



Avon Barrier Company Ltd

**AVON FG 250
TWIN WING FAST GATE.**



Example Picture Only.



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INTRODUCTION.

This manual provides information on the Avon Barrier Company FG 250 Fast Gate. It is designed to assist the Installers, Maintainers, Operators, System Integrators and Procurement Staff.

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

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Scope of Document.

The FG 250 shall hereafter be referred to as the Fast Gate.

This document is intended for those who will:

Specify the site / system.

Design the secure entry system

Install / interface the Gate(s)

Operate the Gate(s)

Maintain the Gate(s)

IMPORTANT: Note for system/site designers.

The safe operation of the Fast Gate 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 FG500 Fast Gate is a speed gate that provides a high level of security against unauthorised vehicle and pedestrian access. The fast acting twin bi-folding gate is designed for durability with a 100% duty cycle ensuring reliability and swift opening and closure.

The Fast gate has been designed to withstand high flows of traffic and varying environmental conditions, it has also been designed to operate in less than 6 seconds to maintain site security.

The system uses fail secure electro-magnetic brakes to lock the Fast Gate in the open or closed position, this is activated by solid state proximity type limit switches.

The Fast gate has its two electro-magnetic drive systems contained within secure housings mounted at high level on the hinge posts, the master control panel is housed in a weather resistant enclosure allowing external or internal installation of the master control panel.



FURTHER DESCRIPTION.

Designed and manufactured by engineers with a wealth of experience in the fields of High Security and Access Control, the FG 250 is a highly dependable security product that will easily interface with a wide range of control equipment.

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

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 Drive units are operated via the master control panel which can be sited remotely from the gates.

The master panel accepts inputs from the access control system and gate monitoring equipment as well as output signals to the Drive motors, back indication system and external signalling.

The incoming mains supply to the master control panel is single- phase 220/250 V, this is converted to three phase by the inverter units contained in the master control panel. This three- phase supply is then applied to the individual motors mounted on the gateposts.

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

The gate leaves 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 4 and 6 seconds for either opening or closing.



General Specification.

The Fast Gate uses a PLC-based control system which can be programmed to suit specific site requirements. Limit switches are fitted to the Fast Gate and provide opened / closed input signals to the logic controller.

Options:

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

The Fast Gate comes with a simple open and close 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 Fast 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.

Electrical requirements:

Electrical Supply	Value	Tolerance	Comments
Supply Voltage (V ac)	230v	+10%, -15%	230v/400v 3 phase option (110v)
Supply Voltage Frequency (Hz)	50		
Current Rating (A) (Current dependant on Equipment supplied and may vary)	20A		The Fast Gate should be protected by a type 'D' MCB
Maximum power cable size (mm ²)	6		
Maximum signal cable size (mm ²)	4		

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.

- Excavate according to installation drawing.
- Position all control, power cable and drainage ducts.
- First pour concrete making sure that the correct depth from floor level is achieved.
- Tamp to remove air bubbles trowel to flat and level finish.
- Wait min 48 hours for concrete to cure.
- Position main gate posts (Hinge posts).
- Position central gate closing unit please refer to drawings listed in documents section.
- Once gate posts are aligned/level secure to 1st pour using suitable anchors
- Connect all control, power cables and drainage ducts.
- Carry out final checks.

Once installation has been completed carry out second concrete pour.

Please refer to installation drawings: *SPG-102-speedgate-double-example*.

INSTALLATION DETAIL.

Ducting.

The following ducts with conduits are required:

50 mm from incoming power supply to master electrical panel enclosure.

50 mm for signal cables between the master electrical panel and site specific control stations.

Two 50 mm between the electrical panel box and gate post one. (one for motor power and one for signal)

50 mm between gate posts one and two for photocell cable and motor supply cable.

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 Fast Gate across the entrance.

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 raising.
- Traffic Lights and back-indication equipment.
- Panic Button with lockdown. When pressed, linked 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.

INSTALLATION ELECTRICAL.



Electrical installation must be in accordance with current local regulations.



All cable sizes must conform to Fast Gate electrical specification and current local regulations.
Power cables must be routed in separate conduit from signal cables.

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 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.

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, photo cells, 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 Gate.	
Mains power ON; Open & Close the Gate using jumper wire between Common and Open / Close terminals.	
Demonstrate use of access control system to operate the 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.

Manual Open / Close.



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 Gate/s unless the area is clear and all covers / guards are in place.

Manual operation of the Fast Gate in the event of power failure:
Please also consult the Bonfiglioli manual .



Before attempting manual operation, ensure that the electrical power is switched off

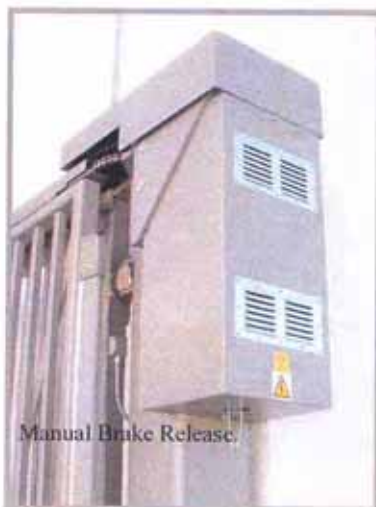


**Do not attempt to operate if there is evidence of failure of any mechanical components –
Call Maintenance Engineer for assistance.**

**Make sure the area around Fast gate is free from obstruction and is isolated from pedestrian and
vehicular traffic.**

Manual operation of the Fast Gate can be carried out by inserting the special override key into the brake underneath the motor gearbox assembly.

- To carry out manual operation you will need to remove the plastic cover and insert the manual override key.
- Wind the manual override key anti-clockwise in until fully tight.
- Once the winding key has disengaged the brake you can then operate the Fast gate manually.



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 Fast Gate 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 FG 250 ; 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.
- 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 Fast Gate is open or opening and the site secure button is pressed, then the Fast 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 Fast Gate drives onto a road loop, the loop detector then closes the 'Open' Circuit and the Fast Gate 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 Fast Gate. 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.

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 Fast Gate in operation and check for:
Erratic operation. Unusual noises. Damage to safety devices.
Operation of traffic lights and induction loop systems (if fitted).

Monthly maintenance:

Same as weekly checks but additionally:
Check the limit switches for tightness.
Clean the photocells (if fitted).
Check tightness of hinge fasteners.

Three monthly maintenance:

Same as weekly and monthly checks but additionally:
Check all fasteners for tightness.
Apply grease with a suitable grease gun to all the hinge pivots.
Apply a spray lubricant (motorcycle chain spray is ideal) to the chain runs.
Check electrical connections for tightness.
Check the air-gap on the electro-mechanical brake . (Refer to the Bonfiglioli manual.)

Note: The motor gearbox is of the 'sealed for life' type and as such, no topping up of the oil should be required. If there is evidence of oil leakage the Bonfiglioli manual should be consulted.



COSSH Data sheets and handling precautions are contained in the information section





The greasing points on the gate hinges should be greased as per the maintenance schedule. A general purpose grease and an hydraulic grease gun should be used.

The hinge retaining nuts should be inspected and tightened where required. The small grub screws in the nuts should be loosened prior to tightening of the nuts and then re-tightened.



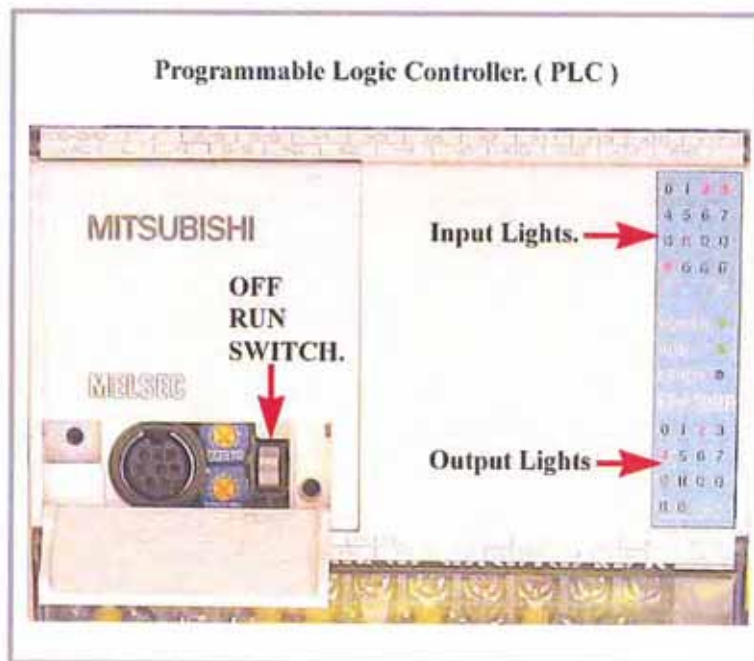
Top view with cover removed, showing the solid state limit switches. Limit switches can be adjusted by moving them in or out. Adjustment can also be made, by moving the limit pick-up cams.

When adjusting the limit switches, bear in mind that the limits do not trigger the gate to stop, rather they trigger the point at which the motor begins to slow and then stop.

Limit switch pick-up cams:
The grub screws can be loosened and the pick-up cams rotated around the shaft in the required direction.



FAULT FINDING.



A Mitsubishi programmable logic controller (PLC) is used to operate the system and monitors the inputs and controls the outputs: It is located inside the electrical control panel and is invaluable in fault finding.

A range of indicator lights at the top of the unit give information about the Inputs with a similar group at the bottom of the unit giving information about the Outputs. These inputs and outputs are listed, along with their functions and contact type (normally open or normally closed) in the PLC Input / Output sheet supplied with the equipment (shipped in the electrical enclosure).

Making a note of which I / O indicators are lit and the position of the gate at the time can be of great benefit in determining the fault.

On the front lower left of the PLC is a small drop down flap which gives access to a micro toggle switch. This switch has two positions; Run and Off and can be used to reset the PLC by toggling OFF and then back to ON, or to switch the programming off while leaving the rest of the circuitry live for testing and fault finding.

Inputs come from:

Access control equipment (open / close push button etc),
Proximity switches. (Actual position of gate)
Safety equipment, (road loops, photo cells etc).

Outputs go to:

Inverters; starts and stops motor.
Traffic lights; lights show green when output is ON. (If fitted).
Back indication; provides clean contact for indicating gate position.

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

Try to determine the exact nature of the fault, i.e. Fast Gate 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.

Safety devices Input.

Note; an open circuit condition in any of the safety devices will prevent the Fast Gate 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.

The input and output indicators on the Programmable Logic Controller should be used, in conjunction with the site specific PLC I/O list, to help determine the nature of the fault.

Open Input

Use the access control system to open the lane (open Fast gate) and observe the input indicator on the PLC which should show on and off condition if the open lane button is repeatedly pressed.

Alternatively a jumper wire can be used between the 'common' and 'open' terminals on the main terminal block.

Close Input

Use the access control system to close the lane (Close fast gate) and observe the input indicator on the PLC which should show on and off condition if the close lane button is repeatedly pressed.

Alternatively a jumper wire can be used between the 'common' and 'close' terminals on the main terminal block.

If a Site Secure facility is provided, the Fast gate will close and over-ride safety devices, therefore if the Fast gate will not close using the normal close (lane close) circuit, but will close using the Site Secure circuit, then this can be used as an indication that the problem may be in the safety device circuit.

Safety devices Input

Check that the PLC display is showing a closed indication for the safety device input.

If an open circuit is indicated then check the safety devices i.e. check photocells, safety edges and induction loop indicators. Refer to the site specific wiring schematic stored in the electrical panel enclosure.

Safety devices can be jumpered across at the terminal block, one at a time, to narrow down the active device.

Limit switch.

Limit switches that are out of adjustment can cause a variety of faults, please carry out the following checks:

- The limit switch is equipped with an LED indicator next to the cable entry point.
- Check that this lamp is lit when **not** near to the metal pick-up point, then check the lamp goes out when near to the pick-up point. *A spanner or other metal object may be used to check for activation of the limit switch.*
- Whilst activating the limit switch, check for correct input indication at the PLC.

Observe the PLC input lights and check with the PLC Input/output information sheets to make sure that the correct limit switch is operating at the correct time.

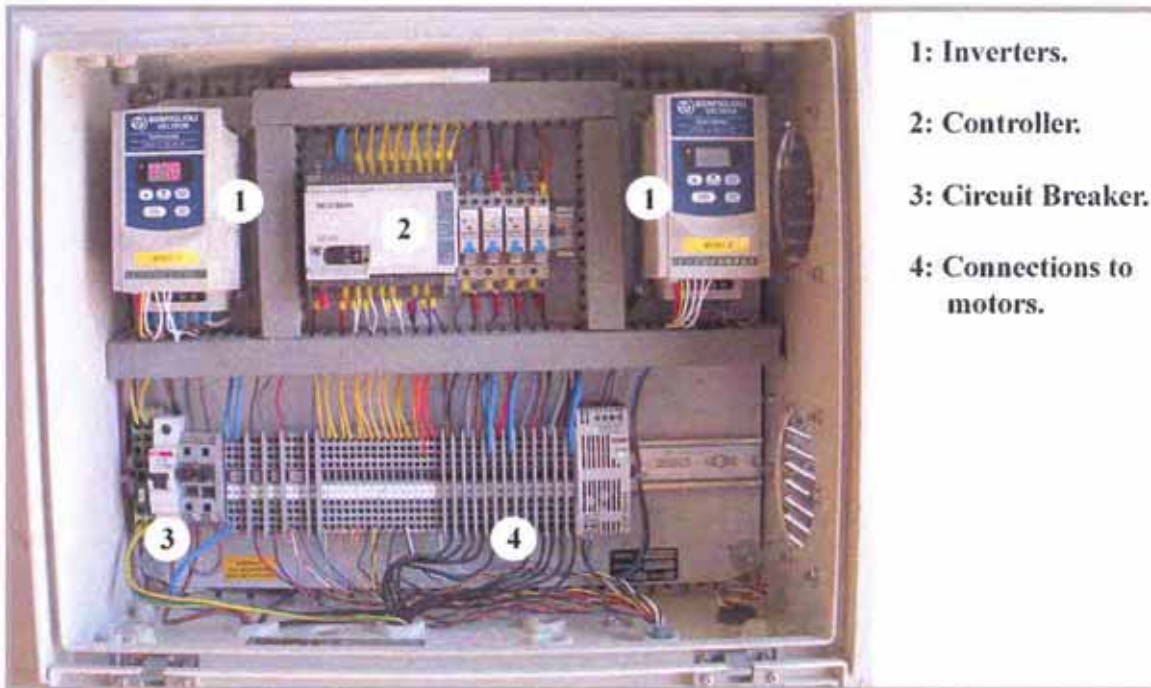
Adjusting the limit switches

Moving the limit switch closer to, or further away from the pick-up point will adjust its sensitivity.

The position at which the gate opens or closes will be determined by the adjustment of the limit switch cams on the gearbox shaft.

More or less sensitivity is achieved by loosening the locknuts around the body of the switch and moving it closer to or further away from the pick-up point.

Normally only very fine adjustments are required and care should be taken not to move the switch too far from its original position.



- 1: Inverters.
- 2: Controller.
- 3: Circuit Breaker.
- 4: Connections to motors.

Master Control Panel.

INVERTER

The display panel on the inverter normally shows the frequency setting, but in the event of a fault condition a fault code will be shown.

The following fault code tables should be used to determine the fault condition and appropriate action may then be taken.

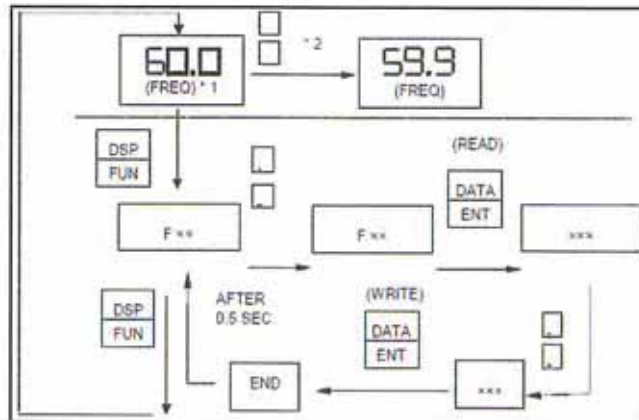
If an inverter fault condition is suspected, but the fault code display may have been reset either by switching the power off and on or because the fault condition was transitory; then the F30 parameter may still be used to display the last three fault codes which are stored in the internal memory.

F_30: Last three faults

1. Last three faults: indicate the sequence of the occurrence of malfunctions by the location of decimal point. X.XX indicates a recently happened malfunction. XX.X indicates the last malfunction that happened. XXX. Indicates the earliest malfunction in the record.
2. After entering the F_30 function, the X.XX trip record will be displayed first. After that, press ▲ button and you can read activity in a chronological order. XX.X → XXX. → X.XX ,, consecutively
3. After entering F_30 function, if the RESET button is pressed, the trip record will be cleared. Indication display --, --., and ---.
4. When the content of trip indicates O.CC, it will indicate the latest trip code is OC-C and so on.

Flowchart for Inverter Keypad operation.

Note: The inverter is programmed at the Avon Barrier factory and no changes to the parameters should be made.



Parameters that are specific to the Fast Gate are listed below; all other parameters are set to manufacturers defaults.

The full list of parameters will be found in drawing: 211311-2-0-5. *Double speedgate controlbox.*

- F01 – Acceleration Time – 1.5 sec
- F02 – Deceleration time – 1.5 sec
- F04 – Motor rotation – forward - 0
- F05 – V/F pattern – high starting torque - 2
- F06 – Frequency upper limit – 50Hz
- F07 – Frequency lower limit – 0Hz
- F10 – Start / stop control – terminal - 1
- F18 - Protection base on motor rated current – 83%

INVERTER FAULT CODES

INDICATION	CONTENT	POSSIBLE CAUSE	COUNTERMEASURE
CPF	Program Error	Outside noise interference	Place a RC surge absorber in parallel with the noise generating magnetic contact
EPR	EEPROM error	EEPROM defective	Replace EEPROM
OV	Voltage too high while not operating	1. Power source voltage too high 2. Detection circuitry defective	1. Examine the power supply 2. Return the inverter for repair
LV	Voltage too low while not operating	1. Power source voltage too low 2. Detection circuitry defective	1. Examine the power supply 2. Return the inverter for repair
OH	Inverter over heat while not operating	1. Detection circuit defective 2. Environment over-heat or poor ventilation	1. Return the inverter for repair 2. Improve ventilation

Manual reset operative malfunctions

(Auto-Reset inoperative)

INDICATION	CONTENT	POSSIBLE CAUSE	COUNTERMEASURE
OC	Over-current at stop condition	Detection circuit malfunction	Return the inverter for repair
OL1	Motor over-load	<ol style="list-style-type: none"> 1. Loading too large 2. Improper V/F model setting 3. Improper F_18 setting 	<ol style="list-style-type: none"> 1. Increase capacity of motor 2. Adjust to use a proper V/F curve setting 3. Adjust F_18 according to instruction
OL2	Inverter over-load	<ol style="list-style-type: none"> 1. Loading too large 2. Improper V/F model setting 	<ol style="list-style-type: none"> 1. Increase capacity of inverter 2. Adjust to use a proper V/F curve setting
OCS	Transient over-current starting machine	<ol style="list-style-type: none"> 1. Motor coil short-circuit with external casing 2. Motor connection wire short-circuit with grounding 3. Transistor module damaged 	<ol style="list-style-type: none"> 1. Examining motor 2. Examining wiring 3. Replace transistor module
OCA	Over-current at acceleration	<ol style="list-style-type: none"> 1. Acceleration time setting too short 2. Improper V/F feature selection 3. Applied motor capacity exceeds inverter capacity 	<ol style="list-style-type: none"> 1. Adjust acceleration time to longer setting 2. Adjust to a proper V/F curve 3. Replace and install another inverter with appropriate capacity
OCC	Over-current at steady speed	<ol style="list-style-type: none"> 1. Transient alteration of the loading 2. Transient alteration of the power supply 	<ol style="list-style-type: none"> 1. Examining the loading configuration 2. Install inductor on the power supply input side
OCd	Over-current at deceleration	Deceleration setting too short	Adjust to use a longer acceleration time
OCb	Over-current at breaking	DC Breaking frequency, breaking voltage, or breaking time setting too long	Adjust to reduce settings of F_15, F_16, or F_17
OVC	Over-voltage at operation/deceleration	<ol style="list-style-type: none"> 1. Deceleration time setting too short or inertial loading too large 2. Power supply voltage variation too large 	<ol style="list-style-type: none"> 1. Adjust to use a longer deceleration time 2. Install a inductor on the power supply input side 3. Increase the capacity of inverter
LVC	Insufficient voltage level at operation	<ol style="list-style-type: none"> 1. Power supply voltage too low 2. Power supply voltage variation too large 	<ol style="list-style-type: none"> 1. Examining the loading 2. Increase capacity of inverter 3. Improve ventilation
OHC	Heat-sink over heated at operation	<ol style="list-style-type: none"> 1. Loading too heavy 2. Ambient temperature too high or poor ventilation 	<ol style="list-style-type: none"> 1. Examining the loading 2. Increase capacity of inverter 3. Improve ventilation

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.



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 FG 250 complies with the relevant provisions of the E C Directives detailed above.

Manufactured by:

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Date : June 2009

Name : P.A.. Jeffrey

**Position: Managing Director
Avon Barrier Company Ltd**

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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.