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INTRODUCTION

Congratulations on purchasing your DURASLIDE gate motor. D.A.C.E has proven to be a leader in the automation field and strives to manufacture high quality products using the latest technology available. D.A.C.E. is constantly working on upgrading their products to bring you, the customer, a product of the highest quality. Other products manufactured by D.A.C.E. include:-

DuraSwing - Swing gate operators
DuarDoor - Garage door operators
DuraOptic - Infra-red safety beams
DuraTronic - Remotes and receivers
DuraSlide AC / DC Motor - AC motor with battery back-up.

It is recommended that an experienced gate installer is used to install your gate motor. If you intend to install this motor yourself, please read this manual carefully before any installation begins.

This automatic gate operator is **NOT** a security device. It is designed to make access to a premise undemanding.

LEGAL REQUIREMENTS AND WARNINGS

REMEMBER A GATE IS A HEAVY PIECE OF MOVING EQUIPMENT. SERIOUS INJURY OR EVEN DEATH CAN OCCUR FROM MISUSE

- It is recommended that your local E.C.A. (Electrical Contractors Association) is contacted in order to obtain the legal wiring regulations pertaining to the area.
- Electrical Shock may occur while installing this equipment.
- Injury or death by electrocution may lead to law suits against the installer/homeowner.
- If you intend to run 220V/AC directly from the Mains supply (house supply) to the transformer, the wiring should be done by a qualified/registered electrician. This is a legal requirement and failure to do so may lead to non compliance of property or law suits against the property owner in the event of an accident.
- It is a legal requirement to run all cabling in conduit. The power supply must be run in a separate conduit to the communication cables.
- Mains supply may only be run in a guarded cable. Under no circumstances may 220V/AC be run using Communication, or Ripcord Cables.
- D.A.C.E will not be held liable for any accident / incident resulting in damage, injury or death ensuing from the installation of the automatic gate motor.
- Although the DuraSlide has built-in collision sensing, substantial damage may occur. For this reason safety beams should be used on all installations.
- Do not allow children to play near or with any gate, gate motor or remote control.
- It is the responsibility of the installer to ensure that the gate is in good working condition before automating the gate.

TOOLS REQUIRED

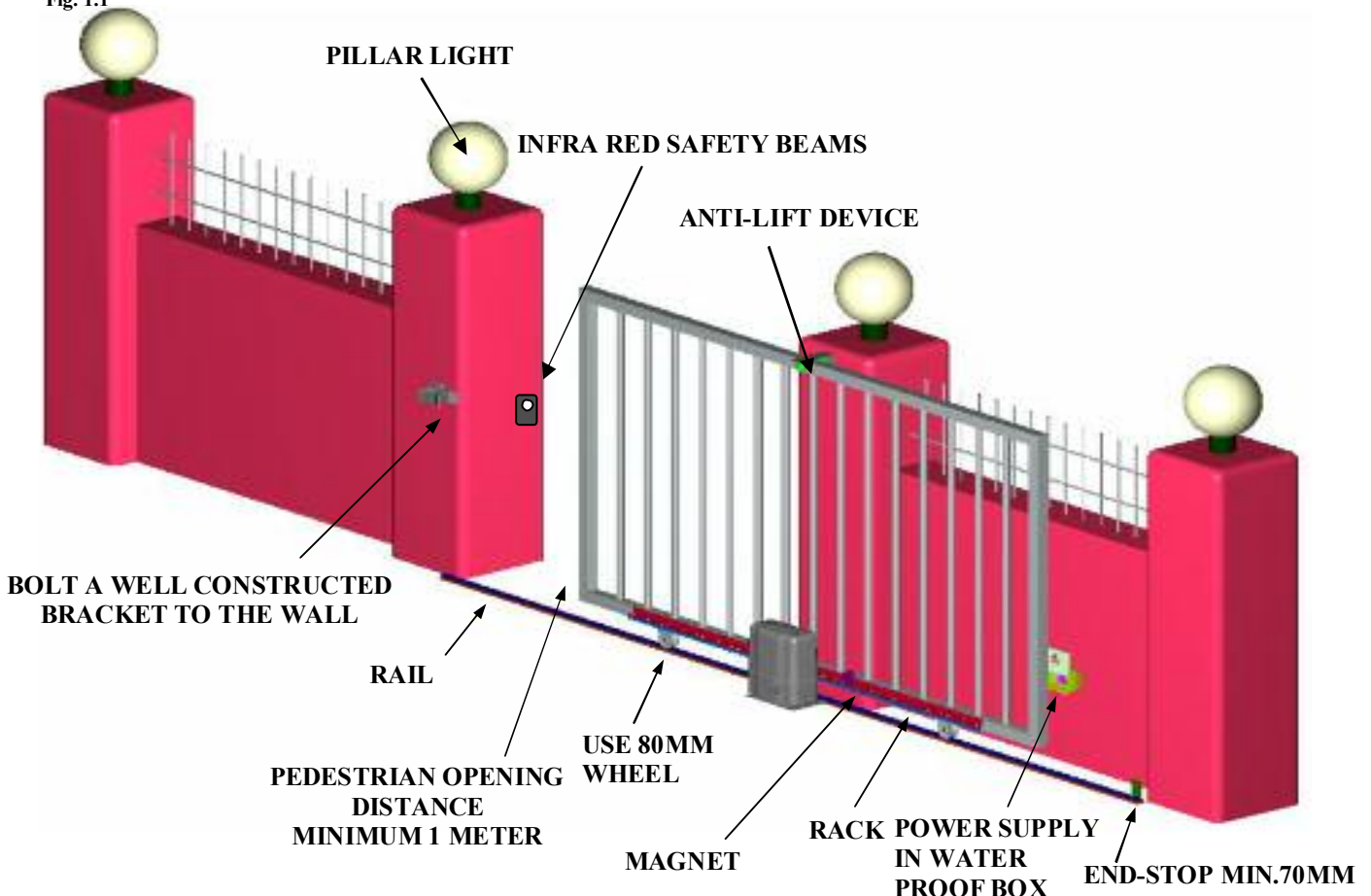
- Assorted screw drivers – Phillips and flat
- 17mm Socket
- Tape Measure
- Spade
- Pick
- Level
- Drilling Machine
- Steel Drill Bits
- Masonry Drill Bits
- Hammer
- Multi Meter
- Side Cutters
- Hacksaw
- 17mm spanner

TERMS AND DEFINITIONS

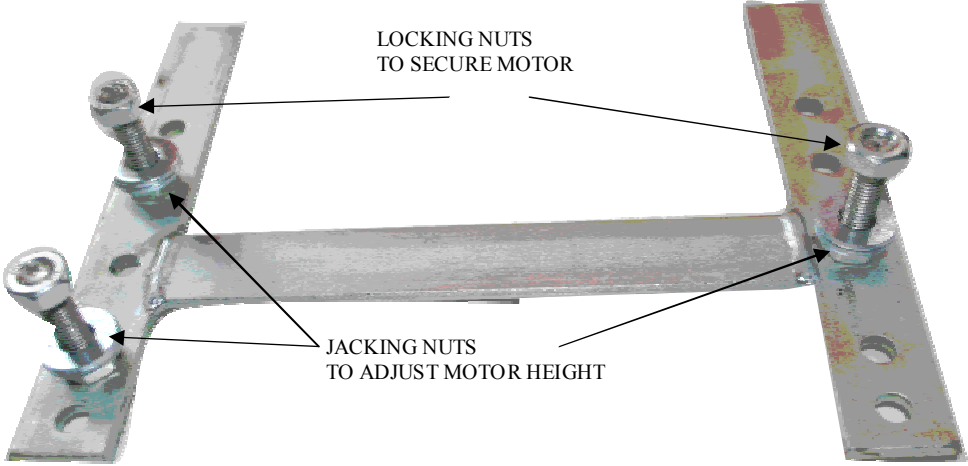
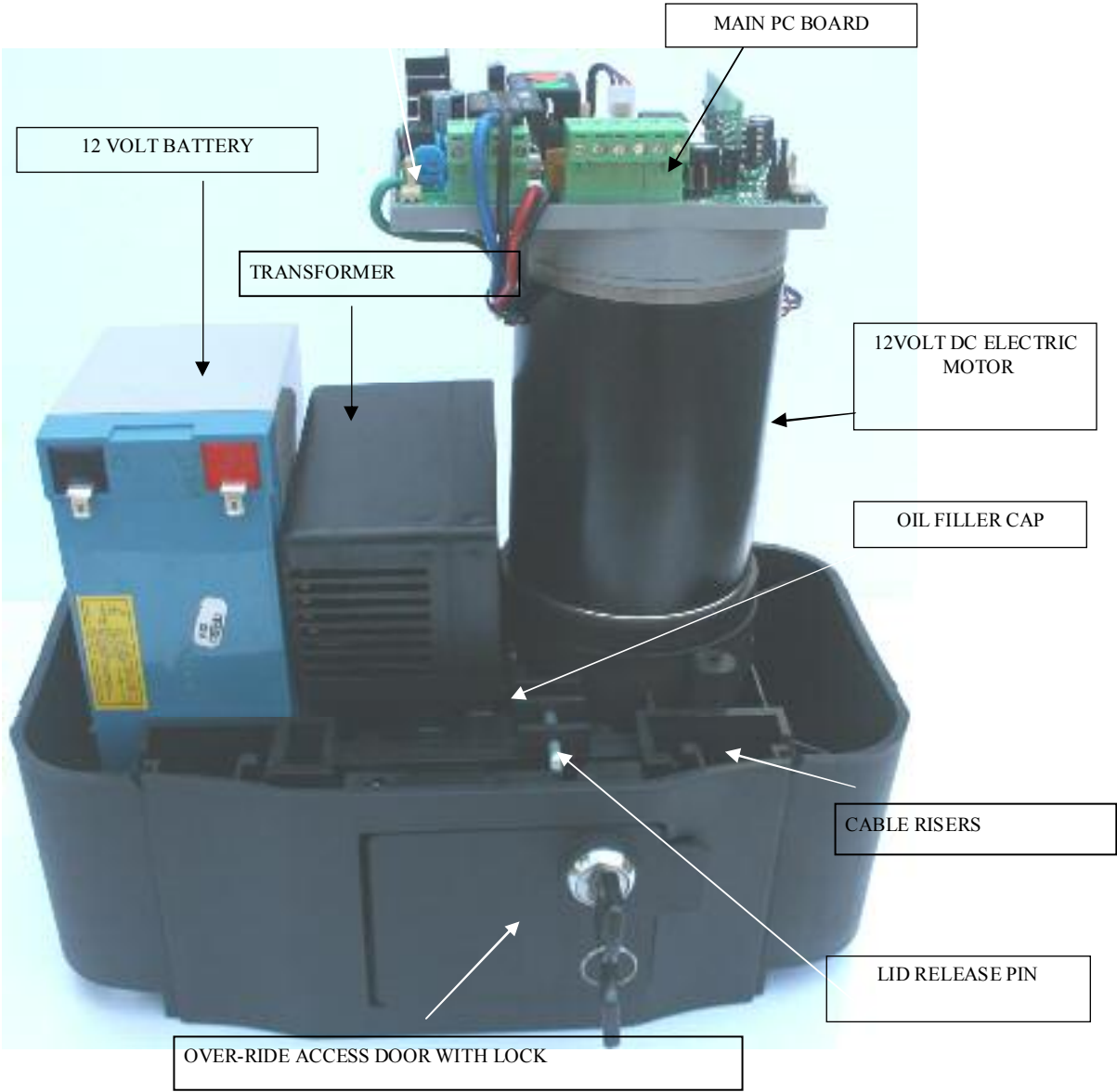
- **AUTOCLOSE**- allows gate to close automatically after a selected time period
- **PEDESTRIAN ACCESS**- gate will open partially and will autoclose after 6 secs.
- **PARTY MODE**- this allows autoclose to be overridden and gate can remain open for as long as needed.
- **MULTI USER**- commonly used in a town house situation. The gate will open completely, regardless of any other trigger received.
- **COLLISION SENSING**- in the event of a collision while closing, the gate will stop and then reopen. If collision occurs while opening, the gate will stop.
- **BATTERY**- 12 volt 7 amp/hour, drives the motor.
- **CHARGER MODULE**- delivers a trickle charge to maintain a constant 13,8 V/DC in the battery.
- **TRANSFORMER**- receives 220 V/AC from the mains supply and delivers 16 V/AC to the charger module.
- **MAIN P.C. BOARD**- this is the printed circuit board that contains all the electronic components that operate the motor.
NOTE : always remove the power from the P.C. Board before connecting any inputs.
- **RECEIVER**- this is an external or onboard component that will trigger the motor.
- **REMOTE / TRANSMITTER**- this is a device that will trigger the motor via the receiver.
- **INTERCOM**- there are many types of intercoms available, an intercom allows communication between the gate and the house. There is normally a button on the intercom handset that operates the gate.
- **TEST BUTTON**- button found on the main P.C. Board that is used to activate the motor during programme mode.
- **RACK**- length of gear mounted on the gate.
- **PINION**- drive gear fitted to main drive shaft of motor.
- **FOUNDATION PLATE/ BOLT HOOKS**- secures motor to concrete plinth.
- **MANUAL OVERRIDE MODE**- allows the gate to be moved by hand.

BASIC SITE LAYOUT

Fig. 1.1



MOTOR LAY-OUT



FOUNDATION PLATE.

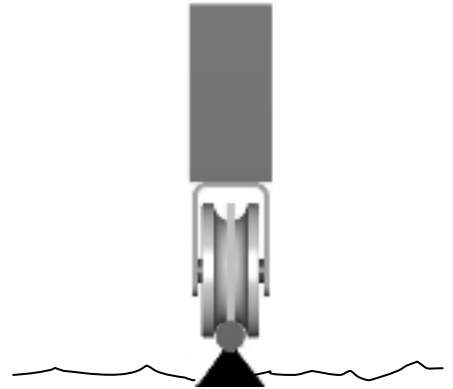
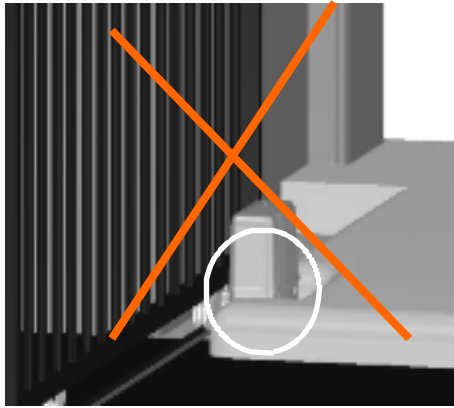
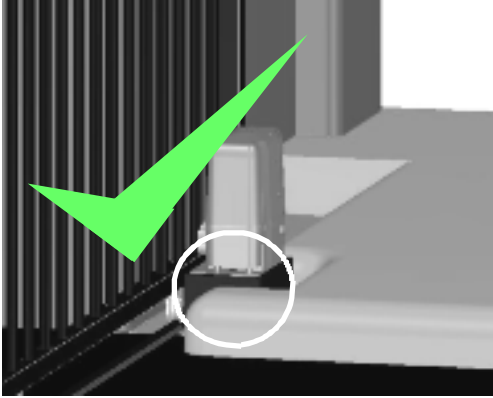
SITE EVALUATION

It is very important to evaluate the site before any installation is done. Items to be checked are as follows

Flood levels

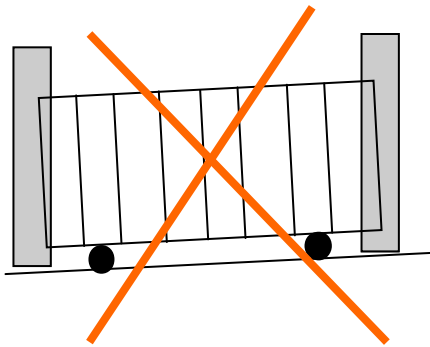
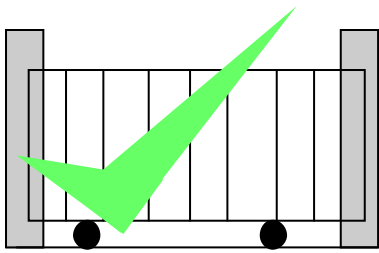
Gate runs level

Rail is free of debris



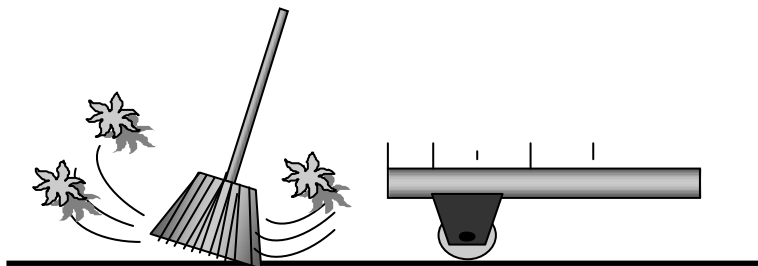
Mount the motor above the flood level or a flood proof wall must be build in order to retain any water from entering the motor

The rail should be above ground level



The gate must not move on its own when left in any position along the rail, if this does occur, the rail must be leveled before the gate is automated.

Ensure that the rail is kept clear of all debris, as this will cause current sensing problems and will jam the gate.

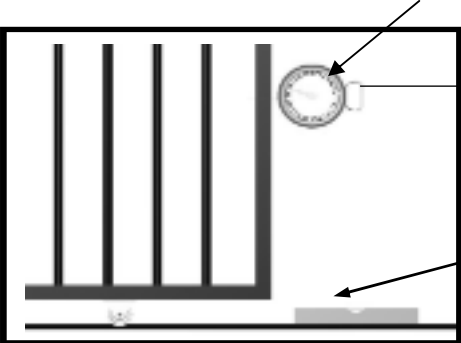


GATE EVALUATION

It is extremely important to evaluate the gate that is to be automated before any automation is done. The following points must be checked.

All of the points mentioned below are common causes of gate problems if not checked.

Check the start up force of the gate using a fishing scale.



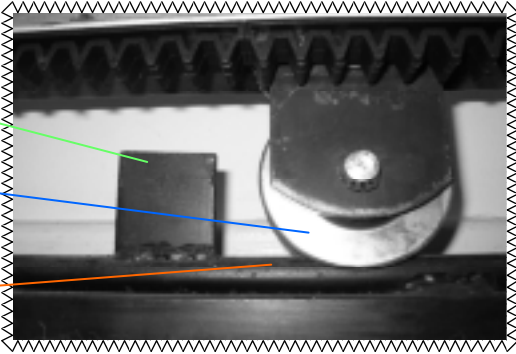
→ PULL Maximum start-up force = 15kg

Ensure that the rail is level.
The gate must not move on its own when left in any position on the rail.

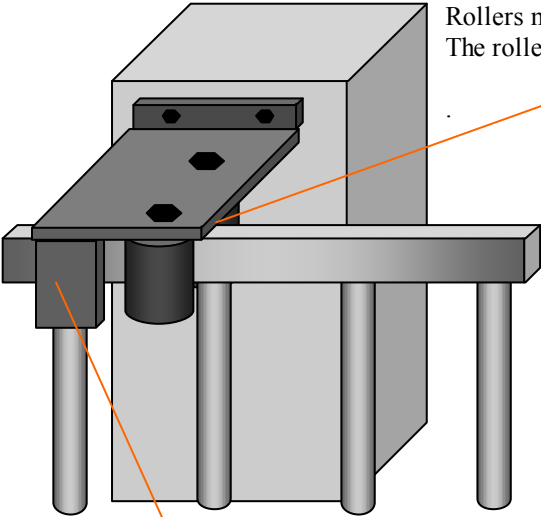
Ensure that the end stops are secure.
Recommended 70mm

Ensure that the wheels are turning freely.
Recommended 80mm wheels

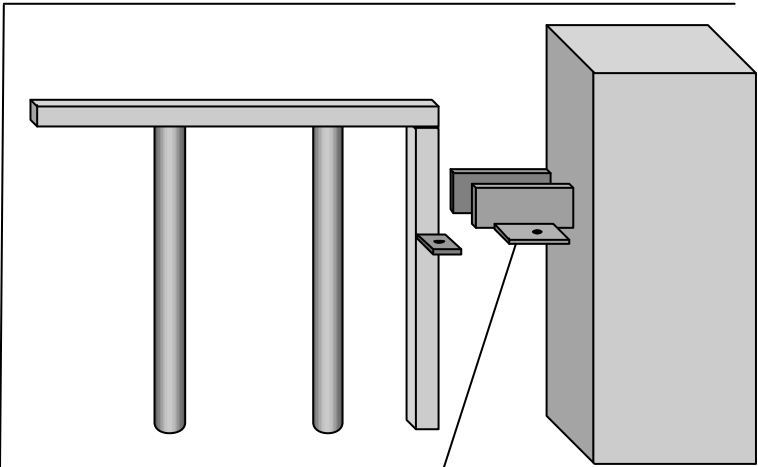
It is recommended that 16mm round bar is used to assist with the smooth operation of the gate and the rail should be above ground level



Rollers must roll freely.
The roller mounting can be used as an anti-lift device,



In the case of the rollers coming off the mounting, the gate must remain in an upright position.
A device must be fabricated to allow for this.
If the gate has a full portal, the portal will provide for this



The gate must not jam in the catch bracket when opening or closing as this may cause the motor to over current

MOTOR INSTALLATION

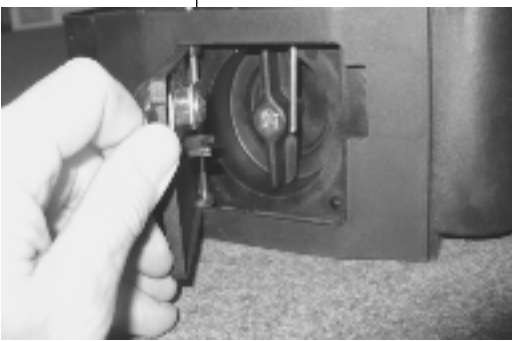
It is important to check the following items before the motor is installed.

- * The gate must be level .
- * The gate must not exceed the max start up force
- * Wheels and rollers must be in good working order.
- * Any catch bracket, locking pins etc must not restrict the gate in **any way**.
- * The end stoppers must be secure, minimum 70mm. Do not attempt to automate a gate without end stoppers.
- * An anti lift device must be placed above the gate to avoid the gate being lifted off the rail.
- * The motor must be set above the flood level to ensure correct operation.

NOTE the rail must be level otherwise the gate may strike the end stopper. D.A.C.E. will not be held responsible for any gate that hits the stopper due to the rail not being level.

REMOVING THE LID AND PLACING THE MOTOR IN MANUAL OVER-RIDE

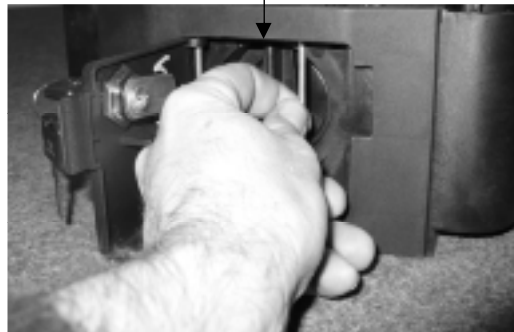
Step 1
Open the door



To remove the lid

Step 2

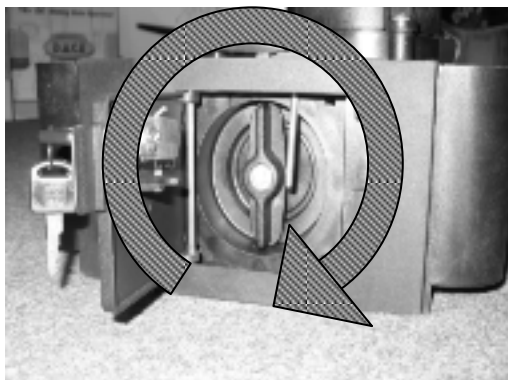
Pull the pin out, the pin will move about 5 mm
The lid can now be removed



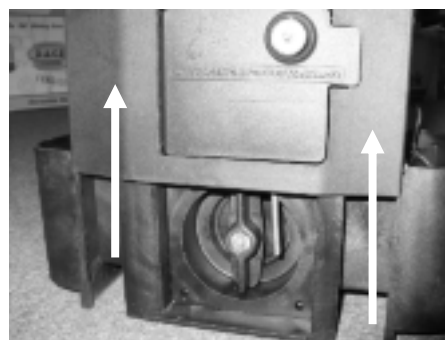
To place the motor in manual over-ride

Open the door as in step 1 above

Turn the thumb-wheel **CLOCKWISE** until the gate moves freely.

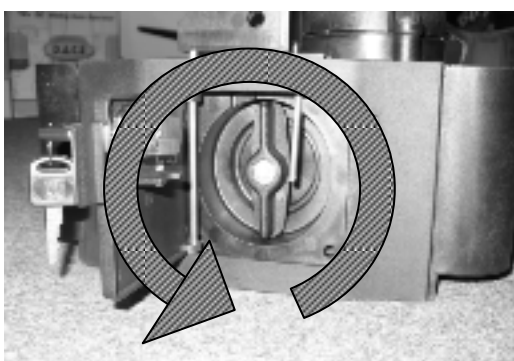


The front cover can be removed for ease of operation, as shown bellow.



To place the motor in normal operation mode

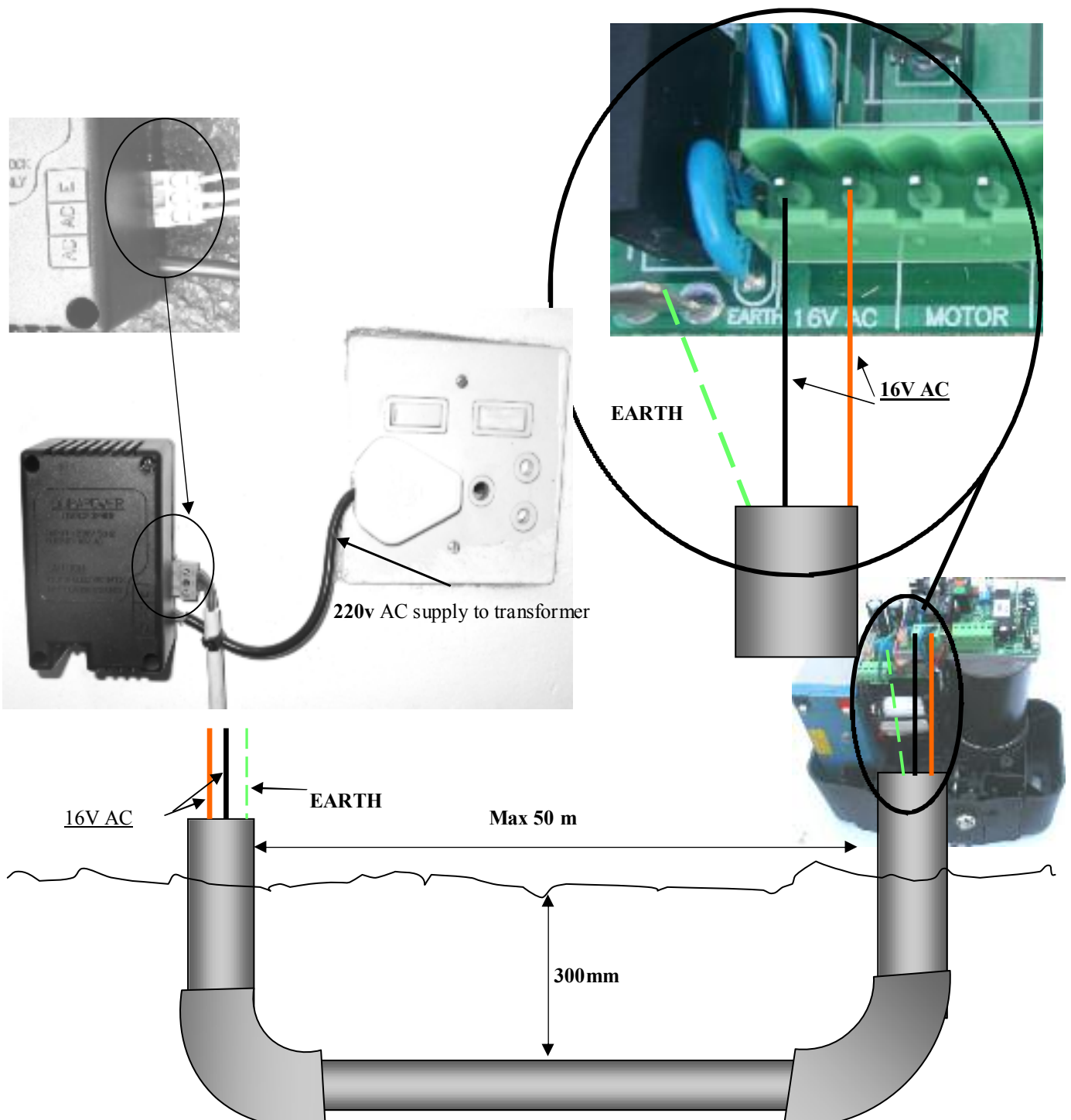
Turn the thumb-wheel **ANTI-CLOCKWISE**. Move the gate by hand until it locks into place. The number of turns needed should not be more than 6. If the number of turns exceeds 6, the wheel may come all the way out. This will not cause any damage. The wheel must be turned back in to the gearbox (clockwise).



ELECTRICAL WIRING

- The transformer must be plugged into a normal plug socket in the house. 16 V/AC. is then run directly to the P.C.BOARD AC connection. The distance between the transformer and the motor should not exceed 50 meters.
- Take care that the wires are connected the correct way. AC—AC / EARTH—EARTH
- The cable should be run 300 mm under the ground. in a water proof conduit and must be terminated inside the motor
- There must be no joins in the cable underground.
- The cable should be a three core 1.5mm cable. **Do not use communication cable for this purpose.**

NOTE : the transformer must not be opened in any way as this may cause electrical shock

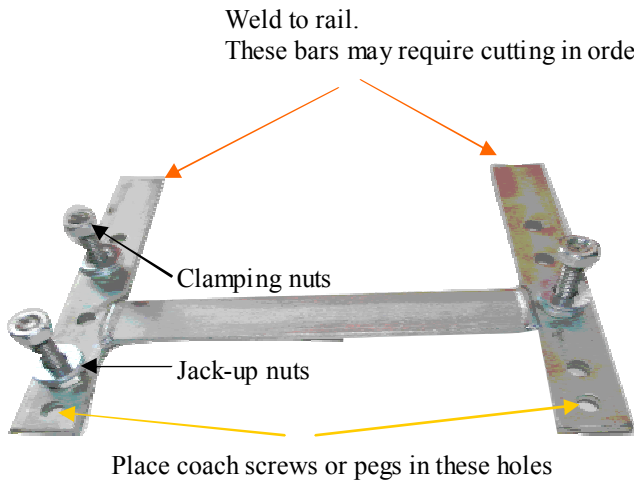


ANCHORING THE MOTOR

It is very important that the motor is secure before operation. There are two options for mounting the motor. These options are as follows :

- 1 Coach screws and plugs.
- 2 Welding the Flat bar to the gate rail.

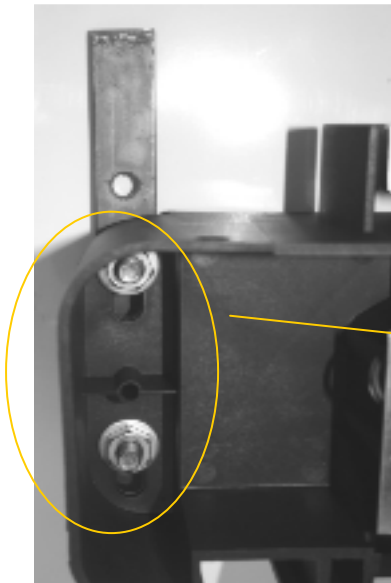
The foundation plate supplied with the motor is set-up for easy installation. It can be used when there is an existing concrete plinth or if the concrete has been laid and it has not yet set. It can also be used in cases where there is no concrete at all, this method will require welding the flat bars to the rail and then securing the flat bars in front of the motor, this can be done by using a spike / peg.



To attach the foundation to the motor: -

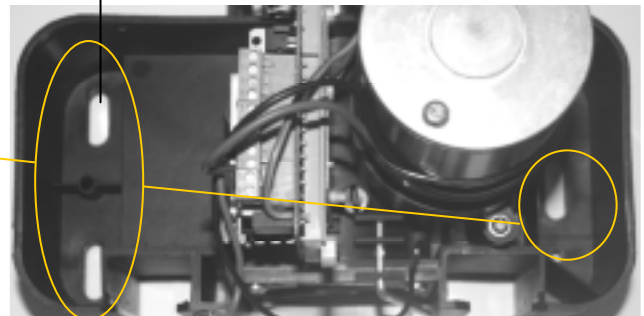
- * Remove the three clamping nuts and the washers.
- * Place the bolts through the slots in the bottom of the motor base. See fig 6 (double bolt on the left and the single bolt on the right)
- * Place the washer and the clamp nuts on the bolts.
- * Ensure that the bolts are in the centre of the slots of the motor base. This is to allow for adjustment later

FIG 6



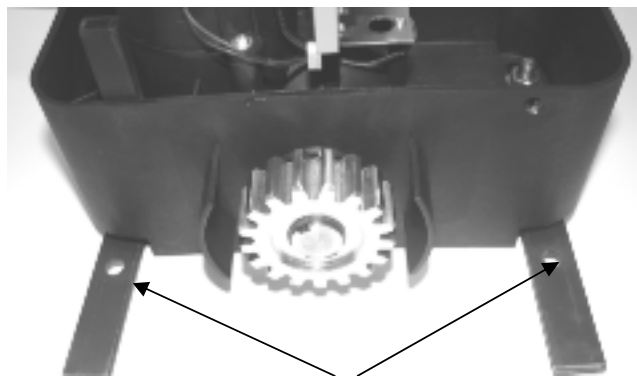
Motor base slots

FIG 7



Motor with flat bars attached

FIG 8

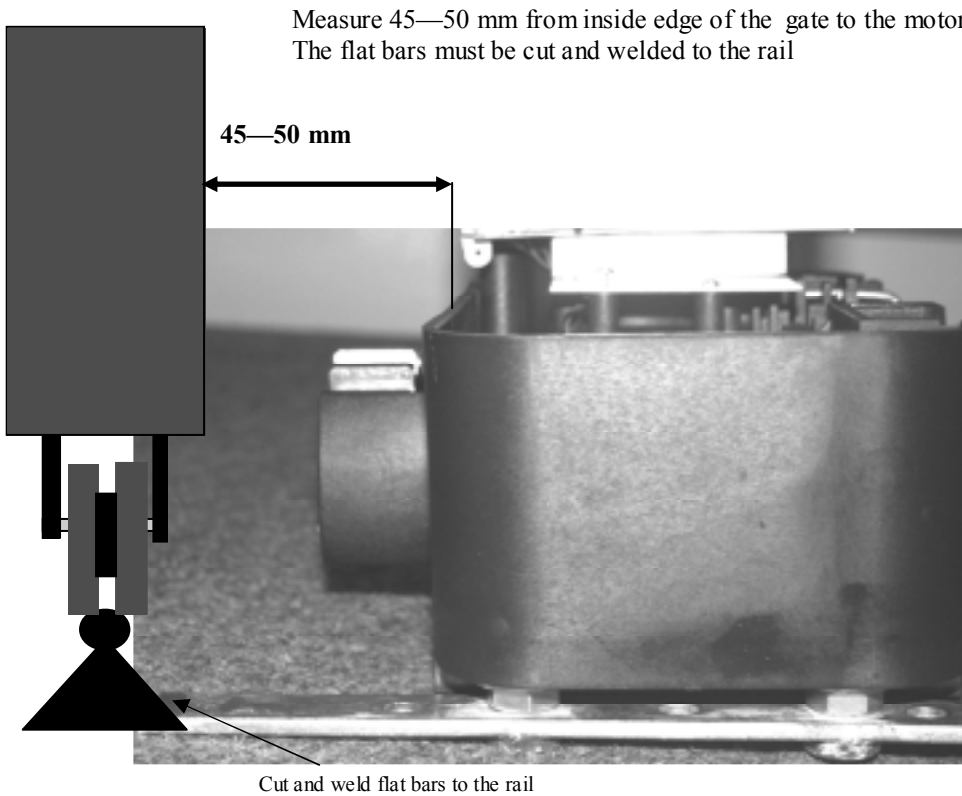


Holes for coach screws or spikes

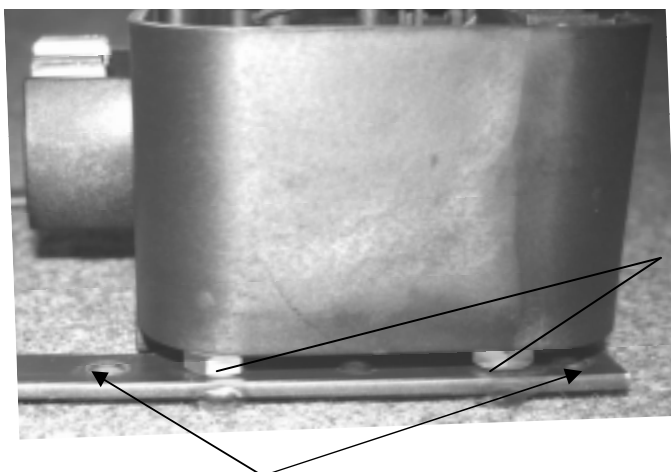
ANCHORING THE MOTOR

The two flat bars can be welded to the rail. Ensure that the distance between the inside edge of the gate and the motor base is 45—50 mm. Ensure that the motor is parallel to the gate.

NOTE: THE MEASUREMENT IS TAKEN FROM THE INSIDE EDGE OF THE GATE AND NOT FROM THE RAIL



After the flat bars have been secured to the gate, lift the motor up about 7 mm using the jack-up nuts. This is done by loosening the three clamp nuts inside the motor base and then turning the jack-up nuts anti-clockwise, this will lift the motor. It is important to ensure that the motor is level at all times. When the correct height is obtained, tighten the clamping nuts to secure the motor.



Use these holes in the flat bar to secure the motor to the ground. This can be done by using a coach screw or a peg. If a peg is used, ensure that it is deep enough so as to anchor the motor solidly.

MOUNTING THE RACK

The rack is attached to the gate using the TEK screws supplied. It is recommended that the rack is **not** welded to the gate as this prevents any adjustment at a later stage. The rack must mesh with the pinion gear throughout the complete length of the gate.

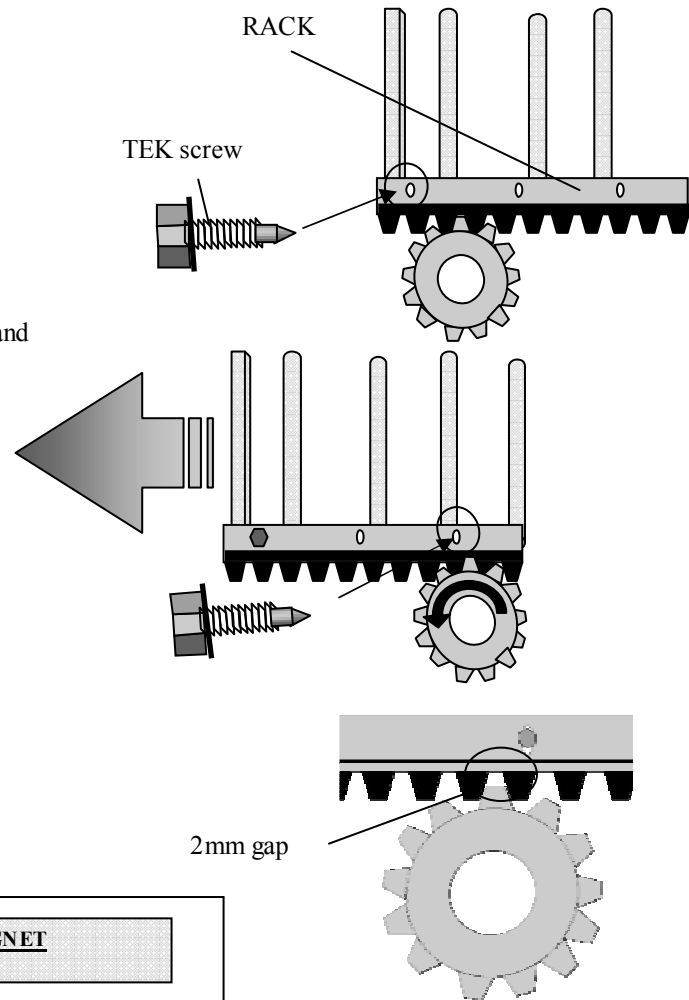
A 2mm gap between the pinion gear and the rack should be set. This avoids any tight spots.

To mount the rack, complete the following steps.

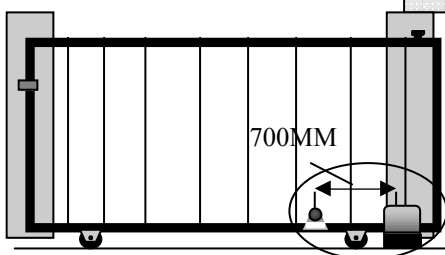
1. Open the gate manually. The gate **must** be **fully** open.
2. Place a length of rack on the pinion.
3. Insert the first TEK screw.
4. Roll the gate to the next mounting hole and insert the next TEK screw.
5. Repeat step 4 until the complete length of rack is attached to the gate. The rack may need to be cut if any section is protruding from the end of the gate. It is important to ensure that the rack stays in full contact with the pinion gear at all times during mounting.

Move the gate by hand until the next mounting hole is above the pinion and then insert next screw.

When the process is complete and the rack is attached securely to the gate, the motor must be adjusted to allow a 2mm gap between the pinion gear and the rack. The best way of doing this is by dropping the motor 2mm on the bolts. Push the gate open and closed by hand to ensure that the rack is adjusted correctly. Check that the rack is not too tight or too loose on the pinion gear. If it is found to be loose or tight, the rack must be adjusted accordingly. Failure to do this may result in incorrect operation of the gate.

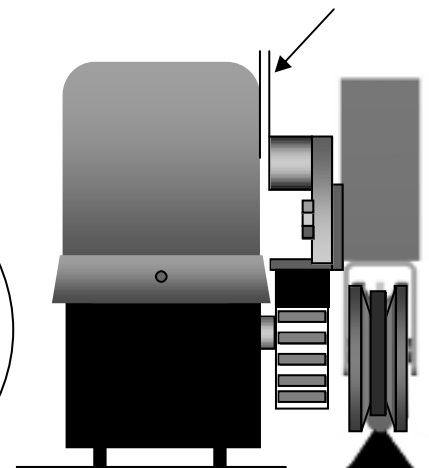
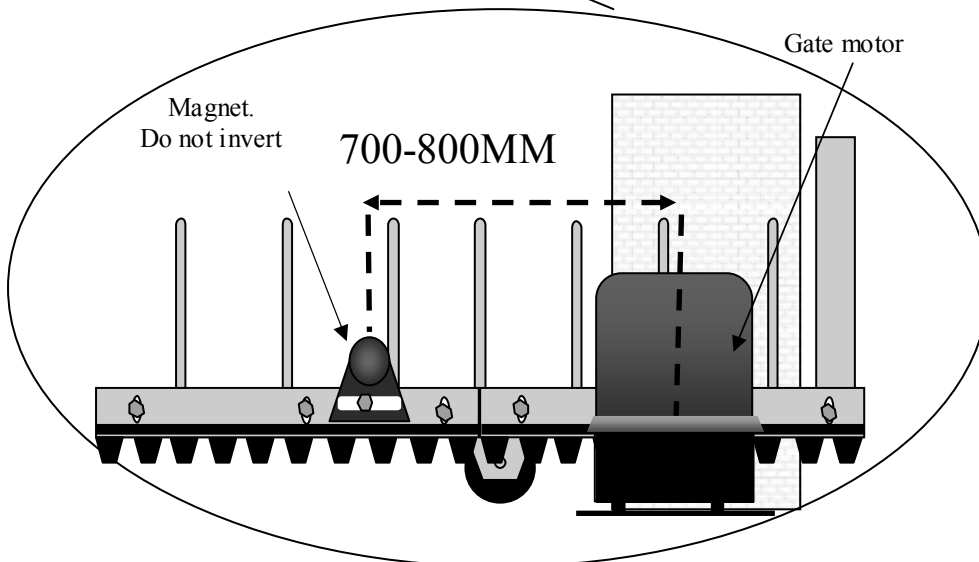


MOUNTING THE MAGNET



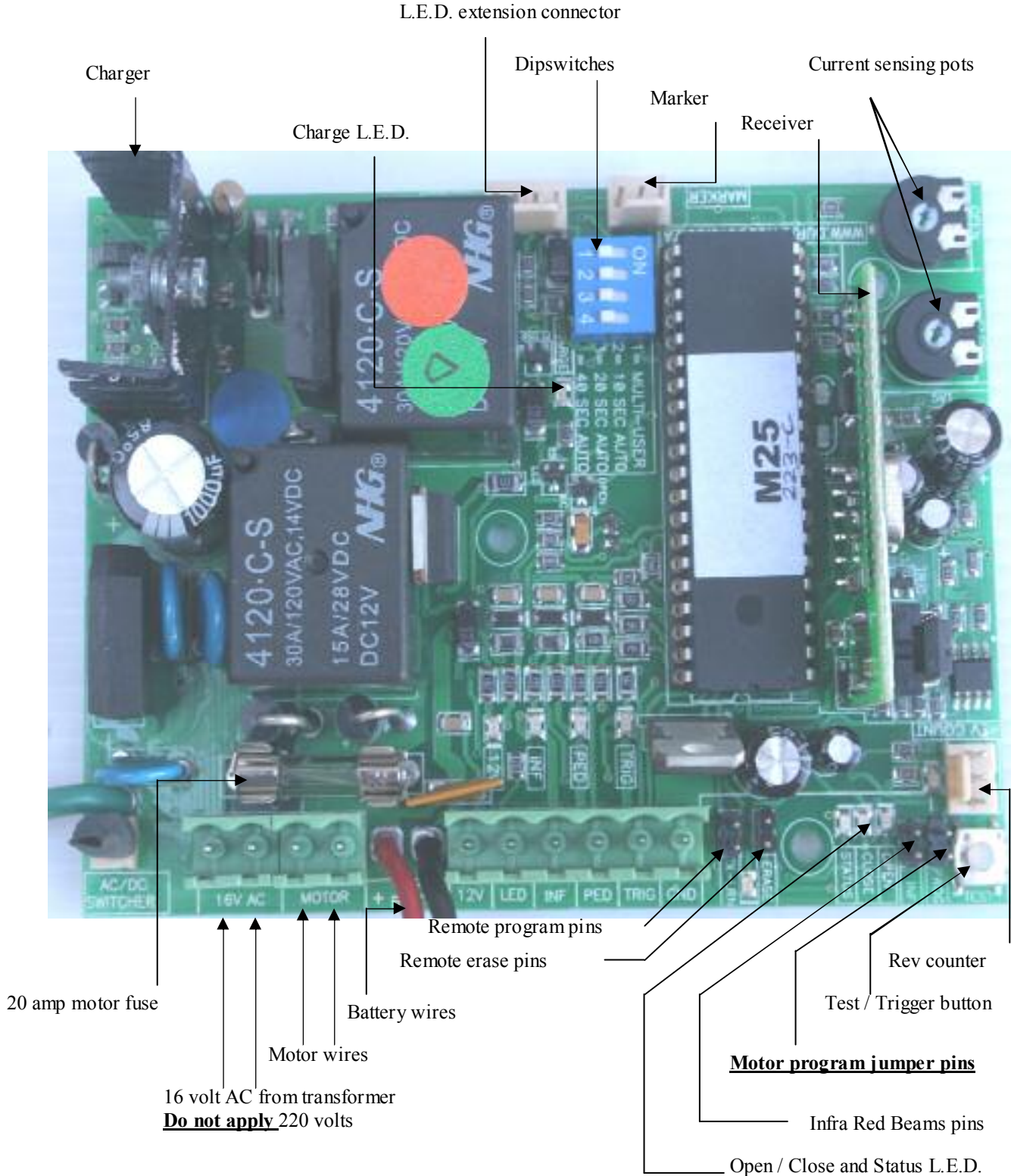
Measure 700- 800mm from the motor and mount the magnet. This must be done with the gate in the **closed position**. Do not invert the magnet.

Maximum gap between the magnet and the motor must be 3mm. If the gap is not correct, place washers behind the magnet. 3mm



MAIN P.C. BOARD LAY-OUT

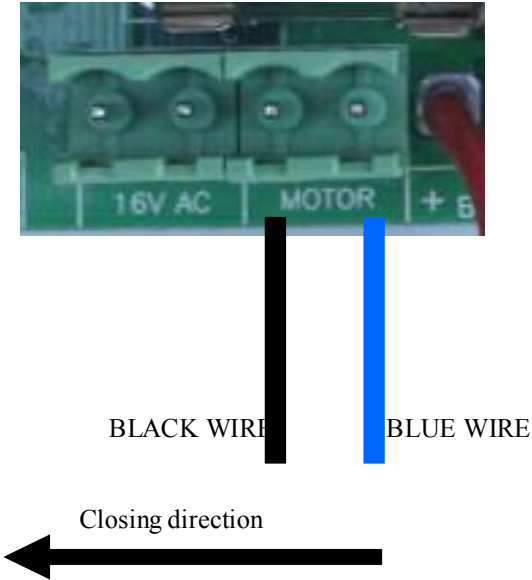
The main P.C. BOARD is the main electronic control board, this is a very sensitive piece of equipment and must be handled with extreme care. The electronic components that are found on the board are sensitive to static electricity and should not be handled or tampered with unless by an authorized D.A.C.E. agent. It is safe to connect electrical wiring to the wiring connectors on the board, but this must be done according to the instructions in this manual. It is very important to remember to disconnect ALL power before connecting or disconnecting any wiring.



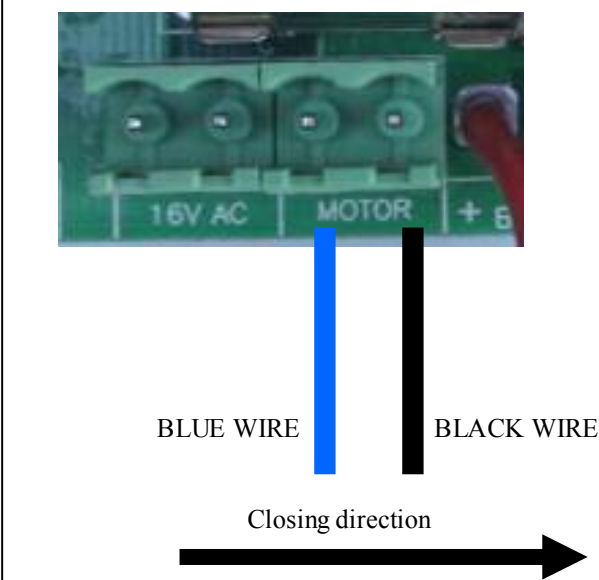
SETTING THE MOTOR DIRECTION

It is important that the motor direction is set correctly. This is a safety feature. The motor is designed so that in the case of a low battery or re-set situation the gate must drive to the closed position. This ensures that the gate will not stay open in the case of an extended power failure.

Gate closing to the left

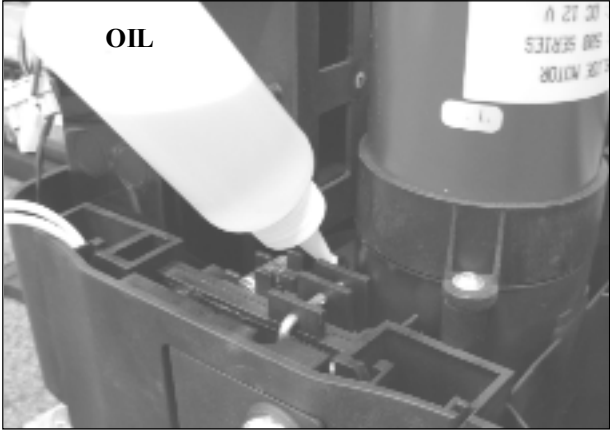


Gate closing to the right



REMEMBER TO PLACE THE OIL IN THE GEARBOX BEFORE THE MOTOR IS OPERATED

It is extremely important that the gearbox is filled with the oil supplied before the motor is operated.



PROGRAMING THE MOTOR

Before programming the motor it is important to check the following:-

- * Gear box oil has been added to the motor (see pg 12)
- * The motor is level and the rack is secure on the gate.
- * The gate has sufficient end stops. **DO NOT** automate a gate that has no end stops.
- * The gate runs freely and does not jam or stick in ANY WAY at all.
- * The gate is level and does not move on its own when left in any position.
- * The magnet is mounted in the correct position. (see pg 12)

To program the motor:-

1. Ensure that **all power is removed** from the PCBoard. This includes the battery (DC) and the mains power (AC)
2. Manually open the gate 1—2 m
3. Lock the gate in place. (see pg 7)
4. Insert the program jumper over the two pins on the PCBoard called PROG MOTOR (see pg 13)
5. Apply the battery power ONLY. Take care that the battery wires are not reversed. The red battery wire is the positive and the black battery is the negative. **DO NOT APPLY AC (MAINS) POWER.** The staus LED will start flashing rapidly, this is an indication that the motor is ready to be programmed.
6. Press the TEST button on the main PC.board. (see pg 13)
7. The gate must do the following sequence:-
 - 1 Start **closing** in slow mode until the end stop is struck.
 - 2 Open in slow mode until the end stop is struck. The program is now complete.
- 8 Remove the jumper from the two PROG pins.
- 9 Apply the AC (mains) power. Check that the green CHARGE LED comes on.
- 10 The program is now complete.

If the sequence in step 7 is not as above, remove the power. This will stop the programming sequence and the motor will stop.

If the motor starts to open when the test button is pushed, remove the motor wires from the PC board and reverse them. This will allow the gate to run in the correct direction.

PROGRAMING REMOTES TO THE RECEIVER

1. Press and hold the button on the remote that is to be programmed.
 2. Insert the jumper over the two pins on the main PC board called TX LEARN. (see pg 13).
 3. Remove the jumper from the two pins.
 4. Release the button on the remote.
 5. Repeat the above steps for each remote to be programmed to the receiver.
- This method is recommended so as to swamp out any other signals that may interfere with the receiver.

ERASING REMOTES FROM A RECEIVER.

1. Insert the jumper over the two pins called ERASE TX
2. Count 4 flashes of the LEARN LED on the main PCB see PG 13
3. Remove the jumper
4. Replace the jumper and count two flashes
5. Remove the jumper.
6. Replace the jumper and count four flashes
7. Remove the jumper
8. The led will flash rapidly to indicate that the remotes have been erased from the receiver.

SETTING AUTO-CLOSE TIME.(OPTIONAL)

Auto-close is a setting that can be chosen in order to make the gate close automatically after a chosen time. It must be noted that it can be extremely hazardous to set an auto close time without the use of infra-red safety beams on the gate, as the gate may close on a vehicle or pedestrian causing harm.

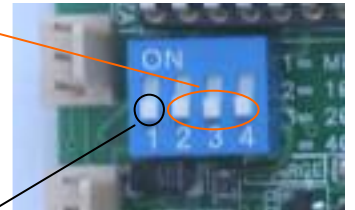
The auto-close function is set by using the dipswitches on the main P.C.Board. See pg 13.

Dipswitch number 2 on = 10 seconds

Dipswitch number 3 on = 20 seconds

Dipswitch number 4 on = 40 seconds

Any combination of these dipswitches can be used to set the required auto-close time.



SETTING MULTI-USER MODE.(OPTIONAL)

Multi-user mode is used when there are numerous remotes eg in a complex. This mode allows the gate to open when it receives a trigger but it will ignore all other triggers thereafter to prevent accidental closure. It must be noted that in order to use Multi-user mode, auto-close must be selected.

To select multi-user -

Select dipswitch number 1 on to activate multi-user mode

Note :- if multi-user is selected without an auto-close time selected. The gate will open and then close immediately automatically.

SETTING THE CURRENT SENSING .(OPTIONAL)

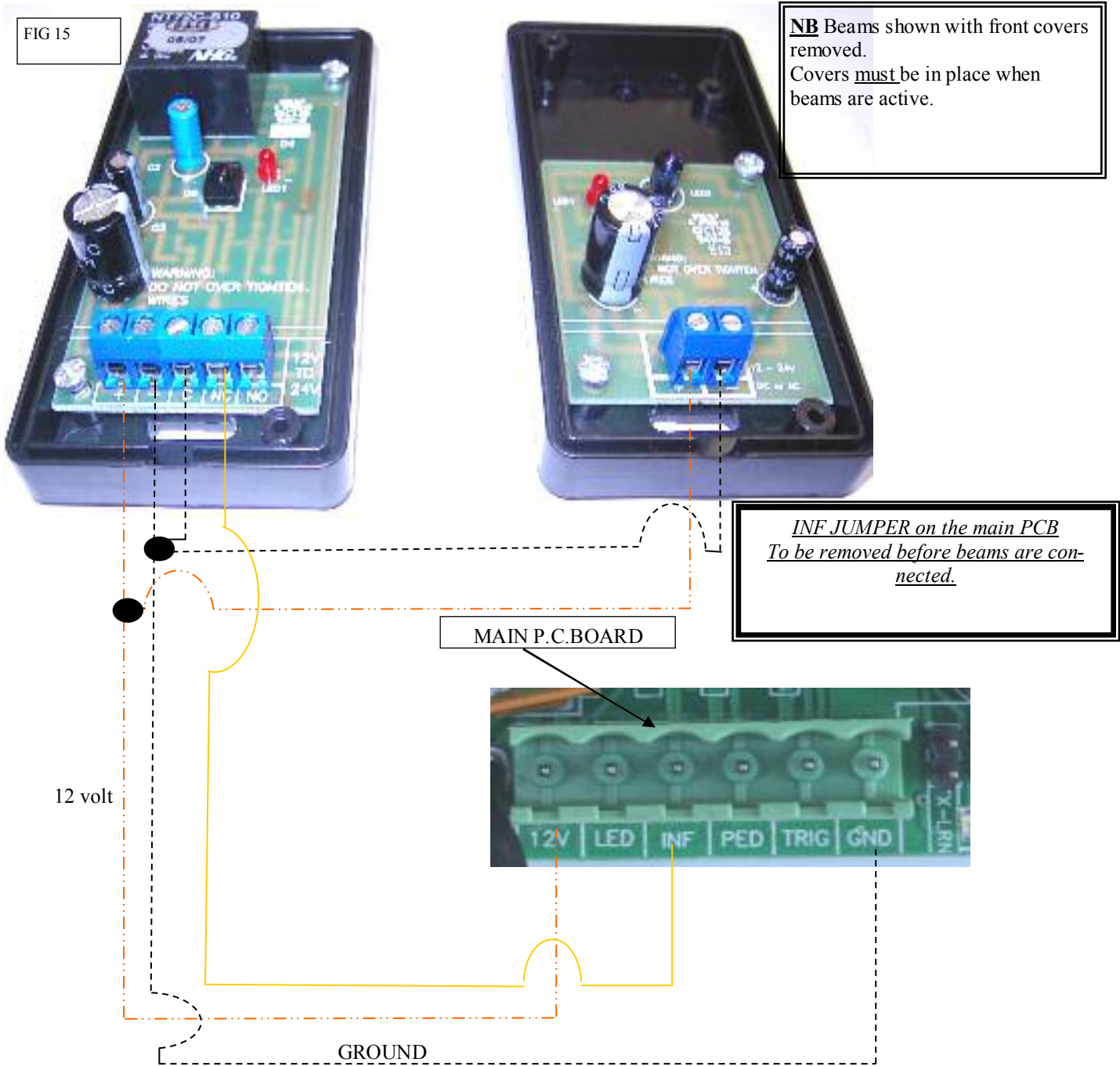
Caution should be taken when setting the current sensing on the motor. The factory settings should be sufficient for most installations. If it is found that the current sensing must be increased, the current sensing pots (potentiometers) must be turned clockwise. This must be done in small increments. Turning the pots all the way up will cause the motor to drive with extreme force, this will cause damage or injury in the case of a collision.



Decrease sensitivity by turning the pots clockwise.

Increase sensitivity by turning the pots anticlockwise

CONNECTING INFRA-RED BEAMS (OPTIONAL)



It is strongly recommended that ALL gate motor installations have infra-red beams connected as this is a safety feature and will guard against the gate hitting a vehicle or pedestrian.

The beams are wired using normal communication cable (8 core). The wiring is done as shown above. It is important to check the following when installing beams.

The NC (normally closed) connector is used on the beam. This is wired to the INF out-put on the main P.C.Board.

The BEAMS jumper on the main PCB must be removed before the beams are fitted.

To de-activate the beams, place the BEAMS jumper over both pins. This will render the beams in-active and will allow the gate to close regardless of any obstruction in front of the beams.

CONNECTING AN INTERCOM. (OPTIONAL)

There are many different types of intercoms available on the market today.

The wiring of these intercoms can vary in some ways, but the general wiring is the same. The three main types of intercom are as follows:-

220 volt. This type normally plugs into the house mains, (220 volt supply) and then four wires are run from the handset (inside the house) to the gate station (outside at the gate) and the motor (trigger).

12 volt. This type normally gets its power from the motor (12 v/dc). This means that a minimum of six wires are needed to run from the handset. Two wires to the gate station and four wires to the motor.

6 volt. This type is battery operated, normally using 4 penlight type batteries for power. Only four wires are needed to run from the handset. Two wires to the gate station and two wires to the motor (trigger)

The mounting of the intercom is the same with each type. The handset is placed inside the house / office and the gate station is placed at the point of entry, this is normally the gate. The gate station is normally mounted by means of a “gooseneck”

**It is important to note that the communication cable MUST be run in a conduit
DO NOT run communication cable in the same conduit as any 220 v cable.**

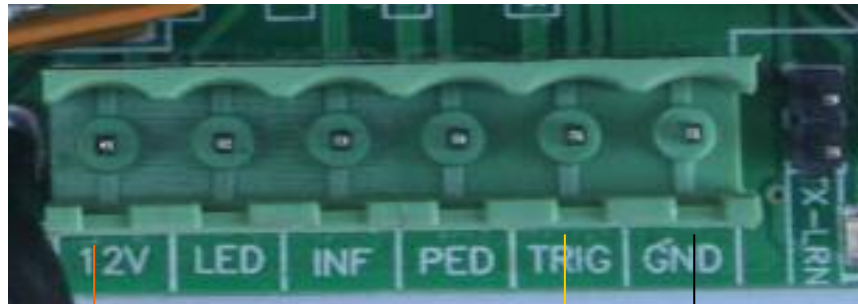
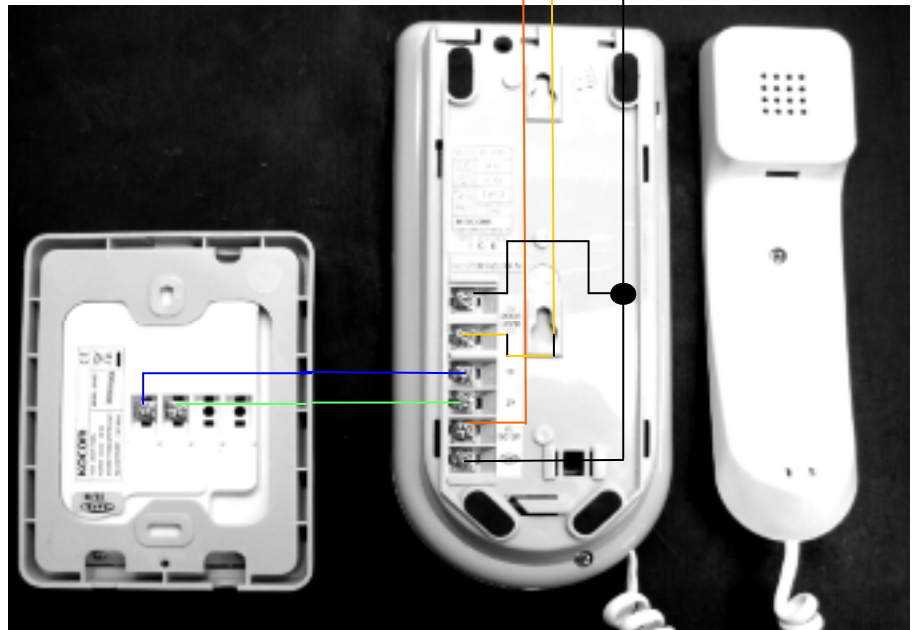
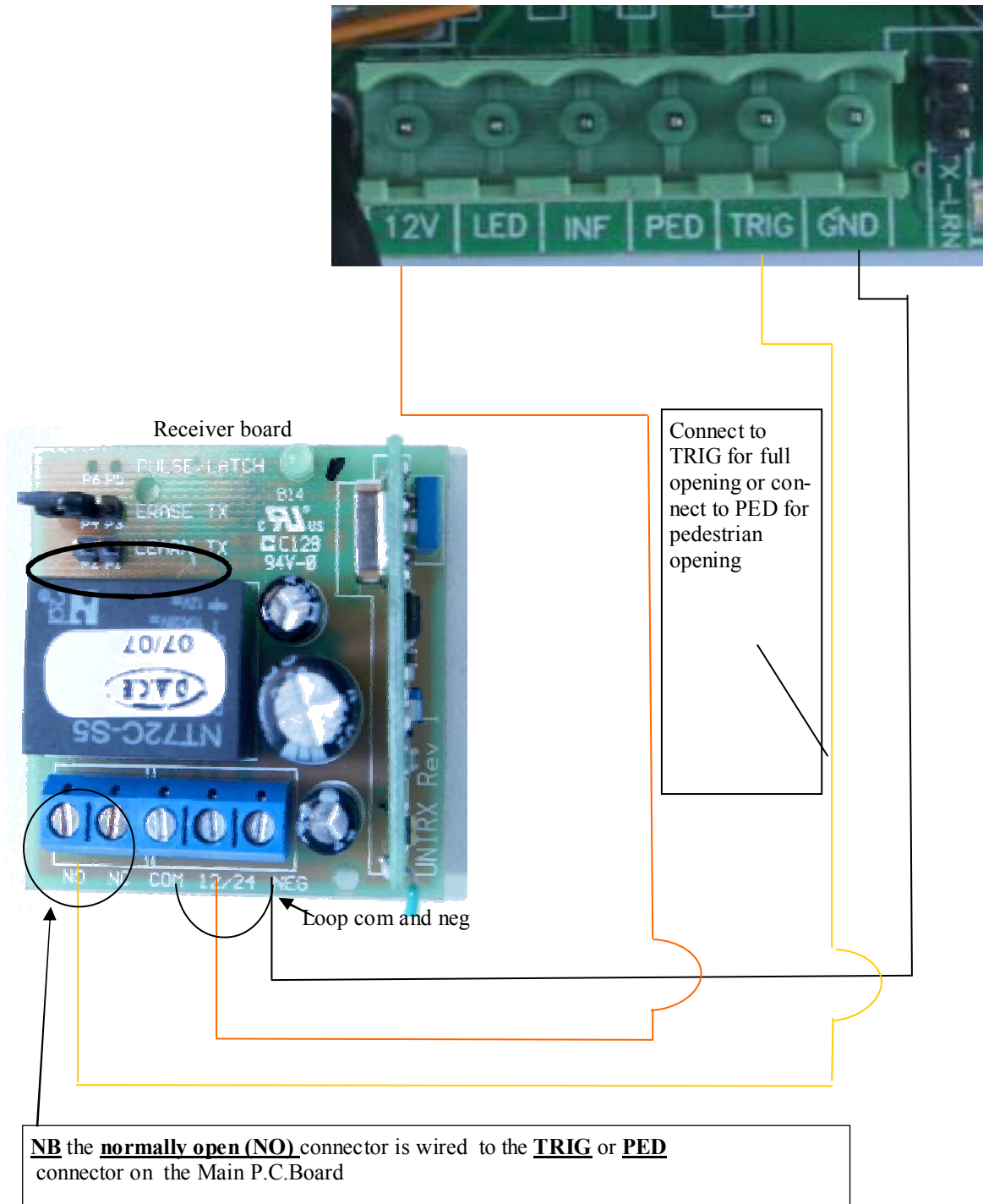


Diagram shows a typical Kocom 12 volt one to one intercom system. Other brands may vary in the layout of the connector screws.



CONNECTING AN EXTERNAL RECEIVER (OPTIONAL)

In the event of the on-board receiver not having enough range or a pedestrian trigger is required, an external receiver can be added. This receiver should be placed about two meters above the motor. The receiver is wired as shown below.



To program remotes to the receiver.

1. press and hold the button on the remote.
2. Place the jumper over the two TX LEARN pins.
3. Remove the jumper.
4. Release the button on the remote.

Repeat the above steps for each remote to be programmed.

CONNECTING AN EXTERNAL L.E.D. (OPTIONAL)

An external L.E.D. (light emitting diode) can be wired to the motor in order to indicate the status of the gate at all times. The most common place to set the L.E.D. is in the handset of the intercom. If there is no intercom then the L.E.D. can be placed in any chosen location.

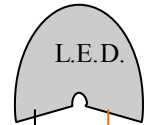
The L.E.D. indications are as follows.

Gate openL.E.D. ON SOLID.

Gate closedL.E.D. FLASH ONCE EVERY TWO SECONDS. (If mains is on)

Gate movingL.E.D. FLASHING CONTINUOUSLY

If the gate is closed and there is no L.E.D. indication, this means that the mains power is not on and the battery is not charging, this means that the battery will go flat and the motor will operate until the battery is flat.



FITTING THE THEFT DETERENT BRACKET (OPTIONAL)



Remove the two screws holding the lid. These will not be needed when the bracket is used. Using the two screws provided with the bracket insert them through the bracket and into the motor base as shown.

Do not leave the motor on its side as this may cause the oil in the gearbox to leak.



Replace the motor onto the foundation plate.
Place the top locking bar over the lid of the motor



Place a padlock through the holes in the locking bar

L.E.D. INDICATIONS

There are several light emitting diodes (L.E.Ds) on the main P.C.Board. These L.E.Ds indicate several conditions. These indications are as follows:-

STAUS LED. ON = gate open or gate is in motion.

OFF = mains power off.

FLASHING ONCE EVERY TWO SECONDS = gate closed and mains power on.

FLASHING 4 TIMES = rev counter fault.

FLASHING 3 TIMES = motor fuse blown or electric motor fault.

OPEN LED. ON = gate open

OFF = gate closed.

CLOSED LED. ON = gate closed.

OFF= gate open.

12v LED. ON = normal.

OFF= 12 volt output fault.

INF LED. ON = normal.

OFF = infra red beams faulty or obstruction in front of beams.

This LED should be on at all times unless there is an obstruction in front of the beams.

TRIG LED. ON = trigger fault. Check all trigger connections for short.

OFF = normal.

This LED should be off at all times and will flash when the motor is receiving a trigger.

PED LED. ON = trigger fault. Check pedestrian trigger connections for short.

OFF = normal.

This LED should be off at all times and will flash when the motor is receiving a trigger.

CHARGE LED ON = normal.

OFF = battery is not charging. Check transformer .

WARRANTY

D.A.C.E. warrants the **original** purchaser, at the point of sale, that the product is in good working order and is free from any defect.

ANY warranty claim **must** be accompanied by the **original** invoice.

The original purchaser is responsible for checking that the equipment is free from any visible defect before it leaves the point of sale.

The warranty period is **24 months** from **date of MANUFACTURE**.

The warranty is a **“walk in”** warranty. No warranty claim will be entered into “on site”.

The equipment must be returned to the factory with the original invoice for any repair or replacement. The **transport** cost is for the end **users account**.

If the equipment was purchased at a dealer, merchant or agent of D.A.C.E. the claim must be directed to said merchant, dealer etc.

The warranty will **not cover** any of the following circumstances in any way.

- 1. Incorrect installation of the equipment.**
- 2. Incorrect wiring of the equipment.**
- 3. Lightning, flooding, power-surge, fire or any form of abnormal use of the equipment.**

SPECIFICATIONS

Max gate mass—500 kg

Max gate length—8m

Max number of operations per day— 80 if start up is less than 6 kg

Max start up force—15 kg

Electric motor—120 w 12v dc

Over-current sensing—electronic

Auxiliary out-put—12v DC

Gate speed—20 m per minute, dependant on gate mass.

Charge rate—13.8 vDC

Receiver— onboard- maximum 30 remotes.

Transformer—plug in type, 220vAC ~ 16vAC

Auxiliary wiring—pluggable.

Optional features

Pedestrian opening.

Infra-red safety beams

Loop detector compatible

Theft deterrent bracket

Note this gate operator is designed to be used in a **domestic application only**. If the application requires a higher number of operations D.A.C.E. suggest that a DuraSlide AC/ DC or 500 SERIES type motor is used.