



Operation and Maintenance Manual

Turn - O - Mat

MK11 Mechanism and HE84/3 control logic



Contents

SECTION 1 Introduction	Page
• General.....	4
• Electrical Warning	4
• Errors.....	4
• Proprietary Notices	4
• Hardware Changes	4
• Rotating Machinery	5
• Warning, Cautions and Notes	5
• Good Practices	5
• Equipment Safety Systems	6
• Risk Assessments	6
• CE Marking	7
 SECTION 2 Product Description	
• General Details	8
• Technical Details	13
• Technical Specifications.....	13
 SECTION 3 Instruction for Use	
• Signs and Symbols	15
• Using the TOM Turnstile.....	15
• Functional Modes and Remote Control.....	15
• Permissive Signals from the Control System.....	16
• Count Signals.....	16
• Reader Inhibit Signals	16
• Traffic Lights	16
• Power Failure.....	16
 SECTION 4 Technical Information	
• MK11 Mechanism	17
• Casting plate	17
• Rotary Head.....	17
• Positioning device	18
• Locking device	18
• Damper.....	19
• Antiregressioin device.....	20
• Position sensors	21
• Tripod	21
• Tripod with drop arm (otional)	22
• Anti-panic device (optional)	24
• HE84/3 control unit.....	25
• PX53-14 power supply unit.....	33
• CBT2 Drop arm device control board.....	35
• ALM2 Alarm sensor control board	38
 SECTION 5 Installation	
• Tools Required	42

• Site Preparation	42
• Environmental Conditions	42
• Electrical System Characteristics.....	43
• General conditions	43
• Cabling	43
• Mounting details.....	45
• Unit positioning	45
• Assembling of the rotary head.....	45
• Tripod pre-assembling.....	46
• Electrical connections	47

SECTION 6 Maintenance

• General Care.....	49
• Preventive Maintenance	49
• Regulation of the mains emergency arms.....	50
• Regulation of the damper	50
• Disassembly of the rotary head.....	51
• Replacing of the defective parts	52
• Disassembly of the cam	53
• Replacement of both the RH and LH connecting rod springs...	54
• Replacing of the toggle and the spring	54
• Replacement of the damper	55
• Reassembly of the cam.....	56
• Fault finding	58

SECTION 7 Recommended Spare Parts

• Spare Parts List	59
--------------------------	----

Section 1

Introduction

General

Please read this manual carefully, it contains information that will assist you with all aspects of installation and maintenance, including unpacking, so that a long and useful machine life can be achieved.

GI makes every effort to ensure that this manual is reviewed whenever significant changes are made to the design. However, our policy of continuous improvement may result in some small differences between the unit supplied and the description in this document.

Enquiries in this respect should, in the first instance, be directed to our Customer Support Department.

Telephone +39 (0) 461 248900, Fax +39 (0) 461 248999.

Electrical Warnings

The electrical power used in this equipment is at a voltage high enough to endanger life. Before carrying out maintenance or repair, you must ensure that the equipment is isolated from the electrical supply and tests made to verify that the isolation is complete.

When the supply cannot be disconnected, functional testing, maintenance and repair of the electrical units is to be undertaken only by persons fully aware of the danger involved and who have taken adequate precautions and training.

Errors

Reports on errors, comments and suggestions concerning this manual are requested and encouraged. They should be submitted to:

Gunnebo Entrance Control SpA, Via Volta 15, 38015 Lavis (TN), Italy

Telephone +39 0461 248900, Fax +39 0461 248999.

Proprietary Notices

All data appearing herein is of a proprietary nature, with exclusive title to it held by Gunnebo Italdis. The possession of this Manual and the use of the information is therefore restricted only to those persons duly authorised by Gunnebo Italdis.

Do not reproduce, transcribe, store in a retrieval system or translate into any human or computer language, any part of this Manual without prior permission of GI.

Hardware Changes

No hardware changes may be made without authority from GI, who will be responsible for ensuring that the proposed change is acceptable in all safety aspects. Only personnel authorised by GI may make hardware changes.

Any maintenance or modification of Emergency Stop and Guarding Circuitry must be followed by safety checks on the whole hardwired Emergency Stop and Guarding Circuitry.

Prior to a hardware change, records must be made of the change, one of which MUST be sent to the GI Customer Support Department at Lavis.

Rotating Machinery

Rotating industrial machinery may possess huge amounts of stored energy. On no account should maintenance be started unless all aspects of safety precautions normally associated with industrial electronic control systems and machines are fully understood.

Before starting to work on the equipment, ensure that all personnel are familiar with the associated blocks in the system, including control loops, mechanics, drives, transducers and electric's. Please read all the Equipment Manuals first.

Warnings, Cautions and Notes

Where necessary within the technical manual, Warnings, Cautions and Notes may be given.

Warnings

Are for conditions that might endanger people. The instructions given in Warnings must be followed precisely. They are given to avoid injury or death.

Cautions

Are for conditions that may cause damage to equipment, or may spoil work. The instructions given in Cautions must be followed to avoid spoilt work or damage to equipment.

Notes

Alert the user to pertinent facts and conditions.

Static Sensitive Devices

Some of the PCB's in the equipment covered by this Technical Manual contain Static Sensitive Devices. It is recommended that maintenance and service engineers are fully aware of the Local Industry Regulations and procedures when handling such devices.

Good Practices

Equipment being installed must not be left unattended unless all potential mechanical and electrical hazards have been made safe. A competent person must be left in charge when the equipment is in a potentially unsafe condition.

The following points indicate good practice that will contribute to safety and avoid equipment damage.

- i Ensure that all electrical power supplies and batteries are turned OFF and disconnected before working on any of the equipment.
- ii Never leave the equipment in a potentially dangerous state.
- iii Use only the correct tools for the task in hand.
- iv When working on the equipment, remove any personal jewellery that may be conductive, or clothing that may become entangled with mechanical parts.

Equipment Safety Systems

Safety systems and controls, such as interlocks, covers and guards, must not be overridden or bypassed by personnel other than authorised staff who are qualified to carry out prescribed actions within specified Warnings.

Risk Assessment

Risk assessment is graded into categories of safety, rated 1 to 8 (where 8 is the highest risk level). The following activities are covered.

Rating	Activity
1	Cleaning
2	General Installation
3	Servicing
4	Servicing General Maintenance Using Chemical Fixers
5	Commissioning
8	Floor Drilling

Rating 1: Cleaning.

Who is at Risk	Engineers or Site Personnel
Hazard	Mis-use of Cleaning Fluids
Current Controls	Compliance with health regulations

Rating 2: General Installation

Who is at Risk	Site Personnel
Hazard	Objects/Tools in Installation area
Current Controls	Trained Installation Engineers

Rating 4: General Maintenance

Who is at Risk	Site Personnel
Hazard	Electric Shock
Current Controls	Isolation of Power/Trained Service Personnel

Using Chemical Fixer

Who is at Risk	Site Personnel within the Vicinity of the Work Area
Hazard	Fume Inhalation
Current Controls	Compliance with health regulations

Rating 5: Commissioning

Who is at Risk	Site Engineer
Hazard	Power Supply/Moving Parts
Current Controls	Isolate Power

Rating 8: Floor Drilling

Who is at Risk	Installation Engineer
Hazard	Flying Debris and Noise
Current Controls	Protective Equipment <u>must</u> be worn

CE - Marking

The GI TOM turnstile is CE marked, developed and manufactured according to Low-Voltage and EMC-Directives.

Important Notice

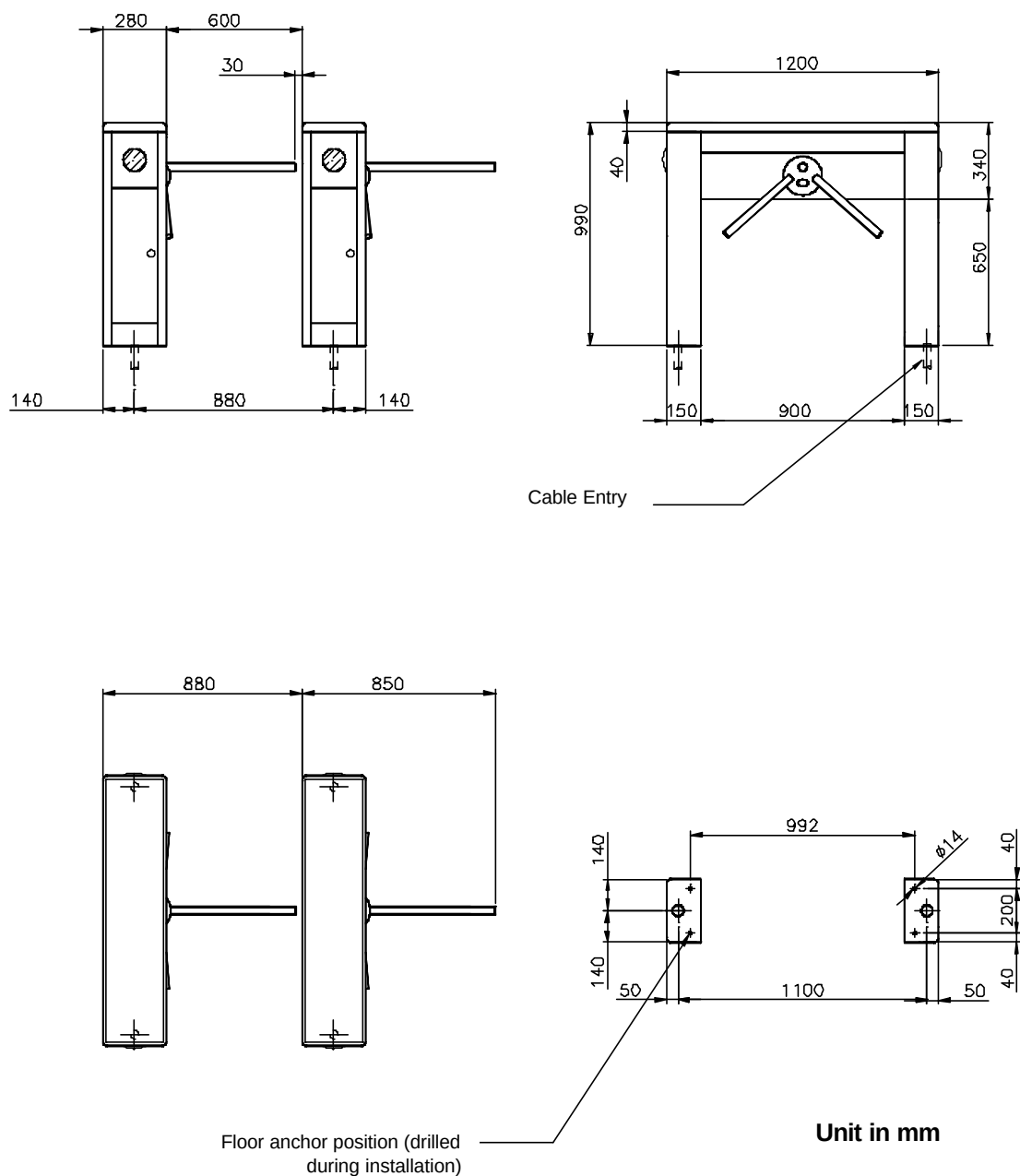
The TOM is a security product, any children or minors using the TOM turnstile must be supervised and accompanied by a responsible adult. Gunnebo Italdis does not accept any liability if this rule is not enforced.

Section 2

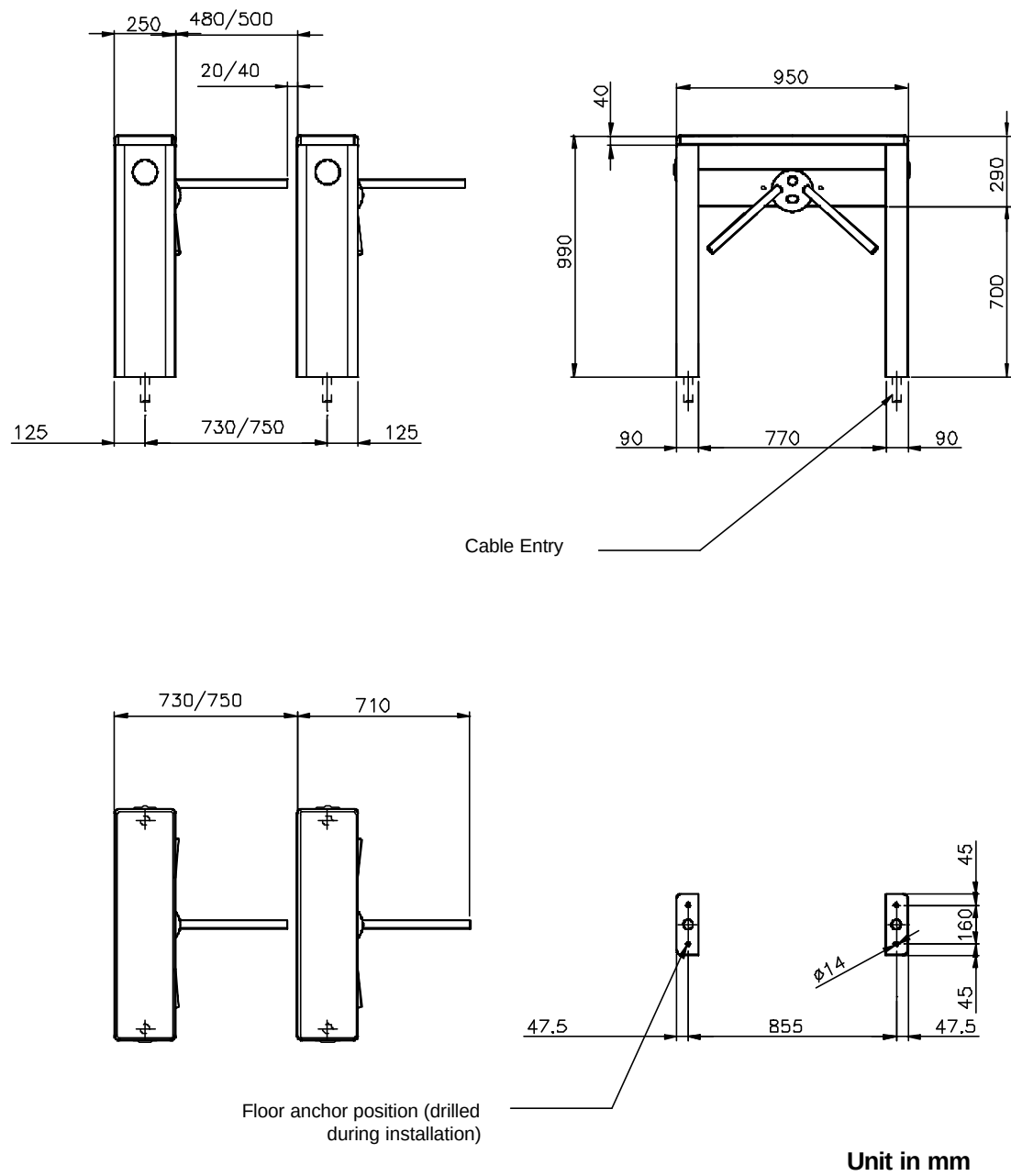
Product Description

The Gunnebo Italdis Turn-o-Matt (TOM) is a bi-directional Tripod Turnstile equipped with control logic and able to process and provide information to the Access Control System in which the turnstile is operating.

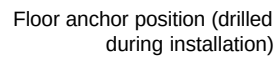
General details



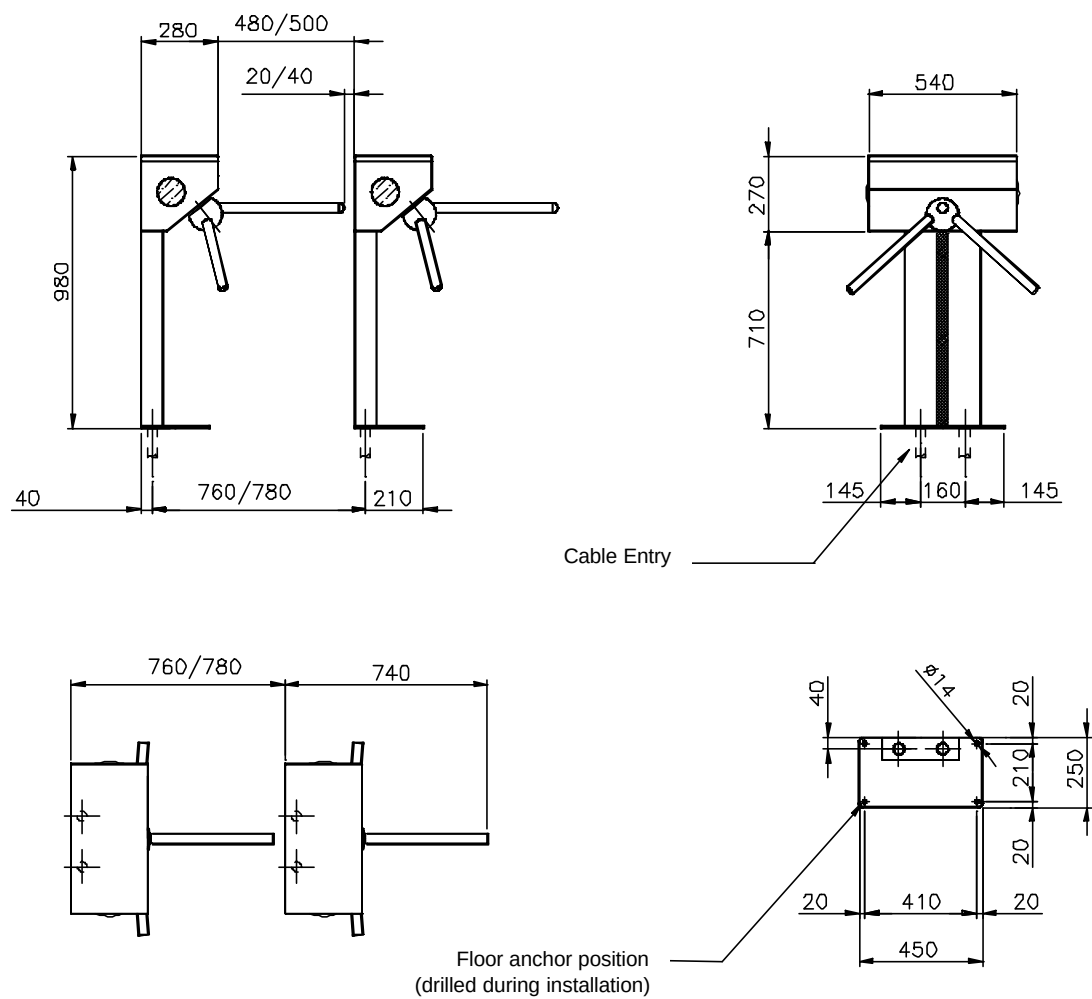
Figures 2.1 show the general dimensions of MC92



Figures 2.2 show the general dimensions of Simplex

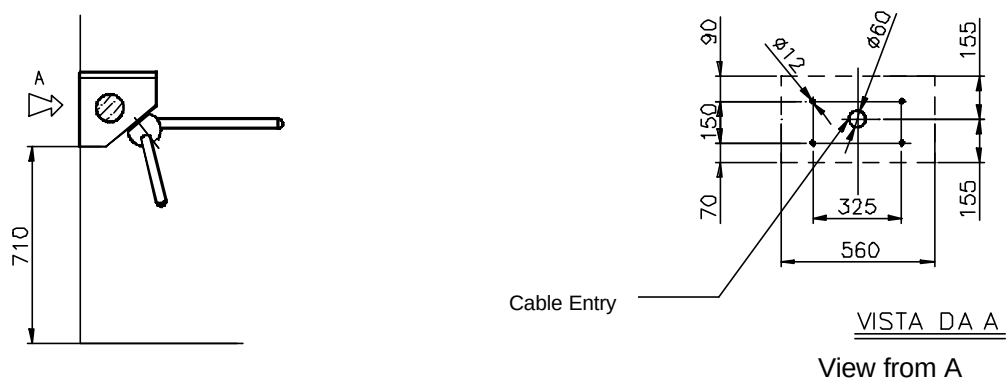


Unit in mm



Wall mounted version

Unit in mm



Figures 2.5 show the general dimensions of DL600

Technical Details

The Turn-O-Mat entrances are manufactured in galvanised painted steel or stainless steel, according to the model.

The unit consists of a mechanism that controls the rotation of a Head Assembly that has three tubular arms. These arms are positioned at 120° intervals so that when the unit is at rest one arm will always be in the horizontal position – BARRIER POSITION.

The operation of the rotary unit occurs by hand through the force exerted by the user when going through the turnstile.

The movement of the Head Assembly is controlled by an electro-mechanical mechanism placed in the upper part of the passageway which can be accessed through a service panel.

When the user starts to rotate the tripod, an anti-reversal device prevents the rotation of the rotary unit in the opposite direction.

After the passage of the user, the Turn-O-Mat mechanism ensures the regular arm drop and the resetting of the rotary head to its correct position. An hydraulic damper accompanies the rotary movement, limits the vibrations and the noise of the rotary unit, and increases the reliability of the turnstile.

The passageway can be controlled by devices such as card readers, or local and remote push buttons.

Technical Specifications

Dimensions	See section 2 of this manual.
Tripod movement	The rotation of the tripod is operated by pressure exerted by the user.
Orientation	Pass Left or Pass Right.
Materials	
Casework	Stainless Steel Grade 304 or galvanised and painted steel, according to model (RAL 7032).
Tripod Hub	Cast Aluminium with black finish.
Tripod Arms	Stainless Steel with plastic end caps. As an option, the arms can be fitted with an anti-panic mechanical device that will allow people to go through in one direction (exit) even if there is no authorisation signal to the turnstile. The anti-panic device activation force can be adjusted.
Functionality	Electro-mechanically controlled bi-directional passage.

Mechanism	Control of the Tripod operation is achieved by an electro-mechanical head mechanism located within the top section of the turnstile casework. It automatically closes once the user has passed the barrier. It is equipped with a non-return device in order to avoid an incorrect use of the barrier.
Power failure	In the event of an emergency or isolation of the power supply the Tripod can be configured to Fail-Safe i.e. rotates freely or Fail-Lock i.e. locks in the HOME position. Either option is available in both or one direction. (As standard the tripods are configured bi-directional fail-lock unless requested otherwise). As an alternative, the mechanism can be equipped with an emergency arm drop device that in the event of a power failure (or in response to a remote command) releases the tripod arm that is in the barrier position. The arm drops under its own weight to leave the passageway open.
Anti-panic device	As an option, the unit can be fitted with a folding arm device that will allow the user to open the passageway completely pushing the arm itself, in case of emergency.
Interface	The mechanism is controlled by means of the HE84/3 control logic with the following interface possibilities: 1. Inputs for A and B direction release; 2. Connector for MP20 remote control module; 3. Outputs for passage counting signals (or reader inhibit) (free contacts are available); 4. Outputs for optic signalling devices (traffic lights).
Power supply	230 Volt AC, 50/60Hz
Logic voltage	24 V DC
Max power	50 Watt
Operating Temperature	-0 to +45°C
Transportation and storage	-25 to + 55°C
Relative humidity	80% Maximum (non condensing)

Section 3

Instruction for Use

The information contained in this section should be used as a basis for the instruction of personnel in the correct use of the TOM Turnstiles.

Signs and Symbols

In this manual the conventional signs shown in the Figure 3.1 will be employed. Direction A is the direction where the mechanism is to the right when passing through the passage.

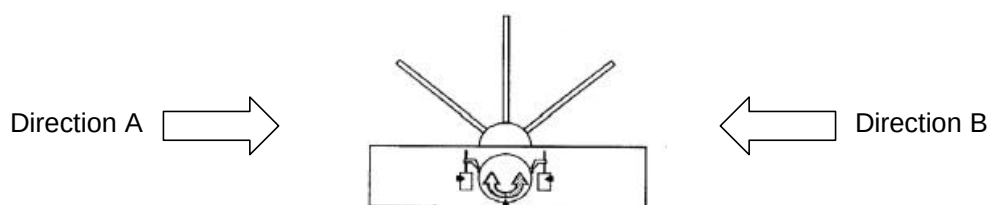


Figure 3.1

Using the TOM Turnstile

The TOM turnstile presents itself to the user with the tripod locked in barrier position. The tripod turnstile is unlocked by presenting a personalised identity card or device to the access control reader (supplied by others). It can also be unlocked by depressing a casework or remote reception push button, if fitted. This will release the mechanism locking solenoids and render the tripod ready for use by walking through the walkway passage in the desired direction.

Should the user decide not to proceed with the passage, the locking solenoid will remain unlocked for a predetermined time after which it will 'time out' and reset the unit making it available for the next person.

Note

- The doors must be used by one person only at a time.
- DO NOT try to push down the rotor by hand as you walk through the barrier.
- DO NOT walk through the barrier with large bags or briefcases in front or trailing behind you.
- DO NOT drag bags over the top casework. (Always lift bags over the top of the barrier).
- Should any item become caught in the rotor, STOP, and DO NOT keep forcing through in the same direction.

Functional Modes and Remote Control

The Turn-O-Mat turnstile is bi-directional. The two directions can be separately configured as follows:

Unlock mode: passage is authorised for all users in the desired direction;

Lock mode: passage is inhibited in the desired direction;

Reader control mode: the passage is possible only for those users who are recognised by the badge reader.

The mode for each direction can be programmed by means of a remote control (optional Gunnebo-Italdis MP20 control module).

Permissive Signal from the Access Control System

On transit in both directions the control logic receives the reader unit permissive signals at the appropriate inputs.

The logic identifies as authorisation the transition from non active to active status of the permissive signals.

After the permissive signal there is limited time during which the mechanism may be engaged, after which if no transit is made the control logic returns to wait for a new signal. It is possible to set this time-out following the instructions given in Section 4.

Count Signals

The control logic provides the possibility to connect a counter in order to define the number of people that are going through the turnstile. Please refer to Section 4 in order to identify the output that have to be considered.

Reader Inhibit Signals

The control logic provides the possibility to have Reader Inhibit Signals according to what is described in Section 4.

Traffic Lights

In order to facilitate the transit flow, the control logic provides the possibility to manage traffic lights which show when a turnstile is programmed with the lock mode or is already engaged in the other direction (red cross). Similarly the presence of a green arrow indicates that a user can pass through the turnstile by operating the access control system (card reader, etc.). Traffic lights are available as an option.

Power Failure

The TOM locking device can be supplied in two versions:

- (BMT) Fail Locked – mechanism locked in the absence of the power supply.
- (SMT) Fail Safe – mechanism released in the absence of the power supply.

Either option is available in both or one direction.

Section 4

Technical Information

MK11 Mechanism

The MK11 mechanism is constructed from die-casting aluminium plate with a self-centring system manufactured in steel.

Locking components are made of nylon reinforced with fibreglass.

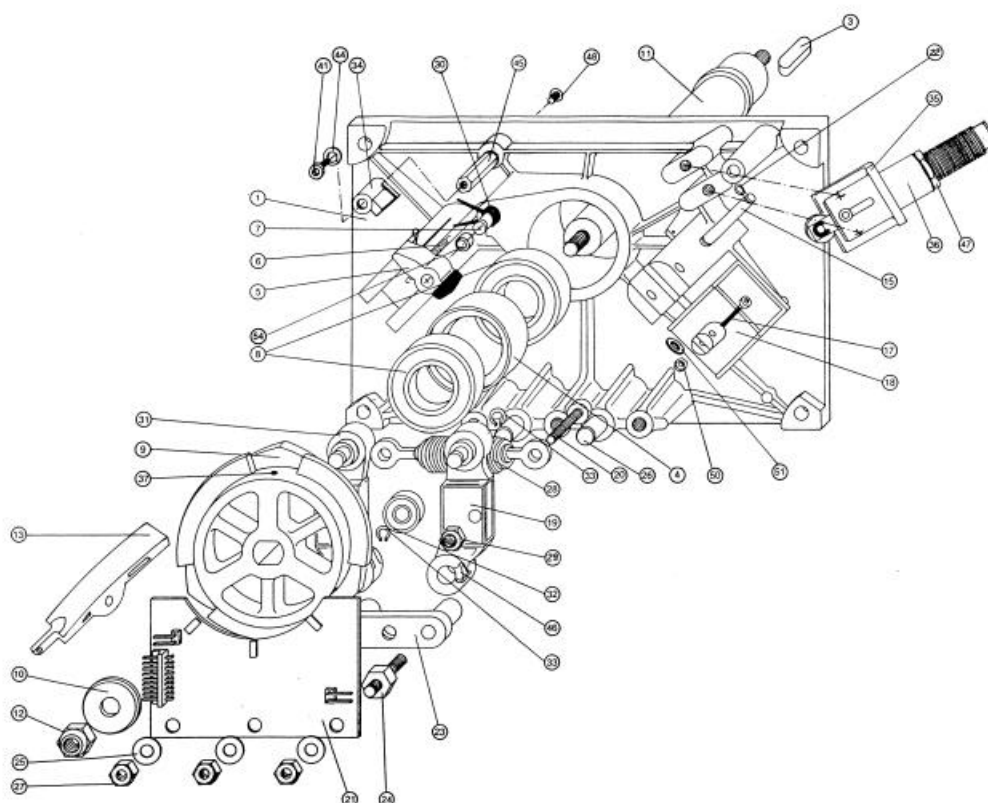


Figure 4.1 Casting plate, rotary head and positioning device

Casting plate

It is made of aluminium alloy (1) and has the function to fix and guide all the components making part of the mechanism. Among these components there are some, such as the bearings (8) and the non-return toggle bolt (7), which are inserted into the casting plate by pressure.

Rotary Head

It consists of the tapered central shaft (11) and the cam (9). The tapered central shaft leans on the bearings (8) and is inserted into the rectangular hole of the cam; this makes the two elements (11, 8) integral and allows them to rotate.

The nut (12), which is screwed on the head of the tapered central shaft (11) through the cam washer (10), completely locks the tapered central shaft to the cam.

The cam is made of universal nylon and its profile allows it to serve several purposes.

The tripod is fixed to the end of the tapered central shaft, which extends beyond the casting plate.

The connection of the tripod to the tapered central shaft is made integral by the presence of the three-way key (3).

Positioning device

The cam (9) has in its centre three notches positioned at a 120° distance one from the other and jointed by three lobes with a increasing - decreasing profile.

These notches receive the roller bearings (32), which are set on the end of both the RH (19) and the LH (31) connecting rods.

Both the connecting rods (19, 31) are pivoted, through the roller bearings (32), on the connecting rod bolts (26) set on the casting plate (1) and are connected one to the other by the spring (28), whose ends are fixed by means of the screw (20). The spring (28) has the function to bring about the approaching of the connecting rods, through the rotation on the bolts, so as to enable the roller bearings (32) to get into the notches of the cam (9).

The particular conformation of the notches allows the roller bearings (32) to be released during the rotation on the turnstile, while the operation of the connecting rod spring (28) along the profile of the lobes determines the complete rotation of the cam (9), once the middle position is overcome.

Locking Device

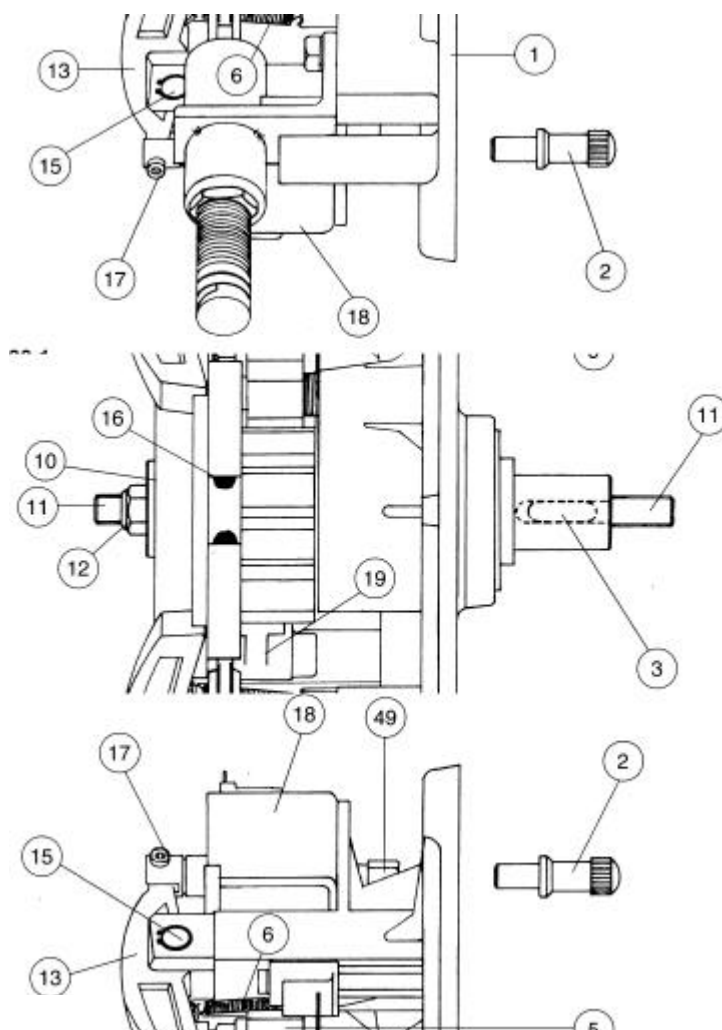


Figure 4.2 Locking device

On the upper part of the cam there are three radial projections, which delimitate, with their rectilinear sidewalls, as many notches aimed at receiving the ends of the rockers (13).

Each rocker (13) is set on the pivot (15) on the tapered central shaft (1) at a height that is above the notches' level of the cam.

The rockers are placed in a way that allows their axis to be tangent to the profile of the cam (9) and they set one against the other in a way that is symmetric to the cam itself.

The rocker is made of universal nylon and its particular profile guarantees its locking to the rectilinear walls of the radial projections (9).

The other end of the rocker is connected through the screw (17) to the slug of the electromagnet (18), which is fixed to the casting plate (1).

Two kinds of locking mechanisms are available:

- fail locked mechanism (BMT).
- fail safe mechanism (SMT).

With regard to the BMT, the operation of the electromagnet entails the movement of the rocker (13) and the consequent release from the notches of the cam (9). In this way, through the rotation, the turnstile is also released.

When the electromagnet is not powered with electricity, the rocker is returned and kept locked by the spring (6).

With regard to the SMT, the operation of the electromagnet entails the movement of the rocker (13) and the consequent engagement of the notches of the cam (9). In this way, the turnstile is prevented from rotating in one direction.

When the electromagnet is not powered with electricity, the rocker is returned and kept open by the spring.

Damper

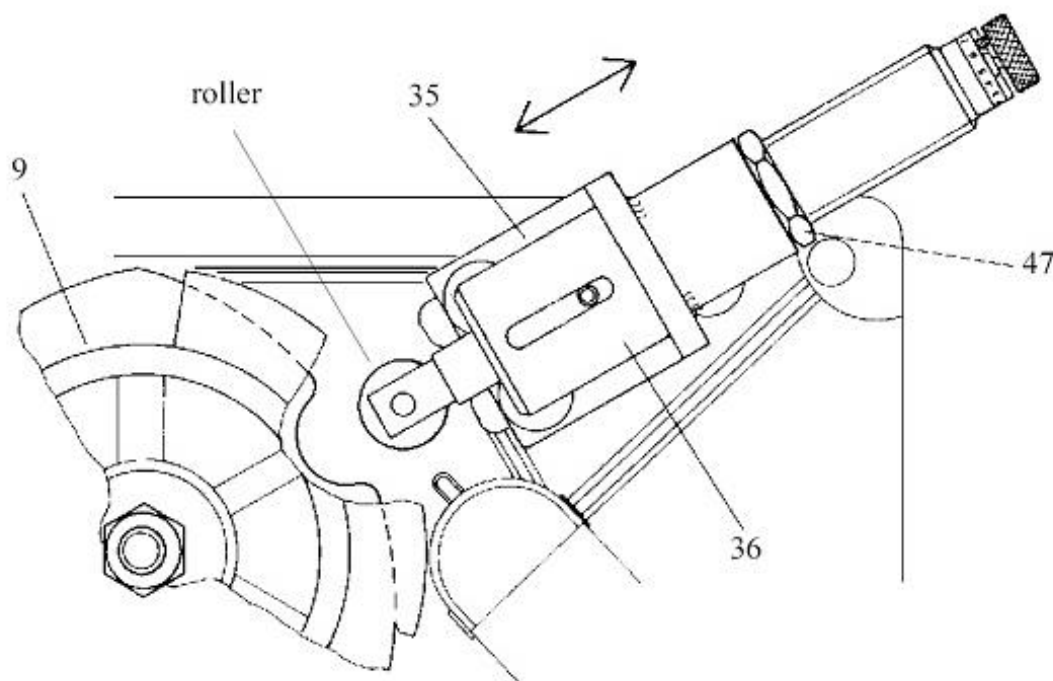


Figure 4.3 Damper

The damper (36) is set up on the support (35) fixed to the casting plate (1) and is directed toward the cam (9), in the central part.

When the cam is at rest, the damper is compressed, since the roller by which it is turned on is in contact with the profile of the cam, where the compression is highest, between the two lobes.

The damper has the function to moderate the energy conveyed to the rotary unit, so as to guarantee a soft stop at the end of the rotation.

The operation of the damper can be adjusted, so as to adapt its functioning to the needs of the activity.

During the first half of the rotation (36) (decreasing profile of the lobe), the damper expands and does not influence the motion of the cam. During the second part of the rotation, the roller of the damper comes into contact with the decreasing profile of the lobe of the cam and exerts on it a breaking power that is proportional to the speed of rotation.

Antiregression Device

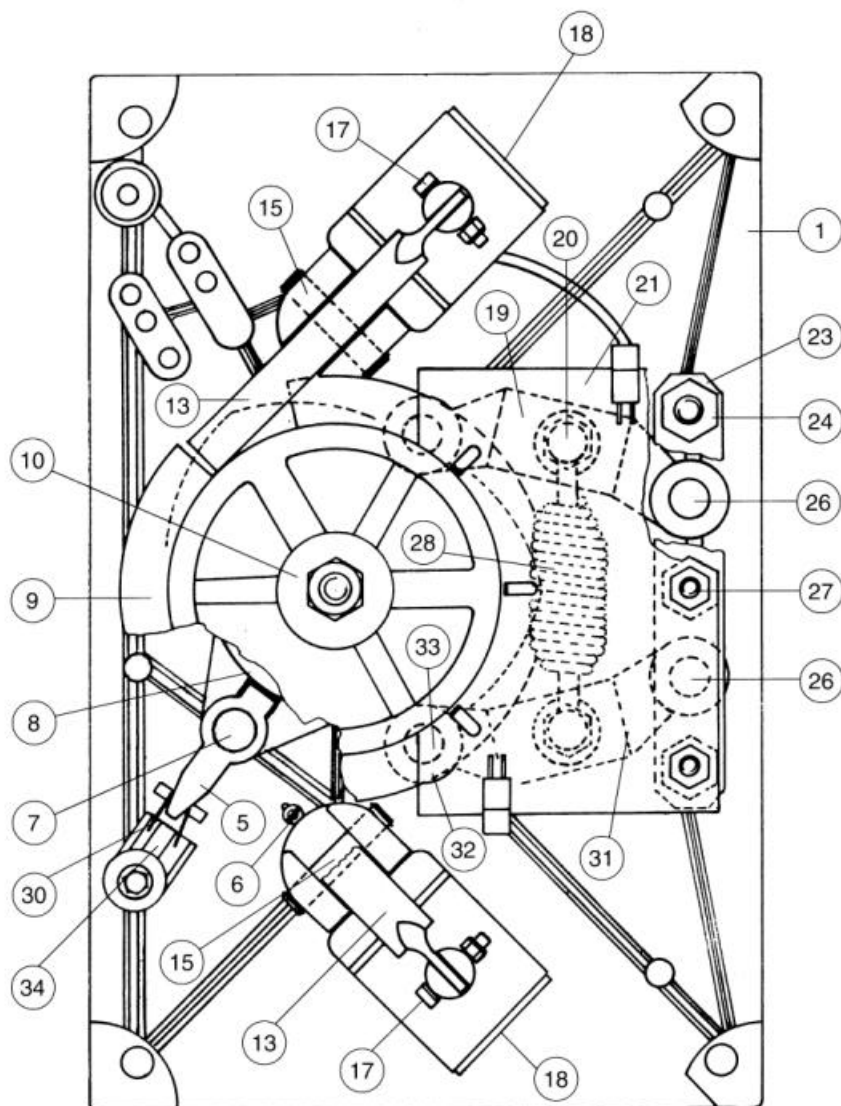


Figure 4.4 Antiregression device

At its bottom, the cam has three semicylindrical notches positioned at a 120° distance one from the other, while on the rest of the lower external surface there are longitudinal grooves.

This device includes the non-return toggle (5), which is set centrally on the bolt (7) of the casting plate (1), and, when at rest, is directed toward the cam and positioned inside the semicylindrical notch.

The antiregression device has the function to prevent the rotation of the rotary unit in a direction opposite to the one it started in.

This means that the device prevents the arm from moving back, when its rotation in one direction has already begun.

During the rotation of the cam (9) in one direction, the toggle (5), which, when at rest, is released inside the notch, enters the grooved surface and moves, until it reaches a rotated position. One of the ends of the spring for the toggle fork (30), which is set on the bolt (7), is locked by the spring reference (34), while the other, dragged by the motion of the toggle, limits the rotation of the toggle itself and keeps the end of the latter against the grooved surface of the cam (9). In such conditions, it is not possible to reverse the sense of rotation, since the end of the toggle (5) will enter a groove of the cam (9) and stop the rotation in the opposite direction.

Position sensors

In the upper part of the cam (9) there are three permanent magnets placed inside radial beads. The end of the magnets is in-line with the external edge of the cam and the magnets are positioned at a 120° distance one from the other. Before the magnets there is an electronic card set on the guide frame. On its semicircular leading edge there are three sensors, which are able to sense the magnetic field generated by the permanent magnet. When at rest, a permanent magnet is opposite to the central sensor, which senses its magnetic field, while the other two sensors are shifted $\pm 37^\circ$ out of phase from the central sensor and do not generate any magnetic field.

Tripod

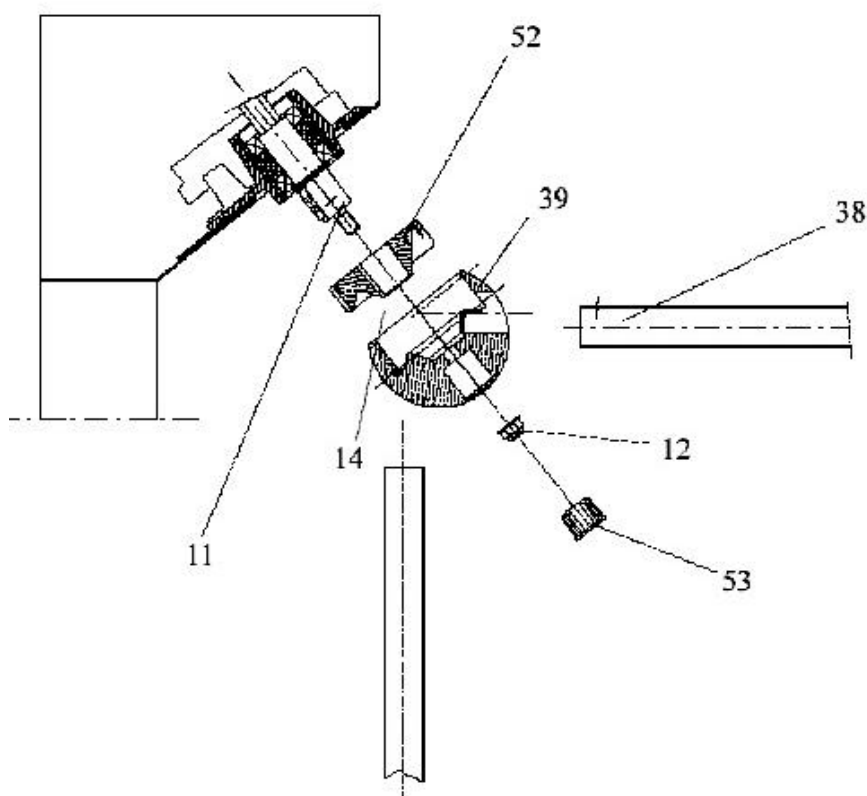


Figure 4.5 Tripod

The tripod consists of a rotary head, which, in turn, includes a tripod core (52) and a rotary head (39).

To the rotary head, made of aluminium alloy, three stainless steel tubular arms (38) are fixed. The arms are at a 120° distance one from the other, so as, when at rest, one of them is positioned for in-terceptions.

The tripod is set up on the projecting part of the tapered central shaft (11) and their mating is made integral by the presence of the three-way key (3).

The nut (12), which is screwed on the tapered central shaft's (11) threaded head through the cam washer (14), allows the complete locking of the tripod to the tapered central shaft.

Tripod with drop arm (optional)

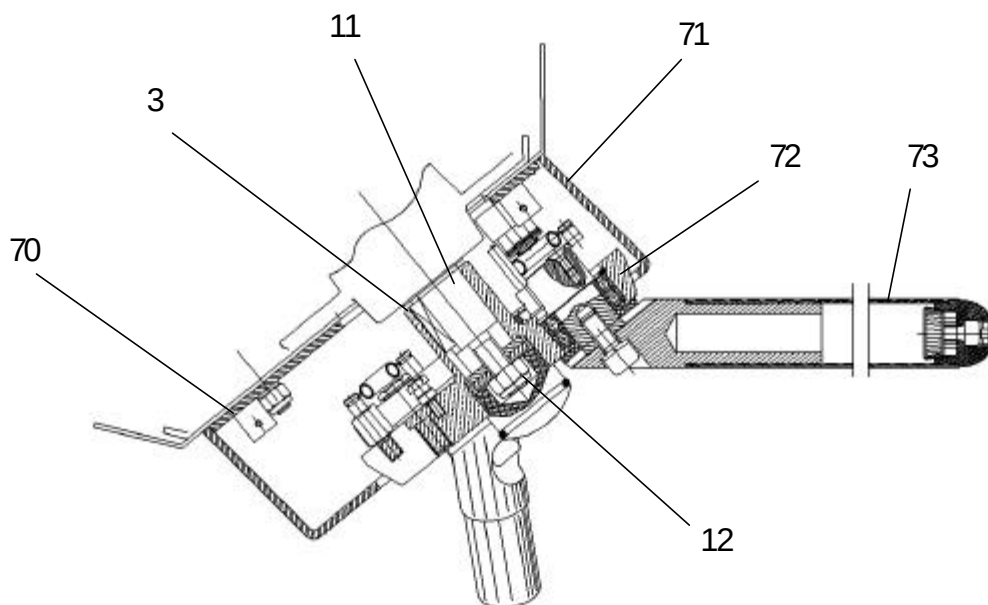


Figure 4.6 Tripod with drop arm

This device, available as an option, is different from the one described up to now. It is characterized by the fact that, upon command, it allows the horizontally positioned arm to rotate, until a vertical position is reached. In this way, the passage is completely open.

This device consists of an opposite supporting board (70), which is set on the external part of the cabinet and is protected by the case (71), and a rotary head (72) on which three stainless steel tubular arms (73) are fixed.

The rotary head is set up on the projecting part of the tapered central shaft (11) and their coupling is made integral by the presence of a three-way key (3).

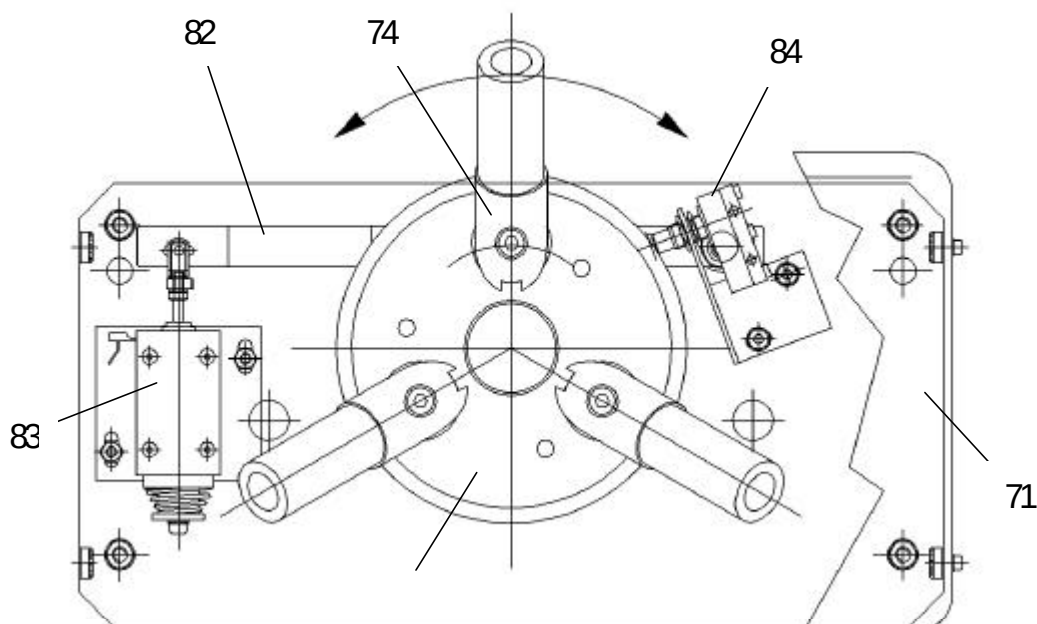


Figure 4.7 Tripod with drop arm - front view

The nut (12), which is screwed on the tapered central shaft's (11) threaded head, through a cam washer allows the complete locking of the rotary head to the tapered central shaft.

The arms are at a 120° distance one from the other, so as, when at rest, one of them is positioned for interceptions.

Each arm, through the connection (74), is fixed to the bolt (75) and made integral with it.

The bolt (75) leans on the bearings, which allow it to rotate around its own axis, and its upper part has a longitudinal groove specifically designed to receive the end of the lever (76).

The lever (76), when inserted into the groove of the bolt (75), prevents it from rotating.

The lever (76), who is pivoted on the screw (77), is returned and kept in position locked inside the groove of the bolt (75) by means of a spring (80).

The spring (78), whose bolts are connected to the bolt (75) of an arm and to the bolt (79), has the function of determine the rotation of the bolt (75), in case its groove is not engaged by the lever.

On the opposite supporting board (70) is set the positioning lever (82), whose ends are pivoted on and connected to the slug of the electromagnet (83) respectively.

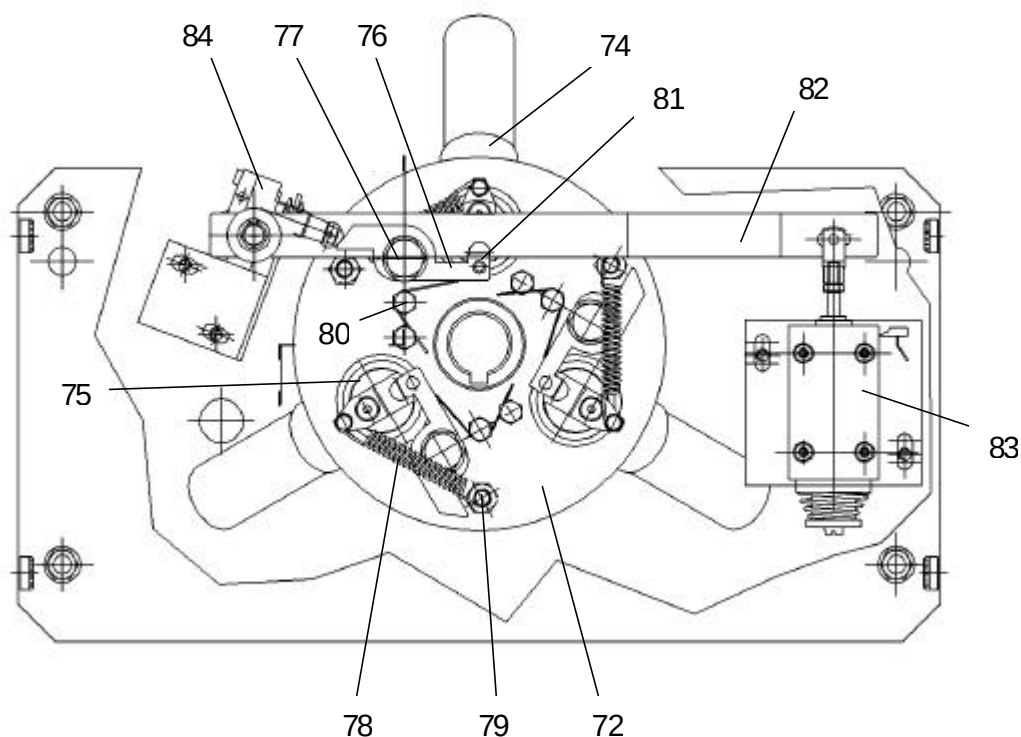


Figure 4.8 Tripod with drop arm - rear view

Even when the electromagnet is not powered with electricity, the position of the positioning lever (82) allows it to rotate and approach the center of the tapered central shaft (11), thanks to the force exerted by the return spring of the electromagnet.

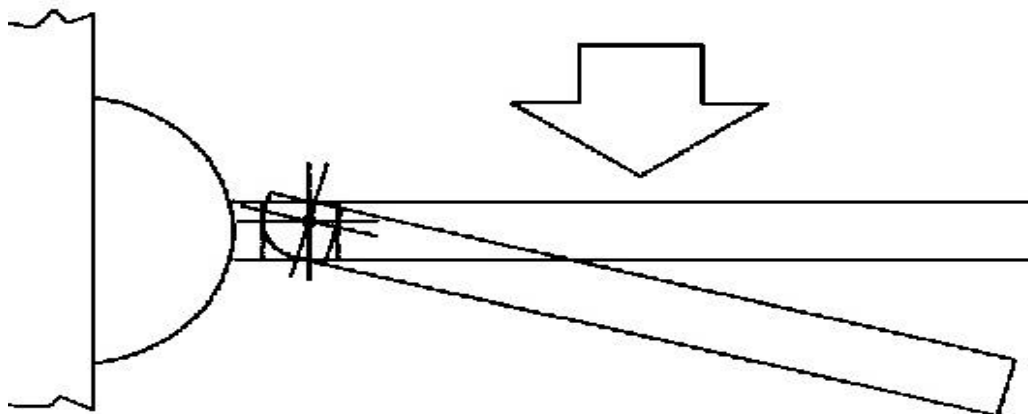
This motion is transmitted, through the spring pin (81), to the lever (76) of the arm, which is positioned for interceptions. This determines the release of the lever from the groove of the bolt (75). In such conditions and following the operation of the spring (78), the bolt and also the arm (73), which is integral with it, rotate around their axis, until they reach the vertical position.

When the electromagnet is powered, the positioning lever (82) reaches a position which does not interfere with the motion of the lever (76), which, after being returned by the spring (80), keeps the contact with the wall of the bolt.

In such conditions, when the arm returns to the horizontal position, the end of the lever (76) will enter the groove of the bolt (75) and stop the rotation.

Anti-panic Device (optional)

Figure 4.9 Anti-panic device



The rotary head provided with emergency arms is given as an option and is set up on a tripod with arms, that open, if pushed with enough strength, even when permission for the tripod to rotate is lacking. The device works in only one direction of passage (exit). It is useful, in case of power failure, as an alternative to the mains emergency arms rotary head, or even to the normal turnstile supplied with SMT (fail safe open).

Functioning when the turnstile is locked

Both the electromagnets (18) are not powered (BMT) or powered (SMT) with electricity and, therefore, the rockers (13) engage the grooves of the cam (9).

The push given by the person passing through the turnstile is transmitted by the arm, which is in position for interceptions, to the cam (9), which rotates by a few degrees around its axis and then stops. A further rotation is prevented by the locking of the rocker (13) against the flat walls of the radial projections.

Functioning when the turnstile is open in one direction

The electromagnet which controls the direction of passage is powered (BMT) or not powered (SMT) with electricity and, therefore, the rocker does not engage the grooves of the cam (9); the electromagnet which controls the opposite direction is not powered (BMT) or powered (SMT) with electricity and, therefore, the rocker (13) relating to it prevents the rotation in that direction.

The push given to the arm by the person passing through the turnstile is transmitted to the cam (9), which rotates around its axis.

This motion determines the release of the roller bearings for connecting rod (13) from the grooves of the cam (9) and their progressive moving away, due to the increasing profile of the lobes of the cam. The motion is resisted by the operation of the spring (28), which progressively brakes the rotation of the cam. During the motion of the cam, the end of the toggle (5) rotates and is kept in contact with the grooved part of the cam by the spring for the toggle fork (30). Once the cam has made a 35° rotation, the toggle meets the first groove; this is called the non-return point, since the reversal of rotation is prevented by the fact that the end of the toggle (5) engages the groove, preventing, in this way, the opposite rotation of the cam.

Once the roller bearings for connecting rod (32) have overcome the middle position between the lobes, after the rotation of the cam, the force of the spring (28) brings about the approaching of the connecting rods (19, 31). The effect of this is the rotation of the cam (9), which moves until reaches the stop position, even though the user stops pushing the arm.

During the first part of the rotation (decreasing profile of the lobe), damper does not exert any influence on the motion of the cam.

During the second part of the rotation, the roller of the damper (36) comes into contact with the increasing profile of the lobe of the cam and exerts on this a braking power, which is proportional to the speed of rotation.

HE84/3 Control Unit

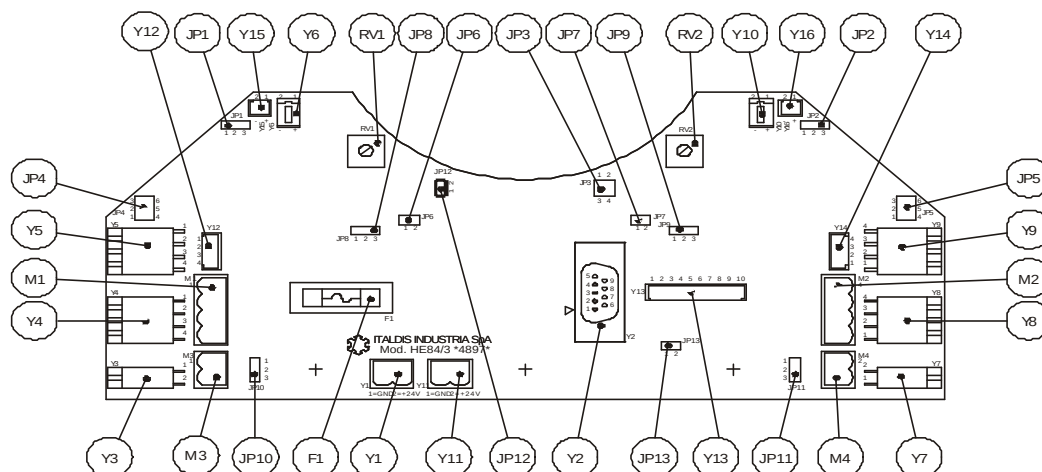


Figure 4.10 HE84/3 Printed Circuit Board

The Control Unit is an Electronic PCB installed directly to the turnstile mechanism to control correct operation.

The board features several functions which allow interfacing of the Turnstile with Card Readers, Obliterators, Coin Acceptors and various other types of control.

The Control Unit enables the card reader or the operator to:

1. Control the locking/releasing of the turnstile:
 - (a) In the entry or exit direction
 - (b) In the entry and exit directions
 - (c) By card reader
 - (b) From a remote control unit
2. Set a time limit for a user to pass through the barrier. Once this time has elapsed (timeout), the turnstile will lock automatically and will not allow further passage.
3. Count the number of people entering and/or exiting the turnstile.
4. Control the lock/release way mode indicators.
5. Lock the turnstile completely.

The HE84/3 control unit can operate either as a stand-alone unit or in connection with a remote control unit.

As a stand-alone unit, the turnstile can only be released by a card reader or push button. In connection with a remote control unit (like the optional Gunnebo-Italdis MP20 control module), it is possible to set the turnstile operation mode in both directions.

Connectors

All electrical connections to the HE84/3 unit are by means of coupling connectors which can be replaced in case of failure.

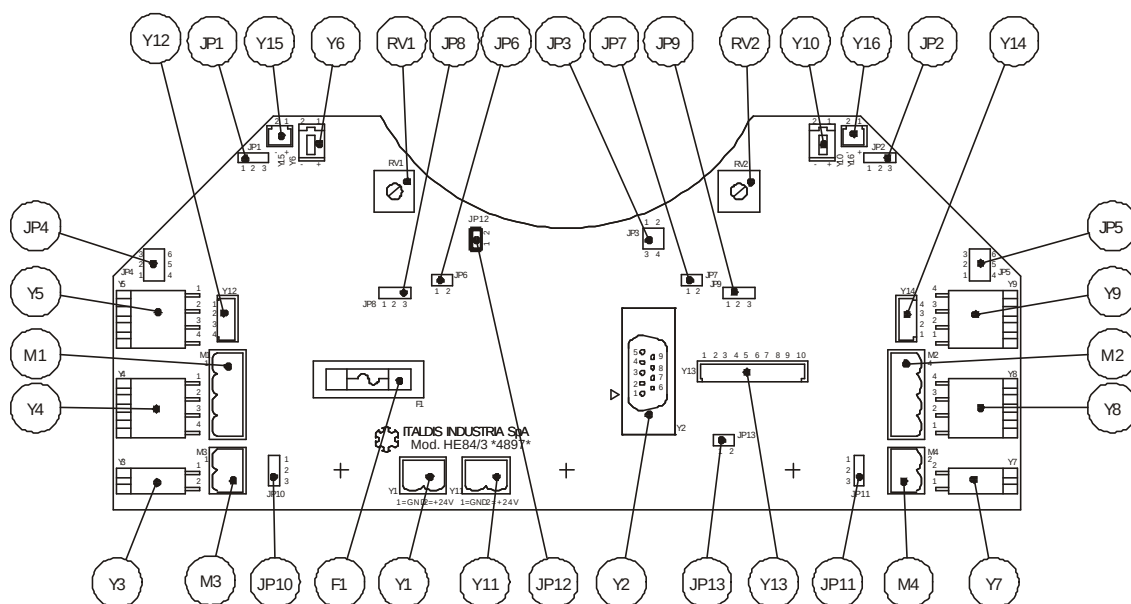


Figure 4.11 HE84/3 PCB CONNECTIONS

Fuse

The F1 fuse is a 2 Ampere fast fuse

Power Supply

This connector is used for the power supply to the control electronics and the turnstile (Fig. 4.12). The system operates from a 24 V DC 2A .

CAUTION: The polarity signs on the printed circuit board must be observed.

Y1	Power Supply
<i>pin</i>	<i>Description</i>
1	+24Vdc
2	GND

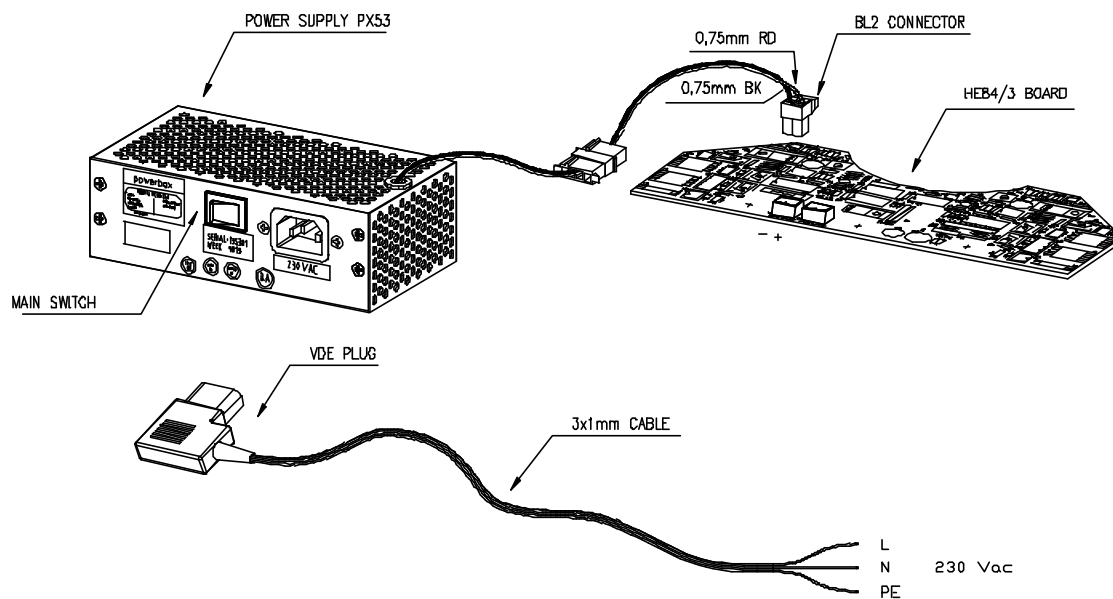


Fig. 4.12 – Power supply connection to HE84/3 card

Remote Controls

This connector is used when the turnstile is remotely controlled (for example by using a MP20 Remote Module).

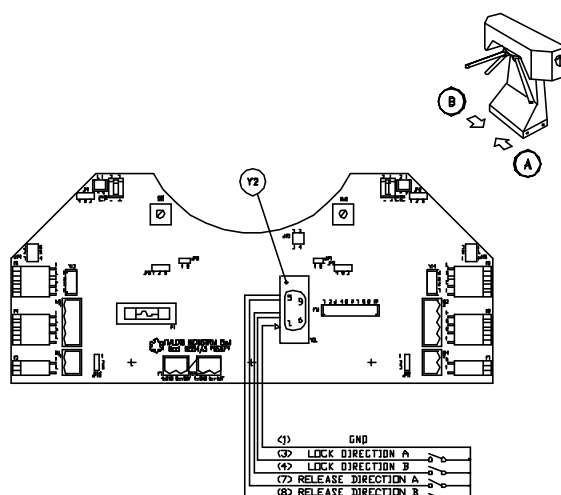


Fig. 4.13 HE84/3 card with remote controls

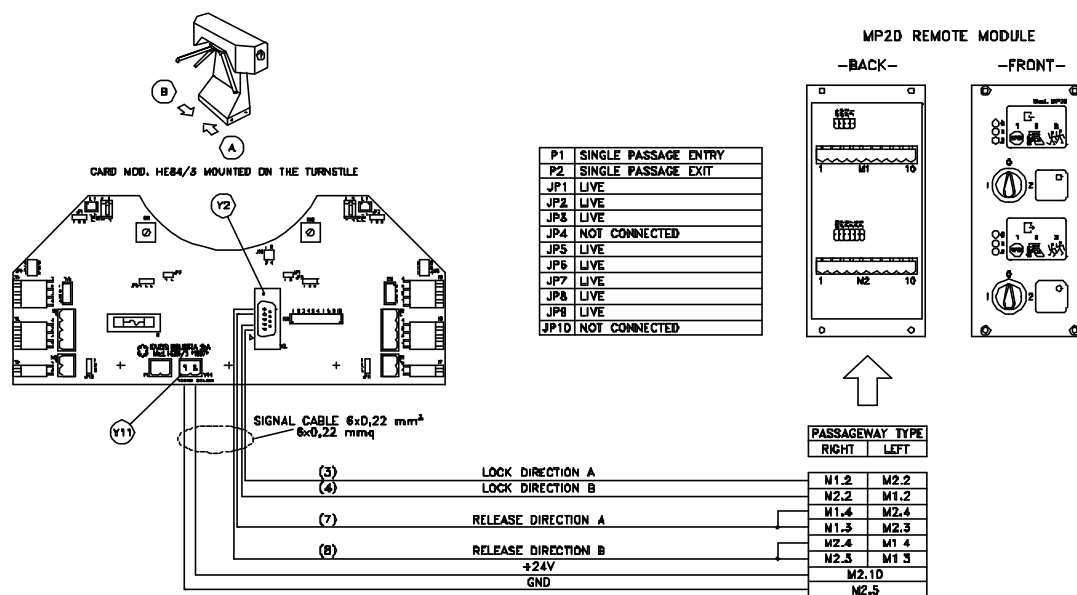


Fig. 4.14 - HE84/3 card with MP20 module – connections

Y2	Remote Control
pin	Description
1	GND
2	direction A reader inhibit (output)
3	lock command direction A (input)
4	lock command direction B (input)
5	direction B count signal (output)
6	direction A count signal (output)
7	unlock command in direction A (input)
8	unlock command in direction B (input)
9	direction B reader inhibit (output)

Passage Counter

Electric or Electronic Pulse-Counters for automatic recording passage through the turnstile are interconnected by Y3 and Y7 connectors.

A passage in DIRECTION A will be recorded by the counter connected to Y3 (M3) connector.

A passage in DIRECTION B will be recorded by the counter connected to Y7 (M4) connector.

The duration of the impulse is normally 50 mS.

The counters are controlled by either an impulse voltage (24 Vdc) or a dry contact (N.C. or N.O.) depending on JP4 (direction A) and JP5 (direction B) jumper position:

24Vdc impulse Normally Open:

Y3 (M3)	Counter direction A JP4 in 1-2 and 5-6 position	Y7 (M4)	Counter direction B JP5 in 1-2 and 5-6 position
<i>pin</i>	<i>Description</i>	<i>Pin</i>	<i>description</i>
1	to the counter (negative)	1	to the counter (negative)
2	to the counter (positive)	2	to the counter (positive)

24Vdc impulse Normally Close:

Y3 (M3)	Counter direction A JP4 in 2-3 and 4-5 position	Y7 (M4)	Counter direction B JP5 in 2-3 and 4-5 position
<i>pin</i>	<i>Description</i>	<i>Pin</i>	<i>description</i>
1	to the counter (negative)	1	to the counter (negative)
2	to the counter (positive)	2	to the counter (positive)

dry contact Normally Open:

Y3 (M3)	Counter direction A JP4 in 3-6 position	Y7 (M4)	Counter direction B JP5 in 3-6 position
<i>pin</i>	<i>Description</i>	<i>Pin</i>	<i>description</i>
1	common	1	common
2	N.O. contact	2	N.O. contact

dry contact Normally Close:

Y3 (M3)	Counter direction A JP4 in 1-4 position	Y7 (M4)	Counter direction B JP5 in 1-4 position
<i>pin</i>	<i>Description</i>	<i>Pin</i>	<i>description</i>
1	common	1	common
2	N.C. contact	2	N.C. contact

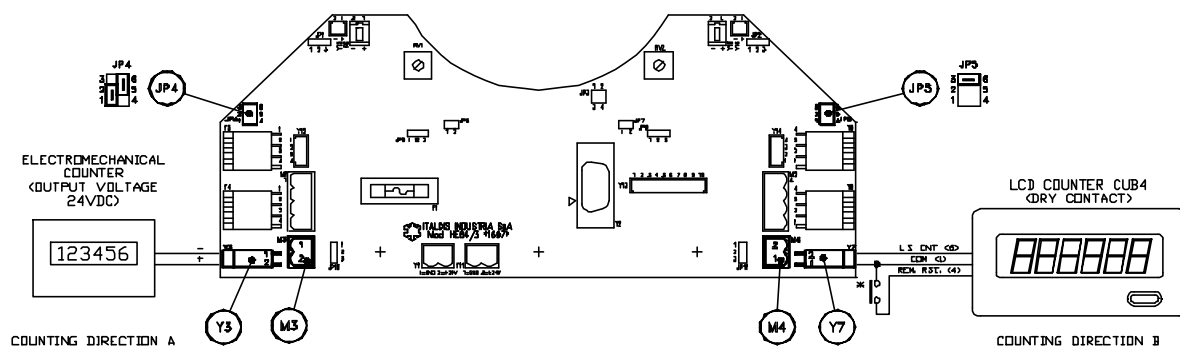


Fig. 4.15 - HE84/3 card with counters - connections

Card Reader Interface Signals

Y4 and Y8 interconnect the release signals from the card reader to allow the passage in the DIRECTION A (Y4 or M1) or in the DIRECTION B (Y8 or M2).

Either a voltage free switch contact or a NPN open collector transistor can give the release signal.

Also available is a contact of a voltage free relay, signals the card reader when the turnstile is engaged or is clear.

It is possible to select the contact to be Normally Open or Normally Closed by operating the short circuit connectors JP10 (DIRECTION A) and JP11 (DIRECTION B) .

Contact N.O. = position "2-3"

Contact N.C. = position "1-2"

Characteristics of the contact:

Maximum voltage : 24 V.

Maximum current: 500 mA.

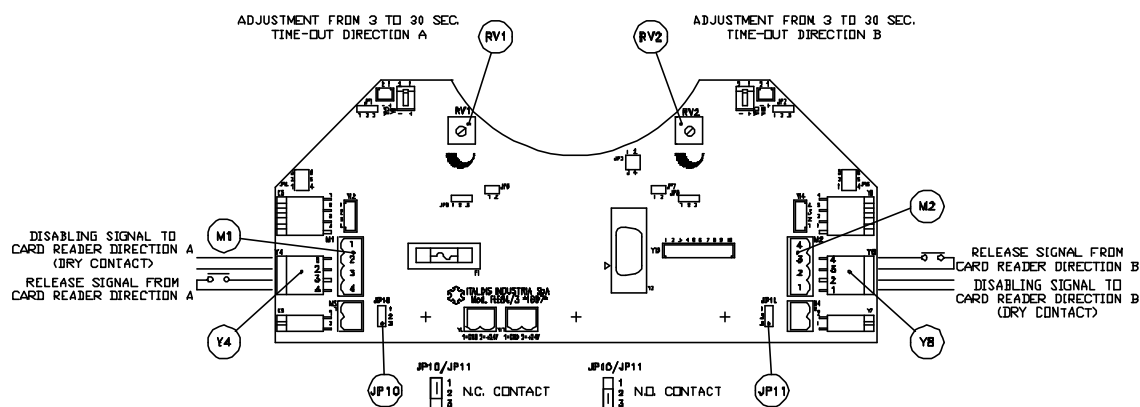


Fig. 4.16 - HE84/3 card with card readers - connections

Note

If inductive loads are used, a protection diode must be included in the circuit to protect against extra voltages.

Y4 (M1)	reader direction A
pin	description
1	common
2	inhibit output (N.O./N.C. contact)
3	release input
4	GND

Y8 (M2)	reader direction B
Pin	description
1	common
2	inhibit output (N.O./N.C. contact)
3	release input
4	GND

Way Mode Indicators

The control unit controls two way mode indicators (red/green) for DIRECTION A (Y5 or Y12) and two for DIRECTION B (Y9 or Y14).

CAUTION : The way mode indicators are powered by 24 Vdc and the maximum load for each one is 7 VA (300 mA.).

Y5 (Y12)	traffic light direction A
<i>pin</i>	<i>Description</i>
1	red light (negative)
2	red light (positive)
3	green light (negative)
4	red light (positive)

Y9 (Y14)	traffic light direction B
<i>Pin</i>	<i>description</i>
1	red light (negative)
2	red light (positive)
3	green light (negative)
4	red light (positive)

By means of the short circuit connectors JP8 (DIRECTION A) and JP9 (DIRECTION B) it is possible to select one of the two way mode indicator operation.

<u>OPERATION WAY 1:</u>	lock mode: RED reader controlled mode: RED unlock mode: GREEN	JP8 (direction A) position 1-2 JP9 (direction B) position 1-2
-------------------------	---	--

<u>OPERATION WAY 2:</u>	lock mode: RED reader controlled mode: GREEN unlock mode: GREEN	JP8 (direction A) position 2-3 JP9 (direction B) position 2-3
-------------------------	---	--

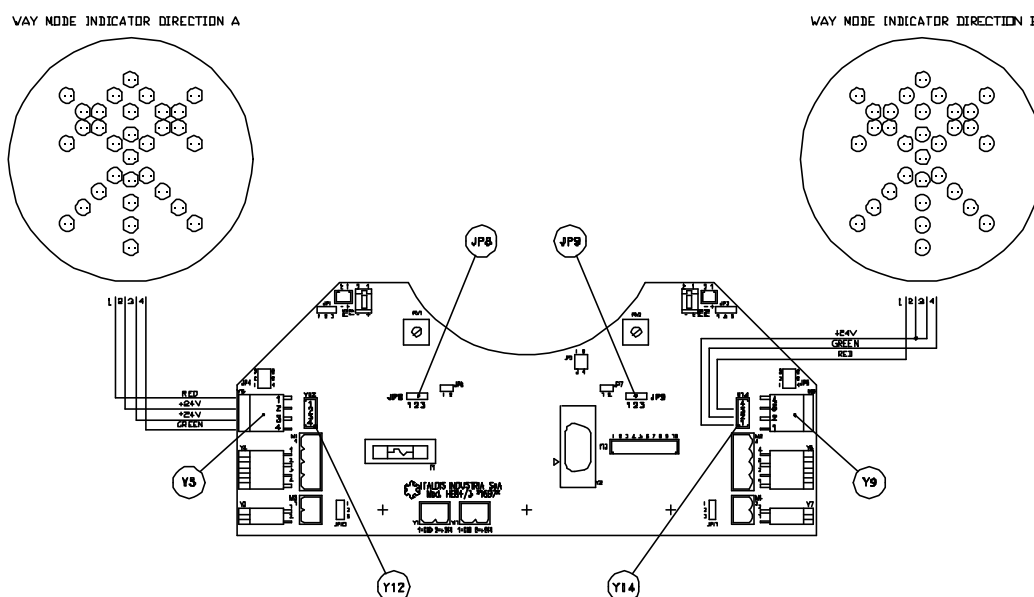


Fig. 4.17 - HE84/3 card with way mode indicator – connections

Solenoids

Y6 and Y10 are used to connect to the solenoids to allow the release of the turnstile in DIRECTION B (Y6 or Y15) and in DIRECTION A (Y10 or Y16) .

Electrical characteristics:

Power supply : 24 V DC
Maximum current : 600mA.
Continuous service : 100 %

Y10 (Y16)	solenoid direction A
pin	description
1	solenoid (positive)
2	solenoid (negative)

Y6 (Y15)	solenoid direction B
Pin	description
1	solenoid (positive)
2	solenoid (negative)

The electromagnet could operates on the locking device in two ways:

1. Fail-Lock (BMT), locks the turnstile in the absence of the power supply.
2. Fail-Safe (SMT), releases the turnstile in the absence of the power supply.

BMT or SMT versions depends on the positions in which the electromagnet is mounted.
By means of the short circuit connectors JP2 (DIRECTION A) and JP1 (DIRECTION B) it is possible to select one of the two electromagnet configuration:

Fail-lock (BMT): position "2-3" ;
Fail-Safe (SMT) : position "1-2".

Note

Attention: the JP1 and JP2 position must respect how predict by assembly of the electromagnet on the mechanism.

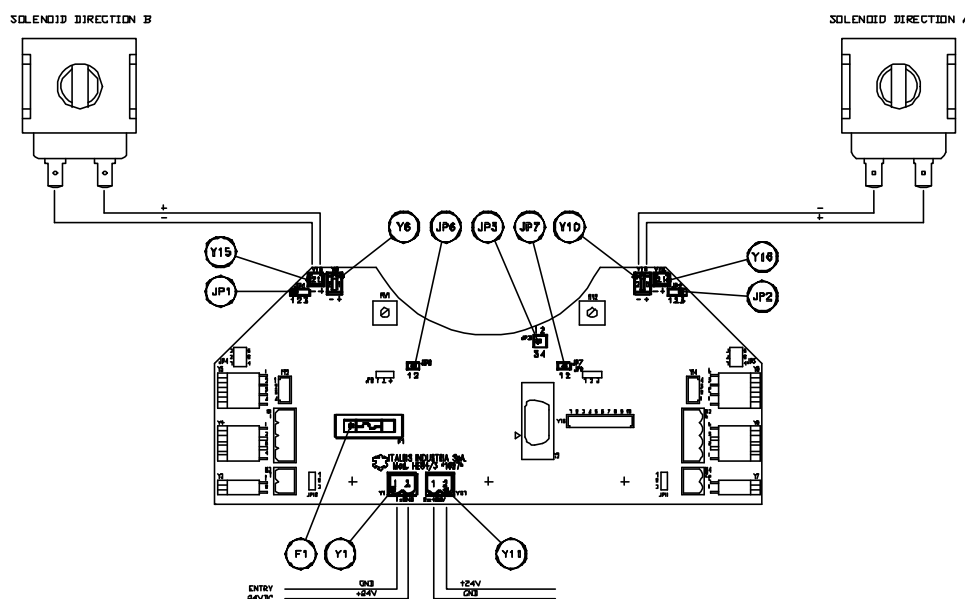


Fig. 4.18 - HE84/3 card with power supply unit and solenoid- connections

Time Out Adjustment

The time limit can be adjusted by operating RV1 potentiometer for DIRECTION A and RV2 for DIRECTION B.

The time is normally factory set is 8 sec. (unless otherwise requested).

PX53-14 – Power supply unit

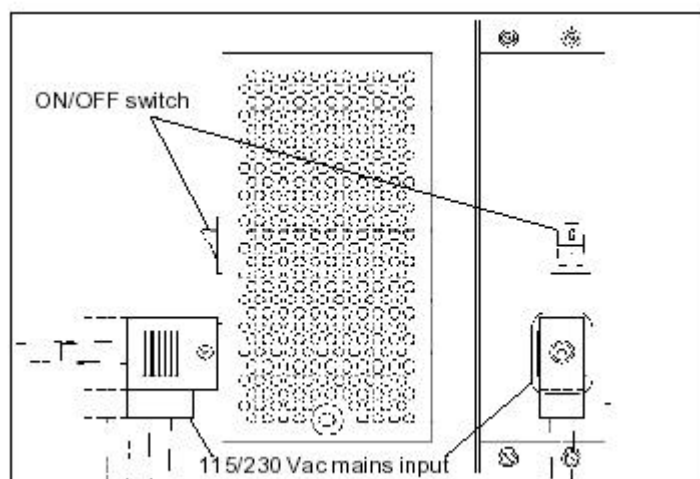


Fig. 4.19 – PX53-14 switching power supply module

General information

The PX53-14A switching power unit is utilized on various types of passageways (Sentinel ATT turnstile, Sentinel barrier for handicapped people, etc.) delivering +24 Vd.c. power to the electronic units, to the sensors and to the passageway's actuators. The PX53-14A is provided with an ON/OFF switch and a mains input plug. (see fig. 4.20).

Characteristics

- Input voltage..... 230 Va.c (15%, 50-60 Hz)
- Output voltage..... + 24 Vd.c.
- Output current..... 2.2 A max.
- Power..... 50 W max.
- Input protections..... 5 x 20 mm fuse, 4A / 250V
delayed, local
- Output protections..... automatic, due to over-current
and over-voltage
- Dimensions (L x H x D) 144 x 80 x 47.5 mm
- Weight..... approx. 620 gr.

Connectors

The PX53-14A switching power unit is provided only with a versatile output connector (figure 4.20), and is protected against coupling reversal.

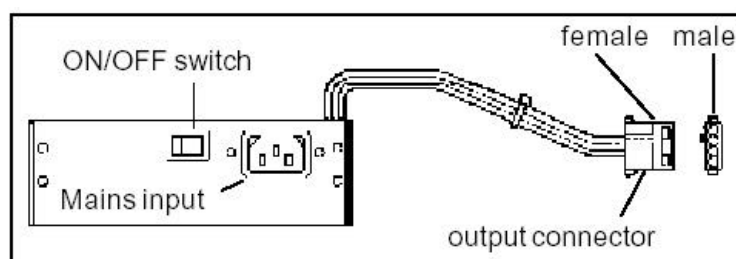


Fig. 4.20 – PX53-14 module connectors

Module replacement

Preliminary operations

Before removing the module, check that the ON/OFF switch is in the ON position, and try to operate it several times to make sure that it has been set properly. Using a tester, check for a 115/230V voltage on the terminals of the mains plug inserted into the module. The latter operation aims at detecting any failure due to wiring and not to the module.

Module replacement procedure

- 1) Switch OFF the module.
- 2) Cut off mains by turning OFF the mains switch.
- 3) Open the cable duct to disengage the cable and the +24 Vd.c. output connector.
- 4) Disconnect the +24 Vd.c. output connector.
- 5) Plug-out mains plug.
- 6) Loosen the 4 fastening screws and remove the module.
- 7) Following the inverse procedure, fasten the spare module, connect back the +24 Vd.c. output connector, close the cable duct, plug-in the mains plug, power the mains switch and activate the module through the ON/OFF switch. The module needs no setting options.

CBT2 – Arms downward pivoting mechanism control interface

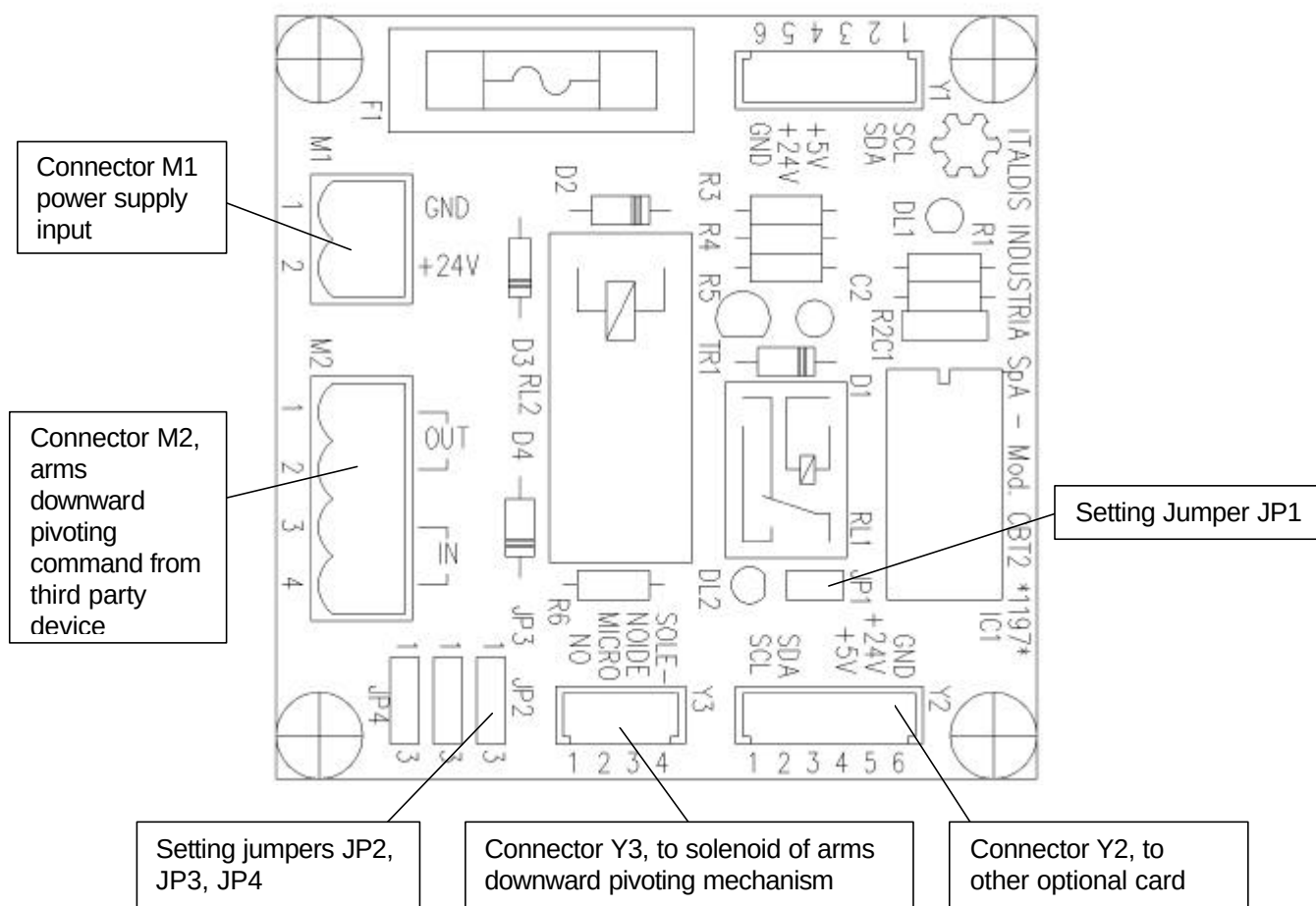


Fig. 4.26 – Basic elements of card CBT2

General information

The CBT2 optional card is implemented together with the arms downward pivoting mechanism. Its function is of controlling the operation of the magnet within the arms downward pivoting mechanism.

The card is provided with two connectors (Y1 and Y2) assigned to the interfacing through a I2C bus. The two connectors are parallel-connected through the p.c.b. tracks thus setting up a bus transit. They are not used in this application.

Connector Y3 has been saved for the connection to the magnet of the arms downward pivoting mechanism, and to the microswitch detecting correct position. Connector M2 allows card connection to an external device which will output the command activating the operation of the arms downward pivoting mechanism (N.O./N.C.contact). The card's power supply input circuit is protected through a 1A/250V fast-blow fuse.

M1	power supply input
<i>pin</i>	<i>Description</i>
1	GND
2	+24V

M2	arm drop command
<i>Pin</i>	<i>description</i>
1	microswitch contact output (N.O.)
2	microswitch contact output (N.O.)
3	arm drop command:
4	GND

Y3	power supply input
<i>pin</i>	<i>Description</i>
1	input for the microswitch contact
2	input for the microswitch contact
3	GND
4	solenoid power supply

Jumper description	
JP1	1-2 factory use
JP2	1-2 solenoid normally powered 2-3 solenoid normally not powered
JP3	2-3 forward the microswitch output to Y3.1
JP4	2-3 forward the microswitch output to Y3.2

Settings

The setting options on the CBT2 card are achieved through jumpers.

Figure 4.27 shows the strap arrangement and their factory-configuration (default).

Led

The CBT2 card is provided with two LEDs (green and red) each locally signalling the operating status state.

Figure 4.28 illustrates the LEDs arrangement.

Table below details the meaning of the transmitted indications

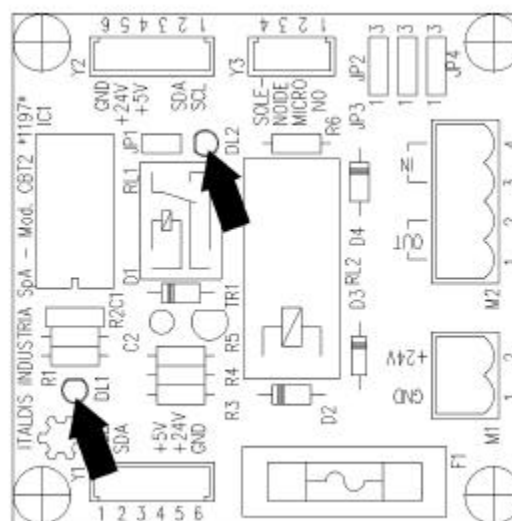


Fig. 4.28 – Leds on the CBT2

LED, Colour	Function	Regular state
DL1, green	Glowing when interaction with unit LCM02 is regular	ON
DL2, red	Glowing when solenoid is powered	ON

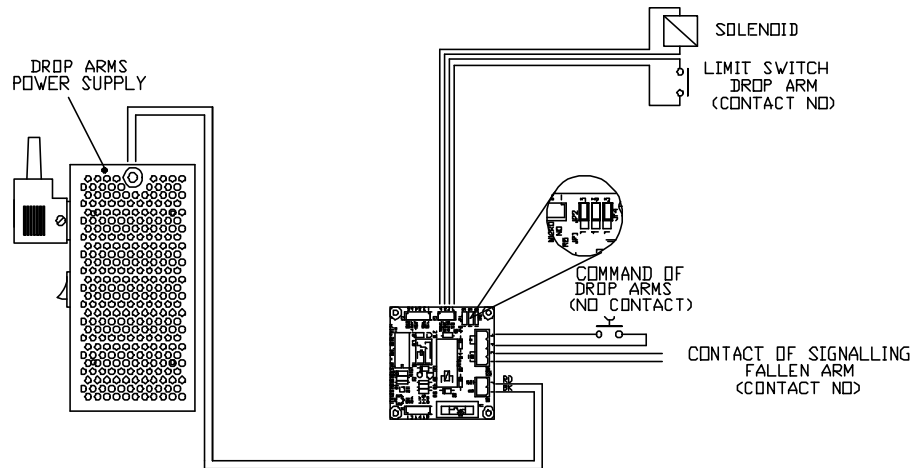


Fig. 4.27 – Connections of CBT2 card

Card replacement

Before removing the card, it is suggested to note down the settings made on the straps, in order to be sure to copy them properly on the new card.

1. Switch off the power supply unit.
2. Cut off mains voltage.
3. Remove the connectors.
4. Loosen the 4 fastening screws and remove the card.
5. Get the new CBT2 card and check the setting options on the straps, proceed to set them like those of the old card.
6. Mount the new card and execute operation 1 – 3 as instructed in the inverse manner.

ALM2 – alarm sensor control

The ALM2 board is provided with the Simplex ATT model.

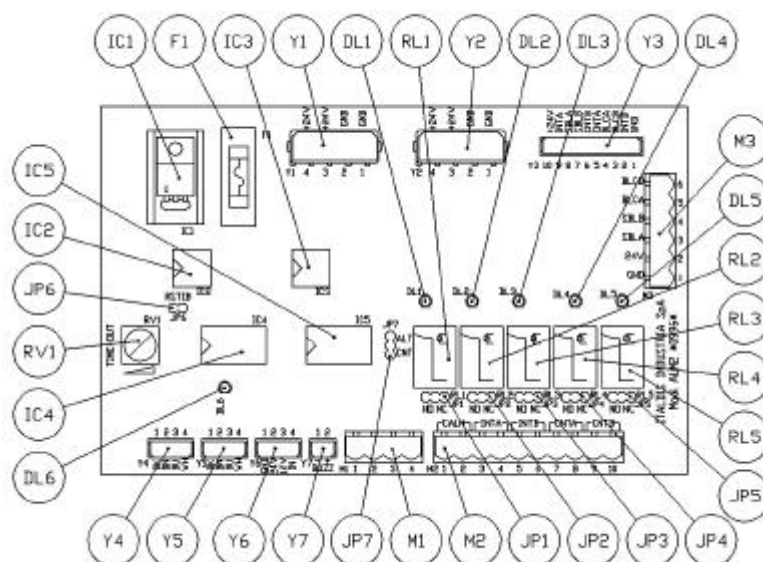


Fig. 4.29 – ALM2 board

Respect to the base model, the SIMPLEX ATT model also features infrared beam sensors, above and below the arms and a pressure sensitive top lid (on request) to prevent unauthorized access. Sensors detect unauthorized access of the turnstile and activate the local buzzer; a relay can be used for remote alarm signals.

The ALM2 board controls alarm sensors (photocells, pressure sensitive top lids) and signaling devices.

Generates “Turnstile engaged” and rotation signals, and connects with the remote control unit.

Protective barrier and sensitive top lid

While at rest and in reader controlled mode, the turnstile does not allow passage, but is prearranged for reception of a release signal from an external device (card readers, coin acceptors, etc.).

Attempts to jump over or bypass the turnstile generate an alarm condition.

The release signal permissive disables the anti-trespass sensors, restores normal operating conditions (if the turnstile is in alarm condition) and frees the tripod, allowing the passage of one person.

Photocells are connected into Y4 and Y5 connector. The top lid sensor is connected into Y6 connector.

Y4, Y5	photocell input	Y6	top lid sensor
---------------	------------------------	-----------	-----------------------

<i>pin</i>	<i>description</i>
1	GND
2	+24V
3	GND
4	sensor input

	input
<i>pin</i>	<i>description</i>
1	GND
2	+24V
3	+12V
4	sensor input

Alarm condition

The turnstile switches to alarm condition following unauthorized crossing of the protective barrier or pressure on the sensitive top lid.

This condition activates the local buzzer; using short-circuit jumper JP7 (card ALM2), it is possible to set continuous (CNT position) or intermittent (ALT position) operation of the buzzer.

Exiting from alarm condition and resetting of normal operation is automatic, after a set period of time (by means of RV1 card ALM2), as long as the protection sensors are not active.

If the short-circuit jumper JP6 (card ALM2) is connected, normal operating conditions can be restored by enabling RELEASE.

Acting on RST input (terminal 2 of M1) makes it possible to exclude the protective barrier, restoring normal operating conditions. Short-circuiting with terminal 1 (GND) of M1 (card ALM2) will activate RST input.

The RL1 relay indicates that the turnstile is in alarm condition, the contact on terminals 1 and 2 of M2 is voltage free and it is possible to select NO/NC using short-circuit jumper JP1.

An ALMR output (terminal 4 of M1) is also provided for controlling remote acoustic/indicator light signals (Max 100 mA / 24 Vdc).

M1	Alarm enable
<i>pin</i>	<i>description</i>
1	GND
2	RST alarm escluded/reset
3	+24V
4	ALMR remote alarm output

M2	Relay outputs
<i>pin</i>	<i>description</i>
1	Alarm (common)
2	Alarm (contact)
3	Card reader A enable (common)
4	Card reader A enable (contact)
5	Card reader B enable (common)
6	Card reader B enable (contact)
7	Counting signal A (common)
8	Counting signal A (contact)
9	Counting signal B (common)
10	Counting signal B (contact)

Connection between ALM2 and HE84/3

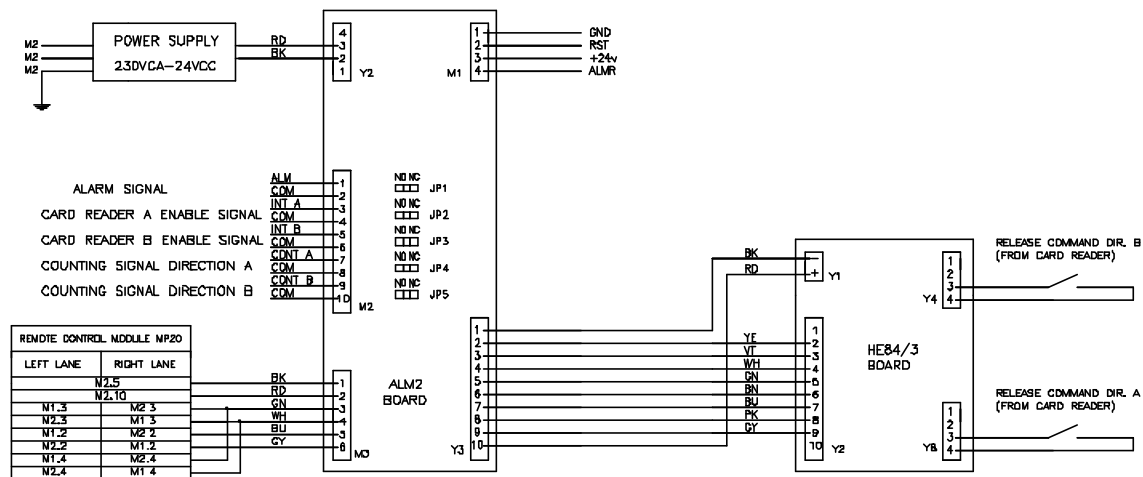


Fig. 4.30

Remote controls

Connections can be made to terminal M3 of card ALM2 for remote control operation of the turnstile.

M3	Remote control
pin	description
1	GND
2	+24V
3	Release direction A
4	Release direction B
5	Lock direction A
6	Lock direction B

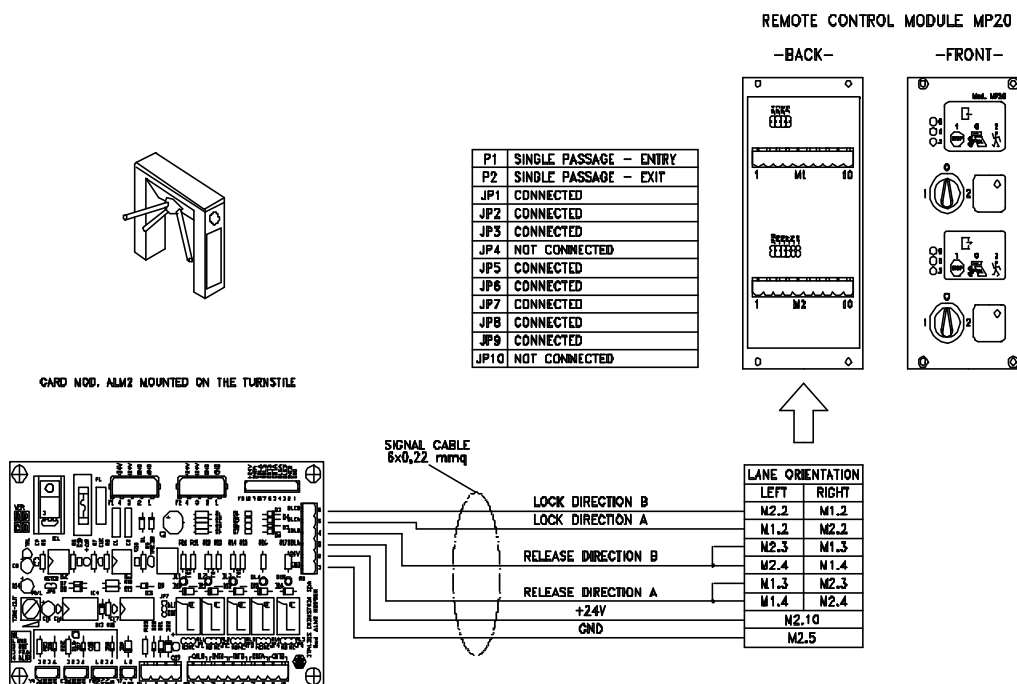


Fig. 4.31

Buzzer

The buzzer is connected into Y7 connector

Y7	Buzzer
pin	description
1	Buzzer activation
2	+24V

Section 5

Installation

On receipt of the equipment, open the packaging and check that it corresponds to the description on the packing list and that there are no defects or damage of any kind.

It is recommended to retain packaging so it can be re-used should the need arise to move the equipment for return to factory.

Tools required

- Hammer drill, with masonry drills (12mm for EAM 10 expansion fittings, or 20mm for M 10 expansion fittings)
- Screwdrivers set;
- Socket head screwdrivers ;
- Box wrench set;
- Wire cutters;
- Crimping Pliers ;
- Wire strippers;
- Insulated lugs;
- Piece of string, chalk powder, pen;
- Scissors;
- Double tape measure;
- Rubber mallet;
- Level;
- Lifting equipment.
-
- NOTE: The lifting equipment should be appropriate for the weight of the barrier, and characteristics of the assembly site. The weight of Turn-O-Mat barriers varies from 60 kg to 80 kg. The barriers must be moved using the two eyebolts provided (fixed in the threaded holes on the top of the barrier).

Site Preparation

Before assembly the following should be taken into consideration:

Environmental conditions;
Power supply characteristics;
Physical space;
Cable layout.

Environmental conditions

For the correct operation of the equipment the site should meet the following requirements:

Working temperature between +5 and +45 °C;

Humidity must not exceed 80%;

No metal powders present;

There must be no solid, liquid or gaseous pollutants present that could corrode copper or other metal components of the equipment.

WARNING

***Do not expose equipments neither to bad weather condition
nor to the direct sun rays action.***

Electrical Systems Characteristics

Turn-O-Mat barriers operate from the public power supply network.

Nominal voltage required - 230/ 50-60Hz.
Tolerance is $\pm 15\%$ of the nominal value.

Maximum power supply of the equipment is 50W.

The power must be supplied through a dedicated cable NOT from cables that supply other electrical equipment.

In the event of voltage or frequently variations the use of voltage stabilisers is advisable.
The power supply circuits of the equipment must be protected by differential switches that are independent from other machinery.

The power supply circuits provided by the customer must have an insulated cable, with an earth connection. The earth protection circuit must be uni-potential and comply with all safety standard in force.

For installations in areas particularly prone to thunderstorms, or supplied by overhead power lines, it is recommended to install an anti-lightning protector on the power supply line.

General Conditions

It is recommended that a drawing of the installation site lay-out should be made, referring to Lay-out and GA drawings shown in this Manual, before actually assembling the equipment.

Foundations should be in concrete to comply with UNI 9858, type RCK 250 (250daN/cm²). The foundation should be level with a maximum tolerance of 5mm.

Anchor holes in the floor for M10 expansion bolts, must be of a minimum depth of 100mm.

The positioning tolerance should be 2mm and the holes drilled during the installation stages.

For floors made with very compact materials (such as granite) use expansion fittings, Fischer type mod. EAM 10, or equivalent.

For floors made with less compact materials (concrete) use expansion fitting, Fischer type mod. M10 L=80mm De=20mm.

Chemical expansion fittings can be used where the floor characteristics require it. Use screws appropriate to the expansion fitting, according to the following table.

Turn-O-Mat	
Expansion fitting	Screw
EAM 10	Hexagonal screw 10x30, flat ring nut
M10	Hexagonal screw 10x60, flat ring nut

Cabling

Turn-O-Mat barriers require two types of cables:

- Power supply cables
- Signal transmission cables

The following instructions should be followed when laying cables:

- Earth conduits with a diameter no less than 20mm;
- Lay the conduits for the power cables and those for data transmission cables separately.
- Lay the conduits away from high voltage cables or cables with radio-frequencies, electric motors and other machines.
- Place the conduits as far as possible from the barrier's anchor holes in the floor;
- Conduits must be directed towards the position for the cables on the barrier (see the layout shown in this section). The conduits must rise at least 50 mm from the foundation base.
- Cables must rise from the floor with a length that reaches the logic panel on the barrier top or to the integrated reader mounted on the barriers (at least 4m). Taken care when running the cables because curves with tight radii can damage the cables.

The following cables generally connect the Turn-O-Mat barrier to the outside:

- *Power Supply Cable*

For each door a power supply cable with 3 conductors must be used, starting from the user switch gear and running to the power supply unit.

The conductors' section must be determined according to the cable length and the power required.

It is recommended to install a disconnecting switch up-line of the power supply. A differential switch should also be installed in accordance with Local Regulations.

- *Remote Control Line*

If there is a remote control panel, an electric shielded cable with eight (8) conductors must be provided for each gate, running from the logic board to the remote control panel.

The conductor section, for a maximum distance of 100m, should be 0,33mm² or greater.

- *Emergency Line (only tripod with drop arm)*

If the emergency control line is provided, a cable with 2 conductors must be placed running from the barrier's logic board to the emergency control switch. The conductor section, for a maximum distance of 100m, should be 0,33mm² or greater.

- *Badge Reader Connection Line*

The customer should consult the data provided by the reader's system supplier.

Mounting details

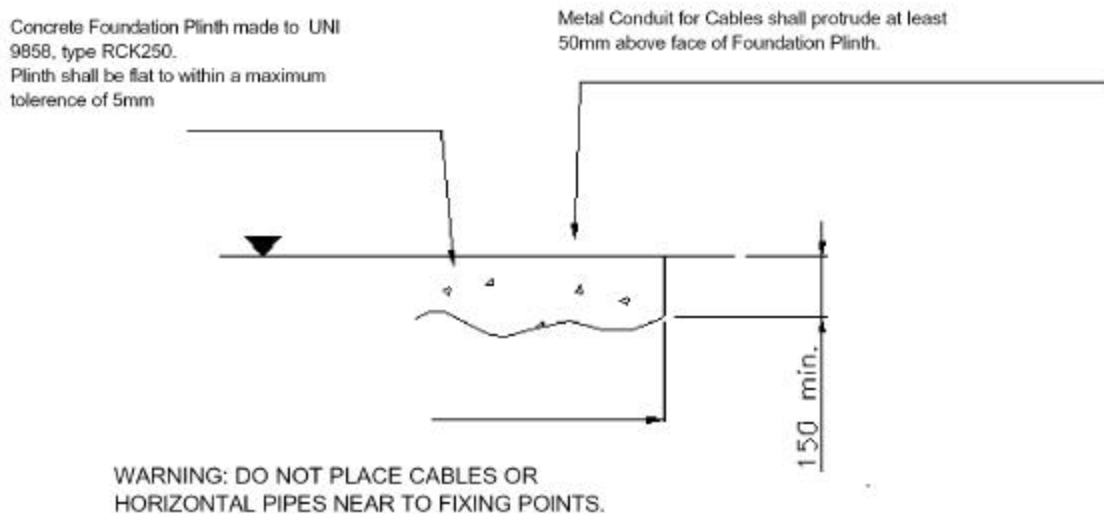


Fig. 5.1 – General indications for Foundation Plinth

Specific details can be found in section 2, fig. 2.1, 2.2, 2.3, 2.4, 2.5

Unit Positioning

The Turn-O-Mat barrier is supplied already-assembled and is tested in the factory before the shipping:

Trace on the floor with chalk a line to which the door must be aligned.

Place the Turn-O-Mat in the correct position.

On the floor mark the position of the expansion fitting holes.

Remove the barrier (if necessary) to make a hole in the floor to fix the expansion fittings.

Re-position the barrier and fix it to the floor fixing the screws into the expansion fittings.

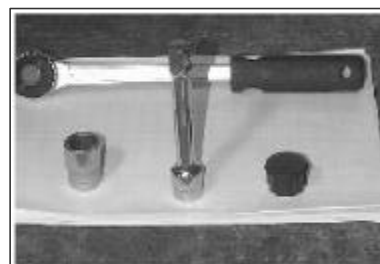
Ensure the frame is positioned both longitudinally and transversally, checking with a level gage. During installation, be careful not damage any positioned cables.

NOTE: If the barrier is supplied as an assembling kit, follow the instructions given in the manual supplied with each kit.

Assembling of the rotary head

Necessary tools

- N° 1 Ratched wrench
- N° 1 Bush extension
- N° 1 Wood or plastic mallet

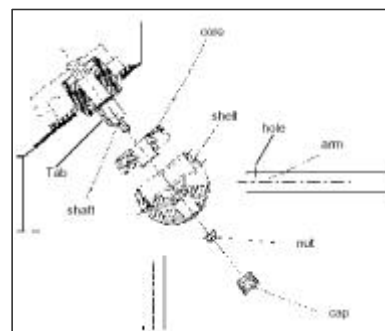


WARNING

It is recommended to have the rotary head assembled only by the technical assistance or by skilled workers.
The drawing to the right illustrates the components of the rotary head and the tripod with their relative positions.

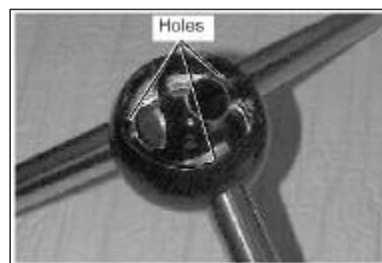
NOTE

If drop arm optional is present, the tripod is supplied completely assembled.

**Tripod Pre-assembling**

1) Work on a flat surface, with one hand hold the shell its inner part facing top; with the other hand insert the three arms paying attention that the holes drilled on them face towards the top.

The arms are inserted by slightly pushing them approx. 1.5 cm. into the shell up to the edge of the structure onto which the core will be placed.



2) Place the core into the shell, taking care that the concave parts of the shell coincide with the convex parts of the core.

Make sure that the slip tabs present on each piece coincide till the tube fits into the notch set on the head's core driving spot.

Try rotating the arms till the notches easily insert into the tubes.



3) Using a plastic hammer or the wooden handle of any other hammer, strike the core into the shell and lightly re-strike it all around its perimeter till it settles.

After having assembled the group, try rotating the arms around the longitudinal axis so as to see if the core notches have set into the holes on the arms.

If doubting the success of the assembling operation, it is suggested to disassemble it and start all over again.

4) Get a self-locking nut and relative washer, if necessary unscrew it from the shaft on which it is usually fitted when supplying it with the packed turnstile.



5) Insert the previously assembled tripod onto the shaft, taking care to make the tab coincide with the relevant seat.

Insert the washer and self-locking nut with the aid of the socket and plug adaptor. Hand-screw the first 3 - 4 threads.



6) Tighten the nut by exerting a 5daNm max. on it. When doing this, hold one of the arms to prevent strength from loading onto the Turn-O-Mat.



7) Complete the assembling operation by fitting a plastic tap so as to close the shell. To make it fit better strike it in with the plastic hammer or with the wooden handle.



8) Unscrew and remove the two clear keys situated on the sides of the tripod and place them into the position assigned to them.



Electrical Connections

All cables for the barrier should be placed as shown in the lay-out diagram and pass through the posts up to the top of the barrier and inserted in the logic board of the barrier.

Within the logic, connections must be made as follows.

- Connection of the release signals from the readers to the JP6 connector (Release direction A & B). See Section 4 – HE84/3-Card Reader Interface Signals;
- Connection of the counting signals to the JP8 connector (Direction A & B). See Section 4 – HE84/3-Passage Counter;
- Connection of the reader enabling signals to the JP8 connector (Reader enable direction A & B). See Section 4 – HE84/3-Card Reader Interface Signals;
- Remote control: see Section 4 – HE84/3-Remote control. If is installed ALM2 board see Section 4 – ALM2-Remote control

The connection to the power supply line is made directly to PX53-14.

All other connections have been carried out in the factory before the shipping.
For further technical description see Section 4.

Section 6

Maintenance

General Care

Routine Cleaning:

Clean with soap or similar detergents, rinse with water and dry thoroughly.

Cleaning oil or fat stains:

Use the appropriate organic detergents, after which clean with soap, rinse with water and thoroughly dry.

Minor damage to painted surfaces:

Remove with an abrasive agent the damaged paint, clean the surface and thoroughly dry. Apply paint on the surface and when the paint is dry (after 2 weeks) use an abrasive paste to ensure a smooth surface.

Damage to the painted surfaces and rust detected:

Remove the rust with a knife and apply an anti-rust agent. If necessary use fine body filler to repair damaged parts after which carry out the procedure for minor damage to painted surfaces.

Preventive Maintenance

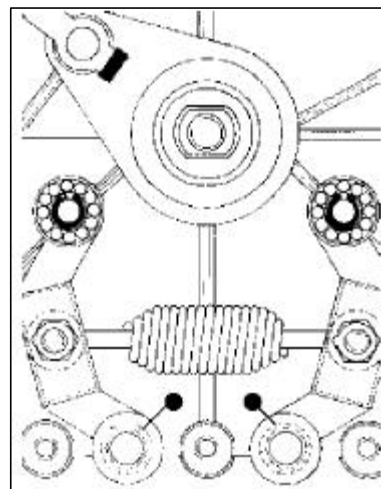
The frequency of preventive maintenance interventions depends on the door's condition and frequency of use.

It is recommended however to carry out maintenance work every 6 months.

The actions that characterise preventive maintenance intervention must include, at least, the following points.

1. Make sure that the door is insulated from the power supply line;
2. Open the door lid, in order to access the mechanism and the logic box.
3. The electronic device does not require maintenance, however, make sure that all connections are in good condition and correctly fixed to the boards;
4. Check the mechanism in order to verify if the system is excessively worn and if there are signs of damage. Replace, if necessary, the unserviceable components.
5. Lubricate, on a 6 months basis, the ball bearings inside the Turn-O-Mat mechanism (see drawing) with Resolve type grease spray (certified) or similar. If the Turn-O-Mat is being used greatly then increase maintenance periodicity accordingly.

● = lubrication points



6. Check the function of:

- Lock solenoids
- Anti-reversal quietening
- Return mechanism
- Damper

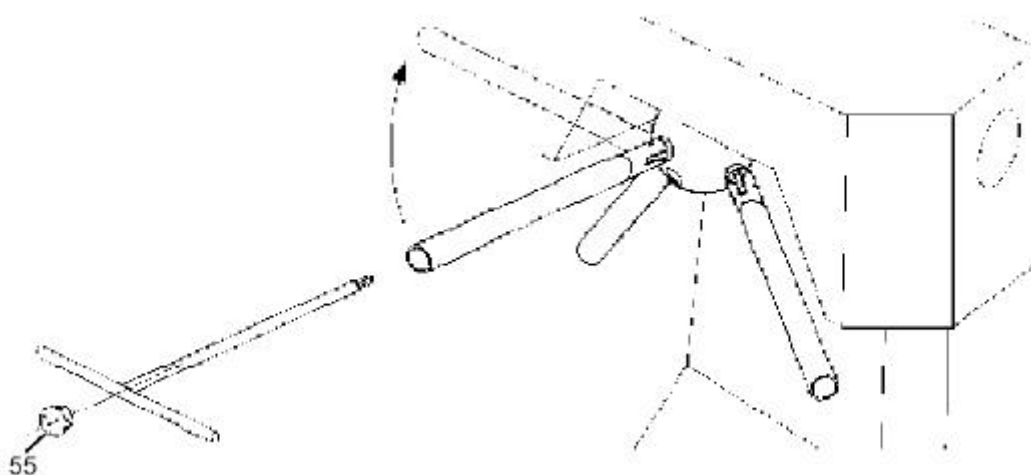
7. Clean the cabinet. The turnstile cabinet (either varnished steel sheet or stainless steel) can be cleaned with a cloth dampened with products normally used to clean office furniture.

8. Clean the photoelectric cells and the retroreflector. This operation must be done on a 6 months basis. The photoelectric cells and the retroreflectors must be wiped with a cloth dampened with alcohol.

Regulation of the mains emergency arms

The regulation occurs through the tightening of the nut on the coaxial screw to the arm. It can be carried out by means of a dynamometric wrench, applying a 250+300 Nm tightening torque.

In the event that a dynamometric wrench is not available, it is possible to regulate the mains emergency arms empirically, by making repeated attempts aimed at detecting the strength necessary for the arm to open, until a suitable regulation is found.



WARNING

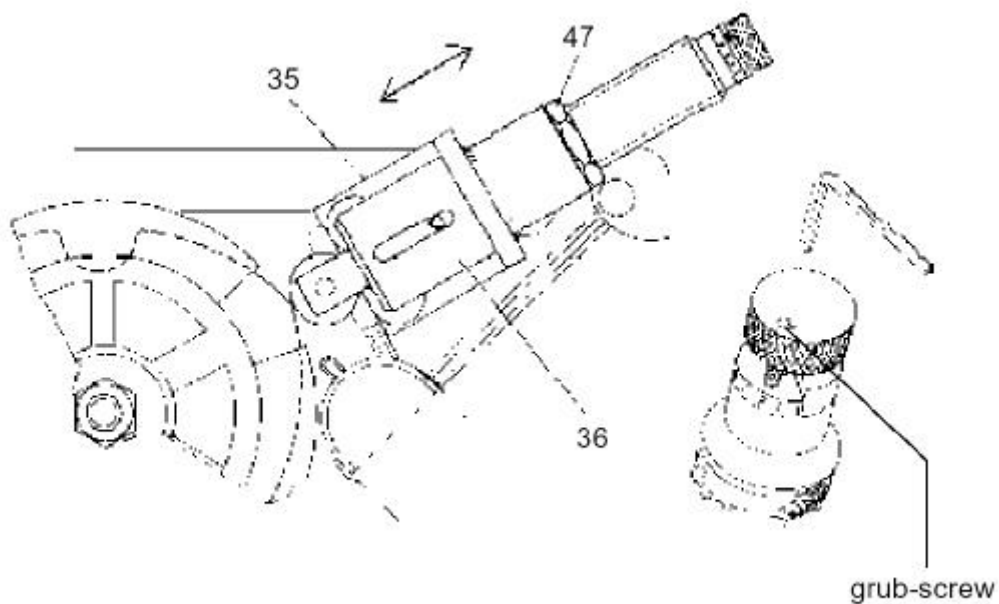
In the event that a dynamometric key is not available, it is recommended to carry the regulation out by technical assistance or by skilled workers.

Regulation of the damper

The damper has the function to moderate the energy given to the rotary unit, so as to guarantee a soft stop at the end of the rotation. When the operation of the shock absorber is slack or too rapid, it is possible to regulate it as it follows:

1. By means of a hexagonal wrench, loosen by 1-2 turns the grub-screw of the thumbscrew.
2. Turn by hand the thumbscrew, until reaching the required position. A null force by the damper on the cam corresponds to the 0 position, while the maximum force exerted by the damper (36) corresponds to the 5.

- 3 Tighten the grub-screw again.



Disassembly of the rotary head

Necessary tools

Ratchet wrench with extension, 19 mm extension, screwdriver, extractor.

Disassembly

1. Using a screwdriver, lift the edge of the plastic cap and, while continuing to lever the edge, extract the cap completely.
2. Insert the socket wrench into the hole and unscrew the nut.
3. Extract both the nut and the screw; then, pull the arms of the tripod toward oneself. The extraction turns out to be easier if one moves the tripod rightward and leftward, until the tripod comes out together with the rotary head.



4. The tripod core is now in sight; take the extractor.

WARNING

Trying to remove the tripod core by hand or by means of tools different from the extractor is completely useless and can cause serious damage to one's hands or to the profile of the tripod core.



5. In the event that an extractor is not available, try to get one like those on sale at spare parts dealers. Apply the extractor and take the tripod core off.

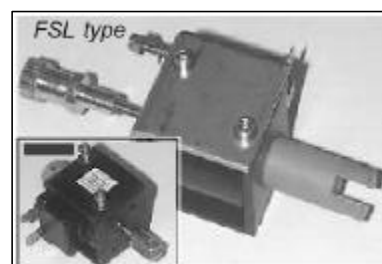


Replacement of the defective parts

Replacement of the electromagnet

Necessary tools: 5 mm hexagonal wrench, 10 mm open wrench.

1. Get the spare electromagnet; it must be the same as the one to replace (FSL or FSO, see the picture beside).



2. Disconnect the electromagnet's power supply wires. With the help of the hexagonal and the open wrench, unscrew and release the rocker.



3. With the same hexagonal wrench, unscrew the 2 recessed hexagonal screws and release the electromagnet from the supporting board.



4. Through an inverse procedure, set up the spare electromagnet:

- a) the 2 recessed hexagonal screws must be used to fix the electromagnet to the supporting board;

- b) insert the rocker into the shaft of the electromagnet; then, insert the screw, the nut the washers; tighten;

- c) connect the power supply wires again.



Disassembly of the cam

Necessary tools: 13 mm open wrench, 19 mm open wrench, sieger stinger, plastic mallet.

1. Disassemble the HE84/3 electronic card (see the instructions in the book relating to this unit).



2. Loosen almost completely the 19 mm nut from the main tapered central shaft; do not remove it completely, but leave it on the tapered central shaft, with just a couple of threads being screwed.



3. Remove the sieger tightening the rockers' pivots, extract them and release the springs of the two rockers.



4. Make the cam rotate, until the TN ITALY nameplate is down. Memorize such position for the reassembly.



5. With a plastic mallet slightly strike the formerly unloosen 19 mm nut, till the tapered central shaft comes out.



6. Remove the nut and its washer. Extract the cam.

WARNING

Hold the tripod, keeping it firm in its position before the disassembly.



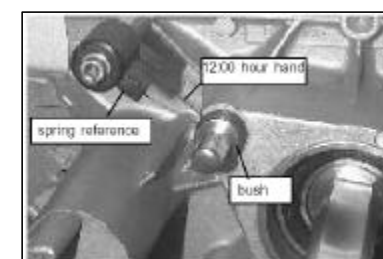
Replacement of both the RH and LH connecting rod springs

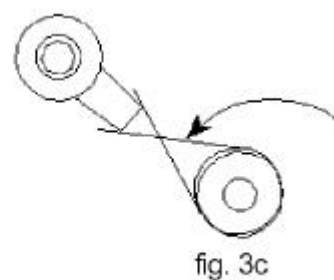
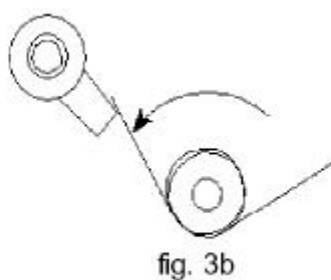
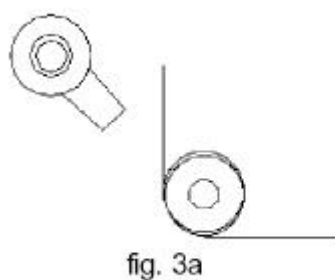
1. Disassembly the cam; then, unloose and extract the three 13 mm nuts showed in the picture and disassemble the HE84/3's guide frame.
2. Complete the disassembly of the cam, following instructions 4, 5 and 6 given on page 20.
3. The spring-connecting rods unit is now accessible and released: by means of a 13 mm wrench, unscrew the spring bolts. Replace the spring.
4. Reassemble the bolts and insert the connecting rods again. Reassemble the HE84/3's guide frame.



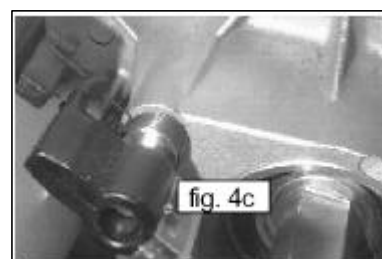
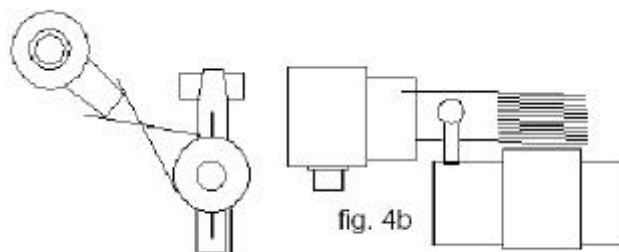
Replacement of the toggle and the spring

1. *Disassembly*
Disassemble the cam, following the instructions given on page 20. Extract the toggle, its spring and the bolt.
2. *Reassembly*
Insert the toggle bolt into the bush, keeping the countersunk part turned toward the casting plate.
3. Insert the spring into the bolt, turning it as if it were 3:00 (fig.3a). Turning it counter-clockwise, lean the 12:00 hour spring's hand on the spring reference (fig. 3b). Turning it counter-clockwise, take the other hand of the spring below the spring reference (fig. 3c).

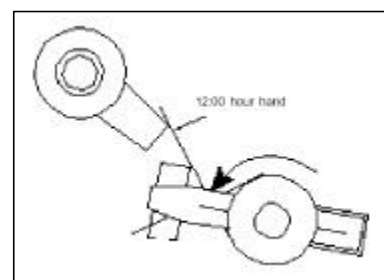




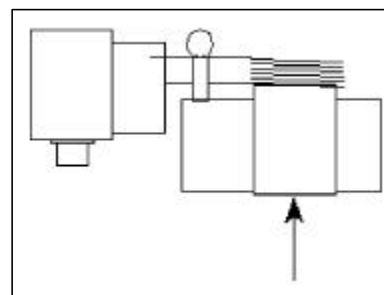
4. With the help of a mallet turned toward the casting plate and upward, insert the toggle (fig. 4a). Turning it counter-clockwise, insert the mallet between the ends of the spring (fig. 4b, fig. 4c).



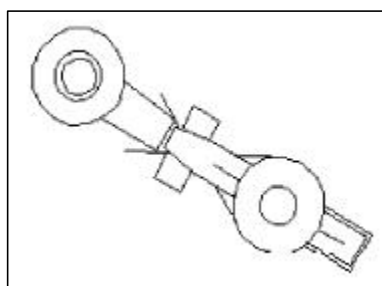
5. Wearing down the resistance of the spring, continue to turn it counter-clockwise, until the mallet is below the 12:00 hour spring's hand.



6. Push the toggle toward the casting plate, in order to allow the mallet, while passing below the toggle, to position behind the hand of the spring.



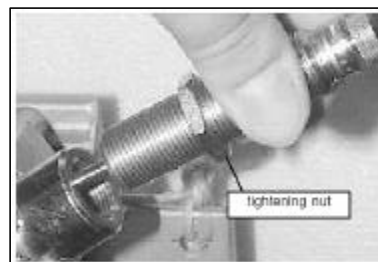
7. Let the toggle go; it must remain connected to the spring.



Replacement of the damper

The damper can be disassembled and replaced, either when the cam is disassembled or when it is not.

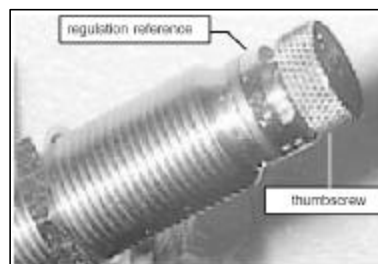
1. Loosen the tightening nut and, while unscrewing it, disassemble damper that must be replaced.



2. Insert the new damper and screw it tight by hand.



3. Unscrew it (not more than 1 turn), until the damper regulating reference numbers on the head with the knurled screw are up.



4. Screw the tightening nut tight. Acting on the knurled screw, regulate the damping force.

Reassembly of the cam

1. Insert the cam into the tapered central shaft, making sure that the TN ITALY nameplate is down.
2. Working with both hands, pull the two connecting rods toward the external circumference of the cam, in order to allow it to position in its seat. While holding the connecting rods, with the left forefinger push the cam into its seat between the two connecting rods.



3. At the same time, the damper must also be moved backward, in order not to hinder the positioning of the cam: with the right thumb, move the damper away sufficiently, until the cam has entered its seat.



3. Check the right positioning of the damper and the connecting rods: the connecting rods must lean on the inner part of the cam, which is provided with connecting rod's seats. The wheel of the shock absorber must lean on the eccentric rim.



4. Insert the washer and the nut and screw them by means of the dynamometric wrench, until reaching 26 daNm.



5. Put the rockers in their seat again and connect their springs; insert the rocker pivots and stop them through the sieger. Set up the HE84/3 card again.



Fault finding

<i>Symptom</i>	<i>Action</i>	<i>Remedy</i>
The door remains locked/unlocked	Check that the power supply switch is in the ON position Check the 24Vdc voltage is present on the HE84/3 board The movement of electromagnets and/or locking pawls is impeded The fuse of the HE84/3 board is unserviceable Verify that 24Vdc voltage is present at the solenoids when commanded. If supplied, the SMT solenoid locks the mechanism, the BMT solenoid unlock the mechanism Simulate the reader signal by short-circuiting the two corresponding inputs for each rotatio direction	If it is not present replace the power supply and/or check the wiring Remove obstacles and carry out maintenance work to check the units function correctly Replace the fuse with a known serviceable item If there is no voltage replace the HE84/3 board. If there is voltage replace the solenoid If the HE84/3 board does not react replace the board
The reader does not receive the passage confirmation signal or the reader inhibit signal	Check the correct function of relays	If one or more relays do not work, replace the HE84/3 board Check the wirings Check the reader
For one reader authorisation signal there are two passages	Check the three magnets on the upper face of the cam in the correct position	If one or more of the magnets have been removed, replace them

Section 7

Recommended Spare Parts

Spare Parts List

<u>CODE</u>	<u>DENOMINATION</u>
ESC0136	Card SL87
ESC0216	Card HE84/3
ESC0218	Card CBT2
EPS0116	Power supply PX53 - 24 Vdc / 2.1 A
ESE0305	Photocell FQ02
EIN1302	Microswitch
EAL0302	Buzzer
TMB1030	Tapered central shaft
TMB1300	Baseplate complete FS/FL
TMB1270	Connecting rod with spring
TMB1070	Rocker
SR00033	Blocchetto serratura completo
TMC0030	Tripod arms – arms
TMB1100	Nylon cam universal
TMB1095	Guide frame
TMB1240	Manual release key
MPC1021	Coperchio semaforo esterno
MPC1022	Coperchio semaforo interno
TMB1280	Solenoid complete FL
TMB1290	Solenoid complete FS
TMB1000	Mechanism electromechanical FL (w/o damper and tripod)
TMB2000	Mechanism electromechanical FS (w/o damper and tripod)
TMBX020	Spring set complete FL/FS
TMB1160	Non return toggle
TMB1180	Toggle spring stop - ref. point
TMD0000	Hydraulic damper - complete set
TMD0030	Damper bracket
TMD0010	Hydraulic damper
TMC0050	Plastic cap complete set
TMC0000	Tripod arms - complete set
TMC0003	Tripod arms - head with core only
ESE0304	Reflector
MGG1000	Rubber gasket for Sentinel top lid
MGG2000	Rubber gasket for terminal cabinet



www.gunneboentrance.com

A COMPANY WITHIN THE GUNNEBO GROUP

Note: In pursuit of its policy of continuous refinement and improvement, Gunnebo Entrance Control SpA reserves the right to modify design and details.

SWEDEN Gunnebo Entrance Control
Box 500, Kumla Gardsvag 33F, 145 63
NORSBORG
Tel +46 (0)8 53 17 15 75
Fax +46 (0) 8 53 18 85 39

NORWAY Gunnebo Trox A/S
Postboks 179, Kalbakken N-0903 Oslo
Tel. +47 22 80 42 00
Fax +47 22 80 42 01

DENMARK Gunnebo Protection A/S
Erhvervsparken 3, DK-4621 Gadstrup
Tel +45 46 19 14 66
Fax +45 46 19 14 55

USA Gunnebo Omega Inc
5056 Commercial Circle, Suite E
Concord, California, CA 94520
Tel +01 925 609 63 39
Fax +01 925 603 08 10

UNITED KINGDOM Gunnebo Entrance Control Ltd
Bellbrook Business Park, Uckfield, East Sussex,
TN22 1QQ
Tel + 44 (0) 1825 761022
Fax +44 (0) 1825 763835

GERMANY Gunnebo Entrance Control AB
Diagonalstrasse 41, D-20537
Hamburg
Tel. +49 (0) 40 47 11 30 0
Fax +49 (0) 40 47 11 30 79

FRANCE Gunnebo Entrance Control SARL
Zone d'Activites Le Mandinet, 20 Rue des
Campanules – F-77185, Lognes
Tel +33 (0) 1 64 80 14 40
Fax +33 (0) 1 64 80 14 39

ITALY Gunnebo Entrance Control SpA
Via A Volta 15 – IT 38015 LAVIS (TN)
Tel +39 0461 24 89 00
Fax +39 0461 24 89 99

SPAIN Gunnebo Entrance Control
BBC, Comte d'Urgel 143, Iola 08036
Barcelona
Tel +34 93 452 59 56
Fax +34 93 451 56 53

HONG KONG Gunnebo Entrance Control
Room 2312, C.C. Wu Building,
302-308 Hennessy Road, Wanchai
Tel +852 2882 8337
Fax +852 2523 7880