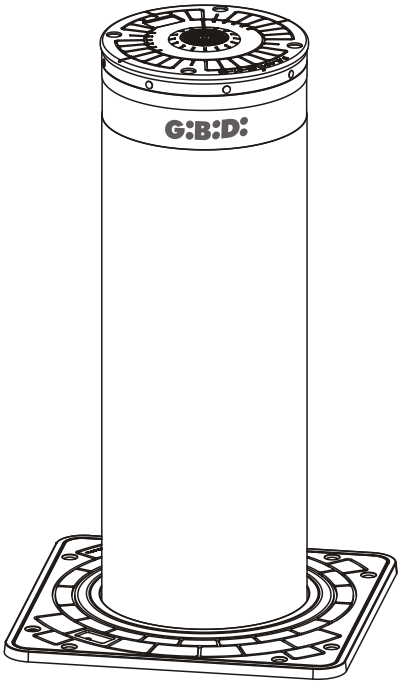

:DPT280

DPT280

Automatic bollards
FITTING, OPERATION AND
MAINTENANCE INSTRUCTIONS

UK

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WARNING: IMPORTANT SAFETY REGULATIONS.

It is important to follow these instructions carefully to ensure safety of persons and belongings. A faulty installation or an incorrect operation of the product may cause serious damages to people and belongings.

These instructions are for experts only, for someone who is able to complete fitting, operation and maintenance in full safety conditions.

1 - NOTES ON INSTALLATION

- Read carefully this manual before starting the installation and save it for future reference.
- Packaging materials (plastic, polystyrene, etc…) must be kept out of reach of children, because potentially dangerous.
- This product have been designed and manufactured only for the use shown in this documentation. Any other use, different from what expressly indicated could damage the integrity of the product and/or be potentially dangerous.
- Gi.Bi.Di. S.r.l. is not responsible for any damage caused by improper or different use than that for which the automated system was intended.
- Do not install the device in an explosive area: the presence of gas or inflammable fumes is a serious danger for safety.
- The installation must be performed in compliance with the law in force.
- In the extra-UE countries make also reference to the national law.
- Gi.Bi.Di. S.r.l. is not responsible for any non-compliance with the correct installation procedure of Gi.Bi.Di's products and accessories, as well as for any deformation that can occur while using.
- Before carrying out any work on the system, it is advisable to wea suitable personal protective equipment (e.g. safety shoes, gloves, goggles, etc..).
- Before performing any operation on the installation, disconnect the main power supply.
- Place a 0.03A magnetothermic differential switch with an opening distance between contacts equal to or greater than 3 mm to power the control unit.
- The main power supply line of the control unit must be directly connected to the main switch set inside the control unit. Use approved anti-flame cable. The dimension of the main power supply line must be evaluated by the installer according to the quantity of bollards (500W each bollard) and the distance from the output place, in order to grant a proper supply (230V +/-10% per each moving bollard).
- Check that there is a suitable earthing and place/connect an earthing line to the terminal PE in the control unit.
- Every bollard is equipped with a safety pressure switch. The pressure switch operates the inversion every time it detects a mass of at least 40 Kg on the head of the bollard while rising. In any case it is recommended to check the activation level every six months.
- Each installation should have: a light signaling such as the flashing light integrated in the head of the bollard – an acoustic buzzer that signals the bollard in movement – a traffic light (red – green) for each direction of transit – a signpost for each direction of transit.
- For the maintenance use only original Gi.Bi.Di. spare parts.

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- Gi.Bi.Di. S.r.l is not responsible in terms of safety and good operation of Pilomat products, in case of use of non-original Gi.Bi.Di's spare parts.
- Do not perform any modification to the parts composing Gi.Bi.Di. system.
- The installer must provide to the customer all the information related to the manual lowering of the bollards in case of need.
- Do not allow people and children to stop close to the bollards during operation.
- Keep radio transmitters and any other control devices out of the reach of children in order to avoid any unintentional operating of the bollards.
- The transit is allowed only with the bollards completely down.
- The customer must avoid any repair or direct intervention and must address to qualify and authorized personnel.
- Do not throw the exhausted batteries in the garbage but dispose them in the proper containers to allow recycling.
- The bollards are packed on pallet. Use specific equipment or forklift for movement; handle with care.
- Gi.Bi.Di. bollards are manufactured with IP 66 or superior protection class and can be stocked everywhere, also outdoor. It is however recommended to stocked the bollards in close or covered places.
- Gi.Bi.Di. bollards are designed to resist to transport and stocking effects in a range between -25°C and +55°C and for a determined time (less than 24 hours) at +70°C.
- The bollards do not require any availability of spare parts: Gi.Bi.Di S.r.l warehouse can send any spare parts in quick times.
- In case of maintenance or repair of the bollards, be sure to avoid any inappropriate rising control. To avoid problems, disconnect the controls through the appropriate switch set in the control unit.

Any procedure not explicitly stated in these instructions is forbidden.

2 - DISPOSAL

The trash container symbol shown on the product label, on the product or in the instructions indicates that the product, at the end of its life, must be disposed separately from other waste products.

The end user must therefore bring the item to an authorised electronic waste disposal centre, or return it to the dealer when new equivalent product is purchased.

Proper separate collection for recycling, treatment or compatible environmental disposal contributes to avoid negative effects on the environment and health, moreover it favours reuse and recycling of the materials the product is made of.

Improper disposal of the product is subject to fines.

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3 - BOLLARD DATASHEET

Bollard	DPT280
Cylinder material	S235JR normal steel X5CrNi18-10 (AISI 304) stainless steel X5CrNiMo17-12-2 (AISI 316) stainless steel
Cylinder diameter	275 mm
Cylinder height	800 mm
Normal steel cylinder thickness	6 mm
Stainless steel cylinder thickness	AISI 304: 6 mm - AISI 316: 4 mm
Normal steel cylinder finish	Anti-corrosion treatment Grey anthracite standard painting *(optional: other RAL colour on request)*
Stainless steel cylinder finish	Grey anthracite standard painting or brushed
Other cylinder finish	Ribs on cylinder's surface *(optional)*
Reflecting adhesive strip	Standard - height 55 mm
Rising speed	17 cm/s
Lowering speed	32 cm/s
Manual emergency lowering	Standard *(optional: automatic lowering if power failed)*
Safety reversal pressure switch	Standard
Connection line to control unit	Standard 10 m (max. lenght 80 m - max. 50 m with heating resistance)
Hydraulic pump for movement	Built-in into the bollard
Hydraulic pump absorption	230V +/- 10% - 2.2A (max. 3.4A)
Hydraulic pump thermal protection	Standard intervention threshold 120°C - automatic recovery 80°C
Protection class	IP67
Type of use	Intensive - 2,000 cycles/day
Life average	3,000,000 cycles
Impact resistance (without deformation)	40,000 J
Breakout resistance	250,000 J
Permitted ambient temperature	from -40°C to +70°C (for temp. lower than -10°C use the heating resistance)
Relative humidity function range	from 10% to 80%
Max. altitude in operation	1,500 m above s.l.
Max. airborne sound emission in operation	60 dB
Weight included 10m connection cable and foundation box	185 Kg
Foundation box weight	47 Kg

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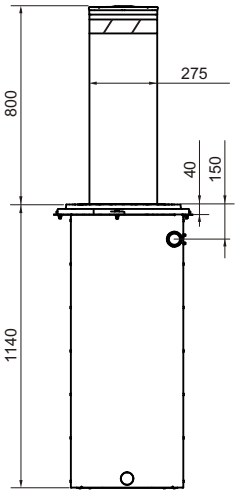
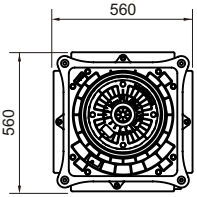
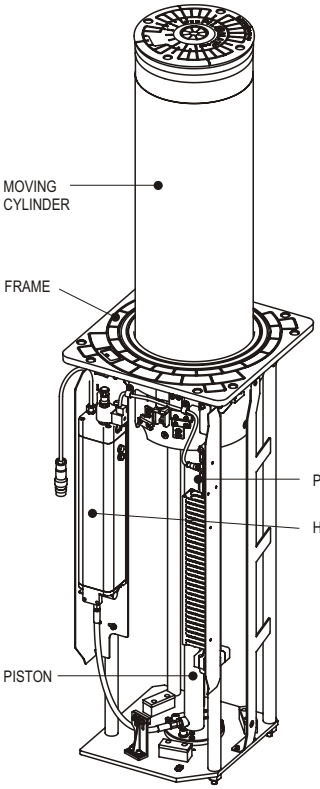
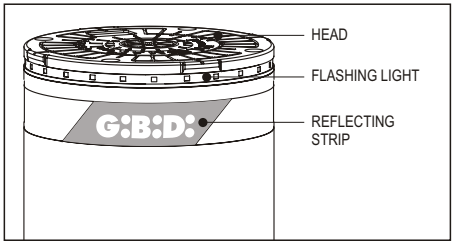
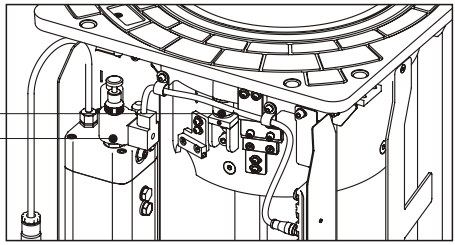


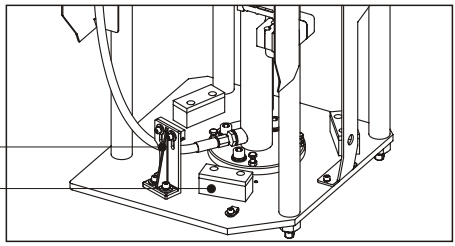


4 - BOLLARD COMPONENTS









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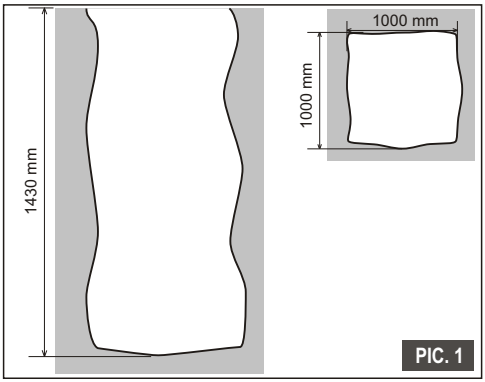
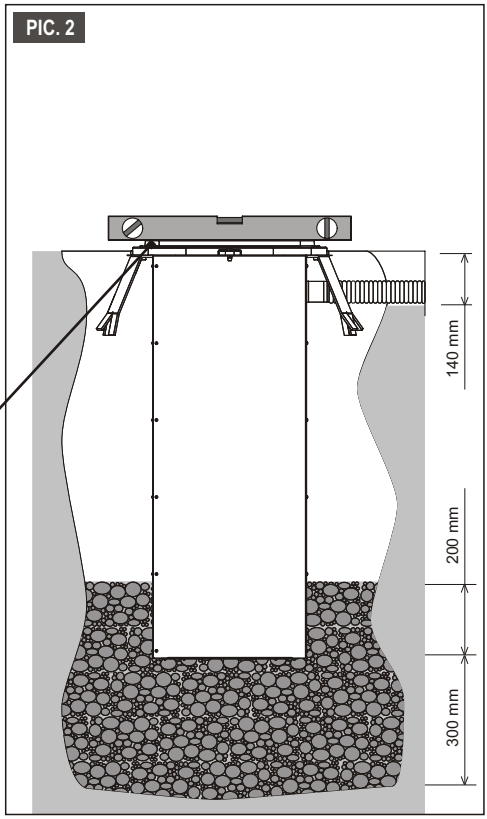
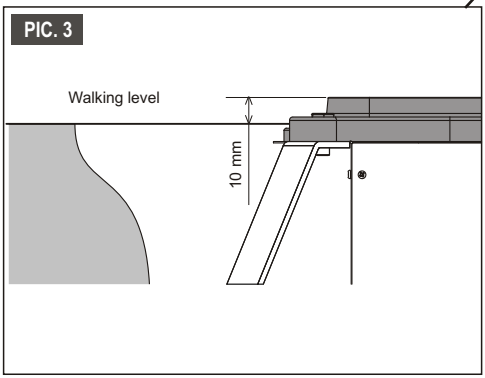
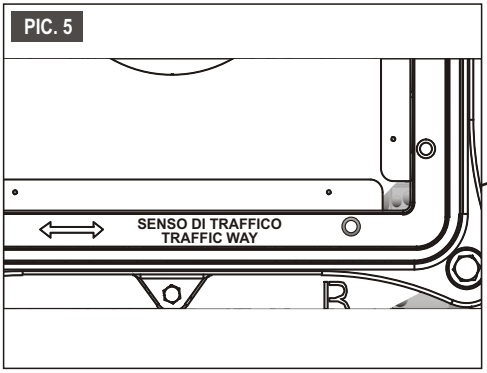
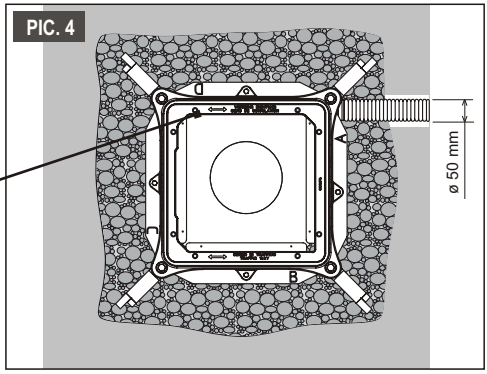
5 - INSTALLATION PROCEDURE











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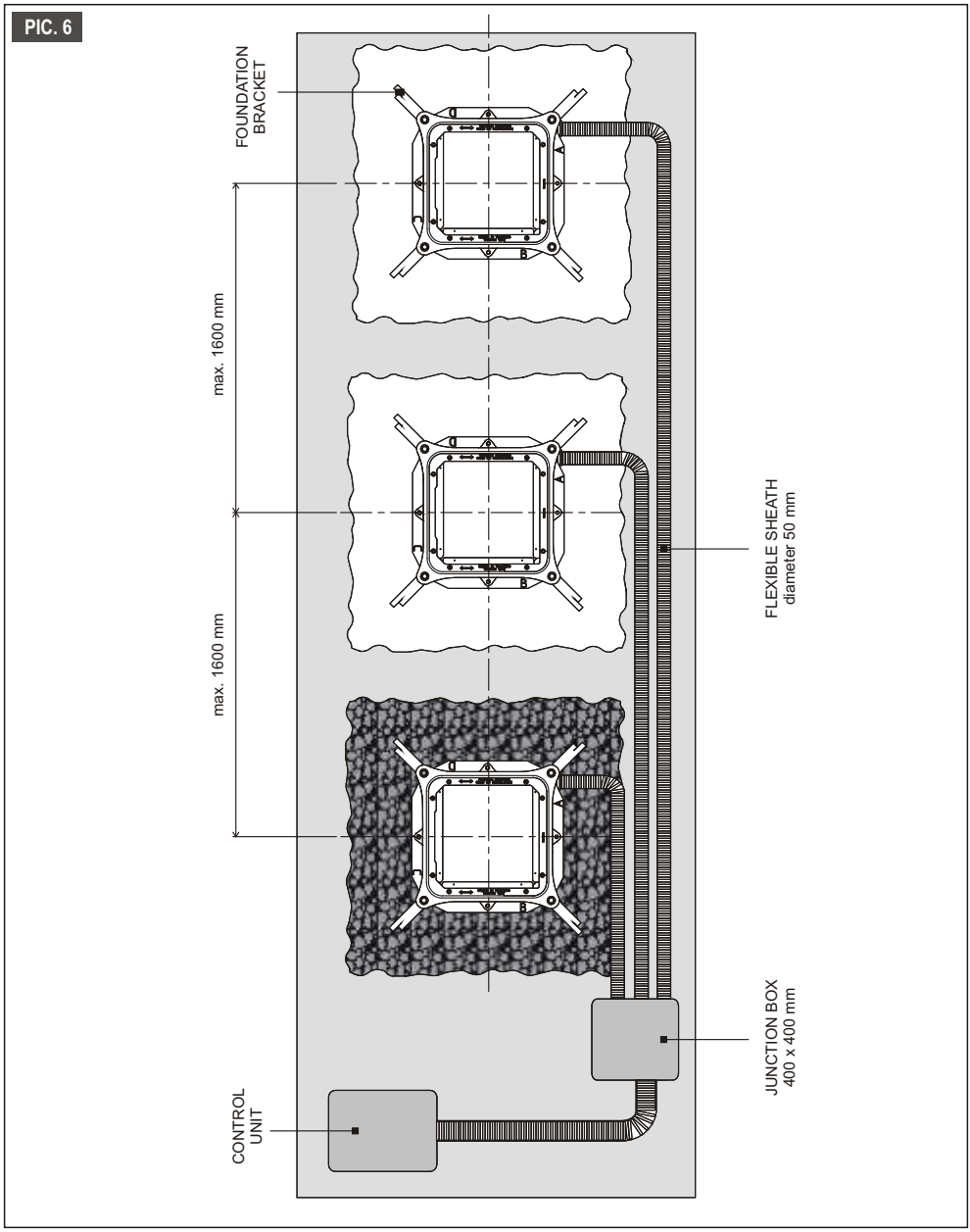
5 - INSTALLATION PROCEDURE

PIC. 6



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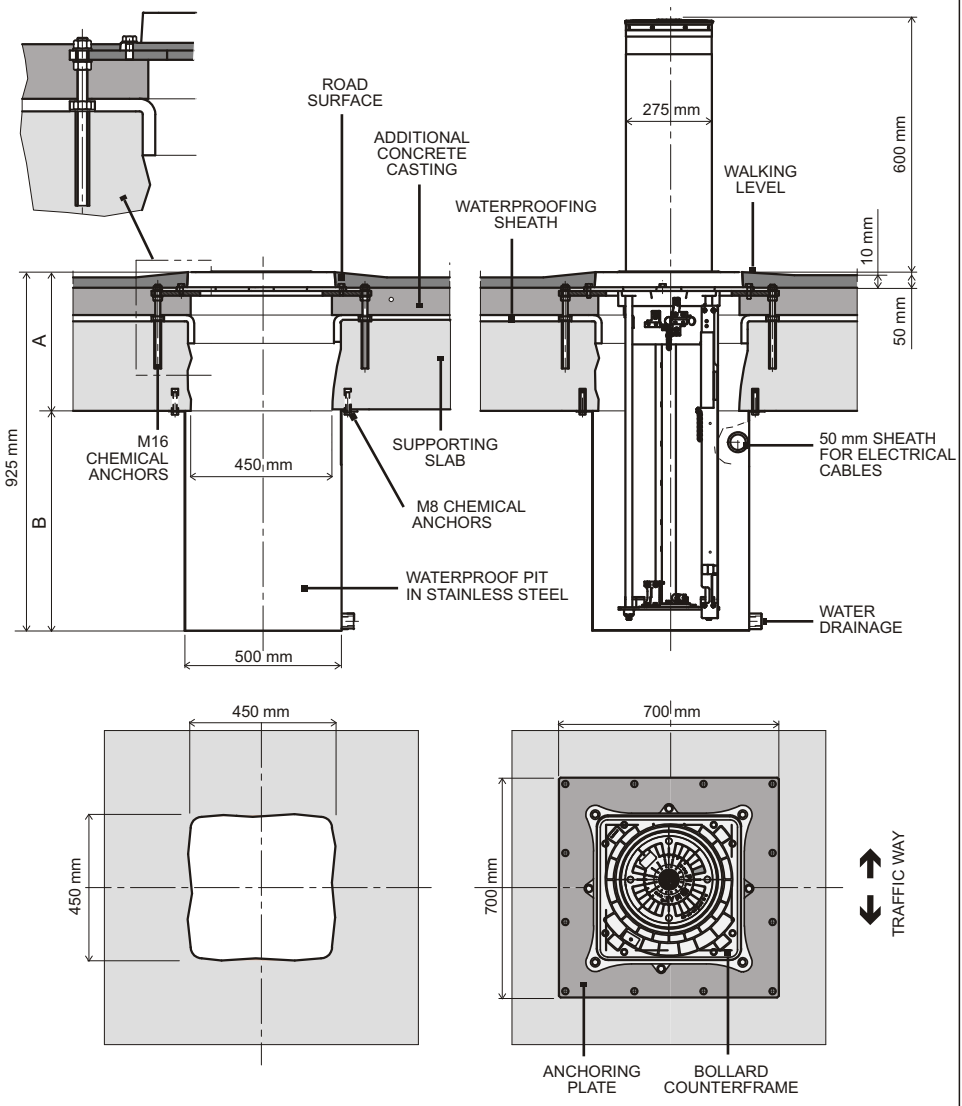
5 - INSTALLATION PROCEDURE

PIC. 7

“A” dimension is the sum of the different thicknesses of which the slab is made of.



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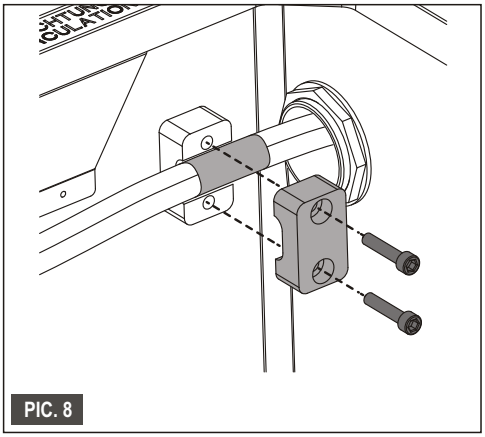
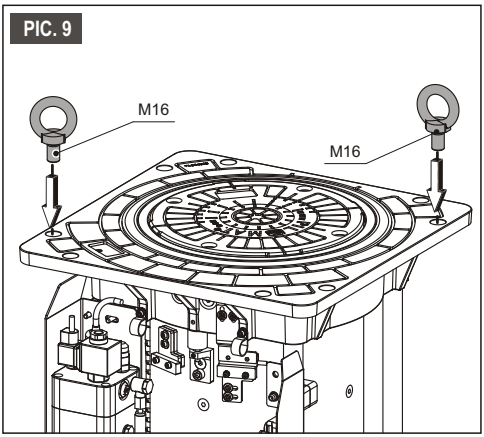
5 - INSTALLATION PROCEDURE



PIC. 8

PIC. 9



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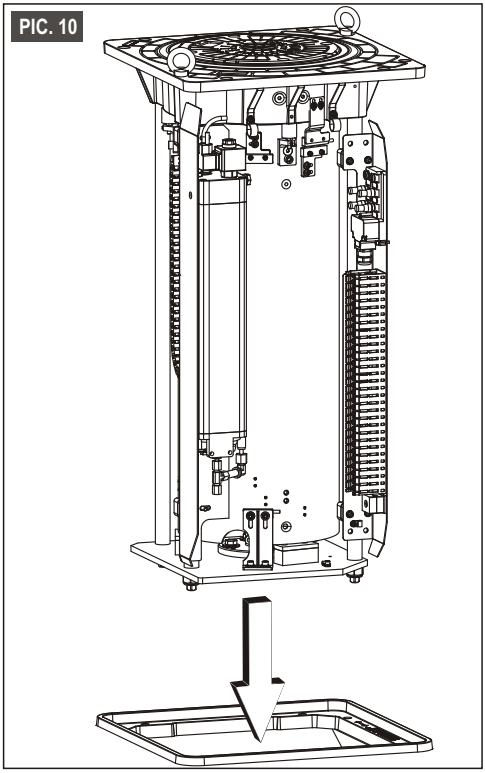

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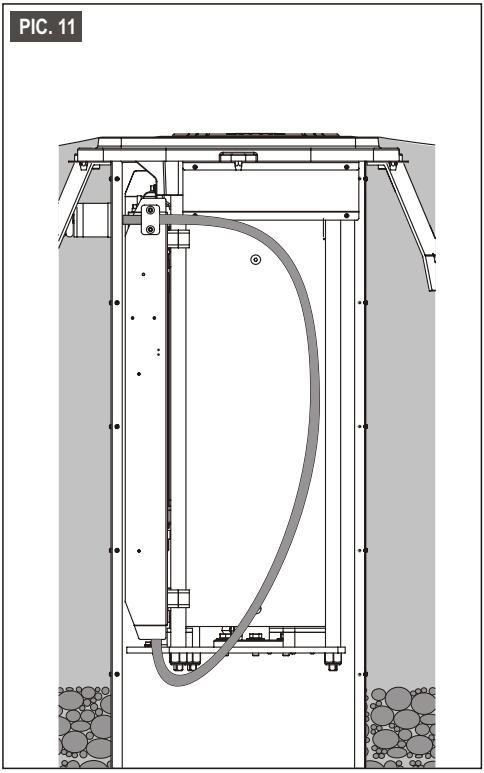

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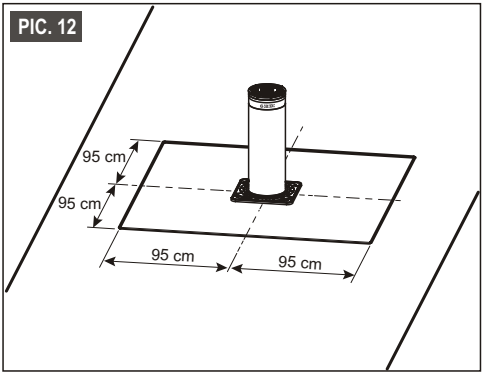
5 - INSTALLATION PROCEDURE

PIC. 12



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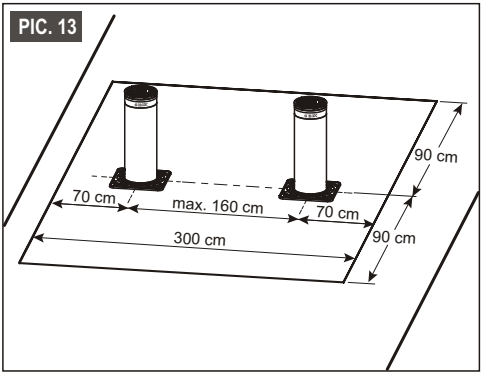
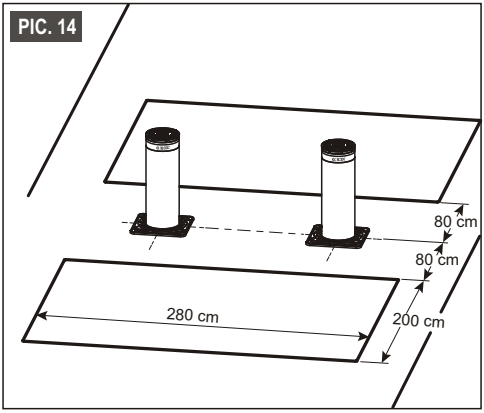
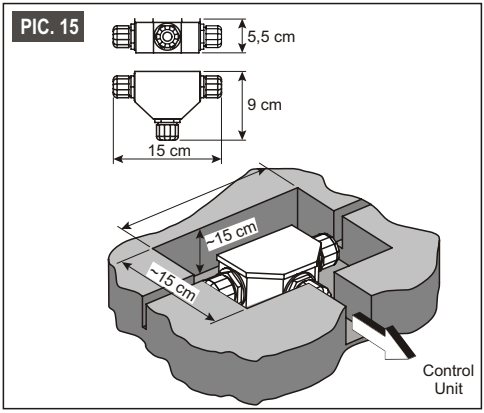


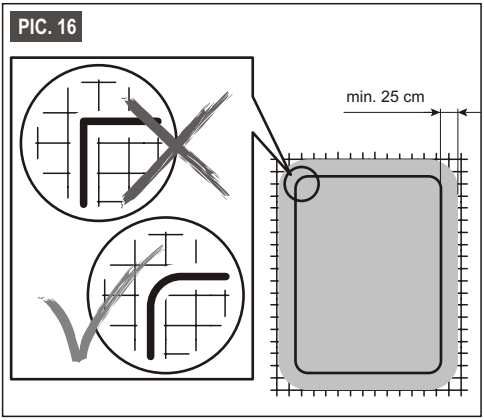
PIC. 14



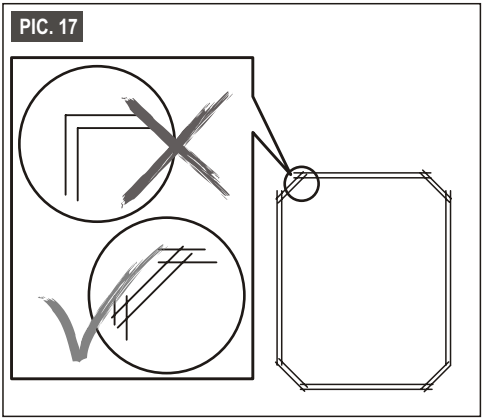
PIC. 15



PIC. 16



PIC. 17



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5.1 - INSPECTION AND PREPARATION

Premise

The bollards and the corresponding foundation boxes may be delivered pre-assembled.
The bollards, control unit and required accessories are packaged on pallet.
Use appropriate lifting equipment or a forklift for transport .

Checking the subsurface

Before inserting the foundation box, make sure that the location where the bollard is to be fitted meetshe following requirement:

1. Water-bearing layers must not be present in the subsurface.
2. Lines or electrical cables must be not present.
3. A ground connection system corresponding with the directives must be available.

If the bollard is positioned on a gradient, the slope can cause rainwater to penetrate the foundation box. You must provide a drainage channel with a cover grille in front of the bollard and in its immediate vicinity to prevent rainwater from penetrating the system.

5.2 - CHECKING GROUND PERMEABILITY

An important factor when inserting the bollard is prior assessment of the ground permeability to drain rainwater. Make sure that the ground permeability in the fitting area meets the following requirements in advance:

- Perform a test to check the ground permeability before inserting the foundation box.
- Pour approx. 40 litres of water per m2 into the pit.
- Check whether the water seeps into the ground within approx. 30 minutes.

If the test is negative:

- Drain off the rainwater via a Ø 50 mm drainage pipe.
- Connect the drainage pipe to the sewer system.

Alternatively, the drainage pipe can be connected to a rainwater collection tank under the foundation box equipped with an immersion pump and a float for automatic drainage. Or connect the drainage pipe to the sewer system.

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5.3 - DIGGING THE PIT

1. Dig a **1000 x 1000 mm** pit with a **depth of 1430mm (PIC. 1). If the foundation box is equipped with immersion pump, dig a pit with a depth of 1730 mm (see drawings at page 6) .**
2. Ensure that the ground for inserting a bollard has good permeability (Note section at chpt. 5.2).
   NOTE: read the paragraph "inspection and preparation", chpt. 5.1.
3. Fill with gravel up to **approx. 300 mm high** (grain size 8 – 20 mm). Compact the gravel to prevent the bollard from settling later on **(PIC. 2)**.
4. Fix the foundation anchors properly to the foundation box **(PICs. 2 and 4)**.
5. Place the foundation box in the pit, together with counterframe and foundation anchor:
   - align the foundation box in accordance with the passage direction, as stated on the frame **(PIC. 5)**.
   - position the foundation box exactly vertical **(PIC. 2)**.
   - in order to position the foundation box at the right height, backfill the foundation box with gravel or remove gravel. Make sure that the frame is **10 mm higher** than the road. This will restrict rainwater penetration into the foundation box **(PIC. 3)**.
   - when fitting several foundation boxes, ensure that they are all turned in the same direction and precisely aligned **(PIC. 6)**.
6. Fill the space around the foundation box with gravel up to approx. **200 mm** to avoid any obstruction of the drainage holes, placed at the bottom of the pit, during the concrete casting .
7. Lay a flexible ø 50 mm tube from each foundation box to carry the connecting cable from the bollard to the control unit **(PICs 2 and 4)**.

   WARNING! If the foundation boxes and the control unit are more than 10 m apart, please order the bollard with extended connecting cable (standard length 10 m – optional up to max. 80 m).
8. When fitting foundation boxes with immersion pump, connect a flexible ø 25 mm tube from each foundation box to the sewer system or similar.
9. Cast the concrete up to **approx. 100 mm under the ground surface** (the height depends on the type of road surface).

   NOTE: cast the concrete in two working steps to prevent the liquid concrete from pushing the foundation box up. Compact the concrete.
10. When using accessories (e.g. induction loops, traffic lights, key switch post), lay a flexible ø 50mm tube from the control unit to the corresponding fitting position of the accessory.
11. Apply the road surface once the concrete has dried.

All the pipelines shall be laid in full compliance with the regulations in force.

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5.4 - INSERTING THE BOLLARD ON SLAB

In case of laying on slab **(PIC. 7)** it is necessary to purchase the specific "kit for installation on slab". The instructions are as follows:

1. Mark the laying point of each bollard, then remove the road surface/concrete casting for about **mm 1000 x 1000**. Remove the waterproofing sheath in the middle of the laying point for about mm 500 x 500; take into consideration the consecutive restoration .
2. At the moment of purchasing, communicate the thickness of the slab in order to let the manufacturer produce a stainless steel waterproof pit of a suitable length **(PIC. 7, ref. A and B)**.
3. In the center of the laying point remove the slab by drilling a **through hole of about mm 450 x 450 mm** .
4. Place the counterframes equipped with anchoring plate in the center of the through hole. Secure it by means of **12 M16 chemical anchors** (supplied by the building contractor) complete with supplementary nuts for the proper leveling of the counterframe/anchoring plate with respect to the walking level (to limit rainwater infiltrations into the pit, arrange the counterframe approx. **10 mm** higher than the walking level).
5. Restore the waterproofing sheath, the additional concrete casting and the road surface.
6. By means of **8 M8 chemical anchor**s (supplied by the contractor), secure the stainless steel waterproof pits to the ceiling of the basement).
7. Lay the pipes for the electrical cables from the bollards to the control unit.
8. Lay the pipes for rainwater drainage from the waterproof pits to the drainage area.
9. Lay the additional pipes from the control unit to the installation point of the accessories (i.e. inductive loops, traffic lights, consolle, etc.). Prearrange the electrical connection and the earthing to the control unit.

All the pipelines shall be laid in full compliance with the regulations in force.

5.5 - INSERTING THE BOLLARD

1. Keep the bollard ready in the immediate vicinity of the foundation box.
2. Completely extend the cables on the ground to avoid possibile twisting.
3. Lay the connecting cable for each bollard through the tube to the control unit .
   ATTENTION! The function of the bollard may be impaired if the connecting cable is twisted.
4. Lay the connecting cable in the foundation box through the strain relief provided **(PIC. 8)**.
   ATTENTION! The function of the bollard may be impaired if the connecting cable is attached at a different point.
5. Screw the four M16 eye bolts (not included in the bollard scope of delivery) into the prepared threaded holes **(PIC. 9)**.
6. Fasten the strap, chains etc. onto the eye bolts and raise the bollard. Please observe the min. carrying capacity! Gently place the bollard in the foundation box o **(PIC. 10)**.
7. While inserting the bollard into foundation box, avoid tight winding when laying the connecting cable in the foundation box. Make sure that the lines are not clamped **(PIC. 11)**.

   ATTENTION! While inserting the bollard into the foundation box, make sure not to twist the cables nor to crush them.

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8. Remove the eye bolts as soon as the bollard is positioned. Screw the bollard tight with the nuts supplied then apply the plastic caps supplied on the top of the screws.
9. Carry out the basic electrical connections of the control unit as indicated in chpt. 6.2.
   WARNING! When connecting the bollard to the control unit carefully read the wiring diagrams contained in the scope of delivery.
10. **The control unit, configured according to the customer's needs as described in the order sheet, is supplied with all the necessary wiring diagrams, including the electrical connections of the bollard.**

5.6 - LAYING THE INDUCTION LOOPS

If the system is used in the automatic operating mode (extension of bollard after a vehicle has driven through), induction loops must be laid to detect metal masses (vehicles).

Induction loops are suitable for two different applications:

- "Limited" protection of the bollards **(PIC 12 - PIC. 13)**. In this case a single inductive loop is installed around the bollards, it avoids the raising in case a vehicle is over the bollards or in the immediate surroundings.
- "Extended" protection of the bollards **(PIC. 14)**. Two induction loops, one before and one after the bollards, are laid for added protection. A passing vehicle is identified approx. 3000 mm in front of the bollards and detected to approx. 3000 mm behind the bollards. This allows the following vehicles to be identified in advance and thus to prevent possible collisions.

Notes on laying the induction loops:

1. Standard induction loops are 9.60 m long (1800 × 3000 mm). Other lengths are also available.
2. Induction loops consist of a special cable with approx. Ø 9 mm. These are suitable for direct laying in the ground without sheathing or other protective equipment.
3. Ensure that there is no reinforcing steel mesh when laying the induction loop. If a reinforcing steel mesh is present, remove it up to approx. 25 cm above the circumference of the induction loop **(PIC. 16)**.
4. Make sure that the corners are rounded when laying the induction loop" **(PIC. 16 - PIC. 17)**.
5. Lay the induction loop 7 cm beneath the ground surface. In case of paving stones with a thickness of at least 10 cm, the material must be adjusted to permit laying at the specified depth. Alternatively, you can lay the induction loop between paving stones in a diagonal join.
6. Induction loops are equipped with a connection box **(PIC. 15)** to which the connecting cable for signa transmission to the control is connected. The connecting cable consists of a strong, special cable with a standard length of 15 m. (you can also order induction loops with a longer connecting cable).
7. You can also use induction loops to detect an exiting vehicle and for automatic requests to lower the bollard.

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6 - ELECTRICAL CONNECTIONS

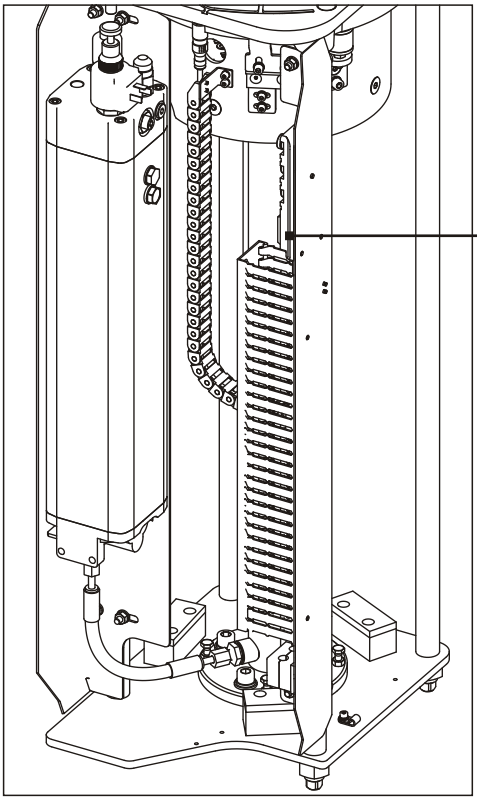
6.1 - BOLLARD WIRING

In order to connect all the electrical devices, a passive box with six connections is installed on the bollard frame. The wires of these devices are marked out by different colours.

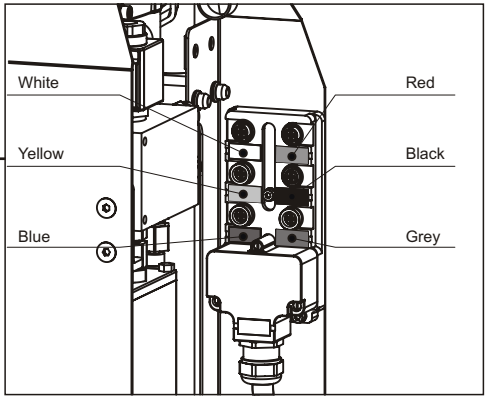
For the correspondence see the wiring diagram **(PIC. 19)**.

No.	Colour	Device
1	BLUE	FLASHING LIGHT / BUZZER (opzional)
2	GREY	SOLENOID VALVE FOR LOWERING*
3	YELLOW	SAFETY PRESSURE SWITCH
4	BLACK	LIMIT SWITCH BOLLARD DOWN
5	WHITE	LIMIT SWITCH BOLLARD UP (optional)
6	RED	HEATING RESISTANCE (optional)

* Standard solenoid valve: N.C. = in absence of power supply the bollard remains in up position.
Optional solenoid valve: N.O. = in absence of power supply the bollard automatically lowers (gravity effect).



PIC. 18



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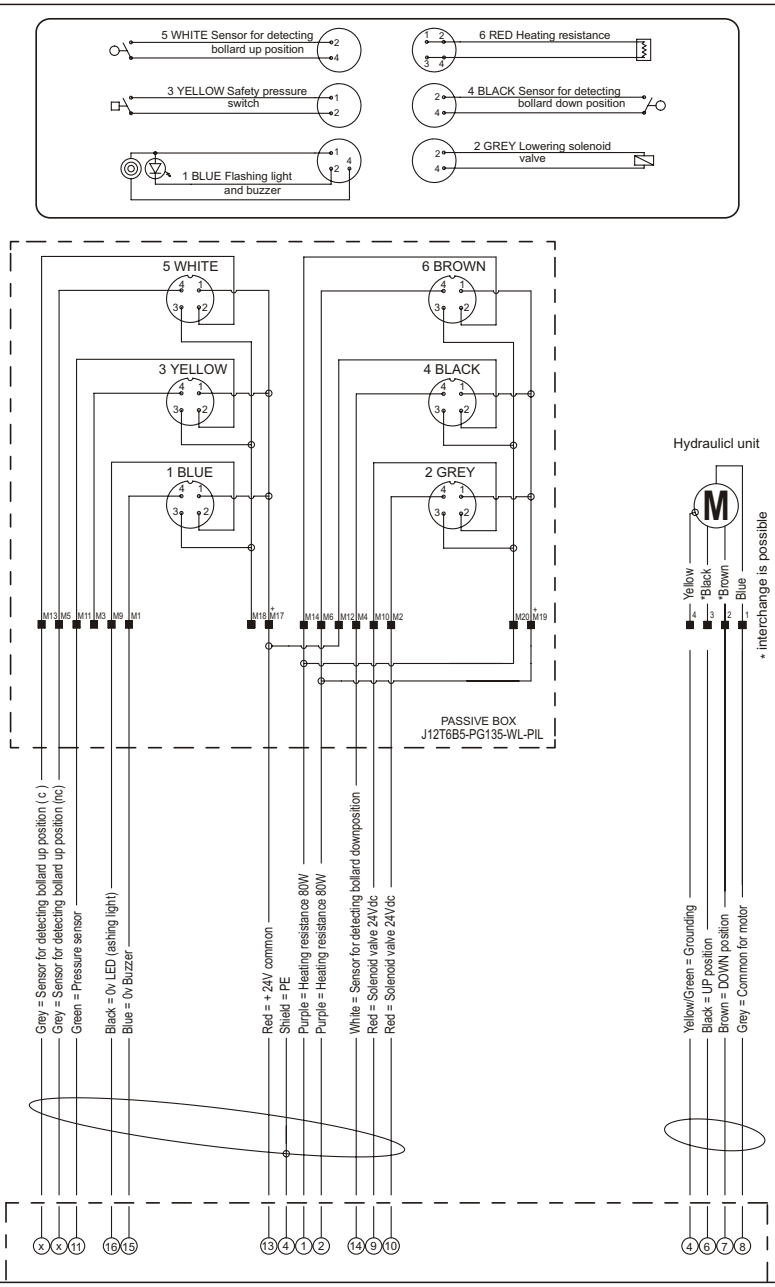
6.1 - BOLLARD WIRING

PIC. 19



This diagram is for illustration purposes only. When connecting the bollard to the control unit carefully read the wiring diagrams contained in the scope of delivery.

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6.2 - CONTROL UNIT

The control is supplied in metal housing (protection category IP56 or IP66) for wall fitting as standard.

Fit the control preferably in:
- a covered place,
- a place protected from poor weather conditions,
- a place protected from direct sunlight.

The size of the housing depends on the system configuration (see chpt. 6.4 "Housing size").

Further housings for the control unit are available on request, e.g. rectangular switch cabinets for floor fitting, key switch posts with Ø 275mm with lockable maintenance flap and 1-sided traffic lights, 2-sided traffic lights and /or control elements.

6.3 - CONTROL UNIT DATASHEET

Circuit board	with microprocessore with specific control program
Standard housing	for wall fitting
Protection category	IP66
Supply	230V +/- 10% - 50/60 Hz
Control unit protection	Thermal-magnetic circuit breaker termico 1P + N - 6kA
Service transformer	24V - Standard power 100 VA
Max. no. of bollards that can be connected (all bollards connected to one control always move simultaneously. Controlling individual bollards is not possible)	No restrictions. Each control contains: 1 master circuit board onto which the 1st bollard is connected, as many slave circuit boards as there are additional bollards available
Permitted ambient temperature	from -15°C toa +60°C
Relative humidity function range	from 10% to 80%

6.4 - HOUSING DIMENSIONS

Configuration	Material	IP class	Dimensions
SP1 - system with 1 bollard	ABS	IP 56	400 x 300 x h. 130 mm
SP2 - system with 2 bollards	Steel	IP 66	500 x 400 x h. 200 mm
SP3 - system with 3 bollards	Steel	IP 66	600 x 400 x h. 200 mm
SP4 - system with 4 bollards	Steel	IP 66	700 x 500 x h. 200 mm
SP5 - system with 5 bollards	Steel	IP 66	700 x 500 x h. 200 mm

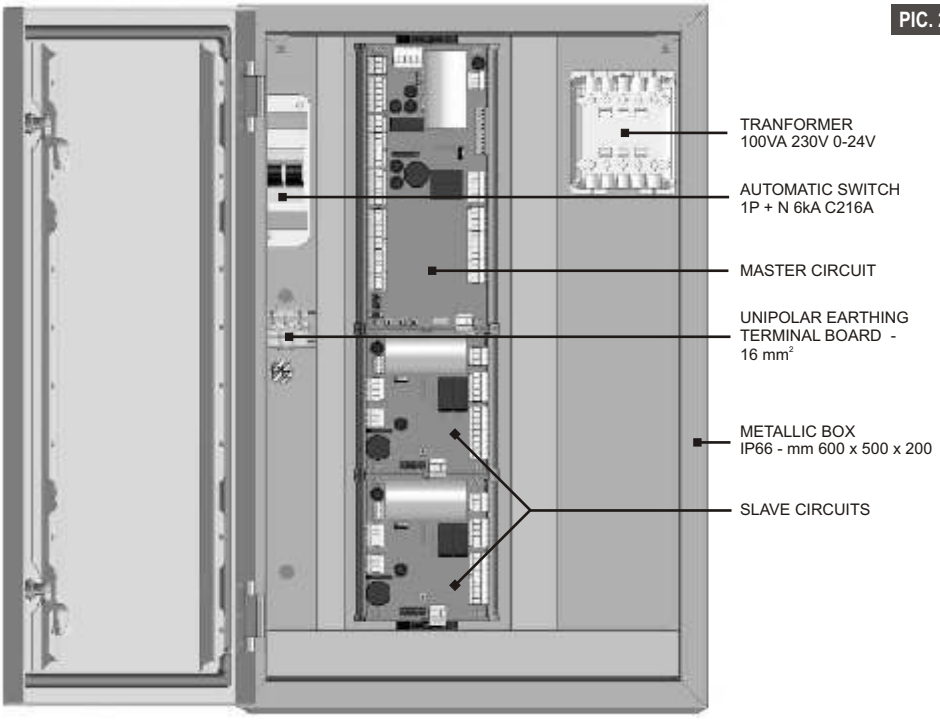
Note 1: the dimensions stated in the table relate to the control with standard configurations. The use of optional accessories such as a timer or a transformer for the heating resistances etc. may require larger dimensions.

Note 2: please Contact your specialist dealer to find out the control dimensions for more than 5 bollards (e.g.control for 8 bollards).

UK

6.5 - EXAMPLE OF CONTROL UNIT

PIC. 20



EXAMPLE OF CONTROL UNIT FOR 3 GI.BI.DI. DPT280 BOLLARDS

6.6 - WIRING THE CONTROL UNIT

1. Lay the wall box.
2. Pull the main electrical supply line (230 Vac) into the control. Connect the line directly to the main switch.*
3. Pull the ground connection line into the control. Connect the line directly to the PE terminal.
4. Pull the connecting cable for each bollard into the control. Connect the lines as follows: 1st bollard to the master circuit board; each additional bollard to the corresponding slave circuit board..
5. Pull the additional lines for the accessories into the control. Connect the lines to the master circuit board according to the connection tables.
6. Before running a functional test consult the instructions related to the electric connections provided with the system.

* The main power supply line of the control unit must be directly connected to the main switch set inside the control unit. Installation of the main supply line depends on the number of bollards (500W each bollard) and the distance of the bollards to the control unit to ensure sufficient supply (230V/400V +/- 10% on the moving bollard).

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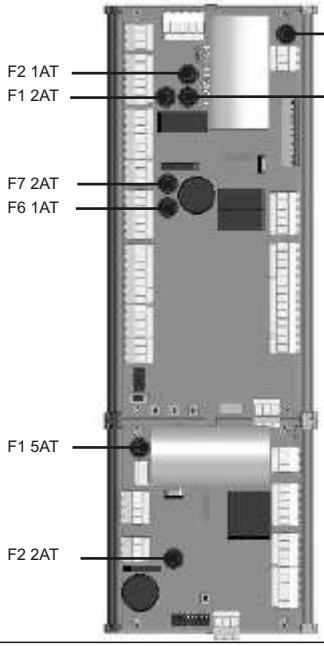
7 - CONTROL UNIT

7.1 - MASTER AND SLAVE CIRCUIT

PIC. 21



7.2 - PROTECTION FUSES MASTER - SLAVE

Master	Slave	Typology	Connected components
F1		2AT	230V - 24 VAC power supply unit supply fuse
F2		1AT	Timer supply fuse
F3		2AT	Traffic light supply fuse
F5	F1	5AT	Supply to accessories connected to terminals 1-2-3 / 31-32-33
F6		1AT	Safety devices supply fuse
F7	F2	2AT	Logic fuse

7.3 - MASTER PUSH BUTTONS

Button	Function
RESET	Performs program recovery (in case of blocking)
START	Starts extending and lowering (depending on the setting of DIP Switch)
PROG	Programming the system adjustment parameters
SERVICE	Enter the maintenance mode

UK

7.4 - MASTER CIRCUIT BOARD CONNECTIONS

Terminal	Contact	Connected device	LED
1-2-3		Through terminals 31-32-33. Protected by F5 fuse	
4		Grounding for hydraulic pump motor	
5		None	
6-7-8		Outlet 230V power supply for hydraulic pump (common terminal 8)	
9-10		Outlet 24V power supply for solenoid valve	L7
11-12	N.C.	Inlet for pressure switch or upper limit switch	L1
13		Common: Lower limit switch - Acoustic buzzer - Flashing light	
14	N.O.	Inlet for lower limit switch	L2
15		Outlet 24V power supply for acoustic buzzer	L3
16		Outlet 24V power supply for flashing light	L4
17		Common: Lower limit switch - Acoustic buzzer - Flashing light	
20-21	N.C.	Inlet for safety devices (example: inductive loops detector)	L14
22-23		Outlet 24V power supply for safety devices (example: inductive loops detector)	
24-25	N.O.	Start command inlet (lowering control or step/step)	L13
26-27	N.O.	Inlet command from radio receiver (lowering control or step/step)	L13
28-30		Outlet 24V power supply for radio receiver	
29-30		Outlet 12V power supply for radio receiver	
31-32-33		Through terminals 1-2-3. Protected by F5 fuse	
34-39		Inlet/outlet for transformer connection	
40-41-42		Outlet 230V connection to traffic light (40= red - 41= green - 42= common)	
43-44-45		Outlet 230V connection to traffic light (40= red - 41= green - 42= common)	
46-47-48		Outlet for traffic light signal (neutral exchange)	
49-50	N.C.	Inlet for breaking glass button - emergency automatic lowering (only for bollards equipped with automatic lowering - NO 230V)	
51-52		Inlet for 230V power supply	
53		None	
54		Inlet for grounding	
55-59		Inlet/outlet connection to yearly/weekly progremmer	
60-61	N.O.	Inlet for future functions or customizations	LIN
62-63		Outlet for future functions or customizations	L5
64-65	N.O.	Inlet for lowering command (common terminal 65)	L12
65-66	N.O.	Inlet for rising command (common terminal 65)	L11
67-68-69		CAN-BUS connection slave circuits (67= CANH - 68= CANL - 69= 0V)	

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7.5 - MASTER CIRCUIT BOARD LEDs

LED	Colour	Function	On	Off
L1	RED	Inlet for limit switch or upper limit switch	Pressure switch / limit switch enabled	Pressure switch / limit switch disabled
L2	RED	Lower limit switch inlet	Limit switch enabled (device in low position, gate open)	Limit switch disabled
L3	YELLOW	Acoustic buzzer outlet	Outlet enabled (fixed or intermittent, depending on setting)	Outlet disabled
L4	YELLOW	Flashing light outlet	Outlet enabled (fixed or flashing, depending on setting)	Outlet disabled
L5	YELLOW	Outlet for terminals 62 - 63 outlet for customizations	Outlet enabled	Outlet disabled
L6	YELLOW	Outlet for hydraulic pump power supply - rising	Rising phase enabled (closing)	Rising phase disabled
L7	BLUE	Lowering solenoid valve outlet	Solenoid valve enabled	Solenoid valve disabled
L8	YELLOW	Outlet for hydraulic pump power supply - lowering	Lowering phase enabled (opening)	Lowering phase disabled
L9	YELLOW	Outlet for hydraulic pump power supply - in motion	Device in motion enabled	Device in motion disabled
L10	YELLOW	Traffic light outlet (green)	Outlet enabled green light ON	Outlet disabled red light ON
L11	RED	Inlet for rising command	Inlet enabled	Inlet disabled
L12	RED	Inlet for lowering command	Inlet enabled	Inlet disabled
L13	RED	Inlet for Start command, Lowering command or Step/Step	Inlet enabled	Inlet disabled
L14	RED	Safety devices inlet	Safety devices - free	Safety devices - in alarm
L16	YELLOW	Outlet for start movement	One flash each time a rising/lowering phase starts, if parameter 16/2 is set (lowering of bollard only in presence of solenoid valve), L16 stays ON until the complete lowering	
LIN	RED	Inlet for terminals 60 - 61 inlet for customizations	Inlet enabled	Inlet disabled
24V	GREEN	Power supply 24VDC	Power supply enabled	Power supply disabled
12V	GREEN	Power supply 12VDC	Power supply enabled	Power supply disabled
5V	GREEN	Power supply 5VDC	Power supply enabled	Power supply disabled
LA LB LC	YELLOW	LED programming	Specific LED for master circuit programming (read the specific document)	

UK

7.6 - SLAVE CIRCUIT BOARD CONNECTIONS

Terminal	Contact	Connected device	LED
1-2-3		Through terminals 26-27-28. Protected by F5 fuse	
4		Grounding for hydraulic pump motor	
5		None	
6-7-8		Outlet 230V power supply for hydraulic pump (common terminal 8)	
9-10		Outlet 24V power supply for solenoid valve	L7
11-12	N.C.	Inlet for pressure switch or upper limit switch	L1
13		Common: Lower limit switch - Acoustic buzzer - Flashing light	
14	N.O.	Inlet for lower limit switch	L2
15		Outlet 24V power supply for acoustic buzzer	L3
16		Outlet 24V power supply for flashing light	L4
17		Common: Lower limit switch - Acoustic buzzer - Flashing light	
18-19-20		Inlet 24V power supply from transformer	
22-23		Inlet 230V power supply	
24		None	
25		Inlet for grounding	
26-27-28		Through terminals 1-2-3. Protected by F5 fuse	
67-68-69		CAN-BUS connection slave circuits (67= CANH - 68= CANL - 69= 0V)	

UK

7.7 - SLAVE CIRCUIT BOARD LEDs

LED	Colour	Function	On	Off
L1	RED	Inlet for limit switch or upper limit switch	Pressure switch / limit switch enabled	Pressure switch / limit switch disabled
L2	RED	Lower limit switch inlet	Limit switch enabled (device in low position, gate open)	Limit switch disabled
L3	YELLOW	Acoustic buzzer outlet	Outlet enabled (fixed or intermittent, depending on setting)	Outlet disabled
L4	YELLOW	Flashing light outlet	Outlet enabled (fixed or flashing, depending on setting)	Outlet disabled
L6	YELLOW	Outlet for rising bollard device	Rising phase enabled (closing)	Rising phase disabled
L7	BLUE	Outlet for solenoid valve	Solenoid valve enabled	Solenoid valve disabled
L8	YELLOW	Outlet for lowering bollard	Lowering phase enabled (opening)	Lowering phase disabled
L9	YELLOW	Outlet for bollard in motion	Device in motion enabled	Device in motion disabled
L16	YELLOW	Outlet for start movement	One flash each time it starts rising/lowering	
24V	GREEN	Power supply 24VDC	Power supply enabled	Power supply disabled
5V	GREEN	Power supply 5VDC	Power supply enabled	Power supply disabled
LA	YELLOW	CAN/BUS error	If flashing: CAN-BUS connection error	Regular connection
LB	YELLOW	Error in bollard outlets	If flashing: one or more outlets in short circuit	Regular outlets connection
LC	YELLOW	Service switch on master circuit enabled (low position)	If flashing: button for step/step movement enabled only for the device connected	Movement button disabled

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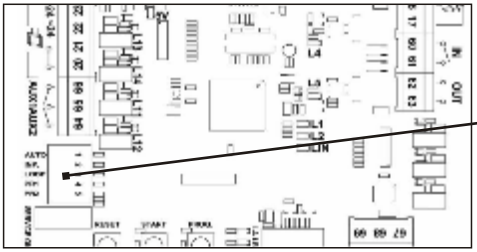
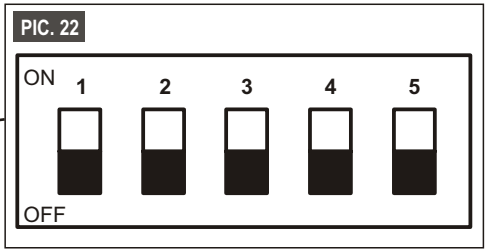
7.8 - FDIP SWITCH FUNCTION

Preliminary remarks:

on the MASTER circuit there are 5 DIP SWITCH; for a proper positioning of the DIP SWITCH refer to the chart below.





OFF position	DIP	ON position
AUTOMATIC RISING FUNCTION The bollard is normally up - as a result of a command it lowers, waiting for the passage of a vehicle – once the vehicle has passed through (safety devices enabled and subsequently disabled), the system automatically performs the rising procedure and the bollard returns to high position. If within 30s since the bollard is down no transit occurs, the system automatically performs the rising procedure and the bollard returns to high position. **This function is available only if the system is equipped with safety devices and traffic lights.**	**1 - AUTO**	**STEP-STEP FUNCTION** The bollard after the first command, from the high position moves to low position – after another command the device returns to high position (step/step function).
COMNAND ENABLED Commands for the operation of bollard, connected to terminals 24/25 - 26/27 - 58/59 are enabled.	**2 - INP**	**COMMAND DISABLED** Movement commands of bollard, connected to terminals 24/25 - 26/27 - 58/59 are disabled. This function is usually set by the technician during maintenance to prevent unexpected commands.
SAFETY DEVICES ENABLED The inlet for safety devices, connected to terminals 20/21 is enabled for operation with the safety devices connected to the system. If safety devices are not connected the system does not allow the rising.	**3 - LOOP**	**SAFETY DEVICES DISABLED** The inlet for safety devices, connected to terminals 20/21 is disabled. Even without safety devices, the system allows the rising.

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RISING LIMIT SWITCH ENABLED At the final stage of the rising the pressure switch works as limit switch in order to complete the rising procedure of the bollard.	**4 - PR1**	**RISING LIMIT SWITCH DISABLED** At the final stage of the rising the pressure switch is not used as limit switch; the rising procedure ends depending on the preset time.
INVERSION PRESSURE SWITCH ENABLED During the rising, if the pressure switch detects a weight greater than 40 Kg, the bollard stops and returns to the down position.	**5 - PR2**	**INVERSION PRESSURE SWITCH DISABLED** The function is excluded and then during the rising the check on weight is disabled; in presence of weights the device does not return to down position.

8 - OPERATION MODES

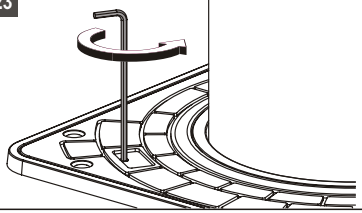
8.1 - MANUAL LOWERING

In case of power failure the bollards go down automatically only if they are provided with the automatic lowering device. If the bollards are not provided with such a device, in case of power failure they will remain in up position and it will be necessary to perform the manual emergency lowering.

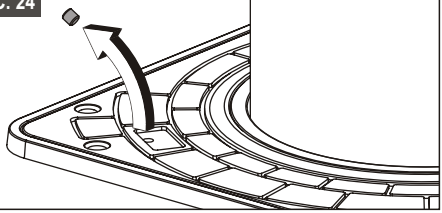
To perform the manual emergency lowering:

1. Unfasten and remove the dowel placed on the frame of the bollard by means of the specific socket head screw (provided) **(PIC. 23 and PIC. 24**).
2. Insert the socket head screw down to the button for the manual lowering **(PIC. 25)**.
3. By pushing the socket head screw the bollard will go down; keep the socket head screw pressed until the complete lowering of the bollard **(PIC. 26)**.
4. Fasten the dowel removed in step 1.

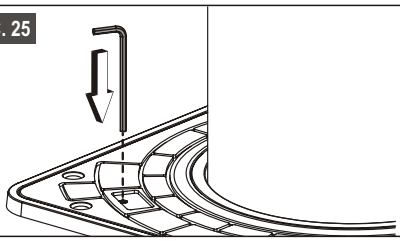
PIC. 23



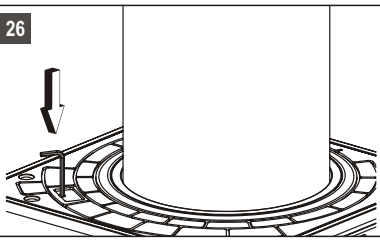
PIC. 24



PIC. 25



PIC. 26



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8.2 - STEP MODE

The basic configuration of an automatic bollard with step operation consists of the following:

- **One or more automatic bollards** equipped with integrated **flashing light** and **acoustic warning signal** (define flashing light and acoustic warning signal depending on the system, if necessary).
- **A control unit** with radio receiver and remote control (defined the respective number).
- **A safety inductive detector** with 1 or 2 induction loops.

The automatic bollards are in the up position in normal operation to block passage. The integrated flashing light keep flashes constantly.

The bollards lower if a corresponding command is given via a remote control to allow passage. An acoustic warning sounds until bollards are fully lowered (ground level).

If the bollards are fully lowered (the position of each bollard is monitored by a sensor), the control unit switches the traffic light and the acoustic warning signal falls silent. The passage is clear.

The command to block the passage can be given once a vehicle has passed through. The integrated flashing lights and the acoustic warning signals are activated immediately after the command. The bollards start rising after approx. 1 second.

If the passing vehicle is still located above the bollards or within close proximity to them, the induction loops are active and prevent the bollards from rising.

The bollards stop and return to the lowered position (reverse command) if another vehicle is detected over the induction loops during rising.

If a pedestrian steps on a bollard during the rising phase, the safety pressure switch detects the presence of a weight and immediately interrupts the rising phase and makes the bollards lower to down position (inversion control by safety pressure switch).

If the bollards are in the lowered position due to a reverse command, they only rise again after receiving another command.

As soon as the bollards are in the up position, the integrated flashing lights start to flash constantly, the acoustic warning signals fall silent and the induction loops are no longer active. The bollards also remain in the up position if a vehicle approaches to pass through. Passage is only enabled once a corresponding command is given.

The bollards remain in the extended position in case of a temporary power failure. You must manually lower the bollards if passage is necessary **(see chpt. 8.1)**.

In order to keep the system in operation in case of temporary power failures, it can be equipped with an emergency power generator (UPS device).

The acoustic warning signals can be deactivated at night by using timers.

Heating elements can be used if bollards are used in areas where the temperatures fall below –10°C. The heating elements prevent the formation of ice between the cylinder and frame and also ensure functionality at low temperatures.

If bollard systems are used in areas with water-bearing layers, watertight foundation boxes with automatic immersion pumps can be used. The immersion pumps pump the rainwater out of the watertight foundation boxes and ensure system functionality.

UK

8.3 - AUTOMATIC RISING MODE

The minimum configuration of an automatic high security bollard with automatic rising mode consists of the following:

- **One or more automatic bollards** equipped with integrated flashing light and acoustic warning signal (define flashing light and acoustic warning signal depending on the system, if necessary).
- **A control unit** with radio receiver and remote control (defined the rrspective number).
- **A safety inductive detector** with 2 induction loops.
- **One set of traffic lights** (red + green) for each passage direction.

The bollards are in the up position in normal operation to block passage. The integrated flashing lights flash constantly. The traffic light illuminates red.

The bollards lower if a corresponding command is given in order to allow passage. An acoustic warning signal sounds until the bollards are fully lowered (ground level).

If the bollards are fully lowered (the position of each bollard is monitored by a sensor), the control unit switches the integrated flashing light off and the acoustic warning signal falls silent. The traffic light switches from red to green. The passage is clear

Attention: the condition AUTOMATIC BOLLARD NOT LOWERED WITH GREEN TRAFFIC LIGHT is not technically possible .

If a passing vehicle is still located above the bollards or within close proximity to them, the 2 induction loops (one before and one after the bollards) are active and prevent the bollards from rising.

If a vehicle has passed through and there is no other vehicle in the immediate vicinity, the induction loops are no longer active. The traffic light switches from green to red. The integrated lighting strips and the acoustic warning signal are activated immediately after the command. The bollards start rising after approx. 4 seconds. The passage is blocked.

The bollards stop and return to the lowered position (reverse command) if another vehicle is detected over the induction loops during rising. The point of passage can only be passed again when the traffic lights change from red to green.

Following this, the bollard system reacts as previously described.

If a pedestrian steps on a bollard during the rising phase, the safety pressure switch detects the presence of a weight and immediately interrupts the rising phase and makes the bollards lower to down position (inversion control by safety pressure switch).

After several inversion controls, by loops or pressure switch, the situation is as described above, when bollards are in down position green sector turn on: instead red sector turns on when the vehicle has passed by crossing, then bollards start rising. If another vehicle stops over the loops, theygive a lowering control.

After giving the corresponding command to lower the bollard, the bollard lowers and waits in this position for a vehicle to pass through. If a vehicle does not pass through within 30 seconds of reaching the lowered position, the bollard automatically returns to the up position again.

As soon as the bollards are in the up position, the integrated flashing lights start to flash constantly, the acoustic warning signals fall silent and the induction loops are no longer active. The traffic light switches from green to red. The bollards also remain in the up position if a vehicle approaches to pass through. Passage is only enabled once a corresponding command is given.

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If the bollard system is equipped with a device for automatic lowering, the bollards automatically lower in case of a temporary power failure. The passage is always clear. The control unit checks whether the induction loops are active when the power supply returns. The traffic light switches to red if the induction loops are not active. Then the integrated flashing lights and the acoustic warning signal are activated. The bollards start rising after approx. 4 seconds. The passage is blocked. If the bollard system is not equipped with a device for automatic lowering, the bollards remain in the up position. You must manually lower the bollards if passage is necessary **(see chpt. 8.1)**.

In order to keep the system in operation in case of temporary power failures, it can be equipped with an emergency power generator (UPS device).

The control unit can be equipped with a weekly / yearly timer, e.g. in order to regulate loading / unloading times in traffic-calmed areas. The control logic of timers acts in the exact same way as previously described. The acoustic warning signals can be deactivated at night by using timers.

Heating elements can be used if bollards are used in areas where the temperatures fall below –10°C. The heating elements prevent the formation of ice between the cylinder and frame and also ensure functionality at low temperatures.

If bollard systems are used in areas with water-bearing layers, watertight foundation boxes with automatic immersion pumps can be used. The immersion pumps pump the rainwater out of the watertight foundation boxes and ensure system functionality.

9 - MAINTENANCE

Attention! The following instructions are exclusively intended for competent / qualified persons with suitable training, specialist knowledge and practical experience sufficient to correctly and safely fit, test, and carry out maintenance on a bollard system .

In order to ensure the correct function and a constant safety level, perform the following inspections and test on the bollard system, safety devices and connected accessories every six months.

Operation	Procedure
Inspection and cleaning of the foundation box, including removal of dirt. (A001)	Check the condition of the inside of the foundation box. If necessary, clean the foundation box using an appropriate vacuum for liquids and solids. All dirt that has collected inside must be removed (sand, soil, gravel and similar).
Cleaning the drains for water discharge on the floor of the foundation box. (A002)	There are openings for draining rainwater in the 4 corners on the floor of the foundation box. The openings can partially or fully block or become calcified over time, meaning that drainage of rainwater is limited or not possible at all. To remove any possible calcification, take an appropriately long drill (Ø 15 mm) and drill the openings clear. Lower the drill approx. 10 cm into the gravel below.
General cleaning of the bollard and possible repair of cylinder paint damages. (A003)	Check the cleanliness of the bollard. Clean the entire bollard, if necessary, with a suitable high-pressure cleaner (with warm water if possible). Clean the bollard in the lowered position first. Extend the bollard and clean the surface of the cylinder. If possible, also clean the sliding area between the cylinder (moving part) and the frame (fixed part). Check the cylinder with regard to its visual impression and repair any paint damages on the cylinder if necessary.
Bollard lubrication. (A004)	Rise the cylinder if the bollard is dry. Lubricate the central sliding guide (external part of the piston that slides on the cylinder) and the piston rod if possible. Use TEFLON OIL, if possible, due to its long-lasting lubrication effect.
Check of the lower support bases. (A005)	When the bollard is lowered, the cylinder is positioned on three contact surfaces at the bottom. These bottom contact surfaces are made of aluminium with a top part made of vulcanised solid rubber. The solid rubber can wear over time. Check the solid rubber top parts for wear or damages and replace them if necessary.
Check the proper position of the magnetic contact and magnet . (A006)	Lower the bollard to down position then check that the magnetic contact, placed in the lower part of the frame, and the magnet, placed on the moving cylinder, are properly alligned.

UK

Check the entire hydraulic system for oil leaks. (A007)	Check whether oil is leaking from the hydraulic assembly, hydraulic lines or connections. Check whether all hydraulic connections are properly tightened using a corresponding open ended spanner.
Check the oil level and fill up the hydraulic assembly if necessary. (A008)	Lower the bollard and disconnect the 230 V supply. Check the correct oil level in the hydraulic assembly with the bollard lowered using the sight glass. The oil must fill the sight glass. Fill up oil if the filling level is too low. (See SPECIFIC OPERATIONS – chpt. 10) **ATTENTION: Only use original oil as specified on the corresponding label.**
Check of the pressure in the hydraulic system. (A009)	**ATTENTION – this check must be performed when the hydraulic pump is "cold"** (not to be carried out after several consecutive movements which may cause the oil heating in the hydraulic system). Lower the bollard, then connect the pressure gauge with the pressure measuring head in the hydraulic system.Command the rising and check whether the pressure shown on the pressure gauge is between 10 and 15 bar. When the bollard is rised, check whether the pressure rises to 35-45 bar; Check whether the pressure stays at approx. 30bar after approx. 5 minutes. If the pressure is not maintained or drops rapidly, check whether oil is leaking from the hydraulic assembly or the solenoid valve. Read chapter 10: SPECIFIC OPERATIONS.
Check of the safety reversal managed by the pressure switch when the bollard is rising. (reversal caused by the detection of approx. 40Kg on the bollard). (A010) **ATTENTION: when bollards are equipped with E.F.O circuit the reversal function is not enabled.**	The hydraulic system is equipped with an hydraulic pressure switch which analyzes the pressure in the system; when the bollard is rising and the pressure switch detects a pressure increase (usually caused by the detection of a weight corresponding to 40 kg or more on the bollard e.g: a person) the bollard stops and goes back to down position. Check the proper functionality of the safety reversal managed by the pressure switch using a sample weight (e.g: a barrel filled with 40lt of water). Otherwise adjust or replace the pressure switch. Read chapter 10: SPECIFIC OPERATIONS.
Check of the rising interruption managed by the the pressure switch. (A011)	The hydraulic system is equipped with an hydraulic pressure switch which analyzes the pressure in the system; when the bollard completes the rising, the pressure switch detects an increase due to the moving cylinder in up position, consequently the control unit ends its rising phase by stopping the operation of the hydraulic pump. Check that once the moving cylinder stops in up position, also the pressure switch makes the hydraulic pump stop in about 4s. Otherwise adjust or replace the pressure switch. Read chapter 10: SPECIFIC OPERATIONS.
Overall check of the proper grip of the screws. (A012)	Check the proper grip of screws and bolts by using the standard handling equipment (hexagonal fix wrenches – Allen wrenches – screw drivers).

Check the proper operation of the differential magnetothermal switch of the electrical circuit. (A013)	The 230/400VAC electric line which powers the control unit must be protected by a differential magnetothermal switch. In particular, it is necessary to check that it stops the power supply in case of earth fault (electric leakage) or electric shock, providing either direct or indirect protection to persons (lifesaving). By means of the suitable instrument (loop tester) check the proper operation with regard to the isolation and the continuity. In addition push the TEST button of the switch and verify that it springs in OFF position to confirm the proper functionality.
Overall check of the control unit. (A014)	Check visually the overall status of the control unit and in particular verify that there are no slack wires in the terminals, sparking relay contacts, oxidised terminals or similar. Check the general conditions of the case and the door gasket which must ensure the IP protection class.
Check the operation of the integrated multiled flashing light (optional item). (A015)	If the bollard is equipped with the multiled flashing light, check the overall conditions and the operation of the 25 led points. In case of partial or total failure, restore the operation of the flashing light. Read chapter 10: SPECIFIC OPERATIONS.
Check the operation of the traffic lights (optional item). (A016)	If the bollard is equipped with traffic lights, check their overall conditions. In case of fault of one or more light sectors, replace the filament bulb (traffic light - old version) or the LED (traffic lights - current version).
Check the function of the safety induction loopsand loop detector (optional item). (A017)	Check the correct function if the bollard system is equipped with induction loops and a loop detector installed in the control. For this, place a test metal mass (e.g. a metal box with metal tools inside) on different sections of the induction loops and check whether the LED on the loop detector is illuminated in red (when induction loops are free, the LED is blue). Perform the same test during extension of the bollard. The bollard must stop and return to the lowered position if it is functioning correctly. Check and correct the cause in case of incorrect function.
Check the proper operation in case of power failure. (A018)	If the bollard system is equipped with automatic lowering device, rise the bollard to up position then turn the power in the control unit off and check that it lowers automatically. If the system is not equipped with automatic lowering device, check that the manual lowering device works properly. Read chapter 10: SPECIFIC OPERATIONS.
Check the operation of the radio receiver (optional item). (A019)	If the system is equipped with radio receiver and transmitters, check the correct operation from a distance of about 30m and, as far as possible, verify the wear of the transmitters and the built-in batteries.

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Check of the GSM activator for remote control (optional item). (A020)	If the bollard system is equipped with GSM activator for remote control, check the correct operation performing some rising/lowering movements from a telephone and/or a mobile phone enabled for the operation of the system.

10 - SPECIFIC OPERATIONS

Operation	Procedure
Topping up of the hydraulic unit. (B001)	• Lift the bollard out of pit, lower it to down position then turn the power off 230/400VAC. • Check that the oil level is at least half of the sight glass; if necessary, top up. • Unfasten and remove the cap of the hydraulic pump (placed on the top of the hydraulic unit) and fill it with the same oil up to half of the sight glass. • ATTENTION: USE ONLY ORIGINAL OIL. • ATTENTION: CHECK IF IT IS MINERAL OIL OR BIODEGRADABLE OIL. • Turn the 230/400VAC power supply on and rise the bollard to up position. Check that the oil level lowers at the beginning of the rising phase. • Once the bollard is up and the hydraulic unit is still (end of the rising cycle), close the cap of the hydraulic pump.
Check/replacement of the lowering solenoid valve. (B002)	Lift the bollard out of pit, lower it to down position then turn the power off. • Unfasten the black cap of the hydraulic pump of about 2 turns (to reset the internal pressure of the pump). • Remove the coil from the solenoid valve. • Unfasten and remove the solenoid valve by means of a fixed wrench size 24 (some oil leaks may occur, use cloth to wipe it clean). • Verify that the lower part of the solenoid valve is not mechanically obstructed by impurities such as metal swarf or similar (in presence of impurities, it is suggested to clean, reassemble the solenoid valve and run functional tests; otherwise use a new solenoid valve). • Fasten the solenoid valve and the coil. • In case of negative logic solenoid valve, on the top there is a push button for emergency manual lowering, it is recommended to lubricate it and check the proper operation. • Turn the 230V power supply on and perform the necessary functional tests. • When the bollard is in down position check the oil level and, if necessary, top it up with the same oil type. • When the bollard is in up position and the hydraulic pump is still (end of the rising cycle) close the black cap of the hydraulic pump.

Repair/replacement of the 25 points flashing light integrated in the head of the bollard (optional item). (B003)	• Every single led of the integrated multiled flashing light is composed by 3 light points but only one point is used; in case of partial or total failure it is possible to use the second or the third light point by following the procedure below. • Turn the 230V power supply off – remove bollard's head – remove the black cover placed under the head (where the power cable enters). • There are 3 terminals on which are connected, on one side 3 black wires (negative power supply of the 3 light points), on the other side only one black wire is connected (this black wire powers the first point at -24VDC). • Move the black wire from the first terminal to the second or the third one to power another light point. • Test the proper operation of the multiled flashing light; if the test is positive reassemble the head and complete the intervention; if the test is negative replace the multiled flashing light. • In case of replacement, request to GI.DI.DI S.r.l. the specific replacement procedure for the flashing light and advise if the printed circuit of the flashing light is orange (old version with IP 67 protection class) or white (current version with IP 68 protection class).
Manual lowering procedure in case of power failure or breakdown. (B004)	If the bollard is not equipped with a device for automatic lowering, in case of power failure, each bollard can be manually lowered. Proceed as follows: • Some fitting screws are located in the bollard frame. Completely unscrew the fitting screws in the frame and remove the frame cover. Use the Allen key included in the scope of delivery. • Remove the plastic cap (labelled: Replace me) from the frame. • Guide the long side of the Allen key into the hole until it presses against the button for manual lowering. • Press and hold the Allen key until the bollard is fully lowered. • Replace the plastic cap and the frame cover and retighten the fitting screws. • Re-establish the 230 V supply.
Adjustment/replacement of the safety pressure switch. (B005)	**ATTENTION – this check must be performed when the hydraulic pump is "cold"** (not to be carried out after several consecutive movements which may cause the oil heating in the hydraulic system). The pressure switches are pre-set and hermetic to increase the IP protection degree, in case of malfunction it is necessary to replace them. • Bollard out of foundation box - bollard in down position - disconnect 230V power supply. • Unfasten the black oil filler cap of the oil-hydraulic unit by approximately two turns (to reset the internal pressures of the hydraulic unit). • Disconnect the pressure switch cable from the passive box on the bollard. • Unfasten and remove the pressure switch with a spanner size 24, making sure not to lose the gasket. CONTINUES NEXT PAGE

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Adjustment/replacement of the safety pressure switch. (B005)	• Position the gasket and secure the new pressure switch. • Reconnect the pressure switch cable in the passive box. • Restore the 230VAC power supply. • When the bollard is in down position, check the oil level in the hydraulic unit and top up with the same type of oil if necessary. • When the bollard is in up position and the hydraulic unit is still (end of the rising cycle), close the black filler cap on the hydraulic unit. • Perform checks A010 and A011 to test correct operation.
Maximum rising pressure adjustment. (B006)	**ATTENTION – before proceding check that the hydraulic unit is cold** (not after having performed several consecutive movements which cause oil heating inside the hydraulic system). When the bollard is in down position, connect the pressure gauge to the pressure outlet. Move the bollard to up position, then check that the pressure is included in a range **between 35 and 45 bar**. If the pressure is inferior than the values above indicated, adjust the maximum rising pressure. • Lower the bollard to down position. • At the bottom of the hydraulic unit, immediately by the side of the hydraulic connection, there is an adjusting screw - to increase the pressure turn it clockwise in steps of 45 ° and after each step, command a rising movement. Once the bollard is completely up, check the pressure on the pressure gauge and, most important, hear that the hydarulic unit continues running for about 4" from the moment when tho bollard reaches up position (if the pressure set is too high, the motor of the hydraulic pump may block and fail) . • In some cases, even if after the adjustment of the maximum pressure, the system does not reach the requested values; in this case it is necessary to replace the hydraulic pump and send it to GI.BI.DI S.r.l. for the repair.
Adjust the lowering speed. (B007)	**This procedure is used to synchronize installation of several bollards.** We suggest not to change the value but to maintain a speed of 2s. • Lower the bollard, lift it out of foundation box then turn the 230V supply off. • At the top of the hydraulic unit there is a speed regulator. Loosen the tightening nut by means of a size 19 socket wrench. • Adjust the speed by means of an Allen screw size 4. • To adjust the speed turn the regulator in steps of 5° (max. range 90°) by means of a Allen key size 5. • Once the system is synchronized, fasten the nut on the regulator by means of a socket wrench size 19. CONTINUES NEXT PAGE

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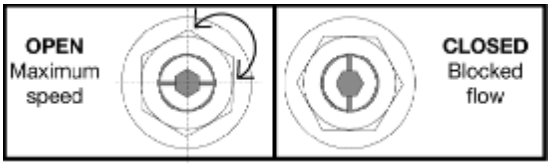
Adjust the lowering speed. (B007)	
Adjust/replace the lower limit switch. (B008)	• Lower the bollard, put it out of foundation box, disconnect the 230V supply (Disconnect possible additional accumulators). • Check the correct allignment between the magnet placed on the cylinder and the contact at the bottom of the frame. • Check that L2 LED of the Master circuit (and possible Slave circuits) is illuminated until the bollard is in down position. Slightly rotate the cylinder and check that L2 LED is still on. • When the bollard rises for more than approx. 15mm, L2 led must turn off. • If necessary adjust the position of the limit switch and the support. • Put the bollard back into the foundation box.
Exchange of the Master circuit board. (B009	• Make sure that the replacement master circuit board is compatible with the system. (Please note that even if the master circuit boards initially look the same, the master circuit board of a Security Line is different from the master circuit board of a High Security Line). • Disconnect the 230 V supply. • Remove all plug-in terminals with lines from the master circuit board (the lines must not be unscrewed as the plug-in terminals can simply be pulled off the pin bases). • Take the defective master circuit board out of the control unit (the master circuit board is in a green holder fixed onto a metal guide with quick couplings). • Put the new master circuit board with the holder back onto the metal guide. Put all plug-in terminals back onto the pin bases in the correct location (the terminals are numbered and there are reference numbers on the circuit board). • Re-establish the 230 V supply and perform the necessary function tests.

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11 - TROUBLESHOOTING

This guide shows the most common problems that can occur while using a GI.BI.DI.

Client's technicians can solve some problems indipendently (especially if they are equipped with spare parts), while for other troubles it may be necessary to be supported by GI.BI.DI. S.r.l assistance department.

In this case they have to contact GI.BI.DI. S.r.l., communicate the reference number of the system (or the reference number of the order confirmation).

PROBLEM	POSSIBLE CAUSE	SOLUTION
The bollard rises of about 10 cm, stops and then returns in low position (without any lowering control). (C001)	The safety pressure switch which detects the presence of about 40 Kg weight on the bollard head is constantly in ON position and for this reason it must be adjusted or replaced.	When the bollard is in low position check the leds L1 on the master and/or the slave unit in the control unit: switched off = the pressure switch is ok – turned on = the pressure switch is in alarm (it is on) – if the led is always turned On or turns On when the bollard starts rising, the problem is caused by the dafety pressure switch which must be adjusted or replaced. For the pressure switch adjustment please consult chapter 10: SPECIFIC OPERATIONS. Note: generally only the pressure switches of old supply are adjustable and recognizable from a waterproof protection made by black soft rubber; the current pressure switches are pre-adjusted and hermetic to increase the IP grade of protection.
The bollard rises but not completely. **(C002)**	• There is too little oil in the hydraulic pump tank. • Bollard's connecting cables are not well placed in the foundation box. If the upper limit switch gets stuck in the cable, the function of the bollard may be impared.	• Check whether oil is leaking from the hydraulic assembly, hydraulic lines or connections. Check whether all hydraulic connections are properly tightened using a corresponding open ended spanner. Refill oil into the hydraulic assembly once the oil leak has been remedied. Read chapter 10: SPECIFIC OPERATIONS. • Pull the bollard out from the foundation box and check if the bollard can fully rise. If the test is positive, put the bollard back into the foundation box and make sure that the connecting cables are positioned correctly.
Once the bollard is in down position, the cylinder is about 7 mm lower than the frame cover. (C003)	The vulcanized hard rubber of the lower base supports is worn.	Replace the lower support bases.

During the rising phase, the bollard does not perform the reversal managed by the pressure switch. **ATTENTION: when bollards are equipped with E.F.O the reversal function is not operative. (C004)**	• The dip switch 5 of the master unit is in ON position (stop function by pressure switch is excluded). • The pressure switch does not detect any pressure increase in the hydraulic circuit. • The hydraulic unit does not generate the correct operating pressure.	• Set the dip switch 5 of the master board in OFF position (reversal function by pressure switch enabled). • If it is possible adjust the pressure switch sensibility (adjustable old version) or replace the pressure switch (pre-adjusted and hermetic new version to increase the IP grade of protection and the system reliabilty). For the pressure switch adjustment please consult chapter10: SPECIFIC OPERATIONS. • Adjust the maximum rising pressure in the hydraulic unit. For the adjustment, please consult chapter 10: SPECIFIC OPERATIONS.
The bollard rises completely, but the hydraulic unit continues working for about 10". (C005)	• The dip switch 4 of the master unit is in ON position (the stop function by pressure switch is excluded). • The pressure switch does not detect any pressure increase in the hydraulic circuit. • The hydraulic unit does not generate the correct operating pressure.	• Set the dip switch 4 of the master board in OFF position (the stop function by pressure switch is enabled). • If it is possible adjust the pressure switch sensibility (adjustable old version) or replace the pressure switch (pre-adjusted and hermetic new version to increase the IP grade of protection and the system reliabilty). For the pressure switch adjustment please consult chapter10: SPECIFIC OPERATIONS. • Adjust the maximum rising pressure in the hydraulic unit. For the adjustment, please consult chapter 10: SPECIFIC OPERATIONS.
The bollard completes the rising phase, but it performs the reversal and turns back in lower position. (C006)	The adjustable parameter in the master board which corresponds to the reversal time in case of alarm of to pressure switch pre-adjusted, must be lowered of 1".	Request to Gi.Bui.Di. S.r.l. the specific document for the programming software, communicating the code on the master board; perform the parameter 1 adjustment lowering the time of about 1".
The bollard is in high position and a lowering command is given, but the bollard remains up and lowers only after an initial pressure downward. (C007)	• Only for cold territories: there is no heating device or it does not work. • The piston rod is "dry" and must be lubricated. • The bollard was bumped violently when in high position so the piston rod is crooked.	• If there is no heating device, install one in each bollard; in presence of heating device, check the proper operation of the resistance and the thermostat. • Lubricate the piston rod. • Replace the piston.

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The bollard is in high position and a lowering command is given, the bollard starts lowering but it stops in intermediate position. (C008)	• The piston rod is very “dry” and must be lubricated. • The bollard was bumped violently when in intermediate position so the piston rod is crooked.	• Lubricate the piston rod. • Replace the piston.
Even if it is powered, the bollard remains for a long time in high position, but after a few days it begins to lower very slowly (millimeter by millimeter). (C009)	When an hydraulic system remains in operation for a long time, the internal pressure decreases gradually up to not being able to maintain the moving cylinder in high position, because of internal micro-leaks in the system. The control unit analyzes the pressure level in the system and when it is lower than a certain value it performs an automatic adjustment. When it occurs, this problem may be caused by: • The automatic pressure adjustment has been accidentally excluded. • The safety inductive detector always in alarm (ON).	• Verity that the dip switches 4 and 5 of the master board are in OFF position. • Reset the correct operation of the safety inductive detector (sometimes the cause is the presence of a metallic object on inductive loops).
The bollard is in high position and a lowering command is given, but the bollard performs the descent slowly (only for products equipped with emergency manual lowering). (C010)	• The lowering solenoid valve is not powered. • The solenoid valve or the solenoid valve coil is broken.	• Control (and if it is necessary replace) the solenoid valve protection fuse in the master/slave units (master unit PF4 - slave unit PF2). • Replace the solenoid valve and/or the solenoid valve coil.
The bollard does not work or shows random operations. (C011)	• The electrical guard switch of the control unit is in OFF position. • The protection fuses of the master board are burned. • The master board is broken and it must be replaced.	• Reset the electrical guard switch in ON position and check that it remains in this position. • Check the 7 fuses of the master board and if it is necessary replace the burned ones with some others with the same values as reported on the printed circuit (ex. T1A). • Replace the master board. Consult chapter 10: SPECIFIC OPERATIONS.

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EC Declaration of conformity

The manufacturer:

GI.BI.DI. S.r.l.

Via Abetone Brennero, 177/B,
46025 Poggio Rusco (MN) - ITALY

declares that the products:

AUTOMATIC BOLLARDS DPT280

are in conformity to the following EEC Directives:

- **Directive LVD 2006/95/CE and subsequent amendments**;
- **Directive EMC 2004/108/CE and subsequent amendments**;

and that the following harmonised standards have been applie:

- **EN60335-1,**
- **EN61000-6-1, EN61000-6-3**

Moreover declares that the product must not be used until the machine in which it has been incorporated has not been declared in accordance with 2006/42/CE Directive.

The legal Representative
Michele Prandi

Date 10/01/2020

Cod. AIC0063 - 01/2020 - Rev. 00

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