



Avon Barrier Company Ltd

**THE SG1500 CR. A.S.T.M.
HIGH IMPACT SLIDING GATE.**



Example Picture Only.



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INTRODUCTION.

This manual provides information on the Avon Barrier Company SG1500 CR. A.S.T.M. High Impact Sliding Gate. It is designed to assist the Specifiers, Installers, Maintainers, Operators, System Integrators and Procurement Staff.

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

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SCOPE OF DOCUMENT.

The SG1500 CR shall hereafter be referred to as the 'Sliding Gate' or 'SG1500 CR'.

This document is intended for those who will:

Specify the site / system.

Design the secure entry system

Install / interface the Sliding Gate(s)

Operate the Sliding Gate(s)

Maintain the Sliding Gate(s)

IMPORTANT: Note for system/site designers.

The safe operation of the SG1500 CR depends on a careful balancing of the various risk factors which are inevitably associated with operating a large piece of moving equipment in a public area. Site-specific risk assessments should be carried out and the mode of operation decided upon before the system specifications are made final. Avon Barrier Company will be happy to provide advice and consultation services are available upon request.

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HEALTH AND SAFETY.



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

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 of the equipment. It is recommended that this assessment be reviewed before the equipment is set to work.

PRODUCT DESCRIPTION.

The Avon SG1500 CR is a High Impact Sliding Gate which provides a high level of security against unauthorised vehicle and personnel access and is designed to operate in a security environment where effective perimeter protection is essential. It will withstand substantial direct impact forces and has the ability to protect sites from extreme aggressive vehicle and /or pedestrian borne threat. The gate has been designed as a modular unit combining a crash tested gate with a range of infill and toppings to provide a site specific design that will blend with the existing perimeter fencing.



SG1500 CR (inner view) shown with foundations.

The SG1500CR has been fully crash tested to PAS 68 (7560kN @ 80 kph and to A.S.T.M.-F2656-07. Designed and manufactured by engineers with a wealth of experience in the fields of High Security and Access Control, the SG1500 CR is a highly dependable security product that will easily interface with a wide range of control equipment. Constructed from a range of proven materials selected for optimum strength and impact absorption, the Sliding Gate utilises a rack and pinion mechanism driven by a 3 phase gate drive motor contained within a cabinet attached to the gate post. The Gate provides a full impact resistant system and can be supplied with a range of gate infill heights. Foundation depths are from under 500mm subject to gate design.

Further Description.

The SG1500 CR is constructed using a mild steel frame with a high tensile steel central blocking tube and additional wheel level stopping bars. The gate leaf is designed to accept a wide range of decorative or protective infill which can be added without affecting the impact resistance of the gate. The facility is also available to accommodate gate topping protection that provides continuity of perimeter fence lines and allows the gate height to be varied without compromising its impact protection.

The gate runs on a heavy duty, RSJ mounted, drive track and is supported at both ends by posts mounted in steel reinforced foundations (less than 500mm overall depth).

The Gate drive unit consists of an electric motor / gearbox driving a rack and pinion. The 3 phase electric motor has a power rating sized to allow for frequent operation (50% duty cycling).

Gate widths can be between 3000 mm and 6000 mm. The Gate and support posts are fully galvanised and painting to match site requirements can be provided as an option.

Limit switches are fitted to provide opened and closed signalling to the control system.

A clutch system is provided to enable the disengaging of the motor drive unit, allowing the gate to be manually opened and closed.

The Drive unit is operated via a master control board which accepts inputs from the access control system and gate monitoring equipment as well as output signals to the Drive motor, back indication system and external signalling. An additional programmable controller can be supplied if site requirements dictate.

The control system is housed in a general purpose IP55 rated housing and allows access to all electrical components for connection, maintenance and programming.

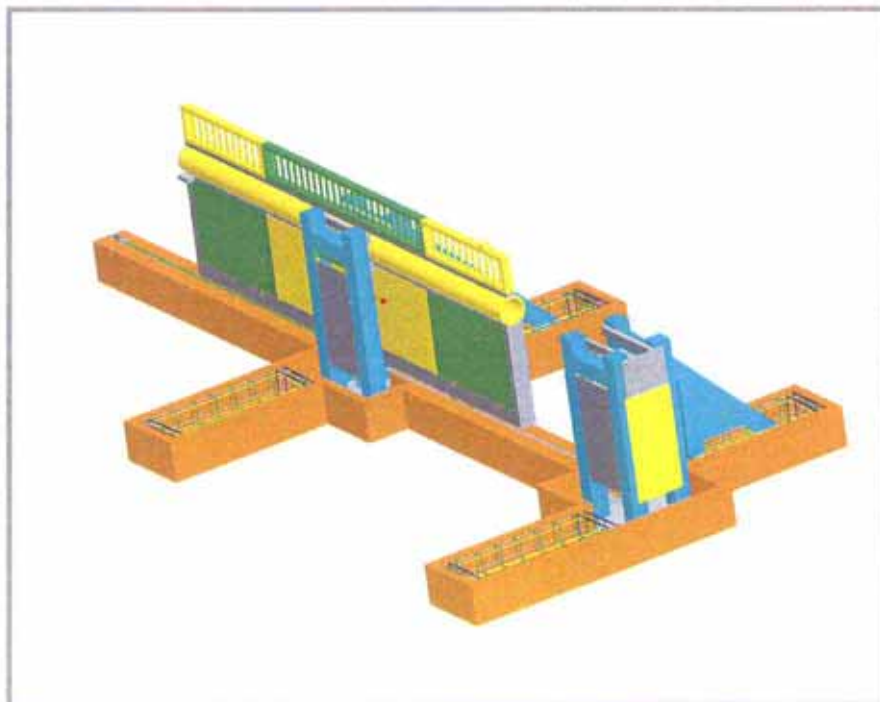
The Gate comes with a push button control panel to open, close and emergency stop the equipment .

The gate leaf can be configured to reverse on command.

The control system is capable of accepting inputs from every major type of access control including but not limited to – Swipe card readers, proximity card readers, inductive loop systems, RF transmitter equipment and biometric readers.

The system can be programmed to interface with other equipment to create an interlock.

Standard operation speed is between 6 and 8 seconds per metre for either opening or closing, with the close speed being increased to 3 seconds per metre when the optional emergency fast close system is activated.



SG1500 CR (outer view) shown with foundations.

GENERAL SPECIFICATION.

Physical dimensions:

Please refer to drawing: SG1500ASTM-101 (appendix)

Electrical requirements:

Electrical Supply	Value	Tolerance	Comments
Supply Voltage (V ac)	415	+10%, -15%	3 phase supply required.
Supply Voltage Frequency (Hz)	50		60 available as a special order.
Current Rating (A) (Current dependant on Equipment supplied and may vary)	10A		The Sliding Gates should be protected by a type 'D' MCB
Maximum power cable size (mm2)	6		
Maximum signal cable size (mm2)	4		

Standard supply requirements: 380v - 415v AC 3 phase 50 hertz, max 10 amps.

Supplies should be protected by a type "D" magnetic circuit breaker.

Cable entry is via 100mm conduit through the base of the drive post.

Limit switches are fitted to the Sliding Gate and provide opened / closed input signals to the logic control board.

Options:

Depending on site conditions and requirements the following options are available:

The Sliding Gates comes with a simple raise and lower 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 and any configuration including, card readers, remote control systems, communication equipment and manned guard panic systems can be accommodated.

Safety systems can include; inductive road loops and photo cells.

Where the control point is to be remote from the Sliding Gate position, we strongly recommend the fitting of a recordable CCTV system, traffic lights, signage and safety inductive loop systems.

Avon Barrier Company Ltd will fully test each Gate, Control System and Access Control equipment prior to despatch. These tests will be fully traceable to each unit despatched.

Our Quality Assurance testing will include dimensional checks, workmanship quality and finish as well as full operational testing. Once fully tested, the equipment will be fitted with a nameplate bearing the manufacturers details, serial number and test date.

Avon Barrier's quality system is certified to ISO 9001.

INSTALLATION.

Health and Safety.



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 of the equipment. It is recommended that this assessment be reviewed before the equipment is set to work.

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 and any associated equipment does not adversely affect the operation or safety of equipment supplied by Avon Barrier Company Limited.

Personnel.



The vendor should train one or more authorised persons, nominated by the employer, to be responsible for the installation of the equipment.

Training should include instruction on Safe Practices and known hazards.

All installation works must be carried out only 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.

Only carry out installation works;

- When suitable warning signs are posted and area is cordoned off from traffic.
- If no hazard exists (e.g. crushing hazard, slipping hazard, etc.)
- With correct tools and equipment.
- After carrying out the appropriate Risk Assessments.

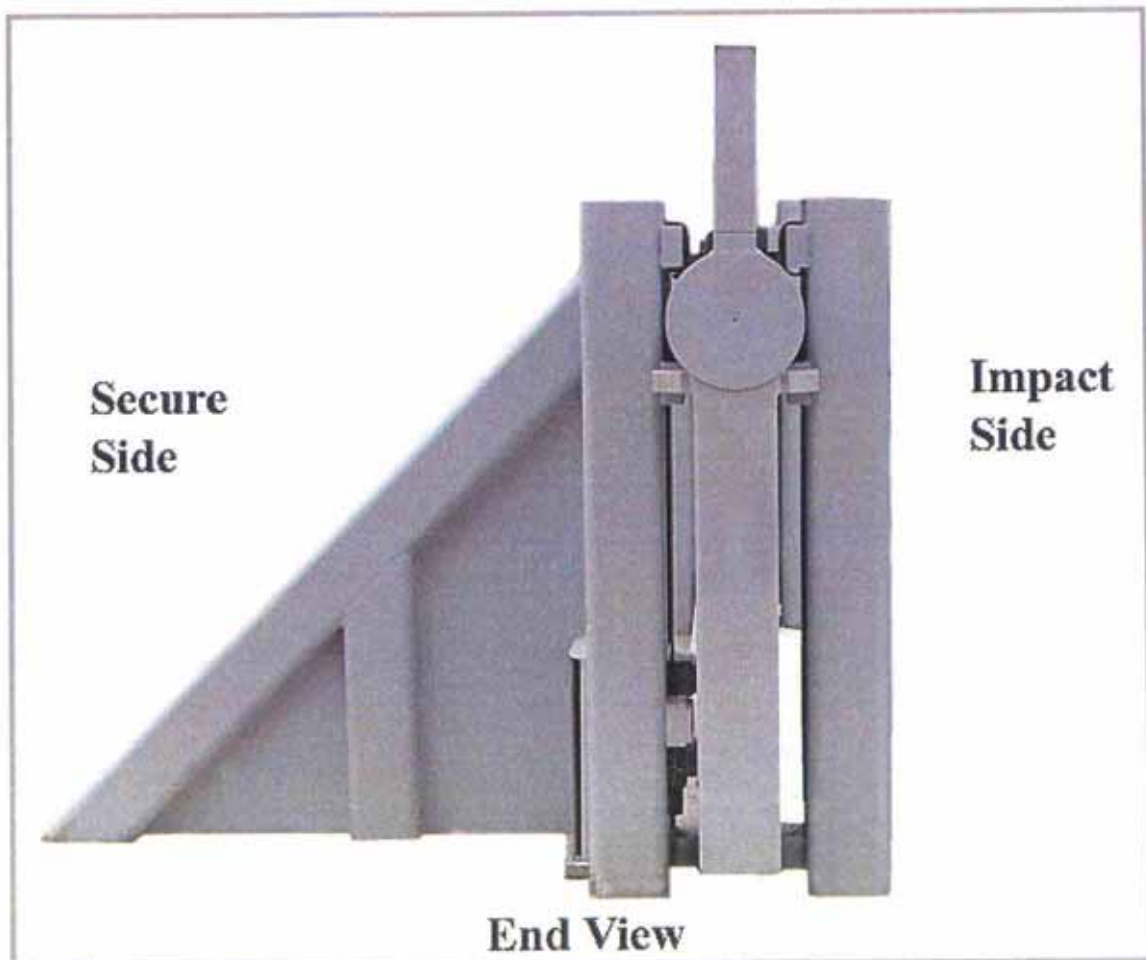
Installation Guidelines.

Installation may be broken down into the following stages:

- Excavation of foundations (500 mm max)
- Installation of 100 mm conduit for power cable and 50mm conduit for control signal cable and 50 mm conduit between gate posts for photocell cable.
- Fabrication of rebar cage.
- Construction of Sliding Gate foundation base. (1st pour concrete.)
- Installation of Sliding Gate posts.
- Bolting down of gate posts.
- Installation and bolting down of RSJ track. Final positioning
- 2nd pour concrete.
- Installation of gate sliding leaf assembly.
- Installation of inductive road loops (if required).
- Mounting of traffic lights (if required).
- Pulling of cables.
- Connecting power and control cables.

Please refer to installation drawings:

SG1500CR-103GTCR Rebar schedule
SG1500CR-ASTM-101 Foundation



INSTALLATION DETAIL.

Ducting.

The following ducts with conduits are required:

- 50 mm for signal cables between the motor gate post and site-specific control stations.
- 50 mm between the two gate posts for photocell cable.
- 100 mm from incoming 3 phase power supply to motor gate post.

Additional ducting may be required for optional traffic lights / interlocks and inductive loop systems. Avoid 90° sharp bends and sharp edges. All conduits should be fitted with draw wires.

System Layout & Controls

The installation will normally comprise 1 Sliding Gate across the entrance.

Sliding Gate control is via remote push-button station as standard, but may be linked to a wide range of access control equipment, for local or remote control to suit specific customer requirements.

These include:

- Access control via Avon range of local control units.
- Access control via Avon range of remote control units.
- Inductive loop system for safety and/or automatic rising.
- Traffic Lights and back-indication equipment.
- Panic Button with lockdown. When pressed, linked Sliding Gates can be closed, by-passing safety systems and can only be reset by key.

Interlock system to give air-lock type protection on sites with high threat levels.

Base Preparation:

Rebar cages should be fabricated according to drawing: *SG1500CR-103GTGR Rebar schedule*

Take note of the correct orientation of the gate with regard to the secure / non-secure side and the direction of opening prior to marking out of foundations.

Base to be 470mm deep with steel reinforced raft foundation placed according to the drawing.

Recommended concrete type is C35 grade.

Ducting for cables should be installed.

The first pour must be level and at the correct height below the finished floor level.

Mechanical Installation:

After the first pour has cured, the 'A' posts can be craned into position.

Ensure that the draw wires for the ducting are accessible.

The posts should be levelled and a centre line established between the two posts.

The RSJ track should be positioned and correctly aligned.

The gate posts and RSJ track can now be bolted down and shimmed to achieve the final correct alignment.

Cable ducts should be brought to their final position and sealed to prevent the ingress of concrete.

The second pour should be carried out carefully to prevent movement of the posts.

Finish should be levelled and trowelled or brushed.

Once the base has cured, the Sliding Gate assembly can be craned into position.

Instructions for motor alignment and manual operation of the gate drive can be found in the Came manual included with this manual.

Installation Electrical.



Electrical installation must be in accordance with current local regulations



All cable sizes must conform to Sliding Gate electrical specification and current local regulations.
Power cables must be routed in separate conduit from signal cables.
The electrical equipment is located inside an IP65 rated enclosure mounted on the gate motor post.
415v 3 phase mains supply cable should be connected to the MCB and the cabinet frame should be earthed.
The signal and control cables should be brought into the electrical enclosure and connected to the appropriate DIN rail mounted terminals.
Copies of site-specific wiring diagrams will be shipped with the equipment and will be found stored in the electrical enclosure.

Inductive Loop Systems

Two types of loop installation may be used. For existing roadways, saw cut loops are most cost effective. Preformed loops encased in PVC conduit or trunking must be used in installations under block paving.
Loop size may vary and will depend upon lane width. The standard size would be 1000 mm across X the width of the Sliding Gate road coverage and a depth of 20 to 50mm.
Four turns of wire is usually sufficient for most applications. (*See loop detector manual for details*).
Loop wires should not be installed above reinforcing steel, electrical cables, steel conduit or water pipes, if this is unavoidable then the loop detector manufacturers instructions should be consulted for details.

Saw cut installations

The slots must be 20-50mm deep and clean, with no sharp corners which could damage the cable insulation and just wide enough to accommodate the type of cable being used.

The wire used for the loops should be 1.5mm sq and have an insulation rated for direct burial as moisture can cause significant loop frequency drift.

When the cable is laid, ensure that no insulation is protruding above road level.

An appropriate sealant should be used dependant upon the finished road surface, i.e. mortar dry mix, brushed into the loop slot, or hard setting epoxy for concrete roadways and bitumastic for tarmac roads. Caution should be taken when using hot fill sealant, as the high temperatures could damage the insulation.

The loop should be installed in one continuous run; the tails of the loop should be twisted together from the point of leaving the loop to the terminations in the HPU.

The tail should have no fewer than 20 turns per metre.

Preformed loop installations

The loops are usually manufactured, upon request, prior to installation.

The cable is housed in a PVC conduit or trunking to provide mechanical protection, with the twisted tails exposed. These loops are then laid in the roadway in their final location and embedded into sand.

The block pavers/paving are then placed over the top and firmed down as normal.

Care should be taken not to crush or damage the trunking or cable when installing the cabling.

It is advisable to perform an earth leakage (Megger) and loop resistance test prior to commissioning the loop.

COMMISSIONING.

Check and adjust the gate alignment and rack and pinion clearances.
Check tightness of all fasteners and electrical connections.
Manually open and close the gate, check for obstructions and smooth operation.



The authorised site electrician should now switch the mains power ON and make the appropriate tests in compliance with local safety regulations.



Equipment will now be live, observe all safety precautions for working near live equipment.



The gate may now be operated using the site-specific control system.
Several opening and closing sequences should be carried out and any adjustments to limit switches made.
Check the function of all safety equipment; inductive loops, photocells, pressure strips etc.
Check that the gate operates according to the mode of operation in the works instruction.

Handover Procedure.

Demonstrate power isolation using MCB .	
With mains power OFF; Demonstrate the use of the motor clutch to manually open and close the Sliding Gate.	
Mains power ON; Open & Close the Sliding Gate using jumper wire between Common and Open / Close terminals.	
Demonstrate use of access control system to operate the Sliding Gate. (Including safety-closing and free exit loops if fitted.)	
Demonstrate that the traffic sequencing functions according to required mode of operation; traffic lights / interlock etc.	
Confirm the open and close speeds.	
Demonstrate the functioning of inductive loop detectors; observe LED's as loop is triggered	
Demonstrate functioning of all safety systems.	
Inspect condition of installation ; paintwork, cabling, etc.	
Demonstrate limit switch adjustment procedure.	
Demonstrate periodic inspection procedures.	
Complete and hand over relevant paperwork, manual, keys etc.	

OPERATION AND MAINTENANCE.



Health & Safety.



Appropriate risk assessments should be carried out and operational methodologies should be agreed and established before the equipment is operated.
The owner should ensure that one or more competent persons are responsible for controlling the access system and advising vehicle users of the correct entry and exit procedures. Training should include instruction on safe practices and known hazards, including normal and emergency use.
Operators and attendants should be directed NOT to operate the Sliding Gate/s unless the area is clear and all covers / guards are in place.

The 'Site Details' section of the final commissioning / handover document will give site-specific details of the equipment fitted and its mode of operation. This should be studied in conjunction with the rest of this manual.

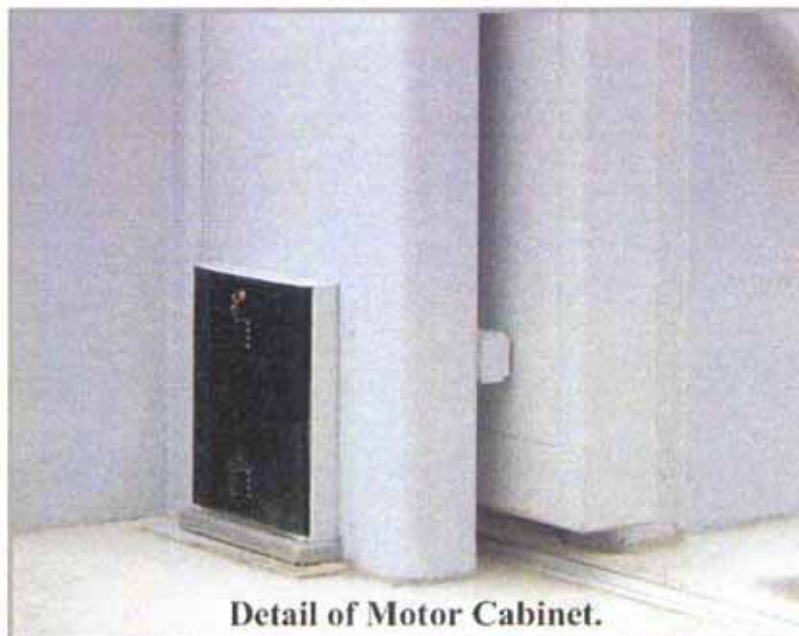
Training and certification of Operations and Maintenance personnel can also be provided upon request by Avon Barrier Company Ltd.

Manual Open / Close.

Manual operation of the Sliding Gate in the event of power failure:
Please consult the Came manual.



**Before attempting manual operation, ensure that the electrical power is switched off
Make sure the area around Sliding Gate/s is free from obstruction and is isolated from pedestrian and vehicular traffic.**



Detail of Motor Cabinet.

Access Control.

Opening and closing is usually achieved by a standard Avon Barrier push button controller, however other access control equipment may be used.

To operate the Sliding Gate/s a signal is required going from normally open to closed, for a pulse length of not more than 1 second. The 'Site Secure' push button (if fitted) will lock in the down position and can be released by twisting the button or using the key, (depends on type supplied).

Depending on the customer requirements, the 'Site Secure' facility may over-ride the safety systems and this should be taken into account when establishing operational procedures.

A wide variety of access control methods, safety systems and security requirements may be applied to the SG1500 CR; these reflect the specific needs of individual sites and may include:

- Site Secure facility which over-rides safety devices.
- Site Secure which does not over-ride safety devices.
- Automatic induction loop triggered opening.
- Automatic induction loop triggered closing.
- Sliding Gate / Barrier interlock system.

Safety devices:

Depending on site specifications, various safety devices may be fitted e.g.

- Induction loops to detect vehicle presence.
- Photocells to detect vehicles or persons.
- Safety edge strips to detect obstacles in the path of the gate.

Site Secure facility:

Some sites may have a Site Secure mode whereby if the Sliding Gate is open or opening and the site secure button is pressed, then the Sliding Gate will stop opening and will close.

This may over-ride the safety device circuit, depending on the system specification.

Loop Detectors:

Some systems may be fitted with inductive loop detectors; the loop is buried a few centimetres beneath the road surface and is connected to a loop detector unit mounted in the main electrical enclosure.

Loop detectors may serve one or more of the following functions:

Safety Loop.

When a vehicle is on this road loop, the detector unit opens the safety circuit which then inhibits the PLC from activating the 'Close' mode.

Free Exit Loop.

Loop detector used to provide a 'free exit' mode whereby a vehicle approaching the Sliding Gate/s drives onto a road loop, the loop detector then closes the 'Open' Circuit and the Sliding Gate/s will open automatically

Auto Closing Loop.

Loop detector used to provide an automatic closing mode whereby a vehicle leaving the road loop causes the detector to close the 'Close' circuit thus automatically closing the Sliding Gate/s. Often used in conjunction with 'free exit' mode.



Loop detectors cannot be relied upon to detect bicycles, motorcycles and non-ferrous framed vehicles

MAINTENANCE & FAULT FINDING GUIDELINES.

Fault finding.

If a fault condition should occur the following steps should be taken:

Try to determine the exact nature of the fault, i.e. Sliding Gate/s will not open, will not close, does not open or close fully etc.

Check that the power supply is ON.

Carry out a visual inspection of the equipment; look for any signs of damage or obstruction.

Switch the power supply off, using the MCB switch in the cabinet, wait a few seconds and then switch back on. This will reset the controller and the Induction loop detectors (if fitted).

Check if the fault has cleared.

If the fault has not cleared, or if it re-occurs after operating the system, then use the Came manual to check for fault indications.

Safety devices Input.

Note; an open circuit condition in any of the safety devices will prevent the Sliding Gate/s from operating.

Site secure Input.

Check that the site secure push buttons are not locked in the ON position.

Limit switch.

Check that the limit switch is operating at the correct point in the opening and closing positions.



Detail of wheels and track.

Loop Detector.

Different models may be fitted, depending on site specifications, but basic functions remain similar, the status LED on the front of the detector unit should change colour as a vehicle or other metal object passes across the road loop. This can be tested either using a vehicle or a steel object laid on the road over part of the loop.

Sensitivity can be adjusted and frequency can be changed. User instructions may be found on the front and side of the detector unit or in the information sheet supplied with the equipment.

Note that the detectors are self-adjusting; if the mains power is switched off, when it is switched back on again the detector will measure the inductive field and reset itself to match its surroundings. This can be used to reset a detector that is outside its correct range. Care should be taken to see that no vehicle or other metal object is on the loop area when the mains power is switched back on as this may cause false detections.



Illustration Elec-005.Nortech loop detector.



Illustration Elec-006.USTC loop detector.

PERIODIC MAINTENANCE.



Only carry out maintenance works;

- When suitable warning signs are posted and area is cordoned off to traffic.
- If no hazard exists (e.g. crushing hazard, slipping hazard, etc.)
- With correct tools and equipment. After carrying out the appropriate Risk Assessments.

Weekly maintenance:

Observe Sliding Gate/s in operation and check for:

- Erratic operation. Unusual noises. Damage to safety devices.
- Operation of traffic lights and induction loop systems (if fitted).
- Open cabinet door and check for debris, ingress of water, loose connections etc.
- Check the ground track and wheel assembly for dirt /debris etc.

Monthly maintenance:

Same as weekly checks but additionally:

- Check the limit switches for tightness.
- Clean the photocells (if fitted).
- Grease the rack and wheels.

Six monthly maintenance:

Same as weekly and monthly checks but additionally;

- Remove all debris around Sliding Gate and ground track.
- Check all fasteners for tightness.
- Clean all old grease from rack and pinion and re-grease.



Avon Barrier Company Ltd

DECLARATION OF CONFORMITY

E C MACHINERY DIRECTIVE 98/37/EEC

E C LOW VOLTAGE DIRECTIVE EN60204-1:1998

**E C ELECTROMAGNETIC COMPATIBILITY
DIRECTIVE EN 50081-1 & EN 50082-2**

We hereby certify that the SG1500 CR 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**

Signed

A handwritten signature in blue ink, appearing to be 'P.A. Jeffrey', is written over a faint, light blue horizontal line.

Date : June 2009

Name : P.A.. Jeffrey

Position: Managing Director Avon Barrier Company Ltd



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 products, if installed, were installed by an Avon Barrier Company Ltd authorised installer, and
- (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 CO. LTD'S LIABILITY EXCEED THE AMOUNTS PAID BY THE BUYER FOR THE PRODUCTS THERE UNDER.

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.