INSTRUCTION MANUAL

# P750 Sliding Gate Motor
# P550 Sliding Gate Motor

## Version –V5.0

## IMPORTANT SAFETY WARNING

⚠ATTENTION To prevent electrical shock, disconnect from power source before installing or service

⚠ATTENTION Electricity and power motors associated accessories could be fatal or at least cause seriously injury. *All main voltage wiring must be installed by a licensed electrician.*

⚠ ATTENTION Additional safety device MUST be fitted such as Photo Electric Beam, Loop Detectors.

⚠ ATTENTION Before do the manual release, the mains power switch must be off even there is no power.

⚠ ATTENTION Before power on, the manual release MUST engaged

⚠ ATTENTION Gate opened stopper and closed gate stopper MUST be installed.

# Contains

**P550C Chain Drive**

## GENERAL LAYOUT
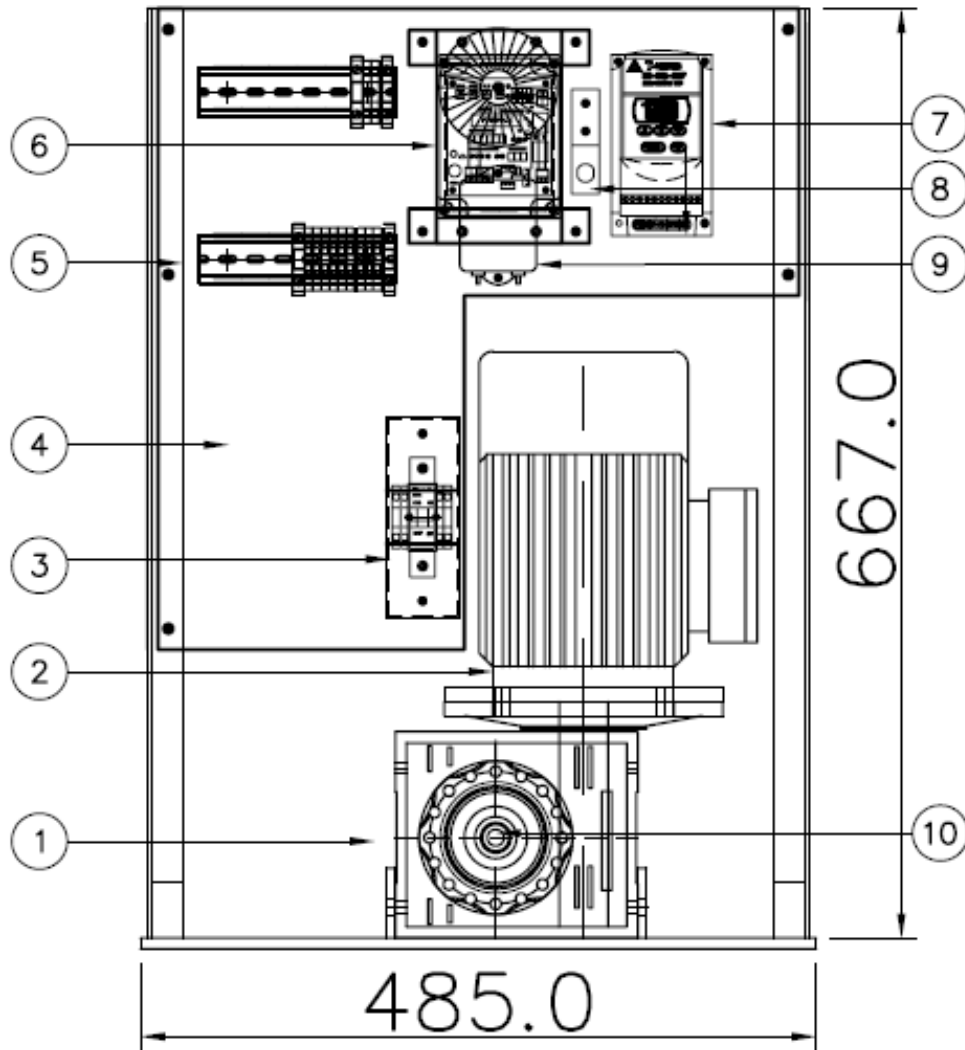
Fig -1

1) Manual Release bolts
3) Circuit breaker
5) Terminals
7) Inverter (VSD)
9) EMC filter

2) Motor
4) Mounting Plate
6) Control board
8) Fuse
10) Gearbox

## CONTROL INPUIT AND BUTTON

### 1. General Descriptions

The P550-4 and P750 sliding gate motors was designed for heavy duty industry track gate or cantilever gate. Heavy duty three phase industry motor driven by VSD (variable speed drive), gate can run at different speeds. Built in encoder and intelligent controller combination can make the gate running more smoothly. The controller can receive the signals from swipe card, loop detectors, remote control, photo-electric beams and any kind of access control system. Galvanised metal sheet and powder coated high quality cabinet (1.5mm thickness) has remove door (P750) and plenty of room for the access control accessories including din rail mounting. 50VA transformer (12V/24v/2A) can directly drive magnetic lock, warning lights etc.

### 2. Technical Specifications

| | |
|---|---|
| Power supply | 230/240V AC at 10A |
| Output voltage | 230V AC three phase (via) inverter, Max. 0.75KW |
| Motor rate | Three phase two poles 0.55KW (P550) or 0.75KW (P750) |
| Gate type | Track or cantilever |
| Drive speed | Up to 700mm/sec (with big drive gear) |
| Max. Gate length | No limitation |
| | |
| Fully programmable | Auto close time, PE trig close time etc. |
| Accessories power supply | 12V@2A or 24@2A, Max. 50VA, protected by 1A fuse |

### 3. Control Board layout



**Fig-2**

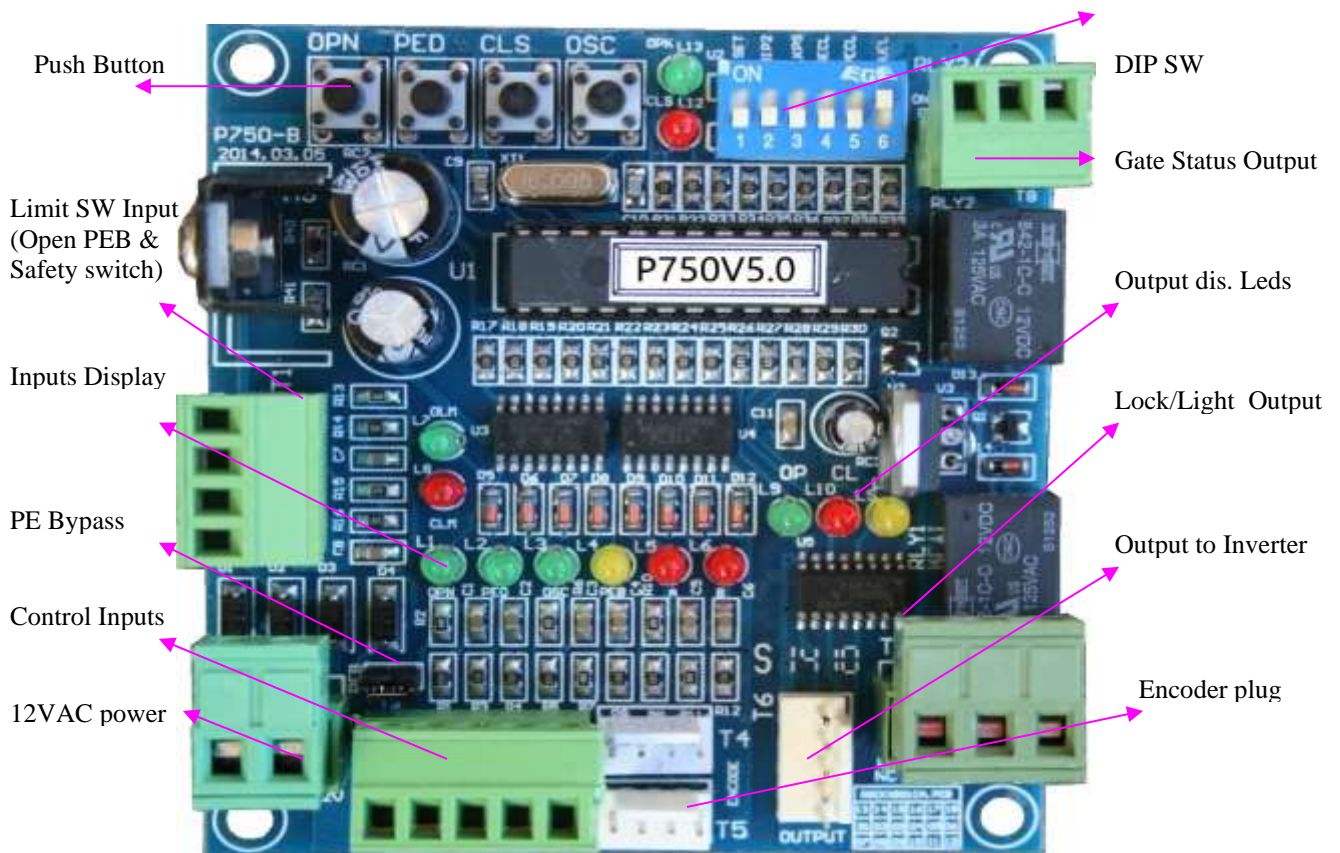## CONTROL INPUIT AND BUTTON

**Open (OPN) input & OPN push button**
The OPN inputs are Push Button OPN and Terminal OPN input. Push OPN button or Activating (connect OPN terminal to the COM (+12V)) the OPN input will start the gate to open. When gate opened, if OPN is still activating, the gate will stay open.

**Pedestrian Access (PED) input and Pedestrian (PED) push button**
The pedestrian input partly opens gate.

**CLS push button**
The CLS push button on control board is to close gate.

**OSC (open/stop/close) input and OSC push button**
OSC input and OSC push button is for manual operation. Push to open the gate, push again stop gate, another push closes the gate. When gate stopped by OSC input, auto close mode does not apply.

**Photoelectric safety beam (PE) input. N/C type**
If the P.E input activated while gate is closing, the gate will stop or reopen depending on the DIP setting. If the gate in the opened position and P.E beam activated, the gate will stay in opened.

**Encoder inputs**
Encoder in mounted on the motor shaft. There is not service is required. 4 pins socket from encoder directly plug in on the control board. Two plugs on the control board are for right hand or left hand gate.

**Drive signals (between control board and inverter)**
Plug 1 link inverter and control board. This is five pins plug. Two pins for 12VDC supply from inverter to control board and other three pins is from control board to inverter, open, close and running frequency signals.

**Lock output signal**
Lock output relay has COM, N/C, N/O outputs. The output can be pause or presence set by DIP3.

**Gate close (status) output signal**
When gate in closed position the relay contact is on, this used to send closing signals to alarm system. As long as the gate is not closed, the relay contact will be off and tell the alarm system, the gate is open.

## 4. DIP SWICTH FUNCTION

**SET/RUN (DIP1)**                    ON=SET,                    OFF=RUN
Dip1 ON selects setting mode. For E-code control and timers

**DIP2 and DIP4**                    ON=F-code                    OFF=E-code
DIP2 off, DIP4 off    --- called "MOD0" ---E-code control with closed limit switch option
DIP2 off, DIP4 on     --- called "MOD1" ---E-code with one N/O limit switch
DIP2 on, DIP4 off     --- called" MOD3" ---F-code control with option two N/C limit switch
DIP2 on, DIP4 on      --- called "MOD4" ---F-code control with option one N/O limit switch

NOTE: DIP2DIP4 SETTIGN MUST SUIT APPLICATION TYPE. THERE IS ONE AND ONLY ONE IS RIGHT

**LOCK Output (DIP3)**                    ON= PLUSE                    OFF= PRESENCE
DIP3 ON selects lock output is pulse at every start cycle. DIP3 OFF selects lock output is presence. The lock relay will be on if the gate is in opening and closing cycle. All other situations will be off.

**PE trig close (DIP5)**                    ON=PE CLS                    OFF=NO PE CLS
DIP5 ON selects PE beam trig auto close mode. In this mode, if P.E beams trigged and clear the gate will auto close after gate opened.

## Motor Set Up

**Auto CLS (DIP6)**                 ON=AUTO CLS                 OFF=NO AUTO CLS

DIP6 ON selects Auto close mode. In this mode, the gate will auto close after standard auto closed time. If DIP6 OFF, no this function.

## 5. Motor Set up

Push Buttons functions

| Button | **Dip1 on**---STD Setting | Special Setting | **Dip1 off**---Running |
|--------|---------------------------|-----------------|------------------------|
| OPN | Open Length Set | Reserved | Full open |
| PED | Auto close time set | Reserved | Pedestrian open |
| CLS | Manual close gate | PE close time set | Close |
| OSC | Lock pulse time set | Reserved | OSC |

## 5.1 MOD1: -- E-code setting: DIP2 off and DIP4 off

MOD1 -- E-code means the encoder is set up at top of the motor and output signal is A and B with 90-degree phase delay each other.  Four cores cable with plug directly plug into control board. Two plugs on control board T4 for right hand side and T5 for left hand side.

MOD0 do not need any limit switch, but with options -- *Open limit switch input as manual release protection input and close limit switch is closed limit switch input*

In this mode, gate how to stop:  In closing cycle, control will check closed point (encode count) or closed limit switch if fit, whichever happen first, then stop gate. In opening cycle, controller will check opened point (encode count) only.

**Set travel limits – (Gate travel distance setup – "learn" how long the gate)**

**Method A**

a) Connect 240V AC (if not done) and make sure power is off.
b) Releases clutch and push gate to middle position, and then engage the clutch.
c) Make sure no signals connect to OPN, PED, OSC and PEB (use Bypass jumper) terminals. Set DIP6 on.
d) Turn power on, gate should start close at low speed. If gate opens, turn power off, change motor direction by swapping any two of three phases output of inverter.
e) Power on again. Gate should start to close. If gate only runs short displace (about 2 seconds time) then turn power off, change encode plug to another connector.
f) Power on again, gate start close, RED LED is flash and GREEN LED is off. When gate hit the closed stopper, gate will stop.
g) Set DIP1 on. Push and hold OPN button, gate will start open at low speed. When gate reach opened position, about 50-100mm before opened stopper, just simply release the OPN button. Controller will save the current position as fully opened position. *While hold OPN button, push and release PED button will save current gate position as PED opened position*.
h) Set DIP1 off and push CLS button, gate will start to close. When gate fully closed, gate will be ready to operate. Then try to open and close. If not satisfied with the position, just repeat step (g) to (h). For more details, see Step by step gate set instruction.

**Method B --- *heavy duty functional mechanical gate opened stopper and closed stopper must be installed***

a) Connect 240V AC (if not done) and make sure power is off.
b) Releases clutch and push gate to middle position, and then engage the clutch.
c) Make sure OPN, PED, OSC led off and PEB led on. Set   DIP6 on.

## Controller Working Mode

d) Turn power on, push CLS button, gate should close. If gate opens, turn power off, change motor direction by swapping any two of three phases output of inverter.

e) Power on again. push CLS button, gate should close. If gate runs only short distance (about 2 seconds) and stop. Turn power off, change encode plug to another connector and try again.

f) Power on again, push and hold CLS button for about 5 seconds until both OPENLED (green) and CLSLED (Red) is solid on, release CLS button, gate will start closing at low speed.

g) Gate hit closed post/closed stopper and stop, short delay, then start opening at low speed.

i) While in this opening cycle, if push and release PED button, that current position will be saved as pedestrian open position.

j) When gate hit opened post/opened stopper and stop, all setting is finished

k) Test gate by push buttons on board, if gate position is not right, then redo it again from step f.

## 5.2 MOD2: -- E-code with one limit switch: DIP2 off and DIP4 on

MOD2 – E-code with one N/O limit (either mechanical or proxy switch). OLM---Open Limit Switch input as manual release spanner protection input –OPTION. Normally do not need it. CLM --- Close Limit Switch MUST need, one limit switch work as closed and opened limit

In this mode, gate how to stop: encoder only determine the slow down point. Gate is only stopped by limit switch, or max. motor running time--- which is motor low speed running time, plus 5 seconds extra. For example, if gate open take 30 seconds in learning cycle/low speed, then max running time is 35 seconds.

Proxy switch can be mounting horizontal (like normal limit switch) or vertical.

Either in closed or opened positions, as long as moved gate without turn power off and Proxy switch/limit switch status/state/situation has been changed, next operation will be in low speed and automatically back to normally after two operations.

**Set travel limits – (Gate travel distance setup – "learn" how long the gate)**

Method B (automatic set up only). Refer MOD1---method B

## 5.3 MOD3: -- F-Code with two N/C limit switch: DIP2 on and DIP4 off

Mode-3 Two limit switch required N/C, proxy switch or mechanical limit switch. F-code is the little circuit connection to inverter output and check frequency information and send to controller.

OLM---Open Limit Switch input. CLM --- Close Limit Switch input.

In this F-code mode, gate how to stop? F-code only determine the slow down point. Gate is only stopped by limit switch, or max. motor running time--- which is motor low speed running time in learning cycle, plus 5 seconds extra. For example, if gate open take 30 seconds in learning cycle/low speed, then max running time is 35 seconds.

Either in closed or opened positions, as long as moved gate and limit switch status changed, next operation will be in low speed and automatically back to normally after two operations.

**Set travel limits – (Gate travel distance setup – "learn" how long the gate)**

a) Mounting motor

b) Moving gate in middle position. Power up, touch limit by screw drive in open and close direction, open limit LED and close LED will off respectively.

c) Set up limit stopper potions. When stopper touch limit and travel another 30 to 50mm, gate should hit mechanical stopper.

d) Push Open button, gate should open. If gate close, then swap any inverter output.

e) Make sure F-code is connected.
f) Power on again, push and hold CLS button for about 5 seconds until both OPENLED (green) and CLSLED (Red) is solid on, release CLS button, gate will start closing at low speed.
g. Gate hit closed limit and stop, short delay, then start opening at low speed.
h) While in this opening cycle, if push and release PED button, that current position will be saved as pedestrian open position.
i) When gate hit opened limit and stop, all setting is finished
j) Test gate by push buttons on board, if gate position is not right, then redo it again from step f.

## 5.3 MOD4: -- F-Code with one N/O limit switch: DIP2 on and DIP4 on

Mode-4 Only one limit switch required N/O, proxy switch or mechanical limit switch.

OLM---Open Limit Switch input as manual release protection input—option. CLM --- Close Limit Switch Input N/O.

In this F-code mode, gate how to stop? F-code only determine the slow down point. Gate is only stopped by limit switch, or max. motor running time--- which is motor low speed running time in learning cycle, plus 5 seconds extra. For example, if gate open take 30 seconds in learning cycle/low speed, then max running time is 35 seconds.

Either in closed or opened positions, as long as moved gate and limit switch status changed, next operation will be in low speed and automatically back to normally after two operations.

a) Mounting motor
b) Moving gate in middle position. Power up, touch limit or proxy switch by screw drive, close LED will on. Open limit is used as manual release protection input---option.
c) Set up limit stopper potions. When stopper touch limit and travel another 30 to 50mm, gate should hit mechanical stopper.
d) Push Open button, gate should open. If gate close, then swap any inverter output.
e) Make sure F-code is connected.
f) Push and hold CLS button for about 5 seconds until the OPNLED and CLSLED both solid on, then release CLS button. gate will start closing at low speed.
g). Gate hit closed limit and stop, short delay, then start opening at low speed.
h) While in this opening cycle, if push and release PED button, that current position will be saved as pedestrian open position.
i) When gate hit opened limit and stop, all setting is finished
j) Test gate by push buttons on board, if gate position is not right, then redo it again from step f.

## Timer Setting

### 5.4 Timers setting

**a) Auto close time set**

Set DISP1 On, push and hold on PED for the auto close time setting. Now the red and green LED flash fast alternatively, when reached the required time simply release PED button. Set DIP1 OFF. The gate controller will back to working mode.

**b) Lock pulse time set**

Push and hold on OSC for the lock pulse time setting. Now the red and green LED flash fast alternatively, and when gate reached the required time, simply release OSC button. Set DIP1 OFF. The gate controller will back to working mode.

### 5.5 SPE (special) time setting mode

*To get into special setting mode, turn power off, set DIP1 on. Push and hold CLS button then turn power on, LED will be on for short time, after LED off simply release CLS button. Gate controller is getting into special time setting mode.*

**a)** Reserved

Push and hold OPN reserved for late use.

**b)** Reserved

Push and hold PED reserved for late use.

**c) PE trig close time**

Push and hold on CLS for the PE trig close time setting. Now the red and green LED flash fast alternatively and when gate reached required time, simply release CLS button.

**d)** Reserved

Push and hold OSC reserved for late use.

### 5.6 Factory default setting

| Timer | F/Setting | Step | Setting Method | Range |
|---|---|---|---|---|
| Full Open Length | 15M | 0.7mm | STD& OPN Button | No limitation |
| PED Open Length | 5M | 0.7mm | STD& OPN+PED Button | No limitation |
| Auto Close Time | 30 sec. | 0.1sec. | STD& PED Button | 0-6550sec. |
| Lock Pulse Time | 0.8 sec. | 0.1sec. | STD& OSC Button | 0-25sec. |
| Motor Stop Time | 1.0 sec. | 0.1sec. | SPE& OPN Button | 0-25sec. |
| Sync Delay Time | Reserved | 0.1sec. | SPE& PED Button | 0-25sec. |
| PE Auto close Time | 2.0 sec | 0.1sec | SPE& CLS Button | 0-25sec |
| Reserved | Reserved | 0 | SPE& OSC Button | 0 |

*To restore factory setting, turn power off and set DIP1 on, push and hold CLS button then power on. While hold CLS button, set DIP1 off, release the CLS button. Now controller restored factory setting from memory.*

**Attention: First time power up, for different working mode will be different. If in Mode-1, the motor will run at low speed in close direction (if DIP6 is on) and hit receiving post. Next open command gate will open at low speed until to fully opened. The controller will calculate the gate length and compare it with original gate length. If it is right, the gate will back to normal operation, otherwise, gate will run at low speed. If in Mode-2,3,4**

## 6. Inverter settings

Different inverter and setting are different. P750V5.0 can control nearly all model inverter. 12V or 24V accessories power supply. PNP or NPN output. Here is some samples.

a) TECO FM 50 inverter. 12V, PNP output, now it is no longer available.

| Function | F | Function Description | Setting | Unit | Note |
|---|---|---|---|---|---|
| Acceleration time | F001 | Acceleration time | 4.0 | Sec. | |
| Deceleration time | F002 | Deceleration time | 2.0 | Sec. | |
| Freq. Upper limit | F006 | Max. Frequency | 60 | Hz | |
| Freq. Lower limit | F007 | Min. Frequency | 0 | Hz | |
| **SP1 Frequency** | **F008** | **Gate Close High Speed** | **35** | **Hz** | |
| Start/Stop/Control | F010 | Terminals | 1 | | |
| Multifunction Input | F020 | Reset Terminal Function | 6 | | |
| **SP2 Frequency** | **F026** | **Gate Open Low Speed** | **15** | **Hz** | |
| **SP3 Frequency** | **F027** | **Gate Close Low Speed** | **15** | **Hz** | |
| | | | | | |

b) TECO L510s inverter. 24V, PNP output.

| Location | Function Discerptions | Setting | Setting |
|---|---|---|---|
| | **Gate Open High Speed** | **Pot** | **Keypad** |
| 00-03 | Alt Run Source | 1 | **1** |
| 00-05 | Main Freq Source | 1 | **0** |
| 00-06 | Alt Freq. Source Select | 0 | **1** |
| 00-07 | Mina & Alt Com | 1 | **0** |
| 00-12 | Max. Frequency | 60 Hz | **60 Hz** |
| 00-14 | Acceleration time | 3.5-4.0 sec | **3.5-4.0 sec** |
| 00-15 | Deceleration time | 2.0 sec | **2.0 sec** |
| | | | |
| 02-00 | Motor rated current | 3.5A -- P750 | 2.4A -- P550 |
| 02-01 | Motor protect Current | 6.8A -- P750 | 4.8A -- P550 |
| | | | |
| 05-02 | Gate Open Low Speed | 15 | **15** |
| 05-03 | Gate Close High Speed | 35 | **35** |
| 05-04 | Gate Close Low Speed | 15 | **15** |

# 7. Chain Drive System

Chain drive system is basically standard motor set on the chain drive base.

How to mounting chain drive motor
   a) Set the motor height. The chain base is adjustable. Chain slave/idle sprocket bottom line is about 10 to 20mm above the bottom line of gate bottom rail.
   b) Every 1M need one chain supporter.

## SCHEMATIC DIAGRAM

## 8. Schematic diagram

## MANUAL RELEASE

## 9. Manual release

A: What to do during a power failure:

The gate can be manually pushed open and close if there is no power. To do this, you need to release the release bolt.

(1) Open the front door and turn the switch (circuit breaker) OFF (even though there is no power)

(2) Fit spanner (provided) onto the manual release bolt nicely.

(3) Turn the spanner **anti-clockwise** 1 turn. Take the spanner off the manual release bolts. The gate can now be manually opened and closed. DO NOT TURN THEBOLT MORE THAN ONE TURN, OTHERWISE OIL COME OUT

(4) After the gate was pushed to the required position, fit the spanner onto the manual release blots, clockwise turn and make the bolts tight, otherwise maybe cause oil leaking.
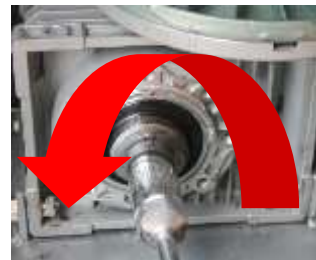


B: What to do if power is reconnected:

(1) Make sure the switch (circuit breaker) is still OFF.

(2) Fit the spanner onto the bolt nicely and clockwise turn the manual release blots and make sure the bolt is tight

(3) Turn on the switch on, the gate should start to close if no signal input on PEB (safety) and OPN (open) inputs

(4) When gate hit on receiving post, the controller will recall the all the settings and ready to operate.
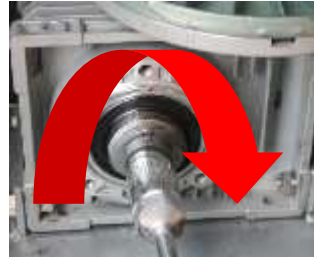
## TROUBLE SHOOTING GUIDE

## 10. Trouble Shooting Guide

10.1 Display information on main control board – see Fig-2

    (1) Gate status LED

| Gate Status (Position) \ LEDs | Status LED-Green (6) | Status LED-Red (7) | |
|---|---|---|---|
| Gate in closed position | Slow Flash | on | |
| Gate is opening | Fast flash | off | |
| Gate in opened position | on | Slow flash | |
| Gate is closing | off | Fast flash | |
| Gate stop in the middle | Alternatively, flash | Alternatively, flash | |

Gate stop in the middle: which means the gate stop by OSC input and at this position the auto close does not apply. If the gate hit something or mechanical jammed, gate will stop and green and red status LEDs alternatively flash.

    (2) Input LEDs

| Inputs LEDs\ Input status | Input Active | Input inactive | |
|---|---|---|---|
| Open input –OPN LED | on | off | |
| Pedestrian input – PED LED | on | off | |
| Open/Stop/Close – OSC LED | on | off | |
| Photo Electric Beam- PEB LED | on | off | |
| Encoder input -A | On or off | On or off | |
| Encoder input -B | On or off | On or off | |

    (3) Drive Signal LEDs

| Drive Signal LEDs\ Output status | Input Active | Input inactive | Gate Status |
|---|---|---|---|
| Gate opening- Green LED | on | off | Gate opening |
| Gate closing – Red LED | on | off | Gate Closing |
| Low speed – Yellow LED | on | off | Low speed |

10.2 Trouble Shooting Guide

| Malfunction | Possible causes | Counter measure |
|---|---|---|
| Gate not open | 1) No power<br>2) Already in opened position | 1) Check the power<br>2) First time power up, for safety reason, the controller treated current position as opened position. |
| Gate not close | 1) Safety input PEB active<br><br>2) OPN input active | 1) Check the safety device, N/O contact required.<br>2) Check access control system |
| Gate run little bit then stop and Status LEDs flash | 1) No encoder input<br>2) mechanical jammed | 1) Aux. power supply fuse<br>2) power off and disengage the motor and push and pull the gate manually |
| Gate opened or closed position not right | 1) mechanical release bolts not tight<br>2) Rack jump over drive pinion | 1) Power off and tight the bolts and power again. Please follow the manual release procedure. |

## CONDITION OF SALE

### 1. Orders
The placement of any orders upon Digiway implies acceptance of these terms and conditions and takes precedence over any other terms and conditions written or oral.

### 2. Deliveries
(a) Time of delivery will be complied with wherever possible. It is not guaranteed and is subject to extensions to cover delays caused by strikes, vehicle breakdown, traffic delays, weather and any causes beyond Digiway's control.
(b) The Purchaser shall not be entitled to be compensated for any loss or damage due to any of the causes stated.
(c) Most of the motors are stock items, but temporarily runs out of stock. Restock time can experience of approximately 8-12 weeks from receipt of official written order.

### 3. Warranty
(a) Digiway has 12 months return base warrants from date of purchase in normal use condition.
(b) Digiway control boards can be up to two years warranty. subject the application conditions.
(c) In lieu of all other warranties expressed or implied. Digiway shall not be liable for any special indirect, incidental or consequent damages of any kind or nature. Equipment manufactured and installed by it to be free from defects in material and workmanship for. Digiway will repair or replace at its option any product or part which it determines to contain defective material and workmanship. Defective parts must be returned to Digiway for repair or replacement. Costs associated with the return of the goods will be the responsibility of the sender. On site repairs will incur travel and labor charges. Liability for replacement parts or repairs carried out by Digiway does not extend the original twelve-month warranty period.

### 4. Payment
(a) Unless agreed expressly in writing, otherwise the terms of payment shall be made prior to shipment or where agreed on completion of the installation. Methods of payment are by:
 (i) Direct bank transfer with remittance advice supplied from purchaser.
(ii) Cheque's need to be received and cleared before shipment.

### 5. Returns
Returns only accepted within 14 days of invoice. Credits only paid after inspection of goods. All returns subject to 30% re-stocking fee on product. Damaged goods are subject to further charges to the value of the damage.