

D5-EVO SMART INSTALLATION MANUAL



D5_{EVO} SMART

Company Profile



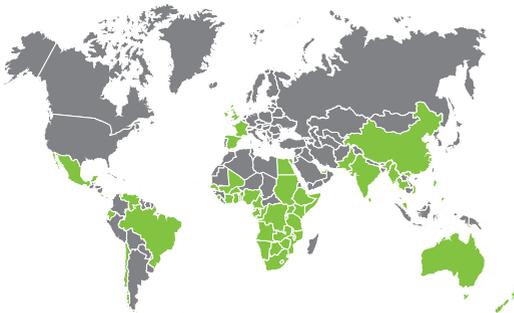
In-house R&D development team

Manufactures to international quality standard ISO 9001:2015



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100% testing of products



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Icons used in this manual



This icon indicates tips and other information that could be useful during the installation.



This icon denotes variations and other aspects that should be considered during installation.



This icon indicates warning, caution or attention! Please take special note of critical aspects that MUST be adhered to in order to prevent injury.

1. Introduction

The **D5-Evo SMART** is a domestic operator designed to open and close sliding gates weighing up to 500kg. A custom-designed Gearbox moulded from robust engineering polymers, coupled with a powerful 12V DC motor, provides fast and reliable automation for entrances to homes and small housing estates.

The system operates off one 12V Battery housed inside the operator using a switch-mode charger to maintain the Battery in a fully-charged state. The Battery provides critical power failure protection.

A non-contact Hall Effect Sensor was selected to ensure reliability and positional accuracy. The Hall Effect Sensor is highly resistant to dust, oil, dirt and insect ingress, thereby ensuring that the **D5-Evo SMART** opens and closes gates reliably and accurately.

Advanced features of the D5-Evo SMART logic controller include:

- Interactive graphic user interface via the MyCentsys Pro Smartphone application
- Automated setup of gate endpoints (limits)
- Independently-adjustable motor speed in both opening and closing directions
- Fail-safe collision detection and auto-reverse (adjustable sensitivity)
- Smooth, adjustable start/stop (ramp-up/ramp-down)
- Multiple operational modes
- Selectable, adjustable Autoclose
- Pedestrian (partial) opening
- Positive Close Mode
- Independent safety inputs for opening and closing beams
- Automatic beam test for both opening and closing beams
- Advanced lightning/surge protection
- Onboard NOVA code-hopping radio receiver with full channel-mapping capability (limited to 1500 remotes¹)

1. Multiple buttons per remote can be used

1.1. Important Safety Information



ATTENTION!

To ensure the safety of people and possessions, it is important that you read all of the following instructions.

Incorrect installation or incorrect use of the product could cause serious harm to people.

The installer, being either professional or DIY, is the last person on the site who can ensure that the operator is safely installed and that the whole system can be operated safely.

Warnings for the Installer

CAREFULLY READ AND FOLLOW ALL INSTRUCTIONS before installing the product.

- All installation, repair, and service work to this product must be carried out by a suitably qualified person
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety
- Do not activate your gate unless it is in view and you can determine that its area of travel is clear of people, pets, or other obstructions
- **NO ONE MAY CROSS THE PATH OF A MOVING GATE —**
always keep people and objects away from the gate and its area of travel
- **NEVER LET CHILDREN OPERATE OR PLAY WITH THE GATE CONTROLS**
- Secure all easily-accessed gate opener controls in order to prevent unauthorised use of the gate
- Do not in any way modify the components of the automated system
- Do not install the equipment in an explosive atmosphere: the presence of flammable gases or fumes is a serious danger to safety
- Before attempting any work on the system, turn off electrical power to the operator and disconnect the batteries
- The Mains power supply of the automated system must be fitted with an all-pole switch with contact opening distance of 3mm or greater; use of a 5A hydraulic breaker with all-pole circuit break is recommended
- Make sure that an earth leakage circuit breaker with a threshold of 30mA is fitted upstream of the system
- Never short-circuit the Battery and do not attempt to recharge the batteries with power supply units other than that supplied with the product, or manufactured by Centurion Systems (Pty) Ltd

- Make sure that the earthing system is correctly constructed and that all metal parts of the system are suitably earthed
- Safety devices must be fitted to the installation to guard against mechanical movement risks such as crushing, dragging and shearing
- Always fit the warning signs visibly to the inside and outside of the gate
- The installer must explain and demonstrate the manual operation of the gate in case of an emergency and must hand over the User Guide/Warnings to the user
- The installer must explain these safety instructions to all persons authorised to use this gate, and be sure that they understand the hazards associated with automated gates
- Do not leave packing materials (plastic, polystyrene, etc.) within reach of children as such materials are potential sources of danger
- Dispose of all waste products like packing materials, worn-out batteries, etc., according to local regulations
- Always check the obstruction detection system, and safety devices for correct operation
- Neither Centurion Systems (Pty) Ltd, nor its subsidiaries, accepts any liability caused by improper use of the product, or for use other than that for which the automated system was intended
- This product was designed and built strictly for the use indicated in this documentation; any other use, not expressly indicated here, could compromise the service life/operation of the product and/or be a source of danger
- Everything not expressly specified in these instructions is not permitted

1.2. Safe Disposal of Batteries



ATTENTION!

- Do not incinerate
- Do not short the Battery terminals
- Do not charge in a gas tight container
- Do not open
- Recharge after use
- Flush with water at once if contact is made with electrolyte (acid)



WARNING! WARNING! WARNING! WARNING! WARNING!

**SAFETY
FIRST**



MOVING GATE CAN CAUSE SERIOUS INJURY OR DEATH!

**KEEP CLEAR! GATE MAY MOVE AT ANY TIME!
DO NOT ALLOW CHILDREN TO OPERATE THE GATE OR PLAY IN THE
NEAR VICINITY OF THE GATE.**

1.3. Lightning Protection

The electronic controller utilises the same proven surge protection philosophy that is used in all our products. While this does not guarantee that the unit will not be damaged in the event of a lightning strike or power surge, it greatly reduces the likelihood of such damage occurring. The earth return for the surge protection is provided via the mains power supply earth and/or earth spike located next to the operator.



In order to ensure that the surge protection is effective, it is essential that the unit is properly earthed.

1.4. Theft Protection

While care has been taken in the design of the **D5-EVO SMART** to prevent unauthorised removal (theft) of the unit, an optional steel theft-deterrent cage is also available for added peace of mind.



If a theft-deterrent cage is required, be sure to leave enough clearance from pillars, etc. (Section 7.1.2. - "Minimum Clearances").

2. Specifications

2.1. Physical Dimensions



FIGURE 1. D5-EVO SMART PHYSICAL DIMENSIONS

2.2. Technical Specifications

Input voltage¹	110V - 240V AC 50/60Hz ¹
Current consumption (mains)	320mA peak
Dx12V Battery charger current output	1.8A @ 14.3V +/- 5% (28W)
Maximum number of operations per day	150 ^{3,6}
Duty cycle - Mains present^{2,3}	50%
Motor power supply	Battery-driven (Standard Capacity - 1x12V)
Current consumption (motor at rated load)	15A
Input / Output sink currents (Max. accessory current draw)	
I/O 4 and I/O 5	100mA (12V)
O6	3A (12V) 10sec Pulse

TABLE 1



This equipment is compliant with the radiated emissions requirements of EN 55032 / CISPR 32 for Class B devices, which intends to offer adequate protection to broadcast services within the residential environment.

2.2. Technical Specifications Continued

Fuse Protection	Type	Rating
Main Control Card	Serviceable	35A
Aux. Supply	Resettable Fuse	12V 600mA (10sec Pulse)
Charger (Mains Supply)	Non-serviceable	3A slow-blow
Motor push force - starting	30kgf	
Motor push force - rated	17kgf	
Gate mass - maximum	500kg	
Gate length - maximum	20m	
Gate speed (varies with load)⁴	Maximum: Up to 24m/min Rated: Up to 19m/min	
Manual Override	Lockable with key release	
Operations whilst in Battery backup mode with 7.2Ah Battery	Operating Mode	
	Up to 24m/min 7kgf	Up to 18m/min 17kgf
	Half day ^{5,6,8}	90
Full day ^{5,6,8}	70	44
Collision Sensing	Electronic	
Operating temperature range	-15°C to +50°C	
Onboard receiver type	Code-hopping multichannel receiver with selective add and delete	
Receiver code storage capacity	1500 Remotes ⁷	
Receiver frequency	433.92MHz	
Degree of protection	IP55	
Mass of unit packed (with standard kit, but excl. Rack and Battery)	7.1kg	
Packaging dimensions (with standard kit, but excl. Rack and Battery)	325mm wide x 245mm deep x 395mm high	

TABLE 1 CONTINUED

1. Can operate off a solar supply, consult your local dealer for assistance
2. Based on 25°C ambient temperature and unit not in direct sunlight
3. Based on a motor push force of less than 50% of rated (Starting and Running forces)
4. Gate opening and closing speeds can be configured to run slower depending on the requirements of individual installations
5. Can increase Battery capacity for longer standby times
6. Based on 4m gate, excluding all accessories
7. Multiple buttons per remote can be used
8. Dependant on the type and condition of the Battery

3. Product Identification

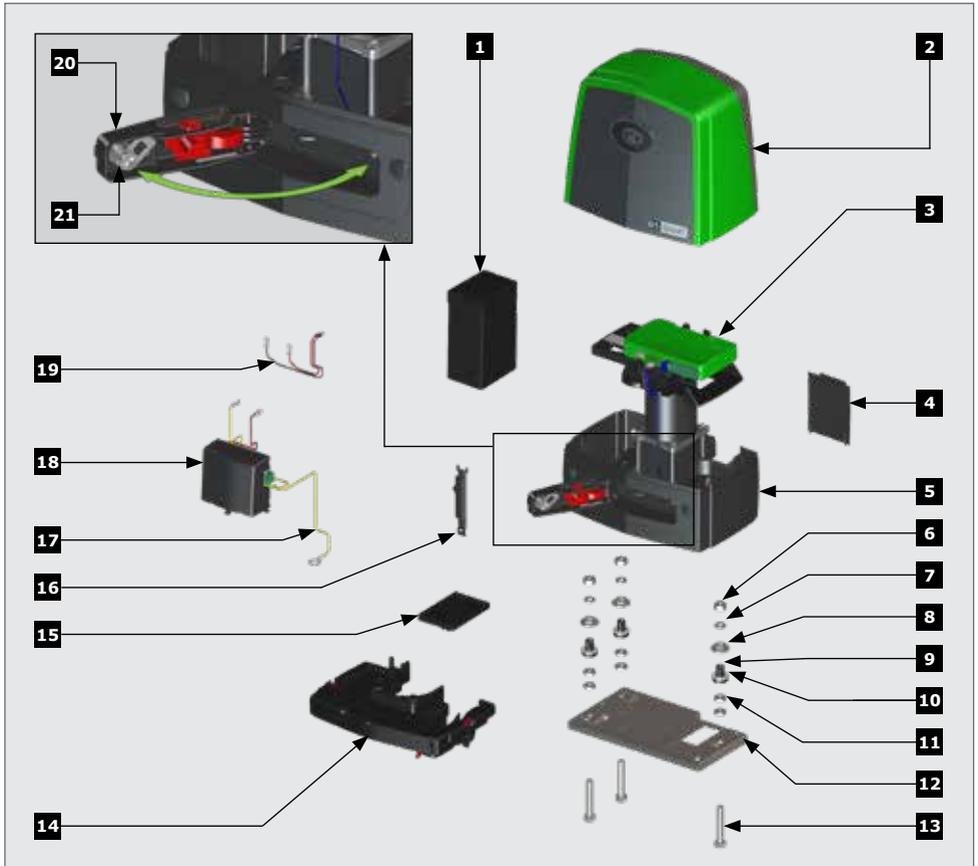


FIGURE 2. PRODUCT IDENTIFICATION

- | | |
|--------------------------------------|-----------------------------------|
| 1. 12V Battery ¹ | 12. Foundation Plate ² |
| 2. D5-EVO SMART Cover | 13. Mounting Bolt ² |
| 3. D5-EVO SMART Control Card | 14. Lower Battery Tray |
| 4. Cable Shield | 15. Cable Cover |
| 5. Gearbox | 16. Cable Trunking |
| 6. M10 Nut (17mm Socket) | 17. Earth Harness |
| 7. Spring Washer | 18. Switch-Mode 1.8A charger |
| 8. Top Height Adjuster (19mm Socket) | 19. Battery Harness |
| 9. Bottom Height Adjuster | 20. Release Handle |
| 10. Heavy Duty M12 Washer | 21. Camlock |
| 11. M10 Half-Nut | |

1. Battery is not supplied with the **D5-EVO SMART**. The **D5-EVO SMART** supports both 7Ah and 7.2Ah variants.

2. Foundation Plates not supplied with the **D5-EVO SMART**. Contact Centurion Systems (Pty) Ltd for more information.

4. Required Tools and Equipment



FIGURE 3. REQUIRED TOOLS AND EQUIPMENT

5. New Site Installation Preparation

5.1. General Considerations for the Installation

Always recommend the fitment of additional safety equipment such as safety edges and safety beams, for additional protection against entrapment or other mechanical risks.

Check that no pipes or electrical cables are in the way of the intended installation.

Check that enough space is available for the gate operator, specifically for the release handle (See Section 7.1.2. - "Minimum Clearances").

Check for loose, sandy soil if installing a foundation, as the soil condition may require a larger foundation.

Never fit the operator on the outside of the gate, where the public has access to it.

Install the gate operator only if:

- It will not pose a hazard to the public
- There is sufficient clearance to a roadway and/or public thoroughfares
- The installation meets all municipal and/or local authority requirements once completed
- The gate mass and application are within the operator specifications
- The gate is in good working order, meaning:
 - that it opens and closes freely;
 - does not move on its own if left in any position;
 - it can be installed to have sufficient clearance between moving parts when opening and closing to reduce the risk of personal injury and entrapment;
- Pushbuttons or key-switches, when required, can be positioned so that the gate is in line-of-sight of the user

5.2. Endstops

Fit opening and closing endstops capable of stopping the gate at rated speed. Refer to the specifications at the beginning of this manual for the operating speed.

Make $H1 > H2$ to ensure gate will not jump over the endstop.

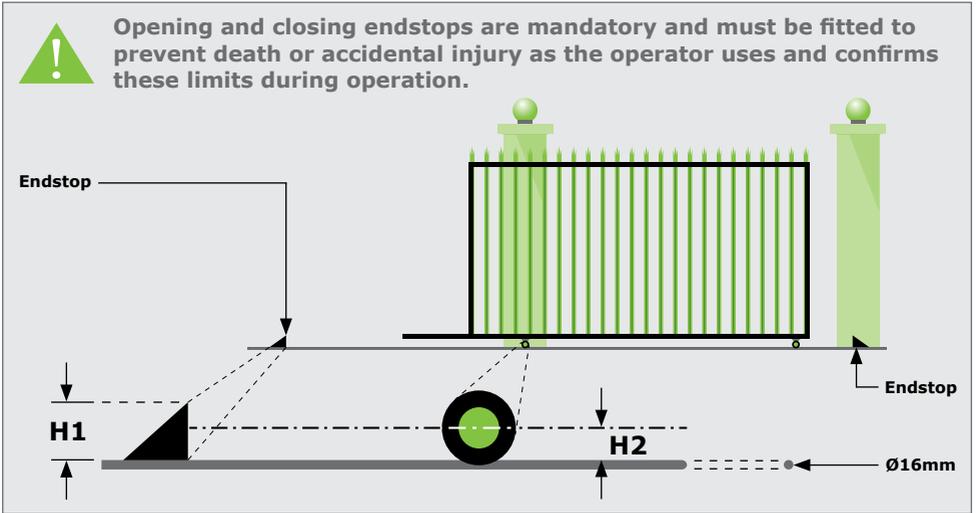


FIGURE 4. FITTING ENDSTOPS

5.3. Guide-rollers and Anti-lift Brackets

Guide-rollers must be installed to ensure that the gate is held vertical. For improved safety, fit additional support posts to prevent the gate from falling over should the guide-rollers fail.

To prevent unauthorised access, fit anti-lift Brackets as shown.

The gap between the anti-lift Bracket and the gate must be less than 5mm.



Ensure that the gate cannot be lifted off the motor Pinion with the anti-lift Bracket fitted.

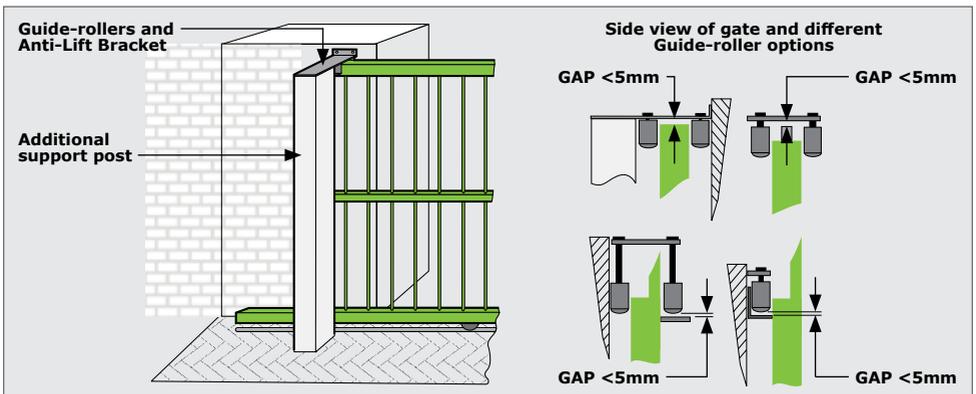


FIGURE 5. FITTING GUIDE-ROLLERS

5.4. Starting and Running Forces

Test the starting force of the gate as per the diagram. Use a pull scale in both directions to determine the maximum amount of pull force required to set the gate in motion.

Determine the running force of the gate by continuing to pull on the scale with just sufficient force to keep it running.

Read and note the maximum value in kgf (kilogram-force) shown on the scale.

Where possible, determine the gate mass.

Our warranty will be void if the pull force and / or gate mass exceeds the below operator specifications:

- Starting force - 30kgf
- Running (rated) force - 17kgf
- Maximum gate mass - 500kg

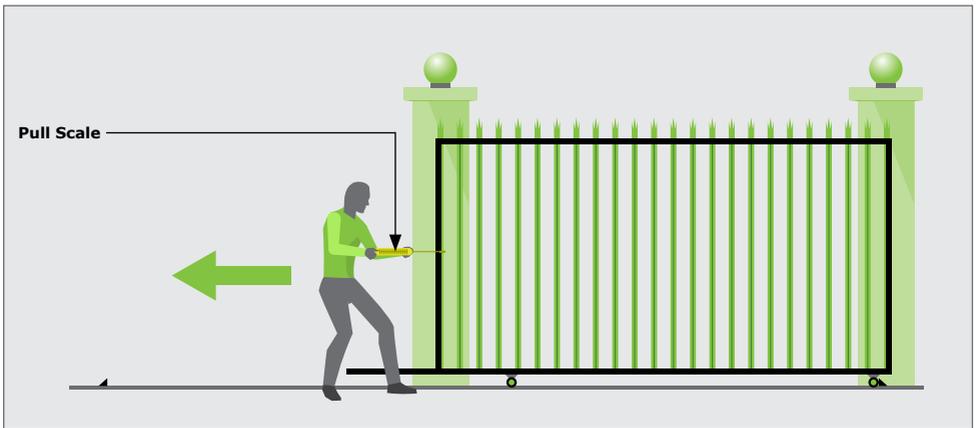


FIGURE 6. STARTING AND RUNNING FORCES

5.5. Cabling Requirements

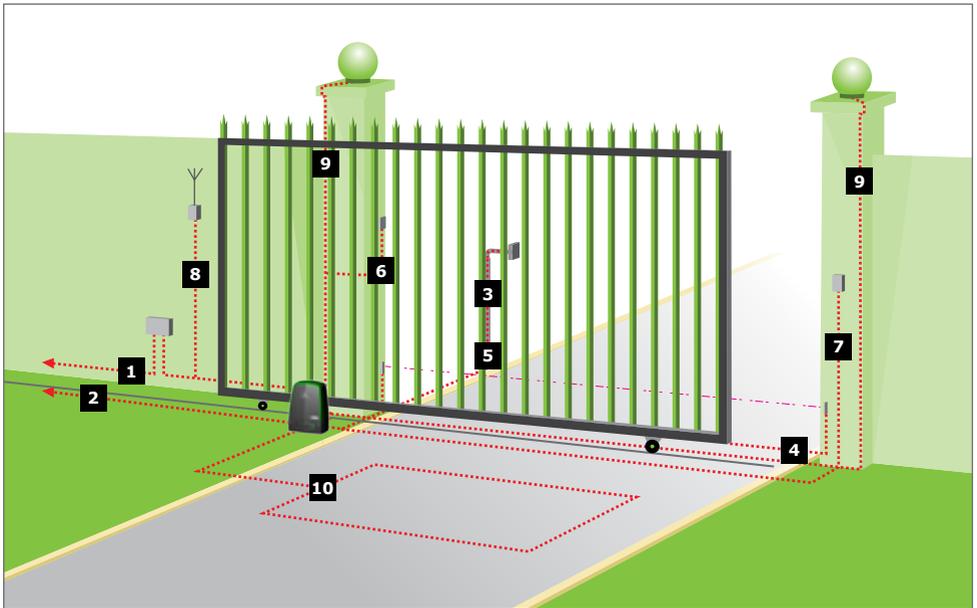


FIGURE 7. CABLING REQUIREMENTS

Legend

1. **MAINS SUPPLY CABLE:** 90V - 240V AC mains cable via double-pole mains isolator-switch (3 core L.N.E. 1.5mm² SWA)^{1,2}
2. Optional **intercom** cable from motor to dwelling (n1 + 6 core³ 0.22mm² multi-strand shielded cable)
3. Optional **intercom** cable from motor to entry panel (n2 0.22mm² multi-strand shielded cable)
4. Optional but recommended **infrared safety beams** (3 core 0.22mm² multi-stranded)⁴
5. Optional **access control device** (3 core 0.22mm² multi-stranded)
6. Optional **pedestrian key-switch** (2 core 0.22mm² multi-stranded) OR
7. Optional **keypad** (3 core 0.22mm² multi-stranded)⁴
8. Optional **external radio receiver** (3 core 0.22mm² multi-stranded)⁵
9. Optional **pillar lights** (3 core LNE SWA, size according to power requirements)⁶
10. Optional **ground loop for free-exit** (1 core 0.5mm² multi-stranded – silicone coated)⁷

n1 means the number of cores required by an intercom

n2 means the number of cores required by an intercom

1. Possibly increase cable thickness if pillar lights are installed.

2. Type of cable must adhere to municipal bylaws but typically SWA (steel wire armoured) cable is recommended.

The armouring provides excellent screening, which gives better protection against lightning – earth one end of the screening).

3. Allows for all features such as pedestrian opening, status LED, etc., to be operated from the intercom handset inside the dwelling.

Number of cores and type of cable could vary depending on brand of access control system being used.

4. Wireless accessories are available. Please refer to www.centsys.com for further information.

5. For optimum range, an external receiver can be mounted on the wall.

6. Requires an external relay

7. Consult manufacturer of loop detector for specific details.

6. Lubrication

The internal gearset of the **D5-EVO SMART** is lubricated by means of an oil bath.



The D5-EVO SMART is supplied with oil in its Gearbox and does not require routine oil changes.

7. OPERATOR INSTALLATION

7.1. New Site Installations



When installing the **D5-EVO SMART**, it is important to take note of the information found in Sections 7.1.1. and 7.1.2. when determining the position of the Foundation Plate, and the height of the **D5-EVO SMART** in relation to the gate that is to be automated.

7.1.1. Locating an Initial Reference Point

Firstly, it is necessary to establish a reference point. To do this, manually open and close the gate so that it moves past a stationary point (i.e. a vertical spike), and determine which part of the gate (including its wheels) protrudes the furthest towards where the **D5-EVO SMART** will be installed. Refer to the examples shown below.



Check for wheels, palisade, uprights, etc. that could potentially collide with the Pinion.

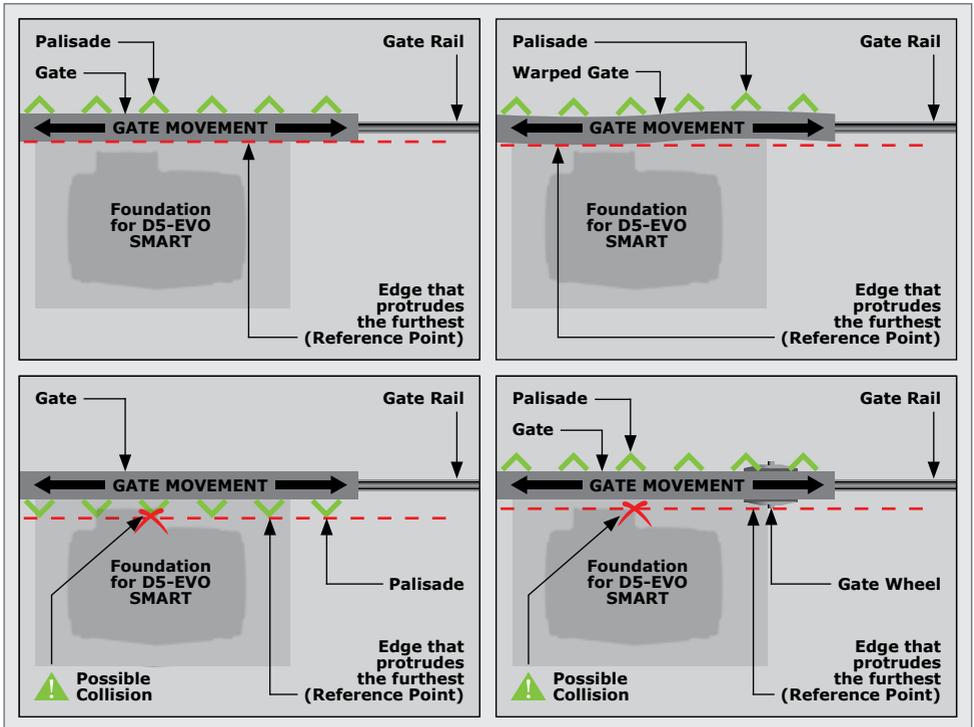


FIGURE 8. FINDING A REFERENCE POINT



Once the point which protrudes the furthest has been found, this will be the reference point to be used when finding the optimum position for the **D5-EVO SMART**.

7.1.2. Minimum Clearances

Below are site plan examples illustrating the minimum clearances required when installing the **D5-EVO SMART**.

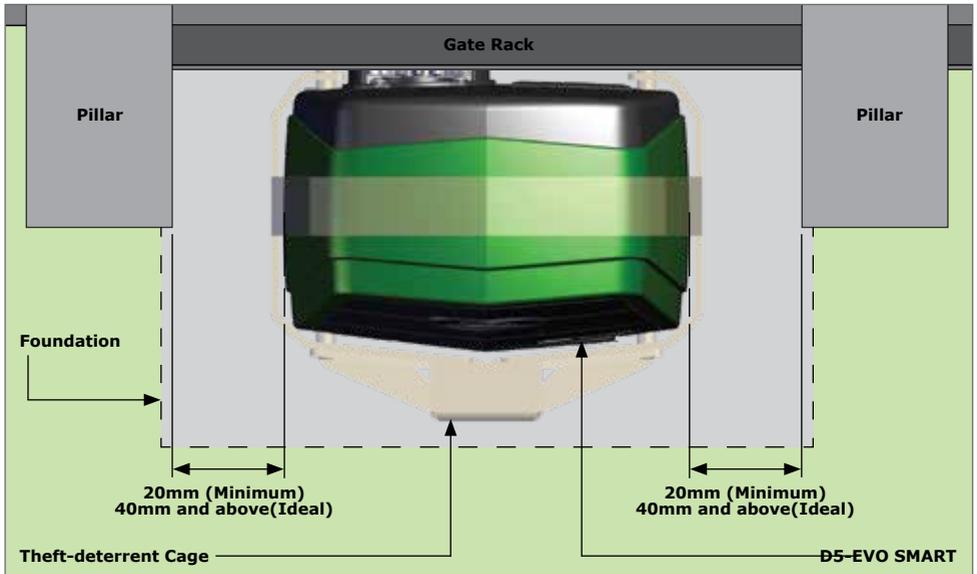


FIGURE 9. MINIMUM CLEARANCES - SIDES

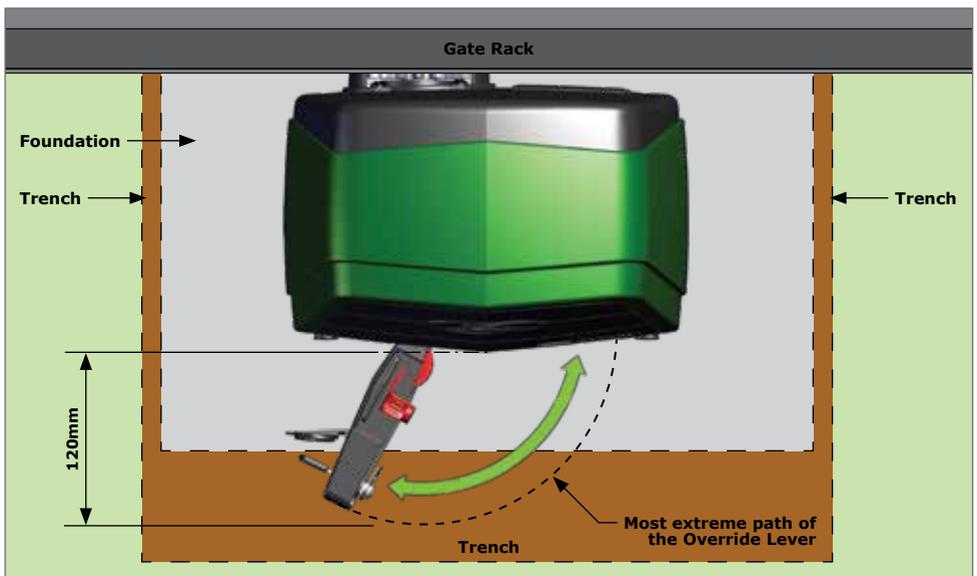


FIGURE 10. MINIMUM CLEARANCES - FRONT

7.1.3. Locating the Operator's Position

To ensure that the operator does not protrude into the driveway, install the base plate at least flush with the driveway entrance.

It is typical to mount the Rack above the Pinion as shown in Figures 11, 13 and 15 for each type of Rack considered. However, in each case, Figures 12, 14 and 16 show the Rack mounted underneath.

If there is space to mount the Rack underneath without fouling the ground as the gate moves, the following are the pros and cons:

Pros

- The Rack is more hidden from view
- It provides a very effective anti-lift Bracket
- It ensures that, since the gate beds in, the Rack does not drop onto the Pinion, loading the operator unnecessarily

Cons

- Rack teeth face up vertically, potentially collecting dirt
- Could require the use of a custom Bracket

The measurements given below are based on the three different Racks supplied by Centurion Systems (Pty) Ltd and are to be used as guidelines only.

Steel Rack

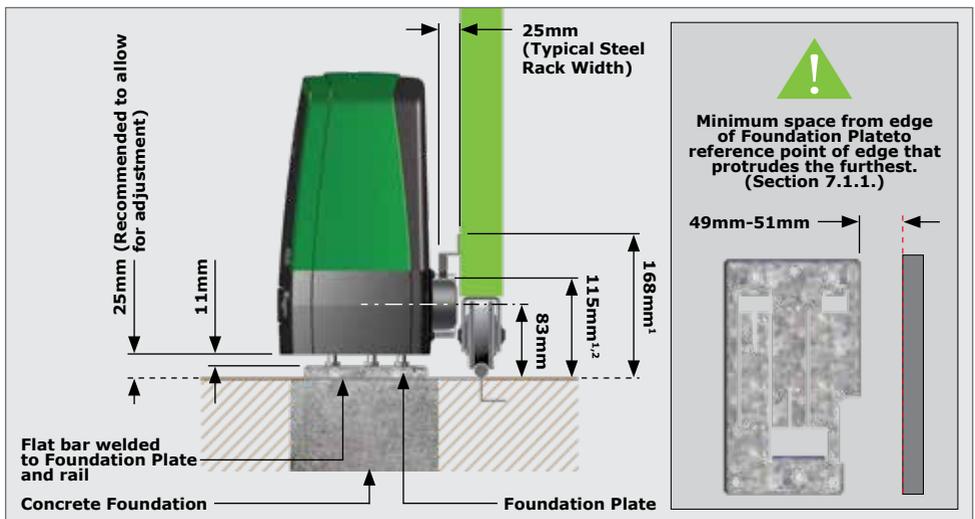


FIGURE 11. STEEL RACK ABOVE PINION

1. Includes 3mm clearance required between Rack and Pinion
2. Distance between bottom of the Foundation Plate and bottom edge of the Rack Tooth

The principles of installation on a Steel Rack is to position in the middle of the output Pinion with the operator fully forward on the slots.

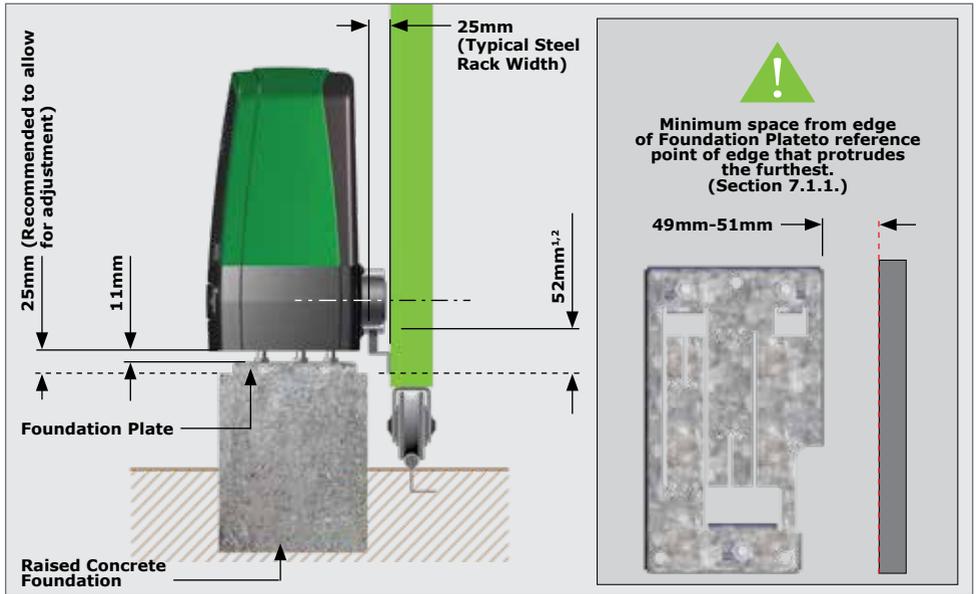


FIGURE 12. STEEL RACK BELOW PINION

1. Includes 3mm clearance required between Rack and Pinion
2. Distance between bottom of the Foundation Plate and top edge of the Rack Tooth



The principles of installation on a Steel Rack is to position in the middle of the output Pinion with the operator fully forward on the slots.

RAZ Rack

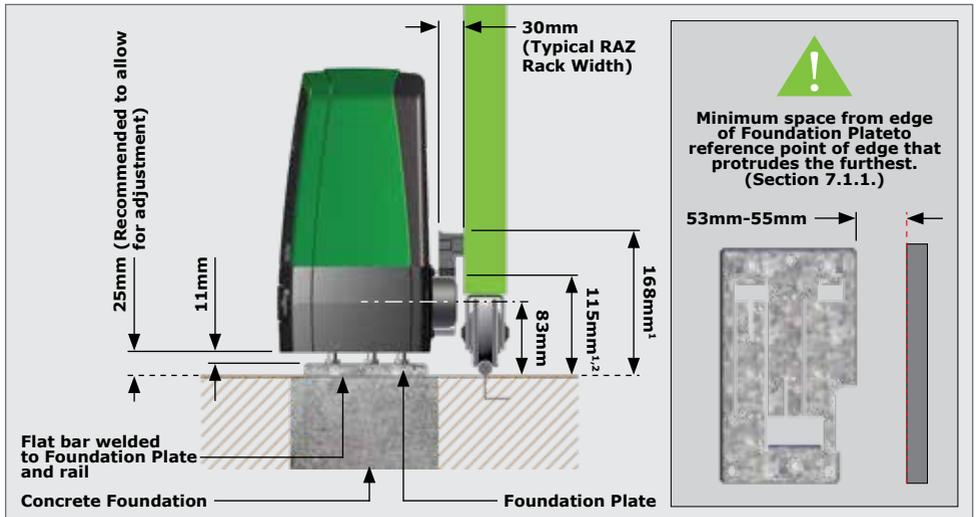


FIGURE 13. RAZ RACK ABOVE PINION

1. Includes 3mm clearance required between Rack and Pinion
2. Distance between bottom of the Foundation Plate and bottom edge of the Rack Tooth



The principles of installation on a RAZ Rack is to position in the middle of the output Pinion with the operator fully forward on the slots.

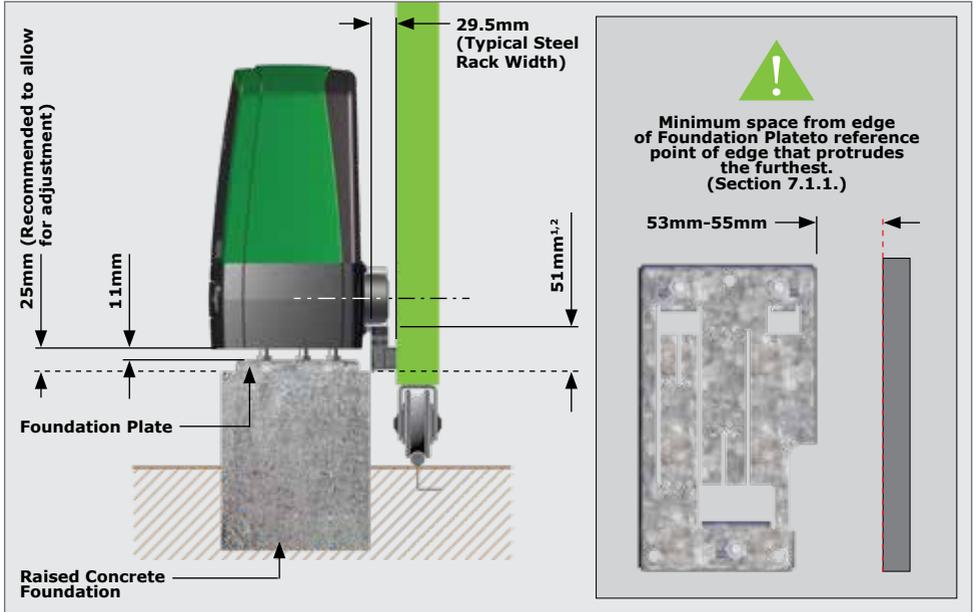


FIGURE 14. RAZ RACK BELOW PINION

1. Includes 3mm clearance required between Rack and Pinion
2. Distance between bottom of the Foundation Plate and top edge of the Rack Tooth



The principles of installation on a RAZ Rack is to position in the middle of the output Pinion with the operator fully forward on the slots.

Nylon Angle Rack



If using nylon angle Rack, please ensure that the weight and pull force of the gate do not exceed the strength limit of the Rack.

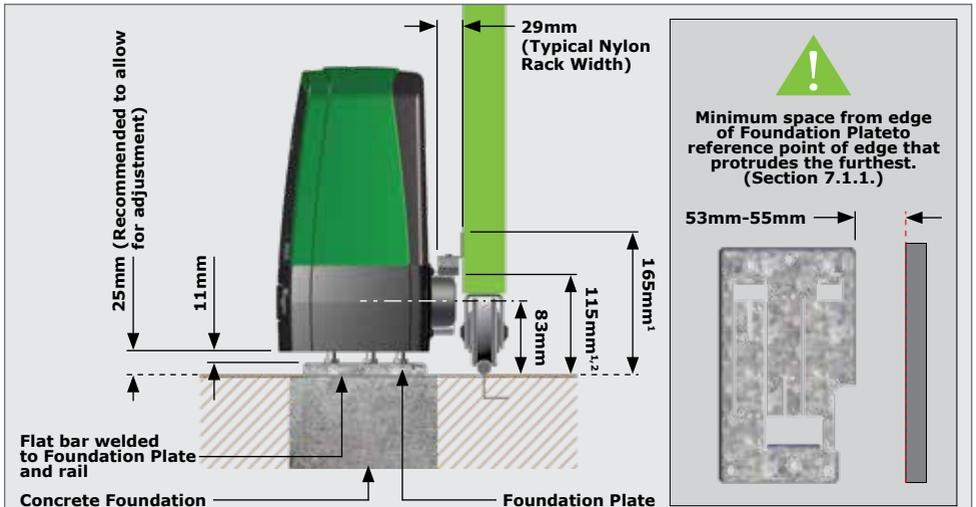


FIGURE 15. NYLON RACK ABOVE PINION

1. Includes 3mm clearance required between Rack and Pinion
2. Distance between bottom of the Foundation Plate and bottom edge of the Rack Tooth



The principles of installation on a Nylon Rack is to position in the middle of the output Pinion with the operator fully forward on the slots.

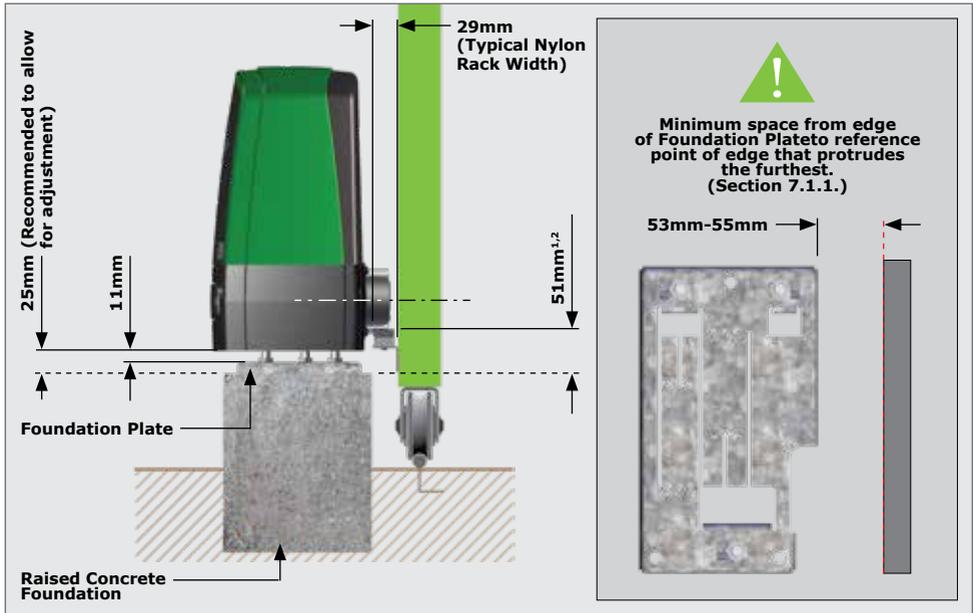


FIGURE 16. NYLON RACK BELOW PINION

1. Includes 3mm clearance required between Rack and Pinion
2. Distance between bottom of the Foundation Plate and top edge of the Rack Tooth



The principles of installation on a RAZ Rack is to position in the middle of the output Pinion with the operator fully forward on the slots.

7.1.4. Foundation Plate Installation

7.1.4.1. Assembling the Foundation Plate



The Foundation Plate/ Adaptor Plate is not supplied with this operator

Place the three mounting bolts through the holes of the Foundation Plate and secure them into position using three half-nuts. The M10 half-nuts should be tightened to 20Nm.



The Foundation Plate can either be set into a new concrete foundation, as in Section 7.1.4.2, or bolted down onto an existing concrete plinth as in Section 7.1.4.3.

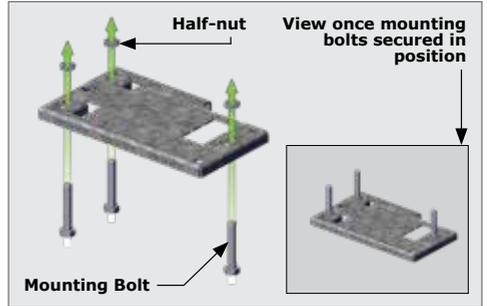


FIGURE 17

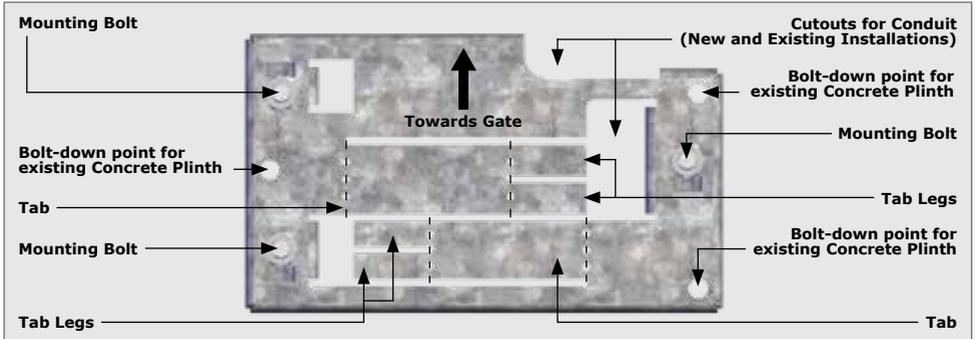


FIGURE 18. ASSEMBLED FOUNDATION PLATE- TOP VIEW

7.1.4.2. New Concrete Foundation

Using a pair of pliers, gently bend the two tabs of the Foundation Plate down to a 90° angle as shown in Figure 19.

Again, using a pair of pliers, gently bend the two legs on each tab to an angle of 90° in opposite directions as shown in Figure 20.

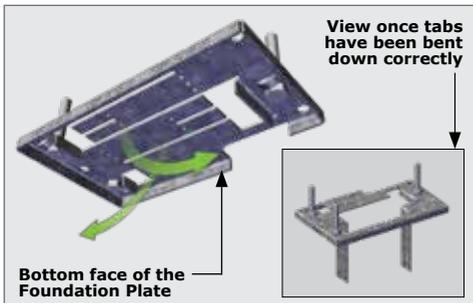


FIGURE 19

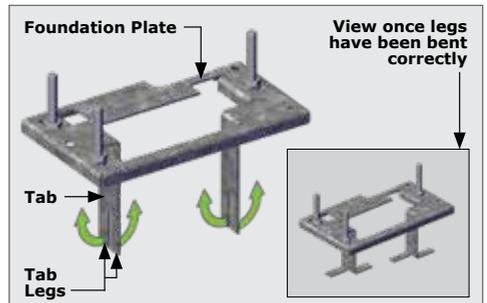


FIGURE 20



Lay the cabling conduit so that it routes the cables to the back of the Foundation Plate. Ensure that 30mm of conduit protrudes above the concrete.

Using medium-strength concrete (25MPa), cast the plinth according to the dimensions as shown in Figure 21.

When using a concrete foundation, it is recommended that the Foundation Plate is welded to the rail/tTrack of the gate using a short length of flat bar, as shown in Figure 22. This makes it possible to complete the whole mechanical and electrical installation without having to wait for the concrete to set. After completing the installation, the concrete can be poured and the operator left in manual mode until the concrete has set. Do not operate the motor until concrete has completely set.



7.1.4.3. Existing Concrete Plinth

If bolting onto an existing concrete plinth, place the Foundation Plate down in the correct position and use the plate as a template for marking the rawl bolt holes.



Check that the M10 half-nuts are tightened to 20Nm on the mounting bolts.



Rerouting of existing cables may be necessary.

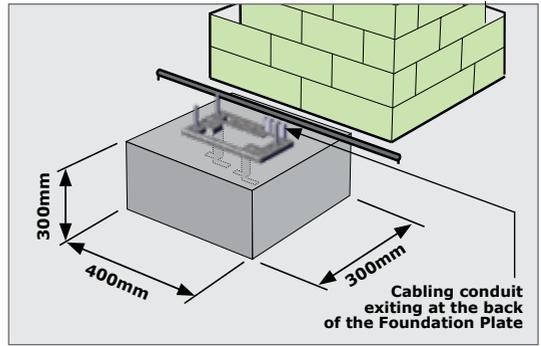


FIGURE 21

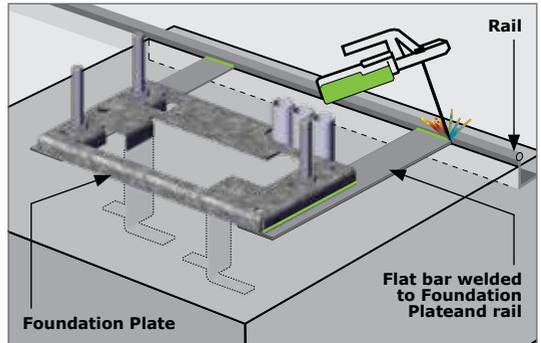


FIGURE 22

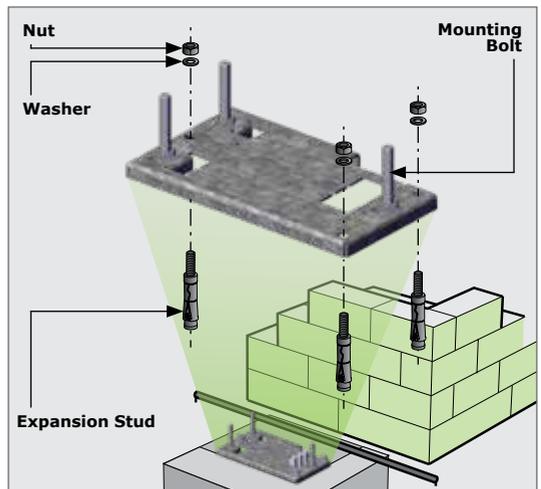


FIGURE 23

7.2. Retro-fit Installations (Existing Sites)

The **D5-EVO SMART** has been designed to retro-fit into most existing D3, D5, or D5-Evo installations, with the following provisions;

- If the unit is installed with the gate in the closed position and the unit on the left-hand side (from the inside of the property), the Rack should extend at least 75mm past the centre line of the existing Pinion
- If the existing unit is mounted with the maximum clearance to the foundation plate, the new unit will require that the Rack be re-adjusted to obtain the correct mesh between the Rack and Pinion, as the existing bolts will be too short

If the existing Foundation Plate is in a good condition, it is not necessary to replace it with the **D5-EVO SMART** Foundation Plate. However, if the existing Foundation Plate is corroded or needs to be replaced for whatever reason, the **D5-EVO SMART** Foundation Plate can accommodate the existing footprint without the need to re-route cable conduits.

7.2.1. Retro-fitting if the Existing Foundation Plate is Unusable

Thoroughly inspect the existing Foundation Plate to determine whether or not it is fit to be reused. A Foundation Plate that is corroded or otherwise damaged should be discarded and replaced with the **D5-EVO SMART** Foundation Plate.

Follow the procedure found under Section 7.1.4.2. - "Existing Concrete Plinth".



There is an allocated slot for existing conduit from previous D3, D5, and D5-Evo installations as shown in Figure 24.

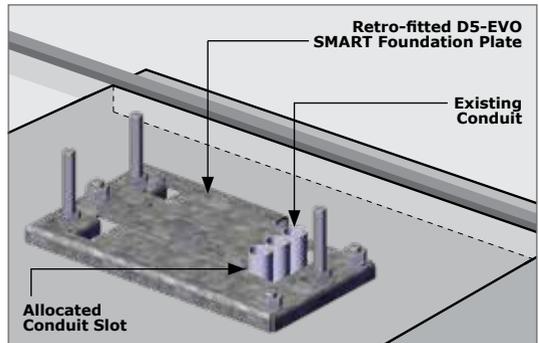


FIGURE 24

7.3. Conduit and Cable Length

Route the cables as determined in Section 5.5 - "Cabling Requirements".

Make sure that the conduits protrude above the concrete foundation. The mains cables should protrude 360mm above the concrete foundation, and all signal cables (i.e. beams, etc.) 550mm above the concrete foundation, as shown in Figure 25.

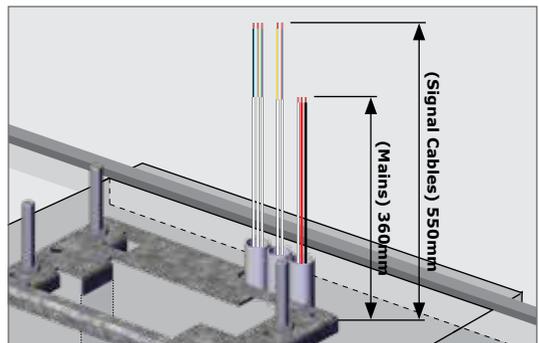


FIGURE 25

7.4. Preparing the D5-EVO SMART for Installation

Open the Camlock Cover, and insert the Operator Key into the Camlock. Unlock it by turning the key anti-clockwise.



There is no need to open the Release Handle to remove the cover of the **D5-EVO SMART**.

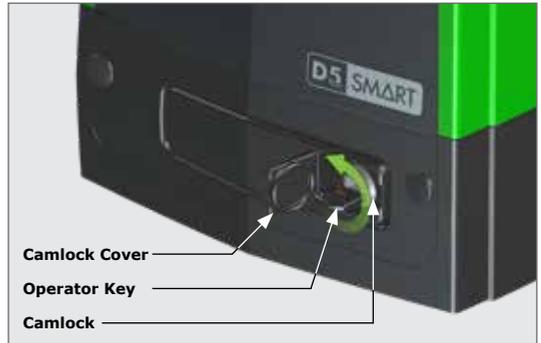
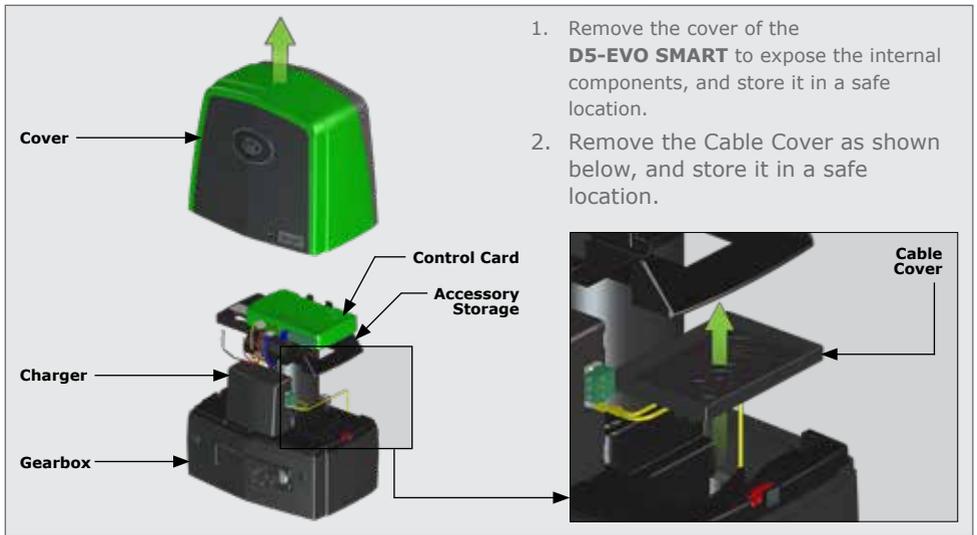


FIGURE 26



1. Remove the cover of the **D5-EVO SMART** to expose the internal components, and store it in a safe location.
2. Remove the Cable Cover as shown below, and store it in a safe location.

FIGURE 27

7.4.1. Removing the Charger

Disconnect the Charger from the **D5-EVO SMART** Control Card at Point "A".

Disconnect the Earth Harness from the Charger at Point "B", and store it in a safe place.

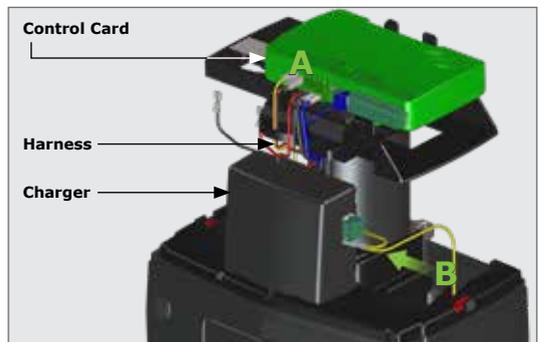


FIGURE 28

Remove the Charger from the Lower Battery Tray by gently pushing the Charger slightly down whilst pulling it towards the front of the **D5-EVO SMART**. It should slide forward and off with ease.

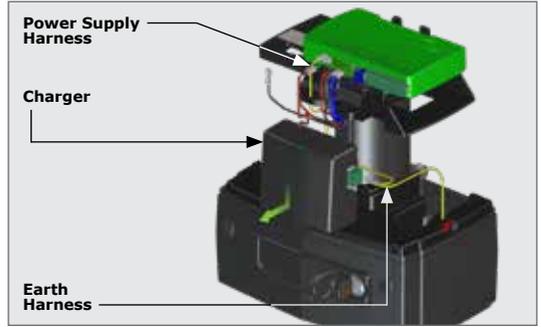


FIGURE 29

7.4.2. Removing the Lower Battery Tray

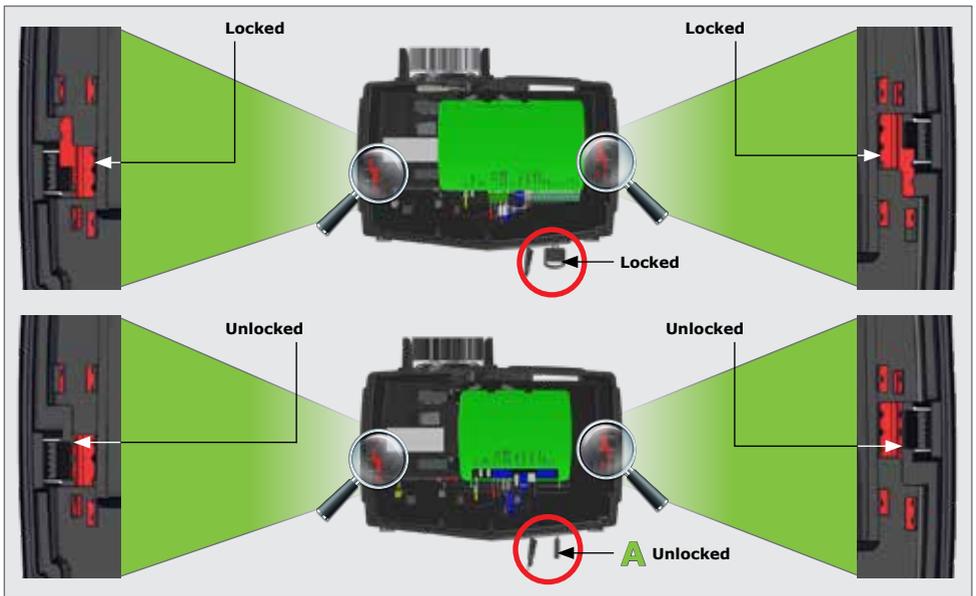


FIGURE 30

To remove the Lower Battery Tray, firstly ensure that the Camlock is in the "unlocked" position (Figure 30 marked as "A"). Open the release handle until the Camlock Cam is visible.

Using a flat screwdriver, lever the left and right Tabs inward, lift the Lower Battery Tray up, and then out towards the front of the **D5-EVO SMART**.

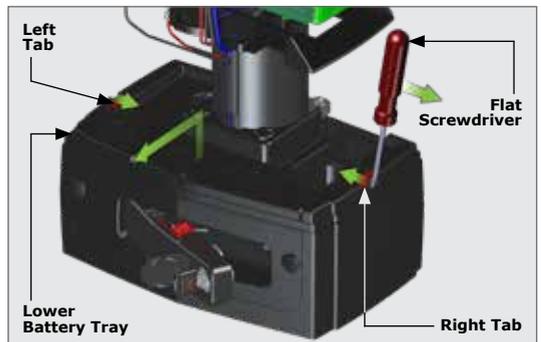


FIGURE 31

7.4.3. Removing the Control Card

Disconnect the Battery Harness at Point "D", the Motor Wires at Point "E" and the Override Sensor Harness at Point "E" from the Control Card as Shown in Figure 32. Store the Battery Harness in a safe location.

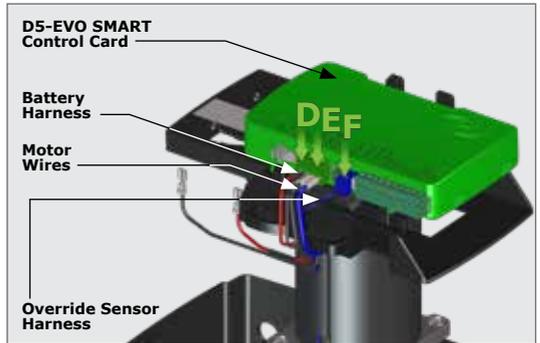


FIGURE 32

Remove the Control Card by pushing the right tab behind the Control Card backwards.

This will allow the Control Card to hinge forward.

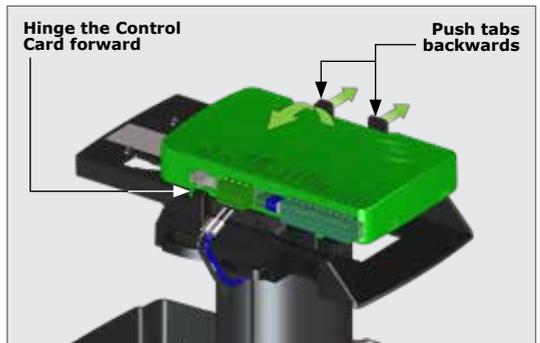


FIGURE 33

Lift the Control Card upwards and away from the **D5-EVO SMART**, which will unhinge it from the hinge tabs found on the sides of the Control Card.



Take care not to snag the remaining harnesses in the harness retainers when removing the Control Card from the platform.

Store the Control Card in a safe place.

The **D5-EVO SMART** is now ready to be mounted onto the foundation plate.

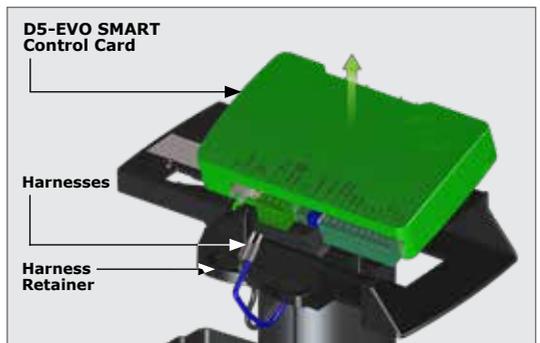


FIGURE 34

7.5. Mounting the Gearbox

For a new site installation, place a Half-nut and a Bottom Height Adjuster onto each Mounting Bolt as shown in Figure 35.



Note the orientation of the Bottom Height Adjusters.

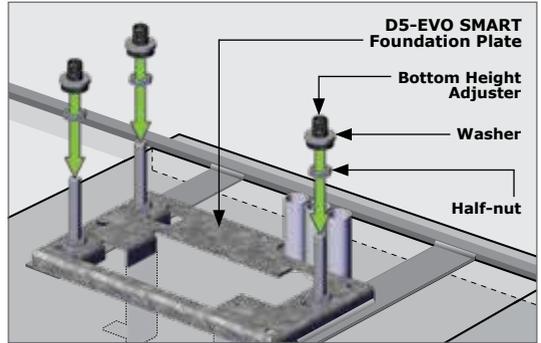


FIGURE 35

Adjust the Half-nuts to be 12mm clear from the Foundation Plate.

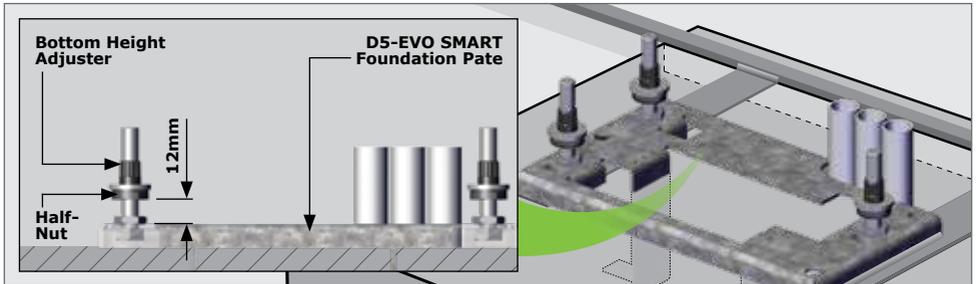


FIGURE 36

For a retro-fit installation, remove the original washers and height-adjustment nuts from the existing Foundation Plate and then place a Half-nut and a Bottom Height Adjuster onto each existing Mounting Bolt, as shown in Figure 37.



Note the orientation of the Bottom Height Adjusters.

If the existing unit was mounted with the maximum clearance to the foundation plate, the new unit will require that the Rack be re-adjusted to obtain the correct mesh between the Rack and Pinion.

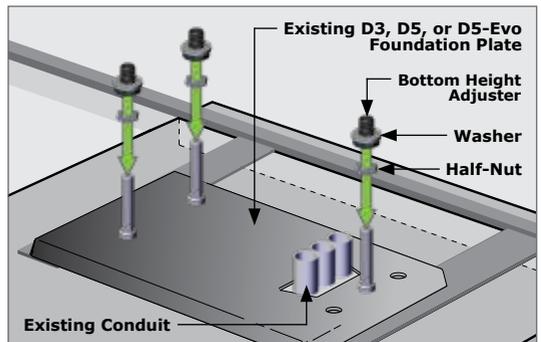


FIGURE 37

Removing the Cable Shield

The Cable Shield needs to be removed before mounting the **D5-EVO SMART** onto its Foundation Plate. This is done by levering the bottom end of the cable shield away from the motor until it unclips from the Gearbox, and then slide it up.

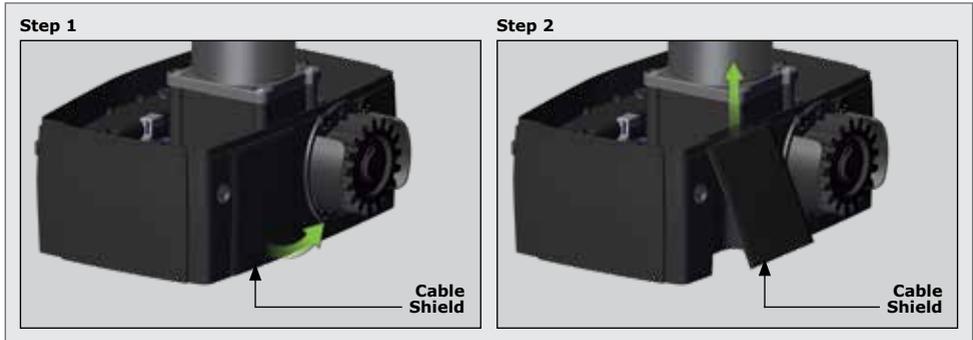


FIGURE 38

Once the Cable Shield has been removed, place the **D5-EVO SMART** into position over the three Mounting Bolts, aligning them with the three slots at the bottom of the Gearbox and rest the **D5-EVO SMART** onto the Bottom Height Adjusters.

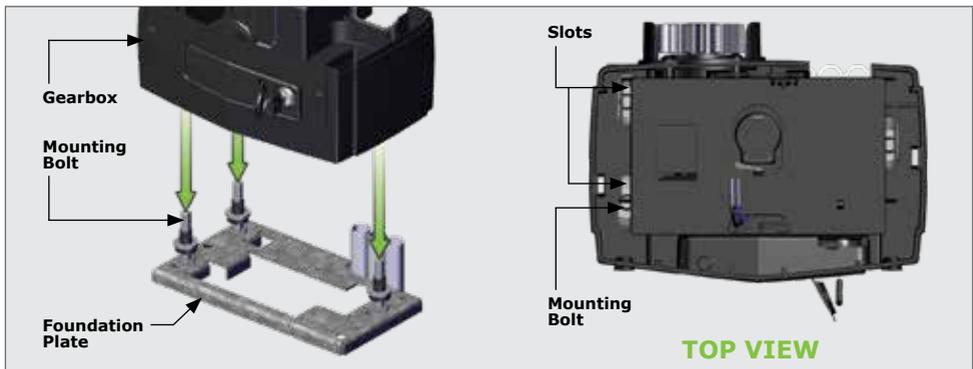


FIGURE 39

Once the Gearbox is resting on top of the Bottom Height Adjusters, slide the **D5-EVO SMART** as far as possible towards the gate to allow for later adjustment.

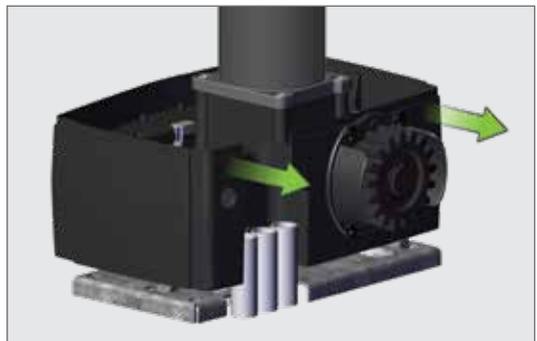


FIGURE 40

7.6. Routing the Cables

Route cables as determined in Section 5.5 - "Cabling Requirements".

POINT A is the entry point for cables with the conduit installed at the back of the unit for new installations as shown in Figure 42.

Although POINT B is the entry point for cables with the conduit from existing D3, D5 and D5-Evo installations, it is recommended to route the cable under the Gearbox and out the back through Point A as shown in Figure 43.

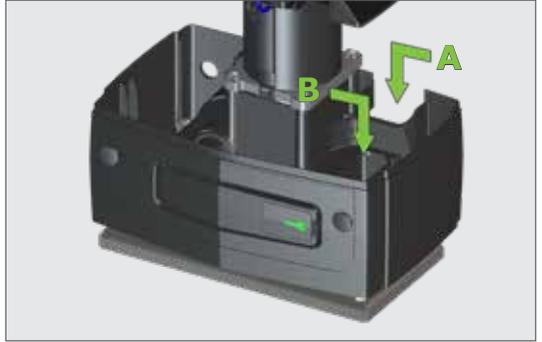


FIGURE 41

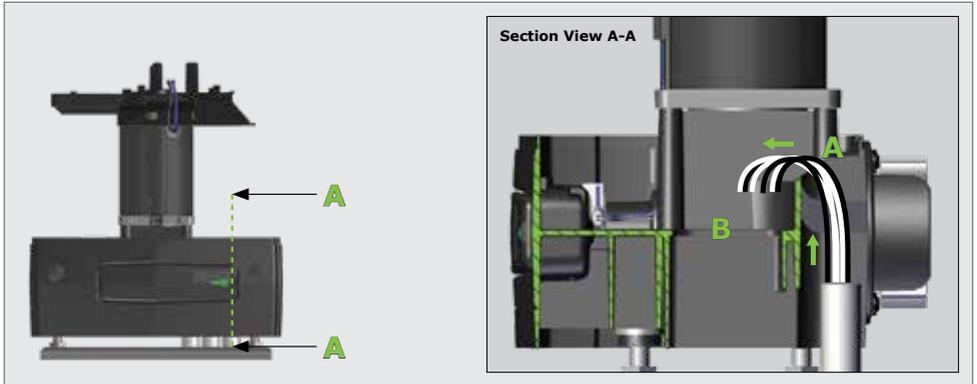


FIGURE 42. CABLE ROUTING FOR NEW INSTALLATIONS

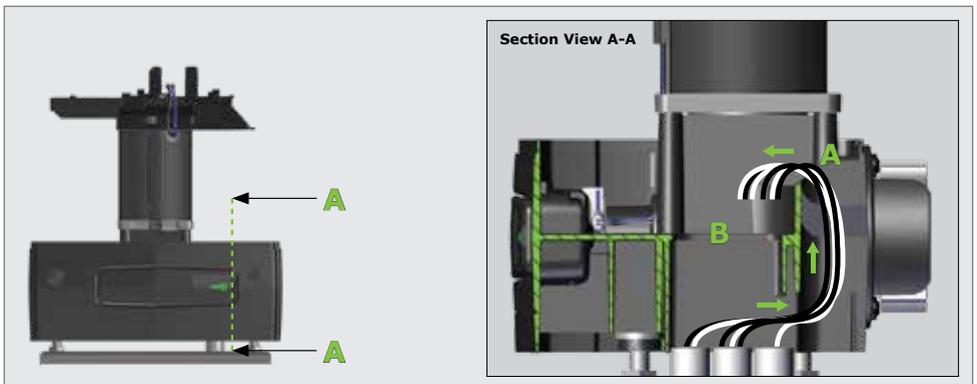


FIGURE 43. CABLE ROUTING FOR RETRO-FITS WITH LONGER CABLES



The method shown in Figure 43 above, is recommended for retro-fit installations, as it is easier to remove the motor should it be necessary to do so at a later stage. However, cable lengthening may be required.



Should the existing cables for a retro-fit installation be too short to route through "Point A" as shown in Figure 43 on the previous page, they can be routed directly through "Point B" to accommodate the shorter length. Note that routing the cables through "Point B" as shown in Figure 44, may make it more challenging to remove the **D5-EVO SMART** for whatever reason at a later stage.

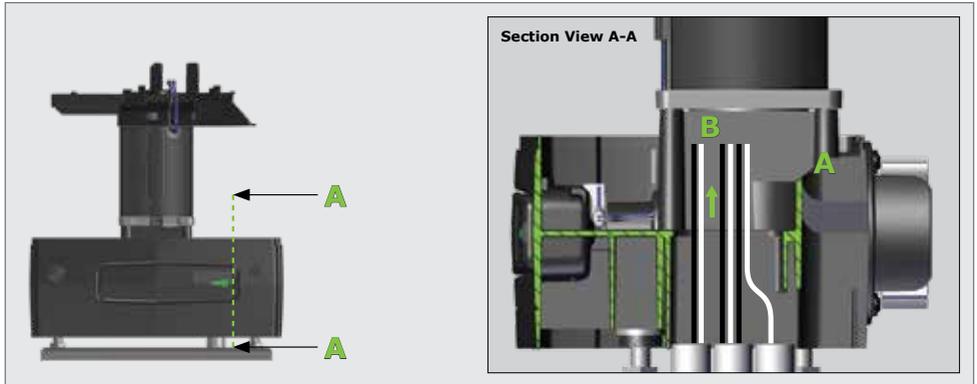


FIGURE 44. CABLE ROUTING FOR RETRO-FITS WITH SHORTER CABLES

Replacing the Cable Shield onto the Gearbox

Tilt the top of the Cable Shield towards the Gearbox, and slide it down so that the top of the Cable Shield is flush with the top edge of the Gearbox.



FIGURE 45

From the other side of the gate, firmly push the bottom sides of the Cable Shield inward, towards the Gearbox.

Two clicks will be heard (one from each side of the Cable Shield) if the Cable Shield has engaged with the Gearbox correctly.

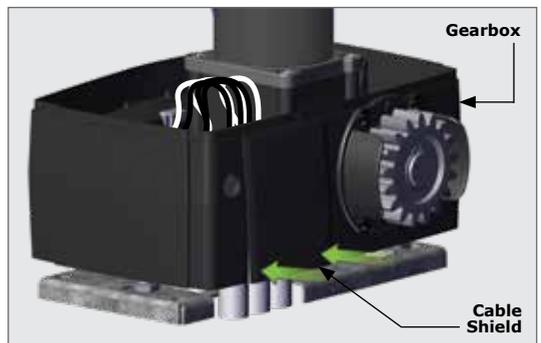


FIGURE 46

7.7. Manual Override



Before mounting the Rack to the gate, ensure that the D5-EVO SMART is in Manual Override. Follow the instructions below.

To disengage (Manual Override) the motor, ensure that the Camlock is in the "unlocked" position, and pull the Release Handle as far left as it will go. The Motor will then be placed in a temporary state of disengagement.

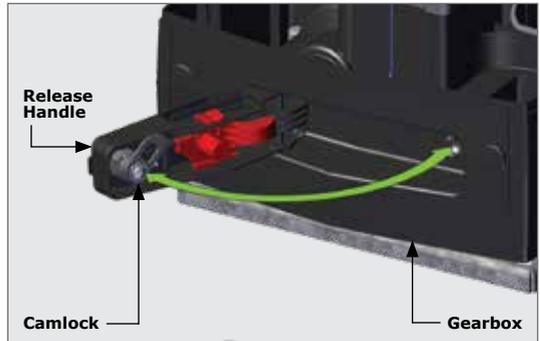


FIGURE 47

Manual Override Latching

In the event of a power failure, it may be required to lock the cover in place whilst "latching" the Manual Release (i.e. Manual Release permanently enabled).

This helps prevent theft of the unit, or its components, and provides full protection from the elements.

With the Release Handle in the open position, slide the Override Cam located on the inside of the handle towards the Gearbox, and a "click" can be heard once it has located correctly. Return the handle to the closed, or locked, position. This allows continued manual operation of the gate while ensuring that the cover remains securely locked in place. See Figure 48.

To re-engage the **D5-EVO SMART** (i.e. take the operator out of latched Manual Override), push the Release Handle Override Cam to the left and then slide it towards the Camlock. See Figure 49.

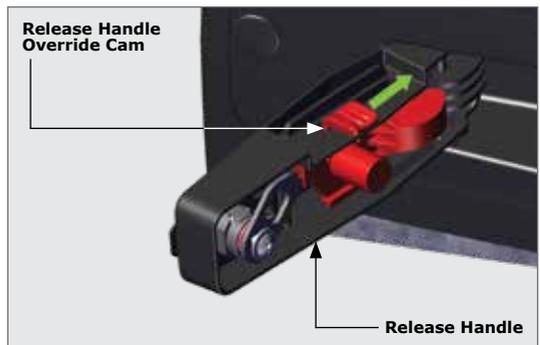


FIGURE 48

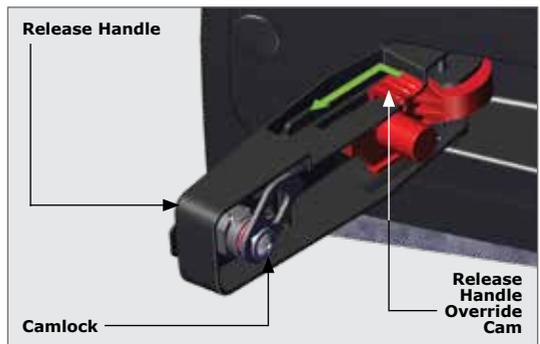


FIGURE 49

7.8. Height Adjustment

The **D5-EVO SMART**'s unique Height Adjustment System adjusts from the top of the Gearbox. This adds further security to the system, as it is not possible to access the lock nuts from the outside of the Gearbox.

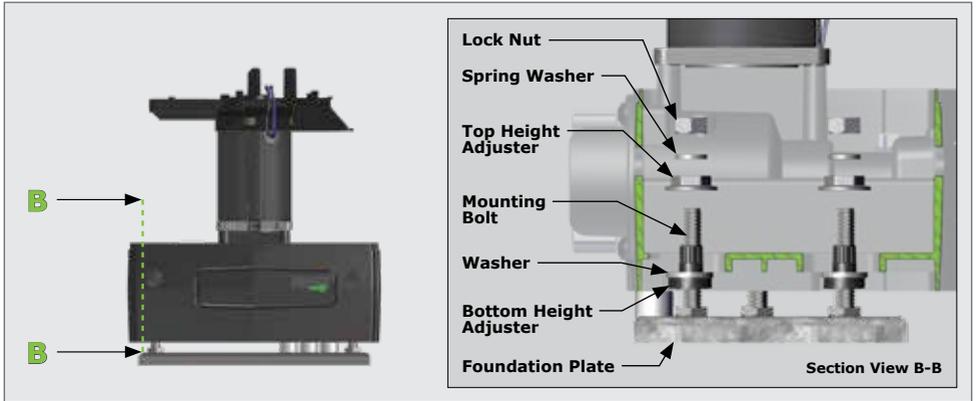


FIGURE 50



Only add the Spring Washers and Lock Nuts once the Rack has been installed and the operator height is correct. See Section 7.9.2. - "Finalising the Height Adjustment".

Place a Top Height Adjuster onto each Mounting Bolt so that it engages with the teeth on the Bottom Height Adjuster.



Note the orientation of the Top Height Adjuster as shown in Figure 50 and 51.

Using a ratchet and a 19mm socket, turn the Top Height Adjuster anti-clockwise to lift the Operator, or turn it clockwise, to lower the Operator.

Using a spirit level, ensure that the Operator is level. If not, use the Height Adjusters to level the Operator.

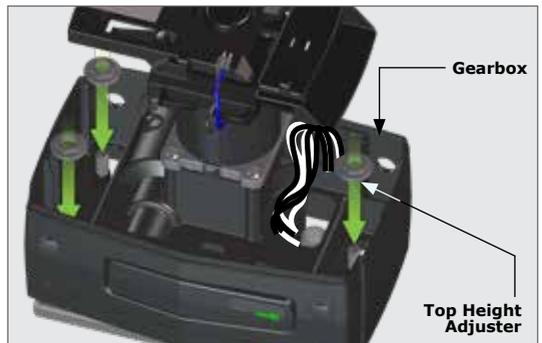


FIGURE 51

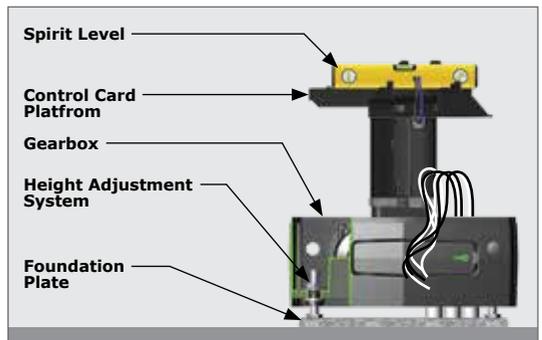


FIGURE 52

7.9. Mounting the Rack



The Rack must be securely mounted to the side of the gate. It must be parallel with the gate rail, and there must be a 2-3mm gap between the Rack teeth and the teeth of the Pinion.

Before mounting the Rack, raise the operator an additional 3mm.

Ensure that the **D5-EVO SMART** Gearbox is in Manual Override. Refer back to Section 7.7 - "Manual Override".

Start with the gate either fully-open or fully-closed.

Slide the **D5-EVO SMART** back towards the gate to where the Pinion will sit just under where the Rack will be fixed to the gate.

Rest the Rack directly onto the Pinion (let it mesh fully) while welding / bolting the Rack into position.



Move the gate so welding does not take place directly above the Pinion, as this may cause damage to the Pinion and or Gearbox.

Level the other end and fix that end to the side of the gate, as shown in Figure 55.

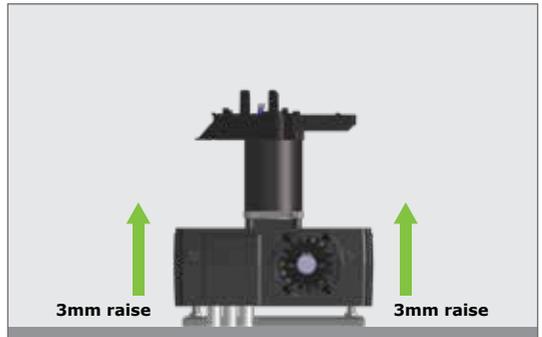


FIGURE 53

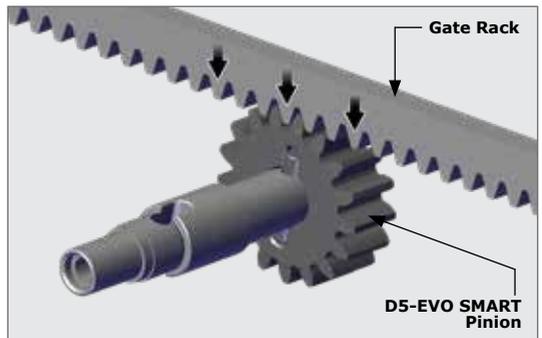


FIGURE 54

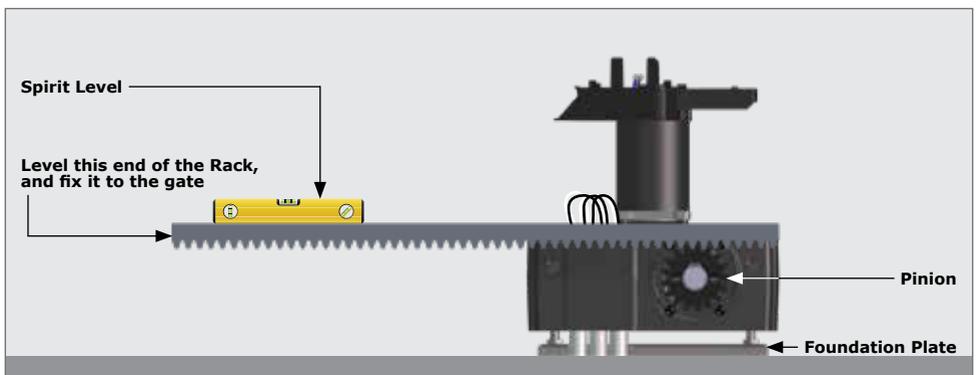


FIGURE 55. THE RACK AND OPERATOR FROM THE GATE'S PERSPECTIVE



Refer to the instructions on how to fix the different types of Rack to a gate in Section 7.9.1. - "Fitting Different Types of Rack to the Gate".

Slide the gate halfway along the first section and level the unsecured end, ensuring that the Rack is resting on the Pinion, not pressing down. Continue this way to fix all sections.



Before fully fixing each section of Rack, slide the gate backwards and forwards along the section, checking that the Rack is only resting on the Pinion, and not pressing down onto it.

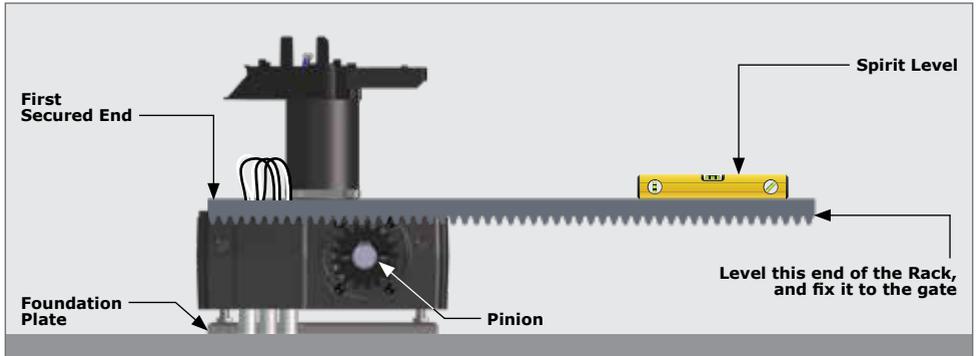


FIGURE 56. THE RACK AND OPERATOR FROM THE GATE'S PERSPECTIVE

Lower the operator 3mm to achieve the required 3mm tooth clearance. Ensure that operator mounting bolts are securely tightened.

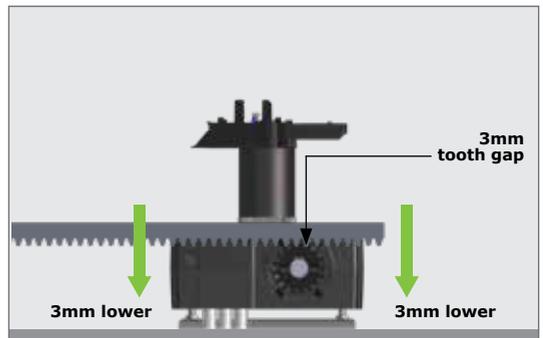


FIGURE 57

7.9.1. Fitting Different Types of Rack to the Gate

Steel Rack

Fix the Steel Rack with the steel angle Brackets provided. The Brackets must be spaced no more than 300mm apart.

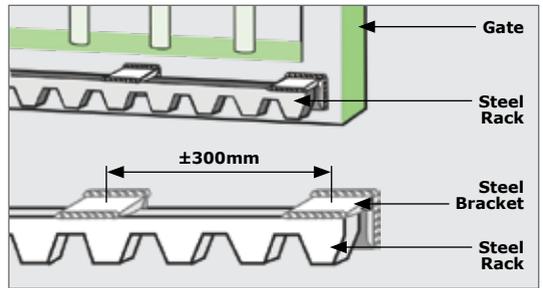


FIGURE 58

When joining different lengths of Steel Rack, a simple way of ensuring that the correct pitch spacing is achieved, is to clamp a small off-cut between the two pieces.



Do not weld the off-cut to the gate or the join.

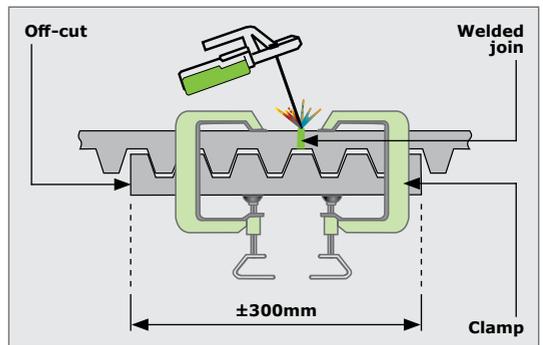


FIGURE 59

RAZ Rack

Fix the RAZ Rack to the side of the gate using the TEK screws provided. Use the vertical slots in order to allow for adjustment.

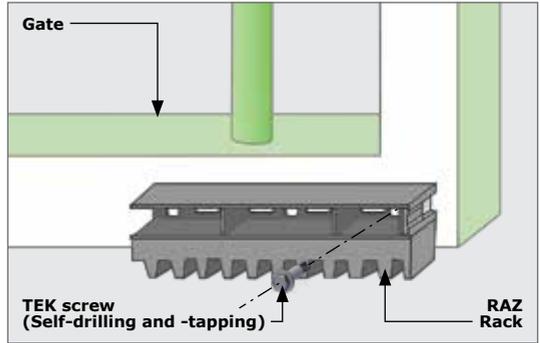


FIGURE 60

When fitting RAZ Rack, it is easier to start on the right and work towards the left.

The RAZ Rack sections simply interlock with each other.

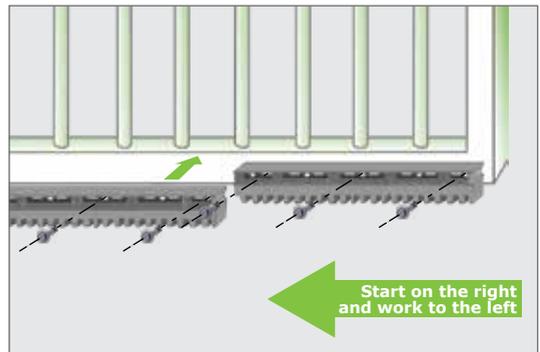


FIGURE 61

Fit an additional fixing screw through the horizontal slots to secure the Rack to the gate directly above the Pinion when the gate is in the closed, pedestrian and open positions as shown in Figure 62.



Fit an additional screw through the horizontal slots at the ends of each section of Rack to further strengthen the joins.

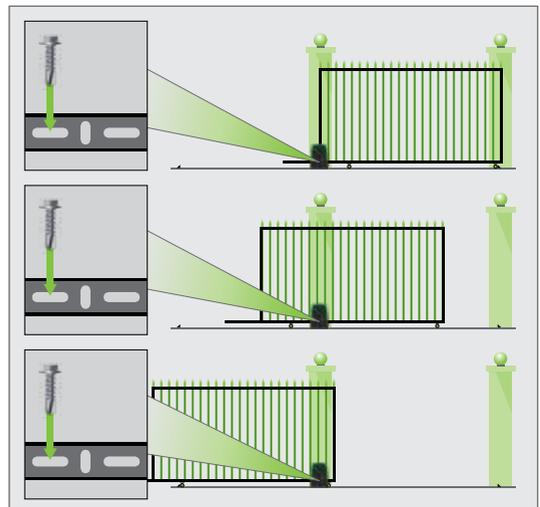


FIGURE 62

Nylon Angle Rack

Fix the Rack to the side of the gate using TEK screws.



Ensure that all the mounting holes provided in the angle section are used.

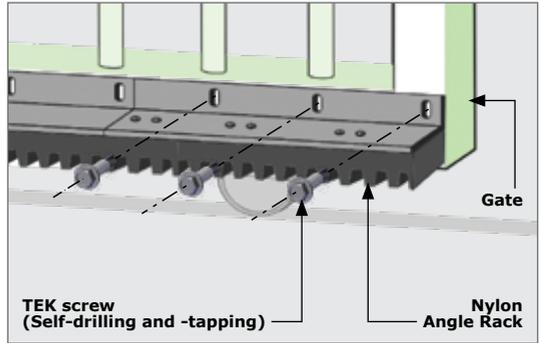


FIGURE 63

When joining two lengths together, simply butt each section firmly together to ensure that the correct pitch is achieved.

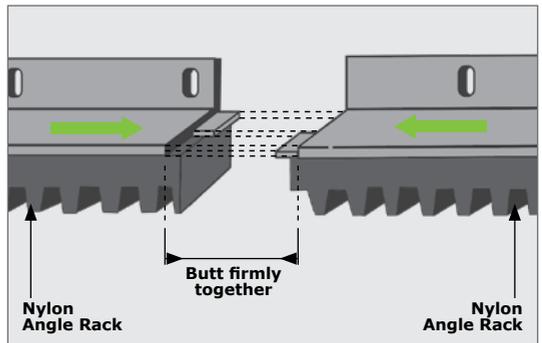


FIGURE 64

7.9.2. Finalising the Height Adjustment



Slide the **D5-EVO SMART** away from the gate so that the Rack is centred above the Pinion.

Final adjustment to the position of the Gearbox should be done at this point.

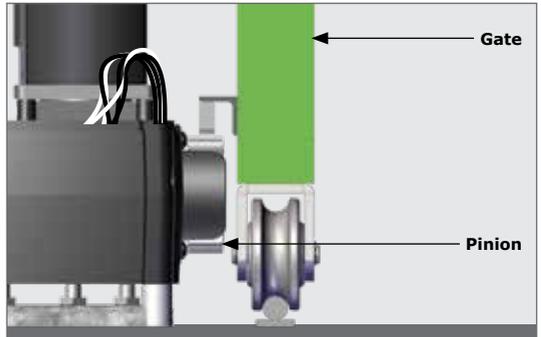


FIGURE 65

7.9.2.1. Placing and Routing the Earth Harness

Place the Ring Lug-end of the Earth Harness onto the mounting bolt on the right-hand side of the Gearbox.

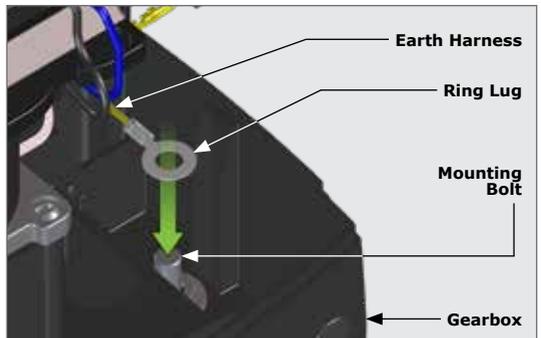


FIGURE 66



To ensure that the Earth Harness is able to reach the Charger once connected to the mounting bolt, it is recommended that it is positioned at the angle depicted by the middle line, but not at an angle exceeding the lines at either side of it as the Earth Harness will not be able to reach the Charger.

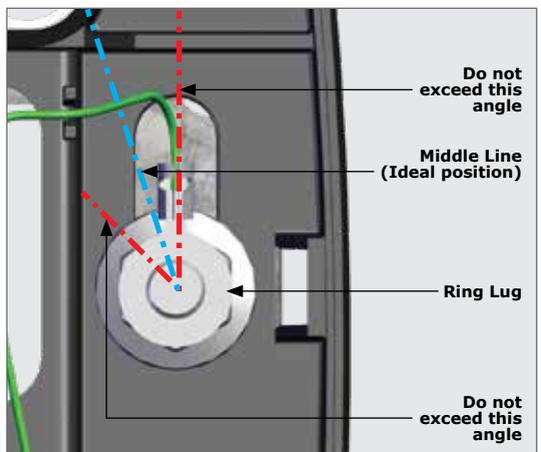


FIGURE 67

Route the Earth Harness up to the left and place it into the Cable Management Clip as shown in Figure 68.



The Earth Harness will need to be routed under the Cable Cover at a later stage.

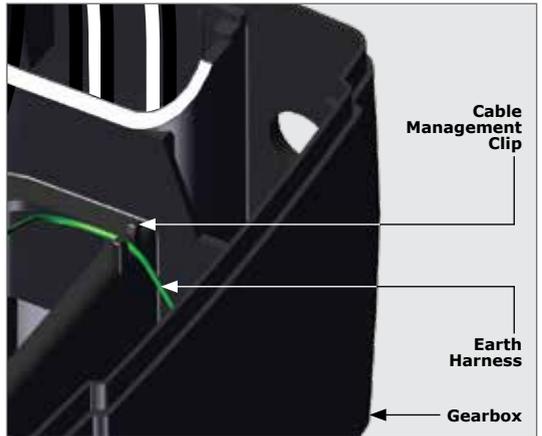


FIGURE 68

7.9.2.2. Placing the Spring Washers and Lock Nuts



Only add the Spring Washers and Lock Nuts once the Rack has been installed and the operator height is correct.

Place one Spring Washer and one Lock Nut onto each of the Mounting Bolts. Tighten all of the Lock Nuts with a 17mm socket to secure the Earth Harness and the height of the **D5-EVO SMART** firmly in position.

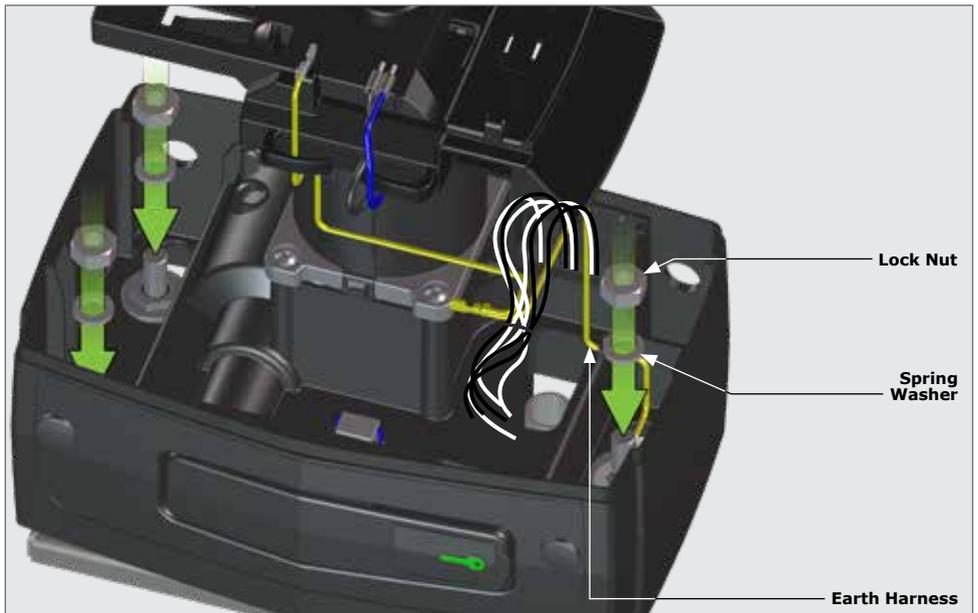


FIGURE 69

7.10. Re-assembling the D5-EVO SMART

7.10.1. Override Sensor



If the Override Sensor has previously been removed, take note of how it is placed back into position correctly, before continuing with the installation.

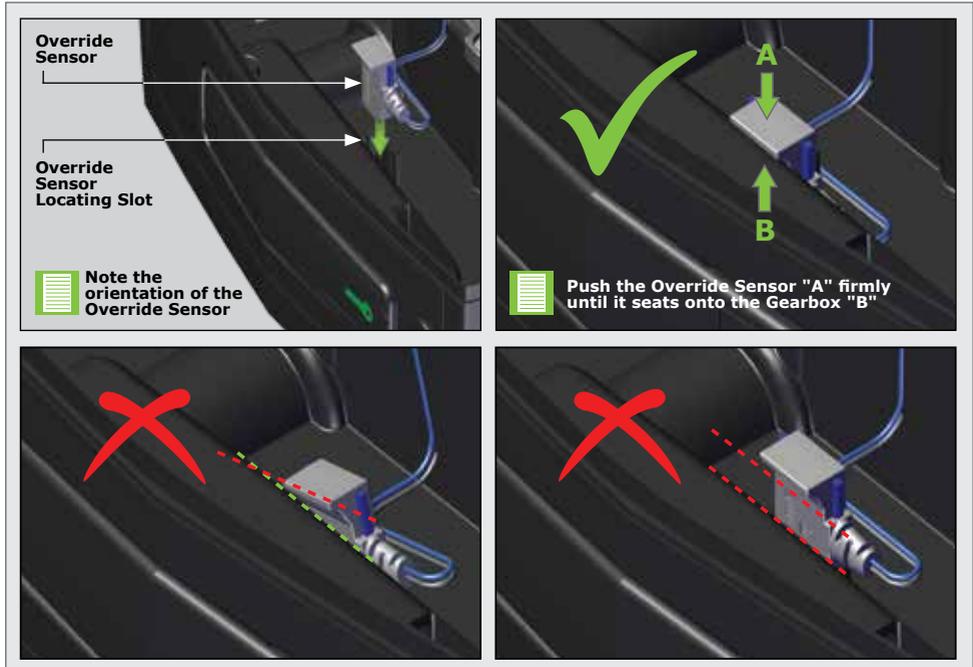


FIGURE 70. OVERRIDE SENSOR

7.10.2. Routing the Override Sensor Harness



It is important to ensure that the harness for the Override Sensor is routed through the correct location when inserting the Lower Battery Tray back into position.

The Override Sensor harness is routed directly in front of the electric motor.

There is a groove located in the middle of the Lower Battery Tray, on the motor's side. The harness needs to be routed between the electric motor and the Lower Battery Tray here as the Lower Battery Tray is placed back into position.

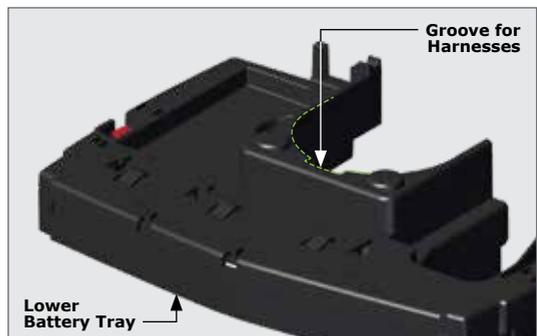


FIGURE 71

7.10.3. Placing the Lower Battery Tray and Charger Back into Position

 Ensure that the Camlock is in the "unlocked" position and that the Release Handle is partially open.

Place the Lower Battery Tray into position. Whilst doing this, route the cabling and harnesses through. A click from both sides will be heard if the tray is fitted correctly.

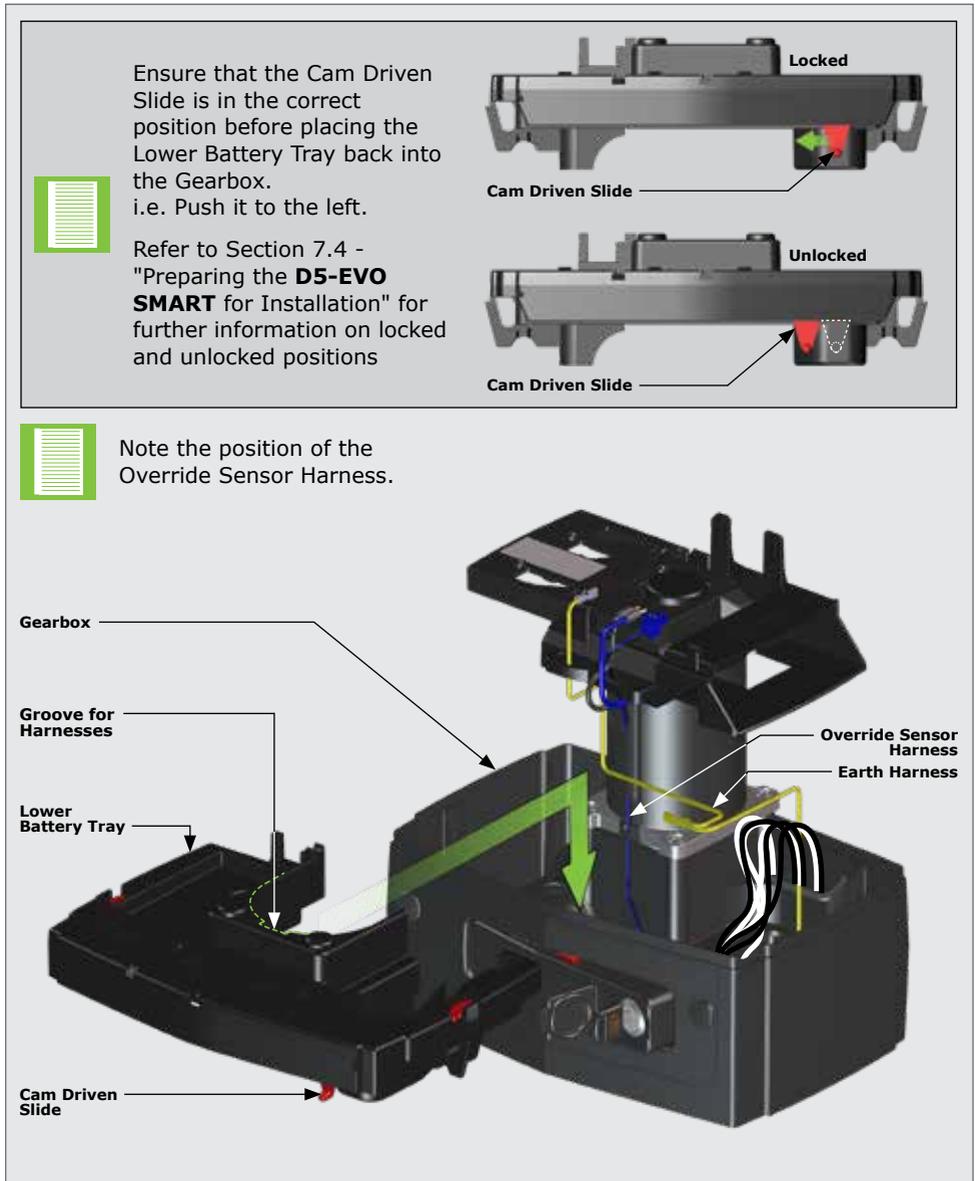


FIGURE 72. LOWER BATTERY TRAY PLACEMENT

Place the Charger back into position by aligning the three feet at the bottom of the Charger with the three slots found on top of the Lower Battery Tray.

Place the studs of the Charger into the three holes on the Lower Battery Tray. Firmly press the Charger down, and push it toward the Electric Motor, sliding it along the slots.

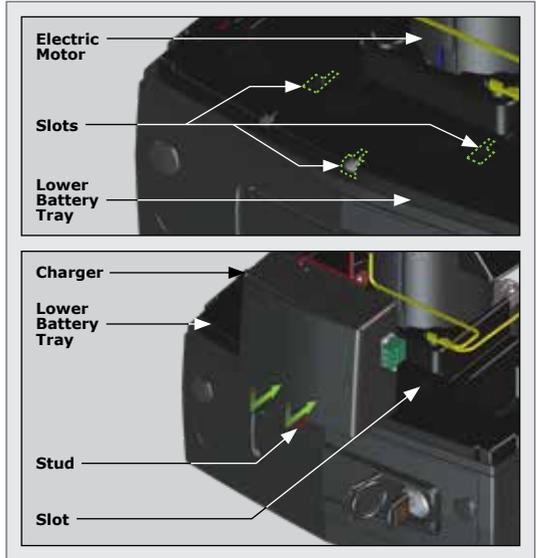


FIGURE 73. CHARGER PLACEMENT

7.10.4. Placing the Control Card Back into Position

Tilt the control card and align the narrow gaps with the clips shown in Figure 74.

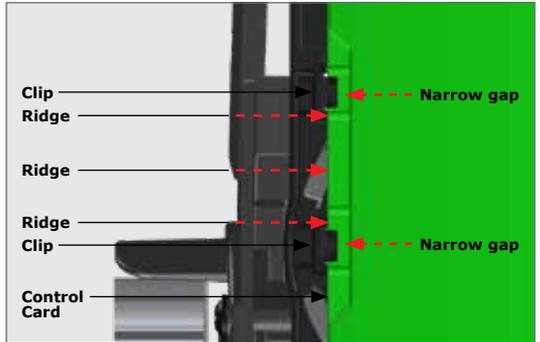


FIGURE 74

Once aligned, hinge the Control Card under the clip's lips, and firmly press downward on both sides in front of the Control Card.

This will engage the Control Card into the hinges at the front of the Accessory Storage.

A click from both sides will be heard if this is done correctly.

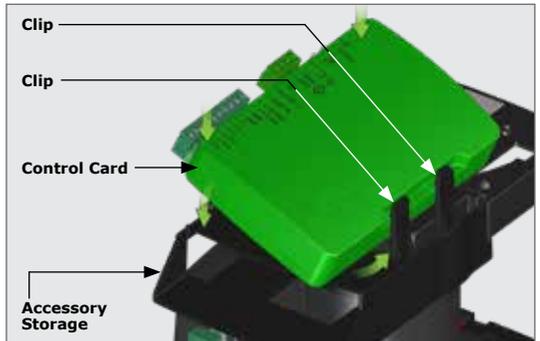


FIGURE 75

7.10.5. Reconnecting the Harnesses to the Control Card and Charger

Reconnect the Motor Wires at Position "A" and the Override Harness at Point "B" on the Control Card.



The black motor wire is connected on the Left, and the blue on the immediate right of the black.

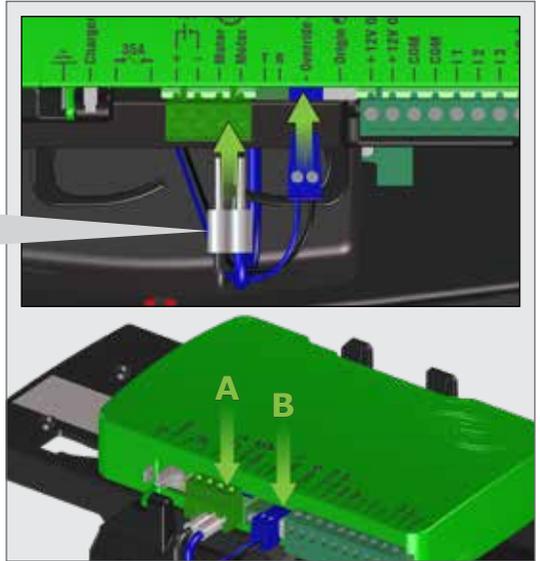


FIGURE 76

Reconnect the Charger Harness to the point from which it was disconnected earlier at position "C", and the earth harness at position "D" on the Control Card.



Utilise the Cable Retainers at the bottom of the accessory storage to neaten up the wiring, and the overall installation.

Connect the other end of the Earth Harness into the right-hand side of the Charger at Point "E".

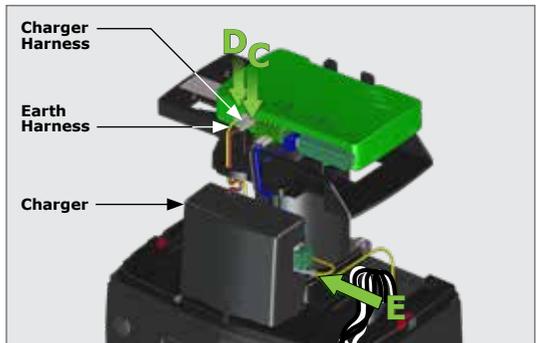


FIGURE 77

8. Completing the Installation

8.1. Fitting the Battery

Gently push the left tab behind the Control Card backwards. This will allow the entire upper assembly to hinge forward.

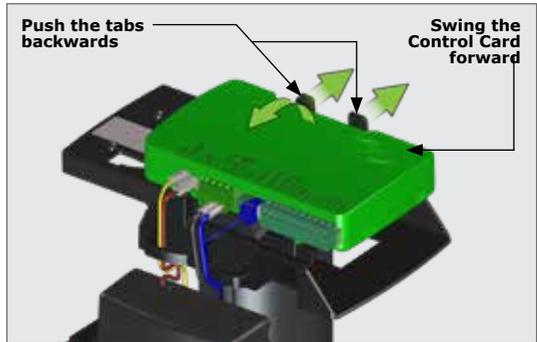


FIGURE 78

Push the two tabs on the Base Tray towards the right. This will allow the Base Tray to hinge up to the right.

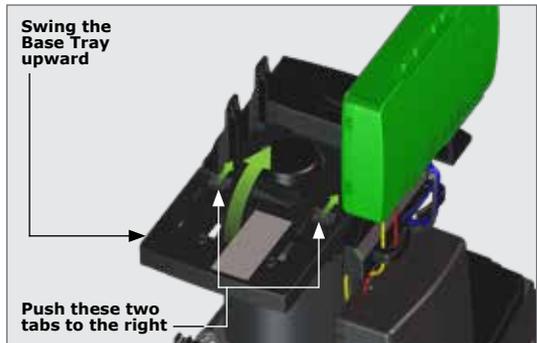


FIGURE 79

Place a Battery into the designated area found on top of the Lower Battery Tray on the left.



Note the orientation of the Battery. Ensure that the Battery Terminals always face the direction of the Charger.

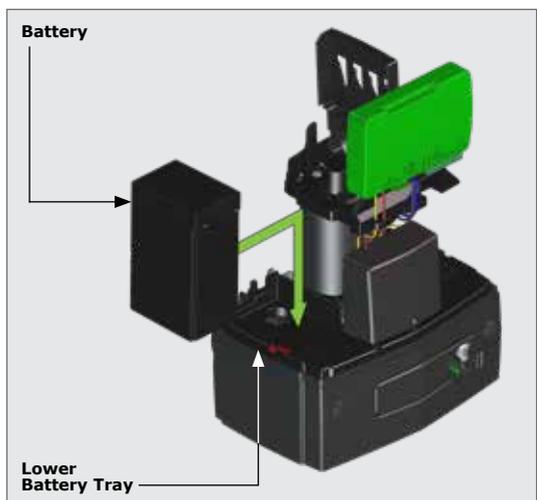


FIGURE 80

SECTION 8

Swing the upper assembly back into position over the Battery, and the control card back into position.

Clicks should be heard if this is done correctly.



Failure to properly click the control card and upper assembly into place will result in erratic behaviour of the gate motor.

Connect the Battery up with the supplied harness, and ensure it is connected to the Control Card at Position "F"

Route the accessory cables around the back of the Charger and through the cable retainers found in front of the Control Card.



Please ensure that the Battery connections match the selected Battery terminals RED to RED, BLACK to BLACK.

Place the Cable Cover back into position as shown in Figure 83. Note the orientation of the cover - The arrow must point to the front of the operator.

COMPLETING THE INSTALLATION

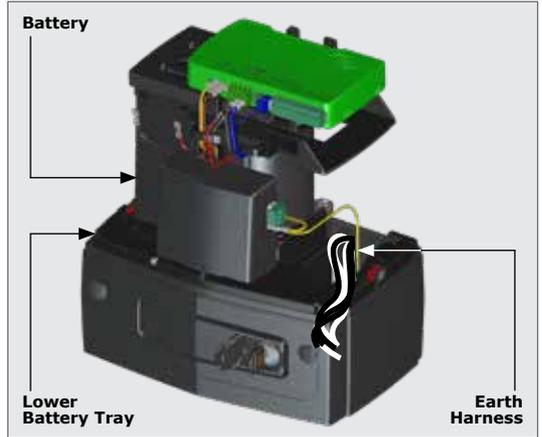


FIGURE 81

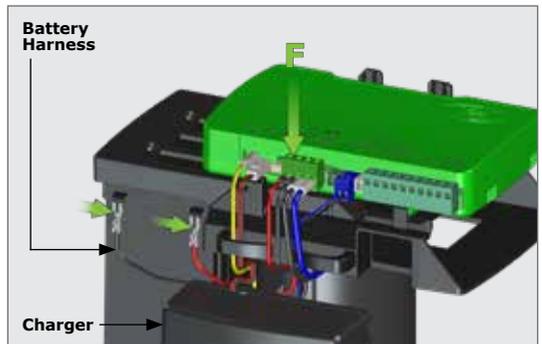


FIGURE 82

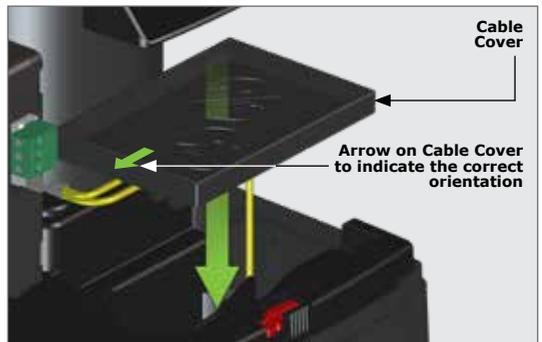


FIGURE 83

8.2. Accessory Installation and Storage

There is dedicated space below the **D5-EVO SMART** Control Card to conveniently install and store any accessories connected to the Operator.

Wire the accessory device to the operator, place it into the space provided.

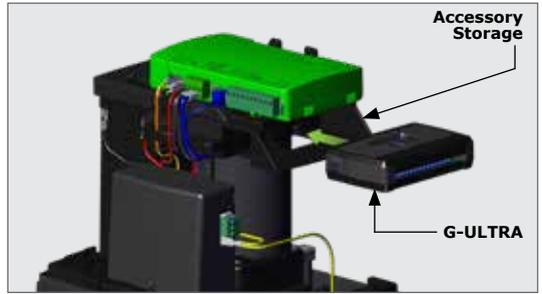


FIGURE 84

8.3. Wiring the Control Card on its Default Settings

The **D5-EVO SMART** Control Card's Input / Output terminals are defaulted with the following configuration;

Control Card Terminal	Default Setting	Control Card Terminal	Default Setting
I1	Trigger (TRG)	I/O4	Gate Status
I2	Pedestrian (PED)	I/O5	Unassigned
I3	Infrared Beam Close (IRBC)	O6	Unassigned

TABLE 2

8.3.1. Closing Infrared Beam Wiring (i5 Infrared Beams)

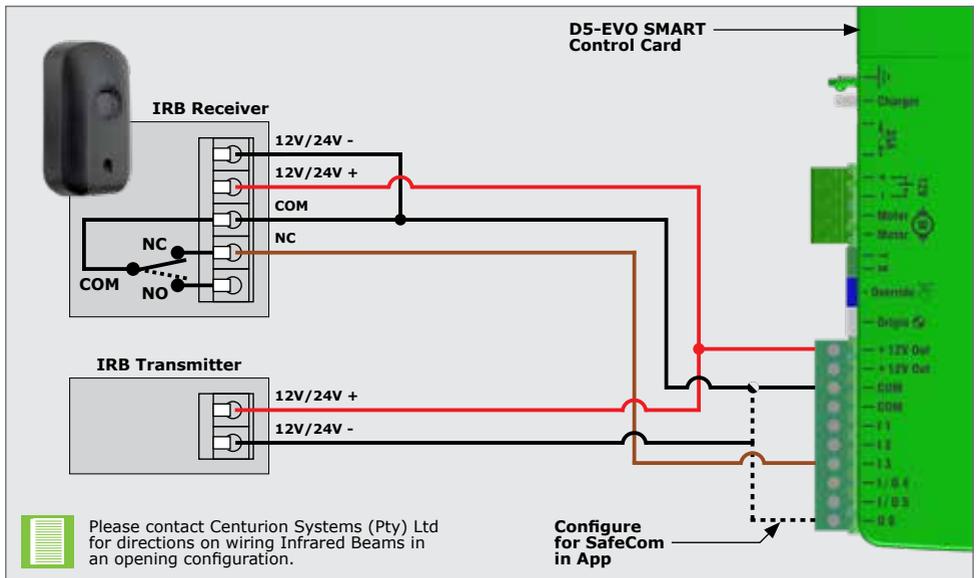


FIGURE 85

8.3.2. Closing Infrared Beam Wiring (Photon Infrared Beams)

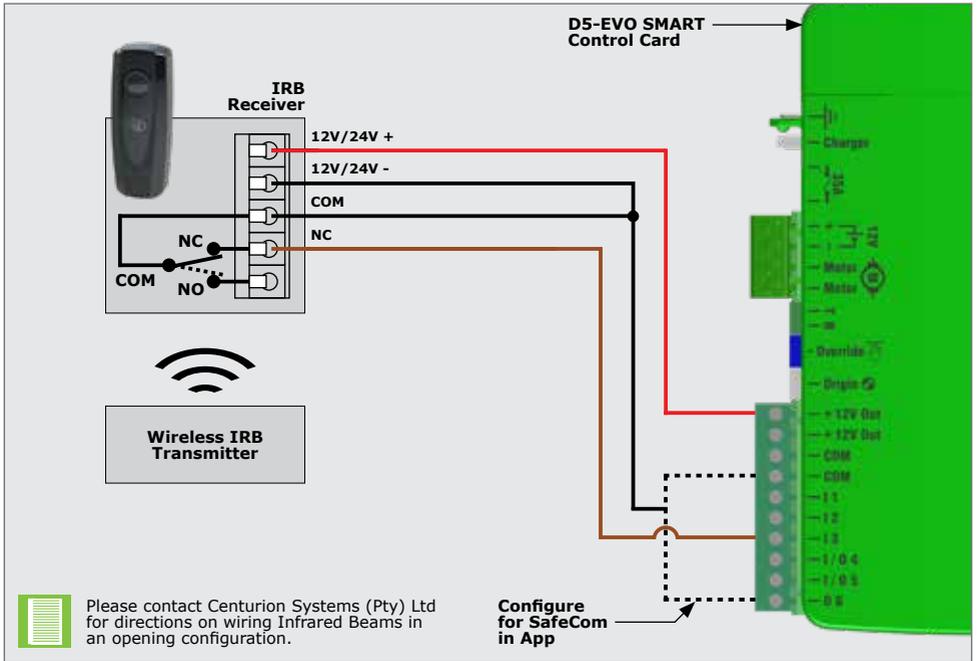


FIGURE 86

8.3.3. Wireless Photon SMART beams

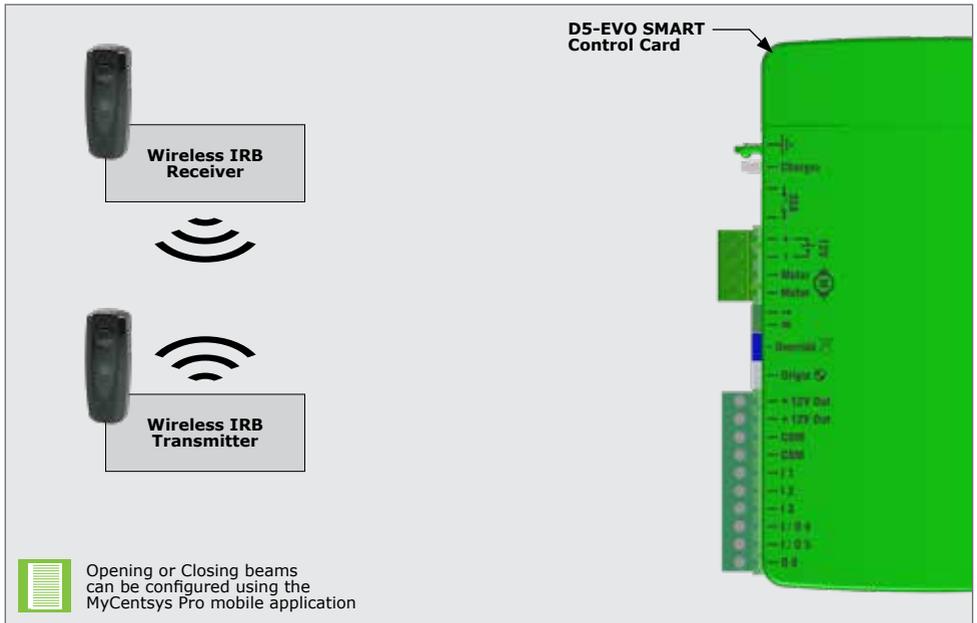


FIGURE 87

8.3.4. External Radio Receiver and Loop Detector Wiring

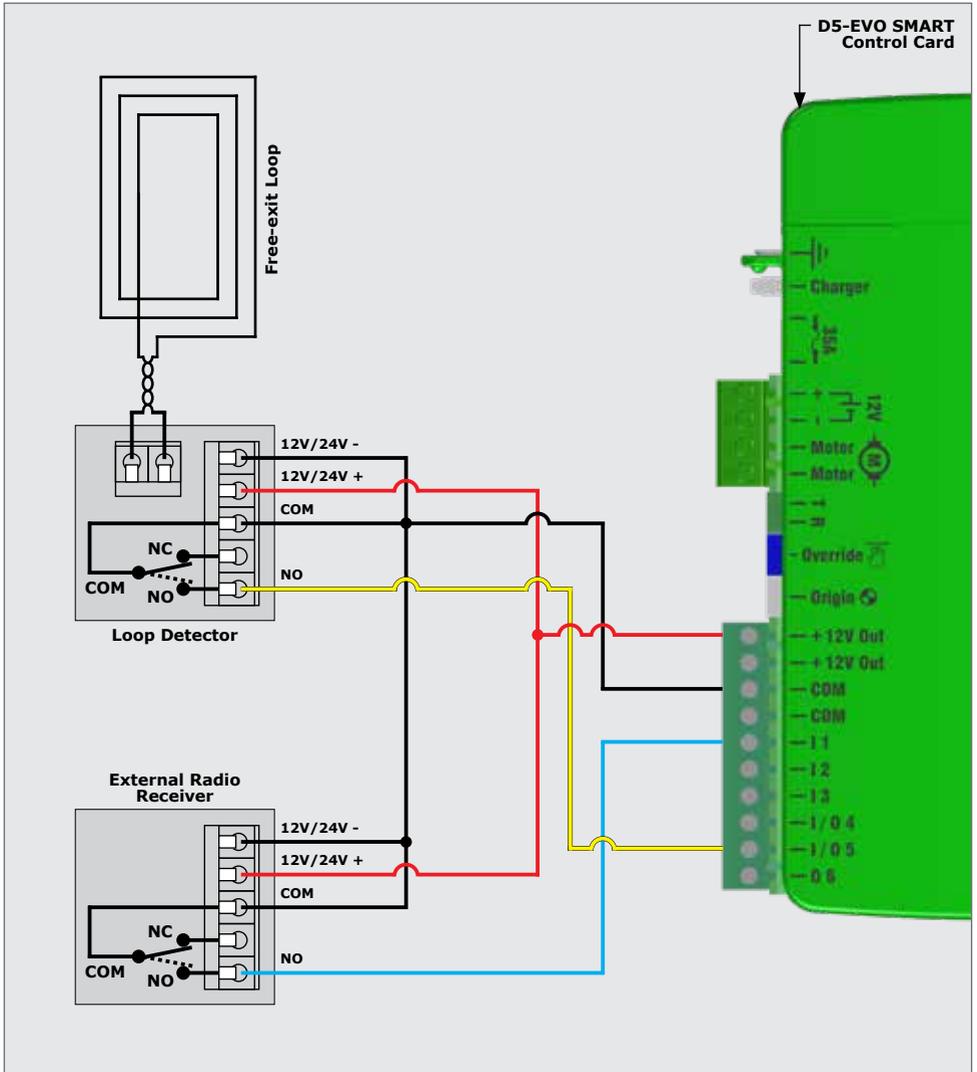


FIGURE 86

8.3.5. Solar Panel Wiring

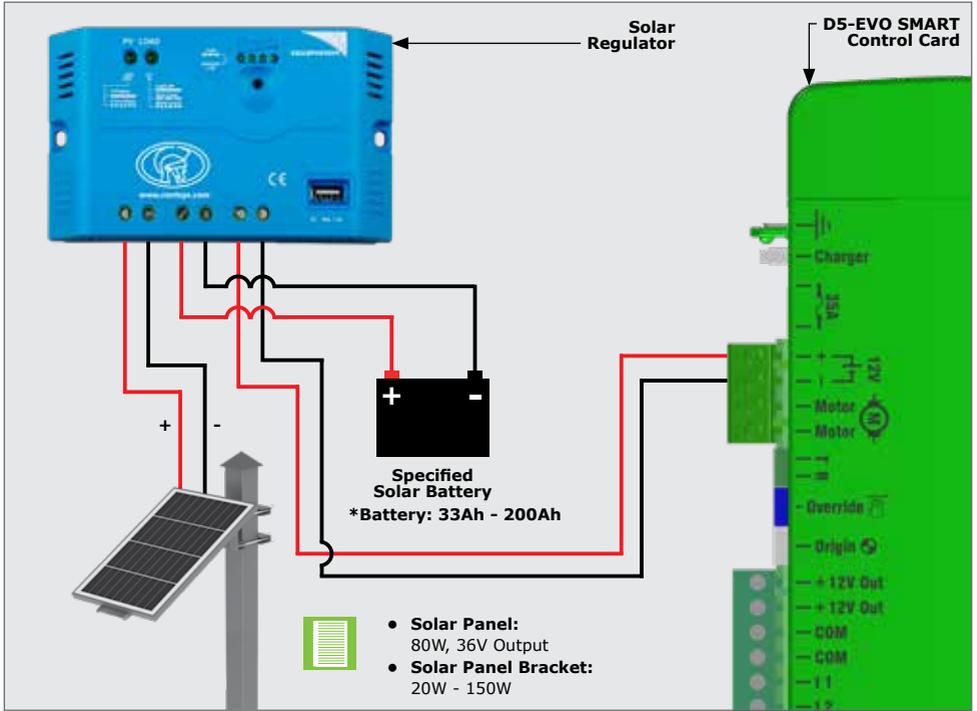


FIGURE 87

8.3.6. G-ULTRA to D5-EVO SMART Wiring

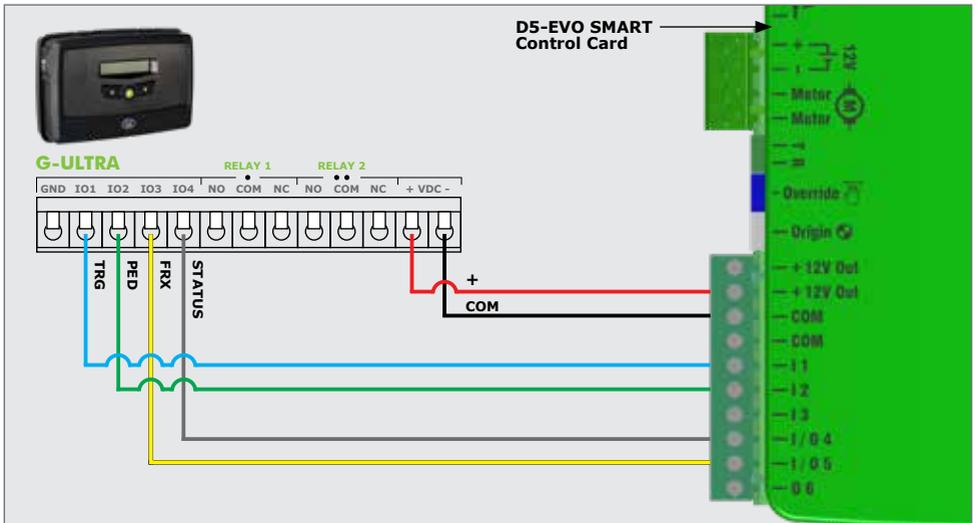


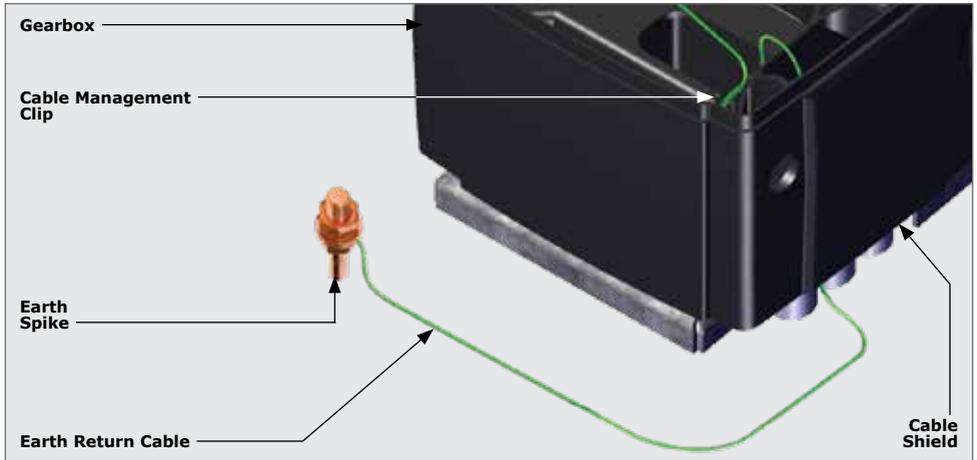
FIGURE 88

8.3.7. Earth Spike Installation

For further surge protection, an Earth Spike¹ can be installed. Route the earth cable from the Earth Spike around to the back of the **D5-EVO SMART**, and under the Gearbox by the Cable Shield. Connect it to the Mounting Bolt on the right of the Gearbox where the Charger Earth is located by means of a Ring Lug. See Section 7.9.2.1. - "Placing and Routing the Earth Harness".



Utilise the Cable Management Clip to keep the wiring neat and out of the way.



1. Not supplied with the **D5-EVO SMART**.

FIGURE 89

8.3.8. 12V Siren to D5-EVO SMART Wiring

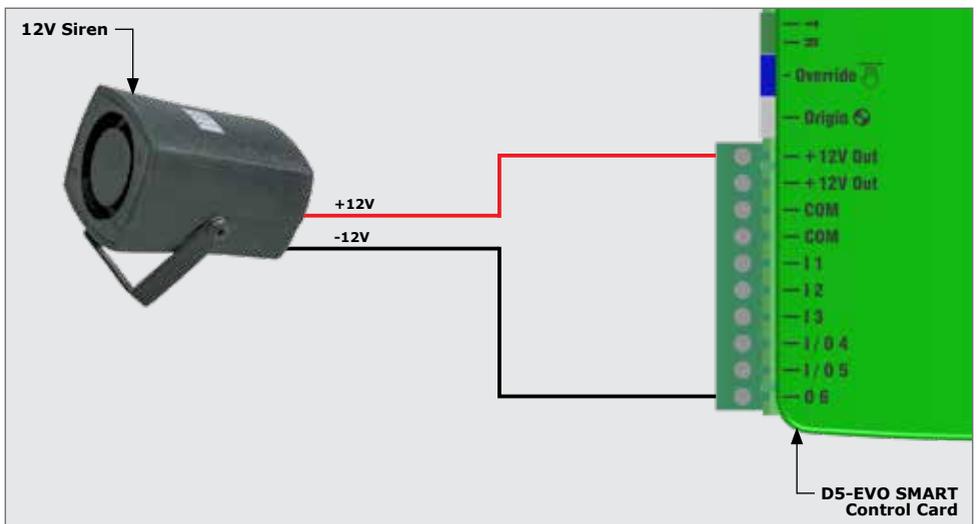


FIGURE 90

8.4. Commissioning the System

1. Scan the QR Code in Figure 92.
2. Select the App Store applicable to the operating system being used, either Apple App Store, Android Google Play Store or the Huawei App Gallery.
3. Download and install the application.

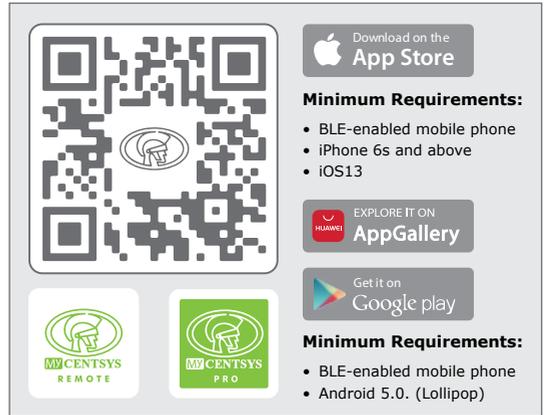


FIGURE 92

Alternatively, go directly to the app store of the operating system being used, and search for the app "**MyCentsys Pro**". Download and install the application onto the smartphone.

1. Once installed, open the application.
2. From the list of operators, select the operator that is applicable to this installation.
3. Connect to the relevant operator.
4. Use the app by following the prompts to configure the **D5-EVO SMART**.

8.4.1. MyCentsys Remote Application

Introducing an intuitive and user-friendly commanding hub for all SMART and ULTRA devices. MyCentsys Remote puts the ultimate in control and flexibility at your fingertips, delivering an all-in-one, fully-customisable experience for your compatible access automation solutions. Download MyCentsys Remote free by scanning the QR code.

1. Scan the QR Code in Figure 92.
2. Select the App Store applicable to the operating system being used, either Apple App Store, Android Google Play Store or the Huawei App Gallery.
3. Download and install the application.

Alternatively, go directly to the app store of the operating system being used, and search for the app "**MyCentsys Remote**". Download and install the application onto the smartphone.

1. Once installed, launch the application.
2. Register with the relevant details.
3. Select the "+ SMART".
4. From the list of operators, select the operator that is applicable to this installation.
5. Wait for the device added message after tapping on the selected operator.
6. Select the operator on the home screen to view all available triggers and device status.

Once all the necessary accessories and harnesses have been connected, ensure that the Camlock is in the "unlocked" position, and place the **D5-EVO SMART** cover onto the Gearbox.

Once the cover is secured in place, lock the Camlock to lock the cover in place.

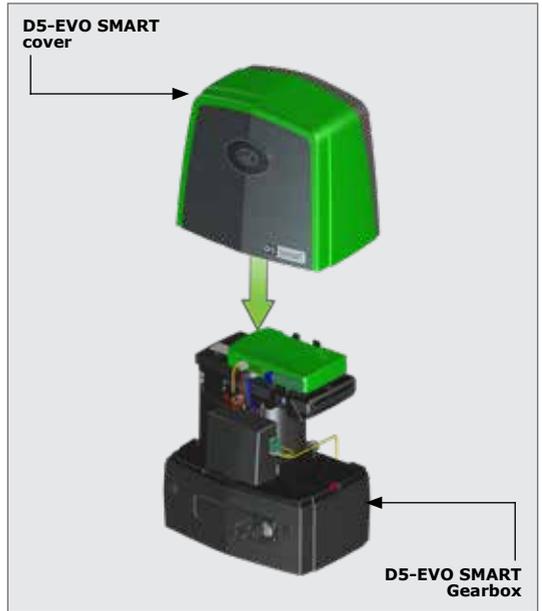


FIGURE 93

8.5. Applying the Warning Decal

Apply the supplied warning decals to the gate as indicated on the reverse side of the decal.



FIGURE 94

9. General Maintenance

9.1. Gate Maintenance

Description	Frequency	Corrective Action
Ensure that the gate tRack is clear of debris at all times	Daily	Clean around the gate and gate operator. Consider installing gate brooms on the bottom of the gate
Ensure that the endstops are sturdy and secure	Every 3 months	If the endstops are damaged or loose, contact an installer to replace
Check that the Rack is securely mounted to the gate over its full length	Every 3 months	Contact installer
Contact an installer to inspect and verify that all safety equipment, e.g. safety beams, is functioning correctly	Every 6 months	N/A
Ensure that the gate moves smoothly when in Manual Override. Check wheels and guide-rollers for signs of wear	Every 6 months	Place the motor in Manual Override and manually open and close the gate. If the wheels and/or guide-rollers are excessively worn, contact an installer to replace
Check the tRack for damage or corrosion	Every 6 months	If the tRack is damaged, contact an installer to replace
If pedestrian gate / emergency gate is fitted within the main gate, ensure that the lock operates smoothly	Every 6 months	Dry lubricate if necessary (graphite)

TABLE 3

9.2. D5-EVO SMART Maintenance



Before performing any maintenance, ensure that the D5-EVO SMART is isolated!

Description	Frequency	Corrective Action
Check for insect infestations	Every 3 months	<p>Clean and remove any nests that are settling in and around the motor and Control Card</p>  <p>Insert a moth ball, which may help to repel insects, at the bottom of the Gearbox</p>
Check that the M10 half-nuts are tight on the Foundation Platebolts	Every 6 months	Torque setting 20Nm
Check that there is no sand build-up inside the unit	Every 6 months	Remove batteries and Lower Battery Tray and clear out the sand build-up
Check Pinion and Rack engagement	Every 6 months	If the mesh is too loose or the Rack is riding on the Pinion, contact an installer to correct
Check the condition of the Pinion	Every 6 months	If the Pinion is excessively worn, contact an installer to replace
Check the condition of the Override Cam Lock	Every 6 months	Dry lubricate if necessary (graphite)
If used, check the condition of the theft-deterrent cage	Every 6 months	Ensure that the device is serving its purpose
If used, check the condition of the theft-deterrent cage lock and that it operates	Every 6 months	Dry lubricate if necessary (graphite)

TABLE 4

10. Product Ancillaries



Solar Supply Solution

Alternative means of powering the system - consult your CENTURION dealer



Photon SMART safety Beams

Fully-wireless infrared beams. Always recommended on any SMART automated installation



Theft-deterrent cage & padlock

Patented design provides excellent deterrence against theft, tampering and vandalism



G-ULTRA

The ultimate GSM solution for monitoring and activating the operator via your mobile phone



G-SPEAK ULTRA

Answer your intercom from anywhere for maximum security and convenience - powered by 4G technology



Gate Stations

Communication hub for the G-SPEAK ULTRA GSM intercom - available in both durable plastic and stylish and strong metal enclosures



12V-24V SMART Siren

The ultimate security companion, designed to seamlessly integrate with your existing SMART gate and garage door operators



Steel, Nylon RAZ or Nylon Angle Rack

A variety of rack available in different lengths, for different strengths



P36

Passive sensitive edge for sliding gates provides additional protection against crushing



SMARTGUARD or SMARTGUARDair Keypad

Cost-effective and versatile wired and wireless keypad, allowing access to users with a customised code



FLUX SA Loop Detector

Allows free-exit of vehicles from the property - requires ground loop to be fitted

11. Installation Handover

Once the installation has been successfully completed and tested, it is important for the installer to explain the operation and safety requirements of the system.

NEVER ASSUME THE USER KNOWS HOW TO SAFELY OPERATE AN AUTOMATED GATE!

Even if the user has used one before, it does not mean they know how to SAFELY operate it. Make sure that the user fully understands the following safety requirements before finally handing over the site.

The following needs to be understood by the user:

- How to operate the Manual Release mechanism.
(Show them how by demonstration)
- How the obstruction detection and all other safety features work.
(Show them how by demonstration)
- All the features and benefits of the Operator, i.e. Beams, etc.
- All the safety considerations associated with operating an automated gate. The user should be able to pass this knowledge on to all other users of the automated system and must be made aware of this responsibility.

- Do not activate the Gate Operator unless you can see it and can determine that its area of travel is clear of people, pets, or other obstructions
- **DO NOT CROSS THE PATH OF A MOVING GATE.** Always keep people, pets and objects away from a moving gate and its area of travel
- **NEVER LET CHILDREN OPERATE OR PLAY WITH THE GATE CONTROLS,** and do not allow children or pets near the gate area
- Avoid close proximity with moving parts where fingers, hands or clothing could be pinched and caught
- Secure all easily-accessible gate operator controls in order to prevent unauthorised use of the gate
- Keep the automated gate system properly maintained, and ensure that all working areas are free of debris and other objects that could affect the gate operation and safety
- On a monthly basis, check the obstruction detection system and safety devices to ensure correct operation
- All repair and service work to this product must be done by a suitably qualified person
- This product was designed and built strictly for the use documented herein. Any other uses not included herein, could compromise the operating condition of the product and/or be a source of danger!



Centurion Systems (Pty) Ltd does not accept any liability caused by improper use of the product, or for use other than that for which the automated system was designed. **Ensure that the customer is in possession of the User Guide and that you have completed the installation details in the back of the User Guide.**

12. Warranty Information



You can register your product(s) online at www.centsys.com, which will assist you in keeping a record of your date of purchase or installation, serial numbers, etc.

All of our products are manufactured with extreme care, thoroughly inspected and tested.

The goods supplied by us shall be subject to the provisions of sections 55 to 57 of the Consumer Protection Act (68/2008) except where the provisions of the warranty contained in our product documentation are more favourable to the purchaser. Subject to the warranty contained in our product documentation, if applicable, our products are warranted for a period of twenty-four months after delivery. However, it is expressly noted that batteries carry a six month warranty due to the nature of these products being such that they are subject to possible misuse. Please note that warranties will be honoured on a carry-in basis; in other words, the product in question must be taken in to one of our branches, or to the authorised reseller that the product was purchased from, for assessment and, if necessary, repair. For equipment not of our manufacture, the warranty as supplied by the original manufacturer will apply if such warranty is more favourable to the purchaser than the relevant provisions of the Consumer Protection Act (Act 68/2008 of South Africa), or any other applicable law as so required in different countries in which the product was sold. Such warranty is valid only once full payment has been received for such goods.

Australian customers:

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure

Any warranty may be voidable on any equipment which:

1. Has not been installed in accordance with the installation instructions provided.
2. Has been subject to misuse or which has been used for any purpose other than that designed for by the manufacturers.
3. Has damage caused as a result of handling during transit, atmospheric conditions (including lightning), corrosion of metal parts, insect infestation, power surges or other forces outside of the control of the manufacturer.
4. Has been repaired by any workshop and / or person NOT previously authorised by the manufacturer.
5. Has been repaired with components not previously tested, passed or authorised by Centurion Systems (Pty) Ltd, South Africa or one of its subsidiary companies.



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