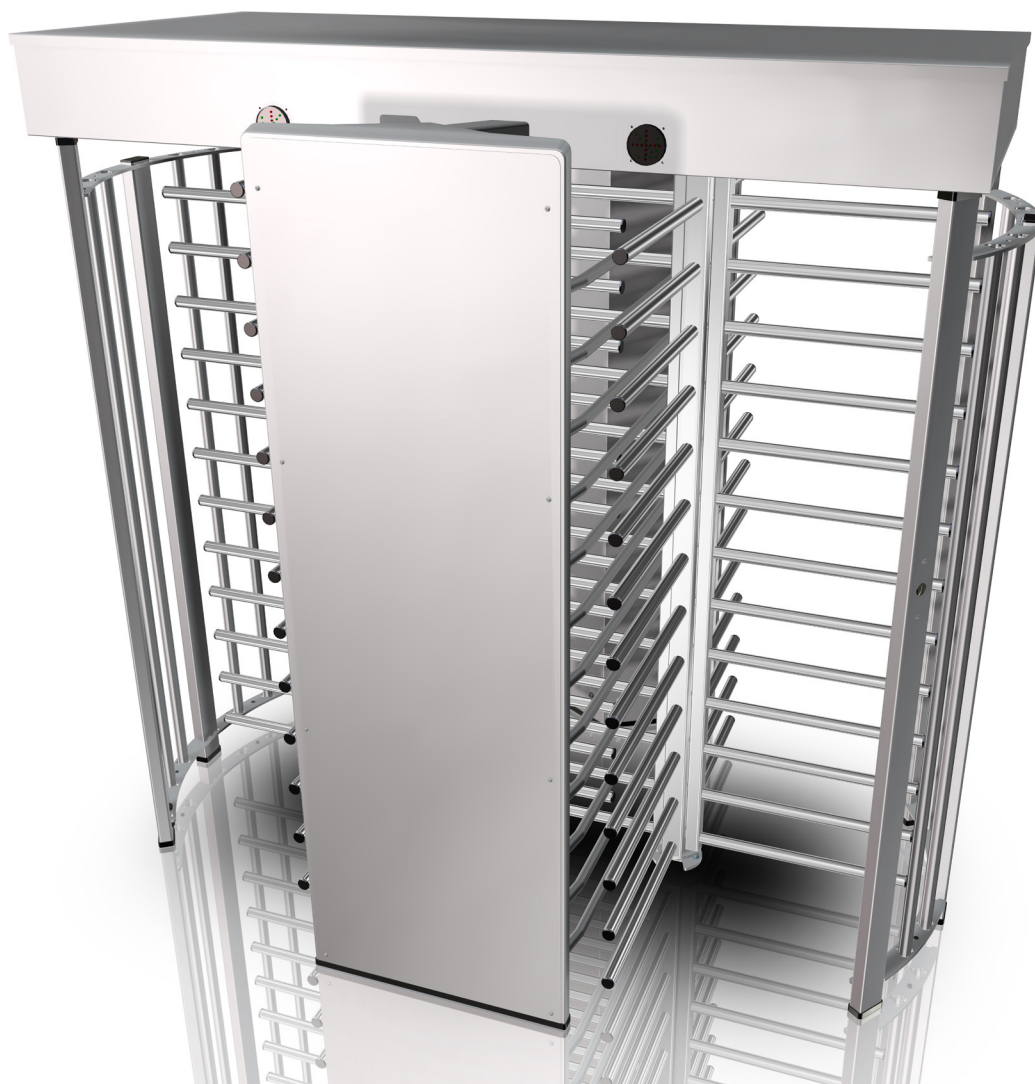


TRS373

AAUTOMATIC
SYSTEMS

Access controlled...
Future secured

Double 4-arm safety turnstile



Technical Manual

(Translated from the original French version)

Rev. 01

www.automatic-systems.com



DOCUMENT REVISION

Rev.	Date	Written by	Checked by	Purpose
00	2017-11-21	Slu	AD	Draft.
01	2019-07-02	JB	Slu	EC declaration of conformity updated and maintenance program updated to reach the MCBF

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1. 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 to control the passage of pedestrians and used for another purpose will jeopardise the safety of users and the integrity of the equipment.

Automatic Systems cannot be held liable for damage resulting from improper use of the equipment.

The turnstile is not designed for:

- People of reduced mobility.
- Unaccompanied children.
- Managing a continuous flow of more than 20 people per minute.
- Do not install this equipment in an explosive area.
- Do not add non-genuine or non-approved accessories (*contact between different metals causes a galvanic effect that adversely affects the corrosion resistance of the equipment*).
- The contractor must 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 unauthorized 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 case of negligent handling. These personnel are required to lock the mechanism's access hatch after the intervention.
- Once the bodywork is opened, immediately use the circuit breaker to cut off the power supply (⇒ch.2.6.).
- The equipment has been set to "minimum risk" mode for users. Parameters should only be changed by qualified personnel with full knowledge of the consequences. Such changes will never fall under the liability of **Automatic Systems**.

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.



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)



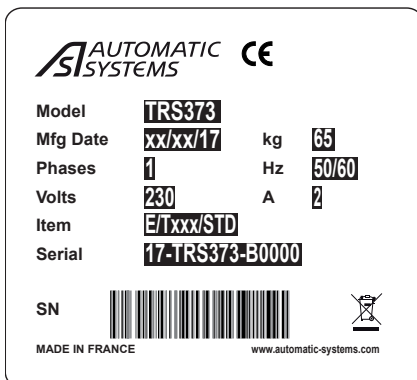
This symbol is used to indicate the **tool** that must be used for the concerned operation.



This symbol indicates that the equipment **complies with European standards and directives**.



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



Product identification label.

3. DESCRIPTION

3.1. TECHNICAL SPECIFICATIONS

- Double-gate rotating turnstile.
- For each passageway: rotating obstacle with 4 arms positioned at 90° to one another.
- Net weight: 690 kg *(including 150 kg for upper housing containing mechanical features)*.
- Power supply per lane *(for a turnstile equipped with one control board)*: single phase 120/230 VAC - 50/60 Hz - Nominal power consumption: 70 W
- AS1300 control board circuits: 24 VDC
- Operating temperature range: -10°C to +50°C
- Max. relative humidity: 95%, without condensation
- Mechanical locking of obstacle withstands a 1500 Nm torque.
- Flow: 15 to 20 passages per minute per lane, depending on the reaction time of the reader.
- Obstacle returns to its initial position in less than 1.5 seconds
- MCBF *(Mean Cycles Between Failures)* with recommended maintenance: 3,000,000.
- MTTR *(Mean Time To Repair)*: 20 minutes.
- Surface treatment:
 - ≡ Zinc-coated internal mechanical parts.
 - ≡ Galvanised rotating obstacle, fixed arm and wall + 2 coats of pale grey paint RAL7038 *(except for galvanised-finishing models)*.
 - ≡ Upper housing treated by electrophoresis + 2 coats of pale grey paint RAL7038.

3.2. OPERATING MODES

For each direction of passage, the various configurations are as follows *(to be chosen when ordering)*:

1. Free access *(obstacle rotating freely)*.
2. Permanently locked *(obstacle blocked mechanically)*.
3. Locked, but unlocked in case of power failure.
4. Electrically controlled *(free, locked, passage subject to authorisation)* and locked mechanically in case of power failure.
5. Electrically controlled *(free, locked, passage subject to authorisation)* and unlocked in case of power failure.



An A5-B3 passageway is therefore configured to operate in mode 5 for direction A *(entry)* and in mode 3 for direction B *(exit)*.

Only turnstiles configured in mode 3, 4 or 5 *(for at least one direction of passage)* are equipped with a control board.

3.2.1. Power Failure

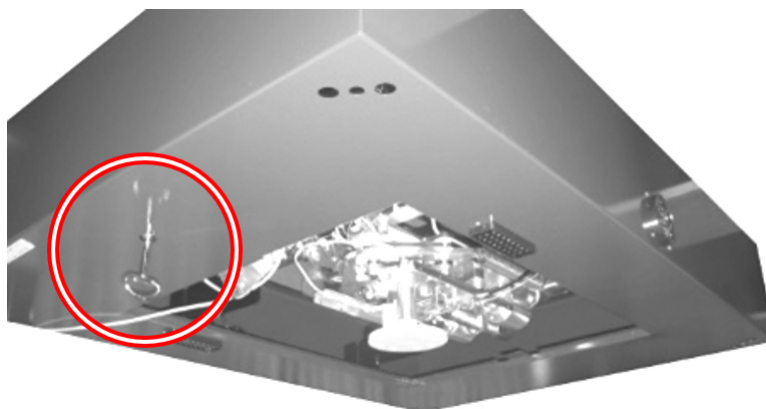


Fig. 1

The key for unlocking the barrier (= **fire brigade key**) (*option*) is used to manually unlock the TRS regardless of the chosen operating mode, in 1 or 2 passage directions according to the selected option.

3.3. LOCATION OF COMPONENTS

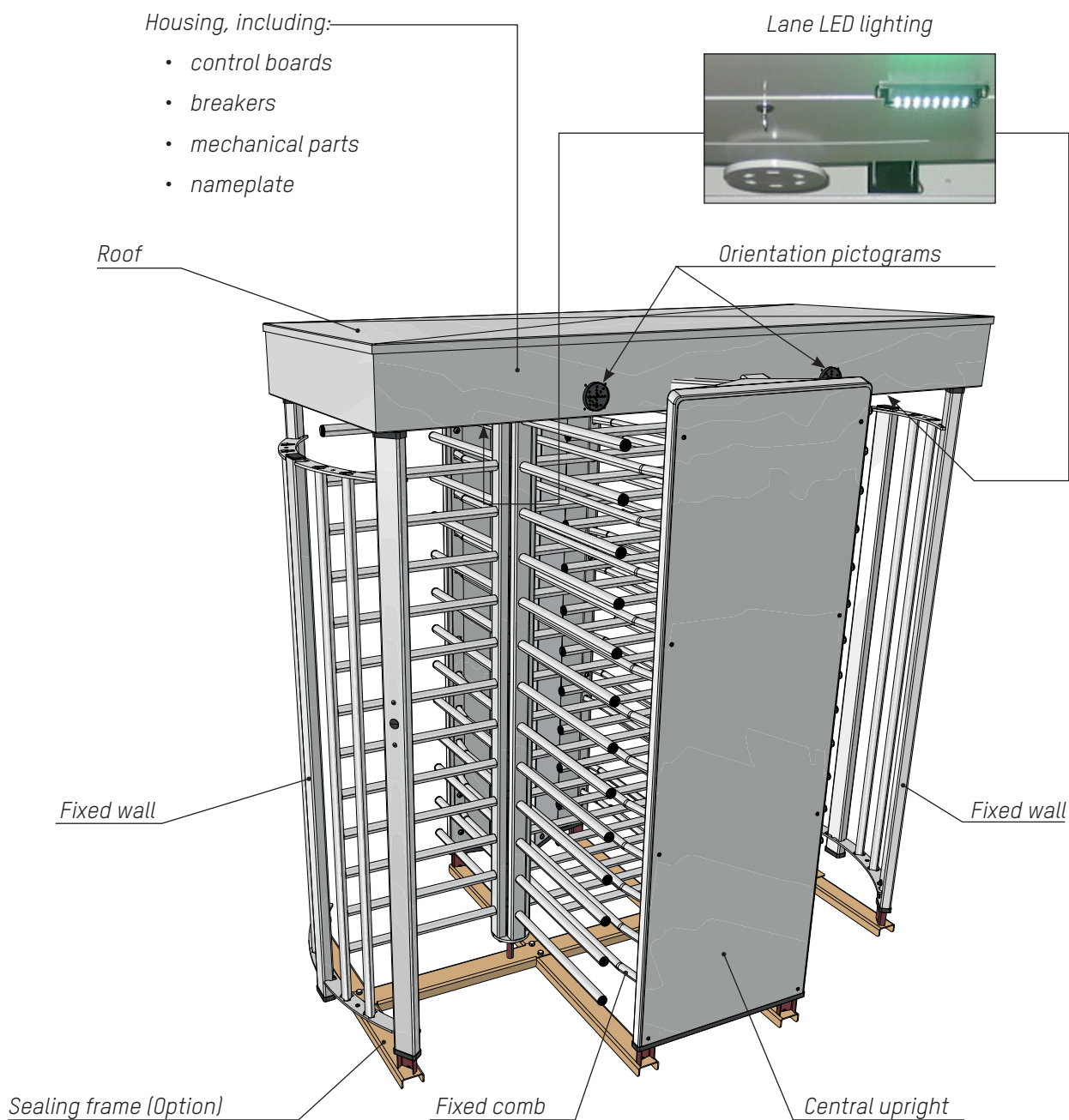


Fig. 2

3.4. FIXED WALLS

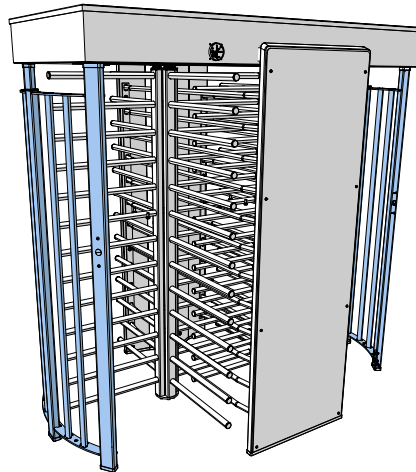


Fig. 3

Fixed walls in painted steel with curved parts delineating the passageway corridor.
The walls are bolted to the ground or the sealing frame.

3.5. CENTRAL UPRIGHTS

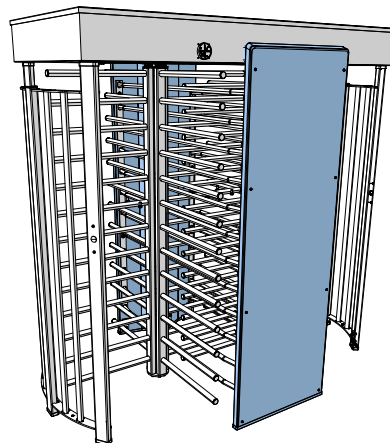


Fig. 4

Central uprights in painted steel with removable front.
The central uprights facilitate routing of control and power cables and the mounting of access control equipment.
Like the fixed walls, central uprights are bolted to the ground or to the sealing frame.

3.6. MOBILE ARMS

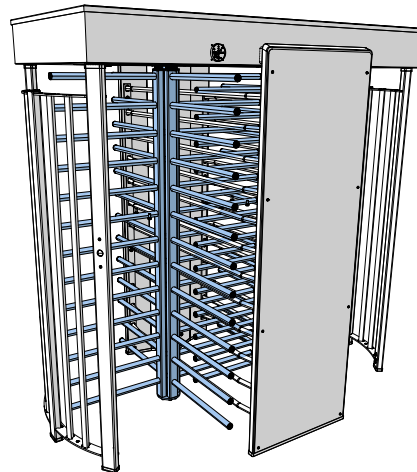


Fig. 5

For each direction of passage, the rotating obstacle consists of **2 x 4 mobile arms** positioned **at 90°** to one another. Tubes that are closest to the ground may be equipped with heel guards (*optional*) to prevent feet from being caught between the lowest tube and the ground.

3.7. FIXED ARMS

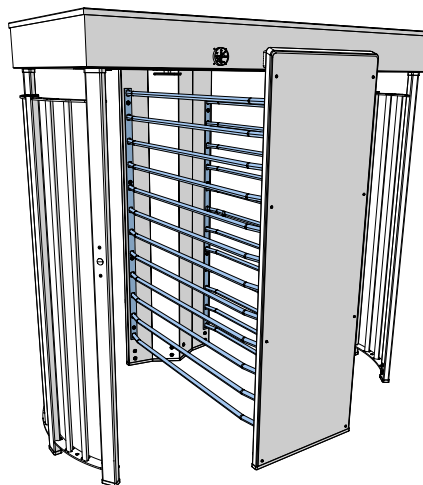


Fig. 6

For each of the 2 passageways, the fixed arm limits access to one half of the turnstile.

3.8. UPPER BOX

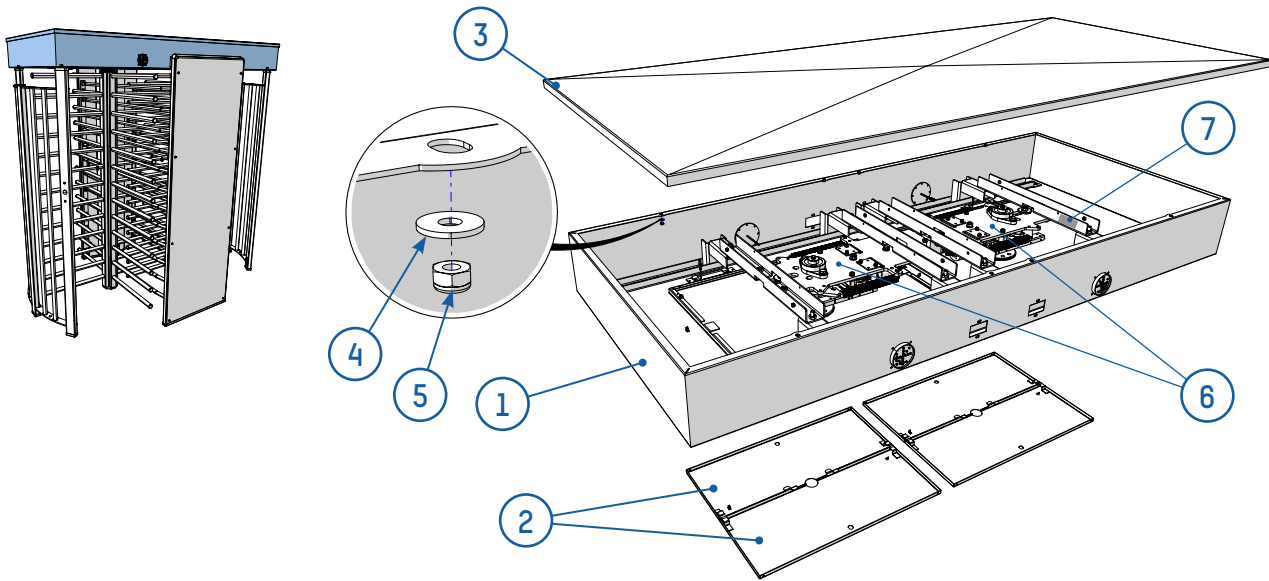


Fig. 7

1	Upper box.
2	Doors with key locks for access to mechanism (4x).
3	Diamond point roof for evacuation of water.
4	Washer for mounting the roof (8x).
5	Nut for mounting the roof (8x).
6	Mechanical assemblies (2x).
7	Nameplate.

3.9. MECHANICAL ASSEMBLY

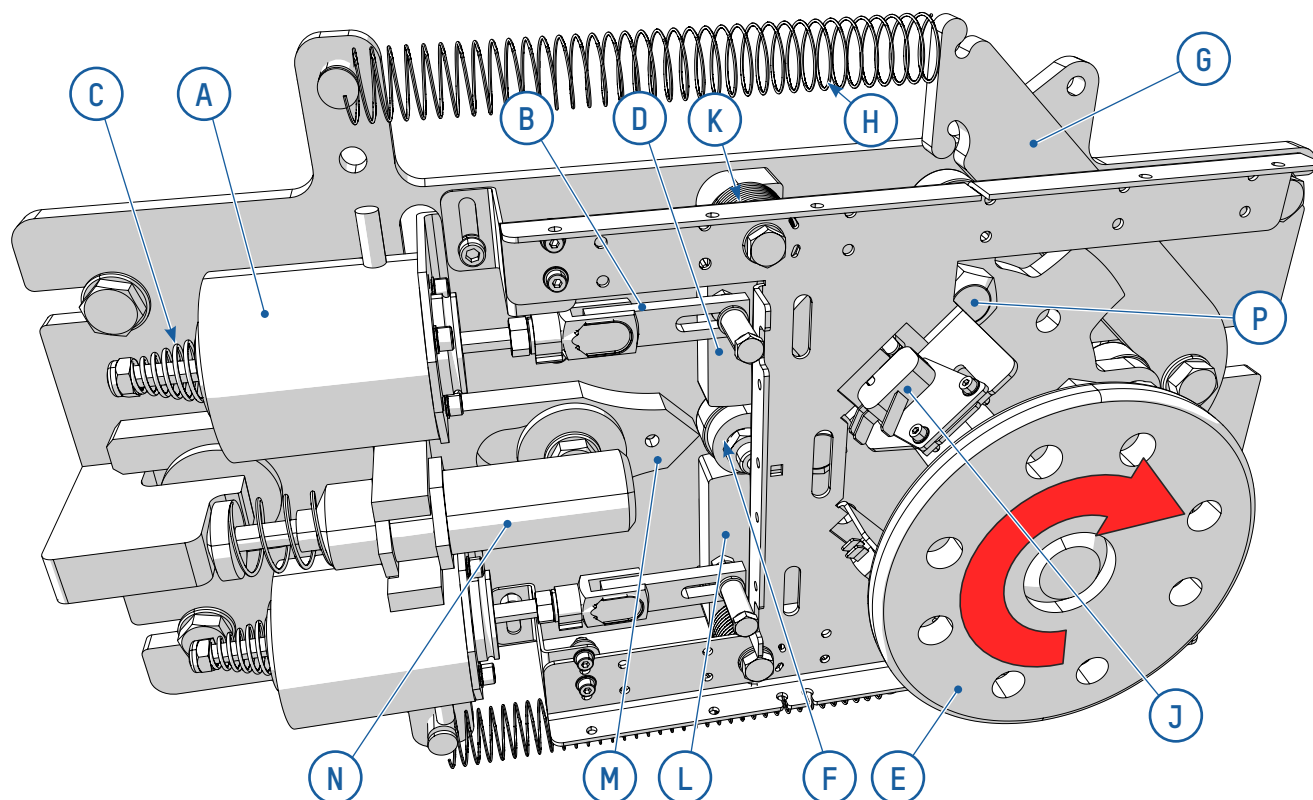


Fig. 8

A	Electromagnet	H	Compensating arm release spring
B	Connecting rod	J	Limit switch
C	Connecting rod release spring	K	Bolt release spring
D	Mobile comb bolt	L:	Mobile comb bolt
E	Rotor	M	Shock absorber cam
F	Rollers	N	Hydraulic shock absorber
G	Compensating arm	P	Limit switch cam

3.9.1. Modes 3 and 5 - Operating principle



The items mentioned in the text below refer to chapter 3.9, page 13.

- In these modes, the obstacle will be unlocked in the event of power failure.
- In rest position, the electromagnet (A) is powered and its connecting rod (B) compresses the spring (C) to move the bolt (D) into closed position.
- When passage is authorised (by a validating device not included in the supply: badge reader, remote control desk, etc.), the electromagnet is de-powered, allowing the release spring (C) to pull, via the connecting rod (B), on the bolt (D) and unlock the obstacle (Fig.a).
- The user activates the rotor (E) by lightly pushing the obstacle (in this case, the rotor rotates clockwise, but the same principle applies in the other direction due to the symmetry of the mechanism). At the same time:
 - ≡ The roller (F) pushes on the compensating arm (G). Its springs (H) will move the rotor back into rest position when the obstacle is released.
 - ≡ The next cam (P) activates the limit switch (J), thereby powering the electromagnet and pushing the connecting rod (B) back to the bolt (D). The bolt is closed again by the action of its torsion spring (K) (Fig.b).
 - ≡ The next roller (F) pushes the bolt (L), positions itself between the 2 bolts and pushes the cam (M) of the shock absorber (N), thereby reducing its movement at the end. The roller is then blocked by the bolt (D), and the obstacle is mechanically locked (Fig.c).

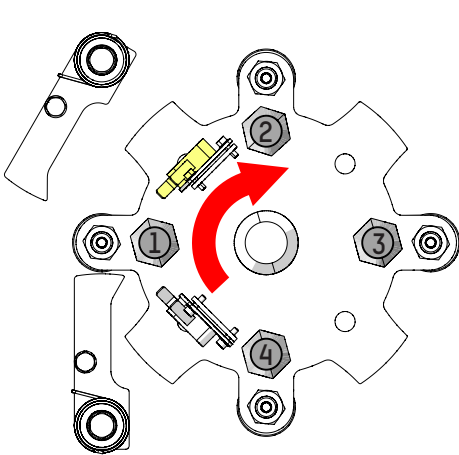


Fig. A

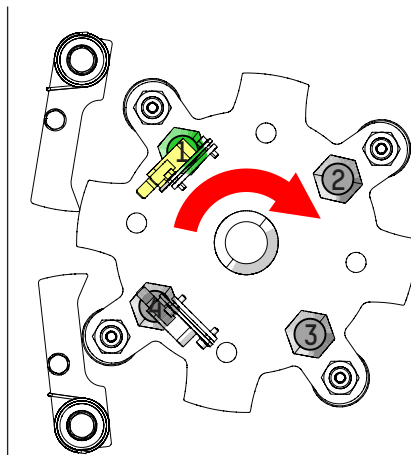


Fig. B

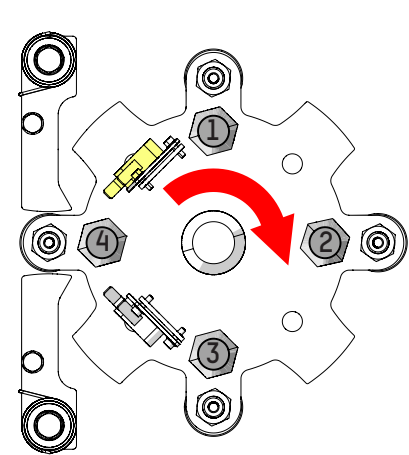


Fig. C

3.9.2. Mode 4 - Operating principle

In this mode, the obstacle is locked in the event of power failure.

- In rest position, the electromagnet is not powered and the spring (C) (in this case, on the connecting rod side (B)) pushes the rod towards the bolt in order to place it closed position.
- When passage is authorised, the powered electromagnet overcomes the pull of the spring (C) in order to pull, via the connecting rod (B) on the bolt (D) and unlock the obstacle.
- The remaining steps are identical to those in previous modes.

3.9.3. Conversion from operating mode 5 to mode 4

Unless specified otherwise, the turnstile is factory configured in operating mode 5 (*unlocked in case of power failure, cf. Ch.3.2.*).

The procedure for switching to operating mode 4 (*locked in case of power failure*) has been shown below:

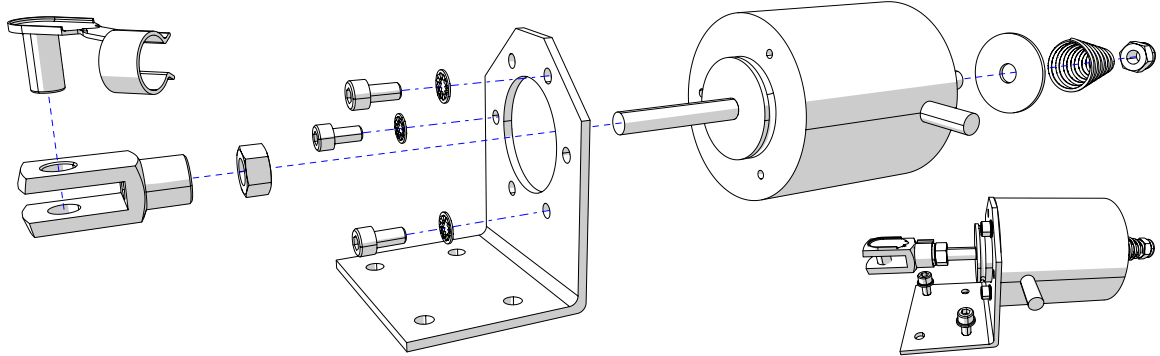
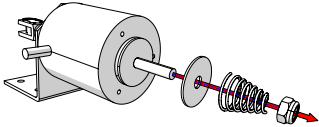
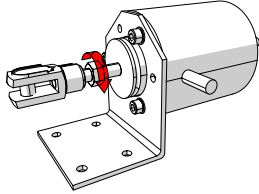
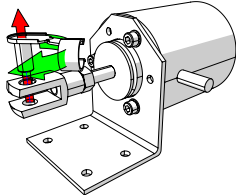
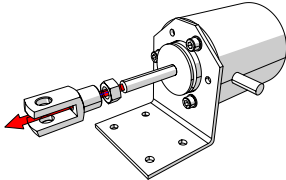
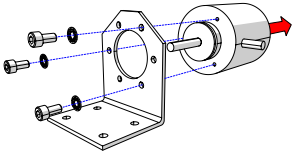
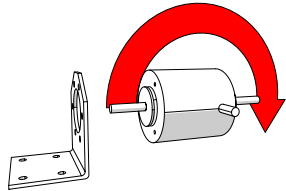
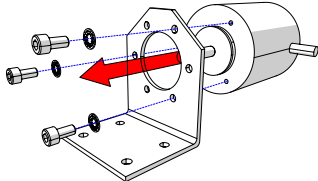
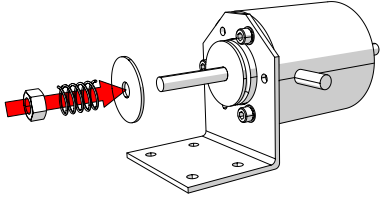
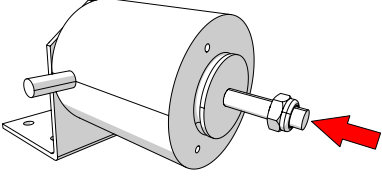
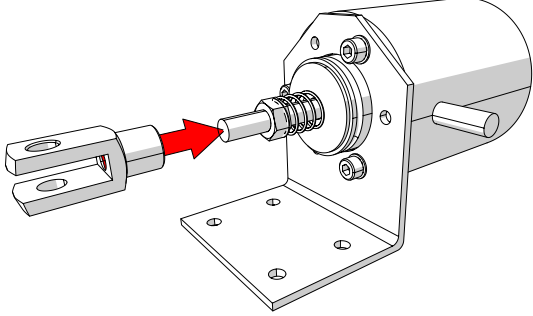
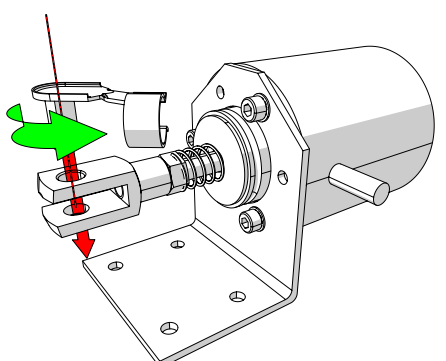
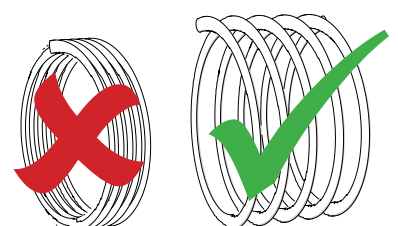


Fig. 9 Electromagnet assembly for operating mode 5.

	<p>Remove:</p> <ul style="list-style-type: none"> • The lock nut • The conical spring (<i>mode 5 spring</i>) • The large washer
	<p>Unscrew the hex connector nut.</p>
	<p>Remove the connector connector clip.</p>
	<p>Remove the connector and the hex nut.</p>

	<p>Remove the electromagnet from its support.</p>
	<p>Turn the electromagnet (<i>through 180°</i>), keeping the electric cable on the same side.</p>
	<p>Replace the electromagnet on its support.</p>
	<p>Mount the following in the indicated order:</p> <ul style="list-style-type: none"> • The large washer • The new cylindrical spring (<i>mode 4 spring</i>) • The M8 flat nut
	<p>Tighten the lock nut on the back of the electromagnet.</p>
	<p>Tighten the connector.</p>

	<p>Insert the connector into the connecting rod of the bolt (not shown) and hold it in place with the connector clip.</p>
	<p>Make sure the spring coils do not touch each other when the electromagnet is powered (<i>adjust connector position if necessary</i>).</p>
	<p>In the OPTIONS menu of the control board, set the ELECTROMAGNET parameter to A4 (or B4 according to the direction of passage).</p>

3.10. PICTOGRAMS

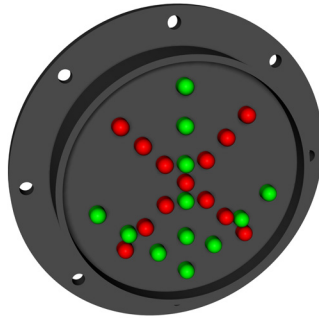


Fig. 10

The pictograms mounted on the housing can operate in the 2 modes described below, depending on the electrical connections and their configuration in the control board.

3.10.1. Orientation pictograms

Orientation pictograms indicate the status of the passageway, and thus help to orientate users that approach the turnstile.

- Apparatus Out of Service: ✖ in both directions
- Apparatus In Evacuation: ↙ in both directions
- Apparatus In Service (for each direction of passage):
 - ≡ Controlled Mode: ↙
 - ≡ Free Mode: ↙
 - ≡ Locked Mode: ✖

3.10.2. Operation pictograms

Operation pictograms inform users about the functional status of the passageway (for each direction): passage authorised or unauthorised.

- Locked Mode: ✖
- Free Mode:
 - ≡ If passage active in opposite direction: ✖
 - ≡ If not: ↙
- Controlled Mode:
 - ≡ At rest: Pictogram turned off or ✖ determined by the status of the **Idle Fct Picto** parameter in the **Options** menu.
 - ≡ If passage active in opposite direction: ✖
 - ≡ If passage is authorised: ↙

3.11. CONTROL BOARD

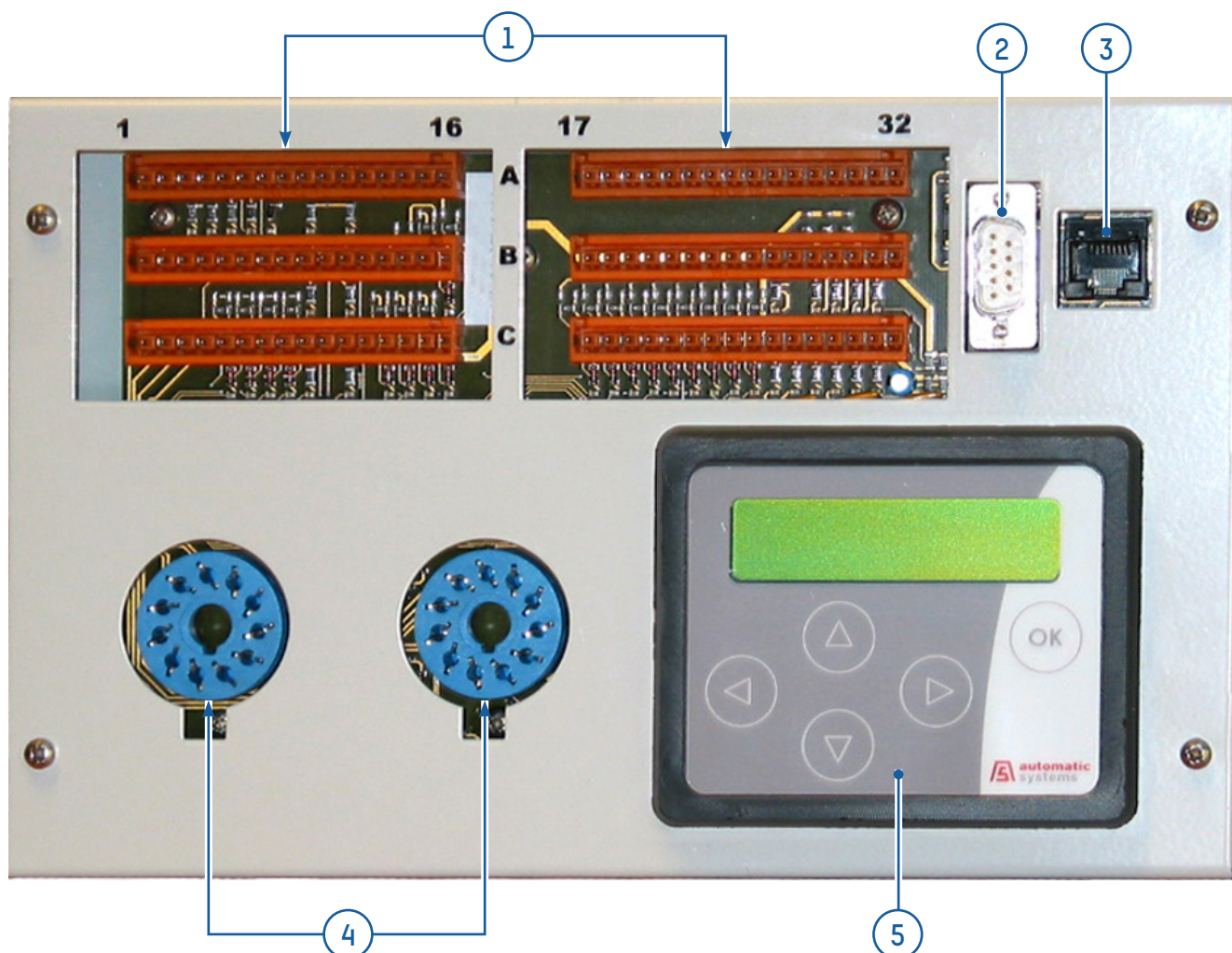


Fig. 11

- | | |
|---|-----------------------------------------------------------------------------------------|
| 1 | Input/Output terminal block (see terminal assignments, ch. Electrical diagrams) |
| 2 | DB9 (CAN BUS) connector |
| 3 | RJ45 (RS232) connector |
| 4 | Presence sensor connectors (not used for the TRS) |
| 5 | Display |

The control board serves as the interface between users and the turnstile. It manages all operations performed by the turnstile, including the optional ones.

Navigation in the menus of the display is based on an architecture with pull-down menus with 3 levels: GROUPS ⇔ PARAMETERS ⇔ VALUES.

The ◀▶ keys can be used to navigate from one level to another (press and hold a few seconds to go from the default screen to another menu); navigation within menu is possible using the ▲▼ keys, and parameter changes can be validated by pressing the OK key.

Note: A simplified version of the menus has been shown below. For a detailed description of all functions, their parameters, etc. please refer to the control board manual (available on request).

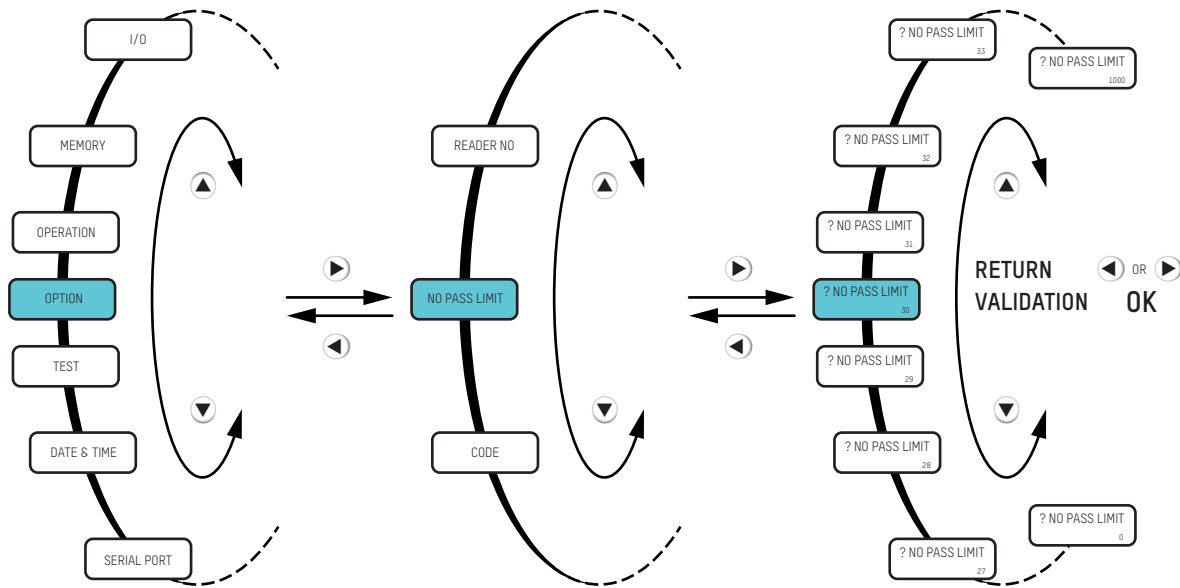


Fig. 12

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

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

The parameters 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. The parameter unit is displayed at the end of the top line if there is one.

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

The current parameter value appears on the second line.

An asterisk (*) below a parameter indicates the value shown is the default value (factory set).

Press the **OK** key to validate a modification.



Store modifications to avoid losing them in the event of a power outage (MEMORY ► Save ► MEM1 or MEM2)



The control parameters have been factory set according to the ordered configuration.

The most commonly used functions are given in **bold**.

GROUP	Parameter	Value	Description
PRDSTD - TRS360	Software Version	0E 00 04 00 00	Version number of the program implemented in the control board.
	OK key		Badge reader simulation (direction A then B).
OPERATION	Status		Display of the last 100 events, with the date and time of their occurrence (access previous events with ► and ▲ keys).
		No Diag	No diagnostic.
		Power Up	Power ON
		Power Down	Power OFF

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GROUP	Parameter	Value	Description
		Short Circuit	Detection of short-circuit at the digital outputs.
		Save Mem1	Manual saving of values to Memory 1.
		Save Mem2	Manual saving of values to Memory 2.
		Load Default	Loading of default values.
		Load Mem1	Manual loading of values from Memory 1.
		Load Mem2	Manual loading of values from Memory 2.
		Time Adjust	Change of date and time.
		Access Level Chg	Change of access level (OPTION ► Code).
		Download Chg Lv1	Level 1 modification to program.
		Download Chg Lv2	Level 2 modification to program.
		Download Chg Lv3	Level 3 modification to program.
		Reset Counters	Zeroing of Counter 2.
		In Service	Apparatus in service.
		Out Of Service	Apparatus out of service.
		Emergency	Apparatus in Evacuation mode.
		Test	Apparatus in Test mode.
		Maintenance	Apparatus in Maintenance mode.
		Default LSA	Limit switch A defect. The turnstile remains in service.
		Default LSB	Limit switch B defect. The turnstile remains in service.
Temperature			Displays temperature within the casing.
Counter 1			Total number of passages in directions A and B.
Counter 2			Number of passages in directions A and B since last reset to zero.
Reset counter 2		Yes	Zeroing of counter 2.
No. Authoris. A			Number of authorisations by the validating device in direction A.
No. Authoris. B			Number of authorisations by the validating device in direction B.
App. Status			Indicates the current status of the apparatus.
		Evacuation	Free passage in both directions.
		Test	Apparatus in test mode.
		Maintenance	Apparatus in maintenance mode.
		In Service.	Apparatus in service (<i>configuration in OPERATION group</i>).
		Out of Service	Apparatus locked in both directions: command received at input DI5.
Pass A State			Indicates the status of the apparatus when it is operation, for direction A (<i>configuration in the OPERATION group</i>).
		Locked	Obstacle locked: passage in this direction is impossible.
		Free	Obstacle unlocked: passage in this direction is free and not controlled.
		Controlled	Obstacle is unlocked after authorisation by the reader.
Pass B State			Same as Pass A State , for direction B.
		Locked	
		Free	

GROUP	Parameter	Value	Description
		Controlled	
TIMINGS	No Passage		Delay allowed for user to pass through the turnstile (= time allowed for the obstacle to reach the limit switch after an Open command).
	Passage Info		
	No Pass Info		Duration of the passage information impulse.
	Fraud Info		Duration of the no-passage information impulse.
OUTPUT FUNCTIONS	Relay 1		Each output can provide one of the following information elements:
		LED Lighting	LED lighting activated by the light sensor.
		LSB Error	Direction B limit switch sensor has not been reached before the no-passage time-out.
		LSA Error	Direction A limit switch sensor has not been reached before the no-passage time-out.
		Fraud AB	Limit switch activated without prior OPEN command.
		Fraud B	Direction B limit switch detection not preceded by an Open command.
		Fraud A	Direction A limit switch detection not preceded by an Open command.
		No Passage B	No detection on time limit switch within the time limit following an Open command in direction B.
		No Passage A	No detection on time limit switch within the time limit following an Open command in direction A.
		Pass B IP NC	Passage in direction B in progress (signal NC).
		Pass E IP NO	Passage in direction B in progress (signal NO).
		Pass A IP NC	Passage in direction A in progress (signal NC).
		Pass A IP NO	Passage in direction A in progress (signal NO).
		Passage B NC	Passage in direction B completed (signal NC).
		Passage B NO	Passage in direction B completed (signal NO).
		Passage A NC	Passage in direction A completed (signal NC).
		Passage A NO	Passage in direction A completed (signal NO).
		Red Fct Pict B	Direction B Red function pictogram is lit.
		Grn Fct Pict B	Direction B Green function pictogram is lit.
		Red Fct Pict A	Direction A Red function pictogram is lit.
		Grn Fct Pict A	Direction A Green function pictogram is lit.
		Red Ori Pict B	Direction B Red orientation pictogram is lit.
		Grn Ori Pict B	Direction B Green orientation pictogram is lit.
		Red Ori Pict A	Direction A Red orientation pictogram is lit.
		Grn Ori Pict A	Direction A Green orientation pictogram is lit.
		Solenoid B	Control of electromagnet in direction B.
	Solenoid A	Control of electromagnet in direction A.	
None	No signal.		
Relay 2		Same as Relay 1	

GROUP	Parameter	Value	Description
	Relay 3		Same as Relay 1
	Relay 4		Same as Relay 1
	Relay 5		Same as Relay 1
	Relay 6		Same as Relay 1
	Relay 7		Same as Relay 1
	Relay 8		Same as Relay 1
	Relay 9		Same as Relay 1
	Relay 10		Same as Relay 1
	Relay 11		Same as Relay 1
	Relay 12		Same as Relay 1
	Relay 13		Same as Relay 1
	Relay 14		Same as Relay 1
	Relay 15		Same as Relay 1
I/O	Input 1		Status of the digital inputs: DI8, DI7, DI6, DI5, DI4, DI3, DI2, DI1.
	Input 2		Status of the digital inputs: DI16, DI15, DI14, DI13, DI12, DI11, DI10, DI9.
	Input 3		Status of the digital inputs: 0, 0, 0, 0, 0, 0, DI18, DI17
	Output 1		Status of the digital outputs: DO8, DO7, DO6, DO5, DO4, DO3, DO2, DO1.
	Output 2		Status of the digital outputs: 0, DO15, DO14, DO13, DO12, DO11, DO10, DO9.
	AnalogIn 1		Value of analogue input AI1 (x10mV).
	AnalogIn 2		Value of analogue input AI2 (x10mV).
	AnalogOut 1		Value of analogue output AO1 (x10mV).
	AnalogOut 2		Value of analogue output AO2 (x10mV).
MEMORY	Load	Default	Loading default parameter values.
		Mem2	Loading values from Memory 2.
	Save	Mem1	Loading values from Memory 1.
		Mem2	Saving values to Memory 2.
		Mem1	Saving values to Memory 1.
OPERATION	Direction A	Ctrl panel	Direction A passage configured from the control panel
		Locked	Direction A passage always closed (<i>even if there is an Open command</i>)
		Free	Direction A passage always allowed (<i>Open command not necessary</i>)
		Controlled	Direction A passage subject to authorisation (<i>see Reader</i>): opens if there is an Open command
	Direction B	Ctrl panel	Direction B passage configured from the control panel
		Locked	Direction B passage always closed (<i>even if there is an Open command</i>)
		Free	Direction B passage always allowed (<i>Open command not necessary</i>)

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GROUP	Parameter	Value	Description
		Controlled	Direction B passage subject to authorisation (see reader): opens if there is an Open command
	Out of Service	In Service	Apparatus in service: operates according to the mode defined in the "Direction A" and "Direction B" parameters
		Out of Service	Apparatus out of service: locked in both directions
OPTION		-32768 to 32767	Code giving Technician or Constructor access to the level parameters.
		Deutsch	Choice of menu language: German
		French	Choice of menu language: French
		English	Choice of menu language: English
		Off	Choice of operation pictogram display when at rest: off.
		Red	Choice of operation pictogram display when at rest: red cross
		-10 to 100	Temperature below which the heating element (connected to output D09) is switched on.
		Activated	Activates the electromagnets when temperature drops below the "Thermostat °C" set-point, in order to heat the direct surroundings of the electromagnets.
		Deactivated	Heating by electromagnets deactivated.
		Yes	Storage of the Open commands given by the reader in Direction A.
		Yes	Storage of the Open commands given by the reader in Direction B.
		A4	Assembly of the electromagnet used for direction A: mode 4 (=locked when not energised).
		A5	Assembly of the electromagnet used for direction A: mode 5 (= unlocked when not energised).
		B4	Assembly of the electromagnet used for direction B: mode 4 (= locked when not energised).
		B5	Assembly of the electromagnet used for direction B: mode 5 (= unlocked when not energised).
		Combined mode	This operating mode combines the following two modes. If an impulse is given (= signal falls off before detection of the limit switch or before the no-passage time limit expires), the apparatus operates in impulse mode; otherwise it will operate in hold mode.
		Hold Mode	Passage is managed by the reader: passage is enabled for as long as the reader input is activated.
		Pulse Mode	Passage is managed by the AS1300: Each reader impulse enables access for passage. The impulses can be stored. The obstacle will lock once the cycle has been completed.
		Yes	Readers in directions A and B active in high state (<i>Normally Open contact</i>).
		No	Readers in directions A and B active in the low state (<i>Normally Closed contact</i>).

GROUP	Parameter	Value	Description
		0 to 1000	Maximum number of consecutive no-passages before indicating that the limit switch is defective.
TEST	Test Mode	Wiring	Wiring check of the AS1300 outputs.
		Alternate Mode	Successive alternation between the following two modes.
		Direction B	Successive locking/unlocking in direction B passage.
		Direction A	Successive locking/unlocking in direction A passage.
	Communication	Menu	Sending complete menu to external PC.
		Stack Value	Sending stack values to external PC.
		Diag. Extract.	Sending of diagnostic table to external PC.
		Param. Extract.	Sending parameter values to external PC.
DATE & TIME	Year	0 to 99	Setting of year
	Month	1 to 12	Setting of month
	Day	1 to 31	Setting of day
	Hour	0 to 23	Setting of hour
	Minute	0 to 59	Minute Display
	Second	0 to 59	Second Display
SERIAL PORT	M o d b u s address		Definition of Modbus communication parameters.
	Com1 Baudrate		
	Com1 Parity		
	Debug Modbus		
	Test Modbus		
LIGHT SENSOR	Value	0 to 100	Value measured by light sensor (<i>option</i>).
	Trigger	0 to 100	Value at which the LED lighting of the lanes is switched on/off.
	Delay On	0 to 9999	Delay before activation of LED lighting.
	Delay Off	0 to 9999	Delay before deactivation of LED lighting.

4. INSTALLATION

4.1. EQUIPMENT STORAGE BEFORE INSTALLATION

Before installation, protect equipment from impact and store it in its original packaging in a dry area protected from dust, heat, and weather.

Storage temperature limits: -30 to +80 °C.

4.2. RECOMMENDED TOOLS



- Electrician tool kit.
- Flat spanner set.
- Socket and bit set.
- Soft face hammer of 500 g
- Percussion drill + drill bits Ø12x100 (*for fixing the reinforcement spacers*) + drill bits Ø15x100 (*for fixing to the ground with template*).
- Spirit level.
- Stepladder or small folding ladder.
- Forklift. (*For positioning the housing containing mechanical parts*)
- Application gun for the adhesive cartridge (*heel guard option*).
- Standard protective equipment: safety gloves, goggles, hard hat and footwear.



One extra person will be needed to position the various vertical elements until the the upper housing has been removed and fixed.

Prepare effectively when installing conduits for cables and remote control devices, at the locations shown in the installation drawing.

Note that the cable ends will extend 3 metres above ground level; electrical connections are made in the upper housing.

Make sure the surface on which the turnstile is to be installed is perfectly flat (*without any irregularities*) and made of concrete or other non-flammable material.

In accordance with instructions on the installation drawing, use the drilling template to mark the locations of the various drilling holes.

When using the anchoring bolts provided by **Automatic Systems**, drill holes of 15 mm dia. to a depth of 85 mm.



Although the anchoring bolts provided by **Automatic Systems** are compatible with most configurations, the complete fixing process must be adapted to the environment and nature of the ground on which the equipment is to be installed, and all civil work must be validated by a qualified engineer.

THE EQUIPMENT MUST BE CORRECTLY FIXED TO THE GROUND PRIOR TO BEING USED!

Automatic Systems cannot be held responsible for accidents or damage resulting from an improperly anchored installation.

Install the anchoring bolts (21).

Provisionally tighten the nuts to trap the expansible plug in the ground.

Remove the nut to subsequently install fixing rails for the uprights.

The stability of the fixed panel must be reinforced using spacers (⇒ [ch.2.5.6.](#)).



Fig. 14

4.4. TURNSTILE ASSEMBLY AND FIXING



An extra person will be needed during the following steps and until the upper housing has been removed and fixed.



The various steps described below cover the installation of the turnstile on a finished surface using an installation kit. These steps are similar to when a sealing frame is used.

4.4.1. Fixed panel assembly



To avoid having to start all over again, make sure upright protectors (F) are present at the points where fixed panels come into contact with the ground. [⇒ Fig. 15]

Having installed the mounting brackets (C) in each of the two external uprights (A1 & A2) using screws (E) and washers (D) [⇒ Fig. 16], place the first fixed panel (A) on the corresponding fixing rails (B). [⇒ Fig. 15]



Do not tighten the fixing screws. Leave the panel loose so that it can still be adjusted when mounting the upper housing.

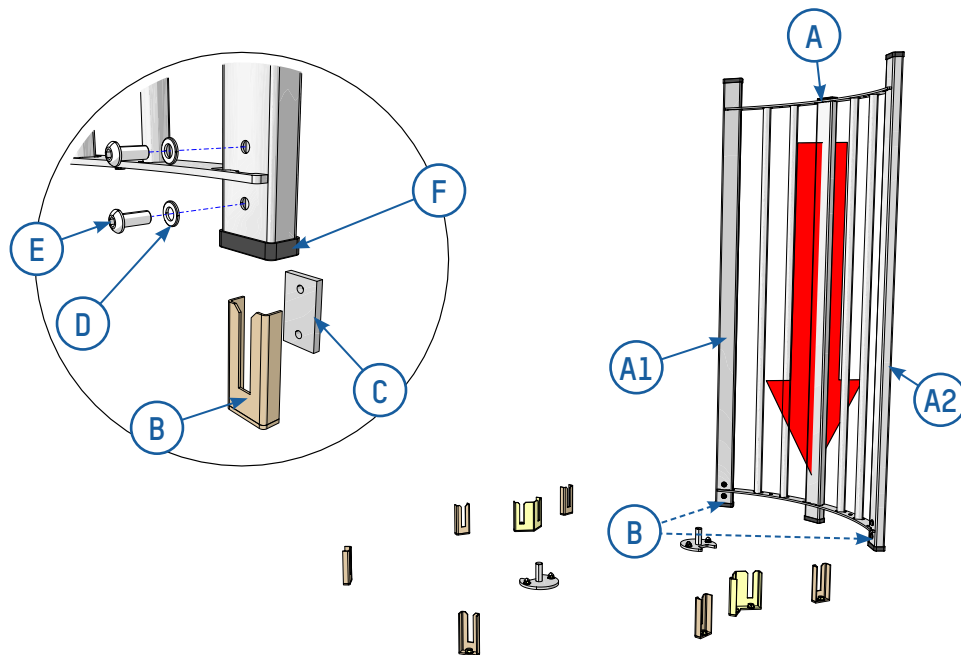


Fig. 15

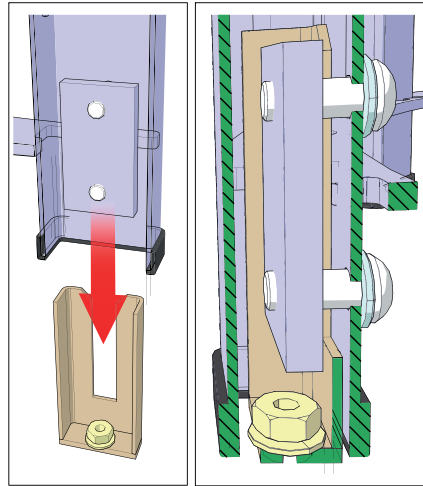


Fig. 16

Proceed in the same way for the second fixed panel. [⇒ Fig. 17]

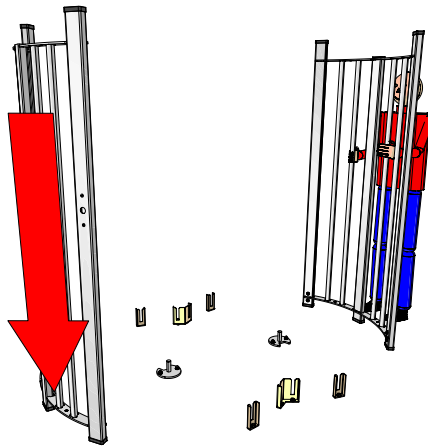


Fig. 17



A second person will be needed to hold the first fixed panel in place.

4.4.2. Central part assembly

4.4.2.1. PREPARATION (FOR EACH CENTRAL PART)

Remove the front (B) of the central section (A) by removing the 8 nylon fixing screws (C) and washers (D) [⇒ Fig. 18];

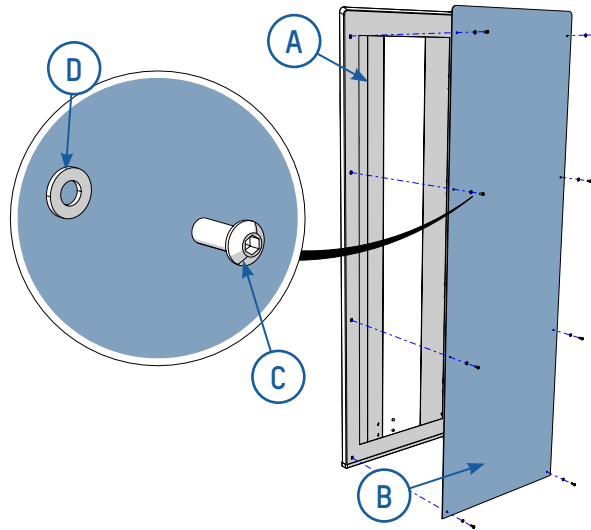


Fig. 18

If not already done, assemble the two upper arms (A1 & A2) of the central section (A) using screws (E) and washers (F & G). [⇒ Fig. 19]

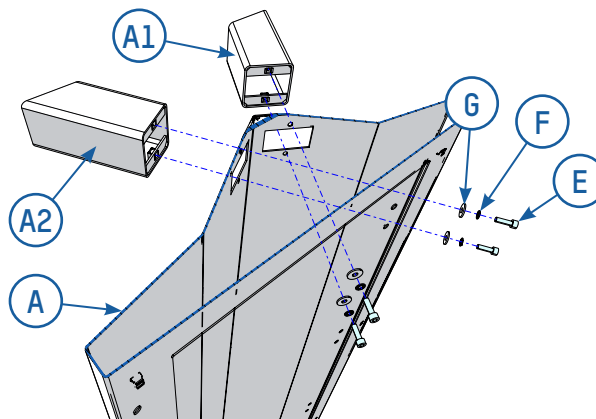


Fig. 19

Then remove the central section (A) from the corresponding fixing rails (B) and hold it in place, without tightening, using mounting brackets (C), screws (E) and washers (D). [⇒ Fig. 20]



A third person will be needed to hold the second fixed panel in place.

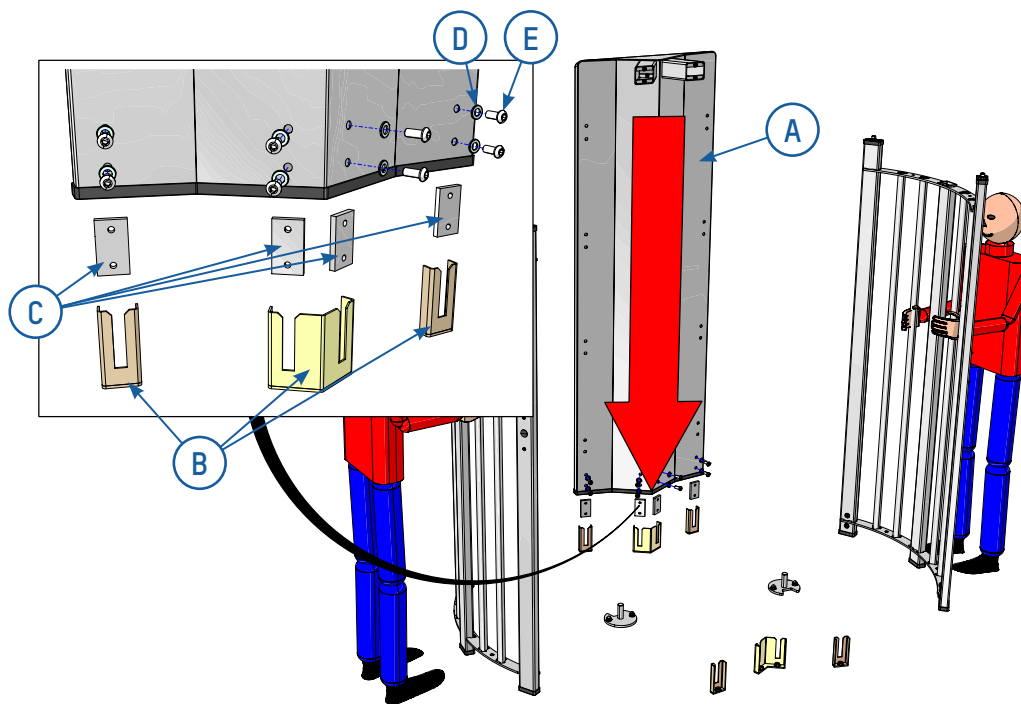


Fig. 20

4.4.3. Housing assembly

First of all, remove the doors and the roof;

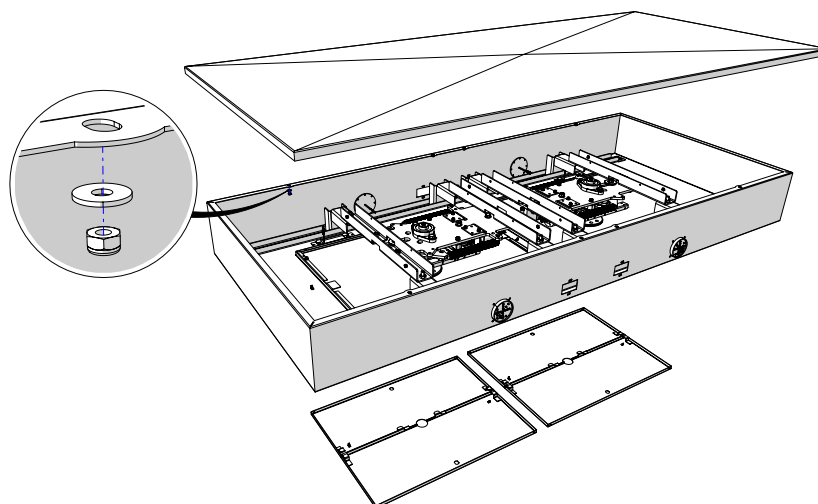


Fig. 21

Using a forklift, lift and move the housing over the previously mounted vertical elements;



Check that upright protectors (F) are present at the points where fixed panels come into contact with the housing. [⇒ Fig. 22]

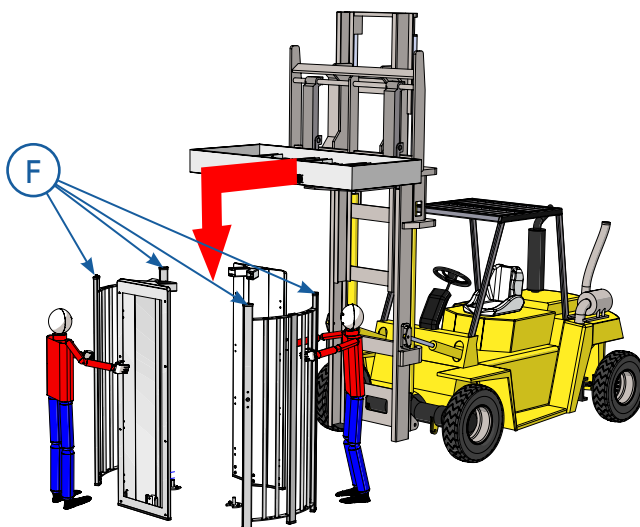


Fig. 22

Adjust the positioning and fasten the housing to the vertical elements.

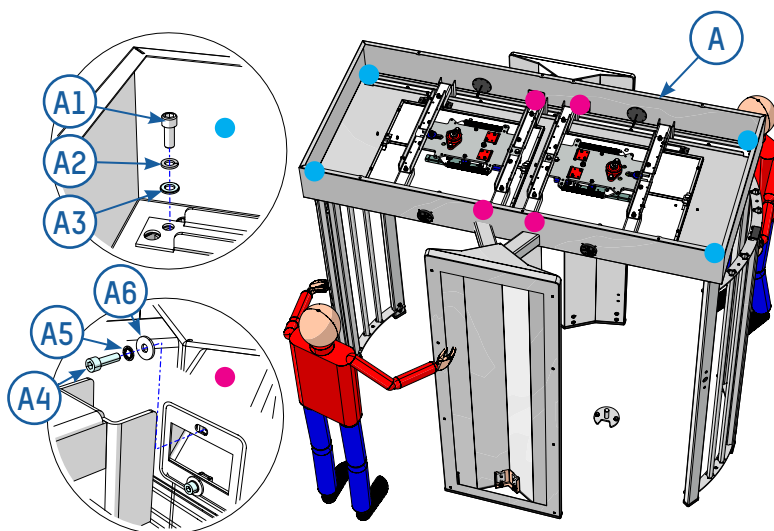


Fig. 23

Connect both fixed panels firmly to the ground.

4.4.4. Fixed comb assembly

Fixed combs are connected to the central uprights. They must be installed offset against each other. This means the fixed comb on the AB side is fixed at the bottom (I), and that on the CD side is fixed at the top (S).

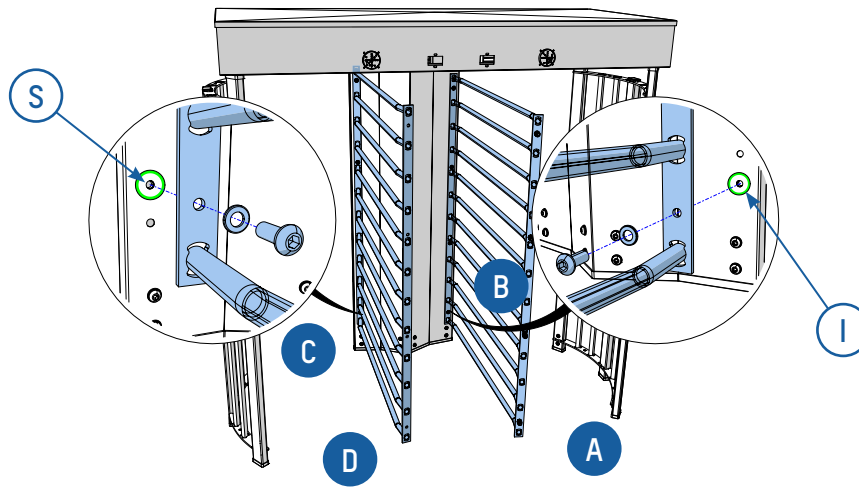


Fig. 24

Once the fixed combs have been assembled, the central uprights can be fixed correctly to the ground.

4.4.5. Mobile comb assembly

Mobile combs are fixed to the rotor via the upper flange and centred via the lower flange on the lower axis.

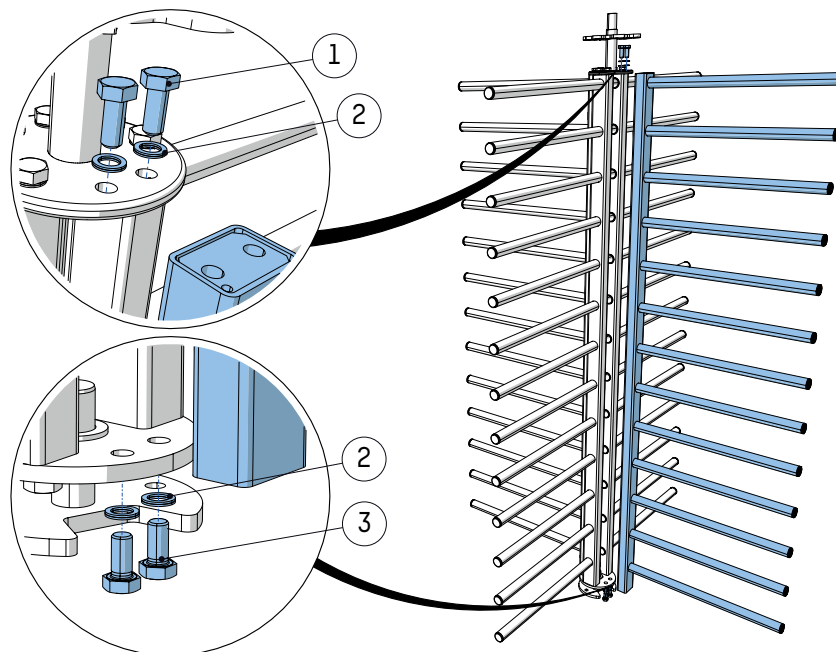


Fig. 25

Like the fixed combs, mobile combs must be installed offset against each other and in the same way as fixed combs.

Since the latter must be able to rotate freely in the passageway, the mobile comb should be mounted (in relation to the fixed comb) so the bars of the mobile comb pass through holes between the bars of the fixed comb.

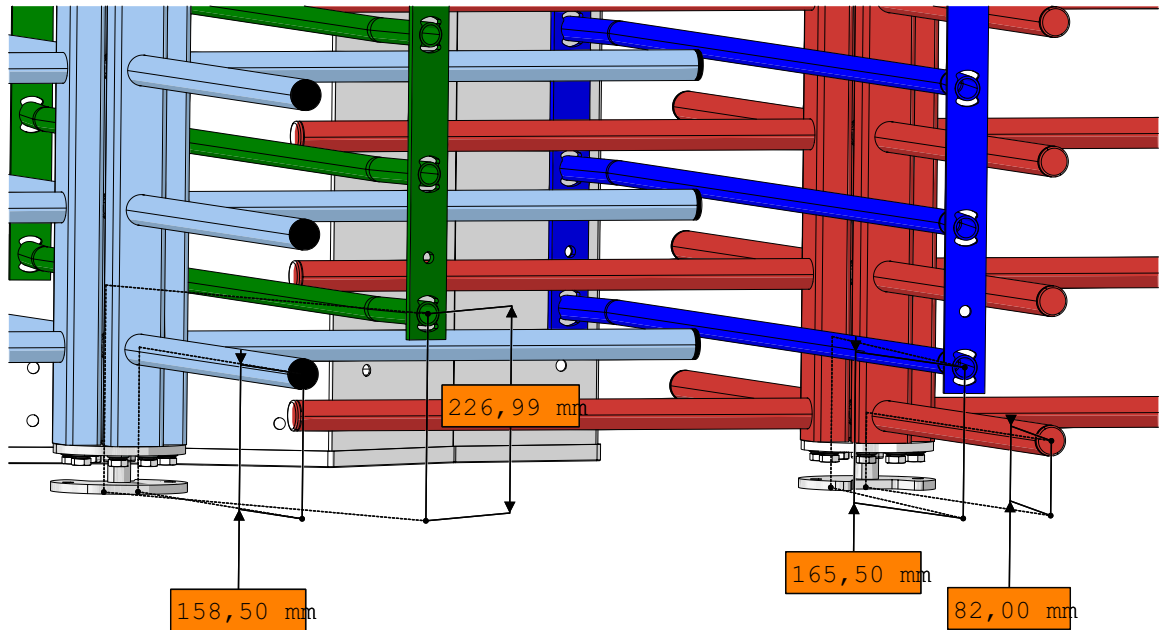


Fig. 26

A view of the theoretical dimensions of the distances between the ground and the first bars of the fixed and mobile combs has been provided below.



The dimensions given below are from a 3D model and may therefore differ from those in the final solution. However, they do indicate the relative positioning of the various elements.

- Clean the fixing holes of the mobile combs using cleaning spray HHS CLEAN 500 ML WURTH or MEWA Eco Force spray, 500 ml.
- For each mobile comb:
 - Position the mobile comb between the upper flange and the lower plate. (Fig. 25)
 - Position the **hexagonal flange bolts (1) (DIN 6921) M12x30 pre-coated** and **Nord-Lock M12 washers (2), to be used as a pair, without separating them**, on the upper fixing holes of the mobile comb *(and tighten them just to make contact)*.
 - Position the **hexagonal flange bolts (3) (DIN 6921) M12x25 pre-coated** and **Nord-Lock M12 washers (2), to be used as a pair, without separating them**, on the lower fixing holes of the mobile comb *(and tighten them just to make contact)*.
- Repeat the operation for each mobile comb.
- Tighten all fixing screws on the mobile combs: tightening torque = 68 Nm.



ONCE TIGHTENED, A PRE-COATED SCREW CAN NO LONGER BE ADJUSTED.

IF ADJUSTMENT IS NECESSARY, THE SCREW MUST BE REPLACED.

4.5. ELECTRICAL CONNECTIONS

The user is responsible for the power and control cables shown on the installation drawing.

If other than the recommended power cables are used, they must be separated from the control cables in order to avoid interference, i.e. they must run through different uprights.

1. Connect the 2 phases of the power supply (*single phase 120/230 VAC - 50/60 Hz*) to the circuit breakers (1 per passageway) and the ground.



PROTECT THE UPSTREAM LINE USING A 16 A CIRCUIT BREAKER.

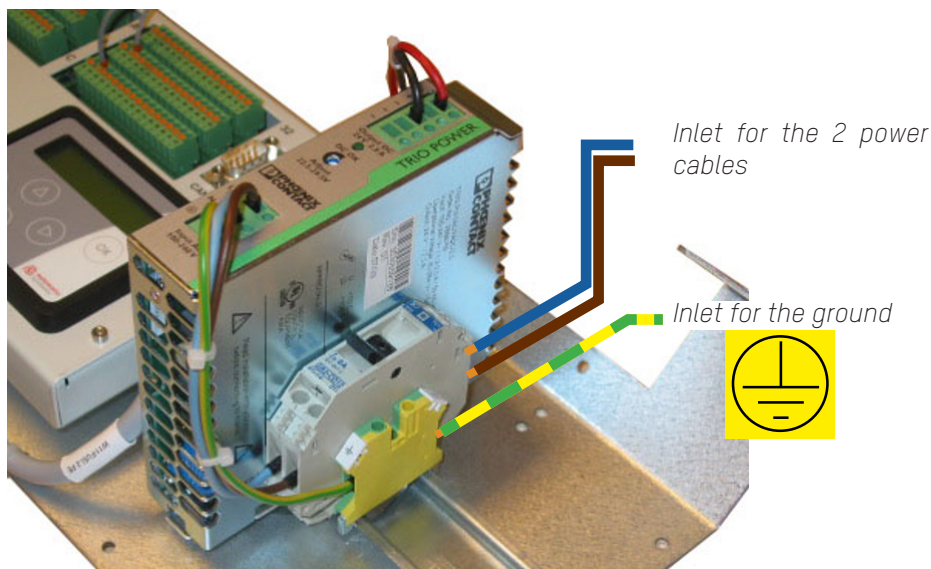
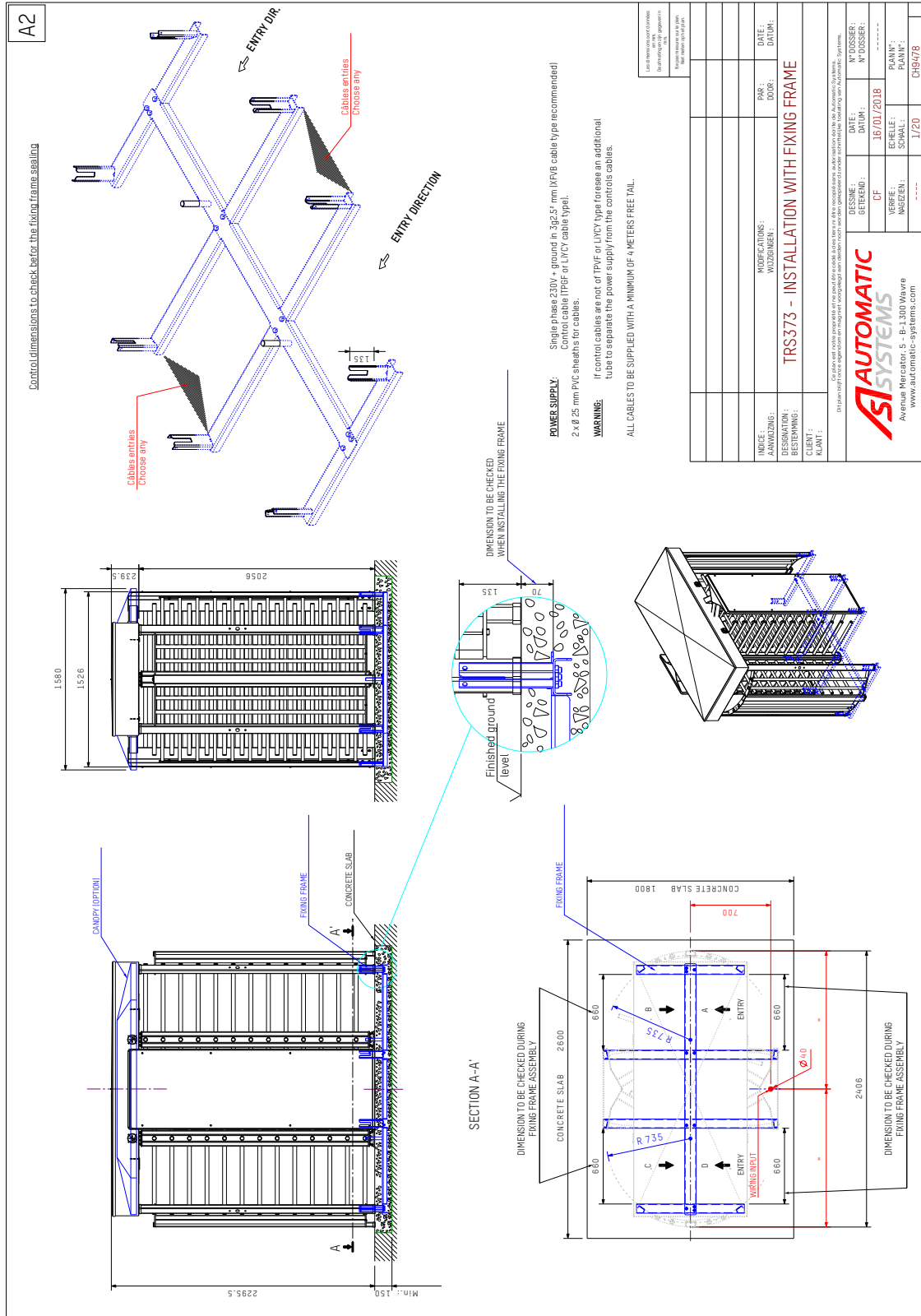


Fig. 27

2. Connect optional equipment (*card reader, etc.*) in accordance with the electrical diagrams.
3. Engage the circuit breaker.
4. Configure the control board parameters in accordance with the installed options (**OPTIONS** group).
5. Send a passage command and check whether the turnstile is working properly: unlocking, obstacle rotation and locking.

5. OPTIONAL EQUIPMENT

5.1. INSTALLATION WITH SEALING FRAME (OPTION)



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Fig. 28

Following the indications on the installation drawing:

1. Make preparations for installing conduits for cables and remote control devices. Note that the cable ends will extend 3 metres above ground level; electrical connections are made in the upper housing.
2. Dig a hole for the concrete slab.
3. Assemble the various parts of the sealing frame using the provided nuts and bolts.
4. Check the centre-to-centre distance of the sealing frame.
5. Insert the sealing frame into the hole:
 - Respect the direction of passage.
 - Run the conduits for the power and remote control cables over the provided uprights.
 - Make sure the fixing rails are sunk into the finished surface as indicated on the installation drawing (*the painted part of the rails must extend beyond the concrete*).
6. Pour and level out a standard concrete slab.
7. Leave to dry for about one week.

5.2. HEATING RESISTOR

A forced air heating resistor is recommended if heating via electromagnets proves to be inadequate (*cf. **Electromagnet Heat** parameter in the **OPTIONS** menu*).

The built-in fan provides homogeneous air circulation and temperature.

The thermostat can be used to set the desired temperature.



This function means the heater need not be controlled by the control unit. A third person will be needed to hold the second fixed panel in place.

Heat output must be adjusted to the required temperature (± 550 W at 20°C).

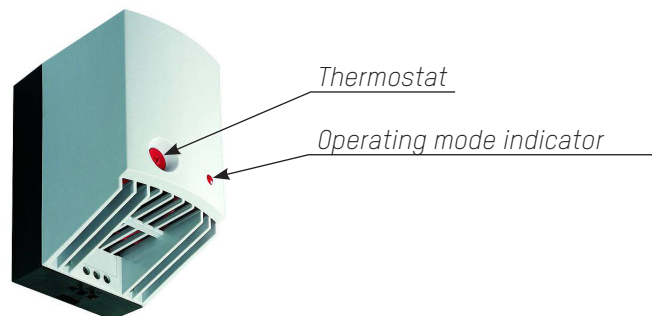


Fig. 29

5.3. FIXING THE HEEL GUARDS

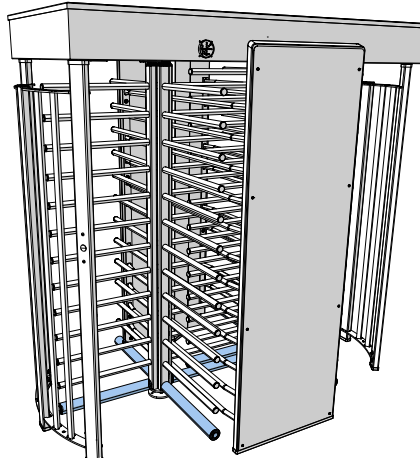


Fig. 30

Automatic Systems will provide an adhesive cartridge, SIKAFLEX 221, for gluing the heel guard to the bar.

This adhesive must be applied for ambient temperatures between +5°C and +40°C.

Once dry, the adhesive is able to withstand temperatures from -40°C to +90°C.



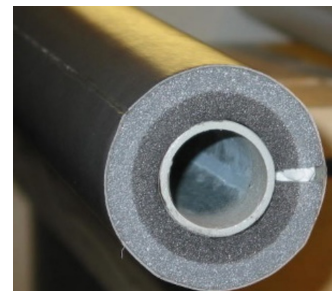
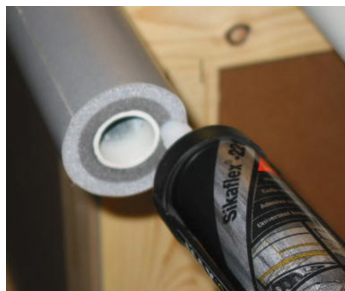
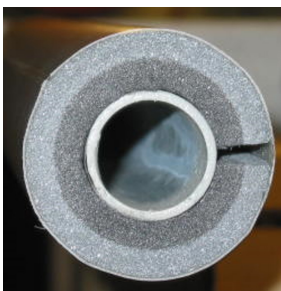
The curing speed of the adhesive depends on the thickness of application and the ambient temperature, and may take several days in case of low ambient temperatures.

Opened cartridges must be used as soon as possible.

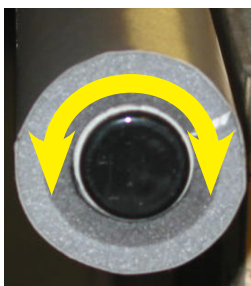
The adhesive does not withstand organic acids, alcohol, concentrated acid and alkaline solutions, and solvents.

For each mobile comb, degrease the bar closest to the ground and slip the heel guard around it.

Insert the end of the adhesive cartridge into the opening of the heel guard and apply the adhesive, taking care not to apply too much.

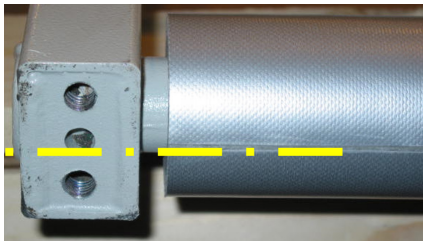


Turn the heel guard upside down to spread the adhesive around the bar.



Align the membrane weld with the bottom of the comb.

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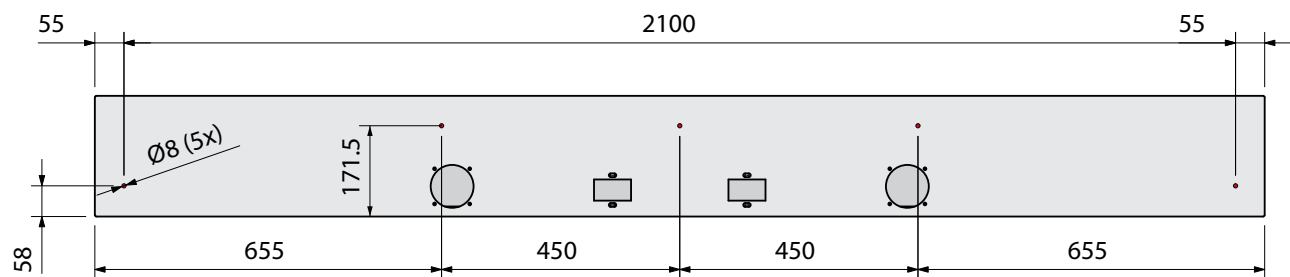


Leave to dry for 1 or 2 days or even longer in case of low ambient temperatures.

5.4. FIXING THE CANOPIES (OPTION)

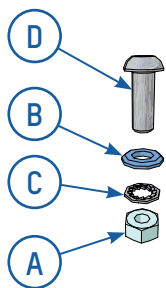
1st phase:

Drill 5 holes of 8 mm dia. on both sides of the housing..



2nd phase:

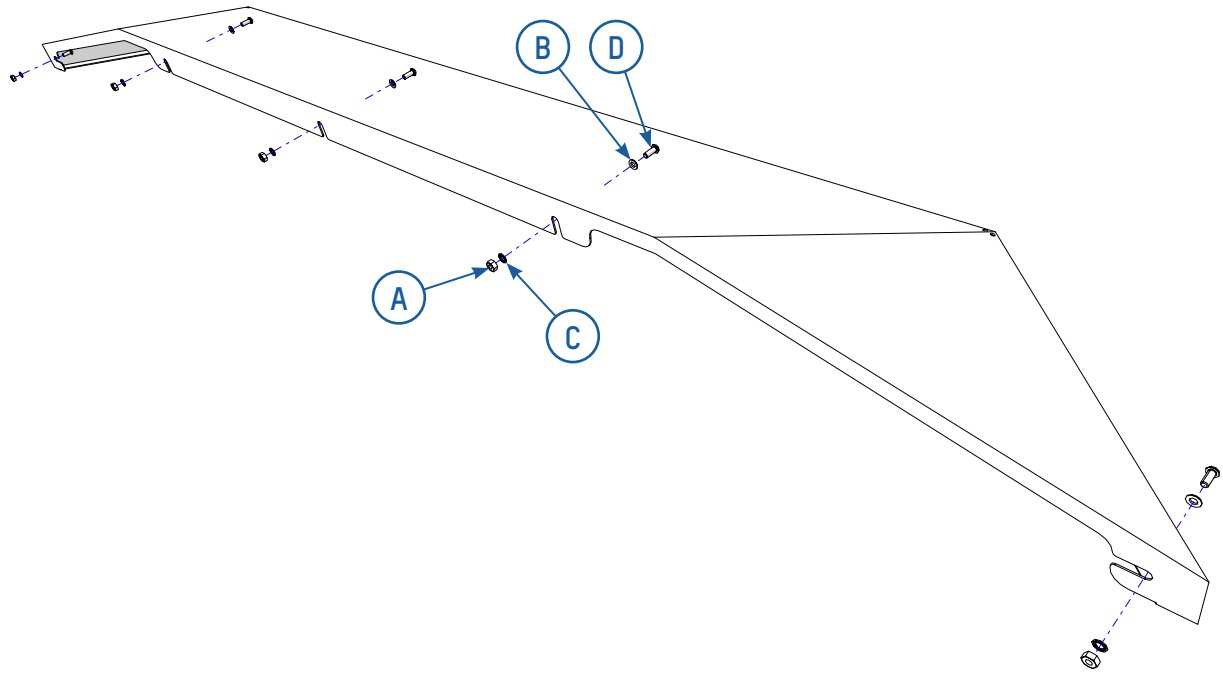
Fix the canopy to the bodywork.



A	A4 stainless steel nut DIN934 M6	10
B	Flat stainless steel washer DIN125 M6	10
C	Serrated stainless steel washer DIN6798 JZ	10
D	Hollow curved hexagon socket stainless steel head screw M6x16	10



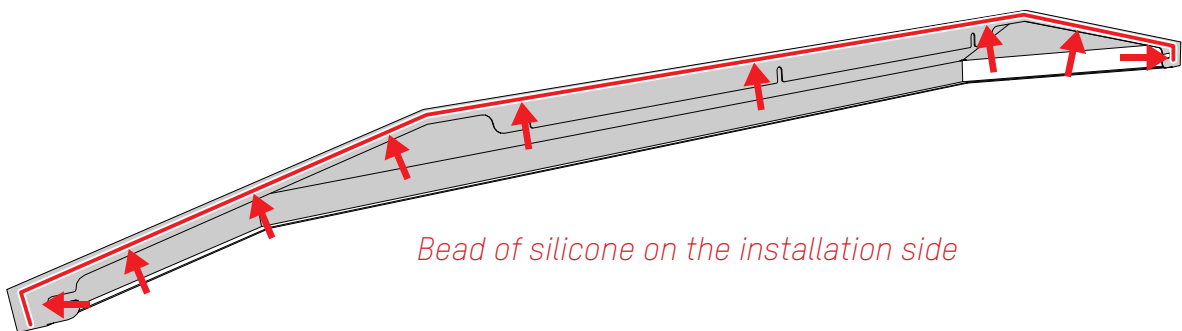
The screws above must be used to fix two canopies.



1st solution:

Apply a bead of silicone to the area that is contact with the housing prior to fixing.

Fix each canopy using the bolts provided in the installation kit.

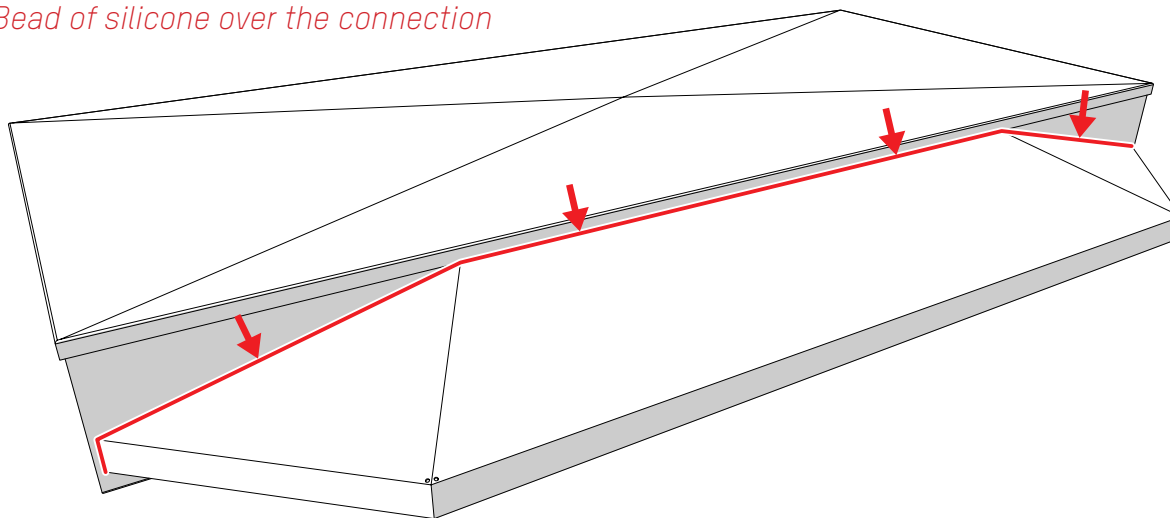


2nd solution:


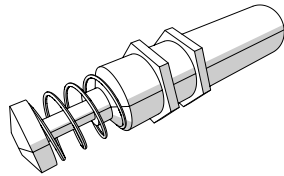
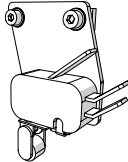
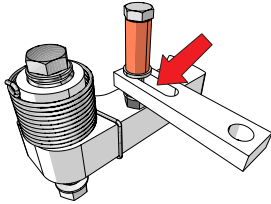
Fix each canopy using the bolts provided in the installation kit.

Apply a bead of silicone over the entire connection between the canopy and the housing.

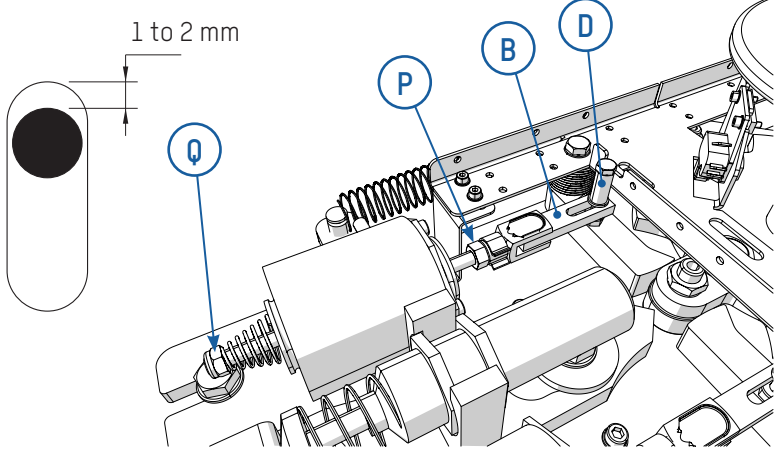
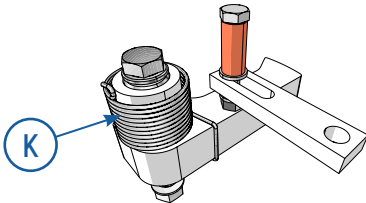
Bead of silicone over the connection



6. MAINTENANCE

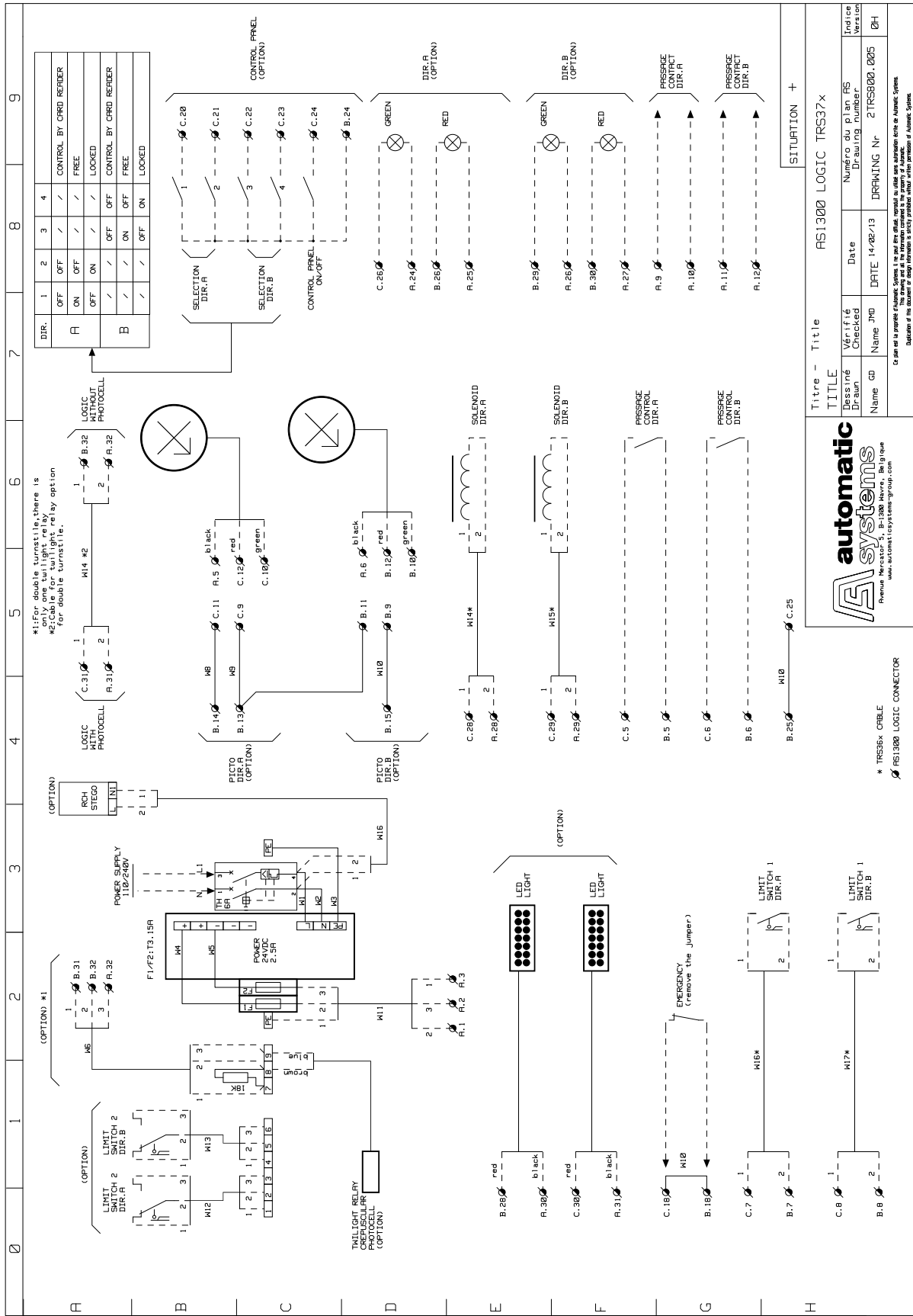
	<p>To get all details related to the preventive maintenance program, please read our Maintenance manual.</p>
<p>Every month <i>(See note opposite)</i></p>	<p>Clean the bodywork, walls and obstacles with water and a light detergent (<i>i.e. non chlorinated</i>).</p> <p>Clean the <i>(optional)</i> stainless steel combs using a cleaning product designed for stainless steel surfaces. Automatic Systems can provide an approved product under reference 0/6031/000.</p> <p>Repair any chips, cuts or scratches on painted surfaces.</p> <p><i>Note: Maintenance frequency must be adapted based on the conditions of use, especially when the turnstile is installed in an oxidizing atmosphere, e.g. entrance to a public pool (heated and chlorinated atmosphere), seaside, industrial environment, etc..</i></p>
<p>Each 6 month or after 500.000 cycles</p>	<p>Check the cinematic parts: springs, shock absorber, limit switches and replace these devices in case of wear.</p>
<p>After 1,000,000 cycles</p>	<p>Replace the shock absorber (N, ch.3.8.), which becomes less effect when exposed to prolonged wear.</p> 
	<p>Replace the two micro-switches (J ch.3.8.), the electrical resistance of which increases as the contact wears.</p> 
	<p>Make sure all bolts on the mechanical structure and mobile combs are tightened properly.</p> <p>Apply silicone spray (ref. 0/7508/284) to the bolt pivot.</p> 
<p>5 years</p>	<p>Replace the control board battery: lithium cell 3V/48mA. Automatic Systems can provide an approved product under reference 0/7111/010.</p> <p>To reach the battery, remove the front panel of the control board by unscrewing the 4 bolts.</p>

7. TROUBLESHOOTING

Turnstile out of service.	See messages on the control board display (OPERATION group, STATUS parameter).
Friction will be visible during movements.	Bolts and/or rollers may be seized up, especially in corrosive conditions (e.g. in a marine environment). Spray some silicone on parts that must be unseized.
Obstacle cannot be unlocked.	<p>Leave a gap between the connecting rod (B) of the electromagnet and the bolt stem (D) (setting the length of the connecting rod using nuts P and Q) in order to create an impact on the bolt when the electromagnet is activated.</p>
	
	<p>The electromagnets could become stuck if tightened too tightly. Slightly loosen nut (Q) in order to decompress spring (C).</p>
Obstacle cannot be locked.	<p>Spring (C) does not have the power needed to pull the bolt: compress the spring by tightening nut (Q) or replace it.</p>
	<p>Bolt release spring (K) is loose. Re-tighten the spring by a few turns.</p> 



8. ELECTRICAL DIAGRAMS



DIR.	1	2	3	4
A	OFF	OFF	✓	✓
B	OFF	✓	✓	✓

CONTROL BY CHRD READER	1	2	3	4
FREE	✓	✓	✓	✓
LOCKED	✓	✓	✓	✓

CONTROL BY CHRD READER	1	2	3	4
FREE	✓	✓	✓	✓
LOCKED	✓	✓	✓	✓

SELECTION DIR.A	1	2	3	4
1	✓	✓	✓	✓
2	✓	✓	✓	✓
3	✓	✓	✓	✓
4	✓	✓	✓	✓

CONTROL PANEL (OPTION)	1	2	3	4
ON/OFF	✓	✓	✓	✓
ON	✓	✓	✓	✓
OFF	✓	✓	✓	✓

Titre - Title	ASI 300 LOGIC TRS37x			
Designé	Verifié	Date	Numéro du plan AS	
Dessin	Checked	14/02/13	Drawing number	
Name	Name	DATE	DRAWING Nr	
GD	JMB	2/RSB00.005	0H	

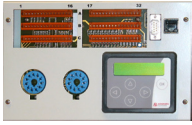
Ca sera val le projet Automatic Systems à ne pas être utilisé séparément ou dans une autre version de Automatic Systems.
 Devenir de ce document est strictement réservé à l'usage interne de Automatic Systems.

Titre - Title	ASI 300 LOGIC TRS37x			
Designé	Verifié	Date	Numéro du plan AS	
Dessin	Checked	14/02/13	Drawing number	
Name	Name	DATE	DRAWING Nr	
GD	JMB	2/RSB00.005	0H	

Ca sera val le projet Automatic Systems à ne pas être utilisé séparément ou dans une autre version de Automatic Systems.
 Devenir de ce document est strictement réservé à l'usage interne de Automatic Systems.

800.005.10

8.1. ASSIGNMENT OF CONTROL BOARD TERMINALS



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

The output parameters can be changed in the **OUTPUT FUNCTION** group.

Inputs/outputs for options have been highlighted.

	C		B		A	
1	BCL1+	<i>Not used</i>	BLC3+	<i>Not used</i>	24V	PWR
2	BCL1-	<i>Not used</i>	BCL3-	<i>Not used</i>	0V	PWR
3	BLC2+	<i>Not used</i>	BCL4+	<i>Not used</i>	PE	
4	BCL2-	<i>Not used</i>	BCL4-	<i>Not used</i>	(PE)	
5	DI1	Pass Control A	24V		GND	
6	DI2	Pass Control B	24V		GND	
7	DI3	FCA (NO)	24V		GND	
8	DI4	FCB (NO)	24V		GND	
9	REL1+	Green Ori Pict A	REL3+	Green Ori Pict B	REL5+	Contact Pass A
10	REL1-		REL3-		REL5-	
11	REL2+	Red Ori Picto A	REL4+	Red Ori B Red	REL6+	Contact Pass B
12	REL2-		REL4-		REL6-	
13	DI5	Alarm (NO) <i>(= Out of Service)</i>	24V		GND	
14	DI6		24V		GND	
15	DI7		24V		GND	
16	DI8		DI18		GND	
17	DI9		24V		GND	
18	DI10	Evacuation (NC)	24V		GND	
19	DI11		24V		GND	
20	DI12	Ctrl Panel A1	24V		GND	
21	DI13	Ctrl Panel A2	24V		GND	
22	DI14	Ctrl Panel B1	24V		GND	
23	DI15	Ctrl Panel B2	24V		GND	
24	DI16	Ctrl Panel Key (NO)	24V		GND	
25	DI17	Connected to 24V	24V		GND	
26	D07	Green Fct Picto A	D08	Red Fct Picto A	GND	
27	D09	Heater not self-regulated	24V		GND	
28	D010	Electro A	D013	LED Lighting	GND	
29	D011	Electro B	D014	Green Fct Picto B	GND	
30	D012	LED Lighting	D015	Red Fct Picto B	GND	
31	A01	Used (=AI2) (*)	A02	Used	GND	
32	AI1		AI2	Light sensor	GND	

9. EC DECLARATION OF CONFORMITY



AS **AUTOMATIC**
SYSTEMS

EC declaration of conformity



We, undersigned,

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

Herewith declare that the following machine

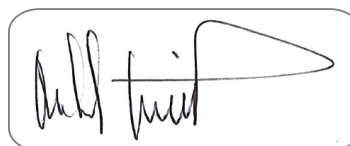
Full-height turnstile

TRS 370
TRS 371
TRS 372
TRS 373
PMR TRS

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: 2018.10.19
Name: Michel TOUSIGNANT
Function: R&D Director





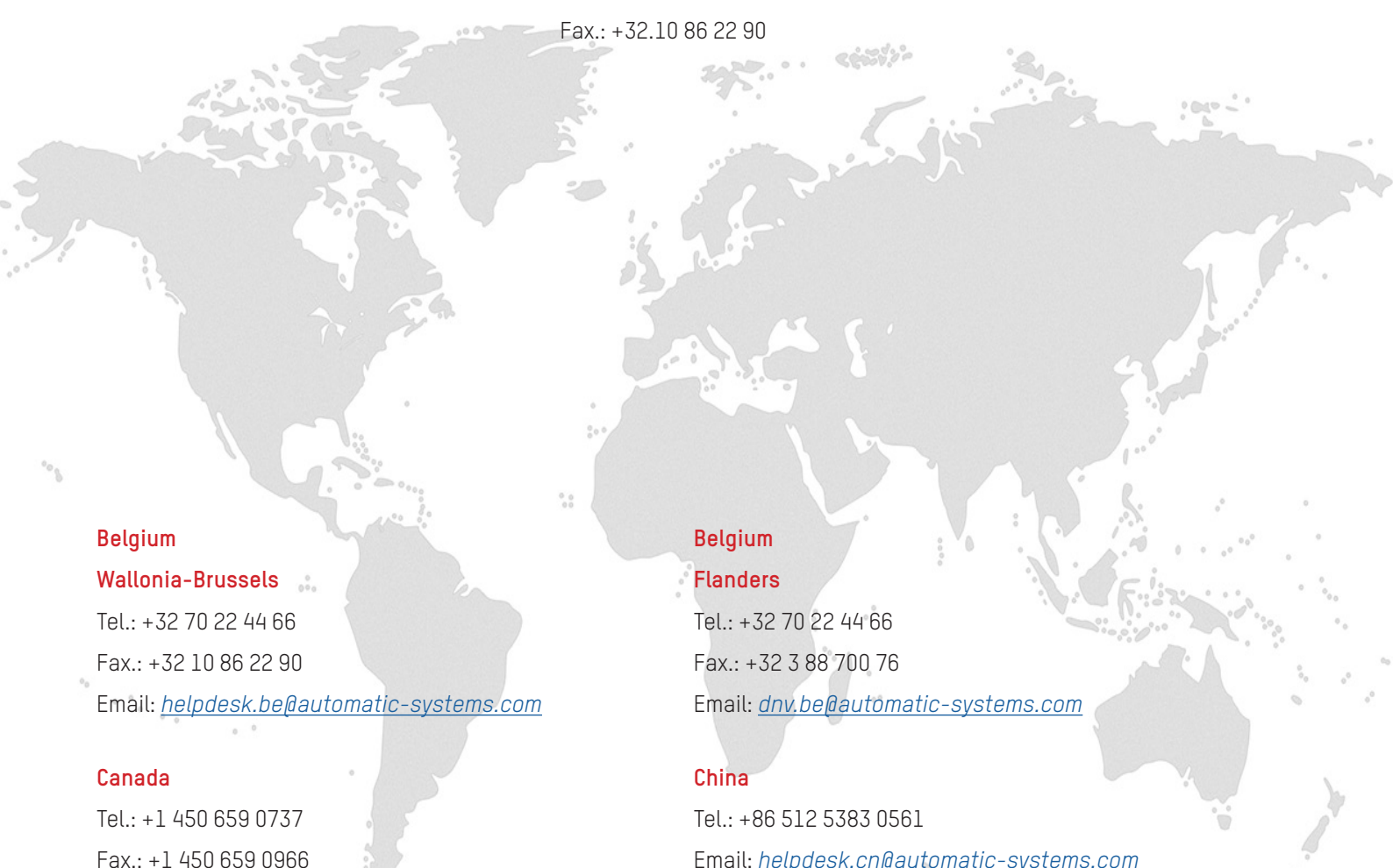
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