

POWRWHEEL LIMITED MANUFACTURERS OF REMOTE CONTROL TRAILER MOVERS

POWRTOUCH REMOTE CONTROL

**INSTRUCTIONS for the Installation,
Operation, Use, Safety & Maintenance**



1) You will be sent your invoice that contains proof of purchase and unique serial numbers. Please transfer your name and serial numbers to this document for your convenience. When contacting Powrwheel Limited on a guarantee matter or claim you will be asked for, and MUST provide, this information.

2) Please retain your invoice it contains proof of purchase information that is needed for any guarantee claim that may arise.

CUSTOMER NAME:.....

POWRTOUCH SERIAL No: PWRT.....

ELECTRONICS SERIAL No:

**BEFORE CONTACTING POWRWHEEL LIMITED WITH A GUARANTEE
ENQUIRY PLEASE PAY SPECIAL ATTENTION TO SECTIONS 18, 21 and 22 OF
THIS DOCUMENT.**

**PLEASE NOTE THE GUARANTEE IS NOT TRANSFERABLE SEE PARAGRAPH 18
OF THIS DOCUMENT.**

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ANNEX 1: ALKO SPARE WHEEL MOVING SYSTEM

1. SAFETY INSTRUCTIONS:

PLEASE READ CAREFULLY:

BEFORE MOVING THE CARAVAN WITH THE POWRTOUCH FOR SAFETY REASONS IT SHOULD ALWAYS BE TESTED, TO DO THIS TURN ON THE POWRTOUCH AT THE ISOLATION SWITCH – DO NOT PUT THE ROLLERS ON TO THE TYRES. WITH THE ROLLERS OFF THE TYRES CHECK ALL THE HANDSET FUNCTIONS ARE DRIVING THE ROLLERS CORRECTLY. ONCE THIS TEST HAS BEEN SATISFACTORILY COMPLETED ONLY THEN SHOULD YOU PUT THE ROLLERS ON THE TYRES AND COMMENCE MOVING THE CARAVAN. IF IN DOUBT CONTACT POWRWHEEL LIMITED.

NOTE 1: IN THE EVENT OF A MALFUNCTION OF THE POWRTOUCH SYSTEM TURN OFF IMMEDIATELY AT THE ISOLATION SWITCH AND PULL ON THE CARAVAN HANDBRAKE AND REMOVE THE ROLLERS FROM THE TYRES

NOTE 2: IN THE EVENT OF A MALFUNCTION OF THE HANDSET UNCLIP THE BATTERY BOX COVER AND THEN REMOVE THE BATTERY.

- i) The Powrtouch Caravan Mover (except handset) is a 12volt D.C. powered device and it should not under any circumstances be powered by any other power source than a 12 volt DC leisure battery. n.b. Using the Powrtouch with the caravan connected to the 240volt mains could cause damage to the caravan internal charging system.**
- ii) The 12 volt leisure battery MUST be fully charged and in good condition to enable the Powrtouch to operate to its full performance specification – to check your battery see Section 22 of this instruction manual.**
- iii) The handset must only be powered by a 9 volt DC battery (pp3 or equivalent). It can also be used with the umbilical cord**

connected to the Powrtouch electronics control box. (the pp3 battery must be removed).

iv) The wiring and cabling supplied by Powrtouch for the installation of the unit are to the correct voltage and current rating, under no circumstance should any other wiring or cabling be used unless supplied by Powrtouch or written approval is given for their use. All power cables should be kept as short as possible and should be of equal length, no cable joining system should be used to lengthen them.

v) When the Powrtouch is switched on and/or in use there will be 12 volts at the two battery terminals on the electronics control box (ECB). Under no circumstance should any metal object be allowed to touch these terminals.

vi) The Powrtouch is not a caravan jacking point and should never be used as such.

vii) The Powrtouch is not a brake or braking system and should never be used as such. When stopped always apply the caravan handbrake.

viii) Be aware that the Powrtouch adds weight to the caravan and the corresponding weight of your mover (see Paragraph 10) must be considered when calculating your payload. If in doubt the MTPLM of the caravan should be checked on a calibrated weighbridge.

ix) Our products are designed to give safe and dependable service if installed and operated in accordance with the instructions contained in this instruction manual

x) Read the instructions carefully and become familiar with the various components and controls prior to assembly and/or operation. Safety must always be the first consideration in fitting or operation.

xi) Never allow children or persons unfamiliar with these instructions to operate the unit.

xii) If you are in any doubt about the assembly or operation of the product unit consult one of our engineers, for which contact details are shown on the front cover.

10. PRODUCT INFORMATION:

This product is one of our range of Boat/Caravan/Trailer Movers that are designed, developed and manufactured by Powrwheel Limited, whose skilled design and manufacturing engineers are working in accordance with ISO 9001/2000 and TUV Quality Management Certifications. The following EC Standards apply to the Electronics Control Box: ETSI EN 300 220-1: 2000 ETSI EN 300 220-3: 2000 ETSI EN 301 489-1: 2004 ETSI EN 301 489-3: 2002. The manufacture of every Powrwheel Limited product is carried out to the highest engineering standards. Please note that every effort has been made to ensure long life, as the materials selected are corrosive resistant, utilising nylon, stainless steel, zinc plating, non-ferrous and epoxy-enamel coated components.

This Powrtouch utilises two or four sealed for life 12-volt dc motors (with reduction gearboxes) that can be driven independently on the 2 wheel versions to provide maximum manoeuvrability. On twin axle caravan/trailers the system will electronically drive one wheel whilst pulsing the other, which achieves an effective turning motion. The motors are mounted on a light but strong metal fabrication that clamps to the trailer chassis. The installation does **NOT** (See note 1 below) require any welding or drilling of the trailer chassis thus making fitting simple. However, in the event of fixing to a non standard chassis welding or drilling is required, our qualified staff can carry this out. The friction drive rollers of the unit are engaged manually with the trailer tyres by a locking cam system that requires only a small turn of the socket wrench spanner supplied or electronically by the Powractor system. If the Powrbar (cross actuation system - manual version only) is not fitted then each roller must be put on individually. The movement is controlled remotely by a small handset. Simply by pressing one of the clearly labelled buttons on the handset the trailer can be moved in any direction and turned on its own axis if required. An umbilical/emergency cable is supplied as a back up to the remote control system (See section 11). Stopping is completely automatic and occurs when a handset button is released.

Please note only single axle trailers can turn on their own axis. Twin axle caravans require having some forward or reverse movement to allow turning to take place.

Note 1: On some caravans and most trailers it may be necessary to drill and/or weld specially manufactured mounting brackets to the chassis to allow for fitting of the mechanical unit. This especially applies to all aluminium chassis caravans manufactured pre 1996. It is recommended that any fitting that requires drilling, welding and strengthening of the chassis should be carried out at our factory in Christchurch, Dorset or by one of our specially trained field engineers.

PLEASE NOTE: These types fitting will involve additional costs, quotes for which may be obtained on application.

11. POWRTOUCH MODELS:

Model 1 (Standard UK – No Longer in production) is the standard GB version that fits the majority of UK manufactured caravans, with the capability of moving a 1200kgs caravan up a 1 in 4 slope (under ideal conditions). This model weighs approximately 34kgs.

Model 2 (Euro – No longer in production) is a different configuration of the model 1 and is designed for caravans fitted with shock absorbers or where the gap between the chassis and tyre is less than 120mm. This model weighs approximately 36kgs.

Model 3 (Heavy Duty) is the Heavy Duty mover that is configured as model 2 but has an additional reduction gearbox to enhance its weight moving capabilities; it is expected to move a 1500kgs caravan up a 1 in 4 slope (under ideal conditions).

Model 4 (Twin Axle) is the twin axle mover that is configured as model 3 but uses increased diameter rollers to provide better traction to the driving wheels and an enhanced electronics system to allow greater power and improves the ability to turn the caravan. This model is the only mover that we recommend fitting **behind the wheels**. The reason for this is that some weight can be taken off the front axle by using the caravan's jockey wheel; which further enhances the turning capability of the mover. This model weighs approximately 40kgs.

Model 5 (Overseas Special) is a mover designed specifically for the Australian and USA markets.

Model 6 (All Wheel Drive) is a twin axle mover as model 4 above but has the ability to drive all four wheels. This model weighs approximately 55kgs.

Model 7 (Compact) is a specially designed and manufactured mover. Configured similar to the model 2 but has increased ground clearance that makes it suitable for the range of lightweight caravans (such as

Eriba, Fluerrette, etc.). Modifications to the chassis are usually required to fit this model. This model has now replaced the model 1 as the standard mover. This model weighs approximately 34kgs

12. CHECKING THE CONTENTS OF THE MOVER:

When unpacking the box there is a checklist of the components of the mover. Please check that all parts have been received before commencing the installation work. If in doubt please contact a Powrwheel Limited engineer. Contact details are on the front page of this document.

13. TOOLING AND EQUIPMENT:

To install the Powrtouch the following tooling and equipment will be required (not supplied):

- 8mm Socket & Ring Spanner
- 10mm Socket & Ring Spanner
- 13mm Socket & Ring Spanner
- 17mm Socket & Ring Spanner
- Power Drill with 3mm & 8 mm drills suitable for wood
- 25mm Hole saw for Plastic (for fitting isolation switch)
- Various Screwdrivers
- Multi Purpose Silicon Sealant
- Lighting as necessary
- Trolley jack, support blocks or axle stands (for raising unit into position)
- 8mm Allen Key – Twin axle and Large Roller Units ONLY
- Torque Wrench
- Safety Goggles
- Ground Sheet
- General Purpose Grease
- Staple Gun and Suitable Cabling Staples (Optional)

14. INSTALLING THE MOVER:

N.B. – VERY IMPORTANT

BEFORE COMMENCING, PLEASE ENSURE THAT THE CARAVAN IS DISCONNECTED FROM ITS 12 VOLT D.C. LEISURE BATTERY SUPPLY AND ANY OTHER ELECTRICAL SUPPLIES (INCLUDING 240 VOLT MAINS) ARE REMOVED.

1) All electronic and electrical control of the system is carried out by the Electronic Control Box (ECB) and isolation switch, please note the ECB has in built safety thermal fuse (set at 90 deg C) should this fuse operate it will automatically reset when the system cools to an acceptable temperature.

2) The Isolation switch must be accessible at all times when parking and moving the caravan/trailer, please be aware of this when selecting the location for the switch.

3) Please check that the tyres are of the same size and design (preferable from the same manufacturer) and not over worn (fitting to new or nearly new tyres is the best option). Also ensure that the pressures are correct to the manufacturer's recommendation prior to commencing assembly.

4) Also check that the chassis is in good condition without any damage and free from rust or corrosion etc.

5) Ensure that the handbrake is in the ON position before the caravan is raised using the front steadies and Jockey Post/Wheel, the back steadies are then lowered to make sure the caravan is fully stabilised and no forward or backward movement can occur .

6) All work should be carried out to ensure personal safety.

Checking chassis depth:

All models are designed to fit on standard chassis depths of 200mm approximately. Some chassis are smaller at 150mm and will require a spacer to be fitted. If this has not been supplied with the unit it can be sent free of charge. The fitting of the spacer kit is the same as the standard clamp kit described below but will be supplied with longer U bolts.

Special mounting plates:

On some recently manufactured caravans (in particular Hymer) special mounting plates are required. These plates can be supplied (for a small additional cost) and are fitted by nuts and bolts using pre-drilled holes in the chassis. The mechanical assembly of the unit will proceed as detailed below.

Mechanical Assembly:

After the caravan is raised and secure, lay down a ground sheet. Remove all items from the packaging onto the protective sheet. Ensure both rollers are in the DISENGAGED position, as the unit will not fit correctly otherwise. Loosely assemble the left hand motor unit, right hand motor unit and alignment tube as shown in fig. 5, and place under the caravan/trailer. Wherever possible all single axle movers unit should be fitted in front of the caravan/trailer road wheels. Twin axle movers should if possible be fitted behind the rear axle. If fitting in these positions is not possible then it is permissible to alternatively fit either to the front or rear of the wheels. If fitting a Standard Twin (Model 4) behind the wheels or All Wheel Drive (Model 7) then it will be necessary to remove Mud Flaps and ALKO jacking points, (this will have been agreed at the customer at point of sale). If there is an under slung spare wheel carrier then this will also need to be re-sited, this can be done with our ALKO spare wheel moving system see Annex 1 attached. If the ALKO jacking points have to be removed then an alternative jacking method should be sought – see Caravan Club Handbook – Technical Section – Jacking/changing a wheel. Using the appropriate support blocks raises the loosely assembled unit into an approximate position and fit the clamps and U-Bolts (see figures 1 & 2) to the chassis (do not tighten at this point). Adjust to the correct place using the wooden spacer provided between the tyre and friction roller (on each side of the trailer).

The correct spacings are as follows:

Single Axle Model 1 (Small Rollers)	at 20mm
Single Axle Model 2 (Small Rollers)	at 20mm
Single Axle Heavy Duty (Small Rollers)	at 20mm
Single Axle Heavy Duty (Large Rollers)	at 15mm
Twin Axle (Large Rollers)	at 15mm

Small Rollers are 45mm diameter approx, and large rollers are 65mm diameter approx.

Also adjust the position of the friction rollers in relation to the tyres by sliding the motor units on the alignment tube until they are aligned correctly (i.e. the maximum amount of roller will be in contact with the tyre tread without any part of the unit fouling the tyre or chassis). If a Powractor is fitted they should be connected to a battery and run fully in and out to ensure they are in the correct position (fully retracted) prior to the final assembly. The assembly should then be fully tightened securely in place with a torque wrench set at 40 ft lbs. Please note the wood spacer blocks should be a sliding fit between the tyre and the coarse drive roller. Should there be any minor differences in the tyre air pressure or contact pressure of the rollers this may cause the trailer to move off centre.

Check both the above alignments at least once during the process and on completion.

Once the motor assembly is completed the stop block should now be fitted to the chassis immediately in front or behind (depending upon the fitting position) of the clamping brackets (see fig. 3) to ensure that the motor assembly does not slide along the chassis when it is in the drive-engaged position using a torque wrench spanner set at 40 ft lbs.

On the large roller and twin axle models (ONLY), 2 grub screws (per side) situated on the top plate provide extra positional security, these should be tightened securely using the 8mm allen key.

The mechanical assembly is now complete.

It is now necessary to carry out a visual inspection of the assembly to ensure that the unit does not obstruct any other system; particular attention should be paid to the caravan/trailer braking rod, chassis and tyres.

Powrbar Installation (If required)

The Powrbar installation kit is as detailed in fig. 5

Fitting of the unit is quite simple but before you begin please check the parts list and familiarise yourself with how your unit fits together. Figure 5 shows how the parts look assembled.

Slide the end tubes into the centre tube and layout the assembly under the caravan/trailer in line with the drive shafts, with the fixing holes in line, with the welded nuts on the centre tube as shown in figure 5.

Choose which side of the trailer to start installation and with the end tubes inside the centre tube raise one end of the assembly and slide it over the round drive shaft. Repeat this process on the other side of the caravan/trailer so that the Powrbar is suspended (loose) from the drive shafts.

Using the nyloc nut and bolt (M8 x 30mm) secure each of the end tubes to the drive shafts, centre up the centre tube and secure the 4 bolts (M6 x 20mm) and the locking nuts.

Be sure that the Powrbar or Centre Bar does not foul any other system, such as the brake cables water tanks etc.

Electrical Assembly

Please ensure the battery is in good condition, a fully charged **leisure** battery **MUST** be used and can be either a lead acid or gel type (**Please note that car batteries are not suitable to operate Powrtouch Movers.**) An 85 –Ampere Hour for single axle and 110- Ampere Hour for twin axle caravan are the recommended battery size for optimum operation. Smaller batteries may be utilised but mover performance may be reduced also it must be upgraded on replacement.

AGAIN - PLEASE ENSURE THAT THE BATTERY AND MAINS LEAD IS DISCONNECTED FROM THE CARAVAN BEFORE COMMENCING INSTALLATION

Note: - The terms right hand (UK Near Side) and left hand (UK Offside) referred to on the electronics box are determined by standing in front of the caravan (at the ball hitch) facing the caravan.

The recommended site for the Electronic Control Box (ECB) is inside the caravan in the dry (bedding) locker behind the battery box. Before choosing a position for the ECB consideration **must** be given to allow access to the jack socket for the emergency umbilical cable. The black plastic lid will need to be removed to allow access to the fixing screw holes of the ECB; it should be screwed to the floor using the screws provided. **Please note some caravans have under floor cables and/or pipes, checks must be made to ensure it is safe to drill.** If safe to do so then drill four 8 mm diameter holes in the floor approximately 150 mm from the control box for the motor wires to be fed into the caravan.. Start routing the wires from the motor, remembering to leave a small amount of slack cable near the motors to allow for their movement when the drive rollers are engaged. The motor wires (two each) and Powractor wires (if fitted) can now be routed along the underside of the trailer floor using the P clips provided (securing of the cables can be made with a suitable staple gun and the correct size staples – not provided). Care should be taken to ensure that the cabling is securely fitted so that no chaffing can occur and that it does not sag. Also ensure cables do not make contact with the steel chassis (unless suitable cable clips are used – not provided). If the Powrtouch is fitted in front of the wheels then the ECB should be wired as shown in Fig 6A. Should it be fitted behind the wheels then the Positive and Negative of the motors should be reversed shown in Fig 6B. Model 6 Powrtouch (All Wheel Drive) should be wired as shown in Fig 6C noting that only one isolation switch need be fitted, however it will require two positive wires from the battery. The Powractor should be wired as per Fig 6D. Any excess motor cable should then be coiled up (secure with cable ties as necessary) in a convenient position inside the caravan/trailer When coiling the motor cables please ensure that the coils are kept as far away from the electronics box and aerial as possible. It is recommend that motor cables should not be cut to ensure they are 1) of equal length and 2) if the Powrtouch is removed and refitted to a new or different caravan the cables can easily be reused.

The aerial (thin black cable) should be let through the caravan/trailer floor directly next to the electronics box (drill small 3mm hole as required) and then run in a straight line away from the electronics box and all motor cables. The aerial should be clipped in place with the last 25mm (1 ins.) of the cable left dangling down. Under no circumstances should the length of the aerial be changed either by cutting, extending or splicing into.

Connecting to the Battery

Please be aware of the need for access to the switch when parking your caravan/trailer. The switch must also be fitted to be in an accessible position whilst the unit is in operation.

The positive connection to the battery has an inline fuse to protect the ECB from overload or misuse. The unit is also supplied with an inline isolator switch to allow isolation of the electrical circuit from the Battery. The suggested location for the fitting of this switch is within the battery box/compartment beneath the 240v mains connector. Drill a 25mm hole with the saw and the two 5mm clearance holes for the fixing nuts and bolts, when the holes are drilled install the switch and tighten up the nuts and bolts. If a Powractor is fitted the operating switch for it should be fitted next to the isolation switch. **Under no circumstances must the electronics box or the isolation switch be located in a compartment with gas bottles. This is due to risk of explosion caused by leaking gas or a spark generated by the electronics or isolation switch.** Using the factory prepared and terminated cables (these cables MUST NOT be lengthened); this switch must be fitted to the Red (Brown) wire (+) between the positive connection in the control box, and the positive terminal on the battery. The Black (Blue) wire (-) is connected direct from the control box to the negative battery terminal, the cables will then need to be securely fitted using the 'P' clips provided.

Please ensure that the positive (Red/Brown) and negative (Black/Blue) are correctly connected to the electronics and the battery, should they be connected incorrectly then this will result in damage to the electronics box.

If cables should ever have to pass through drilled holes in the metal, wood or fiberglass then the cables should be protected from chaffing by the use of grommets/tubing/insulation tape (not provided). All cables can then be connected to the electronic control box ensuring that they are fitted in accordance with the labels on the control box, see fig. 6. On completion of assembly and testing of the ECB it will be sealed with a Guarantee Sticker, unauthorized breakage or removal of this seal may invalidate the warranty. The electrical assembly is now complete and the hole(s) drilled for the battery and motor wires should now be sealed with the silicon sealant to prevent ingress of gas, damp or water.

If you are unsure about the installation consult a Powrwheel Engineer, Telephone: 0870 7521762.

Unique Frequency Handset Tuning

The unique frequency setting is carried out at the factory during the quality control testing procedures prior to delivery of the mover. The following instructions are therefore provided for information only. This multi-level frequency setting codes the handset to the ECB thus preventing any other handset working the ECB or moving your caravan.

Firstly make sure that the friction rollers are disconnected from the tyres.

On the Model 7 (All Wheel Drive) the handset will need to be mapped to both Electronics Boxes using the correct method shown below for the versions used.

Version 1 – This version is identified by the prefix T to the serial number shown on label situated in front of the cable connection screws on the Electronics Control Box (ECB)

Locate the ECB, which is usually fitted beneath one of the centre seats (bedding locker). Remove the guarantee sticker and then the four small screws, which hold on the black cover. Compare the picture with your unit (see fig 7). Locate the reset button by comparing the picture to your controller.

Make sure the battery is in the handset. Switch on the ECB (using isolation switch) and then the handset by pressing the two red buttons, and then press the reset button on the control box. The red LED will start flashing. Then press one of the direction arrows on the handset, the LED will stop flashing and the unit will start working. Your handset is now configured. Fit the new guarantee sticker provided.

Version 2 – This version is identified by the prefix E to the serial number shown on label situated in front of the cable connection screws on the Electronics Control Box (ECB)

Locate the ECB, which is usually fitted beneath one of the centre seats (bedding locker).

Remove the guarantee sticker and then the four small screws, which hold on the black cover. Compare the picture with your unit (see fig 7). Locate the reset button by comparing the picture to your controller.

Make sure the battery is in the handset. Switch on the ECB (using isolation switch) and then the handset by pressing the two red buttons, then press and hold down the reset button on the control box. The red LED will start flashing. Whilst still holding down the reset button, press one of the direction arrows on the handset, continue to press the direction button while the reset button is released, the LED will stop flashing and the unit will start working.

Your handset is now configured. Fit the new guarantee sticker provided.

Control Box: (Receiver)

Turn on the isolator switch, the green light will illuminate and stay on. The red light flashes and then stays illuminated. If either of the lights does not stay on but continues to flash, then this is an indication that there is a fault in the Powrtouch system please contact a Powrtouch engineer. Contact details are on the front cover.

During the operation of the unit via the handset both lights will illuminate continuously. If the control box is left switched on for approximately 15 minutes and the system is not activated by the handset, then the unit will go into the hibernation mode and both lights will go out. Should this occur the isolator switch should be turned off and the key removed for a minimum of 20 seconds and then turned on again, this will reset the system and the lights will operate as above.

There are safety features built into the control box, your unit will shut down if one of the following conditions occur:

1. Thermal overload of the motors.
2. Battery voltage below 12 volts when not running
3. Battery voltage below 10 volts when motors running
4. Unit has not been used for 15 minutes.

As the isolator switch is required to reset your unit please make sure that it is fitted in a readily accessible place, **be aware of the need for access to the switch when maneuvering and /or parking your trailer.**

Handset: (Transmitter)

The Handset is powered by one PP3 9v battery, and is activated by **simultaneously pressing and holding down the two red 'on' buttons**, that are positioned just below the indicator light, once activated a green light will come on and the directional controls can now be used. The shape of the caravan is shown on the handset and the green light represents the tow ball of the caravan. Each button will respond and send the caravan in the direction shown, when doing a large turn it is possible to press the two opposite corner buttons (making one wheel go forward and the other in reverse), the opposite corners are the only combination of buttons that will work pressing any other two buttons will result in no movement of the caravan. Note the green light will fast flash when in operation. If the handset has not been used for a period of 30 seconds then it will automatically switch itself off. If the green indicator light on the handset starts to slow flash it is time for the PP3 battery to be replaced. Removing the rear cover of the handset and inserting the new battery into the position shown will achieve this.

Replace the cover and the unit is now ready to test. Should the Powrtouch not be used for a period of time (i.e. winter storage) then the battery should be removed and stored separately from the handset, the handset should always be kept in a dry area. Due to the nature of radio signals they can be corrupted by large metal objects, terrain or external source of interference (such as burglar alarms, radio masts, PIR lights etc.). Under exceptional circumstances it may be necessary to use the umbilical cable as below.

Umbilical/Emergency Cable:

The umbilical cable is supplied to provide a hard wire connection of the handset to the electronics control box. Connections are made via the jack plug sockets; situated one on the end of the handset and the other in the electronic box just to the side of the red and green LED's

Always remove the 9-volt PP3 battery from the handset before using the cable

This cable should be used if:

- 1) The battery in the handset has failed
- 2) There is interference in the surrounding area affecting the transmission of the systems radio signals
- 3) Fault finding (see Section 21)

NB: The cable should never be left connected to the electronics box when not in use; failure to remove the cable can result in the transmitting/receiving system failing to work. This cable is also carrying a live 9-v dc charge when the mover is switched on and could then cause a short circuit.

Checking the Product Installation

Place the trailer outside in an area free from the tow vehicle and clear of any obstruction, and with enough space to move freely. Ensure that the motor drive units are disengaged from the caravan tyres, the handbrake is on and the mains/charging cable is removed. Turn on the Powrtouch at the isolation switch and then press the two ON buttons on the handset that will switch it to the active mode, the small green light between these buttons will then illuminate. Please note that the handset will turn itself off automatically after 30 seconds if any button is not pressed (should this occur, reactivate the system as described above). Check all direction controls on the handset and ensure the rollers are rotating in the directions as indicated by the handset. If so, the unit is now ready to use, if not please recheck the wiring.

15. USING THE MOVER:

Once again ensure that the caravan is free from the tow vehicle, any obstructions and in a clear space. Using the 19mm socket wrench (supplied) engage the drive roller by turning the hexagon nuts on the end of the drive rollers just over ½ turn (approx 200 degrees). In some cases an extension to the socket wrench may be required; this is not supplied as part of the unit but can be obtained from your local tool or hardware store (it is also available on request from Powrwheel Limited). The movement should not be forced, but in case of difficulty first ensure that you are turning the nut in the right direction. You should feel the drive roller lock into place, and if the Powrbar is not installed then repeat this operation on the other drive roller. The isolator switch should be in the on position (and reset if required see under Control Box above).

If the Powractor is fitted then with the isolation switch in the on position the switch for the Powractor should be moved to the on position, when the rollers are fully engaged the switch should be returned to the neutral position (NB The switch MUST always be in the neutral position when the full the rollers are fully engaged or disengaged). The trailer is now ready to be moved.

Ensure the caravan/trailer hand brake is off and the steadying legs are raised.

Stand in front of the trailer and turn on the remote control handset. Press the switch in the direction you wish the trailer to move as indicated by the outline shape of the caravan and the direction arrows on the handset. You will notice a low pitched whine from the unit as it begins to move, do not be concerned this is the Soft Start operating and the whine will stop when the mover is at full speed (it should only be a few seconds). Should the drive rollers slip during this operation please check that the distance between the drive rollers and the tyres is correct, if not reset the gaps and retighten? The trailer can now be moved in the direction required by using the appropriate button on the handset; the caravan/trailer will stop immediately once the button is released. The Powrtouch moves at one speed only and may slow slightly going uphill and speed up slightly when going downhill. The Powrtouch has a very effective Soft Start facility that can be utilised to move the caravan about a 10mm or less at a time. This small movement can be achieved by pressing and quickly releasing a direction button (stabbing the button), this facility makes attaching the caravan to the tow ball of the car a very simple operation. It is recommended that a good practice session should be carried out on level ground and in an open space

before any difficult manoeuvres are undertaken. After use the rollers on the manual system should be disengaged in a controlled manner. Hold the socket wrench firmly and do not allow the rollers to spin back under their own inertia. Failure to do this may cause a shock load to the system and can also allow the wrench to hit the ground; this will cause damage to the cam locking system. The Powractorator system should be removed by using the off switch in the battery box that **MUST** be returned to the neutral position when the rollers are fully disengaged

N.B. the rollers must always be disengaged when towing the caravan/trailer

16. OPERATING THE MOVER SAFELY:

- 1) The prime consideration when moving the caravan must be **SAFETY**
- 2) **ALWAYS REMEMBER TO TURN THE UNIT OFF AND REMOVE THE ISOLATION KEY WHEN NOT IN USE**
- 3) Always ensure that children and pets are kept well out of the way
- 4) The mover is designed to cope with most slopes depending upon the surface
- 5) The mover may not climb a 38 mm or greater kerbstone without the assistance of ramps or wedges
- 6) Do not leave the trailer parked for any length of time with the drive rollers engaged as this may cause damage to the tyres, i.e. Weekends, On-site, End of Season etc.
- 7) The trailer handbrake should be applied at all times when the mover is not in use. Do not rely on the mover to act as a brake, as some creeping may occur.

17. MAINTENANCE.

IMPORTANT NOTICE

Please note that every effort has been made to ensure the long life of your new Powrtouch, by non-corrosive materials such as stainless steel and nylon, also protective finishes such as epoxy enamel coated paint and zinc plating. However due to the location of the mover it is subjected to a harsh environment i.e. salt and chemicals from the road etc. Due to this you may notice superficial markings or colourings on the surface of the unit over time. Please be fully assured that this does not affect the integrity or performance of the mover in any way. There is however some simple actions you can take to help keep the cosmetic look of your mover for many years to come.

Ideally after every journey where there is spray on the road wash down with warm soapy water and if possible try to dry the unit, if this is not possible then rinse with clean water. It is essential that the unit is re-greased after this procedure.

Ensure that the rollers are kept clean; this can be undertaken by washing with a hard brush.

Also check that no stones or other debris are trapped in any part of the mechanism.

Periodically, or at least every six months, clean and grease all moving parts. i.e Locking cam system and the sliding motor mounting plates. A suitable grease called Powrlubricant can be obtained from Powrwheel Limited

The electronics package is a highly sensitive system and except during the DIY installation to connect the cables and set the frequency the unit must never be opened other than by an approved Powrwheel Limited engineer.

ON MODELS 1 ONLY: If required the roller may be removed and cleaned by unscrewing the three bolts on the end cap: see figure 4 (when replacing ensure that the drive slot is facing towards the motor). All other models require the dismantling of the gearbox to remove the rollers. Also check that no stones or other debris are trapped in any part of the mechanism. The electronics require no maintenance other than to keep the handset in a warm dry place; it may also be advisable to remove the battery if the unit is not to be used for a long period of time.

18. CHANGING YOUR CARAVAN:

The mover has been designed using material that will minimise corrosion, therefore removing and refitting to another caravan/trailer will be practical. Please contact us if you need a quotation or if you require one of our trained fitters to remove and/or refit your system.

When moving or transferring the unit to another caravan please bear in mind that the unit purchased was for a specific size and weight of caravan and it may not be suitable if moved to a larger or heavier caravan. If such a transfer is undertaken without the prior approval of Powrwheel Limited and damage to the unit subsequently occurs; it can affect your guarantee.

19. GUARANTEE:

A NEW Powrtouch is covered by a **FIVE YEAR** no quibble guarantee and a RECONDITIONED Powrtouch for THREE YEARS.

N.B. IT IS AT THE COMPANY'S DISCRETION WHETHER THIS GUARANTEE IS TRANSFERABLE. A CHARGE WILL BE MADE FOR ANY TRANSFER.

PLEASE CONTACT US FOR FURTHER INFORMATION.

Please note that our guarantee covers reasonable use of the mover, it does NOT cover any damage caused by misuse. The guarantee cannot cover any malfunction caused by the fitting of the mover if the fitting has been done on a DIY basis or purchased from and fitted by a dealer or agent.

Any unauthorised modifications, use of non original Powrtouch spare parts or failure to respect the installation or operating instructions will render this guarantee null and void.

To ensure the validity of the guarantee please carry out maintenance in accordance with section 16 i.e. clean and grease.

Powrwheel Limited reserve the right to make a call out and/or repair charge for any work required to be undertaken to rectify faults that are outside of the company's control. i.e. **caravan battery failure**, incorrect or poor fitting, misuse, accidental damage, etc.

20. OTHER PRODUCTS AND IDEAS FOR IMPROVEMENT:

We take great pride in our products and are constantly looking for improvements, also for innovative ideas for new products. If you feel you could contribute to improving our current range or have ideas for new products please do not hesitate to contact us.

21. USEFUL TIPS:

The following tips are offered to help you make the most out of your Powrtouch. They cover fitting, usage and maintenance of your mover, and simple diagnosis of common symptoms that you may experience. If you require any personal assistance then please telephone us on 0870 7521762.

Motor cables – do not cut to exact length, as more cable may be required on your next caravan/trailer.

Disengaging rollers – When rollers have been engaged, place the socket wrench on the driver's seat of your car, this will **definitely remind** you to disengage the rollers before driving off.

Never put the **handset** on the A frame of the caravan/trailer or rear bumper of the towing vehicle when connecting them. Always put it in a pocket or the boot of the towing vehicle, **remember** the handset is an expensive item to replace.

Always store the **handset** away from the caravan, should you be unfortunate enough to have the caravan stolen the mover is inoperable without the handset. It is a policy of Powrwheel Limited not to sell spare parts unless the buyer can prove ownership of the mover. All sales and technical staff have the serial numbers of movers reported stolen to hand at all times.

Practice using your mover in a wide-open space in order to familiarise yourself and increase confidence for use in tighter circumstances.

If operating the mover over gravel or soft surfaces, the jockey wheel may 'lead' the caravan in an undesired direction. To prevent this have the jockey wheel 'trailing' i.e. moving the caravan backwards into the necessary position. It is also recommended that a pneumatic tyre be fitted to the jockey wheel, which will also help to alleviate the problems of moving on gravel and soft ground.

Consider adjusting your direction manually, whilst still using the forward or reverse speed, by using the handrail on the front of the trailer to counter cambers, especially on uneven and/or sloping surfaces.

Please be aware that during operation of the mover the control box will become warm, for this reason it is not recommended that it be covered with clothes or similar items, it is also helpful if an air gap can be left around the electronics box. Also it should be noted that the ECB will emit a strong electromagnetic field when in use that could damage other electronics items such as digital camera, personal stereos etc. if left in close proximity.

22. FAULT FINDING:

BEFORE CONTACTING POWRWHEEL ENSURE THAT YOUR BATTERY IS FULL CHARGED TO CHECK SEE SECTION 22 OF THIS MANUAL

Should your Powrtouch fail to operate please check the following:

NB: SOME OR ALL OF THE FOLLOWING CHECKS WILL BE REQUIRED TO BE UNDERTAKEN AND THE RESULTS WILL BE ANALYSED BY A QUALIFIED ENGINEER AT POWRWHEEL LIMITED. THIS WILL ALLOW US TO SEND THE RIGHT PARTS REQUIRED ALLOWING YOU TO UNDERTAKE ANY RECTIFICATION WORK. IF AN ENGINEER IS CALLED OUT AND THE FAULT IS FOUND TO BE THE CARAVAN/TRAILER OR CARAVAN BATTERY OR ANY OTHER FAULT OUTSIDE OF THE COMPANY'S CONTROL THEN POWRWHEEL LIMITED RESERVE THE RIGHT TO CHARGE FOR THE CALL OUT.

Symptom of Fault	Possible fault and method of correction
Unit fails to operate – seems completely dead	Reset the isolation switch by turning off and removing the key for at least 20 seconds and then turning on again. The green light on the electronics box should be illuminated.
Unit fails to operate – seems completely dead	Leave for ECB for 5 minutes to see if the thermal Fuse will reset itself, check temperature of ECB it should not be hot.
Unit fails to operate – seems completely dead	Check the in line fuse is not broken and 12 volts dc is getting to the ECB
Unit fails to operate	Check the battery voltage of the hand set is correct, an indication of this is given by a slow green flashing light on the handset. This also can be checked by use of the emergency cable. N.B. Always remove the handset battery when using this cable.
Unit fails to operate or moves intermittently	Radio interference, check by using emergency cable. N.B. Always remove the handset battery when using this cable
Unit fails to operate or moves intermittently	Badly connected or corroded battery terminals, check battery terminals, clean and connect as required.
Unit fails to operate or moves intermittently	Caravan battery low - check voltage of battery (see battery voltages section 22 below), charge or renew caravan battery.
Caravan fails to move or moves intermittently	Caravan battery low - with the rollers engaged, check the voltage drop on the caravan battery meter, if this drops immediately well below 10 volts, charge or renew caravan battery.
Roller will not engage, spindle rotates fully.	Safety spirol pin broken, call factory.
Rollers slip on wheels	Check distance of rollers to tyres, 15mm for large roller versions and 20mm for small roller versions; check tyre pressures are correct and they are not badly worn.

IF IN DOUBT CONSULT A POWRWHEEL ENGINEER. TEL: 0870 7521762.

23. CHECKING THE CHARGE STATE OF A 12 VOLT BATTERY:

APPROX CHARGE STATE	VOLTMETER READING (No Load)	HYDROMETER READING
100%	12.7 v or over	1.27
75%	12.5 v	1.23
50%	12.4 v	1.20
25%	12.2 v	1.17
Discharged	12.0 v	1.10

Please Note: Voltage readings should be taken at least 4 hours after recharging to obtain an accurate reading
The above voltages are accurate at 25 degrees centigrade, in temperatures less than this the battery performance and output decreases by 1.25% per degree

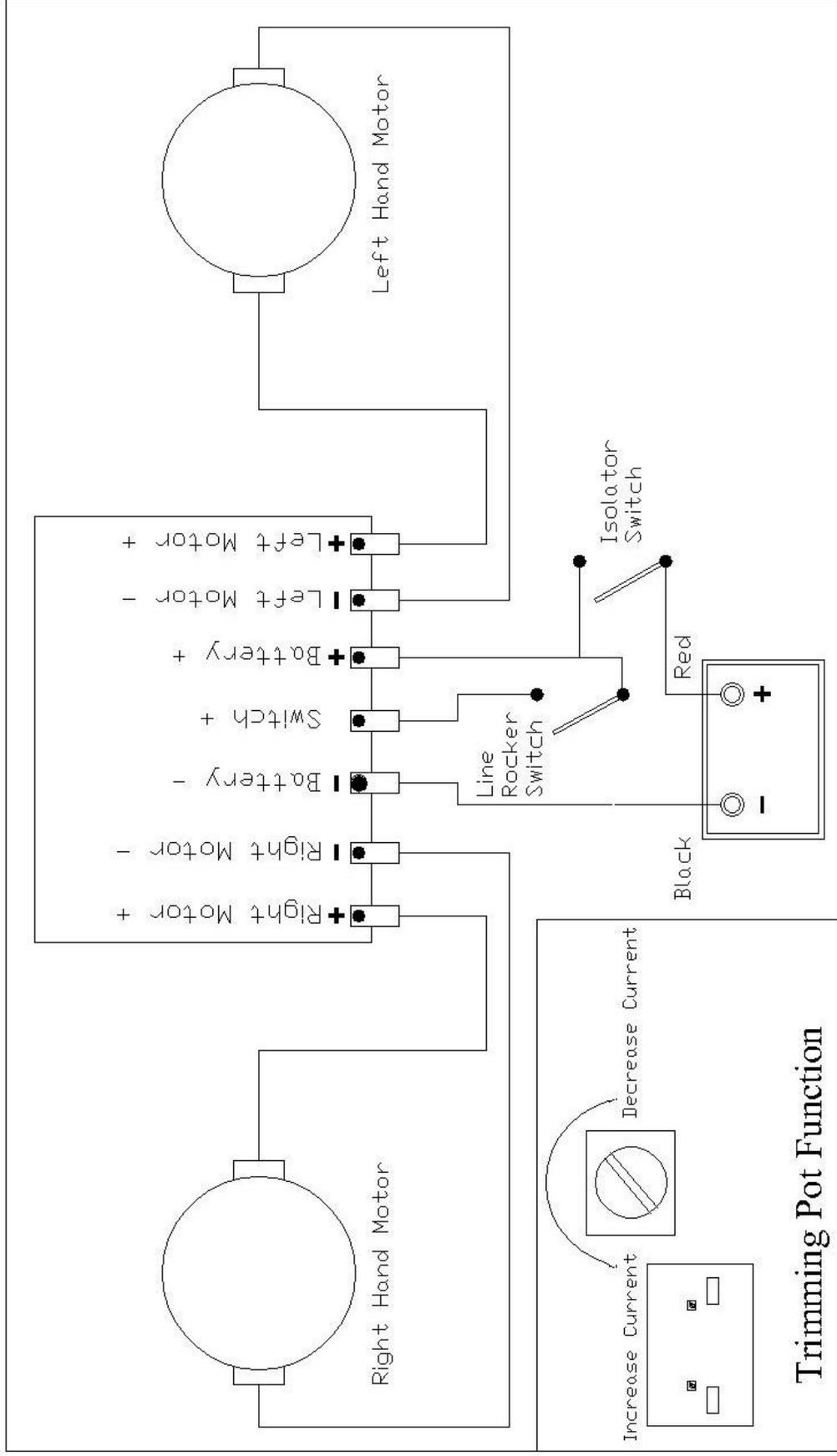


Fig 8. Actuator schematic diagram

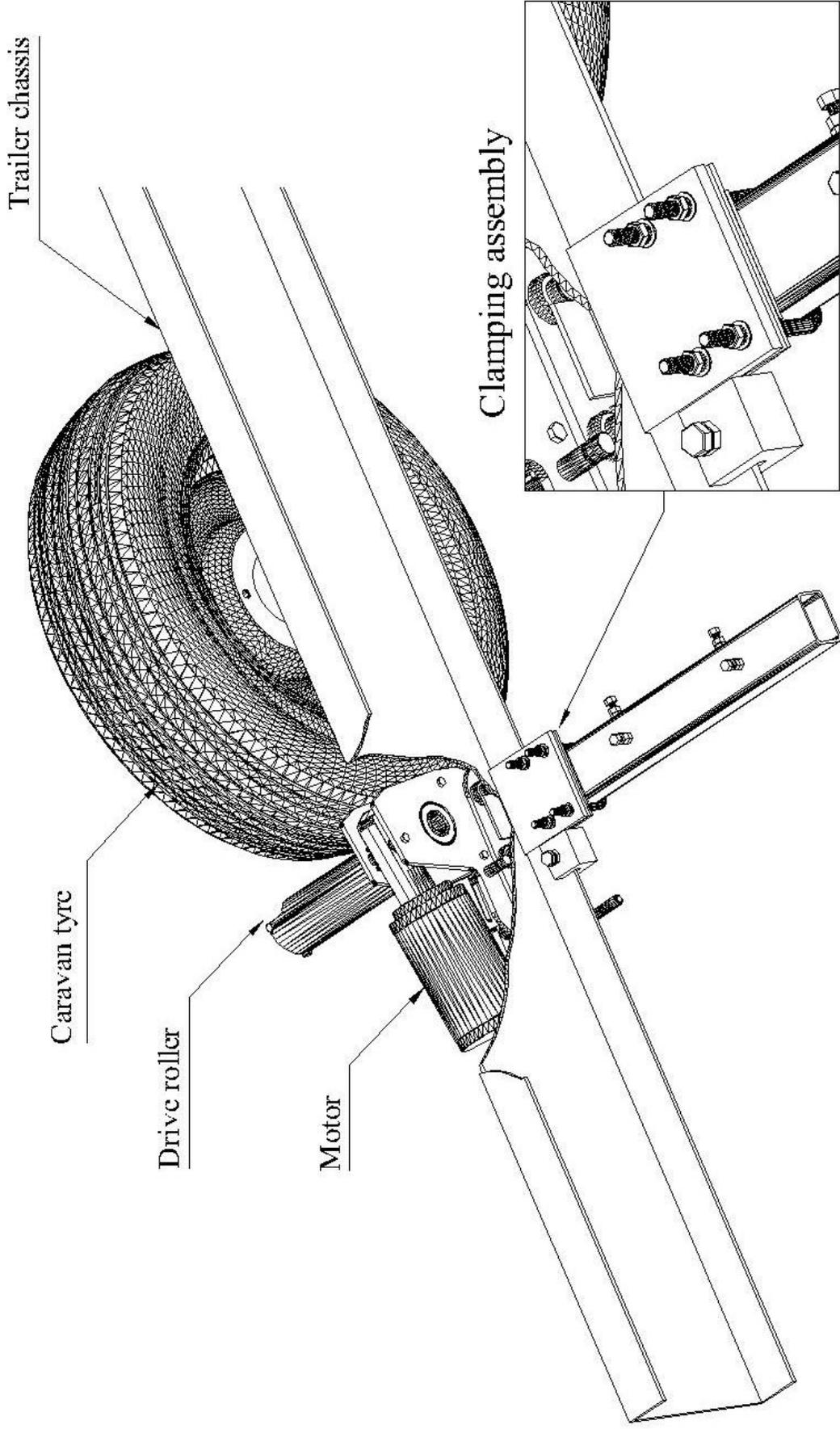
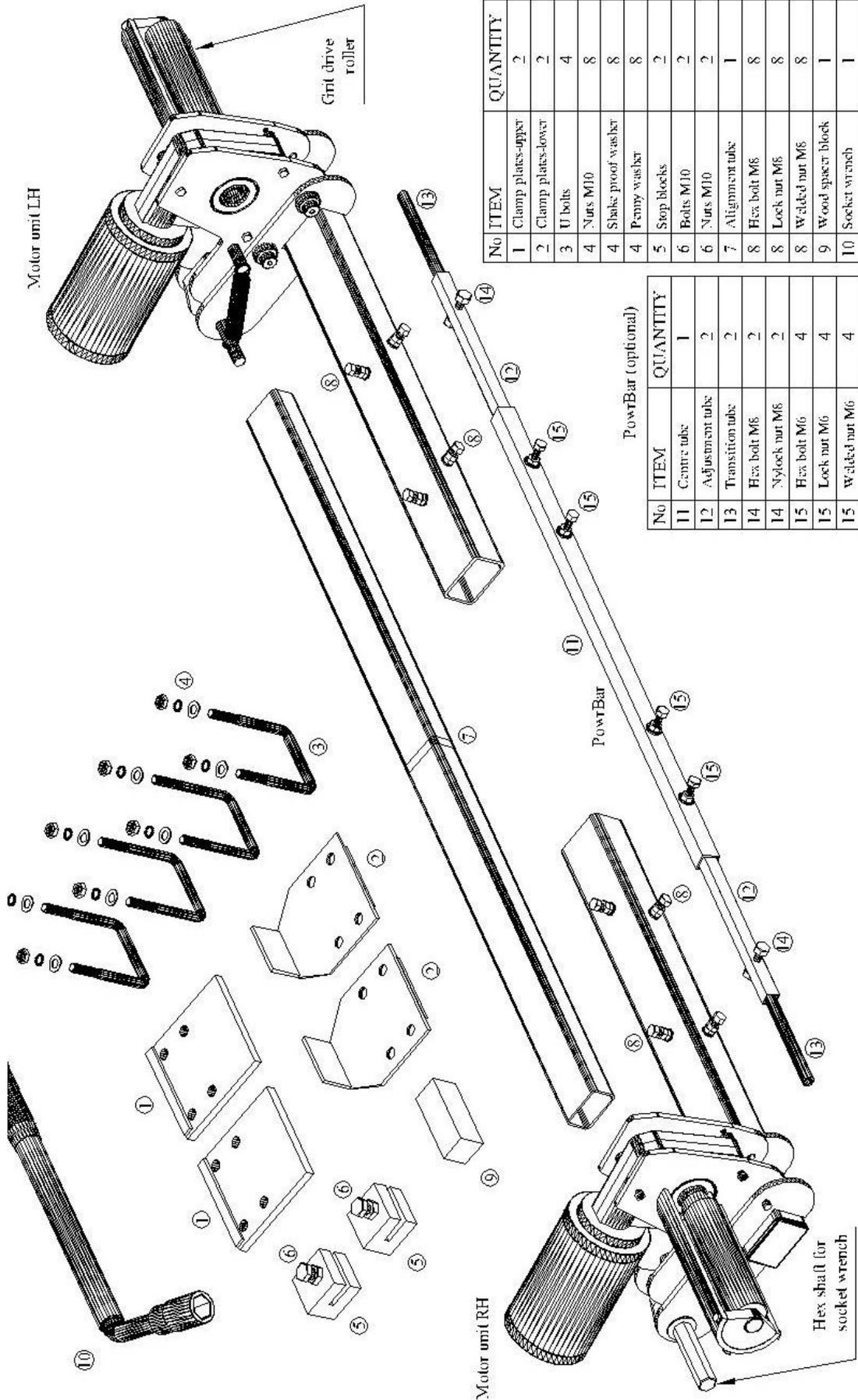


Fig 1. Drawing showing unit mounted on trailer chassis



No	ITEM	QUANTITY
1	Clamp plates-upper	2
2	Clamp plates-lower	2
3	U bolts	4
4	Nuts M10	8
4	Shake proof washer	8
5	Penny washer	8
5	Stop blocks	2
6	Bolts M10	2
6	Nuts M10	2
7	Alignment tube	1
8	Hex bolt M6	8
8	Lock nut M6	8
8	Welded nut M6	8
9	Wood spacer block	1
10	Socket wrench	1

PowerBar (optional)		
No	ITEM	QUANTITY
11	Centre tube	1
12	Adjustment tube	2
13	Transition tube	2
14	Hex bolt M6	2
14	Nylock nut M6	2
15	Hex bolt M6	4
15	Lock nut M6	4
15	Welded nut M6	4

Fig 2. Drawing showing mechanical parts

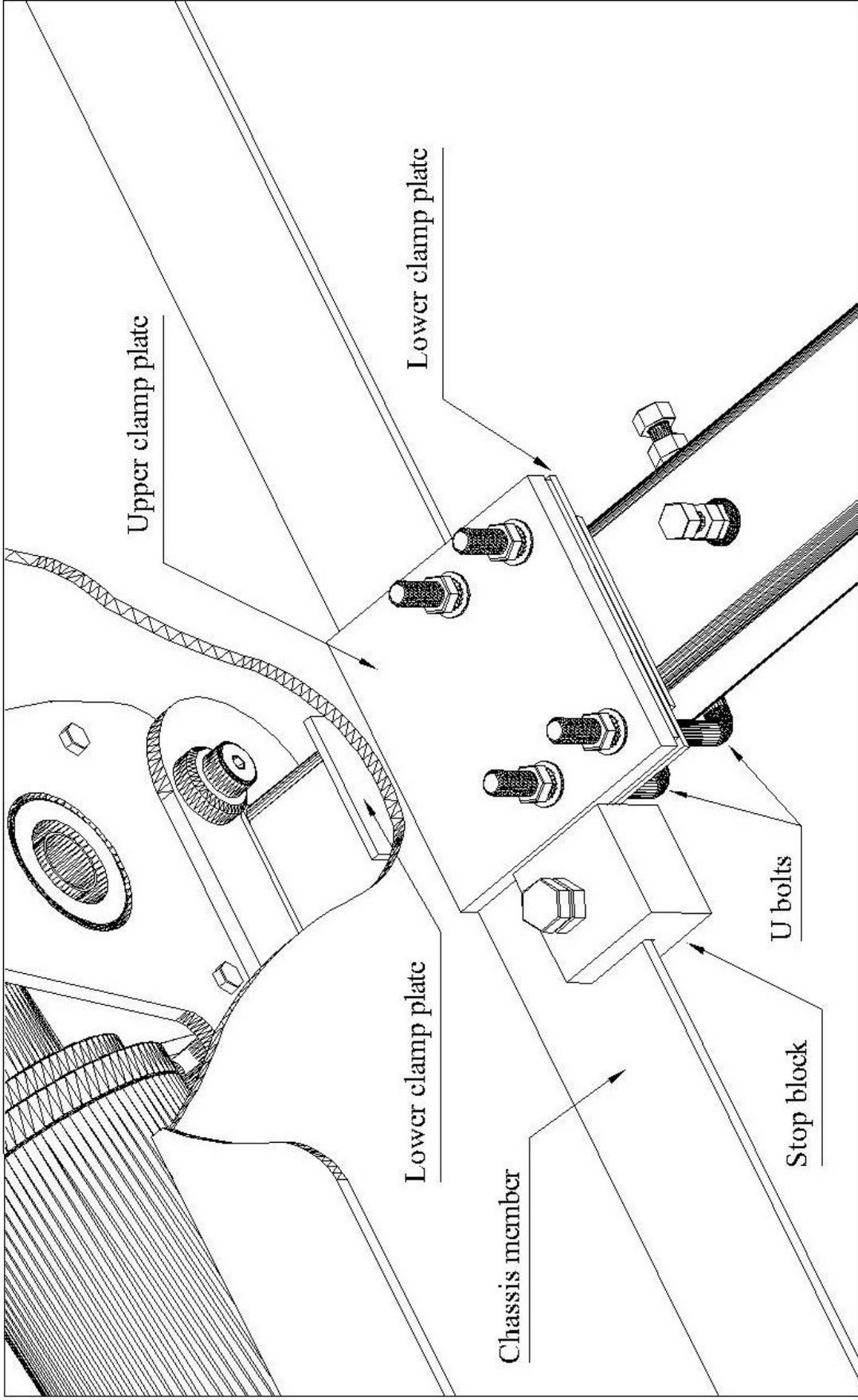


Fig 3. Drawing showing clamping arrangement

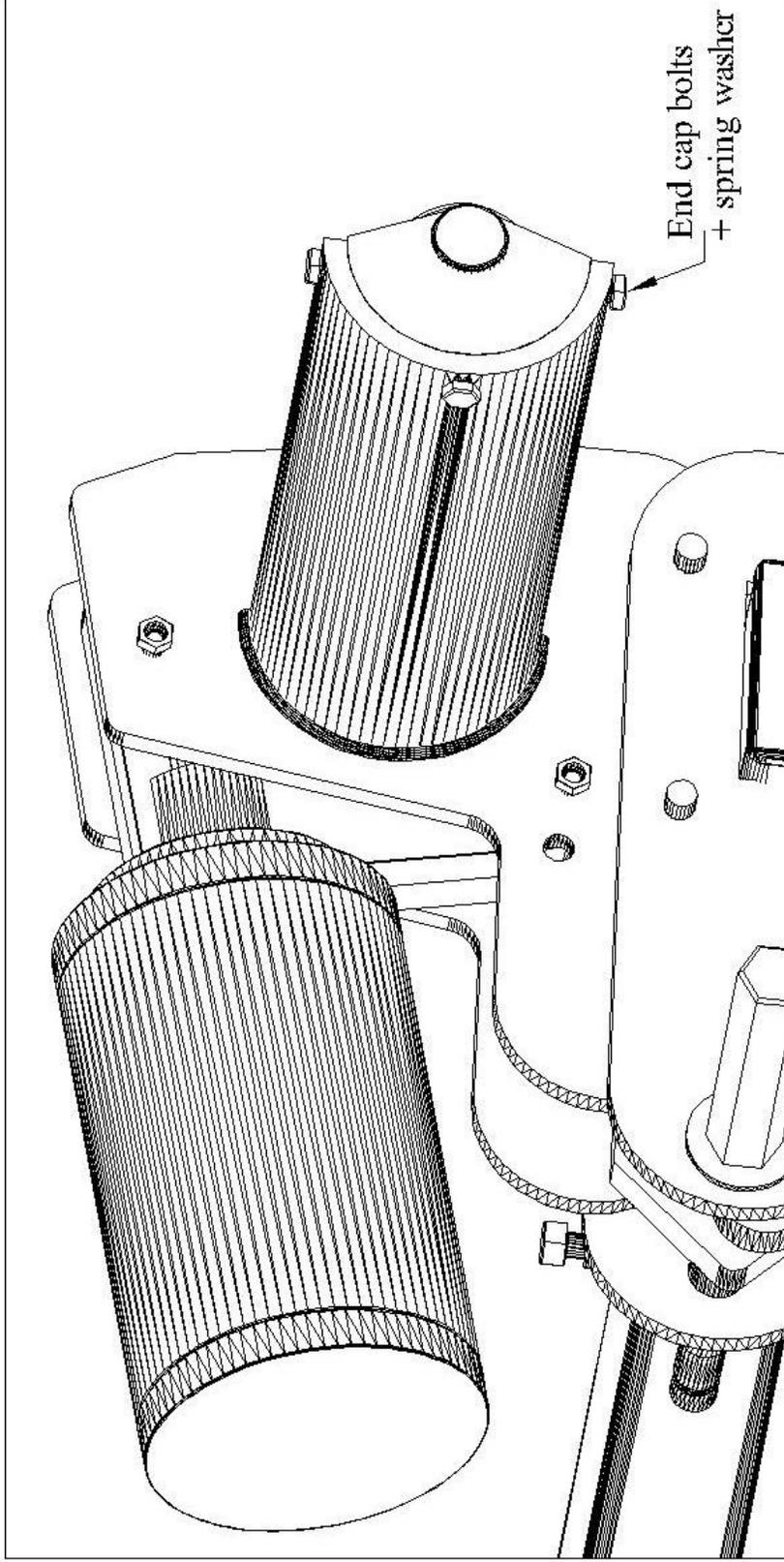


Fig 4. Drawing showing drive roller end cap bolts

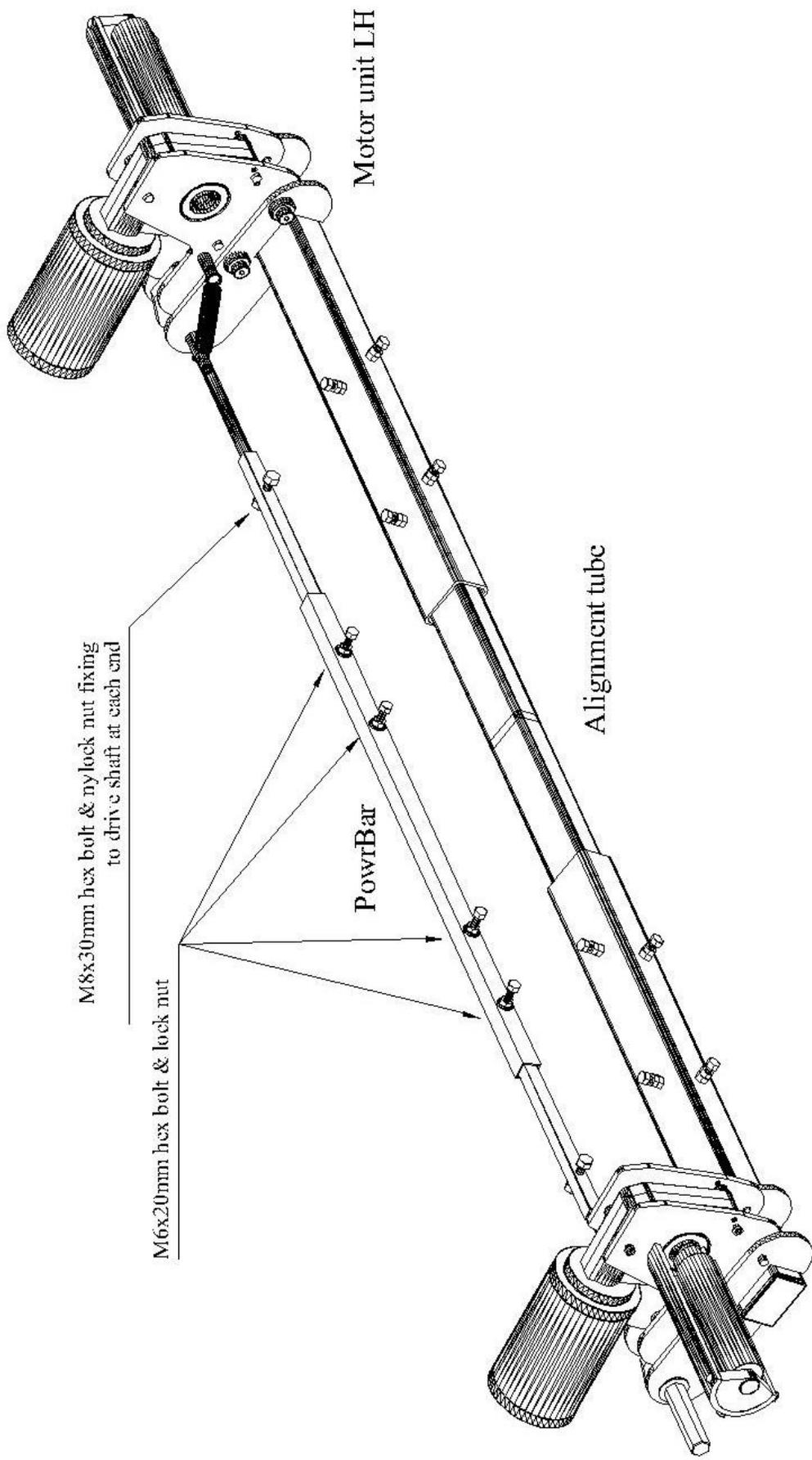


Fig 5. Drawing showing PowrBar Installation

Motor unit RH

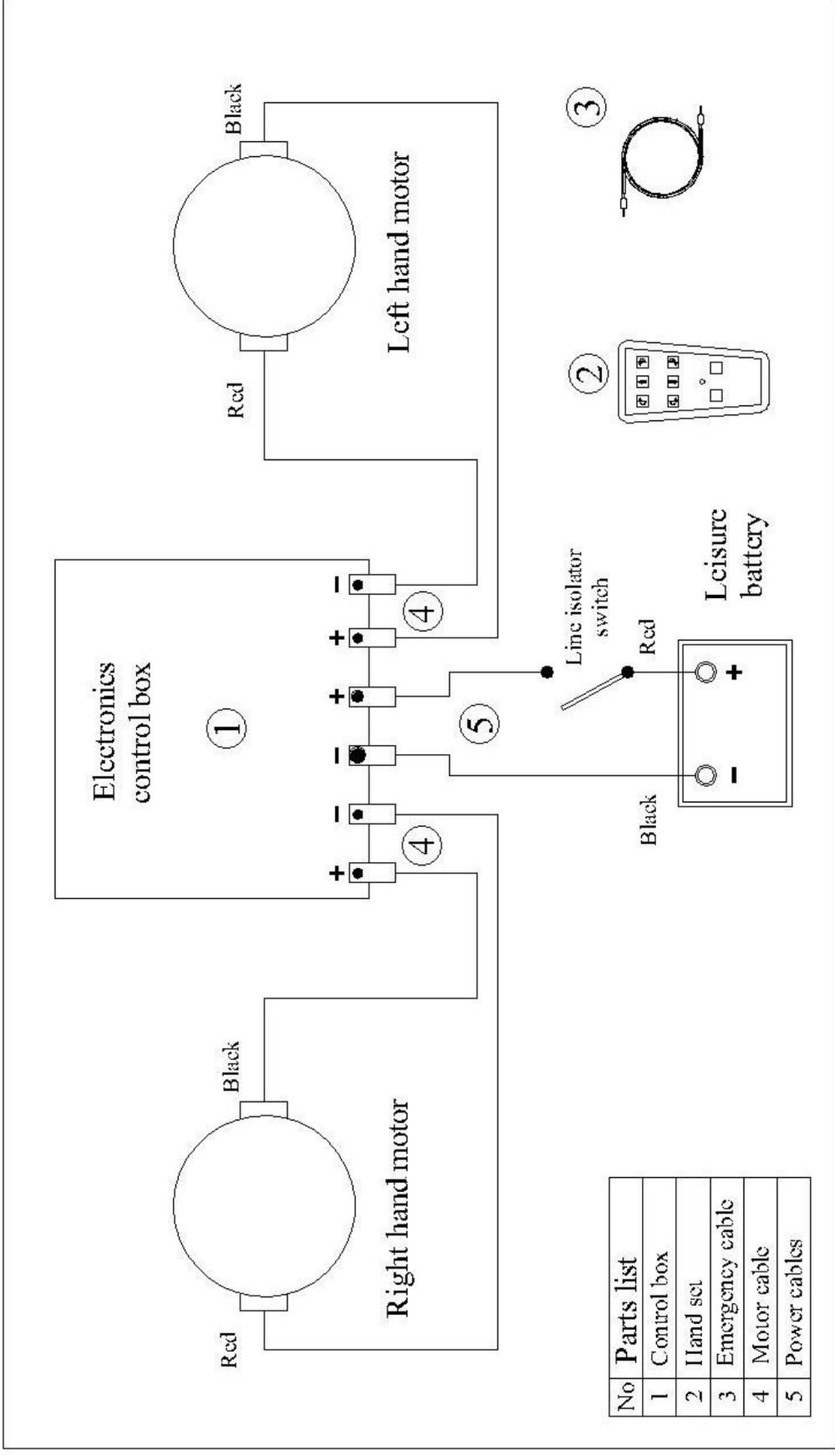


Fig 6A. Electrical schematic diagram - Powrtouch Fitted Behind the Wheels

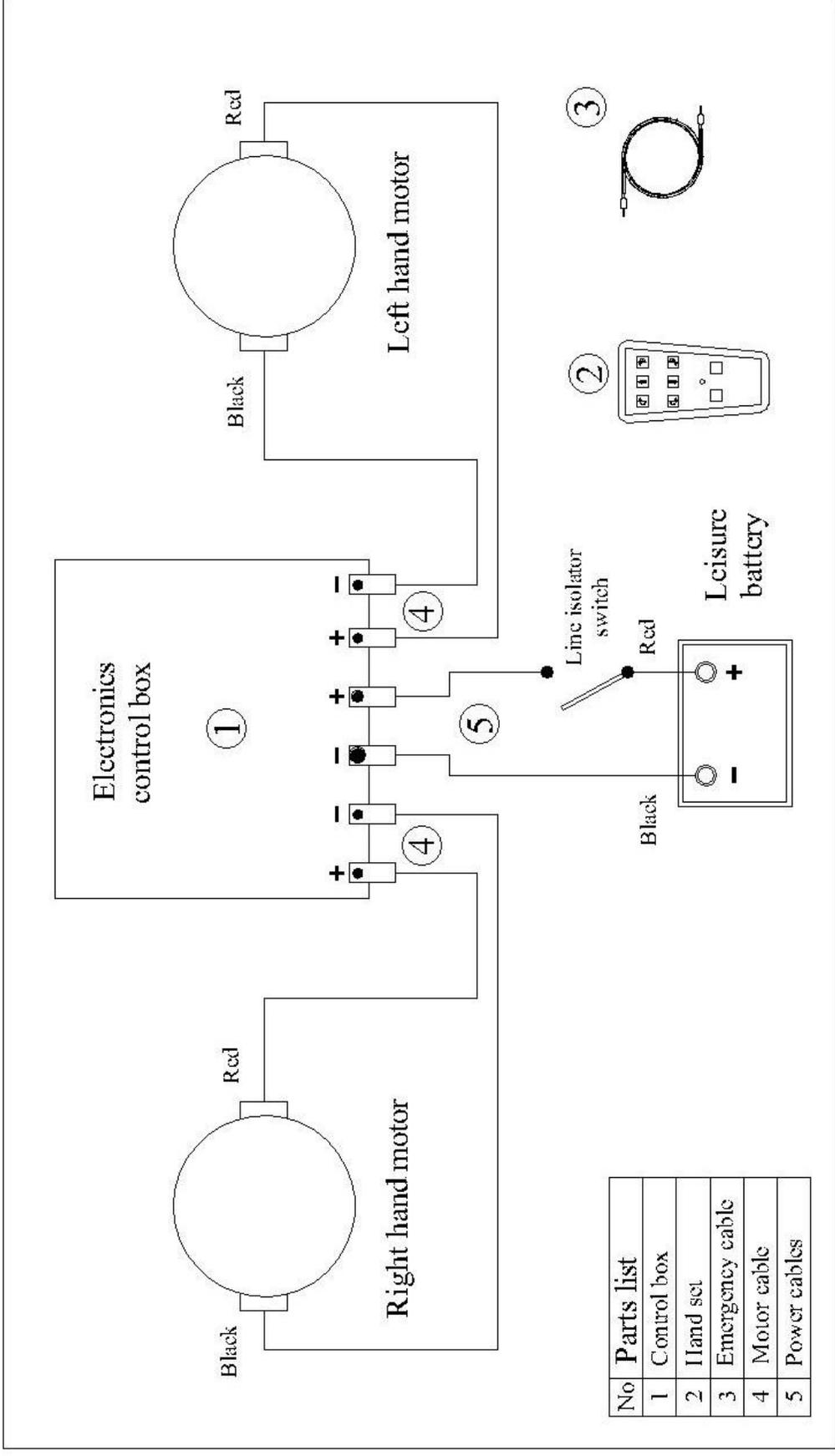


Fig 6B. Electrical schematic diagram - Powertouch Fitted Infront of the Wheel

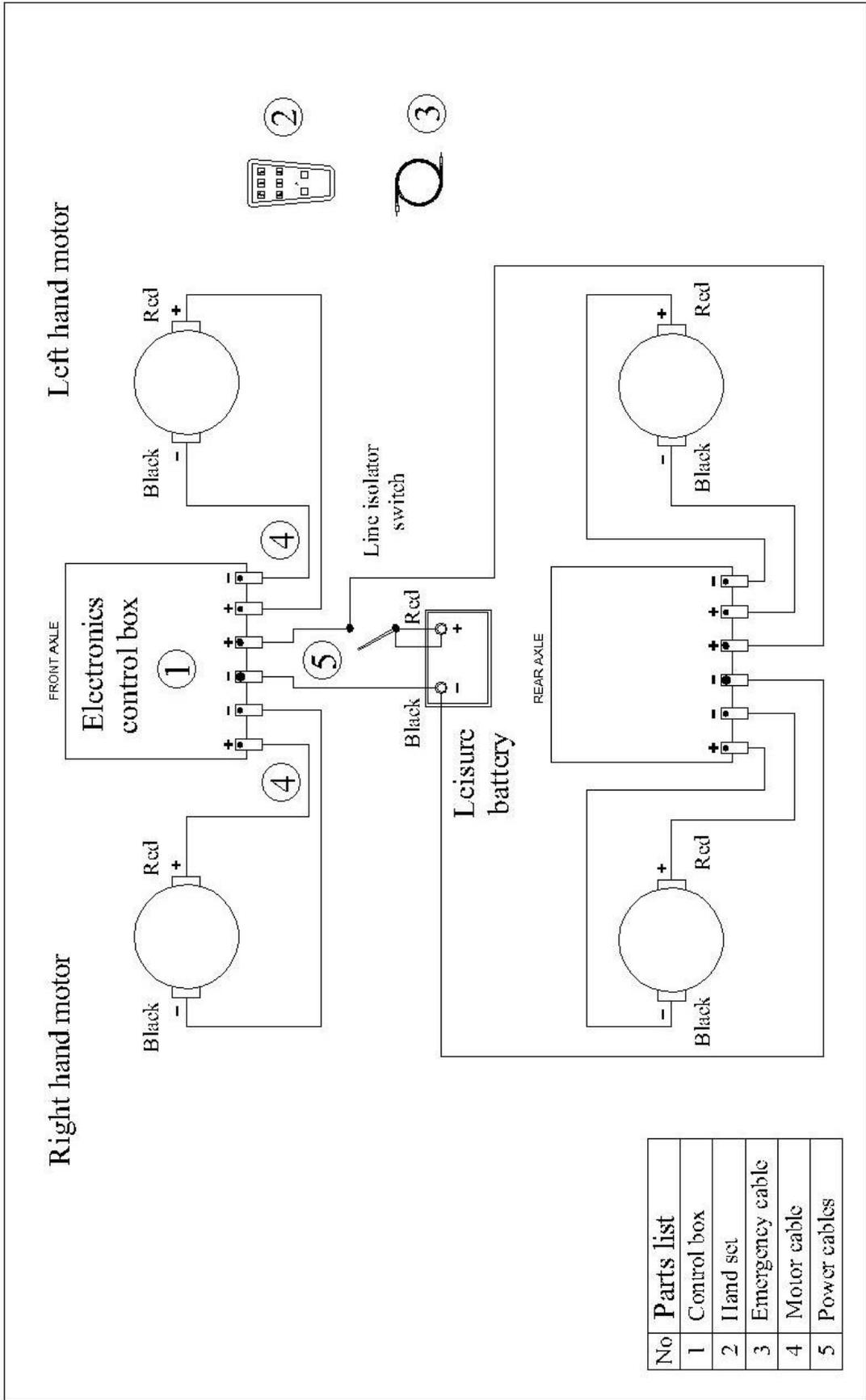


Fig 6C. Electrical schematic diagram - AWD

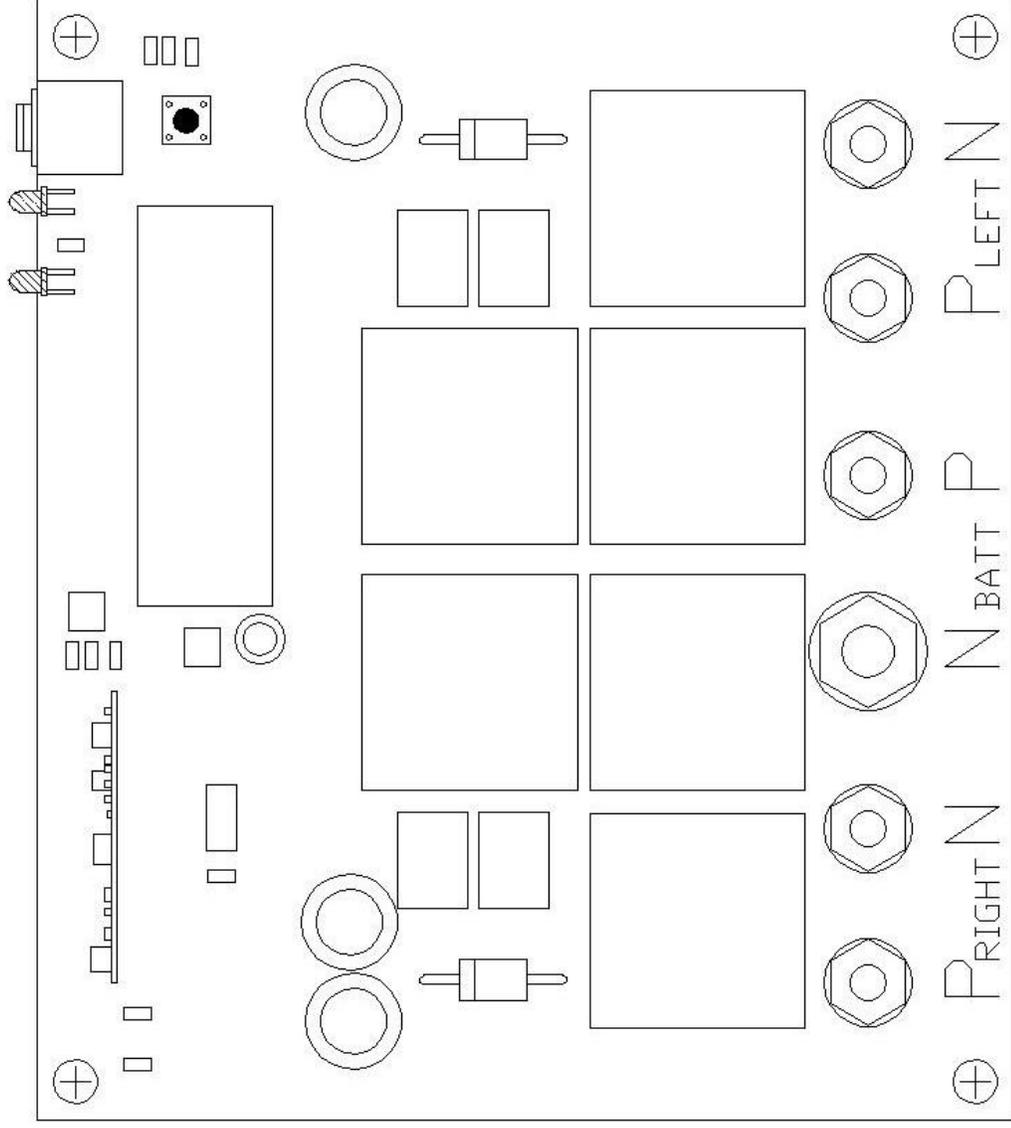


FIG 7. Electronic Board Configuration

Annex 1 to POWRTOUCH REMOTE CONTROL

**INSTRUCTIONS for the Installation,
Operation, Usage, Safety & Maintenance**

INSTRUCTIONS for the Installation of the ALKO spare wheel moving system.



Picture shows one side (or half) of the full fitting system with bolts, plates, spacers, nuts and washers assembled

- 1) When installing a Powrtouch product safety is paramount**
- 2) Our products are designed to give safe and dependable service if installed and operated in accordance with the instructions contained in this leaflet.**
- 3) Read the instructions carefully and become familiar with the various components prior to assembly.**
- 4) If you are in any doubt about the installation or assembly of this product please consult a Powrtouch Engineer.**

ISSUE 1 DATED: 17th APRIL 2007

1) Spare Wheel Moving Systems

The spare wheel moving system comprises of 2 x position extension plates (not handed) and 4 sets of bolts, round spacers, spreader plates, nuts and washers. The system works by shifting the spare wheel carrier 50mm (approx) to the nearside of the caravan and moving it to the rear of the caravan to clear the Powrtouch unit. There are different extension plates for UK and European caravans because for safety reason the spare wheel must always be removed on the near side (pavement side) of the caravan.

2) Remove existing parts

Remove spare wheel carrier complete with the central locking bolt and put carrier and bolt to one side for refitting later. Take off the ALKO jacking points from their existing positions, unfortunately it is not possible to refit the jacking points and alternative arrangement should be made to jack up the caravan i.e. Trolley or Scissor Jack. If in doubt consult the Caravan Club Handbook – Technical Section – Jacking/Changing a Wheel.

3) Assembly of Moving System

On the UK version the Left Hand plate is fitted externally to the chassis and the Right Hand plate is fitted internally. On the European version these positions will be reversed.

The pictures are of a UK version spare wheel extension plates being fitted of nearside of the caravan.

See also expanded 3D drawings attached to this Instruction Manual

3a) Pointers show position of the two fixing holes to be used. These holes exist in the chassis and no drilling of the chassis is required.



3b) Insert the 2 x 12mm bolts with 2 x 24mm washers on the left hand bolt put the 90mm x 40mm spreader plate in vertical position on the right hand bolt put the 70mm x 40mm plate in the horizontal position



3c) Now fit the same plates on the opposite side of the chassis with the plates in the same vertical or horizontal positions, put the 18mm round spacer tubes on to the bolts and lock firmly into place with the plain 12mm nuts



3d) Place the 36mm washers on to the fitted bolts assemblies



3e) Place the spare wheel extension plates onto the fitted bolt assemblies and then place the other 36mm washers on the outside of the plates



3f) Tighten the plate firmly in position with the 12mm nylon nuts



4) Fit offside extension plates

Repeat the process for the extension plates on the offside side of the caravan, the plates fit internally to the chassis.

5) Refit existing Parts

Once both plates are fitted to the caravan then the spare wheel carrier can be fitted to the caravan using the holes provided.

6) Fit Powrtouch

It is now possible to fit the Powrtouch to the rear wheels of the caravan.

