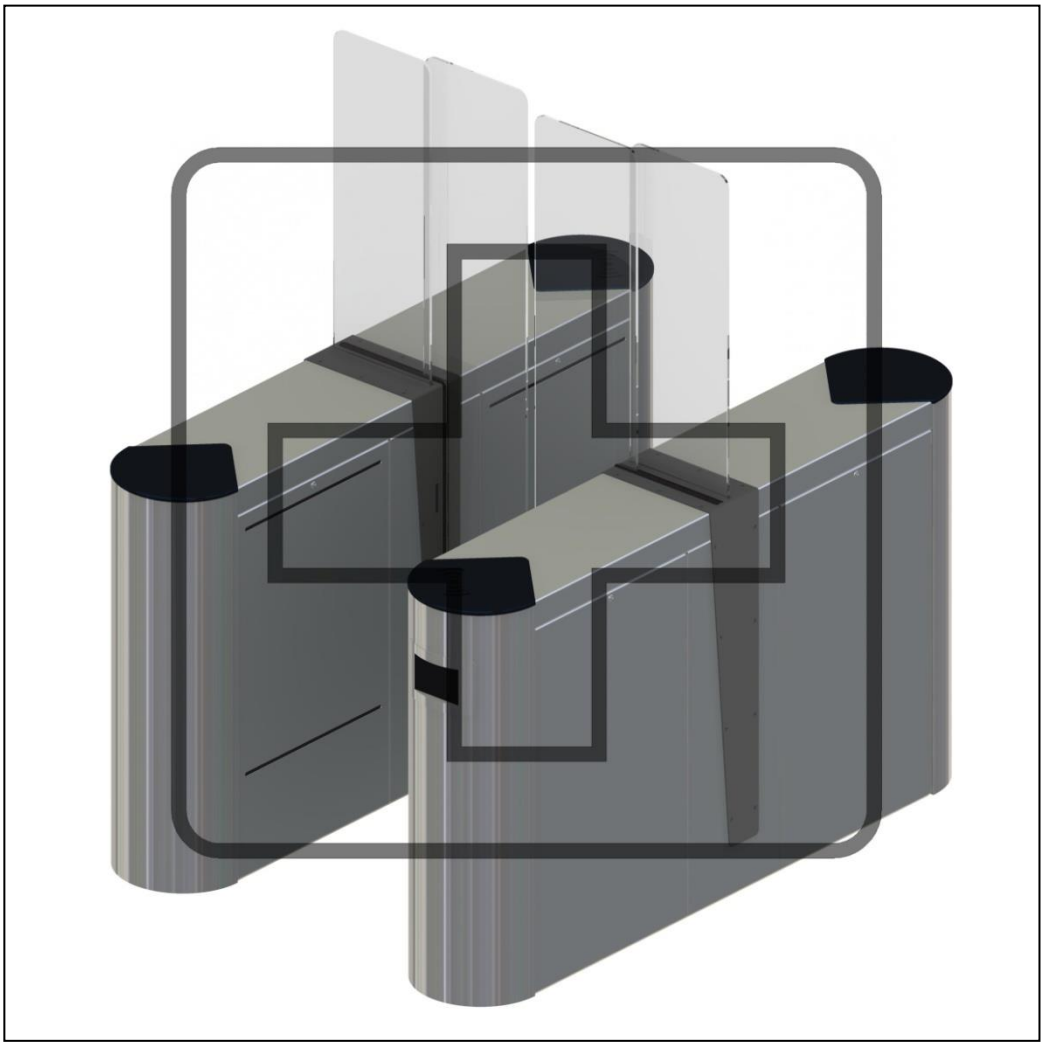


MAINTENANCE MANUAL OF THE TURNSTILE TYPE:

EASYGATE

(EASYGATE-LX, EASYGATE-LH, EASYGATE-FL, EASYGATE-FH, EASYGATE-LG)

1. INTRODUCTION

This document is intended for qualified COMINFO technicians or anyone who has completed the COMINFO training course.

Maintenance means a repetitive regular inspection and maintenance of the equipment to prevent any breakdowns and excessive wastage.

Maintenance significantly impacts safety, reliability and lifetime of the system. To keep warranty of the product it is necessary to regularly carry out maintenance as per this document and adjust individual mechanisms (the standard warranty term of the manufacturer is 24 months).

This manual is intended for turnstiles that are equipped with control electronics of version MLU 5V6 or higher.

Regular maintenance leads to significant financial savings.

This manual contains the following safety warnings:

DANGER !
A danger of a mechanical nature. Failure to obey these instructions may result in injuries of people or damage the machine.

WARNING !
Important information or important procedure.

NOTE !
Information or procedure that recommends how optimally use the system or its equipment with the purpose to prolong lifetime of the system and prevent it from being damaged, and also how to optimize its operation with a respect to safety standards.

2. REGULAR MAINTENANCE PLAN

The following maintenance tasks may be performed only by qualified COMINFO technicians or individuals who have completed the COMINFO training course.

FUNCTIONAL UNITS	REQUIRED TASKS	First	Each following	
		Month of operation	500 000 passages or 6 months	1 000 000 passages or 12 months
Linear guide	Cleaning after running-in	✓		
Moving mechanism	Cleaning Check-up Adjustment		✓	
Preventive check-up	All tasks as per this document			✓

3. PREPARATION BEFORE THE MAINTENANCE

Before the maintenance it is necessary to update the TCONF and TMON application. When your laptop is connected to the Internet and then each application is switched on, the update will take place automatically at startup. Consult the manufacturer whether it is suitable to upload a new firmware version.

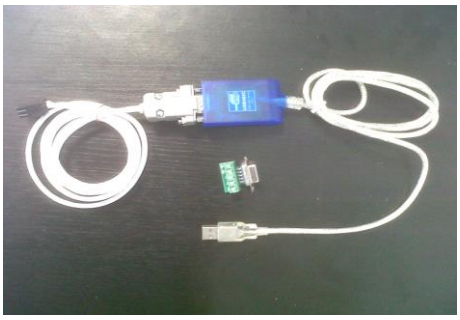
3.1. TOOLS FOR MAINTENANCE

To complete the maintenance it is suitable to prepare all tools for installing turnstile as specified in the *Manual for turnstile installation the type EASYGATE* according to the chapter *Tools required for installation*. Moreover, it is necessary to prepare the following items:

Special aids:

- laptop with operation system Windows XP, Vista, 7 (32b and 64b)
- T-Config software application
- T-Monitor software application
- CmfMng program with possible start-up as administrator
- SensorTest program
- Test device for electronics the type MLU5 that can simulate the function of a superior system

- Current firmware for given type of turnstile
- Touch panel to control the 485 communication
  (suitable for extensive maintenance – more operative than T-Monitor)
- RS485/USB converter with cable and connector
  Always use a converter supplied by COMINFO Inc.!



- multimeter
- battery tester
- micro soldering iron to exchange the battery and buzzer on MLU5 electronics

- Key to the lock CAMLOCK

- Key to the lock DOM (turnstiles up to May 2012)

- Tensile or compressive dynamometer with a range of up to 100N
- Nut wrench KM5
- Glazing gloves for handling damaged glass
- goggles
- cutter with snap-off blade with metal reinforcement

Cleaning, conservative and chemical preparations:

- agent for cleaning and conservation of stainless steel surface (recommended product ARECAL: EDELSTAHL PFLEGE)
- cleaner for glass wings of turnstile (recommended product ARECAL: GLASREINIGER)
- cleaning agent to treat sliding properties of brush (recommended product WURTH: CARE AND LUBRICANT SPRAY)
- agent on the basis of detergent for cleaning plexiglass peep-holes of sensors
- Loctite 243 to secure bolted connections
- Loctite 603 to fix bolted connections
- Silicone sealant for sticking the glass

Documentation:

- Manual for turnstiles installation the type EASYGATE-LX/LH/FL/FH/LG
- Manual how to use TCONF application
- manual how to use TMON application
- manual for LaneLight display panel
- manual for AccessLight display panel
- manual for MLU5 test preparation
- MLU5 – service manual

3.2. SPARE PARTS

3.2.1. SPARE PARTS - ELECTRO

Name	Order No.
Control electronics MLU5	1008739
Set of connectors for MLU5 electronics	1009421
Distance columns for mounting electronics	1010175
Backup battery for MLU5 electronics	1006084
small buzzer for MLU5 – passage	1007898
Big buzzer alarm – unauthorized passage	1002786
Backup battery of turnstile 15Ah (17Ah)	1000610
Power supply SM-12 / 24VAC/13.8VDC	1010046
transformer 230/24V - 630VA	1008760
Main power terminal board - X1	1010174
MASTER - X2 terminal board	1010172
SLAVE - X3 terminal board	1010172
Control electronics of sensors - C2	1009538
Sensor bar long – transmitters	1009926
Sensor bar long – receivers	1009748
Sensor bar short – transmitters	1009925
Sensor bar short – receivers	1009746
Complete set of cables	1009752
Power distributor - PD1	1009643
Brake power distributor - BD1	1009753
LaneLight MASTER/SLAVE (different in switching)	1008133
AccessLight MASTER/SLAVE (different in interconnecting)	1009894

3.2.2. SPARE PARTS - MECHANICAL

Name	Order No.
EASYGATE-LX/LH/FL/FH drive unit	1009373
EASYGATE-LG drive unit	
Speed sensor (encoder)	1009496
Roller of linear rails (C208)	1007757
Bar of linear rails (D10 L=300mm)	1008086
Bar of linear rails (D10 L=480mm)	1008806
Silent-blocks to mount the drive unit (S2020 diameter 20x20 - M6)	1008545
Silent-blocks to mount the drive unit (S3020 diameter 30x20 - M8)	1008546
Shaft couplings (TLK250L 19x30)	1007200
Follower's bearing (CSN 02 4630/DIN 625 - 6002)	1007615
Plastic follower	1007813
DOM lock (turnstiles up to May, 2012)	1002775
CAMLOCK lock	1010043
Side cover without peep-holes for sensors	1009948
Side cover with peep-holes for sensors	1008408
Plexiglass cover of peep-holes sensors on the side covers	1008695
Glass wing - movable - passage 550 for the height 1200	1008673
Glass wing - movable – passage 900 for the height 1200	1009882
Glass wing - movable - passage 550 for the height 1800	1009880
Glass wing - movable - passage 900 for the height 1800	1009881
Solid glass - narrow turnstile housing for the height 1200	1008674
Solid glass – wide turnstile housing for the height 1200	1009885
Solid glass – narrow turnstile housing for the height 1800	1009883
Solid glass – wide turnstile housing for the height 1800	1009884
Top glass - narrow turnstile housing	1009886
Top glass – wide turnstile housing	1009888
Top glass AccessLight – narrow turnstile housing	1009952
Top glass AccessLight – wide turnstile housing	1009958
Top glass LaneLight – narrow turnstile housing	1010079
Top glass LaneLight – wide turnstile housing	1010080
Top glass LaneLight with pictogram – narrow turnstile housing	1010081

Name	Order No.
Upper glass LaneLight with pictogram – wide turnstile housing	1010082
Front glass LaneLight	1009953

4. MAINTENANCE PROCEDURE

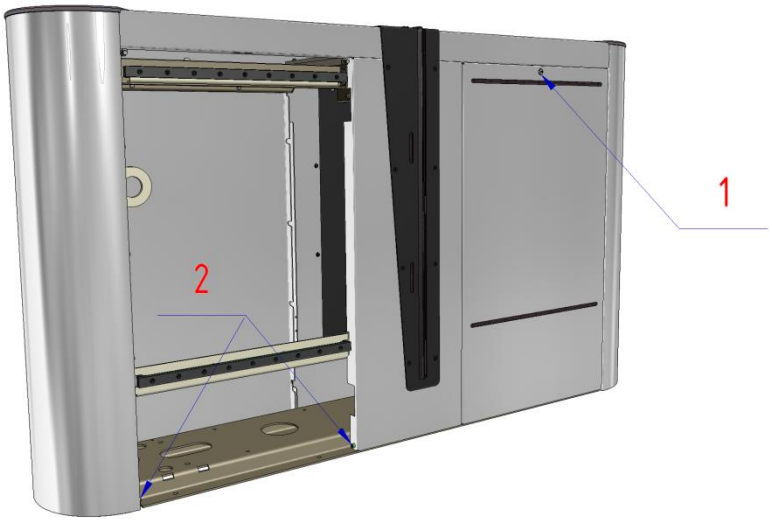
4.1. ACCESS TO THE CONTROL ELECTRONICS

After removing the side cover you will get to the drive unit with control electronics.

Description of disassembling of the EASYGATE-LX/LH/FL/FH side cover:

- Slide the key into the lock (pos.1)
- Push on the side cover in location of the lock to release locking mechanism
- Turn the key to the left
- By pulling the key, slightly tilt the side cover in the direction from the turnstile
- By pulling up, release the cover out of the bottom pins (pos.2)
- Put the disassembled side cover to a safe place

Use the reverse procedure to assemble the side cover back to the turnstile cabinet. It is very important to push the side cover in location of the lock during side cover assembling to the turnstile cabinet to prevent the lock damaging.

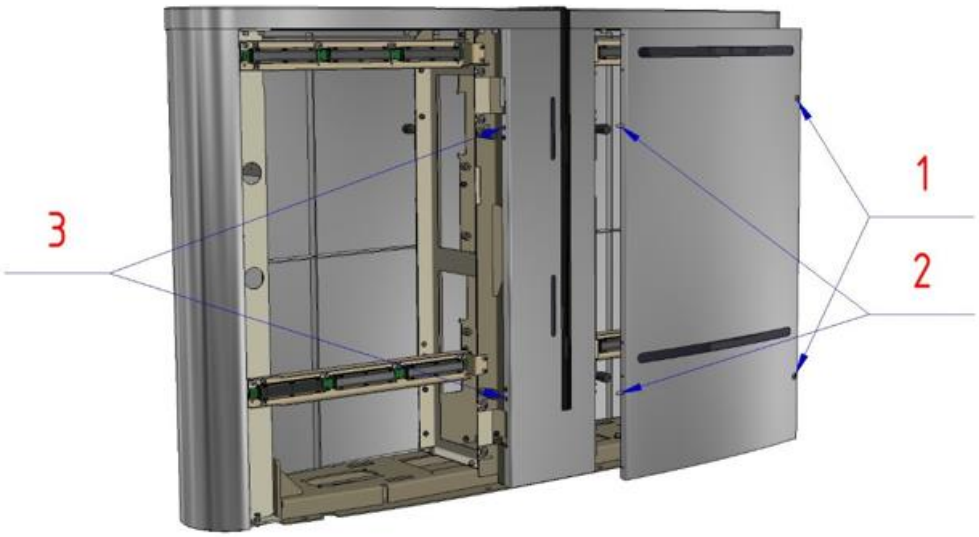


Description of disassembling of the EASYGATE-LG side cover:

- Slide the keys into the two lock (pos.1)
- Push on the side cover in the location of the lock to release the locking mechanism
- Turn the keys to the left
- By pulling the key, slightly tilt the side cover in the direction from the turnstile
- By pulling from the middle of the turnstile, release two pins (pos.2) from their openings (pos. 3)

- Put the disassembled side cover to a safe place

Use the reverse procedure to assemble the side cover back to the turnstile cabinet. It is very important to push the side cover in location of the lock during side cover assembling to the turnstile cabinet to prevent the lock damaging.

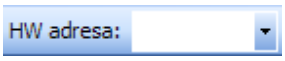


The following steps are done with the dismounted covers, so you must take an extra care to avoid injury from the moving drive unit mechanisms of turnstile.

4.2. INSPECTION OF CONTROL ELECTRONICS

More information about MLU control electronics are contained in the chapter *Description of connecting the control electronics and accessories* **and in a separate manual** *MLU5 – Service manual.*

4.2.1. CHECK-UP OF THE EVENTS STATEMENTS - LOGs

- Disconnect a black data connector of superior system DATA EXT from the sensor control electronics (if the turnstile is controlled by the status signal, the connector is free and disconnected).
- Connect the laptop with TCONF program and USB/485 converter
- Run TCONF program and wait about 1 minute for login the control electronics address of the connected turnstile
- In this window 

choose the address of the connected turnstile
- By the button **Logs statement** run a window of log statements
- By the button **Load logs** display a history of the latest events
- Check whether the error has not occurred in history of brakes, drive unit, power supply or illogical events such as a large amount of unrealized passages, emergency signals, etc.
- Save the log statement into a memory of your PC

If you have any problems that you do not know, send following information to hotline@cominfo.cz:

1. **Log Statement**
2. **Completed form about reporting defects (claim report form)**
3. **Current configuration of the control electronics (ending .tcpf) that you get according to chapter** *Replacement of MLU5 control electronics*

4.2.2. DISCONNECTION THE SUPERIOR SYSTEM AND CONNECTION THE TESTING DEVICE

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

4.2.3. CHECK-UP OF THE ELECTRONICS BACKUP BATTERY

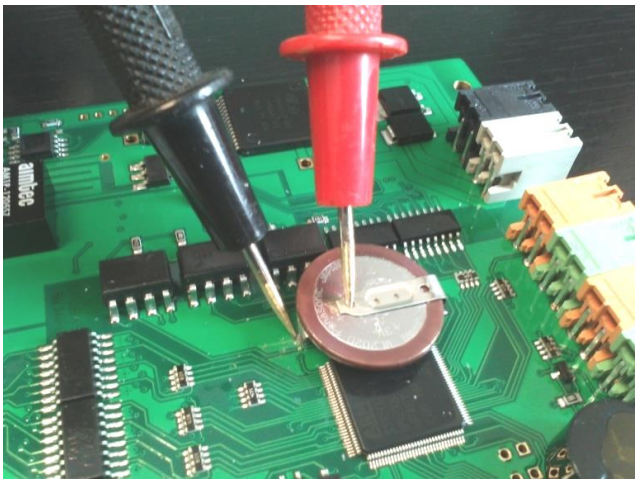
Backup battery is used during a power failure to backup the RAM memory.

CHECK-UP OF THE BATTERY CONDITION

- Before measuring, clean the measuring points of battery (electronics and battery have a protective insulating surface)

- When the power voltage is disconnected then according to the picture measure the battery voltage that should not be less than 3V.
- If there is voltage less than 2.5V, it is necessary to replace the battery.

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



CHECK-UP OF THE BATTERY FUNCTIONALITY

Functional battery:

- After connecting supply voltage, the turnstile performs initialization
- Logs can be downloaded via the TCONF application

Non-functional battery:

- After connecting supply voltage, the turnstile does not perform initialization, which means it is non-functional
- All logs are lost from the memory

Battery can be replaced only by COMINFO Inc.

EMERGENCY COMMISSIONING OF THE TURNSTILE WITHOUT A NON-FUNCTIONAL BATTERY

- After turning on the supply voltage, the turnstile may be put into operation using the function Electronics Reset (see the chapter *Electronics Reset Function*).
- Turnstile is in running order until power supply failure.

4.2.4. CHECK-UP OF THE SMALL BUZZER OF THE CONTROL ELECTRONICS

The small buzzer is intended to signalize the standard passages.

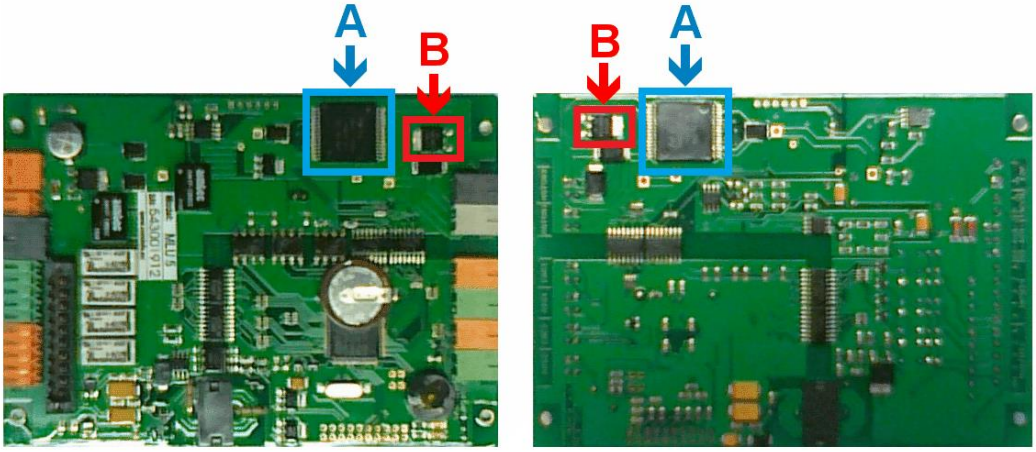
- Switch-on the turnstile by using the test preparation (signal ON-OFF)
- Activate opening by using INL or INR signals
- Buzzer must exude a configurational sound when the turnstile is opening

Buzzer function does not affect any other turnstile functions. If the customer does not ask for sound signal of authorized passage, it is not necessary to replace a broken buzzer.

Buzzer can be replaced only by a specially trained technician or by COMINFO Inc. after sending the control electronics.

4.2.5. CHECK-UP OF THE STATE, CORROSION AND POLLUTION OF CONTROL ELECTRONICS

- Check whether water does not come into the control electronics or moisture is not condensing there. In case of any sign of corrosion of printed circuit or components, replace the control electronics.
- Control the state of components on electronics. Mainly the output bridges (A) and transistors (B). If you find any indication of thermal overload of devices, replace the control electronics.



- During replacing the control electronics it is necessary to configure all parameters according to previous setting by using TCONF application and then perform initialization according to chapter *Function RESET-Initialization*.

4.3. CHECK-UP OF THE BIG BUZZER - ALARM

Great buzzer **B2** is intended for signalization of unauthorized passages.

- Switch the turnstile by using the test preparation (signal ON-OFF)
- Activate by person´s entry into turnstile corridor

- After 1s (factory setting) the buzzer must give a configurable sound

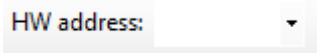
Buzzer function does not affect any other turnstile functions. If the customer does not ask for sound signal of authorized passage, it is not necessary to replace a broken buzzer.

Replacing of big buzzer:

- Disconnect a buzzer from a grey connector with flexible clamps and connect a new buzzer according to chapter *Check-up of flexible clamps and crimp connectors*
- During replacing you must keep the polarity. When you look at electronics with placed connector:
  Red wire - left
  Black wire - right

4.4. FIRMWARE UPDATE

When firmware is updated the initialization starts automatically, during this operation the turning path of turnstile wings is calibrated. During initialization you must not interrupt it in any way – otherwise the turnstile will not correctly reach the final positions.

- Firmware version must be consulted with the manufacturer
- Firmware must be saved into any PC folder
- Connect the laptop with TCONF  program and USB/485 convertor to MLU electronics
- Run TCONF  program and wait about 1 minute for login of electronics address of the connected turnstile
- Select the address of MLU electronics in the window HW address 

- When using the button **Upload firmware**  in TCONF application the LoadFW control driver is activated
- With the button **Open file** choose firmware that you need to upload, then confirm it by pressing the button **Open**
- Using the button **Upload firmware** upload the current into control electronics of the selected turnstile check all turnstile functions using a testing device (according to chapter *Check-up of the input signals of LaneLight and AccessLight signaling* and *Check-up of output control signals)*

4.5. CHECK-UP OF THE BACKUP BATTERY

When turnstile is equipped with a backup battery that is controlled by power supply SM-12 electronics or an older type PWS-73, control the turnstile if it is running on this backup battery.

- SM-12 source: disconnect the power supply 24VAC AC connector (for older versions the bolted clamp)
  PWS-73 source: disconnect the power supply 24VAC AC bolted clamp

- On PD1 distributor, disconnect the orange power connector leading from the main power clamp
- Control the turnstile function during passing by using the electronics test preparation. If turnstile wings do not reach the final position, the battery or charging control electronics is defective.
- Disconnect a backup battery and by using the battery tester measure its capacity. If there is half capacity than battery´s label indicates, replace battery with the new one.

4.6. CHECK-UP OF THE HEATING SYSTEM

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

- Disconnect the power supply of the heating system
- Bridge a thermostat and measure resistance of both parallely connected elements
  - if there is 6 Ohm ±10% - they are all right
  - if there is 12 Ohm ±10% - one element is damaged

bridging the thermostat - version 1

bridging the thermostat - version 2

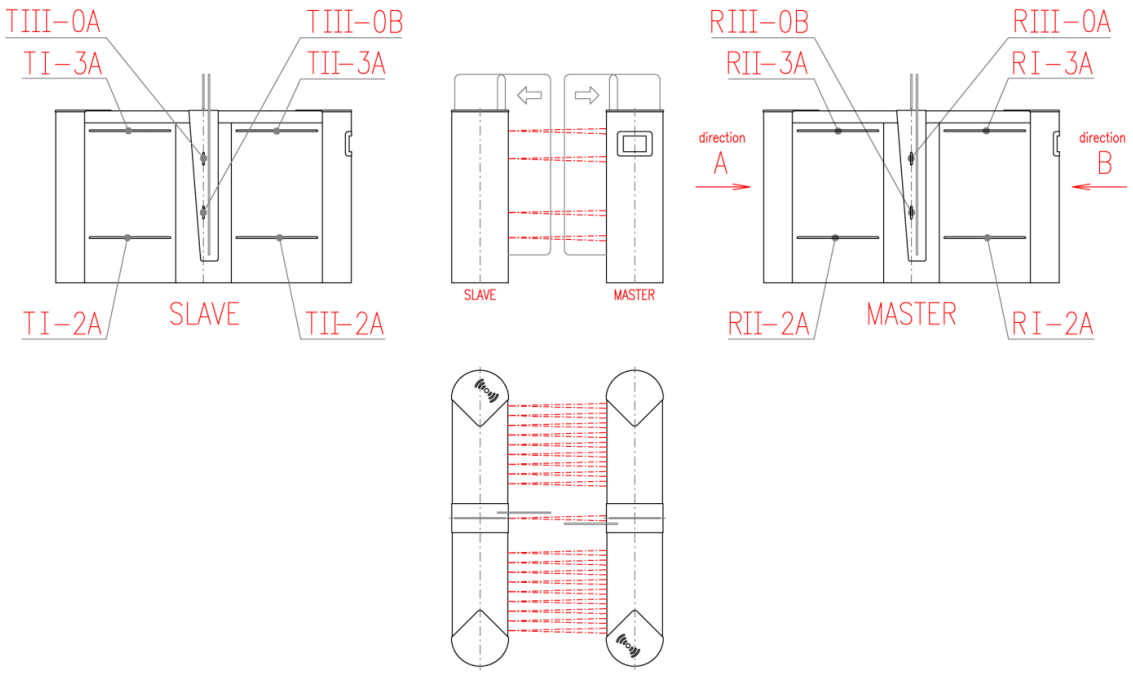
- Connect a multimeter within a measuring range resistance into contacts of thermostat. Resistance must be infinity (check stick contacts of thermostat). During measuring you must take into account the switching temperature and hysteresis of thermostat. Thermostat switches-on when temperature drops at 14-15 ° C and switches-off at 21-22 ° C. If the ambient temperature is low and thermostat is switched on, it is necessary to connect 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 is the fifth and sixth digits of the serial number. For example, the turnstile serial number 0300**12**5261 means it was manufactured in 2012.

4.7. CHECK-UP OF THE OPTICAL SENSORS MONITORING THE PASSAGE THROUGH THE TURNSTILE

System of bars with 40 optical sensors is put together from bars of **T** transmitters on SLAVE turnstile and bars of **R** receivers on MASTER turnstile. Bars of receivers are connected to control electronics of **C2**

sensors. Bars of transmitters are connected to supply voltage to **X3** terminal board (in older version through **TD1** voltage stabilizer).

Location and designation of sensor bars:

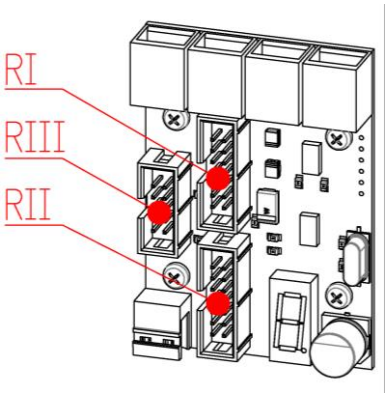


4.7.1. CHECK-UP OF THE OPTICAL SENSORS FUNCTIONALITY

- After switching on and off the supply voltage you find out firmware version of control electronics of sensors **C2** that is displayed for 1 second on a screen. If there is an old version, producer recommends to replace it with the new electronics (see chapter *Replacement of electronics*) with new firmware (only producer can upload firmware).

- Find out whether the control electronics of sensors **C2** does not detect any fault in communication of optical sensors - Receivers. If all bars of receivers are connected correctly, on display **0** is displayed. If any bars are connected incorrectly, due to damaged wiring or connector, the display shows number of the bar. Numerical assignment to the individual bars of receivers and assigning connectors to the individual bars of receivers is in the following table.

  Control electronics of sensors **C2**:

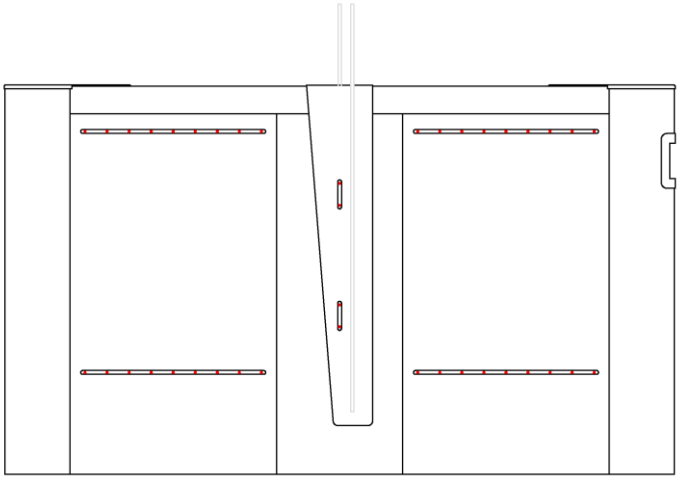


Number of receiver	Number of connector	Displayed symbol
RI-2A	RI	2
RI-3A	RI	1
RII-2A	RII	6
RII-3A	RII	5
RIII-0A	RIII	F
RIII-0B	RIII	E

- Check if green LEDs are lightning on all six transmitting sensor bars **T**. They signalize the power supply connection and via blinking, they signalize correct synchronization. If the LEDs are lit, it means interruption of the signalling cable or oscillator failure

- Check if green LEDs are shining on all six receiving sensor bars **R**. They signalize the power supply connection.
- From electronics of sensors **C2** disconnect one of two connectors 485 Direct display and connect the 485 connector to Laptop..
- Using CmfMng program stops the communication server by red button with white cross
- Run Senzor Test program, setup the correct COM. Leave pre-set speed transmission 50ms and with button **Open** start the sensor communication with program.
- All squares must stay white after starting communication
- Check-up of the receiving sensors **R**:
  Gradually make a shadow with a finger to each of 40 receiving sensors the upper and lower horizontal bars and watch the squares on monitor that signalize a change with blue colour.

Location of sensors (red dots):



Function of transmitting sensors can be checked with any digital camera that displays IR LED as luminous point when pointing at transmitting sensor. If not, transmitting sensor is defective.

- If you find out that some of receiving or transmitting sensors are broken then replace whole sensor bar
- At the end, disconnect Laptop and connect back the original connector
- Switch on the communication server in CmfMng program by using a green button

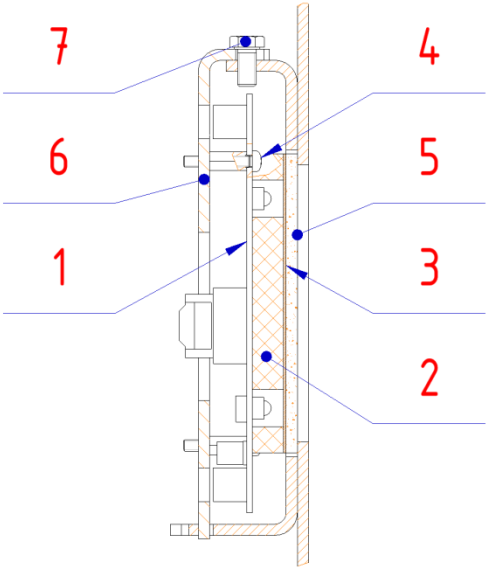
Turnstile is able to operate even when there is a fault of individual transmitting and receiving sensors. If you find any broken sensors, it is absolutely necessary to replace whole sensor bar. There are used four types of identical interchangeable sensor bars:

Sensor bar long - transmitters (TI-2A, TI-3A, TII-2A, TII-3A)
Sensor bar short - receivers (RI-2A, RI-3A, RII-2A, RII-3A)
Sensor bar short - transmitters (TIII-0A, TIII-0B)
Sensor bar short - receivers (RIII-0A, RIII-0B)

4.7.2. REPLACEMENT OF VERTICAL SENSOR BAR

- Remove cable tie and unplug the connecting cables of sensor bar

- Loose M5x10 bolt (pos. 7). From turnstile, remove the complete unit of sensor bar that is mounted on a holder (pos. 6) and the separate plexiglass cover peep-holes of sensor (pos. 5) that is only put and pressed through a rubber in the turnstile frame (pos. 2).



- Unbolt four pieces of M3x6 bolts with plastic washer (pos. 4)

- Remove the sensor bar (pos. 1) with rubber (pos. 2) from the holder (pos. 6)
- Fix a new sensor bar (pos. 1) with affixed rubber (pos. 2) on the holder (pos. 6) by using four pieces of M3x6 bolts with plastic washer (pos. 4)

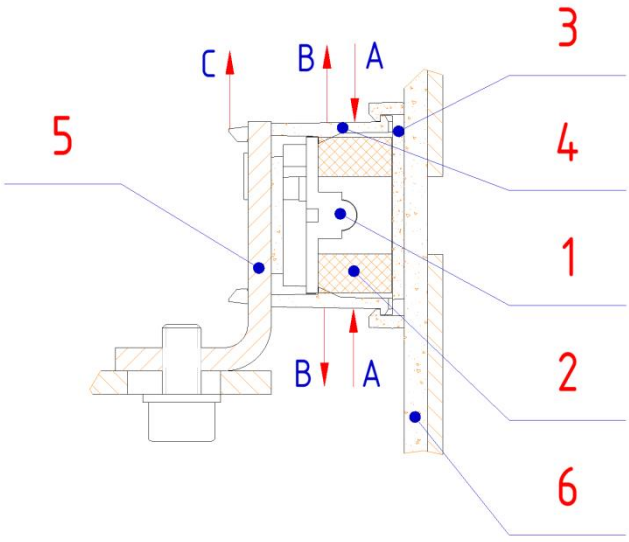
Rubber (pos. 2) protects the sensors against dust and it always must be stuck on the sensor bar (pos. 1). To set the right rays of transmitters, on the rubber (pos. 2) must be stuck the foil (pos. 3) with gaps Ø3mm. There must not be any foil stuck on the sensor bar of receivers (pos. 3).

- Put the clean plexiglass for peep-hole into turnstile (pos. 5)
- Put the holder (pos. 6) with complete unit of sensor bar into turnstile. Press the holder through rubber on plexiglass and tighten it by bolt (pos. 7)
- Plug the connecting cables. Fix the cables by using cable tie so they do not impede to free turning of turnstile mechanism.

4.7.3. REPLACEMENT OF HORIZONTAL SENSOR BAR

When handling the sensor bar, be careful not to bend and twist it because it can damage the printed circuit board of sensor bar.

REPLACEMENT OF HORIZONTAL SENSOR BARS FIXED IN PLASTIC HOLDERS:



- Unplug the connecting cables of sensor bar
- In the direction of the **A** arrows, press the plastic bar (pos. 4), loose the cover bar (pos. 3) and remove the rubber (pos. 2). Do this procedure at one sensor bar on all three plastic holders.
- In the direction of the **B** arrows, extend all plastic bars gradually (pos. 4), so it is possible to dismount the sensor bar (pos. 1)
- A new sensor bar (pos. 1) clip from one side into all plastic bars (pos. 4). The position of sensor bar is centered in the correct position by three pivots that are the part of plasic bars. Make sure if the sensor bar fits well on whole surface and is not twisted.

- Put a rubber (pos. 2) into individual plastic bars (pos. 4). Center the gaps in a rubber towards the individual transmitters or receivers.

- Clip the cleaned cover bars (pos. 3) on the plastic bars (pos. 4). Adjustment the correct position of cover bar towards plastic bars is ensured by four side stops on a plastic bar. The cover bar must fit well to all surface.

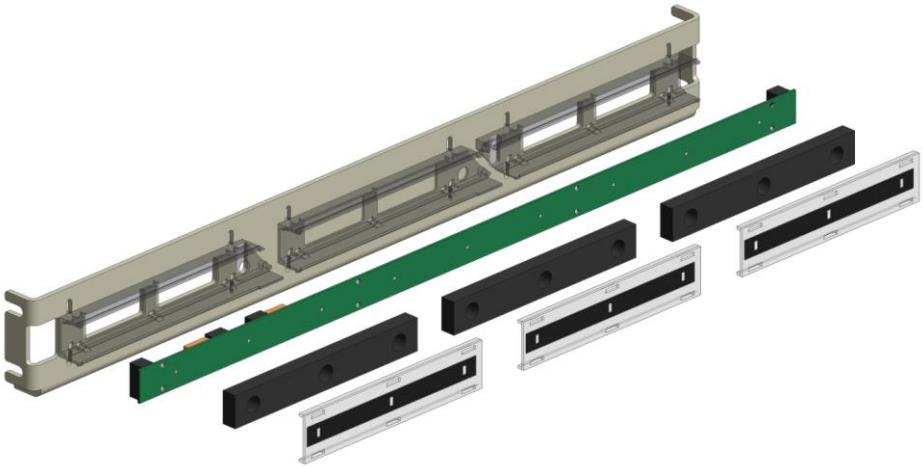
Rubber (pos. 2) is used as a sensor protection against dust and it must be always inserted into the sensor bar. To set the right rays of transmitters, on the plastic bar must be placed a cover bar with black printing with clear peep-holes 2x5mm. On the plastic bar of receivers must be placed a clear cover bar without any color printing.

- Plug the connecting cables

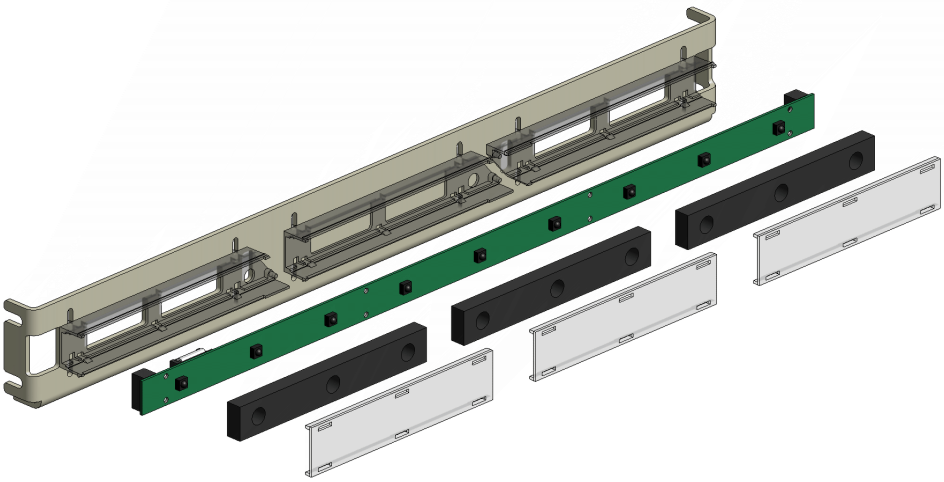
For maximum resistance to dust on the sensor function, move a sensor holder (pos. 5) so that the cover bar (pos. 3) will fit to the glass window (pos. 6). Adjust it from other side of turnstile when a side cover is placed.

While replacing, if there were damaged some of plastic bars (pos. 4), then carry out its replacement on a sensor holder (pos. 5) before you clip a new sensor bar. Remove a damaged plastic bar after pressing the pawl in direction of **C** arrows. In order to be able to put the sensor bar on all three centering pivots, it is necessary to place the plastic bars as shown below in the picture:

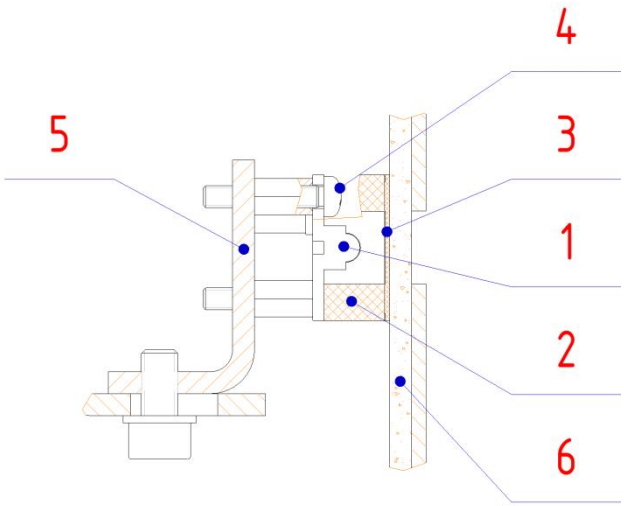
Sensor bar of transmitters:

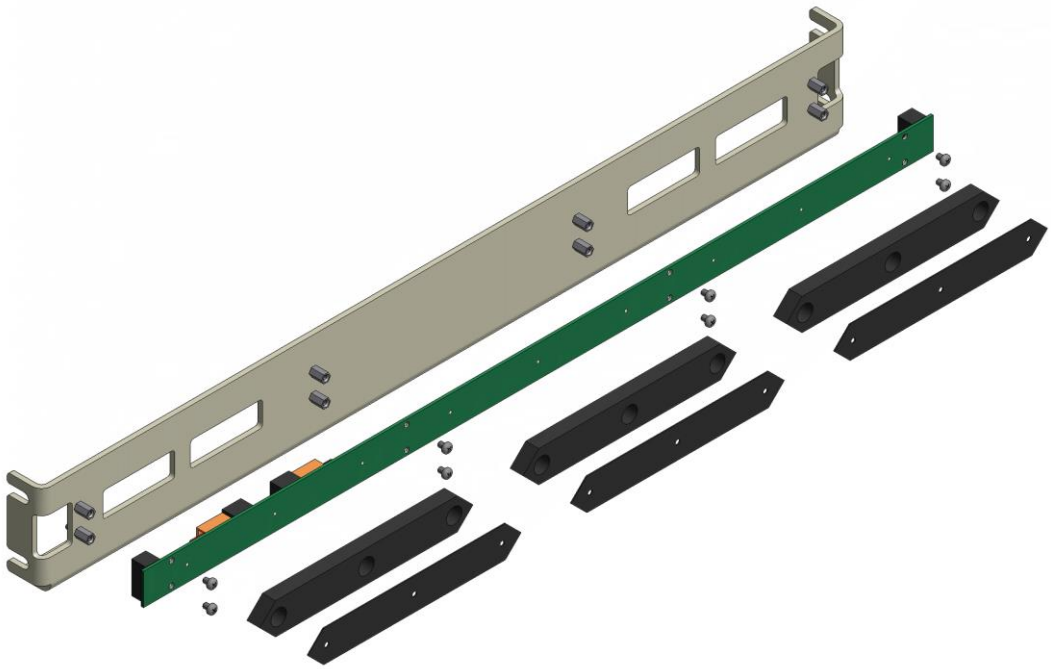


Sensor bar of receivers:



REPLACEMENT OF HORIZONTAL SENSOR BARS FIXED BY BELTS:
(supplied since May, 2012)





- Unplug the connecting cables of sensor bar
- Unbolt eight pieces of M3x6 bolts with plastic washer (pos. 4)

- Remove the sensor bar (pos. 1) with rubber (pos. 2) from a holder (pos. 5)
- Fix a new sensor bar (pos. 1) with stuck rubber (pos. 2) on a holder (pos. 5) by using eight pieces of M3x6 bolts with plastic washer (pos. 4)

Rubber (pos. 2) protects the sensors against dust and it always must be stuck on the sensor bar (pos. 1). To set the right rays of transmitters, on the rubber (pos. 2) must be stuck the foil (pos. 3) with gaps Ø3mm. There must not be any foil stuck on the sensor bar of receivers (pos. 3).

- Plug the connecting cables

To provide maximum resistance to dust on sensor function, move a sensor holder (pos.5):
- at sensor bar of receivers, so that a rubber (pos. 2) fits well on the plexiglass of peep-hole (pos. 6)
- at sensor bar of transmitters, so that foil (pos. 3) fits well on the plexiglass of peep-hole (pos. 6)
Perform the adjustment from other side of turnstile when a side cover is placed.

4.7.4. REPLACEMENT OF CONNECTING CABLES OF RECEIVING SENSORS

If you detect a failure in cabling of receiving sensors, it is necessary to replace whole flat cable.

Sensor cable RI - name IN28, length 2.2m

Cable with three connectors coded by cable interruption under black strip that is used for the connection of horizontal sensor bars on the side with control electronics.

- Plug the outside connector with non coded cable into **R1** connector of **C2** sensors of control electronics
- Plug the middle connector with coded cable into **RI-2A** lower bar
- Plug the outside connector with coded cable into **RI-3A** upper bar

Sensor cable RII - name 29, length 5.5m

Cable with three connectors coded by cable interruption under black strip that is used for the connection of horizontal sensor bars on the side without control electronics.

- Plug the outside connector with non-coded cable into **RII** connector of **C2** sensors of control electronics
- Plug the middle connector with coded cable into **RII-2A** lower bar
- Plug the outside connector with coded cable into **RII-3A** upper bar

Sensor cable RIII–0B - name 27, length 2.5m

Cable with two connectors non coded that is used for connection of lower vertical bar

- Plug the connector on one side of cable into **RIII** connector of **C2** sensors of control electronics
- Plug connector on other side of cable into **RIII–0B** middle connector of lower vertical bar

Sensor cable RIII–0A - name 26, length 0.3m

Cable with two connectors non coded that is used for connection of upper vertical bar

- Plug the connector on one side of cable into **RIII–0B** upper cable of lower vertical bar
- Plug the connector on other side of cable into **RIII–0A** middle connector of upper vertical bar

Long sensor cable **RII** is usable instead of a short cable for **RI** sensors**.**

4.8. CHECK-UP OF THE INPUT CONTROL SIGNALS OF LANELIGHT AND ACCESSLIGHT SIGNALIZATION

With a testing device for control electronics you can display all LaneLight and AccessLight status.

Controlled status:

Turnstile in EMERGENCY mode (PANIC button is pressed on a testing device)

- All LaneLight display two red triangles with hypotenuse facing to itself
- Upper AccessLights change white, green and red colour with very high frequency

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

- All LaneLight display a red cross or red cross with arrow (see separate instructions: *Manual for* LaneLight *display panel*)
- Upper AccessLights display a red symbol of attached card)

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

- Front LaneLight display a green arrow pointing to the passage corridor
- Upper AccessLights display a white symbol of attached card

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

- Front LaneLight display a green arrow pointing to the passage corridor
- Upper AccessLights of in direction display a green symbol of attached card
- Upper AccessLights of out direction display a red symbol of attached card

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

- Display is the same, but from opposite side as in a previous paragraph

During this control it is necessary to monitor whether all LED diodes of display units are lightning. When defective LED diode is detected then replace whole LaneLight or AccesLight for the competent according to its labeling and configuration (according to chapter *Replacement of control electronics*).

4.9. CHECK-UP OF THE OUTPUT CONTROL SIGNALS

Using the testing device simulate all status when control electronics generates output signals. During this control the ON / OFF test switch must be in the state ON.

Controlled status:

Signal attempt on unauthorized passage (yellow LED diode on a testing with indicated F1)

- Output signal is activated by person´s entry into passage corridor of turnstile

Signal BUSSY (red LED on a testing device)

- Output signal is activated by pressing INL or INR button. Red LED diode is deactivated after realized passage or after passed Timeout.

Signal ROTL (green LED on a testing device)

- Output signal is activated by passing in L direction realized after pressing INL button.

Signal ROTR (green LED on a testing device)

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

4.10. CHECK-UP OF THE CLAMPS, CONNECTORS AND CABLING

4.10.1. TIGHTENING OF BOLTED CLAMPS

Most turnstile clamps are flexible, they 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:

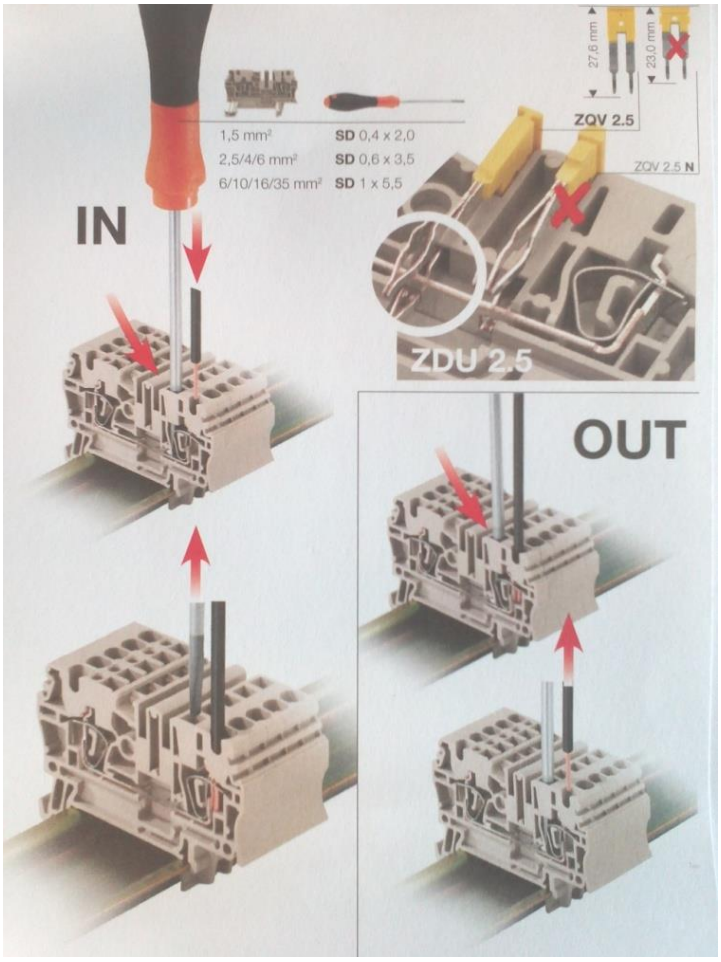
- supply terminal board **X1**
- connector of brake MASTER drive unit on distributor of **BD1** brake supply
- backup source **PWS–73**
- old version of backup source **SM-12**

4.10.2. CHECK-UP OF THE FLEXIBLE CLAMPS AND CRIMP CONNECTORS

Control flexible clamps and crimp connectors by gentle pulling of individual wires in the way out of the connector, if they are correctly inserted and secured in connector clamp.

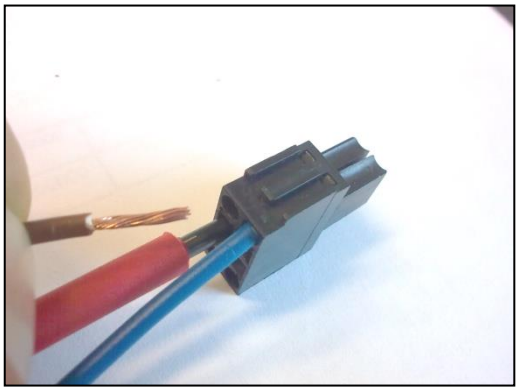
Procedure for connecting the wires into flexible clamps of terminal block X2 and X3:

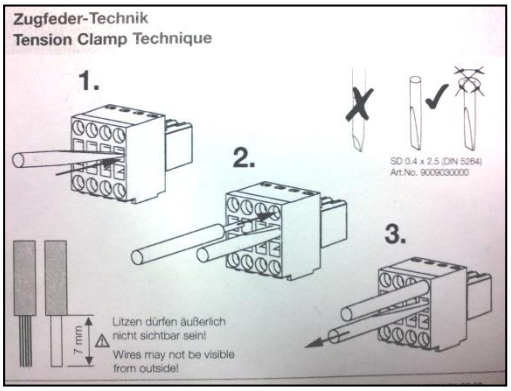
Weidmueller terminal board with flexible clamps is connected according to the following figure:



Procedure for connecting the wires into connectors:

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





4.10.3. CHECK-UP OF HEATED-UP CONNECTORS

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

4.10.4. CHECK-UP OF THE MASTER SLAVE CONNECTING CABLES

Control connecting cables if it is not damaged, or pinched of cabling insulation. Especially control places where cabling goes through sharp edges. Then control wires by gentle pulling of individual wires, if they are correctly secured in a flexible clamp, both MASTER and SLAVE side.

4.11. REPLACEMENT OF CONTROL ELECTRONICS

During handling the control electronics must not be exposed of bending or twisting. If the locks of distance columns are damaged during dismantling, it is necessary to replace the distance columns with new ones.

Prior to connection to the turnstile, new electronics must be configured for the given turnstile type or non-defined. In case the electronics is configured for a different type of turnstile, the turnstile may be damaged and the electronics may burn.

4.11.1. REPLACEMENT OF MLU5 CONTROL ELECTRONICS

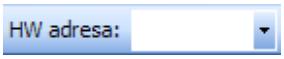
Prior to connection to the turnstile, new electronics must be configured for the:

If the turnstile worked without any problems to the satisfaction of the customer, it is recommended to use the original firmware and settings to prevent change of properties to which users are used to.

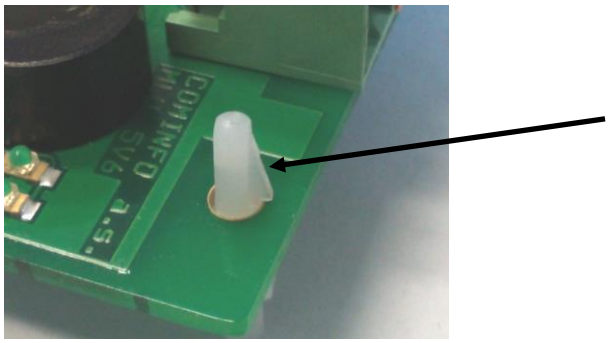
In most cases, damaged electronics enables connection to a computer and therefore detection of the original firmware version and copying of set parameters.

If the damaged electronics is shorted, it is recommended to use default settings, and the firmware version must be consulted with the manufacturer.

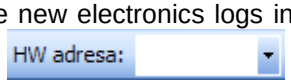
Copying of parameters from the original MLU5 electronics:

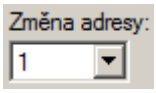
- Connect a laptop with installed application TCONF and equipped with the USB/485 converter
- Run the TCONF application and wait for 1 minute until the electronics ' address of the connected turnstile logs in
- Select the address of the original MLU electronics in the HW address window 

- Using the button **Electronics parameters setting** , open the parameters table of the original electronics
- Using the button **Save user settings as** , save the settings of the original electronics to any computer folder. Use this file also in case of problems and send it to the manufacturer together with the logs statement.
- Disconnect control electronics from power supply and take a picture of current connection of all connectors.
- Disconnect all connectors that are connected to electronics
- remove the electronics from distance columns:
  Release a lock that is illustrated in a following picture using a small screwdriver or tweezer and move a gap a bit over a lock by gentle pulling behind electronics. Firstly you need to release every distance column individually and then remove whole electronics.



Copying parameters from the original to the new MLU5 electronics:

- Connect a laptop and power supply to the new electronics (outside of the turnstile)
- Wait until the new electronics logs in and select the address of the new MLU electronics in the HW address 

window. The new unused electronics will show with address 31, the used electronics will show with address assigned during last configuration.
- Using the button **Electronics parameters setting**  , open the parameters table of the new electronics
- Using the button **Open user settings from file**  , open previously saved settings of the original electronics (ends with .tcpf)
- Using the button **Load parameters to device**  , save the configuration to the new electronics
- In the window **Change of address** 

, check correctness of the address against the address of the original electronics
- Upload the same firmware as was in the original electronics

Installation and connection of new MLU5 electronics:

- Using gentle pressure, put the new electronics into distance columns, but do not bend it, until it locks all four locks.
- Plug in all connectors properly, except the supply connectors, back to the electronics (according to separate instructions: *Manual for turnstile installation the type EASYGATE)*
- Perform a thorough inspection of connection before turning on
- Plug a supply connector and initialize the turnstile. After the initialization, test the turnstile by a testing device of control electronics

4.11.2. REPLACEMENT OF ELECTRONICS SENSORS

Electronics is fitted as well as MLU5 electronics by distance plastic columns with a lock. When replacing proceed the same way.

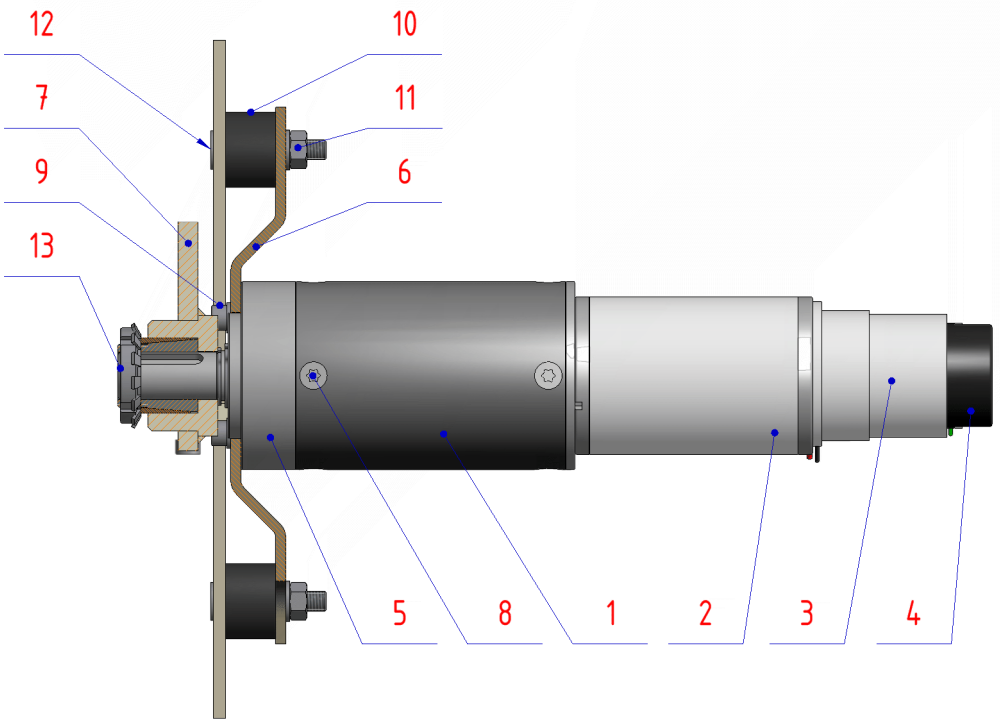
4.11.3. REPLACEMENT OF ELECTRONICS FRONT LANELIGHT

Electronics is fitted as well as MLU5 electronics by distance plastic columns with a lock. When replacing proceed the same way. LaneLight configuration is done with SWITCH (according to separate instructions: *Manual for LaneLight display panel*).

4.11.4. REPLACEMENT OF ELECTRONICS UPPER ACCESLIGHT

Electronics is fixed by M3 bolts that are fixed with plastic washers. Bolts with washers are the part of supplied spare electronics. If you lose the washers during installation, use washers from the original electronics. There are always used two loose distance washers and one tight washer that prevents bolts to fall out. AccessLight configuration is done by solder bridges (according to separate instructions: *Manual for AccessLight display panel*). This can be done only by the manufacturer.

4.12. CHECK-UP OF THE EASYGATE LX/LH/FL/FH DRIVE UNIT



4.12.1. CHECK-UP OF BOLTED CONNECTIONS

The cooperation of two persons is necessary. Proceed control when supply voltage is connected, so that one person tries to vibrate turnstile with force (tension and pressure on a turnstile wing) and the second person monitors bolted connections. Loose connections must be tightened.

Because of safety reasons, the tightening of bolt connection must be done when the supply voltage is disconnected.

Control following connections on drive unit:

- **Mounting the front flange (pos. 5) to planetary gearbox (pos. 1)**
  - if bolts (pos. 8) are loosened, it is necessary to dismantle bolts. Use degreasing spray and clean bolts and thread in flange from gearbox permeated lubricant and before installation secure the bolts with LOCTITE 603 glue. TORX TX30 key is needed for tightening bolts.

- **Mounting the front flange planetary gearbox (pos. 5) to a drive unit board (pos. 6)**
  - if you find any loosened bolts (pos. 9), dismount the drive lever (pos. 7) in accordance to chapter *Replacement of drive unit*
  - secure the loosened bolts (pos. 9) with LOCTITE 243 glue

- **Mounting the drive unit board (pos. 6) to frame through rubber silent blocks (pos. 10)**

- secure the loosened nuts (pos. 11) with LOCTITE 243 glue
- secure the loosened bolts (pos. 12) with LOCTITE 243 glue

4.12.2. CHECK-UP OF ELECTROMECHANICAL BRAKE

Control the electromechanical brake (pos. 3) when power supply is connected to control electronics.

- by using testing device alternately activate and deactivate ON/OFF signal and control whether brakes of both drives (MASTER and SLAVE) are audibly clattering. If none of brakes clatter, there is probably a fault in wiring or in output transistor that paralelly controls both brakes. Then check the cabling. In case of transistor failure it is necessary to replace control electronics.

- Set the signal in ON state and try to open turnstile with pressure on both turnstile wings. Within about 2 cm of trajectory both wings must stop. If any wings do not stop, measure the voltage at relevant brake. Measure the voltage of MASTER turnstile on **BD1** brake distributor and SLAVE turnstile voltage on terminal board **X3**. If voltage is in the range of 12 – 13.8 VDC the electromechanical brake is faulty. The brake is part of a drive unit and it is not supplied as a spare part. It is necessary to replace whole set consisting of:
  - planetary gearbox (pos. 1)
  - electromotor (pos. 2)
  - electromechanical brake (pos. 3)
  - speed sensor (pos. 4)

4.12.3. REPLACEMENT OF THE DRIVE UNIT

In case of replacing the drive unit, the manufacturer also recommends to replace MASTER and SLAVE drive unit together. The same characteristics and operating lifetime will be guaranteed.

Replace the drive unit when supply voltage is disconnected.

- MASTER turnstile: disconnect all connectors of drive unit from **MLU** control electronics and from **BD1** brake power supply distributor

  SLAVE turnstile : disconnect all wires of drive unit from **X3** terminal board

- Unscrew four pieces of M8 nuts with washer (pos. 11)

- Turn a drive lever (pos. 7) into vertical position and take out a board (pos. 6) with drive unit from turnstile.

- Using a screwdriver unbend a safety nut washer of clutch (pos. 13). Release the nut of clutch.

- By double-click on the nut release a clamp connection and remove a drive lever with couplings.

- Unscrew four pieces of M6x16 bolts (pos. 9) and remove the complete drive unit.

- Fix a new complete drive unit (pos. 1, 2, 3, 4) using four bolts (pos. 9) and secure them with LOCTITE 243 glue.

- Put a lever (pos. 7) with clutch (pos. 11) on drive shaft unit. Push the lever close to the safety clutch ring and push the clutch close to hole in lever bottom. Tighten the nut of clutch and secure it by bending of secure washer. The specific torque is 130 – 150 Nm.

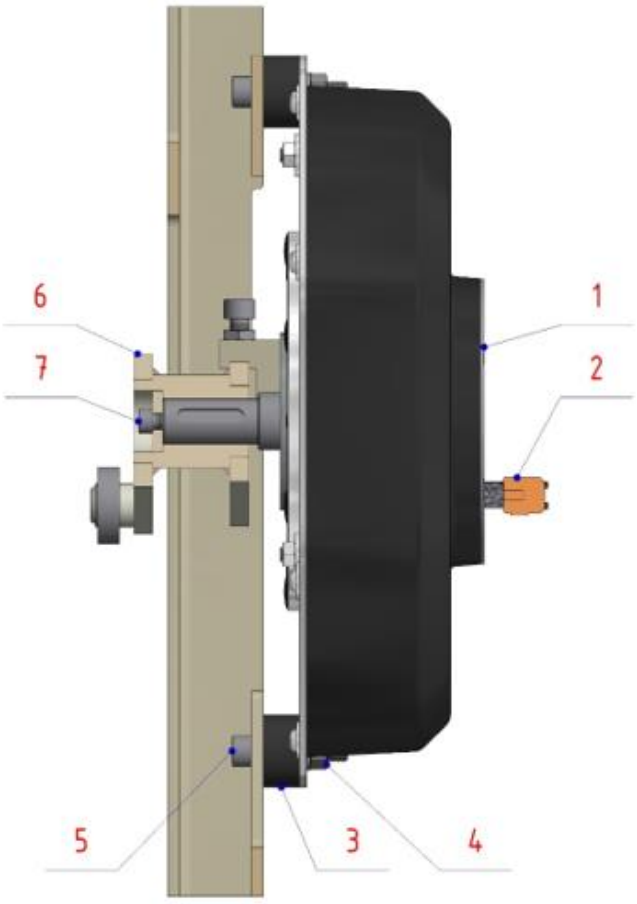
- Put a board with drive unit on silent blocks (pos. 10), so that a lever bearing fit up to plastic followers of moving mechanism.

- Screw four M8 nuts with washers (pos. 11) and secure them with LOCTITE 243 glue.

- Plug in all connectors or wires correctly (according to separate instructions: *Manual for turnstile installation the type EASYGATE*)
- Connect the power supply and carry out the initialization (according to chapter *Function Reset initialization)*

4.13. CHECK-UP OF THE EASYGATE LG DRIVE UNIT

Because of safety reasons, this checking must be done when supply voltage is disconnected.



4.13.1. CHECK-UP OF BOLTED JOINTS

Cooperation of two persons is necessary. Perform the check-up with connected power supply. One person is uses force and tries to vibrate the turnstile (by pulling and pushing on the turnstile wing). The other person observes the bolted connection. Loosen connection must be tightened.

Due to safety, tightening of bolted connections must be carried out with disconnected supply voltage.

Check the following connections on the drive unit:

- **Drive unit flange attachment (pos.1) to the drive unit frame over rubber silentblocks (pos.3)**
  - secure the loosened nuts (pos.4) using LOCTITE 243

-secure the loosened bolts (pos.5) using LOCTITE 243

4.13.2. CHECK-UP OF THE ELECTROMECHANICAL BRAKE

- Electromechanical brakes are implemented inside the drive unit (pos.1)
- Carry out the check-up of brakes with connected supply voltage to the turnstile (with closed wings)
- Try to manually open the turnstile wings, while both brakes must audibly click and the wings must brake
- Brakes are controlled by the drive unit electronics. If any of the wings does not brake, the whole drive unit must be replaced (pos.1)

4.13.3. REPLACEMENT OF THE DRIVE UNIT

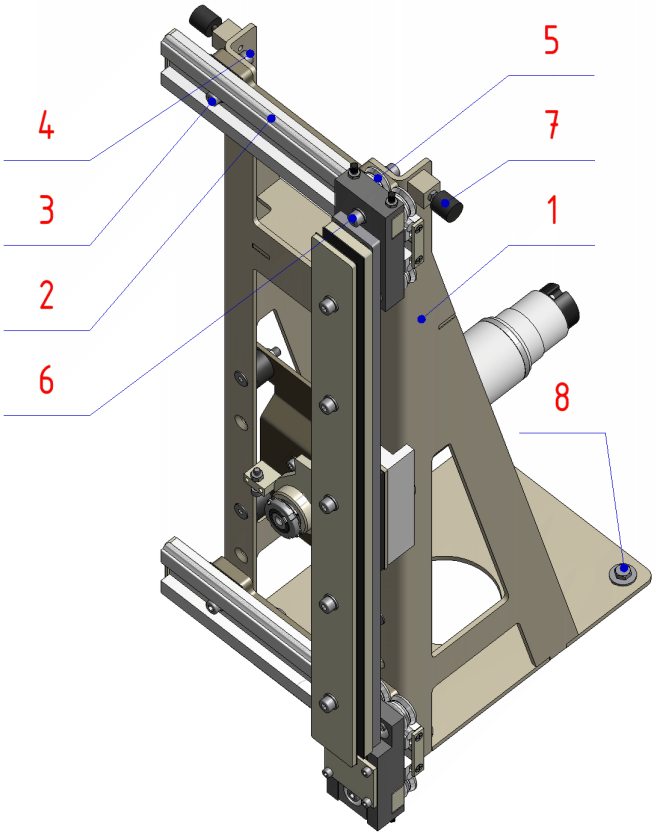
If replacement of the drive unit is needed, the manufacturer recommends replacing the MASTER and SLAVE drive unit at the same time. This will guarantee the same properties and lifetime of drive units.

The drive unit must be replaced with disconnected power supply.

- MASTER turnstile: disconnect the connector (pos.2) from the drive unit (pos.1)
  SLAVE turnstile: disconnect the connector (pos.2) from the drive unit (pos.1)
  Before disconnecting the connectors, it is necessary to loosen the securing bolts
- Unbolt four M8 nuts with washers (pos.4)
- Turn the drive unit lever (pos.6) to a vertical position and remove the drive unit (pos.1) from the turnstile
- Unbolt the M6x20 bolt (pos.7) and take off the lever from the drive unit (pos.6)
- Attach the drive unit lever (pos.6) to the new drive unit (pos.1) using the bolt (pos.7) and secure the assembly using LOCTITE 243
- Place the drive unit on silentblocks (pos.3) in a way so that the bearing of the drive unit lever locks into the plastic surround of the moving mechanism
- Bolt the four M8 nuts with washers (pos.4) and secure the assembly using LOCTITE 243
- Connect all connectors (pos.2) and secure them using securing bolts
- Connect power supply and carry out initialization (as per the chapter Reset Function – Initialization)

4.14. CHECK-UP OF THE MOVING MECHANISM

Because of safety reasons, this checking must be done when supply voltage is disconnected.



4.14.1. CHECK-UP OF BOLTED JOINTS

Check these connections on moving mechanism:

- **Attachment of the linear guidance (pos. 2) to drive frame (pos. 1).**
  - tighten loose bolts (pos. 3) without LOCTITE
  - secure loose bolts (pos. 4) with LOCTITE 243 glue

- **Attachment of the adjustable roller blocks (pos. 5)**
  - tighten upper and lower bolts (pos. 6) without LOCTITE

- **Attachment of the drive unit frame (pos. 1) to the base of turnstile**
  - tighten four M8 bolts (pos. 8) without LOCTITE

- **Positioning of drive unit frame (pos. 1) in turnstile housing**
  - both silentblocks (pos. 7) must touch the inner surface of turnstile housing. If there is a clearance between silentblock and turnstile housing, loose the silentblock nut, unscrew silenblock to the stop to surface of turnstile housing and fix it again with a nut.

4.14.2. CHECK-UP OF THE LINEAR GUIDES

CLEANING OF THE LINEAR GUIDES

Cleanless of the linear guides mechanism is crucial for its lifetime.

Therefore the mechanism of the linear guides must be regularly cleaned:

- After the first month of actual operation, the pushed out grease from both sides of all fairleads must be wiped off. The contact surfaces of the guide rods must be free of dust, dirt and fat.

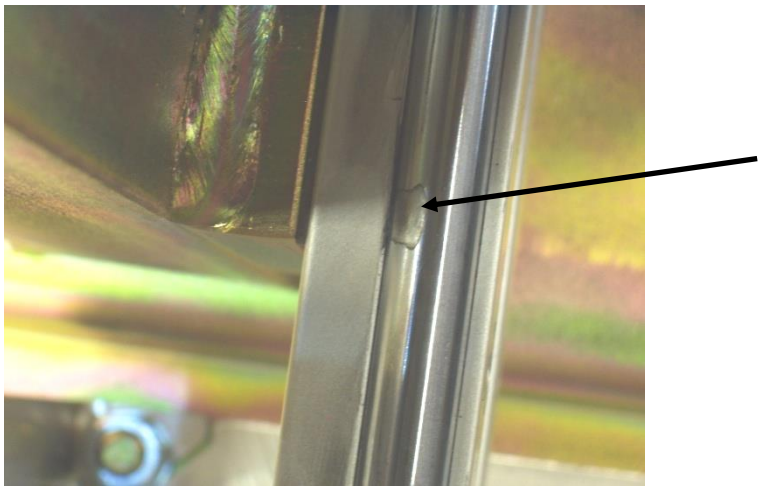
- Further regular cleaning should be carried out after six months of operation or after 500,000 passages.

Note:
Number of actual passages may be determined using the T-Monitor application or diagnostics in the T-Config application.

CHECKING THE WEAR OF LINEAR RAILS

If you find a damage of linear rails as shown in the picture, it is necessary to replace the aluminum bar with hardened guide bars and even rollers that rolled through damaged part of linear rails.

Traces of stuttering on guide bars and peeled hardened coating:



When replacing the linear rails it is necessary to keep the maximum possible parallelism of upper and lower linear rails.

CHECK-UP OF the ROLLER BEARINGS OF LINEAR RAILS

- One person pushes the wing in different directions and relieves the individual rollers
- Second person turns individual rollers by fingers and checks the status of rollers bearings. If it is stuttering during turning, it is necessary to replace rollers.

Roller bearing of linear rails is an integral non-removable part and it is equipped with permanent lubrication. Surface of linear rails should not be lubricated and must be kept clean.

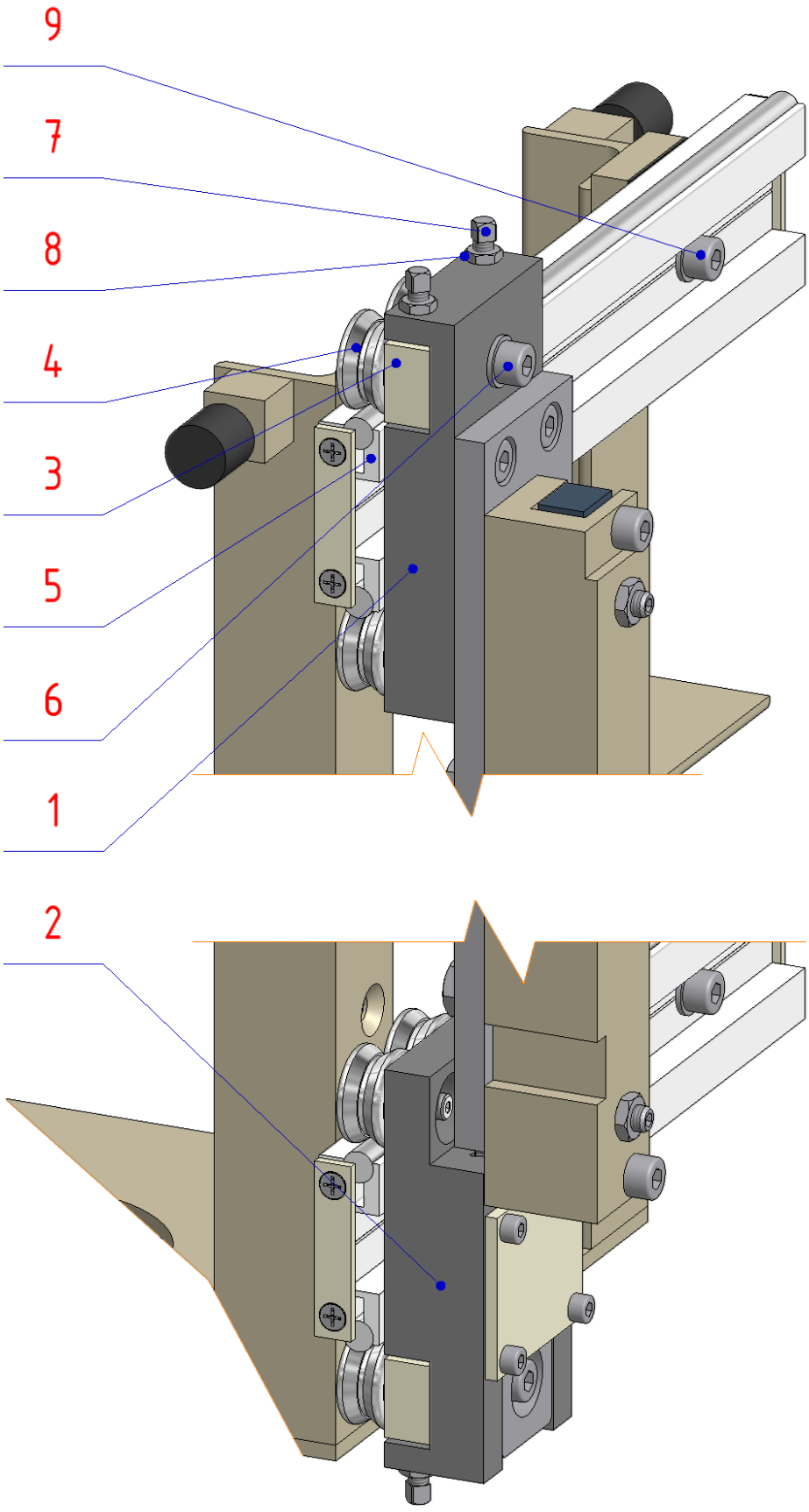
POSITIONING OF ROLLERS OF LINEAR RAILS

If you need to adjust the relative position of linear rails and thus define a clearance of turning path, proceed as follows:

- Adjustment of rollers (pos. 4) perform with a complete installed drive unit and with a movable glass wing including brushes. Check the centering of wing due to brushes.
- Easily loose M8 locking bolt (pos. 6) on upper slider (pos. 1) and by rotating two pieces of M6 adjusting screws (pos. 7) you get optimal position of two rollers that are fixed in the same holder (pos. 3). In this position, secure the adjusting screws (pos. 7) with nuts (pos. 8). Finally ensure the position of slider with rollers by tightening the locking bolt (pos. 6).
- After tightening the locking bolt (pos. 6) may change the relative positions of individual elements of linear rails. It is necessary to check relative positions again and in case of changes you must do a new adjustment.
- Adjust the rollers position of lower slider (pos. 2) the same way.
- During adjusting the rollers of linear rails try to achieve such a relative position of sliders with rollers that can provide a smooth sliders operation in linear rails (pos. 5) – rollers must roll, so that in all path length shift is possible to turn one of roller on upper and lower slider easily by hand. A clearance must not be such as to be possible manually rotate simultaneously more than one roller on each slider.
- When supply voltage is disconnected, in both wings all turning path length, measure by steelyard the maximum force that is needed to turn the wings. The difference between two wings must not be greater than 10N. If the difference is greater, check the moving mechanism again.

If the clearance of rollers is large, the turnstile may be broken due to impact of movable glass wing to the inner turnstile construction.

If the clearance of rollers is small, it can damage the rollers and wiring surface due to great pressures. Small clearance will cause that control electronics is not able to start up the wing drive.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2

4.14.3. CHECK-UP AND ADJUSTMENT OF THE WINGS END POSITIONS

If bar or movable glass wing still hit the turnstile housing even after these adjustments, it is necessary set the nuts (pos. 1 and 2) to avoid this hitting, but keep the maximum wing turning. In open position (wing is inserted in turnstile housing) the edge of glass should be together with the edge of brushes or slightly slide out towards the passage. Check the length of wings turning in the passage. If there is difference in length tolerance more than ±1mm, correct the **end positions of closed position** (pos. 1).

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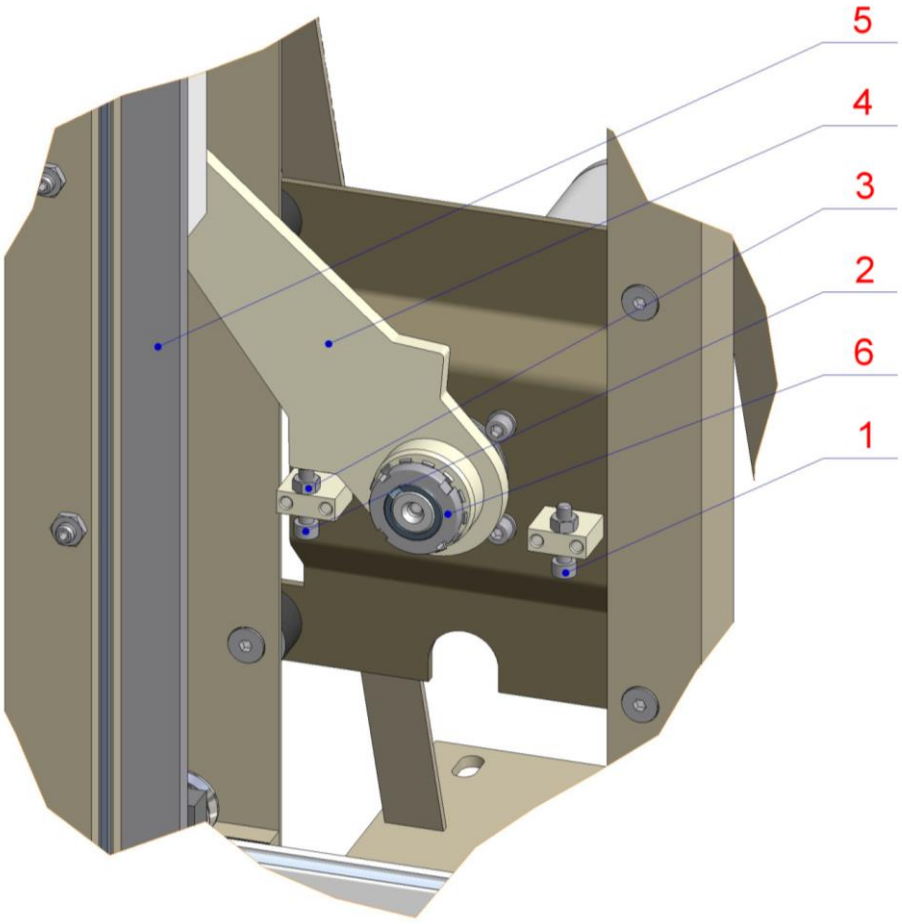
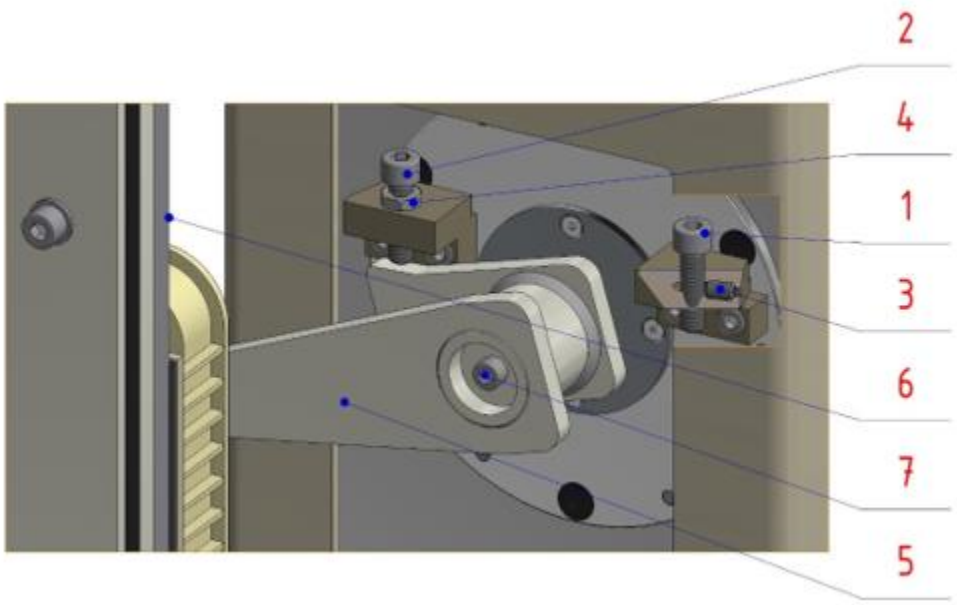
- Check the tightening of clamp couplings nut (pos. 6).
- Loose the stopscrew closed position (pos. 1) and manually turn the wing to extreme position so that the bar (pos. 5) touches the turnstile housing.
- Tighten the stopscrew manually, so it touches the stop surface on drive lever (pos. 4).
- Tighten the stopscrew for one more turn and counter it by nut (pos. 3).
- Adjust the stopscrew open position (pos. 2) in the same way.



EASYGATE-LG

- Check the tightening of the bolt (pos. 7).
- Loose the stopscrew closed position (pos. 1) and manually turn the wing to extreme position so that the bar (pos. 6) touches the turnstile housing.
- Tighten the stopscrew manually, so it touches the stop surface on drive lever (pos. 4).
- Tighten the stopscrew for one more turn and counter it by nut (pos. 3).
- Adjust the stopscrew open position (pos. 2) in the same way.



4.14.4. CHECK-UP OF BRUSHES

- Check the fibers that are torn or twisted inside when the wing is in the position turned in or out. Try to straighten the twisted fibers. If you can not repair the brush, carry out its replacement.
- Check the pollution of brushes. Try to suck out or comb the dirt and impurity.

When cleaning the brushes on the turnstile you must not use any preparation that might get on the linear rails and cause corrosion or contamination. For cleaning you must not use any solvents.

- If you can not clean the brushes on turnstile by standard methods, dismantle the center cover with brushes and clean the brushes with detergent outside turnstile. When brushes are cleaned, it is necessary to wash them with water and dry.
- Dry brushes should be treated with a preparation that increases the slipperiness. When applying this preparation, the glass wings must not be contaminated. The producer recommends a preparation WURTH: CARE AND LUBRICANT SPRAY.

DISMANTLING OF CENTER COVER WITH BRUSHES:

In turnstile with 1800mm height wings there are needed two workers for this operation. It can be done when the turnstile is off and it is possible to turn the glass wings manually. In MIDDLE turnstile the power supply of the next passage must be switched off, too.

- Disconnect connecting cables of secondary vertical sensor bars.
- Dismantle all 22 bolts that fix a cover with brushes
- Manually turn all wings into open position behind the brushes edge
- Carefully remove the cover upward, so you must open the lower part a little bit

Manipulate very carefully with dismantled cover to avoid any damages to the coating on visible parts of the cover.

REPLACEMENT OF BRUSHES:

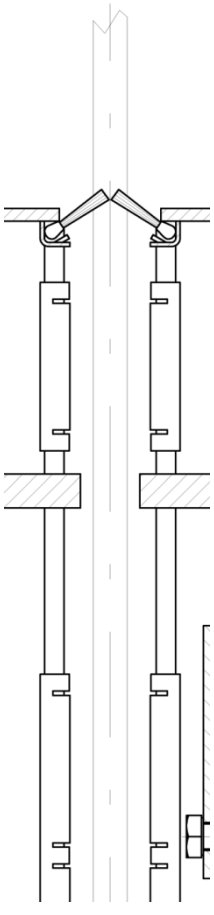
Brushes are fixed along their whole length in a trough by manually bent fixing parts of 4mm width. You must straighten all these parts when removing brushes.

For EasyGate-LX turnstile there are four types of brushes:

- brush right EasyGate-LX
- brush left EasyGate-LX
- brush right EasyGate-LXI
- brush left EasyGate-LXI

Before installing the new brush, it is necessary to clean and treat with some preparations to increase its slipperiness.

Put the new brush into a cover, so that it is pushed close to the trough bottom and it was balanced against the other brush. There should be a minimal gap between brushes. After balancing the brushes bend all fixing parts.



4.14.5. CHECK-UP OF THE ATTACHMENT OF THE MOVING GLASS WINGS

Check the strength of attachment of the glass holder. There are two types of mounting:

1. Glass with pressuring shims that is put in a holder into plastic blocks and tightened by five bolts from one side of wing (up to May, 2012).

2. Glass without pressuring shims that is put in a holder between rubber sheets and fixed by five bolts through the glass.

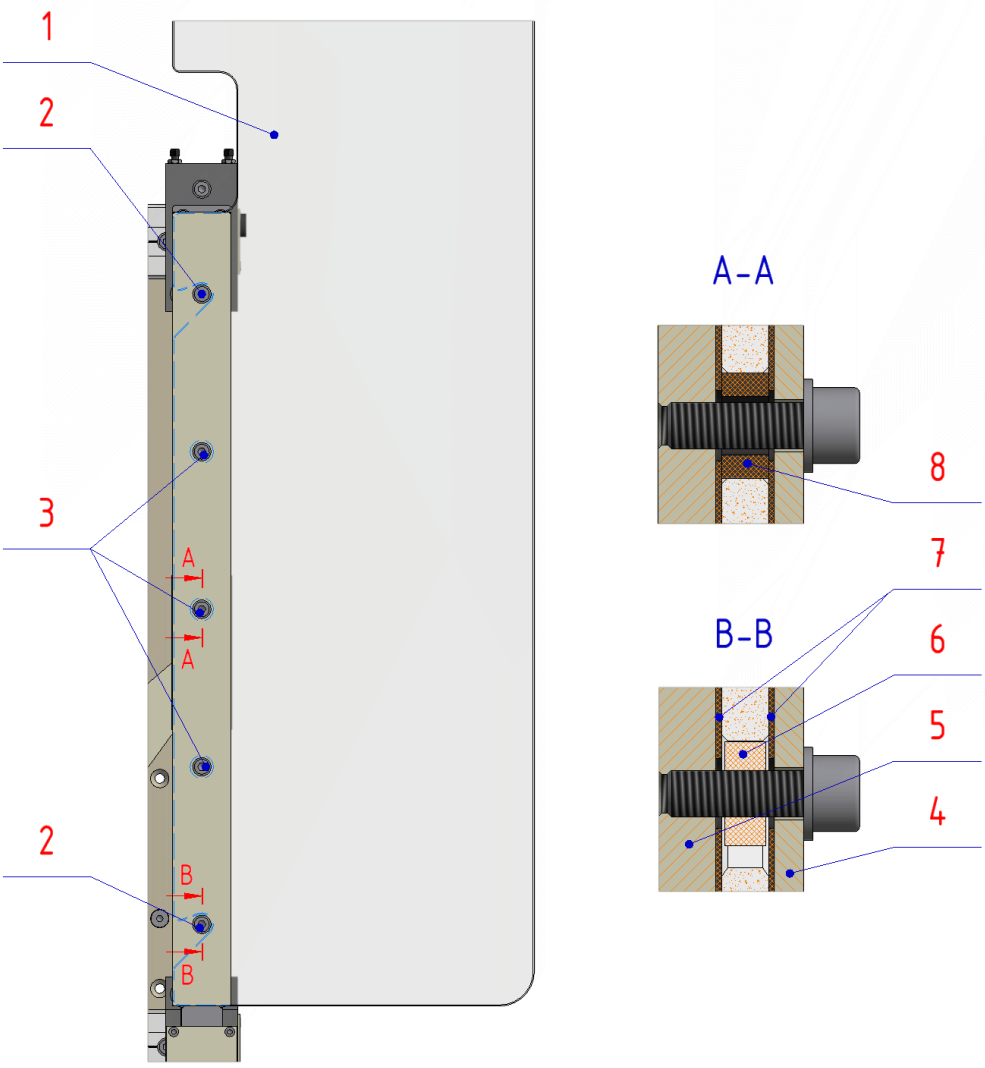
If the glass is not fixed enough, the procedure is according to the information in chapter *Replacement of movable glass wings*.

4.15. REPLACEMENT OF GLASS

When replacing a cracked or otherwise damaged glass there is a risk to be hurt with glass. It is necessary to work with protective goggles and gloves and to be very careful. Take care not to hurt the other person with shards and not to get any shards inside the turnstile.

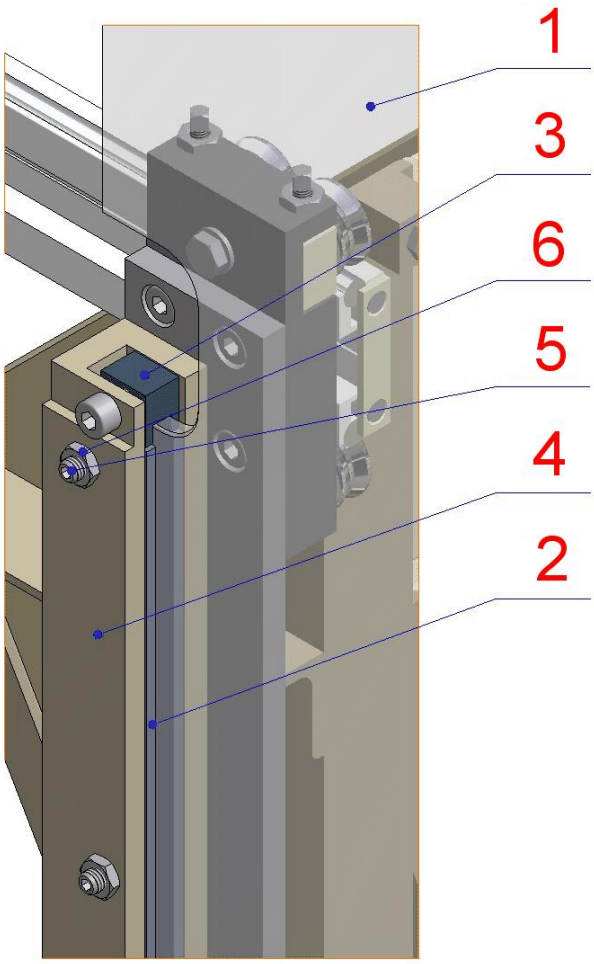
4.15.1. REPLACEMENT OF MOVABLE GLASS WINGS

GLASS WITHOUT PRESSURING SHIMS:



- Unbolt the central bolts (pos. 3) and loosen two outer bolts (pos. 2)
- By lateral pressure on the glass wing (pos. 1) loosen the wing from rubber (pos.7)
- Carefully pull out the broken glass outwards from turnstile. When removing gently rise the glass.
- Clean rests of glass from the glass holder and inside the turnstile
- Insert the rubber rings (pos. 8) into three holes the new glass wing
- Insert the new glass wing into turnstile housing between a glass shoulder (pos. 5) and glass shim (pos. 4) and do not disturb the position of brushes
- Balance the glass, so that both plastic rings (pos. 6) fit closely to a bottom slot in the glass
- Tighten two outer bolts (pos. 2) and ensure the wing by three bolts (pos. 3)

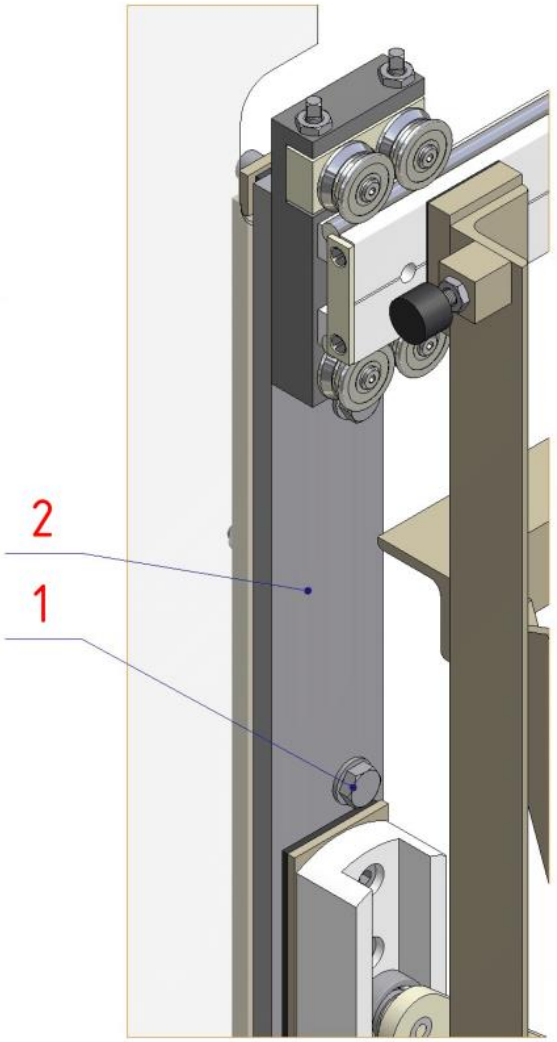
GLASS WITH PRESSURING SHIMS:



- Loosen all nuts (pos. 6) and unbolt all 5mm bolts (pos. 5)
- Carefully pull out the broken glass outwards from turnstile
- If the pressure plates (pos. 2) stayed in turnstile after removing the glass from turnstile, pull them out
- Clean rests of glass from the glass holder (pos. 4) and inside the turnstile
- The movable glass wing (pos. 1) with pressuring shims (pos. 2) insert in the bottom and top between plastic restraints (pos. 3) and at the same time into the glass holder U-shaped (pos. 4). Insert the glass into turnstile and do not disturb the position of brushes. Pressuring shims are part of the glass and they are already glued by the producer.
- Tighten the glass by M 8x20 bolts with a tip (pos. 5). Fix it by M6 nuts (pos. 6).

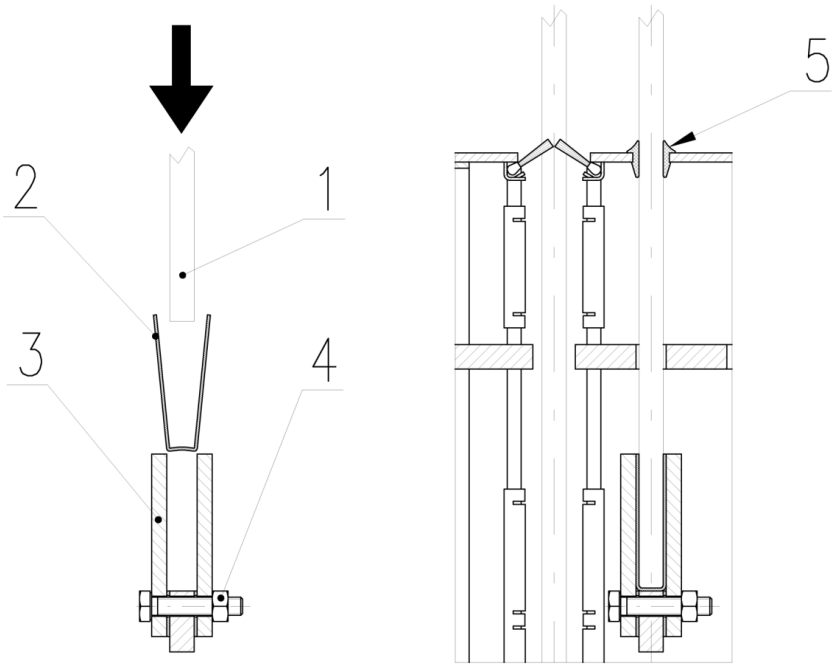
ADJUSTMENT OF GLASS POSITION:

In upper and lower part of bar (pos. 2) there are slots that allow tilting of glass holder in some range and thus the movable glass wings to get optimal vertical and relative position. When three M10x20 bolts (pos.1) are loosened, then you can tilt the glass. When the glass installation is finished, adjust the brushes into their right position.



For correct turnstile operation the wing must be centered due to brushes. Perform the centering by moving and putting the pad under the whole drive unit on the turnstile base.

4.15.2. REPLACEMENT OF FIXED GLASS WINGS



- pull out two rubber profiles (pos. 5)
- loosen three M6 nuts (pos. 4) and stretch two shims (pos. 3)
- carefully pull out the broken glass outwards from the turnstile
- remove the rubber (pos. 2) from turnstile and clean it
- clean the space between shims (pos. 3) and inside the turnstile from the rests of damaged glass
- adjust the rubber (pos. 2) into trough-shaped and put it together with a new solid glass wing into the gap between shims
- gradually tighten three M6 nuts, so you clamp the glass between shims
- squeeze two rubber profiles (pos. 5) between the glass and turnstile housing

4.15.3. REPLACEMENT OF UPPER GLASS PANEL - ACCESSLIGHT

The glass is fixed with silicone sealant.

- Before replacing it is necessary to dismantle ACCESSLIGHT or LANELIGHT electronics to prevent its damage.
- Cut the glass by cutting string diameter up to 0.5mm or by a high-quality cutter with snap-off blade with metal reinforcement
- After removing the original glass it is necessary to remove the remains of original adhesive
- Stick a new glass with silicone sealant, so that between the glass and turnstile metal plate stay adhesive layer 0.5mm. This is necessary to preserve because of the possibility of re-cutting out the damaged glass.

4.15.4. REPLACEMENT OF FRONT GLASS PANEL - LANELIGHT

The glass is fixed with silicone sealant.

- Dismantle LANELIGHT.
- From inner side of turnstile, knock out most of the glass outward by a hammer. Be careful not to hurt the other person or to get some pieces inside the turnstile.
- Remove the rests of glasses and glue by pliers and a cutter with snap-off blade with metal reinforcement
- New glass should be affixed on the cleaned surface with a very small layer of silicon sealant applied only on front side of the frame. Sealant must not overflow over the edge of glass. After sticking it is necessary to secure the glass by stick tape until sealant hardens.

4.16. FINAL OPERATION OF THE MAINTENANCE

4.16.1. RESET FUNCTION - INITIALIZATION

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

When start up the reset and initialization procedure, there is:

- reset of internal registers
- reset of error register
- starting device initialization
- fault detection

After start-up of the reset and initialization procedure the turnstile configuration is not changed.

During the reset and initialization procedures you must not interfere in turnstile operation in any way.

Reset and initialization procedure can not be perform when running on backup battery or if the terminal voltage drops below 12.5VDC (due to voltage decreasing on the supply wiring).

Starting the reset and initialization procedure can be done 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 Touch Panel within 20 seconds after stabilization devices in the basic position

3. Connect power supply voltage – then five times activation and deactivation the ON/OFF switch on the testing device for turnstile within 20 seconds after the turnstile is in the home position

4. Press RESET icon in TCONF application – at any time during turnstile operation

5. Uploading a new configuration in TCONF application – at any time during turnstile operation

6. Uploading a new firmware in TCONF application – at any time during turnstile operation

After start-up and finished the reset and initialization procedure (about 1 min) the device will stay in home position.

Control whether the movable glass wings are opened and closed with the same speed. Then control whether both movable glass wings copy the same turning trajectory, possibly adjust it according to chapter *Inspection and adjustment the wings end positions.*

4.16.2. CHECK-UP OF THE ANCHORING BOLTS AND ALL BOLTS OF TURNSTILE CONSTRUCTION

- Cooperation of two persons is required. Perform the control, so that one person tries to vibrate the turnstile by force (tension and compression) to different parts and the other person monitors the bolted connections.
- Loose connections must be tightened
- Loose anchors must be replaced

4.16.3. DISCONNECTION THE TESTING DEVICE AND CONNECTION THE SUPERIOR SYSTEM

- Unplug the orange power connector on MLU control electronics
- Gradually disconnect all connectors of testing device and RS485 distributor
- Connect all original connectors of superior system
- Connect the orange power connector on MLU control electronics

4.16.4. CHECK-UP OF ALL the INSERTED CONNECTORS IN TURNSTILE

Control the insertion of all connectors up to locks.

4.16.5. COMMUNICATION CONTROL WITH SUPERIOR SYSTEM AND CONTROL PERIPHERALS

In cooperation with the customer control whether turnstile successfully communicates with superior access system control.

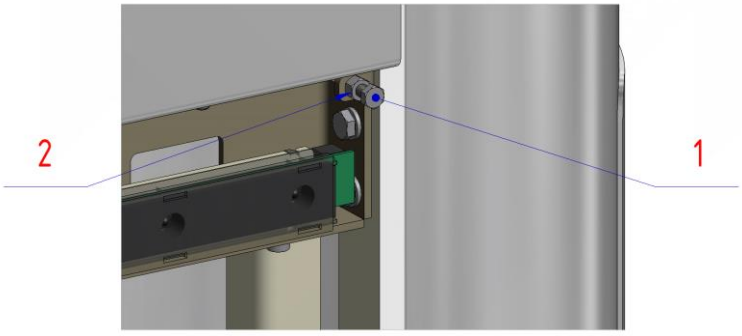
4.16.6. CLEANING THE INSIDE OF TURNSTILE

- Suck out the dirt and wipe dust inside the turnstile
- Clean guiding bars of linear rails. Surface must be dry and without grease
- Clean the plastic cover bars of horizontal sensors
- If dirt is on inner surface of AccessLight glass then dismantle AccessLight and clean the glass
- If dirt is on inner surface of LaneLight glass then dismantle LaneLight and clean the glass

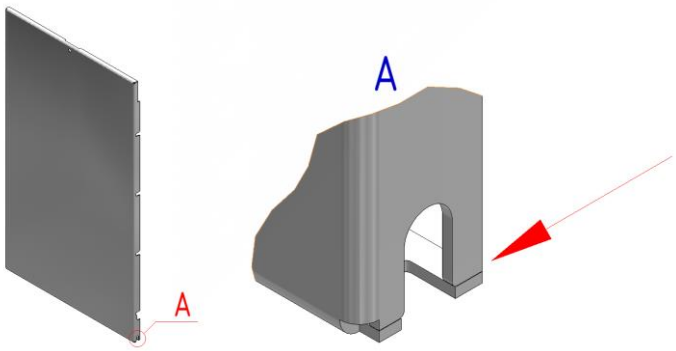
4.16.7. SIDE COVERS ASSEMBLY

- Before installing the side covers, clean the inner surfaces of plexiglass peep-holes of sensors
- Put side covers and lock the covers
- Check the correct operation of locks
- Check whether any of covers do not resonate when the wing is turning. A cover that resonates dismantle and adjust it according to the following procedure:

  In upper part where the cover is mounted to turnstile, adjust supporting bolts (pos. 1), so that after placing the cover when locking you were forced to push a little bit on the upper center of the cover toward the turnstile. after adjusting secure the bolts by nuts (pos. 2).



In lower part of the cover, adjust the width of both grooves in the direction of arrow, so that after placing the cover on bottom pins you were forced to develop a little pressure. Perform the adjustment by double-tap and do not damage the outer surfaces of the cover.



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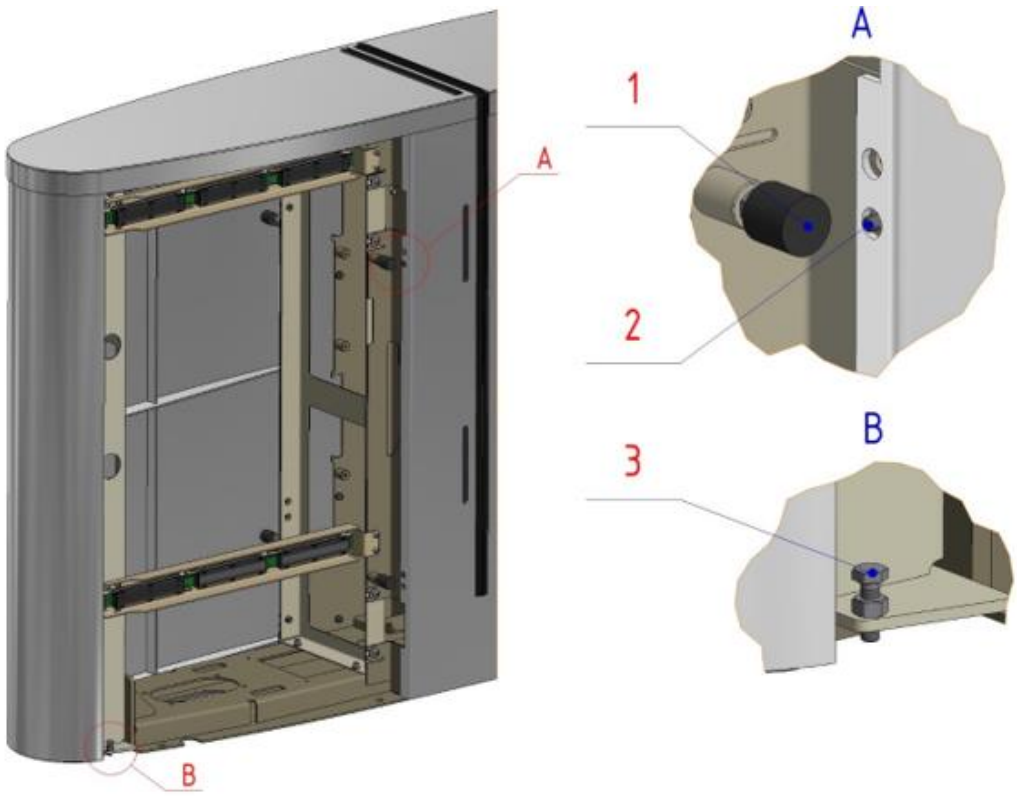
Using two silentblocks (pos. 1), adjust the optimal contact force applied to the side cover. Adjust the correct position of the cover using the bolt M6x20 (pos. 3) and two M5x10 bolts (pos. 2).



4.16.8. CLEANING THE EXTERIOR PARTS OF TURNSTILE

- Clean outer parts of turnstile by water with detergent without using any chemical detergents.

- Treat the outer stainless surface using agents meant for this purpose
  The manufacturer recommends the following agents:
  - RAPELLE - GLASS & STAINLESS STEEL SEAL & PROTECT
  - KIM-TEC – EDELSTAHLREINIGERSPRAY (850001)
  - WÜRTH – EDELSTAHLPFLEGESPRAY (0893121)
  - WÜRTH – EDELSTAHLREINIGUNGSTUCH (089312130)

- Clean plexiglass peep-holes of horizontal and vertical sensors.
- Clean the fixed glass wings, upper glass AccessLight and front glass LaneLight
- Perfectly clean and degrease the movable glass wings. Purity of wings has an effect on the smooth and trouble-free glass wings operation (the producer recommends the product ARECAL GLASREINIGER). Never use steam cleaners for cleaning of glasses.

5. TROUBLESHOOTING

For quick removal of your turnstile's malfunction, it is necessary to fill out the *Claim Report Form* **when contacting the Service Department of the COMINFO company. The report must indicate serial number of the turnstile in compliance with the production label, and a description of the malfunction. Along with the completed form, send a video which clearly shows the occurring malfunction.**

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