard's position lights (if installed).

USER INFORMATION AND TRAINING

The access point manager is held to inform users about the use and procedure of the access point given that URABCO cannot be held liable for its improper use or non compliance with the local safety regulations.

To enable the access point managers to know the safety rules and the latest updates as concerns URBACO proposed solutions, training courses are available.

2.2 G6EVO bollard general description

The G6EVO bollard is designed to control access when associated with a full automation solution. Consequently, the bollard provides a high level of impact resistance and an intensive rate of use. Also, the G6EVO bollard maintenance is limited due to the use of simple and sturdy elements. The bollard is made up of:

1 - Cast iron casing
2 - Cast iron bollard head
3 - Painted cast iron cover
4 - Cylinder
5 - Removable components bracket
6 - Bollard covering (Top plate and sleeve)

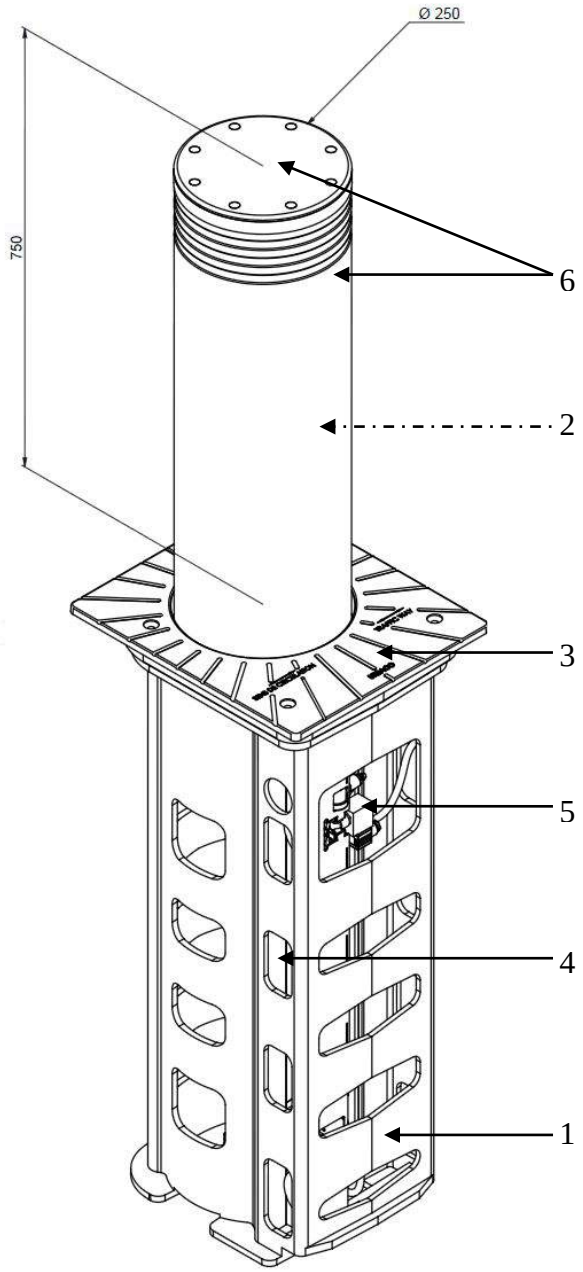


Figure 1: Example of a G6EVO Ø250 H750, Chateauneuf version, with LED light ring, light diffusers on top and hidden screws.

2.3 G6EVO bollard main components

The G6EVO bollard is made of 4 main components

Figure 2: Structure (Casing, cover and bare bollard's head)

Figure 3: Motorization (components bracket and cylinder)

Figure 4: Bollard's covering (top plate and sleeve)

Figure 5: Top plate with screws and light diffusers

1	Base	Structure	C
2	Energy	Motorization (part integrated into the bollard)	C
3	Covering	Sleeve	C
		Top plate	C
		With or without LED light ring	C
4	Options	Tamper-proof screws	O
		Fail secure (1)	O
		Hoisting kit (for installation and maintenance)	O
		Standard anti-freeze device up to -20 °C (1)	O
		High anti-freeze device up to -50 °C (1)	O
		Movement warning sound-buzzer (1)	O
		Lost casing	O

C = Multiple-Choice; O = Optional

(1): Involved changes and/or additional components into the technical control unit.

The multiple choices (C) are detailed in §2.5

Option (O) are detailed in §2.6

2.4 G6EVO bollard technical details

G6EVO Monobloc automatic retractable bollard:

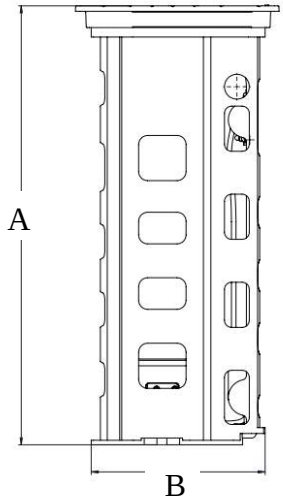


Figure 6: Front view

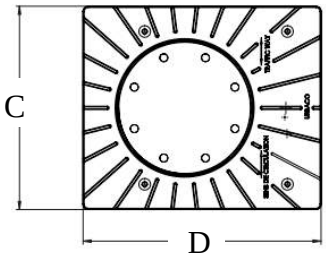


Figure 7: Top view

Mechanical characteristics:

Size	Ø250 H750	Ø200 H750	Ø250 H550
Material	Ductile cast iron: head, casing and cover / Galvanized sheeting: supports / stainless steel: screws		
Load class as per EN124	E600 (60 tons)		
Impact resistance	241 kJ	96 kJ	241 kJ
Height above ground	750 mm	750 mm	550 mm
Head diameter	250 mm	200 mm	250 mm
Casing dimensions (AxCxD)	450 x 385 x 972	390 x 317 x 972	450 x 385 x 687
Head weight	57 Kg	45 Kg	41 Kg
Motorization	Hydraulic standard		
	Pneumatic		
	Built-in hydraulic		-

Other technical characteristics:

	Ø250 H750			Ø250 H550		Ø200 H750		
Motorization	Pneumatic	Hydraulic standard	Built-in hydraulic	Pneumatic	Hydraulic standard	Pneumatic	Hydraulic standard	Built-in hydraulic
Code	BPEVOF75	BHEVOF75	BHEEVOF75	BPEVOF55	BHEVOF55	BPEVOE75	BHEVOE75	BHEEVOE75
Bollard power supply	24 V – 50 Hz	-	24 V - 50 Hz and 230 V - 60 Hz	24 V – 50 Hz	-	24 V – 50 Hz	-	24 V - 50 Hz and 230 V - 60 Hz
Operating pressure	7 bar	35 bar	35 bar	7 bar	35 bar	7 bar	35 bar	35 bar
Standard operating temperature	>0 °C / 50 °C							
Operating temperature (with standard anti-freeze device)	-20 °C / 50 °C							
Working temperature (with high anti-freeze device)	-50°C / 50°C							
Rising time	4 - 5 s	5.3 s	5.3 s	2 - 3 s	3.5 s	4 - 5 s	5.3 s	5.3 s
Lowering time	2 - 4 s	3 - 6 s	3 - 6 s	1.5 - 3s	2 - 4 s	3 - 6 s	4 - 7 s	4 - 7 s
Intensive use	2000 cycles / 24 h							
Protection rating	IP45	IP67		IP45	IP67	IP45	IP67	

2.5 G6EVO bollard configuration

2.5.1. G6EVO bollard configuration codes description

G6EVO Monobloc automatic retractable bollard can be configured using the following codes:

4 to 5 codes are necessary to fully set a G6 EVO Bollard.

1 – Code to choose bollard motorization and size

2 – Code to choose bollard covering (sleeve)

3 – Code to choose LED light ring

4 – Code to choose Top plate appearance

Codes are detailed in §2.5.2

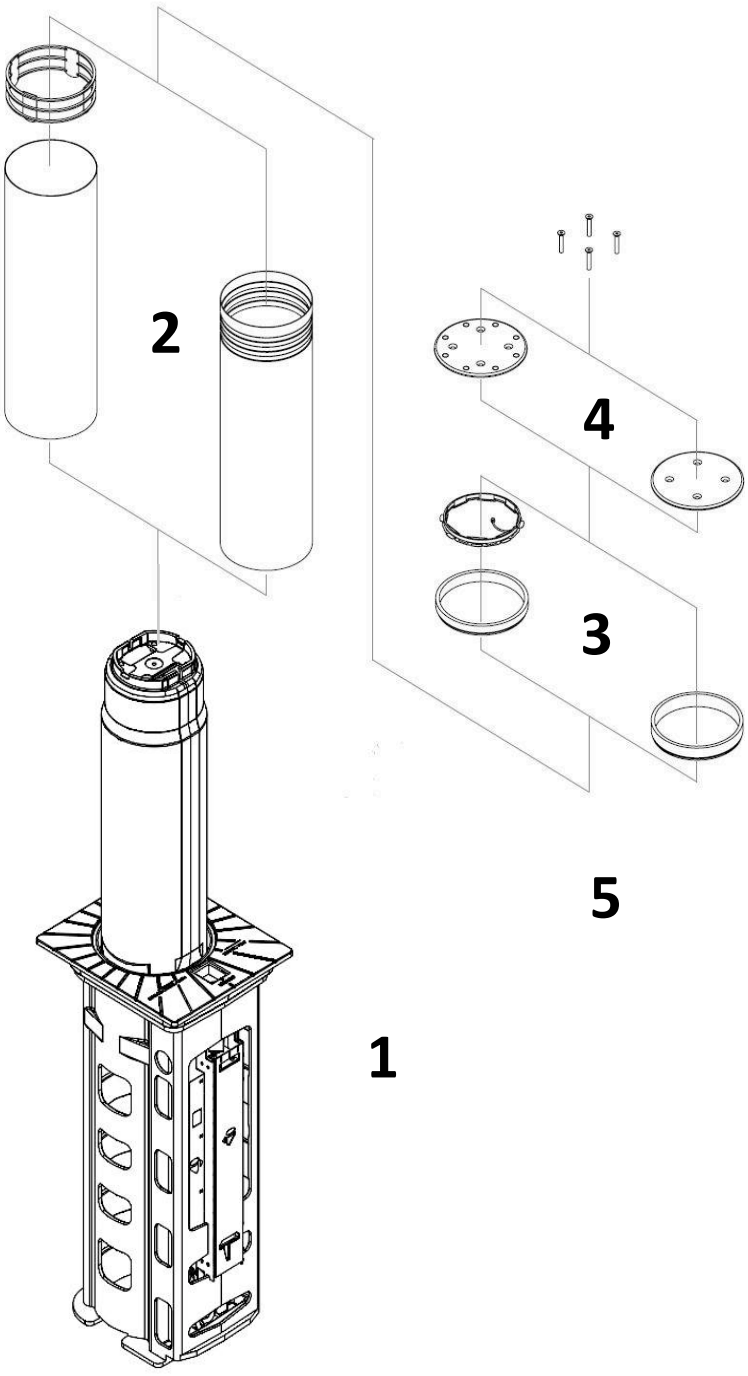


Figure 8: G6EVO Bollard configuration code exploded view

2.5.2. G6EVO bollard configuration codes details

Each configuration codes are detailed below.

1 – Choose G6EVO Bollard size (diameter and height) and Motorization

Example: BPEVOF75 – Pneumatic Bollard G6EVO Ø250 H750

BP EVO F 75

Motorization
BP : Pneumatic
BH : Hydraulic standard
BHE : Built-in Hydraulic

Product family
EVO : G6EVO

Bollard diameter
E : Ø200mm
F : Ø250mm

Bollard Height above ground
55 : 550mm
75 : 750mm

2 – Choose G6EVO Bollard covering (sleeve)

Example: BOEVOHF75-VDM – Stainless Steel Sleeve for G6EVO Bollard Ø250 H750

BO EVO H F 75 - VDM

Bollard Option

Product family
EVO : G6EVO

Option type
H : Habillage (sleeve)

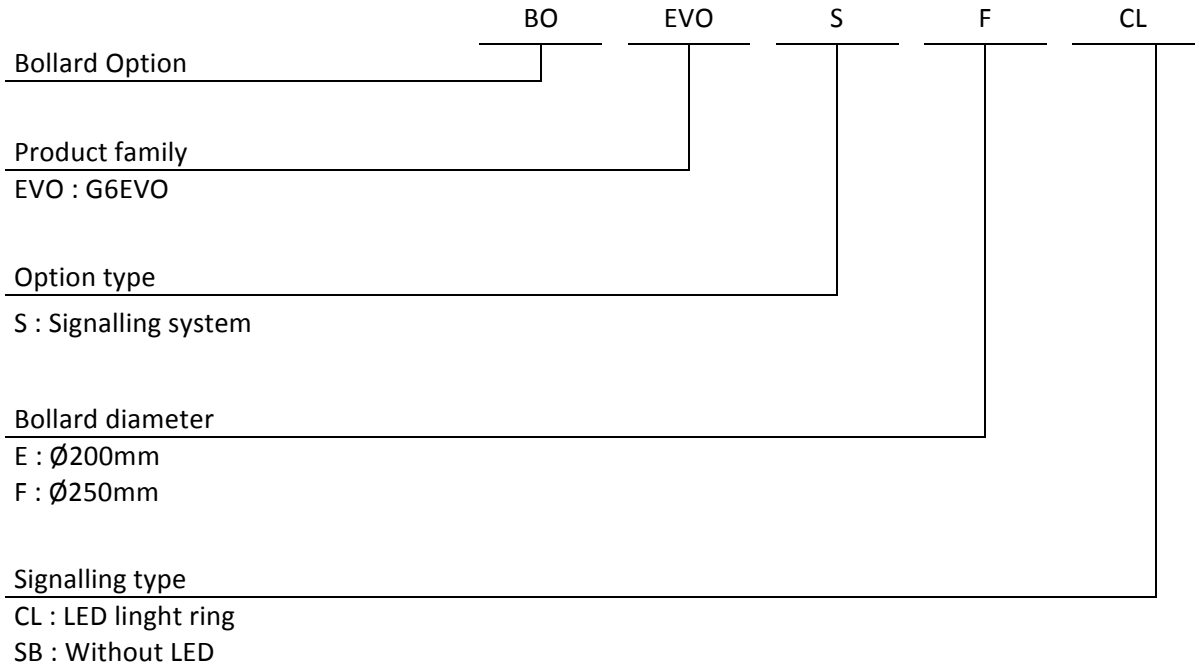
Bollard diameter
E : Ø200mm
F : Ø250mm

Bollard Height above ground
50 : 500mm
55 : 550mm
75 : 750mm

Covering type
CL : Cylinder
VDM : Vendôme
CHP : Chateauneuf
CUSxxx : Customized

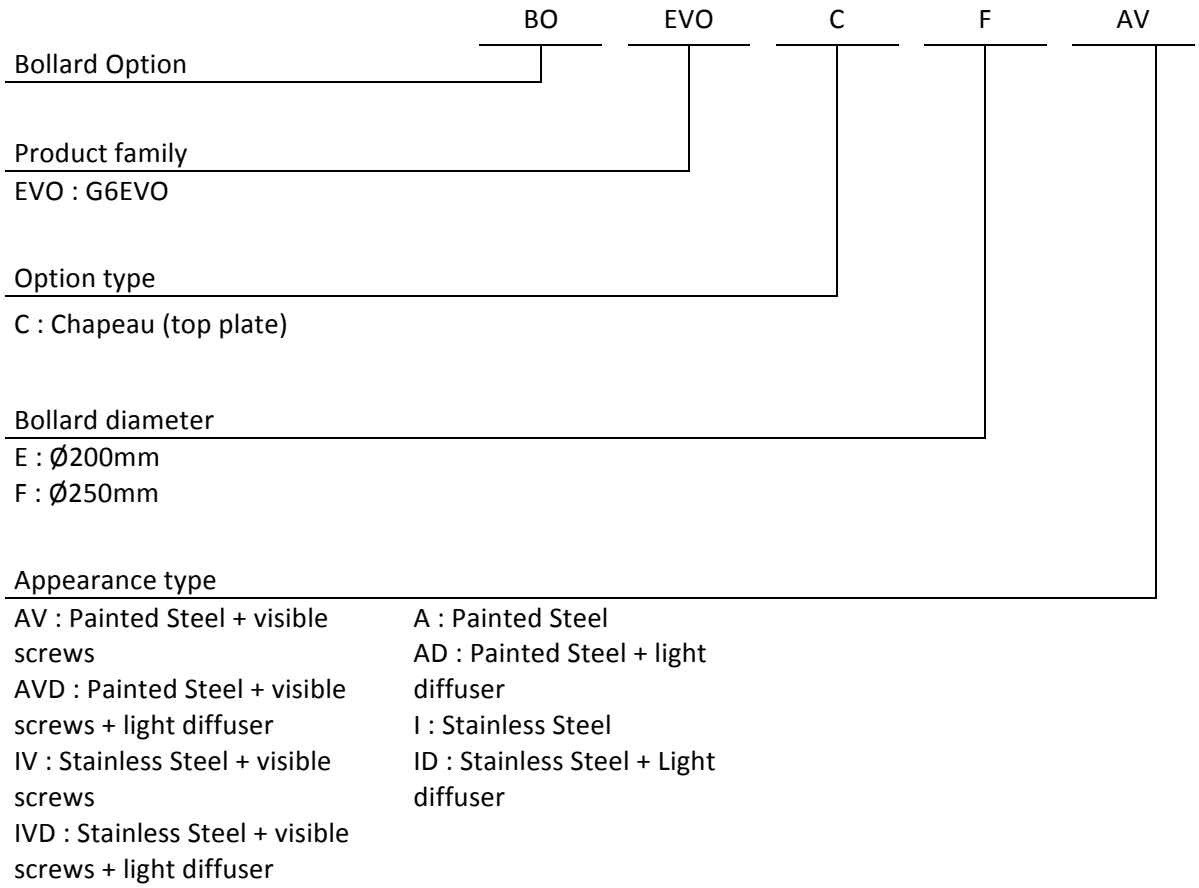
3 – Choose G6EVO Bollard Led light ring

Example: BOEVOSFCL – Led light ring for G6EVO bollard Ø250



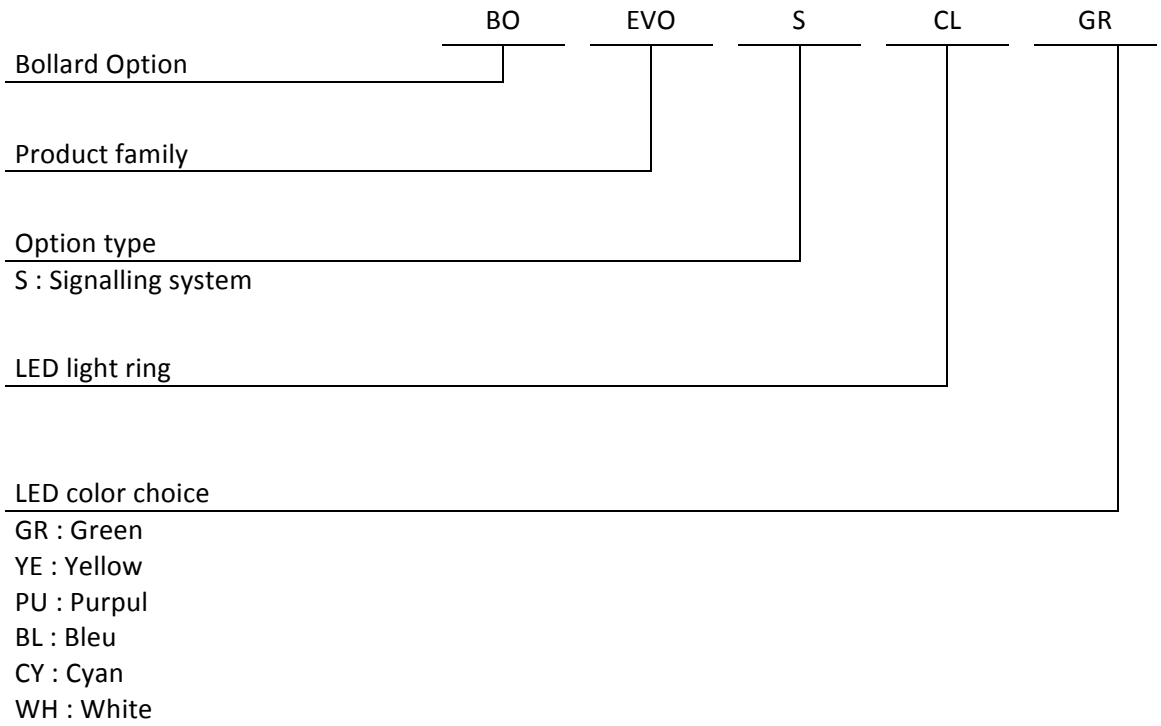
4 – Choose top plate appearance

Example: BOEVOCFAV – Steel top plate with visible screws and no diffusor



5 – Choose LED light color (only when led light option code finish by CL)

Example: BOEVOSCLGR – Green led light



2.5.3. G6EVO bollard configuration example

To configure the bellow G6EVO Bollard example, here are the codes that must be chosen:

Pneumatic G6EVO Bollard Ø250 H750, painted Chateauneuf sleeve, White LED light ring, stainless steel top plate with light diffusers and hidden screws.

1 – BPEVOF75	Pneumatic G6EVO Bollard Ø250 H750
2 – BOEVOHF75CHP	G6EVO covering with painted chateauneuf sleeve
3 – BOEVOSFCL	G6EVO Lid light ring
4 - BOEVOID	G6EVO Stainless steel top plate with light diffusers and hidden screws
5 – BOEVOSCLWH	G6EVO LED light color = White

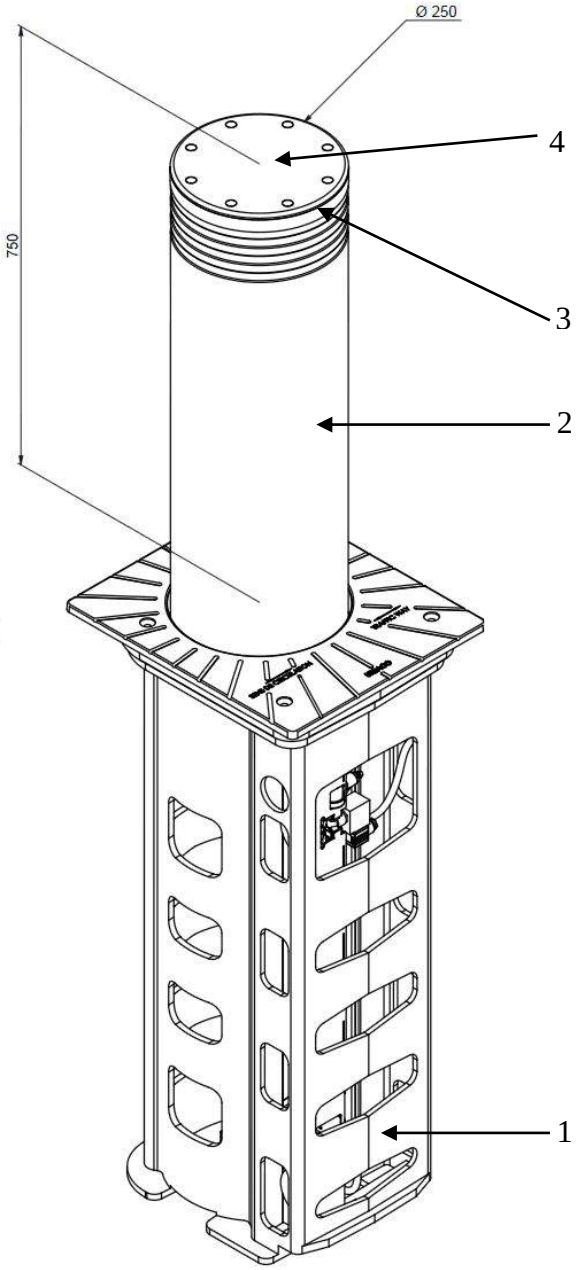
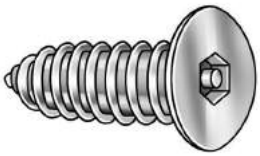


Figure 9: Example of a G6EVO Ø250 H750, painted Chateauneuf version, with white LED light ring, stainless steel top plate with light diffusers on top and hidden screws.

2.6 G6EVO bollard options detail

Below are all G6EVO Bollard options that could be choosen:

Independently of the G6EVO bollard size and motorization choosen, the following options are compatible with the product.

Tamper-proof screws
Tamper-proof screws require specific tool to be desassembled.  **Figure 10 : Example of a tramper-proof screw**
Fail secure (1)
The fail secure option means that the bollard remains up if the power is cut off The bollard could then be manually retracted
Hoisting kit (for installation and maintenance)
See hoisting security manual NT-CGS
Standard anti-freeze device up to -20 °C (1)
High anti-freeze device up to -50 °C (1)
Any anti-freeze option is easy to install into the bollard.
Movement warning sound-buzzer (1)
The sound-buzzer will make a sound at any bollard movement
Lost casing
The lost casing has been designed for easy bollard installation – See manual NT-COFG6

(1) Involve changes and/or additional components into the technical control unit.

3. INSTALLATION

This product must be exclusively used for its intended use. Any other use is considered dangerous. The company Urbaco S.A. is not liable for any damage caused by improper, wrong or unreasonable use.
The product's safety and consequently its installation depend on the respect of its proper installation and usage modes, which are clearly detailed in this manual.
Installation, control and testing operations, as well as, preventive maintenance jobs, must be made by skilled technical staff and authorized in agreement with the person responsible of the system.

3.1. Installation site study

When choosing the installation site, it is recommended to firstly:

• Check the solidity and compactness of the ground (to prevent from sinking on its foundation).

• Check the condition of the ground where the bollard will be intalled and adopt the necessary precautions to prevent the ground from caving in the bollard’s excavation.

• Make sure there are no underground pipes that could impede excavation and underground cable laying operations.

• Check that the site chosen for the technical control unit is sufficiently protected from vehicle collisions.

• Check that the distance between the bollard and the technical control unit does not exceed 25 meters.

• Check that the maximum length of the electrical connecting cables and pneumatic/hydraulic hose between the control unit and each bollard does not exceed 25 meters.

• Check that the maximum length of the twisted connecting cable between the loops and the loop detector does not exceed 50 meters.

• Check that the sheaths between the control unit and the bollards are buried at the legal depth according to the country's laws in force.

• Check that all sheaths are installed without sharp angle to pull through electrical cables and hoses.

• Check that there are no obstructions that may impede the normal movement of the bollard.

• The safety loops shape and position could affect the proper functioning of the access-point. Read the Technical manual NT-BCL for safety loops installation and ensure proper loops installation and lay a safe and secure access-point.

• Position the loops. Then, position the bollards.

• If needed, install additional optical and/or sound systems to warn people of the presence of a moving system and the resulting risk. You may also need both horizontal and vertical warning signal, to comply with the traffic rules where the system is anstall.

• Check that the power supply and voltage are adapted to the whole system.

• Check that the bollard and surrounding fixed parts are not constitutes an obstacle and become a tripping risk for pedestrians or cyclists when the bollard is fully retracted.

• Check that the components have been properly installed and that they are stable. In case of problems, contact Urbaco S.A. for understanding proper corrective actions to be performed.

• Check that the bollard is always vertical, even if the ground is sloped.

• CAREFULLY check the technical manuals, before starting any work.

3.1.1. Standard installation of a complete and safe access control solution

Bellow is an example of a standard installation layout of a complete solution with a retractable bollard, magnetic loops, technical control unit and traffic lights. Please refer to the manual N° NT-BCL and NT-for all types of installation layouts including specific safety solutions.

1	Automatic retractable bollard	4	safety loop
2	Automatic exit loop	5	Technical control unit
3	Safety loop	6	Traffic light

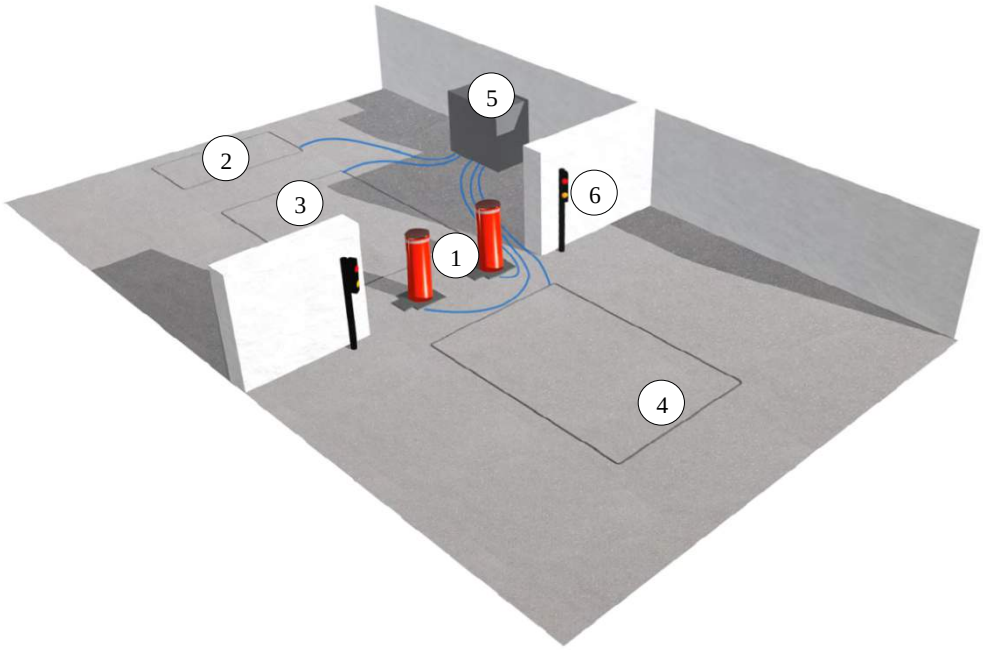


Figure 11: Standard installation skecth

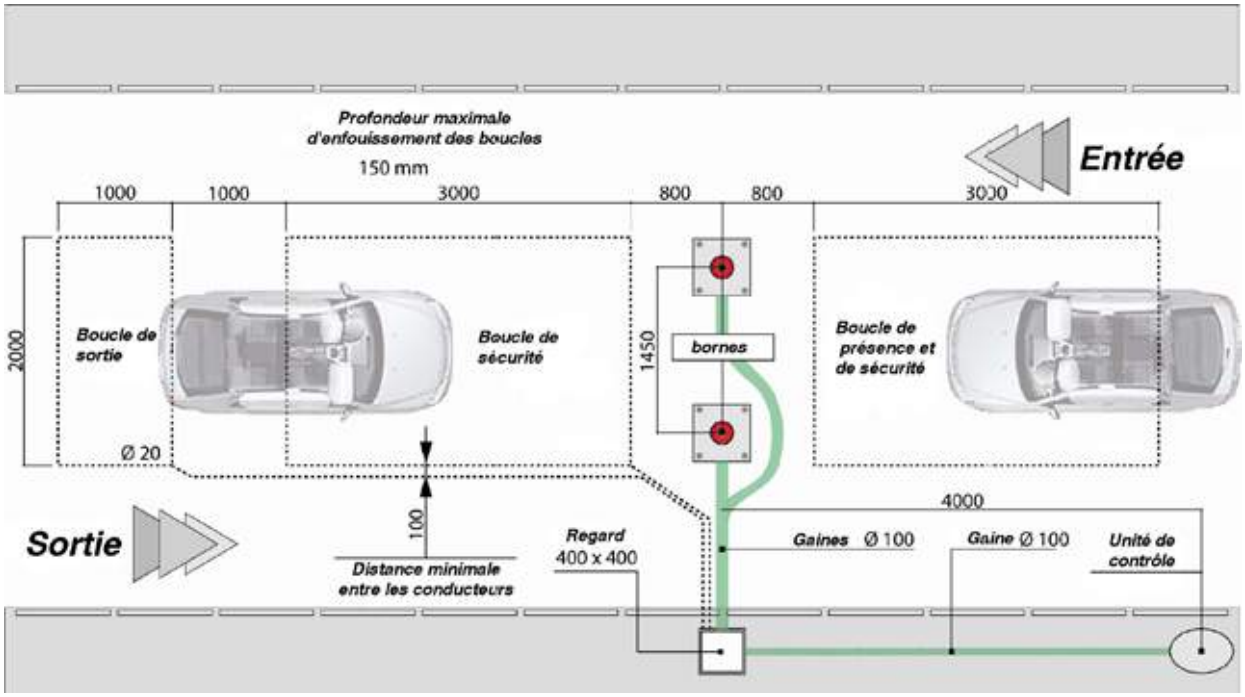


Figure 12: Standard safety loops installation diagram

3.1.2. G6EVO bollard concrete foundation dimensions

It is recommended to install the bollard using concrete foundation as shown below.

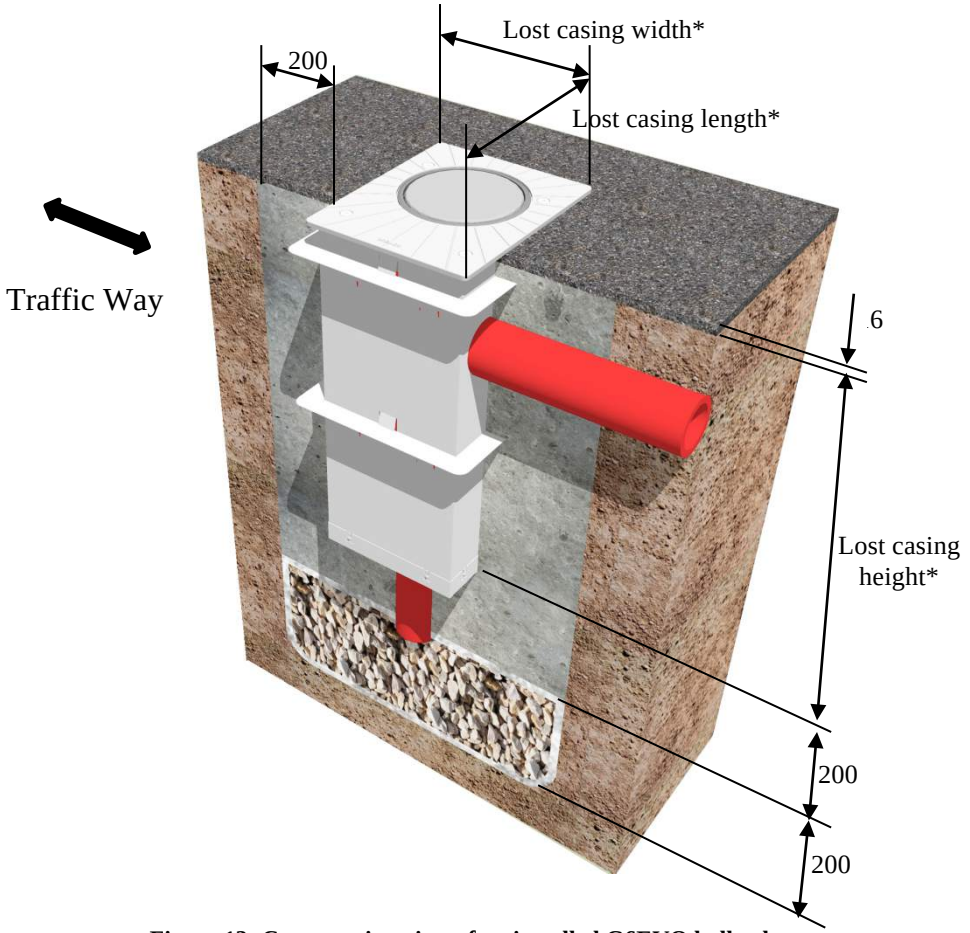


Figure 13: Cross section view of an installed G6EVO bollard (with lost casing)

*For lost casing dimensions, refer to the appendix N°COFG6

3.1.3 Place of installation protection

Public access to installation site is restricted. It must be clearly demarcated with appropriate means during the installation works and testing duration. Remove protections only after the success of the commissioning tests.

3.2. Receipt of the material

Each bollard is supplied on a pallet (Pallets are treated in compliance with ISPM15).

The technical control unit is supplied on another pallet (also treated in compliance with ISPM15) with separate options and accessories.

The material is packaged with straps, wrapped in heat-shrinkable film and identified.

Upon delivery, the material must be checked (items, quantities, conditions) and stocked on the original pallets, in a clean and dry room until its installation.

3.3. Unpacking and handling the bollard

3.3.1. Unpacking the bollard

Unpacking precautions:

Before cutting the straps that bind the bollard on the pallet, check that the bollard stands stable on the pallet and that the pallet is in good condition, considering the bollard's significant weight.

Each bollard is wrapped, at the top and bottom with yellow adhesive tape mentioning "Do not remove plastic film"., in five different languages.

THE PACKAGING PLASTIC FILM MUST BE LEFT AROUND THE CASING so that, later, when the polyurethane foam is injected between casing and excavation inner wall, the bollard stands protected from the polyurethane foam. Cut the plastic as shoon below and remove both plastic extremities.

Figure 14: Bollard wrapped in heat-shrinkable film upon receiving

3.3.2. Handling the bollard

PRECAUTIONS to take when hadling the bollard

Considering that the bollard weighs more than 100 Kg, there is an inherent risk of crushing. Staff working must be carefully follow the specified procedures for the safety of people (see manual N° NT-CGS for more details).

The bollard must be positioned using suitable hoisting devices, such as, cranes and winches that can handle loads exceeding 500 Kg.

Hoist the bollard using suitable harnesses.

From the cover, remove two diagonally opposite screws. Fit the two hoisting rings that are supplied with the bollard.

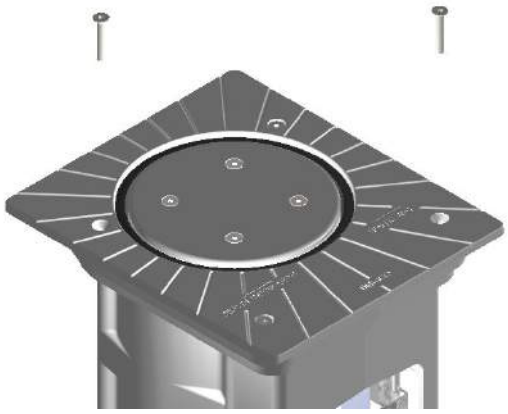


Figura 15: Removing two cap screws (diagonally opposed)

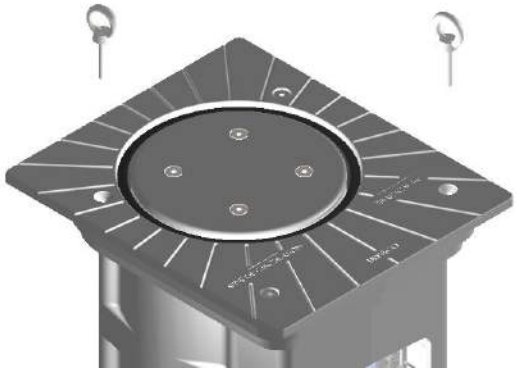


Figure 16: Fitting two hoisting rings to the cover

3.4. Civil works

Building the concrete foundation is the most challenging part of the installation.

Special recommendations:

- The reinforcing steel rebars must exclusively be of the HLE type (TOR steel).
- Rebars fastened must be done with either steel wire or welded.
- The concrete must be carefully checked. It should have a density of at least 350 to 450kg of cement per m3and the cure times must be respected (at least 28 days for standard concrete).
- To reduce the job duration, we suggest using a fast curing concrete blend, for example Lafarge Chronolia 45Mpa with a 10-day drying period.
- Besides requesting a certificate of conformity for the concrete, it is always best to take a sample and check it.

3.4.1. Bollard positioning

POSITION THE BOLLARD PROPERLY, RESPECTING THE TRAFFIC WAY
(THE TRAFFIC WAY IS SHOWN ON THE BOLLARD'S COVER)

Figure 17: Cover traffic way marking (FR)

Figure 18: Cover traffic way marking (EN)

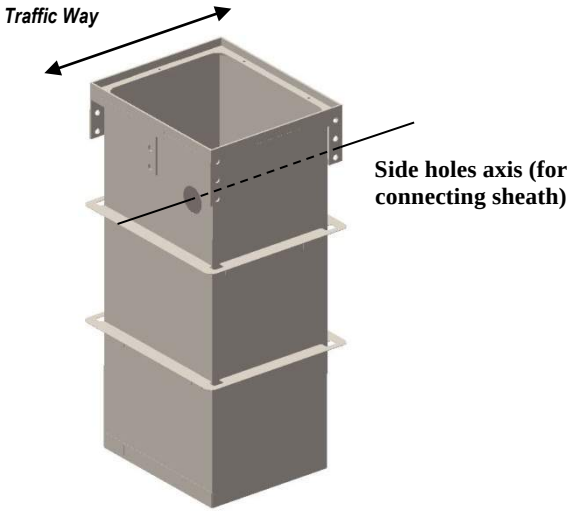


Figure 19: Lost casing with top finishing frame

- The lost casing of the G6EVO bollard must be positioned so that the axis of the side holes is parallel with the traffic way.
- See the "Lost casing assembly process" in the technical document N° NT- COFG6
- The chosen bollard place must not be under the vehicle's wheels.
- The recommended distance between centers of two bollards is 1.45 meters.
- Safety loops must be installed according to the technical document N° NT-BCL instructions.
- The sheath linking the bollard to the side pit, or directly to the technical control unit, is a Ø90 sheath. The trench where this sheath is buried in must not be too close to the loop's cable (never less than 100 mm) and must not sharply change of direction.
- The trenches depth must comply with the country's laws in force.

3.4.2. Bollard position markings and excavation

After defining the position and direction of the bollard, trace measurements X and Y of the excavation.

Then, depending on the ground type, cut the top layer or concrete using a circular saw or remove the paving.

When several bollards are fitted side by side, a trench may be done.

Important: traffic way must be respected

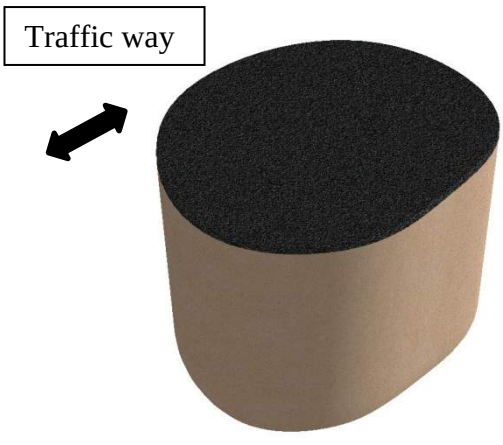


Figure 20: Mark the Bollard possition before the excavation

Figure 21: Cut top-layer

Figure 22: Excavation

3.4.3. Building the draining system

Build a drainage system (well) that suits the permeability of the soil (from 200 to 300 mm). In the lower part of the foundation, add the geotextile lining and fill it with gravel up to about 250 mm in height. The drainage system must be able to evacuate 20 liters of water in five minutes. Place a section of 100 mm diameter PVC pipe and pour the first concrete layer.

When the ground is not very permeable, it is best to link the bottom of the excavation to an additional drainage network/system..

Figure 23: Excavation cut view

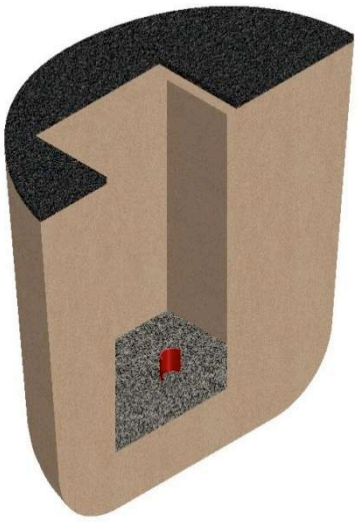


Figure 24: Drainage with PVC pipe

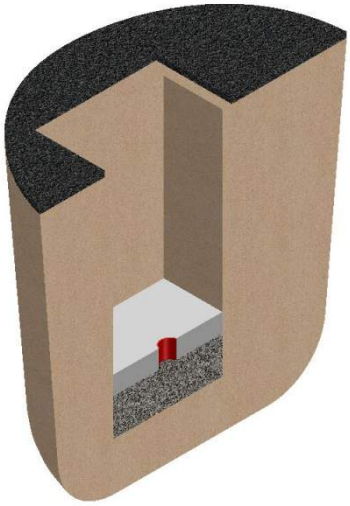


Figure 25: First concrete layer

3.4.4. Positioning the lost casing (if used)

Position the lost casing inside the hole and reinforce the inside. Check that it is properly positioned (vertically, horizontally and with respect to the traffic way. We suggest using a bubble level).

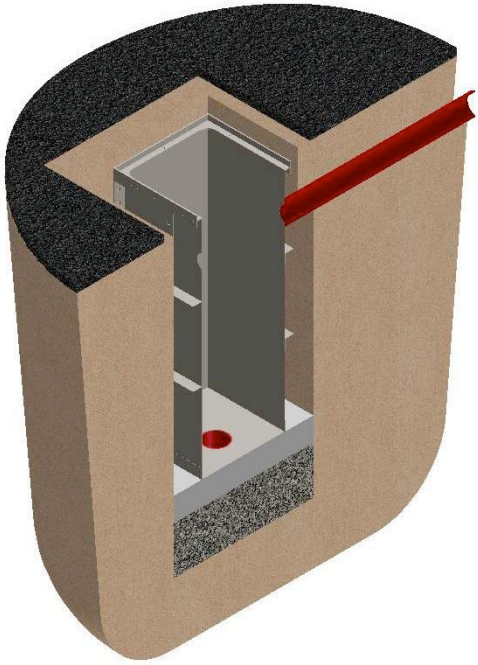


Figure 26: Lost casing installation

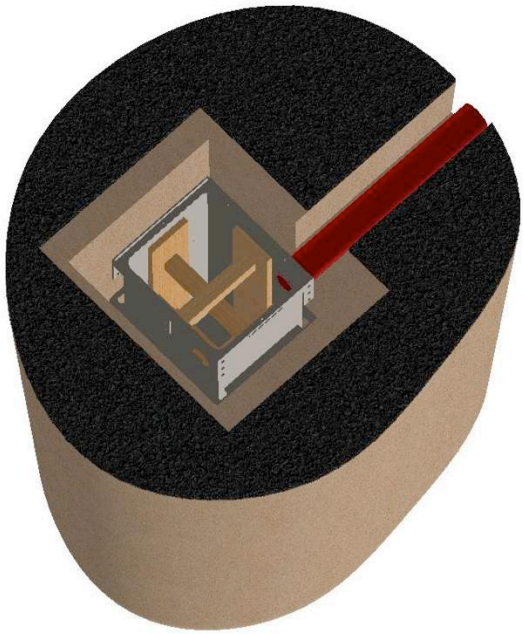


Figure 27: Wooden reinforcement installed into the lost casing

3.4.5. Pour the concrete foundation

Steel elements must be covered by at least 5 cm of concrete.

It is recommanded to vibrate the concrete for a homogeneous fill.

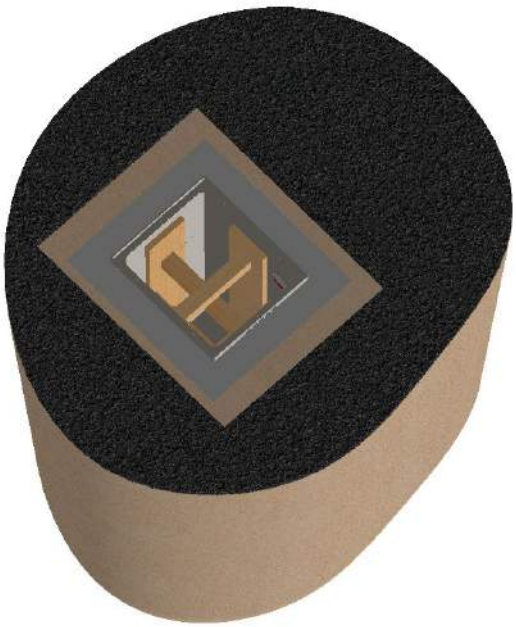


Figure 28: Concrete poured

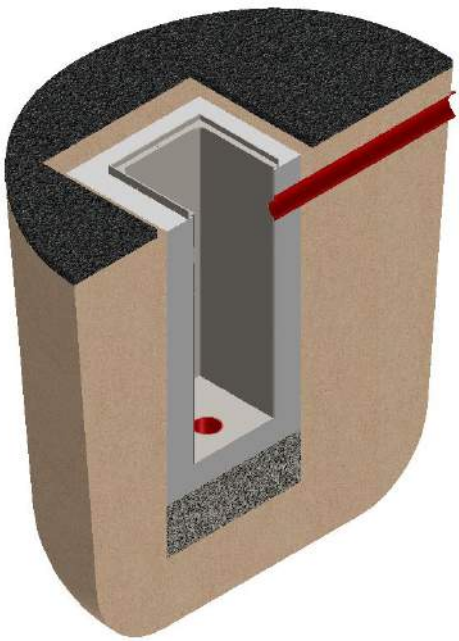


Figure 29: Reinforcement removed after concrete cure time

3.4.6. Check the capacity of the lost casing or the excavation to receive the bollard

Check the entire height and length of the embedded lost casing. It must comply with the foundation drawing. Make sure that there is no missing concrete underneath the lost casing. Check that the drainage system is efficient and that it drains 20 liters in 5 minutes, that is, 4 liters / minute.

Make sure the inside of the lost casing is clean. It must be free of concrete residues which could compromise the proper positioning of the bollard or even the mechanical movement.Check the depth at the bottom of the lost casing. It must comply with the dimensional characteristics detailed in the foundation drawing.

If the lost casing is embedded too low, the bollard will not rest on the bottom of the lost casing but will hang the edge of the cover up on the ground surface. And this is prohibited.

If the lost casing is embedded too high, the bollard will overhanging the ground surface and creates a dangerous obstacle for pedestians. And this is prohibited.

Clean the surroundings of the excavation. Remove anything that may damage the bollard coating.

Important: the height of the concrete foundation must be under the finishing floor level, so it leaves enough space for the top layer. This space must not exceed 6 cm.

Before using the access point, the concrete must cure for at least 28 days.

3.4.7. Bollard positioning

Before bollard positioning, make sure that the unpacking and handling actions have been executed properly.

- Place the bollard onto the excavation or in the lost casing and check that it is positioned correctly.
- Pass the sheath extremities through the casing's hole and leave a few centimeters inside the bollard.
- For a good bollard's stability, inject the polyurethane foam between the casing and the excavation (lost casing).

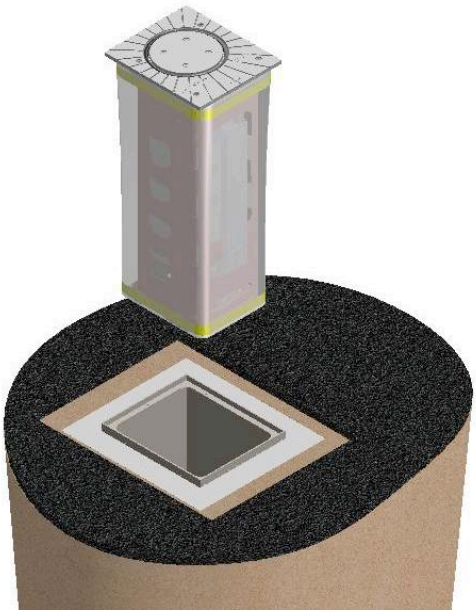


Figure 30: Bollard positioning

Figure 31: Bollard installed

3.4.8. Leveling and finishing the final top layer

Figure 32: Finished top layer completed with asphalt

3.5. CONNECTIONS

To reach a bollard's connection area, first remove the cover.

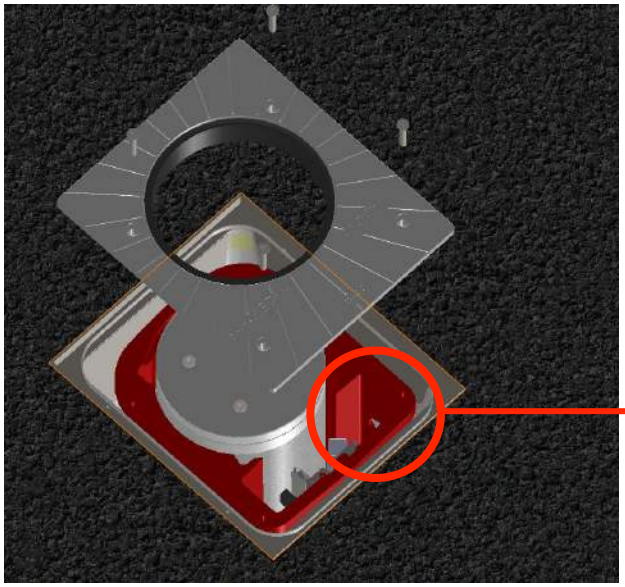


Figure 33: Removing the cover for bollard connection

3.5.1. Run cables and hoses into the sheaths

Once the technical control unit is installed, run the electric cables and hoses (pneumatic or hydraulic depending on the chosen motorization) between the bollard and the technical control unit.

For the hydraulic standard solution (the hydraulic pump is installed into the technical control unit), be very careful with the following two points:

The hydraulic hose must be run inside the sheath in one single way, from the bollard to the technical control unit. The U-bend end shape of the hose must stand on the bollard side for connection.

The hydraulic hose must remain as straight as possible, to prevent any pressure loss.
Do not roll up the hydraulic hose. It must be ordered at proper length.

3.5.2. Bollard connections

Depending on the motorization used, refer to the corresponding connection scheme in the appendix NT-RACC.

Leave enough cable length into the bollard (at least 2 m). The cable excess can be reinserted into the sheath to free up space into the bollard.

3.5.3. Technical control unit connections

All automatic bollards are supplied with an access control unit. This access control unit could be installed independently from the bollard. The technical control unit connection will depend on the global solution choosen. Here are the controllers compatible proposed by URBACO:
U200
U202H
AT224
LOGO
ZELIO
Industrial Computer

Please refer to the technical documentation of the used controller.

4. COMMISSIONING

4.1. PRELIMINARY OPERATIONS TO BE DONE BEFORE POWERING THE SYSTEM

The electrical connections must be made as detailed in paragraph 3.5.3.

General Check Points (GCP)	Checked
Connect the lower limit-switch to the terminal block (for several bollards access, respect the connection order).	
Connect the upper limit-switch to the terminal block (for several bollards access, respect the connection order).	
Connect the safety loops cables to the loop detector (if not included, the three inputs must be bridged).	
Fastening the "loop tail" cables inside the technical control unit to prevent them from moving during bollard operation.	
Connect the bollard's LED light ring (if included).	
Clean the ground around the bollard to prevent scratching caused by gravel during testing.	

Pneumatic Check Points (PCP)	Checked
Connect the air hose to the solenoid valve into the bollard and to the air compressor inside the technical control unit.	
Connect the solenoid valve wire into the bollard, to the wire run into the sheath for this purpose. The other wire extremity will be connected to the right terminal block (refer to the technical control unit documentation).	
Check the network pressure on the compressor gauge.	
Check for any air leaks.	
Check that there is no contact between the pneumatic hose and the bollard head.	

Standard Hydraulic Check Points (HSCP)	Checked
Replace the transport cap of the hydraulic unit's tank with the vent cap (IMPORTANT). See the technical manual N°NT-RGRPH-STD.	
Connect the hydraulic hose to the cylinder into the bollard and to the hydraulic pump inside the technical control unit.	
Connect the solenoid valve wire into the bollard, to the wire run into the sheath for this purpose. The other wire extremity will be connected to the right terminal block (refer to the technical control unit documentation).	
Check the oil level in the hydraulic tank.	
Check that there is no oil leak.	
Check that there is no contact between the hydraulic hose and the bollard head.	

Built-In Hydraulic Check Points (HECP)	Checked
Connect the solenoid valve wire into the bollard, to the wire run into the sheath for this purpose. The other wire extremity will be connected to the right terminal block (refer to the technical control unit documentation).	
Connect the electrical powering cables to the hydraulic unit.	
Check the oil level in the hydraulic tank.	
Check that there is no oil leak.	
Check that there is no contact between the hydraulic hose and the bollard head.	

4.2. OPERATING TEST - COMMISSIONING OF THE SYSTEM

The operating tests to perform depend on the global solution and allocated controller chosen. Therefore please refer to the used controller before commissioning the sytem.

4.3. REMOVING SITE PROTECTIONS

After performing all operating tests with success and making the access point functional and safe, the protections and signs can be removed.

5.1. G6EVO BOLLARD'S PREVENTATIVE MAINTENANCE PROGRAM

This preventive maintenance program is intended to ensure the continuous operation and maintenance of the equipment.
Please refer to the preventive maintenance program of the technical control unit to perform maintenance tasks.
All maintenance actions must be done as planned in order to keep the whole system in proper condition of use.
The below check points are detailed in § 5.2.

Common yearly maintenance program

Checkpoints	Action type*	§	check-ups and maintenance actions	When installing	1st month	2nd month	3rd month	4th month	5th month	6th month	7th month	8th month	9th month	10th month	11th month	12th month
1	PA	5.2.1	Cover well Fastened	C						C						C
2	PA	5.2.2	Guides are cleaned	C						C						C
3	PA	5.2.3	Cylinder well positioned	C						C						C
4	PA	5.2.4	Limit-switch sensors control	C						C						C
5	PA	5.2.5	Solenoid valve control	C						C						C
6	PA	5.2.6	Drainage efficiency control	C						C						C
7	PA	5.2.7	After vehicle impact control	C						C						C

Specific yearly maintenance program for the PNEUMATIC motorization

Checkpoints	Action type*	§	check-ups and maintenance actions	When installing	1st month	2nd month	3rd month	4th month	5th month	6th month	7th month	8th month	9th month	10th month	11th month	12th month
8	PA	5.3.1	No contact between bollard head and pneumatic hose	C						C						C
9	PA	5.3.2	No air leaks	C						C						C
10	PA	5.3.3	Proper solenoid-valve connection	C						C						C
11	PA	5.3.4	Components properly fastened onto the bracket	C						C						C

Specific yearly maintenance program for the HYDRAULIC STANDARD motorization

Checkpoints	Action type*	§	check-ups and maintenance actions	When installing	1st month	2nd month	3rd month	4th month	5th month	6th month	7th month	8th month	9th month	10th month	11th month	12th month
12	PA	5.4.1	No contact between bollard head and hydraulic hose	C						C						C
13	PA	5.4.2	No oil leaks	C						C						C

Specific yearly maintenance program for the BUILT-IN HYDRAULIC motorization

Checkpoints	Action type*	§	check-ups and maintenance actions	When installing	1st month	2nd month	3rd month	4th month	5th month	6th month	7th month	8th month	9th month	10th month	11th month	12th month
14	PA	5.5.1	No contact between bollard head and hydraulic hose	C						C						C
15	PA	5.5.2	No oil leak	C						C						C
16	PA	5.5.3	Proper soleniod-valve connection	C						C						C
17	PA	5.5.4	Tighten up the fastening screws of the hydraulic pump onto support and support onto casing	C						C						C

All maintenance jobs must be performed every six months even if the system is unused.

* - Action type: Preventive Action: PA; Corrective Action: CA

5.2. COMMON CHECK POINTS DETAILS

5.2.1. Cover well fastened – Check Point N°1

Remove the hoisting rings, clean the casing threading holes (using compressed air) and apply grease (Molykote CU7439 Molykote or equivalent) before placing back the screws. Firmly tighten all screws.

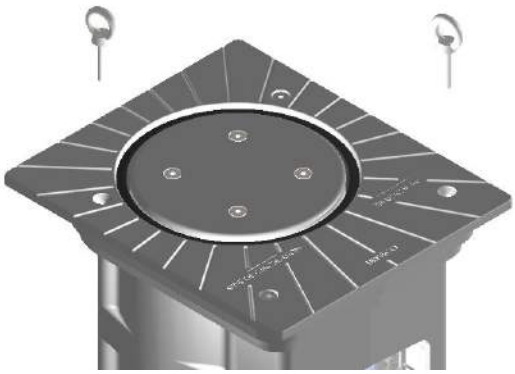


Figure 34: Remove the two hoisting ring

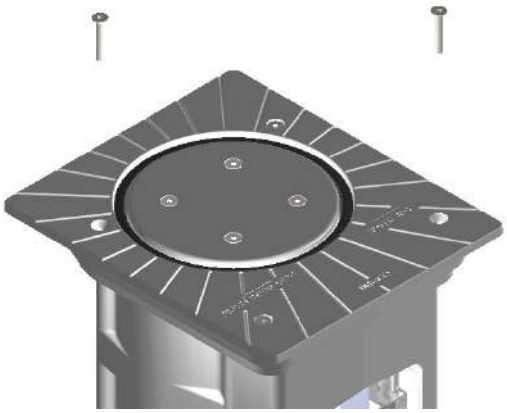


Figure 35: Put the two screws back in place

5.2.2. Guides are cleaned – Check Point N°2

Make sure the casing's guides and the bollard head guides are cleaned and freed from deposits. Before reassembling the bollard, spray the guides with Molykote 3402C or equivalent lubrication.

Figure 36: Guide rails view

5.2.3. Cylinder well positioned – Check point N°3

NOTE: to perform this action, remove the cover and action the bollard in the raised position (without dismantling the bollard head).

Check that the cylinder is properly centred in the cross-bar on the bottom of the casing.

Figure 37: Cylinder position

Figure 38: Casing crossbar

5.2.4. Limit-switch sensors control – Check point N°4

The bollard is equipped with two limit-switch sensors (one at the top and one at the bottom) mounted into the casing using the components bracket. Each sensor transmits to the management system's PLC the information on the bollard's position and contributes to the access point safe functioning. The limit-switch is a normally open contact.

The bollard head is equipped with a detection magnet.

See appendix N° NT-REG for more detail.

Figure 39: Components bracket

Check the fastening and positioning of each limit-switch sensor: they must never touch the magnet. Check that they properly detect at the top and bottom.

In case of malfunction, check the connections on the technical control unit and inside the bollard and, if the problem continues, replace the limit switch sensor.

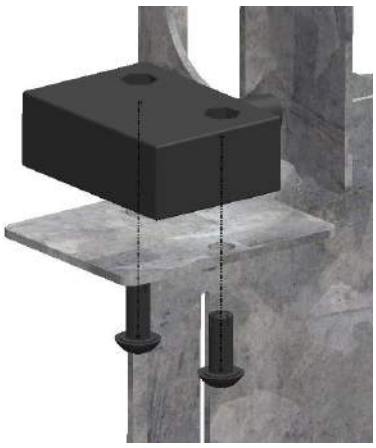


Figure 40: Limit-switch sensor assembling

5.2.5. Solenoid valve control – Check point N°5

The solenoid-valve must work. Check the wiring and connections into the Bollard and inside the technical control unit.

See appendix NT-REVB.

5.2.6. Drainage efficiency control – Check point N°6

The drainage system must be able to evacuate 20 liters of water in five minutes.

To run the test:

Remove the cover and the bollard head, check that the inside of the casing is free of any sand, dirt or other foreign bodies (if necessary, clean it). Pour 20 liters of water into the casing and check that it evacuates in five minutes.

If any drainage problem occurs, clean the drainage conduit by liquid suction and repeat the operation several times until the drainage system works correctly.

5.2.7. After vehicle impact control – Check point N°7

After important vehicle impact, it is recommended to quickly inspect the access point very carefully.

Check the bollard as following:
- No deformation or crack of any structural part.
- The bollard is rising and lowering without any friction point.

Check the concrete foundation as following:
- Original position (the foundation hasn't moved due to the collision). Check the connection between foundation and road surface on the impact side.
- Good concrete solidity around the bollard.

If the bollard and foundation can be used again, it is recommanded to perform preventive maintenance by replacing all screws.

5.3. PNEUMATIC MOTORIZATION CHECK POINTS DETAILS

5.3.1. No contact between bollard head and pneumatis hose – Check Point N°8

Make sure that the pneumatic hose hasn't moved during the transport. The pneumatic hose must stay in center position and have no contact with the bollard head part at any time.

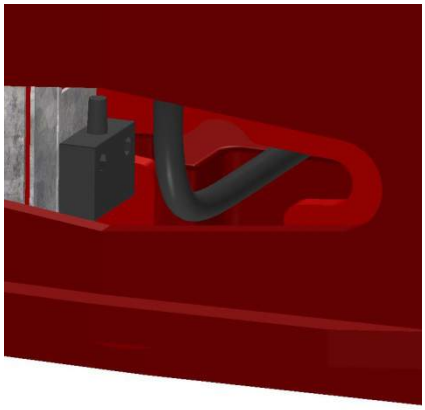


Figure 41: Inner bottom view. Pneumatic hose passing through the bollard head

5.3.2. No air leak – Check Point N°9

Check the air pressure into the air circuit. Adjust it if lower than requested. If the air circuit doesn't keep the pressure check eventual leak on each connections.

5.3.3. Proper solenoid-valve connection – Check Point N°10

Make sure that the soleniod-valve is properly connected.
See appendix N° NT-REVB for more detail.

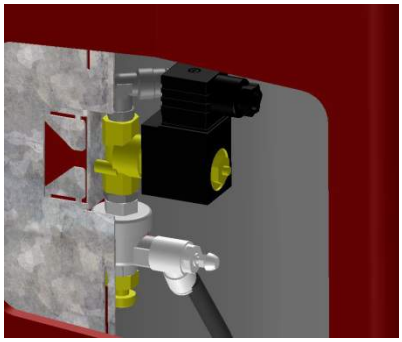


Figure 42: Solenoide-valves mounted onto the components bracket

5.3.4. Components properly fastened onto the bracket – Check Point N°11

Make sure that all components are well fastened onto the bracket.
See appendix N° NT-REG for more detail.

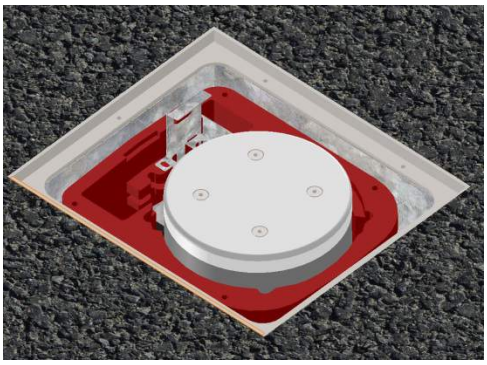


Figure 43: Bracket position identification

Figure 44: Bracket extraction

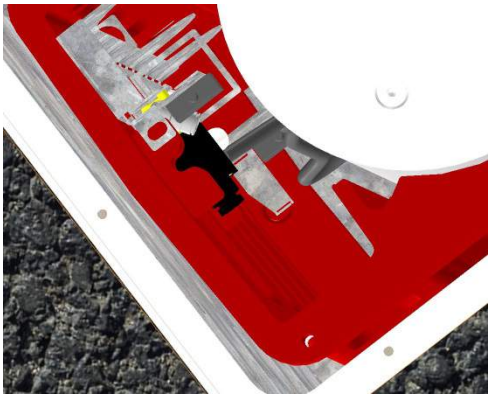


Figure 45: Bracket positioning view

Figure 46: Bracket positioning zoom

When replacing the braket into the bollard casing, make sure the bottom part is locked into the bottom casing hole.

5.4. STANDARD HYDRAULIC MOTORIZATION CHECK POINTS DETAILS

5.4.1. No contact between bollard head and hydraulic hose – Check Point N°12

Make sure that the hydraulic hose hasn't moved during the transport. The hydraulic hose must stay in center position and have no contact with the bollard head part at any time.

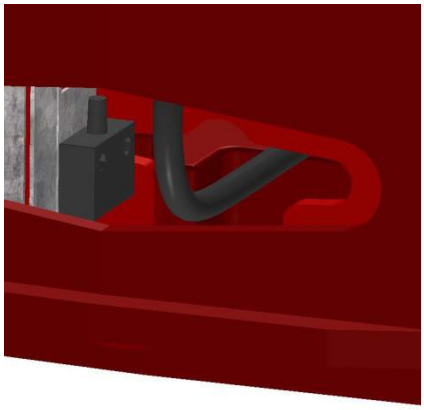


Figure 47: Inner bottom view. Hydraulic hose passing through the bollard head

5.4.2. No oil leak – Check Point N°13

Check that there is no oil leak from the hydraulic hose and the cylinder.

5.5. BUILT-IN HYDRAULIC MOTORIZATION CHECK POINTS DETAILS

5.5.1. No contact between bollard head and hydraulic hose – Check Point N°14

Make sure that the hydraulic hose hasn't moved during the transport. The hydraulic hose must stay in center position and have no contact with the bollard head part at any time. It is guided and protected by the hydraulic unit support.

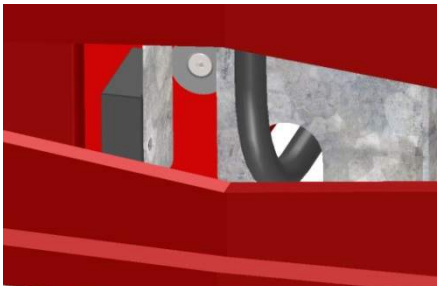


Figure 48: Inner bottom view. Hydraulic hose passing through the bracket

5.5.2. No oil leak – Check Point N°15

Check that there is no oil leak from the hydraulic hose and the cylinder.

5.5.3. Proper solenoid valve connection – Check Point N°16

See NT-REVB

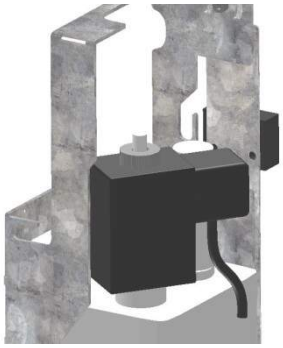


Figure 49: Solenoid valve indentification

5.5.4. Tighten up the fastening screws of the hydraulic pump onto support and support onto casing – Check Point N°17

Check that all assembly screws are well tightened.

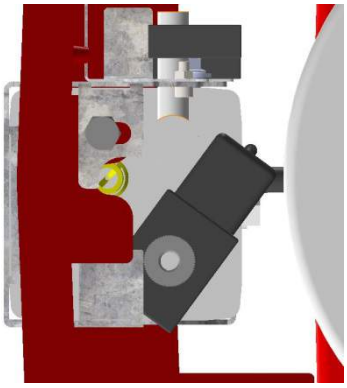


Figure 50: Built-in hydraulic pump top view

6. CORRECTIVE ACTIONS

6.1. CORRECTIVE ACTIONS LIST

For any reason of replacement of a component, follow the below procedure to make sure the disassembly/assembly step are well undertaken.

Common corrective tasks

Checkpoints	Action type*	§	Task name	Operation date												
1	CA	6.2.1	Cover and/or covering(Sleeve and/or top plate) replacement													
2	CA	6.2.2	Plastic frictionless ring and/or cover replacement													
3	CA	6.2.3	Guide rails cleaning													
4	CA	6.2.4	Led light replacement													
5	CA	6.2.5	Sleeve holding system replacement													
6	CA	6.2.6	Magnet replacement													

Specific corrective tasks for the PNEUMATIC motorization

Checkpoints	Action type*	§	Task name	Operation date												
7	CA	6.3.1	Limit-switch sensors replacement													
8	CA	6.3.2	Cylinder replacement													
9	CA	6.3.3	Pneumatic components bracket replacement													

Specific corrective tasks for the HYDRAULIC STANDARD motorization

Checkpoints	Action type*	§	Task name	Operation date												
10	CA	6.4.1	Limit-switch sensors replacement													
11	CA	6.4.2	Cylinder replacement													
12	CA	6.4.3	Standard hydraulic components braket replacement													

Specific corrective tasks for the BUILT-IN HYDRAULIC motorization

Checkpoints	Action type*	§	Task name	Operation date												
13	CA	6.5.1	Limit-switch sensors replacement													
14	CA	6.5.2	Cylinder replacement													
15	CA	6.5.3	Hydraulic pump replacement													
16	CA	6.5.4	Solenoid valve replacement													

PRECAUTIONS TO FOLLOW

Considering the weight of the bollard that is over 150 Kg., the people taking charge of this job must be particularly careful when performing the following procedures, especially regarding their own safety, that is, they must wear protective clothing and safety boots. Also, it is necessary to keep the site closed to traffic, by fitting legal signage dedicated to this type of construction site. Before starting works, always check that the power supply has been cut off.

"NT-CGS“

6.2. COMMON CORRECTIVE ACTION DETAILS

6.2.1. Covering (sleeve and/or top plate) replacement – Task N°1

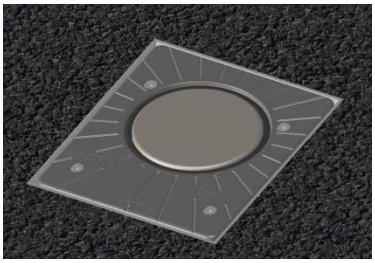


Figure 51: Bollard retracted

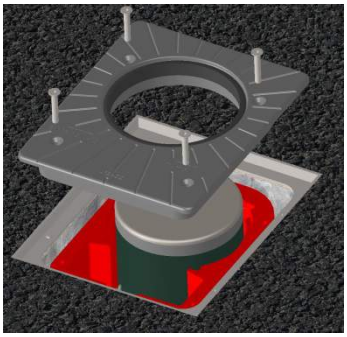


Figure 52: Screws and cover removing

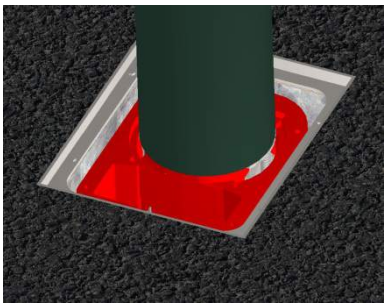


Figure 53: Raised up bollard

For the visible screws top plate version

Figure 54: Screws and top plate removing

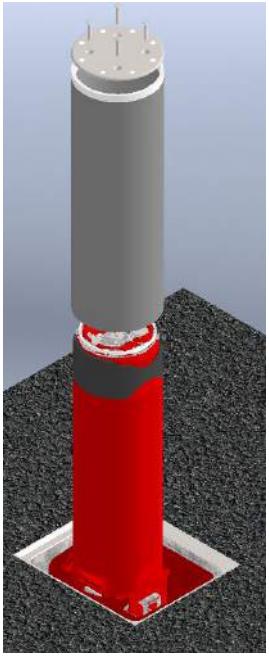


Figure 55: Removing covering

Figure 56: Sleeve removed

or the invisible screw top plate version – Action to be made with bollard in raised position.

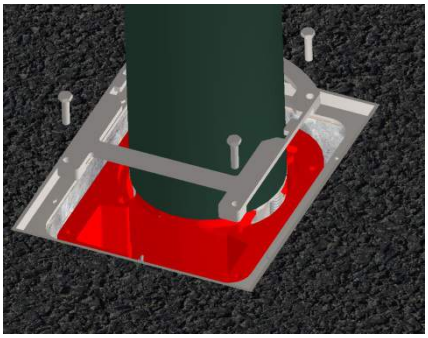


Figure 57: Place the specific disassembly tool

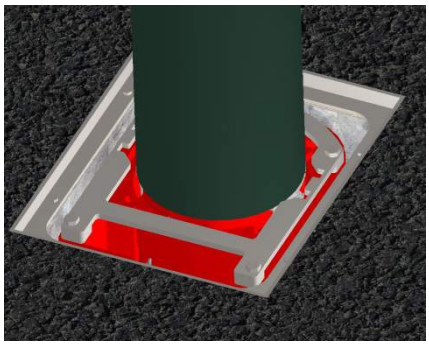


Figure 58: Specific disassembly tool in position

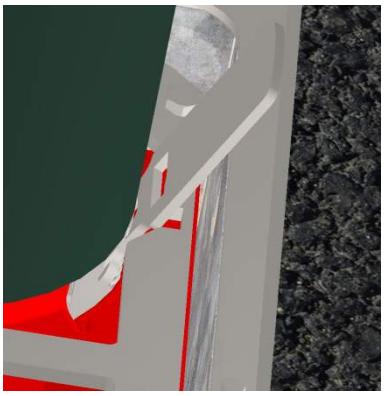


Figure 59: Insert the handling tool to catch the sleeve's compression system

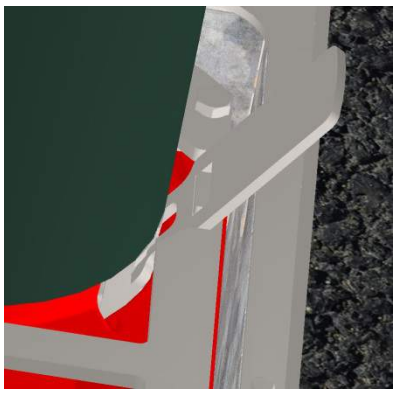


Figure 60: Push down to free up the sleeve and slide it down

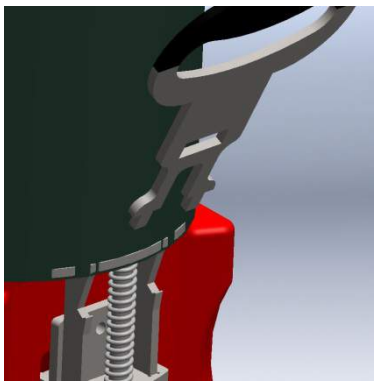


Figure 61: Handling tool positioning view

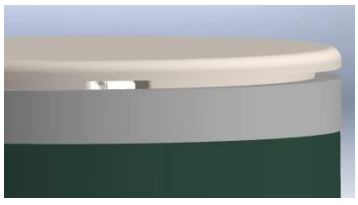


Figure 62: When the sleeve has slid down, a gap between top plate and sleeve appears

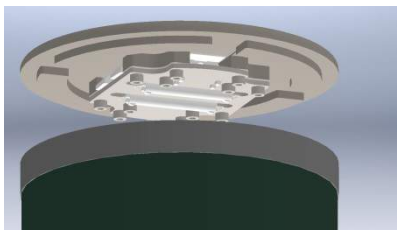


Figure 63: Remove the top plate using an Allen key

Figure 64: Sleeve removed

6.2.2. Frictionless plastic ring replacement – Task N°2

The frictionless plastic ring prevents the cylinder from scratching against the bollard casing. This piece must be replaced after any significant collisions or after it wears down.

Figure 65: cover with mounted frictionless ring

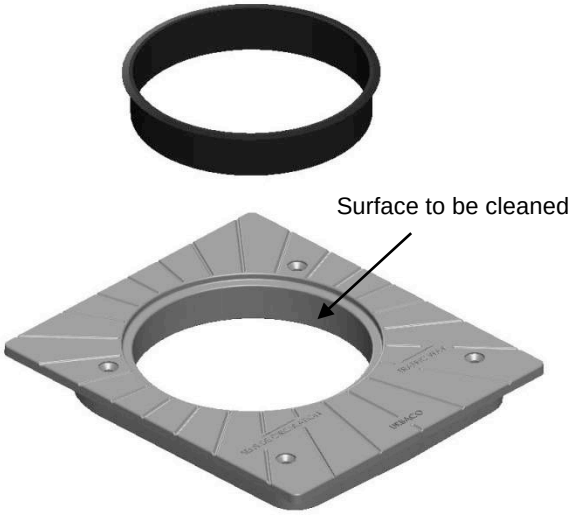


Figure 66: dismounted cover and frictionless ring

Remove the old frictionless ring. After having scrapped off all glue residues, fit the new ring with polyurethane glue.

6.2.3. Guide rails cleaning – Task N°3

The casing guide rails must be dust free
Before reassembling the bollard, spray the guides with Molykote 3402C or equivalent lubrication oil.

Figure 67: Guide rails view

6.2.4. LED light replacement – Task N°4

There is a direct access to the LED light just underneath the top plate.

See §6.2.1. for invisible screw top plate version disassembly.

Led light can be connected by welding and protected with heat-shrinkable sheath or with waterproof electrical connectors.

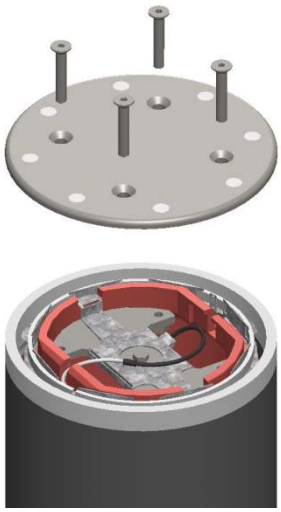


Figure 69: Top Plate disassembly

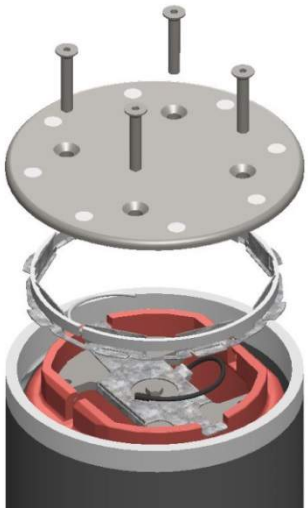


Figure 70: LED light disassembly

6.2.5. Sleeve holding system replacement - Task N°5

To perform this task, the bollard head must be cover free and out from the casing. See §6.2.1. for more details.

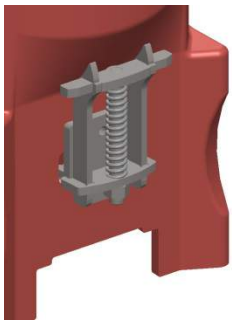


Figure 71: Sleeve holding system

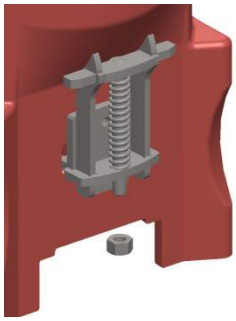


Figure 72: Take the bottom bolt off

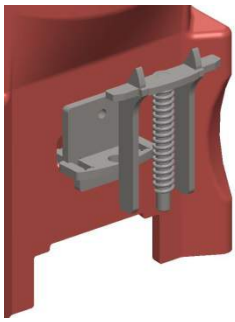


Figure 73: Remove the first part

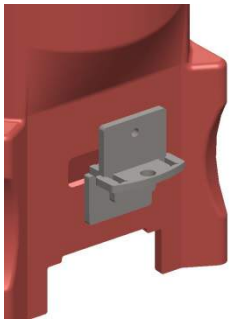


Figure 74: Remove the second part

6.2.6. Magnet replacement - Task N°6

To perform this task, the bollard head must be out from the casing. See §6.2.1. for more details.

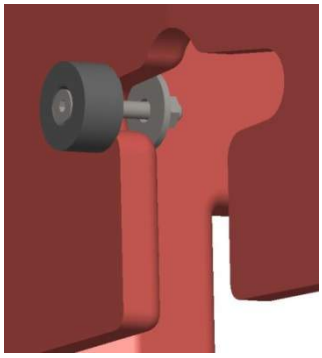


Figure 75: Magnet in position

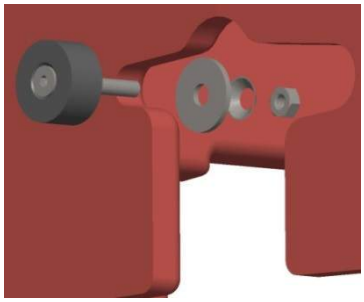


Figure 76: Remove the magnet

6.3. PNEUMATIC MOTORIZATION CORRECTIVE ACTION DETAILS

6.3.1. Limitswitch sensors changing – Task N°7

The bollard is equipped with two limit-switch sensors (one at the top and one at the bottom) mounted into the casing to the components bracket. Each sensor transmits to the management system's PLC the information on the bollard position and contributes to the access safe functioning. The limit-switch is a normally open contact.

The bollard head is equipped with a detection magnet.

See appendix N° NT-REG for more detail.

Figure 77: Components bracket

Check the fastening and positioning of each limit-switch sensor: they must never touch the magnet. Check that they properly detect the bollard when in up and in down position.

In case of malfunction, check the connections on the technical control unit and in the bollard and, if the problem continues, replace the limit switch sensor. Limit-switch sensor replacing kit is supplied with plastic rivets.

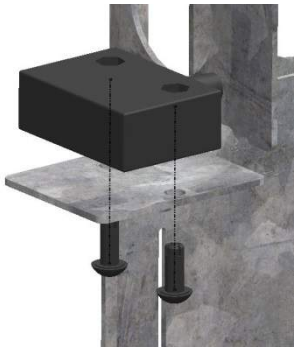


Figure 78: Limit-switch sensor assembled with 2 plastic rivets.

6.3.2. Pneumatic cylinder replacement – Task N°8

To perform this task, the bollard head must be cover free. See §6.2.1. for more details.

See appendix N° NT-RVP for more detail.

Figure 79: remove the central screw that holds the cylinder

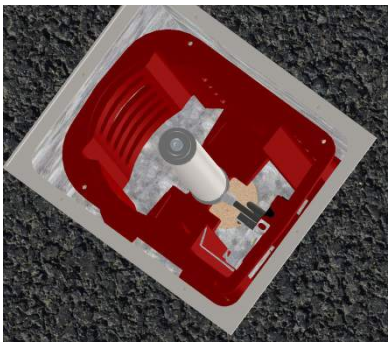


Figure 80: remove the cylinder

Figure 81: disconnect the cylinder

6.3.3. Pneumatic components bracket replacement – Task N°9

Figure 82: replace components bracket

6.4.1. Limitswitch sensors replacement – Task N°10

The bollard is equipped with two limit-switch sensors (one at the top and one at the bottom) mounted into the casing using the components bracket. Each sensor transmits to the management system's PLC the information on the bollard's position and contributes to the access safe functioning. The limit-switch is a normally open contact.

The bollard head is equipped with a detection magnet.

See appendix N° NT-REG for more detail.

Figure 83: Removing components bracket

Check the fastening and positioning of each limit-switch sensor: they must never touch the magnet. Check that they properly detect the top and the bottom of the bollard.

In case of malfunction, check the connections on the technical control unit and in the bollard and, if the problem continues, replace the limit switch sensor.

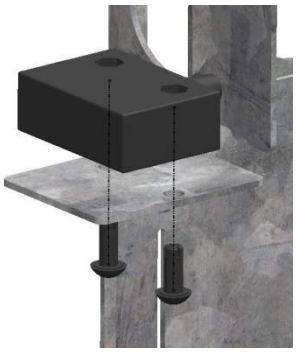


Figure 84: Limit-switch sensor assembling

6.4.2. Hydraulic cylinder replacement – Task N°11

To perform this task, the bollard head must be cover free. See §6.2.1. for more details.

See appendix NT-RVH for more detail

Figure 85: remove the central screw that holds the cylinder

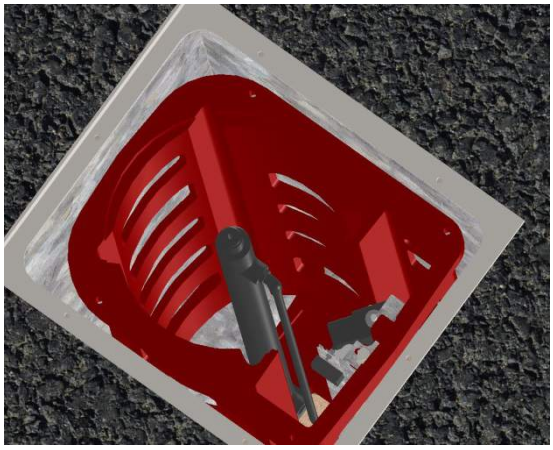


Figure 86: remove the cylinder

Figure 87: disconnect the cylinder

6.4.3. Standard hydraulic components braket replacement – Task N°12

Figure 88: Replace components bracket

6.5. BUILT-IN HYDRAULIC MOTORIZATION CORRECTIVE ACTION DETAILS

6.5.1. Limitswitch sensors replacement – Task N°12

The bollard is equipped with two limit-switch sensors (one at the top and one at the bottom) mounted into the casing using the components bracket. Each sensor transmits to the management system's PLC the information on the bollard position and contributes to the access safe functioning. The limit-switch is a normally open contact.

The bollard head is equipped with a detection magnet.

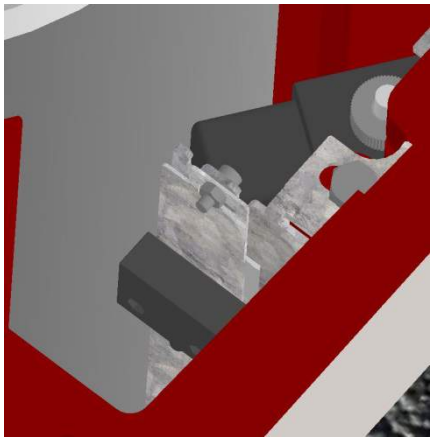


Figure 89: Components bracket assembly screw identification

Figure 90: Unscrew the components bracket assembly screw

Figure 91: Removing components bracket

Check the fastening and positioning of each limit-switch sensor: they must never touch the magnet. Check that they properly detect the top and bottom of the bollard.

In case of malfunction, check the connections on the technical control unit and in the bollard and, if the problem continues, replace the limit switch sensor.

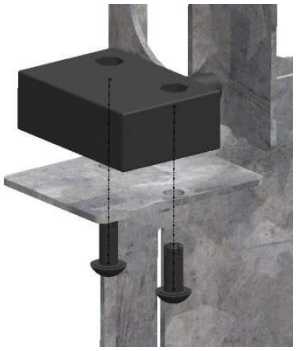


Figure 92: Limit-switch sensor assembling

6.5.2. Hydraulic cylinder replacement – Task N°13

To perform this task, the bollard head must be cover free. See §6.2.1. for more details.

See appendix N° NT-RVH

Figure 93: remove the central screw that holds the cylinder

Figure 94: remove the cylinder

Figure 95: disconnect the cylinder

6.5.3. Hydraulic pump replacement – Task N°14

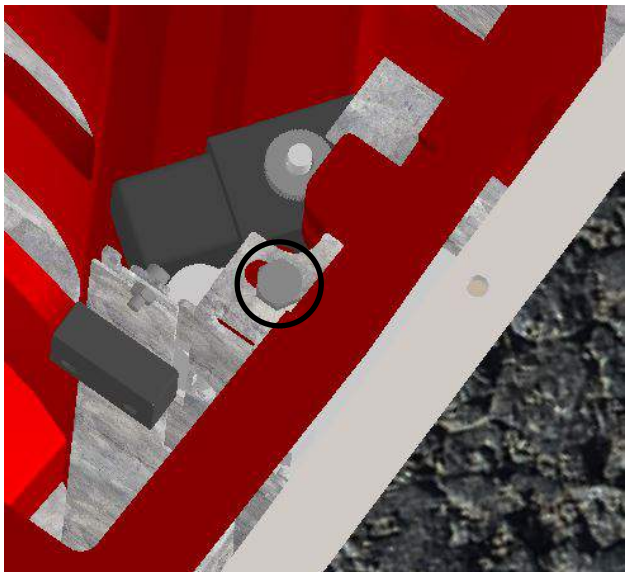


Figure 96: Hydraulic pump support assembly screw identification

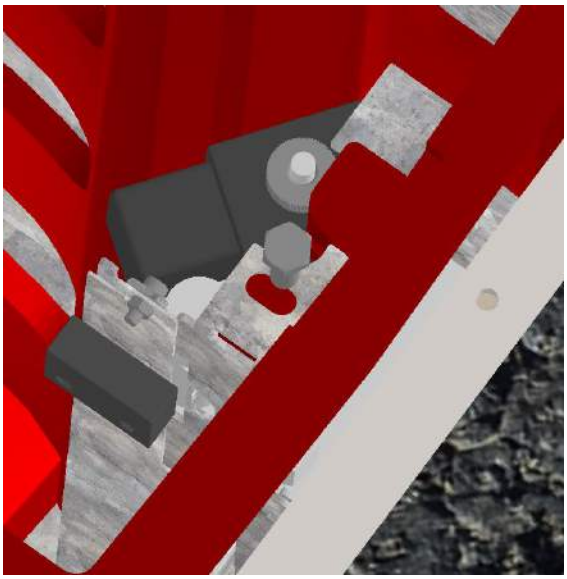


Figure 97: Unscrew the hydraulic pump support assembly screw

Figure 98: Remove the hydraulic pump from its support and the cylinder

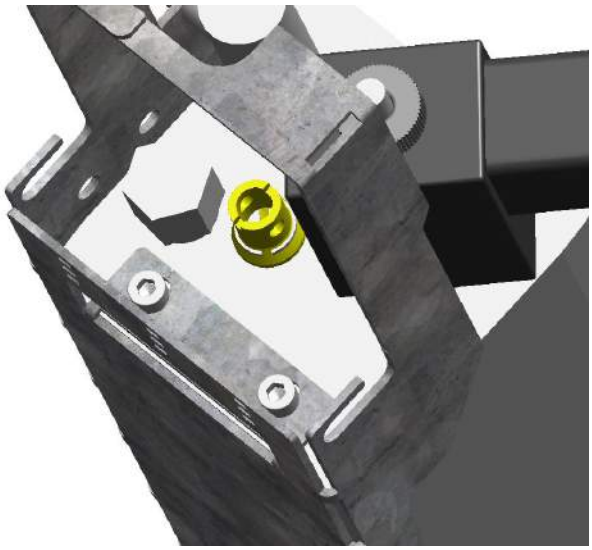


Figure 99: Hydraulic pump top assembling screws

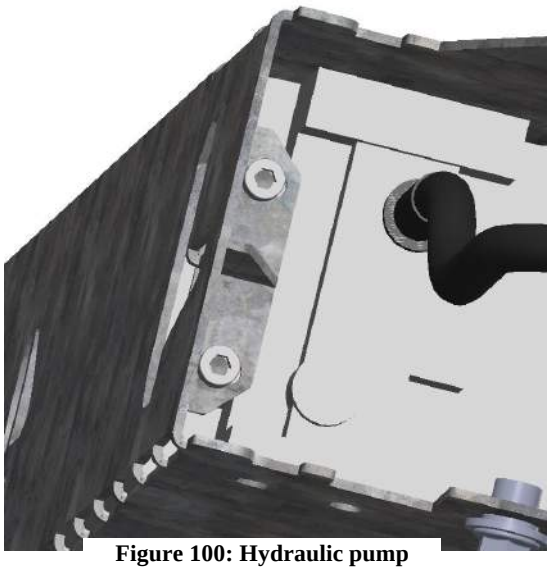


Figure 100: Hydraulic pump bottom assembling screws

6.5.4. Solenoide valve replacement – Task N°15

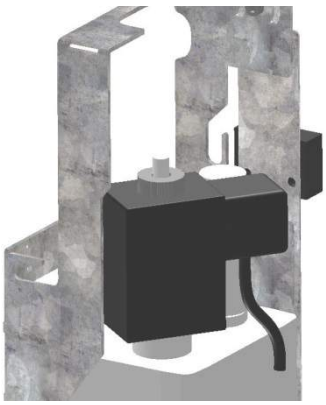


Figure 101: Solenoide valve identification

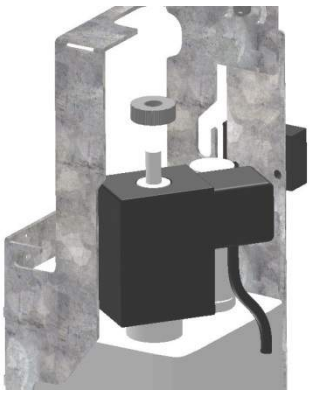


Figure 102: Remove the knurled nut

Figure 103: Remove the solenoid valve

7.1. G6EVO - COMMON PARTS

Ref.	DESCRIPTION	DIMENSIONS	CODE
1	Casing for pneumatic and hydraulic standard motorization	Ø250 H500	RCAIF50A
		Ø250 H550	RCAIF50A
		Ø200 H750	RCAIE75ANM
		Ø250 H750	RCAIF75AM
1bis	Casing for built-in hydraulic motorization	Ø200 H750	-
		Ø250 H750	-
2	Bollard head	Ø250 H500	RTEVOF50
		Ø250 H550	RTEVOF55
		Ø200 H750	RTEVOE75
		Ø250 H750	RTEVOF75
3	Cover	Ø200	RCOVEPA
		Ø250	RCOVFPA
4	Frictionless ring	Ø200	RBFREM
		Ø250	RBFRF
5	M10 cover screw	Ø200 and Ø250	RVIS06

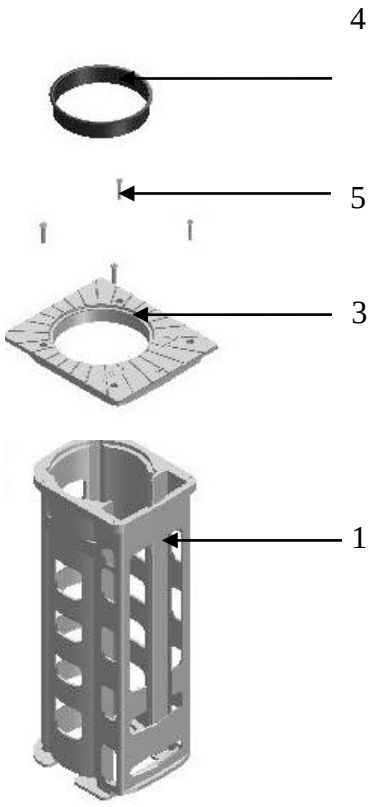


Figure 104: Casing and cover exploded view

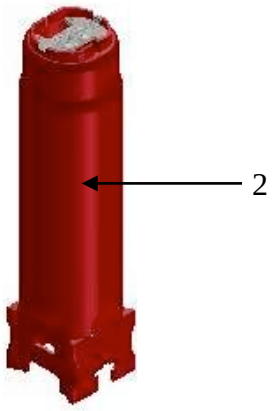


Figure 105: Bare bollard head

7.2. G6EVO – PNEUMATIC SOLUTION

Ref.	DESCRIPTION	DIMENSIONS	CODE
1	Pneumatic components bracket (Fail safe)	H500	RSUPACCP50
		H550	RSUPACCP55
		H750	RSUPACCP75
2	Pneumatic cylinder	H750	RVEP75M
		H500/550	RVEP50M

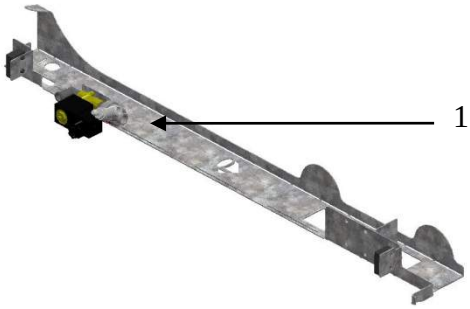


Figure 106: Pneumatic components bracket

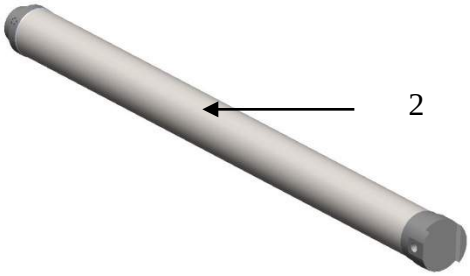


Figure 107: Pneumatic cylinder

7.3. G6EVO – STANDARD HYDRAULIC SOLUTION

Ref.	DESCRIPTION	DIMENSIONS	CODE
1	Standard hydraulic components bracket	H500	RSUPACCH50
		H750	RSUPACCH75
2	Hydraulic cylinder	H500	RVEH50M
		H750	RVEH75M

Figure 108: Standard hydraulic components braket

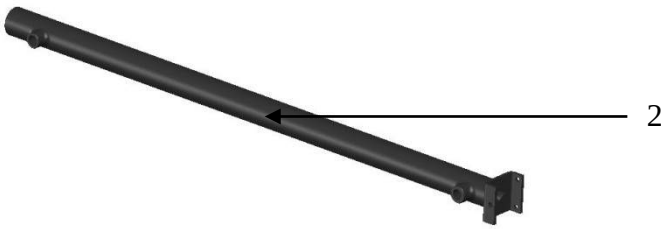


Figure 109: Hydraulic cylinder

7.4. G6EVO – BUILT-IN HYDRAULIC SOLUTION

Ref.	DESCRIPTION	CODE
0	Built-in hydraulic unit with cylinder (Fail safe)	RKITHE75SP
0	Built-in hydraulic unit with cylinder (Fail secure)	RKITHE75SN
1	Limit-switch on bracket	RG6EVO-FDC01
2	Hydraulic unit (Fail safe)	RGRPHE75SP
2	Hydraulic unit (Fail secure)	RGRPHE75SN
3	Hydraulic cylinder	RG6EVO-VHE01
4	Hydraulic hose	RG6EVO-FLH01

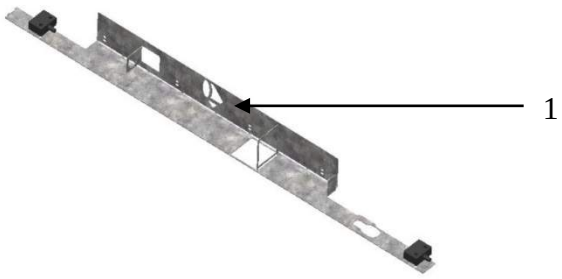


Figure 110: Built-in hydraulic components bracket

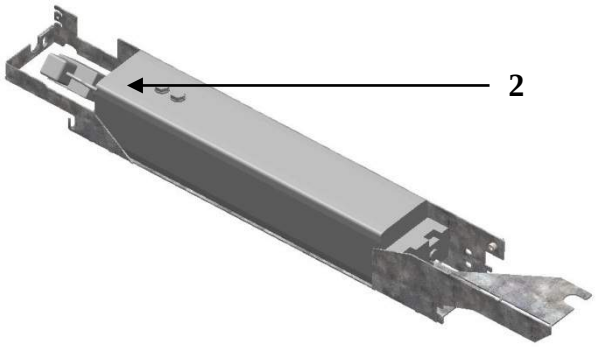


Figure 111: Built-in hydraulic group

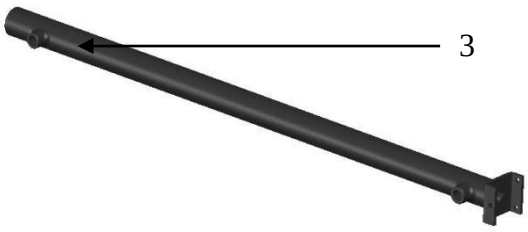


Figure 112: Hydraulic cylinder

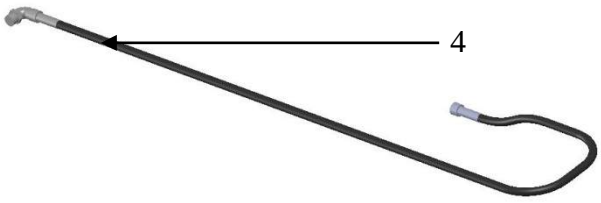


Figure 113: Built-in hydraulic hose

7.5. G6EVO COVERING

Ref.	DESCRIPTION	MATERIAL	DIMENSIONS	CODE
1	Standard sleeve	Painted steel	Ø200 H750	RG6EVOHE75-CLP
			Ø250 H550	RG6EVOHF55-CLP
			Ø250 H750	RG6EVOHF75-CLP
		Polished stainless steel	Ø200 H750	RG6EVOHE75-VDM
			Ø250 H550	RG6EVOHF55-VDM
			Ø250 H750	RG6EVOHF75-VDM
2	Chateauneuf sleeve	Painted steel	Ø200 H750	RG6EVOHE75-CHP
			Ø250 H550	RG6EVOHF55-CHP
			Ø250 H750	RG6EVOHF75-CHP
		Polished stainless steel	Ø200 H750	RG6EVOHE75-CHPI
			Ø250 H550	RG6EVOHF55-CHPI
			Ø250 H750	RG6EVOHF75-CHPI
3	Customized sleeve	Painted steel	Ø200 H750	-
			Ø250 H550	-
			Ø250 H750	-
4	Top plate with screws	Painted steel	Ø200	RG6EVOCE-AV
			Ø250	RG6EVOCF-AV
		Stainless steel	Ø200	RG6EVOCE-IV
			Ø250	RG6EVOCF-IV
5	Top plate with light diffusers and screws	Varnished steel	Ø200	RG6EVOCE-AVD
			Ø250	RG6EVOCF-AVD
		Stainless steel	Ø200	RG6EVOCE-IVD
			Ø250	RG6EVOCF-IVD
6	Simple screwless top plate	Painted steel	Ø200	RG6EVOCE-A
			Ø250	RG6EVOCF-A
		Stainless steel	Ø200	RG6EVOCE-I
			Ø250	RG6EVOCF-I
7	Screwless top plate with light diffuser	Varnished steel	Ø200	RG6EVOCE-AD
			Ø250	RG6EVOCF-AD
		Stainless steel	Ø200	RG6EVOCE-ID
			Ø250	RG6EVOCF-ID
8	Sleeve holding system	-	Ø200 H750	RG6EVODE-CC
			Ø250 H550	RG6EVODF55-CC
			Ø250 H750	RG6EVODF-CC
9	Led light	-	Ø200	RG6EVOSE-CL
			Ø250	RG6EVOSF-CL
10	Led light diffusor	-	Ø200	RG6EVOSE-DH
			Ø250	RG6EVOSF-DH
10	No Led – reflective band support	-	Ø200	RG6EVOSE-BS
			Ø250	RG6EVOSF-BS
11	Magnet detection	-	-	RG6EVOD-SP
12	Led light spiral cable	-	-	RG6EVOS-CCL
13	Reinforcing ring	-	Ø200	RG6EVODE-RF
			Ø250	RG6EVODF-RF

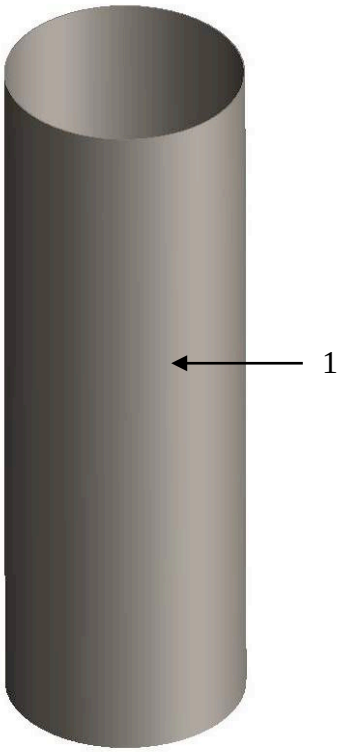


Figure 114: « Cylinder » style sleeve as standard

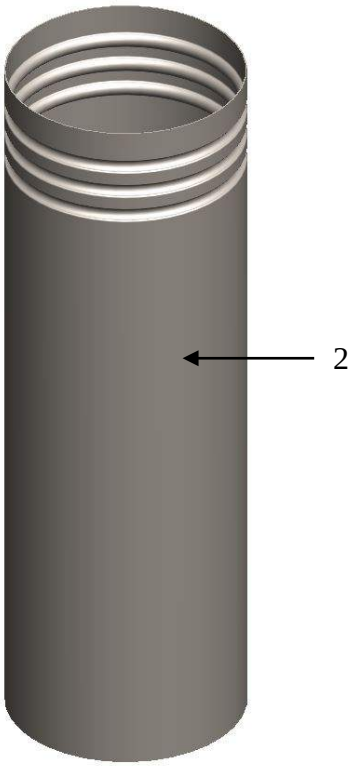
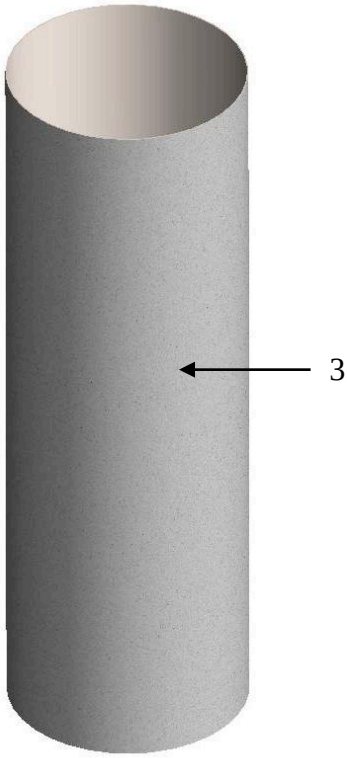


Figure 115: « Chateauneuf » style sleeve



Fugure 116: Customized sleeve

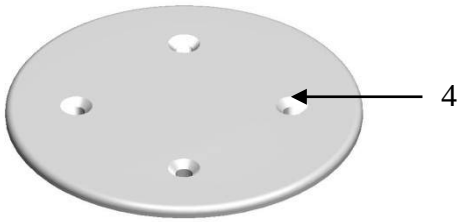


Figure 117: Top plate with screws

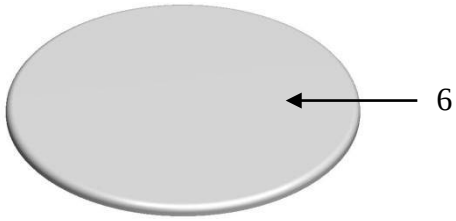


Figure 118: Top plate without screws

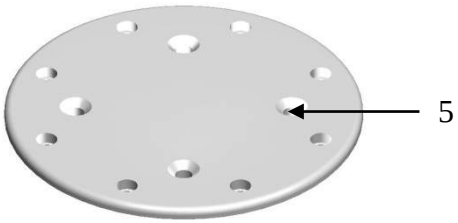


Figure 119: Top plate with screws and diffusers

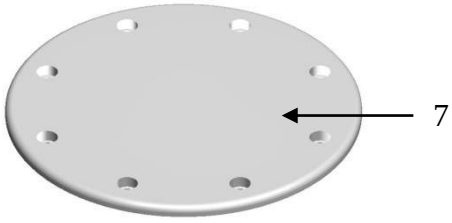
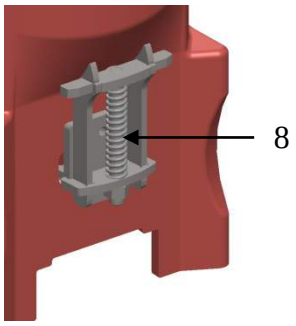
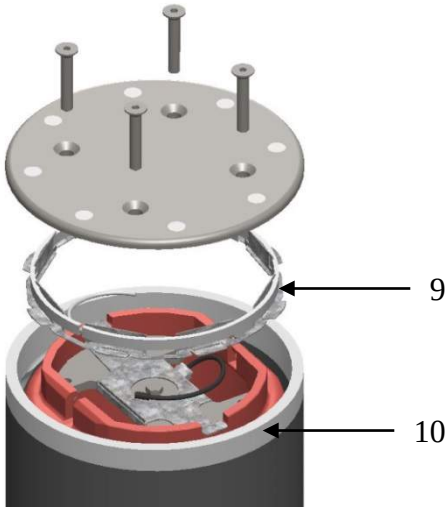


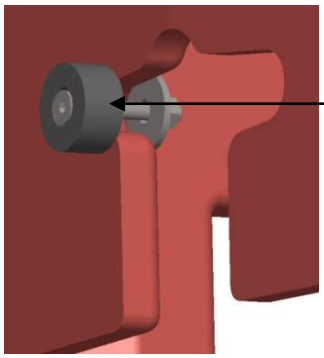
Figure 120: Top plate without screw and with diffusers



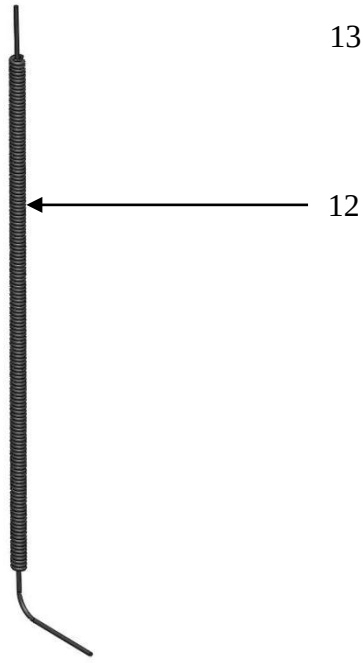
Fugure 121: Sleeve holding system



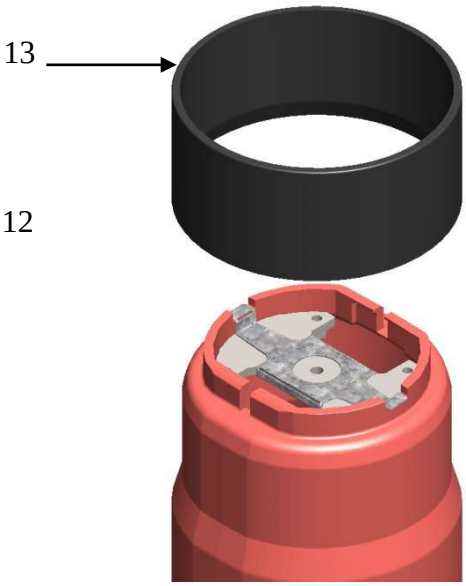
Fugure 122: Led light ring



Fugure 123: Magnet



Fugure 124: Led light spiral cable



Fugure 125: Reinforcing ring

8. FIRST LEVEL CORRECTIVE ACTIONS

DEPENDING ON THE TYPE OF MOTOR, SOME ANOMALIES COULD BE QUICKLY SOLVE

PROBLEM	POSSIBLE REASON	SOLUTION	CP N°
The electro-valve is powered up (check using a voltmeter) but the bollard does not rise.	The air does not reach the electro-valve.	Check compressor and air circuit.	
	The pressure regulator is closed.	Open the pressure regulator.	
	The electrovalve coil is out of order.	Replace the coil.	
	The hydraulic pump is out of order.	Replace the hydraulic unit.	
	The compressor is out of order.	Replace the compressor.	
The bollard rises irregularly.	There are foreign objects in the guide rail.	Check the cleanness of the guide rails. Clean and lubricate.	
	The cylinder is blocked or deformed.	Check the cylinder. If necessary, replace it.	
	Insufficient air pressure.	Check the pressure on the pressure gauge (from up to 7 bars).	
	Insufficient oil pressure.	Check for oil leaks.	
The bollard surfaces but stop before reaching the upper limit-switch.	There are foreign objects in the guide rail.	Check and clean the guide rails.	
The bollard retracts but stops before reaching the lower limit-switch.	There is a foreign object under the bollard head.	Clean the bottom of the casing and the lower part of the bollard head.	

9. MAINTENANCE LOG

This form must be filled in at each maintenance job. Otherwise the warranty is no longer valid.

Signature							
Other task							
Task done							
Company							
Operator							
DATE							

10. DISMANTLING AND DISPOSAL

For URBACO, environmental protection is a basic requirement of our operating and market strategies and we encourage you to follow a few simple rules concerning recycling:

DISPOSING OF THE PACKAGING

The components of the packaging (cardboard, plastic, and so on) are considered solid urban waste and can be disposed of easily, simply by separating them for recycling.
Before proceeding always check the specific current local laws.

DO NOT STOCK IN THE STREET!

DISPOSING OF THE PRODUCT

Our products are made with different materials. Most of these (cast iron, aluminum, plastic, iron, electric cables) are considered solid urban waste and can be separated and recycled at authorized plants.

Other components such as control boards, radio control batteries, and so on, may contain pollutants. They must therefore be dismantled and handed over to specialized disposal firms that are authorized to retrieve and dispose of them properly. Before sorting any components, always refer to the local legislation.

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