

# TRS PMR

Security door

## TECHNICAL MANUAL

*(Translated from the original French version)*

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## 1. PRESENTATION

You have chosen a TRS PMR security door fitted with a TRS mechanism designed and manufactured by **Automatic Systems**, for which we thank you. We are convinced that your acquisition will give you complete satisfaction for many years and, to this end, invite you to read the following information carefully before installing your equipment.

While this manual has been prepared with great care, some information may seem incorrect or unclear to you. In that case, please do not hesitate to send us your remarks or questions.

### ***PRIOR WARNING***

***YOUR SECURITY DOOR IS MADE UP OF VARIOUS MECHANICAL AND ELECTRICAL COMPONENTS. ANY NEGLIGENCE WHILE WORKING ON IT COULD HAVE SERIOUS CONSEQUENCES FOR YOUR SAFETY. DISCONNECT THE GENERAL POWER SUPPLY FROM THE EQUIPMENT AS SOON AS YOU OPEN THE ROOF SECTION. BE VERY CAREFUL WHEN HANDLING ANY INTERNAL ELEMENTS THAT CAN BE TURNED ON OR ARE IN MOTION.***

## 2. SAFETY WARNINGS

- This manual must be available to all persons required to work on the equipment: installers, maintenance operators, end users, etc.
- This equipment is designed for pedestrian access control, including that with persons of reduced mobility, and cannot be used for another purpose without risk to the user and to the integrity of the equipment.
- **Automatic Systems** cannot be held liable for damage resulting from improper use of the equipment.
- In particular, the equipment is not designed for:
  - Unaccompanied young children.
  - Managing a continuous flow of more than 20 persons a minute.
- Do not install this equipment in an explosive area.
- Do not add non-original or non-approved accessories (contact between different metals causes a galvanic effect that adversely affects the corrosion resistance of the equipment).
- The contractor shall comply with local regulations when installing the equipment.
- All operations on the equipment must be carried out by qualified personnel. Any work on this product that is unauthorised or carried out by an unqualified technician will automatically void the manufacturer's warranty.
- Access to the mechanism must be reserved for staff who are aware of the electrical and mechanical risks incurred in the case of negligent handling. These personnel are required to lock the access panels to the mechanism after the intervention.
- As soon as the access door of the roof section is opened for maintenance on the mechanical parts, cut off the power via the main circuit breaker.

This manual details how the equipment works and provides information concerning fault diagnosis and maintenance operations in order to ensure the device works at maximum efficiency. We recommend you read it carefully before starting up the equipment.



Keep this manual in a safe place, at the disposal of the operating and maintenance personnel.

### 3. 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**.



**WARNING:** This symbol indicates **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)**.

## 4. TERMINOLOGY

AS	<b>Automatic Systems.</b>
TRS	<b>Safety Rotating Turnstile</b>
PMR	<b>Person with Reduced Mobility</b>
CMD	Control
DI	Digital input
DO	Digital output
I/O	Input / Output
O/S	Out of service
HMI	Human-Machine Interface
CRA	Reader direction A
CRB	Reader direction B
NC	Normally closed ( <i>contact</i> )
NO	Normally open ( <i>contact</i> )
Direction A	By convention, this is the direction of flow for which the hinge of the rotating blocker is <b>to the right of the flow.</b>
Direction B	Direction of flow contrary to direction A. Direction B is the direction of flow in which the hinge of the rotating blocker is <b>to the left of the flow.</b>

## 5. INTRODUCTION

TRS PRM security doors are designed for access control for use by people with reduced mobility. They allow the incorporation of control equipment such as: proximity readers, barcode scanners, badge collectors, etc.

Totally autonomous and robust, they are particularly designed for the outdoor security of sensitive, high-traffic sites, such as industrial, sports and commercial complexes, offices, airports, power stations, amusement parks, military bases, car parks, etc.

The TRS PMR door is bi-directional and can be operated manually or motorised.

Its design makes it a perfect match for the TRS37x turnstile range for side-by-side or remote installation. Since it is completely autonomous, the TRS PRM door can be installed at the right or left end of an existing TRS37x turnstile row or inserted in the middle of a row. The operating mode of the equipment does not make it possible to guarantee a single passage after opening the door.

The rotation control mechanism for the leaf is the result of many years' experience in the development and manufacture of access control equipment and the marketing of tens of thousands of units worldwide.

The mechanical and electronic assembly is located in the upper part of the door (in the casing, equipped with an access panel locked by a lock) and is therefore out of reach of users; the connection and floor anchoring require some civil engineering works which are described in this document.

In order to limit its size, the equipment is delivered in several sub-assemblies and the final assembly is done on site.

Many options are available to cover all cases that are likely to be encountered in pedestrian access control: Twilight switch to operate the lighting, heating element, functional pictograms coupled with reader operation, manual release with fire brigade key (only in France), canopies, reader boxes.

The rotating blocker comes in steel or brushed stainless steel (optional) and several RAL colours are available.

As far as floor anchoring is concerned, two options are available: anchoring on a finished floor or delivery of an anchoring system to be embedded in the concrete.

## 5.1. IDENTIFICATION PLATE

The name plate, an example of which is given below, contains technical information regarding the characteristics of the equipment and its date of manufacture.

The serial number of the equipment is useful in the event of a technical support request.

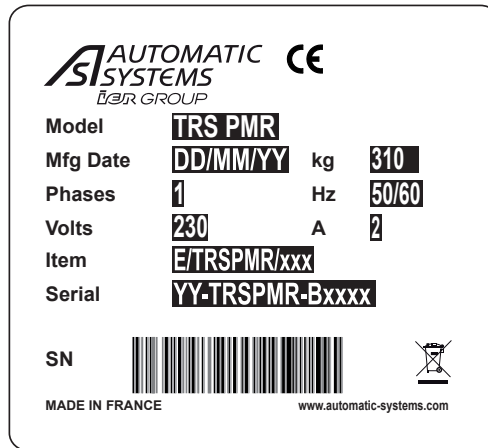


Fig. 1 - Identification plate

## 5.2. CONVENTIONS

The figure below illustrates the positioning of the readers in direction A and direction B. The reader(s), if any, will be mounted onto the vertical upright that does not contain the hinges of the rotating blocker. However, other layouts are possible on request.

**IMPORTANT! ENSURE THE CONSISTENCY OF THE OPERATING MODE IN DIRECTION A AND B IF THE TRS PRM DOOR IS BATTERY-POWERED WITH ONE OR MORE TRS37X.**

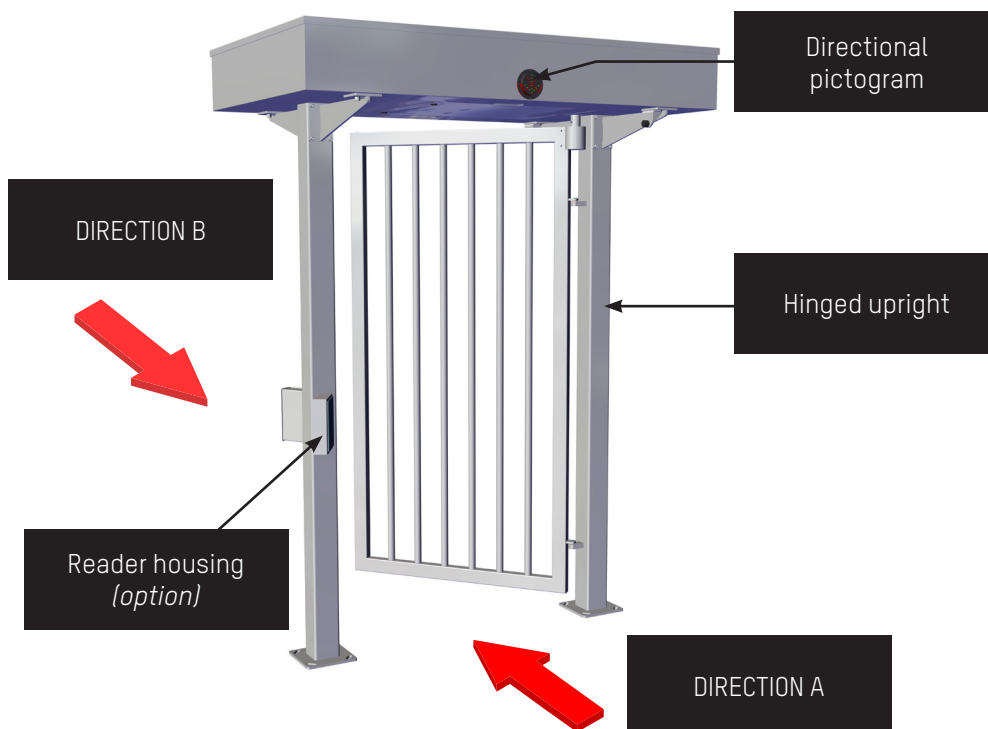


Fig. 2 - Conventions for direction A and direction B

### 5.3. OPERATING MODES

The TRS PRM door can be configured in 3 operating modes, in each direction of flow.

Some modes have an impact on the assembly of the factory kinematic unit and the desired configuration should therefore be specified when ordering the product.

MODE	DESCRIPTION	COMMENT
3	Permanently locked access and free when power is off.	Presence of a lock and an electromagnet.
4	Access controlled electrically and blocked when power is off.	Presence of a lock and an electromagnet.
5	Access controlled electrically and free when power is off.	Presence of a lock and an electromagnet.

So, for example, A5/B5 equipment will be electrically controlled in both directions of flow. This is the ex-factory configuration if nothing else is specified in the customer's order.

Note that no detection system is provided on this type of device. Once the door is open, there is therefore no way to guarantee single passage. The door closes by itself by the action of a spring when it is no longer held in the open position by the user.



## 6. GENERAL DESCRIPTION

### 6.1. EXTERNAL COMPONENTS LOCATION

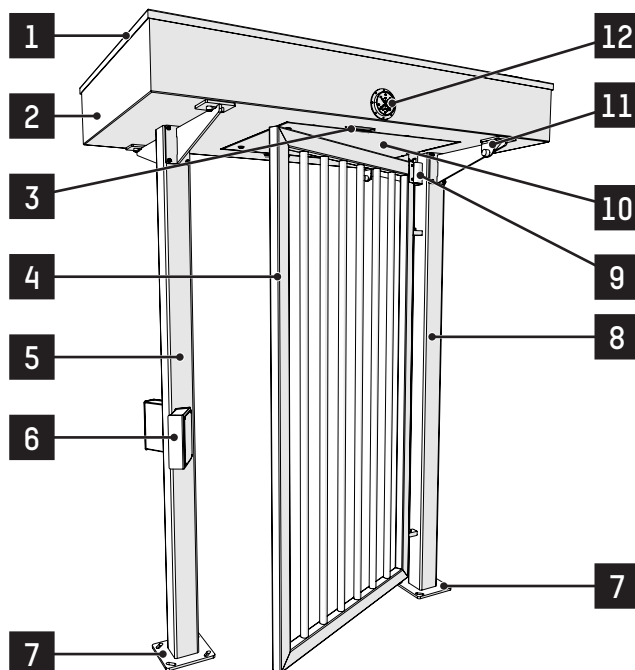


Fig. 3 - External components

REP.	DESIGNATION
1	Roof
2	Housing integrating mechanics, motorisation (*) and control logic
3	LED lightning
4	Door
5	Left post
6	Box for reader integration (*)
7	Floor fixing base
8	Right post
9	Protective cover for the door rotation axle
10	Access door to the mechanism and control logic
11	Position abutment (1 per direction)
12	Directional pictogram

(\*) Available in option.

## 6.2. INTERNAL COMPONENTS LOCATION

### 6.2.1. MANUAL VERSION

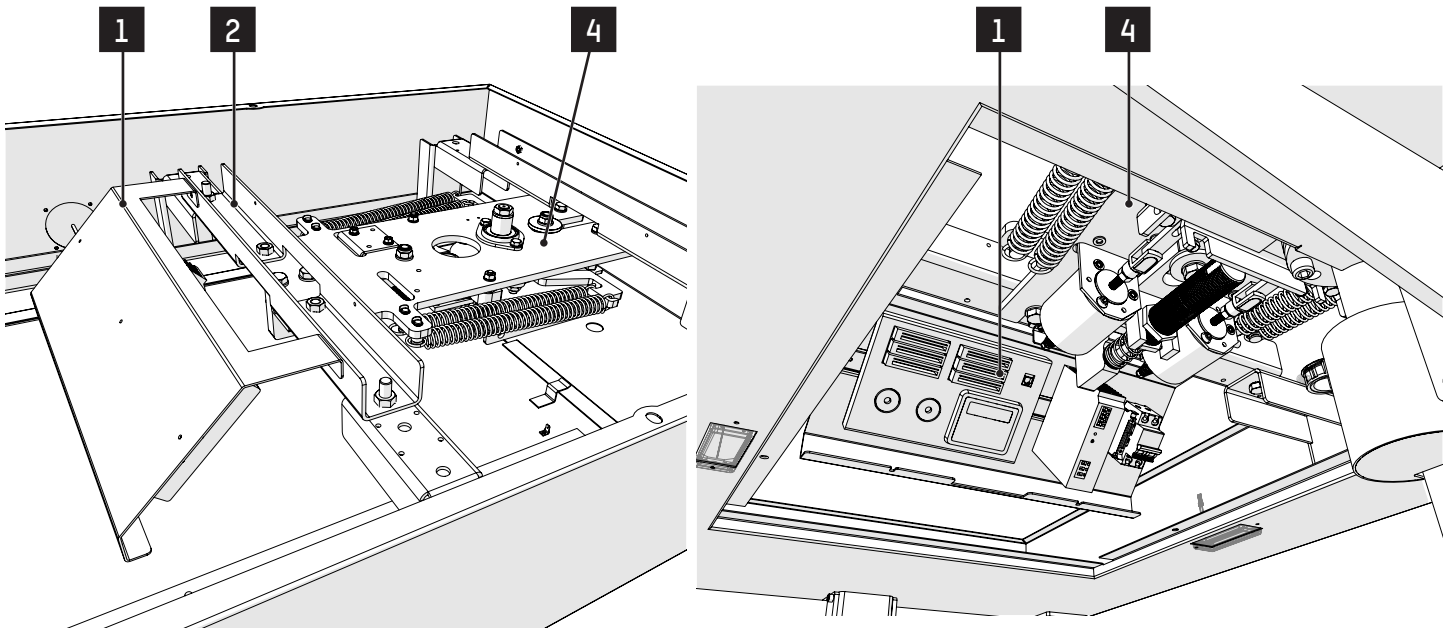


Fig. 4 - Internal components, manual version

### 6.2.2. MOTORISED VERSION

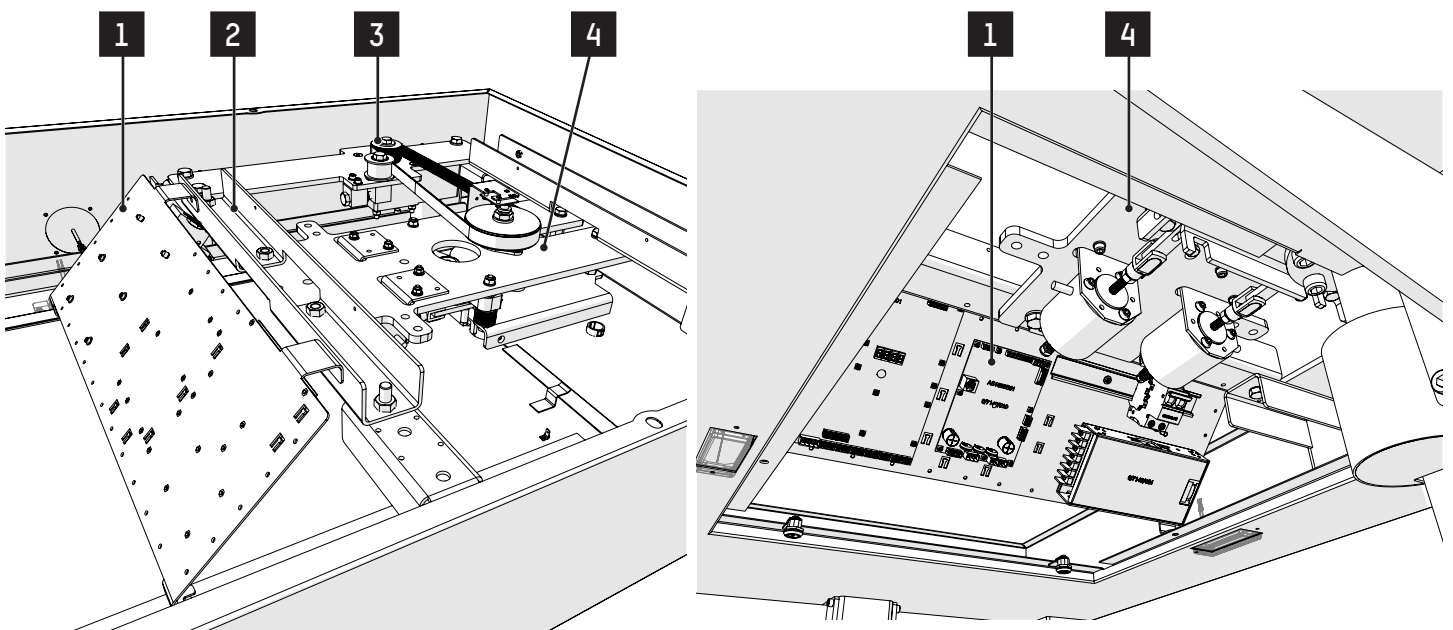


Fig. 5 - Internal components, motorised version

REP.	DESIGNATION
1	Electronic control boards plate
2	Mechanical frame
3	Motorisation kit
4	Mechanism

## 6.3. ELECTRICAL/ELECTRONIC COMPONENTS LOCATION

### 6.3.1. MANUAL VERSION

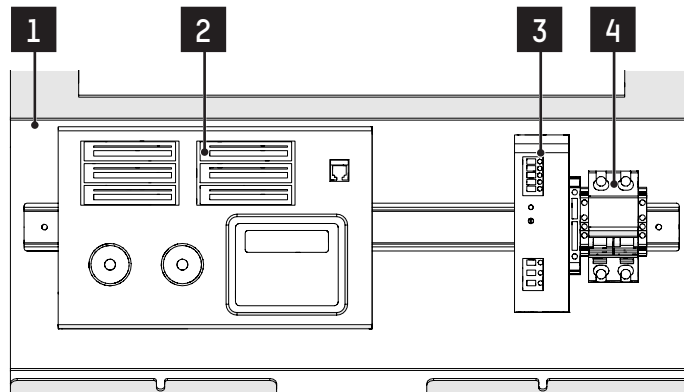


Fig. 6 - Detail of the electronic control logic AS1300

REP.	DESIGNATION
1	Electronic logic board
2	Electronic logic AS1300
3	Power supply 100-240 VAC/24 VDC
4	Magneto-thermal switch 6 A

### 6.3.2. MOTORISED VERSION

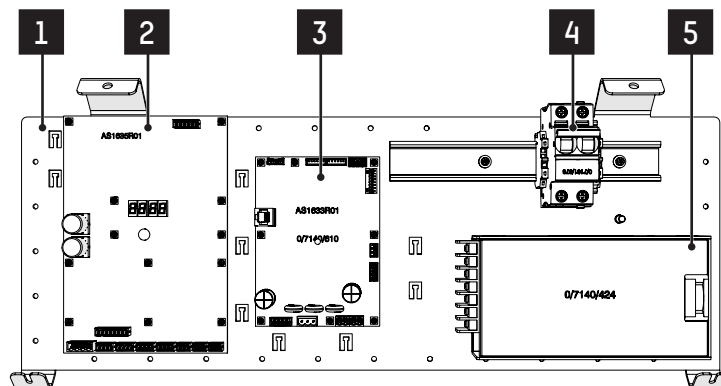


Fig. 7 - Detail of the electronic control logic AS1635

REP.	DESIGNATION
1	Electronic logic board
2	Electronic logic AS1635
3	Motorisation board AS1633
4	Magneto-thermal switch
5	Power supply 100-240 V 24 VDC

6.4. EXTERNAL DIMENSIONS

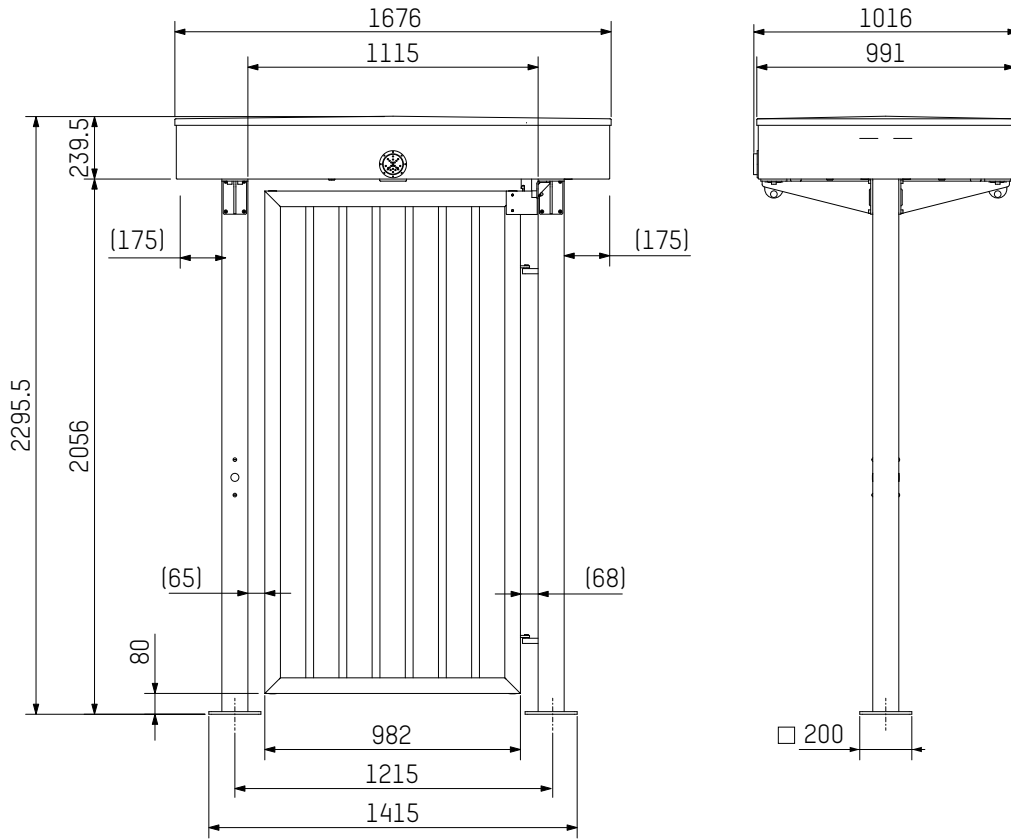


Fig. 8 - External dimensions of the TRS PMR alone

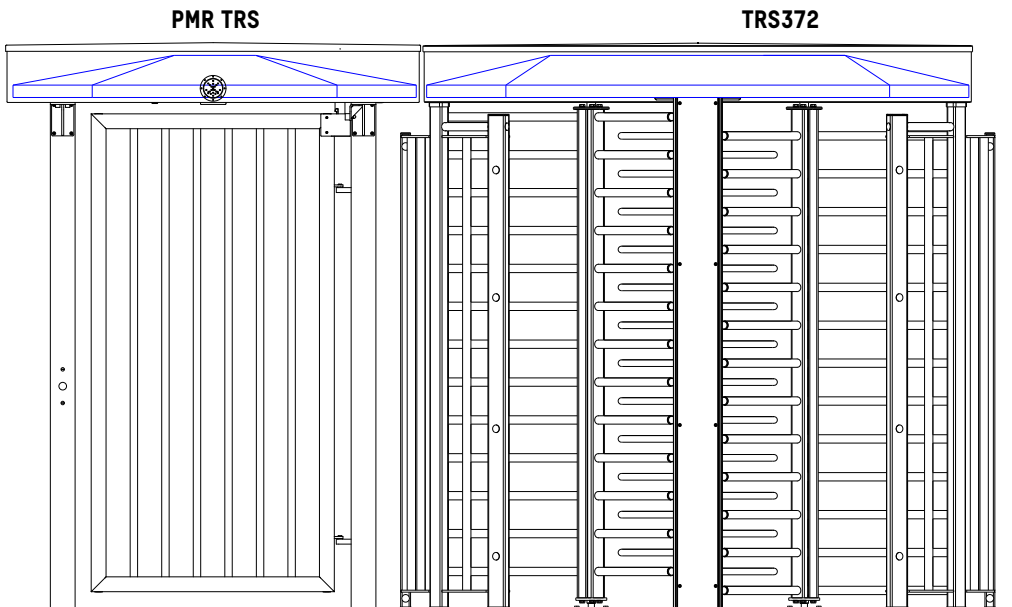


Fig. 9 - TRS PMR to the left of a TRS372 (Viewed in direction B)

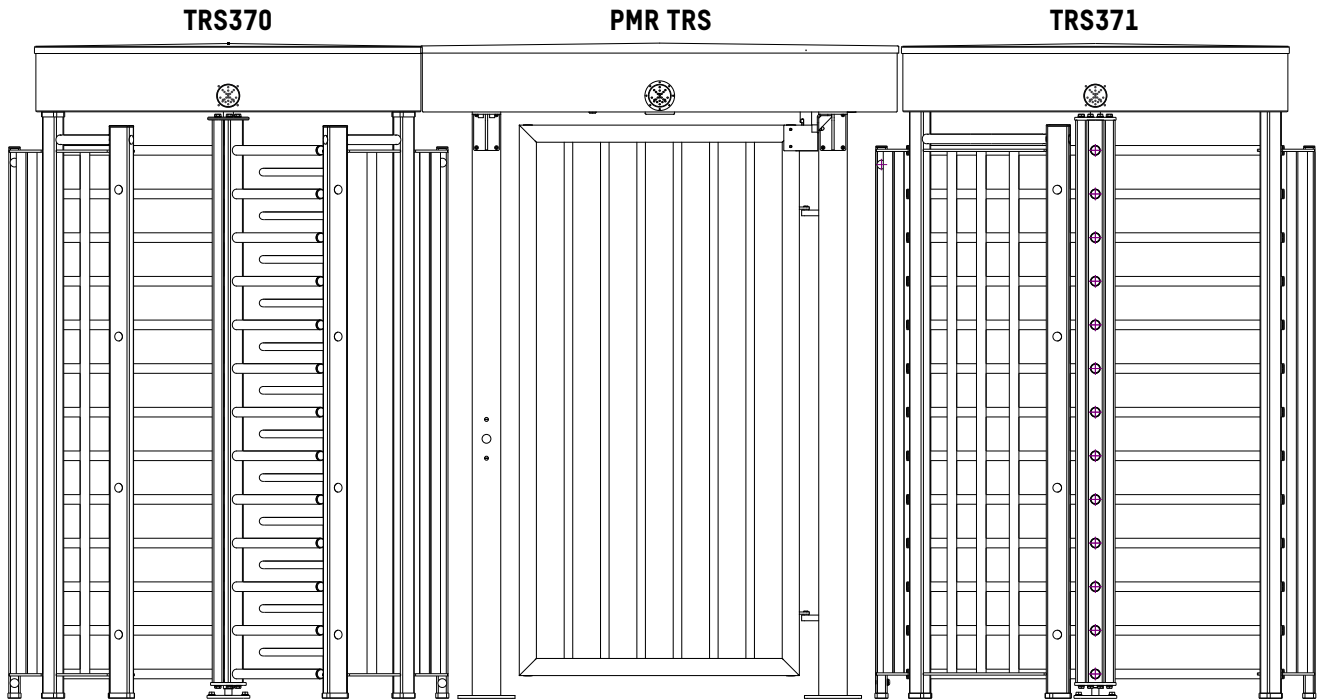


Fig. 10 - TRS PMR placed between two TRS37X turnstiles (seen in direction A)

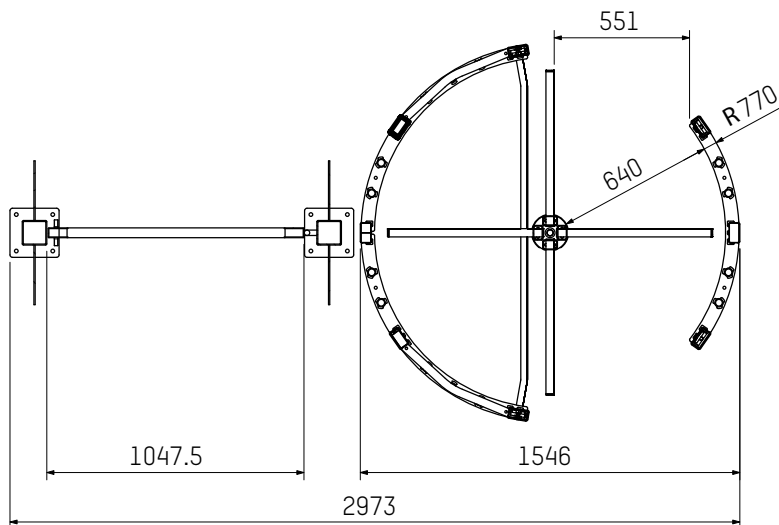


Fig. 11 - Footprint of a TRS PMR + TRS371

As the two devices are completely independent, the remaining space between them may vary from one installation to another. However, a connecting piece is provided between the two anchoring frames.

## 6.5. BEHAVIOUR WITH THE POWER OFF

With the power off, the device can be set to unlocked (allowing evacuation of the site) or locked. These are modes 5 or 4 as described in section 5.2, page 9. This setting depends on the physical orientation of the solenoid coil because a return spring is mounted on its axle. The control of the electro-magnets will therefore be different in each case and a configuration setting is provided in the memory of the control logic. The switch from one operating mode to the other is described in section 12.1, page 40.

## 6.6. VISUAL DISPLAY SYSTEM ON THE ROOF SECTION

In order to correctly guide users to the access possibilities and to obtain access rights, directional pictograms are provided for each direction of flow. The pictogram displays either a red cross or a green arrow.

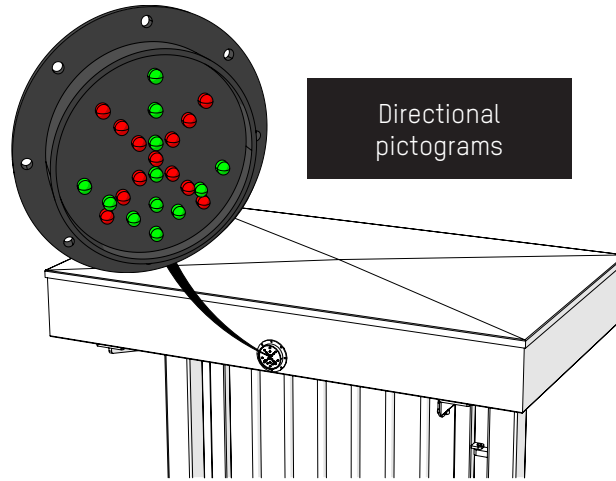


Fig. 12 - Directional pictograms

The following are the colour conventions in the factory configuration according to the status of the door:

DEVICE STATUS IN DIRECTIONAL PICTOGRAM CONFIGURATION	DIRECTIONAL PICTOGRAMS
Power on	Off
Initialisation	Off
Evacuation	Green arrow
Maintenance or out of service	Red cross
Free Mode <i>(per direction of flow)</i>	Green arrow
Prohibited <i>(per direction of flow)</i>	Red cross
Controlled awaiting validation <i>(per direction of flow)</i>	Green arrow
Controlled with authorised passage <i>(per direction of flow)</i>	Green arrow
Controlled without right of passage request <i>(per direction of flow)</i>	Green arrow

Note that the control logic allows the pictograms to be configured in "functional pictogram" mode as described in the table below:

STATUS OF THE DEVICE IN FUNCTIONAL PICTOGRAM CONFIGURATION	FUNCTIONAL PICTOGRAMS
Power on	Off
Initialisation	Off
Evacuation	Green arrow
Maintenance or out of service	Red cross
Free mode if no passage in progress	Green arrow
Free mode if passage in progress in the wrong direction	Red cross
Prohibited <i>(per direction of flow)</i>	Red cross
Controlled awaiting validation <i>(per direction of flow)</i>	Red cross <sup>[1]</sup>
Controlled with authorised passage <i>(per direction of flow)</i>	Green arrow

<sup>[1]</sup> The status of the "Funct. Picto at Rest" setting allows the functional pictogram to be switched off or the red cross to be displayed while waiting for passage to be authorised. For more details, see chapter 8.3, page 32.

## 6.7. HOUSING FOR READER INTEGRATION

A painted steel reader housing, mounted on the upright which is not fitted with hinges, is available as an option. The useful internal dimensions are 160x100x45mm (Height x Width x Depth). The front panel is made of stainless steel 304 and the assembly is sealed tight.

If the opening of the door is controlled in both directions, this type of housing can be mounted in direction A and in direction B. Three holes are provided on each side of the vertical upright to mount the housing and for cable entry. If the TRS PRM is not equipped with housings, plugs are placed to weather seal the assembly.

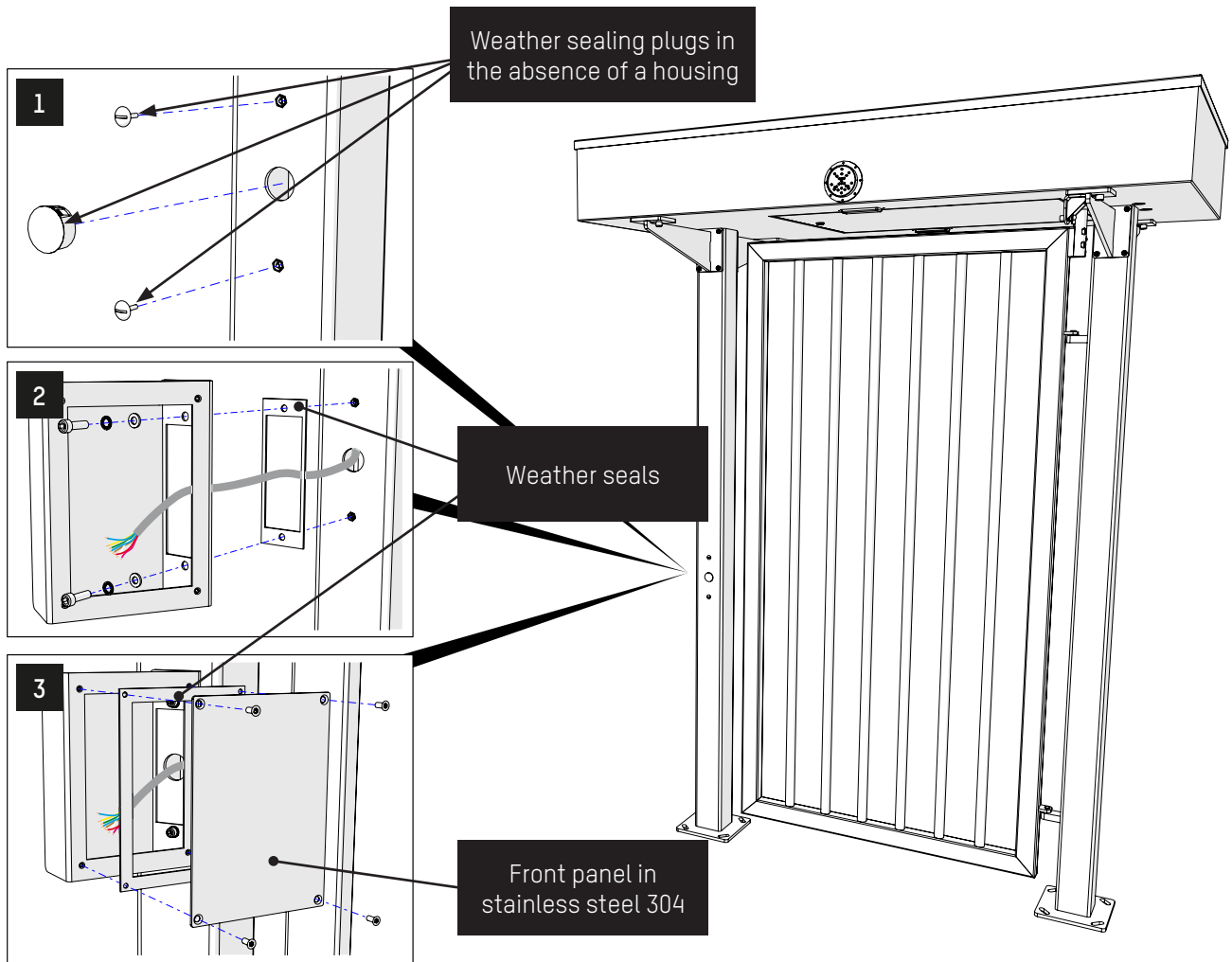


Fig. 13 - Housing to hold the reader

Two housing sizes are available, allowing the integration of most existing proximity readers:

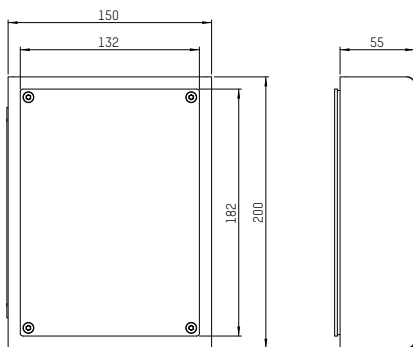


Fig. 14 - Dimensions of small housing

Internal useful dimensions: 160 x 100 x 45 mm (H x L x P).

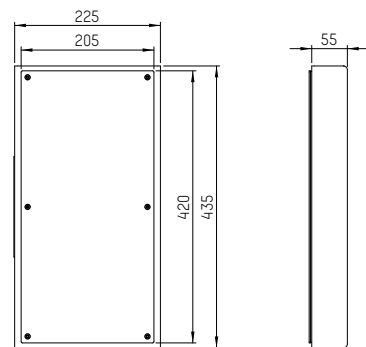


Fig. 15- Dimensions of big housing

Internal useful dimensions: 390 x 175 x 45 mm (H x L x P).

## 7. INSTALLATION

### 7.1. PACKAGING

For obvious reasons of space, the door is delivered disassembled in a few sub-assemblies:

- The right and left posts.
- The roof section with roof and access panel containing the mechanical assembly, the power supply and the control logic.
- The leaf (rotating blocker).
- The connecting brackets between the posts and the top casing.
- The abutments.
- Possible options such as reader housings and/or canopies.
- The drilling template or the anchoring frame (to be specified when ordering).
- Screws and technical documentation.

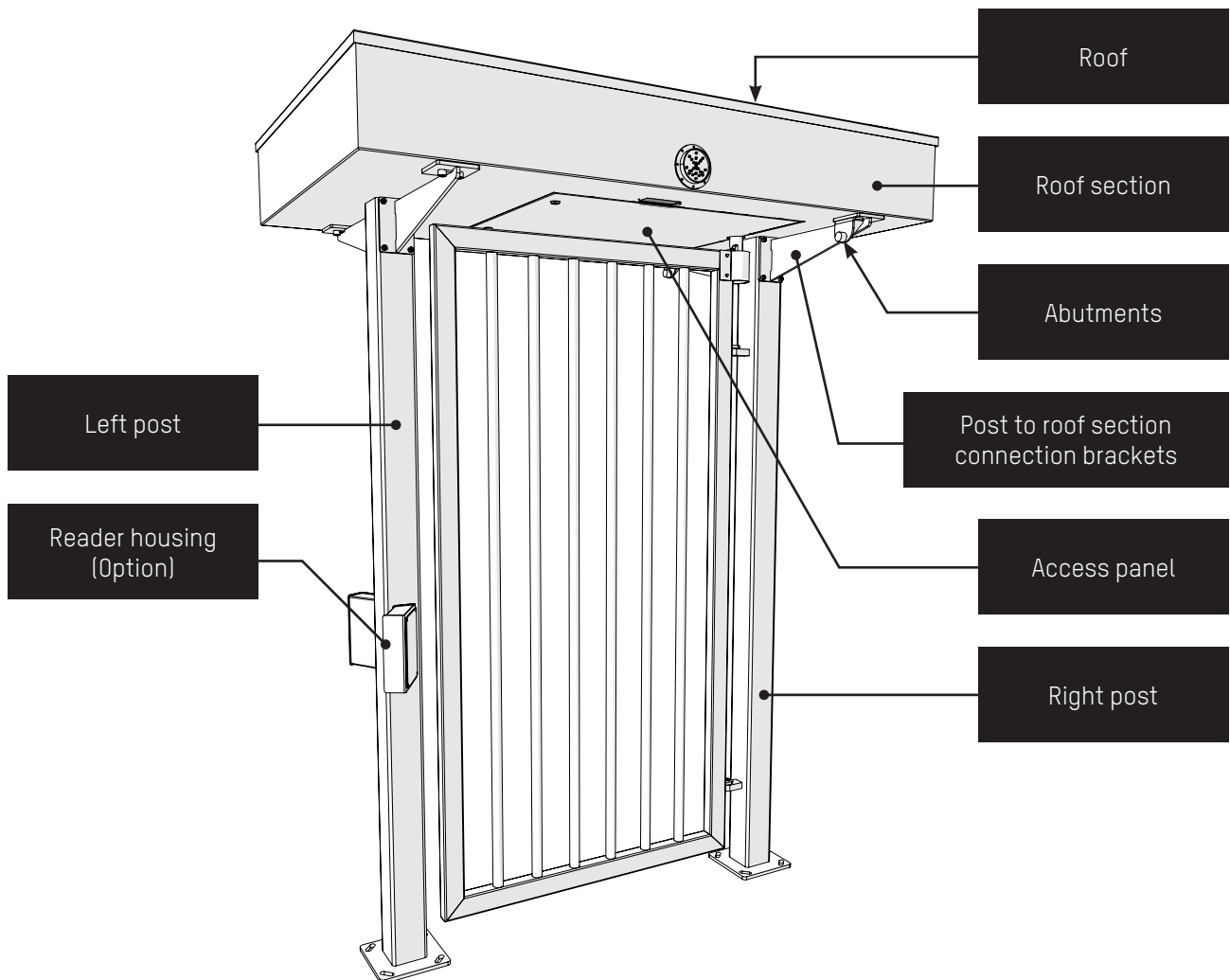


Fig. 16 - Sub-assemblies provided for in the packaging of the TRS PMR



## 7.2. UNPACKING

When the equipment arrives on-site, please check that each element is complete and in good condition.

If for some reason damage has occurred during transport, please check that the transport document is in good condition and, where necessary, report the incident to **Automatic Systems**.

## 7.3. SWITCHING THE EQUIPMENT ON/OFF



**AS SOON AS YOU OPEN THE CASING, SWITCH OFF THE EQUIPMENT BY TURNING OFF THE MAIN CIRCUIT BREAKER LOCATED ON THE POWER SUPPLY BOARD.**

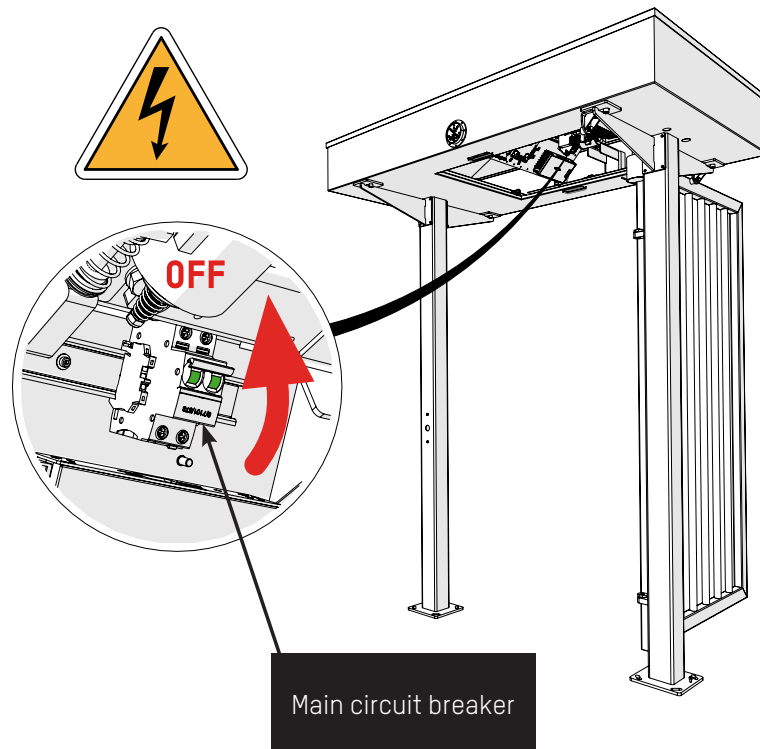


Fig. 17 - Main circuit breaker location

### 7.4. GENERAL DIMENSIONS AND INSTALLATION PLAN

The power and data cables must be routed through the pole that is not equipped with hinge fasteners according to the layout diagram below (Fig. 18, page 20).

We recommend using a 230 V Mono + earth power cable in 3G2.5 mm<sup>2</sup> (Type XFVB recommended) and possibly control cables type TPVF or LiYCY.

In order to avoid interference problems, we also recommend that the power and control cables be run in separate PVC conduits with a diameter of 25 mm.

In order to reach the connectors provided in the roof section, all cables must protrude at least 3 m above the floor.

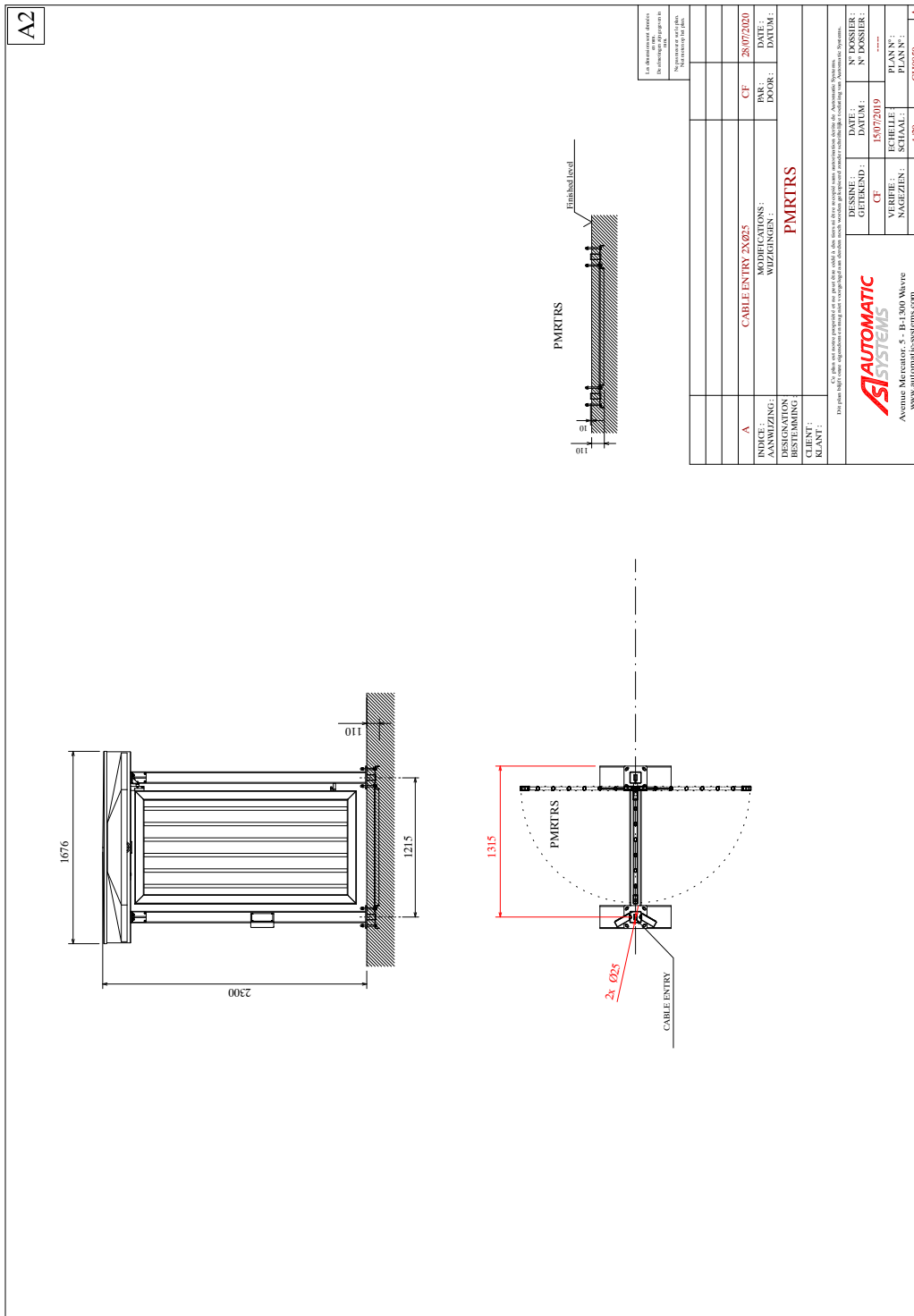


Fig. 18 - Installation plan TRS PRM

## 7.5. DRILLING TEMPLATE (STANDARD) OR ANCHORING FRAME (OPTIONAL)

Two situations may arise on site:

- **Installation of the equipment by drilling into a finished floor:** In this case, the use of a drill template not only allows you to work accurately, but also to combine it with the TRS37X turnstile drill template for installation in a row.
- **Use of an anchoring frame (option),** cast in the concrete. A connection with a turnstile anchoring frame is also possible in this case:

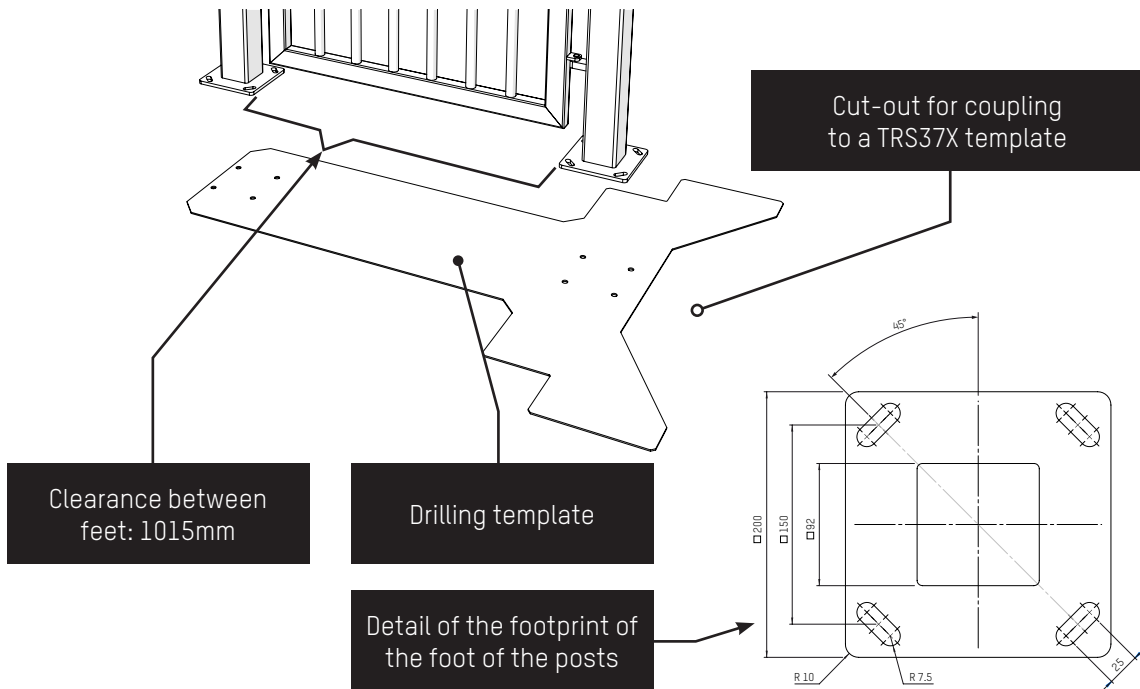


Fig. 19 - Drilling template for finished floor

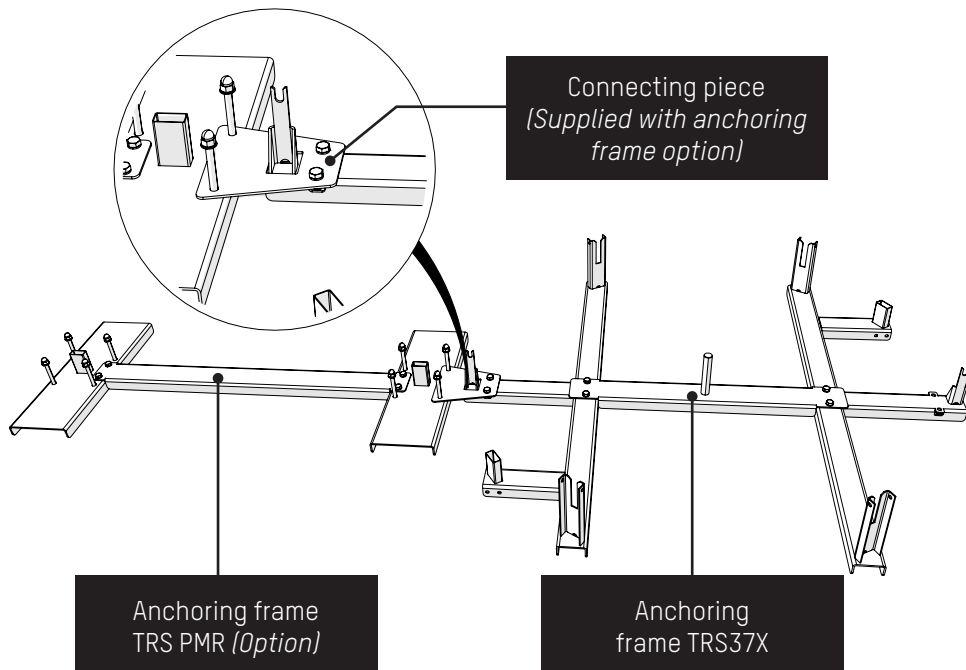


Fig. 20 - Anchoring cross option

## 7.6. RECOMMENDED INSTALLATION TOOLS



- Standard electrical tools.
- Flat spanner set.
- Set of Allen keys.
- Spirit level.
- Hammer drill + concrete drill bits -  $\varnothing$  15 x 100.
- Standard protective equipment: gloves, goggles, hard hat and safety shoes.

## 7.7. PREPARATION OF THE INSTALLATION ON A FINISHED FLOOR

- Allow for ducts for the passage of the power supply cables (not supplied) and any remote controls at the locations defined on the installation plan. Allow for 3m of spare cable above the floor, the connections to the control and command circuit being made in the roof section.
- Make sure that the floor on which the door will rest is flat (smooth), perfectly horizontal, and made of standard concrete or other non-combustible material (strong enough to add stability).
- Following the indications on the installation plan, mark the location of the drilling points with the template; the drilling points for each foot form a 150x150mm square.
- When using anchor bolts (expandable (recommended type: model B15/30, ref. -/3413/000) or chemical) supplied by **Automatic Systems**, drill holes  $\varnothing$  15 mm and 85 mm deep.



**ALTHOUGH THE ANCHOR BOLTS SUPPLIED BY AUTOMATIC SYSTEMS ARE SUITABLE FOR MOST CONFIGURATIONS, IT IS ESSENTIAL TO ADAPT THE MOUNTING METHODS AND PROCEDURE TO THE ENVIRONMENT AND THE NATURE OF THE FLOOR ON WHICH THE EQUIPMENT WILL BE PLACED AND TO HAVE THE WORK VALIDATED BY A COMPETENT ENGINEER.**

- The equipment must be anchored to the floor before making it accessible to users! **Automatic Systems** cannot be held responsible for accidents or damage caused by improper floor anchoring.

## 7.8. PREPARATION OF THE INSTALLATION WITH AN ANCHORING FRAME

- Allow for ducts for the passage of the power supply cables (not supplied) and any remote controls at the locations defined on the installation plan. Allow for 3m of spare cable above the floor, the connections being made in the roof section.
- Prepare the pit or formwork for the concrete slab.
- Assemble the different parts of the anchoring frame by means of the M20 screws and washers provided. For row assembly with TRS37X turnstiles, connect the anchoring frames together.
- Check the centre distance of the anchoring frame.
- Place the anchoring frame in the pit:
  - Check that its orientation is correct according to the direction of flow.
  - Passing the sheaths of the power supply and remote control cables through the uprights.
  - Ensuring that the anchoring rails are sunk in relation to the finished ground level as shown on the installation plan (the painted part of the rails must remain out of the concrete).
- Pour standard concrete and smooth it.
- Allow to dry for about a week.

## 7.9. INSTALLATION AND CONNECTION PROCEDURE



**FOR EACH OF THE FOLLOWING STEPS, IT IS VERY IMPORTANT TO CHECK THE LEVELLING OF THE VARIOUS ELEMENTS OF THE TRS PMR DOOR. IT IS A MATTER OF ITS CORRECT OPERATION AFTERWARDS!**



In order to allow a correct adjustment of the different elements when assembling the product, we advise you not to tighten the fixing screws.

Tighten all fasteners properly after complete assembly has been completed and tested.

### 7.9.1. INSTALLATION OF POSTS AND ACCESSORIES

- Anchor the two vertical posts to the ground, ensuring that they are completely vertical. Do not forget to insert the power and control cables into the right-hand pole (pole without hinge support).
- Fix the 4 brackets connecting the posts - roof section (4x M8 cylinder head screws + flat washers).

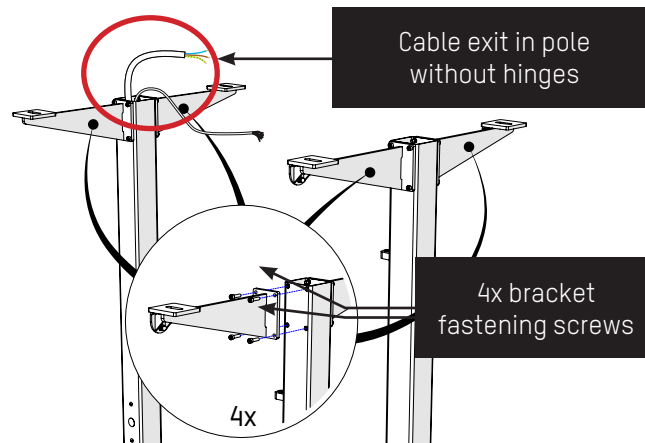


Fig. 21 - Mounting brackets and abutments

### 7.9.2. MOUNTING THE CASING



**DO NOT TIGHTEN THE CASING FIXING SCREWS! THESE WILL BE TIGHTENED ONCE THE DOOR AND SHAFT HAVE BEEN MOUNTED.**

- Using a forklift truck, place the casing without the roof on the 4 brackets. Do not forget to insert the cables into the casing.
- The casing frame is connected to each of the 4 gussets with 2 M12 stainless steel bolts (ISO 7380 M12 x 40 screw + M12 washer DIN 125 + M12 lock nut DIN 985). Two of them are also used to fix the two stops limiting the final opening position of the door in each direction of passage.

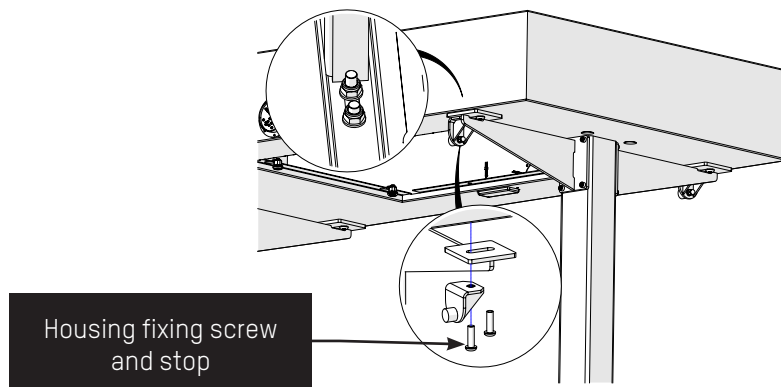


Fig. 22 - Mounting the casing

### 7.9.3. INSTALLATION OF THE ROTATING BLOCKER



The intermediate bearing, fixed to the turret by 6 **M10 bolts**, must be removed so that the door can be inserted into the two hinge brackets on the left-hand side of the post. If the intermediate bearing has been factory-fitted on its axis, it must be removed temporarily.

- If you have not already done so, remove the access panel for the logic and mechanism (lock closure).
- Taking into account the weight of the rotating blocker, check the rigidity of the assembly formed by the roof section and the two posts.
- Insert the blocker into both hinges and manually check whether it rotates 90° in both directions up to the stop point.  
**Check levelling in all directions!**

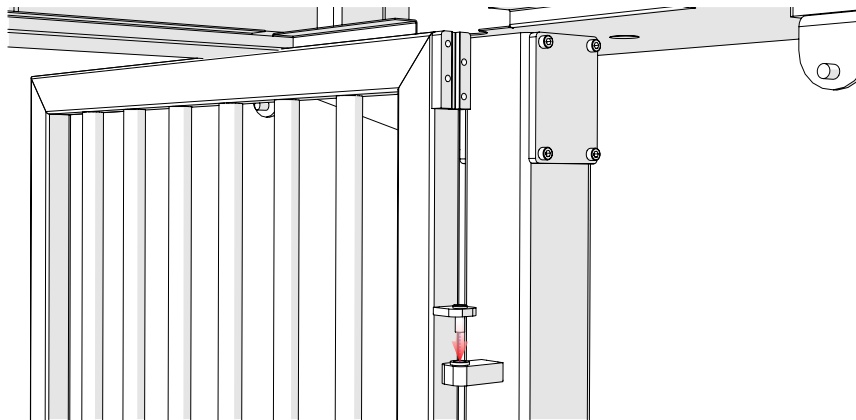


Fig. 23 - Mounting the rotating door

- While keeping the obstacle in the open position, place the "flange" of the intermediate bearing on the axis of the mechanism.



The flange of the intermediate bearing is freely mountable. It can therefore be adjusted from bottom to top so that the axis of the intermediate bearing can be correctly aligned with the door.

- Attach the "axis" part of the intermediate bearing to the obstacle.
- Then fix the intermediate bearing elements together ("flange" and "shaft").

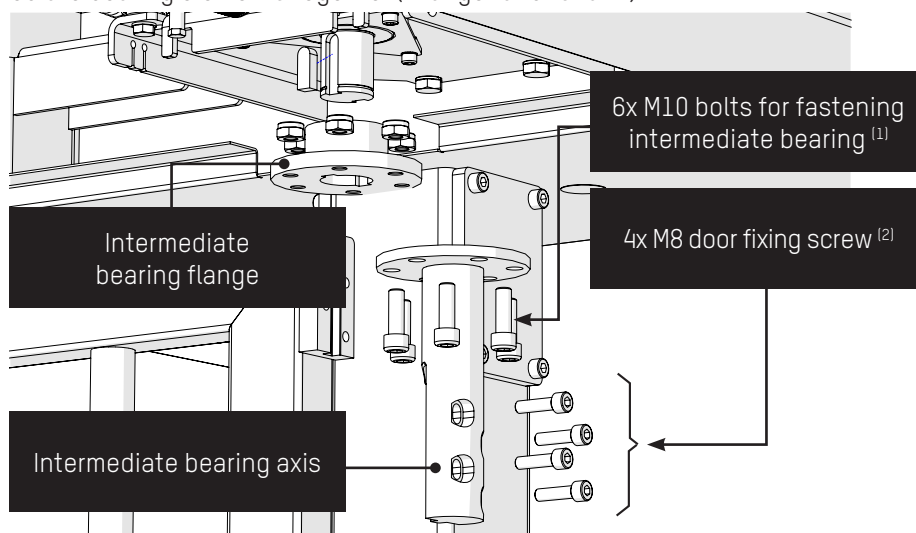


Fig. 24 - Coupling of the door to the axis of the mechanism

- Make a few movements with the door to check that everything is working properly.
- After positioning the housing, lock the shaft and tighten the 6 screws.
- Check the levelling one last time and tighten all fasteners (mechanical - casing - obstacle) correctly.

<sup>(1)</sup> 6 zinc plated screws M10 x 30 12.9 Din 912 zinc flake treatment (GEOMET®) + brake nut Din 985.

<sup>(2)</sup> 4 zinc-plated screws M8 x 30 12.9 Din 912 zinc flake treatment (GEOMET®).

## 7.9.4. MOUNTING OF THE PROTECTIVE COVER

In order to avoid any risk of pinching at the intermediate bearing axis, it is necessary to install the protective cover, as described below:

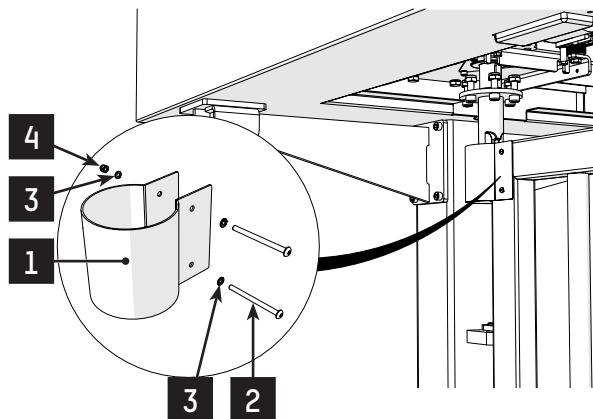


Fig. 25 - Mounting of protective cover

REP.	DESIGNATION
1	Protective cover for lower shaft
2	Stainless steel screw ISO 7380 TCA M4x50
3	Stainless steel washer inox DIN 127 M4
4	Stainless steel cap nut DIN 1587 M4



The installation of the protective cover will be easier if the door is opened at 90° and in contact with abutment.

Fit the protective cover (1) with the closed bottom downwards onto the door frame on the hinge side and slide it upwards so that it covers the intermediate bearing axis. Match the fixing holes of the cover with those on the door frame and fix it with screws (2), washers (3) and cap nuts (4).

## 7.9.5. MOUNTING OF THE ROOF

As with the TRS37x, the roof is fastened with 4 DIN 985 M6 nuts and DIN 921 M6 washers.

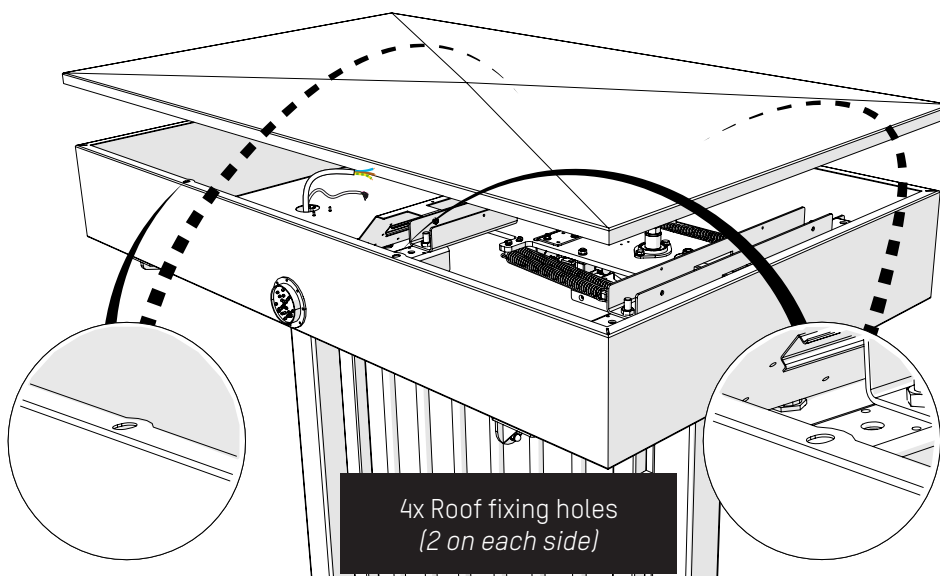


Fig. 26 - Mounting of the roof

**7.9.6. MOUNTING THE CANOPIES (OPTIONAL)**

Drill 4 holes Ø 8mm on each side of the roof section according to the drawing below:

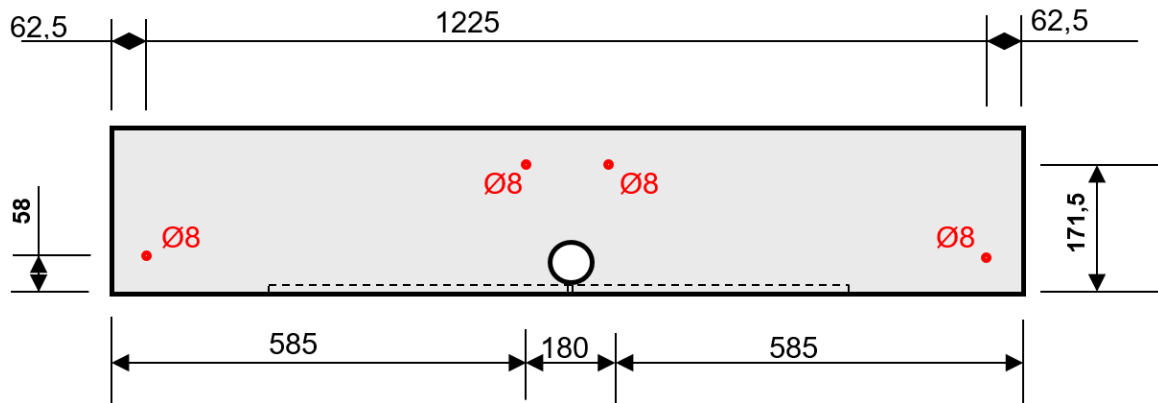
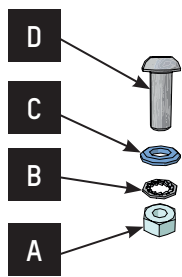


Fig. 27 - Drilling the casing to mount the canopy

In order to avoid the appearance of rust marks, it is recommended that the contact surface between the casing and the canopy be sealed.

- First solution: Put a silicone bead on the side of the canopies in contact with the casing before mounting and then mount the canopies with the screws shown in the view below.
- Second solution: First mount the canopies with the screws shown in the view below and then apply a silicone bead on the connection between the canopy and the casing.



A	Stainless steel nut A4 DIN934 M6	8x
B	Stainless steel fan washer DIN6798 JZ	8x
C	Flat stainless steel washer DIN125 M6	8x
D	Hexagon socket head cap screw M6x16 stainless steel	8x

The screws shown above are suitable for mounting two canopies.

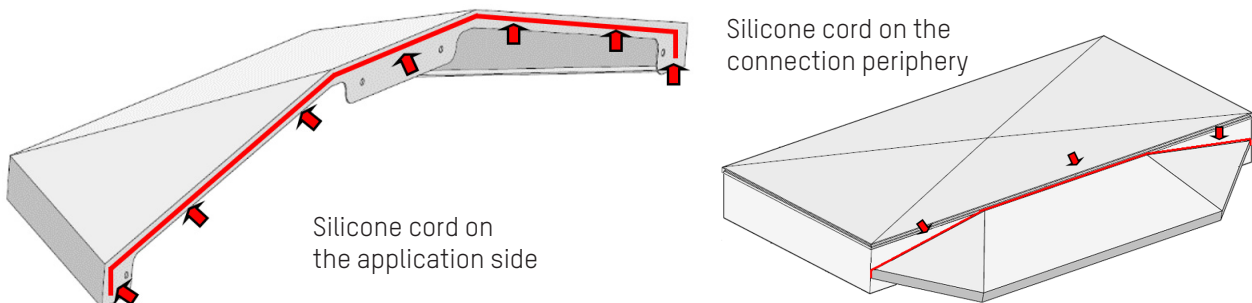


Fig. 28 - Canopy mounting and sealing cord



## 7.9.7. MOUNTING THE READER HOUSING(S)

Mount the reader housing(s) if any. The reader connection cable is inserted into the post using a cable gland.

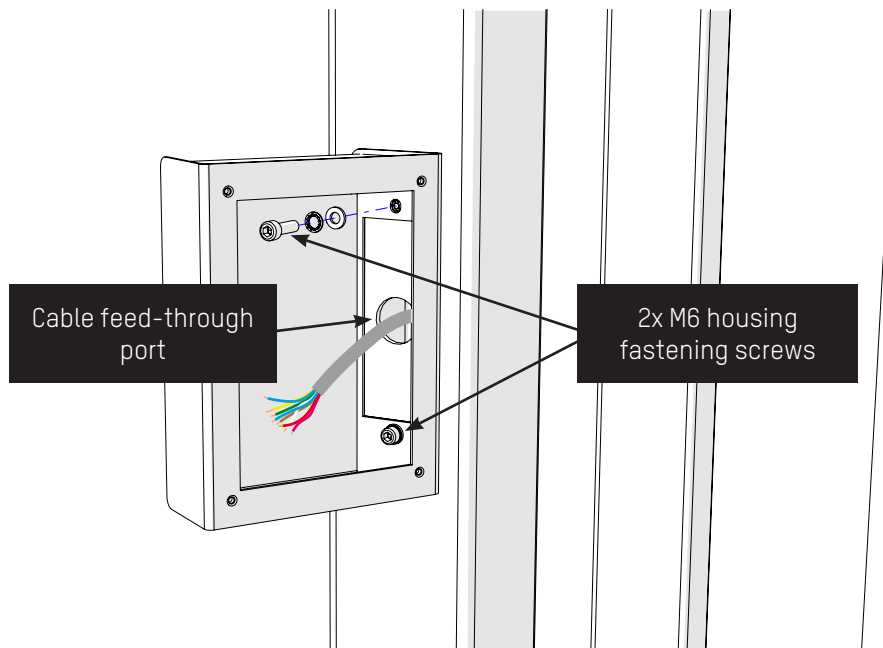


Fig. 29 - Mounting the reader housing



See also chapter "6.7. Housing for reader integration", page 1720.

## 7.10. ELECTRICAL CONNECTIONS

The supply of the power and control cables as defined on the installation plan are the responsibility of the installer.

If the control cables are not of the recommended type, they must be separated from the power supply cables to avoid interference, and must therefore be routed through different posts.

- Connect the 2 phases of the power supply and the earth connection (single-phase 120/230 VAC - 50/60 Hz) to the circuit-breaker; if necessary, cut off the excess cable length. Protect the upstream line by a 16 A circuit breaker.



Fig. 30 - Electrical Connections (TRS PMR manual)

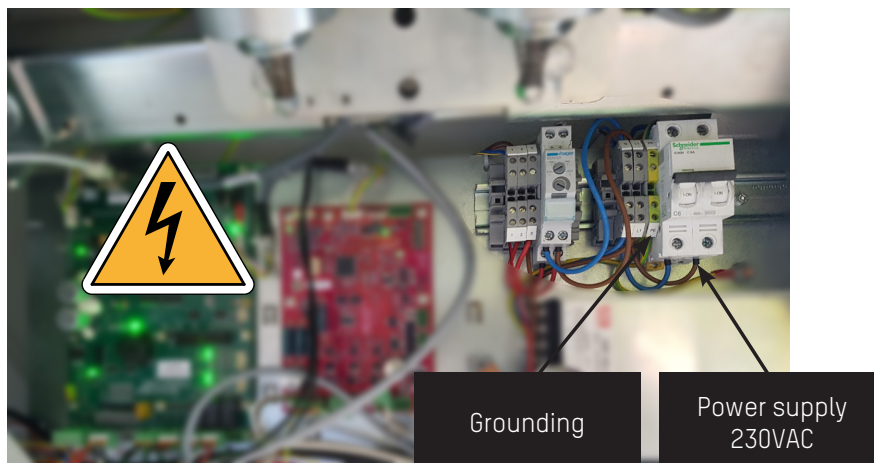


Fig. 31 - Electrical Connections (TRS PMR motorised)

- The electrical connections must be carried out in accordance with the diagram provided with the equipment.
- Make sure that the power supply cables are not live. All the internal connections have been made at the factory (pictograms, operation of locks, position detector, etc.).
- Make sure that the metal parts of the equipment are well connected to the main earth (vertical uprights, casing, etc.).
- Make any other connections according to the specifications of the installation (control cables, reader connection, etc.).
- Switch on the power supply and reposition the control logic access panel.

## 7.11. CALIBRATION (MOTORISED VERSION)

Refer to the technical manual of the AS1635 control logic to connect to the TRS PMR door and start the calibration.

1. Connect to the TRS PMR door via the maintenance interface;
2. Put the door in the closed position;
3. In the maintenance interface, **Individual tests > Calibration**, click on lock ⇒ the locks close\*;
4. Then click on **Calibrate** ⇒ the closed position is then stored\*.

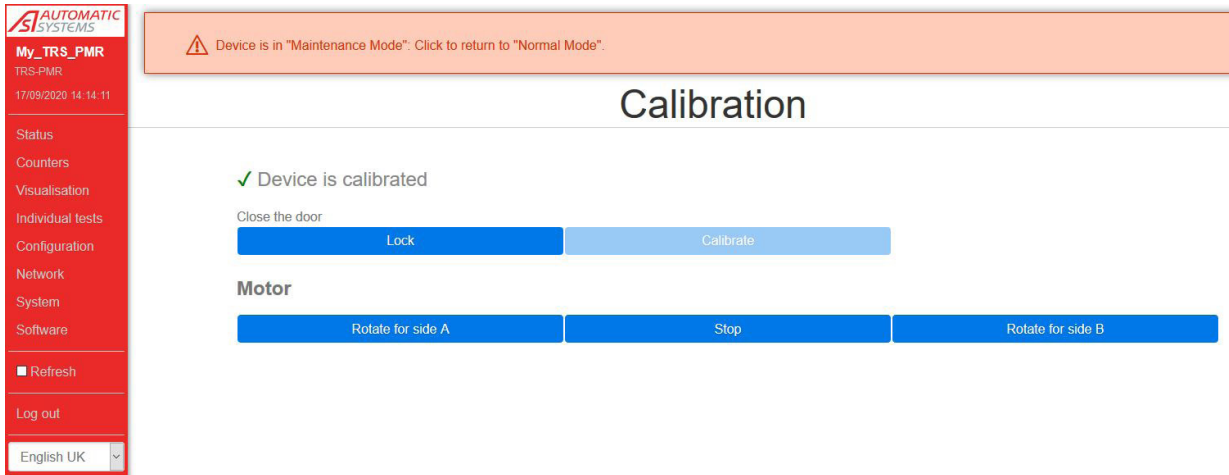


Fig. 32 - HMI > Calibration

Once the calibration has been carried out, it is possible to carry out A & B opening/closing tests via the 'Visualisation' page:

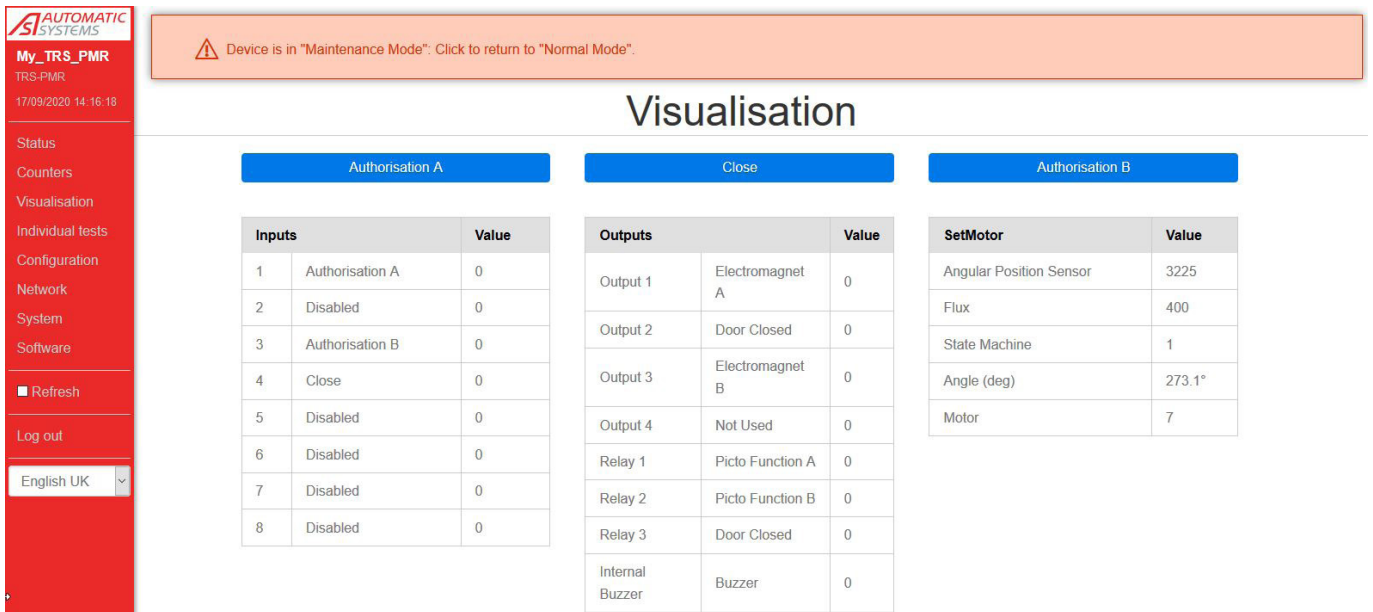


Fig. 33 - HMI > Visualisation

## 8. MECHANISM AND OPERATING MODES

### 8.1. OPERATING PRINCIPLE IN MODES 3 AND 5

In this operating mode, the blocker is unlocked in the event of a power failure, allowing the site to be evacuated.

- At rest, the electromagnet (A) is powered and its connecting rod (B) compresses the spring (C) to push the lock (D) into the roller locking position (F).
- When passage is authorised (by a validator not supplied: badge reader, remote control console, etc.), the power supply to the electro-magnet is cut off by the control logic allowing the return spring (C) to pull the bolt (D) backwards via the connecting rod (B), which unlocks the rotation of the rotating door in one direction. In controlled mode, the second lock prevents rotation in the opposite direction.

#### 8.1.1. FOR MANUAL VERSION

- The user applies a thrust on the rotating blocker, which activates the rotor (E) (clockwise in this example), but the principle is the same in the other direction due to the symmetry of the mechanics.

During this movement:

- The roller located at 90° to the roller (F) pushes on the compensator arm and thus powers the 4 return springs (H) attached to it.
- When there is no more pressure on the rotating blocker, it returns to its rest position following the action of the 4 return springs (H). This closing movement is slowed down by the action of the shock absorber (N) and the needle visible below the shock absorber, which comes into contact with the roller (F) during rotation of the axle.
- The proximity sensor (J) detects that the shock absorber has returned to its rest position (which corresponds to a complete closing of the door); it sends the information to the control logic that powers the electromagnet, which locks the door again.

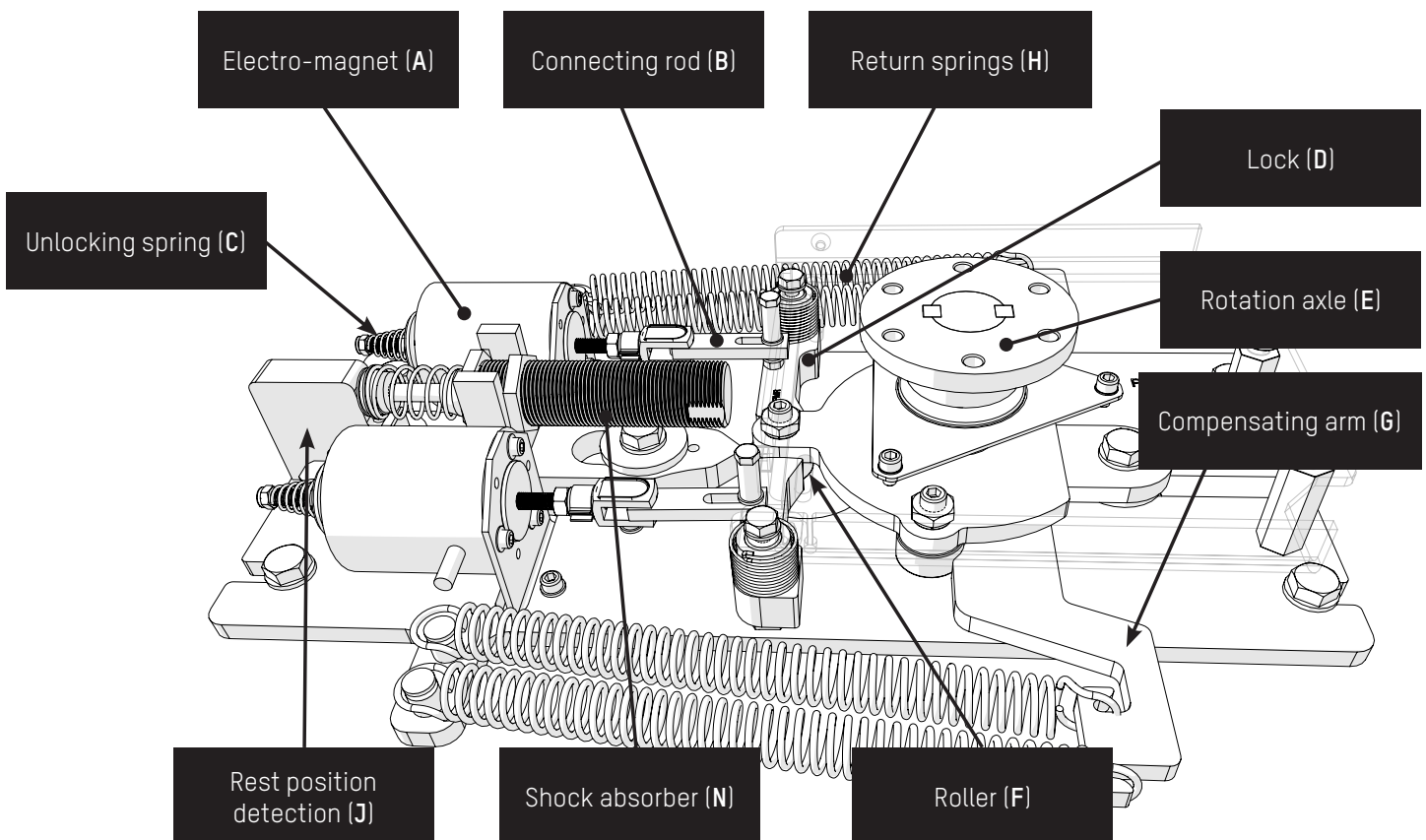


Fig. 34 - Mechanical unit of TRS PMR manual door

## 8.1.2. FOR MOTORISED DOOR

As soon as the first steps described in the chapter 8.1 are completed, the control logic sends the door opening command to the AS1633 motorisation card which operates the motor (G).

The transmission of movement from the motor (G) to the rotation axle (E) is made by means of a pulley/belt system.

The tensioner (H) ensures a good tension on the belt and prevents it from slipping.

The position sensor (I) allows the position of the door to be known at any time, allowing optimum and safe management.

The door closes automatically after the passage delay time has elapsed.

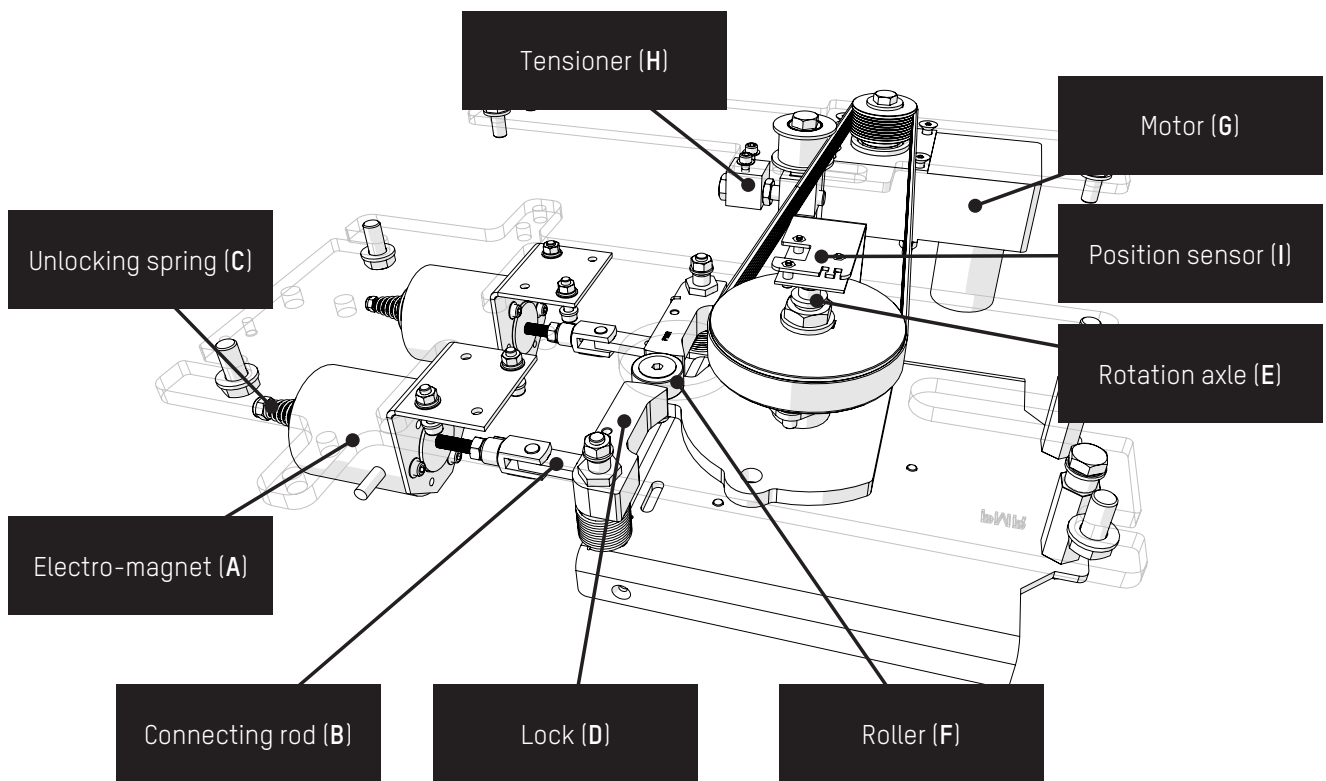


Fig. 35 - Ensemble mécanique de la porte TRS PMR motorisée

## 8.2. OPERATING PRINCIPLE IN MODE 4

In this operating mode, the blocker is locked in the event of a power cut.

- The operating logic of the electro-magnet is therefore inverted (this setting is accessible in the control logic management). With the TRS-PRM powered on and in the rest position, the electro-magnet is not powered. In this configuration, the spring (C) is placed on the side of the connecting rod (B). When switched off, it applies pressure to the bolt, which prevents the axle from rotating.
- In the case of a passage authorisation, the control logic powers the electro-magnet, which unlocks the passage in the corresponding passage direction.
- The other features are identical to the previous mode.

### 8.3. PICTOGRAMS

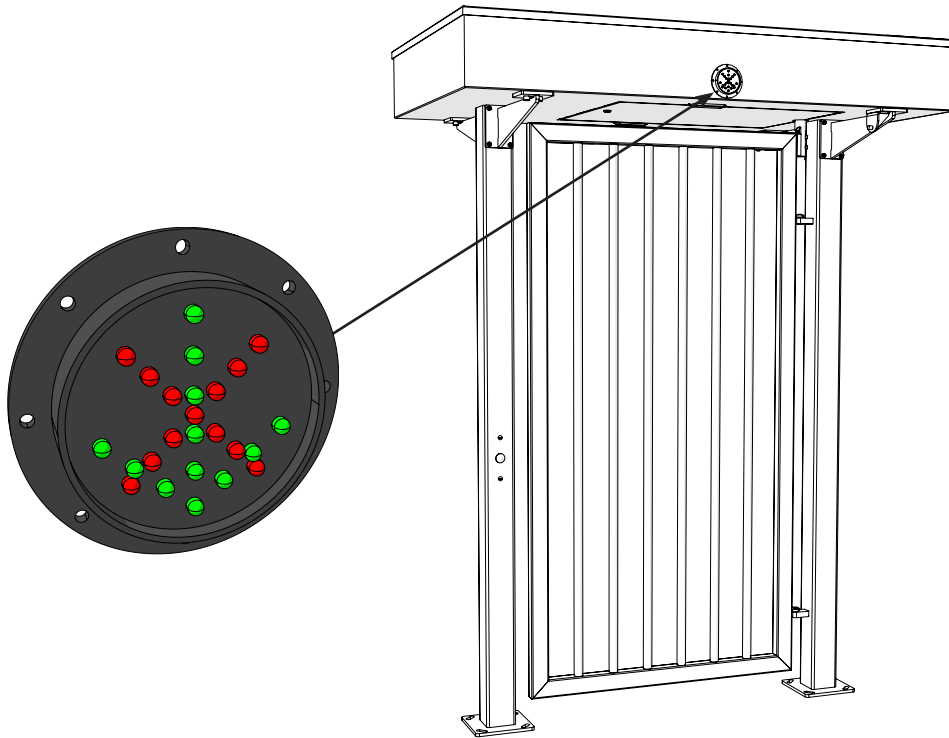


Fig. 36 - Pictograms

The pictograms mounted onto the casing can operate in the 2 modes described below, depending on their connection and the choice of settings in the control logic:

#### 8.3.1. DIRECTIONAL PICTOGRAMS

This is the most common mode of operation: Directional pictograms indicate the status of the lane and thus help to guide approaching users:

- Device Out of Service: in both directions
- Device In Evacuation: in both directions
- Device In Service, in a waiting situation or during passage (for each direction of flow independently):
  - Controlled mode:
  - Free mode:
  - Locked mode:

#### 8.3.2. FUNCTIONAL PICTOGRAMS

The functional pictograms indicate to the operator the functional status of the passage (for each direction): passage permitted or not permitted.

- Locked mode:
- Free mode:
  - If passage is allowed in the opposite direction using a reader or an external contact:
  - Otherwise:
- Controlled mode:
  - At rest: Pictogram off or , depending on the status of the "Funct. Picto At Rest" setting in the "Option" menu.
  - If passage allowed in opposite direction:
  - If passage authorised and no passage in progress in the opposite direction:

## 9. DESCRIPTION OF THE ELECTRONIC ASSEMBLY

### 9.1. MANUAL VERSION - CONTROL BOARD AS1300

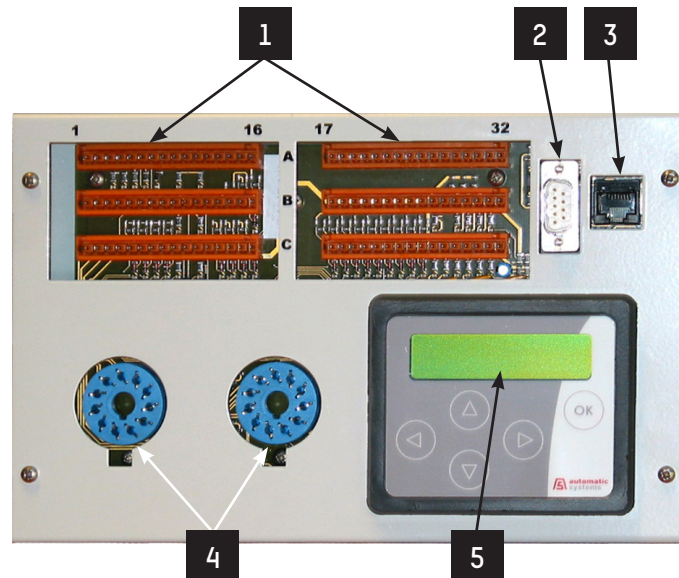


Fig. 37 - AS1300 control logics

REF.	DESIGNATION
1	Input and output terminals <i>(see terminal assignments under "Electrical diagrams")</i>
2	DB9 connector <i>(CAN BUS)</i>
3	RJ45 connector <i>(RS232)</i>
4	Connectors for presence detectors <i>(not used for TRS7X and TRS PRM)</i>
5	Display


The control logic is the interface between the user and the access door that manages all its actions, including management of any possible options (readers, functional pictograms).

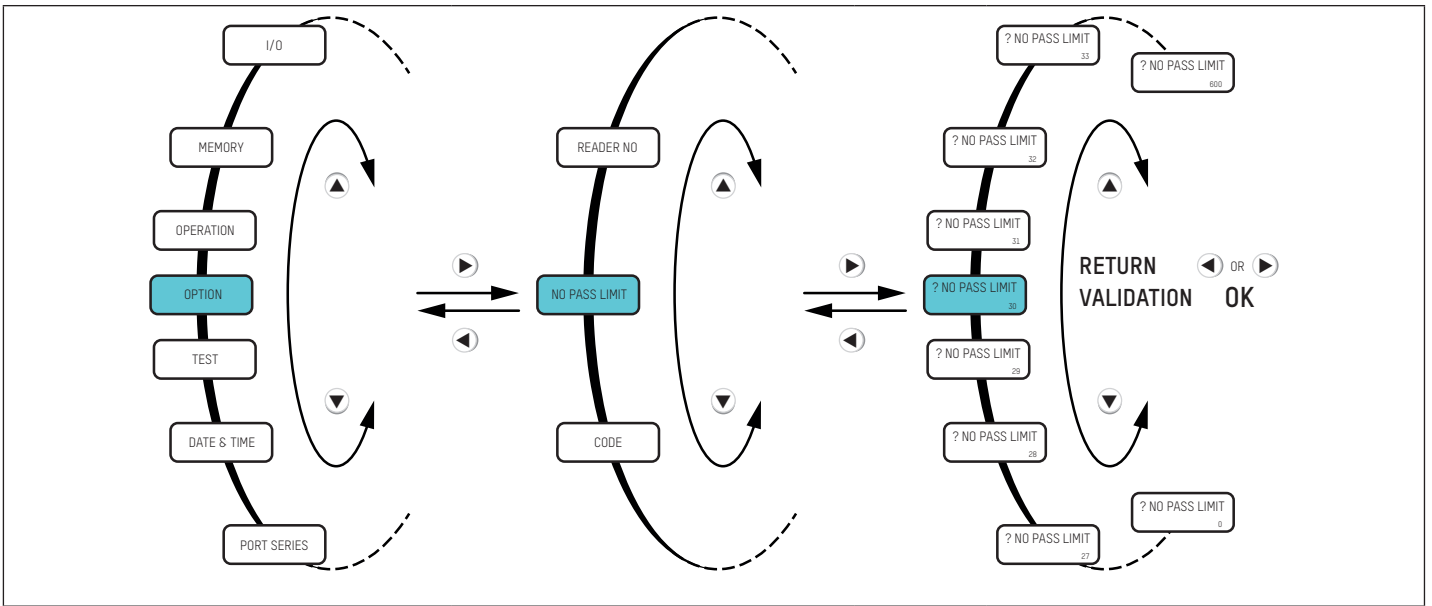
Refer to the electrical diagrams for detailed wiring information.

Navigation in the menus of the display is based on an architecture with pull-down menus with 3 levels:

**GROUPS ⇄ SETTINGS ⇄ VALUES.**

You can switch from one level to another using the keys ◀ ▶ *(press a few seconds to switch from the idle screen to another menu)*, navigate through the levels using the keys ▲ ▼ and confirm a value modification using the **OK** key.

 Only a simplified version of the menu architecture is presented in this document. For a detailed description of all functionalities and setting modifications, please refer to the manual dedicated to the AS1300 logic (available on request or on our Partnerweb).



The menus are displayed on the first line, in upper case starting from the first character of the LCD.

Press for a few seconds on ▲ or ▼ to exit the PRDSTD (PRoDuit STanDard, standard product) screen and access the other menus.

The settings are displayed in lower case with the first letter of each word on the first line in upper case and with a one-character indent. At the end of the first line, the setting's unit value (if it has one) is displayed.

The question mark (?) that precedes a setting indicates that the latter is ready for modification.

The setting's current value is displayed on the second line. In the above example, the "no passage" time can vary from 0 to 600 (unit of 100msec).

The asterisk (\*) below a setting indicates the default value (factory setting).

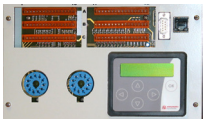
The modification is confirmed by pressing the **OK** key.

**SAVE THE MODIFICATIONS TO AVOID LOSING THEM DURING A POWER FAILURE**  
**("MEMORY" ▶ "SAVE" ▶ "MEM1" OR "MEM2")**

The logic has already been configured in the workshop according to the options selected. In principle, it is therefore not necessary to intervene in the various menus.



## 9.2. ASSIGNMENT OF THE CONTROL LOGIC TERMINALS



The table below gives the **factory settings** for the inputs/outputs.

The outputs can be set differently via the **OUTPUTS FUNCTION** group.

The inputs/outputs of the options are highlighted.

	C		B		A	
1	BCL1+	Not used	BLC3+	Not used	24V	PWR
2	BCL1-	Not used	BCL3-	Not used	0V	PWR
3	BLC2+	Not used	BCL4+	Not used	PE	
4	BCL2-	Not used	BCL4-	Not used	(PE)	
5	DI1	Request Passage A	24V		GND	
6	DI2	Request Passage B	24V		GND	
7	DI3	Position sensor	24V		GND	
8	DI4	Not used	24V		GND	
9	REL1+	Direct. picto. A green	REL3+	Direct. picto. B green	REL5+	Contact Pass A
10	REL1-		REL3-		REL5-	
11	REL2+	Direct. picto. A Red	REL4+	Direct. picto. B Red	REL6+	Contact Pass B
12	REL2-		REL4-		REL6-	
13	DI5	Alarm (NO) <i>(= Out of order)</i>	24V		GND	
14	DI6		24V		GND	
15	DI7		24V		GND	
16	DI8		DI18		GND	
17	DI9		24V		GND	
18	DI10	Evacuation (NF)	24V		GND	
19	DI11		24V		GND	
20	DI12	Console A1	24V		GND	
21	DI13	Console A2	24V		GND	
22	DI14	Console B1	24V		GND	
23	DI15	Console B2	24V		GND	
24	DI16	Console key (NO)	24V		GND	
25	DI17	Connected to 24V	24V		GND	
26	D07	Funct. Picto A Green	D08	Funct. Picto A Red	GND	
27	D09	Non self-regulated heating resistance	24V		GND	
28	D010	Electro A	D013	LED lighting	GND	
29	D011	Electro B	D014	Funct. Picto B Green	GND	
30	D012	LED lighting	D015	Funct. Picto B Red	GND	
31	A01	Used (=AI2) (*)	A02	Used	GND	
32	AI1		AI2	Twilight sensor	GND	

### 9.3. MOTORISED VERSION - AS1635 CONTROL BOARD

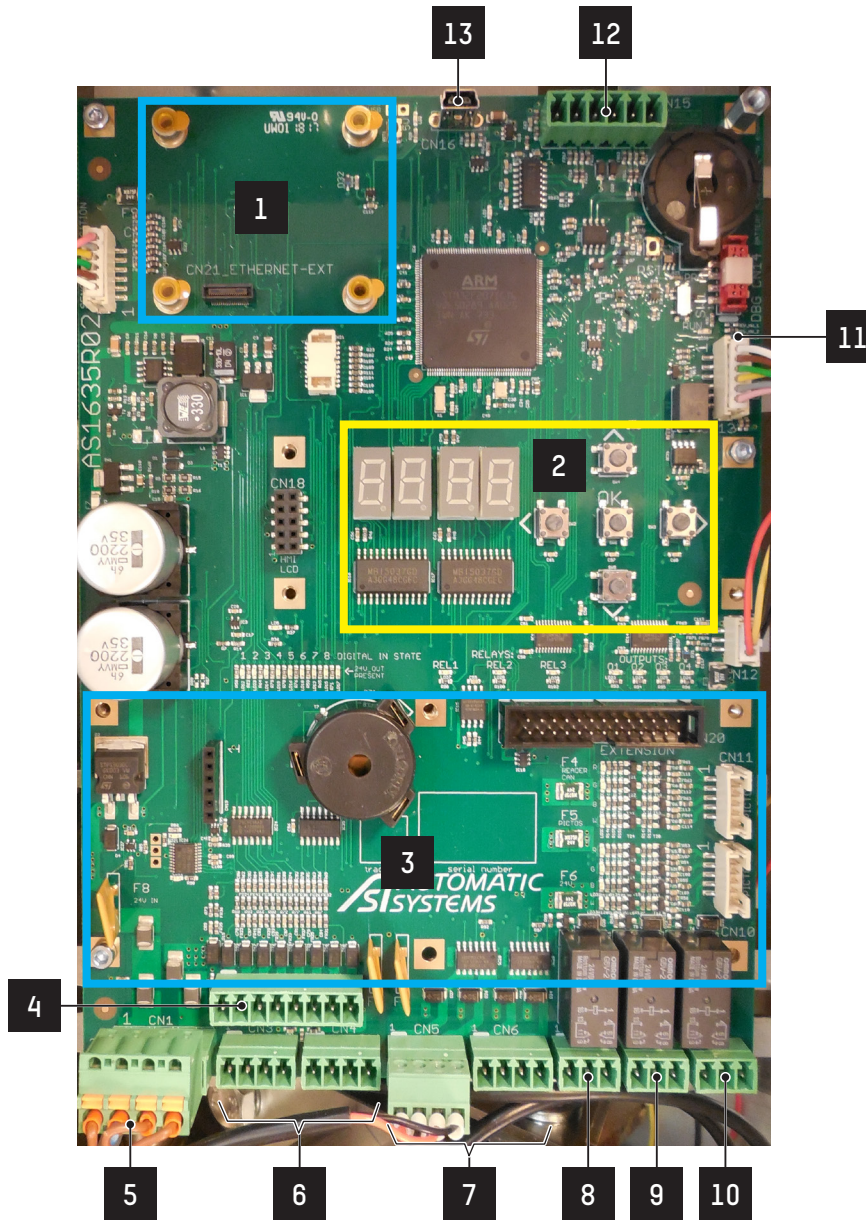


Fig. 38 - AS1635 control board

REP.	DESIGNATION
1	AS1622 Ethernet card slot (optional).
2	Integrated Human Machine Interface (HMI).
3	Expansion card slot (optional).
4	Digital inputs connector.
5	Power supply connector.
6	Sensor power supply connector.
7	Digital outputs connector.

REP.	DESIGNATION
8	Relay 1 connector
9	Relay 2 connector
10	Relay 3 connector
11	CAN bus ( to motor board)
12	RS232/485 connector
13	Mini USB connector



For further information, please refer to the AS1635 logic manual.

## 9.4. MOTORISED VERSION - AS1633 MOTOR BOARD

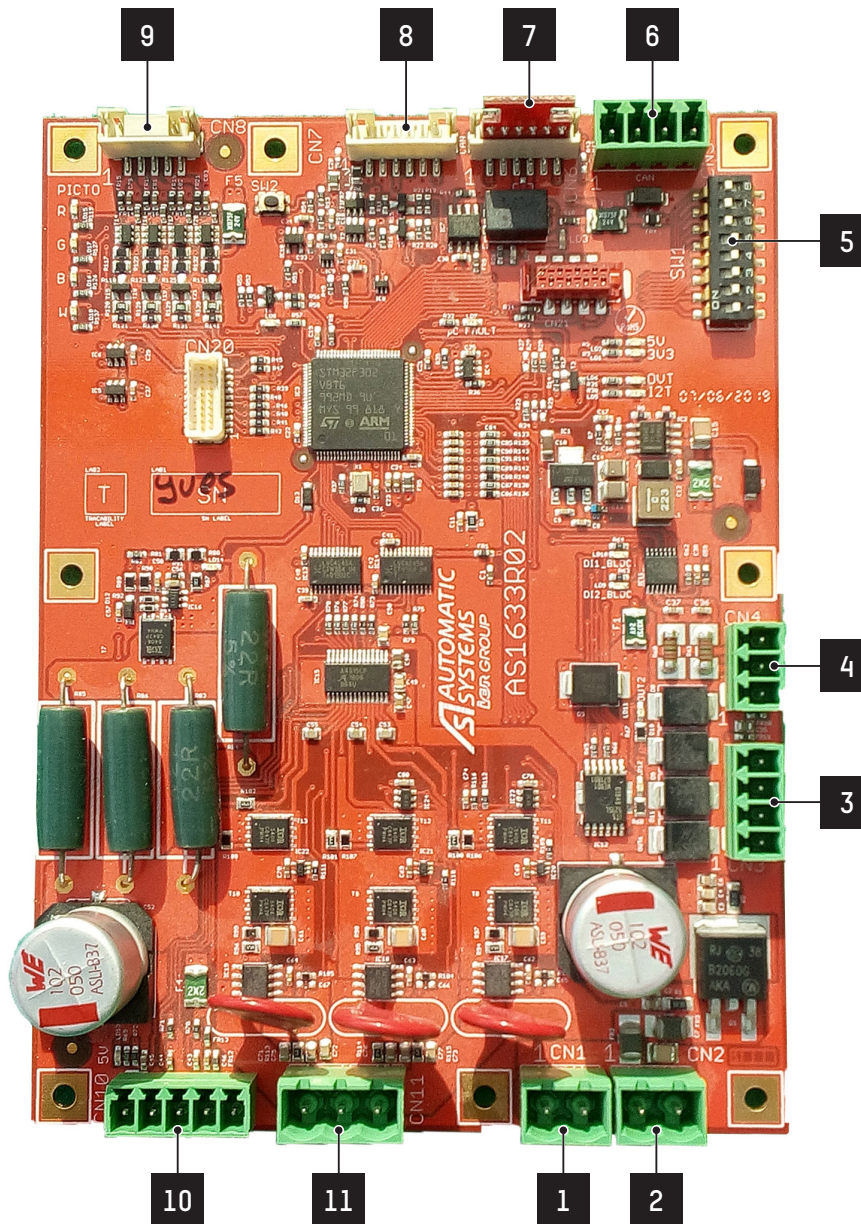


Fig. 39 - AS1633 motor board

REP.	DESIGNATION
1	Motor - power supply connector
2	Motor - encoder connector
3	Digital inputs connector
4	Digital outputs connector
5	DIP switch for CAN address settings.
6	CAN connector


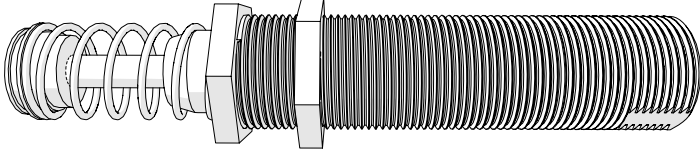
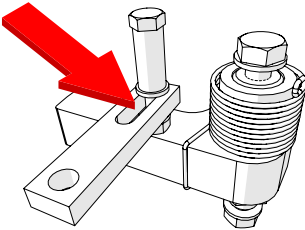
REP.	DESIGNATION
7	CAN connector
8	CAN connector
9	RGBW pictogram connector
10	Hall-effect sensor connector
11	Motor exit connector



**WARNING:**

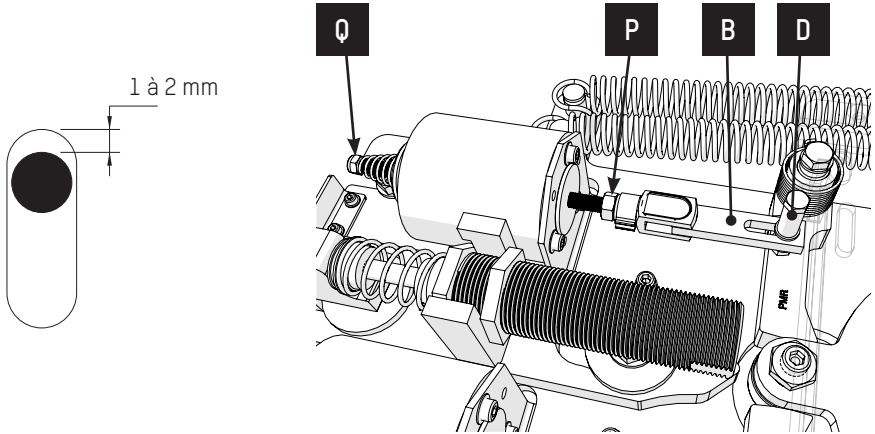
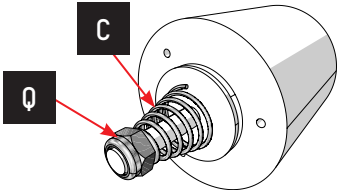
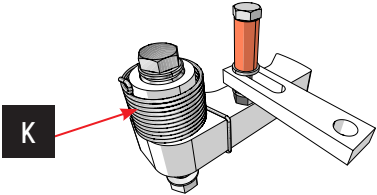
**INVERTING THE MOTOR AND ENCODER POWER SUPPLY CONNECTORS, CN1 & CN2, WILL LEAD TO THE DESTRUCTION OF THE MOTOR BOARD! CHECK THE CONNECTIONS AFTER ANY INTERVENTION ON THIS CARD!**

**10. MAINTENANCE**

<p><b>Every month</b> (See note opposite)</p>	<p>Check the stability of the door (<i>floor anchoring</i>).</p> <p>If motorised: check the belt tension.</p> <p>Clean the roof section, vertical uprights and rotating blocker with water and a non-aggressive detergent (<i>e.g. non-chlorinated</i>).</p> <p>If the AISI 304 stainless steel option is chosen for the rotating blocker, clean with a product for stainless steel. <b>Automatic Systems</b> can supply a product approved under reference 0/6031/000.</p> <p>Repair any splinter, blow or scratch on the painted surfaces of the equipment.</p> <div data-bbox="395 645 1513 748" style="border: 1px solid black; padding: 5px;"> <p> The frequency of maintenance must be adapted to conditions of use of the door, especially when placed in an oxidizing atmosphere: at the entrance to a swimming pool (heated and chlorinated atmosphere), by the sea, in an industrial environment, etc.</p> </div>
<p><b>1,000,000 cycles</b></p>	<p>Replace the shock absorber (Ref. <b>N</b>, Fig. 34, page 30), the effect of which diminishes with wear.</p> <div data-bbox="596 824 1299 972" style="text-align: center;">  </div> <p>If motorised: check the belt tension.</p> <p>Check that all the bolts of the entire mechanism and the bearing structure are screwed tight.</p> <p>Spray a silicone spray (ref. 0/7508/284) on the locking bolts.</p> <div data-bbox="798 1196 1104 1424" style="text-align: center;">  </div>
<p><b>5 years</b></p>	<p>Replace the battery of the AS1300 control logic: 3 V/48 mA lithium battery. <b>Automatic Systems</b> can provide an approved product under reference 0/7111/010.</p> <p>To access the battery, remove the access panel inside the casing and remove the cover from the front panel of the logic by unscrewing its 4 screws.</p>



**11. MALFUNCTIONS AND REMEDIES**

<p>Door out of service</p>	<p>Check the 230VAC power supply as well as the 24VDC voltage. See the messages on the control logic display (group <b>OPERATION</b>, setting <b>STATUS</b>).</p>
<p>Friction is perceptible in the rotation movements of the blocker.</p>	<p>The bolts and/or the rollers may be seized up, especially in corrosive conditions (e.g. in a marine environment). Spray some silicon on the parts to be unseized.</p>
<p>The rotating blocker no longer unlocks.</p>	<p>Leave a clearance between the link (B) of the electro-magnet and the rod (D) of the lock (adjusting the length of the connecting rod by means of nuts P and Q) so as to cause an impact on the lock when the electro-magnet is operated.</p>  <p>The electro-magnets may be glued too tightly. Slightly loosen the nut (Q) to release the spring (C).</p>  <p>The spring (C) does not have the energy necessary to pull the lock: compress it by tightening the nut (Q) or replace it.</p>
<p>The blocker no longer locks.</p>	<p>The return spring (K) of the lock is released. Tighten it again by turning it a few times.</p> 
<p>The door does not open completely</p>	<p>Check the belt tension and carry out a new calibration.</p>

## 12. REPLACING COMPONENTS

The list of spare parts, with their article codes, is available on our Partnerweb site or from our distributors.

### 12.1. REPLACING OR INVERTING THE DIRECTION OF AN ELECTRO-MAGNET

The electro-magnet is mounted onto an L-shaped support using 3 screws.

Unless otherwise specified, the door is factory set to operating mode 5 (unlocked in the event of a power failure (see chapter 8, page 30)).

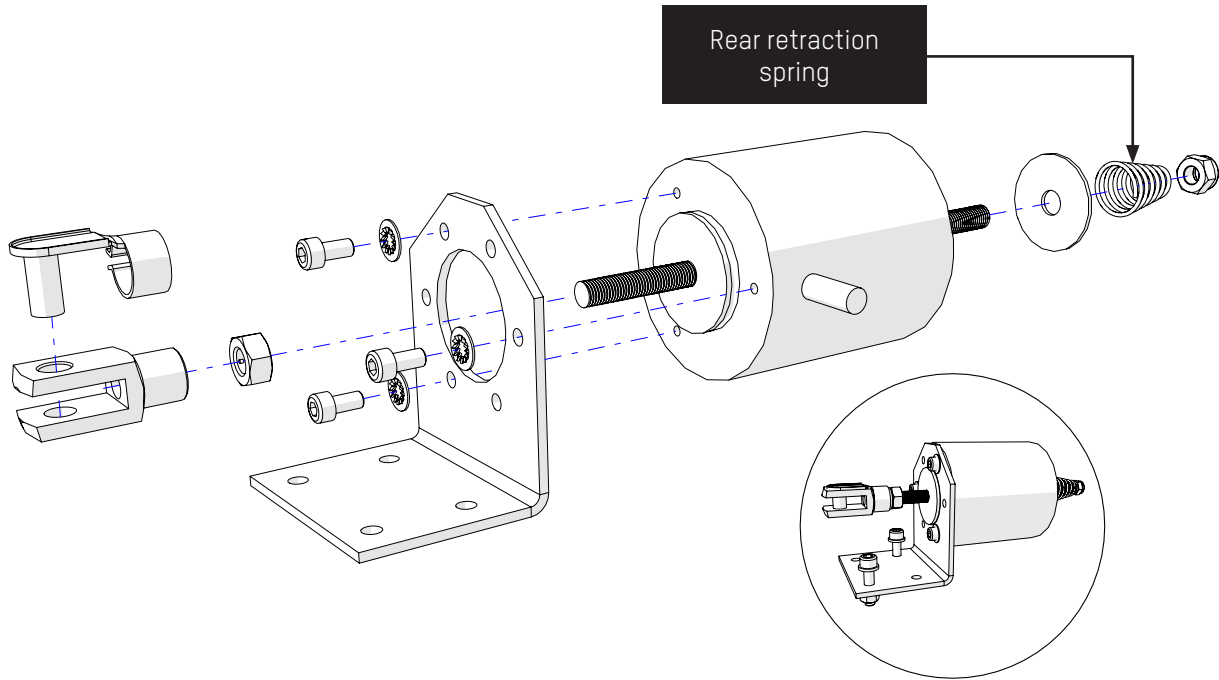


Fig. 40 - Operating mode 5

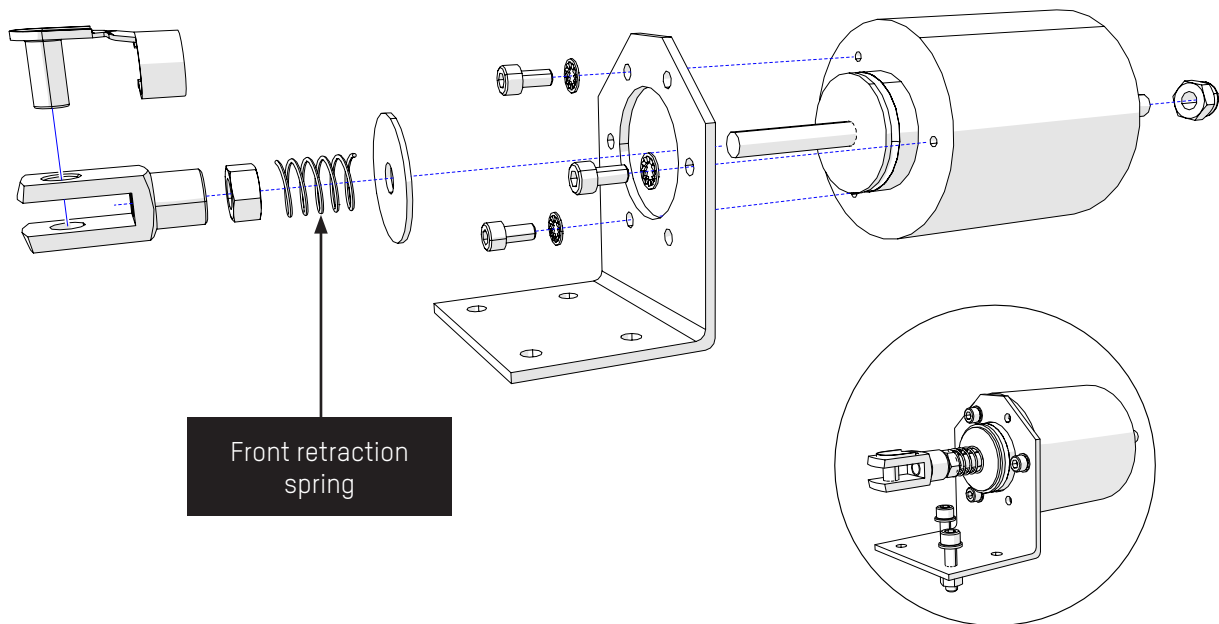


Fig. 41 - Operating mode 4

The procedure below gives the information necessary to change the operating mode from 5 to 4. The first steps of the procedure are to be followed to replace a defective electro-magnet:

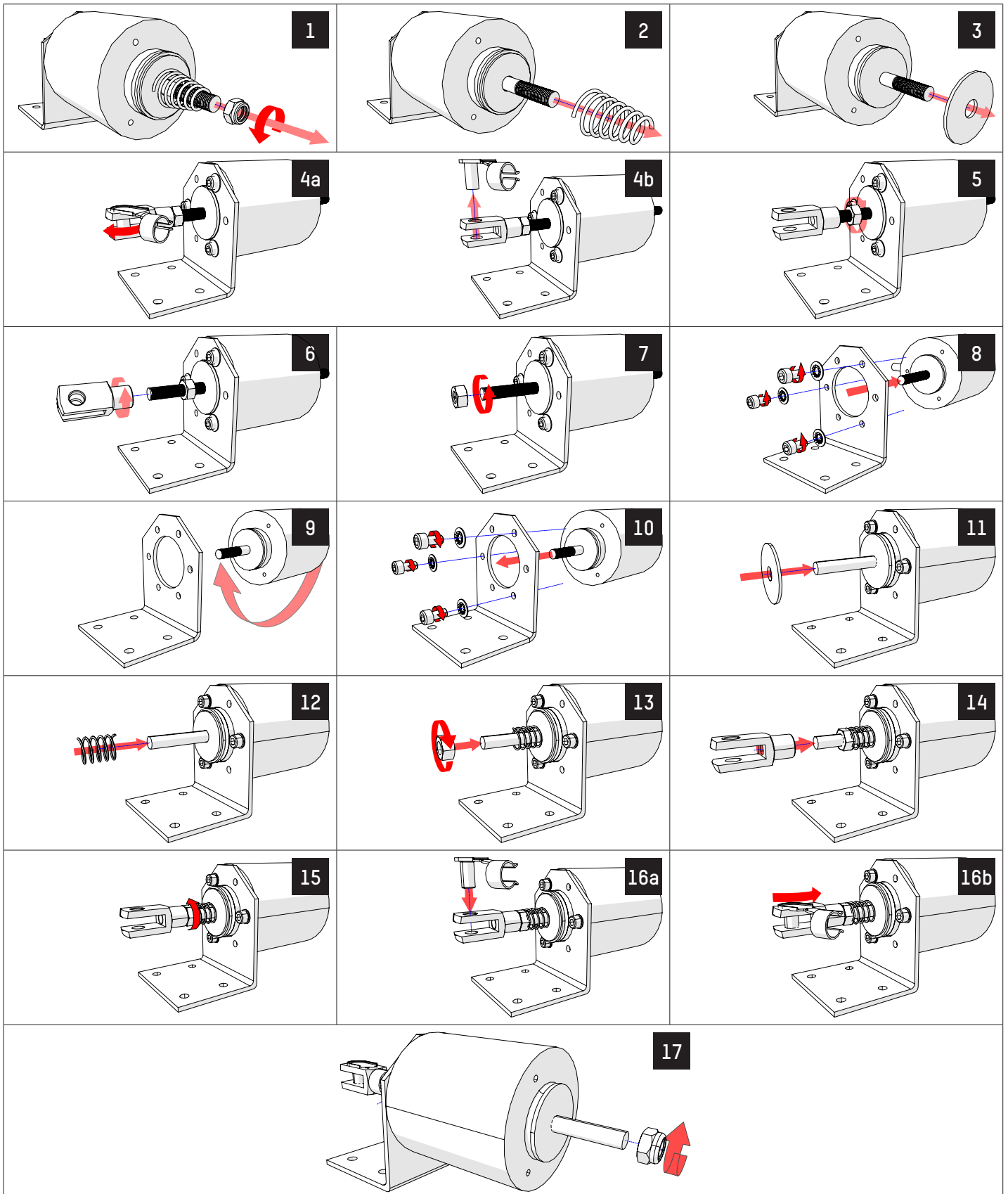


Fig. 42 - Mode change / replacement of an electro-magnet

## 12.2. REPLACING THE SHOCK ABSORBER

The shock absorber is mounted onto its support with two nuts (see figure below). Note the position of the shock absorber and the pressure exerted on the return spring before replacing it.

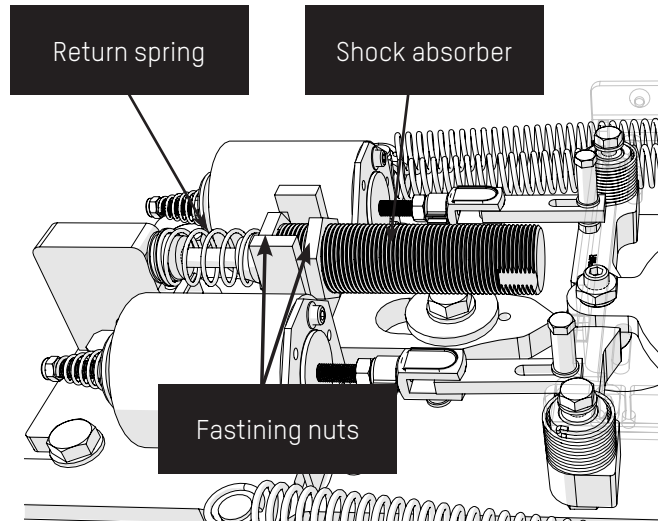


Fig. 43 - Mounting the shock absorber

## 12.3. REPLACEMENT OF RINGS, SPRINGS AND OTHER WEAR PARTS

After a few million operations, some rings, washers and springs may show signs of wear; their replacement does not pose any particular problem. In the event of wear, **Automatic Systems** suggests replacing certain sub-assemblies containing several wear parts at the same time.

**For example:**

REF.	DESCRIPTION	COMMENT
1	Shock absorber assembly	Contains the shock absorber, the movement transmission system with its support.
2	Compensator arm unit	Contains the compensator arm, fastening elements and spring(s).
3	Latch assembly (D or G)	Contains the lock, pivot, torsion spring and fastening elements.
4	Electro-magnet assembly	Electro-magnet with its support and fastening elements.

## 12.4. REPLACEMENT OF A DIRECTIONAL PICTOGRAM

The directional pictograms are mounted to the sides of the housing with 4 M6 screws and the cable is connected to the logic circuit.

Their replacement is simple provided that the roof is removed; access is also possible after removing the panel giving access to the mechanical unit and the logic.

5. Disconnect the cable from the function pictogram of the control logic.
6. Remove the 4 screws securing the pictogram.
7. Replace the defective pictogram and reassemble it by performing the steps described above in reverse order.



## 13. TECHNICAL DATA

TYPE	FEATURE	VALUE	
Electrical	Power supply	100 - 230 V single-phase 50/60 Hz	
	Control circuit	24 VDC	
Consumption	At rest, without heating	30 W	
	In motion, without heating	60 W	
Flow	(beyond reader response time)	Up to 20 passages/minute depending on the type of reader and its response speed to authorise passage	
Ambient	Operating temperature:	-10 °C to + 50 °C	
	IP rating:	IP43	
	Max. relative humidity:	95%, without condensation	
Weight	Net weight without options and without packaging	<b>Manually-operated version</b>	<b>Power-operated version</b>
		207,4 kg	220 kg
MCBF	Average number of cycles between failures, subject to compliance with recommended maintenance	1,000,000 cycles	
MTTR	Mean time to repair	20 minutes	
<b>CE</b>	Complies with EC standards.		





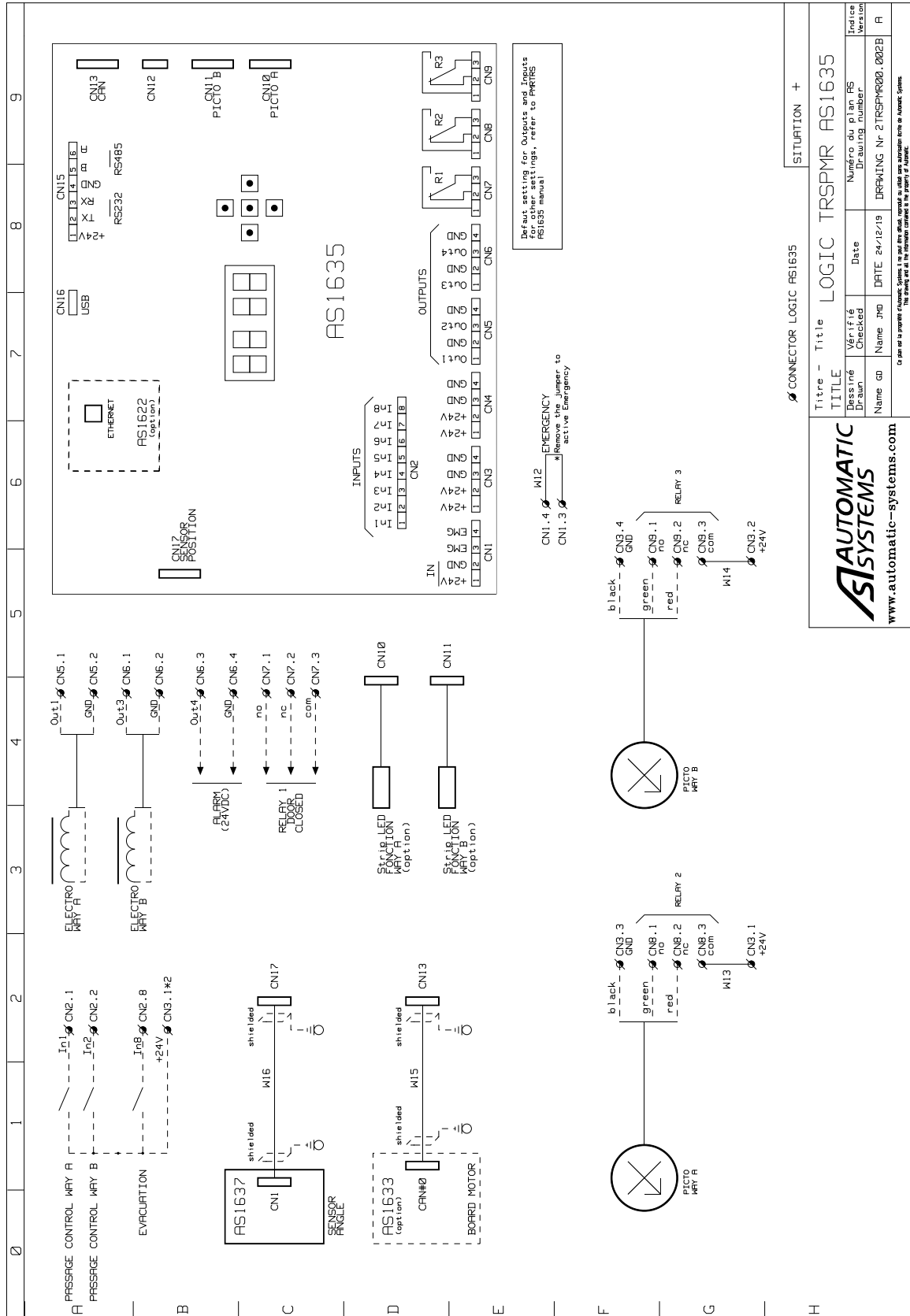


Fig. 46 - Electrical Diagram for AS1635 - Part 2

Titre - Title		LOGIC TRSPMR AS1635	
Dessiné Drawn		Vérifié Checked	
Name		Date	
ID		24/12/19	
Name		JMD	
Drawing No		DRWING Nr 2 TRSPMR00_002B	
Version		R	

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**15. EC DECLARATION OF CONFORMITY**



EC declaration of conformity



We, undersigned,

**AUTOMATIC SYSTEMS SAS  
22 rue du 8 mai 1945  
95340 PERSAN  
FRANCE**

Herewith declare that the following machine

**Full-height turnstile**

**TRS 370  
TRS 371  
TRS 372  
TRS 373  
TRS PMR**

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

- Machinery Directive 2006/42/CE.
- Low-voltage Directive 2014/35/UE.
- Electromagnetic compatibility Directive 2014/30/UE.
- Directive RoHs (Restriction of Hazardous Substances) 2011/65/EU.
- 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.
- EN 61000-6-3 / A1 : 2011: Electromagnetic compatibility (EMC). Generic standards. Emission standard for residential, commercial and light-industrial environments.
- IEC 61000-6-2 : 2016: Electromagnetic compatibility (EMC). Generic standards. Immunity standard for industrial environments.

Made in PERSAN,  
Date: 2019.09.16  
Name: Roland MONET  
Function: Operations Director France



Fig. 47 - EC Declaration







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