

GUNNEBO
ENTRANCE CONTROL

THE MAYOR PRODUCTLINE



ClearSec
Installation Operation and Maintenance Manual



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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.

GEC Ltd (Gunnebo Entrance Control Ltd) 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 Technical Department. Telephone +44 (0) 1825 761022, Fax +44 (0) 1825 746170, E-mail technical@gunneboentrance.co.uk

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:

Technical Department, Gunnebo Entrance Control Ltd, Bellbrook Business Park, Uckfield, East Sussex, TN22 1QQ, UK.

Telephone +44 (0) 1825 761022, Fax +44 (0) 1825 746170, E-mail technical@gunneboentrance.co.uk

Proprietary Notices

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

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 Gunnebo Entrance Control Ltd.

Changes

No hardware or software changes may be made without authority from Gunnebo Entrance Control Ltd who will be responsible for ensuring that the proposed change is acceptable in all safety aspects. Only personnel authorised by Gunnebo Entrance Control Ltd may make 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 Technical Department at Gunnebo Entrance Control Ltd at Uckfield.



Rotating Machinery

Rotating industrial machinery may possess huge amounts of stored energy. On no account must you commence maintenance if you do not fully understand what you are doing and/or have not taken all the safety precautions normally associated with industrial electronic control systems and machines.

Before starting work on the equipment, please make yourself familiar with all the system sub-assemblies, including control loops, mechanics, drives, transducers and electric circuits. Please read this Manual if you are unfamiliar with the equipment before you commence work.

Warnings, Cautions and Notes

Where necessary within this 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

The PCB in the equipment covered by this Technical Manual contains 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 to be left while potentially unsafe.

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

- i Ensure that all electrical power supplies 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 Glass Panel Installation

Rating 1: Cleaning.

Who is at Risk	Engineers or Site Personnel
Hazard	Misuse of Cleaning Fluids
Current Controls	Compliance with COSHH 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 COSHH 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

Glass Panel Installation

Who is at Risk	Installation Engineer
Hazard	Glass Breaking
	Incorrect handling techniques
Current Controls	Protective Equipment <u>must</u> be worn.

CE - Marking

The GM ClearSec is CE - marked, developed and manufactured according to EU's Machinery Directive, Low-Voltage Directive and EMC-Directive.

With each ClearSec a Declaration of Conformity is supplied



Section 2

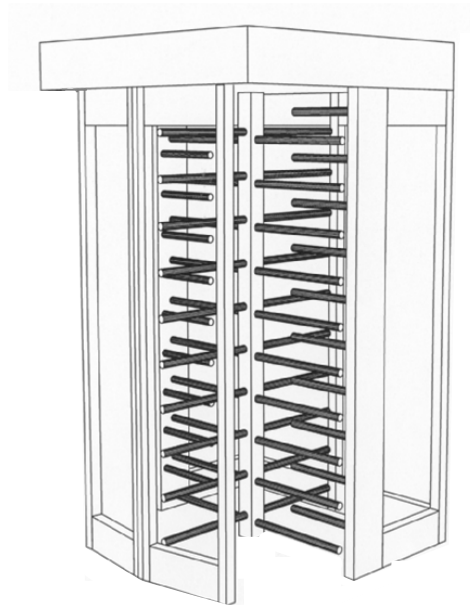
Product Description

The ClearSec is designed for use in entrances of Administration Centres, Industrial Complexes and Military Establishments where high security full height barriers are required.

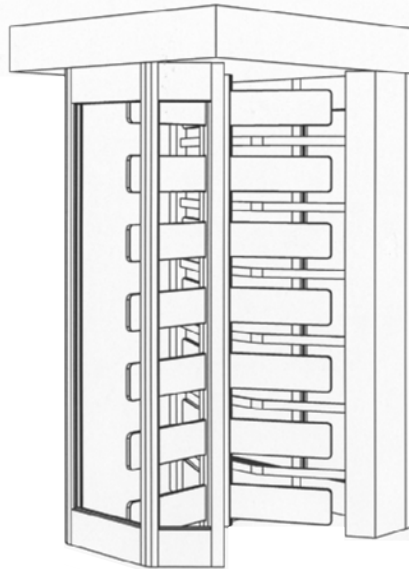
The ClearSec combines high security with impressive functions and convenience for internal and external use. The system can be supplied to suit customer requirements with either acrylic slats, straight or trombone metal arms to the rotor. This Technical Manual provides sufficient information to cover all models.

Model	Unit Type
G90	Single unit
G120	Single unit
GD90	Double unit
GD120	Double unit
GD90I	Double unit (interlocking)
GD120I	Double unit (interlocking)

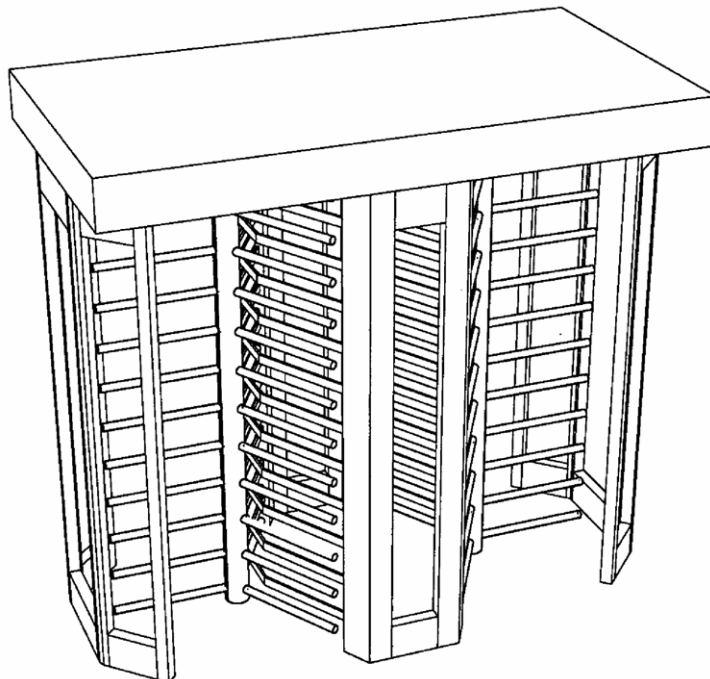
Typical Units



ClearSec – Model G90



ClearSec – Model G120SL (Slatted rotor)



ClearSec – Model GD120I

Technical Details

The ClearSec is of stainless steel and laminated glass construction as standard, however alternative construction styles are available.

Glazing is 8.2mm thick 3ply clear laminated glass.

Control of the door wings is achieved through an electrical-mechanical head or mechanical mechanism which comprises the following:

- A positive action lock which prevents two passages at one time.
- A self-centring mechanism to ensure complete rotation of the head to the reset position.
- A hydraulic damper to ensure smooth and quiet operation.
- An anti-backup device prevents reverse rotation when the head has moved 32° from the rest position.

Standard Technical Specification

Orientation: Pass left or Pass Right

Rotor Wings: 4N⁰ for the ClearSec 90
3N⁰ for the ClearSec 120

Drive: Manually Operated

Materials: Casework: 304 Grade Stainless Steel (EN10088-2 Grade 1G/2G)
Glazed Infill Panels 8.2mm thick laminated glass infill panel.
Rotor Arms 316 Grade Satin Polished Stainless Steel (EN10088-2 Grade 1K/2K)
Rotor Column Ø100mm X 3mm Mild Steel Painted Black
Rotor Arms (slatted) 19mm Acrylic slats.

Function: Passage in both directions, electronically controlled.

Mechanism : Control of the ClearSec operation is achieved by an electro- mechanical head mechanism.
The Head has damping fitted as standard.

Security: Security is achieved by means of a Pressure Mat or Stator Bars in the walkway.

Power Supply: 115/230 Vac 50/60Hz

Power Rating: Standby or Passage 50Va (Alarm Condition 50Va)

Logic Voltage: 24Vdc

Power Failure : In the event of an emergency or isolation of the power supply the ClearSec 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 one or both directions.
(As standard the ClearSec is configured bi-directional fail-safe unless requested otherwise)

Fire Alarm: Input facility available for 0V contact supplied by others to effect fail state.



Interface:

The mechanism is controlled by means of a LCM02 microprocessor control logic with the following features:

- Three inputs for sensor directing the mechanism position
- One input for opening/locking the mechanism in each direction.
- Two protected outputs for control of the opening/locking solenoids.
- Four protected outputs for piloting way mode indicators.
- Two dry contacts (0V) output relays indicating availability of use in either direction.
- Two dry contacts (0V) outputs to count passage in either direction.
- One serial port – RS485 (RS485 accessory card will be required for this function)
- One serial port – 1²C BUS

Operating Temperature: 0 to 55°C

Transportation and Storage: -25 to +55° C

Relative Humidity: 95% Maximum

Note - This Technical Manual is applicable to all variants.



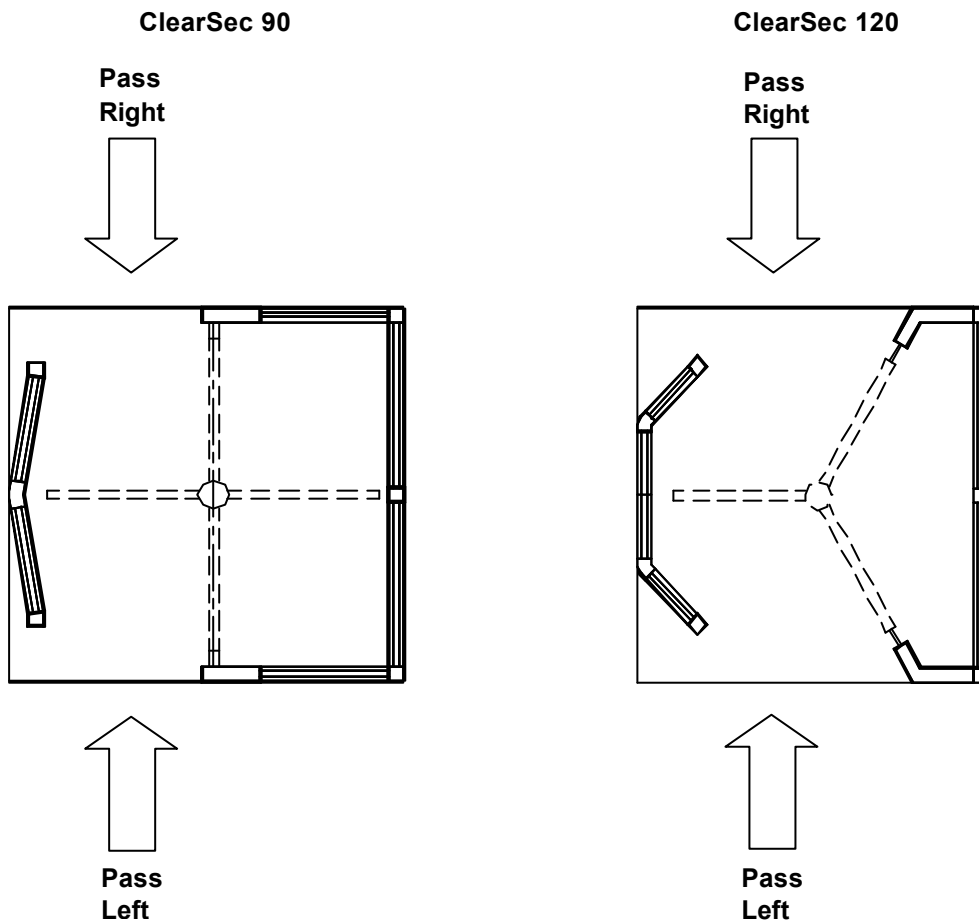
Section 3

Instructions 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 doors.

Operating Sequence

The operating procedure is shown below and given the sequence of passage through the ClearSec in either direction.



1. The Rotor will normally be locked, unless a free entry/exit option has been specified.
2. Operate the Access Control Device if fitted. (See access control devices)
3. On the acceptance of a signal from the Access Control Device the rotor will unlock and be free to rotate in one direction.
4. Pass through the ClearSec, using your arms to push the rotor.
5. The rotor will automatically lock in its new position.

Note -

- Gunnebo Entrance Control Ltd recommends the fitting of a push button if free exit is required.

Important Notices -

- Only one person at a time should pass through the turnstile.
- Large packages should be carried in front of you.
- Should any article become caught in the rotor, STOP, and DO NOT keep forcing through in the same direction.

Fail State

The ClearSec can be set to fail lock (BMT) or fail safe (SMT) in either direction via alteration of the solenoids and programmable parameter. The fail state is the same as that when a fire alarm signal is received.

Access Control Devices

GM can supply the mounting for an Access Control Device, which is specified at the initial order to meet customer requirements.

Programmable Parameters

The system operation is conditioned by the values given to certain parameters stored in the LCM02 PCB.

When the control logic microprocessor executes the program it verifies the values of the specific programmed parameters which sets the operation and function of the unit.

The values of these parameters can be adjusted or reset to a standard configuration by following the procedures given in section 4.

Listed in Table 8.2 are the parameters together with their locations and functional descriptions.

Masks

The value of some of the parameters can be worked out by converting the hexadecimal value in to a binary value and then consider the value of each digit separately.

The location parameters from 00 to 07 allow signals to be directed to the individual relays of the LCM02 PCB. Refer to Table 8.2 for Parameter Values and Section 4 for instructions to enable changes.

Important Note

Should you be locked in the 'dead zone' when using a full panel or slatted rotor with pressure mat detection, due to incorrect usage of the equipment - DO NOT PANIC.

An alarm will sound and the rotor will be released by:

- (1) The security staff using a key-switch (Standard)
- (2) If the Auto Release Facility has been ordered - you may walk back in the direction from where you entered.

The reason for the entrapment is that the user did not receive a valid authorisation signal to enter the unit. This normally occurs when TWO PERSONS try to use the unit simultaneously from both directions. This action is a security measure.



Section 4

Technical Information

Standard Features

2000mm Walkway height

Servicing from above

Stainless steel finish

Halogen walkway Downlights

Electro-mechanical head mechanism

Rotor restoring mechanism

LCM02 Logic board

Fail-safe or Fail-lock

Combination of Fail-Safe/Fail Lock

Hydraulic Damper Mechanism

Status Lights

Optional Features

Powder coated finish to standard RAL colours

GM can supply the following features on request for the ClearSec:

Pushbuttons

Card-reader mounting facility

Acrylic slatted rotor

Marguard full panel rotor

Uni or Bi-directional

Note:

The Full Panel Rotor will have Pressure Mat protection in the 'dead area' with a key-switch override (to release trapped persons).



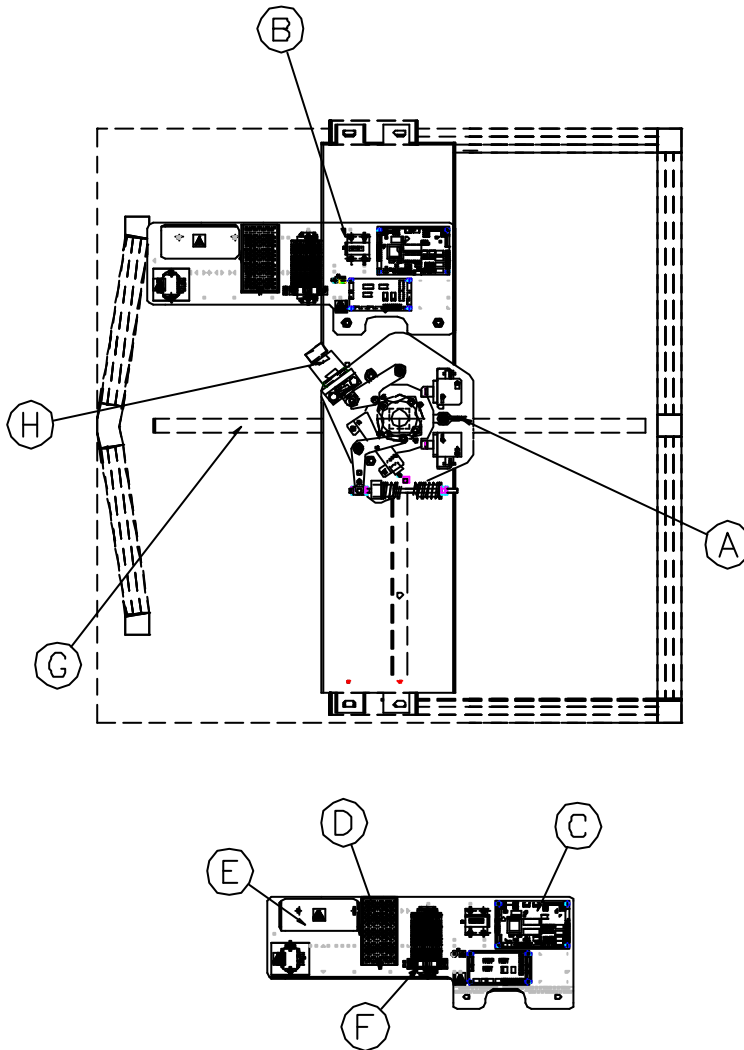
Typical Layout Details ClearSec 90 (Single Walkway)

Figure 4.1 shows the general location of the main units/assemblies that comprise the single ClearSec 90.

Fig 4.1 - Layout Details (Single Walkway)

Key to Illustration

- A - Head Mechanism
- B - Electrical Plate Assembly
- C - Logic Board
- D - Transformer
- E - Distribution Box
- F - Mains Circuit Breaker
- G - Walkway Light
- H - Rotor Damper



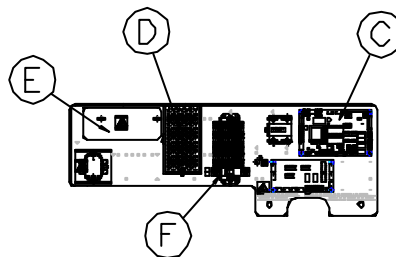
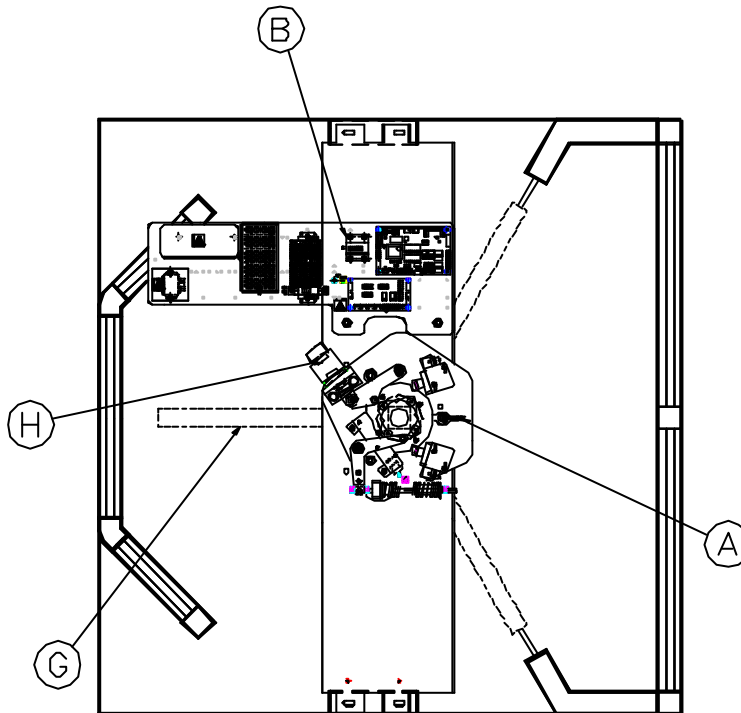
Typical Layout Details ClearSec 120 (Single Walkway)

Figure 4.2 shows the general location of the main units/assemblies that comprise the single ClearSec 120.

Fig 4.2 - Layout Details (Single Walkway)

Key to illustration

- A - Head Mechanism
- B - Electrical Plate Assembly
- C - Logic Board
- D - Transformer
- E - Distribution Box
- F - Mains Circuit Breaker
- G - Walkway Light
- H - Rotor Damper



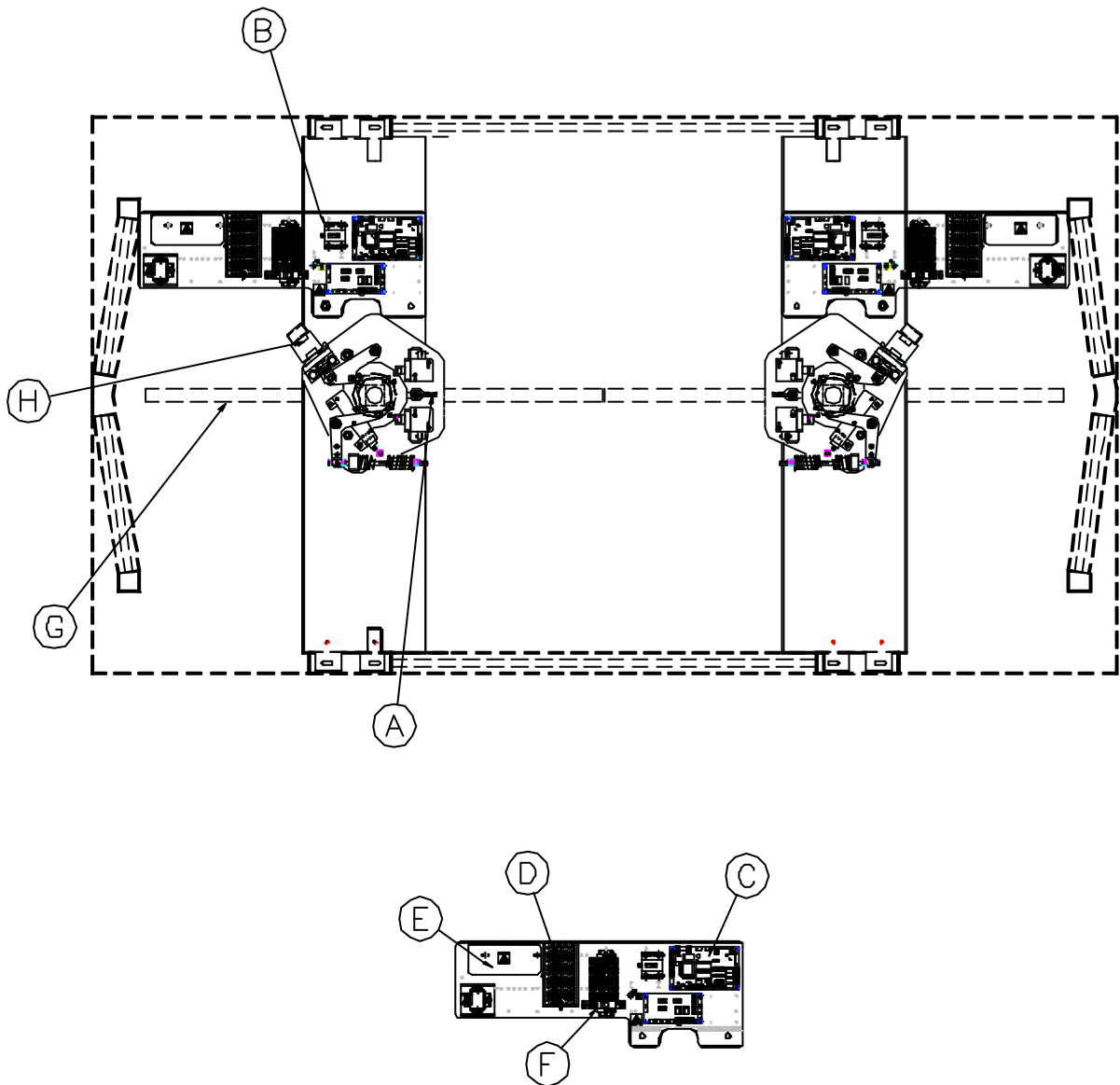
Typical Layout Details ClearSec 90 (Double Walkway)

Figure 4.3 shows the general location of the main units/assemblies that comprise the double ClearSec 90.

Fig 4.3 - Layout Details (Double Walkway)

Key to Illustration

- A - Head Mechanism
- B - Electrical Plate Assembly
- C - Logic Board
- D - Transformer
- E - Distribution Box
- F - Mains Circuit Breaker
- G - Walkway Light
- H - Rotor Damper



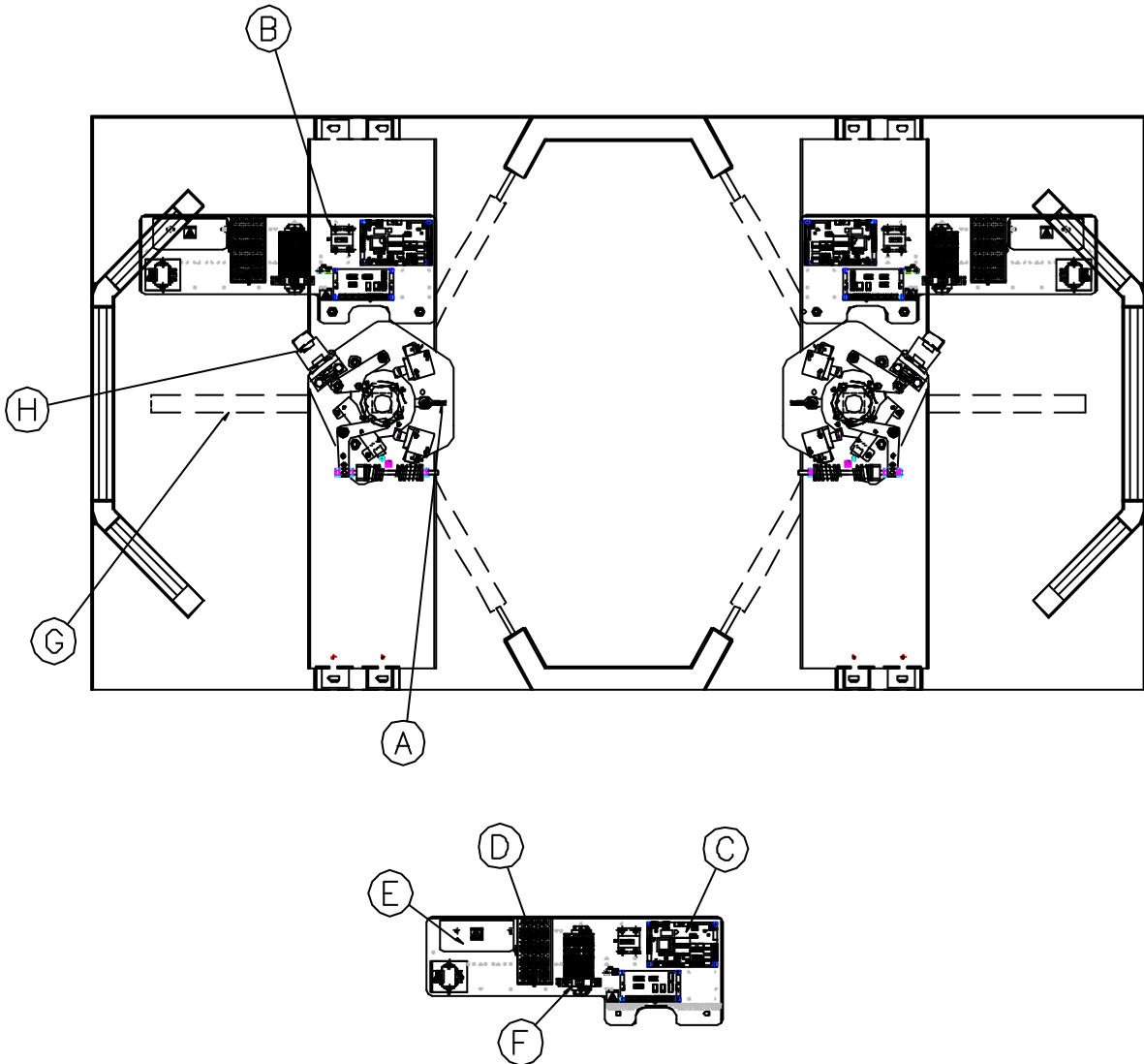
Typical Layout Details ClearSec 120 (Double Walkway)

Figure 4.4 shows the general location of the main units/assemblies that comprise the double ClearSec 120.

Fig 4.4 - Layout Details (Double Walkway)

Key to Illustration

- A - Head Mechanism
- B - Electrical Plate Assembly
- C - Logic Board
- D - Transformer
- E - Distribution Box
- F - Mains Circuit Breaker
- G - Walkway Light
- H - Rotor Damper



This section gives details of the main components that comprise a ClearSec.

Fig 4.5 – 90° Titan Head Mechanism

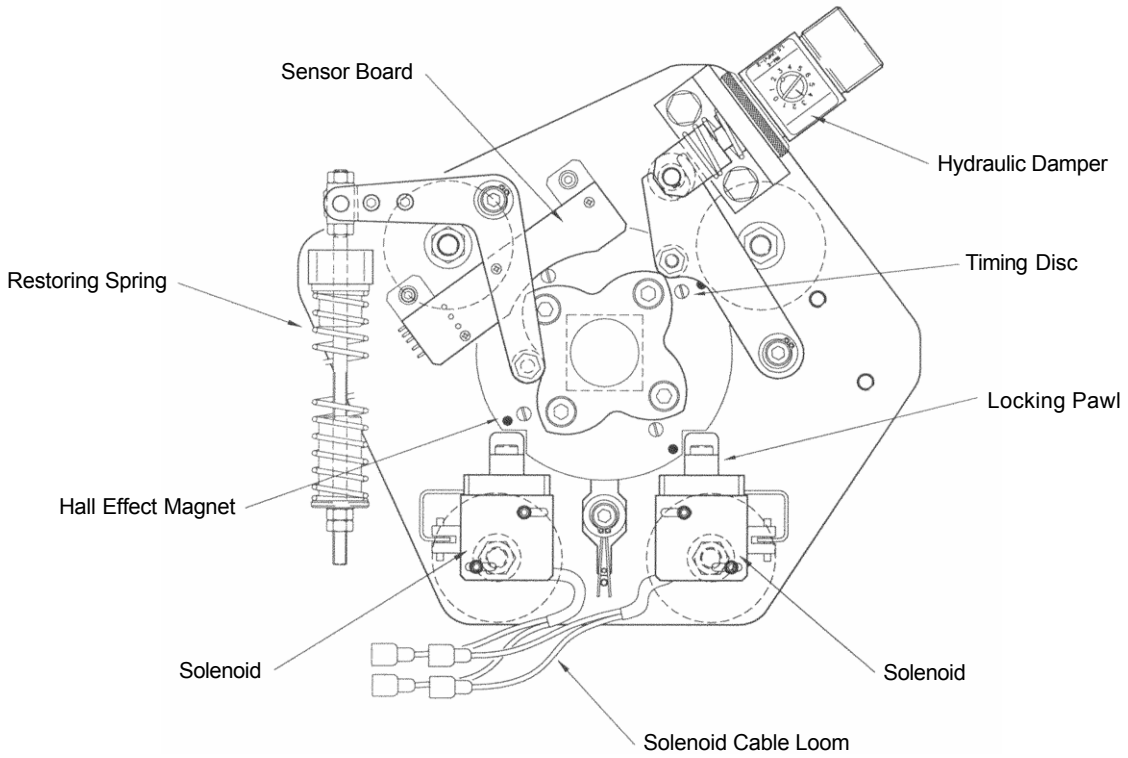


Fig 4.6 – 120° Titan Head Mechanism

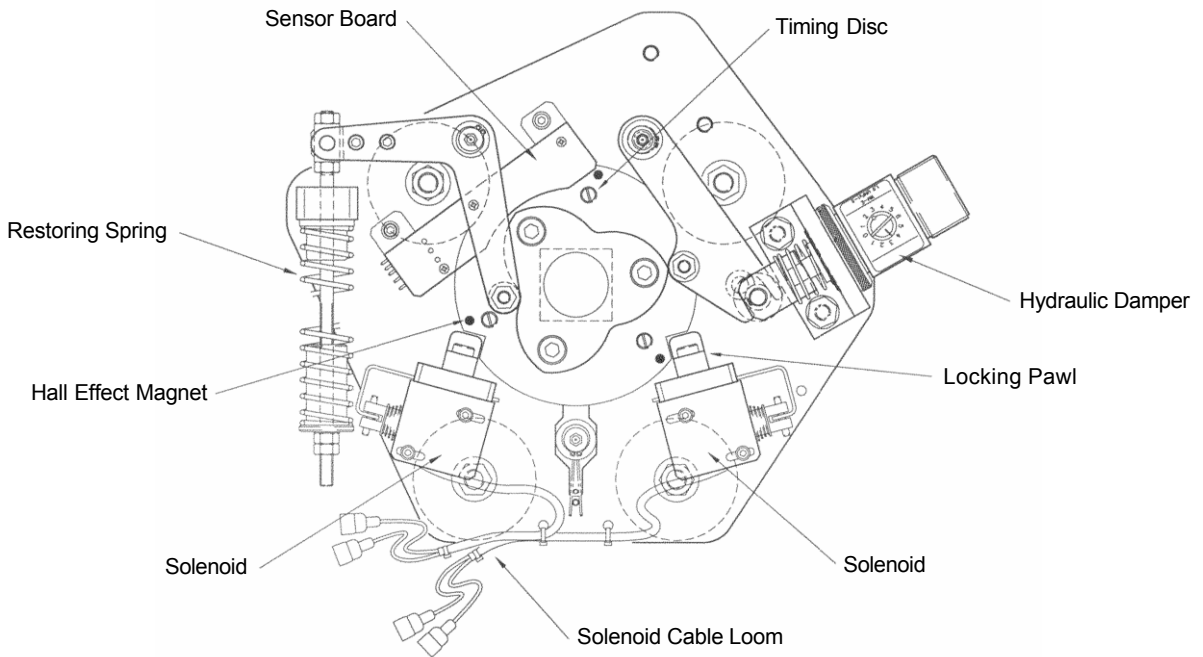


Figure 4.7 - Typical Titan Head Mechanism Elevation.
 (Position of components vary slightly between models)

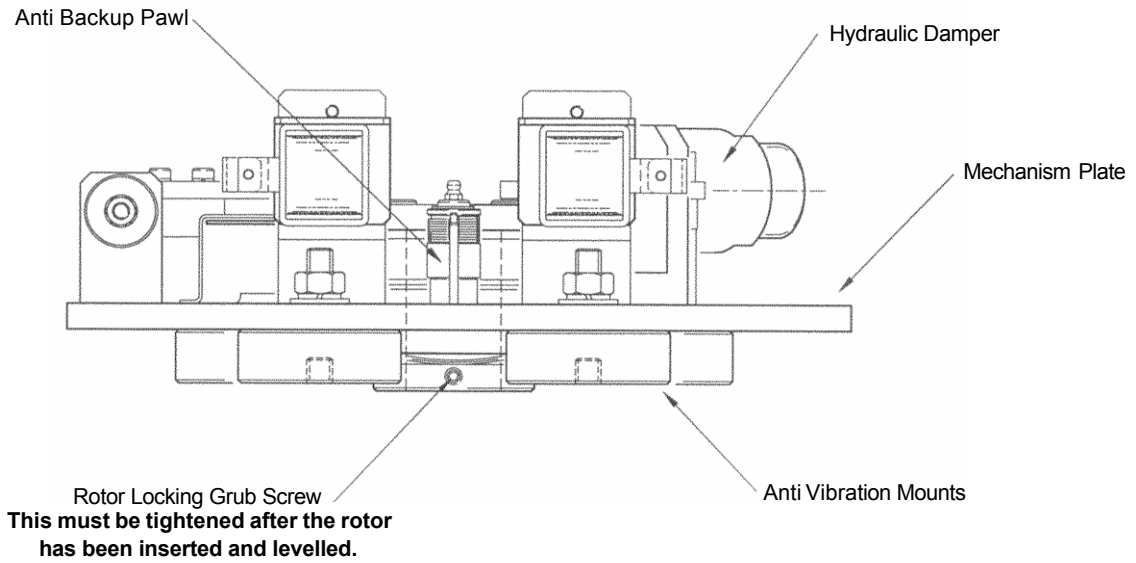
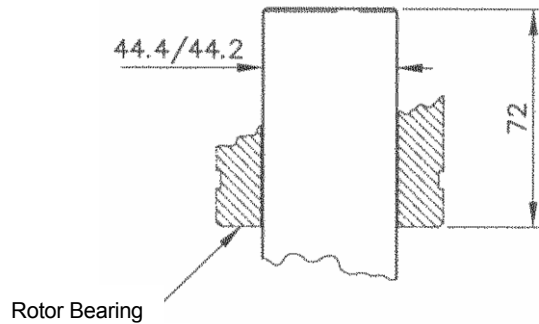


Fig 4.8 – Rotor Engagement Detail



Note - All Rotor variants should be inserted into the mechanism bearing as detailed above.

Drives and Controls

The head is mounted by means of 4 x M12 bolts through slotted holes in the chassis. Although the unit can be mounted directly to the turnstile framework, we recommend that it is mounted on bonded rubber anti-vibration mountings. A kit part number 88161107 is available for this purpose.

Fine adjustment of the rotor home position in relation to the turnstile framework can be achieved by slackening the 4 x M12 mounting bolts in the slotted holes and rotating the complete head assembly to the desired rotor position and re-tightening.

Connection of the turnstile rotor to the head is by means of a 44.4mm (1.75 inch) square section spigot at the top of the rotor, which engages in a similar hole in the head ratchet block. It is essential that this spigot is aligned with the rotor and also maintained perpendicular to the head chassis plate.

Two M8 grub screws spaced at 90° secure the rotor spigot to the head unit.



Restoring Force Adjustment

The force exerted by the restoring spring can be adjusted to cater for a wide range of head and rotor configurations.

The factors affecting the setting are:

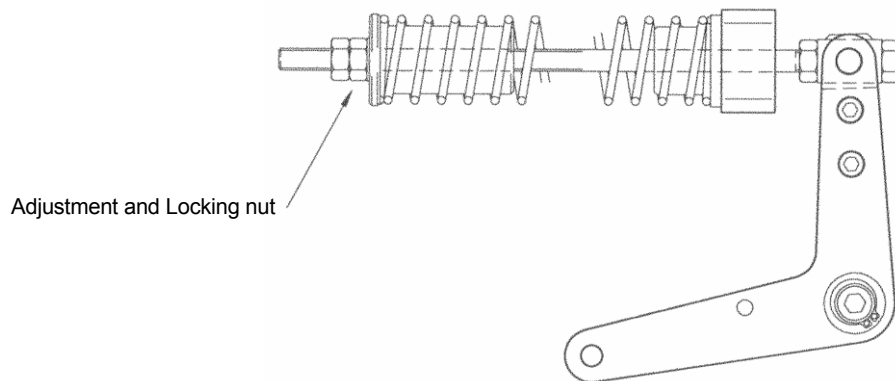
- Rotor weight and diameter
- Whether the unit is damped or un-damped.
- General friction within the installation
- User preference

The minimum force is always that required to rotate the unit to the next home position after the rotor has moved half way through the cycle following a release signal. The length of the spring should be adjusted to achieve this. (Spring length is shortened to increase the force and lengthened to reduce it).

Carry out checks at various positions in the cycle by ensuring that the unit, when starting from a static position, will always be fully restored to the home position.

The restoring force may be increased as required to suit user preference.

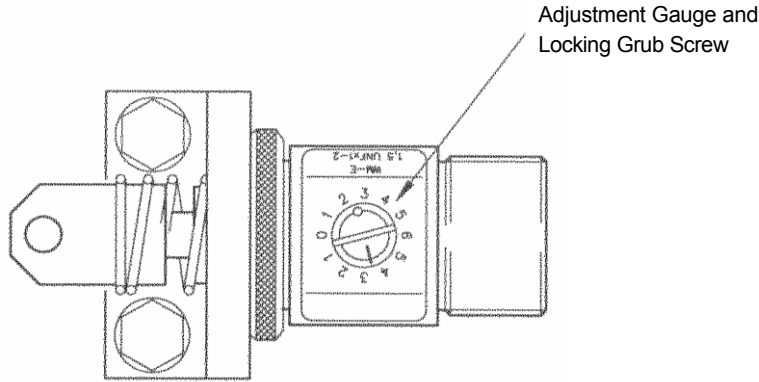
Figure 4.9 - Restoring Mechanism



Damping Adjustment

An adjustable hydraulic damper is fitted to the head assembly. This reduces the shock and noise which can occur when the turnstile rotor reaches the home position.

Figure 4.10 - Hydraulic Damper



The damper should be adjusted to suit user preference and the weight diameter of the rotor.

Note - There is some interaction between the damper setting and restoring force.

First set the damping as required for the application by unlocking the grub screw, swinging the rotor as hard as possible, adjusting the damper by means of the rotor adjustment on the side of the damper, so that the rotor comes to a controlled stop at the home position. Zero is minimum damping, 6 maximum.

Final adjustment is fairly critical and sensitive.

The restoring force can then be adjusted as in the previous section, so that the rotor will return to the home position against the resistance of the damping. Check this by rotating the unit until the Cam contacts the damper roller with the head stationary. A properly adjusted restoring mechanism should then always return the unit to the home position.

Note - That if it is necessary to increase the restoring force then it may be necessary to further increase the damping slightly and therefore a little more restoring force may then also be required.

It is a question of balancing the one against the other, making adjustment as necessary until the system is tuned.

Electrical Connections

The locking solenoids have flying loom with shrouded male connectors. Polarity of the connection to the solenoids is unimportant.

It is recommended that the head unit is connected to Earth. A M5 threaded stud is provided for this purpose.

Sensor Timing and Solenoid Operation

The LCM02 microprocessor controller will operate with a dc supply from the in-built PSU from 5 to 24v, providing a negative going signal, when a sensor is active.

When a sensor is inactive the output V01, V02 or V03 will be high (at supply voltage) and the corresponding indicating LED will illuminate. On activation the sensor output will drop to 0v and the indicator LED will extinguish.

For the optimum operation it is recommended that when configured in fail safe mode (i.e. de-energised to release) the solenoids are re-energised at the second sensor signal, i.e. sensor S2, output V02, for pass left clockwise rotation or sensor S1, output V01, for pass right anti-clockwise rotation of the rotor.

When configured fail lock (i.e. energise to release) ideally the solenoids should be de-energised (to lock) at the first sensor signal, i.e. sensor S1 output V01, for pass left clockwise rotation or sensor S2 output V02 for pass right anti-clockwise rotation of the rotor. This allows time for the solenoid magnetic field to decay sufficiently to let the locking pawl drop before the rotor reaches the home position.

Anti-reverse Ratchet Quietening Adjustment

The TITAN head quietening mechanism will have been tested and adjusted for correct operation. However, during the life of the unit there may be some wear in the components.

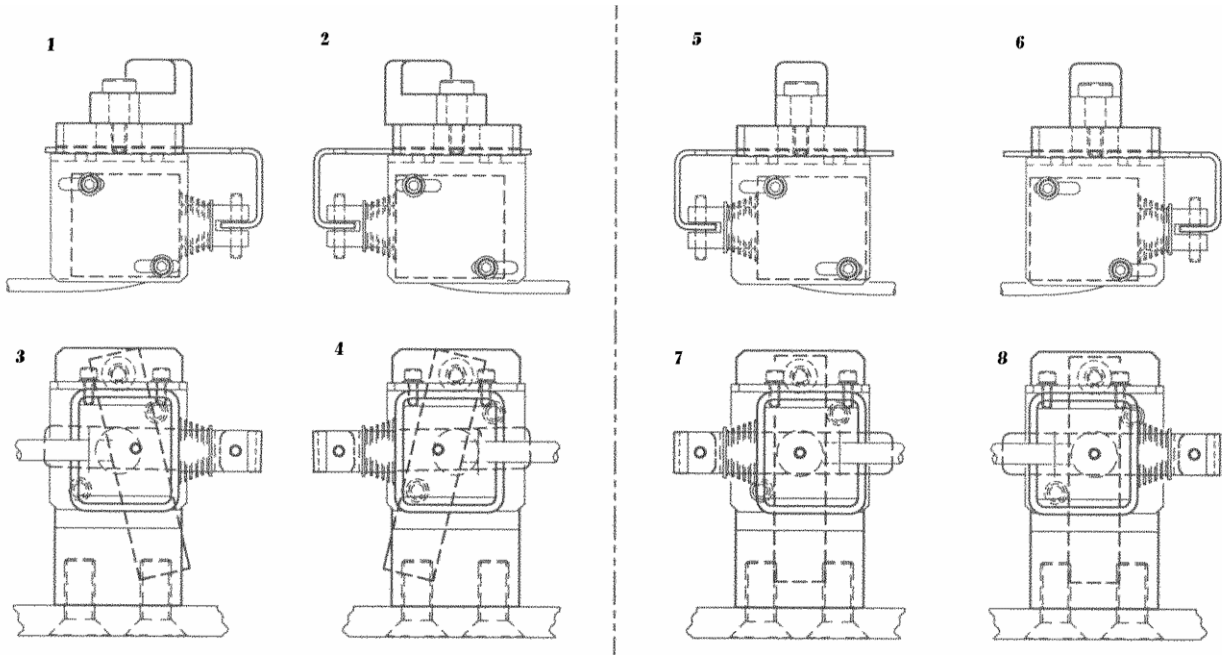
Should adjustment be required, (indicated by ratchet noise as the head is rotated) the slotted grub screws can be rotated clockwise with a screwdriver, quarter of a turn at a time until the ratchet noise is eliminated.



Locking Solenoid Adjustment

The configuration of the head locking solenoids can be changed from fail safe on power failure to fail lock or vice-versa in both directions of rotation, by re-adjustment of the component parts,

Figure 4.11 - Solenoid Detail



Note - If the fail state of the solenoid is changed by physically turning it around then parameter 0.0. MUST be altered to suit. Parameters are altered by using the programming switches on the LCM02
i.e.

Pass Left (Direction A)	Pass Right (Direction B)	0.0. Value
BMT (fail lock)	BMT (fail lock)	00
SMT (fail safe)	BMT (fail lock)	01
BMT (fail lock)	SMT (fail safe)	02
SMT (fail safe)	SMT (fail safe)	03

Warning - Fail lock solenoids become hot during operation since they are energised until released.

• **For fail safe units check:**

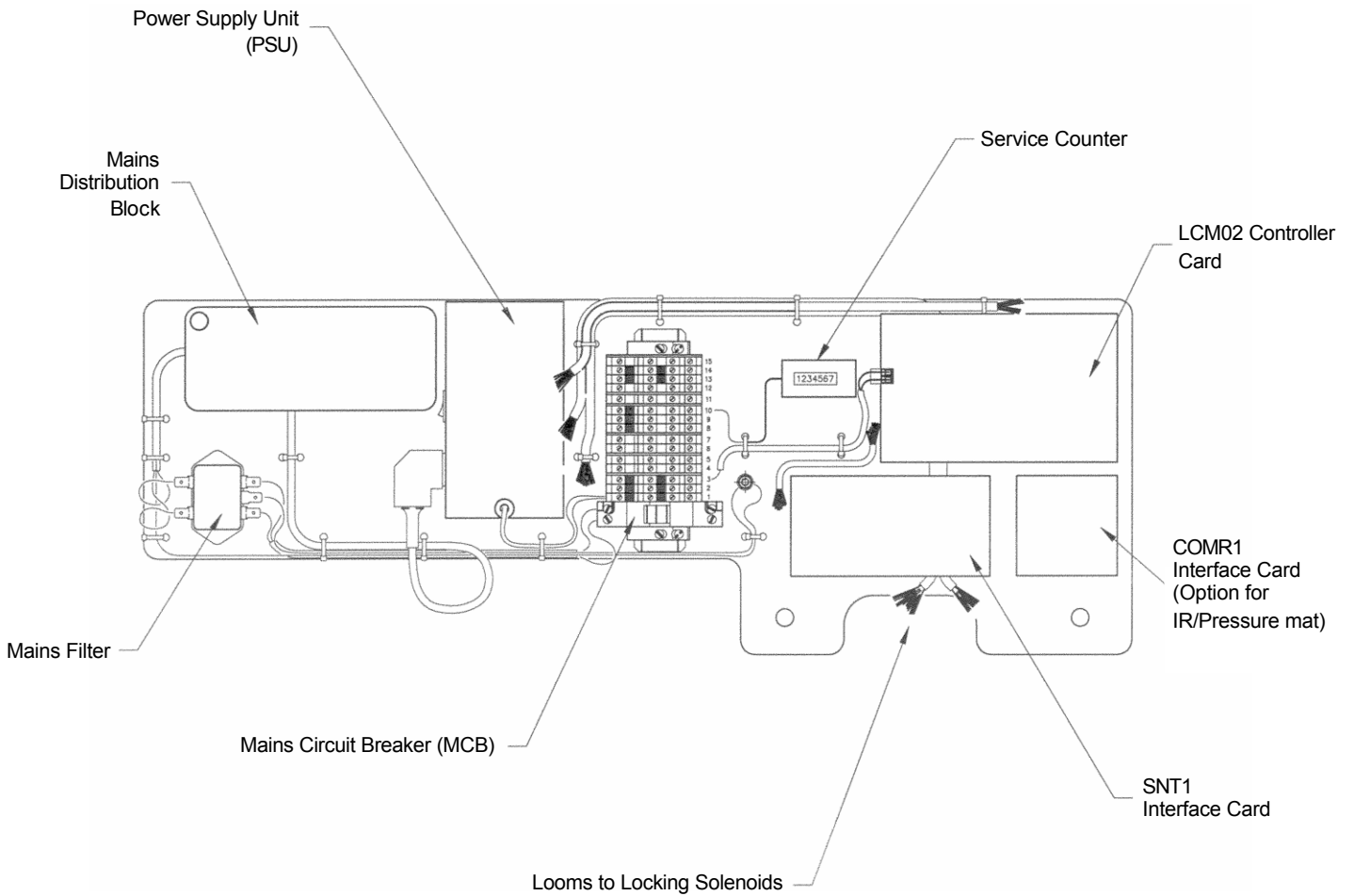
1. With solenoid de-energised and plunger extended by action of the spring the locking pawl is held clear of the baffle plate outside diameter. Adjust the position of solenoid coil if necessary, with the head in home position, retract the plunger manually, and the locking pawl will engage in the recess on the ratchet block without excessive friction. Release pawl will also swing clear.
2. Energise the solenoid, the pawl will engage the recess in the ratchet block. De-energise the solenoid and the pawl will release clear of baffle plate outside diameter.
3. Re-energise the solenoid and the pawl is engaged in ratchet the block. Manually operate the locking pawl to the Release Position against the force of the energised solenoid. There will be some resistance but it must not be excessive. Adjust the position of the solenoid coil to reduce resistance to a minimum and re-check as detailed above.

• **For fail lock units check:**

1. With the solenoid de-energised and the plunger extended by action of the spring, (head in home position) the locking pawl is engaged in the recess in ratchet block. Adjust the position of the solenoid coil as required. Retract the plunger manually, the locking pawl will swing clear of the baffle plate outside diameter. On release, the pawl will re-engage the ratchet block.
2. Energise the solenoid. The pawl will release clear of the baffle plate outside diameter. De-energise the solenoid and the pawl will re-engage the ratchet block.

Electronic Circuit Boards.

Fig 4.12 – Electrical Plate Assembly



The mechanism has one Electrical Assembly comprising of the electrical mains connection location and electronic control and interface card options.

The three mains electronic cards are

1. LCM02 Controller Card
2. SNT1 Passage Management
3. COMR1 Dead Area Sensing Control used for IR/Pressure Mat functions.

For schematic and Customer Connection refer to Section 5.

Note - Customer Connections with the exception of the Card Reader Interface is via the terminal block TB1 mounted on the Electrical Plate Assembly.

LCM02 Control Logic Board

The LCM02 board controls the system inputs and outputs either directly or through other boards to which it interfaces.

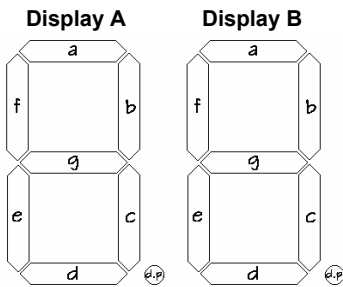
The basic features of the board are as follows:

- One input for unlocking the tripod for transit in direction A.
- One input for unlocking the tripod for transit in direction B.
- Two pairs of protected outputs for driving the signal lights (red and green) for directions A and B.
- Four outputs that can be directed to relays with voltage free contacts to provide an interface with external components.
- Fast acting fuse 5x20mm, 3. 15A/250V.
- RS485 asynchronous serial line.
- Four board mounted push buttons to program, reset and default of parameters.
- Microprocessor reset button.
- Operator interface comprising two 7-segment displays with decimal points and three pushbuttons.

Start-up Functions

At the start-up, or when the equipment is switched on, the following functions/messages can be read on the LCM02 displays.

SW 2	SW 3	SW 4	Result
OFF	OFF	OFF	It displays the status of 14 inputs
ON	OFF	OFF	It allows the parameter programming SW2: It changes from parameter number parameter value (Dot = num. parameter) SW3: Decreases the displayed number SW4: Increases the displayed number
OFF	On	OFF	It displays the status of 14 inputs and the TX RX serial line status SW2: Red pictograms, red traffic lights, 2=1rele on, 1 magnet on, buzzer off, display off. SW3: Green pictograms, green traffic lights, 2=1 relay on, 1 magnet on, buzzer off, display on. SW4: Pictog, badge, traffic lights off, relay off magnets off, buzzer on, display = indser
OFF	OFF	ON	It visualises the status of 10 bit anagogical-digital converters SW2: It allows to select channel ADC SW3: It visualises the channel and the high part of the conversion
ON	OFF	ON	It initialises the equipment with the default parameters Display visualises in By pressing SW3 switch default type is selected (from 00 to 02) One the default has been selected press SW4 If everything is OK display shows do, otherwise it shows Er.

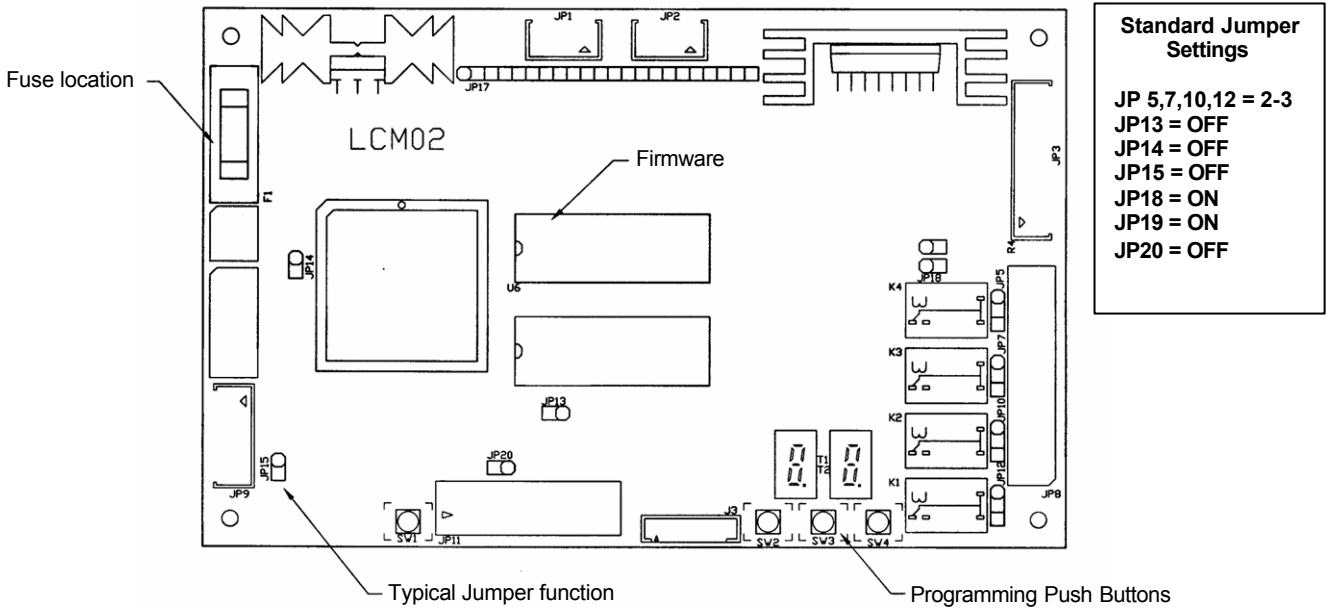


Segment (Display B)	High	Normal	Low	Normal
a	Lock A	Off	Sensor 2	On
b				Off
c	Mat B	Off	Reader B	Off
d	Emergency	Off		
e	Mat A	Off	Reader A	Off
f	Unlock A	Off	Sensor 1	Off
g	Lock B	Off		
d.p.	Rx	Off	Tx	

Changes to the Programmable Parameters

The installation/service/maintenance engineer can perform changes to the parameters or carry out input and output tests using a sub system of the LCM02 PCB consisting of two seven segment displays (T1 and T2) and pushbuttons SW1, SW2, SW3 and SW4.

Figure 4.13 Programming Pushbutton and Switch Locations



Qualified personnel only must carry out parameter changes.

It is recommended that before any changes are made the old locations and values are recorded, and when the change is completed the new values are listed for record purposes.

Accessing the Parameter Change Mode

To access the parameter change mode:

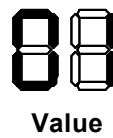
1. Press and hold down pushbutton SW2
2. Reset the microprocessor by pressing and releasing SW1
3. Release SW2

A number will be shown on the Display.

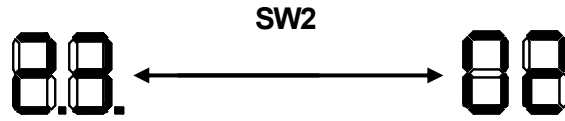
If the number has two decimal points - it is the LOCATION.

If not - it is the PARAMETER VALUE.

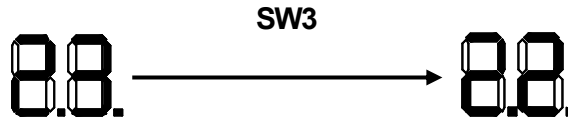
i.e.



Pressing SW2 will cause the logic to switch between PARAMETER LOCATION and RELATIVE VALUE.



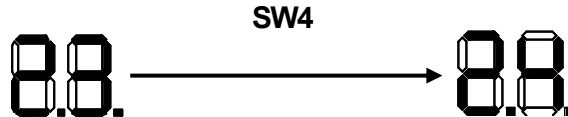
Pressing SW3 when a Location is displayed will move to a lower location.



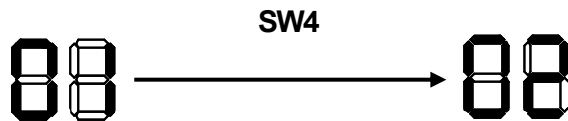
Pressing SW3 when a Value is displayed will decrease the VALUE.



Pressing SW4 when a Location is displayed will move to the next higher Location.



Pressing SW4 when a Value is displayed will increase the Value.



When all required adjustments have been made – start the program using the RESET pushbutton SW1.

Note – The LCM02 display will go blank for approx. 1 second when pressing SW1. Should it remain blank after this time, turn the power off and then back on.

Basic Configuration

Important Note

**THIS CONFIGURATION IS DIFFERENT TO THOSE SET DURING FACTORY TESTING.
ANY CHANGES WILL DELETE THE ORIGINAL SETTINGS.**

Parameter Default Setting

The ClearSec always uses default 01

To select the default please follow this procedure:

- Hold down SW2 and SW4, press SW1 for a second: "in" is then displayed;
- Push SW3 twice so that 01 is displayed;
- Press SW4 to confirm "do" is displayed, then press SW1 to reset.

Voltage Free Outputs



The four relays K1, K2, K3 and K4 control an equal number of voltage free contacts that interface the control logic with external components. The maximum capacity of the contacts is 0.5A max/30V.

Note - The output contacts may be configured individually for normally open (NO) or normally closed (NC) operation by suitably positioning the jumpers JP05, JP07, JP10 and JP12.

The logical function of the four outputs is dependant on the values set for certain programmable parameters, Refer to the OPERATING SECTION of this manual.

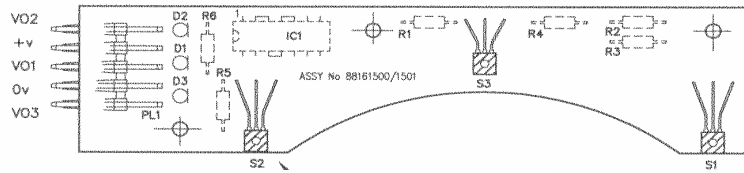
Sensor Board

The board provides an interface between the Titan mechanism and the LCM02 Controller Logic. Mounted on it are the position sensors for the rotary unit and all the connections required to operate the solenoids.

The sensor PCB assembly is fitted with a 5 way male connector.

Communication with the LCM02 PCB is made by means of a cable to the Board. This cable carries +24Vdc for the Board supply, sensor signals and the commands for all solenoids.

Fig 4.14 - Sensor Board



Hall Effect Sensor (x3)

LED's

The board has 3 status LED's that indicate the operating status of the mechanism.

LED	Colour	Function	Description
DL1	Green	Status of Hall sensor 1	On when sensor engaged
DL2	Green	Status of Hall sensor 2	On when sensor engaged
DL3	Green	Status of Hall sensor 3	On when sensor engaged

SNT1 Card

The board is used as an interface between the LCM02 PCB and the Photocells, Buzzer, Pictograms and the Sensors. The circuit details are shown on figure 5.15 to 5.17 Customer Connections.

It is fitted with two relays that provide ONE or ALL of the Alarms. The Alarms are defined as follows:

- Improper Transit
- Rotor Positioning
- Sort
- Auxiliary (this can be defined by the user)
- Programming of the alarms is carried out at the LCM02 PCB.

Power Supply Unit

The switching power supply unit PX53-14A provides the +24Vdc power for the systems electronic and electromechanical devices. It is equipped with an ON/OFF switch and a socket for the connection of the mains power input.

Specification

Input voltage:	115/230 Vac +/- 15%, 50 / 60Hz (To change input voltage the internal jumper will need to be changed, this is normally done at the factory)
Output voltage:	+24Vdc
Output current:	2.2A max
Power:	50W max
Input protection:	Internal time delay fuse 5x20mm, 4A/250V
Output protection:	Automatic over current and over voltage



SECTION 5

Installation

Unpacking

On receipt of equipment on site, check all items are complete and undamaged. If for any reason transit damage has occurred, ensure the extent of any damage is recorded and if considered necessary report the incident to GM.

Retain all major component packaging for re-use in the event that items may need to be returned for servicing during their life.

Tools Required

Step Ladder
 One Metre Long (minimum) Spirit Level
 Tape Measure
 Set of Metric Allen Keys
 Set of Metric Spanners
 Crowbar
 Hammer Drill
 Chisel Attachment
 Diamond Drill bits for 12mm bolts
 Tungsten Drill bits for 12mm bolts
 Extension Lead
 Generator (if power is not available)
 Chalk Plumblines
 Shims
 Mastic
 Hammer and Chisel
 Nylon Mallet
 Tool Kit - General
 Safety Glasses
 Safety Gloves
 Special Key Spanner (for access panel)

Please Read All Sections Carefully Before Commencing Installation

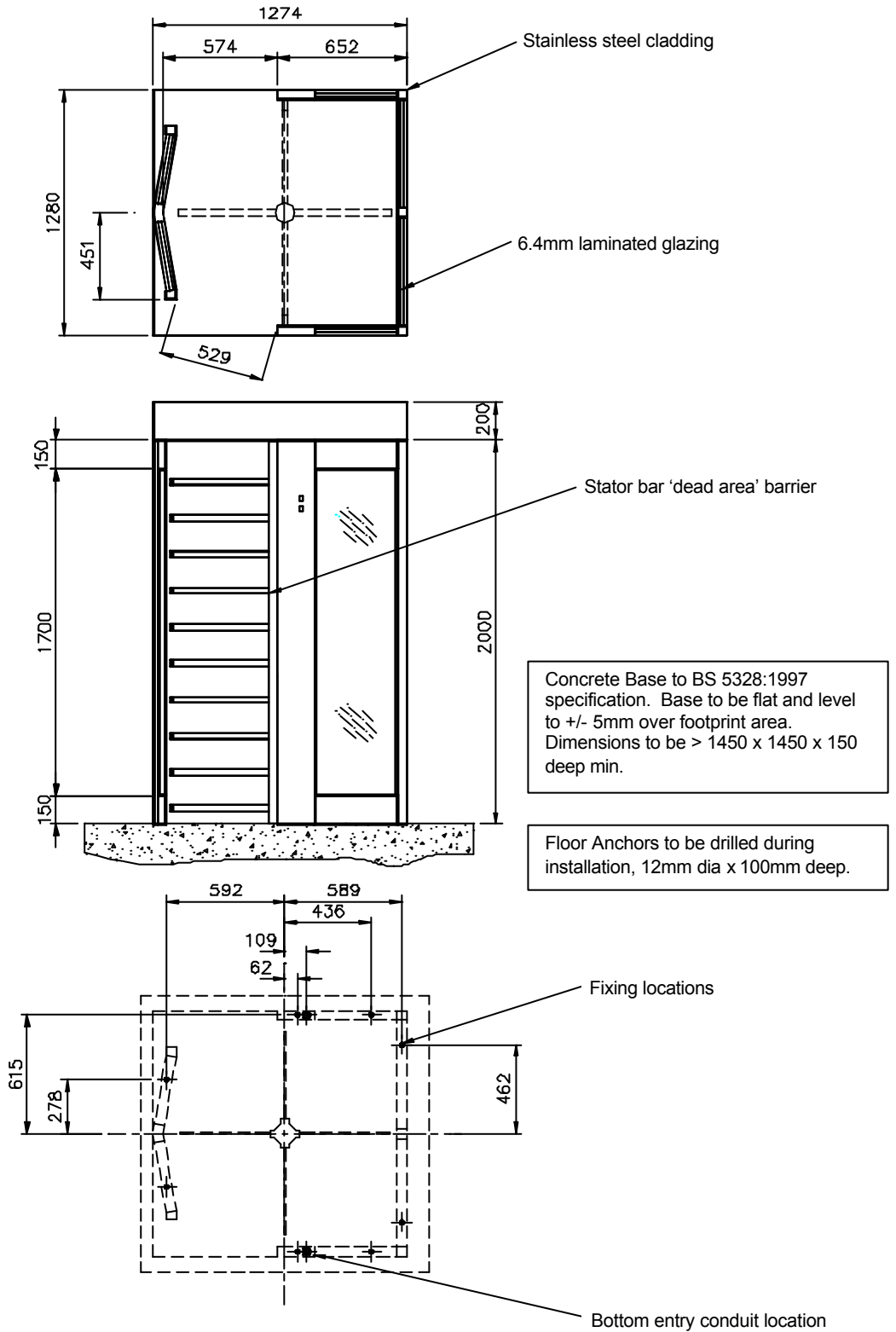
Site Preparation

Ensure the site base area has been completed in accordance with the approved site installation drawing. Reference to Figures 5.1 to 5.6 should be made.

Note – The drilling details are a guide only and should be done on site when installing the unit.



Fig 5.1 – ClearSec G90 Site Preparation



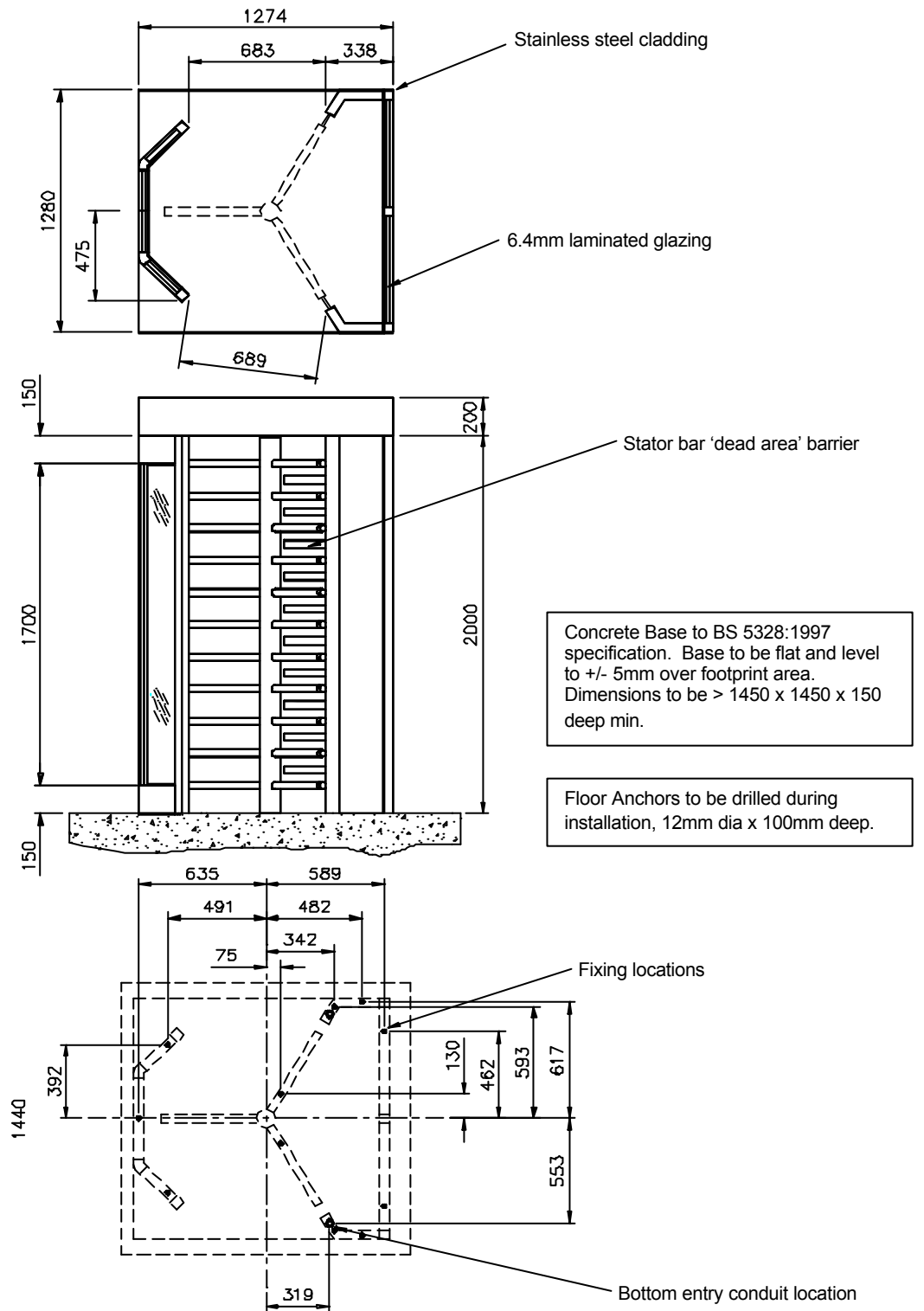
Concrete Base to BS 5328:1997 specification. Base to be flat and level to +/- 5mm over footprint area. Dimensions to be > 1450 x 1450 x 150 deep min.

Floor Anchors to be drilled during installation, 12mm dia x 100mm deep.

IMPORTANT

- Any horizontal pipe or conduit runs below the ClearSec must be at least 140mm below FFL.
- It is the customers responsibility to ensure the structural integrity and strength of the installation location.
 - 200mm clear clearance is needed above the ClearSec for service activities.

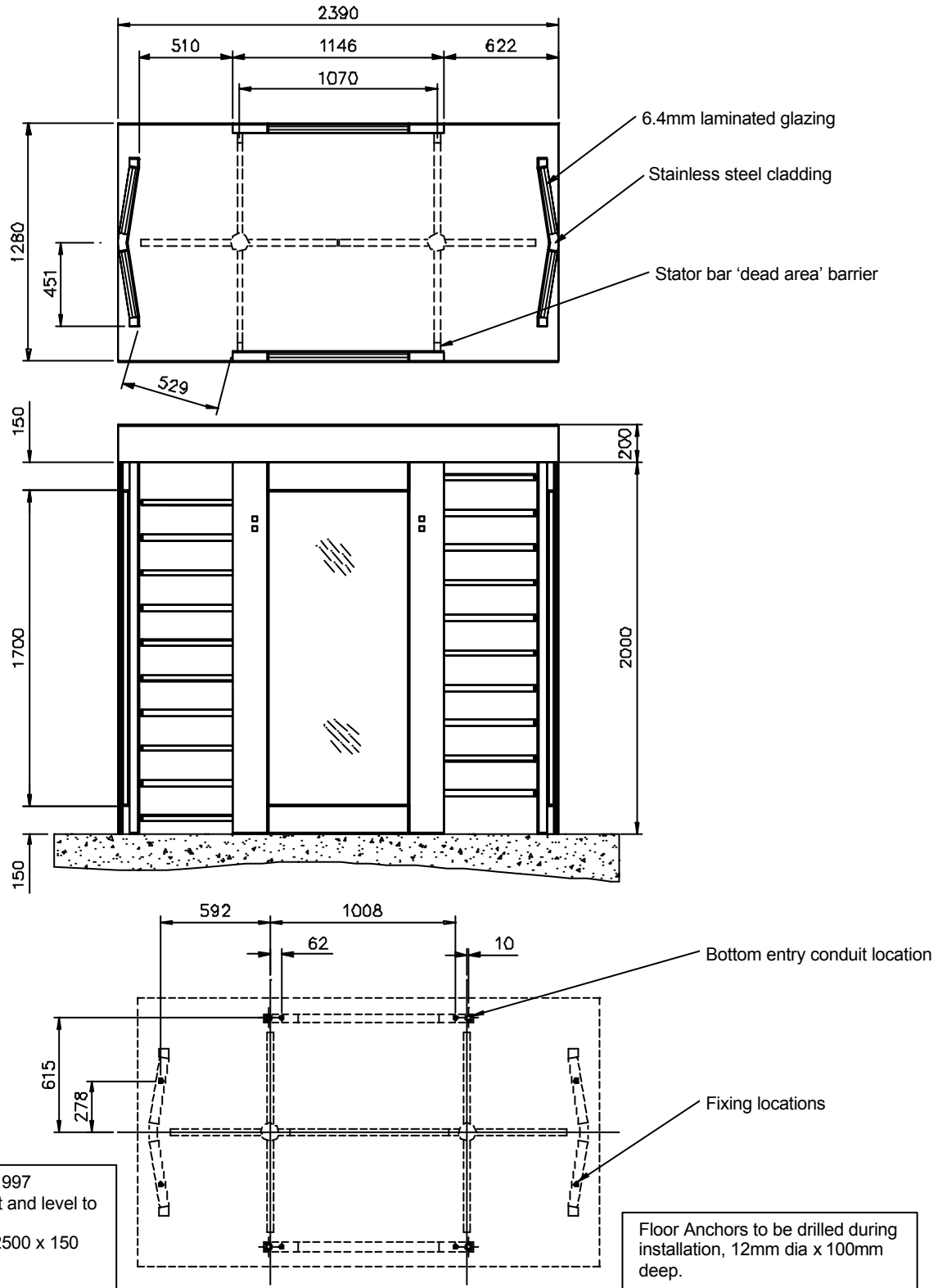
Fig 5.2 – ClearSec G120 Site Preparation



IMPORTANT

- Any horizontal pipe or conduit runs below the ClearSec must be at least 140mm below FFL.
- It is the customers responsibility to ensure the structural integrity and strength of the installation location.
 - 200mm clear clearance is needed above the ClearSec for service activities.

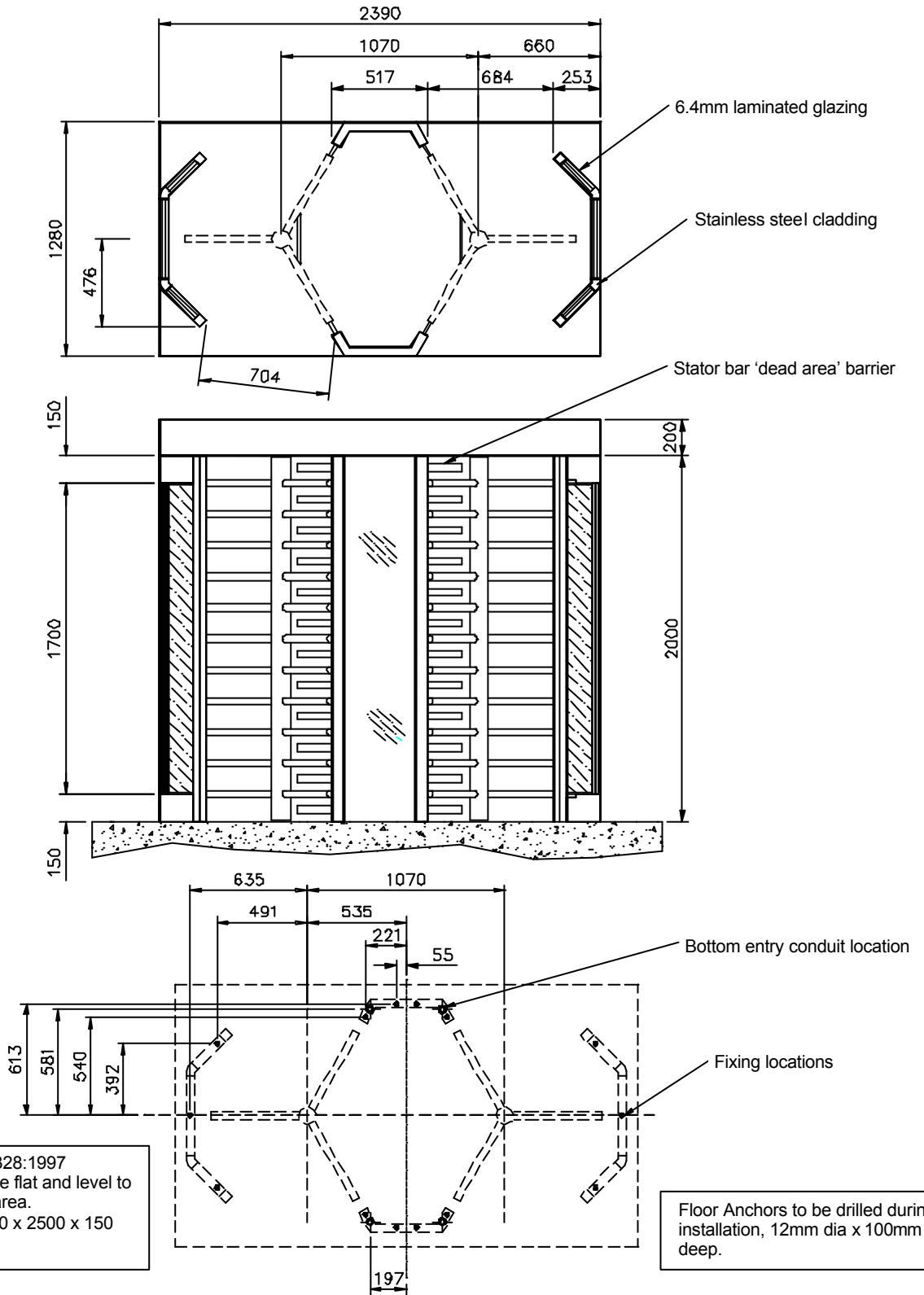
Fig 5.3 – ClearSec GD90 Site Preparation



IMPORTANT

- Any horizontal pipe or conduit runs below the ClearSec must be at least 140mm below FFL.
- It is the customers responsibility to ensure the structural integrity and strength of the installation location.
 - 200mm clear clearance is needed above the ClearSec for service activities.

Fig 5.4 – ClearSec GD120 Site Preparation



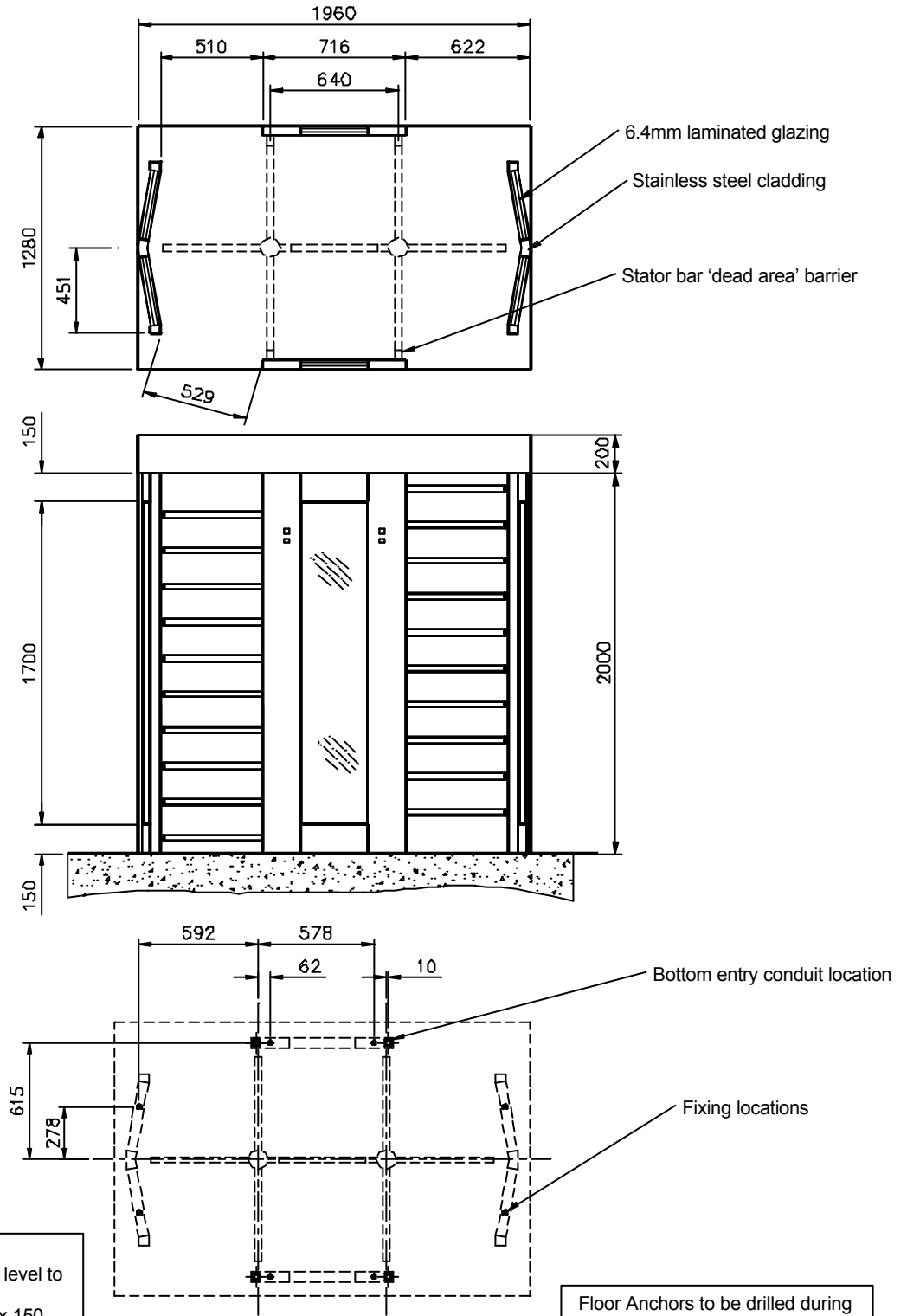
Concrete Base to BS 5328:1997 specification. Base to be flat and level to +/- 5mm over footprint area. Dimensions to be > 1450 x 2500 x 150 deep min.

Floor Anchors to be drilled during installation, 12mm dia x 100mm deep.

IMPORTANT

- Any horizontal pipe or conduit runs below the ClearSec must be at least 140mm below FFL.
- It is the customers responsibility to ensure the structural integrity and strength of the installation location.
 - 200mm clear clearance is needed above the ClearSec for service activities.

Fig 5.5 – ClearSec GD90I Site Preparation



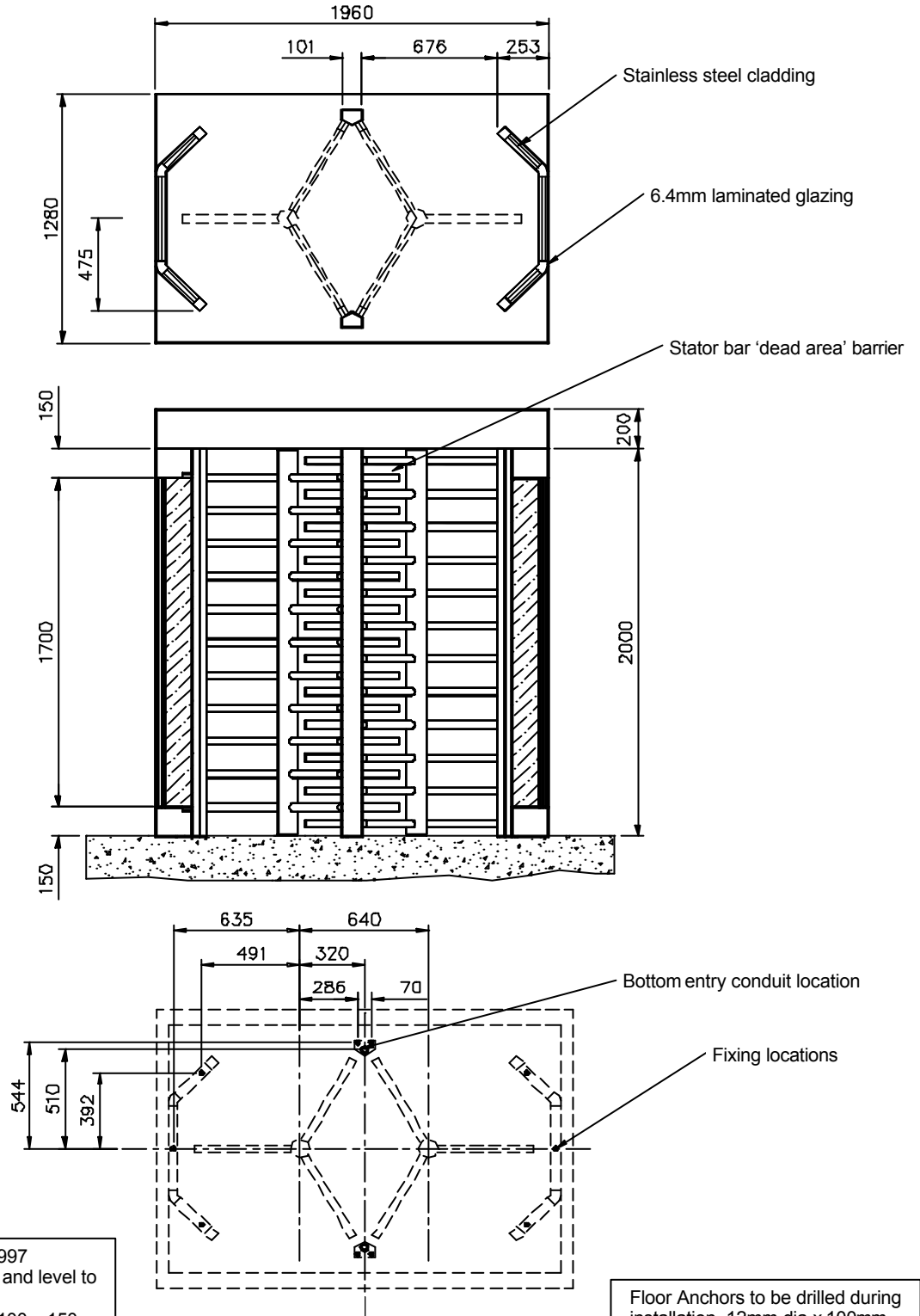
Concrete Base to BS 5328:1997 specification. Base to be flat and level to +/- 5mm over footprint area. Dimensions to be > 1450 x 2100 x 150 deep min.

Floor Anchors to be drilled during installation, 12mm dia x 100mm deep.

IMPORTANT

- Any horizontal pipe or conduit runs below the ClearSec must be at least 140mm below FFL.
- It is the customers responsibility to ensure the structural integrity and strength of the installation location.
 - 200mm clear clearance is needed above the ClearSec for service activities.

Fig 5.6 – ClearSec GD120I Site Preparation



Concrete Base to BS 5328:1997 specification. Base to be flat and level to +/- 5mm over footprint area. Dimensions to be > 1450 x 2100 x 150 deep min.

Floor Anchors to be drilled during installation, 12mm dia x 100mm deep.

- IMPORTANT**
- Any horizontal pipe or conduit runs below the ClearSec must be at least 140mm below FFL.
 - It is the customers responsibility to ensure the structural integrity and strength of the installation location.
 - 200mm clear clearance is needed above the ClearSec for service activities.

Headroom

A minimum floor to ceiling height of 2600mm must be provided to allow sufficient headroom for erection and subsequent maintenance operations. For security applications, when it is undesirable to leave a gap above the ClearSec an overhead grille or barrier must be provided, which is removable to allow installation or maintenance. Such infills should be retained from the secure side, to maximise security.

In extreme circumstances 2400mm is acceptable, however it will present servicing difficulties.

Conduits Routing

Conduits carrying cables for Power and Control, enter from overhead or at floor level. Two conduits are required normally, one for the Power supply, the other for the Control or data signals.

Conduit Routing From Overhead

Our Contract Department **MUST** be advised at the time of order placement (or as soon as possible thereafter) of this intention.

Cable Requirements

All conduits, cables and associated building work **MUST** be provided by others. Cables must be laid in the conduits and left with 4 metre long tails at the ClearSec position.

Power Cables

One conduit should be dedicated for the power supply from an external source and be run back to the nearest fused spur. A triple-core, earthed cable rated at a minimum of 10 amps should be provided. The power supply cable must be isolated until installation has been completed and must be terminated to a live supply by others. If Engineers from GM are erecting the unit, it is preferable to arrange concurrent attendance of the site Electrical Contractors to position the conduits and terminate cables.

RCCD (Earth Leakage Protection)

It is the customer's electrical contractors responsibility to ensure the incoming supply to the ClearSec meets current Regulations and to fit appropriate safety devices accordingly.

Control Cables

A second conduit should be provided, separate from that for the power supply, for any remote control or data cabling requirements. Units controlled from simple remote switches, such as pushbuttons/footswitches etc; should be provided with either a four-core cable if bi-directional control is specified, or twin-core if uni-directional.

Such cables should be of minimum conductor size 0.5mm sq. and laid in the conduit with a 4 metre tail left at the ClearSec position. For these applications the control conduit should be routed back to the control switch position and the cable left with a suitable tail for the switch.

For units controlled by a card access system or other equipment, the relevant manufacturer should be consulted for any data-line or other cabling requirements for their equipment, whether or not the controlling device is mounted directly to the unit.



Basic Principles Of Setting To Work (Fig 5.7, 5.8, 5.9, 5.10, 5.11 and 5.12)

NOTE: The following information is given for a Single Unit, however they can also be used when installing a Double Unit.

With reference to the following diagrams, carry out the following routines:

1. Assemble Items 1, 2 and 3 using M6 x 12 Hex Head screws and Shakeproof Washers over the fixing position.
2. Assemble Item 4 with M6 x 12 Hex Head screws and Shakeproof washers. Ensure that the status lights and push buttons are fitted to the inside of the upright panels at this stage. Fig 5.8 & 5.9

NOTE: Stator Bars vary between Rotor options - NOT applicable to Full Panel option.

3. Position item 5, and screw into position on the bottom of items 2 and 3. (Use this item to align items 2 and 3).
4. Run the control and power cables through the upright panels, if run from below.
5. Place the bearing into the bearing cup bolted to item 5, ensuring that it is packed with grease.
6. Place the rotor into position.
7. Position the Roof Assembly, item 8 on top of the main framework and secure in place using twelve M6 x 12 Hex Head screws and Shakeproof Washers.
8. Position and fix item 7 using M6 x 12 Hex Head screws.
9. Fit Top Channel, item 9, containing the Head Mechanism and Electrical Plate assembly by bolting to the upright panels inside the Roof.
10. Connect the electrical cables as detailed in Figs 5.5 and 5.6.
11. Connect the associated control and data cables as detailed in Fig 4.5.
12. On completion of the above, fit the Cover, item 10 with M5 x 12 Tamperproof Screws, ensuring that a Sealing Strip is applied to the edges.
13. Place the laminated glazed panels into the appropriate apertures and secure into position from the inside of the unit with the glazing cover strips and screws supplied.
14. Bolt the assembly to the floor using the 'Spit Bolts' supplied.
15. Finally prior to tightening the fixing bolts, make sure that the complete assembly is LEVEL. Use shims if necessary.



Variations To The Standard Straight Bar Rotor (Fig 5.13 and 5.14)

Trombone Rotor Option

Fit all as Straight Bar Rotor.

Slatted Rotor Option

Omit part 6 of the Setting to Work instructions and carry out the following after point 15.

Place the Top and Bottom Rotor Spigots into position, ensuring that the top spigot is manually held in position.

Place the central Rotor Plates in position and fix to the spigots.

Bolt the Acrylic Slats into the required position, level and tighten.

Finally locate and fit the Rotor Cladding Cover Strip between the Slats and secure with security fixings.

Solid Panel Option

As the Slatted Rotor above, except for the following;

Omit item 2 of the Setting to Work instructions and fit plain cover strips provided.

In lieu of the Acrylic Slats fit the 'Marguard' full panel wings.

Before fitting the glazed panels place the Pressure Mat assembly into the dead zone area and run the cables up the adjacent upright panel.

Connect the Pressure Mat interface board (Fig 4.8).

Finally glaze the unit.



Fig 5.7 - Assembly 90° (Single Unit)

KEY

- 1) Back Assembly
- 2) Side (RH)
- 3) Side (LH)
- 4) Stator Bar Assembly
- 5) Bottom Bearing Assembly
- 6) Rotor
- 7) Front Assembly
- 8) Roof Assembly
- 9) Head Mechanism
- 10) Head Cover

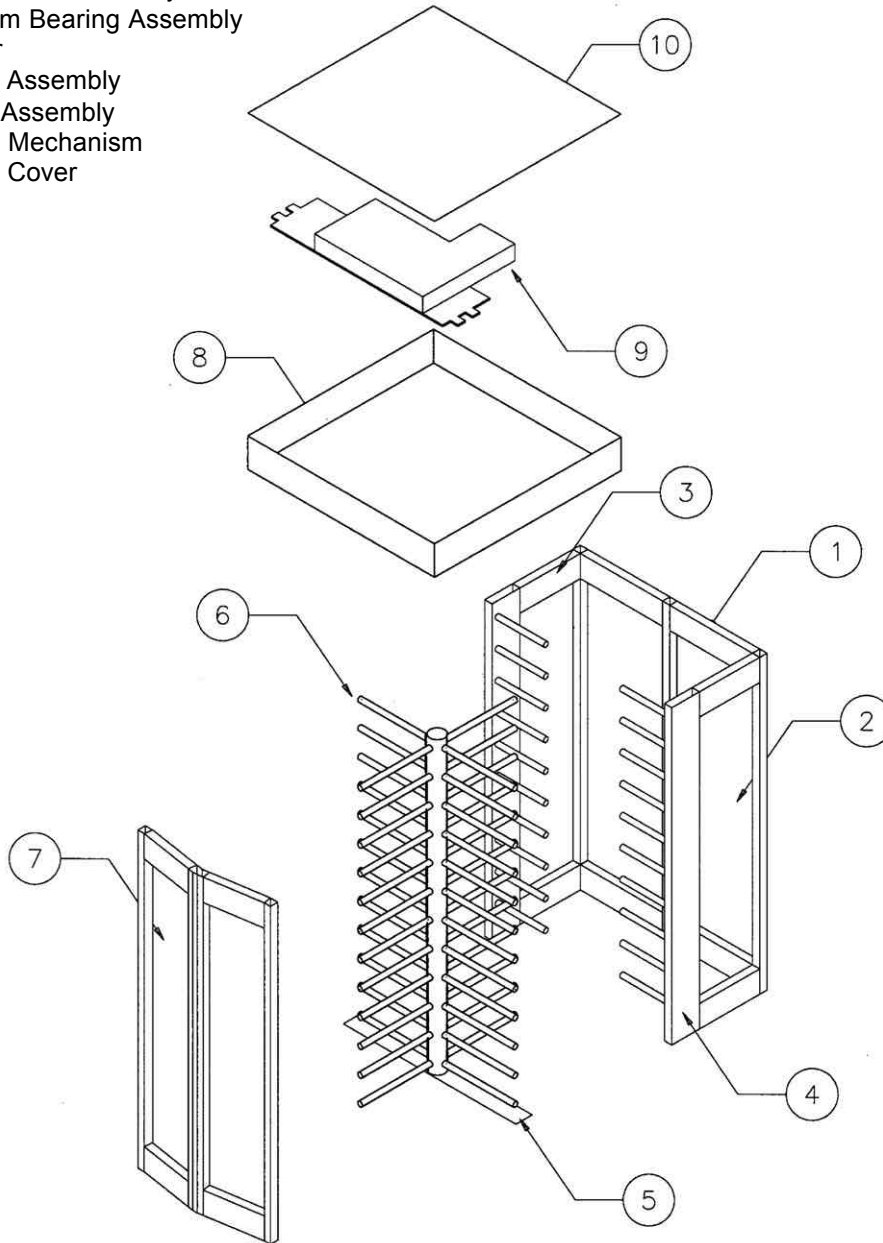


Fig 5.8 - Assembly 120° (single Unit)

KEY

- 1) Back Assembly
- 2) Side (RH)
- 3) Side (LH)
- 4) Stator Bar Assembly
- 5) Bottom Bearing Assembly
- 6) Rotor
- 7) Front Assembly
- 8) Roof Assembly
- 9) Head Mechanism
- 10) Head Cover

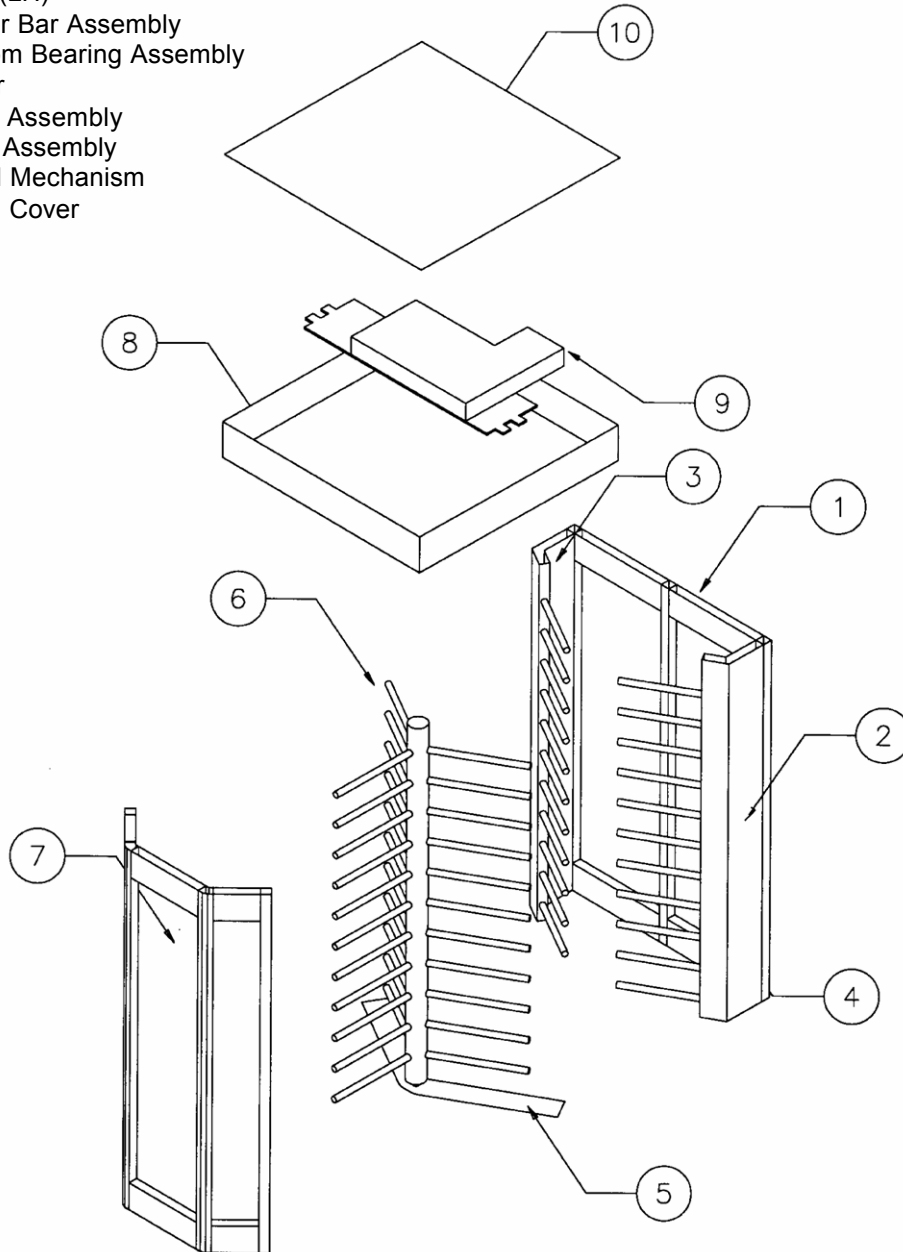


Fig 5.9 - Assembly 90° (Double Unit)

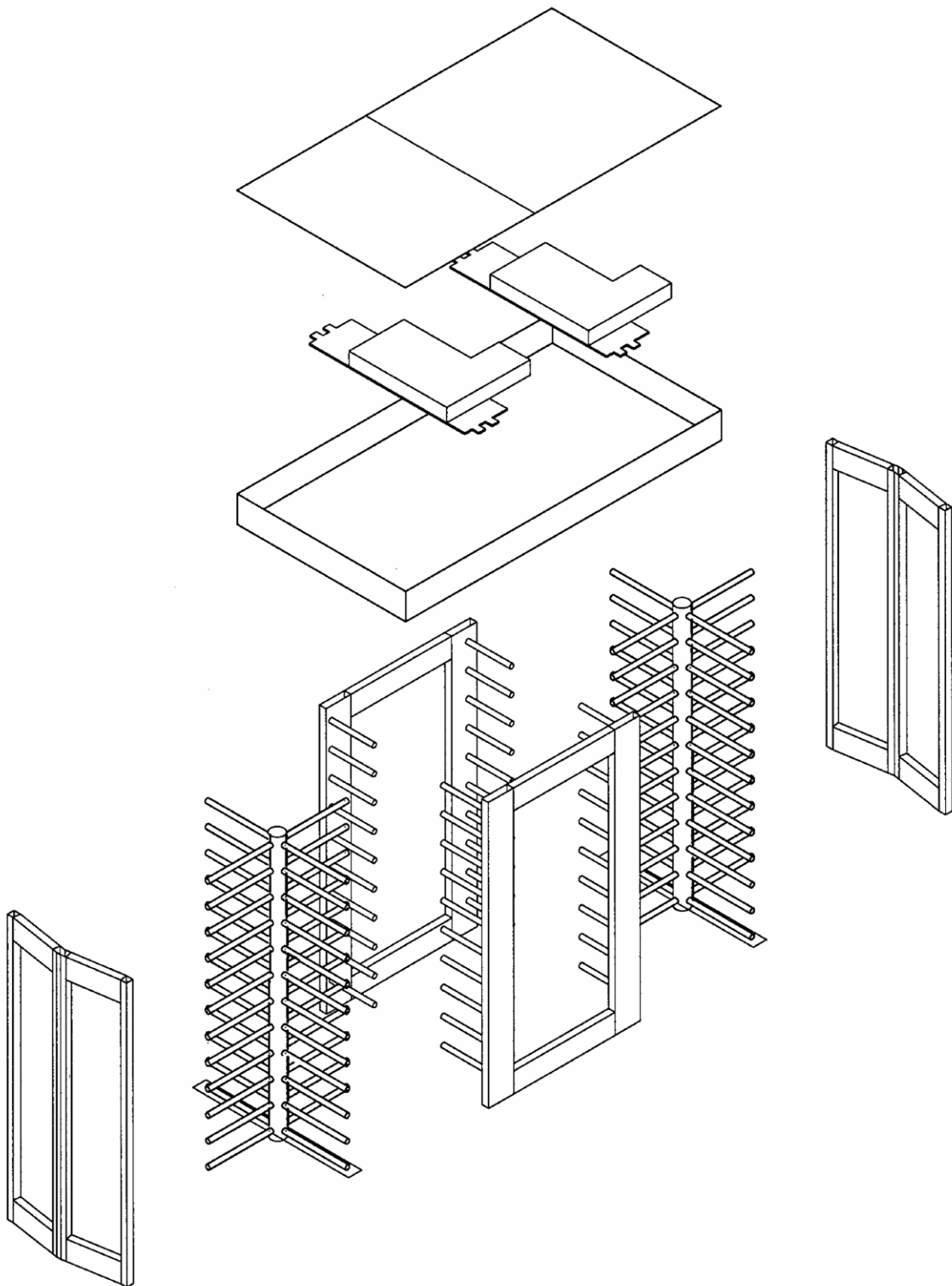


Fig 5.10 - Assembly 120° (Double Unit)

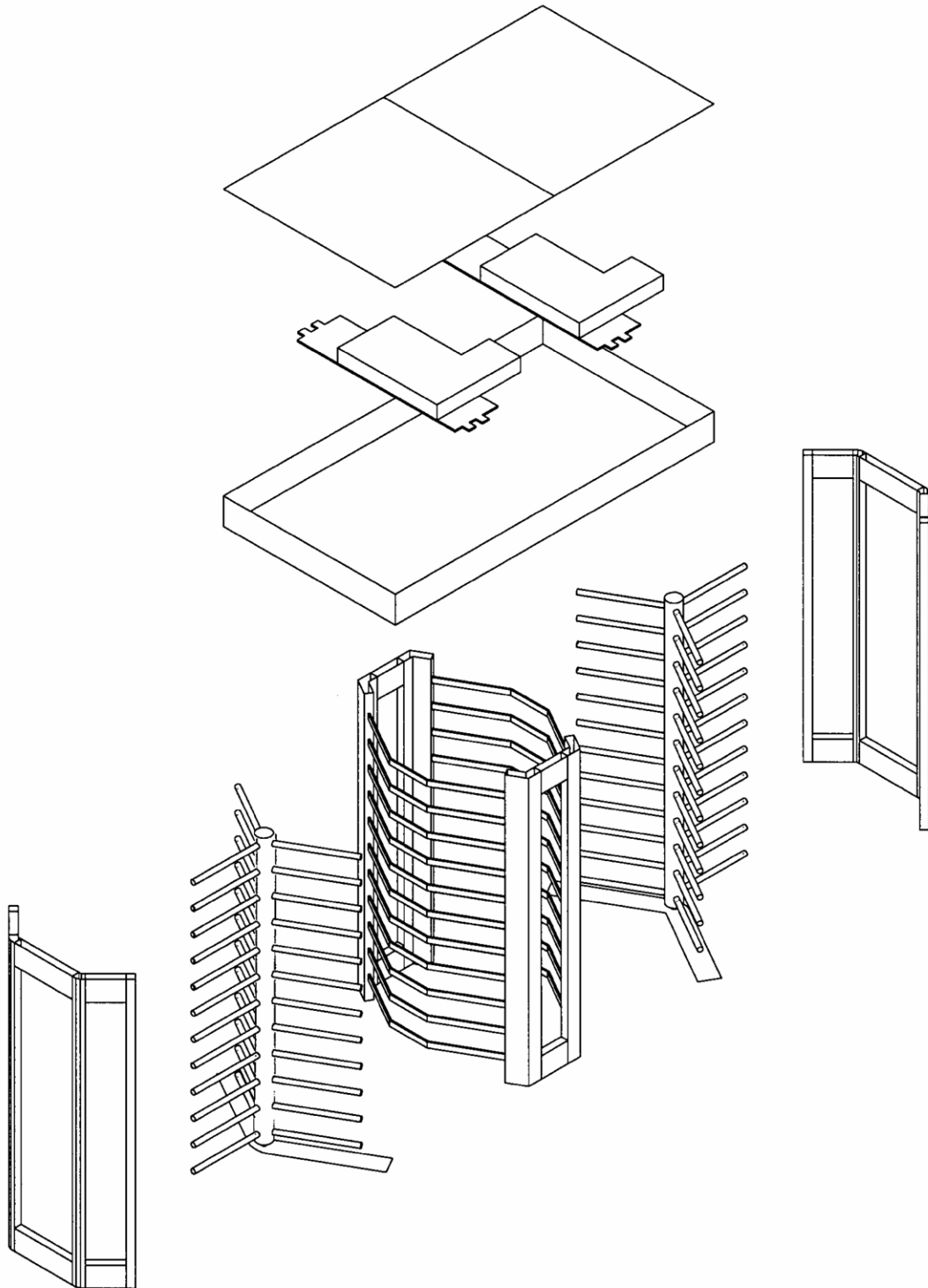


Fig 5.11 - Assembly 90° (Double Interlocking Unit)

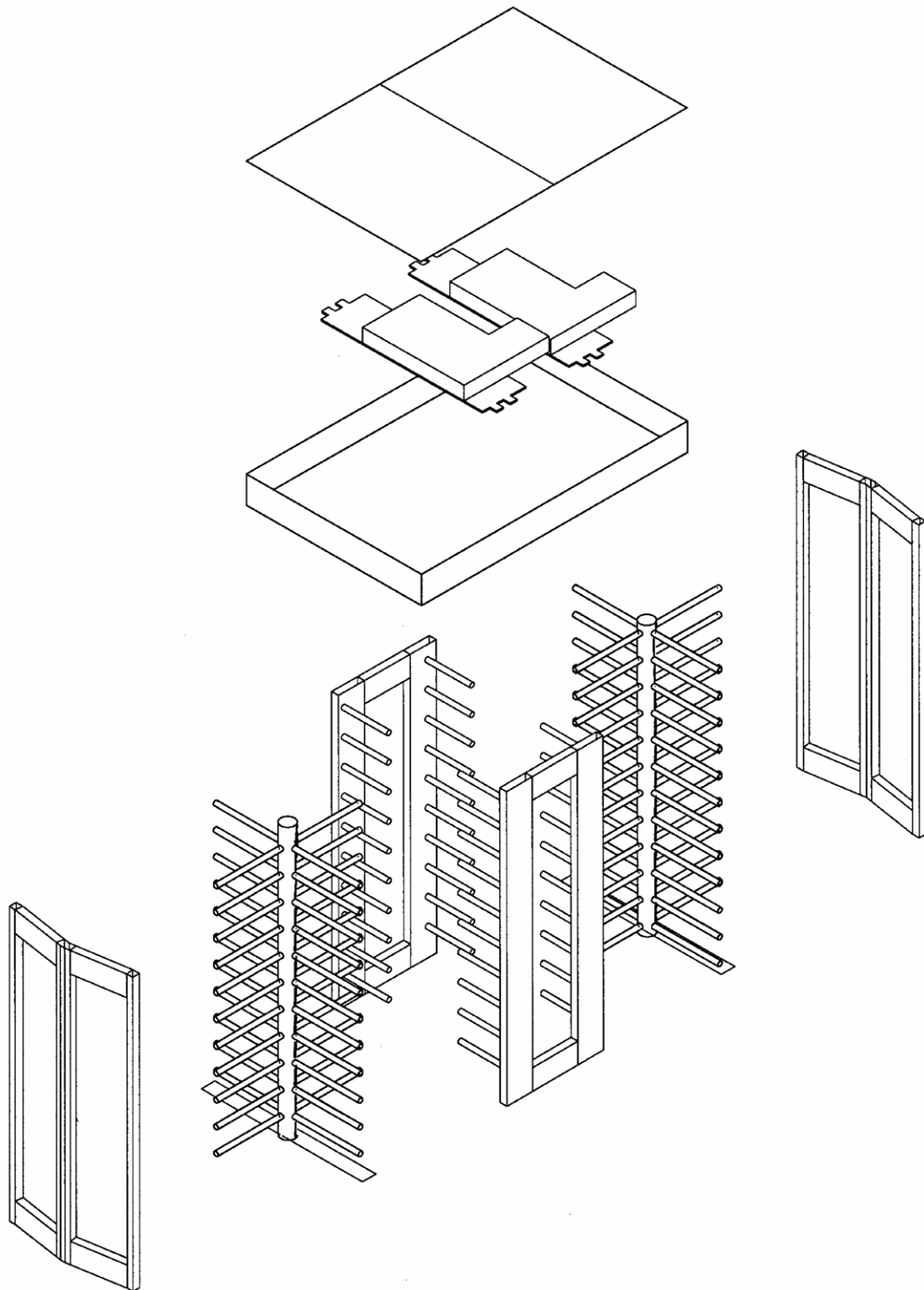


Fig 5.12 - Assembly 120° (Double Interlocking Unit)

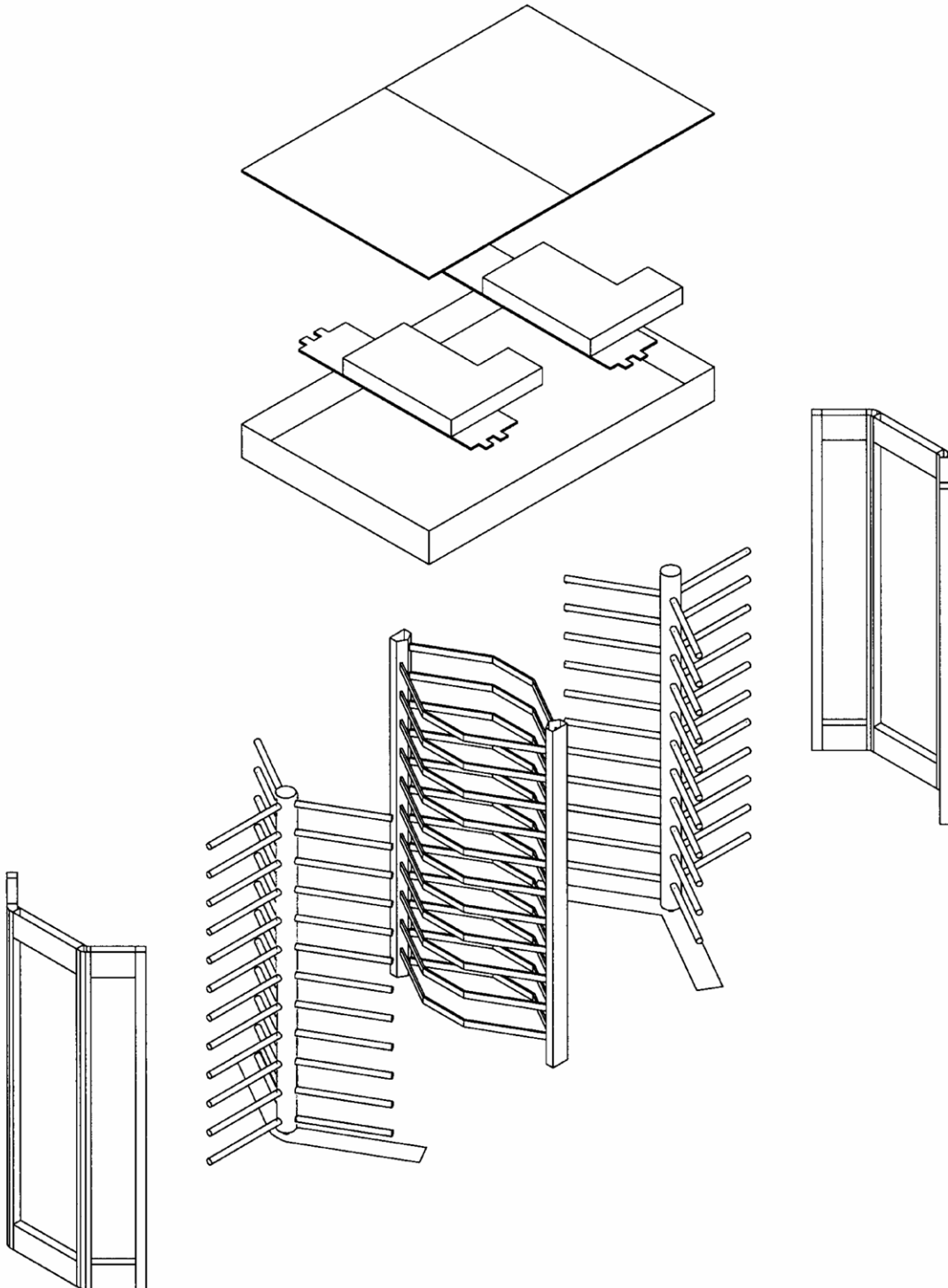
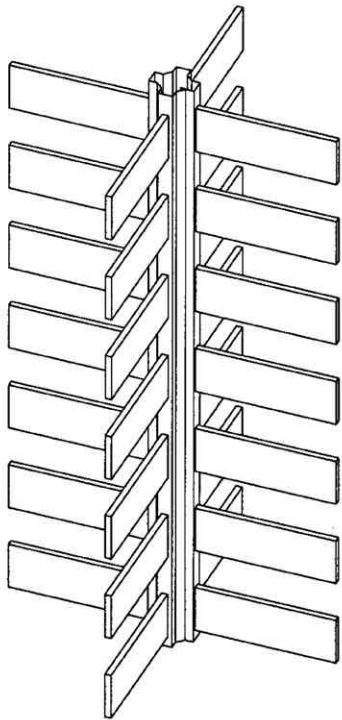
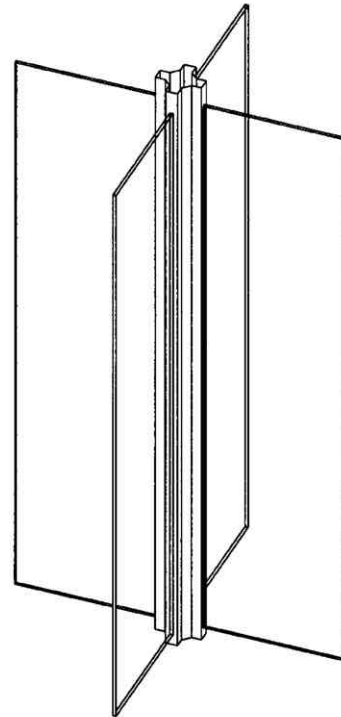


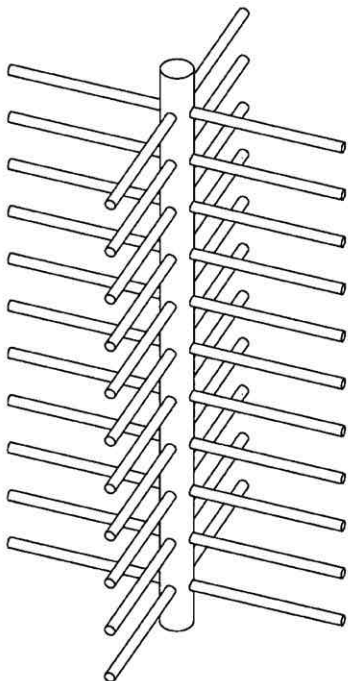
Fig 5.13 - Typical 90° Rotor Assemblies



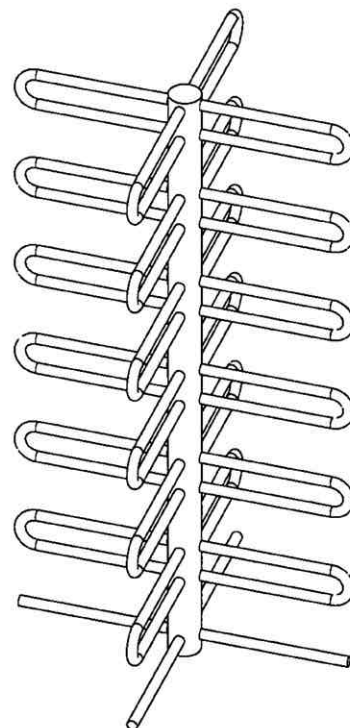
Slatted



Full Panel

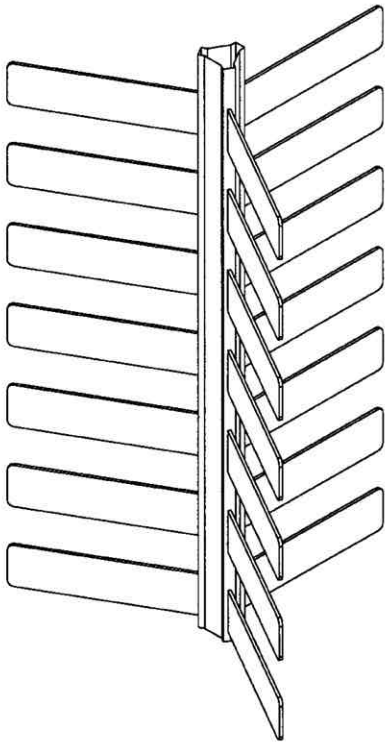


Straight Bar

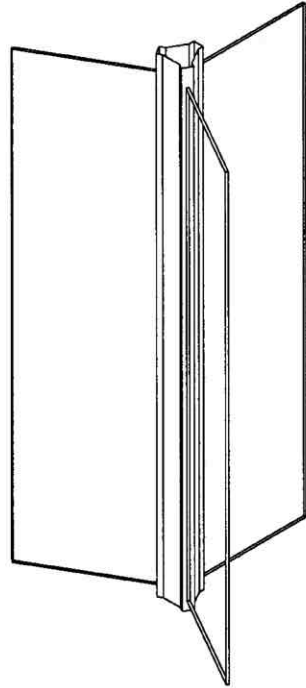


Trombone

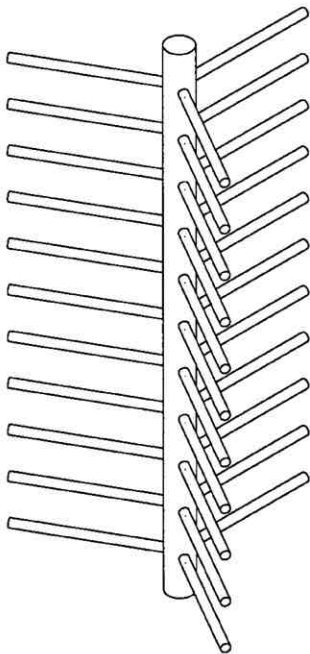
Fig 5.13 - Typical 120° Rotor Assemblies



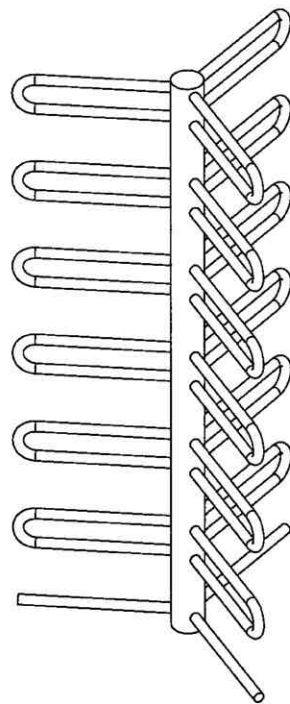
Slatted



Full Panel



Straight Bar



Trombone

Card Reader Mounting

Refer to Gunnebo Entrance Control Ltd Technical department for information and recommendations.

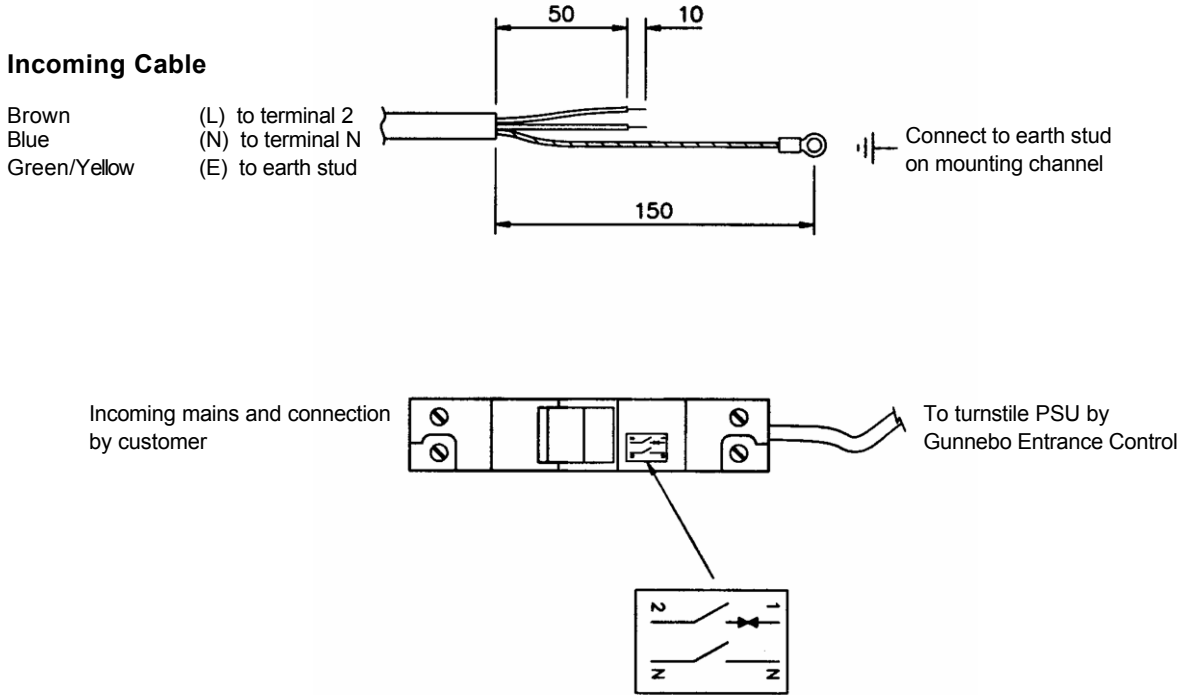
Customer Connections

On completion of the installation routines the ClearSec System must be connected to the Customer's services.

Electrical Connections

Note – The following routines must be carried out by a qualified electrician.

Fig 5.15 Mains Power Electrical Power Preparation



- Check the incoming mains supply is isolated.
- Feed the mains supply cable through the ClearSec towards the MCB.
- Cut back and strip the sleeving as shown in Fig. 5.15
- Remove the terminal cover from the MCB.
- Clamp the cable using a cable tie through the base of the MCB mounting block.
- Connect the wires as shown in Fig. 5.15
- Replace the terminal cover.

Testing After Installation

- On completion of the installation routines it is recommended that the following checks and tests be carried out.

Power

- Switch ON the mains power and the mains circuit breaker unit.

Mechanism

- Rotate the Rotor and check for parking position, restoring and damping for a minimum of 50N⁰ non-consecutive operations in either direction. This will allow the mechanism to settle in. Adjust if necessary after the test.



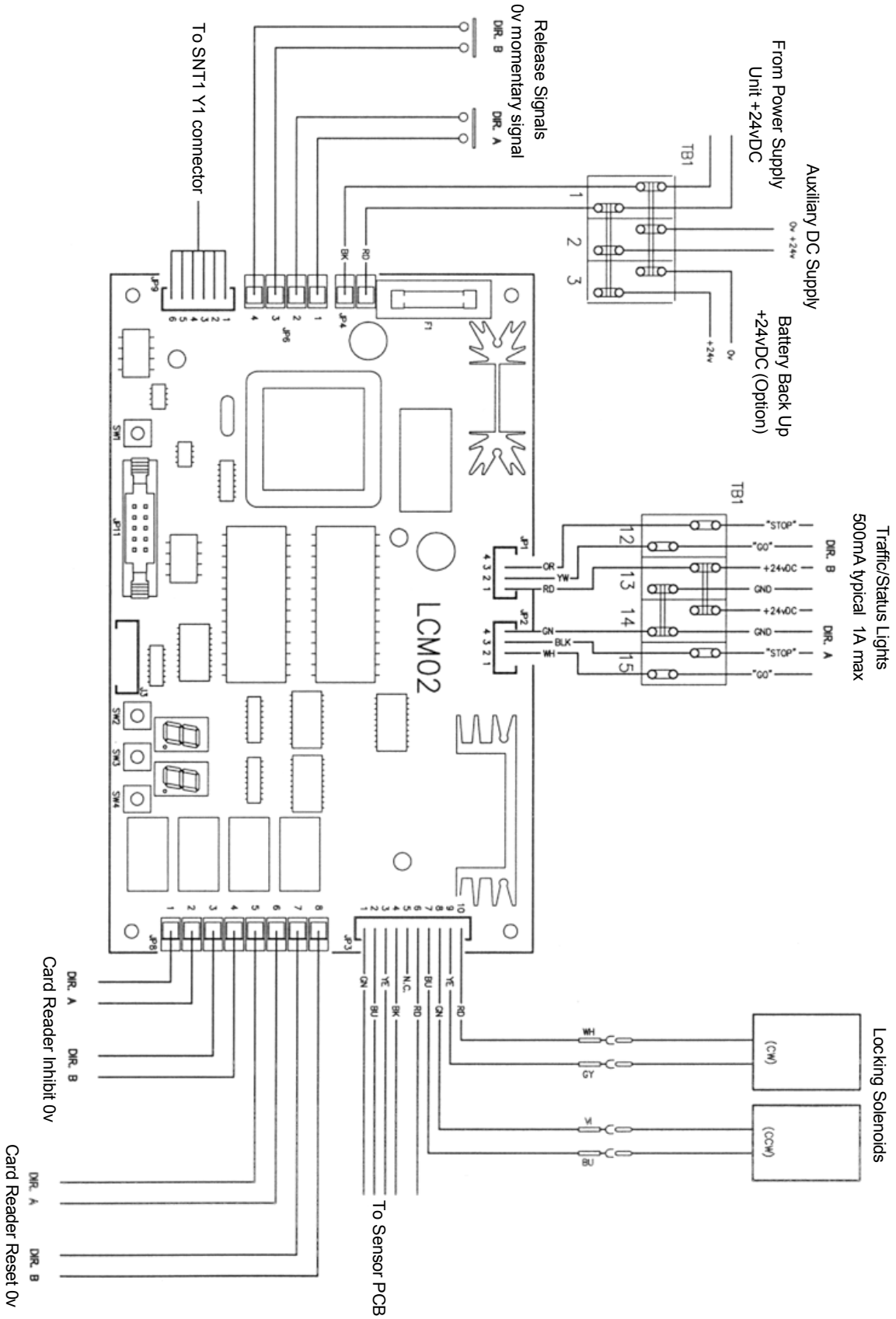


Fig 5.16 – LCM02 Controller Connections

Fig 5.17 – SNT1 Interface Connections

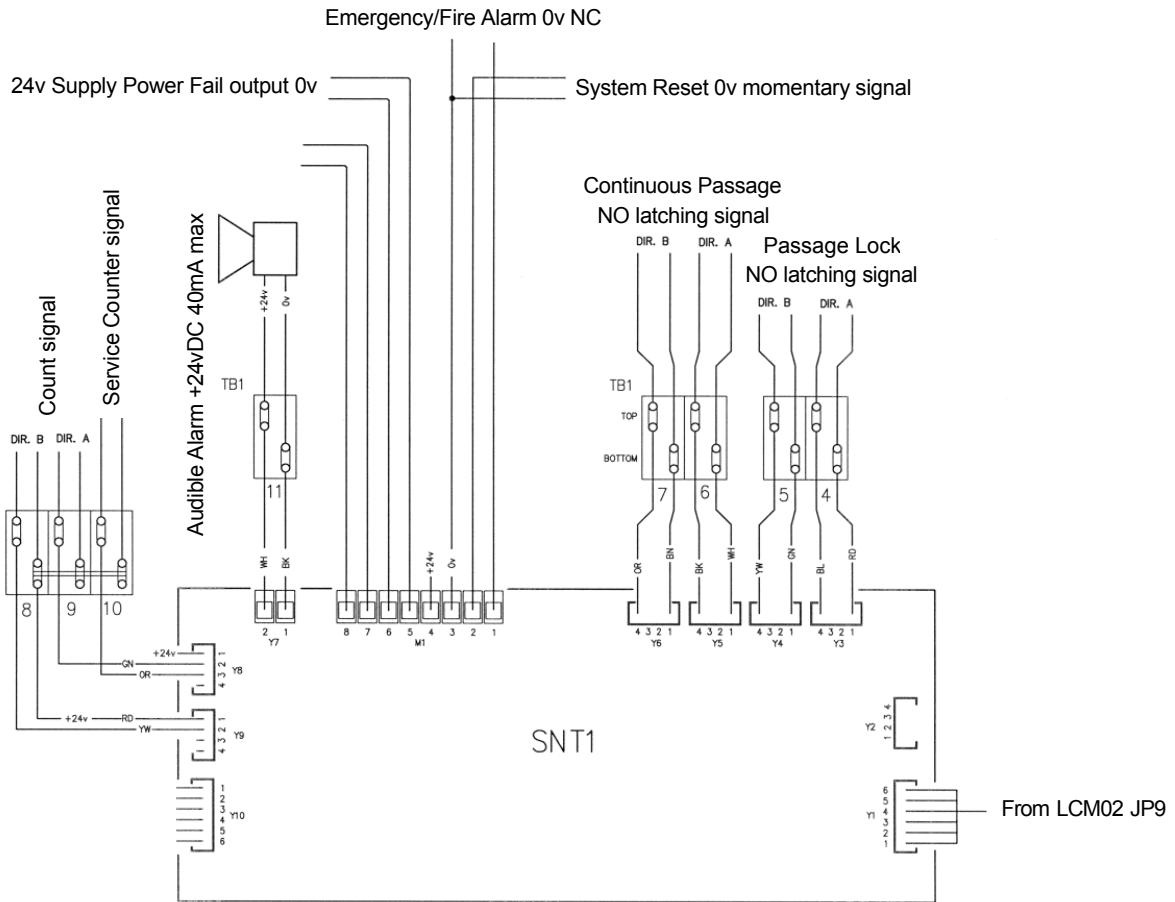
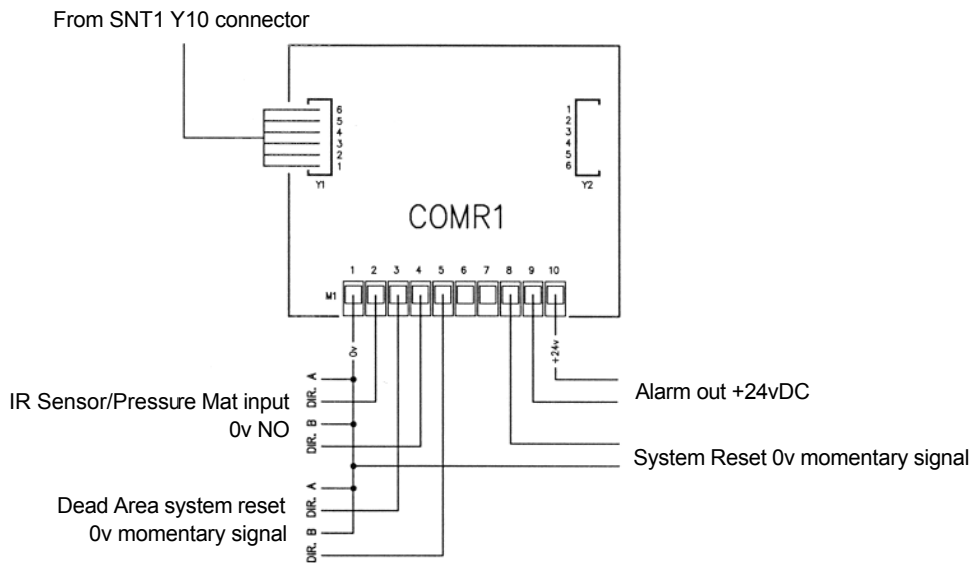


Fig 5.18 - COMR1 Remote Control Connections



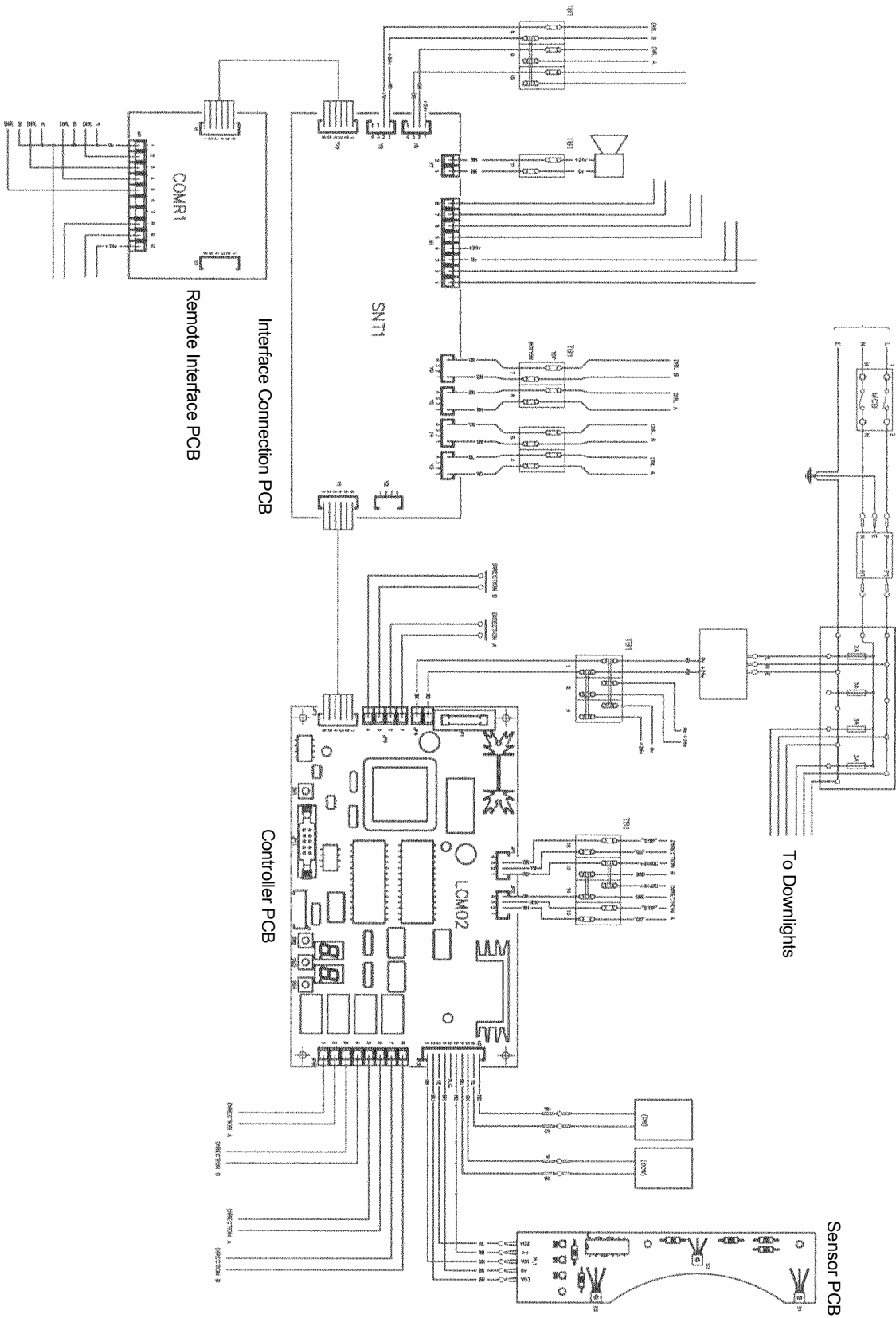


Fig 5.19 – Interface Connection Schematic

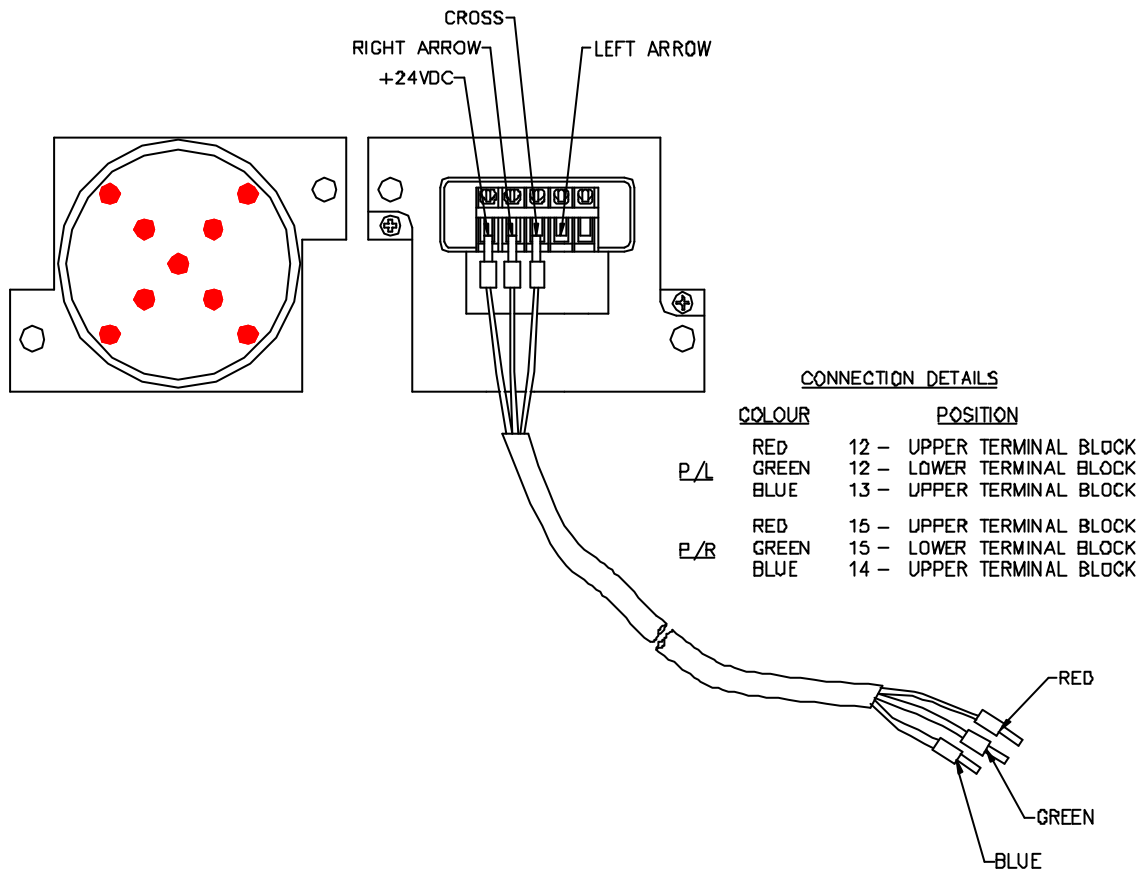
Status Lights (Standard)

Run the loom behind the main upright member of the casework through the respective access holes at each end of the top channel.

Connect the wires to the rear of the lamp holders.

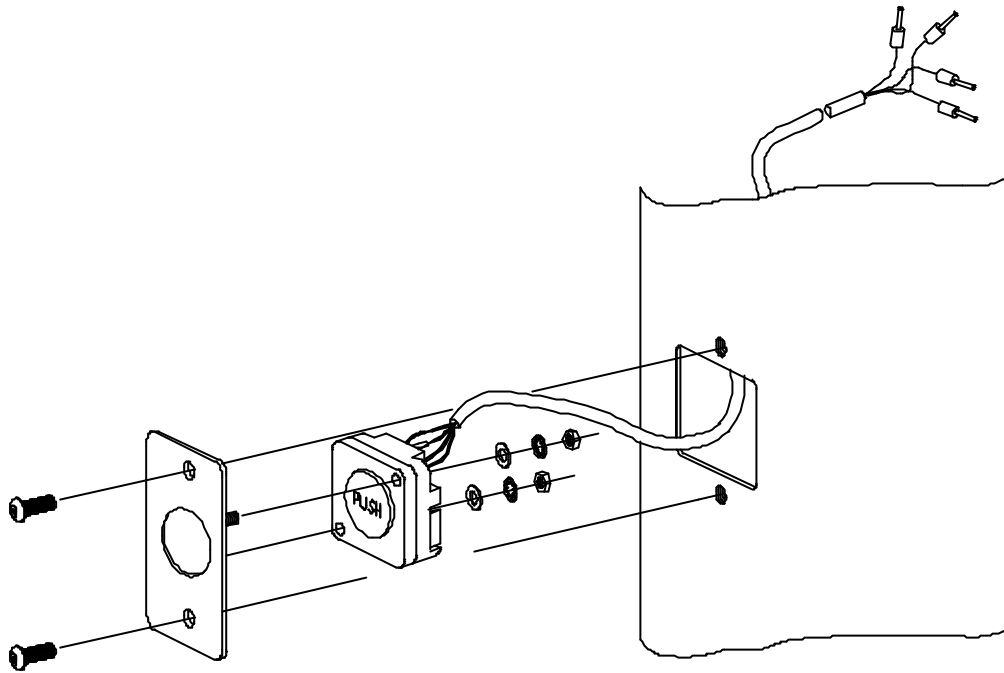
NOTE: Connect to the Logic PCB as shown in Fig 5.16.

Fig 5.20 - Status Lights



Push Button (Optional)

Fig 5.21 - Optional Pushbuttons



Cardreaders

When Cardreaders are to be fitted they should be mounted and the cables routed to the respective terminal points.

Bottom Bearing

The Bottom Bearing comprises a single steel ball running between two cup housings with an intermediate felt sealing ring.

Remember to insert the ball when the rotor centre column is fitted.

General Assembly Notes

The assembled channel may be fitted in to the roof during installation and only the head mechanism needs to be removed temporarily prior to coupling the rotor and damper assembly.

If a full panel rotor has been specified, the rotor leaves should be fitted to the centre column on completion of the casework assembly.

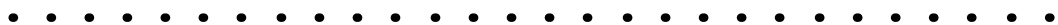
When all wiring has been connected and the internal panelling completed, the external power supply can be connected to the MCB in the top channel.

After a final check of the electrical connections, the power can be switched on.

Test the unit for correct working actions.

On completion of the tests, fit the cover plate to the casework using the tamperproof screws.

Clean the unit and on the full panels fit the Safety Labels. (1500mm from base of panel and centralised).



Section 6

Maintenance

General Care

The ClearSec Rotating Door should be cleaned and greased at regular intervals, using the following approved materials.

Routine cleaning, all finishes

- Cleaning agent: Soap or mild detergent water.
- Action: Sponge rinse with clean water, wipe dry as necessary.

Fingerprints

- Cleaning agent: Soap or warm water or organic solvent (acetone, alcohol, genclene)
- Action: Rinse with clean water and wipe if necessary.

Stubborn stains and discoloration, all finishes.

- Cleaning agent: Mild cleaning solutions or domestic service cleaners.
- Action: Rinse well with clean water and wipe dry.

Oil, Grease marks, all finishes

- Cleaning agent: Organic solvents (acetone, alcohol, genciene, trichlorethane).
- Action: Clean after with soap and water, rinse well with clean water and wipe dry.

Rust and other Corrosion products, Stainless finishes

- Cleaning agent: Oxalic acid. The cleaning solution should be applied with a swab and allowed to stand for 15 to 20 minutes before being washed away with water. Continue using a domestic surface cleaner to give final clean.
- Action: Rinse well with clean water (precautions for acid cleaners should be observed).

Minor scratches on painted surfaces.

- Cleaning agent: Lightly rub with cutting paste. Rinse area with water, dry and apply touch-up paint in fine layers.
- Action: Allow 2 weeks to harden. Blend into surrounding paint work, using fine cutting paste.

Deep scratches on painted finishes causing rust.

- Cleaning agent: Remove rust with a small sharp knife and apply rust inhibiting paint. Fill scratch with fine body filler to just under finished surface. Follow procedure for minor scratches.

Scratches on brush (satin) finish.



Cleaning agent: For slight scratches, use impregnated nylon pads then polish with scruffs dressed with iron free abrasives. For deeper scratches, apply in direction of polishing. Then clean with soap or detergent as per routine cleaning.

Action: Do not use ordinary steel wool, iron particles can become embedded in stainless steel and cause further surface problems.

Greasing

This action is carried out by Service Engineers during service visits.

Routine Maintenance

• **General Indications**

The mechanism should be inspected and cleaned at regular intervals in order to maintain the components in good working order and to check for signs of wear.

Note - The following indications refer to an installation where the average number of transits per year is equal to one million.
When used in dusty conditions, increase the inspection intervals.

Warning - To avoid the risk of electric shock, always ensure that the electrical power and batteries are disconnected before inspecting the mechanism.

• **Servicing Access**

All serviceable components can be accessed by the removal of all service hatches or from above the enclosure by removing the roof cover.

Ensure the securing sockets are free to operate and are not damaged

Note - A special key spanner is required to unlock the panels.

• **Electrical Isolation**

No general maintenance is required apart from replacement fuses in the event of a failure.

• **Lubricants**

For the lubrication of parts subject to wear, use Molycote BR2, plus grease or an equivalent grease containing graphite or molybdenum sulphide (MoS)

Do not grease moving parts unless specifically indicated in this manual. The use of grease can lead to a build up of dust that can impair operation of the mechanism.



Components

Annual Checks (Operations to be carried out with the power supply and BBU disconnected)

- **Cables and Connectors** (Operations to be carried out with the power supply and BBU disconnected)
 - Check that the wire connectors are firmly attached.
 - Check that the terminals are fully tightened.
 - Check that the insulation of the wires is in good condition and that no conductors are exposed.
 - Check that mechanism fixings, screws and encoder grub screws are tight.
 - Carry out general testing as described previously.

- **Electrical Circuits**

No general maintenance is required apart from replacement fuses in the event of a failure.

General Component Maintenance

Ensure the assembly is kept clean.

- **Replacing the LCM02** (Operations to be carried out with the power supply and BBU disconnected)

Note - Before removing the PCB, record the position of the Jumpers and Connectors. When replacing ensure the correct EPROM configuration is refitted.

- Disconnect the power supplies.
- Remove all connectors from the PCB .
- If necessary remove the PCB supports and the small chip in Master side LCM02.
- Disconnect the flat cable from the UCM95 (if the PCB is fitted)
- Connect the Jumpers to the NEW PCB.
- Insert the original EPROM from the old unit to the NEW PCB.
- Reconnect the cables and connectors.
- Replace the PCB.
- Reconnect the power supplies.
- Switch ON the Unit and return it to normal operation.

- **Replacing the Infrared Sensor** (Operations to be carried out with the power supply and BBU disconnected)

- Disconnect the power supplies.
- Remove the infrared sensor from the support bracket.
- Remove all cables from the infrared sensor, taking note of their location.
- Reconnect the cables.
- Replace the infrared sensor onto the mounting bracket.
- Reconnect the power supplies.
- Switch ON the Unit and return it to normal operation.

Note – Adjust the infrared sensitivity to suit as detailed in Section 5

- **Replacing Other Interface Cards** (Operations to be carried out with the power supply and BBU disconnected)

Other Interface Cards may be fitted as specified at time of order.

Follow the same good practice procedures as detailed above.



Fault Finding

Symptom	Check	Action
Rotor will not park	Restoring and Damping mechanisms	<ul style="list-style-type: none"> Adjust restoring mechanism Adjust damping mechanism if on maximum setting replace with new.
Rotor over spins	Solenoids, Locking Pawls and Sensor Card	<ul style="list-style-type: none"> Adjust solenoids Adjust locking pawls, if faulty replace. Adjust damping mechanism
Unit locks up and will not accept signals	Sensor card and Hall Effect Magnets	<ul style="list-style-type: none"> Sensor card alignment Hall Effect magnets Cable connections
ClearSec fails to operate	Power supply problems	<ul style="list-style-type: none"> Check all electrical wiring for security of connectors. Check supply fuses are serviceable. Check Mains input supply is correct Check fuses on LCM02
	Card reader (entrance device) faulty	<ul style="list-style-type: none"> Check +24v is present at solenoids when LED is illuminated. Remove the GO signal and simulate a signal from a known working switch Check wiring <p>(If all correct the entrance device is at fault refer to access control contractor)</p>
	Movement of Solenoids	<ul style="list-style-type: none"> Remove any obstructions Carry out routine maintenance Replace if faulty
Mechanism is noisy	Timing Disc	<ul style="list-style-type: none"> Tighten screws holding down Timing Disc.
Dead area sensing not operating.	Infrared sensor	<ul style="list-style-type: none"> Adjust sensitivity, replace if faulty.
Down lights not illuminated	Halogen down light	<ul style="list-style-type: none"> Check cables and transformer Replace lamp if blown.



Section 7

Spare Parts

Recommended Spare Parts

Quantities listed are per ClearSec over a 24 month period.

Table 7.1 – Recommended Spare Parts

Code	Description	Qty
71032012	Bulb 35W Clear 12V	2
71155002	Fuse Mains 24mm 3A	2
71541021	Locking Solenoid	1
72091006	Damper (if fitted)	1
72452050	Tension Pin M4 x 25	1
74631001	St. Steel cleaner- S/S rotor only	1
88161501	Sensor PCB	1
88164013	Actuating Link	1
71454029	LCM02 without EPROM	1
89183004	Titan EPROM	1
71454027	SNT1 Card	1
71454028	COMR1 Card (if fitted)	1



Section 8

Table Appendices

Table 8.1 Decimal, Hexadecimal and Decimal Conversion Table

Dec	Hex	Binary	Dec	Hex	Binary	Dec	Hex	Binary	Dec	Hex	Binary
0	00	00000000	64	40	01000000	128	80	10000000	192	C0	11000000
1	01	00000001	65	41	01000001	129	81	10000001	193	C1	11000001
2	02	00000010	66	42	01000010	130	82	10000010	194	C2	11000010
3	03	00000011	67	43	01000011	131	83	10000011	195	C3	11000011
4	04	00000100	68	44	01000100	132	84	10000100	196	C4	11000100
5	05	00000101	69	45	01000101	133	85	10000101	197	C5	11000101
6	06	00000110	70	46	01000110	134	86	10000110	198	C6	11000110
7	07	00000111	71	47	01000111	135	87	10000111	199	C7	11000111
8	08	00001000	72	48	01001000	136	88	10001000	200	C8	11001000
9	09	00001001	73	49	01001001	137	89	10001001	201	C9	11001001
10	0A	00001010	74	4A	01001010	138	8A	10001010	202	CA	11001010
11	0B	00001011	75	4B	01001011	139	8B	10001011	203	CB	11001011
12	0C	00001100	76	4C	01001100	140	8C	10001100	204	CC	11001100
13	0D	00001101	77	4D	01001101	141	8D	10001101	205	CD	11001101
14	0E	00001110	78	4E	01001110	142	8E	10001110	206	CE	11001110
15	0F	00001111	79	4F	01001111	143	8F	10001111	207	CF	11001111
16	10	00010000	80	50	01010000	144	90	10010000	208	D0	11010000
17	11	00010001	81	51	01010001	145	91	10010001	209	D1	11010001
18	12	00010010	82	52	01010010	146	92	10010010	210	D2	11010010
19	13	00010011	83	53	01010011	147	92	10010011	211	D3	11010011
20	14	00010100	84	54	01010100	148	94	10010100	212	D4	11010100
21	15	00010101	85	55	01010101	149	95	10010101	213	D5	11010101
22	16	00010110	86	56	01010110	150	96	10010110	214	D6	11010110
23	17	00010111	87	57	01010111	151	97	10010111	215	D7	11010111
24	18	00011000	88	58	01011000	152	98	10011000	216	D8	11011000
25	19	00011001	89	59	01011001	153	99	10011001	217	D9	11011001
26	1A	00011010	90	5A	01011010	154	9A	10011010	218	DA	11011010
27	1B	00011011	91	5B	01011011	155	9B	10011011	219	DB	11011011
28	1C	00011100	92	5C	01011100	156	9C	10011100	220	DC	11011100
29	1D	00011101	93	5D	01011101	157	9D	10011101	221	DD	11011101
30	1E	00011110	94	5E	01011110	158	9E	10011110	222	DE	11011110
31	1F	00011111	95	5F	01011111	159	9F	10011111	223	DF	11011111
32	20	00100000	96	60	01100000	160	A0	10100000	224	EO	11100000
33	21	00100001	97	61	01100001	161	A1	10100001	225	E1	11100001
34	22	00100010	98	62	01100010	162	A2	10100010	226	E2	11100010
35	23	00100011	99	63	01100011	163	A3	10100011	227	E3	11100011
36	24	00100100	100	64	01100100	164	A4	10100100	228	E4	11100100
37	25	00100101	101	65	01100101	165	A5	10100101	229	E5	11100101
38	26	00100110	102	66	01100110	166	A6	10100110	230	E6	11100110
39	27	00100111	103	67	01100111	167	A7	10100111	232	E7	11100111
40	28	00101000	104	68	01101000	168	A8	10101000	232	E8	11101000
41	29	00101001	105	69	01101001	169	A9	10101001	233	E9	11101001
42	2A	00101010	106	6A	01101010	170	AA	10101010	234	EA	11101010
43	2B	00101011	107	6B	01101011	171	AB	10101011	235	EB	11101011
44	2C	00101100	108	6C	01101100	172	AC	10101100	236	EC	11101100
45	2D	00101101	109	6D	01101101	173	AD	10101101	237	ED	11101101
46	2E	00101110	110	6E	01101110	174	AE	10101110	238	EE	11101110
47	2F	00101111	111	6F	01101111	175	AF	10101111	239	EF	11101111
48	30	00110000	112	70	01110000	176	B0	10110000	240	F0	11110000
49	31	00110001	113	71	01110001	177	B1	10110001	241	F1	11110001
50	32	00110010	114	72	01110010	178	B2	10110010	242	F2	11110010
51	33	00110011	115	73	01110011	179	B3	10110011	243	F3	11110011
52	34	00110100	116	74	01110100	180	B4	10110100	244	F4	11110100
53	35	00110101	117	75	01110101	181	B5	10110101	245	F5	11110101
54	36	00110110	118	76	01110110	182	B6	10110110	246	F6	11110110
55	37	00110111	119	77	01110111	183	B7	10110111	247	F7	11110111
56	38	00111000	120	78	01111000	183	B8	10111000	248	F8	11111000
57	39	00111001	121	79	01111001	185	B9	10111001	249	F9	11111001
58	3A	00111010	122	7A	01111010	186	BA	10111010	250	FA	11111010
59	3B	00111011	123	7B	01111011	187	BB	10111011	251	FB	11111011
60	3C	00111100	124	7C	01111100	188	BC	10111100	252	FC	11111100
61	3D	00111101	125	7D	01111101	189	BD	10111101	253	FD	11111101
62	3E	00111110	126	7E	01111110	190	BE	10111110	254	FE	11111110
63	3F	00111111	127	7F	01111111	191	BF	10111111	255	FF	11111111

Table 2 EnableAll - PmaskRL 1 - PmaskRL2 (high+low)

EnableAll (high) – PmaskRL1H – PmaskRL2H

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Reserved Power-on					Temperature		Positioning

EnableAll (low) – PmaskRL1L – PmaskRL2L

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
				Choosing		Fraud	

Table 3 PSemafori

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
						Traffic lights during waiting dir.B 0 = Green 1 = Red	Traffic lights during waiting dir.A 0 = Green 1 = Red

Table 4 PsetLettori

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
		Accumulated credits. 0 = Not ordered 1 = Order in a table		1=Reader resets alarms. Only if PmaxPren otaz = 0	Number of readers 0 = 2 readers 1 = 1 reader	Reader timeout 0 = Pulse 1 = Level	

Bit 3 modifies flag FELA and FELB functioning in case of an alarm

Table 5 PtipoSort

Choosing typology in Dir'n A	Choosing typology in Dir'n B
0 = None 1 = Before passage occurs 2 = During counting	0 = None 1 = Before passage occurs 2 = During counting

Table 6 K (x) High+ K (x) Low

K (x)High

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Polarity 0 = Normal	0 = OR 1 = AND						Fposiz S0

K (x)Low

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
FBusy B	FBusy A	FBlocco B	FBlocco A	Conteggio B	Conteggio A	FELB	FELA



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