INSTALLATION AND MAINTENANCE MANUAL

Industrial Swing Gate Operator

DA6000

Manufactured in Australia

Downee

TECHINCAL DATA

	DA6000	DA4000
Input Voltage (V~)	230-240	230-240
Rated supply current (A)	1.5	1
Absorbed Motor power (W)	250	180
Maximum opening speed	10-12 sec to 90°	10-12 sec to 90°
Maximum gate weight (kg)	1500	1000
Maximum gate length (m)	6	4
Maximum duty cycle (%)	100	
Operating temperature range (°C)	-10 to +40	
Weight of operator (kg)	64kg Operator + 20kg bracket	
Auxiliary DC power supply output	24 VDC 2A	
Auxiliary DC power supply output	12 VDC 500mA	

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.

1. Read this installation manual thoroughly before commencing the installation of the equipment.
2. Check that the operator and controls have not been damaged in transit and are in new condition.
3. Ensure only appropriately licenced and competent personnel install the equipment.
4. The operators are designed to open and close swing gates or doors only and should not be used for any other purpose.
5. Ensure adequate protection to people and property against the effects of shearing, compression and other traps which could cause serious injury or death, it is essential to undertake a risk assessment of the gate or door and its associated support posts and walls. Consideration must be given to ensure safe operation of the general installation and surrounding environment.
6. Check that the foundations, gateposts, and mounting structures have the necessary strength and rigidity to support the operator and the gate both when stationary and whilst in motion.
7. Erect safety signs to indicate any danger areas and automatic operation of the gate or door.
8. The operators are NOT designed for use in hazardous areas (flammable/explosive atmospheres) or areas subject to flooding, etc.
9. All electrical connections and wiring must be performed in accordance with all applicable local laws.
10. It is the responsibility of the installer to ensure the safety of the automatic gate system. A health and safety risk assessment must be performed on the automated gate system, and appropriate mitigants must be provided.
11. Do not allow children to play with fixed controls. Keep remote controls away from children.
12. Activation of the manual release may cause uncontrolled movement of the driven part due to mechanical failures or an out-of-balance condition.
13. Frequently examine the installation for imbalance where applicable and signs of wear or damage to cables, springs and mounting. Do not use if repair or adjustment is necessary.
14. Disconnect the supply(s) when cleaning or other maintenance is being carried out.
15. DA Operators exceed a single person lift and weigh more than 65kgs. Please adopt safe manual handling techniques when lifting, manoeuvring, and positioning these operators into their respective locations.
16. Care must be taken to avoid entrapment and the creation of unsafe cavities that may be created between the gate and any adjacent receiver posts, fences, walls etc. A risk assessment should be carried out to determine if any safeguarding is required to avoid potential entrapment hazards at the installation site.
17. Always incorporate the appropriate strobes, photoelectric beams, induction loops, bump strips and any other appropriate safety devices to protect both equipment and personnel.
18. The appliance is not to be used by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction.

Extra caution should be employed when using the operator in auto-close mode.

WARNING:
ELECTRICITY CAN KILL

Danger 240 Volts

NOTICE OF COMPLIANCE

AS/NZS 60335.2.103:2016
Household and similar electrical appliances – Safety
Part 2.103: requirements for drives for gates, doors and windows.

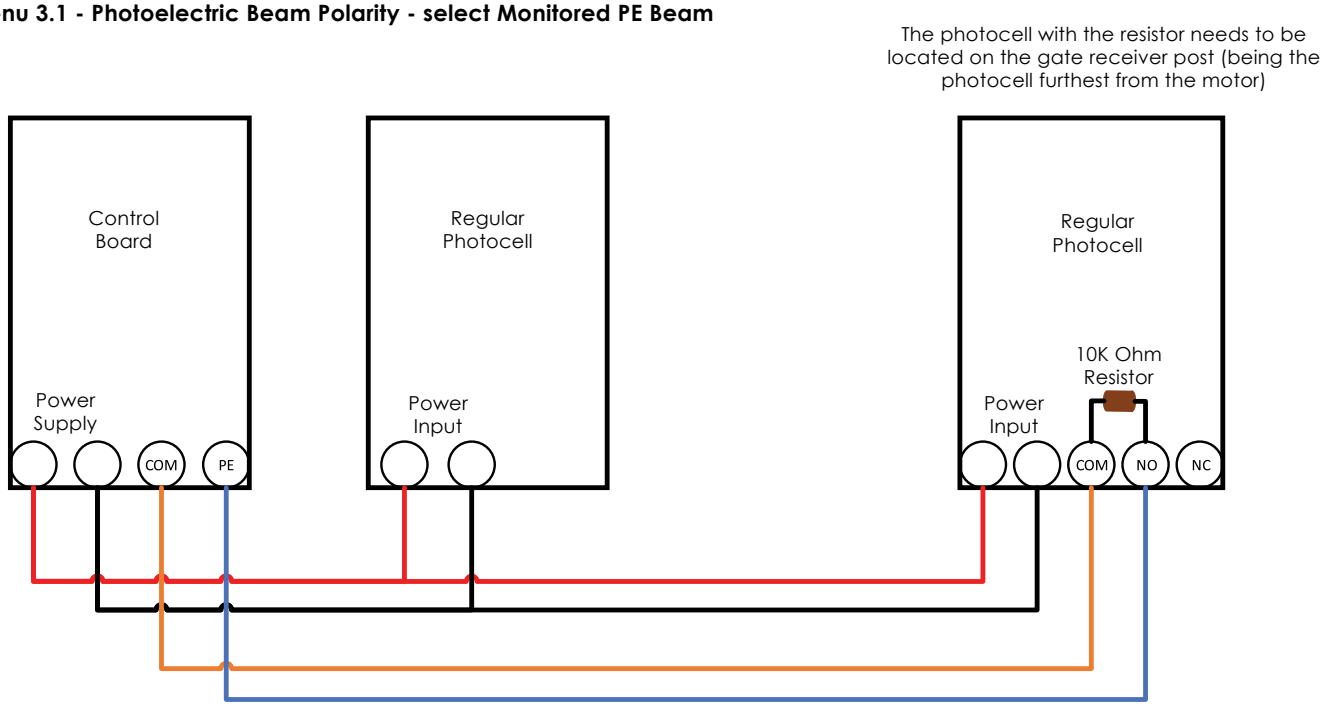
To comply with the above Standard, this operator must be connected using the inbuilt monitored PE beam circuit.

The monitored circuit is an option within the Elsema MCi control board. Details on how to enable this option can be found within Menu 3 - Input Functions of the Elsema control board.

A 10K resistor (supplied with this operator), must be connected to the PE beam circuit, as outlined in the schematic diagram below:

ELSMA MCI Board - Monitor PE Wiring and Programming Guide 1

Menu 3.1 - Photoelectric Beam Polarity - select Monitored PE Beam



The manufacturer of the automation equipment is not responsible for damage which may be caused to either the operator, gate or door and any other person or equipment when:

1. Wrong or poor installation practices were performed.
2. Faulty, inadequate or insufficient safety devices were used.
3. Either the surrounding structure or the gate or door strength and rigidity was not sufficient for the task in hand.
4. Inefficient locking devices were employed.
5. Poor or no maintenance has been regularly undertaken.
6. Any other circumstances beyond the manufacturer's control.

POST INSTALLATION DETAILS

- 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.
- All electrical connections 240V or above must be performed by a suitably qualified and licenced electrician.
- 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.

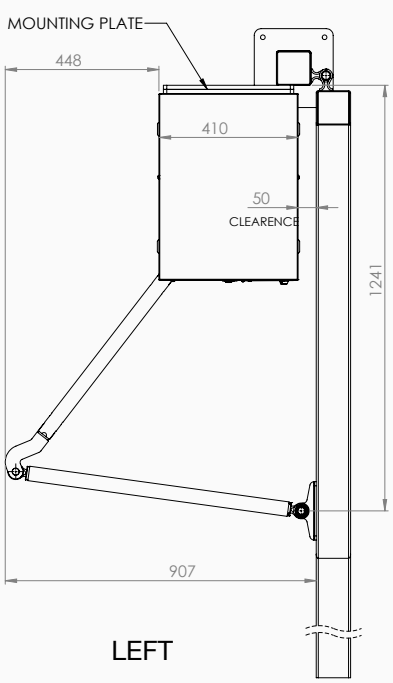
WIRING REQUIREMENTS

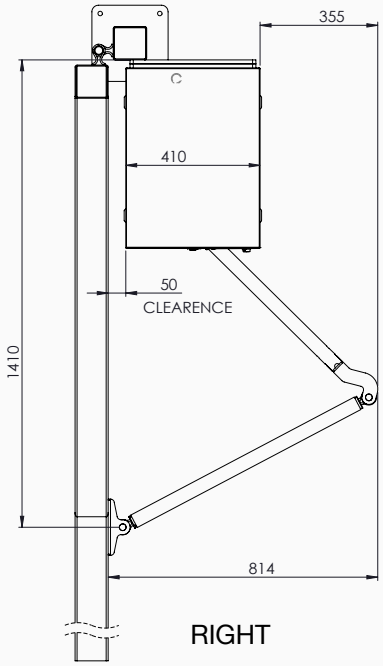
- Single phase 240VAC 10A earth-leakage protected power close to where the operator is mounted.
- Extra low voltage cables from the gate operator to connected accessories, i.e. safety, and access control systems. Extra-low voltage cables must be shielded if they are longer than 8m. Cable shields must be connected to ground.
- 240v “Master” side. For Dual, 240V ‘Slave’ side as well; or 240V from Master to Slave
- 2-4 core extra-low voltage cables from Master to Slave unit
- Allow for control input cables, Output signal cables, Lock cabling, Safety PE’s etc

ALL SHIELDED LOW VOLTAGE CABLE IF RUN IS OVER 8M

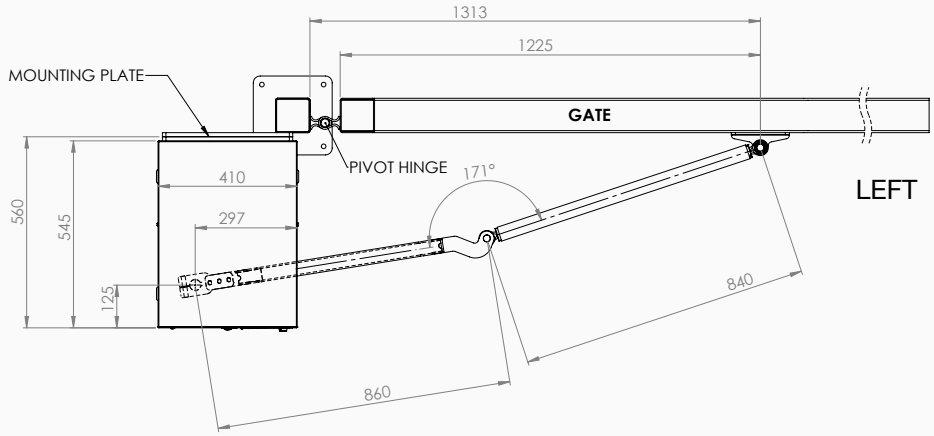
DA 6000 GATE OPERATOR DIMENSIONS

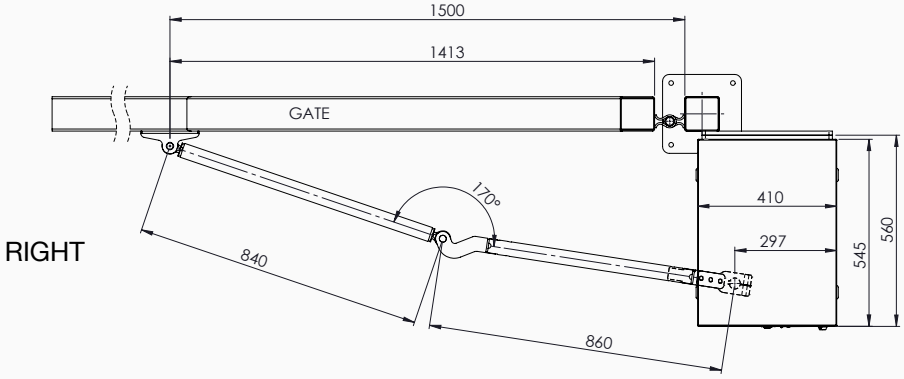
OPEN





CLOSED





INSTALLATION STEPS

Step 1: Weld or bolt the bracket.

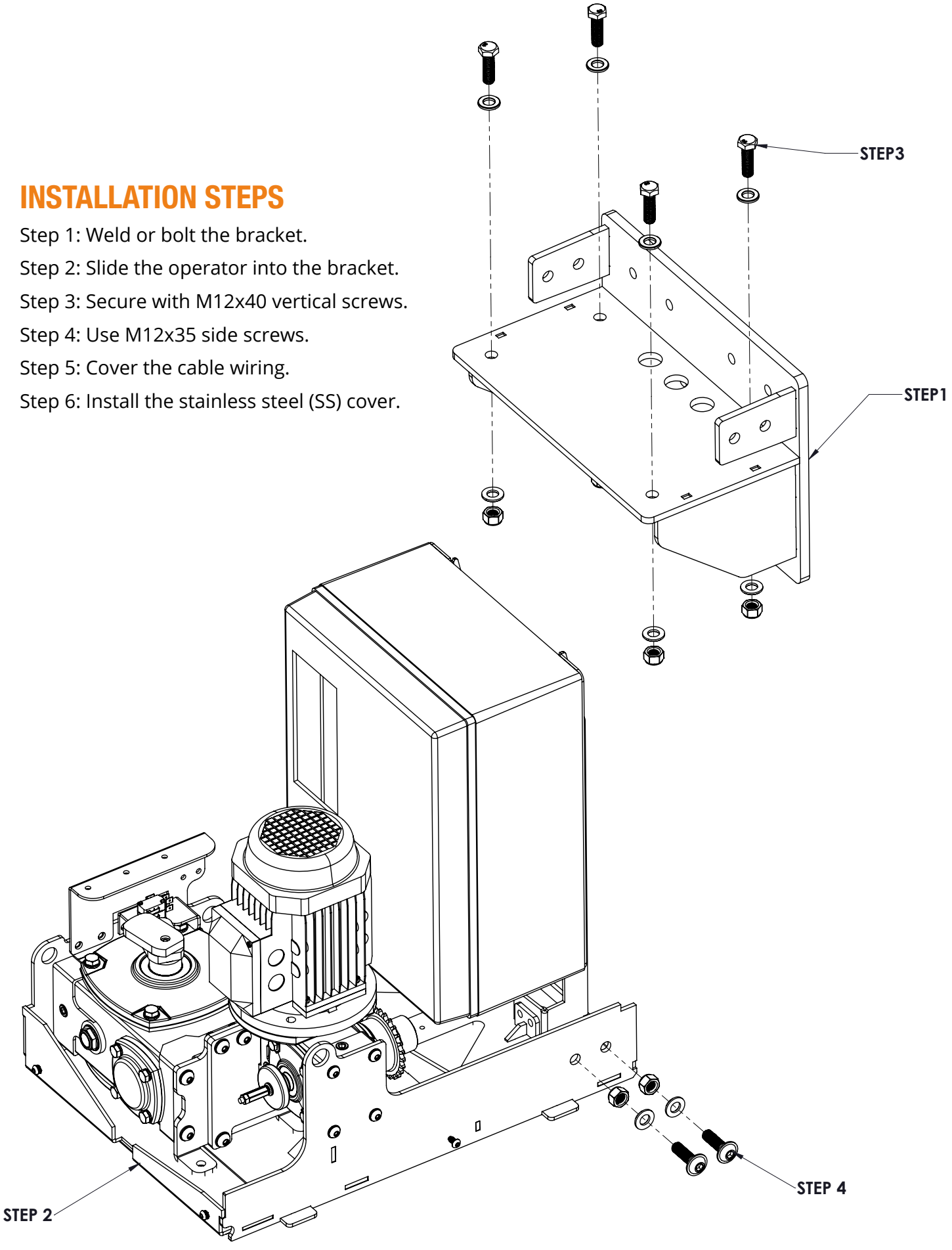
Step 2: Slide the operator into the bracket.

Step 3: Secure with M12x40 vertical screws.

Step 4: Use M12x35 side screws.

Step 5: Cover the cable wiring.

Step 6: Install the stainless steel (SS) cover.



INSTALLATION DETAILS

After reading the previous sections in this manual and having checked for suitable installation, proceed as follows:

Electrical Cabling & Connections

1. A suitably rated Isolator and 240VAC earth-leakage protected power supply should be available near to where the gate operator is to be mounted.
2. Connect the protected 10A 240V supply to terminals labelled A and N. Connect the earth wire from the power supply to the earth terminal in the operator control cabinet.
3. If electrical cabling needs to be run across the driveway (for dual operators or where the Slave gate operator is on the opposite side to the Master operator) then ensure the appropriate number of cables (see wiring requirements) are run in conduit and are installed at the correct depths and manner for both the mains voltage cables and extra low voltage cables.
4. See the installation manual for the Elsema MCi Control Board for connection of external inputs and set up details. Standard programming has been performed in the factory and arrives ready to set limits and travel times.

Details can be found by scanning the QR code below or visit www.elsema.com.au

Mechanical Installation

1. Firstly, determine which gate rail the operator arm is to be mounted to.
2. Run a level from the top of the gate rail across to where the operator is to be installed onto either wall or post.
3. Draw a horizontal line on the post or wall, which becomes the mounting position of the operator where the middle of the mounting plate is in line with your level line, so, level with the top of the gate rail.
4. Ideally, weld the mounting plate provided to the steel post and use extra strengthening brackets/ gussets if necessary to ensure a solidly fixed mounting plate (i.e. strengthening brackets may be required if post is less than approximately 150mm wide).
5. If mounting to masonry or similar, chemical anchor the mounting plate to ensure a firm mounting is obtained.
6. Lift operator into position and bolt to the mounting plate.
7. Turn the knurled knob anticlockwise and position arms so they are approximately 5 degrees off being straight when the gate is fully closed.
8. Mark where the gate bracket is to be fixed onto the gate rail, ensuring both arms are in a horizontal, level plane.
9. Fully open the gate and realign the gate bracket to the marked position to ensure there is adequate side room for the arms to swing. If not, the last 2 steps may have to be repeated using a cut-down secondary arm.
10. Now attach the gate bracket to the gate rail with bolts suitable to handle the load and forces the gate and operator provide (normally 10mm).

IMPORTANT: Ensure that gate stops have been firmly installed in the fully open and closed positions. These stops must be engineered and installed to stop the gate should the limits fail.

Electrical Connections

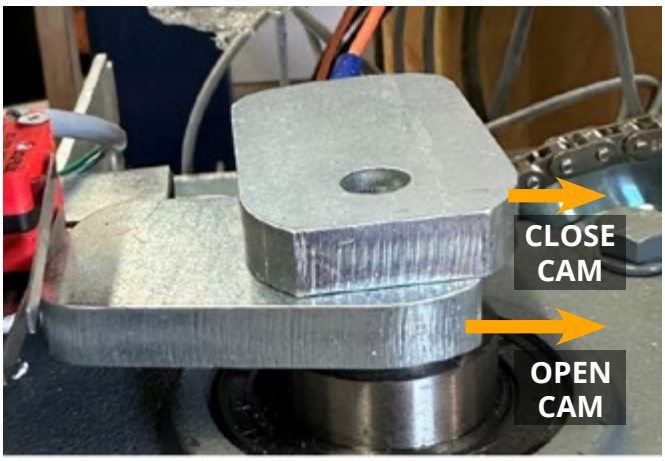
1. Single phase 240VAC earth-leakage protected power with a suitably rated isolator should be available close to where the gate operator is to be mounted.
2. Connect the protected 10A 240V supply to terminals labelled A and N. Connect the earth wire from the power supply to the earth terminal in the operator control cabinet.
3. Conduits for power and control need to come up through the base plate 'cutout'.
4. When bringing power and control cables into the control enclosure inside the operator, always leave enough slack in the cables, so the control system enclosure can be tilted up, to see and work on the controls more conveniently.
5. The control system enclosure can be tilted to simplify installation and maintenance. To tilt the enclosure, undo the wing nut and move the bottom of the enclosure upwards, until the bolt on the back moves out of its slot. Once lifted, pull the bottom slightly to tilt the enclosure. Always return the enclosure to the vertical position before operating the gate. To return the enclosure to the vertical position, carry out the process in reverse and tighten the wing nut once done.
6. See the installation manual for the Elsema MCi Control Board for connection of external inputs and set up details.

Variable speed Drive (Inverter)

- The variable speed drive unit will, for each motor, ramp up the speed of the operator and then ramp down prior to closing. It must be remembered that the limit switches are to be set in a position which initiates the ramp down time. Therefore, the limit switches need to operate prior to gate coming to fully open or closed position.
- The accelerate and decelerate times have been set in the factory for normal installation but can be changed if necessary. Similarly, the speed that the gate operates at has also been set but can be changed (up to approx. 50Hz).

NOTE changing the speed will change the position the gate will end up in its fully closed and open position (unless limit switch cams are also adjusted accordingly).

P100 = Ramp Up Time - 3 Sec
P101 = Ramp Down Time - 1.5 Sec
P124 = Open Speed – 50Hz
P125 = Close Speed – 40Hz



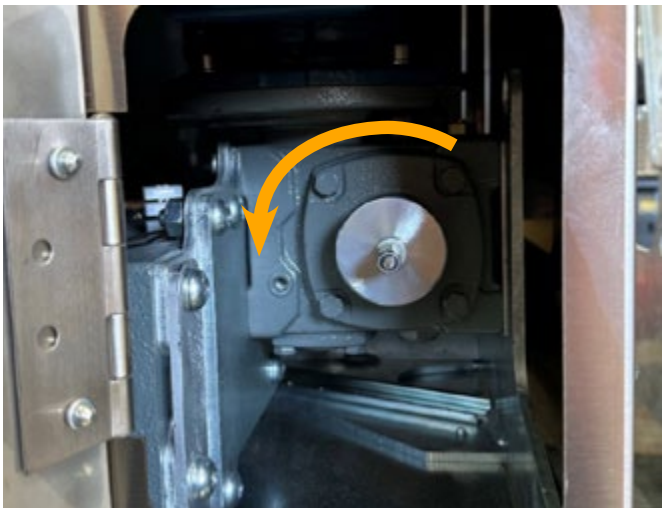
COMMISIONING

Setting Limits

1. Turn the manual release knob anticlockwise so gate clutch is released, and the gate can move by hand.
2. Manually close the gate and watch which way the cams are turning. The top cam is for the close position so when the gate is closed, bring cam around so it drives onto the limit switch and take it 10mm past after it 'clicks' (to allow for Ramp Down). Fine adjustment can be made later. Tighten Allen -Head Bolt holding cams.
3. Manually open the gate and watch which way the cams are turning. The bottom cam is for the open position. While holding the top cam, loosen Allen-Head bolt and move bottom cam, so cam hits limit switch and take it 10mm past after it 'clicks' (to allow for Ramp Down). Fine adjustment can be made later. Tighten Allen-Head Bolt holding cams.
4. Check cams are right by closing and opening gate.
5. Move gate back to centre position

MANUAL RELEASE INSTRUCTIONS

1. Turn power off to control board if there is a separate isolator next to gate operator
2. Unscrew door hatch on gate operator cover
3. Turn knurled wheel anticlockwise to release clutch
4. If a magnetic lock is fitted, turn off the power to the control box
5. If an electric lock is fitted, release with the electric lock key provided.
6. The gate will now open manually. Ensure gate is held firm so it does not close on someone or something.
7. To engage drive, turn knurled wheel clockwise until tight.



ELSEMA CONTROL BOARD SETUP PROCEDURE

1. Power up controls and allow the control board to go through the startup procedure.
2. Press the Master control for 2 seconds to enter program mode.
3. Turn the Master control to navigate to Parameter 12 – I Learn Mode.
4. Press the Master control to enter I Learn Mode.
5. Answer the configuration questions:
   - Gate: Single (or Double)
   - Limit Switch: NC
6. Press and hold the **Close** button to check the gate leaf is closing.
   - If not, **turn power off**, wait until the inverter screen is off, then swap two motor phases.
7. Press and hold the **Close** button and allow the limit switch to stop the motor when closed.
8. Press the Master control when done.
9. Press and hold the **Open** button until the gate is fully open.
10. Press and hold the **Close** button until the gate is fully closed.
11. Learning successful!
12. Make any necessary fine adjustments with the limit switches.

Final Check:

Ensure the full operation of all safety and access controls including PE beams, loops, strobes, bump strips, and access control systems.

FOR BI PARTING SLIDER CONFIGURATION ONLY

Electrical Connections

1. 240V mains power is required on both sides of the driveway, as supply voltage is required for each operator. This can be achieved by either having 240V mains power available at each gate operator or directing 240V mains power across the driveway from the **Master** unit to the **Slave** unit.
2. A 6-core low voltage (24V) cable is also required from the **Master** unit to **Slave** unit.
3. Make the following low voltage connections within the **Slave** unit:
   - Motor 2 Inverter: Open, Close and COM
   - Motor 2 Limits: Open, Close and COM
4. To connect the **Slave** unit to the **Master** unit: Connect cables from Motor 2 Inverter and Motor 2 Limits to the corresponding Elsema board terminals as labelled within the **Master** unit control box (shown in the Wiring Diagram on the next page).

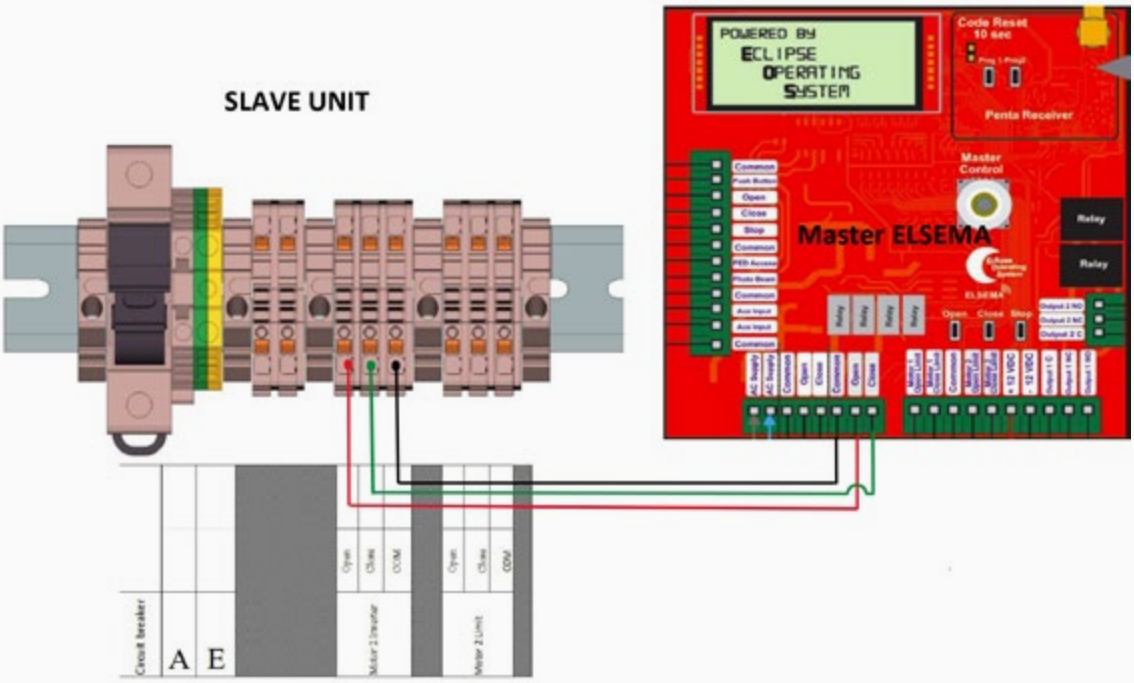
All access control and safety devices must be connected to the **Master** unit control board.

Commissioning

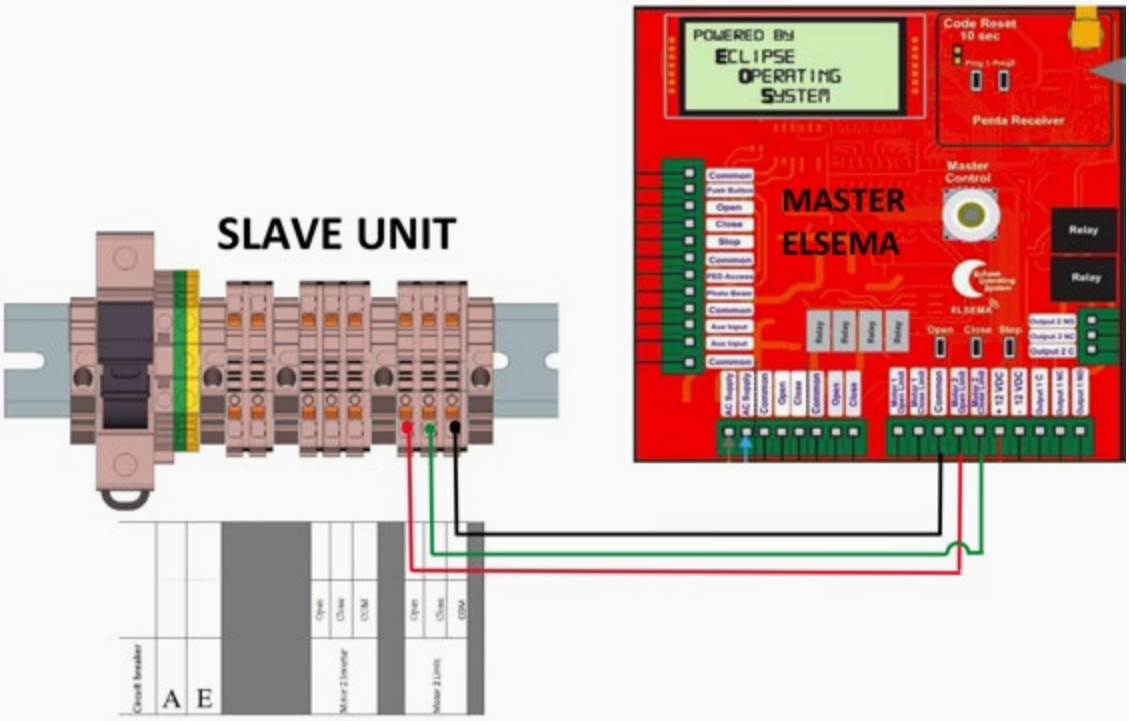
Press program button on Elsema board and select **Learn** menu, set up as a **Double** and follow the learn prompts, as indicated on the control board display.

WIRING DIAGRAMS

To connect slave VSD (Inveter) to Master Swing Elsema (M2 LIMIT):



To connect slave Slave Limit switch to Master Swing Elsema board:



MAINTENANCE DETAILS

WARNING: Failure to properly maintain equipment may result in injury or death, and damage to property and equipment. Failure to follow the prescribed maintenance procedure may void the manufacturer's warranty.

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

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

Before commencing maintenance on the gate or operator, isolate the electrical supply and ensure the system is de-energised.

Service performed by: _____

Site name: _____

Site address: _____

Gate hinges are in good condition and oiled/greased	
Gate swings freely	
Gate stops in good condition	
Gate operator mounting bolts are tight	
All arm joints moving freely with Nyloc nuts tight on bolts	
No oil leaks from gearbox	
Gearbox mounted securely	
Torque limiter chain is lubricated	
All electrical connections are properly secured	
Limit switches are operating as specified	
External safety devices are working properly	
External locks operate correctly	
General operations i.e. speed, auto close etc are normal	
Comments:	

WARRANTY

1. Downee Pty Ltd Trading as Downee hereafter called Downee 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 because of faulty workmanship or materials, Downee will make all necessary repairs, or, at its discretion, replace the product at no charge to the customer except for installation and freight. The appropriate Serial Number must be quoted for all warranty claims.
2. For goods not manufactured by Downee, 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 because of faulty workmanship or materials.
3. All goods must be returned to Downee or its representative for inspection and or testing to assess if a claim is justified. It is the responsibility and at the cost of the Customer, to return the goods for inspection and freight costs are the responsibility of the Customer.
4. 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 manufacturer's control
5. Goods returned under warranty for repair or testing will incur a charge to be fixed by the manufacturer if no fault is found.
6. The Customer shall bear freight charges for removing and returning the goods for inspection and for the delivery and installation of any replacement or repaired product from a justified warranty claim.
7. 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.