

# REDFOOT®

## LEVELLING

### **3 Point Jack Levelling System For tandem axel Caravans up to 3.5 ton.**



## **Installation Manual**

**Effective July 2021**

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**Before starting the installation, check the content of all boxes received against the picking slip which is attached to the outer of the main carton. Please call Redfoot Levelling immediately if there is a discrepancy!**

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### **WARNING!**

This is a 12VDC System **DO NOT** connect to your 24Volt House Battery

#### **Warning:**

**REDFOOT Levelling does not permit use of our levelling system to be used as a ‘Tyre Jack’ solution. Do not use the levelling system as a vehicle jack when changing tyres. Use the proper vehicle jack supplied with the vehicle in accordance with the manufacturer’s instructions. Jack Stands shall be always in use as the primary support when wheels are off the ground for long durations.**

Modification of any factory-supplied item may result in the denial of all warranty claims. Call Redfoot Levelling Solutions Technical Support prior to any modifications. Redfoot Levelling Solutions offers full installation support for authorised approved Installers only. End user installers must read and accept our Warranty and Terms and Conditions on the Invoice issued with this purchase.

#### **Danger:**

With any hydraulic application, holding position on a cylinder must be done with safety in mind. Failure in the system may cause the jack(s) to retract or extend suddenly. When working under or near the vehicle, always use jack stands of appropriate rating to support the weight of the vehicle.

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### **Basic Installation Items (Not supplied)**

#### Tools Required for Installation

- Ratchet, sockets and wrench set
- Wire cutters/crimpers
- Electric drill and bits
- Screw gun bit
- Welding equipment (if welding in place)

### **Additional Parts Needed**

- # 4 gauge ground wire (to connect battery ground to pump)
- # 4 gauge ring terminals
- Loom clips (to secure switch and harness to the trailer)
- Self-tapping screws or pop rivets (to secure loom clips)
- Wire ties
- Automatic transmission fluid (Dex III) up to 12 quarts depending on the jack size

## **Installation**

### **BlackJack**

Install as per instructions inside the box.

### **Hydraulic Cylinders**

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Your cylinders may have been provided with a mounting flange or bracket (depending on the mounting option ordered for your system). There are different mounting options for different manufactures of trailers plus a “Universal type mount”.

When bolting the cylinders to the trailer we recommend using grade 8 bolts of the proper size to “fill” the holes. Welding the cylinders in place requires sound welding practices. If unsure of specific mounting requirement check with Redfoot Levelling or your trailer manufacturer.

The cylinders should be mounted adequately to lift the trailer and the tow vehicle as the coupler could “stick”. The cylinders should be mounted so that when the trailer is level (while mounted to the tow vehicle) there is a minimum of 10 inches of ground clearance. This is usually achieved by mounting the cylinders so that the foot is slightly below the bottom edge of the trailer. The bottom of the footpad should not be lower than any other item on the trailer.

### **Pump Mounting**

The base of the pump is drilled and tapped 3/8-16 to be used for mounting. Most are shipped with mounting fasteners for this purpose. Pumps may be mounted vertical or horizontal. They must be mounted so that the fill or breather cap is “UP” and in a position where it can be filled. There are 2 locations where the fill (breather cap) may be located depending on the mounting selected. When mounting vertically the motor must be “UP” or above the reservoir. If mounting horizontal the mounting holes/surface must face down.

The pump assembly should be mounted in a manner that allows access for maintenance and to be able to perform “manual override” if it is needed. See the section(s) on manual override for info on this. Also, on units that have the selector valves, the valves will need to be accessible for the customer to operate. The pump assembly should be mounted in a box or compartment, or a cover should be used to protect the unit from direct road spray. One favoured mounting location is on the front of a jack, many of the leg assemblies have a bracket for this purpose.

### **Switch and Harness**

The switch box is made with a mounting plate with 4 holes (one in each corner) for mounting purposes. It may be mounted using screws or rivets. The type of screw or rivet is dependent on the type of surface that the switch box is to be mounted. The screw head should be of a type that properly mates with the plastic surface.

When selecting a mounting area be aware of the length and the routing of the harness and a location that is convenient for the user. The harness should be routed in a manner that protects it from chaffing and high heat sources. The switch and harness are weather resistant. A mounting locating that keeps it out of direct road or tire spray should be considered to help prevent issues.

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### **Fluid**

Automatic transmission fluid (ATF) that meets a Dexron III specification (such as multipurpose) is the recommended fluid for use in all Equalizer Systems hydraulic pumps. Using ATF Dexron III provides good operation for most climates that the systems will be used in. The use of a Synthetic ATF Fluid may be used if the system needs to be used in extreme cold conditions (-20 F or below). Fluids heavier than ATF such as ISO 32 or 46 hydraulic oils are not recommended as poor or no operation

### **Bi-Rotational Pump Hydraulic Hose Connections Independent Control**

These units have two rocker switches on the switch box, one for each jack leg. The manifold block with two valves and two hose connections is mounted to the pump centre section.

#### **Hose Connections Top Port:**

A tee fitting exits the side of the pump centre plate between the motor and the reservoir. The pump centre section will be stamped with a "A" on the surface near the reservoir. This is the extend port and must be connected to the top fitting of each jack. It does not matter which connection on the Tee fitting is the left or right jack.

#### **Hose Connections Bottom Port: (see purge instr. below)**

A tee fitting exits the side of the pump centre plate between the motor and the reservoir. The pump centre section will be stamped with a "B" on the surface near the reservoir. This is the retract port and must be connected to the bottom fitting of each jack. It does not matter which connection on the Tee fitting is the left or right jack.

#### **Pump Ground (-12 volts DC):**

A 5/16" stud is provided at the port plate to attach a wire (minimum # 6 gauge) to the negative post of the battery. It is not acceptable to use the frame of the vehicle (or trailer) as the sole grounding connection.

#### **Pump Positive (+12 volts DC):**

A wire (minimum #6 gauge) must be connected from the battery terminal on the motor solenoid to the positive (+12v) of the battery. This terminal will also have a 14 gauge red wire feeding a

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red fuse holder. If circuit protection is required, a circuit breaker with a minimum rating of 80 amps is required at the battery.



TOP of CYLINDER



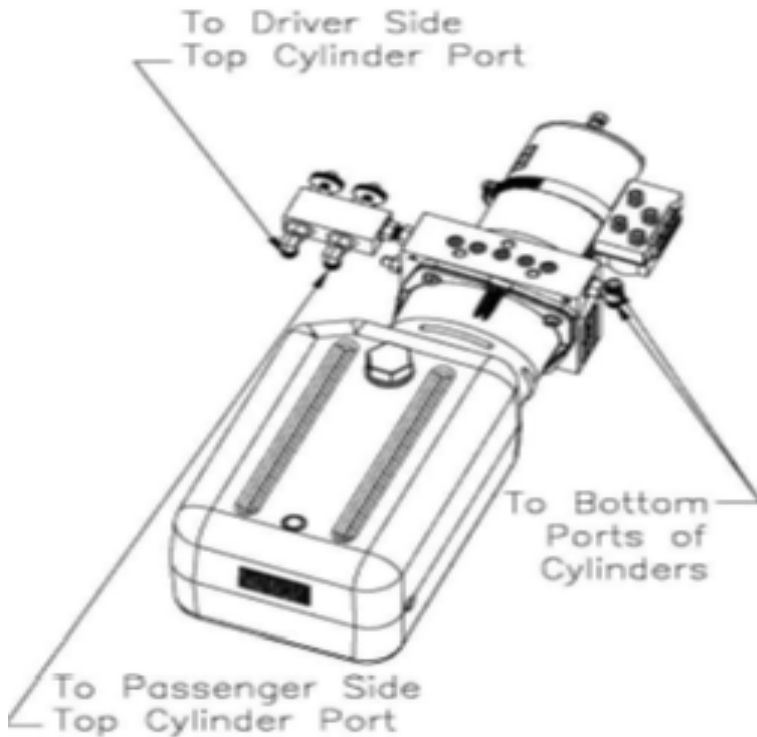
BOTTOM of CYLINDER



MANIFOLD FITTING 90°  
(optional extra)

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### HOSE CONNECTIONS

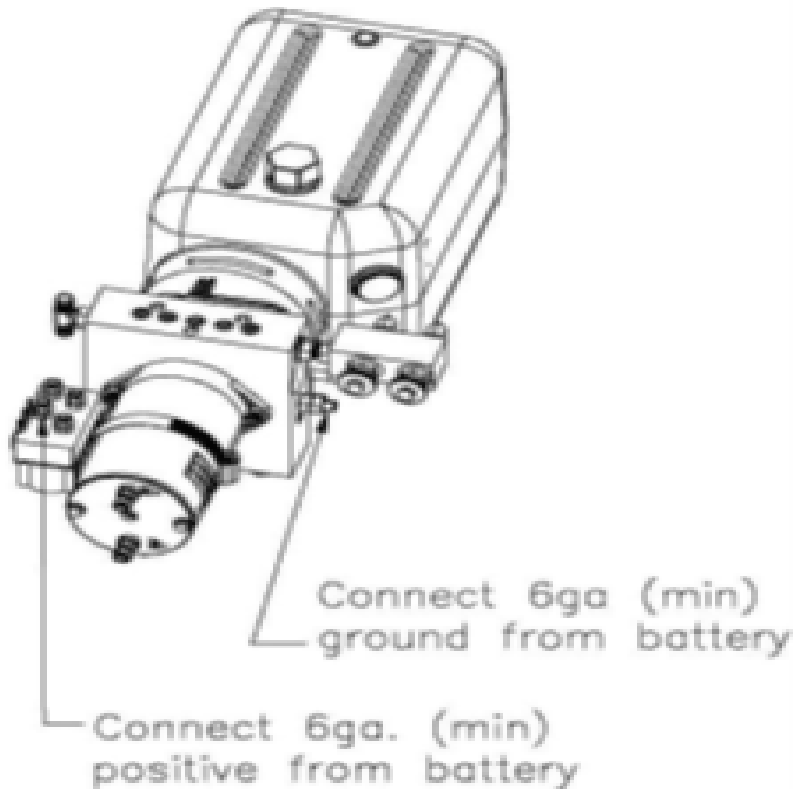
#### **Switch and Harness Connection:**

A 6-way connector (white in colour) is provided on the pump assembly and mates with the connector at the end of the switch and harness assembly.

The use of corrosion preventative spray may be used on electrical terminals to help prevent corrosion.

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### ELECTRICAL POWER CONNECTIONS

#### Bi-Rotational Pump Hydraulic Fluid Purging

This process works best if the cylinders can be fully extended without lifting the trailer. This procedure should be performed with the initial installation and running of hydraulic system following installation of the pump assembly and cylinders. All electrical and hose routing and connections must be completed before the purging process.

Fill reservoir with ATF (Dex III).

Remove the bottom hoses from the tee fitting at the pump (B port). Place hoses into a clean container. These are the bottom (or retract) hose assemblies. Cap the connection at the tee fitting to prevent air intrusion.



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### **Run the pump to extend the cylinders.**

Maintain the fluid level in the reservoir approximately  $\frac{1}{2}$  full. Do not allow the reservoir to run empty. If cylinders will not fully extend, crack loose the upper hoses at the cylinders and run pump to extend until air is expelled. Retighten the hoses and complete the extension of the cylinders. Maintain the fluid level as described above. Reconnect the hoses to the tee fitting at the pump.

### **Run the pump to retract the cylinders.**

Maintain the fluid level as above. Do not fill to full until after the legs are fully retracted. If fluid in reservoir appears to be aerated (foaming), allow unit to sit until foam dissipates (approximately 5-10 minutes).

### **Fully extend and retract jack legs a minimum of three times.**

Allow foamed oil to dissipate as needed. Maintain the fluid level in the reservoir as needed.

### **Additional Notes Regarding Purging**

The reservoir fluid level will be greatest when the cylinders are fully retracted and lowest when the cylinders are fully extended. Never allow the reservoir to go empty. Maintain the fluid level at least  $\frac{1}{4}$  full all the time.

The  $\frac{1}{4}$  line should be clear fluid, not foamed up. The fuller the reservoir, the better. Remember that the level will rise as the cylinders are retracted. If it is too full when the cylinders are extended, the reservoir will overflow out of the breather cap when the cylinders are retracted.

Be patient. It does no good to run the pump and try to move the cylinders when the reservoir is full of foam. Pumping foam will only reintroduce air into the system. You want the air out. Allowing the air to dissipate through the reservoir and maintaining the reservoir fluid level will get things working faster.

### **Operation of Dual Leg cylinders**

Normal operation of dual leg cylinders is the same regardless of which pump type (UNI or Bi-Rot) is part of the system. The operation of these does vary however, depending on if the system is independent control, selector valve, or teed.

#### **Independent Control:**

The easiest way to identify this type of system is that the switch control box will have 2 rocker switches- one for each jack. To operate these simply insert the key into the key switch, turn it to the on position, and then use the rocker switches to extend or retract the cylinders. The cylinders can be run independently (one at a time) by pressing one or the other switch or together by

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pressing both switches at the same time. When running them at the same time they both must operate in the same direction. They can be used one at a time to “level” side to side. They will stay in place individually as they have separate individual extend “hold” valves.

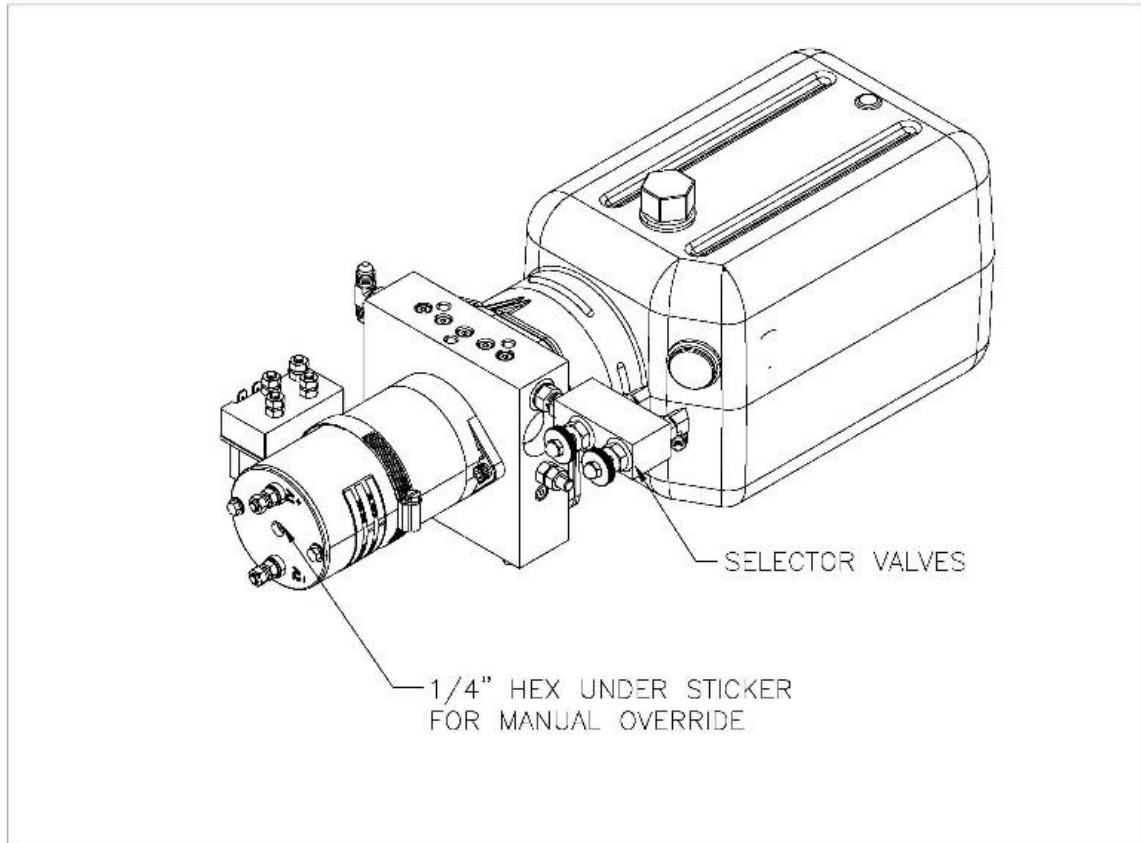
### **Manual Override**

Redfoot Levelling’s dual leg systems are designed with an override feature to help operate the cylinders in the event of an electrical or power failure. For this feature to be effective the hydraulic system must be sound (free of excessive leaks) and there must be oil in the reservoir.

1. Locate the two cartridge valves. Recessed into the end of the cartridge valve is a 1/8-inch Allen hex that needs to be turned in (clockwise) until it stops (about 2-2 ½ turns).
2. Locate the 7/16 hex under the plastic cover on the end of the motor. Use a drill (at least 2000 RPM) and a 7/16 hex driver on the end of the motor run the drill clockwise the jack(s) should extend.
3. After override is complete return the cartridge valves (item 1) back to the original out (counter-clockwise) position.

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**IT IS ALWAYS THE RESPONSIBILITY OF THE OPERATOR TO VISUALLY CONFIRM THAT THE CYLINDERS ARE FULLY RETRACTED AND SAFE FOR TRAVEL.**

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### **Hints / FAQ and Problem Solving for Single and Dual Leg Trailer Cylinders**

#### **The jack(s) run for a few seconds then stop(s)**

Generally, this is caused by a weak or defective battery. Charge the battery and retry. It may be necessary to have the battery tested and/or replaced.

#### **The jack(s) only extend regardless of which way I push the switch**

Generally, this is caused by a weak battery or poor connections. On units that have the uni-rotational pump, the directional valve must receive at least 10.5 VDC for it to properly shift. Charge the battery, check the connections for connectivity or corrosion and retry.

#### **I push the switch, and nothing happens**

Check the wiring connections at the battery and the pump assembly for looseness or corrosion. Check the disconnect switch or the key switch to assure (if equipped) that it is in the "ON" position. Check for a tripped circuit breaker. Some units have a fuse holder at the wiring near the pump. If so, check the fuse. Verify that the battery is not dead

#### **Most of the time its works fine, sometimes not at all, and then later it works again or sometimes it just clicks**

Most no-run, intermittent operation, or operation in one direction only is due to a dead or weak battery. Or possibly a battery that is not being properly charged by the charging system and/or loose or corroded electrical connections. Check out the vehicle electrical system to include the battery and the charging system for possible issues.

#### **Why do I need a ground? Isn't my jack bolted to the trailer?**

Do not ignore the ground. Redfoot Levelling recommends that a 4-gauge wire cable be run from the battery negative terminal to the body of the jack to assure a good connection. Failure to do so invites a poor ground connection due to painted surfaces or corrosion build up between the jack and the trailer. This is especially important if the mounting is relied upon for grounding on aluminium trailers, as corrosion will build up between the jack and the trailer. Also, most battery-to-trailer grounds are of smaller than needed wire gauge size as they were designed to operate lighting or other low current draw devices. The jack is a high current draw item requiring a "heavy" gauge ground.

#### **What happens if I lose my keys?**

You may be able to buy new keys from Redfoot Levelling if you know the key code. If you do not know the key code, you will need to replace the key switch assembly. In an emergency you will need to perform the manual override procedure outlined in your owner's manual.

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### **My trailer lowered overnight. Why did the jack(s) do this?**

There are three basic reasons for this. First look for any signs of external fluid loss (leakage). Generally, if there is a leak it will be due to a loose fitting or adaptor. If no external fluid leaks are present, the issue is with the hydraulic cylinder seal or with the hold-check (valve) in the pump. You will need to record the numbers from the pump assembly and call Redfoot Levelling to get these items addressed.

### **When retracting my jack(s) it bounces or jerks– Why?**

The first possibility is that there is air in the system. Check the fluid level in the reservoir. Add fluid if needed. Cycle the jack to full extension and then full retraction 3 times to purge the air out. If the fluid is foamy between cycles allow it to sit until the foam dissipates. On systems that are at or over the maximum lifting capacity, a very slight “pulse” may be normal during retraction. For excessive “pulsing” (bouncing) call Redfoot Levelling as there may be an issue with the flow control or pump check valve.

### **My dual legs cylinders operate at different speeds –Why?**

The fluid from the pump will flow faster to the leg where there is the least resistance. If equipped with the selector valves, adjust them so that the jack speed is the same. Generally, when running the cylinders to take up ground clearance there may be some difference, when the fast one hits the ground, the slower one will speed up and catch up to the other jack.

### **My jack will not work. How do I manually override?**

The manual override procedure is different depending on the type of pump assembly and control that is on your specific system. You will need to know which type you have. See the manual override section of the owner’s manual for this.

### **I need parts. How do I find and where do I go?**

You will need the number from the pump assembly and perhaps some measurements of the jack leg(s). You can go to the replacement parts by contacting Redfoot Levelling on 07 3286 1199. You can also contact your dealer for assistance.

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### Product Warranty Guide

Only warranty claims with prior written or verbal authorisation from Redfoot Levelling will be recognised, all other claims will be denied.

1. Redfoot Levelling warrants levelling system components for a period of One year from the date of original sale of the vehicle. This warranty covers defects in material and workmanship only. Redfoot Levelling is not liable for any damage due to abuse, neglect, misuse, negligence, misapplication, error of operation, accidental or purposeful damage or damage due to an “Act of God” such as, wind or rain damage, flood, lightning or other natural causes of the like. Redfoot Levelling limited warranty is applicable to the Redfoot Levelling components only and does not apply to the vehicle, apparatus, or property to which it is attached. Warranty parts will be shipped at no charge if the repair is authorised by Redfoot Levelling representative. Purchased components used in authorised warranty repairs will be reimbursed at the original purchase price. **ALL product prior to return, must be authorised by a Redfoot Levelling representative. Connotes will be supplied for their return unless prior arrangements have been made. Installers must receive the appropriate Scope of Works from Redfoot Levelling prior to the commencement of any work.**
2. Labour and freight expenses due to warrantable parts defects or workmanship will be reimbursed for the period of One year from the date of the original sale of the vehicle. Freight expenses will either be prepaid by Redfoot Levelling or reimbursed at the Road Logistic rate only. Any additional shipping charges or requirements are the obligation of the vehicle owner or service centre performing the warranty repair. The owner or Service Centre’s obligation may include overseas shipping charges, border fees, and any other additional fee of the like.
3. Warranty labour will be reimbursed only for claims that have prior written or verbal authorisation from a Redfoot Levelling representative. Warranty labour compensation is required to correspond with the “Warranty parts replacement time guideline” published by Redfoot Levelling. Any warranty repair not listed on this guideline will require prior authorisation from an Equalizer Systems representative. A reasonable time allowance will be determined by the Equalizer Systems representative. Any warranty repair that is not listed on this guideline that is performed without prior authorisation will be denied without exception. Time associated with learning about the repair or excessive diagnostic and installation time will not be reimbursed. Warranty labour will be reimbursed at the authorised service centre’s published shop rate for that region. Overtime labour will not be reimbursed without exception.
4. Labour, parts, and freight credit (if applicable) will be sent after the parts are tested and the warranty claim is validated. Returned parts that are found to be in normal operating condition are not warrantable and will be charged to the owner or service centre. Redfoot Levelling reserves the right to charge back the service centre for labour claim payments previously submitted if the installation of the warranted part is found to be inadequate at a later date.
5. Claims will be denied if the date submitted is greater than 30 days from the repair.

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6. Prior authorisation is required before parts may be sent back by to Redfoot Levelling. Redfoot Levelling will supply a connote for the return goods.
7. Complete systems are not warranted unless authorised by a Redfoot Levelling representative. There are absolutely no exceptions to this clause.
8. Consideration should be taken regarding the location and protection of Redfoot Levelling's components prior to installation. Please reference our installation manuals for recommended locations and maintenance or visit [www.redfootlevelling.com.au](http://www.redfootlevelling.com.au) for more information. The failure of any Redfoot Levelling components due to extreme environmental conditions, improper installation or lack of maintenance will not be covered under warranty.
9. Warranty coverage for parts or systems sold by non-authorized resellers (such as live or internet auctions) will be at the discretion of Redfoot levelling.
10. This warranty begins upon the sale date of the vehicle and is transferable, with limitation, to the subsequent owners upon furnishing the original sale date of the vehicle and proof of purchase.
11. Redfoot Levelling is not liable for loss of time, manufacturing costs, labour, material, loss of profits, direct or indirect damages incurred by the vehicle manufacturer.
12. Excessive warranty labour resulting from inadequate access to the Redfoot Levelling product will not be reimbursed.
13. Redfoot Levelling will not pay mark-up on warranty parts unless required by law.
14. Travel expenses, hotel, telephone, fuel, or any other expense of the like are not covered under warranty.
15. All "out of warranty" repairs will have a flat rate inspection fee of \$190 Inc GST. There will be an additional charge of \$95 Inc GST per hour for repair work carried out beyond the inspection diagnostic

### **Replacement Parts:**

Replacement parts are warranted under the same guidelines listed above for the remainder of the original warranty or 90 days, whichever is longer. Proof of warranty repair date and original vehicle purchase date are required via any means possible.

No additional warranties expressed or implied are authorised by Redfoot Levelling.

Titan Stability Solutions Pty Ltd Trading as Redfoot Levelling Solutions

Unit 5 Euro Business Park

26 Weippin Street

Cleveland QLD 4163

Ph: +61 7 3286 1199

Email: [sales@titanrv.com.au](mailto:sales@titanrv.com.au)

[www.redfootlevelling.com.au](http://www.redfootlevelling.com.au)