O&M Manual
Revision 1.0

D3250

Automatic Barrier

Maximum span - 7.0
100 % Duty cycle

Made in the

This equipment is part of a large range of traffic flow products. They are designed to be easy to install, as all settings and internal wiring have been completed in our factory. Any of the instructions in this manual should only be carried out by a qualified service engineer or a competent person.

The barriers are ready to bolt down, connect to a single phase power supply and have any pre-cut loops wired into them (Please note that loop detectors are sold separately). The steps must be completed before the power is turned on to prevent accidents.

The following information is a guide only, and whilst we have made every effort to be accurate and correct there may be printing errors which we cannot be held responsible for.

With a correct installation you can expect to enjoy many years of reliable service from this product, we do however recommend that the product has a bi-annual service carried out by a qualified engineer. Please contact our service department to obtain a quote. As we manufacture the products we are best suited to care for your equipment.

Important Safety Notice

Automatic barriers are designed to Control the flow of vehicular traffic only. It can be dangerous to allow the passage of pedestrians and any other self-powered animal or device to utilise this method of access without appropriate warnings and or signage.
It may be necessary for the end user of this product to provide an alternative, safe method of access to cater for the previously mentioned categories.
The end user should fit all necessary signage and warning notices to either side of the gate, which should be visible and clear from all directions of approach.
The product that was shipped to you was designed with a control program to protect all categories from harm or affect this however is only a safety precaution and should not be modified or tampered with by any unauthorised person not sanctioned by the manufacturer.

Please sign and date below to say that you have read and understood this notice before ANY installation work:

/ /20

Information on using this manual

- Read all information thoroughly
- Pay attention to all safety advice
- Be aware of the symbols (shown above right and above left) as they have different meanings. One is an information symbol, the other a warning.
- There are many artists impressions of the product in this manual you should refer to the images as a guide only. Professional CAD drawings should be used as a reference drawing and nothing else. As before every effort has been made to be 100% accurate in this manual but we cannot make any guarantees.
- As we constantly innovate our products we may change the quoted spec and any other details that have been documented in this manual so you should always refer to the supplier to see if the manual that was shipped with your product is the latest edition.
- As with all electrical installations you should use a qualified electrician and obey all of the latest laws and regulations.
- Be sure to fill out and complete ALL paperwork where instructed as this manual is the equipments log book and maintenance manual.

The “Warnings” leaflet and “Instruction booklet” supplied with this product should be read carefully as they provide important information about safety, installation, use and maintenance.
Scrap packing materials (plastic, cardboard, polystyrene etc) according to the provisions set out by current standards. Keep nylon or polystyrene bags out of children's reach.
Keep the instructions together with the technical brochure for future reference.
This product was exclusively designed and manufactured for the use specified in the present documentation. Any other use not specified in this documentation could damage the product and be dangerous.
The Company declines all responsibility for any consequences resulting from improper use of the product, or use which is different from that expected and specified in the present documentation.
Do not install the product in explosive atmosphere.
The construction components of this product must comply with the following European Directives: 89/336/CEE, 73/23/EEC, 98/37/EEC and subsequent amendments. As for all non-EEC countries, the abovementioned standards as well as the current national standards should be respected in order to achieve a good safety level.

The Company declines all responsibility for any consequences resulting from failure to observe Good Technical Practice when constructing closing structures (door, gates etc.), as well as from any deformation which might occur during use.
The installation must comply with the provisions set out by the following European Directives: 89/336/CEE, 73/23/EEC, 98/37/EEC and subsequent amendments.
Disconnect the electrical power supply before carrying out any work on the installation. Also disconnect any buffer batteries, if fitted.
Fit an omnipolar or magnetothermal switch on the mains power supply, having a contact opening distance equal to or greater than 3mm.
Check that a differential switch with a 0.03A threshold is fitted just before the power supply mains.
Check that earthing is carried out correctly: connect all metal parts for closure (doors, gates etc.) and all system components provided with an earth terminal.
Fit all the safety devices (photocells, electric edges etc.) which are needed to protect the area from any danger caused by squashing, conveying and shearing, according to and in compliance with the applicable directives and technical standards.

Transport and Handling.

This article describes how your equipment will be delivered to you, specifications on the transportation used and advice including health & safety on movement of the equipment.

The manufacturer will use a qualified transport company to deliver the product conforming to the necessary regulations as detailed below:

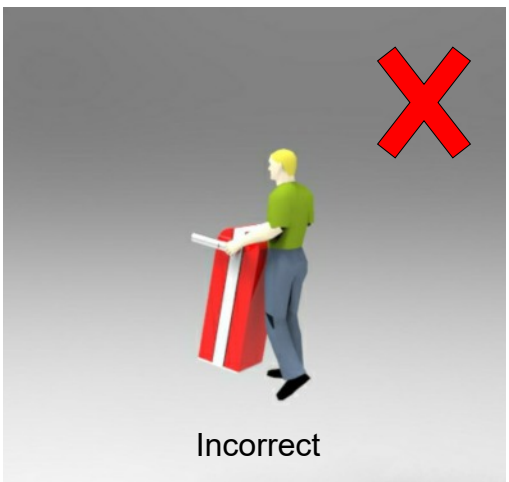
- All drivers are qualified
- All drivers are tested once yearly (If applicable)
- All drivers carry risk assessments and method statements (available on request)
- They are controlled under law to conform as there are no trade regulation standards to comply with

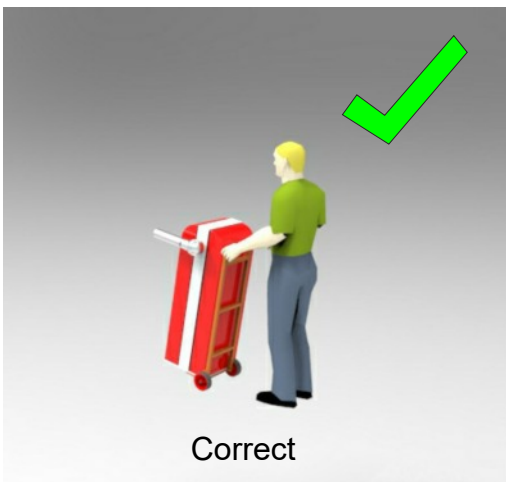
Health and safety Considerations:
Moving Goods Safely (MGS) is a national project involving both the Health and Safety Executive (HSE) and Local Authorities (LA) working in partnership. The project aims to reduce injuries and ill-health arising from the movement of goods from supplier through haulier to the recipient and end user including any home deliveries. The project will focus upon the delivery and collection of goods and the hazards this generates. It covers the main areas that cause the majority of injuries and ill-health to workers, including:

- Workplace transport;
- Slips & trips, and;
- Musculoskeletal disorders (MSD).

The movement of goods presents us, as health and safety regulators, with the challenge of dealing with a huge variety of issues. The commercial organisations involved within the movement of goods are diverse including haulier, third party logistics providers, pallet networks, retailers etc, with some very large companies, thousands of small businesses and the self-employed. The movement of goods is more than just trucks on the road with a large proportion of accidents happening at the delivery/collection sites that are often not directly under the control of the company making the delivery or collection. Communication and cooperation problems can arise due to the many organizations involved in the movement of the goods, and this can also lead to difficulties in effectively managing health and safety.
(Source H&S Executive UK 2008)

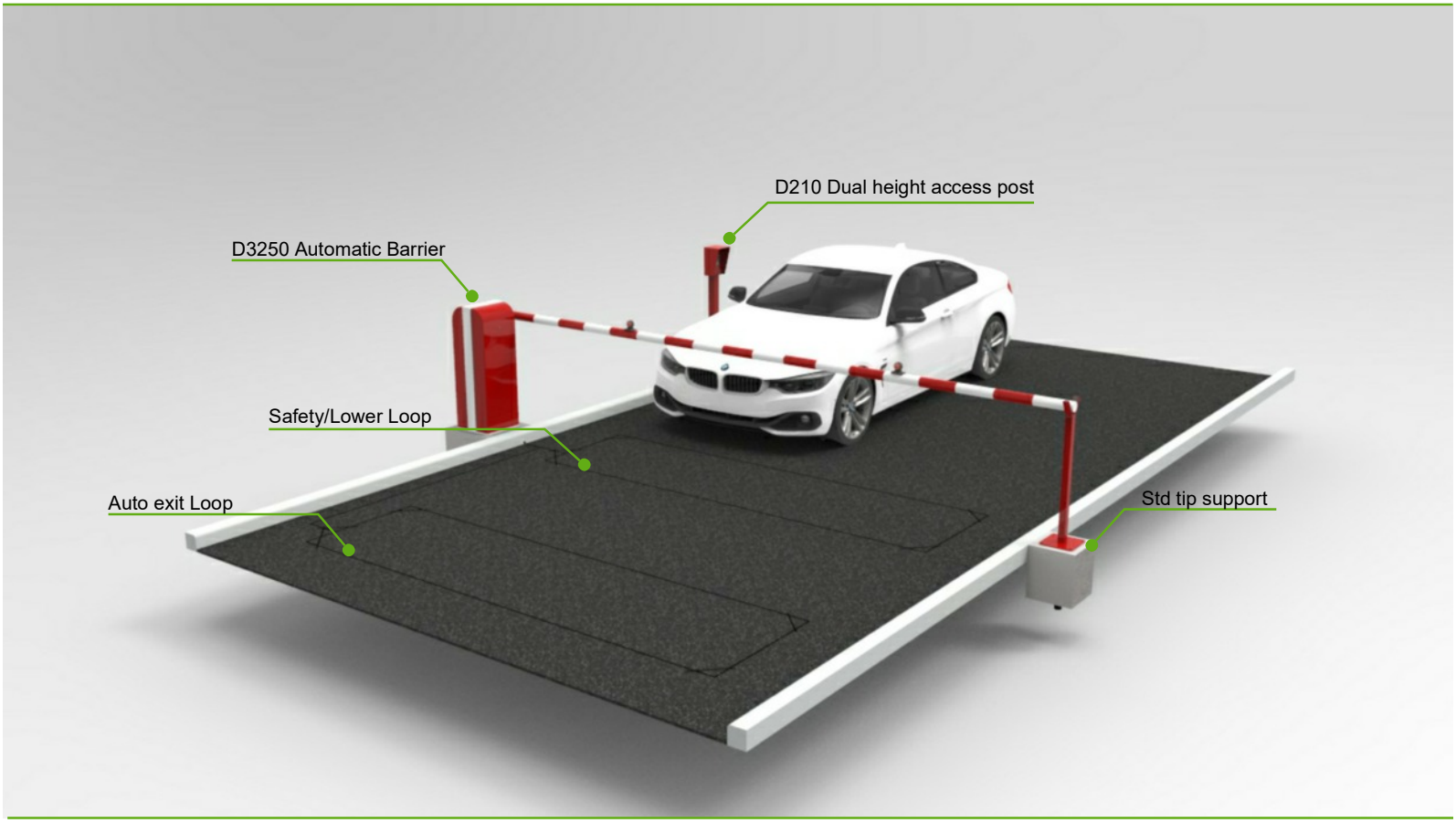
The barrier should ALWAYS! be moved with care and attention. The products are very heavy individually as well as a whole. You should not attempt to move this or any other products by unapproved handling methods.





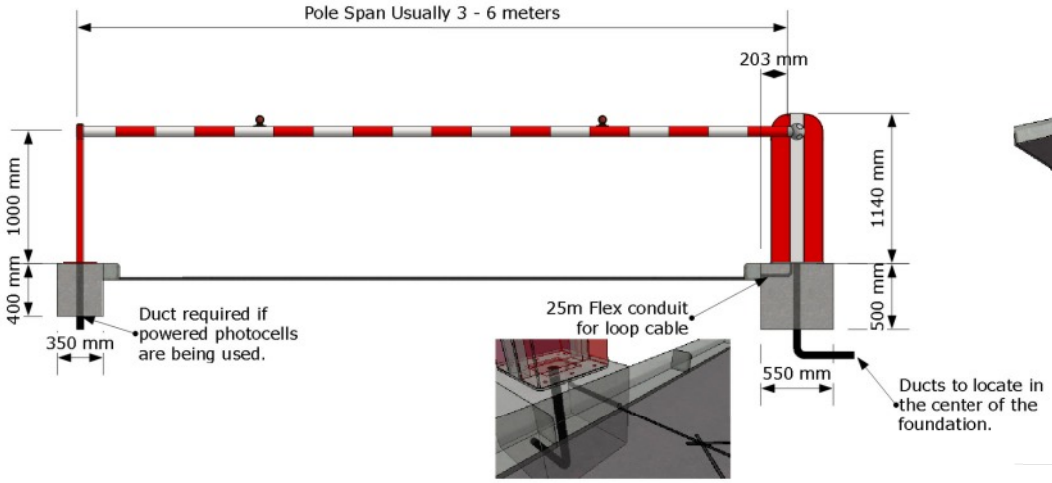
General Layout.

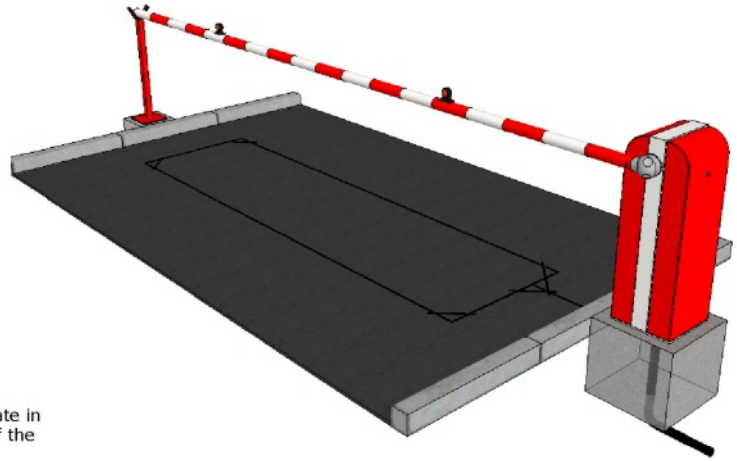
Shown below is a typical installation of a D3250 Automatic barrier for a single entrance.
Control - Dual height Card access entry, Loop safety/lower with Auto loop exit.

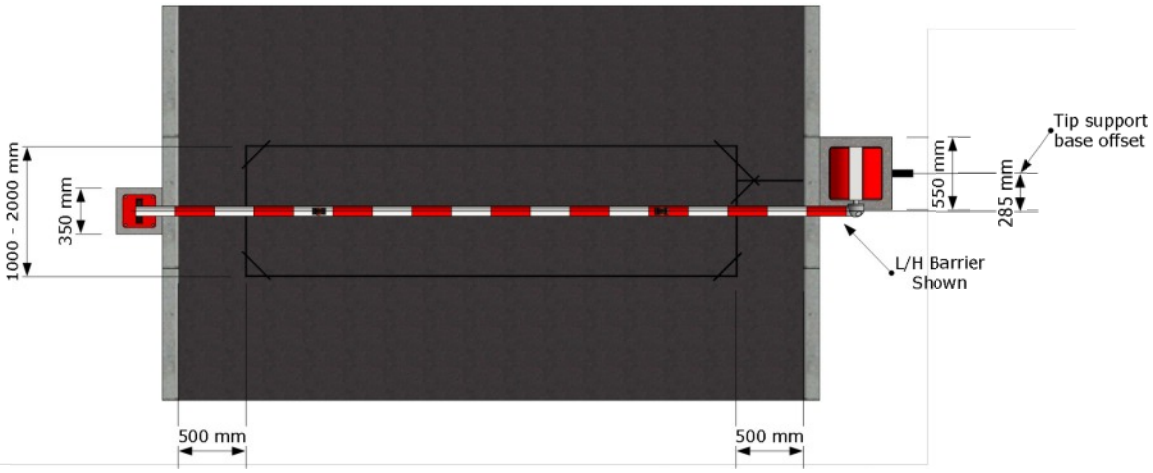


Shown above is a very basic layout, There are many types of layouts available such as Separate entry/exit barriers, Twin Barriers for larger span roads and many more.

D3250 Foundation layout







Notes ;

All Concrete for foundations to be grade C35 Concrete and should be installed 7 x days prior to barrier installation. All base's should be Flat, smooth and level with each other. All ducts must have inspection chambers where necessary and to have pull ropes in. More than one duct may be required to the barrier base depending on spec of access control etc. (Check your spec)

Electrical Supply - 230 vac 6amp to be supplied to the barrier box.

Drawn A Mcginley	D3250 Foundation Layout Ver 1.0
Date 20 / 05 / 14	

Guide to Physical Installation.

Component Identification and Notes:

You should check that you have received the following in your order as they are referred to throughout this manual (note this can change per barrier spec i.e. manual components are different from automatic):

Barrier Cabinet
c/w Pole Arm Adaptor

End Rest

Pole , if over 6m then it will have Strainer wire attached to it.

Box of bits C/w
4 x M16 parabolts
4 x M12 parabolts
2 x M6 x 90 pole bolts
1 x cabinet key

O and M manual

O&M Manual
Revision 1.2

Follow the steps below for Installation.

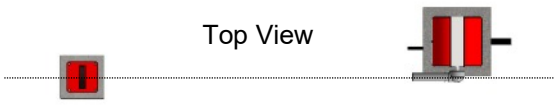
Please note all installations should be carry out by a competent person and all electrical Connections should be made by a qualified electrician.

1

When delivered, the barrier will arrive On a pallet. Make sure you check Before you sign! Take care when Unpacking not to damage the barrier.

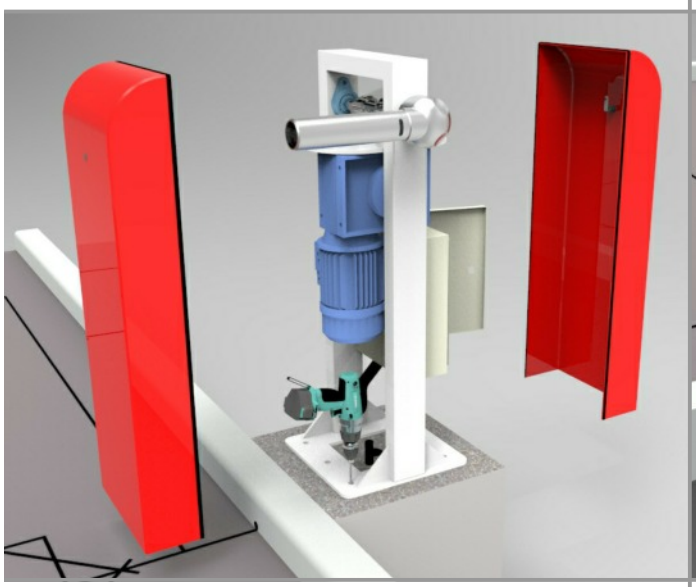
2

Once the barrier has been lifted onto the plinth, Align the pole arm adaptor with the centre of The tip support. Ensure both barrier and tip Support are level ready for bolting down.



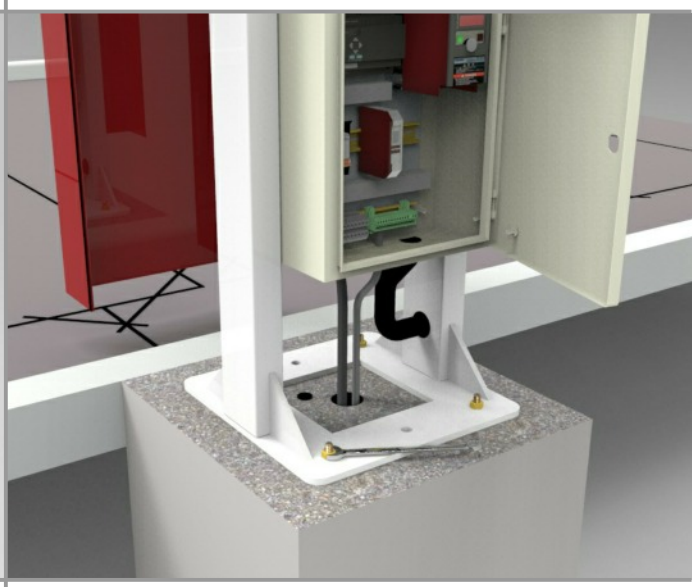
3

Remove Both Barrier covers using the keys provided And place the Covers somewhere safe to prevent them getting damaged. Then using An SDS Drill and M16 drill bit Drill one of the rear fixing holes And knock in one of the M16 Bolts supplied. You can remove the control Cabinet to gain access to the fixing holes below it, to Do this remove the M8 nuts fixed at the rear of the Panel.



4

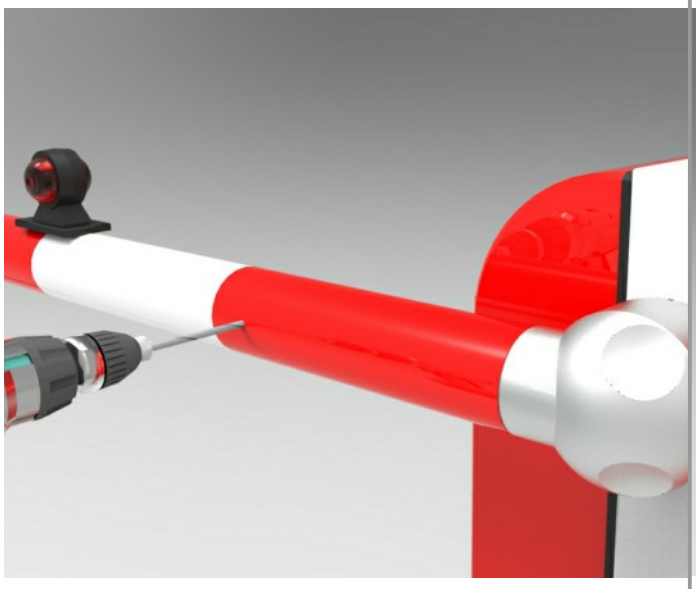
Now make sure all cables are through the duct and Routed where they need to go (e.g mains cable to The Isolater.) Then after checking the barrier is Still in line and level proceed to drill and bolt in the Rest of the fixing bolts. Once all bolts are in make Sure they are tightened down.



5

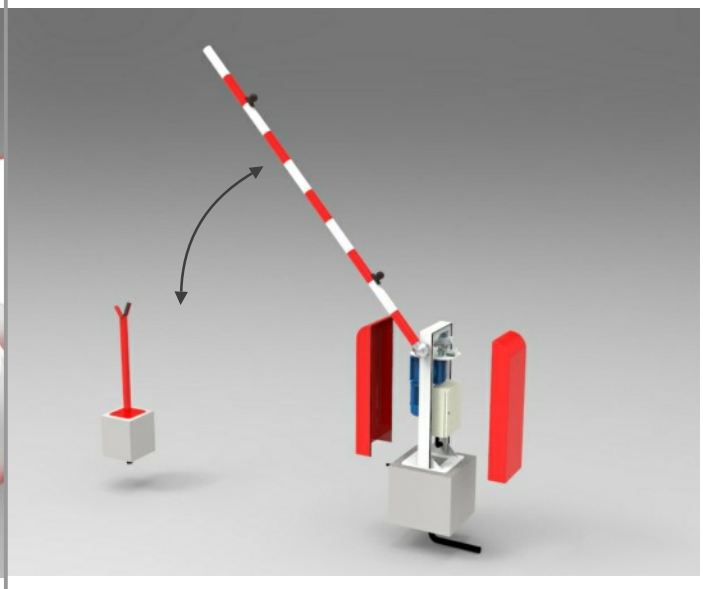
Unwrap the pole very carefully and slide the pole onto the pole arm adaptor. Using a 6.5mm HSS Drill bit now drill through both the Pole and the adaptor at the same time and fit the M6 x 90 Cap head bolts supplied.

Note - if the pole has boom lights/maglock make sure you connect these before fitting pole.



6

Now the barrier is fully bolted down with the pole on, Manually wind the barrier in the fully raised and Lowered positions to ensure everything is correctly In line.

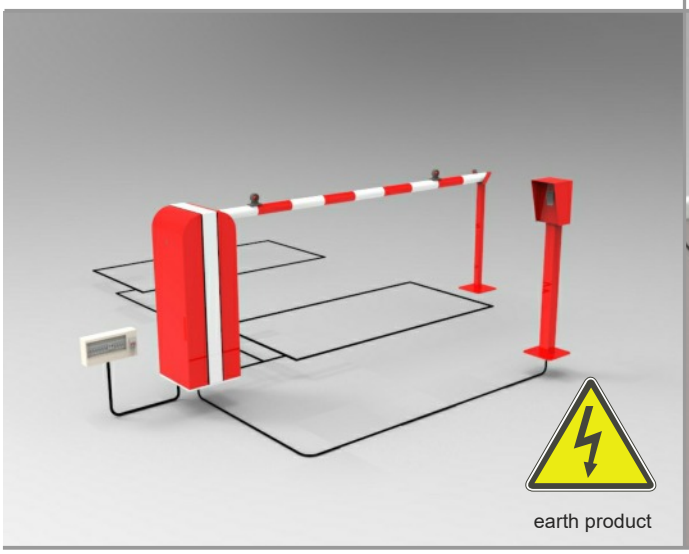


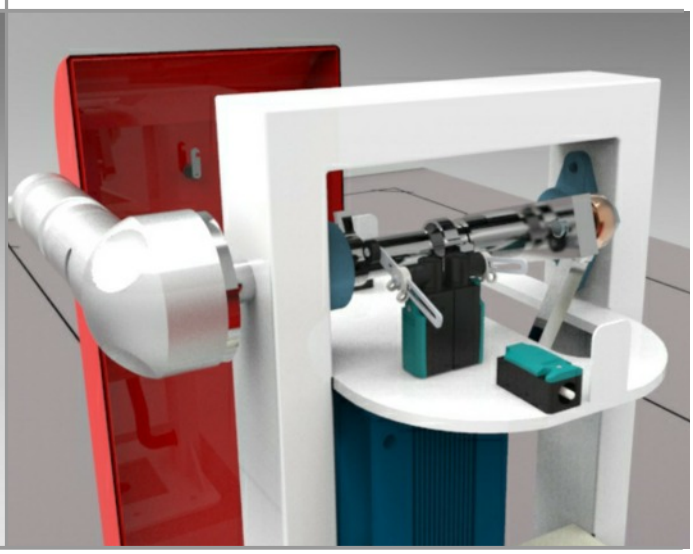
7

Now connect all Induction loops, Mains power and Any other accessories you have using the Connection diagram on page 8. Once you have Everything connected you can then power up and test. You must check that all safety accessories Work correctly first and then move on to testing any Access control fitted. Below shows a basic keypad Entry, auto exit and loop lower/safety system.

8

Depending on pole length you may now be required To adjust the limit switches if the pole is not finishing In the desired position. You will see the two Limit strikers on the main shaft that operate the limit Switches. These are what you may need to adjust, For example if the pole is stopping short of its tip Support in the lower position then you will need to Back the lower striker off so it hits the switch later Allowing the pole to travel further. Depending on what handing the barrier
Is depends on which limit switch does the raise or lower. You will clearly see which one you need to adjust by looking
At the position of the barrier to the pole.





9

Make sure to check all your connections and the barrier is earthed correctly. Also ensure the barrier covers are on correctly and the safety switch is operated. Now fill out the commissioning certificate on the Next page.

Notes area

Notes area

Commissioning Certificate.

D3250

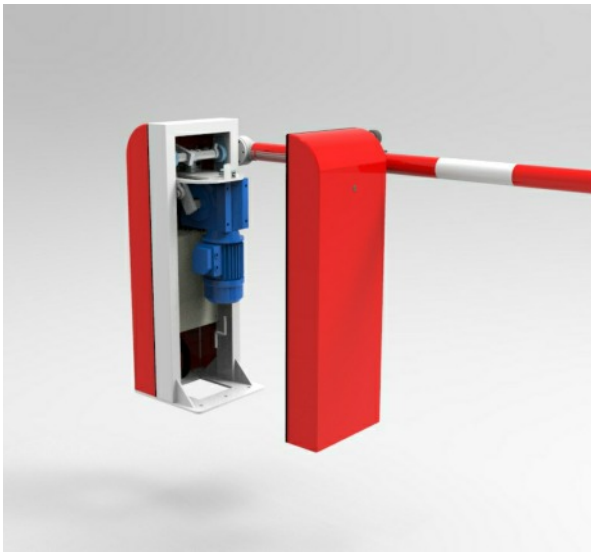
We certify that the system covered by this certificate has been commissioned satisfactorily.			
Site Name		Completion	
Site Reference		Engineers Installing	
Installation Commenced	/ /20	Commissioning	
Equipment Fitted			
Handover Date			

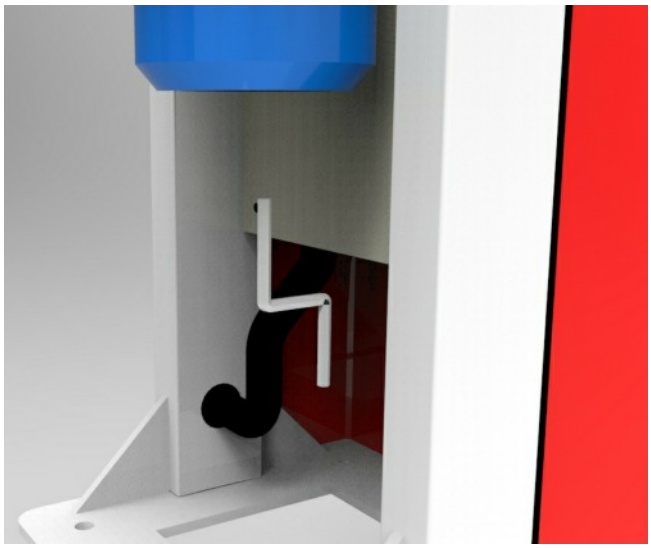
Part 2. Existing Installation Items not covered under warranty/ This certificate:			
Part 3. Certificate Signing off Section			
Installers Name		Signature	
On Behalf of		Date of Signing	
Address		Position	
Client Name		Signature	
On Behalf of		Date of Signing	
Site Address		Position	

Please use the following instructions to operate the barrier manually, the following is assuming you have powered down the unit.

To Manually release the barrier please remove the cover using key supplied, then take the release Handle (which will be handed over with the keys) and insert into the motor and rotate. Direction depends on Barrier handing. Once the barrier is wound to the desired position replace the release key and replace the cover and re-lock.

Note the cover has a safety switch on it that will not allow the barrier to operate if the cover is Not fully closed.





As stated at the beginning of this manual we recommend a bi-annual service, but at a bare minimum, it is imperative that you get a service done once every 12 months. This is not a sales tactic in disguise, there is a very serious health and safety issue/risk associated with not complying to this. Also in order for your barrier to keep complying with the appropriate legislation.

Before carrying out any maintenance to the installation, disconnect the mains power supply.

Make sure you have disconnected/Isolated the power before attempting any work.

A Maintenance Contract should be sought from a specialist company after a maximum of 5000 manoeuvres or 1year from the install date.

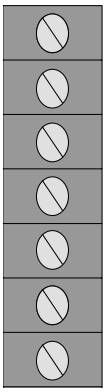
Occasionally clean the photocell optical components and make sure they are free from dirt, water, rain, soil etc.. ? Batteries in photo cells may need to be changed every 6 months or sooner dependant on use. Barrier will not work properly without photo cell function.

Have a qualified technician (installer) check the correct setting of the electric clutch.

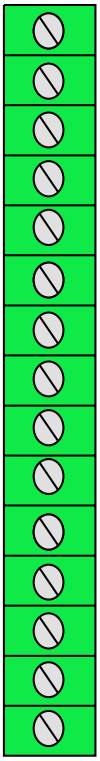
If the power supply cable is damaged, it must be replaced by the manufacturer or its technical assistance service, or else by a suitably qualified person, in order to prevent any risk.

When any operational malfunction is found, and not resolved, disconnect the mains power supply and request the assistance of a qualified technician (installer). When automation is out of order, activate the manual release to allow the opening and closing operations to be carried out manually.

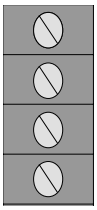
Gearbox drive unit is “sealed” for life and requires no further lubrication.



L - 230VAC
N - 230VAC
Earth
U - Motor
V - Motor
W - Motor
Earth to motor

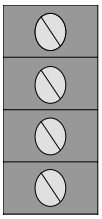


1 - Common 24vdc +
2 - Stop N/C
3 - Photocell N/C
4 - Common 24vdc +
5 - Raise N/O
6 - Lower N/O
7 - Common 24vdc +
8 - Door Safety switch N/C
9 - Common 24vdc +
10 - Raise limit N/O
11 - Lower limit N/O
12 - Boom lights 24vdc +
13 - Boom lights 24vdc -
14 - Aux supply 24vdc + 0.5amp
15 - Aux supply 24vdc -

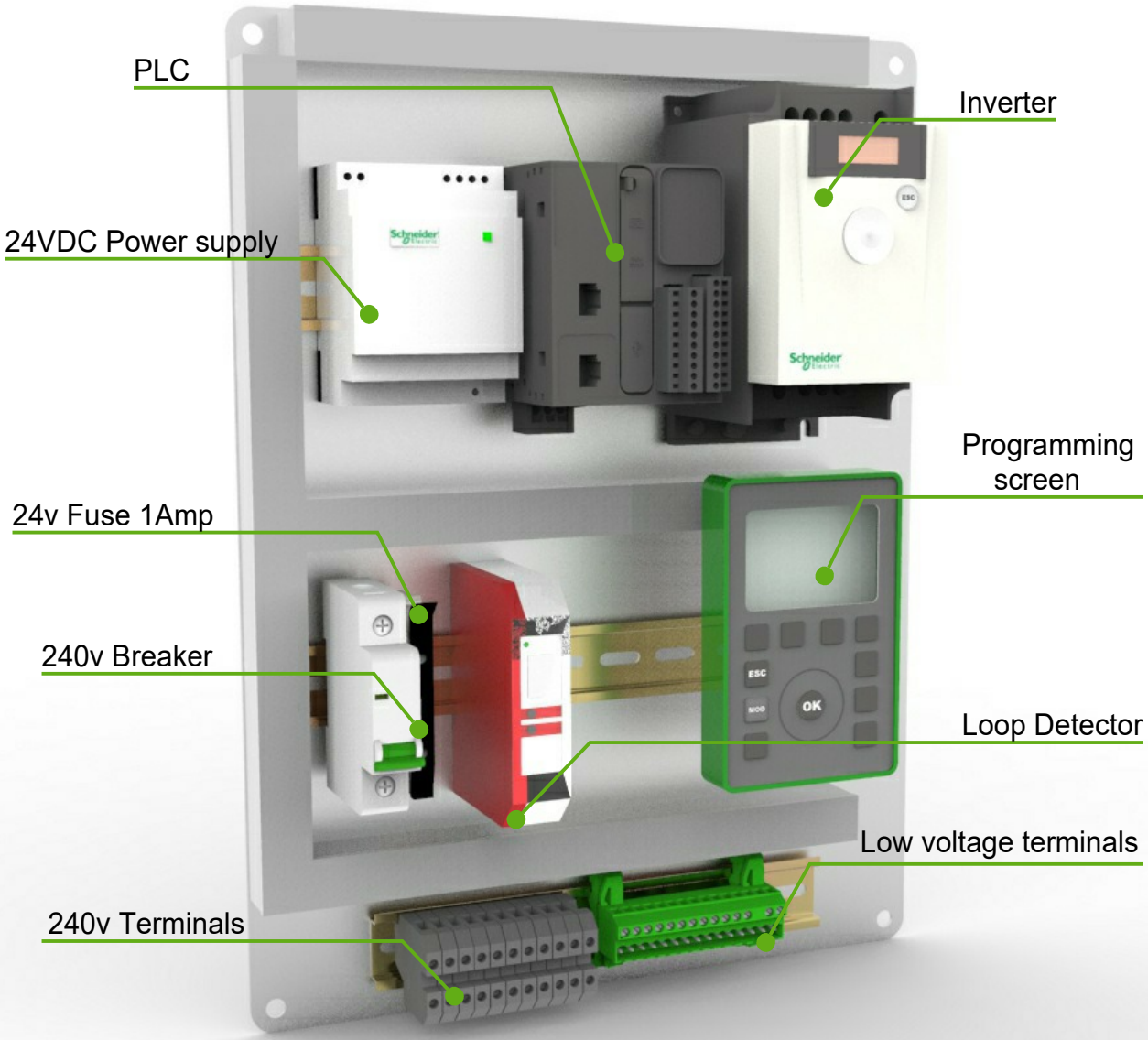


Safety Loop twisted pair
Safety Loop twisted pair
Auto Loop twisted pair
Auto Loop twisted pair

When used as a Master Barrier below terminals will be situated on the din rail



16 - Connect to terminal 4 in slave barrier
17 - Connect to terminal 5 in slave barrier
18 - Connect to terminal 4 in slave barrier
19 - Connect to terminal 3 in slave barrier

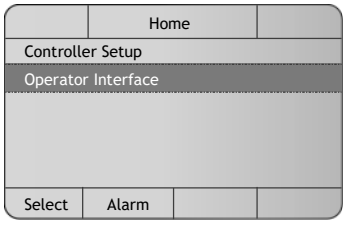


Above shows a typical barrier control panel layout which identifies the major components

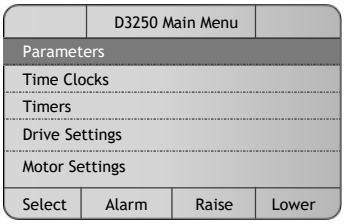
Using the Controller Display

The barriers PLC has a remote controller display screen where you Can change features and operate the barrier. The Installer should Have the screen or it should be left in the barrier control cabinet. The Remote display should be plugged into the serial port 1 on the PLC to enable it to operate the Barrier.

To operate the display you simply use the dial/arrows to navigate Your way through the screen. There is an ESC key which will take You back to the home screen if you want to return.



The home screen is always the first Screen that appears after the gate is Powered up. You will only ever need To access operator interface to Operate and change parameters Of the barrier.

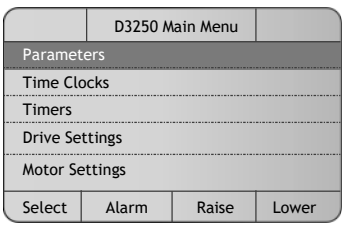


Once you select operator interface You will see the screen shown in The left diagram which shows Settings you can alter. One very Useful feature is the R4 and R3 Key can raise and lower the barrier As shown in the bottom right hand Of the screen.

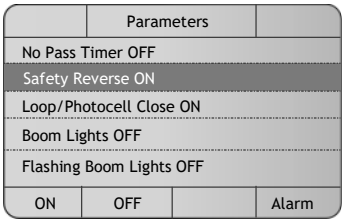
Setting the barriers parameters

The barriers PLC has various parameters that can be set so you can Alter the way the barrier operates.

To change the parameters you will need access to the PLC graphic Display, once you have access to this Follow the below instructions.



Using the Arrows/dial navigate the Cursor to operator interface and Press ok and you will see the Parameters menu. Press OK with The cursor on parameters and all The parameters will then appear.



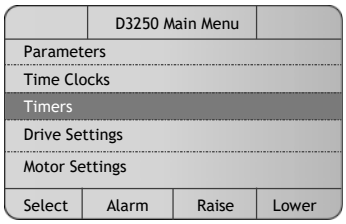
You can now scroll through the Parameters and choose what you would Like to turn on. To turn on/off use the R1/R2 key which is labelled on the screen in the bottom left corner.

Below is a table of all the parameters available to set in the barriers PLC, Please note there may be Bespoke programs developed for certain companies where the parameters may be differ from below.

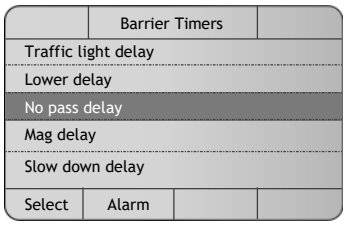
Barrier parameters	Description	Default
No Pass Timer	This turns on a timer that times out and lowers The barrier if no vehicle passes through the loops Or photocells. This timer is located in Timers.	OFF
Safety Reverse	This allows the barrier to raise back up if the loops Or photocells are activated whilst the barrier is Lowering.	OFF
Loop/Photocell Close	This closes the barrier once the loop or photocells Have been activated.	OFF
Boom Lights	This turns the output on for Boom lights to operate, The lights will turn off in the up position.	OFF
Flashing Boom Lights	This enables the Boom lights to flash	OFF
Slow down	This enables the barrier to slow down after a set Time, The timer for this is located in timers.	ON
Inverter Outputs	The Plc runs the inverter via a network cable, this Option turns on the outputs to run an inverter hard Wired.	OFF
Raise Timeclock	This turns ON the raise timeclock which will hold the Barrier up at set times of the day. See timeclock Setup on page 18.	OFF
Auto Timeclock	This turns on the Timeclock that disables the auto Loop from operating at set times of the day. See Timeclock set up on page 18.	OFF
N/O Safety	This turns the safety input into normally open	OFF
Master/slave	This turns on the master/slave outputs to operate A slave barrier from. Q6 = Raise Q7 = Lower	OFF
Traffic light	This turns on the traffic light output	OFF
Kerb Interlock	This turns on the kerb interlock program, see your Supplier for connection/operation details.	OFF
2 Step logic	The 2 step logic allows the raise input to lower The barrier once raised.	OFF

Within the barriers plc screen you can set up various timers. Follow the below instructions to set up.

Accessing Timers



To access the timers scroll down To Timers and press ok, here you Will see a list of timers that you Can alter to suit your requirements



Once you are in the barrier timers Screen you can now select the Timer you wish to change.

Time Operation	
Traffic light delay	Delays the traffic light from going Straight to green once the gate has fully opened
Lower delay	Delays the barrier from lowering once given a Close signal from photocells/Button.
No pass delay	When turned on in parameters this timer Times out and lowers the barrier if no close Signals are given.
Mag delay	The time taken to bring in the maglock Output from when the barrier reaches its Lower limit.
Slow down delay	This timer sends the gate into slow speed After the set time. This must be set to come In when the gate is around a meter from its Closing post
Raise delay timer	This timer delays the barrier from raising.

PLC Time clock setting.

The barrier has a built in 24hr time clock with two functions,
Function 1 - Raise Timeclock which holds the barrier up
Function 2 - Auto Timeclock which disables the auto loop

Note, you will need to turn these timers on in parameters once you have set up them up as below.

D3250 Main Menu			
Parameters			
Time Clocks			
Timers			
Drive Settings			
Motor Settings			
Select	Alarm	Raise	Lower

Using the Arrows/dial navigate the Cursor to operator interface and Press ok and you will see the screen As shown to the left. Now enter into Time clocks.

Timeclock configuration			
Raise Time Clock			
Auto exit Time Clock			
Select	Alarm		

Choose from the two timeclocks Available which one you would like To set, press ok and proceed below.

Example ; Raise timeclock

Raise Timeclock			
Period 1 : Time set			
Period 1 : Day set			
Period 2 : Time set			
Period 2 : Day set			
Period 3 : Time set			
Select	Alarm		

Each period represents an ON/OFF time, You can now enter up to 4 periods and Set the times and days you require.

Period 1			
On Time	0900		
Off Time	1700		
In Range	0		
Select	Alarm		

When you select a “period time set” it will Take you to the on/off time for that Period, you can now set the times you Need the barrier to stay open. In Range Just lets you know if that period is on Or off (off being 0)

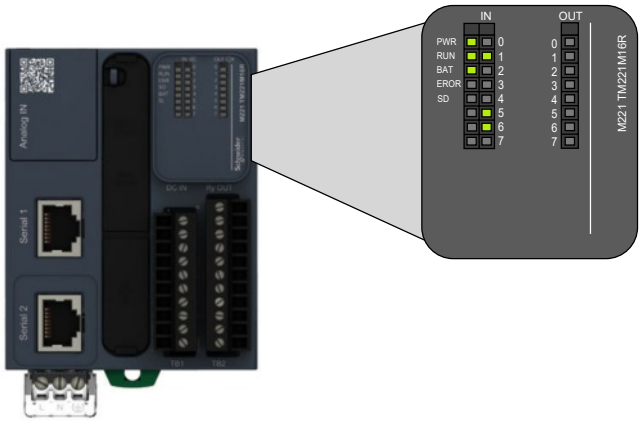
Period 1			
Monday ON			
Tuesday OFF			
Wednesday OFF			
Thursday OFF			
Friday OFF			
ON	OFF		

When you select a “period day set” it will Take you to the on/off screen to set which Days you would like that period to work Using the the on/off buttons which are Indicated at the bottom left hand of the Screen.

Follow the same procedure for setting up the auto timeclock.

Electrical Troubleshooting guide.

The table (bottom) relates to the diagram directly below to help you trouble shoot electrical component errors



The image on the left shows the input and output LED indicators, use these with the chart below To identify any faults with the barrier. The example On the left shows that the barrier is lowered, the Photocells/loop are healthy and the stop circuit is Also healthy.

Note, the PLC is located in the barrier cabinet.

1. Inputs			
Input	Polarity	Connected to	Operation when active
I0	Normally closed	Kerb lowered	Stops the barrier from raising when kerb interlock ON
I1	Normally Closed	Stop circuit	Barrier stops if door open
I2	Normally Open	Raise signal	Raises Barrier
I3	Normally Open	Lower signal	Lowers barrier
I4	Normally Open	Raise limit switch	Arm has reached its fully open position
I5	Normally Open	lower limit switch	Arm has reached its fully closed position
I6	Normally Open	Safety loop Detector/Photocell	Barrier stops and returns the the raise position until clear.
I7	Normally Open	Auto Loop	Raises the barrier from the auto loop
2. Outputs			
Output:	Polarity:	Connected to:	Operation when active:
Q0	Normally Open	Motor controller slow down	Active to slow barrier down
Q1	Normally Open	Motor controller open direction	Active to Raise barrier
Q2	Normally Open	Motor controller close direction	Active to lower barrier
Q3	Normally Open	Boom Lights	Active to operate boom lights
Q4	Normally Open	Traffic light relay	Active when green light in
Q5	Normally Open	Maglock or siren	Active to operate maglock or siren (depending on parameters)
Q6	Normally Open	Slave raise or Barrier raised	Active to raise the slave barrier or give barrier raised output
Q7	Normally Closed	Slave Safety/close or barrier lowered	Active to lower the slave safety or give barrier lowered output

MECHANICAL ERRORS	CAUSE	CORRECTION
Barrier arm keeps going up and down	Limit switch fault	check and reset limit switches
Barrier creaking when moving	Check bearings	Oil or grease bearings
Barrier motor not running	Loss of voltage	Check motor supply test 3 phases
Barrier not raising or lowering	Possible stripped gears	Call service team to diagnose fault
Barrier not raising or raising half way	Gearbox	Gears stripped due to overlading replace
Barrier raises slowly and lowers too fast	Lack of balance counter weight compensation	Fit counter weights
Barrier not running at all	Door has been left open or switch not pushed in	Close the door and issues a signal to open or close
Barrier raised will not lower	Key switch is left in open position	Turn key switch to auto
	Loop fault or loop detecting	Check if green light is on detector if so remove object that it is detecting or replace loop

ELECTRICAL ERRORS	CAUSE	CORRECTION
Blank screen on PLC but power to other devices in the control panel	On-board fuse blown	Replace fuse and reset barrier
	PLC has developed an electrical fault or had a power spike	Change PLC
Barrier does not run (stays open)	Check inverter is in ready (rdy) mode on display	Power down then back up
	Loop detector is faulting or sensing presence	Clear obstacle or reset the detector
	Check inverter settings	ACC - 6.0 DEC – 2.0 LSP – 25-40 (Variable)
	Barrier staying up in raise position	Access control giving a constant pulse shorten this
	Photo cell batteries (if fitted)	Check that the fitted batteries still have power to them. They should only be replaced with special 3.6V Lithium-ion batteries made for purpose. These can be provided by your supplier
	Photo cells dirty (if fitted)	Clean photo cells make sure they are debris free
Mains on but no power	Isolator fuse	Check and meter fuse in isolator
Barrier not going up	Access control may be faulty	Remove and check barrier function via the PLC
Barrier Staying up	Car has driven off before clearing the loop	Complete cycle by going through the ground loop

As stated at the beginning of this manual we recommend a bi-annual service, but at a bare minimum, it is imperative that you get a service done once every 12 months. This is not a sales tactic in disguise, there is a very serious health and safety issue/risk associated with not complying to this. Also in order for your barrier to keep complying with the appropriate legislation.

Before carrying out any maintenance to the installation, disconnect the mains power supply.

Make sure you have disconnected/Isolated the power before attempting any work.

A Maintenance Contract should be sought from a specialist company after a maximum of 5000 manoeuvres or 1year from the install date.

Occasionally clean the photocell optical components and make sure they are free from dirt, water, rain, soil etc.. ? Batteries in photo cells may need to be changed every 6 months or sooner dependant on use. Barrier will not work properly without photo cell function.

Have a qualified technician (installer) check the correct setting of the electric clutch.

If the power supply cable is damaged, it must be replaced by the manufacturer or its technical assistance service, or else by a suitably qualified person, in order to prevent any risk.

When any operational malfunction is found, and not resolved, disconnect the mains power supply and request the assistance of a qualified technician (installer). When automation is out of order, activate the manual release to allow the opening and closing operations to be carried out manually.

Gearbox drive unit is “sealed” for life and requires no further lubrication.

This Manual must be completed in accordance with the guidelines below, at any point service/repair work is carried out on the product. This is to achieve two things;

1. To keep a history of the product for yourself and your supplier/manufacturer.
2. To keep an accurate log of any historical or recent modifications, and/or problems, to help an engineer in the event of any future work required on the product.
3. This page is continued on the next page if extra space is needed.

Date	Reason for visit/Action taken	Engineers Signature
/ /20		
/ /20		
/ /20		
/ /20		
/ /20		
/ /20		
/ /20		
/ /20		
/ /20		
/ /20		
/ /20		
/ /20		
/ /20		
/ /20		
/ /20		
/ /20		
/ /20		
/ /20		
/ /20		

Specification

Maximum Boom Length: 7.0 metres
Power Requirement: 230v, Single Phase, 50Hz, 5 Amps
Drive Motor: 3 Phase motor & wormed gearbox
Opening/Closing time: 1.5 - 7.0 seconds
Duty Cycle: 100% continuos duty rating
Operation Time: 8 Seconds per metre (Variable)
Finish: Polyester Powder Coated
Dimensions: 420mm x 405mm x 1138mm

Access Controls: Push-button, Proximity cards, card readers, tokens, voice/video intercoms, keypads and remote fobs.

Motor/Gearbox

Electric Motor:

400v 50hz 3 phase
6 pole
IP55
8mm End Cap
B14 C face mounted
Frame size 80
Output power: 0.55kW
Current @ 400v: 1.70A
Rated speed: 885rpm
Full-load power factor(cos): 0.72
Full-load efficiency: 65%
Locked rotor current is/in: 4.7
Locked rotor torque Ms/Mn: 2.0
Break down torque Ms/Mn: 2.1
Net weight 9.2kg
Driving end bearings: 62042RS/C3

Geared Motor Spec:

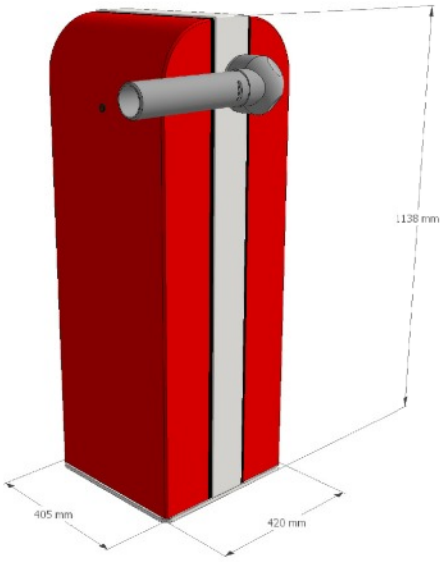
Type: Worm & Wheel
Overall speed: 2 rpm
Max rated torque: 1050nm
Actual torque: 1000nm
Gearbox efficiency: 40%
Output size: 42mm
Mounting position: V5
Angular Backlash: 15' +/- 5' / 0.00436 +/- 0.00145 (W110)
Lubricated with: Shell Omala 1.7 litres (W110)

Accessories

Optional extras:

- Folding bottom skirt up to 6.0m
- Hi-Bar skirt up to 5.0m
- Articulated arm (low ceilings)
- Pogo tip support
- Boom lights
- Magnetic lock
- Lorry height stop/no entry signs
- Warning sounder/flashing Beacon
- Sensing safety edges

Dimensions



Made in the UK