



Avon Barrier Company Ltd

FULL-HEIGHT TURNSTILE TS90/TS120



Example Illustrations Only



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INTRODUCTION

This manual provides information on the Avon TS90/TS120 Turnstile and is designed to assist the Installers, Maintainers, Operators and System Integrators.

Should you require and further assistance or specific assistance please contact our security specialists at our UK Head Office.

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SCOPE OF DOCUMENT

The Avon Full Height Turnstile shall hereafter be referred to as the “Turnstile” or “TS90/TS120”

This document is intended for those who will:

Install/Interface the Turnstile

Operate the Turnstile

Maintain the Turnstile

NOTE FOR SYSTEM DESIGNERS/INSTALLERS

The safe operation of the Avon TS90/TS120 Turnstile depends on a careful balancing of the various factors that are inevitably associated with operating a piece of moving equipment in a public place. It is vital that these factors are taken into consideration before the system specifications are made final.

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Appendix

90 Degree Turnstile Foundation details (A3)

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HEALTH & SAFETY STATEMENT



This symbol indicates a potentially hazardous situation that might result in minor injury or machine damage. It also indicates strict attention must be given to the instructions following the displaying of this symbol.

Where associated equipment is supplied or fitted by others, the seller and purchaser of the equipment are responsible for ensuring that:

- The equipment complies with all safety requirements, the associated equipment does not adversely affect the operation or safety of equipment supplied by Avon Barrier Company Ltd.
- It is the sole responsibility of the owner/user of the equipment to establish which legislation is applicable to the country in which the equipment is installed, and to ensure subsequent compliance with all national and local regulations.
- It is also important that the owner/user of the equipment has assessed all equipment and operational hazards, which might arise from the presence of electrical power, powered machinery and exposed moving parts, both pre and post-installation. It is recommended that this assessment be reviewed before the equipment is set to work.



PERSONNEL SAFETY

The vendor should train one or more authorised persons, nominated by the employer to be responsible for controlling the access system or advising users of the correct entry and exit procedures.

Training should include instruction on the Safe Practices and known hazards including normal and emergency use. Operators and attendants should be directed **NOT** to operate the turnstile unless the area is clear and all covers/guards are in place.

All maintenance and servicing must be carried out by suitably qualified and experienced personnel, who are familiar with the risks and dangers inherent to their particular discipline, and the precautions necessary to minimise them.

Safe Maintenance

Only carry out maintenance and servicing:

- **When suitable warning signs are posted and the area is cordoned off to pedestrians**
- **If no hazard exists (ie crushing hazard, slipping hazard etc)**
- **With the correct tools**
- **With the correct PPE**
- **When the control panel is at zero volts and is secured against restoration of the power supply (Isolator is off).**

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PRODUCT DESCRIPTION



Illustration purposes only

The Avon Turnstile Systems are ideal for securing pedestrian entrance ways against unauthorised access. Designed and manufactured in the UK, these turnstiles will provide additional security and enhance any unguarded pedestrian entrance to a site. Available in a range of designs, finishes and operating modes, they can be interfaced with all forms of access control.

Turnstile systems come in various options and are manufactured as standard from steel sections and sheets which are fully galvanised. The Full-Height Turnstile is constructed from steel framed panels with a combination of sheet and bar infill. The sections are modular in design giving ease of installation.

All mechanical controls are housed within the head unit of the turnstile and these are accessed via the lid. The electrical controls are housed within a waterproof IP65 rated box and are also situated within the head unit. There are also termination panels located at the bottom left and right hand corners for ease of installation.

Avon Barrier Company Ltd offer 2 types of turnstile:

Avon TS 120 (3 arm turnstile rotating through 120 degrees)

Avon TS 90 (4 arm turnstile rotating through 90 degrees)

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MODE OF OPERATION

The Turnstile comes with a push-button control as standard, however it can be customised to interface with a wide range of access control equipment to suit specific customer requirements (available as options) and any configuration including (but not limited to) card readers, and communication equipment. It can be used in either a bi-directional or uni-directional manner.

With regards to **Emergency situations, it can be configured to free wheel in one or both directions on power fail or fire alarm signal.**

Where the Turnstile control point is remote from the installation, we strongly recommend the fitting of a recordable CCTV system.

Options available:

- ❖ Access control and Intercom systems
- ❖ Access Control mounting plates
- ❖ Canopy - with/without down lights
- ❖ Adjacent disabled access gate
- ❖ Battery backup facility
- ❖ Stainless steel/ Painted
- ❖ Power failure - lock/free wheel
- ❖ Anti climb topping
- ❖ Indicator lights
- ❖ Guide railings



Intercom

Fig 6.1



Keypad

Fig 6.2



Fig 6.0

1. Standard Avon Swipe card reader
2. Standard Avon Proximity card reader
3. Anti Vandal Proof card reader
4. Avon Barrier Company swipe cards
5. Standard proximity cards

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TECHNICAL DETAILS

Power and environmental Requirements

Electrical Supply	Value	Tolerance	Comments
Supply Voltage (V ac)	230	+10%, -15%	Other voltages can be accommodated
Supply Voltage (V dc)	12		
Supply Voltage Frequency (Hz)	50		Other frequencies can be accommodated
Current Rating (A)			
Supply AC	0.15A		The turnstile should be protected by a Type "C" MCB (Isolator)
Supply DC	2.5A		
Maximum power cable size (mm ²)	4		
Maximum signal cable size (mm ²)	2.5		
Canopy lighting (optional)			As required

Environment	Minimum	Maximum
Temperature	-10° Celsius	+50 ° Celsius
Humidity	5%	95% Non Condensing

Electrical installation must be in accordance with current regulations. All cable sizes are to conform to site specification with current regulations. Keep the power cable separate from the control cable. To avoid any potential electrical interference problems, it is advisable to route these wires in separate conduit.

Power isolation is via a double pole DIN rail mounted isolator in the electrical housing.

Signal connection is via the DIN rail mounted terminals to the right of the isolator in the control panel located in the head of the turnstile. The power and signal terminations are replicated, for ease of installation, behind low level access panels either side of the turnstile. These are pre-wired into the control panel in the turnstile head.

Terminal	Description
+	24 Volt DC
-	0 Volt DC
1	Proximity Switch (Input)
2	Release (Entry)
3	Release (Exit)
4	Entry solenoid
5	Exit solenoid

Table 8.0 Electrical connection – Power

Terminal	Description
Earth clamp (to left of isolator)	Earth
Isolator terminal 2	230 Volts AC (Live)
Isolator Terminal 4	230 Volts AV (Neutral)

Table 8.1 Electrical connection - Signal

INSTALLATION



When preparing a site for installation please be aware of the following problems



**Identify all underground services before excavation
(Could cause problem when installing ducting and turnstile base).**

Ensure site is organised make sure that pedestrians and vehicles can both move around safely without risk.

The turnstile foundation should consist of Grade C35 and have minimum dimensions of 1650mm x 1600mm x 150mm. Finish should be levelled and trowelled. The turnstile should be secured via 6 x M16 x 160mm chemical anchors. Care should be taken to ensure that all sides of the turnstile are vertical and at right angles with each other whilst tightening the fixings. The lid is removable and provision should be made to be able to access this for ease of installation and servicing. Installation process should take the following trend:

1. Foundation completion and set firm
2. Turnstile securing
3. Accessory installation (if applicable)
4. Wiring termination
5. Test, adjust and commission
6. Handover to customer

Ducts (Cable Entry points): See Fixings Points & Ducts drawing for details (Page 12)

Termination access panels: See Fixings & Duct drawing for details (Page 12).

Actual Dimensions: Turnstile dimensions are 1400mm Wide x 1450mm Long x 2200mm High, with a walkway of 650mm Wide x 1950mm High



The Electrical Control Panel and Turnstile Mechanism is housed within the turnstile head.



The turnstile top cover weighs in excess of 30 KG. Manual handling procedure should be included in the Method Statement and Risk Assessment. The cover is secured by 4 x M8 stainless steel dome bolts. Ladders/scaffolding must be used to remove the top cover using a minimum of 2 personnel.



DRILLING



BEFORE COMMENCING ANY DRILLING WORK, ENSURE THAT THE FOLLOWING ARE OBSERVED:

- THE DRILL BIT HAS NO OBVIOUS DEFECTS
- THE DRILL BIT IS SECURE IN THE CHUCK
- THE DRILL IS APPROPRIATE FOR THE JOB IN HAND
- THE CORRECT PROTECTIVE CLOTHING IS BEING WORN FOR THE JOB
- THAT AT LEAST 2 PERSONNEL, INCLUDING THE OPERATIVE ARE PRESENT



DISC CUTTING



BEFORE COMMENCING ANY DISC CUTTING WORK, ENSURE THAT THE FOLLOWING ARE OBSERVED:

- THE DISC BEING USED HAS NO OBVIOUS DEFECTS
- THE DISC IS SECURELY ATTACHED TO CUTTING TOOL
- THE DISC CUTTER IS APPROPRIATE FOR THE JOB IN HAND
- THE CORRECT PROTECTIVE CLOTHING IS BEING WORN FOR THE JOB
- THAT AT LEAST 2 PERSONNEL, INCLUDING THE OPERATIVE ARE PRESENT
- ENSURE SITE IS ORGANISED – MAKE SURE THAT PEDESTRIANS AND VEHICLES CAN
- BOTH MOVE AROUND SAFELY WITHOUT RISK

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TURNSTILE HEAD UNIT MECHANISM

1. Pan head bolt M4
2. Solenoid bracket
3. Solenoid assembly
4. Countersunk screw M5
5. Washer
6. Proximity (Limit) switch
7. Proximity switch assembly
8. Pan head screw M4
9. Rotary head (Figs show both types)
10. Rotary arm bush
11. Rotary arm
12. Spring (Tension) 110mm
13. Spring (Compression) 37mm
14. Grub screw M6
15. Socket head bolt M10
16. Locking bar
17. Lock Bolt M20
18. Spring Stud M12



Fig 9.0

90 Degree Head Mechanism

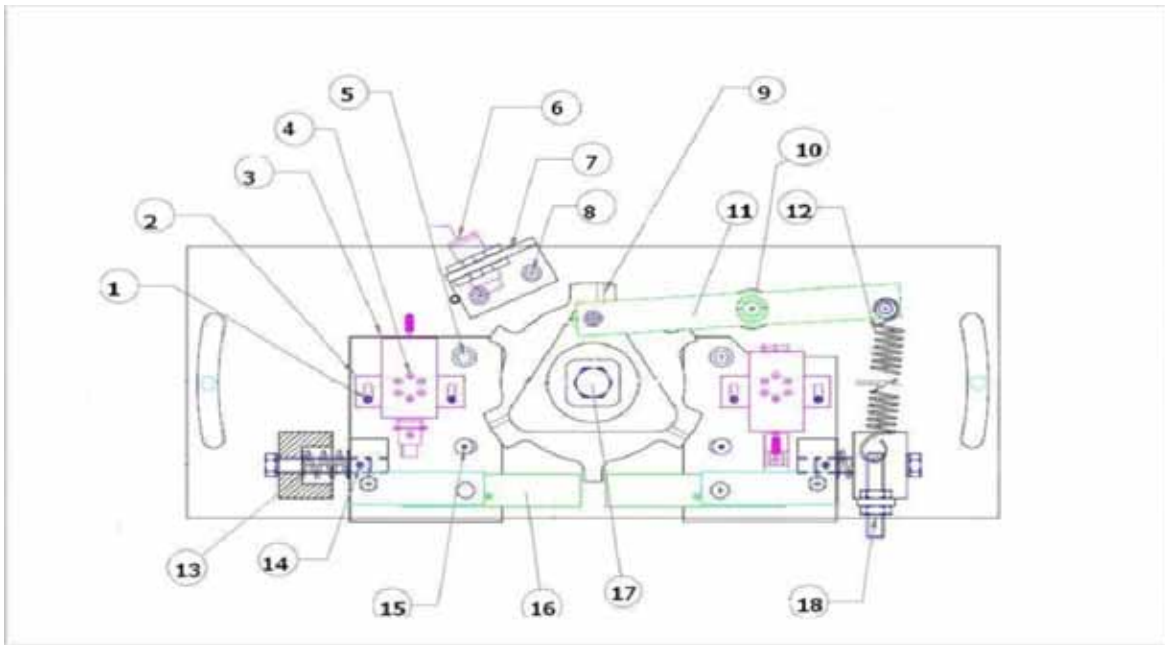


Fig 9.1 120 Degree Head Mechanism

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TYPICAL HEAD MECHANISM SETUP

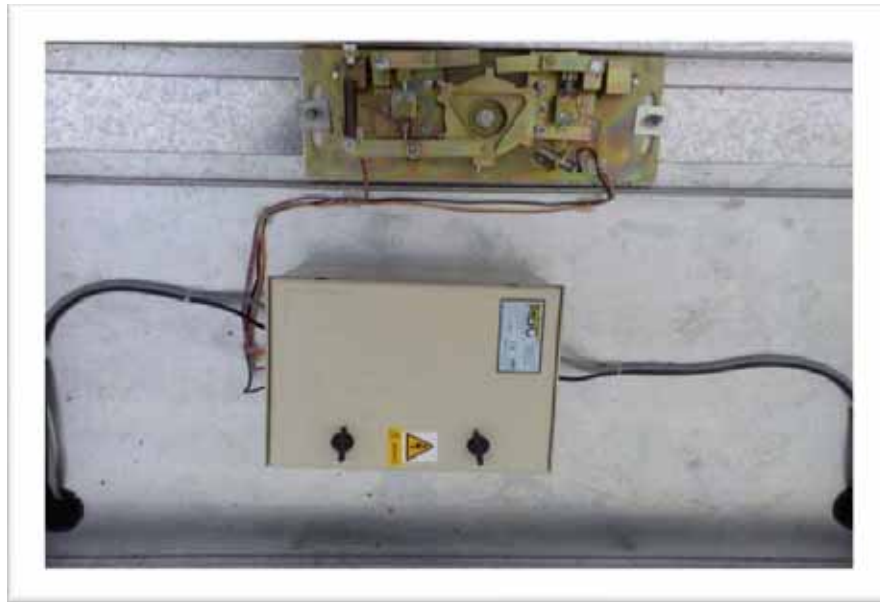
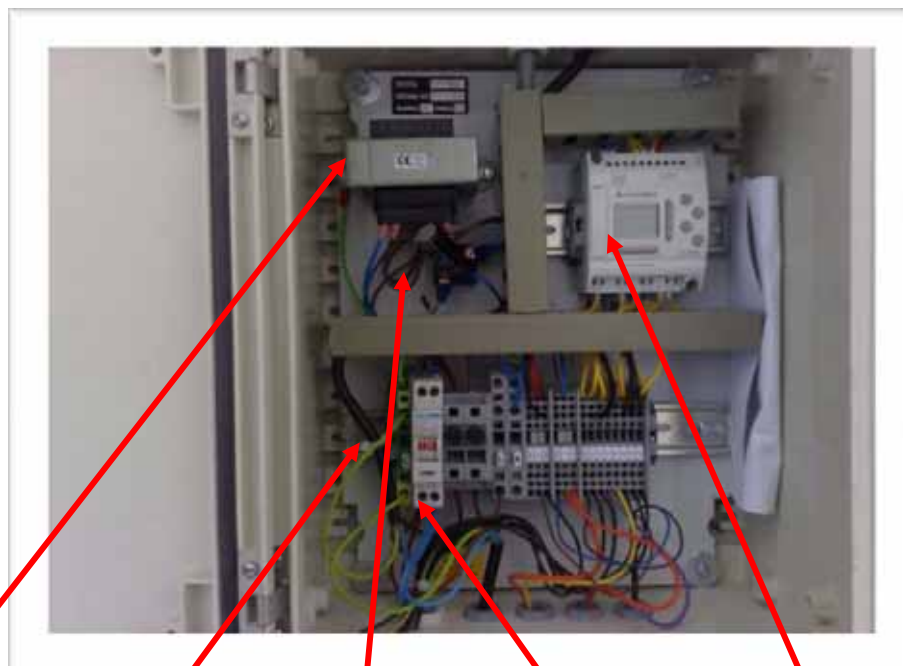


Fig 10.0

INTERNAL CONTROL BOX MECHANISM



Transformer

Isolator

Bridge rectifier

Fuses

Alpha Controller

Fig 10.1 Control Box Components

The control box houses a transformer which provides 24Volts for the Alpha controller (which operates the solenoids), and the terminations. An isolator is also located here for safety alongside the fuses.

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RECOMMENDED SPARES LIST



Fig 11.0

1. Proximity Limit switch (3 wire)
2. Main bearing for top Rotor shafts (Fig 10.1)
3. Lock Arm bearings
4. Rocker Arm bearings
5. Tension spring 110mm
6. 24 VDC Solenoid



Fig 11.1 Top and bottom Rotor shafts

In addition the following components are recommended:



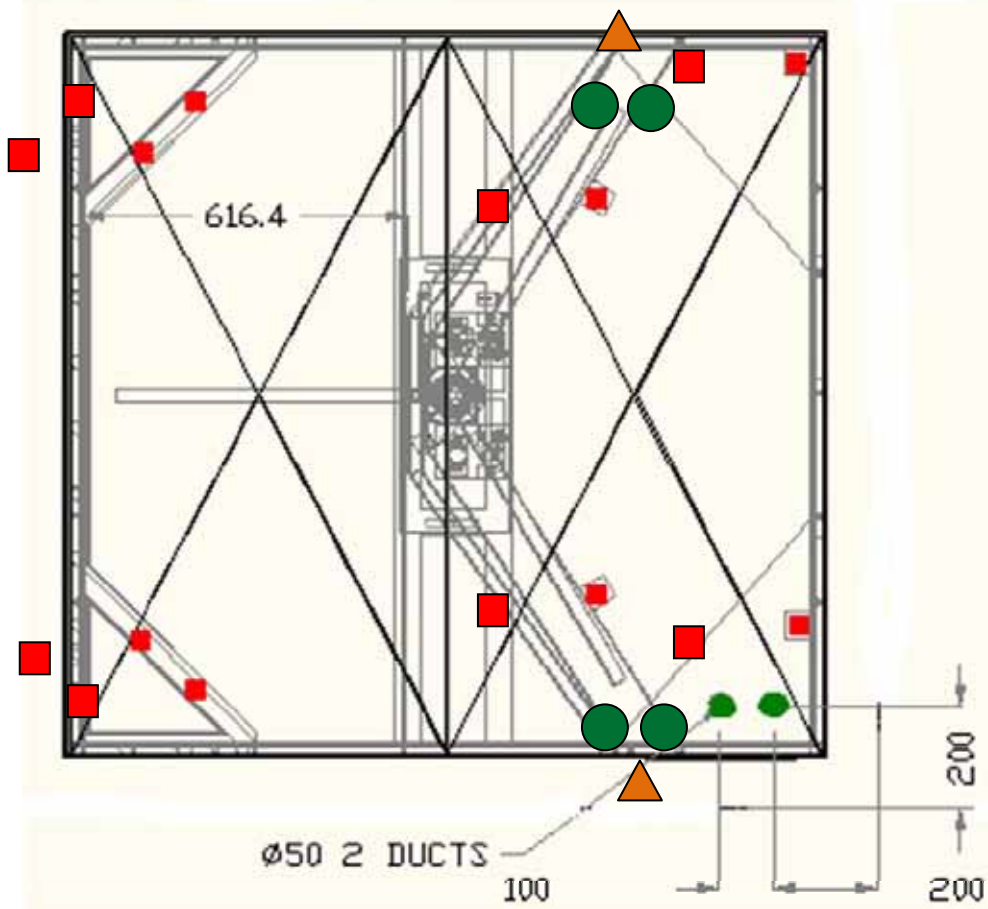
Fig 11.2 Alpha controller AL-10MR-D





Fig 11.3 Transformer 25VA 9Amp


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FIXING POINTS & DUCTS



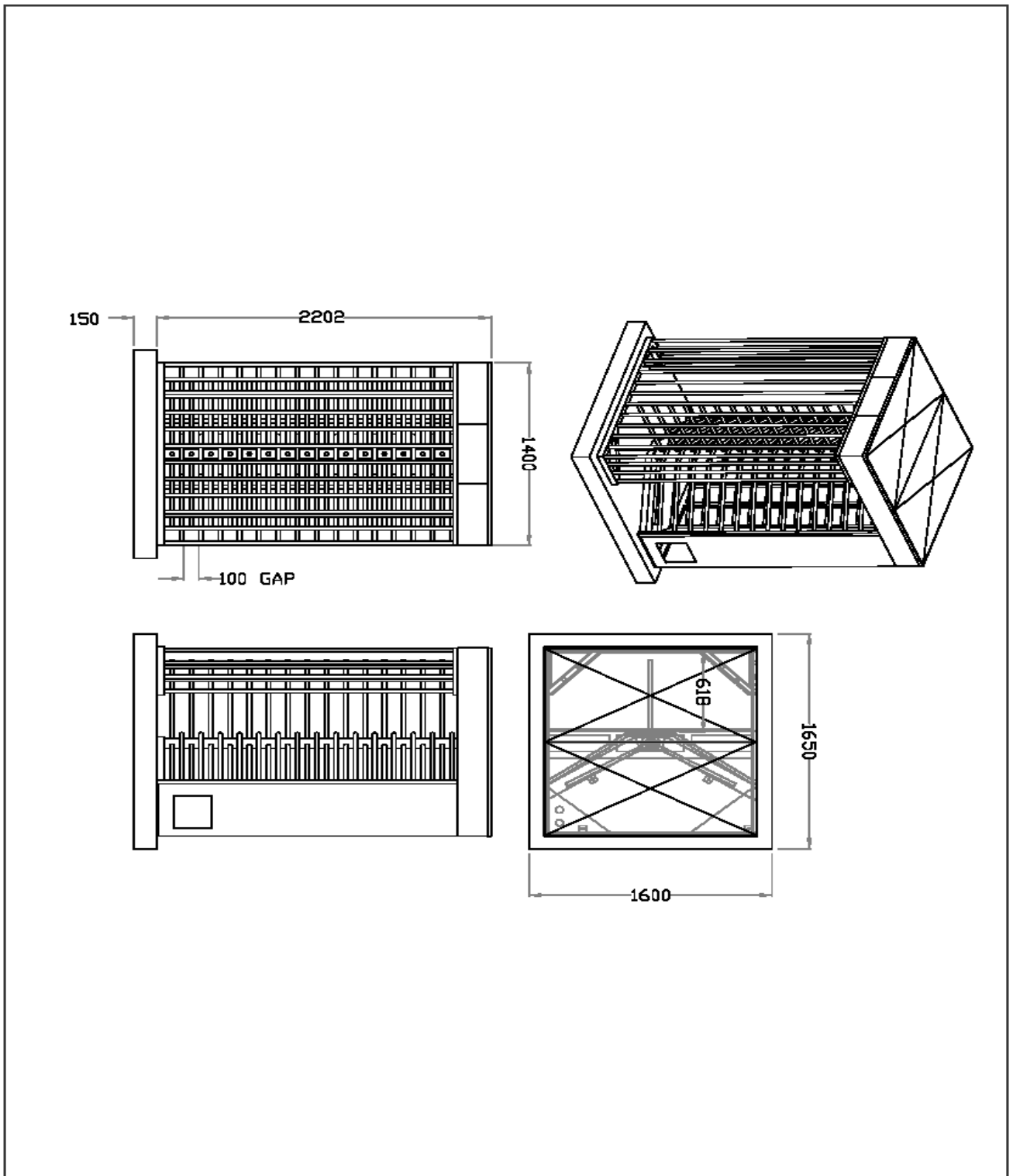
Fixing Points 

Duct (Cable entry) Points 

Termination Access panels 

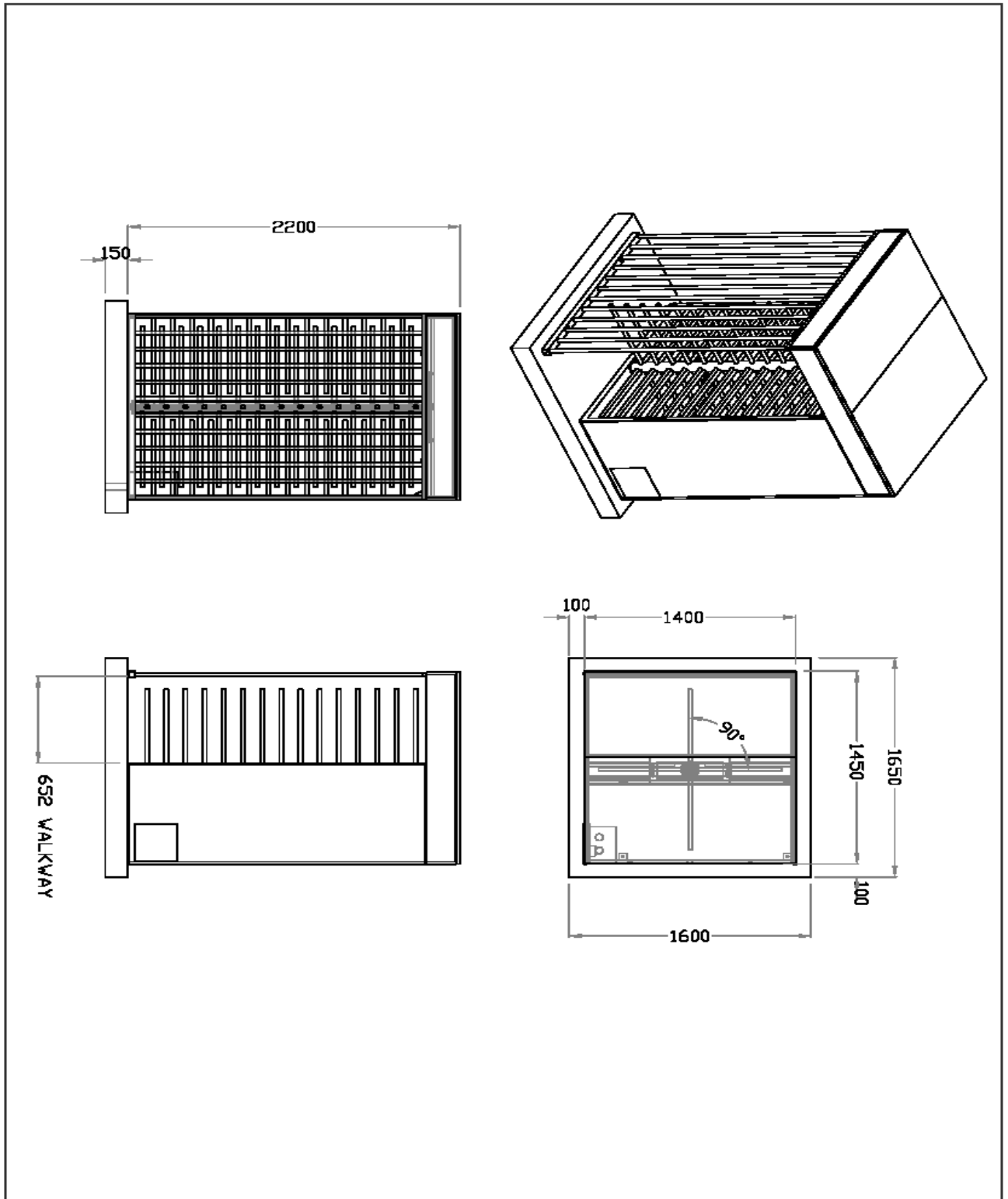
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AVON TS120 DRAWING



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AVON TS90 DRAWING



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MAINTENANCE/SERVICING



Avon Barrier Company Ltd AVON BARRIER COMPANY LTD – MAINTENANCE INSPECTION (6 MONTHLY SCHEDULE)

Company Name:		Contract No:	
Site Address:			
		Name of Engineer:	
		Model: Turnstile (TS90/TS120) Please circle Serial No:	
Site Contact:			
Site Tel No:			
Site Fax No:		Visit Date:	
Area/Customer Ref:		Visit Time:	

Equipment		Action	Completed <input type="checkbox"/>	Notes
Fixings		Check/Tighten		
Drive Mechanism		Check/Tighten		
Drive Wheel/Roller				
Hinge Assemblies		Check/Lubricate		
Limit Switch Contact Resistance		Check		
Limit Switch		Check/Adjust		
Bearings - Top and bottom Rotor shafts		Check/Lubricate		
Control Signals		Check		
Terminations		Check/Tighten		
Canopy lights	(if applicable)	Check		
Spring Anchor/Pivots		Check/Lubricate		
Lubrication		As required		
Power Switched On		Check		
Functionality		Check		
Lid		Secure		

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ROUTINE MAINTENANCE

ITEM	TASK	FREQUENCY
Rotor – lower bearing	Check for wear	Every 12 months
Head mechanism	Check for wear/fatigue and tighten as required, pay special attention to rota blocker fixing (32mm Socket required)	Every 6 months
Tension spring	Tighten to control Centralising of the rotor	As required
Solenoids	Check for operation	Every 6 months
Limit switches	Check for operation/adjust	Every 6 months
Pivots	Grease/lubricate	Every 6 months

FAULT FINDING

SYMPTOM & POSSIBLE CAUSES	ACTION/REMEDY
Freewheeling	No Power, Proximity switch not activating
Not operating	Faulty solenoid Solenoid not aligned correctly
Jamming halfway	Proximity switch picking up halfway – Adjust limit
Not operating when access control activates	Solenoid jamming – free solenoid/replace No card reader input – Check card reader operation
Turnstile not restoring correctly	Damper arm spring broken – replace Damper arm bearing seized - replace



Ensure control panel is at zero volts and is secured against restoration of the power supply (Isolator is off).

Ensure suitable warning signs are erected and the area is cordoned off.

In some cases, you may have to keep Mains power on to locate fault.



Avon Barrier Company Ltd

WARRANTY AND LIMITATION OF LIABILITY

Avon Barrier Company Ltd. warrants that during the first 12 months following delivery, the products will be free from defect in material and workmanship.

Avon Barrier Company Ltd's sole obligation under the terms of this warranty shall be to repair (or at Avon Barrier Company Ltd's option, to replace) any defective product/part, without extra charge to the Buyer, provided that,

- (a) Buyer gives Avon Barrier Co. written notice of any such claimed defect within such period of 12 months,
- (b) The product(s), if installed, were installed by an Avon Barrier Company Ltd authorised installer,
- (c) The products have not been altered, subjected to misuse, improper maintenance, negligence or accident, or used with parts not authorised by Avon Barrier Company Ltd.

NO OTHER WARRANTY IS EXPRESSED AND NONE SHALL BE IMPLIED, INCLUDING WITHOUT THE WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR USE.

THE FOREGOING STATES THE ENTIRE LIABILITY OF AVON BARRIER CO. LTD. WITH RESPECT TO THE PRODUCTS.

IN NO EVENT SHALL AVON BARRIER CO. LTD. BE LIABLE FOR ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES WHICH RESULT FROM USE BY BUYER OR ANY OTHER PARTY, OF THE PRODUCTS, AND IN NO EVENT SHALL AVON BARRIER BLOCKER CO. LTD'S LIABILITY EXCEED THE AMOUNTS PAID BY THE BUYER FOR THE PRODUCTS THEREUNDER.

DISCLAIMER

Careful consideration must be given to the selection, placement and design of a Barrier installation, and care must be taken to ensure that approaching vehicles as well as pedestrians are fully aware of the Barrier system and its operation.

Proper illumination, clearly worded signage and auxiliary safety devices, should be considered.

Avon Barrier Company Ltd. has information available on many such pieces of safety equipment not specifically listed here.

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Avon Barrier Company Ltd

DECLARATION OF CONFORMITY

E C MACHINERY DIRECTIVE 2006/42/EC

E C LOW VOLTAGE DIRECTIVE EN60204-1:1998

E C ELECTROMAGNETIC COMPATIBILITY

DIRECTIVE EN 50081-1 & EN 50082-2

We hereby certify that the TS90/TS120 Turnstile complies with the relevant provisions of the E C Directives detailed above.

Manufactured by:

Avon Barrier Company Ltd
Nova House
195 South Liberty Lane
Ashton Vale Trading Estate
Bristol
BS21 2TN

Date: 1st December 2009

Name: P A Jeffrey

Position: Managing Director, Avon Barrier Company Ltd

[ToC](#)

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