

REDFOOT

LEVELLING

Smart Levelling Systems

User Manual for Motorhomes

Redfoot Levelling System
Typical Kitset



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www.redfootlevelling.com.au

WARNING!

This is a 12VDC System **DO NOT connect to your 24Volt 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 in use as the primary support at all times 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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1 Panel Indicator LED's

There is a total of ten (10) LED indicators on the Redfoot Keypad. The function of these LED's is detailed below.

During typical operation, the LED's on the bottom left hand corner of the keypad should NOT be illuminated. The only LED that should light is the "OPERATING' LED, which should flash during operation.

POWER' LED ON	Red when power is ON OFF when power is OFF FLASH every 1 sec. In Sleep Mode
JACK' LED (4 each) ON	Red when jack(s) are deployed OFF when jack(s) are stowed
OPERATING' LED FLASHING	Red w/ Auto Level or All Retract OFF when keypad is idle or 'sleeping'
LOW VOLTAGE' LED ON	Red when voltage is below 10.5 VDC OFF when voltage is above 10.5 VDC
ENGAGE PARK BRAKE' LED	ON Red when park brake is not set OFF when park brake is set.
IGNITION ON' LED ON	Red when ignition is in the ON position OFF when ignition is OFF
EXCESS SLOPE' LED ON	Red following an Auto Level attempt if system cannot overcome slope OFF when slope is not excessive

If the LOW VOLTAGE, ENGAGE PARK BRAKE, IGNITION ON or EXCESS SLOPE LED's illuminate, you have an 'error' condition that must be corrected prior to operating the jacks.

2. Setting the Null:

Null is the term used to indicate the levelness of the motorhome. The null has been pre-set at the factory. If the motorhome is not level following an attempt to Auto-Level, you will need to level the motorhome and reset the null. To set the null, push and release the Power button on the Keypad to engage power.

The LED light next to the Power button should be RED when the power is on. Level the motorhome by deploying jacks manually, or by simply parking the motorhome on a level site. You do not need to have the jacks deployed to set the null. Use a bubble level on a flat surface in the centre (or close) to the motorhome as a reference. Once the motorhome is level, turn the power off at the panel. Depress and hold the Auto-Level button and press and release the Power button and listen for a series of beeps.

After the Keypad has beeped 5 to 6 times, release the Auto-Level button (the Keypad will continue to beep if the Auto-Level button is held). The new null has been set and the panel will maintain this setting. Press and release the All Retract button to retract the jacks to the stowed position.

3. Auto-Level Operation

Power On:

Push and release the Power button to engage power. The LED light next to the Power button should be RED when power is on. You will need to have the ignition key in the “off” position to extend the jacks. If you attempt to extend individual jacks or all jacks with the Auto-Level button, you will hear a deny tone from the keypad if the ignition key is in the improper position.

Auto-Level:

Press the Auto-Level button and release. The system will send out a continuous series of beeps and the “Operating” LED will flash RED to let you know Auto-Level is operation and will automatically level the motorhome. Please refrain from moving inside the motorhome during the Auto-level process. When completed, the Keypad will signal the successful completion with a dual-stage tone. The Keypad may be left on once level has been achieved. The Keypad will enter “sleep mode” after five minutes of inactivity.

Retracting the Jacks:

To retract all jacks simultaneously, press and release the All RETRACT button. All jacks will automatically retract and return to stowed position. The pump will run in retract mode until all of the jacks are fully stowed (plus an additional 5 seconds) up to a maximum of 60 or 90 seconds).

This is the proper method for retracting the jacks prior to travel. You may stop the ALL RETRACT by pressing any button on the keypad. Jacks may be retracted in pairs by using the UP ▲ button for each end or side for levelling purposes however the ALL RETRACT must be used to fully stow the jacks prior to travel. The jacks down LED's will turn off, indicating the jacks are in the "stowed" position.

Power OFF:

Press and Release the Power Keypad Button jacks should be in the stowed position.

Visually confirm all jacks are retracted prior to travel.

3. Helpful Hints

- If your motorhome is equipped with air suspension, it is recommended to start your motorhome and allow the chassis air to build before pressing All Retract. This will ensure adequate air supply to the chassis air valves.
- Do not allow excessive motion in the motorhome during the Auto-Level operation (do not move around in the motorhome). This could cause the system to level improperly.
- The Auto-Level is a microprocessor-controlled system. Proper and adequate battery voltage and permanent chassis ground are essential.
- Your system may be equipped with a manual override option. Refer to the procedure for proper operation of this option. It is usually better to review this procedure prior to its actual use, rather than having to learn a new procedure in difficult environments.
- If the system has not been used (with the jacks stowed) for over 24 hours, it is recommended that you engage the All Retract button prior to travel to re-pressurise the system.
- A lubricant, like T9 by Boeing Aircraft, may be used to clean and lubricate the cylinder shafts/rods.

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5. Manual Operation

Power On:

Push and release the Power Keypad button to engage power. All lights will come on then most will go out. The LED light next to the Power button should be lit RED when power is on. If the levelling system has been installed into the ignition disable circuit, you will need to have the ignition key in the “off” position to extend the jacks. If you attempt to extend individual jacks by pressing the Down Keypad buttons or all the jacks with the Auto-Level button, you will hear a “deny” tone from the keypad if the ignition key is in the improper position.

Planting the Jacks:

Using the Down Keypad button, extend each jack until they contact the ground (this is referred to as “planting” the jacks). As you extend each jack, an LED light on the Keypad will indicate the jack is out of the “stowed” position. **Do not manually overextend individual jacks. This may cause unwanted stress on the motorhome or the jacks.**

Levelling the Motorhome:

Use a bubble level on a flat surface in the centre (or close) to the motorhome. Level the vehicle by using the Down or Up Keypad buttons until the vehicle is level. Jacks may be operated individually or in pairs if they are operated in the same direction. Do not attempt to lift the vehicle’s tyres off the ground. The Keypad may be left on once level has been achieved. The Keypad will enter “sleep mode” after five minutes of inactivity.

Note: There are specific instances when manual extension of one or more jacks is inhibited (deny tone when Down is depressed). This situation is caused by the ‘anti-twist’ protocol in the software installed in the Controller. Simply stated, the ‘anti-twist’ protocol denies jack extension if the system senses that a specific corner of the motorhome is approximately 3 degrees higher than the rest. You will be able to extend the other jacks to overcome the slope. *If the system incorrectly senses excessive slope, this can be overcome by re-setting the null. This will allow manual extension of all jacks.*

Retracting the Jacks: Use the All Retract button to retract the jacks prior to travel.

The Redfoot levelling system does provide the ability to retract the jacks using the UP buttons for each pair of jacks. However, these buttons are not intended to be used for retracting the jacks to their stowed position prior to travel. The individual Up arrows are to be used only for retracting the jacks to help level the coach. The All Retract button must be pressed to ensure the system is ready/safe for travel. All jacks will automatically retract and return to stowed position when the ALL RETRACT button is

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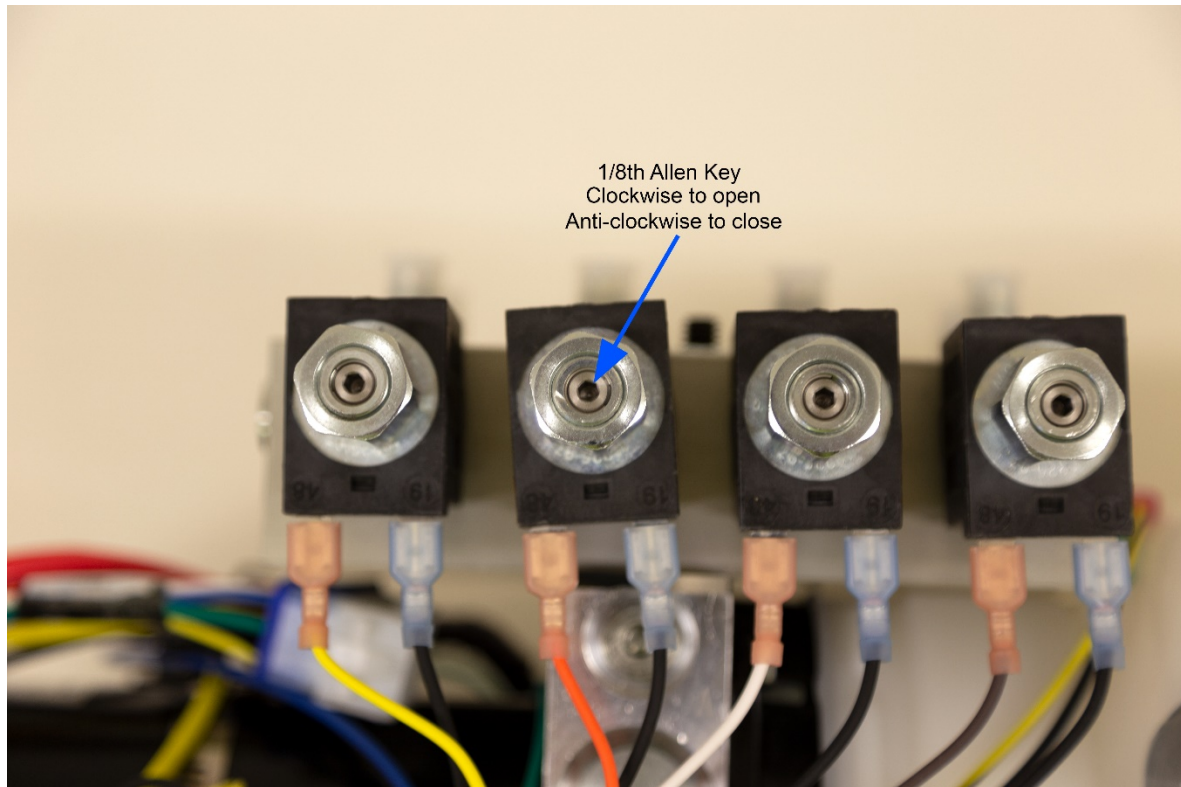
pressed and released. The pump will run in retract for approximately 5 seconds after the last jack has been fully retracted- or until a time limit of 90 seconds has been reached.

It is always the responsibility of the motorhome operator to visually confirm that the jacks are fully retracted and safe for travel.

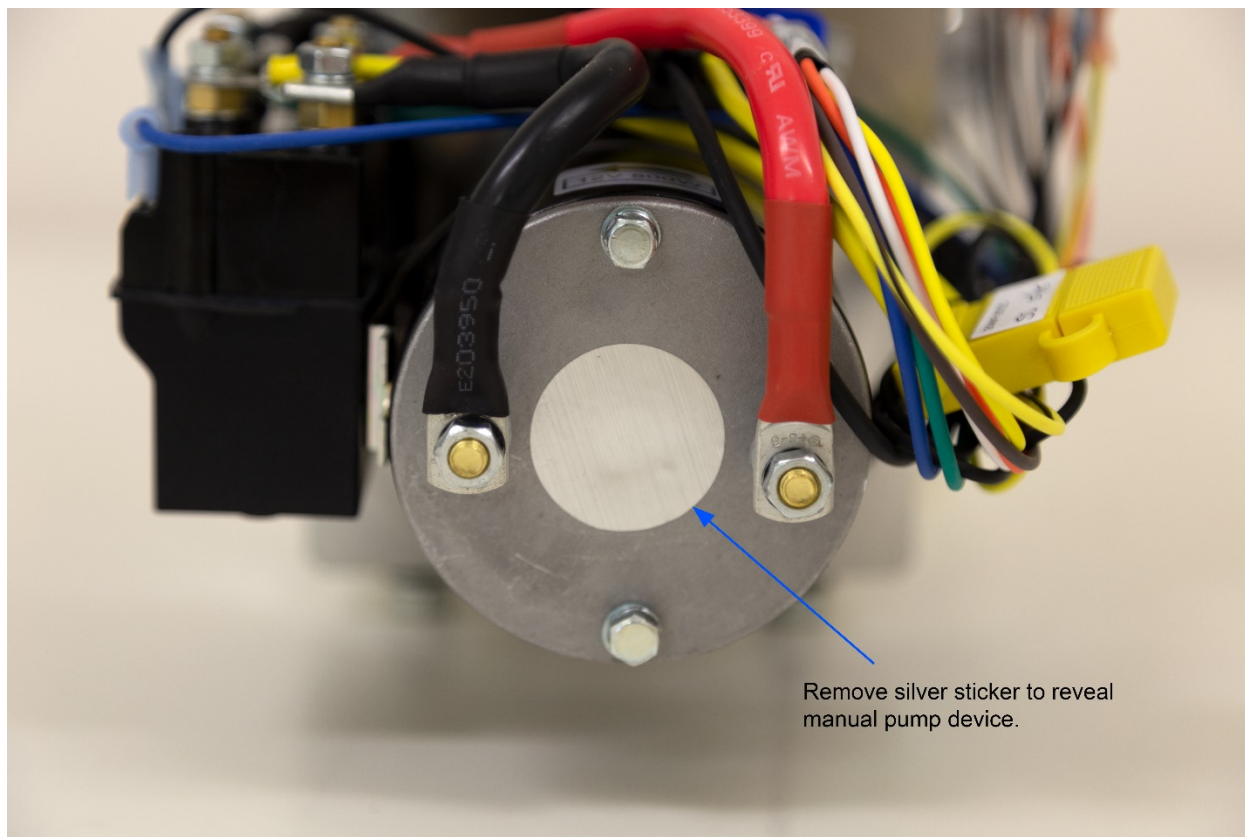
Note: There are specific instances when manual extension of one or more jacks is inhibited (deny tone when Down is depressed). This situation is caused by the 'anti-twist' protocol in the software installed in the Controller. Simply stated, the 'anti-twist' protocol denies jack extension if the system senses that a specific corner of the coach is approximately 3 degrees higher than the rest. You will be able to extend the other jacks to overcome the slope. If the system incorrectly senses excessive slope, this can be overcome by re-setting the null. This will allow manual extension of all jacks.

6. Manual Override Procedure for Elite Auto System

This pump is equipped with a manual override. Locate the 4 valves on the side of the manifold. Locate the screws recessed in the end of the appropriate cartridge valves. Using a 1/8th Allen Key, turn the screw(s) clockwise until seated in.



Remove the silver sticker on the front of the motor to reveal a hex key fitting. Using the appropriately sized hex key and a drill capable of 2000 RPM (minimum).



Remove silver sticker to reveal manual pump device.

To Retract: Run the drill in the counterclockwise direction.
To Extend: Run the drill in the clockwise direction.

****Care must be taken to ensure neither the drill nor the socket contact any + or - wires or hydraulic hoses while in use. ****

**** Remember to turn the 1/8th Allen Keys back to the outer most (anti-clockwise) position after you have completed these steps. ****

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7. Troubleshooting

Troubleshooting Guide		
Symptoms	Possible Cause	Solution
Keypad will not turn on	Blown fuse at pump harness	Replace fuse 20A
	Faulty ground or 12VDC power	Trace and repair
	Low battery voltage - min. 10.8	Charge batteries
	Defective keypad or controller	Call <i>REDFOOT</i>
	Defective keypad or controller harness	Trace and repair
Keypad turns on but jacks will not operate	Low battery voltage to pump	Charge batteries
	Faulty ground or 12VDC power	Trace and repair
	Defective keypad or controller	Call <i>REDFOOT</i>
	Defective pump motor or solenoid	Replace motor and/or solenoid
	Other system defect	Call <i>REDFOOT</i>
Jacks will extend but will not retract	Low battery voltage - min. 10.8	Charge batteries
	Park brake not set	Set park brake
	If bi-rotational pump, bad motor or solenoid	Replace motor and/or solenoid
	Anti-twist software protocol has stopped further action	Lower opposite side of motorhome and/or reset Null and then level motorhome
	Ignition switch in wrong position	Check and change as needed
	Defective keypad or controller	Call <i>REDFOOT</i>
	Faulty ground or 12VDC power	Trace and repair
	System defect	Call <i>REDFOOT</i>
AUTO Level will not level	System Null is to set	Set Null
	Controller has been set wrongly or has moved	Check controller orientation
	Ignition switch in wrong position	Check and change as needed
	Damaged or defective keypad or controller harness	Call <i>REDFOOT</i>
	Defective keypad or controller	Call <i>REDFOOT</i>
	Other system defect	Call <i>REDFOOT</i>

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Troubleshooting Guide		
Symptoms	Possible Cause	Solution
Auto-Level stops mid-cycle	Low battery voltage - min. 10.8	Charge batteries
	Excessive motion during levelling sequence	Reset keypad and retry
	Damaged or defective controller	Check and change if needed
	Damaged or defective keypad or controller harness	Call <i>REDFOOT</i>
	Other system defect	Call <i>REDFOOT</i>
Jack LED's on keypad staying on	Defective pressure switch or wiring	Trace/Repair or replace
	Defective keypad/controller or pump harness	Trace and repair or replace
	Defective keypad or controller	Call <i>REDFOOT</i>
	Low system pressure caused by fluid leak or low fluid level	Correct fluid level or leak
Hydraulic pump inoperative	Low battery voltage - min. 10.8	Charge batteries
	Blown 20A fuse on pump harness	Replace fuse or breaker
	Faulty ground or 12VDC power	Trace/Repair or replace
	Defective pump motor or solenoid	Replace
Jack(s) bleed down from levelled or stowed position	Air in hydraulic system	Purge/bleed air
	External fluid leak	Trace and repair
	Defective valve in pump	Clean or replace valve
	Defective hydraulic jack/cylinder	Replace hydraulic cylinder
Jack(s) are jerky or noisy when extending or retracting	Air in hydraulic system	Purge/bleed air
	Fluid level low	Check fluid level and top up
Jack's will not retract from extended position	Low battery voltage - min. 10.8	Charge batteries
	Low battery voltage or poor ground	Change batteries/check ground return
	Damaged/Defective harness from keypad to controller or controller to pump	Trace and repair
	Fluid level low	Correct fluid level and add
	Defective pump motor or solenoid	Replace

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#7846 Pump Pack

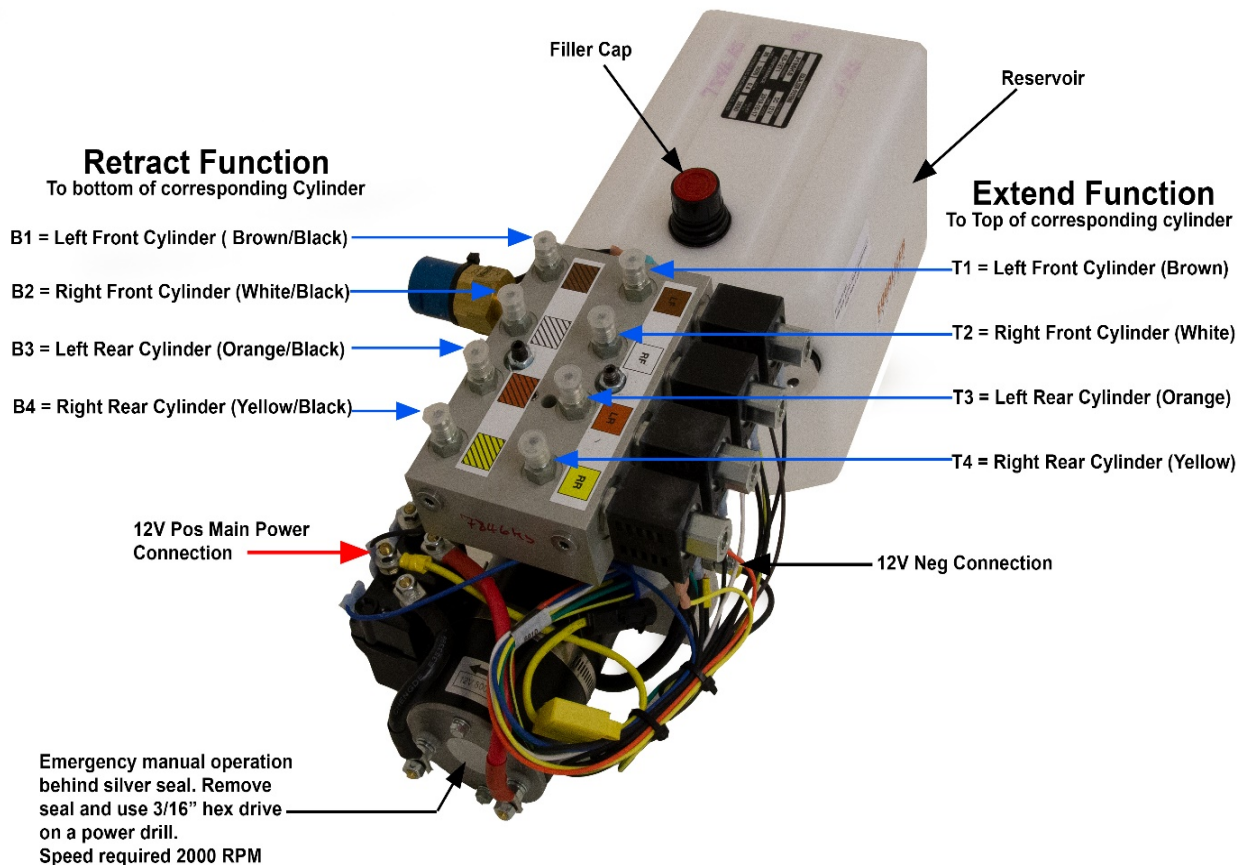
Jack Leg

Left Front-Top
 Left Front-Bottom
 Right Front-Top
 Right Front Bottom
 Left Rear-Top
 Left Rear-Bottom
 Right Rear-Top
 Right Rear-Bottom

Manifold Connection

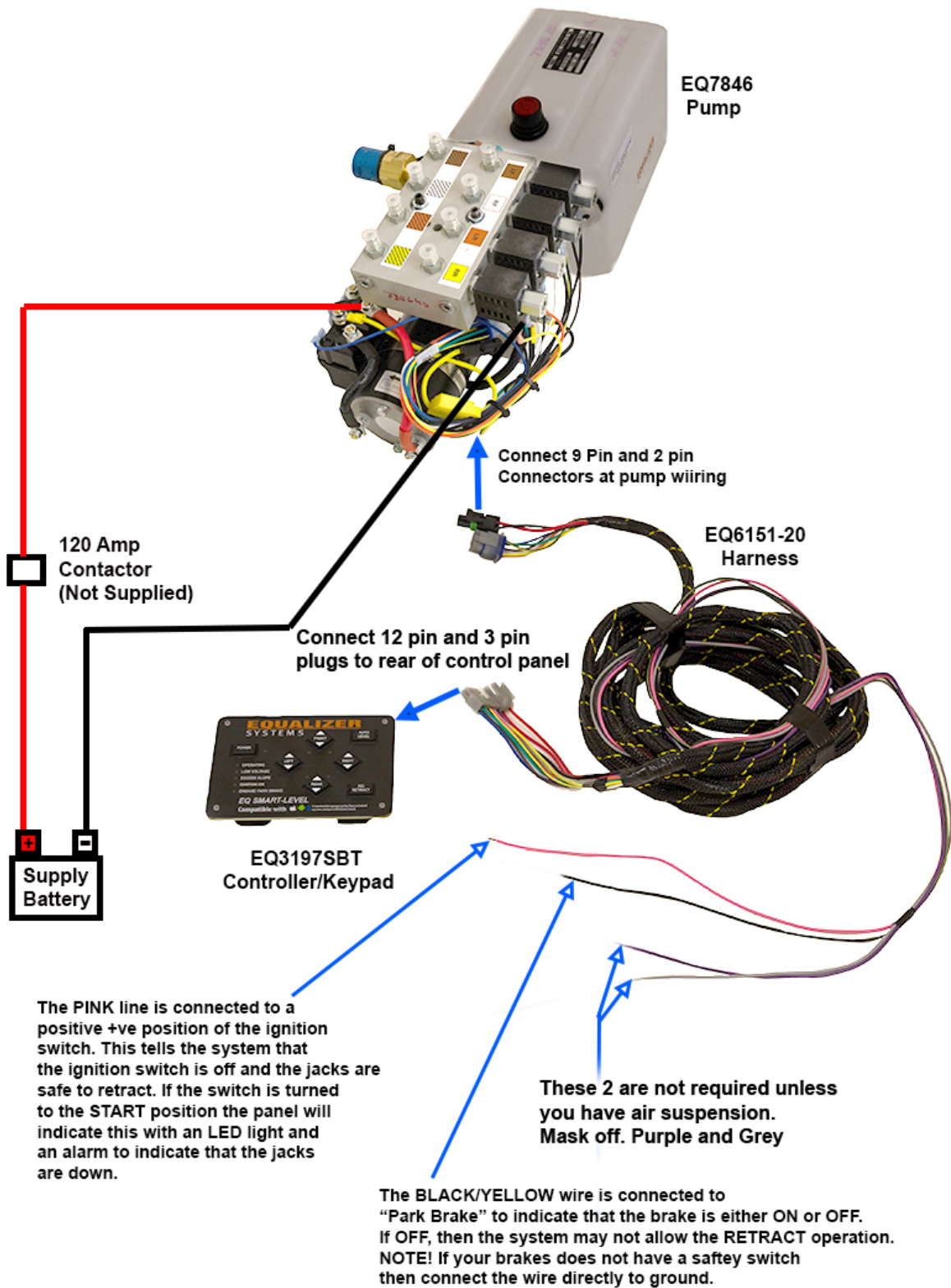
T-1 Brown Solid
 B-1 Brown Stripe
 T-2 White Solid
 B-2 White Stripe
 T3- Orange Solid
 B3- Orange Stripe
 T-4 Yellow Solid
 B-4 Yellow Stripe

Left side = Passenger Side of Vehicle
Right side = Drivers Side of Vehicle



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8. Product Warranty Guide

Titan Stability Solutions Pty Ltd trading as Redfoot Levelling Solutions

1. Only warranty claims with prior written or verbal authorisation from Redfoot Levelling will be recognised, all other claims will be denied.
2. 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.**
3. 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.
4. 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 a Redfoot Levelling representative. A reasonable time allowance will be determined by the Redfoot Levelling 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.
5. 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 later.
6. Claims will be denied if the date submitted is greater than 30 days from the repair.
7. Prior authorisation is required before parts may be sent back by to Redfoot Levelling. Redfoot Levelling will supply a connote for the return goods.

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8. Complete systems are not warranted unless authorised by a Redfoot Levelling representative. There are absolutely no exceptions to this clause.
9. 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 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.
10. Warranty coverage for parts or systems sold by non-authorised resellers (such as live or internet auctions) will be at the discretion of Redfoot levelling.
11. 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.
12. 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.
13. Excessive warranty labour resulting from inadequate access to the Redfoot Levelling product will not be reimbursed.
14. Redfoot Levelling will not pay mark-up on warranty parts unless required by law.
15. Travel expenses, hotel, telephone, fuel, or any other expense of the like are not covered under warranty.
16. 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.

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