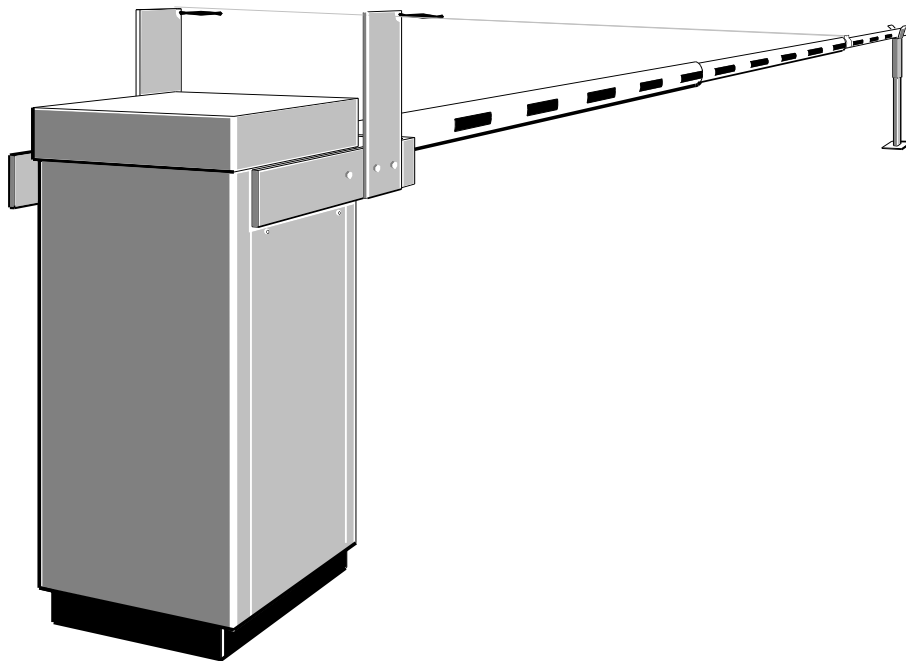


Electrical rising barrier

BL52 / BL53

This handbook is also valid for the customised equipment **BLG76**, which will be regarded as BL52 with netting.



OPERATING MANUAL

(translated from the French original notice)

Rev 15

Revision page

| Rev | Date | Written by | Checked by | Nature of the modification |
|-----|---------------|------------|------------|--|
| 02 | Apr 05, 2007 | MFy | SD + JB | - Replacement of D1 control board by AS1320 (version 3.6 of the program) => ch 3 added. |
| 03 | July 19, 2007 | MFy | | - Update of the balance table (ch. 5.5). |
| 04 | 13 nov. 07 | MFy | | - Update the emergency operation (ch 2.5.2). - Adapt to software version 4.1 of AS1320 control board (ch 3). - Update of the balance table (ch 5.5). - Addition of balance spring fixing bolt inspection (ch 6). - Update of the conformity certificates (ch 9). |
| 05 | June 09, 2008 | MFy | | - Addition of the note regarding BLG76 (p1). - Control board: adapted to version 6.x of the program. - Revision of the electric diagram & addition of connector blocks assignment. |
| 06 | July 3, 2008 | MFy | | Ch. 7.1: adapt the detection loops pinning references to electric drawings (X9-X11-X13-X14). |
| 07 | 2009-08-03 | MFy | | Ch. 2.4: operation t° modification. Ch. 9: EC certificate update. |
| 08 | 2009-08-20 | MFy | | Ch. "Safety warnings" & "Installing the arm": add warning. |
| 09 | 2009-11-26 | MFy | | Ch.1: warning added regarding detection loops installation. Ch.3 adapted to control board v 6.2 (no functional modification). |
| 10 | 2010-01-04 | MFy | | EC certificate update. |
| 11 | 2010-06-30 | MFy | | Electrical connections: add warning regarding power network. |
| 12 | 2010-11-04 | MFy | | AS1320 menus: translation corrected by RWK. |
| 13 | 2011-01-05 | MFy | | Ch. 3.1: Download Chg Lvx parameters description modified. |
| 14 | 2012-03-23 | MFy | | BLG76 fence installation added. Stainless steel maintenance added. |
| 15 | 2012-05-04 | MFy | | Ch.4.2: installation on steel support added |

Table of contents

| | | |
|-----------|--|-----------|
| 1. | SAFETY WARNINGS | 4 |
| 2. | GENERAL | 5 |
| 2.1. | General view | 5 |
| 2.2. | Access to internal components | 6 |
| 2.3. | Switching off the equipment | 7 |
| 2.4. | General conditions of use | 8 |
| 2.5. | Emergency operation | 8 |
| 2.5.1. | Opening or closing in case of power failure | 8 |
| 2.5.2. | In case of breakdown | 9 |
| 3. | AS1320 Control board | 10 |
| 3.1. | "PRDSTD – BL_xxx" Menu: Diagnosis and monitoring | 12 |
| 3.2. | "QUICK START" menu: quick configuration | 18 |
| 4. | INSTALLATION | 26 |
| 4.1. | Preliminary work on site | 26 |
| 4.2. | Handling and installing the unit | 27 |
| 4.3. | Installing the round arm (BL52) | 28 |
| 4.4. | Installing the oval arm (BL53) | 29 |
| 4.5. | Installing the fence (BLG76) | 30 |
| 4.6. | Fixing the shrouds (BL52 only) | 31 |
| 4.7. | Dimensional views and arm segments | 32 |
| 4.8. | Levelling the barrier arm | 34 |
| 4.8.1. | Horizontal position "closed" | 34 |
| 4.8.2. | Vertical position "open" | 35 |
| 4.9. | Installing the tip support | 36 |
| 4.9.1. | Standard tip support | 36 |
| 4.9.2. | Electromagnetic tip support | 37 |
| 4.10. | Electrical connections and initial power-up | 38 |
| 4.11. | Check-list | 38 |
| 4.12. | Scrapping the equipment | 38 |
| 5. | ADJUSTMENTS AND TECHNICAL INTERVENTIONS | 39 |
| 5.1. | Arm balance adjustment | 39 |
| 5.1.1. | Checking the arm balance adjustment | 40 |
| 5.2. | Belt tension adjustment | 41 |
| 5.3. | Safety torque limiter adjustment | 43 |
| 5.4. | Limit switch adjustment | 44 |
| 5.4.1. | Electrical closing test | 44 |
| 5.5. | Changing the arm model | 46 |
| 6. | MAINTENANCE | 49 |
| 7. | ELECTRICAL DRAWINGS | 50 |
| 7.1. | Control blocks assignment | 51 |
| 8. | INSTALLATION PLANS | 54 |
| 9. | EC CONFORMITY CERTIFICATE | 57 |

1. SAFETY WARNINGS

WARNING:

YOUR RISING BARRIER TYPE BL52/BL53 COMPRISES A MECHANISM AND VARIOUS ELECTRICAL COMPONENTS. ANY NEGLIGENCE DURING AN INTERVENTION IN THE MACHINE MAY SERIOUSLY ENDANGER YOUR SAFETY. AS SOON AS YOU OPEN THE HOUSING, SWITCH OFF THE CIRCUIT BREAKER (4:1) LOCATED BEHIND THE SIDE DOOR (1:2). BE CAREFUL IN HANDLING ANY INTERNAL ELEMENT WHICH MIGHT BE UNDER POWER OR COULD BE SET IN MOTION. THE HOOD SHOULD BE REMOVED ONLY IF YOU NEED TO REPLACE THE DRIVING SHAFT OR THE SPRING, ADJUST THE ARM BALANCE OR PROCEED WITH THE MAINTENANCE.

WARNING: Never raise the arm brackets by means of the crank, without the boom arm fixed for counterbalancing the spring: the arm brackets would swing violently, with serious injury risks for the operators.

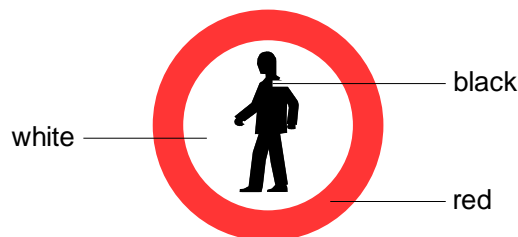
IMPORTANT INFORMATION CONCERNING HEALTH & SAFETY PROCEDURES

The introduction of a pedestrian or vehicle barrier product as manufactured by **Automatic Systems** places a duty of responsibility for the safety and well-being of any user(s) or person(s) in close proximity to such equipment. You are required therefore to observe and put in place appropriate safety measures, as deemed necessary.

- ◆ Pedestrian flow must be prohibited anywhere within a vehicle barrier passage-way, unless the movement of the barrier system is clearly indicated, e.g. audible and/or visual signals, floor marking, notices, etc.
- ◆ Access keys to any of the internal mechanisms can only be issued to authorised and qualified personnel, aware of the relevant electrical and mechanical safety codes and regulations in force. All equipment housing must be kept locked.

You have a legal obligation and responsibility to enforce good safety practices at all times. See also note below.

Note: In the countries of the European Union, the requirement 1.3.7.2 of the EC Machines Directive prescribes that the pictogram for "Dangerous area" -- no entry for pedestrians" be affixed on both sides of the equipment (* within 1 meter of the barrier arm in its closed position).

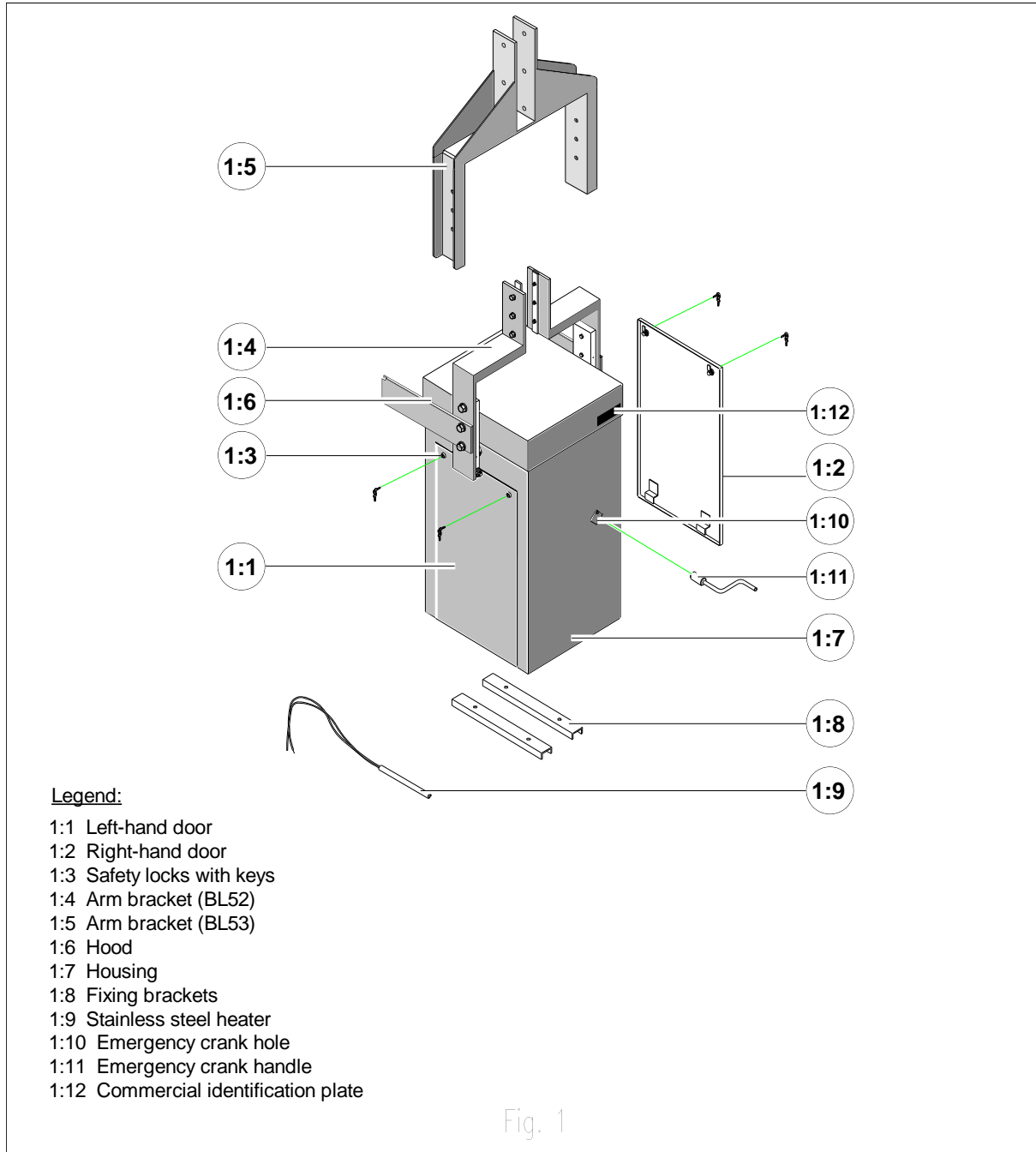


The installation of detection loops must be validated by qualified personnel who will determine their optimal configuration (adapted to vehicle type and passageway).

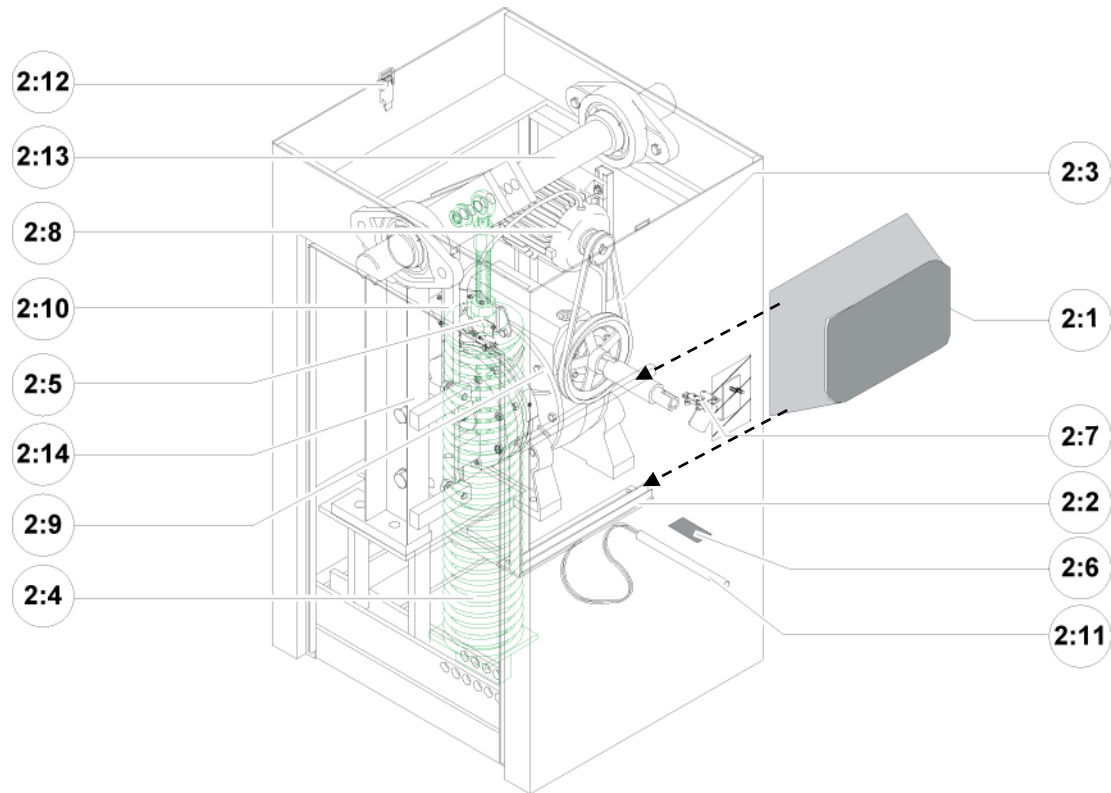
WARNING: The risk of injury exists for people when using standard detection loops; they can incorrectly detect trucks and (motor)bikes and close the gate on them!

2. GENERAL

2.1. General view



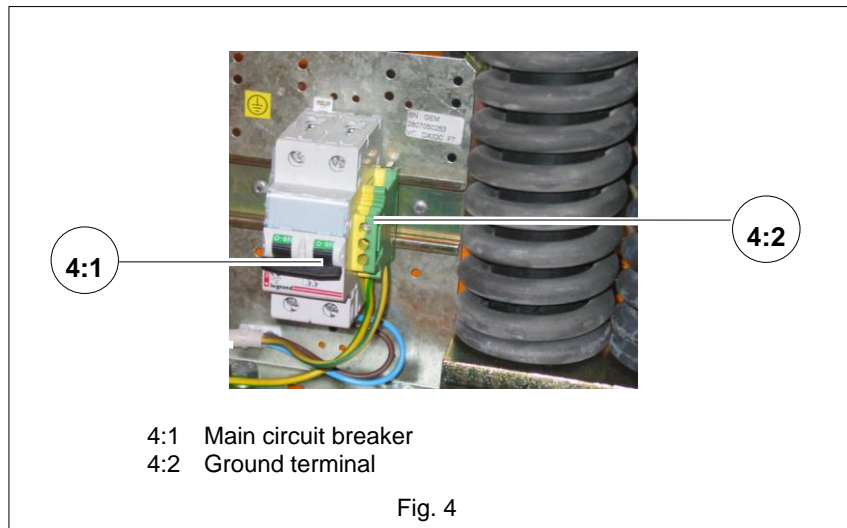
2.2. Access to internal components



- 2:1 Control board with cover
- 2:2 Control board guides
- 2:3 Driving belt
- 2:4 Spring
- 2:5 Limit switches
- 2:6 Serial plate
- 2:7 Crank switch
- 2:8 Motor
- 2:9 Gearbox
- 2:10 Driving rod
- 2:11 Heater
- 2:12 Fixing latches
- 2:13 Driving shaft
- 2:14 Abutment

2.3. Switching off the equipment

- As soon as you open the housing, switch off the power by switching off the magneto-thermal circuit breaker (4:1) located behind the side door (1:1).



2.4. General conditions of use

- Your rising barrier type BL52/BL53 has been designed to operate in any kind of climatic environment, from -35°C to +50C (thanks to heating resistance), with up to 95% of relative humidity.

2.5. Emergency operation

- The following instructions are to be given to the installation supervisor.

2.5.1. Opening or closing in case of power failure

- Insert the emergency crank handle (1:11) into the crank hole (1:10). A safety device automatically switches off the power supply, thus eliminating any risk of accident in case the power supply returns.
- Turn the crank clockwise to open the barrier and counter' clockwise to close the barrier
- When the arm is in the horizontal or vertical position, keep turning the crank to lock the barrier mechanically.

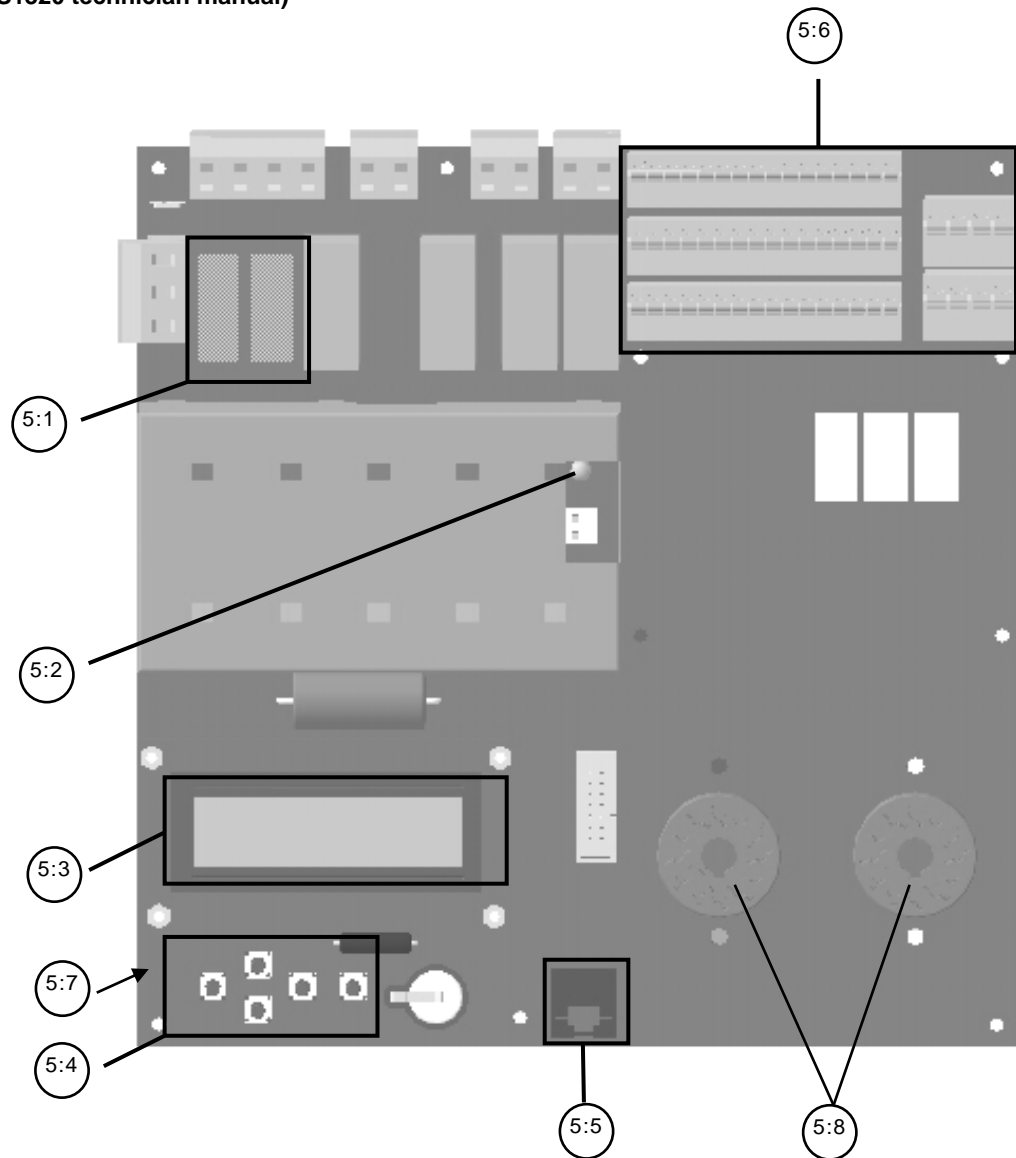
2.5.2. In case of breakdown

| | | |
|------------------------------------|---|---|
| The obstacle does not move | Liquid crystal display is off | <ul style="list-style-type: none"> • Check the general power supply. • Check the voltage on the circuit breaker (4:1), and check if this late is on. • Check the connection of the control wires referring to the electrical diagram, as well as their tightening. • Check the state of the fuses (5:1, p10) on the electrical control board. • Check that the green LEDs are lit on the logic control board (5:6, p10). <ul style="list-style-type: none"> - If not, check the general fuses (5:1, p10). - If so, check that the logic board is not in programming mode (cable RJ45, plugged in socket 5:5, p10). |
| | Liquid crystal display is on | <ul style="list-style-type: none"> • Check that the red LEDs (other than the analogue output ones) on the logic control board are on (5:6, p10). <ul style="list-style-type: none"> - If not, cut the supply voltage and remove the control terminal blocks (5:6, p10) (on the AS1320 and AS1321, if present). Turn the power back on and then check whether the red LEDs are on. If that is the case, there is a short circuit in one of the control terminal blocks (5:6, p10). In order to reactivate the outputs, the logic board has to be turned on again. - If so, refer to the displayed breakdowns (“PRDSTD – BL_ xxx“ menu → “Log”/”Close Status”/”Open Status”). |
| | Check the defects on the frequency inverter | Refer to AS1320 control board manual. |
| The obstacle stops during movement | OP, CL and STOP commands have no effect. | Opening and/or closing limit switch is defective or badly connected. |

Note: *If the trouble persists after you carry out the checks above mentioned, call your local **Automatic Systems** agent.*

3. OFFAS1320 Control board

(Extract from AS1320 technician manual)



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

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

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

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

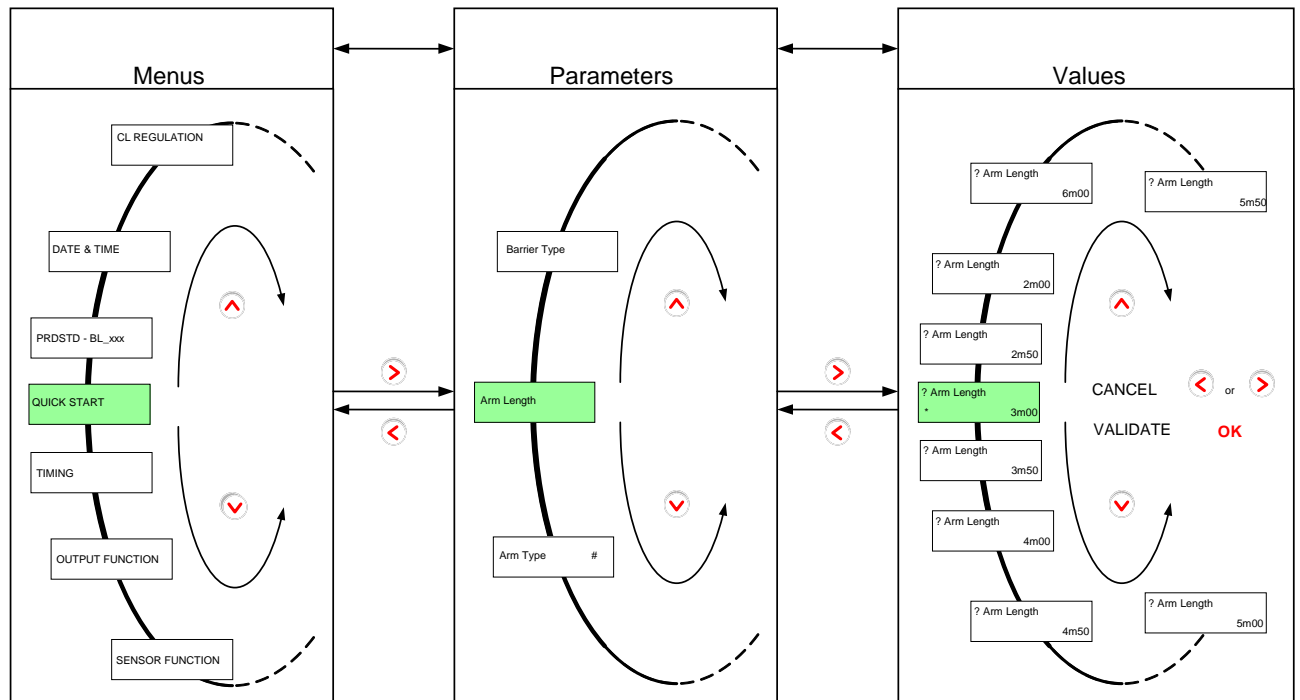
Navigation in the menus of the display screen is based on a pull-down menu architecture on 3 levels:

MENUS ↔ PARAMETERS ↔ VALUES.

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

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

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



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

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

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

A question mark (?) preceding the parameter indicates that it is ready to be modified. The current value of the parameter appears on the second line.

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

To validate a modification, press the OK key.

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

3.1. “PRDSTD – BL_xxx” Menu: Diagnosis and monitoring

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



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

| Parameter | Values | Description | | | | | | | | | | | | |
|-----------|-------------------------|---|-----|-------------------------|---|-----|-----------------------|--|-----|-------------------------|--|-----|----------------------|---|
| 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 border="1"> <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>Note: 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> | | | | | | | | | | | | |
| | Out Of Service | <p>Apparatus out of service. This may be caused by the following events:</p> <ol style="list-style-type: none"> 1) Time out during opening (see <i>Open Time Out</i> message). 2) Time out during closing (see <i>Close Time Out</i> error) + allotted number of tries to close have been executed (see <i>Close Retries</i> message). 3) Arm is unhinged (see <i>Arm Swing Off</i> message). 4) Locking or unlocking failure of the BL4x (see <i>Unlock BL4x Er</i> message). 5) Defect of the frequency inverter. | | | | | | | | | | | | |

| Parameter | Values | Description |
|-----------|--------------------------|--|
| | <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> | Frequency converter power cut-off in order to prevent any movement of the obstacle in case of: <ul style="list-style-type: none"> • Crank presence sensor activation (available on some equipment for manual handling of the obstacle), • Door/hood opening sensors activation (option on some equipment). |
| | <i>Reset Sensor Init</i> | Change of the positioning sensor type (cf. <i>Positioning</i> parameter of <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>). |
| | <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</i> ► <i>Power Fail OP</i> ► <i>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. Note: This message is only displayed if the Cooling – Log (below) is ON. |
| | <i>CoolingMotor OFF</i> | Stopping of the fan that cools the motor. Note: This message is only displayed if the Cooling – Log (below) is OFF. |
| | <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. |

| Parameter | Values | Description |
|-----------|--------------------------|--|
| | <i>Download Chg Lv2</i> | <p>Downloading a version of the control board program that differs from the one previously installed.</p> <p>As the difference is of level 2 (modification of the version or the evolution), all of the parameters are returned to their default values.</p> <p>WARNING: it is then necessary to set the parameters to the actual configuration of the equipment and to save them in MEM1.</p> <p>Note: it would be wise to keep the parameters values before changing the program version: Communication parameter → Extract Param (Technician level access).</p> |
| | <i>Download Chg Lv3</i> | <p>Downloading a version of the control board program that differs from the one previously installed.</p> <p>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.</p> <p>WARNING: it is then necessary to set the parameters to the actual configuration of the equipment and to save them in MEM1.</p> <p>Note: it would be wise to keep the parameters values before changing the program version: Communication parameter → Extract Param (Technician level access).</p> |
| | <i>Reset Counters</i> | Counters reset to zero following the download of a different program version of level 3 (see <i>Download Chg Lv3</i>). |
| | <i>Curve 229Std</i> | Change in the type of barrier: selection of curve 229 standard (<i>Barrier Type</i> parameter under the <i>QUICK START</i> menu). |
| | <i>Curve 229Highway</i> | Change in the type of barrier: selection of curve 229 highway (<i>Barrier Type</i> parameter under the <i>QUICK START</i> menu). |
| | <i>Curve 1x-2x-3x-5x</i> | Change in the type of barrier: selection of curve for BL16, BL32, BL33, BL52, BL53 (<i>Barrier Type</i> parameter under the <i>QUICK START</i> menu). |
| | <i>Curve BLG77</i> | Change in the type of barrier: Selection of curve BLG77 (<i>Barrier Type</i> parameter under the <i>QUICK START</i> menu). |
| | <i>Curve Special</i> | Change in the type of barrier: selection of the <i>Special</i> curve (<i>OPTIONS</i> menu) for operation according to the <i>OP REGULATION</i> and <i>CL REGULATION</i> menus. |
| | <i>Curve BL223</i> | Change in the type of barrier: Selection of curve BL223 (<i>Barrier Type</i> parameter under the <i>QUICK START</i> menu). |
| | <i>Curve BL40 AVR</i> | Change in the type of barrier: Selection of curve BL40 AVR (<i>Barrier Type</i> parameter under the <i>QUICK START</i> menu). |
| | <i>Curve BL40 SR</i> | Change in the type of barrier: Selection of curve BL40SR (<i>Barrier Type</i> parameter under the <i>QUICK START</i> menu). |
| | <i>Curve BL41 AVR</i> | Change in the type of barrier: Selection of curve BL41AVR (<i>Barrier Type</i> parameter under the <i>QUICK START</i> menu). |
| | <i>Curve BL41 SR</i> | Change in the type of barrier: Selection of curve BL41SR (<i>Barrier Type</i> parameter under the <i>QUICK START</i> menu). |
| | <i>Curve BL43 AVR</i> | Change in the type of barrier: Selection of curve BL43AVR (<i>Barrier Type</i> parameter under the <i>QUICK START</i> menu). |
| | <i>Curve BL43 SR</i> | Change in the type of barrier: Selection of curve BL43SR (<i>Barrier Type</i> parameter under the <i>QUICK START</i> menu). |
| | <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). |


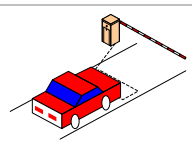
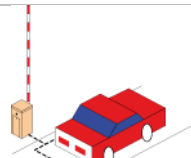
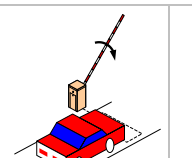
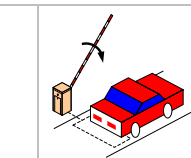
| Parameter | Values | Description |
|---------------------|----------------------------|--|
| | <i>Curve BL46 AVR</i> | Change in the type of barrier: Selection of curve BL46AVR (<i>Barrier Type</i> parameter under the <i>QUICK START</i> menu). |
| | <i>Curve BL46 SR</i> | Change in the type of barrier: Selection of curve BL46SR (<i>Barrier Type</i> parameter under the <i>QUICK START</i> menu). |
| | <i>Curve RSB 70&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"> • Check whether the sensor is plugged into the corresponding connector and whether it is functioning properly. • Check whether the sensor is properly connected. • Check whether the sensors are programmed correctly (<i>SENSOR FUNCTION</i> menu). |
| | <i>PS2 Activated</i> | |
| | <i>PS3 Activated</i> | |
| | <i>PS4 Activated</i> | |
| | <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"> • Check whether the arm safety sensor is functioning properly. • Check whether the Safety Arm parameter is programmed correctly (<i>Options</i> menu). |
| | <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>Note: 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"> • Check why the stop command is being maintained on the control board connector block. • Check whether the Stop Cmd parameter is programmed correctly (<i>Options</i> menu). |
| | <i>Reader A Hold</i> | Check why the Reader A command is being maintained on the control board connector block. |

| Parameter | Values | Description |
|------------------------|---|--|
| | <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"> • The reader counter (see the OPTIONS menu ► Counter CR) is greater than zero. • Or the timing for no passage is other than zero (see the TIMING menu ► No Passage). |
| <i>Open Status</i> | | Cases when the obstacle is prevented from opening during a request to open. |
| | OK | Normal opening. |
| | <i>Lock CL Hold</i> | Check why the Lock CL command is being maintained on the control board connector block. |
| | <i>Lock Close LCD</i> | The <i>Test Mode</i> parameter of the TEST 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 TIMING menu to elapse. |
| | <i>Stop Cmd Hold</i> | <ul style="list-style-type: none"> • Check why the close order is being maintained on the control board connector block. • Check whether the Stop CMD parameter is programmed correctly (Options menu). |
| | <i>Arm ELV Locked</i> | <ul style="list-style-type: none"> • Check whether the detector of the unlocking of the electrically locking (ELV) tip is functioning properly. • Check whether the Arm parameter in the OPTIONS menu is programmed correctly. |
| | <i>Arm ELV Detect</i> | Check whether the detector sensing the presence of the arm is functioning properly on the control board connector block. |
| | <i>Position Fail</i> | The type of sensor selected is <i>Analog. Sensor</i> (QUICK START menu ► <i>Positioning</i>); nevertheless, the obstacle still has to be activated (► <i>Activate Motor?</i> ► OK). |
| <i>Counter 1</i> | <i>0 to 99,000,000</i> <i>(0 by default)</i> | Total number of manoeuvres executed by the obstacle since it was first put into service. |
| <i>Counter 2</i> | <i>0 to 99,000,000</i> <i>(0 by default)</i> | Representation of counter 1, with the possibility of resetting it to zero. |
| <i>Reset counter 2</i> | | Counter 2 reset to zero. |
| | <i>OFF (by default)</i> | No resetting. |
| | ON | Request to reset to zero. |
| | <i>Done</i> | Message is displayed for 1 second when the counter has been reset to zero. |

3.2. "QUICK START" menu: quick configuration

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

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


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

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

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

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

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



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

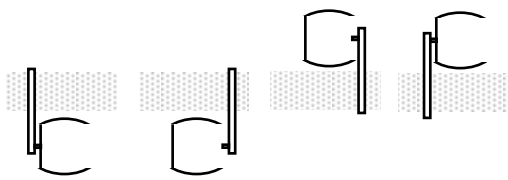
Note: the installation of 2 loops on PS1 and PS2 requires the use of a double detector since PS1 and PS2 are on the same connector.

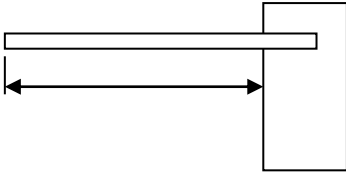
Note: 2 supplementary Presence Sensor (PS3 and PS4) are available through extended menu "SENSOR FUNCTION".

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

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

| Parameter | Values | Description |
|-------------|--------------------------------|--|
| Positioning | | Definition of the type of sensor used to position the obstacle. |
| | Limit Switches (by default) | To be selected if the open/close position of the obstacle is determined by limit switches. |
| | Analog. Sensor | To be selected if the position of the obstacle is determined by an analogue sensor. The analogue position sensor measures the distance separating it from a spiral cam located on the shaft that transmits the movement of the obstacle's motor, which means that the angular position of the obstacle is known at all times. Also, see the Min Sensor Max parameter below. |
| | Manual Switch | This message is displayed if it is not possible to activate the analogue sensor, as per one of these cases: <ul style="list-style-type: none"> • The crank presence detector (only present on some equipments) is engaged. => Remove the crank so that the motor may be engaged. • If the equipment does not have a crank presence detector, the circuit may have been cut. => link the corresponding connections. |
| | Activate Motor? | Pushing the OK key within 5 seconds launches the analogue sensor activation procedure (see below) and the movement of the obstacle!  The Barrier Type and Arm characteristics must be selected <u>BEFORE</u> initializing the analogue sensor. Otherwise, rough movements of the arm can occur with risk of injury for the personnel and the equipment. => Navigate through the menus by means of the upper key (▲). |
| | Search LSO... | The obstacle opens to look for its open limit position. |
| | Search LSC... | The obstacle closes to look for its close limit position. |
| | |  The obstacle is moving during this phase! |
| | Init. Passed | This is displayed if the open and closed limit values have been recorded. The analogue sensor is then operational. The message disappears after 5 seconds or if the OK key is pushed. IMPORTANT: Save the values in MEM1 or MEM2 (MEMORY menu). |
| | Adjust Sensor | Activation failed because the analogue sensor was not properly positioned => adjust it (closer or further away from the cam) so the measurement is included in the working range (= between the min. and the max. set in the <i>Min Sensor Max</i> parameter below). |


| Parameter | Values | Description |
|---------------------|----------------------------------|---|
| | <i>Value 0 Detect</i> | Activation failed because the analogue sensor returned a measurement of zero. As this value is invalid, check: <ul style="list-style-type: none"> the sensor's wiring (in the sensor as well as on the control board's connector blocks); whether the sensor is too close to the cam; whether the sensor is functioning: LED on the sensor is illuminated and the value measured is displayed in the Min Sensor <i>Max</i> parameter below. |
| <i>Barrier Type</i> | | Definition of the equipment type; this allows the program to automatically modify the opening and closing motor power curves. Note 1: The equipment type is stated on the reference plate, inside the housing. Note 2: to change from barrier solution 1 or 2 to solution 3 or 4 (illustration below), 2 phases of the motor have to be inverted.  |
| | <i>229 Standard (by default)</i> | Parameter to select for a BL229 Standard. |
| | <i>229 Highway</i> | Parameter to select for a BL229 Highway. |
| | <i>1x – 2x – 3x – 5x</i> | Parameter to select for a BL16, BL32, BL33, BL52, BL53, BP56. |
| | <i>BLG77</i> | Parameter to select for a BLG77. |
| | <i>BL 223</i> | Parameter to select for a BL223. |
| | <i>RSB 70 & 71</i> | Parameter to select for a RSB 70 or RSB 71. |
| | <i>BL 40 SR</i> | Parameter to select for a BL40 without automatic opening of the arm in case of power cut. |
| | <i>BL40 AVR</i> | Parameter to select for a BL40 with automatic opening of the arm in case of power cut. |
| | <i>BL 41 SR</i> | Parameter to select for a BL41 without automatic opening of the arm in case of power cut. |
| | <i>BL 41 AVR</i> | Parameter to select for a BL41 with automatic opening of the arm in case of power cut. |
| | <i>BL 43 SR</i> | Parameter to select for a BL43 without automatic opening of the arm in case of power cut. |
| | <i>BL 43 AVR</i> | Parameter to select for a BL43 with automatic opening of the arm in case of power cut. |
| | <i>BL 44 SR</i> | Parameter to select for a BL44 without automatic opening of the arm in case of power cut. |
| | <i>BL44 AVR</i> | Parameter to select for a BL44 with automatic opening of the arm in case of power cut. |

| Parameter | Values | Description |
|------------|---------------------|---|
| | BL 46 SR | Parameter to select for a BL46 without automatic opening of the arm in case of power cut. |
| | BL 46 AVR | Parameter to select for a BL46 with automatic opening of the arm in case of power cut. |
| Arm Length | | <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>Note: arm length = free passage = distance between the arm tip and the barrier housing.</p>  |
| | 2m00 | Select this for a BL4x or BL229 with an arm of 2 m. |
| | 2m50 | Select this for a BL4x or BL229 with an arm of 2.5 m. |
| | 3m00 | Select this for a BL4x or BL229 with an arm of 3 m. |
| | 3m50 | Select this for a BL4x or BL229 with an arm of 3.5 m. |
| | 4m00 | Select this for a BL4x or BL229 with an arm of 4 m. |
| | 4m50 | Select this for a BL4x or BL229 with an arm of 4.5 m. |
| | 5m00 (by default) | Select this for a BL4x or BL229 with an arm of 5 m. |
| | 5m50 | Select this for a BL4x or BL229 with an arm of 5.5 m. |
| | 6m00 | Select this for a BL4x or BL229 with an arm of 6 m. |
| | 7m00 | Select this for a BL4x with an arm of 6,5 or 7 m. |
| | 8m00 | Select this for a BL4x with an arm of 7,5 or 8 m. |
| | 9m00 | Select this for a BL4x with an arm of 8,5 or 9 m. |
| | 10m00 | Select this for a BL4x with an arm of 9,5 or 10 m. |
| | 11m00 | Select this for a BL4x with an arm of 10,5 or 11 m. |
| | 12m00 | Select this for a BL4x with an arm of 11,5 or 12 m. |
| | Non-modifiable | Message displayed when the Barrier Type parameter does not allow any modification of the arm length. |
| | Incompatible | Message displayed when the selected Arm Length is not compatible with the selected Barrier Type. |
| Arm Type | | Specification of the type of arm assembled on the barrier. This parameter only applies to the BL 229 Highway and is not taken into account for other types of equipment. |
| | Aluminium (default) | Aluminium arm. |
| | Carbon | Carbon arm. |
| | Non-modifiable | Message displayed for the equipments different than BL229 Highway. |

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

| Parameter | Values | Description |
|--------------|----------------------------|--|
| Exploitation | | <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 => Lock Close has priority in an opening loop and will work even if something is detected.</p> <p>Warning: The OP command is never interrupted (the arm always goes to the LSO before accepting the next command) => Lock Close will take affect after the obstacle has reached its LSO.</p> <p>Note: Some use modes are incompatible with the operating mode of the presence sensors (see the table of incompatible modes, here after).</p> |
| | 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 Close Cmd: close the obstacle on the rising edge of the command. STOP Cmd: stop.</p> <p>Note: if a Lock Open command is given when the No Passage timing has been activated, it will close when the following two conditions have been met:</p> <ul style="list-style-type: none"> • the Lock Open command is deactivated, • the set time has elapsed (or, immediately if there is a detection on a closing sensor). |
| | 1 Contact | <p>Open Cmd: if active, the obstacle opens. Open Cmd: if inactive, the obstacle closes. STOP Cmd: stop. When the stop is released, the obstacle will continue to open if an OP/Lock Open command is still present, if not the obstacle will close.</p> <p>Note: there is no CL contact in this mode.</p> <p>Note: if this mode is used for a reader, it must be ensured that the latter sends a continuous signal in order for the obstacle to be kept open for a given time.</p> <p>Note: this mode is highly recommended for barriers which arm is Normally Open (tunnel entry, etc.). In this case effectively, it is mandatory to maintain a continuous opening command in order to prevent an untimely closing (by maintenance personnel for example).</p> <p>Warning: if there is a voltage loss while the obstacle is open, the obstacle will close when the power comes back if the OP command is not activated, because – in this mode – an inactive open command equals a close command.</p> |
| | Step by Step | <p>Open Cmd: inversion at each rising edge (i.e., at each pulse). STOP Cmd: stop.</p> <p>Note: neither CL nor reader commands are available in this mode.</p> |

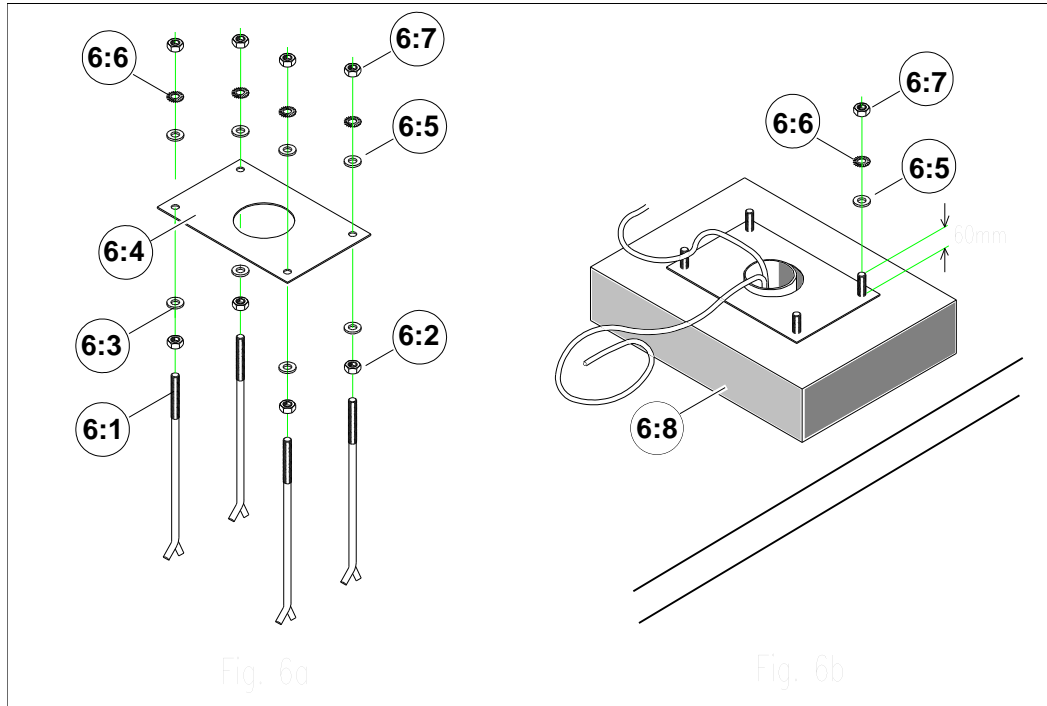
| Parameter | Values | Description | | | | | | | | | | | | | | | |
|-----------------------|--|---|-------------|-------------|------------------|------------------|--|------------------|--|--|-----------|-----------|-----------|-------------|-------------|-------------|--|
| | <i>Dead Man</i> | <p>Open Cmd: if active, the obstacle opens. If inactive (i.e., when the command is released), the obstacle stops.</p> <p>Close Cmd: If active, the obstacle closes. If inactive, it stops.</p> <p>STOP Cmd: stop.</p> <p>Note: the open or close command may be realised by a Lock OP or Lock CL pulse command.</p> <p>Note: the reader commands do not work in this mode.</p> <p>Note: this mode is only compatible with presence sensors operating under the Nothing_Stop or Deactivated modes (otherwise the Incompatible message appears briefly).</p> | | | | | | | | | | | | | | | |
| | <i>2 Contacts CFE</i> | <p>Same as 2 Contacts operation, except:</p> <p>Close Cmd: Closure of the obstacle on the Falling Edge of the command (i.e., when the button is released).</p> | | | | | | | | | | | | | | | |
| | <i>Incompatible</i> | <p>This message is displayed for one second if the operating mode selected is not compatible with the parameters set for the presence sensors.</p> | | | | | | | | | | | | | | | |
| <i>Memory</i> | | Save the parameter values (see the MEMORY menu). | | | | | | | | | | | | | | | |
| | <i>Ignored (by default)</i> | No action. | | | | | | | | | | | | | | | |
| | <i>Save</i> | <p>Save the modified parameters in MEM1.</p> <p>This saving action is necessary so that the modifications made are not lost during a power cut!</p> | | | | | | | | | | | | | | | |
| | <i>Load Default</i> | <p>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.</p> <p>Warning: the loading of the default parameters entails the loss of the parameters specific to the installation's real situation and may put the equipment out of service.</p> | | | | | | | | | | | | | | | |
| | <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> | <table style="border: none; text-align: center;"> <tr> <td><i>0000</i></td> <td><i>0000</i></td> <td><i>0000</i></td> </tr> <tr> <td><i>(default)</i></td> <td><i>(default)</i></td> <td></td> </tr> <tr> <td><i>(default)</i></td> <td></td> <td></td> </tr> <tr> <td><i>to</i></td> <td><i>to</i></td> <td><i>to</i></td> </tr> <tr> <td><i>1024</i></td> <td><i>1024</i></td> <td><i>1024</i></td> </tr> </table> | <i>0000</i> | <i>0000</i> | <i>0000</i> | <i>(default)</i> | <i>(default)</i> | | <i>(default)</i> | | | <i>to</i> | <i>to</i> | <i>to</i> | <i>1024</i> | <i>1024</i> | <i>1024</i> | <p>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).</p> |
| <i>0000</i> | <i>0000</i> | <i>0000</i> | | | | | | | | | | | | | | | |
| <i>(default)</i> | <i>(default)</i> | | | | | | | | | | | | | | | | |
| <i>(default)</i> | | | | | | | | | | | | | | | | | |
| <i>to</i> | <i>to</i> | <i>to</i> | | | | | | | | | | | | | | | |
| <i>1024</i> | <i>1024</i> | <i>1024</i> | | | | | | | | | | | | | | | |
| <i>Menu Access</i> | | Choice of the display mode for the menus. | | | | | | | | | | | | | | | |
| | <i>Simplified (default)</i> | <p>Access to the menus included in the Simplified mode.</p> <p>Warning: pressing the OK key to validate the passage from the Extended to the Simplified mode causes a movement of the arm (opening or closing), even if a presence is detected by the Presence sensors.</p> | | | | | | | | | | | | | | | |
| | <i>Extended</i> | Access to supplementary parameters. | | | | | | | | | | | | | | | |

| | |  Table of incompatibility between the exploitation modes and the presence sensor function: | | | | |
|-----------------|----------------|--|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| | | <input checked="" type="checkbox"/> compatible <input checked="" type="checkbox"/> incompatible | | | | |
| | | Exploitation 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"/> |
| | Nothin_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"/> |

4. INSTALLATION

4.1. Preliminary work on site

- This is basically the following:
 - Assembly of the barrier installation basement kit, delivered as an accessory.

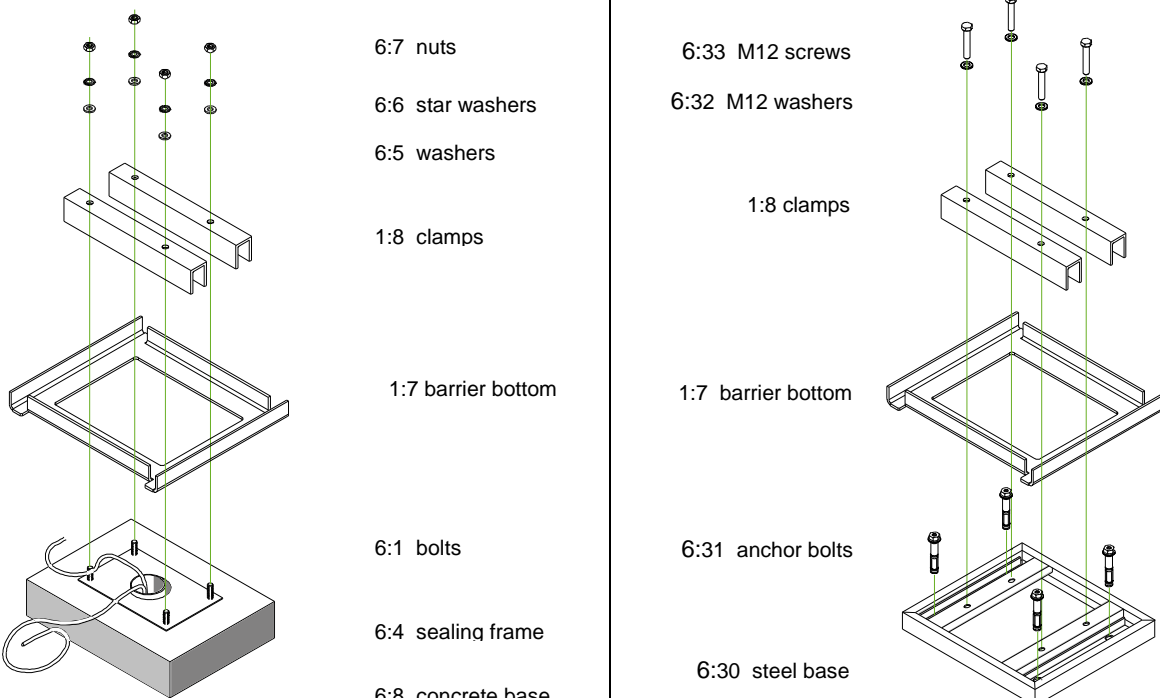


Pass the four anchoring bolts (6:1) into the holes of the sealing frame (6:4) using a nut (6:2) and a flat washer (6:3) each time. The curved end of the anchoring bolts must be oriented downwards and the threaded end upwards as illustrated in Fig. 6a. Secure the anchoring bolts on the sealing frame by putting a flat washer (6:5), a lock washer (6:6) and a nut (6:7) on each threaded rod with a 60mm tail. Tighten the nuts. It is advisable to protect the threads sticking out of the sealing frame from concrete projections by means of adhesive tape.

- PVC tube (minimum diameter 60mm) to be provided to allow the power supply and remote control wires to exit from within the concrete base.
- Construction of a concrete base (6:8) in which the basement kit is to be buried according to the instructions of plan Nr CH1510. The basement kit must be flush with the finished level of the concrete base and perfectly horizontal (Fig. 6b). When the concrete is dry, remove the adhesive protection tape from the threads, and remove the nuts (6:7), the lock washers (6:6) and the flat washers (6:5).
- Wiring (to be provided by the customer, according to the legal prescriptions in use in the country of installation):
 - Power supply (from the general power supply box to the concrete base)
 - Control wiring (from the place where the control box will be installed to the concrete base).
 - Ensure that the cables have a minimum of 1 metre out of the concrete base.

4.2. Handling and installing the unit

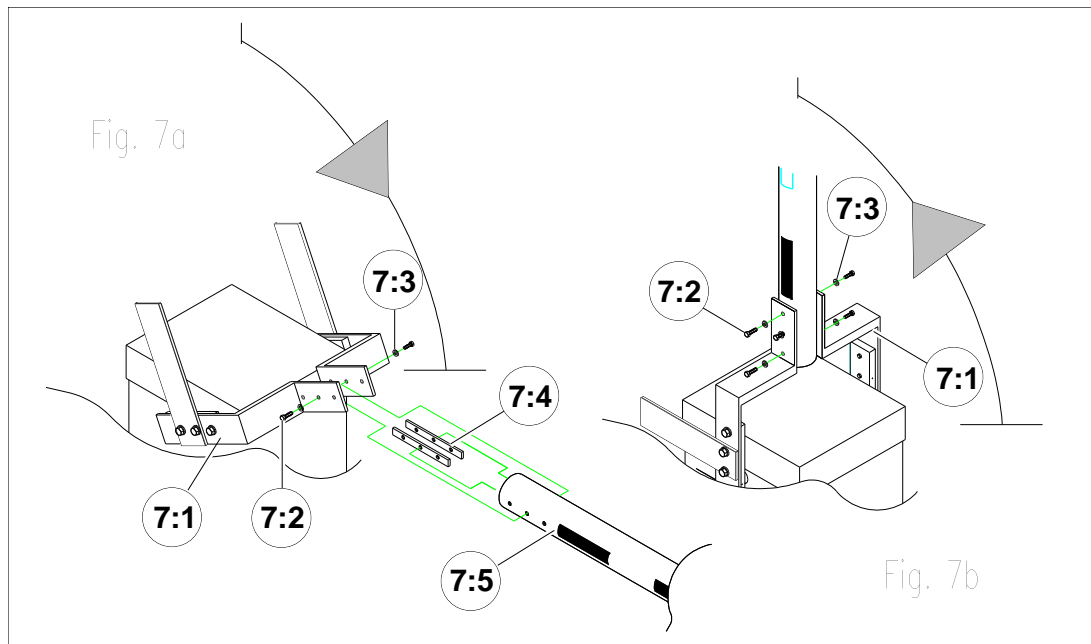
- The barrier has been packaged in a wood crate for transport. Carry the material to the installation site with the help of a trolley or a crane (according to the site configuration), place the crate upright and dismantle.
- Unlock and remove the side doors (1:1) and (1:2). Keys are attached on the arm bracket (1:4) or (1:5) by means of adhesive tape.
- Unlock the two latches (2:12) from inside and remove the hood (1:6).
- Check the state of the equipment. Though it has been carefully packed, damage may have occurred during transport: in this case, do not forget to advise your local **Automatic Systems** agent or your insurance company. If need be, proceed with the necessary repairs.
- Strip the insulation of the cables along approx. 50cm.
- Locate the hole (1:10) of the emergency crank (1:11).
-

| Fixing on concrete base | Fixing on steel raised base (option) |
|---|--|
| <ul style="list-style-type: none"> • Without damaging the anchoring bolts, place the housing (1:7) on its concrete base so that the crank hole is at the same side as the roadway. | <ul style="list-style-type: none"> • Drill 4 holes Ø15mm x 85mm deep, clean them by blowing and fix the base in the ground by means of anchor bolts (6:31). Tighten to 40 NM. WARNING: anchor bolts provided are foreseen to be fixed into concrete (class C20/25 to C50/60). Adapt the fixation means to the support. |
| <ul style="list-style-type: none"> • Insert the two fixing brackets (1:8) inside the unit onto the anchoring bolts (6:1) of the basement kit. | <ul style="list-style-type: none"> • Place the barrier on the base (crank hole on roadway side) and secure it by tightening the clamps (1:8) in the base (6:30) by means of screws (6:33) and washers (6:32) provided. |
| <ul style="list-style-type: none"> • Secure the barrier to the basement kit by locking the fixing brackets (1:8) to the anchoring bolts (6:1) with the flat washers (6:5), the lock washers (6:6) and the nuts (6:7) provided. |  |

- Fix the stainless steel heater (2:11) into the sheath provided behind the gearbox console, below the technical identification plate (2:6).
- If required, add shims between the sealing frame and the housing in order to ensure the barrier is perfectly level.

Note: Since final adjustment of the alignment with the roadway may be necessary after the arm is installed, do not tighten the nuts (6:7) or screws (6:33) firmly now.

4.3. Installing the round arm (BL52)

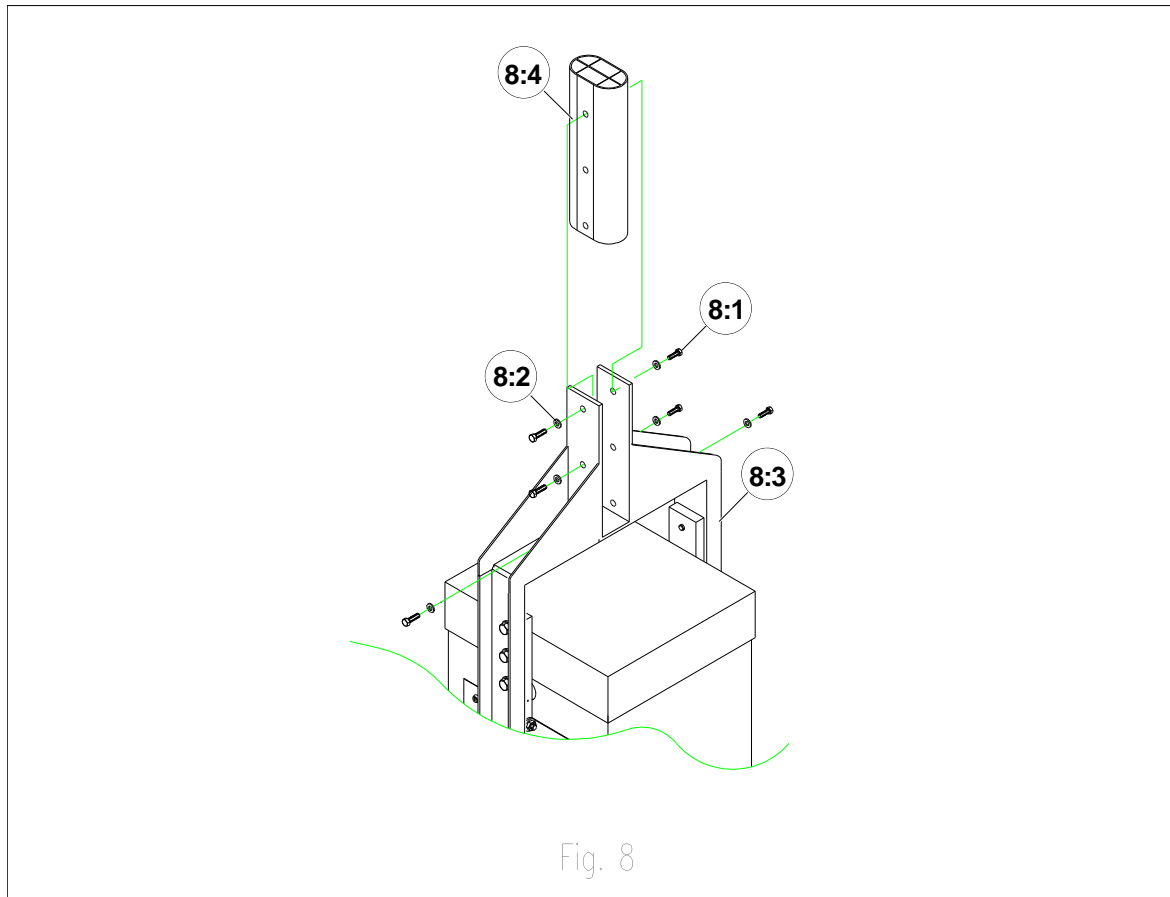


WARNING: Never raise the arm brackets by means of the crank, without the boom arm fixed for counterbalancing the spring: the arm brackets would swing violently, with serious injury risks for the operators.

Note: Fixing the arm requires two people!

- Lower the arm brackets (7:1) with the crank (1:11), helping the movement by hand if necessary, until the friction clutch slips (angle of about 20°).
- Remove the three screws (7:2) and flat washers (7:3) from each arm lock plate (7:4). On delivery, the lock plates are affixed on the arm brackets.
- Insert the first arm segment (7:5) between the two arm brackets (7:1) as shown in Fig. 7a.
- Insert both lock plates (7:4) successively inside the arm tube and fix a flat washer (7:3) and a screw (7:2) again into the middle hole of each arm bracket. Raise the arm brackets (7:1) in the vertical position with the crank, align them with the arm segment, and fix the flat washers (7:3) and the screws (7:2) into the upper and lower holes of the arm brackets (Fig. 7b). Tighten the screws (7:2) firmly. The first arm segment is now in place.
- Lower the arm tube with the crank (1:11), helping the movement by hand if necessary, up to the horizontal position. Continue turning the crank to make sure that the mechanism is locked.
- After loosening the screws (9:10), insert the second segment (9:9) into the first and the third (9:11) into the second, then align the red reflecting stripes.
- Tighten the screws (9:10) firmly again to secure the second and third arm segments.
- Check the alignment of the complete barrier with the roadway and adjust if necessary.
- Install the shrouds now referred in paragraph [4.5. Fixing the shrouds].
- Refer to paragraph [4.8 Installing the tip support] for installation of the tip support.

4.4. Installing the oval arm (BL53)

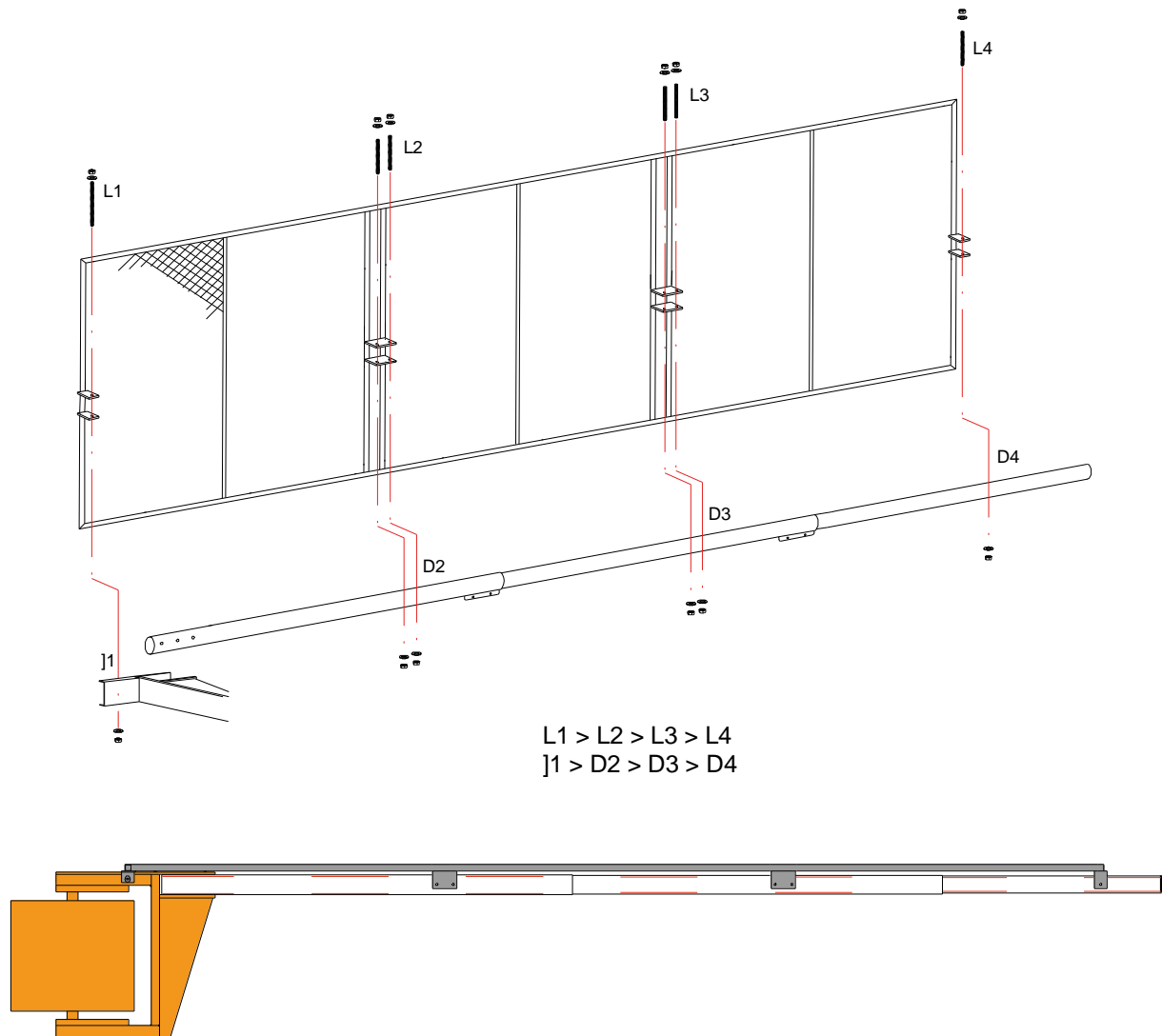


WARNING: Never raise the arm brackets by means of the crank, without the boom arm fixed for counterbalancing the spring: the arm brackets would swing violently, with serious injury risks for the operators.

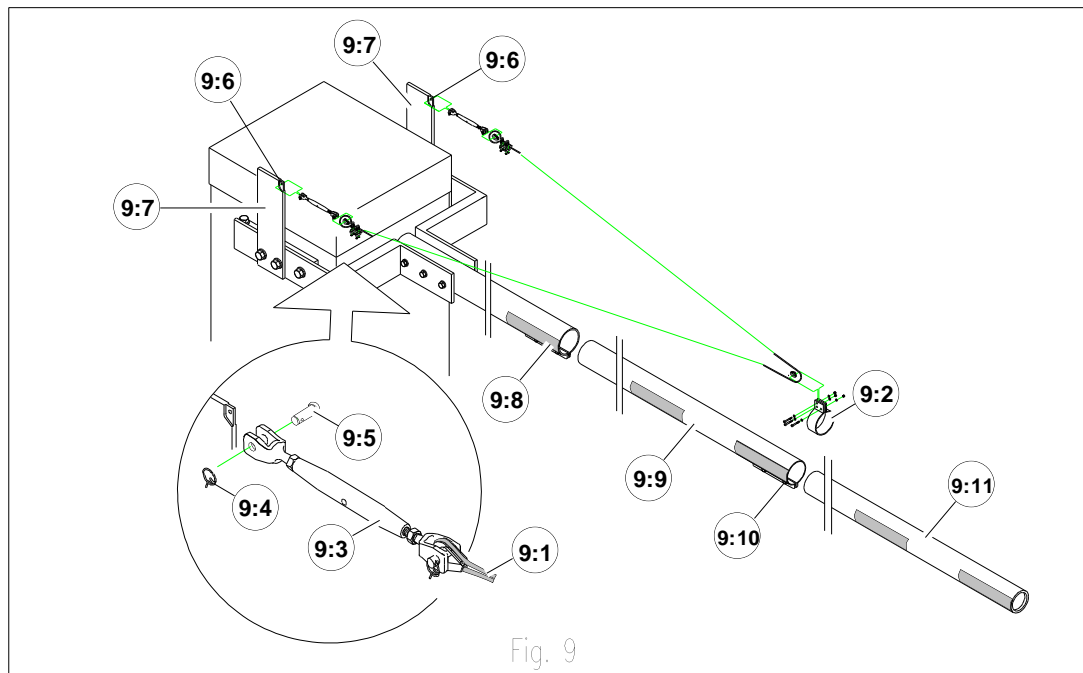
Attention: Fixing the oval arm requires at least two persons, depending on its length! In case of difficulty, the use of a crane is highly advisable.

- Remove the three screws (8:1) and flat washers (8:2) from the twin arm bracket (8:3).
- Insert the arm tube (8:4) vertically inside the arm bracket (8:3), if necessary using a crane.
- Fix the flat washers (8:2) and screws (8:1) again. Tighten the screws (8:1) firmly.
- Lower the arm with the crank (1:11) up to the horizontal position. Continue turning the crank to make sure that the mechanism is locked. Check the alignment of the arm tube with the arm bracket.
- Check the alignment of the complete barrier with the roadway and adjust if necessary.
- If no tip support is to be installed, tighten the nuts (6:7) or screws (6:33) firmly to lock the barrier on the sealing frame.

4.5. Installing the fence (BLG76)



4.6. Fixing the shrouds (BL52 only)

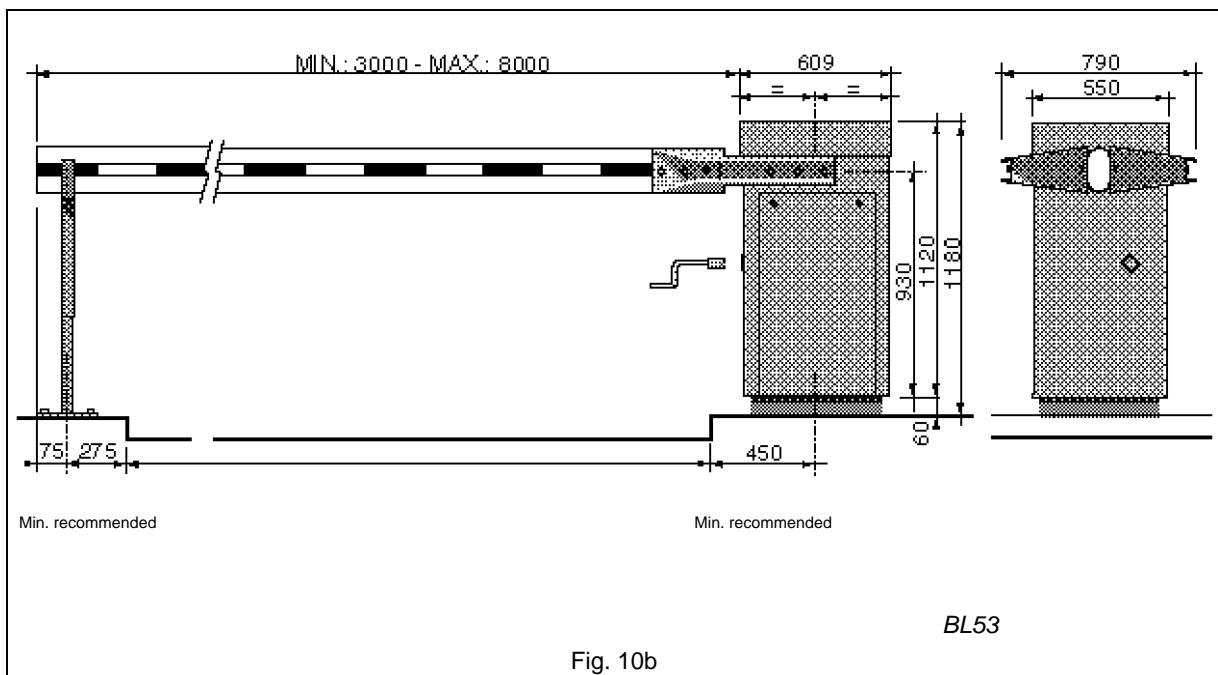
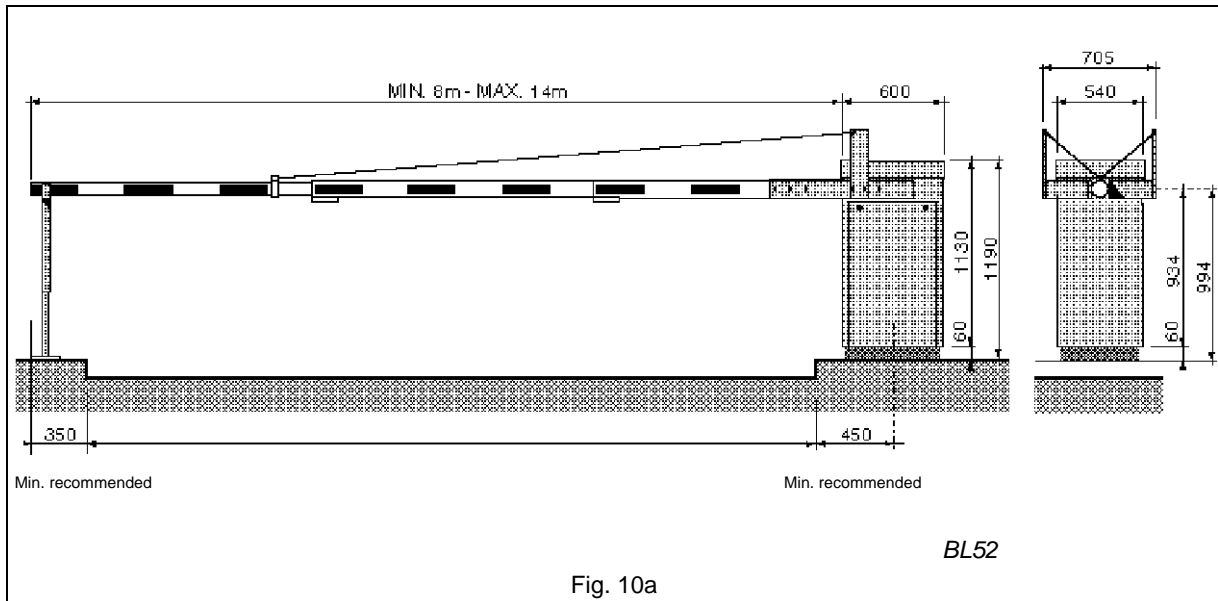


Attention: Fixing the shrouds requires two people!

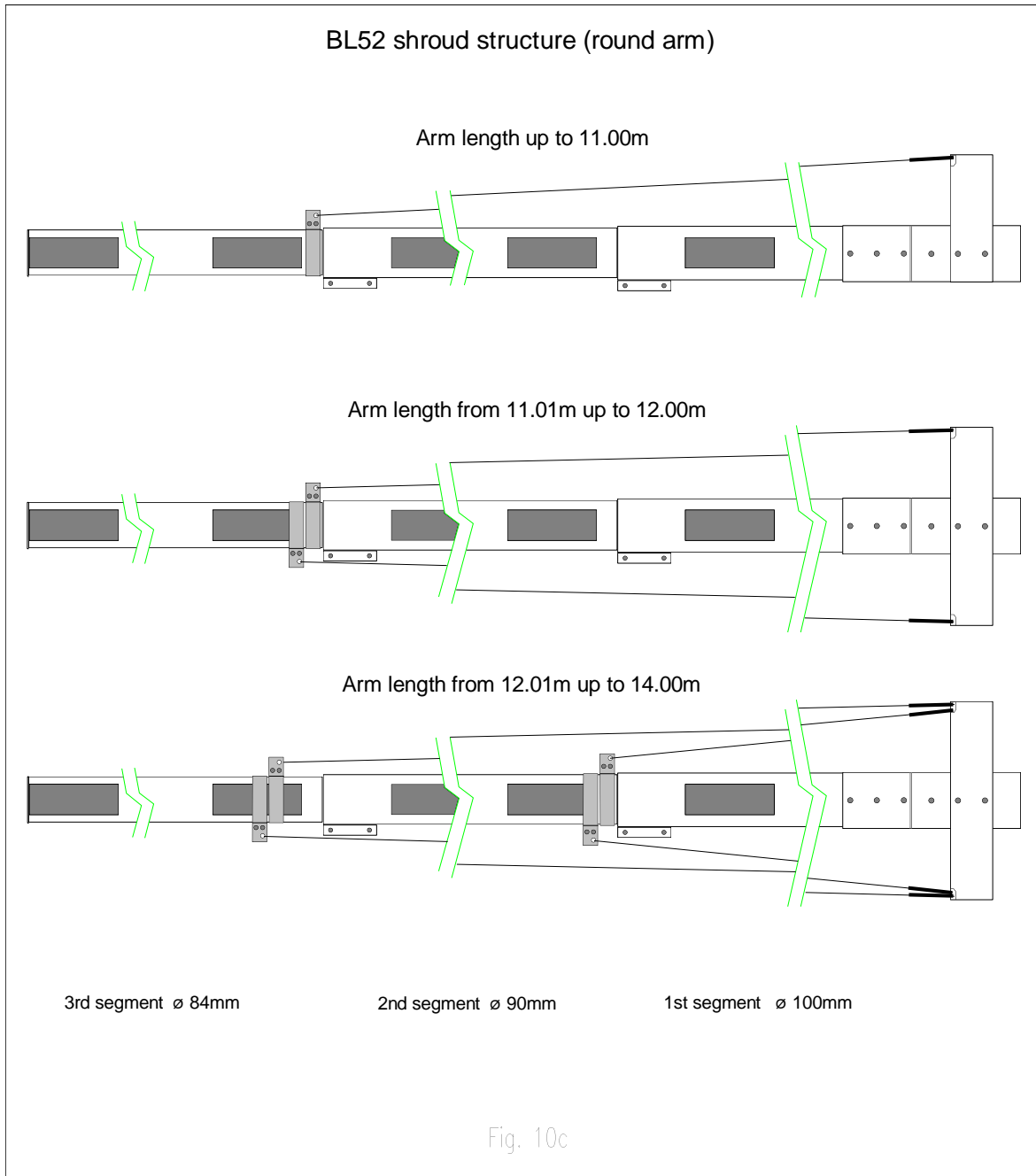
- The stainless steel bracing wires (9:1) are factory-fixed with the collar (9:2) on the arm.
- When the three arm segments are fixed and secured to one another (see *paragraph 4.3 Installing the round arm*), proceed as follows:
 - Unroll the cable (9:1) and pass it onto the upper screw of the collar (9:2), not forgetting to place the eyelet.
 - Loosen the strainers (9:3) at maximum length.
 - Remove the security pin (9:4) and the axle (9:5) from the strainers.
 - Position the strainer (9:3) onto the wing (9:6) of the stretcher plates (9:7).
 - Insert the axle (9:5) into the wing of the stretcher plate and fix the security pin (9:4) again.
 - Tighten the strainers (9:3) so as to make the arm vertical in its open position and horizontal in its closed position. If the precise positioning of the arm is not possible, see *paragraph 4.7*.

Note: The figure above shows a two-stretcher assembly (arm length up to 11 metres). Proceed likewise for a four-stretcher assembly (over 11 metres) or an eight-stretcher assembly (over 12 metres).
For the arms longer than 12 meters, after positioning the collars on the segment n° 3, drill and tap 4 M6 holes through the collars and the arm; then, fix these collars with M6 20mm-long screws.

4.7. Dimensional views and arm segments



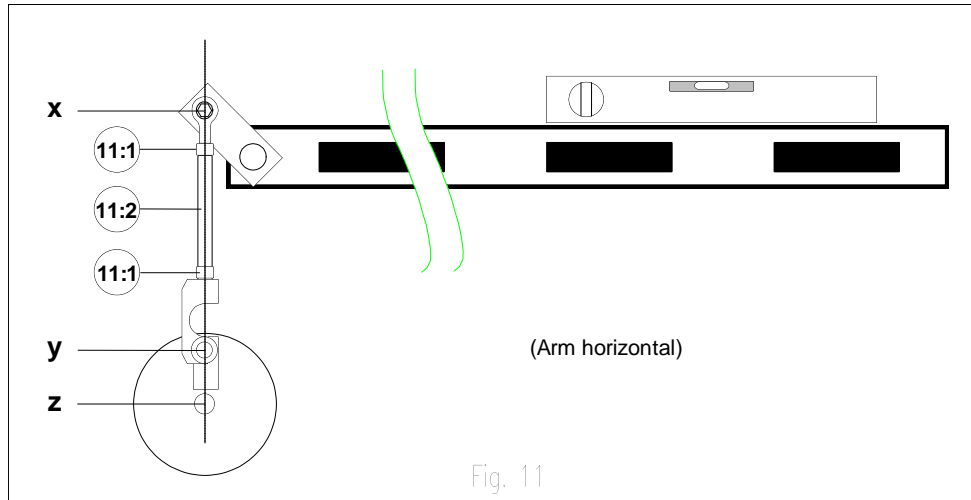
| Table of segments of BL52 arms and position of shrouds | | | | |
|--|----------------|-------|-------|----------|
| Arm length (from) | Segment length | | | Position |
| | 1 | 2 | 3 | x |
| 8.00m | 3.00m | 3.00m | 2.30m | 0 |
| 9.00m | 3.00m | 3.00m | 3.30m | 0 |
| 10.00m | 3.00m | 4.00m | 3.30m | 0 |
| 11.00m | 3.00m | 4.00m | 4.30m | 0 |
| 12.00m | 4.00m | 4.50m | 3.80m | 0 |
| 13.00m | 4.00m | 4.50m | 4.80m | 1.00m |
| 14.00m | 5.00m | 4.50m | 4.80m | 1.20m |



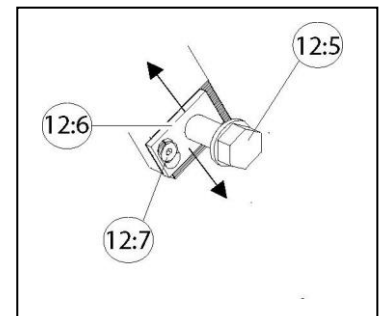
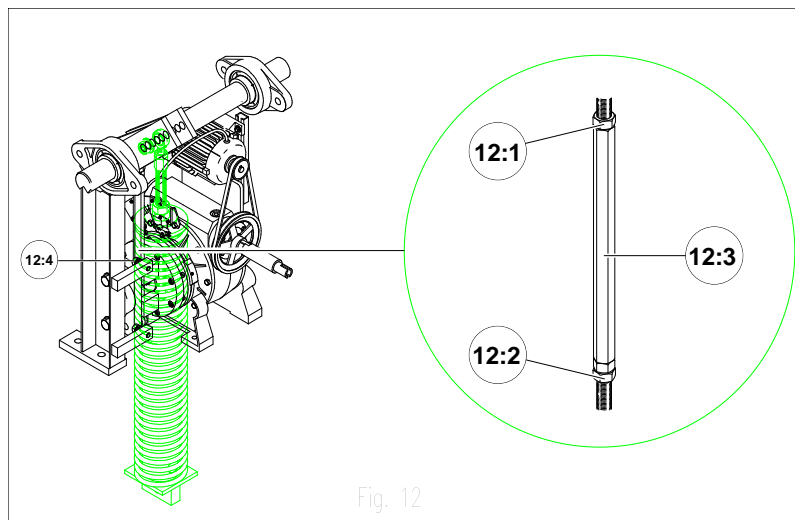
4.8. Levelling the barrier arm

4.8.1. Horizontal position "closed"

- The barrier is closed (arm horizontal) if the three conditions below are fulfilled:
 - the motor is stopped;
 - the closing limit switch is activated;
 - the steel plate of the crankshaft is flush (without any pressure) with the screw of the closing abutment (12:4).



- If necessary, adjust the arm level as follows:



- Make sure that the arm is perfectly aligned with the arm bracket (1:4) or (1:5).
- Loosen the nuts (12:1) and (12:2).

Note: The nut (12:1) have a left-handed thread and the nut (12:2) a right-handed thread.

- Rotate the rod (12:3) clockwise to raise the arm, counter-clockwise to lower it.
- While holding the rod strongly, tighten the nuts (12:1) and (12:2) firmly again.

4.8.2. Vertical position "open"

- The mechanism is in "open" position if the crankshaft is flush with the open stop screw (without pressure).
- If the arm is not in vertical position, proceed as follow:
 - Unscrew the nut of screw (12:5), without dismantling it.
 - Loosen screws (12:7) maintaining the "angle corrector" plate (12:6).
 - Move this late millimetre by millimetre, towards the shaft if the arm has passed over the vertical position, or away from it if the arm has not reached the vertical position.

Warning: *After this operation, bring the mechanism in closed position and check once more the horizontal position of the arm. The adjustment operations must be repeated as much as necessary to reach precise positions, when opening and closing the arm.*

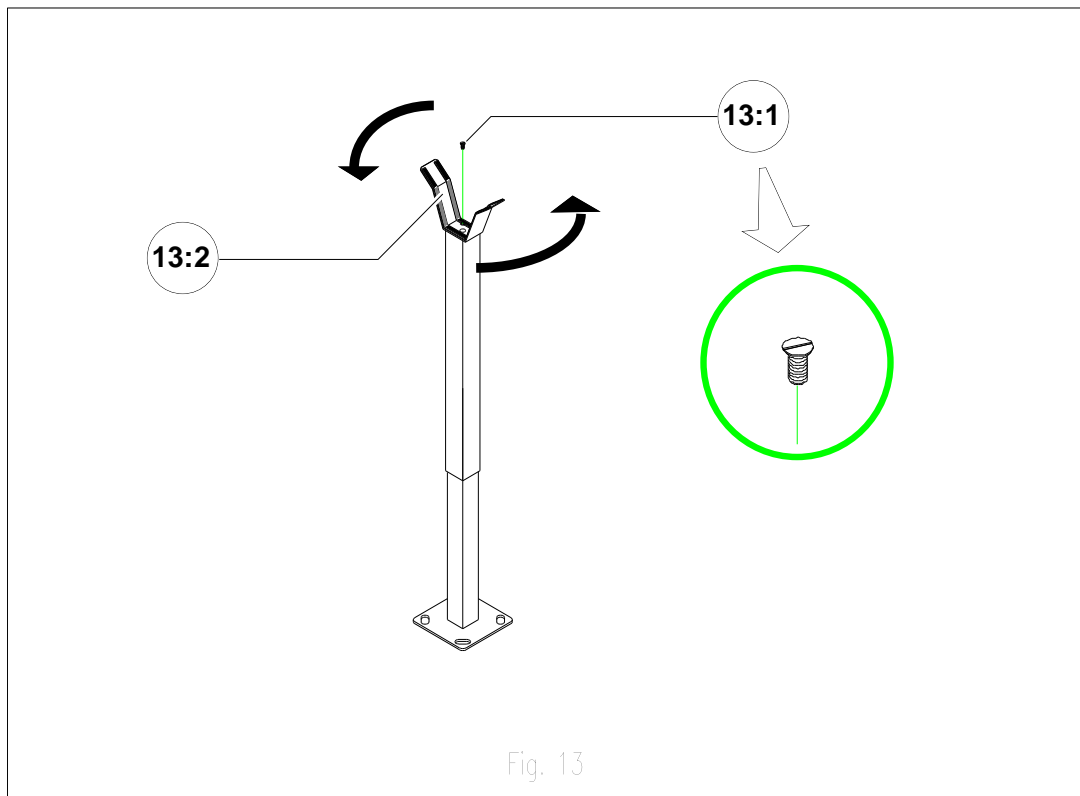
Note:

This "angle corrector" allows also to reduce or increase the 90° angle and to align the arm with a bending road.

4.9. Installing the tip support

4.9.1. Standard tip support

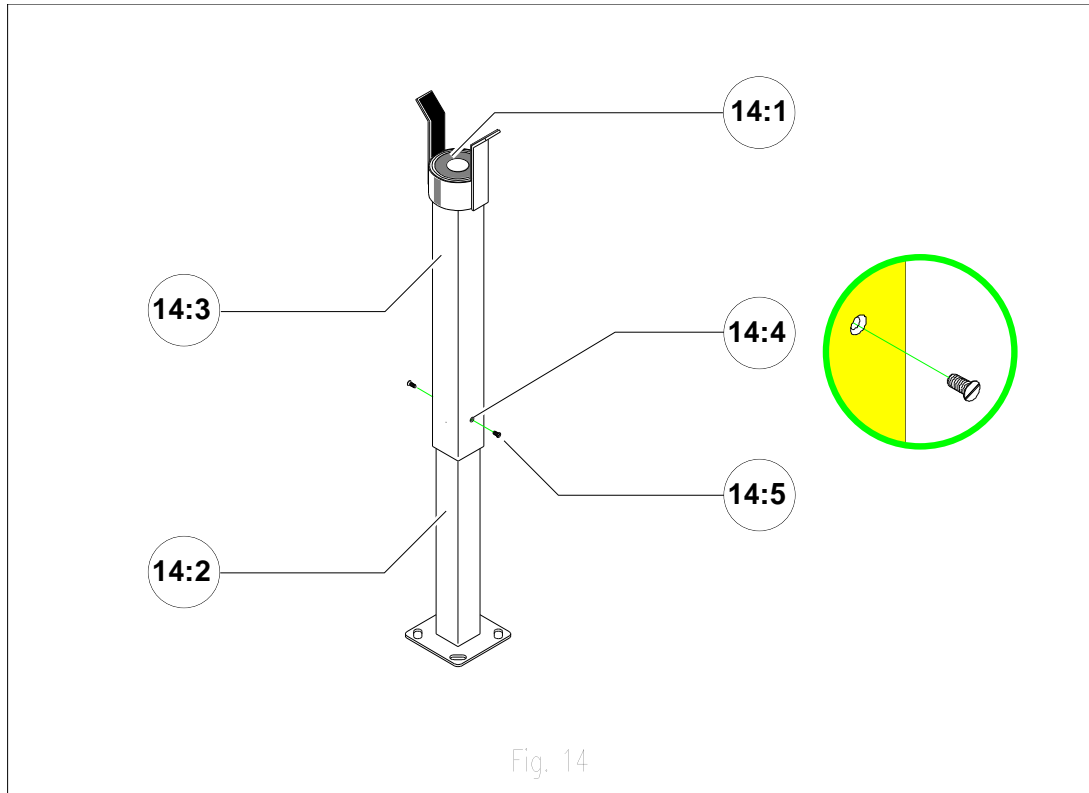
- The standard arm tip support is supplied as standard equipment with the barrier type BL52, and as an option with the barrier type BL53.
- The tip support must be fixed onto a flat and level concrete base by means of four rawbolts following the instructions of plan Nr CH2656. Its role is to assure the rigidity of the arm and maintain its tip when in the closed position.
- If required, adjust the height of the tip support as follows:



- Remove the screw (13:1).
- Rotate the fork (13:2) of the tip support in either direction so that the arm tip just rests on it when the arm is locked in the closed position.
- Fix the screw (13:1) again.
- Align the arm in the tip support, if necessary by rotating the barrier on its sealing frame. Tighten the nuts (6:7) or screws (6:33) firmly to lock the barrier on the concrete base.

4.9.2. Electromagnetic tip support

- The electromagnetic arm tip support is available as an option for the barrier types BL52 and BL53.
- The electromagnetic tip support must be fixed onto a flat and level concrete base by means of four rawbolts following the instructions of plan Nr CH1019. Make sure the tip support is positioned as precisely as possible to ensure the best contact possible between the electromagnetic suction disc (14:1) and the adhesion plate mounted on the arm tip. The electrical connection must first be provided between the wires from the concrete base and the tip support (2 x 1.5mm² + earth).
- The role of the electromagnetic tip support is to improve the mechanical locking of the arm in its closed position, making it impossible to lift it up manually.
- The tip support comprises two telescopic elements: a ground fixing post (14:2) and a sliding post (14:3).



- Adjust the height of the tip support as follows:
 - Slide the post (14:3) vertically until the adhesion plate of the arm tip rests on the suction disc (14:1) in the closed position.
 - Bore the holes (14:4) to accommodate the two M6 screws (14:5) delivered as accessories, and tighten these firmly.
 - Align the arm in the tip support, if necessary by rotating the barrier on its sealing frame. Tighten the nuts (6:7) or screws (6:33) firmly to lock the barrier on the concrete base.

4.10. Electrical connections and initial power-up

WARNING: the equipment is not to be connected to a floating network or to high impedance earthed industrial distribution network.

WARNING: high leakage current (between 3.5 mA and 5% of the nominal current).

Earth connection with a cable of minimum 1 mm² section mandatory before connecting power supply.

Do not connect several equipments to the same differential breaker.

- Make sure the power supply cables are not live
- Connect the power supply to the main circuit breaker (4:1) according to the electric diagram.
- Connect the earth wire to its terminal (4:2).
- Connect the control wires of the possible options to the connection block (5:6) of the control board (refer to the electric diagram).
- Arm the overload protection of the electrical control board by switching on the circuit breaker (4:1). If the installation includes one (or more) loop(s), make sure no vehicle activates it (them) since this might distort the loop(s) initialization.
- Proceed with an electrical opening test by pushing the OK button on the control board.
- The motor may run without activating the arm. In this case, the sense of rotation of the motor must be inversed. To do so, switch off the circuit breaker (4:1), and reverse the connection of the motor terminals U and V. Re-arm the overload protection by switching on the circuit breaker (4:1).
- Fix the cables under the electrical control board by means of the cable binders provided.
- Replace the control board by pushing it along its sliders.

4.11. Check-list

Before commissioning your barrier BL52/BL53, proceed with the general electrical tests (opening, closing, emergency stop, electromagnetic tip support if installed, etc.). Then review the following points:

- Check if all screws and nuts have been tightened firmly.
- Check if all wires are firmly connected to their respective terminal blocks.
- Check if the arm is correctly fixed. If not, refer to paragraph [4.3 or 4.4 *Installing the arm*].
- Check if the shrouds (if existing) are correctly mounted. If not, refer to paragraph [4.5 *Fixing the shrouds*].
- Check if the barrier arm is perfectly horizontal in the closed position. If needed, refer to paragraph [4.7 *Levelling the barrier arm*].
- Check if the V-belt is properly adjusted referring to paragraph [5.2 *Belt tension adjustment*].
- Check if the arm reopens with difficulty in case a closing movement is reversed, or if it cannot be stopped by hand during a manoeuvre. If necessary, refer to paragraph [5.3 *Safety torque limiter adjustment*].
- Since the mechanism has not been run in, the position of the limit switches is such that the crankshaft plate stops at 2-3mm from each abutment at the end of the movement. After about 1000 operations, the mechanism will be run in and this plate will have to be flush with each abutment. Please refer to paragraph [5.4. *Limit switch adjustment*].
- Check if you did not forget any tool inside the barrier.
- Remove any foreign body from the inside of the barrier (scraps, etc.) and clean.
- Replace the hood (1:6) and lock it from inside with the two latches (2:12).
- Put the side doors (1:1) and (1:2) in place again and lock them.

The barrier is now operational. Although all adjustments have been carried out in factory, a final regulation may be required after the transport or mounting procedure. In this case, see *chapter [5 Adjustments and technical interventions]*.

4.12. Scrapping the equipment

- When the equipment is withdrawn from use, do not fail to empty the oil from the gearbox (2:9) and to scrap the various elements of the machine in the appropriate way (metal parts, electronic components, etc.) in line with your country code/regulations.

5. ADJUSTMENTS AND TECHNICAL INTERVENTIONS

Before any operation, refer to the "safety warnings", p4.

5.1. Arm balance adjustment

- The power needed to set the mechanism in motion is minimal due to the built-in compression spring. To operate properly, the tension of the spring must be correctly adjusted, i.e. the strength needed to activate the mechanism must be equal in either direction. If necessary, proceed with the adjustment as follows:
 - Insert the crank handle (1:11) into the crank hole (1:10) and turn it in either direction to unlock the arm and bring it to an angle of approx. 20°.
 - Uncouple the torque limiter by loosening the 8 lock nuts (18:1) and the 8 screws (18:2) without removing them.
 - Move the barrier arm manually to an angle of 45°.

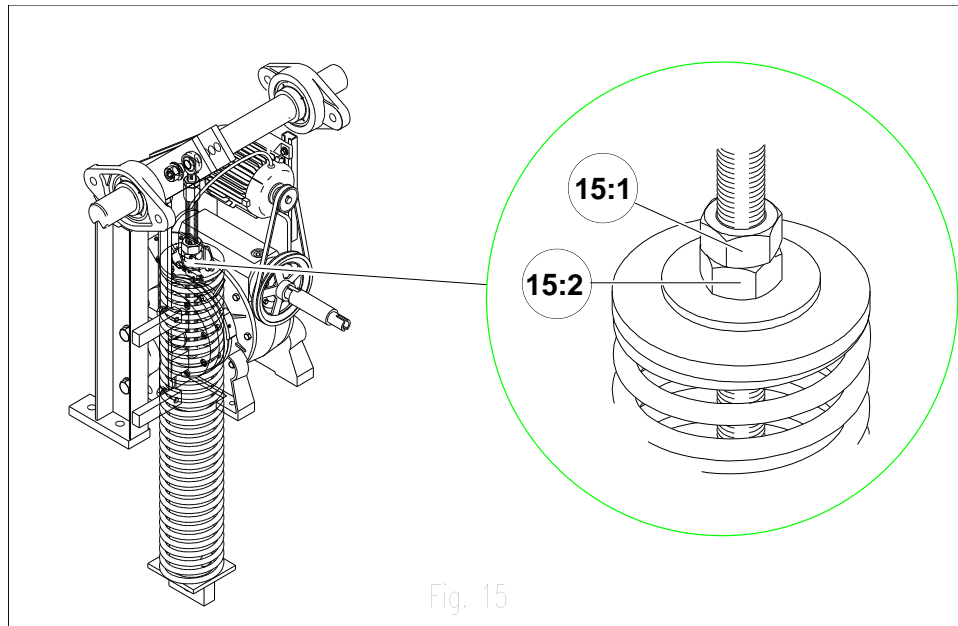


Fig. 15

a) If the arm moves downwards:

- ☞ Loosen the lock nut (15:1).
- ☞ Tighten the nut (15:2) smoothly to compress the spring harder and position the arm at 45°.
- ☞ When the desired result is obtained, tighten the nut (15:1) again to block the nut (15:2).

b) If the arm moves upwards:

- ☞ Loosen the lock nut (15:1).
 - ☞ Loosen the nut (15:2) smoothly to release the compression spring and position the arm at 45°.
 - ☞ When the desired result is obtained, tighten the nut (15:1) again to block the nut (15:2).
- Check the V-belt following the instructions of paragraph [5.2 Belt tension adjustment], then adjust the safety clutch referring to paragraph [5.3 Safety torque limiter adjustment].

5.1.1. Checking the arm balance adjustment

There are 2 procedures for this inspection:

- 1 – By means of a crank, proceed to complete opening and closing of the barrier. The adjustment is correct if the force to apply is the same for both directions, all along the operation, and being as low as possible.
- 2 - By means of a crank, bring the arm in vertical position and ensure that it is locked. Remove screw **(12.5)** to disconnect rod **(12.3)**. Manually tilt the arm and check that it remains stable for each position between 0 and 90°.

5.2. Belt tension adjustment

- The tension of the belt must be adjusted after replacement or after a certain time of operation, or when all the motor power cannot be transmitted to the mechanism. As a consequence, the belt slips on the pulleys and there is a formation of black dust. Proceed as follows to check the tension and/or replace the belt.
 - Arm the overload protection by switching off the circuit breaker (4:1)
 - Open the barrier arm electrically to an angle of 90° by means of the button OK (5:4).
 - Close it electrically again by pushing the button OK (5:4).
 - Reverse the movement when the arm is half-way (angle of 45°).
 - By slipping slightly, the torque limiter must absorb the inertia of the arm (NOT THE V-BELT!).
 - If necessary, adjust the belt tension as follows, after switching off the circuit breaker (4:1)

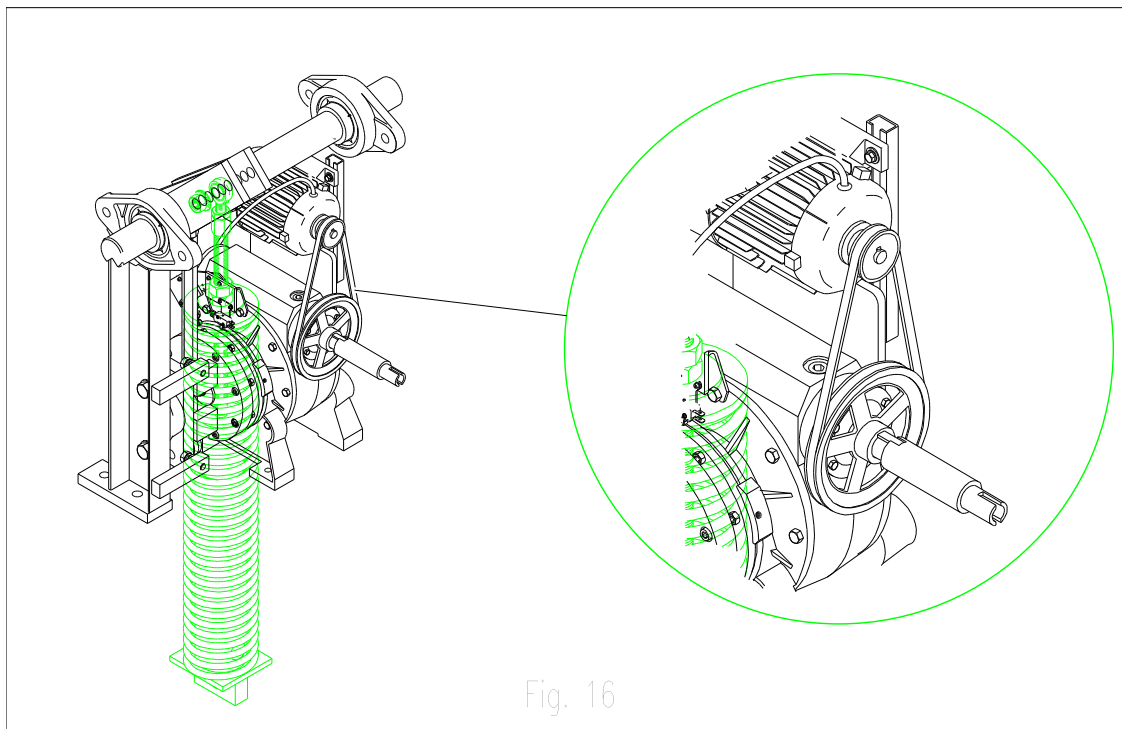


Fig. 16

- ☞ Loosen slightly the four screws (17:1) that fix the motor.
- ☞ If required, slide the motor downwards in its guides (17:2), remove the old V-belt and fix the new one.
- ☞ Slide the motor upwards in its guides. The tension is properly adjusted if the belt can be depressed about 10mm when you push on it as illustrated in Fig. 17.
- ☞ Make sure that the motor is horizontal.
- ☞ Tighten the four screws (17:1) firmly again.

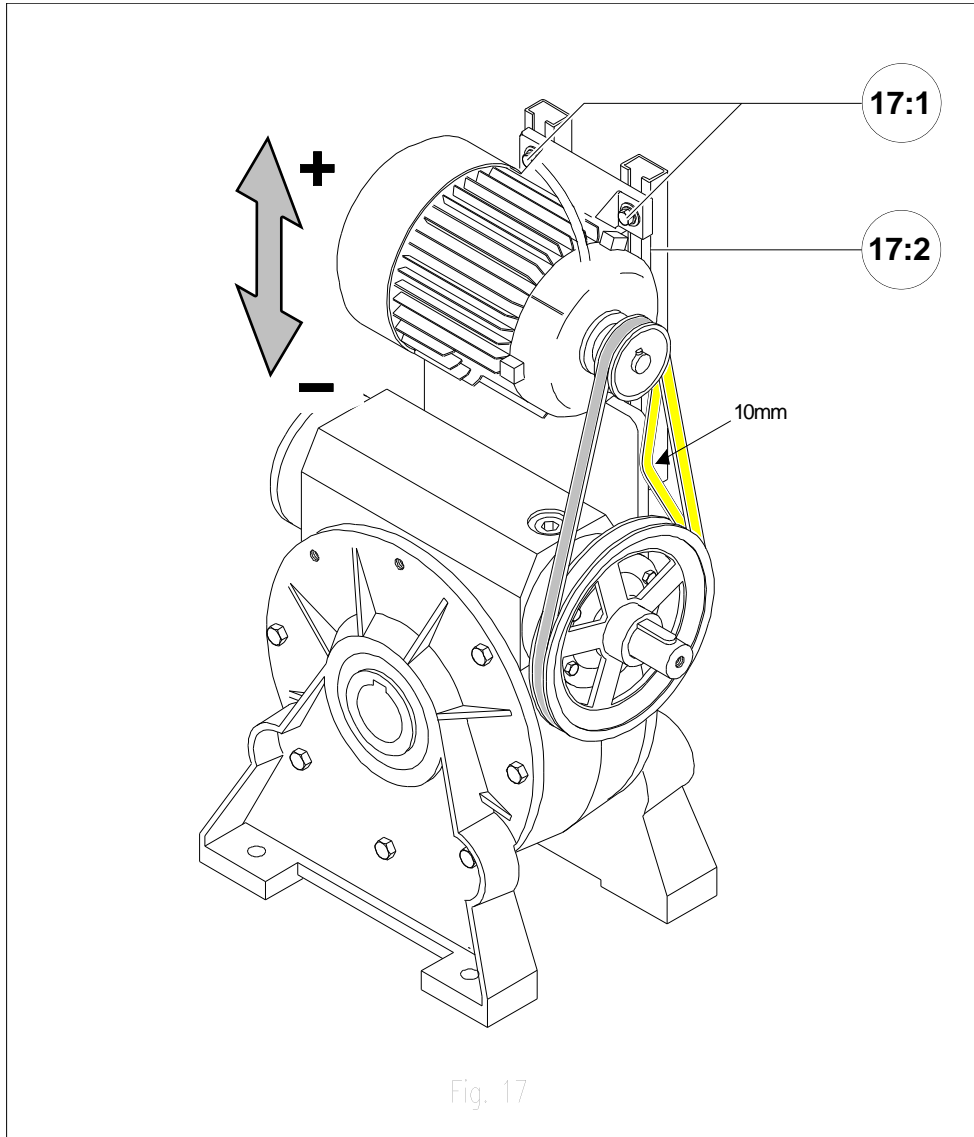
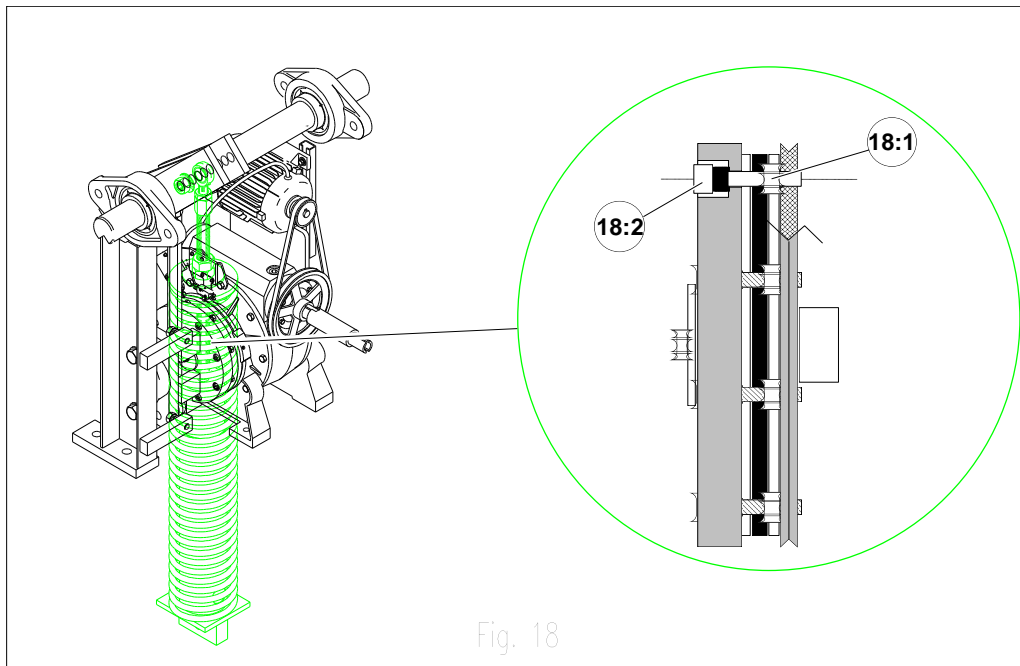


Fig. 17

Reminder: In case a closing or opening movement is reversed, the belt must not absorb the inertia of the mechanism!

5.3. Safety torque limiter adjustment

- The torque limiter is a safety device and is factory-adjusted. However, some further adjustment may be necessary when the equipment has been installed or after a certain time of operation. Proceed with the adjustment in the following cases:
 - Either the barrier arm does not open easily when a closing movement is reversed. The friction clutch then slips and must be tightened.
 - Or the force needed to block the arm by hand during a closing or opening movement is too strong. The friction clutch then sticks and must be loosened.
 - Or after a balance adjustment with the spring.
- In either case, the state of the V-belt must first be checked according to paragraph [5.2 Belt tension adjustment]. Then proceed as follows:



- Loosen the 8 lock nuts (**18:1**).
- Tighten the 8 screws (**18:2**) to tighten the torque limiter, untighten them to loosen it.
- Switch on the main circuit breaker (**4:1**)
- Make an electrical opening/closing test by pushing the button OK (**5:4**), and repeat the procedure above until the desired result is obtained. Never forget to first switch off the equipment.
- When the adjustment is completed, switch off the main circuit breaker (**4:1**)

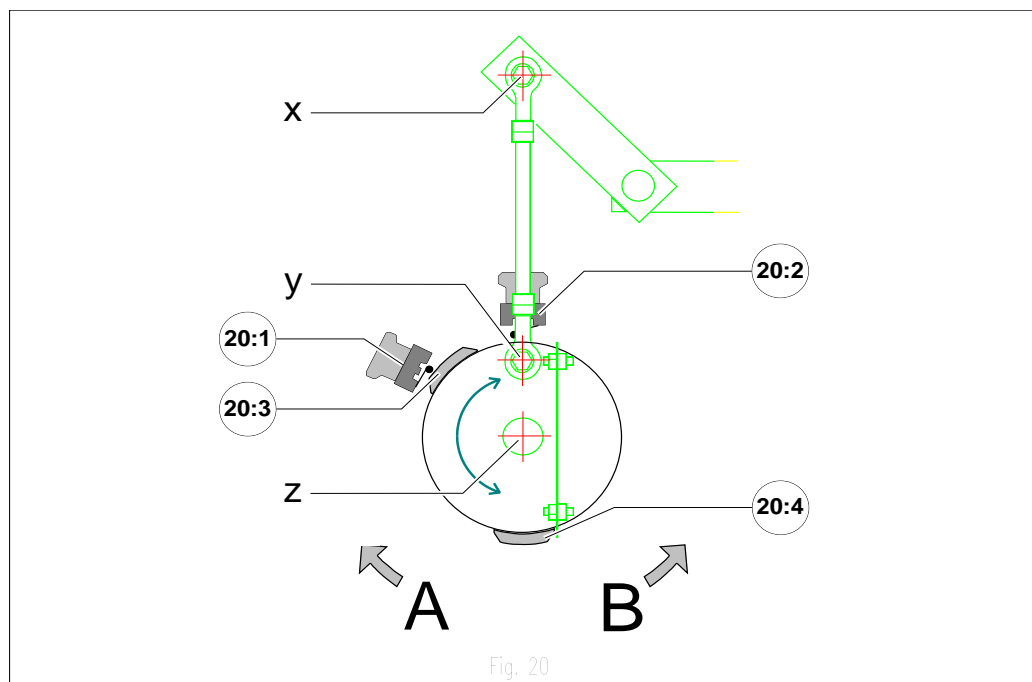
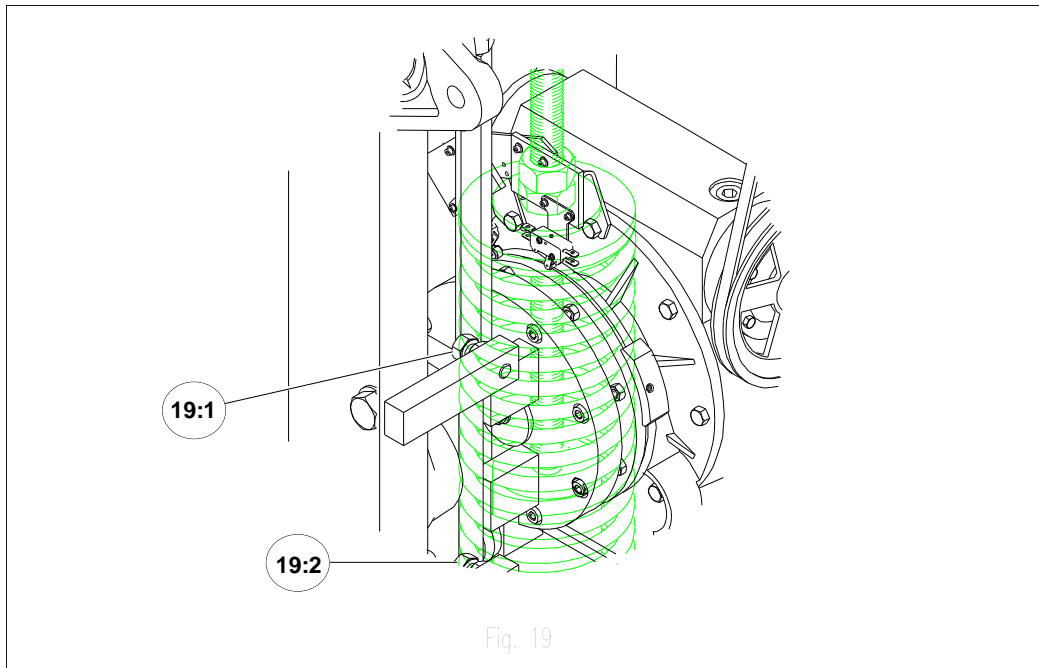
Attention: Proceed smoothly by 1/8th of a turn successively, since the adjustment is very sensitive. When the adjustment is completed, do not forget to tighten the 8 lock nuts (**18:1**) firmly again.

IMPORTANT: Excessive tightening of the clutch may damage the gearbox!

- To test the torque limiter adjustment, proceed as follows:
 - Arm the overload protection of the barrier by switching on the circuit breaker (**4:1**).
 - Open the barrier arm electrically to an angle of 90° by means of the button OK (**5:4**).
 - Close it electrically again by pushing the button OK (**5:4**).
 - Reverse the movement when the arm is half-way (angle of 45°).
 - By slipping slightly, the torque limiter must absorb the inertia of the arm (NOT A/THE V-BELT!).
 - When the check is completed, switch off the circuit breaker (**4:1**).

5.4. Limit switch adjustment

- At the end of a closing or opening movement, the barrier arm stops by means of the limit switches (20:1) and (20:2) actuated by the adjustable cams (20:3) and (20:4). To check if the position of these two cams is correct, proceed with the following test, after you have made sure that the arm level is correctly adjusted according to paragraph [4.7 Levelling the barrier arm]:



The positioning of the limit switch cams will be correct if, when the arm stops in horizontal or vertical position, the motor stops and the crankshaft plate is flush (without pressure) with the corresponding abutment (19:1) or (19:2).

5.4.1. Electrical closing test

Close or open the barrier arm electrically.

a) If the movement stops TOO EARLY, without being flush with the rubber abutment:

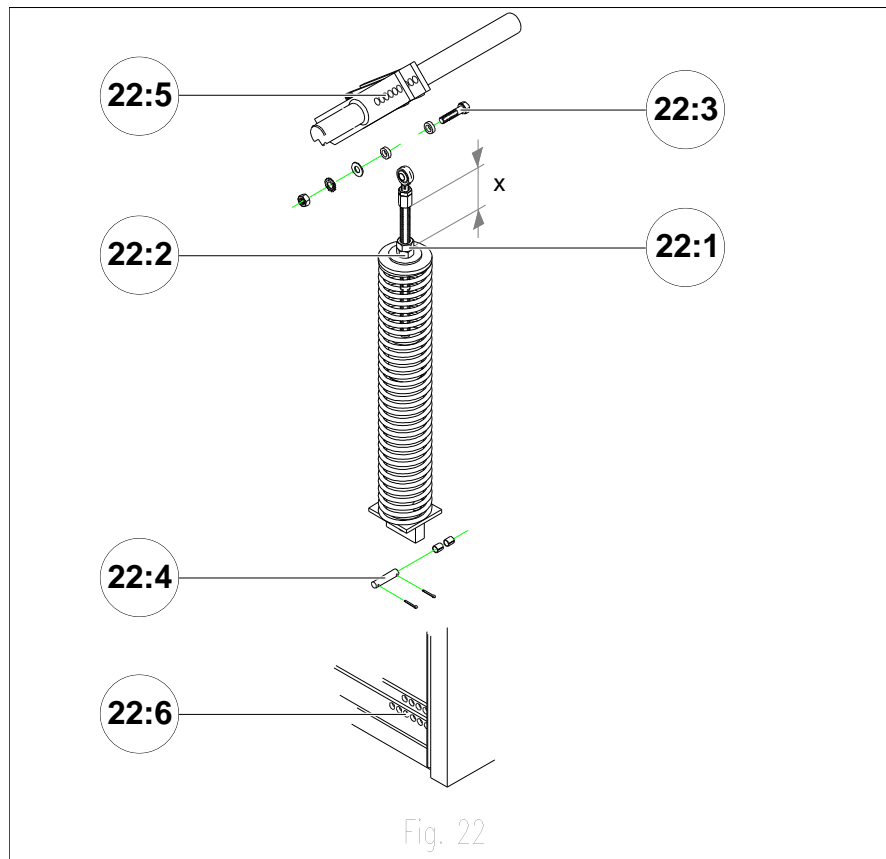
1. Switch off the circuit breaker (4:1).
2. Loosen the fixing screw of the cam to be set (20:3) or (20:4).
3. Move the cam slightly in the direction opposite the movement in order to delay the stop of the mechanism.
4. Switch on the equipment again.
5. Make a complete opening/closing test.
6. If necessary, repeat the above procedure until the **crankshaft plate** is flush (without pressure) with the corresponding abutment (19:1) or (19:2), and never forget to first switch off the equipment!

b) If the movement stops TOO LATE, thrust against the abutment or the motor goes on running:

1. Switch off the circuit breaker (4:1).
 2. Loosen the fixing screw of the cam to be set (20:3) or (20:4).
 3. Move the cam slightly in the direction of the movement in order to anticipate the stop of the mechanism.
 4. Switch on the circuit breaker (4:1).
 5. Make a complete opening/closing test.
 6. If necessary, repeat the above procedure until the **crankshaft plate** is flush (without pressure) with the corresponding rubber abutment (19:1) or (19:2), and never forget to first switch off the equipment!
- At the beginning of the use on site, the position of the limit switches is such that the crankshaft plate may stop at 2 to 3mm from each abutment at the end of the movement. However, after about 1000 operations, the mechanism will be ran in and this plate will have to be flush (without pressure) with each abutment.

5.5. Changing the arm model

- Your barrier type BL52/BL53 has been factory-adjusted according to the arm boom mounted on it. Should you decide at a later stage to mount an arm of a different length, follow the instructions below.
 - Make sure that the arm tube to be replaced is mechanically locked in its open position, and dismount it (follow the inverted order of paragraphs 4.3 or 4.4). Make sure that the mechanism remains locked!
 - Mount the new arm referring to *paragraph [4.3 or 4.4. Installing the arm]*. At the end of the mounting procedure, the barrier arm will be in the closed position.
 - Raise the arm with the crank (1:11) up to the vertical position. Continue turning the crank to make sure that the mechanism is locked.
 - Make sure that the mechanism remains locked!



- Loosen the lock nut (22:1) then the nut (22:2) to release the spring to the maximum.
- Position the screw (22:3) and/or the lower axle (22:4) on the upper fixing points (22:5) *a* to *f* and lower (22:6) *1* or *8* as illustrated in Fig. 22 and 23, referring to the tables on next page.
- Tighten the nut (22:2) according to the distance "x" shown in the tables, depending on the new arm, and lock it with the nut (22:1).

BL52 (round arm)

| Arm length (up to) | Fixing points | Distance "x" |
|--------------------|---------------|--------------|
| 6,00m | b-1 | 45mm |
| 6,50m | b-1 | 55mm |
| 7,00m | b-1 | 60mm |
| 7,50m | b-1 | 65mm |
| 8,00m | b-1 | 70mm |
| 8,50m | b-1 | 75mm |
| 9,00m | b-1 | 80mm |
| 9,50m | b-3 | 65mm |
| 10,00m | c-1 | 65mm |
| 10,50m | c-1 | 80mm |
| 11,00m | c-2 | 90mm |
| 11,50m | c-2 | 120mm |
| 12,00m | d-3 | 96mm |
| 12,50m | d-3 | 104mm |
| 13,00m | d-1 | 125mm |
| 13,50m | d-2 | 130mm |
| 14,00m | e-4 | 130mm |

BL53 (oval arm)

| Arm length (up to) | Fixing points | Distance "x" |
|--------------------|---------------|--------------|
| 4,00m | b-3 | 60 mm |
| 4,50m | b-2 | 60 mm |
| 5,00m | c-3 | 45 mm |
| 5,50m | c-3 | 55 mm |
| 6,00m | c-2 | 160 mm |
| 6,50m | d-1 | 110 mm |
| 7,00m | d-1 | 130 mm |
| 7,50m | e-3 | 125 mm |
| 8,00m | f-3 | 130 mm |

(Theoretical data for a standard basic arm tube, according to most common configurations).

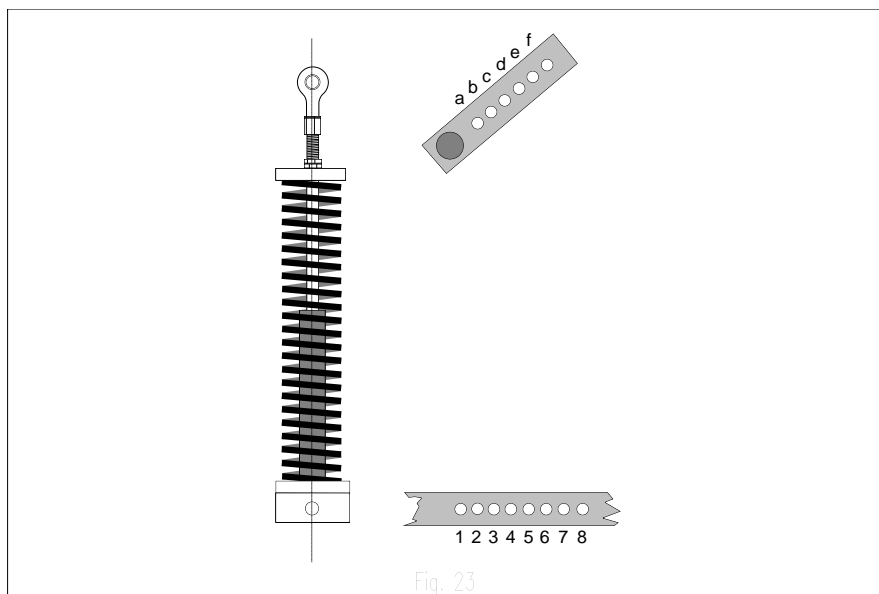


Fig. 23

- If the case occurs, mount the shrouds on the new arm referring to paragraph [4.5. Fixing the shrouds].
- Make the necessary adjustments referring to paragraphs [4.7. Levelling the barrier arm], [5.1. Arm balance adjustment] and [5.3. Safety torque limiter adjustment].

Notes:

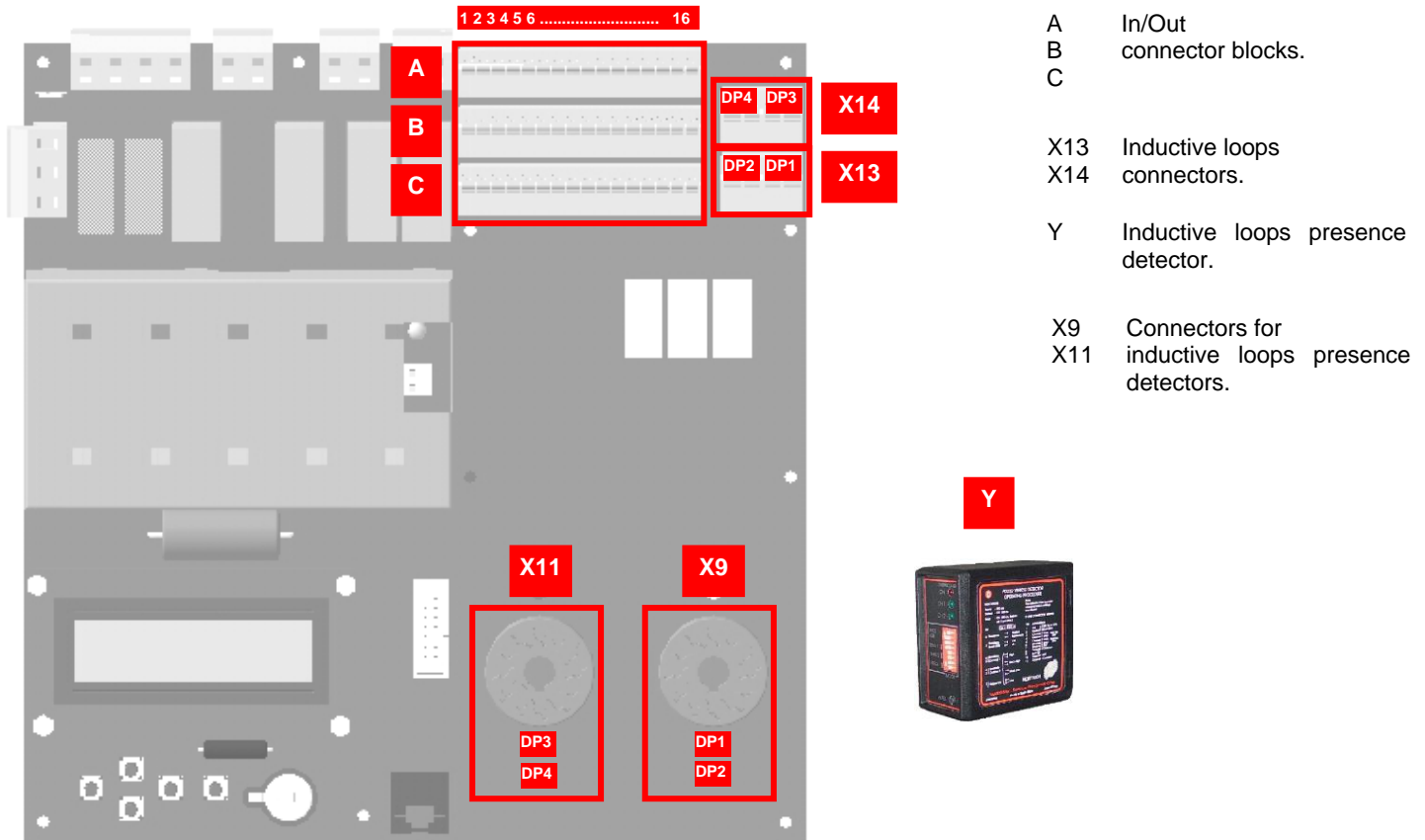
- If you install an accessory on the barrier arm (road sign, traffic lights, etc.) or remove one, refer to paragraphs [4.7.], [5.1.] and [5.3.] to re-adjust the arm balance.
- Should the shaft be replaced, please contact your local **Automatic Systems** agent for further information.
- To replace the spring, follow the procedure described here above (same paragraph 5.5).
- If the mains frequency is 60Hz, you may have to change the pulley/belt combination. If necessary, contact your local **Automatic Systems** agent.

6. MAINTENANCE

- The following operations are to be repeated every 6 to 12 months according to the traffic intensity.
 - Unlock and remove the side doors (1:1) and (1:2).
 - Unlock the two latches (2:12) from inside and remove the hood (1:6) if necessary.
 - Remove all the dust and clean the interior of the housing, and remove any foreign body from the inside of the cabinet (scraps, etc.).
 - Clean the outside of the housing and the arm by means of a soft cloth impregnated with a non-aggressive detergent.
For the countries with a lot of sun, it is also advised to treat the outside of the body with a glossing product.
 - Clean the stainless steel parts/options to prevent deposition of metallic particles (approved product reference 0/6031/000).
Note: The frequency of maintenance must be adjusted to the conditions of use of the equipment, in particular when it is located in an oxidizing atmosphere: near the sea, industrial environment, etc.
 - Check if all screws and nuts have been tightened firmly.
 - Check if all wires are firmly connected to their respective terminal blocks.
 - Check if the arm is correctly fixed. If not, refer to paragraph [4.3 or 4.4 *Installing the arm*].
 - Check if the shrouds (if existing) are correctly mounted. If not, refer to paragraph [4.5 *Fixing the shrouds*].
 - Check if the barrier arm is perfectly horizontal in the closed position. If needed, refer to paragraph [4.7. *Levelling the barrier arm*].
 - Check the state and the tension of the V-belt referring to paragraph [5.2. *Belt tension adjustment*].
 - Check if the arm reopens with difficulty in case a closing movement is reversed, or if it cannot be stopped by hand during a manoeuvre. If necessary, refer to paragraph [5.3. *Safety torque limiter adjustment*].
 - Check the position of the limit switches: crankshaft plate must come flush (without pressure) with each abutment at the end of each movement. If not, refer to paragraph [5.4].
 - Check the general state of the compression spring. Should it be replaced, follow the procedure described in paragraph [5.5. *Changing the arm model*].
 - For BL52: check the wear of the balance spring fixing bolt (22:3) and replace if necessary (screw E/0172/563, nut Z/1800/985).
 - Grease the ball straps (spherical rod ends) once a year by means of an anticorrosive multifunction grease with a working range from -25°C to +110°C (-13°F to +250°F).
 - Check if you did not forget any tool inside the barrier.
 - Replace the hood (1:6) and lock it from inside with the two latches (2:12).
 - Put the side doors (1:1) and (1:2) in place again and lock them.
 - Clean the outside of the housing and the arm with a soft cloth or brush.

Note: *The reduction gearbox and the pillow blocks are life-lubricated and do not require any maintenance. Just check on a regular basis if they do not leak.*

7.1. Control blocks assignment



| | | Connector block number | | | | | | | | | | | | | | | |
|------------|---|------------------------|--------------------|----------------------|-------------------------|-----------------|---------------------|-------------------|------------------|----------------------|--------------------------|-----------------------|-----------------------|------------|------------|------------|------------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| Connectors | A | GND | GND | GND | GND | 24V | 24V | 24V | GND | GND | GND | REL3 - Output relay 3 | REL3 + Output relay 3 | GND | GND | GND | GND |
| | B | AO1 FI setting | DO11 PWM Output 11 | DO8 Descending motor | 24V | DI13 Closing LS | DI11 Lock Close CMD | DI9 Close command | 24V | 24 V | 24V | REL2 - Output relay 2 | REL2 + Output relay 2 | 24V | 24V | 24V | 24V |
| | C | AI1 Analog. Sensor | DO10sPWM Output 10 | DO7 Rising motor | DI14 crank limit switch | DI12 Opening LS | DI10 Lock Open CMD | DI8 Open command | DI7 Stop command | DI6 Reader A command | DI5 Swing off sens./Lock | REL1 - Output relay 1 | REL1 + Output relay 1 | DI4 Cell 4 | DI3 Cell 3 | DI2 Cell 2 | DI1 Cell 1 |

INPUTS

Signals from outside that are received by the control board.

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

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

DI5 (Swing off sens./Lock):

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

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

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

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

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

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

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

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

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

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

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

OUTPUTS

Signals sent by the control board to external elements.

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

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

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

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

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

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

(DO9 = Power relay 1 (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

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 $\leq 2.5 \text{ mm}^2$) and the associated detector (Y) is connected to the corresponding pin (Z).

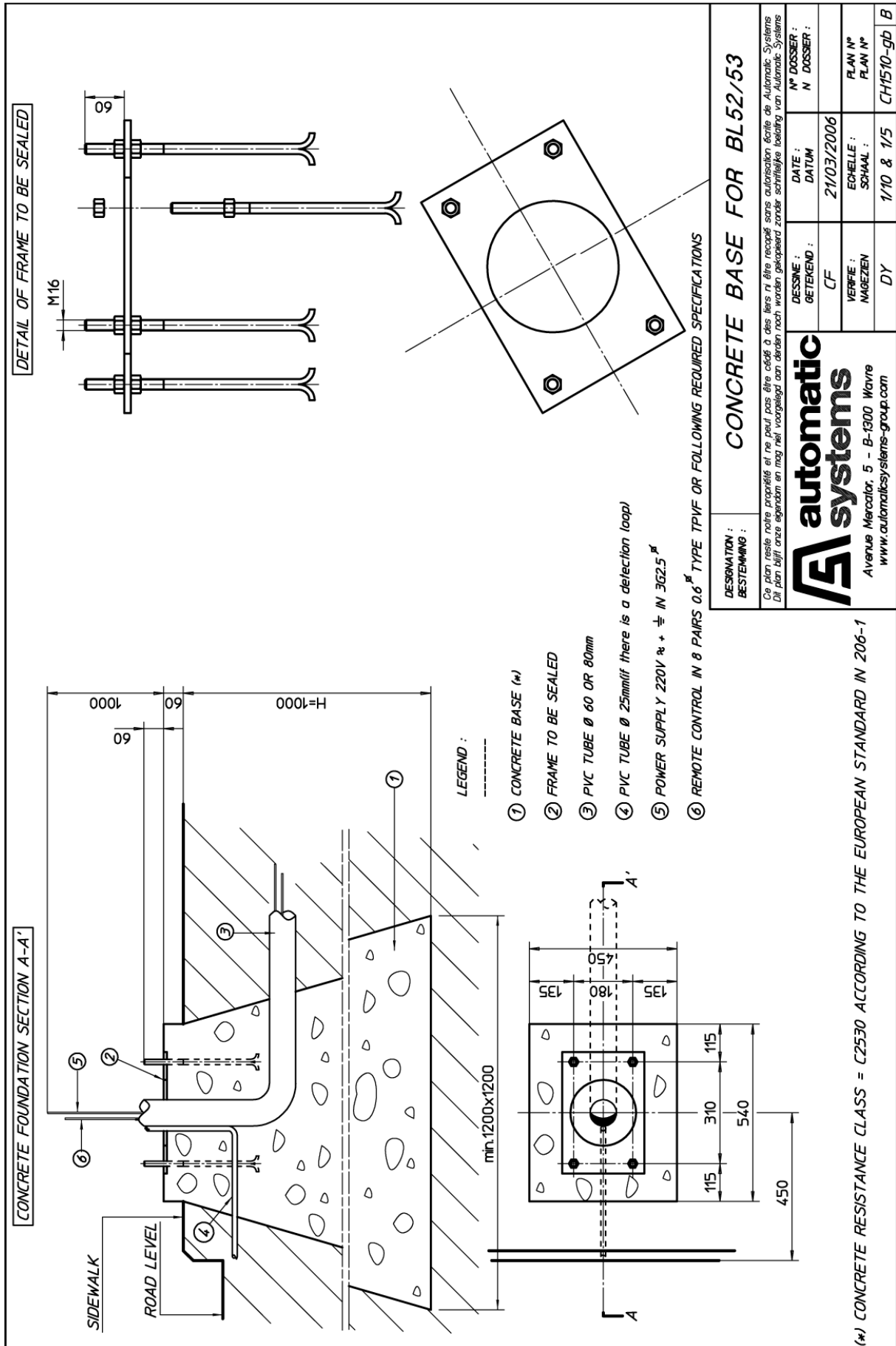
Note 1: a double detector allows the handling of 2 loops simultaneously, but only following 2 combinations: either DP1 & DP2, either DP3 & DP4.

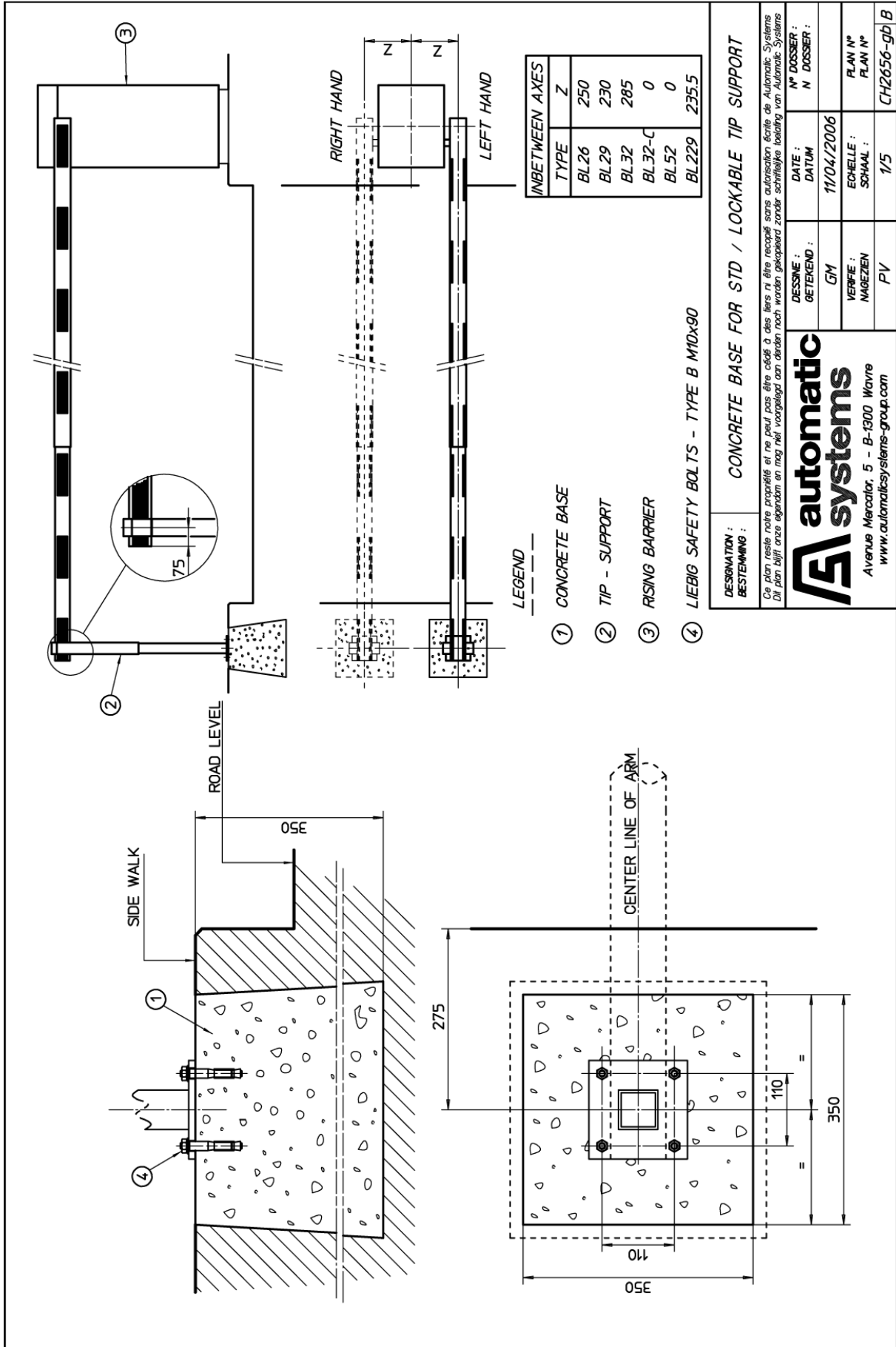
Note 2: circuits DP1, DP2, DP3, DP4 of connector X13 are respectively linked to circuits DP1, DP2, DP3, DP4 of connectors A, B and C. A loop and a cell may not be put on the same circuit (in other words, if a cell is connected to D11 (connector 16), a loop may not be at DP1 but may be at DP2, 3 or 4).

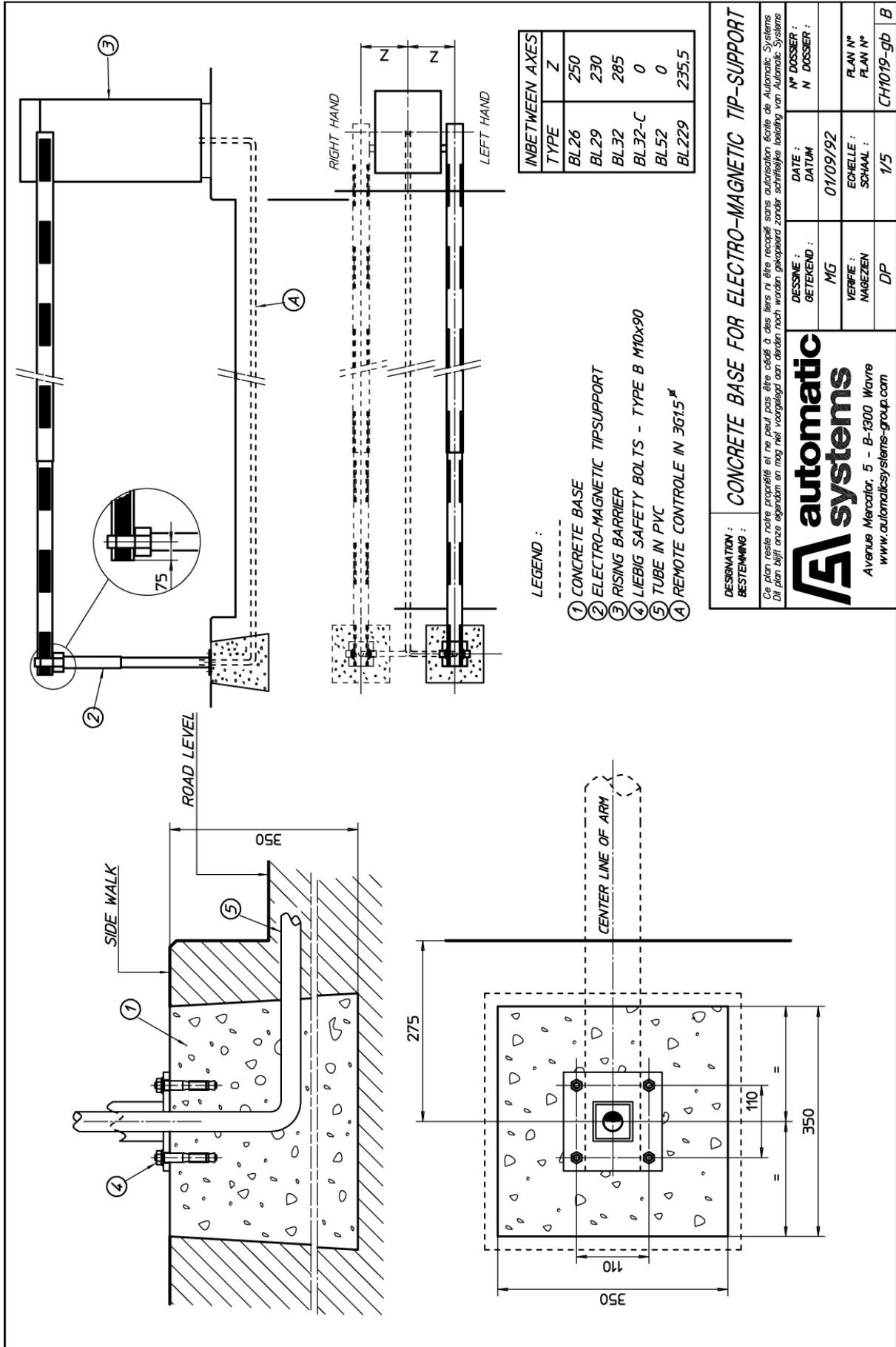
Note 3: it is also necessary to configure the “*Exploitation*” parameter in the “*QUICK START*” menu.

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

8. INSTALLATION PLANS







9. EC CONFORMITY CERTIFICATE



EC declaration of conformity

We, undersigned,

AUTOMATIC SYSTEMS s.a.
Avenue Mercator, 5
1300 Wavre
BELGIQUE



Herewith declare that the following machine

Electrical rising barrier

BL 52
BL 53

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

- RoHS Directive 2011/65/EU.
- Machinery Directive 2006/42/CE.
- Low-voltage Directive 2014/35/UE.
- Electromagnetic compatibility Directive 2014/30/UE.
- EN 12100:2010: Safety of machinery – General principles for design - Risk assessment and risk reduction (ISO 12100:2010).
- IEC 60204-1 / A1 : 2016: Safety of machinery - Electrical equipment of machines - Part 1: General requirements.
- IEC 61000-6-2 : 2016: Electromagnetic compatibility (EMC). Generic standards. Immunity standard for industrial environments.
- EN 61000-6-4/A1 : 2013: Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments.

Made in WAVRE,
Date: 2020.07.28
Name: Nicolas Péqueux
Function: R&D Director