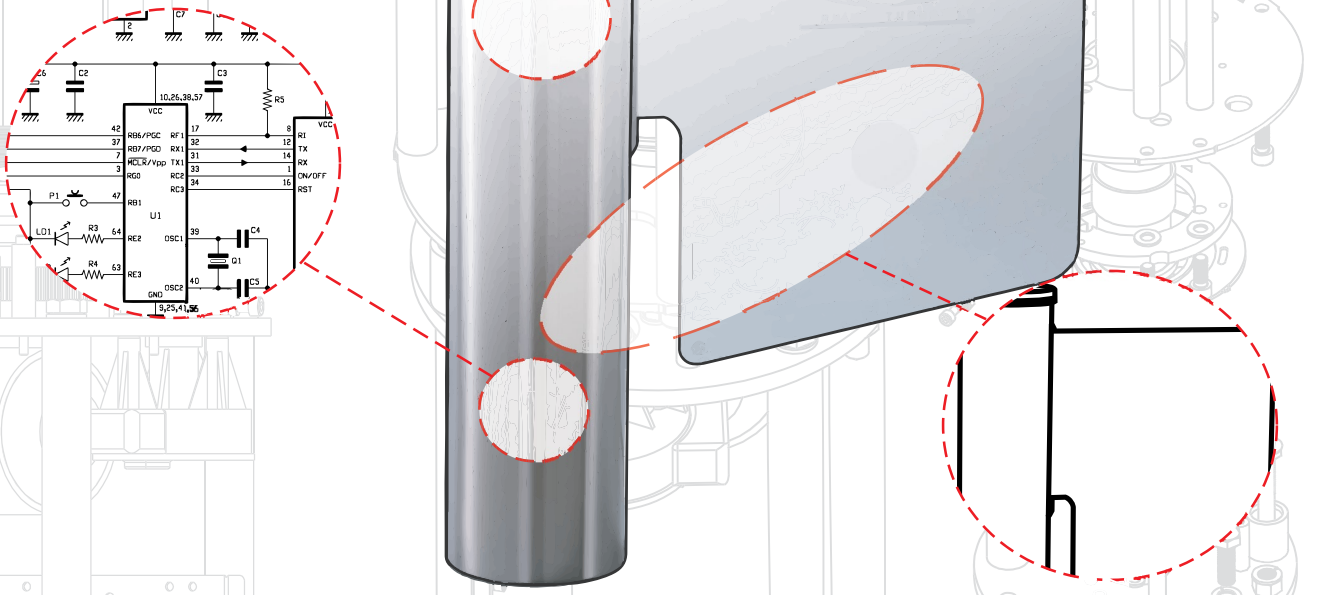
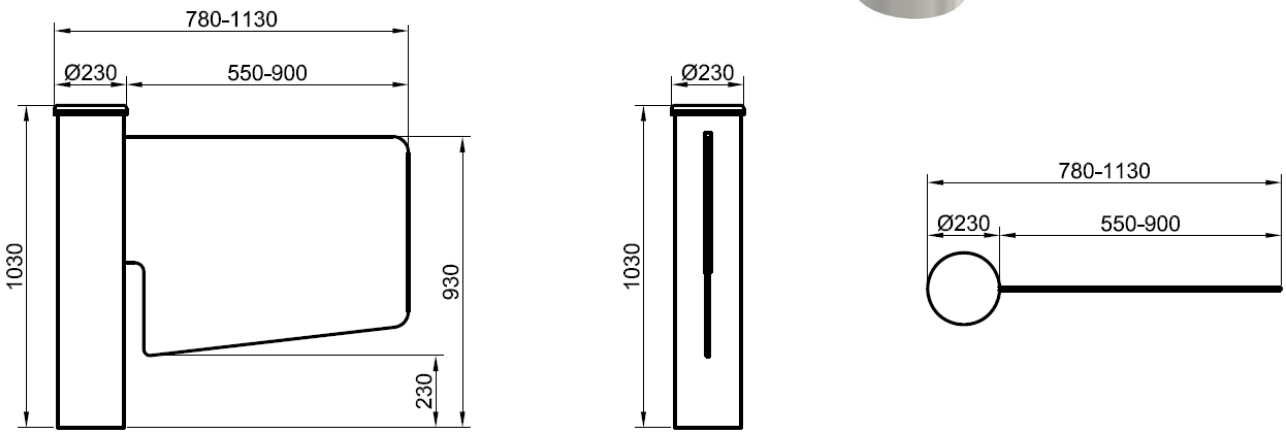


AP-A1 & AP-2

INSTALLATION AND MAINTENANCE HANDBOOK

INDEX

AP-A1
TECHNICAL SPECIFICATIONS



Power Requirements :110/220-240V. 60/50Hz. AC (%±10) 24V.DC at standby ~2W.max. ~65W. System is powered by a well regulated SMPS which can automatically compensate for voltage fluctuations.

Dimensions **:** Cylindrical body 1030mm x Ø230mm x Wing width (550 / 900mm)

Body Features **:** 1mm thick, single piece, 304-Grade satin finished stainless steel cylindrical body.

Wing Features **:** Wing is made of 10 mm thick tempered glass (Opt.polycarbon or acrylic). 550 mm or 900 mm wing lengths are available as standard choices.

Top Lid Features **:** Standard 20mm thick natural granite (Star Galaxy Black) stone top lid for a decorative and aesthetical appearance (opt. tempered glass, stainless steel, wood).

Indicator Features **:** Built-in circular RGB LED status indicators are located under the top lid. Illumination is blue at stand-by; green during authorised passage, flashing red for unauthorised attempts and green for emergency alert mode.

Operating Temperature, Humidity, IP Rating, MCBF
: -20°C - +68°C (Opt. -50°C with heater unit) / RH 95% non-condensing /IP 44 Indoor Model (IP 56 is available for optional pipe wing versions)/ 1M Cycles.

Control System **:** All inputs are opto-coupler protected. Controlled by dry contact or grounding input. Compatible with all access control systems that provide dry contact or grounding outputs. Optional RS232/RS485/TCP IP control module is available.

Weight : ~58kg (with 90 cm. tempered glass wing and granite top cover).

AP-A1
TECHNICAL SPECIFICATIONS

System Features & Operation
: Microprocessor controlled, bi-directional DC motor driven mechanism with torque and speed adjustments. The system opens the wing in either direction upon receiving contact to allow passage. Glass wing automatically retreats when it pushes against an obstacle and goes into alarm after a second attempt.

Emergency Mode **:** In case of emergency input, the wing opens in either direction (pre-set direction by internal dip-switch) and the system stays in open position until the emergency input is removed.
Wing can be pushed open manually in either direction in case of a power failure.

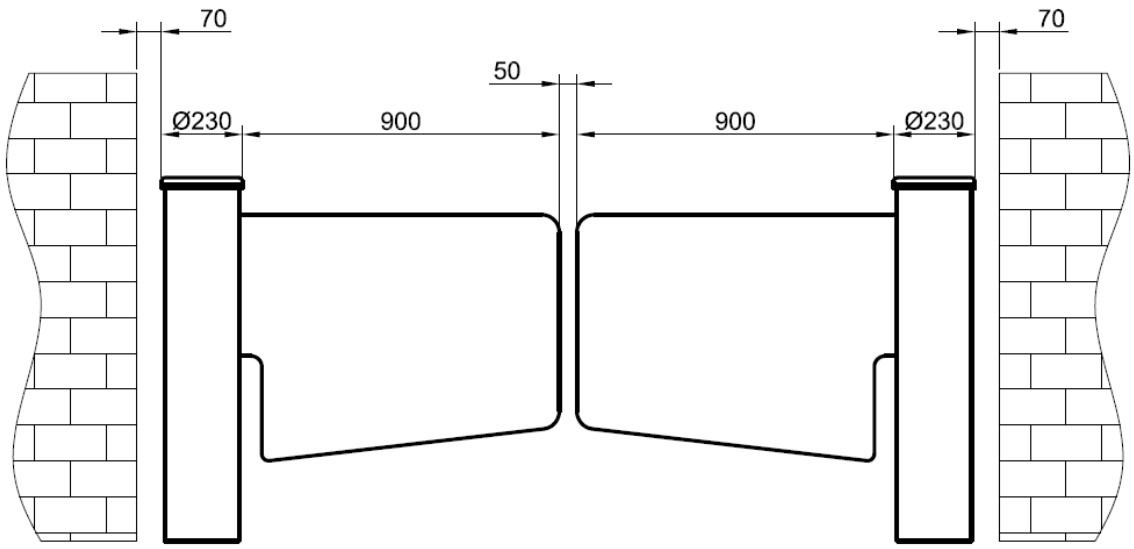
Wing Speed **:** Wing speed is controlled by adjustable PWM controlled motor driver system.
For 900mm Passage Width Tempered Glass Wing:
-Wing Opening Speed: ~3,0 seconds by default, ~2,5 – 3,5 sec. adjustable.
-Wing Closing Speed: ~3,0 seconds by default, ~2,5 – 3,5 sec. adjustable.

For 550mm Passage Width Tempered Glass Wing:
-Wing Opening Speed: ~2,7 seconds by default, ~2,5 – 3,5 sec. adjustable.
-Wing Closing Speed: ~2,7 seconds by default, ~2,5 – 3,5 sec. adjustable.

- 90° movement from original position,

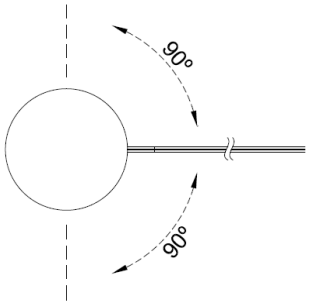
Standard Features **:** Natural granite top lid (Star Galaxy Black), RGB LED indicator.

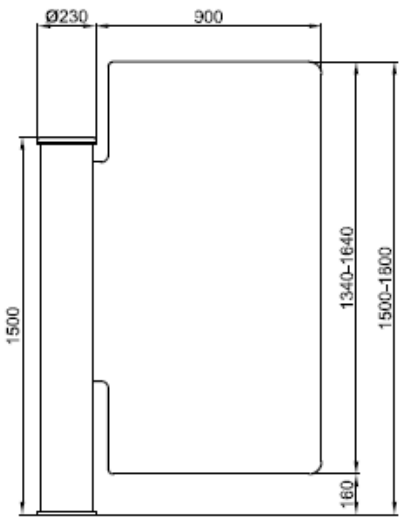
Optional Accessory and Applications
: Remote control unit, interface unit for PC, RS485, RS232 and LAN, counter, audio-messaging system, base plate, different top lids, separator, card reader pole.

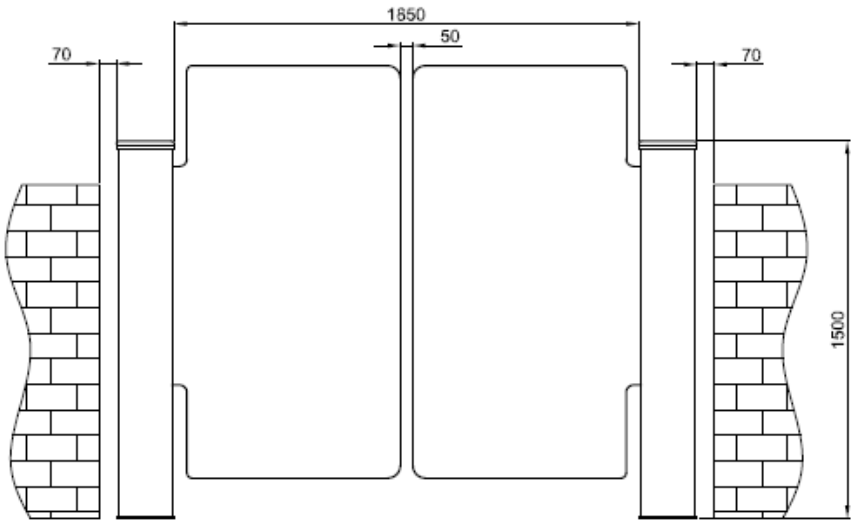


**Design and specifications are subject to change without notice.*

AP-A2
TECHNICAL SPECIFICATIONS







Power Requirements **:** 110/220-240V. 60/50Hz. AC (%±10) 24V.DC at standby ~2W.max. ~65W. System is powered by a well regulated SMPS which can automatically compensate for voltage fluctuations.

Dimensions **:** Cylindrical body 1500mm x Ø230mm x Wing width (900mm)

Body Features **:** 1mm thick, single piece, 304-Grade satin finished stainless steel cylindrical body.

Wing Features **:** Wing is made of 4,0+1,52+4,0 mm laminated & tempered 900 mm glass. Wing length and 1500/1800 mm wing heights are available as standard choices.

Top Lid Features **:** Stainless steel or natural granite (Star Galaxy Black) stone top lid.

AP-A2
TECHNICAL SPECIFICATIONS

Indicator Features **:** Built-in circular RGB LED status indicators are located under the top lid. Illumination is blue at standby; green during authorised passage and flashing red for unauthorised attempts or emergency alert mode.

Operating Temperature, Humidity, IP Rating, MCBF
: -20°C - +68°C (Opt. -50°C with heater unit) / RH 95% non-condensing / IP 44 Indoor Model (IP 56 is available for optional pipe wing versions)/ 1M Cycles.

Control System **:** All inputs are opto-coupler protected .Controlled by dry contact or grounding input. Compatible with all access control systems that provide dry contact or grounding outputs. Optional RS232/RS485/TCP IP control module is available.

System Features & Operation
: Microprocessor controlled, bi-directional DC motor driven mechanism with torque and speed adjustments. The system opens the wing in either direction upon receiving contact to allow passage. Glass wing automatically retreats when it pushes against an obstacle and goes into alarm after a second attempt.

Emergency Mode **:** In case of emergency input, the wing opens in either direction (pre-set direction by internal dip-switch) and the system stays in open position until the emergency input is removed. Wing can be pushed open manually in either direction in case of a power failure.

Wing Speed **:** Wing speed is controlled by adjustable PWM controlled motor driver system.
For 900mm passage width laminated & tempered glass wing:
-Wing Opening Speed : ~3,0 seconds by default, ~2,5 – 3,5 sec. adjustable.
-Wing Closing Speed : ~3,0 seconds by default, ~2,5 – 3,5 sec. adjustable.

- 90° movement from original position.

Standard Features **:** Natural granite top lid (Star Galaxy Black), RGB LED indicator.

Optional Accessory and Applications
: Remote control unit, interface unit for PC, RS485, RS232 and LAN, counter, audio-messaging system, base plate, separator, card reader pole.

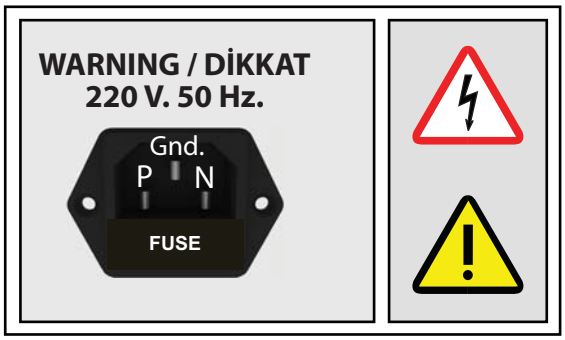
**Design and specifications are subject to change without notice.*

2. SAFETY AND OPERATION

2.1 Safety Warnings And Symbols

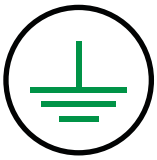
For Safety and proper operation of the turnstile all installation and repair work must be performed by qualified technical personnel only!

HIGH VOLTAGE WARNING LABEL

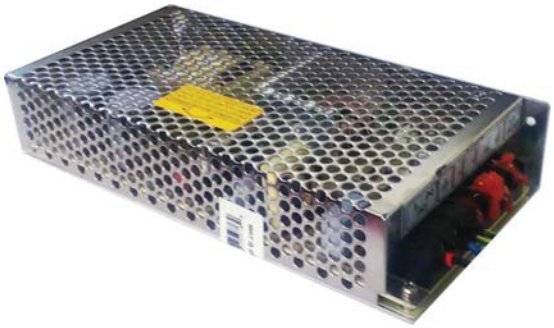


> **WARNING !**
>
> Never remove the protective cover of the power supply unit for any reason!
>
> Observe the warning signs, power and fuse values when performing any work on the turnstile. Warning labels and power supplies may vary depending on the turnstile model and type.

GROUNDING SYMBOL



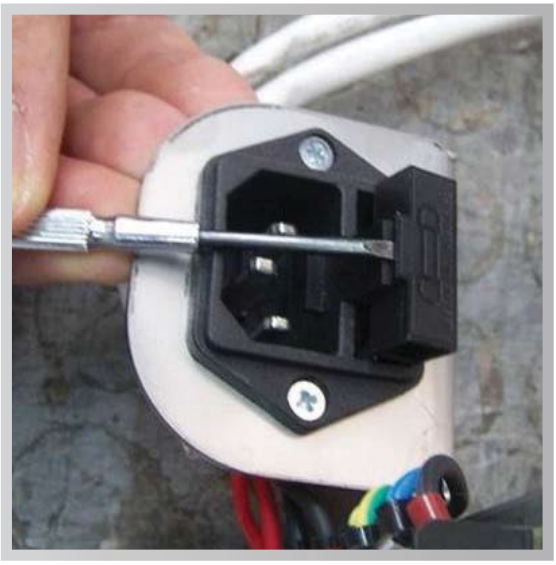
POWER CONNECTOR FRONT VİEW

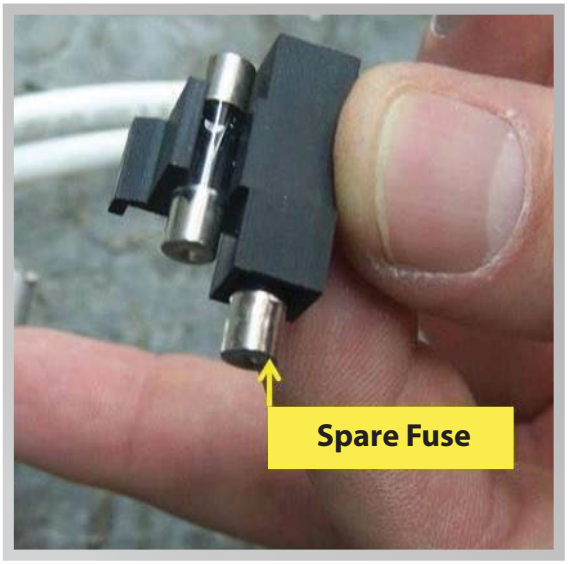


24 V DC Power Supply

2.2 POWER SUPPLY FUSE REPLACEMENT

CAUTION! Use only original type and value replacement fuse





2.3 Safety Related Instructions

1. Users must not dismantle the turnstiles. Maintenance can only be performed by competent and authorized personnel. Maintenance work attempted by non- qualified individuals may create danger to users and the turnstile.
2. Turnstile must not be installed at places where there is a risk of explosion caused by electrical arcs or a probable gas leakage.
3. Turnstile must be kept away from flammable environments.
4. Turnstile cannot be installed at places where there is vibration.
5. Turnstile must not be kept in excessively moist environments.
6. Turnstile must not be exposed to heat.
7. Turnstile must be kept away from high level magnetic fields.
8. Turnstiles must not be subjected to abusive treatment such as impact or excessive shaking.
9. Operating voltage/ power range must be observed in all installations. .
10. The power must be stable, properly grounded, insulated.
11. Turnstiles can only be operated under the environmental conditions and temperatures specified by the manufacturer.
12. Children must not be allowed to play with the turnstiles.
13. All connections must be confirmed to be correct before supplying power to the turnstile.
14. No materials or equipment other than what is specified for the turnstile must be used when making connections into the input and output terminals.
15. All parts and accessories used in the turnstiles must be approved by the manufacturer.
16. In case of any electrical arching or faults caused by such condition, power must be disconnected and authorized servicer or manufacturer must be contacted as soon as possible.
17. The power must be cut off before cleaning or applying maintenance to the turnstiles.
18. Only clean, soft and moist fabrics (no abrasive materials) should be used for cleaning the turnstile.
19. Damaged turnstiles must not be operated, and the authorized dealer or the Manufacturers technical support center should be contacted soon as possible for repair.

2.4 Operating Precautions

1. More than one person must not attempt to pass at the same time.
2. Do not obstruct or apply force to the panel at any time.
3. A locked turnstile must not be forced, kicked, abused or tempered with to gain passage without authorization.
4. Turnstiles must not be washed for cleaning purposes (applying water with a hose or pouring water from a bucket. etc)., Wiping off with non abrasive materials such as a damp cloth is sufficient in most cases.
5. Chemicals for cleaning and polishing must not be used in any case. The manufacturer is not responsible for damages resulting from use of such materials.

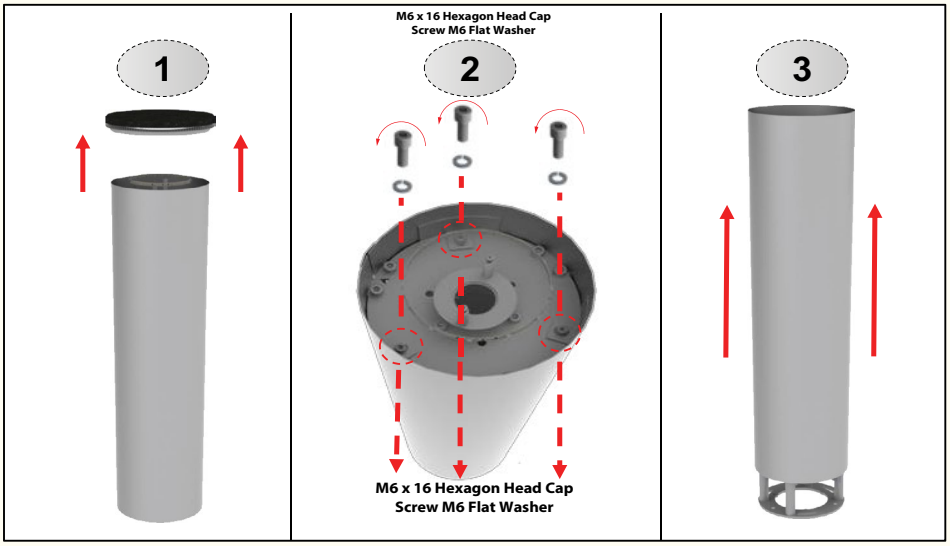
3. HANDLING AND INSTALLATION

3.1 Handling

1. Please pay special attention to carry the turnstiles as originally packed by the manufacturer.
2. Follow the handling and carrying instructions written on the package.
3. Do not place a heavy load on the turnstile package.
4. Do not place the packed turnstile on a wet ground.
5. Do not leave the packed turnstile under rain.
6. During handling, use an appropriate lift/crane with sufficient lifting capacity.
7. Before starting installation ensure that there is no shipping damage or missing parts and hardware inside the package.

3.2 Installation

The installation place should be selected according to user's requirements. This selection should not prevent proper operation of the turnstile.
Ensure that the Installation surface is flat, even and of proper strength. Flatten any uneven/rough areas as required.



Removal of Cover Before Installation:

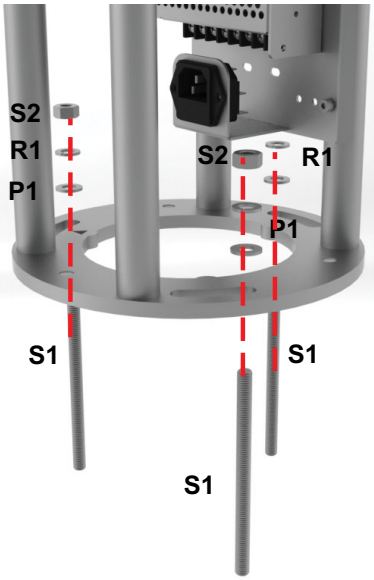
1. Remove the granite top cover by pulling upward.

2. Unscrew 3x M6x16 Allien head screws and washers.

3. Pull up and remove the stainless steel cylindirical body.

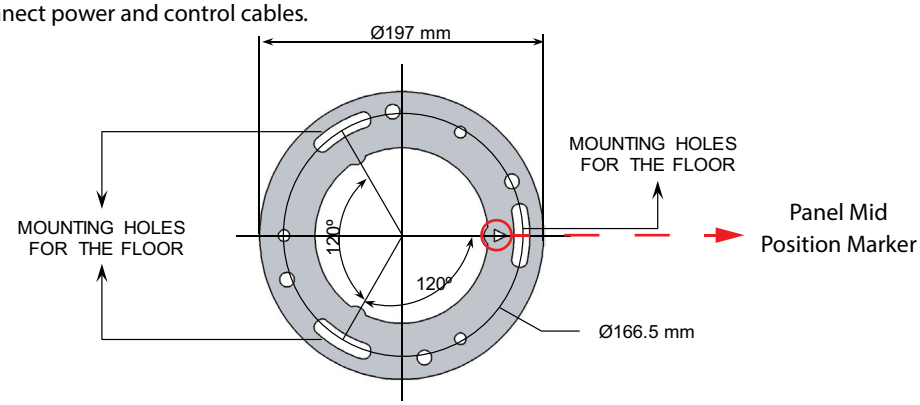
3.2 Installation

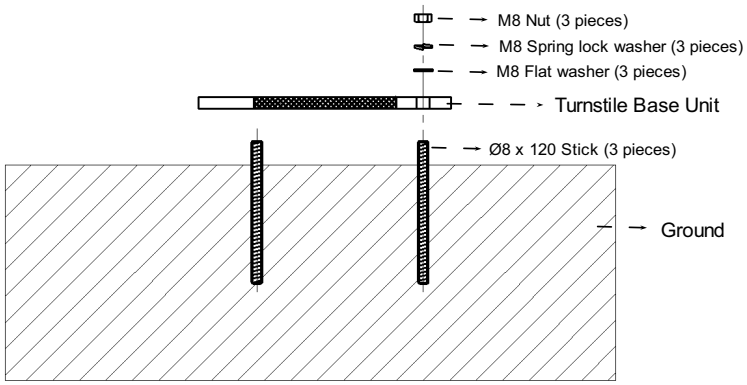
Surface Mounting



	S1	S2	P1	R1
	Ø8x120 STICK	M8 NUT	M8 FLAT WASHER	M8 SPRING LOCK WASHER
GLASS LINE	3	3	3	3

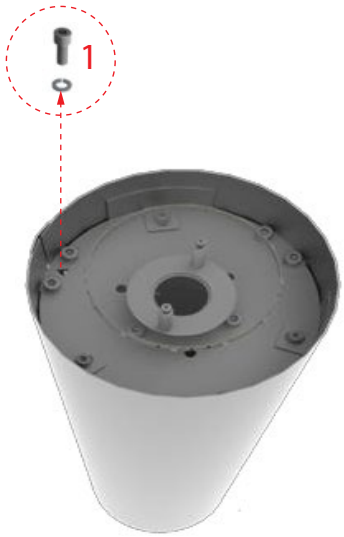
1. Mark holes and drill with a size 10 drill bit. Clean debris inside the holes by pressurized air.
2. Fill holes with chemical plaster and fix anchoring bolts (size 8) in place by rotating. Chemical plaster dries in about 25 minutes.
3. Place turnstile on anchoring bolts and tighten the nuts to secure in place. Pay attention to triangle panel position marker during surface mounting
4. Connect power and control cables.

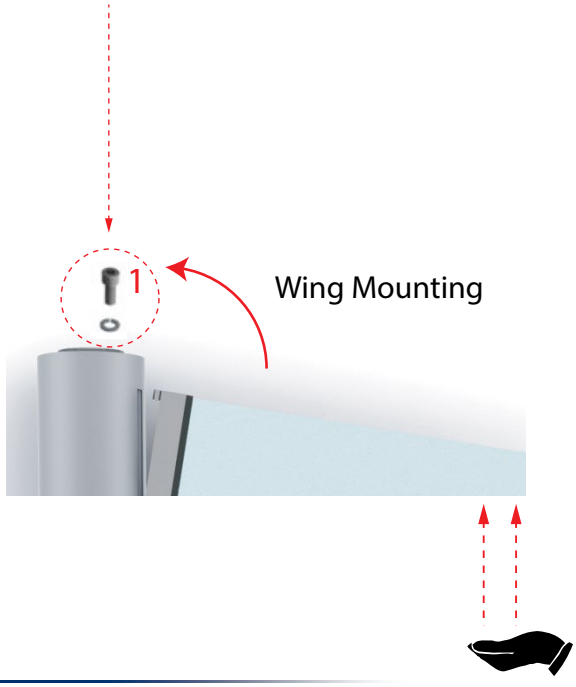




5. Re-install cylindirical body
6. Remove display unit mounting screw (1).
7. Remove glass fixing screw (2)
8. Install panel as shown in fig. 1 by tilting slightly forward and securely seat on the chasis.
9. Tighten panel fixing bolt and nut.
10. Reposition and secure display unit.
11. Install granite top lid in place.

Caution!
Have panel held securely while tightening or removing panel fixing screw (1) to avoid dropping!

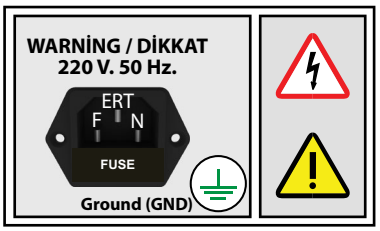




4. SETUP AND OPERATION

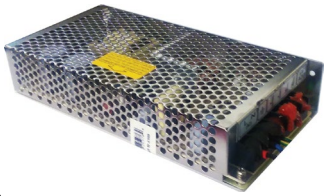
4.1 Power and Grounding Connections

TURNSTİLE POWER WARNING LABEL

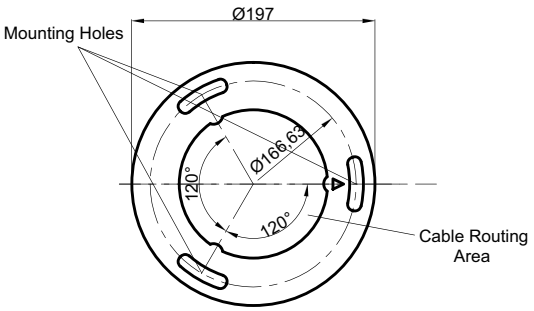


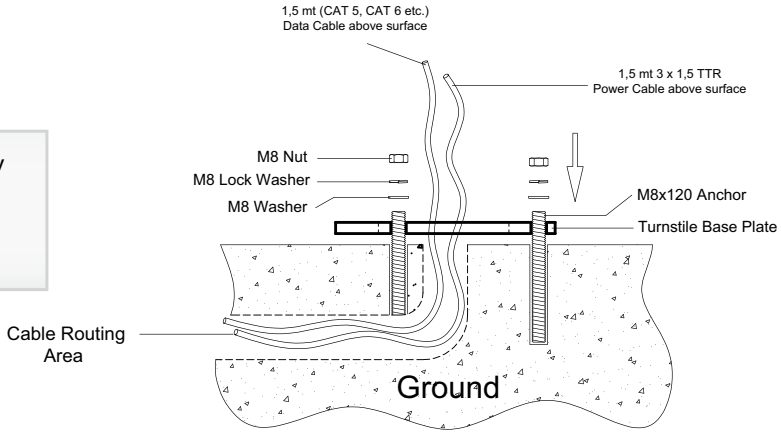
Warning! Power and grounding connections must be made by a qualified electrician in accordance with the relevant local regulations using appropriate materials!

Proper grounding must be ensured to prevent shock hazard!

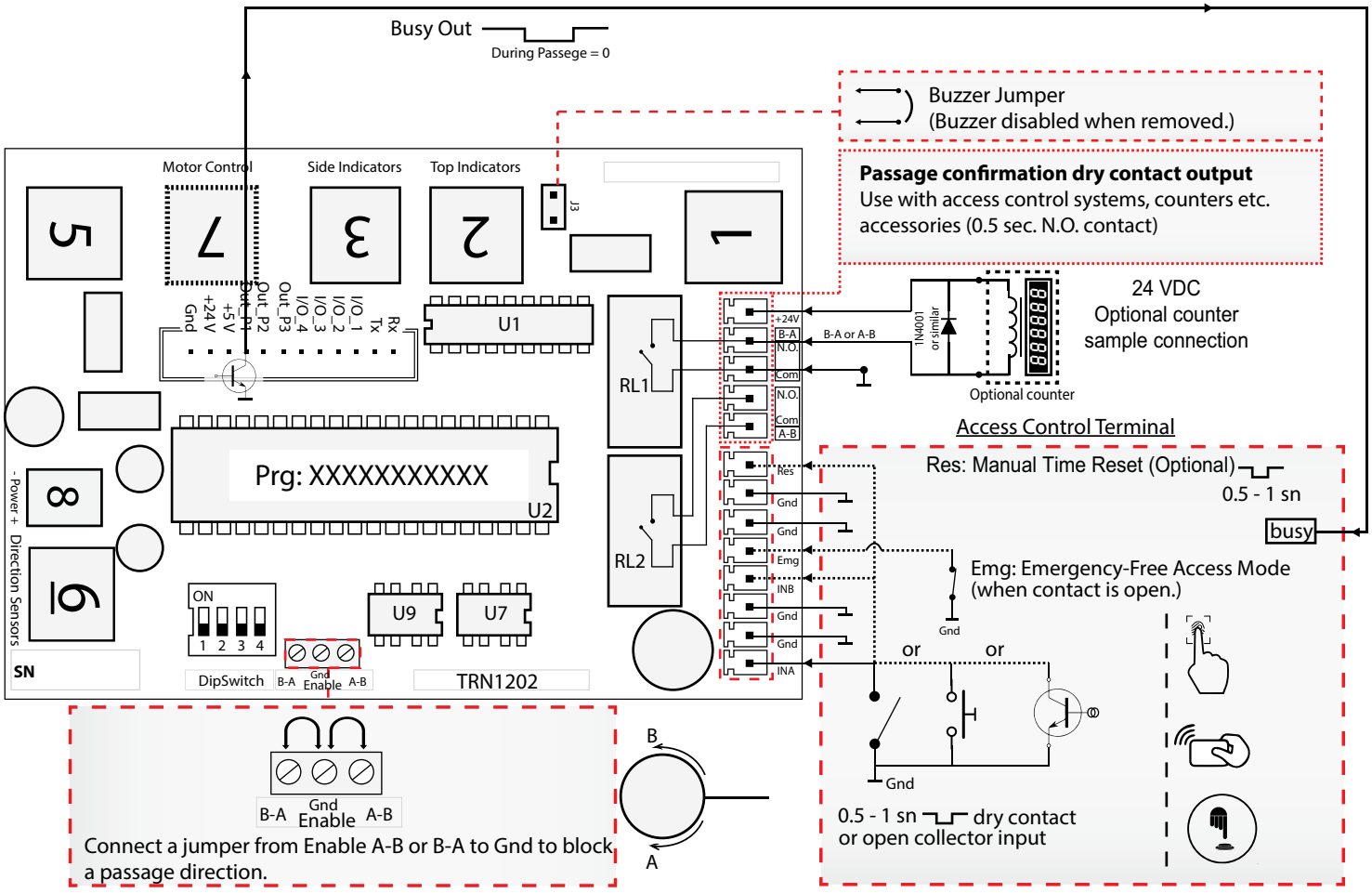


Warning! Never remove the protective cover of the power supply unit for any reason!
In case of a power supply failure, the power supply unit must be replaced with an original unit obtained from PROACCESS.





4.2 Control Board Connections

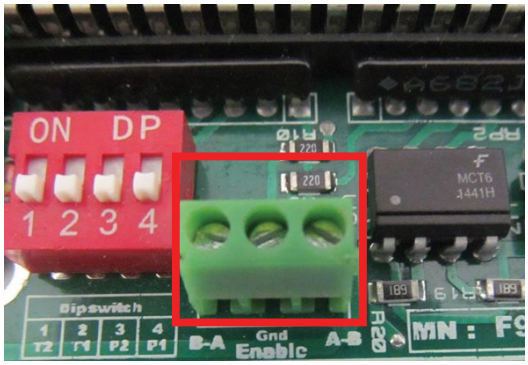


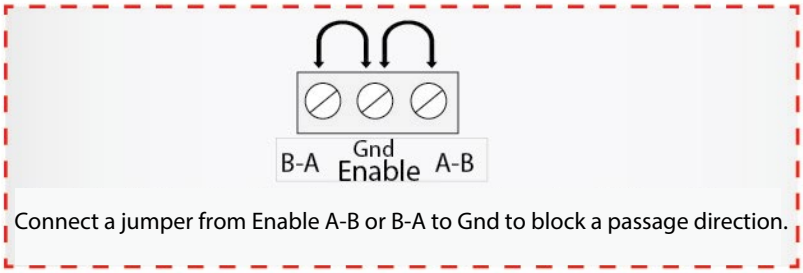
Note: For optimal flow rate contact duration of 1 second or less is recomended.

4.3 Control Board Settings

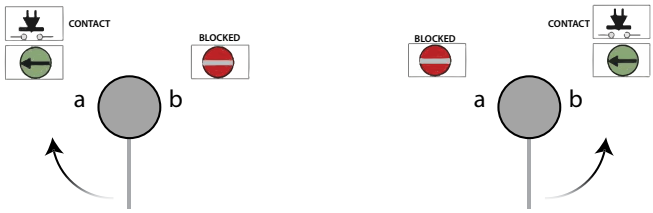
4.3.1 Blocking Passage Directions (Inhibit)

To block entry into A or B direction, short enable terminals. Turnstile will not alow passage in the blocked direction. This feature can be used with a metal detector to automatically block access for security purposes or setting the turnstile for one way traffic operation.

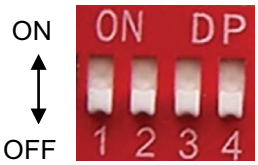


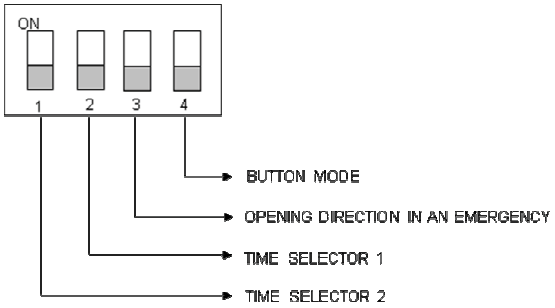


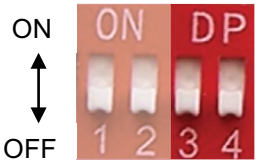
Connect a jumper from Enable A-B or B-A to Gnd to block a passage direction.



4.3.2 Timeout and Mode Settings by Dip Switch







TIME SELECTION		
SW	SW	
1	2	EXPLANATION
OFF	OFF	Entry Time Out 6 Seconds
ON	OFF	Entry Time Out 12 Seconds
OFF	ON	Entry Time Out 2 Seconds
ON	ON	Entry Time Out - Infinite
PANEL OPENING DIRECTION IN EMERGENCY		
SW		
3		EXPLANATION
OFF	FIG. 3	OPEN CLOCKWISE IN EMERGENCY
ON	FIG. 4	OPEN COUNTERCLOCKWISE IN EMERGENCY
BUTTON MODE SELECTOR		
SW		
		EXPLANATION
OFF	FIG. 1	SEPARATE OPEN AND CLOSE BUTTONS
ON	FIG. 2	OPEN AND CLOSE WITH A SINGLE BUTTON INTO IN A OR B

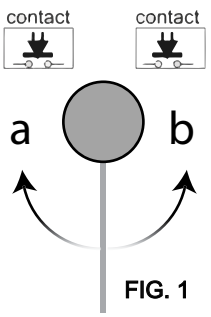


FIG. 1

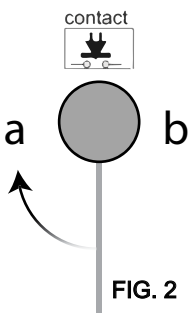


FIG. 2

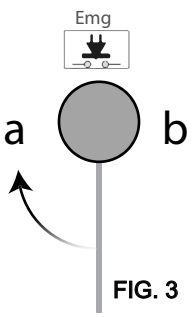


FIG. 3

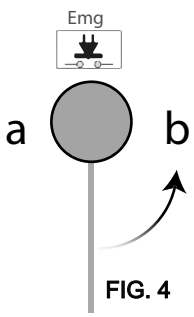
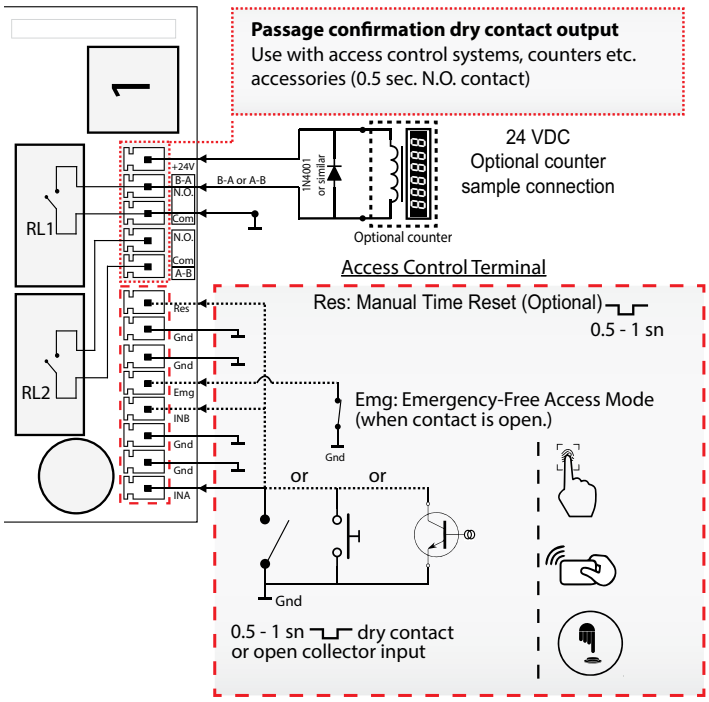


FIG. 4

4.4 Operating Instructions

1. Turnstile is factory preset (see dip switch settings) for bi-directional controlled access. For one way access, or single button/ reader operation please refer to **4.4 Control Board Settings**
2. After completing the installation steps, gently bring the panel to the center position and apply power . Buzzer is heard, RGB indicator on top flashes white for a few seconds and then buzzer stops, RGB indicator turns blue indicating that the turnstile is in standby mode.
3. When a momentary contact is given into 'INA' terminal, top indicator flashes green, buzzer is heard and panel opens by turning 90 degrees in clockwise direction. Panel remains open for 6 seconds (default setting) and then returns to center. For opening in the opposite direction a contact is required on 'INB' terminal.
4. Panel remains open when continuous contact is present on INA or INB.
5. If a continuous contact is given on Emg. terminal, buzzer is heard, indicator flashes green, panel opens in clockwise and remains open for duration of the contact. This feature can be used with fire alarm system to open the gate automatically when the alarm is activated. To open in counterckockwise direction, set dip switch 3 ON.
6. When the panel is held or meets an obstacle during movement after opening more than 30 degrees, it moves back and tries to advance once more. If the obstacle is still present panel stops and alarm is heard. Alarm resets after 10 seconds.
7. If the panel is forced excessively, a built in electronic circuit breaker will be activated and power to motor is disconnected. **In this case a power off reset is required to restore normal operation.**



5. POST INSTALLATION CHECK LIST

No	Item to Check	√	Remarks
1	Installation surface is flat, even and sufficiently strong		
2	All wiring is routed and connected properly		
3	⚠ All AC power lines are properly insulated and grounded		
4	Turnstile is positioned and mounted correctly and firmly		
5	All anchoring bolts are secured in place with chemical plaster.		
6	All anchoring hardware tightened properly (no loose nuts/bolts etc).		
7	⚠ Panel, covers, readers etc. are mounted correctly. Panel is securely bolted in place		
8	No physical damage or irregularities (dents, scratches, broken items ets.)		
9	When powered up buzzer is heard, indicator is blue, rotor/panel in standby position)		
10	Turnstile allows passage in A direction (opens clockwise) when contact is given on Input A and Gnd and indicator turns green.		
11	Turnstile allows passage in B direction (opens counterclockwise) when contact is given on Input B and Gnd and indicator turns green.		
12	Turnstile operates quietly, smoothly and returns to center (standby) position after the pre-set time elapsed (6 sec default)		
13	When Emg contact is given continuously turnstile opens for free passage..		
14	When power is cut off, turnstile allows free passage by pushing		
15	⚠ AC potential between turnstile ground and neutral is less than 0.5V. Good continuity (0 Ohm) between chassis and ground.		Unit is properly grounded.

6. SERVICE AND MAINTENANCE

6.1 Maintenance Instructions

6.1.1 Recomended User Maintenance

- Periodically wipe the turnstile exterior with a clean, damp and soft cloth to keep it free of dust.
- Inspect panel, cover, body etc. once every three months or as required to ensure that there are no loose, worn out or damaged items.
- Check that the turnstile is firmly anchored on the surface.(No loose or damaged anchoring).
- Check that all mechanical movement is smooth and quiet with no unusual noise, rattling etc.
- Inspect electrical cables and connections for any damage, water contamination, loose connections or wear. Contact your authorized dealer or the manufacturer if any problem is detected.
- uses only the finest quality certificated steel obtained from reputable suppliers for maximum corrosion resistance and strength. During the manufacturing process all the required procedures are completed to ensure that the finished products have excellent corrosion resistance.
- Depending on the environmental conditions, there may be tea staining issues on some turnstile surfaces in moist/ dusty areas if regular cleaning and maintenance is not performed. On 304 and higher grade steel surfaces, these stains are not actual rust, but only accumulation of airborne particles sticking on the surfaces. These type of stains can be cleaned off and prevented by periodic maintenance recommended below.

Do not wash the turnstile with water. GLA1 is designed for indoor applications only. There are no user serviceable items inside the turnstile. Do not attempt to do repair work such as lubrication, part replacement, adjustment inside the unit. All such work must be performed by qualified technical personnel only!

6.1.2 Periodic Maintenance by Technical Service Personnel

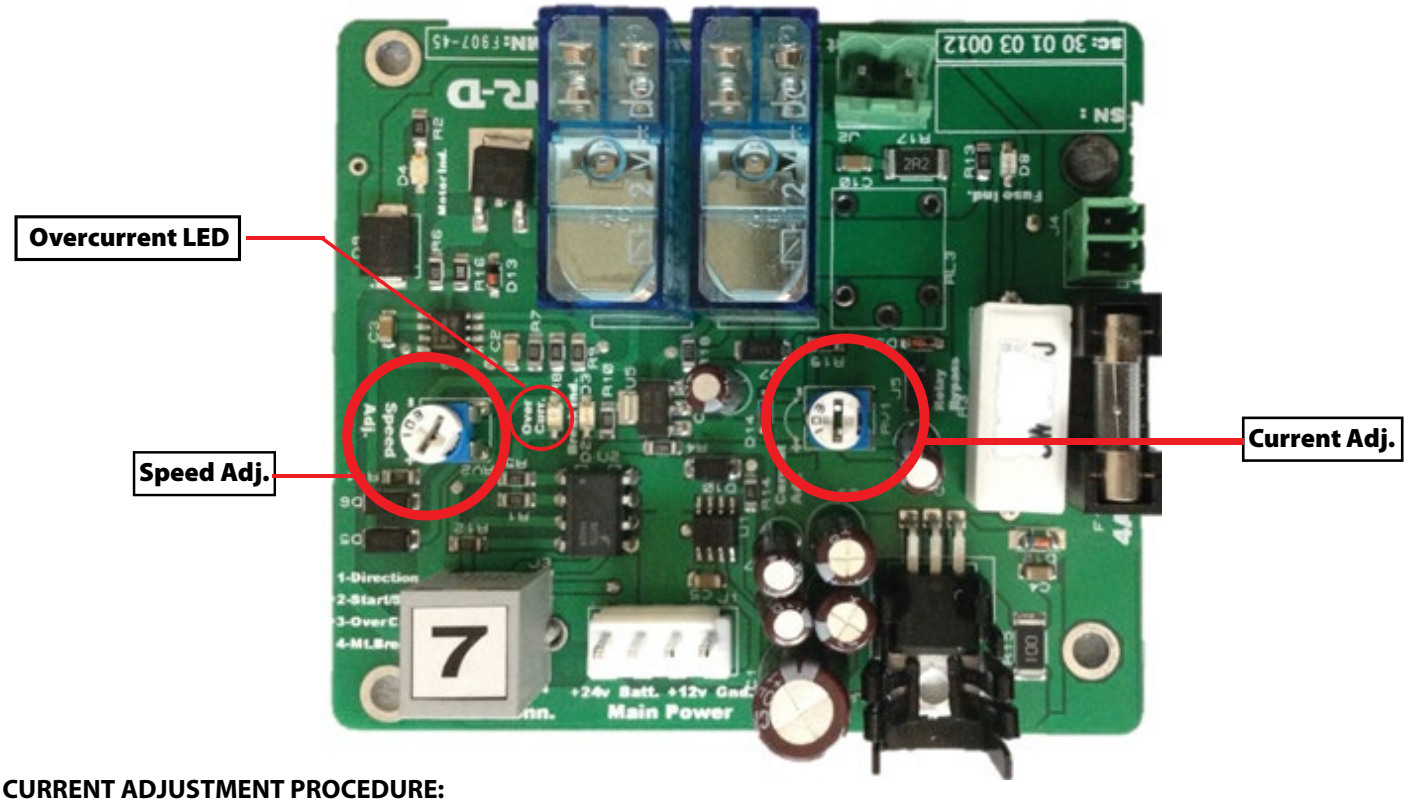
GLA1	Maintenance Item	Period	Action
General	Covers and anchoring bolts	12 mt.	Check/ tighten
	Reader and other munted accessories	12 mt	Check
	Panel (tight and secure-no play)	12 mt	Check
Mechanism	Rotor shaft	12 mt	Check
	Motor	12 mt	Check
	Gears	12 mt	Check + Lubricate
	Bearings	12 mt	Check
Electrical	Control Board	12 mt	Check + Remove dust
	Directional Photosensor	12 mt	Check + Remove dust
	Wiring and connectors	12 mt	Check
	Indicators and buzzer	12 mt	Check

Maintenance Notes:

6.2 Trouble Shooting and Repair Guide (⚠ Refer all repair work to qualified technical service personnel!)

Description of Fault	Possible Cause	Recommended Action
No power. (indicators, buzzer off)	1. No AC power supplied to unit. 2. Loose power cable 3. Blown fuse 4. Faulty power supply unit	1.Restore AC power. 2. Connect power cable. 3. Replace fuse (see 2.2) 4. Replace power supply unit
Turnsile does not allow passage when input contact is given-buzzer heard, indicator turns green	1. Restricted panel movement (due to foreign object blocking movement) 2. Motor driver circuit breaker tripped 3. Loose motor connection 4. Blown motor driver fuse. 5. Electronic circuit protection activated	1.Remove object 2. Power off reset 3. Repair connection 4. Replace motor driver board fuse 5. Power off reset
Panel oscillates right and left in the middle position	1. Misaligned/ bent photosensor	Adjust photosensor (reduce angle)
No response to input/reader device. No access	1. Loose/incorrect reader connection 2-Reader fault 3-Faulty control board	1.Check/repair reader connections 3-Replace faulty reader/input device 4-Replace control board
Turnstile remains open with alarm sound.	1. Emergency (Emg) input jumper removed. 2.Fire alarm relay connection fault.	1. Connect jumper on Emg-Gnd terminals 2.Repair fire alarm (NC)connection
Motorized rotor/ panel keeps moving/ fails to stop in middle position.	1. Loose photosensor connector 2. Misaligned, bent or contaminated photosensor 3. Faulty photosensor	1. Repair/tighten photosensor connector 2. Adjust/ clean photosensor 3. Replace photosensor
Motorized panel opens slowly and times out on return/ alarm activated.	1. Too low motor speed setting on motor driver board	1. Increase motor speed (turm speed control ccw direction) on motor driver board

6.3 Motor Driver Adjustments



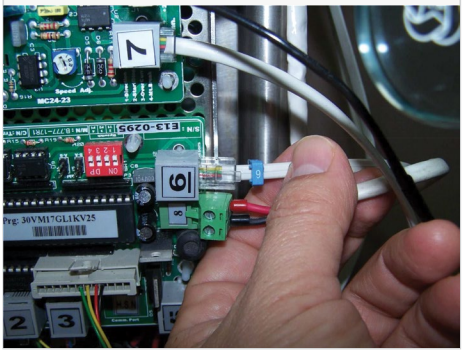
CURRENT ADJUSTMENT PROCEDURE:
The motor driver board has an overcurrent protection feature with adjustable threshold by RV1.
1. Do not change speed setting unless a replacement board is installed. Otherwise, set the speed at factory default .
2. Adjust 'current' carefully by observing red 'overcurrent' LED. The LED should blink for minimal duration each time the motor starts. If the led blinks too long and brightly, turn adjustment left (CCW) for minimal flash duration.

Note: If the speed setting is changed, 'current' must be re-adjusted.

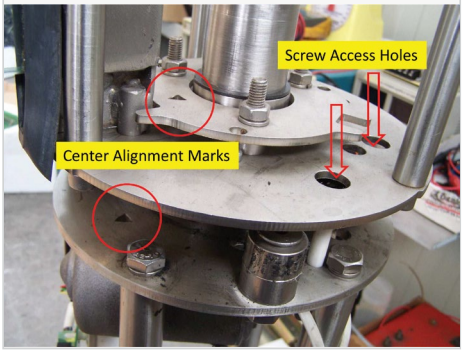
Caution!
Panel may stall and retreat with no obstacle if RV1 setting is too low. In this case turn RV1 counter clockwise to reduce sensitivity. If the setting is too high then panel may exert excessive pressure on an obstacle.

6.4 Photo Sensor Replacement and Alignment

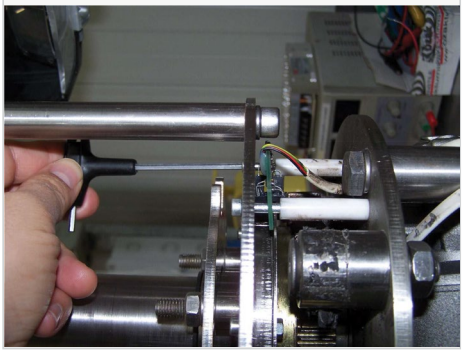
1. Power off unit and Remove Sensor Plug #6



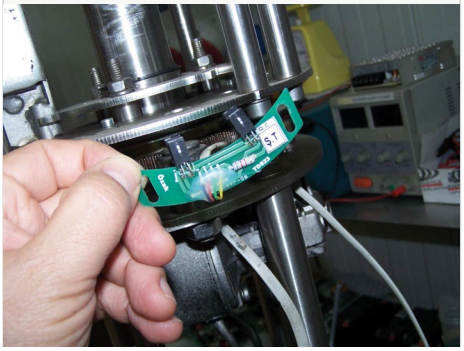
2. Move mechanism to center position



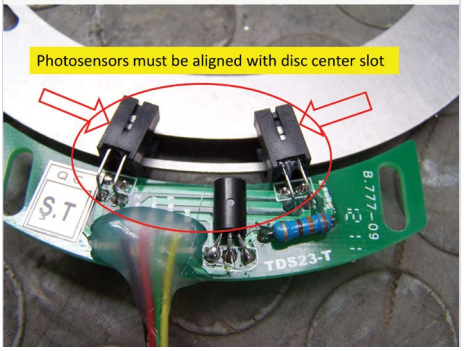
3. Remove 2 sensor screws with 3 mm. Allen key) and take out plastic spacers



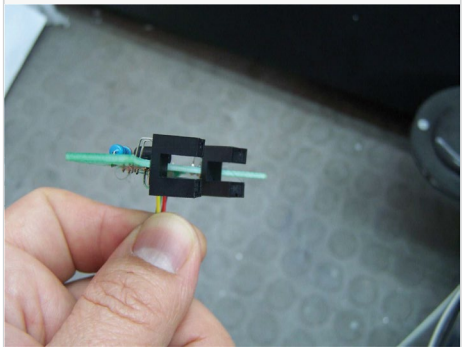
4. Remove Photosensor Unit



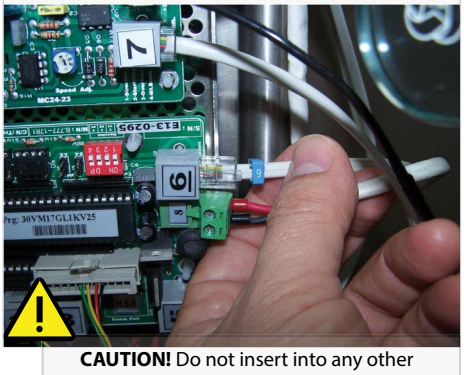
5. Check new photosensor for proper centering



6. Check photosensors for proper alignment

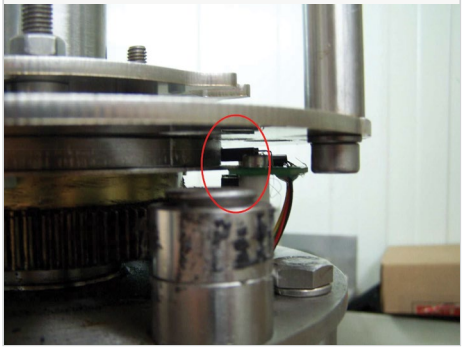


7. Install photosensor unit (follow removal steps in reverse order) – Insert into plug #6

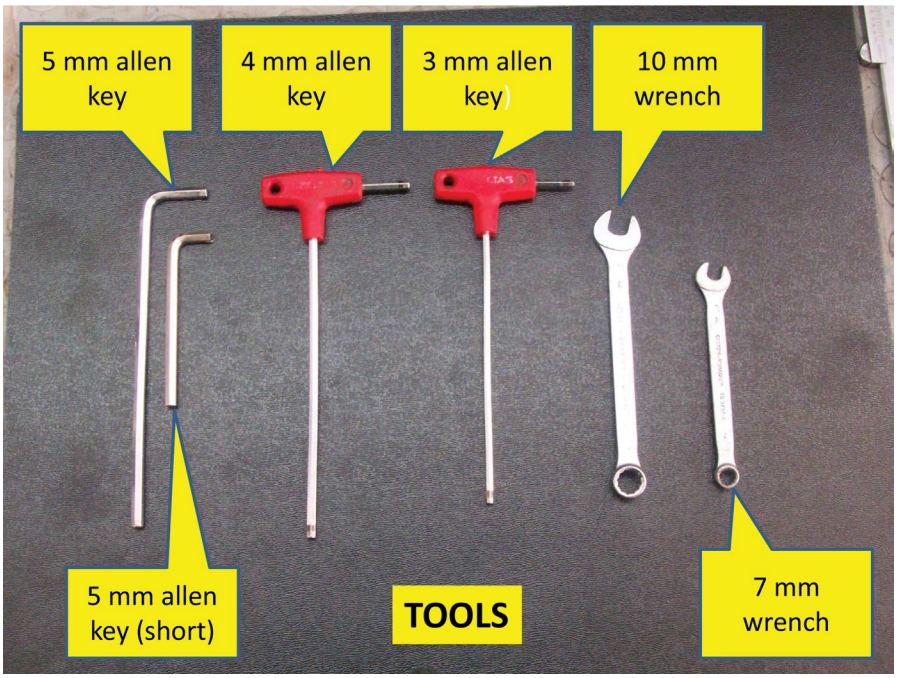


CAUTION! Do not insert into any other plug-This will damage photosensor unit.

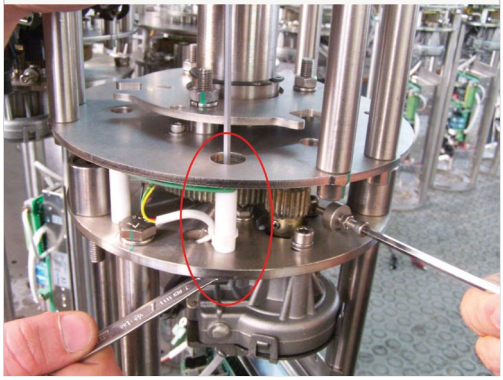
8. Check/align sensors for proper clearance with disc and all moving parts.



6.5 Motor Replacement

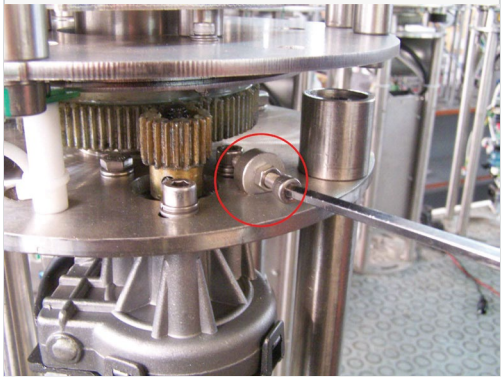


1. Turn rotor to gain access to sensor fixing screw. Remove screw by 3mm. allen key while holding bottom nut with 7 mm wrench

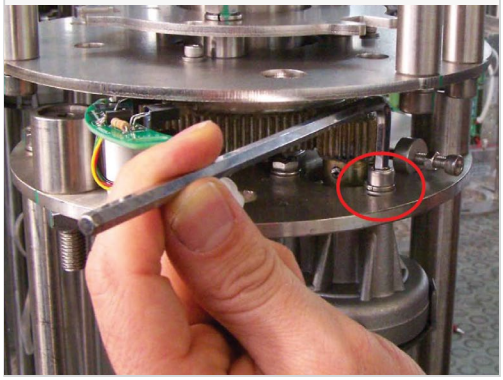


2. Carefully push photosensor unit back for access to motor mounting bolts

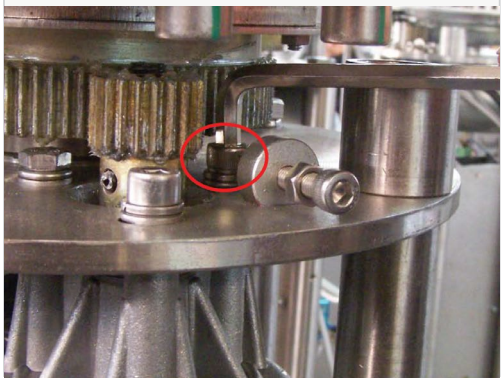
3. Loosen lock screw by 4 mm allen key



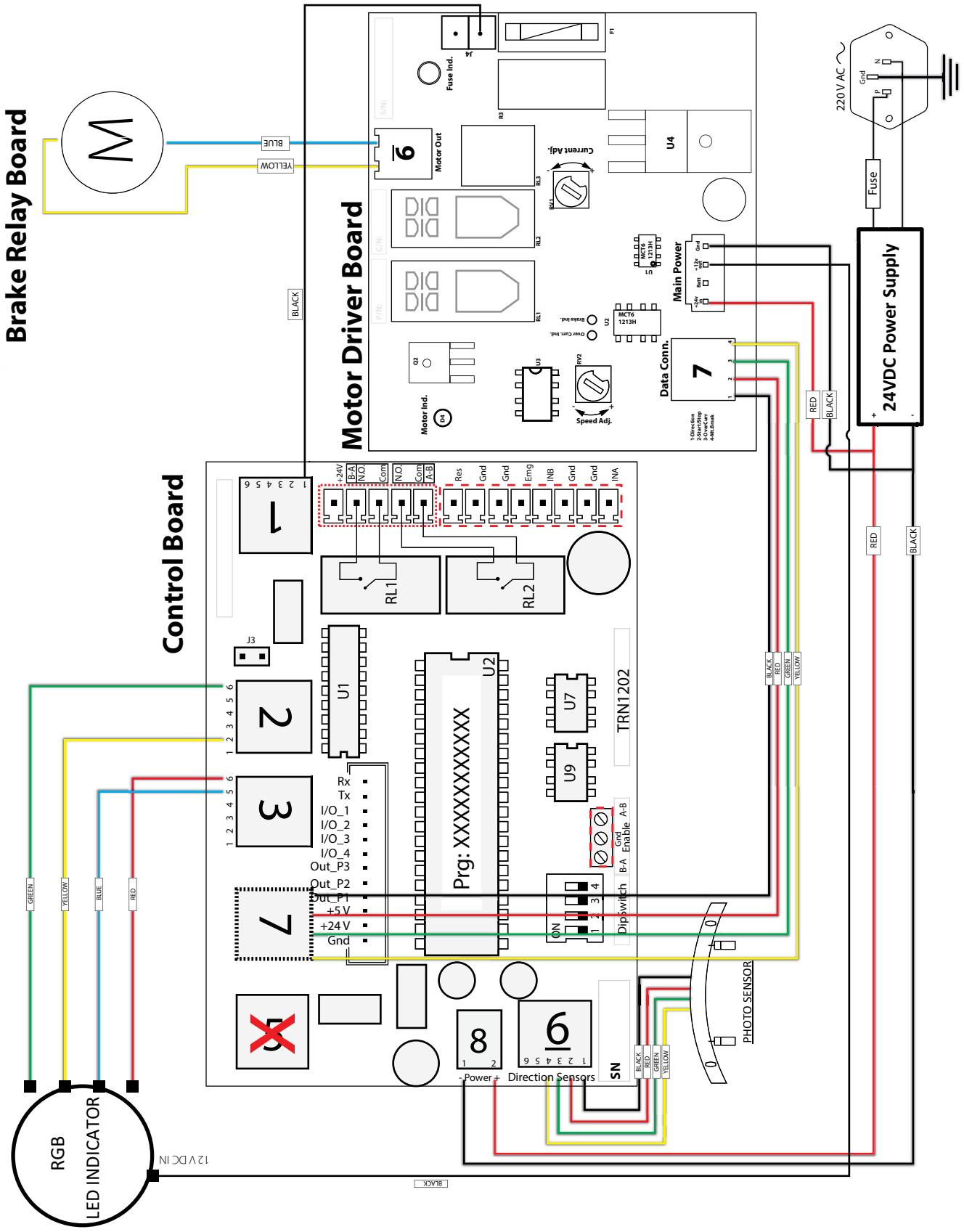
4. Remove motor mount screw '1' by 5 mm allenkey



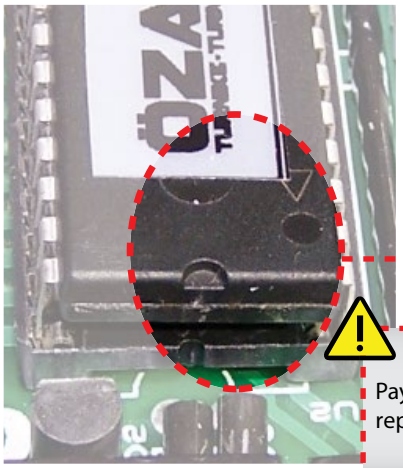
5. Remove motor mounting screw '2' by 5 mm allenkey



6. Remove remaining motor mounting bolt by10 mm wrench and remove motor. Follow stepsin reverse to install new motor.


Brake Relay Board
Motor Driver Board
Control Board
24VDC Power Supply
220 V AC
Fuse
Main Power
Data Conn.
Motor Out
Motor Ind.
Fuse Ind.
Current Adj.
Speed Adj.
MCT6 1213H
BLUE
YELLOW
BLACK
RED
GREEN
Prg: XXXXXXXXXX
TRN1202
RL1
RL2
U1
U2
U7
U9
J3
Rx
Tx
I/O_1
I/O_2
I/O_3
I/O_4
Out_P3
Out_P2
Out_P1
+5 V
+24 V
Gnd
DipSwitch
Enable
- Power +
Direction Sensors
SN
PHOTO SENSOR
RGB
LED INDICATOR
12 V DC IN

CAUTION! Pin and connector numbers



Pay attention to pin markers when replacing microprocessors !

Match socket and cable numbers when replacing boards and other parts !

CONNECTOR PIN CONFIGURATION TABLES

CONTROL BOARD

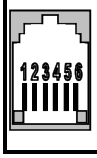
1

(5 not used)

1	Relay Out 1	Red

2

RGB LED STRIPE



1	n.c
2	B-A Green Led Stripe
3	n.c
4	n.c
5	n.c
6	A-B Green Led Stripe

3

RGB LED STRIPE

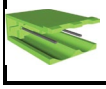
1	Red Led Stripe
2	Blue Led Stripe
3	n.c
4	n.c
5	n.c
6	n.c

6

PHOTO SENSOR INPUT

1	Sensor 1 Data In
2	+24Vdc
3	Sensor 2 Data In
4	Gnd

POWER 8



1	Gnd
2	+24Vdc

MOTOR DRIVER BOARD

POWER

1	+24Vdc
2	Batt.In
3	+12Vdc (For Led Strip)
4	Gnd.

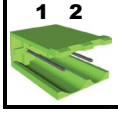
7

CONTROL CONN.

1	Direction Control
2	Start/Stop Control
3	Overcurrent Detect
4	Motor Brake Control

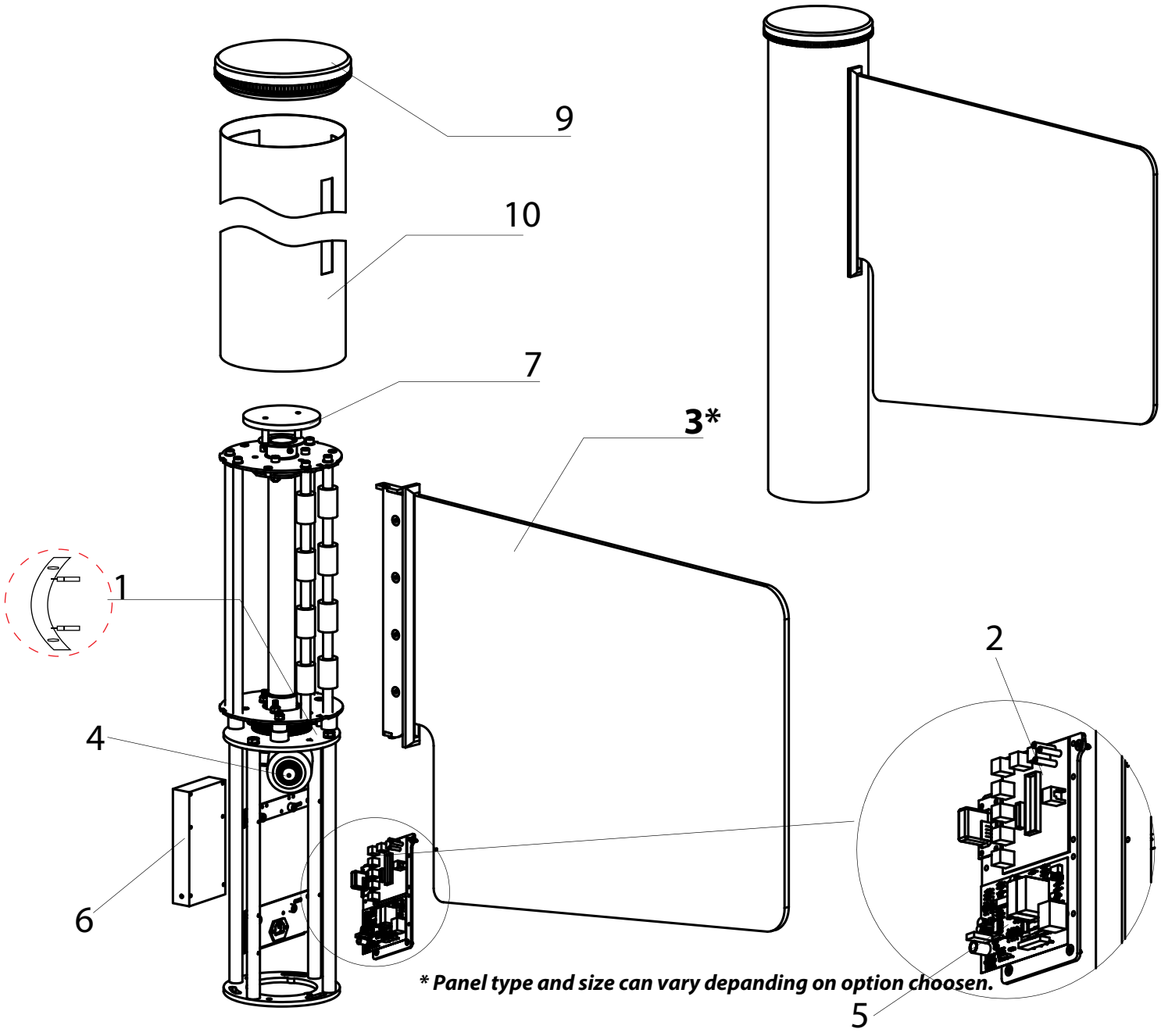
9

MOTOR OUT



1	Motor Out (Brown)
2	Motor Out (Blue)

7. LIST OF REPLACEMENT PARTS



**** Panel type and size can vary depanding on option choosen.***

REF	Part Description	Part Number
1	Directional Photosensor	30 01 14 0001
2	Electronic Control Board (1202)	30 01 06 0003
3	Glass Wing	*
4	Motor (24V/60W)	30 01 16 0002
5	Motor Driver Board (MC24)	30 01 03 0011
6	Power supply (SMPS) 100W/ 24V	10 01 35 0013
7	RGB Indicator Led	45 00 00 0004
8	Rubber Stop	20 02 03 0023
9	Top Lid (Marble)	30 03 00 1144
10	Cylinder	30 03 00 0020

****Please provide model and serial number of the turnstile when ordering parts.***
*****Part numbers can vary depanding on pruduction date.***

8.2 Warranty Terms and Conditions

1. Warranty period starts after the date of purchase of the goods and continues for twentyfour (24) months against manufacturing defects. Warranty coverage is in form of supplying replacement parts free of charge.
2. Availability of the spare parts by the manufacturing company is guaranteed for ten (10) years following the manufacturing date of the product.
3. Any tampering, failures resulting from unauthorized modification or repair attempt and shall void the warranty.
4. Expiration time for the warranty of the parts replaced within the warranty period is the same as that of the turnstile.
5. When the turnstile fails within the warranty period, duration of repair is added to the warranty period.
6. Manufacturing company supplies required replacement parts to repair defects and failures during the warranty period in accordance with the terms stated herein. The parts are supplied to the authorized dealer/ service center which has sold the product to end user.
7. It is the user's responsibility to check that technical services are carried out in accordance with the terms stated herein.
8. The user must retain the warranty certificates and present to the authorized service personnel when required.
9. Users are expected to sign the failure report/ service forms that are filled after service/maintenance work performed under the warranty coverage.
10. In case any dispute or problem related to the warranty is not resolved by the manufacturer, users can apply to the Republic of Turkey Ministry of Industry and Trade, Directorate General of Protecting Consumer Rights and Competition.
11. All replacement parts sold by PROACCESS are warranted for a period of one year following the date of purchase, excluding failures resulting from physical damage, incorrect installation, misuse, tampering and similar reasons beyond manufacturers control.

8.3 Cases Excluded from the Coverage of Warranty

1. Any tampering or damage on warranty certificate or serial numbers and labels that prevent the identification of the product shall void the warranty.
2. Any modifications, addition of accessories and parts, or replacement of parts without approval of manufacturer fall within the scope of tampering with the system, therefore terminates liability of the manufacturing company.
3. Any damage and failure resulting from any of the conditions listed below are not covered by warranty:
   a) Misuse, abuse, deliberate act or negligence,
   b) Glass breakage,
   c) Failures caused by short circuit, power surge, incorrect wiring and voltage applications, improper grounding, change of phase group, induction current effects,
   d) Maintenance, repair, additions, or replacement of parts and accessories or moving the turnstiles from original location by unauthorized personnel,
   e) Shipping and handling damages
   f) Failures caused by exposure to unsuitable environmental conditions for the stated technical specifications of the product (temperature range, IP grade etc) such as excessively dusty, humid, dirty and other environments.
   g) Failures caused by leakage of water into the internal parts of the turnstile due to application of pressurized water on the product,
   h) Damage and failure caused by lightning, flood, fire, storm, hurricanes, earthquake and similar natural disasters,
   i) Accidents that occur at the location where the products are installed,
   j) Damages that occur as a result of circumstances beyond reasonable control of the manufacturer or the user (armed conflicts, civil unrest, blockade, revolution, insurrection, mobilization, looting etc.)
   k) THE DAMAGE OR FAILURES OCCURRING DUE TO FEEDING OF EXTERNAL DEVICES (CARD READERS, TERMINALS, INDICATIONS, COMMUNICATION DEVICES, ETC.) FROM THE CONTROL BOARD OR POWER SUPPLY UNIT INSIDE THE TURNSTILE.