

# ***Tiger Automatic Traffic Barrier, Control Panel***

## **FEATURES:**

1. This control panel operates a Single or 3-phase motor, from a relevant supply. A neutral wire is not essential for 3 phase motor operation.
2. The limit switches are an integral part of the barrier and wired during factory assembly.
3. The motor current is monitored electronically, and the OVERLOAD setting is adjustable from 1 to 10 amps. The motor thermal trip may be wired to the INTERLOCK input terminals on the control panel. LED indicators are provided, which indicate both PEAK motor current during motor start, and to indicate an OVERLOAD condition. The overload self reset time is 8 minutes. Isolating the power supply for 5 seconds may manually reset the circuit.
4. The motor contactor terminals are tested automatically to ensure that there are no contactor faults. If a fault occurs, the circuit will become none-operational, and the FAULT indicator LED will illuminate.
5. PLUG-IN terminal blocks are provided for ease of installation. Terminal designations are labelled on the panel.
6. Separate terminal blocks are provided for the following:
  - A. SINGLE/THREE PHASE SUPPLY
  - B. SINGLE / THREE PHASE MOTOR
  - C. LIGHTING OUTPUT (2KW)
  - D. LIMIT SWITCHES
  - E. PUSH BUTTONS (OPEN (N/O)-STOP (N/O-CLOSE (N/O))
  - F. INTERLOCK (Normally closed)
  - G. SAFETY (Either N/C or RESISTIVE) terminated selectable by panel switch. A switch is also provided for SAFETY OVER-RIDE.
  - H. CYCLE SWITCH. This provides remote single button operation of the motor: Push to open, push to stop, push to close.
  - I. Remote PROGRAMME switch
  - J. LOCK CONTROL
  - K. Warning speaker +24VDC and common for accessories, photoelectric cells etc. etc.
  - L. Traffic light indicators
7. PLUG-IN connector headers are provided for the following:
  - A. 2 Induction loop vehicle detector modules.
  - B. MAINS SIGNALLING Receiver-Control
  - C. Hand Held FIELD PROGRAMMER.
8. Separate panel fuses are provided for the following:
  - LINE1. 10 amp
  - LINE 2. 10 amp
  - LINE 3. 10 amp
  - LIGHTING. 6 amp
  - 24V DC supply. 2 amp
  - PANEL POWER SUPPLY: 120 mA.
9. Panel switches are provided for the following:
  - PROGRAMME BUTTON
  - AUTO-CLOSE
  - REMOTE CONTROL SAFETY
  - SAFETY OVER-RIDE
  - SAFETY SENSE: N/C or RESISTIVE
  - DEAD MAN: for CLOSE
  - DEAD MAN: for OPEN
  - RESET MICROPROCESSOR
10. Indicators are provided for the following:
  - MOTOR CURRENT PEAK
  - MOTOR OVERLOAD
  - CONTACTOR FAULT
  - SAFETY ACTIVE
  - RADIO SIGNAL
  - SAFETY SHORT CIRCUIT
  - SAFETY OPEN CIRCUIT
  - OPEN LIMIT SWITCH OPERATED
  - BARRIER OPENING
  - BARRIER CLOSING
  - CLOSED LIMIT SWITCH OPERATED
11. Screwdriver adjusters are provided for:
  - MOTOR CURRENT: 1 - 10 AMPS.
  - DOOR CLOSE DELAY: 0-10 SECS. - After WARNING SPEAKER START.
12. The panel program button, or the field programmer may be used to program the following:
  - MOTOR OPEN RUN TIME
  - MOTOR CLOSE RUN TIME
  - SAFETY STOP & RETURN POINT
  - AUTO-RECLOSETIME
  - TRANSMITTER CODESA panel mounted BLEEPER is provided to prompt the operation sequence of the panel's program button.
13. Standard run times are factory programmed, but are easily changed as required.
14. The FIELD PROGRAMMER allows the customers standard settings to be programmed in one simple operation, or changed as necessary.
15. The control unit incorporates a memory for up to 60 transmitter codes. Codes may be erased if required.
16. A BARRIER CLOSE START DELAY adjuster is provided, which allows the adjustment of a start delay in the closing cycle, where a WARNING SPEAKER is fitted in conjunction with the main control unit. The Control unit initiates the WARNING at the start of the closing cycle; the barrier then starts to close after the preset delay, which is adjustable from 0 to 10 seconds.
17. The SAFETY STOP AND RETURN position during the barrier close run time may be programmed such that if the safety edge is activated by an obstruction before making contact with the ground, it will stop and re-open. This decision point should be within 1 - 2 feet of the fully closed position. If the door/barrier/gate is activated by an obstruction after this point the door will stop and remain stationary.

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18. A selector switch is provided on the panel, to enable the SAFETY circuit to be either set to monitor a NORMALLY CLOSED circuit, or a RESISTIVE terminated circuit. In which case it will monitor for both OPEN and SHORT CIRCUIT.
19. Should the safety circuit fail, the button control of the CLOSE function is automatically changed to PUSH-TO-RUN (DEAD MAN).
20. Use of the SAFETY circuit may be over-riden by setting the SAFETY OVER-RIDE Switch to ON.
21. A traffic light control output plug is provided. The outputs are OPEN COLLECTOR transistors for the following functions:  
 OPEN LIMIT operated.  
 DOOR OPENING  
 DOOR CLOSING  
 CLOSED LIMIT operated  
 Panel mounted LED's are provided to indicate the above functions.

## **Wiring**

### **Incoming Supply.**

Ensure the mains power supply available is complimentary to the type of barrier ordered.

The power supply terminals include a provision for either single phase or three phase.

A neutral wire is required with a single-phase supply. A neutral wire is also required using three phase if the lighting output or mains signaling receiver module is utilised.

If a portable generator is used ensure that the output does not exceed 250 V ac, for single phase, and 440 V ac for three phase.

A transformer power supply is incorporated in the control unit. The fuse connection is factory fitted for three phase 415 V. If a single-phase supply is used, then the transformer supply fuse should be removed from three-phase holder, and refitted into the single-phase fuse holder.

If the radio remote control receiver is used then caution should be used during installation to ensure all cables are kept well clear of the area surrounding the antenna.

The barrier will be supplied complete with limit switch, kill switch and motor wiring pre connected. Mains incoming supply to be connected as follows:

THREE PHASE (as marked)

<b>Incoming Supply</b>	<b>Panel</b>
Earth	Earth
Neutral	Neutral
Live 1	Live 1
Live 2	Live 2
Live 3	Live 3

Single Phase

<b>Incoming Supply</b>	<b>Panel</b>
Earth	Earth
Neutral	Neutral
Live	Live 1
Live	Live 2
Neutral	Live 3

When using a three-phase supply and the motor runs in an opposite direction, reverse 2 of the incoming live terminals.

Motor Terminals are as follows:

<b>Panel</b>	<b>Motor</b>
Earth	Earth
Neutral	Not Connected
U.	U.
V.	V.
W.	W.

THREE PHASE:

<b>Panel</b>	<b>Motor</b>
Earth	Earth
Neutral	Field 1A
U.	Field 2B
V.	Field 1A
W.	Field 2B

Single Phase:

### **Remote Push Buttons**

A remote push button station (open - stop - close) can be connected to these terminals noting that open and close buttons are normally open & stop button is normally closed (all common to the common terminal).

### **Interlock**

An interlock can be connected to these terminals to isolate the barrier when activated (i.e. when 2 barriers are used together to create an inspection area). If an interlock is not used, these terminals must be linked out.

### **Safety**

If a safety device is used then switch the override safety switch on the panel to the safety active position. (safety switch 2 - off).

If the safety device has a resistive termination (8K2 ohms) then switch the switch to safety sense switch on the panel to res.

If the safety device has a normally closed circuit, then switch the safety sense switch to N/C.

If no safety device is used (excluding induction loops) then switch the safety override switch on.

### **Cycle switch**

A provision is made for a remote cycle switch if required, which enables the controller to be operated by a single push button, to operate push to open, push to close, push to stop. The cycle switch is normally open contacts.

### **Remote programme switch**

The remote program switch performs the same function as the panel mounted program push button. See program button for further information.

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## **24v DC supply**

A 24 v DC supply is available for powering standard accessories such as xenon warning lights and pedestrian safety photocells. Nominal current 120m.a., protection fuse 150 m.a.

## **Automatic Lock Control**

Output terminals are provided to energize a boom mounted lock complete with in-built delay. This will unlock prior to motor start up and lock only after the motor has stopped running. Often used in conjunction with the interlock terminals to ensure the lock is clear before boom movement.

## **Traffic Light Controller**

Additional relays can be connected to these terminals to indicate boom position etc. These are provided open collector connections that are also duplicated by adjacent LED's.

## **Fuses**

Panel mounted fuses are provided for protection of the following circuits:

<b>Circuit</b>	<b>Fuse Rating</b>
Live 1	10 amp
Live 2	10 amp
Live 3	10 amp
1 Phase Transformer *	125 m.a.
3 Phase transformer *	125 m.a.
Lighting	6 amp
24 v. dc	150 m.a.

\* = fit one fuse only.

## **INITIAL SETTINGS**

All settings will be factory pre-set to suit the barrier system ordered. Adjustments can be made as follows:

### **Motor Current Trip Setting**

An electronic control of the motor current is provided. A screwdriver adjuster facilitates the adjustment of maximum motor current. The adjustment calibration shows actual motor current. The adjustment should be set slightly higher than the normal motor normal running current (e.g. if the motor running current is 3 amps then the adjuster should be set to 10 - 20% higher setting of 3.5 - 4.0 amps.

Two LED indicators show Motor peak current during starting, and motor overload, which if sustained for more than 1 second will cause the current to trip, and the controller will become inoperable for 8 minutes. This (motor cool down) delay may be shortened by removal of the mains power supply for 10 seconds.

## **Dead Man Operation**

If a remote push button station is connected then the open and close push buttons will operate momentary, unless the dead man panel switches are set for dead man. Separate switches are provided for open and close functions.

If a safety circuit is employed and the safety over ride switch is off, then the close push button will automatically change to dead man operation, only if the safety circuit should fail.

## **Auto Close**

If it is required that the barrier should automatically close after a pre-set time period, then the auto close switch should be set to on.

The auto close time delay can be easily adjusted if required, see programming section.

## **Initial Testing**

Prior to applying power to the barrier it is most important to ensure the transformer supply fuse is inserted into the correct fuse holder, relative to the power supply to be used: single phase 240 volts or 3 phase 415 volts.

Ensure the motor trip level is adjusted as described above and that all switch settings are as required.

Switch on the power supply, and check that one or both of the green safety LED's are illuminated.

NOTE: All terminals other than the power supply input terminals, motor terminals, lighting output terminals and mains signalling receiver module are all low voltage (5 - 24 volts) and are safe to touch. All switches are low voltage.

## **Safety Circuit Initial Test**

If a safety device is connected, then check that the safety over ride switches is set to the correct positions and that the safety over ride switch is off.

Activate the safety device noting that the safety LED illuminates (also one of the green safety circuit LED's will operate). If no safety device is connected, then set the safety over ride switch on.

## **Limit Switch Test**

Observing the LED indicators may carry out a simple test of the limit switches. With the boom positioned mid point (i.e. no limit switches activated) neither LED will illuminate. If the open limit switch is activated (by hand) the open limit LED will illuminate. The same theory can be applied to the close limit switch.

## **Kill Switch Test**

If the kill switch is activated (by inserting the manual hand crank) both the open and close limit switch LED's will illuminate.

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## **Motor Control**

Using the panel mounted program button, or remote button station facilitates full control of the motor.

The programme button operation is as follows:  
Momentary press = Motor runs in first direction.  
Momentary press = motor stop.  
Momentary press = Motor runs in reverse direction.  
Momentary press = Motor stop.

Check that the motor stops when the relative limit switch operates together with the limit switch indicator.

Check that the motor direction is consistent with the LED direction indicator. If the motor direction is reverse to the indicator direction than change the motor connections as described under the relevant paragraph covering the motor type.

Note. The motor peak current LED illuminates briefly during motor start. This indicates the motor start at peak current, which is in the order of 6 times the normal running current. If the peak LED remains lit for more than 1 second then the electronic overload may trip, as indicated by the illumination of the overload LED. In which case re-adjust the trip current slightly higher, and isolate the mains supply for 10 seconds to reset the trip current circuit.

## **Programming**

All the programming functions may be carried out using the programme button, remote programme button terminals or field programmer, a bleeper prompts all programming functions.  
A press and release of the programme button results in control of the motor as described above.

Access to each program function is facilitated by pressing and holding the program button as follows:

Press and hold, after 5 seconds (bleep 1) = enter transmitter code into memory.  
After another 5 seconds (bleep 2) = program auto close of the barrier.  
After another 5 seconds (bleep 3) = program open run time period.  
After another 5 seconds (bleep 4) = program close run time period.  
After another 5 seconds (bleep 5) = program safety stop and return time.

To enter each function the program button is to be released after the relative bleep.

The programming functions should be carried out after setting the limit switches, preferably in the above order:

If a remote control transmitter is used with the barrier then first check that the transmitter code has been programmed into the control unit memory by pressing button No. 1 on the transmitter for at least 1 second.

This operation should cause the barrier to open, the barrier can be stopped (or reversed) by pressing button No. 1 again. If the barrier responded as described above then the transmitter code has been pre-programmed into the memory.

If the barrier did not respond then the transmitter code may be programmed into the memory by completing the following procedure:

## **Transmitter Code Programme Procedure**

Press and hold the program button and simultaneously hold down the required button on the transmitter. After 5 seconds the bleeper will emit a single bleep. Releases the program button but maintain the transmitter button, the bleeper will now emit a double bleep to acknowledge transmitter code, release the transmitter button. Test operation of the barrier as described above.

## **Transmitter Code Erasure Procedure**

If it is necessary to erase transmitter codes from the memory, or inhibit radio remote control operation all transmitter codes can be erased as follows:

Press and hold reset button (at the top of the panel), then press and hold the program button, then release the reset button (but hold the program button) after 5 seconds the bleeper will emit a double bleep thus acknowledging erasure of all transmitter codes. New codes are to be re-entered (if required) as detailed above.

## **Open Run Time Programme Procedure**

Ensure the barrier is in the closed position. Press and hold the program button, after the third bleep release the program button then press the open push button and allow the barrier to open fully. When the barrier reaches its fully open position a single press of the program button is required. The bleeper will emit a double bleep thus acknowledging new open run time.

## **Close Run Time Programme Procedure**

Ensure the barrier is in the open position. Press and hold the programme button, after the fourth bleep release the programme button then press the close push button and allow the barrier to close fully. When the barrier reaches its fully closed position a single press of the programme button is required. The bleeper will emit a double bleep thus acknowledging new close run time.

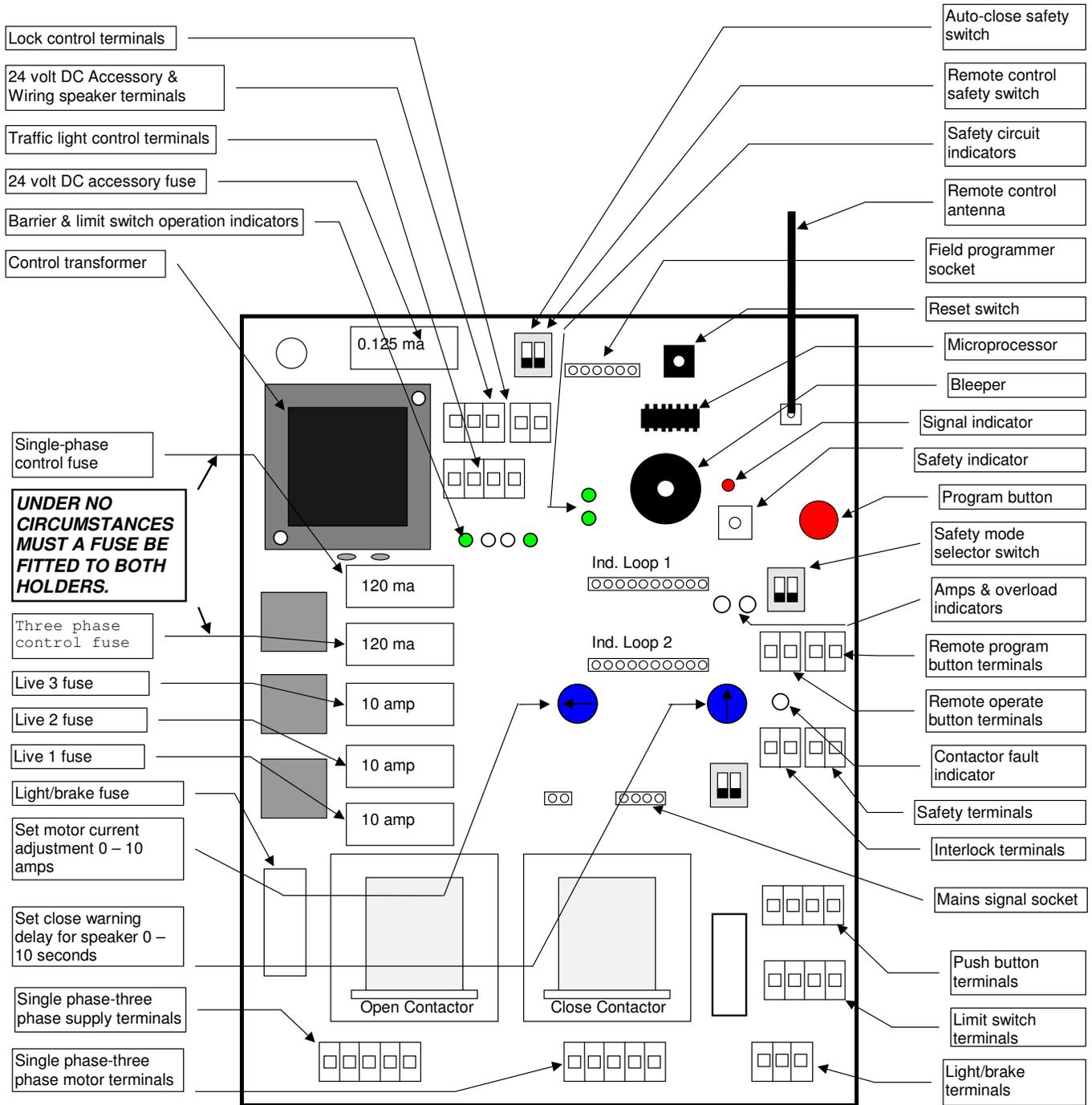
## **Auto Close Time Programme Procedure**

Ensure the barrier is in the closed position. Press and hold the programme button, after the second bleep release the programme button then press the open push button and allow the barrier to open fully. After the time period has elapsed that the barrier is required to remain open, a single press of the programme button is required. The bleeper will emit a double bleep, thus acknowledging the auto close time is set and the barrier will close.

## **Safety Stop and Return Time**

This feature is disabled due to safety regulations.

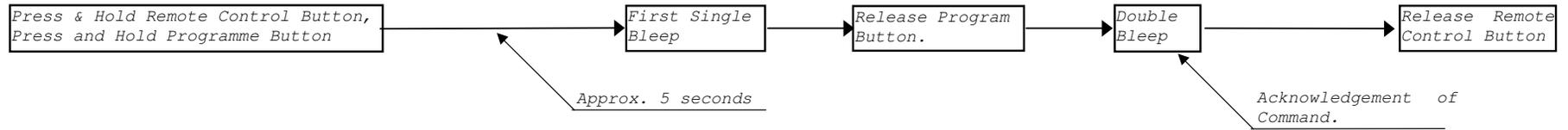
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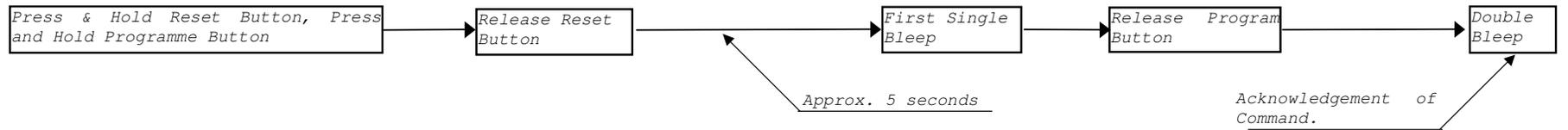
NOTE For single-phase operation link L1 to L2 and Neutral to L3

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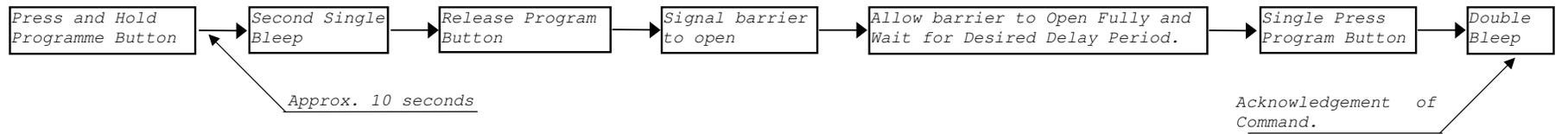
## Transmitter Code Programme Procedure.



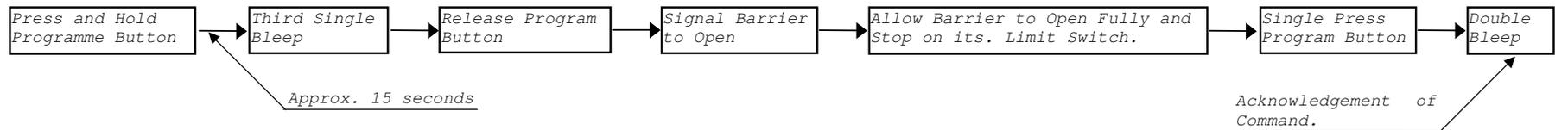
## Transmitter Code Erasure Procedure.



## Auto Time Close Programme Procedure (boom to be in the closed position).



## Open Run Time Programme Procedure (boom to be in the closed position).



## Close Run Time Programme Procedure (boom to be in the open position).

