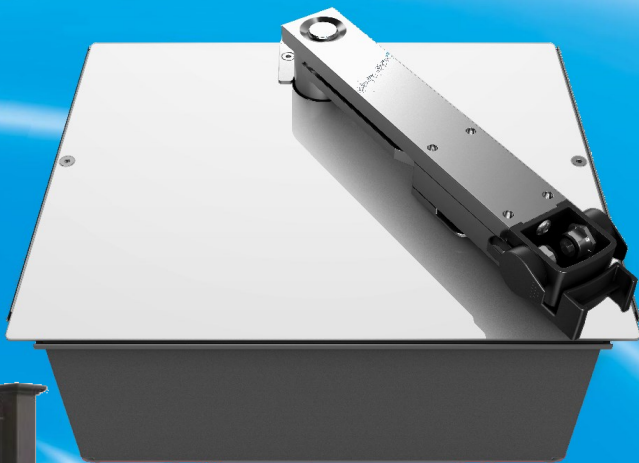


FOREMATIC

AXEL

Underground gate opener

F730 installation



AXEL installation

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2	Responsibilities & consideration
3	Gate mounting
4	Driveway layout
5	Groundwork & cable ducts
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Description

AXEL sets are suitable for prestige estate gates. The powerful PWM motors have internal encoders to monitor gate position. Stall sensors detect obstacles and in order to reverse the gate's direction. Speed and pressure are adjusted in compliance with safety standards. AXEL sets are safe and green. They will provide long and reliable service if fitted and maintained according to the instructions in this manual.

Remotes use a 'Rolling Code' format that changes the code sent every time it is used. It can't be copied, keeping your home secure.

A key operated manual release mechanism allows access in case of a power outage.

Though this equipment is complex, user programming has been kept simple. Foresee have a planned program of simple hi technology new product releases to keep your home secure and up to date.

Set contents

AK-424 The standard set is for double leaf boarded gates, and heavy domestic gates. The set includes two underground openers, control panel, two remotes and a photo-beam. RIO-X control panel requires a 230Vac supply.

AK-414 This single leaf version is approved for gates leaves up to 2.8m when installed with an electric lock (not included) or pedestrian gates.

AL-424 This is the AXEL low power set. The RIO-XL control panel is powered by an ELV source mounted remotely, often in the house or garage. RIO-XL includes 1.1Ahr batteries. Ideal for sites where a long mains cable would be difficult or expensive to run. The charging cable can also be used for an intercom or other controls.

All sets include two remotes and a photobeam set. Mains powered sets can be fitted with the battery backup set for up to 10 hours off grid. Without batteries, gates will attempt to close when power is restored.

Set contents are a starting point. Additional devices may be added. Further safety devices may be required. Mains isolator is not included

Technical Specifications

Supply voltage	220-240Vac	Motor power	100W @ 24Vdc
Supply rating	2.5A @ 50-60Hz	Motor torque	250Nm max
Standby power	<10W	Motor insulation	IP67
Ambient temp	-20° to +70°	Open angle	100 degrees
Remotes	433MHz 50max	Opening speed	4.5° /sec



Double leaf set

- ◆ 2x motor casings
- ◆ 2x motor gearboxes
- ◆ Control panel with remote receiver
- ◆ 2x IR safety photo-beams
- ◆ 2x remote controls

Installer responsibility

An automated gate is a machine that must comply with the EU Machines directive. There are many aspects of compliance that ensure the gate is safe to users and public. 'Automatic gate' signs are required on both sides of the gate warning against risk of contact injury.

The installer must prepare a handover pack to include details of the installation, a user guide and a risk statement. Much of that information is included in this manual, along with guides to identify site specific risks and gate attributes. Good practice is essential to safety & reliability. Note outdoor installations electrical standards.

Homeowner responsibility

It is the responsibility of the owner to ensure only trained people operate the gate, and they are aware of potential gate hazards. Owners are responsible for injury resulting from failure to meet the requirements in this manual.

The person operating the gate must take responsibility for the safety of any person within the hazard area. Never let children play near gates in motion.

Gates must be robust, well maintained, and on clean level ground. Keep the gate area clear of objects. Have the gate properly maintained and repaired by qualified personnel to maintain the legal safety requirements.

Safety considerations

European standards specify safety measures to be used on applications with perceived risk. The highest rating calls for photobeams and sensitive edges, in addition to control panel PSR.

Ratings for systems in public spaces used by untrained are higher than private gates operated by trained. Autonomous devices such as timers and vehicle detectors add a level of risk.

The safety tutorial at the end of this manual is dedicated to defining 'risk'. The design and layout of a gate can eliminate many risks, avoiding the need for more safety devices. Control panel electronic measures do not make the system compliant on their own.

Declaration of Conformity

We hereby declare, that gate openers F-550 has been manufactured in accordance with the following standards or normative documents

- EN 60335-2-95: 2004
- EN 60335-1/A13: 2008/A2: 2006
- EN 62283: 2008
- EN 61000-3-2: 2006, + A1: 2009 +A2: 2009
- EN 61000-3-3: 2008
- EN 55014-1: 2006 +A1: 2009 EN 55014-2: 1997 +A2: 2008
- EN 50371: 2002

In accordance with the provisions of the following directives
98/37/EC Machinery Directive with amending directives
2006/95/EC LV Directive
2004/108/EEC EMC Directive
1999/5/EC R&TTE Directive

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Mr H WYNN JONES Director

Gate mounting

[A] is frequently requested, but requires extra safety edges because of the crush risk between the gate and the pier.

[B] recommended for safety and has a good opening angle.

[C] casement must be turned through 90° and mounted on the back face of pier. This results in a reduced opening angle.

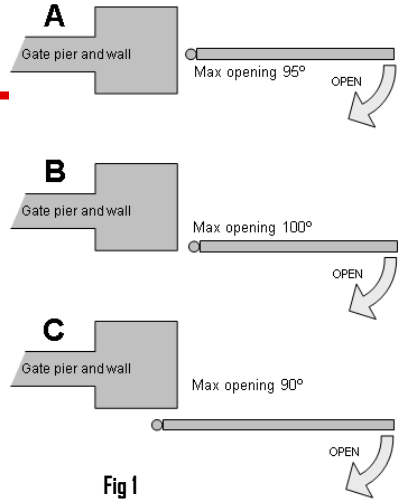


Fig 1

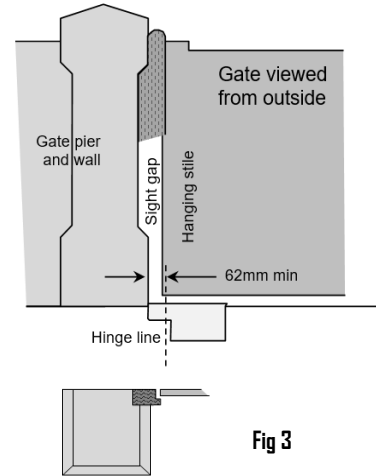
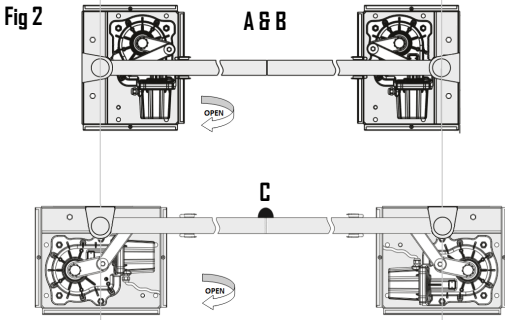


Fig 3

Stepped piers work better for steel barred gates. Boarded gates leave an unsightly gap. Filling the gap is likely to cause a pinch hazard.

Rear hung gates, where the casement is on the back of the pier (Fig 1c) eliminate the sight gap, and can hide the necessary safety edge.

However on turning the casement the adjustable closed stop no longer works. You will need a centre stop or an alternative casement stop.

The top hinge on a boarded gate is critical to quality installation. Top hinges need to be plumb above the casement pivot. Fig 3 gives some alternatives.

The most common [D] requires the gate to be off centre, and therefore will require a safety edge to protect the pinch hazard.

[E] is on centre, but leaves a sight gap, or you need to cope with a rear hung gate.

[F] is ideal, but needs a special hinge fitting to the top of the gate.

Be sure to discuss top hinge design with your gate supplier. The design will affect safety, pier design, the gate's dimensions, opening angle and entrance width.

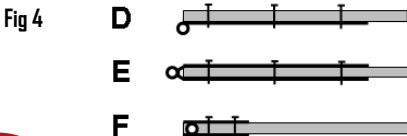


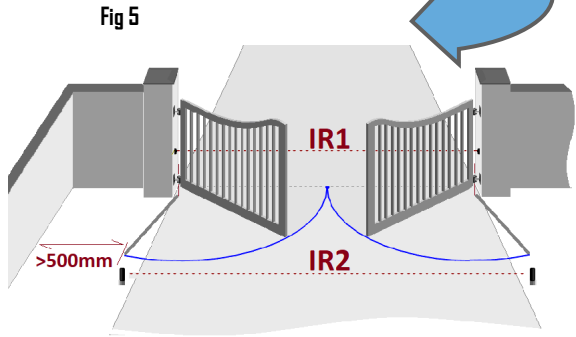
Fig 4

Driveway layout



Layout, like gate mounting, can minimise extra safety devices without compromising safety. Sets contain one photobeam, normally wired to the re-open [F] input. The beam is fixed to the gate pier or post. A second pause photobeam on [E] input is placed outside the swing of the gate.

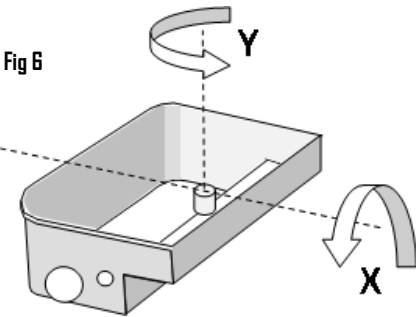
The entrance should be on level ground from pier to pier. The casements need to be at finished ground level. It is possible to have casements at different heights but one leaf will need to be adjusted to suit.



On a few occasions, the driveway may be so steep that it is necessary for gates to open outwards. This is to be discouraged as it puts the public at more risk.

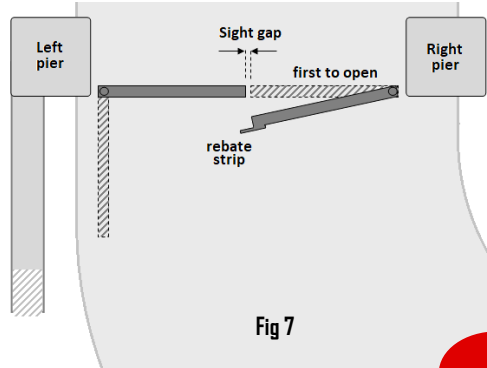
Similarly, the casement should be level on both axes, pitch & roll. However, to adjust roll angle X can compensate for a steep drive. This needs careful calculation that can be viewed on our webpages.

The return wall on the left, or any other fixed solid feature, should be over 0.5m the area swept by the gate. Any closer, and a protection device may be required.



Casements need functioning drainage. In most cases, the drive will be higher than the water table, so a soakaway may be sufficient. Steep private drives may have regular run offs towards the road that will frequently fill the casement, then fill the soakaway. Consider a surface drain.

Wood swells when it absorbs moisture. A gap between gate boards and between gate leaves is essential. Any sight gap between leaves can be covered by a rebate on one leaf. This will dictate the order that the leaves open and close. This control panel function is also used for drives that curve inside the property.



Groundwork & cable ducts

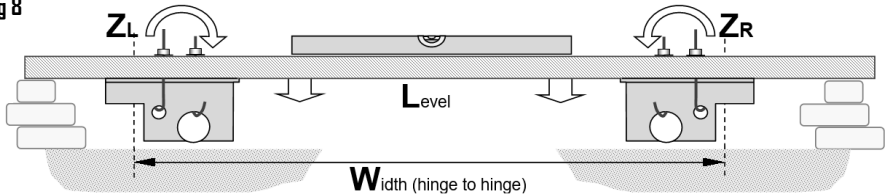


Piers can be constructed hollow, infilled, or with steel post reinforcement. That is a decision beyond the scope of this manual.

Two concrete bases are required for the piers, set at precisely the same level. Level off 170mm below road level to give casements a solid base, and space for ducts and drainage to be buried.

Foundation depth depends on the ground and pier weight. Gate width is critical, so it is safer to lay the first brick course before ordering the gate to ensure it fits.

Fig 8



More ducts can be laid when the piers are half height. We recommend 40mm ribbed duct for cables and 50mm ribbed for drainage. Ducts in the drawing below are shown terminated at the base of the pier.

If the pier is to remain hollow, it is tidier to run cable ducts in the pier. If solid, run the ducts up the side of the pier (Fig 9). It is a sensible precaution to run a pull cord down any long ducts. If you have the cable, run the cable as well.

Photobeams are set 500mm above road level. Add a 20mm duct in each pier run to an access hole at on the back face. The far pier has a JB. The near pier will have the control panel.

The casements can now be laid on a thin bed of concrete over the concrete base. Fig7 shows an alternative method where the casements are suspended from a level bar resting on the first few brick courses. This ensures the casements are level and packed underneath.

Push fit ducts and drains in the casement. Protect any exposed screw threads and tape up any holes to prevent concrete ingress. Then build concrete around the casement to at least 75mm, including under the pivot shelf.

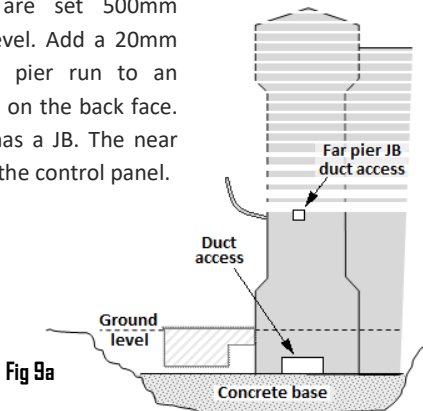


Fig 9a

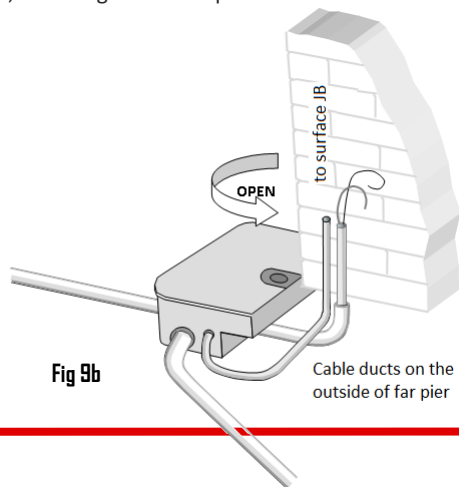


Fig 9b

Cable ducts on the outside of far pier

Pier design



This is a good point to consider any other ducts or cables that may be needed. See the accessory page for more options, such as an intercom, a keypad, or a vehicle sensor.

The nearside pier normally has a power supply cable and the control panel. In these examples it is shown on the left, but could equally be on the right. The farside pier has a junction box (JB) to make connections to the motor and photobeam.

If there is an intercom or other access control, it is normally fitted to the left pier, because that is the side visitors get out of their vehicles. Height is typically 1.5m. Leave a suitable duct access hole. Ducts will run either to the control panel, or to an electrical junction box on the rear.

Nearside piers are often the closest to a garage or the house, where there is a fuse box or consumer unit. A garage makes a more secure, safer, and less hostile control panel position. It must be within 10m of the gate and will require more cabling.

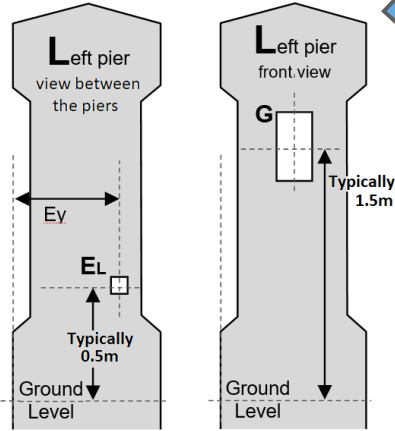


Fig 10

Duct termination	
A	Far side JB
B	Control panel
C	Pier base nearside
D	Pier base farside
E	Nearside photobeam
F	Farside photobeam
G	Intercom

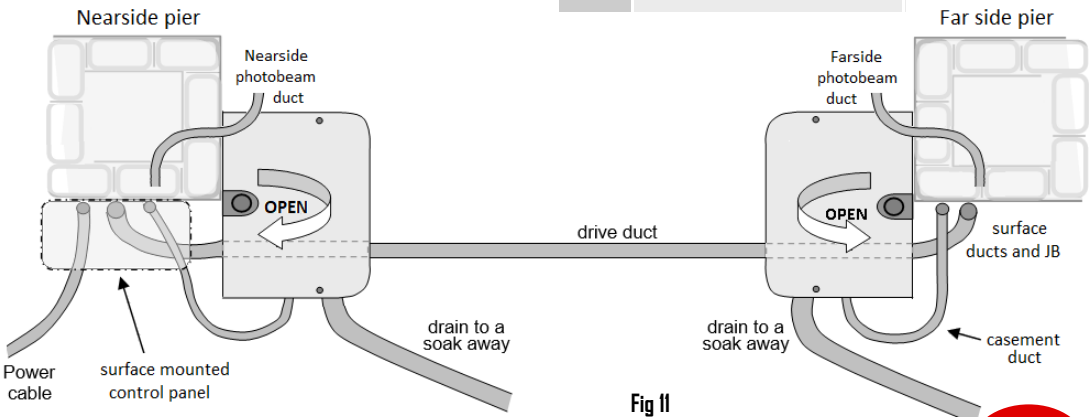


Fig 11

Fitting the motors

The 2 casement orientations are shown in Fig.12 with the motor positions. Place the motors over the casement studs, then bolt them down.

Gate fixing levers will not be fitted until later, though they are shown on the diagram.

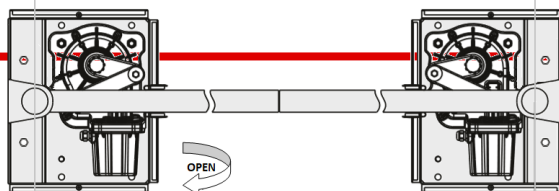


Fig 12a

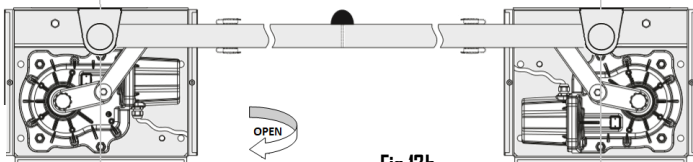


Fig 12b

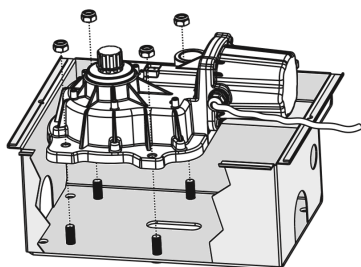


Fig 13

Stop plates

The stop plate has two limits. The close position is adjustable. The open position is fixed to the limit of the casement. If you need the gate to open less you can fit an addition ground stop.

Fit the stub axle plate and stop plate over the exposed studs in the upper shelf, then fix with the locking nuts.

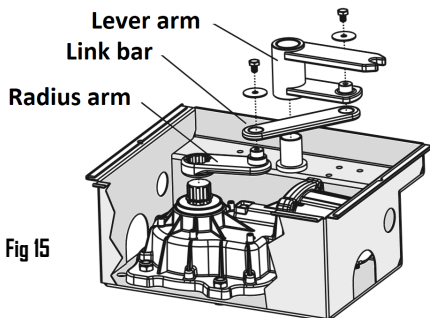


Fig 15

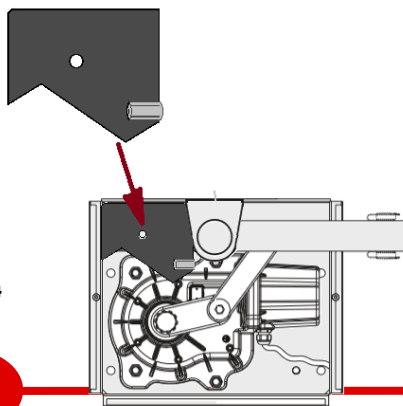


Fig 14

Motor arms

Motor arms can now be assembled on the stub axle. Grease the motor splines. Place the radius arm as Fig 14, then tap the arm on with using a soft mallet. Grease the stub axle well then add the lever arm. Fit the link bar (thick end towards the motor) and fix with two screws..

It will not be possible to set the closed stop until the motors are under power.

Running cables

We recommend star wiring. A five core 0,6mm cable (DC519) is run from the control panel to most devices. Exceptions are the motor cables which are 3 core 1mm, and AK sets mains supply cable (3 core 5A). Lock and lamp cables may also differ, so check their cable specifications.

Cables should enter the panel through glands. Running the cables behind the PCB keeps the limited space tidy. It is better to hide cables than cut them too short. Mark all cables.

The wiring plan below shows individual cables grouped in appropriate ducts. Only one junction box is shown. Others are likely to be required.

Capital letters refer to the terminal they service. An intercom has been included as an example of access control. Devices on terminals L, K, G, E and D are optional and not included in AXEL sets.

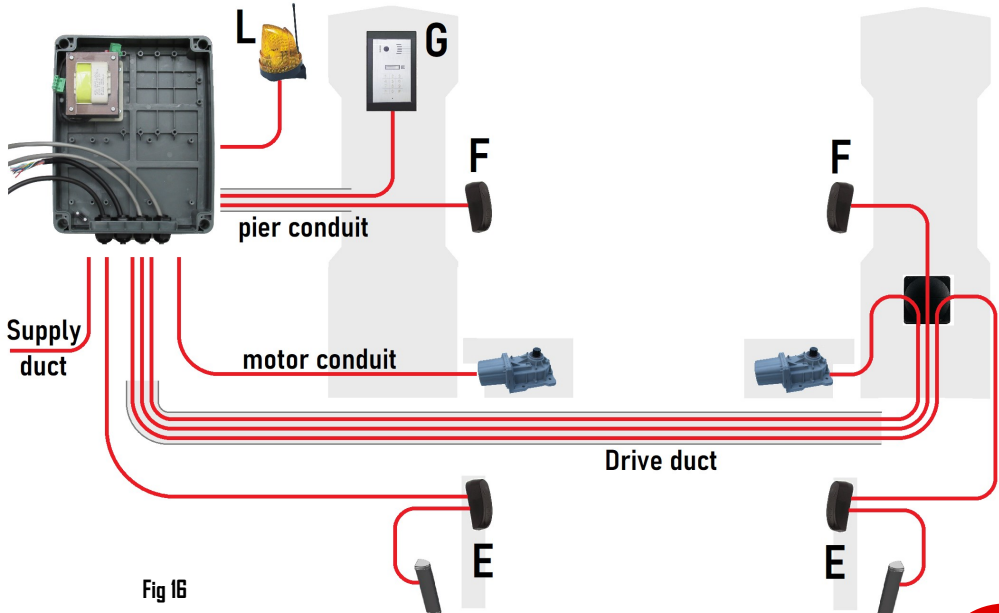


Fig 16

RIO-X panel

RIO-X is the mains panel with a 24Vac transformer. The only other main wiring is the warning lamp.

RIO-XL is a low power version with batteries charged remotely.

Batteries can also be fitted to RIO-X giving about 10hrs off grid service.

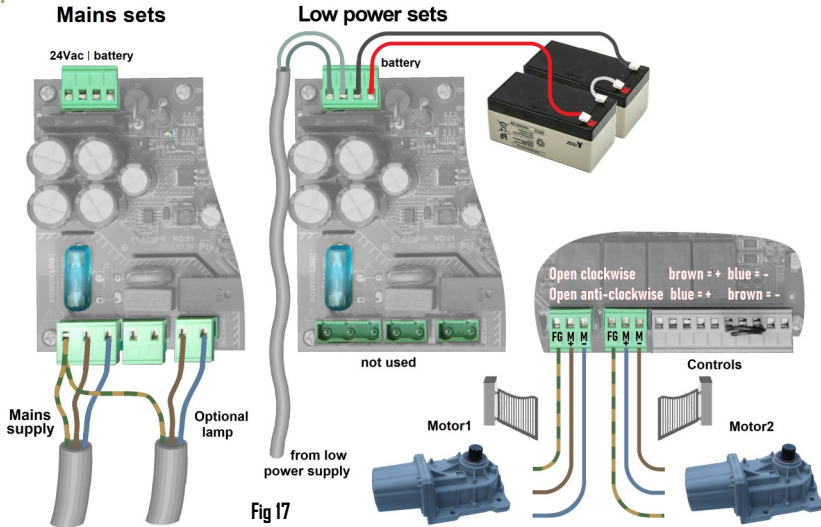


Fig 17

CONTROL WIRING

The 10 way control connector is for 'activation' and 'safety' devices. A standard colour scheme simplifies diagrams. Black [C] is common to all devices. Use only compatible devices.

WARNING LAMP [L & C] output gives 12Vdc ON-OFF while the gate is in motion for lamps without a flasher circuit. The power board has terminals for 230V lamps with internal flashers.

ELECTRIC LOCK [K & C] option gives a DC pulse on opening. Use wire over 1.5mm terminals.

ACTIVATION DEVICES [G & C] or [D & C]
Any number of extra activation devices can be wired to [G & C]. Some examples are shown on the next page. Move the green wire to [D] for single leaf "door" opening. Remotes can be set for these two functions. See user instructions.

SAFETY DEVICES [F & C] or [E & C]
There two inputs are for safety devices. Input [F] prevents the gate closing (outside photobeams). Devices on input [E] pause gate while opening or closing (eg inside photobeam or safety edge).
Examples on the previous page.

Unlike activation devices, safety device contacts are 'NC'. More than one device contact on the same input need to be connected in series. If an input has no device connected, it needs to be linked to [C] common.

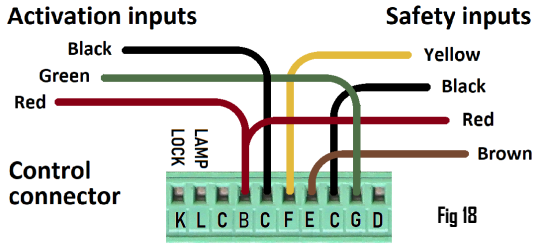


Fig 18

Examples on page 12 show single photobeams on each input. Below that, there are examples of a photobeams with one and two safety edges. Safety device power (red) is 24Vdc. It is only active while the motor is running.

We recommend safety edges with an NC contact for easy wiring. Not all edges need the power supply. Resistive edges may need a processor.

Safety is a synergy of all measures and devices. Refer to the safety tutorial for risks & solutions.

Activation device wiring

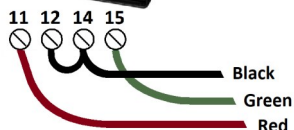


VY805
button

FA61
Keyswitch

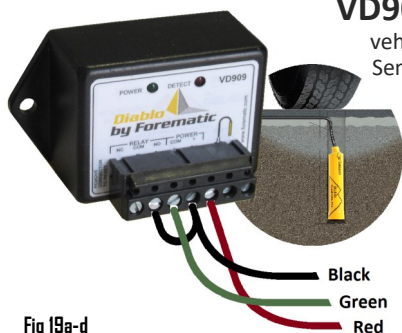
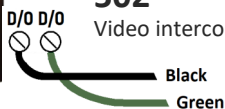


K15
Keypad



202
Audio intercom

502
Video intercom



VD909
vehicle
Sensor

Accessories below have NO contacts. FORESEE's wireless button & keypad work on the remote channel so require no wiring.

Exit button is normally in the property. A **keyswitch** can be on either side, or for use by authorised persons only (eg teachers)

Vehicle sensors are normally used for leaving the property, often described as 'free exit' sensor. A single point vehicle sensor is placed in the driveway. Adding a time clock to work during the day could be viable 'free entry' device for a commercial property.

Keypads are useful for friends, family or trusted delivery drivers. This keypad can accept many codes, and some for single use (less trusted delivery drivers).

Intercoms normally require a cable to the house. These two types need only 2 wires (not shown here), which can be included in a 'Low Power' RIO-XL's power supply cable. Intercoms and keypads are normally on the left pier to suit visitors by car.

Smartphone control offers a modern control method with a device we all carry. A data cable to the house is not necessary for simple control, but adds features if it is included at this early stage. They can replace the intercom and additional remotes.

Control terminal functions		
	Lock output, 24Vdc	K
	Lamp output, 24Vdc	L
Black	Lamp & lock common	C
Red	Accessory power	A
Black	Common	C
Yellow	Safety, re-open	F
Orange	Pause either direction	E
Black	Common	C
Green	Full opening input	G
	Pedestrian opening	D

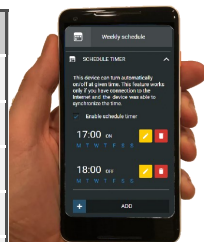


Fig 19a-d

Further wiring plans

There are 2 safety inputs. [F] stops the gate closing (Fig24). [E] pauses the gate in either direction (Fig25). More safety devices may be added as required. Refer to the safety page for guidance on the risks.

Multiple safety contacts must be wired in a chain (series) on the same input. Photo-beams have a receiver [Rx] and transmitter [Tx]. It helps if the beam direction on [F] is the reverse of the beam direction on [E].

Fig20 The primary beam is [F]. An inside beam [E] is recommended, fitted to posts or a wall. Note the hinge position is on the pier corner, so finger traps are less likely.

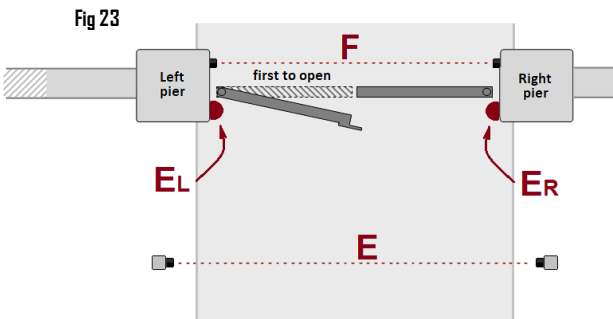
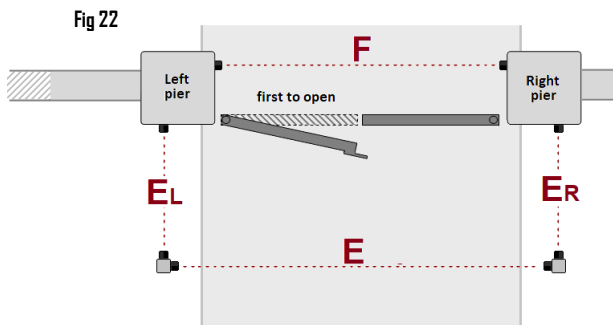
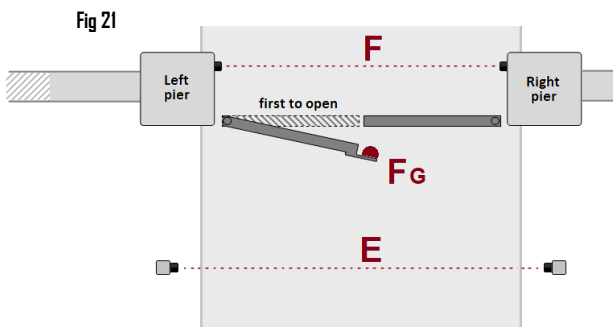
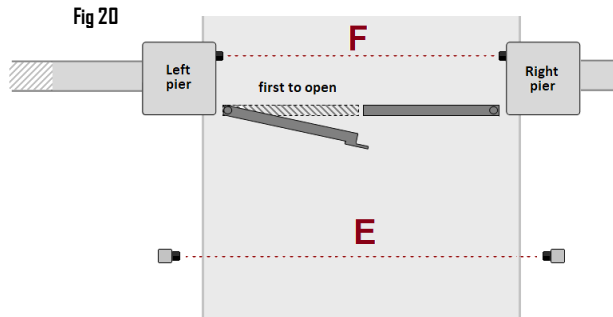
Fig21 An safety edge has been added to the gate leaf that closes last. There are now two devices on [F] wired as Fig26 or Fig27.

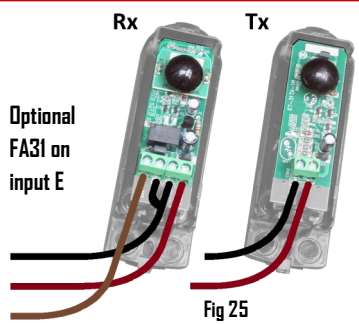
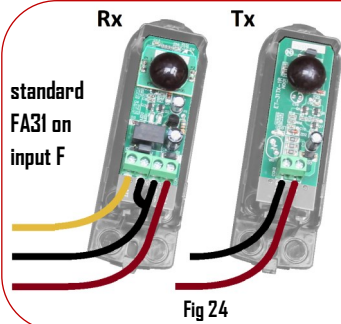
Fig22 This ring of photo-beams stops gate movement if there is any incursion into the area enclosed. There are 2 repeater posts that need only power (Fig29). Fig25 Tx is the start, and Fig25 Rx is the end of chain.

Fig23 The gate hinges have been moved making a finger trap risk. Safety input [E] needs 2 safety edges and a photo-beam. Wire to Fig26 (left) and Fig27 (right).

SAFETY EDGES

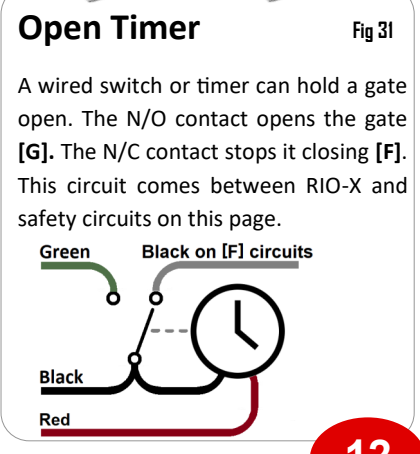
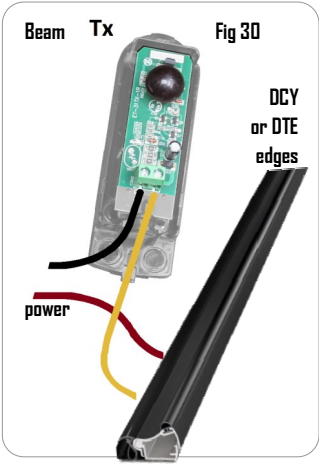
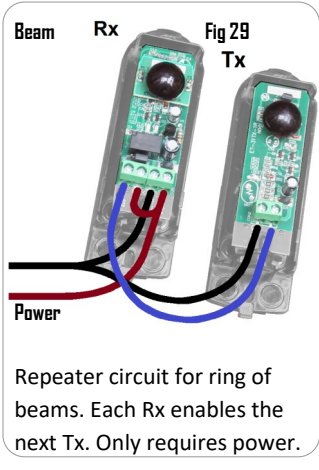
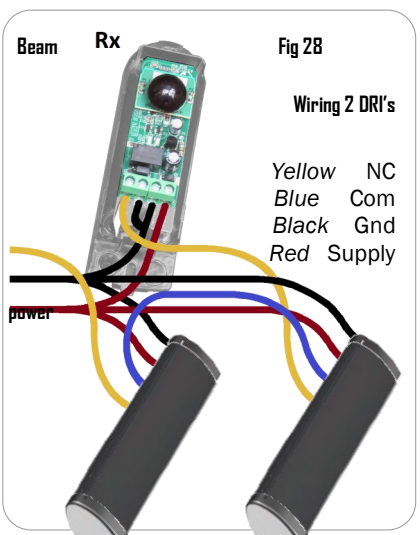
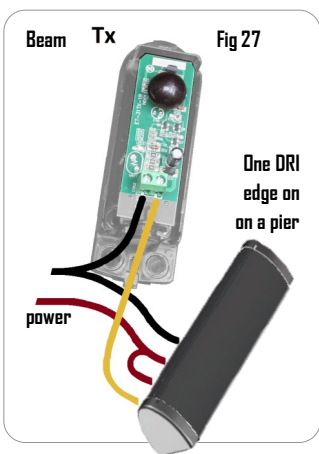
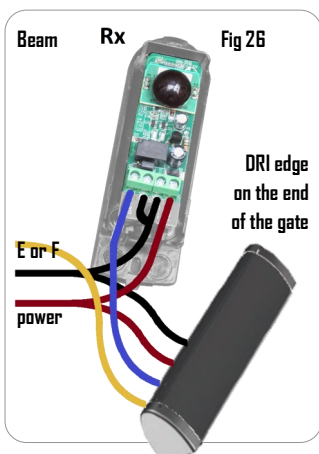
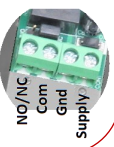
DRI safety edges have a 4 core cable (Blue-yellow-black-red) that needs power. Fig30 shows the alternative DCY or DTE edges.





Photobeam wiring

The first photobeam on F (yellow) is compulsory. The E input (brown) is optional. Inputs can take multiple safety devices when their volt free contacts are wired in series. Note jumper position!



Static settings

Open & close delays - DIP1 to 4

The first leaf needs to start to open a few secs before the second leaf. There is a similar delay for closing. If your drive is straight the delays can be set to minimum, so set all 4 DIPs off.

Delay	2s	3s	4s	5s
DIP 1&2 - opening	00	10	01	11
DIP 3&4 - closing	00	10	01	11

DIP5 OFF for double leaf gates. Set ON for single leaf gates, connected to 'Motor1' output.

Auto-close delay - DIP11 to 13

Delays start when both gates are open. Delay is set on DIPs 11-13. All DIPs off disables the auto-close function. The table below gives delays.

DIP11,12,13			Auto-close delay			
100	010	110	001	101	011	111
5s	15s	20s	60s	65s	75s	80s

Electric Lock

Can be set as an electro-lock or locking magnet. The electro-lock can be set to 24Vdc or 12Vdc. Maglock is 24V except while the gate is opening.

DIP15 OFF = electro lock ON = Maglock

DIP7 OFF = 24V lock ON = 12V lock

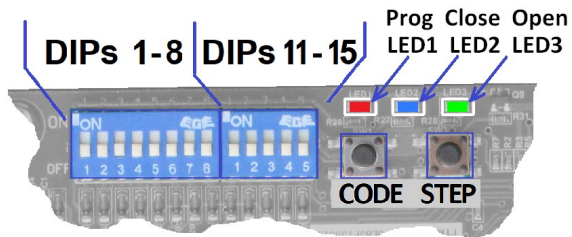
Opening order - DIP14

Sets which gate opens first (and pedestrian gate)

DIP14 OFF; motor1 leaf opens first, closes last.

DIP14 ON; motor2 leaf opens first, closes last.

Motor1 is normally on the left pier. See page 13.



PCB buttons

There are two buttons on the PCB. The CODE button is used to set remotes. STEP is the same as receiving an input on the [G] terminal.

Setting remotes

You can save up to 50 remotes. There are two remote channels. Pedestrian channel opens one gate only. Main opens both leaves.

Press and hold the 'code' button for 2 secs. LED1 will light. Press any button on the remote twice. LED1 now goes out.

Pedestrian opening - Press the 'code' button for 1 secs. LED1 will light. Press the 'code' button again for 1 secs. Press the bottom remote button twice. LED1 now goes out.

Remote function

In both states, assuming an auto-close delay is set, a single remote button press will open the gate, pause for auto-close delay, then re-close.

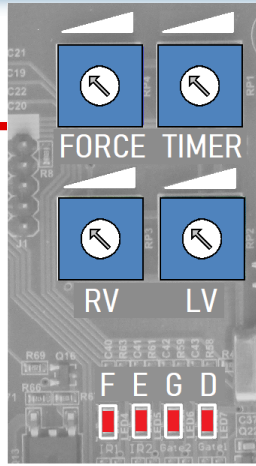
4step auto sequence is ;

OPEN—STOP—CLOSE—STOP

Gate motion can be stopped at any point by pressing remote button. The next press reverses direction. If you want to hold the gate open, wait until the gates are almost open, or just beginning to close, then press the remote again to pause. Release with another press.

Run time setting

- LED1** Programming indicator
- LED2** Flashes while closing. On when closed
- LED3** Flashes while opening. On when open
- LED4** Indicator for input [F]. On when safe.
- LED5** Indicator for input [E]. On when safe.
- LED6** Indicator for input [G]. On when active
- LED7** Indicator for input [D]. On when active



Fine adjustment

Fine adjustments set the safe running of the gate. Follow the order below. Extra activation and safety devices can be wired in after these adjustments without the need to re-adjust.

Limit learning - DIP8

RIO-X uses encoder feedback from the motors to monitor movement. On a test run, it can detect the ends of travel set by physical stops allowing it to find its own limits and set slow down points.

The DIPs and remotes should have been set. The four blue pots should be set to 10 o'clock (as picture opposite). Pots will be fine set later.

Close the gates (this may need a 12V battery). Set DIP8 to ON. Press STEP to start learning.

- RV.** Mid travel speed. The gate should only run fast when it is at least 500mm clear of know objects. Set heavy gates to run slower.

- LV.** Speed at slow start & slow stop. Set to close the gate firmly against the post. LV is a preset percentage of the total run time.

- Force.** Regulates the maximum force applied by the motor before obstacle detection kicks in. Set it high enough to move the gate reliably, yet still reverse on an obstacle.

- Timer.** Sets the default run time (30-63 secs). If the motor fails to find a physical stop. It timesout.

Refer to safety tutorial for force test limits. The safe force limits need to be observed. Adjusting the first 3 settings will help comply. The adjustments above should not affect the limit learning. Small changes in physical limits may be necessary but big changes will need the limit learning to be repeated.

Further support

Further wiring applications, support and fault finding can be found on our website on the AXEL support page.

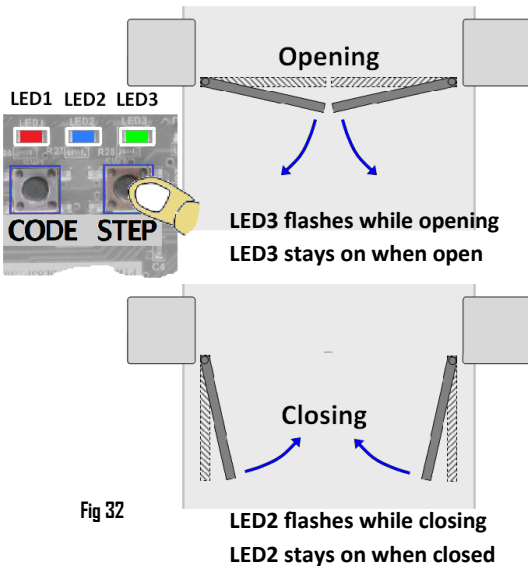


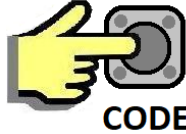
Fig 32

User Instructions

You can save up to 50 remotes. There are two remote channels. Pedestrian channel opens one gate only. Main opens both. You will need to open the control panel to find the 'CODE' button. The control panel will not accept coding while the gate is moving.

Add a remote

Press and hold the 'code' button for 2 secs. LED1 will light. Press any button on the remote twice. LED1 now goes out.



Pedestrian opening - Press the 'code' button for 1 secs. LED1 will light. Press the 'code' button again for 1 secs. Press the bottom remote button twice. LED1 now goes out.

Deleting remotes

You cannot delete remotes one at a time. Delete all. Re-enter the ones you want to keep. Press and hold the 'code' button for 8 secs. Delete will not work while gate is moving

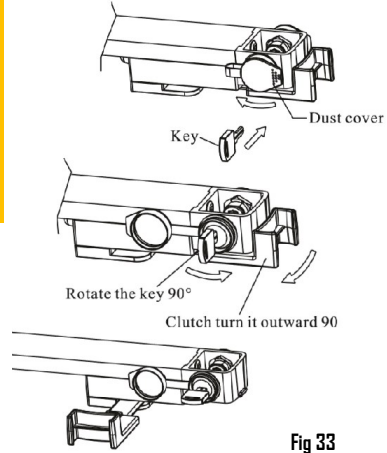


Fig 33

Safe operation

Installers must hand the gate over in a safe state. Use a 'competent person' to keep the gate in compliance with safety directives. The home owner is obliged to maintain the system in a safe state, and keep maintenance records which will be passed to new owners of the property.

Don't let children operate or play on the gate. Keep remotes out of reach of children. Check the safety device's function of once a month. Do not modify the gates, as this will require a new safety audit.



Fault finding

In the event of a failure, homeowners should seek professional help to maintain safety. Our website PICO support page has fault finding support.

Manual release

Each leaf has a key release mechanism for use in case of power failure. The key hole is at the bottom of the gate behind a round plastic cover. Turn the key then pull the lever towards you. When the lever has turned through 90° the gate is be free to open. Be sure to keep the keys in a place which is accessible from both sided of the gate.

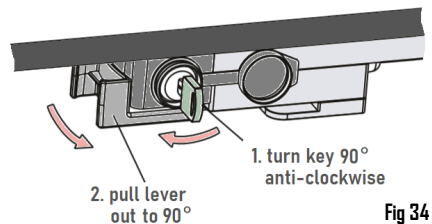


Fig 34

Fault finding



There are 8 LED's on RIO-X that show the states of inputs and the gate position.

Gate runs slowly This happens when there has been a loss of power. The controller needs to re-find it's limits. This is done automatically.

Gate will not close Check LED's 4&5. They should be ON unless a safety device is active.

Randomly triggers There may be a missing remote, or loose wiring in [G] or [D] .

Gate stops before fully open or closed. Can be the stall detector has sensed an object. Check for stiff or dry hinges. Increase FORCE pot.

LED3 flashes 4 times - cannot find the limit.

Gate will not operate - Are there any LED's on? Check power in, battery voltage and fuses. Isolate wiring thus; link [E] to [C]. Link [F] to [C]. Empty terminals [G] and [D]. Does it now work on remotes?

LED1 indicates a correct remote is being received, or that you are in limit or remote learning mode.

LED2 Flashes while closing. On when closed.

LED3 Flashes while opening. On when open

LED4 Indicator for input [F]. On when safe.

LED5 Indicator for input [E]. On when safe.

LED6 Indicator for input [G]. On when active

LED7 Indicator for input [D]. On when active

LED8 Indicates the batteries are charging

Motor checks - 3 ohms between blue & brown.

Installation record

complete this table as part of your records

Safety	Input	Position	Device	1	User record								
	F		FA31	2									
				3									
Activation	Input	Position	Device / code	4									
	G			5									
				6									
DIPs	1	2	3	4	5	6	7	8	11	12	13	14	15
	FORCE	%	TIMER	%	LV	%	RV	%					

Overview

The gate installer builds a machine on site. The machine must be declared safe by the builder and comply with the EU Machinery Directive. Parts for the machine must be compliant and used as directed by the manufacturer. Standards require good design and good working practices. Finished machines must be declared safe. Handover to a responsible person includes documentation and training to maintain the machine's safety for users & public. The latest DHF TS011 Code of Practice can be found at www.dhfonline.org.uk

Force testing

EN12445 explains the method of testing the impact forces of a gate. The crux is a graph of acceptable forces from the point of impact.

Safety device applications

Safety devices such as sensitive edges and photo beams are to stop, and if necessary, reverse the gate movement in the "Risk Zone". Applications necessary for safety are primary devices. Other applications that contribute to safety, but are not necessary are supplementary devices. Some devices are only rated for supplementary safety use. Primary devices need to be Cat2 or Cat3 as defined by EN954-1.

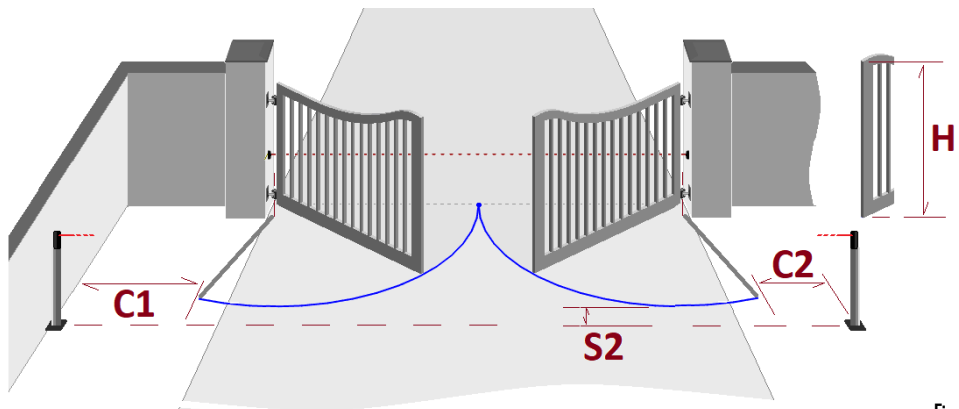


Fig 35

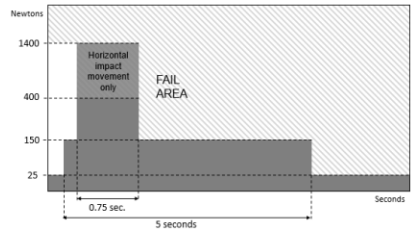


Fig 36

This guide is a helpful reference to identify risk. It is not a directive. It does not suggest solutions.



Crush hazards

marked C1 to C3

Crushing is between a moving part and a stationary part. It is most significant below 500mm when it may be up to 400N for less than 750ms. Moving part needs to reverse within 5 secs so that pressure is released to 25N.

Impact zones

marked R1 to R3

Impact refers to a moving object striking a person outside the crush zone. This is 1400N for less than 750ms. There could be a temporary object (a car) in the R zones, hence the use of photo-beams.

Safety distances

marked S1 & S2,

At least one photo-beam 300–700mm high must supplement force limitation. Spacing between the beams and the limit of the moving part must be less than 200mm. Nominal spacing between vertical gate bars is 100mm. Safety must be effective to H, the maximum height of the moving part, or 2.4m, whichever is the least.

Edited from DHF TS 011 Code of Practice

'Draw in' or Shear

Gaps where a body

part could be drawn in are not allowed. Limbs have different nominal sizes. Finger gaps need to be less than 8mm (D2), arms less than 100mm etc. A solid infill sliding gate needs to be less than 8mm from the post. Vertical bars on sliding gates (D2) present multiple shear risks against the supporting post.

Entrapment

Ez is an area where a

person can be entrapped without being in contact with the gate. Entrapment is not permitted unless a manual release is provided inside the zone.

Finger traps

F1 is a finger trap as a result

of poor hinge design. Designs must ensure moving gaps are under 100mm, **and** either under 4mm or over 25mm, **and** the gap changes by less than 20%. Motor PSR is not an acceptable finger trap solution.

Hold to run speed of a closing gap in a crush zone must be less than 0.5m/s. The gate must stop within 50mm in the crush zone, or 100mm at mid travel.

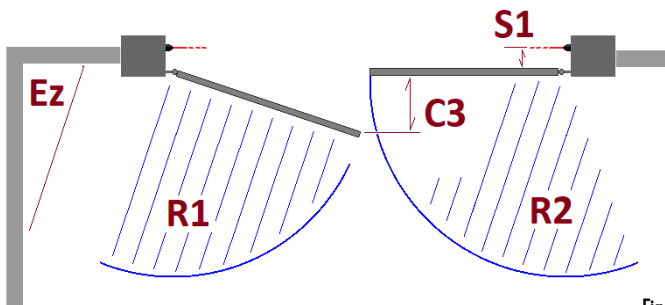


Fig 37

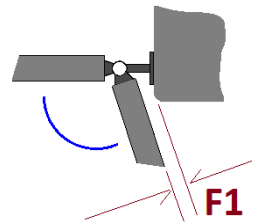


Fig 38

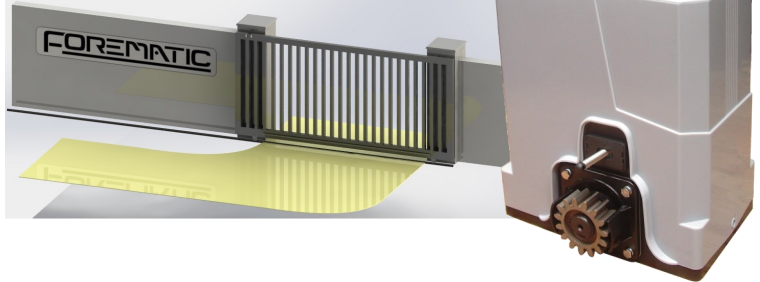
FOREMATIC

Complete your home security with a Foresee gate automation set



PICO

sliding gate motors for confined spaces, sloping drives, and sharp corners



RETRO



AVANTI



PRIMO

Garage door opener



Warranty

Warranty covers defects to the Foresee product proven attributable to a material or manufacturing fault during the warranty period. We will repair, or refund, or replace faulty product with a similar fault free product at our discretion. We do not accept costs for dismantling, installation, or for carriage. Parts replaced under warranty are the property of the warrantor.

The warranty period for Radio Equipment is 24 months. The period for replacement parts is 6 months or to the end of the current warranty period, which ever is longer.

Warranty exceptions

The warranty does not cover damage caused through: Wear & Tear or Improper Installation or Negligent Care or lack of Maintenance or Misuse or Water ingress or Abnormal Environmental Influences or Mechanical damage during Transport or damage through improper Installation or