

D10 SMART / D10 TURBO SMART / D20 SMART INSTALLATION MANUAL



D10 SMART

D10
TURBO SMART

D20 SMART



Company Profile



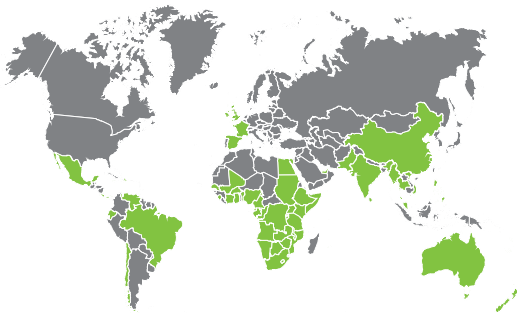
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Icons used in this manual



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 **D10 SMART** is a heavy duty sliding gate operator designed to open and close industrial sliding gates weighing up to 1000Kg.

The **D10 Turbo SMART** is perfectly suited for sites with lighter gates requiring a high number of operations per day, and can reach almost double the speed of the standard **D10 SMART** for increased security. However, it is not suitable for gates weighing more than 250kg, as the inertia generated by heavier loads might prove detrimental to the gearbox at such high speeds. Refer to Table 2 under Section 2.2. - "Technical Specifications" for derating speeds on heavier gates.

A die-cast aluminium gearbox, coupled to a powerful 24V DC motor and switch-mode charger, makes the **D10 SMART** / **D10 Turbo SMART** the automatic choice for townhouse complexes and office parks.

The system operates off two 12V / 7.2 - 8Ah batteries housed inside the operator using a switch-mode charger to maintain the battery in a fully-charged state. The batteries provide critical power failure protection.

A non-contact Hall Effect Sensor ensures reliability and positional accuracy. The Hall Effect Sensor is highly resistant to dust, oil, dirt and insect ingress, thereby ensuring that the **D10 SMART** / **D10 Turbo SMART** opens and closes gates reliably and accurately.

For industrial sites with large, heavy gates and high traffic volumes, the **D20 SMART** offers a powerful and reliable automation solution that can move gates weighing up to 2000kg.

This formidable operator has been designed to withstand the most demanding operating conditions and work dependably in any environment thanks to its rugged die-cast aluminium gearbox and potent DC motor. In addition, its sophisticated electronics and motor control circuitry ensure that it moves smoothly with pinpoint stopping, further adding to the unit's reliability and longevity. Complementing its tough mechanical build, award-winning SMART technology makes the **D20 SMART** as intelligent as it is solid.

Advanced features of the D10 SMART / D10 Turbo SMART / D20 SMART logic controller include:

- Interactive graphic user interface via a 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 NOVA remotes with multiple buttons per remote)

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 breaker 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. 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.

1.3. Theft Protection

While care has been taken in the design of the **D10 SMART / D10 Turbo SMART / D20 SMART** to prevent unauthorised removal (theft) of the unit, an optional steel theft-deterrent cage is also available for added peace of mind. In addition, the system boasts novel theft and break-in protection via an integral vibration sensor that can be connected to a sound bomb or third party alarm system, or linked to an armed response company.



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

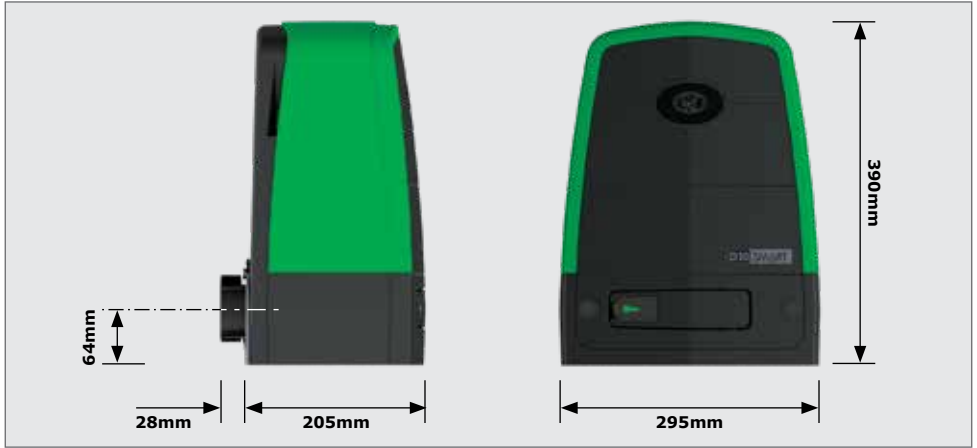


FIGURE 1. D10 SMART / D10 TURBO SMART / D20 SMART PHYSICAL DIMENSIONS

2.2. Technical Specifications

	D10 SMART	D10 Turbo SMART	D20 SMART
Input voltage	90V - 240V AC +/-10% @ 50Hz ¹		
Current consumption (mains)	250mA		
Battery charger current output	1.8A@ 27.4V +/-1%		
Maximum number of operations per day	750 ^{3,6}		
Duty cycle - Mains present^{2,3}	45%	25%	45%
Motor power supply	Battery-driven (Standard Capacity - 2x 12V 7.2Ah)		
Current consumption (motor at rated load)	8A	10A	9A
Input / Output sink currents (Max. accessory current draw)			
I/O 1-4	100mA (12/24V)		
I/O 5 and 6	3A (12/24V) 10sec Pulse		
Motor push force - starting	40kgf	24kgf	52kgf
Motor push force - rated	30kgf	18kgf	39kgf
Gate mass - maximum	1000kg	250kg	2000kg
Gate length - maximum	50m	50m	25m
Gate speed (varies with load)	Up to 26m/min ⁴	Up to 45m/min ⁸	Up to 18m/min ⁴
Manual Override	Lockable with key release		

2.2. Technical Specifications Continued

	D10 SMART		D10 Turbo SMART		D20 SMART	
Operations in standby (7.2Ah Batteries)	Operating Mode					
	Power saving 15m/ min 15kgf	Normal 26m/ min 15kgf	Power saving 15m/ min 9kgf	Normal 45m/ min 9kgf	Power saving 15m/ min 20kgf	Normal 18m/ min 20kgf
	Half day ^{3,5,6}	118	63	189	130	101
Full day ^{3,5,6}	93	50	150	104	80	45
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	IP54					
Mass of unit packed (with standard kit, but excl. rack and battery)	13kg		13.5kg		13kg	
Packaging dimensions (with standard kit, but excl. rack and battery)	350mm wide x 282mm deep x 470mm high					
Fuse Protection	Type			Rating		
Main Control Card	Serviceable			25A		
Aux. Supply	Resetable Fuse			24V 3A (10sec Pulse)		
Charger (Mains Supply)	Non-serviceable			3A slow-blow		

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. Refer to the table below for **D10 Turbo SMART**'s recommended gate speed for specified gates masses.

RECOMMENDED SPEEDS AND GATE MASSES FOR THE D10 TURBO SMART¹			
Max Speed (m/min)	Gate Mass (Kg)	Max Speed (m/min)	Gate Mass (Kg)
45	250	29	600 ²
41	300	27	700 ²
36	400	25	800 ²
32	500	24	900 ²
		23	1000 ²

TABLE 2

1. If a **D10 Turbo SMART** is used on a gate over 250Kg, the speed must be reduced according to the table above to ensure that the gate can be safely stopped in an emergency.
2. Cenurion Systems (Pty) Ltd recommends the use of a **D10 SMART** for gates weighing over 500KG.

3. Product Identification

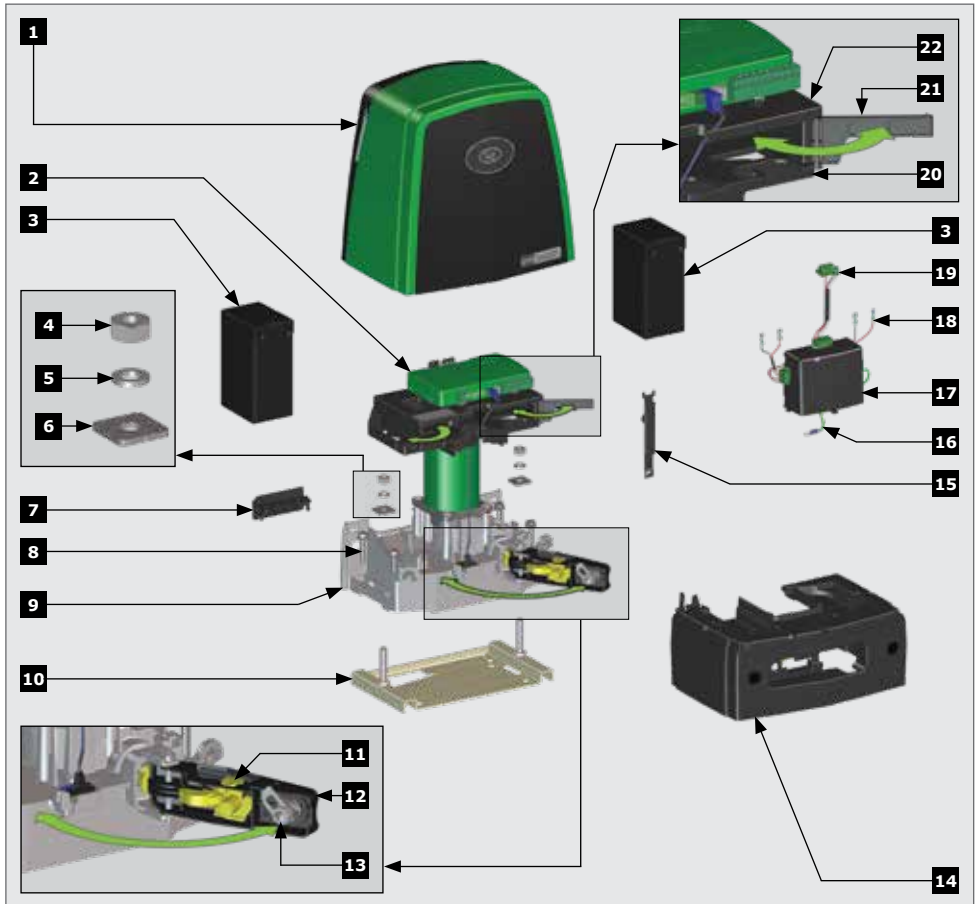


FIGURE 2. PRODUCT IDENTIFICATION

- | | |
|---|------------------------------------|
| 1. D10 SMART / D10 Turbo SMART / D20 SMART Cover | 12. Release Handle |
| 2. DX Control Card | 13. Camlock |
| 3. 7.2Ah 12V Battery ¹ | 14. Gearbox Trim |
| 4. M10 Nut | 15. Cable Trunking |
| 5. Spring Washer | 16. Earth Harness |
| 6. Gearbox Mounting Washer | 17. Switch-mode Charger 27.4V 1.8A |
| 7. Cable Shield | 18. Battery Harness |
| 8. Hex Height Adjustment Bolt (x4) | 19. Power Supply Harness |
| 9. Die-cast Aluminium Gearbox | 20. Top Battery Stabiliser |
| 10. Foundation Plate | 21. Accessory Retaining Door |
| 11. Override Cam | 22. Accessory Tray |

1. Batteries are not supplied with the **D10 SMART / D10 Turbo SMART / D20 SMART**.

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, and removal of the Gearbox Trim (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, must 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.

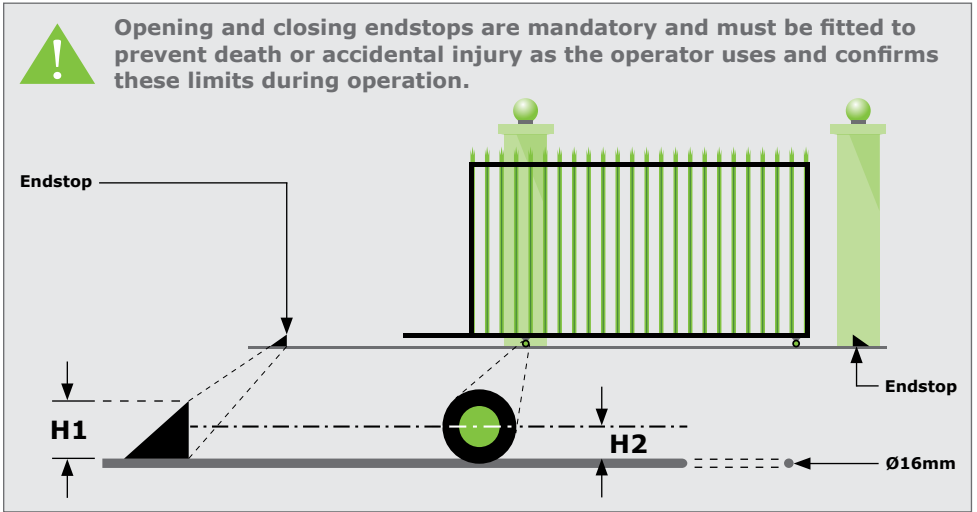


FIGURE 4. FITTING ENDSTOPS

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.

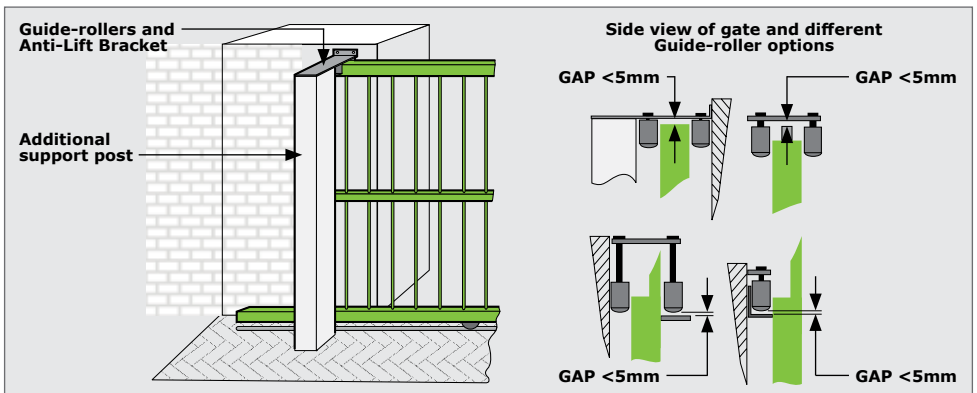


FIGURE 5. FITTING GUIDE-ROLLERS

5.4. Starting and Running Forces

Test the starting force of the gate as per Figure 6. 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:

D10 SMART

- Starting force - 40kgf
- Running (rated) force - 30kgf
- Maximum gate mass - 1000kg

D10 Turbo SMART

- Starting force - 24kgf
- Running (rated) force - 18kgf
- Maximum gate mass - 250kg

D20 SMART

- Starting force - 52kgf
- Running (rated) force - 39kgf
- Maximum gate mass - 2000kg

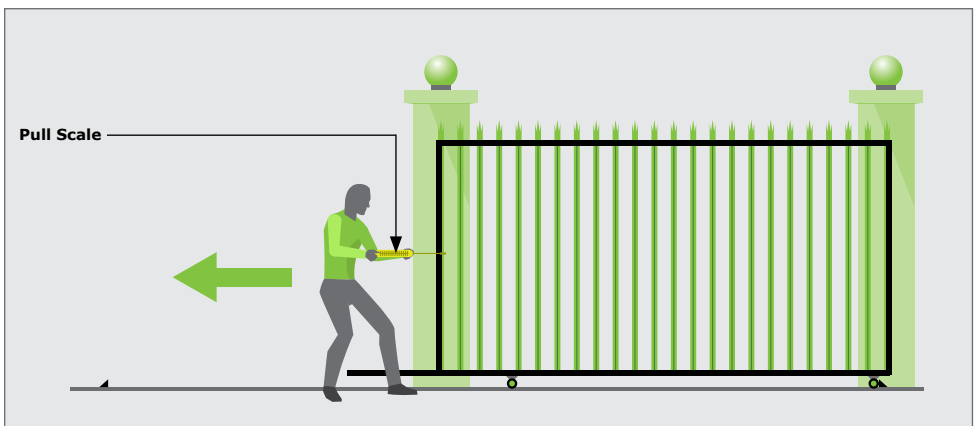


FIGURE 6. STARTING AND RUNNING FORCES

5.5. Cabling Requirements

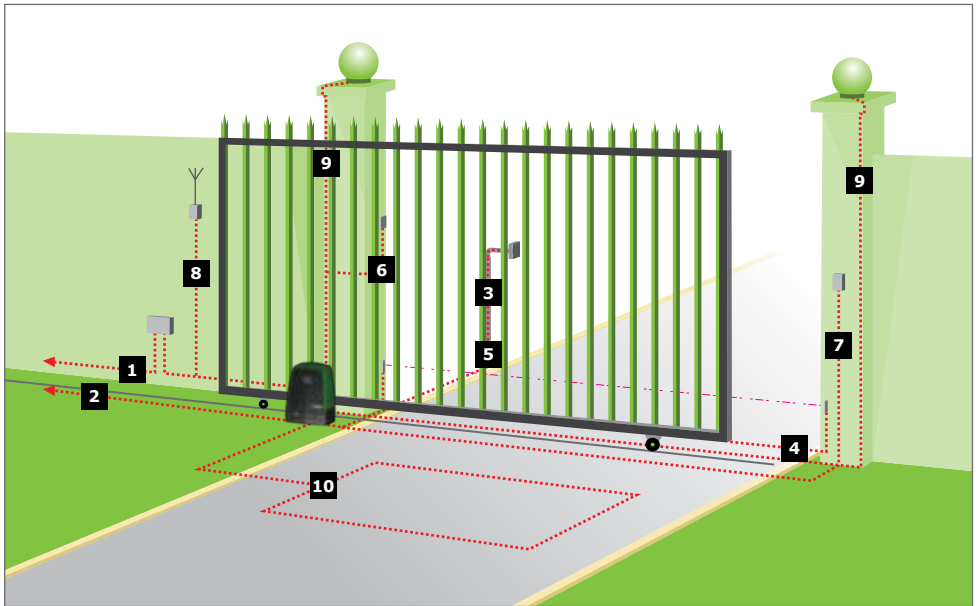


FIGURE 7. CABLING REQUIREMENTS

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 **D10 SMART / D10 Turbo SMART / D20 SMART** is lubricated by means of an oil bath.



The D10 SMART / D10 Turbo SMART / D20 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 **D10 SMART / D10 Turbo SMART / D20 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 **D10 SMART / D10 Turbo SMART / D20 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 **D10 SMART / D10 Turbo SMART / D20 SMART** will be installed. Refer to the examples shown below.



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

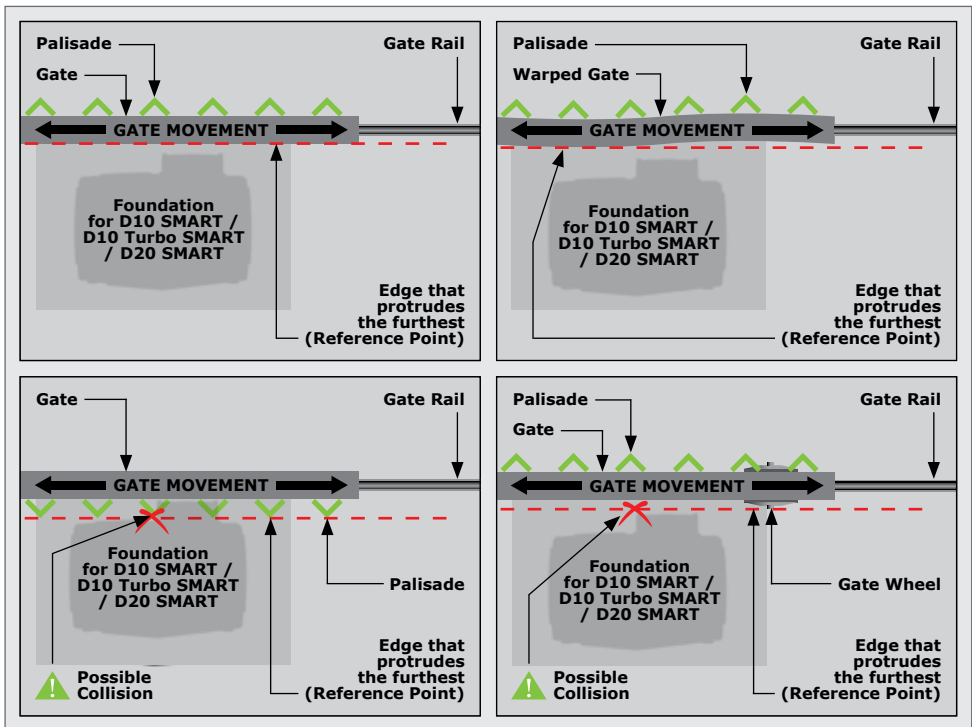


FIGURE 8. FINDING A REFERENCE POINT



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 **D10 SMART / D10 Turbo SMART / D20 SMART**.

7.1.2. Minimum Clearances

Below are site plan examples illustrating the minimum clearances required when installing the **D10 SMART**, **D10 Turbo SMART** or **D20 SMART**.

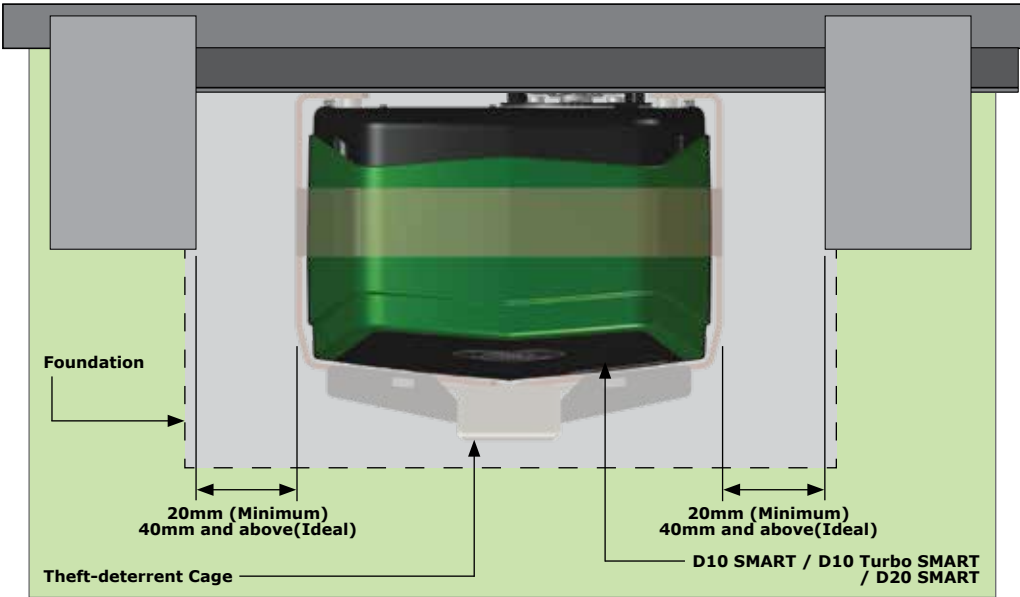


FIGURE 9. MINIMUM CLEARANCES - SIDES

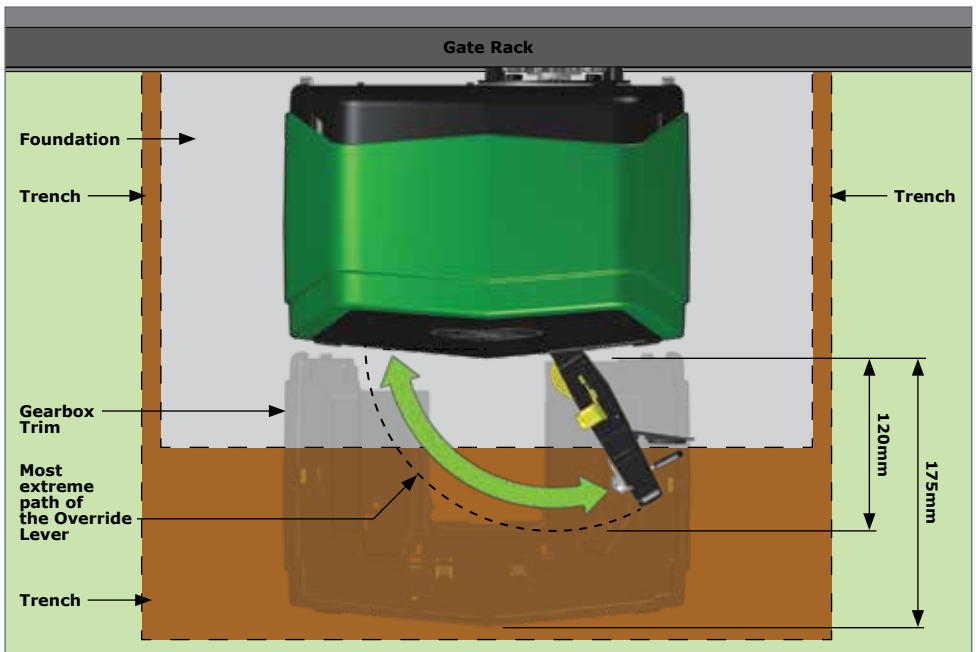


FIGURE 10. MINIMUM CLEARANCES - FRONT

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. However, Figures 12, 14 and 16 shows 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 rack supplied by Centurion Systems (Pty) Ltd and are to be used as guidelines only.

D10 SMART - Steel Rack

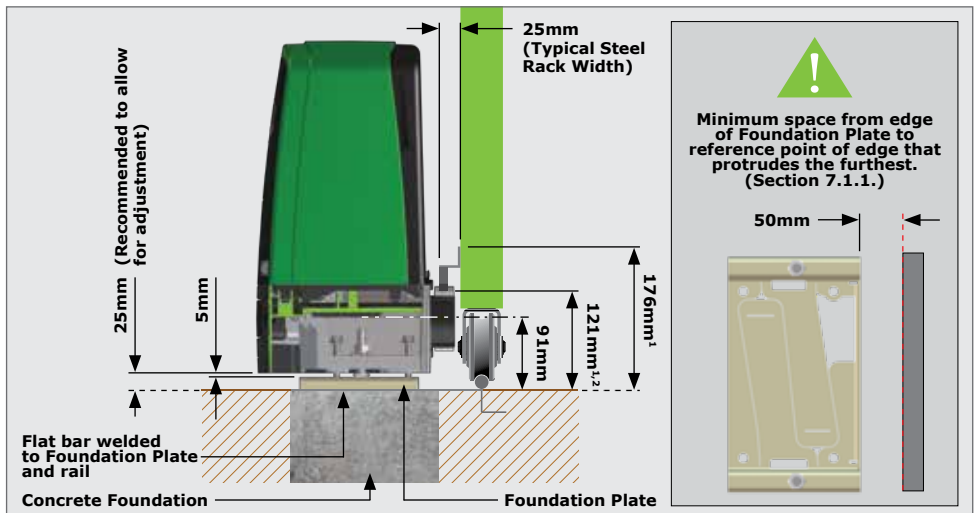


FIGURE 11. STEEL RACK ABOVE PINION

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 it in the middle of the output pinion with the operator fully forward on the slots.

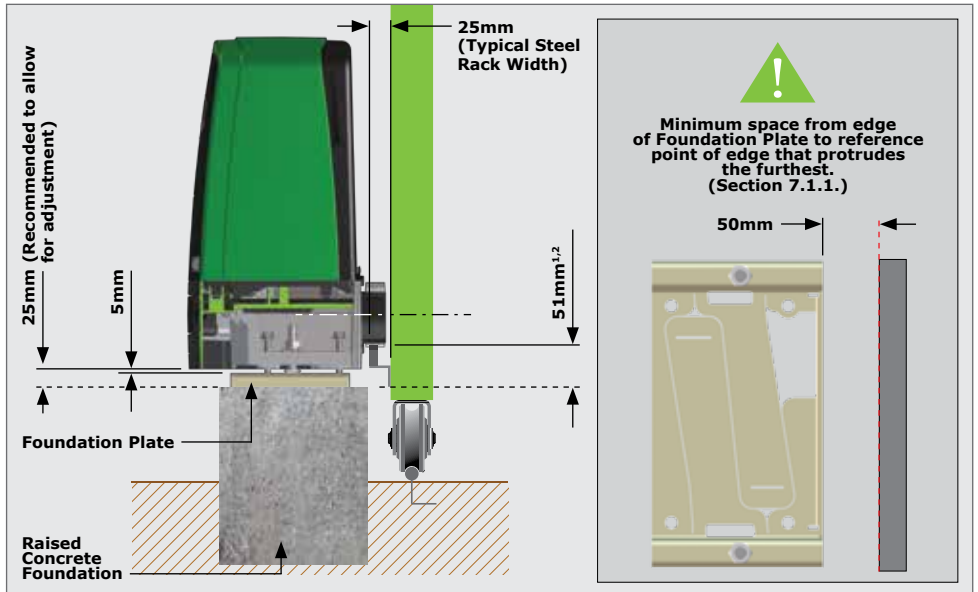


FIGURE 12. STEEL RACK BELOW PINION

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 it in the middle of the output pinion with the operator fully forward on the slots.



The Pinion Guard needs to be rotated 180 degrees if the rack below the pinion is desired for **ONLY** the **D10 SMART** and **D20 SMART**, and not the **D10 Turbo SMART**.

D10 Turbo SMART - Steel Rack

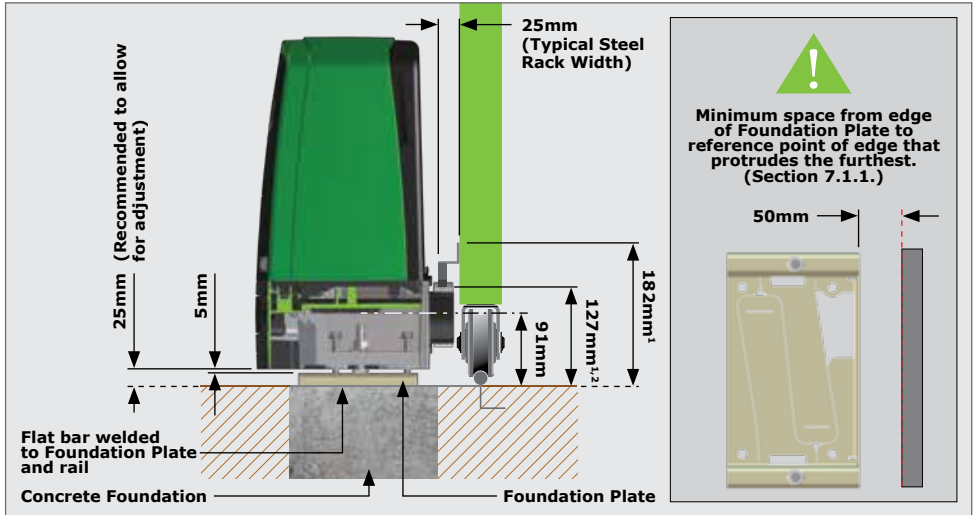


FIGURE 13. STEEL RACK ABOVE PINION - D10 TURBO SMART

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 it in the middle of the output pinion with the operator fully forward on the slots.

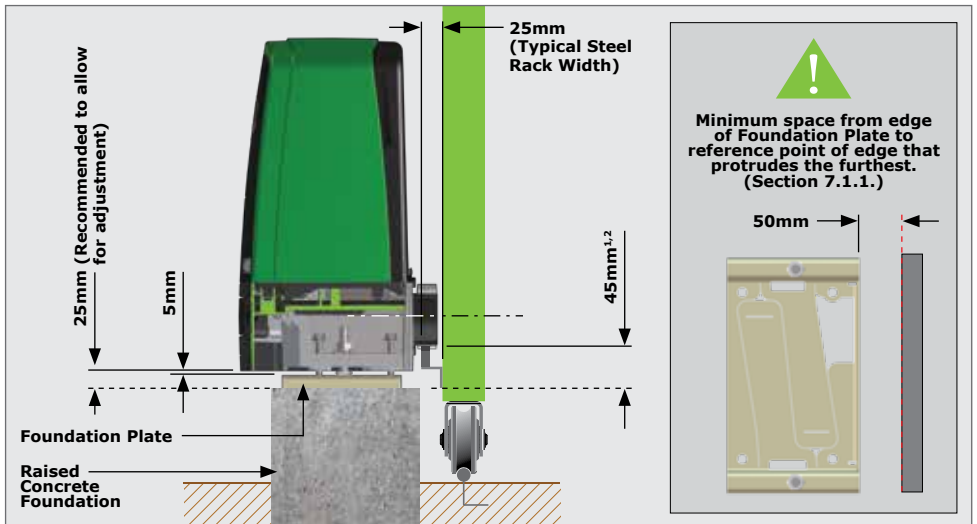


FIGURE 14. STEEL RACK BELOW PINION - D10 TURBO SMART

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 it in the middle of the output pinion with the operator fully forward on the slots.

D20 SMART - Steel Rack

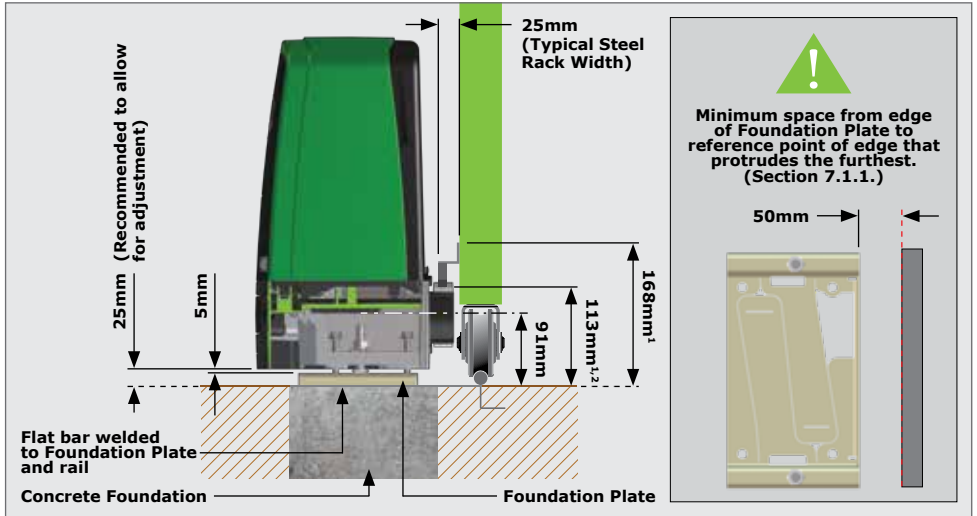


FIGURE 15. STEEL RACK ABOVE PINION - D20 SMART

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 it in the middle of the output pinion with the operator fully forward on the slots.

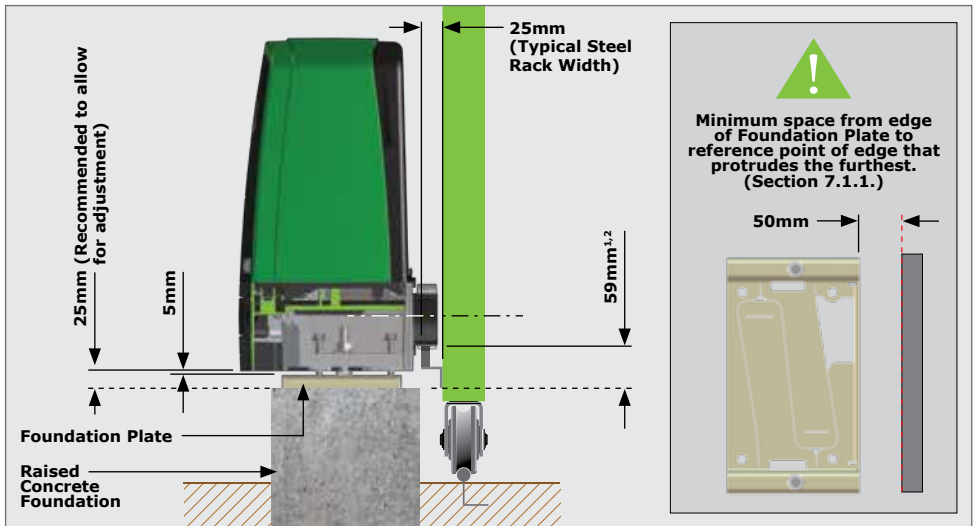


FIGURE 16. STEEL RACK BELOW PINION - D20 SMART

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 it in the middle of the output pinion with the operator fully forward on the slots.

7.1.4. Foundation Plate Installation



The Foundation Plate can either be set into a new concrete foundation, as in Section 7.1.4.1, or bolted down onto an existing concrete plinth as in Section 7.1.4.2.

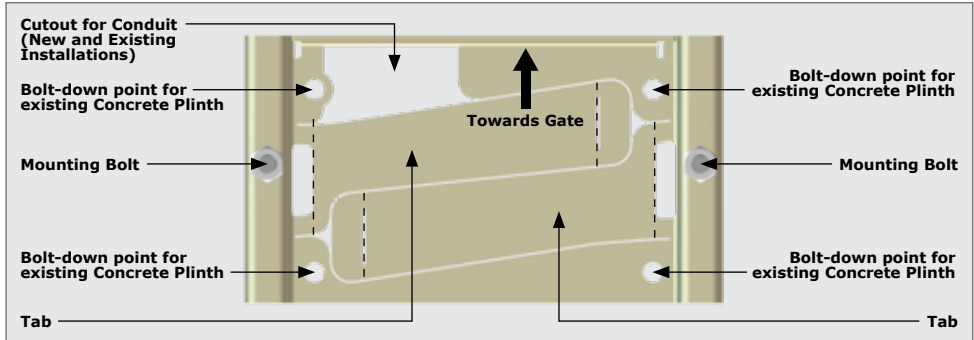


FIGURE 17. FOUNDATION PLATE ASSEMBLY - TOP VIEW

7.1.4.1. New Concrete Foundation



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

Using a pair of pliers, gently bend the two tabs of the Foundation Plate down to a 90° angle as shown in Figure 16.



Be careful not to deform the Foundation Plate while bending the tabs.

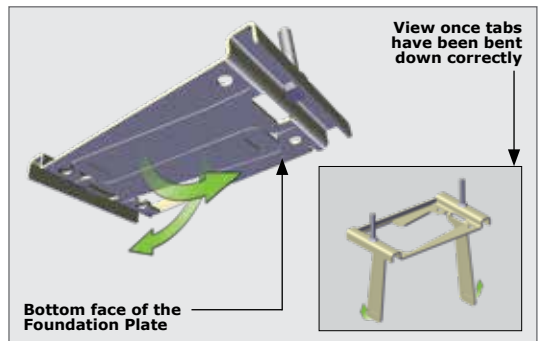


FIGURE 18



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 19.

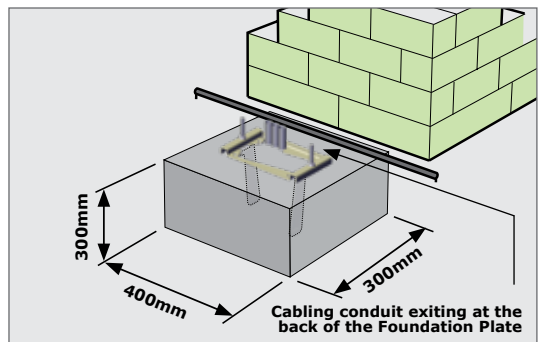


FIGURE 19

When using a concrete foundation, it is recommended that the Foundation Plate is welded to the rail/track of the gate using a short length of flat bar, as shown in Figure 20. 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.

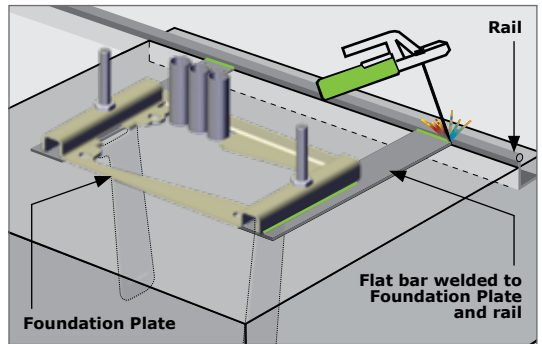


FIGURE 20

7.1.4.2. 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 Expansion Stud holes.



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



Ensure that the Expansion Studs do not protrude more than 23mm above the Foundation Plate.



Rerouting of existing cables may be necessary.

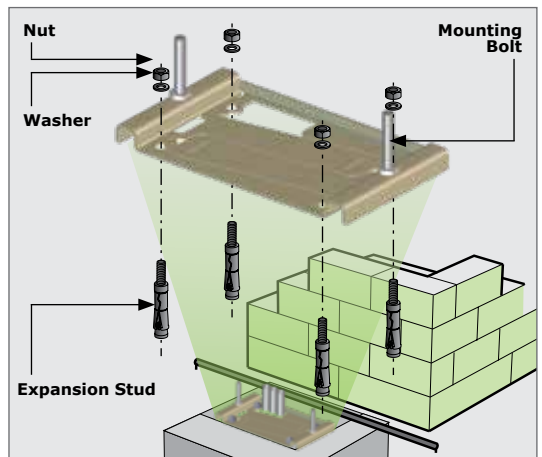


FIGURE 21

7.2. Retro-fit Installations (Existing Sites)

The **D10 SMART / D10 Turbo SMART** has been designed to retro-fit into existing D10 and D10 Turbo installations.

If the existing Foundation Plate is in a good condition, it is not necessary to replace it with a new **D10 SMART / D10 Turbo SMART** Foundation Plate. However, if the existing Foundation Plate is corroded or needs to be replaced for whatever reason, the **D10 SMART / D10 Turbo SMART** Foundation Plate can accommodate the existing footprint without the need to re-route cable conduits.

The **D20 SMART** is designed to fit existing foundation plates for D10 and A10 installations. However, there are potential sites where an A10 was mounted high on a foundation plate, and the **D20 SMART** will not be able to reach the rack. In these cases, the rack will need to be lowered.

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 450mm above the concrete foundation, and all signal cables (i.e. beams, etc.) 600mm above the concrete foundation, as shown in Figure 22.

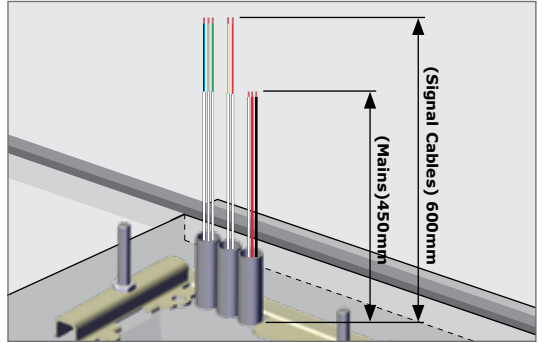


FIGURE 22

7.4. Preparing the Operator 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 **D10 SMART / D10 Turbo SMART / D20 SMART**.

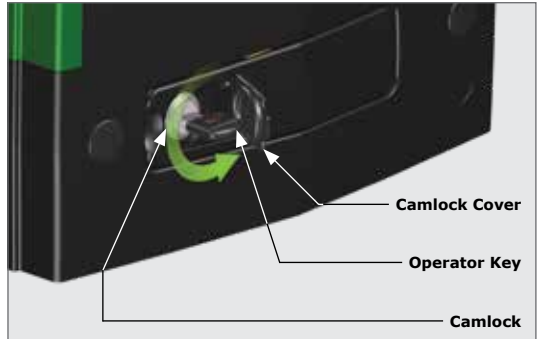


FIGURE 23

Remove the cover of the **D10 SMART / D10 Turbo SMART / D20 SMART** to expose the internal components, and place it to one side in a safe location.

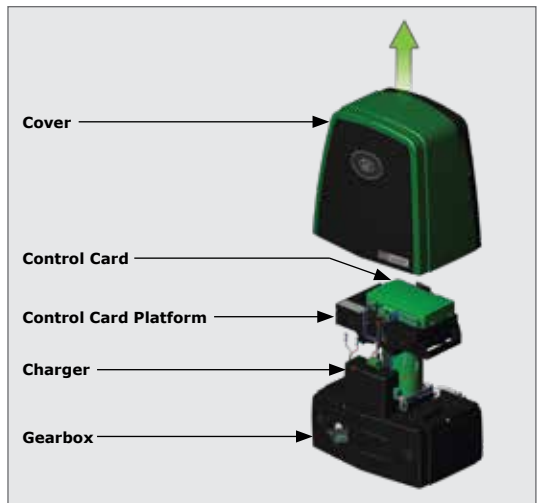


FIGURE 24

7.4.1. Removing the Charger

Disconnect the Charger from the **D10 SMART / D10 Turbo SMART / D20 SMART** Control Card at either Point "A" or Point "B".



If the disconnection is made at Point "A", note that there are two connector blocks that need to be disconnected from the Control Card.

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

Remove the Charger from the lower battery tray by gently pushing the Charger slightly down whilst pulling it towards the front of the **D10 SMART / D10 Turbo SMART / D20 SMART**. It should slide forward and off with ease.

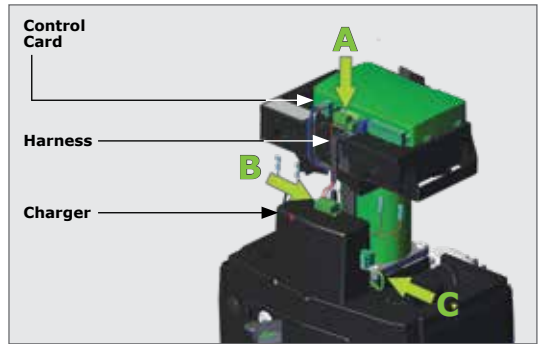


FIGURE 25

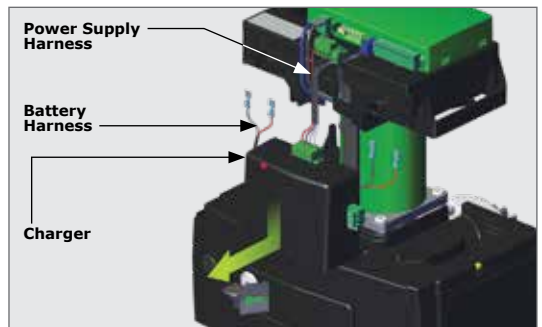


FIGURE 26

7.4.2. Removing the Gearbox Trim and Battery Tray Assembly

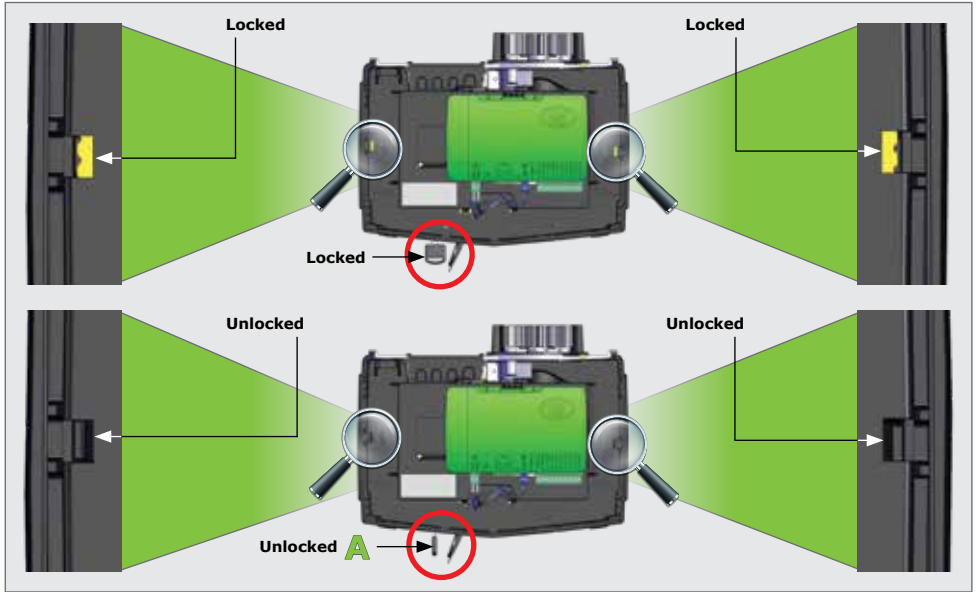


FIGURE 27

To remove the Gearbox Trim with the battery tray, firstly ensure that the Camlock is in the "unlocked" position (Figure 27 marked as "A").

Open the Manual Override Lever so that it is in the 90° position. Remove the Camlock Key, and keep it in a safe place. Hold the gearbox trim on both sides firmly and pull the entire assembly forward with a slight tug towards the front of the **D10 SMART / D10 Turbo SMART / D20 SMART**. It will unclip from the rear of the gearbox. Manoeuvre it over the Manual Override Lever to remove it completely off the gearbox.

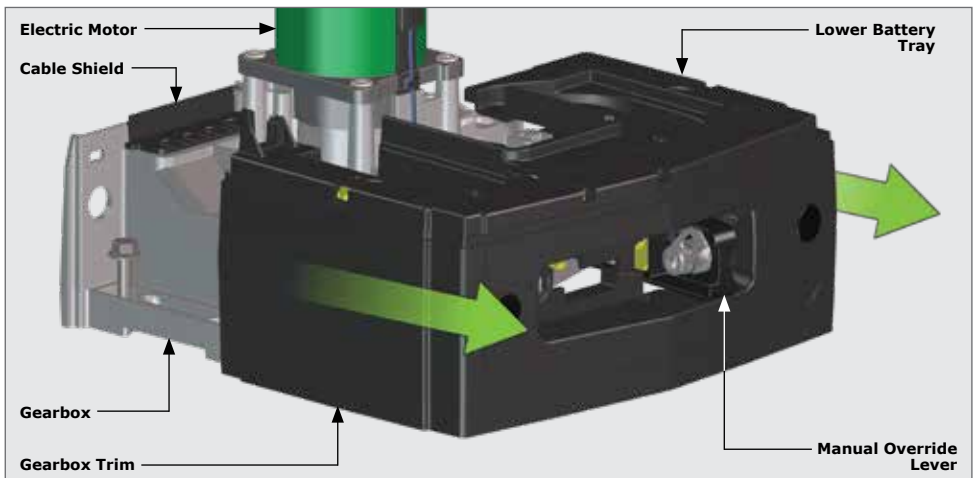


FIGURE 28

7.4.3. Removing the Control Card

Disconnect the Motor Wires at Point "D" and the Override Sensor Harness at Point "E" from the Control Card as Shown in Figure 29.

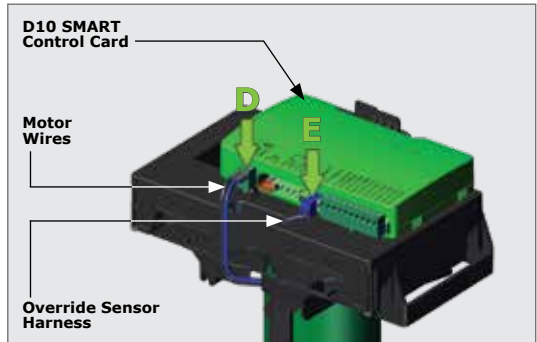


FIGURE 29

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

This will allow the Control Card to hinge forward.

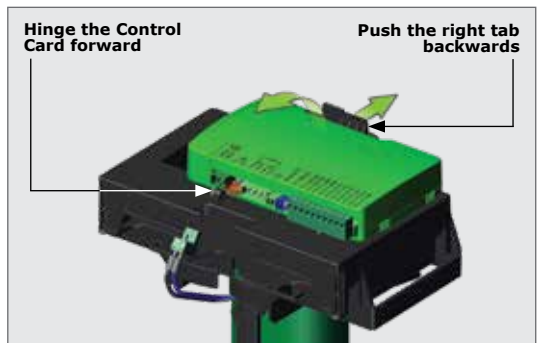


FIGURE 30

Lift the Control Card upwards and away from the **D10 SMART / D10 Turbo SMART / D20 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 **D10 SMART / D10 Turbo SMART / D20 SMART** is now ready to be mounted onto the Foundation Plate.

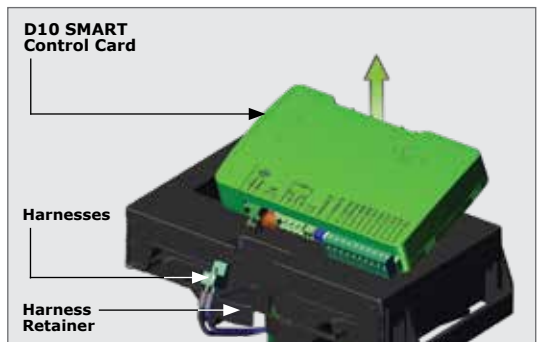


FIGURE 31

7.5. Mounting the Gearbox

Removing the Cable Shield

The Cable Shield needs to be removed before mounting the **D10 SMART / D10 Turbo SMART / D20 SMART** onto its Foundation Plate. This is done by lifting the Cable Shield up and away from the gearbox.

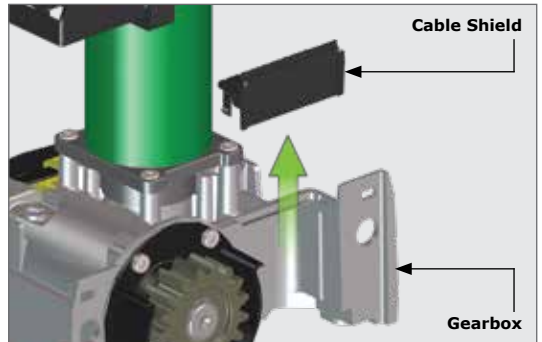


FIGURE 32

Once the Cable Shield has been removed, place the **D10 SMART / D10 Turbo SMART / D20 SMART** into position over the two Mounting Bolts, aligning them with the two slots at the bottom of the gearbox and rest the **D10 SMART / D10 Turbo SMART / D20 SMART** onto the Foundation Plate.

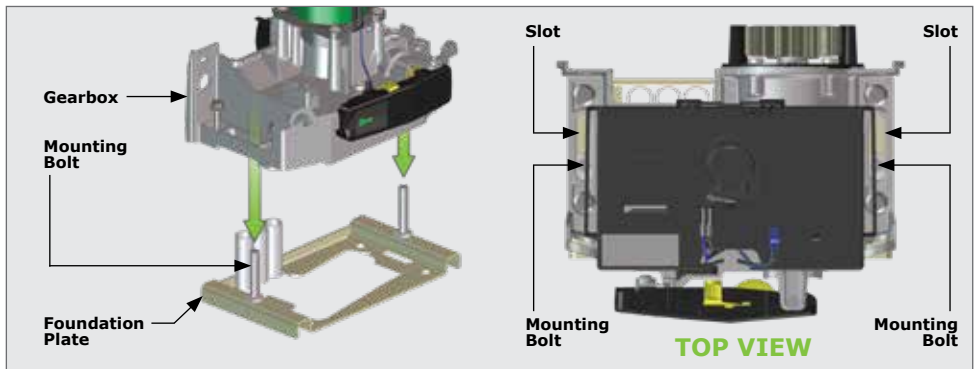


FIGURE 33

Once the Gearbox is resting on top of the Foundation Plate, slide the **D10 SMART / D10 Turbo SMART / D20 SMART** as far as possible towards the gate to allow for later adjustment.

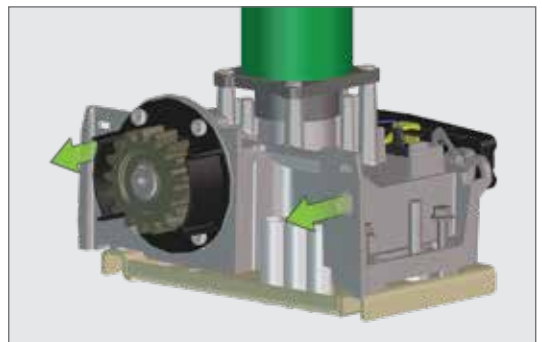


FIGURE 34

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 as shown in Figure 35.

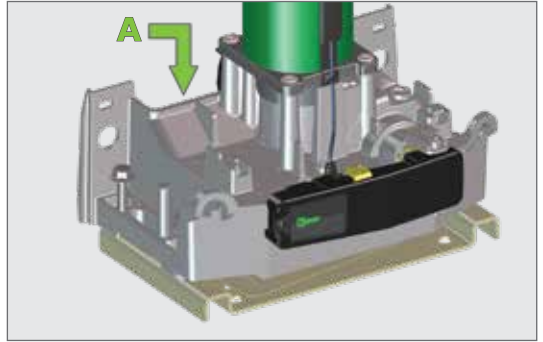


FIGURE 35

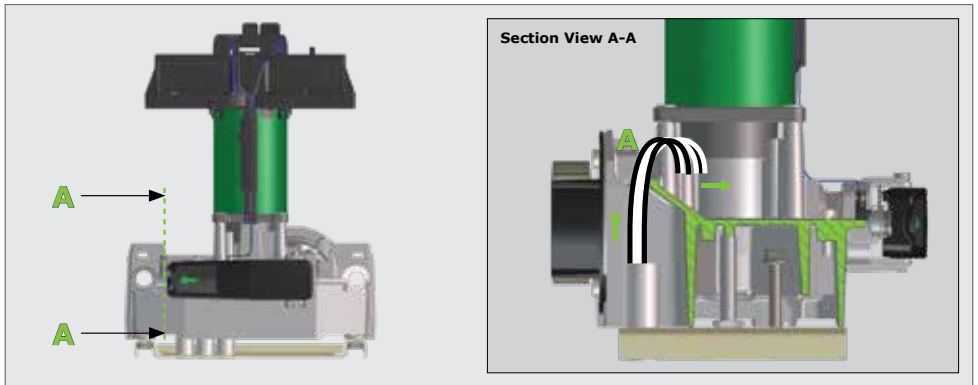


FIGURE 36. CABLE ROUTING FOR NEW INSTALLATIONS

Replacing the Cable Shield onto the Gearbox

The Cable Shield has punch-outs on it which cater for both Mains Cables and Communication cables. Punch out the holes which are needed and place the Cable Shield back into position onto the gearbox whilst guiding the cables through the holes.

There is a groove on either side of the Cable Shield to guide it into position.

Press firmly down, and you will hear a "click" once the Cable Shield has located correctly.

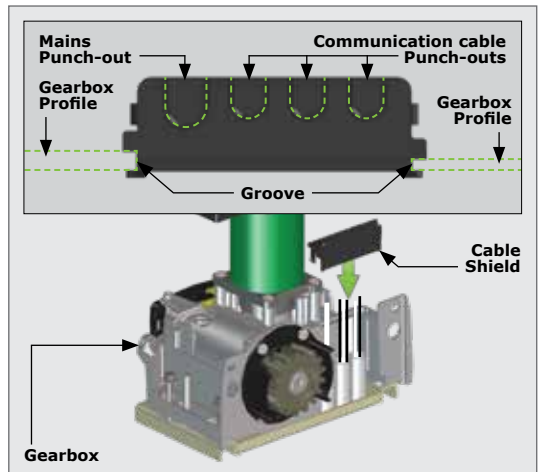


FIGURE 37

7.7. Manual Override



Before mounting the rack to the gate, ensure that the D10 SMART / D10 Turbo SMART / D20 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 to a 90° position. The Motor will then be placed in a temporary state of disengagement.

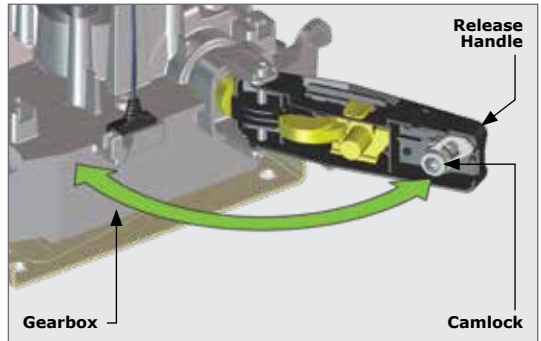


FIGURE 38

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 39.

To re-engage the **D10 SMART / D10 Turbo SMART / D20 SMART** (i.e. take the operator out of latched Manual Override), push the Release Handle Override Cam to the right and then slide it towards the Camlock. See Figure 40.

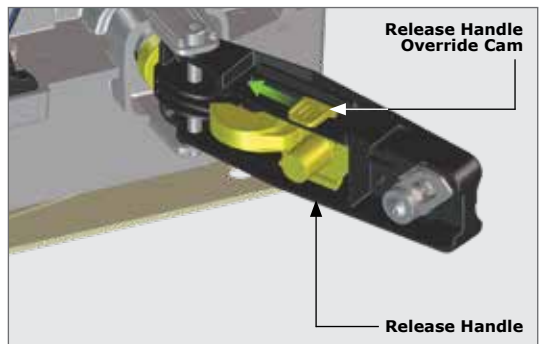


FIGURE 39

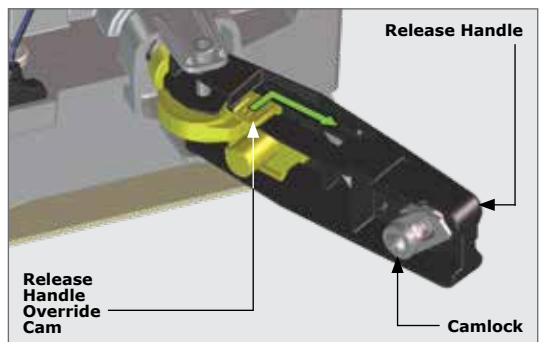


FIGURE 40

7.8. Height Adjustment

The **D10 SMART / D10 Turbo SMART / D20 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 Height Adjustment Bolts from the outside of the gearbox.

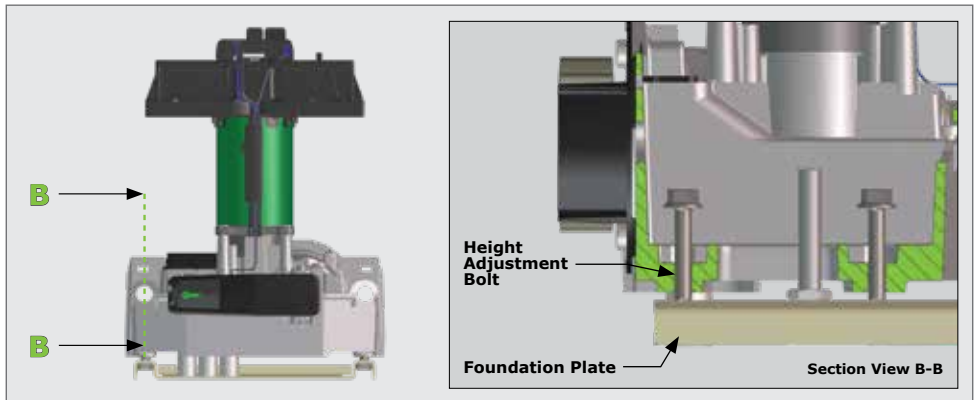


FIGURE 41

Using a ratchet and a 12mm socket, turn the Height Adjustment Bolt clockwise to lift the Operator, or turn it anti-clockwise, to lower the Operator.

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



Lubricating the Height Adjustment Bolts with Q20 or a similar general purpose lubricant will make adjusting the bolts easier.

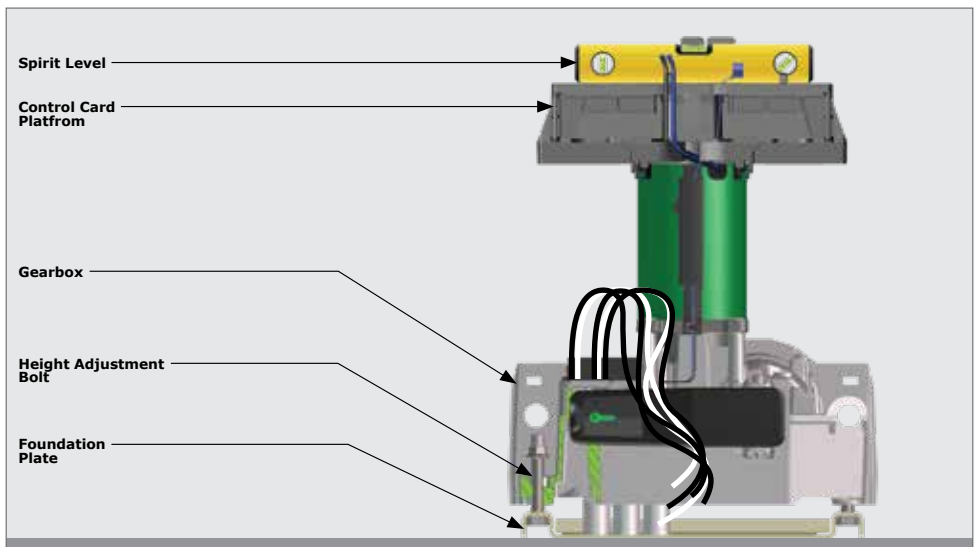


FIGURE 42

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 **D10 SMART / D10 TURBO SMART / D20 SMART** Gearbox is in Manual Override. Refer back to Section 7.7 - "Manual Override".

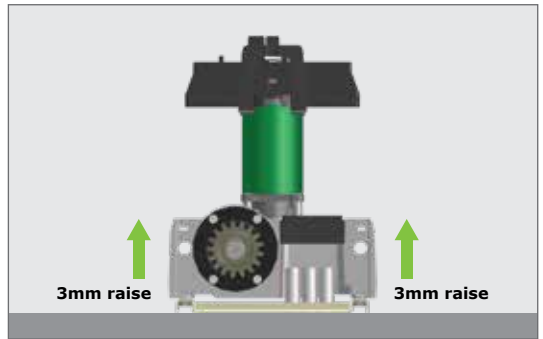


FIGURE 43

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

Slide the **D10 SMART / D10 TURBO SMART / D20 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.

Level the other end of the rack and fix to the side of the gate, as shown in Figure 45.

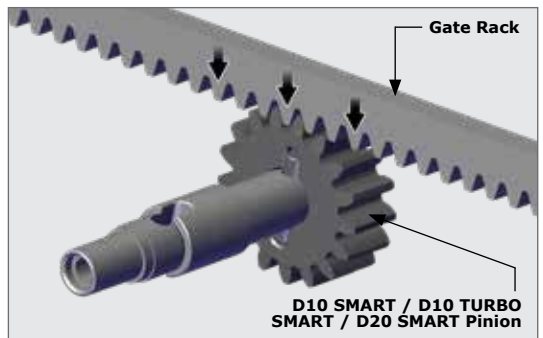


FIGURE 44

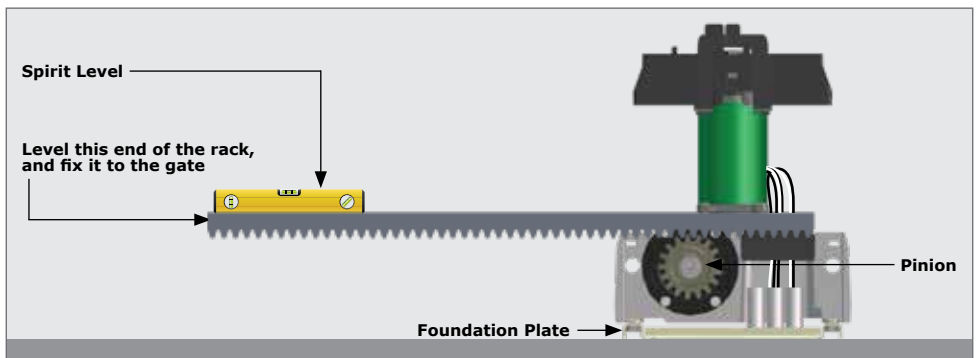


FIGURE 45. THE RACK AND OPERATOR FROM THE GATE'S PERSPECTIVE



Refer to the instructions on how to fix the Steel Rack to a gate in Section 7.9.1. - "Fitting Steel 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.

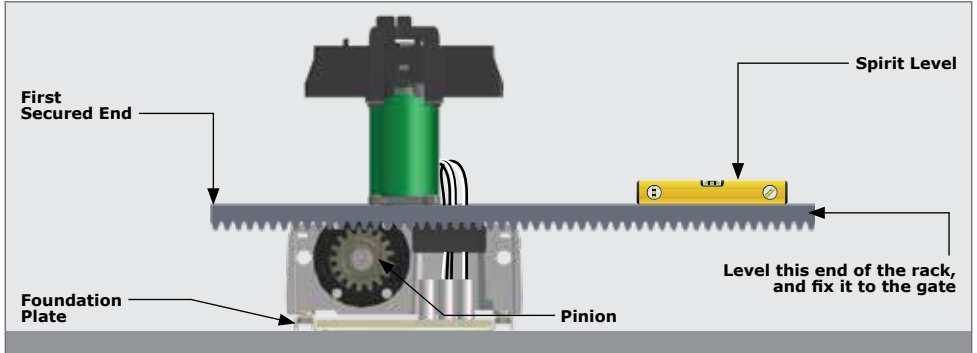


FIGURE 46. THE RACK AND OPERATOR FROM THE GATE'S PERSPECTIVE

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

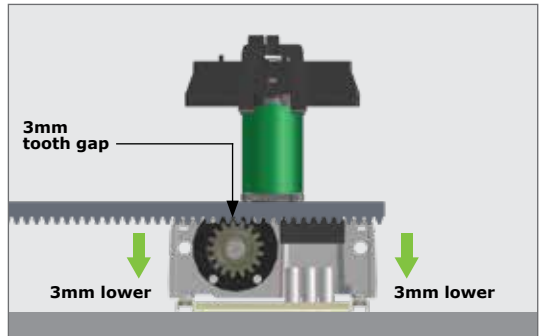


FIGURE 47

7.9.1. Fitting Steel Rack to the Gate

Fix the Steel Rack with the steel angle brackets¹. The brackets must be spaced no more than 300mm apart.

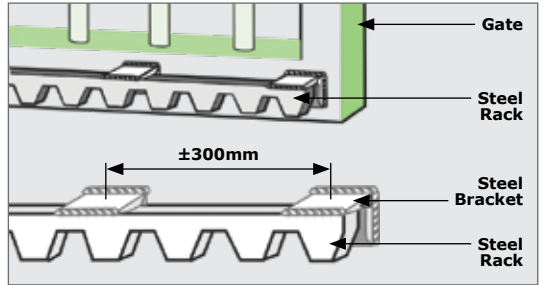


FIGURE 48

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.

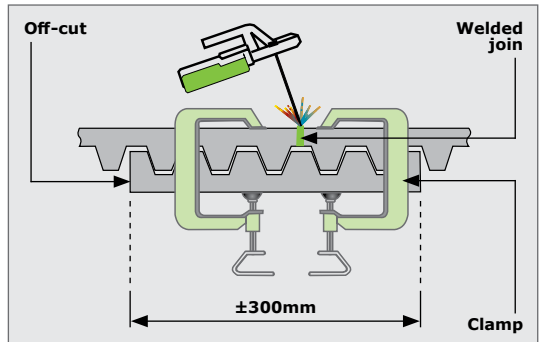


FIGURE 49

1. The Steel Angle Brackets are not supplied with the **D10 SMART / D10 Turbo SMART / D20 SMART**.

7.9.2. Finalising the Height Adjustment

Slide the **D10 SMART / D10 TURBO SMART / D20 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.

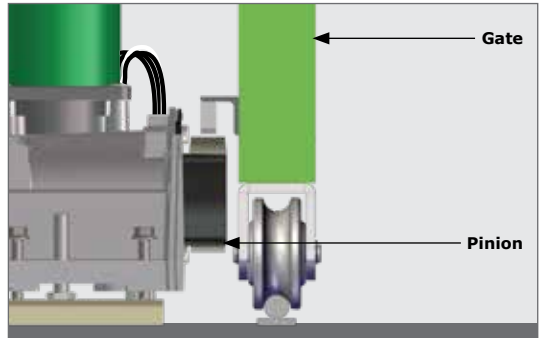


FIGURE 50

7.9.3. Placing the Gearbox Mounting Washers, Spring Washers and Lock Nuts

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

Place one Gearbox Mounting Washer, 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 height of the **D10 SMART / D10 Turbo SMART / D20 SMART** firmly in position.

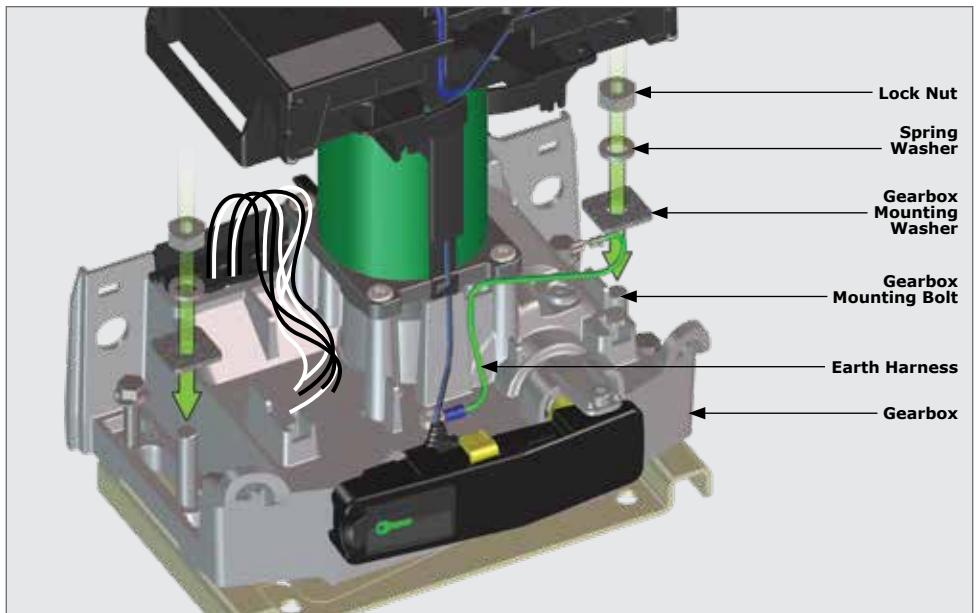


FIGURE 51

7.10. Re-assembling the D10 SMART / D10 Turbo SMART / D20 SMART

7.10.1. Placing the Gearbox Trim and Charger back into Position



Ensure that the Camlock is in the "locked" position and that the Manual Override Lever is open to the 90° position.

Ensure that the Manual Override Lever is in the open position, and slide the Gearbox Trim into position. Whilst doing this, route the Earth harnesses through. A click from both sides will be heard if the tray is fitted correctly.

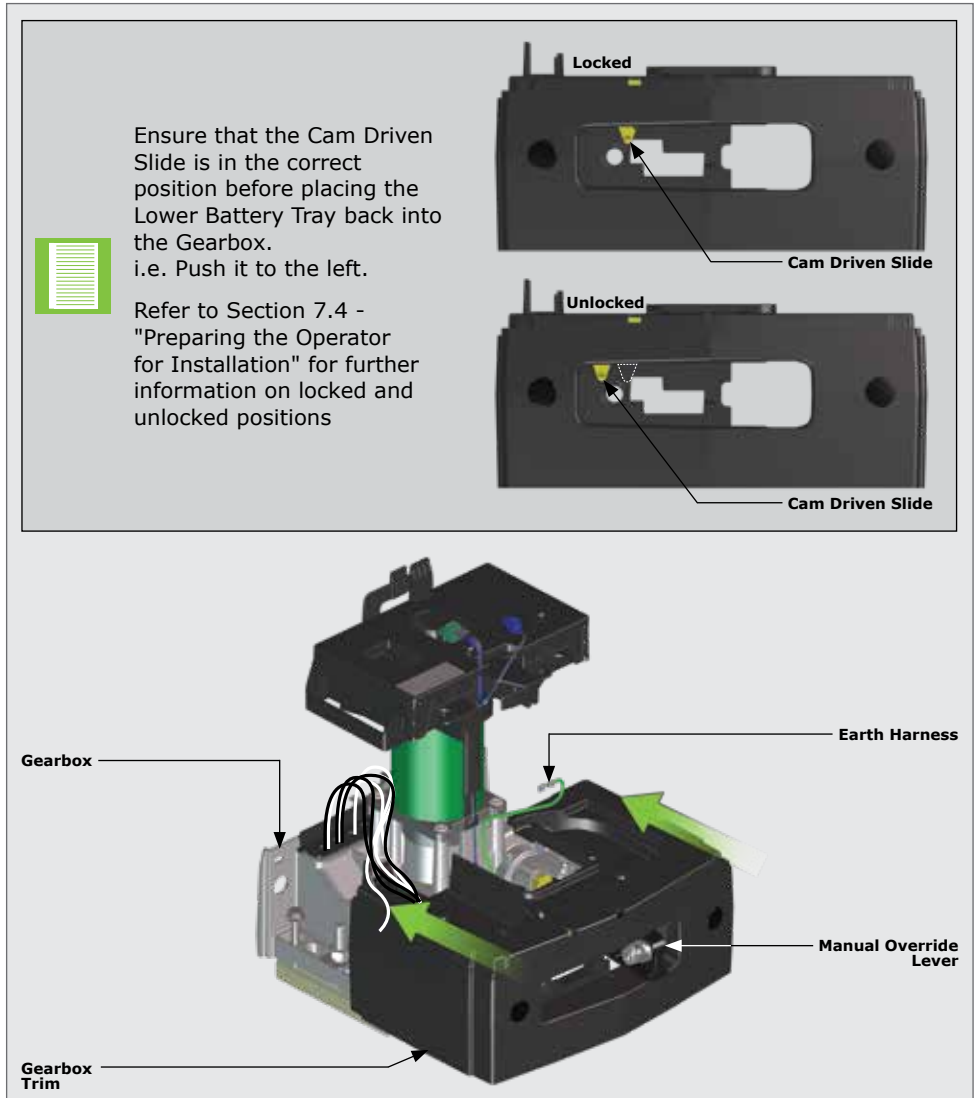


FIGURE 52. GEARBOX TRIM PLACEMENT

Place the Charger back into position by aligning the three studs at the bottom of the Charger with the three slots found on top of the Gearbox Trim.

Place the studs of the Charger into the three slots on the Gearbox Trim. Firmly press the Charger down, and push it toward the Electric Motor, sliding it along the slots.

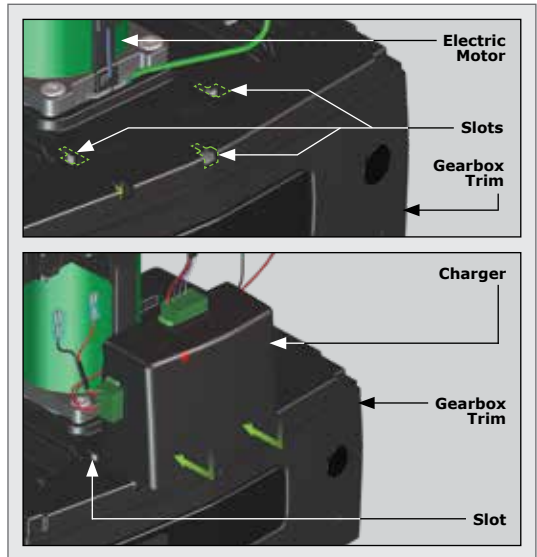


FIGURE 53. CHARGER PLACEMENT

7.10.2. Placing the Control Card back into Position

Tilt the Control Card towards the back of the Control Card Platform and align the wider gap with the clips shown in Figure 53.

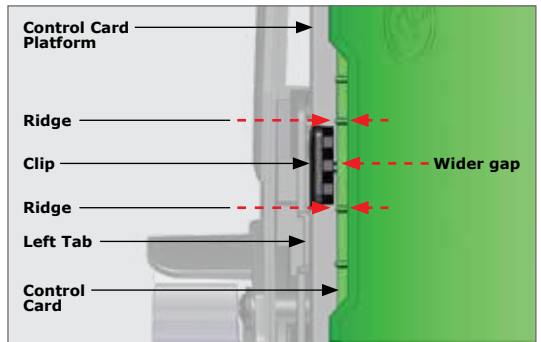


FIGURE 54

Once aligned, hinge the Control Card under the tab's lip, 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 Control Card Platform.

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

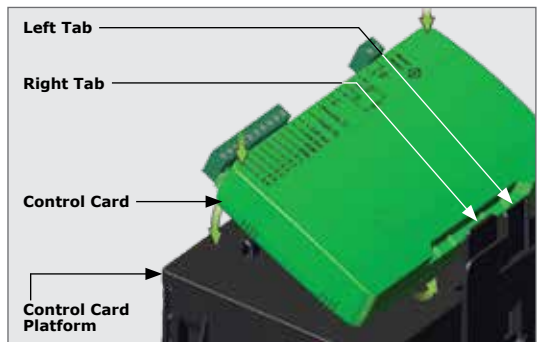


FIGURE 55

7.10.3. 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 far Left of the Control Card, and the blue on the immediate right of the black.

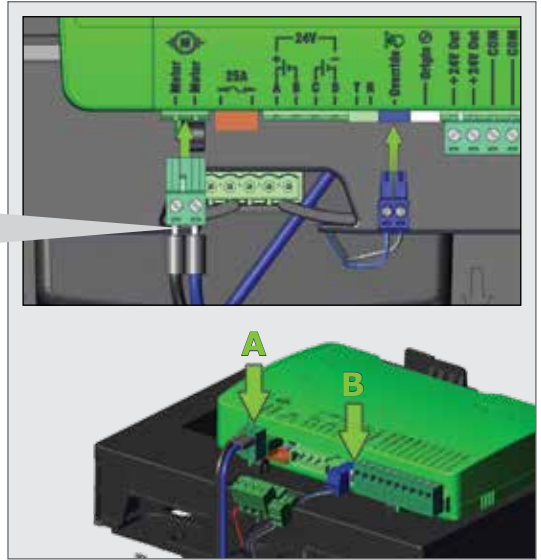


FIGURE 56

Reconnect the Charger Harness to the point from which it was disconnected earlier, either at Position "C" or at Position "D".



If the connection is made at Point "C", note that there are two connector blocks that need to be reconnected to the Control Card.



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

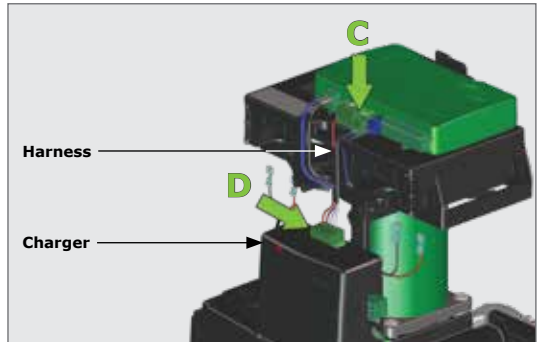


FIGURE 57

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

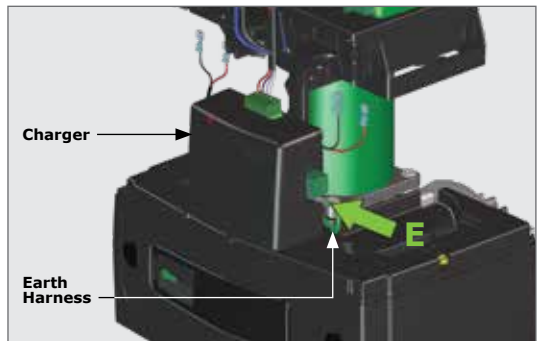


FIGURE 58

7.11. Installing the Origin Sensor and Marker



The Origin Sensor and Marker is an optional extra for the **D10 SMART**, but is mandatory to use for the **D10 Turbo SMART**, and the **D20 SMART** as a safety precaution.

7.11.1. Installing the Origin Sensor

Locate the Origin Sensor and its Harness

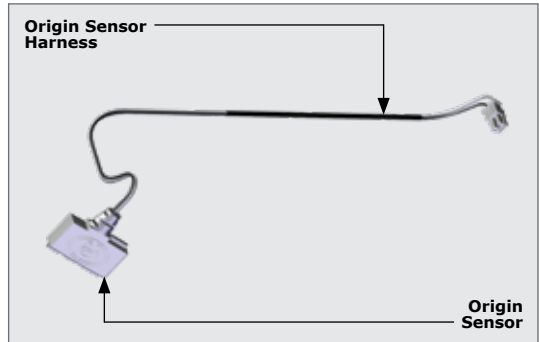


FIGURE 59

Place the Origin Sensor into its dedicated slot found just above the Pinion on the Lower Battery Tray.



Note the orientation of the Origin Sensor.

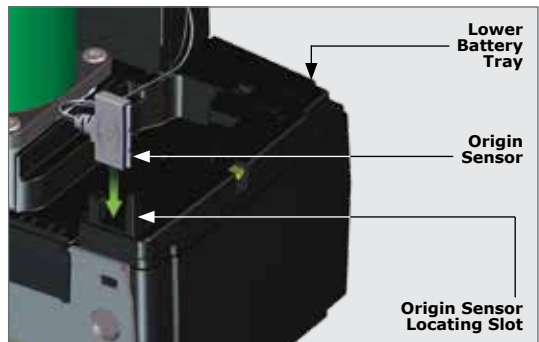


FIGURE 60

Route the Harness around the electric motor to the front of the operator, and through the cable retainers found in front of the Control Card.

Connect the Harness to the white "Origin" Terminal found on the Control Card.



FIGURE 61

7.11.2. Mounting the Origin Marker

Firstly, close the gate completely.

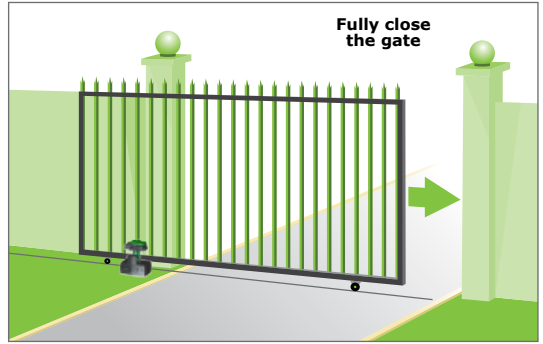


FIGURE 62

Mount the Origin Marker to the rack a minimum of 500mm from the origin sensor. Refer to Figure 62.

It is possible to make the distance between the marker and the sensor much greater than 500mm. However, if using the pedestrian opening facility, although the position of the marker will not affect the width of the pedestrian opening, it is preferable to have the marker mounted inside of the pedestrian opening point.

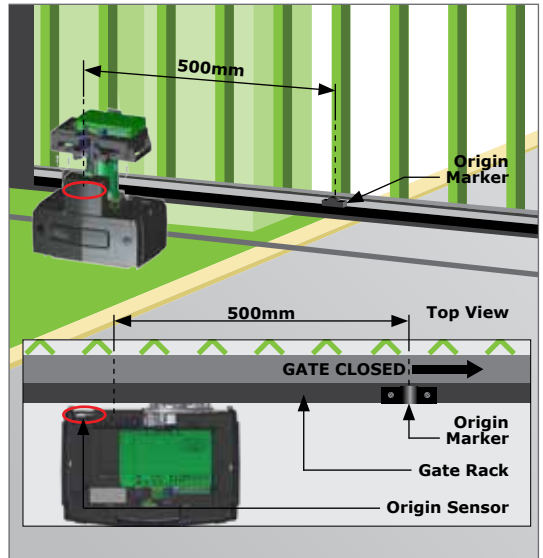


FIGURE 63



Note the orientation of the Origin Marker.

Manually slide the gate open until the origin marker is in line with the origin sensor.

Ensure the distance between the face of the marker and front face of the sensor is between 10 and 20mm.

Adjust distance by sliding the Origin Marker along the slotted mounting holes until the specified distance is achieved.

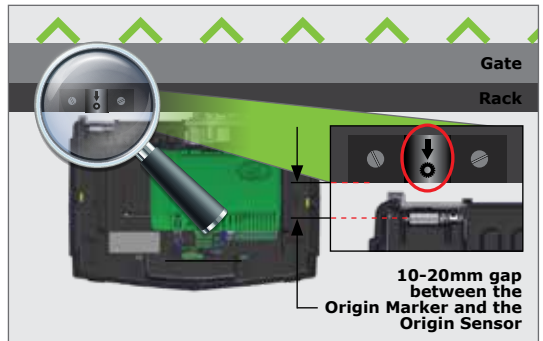


FIGURE 64

7.11.3. Mounting the Origin Marker onto the Steel Rack

For Steel Rack, mount the Origin Marker onto the Rack using the bracket provided.

Weld the bracket to the Rack.

Bolt the Origin Marker onto the Bracket using the fasteners provided.



Ensure that the Origin Marker is within +/- 10mm of the Origin Sensor in the vertical plane.

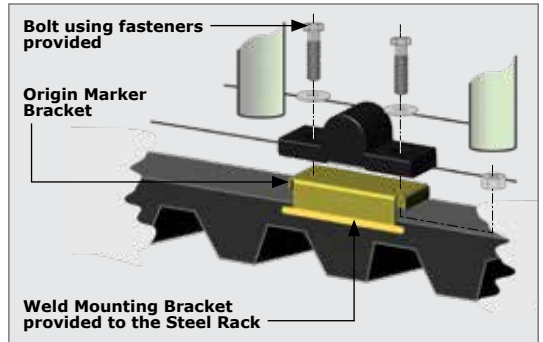


FIGURE 65

8. Completing the Installation

8.1. Fitting the Batteries

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

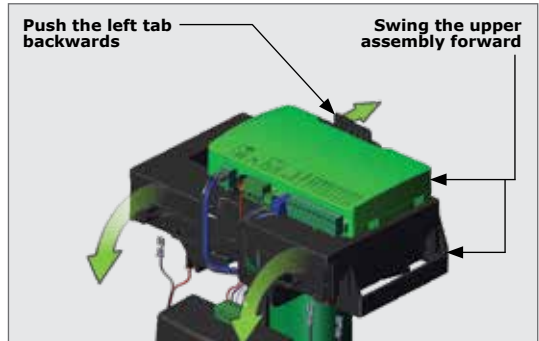


FIGURE 66

Place a Battery into the designated area found on top of the Gearbox Trim on the left. Route the Signal Wires below the Left Battery, and the Power Cables behind the motor and under the Right Battery then place the remaining Battery in its designated area on the right.



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

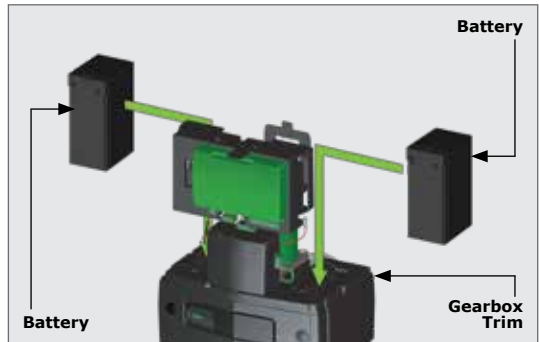


FIGURE 67

Swing the upper assembly back into position over the batteries.

A click 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.

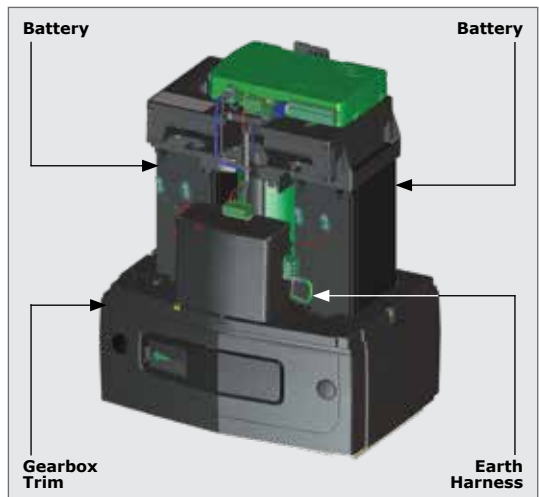


FIGURE 68

Connect both batteries up with the supplied harness, and ensure that it is connected to the left side of the Charger.

Route the accessory cables around the back of the Charger and through the cable retainers found at the bottom of the accessory storage.



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

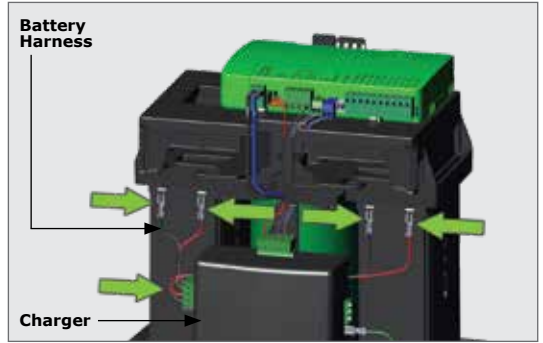


FIGURE 69

8.2. Accessory Installation and Storage

There are dedicated trays below the **D10 SMART / D10 Turbo SMART / D20 SMART** Control Card to conveniently install and store any accessories connected to the Operator.

Opening the two retaining doors, reveals the storage space for accessory products, such as the G-ULTRA, or External Receivers.

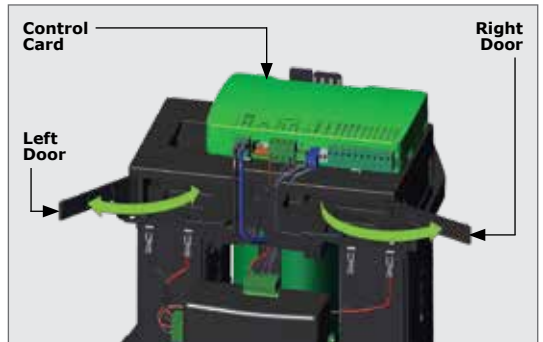


FIGURE 70

Wire the accessory device to the Operator, place it into the space provided, and close the door.

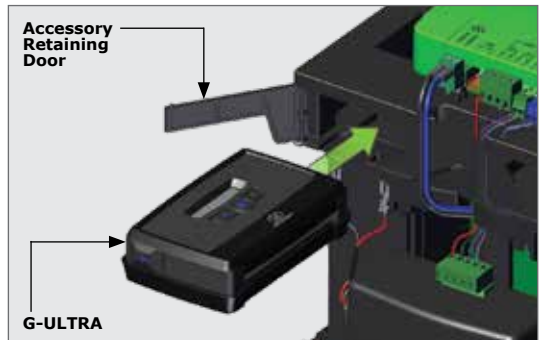


FIGURE 71

8.3. Wiring the Control Card on its Default Settings

The **D10 SMART / D10 Turbo SMART / D20 SMART** Control Card's Input / Output terminals are defaulted with the following configuration;

Control Card Terminal	Default Setting	Control Card Terminal	Default Setting
I/O1	Trigger (TRG)	I/O4	Gate Status
I/O2	Pedestrian (PED)	I/O5	Unassigned
I/O3	Infrared Beam Close (IRBC)	I/O6	Unassigned

TABLE 3

8.3.1. Closing Infrared Beam Wiring (i5 Infrared Beams)

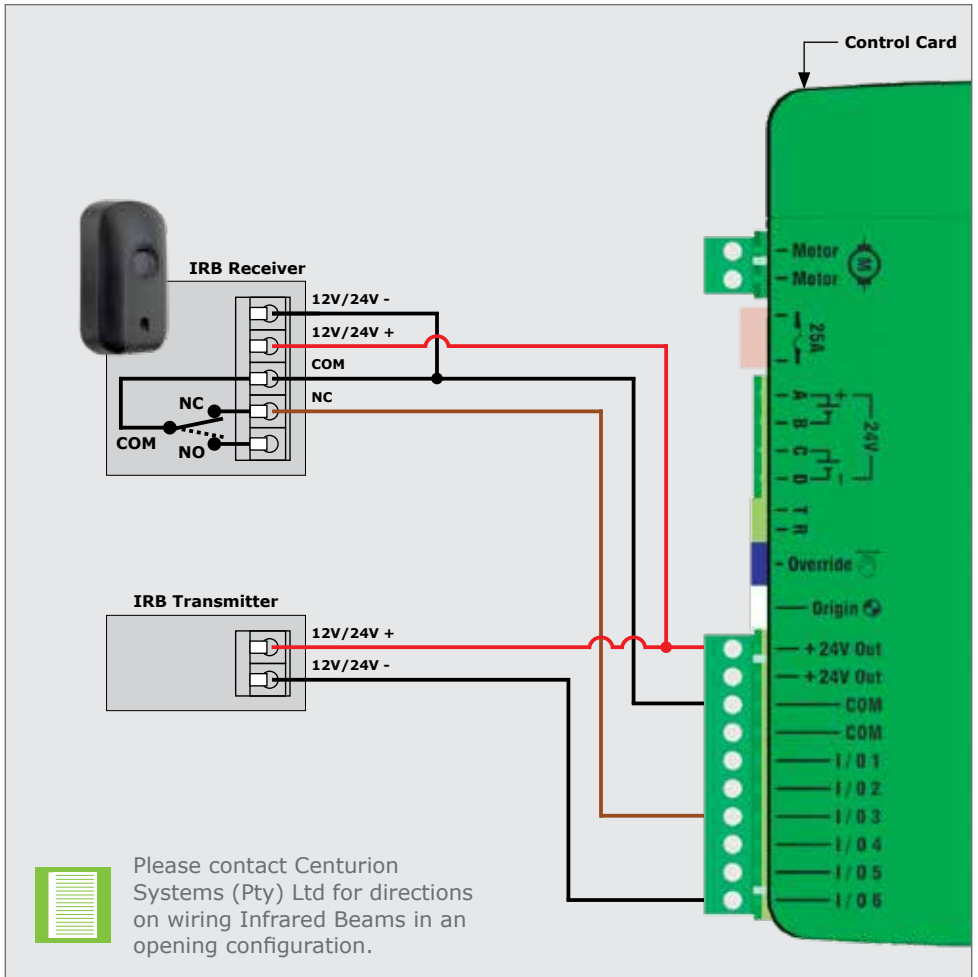


FIGURE 72

8.3.2. Closing Infrared Beam Wiring (Photon Infrared Beams)

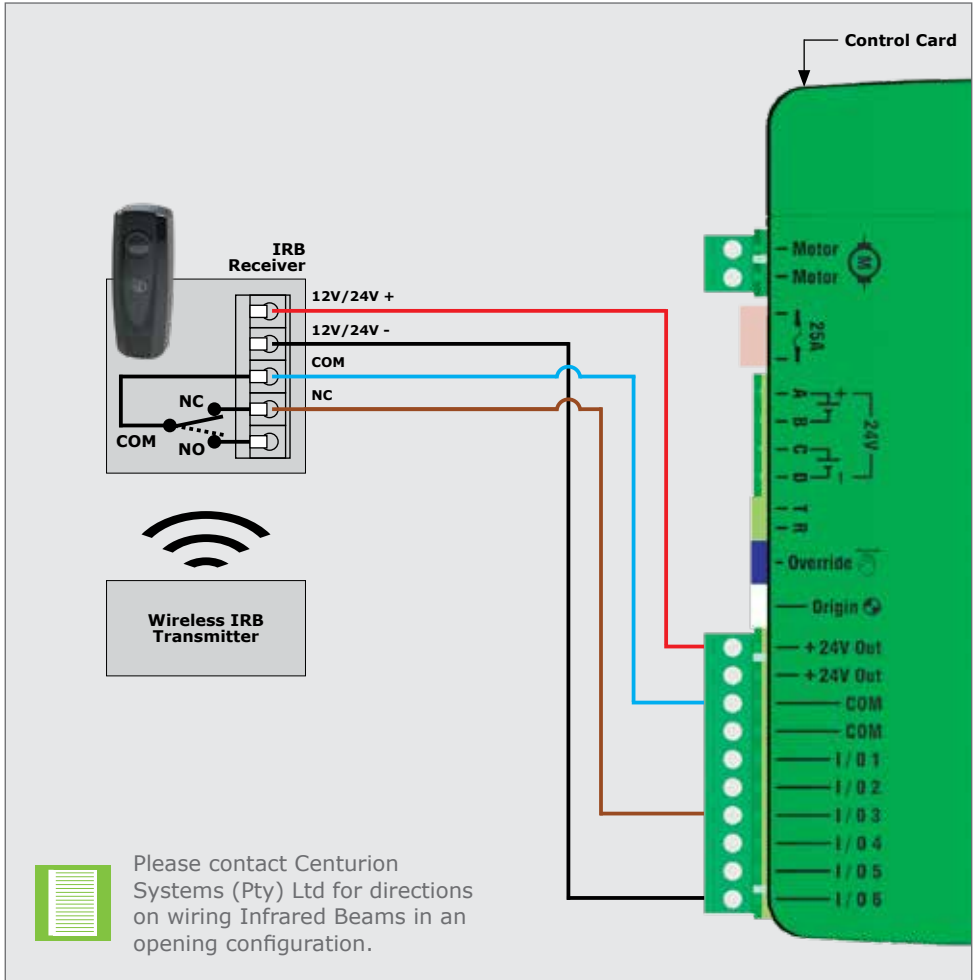


FIGURE 73

8.3.3. External Radio Receiver and Loop Detector Wiring

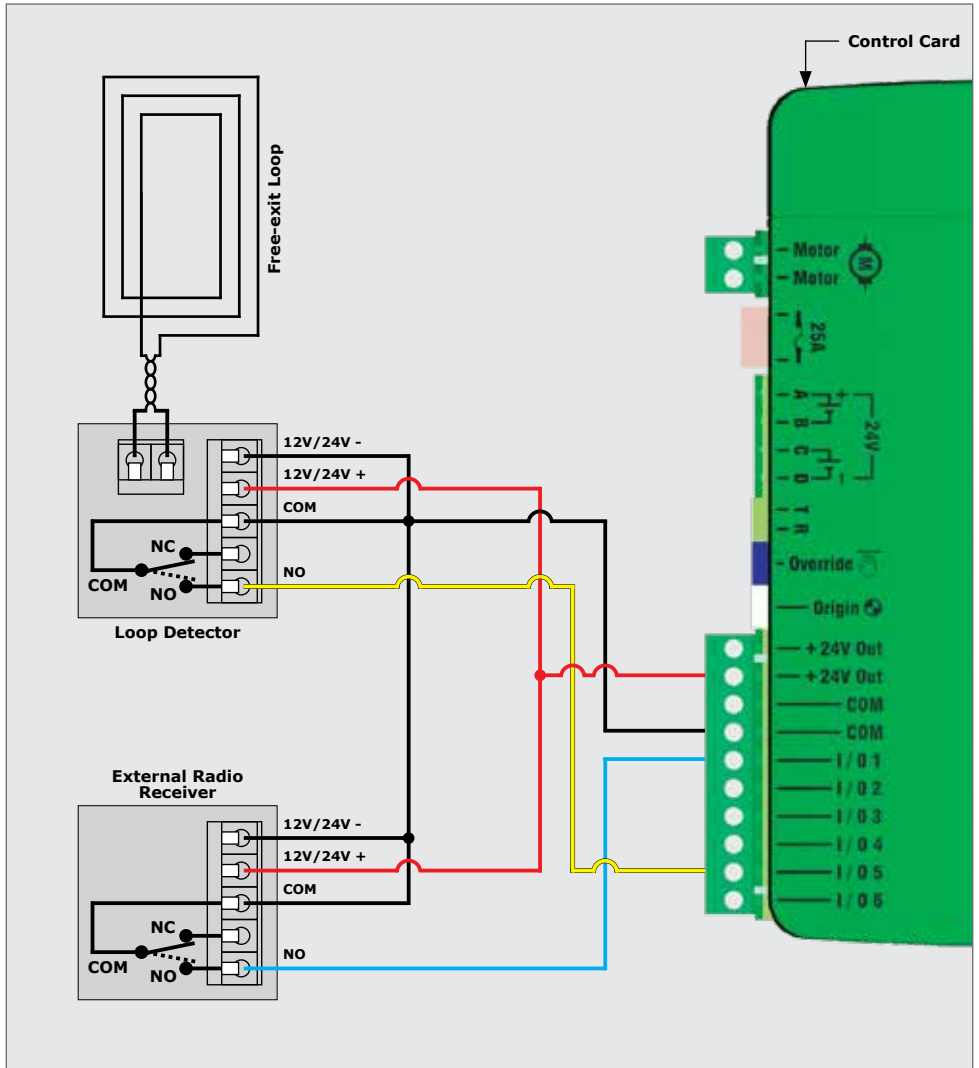


FIGURE 74

8.3.4. G-ULTRA to D10 SMART / D10 Turbo SMART / D20 SMART Wiring

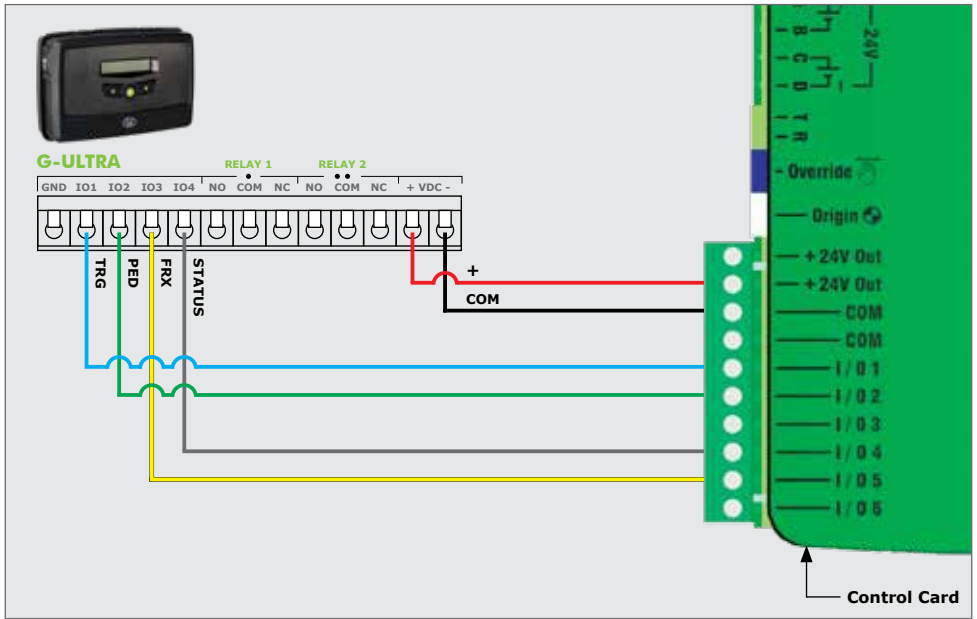


FIGURE 75

8.3.5. 24V Siren to D10 SMART / D10 Turbo SMART / D20 SMART Wiring

- Open the MyCentsys Pro mobile application on your smartphone and tap on the three dots at the bottom of the screen, which will display an additional menu
- Tap on Settings and select Alarms
- Select Tamper Theft Alarm and enable the alarm using the slider
- Ensure that Auto Arm is on
- Select the sensitivity setting most suitable to your preferences
- Select I/O 5 or I/O 6 under Assigned I/O
- Adjust the Output Pulse Length according to your preferences

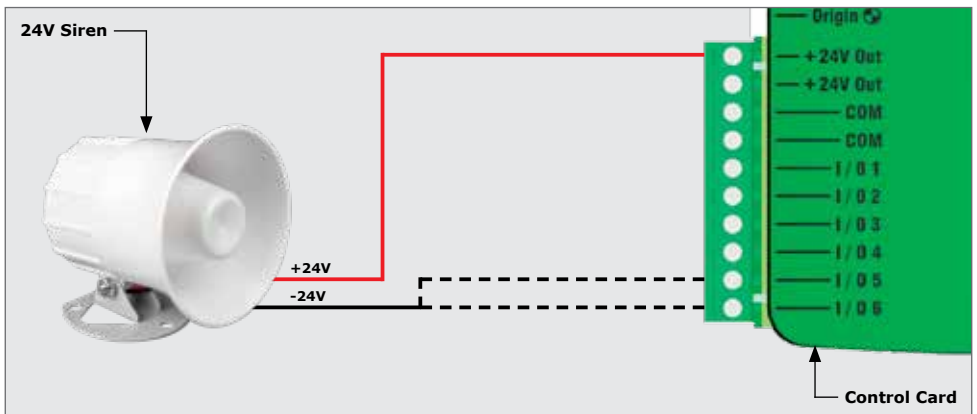


FIGURE 76

8.3.6. Synchronisation of two D10 SMART / D10 Turbo SMART / D20 SMART Operators

The following diagram illustrates how to connect two **D10 SMART / D10 Turbo SMART / D20 SMART** controllers so that the operation of the operators is synchronised.

Configure the settings as follows for the respective controllers;

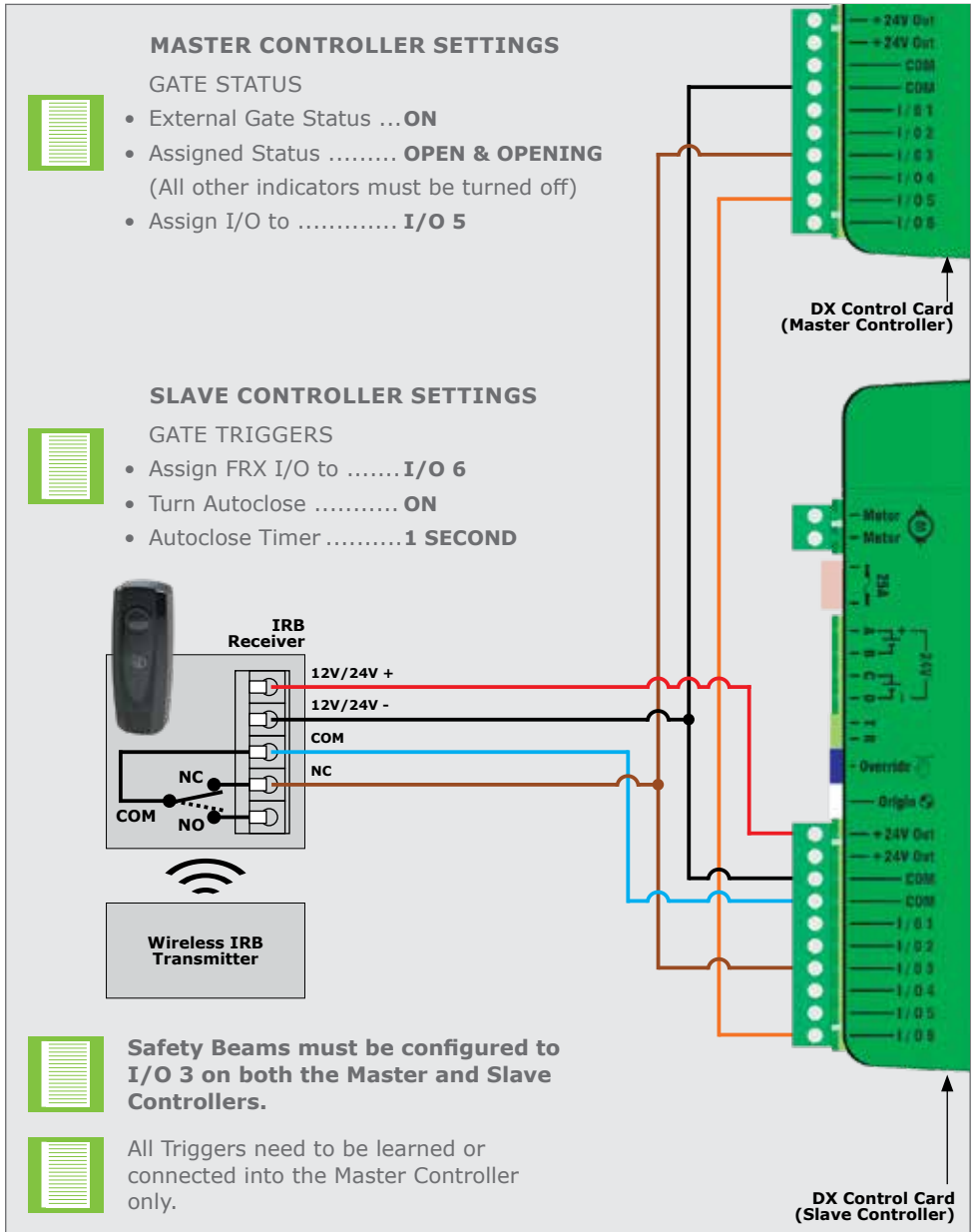


FIGURE 77

8.4. Commissioning the System

1. Scan the QR Code in Figure 78.
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.

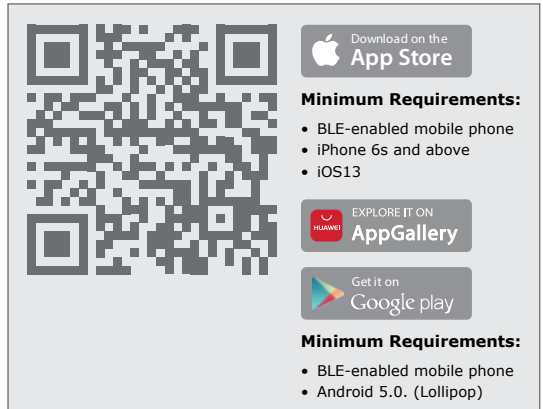


FIGURE 78

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 **D10 SMART / D10 Turbo SMART / D20 SMART**.

Once all the necessary accessories and harnesses have been connected, ensure that the Camlock is in the "**unlocked**" position, and place the **D10 SMART / D10 Turbo SMART / D20 SMART** cover onto the gearbox.

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



FIGURE 79

8.5. Applying the Warning Decal

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



FIGURE 80

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 4

9.2. D10 SMART / D10 Turbo SMART / D20 SMART Maintenance



Before performing any maintenance, ensure that the D10 SMART / D10 Turbo SMART / D20 SMART is isolated or is disconnected from the mains supply!


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 mounting nuts are tight on the foundation plate bolts	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 camlock	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 5

10. 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.**

11. 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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