



ZAP MOTOR AND CONTROL UNIT INSTALLATION MANUAL

Zap™ 815 Series Roll-Up Sheet Steel Door Operators

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PRODUCT OVERVIEW

CONTROL UNIT

800-PB

Integrated Control Unit with 3 case mounted OPEN, STOP and CLOSE push buttons. This Control Unit will power doors up to 16 square metres (170 square feet) in conjunction with the 815 series of ROLL-UP SHEET STEEL DOOR operators. This Control unit provides **FAST OPEN WITH SOFT STOP AND GENTLE CLOSE.**



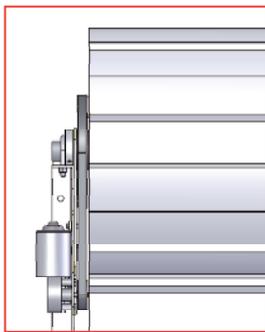
800-II-PB

Integrated Control Unit with three case mounted OPEN, STOP and CLOSE push buttons as above and provides a **SOFT START - FAST OPEN - SOFT STOP - SOFT START - FAST CLOSE - SOFT STOP.**

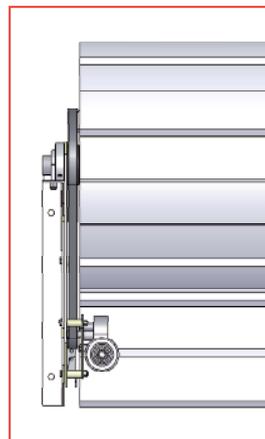
ROLL-UP SHEET STEEL DOOR OPERATORS



STANDARD operator



SLIM-LINE operator



815-SS: LIVE AXLE OPERATOR

Model 800-PB: Three Button Control Unit complete with a live jackshaft mounted SUPER-DRIVE V-Belt driven integrated operator with a V-belt tensioning device, which is released by a door frame or wall-mounted over-centre lever to facilitate manual operation of the door.

815-II-SS: LIVE AXLE OPERATOR

Model 800-II-PB: Three Button Control Unit with a SOFT START complete with a live jackshaft mounted SUPER-DRIVE V-belt driven integrated operator with a V-belt tensioning device, which is released by a door frame or wall-mounted over-centre lever to facilitate manual operation of the door.

815-SD: STANDARD DEAD AXLE OPERATOR

Model 800-PB: Three Button Control Unit complete with a door shaft mounted SUPER-DRIVE V-belt driven integrated operator with a V-belt tensioning device, which is released by either an operator, door frame or wall-mounted over-centre lever to facilitate manual operation of the door.

815-II-SD: STANDARD DEAD AXLE OPERATOR

Model 800-II-PB: Three Button Control Unit with a SOFT START complete with a door shaft mounted SUPER-DRIVE V-belt driven integrated operator with a V-belt tensioning device, which is released by either by an Operator, door frame or wall-mounted over-centre lever to facilitate manual operation of the door.

815-SL: SLIM-LINE DEAD AXLE OPERATOR

Model 800-PB: Three Button Control Unit complete with a door shaft mounted SLIM-LINE SUPER-DRIVE V-belt driven integrated operator with a V-belt tensioning device, which is released by either an operator, door frame or wall-mounted over-centre lever to facilitate manual operation of the door.

815-II-SL: SLIM-LINE DEAD AXLE OPERATOR

Model 800-II-PB: Three Button Control Unit with a SOFT START complete with a door shaft mounted SLIM-LINE SUPER-DRIVE V-belt driven integrated operator with a V-belt tensioning device, which is released by either an operator, door frame or wall-mounted over-centre lever to facilitate manual operation of the door.



ZAP MOTOR AND CONTROL UNIT INSTALLATION MANUAL

Zap™ 815 Series Roll-Up Sheet Steel Door Operators

Patents Granted and Pending

**PLEASE READ THESE INSTRUCTIONS CAREFULLY
TO ENSURE A SUCCESSFUL INSTALLATION**

SERIES DESCRIPTION

The Zap Controls' range of Motor-Control Systems for Roll-Up Sheet Steel Doors provides a new concept in safety control and the elimination of the inherent problems with a number of features with existing door operators.

The Zap range of low voltage DC Motor-Controls operate without limit switches and without a safety edge.

The control unit monitors the motor load and interprets a sudden increase in load as either an obstruction or the limit of door travel.

The models 815-SS, 815-SD & 815-SL include the model 800 control unit, Super-Drive Operator and a Manual Over-Ride kit. Clip-on motor cover kits will be available.

The models 815-II-SS, 815-II-SD & 815-II-SL include the model 800 series II control unit, Super-Drive Operator and a Manual Over-Ride kit. Clip-on motor cover kits will be available.

The installation of a Zap Super-Drive can be carried out in significantly less time than is involved in fitting a conventional wall-mounting operator.

Ensure that you have the correct type of Motor-Control system for the type of door as follows:

Roll-Up Sheet Steel doors with a *LIVE* Axle (rotating axle): 815-SS version I or II.

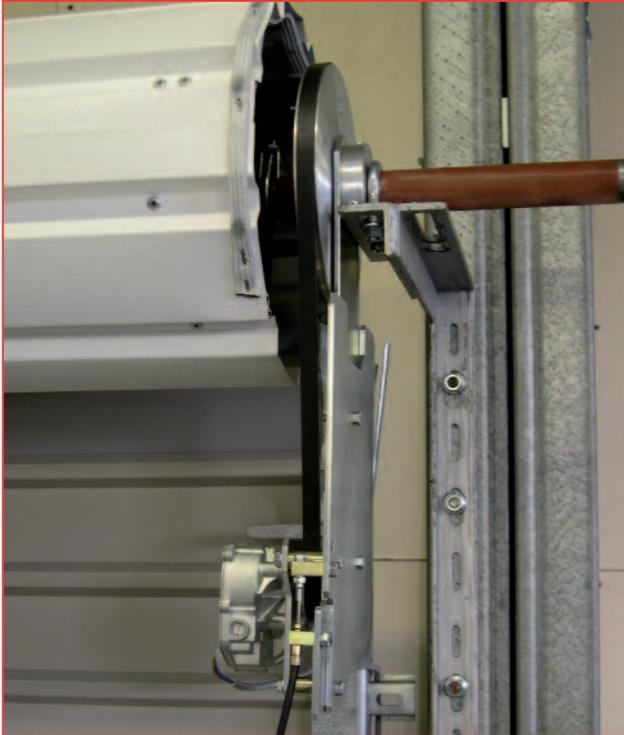
Roll-Up Sheet Steel doors with a *DEAD* Axle (non-rotating axle): 815-SD or 815-SL version I or II.

Ensure that you have the correct Dead Axle Operator, depending upon the side room available.

The 815-SD STANDARD *DEAD* Axle Operator will fit into a nominal 1" (25.4mm) space between the edge of the door roll and the axle support bracket. The Motor barrel is on the outside and requires 3.65" (93mm) clearance between the edge of the door roll and a side wall.



The 815-SL SLIM-LINE DEAD Axle operator will fit into a nominal 1" (25.4mm) space between the edge of the door roll and the axle support bracket. The motor barrel is on the inside and may be fitted even where there is no clearance between the axle support bracket and the sidewall.



The maximum door weight should not exceed: 500 LBS (230 Kgm).

The maximum door size should not exceed a nominal 170 square feet. (16 sq metres).

Ensure that the door is free to move by hand pressure. Check that it is balanced, preferably with the spring tension biased slightly open.

The door should feed into the tracks and start to close, if the roll is turned by hand. If the door shows a tendency to balloon, then a weight bar should be attached to the bottom of the door, to help it feed into the tracks.

Counterbalance springs will weaken over time and the balance will become biased closed. The Zap obstruction sensing system automatically adjusts to changes in door balance over a period of time. The springs should be checked and adjusted on a service visit, at least every 2500 motor operations or 1250 door cycles, or every six months whichever is sooner.

If the door movement is stiff at any point, the door should be adjusted to allow it to be moved by hand pressure without any significant force. Any misalignment of track sections should be corrected to ensure the door runs smoothly.

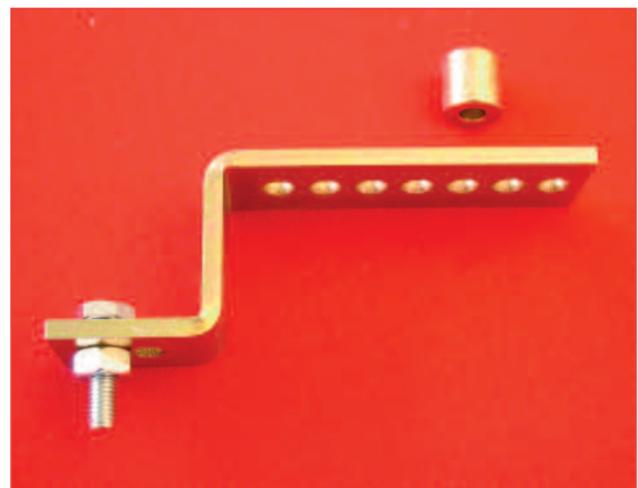
Note: A service-due reminder is provided in the control unit, which can be enabled to prompt the customer to call the installer after 2500 door operations. (See page 17)

IMPORTANT

FITTING THE 815-SS LIVE AXLE SUPER-DRIVE

The 815-SS Live Axle Super-Drive kit includes an anti-torque (anti-rotation) arm, which is bolted to the Super-Drive back plate and linked to a spare hole on the jackshaft bearing plate or onto the door frame.

A spacer bush is also provided and may be required to allow the torque arm to be spaced further away from the operator to clear any obstruction on the door frame. **(PIC 1)**



PIC 1

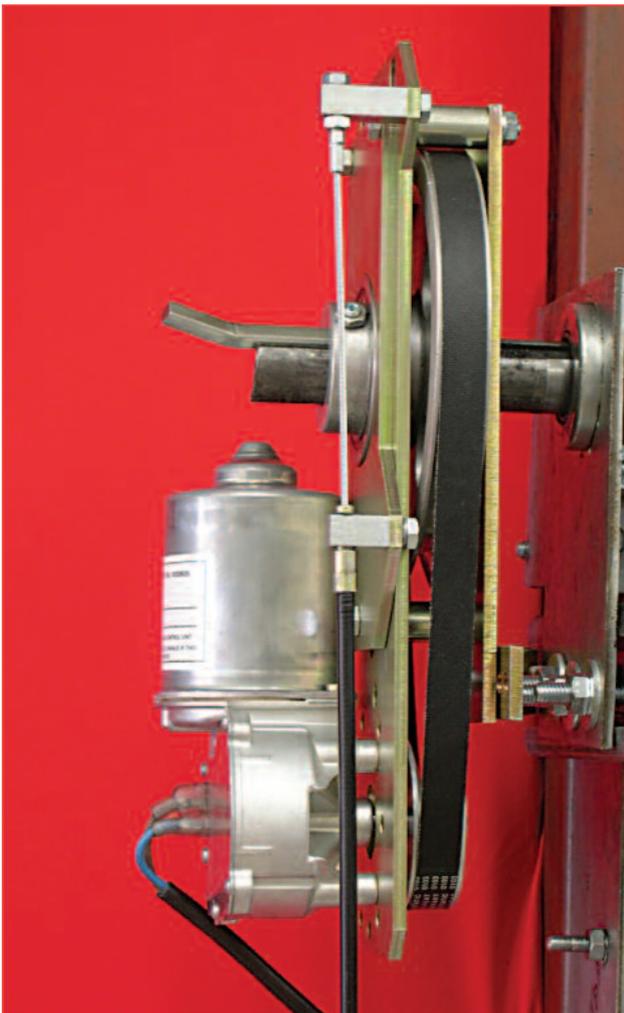
It is preferable to lightly screw the torque arm to the bearing plate hole or door frame securing point before mounting the Super-Drive. **(PIC 2 overleaf)**



PIC 2

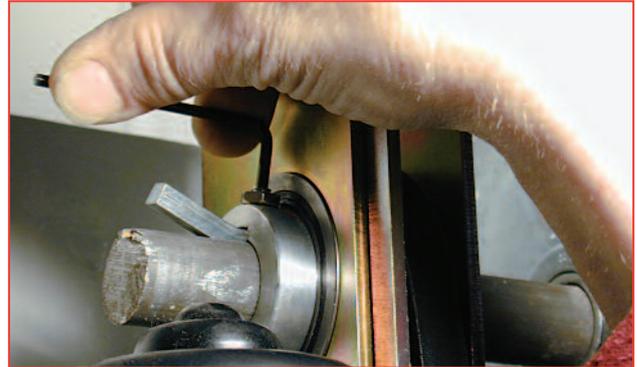
When mounting the Super Drive bowden cable operators, the motor can be mounted at any angle provided that the torque arm is secured at a right angle to the operator.

Now slide the Super-Drive assembly onto the door shaft and bolt the torque arm to the Super-Drive back plate. **(PIC 3)**



PIC 3

Align the Super-Drive keyway with the door shaft keyway and fit the key supplied with the package. Ensure that the Allen screw is firmly tight and then tighten the lock nut. **(PIC 4)**.



PIC 4

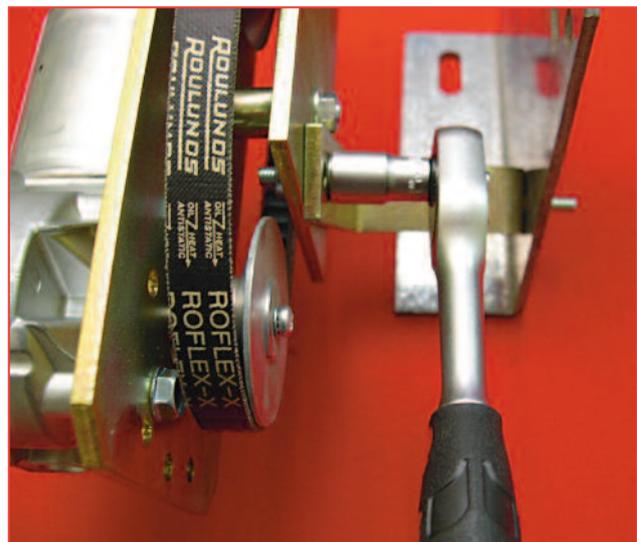
The wall of a hollow door shaft should be drilled with a 6mm, or 1/4 inch drill bit, the allen screw can be seated to lock the pulley to the shaft. The lock nut should then be tightened to lock the Allen screw into position. **(PIC 5)**



PIC 5

The second Allen screw set at 90 degrees which should also be tightened and secured with the locknut.

Now tighten the torque arm bolts. **(PIC 6)**



PIC 6

IMPORTANT

FITTING THE 815-SD (STANDARD) AND SL (SLIM-LINE)

DEAD AXLE SUPER-DRIVES

The 815-SD STANDARD and SL SLIM-LINE Operators can be fitted on the door shaft with the shoulder of the Operator Shaft Sleeve resting on the shaft support bracket where there is limited side room between the side of the door roll and the shaft support bracket. In this case the door shaft will need to be raised a little and shaft support blocks (supplied) should be positioned on both of the shaft support brackets, under the "U" bolts, to support the shaft on both sides of the door.

Alternatively where there is at least 1.7" (43mm) of clearance between the side of the door roll and the shaft support bracket, then the shaft may be secured in position, resting directly on the shaft support brackets, without the shaft blocks.



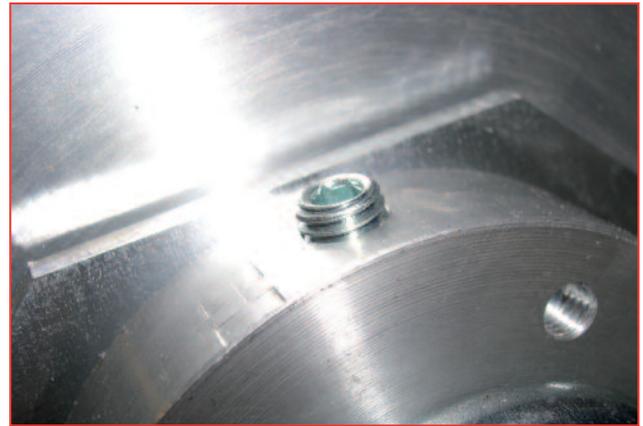
PIC 7



PIC 8

The L shaped drive Tongue should be fixed to the door side of the driven pulley, using the countersunk screws and flange nuts provided, so that it will locate in one of the large holes in a steel drum plate. **(PIC 7)** Where the drum is supported by plastic spoked wheels, the tongue should be fitted upside down so that it locates in the valley between the spokes without any backlash movement. **(PIC 8)**

On wide clearance applications the operator should be aligned vertically on the shaft and three Allen screws in the collar of the shaft sleeve, should be tightened securely to prevent rotation of the operator. **(PIC 9)**

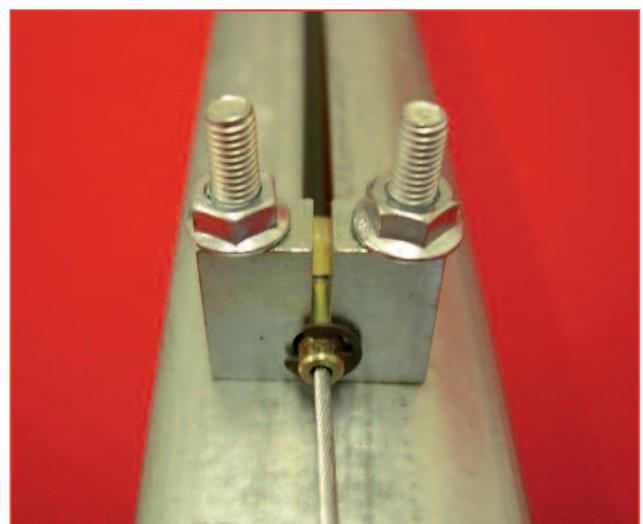


PIC 9

IMPORTANT

FITTING THE MANUAL OVER-RIDE LEVER MECHANISM

The position of the cable post should be assessed next. The cable post, which secures the Bowden cable outer sheath, is fixed to the door track or frame using two M6 counter sunk screws and flange nuts supplied. Drill two M6 or 1/4 " holes in the door track or frame in a position **AT LEAST 50MM OR TWO INCHES HIGHER THAN THE FULLY EXTENDED POSITION OF THE OUTER CABLE,** to allow flexibility of movement of the cable. **(PIC 10)**



PIC 10

It is preferable to position the over-ride lever relative to the position of the end of the inner cable with the lever in the **horizontal** position.

Mark the two hole positions for the Manual Over-Ride lever on the door track or frame at an accessible height from the floor. Drill two M5 or 7/32nd of an inch size holes. **(PIC 11)**.



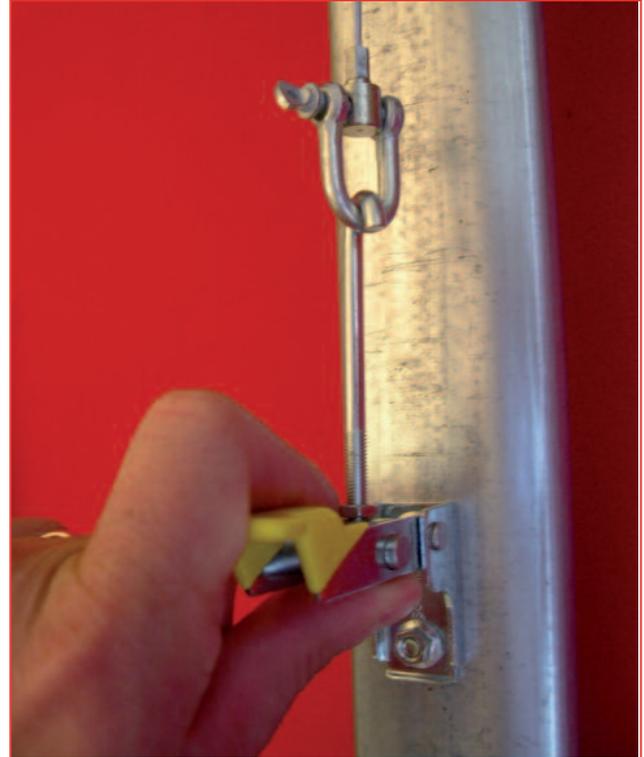
PIC 11

Fit the M5 screws provided with the screw head on the inside of the track or door frame. Fit the shake-proof washers and M5 thin nuts. A length of extension chain (Part No. ZA0072) is provided where the operator is fitted on tall doors and the Bowden cable may not be long enough to reach the lever hook. **(PIC 12)** Secure the hook in a convenient link of the extension chain or cable D-shackle. **(PIC 12)**



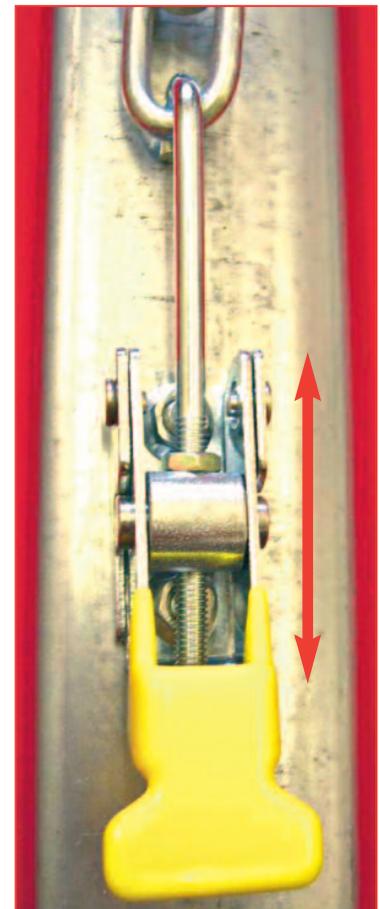
PIC 12

Ensure the lever is horizontal when the tension is taken up. **(PIC 13)**.



PIC 13

It is important that sufficient tension is achieved to ensure that the drive belt does not slip on the motor pulley. The lever should require reasonable hand pressure to lock it into place. The lever hook position is adjustable to allow the Super-Drive V-Belt to be correctly tensioned. Adjust the hook position to increase, or decrease tension by screwing it in or out of its bush. **(PIC 14)**



PIC 14

When the lever tension is correct push the lever completely down to correctly tension the V-Belt drive.

FITTING THE CONTROL UNIT

Check that the standard control unit voltage, which is shown on the label on the side of the control unit case, is correct for the available single phase supply voltage.

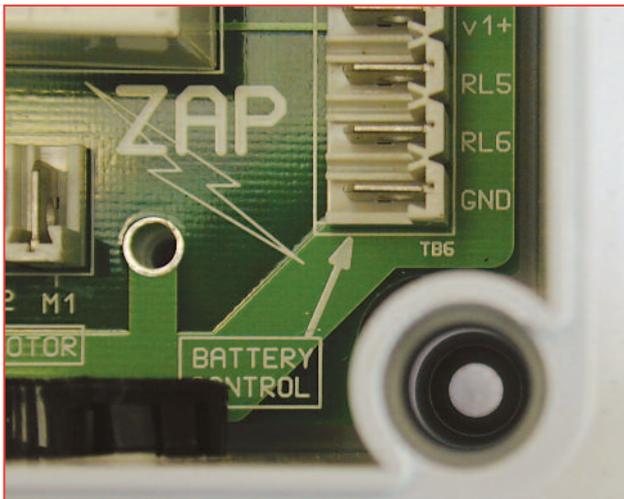
The series I control unit model number has a suffix, which relates to the supply voltage.

US is 120 Volts
EU is 220 Volts
UK is 240 Volts

The Series II Control unit has a two position voltage select switch, which enables it to be used on 115 Volt or 230 Volt supplies. Ensure that the switch is set to the correct supply voltage.

Both control units will operate on 50 or 60 cycle single-phase supplies.

The control unit should be mounted in a convenient position with the screws provided passed through the mounting holes in the corner pillars, which are outside of the waterproof gasket. (PIC 15)

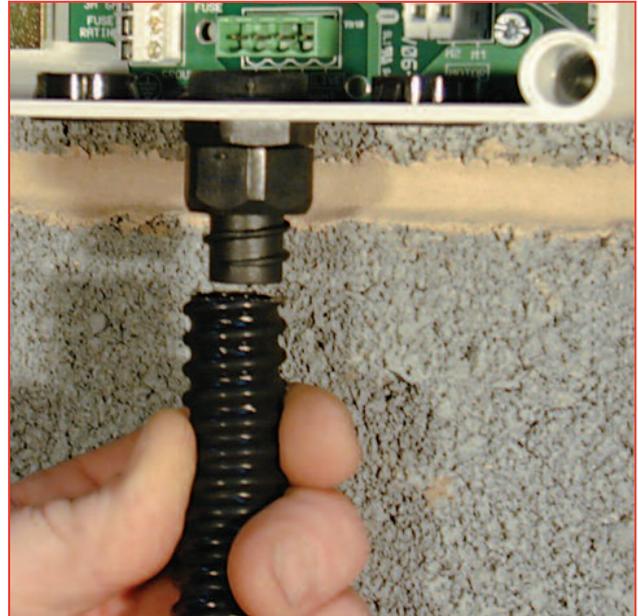


PIC 15

Do not drill holes in the back of the case, as this is liable to allow water ingress and cause damage to the back of the printed circuit board.

Site the control unit so that any conduits are routed to the BOTTOM of the case. DO NOT drill the top or sides of the case as condensation within

the conduit will run down onto the panel and cause operating problems and probable damage. We recommend the use of 20mm or 0.8 inch glands as these will match the pre-drilled holes in the bottom of the case. (PIC 16)



PIC 16

If the printed circuit board has to be removed from its case, ensure that it is handled with care and not placed on its back on any hard surfaces as this may damage the ceramic surface mount components on the rear of the printed circuit board.

The control unit lid can be temporarily secured to the case side screw positions to prevent it hanging by the cables during the setting up process. (PIC 17)



PIC 17

LOW VOLTAGE DC MOTOR WIRING

The Zap pre-terminated Motor Cable should be fitted next.

If it is preferable not to cut off any excess cable length. It may be coiled and secured with a cable tie at the motor end.

Connect the brown and blue wires to the motor terminal block which is located at the bottom right hand side of the panel. **(PIC 18)** A mistake in the wiring polarity of the motor cable will result in the door moving in the opposite direction to that initiated by pressing the OPEN or CLOSE push button and indicated by the LED motor run indicators, which are located at the top of the panel. In which case – reverse the connections of the Blue and Brown wires.

NOTE THAT ALL TERMINALS ARE PLUG-IN FOR EASE OF WIRING and that all terminal functions are labelled on the panel.



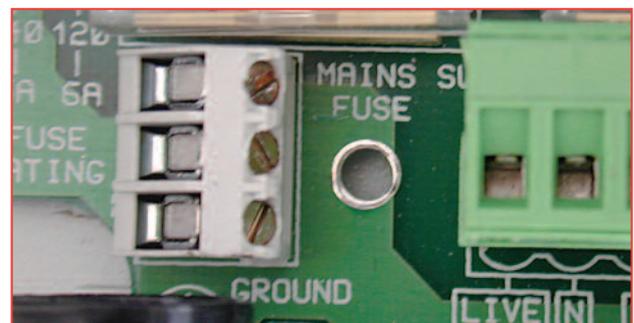
PIC 18

FITTING THE MAIN POWER SUPPLY CABLE

A Main power supply cable should be fitted next. This is not supplied with the Operator as the length will depend upon to location of the supply source. The three-core cable should be rated at 10 Amps continuous.

The Live and Neutral wires are connected to the two left-hand terminals of the GREEN Mains supply connector on the panel.

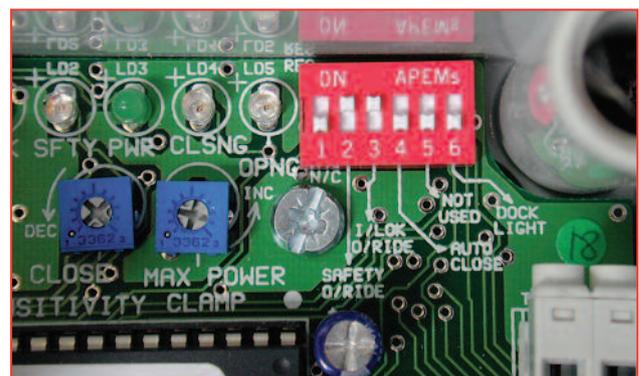
The Earth or Ground wire is connected to one of the terminals of the GROUND terminal block. **(PIC 19)**



PIC 19

If the Lighting output is to be used to operate a Dock Light or a Flood light then the lighting wires should be routed to the two right hand terminals of the GREEN supply connector. The lighting circuit wiring should be rated at 10 Amps.

If the Lighting output is to be used, then the lighting MODE switch No. 6 should be set as required. The 6 way DIP switch is located at the top right hand side of the printed circuit board panel. **(PIC 20)**



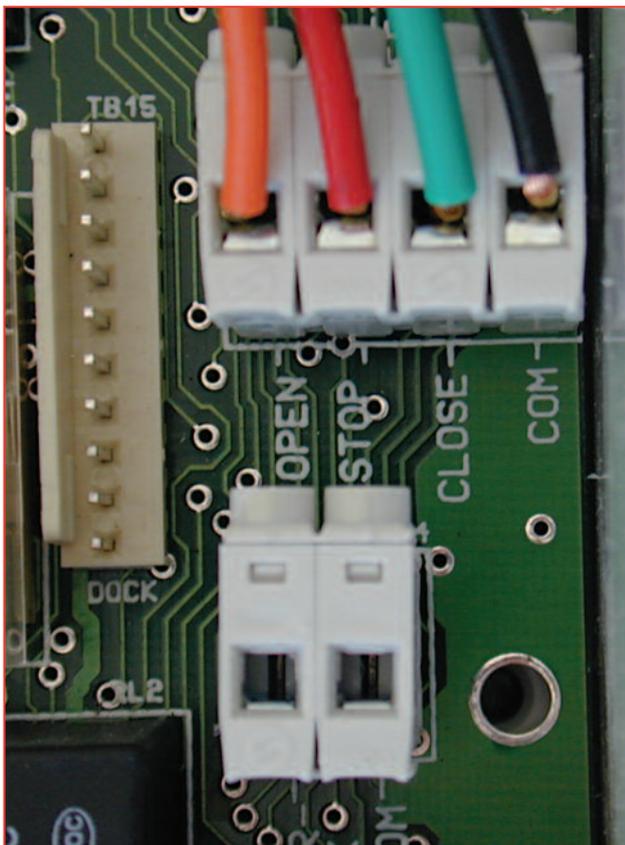
PIC 20

DIP switch No.6 should be set to the OFF position if the light is required to switch on when the door is operated and turn off three minutes from the last operation.

Switch No. 6 should be switched ON if the light is required to switch ON when the door is opened, the light will switch OFF when the door is closed.

This mode of operation is normally used for a Loading Bay Dock light.

If a Remote Push Button station is to be fitted then both the OPEN and CLOSE push buttons may be wired in Parallel with the case mounted buttons and terminated in the push button connector on the printed circuit board. **(PIC 21)**



PIC 21

The remote STOP push button should be wired to the interlock terminals and the interlock over-ride switch No. 3 should be set to the off position. A model 871 plug-in Radio Receiver Interface module may be used to terminate a remote button station for easier wiring.

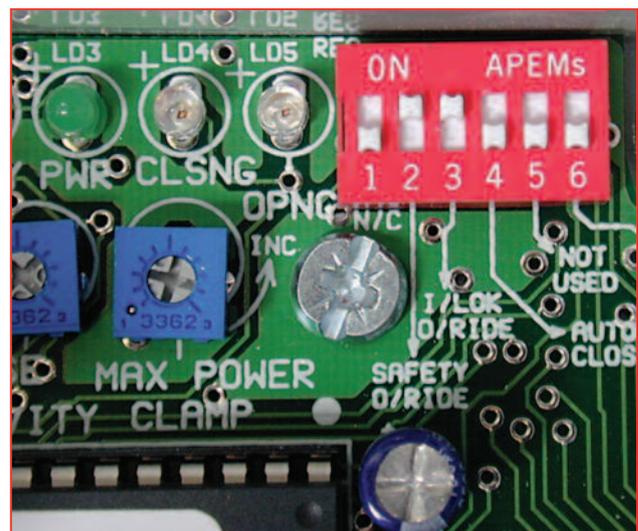
TESTING THE DOOR OPERATION

When the basic wiring is complete the door operation may be tested. Switch on the mains power and note that the power indicator LD3 is illuminated. **(PIC 22)**



PIC 22

Note the factory set positions of each of the DIP switches at the top right hand side of the panel will be: **(PIC 23)**



PIC 23

- SW1 SAFETY MODE: OFF/N/C**
- SW2 SAFETY OVER-RIDE: ON**
- SW3 INTERLOCK O/RIDE: ON**
- SW4 AUTO-CLOSE: OFF**
- SW5 NOT USED.**
- SW6 LIGHTING MODE: OFF**

Note that the 800-II Control unit provides a very soft start in both directions. The door speed will build up to maximum after a few seconds.

Providing the door is balanced correctly and the door movement is smooth the soft start in the close direction will allow the door to close smoothly without the door roll ballooning.

If a Series I Control unit is fitted it should be programmed to close in slow speed otherwise the door may balloon at the start of the close cycle. Complete the following tests before establishing if the Slow-Close function requires programming.

Note that if a single button control unit is fitted the operation of the button is as follows:

First press after power-up: **OPEN**. Then press to **STOP**, press to **CLOSE**, press to **STOP**.

If the door has completed a run in the open direction the next button press will be CLOSE.

If the door has completed a run in the close direction the next button press will be OPEN.

Release the Manual Over-Ride lever and move the door to a part open position, then re-engage the lever.

Now press the control unit **OPEN** push button then press the STOP button after a short run.

If the door moves in the open direction then the motor wiring polarity is correct.

If the door moves in the close direction, isolate the mains supply and reverse the two motor wires in the control unit terminal block.

Release the Manual Over-Ride lever and move the door back to the fully closed position, and then re-engage the lever.

If a Series I control unit is fitted you should note that if the door runs in fast speed in both directions. You **MUST** complete the following procedure to program the Control unit to run the door in slow speed in the close direction:

Press and HOLD the red program button. Watch for a sequence of flashes of the ACKNOWLEDGE LED. Release the program button after the seventh flash. A sequence of

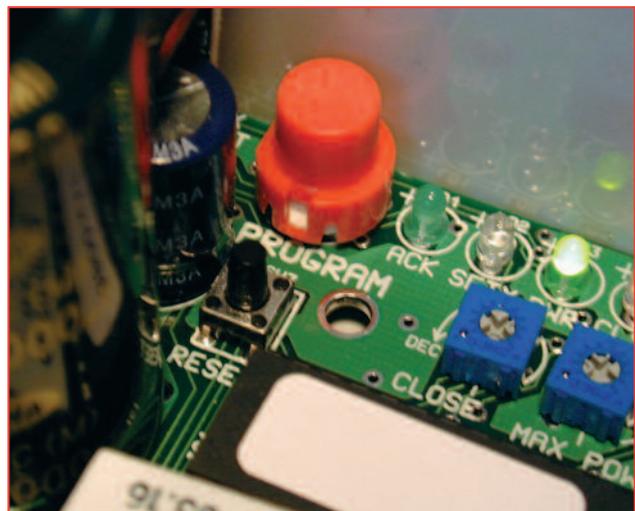
six flashes will confirm that the procedure is complete.

Repeat the following procedure if it is required to program the Control unit to run the door in *FAST* speed in the close direction (Series II only):

Press and HOLD the red program button. Watch for a sequence of flashes of the ACKNOWLEDGE LED. Release the program button after the seventh flash. Two flashes of the ACKNOWLEDGE LED will confirm that the procedure is complete.

DOOR SPEED CHANGE POINT CALIBRATION

After closing the door the microprocessor reference for the door start position should be reset either by pressing the black reset button or by isolating the mains supply for at least 10 seconds. **(PIC 24)**

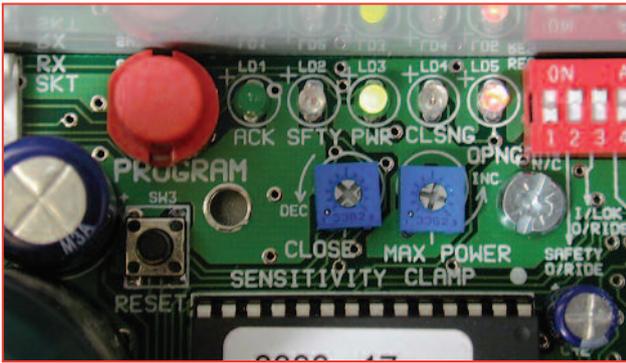


PIC 24

Now press the control unit OPEN push button. Note that the opening LED is illuminated whilst the door is opening. **(PIC 25 overleaf)**

The door will run in fast speed for a few seconds then change to slow speed and stop when it reaches its fully open position.

The microprocessor now knows the door opening height and will calibrate the speed change points



PIC 25

after the next few runs, until it is set a few seconds from each limit of door travel

Now press the CLOSE push button (or single push button).

Note that the CLOSING LED, LD4, is illuminated whilst the door is closing. **(PIC 26)**



PIC 26

After the door has stopped, press the OPEN push button (or single push button) again.

Note that after the second open and close door cycle the microprocessor continually updates and stores the door position in the controller's memory and the speed change point will be maintained within a few seconds from each limit of door travel.

If the door movement is too tight or if there is some damage to the door track then the door may stop before it reaches the limit position. If track damage or stiffness is minimal then the motor power may be increased to overcome the restriction by adjusting the MAXIMUM POWER CLAMP preset control slightly counter-clockwise. **(PIC 27)**

The adjustment direction relates to the analogy of



PIC 27

the operation of a water tap. A tap is generally turned counter-clockwise to increase the water flow. Likewise if the control is turned counter-clockwise it will allow an increase in current to flow to the motor and consequently provide extra power to move the door.

The sensitivity of the door detecting an obstruction in fast speed in the CLOSE direction may be adjusted with the CLOSE SENSITIVITY preset.

In Europe it is necessary that installers establish that the obstruction sensitivity of both the door and safety control system meets the requirements of relevant European Safety Standards, which include the control of the maximum pressure required on the bottom edge of the door, which causes the door to stop and re-open. The maximum pressure required to meet Standard: EN 60335-2-95:2001 is 600 Newtons, which equates to a pressure of 61 Kgm (135 pounds) force. The measurement for commercial applications is measured at 400 Newtons. These should be measured with specialist equipment, which includes a Load Cell and Test Meter.

The maximum pressure standards emphasise that it is the installers responsibility to understand and comply with all of the requirements.

A reasonable assessment can be made by the installer by testing the force required to cause the door to stop and re-open by obstructing the closing door in fast speed by sharply pushing a hand or shoulder against the bottom edge of the closing door, and relating the force to an object which weighs 61 Kgm or 135 pounds. **(PIC 28 overleaf)**



PIC 28

On very large heavy doors, where the maximum force may exceed 600 Newtons (61 Kgm/136 pounds) then it may be preferable to fit a sensitive safety edge device, which may be wired to the Safety terminals on the Controller. **(PIC 29)**



PIC 29

If it is required to increase the obstruction sensitivity, thus reducing the door edge pressure required to activate the control unit obstruction sensing circuit, which causes the door to stop and re-open during the close cycle, then the CLOSE SENSITIVITY adjuster should be turned further clockwise. **(PIC 30)**



PIC 30

Please note that this will also increase the possibility of the controller reacting to slight abnormalities or minor damage to the track or misalignment of track sections. This may cause fluctuations in the motor current and may be significant enough to result in

the door stopping and re-opening. It is therefore important that the smooth movement of the door is tested by releasing the manual over-ride lever and moving the door by hand in both directions.

Both preset controls are factory set to the one o'clock position. Providing the door runs smoothly by hand in both directions it is unlikely that you will need to adjust these presets.

During a build up of snow and ice for example, the door speed change point will automatically recalibrate to account for the new ground position.

If the door strikes an abnormal obstruction twice in the same position then the speed change point will recalibrate to account for the change. For example where a pallet (skid) has been left in a position obstructing the closing door. **(PIC 31)**



PIC 31

This feature also takes care of recalibration of the door position if it has been moved by hand during a power supply failure. The speed change points will automatically recalibrate with reference to the new limit of door travel positions following manual repositioning of the door.

SAFETY CIRCUIT WIRING

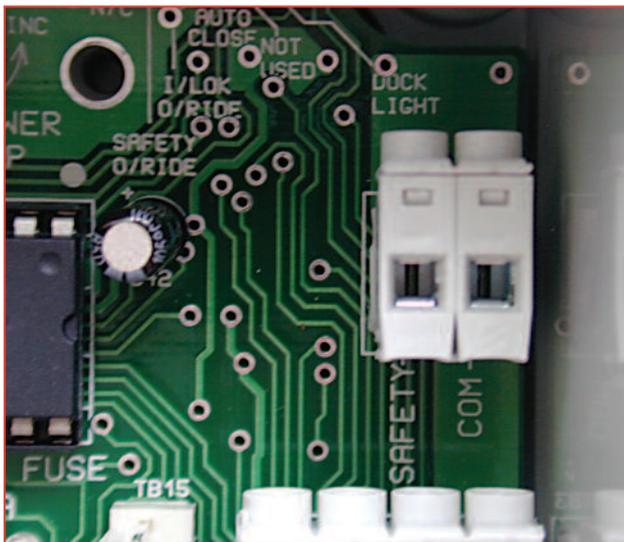
If the door is to be operated without any safety devices then the SAFETY OVER-RIDE SWITCH, DIP switch No. 2 should be set to the ON position.

However if it is required to operate the door close function in DEAD MAN or PUSH TO RUN mode then the safety over-ride switch should be set to the OFF position.

The door will then stop if the CLOSE button is released while the door is closing.

If a safety device such as a Photo-Beam (Photo-Eye) or Safety Edge is to be fitted then the SAFETY OVER-RIDE switch, DIP Switch No. 2 should be set to the OFF position. This provides a Safety STOP and RE-OPEN control of the door if the safety circuit becomes active whilst the door is closing.

If a Photo-Beam with a Normally Closed relay circuit is fitted then the relay contact wires are connected to the SAFETY terminals at the top right hand side of the panel. **(PIC 32)**



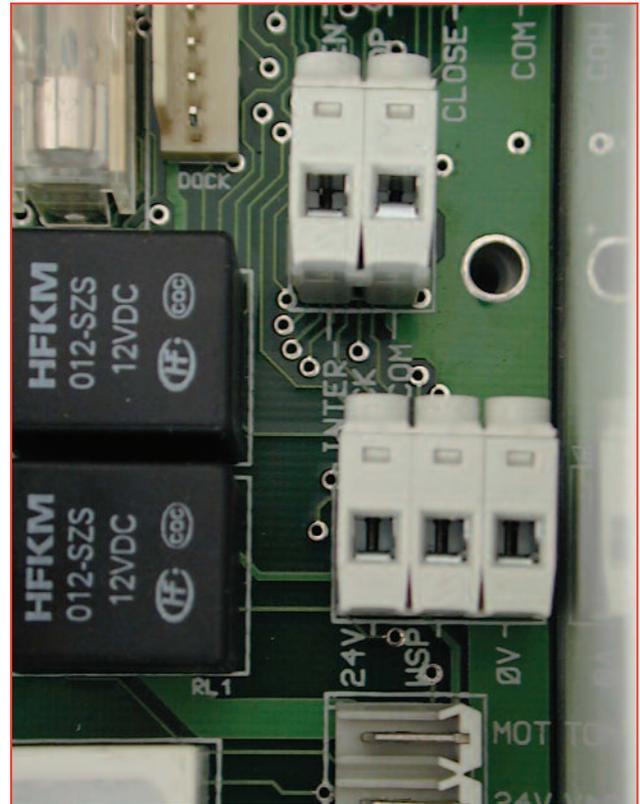
PIC 32

If two or more Photo-Beams, or any other safety devices are fitted then each switching circuit should be wired in series.

A 24-volt Photo-Beam or other accessory may be powered from the 24-volt DC accessory supply terminals at the lower right hand side of the panel. The 24-volt accessory supply may be used to power other accessories such as a Magnetic Loop Detector, Radar units or an accessory radio receiver (non Zap). **(PIC 33)**

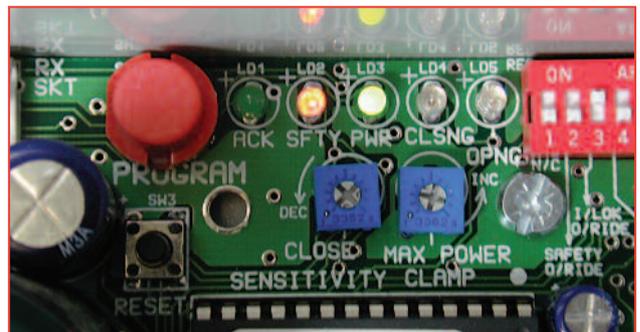
The range of Zap Photo-Beam units has been designed for universal supply operation. They can be powered from 12 to 240 volts DC or 24 to 240 volts A/C.

Wiring diagrams for various types of photo-beam units are shown on pages **18** to **20**.



PIC 33

Each time the Safety circuit is activated LED LD2 will illuminate. This is useful when testing the operation of the photo-beam or other safety device without running the door. **(PIC 34)**



PIC 34

In Europe it is necessary to arrange for the safety circuit to be monitored for both an open circuit and a short circuit in which case the circuit must include an 8.2 K resistor at the furthest point in the external circuit.

DIP Switch No. 1 should be set to ON which is the position marked RES for resistive.

When the circuit is to be operated as Normally Closed then DIP switch No. 1 should be set to OFF. This position is marked N/C on the panel for Normally Closed.

If a contact strip Safety Edge with an 8K2 terminating resistor is fitted then DIP switch No. 1 should be set to ON, which is marked RES for Resistive. If a Normally Closed Safety edge is fitted then DIP switch No. 1 should be set to OFF, which is marked N/C.

If a Photo-Beam (Photo-Eye) is to be fitted together with a Safety Edge then the two circuits should be wired in series (daisy chained).

If the safety circuit is interrupted whilst the door is operating with the Auto-Close timer DIP switch No. 4 set to ON then the timer will reset during each interruption of the safety circuit, whilst the door is open.

INTERLOCK CIRCUIT WIRING

A pair of terminals is provided to enable a pass door switch or a key switch to be interlocked to the control unit, to prevent the main door opening if the interlock terminals are open circuit.

An Inter-Lock Over-ride switch, DIP switch No. 3, is provided if the interlock circuit is not used.

A Slide Lock switch may be fitted and wired to the interlock terminals. However this is not essential as the Control unit will detect the obstruction and stop the door if the slide lock is left in the locked position.

AUTO-OPEN ACCESSORIES

Where it is required to automatically open the door by the operation of an accessory device such as a Magnetic Loop vehicle detector, a Radar unit, a Photo-Beam unit or other remote switch then the Normally Open switching circuit of the device should be connected in parallel with the OPEN push button wiring at the panel terminal block.

One wire should be connected to the OPEN terminal together with the OPEN push button wire from the case lid button. The other wire should be connected to the COMMON terminal with the existing common wire.

Alternatively a Zap model 871 plug-in module can be fitted. This incorporates separate open, stop, close and cycle terminals for direct wiring of accessories such as a remote push button station, magnetic loop detector radar units and accessory radio receivers etc.

ACCESSORY RADIO RECEIVER WIRING

Wiring diagrams for various accessory radio receivers are shown on pages **18** to **20**.

PROGRAMMING

The following functions can be programmed using the Program Button, which is located at the top of the panel. **(PIC 35)**



PIC 35

When the program button is pressed and held a sequence of flashes of the Acknowledge LED follows at 4-second intervals. If the Beeper is fitted then the Beeper sounds with the flashes of the LED.

The first flash or beep indicates the remote control transmitter program mode.

The second flash or beep indicates the Auto-Close timer program mode.

The third flash or beep indicates the Close Delay program mode, which allows the optional Warning Speaker to sound before the door starts to close.

The fourth flash or beep indicates the transmitter code memory erasure mode.

The fifth flash or beep indicates the door part-open program mode

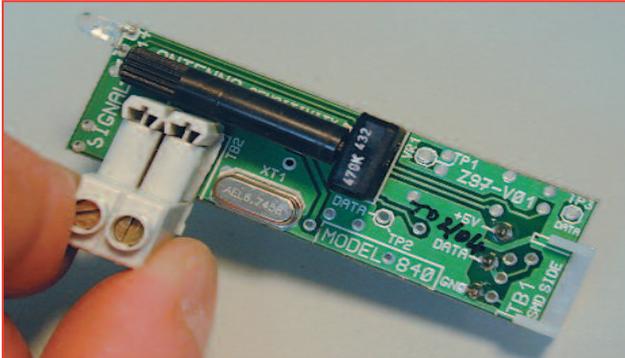
The program button should be released after the appropriate flash or beep to enter the required program mode.

All of the programmed functions are stored in a non-volatile memory, which is retained during a power interruption.

A quick reference programming chart can be found on page **21**.

TRANSMITTER CODE PROGRAMMING

Note: a Zap radio receiver model 840 should be fitted.



To program a Zap transmitter code into memory:

First press and hold the required transmitter button. Then press and hold the Program button.

Release the program button after the first LED flash or beep.

Two flashes or beeps confirm that the code has been stored into memory.

Now release the transmitter button.

Three flashes or beeps indicate that no code data was present in which case repeat the programming sequence.

Up to 60 transmitter codes can be stored in memory. In which case repeat the programming sequence for each of the new transmitters. (Each transmitter has a different operating code)

To erase all transmitter codes: Press and hold the Program button and release it after the FOURTH flash or beep.

Two flashes or beeps acknowledge that all of the transmitter codes have been erased.

AUTO-CLOSE TIMER PROGRAMMING

The factory set Auto-Close timer delay is 15 seconds.

In order to confirm the operation of the Auto-Close timer first set DIP switch No. 4 to ON. Then press the OPEN push button. The door will open

and re-close after the time delay.

To change the time delay first ensure that DIP switch No. 4 is set to the ON position and that the door is fully closed.

Now press and hold the program button. Release the button after the SECOND flash or beep.

Next press the OPEN push button.

After the door has fully opened and after the required delay press the CLOSE push button. This new delay is now stored into the memory and will be retained during any power interruptions.

A sequence of 6 flashes and beeps follow to prompt you to decide if you want the door to auto-close regardless of the door reopening after striking an obstruction.

It is preferable that the door should reopen and stay open following an obstruction strike. However it may be required for security reasons, when used as a car wash door for example, that the door should auto-close after reopening after hitting a large build-up of snow and ice in winter, in which case it will make two attempts to close onto the ice. On the third run it will then stop on the ice.

If you require the door to Auto-Close regardless of obstructions then press the close button a second time during the 6 flashes and beeps.

If the CLOSE button is not pressed during the flashes and beeps the controller will default to stay open after an obstruction-reopen sequence.

If it is required to change the programmed delay then repeat the programming sequence.

PART OPEN PROGRAMMING

For high doors, there may be a requirement to only open the door to a pre-determined height.

N.B. Before programming the part open position, the installation and initial calibration of the door must be completed and the door should be cycled at least 5 times.

To program this height, start with the door fully closed. Press and hold the program button for five flash (ACK LED)/beep prompts. Release the Program button and then press the open button; the door will now start opening. At the required open position press Stop; two flash/beep prompts will confirm successful programming. The door will now open to this programmed position.

If it is required to fully open the door, press the Open button with the door at the part open position and the door will open fully.

To erase the part open position, press and hold the Program button until six flash/beep prompts are heard. Release the Program button and two flash/beep prompts will confirm erasure.

CLOSE SPEED PROGRAMMING

Press and hold the program button and wait for the seventh flash of the acknowledge LED or beep. Release the program button, the LED will flash six times to confirm the speed change. The door will now close at slow speed. If the process is repeated the door will revert to closing at fast speed. **Series I controller must close in slow speed to avoid the door ballooning at the start of the close cycle.**

PROGRAMMING USING THE CASE LID BUTTONS

A Door OPERATIONS COUNTER is incorporated. The number of door operations can be counted more easily by fitting the plug-in Beeper module, which sounds in conjunction with flashes of the Acknowledge LED indicator.

The Door OPERATIONS counter may be used at any time by pressing and holding both the STOP push button and the OPEN push button and releasing them after a beep is heard.

The beeper will then indicate the total door operations since the door was installed by sounding long beeps for 1000's of operations and short beeps for 100's of operations.

Two long beeps and three short beeps for example indicate that the door has completed 2300 operations. If there is no response after releasing

the buttons the door has completed less than 100 operations.

A SERVICE DUE REMINDER is incorporated in the control unit. This prompts the customer to call the installer when the door requires servicing. A beeper model 850 should be installed.

The SERVICE DUE REMINDER operates after 2500 door operations, which equates to a six month service period for an average door operating ten times each day. After the door has completed 2500 operations the SERVICE DUE REMINDER becomes active and delays the door close cycle by ten seconds during which the beeper will sound ten times.

The SERVICE DUE REMINDER is NOT enabled during manufacture. It may easily be enabled during the installation by pressing and holding the STOP push button. Then press and hold the OPEN button.

Release the buttons after the SECOND beep. Two beeps confirm that the SERVICE DUE REMINDER is enabled.

The SERVICE DUE REMINDER can be reset during the service visit by repeating the enable sequence.

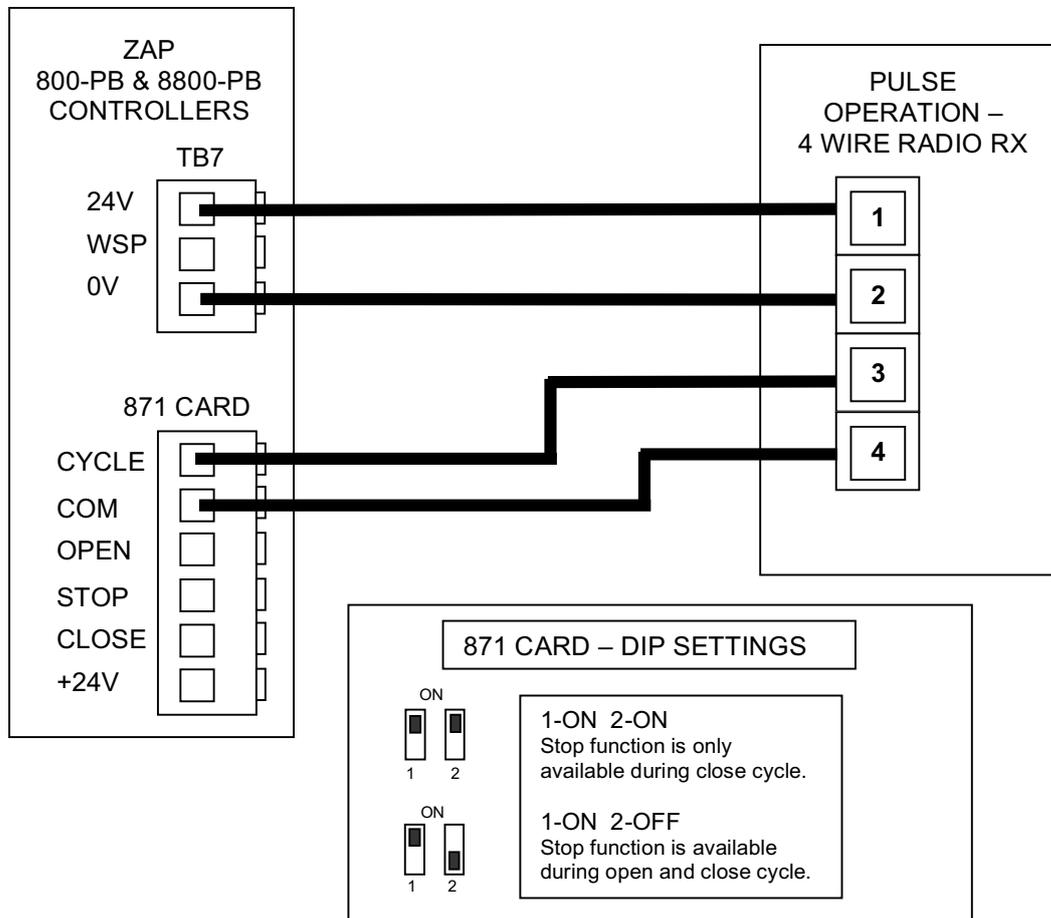
If it is required to disable the SERVICE DUE REMINDER then press and hold both the STOP and OPEN buttons. Release them after the third flash and beep. Two flashes or beeps confirm the SERVICE DUE REMINDER is disabled.

AUTO-CLOSE STAY OPEN PROGRAMMING

If the Auto-Close DIP switch No. 4 is set to the ON position to provide Auto-Close operation of the door and it is required to disable the auto-close function for example when it is required to hold the door open on a warm summers day, then the Auto-Close can be temporarily disabled by opening the door and waiting for the door to stop in the open position. Then press and hold the STOP button, then press and hold the CLOSE button. Release the buttons after the beep. (The analogy being - STOP CLOSING).

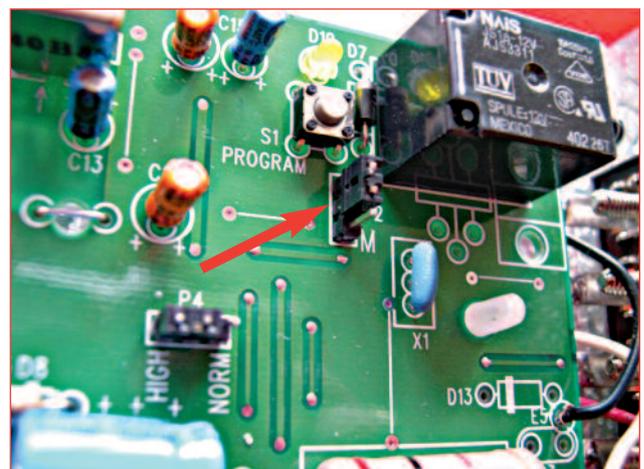
The Auto-Close function will operate normally after the door is next closed using the close push button.

ZAP 800-PB/8800-PB CONTROLLER WIRING – PULSE OPERATION WITH LIFT MASTER 412 HM

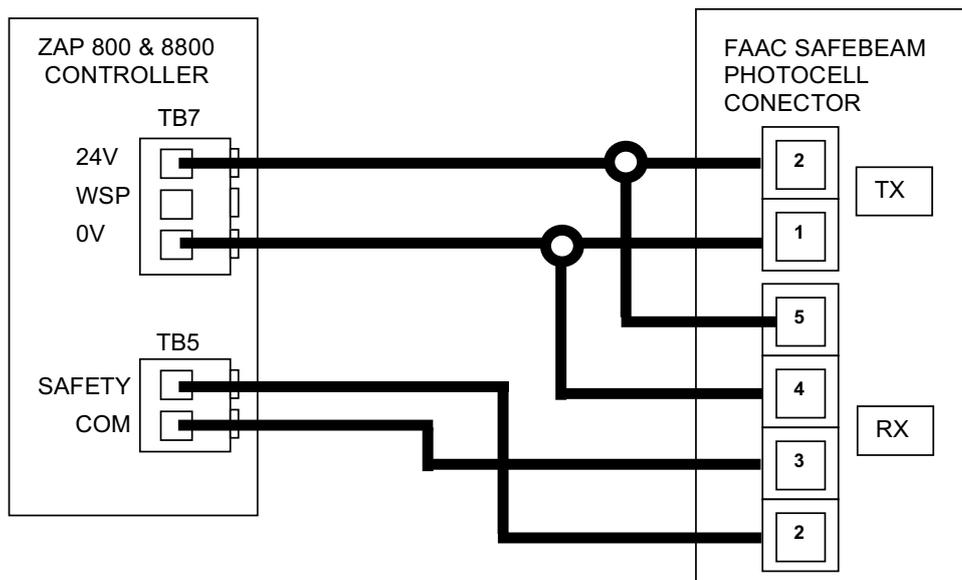
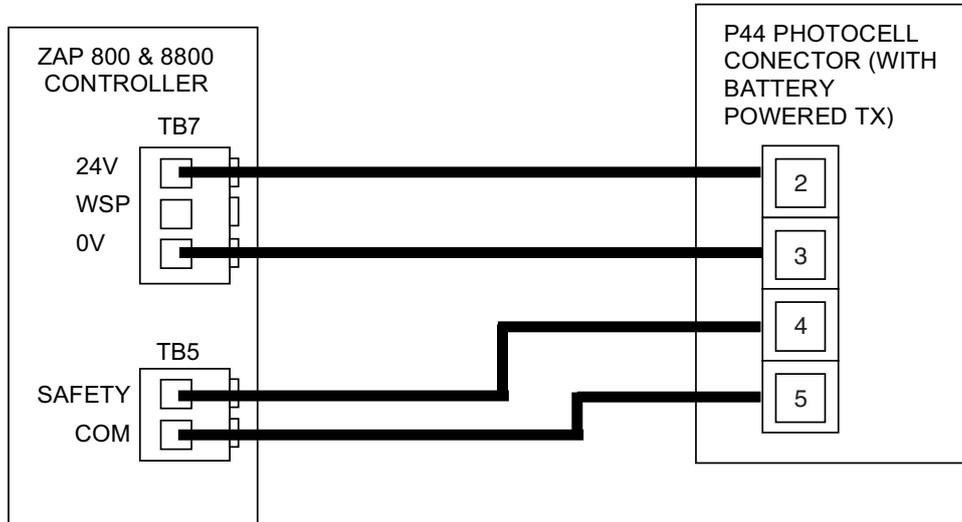
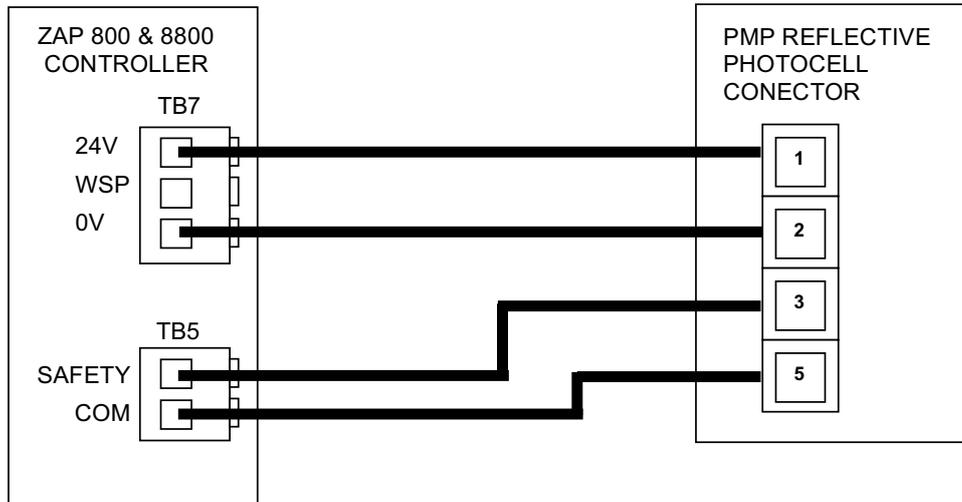


Note: To use the LIFTMASTER 412HM Gate Receiver with the ZAP 800-PB or 8800-PB Controller you must change the Receiver from Momentary operation to Constant operation. The jumper linking 2 of the 3 Output duration terminals should be transferred to the 2 terminals nearest the outer edge of the panel, which are marked "C" for CONSTANT operation.

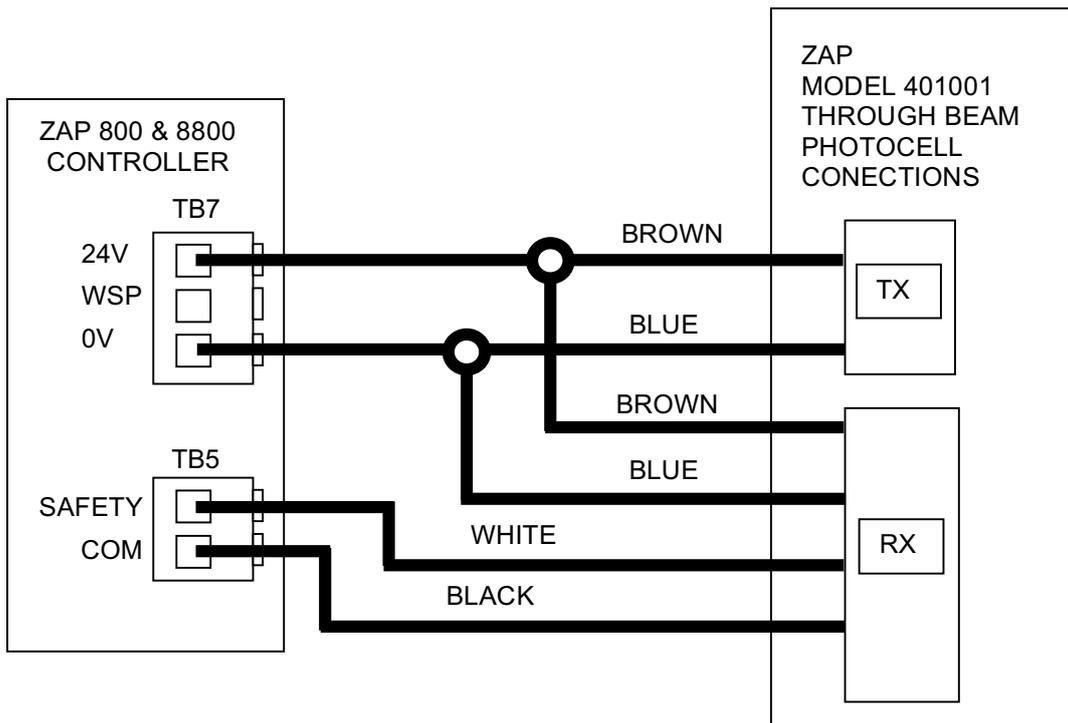
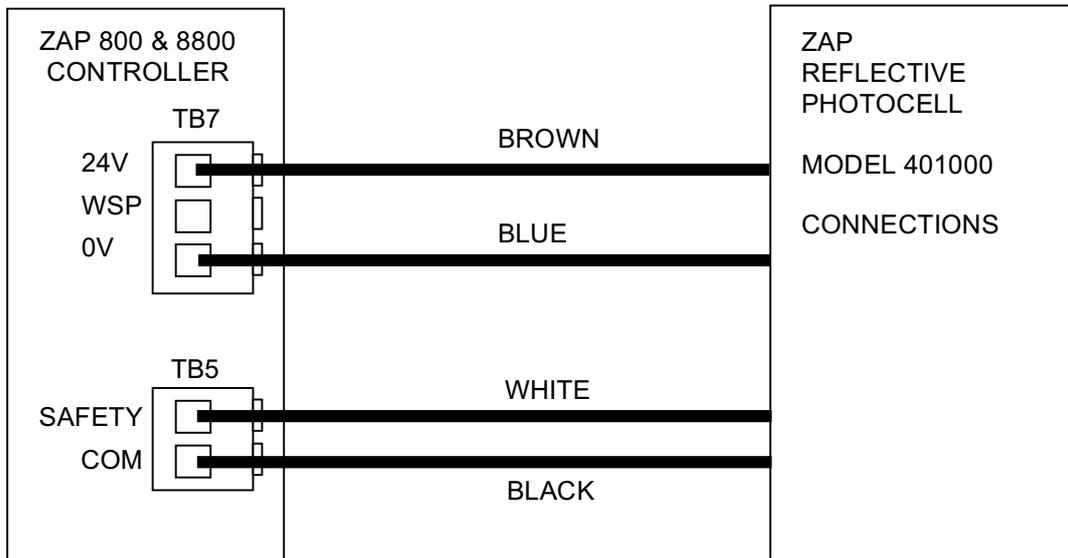
Note: if the Radio Receiver does not operate properly then switch the connections on terminal TB7 or refer to the receiver manual for further directions on connections to a DC power supply.



ZAP 800-PB/800-G/8800-PB SAFETY WIRING CONNECTIONS



ZAP 800-PB/800-G/8800-PB SAFETY WIRING CONNECTIONS



FAULT FINDING GUIDE

| FAULT | REASON & REMEDY |
|---|---|
| 1. The Opening or Closing LED remains Illuminated After the door has stopped. | <p>The V-Belt tension is too loose and the belt is slipping over the motor pulley.</p> <p>Increase the belt tension by releasing the Manual Over-Ride lever and screw the adjuster in a few turns.</p> |
| 2. The door stops just after it has started in the open direction. | <p>A. The door movement is stiff due to the door running tight against the door frame in the fully closed position. In which case adjust the position of the roller wheel supports to ease the pressure of the door against the frame.</p> <p>B. The door is badly out of balance. In which case re-tension the counterbalance springs.</p> <p>C. The door is near the maximum weight for the operator and the Maximum Motor Current adjuster is set too low. In which case turn the adjuster a further 20 degrees counter-clockwise.</p> |
| 3. The closing door stops and reopens before it contacts the ground. | <p>A. There is an abnormality in the track, which is causing the roller wheels to jump. This may be due to a misalignment of track sections or a deformity of a damaged section of track. In which case correct the track problem and ensure the door will run smoothly by hand movement with the over-ride lever disengaged.</p> <p>B. The Close Sensitivity adjuster is set too fine. In which case turn the adjuster counter-clockwise by a further 20 degrees.</p> |
| 4. The door runs in slow speed for an extended period of time. | <p>A. The V-Belt is slipping. In which case adjust the belt tension described in 1. above. Then run the door fully open and closed a few times to enable the microprocessor to recalibrate the door speed change points.</p> |

PROGRAMMING GUIDE – USING THE PROGRAM BUTTON

Press and hold the program button and release after the relative bleep or flash of the acknowledge L.E.D.

| | | |
|--|---|-----------------------|
| First Beep | Program new transmitter | See page 16 |
| Second Beep | Program an auto-close timer programming | See page 16 |
| Third Beep | Program a close delay for warning device | Contact us |
| Fourth Beep | Erase all transmitter codes from memory | See page 16 |
| Fifth Beep | Program a part-open door position | See page 16-17 |
| Sixth Beep | Erase part-open door position | See page 17 |
| To program using the case lid buttons | | See page 17 |