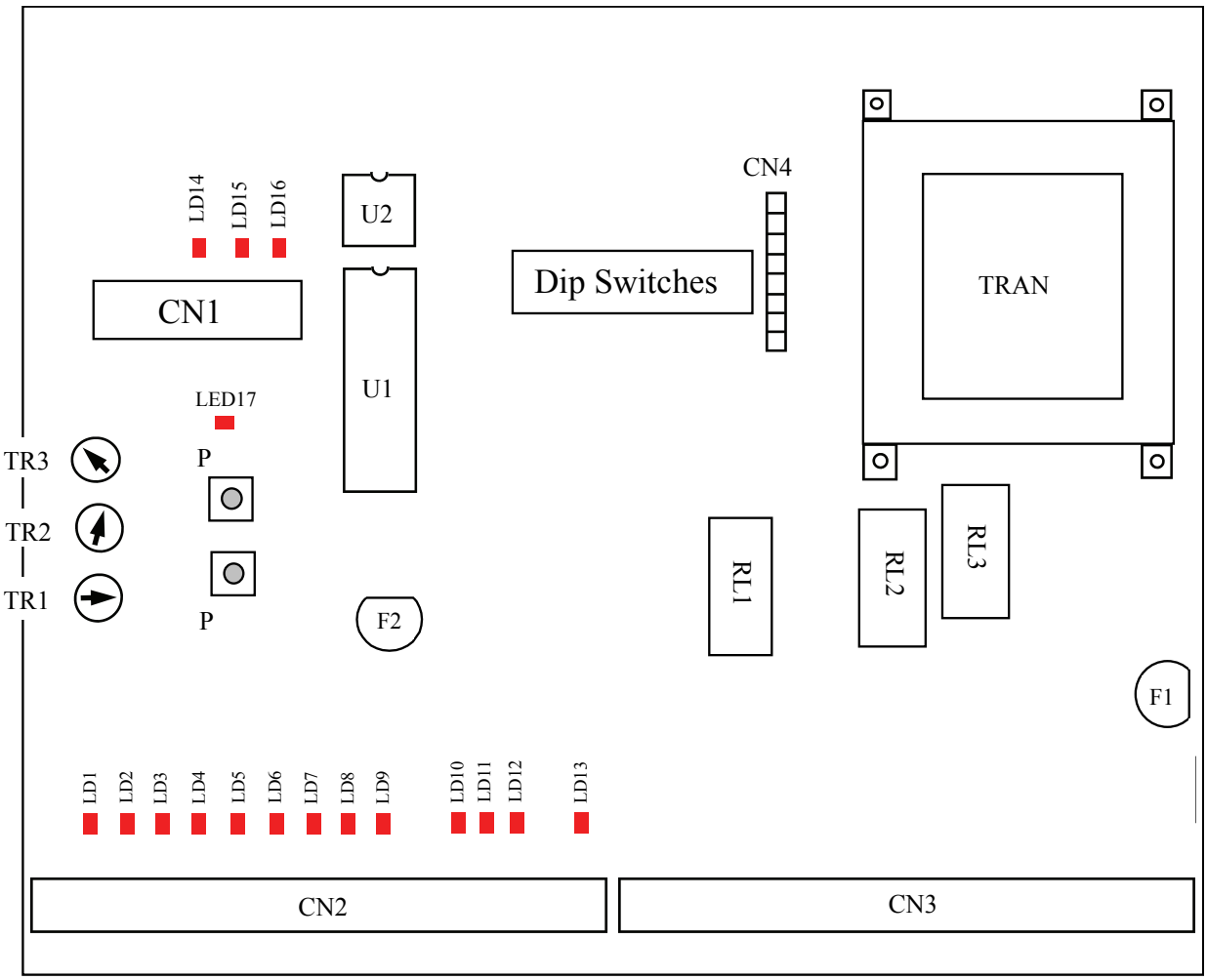
# ‘GATE 2’

## Part No. 23001125

# SWING GATE CONTROLLER INSTALLATION GUIDE

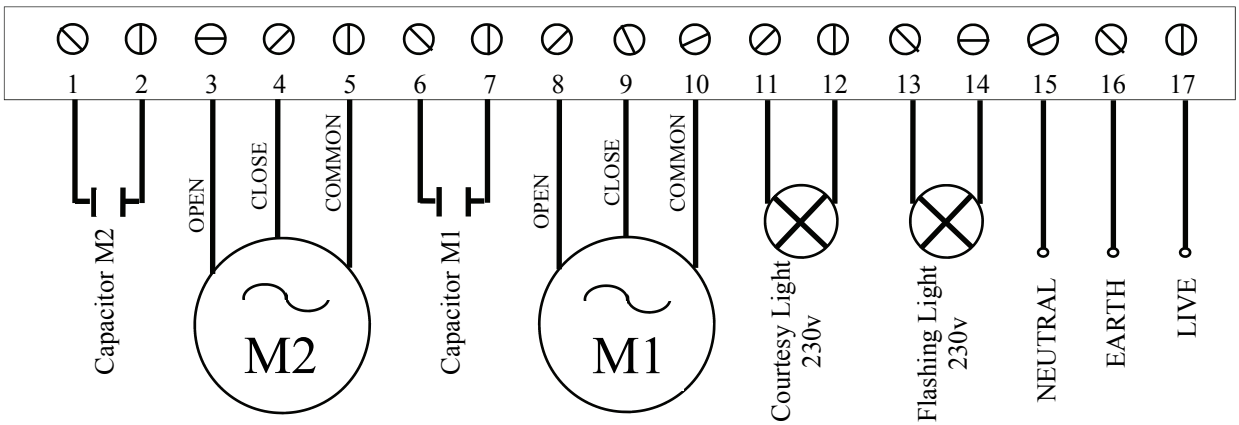
# GATE 2— Code No. 23001125

Electronic Control Board for use with SEA Hydraulic or Electro-mechanical swing gate operators (without limits). On-board Radio Receiver (128 users).
Selectable features include:
Soft Start, Soft Stop, Pedestrian Opening, Courtyard safety input, Hold-open input

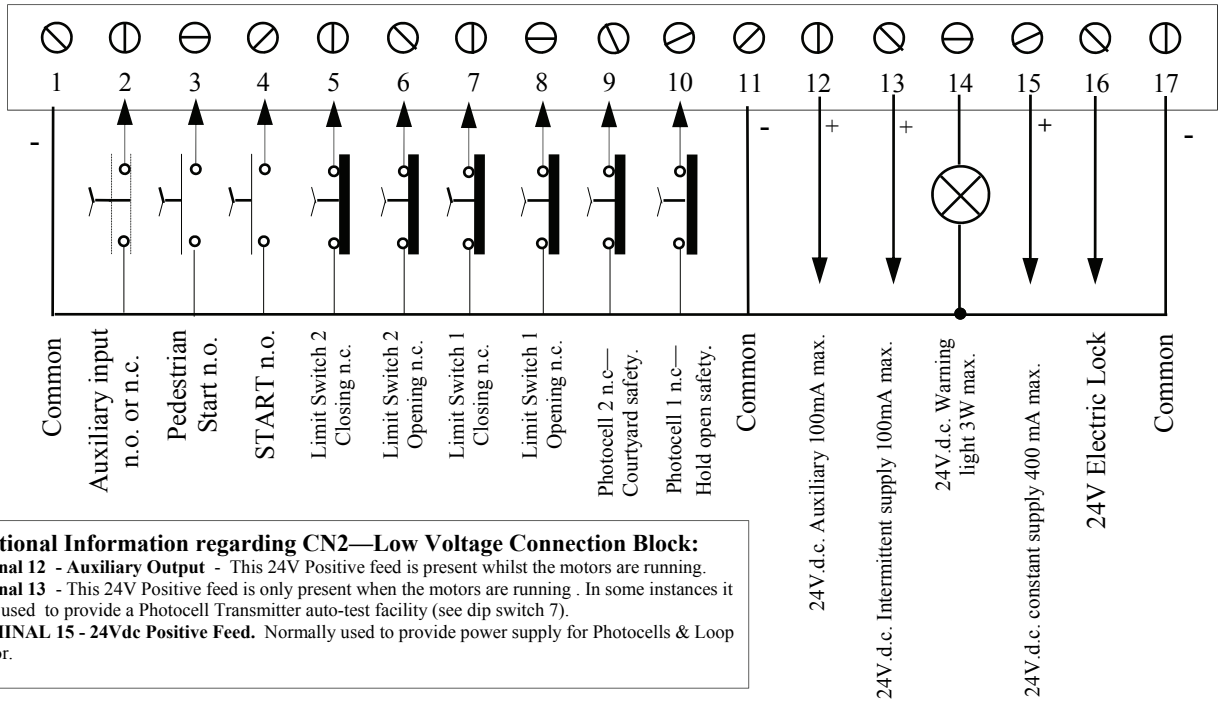



| | |
|---|---|
| LED1—Auxiliary Input | CN2– 24v (low voltage) Connector |
| LED2—Pedestrian Start Motor 1 | CN3—230V Mains, Motor Connector |
| LED3—Start | CN4—Optional Optical Display Connector |
| LED4—Close Limit— Motor 2 | TR1—Motor Torque/Power Regulator |
| LED5—Open Limit— Motor 2 | TR2—Electronic Soft Stop, Time Regulator |
| LED6—Close Limit— Motor 1 | TR3—Open Pause Time Regulator |
| LED7—Open Limit— Motor 1 | P-Time—Motor Run Time Programming Button |
| LED8—Photocell 2 Control in open, courtyard logic | P Code—Transmitter Programming Button |
| LED9—Photocell 1 Hold open safety | Dip—Logic Selection Switches |
| LED10—24V+ Auxiliary Output During run time only | F1—230V Supply and Motor Fuse (6.3AT) |
| LED11—Photocell Transmitter Output p/cell auto-test | F2—24V Accessories Fuse (2A) |
| LED12—Warning Light. Indicator lamp 24v | TRAN—Transformer |
| LED13—24v Electric Lock | RL1—Motor Power Supply Relay |
| LED14—Encoder Motor 2 | RL2—Motor Direction Relay |
| LED15—Encoder Motor 1 | RL3—Courtesy Light Relay |
| LED16—Stop | U1—Microprocessor |
| LED17—Programming LED | U2—EEPROM Memory (Radio Memory Chip ) |
| CN1—24V Input/Output Connector | |

## CN3 230V Mains/Motor Connections.

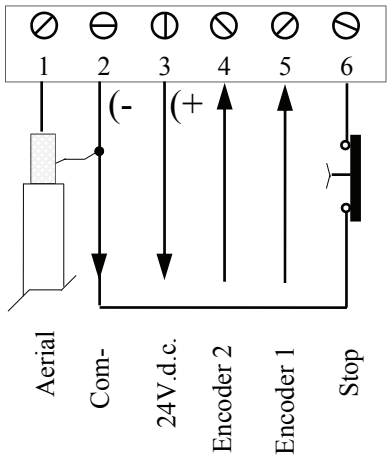



## CN2 24V Low Voltage Connections.



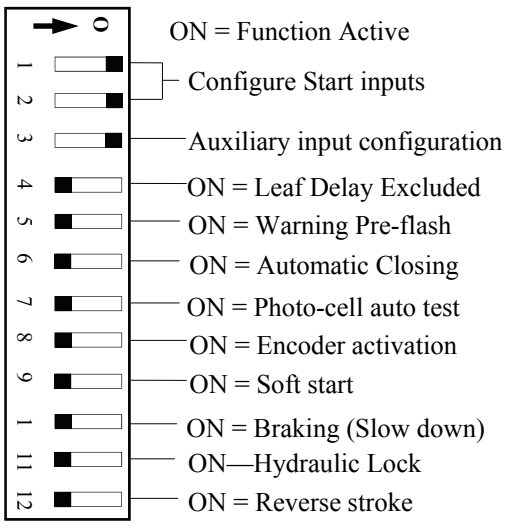

**Additional Information regarding CN2—Low Voltage Connection Block:**
**Terminal 12 - Auxiliary Output** - This 24V Positive feed is present whilst the motors are running.
**Terminal 13** - This 24V Positive feed is only present when the motors are running . In some instances it can be used to provide a Photocell Transmitter auto-test facility (see dip switch 7).
**TERMINAL 15 - 24Vdc Positive Feed.** Normally used to provide power supply for Photocells & Loop detector.

## CN1 24V Low Voltage Con-




DIP SWITCHES

See pages 8/9 for more info.



## Some things you need to know before you start Programming 'GATE 2'.

At the start of programming, the first press of P Time should send Operator 2 towards closed. If Motor 2 is sent towards **open, turn the power off, invert the black and brown motor wires,** turn the power on and start programming from the beginning again.

If after programming, the results prove to be other than that which is required or was expected, simply turn the power off **for at least 1 minute,** turn the power back on and start again from the beginning.

Programming operator run times into the 'GATE 2' control panel is carried out by pressing the button **'P Time'**.

Each press of **P Time** will either start the first operator running or, memorise the start time for the second operators' activation. (See programming & delays below).

Do allow a few seconds of 'over-run' time when each leaf reaches the fully open and fully closed positions.

## *WARNING !*

**Programming of the opening and closing operator/motor run time cycles is carried out as one operation. Irrespective of the settings of the logic control dip switches**.
Once programming has commenced and the opening cycle has been programmed, the closing cycle will **start automatically and immediately** after both operators have reached the open stops.

## Programming:

On pages 7, 8 & 9 you will find pictorial guidance on motor run time programming of the Gate 2 control box.
The following descriptions and logic switch examples show the simplest way to set-up the logic switches when programming the motor run times on button P TIME. You should find it helpful if you look at the pictorial programming sequence pages in conjunction with reading the following descriptions.

The length time required when pressing P TIME when first entering the programming is 10 seconds. Subsequent presses of P TIME should only be of about 1 second duration (It is possible to give the ***subsequent*** presses by radio transmitter instead of pressing button P TIME, see radio transmitter programming on page 10) Using a radio transmitter for programming will be particularly useful if the Gate 2 control box is in a difficult location.

The total number of presses required to complete the programming cycle is dependant on the type of logic selected, for example:
2 x Gates with leaf delay— Total number of presses: 9
2 x Gates with no leaf delay—Total number of presses: 7
1 x Single gate operation— Total Number of presses: 4

After the motor run times have been programmed, to change or make any additional logic selections:-
**De –power the Gate 2 control panel for 1 minute**. During this period, make the required logic changes (i.e. auto closing, soft stop etc). Then turn the power back on.

**PLEASE NOTE: With regard to TR1: Power Regulator.**
The Gate 2 panel is capable of controlling hydraulic or electro-mechanical gate operators, single or paired. All SEA 'hydraulic' operators have pressure adjusting valves that limit the power imparted on the gate and fixings. In this instance when programming the Gate 2 panel the 'TR1 - Power Regulator' should be set to maximum and the operators pressure valves adjusted accordingly after the programming of the panel is completed.
**Many types of Electro-mechanical operators are 'direct drive' and the operators power must be regulated by the 'TR1 - Power Regulator'**.
**When programming this type of 'direct drive' operator for the first time, set TR1 Power Regulator at a 'low level, to prevent the operator damaging lightly constructed gates, fixings or posts**. If during programming the 'low level' setting proves to be insufficient, simply turn off the mains power, increase the TR1 Power setting by the required amount and start the programming sequence again from the beginning.

## Programming a single swing gate operator

Set the logic switches:-


CONNECT GATE MOTOR TO:
M1 motor terminals 8, 9, 10 - CN3 BLOCK

DO NOT LINK-OUT LIMIT SWITCH 2 INPUT:-
Terminals 5 & 6 - CN2 BLOCK

With the gate set at 45º

Turn on the 230v mains supply to the Gate 2 control panel.

**First long press (10 secs)**: Initiates the programming cycle. Pres and hold until gate motor (M1) starts running towards closed.

**Next press (1 sec):** When the gate hits the closing stop. This will stop the gate motor running and automatically start the gate motor to start running towards open.

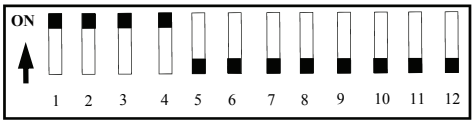
**Next press (1 sec):** When the gate hits the open stop (allow a couple of seconds over-run time). This stops the motor and automatically starts the gate motor running towards closed.

**Next Press (1 sec):** When the gate hits the closed stop (allow a couple of seconds over-run time).

PROGRAMMING SEQUENCE IS COMPLETE.

## For a pair of swing gates *without* leaf delay

Set the Logic Dip switches:-




LINK-OUT BOTH LIMIT SWITCH INPUTS:-
Terminals 5 & 6 - 7 & 8 - CN2 BLOCK

With the gates set at 45º

Turn on the 230v mains supply to the Gate 2

Sequence for pressing button P TIME:-

**First long press (10 secs.)**: Initiates the programming cycle. Press & hold until the first closing gate (M2) starts running towards closed.

**The next press (1 sec):** When gate hits the closed stop. This will stop the first gate motor (M2) running and automatically start the last closing gate motor (M1) running toward closed.

**The next press (1 sec):** When the last closing gate (M1) hits the closed stop. This press stops (M1) running and automatically starts (M1) running towards open.

**The next press (1 sec):** When (M1) gate hits the open stop (allow a couple of seconds over-run time). This press stops (M1) running and automatically starts (M2) gate running towards open.

**The next press (1 sec):** When (M2) gate hits the open stop (allow a couple of seconds over-run time). This press will start (M2) running towards closed.

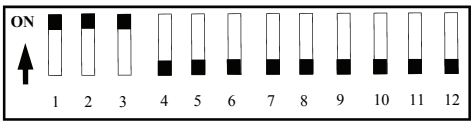
**The next press (1 sec):** When (M2) gate hits the closed stop (allow a couple of seconds over run time). This press also starts (M1) gate closing.

**The next press (1 sec):** When (M1) gate hits the closed stop (allow a couple of seconds over-run time).

PROGRAMMING SEQUENCE IS COMPLETE

## A pair of swing gates requiring leaf delay.

Set the Logic Dip switches:-




LINK-OUT BOTH LIMIT SWITCH INPUTS:-
Terminals 5 & 6 - 7 & 8 - CN2 BLOCK

With the gates set at 45º

Turn on the 230v mains supply to the Gate 2

Sequence for pressing button P TIME:-

**First long press (10 secs)**: Initiates the programming cycle. Press & hold until first closing gate (M2) starts running towards closed.

**The next press (1 sec):** When gate hits the closed stop. This will stop the first gate motor (M2) running and automatically start the last closing gate motor (M1) running toward closed.

**The next press (1 sec):** When the last closing gate (M1) hits the closed stop. This press stops (M1) running and automatically starts (M1) running towards open.

**The next press (1 sec):** Sets the leaf delay in opening of (M2) (M1 pauses opening for a second when this press is given).

**The next press (1 sec):** When (M1) gate hits the open stop (allow a couple of seconds over-run time). This press will stop (M1) running and automatically start (M2) gate running towards open.

**The next press (1 sec):** When (M2) gate hits the open stop (allow a couple of seconds over-run time). This press will start (M2) running towards closed.

**The next press (1 sec):** Sets the leaf delay time in closing for the (M1) gate (M2 pauses closing for a second when this press is given).

**The next press (1 sec):** When (M2) gate hits the closed stop (allow a couple of seconds over run time). This press also starts (M1) gate closing.

**The next press (1 sec):** When (M1) gate hits the closed stop (allow a couple of seconds over-run time).

PROGRAMMING SEQUENCE IS COMPLETE

TROUBLE-SHOOTING HELP.

Problems during programming (setting up), what to check for.

LED's not lighting:-
Check power supply lines, junction boxes, trips/fuses & RCD.

LED's light up, motors running but no operator movement.
Check for open manual release valves.

LED's light up, no operator movement.
Check:. Stop circuit (n.c.) is open circuit and LED 12 flashes in groups of 4 ) Wire link required between terminals 2 & 4 on block CN1.

LED's light up, no operator Movement, check:
Limit switch inputs (n.c.) all open circuit. (Links required).

LED 12 flashing x2, No operator movement.
Check Dip Switch 3 is in ON position.

Only one operator moving
One limit switch input (n.c.) is open circuit. (Link required)

Programming completed o.k., gates not opening:
Photo Cell (1) input (n.c.) open circuit. (Link required).

Programming completed o.k., gates opening but not closing:Photo Cell (2) input (n.c.) open circuit. (Fit p/cell or link out)

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Most common problems occurring during normal operation can be quickly diagnosed by the status of 'LED 12' (24v Lamp) which acts a diagnostic indicator.
After a start input is given, the following flashes and the intervals between them indicate the associated condition.

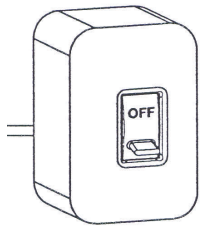
| **LED 12 flashes:** | **Interval**: | **Indicating:** |
|---|---|---|
| x1 for 1 second | 1 second | gates opening. |
| x1 for 0.5 second | 0.5 second | gates closing. |
| x1 for 0.5 second | 2 seconds | Gates held open by photo cell input 2. |
| x2 for 0.5 second | 0.5 second | Switch 3 is OFF (Turn Switch 3 ON) |
| x4 for 0.5 second | 2 seconds | 'Stop' circuit open |
| x5 for 0.5 second | 2 seconds | (1) An open photo cell circuit if the photo cell Tx (+)'s are wired into terminal 13 and Switch 7 is ON |
| x5 for 0.5 second | 2 seconds | (2) If not wired as above turn switch 7 OFF |

# PROGRAMMING OF OPERATOR RUN TIMES FOR SWING GATES WITHOUT LIMIT SWITCHES

**ATTENTION ! This procedure is potentially dangerous and must only be carried out by qualified and experienced personnel following current electrical and health & safety regulations.**

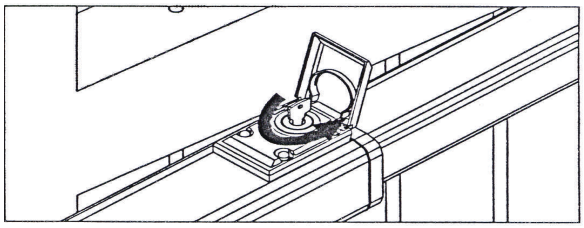
Make all electrical connections and wire link any unused n.c. (normally closed) inputs.
**For operators containing anti-crush devices**, e.g. pressure regulating valves or friction clutches, set trimmer TR1 to maximum (fully clockwise) and adjust operating pressures to a safe level when programming is Completed via the pressure regulating valves or friction clutch as appropriate.
**For operators not fitted with anti-crush devices**, (e.g. some electro-mechanical models) set TR1 to approximately a midway position for programming purposes. If this setting will not run the operators, increase the pressure slightly (clockwise).
When programming is complete, adjust the torque setting of TR1 to operate the gates at a safe pressure.

1



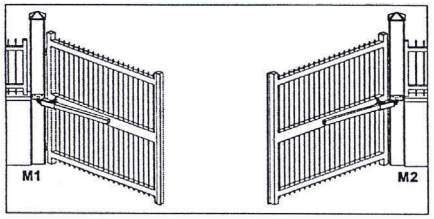

Turn power OFF

2



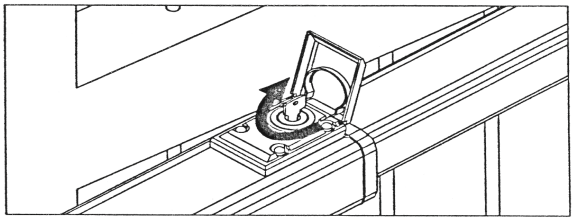
Open both operators' manual release devices

3



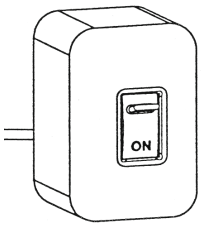

Open the gates to a mid way position

4



Close both operators' manual release devices

5



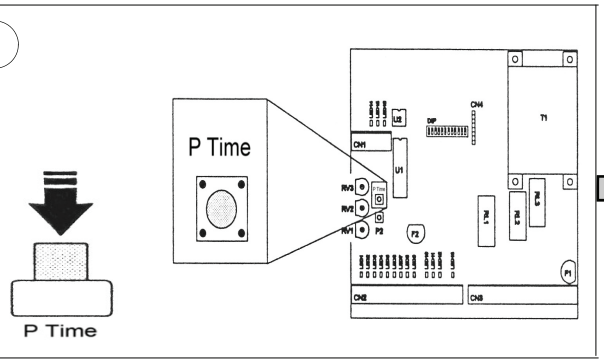

Turn power ON

**IMPORTANT**
OPEN & CLOSED GROUND STOPS MUST BE FITTED
**PRIOR** TO STARTING THIS PROCESS.

Terminology: M1 = Operator/Motor 1 M2 = Operator/Motor 2

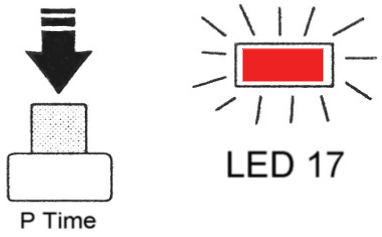
Please Note: After initially pressing P Time to start programming, further presses of P Time may be substituted by radio transmitter 'start' signals.

6



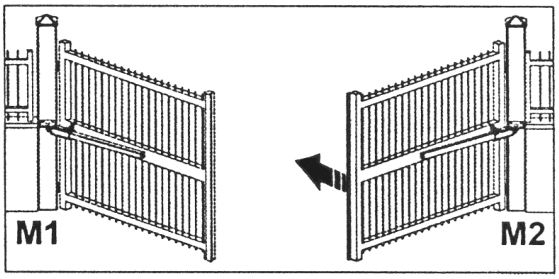

Press **and hold** the P Time button.

7




With P Time pressed down, after 5 seconds LED 17 will light.

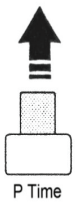
8




5 seconds after LED17 lights,
M2 will start a closing cycle *

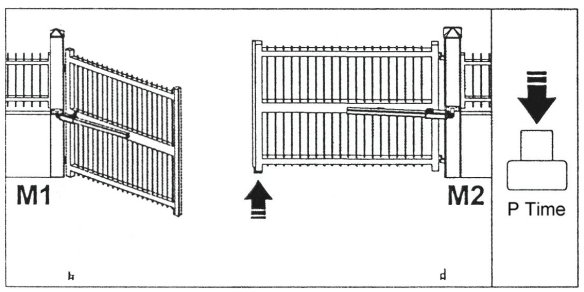
* If M2 (motor 2) starts to run towards open, turn the power OFF.
Invert the brown and black motor phase cables, re-connect and turn the power ON
Start programming again at step 6.

9



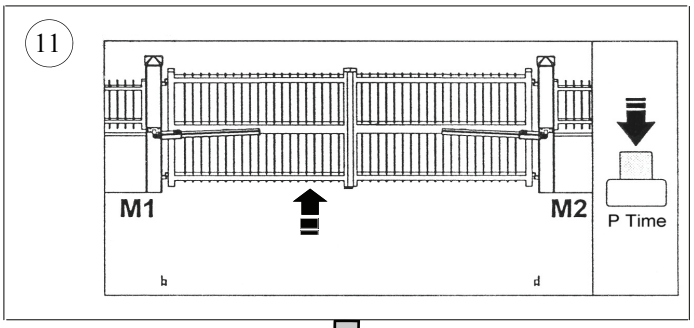

When M2 starts the closing cycle, **release** P Time

10

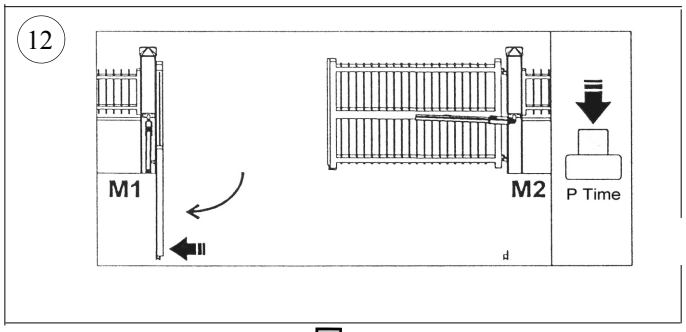



When M2 reaches the closed position, press and release P Time. This will cause M1 to start a closing cycle..

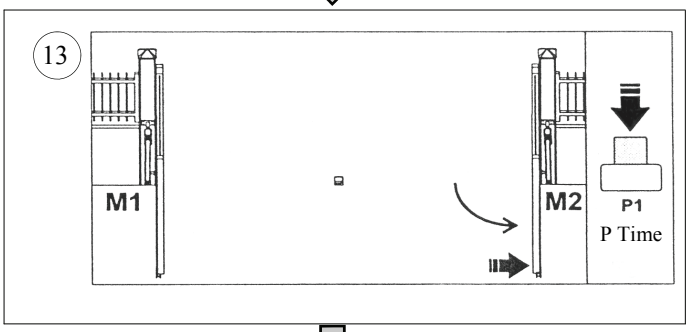
When M1 reaches the closed position, press and release P Time. Allow for any leaf delay required in opening then press and release P Time again. The first press causes M1 to start an opening cycle. The second press memorises the time M2 will start it's opening cycle and causes M1 to stop momentarily.



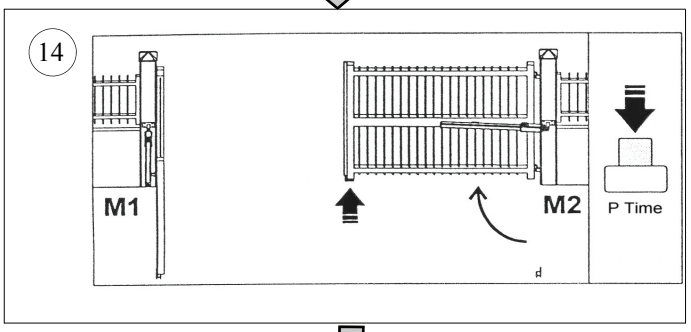

When M1 reaches the open position, allow a few seconds of over-run time, then press and release P Time.
This will cause M2 to start it's opening cycle.



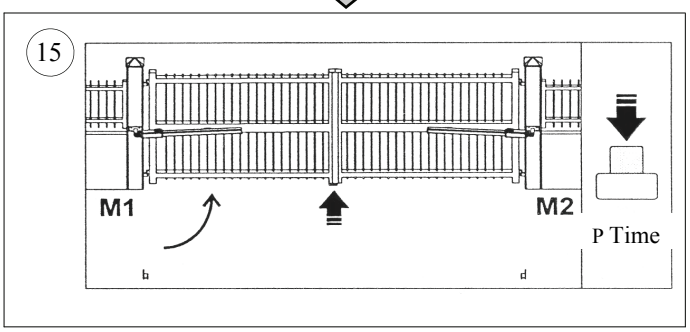

When M2 reaches the open position, allow a few seconds of over-run time then press and release P Time.
This will cause M2 to start a closing cycle. Allow for any leaf delay required then press and release P Time again.
The second press memorises the time M1 will start it's closing cycle and will cause M2 to stop momentarily




When M2 reaches the closed position, allow a few seconds of over-run time, then press and release P Time.
M1 will now start it's closing cycle.

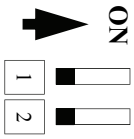



When M1 reaches the closed position, allow a few seconds of over-run time and press and release P Time.
A full open and close program has now been completed.
Give a start command to confirm that the settings are correct.

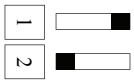


# LOGIC SETTING & DIP SWITCH FUNCTIONS.

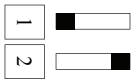
## Start input configuration.



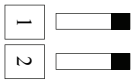

A start input opens the gates. A start input during opening halts gate movement.
A start input following the halt in opening will close the gates.
A start input during closing halts gate movement. A following start input opens the gates.




A start input opens the gates. A start input during opening halts & automatically closes gate.
A start input during closing re-opens the gates.

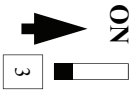



A start input opens the gates. Start inputs during opening are ignored.
Start inputs during open pause time are ignored..
A start input during closing re-opens the gates.




A start input opens the gates. Start inputs during opening are ignored.
A start input during open pause time closes the gates immediately.
A start input during closing re-opens the gates.
N.B. For automatic closing, put dip switch **6** to the **ON** position.

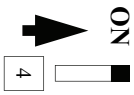
## Auxiliary input configuration. (Terminal 2 and ground on block CN1)



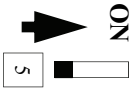

SAFETY EDGE (n.c. contact)
Any device with n.c. contacts triggering this input will stop the gates movement and reverse it's direction for about 1 second. A start input is then required to re-start gate movement.


TIMER (Start hold open) (n.o. contact).
A time clock or other device with **volt free n.o. contacts** fitted between terminals 2 and ground will hold the gates open for as long as the contacts are closed.
When the contacts are opened, the gates will time out and close.
N.B. For automatic closing, put dip switch **6** to the **ON** position.

## OTHER FUNCTIONS




LEAF DELAY EXCLUSION.
When this function is switched ON, leaf delay in opening and closing is cancelled out.
When switched OFF, leaf delay timings (if any) are as they were programmed in during set up.



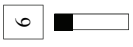

PRE-MOVEMENT WARNING FLASH.
When this function is switched ON, the flashing lamp and warning light outputs begin flashing for about 3 seconds before the motors run towards open and close.


AUTOMATIC CLOSING.
When this function is switched on, the gates will automatically close after any time set on the open pause trimmer (TR3) has elapsed and any hold open safety devices are clear.
N.B. Automatic closing can be selected regardless of any combination of switches 1 & 2.

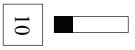

PHOTOCELL AUTOTEST.
**This function will not allow the Courtyard Photocell Input (Term. 9) to work.**
When this function is switched on, a test is carried out on the photocells before any gate movement takes place. For this function to be operative, **the photocell transmitter(s)** must be connected to terminals 13 (24v +) and ground (-) on block CN2.
When a photocell malfunction is detected, LED 12 will flash in groups of 5.
Please note. If a malfunction is detected the gates will **not close**.
*Explanation:- Term. 13 only provides a + feed to the photocell Tx(s) when the motors are running. I.E. Motors at rest, no feed to the photocell Tx(s).*



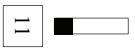
ENCODER MANAGEMENT.
NOT CURRENTLY APPLICABLE TO SWING GATE OPERATORS.



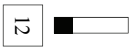

'SOFT' START.
When this function is selected, the motor will start with a lower torque to avoid stresses and strains on the gates' mechanical components. The starting torque is a percentage of the normal operating torque.
DO NOT SELECT THIS FUNCTION ON VERY HEAVY GATES OR GATES WHICH DO NOT RUN SMOOTHLY.



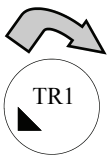

'SOFT STOP' (Braking).
When this function is selected, the motor speed (power) reduces towards the end of the gates travel. This function is designed to bring the gates gently to the open and closed positions without slamming into the physical stops. The slow down speed is fixed, but the length of slow down time is variable via trimmer TR2.




HYDRAULIC LOCK BOOST.
**N.B. NOT TO BE USED ON SLIDING GATES WITH LIMIT SWITCHES.**
**ONLY EFFECTIVE WHEN 'SOFT STOP' (switch 10) IS SELECTED**. When the gate/ motor slowly reaches the open and closed stops, the motor runs at full power for about 1 second. This function increases the oil pressure and makes the hydraulic locking more effective.




REVERSING STROKE (for swing gates only).
With the gates in the closed position, when a start input is given, the gates are run in the closed direction for about 1 second to relieve any wind pressure on them and then they run towards open as normal.




OPERATOR TORQUE ADJUSTMENT. (Clockwise increases—anti-clockwise decreases).
Set to maximum for hydraulic operators. When programming is completed, set open/close pressures on by pass valves or friction clutch on operators to a safe operating force in opening and closing.
For operators without by-pass valves or friction clutches, set TR1 to a safe operating pressure after programming..


SOFT STOP (Braking) (Length of time adjustment).
Use to adjust the duration of the slow down (Soft Stop) phase.


OPEN PAUSE TIME
Used with automatic closing (**switch 6 ON**). 0 — 120 seconds delay before closing cycle commences.

Installation must only be undertaken by qualified personnel and in accordance with all Current Electrical Regulations.

**The 230v electrical supply to this unit must have incorporated into it:-**

1) A locally situated and clearly labelled method of electrical isolation, preferably double pole.

2) A trip or fuse rated at 6 amps.

3) Current protection device (RCD/ELCB) rated at not more than 30mA.

4) Adequate earth bonding to both motors and this control panel.

NOTE

Assuming gates open inwards:

On all S E A **Libra** *'on gate'* ram operators, the brown wire is open, black is close.

On S E A **Lyra 'Compact'** underground operators, the motors have to run in opposing directions.
So brown will be open and black will be close on one side of the drive
and black will be open and brown will be close on the opposite side of the drive.

## Programming radio transmitters into the on-board 433MHz radio receiver.

Program = START (both gates).
Press button P Code.
LED17 lights steadily.
Press the button required to operate this channel on the new transmitter.
LED 17 will flash twice then light steadily.
More transmitters may be programmed in.
The receiver will exit programming automatically, 10 seconds after the last transmitter is programmed in.

Program = Pedestrian (1 gate).
Press button P Code then press button P Time.
LED 17 flashes once per second.
Press the button required to operate this channel on the new transmitter.
LED 17 will flash twice, then flash once per second.
More transmitters may be programmed in.
The receiver will exit programming automatically, 10 seconds after the last transmitter is programmed in.

**CAUTION. During programming, pressing the button of a transmitter into the same channel a second time will cause it to be deleted from memory.**
**(The first press programs the button in. The second press takes it out of memory).**

**(LED 17 will flash *4 times* after a button has been pressed on a transmitter that is already in the memory of the channel currently being programmed).**

### Total deletion of all transmitters in memory.

**Press and hold the P-Code button. LED 17 will start a sequence of flashes. Keep the button pressed until the flashing stops and the LED goes out. Release the P Code button. Deletion is then complete.**

**LED 17 Will flash 6 times confirming deletion.**