

CHAMBERLAIN®

GRIFCO

GLM SERIES CONTROL

Users Manual

Rev. 808062

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INTRODUCTION

Congratulations on your purchase of the GLM SERIES unit. This component is specifically designed to suit our Mechanical Limit 'Industrial Grifco Operators'. Its intended purpose is to provide the functions of the Maestro Main Control Board, (MCB) and its accessories. Supplied with your GLM SERIES control is a Maestro Receiver Card (MRC), Expansion Board (EB), a reflective PE Beam (PB008) and a Grifco Transmitter (GT4).

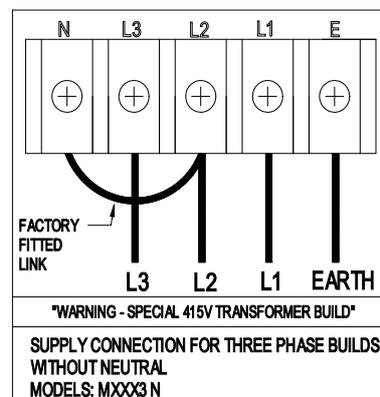
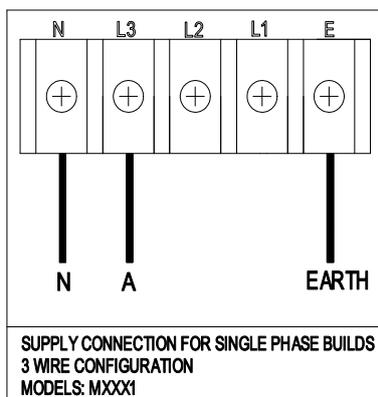
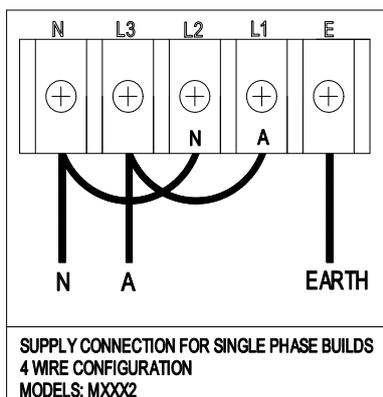
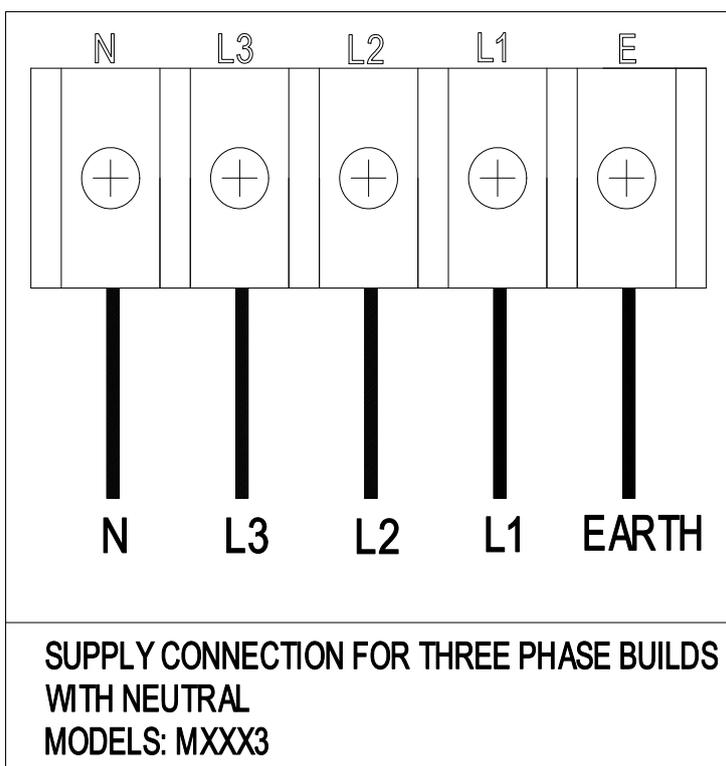
CONNECTING POWER

Precautions-

*The GLM Series Control **must**:*

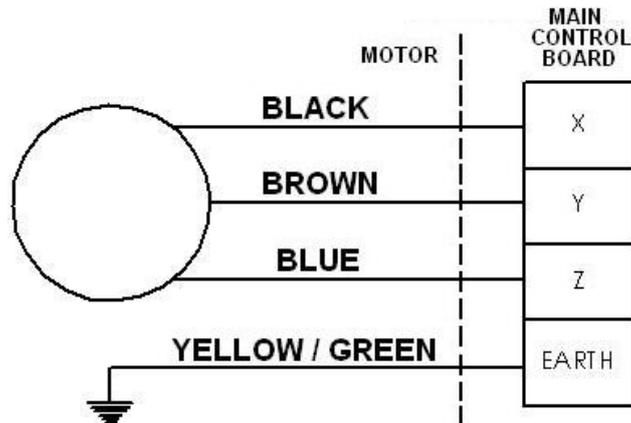
- *be connected via a device that is capable of being locked for maintenance*
- *be connected via a suitable circuit breaker that disconnects all live conductors*
- *have a handle of supply easily accessible and in the vicinity of the motor*
- *be connected in accordance with the wiring rules of the country in which it is installed*
- *not have control enclosures left open for extended periods (excess dust will void warranty)*

The GLM Series Control is available in both single and three phase models. The Control model can be identified by the label located on the MCB contactors or mains fuses cover. Carefully match the requirements of the motor to the correct configuration shown below.

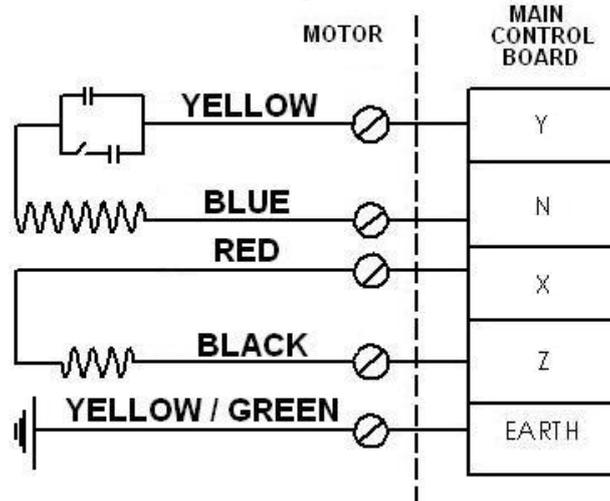


MOTOR TERMINAL WIRING DIAGRAMS

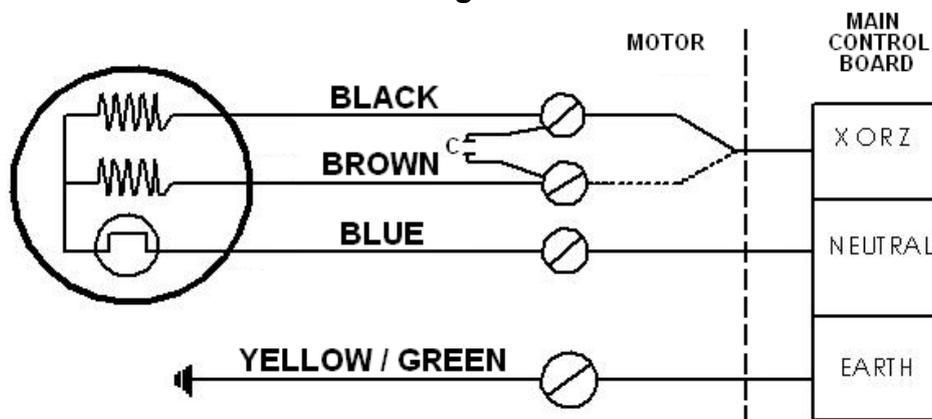
MODELS: Three Phase 3 Wire



MODELS: Single Phase 4 Wire



MODELS: Single Phase 3 Wire





**DISCONNECT MAINS POWER TO THE SYSTEM BEFORE REMOVING COVERS.
MAKE SURE THAT PEOPLE WHO INSTALL, MAINTAIN OR OPERATE THE DOOR FOLLOW THESE INSTRUCTIONS. IT IS ADVISED THAT THE INSTRUCTIONS BE KEPT IN A SAFE PLACE SO THAT YOU CAN REFER TO THEM QUICKLY WHEN YOU NEED TO.**

GETTING STARTED / SETUP

1. OBSTRUCTION DETECTION DEVICES

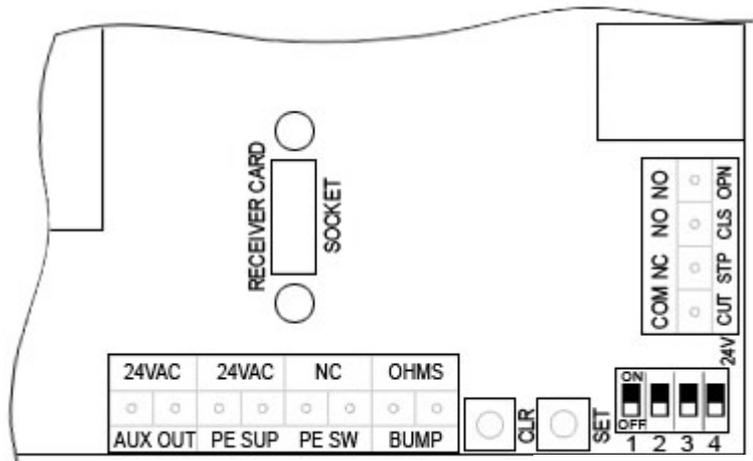
Devices such as PE beams and Safety Bump Edges allow safe automatic closing of the door and can be wired directly into the MCB via an appropriate cable entry. The devices are wired into the obstruction inputs located next to the behaviour dip switches on the MCB shown below.

PE SUP (or AUX OUT): Supply power for PE beam (24VAC, max *150mA)

PE SW: Switch input from PE (Normally closed)

BUMP: Bumper edge input (Normally open or resistor type)

PE Beams (Part No. PB008) and **Terminal Blocks** (Part No. TB210) are all available from your local industrial door dealer or Grifco.



***Important warning:** Additional devices must not draw current from the MCB 24 volt circuit exceeding 150mA. Excessive load from connected devices will cause malfunction of the Maestro operator. This generally allows for up to 2 x photo beams (Grifco supplied). For additional loads, use a separately mounted power supply.

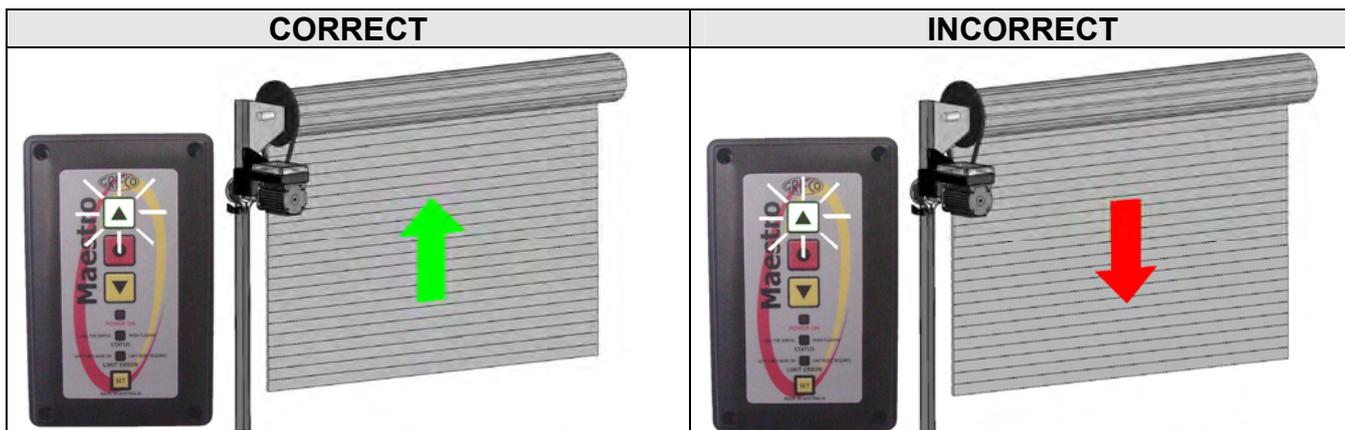
Note: Turn the key to the MAN position. Ensure DIP switches 1 & 2 are ON, on the MCB. AUTO mode must not be used until installation is complete!

2. CHECKING POWER AND DOOR DIRECTION

After the unit powers up check that the *POWER ON* indicator on the controller is lit. If the LIMIT ERROR indicator (orange) is lit the limit switch connection is incorrect (refer page 5). Extreme care must be taken when moving the door for the first time. The door should be positioned mid way between the top and bottom stops.

If the direction is correct skip forward to the next step.

If the direction of doors movement is opposite of what is shown on the control box, refer to **Changing Door Direction** on the next page.



Changing Door Direction (if required)

1. Turn off power to unit.
2. Refer to page 3 (for Motor wire colour & wiring arrangement). You will need to switch over the X and Z Motor Terminals.
3. Return power and carefully assess the doors direction.

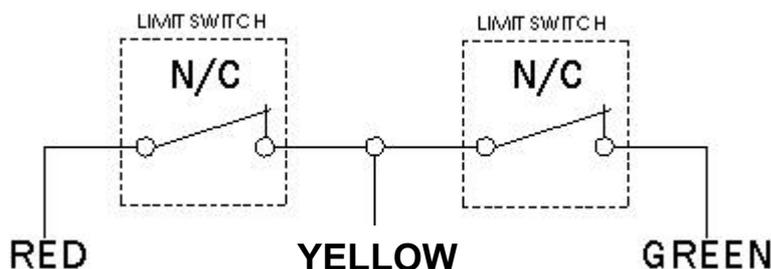
The direction of the doors movement will now be reversed.



EXTREME CARE SHOULD BE TAKEN BY SERVICE PERSONNEL. MOTOR CAN START WITHOUT WARNING IN AUTO MODE. THE ONLY WAY TO ENSURE THE MAESTRO OPERATOR WILL NOT START WITHOUT WARNING IS BY SWITCHING OFF MAINS POWER.

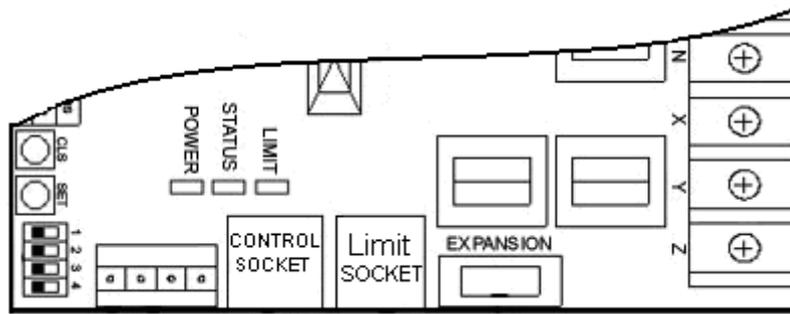
3. LIMIT SWITCH CONNECTION AND LIMIT SETTING

CONNECTION



Using the cable and 90° quick connects provided, connect the cable from the limit switches (diagram above); to the limit socket (refer page 6):

Note: The Black wire is not connected



LIMIT SETTING PROCEDURE

WARNING: Limits are extremely sensitive; a small cam movement may correspond to a large amount of shutter travel.

-ISOLATE MAINS BEFORE SETTING LIMITS

-AVOID CRAMMING WIRES INTO LIMIT ENCLOSURE AS IT MAY AFFECT CAM MOVEMENT

Follow the steps below:

- Manually position the door in the centre of the opening.
- Position one cam to depress a switch and the other so that it is well clear of the switch.
(Note which switch it is that you have depressed.)

- For controls with up and down functions:
 - ~Supply power and activate control in the upward direction.
 - ~If the shutter travels up then the limit switch noted above is the bottom limit.
 - ~If the shutter doesn't move it is the top limit.

- For single button controls:
 - ~Supply power and push the button.
 - ~If the shutter moves up, the switch noted above is the bottom limit.
 - ~If it moves down then it is the top limit.

- Isolate power and adjust the limit cams to depress the switches when the shutter reaches its open and closed positions.
- Test the cam positioning and adjust if necessary.



MOISTURE AND WATER CAN DESTROY THE CONTROL BOARDS. MAKE SURE UNDER ALL CIRCUMSTANCES THAT WATER, MOISTURE OR STORAGE MOISTURE CANNOT PENETRATE ANY OF THE CONTROL BOARDS. THE SAME APPLYS FOR OPENINGS AND CABLE ENTRIES.

4. OPERATION

ENSURE all previous steps have been followed before proceeding with this part of the installation.

The door should be moving up and down between the limits that have been set and the PE beam should be operational. If this is not the case return to the previous steps and correct the doors behaviour.

NOTE: In manual (MAN) mode the door will only travel whilst the UP or DOWN buttons are being held.

Given that the Expansion Board is utilised, Jumper 2 (JP2) on the Expansion Board must be fitted at all times.

Once limits have been set and the Operator is working correctly in the manual mode it is time to test the AUTO functionality;

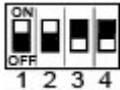
AUTO MODE:

When the key switch is turned to the AUTO position the door will travel upwards and downwards with only a single press of a valid auto input (i.e. any input wired directly into the expansion board or remotes). The door will stop at the set limits or when the STOP button is pressed.

Note: This mode is only used in conjunction with an Obstruction Detection Device such as a PE beam or a Safety Bump Edge. Failure to do so may result in damage to property or injury to persons. Refer page 6.

Setting Door Behaviour

To set the Door Behaviour modes, adjust the DIP switches on the corner of the MCB (refer page 9 No. 4). The different combinations of DIP switches will suit different behaviours and obstruction detection devices installed.

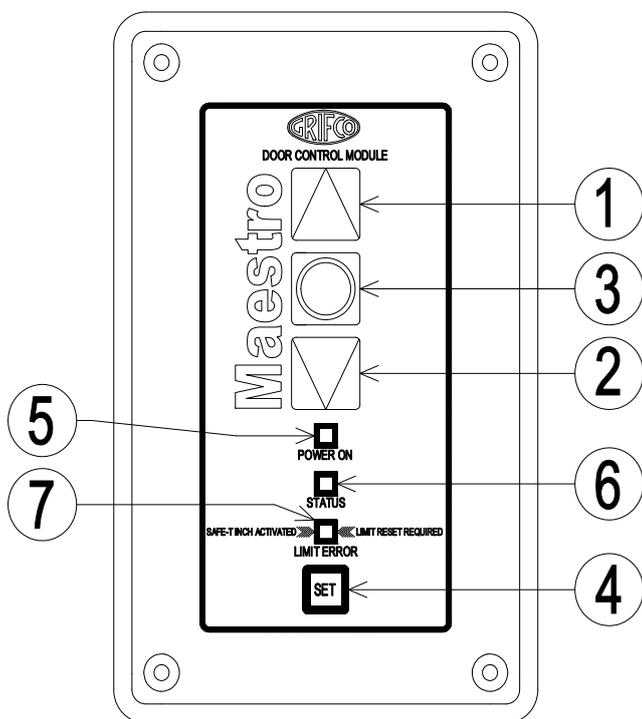
Desired Behaviour	PE beam Installed	Safety Bump Edge Installed	DIP 1	DIP 2	DIP 3	DIP 4
Latch Up Latch Down 	Y	N	ON	ON	OFF	OFF
	N	Y	OFF	ON	**OFF	OFF
	Y	Y	ON	ON	**OFF	OFF
** If using a 8k2 resistor type Safety Bump Edge, then set DIP 3 to ON AND 2 OFF						

Manual Operation

The hand chain provided allows manual operation of the door at all times in which the motor is not in use. Use of the hand chain during powered operation of the door may result in damage to equipment or injury to the user. Ensure power is shut off before using manual chain.

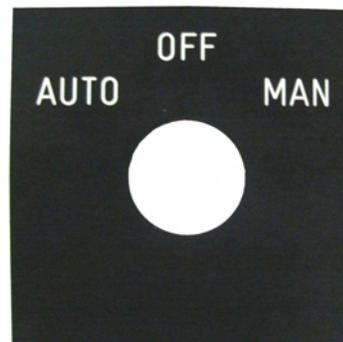
5. CONTROLLER

The Maestro Controller Panel is the user interface for the Operator. It consists of four buttons for control and setup, as well as three indicators to display the operator status.



- 1) UP - Moves the door upwards
- 2) DOWN - Moves the door downwards
- 3) STOP - Stops the door
- 4) SET - Used to clear error
- 5) POWER ON - Shows when the unit is mains powered
- 6) STATUS - Shows the status of the unit (refer page 14)
- 7) LIMIT ERROR – When lit indicates no connection or incorrect wiring of limits (refer page 5)

The Keyswitch Panel (pictured right) consists of, a dedicated AUTO, OFF, and dedicated MAN position.



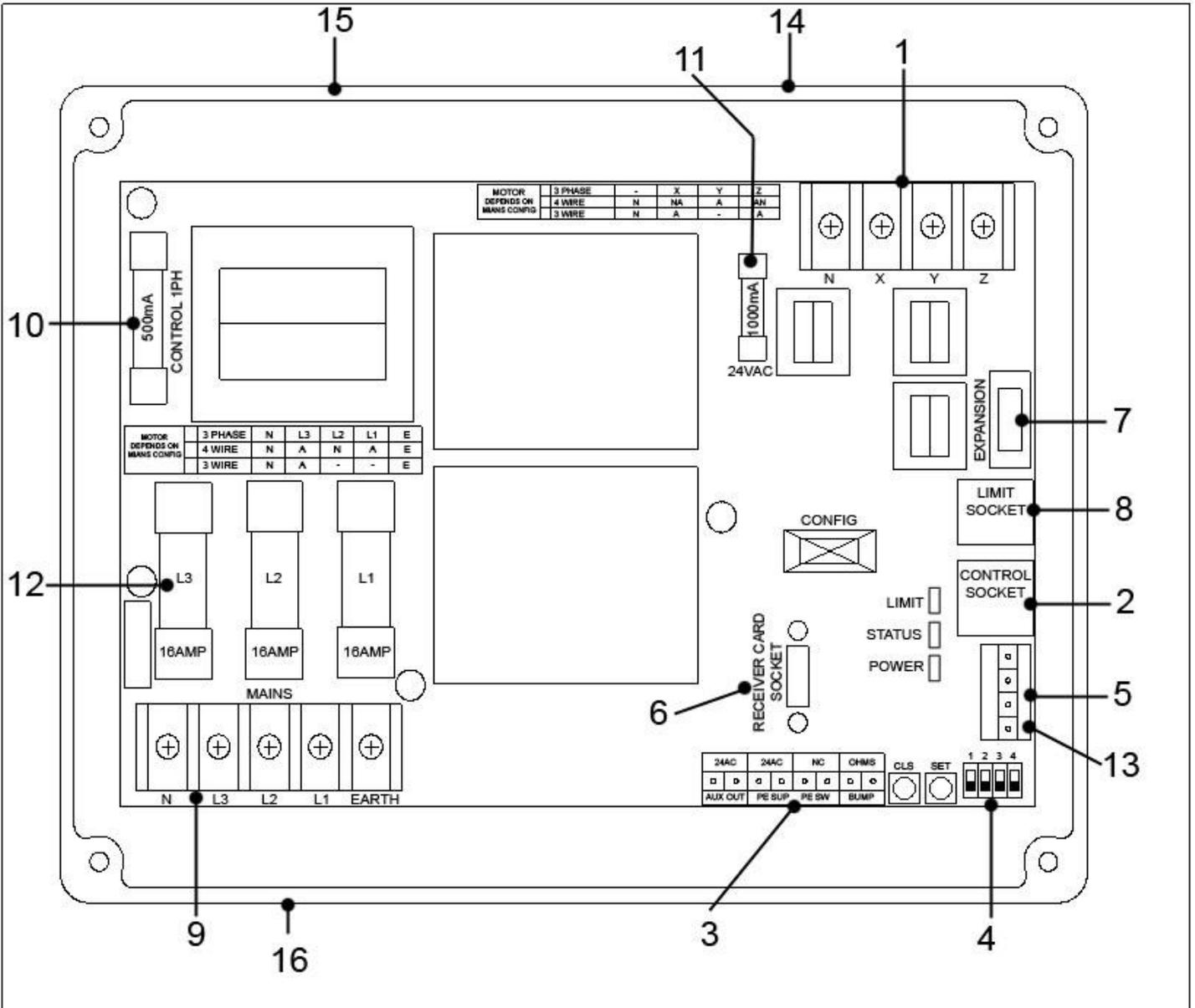
- OFF:**
When in **OFF** the Operator is completely inoperative.
- AUTO:**
AUTO is only selected when the door is in normal operations, where the user does not want to allow use of the UP and DOWN buttons on the Controller. The only button to function on the Controller will be STOP.
- MAN:**
MAN position only allows the use of the UP, STOP, DOWN and SET buttons on the Controller. This mode would be used when setting limits and while performing any routine maintenance on the door.



AFTER THE INSTALLATION A FINAL TEST OF THE FULL FUNCTION OF THE SYSTEM AND WHERE PRESENT THE FULL FUNCTION OF THE SAFETY DEVICES MUST BE DONE.

MAIN CONTROL BOARD (MCB)

The MCB is the heart of the Maestro. The diagram below provides an overview of the major components and access points.



1	Motor Terminals	9	Power Supply Terminals
2	Controller Connection Socket	10	High Voltage Control Fuse (500mA)
3	Obstruction Detection Inputs	11	Low Voltage Control Fuse (1000mA)
4	Door Behaviour Dip Switches	12	Main Supply Fuses (16A)
5	Open / Close / Stop / AUX Inputs	13	Auxiliary Stop Track
6	Remote Control Card Input	14	Mains Power Cable Entry (typical)
7	'ELITE' Expansion Board Input	15	Controller Cable Entry (typical)
8	Limits Socket	16	Spare Cable Entry

EXPANSION BOARD

The Expansion Board plays a major role in the construction of the GLM Series control. It allows for a vast range of functionality for many door automation applications, however it is typically aimed at satisfying car park requirements.

Some of the automatic features include:

- Dedicated AUTO & dedicated MANUAL modes
- Auto close with user settable delay (0 to 300 seconds)
- Variable obstruction behaviour settings
- Trigger input with variable door action sequences
- Connection to industry standard 6 pin radio receiver cards
- Independent variable radio card response actions
- 4 status relays to allow connection to external devices
- Emergency Services open and close inputs

CONNECTIONS

Obstruction Detection Devices (*Photo Beams & Safety Bump Strips etc*)

The Expansion Board requires that at least one obstruction detection device is connected to the MCB to operate correctly.

Door Activation Inputs (*Key Switches, Card Readers, Push Buttons etc*)

One of the most common inputs for a car park door operator is that which activates the door to open. This is generally connected to external / internal key switches, card readers, push button and the like to allow users to activate the door. If remote control is the only source of activation, these inputs will not be required. (For connection details refer page 12-J1).

External Trigger Input

An external trigger can be installed to give more control over the operator. Once installed the trigger can be used to open/close the door, go straight to third limit if set, hold open or delay close. By default the trigger is 24VDC input, however by fitting the "contact" jumper next to the terminals (Page 12-H4) you will switch to "voltage free" input.

The behaviour of the trigger is set via the on board DIP switches. Refer to Trigger Input Behaviour on page 13.

Status Relays

Four status relays located on the expansion board allow external devices, such as lights, sirens and solenoids to be activated in various ways. Relays 1 and 2 are set to activate when door is OPEN and CLOSED respectively. Relays 3 and 4 can be configured via dipswitches (refer page 13).

Each relay has a common, normally open, and normally closed connection.

6 Pin Receivers / Antenna

Located on the expansion board is a 6 pinned header to suit industry standard 6 pin receiver cards (page 12-A7). Other style radio cards can be plugged in directly via the 3 position EXTERN RADIO terminals (page 12-A10).

An ANTENNA can be wired to the adjacent terminals (page 12-A5).

Emergency Input Controls

These inputs are used in case of an emergency. They will open or close the door in all operating modes except OFF, overriding all other inputs. If an obstruction is detected during an emergency close, the operator will attempt to re-close after the obstruction is removed, regardless of the 'Door Close Retry' settings. The connection points for the emergency inputs can be found on page 12-13.

SETTINGS

Typical Car Park Application (ref below for definition)

For typical car park installations, all DIP switches are to be OFF. Jumper 2 (refer page 12-J6) must always be ON.

In Auto the door is generally operated by a push button, card reader or remote control to activate the door in an opening sequence. The door will then automatically close after a user settable time. The obstruction detection input will command the door to open to the fully open position and resume closing after the obstruction has cleared. The Auto Close timer will not be restarted unless another “open” input is received.

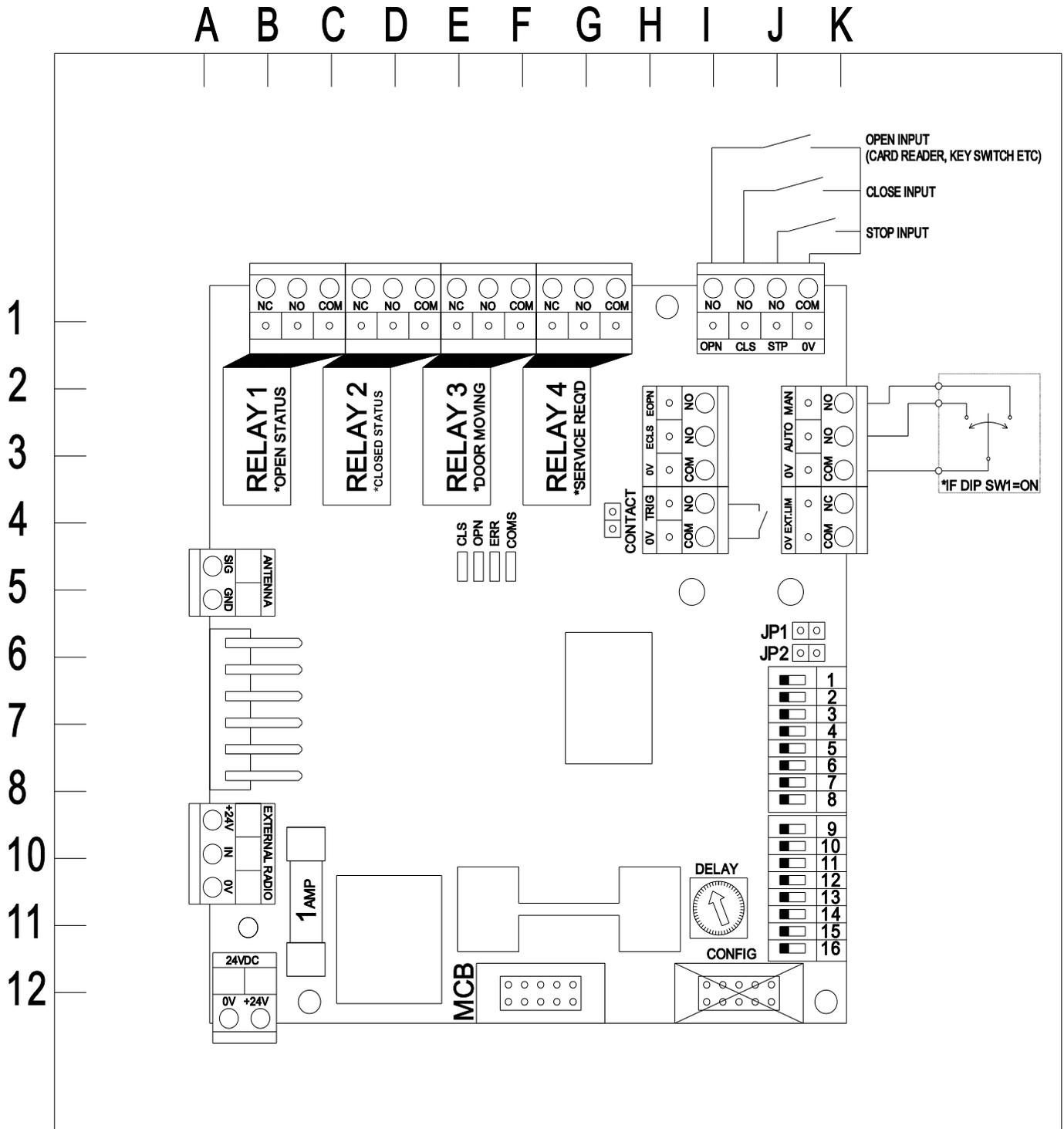
The Auto close timer is a dial type pot located in the corner of the Expansion Board where the DIP switches are also found (refer page 12-J11). By default it is set up at a range of 5 – 30 seconds (clockwise to increase). Range can be increased to 5 minutes by fitting Jumper 1 (refer page 12-J6).

STATUS LEDS (refer page 12 – E5)

LED Description	Colour	Display	Status	Possible Solution	
Close	Red	Solid ON	= Closed		
		Flashing	= Closing		
Open	Green	Solid ON	= Open		
		Flashing	= Opening		
Error	Yellow	Solid ON	= EB failed		Power OFF&ON if still error, replace EB
Communications	Orange	Solid ON	= EB to MCB comms error		Check ribbon connection or replace EB
		1 flash	= 24vdc b/up power detected		Not an error, waiting for mains to resume
		2 flash	= Incompatible limits		Reset limits
		3 flash	= No limits Set	Set Limits	
		4 flash	= MCB latch setting error	Check DIPSWITCHES 2 and 3 on MCB	
		5 flash	= EB ignored by MCB	Check MCB for errors	

LAYOUT

The diagram below show the various inputs, outputs and components found on the Expansion Board. Throughout this manual, alpha-numeric references may be made to certain areas. Simply follow the grid locations to see the area being referred to.



EXPANSION BOARD DIP SWITCH SETTINGS

Setting the Expansion Boards behaviour is done by adjusting 16 dipswitches located on it (refer page 12-K8). To adjust the Expansion Boards settings follow the table below.

EB setting	Dipswitches		Setting
<u>EB mode source</u>	<u>SW1</u>		
Factory Set>	OFF		AUTO with MCB Over-ride
	ON		Use MANUAL-OFF-AUTO Switch
<u>Auto Close Disable</u>	<u>SW2</u>		
Factory Set>	OFF		Auto Close ENABLED
	ON		Auto Close DISABLED
<u>Obstruction Behaviour</u>	<u>SW3</u>	<u>SW4</u>	
Factory Set>	OFF	OFF	Stop and retract to last upper limit
	OFF	ON	Stop and retract while obstruction remains
	ON	OFF	Stop with 2 second retract only
	ON	ON	Stop
<u>Door Close Retry</u>	<u>SW5</u>		
Factory Set>	OFF		Door will close after obstruct behaviour concludes
	ON		Door Close Retry DISABLED, only Auto Close will close the door after obstruction behaviour, and time out concludes
<u>Vehicle Close</u>	<u>SW6</u>		
Factory Set>	OFF		Vehicle Close DISABLED
	ON		Door will close after obstruction clears, whilst open, opening or closing
<u>Open Button Behaviour</u>	<u>SW7</u>	<u>SW8</u>	
Factory Set>	OFF	OFF	Open only, stop and open when closing
	OFF	ON	Reverse direction during opening and closing
	ON	OFF	Stop then reverse during opening, reverse during closing
	ON	ON	Press to Stop, then again to reverse during opening and closing
<u>Receiver Behaviour</u>	SW9	SW10	
Factory Set>	OFF	OFF	Open only, stop and open when closing
	OFF	ON	Reverse direction during opening and closing
	ON	OFF	Stop then reverse during opening, reverse during closing
	ON	ON	Press to Stop, then again to reverse during opening and closing
<u>*Trigger Input Behaviour</u>	SW11	SW12	
Factory Set>	OFF	OFF	Close
* Trigger is 24VDC input	OFF	ON	Door will open to third limit
	ON	OFF	Door will go to open limit and remain while input remains held
	ON	ON	Custom Input via Parameters (Default - delay close as per timer pot)
<u>Status Relay 3 Function</u>	SW13	SW14	
Factory Set>	OFF	OFF	ON when Door Moving
	OFF	ON	ON when Door Moving, with 1Hz Oscillation
	ON	OFF	ON Door Moving, 1 minute Time Extension
	ON	ON	Custom (Default- on during obstruction, stays on for 2 sec after clear)
<u>Status Relay 4 Function</u>	SW15	SW16	
Factory Set>	OFF	OFF	Relay is on when Service Required
	OFF	ON	Relay flashes every second when service is required
	ON	OFF	Unlock function
	ON	ON	Custom Settings (Default – On if door has not closed for >5mins)

TROUBLESHOOTING

Status Indicator (Green) Flash / Problem Table for Main Control Board

No. flashes/ Problem	Meaning	Possible causes	Possible Solutions
Solid ON	Motor running		
1	Running on EB battery		
2	Photo beam and/or Bump edge obstruction	<ul style="list-style-type: none"> ▪ PE beam obstructed ▪ Bumper edge pressed 	<ul style="list-style-type: none"> • Clear obstruction • Remove pressure from bump edge
3	Bump edge failure (Resistor type only)	<ul style="list-style-type: none"> ▪ Bumper edge connection lost 	<ul style="list-style-type: none"> • Check / repair wiring of resistor type bump edge
4	MCB error	<ul style="list-style-type: none"> ▪ Internal Error ▪ Severe close range frequency 	<ul style="list-style-type: none"> • Power off, and on, or replace MCB
5	EB internal error	<ul style="list-style-type: none"> ▪ Fatal Error ▪ EB disconnected from MCB 	<ul style="list-style-type: none"> • Replace EB • Return EB to the installation
6	Maximum starts per hour reached	<ul style="list-style-type: none"> ▪ Operator used above maximum rated starts per hour 	<ul style="list-style-type: none"> • Use operator less frequently • Upgrade to a high cycle operator
7	Max run time reached	<ul style="list-style-type: none"> ▪ Operator used above maximum rated running time 	<ul style="list-style-type: none"> • Use operator less frequently • Upgrade to a high cycle operator
8	Current Imbalance	<ul style="list-style-type: none"> ▪ Phase missing (only applicable to 3 phase operators) 	<ul style="list-style-type: none"> • Check mains wiring • Check fuses • Check motor connections and / or phase current
9	Locked Rotor overload	<ul style="list-style-type: none"> ▪ Motor stalled 	<ul style="list-style-type: none"> • Check for objects causing interference to door operation • Check for damage to motor • Upgrade to a larger operator
10	Severe Running overload	<ul style="list-style-type: none"> ▪ Extreme load on door 	<ul style="list-style-type: none"> • Check for objects causing interference to door operation • Check for damage to motor • Upgrade to a larger operator
11	Running overload	<ul style="list-style-type: none"> ▪ Excess load 	<ul style="list-style-type: none"> • Check for objects causing interference to door operation • Check for damage to operator • Upgrade to a larger operator • Reduce size of operator sprocket or increase size of door sprocket • Increase overload setting (warranty will be voided)
12	Thermal overload	<ul style="list-style-type: none"> ▪ Motor overheating 	<ul style="list-style-type: none"> • Use operator less frequently • Upgrade to a high cycle operator
13	Travel time high	<ul style="list-style-type: none"> ▪ Motor fault causing slow speed ▪ Excess load on door 	<ul style="list-style-type: none"> • Check door for mechanical failure
14	Direction error	<ul style="list-style-type: none"> ▪ Motor connections altered ▪ Bad connection to Limit Socket 	<ul style="list-style-type: none"> • Change door direction and reset limits • Carefully spray RJ11 MCB with CRC 2.26 Contact treatment
15	Under speed	<ul style="list-style-type: none"> ▪ Motor running under speed ▪ Excess load on door 	<ul style="list-style-type: none"> • Check door for mechanical failure or motor fault • Carefully spray RJ11 MCB with CRC 2.26 Contact treatment
Constant flash	Due for service	<ul style="list-style-type: none"> ▪ Door is due for routine service 	<ul style="list-style-type: none"> • Contact your local door dealer to arrange service
No Lights Displayed	Power failure – No lights on MCB or Controller *With lights on at MCB	<ul style="list-style-type: none"> ▪ Blown fuse ▪ Power supply not correctly connected ▪ *Bad connection to Controller 	<ul style="list-style-type: none"> • Check all fuses • Check power supply wiring • *Refer below if lights are on at MCB and not on Controller
Push button not responding	Operator does not drive up and / or down	<ul style="list-style-type: none"> ▪ Bad connection to Controller ▪ Faulty Controller cable ▪ Controller buttons forced and dislodged from rear of lid 	<ul style="list-style-type: none"> • *Check RJ45 plugs are clipped in securely at Controller and MCB • *Carefully spray RJ45 Controller & MCB socket with CRC 2.26 contact treatment • *Replace Controller cable • *Replace Controller
Open or Close button not responding but green light comes on	Coil failure if green light on whilst holding up or down button and operator does not move in one direction	<ul style="list-style-type: none"> ▪ Extreme vibration or impact during transit 	<ul style="list-style-type: none"> • Replace MCB

IMPORTANT NOTE:

If a problem is found with an installation, be sure to read the troubleshooting guide thoroughly and if the problem persists call Grifco for technical assistance on **02 43233877** or email technical@grifco.com.au

MAINTENANCE

The Maestro is equipped with smart logic to indicate when your industrial door will require servicing. When the STATUS indicator constantly flashes quickly, please contact your industrial door dealer to arrange a routine door service.

Overload Adjustment and Settings

This process is not necessary for typical applications. Varying overload levels from the Factory Set level will void warranty.

To view full load current (FLC) overload setting (with limits set)

- Drive door to closed limit
- Press and hold STOP and CLOSE for 10 seconds
- Status LED will light up indicating number of amps
- To read number of amps, follow the 'Reading Status Flashes' routine described below

To view max amps (with limits set)

- Drive door to closed limit
- Press and hold CLOSE for 10 seconds
- After 10 seconds and while still holding CLOSE, press and release the STOP button
- Status LED will light up indicating maximum amps drawn
- To read max amps, follow the 'Reading Status Flashes' routine described below

To change full load current (FLC) overload setting

- While holding STOP, press the SET button 3 times
- The LIMIT ERROR indicator will start flashing signifying limit setting mode
- Press and hold the STOP button
- While holding STOP, press either UP or DOWN to increase or decrease the FLC by 0.1A with each press
- The LIMIT ERROR indicator will flash with every successful increment/decrement
- The FLC can be modified a maximum of 1.5A per session
- Once done release the STOP button, then press the STOP button again to exit

Reading Status Flashes

- STATUS indicator will start flashing to signify the value of the least significant digit of the overall number, or in the case of amperage values this will be the value after the decimal point. A solidly lit indicator stands for zero
- Press set to view the next digit
- Continue previous step until the STATUS indicator flashes quickly for 1 sec then goes out. This signifies that the entire number has been displayed

To reset error

- (This process indicates there has been a severe problem. Persistent resetting will void warranty and may do damage to the door or operator)
- Hold the STOP button for 10 seconds
 - While still holding the STOP button, press and release the SET button
 - The STATUS indicator should flash quickly for 1 second. Any errors that were flashing should have stopped.

WARRANTY / GUARANTEE

Chamberlain Australia Pty Ltd herein referred to as "The Company"

- (a) The Company shall guarantee the goods for a period of two years from the date of invoice against any defects in construction or operation arising solely from faulty design, materials or workmanship subject to the following clauses.
- (b) The Company shall at its option, repair, modify or replace defective parts or units at its own expense and within a reasonable time but the Company shall not unless otherwise agreed in writing be liable for costs associated with removal, replacement, transport or travelling expenses incurred by the Purchaser in obtaining the goods and returning them to the Company.
- (c) The Company does not guarantee the goods where:-
 - (i) the defect rises from materials supplied by the Purchaser or a design requested by the purchaser; or
 - (ii) the defect arises from ordinary wear and tear, neglect or misuse by the Purchaser, accident, lack of care, insufficient maintenance, incorrect installation or improper use of the goods; or
 - (iii) the defect arises from force majeure; or
 - (iv) the Purchaser has in any way modified or repaired the goods without the Company's prior written consent; or
 - (v) the Purchaser has not complied with any written or oral instructions concerning the operation and maintenance of the goods; or
 - (vi) the Purchaser is in default in the observance or performance of any other provisions of the contract; or
 - (vii) The Grifco electric motors are used in conjunction with controls other than those assembled and supplied by the Company.
- (d) Where warranty is approved for goods in a used condition, such goods will be repaired or replaced and returned to the purchaser as the Company sees fit. Refunds or credits will only be considered for goods not used and in new, undamaged condition.
- (e) The Company's liability under this guarantee will be strictly limited to repairing or replacing a defective product at the Company's premises, as it may elect.
- (f) The provision of sub-clauses (a) and (b) are stipulated for the benefit of the Purchaser only and are not intended for the benefit of any third party.
- (g) Save for sub-clauses (a) and (b) the Company does not give any warranty or guarantee or make representations whatever in respect of the goods or the fitness of the goods or any part thereof or any particular purposes (whether or not that purpose is known to the Company).

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