



Technical manual

(translated from French)

Technical Manual RB 70S-MT-EN-07

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Revision of document

Revision	Date	Written by	Checked by	Details
00	2009-06-05	MFy		Initial version.
01	2009-07-22	MFy		- "Installing the case" chapter: translation of point 8. - EC certificate modified (rev 2).
02	2009-10-01	MFy		- Ch.2.2. : manometer not supplied.
03	2009-11-30	MFy		- Ch.1: warning added regarding detection loops installation.
04	2010-01-04	MFy		- EC certificate update.
05	2010-07-05	MFy		- Electrical connections: add warnings.
06	2010-07-14	MFy		Location of components: optional heater added.
07	2010-10-08	MFy		Wiring diagram RB70S-02-rev1: cable color corrected on terminals 7-8-11-12.

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1. SAFETY WARNINGS

- This manual must be available to all persons required to work on the equipment: the installer, maintenance operator, end user, etc.
- This equipment is intended to obstruct the passage of vehicles and is not to be used for another purpose without risk for the user and for the integrity of the equipment.
Automatic Systems shall not be held liable for damage resulting from an inappropriate use of the equipment.
- Do not install this equipment in an explosive area.
- Do not add non-original or non-approved accessories (contact between different metals causes a galvanic effect that adversely affects the corrosion resistance of the equipment)
- The contractor shall install the equipment in compliance with local standards.
- Any operation on the equipment must be carried out by qualified personnel informed about the electrical and mechanical risks of negligent manipulation. Any work on this product that is unauthorised or carried out by an unqualified technician will automatically void the manufacturer's guarantee.
- Caution must be exercised when handling any internal element liable to be live or moving.
- The equipment is configured in "minimum risk" mode for its users. The parameters must only be altered with full knowledge of the facts by qualified personnel and shall not in any way invoke the liability of Automatic Systems.
- The equipment must be fully visible to the user before being actuated.
- The equipment must be thoroughly checked by an approved technician after any collision, even when there may be no visible damage.
- The installation of detection loops must be validated by qualified personnel who will determine their optimal configuration (adapted to vehicle type and passageway).
WARNING: The risk of injury exists for people when using standard detection loops: they can incorrectly detect trucks and (motor)bikes and close the gate on them!

2. DESCRIPTION

2.1. Technical specifications

- Traffic obstacle comprising a 275 mm diameter, 10 mm thick painted steel mobile cylinder, height above ground: 700 mm.
- Impact resistance without deformation (guaranteed operation): 15,000 joules.
Impact resistance with permanent deformation: 630,000 joules.
- Allowable weight on retracted bollard: 40,000 kg.
- Allowable weight on bollard during extension, before reversal: 150 kg (200 kg without pressure switch).
- Allowable weight on raised bollard, before lowering: 3,000 kg.
- Weight of bollard: ± 160 kg
- Weight of casing: ± 60 kg
- 230 VAC $\pm 10\%$ single phase power supply, 50 Hz.
- Rated power consumption: 400 W.
- Control unit located in an IP55 wall-mountable housing.
- Connecting cable between the bollard and the control unit: 10 m (up to 50 m optional).
- Hydraulic movement transmission.
- Raising speed: 10 cm/s.
- Lowering speed: 20 cm/s.
- Manually retractable mobile obstacle.
- Frequency of use > 1,500 operations per day.
- Mechanical endurance (MCBF), following recommended maintenance plan: 2.000.000 cycles.
- Ambient storage and operating temperature: -15 to +70 °C (bollard and control box)
(to -25°C with optional heating element in the bollard).
- Max relative humidity: 95%, without condensation.
- Bollard protection class: IP67.
- Noise: 60 dB.
- Complies with EC standards.

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2.2. Location of components



1. Mobile obstacle (= cylinder)
2. Crown
Buzzer in crown (optional) (not shown)
3. LEDs in centre of crown (optional)
4. LEDs on the side of the crown (optional)
5. Cover plate
6. Pump
7. Solenoid valve
8. -
9. Connector for test manometer (not supplied)
10. Hydraulic jack
11. Bollard support bearings (retracted position)
12. End stops (raised position)
13. Booster (optional)
14. Serial plate
15. Heater (optional)

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3. INSTALLATION

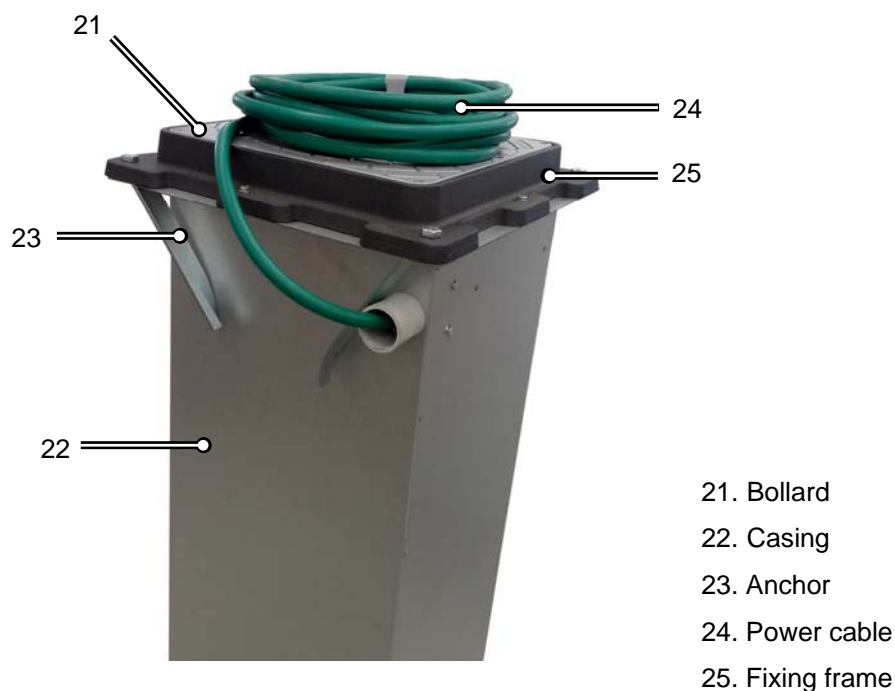
3.1. List of required tools

- Standard tool kit.
- Set of Allen keys.
- Lifting bar or strap for lifting the bollard (bollard weight is indicated ch. 2.1. Technical specifications).
- Optionally when installing a group of bollards: steel bars for framework reinforcement (ch.3.4.) and welding machine.

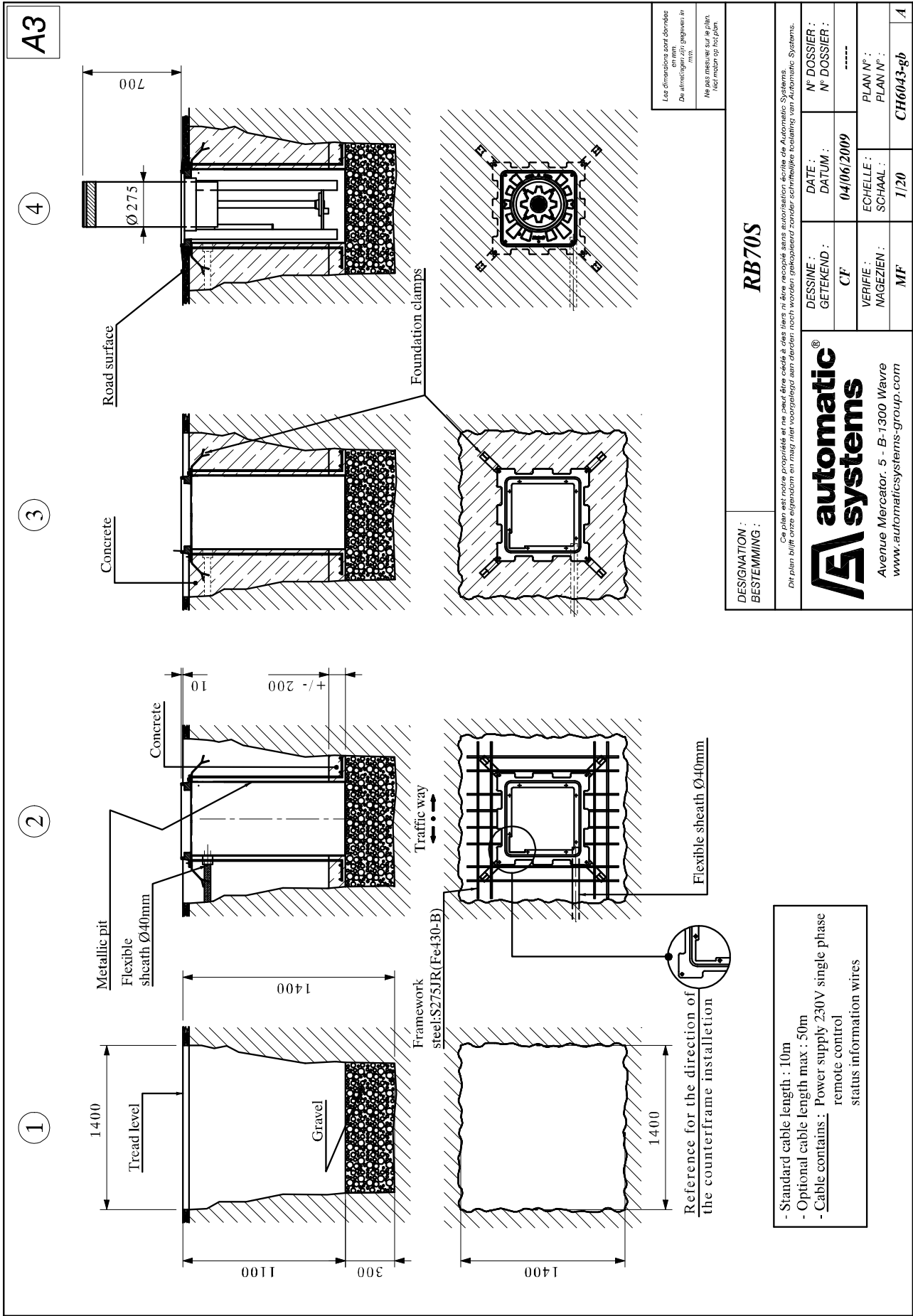
3.2. Handling

The bollard and its casing are delivered ready-assembled, the crown is protected by a plastic film. The unit, together with its electrical box and cable are packed on a Europallet.

Handle the bollard with a pallet truck. The bollard can be carried in a vertical or horizontal position.



3.3. General arrangement & dimensions



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3.4. Installing the casing

Refer to installation drawing, chapter 3.3.

1. Excavate a pit approximately 1.40 m x 1.40 m and 1.40 m^(*) deep relative to the road surface.
^(*) The pit must be deeper in the event that options are installed (booster, hermetically sealed casing). In all cases, the depth of the pit must be equal to the height of the casing + 30 cm for the gravel bed. When installing a group of bollards, a single trench can be excavated instead of individual pits.
2. Ensure adequate drainage of the pit: pour approximately 40 litres of water and check that it is absorbed in under 30 minutes.
 Failing this, remove the standing water by means of a 60 mm diameter drain pipe connected to a drainage system.
3. If installed in a sloping road, a drain trough must be placed on the **upstream** side of the bollards.
4. Pour gravel into the pit (8-20 mm diameter to ensure good drainage), over a depth of approximately 30 cm (to be adjusted according to the next step). Compact it to avoid subsequent settlement and level it.
5. Remove the bollard from the casing:
 - Unscrew and remove the cover plate (fig. a).
 - Screw the two M10 lifting eyes (provided) into the bollard and thread a metal bar or a strap (not provided) through them (fig. b).
 - Lift out the bollard (be careful of the weight: see ch.2.1.).
6. Pass the 16 L bars through the sealing frame, without tightening (fig. c + 13).
 Pass the 6 square bars around the previous ones (fig. c).
7. Set the casing with its steel framework (fig. c) down on the gravel in such a way that:
 - It is correctly oriented in the direction of traffic (fig. d): as the bollards are not centred in the casing, it is essential that all the casings of a group of bollards face in the same direction.
 - The top of the frame extends 1 cm above the road surface, in order to limit rainwater infiltration (fig. e). Adjust the gravel bed if necessary.
 - The casing is vertically plumb to avoid scratching the cylinder during raising and lowering.
 - The casings forming a group are perfectly aligned (attach them to a single metal bar to adjust them together).

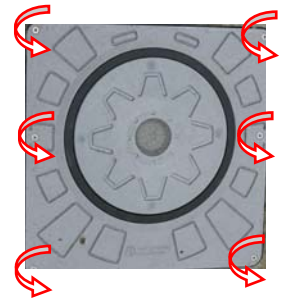


Fig. a: unscrew the plate

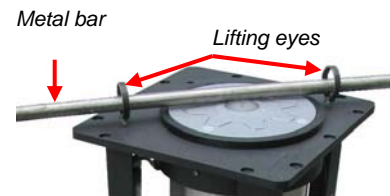


Fig. b: lift out the bollard



Fig. c: framework

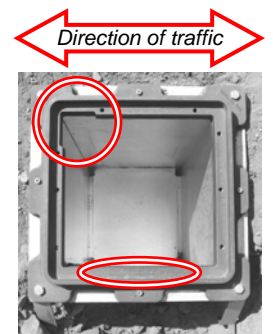


Fig. d: marks

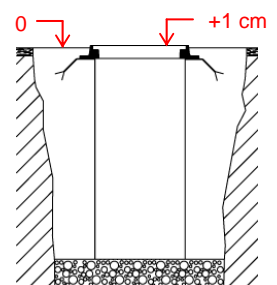


Fig. e: gravel bed

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8. When installing a group of bollards, the concrete foundation may be reinforced and the bollards linked together to form a compact assembly by welding to the steel framework of each casing:
 - Parallel to the traffic (fig. 7a): 4 steel bars Ø16 mm, 1.3 m length.
 - Perpendicular to traffic (fig. 7b): 4 steel bars Ø16 mm (length = trench length in case of grouped installation).

Note: Impact resistance values are not depending to the steel framework.

9. Lay a conduit (Ø 40 mm with draw wire) to run the electric cables from the bollard to the electric box (fig. g).
Form large radius bends.

The clearance between the conduit and the casing must be minimal to prevent concrete entering the casing during the subsequent stages. If the distance between the bollard and the electric box exceeds the length of cable supplied (10 m standard, optional up to max 50 m), provide a junction box.

10. For the "immersion pump" option, provide an additional Ø40 mm conduit for running the drainage pipe to a sewer, drain or similar. Provide a trap or a non-return valve to avoid backflow of water into the casing.

11. Turn the 4 anchors towards the outside of the casing (fig. h).

12. Pour a concrete ($R_{ck} = 25 \text{ N/mm}^2$) around the casing up to a level approximately 10 cm below the road level (allow for the thickness for the road surfacing).

The concrete must be thick enough not to flow within the gravel, in order to avoid blocking the drainage holes (fig. f).

Note: the concrete should be poured in two steps to prevent uplift due to the pressure of the liquid concrete: place approximately 20 cm of concrete and allow it to set before completing the remainder. Vibrate the concrete to ensure that it is properly compacted over the full height in order to withstand the weight of the traffic. Ensure that no concrete has entered the casing.

13. When the concrete has hardened (let it dry min 2 weeks), Tighten the steel bars of the framework to the frame (fig. 13).

14. Finish by placing the road surfacing around the bollard, with a slight slope on all sides from the top of the frame (fig. i).

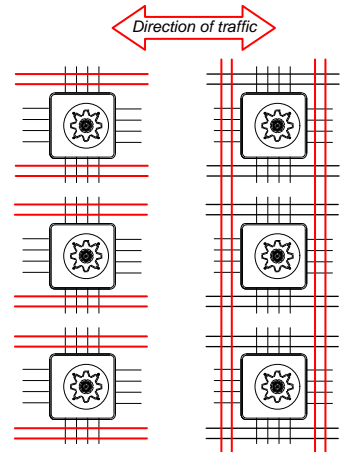


Fig. 7a

Fig. 7b

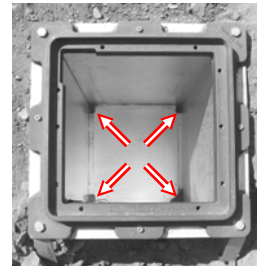


Fig. f: drainage



Fig. g: conduit



Fig. h: anchor



Fig. 13: tightening



Fig. i: road surfacing

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3.5. Installing the bollard

15. Leave the encasing concrete cast in the previous stage to harden for at least one day.
16. Screw the two M10 lifting eyes (provided) into the bollard and thread a metal bar or a strap (not provided) through them in order to lift the bollard (fig. j).
17. Draw the power cable in the conduit up to the control unit (fig. k). Attach the cable to the casing with the fastener provided, **at the point indicated on the cable!** This length of cable (= height of bollard + 10 cm) constitutes the reserve necessary for the movement of the bollard inside the casing.
18. Insert the bollard in the casing, passing the pump through the notch in the frame (Fig. m). Take care to hold the cable along the side of the bollard to avoid crushing it.
19. Make the electrical connections (ch.3.6.) so that the bollard is raised with a CLOSE command, and check its verticality. Also check the alignment of groups of bollards. The verticality of the bollard can be adjusted by inserting shims between the frame of the casing and that of the bollard.
20. Screw the bollard to the frame (Fig. n).
21. Remove the lifting eyes and screw the cover plate to the bollard (Fig. p).

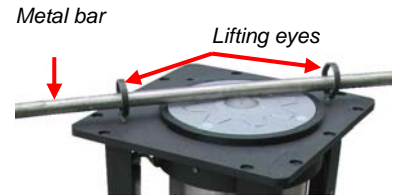


Fig. j

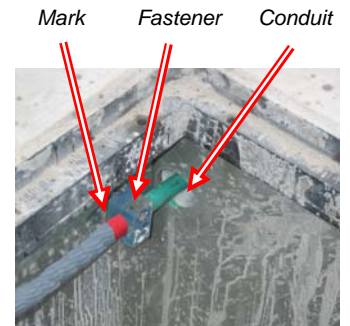


Fig. k

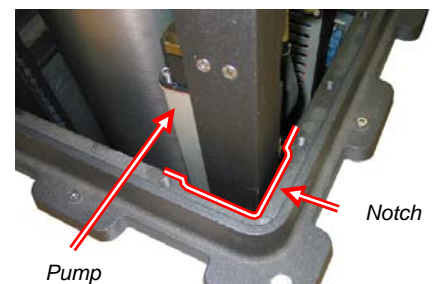


Fig. m



Fig. n:
attachment of bollard to frame



Fig. p:
attachment of cover plate

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3.6. Electrical connections

WARNING: do not connect to a floating network or to high impedance earthed industrial distribution network.

WARNING: high leakage current.

Imperatively connect to the ground with a 1-mm² cable minimum before connecting the mains.

Do not connect several equipments to the same differential breaker.

The control units and the different terminal blocks for connecting to the retractable bollards are housed in a remotely-located control box.

This box is designed to be mounted against a wall in a room meeting the temperature requirements specified in ch. 2.1. (Technical Specifications).

The type of box provided depends on the configuration of the bollards:

BOLLARD CONFIGURATION	BOX DIMENSIONS (mm) W x H x D	MATERIAL
1 bollard.	320 x 400 x 160	Plastic
2 bollards or 1 bollard with options.	400 x 480 x 160	Plastic
Max. 5 bollards or 3 bollards with options.	400 x 600 x 200	Painted steel
Max. 8 bollards or 5 bollards with options.	500 x 700 x 260	Painted steel

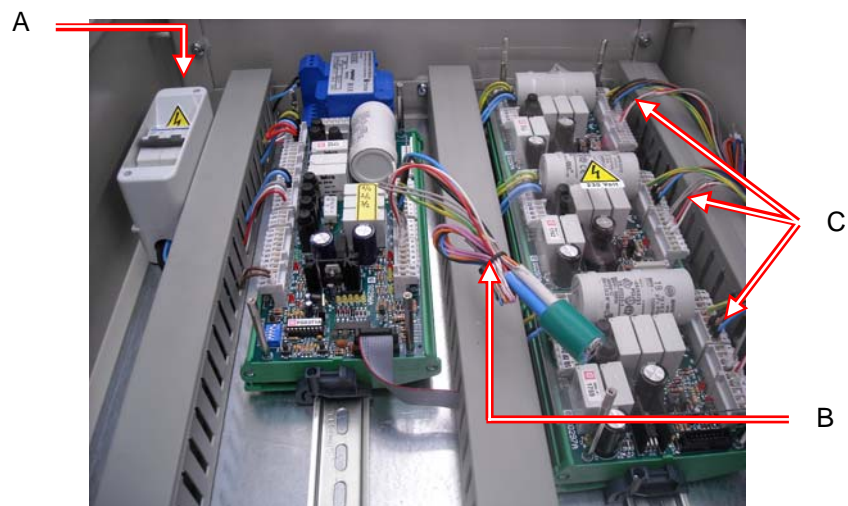


Fig: box containing 1 master and 3 slave control units

- Switch off the circuit breaker (A) and connect it to the mains power supply (230 VAC single phase).
Note: a single circuit breaker per box protects up to 5 bollards.
Protect the incoming line with a 30 mA differential trip.
- Replace the lengths of cable left as markers on the terminal blocks of the master (B) and slave (C) control units with the cables from the bollards (see step 17ch.3.5. and wiring diagram RB02, ch.6.).
- Connect bollard lowering controls to terminal blocks 24+25 or 26+27 of the master control unit.
- Connect any vehicle detection loops, if applicable (optional) to terminal blocks 20 and 21 of the master control unit. These 2 terminal blocks must be shunted if loops are not used.
Note: the other options chosen at the time of ordering are already connected.
- Connect any emergency stop controller, if applicable, to terminal blocks 49 and 50 of the master control unit.
These 2 terminal blocks must be shunted if the emergency stop is not used.

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4. USE

4.1. Automatic mode

The automatic bollard can be operated by external controllers such as card readers, remote control with transmitter-receiver, pushbutton, detection loop(s), etc.

The controller issues the bollard lowering command. The bollard is raised either following a further command, the freeing of the vehicle detection loops (optional), or following a time out.

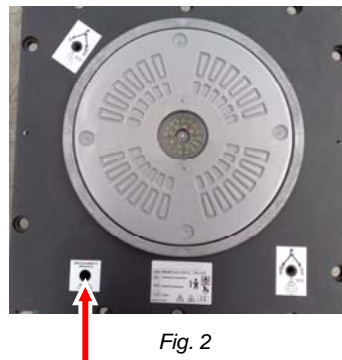
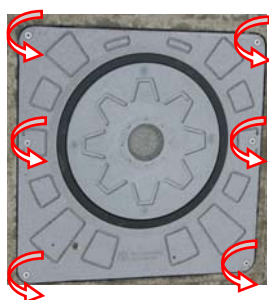
The bollard can always be lowered manually (ch.4.3.).

4.2. Power failure

In the event of a power failure, the bollard remains in raised position, but can be lowered manually (ch.4.3.).

4.3. Manually lowering the bollard

1. Unscrew the cap if any (fig. 1a) or the cover plate (fig. 1b).
2. Insert a metal rod in the "Manual Lowering" hole (fig.2).
3. Press the valve to lower the bollard (fig.3). Push down on the bollard with the foot if necessary.
4. Refit the cover plate.



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4.4. Maintenance

Every six months:

- Check the proper operation of the bollard (see ch.4.1.): it must operate silently, smoothly and over the full extent of movement.
- Check the proper operation of any options that might be fitted (vehicle detection loops, LEDs, buzzer, heating element, immersion pump, etc.).
- Remove the bollard from the casing (following the procedure given in ch.3.5. in reverse order) and clean any possible deposits from inside the casing.
- Pour some water into the bottom of the casing and check that it quickly drains away.
- Check the hydraulic circuit for leaks.
- Check the pressure calibration (5.2.).
- Check the oil level: with the cylinder retracted, the oil level should be visible on the indicator. Top-up the oil level if necessary (ch.5.2.1.).
- Clean and grease the actuator rod with a liquid lubricating oil (Teflon Spray or similar).
- Check the state of the upper and lower end stops (11 + 12, ch.2.2.).
- Clean the cylinder with a suitable cleaner for stainless steel. *Automatic Systems* supplies an approved product under reference 0/6031/000.
- Touch-up any paintwork damage due to chips, knocks and scratches.
- Check that all screws are securely tightened.
- Check the state of electrical connections (oxidised terminal blocks, bared cables, etc.).
- Refer to the manufacturer's manual for the options.

4.5. Troubleshooting

In the event of abnormal operation, refer to the indicator LEDs and their meaning (ch.6.1.2.).

Should you require technical support, the following information will need to be provided:

- The bollard serial number (indicated on the lid of the control box or the frame of the bollard, after unscrewing the cover plate).
- Configuration of the installation (number of bollards)
- Options installed (solenoid valve for automatically lowering the bollard in the event of a power failure, etc.)
- Type of opening control,
- ...

SYMPTOM	CHECKS
Bollard will not rise	Check: <ul style="list-style-type: none"> - that the control unit is powered. - that a raise request has been issued (LED L13 or L14 lit, ch.6.). - that the solenoid valve is powered: fuse PF4 (master) / PF2 (slave) intact (ch.6.). - That the solenoid valve piston is not jammed.
Bollard extends a few centimetres before lowering again	<ul style="list-style-type: none"> - If LED L1 is off, check the circuit pressure and pressure switch operation. - If LED L1 is lit, there is probably a mechanical fault.
Pump continues operating once the bollard is raised	<ul style="list-style-type: none"> - If LED L1 is off, check the circuit pressure. - If LED L1 is lit, the problem comes from the pump or its control system => check the pump and its electric circuit.
Noisy pump	<ul style="list-style-type: none"> - Check the oil level (ch.5.2.1.). - Bleed air from the circuit (ch.5.2.1.). - Check the pressure in the circuit when the bollard is raised. If the pressure is less than 30 bars, the pump is defective.

4.6. Prolonged stoppage / Elimination / Destruction

Remove the bollard from the ground (follow the procedure of ch.3.5. in reverse order).

If the bollard is permanently removed (eliminated or relocated), the pit should be refilled with gravel or concrete and the equipment recycled via the appropriate channels (in particular the oil of the hydraulic system).

Automatic-Systems can also supply a metal home cover plate (please contact us).

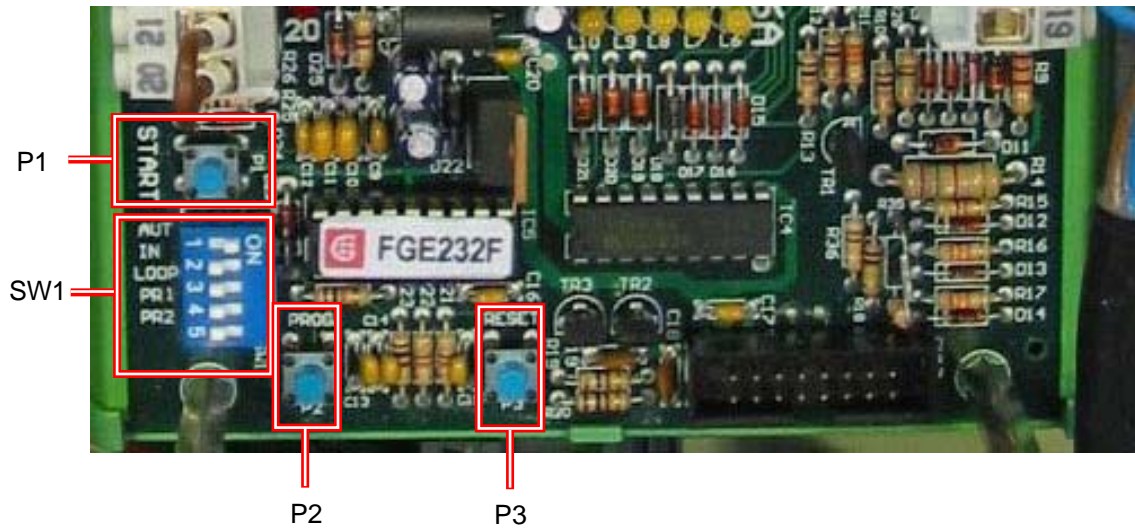
In the event that it is to be reused, the bollard shall be repackaged, the storage conditions being similar to those specified in ch.2.1. .

5. PRINCIPLE OF OPERATION

5.1. Control unit

The control unit managing the bollard is located in a separate box.

In the case of groups of bollards, one of the bollards is controlled by a master control unit and the others by slave control units that are connected to the master unit.



SW1:	Operating mode selector switch	}	On master control unit only
P1:	Start cycle button		
P2 and P3:	Programming or intensive testing buttons		

5.1.1. Start cycle button (P1, ch.5.)

In addition to the controls connected to terminals 20-21, 24-25, 26-27 and 58-59, the START button P1 actuates a bollard raising or lowering cycle, that will be performed according to the settings of dipswitch SW1.

5.1.2. Operating modes (SW1, ch.5.)

OFF	Dip	ON
Automatic extension enabled: After a start cycle command, when the bollard is controlled by an NC safety sensor contact connected to terminals 20-21, the raise bollard command is issued after the contact returns to its NC position. If no impulse is given by these sensors, the bollard will automatically rise after a fixed time delay of 30 seconds.	1-AUT	Automatic extension disabled: Step-by-step function: the raise bollard command is issued after a further command pulse.
Wired commands enabled: The wired cycle commands connected to terminals 20-21, 24-25, 26-27 and 58-59 are operational.	2- IN	Wired commands disabled: Inhibition of the wired cycle commands, useful when servicing the equipment. This function does not disable the control unit's START pushbutton P1.
Safety contact enabled: The safety sensor contact connected to terminals 20-21, is operational. If no NC contact is connected to, the bollard will not be able to rise.	3- LOOP	Safety contact disabled: Inhibition of the safety sensor contact, useful when servicing the equipment. This function does not disable the control unit's START pushbutton P1.
Pressure switch contact used: Pressure switch not provided on RB70S => parameter to leave ON.	4- PR1	Pressure switch contact not used: Pressure switch not provided on RB70S => parameter to leave ON.
Reversal of upward motion enabled: Depending on the pressure switch not provided on RB70S => parameter to leave ON.	5- PR2	Reversal of upward motion disabled: Depending on the pressure switch not provided on RB70S => parameter to leave ON.

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5.1.3. Programming and test buttons (P2 and P3, ch.5.)

Intensive test:

Keeping button P2 pressed for 1 second starts the intensive test. This mode disables the wired commands and activates a raising and lowering motion every 30 seconds.

P3: stops intensive test.

Programming:

Par. no.	Description	Unit	Min-Max	default (*)	Comments
1	Reversal accessibility time-delay	1 s	1 - 15	5	Depending on the pressure switch not provided on RB70S => parameter to leave ON.
2	Time-delay before start of bollard raising motion	1 s	1 - 10	3	This time delay is activated as soon as the raise bollard command is issued. This time delay does not apply to the warning signals => during this time, the buzzer sounds and the (optional) LEDs on the crown flash.
3	Intermittent sound signal	0 or 1		1	0 = YES 1 = NO
4	Max. lowering time	1 s	5 - 30	15	Maximum time allotted for the lowering motion before the pump is stopped.
5	Max. raising time	1 s	5 - 30	15	Maximum time allotted for the raising motion before the pump is stopped (in the event of operation without an upper limit switch or upper limit switch fault). This time interval begins at the end of the parameter 1 time interval.
10	Reset default values				

(*) These default values represent those entered by the manufacturer.
Nevertheless, as each item of equipment is adjusted according to its intended purpose, the actual settings may differ, in which case a label is applied to the board's relays:



"Factory" settings
differing from
default values
(Parameter/
Value)

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Programming procedure:

1. Press button P3 to reset the current settings and within the next two seconds, press button P2 until the yellow LED L3 lights (ch.6.). Release the button and the yellow LED L3 will go off: programming is accessible.
2. Press button P2 the number of times that there are parameters to be changed. LED L3 will flash an equal number of times, to verify the parameter number entered. LEDs L4 and L5 will then flash the number of times corresponding to the actual value of the parameter.
3. Press P2 the same number of times as the value to be encoded for this parameter. LEDs L4 and L5 will then flash the number of times corresponding to the value encoded. In case of error, return to step 2.
4. Press button P2 to save and apply the new parameters and then press P3 or wait 60 seconds to exit programming mode and return to operating mode.

5.2. Hydraulic system

The cylinder is operated by a hydraulic unit located in the casing.

As the bollard rises, the pressure in the circuit rises to 40 bars (50 bars with the optional Booster).

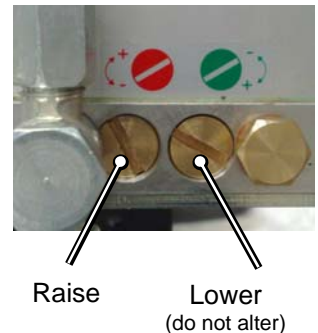
If the bollard does not reach the upper limit switch within the time limit specified under parameter 5, ch.5.1.3. , the pump automatically stops.

Once the bollard is raised, the pressure in the circuit will fall despite the non return valve placed between the pump and the jack. As soon as the bollard leaves the upper limit switch, the pump will automatically be reactivated to increase the pressure in the circuit (any safety loops (optional) will be deactivated during this time).

Below 12 bars (= Pmin), the cylinder will lower under the effect of its own weight).

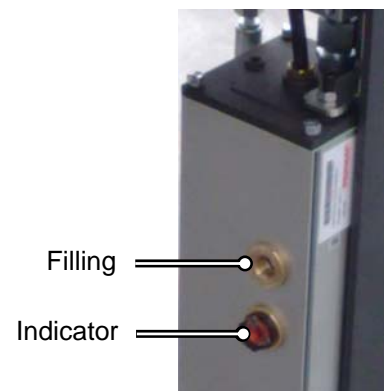
A valve allows the bollard to be manually lowered if necessary (ch.4.3.). An optional solenoid valve will automatically lower the bollard in the event of a power failure.

Slight adjustments can be made to the circuit pressure by means of the 2 screws at the base of the pump.



5.2.1. Topping-up the hydraulic circuit oil level

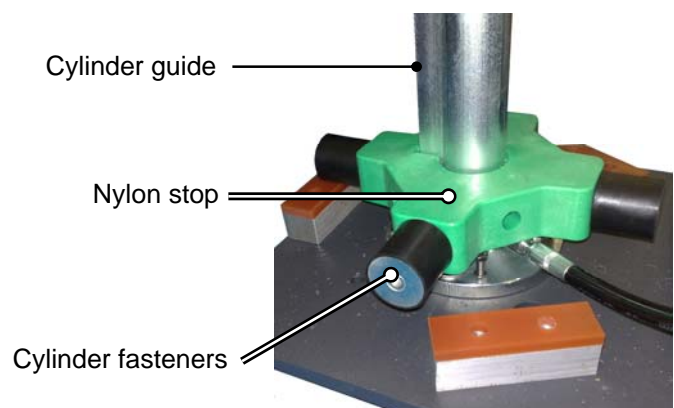
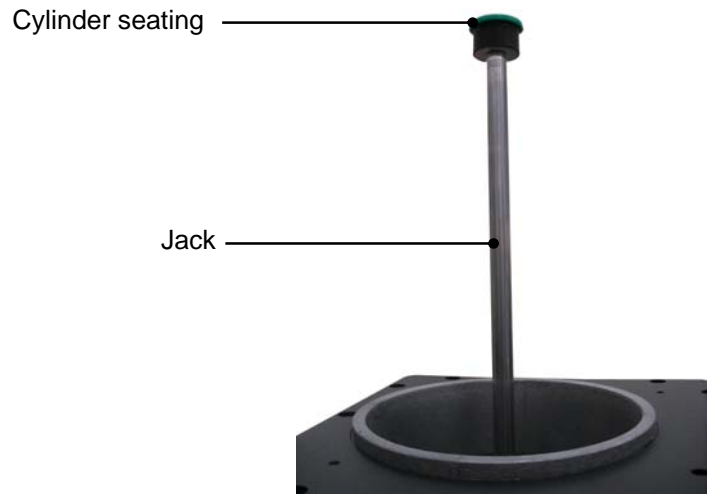
1. Remove the bollard from the casing (follow the procedure of ch.3.5. in reverse order).
2. Lower the cylinder.
3. Fill the pump up to the centre of the level indicator.
Note: The correct oil to be used is indicated on the pump. **Never mix two different oils!**
4. Raise the cylinder back up **before** closing the filler cap.
Following this sequence will remove air from the system and considerably reduce pump noise during pressurisation. If necessary, perform several raise/lower cycles before refitting the cap.



5.3. Mobile obstacle (cylinder)

The cylinder rests on a nylon bearing at the end of the jack to limit the damage caused if the bollard is knocked.

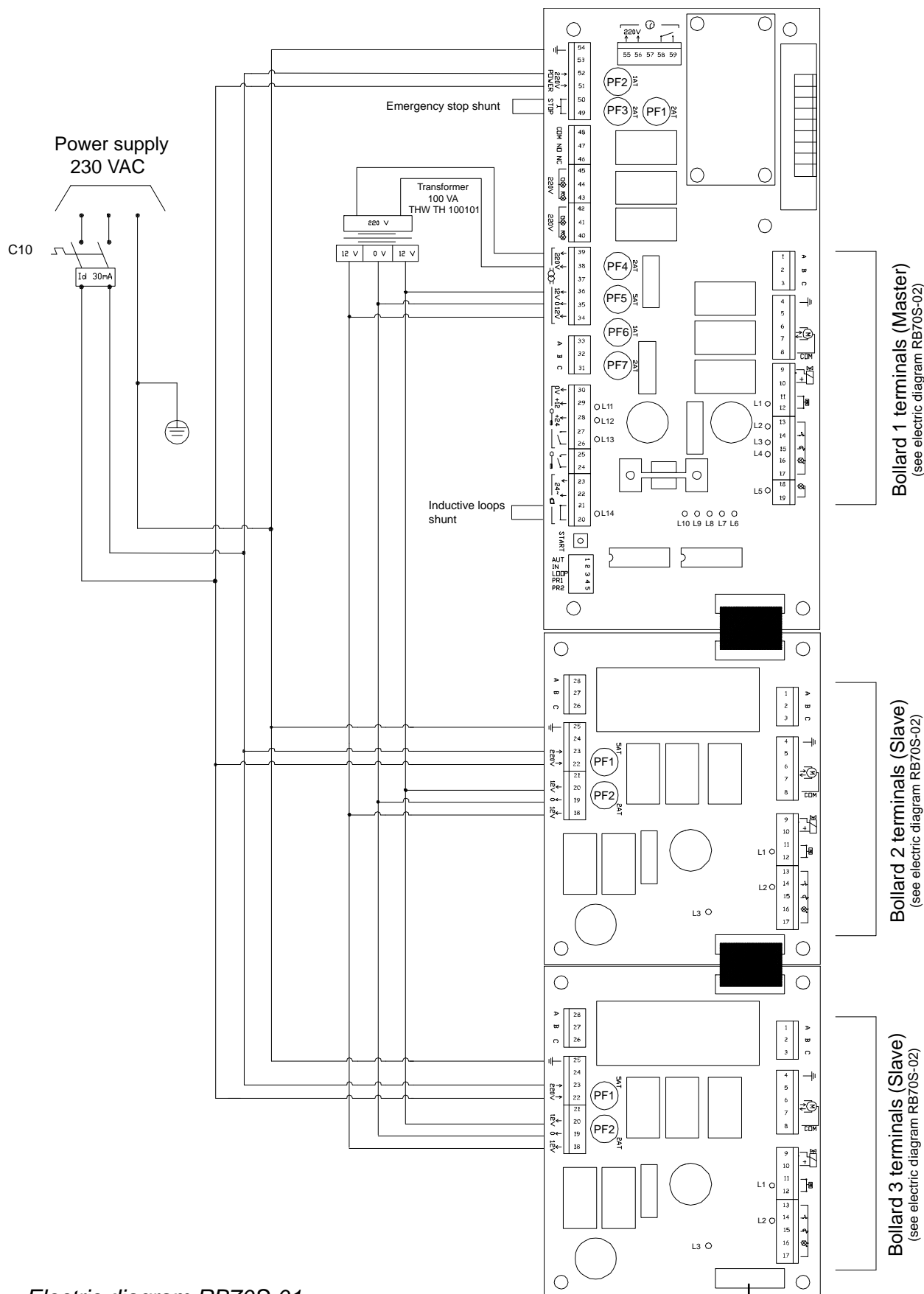
The base of the cylinder is attached to a nylon end stop, guided along the length of the jack to prevent the cylinder rotating about its own axis.



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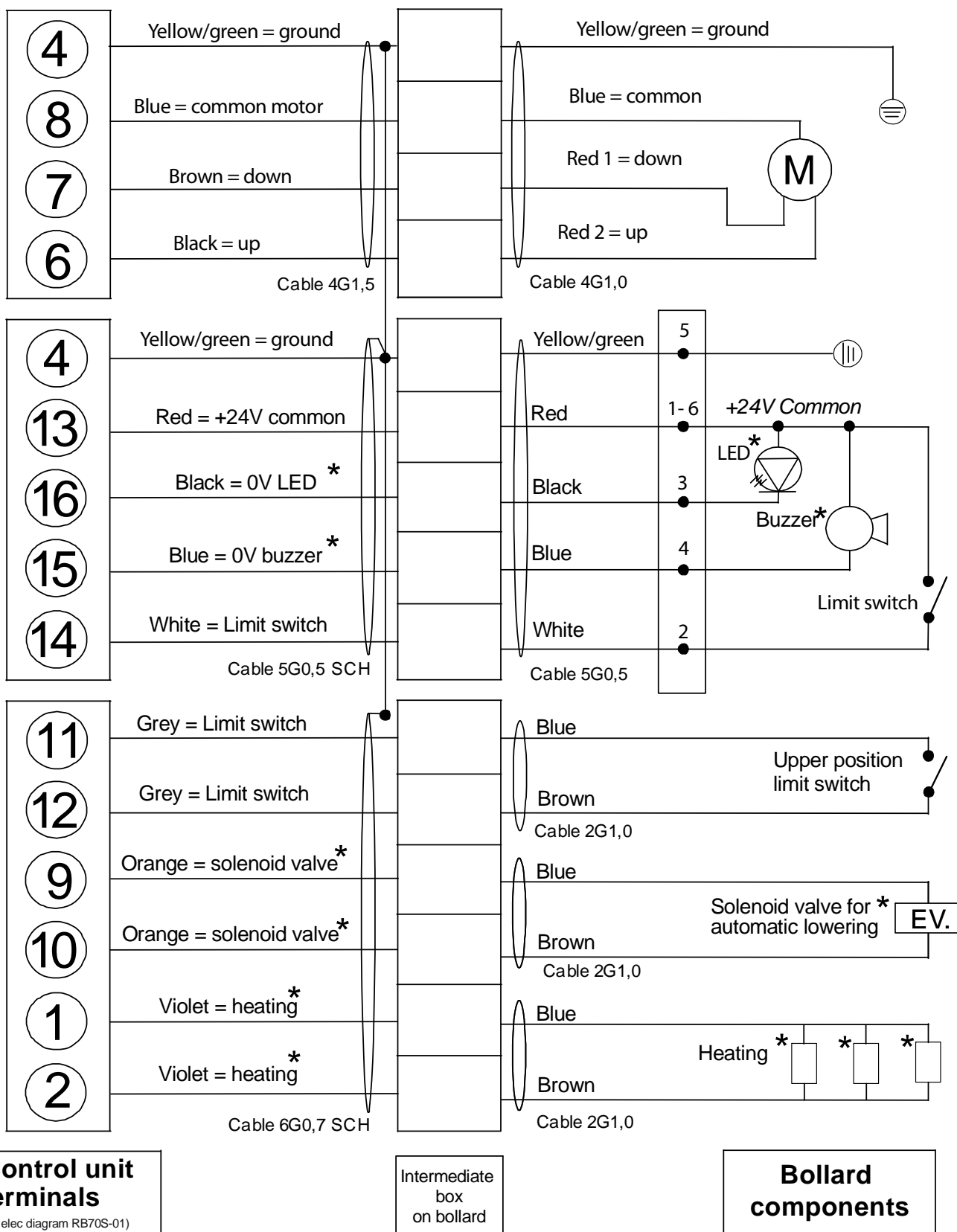
6. WIRING DIAGRAMS

Note: for information only. The reference diagrams are inside the equipment.



Electric diagram RB70S-01

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*OPTION

Electric diagram RB70S-02-rev 1

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6.1.1. Connections

MASTER terminal	SLAVE terminal	Use	
1 (A)	1 (A)	Connection to the other terminal block (A) of the control unit, via a fuse.	Connection of the bollard heating element (option): the heating element is connected to these terminal blocks ABC, the thermostat to the other terminal blocks ABC (on the other side of the control unit)
2 (B)	2 (B)	Connection to the other terminal block (B) of the control unit.	
3 (C)	3 (C)	Connection to the other terminal block (C) of the control unit.	
4	4	Earth/ground	
5	5	Not used	
6	6	Connection of the bollard's hydraulic pump	Rising phase
7	7		Lowering phase
8	8		Common
9	9	Automatic lowering valve in the event of a power failure.	Not used
10	10		
11	11	Upper position limit switch	NO contact
12	12	Common for accessories	+24V
13	13	Common for accessories	+24V
14	14	Lower limit switch (bollard lowered)	NO contact
15	15	Intermittent sound signal	
16	16	Mobile bollard crown warning light	LEDs on the crown (option)
17	17	Common for accessories	+24V
18		Repetition of crown light signal	Intermittent 24 VAC output , for a light signal or any fixed bollards adjacent to the retractable bollards
19		Common for accessories	+24V
20		Safety switch	NC contact for loops. Shunt 20 and 21 if not used.
21		Common for accessories	
22		24 VAC output via fuse PF6	coming from terminal 34, for loops
23		24 VAC output	coming from terminal 36, for loops
24		Bollard movement command 1	
25		Common for accessories	+24V
26		Bollard movement command 2	
27		Common for accessories	+24V
28		+24V DC logical output	
29		+12V DC logical output	
30		0V output	
31 (C)	26 (C)	Connection to the other terminal block (C) of the control unit.	Connection of the bollard heating element (optional): the heating element is connected to these terminal blocks ABC, the thermostat to the other terminal blocks ABC (on the other side of the control unit)
32 (B)	27 (B)	Connection to the other terminal block (B) of the control unit.	
33 (A)	28 (A)	Connection to the other terminal block (A) of the control unit, via a fuse.	
34	18	+12V DC input	Transformer power supply
35	19	Input 0V	Transformer power supply
36	20	+12V DC input	Transformer power supply
37	21	Not used	
38		230V AC phase output via fuse PF1	Transformer power supply

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39		230V AC neutral output	Transformer power supply
40		230 V AC output for Traffic light 2	Red light
41		230 V AC output for Traffic light 2	Green light
42		230V AC neutral output	Common for traffic light 2
43		230 V AC output for Traffic light 1	Red light
44		230 V AC output for Traffic light 1	Green light
45		230V AC neutral output	Common for traffic light 1
46		Traffic light auxiliary relay output	NC contact
47		Traffic light auxiliary relay output	NO contact
48		Traffic light auxiliary relay output	Common
49		+230V AC for emergency stop.	
50		Shunt if not used.	
51	22	230V PHASE supply	Control unit power supply
52	23	230V NEUTRAL supply	Control unit power supply
53	24	Not used	
54	25	Earth/ground	Control unit earthing/grounding
55		230V output	230V AC phase after shunting 49-50 and via fuse PF2
56		Neutral output	
57		Not used	
58		Common for accessories	+24V
59		Activation switch input	Programmer

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6.1.2. Indicator lights

Master ref.	Slave ref.	Type	Signal
L1	L1	Red	Pressure switch contact
L2	L2	Red	Bollard retracted limit switch contact.
L3		Yellow	Sound signal output / access to programming
L4		Yellow	Retractable bollard LED lighting output
L5		Yellow	LED lighting output for a fixed bollard
L6		Yellow	Bollard raising command output
L7		Yellow	Bollard raising solenoid valve power supply output
L8		Yellow	Bollard lowering command output
L9		Yellow	Pump power supply output => bollard in motion
L10		Yellow	Green light command output
L11		Green	+ 12 VDC On
L12	L3	Green	+ 24 VDC On
L13		Red	Bollard movement command input
L14		Red	Safety loop input

6.1.3. Protections

Master ref.	Slave ref.	Type	Protection
PF1		2 A Time delay	protection of terminal blocks 38+39 (transformer)
PF2		1 A Time delay	protection of terminal blocks 55+56 (programmer)
PF3		2 A Time delay	protection of terminal blocks 40 to 45 (traffic lights)
PF4	PF2	2 A Time delay	protection of terminal blocks 9+10 (solenoid valve)
PF5	PF1	5 A Time delay	protection of terminal blocks 9+10 A-B-C
PF6		1 A Time delay	protection of terminal blocks 28 to 30
PF7		2 A Time delay	protection of control unit

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7. DECLARATION OF EC COMPLIANCE

Déclaration CE de conformité

Nous, soussignés,

AUTOMATIC SYSTEMS s.a.
Avenue Mercator, 5
B-1300 WAVRE
Belgique

Déclarons que la machine

**Borne escamotable automatique
de haute sécurité**

RB70S

est conforme aux dispositions des Directives, normes
et autres spécifications suivantes:

- Directive Sécurité des Machine 2006/42/CE.
- Directive Basse Tension 2006/95/CE.
- Directive Compatibilité électromagnétique 2004/108/CE.
- EN 12100-1: 2003 Sécurité des machines- Terminologie de base et méthodologie.
- EN 12100-2: 2003 Sécurité des machines- Principes techniques et spécifications.
- EN 60204-1: 2006 Sécurité des machines, Equipement des machines- Règles générales.
- EN 61000-6-3: 2001 Compatibilité électromagnétique- Norme générique émission- Résidentiel, commercial, industrie légère.
- EN 61000-6-2: 2001 Compatibilité électromagnétique- Norme générique immunité- Résidentiel, commercial, industrie lourde.

Fait à WAVRE,
le : 2009-12-03
Nom du signataire : Denis VANMOL
Fonction : Directeur du développement
Signature :



EC declaration of conformity

We, undersigned,

AUTOMATIC SYSTEMS s.a.
Avenue Mercator, 5
B-1300 WAVRE
Belgium

Herewith declare that the machinery

**High security
automatic rising bollard**

RB70S

is in accordance with the conditions of the following
Directives, standards and other specifications:

- Machinery Directive 2006/42/CE
- Low-voltage Directive 2006/95/CE
- Electromagnetic compatibility Directive 2004/108/EC
- EN 12100-1: 2003 Machinery – Basic terminology and methodology.
- EN 12100-2: 2003 Machinery – Technical principles and specifications.
- EN 60204-1: 2006 Safety of machinery. Electrical equipment of machines. General requirements.
- EN 61000-6-3: 2001 Electromagnetic compatibility (EMC). Generic standards. Emission standard for residential, commercial and light-industrial environments.
- EN 61000-6-2: 2001 Electromagnetic compatibility (EMC). Generic standards. Immunity standard for industrial environments.

Made in WAVRE
Date: 2009-12-03
Name : Denis VANMOL
Function : Director of Development
Signature :



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