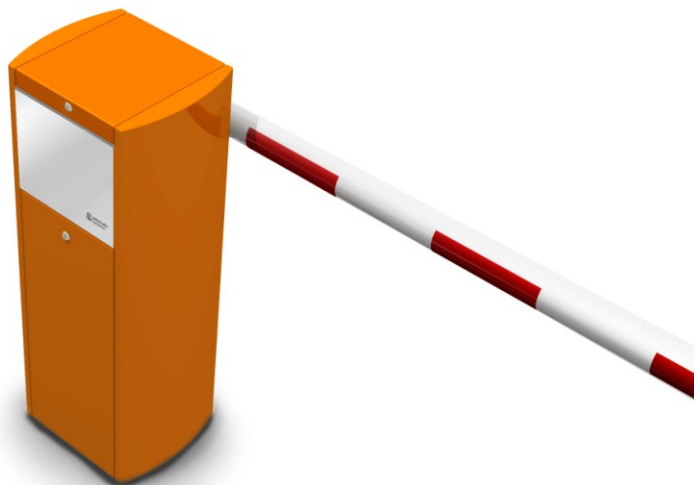


ELECTRICAL RISING BARRIER



USER MANUAL

(Translated from the French original notice)

Rev 18

Technical Manual BL229-MT-EN

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Document Revision

Rev	Date	Written	Checked	Nature of the modification
00-00	May 15, 2006	MFy	SL+SD+JB +JPL	Initial version
01-01	Nov 20, 2006	MFy	SL+RWK+ SD+DM +KB	Adaptation to version 3.4 of the AS1320 control board program.
02-02	Jan 26, 2007	MFy		- New design (control board raised) from serial n° 07-BL229-00179 => spare parts codes modified. - Table modified, p36. - SENSOR FUNCTION menu: Text modified (PSS-O).
02-03	May 10, 2007	MFy		- OPTIONS menu: precise the procedure to open the barrier manually in case of power failure. - Ch.4.1. fig B: use the small marks. - Table modified, p36.
04	Nov 06, 2007	MFy		- Ch 2.3. replacement by version 4.1 of the control board program. - Ch 9. addition of electric diagrams for options. - Ch 10. : update of EC certificate.
05		MFy		- Ch 3.3. & 5.1. : adapt to version 4.1 of the program. - Ch 9. : remove the diagrams related to options.
06	Jun. 17, 2008	MFy		- Control Board chapter adapted to version 6.x of the program. - Revision of the electric diagram & addition of connector blocks assignment.
07	July 3, 2008	MFy		- Ch. 9.1. : adapt the detection loops pinning references to electric drawings (X9-X11-X13-X14).
08	Aug 27, 2008	MFy		- Suppression of the Recommended spare parts (which are in the spare parts catalogue now).
09	2009-07-27	MFy		- "PRDSTD-BL_xxx" menu ► Log ► : Sw Manual: description modification. - Technical specifications: operating temperature modified. - EC certificate update.
10	2009-11-26	MFy		- Ch.1: warning added regarding detection loops installation. - Ch.2.3. adapted to control board v 6.2 (no functional modification).
11	2010-01-04	MFy		- EC certificate update.
12	2010-06-30	MFy		- Electrical connections: add warnings.
13	2010-11-04	MFy		- Control board menus: translation corrected by RWK.
14	2011-01-05	MFy		- Ch. 2.3.1: Download Chg Lvx parameters description modified.
15	2011-06-14	MFy		- Ch.4.2: modification of the balancing table.
16	2011-07-08	MFy		- Ch.6: reference to 120 km/h winds suppressed.
17	2012-03-16	MFy		- Stainless steel maintenance added.
18	2012-03-27	MFy		- Ch.3.2. : placing on steel support added.

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1. SAFETY WARNINGS

Putting up a vehicle barrier or an access control obstacle exposes you to liabilities in terms of people's safety.

- Pedestrians must be banned from accessing the passage where the barrier is, unless its movement is efficiently announced (sound and/or light signal, markings on the ground, and so on).

In the countries of the European Union, the EC Machines Directive requires the displaying of the pictogram forbidding pedestrian access to the danger zone somewhere on the equipment (less than 1 metre upstream and downstream from the barrier's arm in horizontal position):

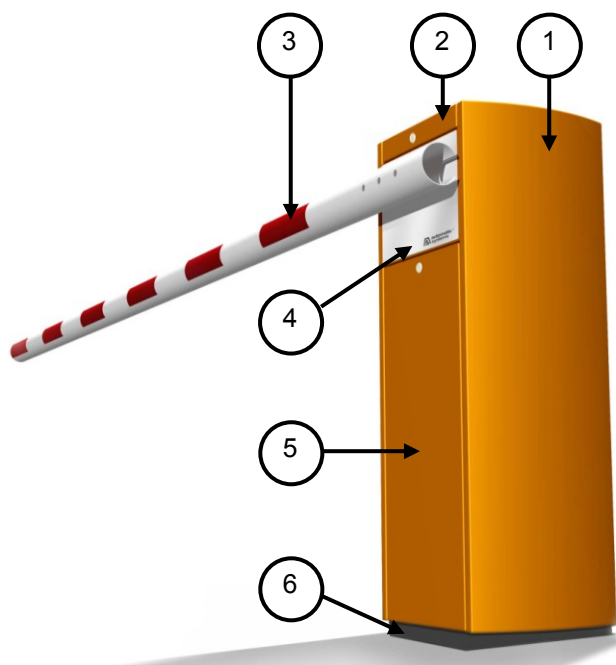


- Any intervention on the equipment must be made by qualified personnel. Any work on this product that is unauthorised or carried out by an unqualified technician will automatically entail the annulment of the constructor's warranty.
- The access keys to the mechanism must only be used by staff who have been informed of the electrical and mechanical risks that they would run in the event of negligent manipulation. The personnel are required to lock the mechanism's access hatch after the intervention.
- Before opening the housing, cut off the power supply on the circuit breaker (26, p5).
- Any internal element that could be live or in movement must be handled with care.
- The equipment has been configured in "minimal risk" mode for its users. Any alteration of the settings must be carried out with full knowledge of the facts by qualified personnel and shall in no way invoke any liability for Automatic Systems.
- The end of the arm must always be at a distance of more than 0.5 m from any object.
- The barrier must be completely visible by the user before being activated.
- 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!

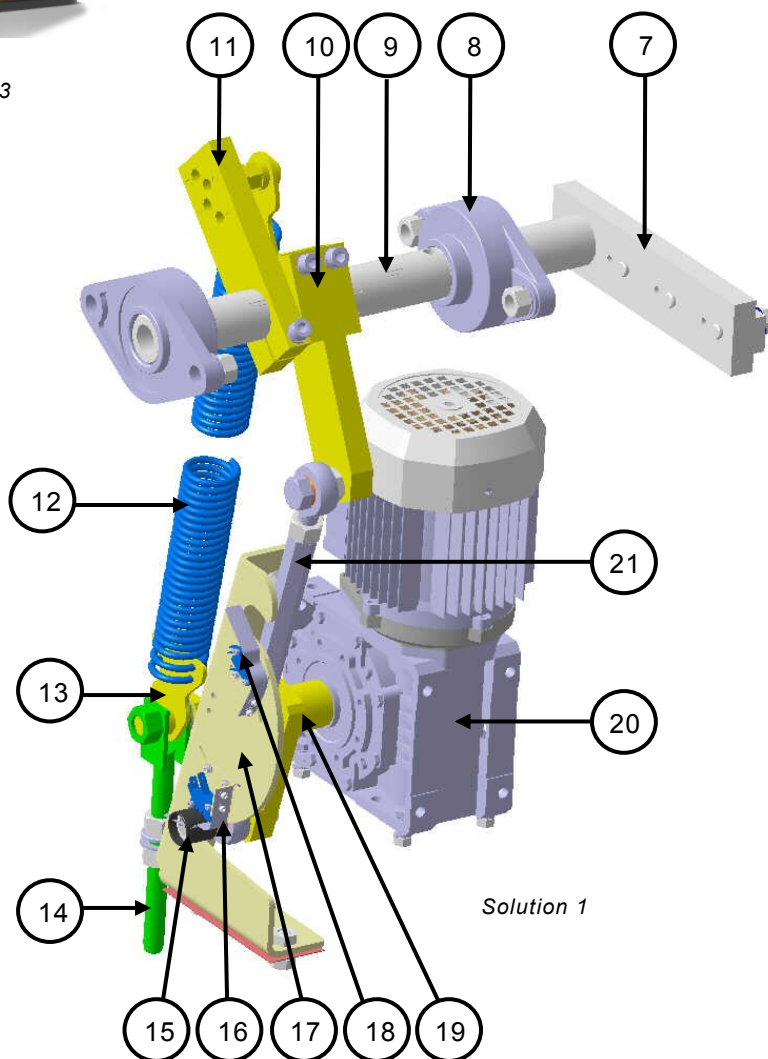
2. DESCRIPTION

2.1. Locating Components



Solution 3

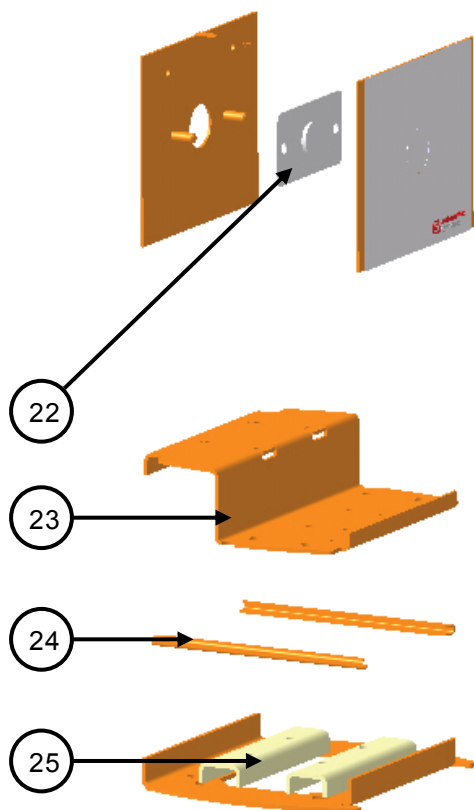
- ① Housing.
- ② Lockable cover
- ③ Boom arm.
- ④ Front panel (door side).
- ⑤ Lockable door
- ⑥ Raised base (optional)



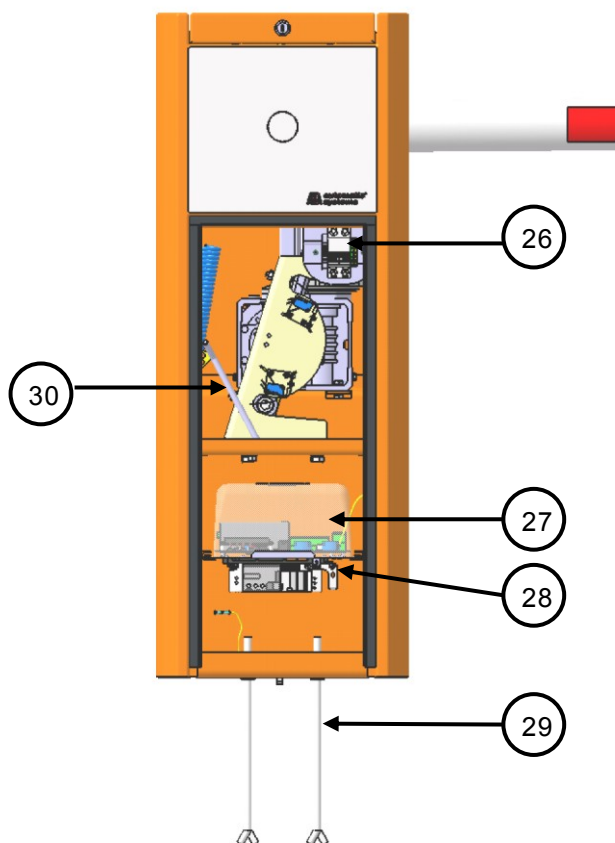
Solution 1

- ⑦ Arm fastening clamp.
- ⑧ Bearing
- ⑨ Arm shaft
- ⑩ Rod lever
- ⑪ Spring lever
- ⑫ Balance spring
- ⑬ Spring anchor plate
- ⑭ Spring stretcher
- ⑮ Limit cam
- ⑯ Closing limit switch
- ⑰ End stop unit
- ⑱ Opening limit switch
- ⑲ Crankshaft
- ⑳ Geared motor
- ㉑ Rod

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- 22 Dust Guard
- 23 Mechanism support
- 24 Control Board support
- 25 Fastening clamps



- 26 Circuit breaker
- 27 Control Board
- 28 Frequency converter
- 29 Fixing bolts
- 30 Unlocking lever

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2.2. Operating Principle

The references in this chapter refer to the illustrations on Pages 5 and 6.

The opening of the arm (3) is controlled by the user (via a key switch, a pushbutton, a radio transmitter), by detections loops buried beneath the roadway, or by an external unit. Closing is controlled in the same way, or automatically at the end of a time-out.



A STOP command immediately stops the motor, but not completely the arm movement: the arm could lower progressively due to its weight and angular position.

The "analogue position sensor" option allows to adjust the position of the arm around the STOP and to compensate this phenomenon.

The movement created by the geared motor (20) is transmitted to the arm by a crankshaft-rod device (19 + 21).

One or two balancing springs (12) assist the motor both at the opening and the closing of the barrier.

The speed of the arm's movement, controlled by the frequency converter (28), is adjustable both at opening and at closing. The movements are configured in the factory to offer progressive accelerations and controlled decelerations at the end of the movement.

Safety

The barrier is put out of service when its movements are not completed within the assigned time or when it does not manage to close after several attempts.

Presence sensors can optionally be added to open, stop immediately, reopen or close the arm if a user is detected in the vicinity of the equipment.

In the open and closed positions, the alignment of the rod and crankshaft (21 and 19) lock the arm's movement ("mechanical locking").

The barrier is factory-configured to remain locked in the event of power failure, the arm then being raised by means of the lever (30).

This parameter can however be changed so that the arm is automatically raised in the event of power failure ("QUICKSTART" menu ► "Power Failure Open").

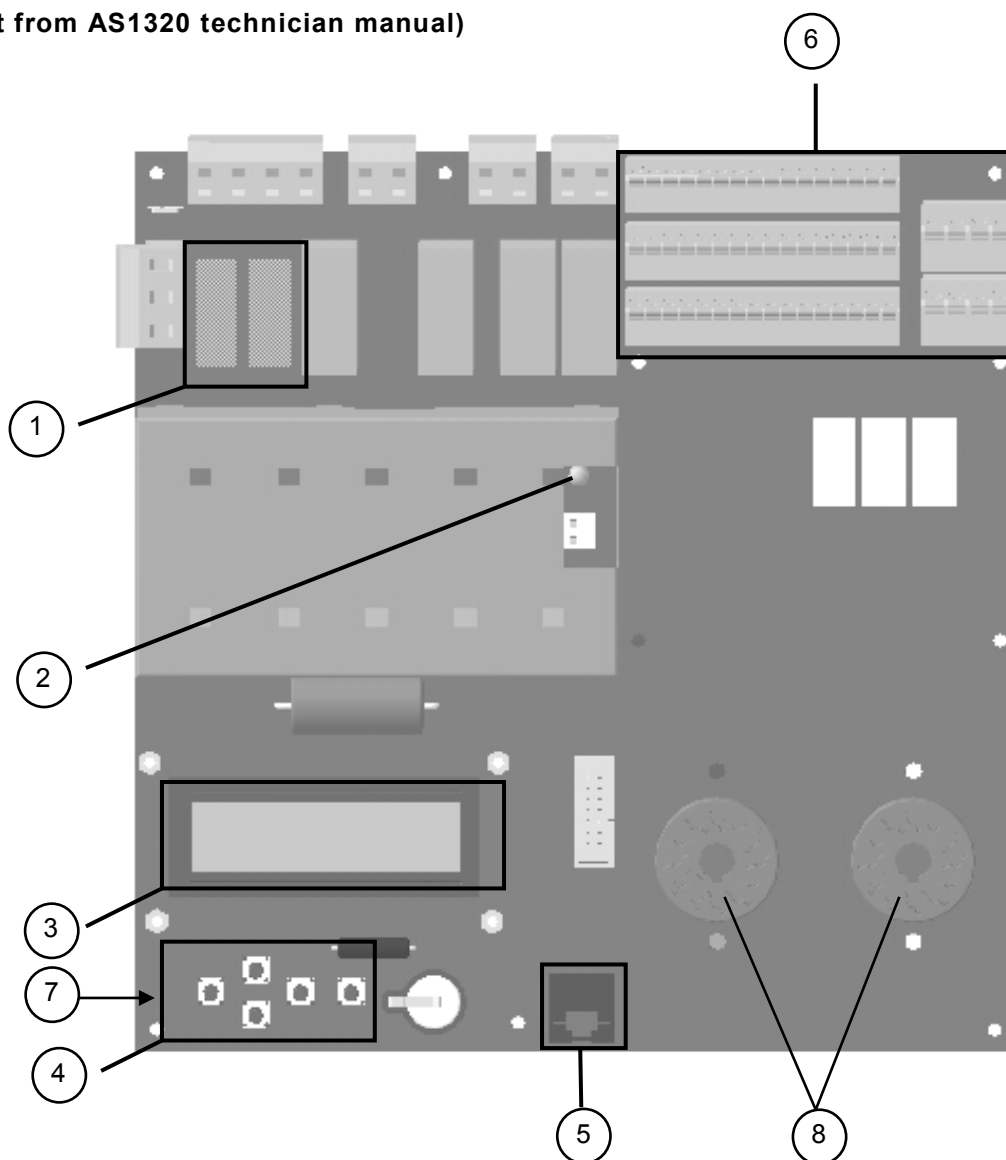
Control Board

The control board (27) co-ordinates the activity of the barrier: movement management, options, inputs and outputs, etc. This information can however be repatriated and processed by an external terminal (not supplied by AS).

The board records and displays the history of the last operations carried out as well as any possible defects preventing the barrier's movement.

2.3. Control Board

(Extract from AS1320 technician manual)



1. Fuses
2. Stabilised power supply indicator light
3. Menu display screen
4. Menu navigation keys
5. RJ45 communication connector
6. In/Out control connector blocks
7. 5 green LEDs (lit when the board is on)
8. Connectors for presence detectors (for inductive loops)

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The control board (27, p6) is the interface between the user and the barrier, which manages all the latter's actions, including any possible options.

Note: Hereinafter are presented only the functions accessible in Simplified mode and sufficient for daily use of the equipment.

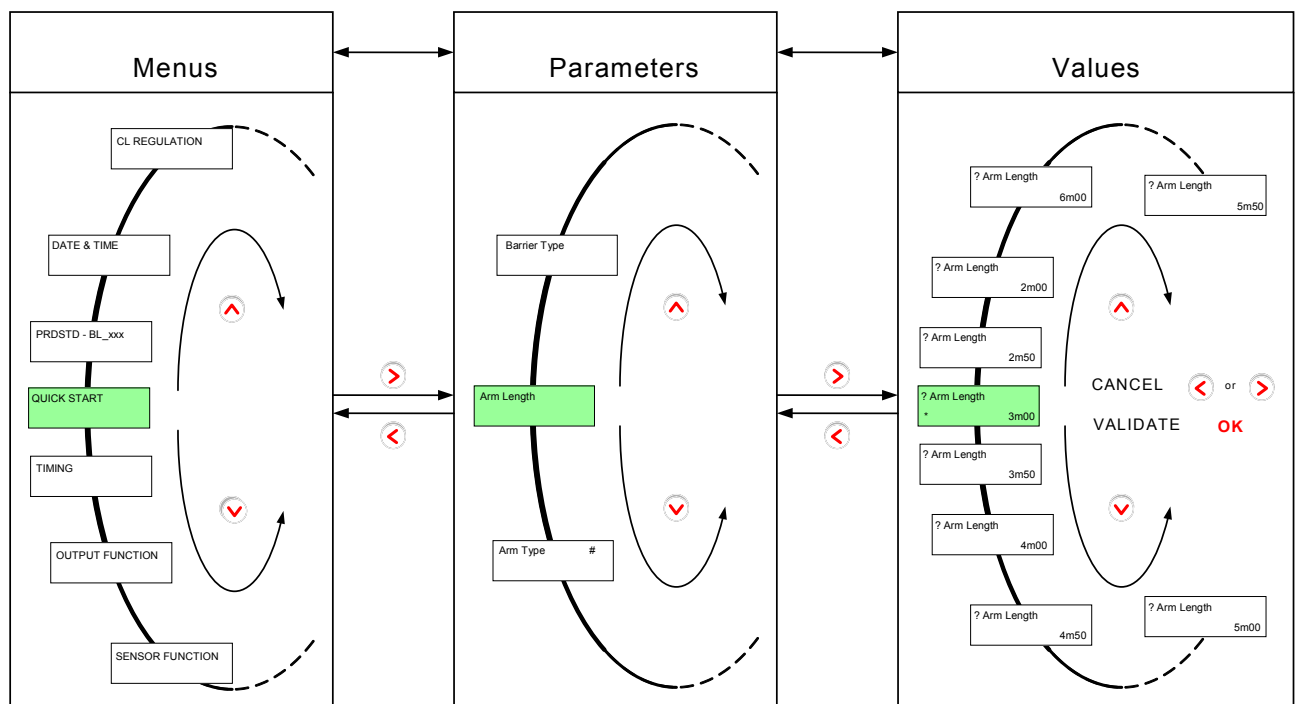
For a detailed description of all the functions, their parameter setting, etc, please refer to the manual dedicated to the board (available on request).

Navigation through the menus of the display screen is based on a pull-down menu architecture on 3 levels: MENUS ↔ PARAMETERS ↔ VALUES.

Moving from one level to another is achieved via the ◀ ▶ keys and navigation inside those levels by means of the ▲ ▼ keys (press for a few seconds to go from the at-rest screen to another menu).

Note: the second column in the tables below provides the parameter default values as they are entered during manufacturing of the control board.

Nevertheless, as each equipment has been specifically adjusted in our workshops, the values actually present on the board may differ slightly.



Menus are displayed in capital letters on the top line, starting with the first character of the LCD.

Hold ▲ or ▼ for a few seconds to leave the PRDSTD screen and access the other menus.

Only the first letter of each word in the parameters is a capital. They are displayed on the top line starting with the second character of the LCD (i.e., there is a space in front). At the end of the top line, the parameter unit is displayed if there is one.

A question mark (?) preceding the parameter indicates that it is ready to be modified.

The current value of the parameter appears on the second line.

A star (*) below a parameter indicates that it is the default value (set in the factory).

To validate a modification, press the OK key.

⚠ Store the modifications to avoid them being lost in the event of a power outage ("QUICK START" → "MEMORY" → "Save")

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2.3.1. “PRDSTD – BL xxx” Menu: Diagnosis and monitoring

This screen appears when the unit is turned on and when there has not been any navigation through the menus in Simplified mode for 100 seconds.



Parameter	Values	Description
		OK key: (only within this menu ^(*) and when no other parameter is selected): command for opening and closing the obstacle. OK during opening: without effect. OK during closing: inversion (= opening). OK maintained: oscillating movement around the opening limit switch: the obstacle opens, starts closing, opens again, etc. ^(*) Warning: in QUICKSTART menu, validating passage from Extended to Simplified menus through the OK key causes also an opening or closing movement of the arm, even if a presence is detected by the Presence sensors. Note: When the operating mode is configured as 1 contact (see the Exploitation parameter in the QUICK START menu), the obstacle closes automatically when the opening limit switch is detected. Left key (◀): Change the menu display language with each touch. EN = English FR = Français NL = Nederlands DE = Deutsch ES = Español IT = Italiano SV = Svenska Select the language using the OK key or allow it to change automatically after a few seconds, following which all of the preceding parameter modifications (including the language) will be saved in MEM1.

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Parameter	Values	Description												
Soft. Version		Display the software version used by the control unit, following format type – evolution – version – revision – minor index of the application. The descriptions included in this chapter correspond to versions 00-00-06-rr-00.												
Log		Display of the last 100 events (use ► the ▲ and keys to view preceding events). For the first two seconds, the event number (00 for the last event recorded (= most recent), 01 for the preceding event, and so on), as well as the date (year-month-day) and time (hours-minutes-seconds) of creation are displayed. In the next two seconds, the event description is displayed. For example: <table> <tr> <td>2 s</td><td>Log 00 060324 235034</td><td>On 24 March 2006 at 23 hours (11 p.m.) 50 minutes and 34 seconds...</td></tr> <tr> <td>2 s</td><td>Log Out Of Service</td><td>...the apparatus was put out of service.</td></tr> <tr> <td>2 s</td><td>Log 01 060324 235034</td><td>View the preceding message (01) using the ►▲ keys...</td></tr> <tr> <td>2 s</td><td>Log Open Time Out</td><td>...we observe that it was put out of service due to a time out while opening.</td></tr> </table> Note: If no error message is displayed when the machine fails, refer to the Troubleshooting chapter.	2 s	Log 00 060324 235034	On 24 March 2006 at 23 hours (11 p.m.) 50 minutes and 34 seconds...	2 s	Log Out Of Service	...the apparatus was put out of service.	2 s	Log 01 060324 235034	View the preceding message (01) using the ►▲ keys...	2 s	Log Open Time Out	...we observe that it was put out of service due to a time out while opening.
2 s	Log 00 060324 235034	On 24 March 2006 at 23 hours (11 p.m.) 50 minutes and 34 seconds...												
2 s	Log Out Of Service	...the apparatus was put out of service.												
2 s	Log 01 060324 235034	View the preceding message (01) using the ►▲ keys...												
2 s	Log Open Time Out	...we observe that it was put out of service due to a time out while opening.												
	Power Up	Power was turned on.												
	Power Down	Power was turned off.												
	Short Circuit	Short circuit of the control board outputs (connector blocks). The short circuit is declared and the equipment put Out of Service only after 3 unsuccessful reactivation tries within the 2.5 seconds following a voltage drop in the 24V power supply (this is to avoid putting it out of service at inopportune moments, as for example during a network changeover to an emergency generator). If one of the outputs short circuits, all of them become inactive and the control board must be powered up again for the outputs to be reactivated.												
	Open Time Out	Time out during opening: the time allocated for opening was exceeded (TIMING menu, OpenTimeOut parameter).												
	Close Time Out	Time out during closing: the time allocated for closing was exceeded (TIMING menu, CloseTimeOut parameter).												
	Close Retries	Allotted number of trials to close have been executed (as defined in the TIMING menu).												

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Parameter	Values	Description
	<i>Arm Swing Off</i>	Arm detected out of its support jaw (see the <i>Arm Swing Off</i> parameter in the OPTIONS menu). If the message continues to be displayed after the arm is rehinged, check the status of the SW arm presence sensor and its fastening.
	<i>Out Of Service</i>	Apparatus out of service. This may be caused by the following events: 1) Time out during opening (see <i>Open Time Out</i> message). 2) Time out during closing (see <i>Close Time Out</i> error) + allotted number of tries to close have been executed (see <i>Close Retries</i> message). 3) Arm is unhinged (see <i>Arm Swing Off</i> message). 4) Locking or unlocking failure of the BL4x (see <i>Unlock BL4x Er</i> message). 5) Defect of the frequency inverter.
	<i>Time Adjust</i>	Modification of the date and time.
	<i>Access Level Chg</i>	Change to the access level.
	<i>OOS Restore</i>	Apparatus put back in service (after it has been out of service) => see the <i>RestartMode</i> parameter under the OPTIONS menu.
	<i>Test Intensive</i>	Activation of the intensive test.
	<i>Lock Open</i>	The Lock Open command of the test mode has been activated.
	<i>Lock Close</i>	The Lock Close command of the test mode has been activated.
	<i>Safety Arm</i>	Safety arm (only with the rubber protection profile option: Rubber strip that detects when the arm makes contact with a vehicle).
	<i>Sw Manual</i>	Frequency converter power cut-off in order to prevent any movement of the obstacle in case of: • Crank presence sensor activation (available on some equipment for manual handling of the obstacle), • Door/hood opening sensors activation (option on some equipment).
	<i>Reset Sensor Init</i>	Change of the positioning sensor type (cf. <i>Positioning</i> parameter of QUICKSTART menu).
	<i>LS Fault</i>	Both opening and closing limit switches are activated simultaneously or badly connected during 100 ms, while Positioning parameter of the QUICKSTART menu is set to Limit Switches.
	<i>Reset LS Fault</i>	Limit switch problem resolved (see <i>LS Fault</i> error).

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Parameter	Values	Description
	<i>Analog. Fault</i>	The analogue sensor gives 0 or 1023 during minimum 100 ms. This may result from a defective wiring, a wrong positioning of the sensor in front of its cam, a defective sensor, etc.
	<i>OP Power Cut</i>	Unlocking of the obstacle following an outage of the supply voltage (if QUICK START ► Power Fail OP ► ON).
	<i>OP Power Blip</i>	Unlocking of the obstacle following a micro-outage of the supply voltage (the voltage drops to 0 V during a few milliseconds) (if QUICK START ► Power Fail OP ► ON). In this state, the obstacle is STOPPED but still operational, because the supply voltage has returned. The apparatus waits for the next command to execute a movement.
	<i>CoolingMotor ON</i>	Start-up of the motor cooling fan. Note: This message is only displayed if the Cooling – Log (below) is ON.
	<i>CoolingMotor OFF</i>	Stopping of the fan that cools the motor. Note: This message is only displayed if the Cooling – Log (below) is ON.
	<i>Stop Time Out</i>	Elapse of the delay defined under the <i>Max Stop</i> parameter of the <i>TIMING</i> menu for the regulation of the obstacle position with regard to the Stop.
	<i>Download Chg Lv1</i>	Downloading a version of the control board program that differs from the one previously installed. As the difference is of level 1 (minor index modification or revision), the parameters continue operate with their value saved in MEM1.
	<i>Download Chg Lv2</i>	Downloading a version of the control board program that differs from the one previously installed. As the difference is of level 2 (modification of the version or the evolution), all of the parameters are returned to their default values. WARNING: it is then necessary to set the parameters to the actual configuration of the equipment and to save them in MEM1. Note: it would be wise to keep the parameters values before changing the program version: Communication parameter → Extract Param (Technician level access).

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Parameter	Values	Description
	<i>Download Chg Lv3</i>	Downloading a version of the control board program that differs from the one previously installed. As the difference is of level 3 (modification of the type), all of the parameters are returned to their default values and the counters are reset to 0. WARNING: it is then necessary to set the parameters to the actual configuration of the equipment and to save them in MEM1. Note: it would be wise to keep the parameters values before changing the program version: Communication parameter → Extract Param (Technician level access).
	<i>Reset Counters</i>	Counters reset to zero following the download of a different program version of level 3 (see <i>Download Chg Lv3</i>).
	<i>Curve 229Std</i>	Change in the type of barrier: selection of curve 229 standard (<i>Barrier Type</i> parameter under the <i>QUICK START</i> menu).
	<i>Curve 229Highway</i>	Change in the type of barrier: selection of curve 229 highway (<i>Barrier Type</i> parameter under the <i>QUICK START</i> menu).
	<i>Curve 1x-2x-3x-5x</i>	Change in the type of barrier: selection of curve for BL16, BL32, BL33, BL52, BL53 (<i>Barrier Type</i> parameter under the <i>QUICK START</i> menu).
	<i>Curve BLG77</i>	Change in the type of barrier: Selection of curve BLG77 (<i>Barrier Type</i> parameter under the <i>QUICK START</i> menu).
	<i>Curve Special</i>	Change in the type of barrier: selection of the <i>Special</i> curve (<i>OPTIONS</i> menu) for operation according to the <i>OP REGULATION</i> and <i>CL REGULATION</i> menus.
	<i>Curve BL223</i>	Change in the type of barrier: Selection of curve BL223 (<i>Barrier Type</i> parameter under the <i>QUICK START</i> menu).
	<i>Curve BL40 AVR</i>	Change in the type of barrier: Selection of curve BL40 AVR (<i>Barrier Type</i> parameter under the <i>QUICK START</i> menu).
	<i>Curve BL40 SR</i>	Change in the type of barrier: Selection of curve BL40SR (<i>Barrier Type</i> parameter under the <i>QUICK START</i> menu).
	<i>Curve BL41 AVR</i>	Change in the type of barrier: Selection of curve BL41AVR (<i>Barrier Type</i> parameter under the <i>QUICK START</i> menu).
	<i>Curve BL41 SR</i>	Change in the type of barrier: Selection of curve BL41SR (<i>Barrier Type</i> parameter under the <i>QUICK START</i> menu).
	<i>Curve BL43 AVR</i>	Change in the type of barrier: Selection of curve BL43AVR (<i>Barrier Type</i> parameter under the <i>QUICK START</i> menu).
	<i>Curve BL43 SR</i>	Change in the type of barrier: Selection of curve BL43SR (<i>Barrier Type</i> parameter under the <i>QUICK START</i> menu).

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Parameter	Values	Description
	Curve BL44 AVR	Change in the type of barrier: Selection of curve BL44AVR (<i>Barrier Type</i> parameter under the <i>QUICK START</i> menu).
	Curve BL44 SR	Change in the type of barrier: Selection of curve BL44SR (<i>Barrier Type</i> parameter under the <i>QUICK START</i> menu).
	Curve BL46 AVR	Change in the type of barrier: Selection of curve BL46AVR (<i>Barrier Type</i> parameter under the <i>QUICK START</i> menu).
	Curve BL46 SR	Change in the type of barrier: Selection of curve BL46SR (<i>Barrier Type</i> parameter under the <i>QUICK START</i> menu).
	Curve RSB 70&71	Change in the type of equipment: Selection of curve RSB 70&71 (<i>Barrier Type</i> parameter under the <i>QUICK START</i> menu).
	Unlock BL4x Er	Only with <i>locking of the arm</i> option for BL4x. The inductive sensor has not detected the release of the lock within the 3 seconds following the open or close request: check whether the locking pin is pressing on the locking clips, preventing them from opening, or whether the sensor is defective.
Close Status		Cases when the obstacle is prevented from closing during a close request:
	OK	Normal closure.
	PS1 Activated	A sensor (loop/cell) detects a presence or a fault in the circuit. In the latter case: • Check whether the sensor is plugged into the corresponding connector and whether it is functioning properly. • Check whether the sensor is properly connected. • Check whether the sensors are programmed correctly (<i>SENSOR FUNCTION</i> menu).
	PS2 Activated	
	PS3 Activated	
	PS4 Activated	
	Lock OP Hold	Check why the Lock Open command is being maintained on the control board connector block.
	Safe Arm Activ	Activation of the Safety Arm sensor (only with the rubber protection profile option: rubber strip that detects when the arm makes contact with a vehicle): • Check whether the arm safety sensor is functioning properly. • Check whether the Safety Arm parameter is programmed correctly (<i>Options</i> menu).
	PWF Open Activ	Setting of the <i>PWF Open Activ</i> parameter of the <i>OPTIONS</i> menu to ON, that is to say that during activation the obstacle opens and waits for the activation of a close or lock-close command. Note: the closure loops are not taken into account for closing in this case.

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Parameter	Values	Description
	<i>Lock Open LCD</i>	The Test Mode parameter of the TEST menu is not set to <i>Deactivated</i> .
	<i>Delay Befor CL</i>	Wait for the delay programmed under the Delay Befor. CL parameter <i>under</i> the TIMING menu to elapse.
	<i>Open Cmd Hold</i>	Check why the open command is being maintained on the control board connector block.
	<i>Stop Cmd Hold</i>	• Check why the stop command is being maintained on the control board connector block. • Check whether the Stop Cmd parameter is programmed correctly (Options menu).
	<i>Reader A Hold</i>	Check why the Reader A command is being maintained on the control board connector block.
	<i>Reader B Hold</i>	Check why the Reader B command is being maintained on the control board connector block
	<i>Position Fail</i>	The type of sensor selected is <i>Analogue Sensor</i> (QUICK START ► menu <i>Positioning</i>); nevertheless, the obstacle still has to be activated (► <i>Activate Motor?</i> ► OK).
	<i>Counter CR</i>	• The reader counter (see the OPTIONS menu ► Counter CR) is greater than zero. • Or the timing for no passage is other than zero (see the TIMING menu ► No Passage).
<i>Open Status</i>		Cases when the obstacle is prevented from opening during a request to open.
	OK	Normal opening.
	<i>Lock CL Hold</i>	Check why the Lock CL command is being maintained on the control board connector block.
	<i>Lock Close LCD</i>	The <i>Test Mode</i> parameter of the <i>TEST</i> menu is not set to <i>Deactivated</i> .
	<i>Delay Befor OP</i>	Wait for the time programmed under the <i>Delay Bef. OP</i> under the <i>TIMING</i> menu to elapse.
	<i>Stop Cmd Hold</i>	• Check why the close order is being maintained on the control board connector block. • Check whether the Stop CMD parameter is programmed correctly (Options menu).
	<i>Arm ELV Locked</i>	• Check whether the detector of the unlocking of the electrically locking (ELV) tip is functioning properly. • Check whether the Arm parameter in the OPTIONS menu is programmed correctly.

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Parameter	Values	Description
	<i>Arm ELV Detect</i>	Check whether the detector sensing the presence of the arm is functioning properly on the control board connector block.
	<i>Position Fail</i>	The type of sensor selected is <i>Analog. Sensor</i> (QUICK START menu ► <i>Positioning</i>); nevertheless, the obstacle still has to be activated (► <i>Activate Motor?</i> ► OK).
<i>Counter 1</i>	<i>0 to 99,000,000</i> <i>(0 by default)</i>	Total number of manoeuvres executed by the obstacle since it was first put into service.
<i>Counter 2</i>	<i>0 to 99,000,000</i> <i>(0 by default)</i>	Representation of counter 1, with the possibility of resetting it to zero.
<i>Reset counter 2</i>		Counter 2 reset to zero.
	<i>OFF (by default)</i>	No resetting.
	<i>ON</i>	Request to reset to zero.
	<i>Done</i>	Message is displayed for 1 second when the counter has been reset to zero.

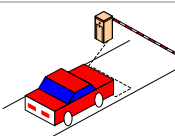
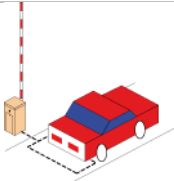
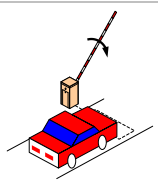
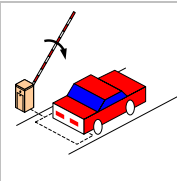
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2.3.2. "QUICK START" menu: quick configuration

This menu inspects the parameters that have to be configured before the equipment may be used.

Parameter	Values	Description
PS1 Function	0 (by default) to 7	Definition of the mode of operation of Presence Sensor 1: see table below.
PS 2 Function:	0 (by default) to 7	Definition of the mode of operation of Presence Sensor 2: see table below.

 **By default, the presence sensors are deactivated.**
Therefore, in order to ensure that their safety functions are operational, it is indispensable that the parameters for each of the presence sensors used be set.

		closed obstacle	open obstacle	Closing obstacle		
						
Sensor function		Action upon arrival in the sensor's field	Action upon leaving the sensor's field	Action upon arrival in the sensor's field	+	Action upon leaving the sensor's field
0	Deactivated	**	-	-		
1	Opening	Opening**	Closing*	Opening	+	Closing*
2	CL_Stop+CL	**	Closing***	Stop	+	Closing
3	CL_OP+CL	**	Closing***	Opening	+	Closing
4	Nothin_Stop+CL	**	-	Stop	+	Closing
5	Nothing_OP+CL	**	-	Opening	+	Closing
6	Nothing_Stop	**	-	Stop		
7	Nothing_OP	**	-	Opening		
Incompatible		This message is displayed for 1 second if the selected operating mode for the sensor is not compatible with the exploitation mode (parameter below). See the table of incompatible modes here under.				

*: Automatic closure only if the preceding opening was initiated by detection and not if presence is detected by another sensor. Notably, if there is a power outage when the obstacle is open, the obstacle will not close automatically when the power is brought back (a close command must be executed).

Warning: The presence sensor operating in "Open" mode may not be placed under the arm, because it is not secured, in contrast to the other modes: a Lock Close command has priority for it (see the "Exploitation" parameter below) and could cause the arm to close on a vehicle.

** : Opening is possible using the commands present on the control board's connector blocks: open command, reader command, and Lock Open command.

***: If passage is detected while the obstacle is Locked Open, closure will take place when the Lock Open command is deactivated.

 : With regard to the underlined values, a close command must be executed to close the obstacle when it is open. The safety function is only activated during the closing movement of the obstacle.

Note: the installation of 2 loops on PS1 and PS2 requires the use of a double detector since PS1 and PS2 are on the same connector.

Note: 2 supplementary Presence Sensor (PS3 and PS4) are available through extended menu "SENSOR FUNCTION".

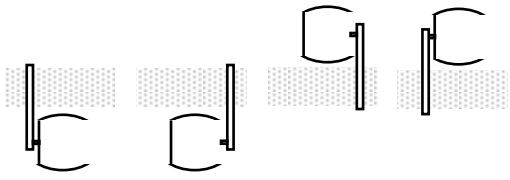
Note: the information regarding the sensor status (1/0) is always available (for each function mode) through extended menu "OUTPUT FUNCTION".

Warning: When the power is turned on, the detectors (DP) measure the state of the loops and initialize the reference level with regard to their environment. Hence, if a vehicle is present on the loop during activation, it will not be detected and the loop will give the order to close (in modes 1, 2 and 3 only)!

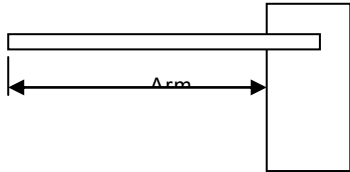
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Parameter	Values	Description
Positioning		Definition of the type of sensor used to position the obstacle.
	Limit Switches (by default)	To be selected if the open/close position of the obstacle is determined by limit switches.
	Analog. Sensor	To be selected if the position of the obstacle is determined by an analogue sensor. The analogue position sensor measures the distance separating it from a spiral cam located on the shaft that transmits the movement of the obstacle's motor, which means that the angular position of the obstacle is known at all times. Also, see the Min Sensor Max parameter below.
	Manual Switch	This message is displayed if it is not possible to activate the analogue sensor, as per one of these cases: • The crank presence detector (only present on some equipments) is engaged. => Remove the crank so that the motor may be engaged. • If the equipment does not have a crank presence detector, the circuit may have been cut. => link the corresponding connections.
	Activate Motor?	Pushing the OK key within 5 seconds launches the analogue sensor activation procedure (see below) and the movement of the obstacle!  The Barrier Type and Arm characteristics must be selected <u>BEFORE</u> initializing the analogue sensor. Otherwise, rough movements of the arm can occur with risk of injury for the personnel and the equipment. => Navigate through the menus by means of the upper key (▲).
	Search LSO...	The obstacle opens to look for its open limit position.
	Search LSC...	The obstacle closes to look for its close limit position.
	Init. Passed	This is displayed if the open and closed limit values have been recorded. The analogue sensor is then operational. The message disappears after 5 seconds or if the OK key is pushed. <u>IMPORTANT</u> : Save the values in MEM1 or MEM2 (MEMORY menu).
	Adjust Sensor	Activation failed because the analogue sensor was not properly positioned => adjust it (closer or further away from the cam) so the measurement is included in the working range (= between the min. and the max. set in the <i>Min Sensor Max</i> parameter below).

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Parameter	Values	Description
	<i>Value 0 Detect</i>	Activation failed because the analogue sensor returned a measurement of zero. As this value is invalid, check: - the sensor's wiring (in the sensor as well as on the control board's connector blocks); - whether the sensor is too close to the cam; - whether the sensor is functioning: LED on the sensor is illuminated and the value measured is displayed in the Min Sensor <i>Max</i> parameter below.
<i>Barrier Type</i>		Definition of the equipment type; this allows the program to automatically modify the opening and closing motor power curves. Note 1: The equipment type is stated on the reference plate, inside the housing. Note 2: to change from barrier solution 1 or 2 to solution 3 or 4 (illustration below), 2 phases of the motor have to be inverted.  solution 1 solution 2 solution 3
	<i>229 Standard (by default)</i>	Parameter to select for a BL229 Standard.
	<i>229 Highway</i>	Parameter to select for a BL229 Highway.
	<i>1x – 2x – 3x – 5x</i>	Parameter to select for a BL16, BL32, BL33, BL52, BL53, BP56.
	<i>BLG77</i>	Parameter to select for a BLG77.
	<i>BL 223</i>	Parameter to select for a BL223.
	<i>RSB 70 & 71</i>	Parameter to select for a RSB 70 or RSB 71.
	<i>BL 40 SR</i>	Parameter to select for a BL40 without automatic opening of the arm in case of power cut.
	<i>BL40 AVR</i>	Parameter to select for a BL40 with automatic opening of the arm in case of power cut.
	<i>BL 41 SR</i>	Parameter to select for a BL41 without automatic opening of the arm in case of power cut.
	<i>BL 41 AVR</i>	Parameter to select for a BL41 with automatic opening of the arm in case of power cut.
	<i>BL 43 SR</i>	Parameter to select for a BL43 without automatic opening of the arm in case of power cut.
	<i>BL 43 AVR</i>	Parameter to select for a BL43 with automatic opening of the arm in case of power cut.
	<i>BL 44 SR</i>	Parameter to select for a BL44 without automatic opening of the arm in case of power cut.

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Parameter	Values	Description
	BL44 AVR	Parameter to select for a BL44 with automatic opening of the arm in case of power cut.
	BL 46 SR	Parameter to select for a BL46 without automatic opening of the arm in case of power cut.
	BL 46 AVR	Parameter to select for a BL46 with automatic opening of the arm in case of power cut.
Arm Length		Specification of the arm mounted on the barrier; this allows the program to automatically modify the opening and closing curves. If the selected length does not correspond to a standard for the barrier selected in the Barrier Type parameter, the message Doesn't Exist appears briefly. Note: arm length = free passage = distance between the arm tip and the barrier housing. 
	2m00	Select this for a BL4x or BL229 with an arm of 2 m.
	2m50	Select this for a BL4x or BL229 with an arm of 2.5 m.
	3m00	Select this for a BL4x or BL229 with an arm of 3 m.
	3m50	Select this for a BL4x or BL229 with an arm of 3.5 m.
	4m00	Select this for a BL4x or BL229 with an arm of 4 m.
	4m50	Select this for a BL4x or BL229 with an arm of 4.5 m.
	5m00 (by default)	Select this for a BL4x or BL229 with an arm of 5 m.
	5m50	Select this for a BL4x or BL229 with an arm of 5.5 m.
	6m00	Select this for a BL4x or BL229 with an arm of 6 m.
	7m00	Select this for a BL4x with an arm of 6,5 or 7 m.
	8m00	Select this for a BL4x with an arm of 7,5 or 8 m.
	9m00	Select this for a BL4x with an arm of 8,5 or 9 m.
	10m00	Select this for a BL4x with an arm of 9,5 or 10 m.
	11m00	Select this for a BL4x with an arm of 10,5 or 11 m.
	12m00	Select this for a BL4x with an arm of 11,5 or 12 m.
	Non-modifiable	Message displayed when the Barrier Type parameter does not allow any modification of the arm length.
	Incompatible	Message displayed when the selected Arm Length is not compatible with the selected Barrier Type.
Arm Type		Specification of the type of arm assembled on the barrier. This parameter only applies to the BL 229 Highway and is not taken into account for other types of equipment.
	Aluminium (default)	Aluminium arm.

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Parameter	Values	Description
	Carbon	Carbon arm.
	Non-modifiable	Message displayed for the equipments different than BL229 Highway.
Power Fail OP		Choice ^(*) of mode for unlocking the obstacle during a loss of supply voltage. ^(*) Except for BL4x, where this parameter is automatically set to ON and not adjustable.
	OFF (by default, except for BL4x)	The obstacle remains mechanically locked, thanks to the position of the transmission elements between them. Nevertheless, it is possible to unlock it manually using a lever or a crank.
	ON (by default for BL4x only, not adjustable)	The obstacle is unlocked: a pulse is given to take the transmission elements out of alignment; opening may have to be effected by hand. This electrical opening is only available for equipment that has a reversible motor reduction drive and a frequency inverter (thanks to the capacitors integrated into the control board and the frequency inverter). Note: for BL4x AVR (with automatic opening of the arm in case of power failure) subjected to great forces (strong winds or fraud attempts to manually open the arm), the locking pin might press against the locking clips and prevent the automatic opening of the lock in case of power failure. This parameter gives the necessary reversed impulse to release the lock. For the BL4x SR (without automatic opening), this parameter has no effect because the electromagnetic brake will lock the arm in position in any case. Warning: this adjustment is incompatible with the Lock Closed command which has priority and will maintain the obstacle closed.

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Parameter	Values	Description
Exploitation		Operating modes for the opening, closing and STOP commands. The commands follow this decreasing order of priority: STOP (stop) Lock OP (lock open) Lock CL (lock close) OP (open) CL (close) The presence sensors and reader inputs are at the same hierarchical level as OP/STOP/CL => Lock Close has priority in an opening loop and will work even if something is detected. Warning: The OP command is never interrupted (the arm always goes to the LSO before accepting the next command) => Lock Close will take affect after the obstacle has reached its LSO. Note: Some use modes are incompatible with the operating mode of the presence sensors (see the table of incompatible modes, here after).
	2 Contacts (by default)	2 contacts used for opening and closing, on the control board's connector block. Open Cmd: open the obstacle Close Cmd: close the obstacle on the rising edge of the command. STOP Cmd: stop. Note: if a Lock Open command is given when the No Passage timing has been activated, it will close when the following two conditions have been met: - the Lock Open command is deactivated, - the set time has elapsed (or, immediately if there is a detection on a closing sensor).
	1 Contact	Open Cmd: if active, the obstacle opens. Open Cmd: if inactive, the obstacle closes. STOP Cmd: stop. When the stop is released, the obstacle will continue to open if an OP/Lock Open command is still present, if not the obstacle will close. Note: there is no CL contact in this mode. Note: if this mode is used for a reader, it must be ensured that the latter sends a continuous signal in order for the obstacle to be kept open for a given time. Note: this mode is highly recommended for barriers which arm is Normally Open (tunnel entry, etc.). In this case effectively, it is mandatory to maintain a continuous opening command in order to prevent an untimely closing (by maintenance personnel for example). Warning: if there is a voltage loss while the obstacle is open, the obstacle will close when the power comes back if the OP command is not activated, because – in this mode – an inactive open command equals a close command.

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Parameter	Values	Description
	<i>Step by Step</i>	Open Cmd: inversion at each rising edge (i.e., at each pulse). STOP Cmd: stop. Note: neither CL nor reader commands are available in this mode.
	<i>Dead Man</i>	Open Cmd: if active, the obstacle opens. If inactive (i.e., when the command is released), the obstacle stops. Close Cmd: If active, the obstacle closes. If inactive, it stops. STOP Cmd: stop. Note: the open or close command may be realised by a Lock OP or Lock CL pulse command. Note: the reader commands do not work in this mode. Note: this mode is only compatible with presence sensors operating under the Nothing_Stop or Deactivated modes (otherwise the Incompatible message appears briefly).
	<i>2 Contacts CFE</i>	Same as 2 Contacts operation, except: Close Cmd: Closure of the obstacle on the Falling Edge of the command (i.e., when the button is released).
	<i>Incompatible</i>	This message is displayed for one second if the operating mode selected is not compatible with the parameters set for the presence sensors.
<i>Memory</i>		Save the parameter values (see the MEMORY menu).
	<i>Ignored (by default)</i>	No action.
	<i>Save</i>	Save the modified parameters in MEM1. This saving action is necessary so that the modifications made are not lost during a power cut!
	<i>Load Default</i>	Recall the default values (factory settings) of the parameters accessible in the level from which this command is executed. E.g.: If you are in the Simplified menus, this function will only load the default values of the parameters accessible in Simplified menu, and will not modify the values of the parameters accessible in Extended or Manufacturer menus. Warning: the loading of the default parameters entails the loss of the parameters specific to the installation's real situation and may put the equipment out of service.
	<i>Done</i>	This message is displayed when the save or the load is finished and disappears automatically after 1 second.

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Parameter	Values	Description
Min Sensor Max	0000 (default) to 1024 0000 (default) to 1024 0000 (default) to 1024	This parameter applies to the analogue sensor (see the Positioning parameter above) and allows viewing the current value of the sensor (Sensor) (reflection of the angular position of the obstacle) in its measurement range (Min and Max being the sensor values at the extreme positions of the obstacle: completely open and closed).
Menu Access		Choice of the display mode for the menus.
	Simplified (default)	Access to the menus included in the Simplified mode. Warning: pressing the OK key to validate the passage from the Extended to the Simplified mode causes a movement of the arm (opening or closing), even if a presence is detected by the Presence sensors.
	Extended	Access to supplementary parameters.

		Table of incompatibilities between the exploitation modes and the presence sensor function: ☒ compatible ☒ incompatible				
		Exploitation mode				
		2 Contacts	1 Contact	Step by Step	Dead Man	2 Contacts CFE
Sensor Function	Deactivated	☒	☒	☒	☒	☒
	Opening	☒	☒	☒	☒	☒
	CL_Stop+CL	☒	☒	☒	☒	☒
	CL_OP+CL	☒	☒	☒	☒	☒
	Nothin_Stop+CL	☒	☒	☒	☒	☒
	Nothing_OP+CL	☒	☒	☒	☒	☒
	Nothing_Stop	☒	☒	☒	☒	☒
	Nothing_OP	☒	☒	☒	☒	☒

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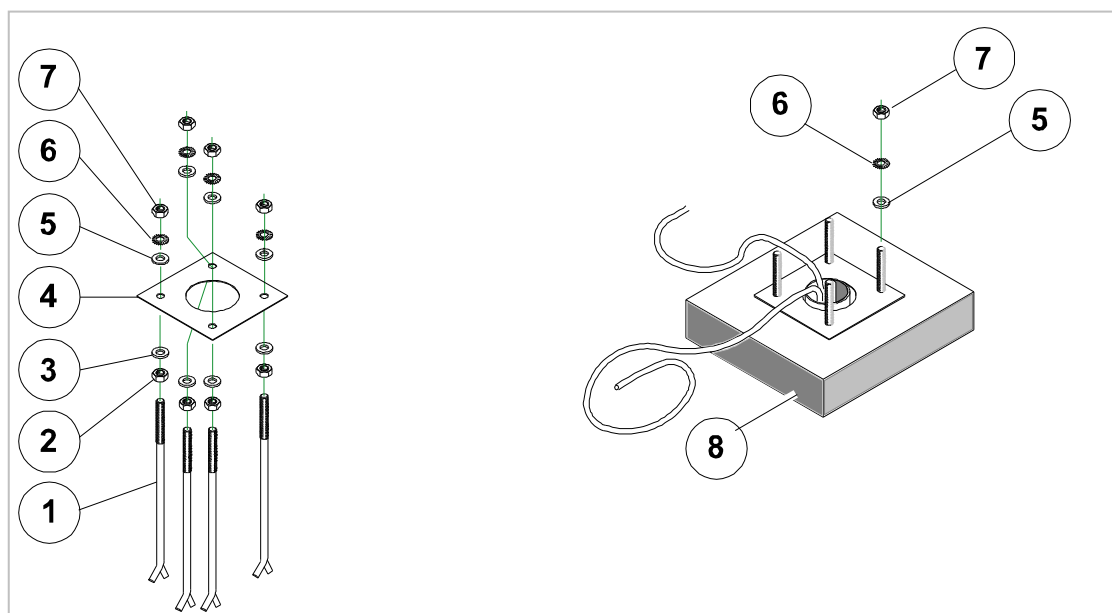
3. INSTALLATION

On receipt, check the state of the material and notify forthwith your insurance company or your distributor in the event of damage occurring during transport. If necessary, proceed with the repairs.

3.1. Preparing the Base Plate

As the barrier cannot be put directly on the ground, it will consequently be necessary to secure it, at choice:

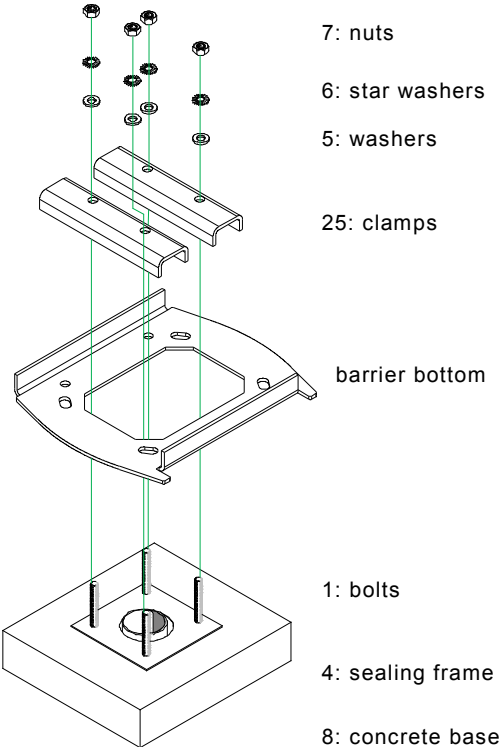
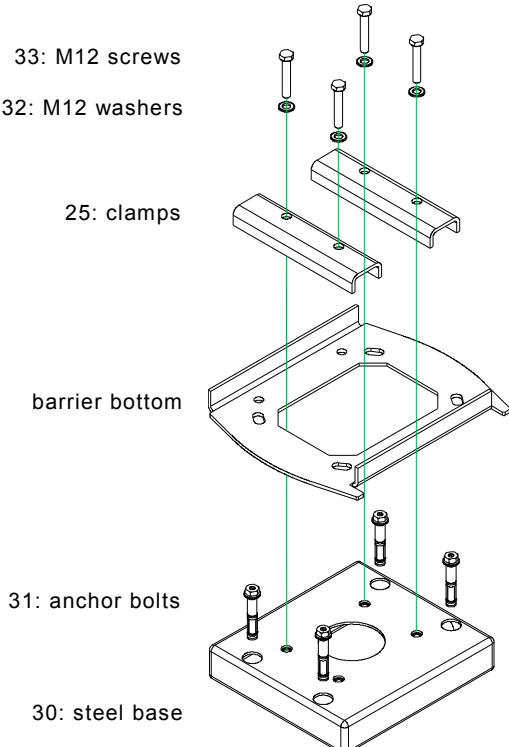
- either on a concrete base plate, by means of the fixing frame provided (detailed procedure hereafter),
- or on a steel raised base (provided as an option).
- For the positioning of the base plate, please refer to the Installation Drawings (p44), which takes precedence over any other information.
- Introduce the four fixing bolts (1), each provided with a nut (2) and a flat washer (3), in the holes of the fixing frame (4). The thread must be directed upwards as illustrated. Assemble the fixing bolts on the fixing frame by tightening a flat washer (5), a star washer (6) and a nut (7) on each thread and by letting the thread exceed the frame (4) by the height defined in the Installation Drawings. Use adhesive tape to protect the threads from concrete splashes.
- Fit the PVC tubes and install the power cable (to the general power board), the command cable (to the control box) and the detection cable (to the loops and/or possible cells), leaving a tail of approximately 1 metre. The cabling must be carried out in accordance with the standards in force in the country where the installation takes place.
- Build a concrete base (8) and place the base plate in it. The frame (4) must be flush mounted with the platform and perfectly horizontal. When the concrete has set, remove the adhesive tape from the threads and remove the nuts (7), the star washers (6) and the flat washers (5), which will be used for fixing the barrier.



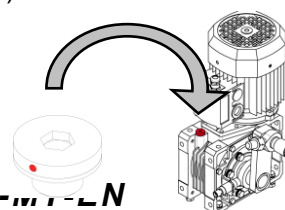
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3.2. Placing the Equipment

- Bring the equipment on site by means of an appropriated handling device (hand truck or equivalent).
- Unlock and remove the side door (5, p5). The keys are attached on the arm's fixing clamp (7, p5).
- Unlock and to remove the cover (2, p5).
- Strip the cable jacket starting from 50 cm from the ground.
- Remove the wooden slats attached to the bottom of the housing.

Fixing on concrete base	Fixing on steel raised base (option)
• Avoiding damaging the fixing bolts, place the barrier on its base according to the chosen command solution (position of the arm in relation to the door and the road: see p28). • Introduce the two fixing clamps (25) into the housing onto the fixing bolts (1).	• Drill 4 holes Ø15mm x 85mm deep, clean them by blowing and fix the base in the ground by means of anchor bolts (31). Tighten to 40 NM. WARNING: anchor bolts provided are foreseen to be fixed into concrete (class C20/25 to C50/60). Adapt the fixation means to the support.
• Secure the housing to the base plate by tightening the clamps (25, p6) on the fixing bolts by means of the flat washers (5, p26), star washers (6, p26) and nuts (7, p26) provided.	• Place the barrier on the base and secure it by tightening the clamps (25) in the base by means of screws (33) and washers (32) provided.
 7: nuts 6: star washers 5: washers 25: clamps barrier bottom 1: bolts 4: sealing frame 8: concrete base	 33: M12 screws 32: M12 washers 25: clamps barrier bottom 31: anchor bolts 30: steel base

- If needed, add adjustment shims under the housing to obtain the correct levelling of the barrier.
Note: only tighten the nuts (7, p26) after the installation of the arm (p31) and the optional tip support (p32).
- The reducer being closed for transport by a plug, replace this late by the provided **vent hole plug** (in a plastic bag fixed on reducer 20, p5).



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3.3. Conversion From One Solution To Another

The barrier can be configured in 4 different ways, according to the position of the arm with regard to the door and the road.

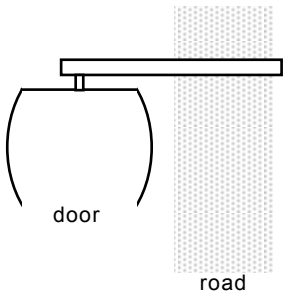
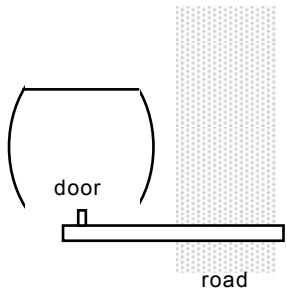
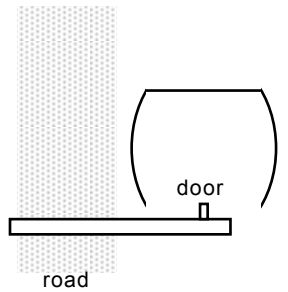
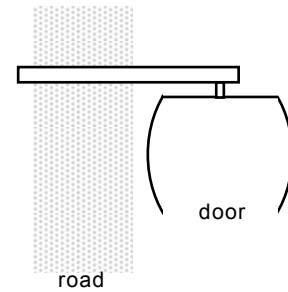
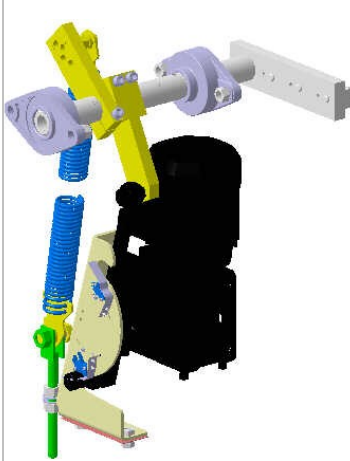
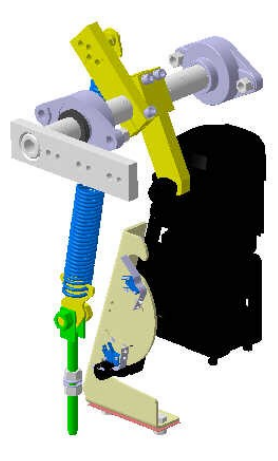
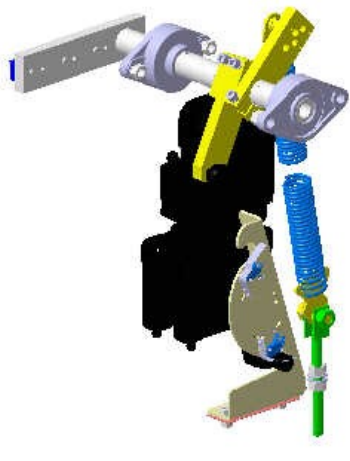
To move from one configuration (solution) to another, the mechanism must be adapted: the arm is either on the door side (solution 2+3) or opposite to the door side (solution 1+4), and the motor turns in one direction (solution 1+2) or the other one (solution 3+4).

The geared motor, the crankshaft and the rod (20, 19 and 21, p6) (in black here below) remain fixed.

On the other hand, the end stop unit (17, p5) used for solutions 1 and 2 is different from that of solutions 3 and 4.

Similarly, the front aluminium panel (4, p5) pierced for the passage of the arm, will have to be replaced by a full panel.

All the other parts are interchangeable from one solution to another.

Solution 1	Solution 2	Solution 3	Solution 4
			
			

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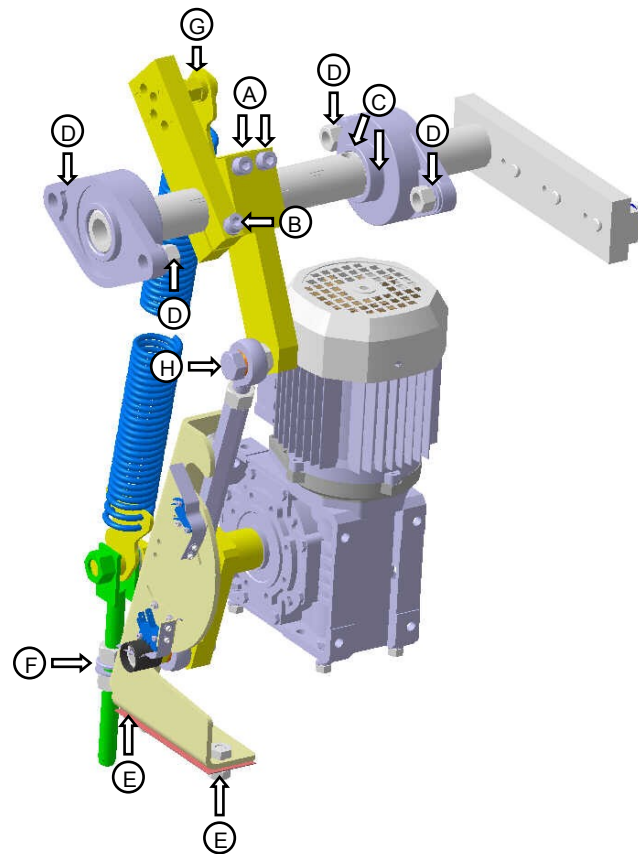


Table: Operations to be carried out (marked "x") to move from one solution to another

1↔2	1↔3	1↔4	2↔3	2↔4	3↔4	
x	x	x	x	x	x	Unscrew the rod lever (Screw A) and the spring lever (Screw B).
x	x	x	x	x	x	Unscrew the compression screws (C) of the bearings on the arm shaft.
x	x	x	x	x	x	Withdraw the arm shaft (9, p5).
x	x	-	-	x	x	Unscrew and withdraw the bearings (Nuts D).
x	x	-	-	x	x	Loosen the aluminium panel (4, p5) of the boom arm side (pierced) and stick a new one (full).
x	x	-	-	x	x	Place the dust guard (22, p6) over the opposite hole.
x	x	-	-	x	x	Pierce the hole (premarked) of the panel that will be now on the boom arm side.
x	x	-	-	x	x	Fix the bearings (8, p5) on the housing

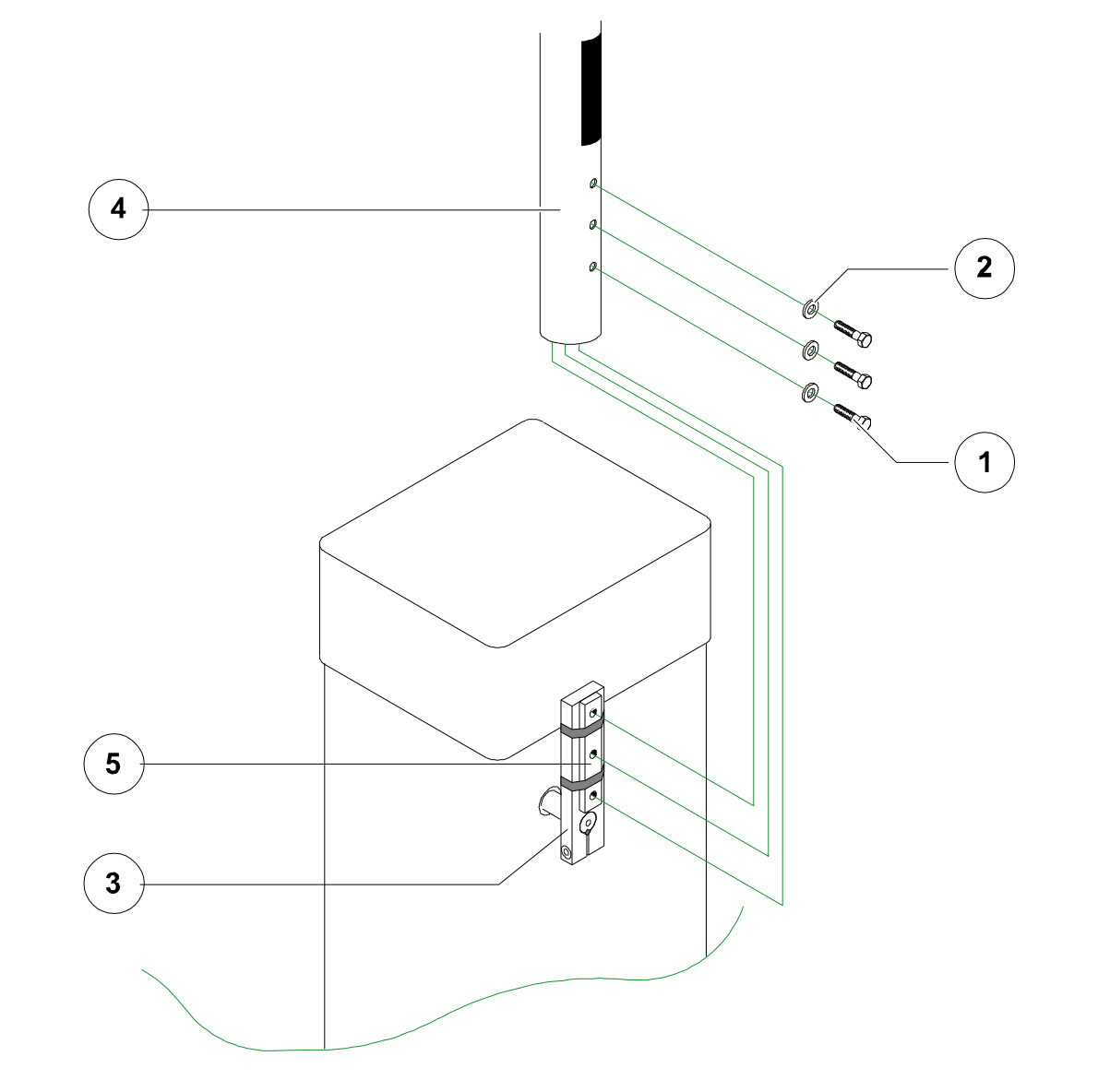
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1↔2	1↔3	1↔4	2↔3	2↔4	3↔4	
-	x	x	x	x	-	Remove the end stop unit (17, p5) (Screw E). Unscrew the 2 bumpers (3 and 5, p39) as well as the 2 limit switches (Screw 1, p39) to fix them on the new end stop unit. Fix the new end stop unit by means of the screw (E). Add shims (provided) if necessary, so that the cam (2, p39) is correctly positioned in the notches of the end stop unit.
-	x	x	x	x	-	Take care to slacken the spring to the maximum and to unscrew it from its support (Nuts F) and from its lever (Pivot G).
-	x	x	x	x	-	Unscrew the rod from its lever (Screw H).
x	x	x	x	x	x	Introduce the shaft into the bearings by passing it through the two correctly positioned levers: they must be directed respectively towards the rod and the spring, the screws and the reference mark for the arm shaft to the top (see illustrations of the various solutions). Check the alignment of the arm shaft in relation to the bearings (p34).
-	x	x	x	x	-	Fix the rod on its lever (Screw H).
-	x	x	x	x	-	Fix the spring on the support (23, p5) (Nuts F), on the closed side of the end stop unit (17, p5). Fix the spring on its lever (Pivot G).
x	x	x	x	x	x	Tighten the shaft in the bearings by means of the compression screws.
x	x	x	x	x	x	Tighten the two levers after having checked their alignment on the shaft (see p34).
-	x	x	x	x	-	Invert 2 of the 3 phases of the motor.

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3.4. Installation of a Round Arm



- Remove the three screws (1) and the flat washers (2) of the clamp (3).
- Position the arm (4) on the clamp, taking care that the spacer (5) is in place, and put back the flat washers (2) and the screws (1) as illustrated above.
- Check the proper alignment of the arm in relation to the clamp and tighten the screws (1) firmly.

3.5. Installation of the Tip Support

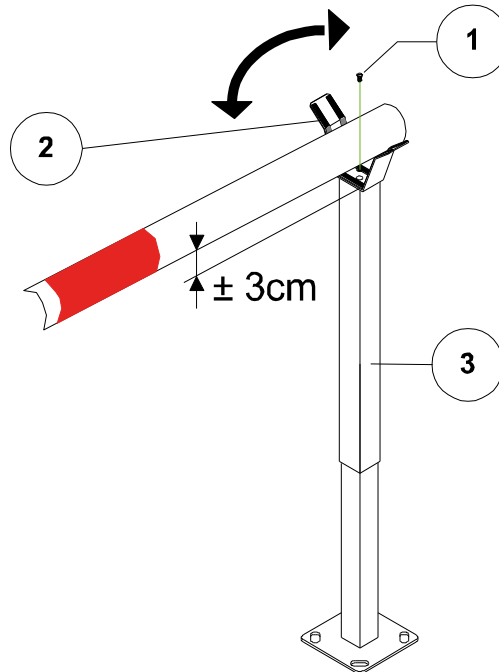
The tip support is automatically provided with any barrier of more than 5m and is optionally available for shorter boom arms.

The tip support's role is to maintain the end of the boom arm in its horizontal position and to ensure its rigidity.

The tip support must be fixed on a concrete base, according to the instructions of drawing CH2656 (p44).

The height of the tip support is to be adjusted once the boom arm has been levelled (see p35):

- Remove screw (1) while holding upper element (3).
- Turn fork (2) in the necessary direction so that the end of the arm comes to rest in closed position ± 3 cm above the tip support.
- Tighten screw (1).
- Align the arm in the tip support by making, if necessary, the barrier swivel on its base.
- Tighten the nuts (7, p26) to ensure the final fastening of the barrier.



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.
- Please refer to the electrical diagram inside the barrier, which takes precedence over any other information.
- Connect any options as indicated on the electrical diagram.
- Connect the power supply to the circuit breaker (26, p6), taking care that the latter's characteristics are in conformity with the required specifications (p42).
- Connect the ground wires to their terminals:
 - Cable ① between the housing and the cover
(Check this connexion before each closing of the cover);
 - Cable ② between the housing and the door
(Check this connexion before each closing of the cover);
 - Cable ③ between the housing and the control board.

4. ADJUSTMENTS

4.1. Positioning of the levers on the Shaft

The rod and spring levers (10 and 11, p5) must be positioned on the shaft (9, p5) according to the chosen solution (see p28).

1. Screw the rod lever onto the shaft, by passing the screw through the holes in the rod and shaft corresponding to the considered solution (fig A and B).
2. Align mark (C) of the spring lever with the mark on the shaft corresponding to the considered solution (fig B): figures indicated on the illustration (1 to 4) indicate the reference mark to be used according to the considered solution (1 to 4).
For a correct alignment, the mark must remain entirely visible (see Fig. A).

With correct positioning, the pivots (G and H, p29) maintaining the rod and the spring in their respective levers are perpendicular to it.

The screws of the rod lever must be tightened with a torque of 60 Nm, the one of the spring lever with a torque of 80 Nm.

Similarly, the arm shaft must be positioned in relation to the bearings so that the circular reference mark on the arm shaft (D) is level with the side of the bearing (Fig. A). The bearing's compression screws (C, p29) are then positioned in front of the groove marked in the arm shaft for this purpose.

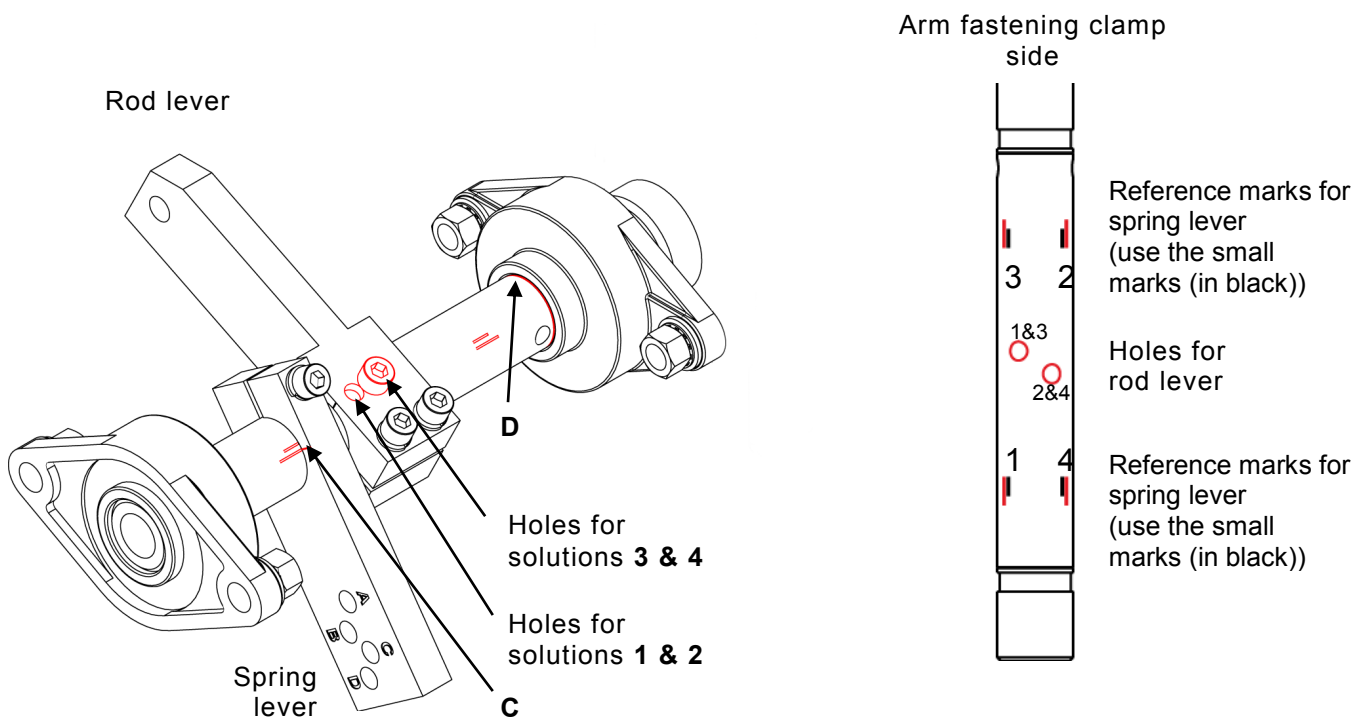


Fig A (solution 4)

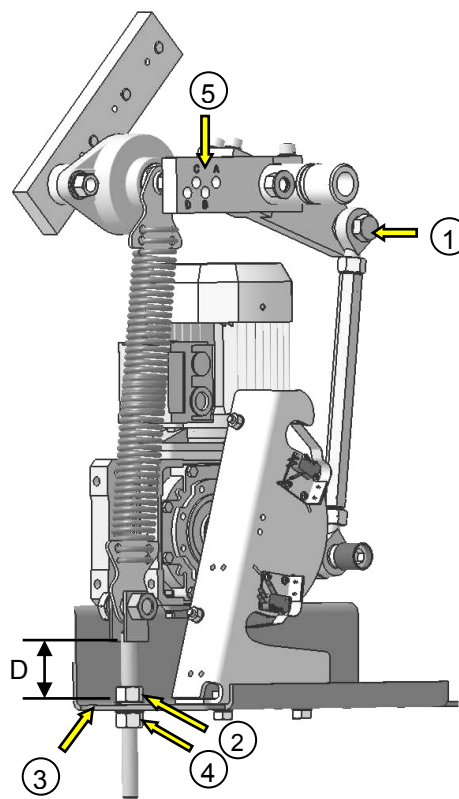
Fig B: rod and spring levers marks on the shaft, according to the considered solution.

4.2. Balancing of the Boom Arm by means of the Spring

The tension of the spring must be adjusted in such a way as to ensure minimal effort for the motor both at the opening and the closing of the barrier:

1. Withdraw screw ① and disconnect the rod from its lever.
2. Raise the arm slightly and release it: it must remain in balance.
Repeat the operation at various different angles.
3. If the arm drops, the tension of the spring must be increased:
 - Loosen locknut ②.
 - Tighten nut ④ slightly against support ③ to increase the spring's tension.
Repeat until stage 2 is correct.
 - Tighten nut ② to lock nut ④.
 - If it is insufficient, position the spring on the next mark ⑤ (further from the shaft: e.g. B → C).
 - If that is still insufficient, use two springs and repeat the above adjustments.
4. If the arm goes up, the tension of the spring must be decreased:
 - Loosen locknut ②.
 - Loosen nut ④ slightly to slacken the spring.
Repeat until stage 2 is correct.
 - Tighten nut ② to block nut ④.
 - If it is not sufficient, position the spring on the previous reference mark ⑤ (closer from the shaft: e.g. B → A).
 - If that is still insufficient, remove one spring (if there were two of them) and repeat the above adjustments.

The following table shows the spring adjustments for the various arm lengths.



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BALANCING TABLE (for information only)

Arm Length	Arm Type	Option	Spring Wire Diameter (mm) ⁽¹⁾	Nr of Springs	Position of Springs on lever ⁽²⁾	D ⁽³⁾	Opening Time at 100% (s) ⁽⁴⁾	Closing Time at 100% (s) ⁽⁵⁾
------------	----------	--------	--	---------------	---	------------------	---	---

2,0 m	Ø 84	-	5,5	1	A	79		
2,5 m	Ø 84	-	5,5	1	A	53		
3,0 m	Ø 84	-	5,5	1	C	35	1,5	1,5
3,5 m	Ø 84	-	7	1	A	56		
4,0 m	Ø 84	-	7	1	B	34	2,3	2,8
4,5 m	Ø 84	-	7	1	C	35		
5,0 m	Ø 84	-	7	2	A/A	56	3	3,2
5,5 m	Ø 84	-	7	2	A	45		
					B	40		
6,0 m	Ø 84	-	7	2	B/B	28	3,8	4,2
3.0 m	Ø 84	Tip support (EM)	7	1	B	34		
3.5 m	Ø 84	Tip support (EM)	7	1	C	35		
4.0 m	Ø 84	Tip support (EM)	7	2	A	58		
4.5 m	Ø 84	Tip support (EM)	7	2	A	45		
					B	40		
5.0 m	Ø 84	Tip support (EM)	7	2	B/B	28		
6,0 m	Ø 84	Tip support (EM)	7	2	C/C	52		
3.0 m	Plate	-	5.5	1	C	47		
2.2 m	Plate	Driving part 1100	5.5	1	A	55		
3.0 m	Plate	Driving part 1300	5.5	1	B	40		

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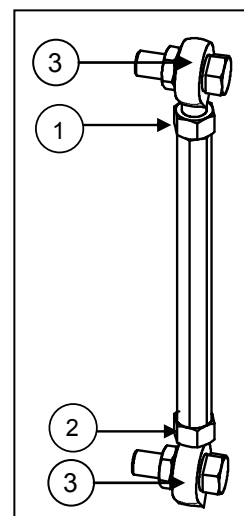
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- (1) Spring Ø 5.5 mm: ref. 0/0002/095.
Spring Ø 7.0 mm: ref. RSA-E03265.
- (2) Spring position on lever: mark ⑤, p35.
- (3) D = Distance of fixing plate /support (mm): see figure on Page 35.
- (4) Set in menu "OP REGULATION".
- (5) Set in menu "CL REGULATION".

Note: For boom arms longer than 4m or for configurations with options, it can be useful to increase the torque on the frequency converter (refer to AS1320 control board technician manual).

4.3. Levelling of the Boom Arm

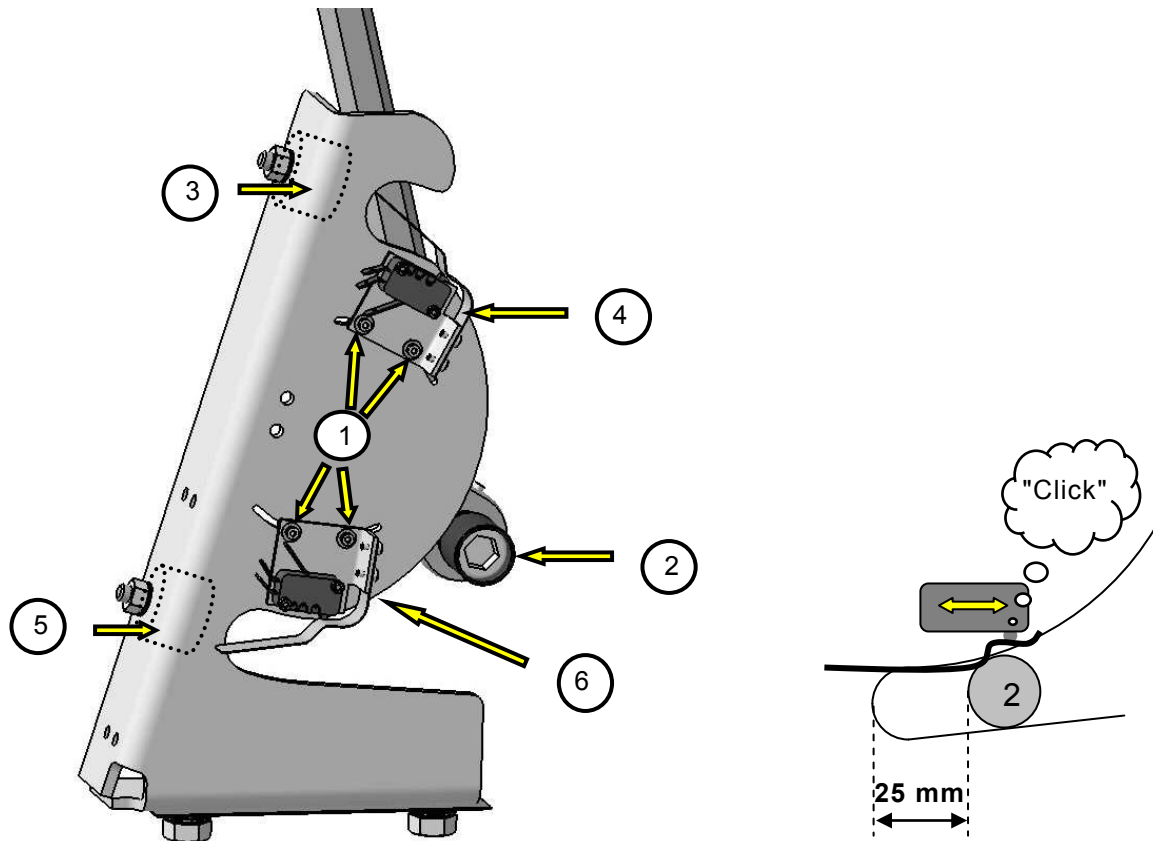
1. First check the position of the levers on the shaft (p34).
2. Close the barrier to put the arm in its horizontal position.
3. On the rod (21, p5), loosen nuts ① and ②.
Note: one nut has a left-hand thread and the other one a right-hand thread.
4. Turn the rod in the clockwise direction to make the arm rise and anti-clockwise to make it descend. Check the arm's horizontality by means of a spirit level.
5. Tighten the nuts.



4.4. Adjusting the Limit Switches (Microswitches)

Limit switches ④ and ⑥ stop the arm's movement when opening or closing as soon as they are actuated by cam ②. They must therefore be adjusted so that the arm stops in a vertical and in a horizontal position:

1. First check that the arm is level (see p38).
2. Bring the arm to its closed position (horizontal).
3. Position the limit cam ② at a distance of 25 mm from the bottom of its guiding groove.
4. Loosen screws ① and position the limit switch ⑥ until the blade, by pushing onto cam ②, engages the sensor (a click can be heard).
5. Tighten the sensor in this position by means of screws ⑤.
6. Bring the arm to its open position (vertical) and proceed in the same way for the opening limit switch ④.



5. USE

5.1. Commissioning

- Before commissioning, review the procedures described in Chapters 3. "Installation", 4. "Adjustments" and 5.2. "Maintenance".
- Switch on the circuit breaker (26, p6).
- On the control board, configure the parameters of the "QUICKSTART" menu and take care to save them ("Memory" ► "Save").
- Turn the power off, and then back on again.
- Wait a few seconds.
- Carry out some electrical opening and closing tests by pressing on the control board's "OK" button or by means of the command mode that is at your disposal (pushbutton box, transmitter/receiver, etc).
Check the proper positioning of the arm in its open position (vertical) and closed position (horizontal). Refer to the corresponding adjustment if necessary (p38).
- Check the proper working of any options and safety measures.

5.2. Maintenance

Maintenance operations must be carried out in compliance with the safety warnings stated in Chapter 0

Unlock and remove door (5, p5) without damaging the ground wire that connects it to the housing. Switch off the circuit breaker (26, p6).

If necessary, remove the cover (2, p5) without damaging the ground wire that connects it to the housing.

- After the first 1000 operations, check the adjustment of the limit switches (p39).
- Every 6 to 12 months, depending on the traffic level:
 - Check all the adjustments described in Chapter 4.
 - Check that all the nuts and screws of the mechanical unit are tight.
 - Check that all the electrical connections are tight.
 - Check if the arm can be stopped by hand in the course of movement, both at opening and at closing. If not, check the balance adjustment (p35).
 - Dust and clean the interior of the housing.
 - Clean the outside of the housing and the arm by means of a soft cloth impregnated with a non-aggressive detergent.
For the countries with a lot of sun, it is also advised to treat the outside of the body with a glossing product.
 - Clean the stainless steel parts/options to prevent deposition of metallic particles (approved product reference 0/6031/000).
Note: The frequency of maintenance must be adjusted to the conditions of use of the equipment, in particular when it is located in an oxidizing atmosphere: near the sea, industrial environment, etc.
 - Lubricate rod ends (3, p38) with anti-corrosive multifunction grease.
Note: The bearings (8, p5) as well as the rings and pivots of the spring unit are life-lubricated.

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5.3. Breakdowns and Remedies

If the barrier does not work correctly, check the following points:

- Check the displayed messages ("OPERATION" menu ► "Log"/"Closing Status"/"Opening Status" (p8).
- Review the procedures described in Chapters 3. "Installation", 4. "Adjustments" and 5.2. "Maintenance".
- Check the state of the fuses (1, p8) on the control board.
- Check that the circuit breaker (26, p6) is properly engaged and that the voltage corresponds to the voltage required in the technical specifications (p42).
- Check that the board is not in programming mode (RJ45 cable (5, p8) connected).
- If the red LEDs under the control connector blocks (6, p8) are not lit up, switch the power off and remove the connector blocks on the control board and extension AS1321 if present. Switch the power back on and check if the LEDs turn on. If they do, there is a short-circuit at the level of the control connector blocks.
- Check if the motor is working.
- Check if the frequency converter (28, p6) is in fault: the red LED on the side of the converter blinks. In this case, contact an Automatic Systems representative.
- Check the connection of the commands according to the electrical diagram (p46).
- Check that all the electric wires are correctly tight, and tighten them if necessary.
- Carry out an electrical opening/closing test by pressing on the control board's OK key ("PRDSTD-BLxxx" menu).

Following an out-of-service condition of the barrier, rebooting will be carried out according to the mode defined in the "OPTIONS" menu, "Reboot Mode" (by default, a new power-up).

5.4. Prolonged Stoppage / Destruction

If the barrier is not to be used for a long period, it is advised:

- To place the barrier in a dry place that is protected from heat and bad weather.
- To leave the barrier turned on. With the motor remaining permanently powered, a certain temperature is maintained in the housing. This eliminates problems of condensation and, at low temperature, prevents the geared motor's oil from solidifying, which would cause the performances of the barrier to fail during the first operations following to a long period of disuse.

When you decommission the equipment, empty the oil from the geared motor (20, p5) and scrap the various components of the machine by the appropriate means (metal parts, electronic components, etc) according to the legislation in force in the considered country.

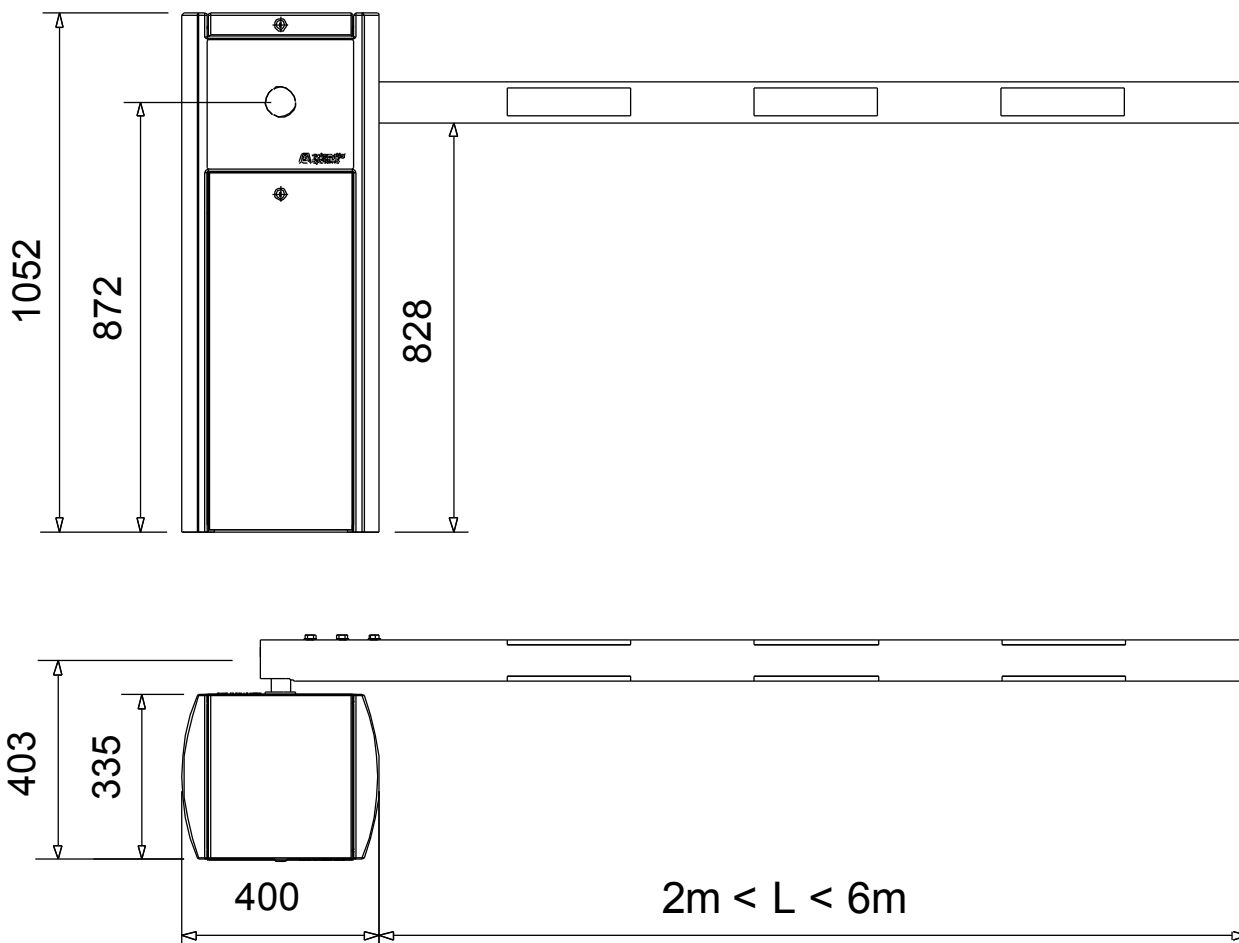
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6. TECHNICAL SPECIFICATIONS

- Folded and welded sheet steel housing, protected from corrosion by two coats of paint.
- Internal machine elements treated against corrosion by electrogalvanisation.
- Power supply: single-phase 230VAC, 50/60Hz.
- Nominal power consumption (at maximum speed, without option): 335 W.
- Three-phase asynchronous motor of 250 W.
- Worm geared motor (1:19 ratio), life-lubricated.
- Secondary transmission by crankshaft-rod device ensuring perfect mechanical locking in the two extreme positions (barrier open and closed).
- Automatic barrier unlocking in the event of power failure (programmable), the opening being then possible by pushing the boom arm manually.
- Frequency converter ensuring progressive accelerations and controlled decelerations, for a vibration-free movement and enhanced protection of the mechanism (adjustable acceleration and braking ramps).
- Limit-switches activated by leaf spring.
- Balancing of the arm by adjustable springs.
- Round aluminium arm, diameter 84 mm.
- Free passage: 2 to 6 m.
- Operating T°: between -20 and +50°C.
- RH < 95%, without condensation
- Minimum operation time: from 1 to 4 seconds according to the boom arm length and the selected options.
- Net weight (excluding boom arm): 83 kg.
- MCBF (Mean Cycles Between Failures): 2,000,000, with normal maintenance.
- IP44.

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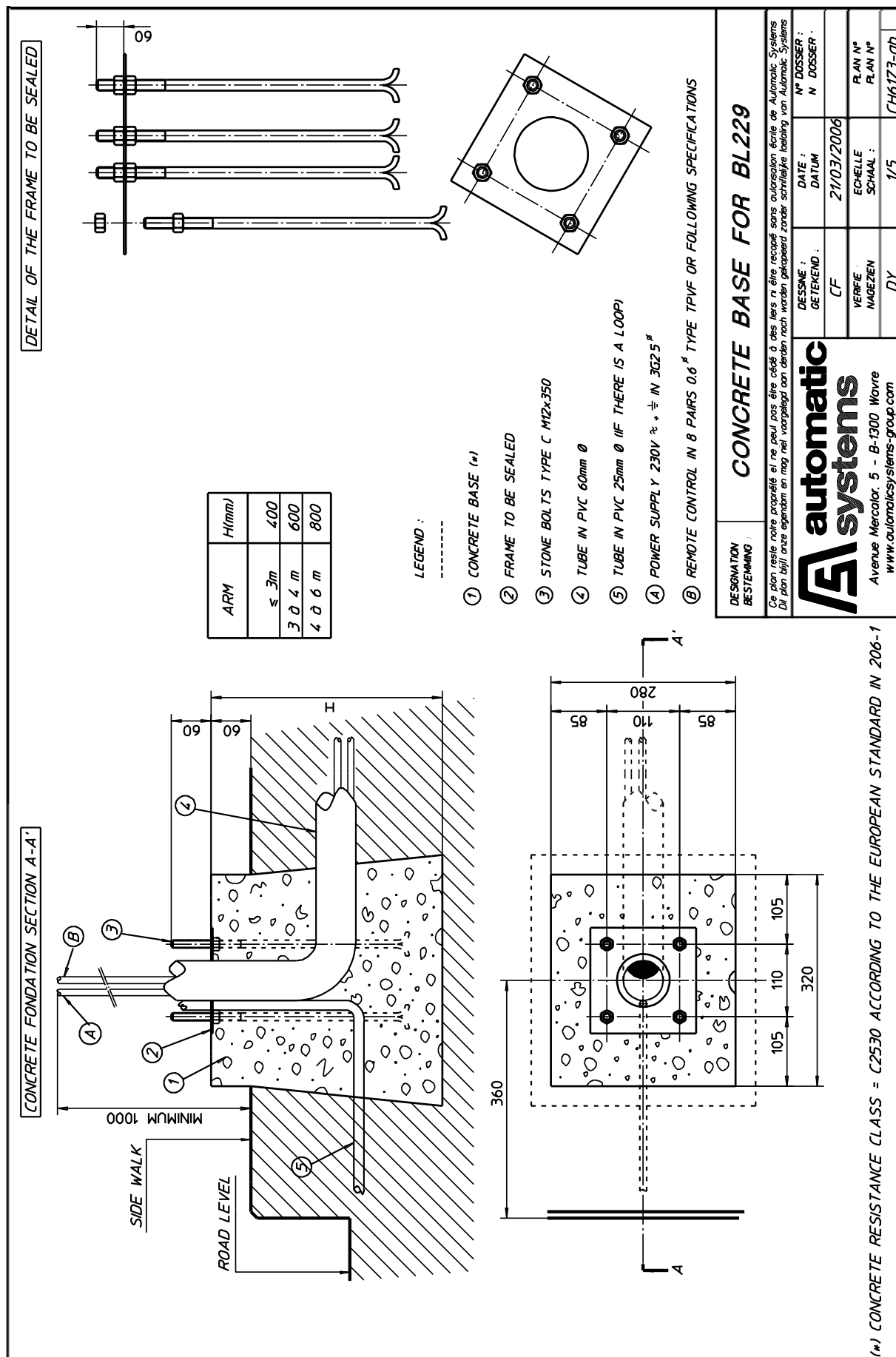
7. DIMENSIONS



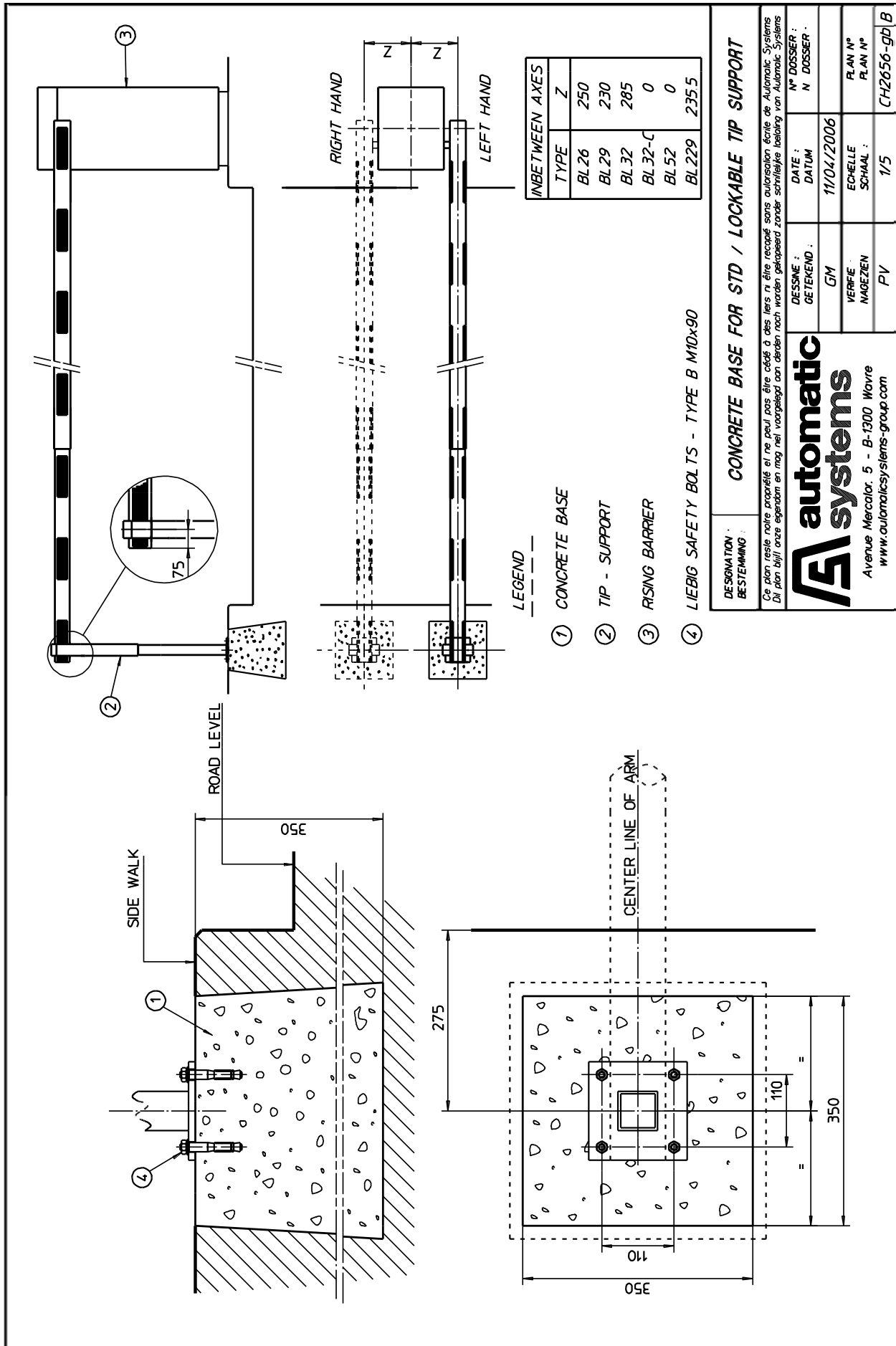
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8. INSTALLATION DRAWINGS



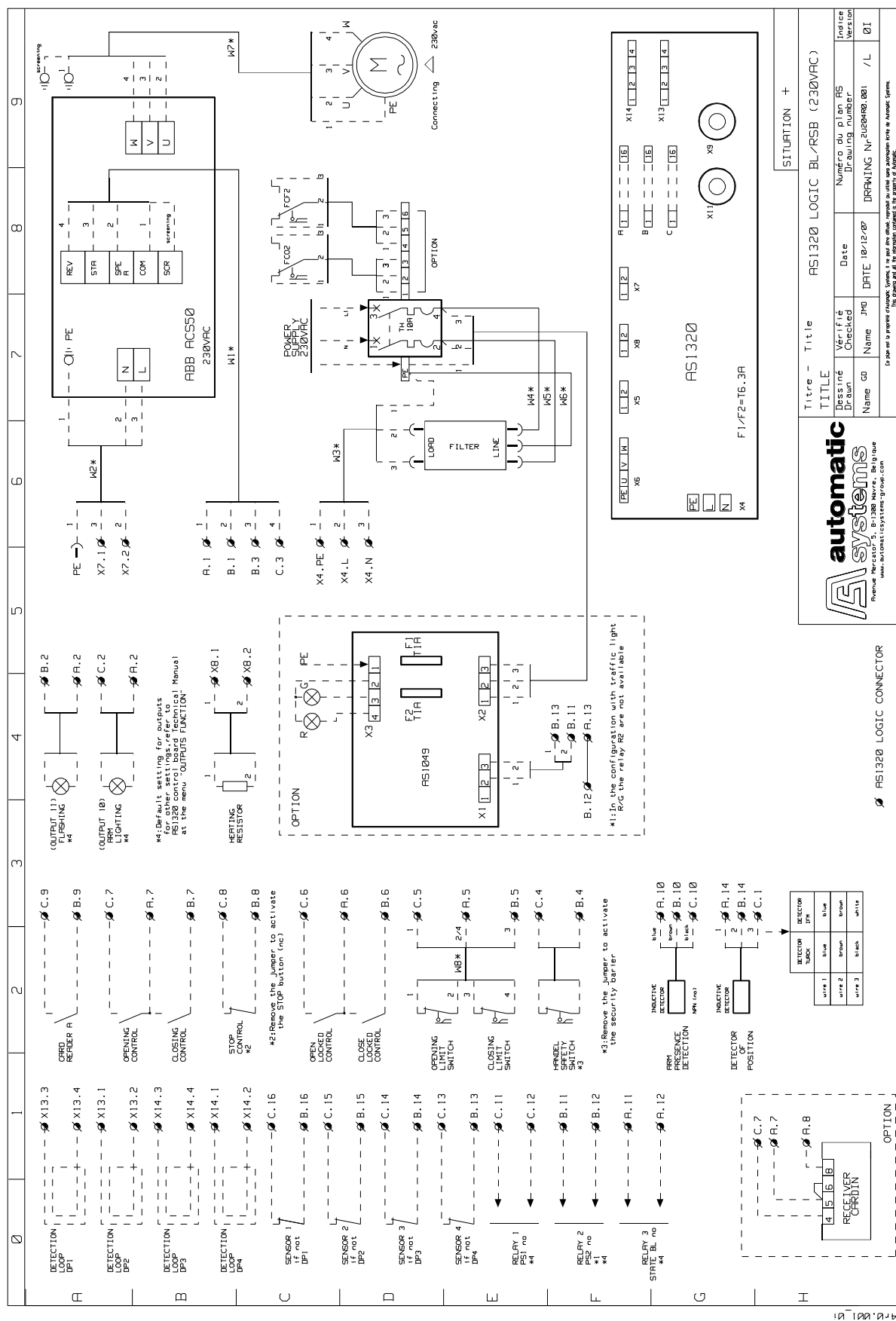
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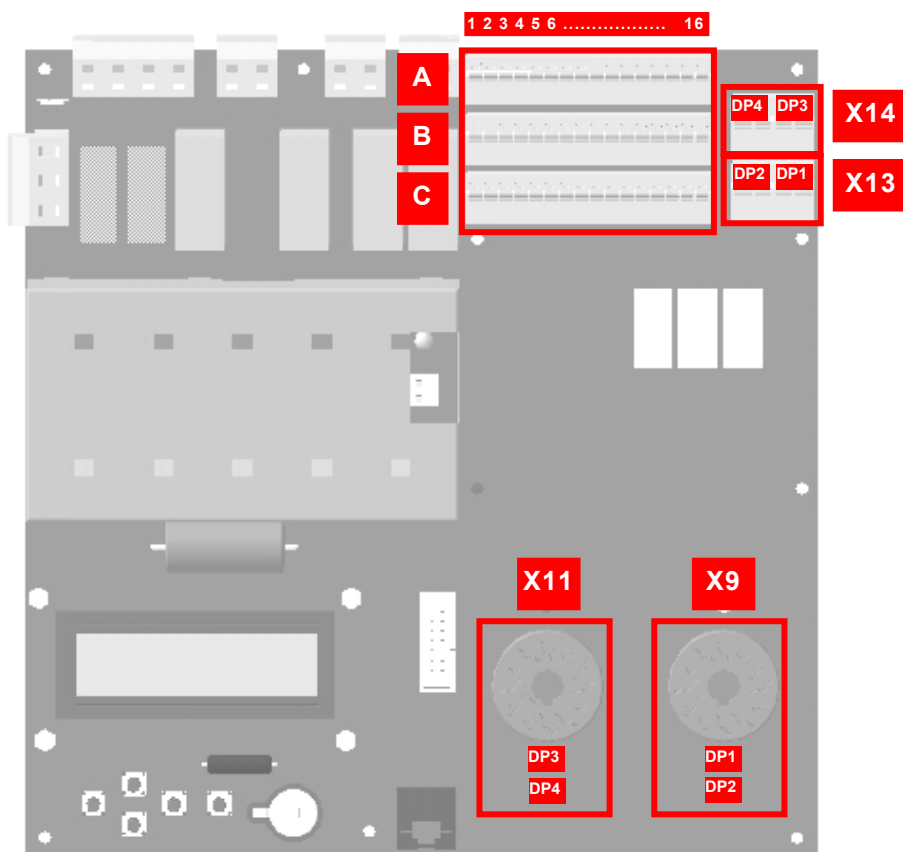
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Note: for information only. The reference diagram is inside the equipment.



9.1. Control blocks assignment



A In/Out
B connector blocks.
C

X13 Inductive loops
X14 connectors.

Y Inductive loops
presence detector.

X9 Connectors for
inductive loops
presence detectors.
X11



Connectors			Connector block number																																					
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16																						
C	B	A	AI1 Analog. Sensor	AO1 FI setting	GND	DO7 Rising motor	DO8 Descending motor	GND	DI14 crank limit switch	24V	DI12 Opening LS	DI13 Closing LS	24V	GND	DI10 Lock Open CMD	DI11 Lock Close CMD	24V	DI9 Close command	24V	GND	DI8 Open command	DI7 Stop command	DI6 Reader A command	DI5 Swing off sens./Lock	REL1 - Output relay 1	REL1 + Output relay 1	DI4 Cell 4	DI3 Cell 3	DI2 Cell 2	DI1 Cell 1	REL2 - Output relay 2	REL2 + Output relay 2	REL3 - Output relay 3	REL3 + Output relay 3	GND	GND	GND	GND	GND	GND

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INPUTS

Signals from outside that are received by the control board.

There is a green LED under every input connection, which indicates its status (ON/OFF).

DI1, DI2, DI3, DI4 (cell): signal from the optional safety cells (see “connecting the presence sensors” below).

DI5 (Swing off sens./Lock):

1. **Swing off sensor:** for all machines except BL4x, signal emitted by the optional arm swing off detector when it no longer detects the arm on the jaw. Also, configure the “*Arm Swing Off*” parameter in the “*OPTIONS*” menu.
2. **Lock:** for BL4x, signal emitted by the arm locking device sensor, indicating the status of the lock (locked or unlocked).

DI6 (reader A command): order to open from the optional badge reader.

DI7 (stop command): order to stop the movement of the obstacle immediately, from a push-button box, remote control, etc. Also, configure the “*Stop CMD*” parameter in the “*OPTIONS*” menu.

DI8 (open CMD): order to open the obstacle, from a push-button box, remote control, reader, etc. Also, configure the “*Exploitation*” parameter in the “*QUICK START*” menu.

DI9 (close CMD): order to close the obstacle, from a push-button box, remote control, etc. Also, configure the “*Exploitation*” parameter in the “*QUICK START*” menu.

DI10 (lock open CMD): order to keep the obstacle in the open position, from an external switch.

DI11 (lock close CMD): order to keep the obstacle in the closed position, from an external switch.

DI12 (Sw open): signal from the opening limit-switch detector.

DI13 (Sw close): signal from the closing limit-switch detector.

DI14 (crank limit switch): signal from the presence detector switch of the crank used for manual operation of the obstacle (only on some types of equipment). This turns off the motor command outputs (DO7 and DO8) to prevent the obstacle from moving while the crank is engaged (safety).
If there is no crank limit switch on the equipment, connections B4 and C4 must be linked.

AI1 (analogue sensor): analogue signal from the analogue position sensor, which must be activated (“*Positioning*” parameter under the “*QUICK START*” menu).

OUTPUTS

Signals sent by the control board to external elements.

There is a red LED under every output connection, which indicates its status (ON/OFF).

REL1- and REL1+: connectors of the relay from which the indication to transmit comes (parameter is adjustable via the “*OUTPUT FUNCTION*” menu).

REL2- and REL2+: connectors of the relay from which the indication to transmit comes (parameter is adjustable via the “*OUTPUT FUNCTION*” menu).

REL3- and REL3+: connectors of the relay from which the indication to transmit comes (parameter is adjustable via the “*OUTPUT FUNCTION*” menu).

DO7 (rising motor): status 1 (ON) if the obstacle is opening or completely open.

DO8 (descending motor): status 1(ON) if the obstacle is closing or completely closed.

(DO9 = Power relay 1).

DO10 PWM and DO11 PWM (Pulse Width Modulation): power element outputs (for arm lighting, flashing light, frequency inverter fan) adjustable via the “*OUTPUT FUNCTION*” menu: outputs 10 and 11.

AO1 (FI setting): analogue signal sent to the frequency inverter controlling the speed of the motor.

CONNECTORS FOR EXTERNAL ELEMENTS

24V: 24 Volt DC connector.

GND: 0 Volt connector.

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Connecting the presence sensors

The board accepts up to four **P**resence **S**ensors (cells and/or loops, the generic term used in the rest of the manual and on the plans, diagrams and display is "PS").

- The cells are directly connected to connectors A, B and C (positions 13 to 16).
- The loops are connected to the X13 connectors (loop x on connector DPx) (cable sections $\leq 2.5 \text{ mm}^2$) and the associated detector (Y) is connected to the corresponding pin (Z).

Note 1: a double detector allows the handling of 2 loops simultaneously, but only following 2 combinations: either DP1 & DP2, either DP3 & DP4.

Note 2: circuits DP1, DP2, DP3, DP4 of connector X13 are respectively linked to circuits DP1, DP2, DP3, DP4 of connectors A, B and C. A loop and a cell may not be put on the same circuit (in other words, if a cell is connected to DI1 (connector 16), a loop may not be at DP1 but may be at DP2, 3 or 4).

Note 3: it is also necessary to configure the "*Exploitation*" parameter in the "*QUICK START*" menu.

Warning: when the presence sensors are put in place, the obstacle may move. Hence, the presence sensors should not be placed before power to the equipment has been cut (circuit breaker cut).

10. "EC" CERTIFICATE OF CONFORMITY

Déclaration CE de conformité

Nous, soussignés,

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

Déclarons que la machine

**Barrière levante électrique
BL229**

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

**Electrical rising barrier
BL229**

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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