

# Installation and Maintenance Manual

## *Commercial Boom Gate Operator*

Model: GDS BOOM 4 - 6  
(L,R,Art Type 506 with MCS Controls)



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# CONTENTS

Section No:		Page Number:
1	Safety Precautions	3
2	Specifications	4
3	Handing of operator	4
4	Mechanical installation Typical Installation Adjusting boom length and correct spring balance Adjusting position of boom through limit switches	5-7
5	Installation Details Electrical connections Control board inputs/outputs Control Board Layout	7-8
6	Factory parameter settings	8
7	Commissioning	8
8	Manual release	9
9	Maintenance details	10
10	Warranty details	11

\* This installation manual is to be used in conjunction with the Elsema Eclipse Control manual for full control details.

## 1. SAFETY PRECAUTIONS



**WARNING!** FAILURE TO FOLLOW THESE SAFETY PRECAUTIONS AND INSTALLATION INSTRUCTIONS COULD RESULT IN INJURY OR DEATH AND/OR DAMAGE TO PROPERTY AND EQUIPMENT.

- Appropriately licensed and competent personnel only should install the automation equipment.
- The operators are designed specifically to raise and lower boom arms and should not be used for any other purpose.
- Before commencing installation, read through this installation manual.
- Check that the boom operator and controls are in new condition and have not been damaged in transit.
- Check the boom gate to protect against shearing, compression and other various traps which could cause serious injury or death. Take into consideration the general installation and surrounding environment.
- Check the concrete pad or mounting structure has the necessary strength and rigidity to support the operator and the load of the opening and closing boom motion.



### **CAUTION!**

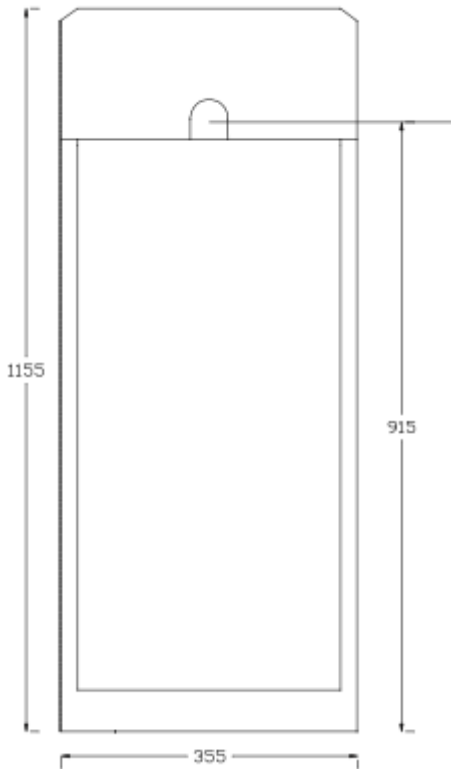
**Always incorporate the appropriate Photo Electric Cells, Induction Loops and any other safety devices to protect both equipment and personnel. Extra caution should be employed when using operator in auto close mode.**

- Display any necessary signs to indicate any danger areas and automatic operation of the boom arm.
- The operators are not designed to be used in any hazardous areas or areas subject to flooding etc.
- All electrical connections and wiring must be performed with AS/NZS 3000-2007 as the guidelines. (Or its counterpart for other countries outside of Australia and New Zealand)

### **WARNING! ELECTRICITY CAN KILL**

- The manufacturer of the automation equipment is not responsible for the damage which may be caused to either the operator, gate or door and any other person or equipment when: -
  - Wrong or poor installation practices were performed.
  - No or inadequate safety devices were used.
  - Either the surrounding structure or the gate or door strength and rigidity was not sufficient for the task in hand.
  - Inefficient locking devices were employed.
  - Poor maintenance on the equipment.
  - Any other circumstances beyond the manufacturers control.
- Isolate power before attempting any maintenance, qualified personnel only to carry out maintenance
- Only original spare parts are to be used should there be a requirement for them.
- Keep loose clothing and hands clear of the arm whilst in operation or potentially able to be operated.
- The installer should provide all information concerning the use of the automation equipment as well as instructions regarding the manual override and maintenance procedures to the users of the system.
- **The boom mechanism is under constant spring pressure, do not try and release springs while boom is down.**

**2. SPECIFICATIONS \* (FOR 506 TYPE OPERATOR)**

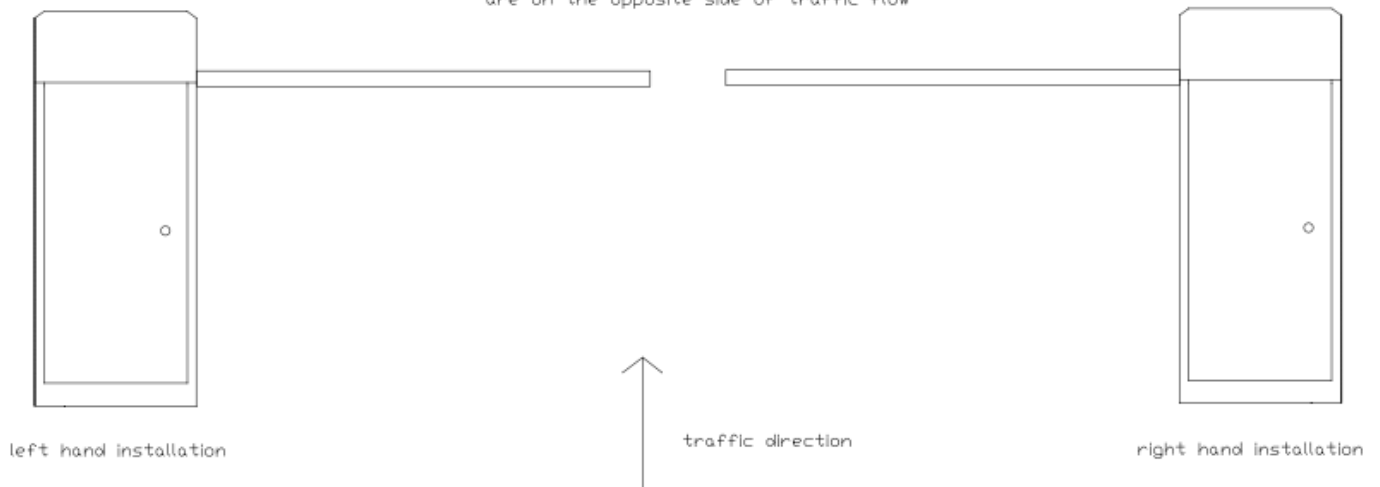


- POWER SUPPLY : 230V A.C 50 HZ
- MOTOR POWER : 80W AT 24V D.C
- POWER TRANSFORMER : 230 VAC PRIM./ 24VAC 120 VA **SEC**
- MOTOR SPEED : 1400 RPM
- TRAVEL TIME : 4 TO 6 SECS  
(APPROX. TIME, DEPENDANT ON CONTROLLER SETTINGS AND BOOM ARM LENGTH, SPRING BALANCE)
- IP RATING : 44
- MAX BOOM LENGTH : 6m
- TEMPERATURE RANGE : -20 TO +50 DEG C
- DUTY CYCLE : 100%
- OPERATOR WEIGHT : 54 KG

**3. HANDING OF BOOM ARMS**

Handing of arms

the operators are mounted so that the arms are on the opposite side of traffic flow



## 4. MECHANICAL INSTALLATION

### Typical Installation

Typical Installation with max 6m long boom



Position the boom gate operator on the concrete mounting plinth (typically 550 x 550 x 400mm deep) and mark the 4 mounting holes ensuring the final boom arm position will be correct when bolted down. Dynabolt the 2 mounting plates as per FIG 1. Fit boom arm in horizontal position with fixing bolts and plate provided as per FIG 2.

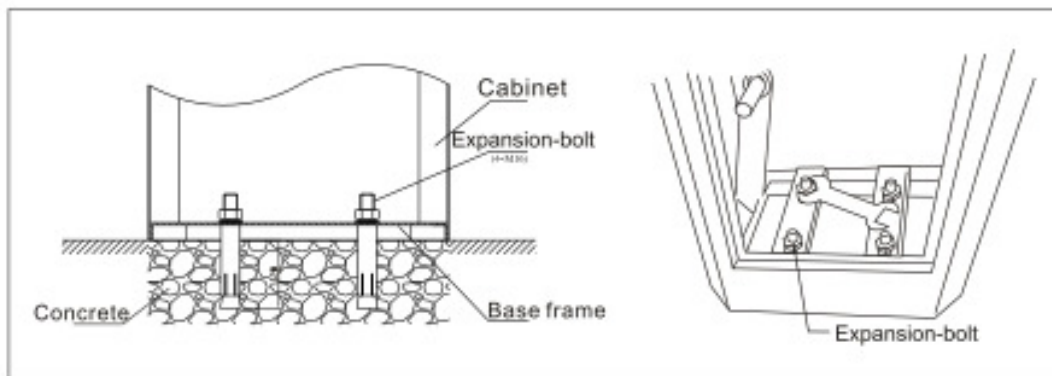


Fig.1

2. Install boom(Fig.2)

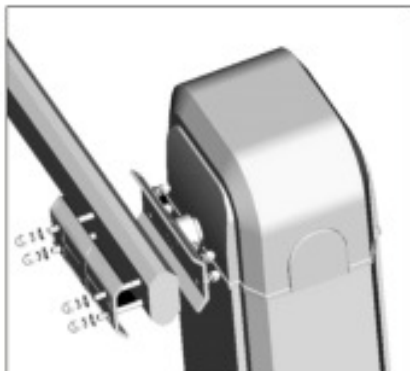
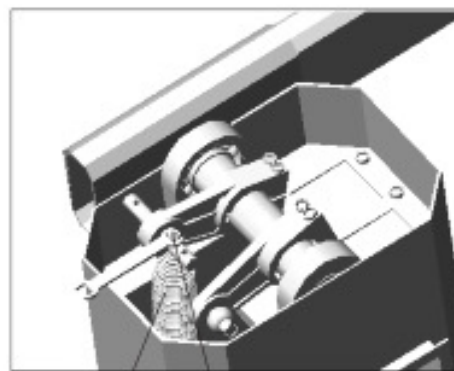


Fig.2



Spring Adjust nut Fig.3

## ADJUSTING BOOM LENGTH AND CORRECT SPRING BALANCE

\* IT IS IMPORTANT THAT THE SIZE OF AND NUMBER OF SPRINGS ARE USED TO MATCH THE LENGTH OF ARM USED. ALSO THE USE OF ACCESSORIES SUCH AS A SKIRT, OR MAG LOCK PLATES CAN AFFECT THE BALANCE OF THE BOOM ARM. A GUIDE TO SPRING CHOICE IS SHOWN BELOW.

- The boom arm length can be adjusted from 4m to 6m in length by sliding out the secondary boom to required length, then fix in place using provided self-drilling screws.
- Once this is done, check the balance of the boom arm by firstly manually releasing the boom and pulling it down manually.
- While still manually released, the boom should stay down, to drive back up, it should only need to be helped by hand by turning the manual release knob to get it started. Once started it should slowly proceed going up by itself, or at least by minimal help via the manual release knob, and should travel at least  $\frac{3}{4}$  of its full travel distance fully up.
- If it goes up uncontrollably, there is too much spring pressure.
- If it doesn't go up easily by itself, or without minimum effort through the manual release knob, there is not enough spring pressure.
- Fine tuning of springs can be performed as shown on fig 3 above.
- Another way to check spring balance is to check that the open running current is as close as possible to matching the close running current. Adjust the springs to suit.

## SELECTING CORRECT BALANCE SPRING (GUIDE ONLY)

Model	Boom Length	Number of Springs	Spring's size
GDS 4-6	$\leq 3-4M$	1	$\phi 5 \times 440mm$
	$\leq 4-5M$	2	$\phi 5 \times 440mm$
Type 506	$\leq 5-6M$	2	$\phi 5 / \phi 6 \times 440mm$

- 1 X 6MM OR 5MM SPRING ONLY MAY BE FITTED TO YOUR OPERATOR DUE TO FINE BALANCING PERFORMED AT THE GDS FACTORY, ABOVE TABLE IS JUST A GUIDE, ANY WEIGHT ADDED TO THE BOOM ARM MAY REQUIRE A SECOND 6MM OR 5MM SPRING TO BE FITTED.

## ADJUSTING POSITION OF BOOM ARM VIA LIMIT SWITCHES

The final stopping position of the arm can be adjusted via the mechanical limit cams located under the top lid in the head of the boom operator.

The lid can be removed firstly by turning the release handle 90 degrees, which is located next to the balance springs. Once turned, remove lid, re-fitting is done firstly by fitting under the spring clip then lowering onto the other side, then turning the handle back again.

Using a 4mm Allen key loosen the 2 clamping screws on the limit Cam just enough to allow the cam to be turned. Once in position, re tighten the clamping screws, then operate the boom checking the position. Once satisfied with the stopping positions, tighten the 2 screws on the cam.

## 5. INSTALLATION DETAILS

### Electrical Connections

#### Supply Input

- Connect a 10A 240v supply to din rail terminals labelled A & N. Connect earth to din rail terminal.
- A 24 vac 120va transformer supplies power to the control board.
- If required, the operator can be ordered with a separate power supply enclosure in case mains power cannot be installed to boom operator. With an extra low voltage supply such as this, it is important to allow for the resulting voltage drop especially with longer cable runs. A larger cable size will have to be selected to suit the cable length required.

#### Control

- If cable runs are over 10m, connect the shielded cable to the chassis.

#### Power for accessories

- There are 2 separate supplies available.
- Supply 1: 12v dc 250 ma regulated supply available at the control board terminals.
- Supply 2: 24v dc 500 ma regulated supply available at din rail terminals.

#### Control Board

(Refer to the Elsema MCS manual for full details)

- The control board uses Elsema`s Eclipse operating system and has been pre-set and test run in the factory with settings which are a general setting for a mid-range boom arm length with no accessories added to the boom arm. Settings can be changed to suit the individual installation through the menu system. If the board has to be reset at any time, or the motor speed altered, the screen will prompt you to perform the “I learn” procedure

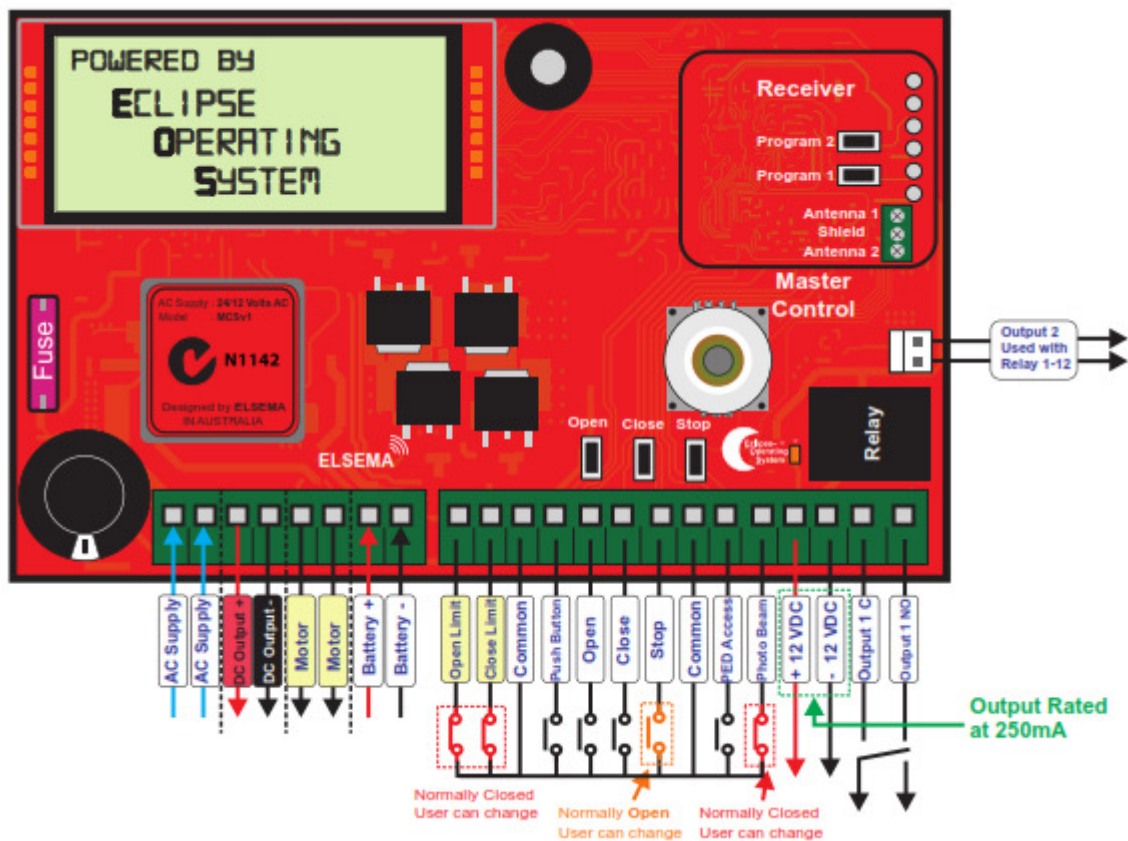
#### Control Inputs

- **M1 motor limit** : pre wired and factory set for a n/c connection.
- **Push button** : N/o input acts as an OSC (open, stop, close) input.
- **Open** : N/o input acts as an open only (swipe mode) input.
- **Close** : N/o input close only input (force close) input.
- **Ped Access** : Not used on boom gate operator.
- **Photo Beam/ P.E:** N/C safety input. Can be set for n/o operation if needed through menu 3.1. PE beam operation modes can be changed through menu 4.2.

#### Control Outputs

- **Motor 1** : Power output to motor 1. Polarity doesn`t matter as motor direction can be checked altered Through the initial I learn set up procedure.
- **12v dc** : Supplies regulated 12v dc at a max of 250 ma, can be used for accessories such as pe cells, warning devices etc, but must not exceed 250ma and is not fused.
- **24v dc** : Supplies 24v dc 500ma regulated output, this can be used for higher power usage devices such as induction loops. This output is fused at 500ma.
- **Output 1** : N/o dry contact relay output. Do not exceed 5A load. Can be set for various functions through menu 5.1 default is Lock/Brake.
- **Output 2** : N/o plus n/c dry contact relay output. 5A max. Functions set through menu 5.2 factory default is courtesy light.
- **Battery** : An on-board charger is provided. SLA batteries can be connected directly to these terminals. A battery backup kit can be supplied and fitted upon order of boom operator, this is equipped 2 x 12V 1.3ahr batteries. The batteries are only to provide a very limited number of operations during a power outage. A max of 12ahr batteries can be connected.

## Control Board Layout



## 6. FACTORY PARAMETER SETTINGS

If the control board has been reset, these parameters will have to be checked and adjusted as required.

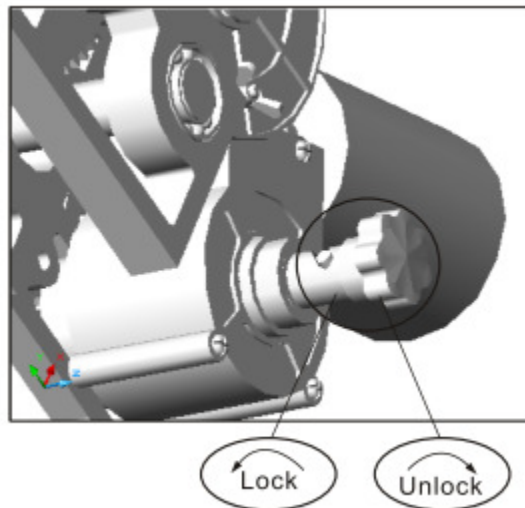
MENU NO	PARAMETER	SETTING VALUE
1.5	NORMAL AUTO-CLOSE ON SEQUENTIAL OBSTRUCTIONS	OFF
8.1	OPEN OBSTRUCTION MARGIN	3A
8.2	CLOSE OBSTRUCTION MARGIN	3A
8.3	OPEN AND CLOSE SLOW SPEED OBSTRUCTION MARGIN	2A
8.4	OBSTRUCTION DETECT RESPONSE TIME	SLOW
9.1	OPEN SPEED	125%
9.2	CLOSE SPEED	125%
9.3	OPEN AND CLOSE SLOW SPEED	35%
9.4	OPEN SLOW SPEED AREA	1
9.5	CLOSE SLOW SPEED AREA	1
10.1	OPEN ANTI JAM	0.1
10.2	CLOSE ANTI JAM	0.1
10.3	ELECTRONIC BREAKING	ON
10.5	GATE MOVEMENT AFTER CLOSE OBSTRUCTION	REVERSE FULLY
14.7	FUSE TYPE	10A



## 7. COMMISSIONING

- \* **Commissioning can only commence once all wiring is complete, and all of the mechanical Installation is complete and checked including checking of all fixing bolts for tightness.**
- \* **The correct springs are fitted for length and type of boom arm. (Further spring tension Adjustment can be made once the boom is operating).**
- \* **There is no obstructions in the way of the boom travel, with no vehicle traffic, and no pedestrian traffic. If the site is busy, necessary traffic/pedestrian barriers and warning signs must be in place before operating the boom.**
- Once all mechanical set up including fitting of the boom arm and correct spring tension. All electrical connections have been made, and if safe to do so, turn on power to the operator. The control board will proceed to go through its start-up procedure. Once finished its start-up, with the boom in its open position, the screen will display “Gate Opened  
M1OpnLmON”
- Only if all precautions have been taken as described above, press the down button to drive the arm down. Then press the up button to drive the boom up.
- If operation is ok try driving the boom down and then release the manual release knob. With the boom released, turn the release knob in the correct direction. It should take very little effort to wind the boom up, and if the boom is balanced perfectly, it should actually travel slowly up by itself for most of its travel.
- Turn power off then back on to reset the control board, once started up again, press the down button. When the boom is travelling down, try stopping the boom by hand, upon stopping the boom the controls should detect that there is an obstruction and return back fully open. Drive the boom down again, this time activate each safety device in turn to make sure they are functioning correctly.
- Once satisfied that the boom is operating correctly, provide full details to the owner concerning the operation, maintenance and manual release details including the door lock key.

## 8. MANUAL RELEASE INSTRUCTIONS



- Manually release by **first pushing the release knob in firmly**, if it doesn't quite release, try with a bit for force, and unlock as shown above. Keep turning to the knob until you feel it click into the unlocked position.
- Turn the knob in the direction shown on the label. i.e with a right handed boom operator, the knob is turned clock wise to raise the boom arm, and left handed is turned anticlockwise.
- You should only have to get the boom arm started to go up via the knob, then with a perfectly balanced boom, it should start to slowly go up by itself for  $\frac{3}{4}$  of the total travel distance to the fully up position. The boom may need minimum assistance through the manual release knob if it isn't quite balanced properly.

## 9. MAINTENANCE DETAILS



### WARNING!

**Failure to maintain equipment may result in injury or death and/or damage to property and equipment**

Recommended maintenance to be performed on the operator and gate are as follows:-

Operator performs over 150 cycles a day	each month
Operator performs between 100-150 cycles a day	every 2 month
Operator performs between 50-99 cycles a day	every 4 months
Operator performs between 20-49 cycles a day	every 6 months
Operator performs under 20 cycles a day	every 12 months

Date: .....

Site Name: .....

Site Address: .....

**Before** commencing maintenance on the operator, isolate the electrical supply to ensure operator will not run inadvertently.

- Boom operator mounting bolts tight .....
- Boom arm mounting bolts tight .....
- Boom arm in good condition and reflective warning stickers are attached and in good condition.....
- Boom arm stops in correct open and close positions .....
- Manual release is operational.....
- Spring balance is set correctly as per description in installation manual.....
- Gate operator mounting bolts tight.....
- Inside operator and control box clean .....
- 'Baygon' Surface Spray around operator and control box (not on electronics).....
- All electrical connections tight.....
- Limit Switches operate in appropriate positions .....
- External safety devices work effectively / cleaned .....
- Electromagnetic lock, if fitted, operates correctly & is clean .....
- Wash down of control box and cover (particularly near corrosive/sea environments).....
- General operation i.e. speed, auto close etc normal .....

Comments .....

Service performed by .....

## 10. WARRANTY

- a. Gate Drive Systems Australia warrants that the goods manufactured by it shall be free from defect in manufacture for a period of 12 months from the date of invoice. Should any fault occur within that period as a result of faulty workmanship or materials, Gate Drive Systems Australia will at its discretion, replace the product at no charge to the Customer except for removal, installation & freight. The appropriate Serial Number must be quoted for all warranty claims.
- b. For the goods not manufactured by Gate Drive Systems Australia, we shall pass on the manufacturer's warranty to the Customer from the date of invoice. It is the manufacturer's discretion to repair or replace goods deemed to be defective as a result of faulty workmanship or materials.
- c. All goods must be returned to Gate Drive Systems Australia or its representative for inspection or testing to assess if a claim is justified. It is the responsibility and at the cost of the Customer, to remove & return the goods for inspection and freight costs are the responsibility of the Customer.
- d. The warranty is negated and will not apply in the following circumstances:-
  - i. If no proof of date of purchase can be produced.
  - ii. If the product has been used in a manner beyond its design parameters.
  - iii. If the product is tampered with or repaired by personnel not authorised to do so.
  - iv. In respect of loss or damage caused by rough treatment.
  - v. If the product is not used and maintained in accordance with instructions or recommendations listed in this Installation and Maintenance Manual.
  - vi. In respect of loss or damage caused by an Act of God or any other cause not within the manufacturers control.
- e. Goods returned under warranty for repair or testing will incur a charge to be fixed by the manufacturer if no fault is found.
- f. The Customer shall bear freight charges for removing & returning the goods for inspection and for the delivery & installation of any replacement or repaired product from a justified warranty claim.
- g. Save for the express conditions and warranties herein contained all other conditions or warranties (whether as the quality, fitness for purpose or any other matter) expressed or implied by statute, common law, equity, trade custom, usage or otherwise are hereby expressly excluded provided that nothing in these terms and conditions shall exclude or limit any breach or condition implied by law, the exclusion or limitation of which is not permitted by law.