



MAC - srl

Sede e stabilimento:
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61022 VALLEFOGLIA (PU)

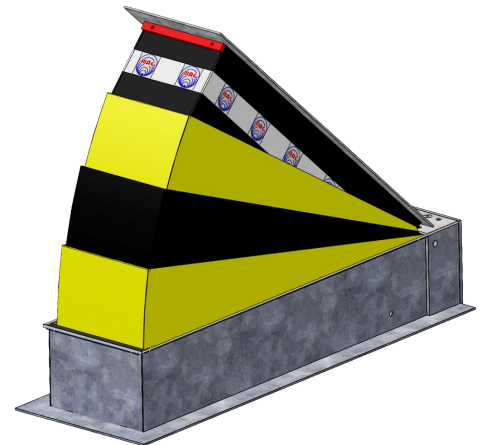
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Cod. Fisc. - Partita IVA n. 02246440412
Iscr. Reg. Imprese di Pesaro Urbino n.02246440412
Cap. Soc. €60.000,00 i.v.



GBR

MANUAL MRB



Customer:

Timbre&Signature

Installing Company:

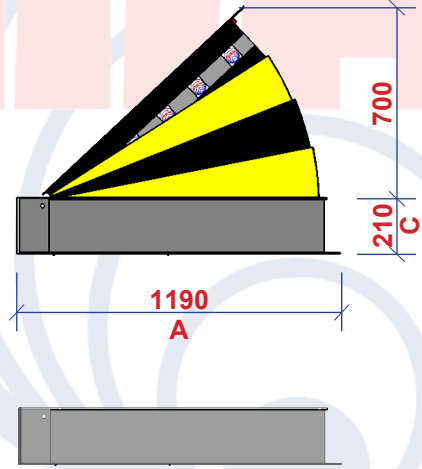
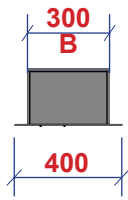
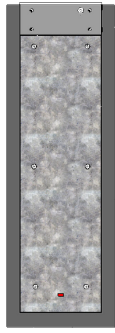
Timbre&Signature

CAREFULLY READ THE MANUAL BEFORE USE

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DIMENSIONS



APPROXIMATELY MACHINE DECLARATION OF INCORPORATION (IN ACCORDANCE WITH THE EUROPEAN DIRECTIVE 2006/42/CE ALL. II.B)

All. II.B.1

Name of the company: MAC s.r.l.
Address: Via Enrico Mattei n°9 - Loc. Morciola
61022 VALLEFOGLIA (PU) - Italia
Tel.: 0721/495447
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mail: info@mac-srl.it
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DECLARES

All. II.B.2

Name and address of who is authorized to draw up the technical file:

All. II.B.3

<i>Description</i>	The bollard is built to be incorporated in a machine or with other machineries in order to arrange a machinery in compliance with the Directive 2006/42/CE
<i>General Denomination</i>	Automatic bollard
<i>Purpose</i>	Avoid the transit of any vehicle.
<i>Model</i>	Road Blocker
<i>Type</i>	TITANO / MiniTitano / Crono / MRB
<i>Serial number</i>	Check the silver label on the product.
<i>Commercial Denomination</i>	Bollard / Road Blocker

All. II.B.4

The product is in compliance with all the dispositions related to the following Directives:

- 2006/42/CE European Directive
- 2004/108/CE; 2014/30/UE Electromagnetic Compatibility (CEM)
- 2006/95/CE; 2014/35/UE Low Tension Directive
- 1999/5/CE Radio and Telecommunications terminal Devices (*upon request*)
- EN 124:2015
- CEI EN 60204-1

All. II.B.5

The company MAC srl undertakes itself to transmit the information concerning the approximately machines, as answer to a question of the national authorities.

All. II.B.6

Furthermore, is not allowed to put on the machinery until the identification of the machine where it will be integrated. The machinery must be also declared in compliance with the Directive 2006/42/CE.

All. II.B.7

Morciola di Vallefoglia, 07/01/2013

All. II.B.8

Managing Director


Fausto Mezzanotti



WARNING

- To do a correct installation of the product, is important to read and follow the instructions below carefully.
- The company MAC s.r.l descends any responsibility in the case the manual is not updated.
- In case of manual or components' modifications, it is at discretion of the customer to ask about them.
- It is not allowed reproducing partially or publishing this document without the authorization of the company MAC S.r.l..
- Any infraction will be prosecuted in accordance with the procedure prescribed by law.
- MAC s.r.l. is exclusive owner of its registered trademark. The brand is affixed on labels with CE conformity and on seals and danger adhesives.
- The removal, cancellation or modification of the label MAC s.r.l. is strictly forbidden.
- An improper installation or use of the product may cause damage to people. Everything not expected in these instructions is not allowed.
- The user must abstain from any attempt to repair or direct intervention. Furthermore, the user must only call qualified and authorized staff.
- The transit on the bollard must only occur when the device is completely lowered and the traffic light is green.
- Keep out of reach of children remote controls or any other device of control in order to avoid the accidental activation of the automation.

SHIPPING

- All the products are accurately checked and tested by the manufacturer before the shipping.
- At the moment of delivery, check if the bollard has been damaged during the transport. Moreover, check that nothing has been rigged or removed. In case of noticing damages or missing parts, warn the courier and the manufacturer sending them related photo documentation.

WASTE DISPOSAL

- MAC s.r.l recommends to respect the environment by promoting recycling waste.
- All the components must be disposed following the regulations of the installation's place.
- Battery, electric and electronic elements may contain noxious and polluting substances. That components must be removed and consigned to companies specialized in recycling noxious waste as indicated in the directive 2012/19/UE.

TRANSPORT AND LIFTING

- The transport and lifting of the bollard must occur with specific equipment and in compliance with safety regulations in force in the area of the product's installation and by expert staff.
- Check the efficiency and the payload of the transportation before to proceed with the bollard's movement.
- To not cause damages to people or to materials it is necessary to implement any possible precaution. It is opportune to avoid abrupt movements that may ruin the bollard and cause damages to things or people.
- To lift the bollard or its parts, are needed means of transport with a minimum load larger than the declared weight. These means of transport must have the CE label with the related certificates in force, like cables and lifting eyebolts.
- To have a better load stability, it is necessary to keep the load as low as possible during the movements.
- Make sure that there are no people not involved in the work nearby during the installation and its operation.

D.P.I. FOR THE OPERATOR

Pictogram				
Description	SHOES	PROTECTION GLOVES	SUITABLE CLOTHES	GLASSES / GLASSES FOR WELDING

The personnel must use the required D.P.I. in these environments of working.

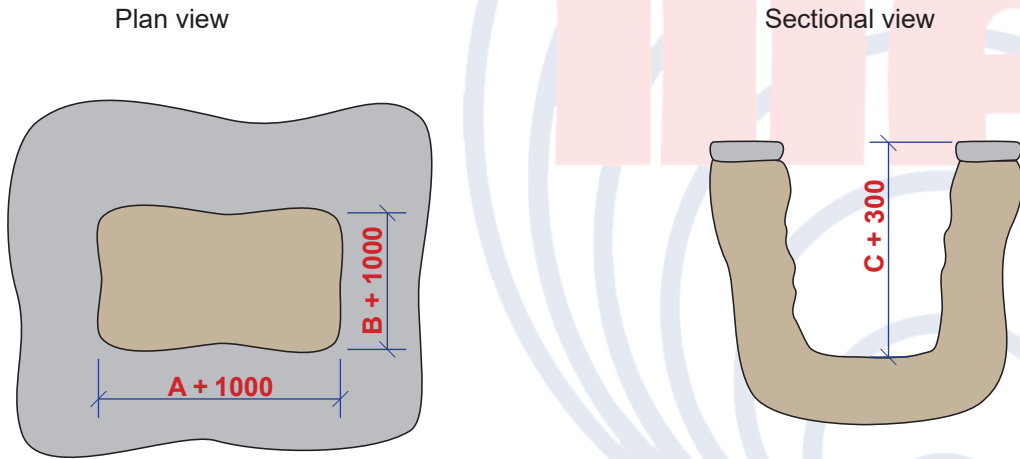
WARNINGS FOR THE MAINTENANCE TECHNICIAN

- The installation must be carried out by competent companies and experts in the field.
- The maintenance technician must be formed and informed about bollard installation.
- The maintenance technician must work using the specific protection devices and following the safety regulations in force in the place where the bollard is installed.
- To not cause damages, the maintenance technician must evaluate carefully the place where the bollard will be installed and check that all the moving parts are free from obstacles, by also checking that the handlings operate linearly.
- For what concerns the movement operations, make reference to the “Transport and lifting” chapter.
- MAC s.r.l. is not responsible about the non-compliance of its products and accessories installation methods.
- The maintenance technician must insert the protections against the indirect contacts upstream of the power line, following the regulations in force according to the installation place.
- Check that upstream of the plant there is a differential magnetomic switch with a 0,03 A threshold.
- The control unit main power line must be directly connected upstream of the specific main switch, placed inside the station itself.
- Use standard flameproof cables.
- To guarantee a correct power source (230V +/- 10% in movement); the main power line sizing must be at least 3x2,5 mm. Anyway, it must be meditated by the maintenance technician depending on the main switch sizing and on the distance from the distribution point.
- Check the grounding system is perfectly done.
- The maintenance technician must give to the client/user all the information about the bollard manual handling in case of emergency and give the user and maintenance manual.

PREPARATION OF THE EXCAVATION

To do a proper installation of our product, we recommend to follow all the points below..

Excavate the land with the measures and depth indicated below.

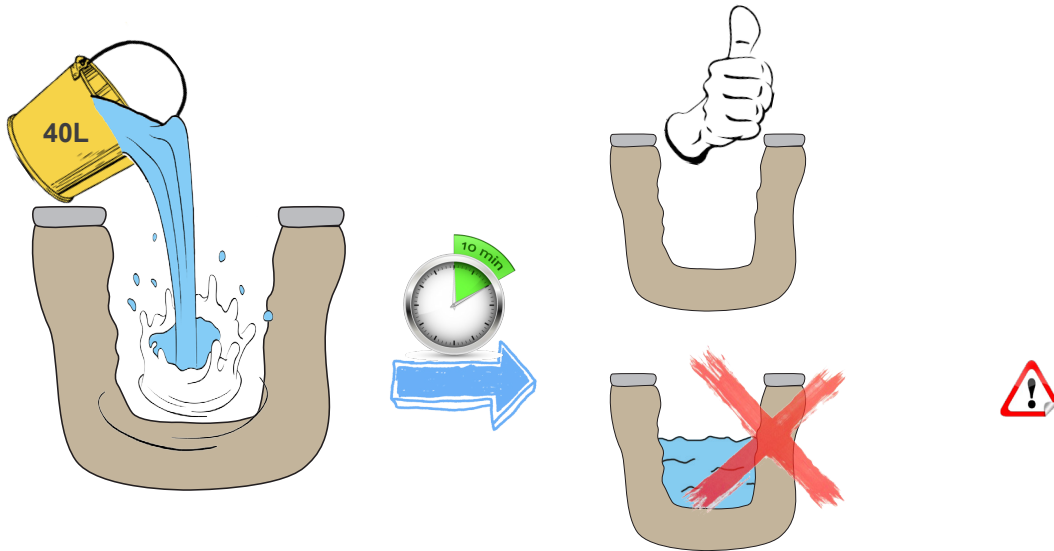


Make sure that the interested soil for the installation of the product is draining by pouring 40 liters of water into the excavation.

If after 10 minutes the excavation has emptied, means that it isn't necessary to install a sewer network.

Individual cases should however be evaluated, considering the soil compliance and the meteorological situations.

Eventually, create a sewer system.

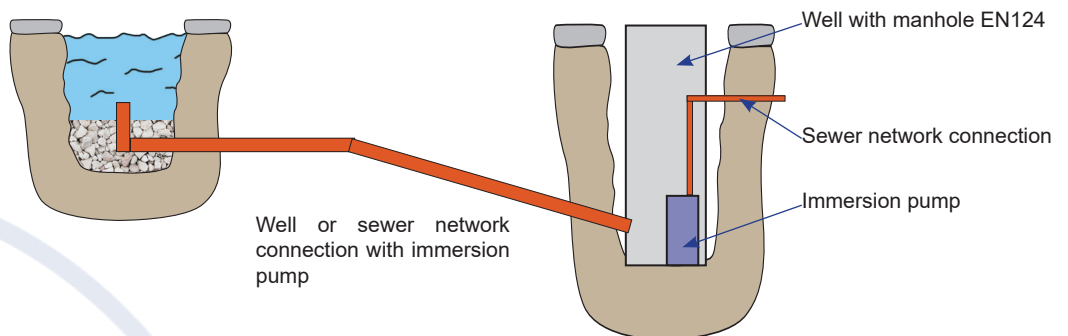


Caution:

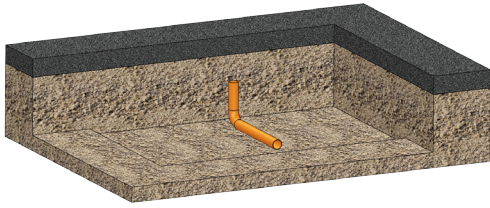
This type of system has been thought for land with poor draining qualities, where, digging, water is immediately found and/or where there is not the possibility to carry everything in a sewer system. The bollard will be collocated in a waterproof concrete tank so if the water level raises, the bollard remain isolated from the surrounding land.

This drawing shows how to install a well for the discharge of the excessive water from the formwork of the bollard. All the cement that covers the bollard and the well should contain special additives that isolate from water.

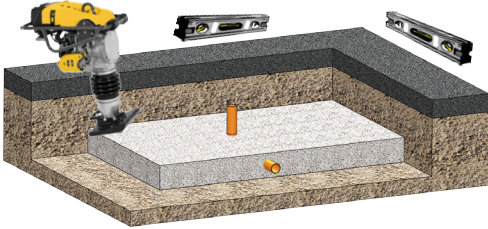
Even just one well can be installed to suck the water of all the bollards installed.



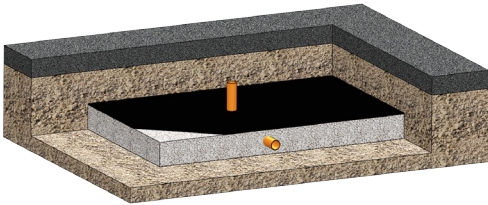
BOLLARD LAYING PROCEDURE



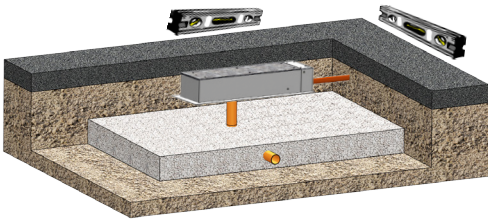
Proceed with the realization of the drain of the rainwater through the lay of a PVC pipe with 100mm diameter. This pipe must be connected to the sewer system or in alternative to a well equipped by an emptying system with a greater depth.




Insert gravel with grain 22/32 mm diameter and 220m height. In order to avoid "retreats of settling", it is advisable to compact the gravel.



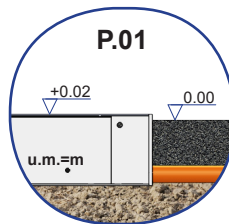
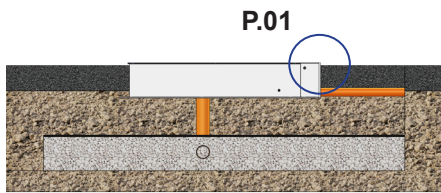
Insert a geotextile layer (gr. 300) on the compacted gravel.



Collocate the formwork supplied taking care to place it flat (centre the bubble) compared to the road level.

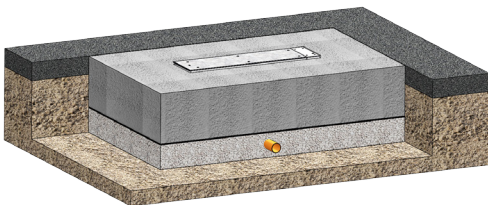
 Predispose a corrugated tube $\varnothing 80$ for the passage of the electrical power cables in the pre-holes of the formwork.

CAUTION: place the foundation formwork based on the direction of traffic as in the view from the above.

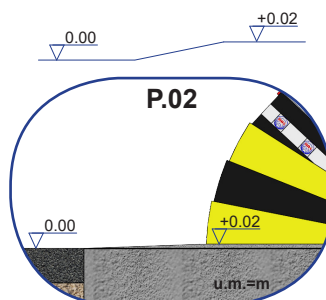
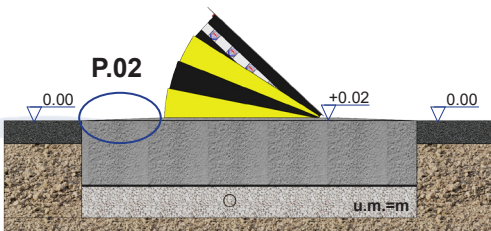


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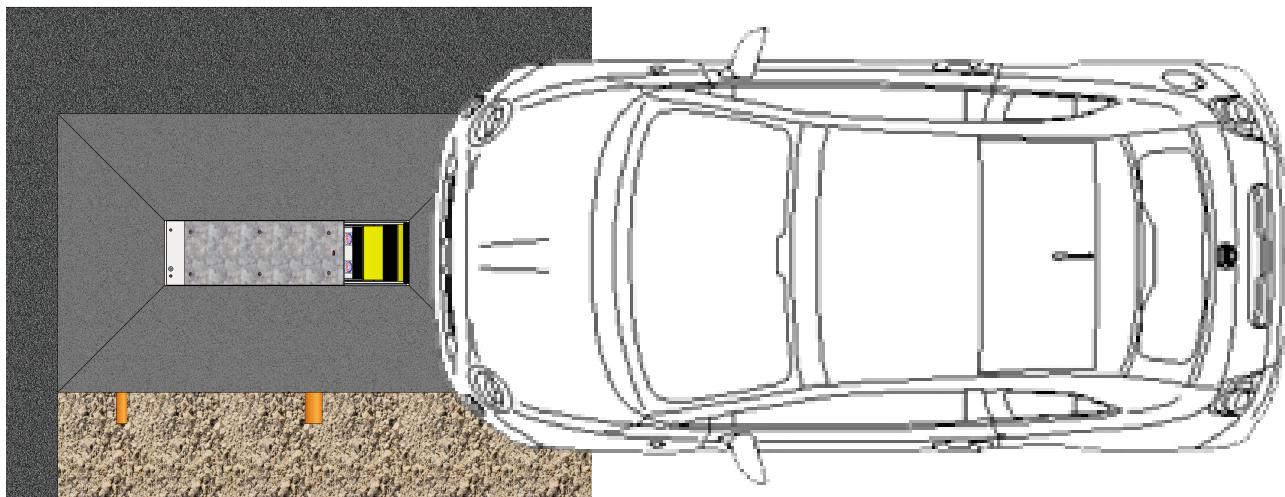
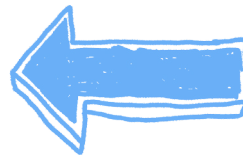
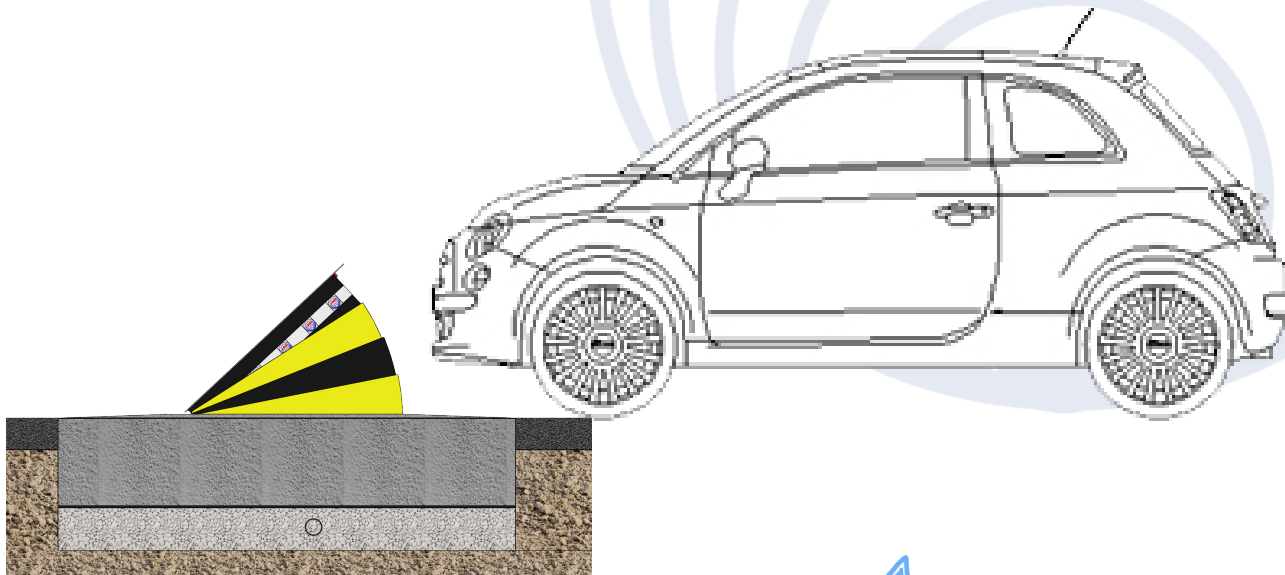
Position the bollard so as to protrude 20mm from the floor level (in order to limit the enter of rainwater in the well).



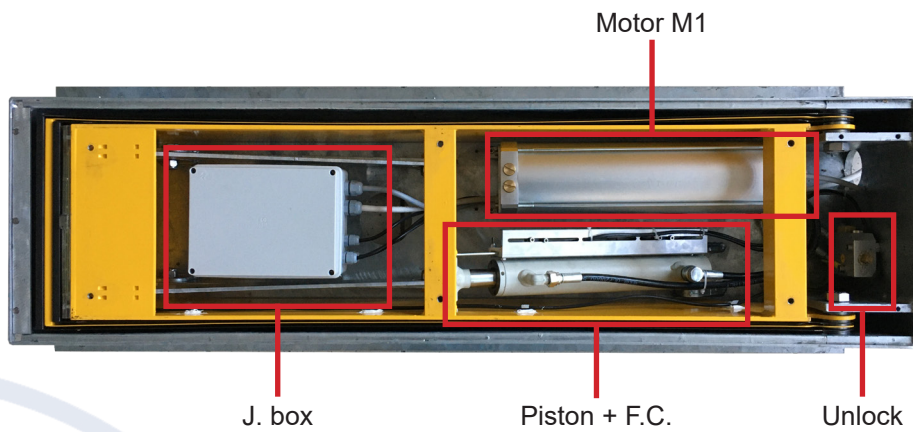
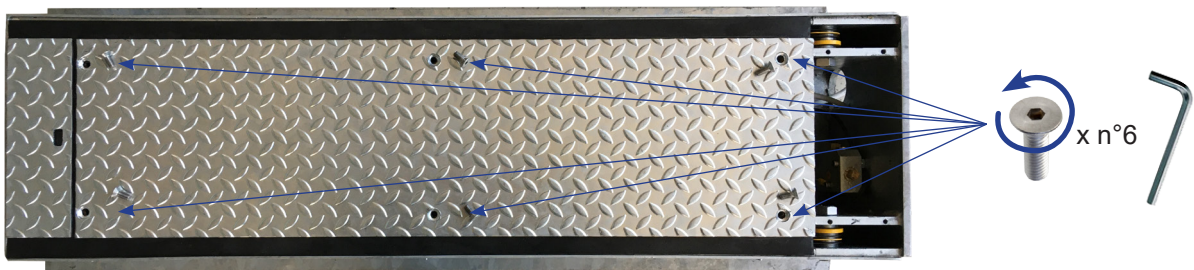
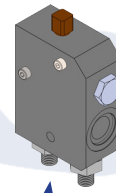
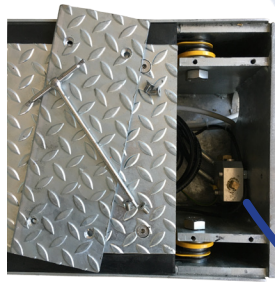
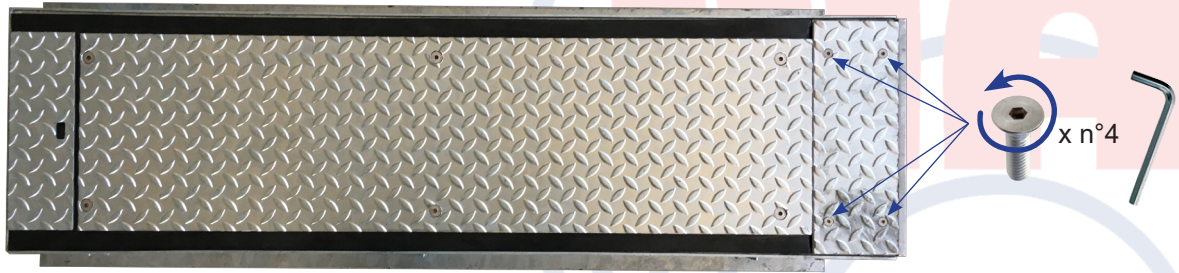
Gradually insert the concrete verifying that the hole is filled uniformly. Deal the concrete so as to not to leave empty pockets of air, especially below the bollard.



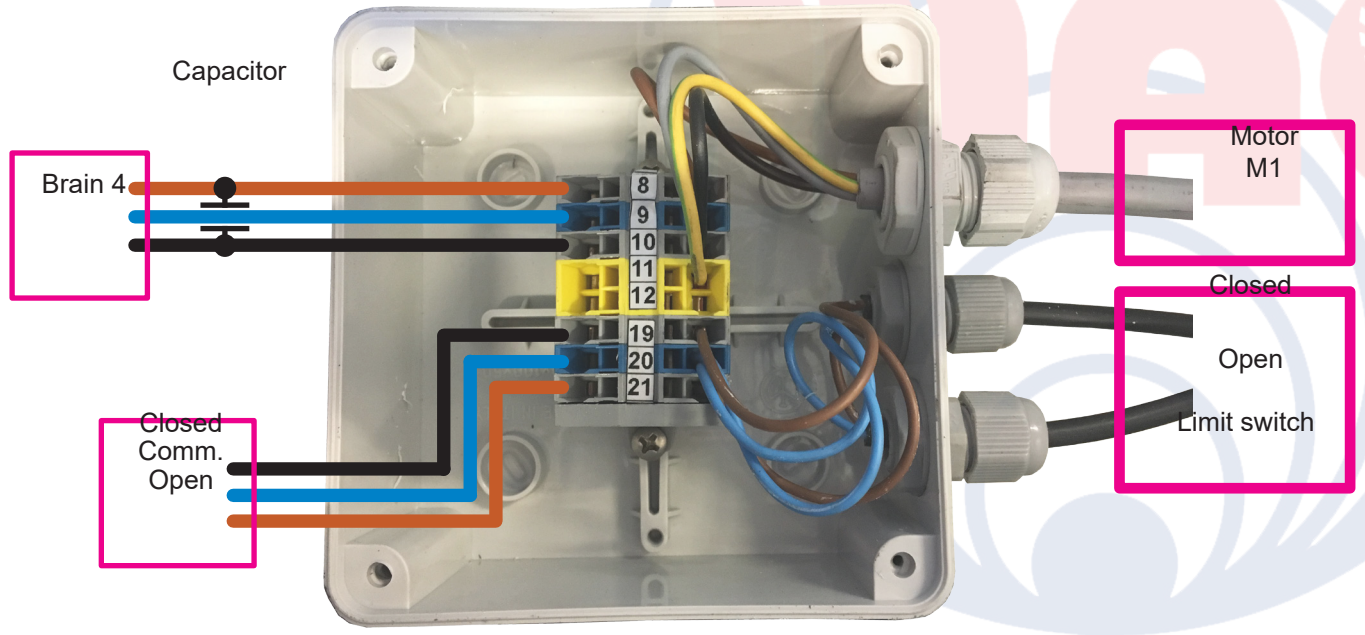
N.B. Make the connection



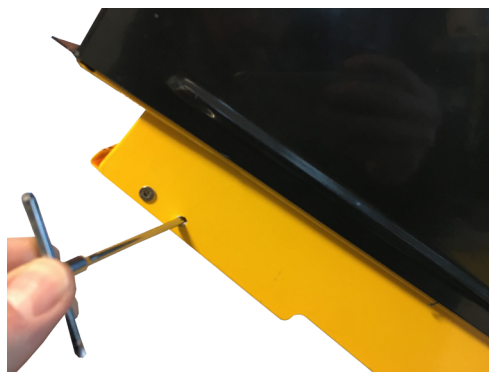
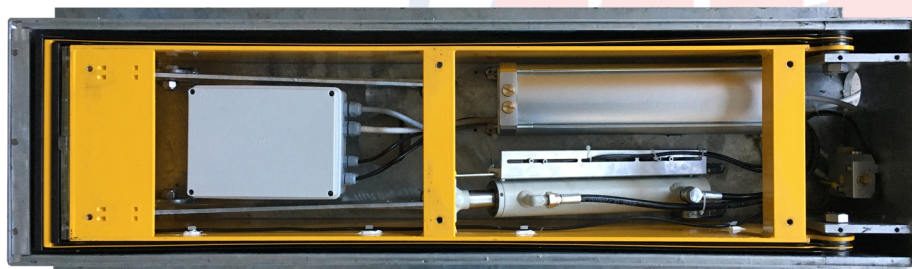
MAINTENANCE



JUNCTION BOX



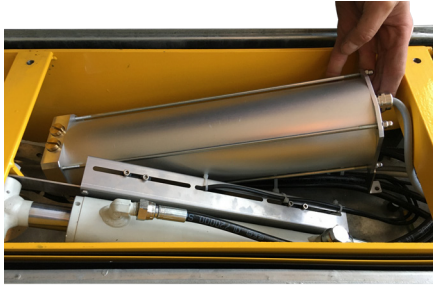
INTERNAL MAINTENANCE



OIL CHANGE

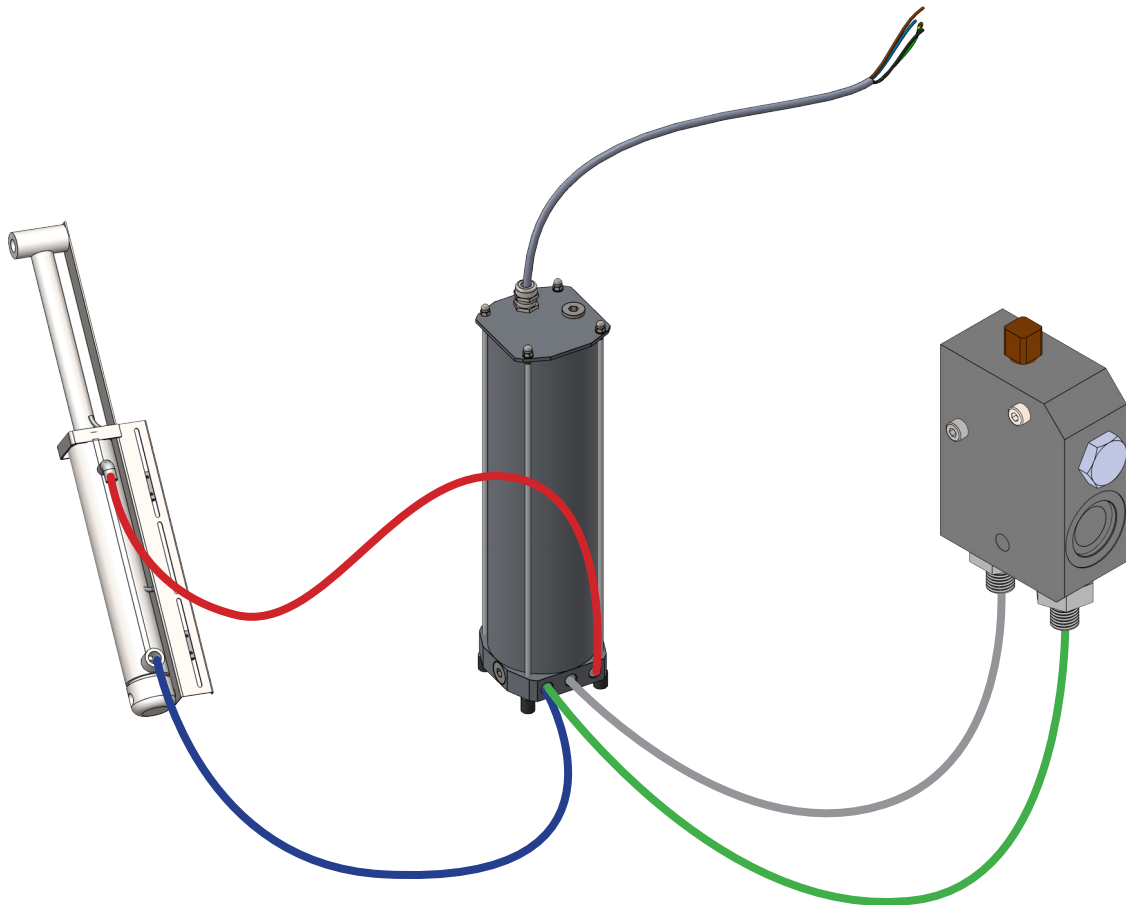


Remove the 4 circular head screws from MA6 from their respective vibrators and move the hydraulic pump to the left




Lift the hydraulic pump


OIL PIPE CONNECTIONS



WARRANTY

- The products of Mac s.r.l. have 24 (twenty-four) months of warranty from the billing date against manufacturing and/or components defects.
- The warranty can be extended only if the customer subscribes the required biannual checks imposed by the legislative regulations.
-  The warranty expires:
 - From the moment in which the customer doesn't respect the ordinary maintenance contract imposed by the legislative regulations in force, by CEE 2006/42/CE and by the manufacturer's indications;
 - In case of the customer and/or the product manager doesn't subscribe a planned biannual maintenance (every 6 months) with a specialized company for the first 24 months starting from the billing date;
 - In case of tampering or fixing carried out by unauthorized personnel;
 - In case of non-original spare parts are used;
 - In case of improper use of the product;
 - In case of sudden occurrence of natural events;
 - In case of the customer refuses to return the defective product or component to repair service so as to verify possible defects;
 - In case of removing the product identification labels. Request their replacement if they are deteriorated.
- Complaints or controversies must be documented by multimedia contents and sent to the manufacturer or to local repair service within 8 (eight) days from the date of receipt of the product or component. These complaints or controversies don't give the right to interrupt the payments. Any return must be previously agreed and authorized by the manufacturer and carried out in free port.

MAINTENANCE OBLIGATIONS

- The machinery directive 2006/42/CE and successive force to a "correct installation and maintenance" of the device.
- The single text 81/2008 art. 64 com.1.c force that "the plants and the devices must be submitted to a regular technical maintenance. The detected defects must be removed as soon as possible because they may compromise the safety and the health.
- Regardless of whether the product is installed in a public or private area, that place will be considered "work area" and that involves the respect and the obligation of the reference regulations.
- For a correct and long-lasting use of the product, MAC s.r.l. recommends to subscribes a planned biennial maintenance (every 6 months) with a specialized installer company. After every intervention of maintenance that company must release to the customer a documentation with the test results performed.
-  In case of the customer decides to not activate the product for a long period, it is advisable to make it inoperative by interrupting power source.
- In case of the product is activated after a long period of inactivity, it is advisable to contact a specialized company for a prior check of all components. That company must also certify the correct operation of the product.

GENERAL WARNINGS

- This manual contains the necessary information for a correct mechanic, hydraulic and electrical maintenance.
- Important, in order to avoid malfunctions that may cause directly or indirectly grave accidents and/or damages to people or objects, it is advisable to observe and respect the instructions and the indications of this manual.
- The maintenance must be only carried out by specialized companies' experts in the field.
- The maintainer must be fully formed and informed about all the characteristics and requirements of the product.
- The maintainer must respect all the safety regulations in force in the area of intervention.
- The information described in this manual are necessary for a correct ordinary and extraordinary maintenance of the product.
- In case of unusual problems or it is necessary to have further explanation during the maintenance, please contact MAC s.r.l. company.

WARNINGS FOR THE MAINTENANCE TECHNICIAN

- The maintenance technician must be fully formed and informed about all the characteristics and requirements of the product.
- Dangers may be generated in case of the maintenance is carried out in a superficial or inattentive way. This may cause damages to people or things.
- The maintenance technician must use original components and carry out all the necessary checks in order to verify the correct functioning of the product both in ordinary maintenance and in extraordinary maintenance.
- The maintenance technician must check:
 - To avoid physical contact with components in movement;
 - That during the product maintenance the work area must be forbidden to unauthorized personnel;
 - That the animals are kept away from the area interested in the maintenance operations;
 - That the maintenance operations are carried out with enough lighting. Lighting devices must be used in case of maintenances localized in areas not sufficiently lighting. The maintainer must avoid cone of shadows that impede or reduce the visibility of the operation point or surrounding areas.;
 - Not to smoke;
 - Not to weld and move close flames during the replacement operations and the fill of the fluid;
 - Not to make welding in presence of fluids;
 - Not to carry out any operation when the product is activated;
 - Never to overtake the maximum pressure indicated;
 - Not to modify the electrical and hydraulic connections;
 - That at the end of the maintenance and before their putting in action, all the devices and safety components are correctly installed.
 - To use the D.P.I. (Individual Protection Devices) necessary both for the maintenance operation and for work environment.
 - To use suitable utensils and/or tools. They don't have to be worn and/or defectives.
 - Not to use suitable utensils and/or tools improperly.

D.P.I FOR THE OPERATOR

Pictogram				
Description	FOOTWEAR	GLOVES OF PROTECTION	CLOTHING SUITABLE	GLASSES / GLASSES WELDING

The operator must always use suitable D.P.I. respect to the work environment.

WAREHOUSING

The product can be stored for around six (6) months before its putting in action following the indications below:

- All the joints provided for the pipe connections must remain sealed.
- No component must be removed from the plant.
- The warehouse must take place in a dry and not dusty space, with a temperature between -30°C and 80°C.
- After six (6) months of warehouse the lubricating and antioxidant proprieties of the fluid utilized for the check are no more guaranteed.



WARNINGS FOR THE HYDRAULIC COMPONENTS MAINTENANCE

HYDRAULIC CONNECTIONS REALIZED WITH RIGID PIPES

Use cold drawn steel tubes without welds, annealed copper tubes, high pressure hydraulic PVC pipes.

- For dimensions up to diameter 32 (DN32) use tubes following DIN2391.
- For dimensions starting from diameter 40 (DIN40) and pressures up to 160 Bar, use tubes following DIN2448.

To calculate the diameter and thickness of the tubes considering the maximum pressure and capacity.

Comply with the values below:

- Fluid speed in the delivery pipes: 3-6 mt/s
- Fluid speed in the return pipes: 2-3 mt/s
- Fluid speed in the suction pipes: 0,5 mt/s

HYDRAULIC CONNECTIONS REALIZED WITH FLEXIBLE PIPES

Strictly respect manufacture indications relate to the operating pressure, the compatibility with the fluid and the installation and maintenance regulations.

The joints must be chosen according to the operating pressure and the pipes diameter:

- For joints up to 1" ½ is recommended to use three cutting ring fitting, with curb to weld and seal with O-Ring DIN2353.
- The connections must be realized with flange if the joint is more than 1" ½ (SAE 3000 – SAE 6000).

CHECKS FOR THE FIRST START OF THE PRODUCT

- Control that all the circuit components are installed and ready for the use.
- Control that the pipes are correctly connected by checking the tightening of the joints so as to avoid damages and fluid leaks.
- Before to proceed with the tank filling, check that it is internally clean. Regarding the cleaning, use vacuum for liquids and solids and non-filamented mops. Not to use degreaser or solvents for the internal cleaning.
- The tank filling with the operating fluid must be carried out only through the specific loading cap.
- Make sure that the fluid is the same prescribed and listed in the "recommended fluids" table.
- Filter the fluid before to put it in the tank, because even a new fluid may contain polluting particles.

FIRST START OF THE PRODUCT

- Open the faucets on the pumps aspiration.
- Reset the settings of the pressure regulating valves by turning the regulating screws in counter-clockwise.
- Make sure that the circuit is free of air and the cycle sequences are correct.
- Make sure that there aren't leaks toward outwards and that all the pipes are correctly connected.
- Carry out the pressure and flow calibrations indicated in the diagram by blocking them.
- Pay specific attention to the noise during the functioning.
- In the first hours of operation, control the fluid level in the tank and check if there are leaks.
- After the first 100 hours of operation, check the cleaning and the temperatures.
- Check the maintenance sheets to decide how often replace the fluid (table n°2).

ORDINARY AND EXTRAORDINARY PLANNED PROCEDURE

Check that:

- The operation area where to do the maintenance is well delimited by specific signage;
- In the maintenance delimited area, the access is forbidden to unauthorized people and animals;
- The maintainer is provided with D.P.I. devices;
- The product power source is interrupted.


 The technician must always pay full attention to the cables placed upstream of the general switch because they remain turned on.


TABLE N°1 GENERAL ORDINARY MAINTENANCE CONTROLS

Period		Description of operations for general controls
6 months	12 months	
Yes		Check the bollard does all the commands (both mechanics and radio controlled)
Yes		Check the hold-to-run control don't put people in danger
Yes		Check the electronic devices state and their working logics
Yes		Check the surface paint state and eventually, clean or retouch it
Yes		Check the bollard handling linearity
Yes		Check the bollard doesn't make abnormal sounds
Yes		Check the acoustic buzzer functionality (for blind persons) (where provided)
Yes		Check the functionality of the emergency vehicles sound recognizer European approved sirens (where provided)
Yes		Check the traffic light and flashing smart LED functionality
Yes		Check the magnetic coil/photoelectric cells
Yes		Check the electrical valve functionality (where provided)
Yes		Check the release functionality
Yes		Check the oil leaks (from roller, tubes, vents, control unit, release)
Yes		Check with simple tests the correct electrical or mechanic safeties (like sensible head) functionality (with specific tools)
Yes		Check the bolts and screws tightening for the fixing of components
Yes		Check the power electric line
Yes		Check the grounding system
Yes		Check the ground conductors, sewer, PE, main and secondary equipotential conductors
Yes		Check the polyurethane mould or polythene (in plastic) band entirety on the tube/platform
Yes		Check the mechanic/magnetic limit switch functionality
Yes		Check the non-condensation resistance functionality
Yes		Check the anti-wear polythene guidelines (green/black colour)
Yes		Regulation limit stop piston
Yes		Regulation pressure switch (where provided)
Yes		Keep clean the water sewer drainage placed on the bottom of the formwork
	Yes	Check the presence of water into the formwork (to prevent malfunctions, ask the constructor if the water level rest constantly high)
	Yes	Check the presence of condensation into the sensitive head (ask the constructor in case of big quantitative of water)
	Yes	Check the presence of Vaseline on the mechanic contacts of the sensitive head
	Yes	Remove any materials or salt accumulations settled into the formwork
	Yes	Oil swap every 1.000.000 operations or after a year (only with compatible oil)
	Yes	Check the oil level or the presence of water inside it
	Yes	Check the oil drawing state from the head of the cylinder
	Yes	Regulation of the maximum pressure valve of the pump

TABLE N°2 ORDINARY MAINTENANCE FLUID CONTROLS

Period	Description of operations for general controls	
6 months		
Yes	Check the fluid level into the tank:	
	CAUSE	CONSEQUENCES
	If the level quickly goes down	Hydraulic oil leaks outwards
	If the level goes up	Possible entrance of water from the vent
Yes	Check the seal outwards:	
	Check visually the tubes, the joint and component supports; keep the plant clean to a quick leaks localization.	
Yes	Check the noise:	
	A noise increase indicates plant anomalies (check the oil. Possible traces of water)	
Yes	Check power consumption:	
	An electric absorption increase at the same payload/pressure indicates plant anomalies	
Yes	Check the fluid temperature:	
	The fluid never must exceed 90°C. The passing of this value is a cause of seal and mechanic parts deterioration	
Yes	Check the pressure calibrations:	
	Check the pressure delimitator valve operation value and reducers.	
Yes	Check the fluid contamination:	
	An emulsified, turbid or dark fluid indicates plant anomalies.	
Yes	Check flexible pipes:	
	Check on the tubes there aren't: cracks, abrasions, deformations, bubbles, sprain upholstery, swellings, sticky tube areas, leaks.	
	The anomaly described above impose the tube replacement.	

RECOMMENDED FLUIDS

SUPPLIER	DESCRIPTION/BRAND	CERTIFICATES
	HLP SYNTH E 22	ECOLABEL
Nils 	ANTARES ES 22	ECOLABEL
	ATF DEXRON II D ISO VG32 HLPSYNTH E22 (olio biodegradabile)	

WARNINGS:

- Provide with a filling and filtering autonomous group for the fluid filled up/replacement.
- The exhausted fluids and any impregnated rag must be disposed according to the regulations in force in the operation area;

TABLE N°3 ORDINARY MAINTENANCE FORM

NOTE FOR THE MAINTENANCE TECHNICIAN

- Carefully read the sheets and the maintenance registry reported below;
- Photocopy the sheets and fill them out after the maintenance is done;
- Keep the sheets with technician original signature;
- Keep a copy of the filled out sheet to have available a maintenance updated registry (copy for the maintainer).

Description of the operation

(Mark the corresponding box to the intervention done. Describe any residual risks and/or the predictable improper use)

Installation Start Regulations Maintenance Fixing Modifications Upgrade Other

Form Title	Description of the operation
Standard/emergency commands State for the bollard activation	
Electronic devices functioning state (response to commands, working logic, stop commands, emergency commands)	
Surface paint state	
Obstacles detection state with sensitive head MAX 3kg (not designed for things or people lifting)	
Emergency vehicles sound recognizer state (where provided)	
Traffic light lanterns or indicators state	
Magnetic coil / photocells state	
Electric valve state (where provided)	
Hydraulic system efficiency state (control unit, unlock, piston)	
Hydraulic oil state (oil level and quality: degraded, emulsified)	
Screws and bolts tightening state for components fixing	
Power source of electrical components state	
Electronic equipment state (breakdowns, presence of condensation, scalds, sticking points, super heating, short-circuits, electric circuit tracks state	
Electric power line state / Mag/T/Diff 0,003A switch	
Grounding system state	
Ground conductors, sewer, PE, main and secondary equipotential conductors state	
Polyurethane strip (in polizene) state, tube guide	
Magnetic/mechanic limit switches	
Non-condensation resistance state	
Anti-wear polizene guidelines (green/black colour) state	
Flush piston regulation state	
Pressure switch calibration state (where provided)	
Formwork cleaning state	
The water sewer drainages placed on the bottom of the formwork state	
Formwork water level state	
Sensitive head condensation state	
Presence of grease on the mechanic contacts of the sensitive head	
General state, pressure, work, wear, cleaning.	

NOTE:

Signature of the Technician:

Signature of the Client:

MAINTENANCE REGISTRY

The current maintenance registry contains technical references and the installation, maintenance, fixing and modifies operation carried out. It must be available to possible inspections from authorized organisms.

TECHNICAL DATA OF THE MOTORIZED TECHNICAL CLOSURE AND INSTALLATION

BUYER: (Reference Person) _____
(Buyer informations) _____

CLIENT: (Reference Person) _____
(Client informations) _____

BUILDING SITE: (Reference Person) _____
(Building site informations): _____

Order: (Order N°) _____ (Date order) _____

Model and description: _____

Dimensions / Weight / strength / speed: _____

Serial number / Year of construction: _____

LIST OF INSTALLED COMPONENTS

The technical features and the performances listed below are documented in the related installation manuals and/or on the same component label.

Drive unit: _____
Model, Type, Serial Number

Electrical panel: _____
Model, Type, Serial Number

Loop Detector/ Photocells: _____
Model, Type, Serial Number

INT-M/T/Dif 0,03A _____
Model, Type, Serial Number

Safety devices: _____
Model, Type, Serial Number

Safety devices: _____
Model, Type, Serial Number

Safety devices: _____
Model, Type, Serial Number

Safety devices: _____
Model, Type, Serial Number

Safety devices: _____
Model, Type, Serial Number

Control devices: _____
Model, Type, Serial Number

Control devices: _____
Model, Type, Serial Number

Dispositivi radio: _____
Model, Type, Serial Number

Warming devices: _____
Model, Type, Serial Number

Warming devices: _____
Model, Type, Serial Number

Other: _____
Model, Type, Serial Number

Other: _____
Model, Type, Serial Number

PRODUCT CODE	CONTROL UNIT CODE	PISTON CODE	RESISTANCE CODE	ELECTRIC VALVE CODE	SENSITIVE HEAD CODE

RESIDUAL RISKS AND IMPROPER PREDICTABLE USE INDICATIONS

Inform the bollard user or the supervisor about the current risks and the improper use of the bollard through signage affixed on the product risk parts and/or through written indications.



TABLE N°4 ORDINARY MAINTENANCE FORM

Client/Building site:	Model and description:				Bollard serial number:			
	Date + ref.	Date + ref.	Date + ref.	Date + ref.	Date + ref.	Date + ref.	Date + ref.	Date + rif.
Tests performed	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
1 Hydraulic unit								
2 Hydraulic pipes / joints								
3 Hydraulic circuit pressure								
4 Potential difference								
5 Oil level control unit /lubrication systems								
6 Oil swap (same type/gradation as written on the label)								
7 Condenser								
8 Engine, motor reducer, pneumatic engine								
9 Electric brake / mechanic clutch								
10 Lubrication devices								
11 Counterweights and suspensions								
12 trapezoidal screw for the lifting								
13 Unlock / Maximum pressure valve								
14 LED lighting head / flashing light								
15 Traffic light and additional signal lights								
16 Sensitive head / additional pressure switches								
17 Electric valve								
18 Safety devices								
19 Magnetic coils and photocells								
20 Acoustic buzzers								
21 Emergency vehicles sound recognizer								
22 Emergency stops commands								
23 Selectors / control buttons								
24 Radio controls								
25 Planned time command								
26 Electronic programmer								
27 Receiving radio / antenna								
28 Transformer /automatic voltage regulator								
29 Anti-condensation electrical resistance / thermostats								
30 Temperature / water / level detectors								
31 Fixed and movable protections								
32 Mechanical stops								
33 Guidelines / wheels / lanes / printed strips								
34 Ground conductor / equipotential / stakes								
35 Power line /electric cables / connection plugs								
36 Differential tests with a tool regulated at mA								
37 Cable insulations with specific tool								
38 Switch / differential								
39 Paints and surface treatments								
NOTES:								
	Technician Sign Client Sign.	Technician Sign Client Sign.	Technician Sign Client Sign.	Technician Sign Client Sign.	Technician Sign Client Sign.	Technician Sign Client Sign.	Technician Sign Client Sign.	Technician Sign Client Sign.

Legend: (R) regularly functioning - (N) negative results - (X) non pertinent to the automation
 The letters (R) or (N) must be reported in the box "finale results" depending on the results of the checks. In case of a control has negative result, the "negative results maintenance form" must be also filled out with the signatures of the client and the technician. Photocopy the maintenance forms, keep them in an archive and send them to the constructor when required.



TABLE N°5 NEGATIVE RESULTS MAINTENANCE FORM

Client/Building site:		Modello e descrizione:		Bollard serial number:	
Tests performed		Date + ref.		LEGEND	
1	Hydraulic unit		RESULT	LEGEND: (R) regularly functioning – (N) negative results – (X) non pertinent to the automation	
2	Hydraulic pipes / joints			The letters (R) or (N) must be reported in the box "final results" according to the checks carried out. Photocopy the maintenance forms, keep them in an archive and send them to the constructor when required.	
3	Hydraulic circuit pressure				
4	Potential difference				
5	Oil level control unit /lubrication systems				
6	Oil swap (same type/gradation as written on the label)				
7	Condenser				
8	Engine, motor reducer, pneumatic engine				
9	Electric brake / mechanic clutch				
10	Lubrication devices				
11	Counterweights and suspensions				
12	Trapezoidal screw for the lifting				
13	Unlock / Maximum pressure valve				
14	LED lighting head / flashing light				
15	Traffic light and additional signal lights				
16	Sensitive head / additional pressure switches				
17	Electric valve				
18	Safety devices				
19	Magnetic coils and photocells				
20	Acoustic buzzers				
21	Emergency vehicles sound recognizer				
22	Emergency stops commands				
23	Selectors / control buttons				
24	Radio controls				
25	Planned time command				
26	Electronic programmer				
27	Receiving radio / antenna				
28	Transformer /automatic voltage regulator				
29	Anti-condensation electrical resistance / thermostats				
30	Temperature / water / level detectors				
31	Fixed and movable protections				
32	Mechanical stops				
33	Guidelines / wheels / lanes / printed strips				
34	Ground conductor / equipotential / stakes				
35	Power line /electric cables / connection plugs				
36	Differential tests with a tool regulated at mA				
37	Cable insulations with specific tool				
38	Switch / differential				
39	Paints and surface treatments				
NOTES:		Finale Result		PLEASE NOTE:	
		Technician Si		TAKE OFF AUTOMATION POTENTIAL DIFFERENCE	
		Client Sign.			



FAQ

N°	INCONVENIENCES	POSSIBLE CAUSES	HYPOTHESIS BREAKDOWN	SOLUTIONS
1	THE BOLLARD DOESN'T GO UP (presence of air in the circuit)	Low oil level in the tank	damaged seals	Replace the seals
				Add oil
		Manual unlock is open	Manual unlock is open	Close the manual unlock
		electric valves are open	electric valves are open or damaged	Check electric valve voltage coil
		electric safeties are open	electric safeties are open or damaged	Fix / replace electric safeties
		(photocells, sensitive head, magnetic coils, emergency button, clock)		
		Oil leaks	Break of the hydraulic circuit	Fix the circuit
		Incorrect sense of rotation	Incorrect limit switch connection	Re-wire up magnetic limit switch
		Reversed limit switches	Incorrect electric engine connection	Re-wire up the electric engine on the electronic programmer
		Missing power source	switch turned on	Re-activate the disconnecter button
		Faulty electronic programmer		Replace the electronic programmer
		Faulty fuses	High absorption peak	Replace the fuse with another suitable
Low potential difference	Short-circuits on the line	Check and fix the breakdown		
	Engine, electric valve inputs, output 24Vac, traffic light			
2	IRREGULAR BOLLARD ASCENT (pump in fault of flow)	Pump not completely immersed in the oil	Blocked aspiration or not immersed in the oil	Check the oil level
		Air bubbles in the circuit	Faulty aspiration	Check the oil cleaning
		dirty oil	Oil with many work hours	Replace the oil
			Oil with solid bodies in it	
		Manual unlock is open	See point 1	See point 1
		electric valves are open	Electrical valve broken	Replace the electrical valve
		Mechanic flaw		
Low voltage	small cable section	Replace the cable		
Maneuver after opening the manual unlock	Air aspiration in the pump	The problem disappears with a second operation		
3	SLOW BOLLARD ASCENT (insufficient pressure) (sticky oil at room temperature)	Incorrect maximum pressure		Correctly calibrate the valve consulting "regulation of the bollard rising force"
		Air presence in the circuit (the bollard doesn't go up)	See point 1	See point 1
		Pump failing in payload (Irregular bollard ascent)	Worn pump	
			See point 2	See point 2
		Too viscous oil	Very compact oil	Replace the oil type
		Too liquid oil	Too high temperature	Replace the oil
		Excessive leaks/ breaks in the circuit	Circuit leaks	Check the circuit
			Break of the O-Ring in the control unit runner	Replace the O-Ring where required
		Incorrect supply voltage	Faulty electric programmer	Sequential programming for the multiple ascent of the bollards in the electrical programmer
			Not tightened screws	tighten screws
			Low fuse voltage	Check power cable
			problem with the distributor	Check with the distributor
Insufficient condenser	broken condenser	Replace condenser or augment it		
	too little condenser			
Friction guide rails	too tighten guide rails	"regulations of bollard guide rails"		
4	CLOSE BOLLARD DOESN'T GO DOWN	Insufficient condenser	See point 3	See point 3
		Cylinder high pressure at the limit switch	Too tense pressure valves	Correctly calibrate the valve consulting "regulation of the bollard rising force"

5	CLOSE BOLLARD, THE TUBE GOES DOWN	Oil leaks	See point 1	See point 1
		Manual unlock is open	See point 3 (O-Ring unlock damaged)	See point 3
		electric valves are open	Cylinder seal	Replace cylinder seal
		Faulty valve seals	Break of the seal valve	Replace the O-Ring in the distributor
6	CLIMB GETS SLOWER (very viscous oil)	Low temperature	See point 3	See point 3
			Exhausted Oil	Replace the oil
				Install a resistance
		Very high pressure of the bollard ascent	Too tense pressure valves	Relax the maximum pressure valves
		Incorrect supply voltage	See point 3	See point 3
	Insufficient condenser	See point 3	See point 3	
7	NOISY PUMP	Presence of air in the circuit (the bollard doesn't go up)	See point 1	See point 1
		Too viscous oil (irregular bollard ascent)	Worn oil	Replace the oil
			See point 2	See point 2
		Wear pump	Excessive inner backlash	Replace oil
		Dirty oil		Replace the pump
8	SEAL OIL LEAKS	abrasive substances in the oil	Crack on the seal	Replace the oil and the seal
			Worn seals	
		High oil temperature	Collapsed seal	Refrigerate the oil and replace the seals
9	EXCESSIVE CONTROL UNIT SUPER HEATING (oil too hot)	Intensive use of the control unit	Wear pump	Replace the pump
			More movements than expected	Respect the operating cycles
			Worn oil	Replace the oil
		Manual unlock is open	See point 1	See point 1
		electric valves are open		See point 1
		Irregular set of the limit switch sensors	Wrong reading of the limit switch	Set the limit switch in the right position (check the limit switch sensor and magnet functioning)
		Too high pressure	Very tight maximum pressure valves	Set the right pressure by consulting "Adjustment of the bollard rising force"
		Oil leaks with loss of pressure	See point 1	See point 1
		High external temperature	See point 3	See point 3
Wrongly regulated valves	Oil overheating	Respect the function temperature		
	Low regulated valves	Ask the constructor		
10	THE BOLLARD DOESN'T COMPLETELY GO UP (incorrect regulations)	Low oil level in the tank	See point 1	See point 1
		Irregular set of the limit switch sensors	See point 10	See point 10
		Insufficient condenser	See point 3	See point 3
		Too high pressure	See point 10	See point 10
		incorrect timing		Adjust time on the brain
11	HIGH WATER LEVEL OF THE FORMWORK	Obstructed sewer	Foliage / debris slow down the waste water	Do maintenance (clean the well)
		non-draining soil	The soil absorbs little water	Build a well or a sewer with pump to draw waste water
			Request an IP67 hydraulic control unit	
12	LIGHTING HEAD NOT WORKING	Faulty or wrong regulated limit switches	Wrong cable installation	Rewiring respecting the polarity of the cables
		Wrong connections	Faulty cables	Cables replacement
			Socket not connected	Connect the plug into the head socket
			See point 14	See point 14
		Faulty fuses	Check fuses	Replace fuses

13	LIGHTING HEAD WITH LOW BRIGHTNESS	Incorrect supply voltage	See point 3	See point 3
			secondary transformer broken	Replace the electronic programmer
		Incorrect installation of the ground cable	Voltage drop on the line	Add a new suitable transformer
				Incorrect bollard installation
				Check the voltage drop
				Do ordinary maintenance
		Worn led	Check led	Replace led
		incorrect installation of ground cable	damaged cables	replace the ground cable
	Contact oxidation	Faulty electrical or contacts insulation	Replace the LED lighting head	
14	FAULTY LIMIT SWITCH	Exceeded the number of cycles	breaking of internal contacts	Replace the limit switch
		Contact oxidation	No contact lubrication	Do ordinary maintenance
			Contact the constructor	
15	SENSITIVE HEAD DOESN'T INVERT THE MOVEMENT	See point 15	See point 15	See point 15
		Not wired electric cables	Incorrect cables installation	Rewiring respecting the polarity of the cables
			Faulty cables	Cables replacement
			Plug not connected	Connect the plug into the head socket
		Check series connections		
16	ELECTRIC VALVE NOT WORKING	Incorrect supply voltage	See point 3	See point 3
			Check fuses	
		incorrect thermal insulation	Incorrect bollard installation	Do ordinary maintenance
		Broken coil	short-circuit	Replace coil
			Insufficient IP grade	Respect the installation type and IP level
			Faulty fuse	Replace fuses
			Broken connector	Replace the connector
High external temperature	See point 10	See point 10		
Dirty oil	See point 2	See point 2		





