



BL40



BL41



BL43  
BL44



BL46

## Technical manual

(Translated from the French original notice)

### Technical Manual BL4x-MT-EN-16

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## Document revisions

Revision no.	Date	Written by	Checked by	Subject
00	2008-03-14	MFy	JPL+SD+CD +JJH	First edition
01	2008-07-03	MFy		<ul style="list-style-type: none"> <li>- Control board: adapted to version 6.x of the program.</li> <li>- Modification of the First startup chapter.</li> <li>- Detail connector blocks assignment.</li> </ul>
02	2008-07-09	MFy		<ul style="list-style-type: none"> <li>- Electric diagram (rev D): modification of the brake and heating resistance wiring.</li> </ul>
03	2008-08-06	MFy		<ul style="list-style-type: none"> <li>- Dimensions drawing: addition of a note for reduced passage for BL46 in open position.</li> <li>- Addition of CE certificate.</li> </ul>
04	2008-08-18	MFy		<ul style="list-style-type: none"> <li>- Wiring diagram (rev E): self-inductance coil added.</li> </ul>
05	2008-09-11	MFy		<ul style="list-style-type: none"> <li>- Ch.4.2. : replacement of the positioning procedure.</li> </ul>
06	2008-10-13	MFy		<ul style="list-style-type: none"> <li>- Ch.5.2. : modification of springs adjustment for BL41, arm length 10.5 / 11.5 / 12 m.</li> </ul>
07	2008-11-27	MFy		<ul style="list-style-type: none"> <li>- Ch.3.2. , Barrier Type parameter: replacement of the solutions illustration.</li> <li>- Ch.5.2. : addition of screws n° 49 tightening torque.</li> <li>- Ch.7. : precision upon power and temperature.</li> <li>- Ch.8. : suppression of the base dimension.</li> <li>- Ch.10. : conformity certificate update.</li> </ul>
08	2009-03-18	MFy		<ul style="list-style-type: none"> <li>- Ch.4.2. : modification of the installation drawing (concrete base enlarged) &amp; procedure detailed.</li> <li>- Ch.5.2. : adjustment modification for:               <ul style="list-style-type: none"> <li>• BL40 – AVR – Alu net – 7.5 m</li> <li>• BL40 – AVR – Alu net – 8 m</li> <li>• BL41 – std – 11.5 m</li> <li>• BL41 – AVR – 12 m</li> </ul> </li> <li>- Ch.9.1. : correction REL 1, 2,3 = dry contacts.</li> </ul>
09	2009-07-31	MFy		<ul style="list-style-type: none"> <li>- Technical specifications: T° and IP update.</li> </ul>
10	2009-11-26	MFy		<ul style="list-style-type: none"> <li>- Ch.1: warning added regarding detection loops installation.</li> <li>- Ch.3. &amp; 5.1. adapted to v 6.2 of the control board (no functional modification).</li> </ul>
11	2010-01-04	MFy		<ul style="list-style-type: none"> <li>- EC certificate update.</li> </ul>
12	2010-03-17	MFy		<ul style="list-style-type: none"> <li>- Automatic lifting of the arm in case of power cuts = standard for BL44 only =&gt; modify ch. 2.2, 5.2, 6.4, 6.5.</li> </ul>
13	2010-06-30	MFy		<ul style="list-style-type: none"> <li>- Electrical connections: add warnings.</li> <li>- Terminology corrected by RWK.</li> </ul>
14	2010-11-09	MFy		<ul style="list-style-type: none"> <li>- Ch. 52: add length of compressed springs in the table.</li> </ul>
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16	2011-01-05	MFy		<ul style="list-style-type: none"> <li>- Ch. 3.1: Download Chg Lvx parameters description modified.</li> </ul>

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# 1. SAFETY WARNINGS

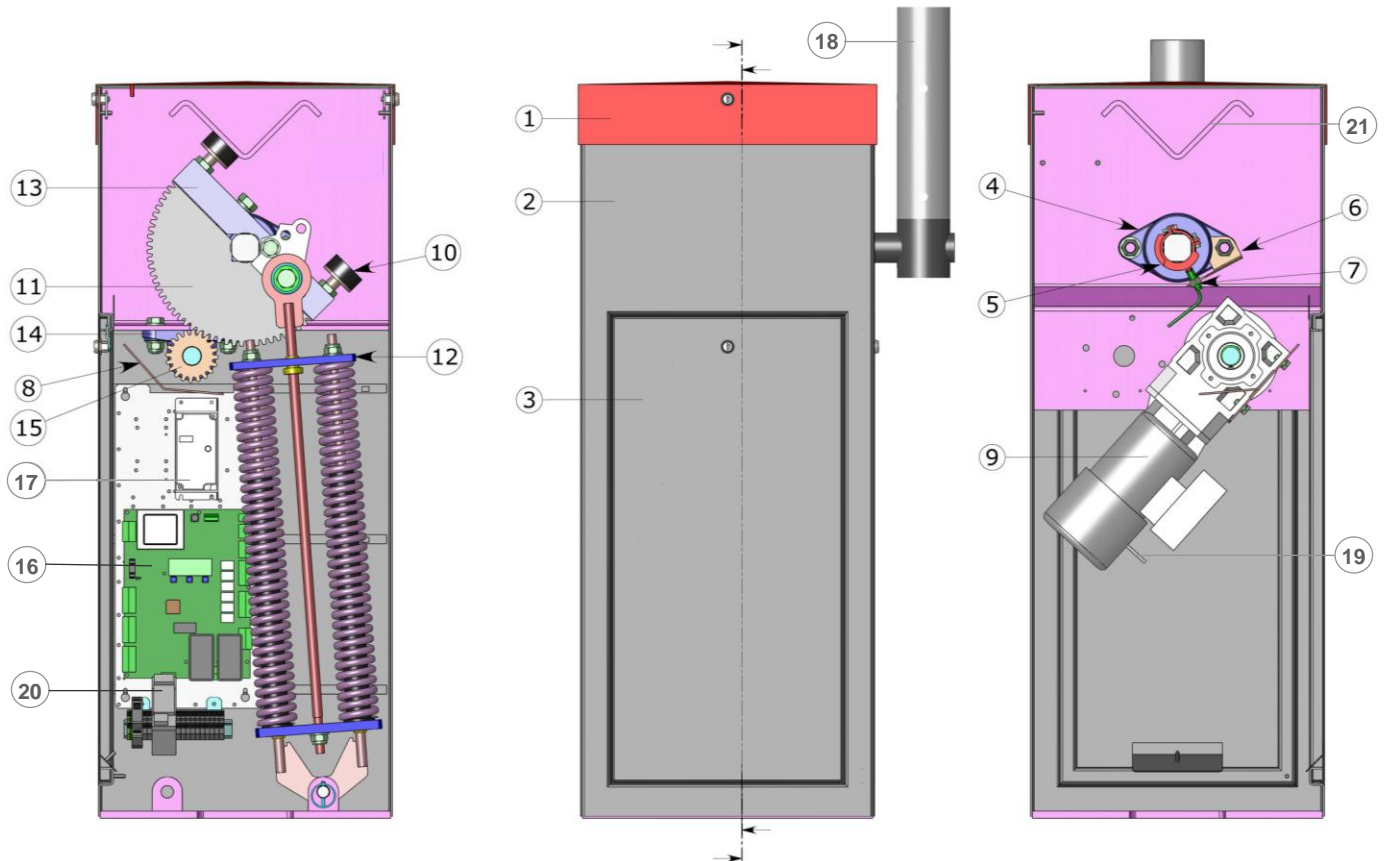
Installing a barrier exposes the user to responsibilities with regards to the safety of people:

- Circulation of pedestrians in the area where the barrier is moving must be banned (risk of being hit and pinching).  
Two pictograms for the prohibition of pedestrian access are provided with the equipment; the EC Machine Directive requires that they be affixed to either side of the barrier, in a location visible to pedestrians.
- All operations performed on the equipment must be undertaken by qualified personnel. All operations that are not authorised or that are carried out on this product by an unqualified technician shall automatically and ipso jure lead to the denial of the manufacturer's warrantee.
- The access keys to the mechanism must only be used by personnel informed about the electrical and mechanical risks incurred by negligent handling. This person is required to lock the mechanism's access door after completing the work.
- **As soon as the access door to the mechanism is opened, cut the power supply on the circuit breaker (20, Ch. 2.1. ).**
- **Raise the arm before any work inside** the housing, in order to release the tension in the balancing springs and avoid the untimely movement of the driving mechanism (Ch. 6.4. ).
- All internal elements that could receive power or move must be handled with care.
- The equipment is configured in a minimal risk mode for its users. All modifications to the parameters must be undertaken by experienced and qualified personnel and in no way entails the responsibility of Automatic Systems.
- The end of the arm must always be kept at a distance of at least 0.5 m from any object.
- The barrier must be fully visible by the user before being actuated.
- After a collision, even without apparent damages, the equipment must be carefully checked by an approved technician.
- **Install the arm and any accessories before any electrical tests (Ch.4. ).**
- **Never operate the barrier without the bumpers (10, Ch. 2.1. ).**
- 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. Location of the components



1	Cover, locked with two locks and keys
2	Housing
3	Front door, locked by lock and key
4	Bearing for main shaft (x2 per barrier)
5	Detection cam (x2 per barrier)
6	Bracket for inductive sensors
7	Inductive position sensor (x2 per barrier)
8	Protective cover
9	Gear motor
10	Bumper (x2 per barrier)
11	Sector gear
12	Spring assembly (x1 or x2 per barrier) (see Ch. 5.2. )
13	Hub
14	Plummer block
15	Pinion
16	Control board
17	Variable speed controller
18	Arm
19	Lever for disengaging brake (except with the automatic lifting option)
20	Circuit breaker
21	Reinforcing V-block, optional arm locking support

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## 2.2. Operating principle

The indicators in this chapter refer to the illustrations in Ch. 2.1.

The opening of the arm (18) is controlled by the user (through a lockable switch, a push-button, a radio transmitter), presence detector loops buried under the road, or through an outside unit. Closing is controlled in the same way, or automatically after a time delay.

The motion generated by the **gear motor** (9) is transmitted to the arm by means of pinion and sector gears (15 + 11).

The speed of the arm movement, controlled by the **variable speed controller** (17), can be adjusted for both opening and closing. The movement parameters are adjusted in the factory in order to offer brisk acceleration and gentle deceleration at the end of the movement.

The 2 inductive **position sensors** (7) indicate the extreme arm positions (open and closed) to the **control board** (16). The latter coordinates the barrier's activity: Management of movements, options, processing of incoming and outgoing information, etc (see Ch. 3. ). This information can, however, be transferred and processed by an external terminal (not supplied by Automatic Systems).

There are one to six preloaded **balancing springs** (12) to help the motor open and close the barrier (model **without automatic lifting\***).

For barrier models **with automatic lifting\*** during power cuts, the preloading of springs is increased in order for the latter to ensure the lifting of the arm in the event of power outages.

**(\*)Automatic lifting** of the arm in case of power cuts: standard for BL44, option for the other models.

An **electromagnetic brake** holds the arm in its two extreme positions (open and closed) and during a Stop command.

In order to increase protection against vandalism (forcing the arm), the latter can furthermore be fitted with an optional **mechanical locking system**, which locks the arm in open and/or closed position (see Ch 2.3. ).

The following table summarises the various possible combinations:

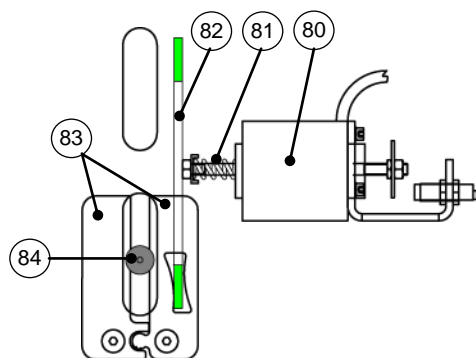
Barrier model	Electromagnetic brake	Locking of the arm (optional)	
		Locked position	Type of lock (see note Ch. 2.3. )
Without lifting of the arm	Brake NC, receives power during the movement of the arm in order to release it.	Locking of arm in open position	Lock NO, receives power when the arm is open in order to lock it.
			Lock NC, receives power during the movement of the arm in order to release it.
		Locking of arm in the closed position	Lock NO, receives power when the arm is closed in order to lock it.
			Lock NC, receives power during the movement of the arm in order to release it.
With automatic lifting of the arm	Brake NC, receives power in extreme positions to lock the arm.	Locking of arm in open position	Lock NC, receives power during the movement of the arm in order to release it.
			Lock NO, receives power when the arm is open in order to lock it.
		Locking of arm in the closed position	Lock NO, receives power when the arm is closed in order to lock it.

NC: Normally Closed = Closed in standby status (not turned on).  
 NO: Normally Open = Open in standby status (not turned on).

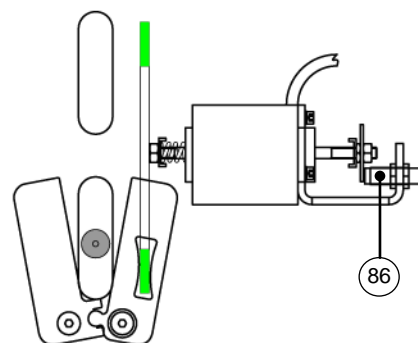
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## 2.3. Locking of the arm (optional)

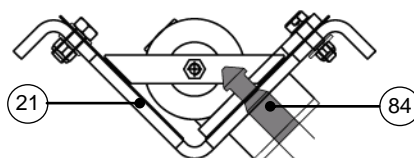
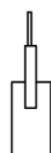
LOCK NC DURING STANDBY (POWER OFF)



LOCK NC WHEN POWERED (POWER ON)



OPTION  
LOCKING OF  
THE ARM IN  
OPEN  
POSITION



- 21. Reinforcing V-block (see Ch. 2.1. )
- 80. Electromagnet
- 81. Call back spring
- 82. Clip driving rod
- 83. Locking clips
- 84. Locking pin
- 86. Inductive sensor

Two locks are available as an option, in order to lock the arm in the open and/or closed position. These locks are placed on the reinforcing V-blocks (21), under the cover.

**Note:** Depending on the desired operating method (specified when the order is placed), the installed locks will be of NO or NC type (see table in Ch. 2.2. ). However, for locking in both positions, the 2 locks will be systematically of the same type (NO or NC), as they are controlled by the same electromagnet.

The above illustration represents the locking of the arm in the **open** position by means of an **NC** lock. The operation described below corresponds to this configuration, but can be applied in principle to other configurations.

The lock is of the Normally Closed type: In standby mode (turned off), the spring (81) pushes the shank (82) out of the electromagnet (80), which closes the clips (83) around the locking pin (84). The locking pin being fastened to the hub (13), which in turn is attached to the arm's driving shaft, which is therefore locked.

When a close command is sent to the barrier, the electromagnet is turned on. The shank (82) is pulled towards the electromagnet, which results in the clips (83) opening.

At the same time, a pulse is given to the arm in the other direction (opening), to possibly unlock the mechanism (the clips could be stuck by the locking pin if the arm has been subjected to major stress in a locked position).

The closing of the arm is only started when the inductive sensor (86) detects the shank's limit switch, which corresponds to the opening of the clips and the unlocking of the arm.

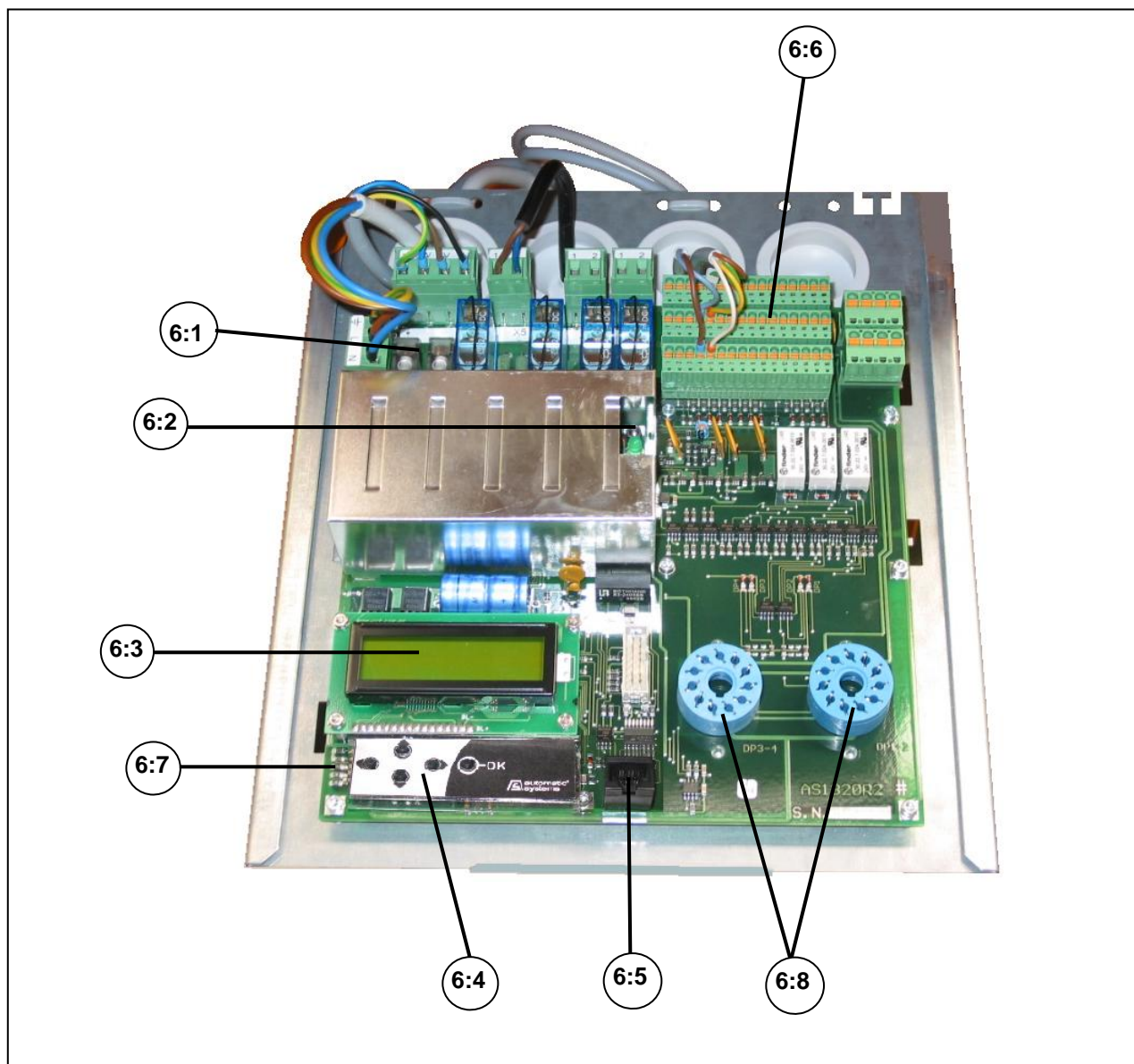
If the arm is not unlocked within 3 seconds, the barrier is put out of service.

Once the arm is closed (detection by the limit switch sensor (7, Ch. 2.1. )), the electromagnet is switched off.



### 3. AS1320 CONTROL BOARD

(Excract from AS1320 techniciean manual)



#### **Legend**

- 6:1. Fuses
- 6:2. Light indicating that the stabilised power supply is switched on
- 6:3. Menu display screen
- 6:4. Keys for navigating through the menu
- 6:5. Connector for the RJ45 communication cable
- 6:6. Terminal blocks for external communication (Input/Output connections)
- 6:7. Green LEDs (lights indicating that the control board has been turned on)
- 6:8. Connectors for presence detectors (for inductive loops)



The control board is the interface between the user and the barrier. It manages all of the latter's actions, including any potential options.

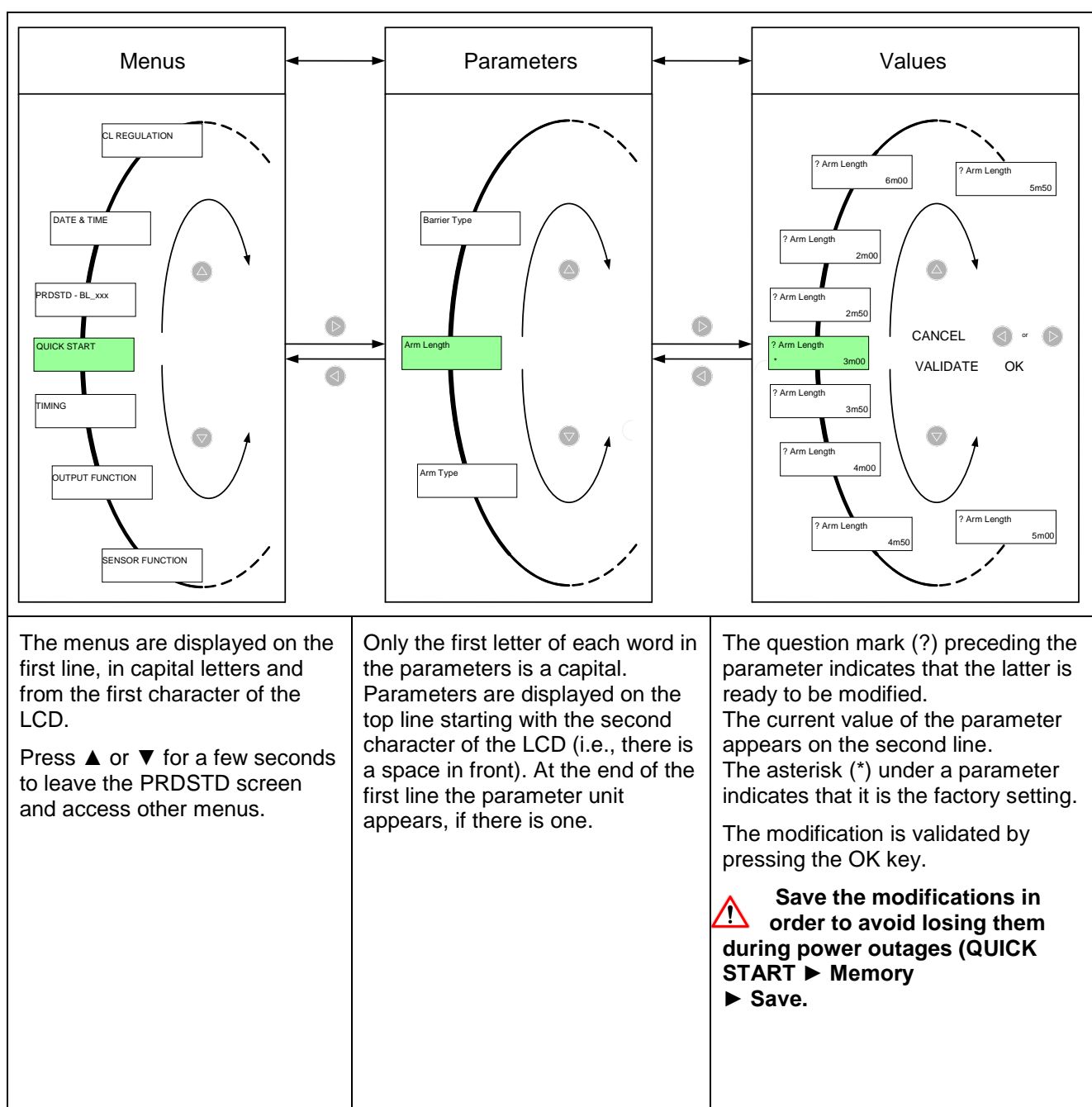
The navigation of the display menus is based on an architecture using drop-down menus with three levels: MENU ↔ PARAMETERS ↔ VALUES.

Use the ◀ ▶ keys to move from one level to another (hold down for a few seconds to move from the standby screen to another menu). Use the ▲ ▼ keys to navigate within the levels themselves. Press the OK key to validate a value modification.

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

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

**Note:** Below only the simplified menus are presented, which are sufficient for everyday use of the barrier. Please refer to the control board manual (available upon request) for a detailed description of all of the functions, adjusting their parameters, etc.



### 3.1. PRDSTD – BL xxx menu: Troubleshooting and monitoring

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



Parameter	Values	Description
		<p><b>OK key:</b> (only within this menu <b>(*)</b> 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.</p> <p><b>(*) Warning:</b> 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.</p> <p><b>Note:</b> 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.</p> <p><b>Left key (◀):</b> 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 <b>all of the preceding parameter modifications</b> (including the language) will be saved in MEM1.</p>

Soft. Version		<p>Display the software version used by the control unit, following format type – evolution – version – revision – minor index of the application.</p> <p>The descriptions included in this chapter correspond to versions 00-00-06-rr-00.</p>												
Log		<p>Display of the last 100 events (use ► the ▲ and keys to view preceding events).</p> <p>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.</p> <p>In the next two seconds, the event description is displayed.</p> <p>For example:</p>												
		<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> <p><b>Note:</b> If no error message is displayed when the machine fails, refer to the Troubleshooting chapter.</p>	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	<p>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).</p> <p>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.</p>												
	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).												
	Arm Swing Off	<p>Arm detected out of its support jaw (see the <i>Arm Swing Off</i> parameter in the OPTIONS menu).</p> <p>If the message continues to be displayed after the arm is rehinged, check the status of the SW arm presence sensor and its fastening</p>												

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	<i>Out Of Service</i>	<p>Apparatus out of service. This may be caused by the following events:</p> <ol style="list-style-type: none"> <li>1) Time out during opening (see <i>Open Time Out</i> message).</li> <li>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).</li> <li>3) Arm is unhinged (see <i>Arm Swing Off</i> message).</li> <li>4) Locking or unlocking failure of the BL4x (see <i>Unlock BL4x Er</i> message).</li> <li>5) Defect of the frequency inverter.</li> </ol>
	<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 <i>OPTIONS</i> 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>	<p>Frequency converter power cut-off in order to prevent any movement of the obstacle in case of:</p> <ul style="list-style-type: none"> <li>• Crank presence sensor activation (available on some equipment for manual handling of the obstacle),</li> <li>• Door/hood opening sensors activation (option on some equipment).</li> </ul>
	<i>Reset Sensor Init</i>	Change of the positioning sensor type (cf. <i>Positioning</i> parameter of <i>QUICKSTART</i> 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).
	<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 <i>QUICK START</i> ► <i>Power Fail OP</i> ► <i>ON</i> ).

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	<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 <i>QUICK START ► Power Fail OP ► ON</i> ). 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.  <b>Note:</b> This message is only displayed if the Cooling – Log (below) is ON.
	<i>CoolingMotor OFF</i>	Stopping of the fan that cools the motor.  <b>Note:</b> 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.  <b>WARNING:</b> it is then necessary to set the parameters to the actual configuration of the equipment and to save them in MEM1.  <b>Note:</b> it would be wise to keep the parameters values before changing the program version: Communication parameter → Extract Param (Technician level access).
	<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.  <b>WARNING:</b> it is then necessary to set the parameters to the actual configuration of the equipment and to save them in MEM1.  <b>Note:</b> 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).

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	<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).
	<i>Curve BL44 AVR</i>	Change in the type of barrier: Selection of curve BL44AVR ( <i>Barrier Type</i> parameter under the <i>QUICK START</i> menu).
	<i>Curve BL44 SR</i>	Change in the type of barrier: Selection of curve BL44SR ( <i>Barrier Type</i> parameter under the <i>QUICK START</i> menu).
	<i>Curve BL46 AVR</i>	Change in the type of barrier: Selection of curve BL46AVR ( <i>Barrier Type</i> parameter under the <i>QUICK START</i> menu).
	<i>Curve BL46 SR</i>	Change in the type of barrier: Selection of curve BL46SR ( <i>Barrier Type</i> parameter under the <i>QUICK START</i> menu).
	<i>Curve RSB 70&amp;71</i>	Change in the type of equipment: Selection of curve RSB 70&71 ( <i>Barrier Type</i> parameter under the <i>QUICK START</i> menu).
	<i>Unlock BL4x Er</i>	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.
<i>Close Status</i>		Cases when the obstacle is prevented from closing during a close request:
	<i>OK</i>	Normal closure.
	<i>PS1 Activated</i>	<p>A sensor (loop/cell) detects a presence or a fault in the circuit. In the latter case:</p> <ul style="list-style-type: none"> <li>• Check whether the sensor is plugged into the corresponding connector and whether it is functioning properly.</li> <li>• Check whether the sensor is properly connected.</li> </ul>
	<i>PS2 Activated</i>	
	<i>PS3 Activated</i>	

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	<i>PS4 Activated</i>	<ul style="list-style-type: none"> <li>Check whether the sensors are programmed correctly (SENSOR FUNCTION menu).</li> </ul>
	<i>Lock OP Hold</i>	Check why the Lock Open command is being maintained on the control board connector block.
	<i>Safe Arm Activ</i>	<p>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):</p> <ul style="list-style-type: none"> <li>Check whether the arm safety sensor is functioning properly.</li> <li>Check whether the Safety Arm parameter is programmed correctly (Options menu).</li> </ul>
	<i>PWF Open Activ</i>	<p>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.</p> <p><b>Note:</b> the closure loops are not taken into account for closing in this case.</p>
	<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>	<ul style="list-style-type: none"> <li>Check why the stop command is being maintained on the control board connector block.</li> <li>Check whether the Stop Cmd parameter is programmed correctly (Options menu).</li> </ul>
	<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>	<ul style="list-style-type: none"> <li>The reader counter (see the OPTIONS menu ► Counter CR) is greater than zero.</li> <li>Or the timing for no passage is other than zero (see the TIMING menu ► No Passage).</li> </ul>
<i>Open Status</i>		Cases when the obstacle is prevented from opening during a request to open.
	<i>OK</i>	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.


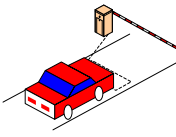
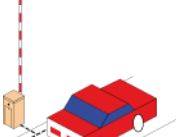
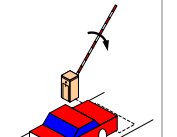
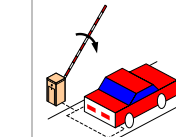
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	<i>Stop Cmd Hold</i>	<ul style="list-style-type: none"> <li>• Check why the close order is being maintained on the control board connector block.</li> <li>• Check whether the Stop CMD parameter is programmed correctly (Options menu).</li> </ul>
	<i>Arm ELV Locked</i>	<ul style="list-style-type: none"> <li>• Check whether the detector of the unlocking of the electrically locking (ELV) tip is functioning properly.</li> <li>• Check whether the Arm parameter in the OPTIONS menu is programmed correctly.</li> </ul>
	<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 (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 (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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## 3.2. QUICK START menu: Quick configuration

This menu reviews 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.			
		<b>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.</b>				
		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	<u>Nothin_Stop+CL</u>	**	-	<u>Stop</u>	+	<u>Closing</u>
5	<u>Nothing_OP+CL</u>	**	-	<u>Opening</u>	+	<u>Closing</u>
6	<u>Nothing_Stop</u>	**	-	<u>Stop</u>		
7	<u>Nothing_OP</u>	**	-	<u>Opening</u>		
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.

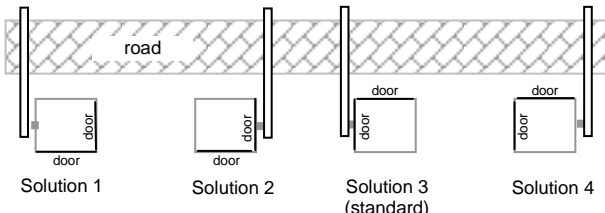
**Note:** 2 supplementary Presence Sensor functions (PS3 and PS4) are available through extended menu SENSOR FUNCTION.

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

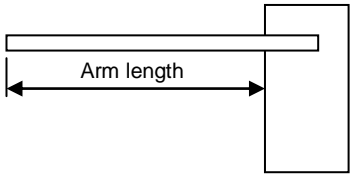
**Warning:** When the power is turned on, the detectors (DP) measure the state of the loops and initialize the reference level with regard to their environment. Hence, if a vehicle is present on the loop during activation, it will not be detected and the loop will give the order to close (in modes 1,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

Positioning		Definition of the type of sensor used to position the obstacle.	
	Limit Switches (by default)	To be selected if the open/close position is determined by limit switches (standard for BL4x).	
	Analog. Sensor	<p>To be selected if the position of the obstacle is determined by an analogue sensor.</p> <p>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.</p>	
	Manual Switch	<p>This message is displayed if it is not possible to activate the analogue sensor, as per one of these cases:</p> <ul style="list-style-type: none"><li>• The crank presence detector (only present on some equipments) is engaged. =&gt; Remove the crank so that the motor may be engaged.</li><li>• If the equipment does not have a crank presence detector, the circuit may have been cut. =&gt; link the corresponding connections.</li></ul>	
	Activate Motor?	<p>Pushing the OK key within 5 seconds launches the analogue sensor activation procedure (see below) <b>and the movement of the obstacle!</b></p> <div><p><b>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.</b></p><p><b>=&gt; Navigate through the menus by means of the upper key (▲).</b></p></div>	
	Search LSO...	The obstacle opens to look for its open limit position.	<div><p><b>The obstacle is moving during this phase!</b></p></div>
	Search LSC...	The obstacle closes to look for its closed limit position.	
	Init. Passed	<p>This is displayed if the open and closed limit values have been recorded.</p> <p>The analogue sensor is then operational.</p> <p>The message disappears after 5 seconds or if the OK key is pushed.</p> <p><b><u>IMPORTANT:</u></b> Save the values in MEM1 or MEM2 (MEMORY menu).</p>	
	Adjust Sensor	<p>Activation failed because the analogue sensor was not properly positioned =&gt; 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).</p>	

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	<i>Value 0 Detect</i>	<p>Activation failed because the analogue sensor returned a measurement of zero. As this value is invalid, check:</p> <ul style="list-style-type: none"> <li>the sensor's wiring (in the sensor as well as on the control board's connector blocks);</li> <li>whether the sensor is too close to the cam;</li> <li>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.</li> </ul>
<i>Barrier Type</i>		<p>Definition of the equipment type; this allows the program to automatically modify the opening and closing motor power curves.</p> <p><b>Note 1:</b> The equipment type is stated on the reference plate, inside the housing.</p> <p><b>Note 2:</b> to change from barrier solution 1 or 2 to solution 3 or 4 (illustration below), 2 phases of the motor have to be inverted.</p> 
	<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, RSB70, or RSB71.
	<i>BLG77</i>	Parameter to select for a BLG77.
	<i>BL 223</i>	Parameter to select for a BL223.
	<i>RSB 70 &amp; 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.
	<i>BL44 AVR</i>	Parameter to select for a BL44 with automatic opening of the arm in case of power cut.
	<i>BL 46 SR</i>	Parameter to select for a BL46 without automatic opening of the arm in case of power cut.

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	<i>BL 46 AVR</i>	Parameter to select for a BL46 with automatic opening of the arm in case of power cut.
<i>Arm Length</i>		<p>Specification of the arm mounted on the barrier; this allows the program to automatically modify the opening and closing curves.</p> <p>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.</p> <p><b>Note:</b> arm length = free passage = distance between the arm tip and the barrier housing.</p> 
	<i>2m00</i>	Select this for a BL4x or BL229 with an arm of 2 m.
	<i>2m50</i>	Select this for a BL4x or BL229 with an arm of 2.5 m.
	<i>3m00</i>	Select this for a BL4x or BL229 with an arm of 3 m.
	<i>3m50</i>	Select this for a BL4x or BL229 with an arm of 3.5 m.
	<i>4m00</i>	Select this for a BL4x or BL229 with an arm of 4 m.
	<i>4m50</i>	Select this for a BL4x or BL229 with an arm of 4.5 m.
	<i>5m00 (by default)</i>	Select this for a BL4x or BL229 with an arm of 5 m.
	<i>5m50</i>	Select this for a BL4x or BL229 with an arm of 5.5 m.
	<i>6m00</i>	Select this for a BL4x or BL229 with an arm of 6 m.
	<i>7m00</i>	Select this for a BL4x with an arm of 6,5 or 7 m.
	<i>8m00</i>	Select this for a BL4x with an arm of 7,5 or 8 m.
	<i>9m00</i>	Select this for a BL4x with an arm of 8,5 or 9 m.
	<i>10m00</i>	Select this for a BL4x with an arm of 9,5 or 10 m.
	<i>11m00</i>	Select this for a BL4x with an arm of 10,5 or 11 m.
	<i>12m00</i>	Select this for a BL4x with an arm of 11,5 or 12 m.
	<i>Non-modifiable</i>	This message is displayed when the Barrier Type parameter does not allow any modification of the arm length.
	<i>Incompatible</i>	Message displayed when the selected Arm Length is not compatible with the selected Barrier Type.
<i>Arm Type</i>		Specification of the type of arm assembled on the barrier. This parameter only applies to the BL Highway and is not taken into account for other types of equipment.
	<i>Aluminium (default)</i>	Aluminium arm.
	<i>Carbon</i>	Carbon arm.

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	<i>Non-modifiable</i>	Message displayed for the equipments different than BL229 Highway.
<i>Power Fail OP</i>		<p>Choice(*) of mode for unlocking the obstacle during a loss of supply voltage.</p> <p>(*) Except for BL4x, where this parameter is automatically set to ON and not adjustable.</p>
	<i>OFF</i> (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.
	<i>ON</i> (by default for BL4x only, not adjustable)	<p>The obstacle is unlocked: a pulse is given to take the transmission elements out of alignment; opening may have to be effected by hand.</p> <p>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).</p> <p><b>Note:</b> 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.</p> <p><b>Warning:</b> this adjustment is incompatible with the Lock Closed command which has priority and will maintain the obstacle closed.</p>
<i>Exploitation</i>		<p>Operating modes for the opening, closing and STOP commands.</p> <p>The commands follow this decreasing order of priority:</p> <p>STOP (stop)          Lock OP (lock open)          Lock CL (lock close)          OP (open)          CL (close)</p> <p>The presence sensors and reader inputs are at the same hierarchical level as OP/STOP/CL =&gt; Lock Close has priority in an opening loop and will work even if something is detected.</p> <p><b>Warning:</b> The OP command is never interrupted (the arm always goes to the LSO before accepting the next command) =&gt; Lock Close will take affect after the obstacle has reached its LSO.</p> <p><b>Note:</b> Some use modes are incompatible with the operating mode of the presence sensors (see the table of incompatible modes, here after).</p>


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	2 Contacts (by default)	<p>2 contacts used for opening and closing, on the control board's connector block.</p> <p>Open Cmd: open the obstacle</p> <p>Close Cmd: close the obstacle on the rising edge of the command.</p> <p>STOP Cmd: stop.</p> <p><b>Note:</b> A Lock Open command is given if the No Passage timing has been activated, it will close when the following two conditions have been met:</p> <ul style="list-style-type: none"> <li>• the Lock Open command is off,</li> <li>• the set time has elapsed (or, immediately if there is a detection on a closing sensor).</li> </ul>
	1 Contact	<p>Open Cmd: if active, the obstacle opens.</p> <p>Open Cmd: if inactive, the obstacle closes.</p> <p>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.</p> <p><b>Note:</b> there is no CL contact in this mode.</p> <p><b>Note:</b> 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.</p> <p><b>Note:</b> 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).</p> <p><b>Warning:</b> 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.</p>
	Step by Step	<p>Open Cmd: inversion at each rising edge (i.e., at each pulse).</p> <p>STOP Cmd: stop.</p> <p><b>Note:</b> neither CL nor reader commands are available in this mode.</p>
	Dead Man	<p>Open Cmd: if active, the obstacle opens.</p> <p>Open Cmd: if inactive (i.e., when the command is released), stop.</p> <p>Close Cmd: If active, the obstacle closes.</p> <p>Close Cmd: if inactive, stop.</p> <p>STOP Cmd: stop.</p> <p><b>Note:</b> the reader commands do not work in this mode.</p> <p><b>Note:</b> this mode is only compatible with presence sensors operating under the Nothing_Stop or Deactivated modes (otherwise the Incompatible message appears briefly).</p>
	2 Contacts CFE	<p>Same as 2 Contacts operation, except:</p> <p>Close Cmd: <b>C</b>losure of the obstacle on the <b>F</b>alling <b>E</b>dge of the command (i.e., when the button is released).</p>

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	<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 MEMORY menu).
	<i>Ignored (by default)</i>	No action.
	<i>Save</i>	Save the modified parameters in MEM1. <b><u>Note:</u> this saving action is necessary so that the modifications made are not lost during a power cut!</b>
	<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. <b><u>Warning:</u> 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.</b>
	<i>Done</i>	This message is displayed when the save or the load is finished and disappears automatically after 1 second.
<i>Min Sensor Max</i>	<i>0 to 1024</i>	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).
<i>Menu Access</i>		Choice of the display mode for the menus.
	<i>Simplified (default)</i>	Access to the menus included in the Simplified mode. <b><u>Warning:</u> 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.</b>
	<i>Extended</i>	Access to supplementary parameters.

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		<b>Incompatibility table</b> of presence sensor (PS) use and operating modes: <input checked="" type="checkbox"/> compatible <input checked="" type="checkbox"/> incompatible				
		Use mode				
		2 Contacts	1 Contact	Step by Step	Dead Man	2 Contacts CFE
Sensor function	Desactivated	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Opening	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	CL_Stop+CL	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	CL_OP+CL	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Nothing_Stop+CL	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Nothing_OP+CL	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Nothing_Stop	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Nothing_OP	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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## 4. INSTALLATION

Installation must be undertaken in compliance with the safety warnings (Ch. 1.).

### 4.1. Storing the equipment before installation

Before installation, ensure that the equipment does not get damaged, leave it in its original packaging, and place it in a dry area protected from dust, heat and weather.  
Store between -30 and +80°C.

### 4.2. Positioning the equipment

Since the barrier cannot be laid flush with the road surface, a perfectly horizontal raised concrete base must be prepared, according to the installation drawing next page.

1. Assemble the fixing frame:  
Pass the four anchoring bolts (3) into the holes of the fixing frame (2) using a nut (7a) and a flat washer (6a) each time. The threaded end of the anchoring bolts must be oriented upwards as illustrated in Fig. a.  
Secure the anchoring bolts on the fixing frame by putting a flat washer (6b) and a nut (7b) on each threaded rod with a 40 mm tail. Tighten the nuts. It is advisable to protect the threads sticking out of the fixing frame from concrete projections by means of adhesive tape.
2. Provide a PVC tube (4) of minimum diameter 60 mm to pass the power supply and remote control wires (Fig. b).  
When appropriate, pass a PVC tube (5) of diameter 25 mm to pass the optional detection loops wires. Ensure that the cables have a minimum of 1 metre out of the concrete base.
3. Construct a concrete base (8) in which the fixing frame is to be buried. The fixing frame must be flush with the finished level of the concrete base and perfectly horizontal (Fig. b).
4. When the concrete is dry, remove the adhesive protection tape from the threads, remove the nuts (7b), the flat washers (6b), put the barrier housing onto the concrete base and maintain it by means of the washers (6b) and the nuts (7b) (Fig. c). The concrete base is designed smaller than the barrier housing in order to prevent water stagnating at the bottom of the housing.

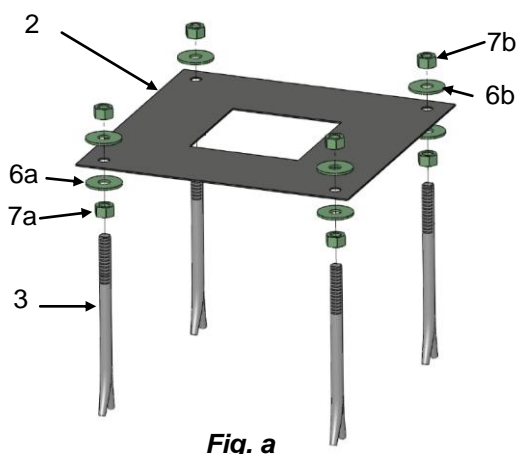


Fig. a

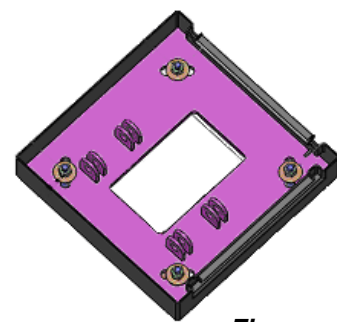


Fig. c

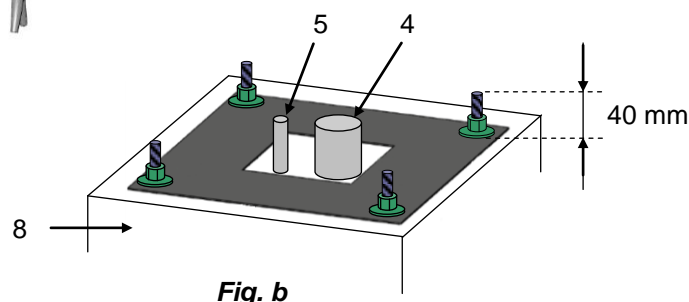


Fig. b

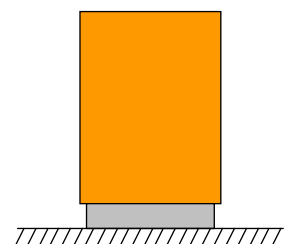
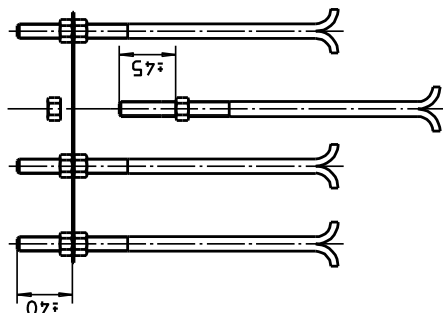


Fig. d

## Technical Manual BL4x-MT-EN-16

DETAIL OF THE FRAME TO BE SEALED

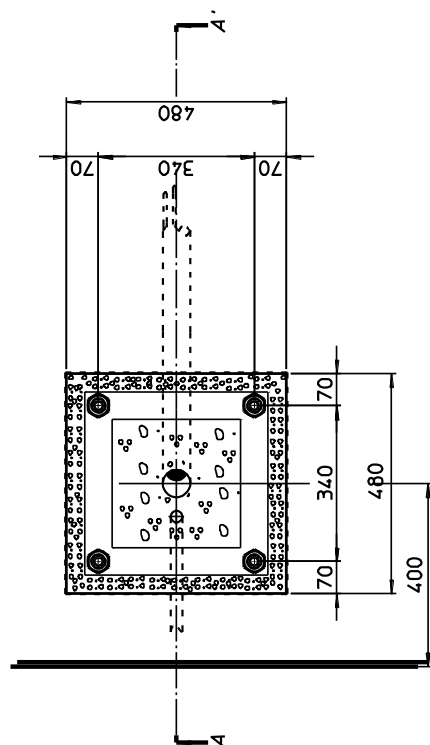
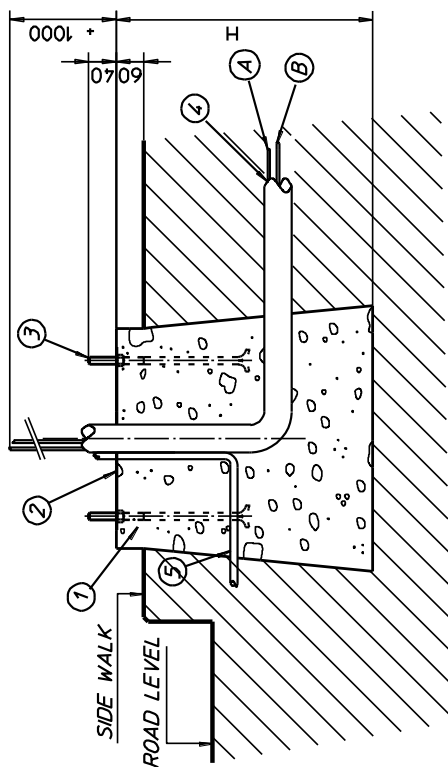


ARM	H
<3m	500
3 A 6m	700
6 A 8m	900
8 A 9m	1000

LEGEND :

- ① CONCRETE BASE
- ② FRAME TO BE SEALED
- ③ STONE BOLTS TYPE C M16x245
- ④ TUBE IN PVC 60 OF 80mm Ø
- ⑤ TUBE IN PVC 25mm Ø (IF THERE IS A LOOP)
- ⑥ POWER SUPPLY IN 230V  $\pm$  IN 3G2.5<sup>mm</sup>
- ⑦ REMOTE CONTROL IN 8 PAIRS 0.6<sup>mm</sup> TYPE TPVF OR FOLLOWING SPECIFICATIONS

CONCRETE FOUNDATION SECTION A-A'



CONCRETE BASE FOR BL4x

DESIGNATION  
BESTEMMING :

Ce plan résume notre propriété et ne peut pas être cédé à des tiers ni être recopié sans autorisation écrite de Automatic Systems  
Dit plan blijft onze eigendom en mag niet verspreid worden noch worden gekopieerd zonder schriftelijke toestemming van Automatic Systems

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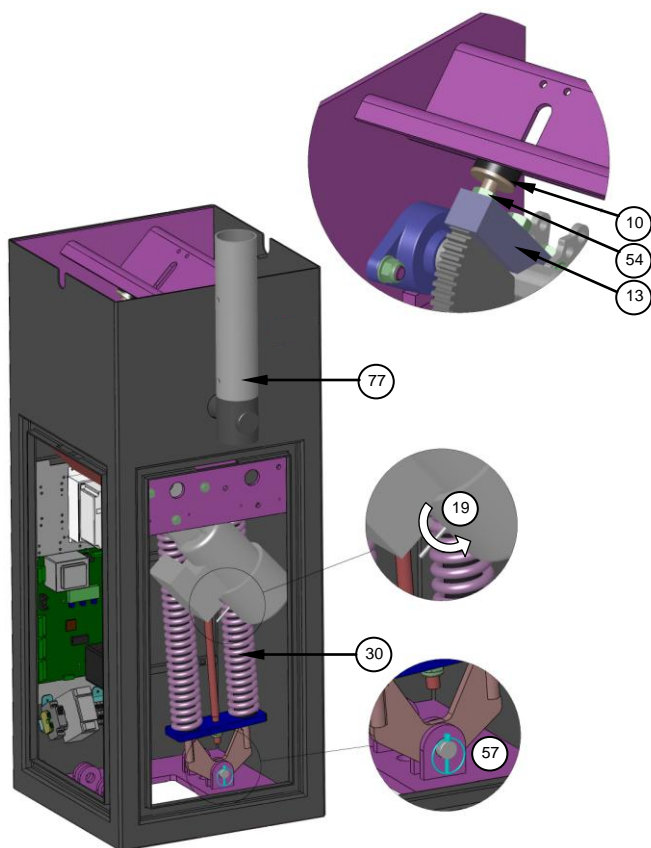
DESIGNER : GÉTEKENDE :	DATE : DATUM :	N° DOSSIER : N° DOSSIER :
CF	17/03/2009	
VERFIE MAKEN :	ECHTELLE SCHAAL :	PLAN N° PLAN N° :
POPO	1/10 & 1/5	CH6943-gb A

(\*) CONCRETE RESISTANCE CLASS = C25/30 ACCORDING TO THE EUROPEAN STANDARD IN 206-1

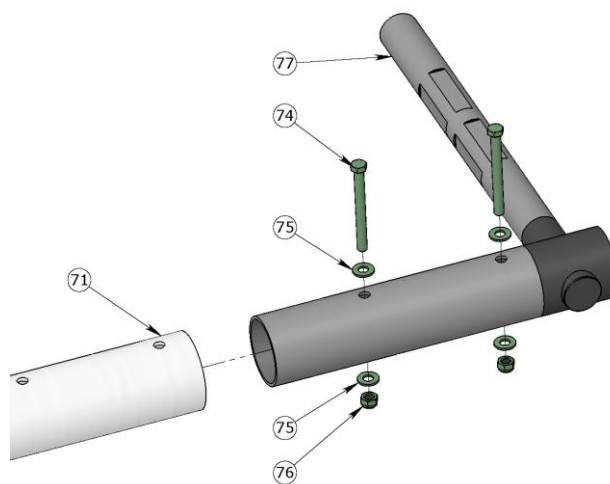
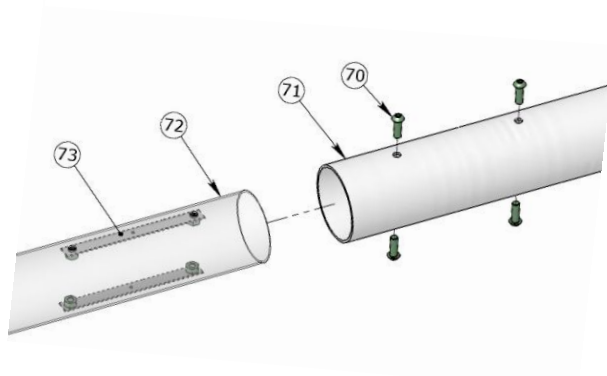
## Technical Manual BL4x-MT-EN-16



### 4.3. Assembly of the round arm for BL40



- 10 Upper bumper
- 13 Hub
- 19 Lever for disengaging brake
- 30 Balancing spring
- 54 Nut
- 57 Pin
- 70 CBLH M8x25 stainless steel screw (tighten to 20 Nm)
- 71 Round aluminium arm, Ø100
- 72 Round aluminium arm, Ø89.5 or Ø83.5
- 73 Assembly fixing bracket for round arm
- 74 H M C12x120 stainless steel screw (tighten to 80 Nm)
- 75 M 12 stainless steel flat washer
- 76 Nylstop M12 stainless steel nut
- 77 Main shaft



## Technical Manual BL4x-MT-EN-16

**Note:** All screws must be lubricated before assembly.

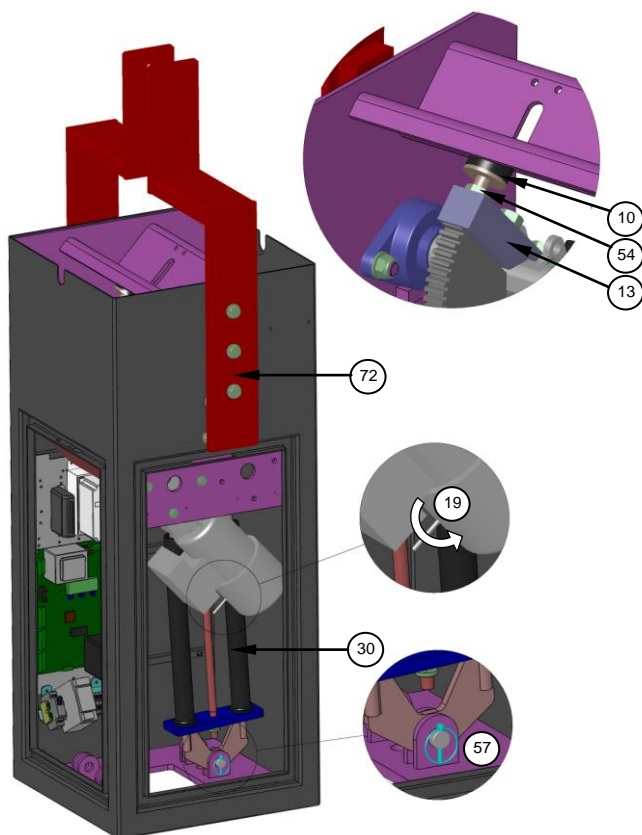
**Note:** Minimum tightening torques are provided in the illustration's legend.

**Warning:** In the event of removing the arm assembly, the spring assemblies' lower fastening pin (57) must be removed beforehand, in order to release the tension in the springs.

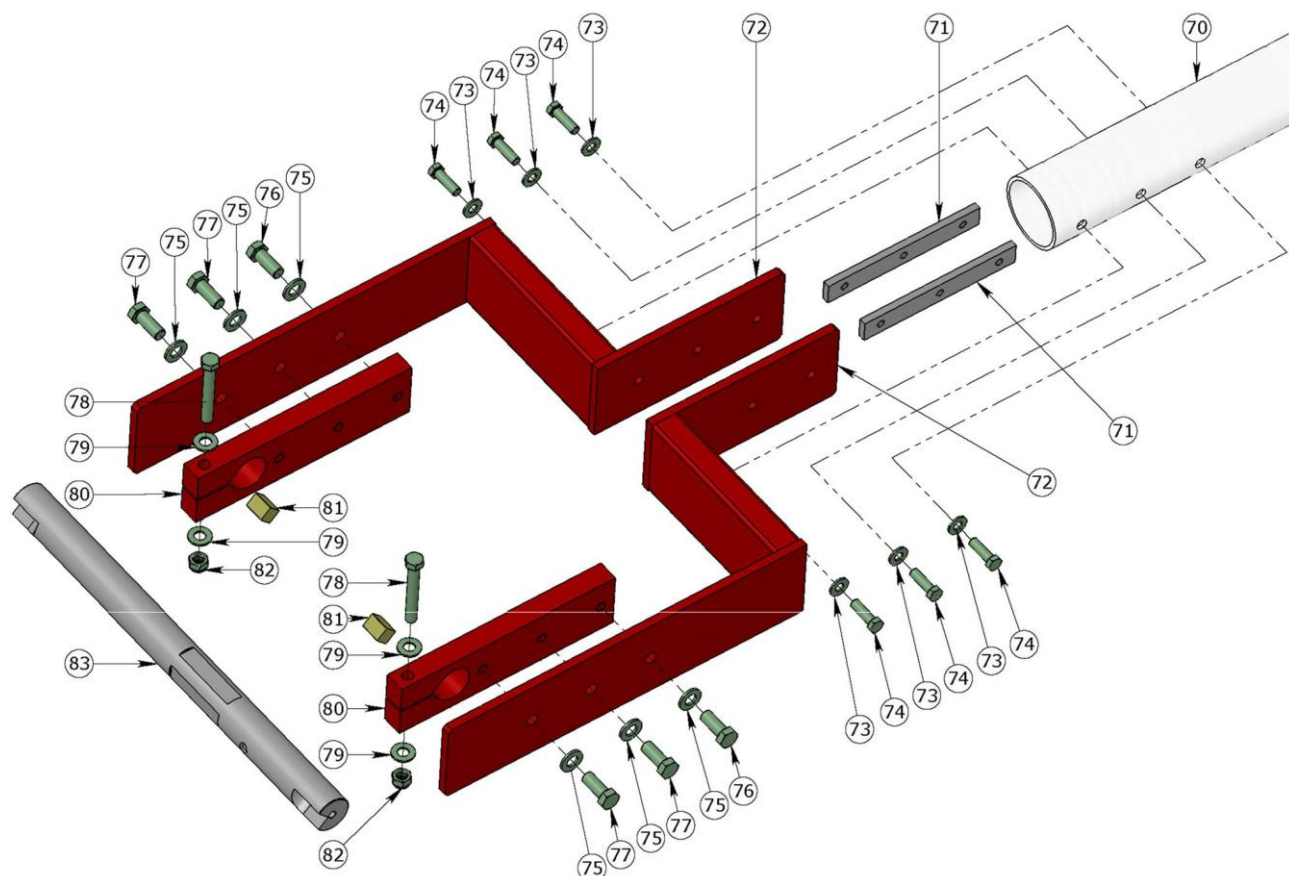
1. Turn off the power to the barrier by turning off the circuit breaker (20, Ch. 2.1. ).
2. Unlock the nut (54) and screw the upper bumper (10) as far as possible into the hub (13), in order to remove the compression constraint on the springs (30), then lift the shaft (77).
3. Remove the spring assembly's lower hinge pin (57).
4. Slowly lower the shaft. If the barrier does not have the *automatic lifting* option, the rotation of the shaft can only be carried out by releasing the motor brake (using lever 19).
5. Place the first arm coupler (71) on the arm rotating shaft (77).  
Tighten the screws (74), washers (75) and nuts (76).  
Place the second arm coupler (72), if any, in the first one and tighten the screws (70).  
Place the third arm coupler (72), if any, in the second one and tighten the screws (70).
6. Lift the arm (if needed by releasing the brake: lever 19).
7. Replace the spring assembly's lower fastening axle and lock it using its pin (57).
8. Adjust the verticality of the arm by tightening or loosening the upper bumper (10), then tighten the lock nut (54).
9. Fasten and, where necessary, tighten the bracing wire (see illustration on the folding fence, Ch. 4.6. ).

## Technical Manual BL4x-MT-EN-16

## 4.4. Assembly of the central round arm for BL41



- 10 Upper bumper
- 13 Hub
- 19 Lever for disengaging brake
- 30 Balancing spring
- 54 Nut
- 57 Pin
- 70 Round aluminium arm, Ø100
- 71 Fixing bracket for central arm
- 72 Central stirrup for round arm (in 2 parts)
- 73 M 12 stainless steel flat washer
- 74 H M12x40 stainless steel screw (tighten to 80 Nm)
- 75 M 16 stainless steel flat washer
- 76 H M16x40 stainless steel screw (tighten to 190 Nm)
- 77 H M16x40 stainless steel screw (standard); H M16x50 screw if bracings (tighten to 190 Nm).
- 78 H M14x100 stainless steel screw (tighten to 130 Nm)
- 79 M 14 stainless steel flat washer
- 80 Fixing jaw
- 81 Clavette
- 82 Nylstop M14 stainless steel nut
- 83 Shaft for stirrup



## Technical Manual BL4x-MT-EN-16

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**Note:** All screws must be lubricated before assembly.

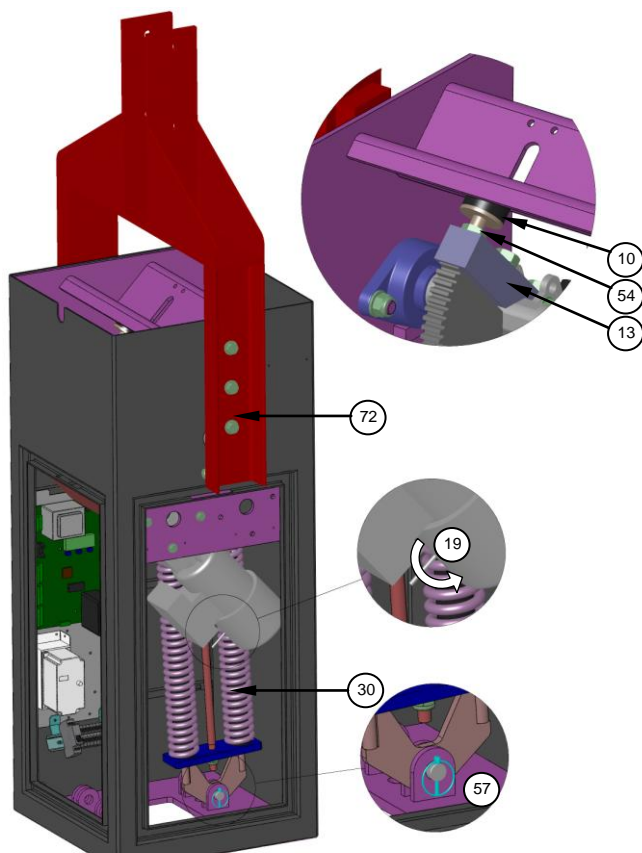
**Note:** Minimum tightening torques are provided in the illustration's legend.

**Warning:** In the event of removal of the arm assembly, the spring assemblies' lower fastening axle must be removed beforehand by removing the pin (57), in order to release the tension in the springs.

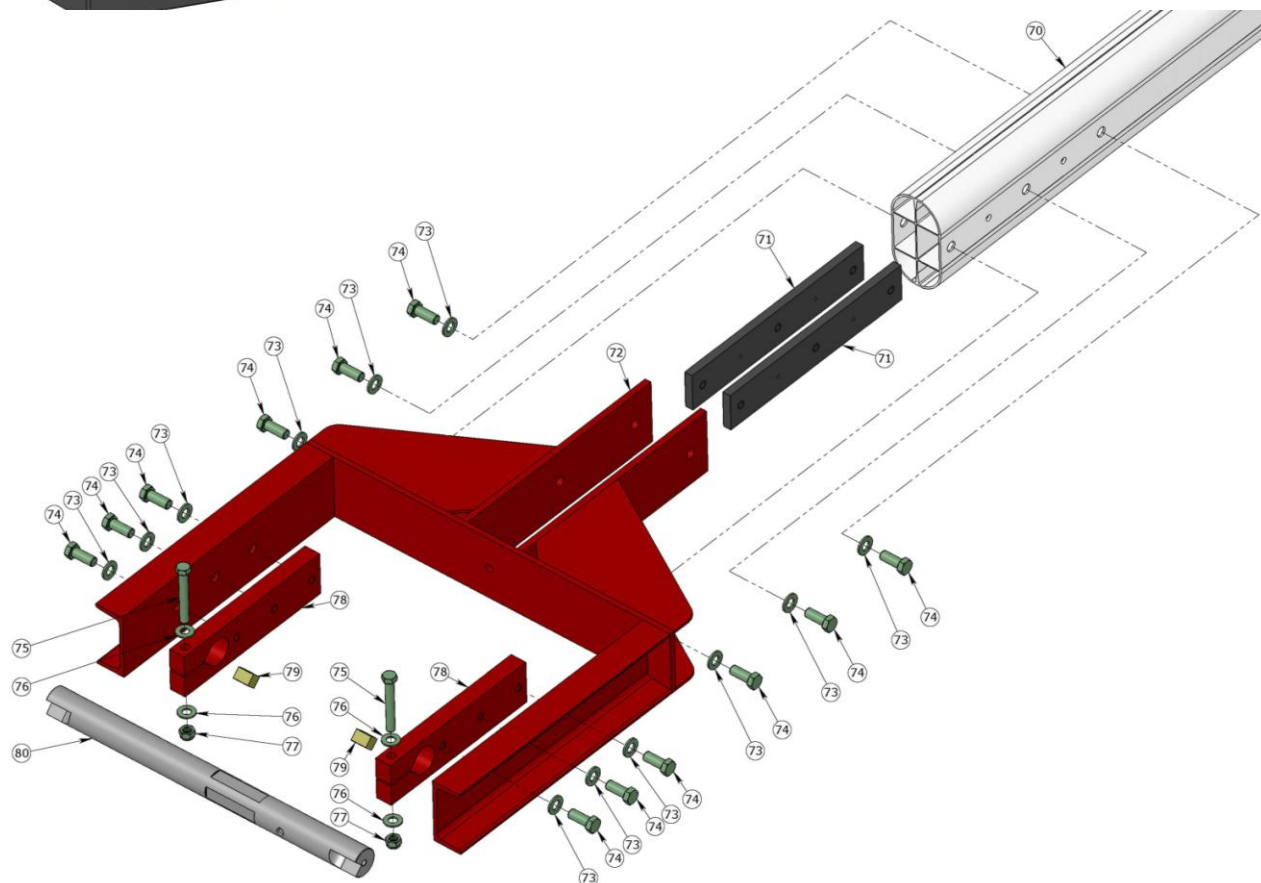
1. Turn off the power to the barrier by turning off the circuit breaker (20, Ch. 2.1. ).
2. Unlock the nut (54) and screw the upper bumper (10) as far as possible into the hub (13), in order to remove the compression constraint on the springs (30), then lift the stirrup (72).
3. Remove the spring assembly's lower hinge pin (57).
4. Slowly lower the arm stirrup. If the barrier does not have the *automatic lifting* option, the shaft can only be rotated by releasing the motor brake (using lever 19).
5. Place the first arm coupler (70) on the stirrup (72).  
Tighten the screws (74), washers (73) and fixing brackets (71).  
Place the second arm coupler, if any, into the first (see *Arm assembly for BL40*).
6. Lift the arm, if needed, by releasing the brake: lever 19.
7. Replace the spring assembly's lower fastening axle and lock it using its pin (57).
8. Adjust the verticality of the arm by tightening or loosening the upper bumper (10), then tighten the lock nut (54).
9. Fasten and, where necessary, tighten the bracing wire (see illustration on the folding fence, Ch. 4.6. ).

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## 4.5. Assembly of the oval arm for BL43 & BL44



- 10 Upper bumper
- 13 Hub
- 19 Lever for disengaging brake
- 30 Balancing spring
- 54 Nut
- 57 Pin
- 70 Aluminium 175x100 arm
- 71 Fixing bracket for 175x100 arm
- 72 Central stirrup
- 73 M 16 stainless steel flat washer
- 74 H M16x40 stainless steel screw (tighten to 190 Nm)
- 75 H M14x100 stainless steel screw (tighten to 130 Nm)
- 76 M 14 stainless steel flat washer
- 77 Nylstop M14 stainless steel nut
- 78 Stirrup fixing jaw
- 79 Calvette
- 80 Main shaft



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**Note:** All screws must be lubricated before assembly.

**Note:** Minimum tightening torques are provided in the illustration's legend.

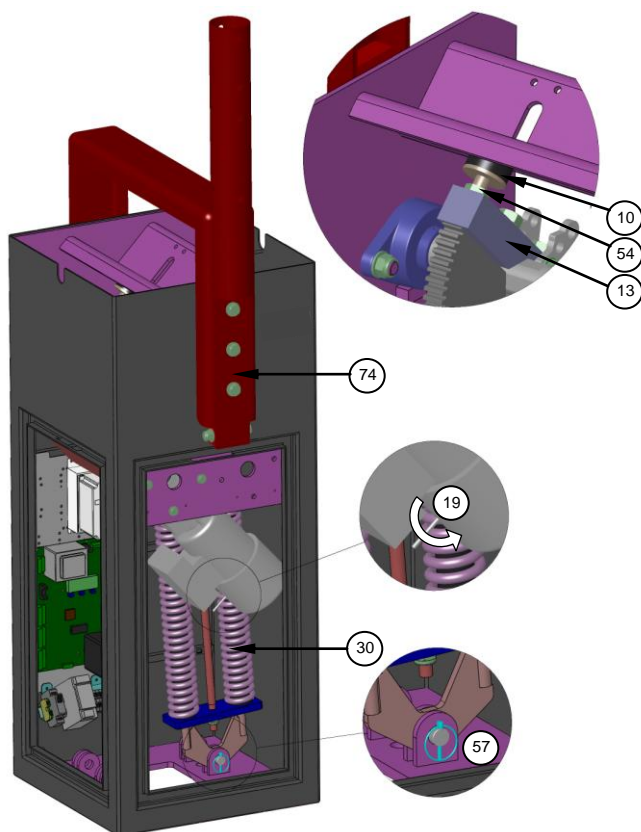
**Warning:** In the event of removal of the arm assembly, the spring assemblies' lower fastening axle must be removed beforehand by removing the pin (57), in order to release the tension in the springs.

1. Turn off the power to the barrier by turning off the circuit breaker (20, Ch. 2.1. ).
2. Unlock the nut (54) and screw the upper bumper (10) as far as possible into the hub (13), in order to remove the compression constraint on the springs (30), then lift the stirrup (72).
3. Remove the spring assembly's lower hinge pin (57).
4. Slowly lower the arm stirrup. If the barrier does not have the *automatic lifting* option, shaft can only be rotated by releasing the motor brake (using lever 19).
5. Place the first arm coupler (70) on the stirrup (72).  
Tighten the screws (74), washers (73) and fixing brackets (71).
6. Lift the arm, if needed, by releasing the brake: lever 19.
7. Replace the spring assembly's lower fastening axle and lock it using its pin (57).
8. Adjust the verticality of the arm by tightening or loosening the upper bumper (10), then tighten the lock nut (54).

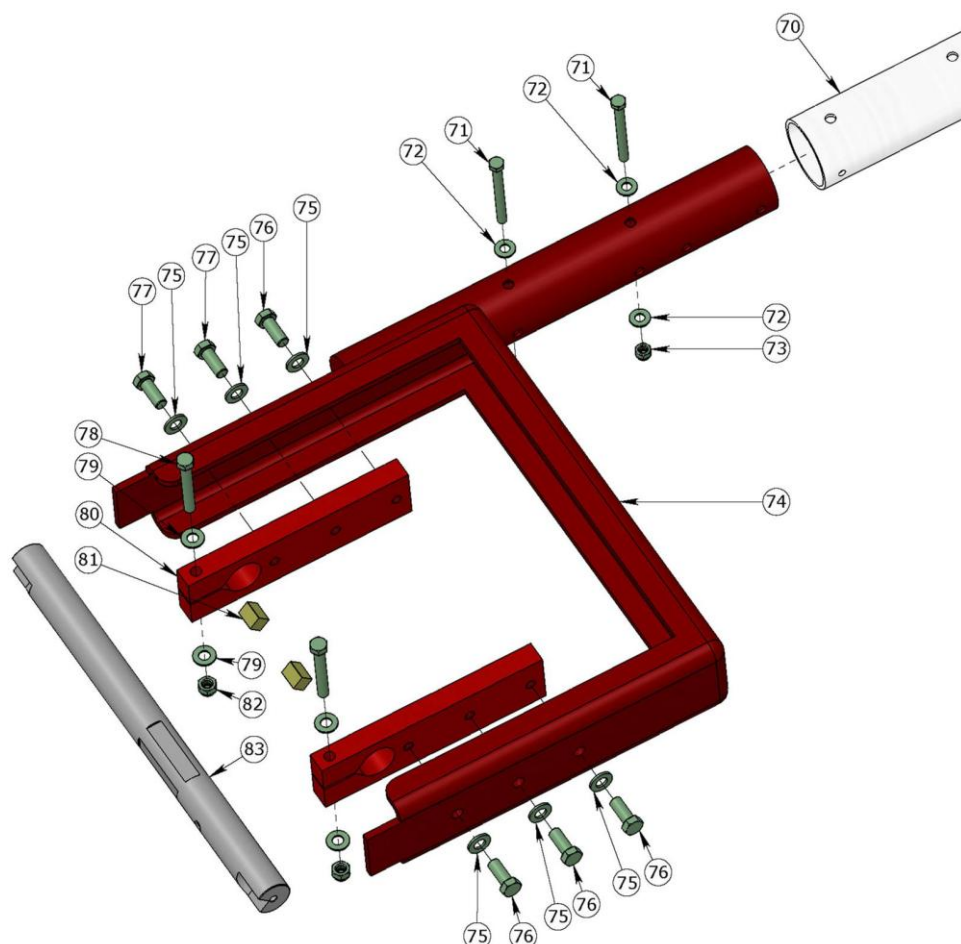
## Technical Manual BL4x-MT-EN-16



## 4.6. Assembly of the arm with folding fence for BL46



- 10 Upper bumper
- 13 Hub
- 19 Lever for disengaging brake
- 30 Balancing spring
- 54 Nut
- 57 Pin
- 70 Round aluminium arm, Ø100
- 71 H M C12x120 stainless steel screw (tighten to 80 Nm)
- 72 M 12 stainless steel flat washer
- 73 Nylstop M12 stainless steel nut
- 74 DAKOTA arm stirrup
- 75 M 16 stainless steel flat washer
- 76 H M16x40 stainless steel screw (tighten to 190 Nm)
- 77 H M16x40 stainless steel screw (standard); H M16x50 screw if bracing (tightened to 190 Nm).
- 78 H M14x100 stainless steel screw (tighten to 130 Nm)
- 79 M 14 stainless steel flat washer
- 80 Stirrup fixing jaw
- 81 Clavette
- 82 Nylstop M14 stainless steel nut
- 83 Main shaft



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**Note:** All screws must be lubricated before assembly.

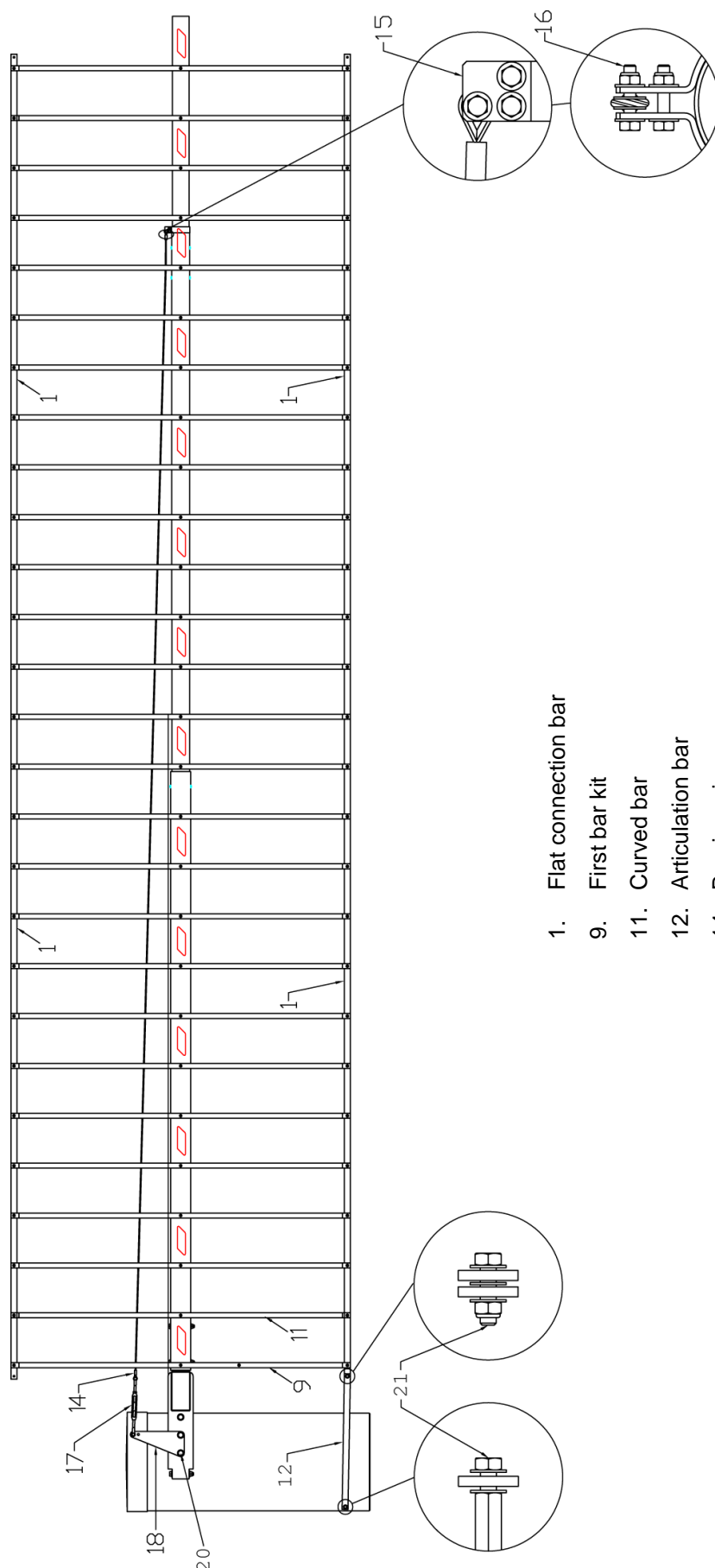
**Note:** Minimum tightening torques are provided in the illustration's legend.

**Warning:** In the event of removal of the arm assembly, the spring assemblies' lower fastening axle must be removed beforehand by removing the pin (57), in order to release the tension in the springs.

1. Turn off the power to the barrier by turning off the circuit breaker (20, Ch. 2.1. ).
2. Unlock the nut (54) and screw the upper bumper (10) as far as possible into the hub (13), in order to remove the compression constraint on the springs (30), then lift the stirrup (74).
3. Remove the spring assemblies' lower hinge pin (57).
4. Slowly lower the arm stirrup. If the barrier does not have the *automatic lifting* option, the shaft can only be rotated by releasing the motor brake (using lever 19).
5. Place the first arm coupler (70) on the stirrup (74).  
Tighten the screws (71), washers (72) and nuts (73).  
Place the second arm coupler, if any, into the first (see Arm assembly for BL40).
6. Lift the arm, if needed, by releasing the brake: lever 19.
7. Put the lower fastening axle of a single spring assembly back in place.
8. Lower the arm, if needed, by releasing the brake: lever 19.
9. Proceed to the mounting of the folding fence assembly, in one of the following ways (see illustrations on the following pages):
  - If the folding fence is delivered completely unassembled, or after a repair: Starting with placing the bracing collar, the first bar kit (9), then alternating white and red bars (11), as well as connecting bars (1).
  - If the folding fence is delivered mounted on the various segments of the arm: By assembling the connecting bars (1) for the various components.
10. Lift the arm, if needed, by releasing the brake: lever 19.
11. Replace the second spring assembly's lower fastening axle and lock it using its hinge pin (57).
12. Adjust the verticality of the arm by tightening loosening the upper bumper (10), then tighten the lock nut (54).
13. Lower the arm and mount the folding fence's articulation bar (12).
14. Fasten and, where necessary, tighten the bracing wire (14).

## Technical Manual BL4x-MT-EN-16

## FOLDING FENCE ASSEMBLY



1. Flat connection bar

9. First bar kit

11. Curved bar

12. Articulation bar

14. Bracing wire

15. Bracing collar

16. HM6 x 35 stainless steel screw

17. Cable adjuster

18. Bracing mast

20. HM16 x 50 stainless steel screw

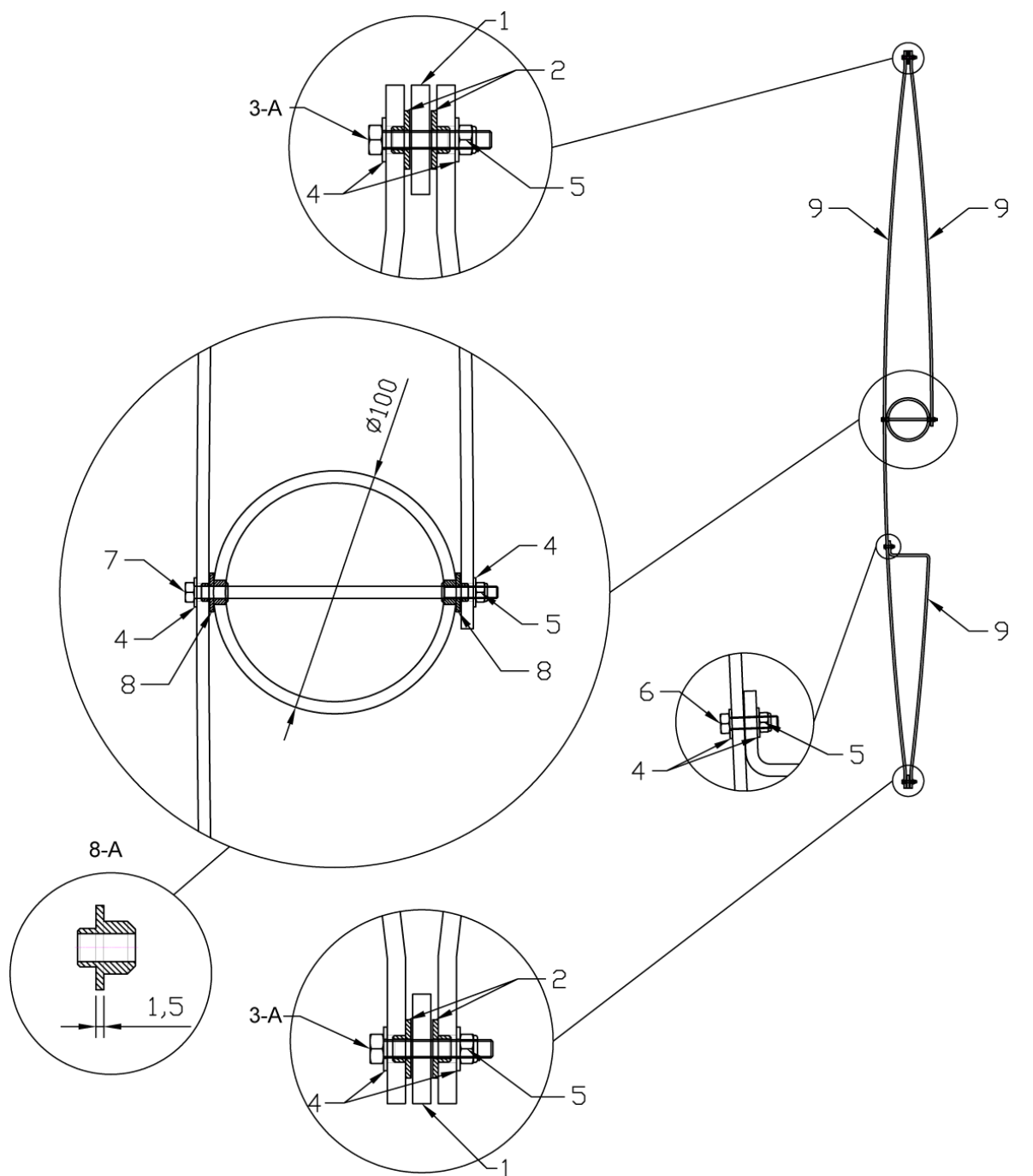
21. HM8 x 30 stainless steel screw

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## ASSEMBLY OF THE FIRST BAR

(arm fastening side)



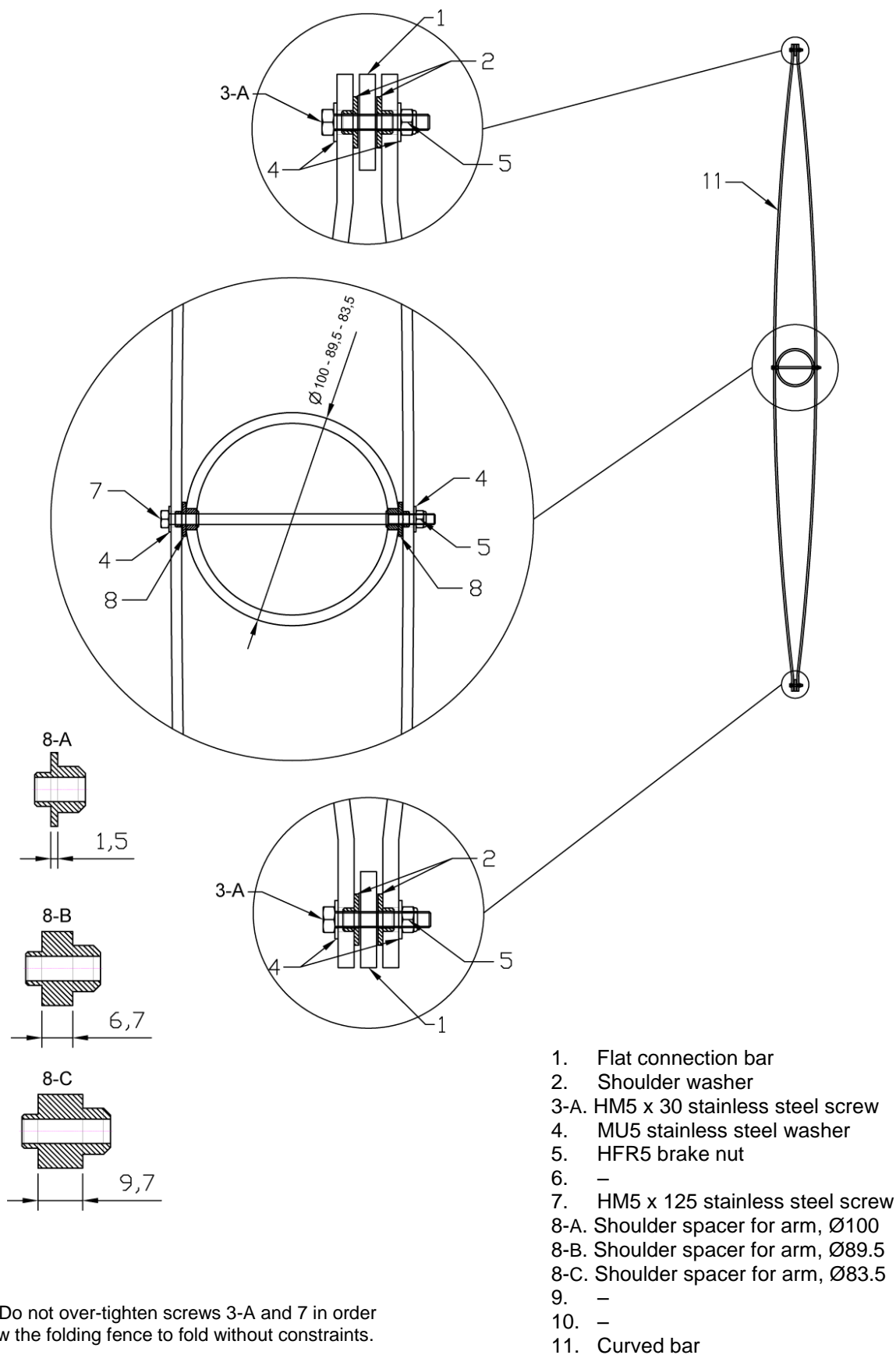
**Note:** Do not over-tighten screws 3-A and 7 in order to allow the folding fence to fold without constraints.

1. Flat connection bar
2. Shoulder washer
- 3-A HM5 x 30 stainless steel screw
4. MU5 stainless steel washer
5. HFR5 brake nut HFR5
6. HM5 x 20 stainless steel screw
7. HM5 x 125, stainless steel screw
- 8-A. Shoulder spacer for arm, Ø100
9. First bar kit

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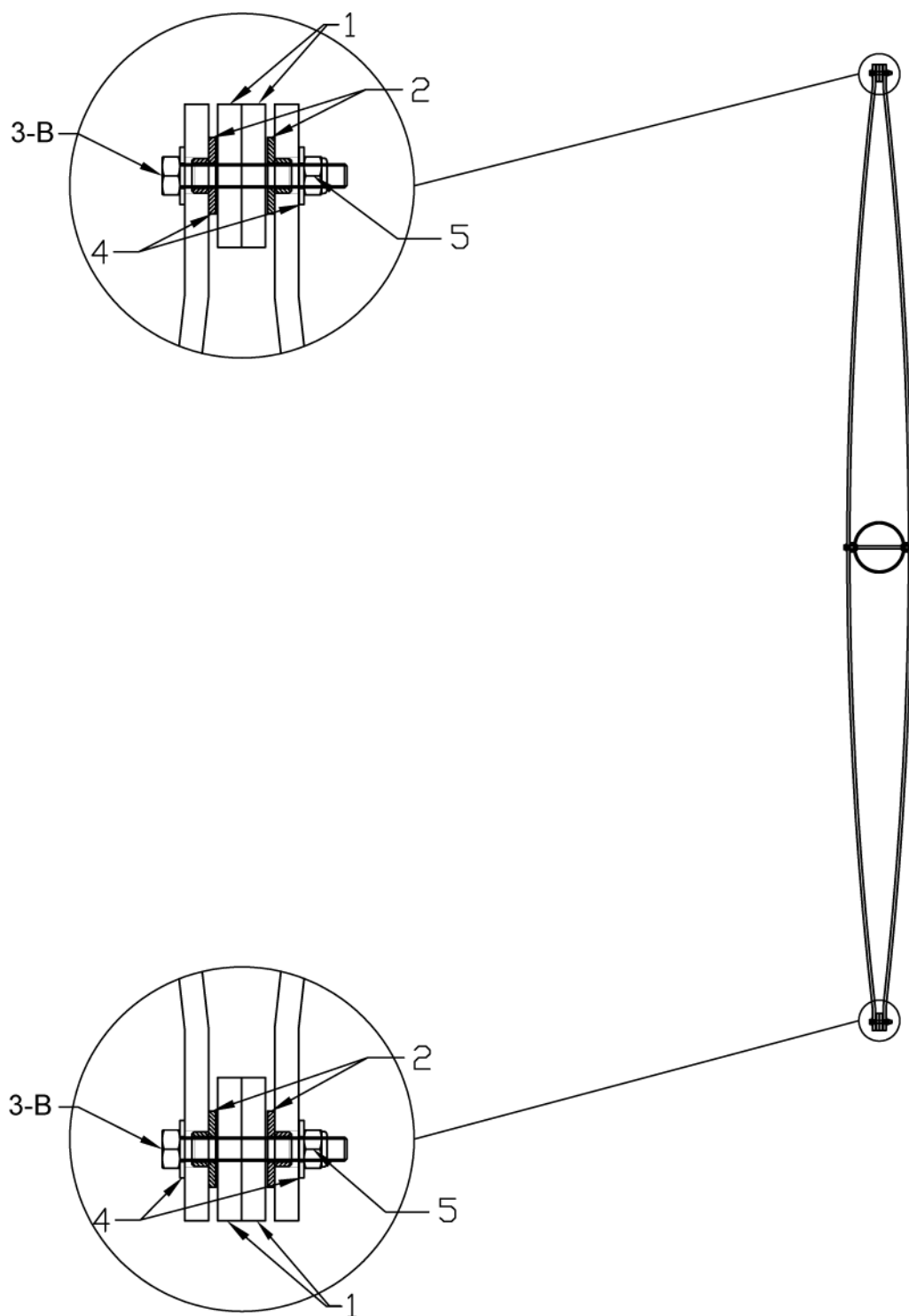
**BAR ASSEMBLY ON ARM, Ø100 – 89.5 – 83.5**



**Technical Manual BL4x-MT-EN-16**

## ASSEMBLY OF THE TOP AND BOTTOM CONNECTION BARS

(where they overlap)



**Note:** Do not over-tighten screws 3-A and 7 in order to allow the folding fence to fold without constraints.

- 1. Flat connection bars
- 2. Shoulder washer
- 3-B. HM5 x 35 stainless steel screw
- 4. MU5 stainless steel washer
- 5. HFR5 brake nut

## Technical Manual BL4x-MT-EN-16

## 4.7. Electrical connections

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

**WARNING:** high leakage current.

Imperatively connect terminal block (21) to the ground with a 1-mm<sup>2</sup> cable minimum before connecting the mains.

Do not connect several equipments to the same differential breaker.

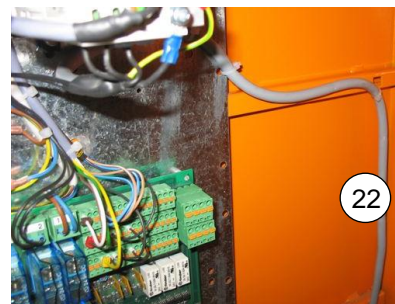
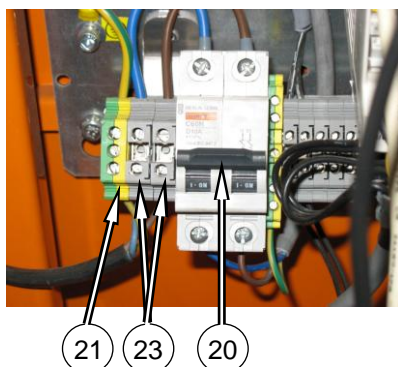
The operations must be undertaken in accordance with the safety warnings, Ch. 1.

Connections must be executed in accordance with the wiring diagrams provided inside the equipment, which remain the reference.

In order to avoid interference, power and control cables must be placed in two different conduits separated by at least 10 cm.

The arm must be mounted before proceeding to electrical connections!

- Turn off the circuit breaker (20) (► OFF).
- Connect the power supply cables to the terminal block (23), making sure their properties comply with required specifications (Ch. 7. ).
- Upstream of the power supply provide:
  - Either a 10A/300mA leakage breaker (max. 5 barriers).
  - Or a 10A/30mA leakage breaker of the selective Super Immunised type (max. 1 barrier).
- Connect the various control units and possible options in compliance with the diagram supplied, avoiding the power cable (22).
- Connect the ground wires to their terminals:
  - Cable between the housing and the cover (check this connection each time the cover is closed)
  - Cable between the housing and the doors (check this connection each time the door is closed)
  - Cable between the terminal block (21) and the control board.
- Test the proper operation of the equipment: see Ch. 6.1.





## 5. ADJUSTMENTS

The equipment was assembled, adjusted and tested at the factory in accordance with the configuration required when the order was placed. Nevertheless, it must be checked before it is put in service the first time and when there is a problem with the equipment's operation.

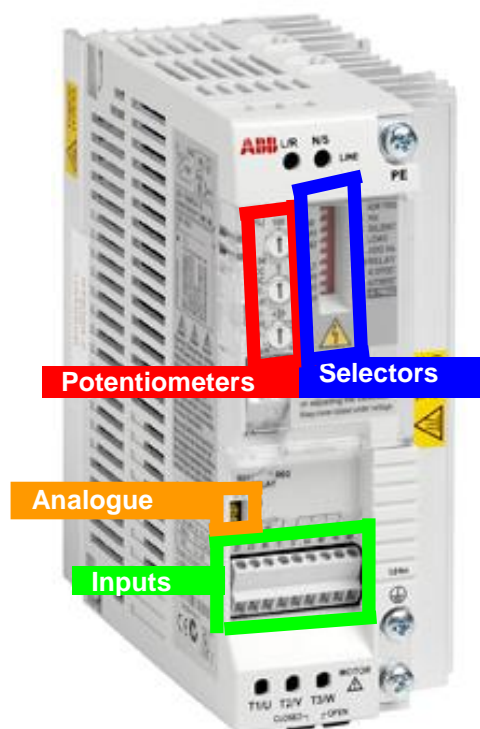
Any repairs to the equipment must be carried out in compliance with safety instructions listed in Ch. 1. Notably, **the arm must be in the upright position (open) before working inside the housing**, in order to decrease the spring compression and avoid untimely movements of the driving mechanism.

Ground cables connect all the metal parts to each other (Ch. 4.7.).

They must not be damaged at the time of disassembly and must be reconnected during reassembly.

### 5.1. Setting the parameters for the variable speed controller

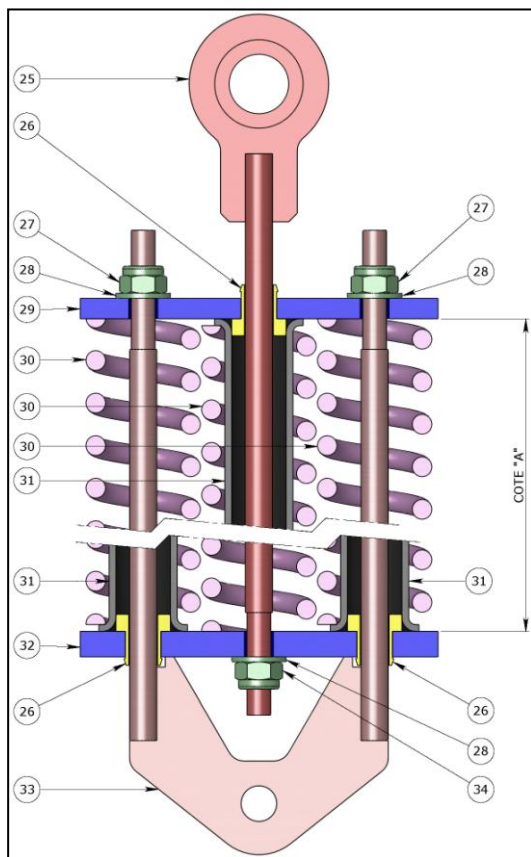
ABB ACS50 V1.35d



Parameters

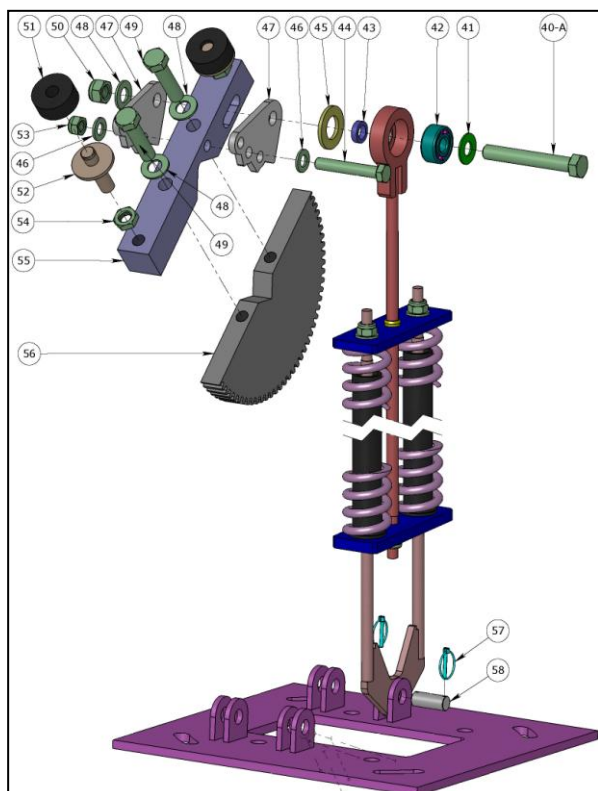
Potentiometers	Motor I Name	150		
	ACC/DEC	0		
	HI Freq	Name		
Selectors	Hz	50	■	60
	Silent	OFF	■	ON
	Load	P&F	■	CT
	Jog Hz	5	■	10
	Relay	FLT	■	RUN
	AI Offset	OFF	■	ON
	Autoreset	OFF	■	ON
	HI Freq	OFF	■	ON
Analogue	AI	U		

## 5.2. Adjusting the balancing springs

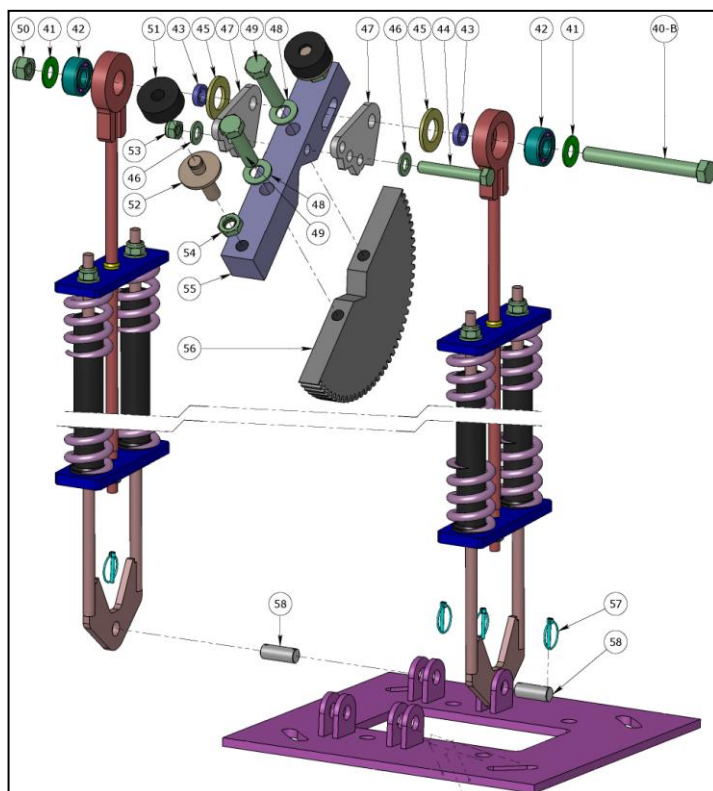


Detail of spring assembly

25	Central rod
26	Guide bushing
27	Nylstop M16 nut (steel)
28	M 16 flat washer (steel)
29	Upper flange plate
30	Compression spring
31	Guiding tube
32	Lower flange plate
33	Double rod
34	Nylstop M16 nut (steel)
40-A	H M20x140 NF EN 24014 screw (steel)
40-B	H M20x180 NF EN 24014 screw (steel)
41	Bearing stop
42	3304B bearing with 2 rows of balls
43	Steel spacer
44	H M16x100 screw (steel)
45	Nylon washer
46	M 16 flat washer (steel)
47	Eccentric for adjustment of spring (x2 per barrier)
48	M 20 flat washer (steel)
49	H M20x80 NF EN 24014 screw (steel) (tighten to 190Nm)
50	Nylstop M20 nut (steel)
51 = 10	Rubber bumper (x2 per barrier)
52	M20 stop (x2 if no locking of arm option)
53	Nylstop M16 nut (steel)
54	Hm M20 nut (steel) (x2 per barrier)
55	Hub
56	Sector gear
57	Locking pin, Ø 4.5
58	Spring pin



Mounting of a spring assembly (1 to 3 springs)



Mounting of 2 spring assemblies (4 to 6 springs)

## Technical Manual BL4x-MT-EN-16

For operation without automatic lifting the arm in the event of power outages, the tension in the spring must be adjusted so as to ensure minimum stress on the motor when opening and closing the barrier: Release the brake by activating the lever (19), slightly lift the arm then release it: it must stay balanced. Repeat the operation for the arm's various angular positions.

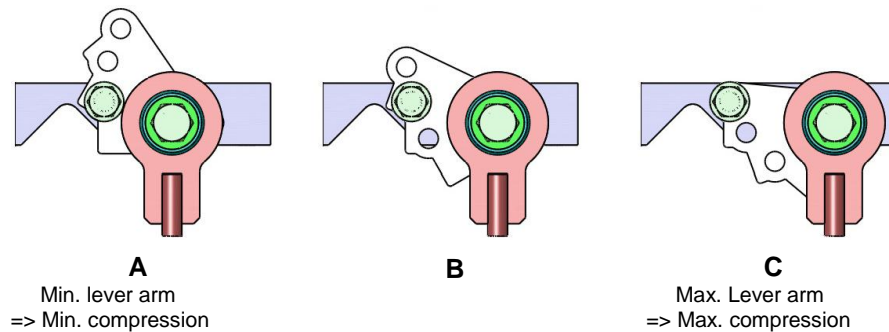
- If the arm falls down, the spring compression must be increased.
- If the arm rises, the spring compression must be decreased.

For operation with automatic lifting of the arm in the event of power outages, the springs must slowly and fully lift the arm, up to its vertical position. Contact between the rubber bumper (51) and the frame should not be too violent, as this may lead to rapid deterioration.

- If the arm does not open completely, the spring compression must be increased.
- If the arm rises too quickly, the spring compression must be decreased.

### **Adjusting the spring compression:**

1. Tighten or loosen the screws (27) to increase or decrease, respectively, spring compression.  
**Warning:** Plates (29) and (32) must remain parallel and the distance between them (rating A) may not be smaller than 444 mm in order for the springs not to deteriorate.
2. If this adjustment proves to be insufficient, change the assembly of the eccentrics (47):
  - a. Bring the arm to the vertical position.
  - b. Switch the equipment off by turning off the circuit breaker (20).
  - c. Release the central spring rods (40) by loosening the screw a few turns (50).
  - d. Completely remove the screw (44) making sure not to drop the washer plates (46) as well as the nut (53).
  - e. Place the eccentrics (47) in the hub (55) in accordance with the desired configuration:



- f. Put the screw (44), washers (46) and the nut (53) back.
  - g. Retighten the screw (50).
3. If the adjustment is still insufficient, increase or decrease the number of springs.

The following table provides an indication of spring adjustments for the various arm lengths.

TABLE OF THE PRINCIPAL SPRING ADJUSTMENTS

		BL 40						BL 41		BL 43		BL 44		BL 46	
	Options	Without lifting of the arm			With lifting of the arm			Without lifting of the arm	With lifting of the arm	Without lifting of the arm	With lifting of the arm	Without lifting of the arm	With lifting of the arm	Without lifting of the arm	With lifting of the arm
		Bare arm	PVC netting	Aluminium netting	Bare arm	PVC netting	Aluminium netting	Bare arm	Bare arm	Bare arm	Bare arm	Bare arm	Bare arm	Bare arm	Bare arm
Useful length (m)	2									1-B-586	2-A-606		1-C-610	1-B-590	2-A-608
	2,5									2-A-610	2-A-584		2-A-606	2-A-602	2-A-574
	3									2-A-586	2-B-606		2-A-580	2-B-606	3-A-598
	3,5									2-B-604	3-A-596		2-B-598	3-A-586	3-B-610
	4	1-B-604	1-B-586	2-A-598	2-A-610	2-A-602	2-B-610	2-A-610	2-A-582	3-A-592	3-B-610		3-A-588	3-B-608	3-B-592
	4,5	1-B-586	2-A-610	2-A-572	2-A-604	2-A-584	2-B-594	2-A-596	2-B-610	3-B-610	3-B-596		3-B-608	4-A-580	4-B-610
	5	1-C-606	2-A-594	2-B-594	2-A-588	2-B-610	3-A-588	2-A-582	2-B-602	4-A-586	3-C-610		3-C-610	4-B-594	5-A-572
	5,5	2-A-600	2-A-572	3-A-586	2-B-610	3-A-606	3-B-610	2-B-610	3-A-602	4-B-610	4-B-598		4-B-606	5-B-606	5-B-596
	6	2-A-582	2-B-598	3-B-610	2-B-602	3-A-592	3-B-592	2-B-592	3-A-586	5-A-576	5-B-610		5-B-610	6-B-610	6-B-602
	6,5	2-A-570	3-A-598	3-B-592	3-A-606	3-A-580	3-C-610	3-A-598	3-A-578					6-B-592	6-B-586
	7	2-B-594	3-A-578	4-B-568	3-A-588	3-B-606	4-B-602	3-A-570	3-B-600					6-C-610	6-C-610
	7,5	3-A-598	3-B-610	4-B-598	3-A-580	3-B-594	5-B-610	3-B-608	3-B-592						
	8	3-A-588	3-B-596	4-B-586	3-B-610	3-C-610	5-B-600	3-B-600	3-C-610						
	8,5							3-B-590	3-C-610						
	9							4-A-580	4-B-610						
	9,5							4-A-570	4-B-604						
	10							4-B-608	4-B-596						
	10,5							4-B-598	5-A-576						
	11							5-A-572	5-B-606						
	11,5							5-B-610	5-B-600						
	12							5-B-602	6-B-610						

### Reading the table

Column: barrier model with options.

Line: useful length of the arm (distance from the tip of the arm to the housing, see Ch. 8. ).

Intersection: "X-Y-Z", where

- X = number of useful springs
- Y = position of the eccentric (n°47, see above)
- Z = compression of the springs, in mm  
= distance between plates (29) and (32)  
= rating A.

**WARNING:** when the barrier is closed (arm lowered), the compressed springs length must not be under 444 mm!

## Technical Manual BL4x-MT-EN-16

### 5.3. Adjusting the position sensors

The aim of the position sensors is to stop the opening and closing movement of the arm.

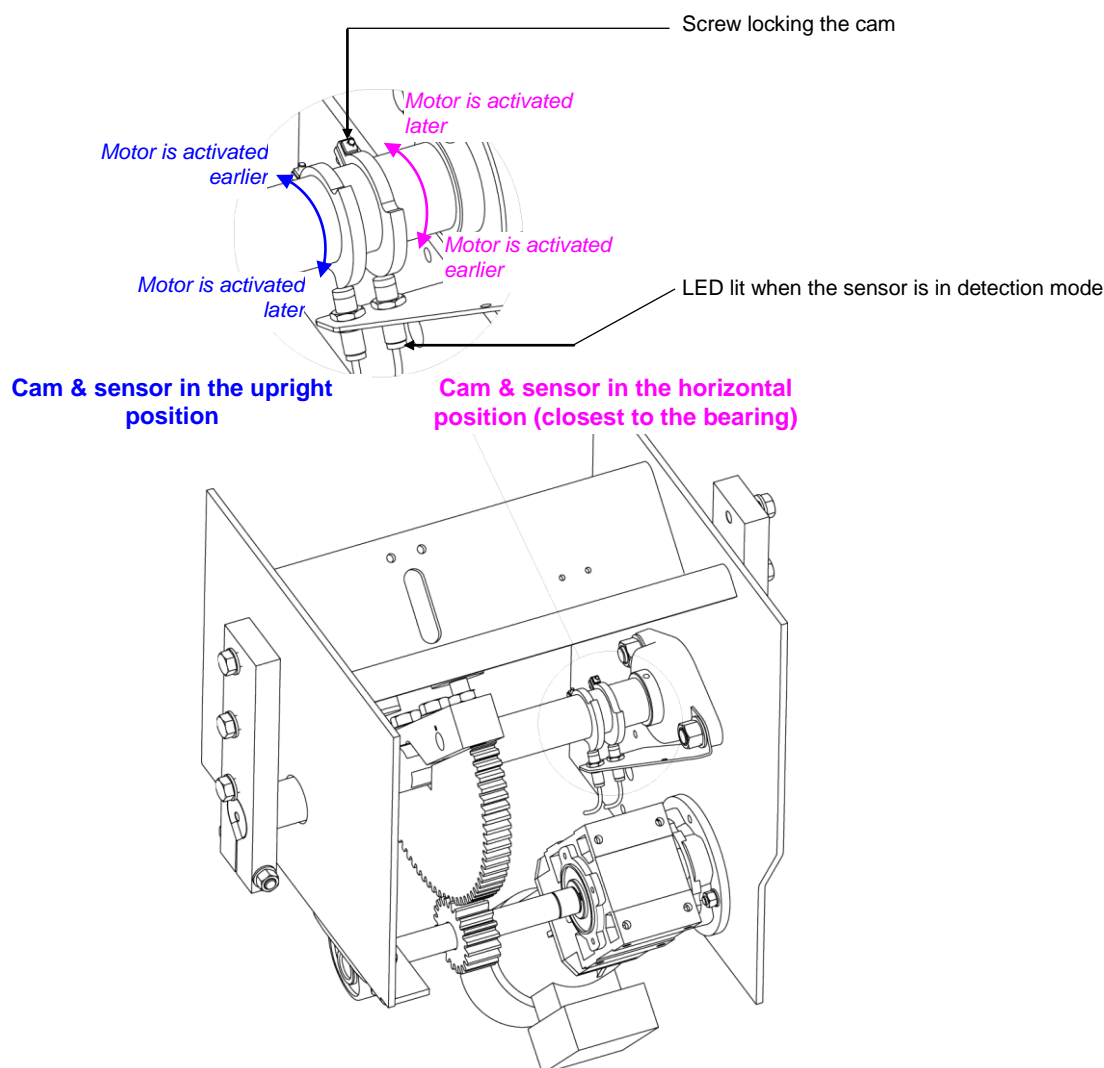
Each movement (opening and closing) is controlled by its own inductive sensor, of the discrete type.

The passage of the cut-out of the cam in front of the sensor results in the power being cut to the motor, the activation of the electromagnetic brake and the activation or release of the arm's optional locking system (depending on whether the lock is NO or NC).

The sensors are adjusted correctly if the motor stops exactly when the bumper (10, Ch. 2.1. ) comes into contact with the frame's reinforcing V-block (21), both during opening and closing.

To do so:

- Bring the arm to the horizontal position (closed).
- Loosen the screw locking the cam in the horizontal position and slightly pivot the latter on the shaft, until the LED on the sensor turns off (= detection of cam's groove). Pivot the cam by a few additional degrees.
- Bring the arm to the upright position (open) and repeat the operation with the upper position cam.



## 6. USE

**The barrier must be used in compliance with safety instructions (Ch. 1. ).  
Never operate the barrier without bumpers (10, Ch. 2.1. ), or without an arm.**

### 6.1. First startup

1. Before startup, review the procedures described in Chapters 4. and 5.
2. Engage the circuit breaker (20).
3. On the control board:
  - Select the menus language (left key ◀).
  - Set all the parameters of the *QUICK START* menu.
  - Make sure to save these modifications (*QUICK START ▶ MEMORY ▶ Save*).
4. Switch off the power supply network, wait 10 s and turn it on again.
5. Proceed to run a few electrical opening and closing tests by pressing the control board's *OK* button or by means of the available command mode (push-button box, transmitter/receiver, etc.). Check that the arm is correctly positioned in the open (vertical) and closed (horizontal) positions. Refer to the corresponding adjustment where necessary (Ch. 4. and 5. ).
6. Check that the variable speed controller (22, Ch. 2.1.) shows a range of positive values when the obstacle opens and the negative values when it closes. If this is not the case, the motor is running in reverse and you must reverse 2 phases of the motor (=invert the cables on the terminal blocks, 20, Ch. 4.7.), after having turned off the circuit breaker (20).
7. Check that all the possible safeties and options are operating properly.
8. Proceed to maintenance (Ch. 6.5. ).

### 6.2. Daily startup

Follow steps 1, 4, 6 in Chapter 6.1.

### 6.3. Turning off the power

Trip the circuit breaker (20).

## 6.4. Manual opening of the arm

The procedure to be followed to lift the arm manually differs depending on the installed options, as summarised in the following table:

BL CONFIGURATION		PROCEDURE
Without lifting of the arm	Without lock	<ul style="list-style-type: none"> <li>• Cut the power (circuit breaker (20, Ch. 2.1. ) on OFF)</li> <li>• Activate the unlocking lever (19, Ch. 2.1. ) and open the arm manually.</li> </ul>
	With lock NO	<ul style="list-style-type: none"> <li>• Cut the power (circuit breaker (20, Ch. 2.1. ) on OFF)</li> <li>• Activate the unlocking lever (19, Ch. 2.1. ) and open the arm manually.</li> </ul>
	With lock NC	<ul style="list-style-type: none"> <li>• Cut the power (circuit breaker (20, Ch. 2.1. ) on OFF)</li> <li>• Open the cover.</li> <li>• Spread the clips (83) to manually unlock the locking pin (84) (see Ch. 2.3. ).</li> <li>• Manually activate the unlocking lever (19, Ch. 2.1. ) and lift the arm manually.</li> </ul>
With automatic lifting of the arm	Without lock	<ul style="list-style-type: none"> <li>• Cut the power (circuit breaker (20, Ch. 2.1. ) on OFF)</li> </ul>
	With lock NO	<ul style="list-style-type: none"> <li>• Cut the power (circuit breaker (20, Ch. 2.1. ) on OFF)</li> </ul>
	With lock NC	<ul style="list-style-type: none"> <li>• Cut the power (circuit breaker (20, Ch. 2.1. ) on OFF)</li> <li>• Open the cover.</li> <li>• Spread the clips (83) to manually unlock the locking pin (84) (see Ch. 2.3. ).</li> <li>• Manually activate the unlocking lever (19, Ch. 2.1. ) and open the arm manually.</li> </ul>



## 6.5. Maintenance

*The indicators in this chapter refer to the illustrations in Ch. 2.1.*

### **Never operate the barrier without bumpers (10, Ch. 2.1. ), even manually!**

Maintenance activities must be carried out in compliance with the safety warnings listed in Chapter 1.

Unlock and remove the lateral and front doors (3) without damaging the ground wire that connects them to the housing. Cut the circuit breaker (20).

Remove the cover (1) without damaging the ground wire that links it to the housing.

#### ▪ **After the first 1,000 operations**

- Check the adjustment of the limit switches (Ch. 5.3. ).

#### ▪ **Every 6 months**

- Visually check the position of the arm: Check whether the arm is properly vertical and horizontal and that it does not bounce. If not, check whether the position sensors (7) are properly adjusted and whether the rubber bumpers (10) are damaged.
- Check the adjustments described in Chapter 5.
- Clean the exterior of the housing and the arm using a soft rag impregnated with a mild detergent.  
For countries with a lot of sun, we recommend treating the exterior of the housing with polish.
- Perform an audio check of the rotation of the bearings.
- Test for disengaging the brake: Activate the lever (19) and open the arm manually (models without automatic lifting).
- Test the automatic lifting of the arm, by cutting the power (models with automatic lifting).

#### ▪ **Every year**

- Check that the fastenings are tightened properly (torque): bearings, gear motor, hub, sensors, spring assembly(ies), fastening of the arm, fastening to the ground, etc.
- Inspection of the condition of the electrical connections.
- Lubrication, using an anticorrosive multipurpose grease:
  - Gears (11 + 15)
  - Upper bearing(s) of the spring assembly (42)
  - Spring guide rods (25 + 33)
  - Lower part (in contact with the plate) of the clips (83) of the arm's locking system (Ch 2.3. ).

**Note:** The bearings (4) and gear motor (9) are lubricated for their entire service life. Simply check their tightness (absence of leaks).

#### ▪ **Every 2 years**

- Check tightness of the barrier's base plate.
- Check the state of cleanliness inside the barrier.

## 6.6. Troubleshooting

SYMPTOM	CAUSE	APPROPRIATE SOLUTIONS
The barrier stays open	Open command is given continually	Check that the open command is a pulse and not a continual command.
	The loop sensor (optional) remains engaged	Review the sensor's sensitivity adjustment and reset the loop sensor to zero. Adjusting the sensitivity adjustment to a setting that is too high may lead to locking in the open position.
		Check the condition of the LEDs on the detector to see whether it and/or the loop are in good condition.
	The cell (optional) sends information that something is present	Check the alignment of the cells.
		Check that the cells are not dirty.
The barrier stays locked, or locks during movement	The variable speed controller is defective	See the list of defects regarding the variable speed controller.
	The limit switch sensor provides incorrect information (see Ch.5.3. )	In the horizontal position: ensure that the horizontal position sensor is the only one to be in the cam's cut-out and that it is operational and connected correctly.
		In the upright position: ensure that the upright position sensor is the only one to be in the cam's cut-out and that it is operational and connected correctly.
The barrier stays locked and the display on the control board is off	Power supply	<ul style="list-style-type: none"> <li>• Check the power supply at the general power supply box.</li> <li>• Check the current voltage at the entry of the cable to the general circuit breaker (20, Ch. 2.1. ), and ensure that the latter is engaged (circuit breaker on ON).</li> <li>• Check the command connections in accordance with the wiring diagram as well as the correct tightening of all electrical cables and tighten, where necessary.</li> <li>• Check the condition of the two fuses on the control board.</li> <li>• If the 5 green LEDs near the LCD are lit, check whether the control board is in programming mode (cable RJ45 is connected).</li> </ul>
The barrier stays locked, but the control board display is lit	Short circuit on the external communication terminal block	<ul style="list-style-type: none"> <li>• Check whether the red LEDs near the LCD (other than analogue output) are lit.               <ul style="list-style-type: none"> <li>- If not, switch off the mains supply and remove the terminal blocks (on the AS1320 and AS1321 if present). Switch the power back on and check again whether the red LEDs are lit. If this is the case, a short circuit is present in the terminal blocks. In order to reactivate the outputs, the control board has to be turned on again.</li> <li>- If so, see the defects displayed (<i>PRDSTD – BL_xxx</i> menu → <i>Log/ Close status/ Open status</i>).</li> </ul> </li> </ul>

## Technical Manual BL4x-MT-EN-16

The barrier closes a long time after the vehicle has passed	Closing time delay after passage is too long	Check the values of the time delays (extended menus).
The barrier opens by itself.	The opening loop (optional) is too sensitive.	Adjust the sensitivity and/or frequency of the opening sensor. Adjusting the sensitivity adjustment to a setting that is too high or incorrect frequency can lead to untimely openings.
	The access control system gives untimely orders.	Inspect it.
The barrier opens and closes immediately afterwards.	The barrier is not stable and during opening the signal from the cell (optional) is no longer aligned.	Properly secure the barrier to the ground.
The barrier bounces in upright and in horizontal position	Too much stress on the rubber bumpers inside the barrier.	Adjust the position sensors (Ch. 5.3. ).
The motor makes noise but the barrier does not move.	The brake's supply circuit is out of service	Check if the brake is connected to X8 connector of AS1320 control board.
		Check that Barrier Type parameter of AS1320 control board QUICK START menu is set to AVR/SR respectively for barrier with/without automatic opening of the arm in case of power cut.
		Open the motor's terminal board and check whether the diode bridge step-down transformer is in good condition. Input voltage: 240 VAC – Output voltage: 110 VDC.
		At the entry of the diode bridge, measure whether it is powered during movement for SR models and if it is powered when idle for AVR models.
The mains power turns off when the barrier is switched on.	The leakage breaker is not adapted.	Use a <b>300 mA</b> leakage breaker for up to three barriers and for cases requiring a 30 mA system, use a SI type circuit breaker (Super-Immunised) for each barrier.

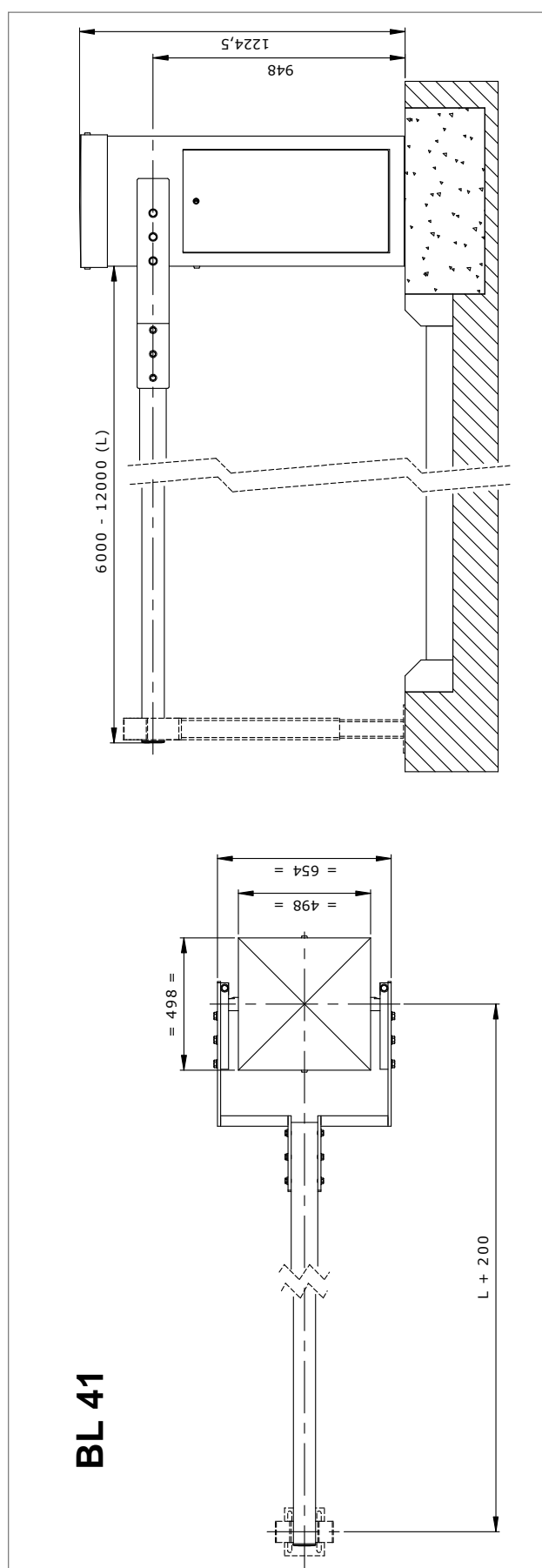
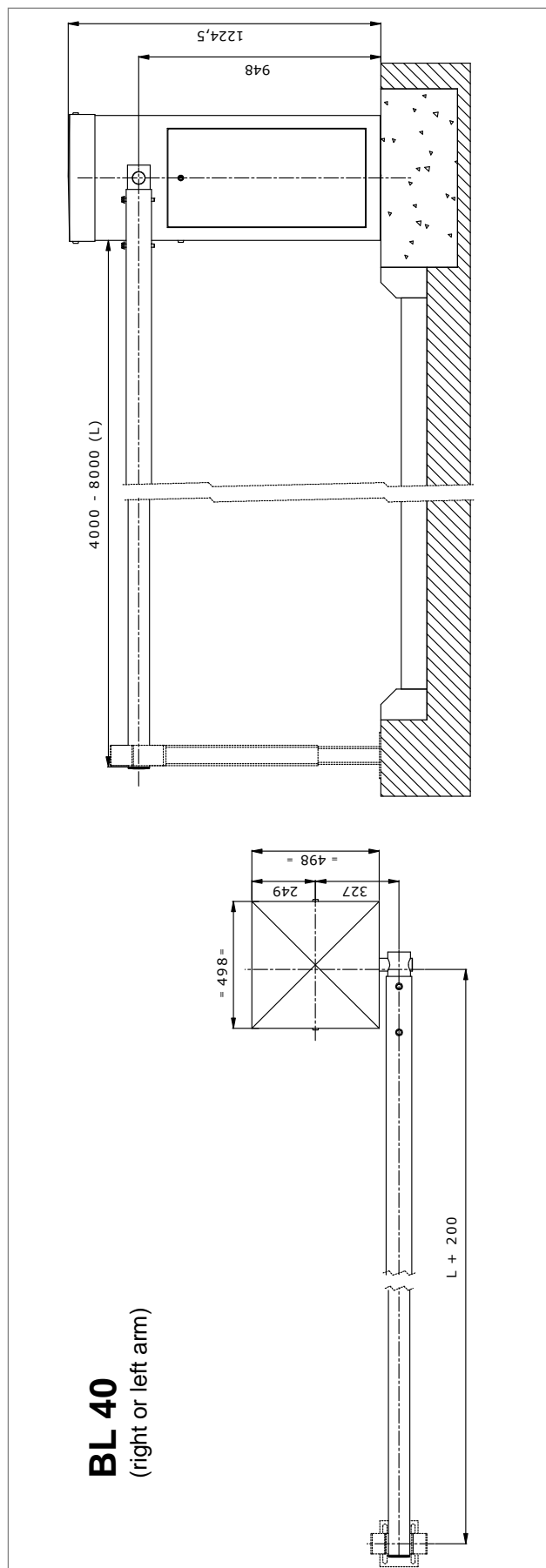
## Technical Manual BL4x-MT-EN-16

## 7. TECHNICAL SPECIFICATIONS

Electrical power supply:	230V~ ( $\pm 10\%$ )/50Hz
Nominal Power consumed:	450 W
Ambient operating temperature:	-20°C to +50°C (-35°C with optional heater)
Average relative humidity:	95% without condensation
Maximum wind speed (without disrupting the operation):	120km/h
Protection index:	IP44
Net weight (without arm):	220 kg (BL40) 230 kg (BL41) 250 kg (BL43) 250 kg (BL44) 250 kg (BL46)

### **Technical Manual BL4x-MT-EN-16**

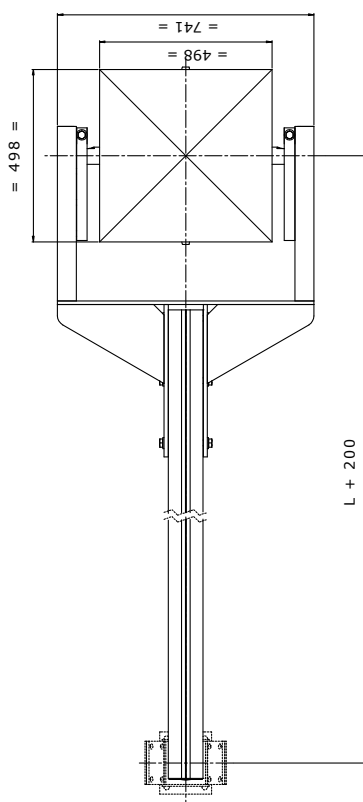
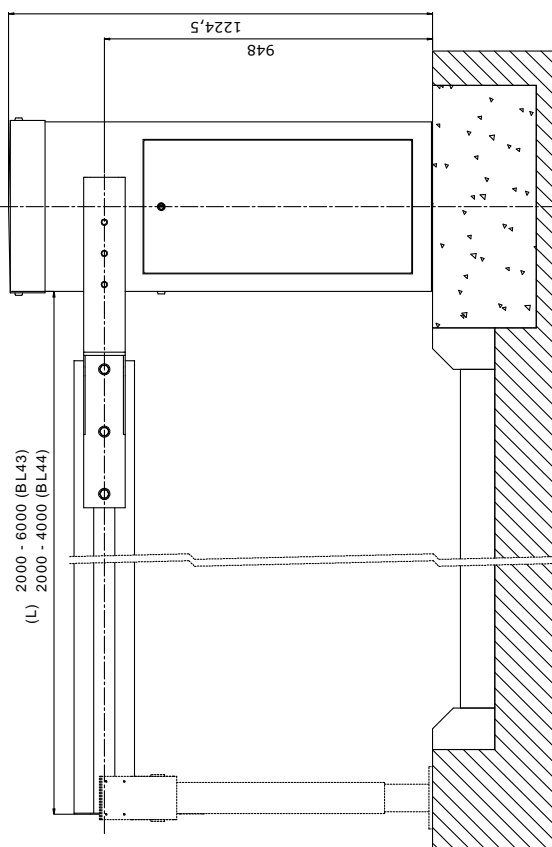
## 8. DIMENSIONS



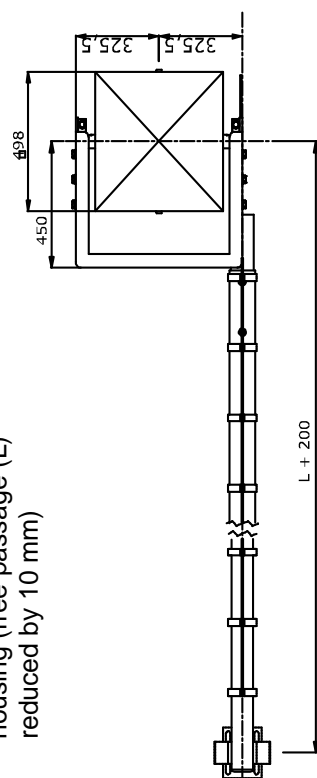
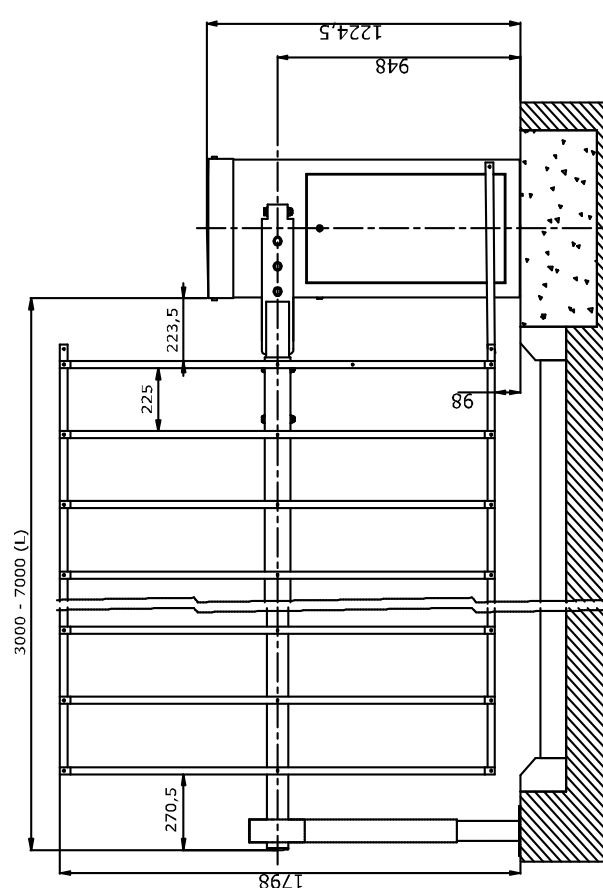
## Technical Manual BL4x-MT-EN-16

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## BL 43 BL 44



## BL 46 (right or left arm)

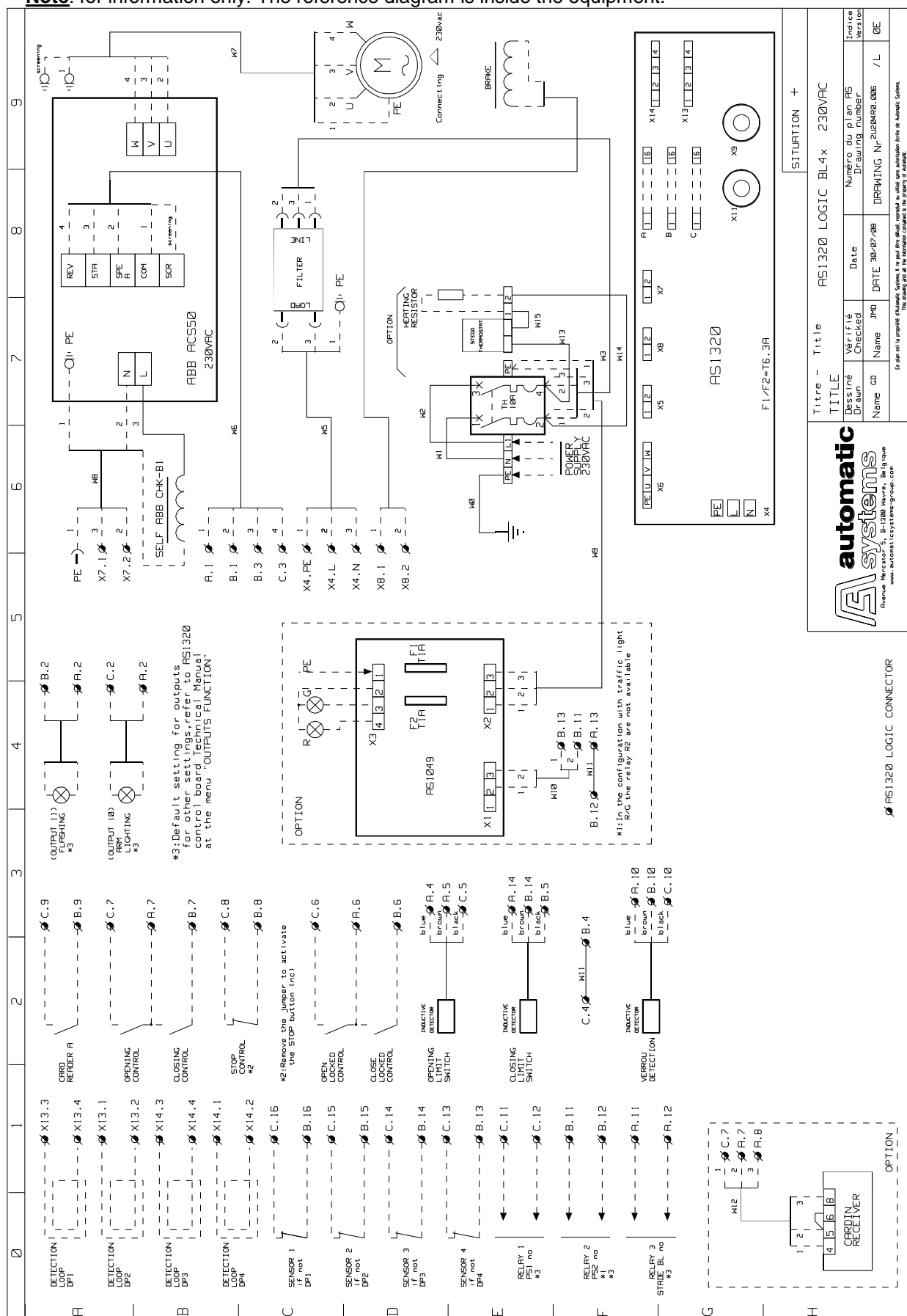


**Note:** in open position, the folding fence is 10 mm wider than the housing (free passage (L) reduced by 10 mm)

## Technical Manual BL4x-MT-EN-16

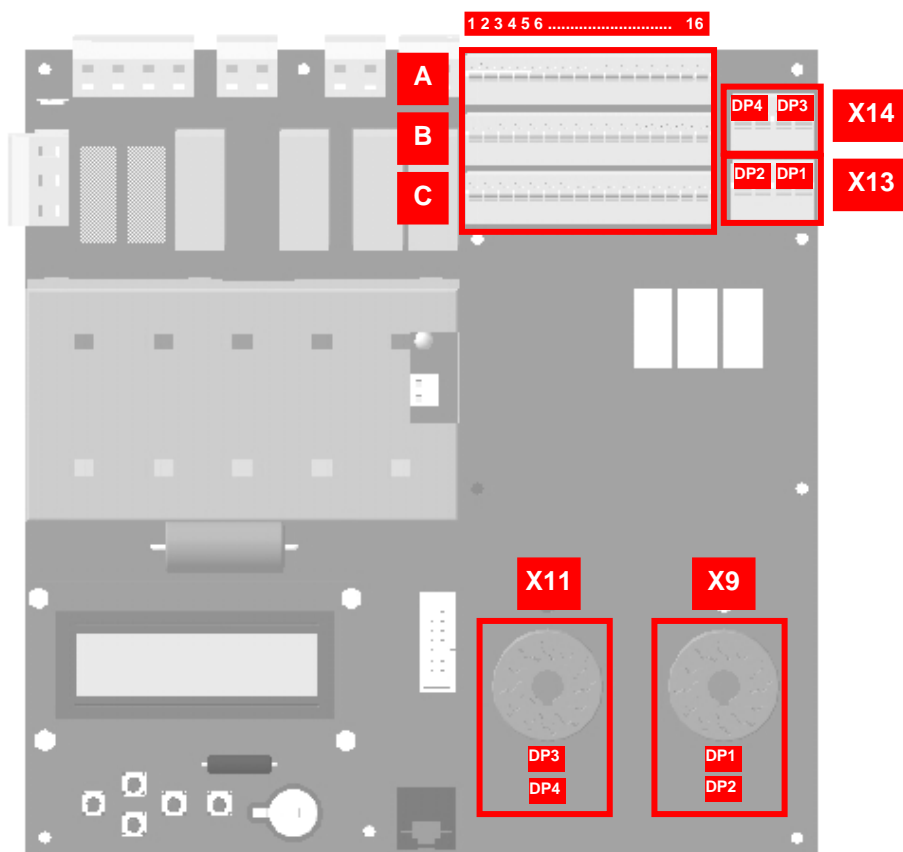
## 9. WIRING DIAGRAMS

**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  
X11 inductive loops  
presence detectors.



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	DO11 PWM Output 11	GND	DO8 Descending motor	GND	DI14 crank limit switch	24V	GND	DI12 Opening LS	DI13 Closing LS	24V	GND	DI10 Lock Open CMD	DI11 Lock Close CMD	24V	DI8 Open command	DI9 Close command	24V	GND	DI6 Reader A command	24 V	GND	DI5 Swing off sens./Lock	REL1 - Output relay 1	REL2 - Output relay 2	REL3 - Output relay 3	REL1 + Output relay 1	REL2 + Output relay 2	REL3 + Output relay 3	DI4 Cell 4	24V	GND	DI3 Cell 3	24V	GND	DI2 Cell 2	24V	GND	DI1 Cell 1	24V	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, see 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, see 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 (assignment is adjustable via the *OUTPUT FUNCTION* menu).

**REL2- and REL2+:** connectors of the relay (assignment is adjustable via the *OUTPUT FUNCTION* menu).

**REL3- and REL3+:** connectors of the relay (assignment 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** (cf. *OUTPUT FUNCTION* menu) on X8 connector)

**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.

### Connecting the presence sensors

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The board accepts up to four **Presence Sensors** (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  $\leq 2.5$  mm<sup>2</sup>) 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.

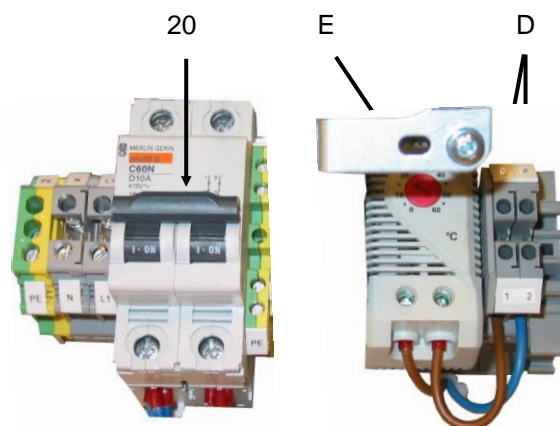
**Note 2:** circuits DP1, DP2, DP3, DP4 of connector X13 are respectively linked to circuits DP1, DP2, DP3, DP4 of connectors A, B and C. A loop and a cell may not be put on the same circuit (in other words, if a cell is connected to DI1 (connector 16), a loop may not be at DP1 but may be at DP2, 3 or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

### **Connecting the heating resistance (option)**

The optional heating resistance must be connected to terminals D, beside circuit breaker 20 (see ch. 2.1. ). It is directly controlled by thermostat E.



## **Technical Manual BL4x-MT-EN-16**

## 10. CONFORMITY CERTIFICATE

### Déclaration CE de conformité

Nous, soussignés,

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

Déclarons que la machine

**Barrière levante électrique**

**BL40**

**BL41**

**BL43**

**BL44**

**BL46**

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**

**BL40**

**BL41**

**BL43**

**BL44**

**BL46**

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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