

# Installation guidelines

## Full-height turnstile Oxgard Praktika T-10-M (T-10-MH)

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## List of abbreviations used

PSU	- power supply unit
S&FA	- security and fire alarm
CB	- control board
ACS	- access control system
NC	- normally closed
NO	- normally opened

*Turnstile firmware version FW v1.2*

## 1. Basic specifications

*Table 1. Basic specifications*

<b>Description</b>	<b>Turnstile</b>	<b>RC panel</b>
Overall dimensions (H x W x D), mm:	2290x1500x1375	107x107x25
Weight (net), kg	320	0.5
Temperature range, °C:		
- during operation	-40...+50	+1...+40
- during transportation and storage	-40...+50	+1...+40
Relative air humidity, %, at most	95	80
Passage width, mm	600	
Throughput, persons per minute	20	
Lifetime, years	8	8

*Table 2. Electrical specifications*

<b>Description</b>	<b>Turnstile</b>	<b>RC panel</b>
Power supply voltage, V:	220	12.0
Rated consumption power*, W	60	

\*- values mentioned at a nominal supply voltage

*The original manufacturer reserves its right to change the scope of supply, technical characteristics and external appearance of the article.*

## 2. Product design

The turnstile is manufactured with electromechanical (motorized) drive of the wicket door automatic rotation.

In the actuating mechanism of Oxgard Praktika T-10-M (T-10-MH) high precision stepper electromotor is installed which is turned at any start of the rotor movement. When moving in the authorized direction, rotor is

made up further by the motor, and, when moving in the prohibited direction, the rotor is partially broken.

After turning the arms of the wicket door to an angle of about 10° degrees, turnstile starts the automatic motion of the rotor in the passage direction until the initial (closed) position of the arms is reached.

In the free passage mode, turnstile starts turning the rotor when the arms are deflected by an angle of about 10 °, and switches to the arm's raking mode after rotor's turning by an angle of about 110 °.

The turnstile body and blocking arms depending on the turnstile model are made of:

T-10-M – from power-coated steel

T-10-MH – from stainless steel.

In conditions of environmental hazard the design ensures prolonged lifetime service of the turnstile.

General view and overall dimensions of the turnstile are shown on the Fig. 2 and 3.

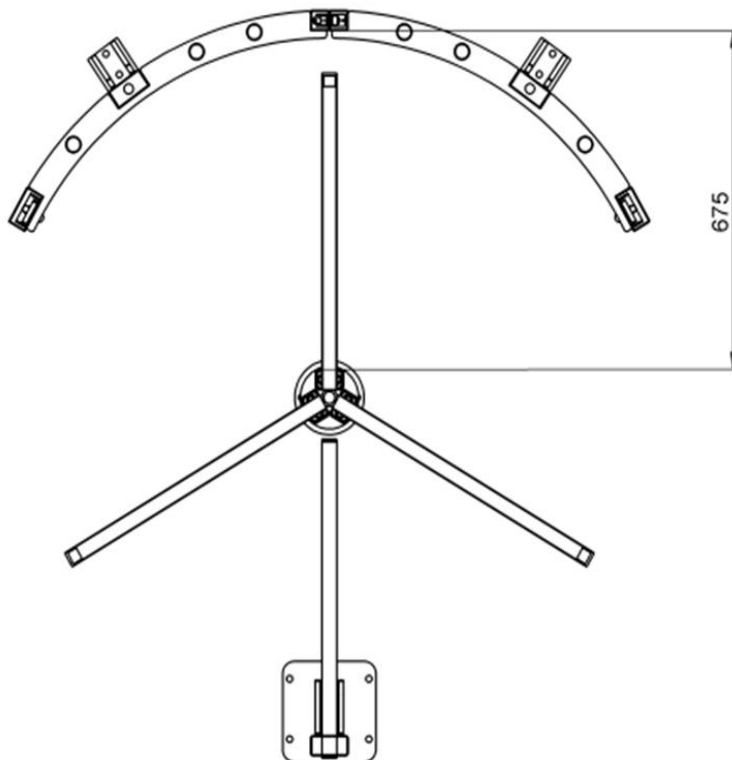
The turnstile consists of:

- fixed enclosure panel (1);
- mobile enclosure elements (rotatory wicket door) (2);
- fixed enclosure elements (3);
- upper module (4);
- actuator (5) within the upper module;

The general view of the turnstile is shown on the Fig. 2. The middle part of the turnstile's upper module is provided with two removable lock doors for fast access to the cross-board when connecting CB and ACS cables and the power supply cable. The cable inputs shall be led to two racks of the fixed enclosure panel (at choice) (Fig. 2).

**In its initial state the turnstile** is closed (the turnstile is closed for passage in both directions).

- in the initial state of the turnstile the passage zone is occluded **by one leaf**; from this state it's possible to set the standard operating modes of the turnstile



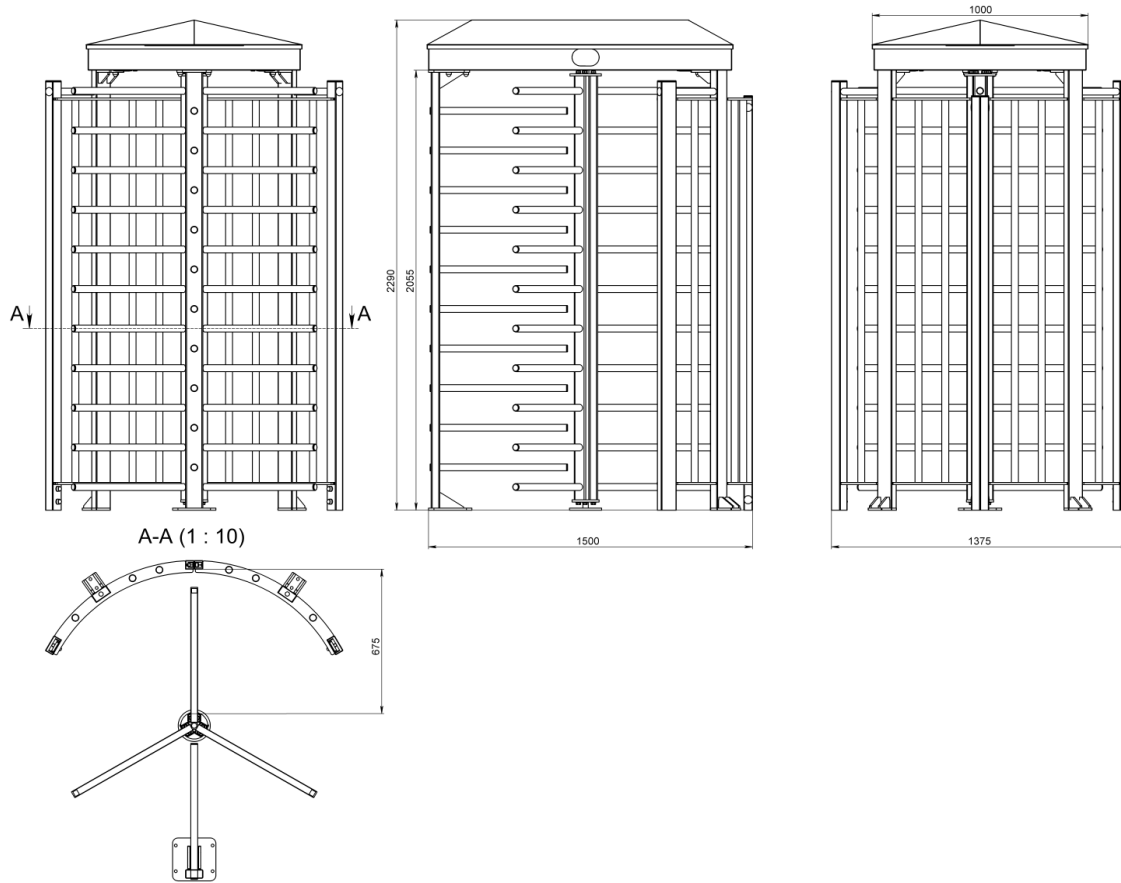
*Fig. 1. Initial position of the leaves  
of the turnstile (above view)*

The said options are defined by orientation of the rotatory shaft during its installation in the course of installation of the turnstile.



*Fig. 2. General view of the turnstile.*

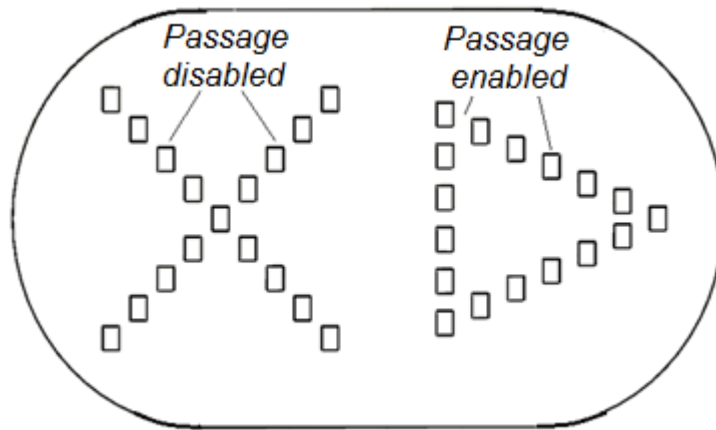




*Fig. 3. General view and overall dimensions of the turnstile*

## ***Display panel***

The display panel of the turnstile is located at the upper module of the turnstile below an acrylic glass insert. The operating modes of the turnstile are displayed at the panel as mnemonic symbols for enabling/disabling the passage (Fig. 4).



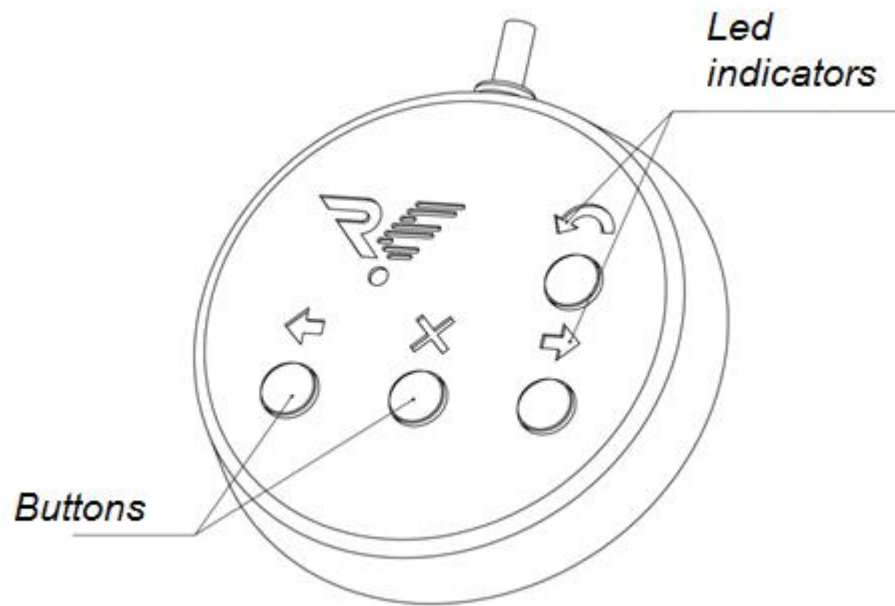
*Fig. 4. External appearance of the display panel*

## ***Control board***

The CB body is made of polished stainless steel. The front side is fitted with control buttons and LED indicators for desk operation modes (Fig. 5). The standard length of the cable included in the scope of supply is 10 meters. The control board cable is laid in the body of the upper module 4 (Fig. 2) through the cable input rack in the fixed enclosure panel 1 (Fig. 2).

The control board cable shall be extended if necessary.

The control board shall be connected to the turnstile via the cross-board of Fig. 16 as per Table 4.



*Fig. 5. External appearance of the control board*

### **3. Safety requirements**

During turnstile operation it is required to follow general safety rules for operating electrical installations.

#### **It is forbidden to:**

- operate the turnstile in conditions not complying with the requirements to operating conditions
- operate the turnstile under power supply voltage different from that specified in Table 2.

When maintaining the turnstile:

All the works shall be done only with the turnstile de-energized.

When removing and installing large-sized and heavy parts of the turnstile be doubly careful and prevent the parts from dropping.

#### **Operating conditions:**

The turnstile is resistant to environmental impact under U2 version as per

GOST 15150-69 (to be operated outdoors).

The turnstile can be operated at ambient temperature between  $-40^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$  and relative air humidity up to 95% at the temperature  $+25^{\circ}\text{C}$ .

The turnstile control board is resistant to environmental impact under UHL 4 option as per GOST 15150-69 (to be operated indoors under artificially adjustable climatic conditions).

The control board can be operated at ambient temperature between  $+1^{\circ}\text{C}$  to  $+55^{\circ}\text{C}$  and relative air humidity up to 80% at the temperature  $+25^{\circ}\text{C}$ .

**CAUTION!** Non-observance of the requirements from this section can cause damage to human life & health and full or partial loss of functions of the article and/or auxiliary equipment.

**CAUTION!** In the off mode, it is forbidden to move the rotor of the turnstile at an increased speed in order not to disturb the operational performance of the product.

**CAUTION!** The original manufacturer shall not take responsibility for damage to human life & health, full or partial loss of functions of the article and/or auxiliary equipment due to non-observance of safety requirements of this section and void the warranty for this article.

### **IT IS STRICTLY FORBIDDEN:**

- to use compounds and liquids for cleaning the article, which are chemically aggressive for materials of the body.

## **4. Installation of the turnstile**

**CAUTION!** The turnstile shall be reliably installed so as to avoid its oscillation and/or capsizing in operation. If the turnstile is to be installed on floors with low strength, take measures to reinforce the floors in the place of installation.

Carefully study the present section of the Instructions before starting to check the operability.

### ***4.1. Necessary equipment***

Equipment to be used for installation of the turnstile:

- electric drilling machine;
- 18 mm-diameter carbide drill for boring anchor openings in a floor (it is recommended to use a sleeve anchor with the bolt FH 11-S 18/10);
- 19-mm wrench;

- 19-mm key wrench with a lever;
- flat blade screwdriver;
- plumbing line or mechanic's level;
- steel shims for adjustment of the turnstile;
- round file;
- side-cutting pliers;
- 500 g hammer;
- plumbing line or mechanic's level.

#### *4.2. Installation of the turnstile*

4.2.1. Places for installation of the enclosure panels and mobile and fixed elements of the turnstile and cable routes shall be pre-arranged according to the working drawing (Fig. 21).

**Pay attention that cable ends come out of the ground for 4 meters as electrical connections shall be made in the upper module of the turnstile.**

4.2.2. Surface to be used for installation of the full-height turnstile shall be smooth and pre-arranged. For this purpose it is recommended to use concrete or other noncombustible material.

4.2.3. By guidelines from the installation drawing (Fig. 21) mark the location for boring by means of a pattern.

4.2.4. According to the installation dimensions (Fig. 22) prepare 9 openings with 18 mm diameter in a floor to put anchors for fixing the turnstile stand for the depth of 80 mm. The installation openings shall be arranged relative to external dimensions of the turnstile as per Appendix 2

(Fig. 20, Fig. 21). The depth of the insert opening shall exceed the anchor length for 5 mm. Insert the anchors into the openings.

**Caution!** The anchor bolts from the original manufacturer are suitable for solving the most of problems, however in each specific case of installation it shall take into account environmental conditions and a type of soil on which the turnstile is installed. All the construction works shall be coordinated and agreed by a qualified engineer who possesses all necessary information.

**The equipment shall be attached to the foundation before the operation starts!**

The original manufacturer shall not take responsibility for emergencies or failures resulted from improper fixture of the equipment.

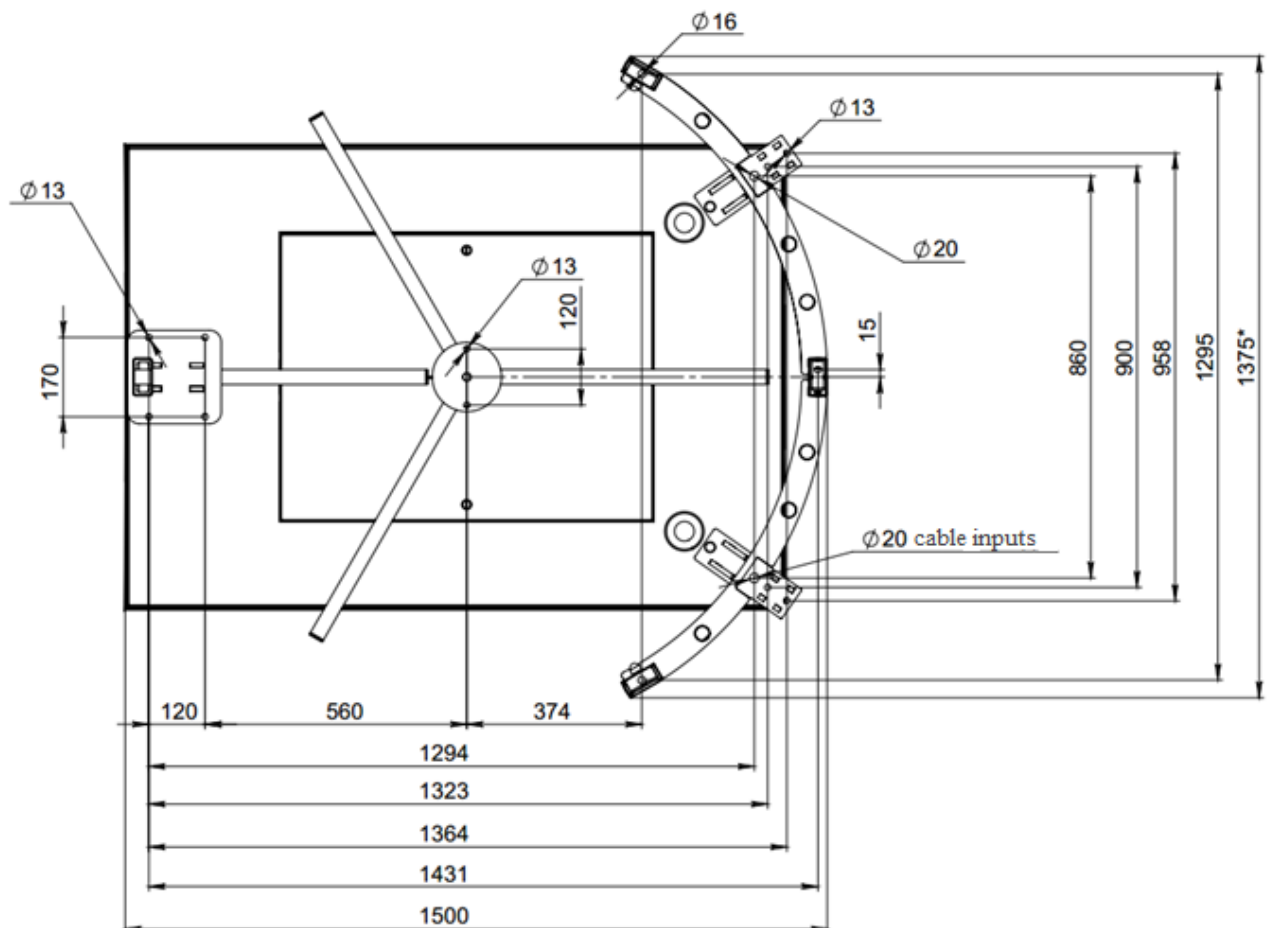
4.2.5. Install the C clamps of Fig. 20 by means of the bolts included in the scope of supply of anchors in the locations for fixturing of the turnstile. Tighten the bolts to fix the expanding anchors in the soil.

4.2.6. Select a rack of the fixed enclosure panel, along which cables for control and power supply of the turnstile will be laid to the upper module. Prepare the cable channel from the site to the installation location of the CB and, if required, to the place of connection of ACS and S&FA.

The cables shall be led to the upper module through the openings made in the racks of the fixed enclosure panel (Fig. 2). It is necessary to prepare a trench for that rack of the fixed module which will be used by you to lay cables to the upper module.

4.2.7. Open the box and unpack the turnstile, check the scope of supply for the following:

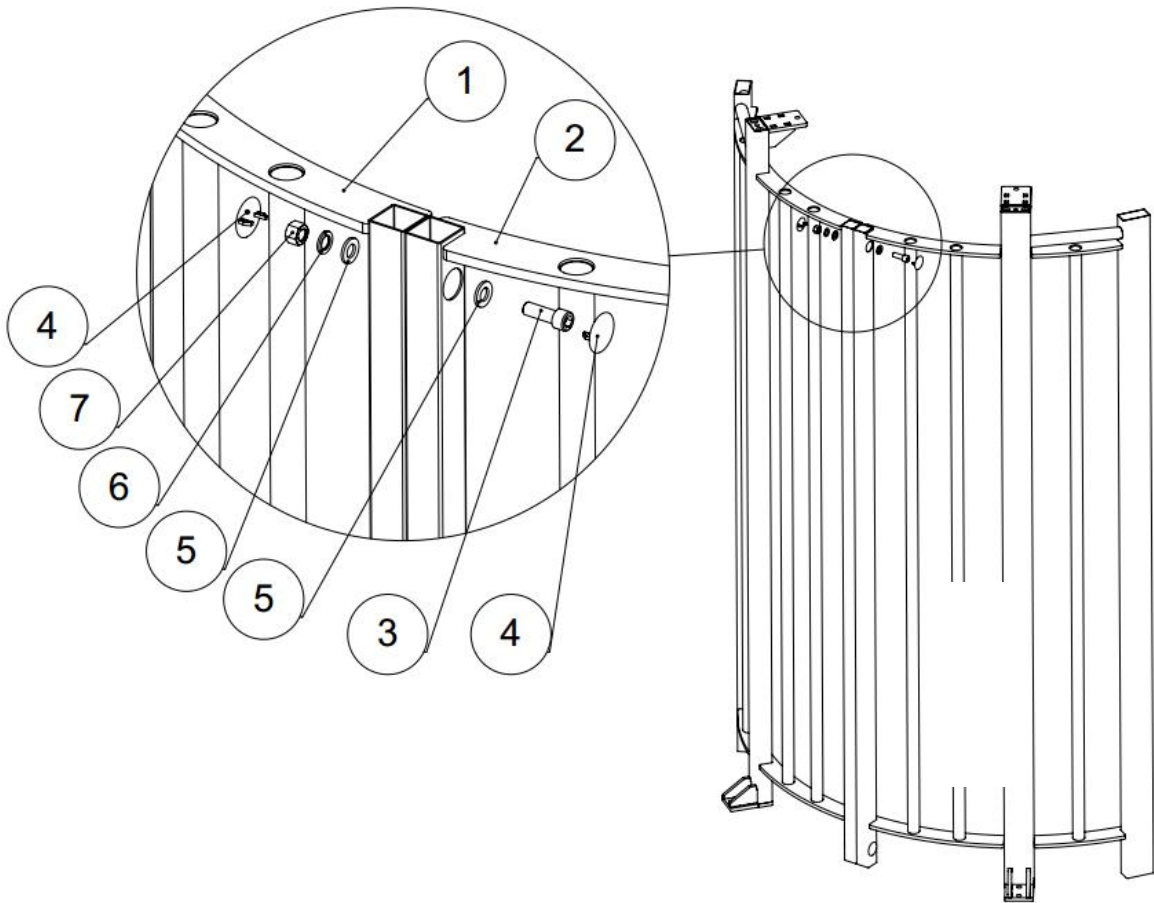
- part of the fixed enclosure panel (1);
- parts of the mobile enclosure elements (rotatory wicket door) (2);
- parts of the fixed enclosure elements (3);
- parts of the upper module (4);
- actuator(5);
- CB with a cable;
- keys for the door lock (4 pieces);
- accompanying documentation.



*Fig. 6. Installation dimensions*



4.2.8. Assemble the fix enclosure panel of the turnstile of Fig. 7. Install it on the prepared site by pre-passing into its rack CB cables, power supply cables, ACS and S&FA cables to the upper module.



1 Bend section

2 Opposite bend section

3 Bolt M-12x40 DIN 933

4 Plug 30-33T38ЧK

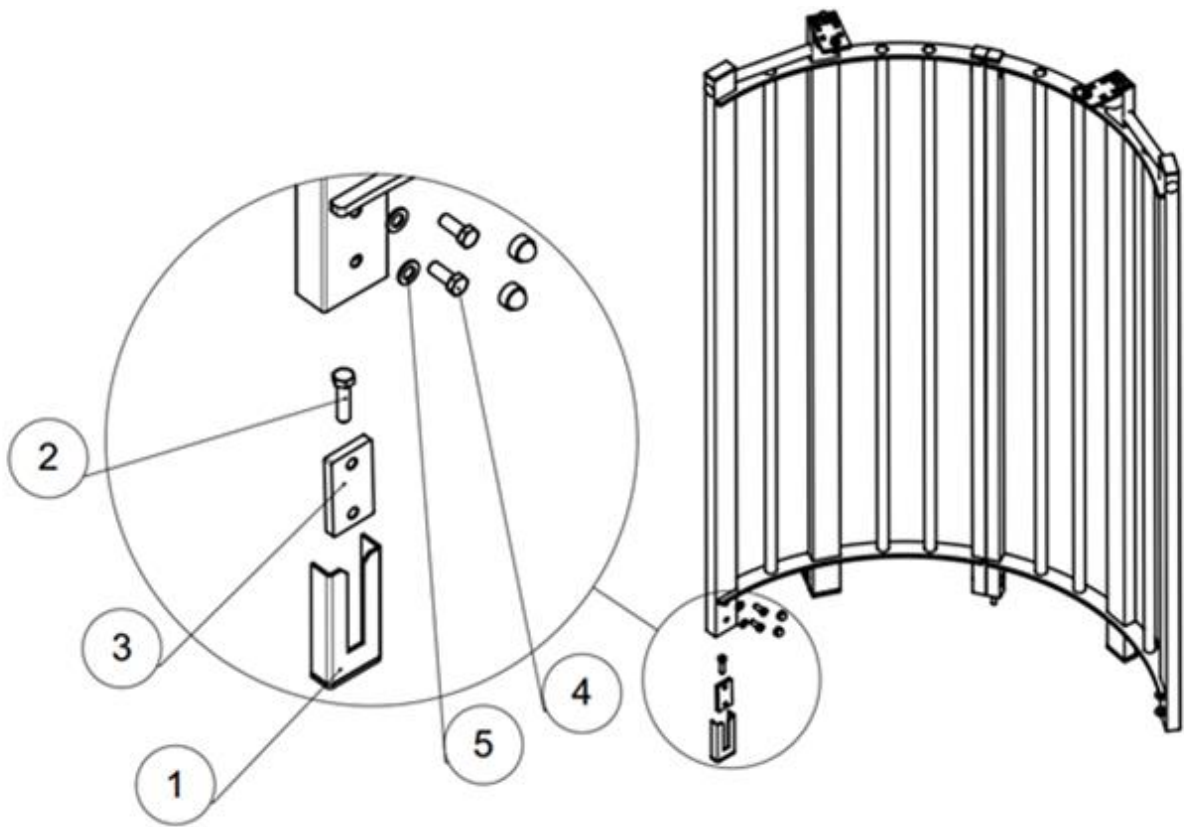
5 Washer M12 DIN 125

6 Washer M12 DIN 127

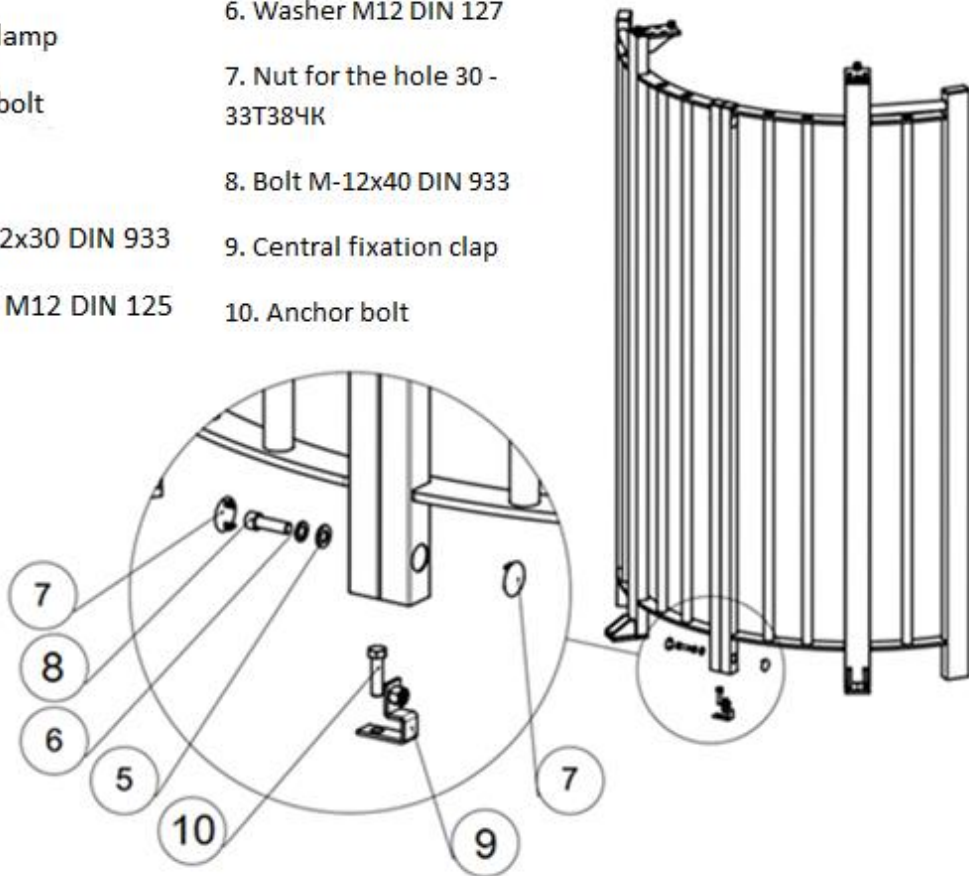
7 Nut M-12

*Fig. 7. Assembly of the fixed enclosure panel.*

4.2.9. Fix the fixed enclosure panel of the turnstile with the clamps 1 (2 pcs.) and 10 and central clap 10, anchor bolts 2 and 10 M12 (Fig. 8) by screwing them into respective anchors by means of the 19-mm key.

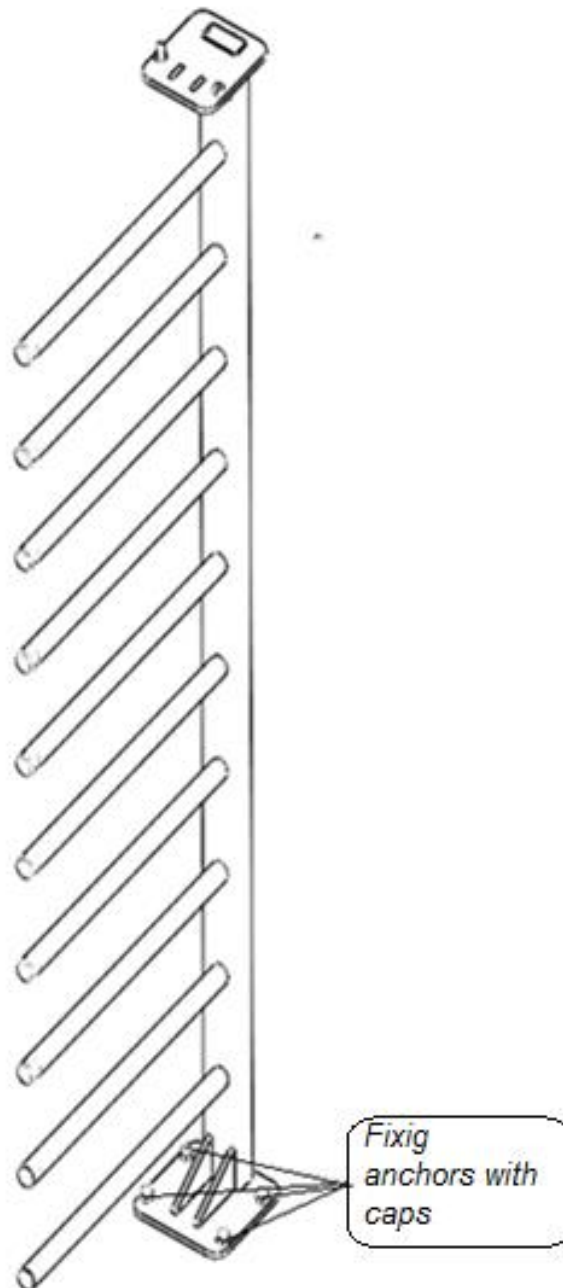


- |                        |                                  |
|------------------------|----------------------------------|
| 1. Fixing clamp        | 6. Washer M12 DIN 127            |
| 2. Anchor bolt         | 7. Nut for the hole 30 - 33T384K |
| 3. Clap                | 8. Bolt M-12x40 DIN 933          |
| 4. Bolt M12x30 DIN 933 | 9. Central fixation clamp        |
| 5. Washer M12 DIN 125  | 10. Anchor bolt                  |



*Fig. 8. Fixture of the fixed enclosure panel*

4.2.10. Install and fix the fixed enclosure element of the turnstile with the anchors (Fig. 9) by screwing them into respective openings by means of the 19-mm key. Install plastic caps onto heads of the fixture bolts.

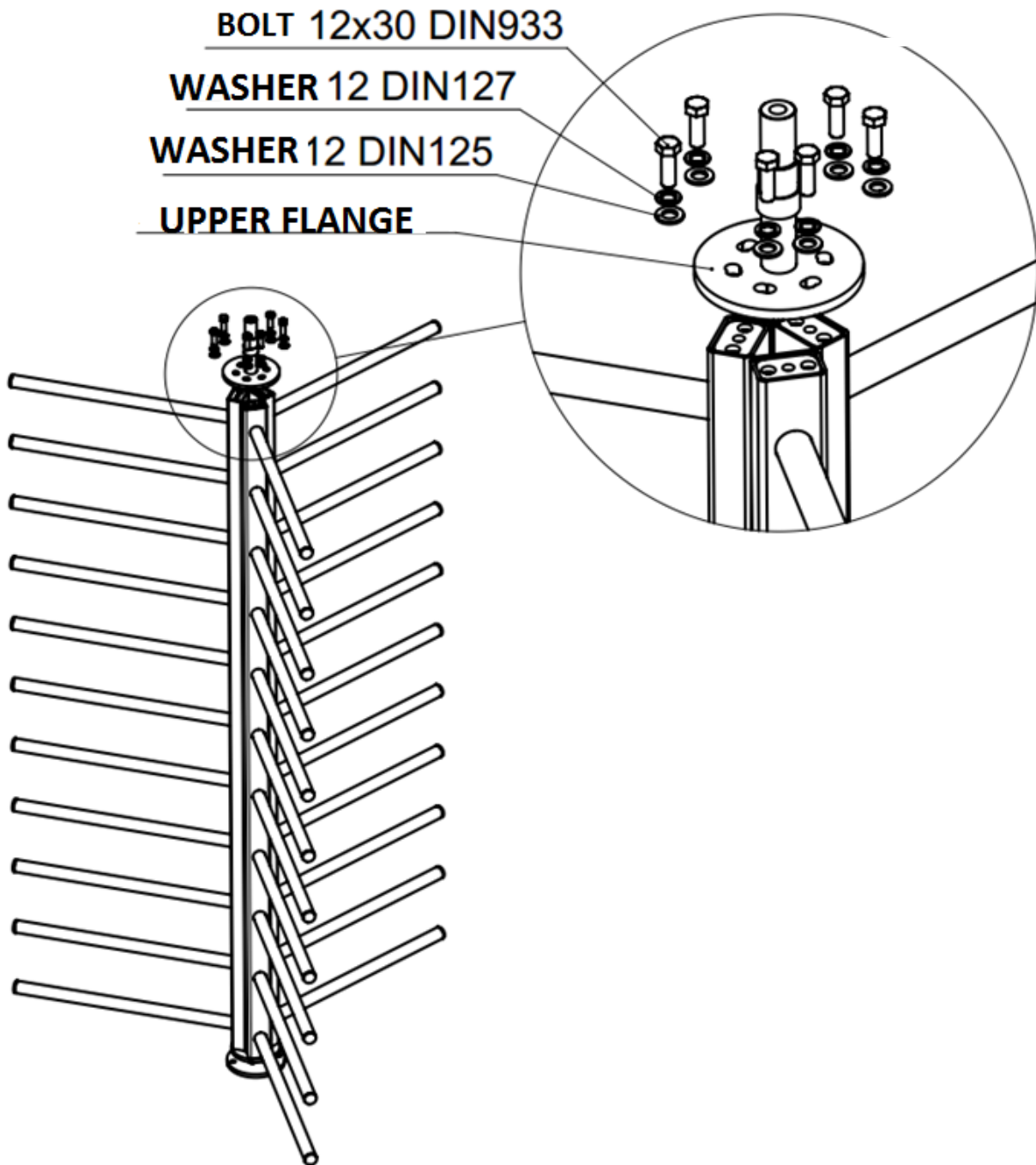


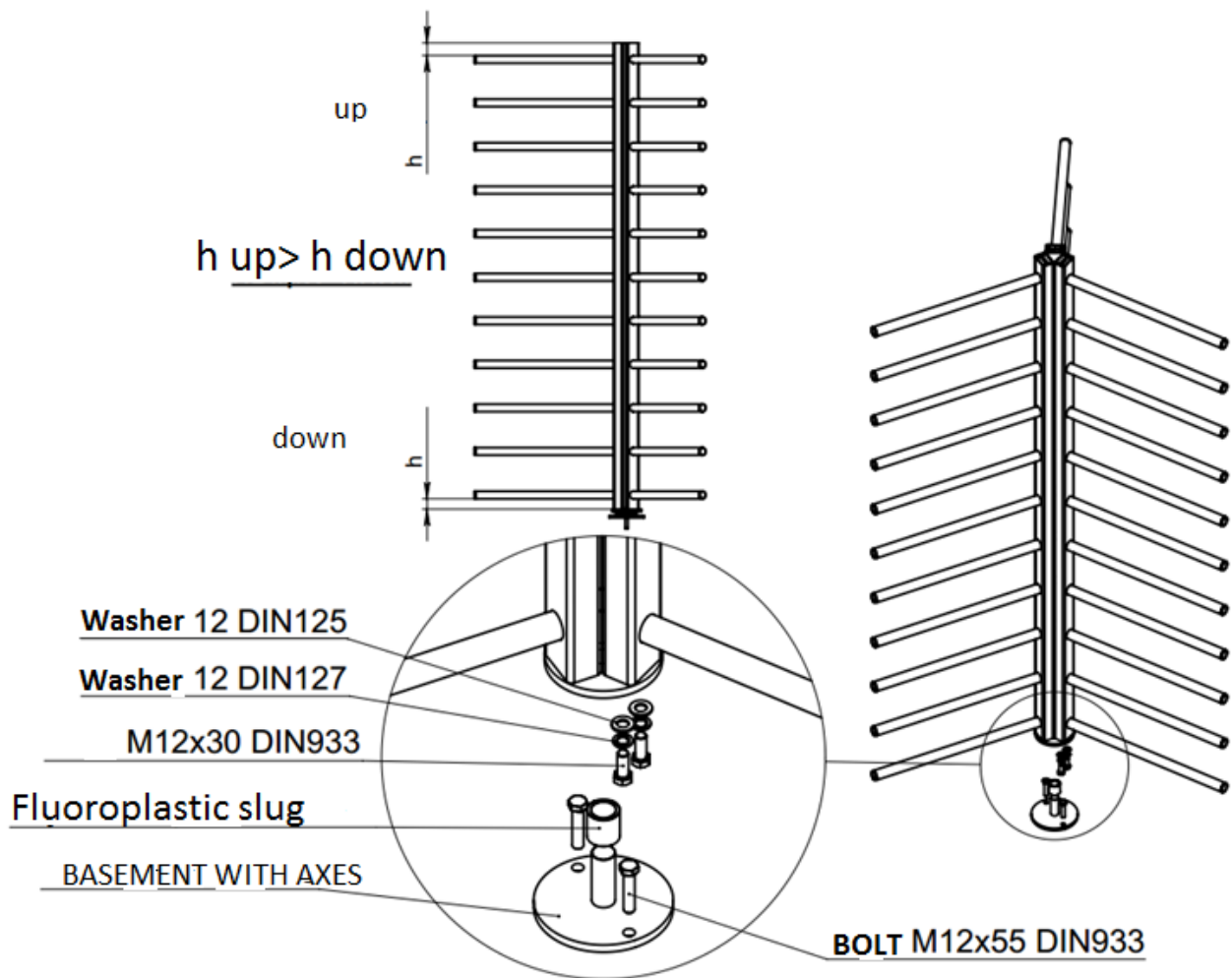
*Fig. 9. Installation of the fixed enclosure element*

4.2.11. Assemble the mobile elements of the turnstile (rotatory wicket door) of Fig.10.

- Turn the sections of the wicket door so as:
- ( $h_{\text{upper}} > h_{\text{lower}}$ ).

Place the rotor sections onto the upper flange so as to close the passage (Fig.1).

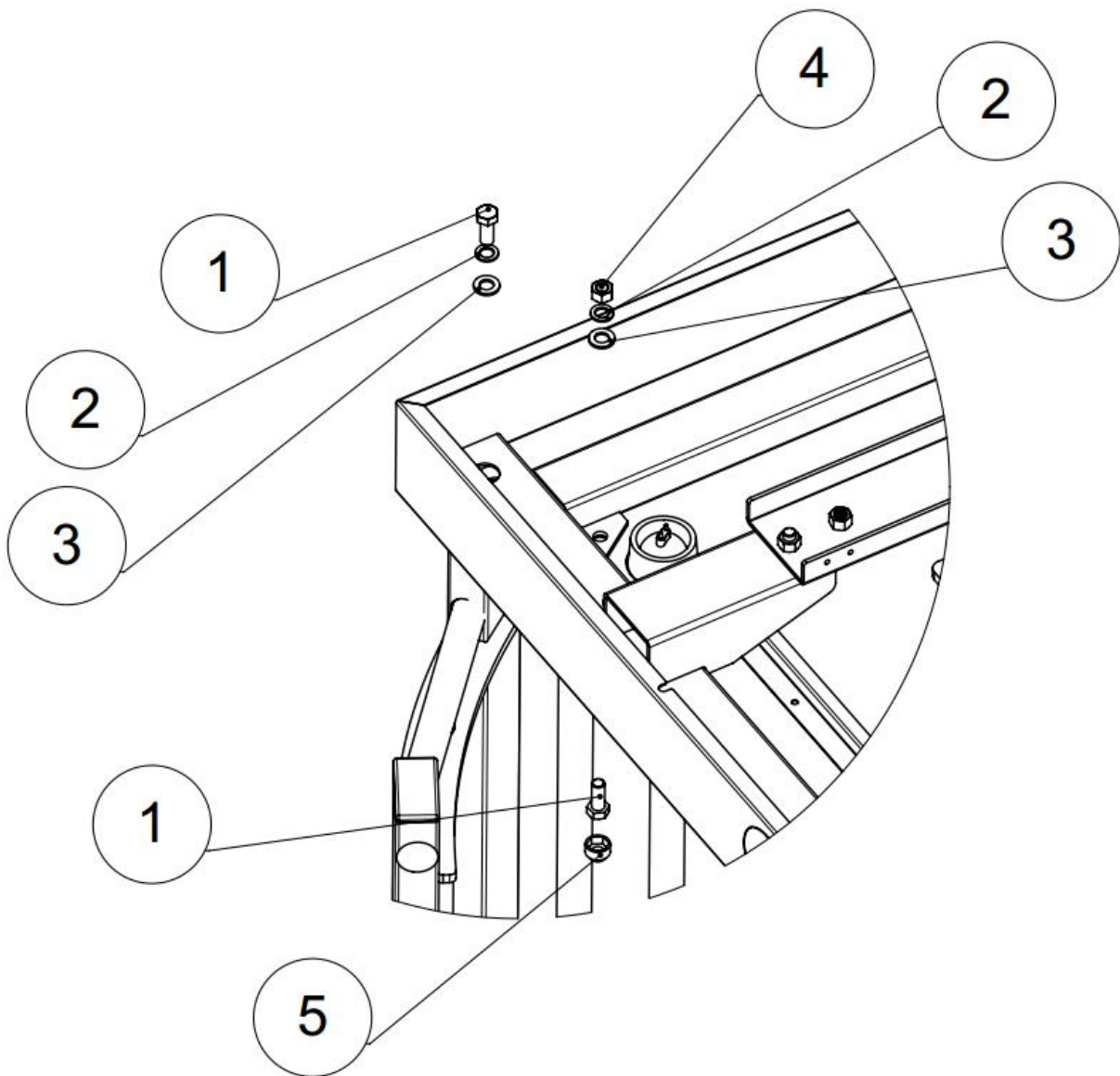




*Fig. 10. Assembly of the rotatory wicket door.*

4.2.12. Install the upper module of the turnstile onto the fixed enclosure elements by pre-passing the cables into the respective holes. Fix the upper module by fixing bolts of Fig. 11 and 12.

**Attention** The upper module has a significant weight and therefore at least two workers are needed to lift it.



1. Bolt M12x30 DIN 933

2. Washer M12 DIN 127

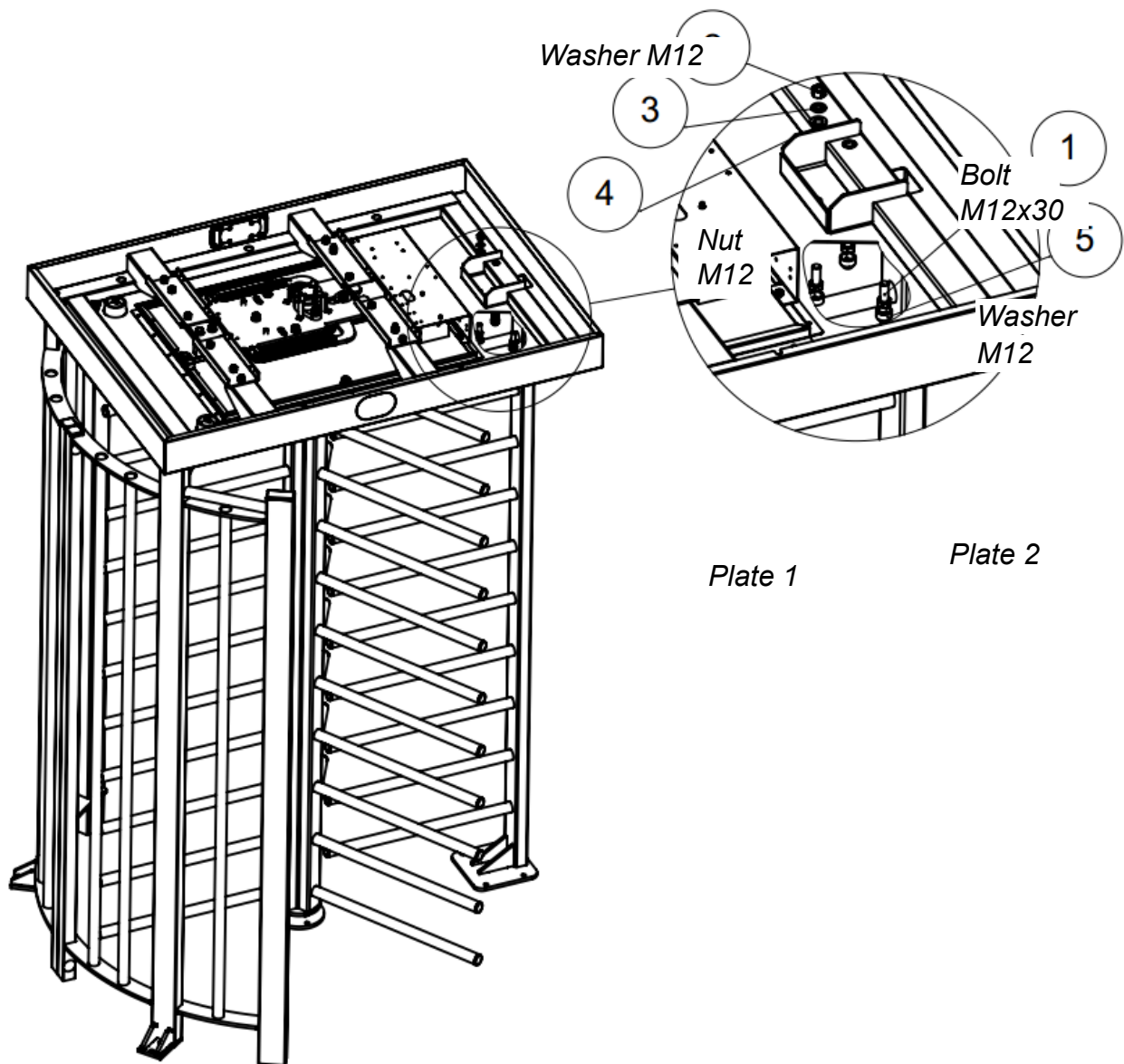
3. Washer M12 DIN 125

4. Nut M12 DIN 934

5. Clap for nut M12

*Fig. 11. Attachment of the upper module of the turnstile.*





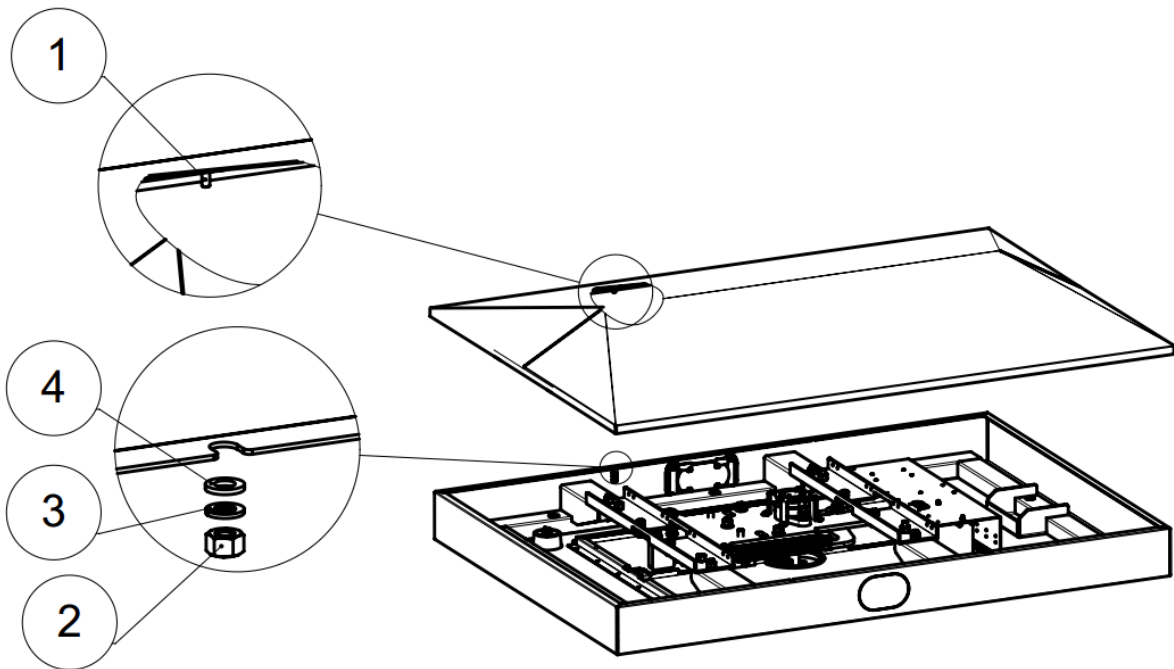
1. Bolt M12x30 DIN 933
2. Nut M12 DIN 934
3. Washer M12 DIN 127

4. Washer M12 DIN 125
5. Clap for nut M12

*Fig. 12. Attachment of the second fixed enclosure element*

4.2.13. Install the fluoroplastic bushing onto the lower axle, install the rotatory wicket door onto the lower axle of the rotor fixture fixed in the concrete base. Attach the rotatory wicket door to the upper module with the help of 6 bolts M12.

4.2.14. The upper cover shall be attached to the upper module by means of four nuts (4) and four washers (Fig. 13). Four pins for fixing the upper cover are located internally of the cover.

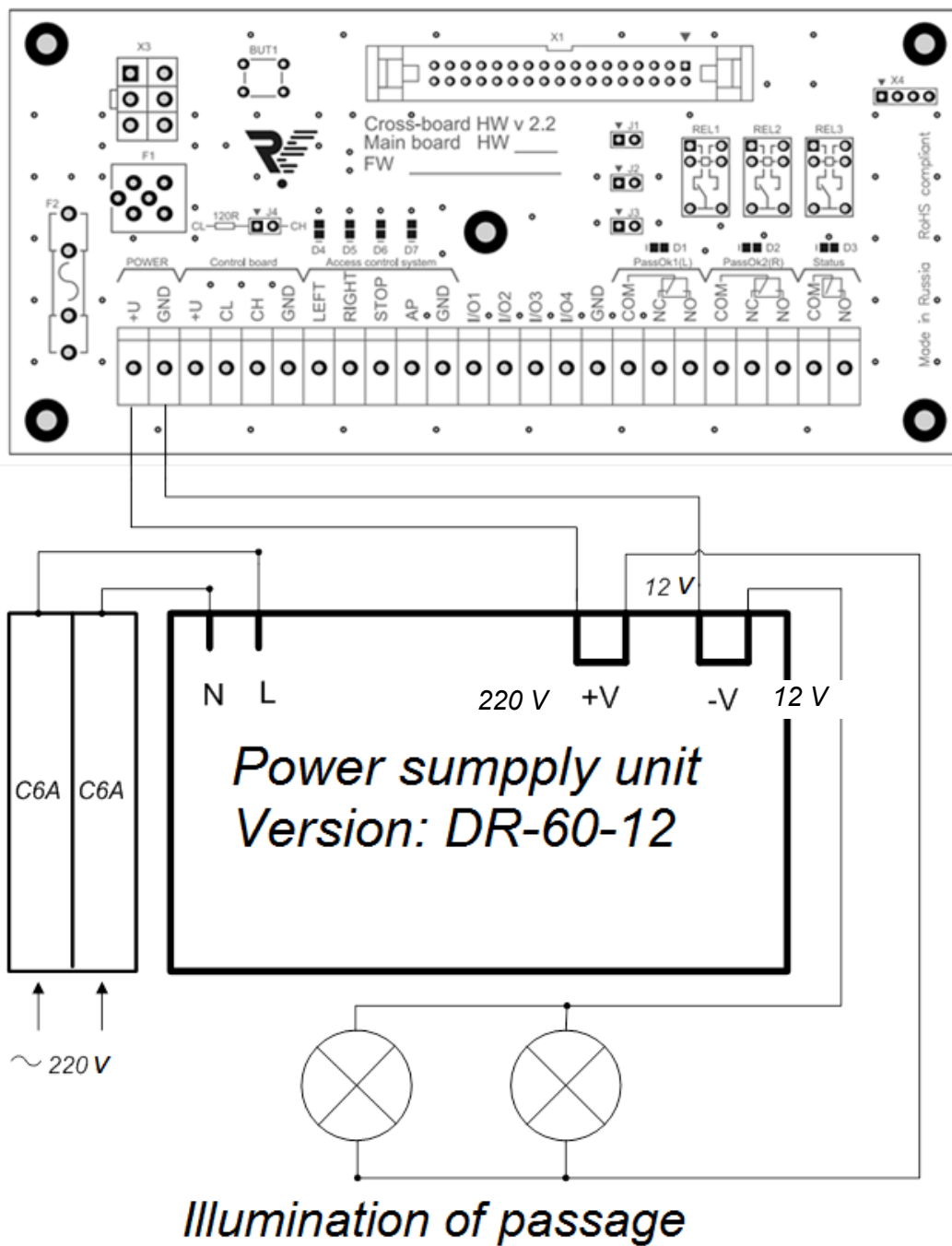


*Fig. 13. Fixture of the upper cover*

## **5. Connecting the turnstile:**

The cables shall be led through a hole made in the rack of the fixed enclosure panel of the turnstile (Fig. 2). Fix the cable with cable ties.

220 V power supply shall be connected to the terminals located on the DIN rack. The connection diagram is shown on (Fig. 14).



*Fig. 14.*

CB and ACS shall be connected via the cross-board. Fig. 15 shows an arrangement of the cross-board on the upper module of the turnstile. Check if the cables are reliably connected. Install the doors and lock them.

Connection of power supply, the control board and ACS

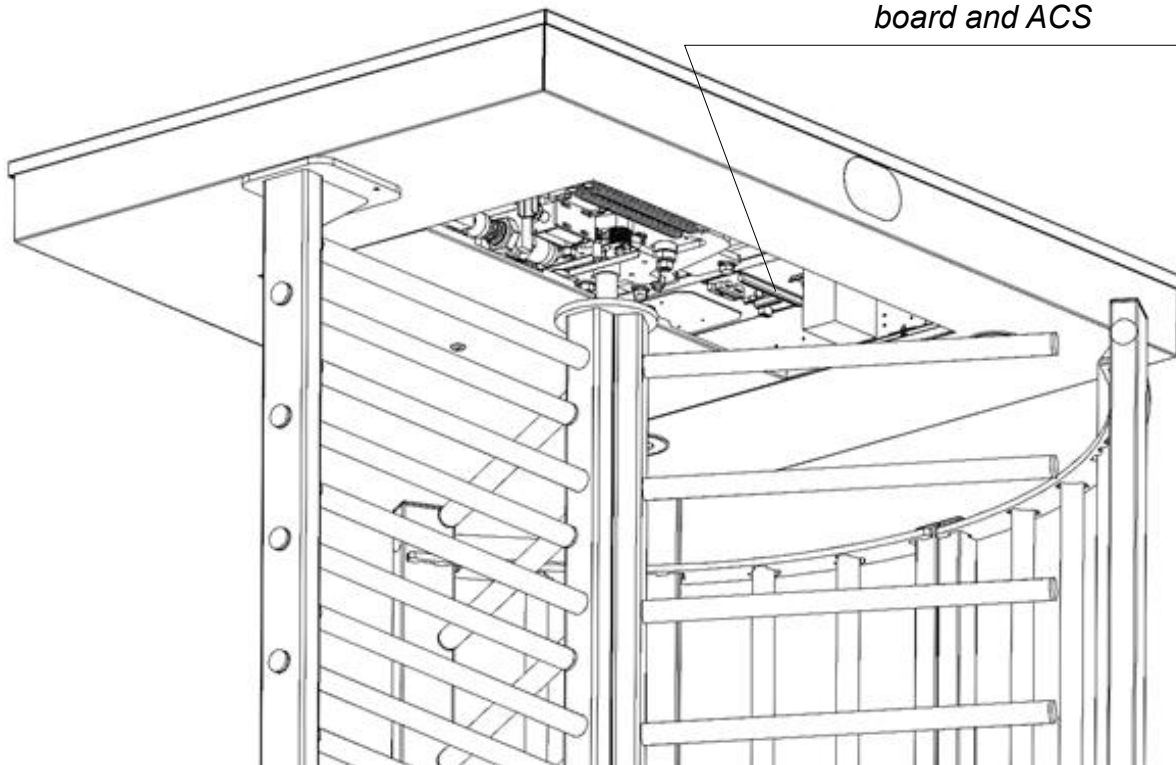


Fig. 15. Arrangement of the cross-board on the upper module of the turnstile.

Fig. 16 shows external appearance of the cross-board and the arrangement of connectors for connection of CB, ACS and S&FA.

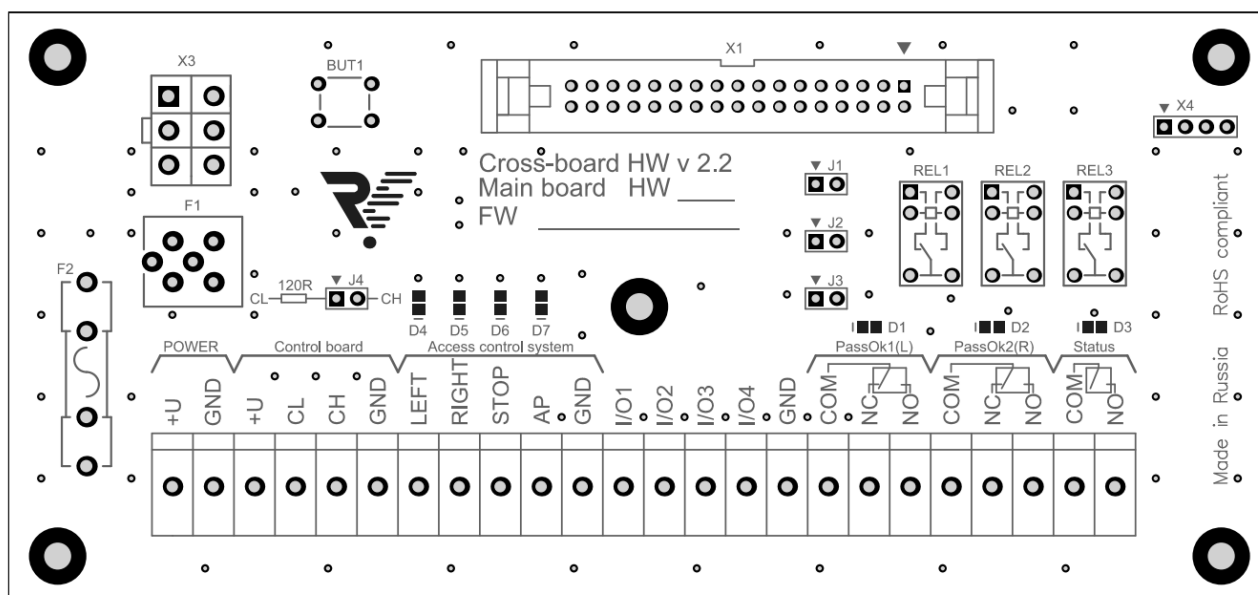


Fig. 16. External appearance of the cross-board

*Table 3. Modes for operating the turnstile*

Position of the jumpers	Mode for operating the turnstile
J1 removed	Pulse mode (see item 5.3.)
J1 set	Potential mode (see item 5.3.)
J2 set	The turnstile is not responding to commands by the board and the status of the buttons is transmitted to the outputs I/O1...I/O4 (see item 5.4)
J2 removed	The turnstile is controlled by the board and the status of the buttons is transmitted to the outputs I/O1...I/O4 (see item 5.4)

- J3 jumper is not used

- J4 jumper is used for arrangement of normal operation of CAN2.0. bus, see Appendix 1.

### ***5.1. Connecting control board.***

The CB is connected to a group of terminals Control Board at the cross-board. The terminals are marked as: 12V, CL, CH, GND.

The CB shall be connected as per terminal labeling listed in Table 4.

*Table 4. Labeling of the terminals for connecting the CB*

<b>Labeling of the terminals</b>	<b>Color of the wire</b>
12V	Red
CL	Yellow
CH	Green
GND	Blue

### ***5.2. Connecting access control system (optionally)***

The ACS controller is connected to the group of the terminals:

Access Control System at the cross-board. The terminals are marked as: LEFT, RIGHT, STOP, AP, GND. The terminals are designated according to Table 5.

*Table 5. Designation of ACS terminals*

<b>Labeling of the terminals</b>	<b>Designation of terminals</b>
LEFT, RIGHT	single-time passage to left/right (the lowest priority)
STOP	the passage is forbidden (“Stop” mode) (the middle priority)
AP	free exit (“Antipanic”) (the highest priority)
GND	general terminal

The inputs for connecting the ACS are differed according to the priorities:

- the highest priority is assigned to the output AP. While this input is closed to the GND terminal, the turnstile is free for exit and NOT RESPONDING (!!!) to other effects;
- the middle priority is assigned to the output STOP. When closing this input to the terminal GND, the turnstile is changing into the mode “Stop” and is not responding to other effects besides AP;
- LEFT and RIGHT are assigned with the same low priority and designed to switch a single-time passage in one or opposite direction. If the two inputs are closed, the passage is allowed in that direction whose

input was closed first. If the passage has not taken place, the turnstile would be automatically switched into the mode “Stop” after 5 seconds.

CAUTION (!) If one of inputs STOP and/or AP is closed, the commands from the board are not accepted as ACS is assigned with a higher priority.

The inputs STOP and AP are potential ones, i.e. as long as the input is closed to the terminal GND, the turnstile is operated in a respective mode, whereas after opening the terminals the turnstile is switched into the mode “Stop” irrespective of which mode was prior to ACS operation.

The inputs LEFT and RIGHT are operable both in a potential and pulse mode as well (to be actuated in response to closing to the terminal GND). The pulse mode is set as default.

In order to switch into a potential mode of operation it is necessary to set the jumper J1 (Fig. 16). In this case the mode for passage to left/right is switched only for the time of supplying a control signal to the inputs LEFT/RIGHT. The mode of free passage can be set by simultaneously supplying control signals to both inputs. The priority of the inputs LEFT and RIGHT when switching into the pulse mode remains unchanged.

The cross-board is designed with two relay outputs for ACS which operate under the “dry contact” principle, namely PassOk1 and PassOk2. NO and COMM means normally opened connection, NC and COMM means normally closed connection. Actuation of one of the contact groups means that a passage was performed in a respective direction (PassOk1 – to right, PassOk2 – to left). “Dry contact” will close/open when the rotatory wicket door is turned for the angle of 60 degrees. The light emitting diodes D1



and D2 shall signal a relay status with PassOk1 meaning to right and PassOk2 meaning to left.

The cross-board is designed with a relay output for ACS which operates under the “dry contact” principle, namely Status. NO and COMM means normally open connection, whose contacts shall be closed when the turnstile is switched into the mode AP with simultaneous lighting up of the D3 diode.

The cross-board is also provided with the following light emitting diodes:

D4 signalizes a supply of a command into the input LEFT.

D5 signalizes a supply of a command into the input RIGHT.

D6 signalizes a supply of a command into the input STOP.

D7 signalizes a supply of a command into the input AP.

Jumper J4 must be installed to be used for connecting the 120 Ohm resistor to the bus CAN 2.0 in order to provide for its normal operation.

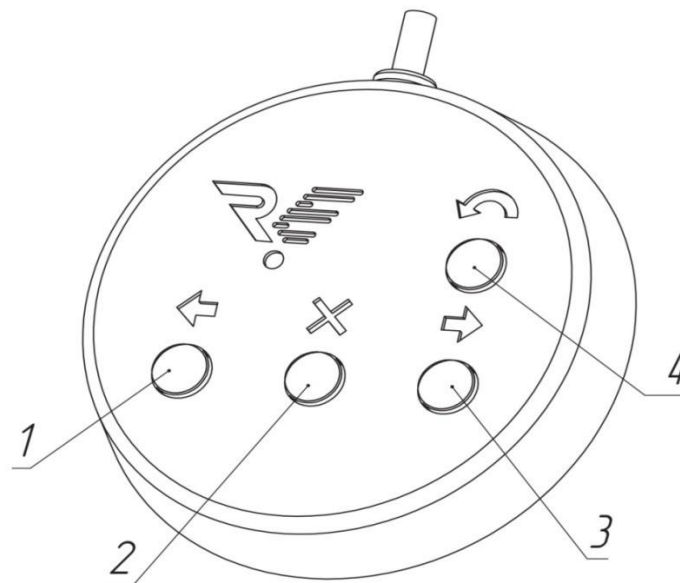
When using two control boards J4 is not installed as the 120 Ohm resistors are fitted into the terminals CL and CH at the same boards.



### ***5.3. Connection control board to the ACS controller.***

In some cases the turnstile CB is required to be connected directly to the ACS controller, as passages to be enabled by the board (when unattended by the controller) are perceived by the system as “break-in”.

In order to apply this diagram for connecting the turnstile it is necessary to install the jumper J2 onto the cross-board (Fig. 16). If the jumper J2 is installed, the turnstile is not responding to commands by the board, but just transmits their status to the contacts of the terminal blocks I/O1...I/O4 (Fig. 16) which are open-collector outputs. The contacts are designed as per Table 6, with the board buttons numbered as shown on Fig. 17. This group of contacts should have an output current of 150 mA at most, with maximum allowable voltage 24 V.



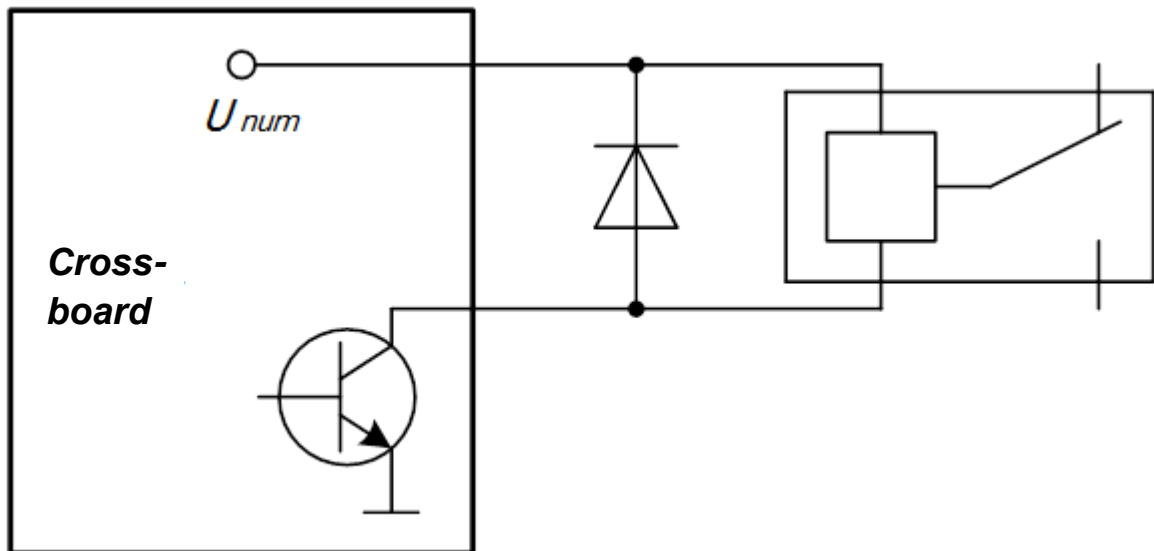
*Fig. 17. Numeration of the control board buttons*

*Table 6. Designation in the group of I/O contacts*

<b>Labeling of the terminals</b>	<b>Designation of terminals</b>
I/O1	Status of the button “Left” (1, Fig. 17)
I/O2	Status of the button “Right” (3, Fig. 17)
I/O3	Status of the button “Stop” (2, Fig. 17)
I/O4	Status of the button “Antipanic” (4, Fig. 17)

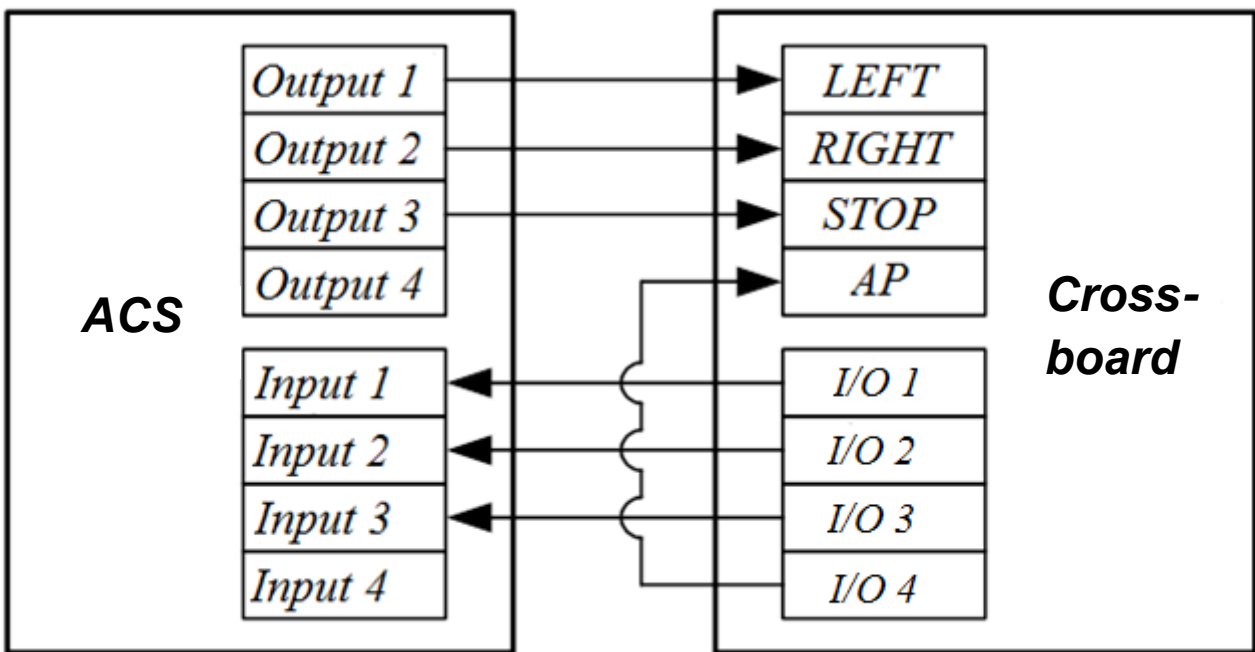
The outputs I/O1...I/O3 display a current status of the CB buttons, i.e. the transistor shall open when pressing the respective button. The output I/O4 is reversed in its status when pressing the “Antipanic” button each time.

The outputs I/O1...I/O4 can be connected both directly to the ACS controller and via the relay as well. If the relay is used, the diode **must (!)** be connected in parallel to the winding (Fig. 18).



*Fig. 18. Diagram for connection of the diode in parallel to the relay winding*

The diagram for connecting the CB to the ACS controller is shown on Fig. 19. In this option the controller governs the turnstile by the contacts “Left”, “Right” and “Stop”, while the contact “Antipanic” is switched on/off by the board. An important feature for connecting the CB via the ACS controller is that it is impossible to use turnstile modes which are set by combinations of the board buttons (besides the mode of free passage in a potential control mode, see the section 5.3 of the Instructions). In this case ACS is responsible for these modes.



*Fig. 19. Diagram for connection of CB to the ACS controller*

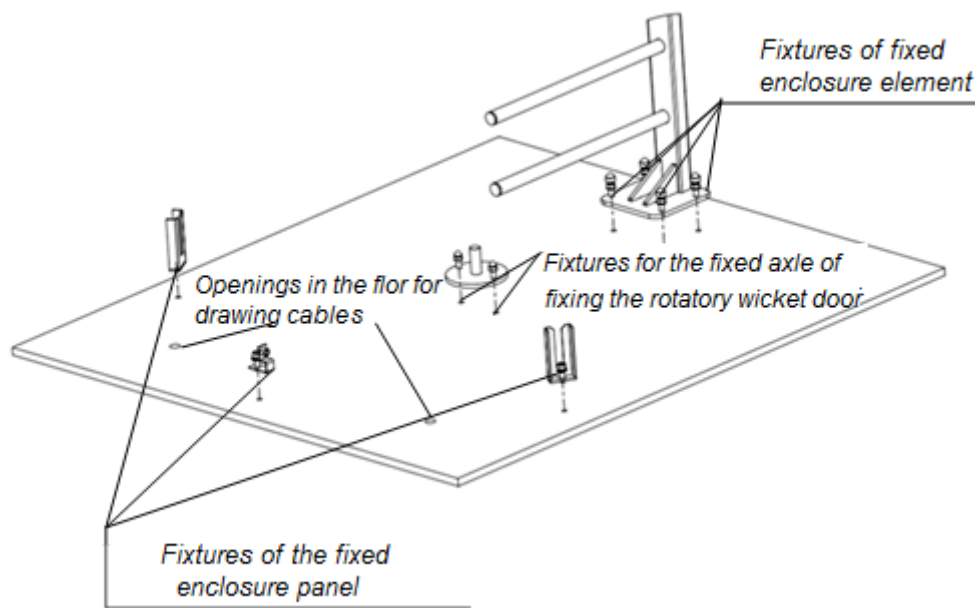
## **Appendix 1. Short summary of the data transmission bus CAN2.0**

The CB is operated by the up-to-date noise-resistant bus under the standard CAN2.0. According to the standard CAN2.0 the length of the cable for transmitting signals can reach more than one kilometer, but correct operation at such distances depends on many factors. At distances more than 25 meters the twisted pair Cat5e or Cat6 must be used. Total electrical resistance in the wire for DC power supply to CB shall not exceed 50 Ohm. If this requirement cannot be met, an additional 12 V/100 mA power supply unit can be installed at the place where the control board is installed (with minimum operating power supply voltage to CB equal to 7.5 V). In this situation 3 wires from the turnstile, i.e. CL, CH, GND, are sufficient for correct operation. Two control boards can be connected to one turnstile.

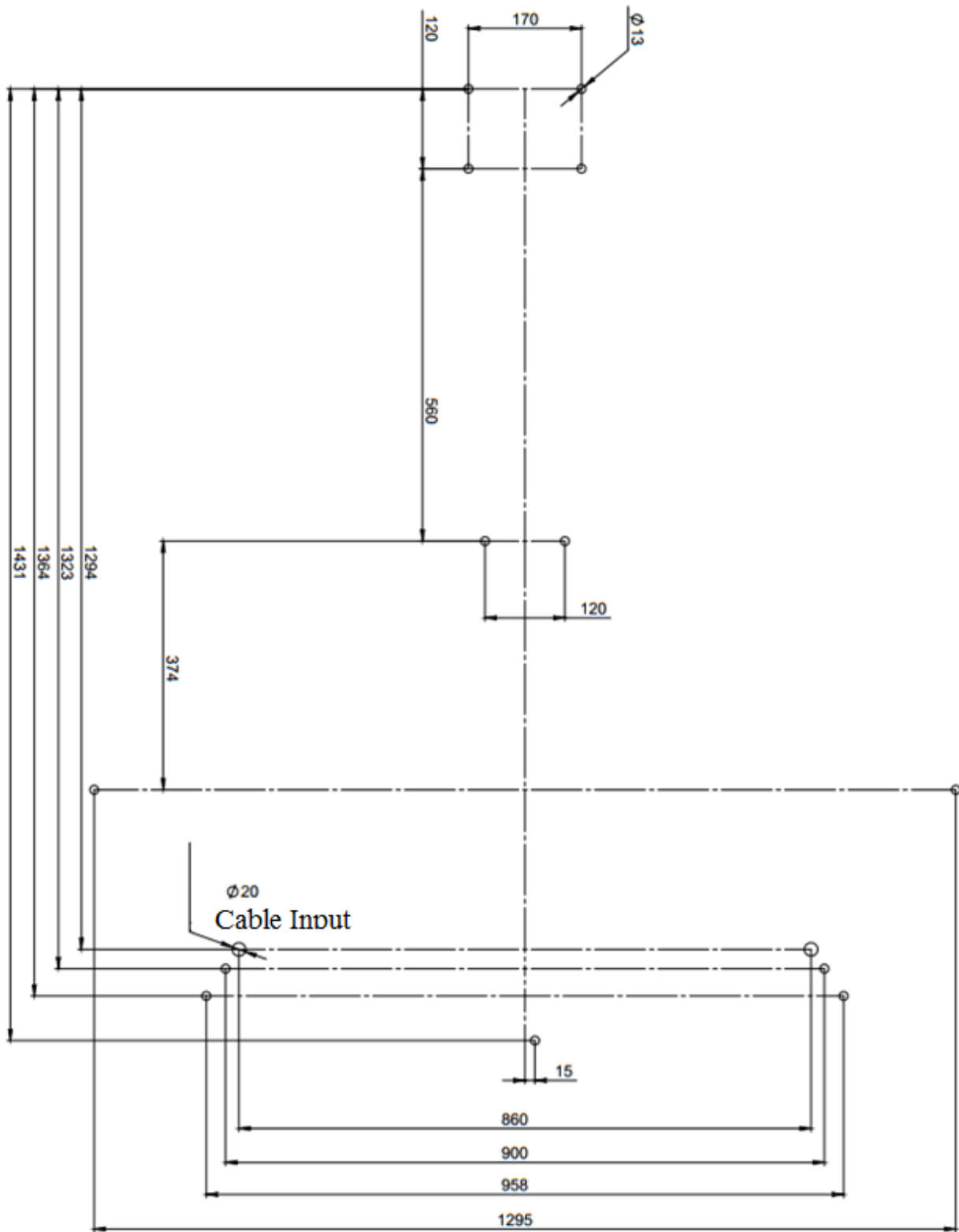
The CAN2.0 bus has an important feature by available 120 Ohm resistors at the bus ends. The standard CB is already fitted with such a resistor. When using one control board it is recommended to connect an additional (second) 120 Ohm resistor, located at the cross-board to the terminals CL and CH, by setting jumper J4.

It is not required to do so, if two control boards are to be connected, as the bus ends are already fitted with the required resistors. And jumper J4 shall be removed.

## Appendix 2. Arrangement of the installation openings relative to the external dimensions of the turnstile

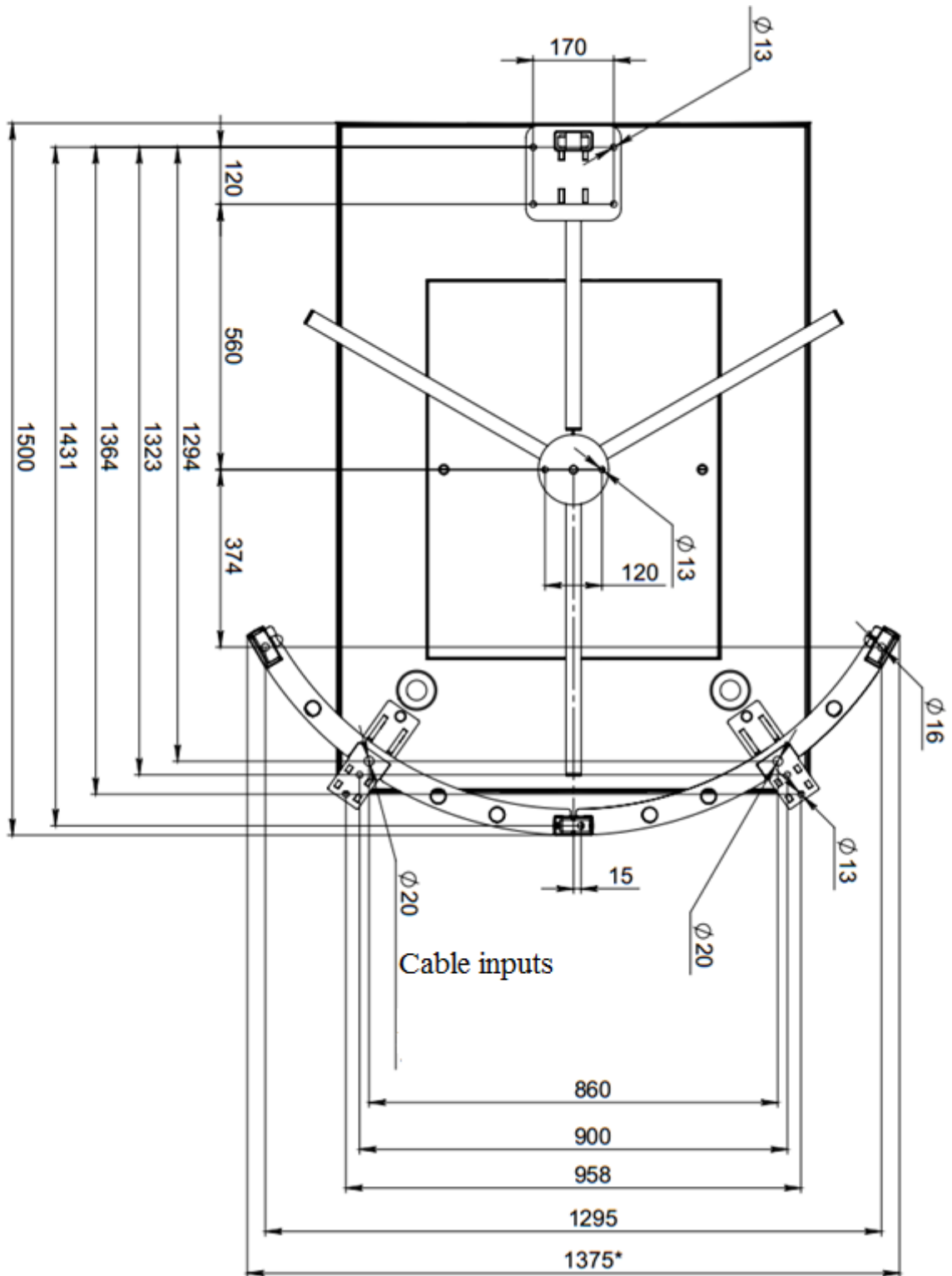


*Fig. 20. Arrangement of the installation openings relative to the external dimensions of the turnstile*



*Fig. 21. Installation dimensions of the turnstile*





*Fig.22. Turnstile installation dimensions*



PRODUCT IS CERTIFIED

Voltage: 220 V/50 Hz

Current: 5A

Importer: VZR System OU

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ISO 9001:2008



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