

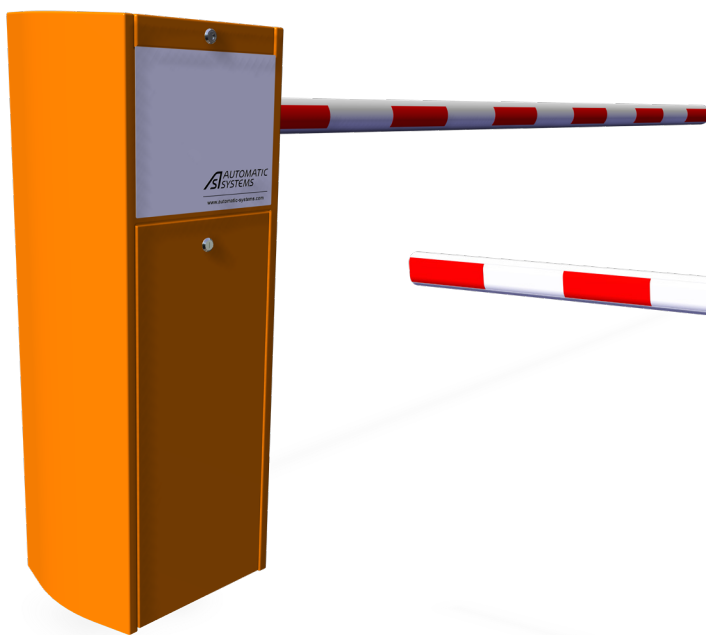
BL 229

Automatic rising barrier

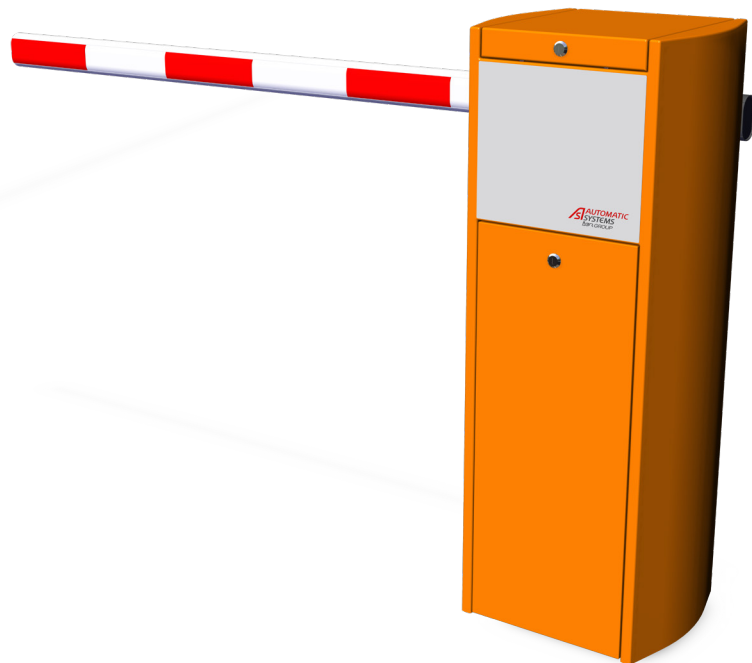
TECHNICAL MANUAL

(Translated from the original French version)

Rev. 27 • Update 05/2022



BL 229



BL 229 TOLL



TABLE OF CONTENTS

1.	Safety warnings	4
2.	General symbols	6
3.	Terminology	7
4.	Presentation	8
5.	Description	9
5.1.	Component location	9
5.2.	Component list	10
5.3.	Operation Principle	11
5.4.	Control board	11
5.5.	Location of labels and documents	12
6.	Installation	14
6.1.	Preparing the base plate	15
6.2.	Placing the equipment	16
6.3.	Conversion from one solution to another	18
6.4.	Installation of the arm	21
6.4.1.	Installation of a round arm	21
6.4.2.	Installation of a flat arm (Optional)	22
6.4.3.	Installation of an oval arm with swing-off device	23
6.4.4.	Installation of a Protecta® arm with swing-off device	24
6.5.	Installation of the tip support	25
6.6.	Electrical connections	26
7.	Adjustments	28
7.1.	Positioning the levers on the arm shaft	28
7.2.	Balancing of the boom arm by means of the spring	29
7.3.	Balancing table for BL 229 (For information only)	30
7.4.	Balancing table for BL 229 Toll(For information only)	31
7.5.	Levelling of the boom arm	32
7.6.	Analog sensor settings	33
7.7.	Calibration of the analog sensor	35
7.7.1.	Using the maintenance interface	35
7.7.2.	Using the integrated HMI interface	35
7.7.3.	Using the AS1621 OLED display (Option)	36
7.8.	Configuring the frequency converter	37
7.8.1.	Main error messages	37
8.	Use	38
8.1.	Commissioning	38
8.2.	Manual opening in the event of power failure	39
8.2.1.	Procedure for solution 1 or 2	39
8.2.2.	Procedure for a solution 3 or 4	40
8.3.	Maintenance	40
8.4.	Troubleshooting	41



- 8.5. Recommended spare parts 41
 - 8.5.1. Maintenance kit 42
 - 8.5.2. Ventilation kit 42
- 8.6. Prolonged stoppage / destruction 42
- 9. Technical specifications 43
 - 9.1. Common technical characteristics 43
 - 9.2. Specific technical features 44
- 10. Dimensions 45
 - 10.1. Dimensions of BL 229 45
 - 10.2. Dimensions of BL 229 Toll 45
 - 10.3. Dimensions of BL 229 with articulated arm (option) 46
- 11. Installation drawings 47
- 12. Appendix 49
- 13. CE declaration 50

ILLUSTRATIONS TABLE

<i>Fig. 1 - Component location - General</i>	9
<i>Fig. 2 - Component location - Mechanism</i>	9
<i>Fig. 3 - Swing-off device</i>	11
<i>Fig. 4 - Location of identification labels</i>	12
<i>Fig. 5 - Preparing the base plate</i>	15
<i>Fig. 6 - Fixing on a concrete base</i>	16
<i>Fig. 7 - Fixing on a raised base</i>	16
<i>Fig. 8 - Plug to change on the reducer</i>	17
<i>Fig. 9 - Solution 1</i>	18
<i>Fig. 10 - Solution 2</i>	18
<i>Fig. 11 - Solution 3</i>	18
<i>Fig. 12 - Solution 4</i>	18
<i>Fig. 13 - Changing the solution (Markers)</i>	18
<i>Fig. 14 - Changing the solution (Details)</i>	18
<i>Fig. 15 - Assembly solution 1/2</i>	19
<i>Fig. 16 - Assembly solution 3/4</i>	19
<i>Fig. 17 - Installation of a round arm</i>	21
<i>Fig. 18 - Installation of a flat arm (Optional)</i>	22
<i>Fig. 19 - Installation of an oval arm with swing-off device</i>	23
<i>Fig. 20 - Installation of a Protecta® arm with swing-off device</i>	24
<i>Fig. 21 - Installation of an adjustable tip support</i>	25
<i>Fig. 22 - Power supply connections</i>	26
<i>Fig. 23 - Equipotential connections</i>	26
<i>Fig. 24 - Arm shaft (Solution 4)</i>	28
<i>Fig. 25 - Rod and spring levers marks on the shaft, according to the considered solution</i>	28
<i>Fig. 26 - Detail of fixing points on the spring jaw</i>	29
<i>Fig. 27 - Balancing spring(s) settings</i>	29
<i>Fig. 28 - Connecting rod assembly</i>	32
<i>Fig. 29 - Analog sensor - Solution 1 & 2</i>	33
<i>Fig. 30 - Analog sensor - Solution 3 & 4</i>	33
<i>Fig. 31 - Detail of the screw fixing the connecting rod onto the gear motor shaft</i>	34
<i>Fig. 32 - Gate mechanism in open position</i>	34
<i>Fig. 33 - Detail of the screw fixing the gear motor shaft</i>	34
<i>Fig. 34 - Detail of pressure screws fixing the spiral cam</i>	34
<i>Fig. 35 - Integrated Human-Machine Interface</i>	35
<i>Fig. 36 - Attaching the earthing cable</i>	39
<i>Fig. 37 - Solution 1</i>	40
<i>Fig. 38 - Solution 3</i>	40
<i>Fig. 39 - Dimensions of BL 229 with round arm</i>	45
<i>Fig. 40 - Dimensions of BL 229 Toll</i>	45
<i>Fig. 41 - Dimensions of BL 229 with articulated arm</i>	46
<i>Fig. 42 - Installation drawing (Barrier)</i>	47
<i>Fig. 43 - Installation drawing (Tip support)</i>	48
<i>Fig. 44 - CE Declaration</i>	50

1. SAFETY WARNINGS

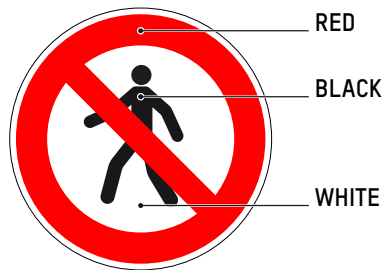


Read this document carefully and in full before using the barrier and keep it in a safe place for future use. Failure to comply with the instructions in this document may cause damage to the barrier and serious personal injury.

This equipment has been designed to control and manage vehicle access and cannot be applied to any other use without risk to users or to the integrity of the equipment. Automatic Systems cannot be held responsible for damage caused by improper use of the equipment.

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

- Pedestrian, cyclist and motorcyclist must be banned from accessing the passage where the barrier is. However, if pedestrians must use this passage, it is mandatory to effectively signal their movement (sound and/or light signal, markings on the ground, and so on).
- In the countries of the European Union, the EC Machines Directive requires the displaying of the pictogram forbidding pedestrian access to the danger zone somewhere on the equipment (less than 1 metre upstream and downstream from the barrier's arm in horizontal position) (⇒ Chap. 5.5, page 12):



- Any intervention on the equipment must be made by qualified personnel. Any work on this product that is unauthorised or carried out by an unqualified technician will automatically entail the annulment of the constructor's warranty.
- Personal protective equipment (PPE) must be worn when working on the barrier:



ASSEMBLE THE ARM AND ITS ACCESSORIES BEFORE PERFORMING ANY ELECTRICAL TESTS ⇒ CHAP. 6.4, PAGE 21



NEVER OPERATE THE BARRIER, EVEN MANUALLY, IF THE LIMIT CAM AND THE END STOP UNITS ARE NOT INSTALLED PROPERLY. (⇒ REP. K & L, FIG. 14, PAGE 18).



**ATTENTION!
LIFT THE ARM BEFORE PERFORMING ANY WORK INSIDE THE HOUSING TO RELEASE THE TENSION IN THE BALANCING SPRINGS AND PREVENT UNDESIRED MOVEMENTS OF THE DRIVING MECHANISM!**



ATTENTION!

DO NOT WORK ON THE BARRIER OR STAND NEAR IT DURING A THUNDERSTORM, ESPECIALLY WHEN THE BARRIER IS IN THE OPEN POSITION (ARM UP), RISK OF ELECTRIC SHOCK!

- The access keys to the mechanism must only be used by staff who have been informed of the electrical and mechanical risks that they would run in the event of negligent manipulation. The personnel are required to lock the mechanism's access hatch after the intervention.
- Before opening the housing, cut off the power supply on the circuit breaker (⇒ Rep. **24**, Fig. 1, page 9).
- Any internal element that could be live or in movement must be handled with care.
- The equipment has been configured in "minimal risk" mode for its users. Any alteration of the settings must be carried out with full knowledge of the facts by qualified personnel and shall in no way invoke any liability for Automatic Systems.
- The end of the arm must always be at a distance of more than 0.5 m from any object.
- The barrier must be completely visible by the user before being activated.
- The installation of detection loops must be validated by qualified personnel who will determine their optimal configuration (adapted to vehicle type and passageway).



ATTENTION! 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!

- Do not add unapproved accessories (contact between different metals causes a battery effect that decreases the equipment's corrosion resistance).

2. GENERAL SYMBOLS

The following symbols are used in this manual or as labels on the equipment:



This symbol is used to highlight a **tip** that may help you to better understand the product.



This symbol is used to highlight an **important instruction** for the correct use and/or maintenance of the product.



ATTENTION! This symbol is used to indicate a **risk of injury or property damage**.



This symbol is used to highlight a **risk of electric shock or electrocution**.



This symbol is used to highlight a **risk of cutting yourself**.



This symbol is used to identify the **ground connection point**.
(Either in the form of an affixed label or directly engraved on a mechanical part)



This symbol is used to indicate **the tool to be used for the relevant operation**.



This symbol indicates that the equipment **conforms to European standards and directives**.



This symbol indicates that the equipment **must be disposed of in accordance with the applicable European Directives (DEEE 2012/19/EU)**.

3. TERMINOLOGY

AS	Automatic Systems
CMD	Control
DI	Digital input
DO	Digital output
I/O	Input/Output
O/S	Out of Service
HMI	Human-Machine Interface
NC	(Contact) Normally Closed (Closed in at-rest state (power off))
NO	(Contact) Normally Open (Open in at-rest state (power off))
OP	Opening
MVT	Movement
RGBW	Red – Green – Blue – White
ETF	Electrical Technical File (File containing the electrical diagrams of the product and its most common options)

4. PRESENTATION

There are currently two types of BL 229:

The first model, which we will call '**BL 229**':

- for a wide range of applications;
- equipped with a round arm for free passage from 3 to 6 metres;
- with opening and closing speeds that can be set between 1,2 and 4 seconds according to 3 different profiles:
 1. Standard speed - Impact force according to EN 12453;
 2. Intermediate speed - Impact force in accordance with EN 12453 by adding a foam protection under the arm;
 3. Maximal speed - The installer must ensure that the installation complies with the standard, e.g. with dead man operation.

A second model, which we will call '**BL 229 Toll**':

- designed for motorway tolls;
- meeting the many requirements in terms of performance, reliability, robustness, adaptability and low maintenance;
- equipped with an oval arm for free passage from 2.5 to 4 metres;
- with opening and closing speeds adjustable between 0.6 and 1.7 seconds.

Both models are equipped with an analog sensor that detects the extreme positions (opening/closing). This sensor allows the exact position of the arm to be known at all times for better control of the movement. For example, the barrier can increase the torque of the motor to compensate for windy conditions.

5. DESCRIPTION

5.1. COMPONENT LOCATION

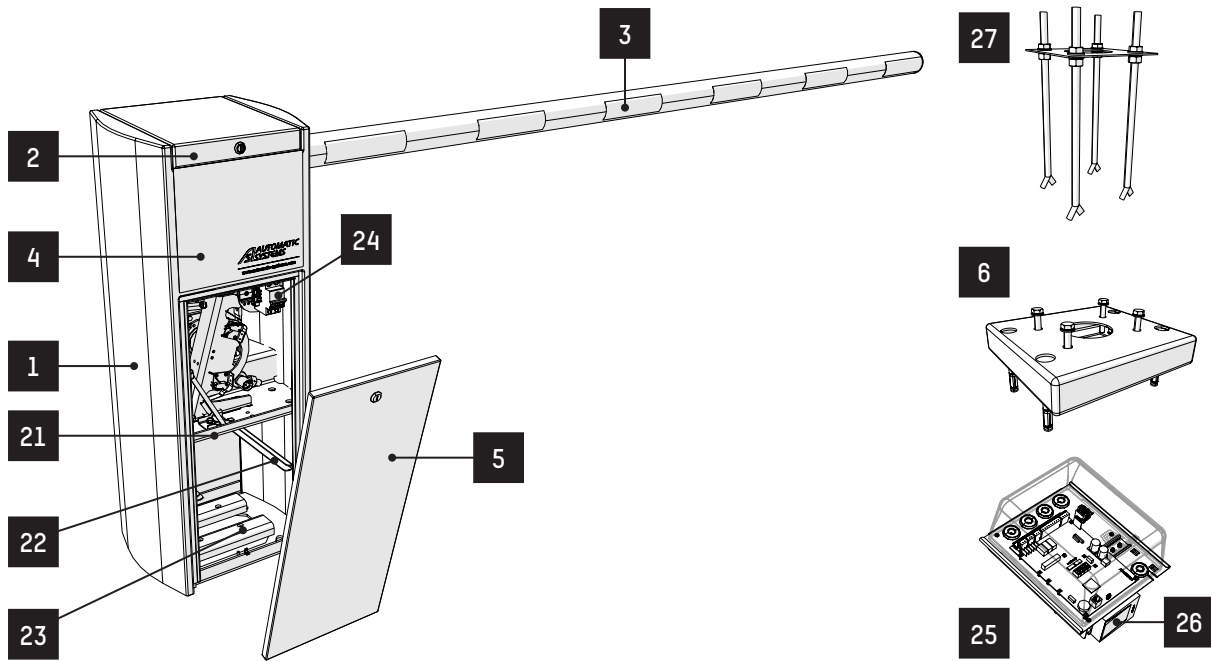


Fig. 1 - Component location - General

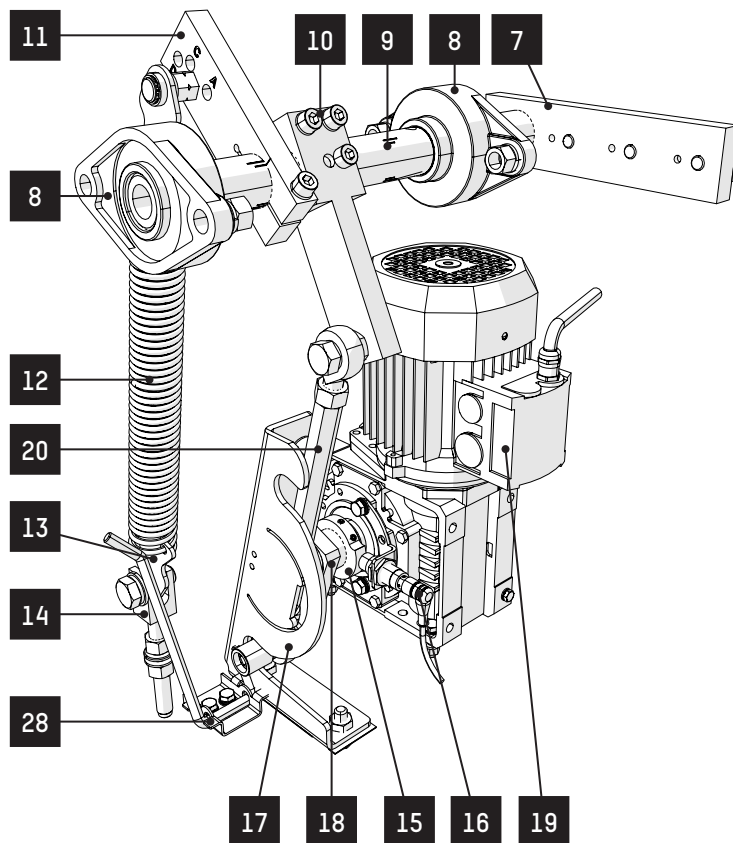


Fig. 2 - Component location - Mechanism

5.2. COMPONENT LIST

REP.	DESCRIPTION
1	Housing
2	Lockable cover
3	Boom arm
4	Front panel (opposite side of the door)
5	Lockable door
6	Raised base (optional)
7	Arm fastening clamp
8	Bearing
9	Arm shaft
10	Connecting rod lever
11	Spring lever
12	Balance spring
13	Spring anchor plate
14	Spring stretcher
15	Spiral cam for analog sensor
16	Analog sensor
17	End stop unit
18	Crankshaft
19	Gear motor
20	Connecting rod
21	Mechanism bracket
22	Control board bracket
23	Fastening clamps
24	Circuit breaker
25	Control board
26	Frequency converter
27	Fixing frame
28	Unlocking lever

5.3. OPERATION PRINCIPLE



The references in this chapter refer to the illustrations on Pages 8 & 9.

The opening of the arm (3) is controlled by the user (via a key switch, a push-button a radio transmitter), by detections loops buried beneath the roadway, or by an external unit.

Closing is controlled in the same way, or automatically at the end of a time-out.



A STOP COMMAND IMMEDIATELY STOPS THE MOTOR, BUT NOT COMPLETELY THE ARM MOVEMENT: THE ARM COULD LOWER PROGRESSIVELY DUE TO ITS WEIGHT AND ANGULAR POSITION.

THE "ANALOGUE POSITION SENSOR" ALLOWS TO ADJUST THE POSITION OF THE ARM AROUND THE STOP AND TO COMPENSATE THIS PHENOMENON.

The movement created by the gear motor (19) is transmitted to the arm by a crankshaft-connecting rod device (18 + 20).

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

The speed of the arm's movement, controlled by the frequency converter (26), is adjustable both at opening and at closing. The movements are configured in the factory to offer progressive accelerations and controlled decelerations at the end of the movement.

Safety

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

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

In the open and closed positions, the alignment of the connecting rod and crankshaft (20 et 18) lock the arm's movement ("mechanical locking").

The barrier is factory-configured to remain locked in the event of power failure, the boom arm then being raised by means of the lever (28). However, this parameter can be modified so that the boom arm automatically rises in the event of a power failure. In this case, it will rise to equilibrium with the balancing spring(s). The opening resulting angle will be close to 45°.



The complete opening of the barrier must be completed manually.

The boom arm swing-off device, which equips the BL 229 Toll as standard and is available as an option for the BL 229 Standard, allows the boom arm to be unscrewed (the boom arm comes out of its fastening jaw) when an impact occurs. The boom arm swing-off device avoids damage to the barrier and the vehicle hitting it.

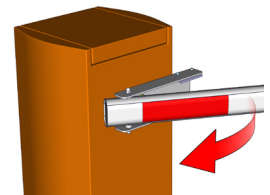


Fig. 3 - Swing-off device

Control board

The control board (25) co-ordinates the activity of the barrier: movement management, options, inputs and outputs, etc. This information can however be repatriated and processed by an external terminal (not supplied by AS). The board records and displays the history of the last operations carried out as well as any possible defects preventing the barrier's movement.

5.4. CONTROL BOARD

See dedicated handbook.

5.5. LOCATION OF LABELS AND DOCUMENTS

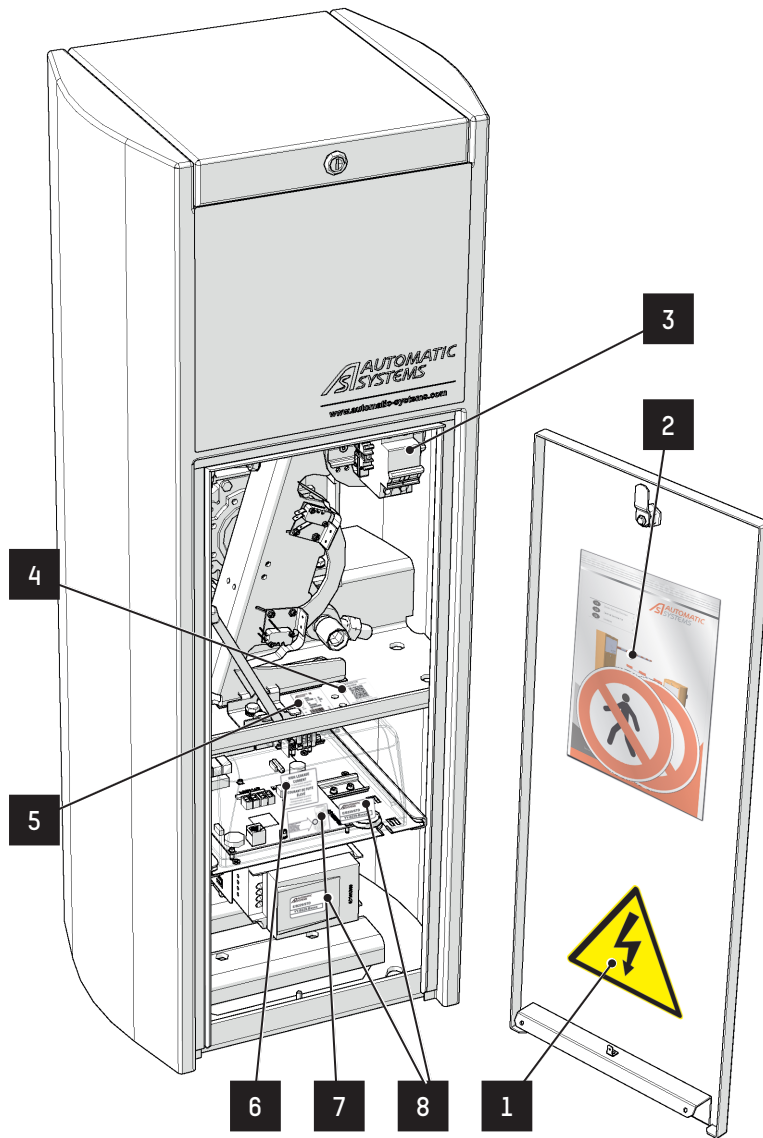


Fig. 4 - Location of identification labels

REP.	REPRESENTATION	DESCRIPTION	LOCATION
1		'Electrical hazard' label	Inside of the door.
2		Plastic pouch, glued, containing the following documents: <ul style="list-style-type: none"> • Electrical Technical File; • 2 stickers 'No pedestrians allowed'; 	Inside of the door.

REP.	REPRESENTATION	DESCRIPTION	LOCATION
3		Label 'Ground connection' or equipotential bonding.	On the circuit breaker bracket
4		Label with QR Code giving access to the technical documentation of the product.	On the top plate of the housing.
5		Product identification label.	On the top plate of the housing.
6		Label 'HIGH LEAKAGE CURRENT'.	On the protective cover of the control board.
7		Label for changing the transport plug of the gear motor.	On the protective cover of the control board.
8		Product information label, min. version	On the control logic; On the frequency converter; On the gear motor nameplate.

6. INSTALLATION

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



ATTENTION! SAFETY INSTRUCTIONS!

1. The installation personnel must follow all laws and standards applicable to the gate installation site.
2. When installing the gate, all operations must be done by qualified personnel. All the safety instructions indicated in this section and in Chap. 1, page 4 must be followed.
3. The gate must be installed with permanent wiring as required by local codes.
4. To reduce the risk of injuries, the grounding connection must be done in accordance to the local codes.
5. To reduce the risk of entrapment, the gate must be installed in a location with sufficient clearance between the gate and adjacent structures when opening and closing. (600 mm minimum)
6. Controls intended for user activation must be located at least 2 meters away from any moving part of the gate and where the user is prevented from reaching over, under, around, or through the gate to operate the controls. Outdoor or easily accessible controls shall have a security feature to prevent unauthorized use.

6.1. PREPARING THE BASE PLATE

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

- Either on a concrete base plate, by means of the fixing frame provided on demand (detailed procedure hereafter);
- Or on a steel platform (provided as an option);

For the positioning of the base plate, please refer to the Installation Drawings (⇒ Chap. 11, page 47), which takes precedence over any other information.

Introduce the four fixing bolts (27), each provided with a nut (32) and a flat washer (33), in the holes of the fixing frame (34).

The thread must be directed upwards as illustrated. Assemble the fixing bolts on the fixing frame by tightening a flat washer (35) and a nut (36) on each thread and by letting the thread exceed the frame (34) by the height defined in the Installation Drawings. Use adhesive tape to protect the threads from concrete splashes.

Fit the PVC tubes and install the power cable (to the general power board), the command cable (to the control box) and the detection cable (to the loops and/or possible cells), leaving a tail of approximately 1 meter.

The cabling must be carried out in accordance with the standards in force in the country where the installation takes place.

Build a concrete base (37) and place the base plate in it. The frame (34) must be flush mounted with the platform and perfectly horizontal.

When the concrete has set, remove the adhesive tape from the threads and remove the nuts (36) and the flat washers (35), which will be used for fixing the barrier.

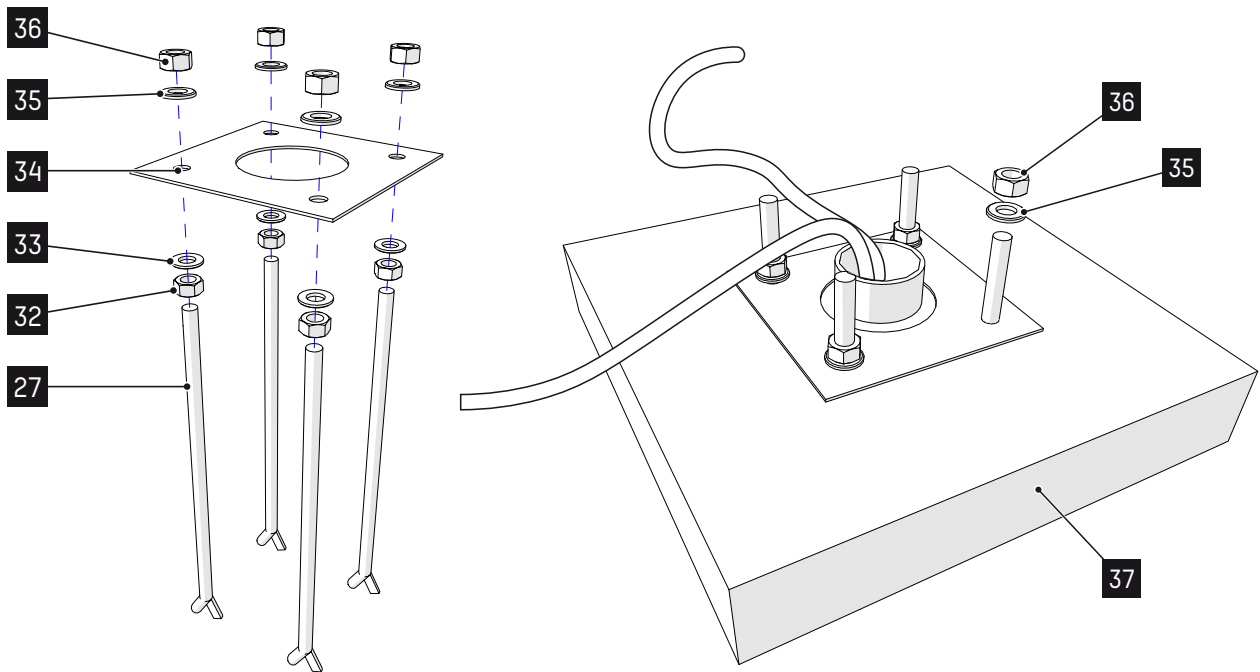
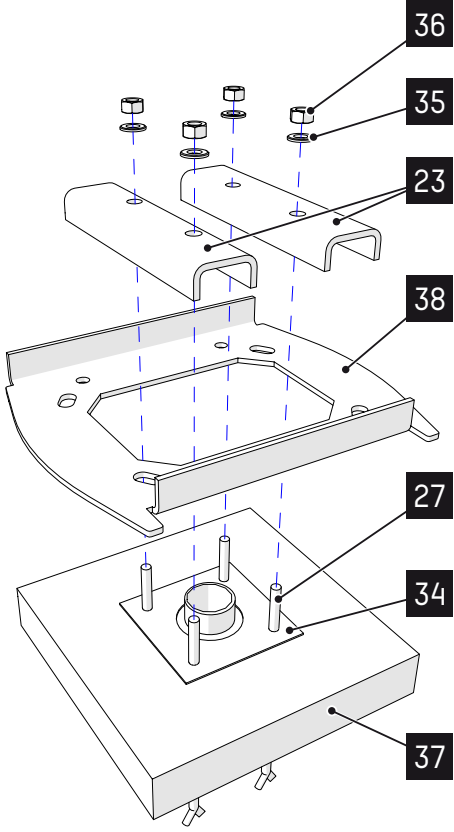
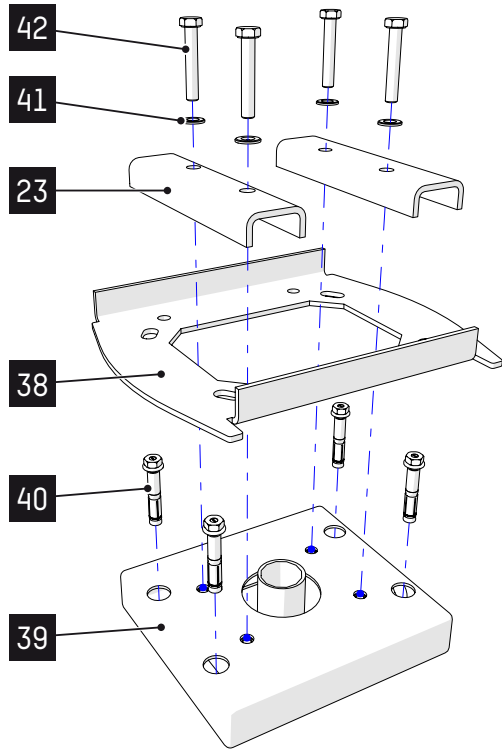


Fig. 5 - Preparing the base plate

6.2. PLACING THE EQUIPMENT

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

FASTENING ON A CONCRETE BASE	FASTENING ON A RAISED BASE (OPTION)
<p>While avoiding damaging the fixing bolts, place the barrier on its base according to the chosen command solution (position of the arm in relation to the door and the road: ⇒ page 18).</p>	<p>Drill 4 holes Ø 15 mm x 85 mm thickness, clean them by blowing and fix the raised base in the floor with the expandable screws (40). Tighten to 40 Nm.</p>
<p>Introduce the two fixing clamps (23) into the housing onto the fixing bolts (27).</p>	<p>WARNING: the provided expandable screws are intended to be fixed in concrete (class C20/25 to C50/60). Adapt the fixing means to the nature of the support.</p>
<p>Secure the housing to the base plate by tightening the clamps (23) in the fixing bolts by means of the flat washers (35) and nuts (36) supplied.</p>	<p>Place the barrier on the raised base and secure it by tightening the clamps (23) in the base using the screws (42) and washers (41) supplied.</p>
 <p>Fig. 6 - Fixing on a concrete base</p>	 <p>Fig. 7 - Fixing on a raised base</p>

REP.	DESIGNATION
37	Concrete base
38	Base of the housing
39	Raised base

- If needed, add adjustment shims under the housing to obtain the correct levelling of the barrier.



Only tighten the nuts **[36]** after the installation of the arm (⇒ Chap. 6.4, page 21) and the optional tip support (⇒ Chap. 6.5, page 25).



ATTENTION! THE FOLLOWING PROCEDURE MUST BE PERFORMED PRIOR TO OPERATING YOUR GATE. FAILURE TO DO SO WILL VOID THE MANUFACTURER'S WARRANTY AND RESULT IN PERMANENT DAMAGE TO YOUR EQUIPMENT.

- This equipment's gearbox has been sealed with a plug for transportation purposes. The plug must be replaced with the vented plug located in the plastic bag fixed on the gear motor (Ref. **19**, Fig. 2, page 9).

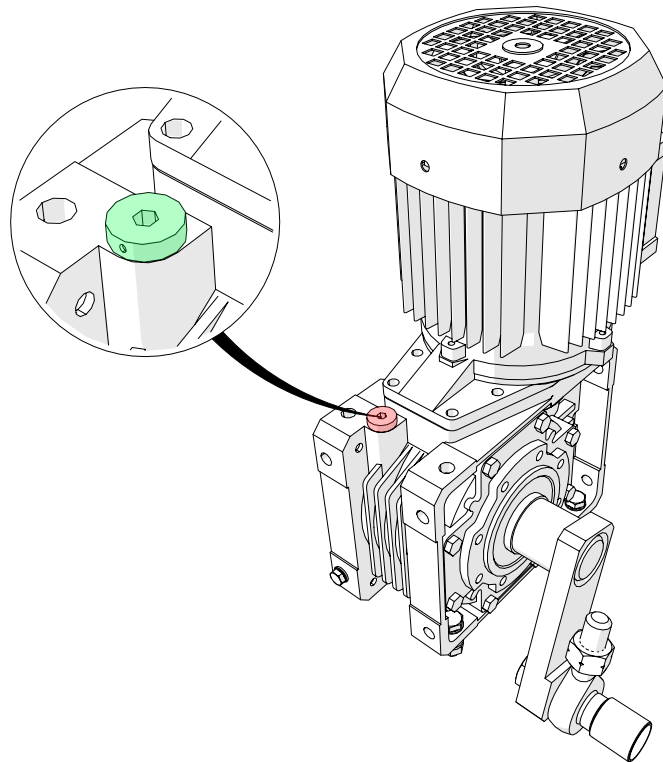


Fig. 8 - Plug to change on the reducer



ONCE THE VENTED PLUG HAS BEEN INSTALLED, THE BARRIER MUST REMAIN IN THE UPRIGHT POSITION FOR TRANSPORT OR HANDLING PURPOSES. FAILURE TO DO SO WILL CAUSE OIL IN THE GEARBOX TO LEAK WHICH MAY CAUSE PREMATURE WEAR OF THE GEARBOX.

6.3. CONVERSION FROM ONE SOLUTION TO ANOTHER

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

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

The gear motor, the crankshaft and the connecting rod (19, 18 et 20) (shaded here below) remain fixed. On the other hand, the end stop unit (17) used for solutions 1 and 2 is different from that of solutions 3 and 4. Similarly, the front aluminium panel (4), will have to be replaced by a new one in most of cases.

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

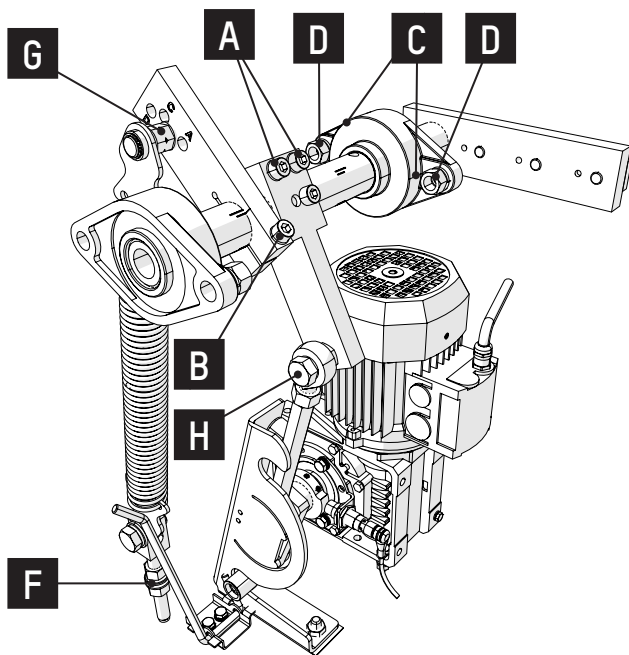
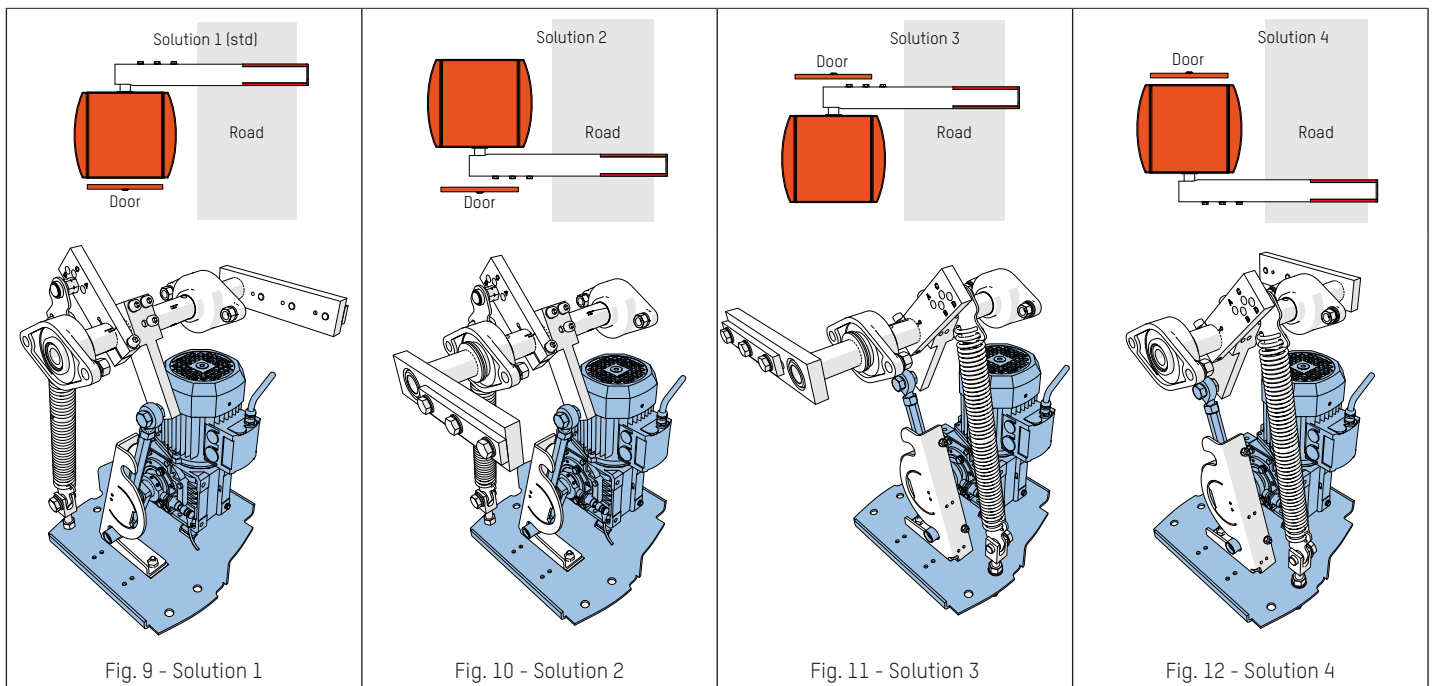


Fig. 13 - Changing the solution (Markers)

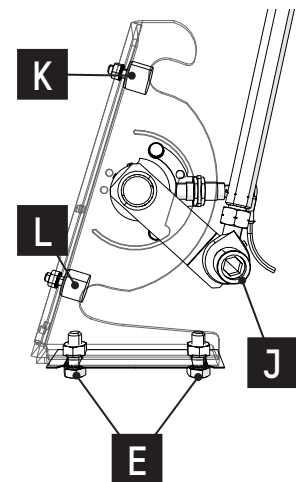



Fig. 14 - Changing the solution (Details)

Table of operations to be carried out, marked ●, to move from one solution to another:

1 ↔ 2	1 ↔ 3	1 ↔ 4	2 ↔ 3	2 ↔ 4	3 ↔ 4	
●	●	●	●	●	●	Turn (OFF) the power supply using the main circuit breaker (24).
●	●	●	●	●	●	Set upright the boom arm and remove it by unscrewing the three screws and flat washers. (In reverse order of Chap. 6.4, page 21)
●	●	●	●	●	●	 TAKE NOTE ABOUT THE POSITION OF THE SPRING (G) ON THE SPRING LEVER (11) AS WELL AS DIMENSION OF X (⇒ FIG. 24, PAGE 28) BEFORE PROCEED TO THE NEXT STEP.
●	●	●	●	●	●	Unscrew the connecting rod lever (screws A) and the spring lever (screws B).
●	●	●	●	●	●	Unscrew the compression screws (C) of the bearings on the arm shaft.
●	●	●	●	●	●	Withdraw the arm shaft (9).
●	●			●	●	Loosen the aluminium panel (4) of the boom arm side (pierced) and stick a new one (full).
	●	●	●	●		Remove the stop assembly (screws E).
	●	●	●	●		Reverse the position of the circuit breaker assembly (24).

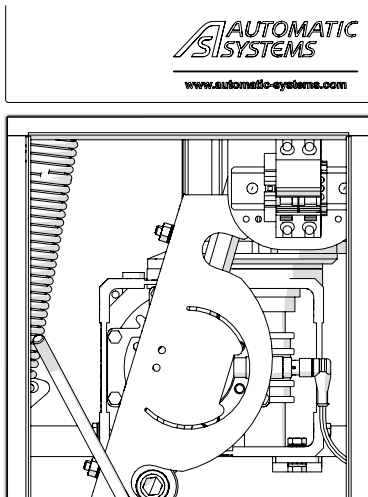


Fig. 15 - Assembly solution 1/2

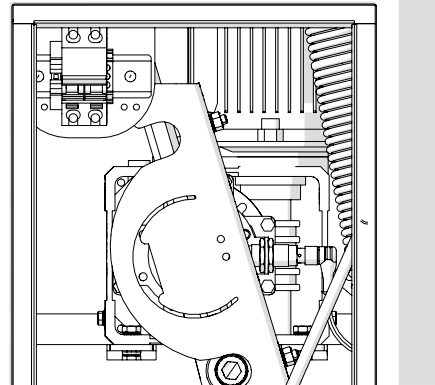


Fig. 16 - Assembly solution 3/4

	●	●	●	●		Reverse the position of the unlocking lever (28).
	●	●	●	●		<u>Assembly the new stop:</u> Unscrew the 2 bumpers (K et L) to fix them on the new end stop unit. Fix the new end stop unit by means of the screw (E). Add shims (provided) if necessary, so that the cam (J) is correctly positioned in the notches of the end stop unit.
	●	●	●	●		Take care to slacken the spring to the maximum and to unscrew it from its support (Nuts F) and from its lever (pivot G).
	●	●	●	●		Unscrew the connecting rod from its lever (Screws H).

1 ↔ 2	1 ↔ 3	1 ↔ 4	2 ↔ 3	2 ↔ 4	3 ↔ 4	
●	●	●	●	●	●	<p>Introduce the shaft into the bearings by passing it through the two correctly positioned levers: they must be directed respectively towards the connecting rod and the spring, the screws and the reference mark for the arm shaft to the top (see illustrations of the various solutions above as well as the Chap. 7.1, page 28).</p> <p>Check the alignment of the arm shaft in relation to the bearings (⇒ Chap. 7.1, page 28).</p>
	●	●	●	●		Fix the connecting rod on its lever (Screws H).
	●	●	●	●		<p>Fix the spring on the support (Nuts F), don the closed side of the end stop unit.</p> <p>Fix the spring on its lever (Pivot G).</p>
●	●	●	●	●	●	Tighten the shaft in the bearings by means of the compression screws.
●	●	●	●	●	●	RTighten the two levers after having checked their alignment on the shaft (⇒ Chap. 7.1, page 28).
●	●	●	●	●	●	Remount the boom arm (⇒ Chap. 6.4, page 21)
●	●	●	●	●	●	Adjust the tension of the spring (⇒ Chap. 7.2, page 29)
	●	●	●	●		Invert 2 of the 3 phases of the motor (U, V, W, ⇒ electrical drawings).
●	●	●	●	●	●	Turn ON the power supply using the main circuit breaker (Rep. 24 , Fig. 1, page 9).

6.4. INSTALLATION OF THE ARM

6.4.1. INSTALLATION OF A ROUND ARM



BL 229: standard equipment.

BL 229 Toll: unavailable.

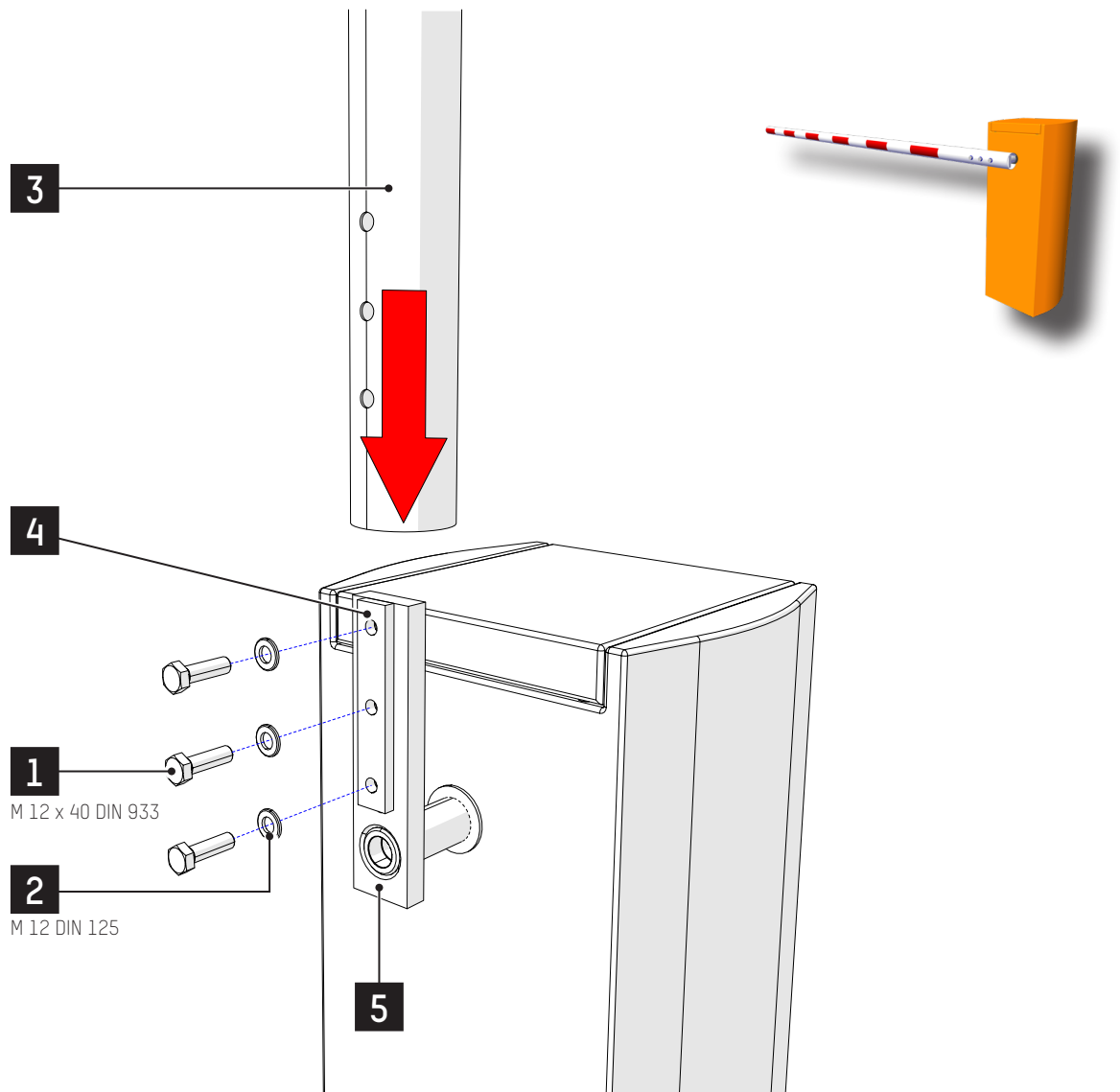


Fig. 17 - Installation of a round arm

- Remove the three screws (1) and the flat washers (2) of the clamp (5).
- Position the arm (3) on the clamp, taking care that the spacer (4) is in place, and put back the flat washers (2) and the screws (1) as illustrated above.
- Check the proper alignment of the boom arm in relation to the clamp and tighten the screws (1) firmly.
- Bring the boom arm to its horizontal position and check its alignment and horizontality in relation to the roadway.
- If necessary, correct the position of the mechanism and definitively tighten the nuts (Rep. 36, Fig. 6, page 16) of the floor fixing clamps.

6.4.2. INSTALLATION OF A FLAT ARM (OPTIONAL)


BL 229: available in option.

BL 229 Toll: unavailable.

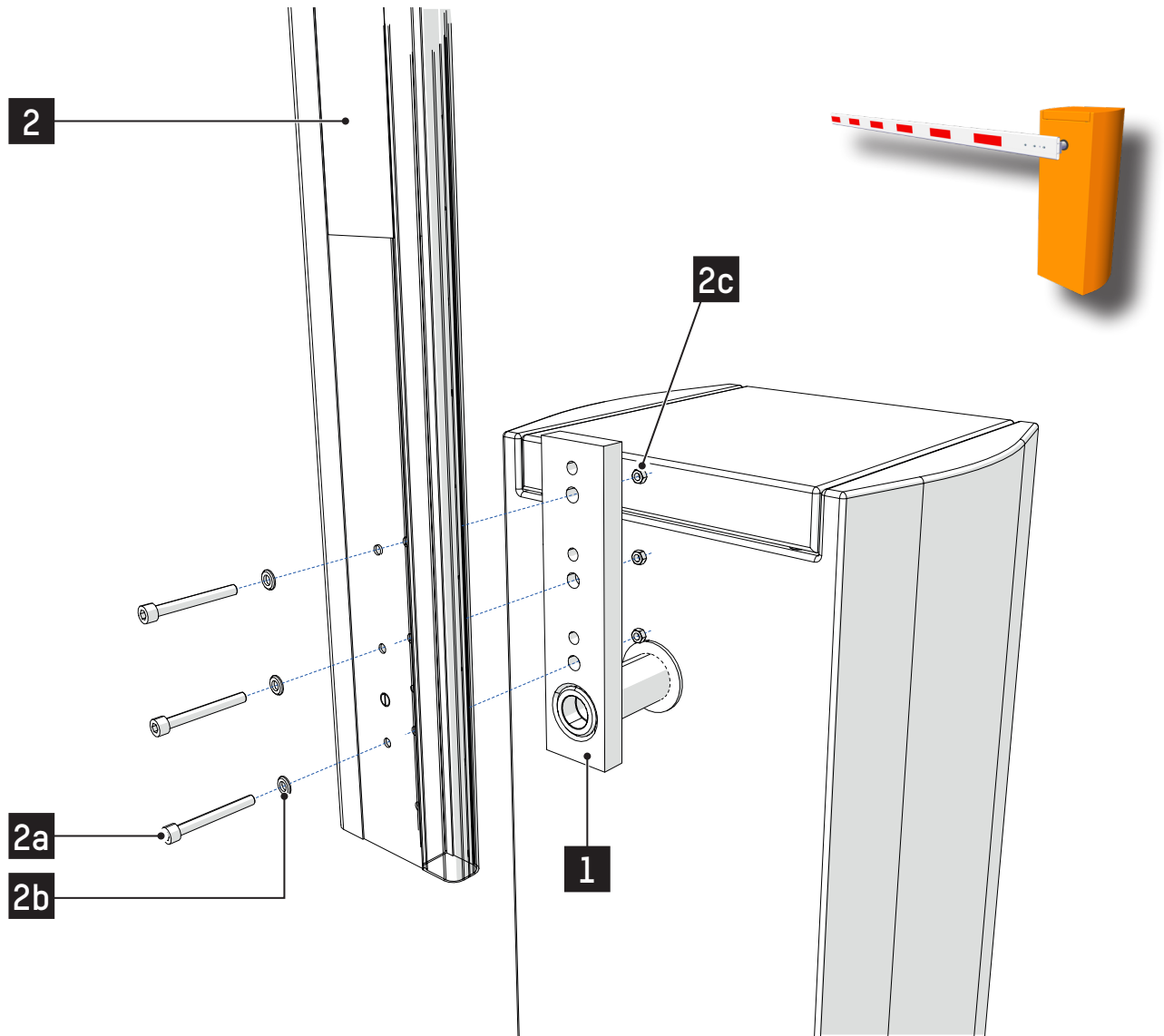


Fig. 18 - Installation of a flat arm (Optional)

- Position the flat arm (2) on the clamp (1) and fix it with the three screws (2a), the three flat washers (2b) and the three synthetic nuts (2c).
- Check the proper alignment of the arm in relation to the clamp and tighten the screws firmly.
- Bring the boom arm to its horizontal position and check its alignment and horizontality in relation to the roadway.
- If necessary, correct the position of the mechanism and definitively tighten the nuts (Rep. 36, Fig. 6, page 16) of the floor fixing clamps.

6.4.3. INSTALLATION OF AN OVAL ARM WITH SWING-OFF DEVICE



BL 229 Toll: standard equipment.

BL 229: available in option.

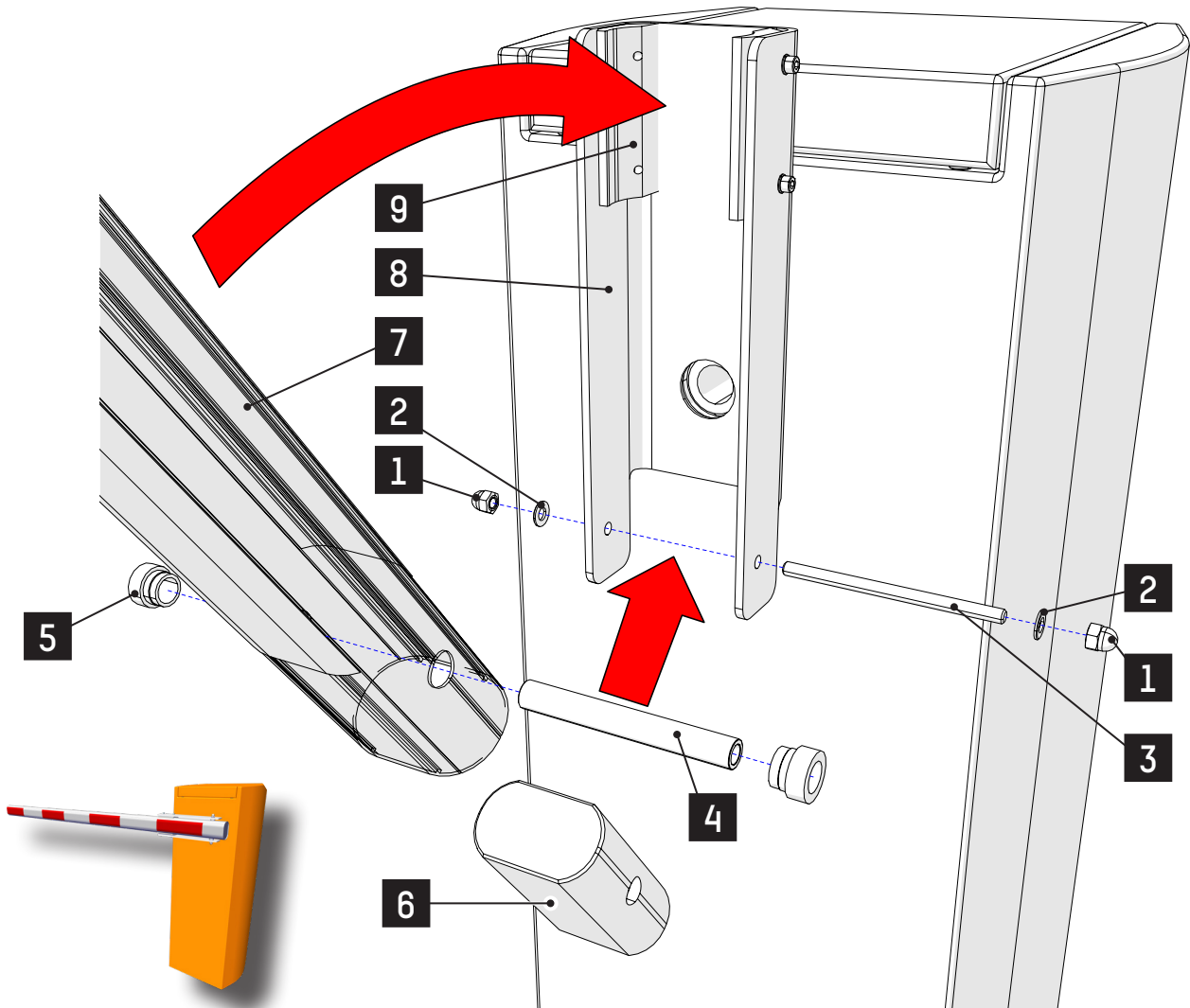


Fig. 19 - Installation of an oval arm with swing-off device

- Jaw (8) in vertical position, remove a cap nut (1) and its associated flat washer (2), the threaded rod (3) and the spacer (4) of the jaw.
- If it's not already done so, insert the internal reinforcement (6) inside the aluminium boom arm (7), matching the through holes. Then place the two spacers (5) at the two ends of the through holes and insert the spacer (4);
- Position the boom arm in an angled position to insert the threaded rod (3) through the jaw (8) and the boom arm (7).
- Replace the previously removed flat washer and cap nut on the threaded rod and tighten firmly.
- Bring the boom arm in its jaw in vertical position. Press the boom arm strongly so that it clips correctly between the synthetic blocks. (9).
- Bring the boom arm to its horizontal position and check its alignment and horizontality in relation to the roadway.
- If necessary, correct the position of the mechanism and definitively tighten the nuts (Rep. 36, Fig. 6, page 16) of the fixing clamps.

6.4.4. INSTALLATION OF A PROTECTA® ARM WITH SWING-OFF DEVICE


BL 229: available in option.

BL 229 Toll: available in option.

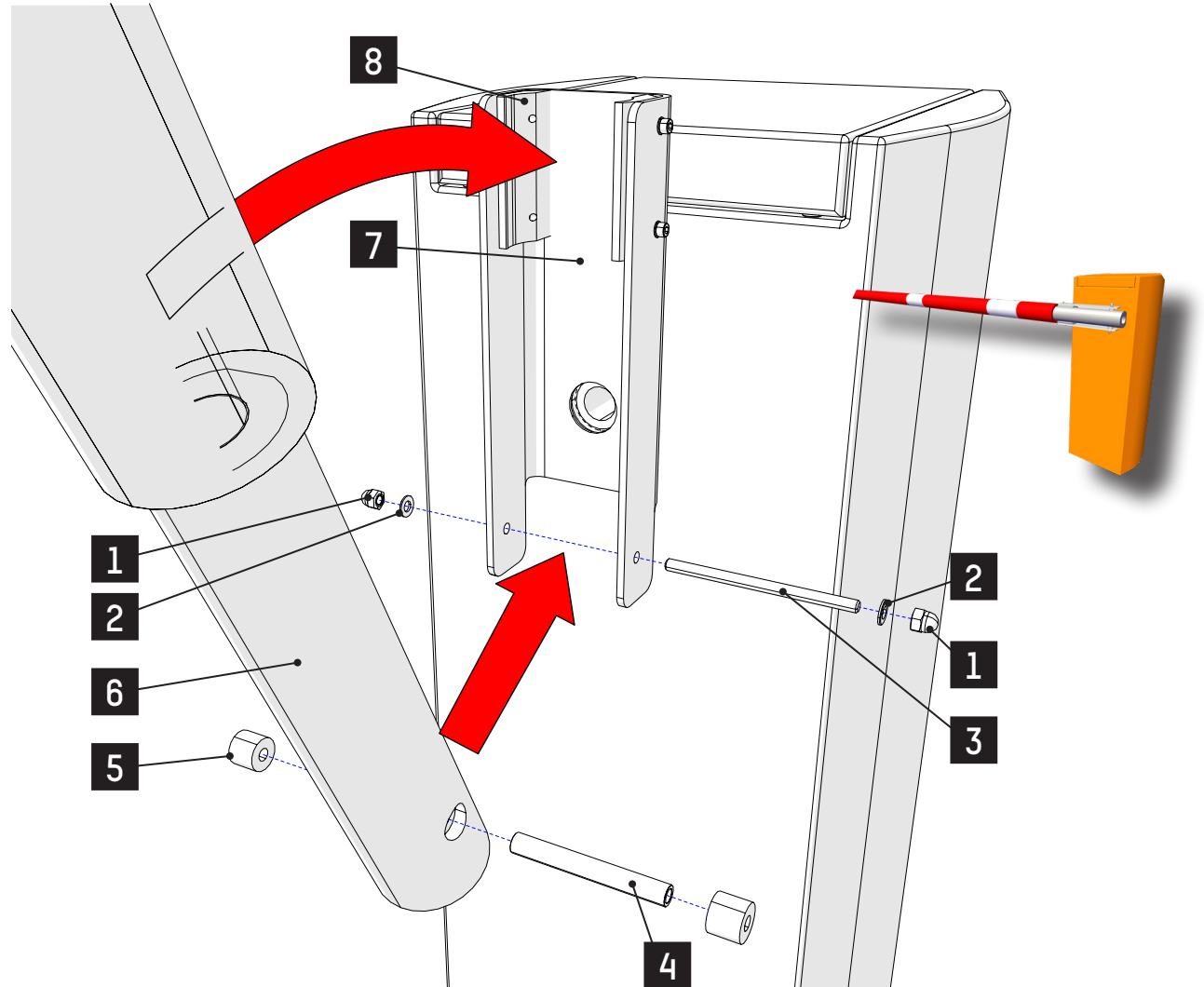


Fig. 20 - Installation of a Protecta® arm with swing-off device

- Jaw (7) in vertical position, remove a cap nut (1) and its associated flat washer (2), the threaded rod (3) and the spacer (4) of the jaw.
- If it's not already done so, place the two spacers (5) at the two ends of the through holes and insert the spacer (4);
- Position the boom arm in an angled position to insert the threaded rod (3) through the jaw (7) and the boom arm (6).
- Replace the previously removed flat washer and cap nut on the threaded rod and tighten firmly.
- Bring the boom arm in its jaw in vertical position. Press the boom arm strongly so that it clips correctly between the synthetic blocks (8).
- Bring the boom arm to its horizontal position and check its alignment and horizontality in relation to the roadway.
- If necessary, correct the position of the mechanism and definitively tighten the nuts (Rep. 36, Fig. 6, page 16) of the fixing clamps.

6.5. INSTALLATION OF THE TIP SUPPORT



BL 229: available in option.

BL 229 Toll: unavailable.

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

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

The tip support must be fixed on a concrete base, according to the instructions of drawing CH2656 (⇒ Chap. 11, page 47).

The height of the tip support is to be adjusted once the boom arm has been levelled (⇒ Chap. 7.5, page 32):

- Remove screw (1) while holding upper element (3).
- Turn fork (2) in the necessary direction so that the end of the arm comes to rest in closed position ± 3 cm above the tip support.
- Push the upper part (3) back under the fork (2) and tighten screw (1), previously withdraw.
- Then place the foam strips (4) that will be used to cushion the impact between the beam and the lyre..
- Align the arm in the tip support by making, if necessary, the barrier swivel on its base.
- Tighten the nuts (Rep. 36, Chap. 6.2, page 16) to ensure the final fastening of the barrier..

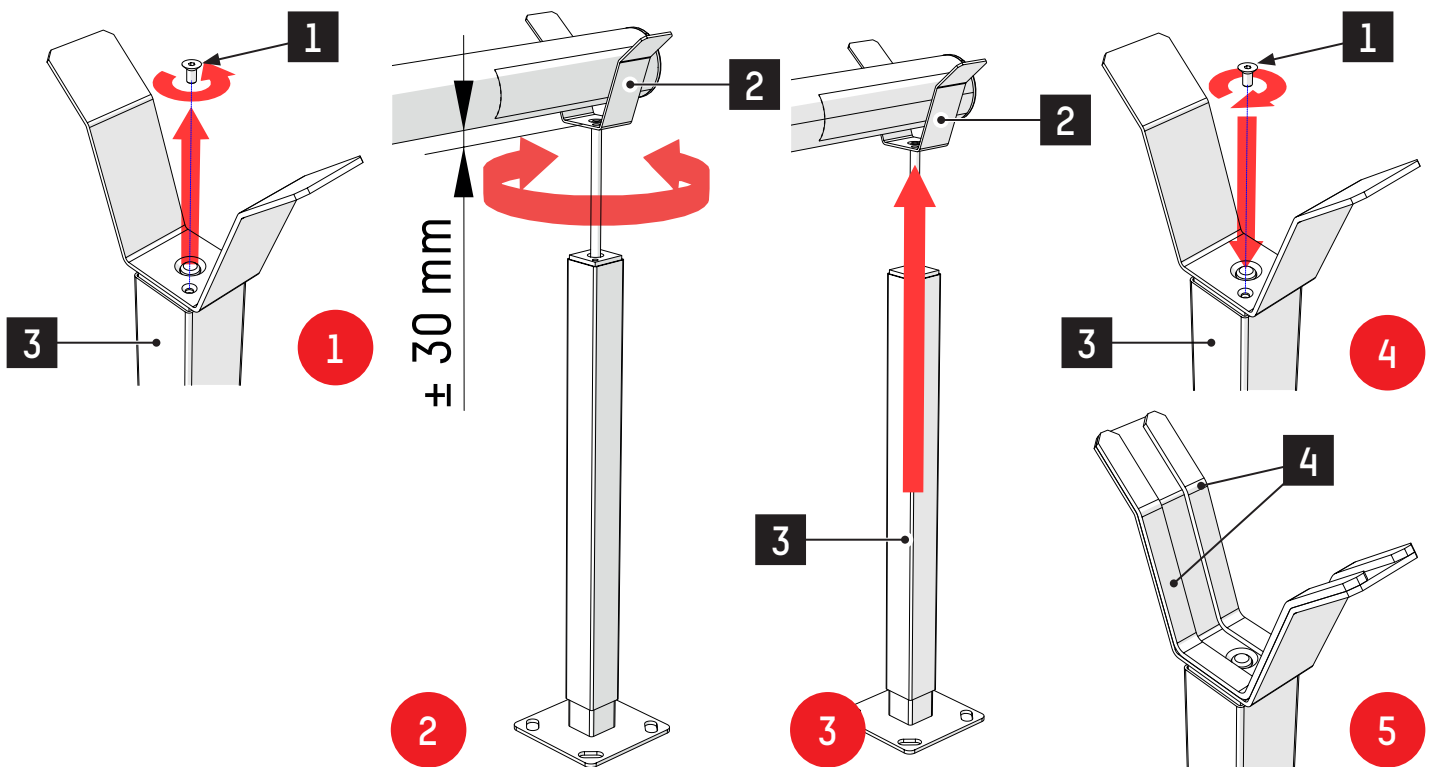


Fig. 21 - Installation of an adjustable tip support

6.6. ELECTRICAL CONNECTIONS



DO NOT CONNECT TO A FLOATING NETWORK OR TO A HIGH-IMPEDANCE EARTHED INDUSTRIAL DISTRIBUTION NETWORK.

HIGH LEAKAGE CURRENT.

BEFORE CONNECTING THE POWER SUPPLY, IT IS ESSENTIAL TO MAKE A GROUND CONNECTION (20) USING A CABLE WITH A MIN. CROSS SECTION OF 2.5 MM².

DO NOT CONNECT SEVERAL DEVICES ON THE SAME DIFFERENTIAL.



THE OPERATIONS MUST BE PERFORMED IN ACCORDANCE WITH THE SAFETY WARNINGS, CHAP. 1, PAGE 4.

CONNECTIONS MUST BE EXECUTED IN ACCORDANCE WITH THE WIRING DIAGRAMS (SEE ETF) INCLUDED INSIDE THE EQUIPMENT, AS THESE REPRESENT THE PRIMARY REFERENCE INSTRUCTIONS.

IN ORDER TO AVOID INTERFERENCES, THE POWER AND CONTROL CABLES MUST PASS THROUGH TWO DIFFERENT DUCTS AT LEAST 10CM APART.

THE ARM MUST BE MOUNTED BEFORE PROCEEDING WITH THE ELECTRICAL CONNECTIONS!



THE MAINS CABLE CANNOT BE ATTACHED TO OTHER CABLES COMING OUT OF THE HOUSING!
INSTEAD, IT MUST BE KEPT AS FAR AWAY FROM THEM AS POSSIBLE.

Connect the power supply cables ¹:

- Switch off the circuit breaker (19).
- Connect the neutral (blue) and the phase (brown or black) wires of the power supply cable to the circuit breaker.
- Connect the ground wire (yellow/green) to the ground terminal (20).

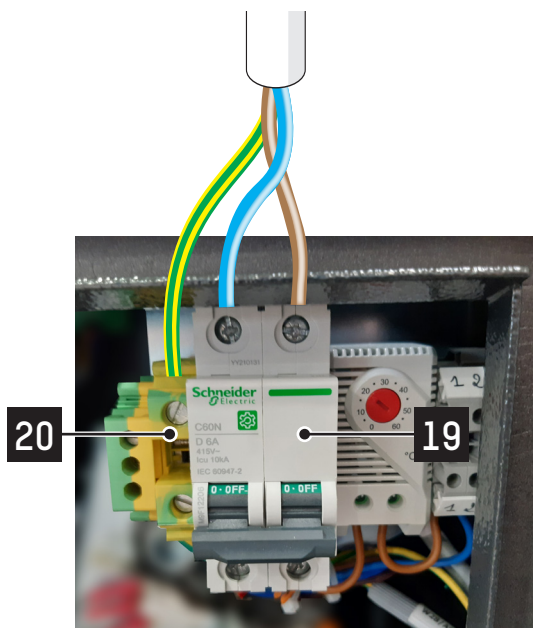


Fig. 22 - Power supply connections

Connect the ground wires to their terminals:

- Cable (1) between the housing and the cover **(Check this connection before each closing of the cover);**
- Cable (2) between the housing and the door **(Check this connection before each closing of the door);**
- Cable (3) between the housing and the main terminal.

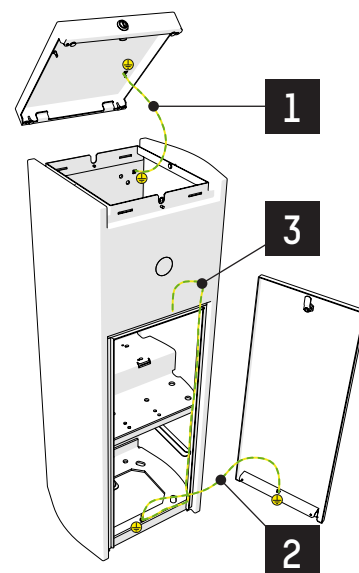


Fig. 23 - Equipotential connections

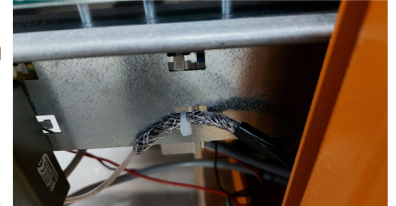
¹ Recommended power cable: 3G 2,5 mm². The power cable must comply with the technical specifications (⇒ Chap. 9, page 43)

- The following must be provided at the feeder head:
 - Either a 10 A/300 mA differential circuit breaker (for five barriers maximum)
 - Or a 10 A/30 mA super-immune selective differential circuit breaker (for one barrier maximum).
- Connect the various controls and options according to the diagram provided and without following the power cable that has been moved from the board for this purpose.

ELECTROMAGNETIC COMPATIBILITY (EMC)

In order to avoid any deterioration in the operation of the equipment, please observe the following recommendations:

- Check the various connections of the equipotential bonding connections shown in Fig. 23 ;
- If the traffic lights option is used, place a ferrite 742 712 22 (1 turn) on the power supply cable of the traffic lights in line with the hole in the shaft;
- If the traffic lights option is present, make a PE connection between the AS1049 board and the top cover (connection point present);
- If a receiver is used, the shield of the antenna cable must be taken from the board directly next to the receiver;
- For the Ethernet connection, please use at least a shielded Category 5e F/UTP cable.



7. ADJUSTMENTS

7.1. POSITIONING THE LEVERS ON THE ARM SHAFT

The connecting rod and spring levers (⇒ Rep.10 and 11, Chap. 5.1, page 9) must be positioned on the arm shaft (⇒ Rep.9, Chap. 5.1, page 9) according to the chosen solution.

1. Screw the rod lever onto the shaft, by passing the screw through the holes in the rod and shaft corresponding to the considered solution (⇒ Fig. 24 and Fig. 25).
2. Align mark (C) of the spring lever with the mark on the shaft corresponding to the considered solution (⇒ Fig. 25): figures indicated on the illustration (1 to 4) indicate the reference mark to be used according to the considered solution (1 to 4). For a correct alignment, the mark must remain entirely visible (⇒ Fig. 24).

With correct positioning, the pivots (G and H, ⇒ Fig. 13, page 18) maintaining the connecting rod and the spring in their respective levers are perpendicular to it.



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

Similarly, the arm shaft must be positioned in relation to the bearings so that the circular reference mark on the arm shaft (D) is level with the side of the bearing (⇒ Fig. 24).

The bearing's compression screws (C, ⇒ Fig. 13, page 18) re then positioned in front of the groove marked in the arm shaft for this purpose

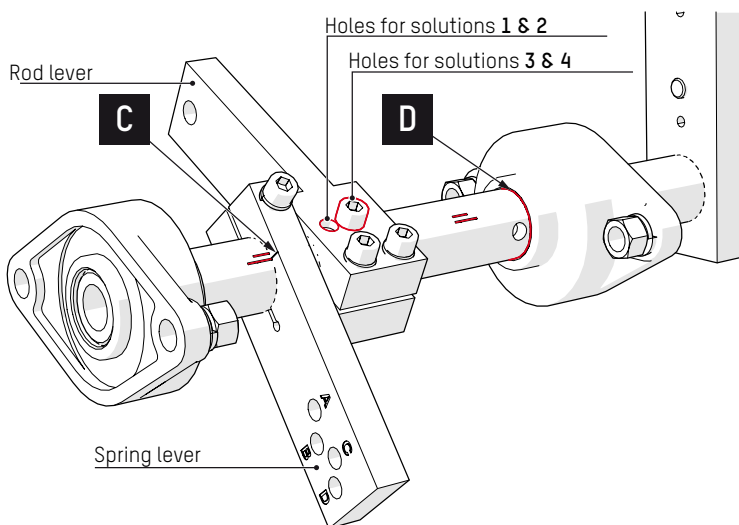


Fig. 24 - Arm shaft (Solution 4)

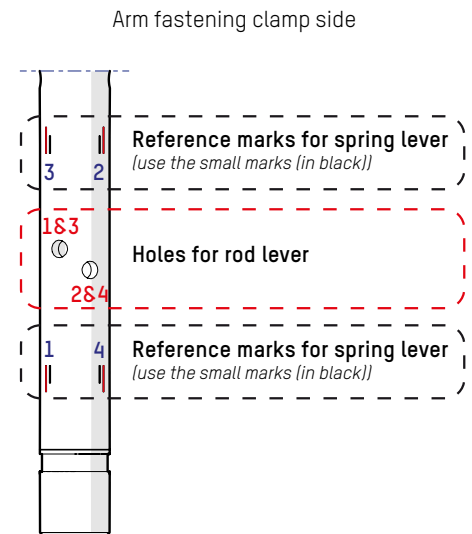


Fig. 25 - Rod and spring levers marks on the shaft, according to the considered solution

7.2. BALANCING OF THE BOOM ARM BY MEANS OF THE SPRING

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

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

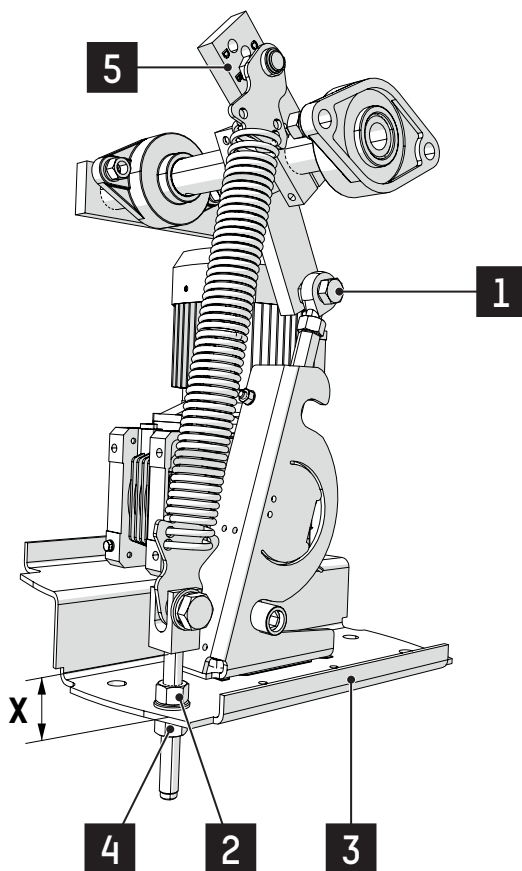


Fig. 27 - Balancing spring(s) settings

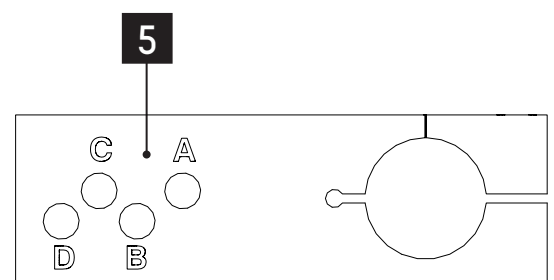


Fig. 26 - Detail of fixing points on the spring jaw

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

7.3. BALANCING TABLE FOR BL 229 (FOR INFORMATION ONLY)

ARM LENGTH (M)	ARM TYPE	OPTION	Ø OF SPRING WIRE	NB OF SPRINGS	POSITION OF SPRINGS ON LEVER (1)	X (2)
2,0	Round Ø 84		5,5	1	A	78
2,5			5,5	1	A	53
3,0			5,5	1	C	35
3,5			7	1	A	56
4,0			7	1	B	34
4,5			7	1	C	35
5,0			7	2	A/A	56
5,5			7	2	A	40
					B	45
6,0			7	2	B/B	28
3,0	Round Ø 84	Automatic opening when power fail	7	1	A	46
3,0	Round Ø 84	Tip support (EM)	7	1	B	34
3,5			7	1	C	35
4,0			7	2	A/A	56
4,5			7	2	A	45
					B	40
5,0			7	2	B/B	28
6,0			7	2	C/C	52
3,0	Round Ø 84	Articulated tip support	7	1	A	30
4,0			7	2	A/A	56
5,0			7	2	B/B	34
4,0	Round Ø 84	Articulated tip support + STOP panel	7	2	B/B	30
2,0	Round Ø 84	Rigid skirt	5,5	1	B	50
2,5			7			
3,0			7	A	46	
			5,5			60
3,5			7	2	A/A	52
3,0	Round Ø 84	Rigid skirt (2,5 m) + Tip support (EM)	5,5	2	B	47
			7		A	45
2,5	Round Ø 84	Folding fence (2,5 m) + STOP panel	7	1	A	40
3,5	Round Ø 84	Rigid skirt (2,5 m) + Articulated tip support	7	2	A/A	37
2,0	Round Ø 84	Folding fence + Articulated tip support + boom arm light	7	1	A	48
4,0	Round Ø 84	Rubber profile + articulated tip support	7	2	A/A	44
4,0	Round Ø 84	Rubber profile + STOP pannel	7	2	A/A	54
3,5	Round Ø 84	Rubber profile + boom arm light	7	1	C	25

ARM LENGTH (M)	ARM TYPE	OPTION	Ø OF SPRING WIRE	NB OF SPRINGS	POSITION OF SPRINGS ON LEVER (1)	X (2)
2,2	Round Ø 84	Rubber profile	5,5	1	A	54
2,5			5,5	1	C	40
3,0			7	1	A	56
3,5			7	1	B	29
4,0			7	2	A/A	58
4,5			7	2	A/A	40
5,0			7	2	B/B	28
4,0	Round Ø 84	Flexible mesh + boom arm light	7	2	A/A	50
4,5			7	2	B/B	34
3,0	Flat arm		5,5	1	C	37
3,0	Flat arm	Automatic opening when power fail	7	1	A	47
2,2	Flat arm	Driving part 1100	5,5	1	A	55
2,5		Driving part 1330	5,5	1	B	35
3,0		Driving part 1000	5,5	1	B	53
3,0		Driving part 1200	5,5	1	C	40
3,0		Driving part 1300	5,5	1	B	40
3,0	Oval arm		5,5	1	A	73
3,0	Oval arm	Automatic opening when power fail	5,5	1	C	46
3,0	Protecta® arm		5,5	1	B	39

7.4. BALANCING TABLE FOR BL 229 TOLL(FOR INFORMATION ONLY)

ARM LENGTH (M)	ARM TYPE	OPTION	Ø OF SPRING WIRE	NB OF SPRINGS	POSITION OF SPRINGS ON LEVER (1)	X (2)
3,0	Oval arm		5,5	1	C	45
3,0	Protecta® arm		5,5	1	B	39

- (1) Spring position on lever: mark: {5} ⇒ Fig. 26, page 29.
- (2) X = Distance of fixing plate /support (mm): ⇒ Fig. 27, page 29



For boom arms longer than 4 meters or for configurations with options, it can be useful to increase the torque on the frequency converter (refer to the handbook of the AS1620 control unit).

7.5. LEVELLING OF THE BOOM ARM

1. First check the position of the levers on the arm shaft (⇒ Fig. 24, page 28).
2. Close the barrier to put the arm in its horizontal position.
3. On the connecting rod (⇒ Rep. 20, Chap. 5.1, page 9), loosen nuts (1) and (2).



One nut has a left-hand thread and the other one a right-hand thread.

4. Turn the connecting rod in the clockwise direction to make the arm rise and anti-clockwise to make it descend. Check the arm's horizontality by means of a spirit level.
5. Tighten the nuts.

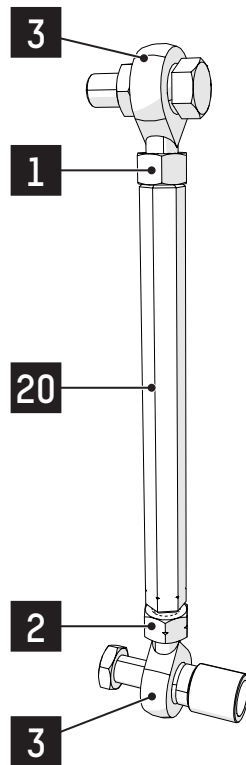


Fig. 28 - Connecting rod assembly

7.6. ANALOG SENSOR SETTINGS

The analog sensor and cam are usually installed in factory according to the customer requested solution and will require no manipulation.

However, if the solution is changed in the field, make sure your cam and analog sensor are mounted appropriately for the new solution.

The illustration below shows the front view of the motor when the side access panel is open. It shows the correct cam and analog sensor position according to the possible solutions (⇒ Ch. 6.3, page 18)

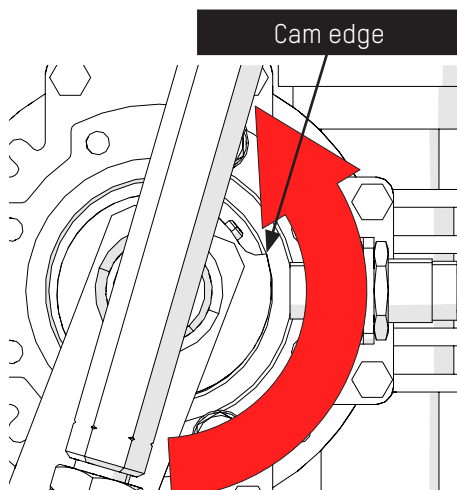


Fig. 29 - Analog sensor - Solution 1 & 2

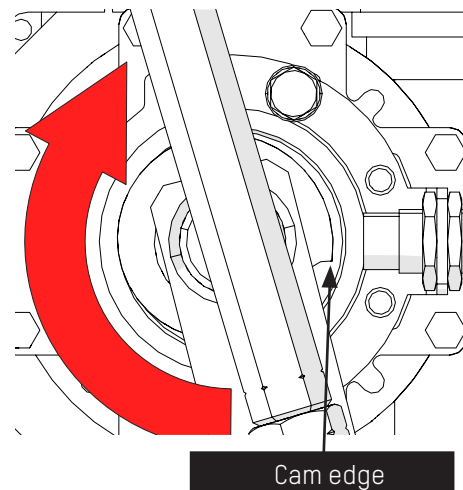


Fig. 30 - Analog sensor - Solution 3 & 4

Should you need to change the analog sensor and cam position in the field proceed as described below.

Please, refer to the illustrations above and below.

1. Open the door and turn **OFF** the power;
2. Thanks to the unlocking lever, unlock the mechanism and place the gate arm in open position (⇒ Fig. 32, page 34);
3. Remove the arm (proceed in the reverse order of the Chap. 6.4, page 21);
4. Loosen the spring(s) and remove it (them);
5. Remove the stops assembly;
6. Disconnect the connecting rod from the gear motor shaft by unscrewing the screw **(1)** (⇒ Fig. 31, page 34);
7. Unscrew the screw **(2)** and remove the gear motor shaft (⇒ Fig. 33, page 34);
8. Loosen the two pressure screws **(3)** of the spiral cam (⇒ Fig. 34, page 34);
9. Return the spiral cam and replace it correctly (the cam edge must be close to the analog sensor when the arm is in closed position) onto the gear shaft, tighten the two pressure screws **(3)**;
10. Reinstall the gear motor shaft on the gear motor and secure it with the screw **(2)**;
11. Reattach the connecting rod to the gear motor shaft by reattaching the screw **(1)**;
12. Reinstall the stops assembly considering the desired solution (⇒ Ch. 6.3, page 18);
13. Reinstall the spring in its correct position considering the desired solution and reload it (⇒ Ch. 7.2, page 29);
14. Mount the gate arm back (⇒ Ch. 6.4, page 21);
15. Proceed with the analog sensor calibration procedure (⇒ Ch. 7.7, page 35).

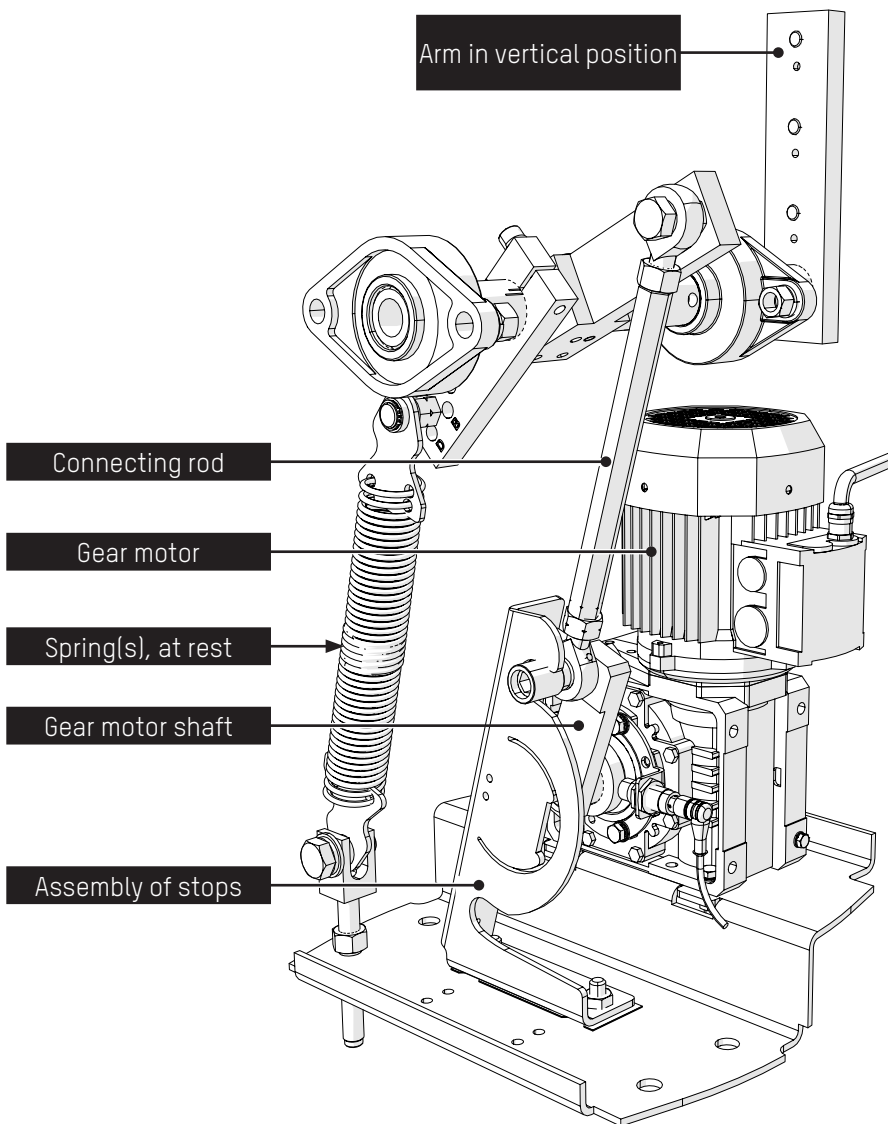


Fig. 32 - Gate mechanism in open position

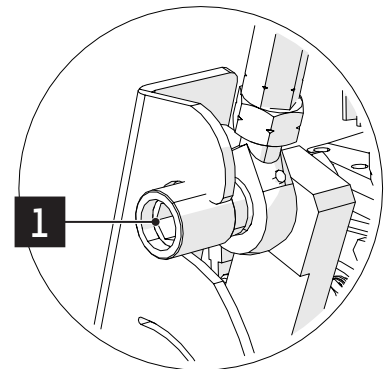


Fig. 31 - Detail of the screw fixing the connecting rod onto the gear motor shaft.

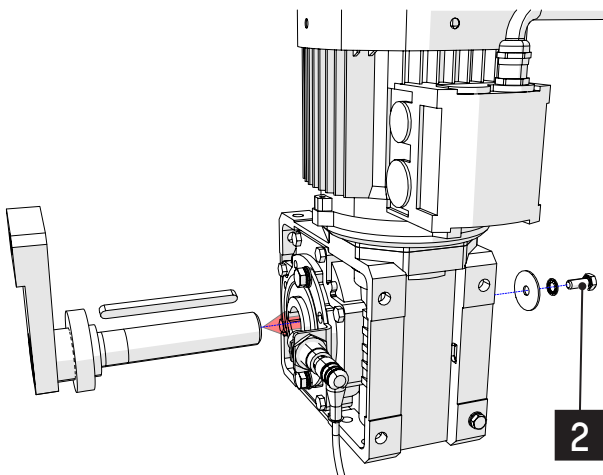


Fig. 33 - Detail of the screw fixing the gear motor shaft

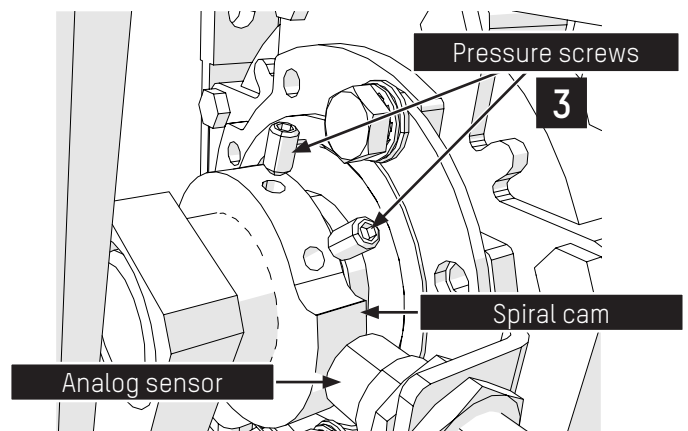


Fig. 34 - Detail of pressure screws fixing the spiral cam

7.7. CALIBRATION OF THE ANALOG SENSOR



THE GATE WILL NOW MOVE TO DETERMINE THE UP AND DOWN POSITION!

1. Place the gate arm in the closed position;
2. Disconnect the RJ45 connector of the frequency converter to prevent gate arm from moving.
3. Adjust the analog sensor, it is located at 3 mm from the cam (or until the value shows 2000 (± 100) on the web interface when the barrier is connected with the Ethernet port).
4. Plug the RJ45 connector of the frequency driver back in the control logic.
5. Perform the analog sensor calibration procedure.

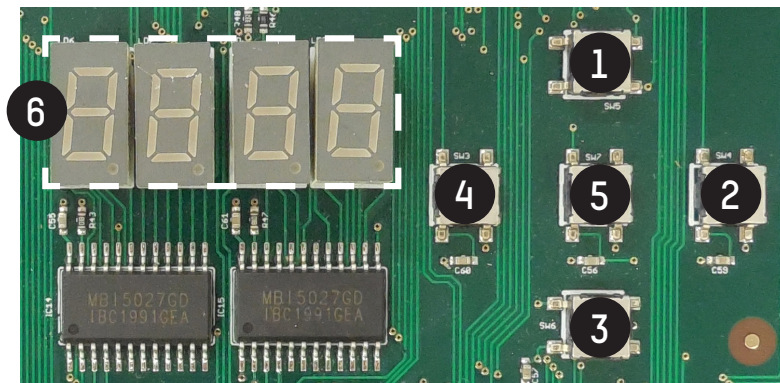


For more information on the following steps, please refer to the technical manual of the AS1620 control logic.

7.7.1. USING THE MAINTENANCE INTERFACE

- a. Go to the page **Individual Tests** and select the menu **Calibration**.
 - b. Perform the **End stop position** test.
 - c. The interface will confirm the success of the calibration if the gate arm is in the open position once the test is completed.
- If calibration fails, return to step 3. The analog sensor is not correctly positioned.

7.7.2. USING THE INTEGRATED HMI INTERFACE



REP.	DESIGNATION	REP.	DESIGNATION
1	TOP button (SW5)	4	LEFT button (SW3)
2	RIGHT button (SW4)	5	OK button (SW7)
3	DOWN button (SW6)	6	Display

Fig. 35 - Integrated Human-Machine Interface


Proceed to the calibration of the analog sensor:

- a. Press and hold the 'OK' (5) button for 2 seconds ⇒ **SET**
- b. Press the up ▲ (1) and down ▼ (3) buttons until to find the menu: **1.5E**
- c. Press the up ▲ (1) and down ▼ (3) buttons until to find the menu: **POS**
- d. Press the right button ► (2) to display **999** and again the right button ► two (2) seconds to display **YES**
- e. Press and hold the right button ► for three (3) seconds to start the calibration.
- f. Check the test result to the display.
- g. Press and hold the 'OK' (5) button for 2 seconds to leave the mode or wait 1 minute.

If calibration fails, return to step 3. The analog sensor is not correctly positioned.

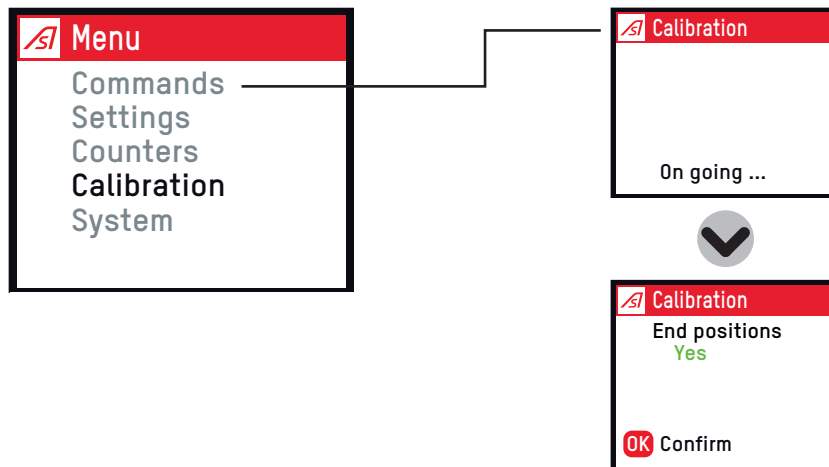
7.7.3. USING THE AS1621 OLED DISPLAY (OPTION)



 The **Calibration** menu, **End positions** option, makes sense only when an angular analog sensor is installed inside the mechanism. The barrier will slowly rotate from down to up position and the logic board will memorize the up and down sensor value.

Calibrate the analogue sensor:

- a. Press and hold the 'OK' button for few seconds (from 3 to 10 seconds) to activate the display;
- b. Press the up ▲ (1) and down ▼ (3) buttons to activate the 'Menu' and press 'OK' to confirm your selection;
- c. Press the up ▲ (1) and down ▼ (3) buttons to activate the menu 'Calibration' and press 'OK' to confirm your selection.
- d. When the calibration is completed, the result is displayed on the OLED display.



If calibration fails, return to step 3. The analog sensor is not correctly positioned.

7.8. CONFIGURING THE FREQUENCY CONVERTER

The factory settings allow the frequency drive and gear motor to be protected against all malfunctions. These values should therefore not be changed under any circumstances.



ANY CHANGES TO THESE PARAMETERS WITHOUT HAVING THE EXPRESS PERMISSION OF AUTOMATIC SYSTEMS, IS YOUR RESPONSIBILITY AND WILL VOID THE PRODUCT WARRANTY

The frequency converter is a **Schneider Altivar ATV12** connected in Modbus.

Configuration is performed via Modbus. The only parameters to be entered manually are the Modbus address (add = 1) and the baud rate (tbr = 38400), which can be accessed via the configuration menu:



```
COnF    =>   Frl    =>   Mdb
COnF    =>   FULL  =>   CON      =>   Add = 1
                               =>   tbr = 38400
```

Turn the power OFF then ON to activate the modifications.

7.8.1. MAIN ERROR MESSAGES

In case of failure, the frequency converter can indicate the origin of the fault via codes.

The most common are described below.



AFTER A POWER FAILURE, THE CODE DISAPPEARS AND IS NO LONGER READABLE ONCE THE GATE HAS RESTARTED. THEREFORE, IT IS IMPERATIVE TO NOTE THESE ADDRESSES BEFORE RESETTING THE BARRIER!

CODE	DESCRIPTION
O ^H F	Overheating of the frequency converter.
O ^L F	Overloading of the gear motor.
O ^b F	Excessive braking.
S ^L F1	Modbus communication fail: check that the cable connecting the control logic and the frequency driver is connected properly.
O ^P F1	Loss one phase at the frequency converter output.

8. USE

8.1. COMMISSIONING

Before commissioning, review the procedures described in chapters 6. Installation, 7. Adjustments, 8. Use and 8.3. Maintenance.



The following list can be used as a checklist for commissioning the barrier.

- Anchor the gate to the ground in accordance with the recommendations of the (⇒ Ch. 6. Installation, page 14).
- Attach the arm (⇒ Ch. 6.4. Installation of the arm, page 21).
- Check the proper positioning of the arm in its open position (vertical) and closed position (horizontal). Refer to the corresponding adjustment if necessary (⇒ Ch. 7.5. Levelling of the boom arm, page 32).
- Adjust the balance of the arm (⇒ Ch. 7.2. Balancing of the boom arm by means of the spring, page 29).
- Connect the inputs and outputs on the control logic.
- Connect the power cables on the terminal blocks.
- Power up the unit, by means of the main switch (Rep. **24**, page 9), and wait for the control logic to complete its initialisation (about 5 seconds).
- The integrated HMI displays the message **boot**.
- After few seconds, the message **run** appears and the equipment is ready to use.



Refer to the control unit handbook for the meaning of the various messages displayed on the HMI.

- Proceed to the calibration (⇒ Ch. 7.7. Calibration of the analog sensor, page 35).



THE GATE WILL NOW MOVE TO DETERMINE THE UP AND DOWN POSITION!

- Check the correct configuration of the gate. If needed, adjust the parameters via the maintenance interface.
- Check the proper working of any options and safety measures.
- Carry out some electrical opening and closing tests by using the integrated HMI (Menu > **Commands**) or by means of the command mode that is at your disposal (push-button box, transmitter/receiver, etc).

8.2. MANUAL OPENING IN THE EVENT OF POWER FAILURE

8.2.1. PROCEDURE FOR SOLUTION 1 OR 2

The BL229 barriers are available in 4 solutions depending on the position of the boom and the door in relation to the road (⇒ Chap. 6.3, page 18).

The procedure first describes the steps for manual opening in solution 1 or 2:

- Using the key provided, open the access door, disconnect the earthing cable and store the door nearby.
- Switch off the power at the main circuit breaker. Depending on the options selected, the mechanism may unlock itself, in which case the boom will make a partial or total opening movement.
- If this is not the case in the installed barrier version, a release lever is provided to allow manual opening.

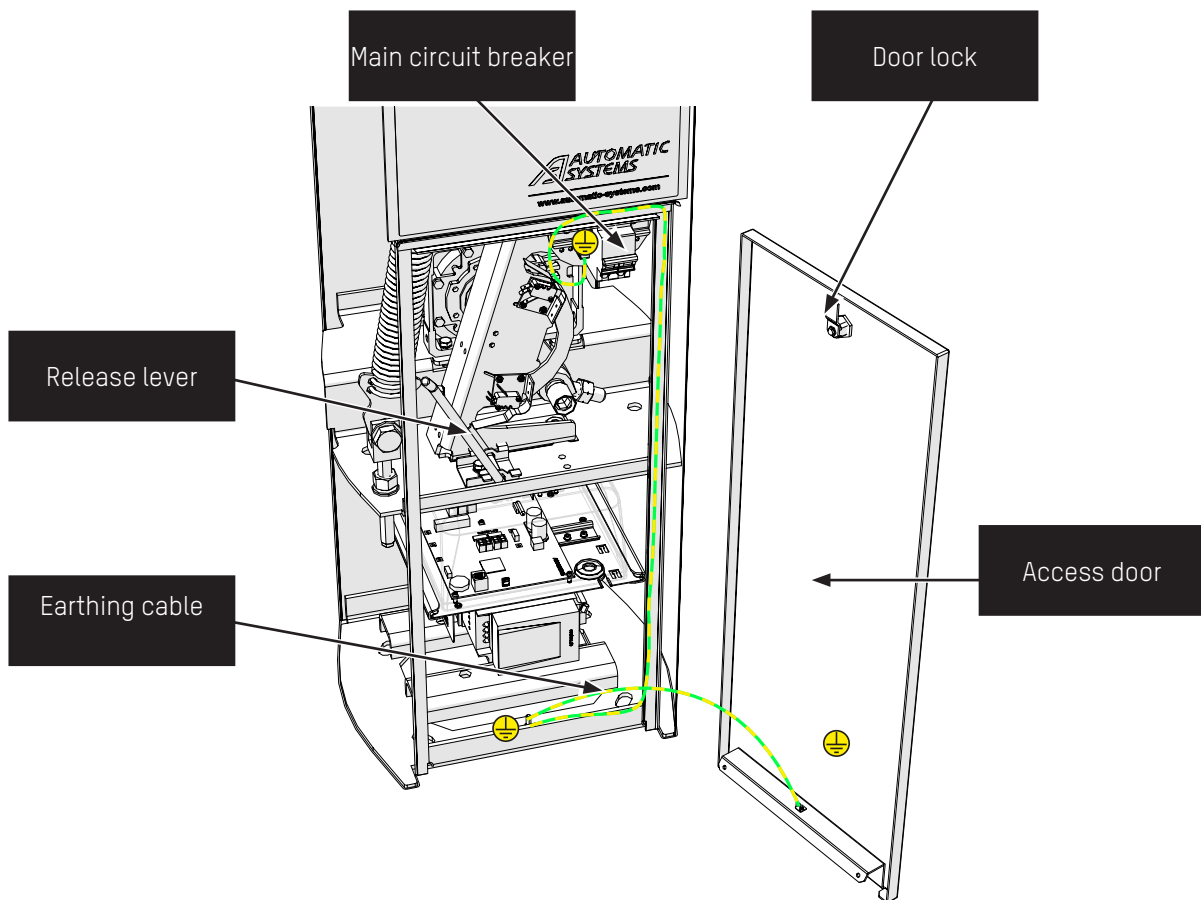


Fig. 36 - Attaching the earthing cable

- Rotate the lever clockwise with the left hand (a few degrees are sufficient to leave the alignment position of the crank system).
- The balancing spring then acts on the main axis of the boom, triggering an opening movement. If necessary, use your right hand to assist the movement and bring the boom upright.
- Re-engage the circuit breaker to allow the barrier to restart automatically after the 230Vac power supply is restored.
- Replace the earth wire on the gate and lock the barrier shaft.

8.2.2. PROCEDURE FOR A SOLUTION 3 OR 4

The procedure is almost identical for a solution 3 or 4 gate.

However, in this case the stop is reversed and the lever movement is therefore counter-clockwise. It is therefore more convenient to make this movement with the right hand and to accompany the movement of the boom with the left hand.

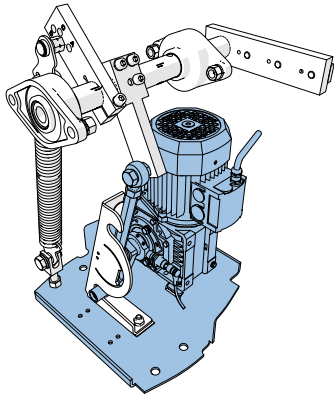


Fig. 37 - Solution 1

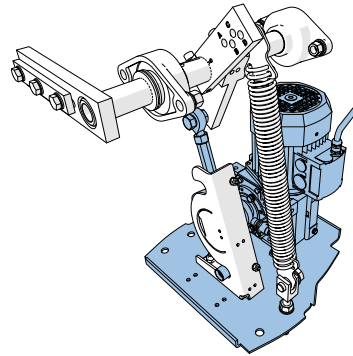


Fig. 38 - Solution 3

8.3. MAINTENANCE



MAINTENANCE OPERATIONS MUST BE CARRIED OUT IN COMPLIANCE WITH THE SAFETY WARNINGS STATED IN CHAPTER 1.

Unlock and remove door (⇒ Rep. 5, Fig. 1, page 9) without damaging the ground wire that connects it to the housing.

Switch off the circuit breaker (⇒ Rep. 24, Fig. 1, page 9).

If necessary, remove the cover (⇒ Rep. 2, Fig. 1, page 9) without damaging the ground wire that connects it to the housing.

After the first 1000 operations, check the adjustment of the analog sensor (⇒ Chap. 7.6, page 33).

Every 6 to 12 months, depending on the traffic level:

- Check all the adjustments described in Chapter 7.
- Check that all the nuts and screws of the mechanical unit are tight.
- Check that all the electrical connections are tight.
- Check if the arm can be stopped by hand in the course of movement, both at opening and at closing. If not, check the balance adjustment (⇒ Chap. 7.2, page 29).
- Dust and clean the interior of the housing.
- Clean the outside of the housing and the arm by means of a soft cloth impregnated with a non-aggressive detergent.
- For the countries with a lot of sun, it is also advised to treat the outside of the body with a glossing product.
- Clean the stainless steel parts/options to prevent deposition of metallic particles (approved product reference 0/6031/000).



The frequency of maintenance must be adjusted to the conditions of use of the equipment, in particular when it is located in an oxidizing atmosphere: near the sea, industrial environment, etc.

- Lubricate rod ends (⇒ Fig. 28, page 32) with anti-corrosive multifunction grease.
- Lubricate the bearings (⇒ Rep. 8, Fig. 2, page 9) and check the wear state of pivots and rings of the balancing spring.



In order to reach a 10.000.000 cycles MTBF, we recommend performing a preventive maintenance program every 2.500.000 cycles:

- Replace the rod ends (⇒ Rep. **3**, Chap. 7.5, page 32)
- Take note about the position of the spring on the spring lever (⇒ Rep. **11**, Fig. 2, page 9) as well as dimension of **X** (⇒ Fig. 27, page 29) and replace the balancing spring (⇒ Rep. **12**, Fig. 2, page 9) by a new one. Adjust the tension of the new spring (⇒ Chap. 7.2, page 29).

8.4. TROUBLESHOOTING

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

- Check the displayed messages on the HMI of the control unit.
- Review the procedures described in Chapters 6. Installation, 7. Adjustments et 8.3. Maintenance.
- Check that the circuit breaker (⇒ Rep. **24**, Fig. 1, page 9) is properly engaged and that the voltage corresponds to the voltage required in the technical specifications (⇒ Chap. 9, page 43).
- Check if the motor is working.
- Check if the frequency converter (⇒ Rep. **26**, Fig. 1, page 9) is in fault: the red LED on the side of the converter blinks. In this case, contact an Automatic Systems representative.
- Check the connection of the commands according to the electrical diagram provided with the equipment.
- Check that all the electric wires are correctly tight, and tighten them if necessary.
- Carry out an electrical opening/closing test by means of the integrated HMI (Menu > **Commands**).



After the equipment has been switched off for a long time, it will be necessary to carry out several opening/closing cycles to raise the temperature of the gear motor in order to allow correct unlocking of the gearmotor and correct balancing of the boom arm.

8.5. RECOMMENDED SPARE PARTS

REFERENCE	DESCRIPTION	QUANTITY(IIES) ²							
		1 BL		3 BL		5 BL		10 BL	
		2 TO 3 M	3,5 TO 6 M	2 TO 3 M	3,5 TO 6 M	2 TO 3 M	3,5 TO 6 M	2 TO 3 M	3,5 TO 6 M
E/7002/593	SPRING ASSEMBLY Ø 5.5 MM WITH STRETCHER (BL229 TOLL)	1		1		1		2	
E/7002/826	SPRING ASSEMBLY Ø 7.0 MM WITH STRETCHER		1		1		1		2
E/7002/827	SPRING ASSEMBLY Ø 5.5 MM WITH STRETCHER	1		1		1		2	
0/3551/000	RUBBER BUMPER	2	2	2	2	4	4	5	5
E/0832/031	ROD ASSEMBLY WITH STRAP			1	1	1	1	1	1
RDC-E03007	GEAR MOTOR					1	1	1	1
0/7140/284	INDUCTIVE SENSOR M18 P 8 MM S ANA 0-10V CON.M12	1	1	1	1	2	2	3	3
E/7140/474	AS1620 CONTROL BOARD ASSEMBLY (INCL. FEMALE CONNECTORS)					1	1	2	2
E/7109/777_TESTE	HMI BOARD AS1621 - TESTED			1	1	1	1	1	1
0/7140/498_CONF	FREQUENCY CONVERTER 230V - CONFIGURABLE			1	1	1	1	2	2
0/7108/919	POWER SUPPLY MEAN WELL 85-264VAC/24V 2,2A LRS-50-24					1	1	2	2

² For quantities of more than 10 units, please contact our after-sales service..

8.5.1. MAINTENANCE KIT

REFERENCE	DESCRIPTION	QUANTITY(IES) ³							
		1 BL		3 BL		5 BL		10 BL	
		2 TO 3 M	3,5 TO 6 M	2 TO 3 M	3,5 TO 6 M	2 TO 3 M	3,5 TO 6 M	2 TO 3 M	3,5 TO 6 M
KIT-BL229-I	MAINTENANCE KIT FOR BL229 STD - AS1620 - 230V - SPRING 5,5mm			1		2		2	
KIT-BL229-J	MAINTENANCE KIT FOR BL229 STD - AS1620 - 230V - SPRING 7,0mm				1		2		2
KIT-BL229-M	MAINTENANCE KIT FOR BL229 STD - AS1620 - 120V - SPRING 5,5mm			1		2		2	
KIT-BL229-N	MAINTENANCE KIT FOR BL229 STD - AS1620 - 120V - SPRING 7,0mm				1		2		2
KIT-BL229-K	MAINTENANCE KIT FOR BL229 TOLL - AS1620 - 230V - SPRING 5,5mm			1		2		2	
KIT-BL229-O	MAINTENANCE KIT FOR BL229 TOLL - AS1620 - 120V - SPRING 5,5mm			1		2		2	

8.5.2. VENTILATION KIT

If your gate is equipped with a ventilation kit (⇒ Chap. 9.2, page 44), it will be necessary to replace the filter regularly.

REFERENCE	DESCRIPTION	QUANTITY
E/7002/011	HOOD FILTER 185 X 185 MM	2 per barrier

The total quantity to be foreseen will depend on the environment (dust, sand,...) in which the equipment is located and the number of barriers.

8.6. PROLONGED STOPPAGE / DESTRUCTION

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

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

When you decommission the equipment, empty the oil from the gear motor (⇒ Rep. 20, page 9) and scrap the various components of the machine by the appropriate means (metal parts, electronic components, etc) according to the legislation in force in the considered country.

³ For quantities of more than 10 units, please contact our after-sales service..

9. TECHNICAL SPECIFICATIONS

9.1. COMMON TECHNICAL CHARACTERISTICS

Folded and welded sheet steel housing, protected from corrosion by two coats of paint.
Internal machine elements treated against corrosion by electrogalvanisation.
Single phase 230VAC, 50/60Hz + Ground ⁴ .
Nominal power consumption (at maximum speed, without option): 335 W.
Three-phase asynchronous motor of 250 W.
Worm gear motor (1:19 ratio), life-lubricated.
Secondary transmission by crankshaft-connecting rod device ensuring perfect mechanical locking in the two extreme positions (barrier open and closed).
Automatic barrier unlocking in the event of power failure (programmable), the opening being then possible by pushing the boom arm manually.
Frequency converter ensuring progressive accelerations and controlled decelerations, for a vibration-free movement and enhanced protection of the mechanism (adjustable acceleration and braking ramps).
Inductive analogue position sensor for permanent monitoring of the boom position.
Balancing of the arm by adjustable springs.
Operating Temperature between -20 and +50°C (without optional heating).
Relative humidity < 95%, without condensation.
Operation unperturbed by winds of 120 km/h.
MCBF (Mean Cycles Between Failures): 10,000,000, with normal maintenance.
Net weight (excluding boom arm): 83 kg.
IP 44.
Noise emitted during operation < 70 db(A). ⁵
Conforms to European standards CE

⁴ Not to be connected to a floating network or to high impedance earthed industrial distribution network..

⁵ Measured at 1 m from the surface of the machinery and at a height of 1.60 m above the ground; according to ISO 3744. No hearing protection needed..

9.2. SPECIFIC TECHNICAL FEATURES

	BL 229	BL 229 Toll
Aluminium boom profile	Round, Ø84.	Oval, section 80 x 53 mm
Opening/Closing time	Adjustable between 1,2 and 4 sec. according to 3 profiles : <ul style="list-style-type: none"> • Standard ⁶ • Intermediate ⁷ • Maximum ⁸ 	From 0,6 to 1,7 seconds
Free passage (L)	From 2 to 6m ⁹	From 2,5 to 4m.



BALANCING SPRING, HIS FIXING PARTS, AND ALL ACCESSORIES THAT COULD BE ADDED ON THE BARRIER (BOOM LIGHT, TIP SUPPORT, FOLDING FENCE ...) ARE NOT INCLUDED IN THE MCBF OF 10.000.000 CYCLES.

ALL ELEMENTS THAT ARE NOT PART OF THE WARRANTY MUST BE CONTROLLED PERIODICALLY ACCORDING TO THE CHAPTER (⇒ CH. 8.3. MAINTENANCE, PAGE 40).



IF THE BARRIER IS USED INTENSIVELY OR IF THE AMBIENT TEMPERATURE OF USE IS HIGH, AUTOMATIC SYSTEMS RECOMMENDS THE USE OF THE OPTIONAL VENTILATION KIT.

6 - Impact force in accordance with EN 12453.

7 - Impact force in accordance with EN 12453 with the addition of a foam protection under the arm.

8 - The installer must ensure that the installation conforms to the standard, e.g. with dead man operation.

9 - Between 5 and 6 m, a tip support is delivered with the barrier.

10. DIMENSIONS

10.1. DIMENSIONS OF BL 229

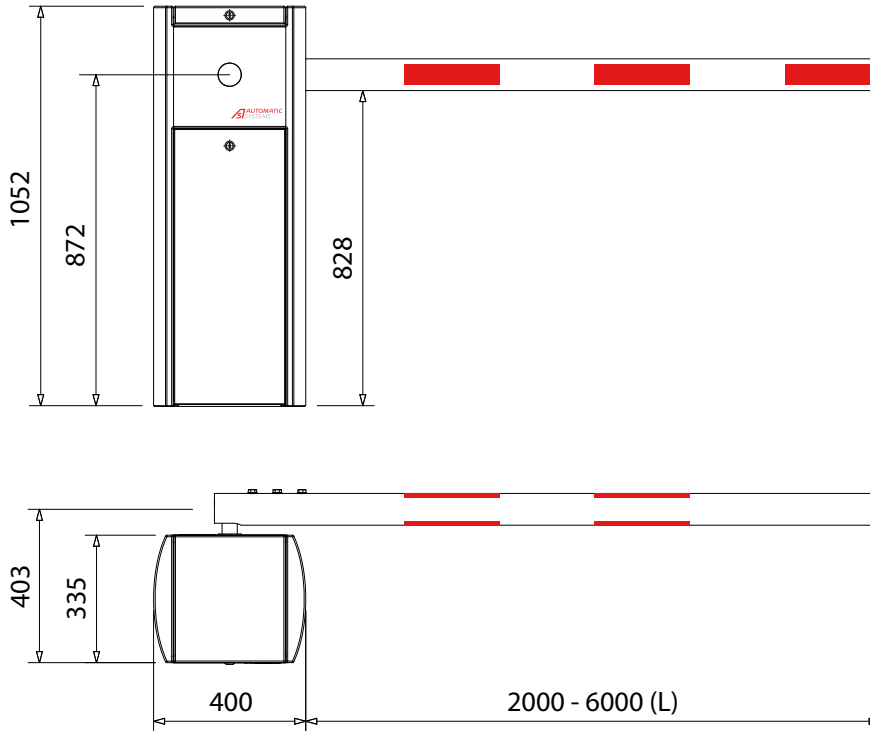


Fig. 39 - Dimensions of BL 229 with round arm

10.2. DIMENSIONS OF BL 229 TOLL

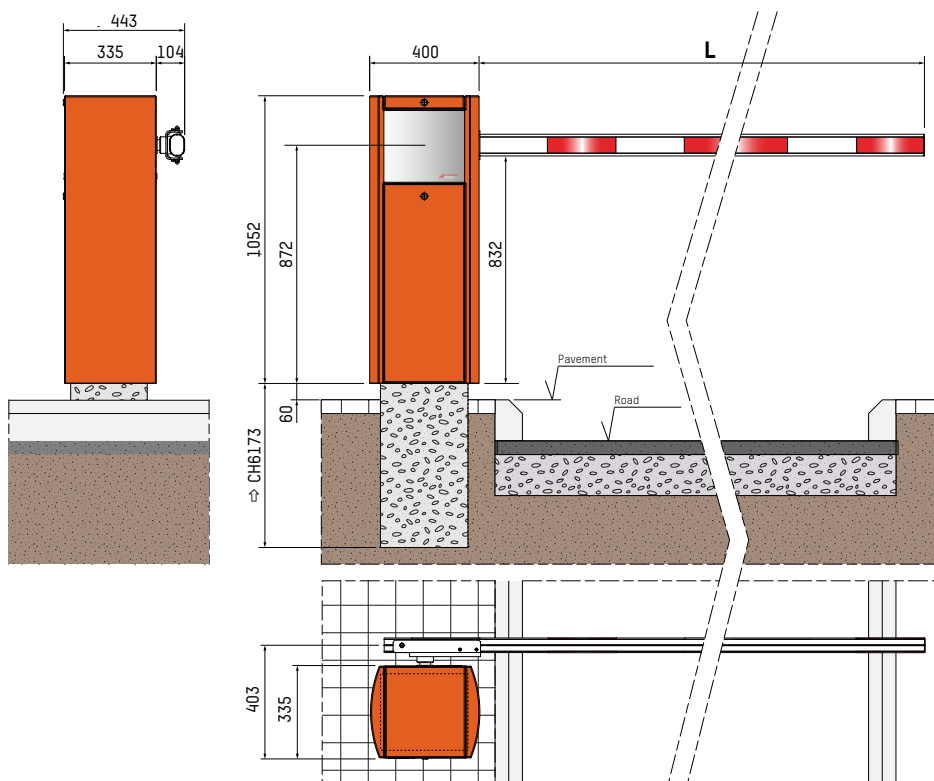
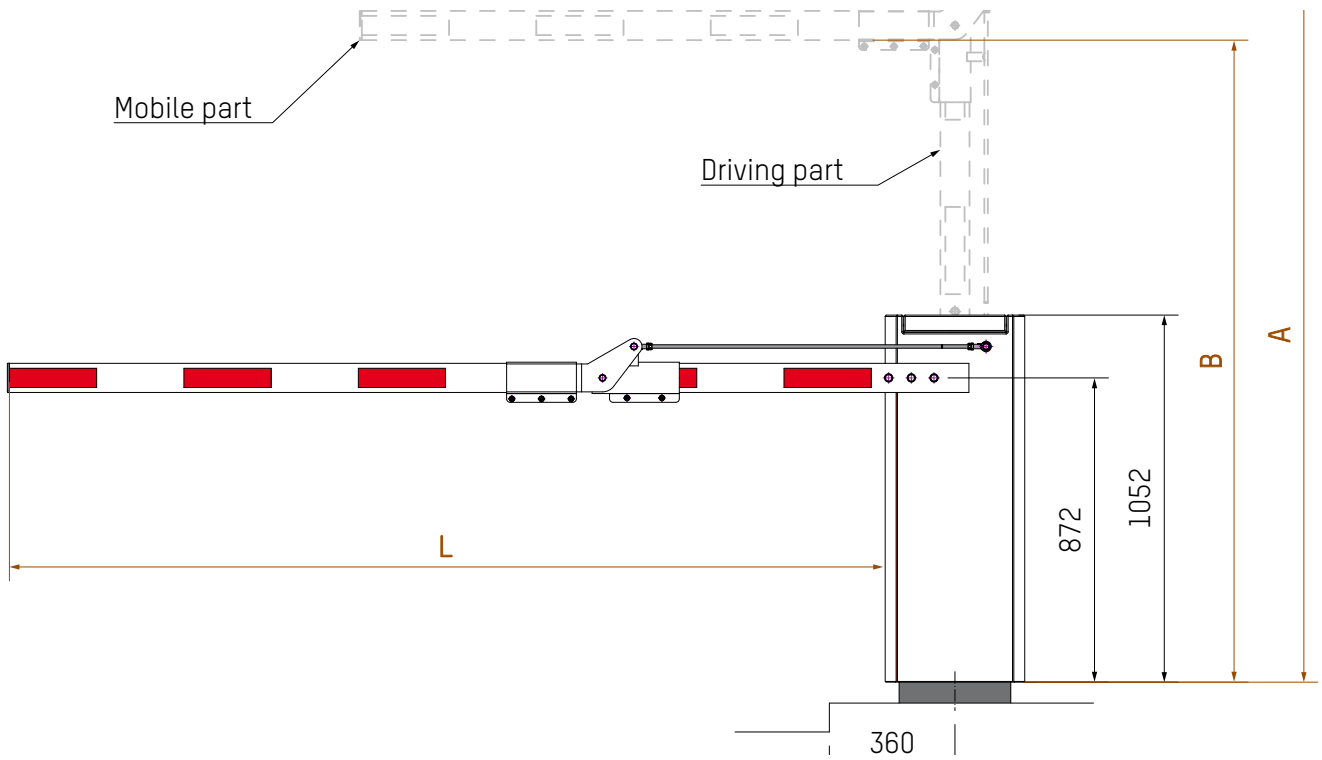


Fig. 40 - Dimensions of BL 229 Toll

10.3. DIMENSIONS OF BL 229 WITH ARTICULATED ARM (OPTION)



	Driving part length (mm)	A (mm)	B (mm)	L (mm)
Round arm	1030	1995	1840	2500 to 5000
	1230	2195	2040	
	1330	2295	2140	
Flat arm	1000	1972	1810	2200 to 3000
	1100	2072	1910	
	1200	2172	2010	
	1300	2272	2110	

Fig. 41 - Dimensions of BL 229 with articulated arm

11. INSTALLATION DRAWINGS

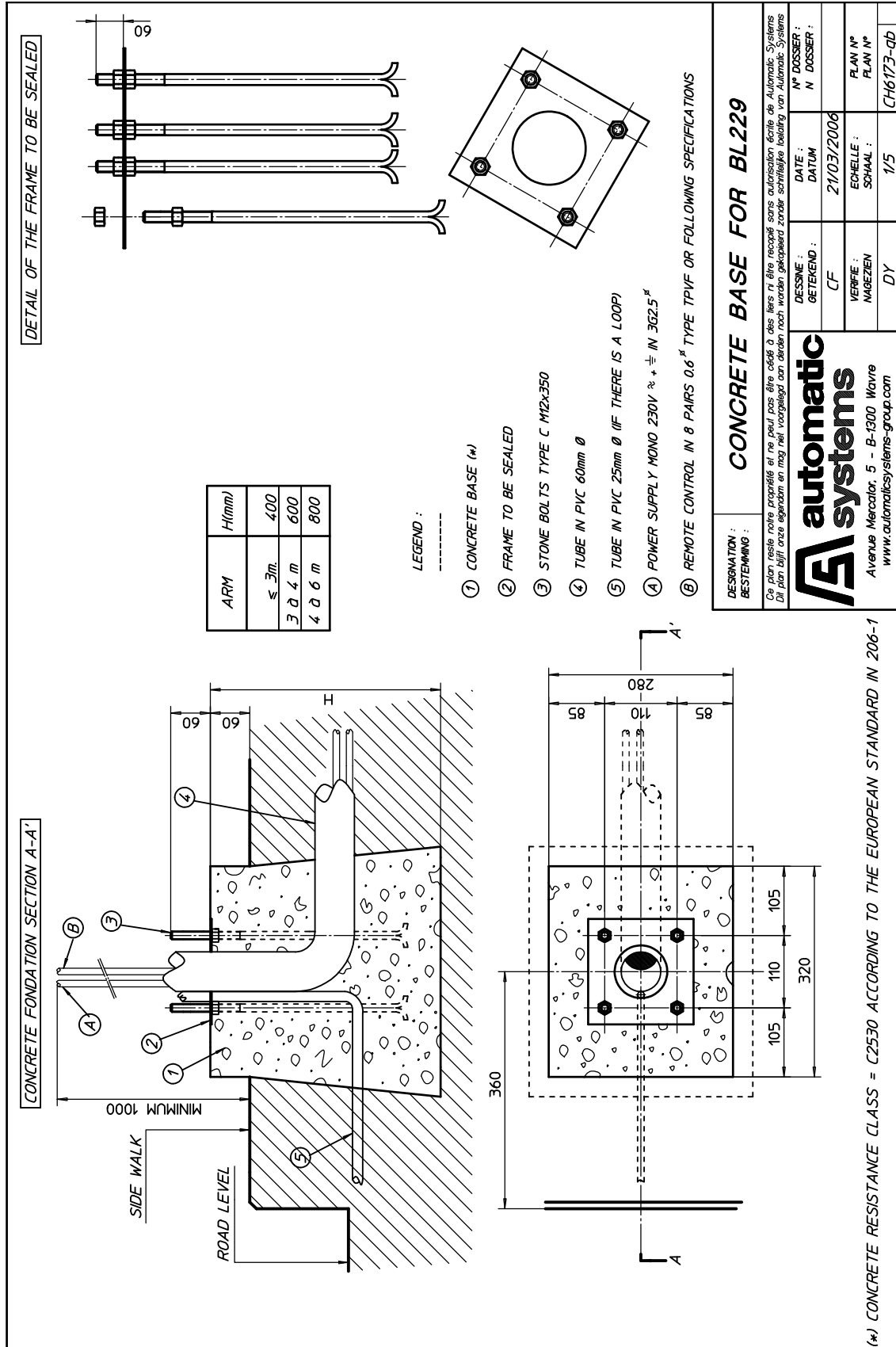


Fig. 42 - Installation drawing (Barrier)

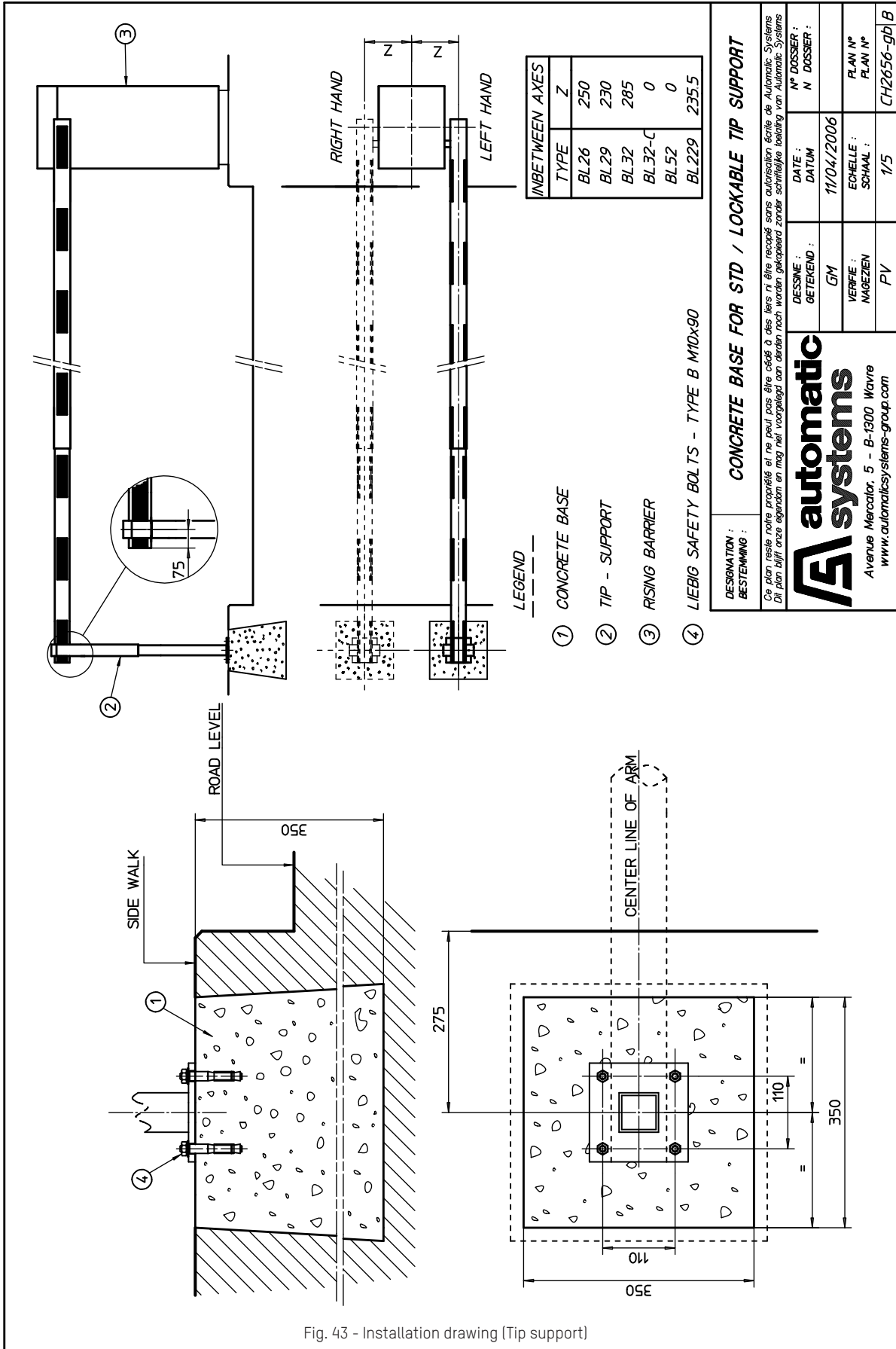


Fig. 43 - Installation drawing (Tip support)

12. APPENDIX

- Electrical drawings : can be found in the document pocket (⇒ Chap. 5.5, page 12).
- AS1620 Control Unit handbook.

13. CE DECLARATION



EC declaration of conformity



We, undersigned,

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

Herewith declare that the following machines

Automatic rising barrier

BL 229

BL 229 TOLL

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

- Machinery Directive **2006/42/EC**.
- Low-voltage Directive **2014/35/EU**.
- Electromagnetic compatibility Directive **2014/30/EU**.
- RoHs Directive **2011/65/EU**.
- **EN 60204-1:2018**: Safety of machinery - Electrical equipment of machines - Part 1: General requirements.
- **EN 61000-6-3:2007+A1:2011**: Electromagnetic compatibility (EMC). Generic standards. Emission standard for residential, commercial and light-industrial environments.
- **EN 61000-6-2:2005**: Electromagnetic compatibility (EMC). Generic standards. Immunity standard for industrial environments.

Made in WAVRE,
Date: 01-12-2021
Name: Nicolas PEQUEUX
Function: Director of Engineering

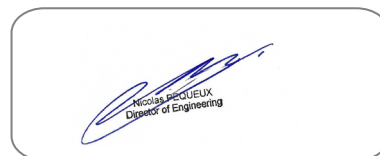


Fig. 44 - CE Declaration



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