

INDEX

INTRODUCTION.....	P2
LEGAL REQUIREMENTS AND WARNINGS.....	P3
RECOMMENDED TOOLS.....	P3
TERMS AND DEFINITIONS.....	P4
MOTOR LAYOUT.....	P5
SITE EVALUATION.....	P6
GATE EVALUATION.....	P7
START-UP FORCE.....	P8
REMOVING THE LID.....	P9
TRANSFORMER WIRING.....	P10
ANCHORING THE MOTOR.....	P11
SECURING THE MOTOR.....	P12
MOUNTING THE RACK.....	P13
FILLING THE GEARBOX OIL.....	P14
MOUNTING THE MAGNET.....	P14
MAIN PC BOARD LAYOUT.....	P15
LCD SCREEN.....	P16
SETTING THE MOTOR DIRECTION.....	P17
PROGRAMMING THE MOTOR.....	P18
SETTING THE OVER-CURRENT.....	P19
PROGRAMMING THE REMOTES.....	P19
SETTING AUTO-CLOSE TIME.....	P20
SETTING PARTY MODE.....	P20
TECHNICAL SPECIFICATIONS.....	P21

INTRODUCTION AND RECOMMENDATIONS

Congratulations on your purchase of a D.A.C.E 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:-

- Infra-red safety beams
- Remotes and receivers
- Slide gate operators - SPRINT; CONDO

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.

It is strongly recommended that safety beams are used on all installations, as this reduces the risk of the gate closing on a pedestrian or vehicle.

NOTE : D.A.C.E. supplies an on-board receiver with every motor. D.A.C.E. cannot guarantee the range of the receiver due to interference or obstacles in the path of the receiver.

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

WARRANTY

BMG Imports offer a Standard Warranty on this equipment. The following terms and conditions apply to ALL warranty claims.

BMG Imports 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 within 24hours of receiving the goods to carry out a physical inspection and notify BMG Imports in writing if the goods do not comply with the description set out.

The warranty period is **12 months** from date of **PURCHASE**.

The warranty is a **"back to base "** warranty.

The equipment must be returned to the factory with the original invoice for any repair or replacement.

If the equipment was purchased at a dealer, merchant or agent of BMG Imports the claim must be directed to said merchant, dealer etc.

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

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

NOTE: the **transformer is not guaranteed** in any manner, due to power fluctuations.

Any warranty claim must be inspected and tested by a BMG Imports agent before any further claim is entered into.

LEGAL REQUIREMENTS AND WARNINGS FOR INSTALLING THIS EQUIPMENT

- It is recommended that your local 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 ANY other cables.
- Mains supply may only be run in a guarded cable. Under no circumstances may 220V/AC be run using Communication cable, Ripcord or Cabtyre.
- BMG Imports 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 SPRINT and CONDO operators have built-in collision sensing, substantial damage may still 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.
- BMG Imports will not be held responsible for any gates bumping the ends stops when a gate is automated on a slide.

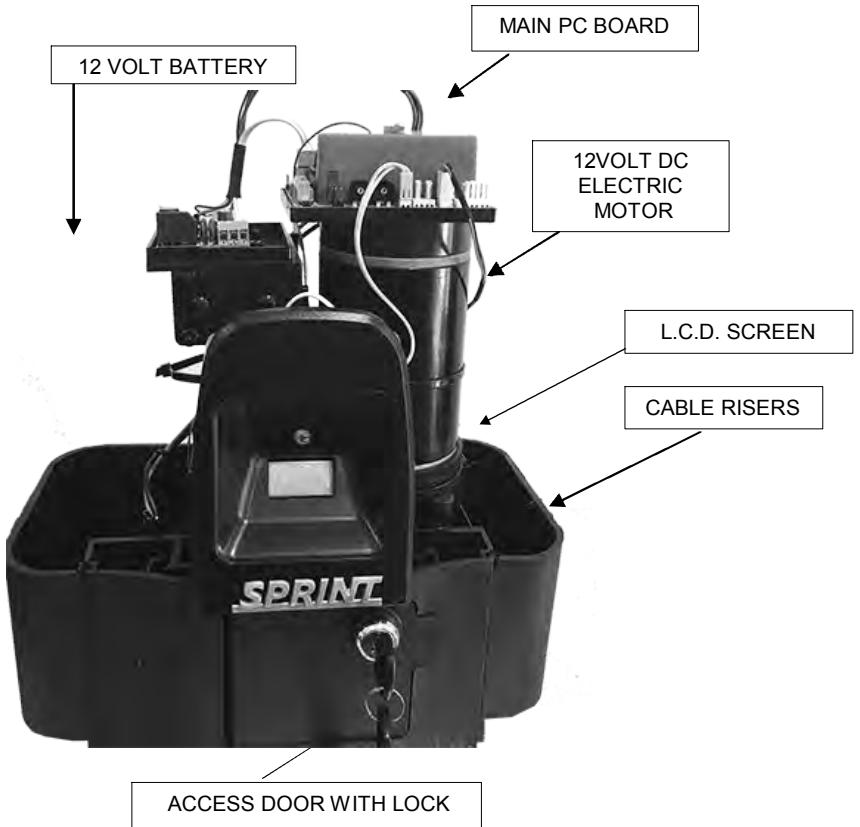
RECOMMENDED TOOLS

- Assorted screw drivers – phillips and flat
- 17mm spanner
- 17mm socket
- Tape measure
- Spade
- Pick
- Spirit level
- Drilling machine
- Steel drill bits
- Masonry drill bits
- Hammer
- Multi Meter
- Side cutters

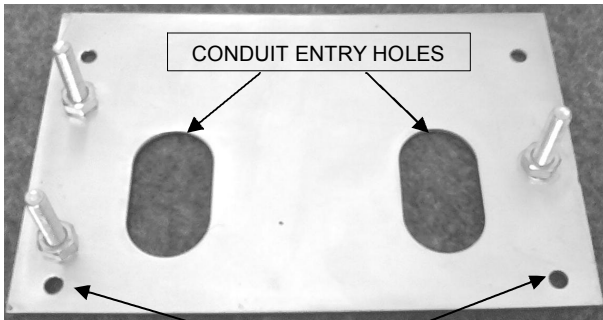
TERMS AND DEFINITIONS

- **Auto-close:** allows the gate to close automatically after a selected time period.
- **Multi-user mode:** this is a setting used in town house situations where there are multiple triggers. This setting will avoid the motor getting multiple triggers at the same time.
- **Pedestrian access:** allows only partial opening of the gate
- **Anti-lift device:** stops the gate being lifted off the rail.
- **Battery:** the battery is used to drive the motor.
- **Safety Beams:** These reduce the risk of the gate closing on a vehicle. Beams should always be used when auto-close is selected.
- **Transformer:** the transformer reduces the mains power to 16 VAC. **NOTE!** The cable to be used from the transformer to the main PC board must be a minimum of 1.5mm cable. DO NOT use communications cable.
- **Charger module:** the on-board charger receives 16 VAC from the transformer and then delivers a trickle charge to maintain ± 13.8 VDC charge to the battery.
- **Main PC board:** this is the printed circuit board that contains all the electronic components that operate the motor. **NOTE!** Always remove the power from the PC board before connecting any out-put wires.
- **Remote/Transmitter:** this is usually a hand held product which transmits a radio signal to the receiver.
- **Receiver:** the receiver triggers the motor after receiving a radio signal from the transmitter.
- **Test button:** this is a button on the main PC board that can be used to activate the motor. This is usually used during the programming of the motor.
- **Rack:** this is a length of toothed gear mounted on the gate.
- **Pinion gear:** this is the gear that meshes with the rack in order to drive the gate. **NOTE!** This is a serviceable part.
- **Foundation plate:** this is the steel plate that is mounted to a concrete plinth in the ground. The motor is mounted onto the foundation plate using the three mounting bolts.
- **Thumb wheel:** this allows the motor to be put into Manual Override mode so that the gate can be operated manually by hand.

MOTOR LAY-OUT



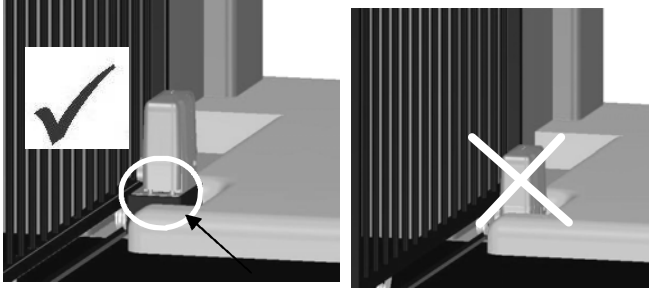
FOUNDATION PLATE



SITE EVALUATION

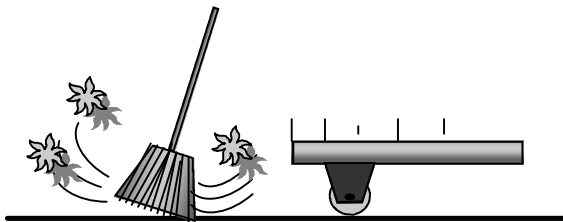
The site should be evaluated before the installation begins. The following items should be checked:

- Flood level: the motor should be above flood level to avoid any damage to the motor.
- The rail must be level and should be above ground level, this will assist with keeping debris out of the path of the wheels. Any debris lying on the rail may cause the motor to over current.

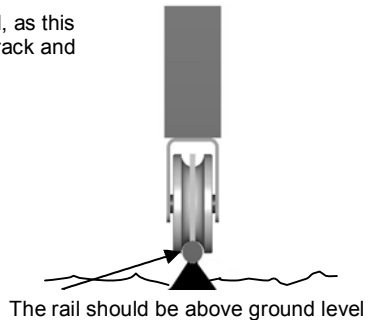


Mount the motor above the flood level or a flood proof wall must be built in order to prevent water from entering the motor

It is important to ensure that the rail is above the ground level, as this reduces the chance of stones and other debris blocking the track and jamming the wheels of the gate.



Ensure that the rail is kept clear of all debris,



Keep all trees, bushes and other growth clear of the gate. Failure to do this may lead to the gate jamming.



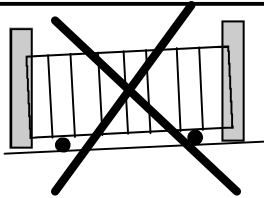
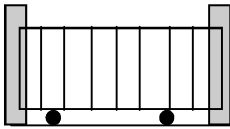
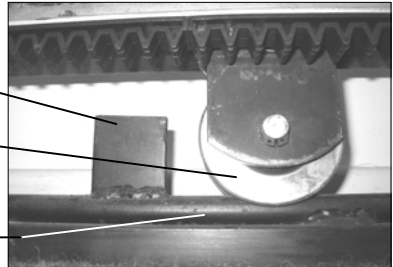
GATE EVALUATION

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 problems if not checked.

Ensure that the end stops are secure.
It is recommended that steel plates of a minimum 70mm high are used as stops.

Ensure that the wheels are turning freely.

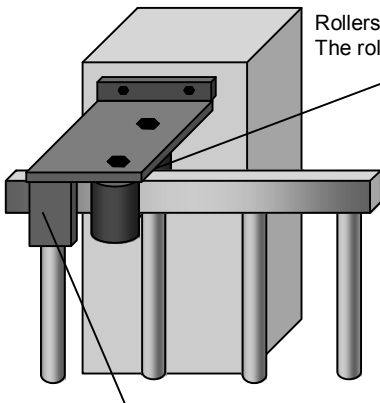
It is recommended that 16mm round bar is used to assist with the smooth operation of the gate



Ensure that the gate is level!



The gate must not move on its own when left in any position on the rail. **D.A.C.E will not be held responsible for any gates bumping the ends stops when a gate is automated on a slide!**

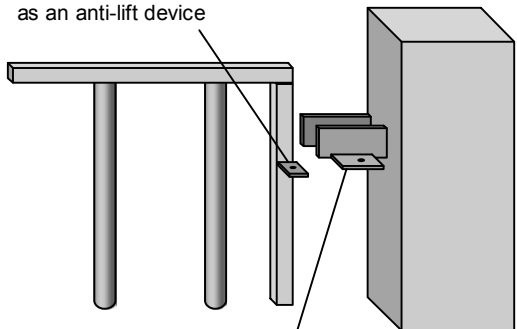


Rollers must roll freely.
The roller mounting can be used as an anti-lift device.

All precautions must be taken to ensure that the gate cannot run free of the rollers.

A device can be fabricated and fitted to prevent this.

The catch bracket can also be used as an anti-lift device

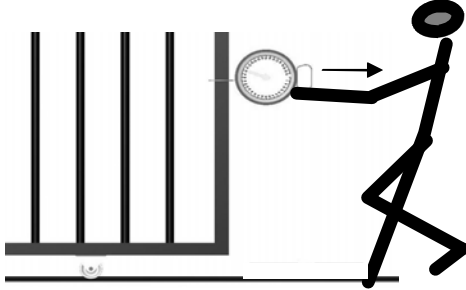


The gate must not bind in any way on the bracket when opening or closing. Binding can cause a fuse to blow.

START UP FORCE

It is important to check the start-up force of the gate before the motor is installed. Place the gate in the fully closed position. Using a fishing scale, pull the gate open and check the kilogram force required to start the gate rolling. This is the start-up force.

At no stage while moving the gate must the reading exceed the force shown in the table below.



Start up force table

Sprint max. start up force of 18kgs

max. running force of 12kgs

Condo max. start up force of 28kgs

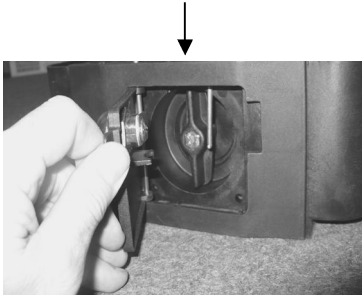
max. running force of 18kgs

Note: a good standard household gate of +/- 100kgs should have a start up force of 1.5kg - 2.5kg

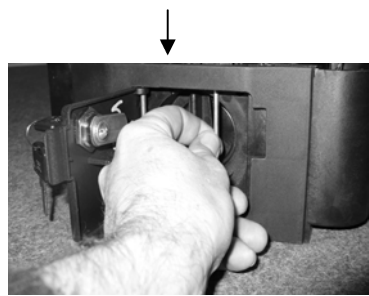
REMOVING THE LID AND PLACING THE MOTOR IN MANUAL OVER-RIDE

REMOVING THE LID

Step 1
Open the access door

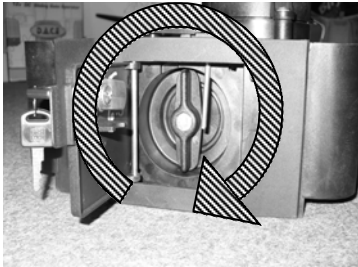


Step 2
Pull the pin out, the pin will move about 5 mm

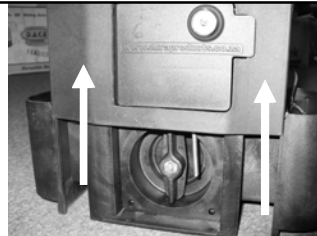


PLACING MOTOR INTO MANUAL OVER-RIDE

Open the door as in step 1 above. Turn the thumb-wheel **CLOCKWISE** until the gate moves freely.

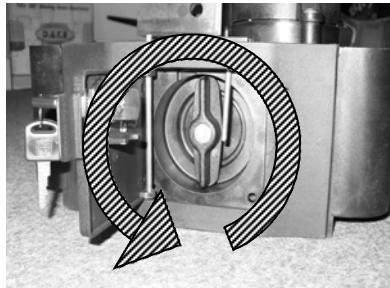


The front cover can be removed for ease of operation, as shown below.



PLACING THE MOTOR IN NORMAL OPERATION MODE

Turn the thumb-wheel **ANTI-CLOCKWISE**. Move the gate by hand until it locks into place.



ELECTRICAL WIRING (SPRINT & CONDO)

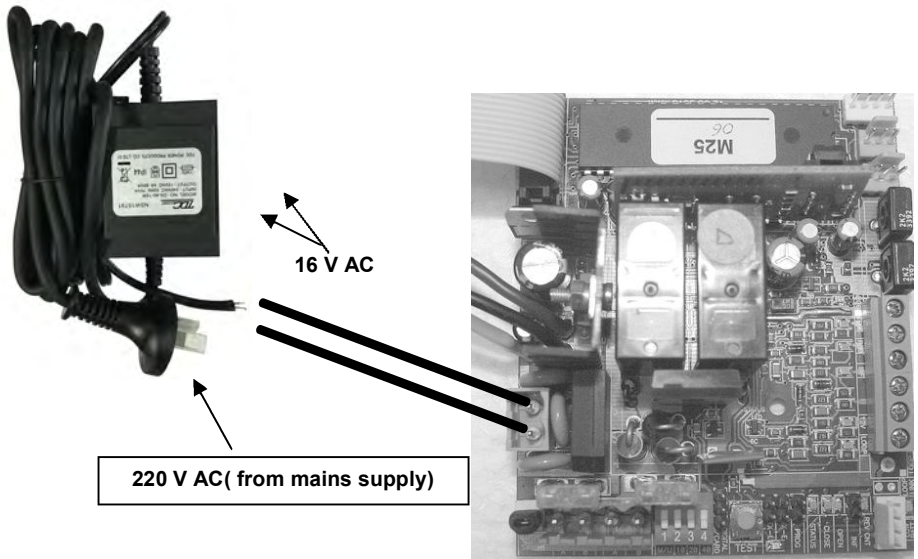
The following section explains how the wiring should be done for the CONDO and SPRINT motors only.

- The transformer must be plugged into a normal plug socket in the house. 16 Volts AC is then run directly to the PC board 16V AC connection. The distance between the transformer and the motor should not exceed 50 meters.
- The cable should be run in a 300 mm deep trench 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 two core 1.5mm cable. **DO NOT USE COMMUNICATION CABLE AS THIS WILL VOID ANY WARRANTY AND IS ILLEGAL.**

WIRING DIAGRAM FROM TRANSFORMER TO CHARGER (SPRINT & CONDO)

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

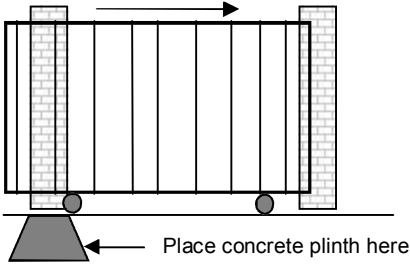
Connect from the transformer 16Volts AC to the **16v AC** on the main PC board.



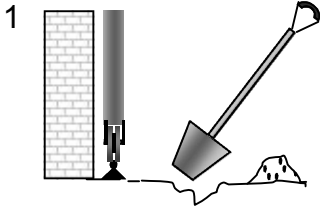
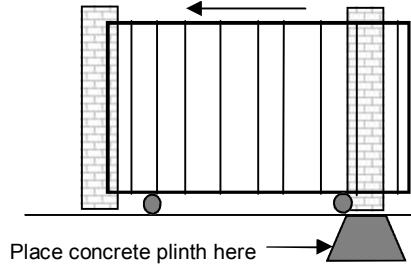
ANCHORING THE MOTOR

It is very important that the motor is mounted on a firm foundation that can not move or become loose over time. The foundation should be constructed from concrete. The size of the plinth should be about 300 by 300 mm square and about 200mm deep. The foundation plate supplied with the motor must be securely mounted to the concrete using coach screws and plugs. The foundation plate can also be welded to the gate rail if need be. The concrete should be allowed sufficient time to set before the motor is mounted onto the plate.

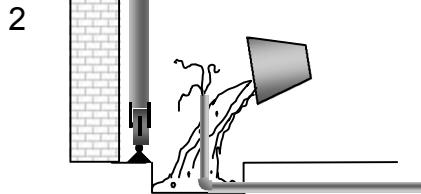
GATE CLOSING TO THE RIGHT



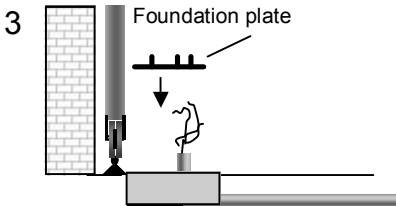
GATE CLOSING TO THE LEFT



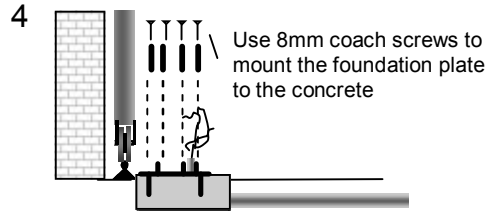
Dig a hole about 300mm



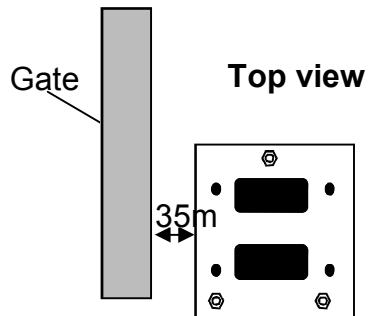
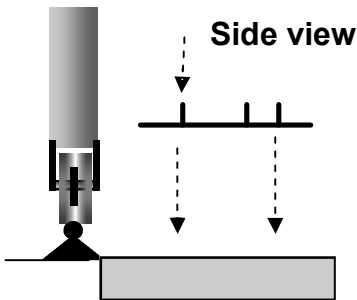
Place the conduit in the correct position before filling the hole with concrete. Flexible conduit may also be used.



Allow concrete to set and then place the foundation plate onto the concrete plinth



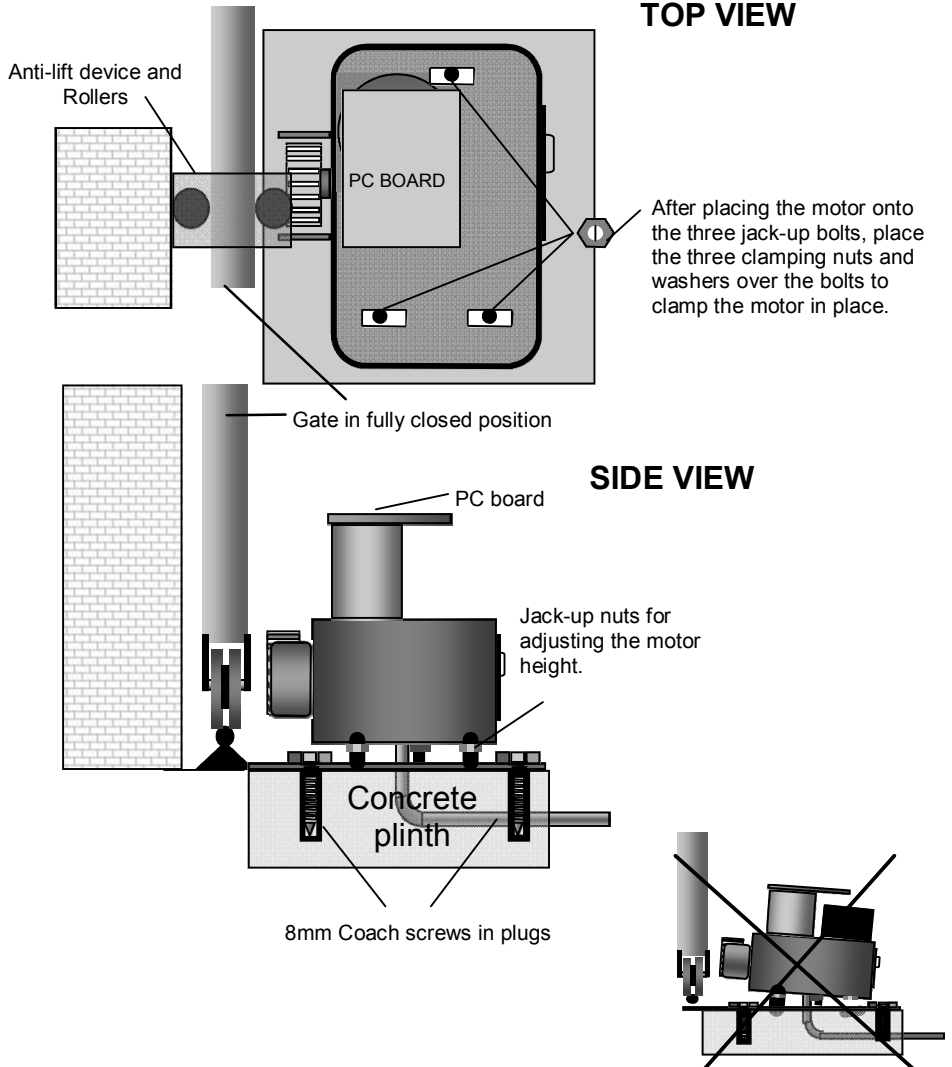
Trim the conduit and the cable to the correct length before placing the motor onto the foundation plate.



SECURING THE MOTOR TO THE FOUNDATION PLATE

When anchoring the motor it is important to ensure that the following points are checked.

- The electrical cable is in position.
- The concrete is fully set.
- The motor foundation mountings are secure and can not move or become loose.
- The motor should be set level and parallel to the gate.
- The motor must be set above the flood level or if this is not possible, a flood proof wall should be constructed around the motor.



ENSURE THAT THE MOTOR IS MOUNTED LEVEL

MOUNTING THE RACK

The rack is a length of steel that has nylon teeth attached to it. The rack is attached to the gate by means of TEK screws. The rack meshes with the pinion gear on the motor which then drives the gate.

It is very important that the rack is mounted securely and that the rack meshes with the pinion gear for the full length of the gate. Any section of rack that is too tight or too loose will cause problems with the operation of the gate.

Step 1: ensure that the motor is at least **7 mm above the ground level** and that the gate is in the closed position. **Fig A**

Step 2: place a piece of the rack on the pinion of the motor, ensuring that the teeth of the rack and the pinion mesh correctly.

Step 3: now fasten the rack to the gate using the TEK screws. The TEK screw should be placed in the centre of the slot in the rack so as to allow for adjustment later. **FIG B**

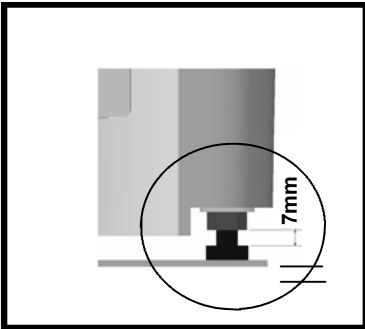
Step 4: push the gate towards the open position continuing to secure the rack to the full length of the gate. Ensure that the rack is securely meshed with the pinion at all times during this operation. Repeat step 4 until the full length of rack is attached to the gate.

Step 5: using the jack-up bolts under the motor, **drop the motor 2mm**, this allows a slight gap between the teeth of the rack and the pinion so as to prevent any binding or tight spots on the rack.

FIG C

Step 6: push the gate all the way open and closed to check that the rack is meshing with the pinion for the complete length of the gate.

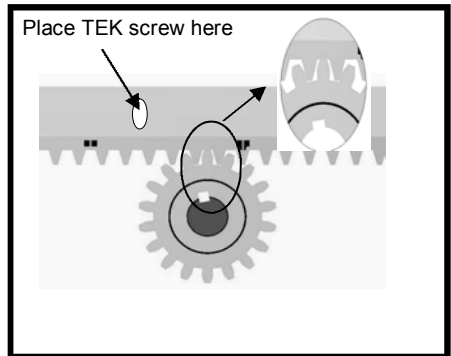
Check that the rack is not touching the motor while running and also check that the rack covers at least three quarters of the pinion at all times when viewed from above.



Start with 7 mm space

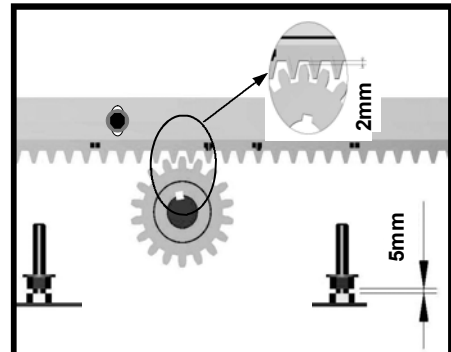
A

B



Place the TEK screws as shown below for the complete length of rack.

C



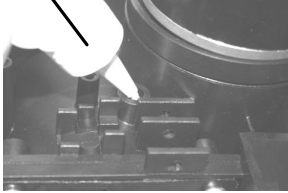
Drop motor by 2 mm when rack is secured to gate.

IT IS RECOMMENDED THAT THE RACK IS MOUNTED AS SHOWN AND NOT INVERTED, AS THIS MAY CAUSE OBSTRUCTION SENSING PROBLEMS

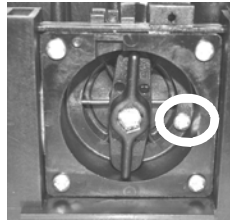
FILLING THE GEARBOX OIL

VERY IMPORTANT: GEARBOX MUST BE FILLED WITH THE SUPPLIED OIL *BEFORE* THE MOTOR IS OPERATED!

Fill the gearbox as shown below. The entire bottle needs to be emptied into the gearbox.



The gearbox oil level needs to be checked periodically. To check the oil level, remove the oil level screw. Oil should be added until the oil just starts to run out of the hole.

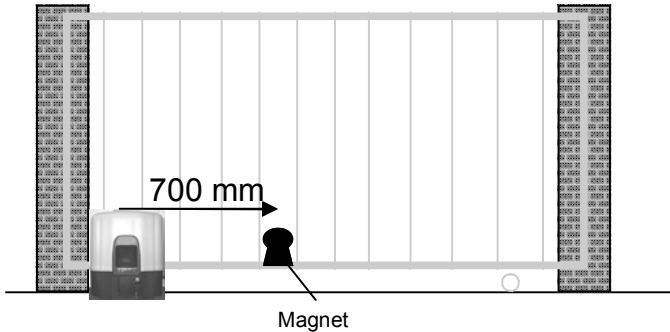


REPLACE THE SCREW!

Oil level screw

Use S.A.E.75W/90 oil to refill the gearbox

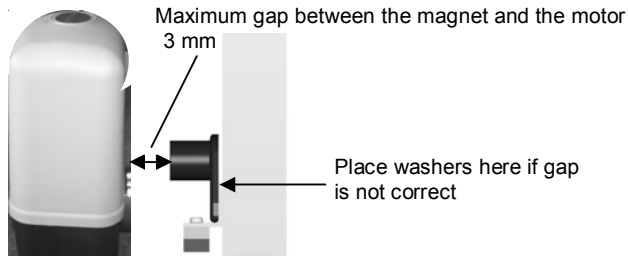
MOUNTING THE MAGNET



As shown above, with the gate in the **closed position**, the magnet must be mounted 700 mm from the centre of the motor.

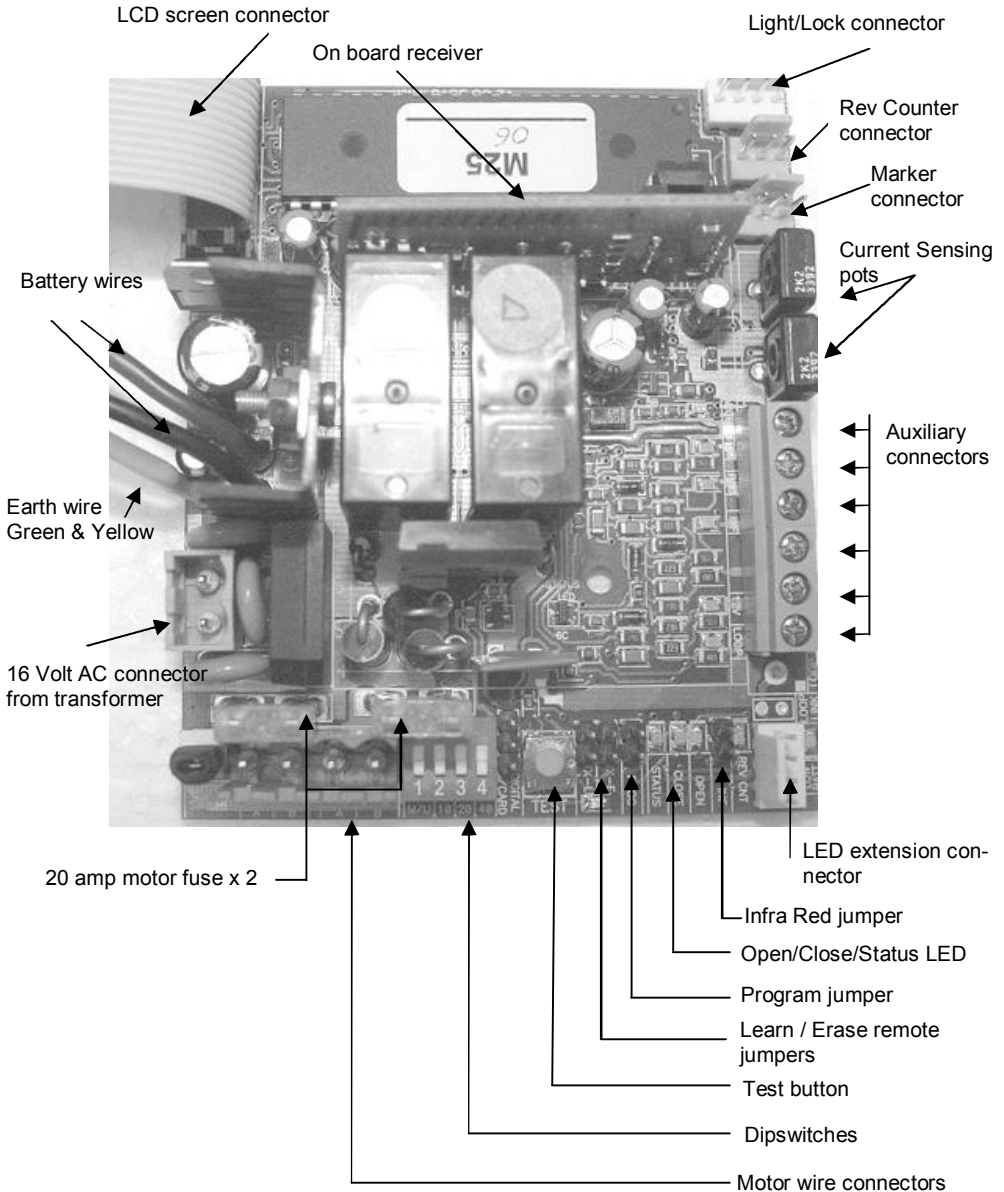
If it is not possible to mount the magnet at 700mm, this distance may be extended very slightly. The magnet must not be inverted. If the magnet is moved for any reason after the motor has been programmed, then the motor will have to be re-programmed.

The gap between the motor and the magnet, when the magnet passes the motor, must not exceed 3mm. To check this, manually move the gate until the magnet is directly over the pinion gear then measure between the magnet and the motor lid. If the gap is more than 3mm, place washers behind the magnet until the correct gap is achieved



MAIN P.C.BOARD LAY-OUT

This PC board 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.



LCD SCREEN

The LCD is an easy to use screen that gives the owner / installer information regarding programming and motor status. Whenever the motor is programmed or a fault occurs, refer to the screen for diagnostic assistance. In certain cases the screen will give a message that reads "Call Technician" this means that the motor needs to be checked by an installer. The messages on the screen are generally self explanatory. However the following table gives a description of the messages and their meaning.

LCD SCREEN



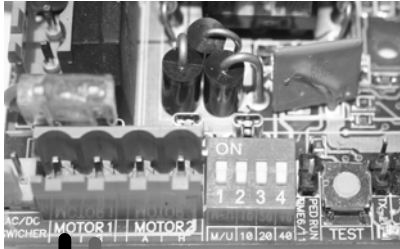
Some of the messages below have been shortened to show the main message. Certain messages will also show the action needed.

<u>MESSAGE</u>	<u>MEANING / ACTION</u>
LOW BATTERY	THIS MESSAGE WILL SHOW AFTER INITIAL START UP, IF THE LOW BATTERY MESSAGE REMAINS AFTER THE MOTOR IS TRIGGERED :- CHECK BATTERY VOLTAGE / CHECK CHARGER VOLTAGE
MAINS FAIL	CHECK THE MAINS POWER / CHECK TRANSFORMER / CHECK CHARGER.
GATE CLOSED	THE GATE IS IN THE CLOSED POSITION.
GATE OPEN	THE GATE IS IN THE OPEN POSITION.
OBSTRUCTION	THE GATE HAS SENSED AN OBSTRUCTION. CHECK THE WHEELS / ROLLERS/ RACK/ BRACKETS/ FUSES/ FORCE SETTING POTS.
NO REV PULSES	FAULTY REV COUNTER, PC BOARD MOUNTING MAY BE LOOSE, MAGNET HOLDER BROKEN.
AUTO-CLOSE ACTIVE	THE GATE IS SET TO AUTO CLOSE.
PARTY MODE	THE GATE IS IN AUTO-CLOSE OVERRIDE .
PROGRAM MODE	THE GATE IS IN PROGRAM MODE.
BEAMS BLOCKED	THE INFRA-RED SAFETY BEAMS ARE BLOCKED / FAULTY/ THE BEAMS LINK HAS BEEN REMOVED.
PROGRAMMING CLOSE POSITION	THE GATE IS CLOSING WHILE PROGRAMMING.
MARKER OK	THIS MESSAGE WILL SHOW WHEN THE MAGNET PASSES THE MARKER. THIS INDICATES THAT THE MARKER IS IN WORKING ORDER.
PROGRAMMING OPEN POSITION	THE GATE IS OPENING WHILE PROGRAMMING.
PROGRAM COMPLETED REMOVE LINK	THE PROGRAM IS COMPLETE. REMOVE THE PROGRAM LINK.
SERVICE DUE	THE MOTOR REQUIRES A SERVICE.

SETTING THE MOTOR DIRECTION

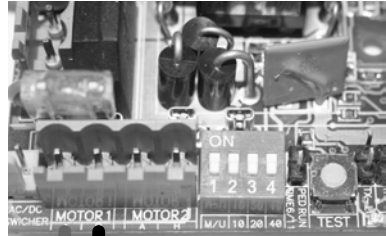
The following diagrams show the correct wiring of the electric motor to the main PC board. The motor wires are found extending from the motor, there are two wires, one wire is blue the other wire is black.

GATE CLOSING TO THE LEFT

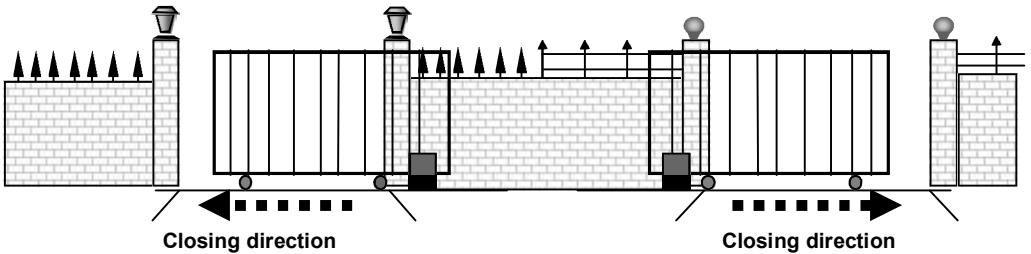


BLACK WIRE BLUE WIRE

GATE CLOSING TO THE RIGHT



BLUE WIRE BLACK WIRE



It is important to set the motor direction, as this will influence the programming of the motor and the security of the motor. The motor is set to automatically close whenever the power is applied and the test button is pressed for the first time. If the gate runs open when the test button is pressed during programming it means that the motor wires are incorrect. The motor wires are the two wires that extend from the electric motor and are connected to the main PC board.

The other reason that the setting of the motor direction is important, is that the motor will automatically drive to the closed position after a prolonged power failure (if the gate is in the open position). Setting the correct motor direction will, in this situation, prevent the gate from suddenly opening and remaining in the open position.

PROGRAMMING THE MOTOR

The motor must be programmed in order that the gate operate correctly. Once programming is complete, the program is held in the memory on the microchip and there is no need to re-program the motor after the initial program.

It is important to note that the following points should be checked before the gate is programmed.

- Gear box is filled with the gearbox oil.
- Motor is level.
- Rack is secure to the gate and engaged with the pinion gear.
- The gate has adequate end stops. (**DO NOT** automate a gate without end stops)
- The gate must run freely and not jam at **ANY** point in its travel.
- The magnet is mounted correctly.

TO PROGRAM THE MOTOR:

Ensure that **all power** is removed from the board.

The LCD screen is designed to assist with the programming of the motor.

Step 1: manually open the gate 1m -1.5m.

Step 2: engage the motor using the thumb wheel.

Step 3: have dip switch 1 & 2 in the 'ON' position

Step 4: apply the battery power. The three LED's will flash rapidly. The LCD will say "PROGRAM MODE - PRESS BUTTON"

Step 5: press the TEST button on the PC board. The gate will automatically do the following:

a) **Close** slowly until the end stop is struck

b) **Open** slowly until the end stop is struck.

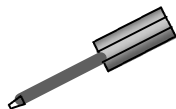
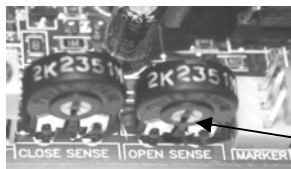
Step 7: after closing it will automatically re-open. Now the LCD screen will say 'PUT SW 1 OFF' The motor is now fully programmed and ready for normal use.

In **Step 6** the gate must close after triggering the motor. If the gate opens instead it indicates that the **motor wires** need to be reversed. This will change the motor direction. {See Setting the motor direction}

Do not connect any auxiliary wires to the board until the motor is fully programmed.

SETTING THE OVER-CURRENT

It is recommended that the current sensing is left as set in the factory. Increasing the current sensing may cause serious injury or damage in the case of the gate striking a person or object. Over-current is the amount of force that the motor delivers before stopping when an object is struck. The amount of force is controlled by the two potentiometers (pots) found on the main PC board. To increase the amount of force - turn the pots clockwise. To decrease the amount of force - turn the pots counter clockwise. **NOTE! the current sensing is set in the factory and should only be changed if absolutely necessary.**



Using a small flat screwdriver turn the pots to increase or decrease the current sensing of the motor

PROGRAMMING THE REMOTES

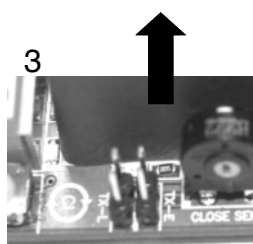
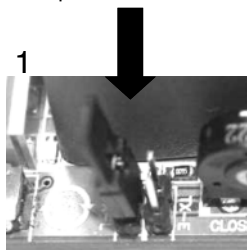
To program remotes to the on-board receiver complete the following steps. (Note: once remotes are programmed, the jumper must not be left on both pins, can be connected to 1 pin for safe storage) It is recommended that the remotes are numbered in order of programming. This will assist with erasing any lost or stolen remote at a later stage.

Step 1: place the jumper over the two pins on the PC Board called TX- L and leave on

Step 2: press and hold the button that is to trigger the gate opener on the remote for 2 seconds, repeat process this step for each remote

Step 3: remove the jumper from the two pins.

That particular button on the remotes is now programmed to the receiver.



ERASING ALL REMOTES PROGRAMMED TO THE RECEIVER

Step1: place the jumper over the two pins called TX-E

Step2: LED will flash 10 times or once it flashes erratic, then remove jumper

PROGRAM REMOTES FOR PEDESTRIAN OPENING ONLY

1: insert learn jumper over pins marked TX-L and do NOT remove the jumper

2: for pedestrian opening press a remote button until the LED flashes twice.

3: release button

4: continue the above steps to add additional remotes for pedestrian opening to a maximum of 18 remotes.

5: remove jumper

Please note if auto close is on the pedestrian mode will work on the auto close time

SETTING PARTY MODE (AUTO-CLOSE OVERRIDE)

Party mode is the auto-close override mode. This means that the gate will remain open and ignore the auto-close time.

To set party mode:

Press and hold the remote button down. The gate will open immediately. Continue holding down for 15 seconds until the LCD displays PARTY MODE.

To reset the gate to normal operation:

Press the remote button twice within two seconds.

The gate will start to close. The gate is now in normal mode again and will use the Auto-close function.

AUTO-CLOSE

Auto-close is an option that allows the gate to close automatically after a chosen time delay, this delay can be from 10 to 70 seconds. Auto-close is selected by using the dipswitches on the main PC Board. Dipswitch numbers 6,7 and 8 are the auto-close time select switches. The times are as follows.

6 off ; 7 off; 8 off = no auto-close

6 on; 7 off; 8 off = 10 seconds

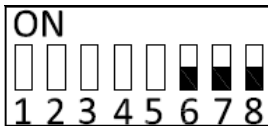
6 off; 7 on; 8 off = 20 seconds

6 off; 7 off; 8 on = 40 seconds

6 on; 7 on; 8 on = 70 seconds

Any combination can be used to select the desired auto-close time.

It is strongly recommended that BMG safety beams are used when Auto-Close is selected as this reduces the chance of the gate closing on an object and causing injury or damage.



No's 6; 7 & 8: SETTING AUTO-CLOSE

TECHNICAL SPECS

	<u>SPRINT</u>	<u>CONDO</u>
Application:	Single Dwelling Only	Town House
Maximum number of open-ings:		
for a gate <200kg	40	120
for a gate <300kg	20	50
for a gate <500kg	10	10
Maximum Gate Mass:	500kg	500kg
Maximum Gate Size:	11m	11m
Collision Sensing:	Electronic	Electronic
Duty Cycle:	20% ***	20% ***
Motor Voltage:	12 Volt	12 Volt
Motor Power:	120 watts	120 watts
Opening Time:	25m/min	18m/min
Supply Voltage at Gate:	16V AC	16V AC
On board receiver:	Yes	Yes
Packaged motor weight (excl. rack & battery):	9.1kg	10.3kg
Packaged motor dimen-sions (excl. rack & battery):	32(L) x 24(W) x 36(H) cm	32(L) x 24(W) x 36(H) cm

*** AT A MAXIMUM RUNNING FORCE OF 10 KG