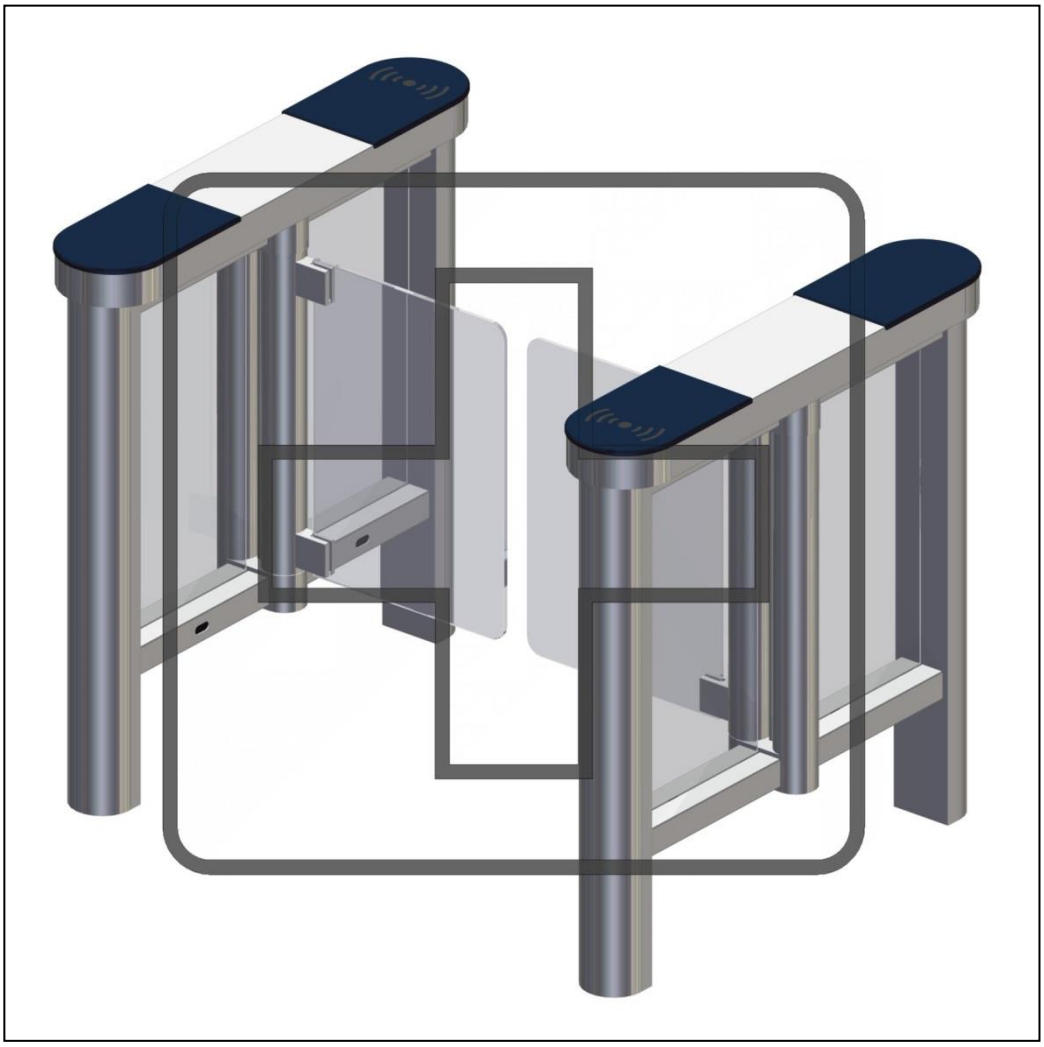


MAINTENANCE MANUAL OF THE TURNSTILES:

EASYGATE-SG
EASYGATE-SH

Annexes can be found in the end of the Maintenance Manual:

- CLAIM REPORT FORM

1. INTRODUCTION

The Maintenance Manual is intended for workers of the Service Department of the COMINFO company, or workers who hold the Installation Schooling Certificate of the COMINFO company. The Manual describes the procedure of maintenance of the EASYGATE-SG and EASYGATE-SH turnstiles.

The Maintenance Manual describes targeted, repeated and regular inspection and maintenance of the device with the goal to prevent defects and excessive wear caused either by the environment or by the technical or human factor. Maintenance may significantly contribute and increase the durability of the device and, of course, bring substantial financial savings. To maintain the warranty for the product, it is necessary to perform the maintenance at least once a year. The producer provides 24 months warranty.

The Manual is intended for turnstiles equipped with the MLU control electronics of the version 5V6 or higher.

This Maintenance Manual employs the following categories of safety instructions:

DANGER!
Mechanical danger. Omission of these instructions may cause personal injuries or device damage.

WARNING!
Important information or important procedure.

NOTICE!
Information or procedure recommending how to use the device or its equipment optimally, and thus prolong its lifetime, prevent potential damage and optimize work in relation to the safety standards.

2. PREPARATION BEFORE THE MAINTENANCE

Before leaving for the maintenance inspection, it is necessary to update the TCONF and TMON applications. If your laptop is connected to the Internet and the applications are opened, they should be updated automatically at their start-up. Then, it is necessary to request the up-to-date firmware for the given type of turnstile, which you achieve by stating the serial number of the turnstile or the order number.

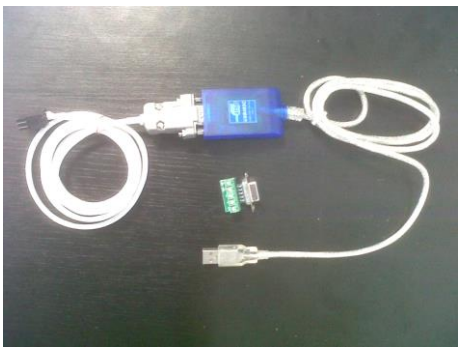
2.1. AIDS NECESSARY FOR MAINTENANCE

To perform the maintenance, it is convenient to prepare all the aids as if the turnstile was about to be installed as stated in the *Installation Manual of EASYGATE Turnstiles* in the chapter: *Aids Necessary for Installation*. In addition, it is necessary to prepare the following:

Special aids

- Laptop with the operating system Windows XP, Vista, 7 (32b and 64b)
- T-Config application
- T-Monitor application
- Test device of the MLU5 electronics that simulates the function of a superior system

- Up-to-date firmware for the given turnstile type
- Touch panel to control the 485 communication
  (suitable for extensive maintenance - more operative than the T-Monitor application)
- RS485/USB converter along with the proper cable and connector
  Always use the converter supplied by the COMINFO company!



- Multimeter
- Battery tester
- Micro solder to replace the battery and buzzer on the MLU5 electronics
- Tensile or compressive dynamometer with a range of up to 100N
- Glazing gloves for handling of damaged glass
- Safety glasses
- Cutter with snap-off blade with metal reinforcement

Cleaning, preservative and chemical agents:

- Agent for cleaning and preservation of stainless steel surfaces
  (the manufacturer recommends the ARECAL: EDELSTAHL PFLEGE agent)
- Agent for cleaning of glass wings of the turnstile
  (the manufacturer recommends the ARECAL: GLASREINIGER agent)
- Agent on the basis of detergent for cleaning of Perspex peepholes of sensors
- Loctite 243 to secure the bolted connections
- Loctite 603 to fix bolted connections
- Silicon sealant for bonding of glasses

Documentation:

- Installation Instructions for EASYGATE turnstiles
- Instruction for using the TCONF application
- Instruction for using the TMON application
- Instruction for using the TrafficLight display panel
- Manual for the MLU5 testing device
- MLU5 - Service Manual

2.2. SPARE PARTS

2.2.1. SPARE PARTS - ELECTRO

Name	Order No.
Control electronics MLU5	1008739
Set of connectors for the MLU5 electronics	1009421
Distance columns for fixing of the electronics	1010175
Backup battery for the MLU5 electronics	1006084
Small buzzer for the MLU5 electronics - passage	1007898
Big buzzer alarm - unauthorised passage	1002786
Terminal box of the SG MASTER – X1X2 turnstile	1010452
Terminal box of the SG SLAVE - X3 turnstile	1010453
Optical sensor (transmitter + receiver) TURCK	1009454
Complete set of cables SG 1000	1010233
Power supply distributor - PD1	1009643
Power supply distributor of brakes - BD1	1009753
Distributor 485	1009084
TrafficLight MASTER/SLAVE (differs in switching)	1008133
AccessLight MASTER/SLAVE (differs in interconnecting)	1009894

2.2.2. SPARE PARTS - COMMON

Name	Order No.
FAIL-SAFE motor drive unit (gearbox, motor, break, speed sensor)	1010030
Bearing (CSN 02 4630/DIN 625 - 6004)	3001001
Bracket of Motor drive unit	1010436
Top Lid 1000	1010437
Top Lid 1600	1010438
Top Lid 2000	1010439
Glass filling 1000	1009912
Glass filling 1600	1010362
Glass filling 2000	1010440
Glass wing (it is necessary to measure the glass width)	1009913

2.2.3. SPARE PARTS EASYGATE SG - MECHANICAL

Name	Order No.
Front cover plate SG - upper	1010442
Front cover plate SG	1010443
Top glass SG with Proximity icon for Access Light	1010441
Top glass SG with sticker	1009910

2.2.4. SPARE PARTS EASYGATE SH - MECHANICAL

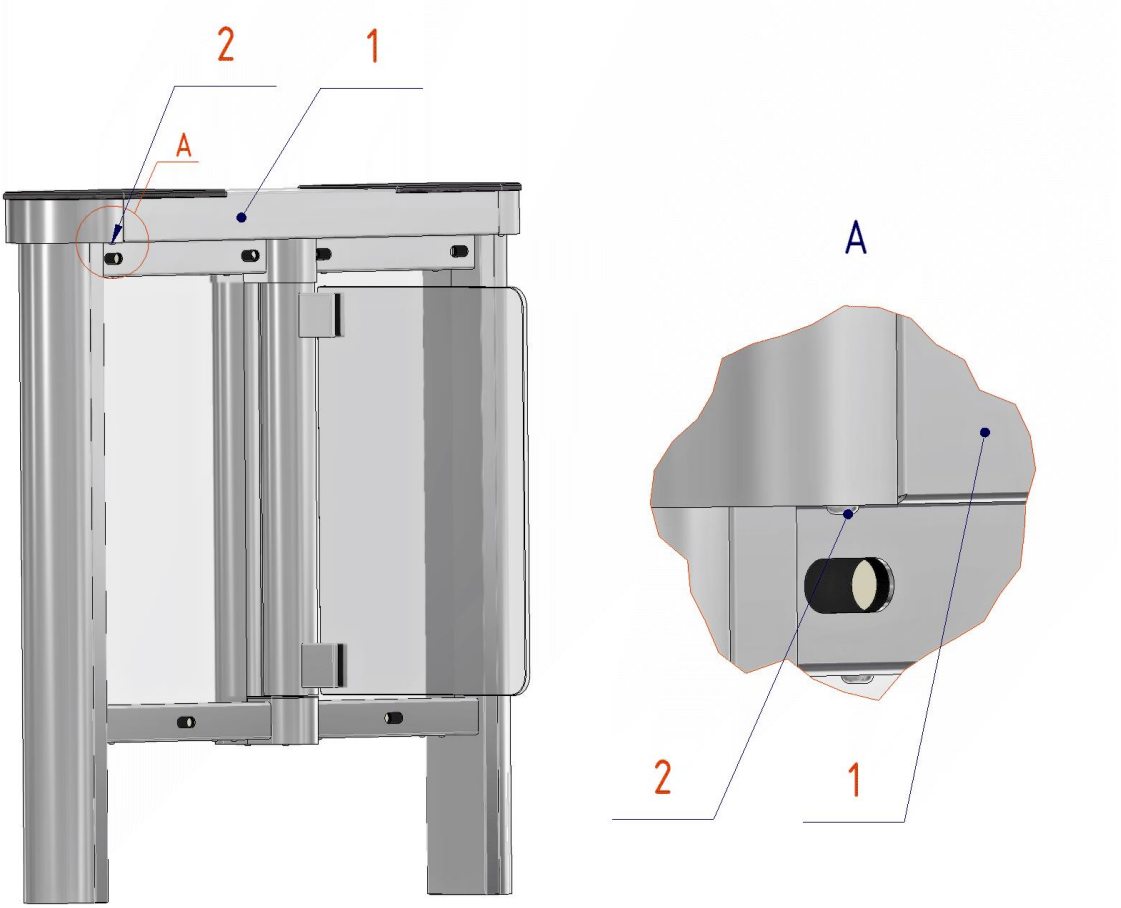
Name	Order No.
Front cover SH - upper	1010444
Front cover SH (120mm)	1010445
Front cover SH Traffic light (200mm)	1010446
Front cover SH (200mm)	1010447
Top glass SH with Proximity icon for Access Light	1010448
Top glass SH with sticker	1010449
Front glass for Traffic Light	1010450
Frame of Front cover SH (120mm)	1010430
Frame of Front cover SH (200mm)	1010451

3. MAINTENANCE PROCEDURE

3.1. ACCES TO THE CONTROL ELECTRONICS

- Access to the control electronics is gained after disassembly of the upper lid (pos.1). After unbolting four M5 bolts (pos.2) located on the bottom side of the lid, lift the lid upwards. If there is AccessLight or other devices placed on the upper lid, disconnect connectors of such a device in the beginning. Two technicians must cooperate when handling the lid. Pay increased attention and hold the lid in balance for the whole time of lifting. Place the loosened lid on a predetermined place.

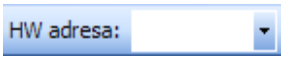
- Assemble the lid back using a reversed procedure.



3.2. INSPECTION OF THE CONTROL ELECTRONICS

Detailed information on the MLU control electronics can be found in the chapter: *Description of Connection of the Control Electronics and Accessories* **and in the separate manual:** *MLU5 - Service Manual.*

3.2.1. INSPECTION OF EVENT STATEMETS - LOGS

- Disconnect the black data connector of the RS485 CONTROL PC/CPT superior system from the control electronics of sensors (if the turnstile is controlled by status signals, the connector is free and disconnected)
- Connect a laptop with the TCONF application installed, and the USB/485 converter
- Run the TCONF application and wait approximately one minute for the login of the electronics address of the connected turnstile
- Select the address of the connected turnstile in the HW address window 

- Using the button **Logs Statement** , run a window of log statements
- Using the button **Load Logs,** display the history of latest events/logs
- Check whether an error of brakes, drive unit or power supply occurred in the history, or whether illogical events occurred, such as large amount of unrealized passages, emergency signals etc.
- Save the Log Statement in your PC

In case of problems you are not sure how to deal with, send the following to hotline@cominfo.cz:

1. **Log Statement**
2. **Completed Claim Report Form**
3. **Current configuration of the control electronics (.tcpf ending) obtained in accordance with the chapter** *Replacement of the Control Electronics*

3.2.2. DISCONNECTION OF THE SUPERIOR SYSTEM AND CONNECTION OF THE TESTING DEVICE

- Disconnect the orange power connector on the MLU control electronics
- One-by-one, disconnect all other connectors (backup battery, INPUT, OUTPUT)
- Connect the connectors of the testing device of the MLU5 control electronics into the free connectors. Now, everything is ready for testing of individual turnstile systems

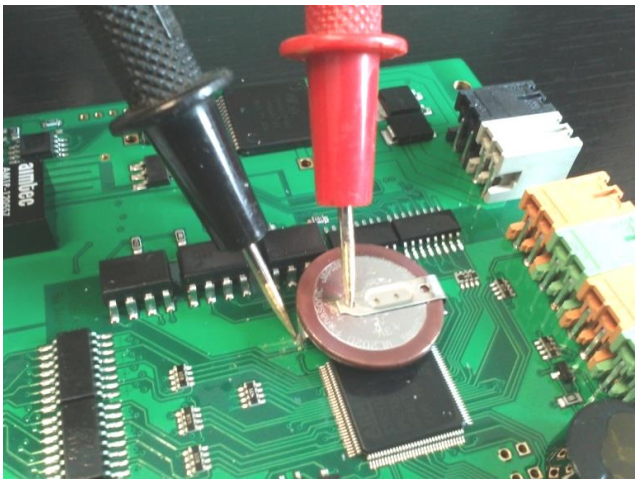
3.2.3. INSPECTION OF THE BACKUP BATTERY OF ELECTRONICS

Backup battery is used during a power failure to backup history of events (Logs) and to calibrate speeds when initializing the turnstile.

BATTERY CONDITION CONTROL

- Clean the battery measuring points before measuring (surface of both electronics and battery is coated with protective insulating varnish)
- When the power supply is disconnected, measure the voltage of the battery in compliance with the picture below, which should not be lower than 3V.
- If there is voltage lower than 2.5V, the battery must be replaced.

Measuring points and measuring of the 3V of the backup battery of control electronics:



INSPECTION OF BATTERY FUNCIONALITY

- Connect the orange power connector to the MLU control electronics
- **If the battery is functional,** the turnstile will only turn to the home position after the power supply connection, and all original logs will remain in the memory after a PC is logged into the electronics.
- **If the battery is not functional,** all original logs will be lost after a PC is logged into the electronics.

Battery may be replaced only by a trained service technician, or by the COMINFO company after sending the control electronics.

3.2.4. INSPECTION OF THE SMALL BUZZER OF THE CONTROL ELECTRONICS

The small buzzer serves to signalize standard passage.

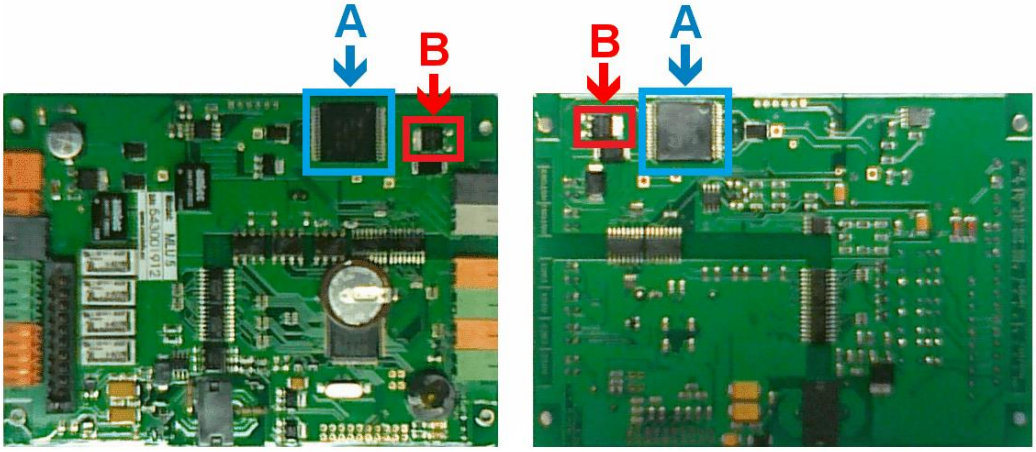
- Switch-on the turnstile using the testing device (signal ON-OFF)
- Activate opening by the INL or INR signal
- The buzzer must emit a configurational sound when the turnstile is opening

Functioning of the buzzer does not influence any other functions of the turnstile. There is no need to replace a faulty buzzer if the sound signalization is not required by the customer.

Buzzer may be replaced only by a trained technician, or by the COMINFO company after sending the control electronics.

3.2.5. INSPECTION OF THE STATE, CORROSION AND IMPURITY OF THE CONTROL ELECTRONICS

- Check whether water did not leak into the control electronics, or if moisture did not condense on it. In case of any sign of corrosion of the printed circuit or other components, replace the electronics.
- Check the state of components of the control electronics. Focus especially on the output bridges (A) and transistors (B). If you find any indication of thermal overload of any of the components, replace the electronics..



- If the control electronics is to be replaced, it is necessary to configure all parameters in accordance with the original setting, using the TCONF application, and perform initialization according to the chapter *Function Reset - Initialization*.

3.3. INSPECTION OF THE BIG BUZZER - ALARM

The big buzzer **B2** serves for signalling of unauthorized passages.

- Switch the turnstile on using the testing device (signal ON-OFF)
- Activate it by a person entering the turnstile corridor
- After 1 second (factory setting), the buzzer must emit a configurable sound

Functioning of the buzzer does not influence any other functions of the turnstile. There is no need to replace a faulty buzzer if the sound signalization is not required

Replacing of the big buzzer:

- Disconnect the buzzer from the grey connector with flexible clamps, and connect a new buzzer in accordance with the chapter: *Inspection of Flexible Clamps and Crimp Connectors*

- During replacing, you must observe the polarity. When you look at electronics with inserted connector:
  Red wire - on the left
  Black wire - on the right

3.4. FIRMWARE UPDATE

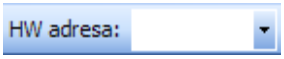
After uploading your firmware, an automatic initialization comes about, during which turning path of the turnstile is calibrated. It is forbidden to anyhow interfere the initialization - otherwise the turnstile will not correctly reach the end positions.

- Firmware version must be consulted with the manufacturer

- Firmware must be saved in any PC folder

- Connect the laptop equipped with the TCONF  application and USB/485 convertor to the MLU electronics

- Run the TCONF  application, and wait approximately one minute for the login of the address of the electronics of the connected turnstile

- Select the address of the MLU electronics in the HW address window 

- Using the button **Upload firmware**  in the TCONF application, the LoadFW control driver is activated

- Using the button **Open file,** choose the firmware that you need to upload, then confirm it by pressing the button **Open**

- Using the button **Upload firmware,** upload the updated firmware to the control electronics of the given turnstile

- Check all turnstile functions using a testing device (in accordance with the chapter: *Control of Input Signals of TrafficLight and AccessLight Signalling* and chapter: *Control of Output Control Signals)*

3.5. INSPECTION OF THE HEATING SYSTEM

If the turnstile is equipped with a heating system of drive unit, the inspection is performed by measuring the interruption of the heating foils by a multimeter, and by measuring the thermostat for stick contacts. The heating is used only in turnstiles that are installed in environment where the ambient temperature may fall below 10 °C. The type of the employed thermostat is L25C 9062 461 N08 11, order number 228-2563.

- Disconnect the power supply of the heating system

- Bridge the thermostat, and measure resistance of both parallelly connected elements
  - if you measure 6 Ohm ±10% - the elements are all right
  - if you measure 12 Ohm ±10% - one element is damaged

bridging of the thermostat - version 1

bridging of the thermostat - version 2

- Connect a multimeter with a measuring range of resistance to the thermostat contacts. Resistance must equal infinity (check stick contacts of the thermostat). During measuring, you must take into account the switching temperature and hysteresis of the thermostat. The thermostat switches on when temperature drops to 14-15 °C and switches-off at 21-22 °C. If the ambient temperature is low and the thermostat is switched on, it is necessary to connect the power supply and try its unfastening after heating the drive unit with heaters.

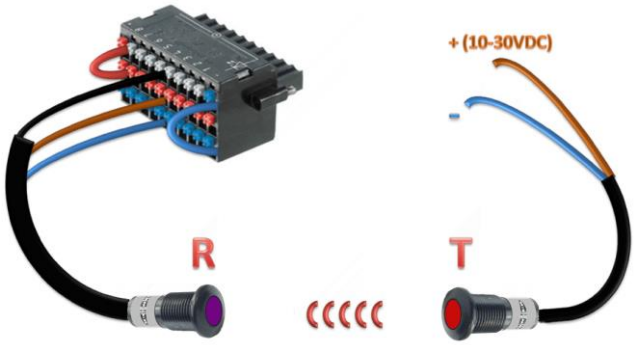
- If the turnstile has been in operation for more than 5 years, replace it with a new thermostat. Date of the turnstile manufacturing can be determined from the fifth and sixth digit of the serial number. For example, the turnstile serial number 0300**12**5261 means it was manufactured in 2012.

3.6. INSPECTION AND REPLACEMENT OF OPTICAL SENSORS MONITORING THE PASSAGE THROUGH THE TURNSTILE

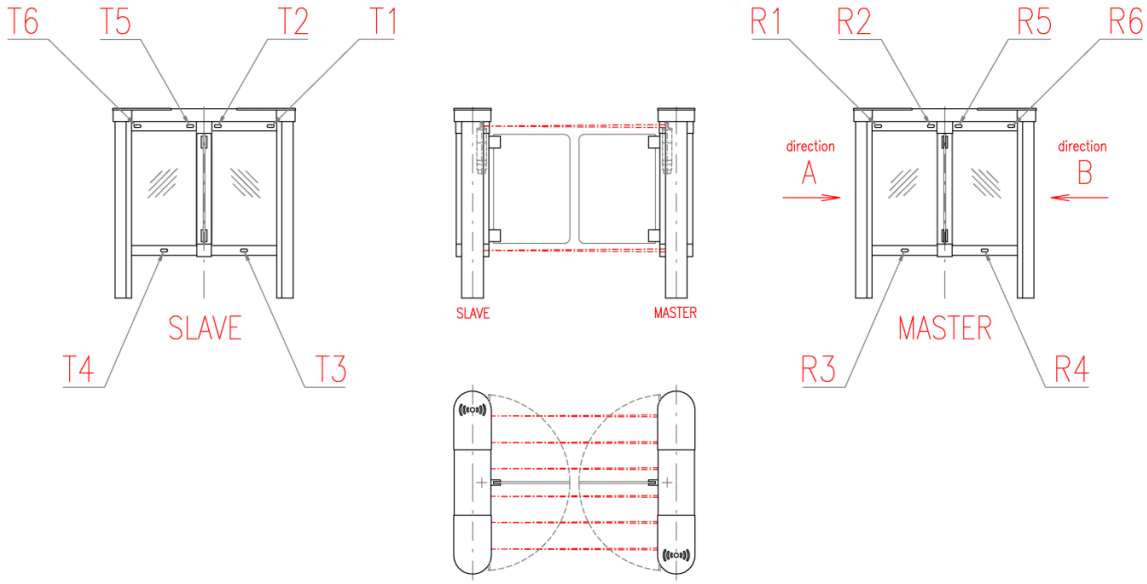
3.6.1. LOCATION OF OPTICAL SENSORS

- There are 6 - 8 receivers **R** placed on a MASTER turnstile depending on the passage length. Receivers are connected to the expander connector with LED diodes on the MLU5 control electronics.

- There are 6 - 8 transmitters **T** placed on a SLAVE turnstile depending on the passage length. Transmitters are connected to the power supply voltage of the **X3** terminal box.



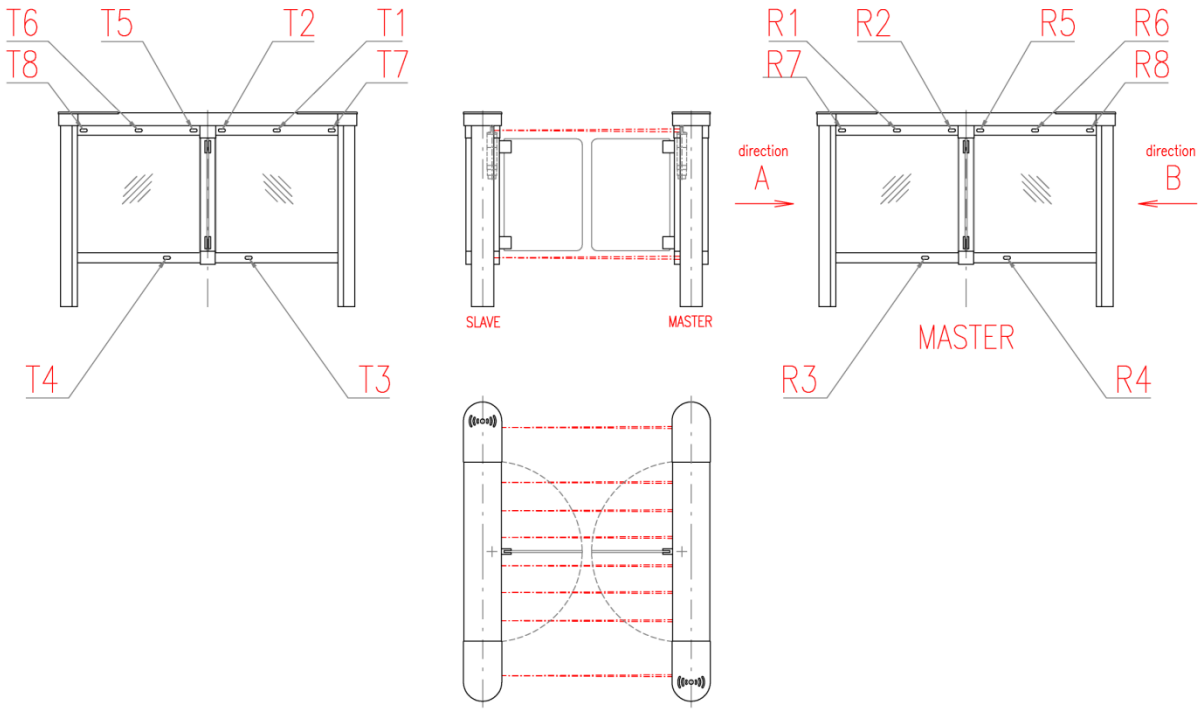
Location of optical sensors on the EASYGATE-SG-1000 turnstile



Connection of optical sensors on EASYGATE-SG-1000 turnstiles

Sensor identification	Clamp No. of the connector
R1	1
R2	2
R3	3
R4	4
R5	5
R6	6

Location of optical sensors on EASYGATE-SG-1600 and 2000 turnstiles



Connection of optical sensors on EASYGATE-SG-1600 and 2000 turnstiles

Sensor identification	Clamp No. of the connector
R1	1
R2	2
R3	3
R4	4
R5	5
R6	6
R7	7
R8	8

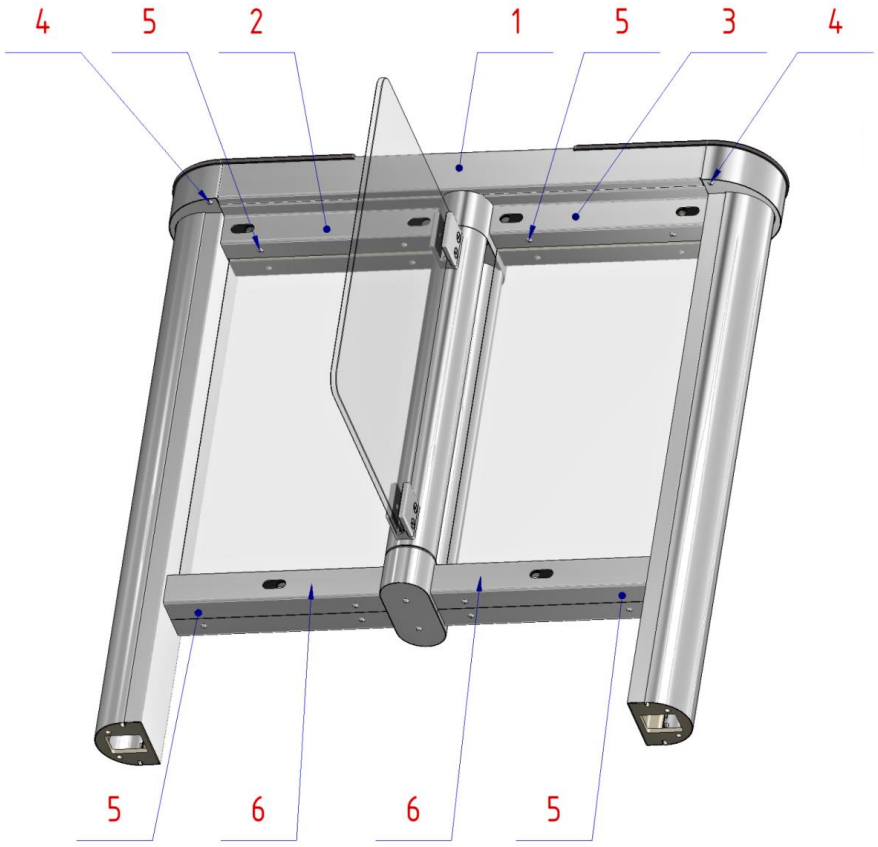
3.6.2. INSPECTION OF OPTICAL SENSORS FUNCTIONING

- After you turn on the power supply, first check if LED diodes on the expander emit light for all connected sensors.
- Gradually shadow all receiving sensors using your hand, and observe if LED diodes on the expander are turning off above respective clamps in accordance with the above stated tables - by this, not only functionality of sensors is checked, but also its correct connection. This inspection is very important because incorrect connection of sensors does not have to cause non-functionality of the turnstile, however, may cause incorrect monitoring of passages and non-standard performance.
- If any LED on the expander does not emit light for any of the sensors or does not turn off, first check if glass peep holes in front of the transmitting or receiving sensors are not dirty and if there is any impediment, e.g. a freely placed cable impeding the ray of light.
- If transit of ray of light is ensured in compliance with the previous point, check directly the transmitting and receiving sensors if they are connected to the power supply voltage. Green LED diode must light on the back side of the each sensor. If the LED does not emit light, search for malfunction in the cabling.
- If the green LED diode lights on the sensors, check if the orange LED emits light on the receiving sensor and if it turns off when shadowed. If the orange LED indicates change of state, search for malfunction in the receiving sensor cabling.
- If the orange LED diode does not shine on the receiving sensor and does not turn off when shadowed, check the transmitting sensor initially.
- We may inspect function of transmitting sensors by means of any digital camera or cell phone with integrated camera, which will display IR LED as a shining point when pointed at the place of transmitting sensor. If it does not, the transmitting sensor is faulty.
- If you do not have a camera at your disposal, you may use a spare functional transmitting sensor to perform the inspection. After connecting it to the power supply voltage, point the spare functional transmitting sensor on the non-signalling receiving sensor. If the receiver still does not signal, the transmitter is probably faulty.
- You may also eliminate the failure of receiving or transmitting sensor by loosening the fastening nuts of the receiver and on the closest functional transmitter, pull the sensors above the level of covers and direct them so that they face each other.

3.6.3. REPLACEMENT OF UPPER AND LOWER OPTICAL SENSORS

Replacement of optical sensors must be performed with disconnected power supply voltage.

- During replacement of upper sensors, firstly it is necessary to dismount the lid assembly (pos.1) as per the section 3.1. Then, unbolt 2 pieces of M4x8 stainless steel bolts (pos.5) from the lower side of the upper right cover (pos.2) or upper left cover (pos.3), and take the respective cover out of the assembly.
- Replacement of lower sensors is much easier. Just unbolt 2 pieces of M4x8 bolts (pos.5) from the respective lower cover (pos.6), and then dismantle it from the assembly. .
- When dismounting a faulty sensor, firstly interrupt the cable near the output of the sensor, loosen the fastening nut of the sensor and pull the sensor from the fastening hole. After that, disconnect the sensor from the terminal box or expander, carefully remove the plastic draw tapes and the cable of the sensor from the turnstile.
- When mounting a new sensor, firstly pull the cable through the fastening frame, whereas do not forget to slide the fastening nut on the sensor cable in between the frame. Then, tighten the sensor to the frame using the nut, and pull the cable according to the original placement to the terminal board or expander.
- Before connecting, wires must be fitted with cord-end terminals with cross-section of 0,25mm.
- In the end, secure the cables by means of plastic draw tapes so that there is no way they could get into the area of glass peepholes and thus shadow the ray of some of the sensors.



3.7. INSPECTION OF INPUT CONTROL SIGNALS OF THE TRAFFICLIGHT AND ACCESSLIGHT SIGNALLING

Using the testing device of electronics, display all states of TrafficLight and AccessLight devices.

Controlled statues:

Turnstile in the EMERGENCY state (the PANIC button was pressed on the testing device)

- all TrafficLights display two red triangles by their hypotenuses facing each other
- the upper AccessLight changes white, green and red colour with a very high frequency

Turnstile in the OFF state (switch of the testing device is in the OFF state)

- all TrafficLights display red cross or red cross with an arrow (see separate manual: *Instructions for Use of the TrafficLight Display Panel*)
- upper AccessLights display red symbol of an attached card

Turnstile in the ON state (switch of the testing device is in the ON state)

- front TrafficLights display a green arrow oriented inside the passage
- upper TrafficLights display an animation of a running card
- upper AccessLights display white symbol of an attached card

Turnstile in the state of INL passage (the INL button was pressed on the testing device)

- front TrafficLights display a green arrow oriented inside the passage
- upper TrafficLight on the input displays a green arrow oriented inside the passage
- upper TrafficLight on the output displays a red cross
- upper AccessLight on the input displays a green symbol of attached card
- upper AccessLight on the output displays a red symbol of attached card

Turnstile in the state of INR passage (the INR button was pressed on the testing device)

- The same display, but from an opposite side as in the previous paragraph

During the inspection, it is necessary to check if all LED diodes of display units emit light. In case of faulty LED diode, replace the whole TrafficLight or AccessLight for the respective new one, observing its labelling and configuration (in accordance with the chapter: *Replacement of Electronics*).

3.8. INSPECTION OF OUTPUT CONTROL SIGNALS

Using the testing device, simulate all statuses, during which the control electronics generates output signals. In the course of inspection, the tester switch must be ON.

Controlled statuses:

Signal "Attempt of Unauthorized Passage" (yellow LED diode on the testing device with DEFINE marking)

- the output signal is activated by entry to the turnstile corridor

Signal BUSSY (red LED on the testing device)

- the output signal is activated by pressing the INL or INR button. Red LED diode is deactivated once a passage is realized or once the Timeout expires.

Signal ROTL (green LED on a testing device)

- the output signal is activated by passing in the L direction realized after pressing the INL button

Signal ROTR (green LED on a testing device)

- the output signal is activated by passing in the R direction realized after pressing the INR button

3.9. INSPECTION OF CLAMPS, CONNECTORS AND CABLING

3.9.1. TIGHTENING OF BOLTED CLAMPS

Most turnstile clamps are flexible, and are checked by gentle pulling. There are also bolted clamps in the turnstile. Check all bolted clamps and tighten well the loosened joints by a screwdriver.

Bolted clamps are used on:

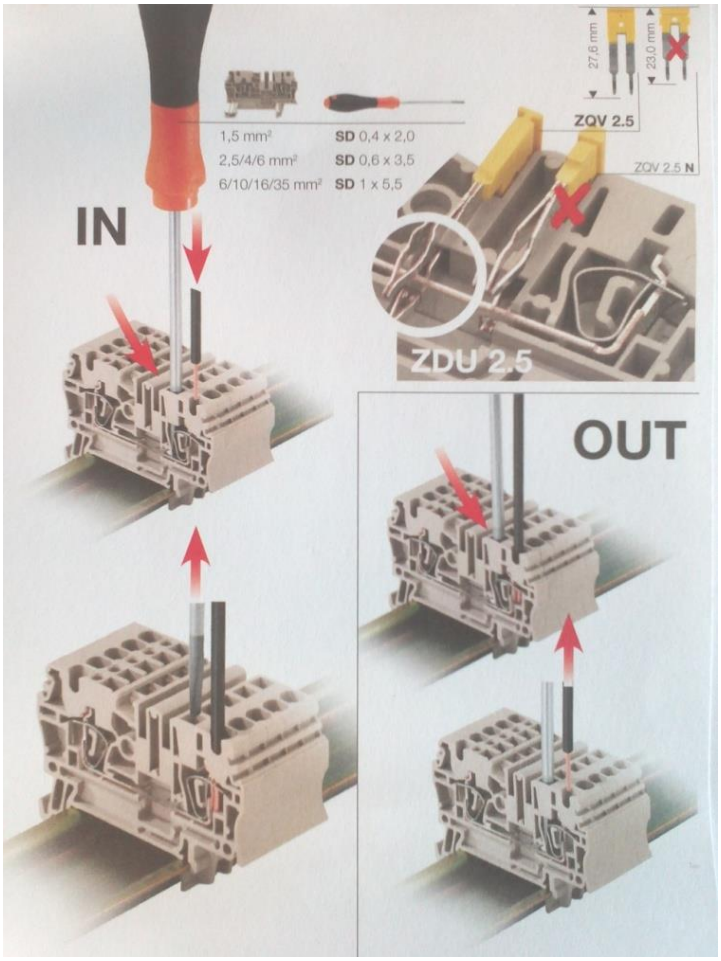
- connector terminal boards on the MLU5 electronics
- brake connector of the MASTER motor drive unit on the BD1 power distributor of brakes

3.9.2. INSPECTION OF FLEXIBLE CLAMPS AD CRIMP CONNECTORS

Flexible clamps and crimp connectors are checked by gentle pulling of individual wires outwards of the connector, by which you inspect if they are correctly inserted and secured in the connector clamp.

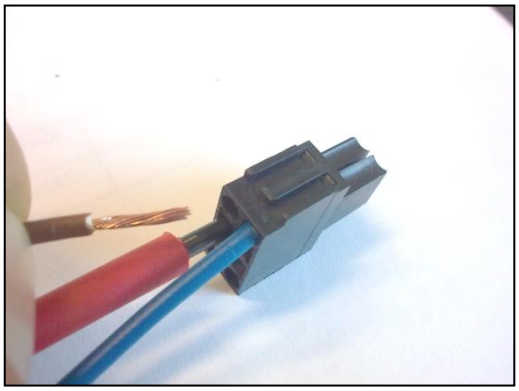
Procedure for connection of wires into flexible clamps of the X2 and X3 terminal boxes:

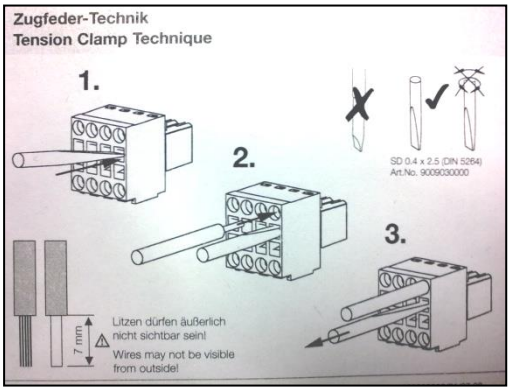
Weidmueller terminal boxes with flexible clamps are connected in compliance with the following figure:



Procedure for connection of the wires into connectors:

Weidmueller connectors with flexible clamps are connected in compliance with the figures below. Flexible clamps are opened by a screwdriver that is inserted into a little window next to the clamp. When inserting the wires into the connector, make sure that all strands of the plaited core are inserted into the connector, and the wire insulation was inserted in recess.





3.9.3. INSPECTION OF HEATED-UP CONNECTORS

Disconnect each connector and check the thermal damage. Check the connectors if they are not melted or blackened. If there are any signs of heat damage, replace the connector. If a connector on the PWD distributor or brake distributor is heated up, replace the whole distributor. If the connector on control electronics is heated up, it is necessary to replace the control electronics and send it back to the manufacturer for repair.

3.9.4. INSPECTION OF INTERCONNECTING CABLING OF MASTER SLAVE

Check damage of the interconnecting cabling, alternatively if the cabling insulation is not pinched. Pay extra attention to spots where the cabling is led through sharp edges. Then, by a gentle pull of individual wires, check if they are correctly secured in the flexible clamp both on the MASTER and SLAVE side.

3.10. REPLACEMENT OF ELECTRONICS

When handling electronics, they must not be strained by bending or torsion. If lock of distance columns are damaged during dismantling, it is essential to replace the distance columns with new ones.

3.10.1. REPLACEMENT OF CONTROL ELECTRONICS

If you need to replace the MLU5 control electronics, proceed as follows:

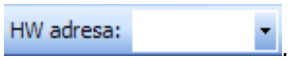
- Disconnect the electronics from power supply. If needed, take a picture of the proper connection of all connectors.
- Disconnect all connectors that are connected to the electronics.
- Properly connect all connectors back to electronics (in accordance with the separate manual: *Installation Instruction for Turnstiles of the Type EASYGATE)* except for the power supply connectors.
- Before turning on, perform thorough inspection of all connections.
- Connect the power connector and let it initialize the turnstile. After initialization, test the turnstile using the testing device of electronics.

Setting of the MLU5 control electronics with default setting:

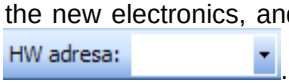
If you use a board with default settings as a new control electronics, it is necessary to set it. After connection of power supply unit, you have approximately one minute to connect to the electronics by means of the TCONF application, RS485/USB converter and a laptop. If you manage to establish a connection with the board within a minute after its connecting, you may change the type of turnstile, for which the electronics is intended, change the hw address, firmware and default setting of parameters. In the end, test the turnstile fitted with new electronics.

Copying of parameters from the original MLU5 control electronics:

If you need to download (copy) parameters from the original MLU5 control electronics, proceed as follows:

- Connect your laptop equipped with the TCONF application and USB/485 converter to the original MLU electronics.
- Run the TCONF application and wait approximately one minute for the login of the address of the electronics of the connected turnstile.
- Select the address of the original MLU electronics in the HW address window 

.
- Using the button **Setting parameters of the electronics** , open the table parameters of original electronics.

- Using the button **Save custom settings to a file**  , save the settings of the original electronics to any folder in your computer. Use this file also in case of problems, and send it back to the manufacturer together with log statements.
- Disconnect the original electronics and connect the new one.
- Close the window where the parameters of electronics are set.
- Wait for login of the new electronics, and choose an address of the new electronics in the HW address window 

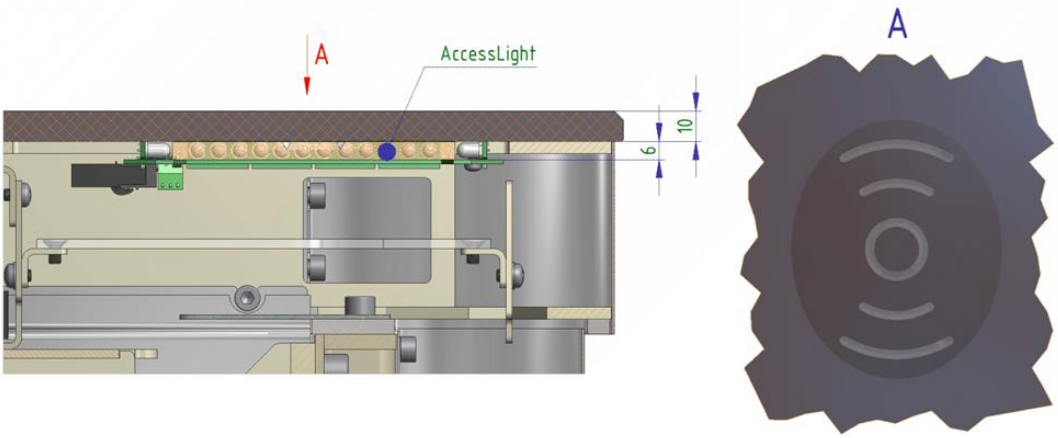
. The new unused electronics reports the address 31, the used electronics reports the address that was assigned within the last configuration.
- Using the button **Setting parameters of the electronics**  , open the table of the new electronics parameters.
- Using the button **Open custom settings file**  , open the previous saved setting of the original electronics (.tcpf ending).
- Using the button **Upload parameters to electronics**  , save the configuration of the new electronics.
- In the window **Change address** 

, check the correspondence of the electronics address with the original address.
- If necessary, upload a new firmware.

3.10.2. REPLACEMENT OF ELECTRONICS OF UPPER ACCESSLIGHTS

Electronics is fixed by M3 bolts that are fastened with plastic washers. Bolts with washers form part of the supplied spare electronics. If you lose the washers during installation, use washers of the original electronics. Always use two loose distance washers and one tight washer that prevents bolts from falling out. AccessLight configuration is done by means of solder bridges (separate instructions: *Instructions for Use of the AccessLight Display Panel*). This may be performed only by the manufacturer.

Thickness of the upper glass panel above the proximity reader is 10mm. If AccessLight (upper signalling LED display) is placed under the upper glass panel, distance of the RFID proximity reader from the upper surface of the upper glass panel is increased by 6mm to 16mm.



3.10.3. REPLACEMENT OF ELECTRONICS OF FRONT TRAFFICLIGHTS

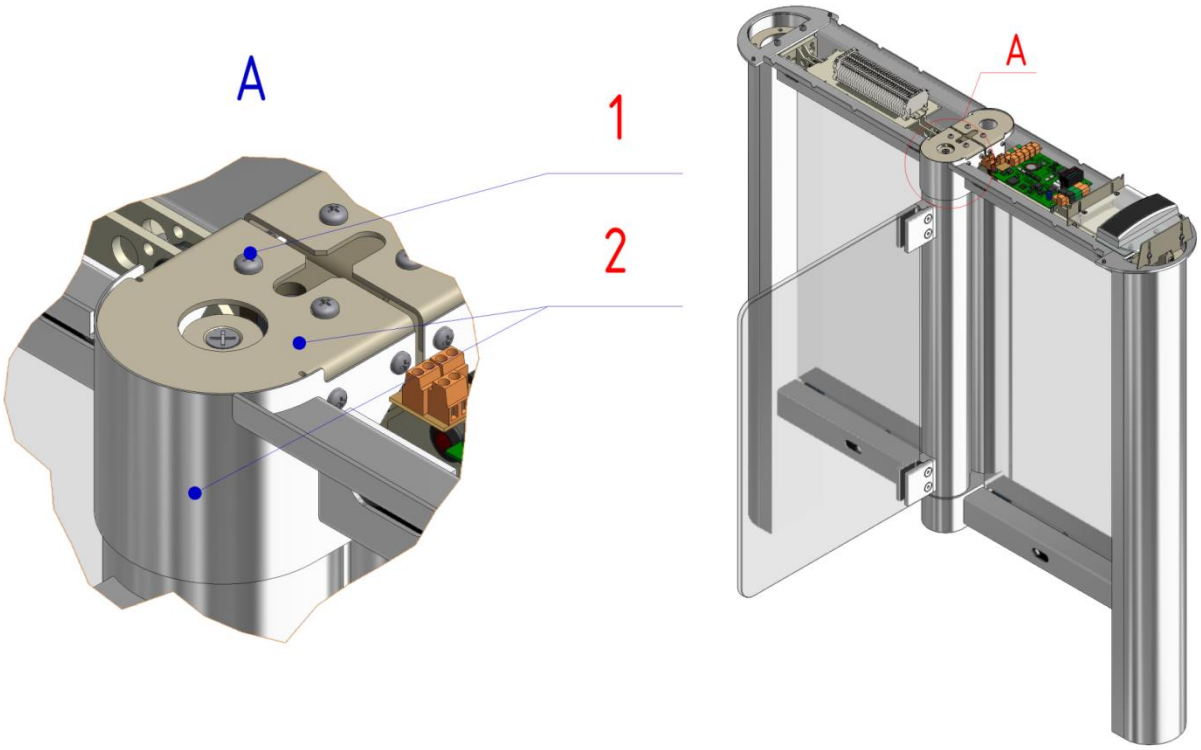
Electronics is fixed by M3 bolts that are fastened with plastic washers. Bolts with washers form part of the supplied spare electronics. If you lose the washers during installation, use washers of the original electronics. Always use two loose distance washers and one tight washer that prevents bolts from falling out. TrafficLight configuration is done by means of SWITCH (separate instructions: *Instructions for Use of the TrafficLight Display Panel*).

3.11. INSPECTION OF THE MOTOR DRIVE UNIT

3.11.1. ACCESS TO THE CONSOLE WITH MOTOR DRIVE UNIT

- Dismount the upper lid in accordance with the chapter: *Access to Control Electronics*, and slide covers from the side of the turnstile where the motor drive unit is placed in accordance with the chapter: *Replacement of Upper and Lower Sensors.*

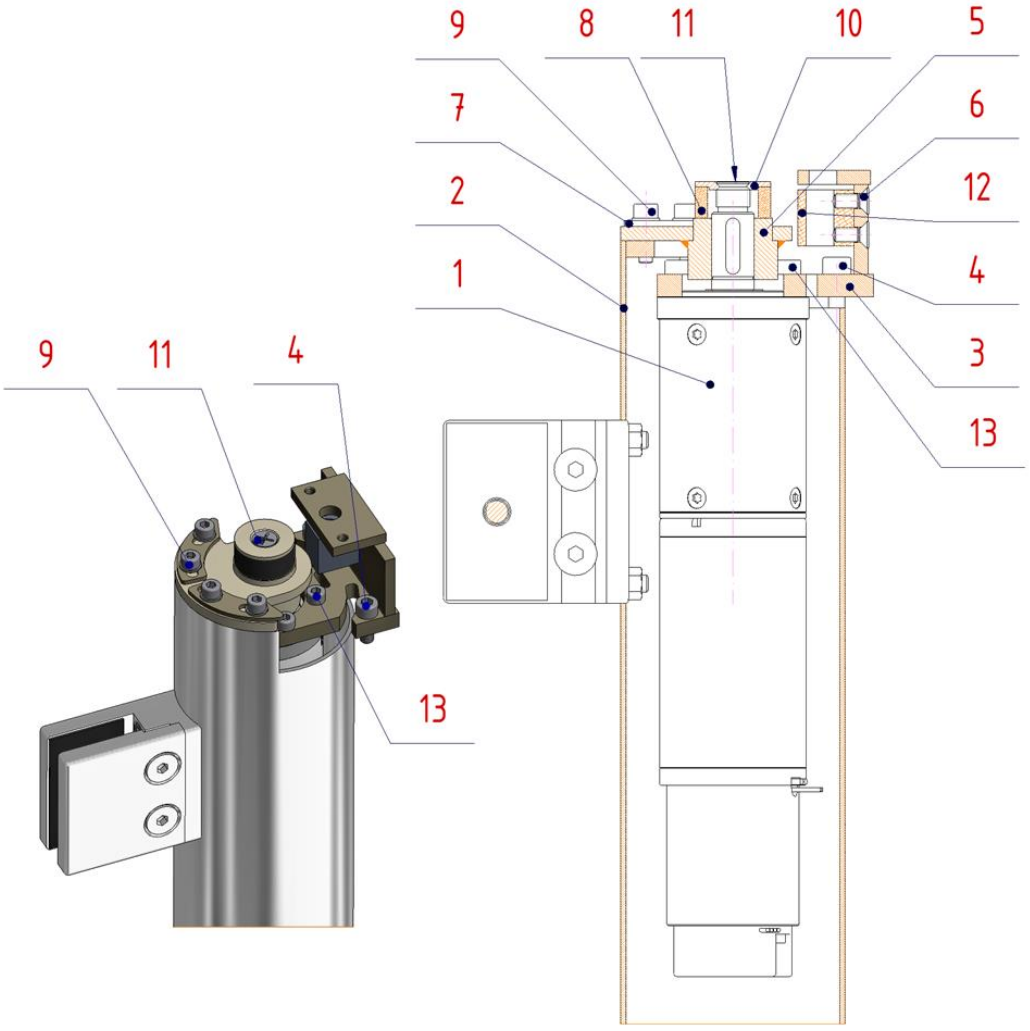
- Dismount the cover above the motor drive unit (pos.2) by unbolting two M5 bolts (pos.1).

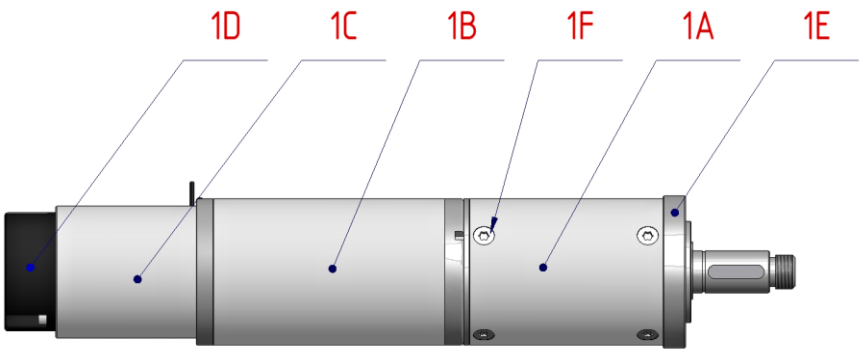


3.11.2. INSPECTION OF THE BOLTED CONNECTIONS

Cooperation of two technicians is necessary. Inspection is performed with a connected power voltage in a way that one person is trying to vibrate the turnstile using strength (by pulling and pushing the turnstile wing), and the second person is checking the bolted connections. It is necessary to tighten the loosened connections

For safety reasons, tightening of bolted connections must be performed with disconnected power supply voltage.





Inspect the following connections of the motor drive unit:

- **Fastening of the motor drive unit wheel (pos.5) to the motor drive unit shaft (pos.1)**
  Check if the M6x16 embedded bolt (pos.1), which connects the motor drive unit shaft (pos.1) via dampening rubber (pos.8) of the motor drive unit and pressure washer (pos.10), is tightened. If the bolt is loosen, it must be dismantled. Clean both the bolt and the thread in the motor shaft (pos.1) from remnants of old adhesive. Secure the bolts with LOCTITE 603 before assembling them back.

- **Fastening of the wing end-position (pos.12) to the motor drive unit bracket (pos.3)**
  Check whether the two pieces of embedded bolts M5x12 (pos.6) are tightened. If any bolt is loosened, it is necessary to dismount it. Clean both the bolt and the thread of the wing end-position (pos.12) from remnants of old adhesive. Secure the bolts with LOCTITE 603 before assembling them back.

- **Fastening of the front flange (pos.1E) to the planetary gearbox (pos.1A)**
  If bolts (pos.1F) are loosened, it is necessary to dismount them. Using a degreasing spray, clean both the bolts and threads in the flange from soaked grease of the gearbox. Before mounting the bolts back, secure the bolts with LOCTITE 603. U will need the TORX TX30 spanner to tighten the bolts.

- **Other bolts**
  Only tighten all other bolts that serve to set the wing. If stop-ends need to be adjusted, proceed in accordance with the chapter: *Inspection and Adjustment of the Motor Drive Unit Stop-Ends*.

3.11.3. INSPECTION OF THE ELECTROMECHANICAL BRAKE

Inspection of the electromechanical brake (pos.1D) is performed with the power supply connected to the control electronics.

- By means of the testing device, alternately activate and deactivate the ON/OFF signal, and observe if brakes of both drive units (MASTER and SLAVE) audibly click. If none of the brakes made a clicking sound, most likely a malfunction occurred in wiring or end transistor that parallelly controls both brakes. Check the cabling. In case of transistor failure, the electronics must be replaced.

- Leave the signal in the ON state, and try to open the turnstile by pushing both turnstile wings. After approximately 2cm, both wings must brake. If any of the wings does not brake, measure voltage on the respective. In case of a MASTER turnstile, the voltage is measured on the **BD1** brakes distributor. In case of a SLAVE turnstile, the voltage is measured on the **X3** terminal board. If the voltage ranges between 12 - 13.8VDC, the electromechanical brake is faulty. The brake forms a part of the motor drive unit and is not supplied as a spare part. Replacement of the whole ensemble, which comprises the following, is necessary:

  - planetary gearbox (pos.1A)
  - electromotor (pos.1B)
  - electromechanical brake (pos.1C)
  - speed sensor (pos.1D)

3.11.4. REPLACEMENT OF THE MOTOR DRIVE UNIT

Replacement of motor drive unit is performed with disconnected power supply voltage.

Disassembly of motor drive unit:

- MASTER turnstile: disconnect wires from all the motor drive unit connectors on the **MLU** control electronics and **BD1**power supply distributor of brakes

  SLAVE turnstile: disconnect all the motor drive unit wires from the X3 terminal board

When disconnecting wires from connectors and clamps, mark their placement for back assembly. Perform disconnecting and connecting back in accordance with the chapter: *Inspection of Flexible Clamps and Crimped Connectors.*

- Loosen the bolt (pos.11) that secures the flexible tightening of the motor drive unit shaft (pos.1) via the motor drive unit rubber (pos.8) and pressure washer (pos.10) to the motor drive unit wheel (pos.5).
- Unbolt four M5 bolts (pos.9) and slide out the flange (pos.5) from the motor drive unit shaft. At this moment, the turnstile wing is only attached by its lower bearing, and thus it must be secured against tilting.
- Unbolt the two M6 bolts (pos.4) and slide the motor drive unit bracket (pos.3) from the wing pipe upwards.
- Unbolt the six M5x14 bolts (pos.13) connecting the motor drive unit bracket (pos.3) with the front flange (pos.1E) of the motor drive unit.

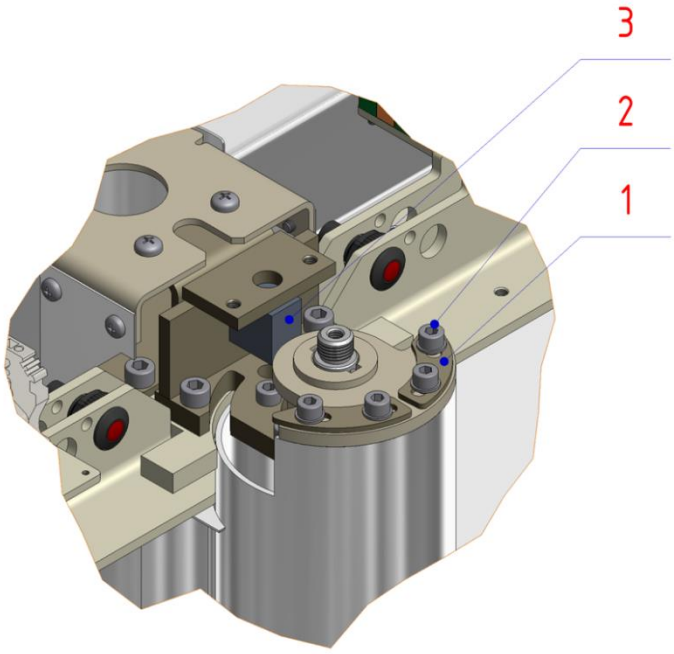
Now, the motor drive unit is dismantled and ready for replacement of service.

Mounting of the motor drive unit:

- Back assembly of the motor drive unit (pos.1) is performed in reverse procedure to the disassembly.
- Attach the new complete motor drive unit (pos.1A, 1B, 1C, 1D) by means of six bolts (pos.13) to the motor drive unit bracket (pos.3), and secure it by LOCTITE 243 adhesive.
- Lead the motor drive unit wires through the holes of the motor drive unit bracket (pos.3) and the stop-end cube (pos.12).
- Before mounting the motor drive unit (pos.1) back, clean the bolt (pos.11) and the opposite thread in the motor drive unit shaft (pos.1) from remnants of old adhesive, and secure them by LOCTITE 603 before assembly.
- Centre the wing by means of two M6 bolts (pos.4) for a smooth run.
- Correctly connect all wires to respective connectors or clamps (in accordance with the separate instructions: *Installation Instructions for EASYGATE Turnstiles*).
- Connect the power supply voltage and perform initialization (in accordance with the chapter: *Function Reset - Initialization)*
- Adjust the motor drive unit stop ends in accordance with the following chapter.

3.11.5. INSPECTION AND ADJUSTMENT OF THE MOTOR DRIVE UNIT END STOPS

- In accordance with the chapter: *Replacement of Upper and Lower Sensors* and chapter: *Access to Motor Drive Unit*, dismantle covers of the upper sensor and motor drive unit on the side of the wing you need to adjust.



- Firstly, check if bolted joints of the motor drive unit and its bracket are not loosened.
- Inspection of correct position of end stops is performed by manual turning of wings to their end positions. The wing must not touch the turnstile cabinet in these end positions, and the distance between the wind and the turnstile cabinet must be identical in both end positions. If these distances differ, adjust the stop ends. Stop ends must be set congruently at both passage wings. Inspection and adjustment of end stops is performed with turned off power supply.
- Always adjust only one end stop as follows:
- Loosen the two M5 bolts (pos.1), and adjust the stop butt strap (pos.1) towards the stop cube (pos.3) so that there is a gap between the wing and turnstile cabinet when the wing is turned to its utmost positions. The best way to proceed is to firstly tighten the stop end very lightly in its utmost position , and then turn the wing slightly to a predetermined distance from the glass filling or turnstile cabinet. Measure this distance by a tape measure, and mark it off by a subject of required size that is inserted between the turnstile wing and glass filling or cabinet. If it is a case of a turnstile, where the glass wing overreaches the turnstile cabinet, set the end stops so that there is a gap of 8-10mm between the glass wing and turnstile cabinet. Lastly, tighten the two M5 bolts (pos.2).
- After tightening the bolts of the first end stop, adjust the end stop of the other opening direction the same way. Set the gap between the wing and turnstile cabinet on the same distance as in the first opening direction.
- Perform initialization in accordance with the chapter: *Function Reset-Initialization*, and check if wings of the turnstile stop perpendicularly to the turnstile axis in one level facing each other.
- Inaccuracies made during anchoring of the turnstile may cause that the wings do not stop facing each other in the home position. In this case, we must choose a compromise setting of end stops.

- In case of this setting, we must proceed from the principle that the glass will always stop in the middle of its path between both end stops. If you shift only one end stop, the wing will stop in the home position by half of path of the shifted end stop. If you shift both end stops in one direction, the wing will stop in home position in compliance with the path of shift of both end stops.

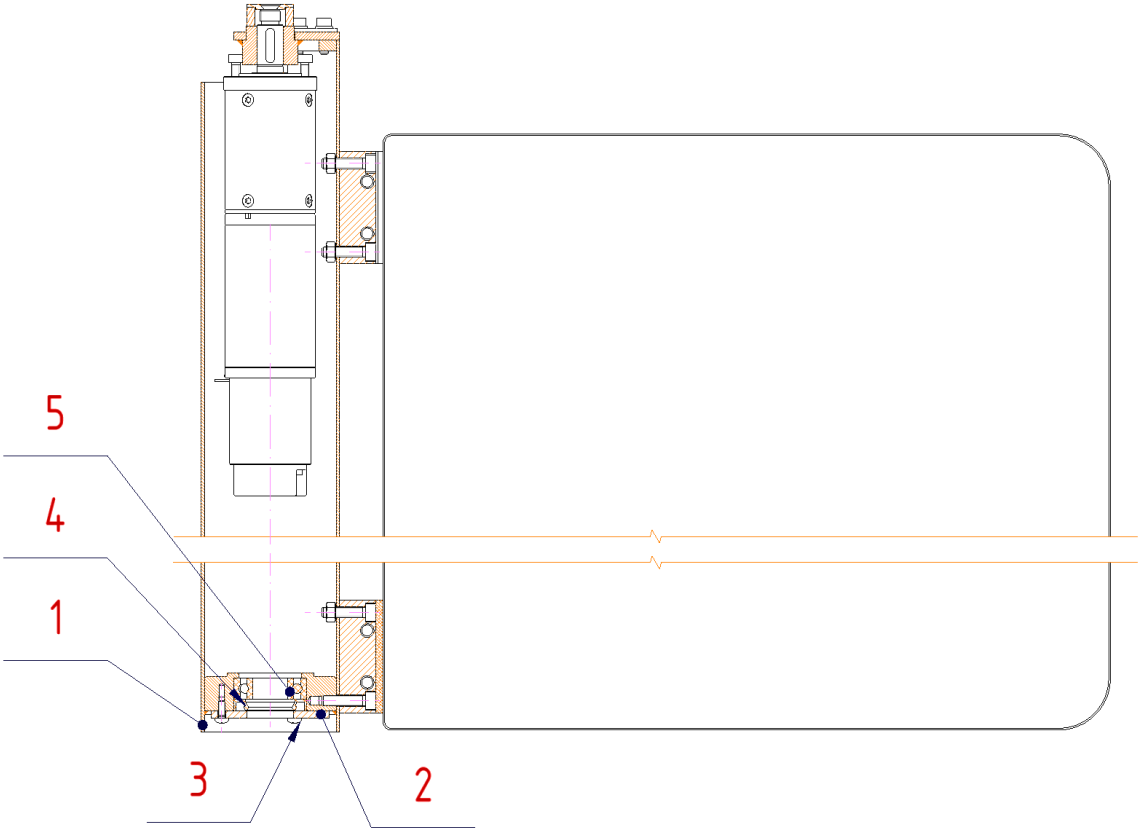
- Sometimes, it is sufficient to adjust end stops of one wing only. However, if the wing is tilted too much from the perpendicular to the turnstile, it is more suitable to adjust end stops of both wings so that deviation from perpendiculars of both wings is symmetrical.

- After this adjustment, we must check again if the wings are not hitting the turnstile cabinet, and alternatively repeat the adjusting with the difference that we will reduce the path of the hitting wing.

Never loosen all four M5 bolts (pos.2) at the same time. Adjust each stop butt strap individually.

3.11.6. HOW TO REPLACE A BEARING

- The procedure is identical with the chapter: *Replacement of the Motor Drive Unit.* The assembly of the turnstile wing (pos.1) including the glass may be slid upwards. Place the wing assembly on supports. Unbolt three M4x10 bolts (pos.3). By removing the bearing lid (pos.2), you will access the rubber gasket (pos.4) and the bearing (pos.5).



3.12. REPLACEMENT OF GLASSES

When replacing broken or otherwise damaged glasses, one may get cut with glass. That is why it is necessary to pay increased attention and use protective glasses and glazing gloves. Be careful so that pieces of broken glass do not hurt another person, and do not penetrate to inner parts of the turnstile.

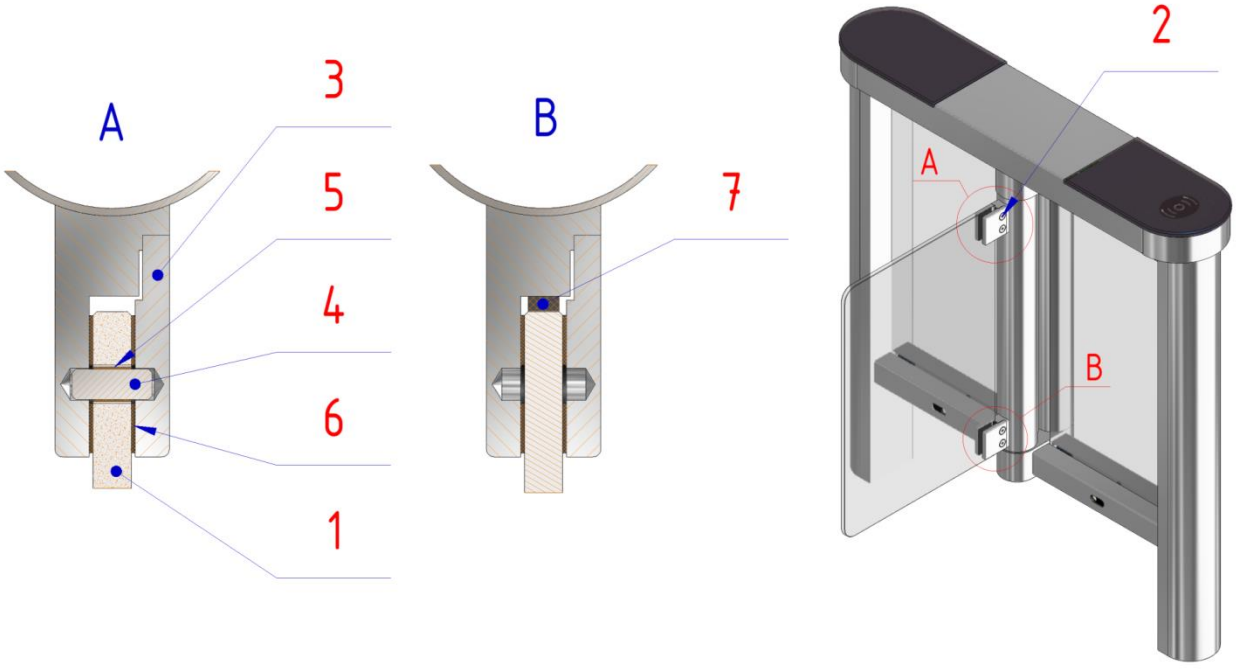
3.12.1. INSPECTION AND REPLACEMENT OF WING GLASSES

Inspection of wing glasses:

- During inspection of the wing glass, check if all MXx20 bolts (pos.1) are tightened. If not, tighten them.
- Visually check if glasses are not partially cracked. If they are, replace the wing glass.

Replacement of wing glasses:

- Lightly loosen all M8 bolts (pos.2) on both glass brackets, and make the glass (pos.1) loose by seesaw motion from rubber washers (pos.6).
- Unbolt both M8 bolts (pos.2) on the lower bracket (detail B) and dismount the glass butt strap (pos.3).
- Support the glass and unbolt both M8 bolts (pos.2) on the upper bracket (detail A) and dismount the glass butt strap (pos.3).
- Take out the glass while being careful not to lose the glass pivot (pos.4) with small rubber tube (pos.4) at the upper bracket.
- Perform the assembly of a new glass by reverse procedure. Before the assembly, check if theh rubber washers (pos.6) are affixed on all glass brackets and if the stop rubber (pos.7) is affixed at the lower bracket. Before tightening the M8 bolts (pos.2), adjust the glass so that the upper edge of the glass is in the same height and in a horizontal position with the opposite turnstile wing.



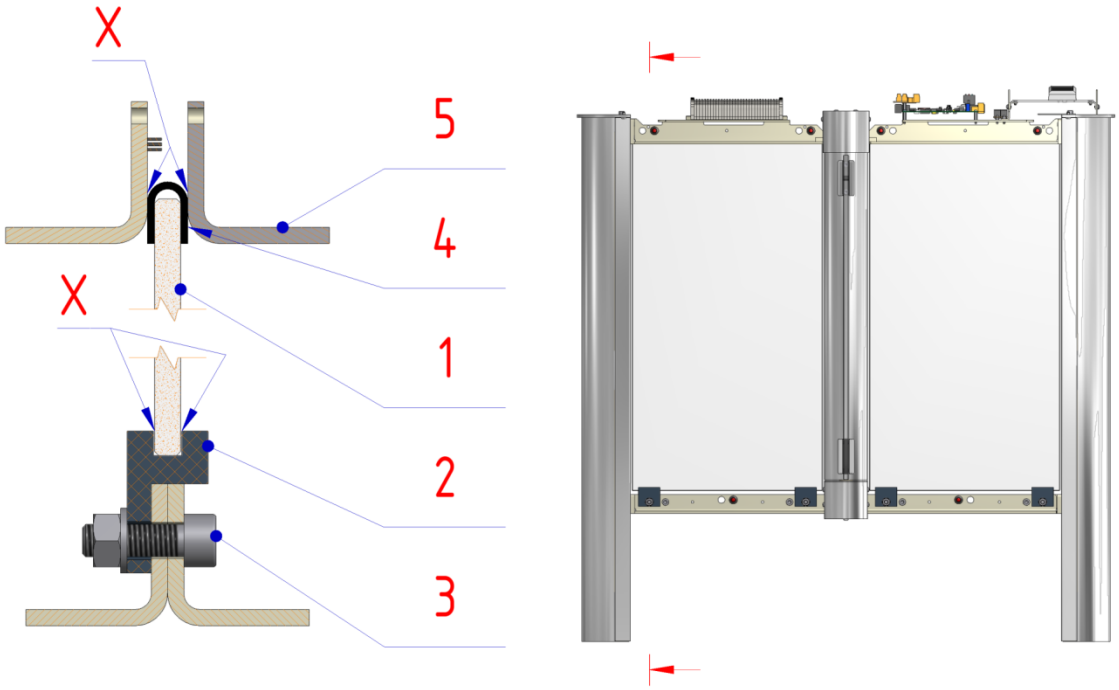
3.12.2. INSPECTION AND REPLACEMENT OF GLASS FILLINGS

Inspection of glass fillings:

- When replacing or inspecting the glass filling, at first it is necessary to dismount the lid assembly in accordance with the chapter: *Access to the Control Electronics*, and covers of upper and lower sensors in accordance with the chapter: *Replacement of Upper and Lower Sensors*.
- During inspection of the glass filling (pos.1), check if all M8x25 bolts (pos.3) with nuts are tightened. If not, tighten these bolts.
- Visually check if the glasses are not partially cracked. If they are, replace the glass fillings.

Replacement of glass fillings:

- Before the replacement, remove remnants of old cracked or partially cracked glass and the upper rubber (pos.4).
- Take the glass out by lifting it up by ca. 8 mm firstly, and then tilting it outwards the turnstile.
- After the original glass is removed, it is requisite to also remove remnants of the original adhesive.
- Firstly slide the new glass to the gap in the upper frame (pos.5) and then put it in two plastic supports (pos.2).
- Insert the upper rubber (pos.4 - 2x50x100mm) into the gaps between the glass (pos.1) and the upper frame (pos.5) in two spots. Two pieces of these rubbers are supplied with a new glass. Insert the rubber by its longer side into gaps, draw it tight around the glass and cut off the part that surpasses the upper frame (pos.5).
- Apply thin layer of silicon sealant in spots marked by "X"



3.12.3. REPLACEMENT OF THE UPPER GLASS - ACCESSLIGHT

- The glass is affixed by silicon sealant.
- Before the replacement, it is necessary to dismantle the ACCESSLIGHT device, or as the case may be the TRAFFICLIGHT device, to prevent its damage.
- Cut the glass by cutting string with diameter up to 0.5mm or by a high-quality cutter with snap-off blade with metal reinforcement.
- After removing the original glass, remove remnant of the original adhesive.
- Affix the new glass with a silicon sealant so that a thin layer of 0.5mm of adhesive remains between the glass and the metal sheet. Preservation of the gap will allow repeated cutting off of the damaged glass.

3.12.4. REPLACEMENT OF THE FRONT GLASS - TRAFFICLIGHT

- The glass affixed by silicon sealant.
- Dismount the TRAFFICLIGHT device.
- Using a hammer, knock most of the glass outwards from the inner side. Pay attention so that the pieces of glass do not hurt another person, and do not penetrate to inner parts of the turnstile .
- By means of pliers and cutter with snap-off blade with metal reinforcement, remove remnants of glass and adhesive.
- Affix the new glass on a cleaned surface using small layer of silicon sealant applied only on the front side of the frame. The sealant must not overflow over the glass edge. It is necessary to secure the glass against falling out after it is affixed. Use adhesive tape to secure the glass.

3.13. FINAL OPERATIONS OF THE MAINTENANCE

3.13.1. FUNCTION RESET - INITIALIZATION

This is a function that enables controlled induction of reset and initialization procedures. The function must be run after replacing the MLU control electronics or after installation of a new equipment. It is also used during chaotic turnstile operation, non-standard wing moving to the end position etc. Non-standard operation may be caused by a wrong running-in and subsequent wrong measuring of the MLU control electronics parameters.

When the reset and initialization procedure is activated, the following procedures come about:

- reset of internal registers
- reset of error register
- activation of device initialization
- detection of faults

The turnstile configuration remains after the reset and initialization procedure is activated.

In the course of the reset and initialization procedure, you must not interfere in turnstile operation in any way.

Reset and initialization procedure cannot be performed when running on back up battery or if the terminal voltage drops below 12,5VDC (due to voltage drop on the supply wiring).

Activation of the reset and initialization procedure may be performed as follows:

1. Connect power supply voltage – then five times activate and deactivate the ON/OFF input within 20 seconds after the turnstile is in the home position

2. Connect power supply voltage – then ten times press the button ON/OFF on the Touch Panel within 20 seconds after the turnstile stabilizes in its home position

3. Connect power supply voltage – then five times activate and deactivate the ON/OFF switch on the turnstiles testing device within 20 seconds after the turnstile stabilizes in its home position

4. Press the RESET icon in the TCONF application – anytime during turnstile operation

5. Upload new configuration in the TCONF application – anytime during turnstile operation

6. Upload new firmware in the TCONF application – anytime during turnstile operation

After you activate and perform the reset and initialization procedures (approximately 1 minute), the turnstile will stabilize in its home position.

Check if the movable glass wings open and close with the same speed. Further, check if both movable wings circumscribe trajectories of the same size, alternatively adjust them in accordance with the chapter: *Inspection and Adjustment of the End Stops of the Turnstile Wings.*

3.13.2. INSPECTION OF ANCHORING BOLTS AND ALL BOLTS OF THE TURNSTILE CONSTRUCTION

- Cooperation of two technicians is necessary. Perform the inspection in the following way: the first person tries to vibrate the turnstile by force (using tension and compression on the revolving barrier) and the second person monitors the bolted connections.
- Loose connections must be tightened.
- Loose anchors must be replaced.

3.13.3. DISCONNECTION OF THE TESTING DEVICE AND CONNECTION OF THE SUPERIOR SYSTEM

- Disconnect the orange power connector from the MLU control electronics.
- Gradually disconnect all connectors of the testing device and the RS485 distributor.
- Connect all original connectors of the superior system.
- Connect the orange power connector to the MLU control electronics.

3.13.4. INSPECTION IF ALL CONNECTORS ARE INSERTED IN THE TURNSTILE

Check insertion of all connectors up to locks.

3.13.5. INSPECTION OF COMMUNICATIONS WITH THE SUPERIOR SYSTEM AND CONTROL PERIPHERALS

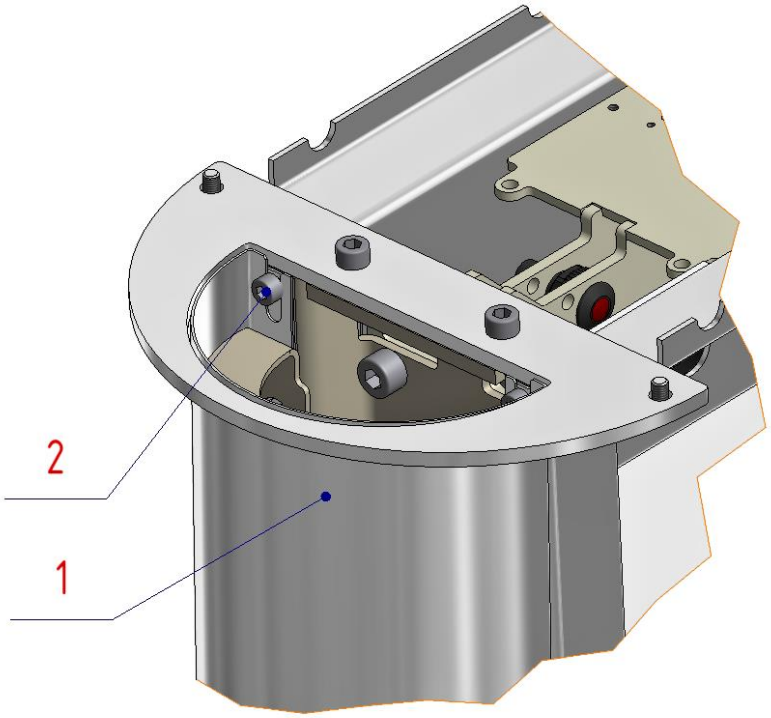
In cooperation with customer, check if the turnstile properly communicates with the superior control system of passages.

3.13.6. CLEANING OF INNER PARTS OF THE TURNSTILE

- Vacuum and dust the inside of the turnstile.
- Clean slide bars of linear rails. The surface must be dry and grease-free.
- Clean the covering plastic bars of horizontal sensors.
- If there is dirt on the inner glass surface of the AccessLight device, dismantle the device and clean the glass.
- If there is dirt on the inner glass surface of the TrafficLight device, dismantle the device and clean the glass.

3.13.7. FRONT COVERS ASSEMBLY - ACCESS TO ANCHORING HOLES

- Dismount the top lid in accordance with the chapter: *Access to the Control Electronics*.
- Loosen the two M5 bolts (pos.5).
- Lift the front cover (pos.1) up by approximately 9mm and tilt its bottom part out of the turnstile.
- Gradually tilt and slide the side cover out from the upper grip to loosen it.
- If there is TrafficLight or other device placed on the front cover, disconnect all connectors of such devices at the beginning of sliding out.
- Place the cover on a predetermined place.



3.13.8. CLEANING OF OUTER PARTS OF THE TURNSTILE

- Clean the outer parts of the turnstile by water with detergent, do not use chemical agents.
- Use the recommended agent to clean the outer stainless steel surfaces (manufacturer recommends the ARECAL: EDELSTAHL PFLEGE agent).
- Clean Perspex peepholes of sensors.
- Clean upper glasses of the AccessLight device and front glasses of the TrafficLight device.
- Clean glass wing and glass fillings.

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e-mail: cominfo@cominfo.cz

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In the case that CRF will not be filled in enough, be returned for completion.

CLAIM REPORT FORM

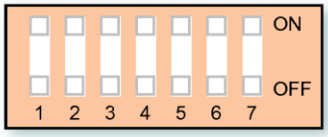
registration form number
intended for the Cominfo needs

1. **Product serial number (necessary):** ☐☐☐☐☐☐☐☐☐☐ * PICTURE 1

2. **Send to hotline@cominfo.cz a movie sample of the issue.**

3a. Control Electronic Round 4V3 (4V2) serial No.: ☐☐ / ☐☐☐☐ * PICTURE 2

SW1 DIP switch setting: * PICTURE 3



Firmware version: ☐☐☐☐ * PICTURE 4

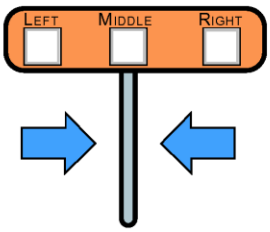
3b. Control Electronic MLU5 serial No. : ☐☐☐☐☐☐☐☐☐☐
(Supplied since August 2009) * PICTURE 5

4. Drive unit type: M T ☐☐ (Fail-Safe / Fail-Lock) * PICTURE 6 * PICTURE 7

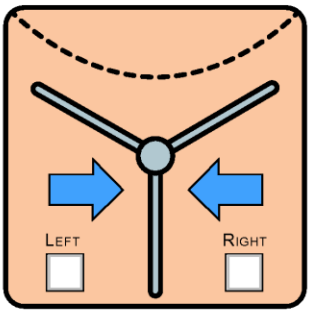
Gearbox type: P L G ☐☐ * PICTURE 8

5. Traffic light (please check box): ☐ **Traffic lights are O.K.**

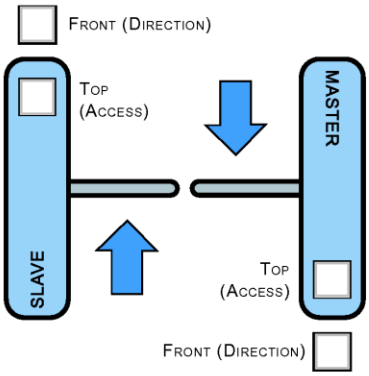
Turnstile BAR



Turnstile REXON



EASY-GATE



C L A I M R E P O R T F O R M

C L A I M R E P O R T F O R M

Claim description:

Customer:

Address:

Contact person:

Phone no.:

Date:

Email:

Info:

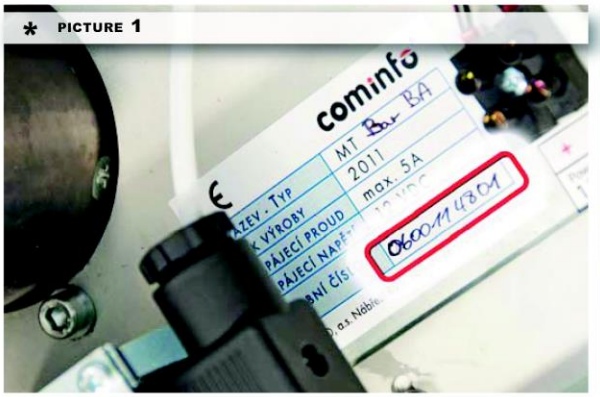
If you need remote online support, it is necessary to interconnect the turnstile with the laptop. The laptop must be connected to the internet and you have to allow remote administration to your laptop via the application TeamViewer. Then send to hotline@cominfo.cz your ID and password and our technician will connect to your laptop.

In the case that CRF will not be filled in enough, be returned for completion.

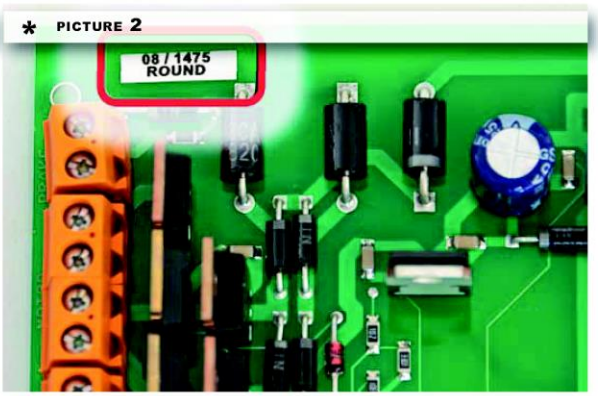
C L A I M R E P O R T F O R M

C L A I M R E P O R T F O R M

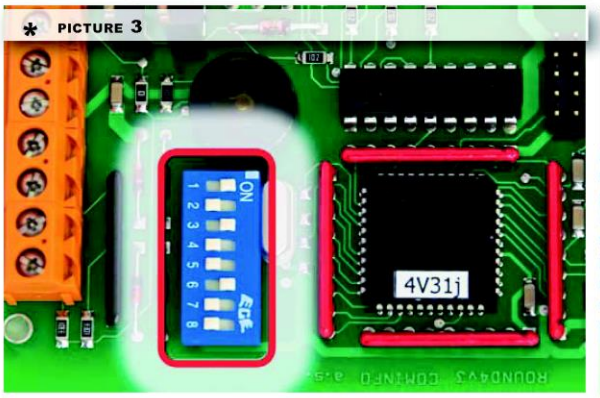
* PICTURE 1



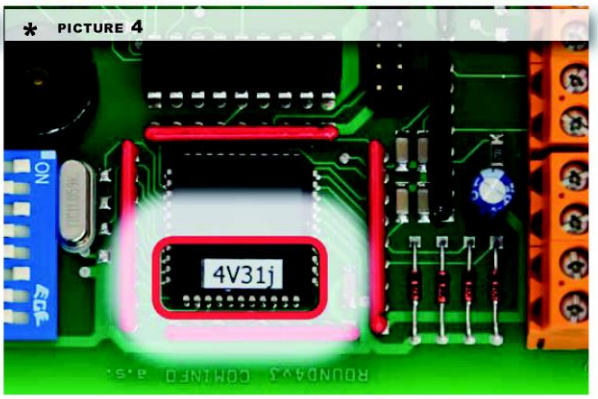
* PICTURE 2



* PICTURE 3



* PICTURE 4



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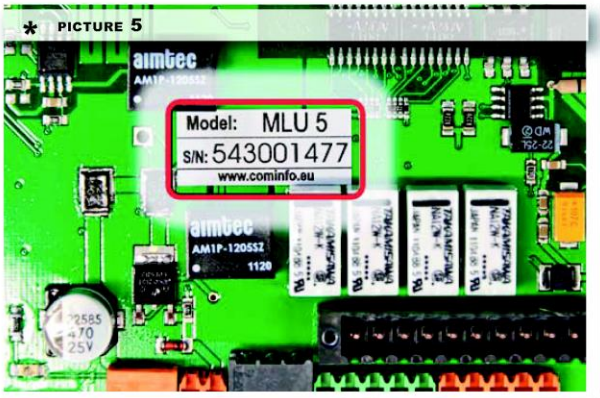
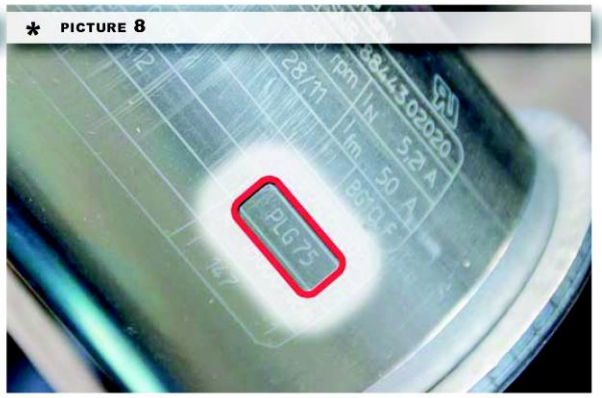


* PICTURE 6

* PICTURE 7

* PICTURE 8



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