



INSTALLATION AND CONNECTION OF AUTOMATIC RETRACTABLE BOLLARDS Ø 120, Ø 200, Ø 250 mm

GUARANTEE :

The installation and civil engineering contractors who install Urbaco products are entirely responsible for the installation and conform to the guidelines regarding the prescribed situation of each site, be it geological or architectural.

The product guarantee is valid only if the installation guidelines are respected and are in accordance with Urbaco general terms and conditions.

In the event legal action is taken, a concrete study must be performed by an engineering and design department. This department will, if necessary, analyze the quality of the concrete by the specimens obtained by core sampling, and will verify that installation guidelines were followed.

If it is concluded that the installation is incorrect, the guarantee will be immediately revoked and the Project Manager will be informed of the incomplete installation. He will then be obligated to rectify the mistakes by resuming the installation and repairing the site according to the agreed specifications.

Analyses and study costs will be the responsibility of the ordering company.

IMPORTANT : The registration form that you receive must be completed and returned within 8 days of installation or within 30 days from shipping. This will validate the warranty. Failure to comply will result in Urbaco denying all claims.

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I EQUIPMENT DESCRIPTION

A controlled access usually involves three to four sets of equipment, all link together with electric wires and a pneumatic or hydraulic line.

- **Safety loops** offer electromagnetic detection. Installed in the ground before and after the bollards, they provide information on the presence or absence of vehicles near the bollards. Two or three loops operate according to the function of access (controlled entrance, free or automatic exit). They are a major part of the safety system.
- **Automatic retractable bollards**, installed across the traffic lane, allow or deny access (one or two bollards for a standard configuration). Consult our engineering department for other configurations.
- **The control system :**
 - § Access controller with **integrated technical center** (City3 or City 5 or micro technical center with radio receiver)
 - § Or access controller (City), **separate from technical center** which is located in a cabinet.

The control system gets instructions from the operator/user by remote control, proximity card, push button, etc. It manages the access typically by PLC and supplies the energy to operate the bollards with pneumatic compressor or a hydraulic pump. Works with 220 VAC (16 A + ground) power for standard European versions and is also available in 110 VAC.

For safety loops installation and control system installation (technical center, city controller), please see the appropriate manual.

Safety loop layout is very important for the proper functioning of the access. Therefore, **it is recommended to first determine loop positioning**, and then proceed with bollard and controls positioning.

II SITE WORKS

2.1 Marking the site

You should proceed to the site marking conforming to the dimensions specified in chapter IV, where three tables detail for every bollard model the corresponding dimensions of the lost casing, the excavation the base, the drain and the duct depth. The duct enables the connection of the bollard to the control system, often via an inspection hole.



Position your marking in function of the traffic flow :

Case n°1 : The marking is a rectangle (which is the case for all bollards except those with a 250 mm diameter in the Tradition line). The duct should be set into the lost casing parallel to the traffic flow. The duct will be placed into the lost casing with the long sides perpendicular to the traffic flow. The short sides will be parallel to the traffic flow.

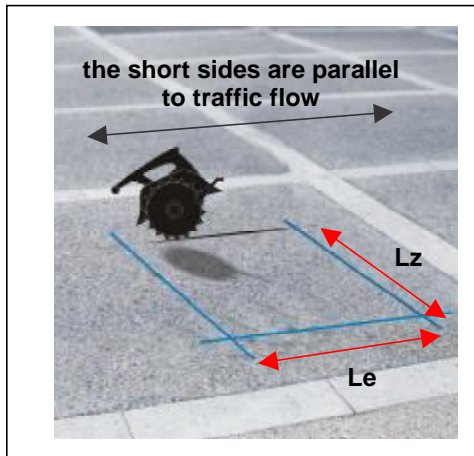
Case n° 2 : the marking is a square (which is only the case for the bollards with a 250 mm diameter in the Tradition line). The duct is set into the lost casing and will be perpendicular to the traffic flow.

Case n°1
(Drawings)

Case n°2

The duct connecting the bollard to the proximity inspection hole (or directly to the control system) is a (Janolene type) protective geotextile sheath Ø 100 mm. The trench for the duct should be located at a minimum distance of 100 mm from the cable of a loop. It should not be set with abrupt bends (in case n°1, you should arrange a bow with a 400 mm radius at the exit of the bollard or place a casing with a 90° bend.

2.2 Site preparation



Depending on the nature of the site, saw-cut the asphalt, or remove the cobblestones.

Please refer to the dimensions tables for the **Lz** and **Le** measurements according to the different bollard models.

If a series of bollards is to be installed, we suggest digging a trench over digging individual holes. Each bollard is linked to the inspection hole by its own duct.

2.3 Excavation

With a jackhammer or similar tool, excavate the area according to the dimensions detailed in chapter IV (**Le**, **Lz**, **He**). Clear the debris (32.5"x32.5"xH46" or 825 x 825 x 1165 mm, approximately 1 cubic yard or 1 cubic meter for a bollard Ø250 H520 for example).



A trench under the asphalt should be made according to the best practices between the excavation for the lost casing and the inspection hole (or control system). This trench should contain a (JANOLENE type) protective geotextile sheath Ø 100 mm.

2.4 Drain

Create a French drain that will accommodate the type of subsoil on the site. The drain should equal the measurements of the lost casing plus 8-12 inches or 200-300 mm. At the bottom of the hole, DOT approved geotextile may be used. Ballast should then be poured until it is 10 inches or 250 mm thick. The drain must be able to absorb approximately 5 US gallons or 20 liters of water in 5 minutes. If the subsoil is not permeable enough, connect the drain to the rainwater system, to a sump pump, or other, depending on availability and local codes.

2.5 Base

Reminder : For all bollards except the Tradition line models with 10-inch or 250 mm diameters, the rectangular lost casing will be positioned so that the side holes are parallel to the flow of traffic.

For Tradition bollards with a 10 in or 250 mm diameter, the square lost casing will be positioned so that the side holes are oriented perpendicularly to the flow of traffic.

This allows the installation of a 4" or 100 mm Ø PVC pipe drain so that the casing can be on top with the corresponding hole in front of the bottom of the primary casing.

Cover the top of the hole with a screen so that no debris can enter.

Specifications of the concrete

Binders: artificial cements with CPA 325 components.

Granulates: with 10-20mm/0.5" – 0.8" granularity. The granulates must be limestone or silica without salts or clay.

Concentration of concrete: Concrete must be completely firm and dry. The subsidence to the Abrams cone must be between 4 and 7 cm for a truncated cone mold of 30 cm high, 10 cm in diameter in the upper part, and 20 cm in diameter in the lower part where 4 layers of concrete should be poured. Amount: 350Kg/m³, 22lbs/cubic ft.

Specifications of the steel re-bars

Use HLE steel re-bars only. For each type of steel used, consider the following:

- the composition of the steel and its carbon content.
 - the geometric characteristics of the sections (parameters that define the shape of the section).
 - the adhesive qualities.
 - the mechanical properties.
 - the usage recommendations: the bending, cutting and welding conditions.
 - the commercial designation (ex. TOR steel)
 - the class of the material (ex. FE E 40A)
- The processing used must comply with the manufacturer's guidelines as well as local codes.

Installation of the re-bars

The installation must comply with the specifications for re-bar. These bars must be installed to allow a 2" or 5 cm thickness as compared to the internal part of the casing.

Concrete installation

After installing the re-bars, concrete must be poured for the base. Ensure a horizontal and flat spread. Do not forget to protect the drain opening (use a PVC pipe Ø 100 mm). It is important to respect the measurements quoted in the bedding plan document.

2.6 Lost casing

2.6.1 Bedding of the lost casing

The lost casing is a form used to dimension the hole in the concrete block. It will house the casing of the bollard.

- Position the lost casing so that it has a correct orientation to the traffic flow, as detailed above. Check that the hole at the bottom is in front of the drainpipe on the concrete sole.
- Take the duct end (type JANOLINE Ø 100 mm sheath) through the side opening and let it extend by a few inches or cm inside the casing. Block off the other holes on the sides of the casing with cardboard, for example.

- **Maintain the inside of the casing with wooden planks that withstand the pressure of the concrete to preserve the square of the casing and the dimensions.**

- **Verify the vertical and horizontal square of the casing, as well as the dimensions of the casing before and after pouring the concrete.** This will ensure that the bollard casing will fit with the necessary tolerances, and will also make the installation or removal for maintenance easy (the upper part of the casing is below ground level, see the distance mentioned on the detailed installation cut sheet enclosed with this installation guide).

Pour concrete around the lost casing ensuring a minimum 6" or 150 mm thickness.

Let cure after checking the levels.

Cut the extending piece of duct.

2.6.2 Fitting of casing into lost casing

1) Control the width of the casing from top to bottom. It must be as indicated on the installation cut sheet. Ensure that there is no void under the casing.

2) Ensure that the drain is functional (able to absorb 5 US gallons or 20 liters in 5 minutes).

3) Ensure that the bottom of the casing is clean and free from concrete.

4) Control the depth of the casing. It must be according to what is shown on the installation cut sheet.

- A casing installed too deep keeps the primary casing from sitting properly on the bottom of the lost casing and makes it hang from the cover, which is prohibited.
- A lost casing that is installed too high makes the bollard stick out of the ground. This is dangerous to pedestrians, and raising the ground is difficult and costly.

5) Clean the area surrounding the hole from sand and gravel that could damage the bollards' paint.

2.7 Cable and flexible hose installation into duct work

Every bollard is connected to the control system (or to the proximity inspection hole) by a pneumatic or hydraulic flexible hose (Ø 10 mm, length 25 m) , (Ø 20 mm, length according to order), and by one or several electric multi-conductor cables.

Before installing the flexible hose, you should cork it carefully in order to avoid the inlet of sand or gravel during the operation.

The pneumatic flexible hose should not be shortened because it enables to create an air supply reserve.

The standard electric cable (Ø 9 mm length 25m) contains 5 conductors. Four of them ensure the connection to the solenoid valve and to the low end switch. The fifth conductor is available for the upper end switch.

The heater option request a specific cable with 2 conductors (supplied). The additional options (led light, shock detector) request a cable containing the necessary conductors (2 for the led light and 2 for the shock detector).

2.8 Unpacking (of casing and bollard)

Caution before unpacking:

Bollards are very heavy: before cutting the straps, ensure that the products are sitting properly on the pallet and that the pallet is in good condition.

Put two tape-bands on the plastic wrap, around the casing at the top and at the bottom to maintain it better. Cut off the top off the plastic wrap with a blade.

(drawings)

Have someone tilt the bollard and cut off the bottom of the plastic wrap to allow evacuation of the water through the drain.



Plastic wrap must be left in place while positioning the bollard with polyurethane foam. Do not allow the foam to get into the casing.

Cut a circle in **the plastic wrap Ø 100 mm** on the side of the solenoid valve, **at the place where the duct will be connected** once the casing is bedded in the casing (see dimension N in chapter IV).

On the cover, remove the plastic caps with a screwdriver and remove the four bolts. Remove the cover but be aware that it is very heavy. If the cover is square, remember the orientation on the casing, as the cover must be replaced exactly as it was removed (observe traffic flow) .

(2 drawings)

(legend to second drawing) Circle cut Ø 100 mm in the plastic wrap on the side of the solenoid valve where the duct should be connected.

2.9 Installation (of casing and bollard)



The installation crew must be cautious with the following steps. Caution must also be taken when handling bollards as they are extremely heavy. Personal protective equipment must be used (ex. safety shoes). The site must be secured from traffic by signs placed in view (steps to take when beginning site preparation).

The bollards must be installed with the appropriate equipment such as a crane or equivalent that can handle a minimum of a 1200-pound or 500 kg load.

Replace two cover bolts on opposite corners by pig tail hooks with a 12mm/0.5" diameter. In addition you should add washers and nuts for blocking them.

Bollards should be lifted with extreme caution and appropriate equipment only.



Place the primary casing in the lost casing :

- **When the casing is rectangular** (which is the case for all bollards **except** those with a 250 mm diameter in the Tradition line), **take into account the position of the solenoid valve**, which should be in front of the duct containing the cables (to choose between the two 180° options).

- **When the casing is square** (which is the case for bollards with a 250 mm diameter in the Tradition line) respect the axis of traffic flow signs on the casing, and **take into account the position of the solenoid valve**, which should be in front of the duct containing the cables (to choose between the two 180° options).

Check the alignments and make sure they are vertical.

III CONNECTIONS

3.1 Electrical connections

1) Pneumatic models

Take the electrical cables out of the casing. Set them on the ground close to the bollard. These cables are labeled.

Standard model

- 1 cable « **FdCB** » for the lower end switch, containing 2 conductors.
- 1 cable « **EV** » for the solenoid valve, containing 3 conductors from which 2 should be used (the third one, for ground, with a yellow and green colour is not used).

Options

- 1 cable « **FdCH** » for the upper end switch, containing 2 conductors.
- 1 cable « **CL** » for the LED light, containing 2 conductors.
- 1 cable « **CHF** » for the heater, containing 3 conductors from which 2 should be used (the third one, for ground, with a yellow and green colour is not used).
- 1 cable « **DChoc** » for the shock detector, containing 2 conductors.

2) Hydraulic models

Take the electrical cables out of the casing. Set them on the ground close to the bollard. These cables are labeled.

Standard model

- 1 cable « **FdCB** » for the lower end switch, containing 2 conductors.
- 1 cable « **FdCH** » for the upper end switch, containing 2 conductors.

Options

- 1 cable « **CL** » for the LED light, containing 2 conductors.

- 1 cable « **CHF** » for the heater, containing 3 conductors from which 2 should be used (the third one, for ground, with a yellow and green colour is not used).
- 1 cable « **DChoc** » for the shock detector, containing 2 conductors.

3) Take the electrical cables out of the duct. Set them on the ground along with the casing ones.

4) **Slip a thermo-retractable waterproof sheath** (not supplied) **on every cable** (on the side of the duct for example).

5) **Slip a thermo-retractable waterproof sheath** (not supplied) **on every conductor** (on the side of the duct for example). Strip the conductors' ends.

(2 pictures)

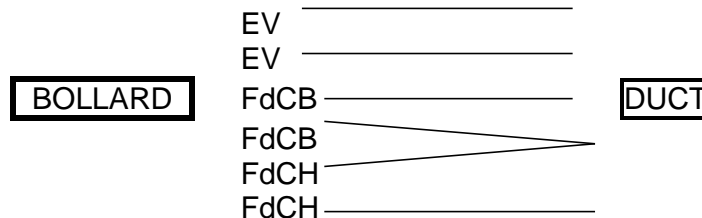
6) Weld **while labeling the cables of conductors that go through the duct** in order to be able to connect their ends to the connection box of the control system afterwards.

For every cable, there is no polarity (the 2 conductors can be substituted for each other).

If **2 lower and upper end switches** are present which is an option for the pneumatic systems and a standard for the hydraulic ones :

weld together a conductor of each cable FdCH and FdCB, in order to create the connection towards the « common » contact of the connecting box.

Thus the 4 conductors of the 2 FdCH and FdCB cables are welded to 3 electric conductors from the duct. Label those 3 conductors well.



Then insulate electrically while heating the thermo-retractable sheath on every welding.

7) Ensure that every cable is waterproof while heating the thermo-retractable sheath.

8) **Do not pull completely on the cables at the other end of the duct**, but keep at least 500mm extra on each side for a possible intervention (change of solenoid valve,

for example). Replace this additional length of cable into the duct or fix it with collars on the inner side of the casing carefully ensuring that **it does not hinder the movements of the bollard.**

(2 pictures)

3.2 Neumatic or hydraulic connections

It is imperative that this connection be operated after installation of the control system, because it requires the use of the pneumatic compressor or hydraulic unit.

Refer to the control system installation manual (Technical center or City Controller).

Note : it is possible to postpone the installation of the control system. The end of the flexible hose (pneumatic or hydraulic) remains in the casing, waiting for the connection to the bollard. This end is protected by a cap (pneumatic hose) or by a quick-seal connection (hydraulic hose). Finishing can be performed (see § 3.3) and the pneumatic or hydraulic connection can be provided later.

3.3 Finishing

Secure casing with polyurethane foam (not supplied) in the four corners between the lost casing and the primary casing. Cut off the excess foam when dry.

Then replace the cover on the casing, respecting carefully the traffic flow direction. After tightening the 4 screws, reset the four plastic caps thanks to a rubber mallet.

Check the levels and the correct fitting to the asphalt cover or paving of the street.

The installation and the connections are done. You can take off the security and protection items.

3.4 Tests of operation

Refer to the control system installation manual (technical center or City controller).

IV SITE WORKS DATA / MEASUREMENTS IN MILLIMETERS

NOTE : all the measurements in the following tables are in millimeters.

(2 Drawings)

(Legend :) DETAIL
Casing with « feuillure » (rabbet joint)
Casing without « feuillure » (rabbet joint)

4.1 « High security » line

Range of « High security » automatic removeable bollards

(legend of the table)

BOLLARD

Model	Ø	Height	Ref.
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LOST CASING

Ref.

....

Excavation

...

Base

Drain

Duct

Detail

4.2 « Tradition » line

Line of « Tradition » automatic removeable bollards (in column « detail », s.o. means « not relevant »).

(legend of the table)

BOLLARD

Model	Ø	Height	Ref.
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LOST CASING

Ref.

....

Excavation

...

Base

Drain
Duct
Detail

4.3 « Monobloc » line

Range of « Monobloc » automatic removeable bollards

(2 Drawings)

(Legend :) DETAIL

Casing with « feuillure » (cornice ? ? ?)

Casing without « feuillure » (cornice ? ? ?)

(legend of the table)

BOLLARD

Model	Ø	Height	Ref.
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LOST CASING

Ref.

....

Excavation

...

Base

Drain

Duct

Detail

Training sessions

Urbaco is pleased to offer technical training sessions. These first level sessions last two days and the second level sessions last three days. These sessions can be conducted in French, English and Spanish. For any information regarding these sessions, please contact the sales department.

Maintenance contract

Urbaco offers a maintenance contract that will meet your needs:

Maintenance contract: Preventive maintenance.

Preferred Care Contract: Worldwide maintenance; includes travel expenses, labor, simplified maintenance budget, and urgent intervention plan.

AFTER MARKET DEPARTMENT



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