

**VECTOR2**



# INSTALLATION MANUAL

# **Company Profile**

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CENTURION SYSTEMS has been manufacturing automatic gate systems since 1987, and is committed to providing reliable, cost effective solutions in the field of access automation.

CENTURION strives to give service and backup second to none. Our engineers are available to give sales support, installation training, and answers to technical or installation problems.

The equipment is installed worldwide and is available through a network of distributors.

CENTURION is an ISO 9001 - 2000 registered company, continually looking at updating its products in line with world trends to ensure that its products will provide customer satisfaction.

Further information is available on our web site [www.centsys.co.za](http://www.centsys.co.za)



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# Important Safety Instructions

## **! ATTENTION**

To ensure the safety of people, it is important that you read all 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 that can ensure that the operator is safely installed, and that the whole system can be operated safely.

## WARNINGS FOR THE INSTALLER

1. CAREFULLY READ AND FOLLOW ALL INSTRUCTIONS before beginning to install the product.
2. All installation, repair, and service work to this product must be done by a suitably qualified person.
3. Do not activate your gate opener unless you can see it and can determine that its area of travel is clear of people, pets, or other obstructions.
4. NO ONE MAY CROSS THE PATH OF A MOVING GATE. Always keep people and objects away from the gate and its area of travel.
5. NEVER LET CHILDREN OPERATE OR PLAY WITH THE GATE CONTROLS, and do not allow children or pets near the gate area.
6. Secure all easily accessed gate opener controls in order to prevent unauthorized use of the gate.
7. Do not in any way modify the components of the automated system.
8. Do not install the equipment in an explosive atmosphere: the presence of flammable gas or fumes is a serious danger to safety.
9. Before attempting any work on the system, cut electrical power and disconnect the batteries.
10. 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 thermal breaker with all-pole circuit break is recommended.
11. Make sure that an earth leakage circuit breaker with a threshold of 30mA is fitted upstream of the system.
12. Never short circuit the battery and do not try to recharge the batteries with power supply units other than that supplied with the product, or by Centurion Systems.
13. Make sure that the earthing system is correctly constructed, and that all metal parts of the system are suitably earthed.
14. Safety devices must be fitted to the installation to guard against mechanical movement risks such as crushing, dragging and shearing.
15. It is recommended that at least one warning indicator light be fitted to every system.
16. Always fit the warning signs visibly to the inside and outside of the gate.
17. The installer must explain and demonstrate the manual operation of the gate in case of an emergency, and must hand the User/Warnings guide over to the user.
18. Explain these safety instructions to all persons authorized to use this gate, and be sure that they understand the hazards associated with automated gates.
19. Do not leave packing materials (plastic, polystyrene, etc.) within reach of children as such materials are potential sources of danger.
20. Dispose of all waste products like packaging materials, worn out batteries, etc, according to local regulations.
21. Always check the obstruction detection system, and safety devices for correct operation.
22. Centurion Systems does not accept any liability caused by improper use of the product, or for use other than that for which the automated system was intended.
23. 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.
24. Everything not expressly specified in these instructions is not permitted.

## **! WARNING**



**MOVING GATE CAN CAUSE  
SERIOUS INJURY OR DEATH  
KEEP CLEAR. GATE MAY MOVE AT  
ANY TIME. DO NOT ALLOW  
CHILDREN TO PLAY IN AREA OR  
OPERATE GATE .**

# General Description

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The Vector operator has been designed to safely and cost-effectively automate a wide variety of swing gates, from single light domestic swing gates to heavy industrial double swing gates.

The fail-safe and fully redundant position and collision detection system has been designed and tested to set the standard in safety of operation and to provide an unparalleled level of reliability and durability in operation.

The gate travel limits are managed by a sealed double-redundant opto-electronic system that has been designed not only to ensure ultra-reliable operation, but also to ensure precise position and trajectory control. This enables very accurate and reliable collision detection to ensure safe operation even under trying conditions.

The Vector control card has been designed to be easy and intuitive to use with helpful instructions on the status of the operation during and after the installation. It also has a built-in diagnostic procedure that can verify every aspect of the control card on site.

Some of the advanced features offered by the Vector controller are:

- Fully automated single button limit-setup for single and double swing gates.
- Full graphics LCD display provides an intuitive user interface with built-in diagnostics to speed up and simplify the installation process.
- Separate safety inputs for sensitive edges or beams on both the closing and opening directions of the gate.
- Advanced closed-loop speed control to maintain safe and reliable operation on inclined gates under windy conditions.
- Fully configurable gate run profiles
- Selectable and adjustable auto-close with pushbutton override.
- Pedestrian (Partial) opening with automatic closure.
- Free exit input.
- Positive close mode.
- Multiple mode of operation.
- Solenoid lock drive output up to 2A.
- Holiday lockout.
- A status LED output to indicate the gate status remotely.
- Pillar light control
- Leaf delay selectable for either gate leaf
- On-board NOVA receiving with selective add and delete of remotes.

## Lightning Protection

The Vector electronic controller utilizes the same proven surge protection philosophy that is used in all Centurion 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. In order to ensure that the surge protection is effective, it is essential that the unit is properly earthed.

## Icons Used In This Booklet

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Indicates tips and other information that could be useful during the installation.



Notes indicate variations and other aspects that should be considered during the installation.



Cautions are critical aspects that must be adhered to, to prevent personal injury

# Specifications

## Overall Dimensions

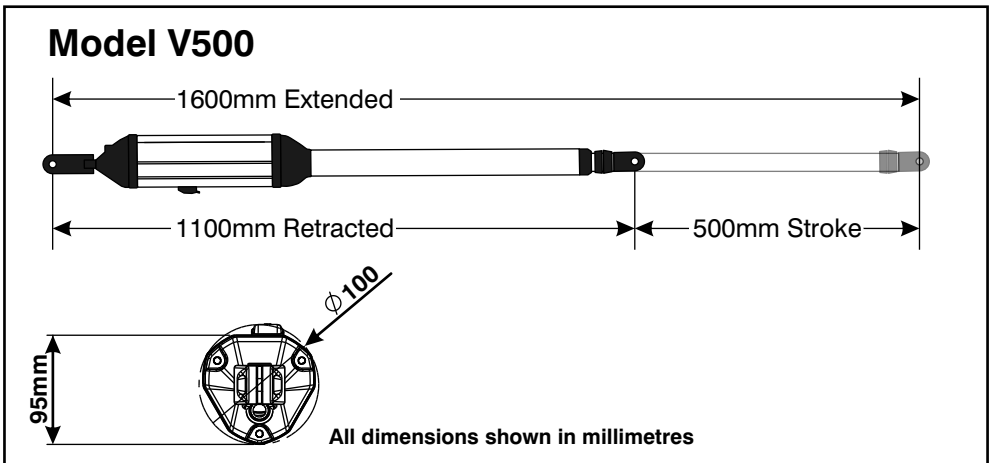
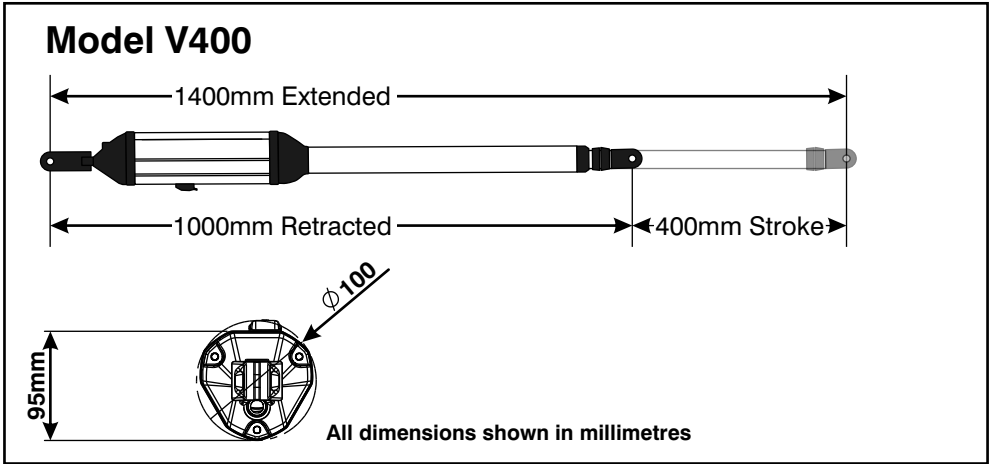


Figure 1 Overall Dimensions

## Operator V400/V500

Power Configurations:	7AH <sup>†</sup> , 12V, CP84E (Domestic)	7AH <sup>†</sup> , 12V, CP84SM2A (Light Industrial)
Nominal Input Voltage:	12V DC	12V DC
DC Current Draw (Max):	15A	15A
Extention/retraction (no load):	27mm/sec	27mm/sec
Max. Output Force:	250kgf	250kgf
Max. Operations (day):	100*	200
Standby Operations:		
<i>Double kit inc controller only</i>		
Standby period:		
½ day	Battery 7AH <140 cycles	Battery 40AH <200 <sup>‡</sup> cycles
1 day	Battery 7AH <115 cycles	Battery 40AH <200 <sup>‡</sup> cycles
2 days	Battery 7AH <75 cycles	Battery 40AH <200 <sup>‡</sup> cycles
<i>Double kit inc controller and 2 sets safety beams</i>		
Standby period:		
½ day	Battery 7AH <85 cycles	Battery 40AH <200 <sup>‡</sup> cycles
1 day	Battery 7AH <7 cycles	Battery 40AH <200 <sup>‡</sup> cycles
2 days	NA	Battery 40AH <200 <sup>‡</sup> cycles
Typical Gate Opening/ Closing Time:	V400: <14 Sec V500: <17.5 Sec	V400: <14 Sec V500: <17.5 Sec
Operating Temp. Range:	-20°C to +60°C	-20°C to +60°C
Housing Protection:	IP55	IP55
Mass of Operator:	V400: 5.5kg V500: 5.9kg	V400: 5.5kg V500: 5.9kg
Operator Stroke:	V400: 400mm V500: 500mm	V400: 400mm V500: 500mm

\*Limited by the charging rate

<sup>†</sup> Higher capacity battery can also be used must be housed separately e.g. 40AH.

<sup>‡</sup> Limited by maximum daily usage

## Control Card

Max. Motor Current Per Channel:	15A (fused)
Max. Input Voltage:	18V DC
Standby Current Draw:	48mA
Max. Solenoid Current Draw:	2A DC
Max. Aux Output Current:	3A (PTC)
Collision Detection:	Current Sense & Redundant Optical
Position & Trajectory:	Redundant Optical
Temperature Range:	-20°C to +60°C

## Power Supply

	7AH, 12V, CP84E (Domestic)	7AH, 12V, CP84SM2A (Light Industrial)
Nominal Input Voltage:	220V AC $\pm$ 10% @ 50Hz	220V AC $\pm$ 10% @ 50Hz
AC Current Draw (Max):	60mA	170mA
Temperature Range:	-20°C to +60°C	-20°C to +60°C
Max. Continuous Charging Current:	0,8A @ 13,8V	2,5A @ 13,8V

## Power Supply, Wall Box and Control Card Assembly

	7AH, 12V, CP84E (Domestic)	7AH, 12V, CP84SM 2A (Light Industrial)
Boxed Shipping Weight (Excluding Batteries):	2.7kg	2.6kg
Protection Level:	IP55	IP55

## Allowable Gate Mass

Maximum allowable gate mass for V400 operator:

Gate swing angle	Up to 1.5m	Up to 2m	Up to 2.5m	Up to 3m(#1)	Up to 3.5m(#1)	Up to 4m(#1)
90°	500kg	500kg	500kg	360kg	260kg	200kg
100°	500kg	500kg	388kg	160kg	190kg	150kg
110°	500kg	306kg	198kg	130kg	<b>NOT RECOMMENDED</b>	
120°	180kg	100kg	65kg			
(#1 - an electric lock must be fitted to secure gate in closed position)						

Maximum allowable gate mass for V500 operator:

Gate swing angle	Up to 1.5m	Up to 2m	Up to 2.5m	Up to 3m(#1)	Up to 3.5m(#1)	Up to 4m(#1)
90°	750kg	750kg	750kg	550kg	410kg	310kg
100°	750kg	750kg	600kg	420kg	310kg	230kg
110°	750kg	500kg	320kg	220kg	<b>NOT RECOMMENDED</b>	
120°	310kg	170kg	110kg			
(#1 - an electric lock must be fitted to secure gate in closed position)						

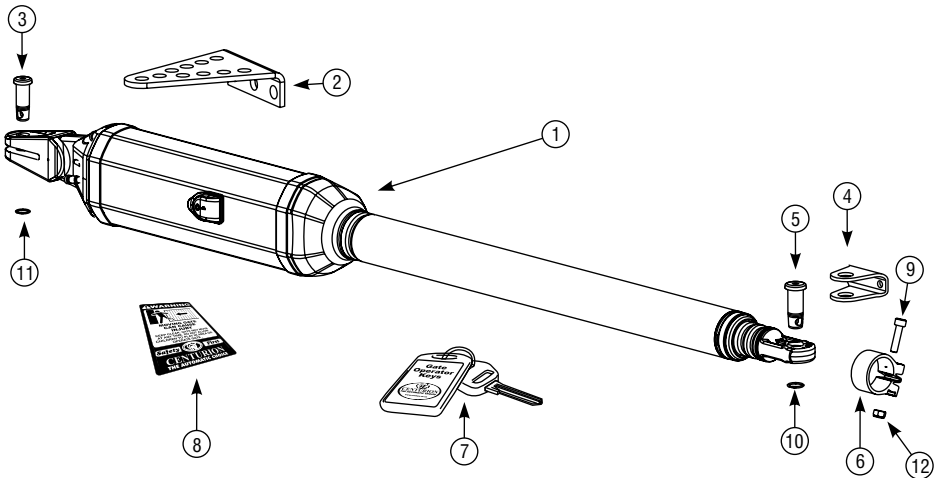
## Allowable Wind Loading

For wind loading tables see page 52.



# Package Contents

For standard V400 and V500 operators  
(VEC40000V2 & VEC50000V2)

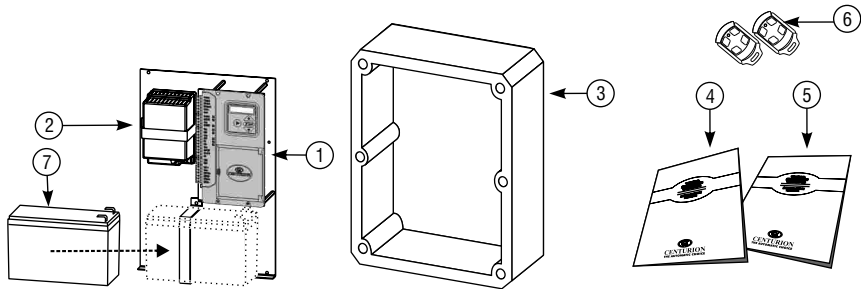


Item	Description	Qty.	Part No.
1	Vector gate operator (Complete assembly)	1	VEC40000V2
2	Wall bracket (standard)	1	1050M20000
3	Wall bracket pin	1	1050M36002
4	Gate Bracket	1	1050M27000
5	Gate bracket pin	1	1050M26002
6	Origin body	1	1050M0161M
7	Gate operator keys*	1	GTKEYTG01
8	Gate warning decal	2	LABELGATE1
9	Cap screw M6 x 25 SS	1	B124106025
10	14mm snap ring	1	F1400SNAPR
11	12mm snap ring	1	F1200SNAPR
12	M6 nut SS	1	N1202060SS
13	Camlock key serial No	1	VECTAG0001

\* Keys are specific to each operator- key number must be recorded.

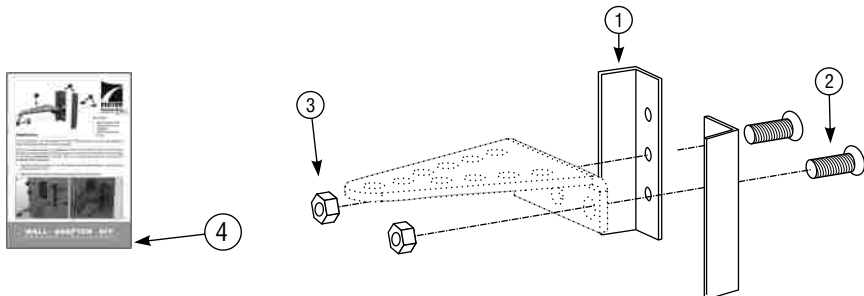
Figure 2 Standard Package Contents

## Control box including charger & controller (Domestic) VECCAD00V2 / (Light Industrial) VECCAD01V2



Item	Description	Qty	Domestic	Qty	Light Ind
1	Vector Control Card Version 2 built in Rx	1	VECC-D00V2	1	VECC-D01V2
2	CP84E Charger	1	CP84E V2	1	CP84SM2A1E
3	Wall box	1	Misc parts		Misc parts
4	User Guide	1	DOC1050D01	1	DOC1050D01
5	Installation Manual	1	1050D010009	1	1050D010009
6	NOVA 4 button transmitters	2	TX4NV2433		
7	12V 7.0AH Battery (User supplied - not part of kit)	1	CP4C	1	CP4C

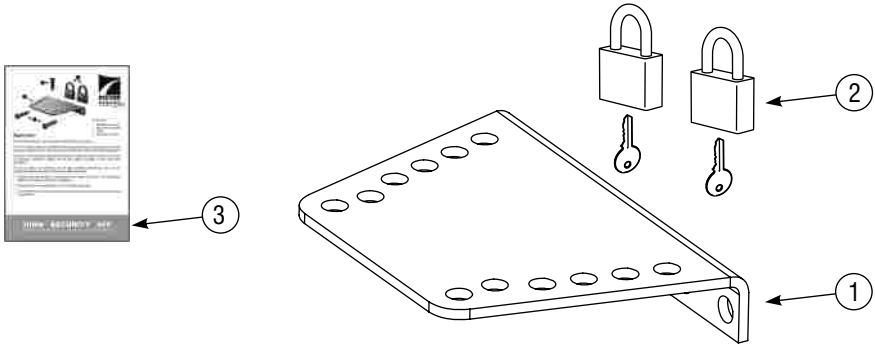
## Wall adaptor kit (optional) VECWAK00V1



Item	Description	Qty.	Part No.
1	Wall adaptor plate	2	1050M34000
2	M10x20 Countersunk screw	2	B123201025
3	M10 Hexnuts	2	N120110000
4	Vector wall adaptor kit packing leaflet	1	DOC1050D06

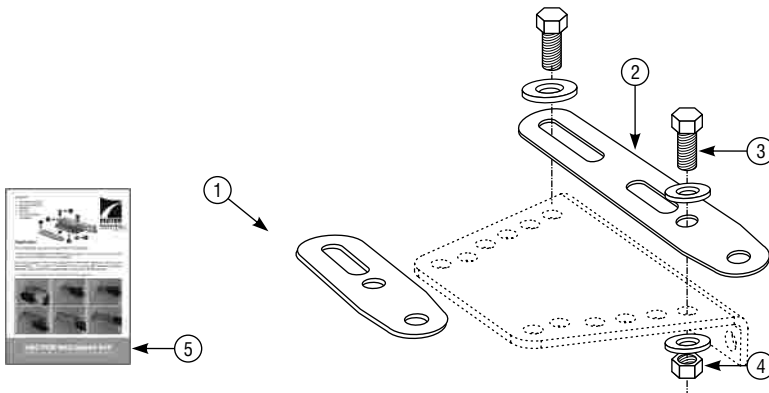
Figure 3 Optional Accessories continued.

## High security kit (optional) VECHSK00V1



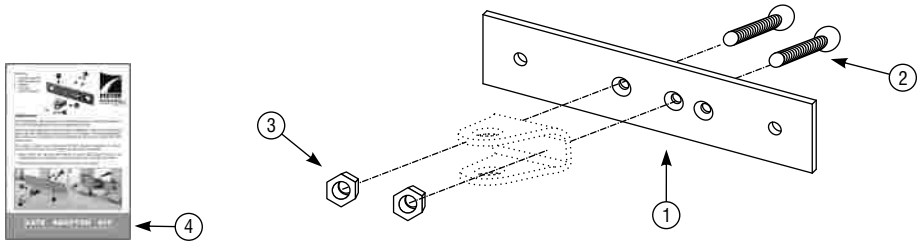
Item	Description	Qty.	Part No.
1	Wall bracket (high security)	1	1050M30000
2	Padlock	2	M-PLTRI263
4	Vector high security kit packing leaflet	1	DOC1050D05

## Mechano kit (optional) VECMAK00V1



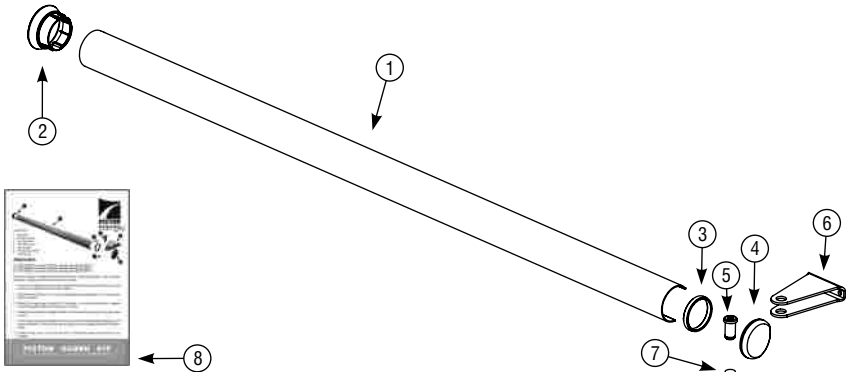
Item	Description	Qty.	Part No.
1	Vector securing plate (short)	1	1050M3200D
2	Vector securing plate (long)	1	1050M3300D
3	M10x35 Bolt	2	B121210035
4	M10 Nut Nylock	2	N120110000
5	Vector mechano kit packing leaflet	1	DOC1050D08
6	Washer flat M10X30X4	4	W220210001

## Gate adaptor kit (optional) VECGAK00V1



Item	Description	Qty.	Part No.
1	Gate bracket spreader plate	1	1050M03500
2	M6x16 Countersunk cap screw	2	B123206016
3	M6 Hexnuts	2	N1202060SS
4	Vector gate adaptor kit packing leaflet	1	DOC1050D07

## Piston guard kit (optional) VEC4PG00V1



Item	Description	Qty.	Part No.
1	Piston guard	1	1050M0321P
2	Guard retainer	1	DOMCEN0070
3	Guard sleeve	1	DOMCEN0070
4	Guard cap	1	DOMCEN0070
5	Guard pin	1	1050M35000
6	Guard gate bracket	1	1050M2400A
7	14mm snap ring	1	F1400SNAPR
8	Piston guard kit packing leaflet	1	DOC1050D04

Figure 3 Optional Accessories

# Required Tools & Equipment

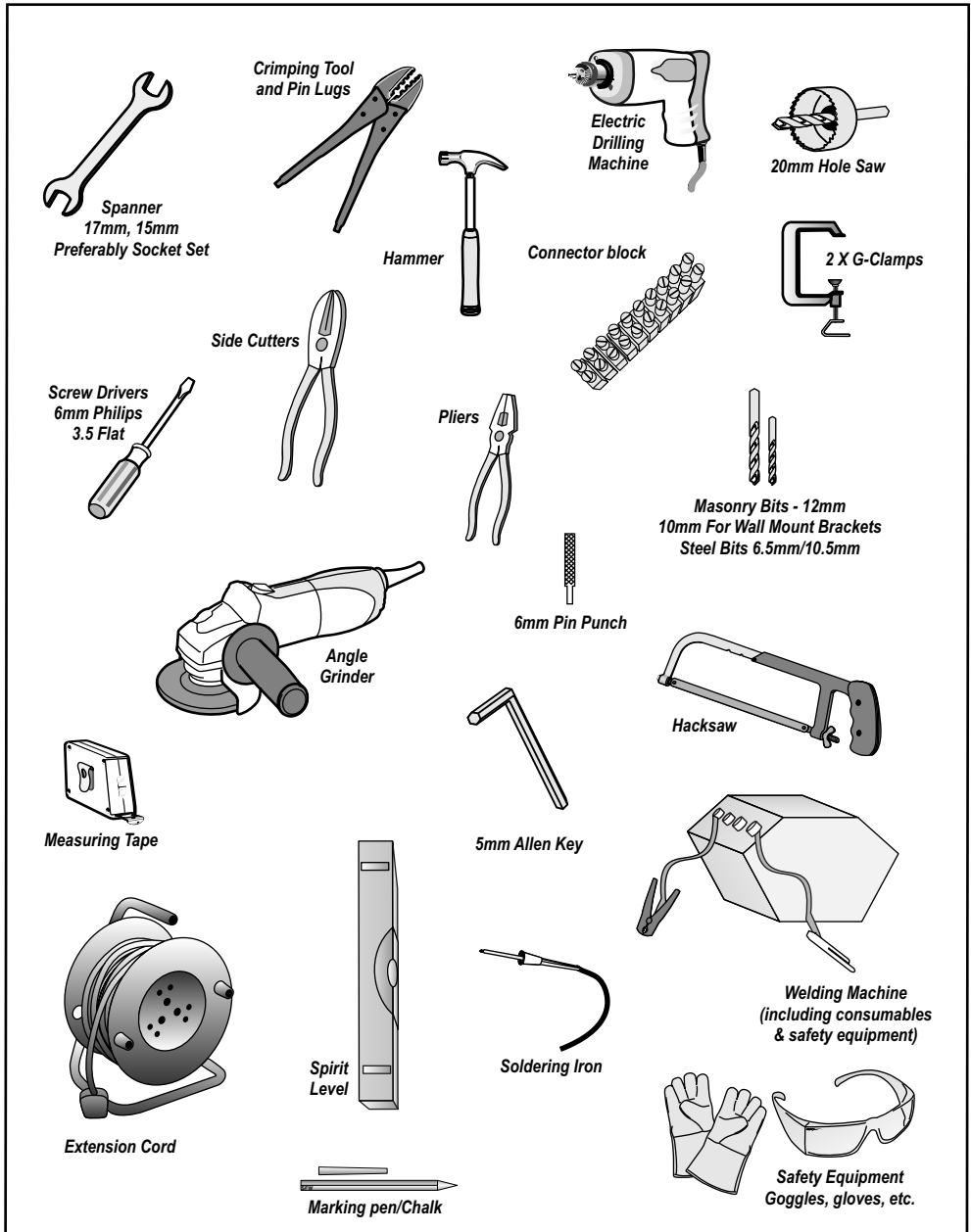


Figure 4 Required Tools and Equipment

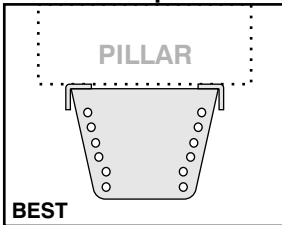
# Site Considerations

In order to ensure a reliable and durable installation thought should be given to:

## Strength of the pillar

For reliable operation it is important to ensure that the way the operator is secured to the wall takes into account the strength of the pillar, the size of the gate, and how frequently the gate would be used:

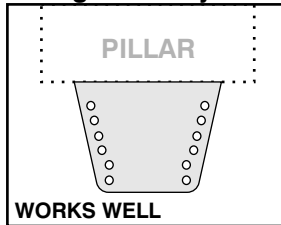
### High security kit together with a Wall adaptor kit



This mounting is highly recommended for all light industrial gates, or for heavy gates of any length.

Alternatively it should be considered for use on pillars of low or unknown strength.

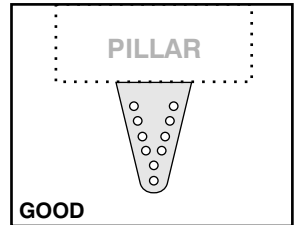
### High security kit



This mounting works well for heavy gates shorter than about 2m in single household domestic applications.

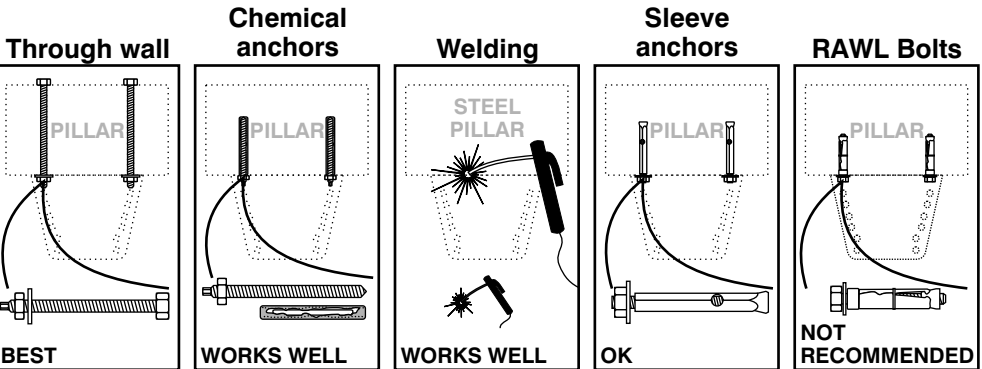
Alternatively it should be considered for use on pillars of low or unknown strength.

### Standard bracket



This mounting means is typically used on light to medium weight domestic gates that are about 1.5m long, and that is mounted on pillars of average strength.

As important as the bracket is how the bracket is secured to the pillar:



Applications:

- Prefabricated walling
- For heavy gates operating frequently

Applications:

- Masonry pillars
- Frequent use

Applications:

- Lighter gates
- Domestic

Applications:

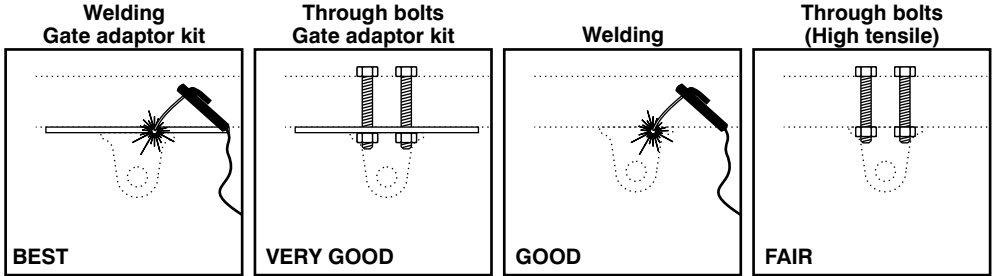
- Light gates
- Domestic

Applications:

- Very light
- Very domestic

## Strength of the gate and gate bracket

The gate adaptor kit both strengthens the connection to the gate, and also allows for more flexibility when mounting the bracket to the gate:



Applications:

- Light industrial
- Heavy gates
- Frequent use

Applications:

- Domestic
- Medium gates
- Frequent use

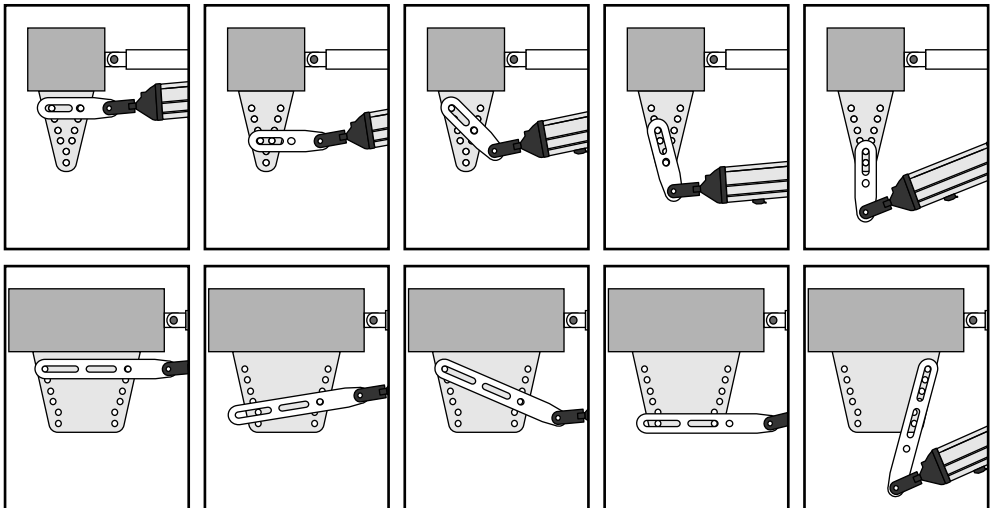
Applications:

- Domestic
- Light gates
- Infrequent use

**Tex screws and mild steel bolts are not recommended**

## The Mechano kit

This kit is useful when fitting VECTORS to existing installations, and also makes adjustments easier when doing new installations.



## Install the gate operator only if:

1. It will not pose a hazard to the public.
2. There is sufficient clearance to a roadway and/or public thoroughfares.
3. The installation will meet all municipal and/or local authority requirements once completed.
4. The gate mass, length and application is within the operator specifications (see page 8).
5. The wind loading specifications are not exceeded (see page 42).
6. The gate is in good working order, vertically hung and swings freely.
7. It can be installed to have sufficient clearance between moving parts when opening and closing to reduce the risk of personal injury and entrapment.
8. Pushbuttons or key switches, when required, must be positioned so that the gate is in line of sight of the operator.

## General considerations for the installation:

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



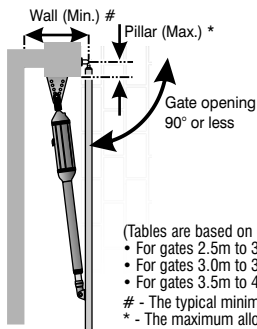
**There must be 2 sets of beams. One across the driveway when the gate is closed and one when the gate is open.**

2. Check that no pipes or electrical cables are in the way of the intended installation.
3. Check that enough space is available for the gate operator with the gate in the required open position. (See diagram below).
4. Check the strength of the mounting pillar and fit a wall adaptor kit where needed.
5. If the swing gate leaf is longer than 2.5m, ensure that a lock can be fitted.
6. Never fit the operator on the outside of the gate, where the public has access to it. (Follow the instructions for an outward opening swing gate, if required.)
7. For greater security consider fitting an optional high security kit.
8. Consider where the gate bracket will be mounted. It might simplify the installation to fit the optional gate adaptor kit.

## Minimum Installation Requirements

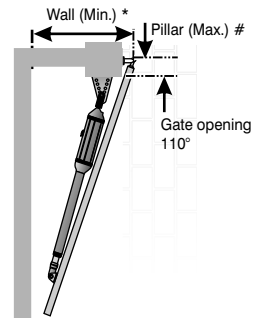
Gate opening 90° or less

Operator	Wall (Min.) #	Pillar (Max.)*
V400	150mm	250mm
V500	150mm	335mm



Gate opening 110°

Operator	Wall (Min.) #	Pillar (Max.)*
V400	150mm	145mm
V500	150mm	210mm



(Tables are based on gates shorter than 2.5m.

- For gates 2.5m to 3.0m long, reduce the maximum pillar thickness by 20mm.
- For gates 3.0m to 3.5m long, reduce the maximum pillar thickness by 40mm.
- For gates 3.5m to 4.0m long, reduce the maximum pillar thickness by 60mm.)

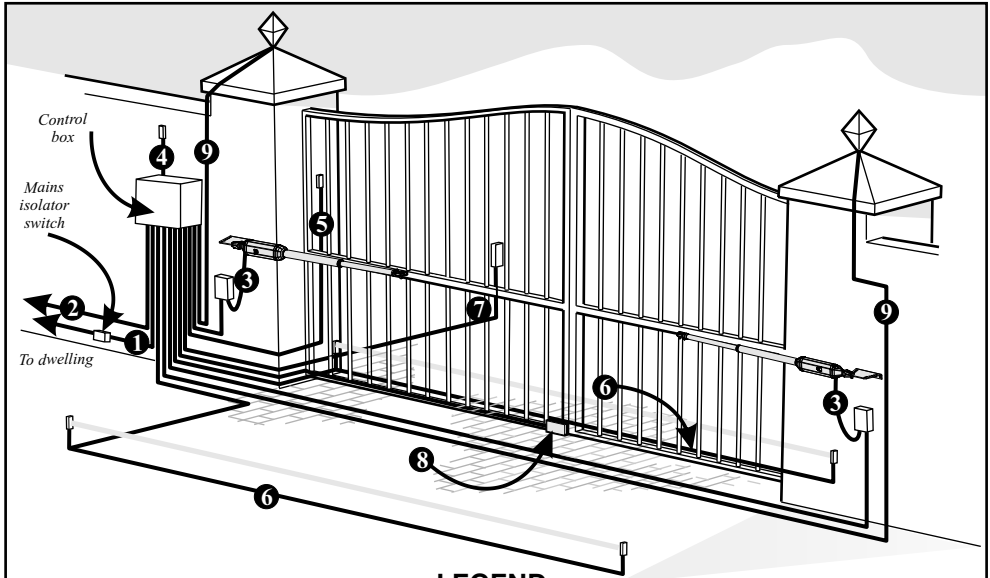
# - The typical minimum wall clearance required to fit the operator.

\* - The maximum allowable pillar thickness on which to fit the operator.

Figure 5 Minimum Installation Requirements



# Cabling Requirements



## LEGEND

- |  |  |
|--|--|
| 1. 220V AC mains cable via mains isolator† (3 core LNE 0,5mm <sup>2</sup> )*   | Or   |
| Low voltage 16V AC battery charger supply‡ (2 core 1,5mm <sup>2</sup> ).   | Optional keypad ( 3 core 0,5mm <sup>2</sup> multi-stranded).   |
| 2. Intercom cable (n1 + 6 core) to house.  | 6. Optional infrared beams or safety edge (3 core 0,5mm <sup>2</sup> multi-stranded or 4 core 0.5mm <sup>2</sup> for CE compliance). |
| 3. MOTOR M (MTR M) or MOTOR S (MTR S) cable ( minimum, 2 core 2mm <sup>2</sup> + 4 core 0,5mm <sup>2</sup> multi-stranded). See note ¥ | 7. Optional intercom cable (n2+2 core 0,5mm <sup>2</sup> multi-stranded) to gate station.  |
| 4. Optional radio receiver cable (3 core 0,5mm <sup>2</sup> multi-stranded, optional). #   | 8. Optional electric lock. (2 core 0.5mm <sup>2</sup> )  |
| 5. Optional pedestrian key-switch ( 2 core 0,5mm <sup>2</sup> multi-stranded).   | 9. Optional pillar light cable (3 core, size according to power reg).  |
| <b>n1 = number of cores required by intercom.</b>  | <b>n2 = number of cores required by intercom.</b>  |

† ⚠ Mains isolator must be fitted less than 1m from controller

\* • Increase cable thickness if pillar lights are to be installed.  
• Screened cable is always recommended to provide better protection against lightning - earth one end of screening.

‡ Domestic charger only.


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

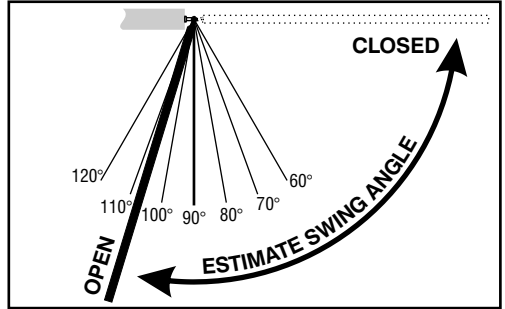
¥ Centurion has available custom VECTOR cable order reference: CABLEVEC68

Figure 6 Cabling Requirements


# Operator Installation

1. Determine gate opening angle and direction of operator (inward or outward).

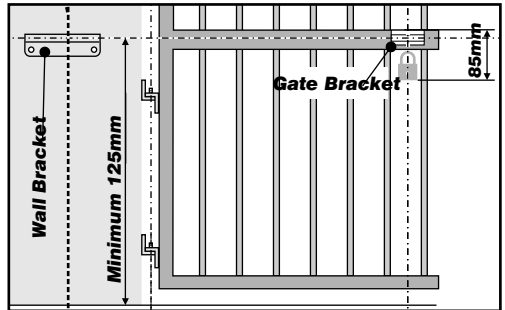
 Alternatively the swing angle can be determined more accurately with the process detailed on page 45.




2. Determine a suitable height for the wall bracket.

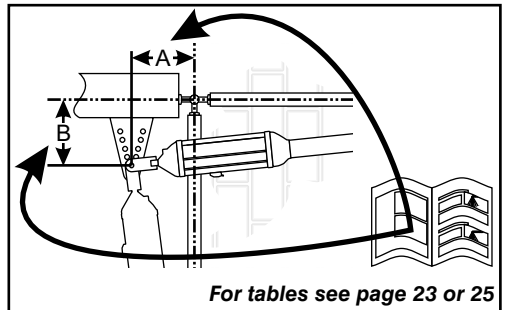
 The gate bracket must fit to a sturdy point on the gate.

Consider using the optional gate adaptor kit.

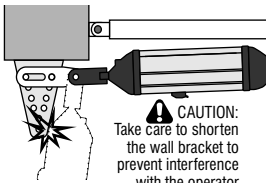


 Take care to make sure the operator is mounted level.

3. Determine where to put the bracket according to A and B values in the tables on pages 23 and 25.

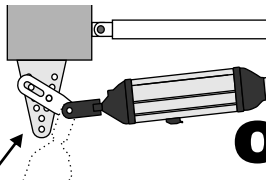


## OPERATOR MUST NOT FOUL AGAINST BRACKET

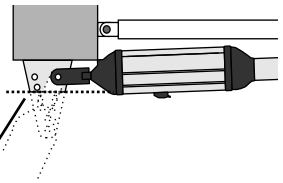


 **CAUTION:**  
Take care to shorten the wall bracket to prevent interference with the operator

USE MECHANO KIT





or

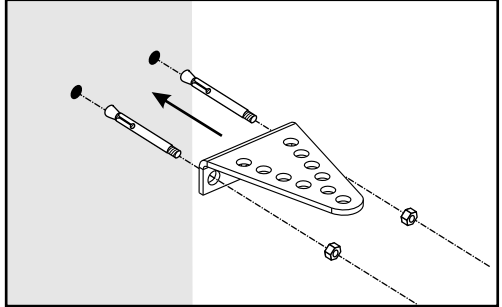


CUT THE BRACKET


- Secure the bracket to the wall with the most appropriate means.

 It is critical that the wall bracket is securely mounted.

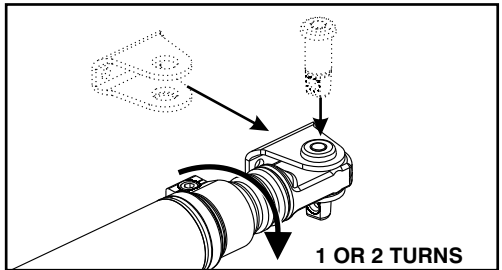
 See page 14 for site considerations.



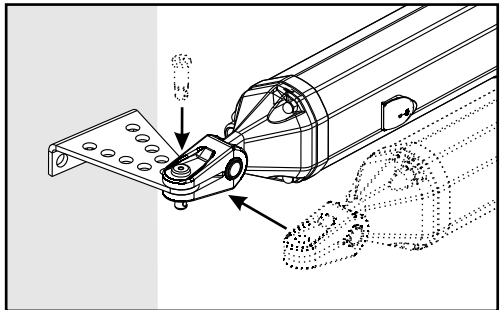
## Determine the gate bracket position

 Start with the operator fully retracted.  
Turn out the actuator tube one or two turns.


- Fit the gate bracket to the operator.




- Fit the motor end of the operator to the wall bracket.

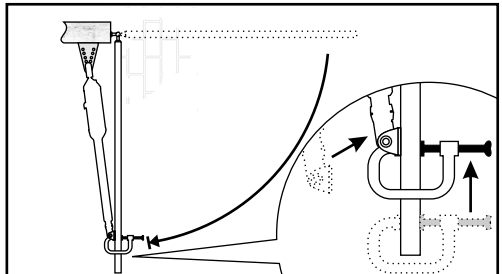


- Open the gate fully and temporarily clamp the gate bracket to the gate.

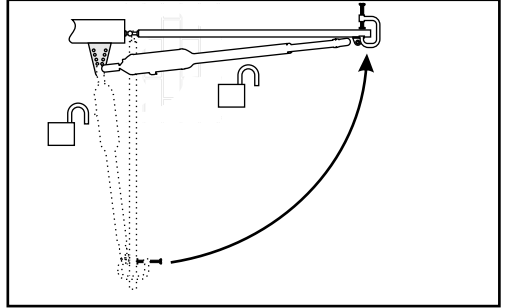
 The gate bracket must fit to a sturdy point on the gate.

Consider using the optional gate adaptor kit.


 See page 12.




8. Unlock the operator and swing the gate closed.



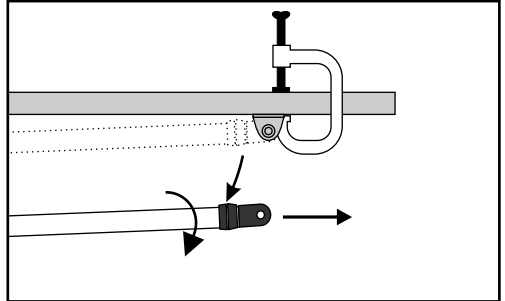
9. Remove the pin and the operator from the bracket, check that there are at least one or two turns of the actuator before it is fully extended.

 If it becomes obvious that the operator does not have enough stroke, reduce either the A or B distances by moving the wall bracket.

 Be sure not to make the A and B values less than allowed for in the installation tables on page 23.


In general:


- Large B distances give good security and good closing push force.
- Small A and small B will increase the speed.

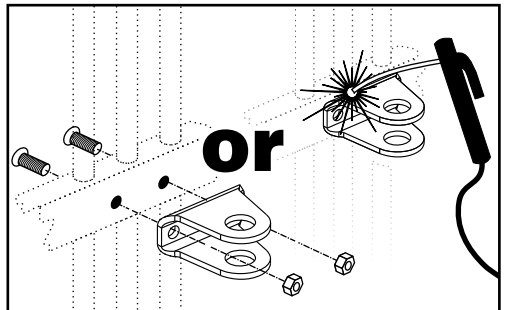


## Fasten gate bracket to gate


10. Secure the gate bracket using the most appropriate means.

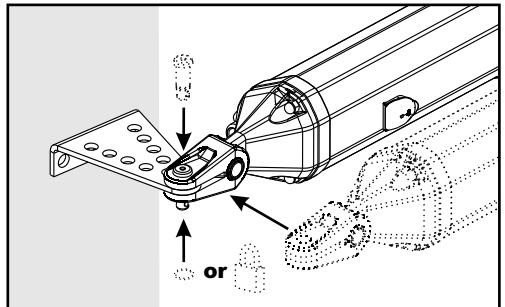
 It is critical that the gate bracket is securely mounted.

 See page 14 for site considerations.




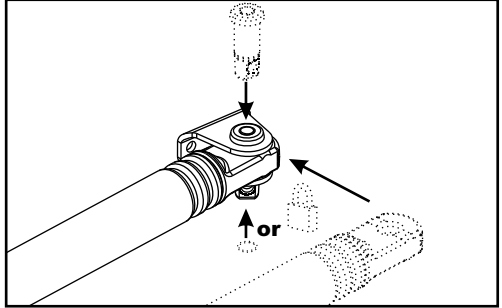
11. Fit operator, wall bracket pins and snap rings.

 As an alternative to the snap ring, fit a padlock.



12. Fit operator, gate bracket pins and snap rings

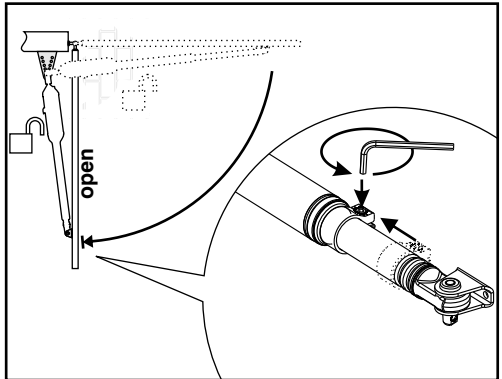
 As an alternative to the snap ring, fit a padlock.



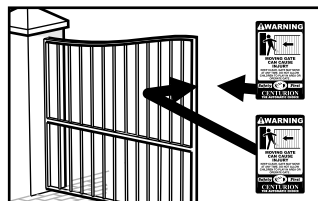
## **Adjust origin clamp *(NB - Not required for outward swinging gates)***

13. Unlock the operator and open the gate fully.

14. Slide the origin clamp along the actuator tube, right up to the operator.  
Secure in place with an allen key tighten properly.



15. Attach warning decals to the gate as shown.



***The mechanical part of the installation is now complete.***

# Operator Installation

## Inward Swing Gate Setup

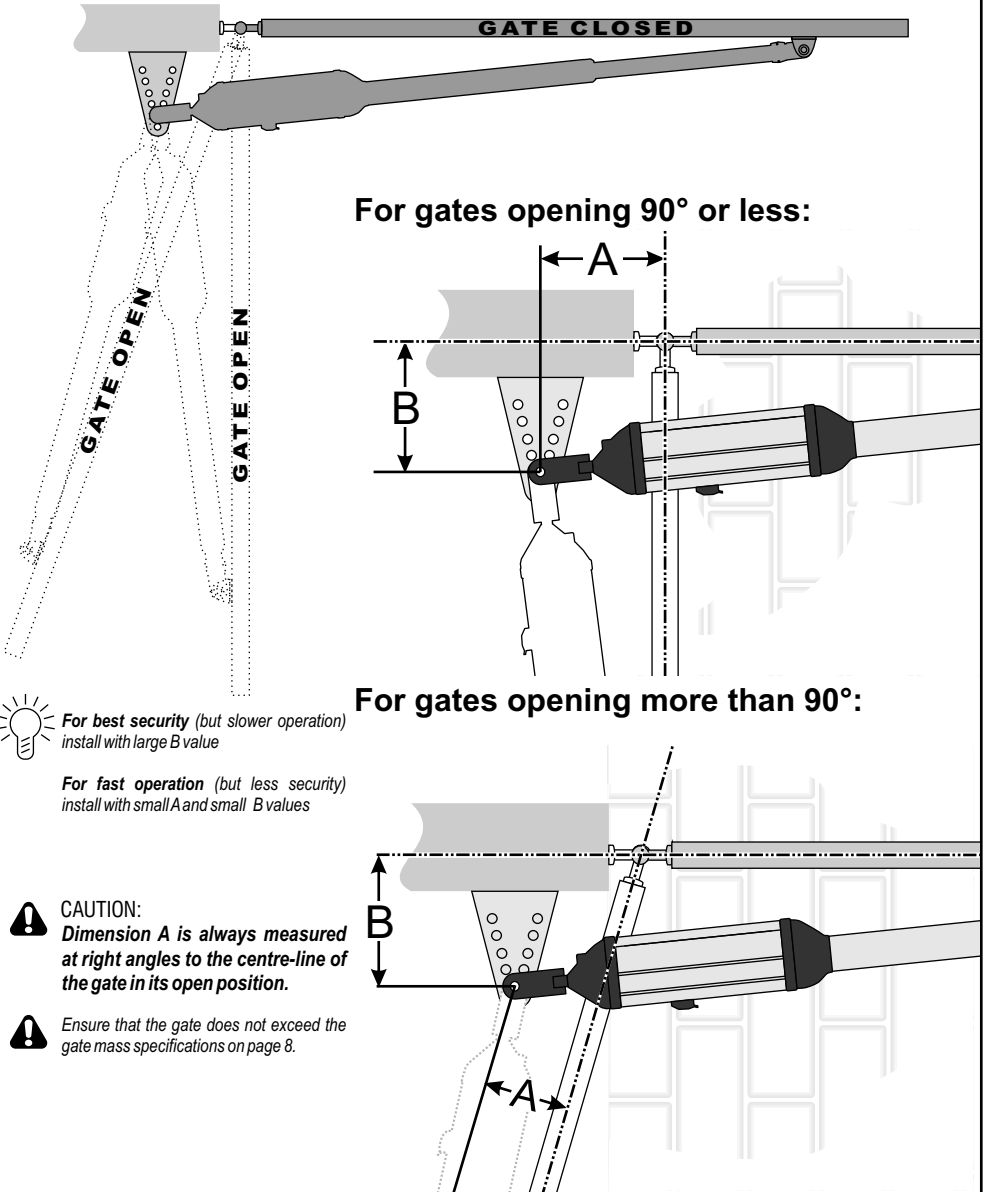
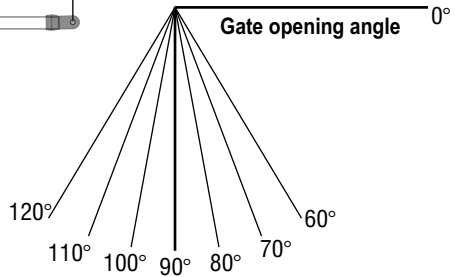
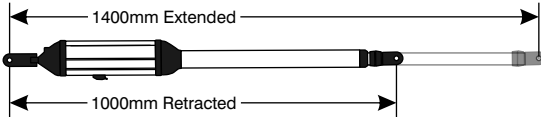


Figure 7 Position Inward Opening Gates

## For V400 (400mm operator)



### Recommended positions (Only for a 2.5m gate or shorter)

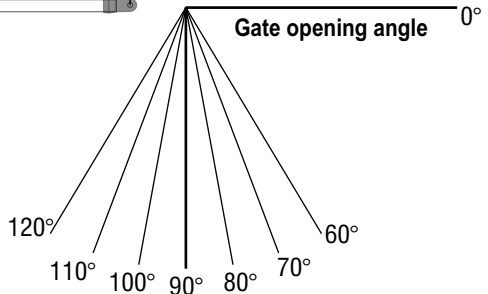
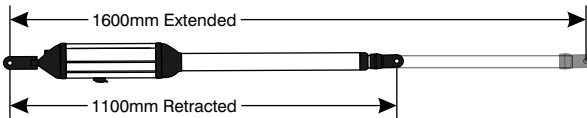
Gate swing angle	A value	B value
90° or less	160	200
100°	120	180
110°	120	130
120°	110	110

### Alternative positions

Gate swing angle	'(A+B) max' A+B should not exceed	A and B 'min value'					
		Up to 1.5m	Up to 2m	Up to 2.5m	Up to 3m	Up to 3.5m	Up to 4m
60° - 90° or less	380mm	110mm	110mm	110mm	120mm	140mm	160mm
100°	310mm	110mm	110mm	110mm	120mm	140mm	160mm
110°	265mm	110mm	110mm	110mm	120mm	NOT RECOMMENDED	
120°	220mm	110mm	110mm	110mm	110mm		

NOTE: A and B must both be greater than 'min value' and  $A + B \leq (A+B) \text{ max}$ ; where  
 $B = (A+B) \text{ Max} - A \text{ min}$  OR;  $A = (A+B) \text{ Max} - B \text{ min}$

## For V500 (500mm operator)



### Recommended positions (Only for a 2.5m gate or shorter)

Gate swing angle	A value	B value
90° or less	205	250
100°	165	215
110°	144	180
120°	115	150

### Alternative positions

Gate swing angle	'(A+B) max' A+B should not exceed	A and B 'min value'					
		Up to 1.5m	Up to 2m	Up to 2.5m	Up to 3m	Up to 3.5m	Up to 4m
60° - 90° or less	460mm	110mm	110mm	110mm	120mm	140mm	160mm
100°	400mm	110mm	110mm	110mm	120mm	140mm	160mm
110°	340mm	110mm	110mm	110mm	120mm	NOT RECOMMENDED	
120°	285mm	110mm	110mm	110mm	110mm		

NOTE: A and B must both be greater than 'min value' and  $A + B \leq (A+B) \text{ max}$ ; where  
 $B = (A+B) \text{ Max} - A \text{ min}$  OR;  $A = (A+B) \text{ Max} - B \text{ min}$

# Outward Swing Gate Setup



**CAUTION:**

*Dimension A is always measured at right angles to the centre-line of the gate in its open position.*



*Outward opening swing gates must have physical end stops fitted in the open position.*



*Origin clamps must NOT be fitted.*



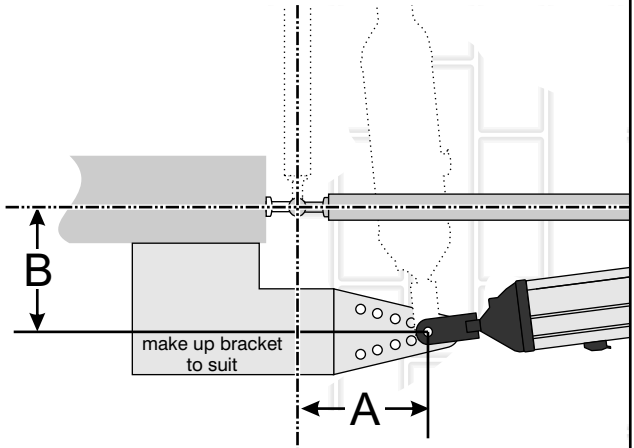
*Ensure that the gate does not exceed the gate mass specifications on page 8.*



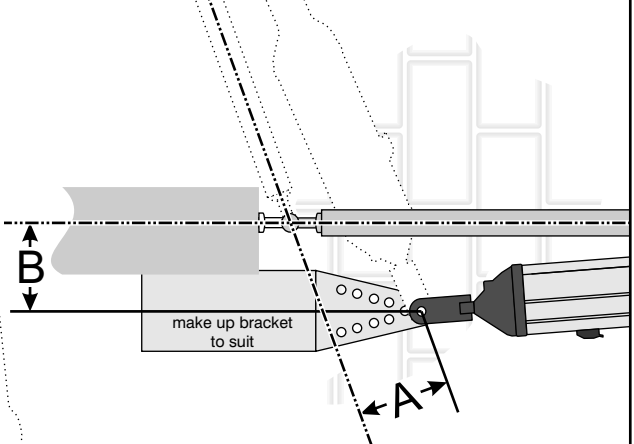
*For best security (but slower operation) install with large B value*

*For fast operation (but less security) install with small A and small B values*

## For gates opening 90° or less:



## For gates opening more than 90°:



End stop see  
Caution Note

GATE OPEN

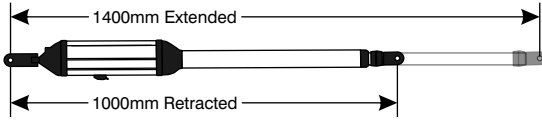
GATE OPEN

GATE CLOSED

Figure 8 Position Outward Opening Gates



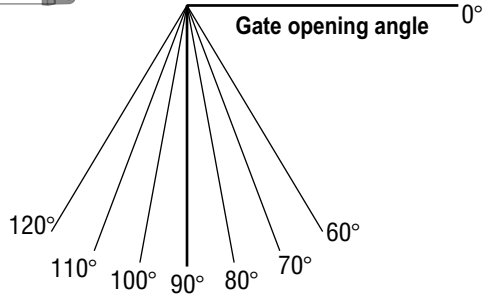
## For V400 (400mm operator)



### Recommended positions

(Only for a 2.5m gate or shorter)

Gate swing angle	A value	B value
90° or less	173	191
100°	145	160
110°	120	130
120°	106	114

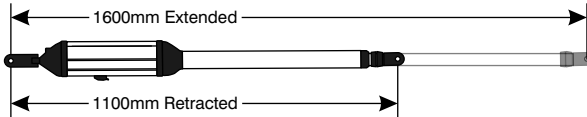


### Alternative positions

Gate swing angle	'(A+B) max' A+B should not exceed	A and B 'min value'					
		Up to 1.5m	Up to 2m	Up to 2.5m	Up to 3m	Up to 3.5m	Up to 4m
60° - 90° or less	365mm	110mm	110mm	110mm	120mm	140mm	160mm
100°	310mm	110mm	110mm	110mm	120mm	140mm	160mm
110°	265mm	110mm	110mm	110mm	120mm	NOT RECOMMENDED	
120°	220mm	110mm	110mm	110mm	NOT RECOMMENDED		

NOTE: A and B must both be greater than 'min value' and  $A + B \leq (A+B) \text{ max}$ ; where  
 $B = (A+B) \text{ Max} - A \text{ min}$  OR;  $A = (A+B) \text{ Max} - B \text{ min}$

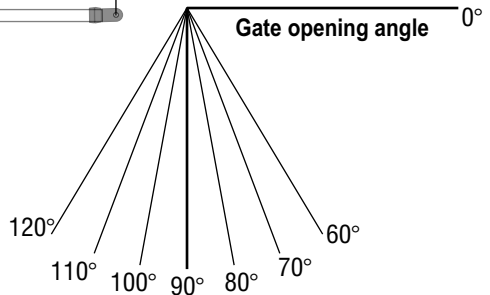
## For V500 (500mm operator)



### Recommended positions

(Only for a 2.5m gate or shorter)

Gate swing angle	A value	B value
90° or less	222	246
100°	185	205
110°	155	170
120°	128	139



### Alternative positions

Gate swing angle	'(A+B) max' A+B should not exceed	A and B 'min value'					
		Up to 1.5m	Up to 2m	Up to 2.5m	Up to 3m	Up to 3.5m	Up to 4m
60° - 90° or less	455mm	110mm	110mm	110mm	120mm	140mm	160mm
100°	390mm	110mm	110mm	110mm	120mm	140mm	160mm
110°	330mm	110mm	110mm	110mm	120mm	NOT RECOMMENDED	
120°	275mm	110mm	110mm	110mm	NOT RECOMMENDED		

NOTE: A and B must both be greater than 'min value' and  $A + B \leq (A+B) \text{ max}$ ; where  
 $B = (A+B) \text{ Max} - A \text{ min}$  OR;  $A = (A+B) \text{ Max} - B \text{ min}$


# Electrical Set-up

## **⚠ WARNING**

1. Always check that the isolator in the mains supply to the gate is in the OFF position, before doing any work.
2. Ensure that all low voltage systems (Less than 42.4V) are suitably protected from damage, by disconnecting all sources of power such as chargers and batteries before doing any work.
3. All electrical work must be carried out according to the requirements of all applicable local electrical codes. (It is recommended that a licensed electrical contractor perform such work.)

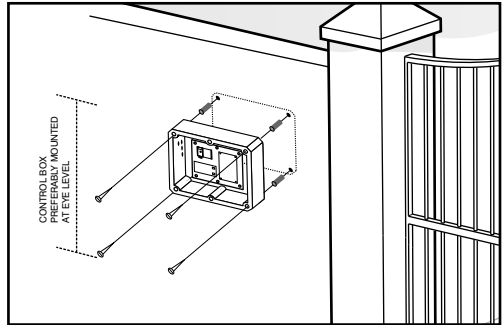
## Secure control box to wall

1. Secure the control box to wall using the most appropriate means.

 Be sure to position the wall box so as not to cause any hazards during and after the installation.

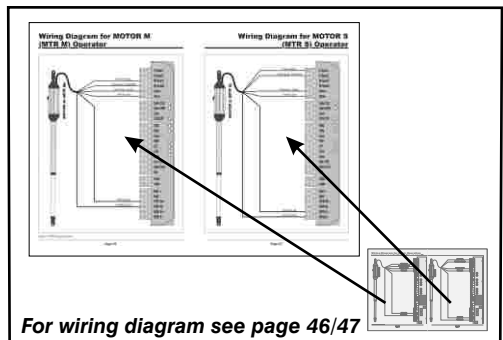
Preferably mount the wall box:

- Out of direct sunlight.
- At a comfortable working height.
- Away from garden sprinklers etc.
- To allow easy access even when the gate is open.

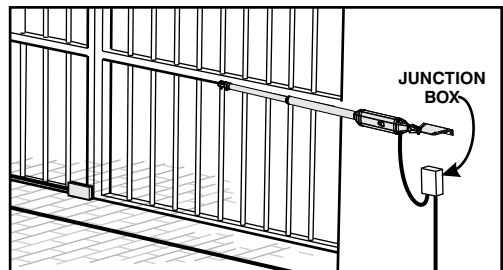


## Connect all wiring


2. Connect all the cables as required to the control card. See page 46 and page 47.



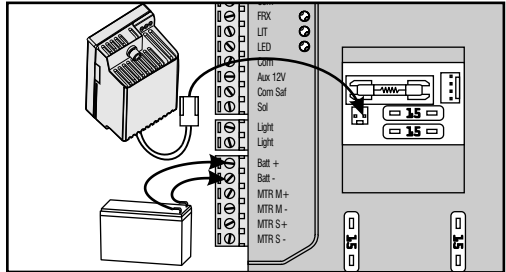
3. When wiring each operator back to the controller housing, it is recommended to mount a small junction box adjacent each operator. Terminate the cable provided on the operator into this junction box and then route a new cable from the junction box to the controller housing.



4. Check that the charger and battery are connected to the controller.

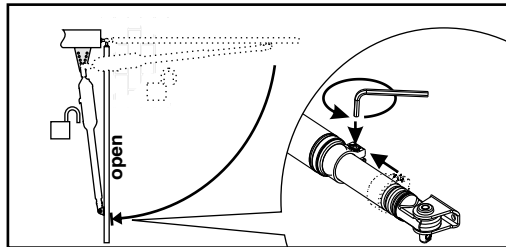
 Ensure the battery polarity is correct.

5. Switch on the mains supply (via isolator).
6. Ensure that both the controller and charger are effectively earthed for improved lightning protection.

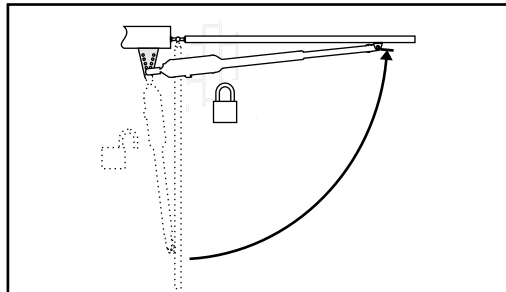


## Setting the limits

7. Check that the origin has been correctly set. (See page 21)




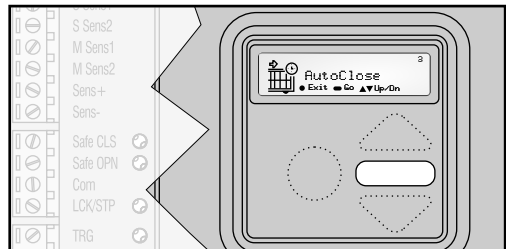
8. Check that the gate is closed and the operator is locked.




- 9.i) If powering up the system ex-factory, it will request for the operating PROFILE (operating standard) to be set. Select from the list the PROFILE that will suit the specific region. With this set, the system will automatically proceed to the limit setup menu. Follow the on-screen instructions to complete the set-up procedure.

- ii) If the powering up with the PROFILE set but no limits set, the system will automatically proceed to the limit setup menu. Follow the on-screen instructions to complete the set-up procedure.

- iii) If powering up at any stage after that, push and hold the SETUP button (  ) for 3 seconds.



Select the “limits” menu by pressing the ENTER button (  ). Follow the on-screen instructions to complete the set-up procedure.

For more details about the PROFILE (operating standard) refer to page 37.

# How to set up additional features on the Vector Controller

Figure 10 provides the full menu of features that can be set up on the system. Explanation of each feature is provided in the section “CONTROLLER FEATURES”.

When setting up the VECTOR system via the LCD display, all the steps that have to be followed are clearly provided via the display. It is only necessary to note the following:

- ? To get into setup mode, press the (oblong) button for 3 seconds and follow the instructions provided from there.
- ? The buttons provided on the controller for navigating the system, are not marked because at each step during the setup, the function given to each button is provided on the display

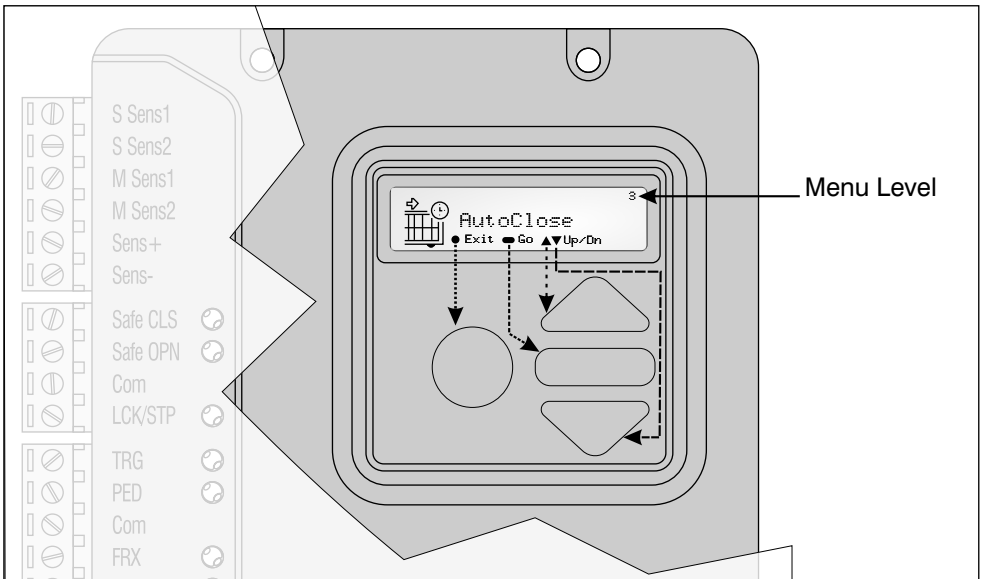


Figure 9 View of Controller

- ? When not in setup mode, ie normal mode, the (round) button is used as a TEST button for operating the system. The up/down buttons are not used unless the diagnostic screens have been selected to appear in normal mode, in which case these buttons allow switching from one screen to the next.

For each feature a factory default setting has been programmed into the controller Referred to as an operating standard or PROFILE, these defaults have been determined to suit the requirements of the specific region where the installation is being carried out. It is only necessary to change a feature where the default does not suit the installation. When selecting any feature in the menu, details of the current setting stored in the controller are displayed.

Refer to Table 1 on page 39 for the Schedule of Factory Defaults for each feature

# Menu Navigation Map

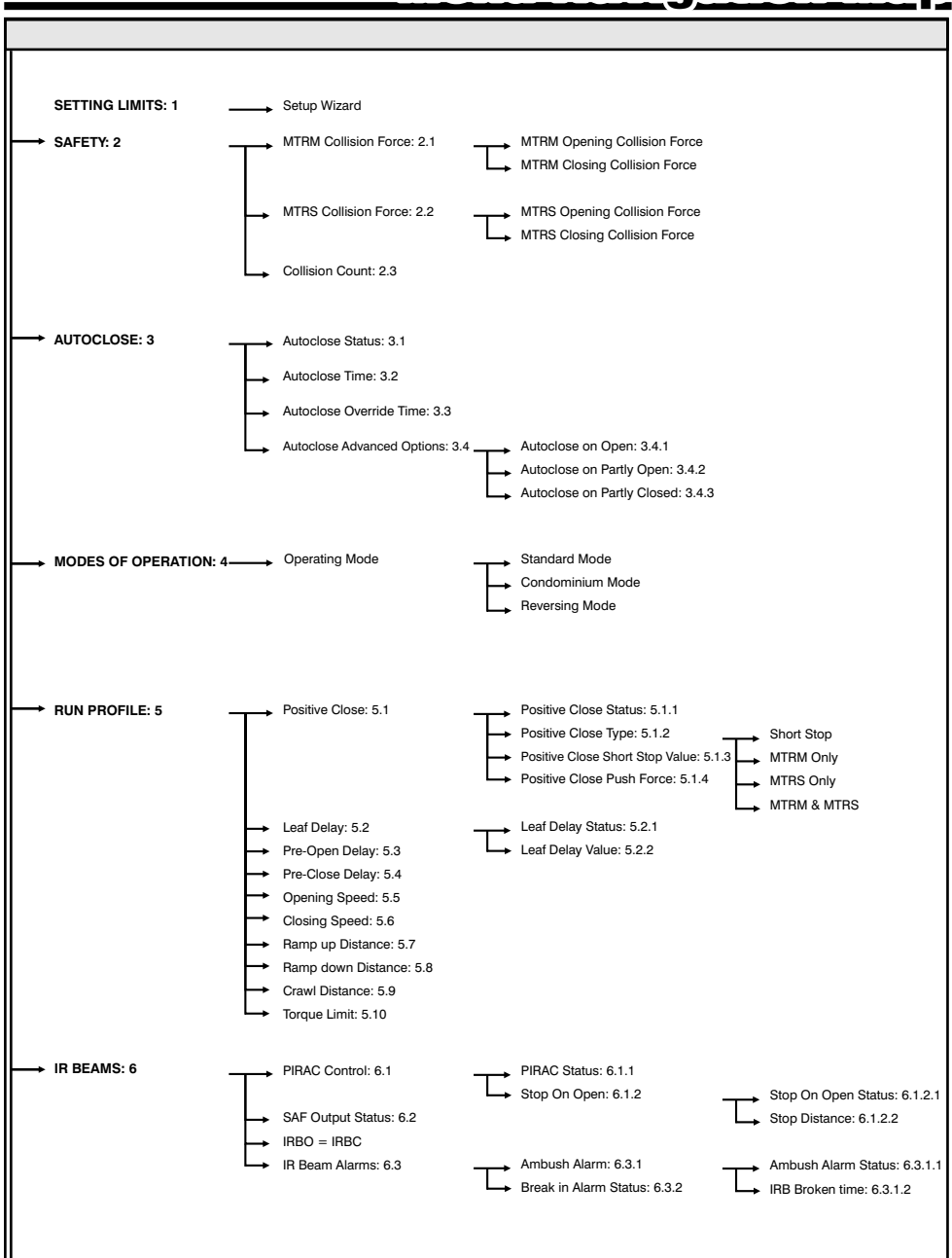
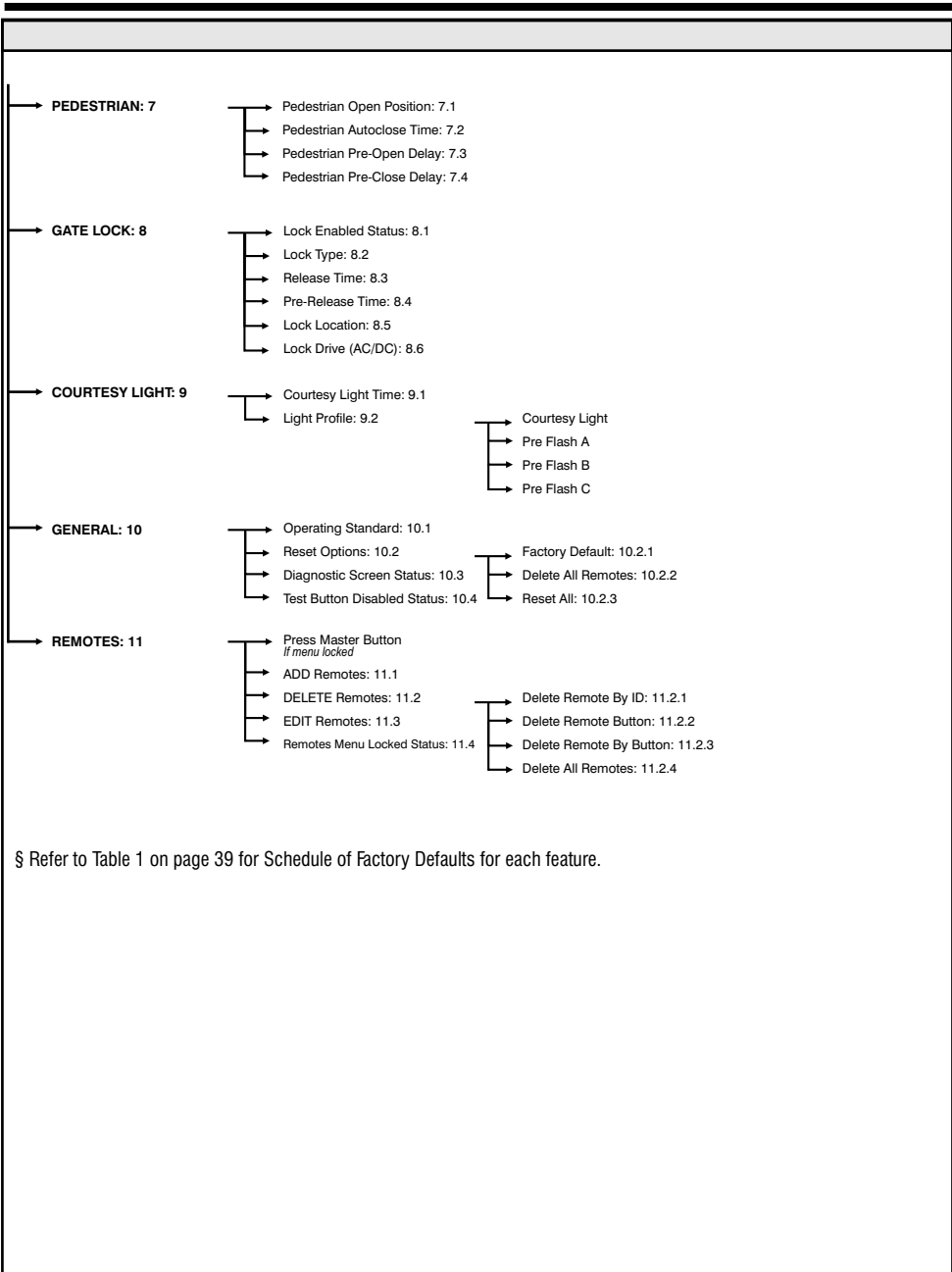


Figure 10 Part A of "Menu Navigation Map"



§ Refer to Table 1 on page 39 for Schedule of Factory Defaults for each feature.

Figure 10 Part B of “Menu Navigation Map”

# Controller Features

§ Refer to Table 1 on page 39 for Schedule of Factory Defaults for each feature described below.

## **SAFETY (COLLISION FORCE) - MENU 2**

### **MTRM/S COLLISION FORCE**

If the gate is obstructed, the internal collision circuitry will activate. The response of the system to a collision will vary, depending on the Operating Standard (eg CE, UL325) selected. Responses can vary from one or both gates stopping, to one or both gates reversing. The collision force can be set from Min to Max in 5 discrete steps.

A sixth step will disable collision sensing entirely, allowing MAXIMUM force to be achieved. Under this condition, the motors will continue running until they stall, at which point a collision will be detected. NB: This level should only be used if additional safety measures are taken. (e.g.: Infrared beams, sensitive edge etc.)

Collision force can be set independently per motor, as well as per direction of travel.

### **COLLISION COUNT**

A counter monitors the number of collisions that the gate experiences before both gates reach the fully closed position. If the value exceeds the value set in the MULTIPLE COLLISION COUNTER the controller shuts down until the next valid trigger is received. As indication, the STATUS LED will flash 4 times every second. The multiple collision fault indication will continue to flash indefinitely or until a valid trigger has been received.

## **AUTO-CLOSE – MENU 3**

### **AUTO-CLOSE STATUS**

The Auto-close feature when turned on, has the function of automatically closing the gate after a preset auto-close time. The AUTO-CLOSE feature is automatically turned on when the controller is set for CONDOMINIUM mode of operation.

### **AUTO-CLOSE TIME**

The auto-close time can be set anywhere from 1 to 255 seconds.

### **AUTO-CLOSE OVERRIDE**

It is possible for the user to temporarily turn off auto-close when the mode of operation is STANDARD or REVERSING. To activate AUTO-CLOSE OVERRIDE, the TRG input must be activated and maintained for a period longer than the time set for the AUTO-CLOSE OVERRIDE TIME, after which the input can be cleared ie press and hold the button of the remote that operates the gate.

The gate response will be to start opening on the first TRG trigger, and then to stop as soon as the AUTO-CLOSE OVERRIDE feature is activated. On clearing of the TRG input, the gate will continue opening until fully open. The AUTO-CLOSE feature is now off and the gate will remain open indefinitely.

The next signal received on TRG will clear the AUTO-CLOSE OVERRIDE feature, close the gate, and set the AUTO-CLOSE feature back to normal.

### **AUTO-CLOSE ADVANCED OPTIONS**

The conditions under which the gate will auto close can be set within the Advanced Autoclose options menu.

---

**AUTO-CLOSE ON OPEN** - will automatically close the gate if it has reached the fully open.

**AUTO-CLOSE ON PARTLY OPEN** - will automatically close the gate if it is stopped while opening, but before the reaching the fully opened position.

**AUTO-CLOSE ON PARTLY CLOSED** - will automatically close the gate if it is stopped while closing, but before reaching the fully closed position.

More than one advanced option can be selected.

## **MODES OF OPERATION - MENU 4**

It is possible to select the following modes of operation: STANDARD, CONDOMINIUM and REVERSING. All modes are triggered by closing a normally open contact between the TRG input terminal and the COM terminal.

**STANDARD MODE** - When stationary, a trigger impulse on TRG will cause the gate to either open or close. On a moving gate, a trigger impulse on TRG will stop the gate. A third impulse on TRG will cause the gate to reverse its direction of travel, i.e. the action is START - STOP - REVERSE.

**CONDOMINIUM MODE** - A trigger impulse on TRG will under all conditions open the gate. If it were closing, it will stop and reverse to open. In this mode of operation, the only way to close the gate is with the AUTO-CLOSE feature which is automatically activated when CONDOMINIUM mode is selected.

**REVERSING MODE** - A trigger impulse on TRG will reverse the direction of a moving gate. If it were closing, it will stop and immediately begin opening. If it were opening, it will stop and immediately begin closing.

## **RUN PROFILE – MENU 5**

### **POSITIVE CLOSE MODE (PCM)**

Setting positive close mode to ON will allow the gate to drive up hard to an end stop without causing the collision circuitry to operate. This feature operates only during the last few millimetres of piston travel in the closing mode.

### **POSITIVE CLOSE TYPE**

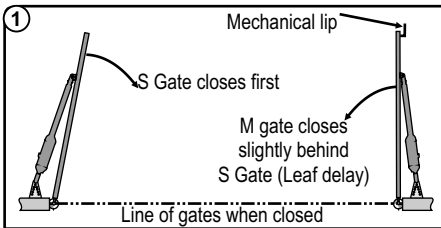
PCM can be applied to one of the following:

- ? Short Stop (further explanation follows)
- ? M motor (MTRM)
- ? S motor (MTRS)
- ? Both M and S motors

### **SHORT STOP**

PCM applied to one gate is ideal for securely locking two gates to each other without having to fit end-stops. Typically, a 'mechanical' lip is fitted to one gate which will push up against the other gate and via PCM keep pushing until the gates are mechanically locked. To ensure that the gates do not close past their desired end point, the gate (S) against which the gate (M) with the mechanical lip pushes, can be preset to stop slightly short of its closed position. This is referred to as the 'Short Stop' distance. If the 'Short Stop' distance is correctly set, the gate (M) will engage with the S gate sufficiently before the





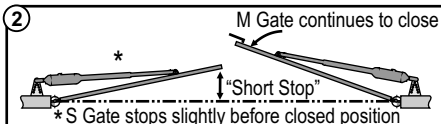
closed position and via the PCM, push the two gates into the fully closed position, but not past.

### SHORT STOP VALUE

The short stop distance can be set between 1mm and 40mm of piston stroke.

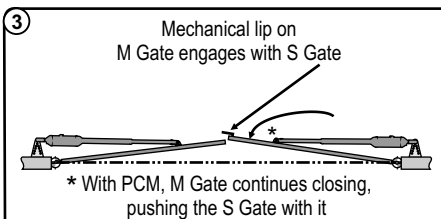
### PCM PUSH FORCE

The amount of force applied by the actuator when in PCM can be set as a value from 1 to 15.



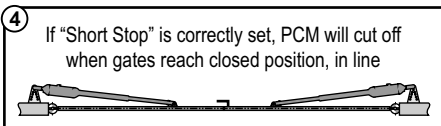
### LEAF DELAY

Leaf delay is used in cases where one gate leaf must move before the other. The most common need for this arises when a mechanical 'lip' is fitted to one of the gates. In a double leaf installation, a leaf delay can be set whereby the M motor will open before the S motor, and the S motor will close before the M motor.



### LEAF DELAY VALUE

The leaf delay is based on piston position, and can be adjusted from 3-250mm of piston travel.



### PRE-OPEN DELAY

Allows a delay between a valid trigger signal being received and the gate commencing movement in

the opening direction. A warning light can be set to activate during this delay. (Refer to Pre-flash modes of the feature PILLAR LIGHT, for more details) This setting applies to both motors.

### PRE-CLOSE DELAY

Allows a delay between a valid trigger signal being received and the gate commencing movement in the closing direction. The delay will also occur if the gate is set to close automatically. A warning light can be set to activate during this delay. (Refer to Pre-flash modes of the feature PILLAR LIGHT, for more details). This setting applies to both motors.

### OPENING SPEED

Sets the maximum piston opening speed in millimeters per second. This setting applies to both motors.

### CLOSING SPEED

Sets the maximum piston closing speed in millimeters per second. This setting applies to both motors.

### RAMP UP DISTANCE

Sets the ramp-up distance in millimeters of travel of the piston when starting. This setting applies to both motors.

### RAMP DOWN DISTANCE

Sets the ramp-down distance in millimeters of travel of the piston when stopping. This setting applies to both motors.

### CRAWL DISTANCE

Sets the final crawl distance in millimeters of travel of the piston when reaching an endpoint. This setting applies to both motors.

### PUSH FORCE LIMIT

Sets the maximum push force delivered by the motors. The maximum setting is a value of 15 and the minimum is 4. This is useful in cases where limited push force is required. This setting applies to both motors.

## IR BEAMS – MENU 6

In a swing gate installation, in order to provide protection for a person or vehicle moving through the entrance, it is necessary to have two sets of beams, one across the driveway where the gates are closed and another where the gates are open. Both these beams must be set as closing safety beams, preventing the gate from closing and stop the gates if they have started to close.

However across the line of the driveway up to where the gates open, it is also recommended to have another set of safety beams to prevent the gate from opening if they are closed and stop if they are opening.

Two independent normally closed inputs are provided for opening and closing safety beams. An interrupted closing beam will prevent the gates from closing and stop and reverse the gates back to the open position if already opening. Vice-versa for a closing beam. Additional beam functionality is provided:

### PIRAC

Passive-Infra-Red Auto-Close causes the gates to automatically close as soon as a vehicle has passed through the closing beams. This security feature ensures that the gate stays open for the minimum time possible.

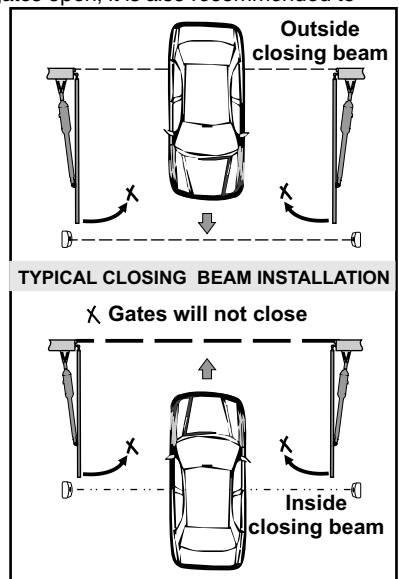
If the AUTO-CLOSE feature has been enabled when the gate is triggered to open, but nothing moves through / breaks the closing beam, the gates will open fully and stay open for the period of time determined by the AUTO-CLOSE timer. However, if at any stage, while the gate is opening or standing open waiting to close, the beams are broken, the gates will close immediately.

### SAFE OUTPUT STATUS

Automatically tests the safety beams before each gate cycle. (eg as required by CE and UI325).

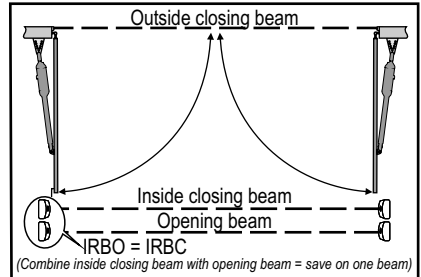


NB: In order for this feature to work, the power supply negative of the beam receiver and beam transmitter must be wired to the SAF COM terminal of the controller.



### IRBO=IRBC

Configures the opening beam to act as a closing beam while the gates are closing. This allows one set of beams to be used across the line of the driveway up to where the gates open.

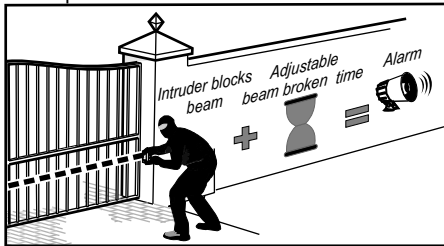


### IR BEAM ALARMS

While the gates are fully closed, this feature allows the following alarms:

#### AMBUSH ALARM

Activates an alarm if either the opening or closing beams have been continuously interrupted for a predefined time. The alarm will remain activated while the beams are interrupted.



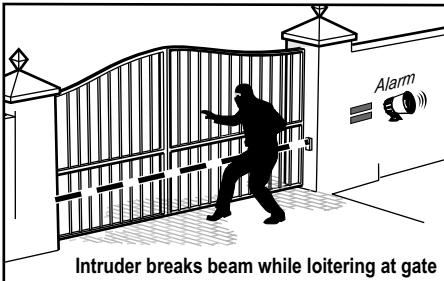
For example; if a would-be intruder covers the beams so that when the gates are opened the gates will stay open, the system will detect this beam override taking place and set off an alarm.

#### IRB BROKEN TIME


The time that the beams must be interrupted before the alarm is activated.

#### BREAK IN ALARM

Activates an alarm if the closing beam on the outside of the property is interrupted. The alarm remains activated while the beams are broken and for a period of 30 seconds thereafter. This time is fixed.



For example; if a would-be intruder is loitering at the entrance, as soon as the beams are broken an alarm will be set off.

 NB: If this alarm is used, it is recommended that TWO parallel closing beams are used to reduce the chance of false triggering.

#### ALARM OUTPUT

The system can be configured to operate one of the following outputs provided on the controller:

- ? Onboard buzzer – emits a continuous tone
- ? Pillar / Courtesy light contact (potential free normally open contact, fused protected – 5A)
- ? Safety beam common (this is an open collector drive, max current draw 3A, not fuse protected)
- ? Solenoid lock output (this is an open collector drive, max current draw 3A, not fuse protected)
- ? Status LED output (operate up to 3 LEDs in parallel or interface with multi LED driver card, CP78)

---

## **PEDESTRIAN OPENING – MENU 7**

This feature is associated with the PED input on the controller. When activating this input, the system will open one of the gates (selectable in a double swing gate installation) to the pedestrian open position, and then automatically close after the pedestrian auto-close time lapses. The gate will open only after the adjustable pre-opening delay time.

If the connection to COM is maintained then the gate will remain open, and when the connection is broken, it will close after the PEDESTRIAN auto-close time.

### **PEDESTRIAN OPEN POSITION**

Sets the maximum opening of the pedestrian gate as a percentage of full opening.

### **PEDESTRIAN AUTOCLOSE TIME**

Sets the autoclose time in seconds after a pedestrian opening.

### **PEDESTRIAN PRE-OPEN DELAY**

Sets the time delay between the pedestrian input being activated, and the gate actually opening. This enhances safety in cases where the pedestrian has to reach through the in order to activate the pedestrian input. A warning light would typically be active during this delay.

### **PEDESTRIAN PRE-CLOSE DELAY**

Sets the time delay between the pedestrian autoclose timer expiring, and the gate actually closing. A warning light would typically be active during this delay.

## **GATE LOCK – MENU 8**

An electric strike lock or magnetic lock can be connected to the control card., allowing the gate to be locked when closed, open or both.

### **LOCK ENABLE STAUS**

Turns the lock functionality on or off.

### **LOCK TYPE**

Allows selection of either a solenoid strike lock, or a magnetic lock. A solenoid strike unlocks when power is applied, while a magnetic lock unlocks when power is removed.

### **RELEASE TIME**

Sets the time period (in seconds) for which the lock remains released after the gate has started moving.

### **PRE-RELEASE TIME**

Sets the time period (in 0.1s increments) for which the lock releases BEFORE the gate has started moving. This is useful in cases where premature gate movement prevents the lock from releasing.

### **LOCK LOCATION**

Specifies whether the gate is locked while closed, open or both.

### **LOCK DRIVE**

Specifies if the lock is to be powered by an AC or DC voltage. Selecting AC will power the lock with a 50Hz square wave.

## **COURTESY (PILLAR) LIGHT – MENU 9**

This feature is associated with the LIGHT connections on the controller. Refer to page 44 of the manual for details on how to connect a pillar or security light to the controller.

The pillar light circuit has multiple functions:

- ? It operates as a courtesy light and switches on for a timed period every time the gate is activated.

- ? It can also be turned on for the same timed period by momentarily connecting the LIT input to COM.(eg activating a pushbutton connected to these terminals)
- ? Via the same pushbutton connected across LIT and COM, it can also be turned ON permanently by application of an impulse longer than 3 seconds. The fact that the pillar light is ON permanently is indicated by the STATUS LED flashing once every second. A short impulse thereafter will switch the lights off.



NB - The gate will not trigger open when using the LIT trigger.

- ? When the PED input is triggered the courtesy light flashes for an adjustable (1 to 255 seconds) pre-flash time before the pedestrian gate opens.

#### **COURTESY LIGHT TIME**

The time that the courtesy light will remain activated can be set from 4 seconds to 10 minutes

#### **LIGHT PROFILE**

The courtesy light can be selected to operate according to one of the following:

- ? Courtesy light as explained earlier. If pre-flashing Mode A, B or C is selected, the courtesy light circuit will activate for the selected pre-opening and pre-closing delay. The manner of activation is dependent on the pre-flashing mode selected.
- ? Mode A will turn on the courtesy light only while the motors are running.
- ? Mode B will flash the courtesy light during the pre-opening delay, as well as while the gates are running.
- ? Mode C will turn on the courtesy light during the pre-opening delay, as well as while the gates are running. In these pre-flashing modes, the timed courtesy light functionality is not available.

## **GENERAL – MENU 10**

### **OPERATING STANDARD**

Regional operating standards can be set. Applying this setting will automatically configure the controller settings to conform to the specific regions standard - e.g. UL325 or CE.

### **RESETTING CONTROLLER SETTINGS**

The controller settings can be reset through the Reset Options menu. Various reset options are available.

**FACTORY DEFAULTS** – Depending on the operating standard / profile chosen all these settings will be restored. No other settings such as remote controls, limit switch settings will be affected.

**DELETE ALL REMOTES** - Delete all the remotes stored in the system, no settings affected.

**RESET ALL** – Clears the system completely as per an off the production line unit.

---

### **DIAGNOSTIC SCREEN STATUS**

Allow a diagnostic screen to be displayed. Can be useful when troubleshooting, but requires some technical knowledge.

### **TEST BUTTON DISABLED**

Allows the round test button on the controller to be disabled, in cases where higher security is required.

## **REMOTE CONTROLS – MENU 11**

The controller is capable of learning up to 64 Centurion Nova remote controls / transmitters. Each transmitter can have up to 4 buttons. Each transmitter learned into the system is assigned a unique transmitter ID.

### **PRESS VALID BUTTON**

If the remotes MENU has been locked as discussed later, only by pressing a button of a transmitter learned into the system, can this MENU be accessed.

### **ADD REMOTES**

Any button can be set to control the trigger, pedestrian, free exit, holiday lockout or courtesy light inputs. When adding transmitters it is recommended that a record be kept of the ID number allocated by the system to each respective transmitter and the person to whom the transmitter is given. This is necessary should selective deletion be required at a later stage.

### **DELETE REMOTES**

Transmitters can be edited at any stage according to one of the following:

- ? **DELETE REMOTE BY ID** - Each transmitter can be deleted individually according to its unique ID. To facilitate this, a record of the ID and the person to whom the ID has been assigned must have been made at the time of learning the transmitter into the system.
  
- ? **DELETE REMOTE BUTTON** - The operation of a button on a particular transmitter can be cleared. It allows for instance Holiday Lockout set on one remote to be cleared without affecting the other operations that the transmitter performs.
  
- ? **DELETE REMOTE BY BUTTON** – use this procedure to delete the transmitter if is present.
  
- ? **DELETE ALL REMOTES** – clear the entire remote memory.

### **EDIT REMOTES**

Change the function of one button to another.

### **REMOTE MENU LOCK STATUS**

The remote control menu can be locked, requiring the use of a valid transmitter in the system to add new transmitters.

# Factory Defaults Schedule

<b>South African Standard Profile</b>				
<b>PARAMETER DESCRIPTION</b>	<b>UNIT</b>	<b>MIN</b>	<b>DEFAULT</b>	<b>MAX</b>
Auto-Close Enabled	YES/NO		<b>NO</b>	
Auto-Close from Fully Open	YES/NO		<b>YES</b>	
Auto-Close from Partly Open	YES/NO		<b>YES</b>	
Auto-Close from Partly Closed	YES/NO		<b>NO</b>	
Auto-Close Time	mm:ss	<b>00:00*</b>	<b>0:15</b>	<b>04:00*</b>
Auto-Close Override Time	s	<b>2*</b>	<b>3</b>	<b>15*</b>
<b>Mode of Operation</b>				
	S,R,C		<b>Standard</b>	
<b>Motor M Opening Force</b>				
Motor M Opening Force	Level	<b>1</b>	<b>3</b>	<b>Max (6)</b>
Motor M Closing Force	Level	<b>1</b>	<b>3</b>	<b>Max (6)</b>
<b>Motor S Opening Force</b>				
Motor S Opening Force	Level	<b>1</b>	<b>3</b>	<b>Max (6)</b>
Motor S Closing Force	Level	<b>1</b>	<b>3</b>	<b>Max (6)</b>
Max. No. Collisions	Collisions	<b>1</b>	<b>4</b>	<b>255</b>
Collision Alarm Output	B,C,PS,L		<b>Buzzer</b>	
<b>PCM Enabled</b>				
PCM Enabled	YES/NO	<b>NO</b>	<b>NO</b>	<b>YES</b>
PCM Type	M,S,M & S,SS		<b>Master Only</b>	
PCM Stop Short Distance	mm	<b>1</b>	<b>5</b>	<b>40</b>
PCM Force	% (A)	<b>1</b>	<b>3</b>	<b>15</b>
<b>Leaf Delay Enabled</b>				
Leaf Delay Enabled	YES/NO	<b>NO</b>	<b>NO</b>	<b>YES</b>
Leaf Delay	mm	<b>3*</b>	<b>10*</b>	<b>250*</b>
<b>Opening Speed</b>				
Opening Speed	mm/s	<b>10</b>	<b>30</b>	<b>Max</b>
<b>Closing Speed</b>				
Closing Speed	mm/s	<b>10</b>	<b>30</b>	<b>Max</b>
<b>Ramp Up Distance</b>				
Ramp Up Distance	mm	<b>20</b>	<b>30</b>	<b>400</b>
<b>Ramp Down Distance</b>				
Ramp Down Distance	mm	<b>20</b>	<b>30</b>	<b>400</b>
<b>Crawl Distance</b>				
Crawl Distance	mm	<b>5</b>	<b>10</b>	<b>400</b>
<b>Torque Limit</b>				
Torque Limit	(A)	<b>4</b>	<b>11</b>	<b>15</b>
<b>Pre-Open Delay Time</b>				
Pre-Open Delay Time	s	<b>0</b>	<b>0</b>	<b>196</b>
<b>Pre-Close Delay Time</b>				
Pre-Close Delay Time	s	<b>0</b>	<b>0</b>	<b>196</b>

*Table continue on next page.*

\* -Settings are fixed across standards

\*\* -Settings are not configurable via the GUI

Table 1 Factory Defaults Schedule

## South African Standard Profile Continue

<b>PARAMETER DESCRIPTION</b>	<b>UNIT</b>	<b>MIN</b>	<b>DEFAULT</b>	<b>MAX</b>
PED Open Distance	% (Full Open)	10	30	100
PED Auto-Close Time	s	0	5	240
PED Pre-Open Delay Time	s	0	2	240
PED Pre-Close Delay Time	s	0	0	240
Gate Lock Enabled	YES/NO		NO	
Gate Lock Type	M,S		Striker	
Gate Lock Pre-Release Time	s	0.1*	0.0	24.0*
Gate Lock Release Time	s	0.1*	1.0	24.0*
Gate Lock Location	C,O,C & O		Close Only	
Gate Lock Drive Type	AC,DC		AC	
Courtesy Light Time	h:mm:ss	0:00:04*	0:02:00	9:59:59*
Courtesy Light Profile	Crt,A,B,C		Courtesy	
PIRAC Enabled	YES/NO	NO	NO	YES
SAF Common Enabled	YES/NO	NO	NO	YES
SAF Common Tests which Beams	C,O,C & O		IRBC Only	
IRBO acts as IRBC	YES/NO	NO	NO	YES
IRB Ambush Alarm Enabled	YES/NO	NO	YES	YES
IRB Ambush Alarm Hold-Off Time	Minutes	1	1	255
IRB Break-In Alarm Enabled	YES/NO	NO	NO	YES
IRB Alarms Output	B,C,P,S,L		BUZZER	
Diagnostic Screen Enabled	YES/NO		NO	
Test Push-Button Enabled	YES/NO		YES	
Remote Menu Locked	YES/NO		NO	
Helix Mode Disabled**	YES/NO		YES	
IRBO Starts Wire-Less**	YES/NO		YES	
IRBC Starts Wire-Less**	YES/NO		YES	
LCK Starts Wire-Less**	YES/NO		YES	




\* -Settings are fixed across standards

\*\* -Settings are not configurable via the GUI

Table 1 Factory Defaults Schedule



# Description of Terminal Functions

<b>S Sens1</b>	Motor S (MTR S) operator . Connects to the thin PURPLE wire of the Motor S operator.
<b>S Sens2</b>	Motor S (MTR S)operator. Connects to the thin BLUE or ORANGE wire of the Motor S operator.
<b>M Sens1</b>	Motor M (MTR M)operator. Connects to the thin PURPLE wire of the Motor M operator.
<b>M Sens2</b>	Motor M (MTR M)operator. Connects to the thin BLUE or ORANGE wire of the Motor M operator.
<b>Sens +</b>	Operator sensor power connection. A 5V output for connecting to the thin RED sensor wireon both the MTR M and MTR S operators.
<b>Sens -</b>	Operator sensor power connection. A 0V output for connecting to the thin BLACK or GREY sensor wire on both the MTR M and MTR S operators.
<b>Safe CLS</b>	CLOSING edge safety input. (A normally-closed potential-free input). For as long as a connection between this input and COM is maintained the controller will behave normally. When this connection is broken it will prevent the gate from closing if it is stationary, and will stop and reverse the gate if it is closing. This input has no effect if the gate is opening.  <u>(NOTE: If the Saf CLO function is not required a link must be fitted between Safe CLO and COM for the controller to operate normally.*)</u>
<b>Safe OPN</b>	OPENING edge safety input. (A normally-closed potential-free input). For as long as a connection between this input and COM is maintained the controller will behave normally. When this connection is broken it will prevent the gate from opening if it is stationary, and will stop and reverse the gate if it is opening. This input has no effect if the gate is closing.  <u>(NOTE: If the Safe OPE and reverse functions are not required a link must be fitted between safe OPE and COM for the controller to operate normally.*)</u>
	* - When setting up the controller for the first time or after a full reset back to factory default has been performed, the system will electronically override the Safety Inputs and allow the system to function without the links. However if safeties are connected to either or both inputs, thereafter there must be a normally closed circuit maintained for the system to operate correctly. I.e. if beams are fitted and then removed, the circuit which is affected must be replaced with a wire link to create the normally closed circuit.
<b>LCK/STP</b>	Holiday Lockout or gate STOP input. (A normally-closed potential-free input). For as long as a connection between this input and COM is maintained the controller will behave normally. But, when this connection to COM is broken all inputs are inhibited, and if the gate is moving it will stop. <u>(NOTE: If the LCK function is not required a link must be fitted between LCK and COM.)</u>  <b>TRG</b> Trigger input. (A normally-open potential-free input) Momentarily connecting this input to COM will cause the gate to open or close depending on the operating mode selected. For more information see the auto-close feature and modes of operation.
<b>PED</b>	Pedestrian opening input. (A normally-open potential-free input). Momentarily connecting this input to COM will cause one gate to open to the Pedestrian open position. For more information refer to the Pedestrian feature.
<b>FRX</b>	Free exit input. (A normally-open potential-free input). Momentarily connecting this input to COM will cause a gate which is closed, or closing, to open or re-open. If the gate is open, or opening, the signal has no effect other than to reset the auto-close timer (if selected). Free exit (FRX) never initiates a closing cycle. The only way to close a gate, if only the FRX input is used, is to activate the auto-close feature on the controller.
<b>LIT</b>	LIT Activates the pillar light output. (A normally-open potential-free input). Momentarily connecting this input to COM will cause the LIGHT relay to energize for a period of time as set in the courtesy light timer menu. If the connection is made for a period exceeding 3 seconds the pillar light relay will latch and remain latched indefinitely until a new momentary connection to COM is given.

---

<b>LED</b>	External gate status indicator. (A low current output signal.) An output terminal which provides a low current, drive (approx. 4.5V DC, 20mA) to a LED which can be used to indicate the gate status remotely. If more than 3 LED's are required it is necessary to fit the CP78 MULTI LED driver card. For more details on the feedback about the status of the gate provided by the STATUS LED refer to pg 43.
<b>Com</b>	The COMMON termination point. All trigger signals etc. have their return path to one of the COM terminals.
<b>Aux 12V</b>	Auxiliary power connection. Provides a +12V DC supply for auxiliary equipment such as a radio receiver, photo cells etc, it is linked directly to the battery positive via a 3A resettable fuse.
<b>Safe Com</b>	Used for switching the power supply to the safety beams. If automatic beam testing is required, the negative power supply connection of the beam transmitters and receivers must be wired to this point.
<b>Sol</b>	Solenoid strike or Magnetic lock. A solenoid strike lock or Magnetic lock can be connected between 12V and SOL. Note that the maximum current draw allowed for the lock is 2A. Should the solenoid lock or magnetic lock exceed this current rating it is necessary to use an interposing relay.  <b><u>(NB - Particularly with magnetic locks, ensure that the steady state current draw calculated over a 24hour period and added to this, the quiescent current draw of the controller, other peripherals and the usage of the motors, does not exceed the current delivered by the charger. If necessary fit a separate supply to power the lock using an interposing relay connected to the Sol input.)</u></b>
<b>Light</b>	Pillar light connection. These two terminals provide a normally open potential free contact which is generally used to switch on a pillar light (courtesy light). This contact is fuse protected – refer to pg44 for fuse specifications.
<b>Batt +</b>	Positive battery connection. (Battery terminal normally indicated as + or RED)
<b>Batt -</b>	Negative battery connection. (Battery terminal normally indicated as - or BLACK)
<b>MTR M+</b>	Motor M operator power connection. (Thick BLUE wire).
<b>MTR -</b>	Motor M operator power connection. (Thick BLACK wire).
<b>MTR S+</b>	Motor S operator power connection. (Thick BLUE wire).
<b>MTR S-</b>	Motor S operator power connection. (Thick BLACK wire).

---

# LED Indicator Lights

The controller is fitted with diagnostic lights (LEDs) that assist with the set-up and maintenance of the gate. Table 2 below provides a description and purpose of the indicator lights with figure 11 alongside, indicating the location on the control

## During Normal Operation

NAME	STATUS	STATUS
Saf CLO	ON = Closing Safeties clear	
	OFF = Closing Safeties obstructed	
Saf OPE	ON = Opening Safeties clear	
	OFF = Opening Safeties obstructed	
LCK/STP	ON = System ready to operate	
	OFF = System locked	
TRG	ON = Signal present	
	OFF = No signal	
PED	ON = Signal present	
	OFF = No signal	
FRX	ON = Signal present	
	OFF = No signal	
LIT	ON = Signal present	
	OFF = No signal	
LED	ON = Gate open	
	OFF = Gate closed	
	SLOW REGULAR FLASH = Gate is opening	
	FAST REGULAR FLASH = Gate is closing	
	1 FLASH EVERY 2 SECONDS = Courtesy light latched on	
	2 FLASHES EVERY 2 SECONDS = Mains failure	
3 FLASHES EVERY 2 SECONDS = Battery low		
4 FLASHES EVERY 2 SECONDS = Collision shutdown		

Figure 11 LED positions

Table 2 Description of LED indicators

## Buzzer Feedback

The VECTOR 2 controller is equipped with an onboard buzzer which is used for various features and functions on the controller. One of the functions it provides is audible diagnostic feedback as detailed in the table below:

PARAMETER DESCRIPTION	
<b>Battery low condition</b>	Buzzer emits a pulsed tone for a 5 second duration, after the controller is activated in a battery low condition.
<b>Multiple collision condition</b>	Buzzer emits a continuous pulsed tone as soon as a multiple collision shutdown is activated. The tone will cease as soon as a valid trigger input is activated.
<b>Holiday lock-out enabled</b>	Buzzer emits a pulsed tone for a 5 second duration when the controller is activated with this feature enabled.

# Charger and Pillar Light Connections

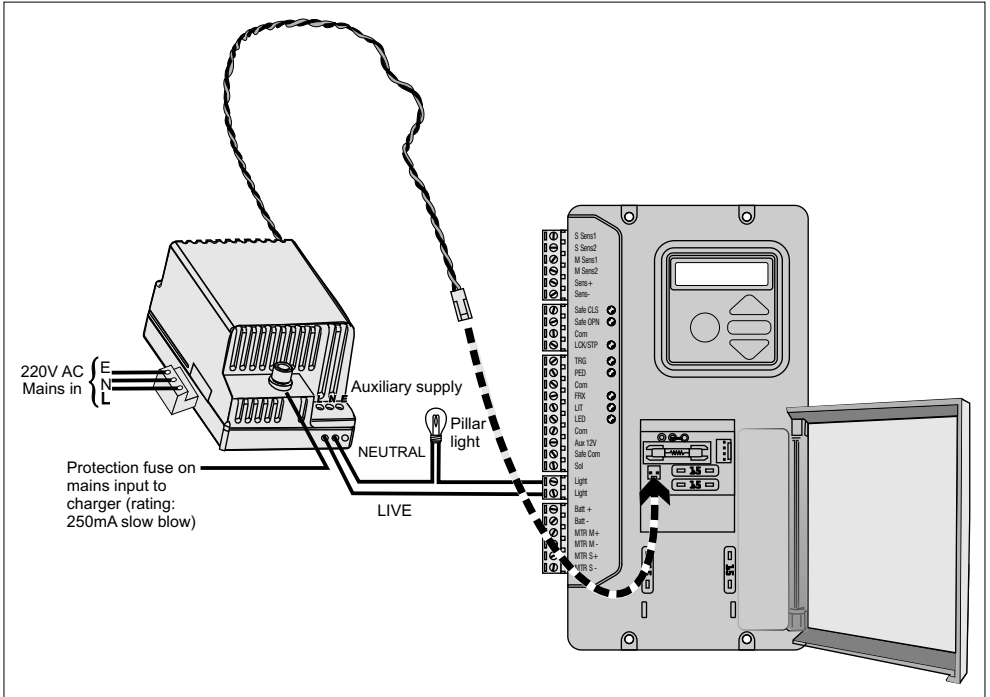


Figure 12 Charger and pillar light connections

## Fuse Protection

The following protection fuses are provided on the system:

Item	Type	Rating
<b>MAIN CONTROLLER</b>		
Motor Circuit - fuse per channel	Automotive Fuse (25X7)	15A
Light circuit	5X20mm	3A Fast Blow
Auxiliary supply	Electronic fuse <sup>†</sup> - not replaceable	3A
<b>CHARGER</b>		
Mains input	5X20mm	250mA Fast Blow

Table 3 Fuse schedule

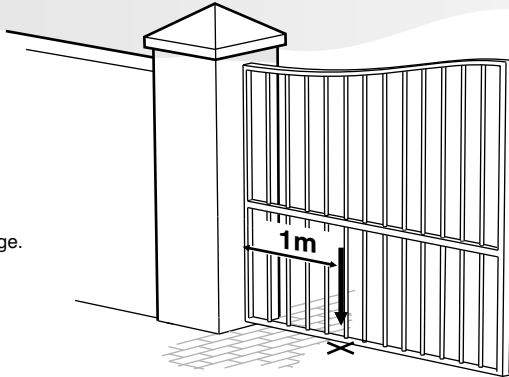
<sup>†</sup> To reset : Power off controller for at least 1 minute and re-apply power

# Determine Gate Swing Angle

Use this procedure to accurately determine the gate opening angle:

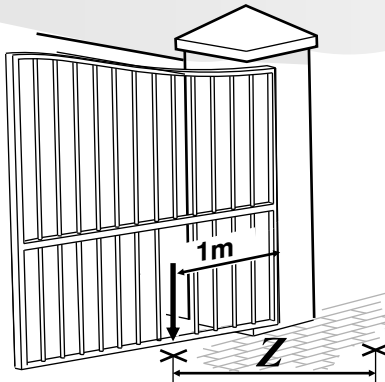
**Step 1**

Close the gate and measure a distance of 1m from the centreline of the gate hinge. Make a mark on the ground.



**Step 2**

Open the gate and measure a distance along the gate a distance of 1m from the centreline of the gate hinge. Make a mark on the ground. Measure the distance on the ground between the two marks (Z). Using this Z value, read off the gate opening angle from the table below.



**Step 3**

VALUE Z FROM...	...TO	USE GATE SWING ANGLE OF
1 000mm	1 075mm	60 Degrees
1 075mm	1 218mm	70 Degrees
1 218mm	1 351mm	80 Degrees
1 351mm	1 475mm	90 Degrees
1 474mm	1 587mm	100 Degrees
1 587mm	1 687mm	110 Degrees
1 687mm	1 732mm	120 Degrees

# Wiring Diagram for MOTOR M (MTR M) Operator

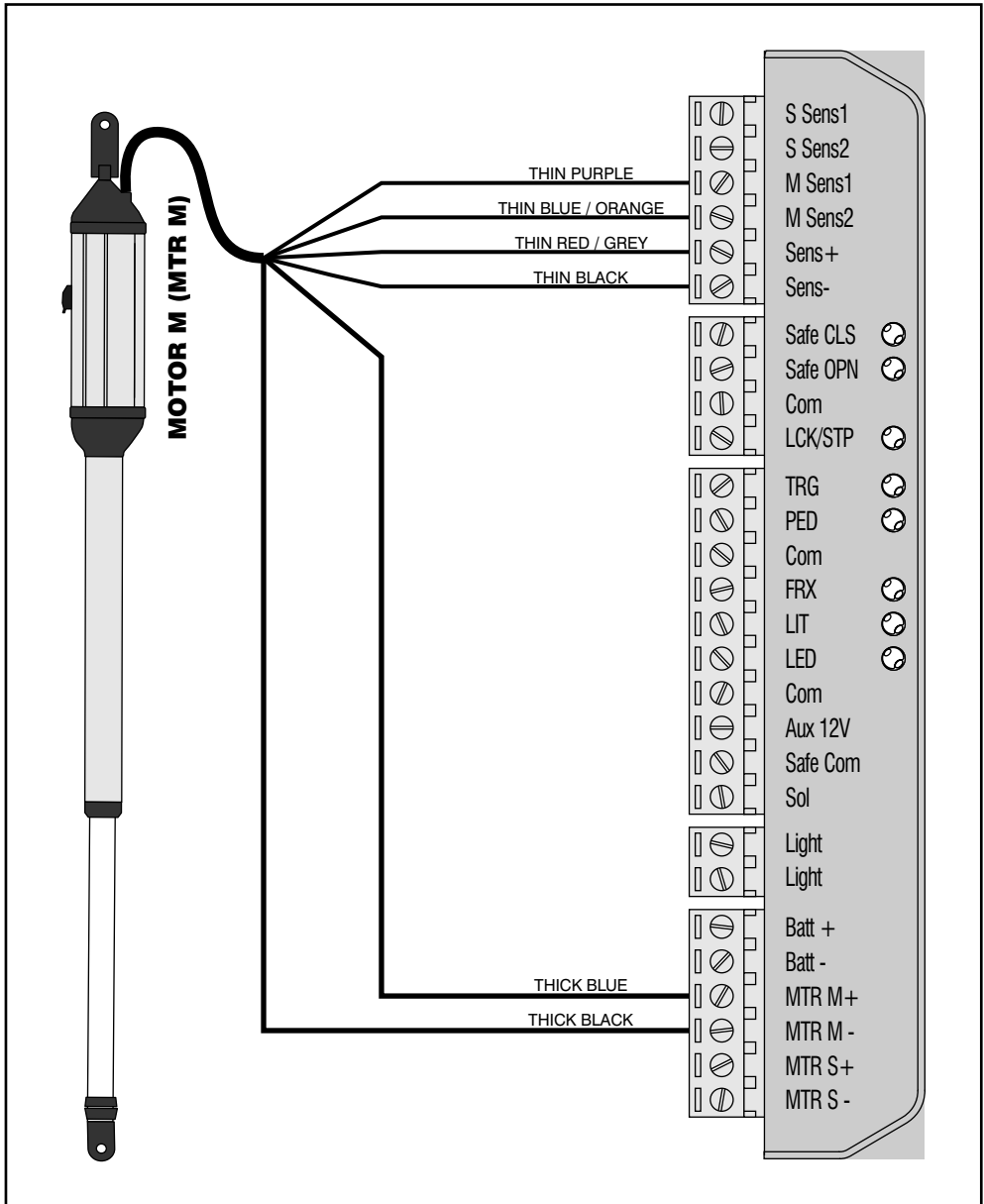


Figure 13 Wiring Diagram for Motor M

# Wiring Diagram for MOTOR S (MTR S) Operator

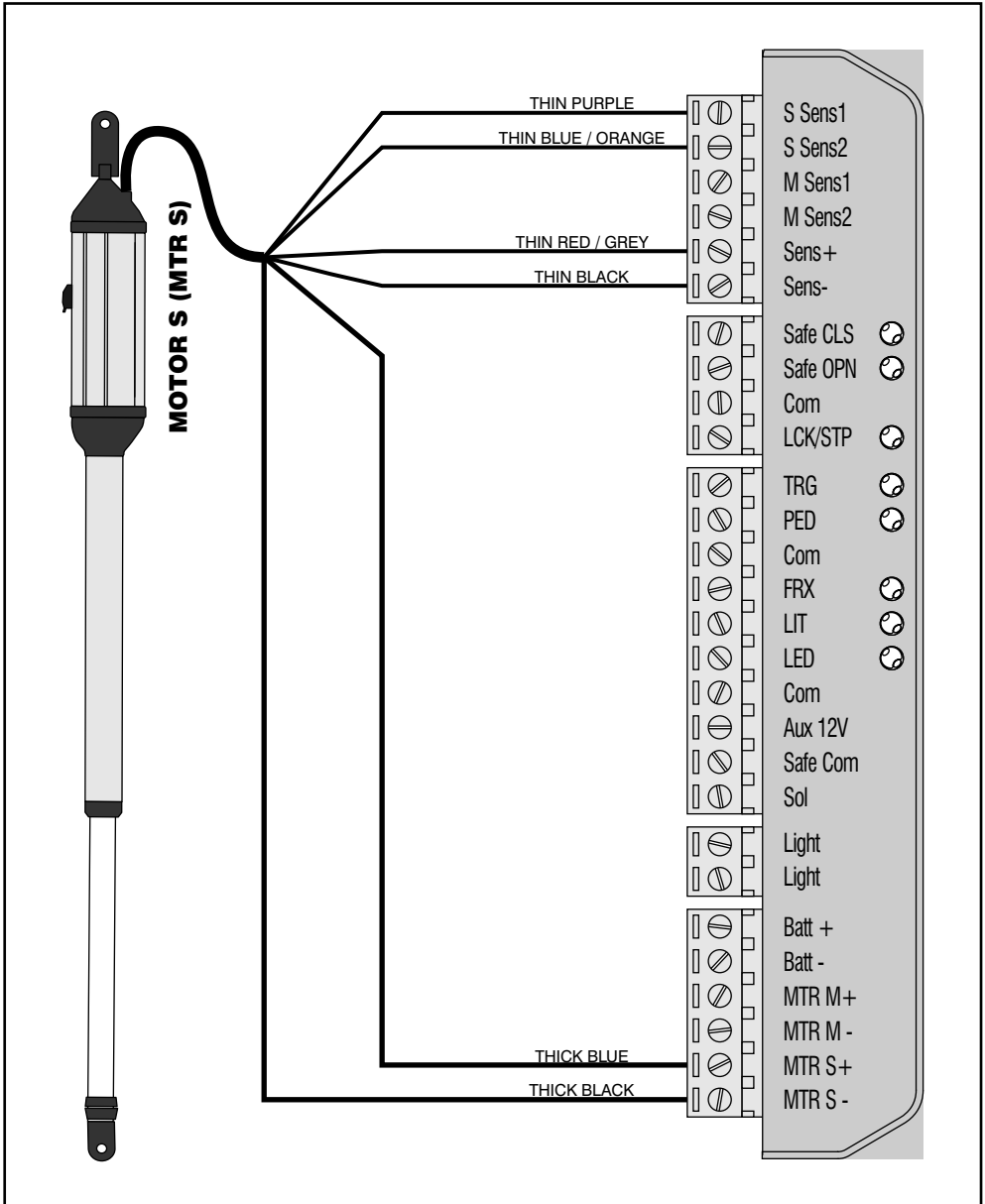


Figure 14 Wiring Diagram for Motor S

# Wiring Diagram for Safety Beams

(for CE compliance)

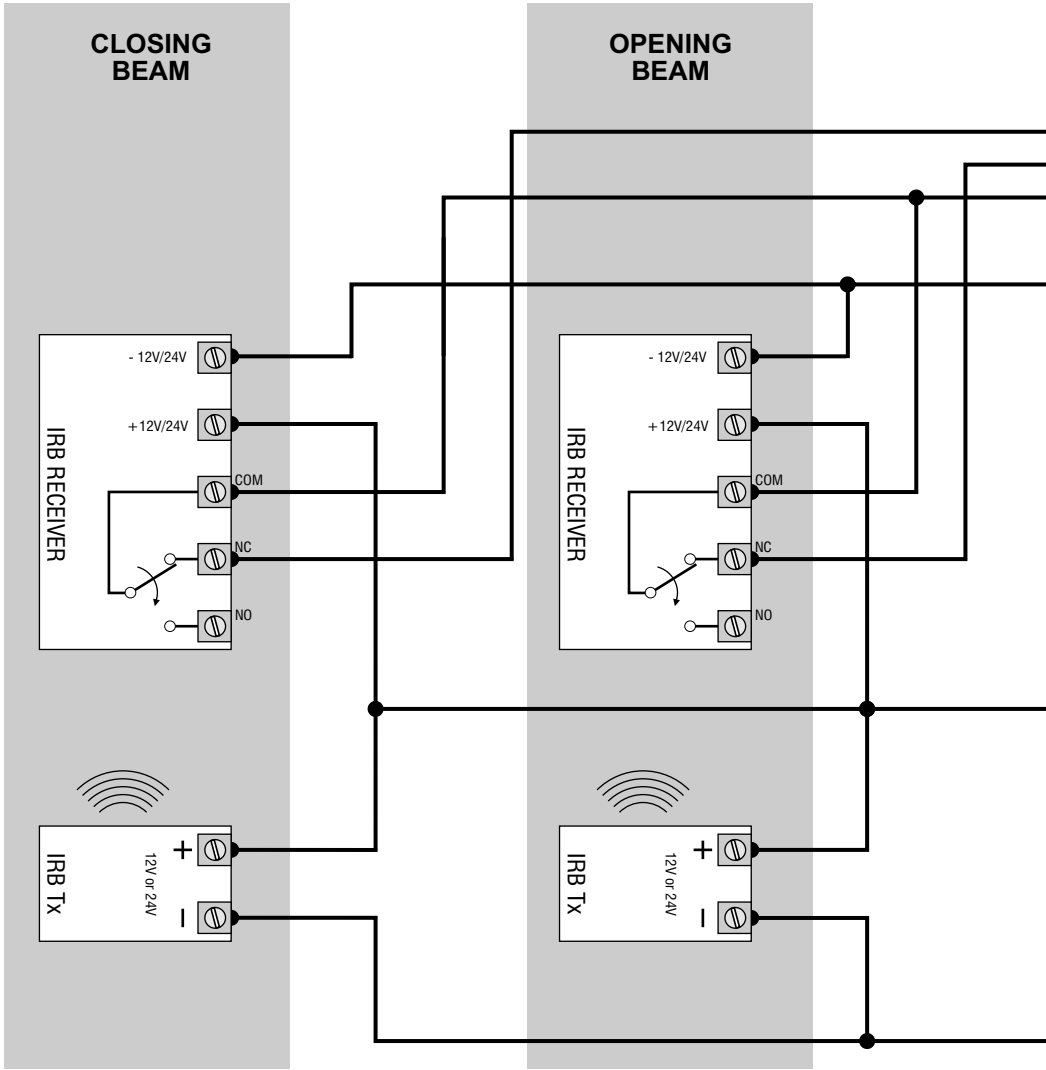
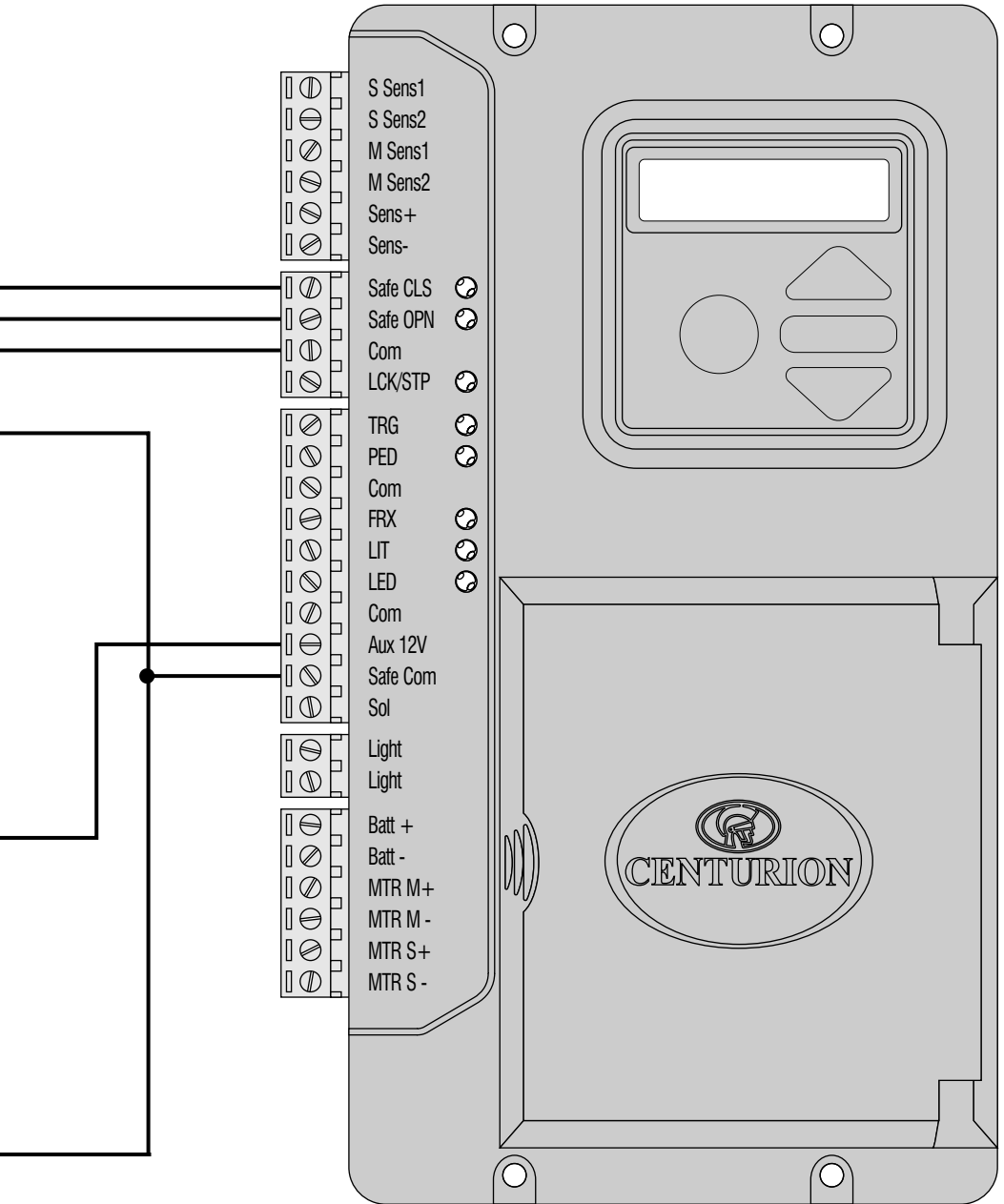
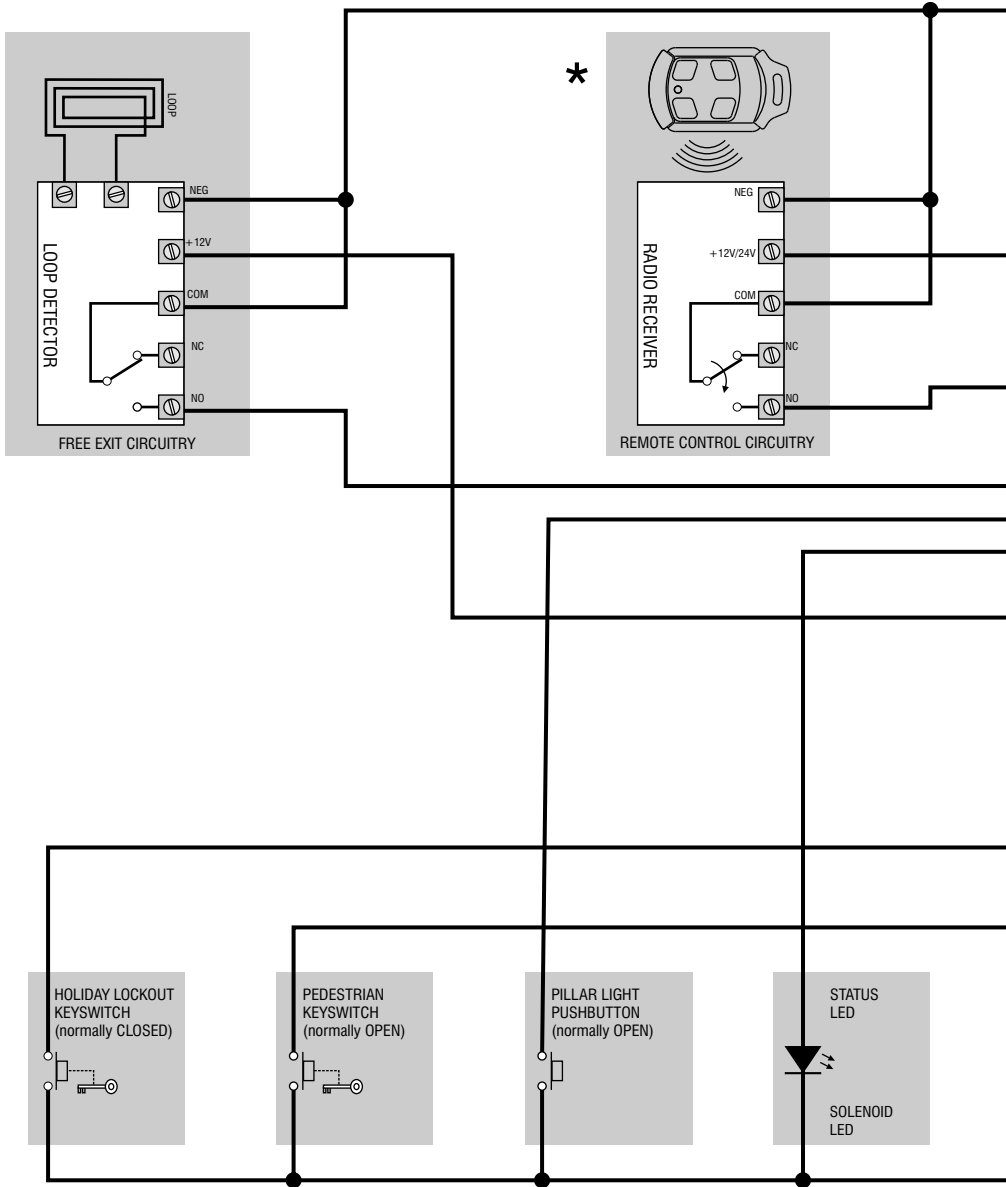


Figure 15. Wiring diagram for safeties



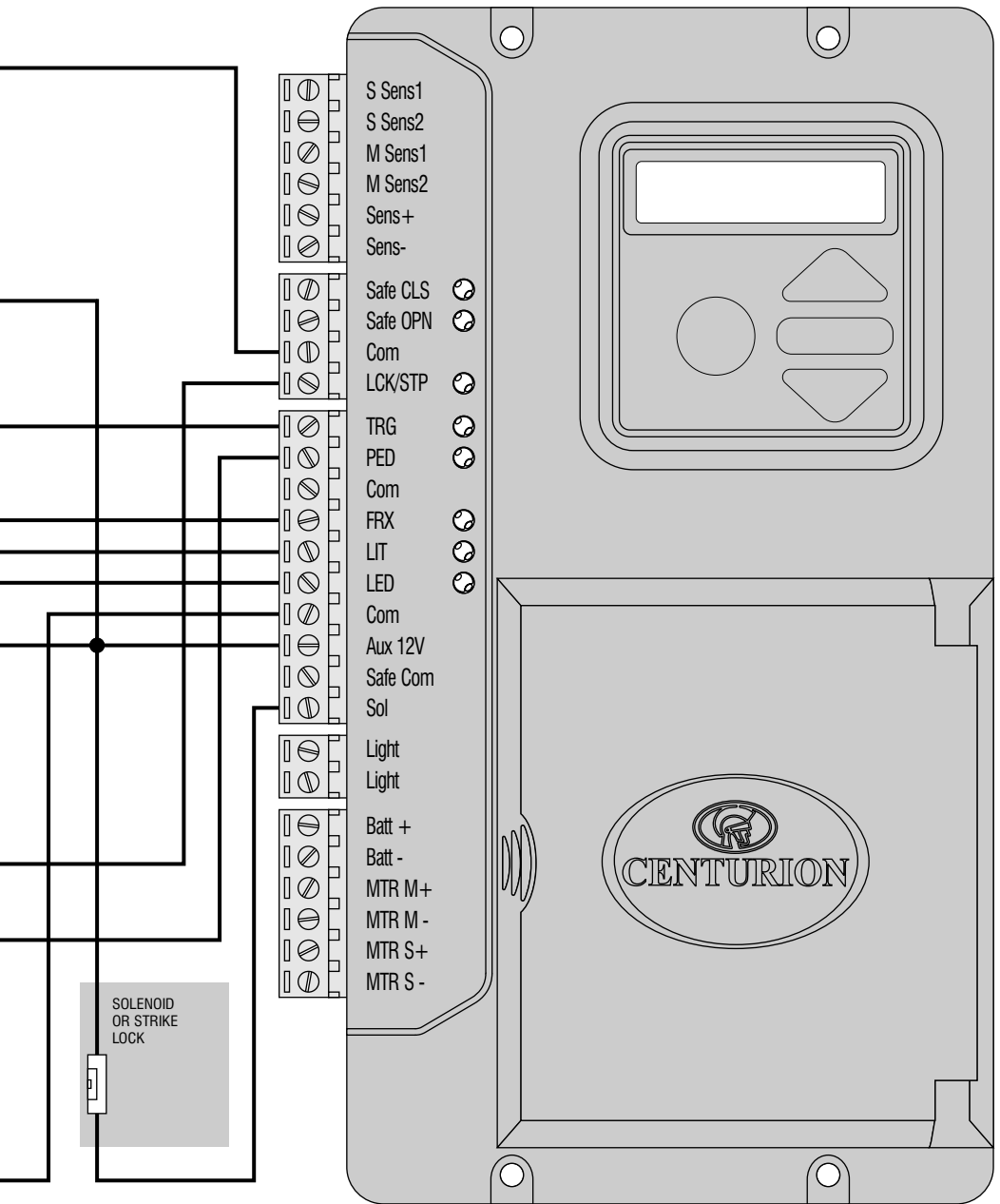


# Wiring diagram for other inputs



\* Only applicable if external radio receiver is being used

Figure 16. Wiring diagram for other inputs



# Allowable Wind Loading

Wind speeds for which operator will still operate the gate (for V400 or V500 operators)

For a 25% covered gate: (Palisades, etc.) x 1.8m high						
Value of A or B dimension once installed. #1	Gate lengths:					
	Up to 1.5m	Up to 2m	Up to 2.5m	Up to 3m(#2)	Up to 3.5m(#2)	Up to 4m(#2)
100mm	94km/h	66km/h	48km/h	44km/h	41 km/h	37km/h
140mm	119km/h	85km/h	65km/h	57km/h	51km/h	46km/h
180mm	138km/h	101km/h	78km/h	67km/h	60km/h	53km/h
220mm	156km/h	114km/h	89km/h	76km/h	67km/h	60km/h
260mm	171km/h	126km/h	99km/h	84km/h	74km/h	65km/h
300mm	186km/h	137km/h	108km/h	91km/h	80km/h	71km/h
340mm	199km/h	147km/h	116km/h	98km/h	86km/h	76km/h

(#1 See page 18 or 20 for installation details) (#2 - an electric lock must be fitted)

Wind speeds for which operator will still operate the gate (for V400 or V500 operators)

For a 100% covered gate: (Fully clad gates, etc.) x 1.8m high						
Value of A or B dimension once installed. #1	Gate lengths:					
	Up to 1.5m	Up to 2m	Up to 2.5m	Up to 3m(#2)	Up to 3.5m(#2)	Up to 4m(#2)
100mm	47km/h	33km/h	24km/h	22km/h	20km/h	19km/h
140mm	59km/h	43km/h	32km/h	28km/h	26km/h	23km/h
180mm	69km/h	50km/h	39km/h	34km/h	30km/h	27km/h
220mm	78km/h	57km/h	44km/h	38km/h	34km/h	30km/h
260mm	86km/h	63km/h	49km/h	42km/h	37km/h	33km/h
300mm	93km/h	68km/h	54km/h	46km/h	40km/h	35km/h
340mm	100km/h	74km/h	58km/h	49km/h	43km/h	38km/h

(#1 See page 18 or 20 for installation details) (#2 - an electric lock must be fitted)

Table 4. Allowable wind loading.

# Installation Handover

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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 he knows how to **SAFELY** operate it. Make sure that the user fully understands the following safety requirements before finally handing over the site.

Ensure that the user fully understands:

- How to operate the manual release mechanism. (By demonstration)
- How the obstruction detection and all other safety features work. (By demonstration)
- All the safety considerations associated with operating an automated gate, and that he understands that he is responsible for explaining these safety instructions to all other users of the automated system:
  1. Do not activate your gate operator unless you can see it and can determine that its area of travel is clear of people pets, or other obstructions.
  2. **NO ONE MAY CROSS THE PATH OF A MOVING GATE.** Always keep people and objects away from the gate and its area of travel.
  3. **NEVER LET CHILDREN OPERATE OR PLAY WITH THE GATE CONTROLS**, and do not allow children or pets near the gate area.
  4. Be careful with moving parts and avoid close proximity to areas where fingers or hands could be pinched.
  5. Secure all easily accessed gate operator controls in order to prevent unauthorized use of the gate.
  6. 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.
  7. On a monthly basis, check the obstruction detection system and safety devices for correct operation.
  8. All repair and service work to this product must be done by a suitably qualified person.
  9. This product was designed and built strictly for the use indicated in this documentation. Any other use, not expressly indicated here, could compromise the good condition/operation of the product and/or be a source of danger.
  10. 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.
  11. Ensure that the customer is in possession of the User Guide and also complete the installation details in the back of the User Guide.

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## Installation Details

Installation Date: .....

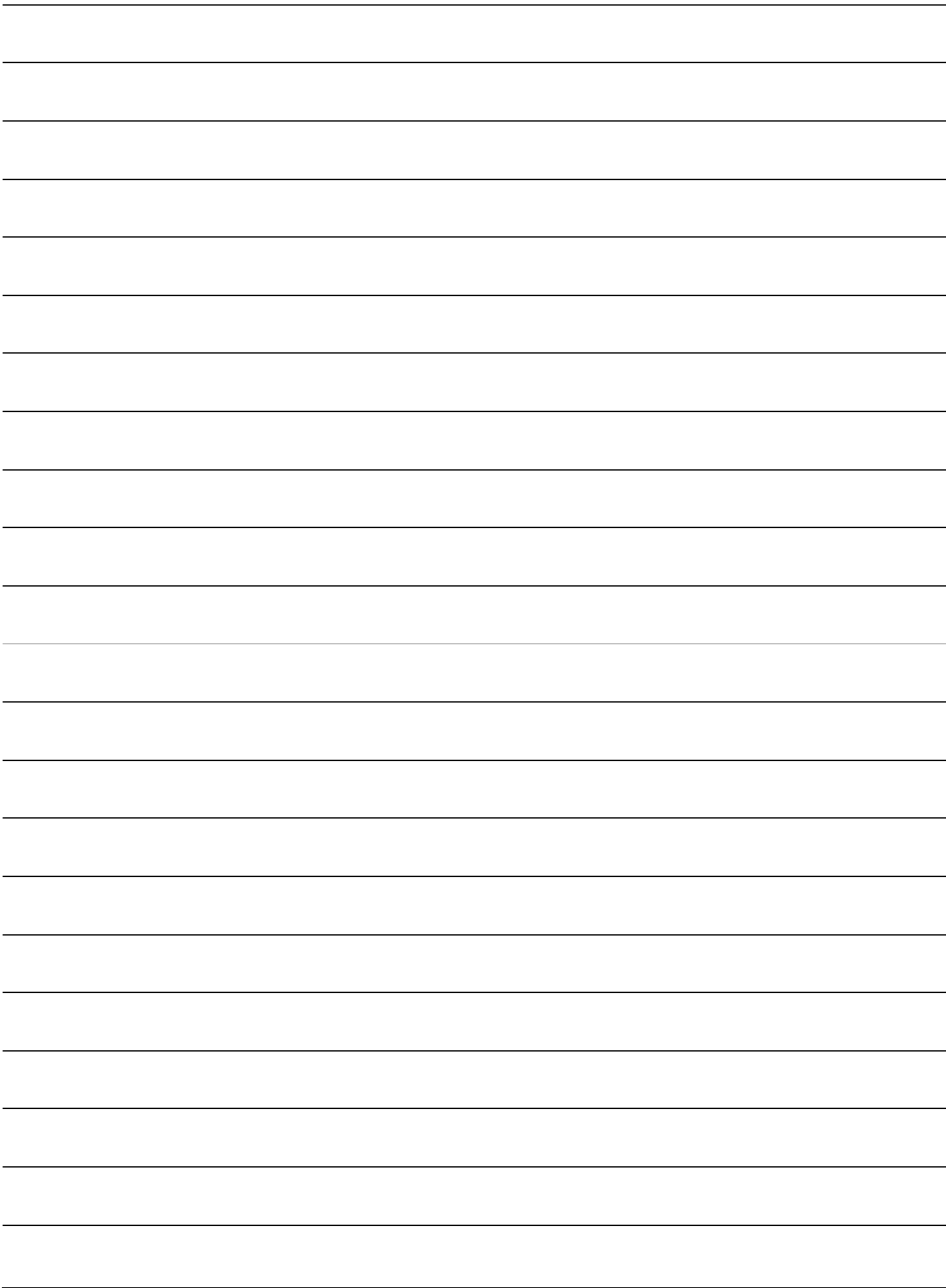
Installer's Name: .....

Installer's Address: .....

Installer's Telephone Number: ..... Installation Checked By: .....

## Notes

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(Sharecall number applicable when dialed from within South Africa only)

**or visit [www.centsys.co.za](http://www.centsys.co.za)  
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