

**Equalizer Systems      1-800-846-9659**

**www.equalizersystems.com**

**2011**

## **Trailer Auto-Level Installation Troubleshooting & Warranty Guide**

**Includes Manual & Automatic 4 & 6 Point Leveling Systems**

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# Trailer Auto-Level 4 & 6 Point Installation

## Jack / Pump Installation

**Step 1 (Determine where the jacks will be mounted).** The front jacks will be mounted to the drop wall. The rear jacks will be mounted as close as possible to the rear axles.

**Step 2 (Jacks)** the jacks must be installed within the range suggested below (see chart for proper ground clearance). In any case, the bottom of the foot / pad should not be lower than any other item mounted on the coach. Pay particular attention to the angle of departure for the chassis when mounting the rear jacks and the angle of approach when mounting the front jacks.

## Reference Chart for Installing Jack Legs

The foot / pad must be mounted with-in the range suggested (see chart below) for proper operation of the system. Retract the jack leg fully (jack leg up); Ground clearance is determined by measuring from the bottom of the jack foot to the ground (jack retracted fully).

When in doubt call Equalizer Systems 1-800-846-9659 ext: 339

**SL-15** = 8 - 10 inches of ground clearance

**SL-16** = 8 - 10 inches of ground clearance

**SL / DP-18** = 10 – 12 inches of ground clearance

### **AJ / CJ / CM / AM / CT / SM -16, 20, 24, 30, 36**

Jack travel (stroke)

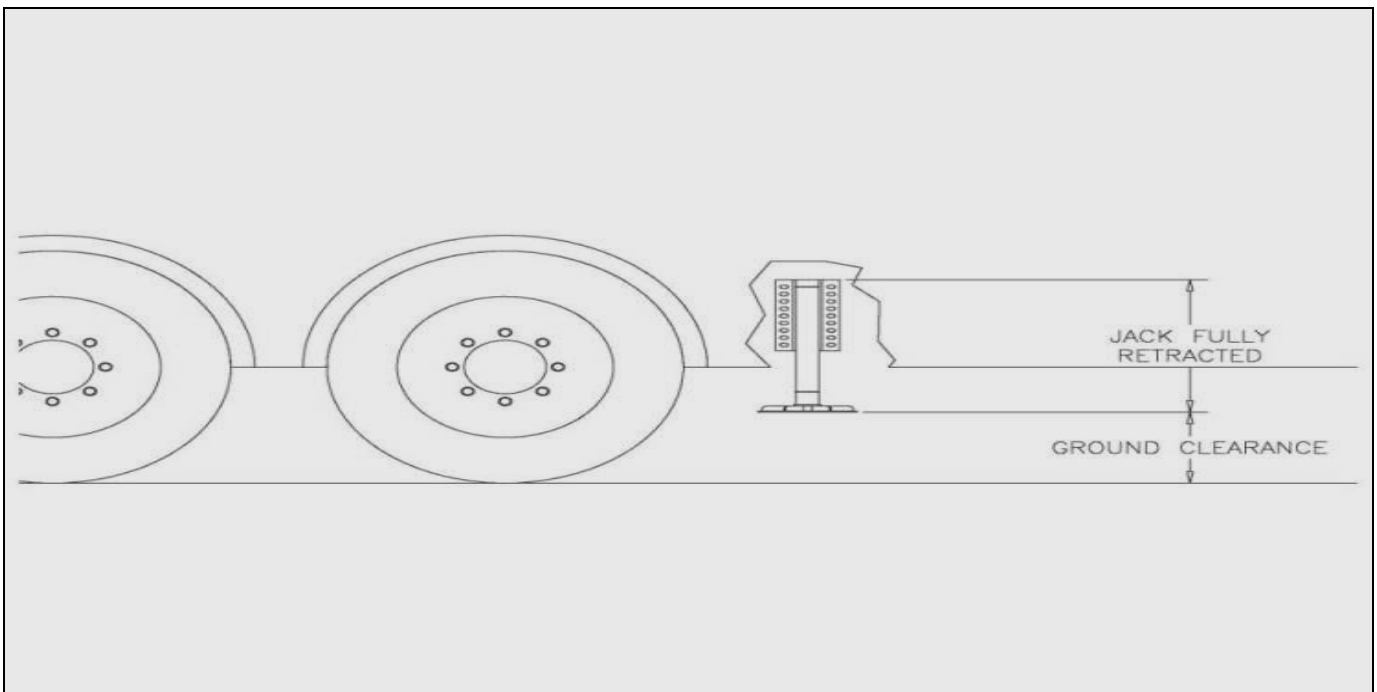
16" = 8 - 10 inches of ground clearance

20" = 12 - 14 inches of ground clearance

24" = 14 - 16 inches of ground clearance

30" = 16 - 18 inches of ground clearance

36" = 18 - 20 inches of ground clearance



**Step 3 (Controller)** The controller must be mounted to the underside of the coach or in the basement (if available). The controller must be mounted as close to center (side to side) of the coach as possible and as close to center between the jacks (front to rear). The controller has a label with mounting instructions for proper orientation (up and front). The mounting directions must be followed for the Auto-Level controller to operate properly (harnesses exiting the controller towards the rear of the coach). The dual switch and harness (if equipped) can be positioned no more than 9 feet from the pump location. This simply plugs into the pump harness and is used to operate the front legs independently while loading and unloading the trailer from the tow vehicle. This is to be used only for this operation. Any adjustments while utilizing Auto-Level should be made at the control panel.

**Step 4 (Pump)** Install the pump assembly. The pump must be mounted in a location that is reasonable to route all of the hydraulic hoses to the manifold. It must be accessible for filling the reservoir and monitoring the fill level. Take note if the unit is equipped with the manual override option. The cartridge valves, end of the motor, and hand pump (if equipped) must be accessible, if manual override is needed. An additional mounting box may be used.

**Step 5 (Hoses)** Install the hydraulic hoses. Route the hoses clear of all hot exhaust components and pinch points in the suspension/chassis system. Attach the hoses to the manifold and jacks according to the hose connection chart. Secure the hydraulic hoses with wire ties or loom clamps to the chassis.

### Hose Routing & Connections 6 - Point Systems

Generally (3) jacks per side. (1) Set (pair) in the front (left & right side of coach) used as dolly legs, as in a (4) point system. (1) Set (center) generally mounted just front of the axles. (1) Set (rear) generally mounted rear of the axles. The center and rear sets are paired (one set left side & one set right side) and are connected / plumbed left pair and right pair to act as one set per side.

### Installation of Hoses to the Manifold 4 Point Systems

#### Jack Leg

#### Manifold Connection

Left Front-TOP	T-1 Brown Solid
Left Front-BOTTOM	B-1 Brown Stripe
Right Front-TOP	T-2 White Solid
Right Front-BOTTOM	B-2 White Stripe
Left Rear-TOP	T-3 Orange Solid
Left Rear-BOTTOM	B-3 Orange Stripe
Right Rear-TOP	T-4 Yellow Solid
Right Rear-BOTTOM	B-4 Yellow Stripe

### Connections: Push Button Control Panel / Controller/ Pump Assembly Application

**Most harnesses used in the system are communication cables.**

**It is very important that all connections for the pump, control panel, and**

**Harnesses are tight and physically sound!**

**Step 7 (Keypad/Controller harness)** Fasten the keypad mount in the desired location. Note: Keypad is not weather resistant and must be install in a compartment or the interior of the unit. Attach the supplied wire harness between the keypad and the location of the controller (see step # 3 above). This harness will connect between the in-board 4-pin (J1) connector on the keypad and the (1ea.) mating connector on the controller. Secure the harness with wire ties to the chassis. Refer to the attached diagram. If your system is equipped with other connectors, refer to wire color for correct connections; see descriptions below.

### **(Pump Connectors)**

1. (2) pin (black in color) red and black wires, mate with 2 pin connector @ the pump with yellow and black wires.
2. Multi - pin connector (white in color) 6 pin or 9 pin mate with same @ pump. If a 6 pin connector is supplied then a 3 pin connector maybe supplied, connect the corresponding connectors.
3. If equipped with hydraulic operated slide -outs, more connectors will be added.  
The harness from the pump to the controller can also be routed. All of the connections at the pump should be Completed, except the power and ground connections at the pump, which are completed next.

### **(Dual Leg Switch & Harness)**

Some systems are equipped with a dual leg switch harness. This is designed to extend and retract the front legs only. It is connected by a (6) pin connector that is plugged in at the pump assembly. This dual leg switch assembly is "weatherproof" and may be mounted to the outside of the unit. It is required that the keyed switch be turned to the off position and the key removed when traveling or transporting.

Note: The following connections may not be present on all trailers.

1. **Pink Wire:** This is an extend disable. If it is connected to +12V when ignition is on, Jack extension In both modes manual and Auto Level will be denied. If it is not used, tape off, so it does not come in Contact with any other wire or grounded surface.
2. **Black/Yellow:** This is an extend disable. This wire must be connected to the park brake (grounded when applied), or must be taken to ground on chassis.
3. **Purple and Gray Wires:** These wires provide +12V output signal for 2 minutes, When Auto Level or all retract buttons are pressed. These outputs are typically used for air leveling suspension systems. Tape them off, so they do not come in contact with any other wire or grounded surface.

## **Power Connections for Uni-Directional Motor**

**These motors can be identified by the presence of a single motor solenoid.**

**(Pump +12v)** Attach a # 4 gauge wire (# 2gauge if the run is over 12ft.) between the positive (+12V) terminal on the battery and the terminal on the solenoid at the motor / pump assembly, this terminal is shared with a yellow wire containing the fuse holder. This supply may be fused at the source with a 120-amp. Circuit breaker. **This +12v supply must be a dedicated and isolated circuit (not shared with other devices), and must be constant, non-switched +12volts.**

**(Pump -12v)** Attach a # 4 gauge wire (# 2gauge if the run is over 12ft.) between the negative (-12V) terminal on the battery and the ground stud on the pump. This is the required method of grounding.

**It is not acceptable to allow the pump mounting bolts to be the sole grounding connection.**

## **Power Connections for Bi-Rotational Motor**

**These motors can be identified by the presence of two motor solenoids.**

**(Pump +12v)** Attach a # 4 gauge wire (# 2gauge if the run is over 12ft.) between the positive (+12V) terminal on the battery and the **common posts on the motor solenoids**. This supply may be fused at the source with a 120-amp circuit breaker.

**This +12v supply must be a dedicated and isolated circuit (not shared with other devices), and must be constant, non-switched +12v.**

**(Pump -12v)** Attach a # 4 gauge wire (#2gauge if the run is over 12ft.) between the negative (-12V) terminal on the battery and the ground stud on the pump. This is the required method of grounding.

**It is not acceptable to allow the pump mounting bolts to be the sole grounding connection.**

## Purging for Uni-Directional Pumps

The Jacks are shipped in the fully retracted position. The retraction side of the cylinders is the first to be purged of air. This procedure outlines the steps taken if the jacks need to be purged of air following repairs, etc.

**Do not manually over extend individual jacks singularly. This may Cause unwanted stress on the coach or the jack legs.**

**Retraction Purge** The retraction side of the cylinders is the first to be purged of air. Fill the reservoir to  $\frac{3}{4}$  full with Dexron III Transmission fluid. This is the same fluid used in GM vehicles. Begin to purge the retraction side of the system by pushing the UP  $\Delta$  button for each jack or by pressing ALL RETRACT. The jacks may be run in pairs (front pair & rear pair). We will know when the retraction side of the hydraulic circuit is purged; when the fluid level in the reservoir stops moving and the pump changes sound (bypass mode). Release the keypad button(s). Repeat this process for the rear jack(s). Refill the Reservoir to  $\frac{3}{4}$  Full.

**Full Purge** Next, cycle the system by lowering each jack to the ground only manually, using the DOWN  $\nabla$  buttons on the keypad. Do not allow the jack to lift the coach. After all jacks are in contact with the ground, press ALL RETRACT to retract the rear jacks. Next, run the jacks in pairs (front pair & rear pair) to full extension by holding both DOWN  $\nabla$  buttons simultaneously. Monitor the fluid level and all fittings for leakage. Retract the jacks by pressing ALL RETRACT. Recheck the reservoir and fill to  $\frac{3}{4}$  full. Note the fluid level in the reservoir is at maximum when all jacks are fully retracted and minimum when jacks are fully extended. This full extension and retraction in pairs should be repeated 3-4 times, if air / bubbles are seen in the fluid, repeat 15 minutes later, repeat as needed.

## Purging for Bi - Rotational Pumps

This procedure must be performed with the initial installation & running of hydraulic system, following installation of the pump assembly and jacks. This procedure applies only to systems that are equipped with the bi-rotational pump. All electrical and hose connections must be completed before the purging process. You must follow this procedure strictly. Any deviation from the process will cause the purging process to become difficult and time consuming.

1. Fill the reservoir with ATF (Dexron III preferred).
2. Remove the fitting that is installed into B -side of the manifold or attach a hose to the coupler (if equipped). Place into a clean container. This will allow retract side air to escape to atmosphere.
3. Using the Down  $\nabla$  Keypad button, run the pump to extend the jacks(s). Maintain the fluid level in the reservoir between  $\frac{1}{4}$  and  $\frac{1}{2}$  full. Do not allow reservoir to run empty. If jacks(s) will not fully extend, crack loose the upper hose(s) at the jack(s) and run pump to extend until air is expelled. Use caution - the air/hydraulic fluid will be under 2250 psi. Retighten the hoses and complete the extension of the jack(s). Maintain the fluid level as described above.
4. Reinstall the fitting into B -side or remove the hose attached to the coupler. (See # 2 above)
5. Using the Up  $\blacktriangle$  Keypad button, run the pump to retract the jack(s). Maintain the fluid level as above. Do not fill to full until after the legs are fully retracted.
6. If fluid in reservoir appears to be aerated (foaming), allow unit to sit until foam dissipates (aprox. 5- 10 minutes).
7. Fully extend and retract jack(s) a minimum of 3 times. Allow any foam in the oil to dissipate as needed. Maintain the fluid level in the reservoir as needed.

### Additional Notes regarding Purging of the Bi Rotational Pump

- **Never allow the reservoir to go empty.** Maintain the fluid level at least  $\frac{1}{4}$  full all the time. The reservoir fluid level will be greatest when all jacks are fully retracted; the reservoir fluid level will be lowest when all jacks are fully extended.
- **Being patient helps !** It does no good to run the pump and try to move the jacks when the reservoir is full of foam. Pumping foam will only reintroduce air into the system and will prolong the process unnecessarily.
- **We want the air out !** Allowing the air to dissipate through the reservoir and maintaining the reservoir fluid level will get things working faster.

## Additional Notes Regarding Purging of the Pump

- The reservoir fluid level will be greatest when all jacks are fully retracted; the reservoir fluid level will be lowest when all jacks are fully extended.
- Never allow the reservoir to go empty: Maintain the fluid level at least ¼ full all the time.
- Being patient helps: It does no good to run the pump and try to move the jacks when the reservoir is full of foam. Pumping foam will only reintroduce air into the system and will prolong the process unnecessarily.
- We want the air out: Allowing the air to dissipate thru the reservoir and maintaining the reservoir fluid level will get things working faster.
- Purging of a bi-rotational units are best preformed using a purge & fill machine. Following the instructions provided with the purge machine. If purge machine is not available follow instructions above.

## Auto-Level Operation

- **Setting the Null:** Null is the term used to indicate “levelness” of the coach. If the coach is not level following an attempt to Auto-Level, you will need to reset the null. To set the null, push and release the POWER keypad button to engage power. The LED next to the POWER button should be lit red when power is on. Level the coach by deploying jacks manually (using the DOWN keypad button, extend each jack until the coach is level), or by simply parking the coach on a level site. You do not need to have jacks deployed to set the null. Use a bubble level on a flat surface in the center of the coach as a reference. Once the coach is level, turn the POWER off at the panel. Depress and hold the AUTO-LEVEL keypad button. Continue to hold the AUTO-LEVEL button and press and release the POWER button and listen for a series of beeps. After the panel has beeped 5 to 6 times, release the AUTO-LEVEL button (the keypad will continue to beep as long as the AUTO-LEVEL button is held). The new null has been set and the panel will maintain this setting. Pressing and releasing the ALL RETRACT button will retract the rear jacks to the stowed position.
- A) **Power On:** Push and release the POWER button to engage power. The LED next to the POWER button should be lit red when power is on.
- B) **Front Legs:** Extend the front legs to the ground and continue to lift the trailer to the point where the front of the trailer is at a satisfactory level.
- C) **Auto-Level:** Press the AUTO-LEVEL button and release. The system will send out a continuous series of beeps, the ‘OPERATING’ LED will flash red to let you know Auto-Level is operating and will automatically level the coach. When completed, the keypad will signal a successful level with a dual-level tone. The keypad may be left on once level has been achieved. The keypad will enter “Sleep Mode” after five minutes of inactivity.
- D) **Retracting the Jacks:** The Equalizer System provides the ability to retract the rear jacks using the ALL RETRACT button or the UP button for each individual jack. Only the rear jacks will automatically retract and return to stowed position when the ALL RETRACT button is pressed and released. The pump will run in retract mode until the rear jacks are fully stowed (plus an additional 5 seconds). You may stop the all retract by pressing any button on the keypad. The front jacks will remain extended when ALL RETRACT is pressed to continue support of the trailer. The front jacks must be retracted manually by using either the RF or LF UP button or the rocker style switch and harness.

## Manual Override for Bi-Rotational Style Pumps

Your hydraulic pump may be equipped with a bi-rotational motor. You will use a 2000 r.p.m. drill and a 7/16" (11mm) hex socket, or 1/4" (6mm) Allen driver. These are identified by the presence of (2) motor solenoids and (2) motor leads. Note: The normal operating position of the screws in the cartridge valves are the counter-clockwise "out" position. The only time the valves should be shifted manually is when attempting to operate jack(s) via manual override.

Care must be taken to ensure that the drill or the socket, does not contact any wires or hydraulic hoses while in use.

### To operate your Jack(s) using the Manual Override (with Bi-Rotational Motor)

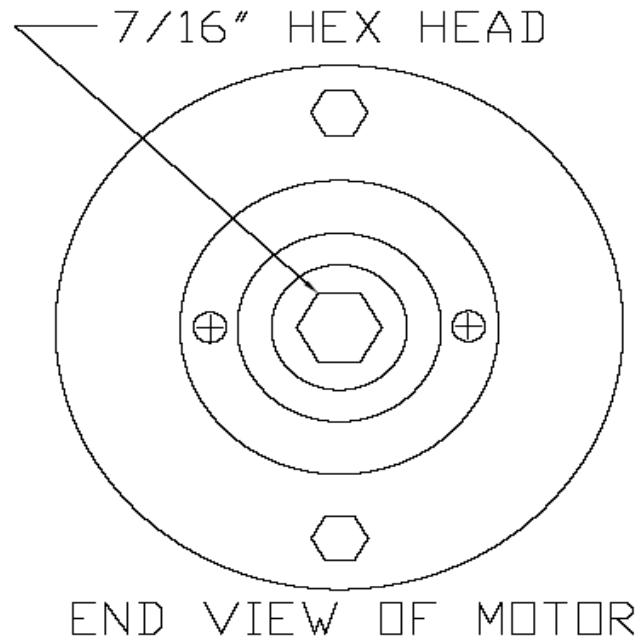
- 1) The individual cartridge valves are clustered together on the side of the pump manifold. They are labeled (1 thru 4). Locate the screws on the appropriate cartridge valve(s). Using a small flat blade screwdriver or an Allen driver, turn the screw(s) clockwise until all the way in.
- 1B) If equipped with a DV-2 valve (red knurled knob), it must be opened by pulling out and turn Clockwise 1/4 of a turn, to remain out. If equipped with an Allen Screw, turn clockwise till seated fully.
- 2) Remove the black plastic cap / silver seal from the top of the motor. Use a small flat head screwdriver. Place the drill with the 7/16" (11mm) hex socket or 1/4" (6mm) Allen driver, on the manual override shaft located at the top of the motor.
- 3) To retract your Jack(s) run the drill in the counter-clockwise direction.
- 4) To extend your Jack(s), run the drill in the clockwise direction.
- 5) When manual override is complete, return the cartridge valve(s) to the normal positions. Re-install black plastic cap / silver seal, on motor.

**CAUTION:** Following manual override operation, failure to return all valves to normal position may result in one or more jack legs to drift down from their retracted (stowed) position. On the cartridge valves, rotate the center screws fully (counter-clockwise lightly) closed.

## Manual Override for Uni-Directional Pump

Your system may be equipped with a manual override option.

If electrical power is lost to the equalizer systems jack Leveling system, the following procedure gives step-by-step instructions on how to operate the manual override to either extend or retract the leveling jacks.



Your hydraulic motor may be equipped with a manual override output shaft. You must use a drill with a 7/16" (11mm) hex head socket or a 1/4" (6mm) Allen driver. The drill must be capable of producing a minimum of 2000 r.p.m. for the pump to develop appropriate pressure output.

Your pump assembly may have a hand pump in place of the motor with manual override shaft. If this is the case, you may pump the hand pump in lieu of using the 2000 r.p.m. drill and the 7/16" (11mm) hex head socket or the 1/4" (6mm) Allen driver.

## To Retract Your Jack(s) using the Manual Override (if equipped)

- 1) The individual cartridge valves are clustered together on the side of the pump manifold. They are labeled 1 thru 4. Locate the screws on the appropriate cartridge valve(s). Using a small flat blade screwdriver or an Allen drive, turn the screw(s) clockwise (2-3 turns) until all the way in.
- 2) Locate the DV2 valve this will be stamped into the manifold. This valve will be on the opposite side of the manifold from the cluster of cartridge valves. This valve may be equipped with a red knurled knob, pull the red knob out and turn 1 / 4 turn, clock-wise. The knob will remain in the 'out' position, or the valve may have an Allen Screw, Turn clockwise till fully seated.
- 3A) To retract, locate the red knurled knob on the directional valve\*\* DV1. This valve will be on the adjacent side of the manifold to the cluster of cartridge valves. Pull the red knob out and turn ¼ turn, clock-wise. The knob will remain in the 'out' position.
- 3B) To extend the jack(s), follow all of the above steps EXCEPT: do not manually shift directional valve DV1 as described in step #3 above.
- 4A) Remove the black plastic cap / sliver seal ( if equipped) from the top of the motor. Use a small flat head screwdriver. Place the drill with the 7/16" (11mm) hex socket or ¼" (6mm) Allen drive on the manual override shaft located at the top of the motor. Run the drill in a clockwise direction at 2000 r.p.m. (minimum). The jack(s) will retract.
- 4B) Operate the hand pump (if equipped)  
Locate hand pump handle. Insert handle into the hand pump collar located on the front of the pump. Begin pumping the handle. Continue operating hand pump until jack(s) begin to retract. Note: It may require many strokes before any movement is noticed in the jack(s). Continue operating hand pump until jack(s) are retracted.
- 5) When retraction is complete, return the cartridge valve(s) and the directional valves DV1 & DV2 to the normal positions. Reinstall black plastic cap on motor.

**Caution: Following manual override operation, failure to return all valves to normal position may result in one or more jack legs drifting down from their retracted (stowed) position. For cartridge valves, rotate the center screw fully counter-clockwise. For directional valves, rotate the red knob until it 'snaps' back to the normal position.**

**Note: The normal operating position of the screw in the cartridge valve is the counter-clockwise 'out' position. The only time the valve should be shifted manually is when attempting to operate jack(s) via manual override.**

**Note: The normal operating position of the red knob on the directional valve(s) is the 'in' position. The only time the valve should be shifted manually is when attempting to operate jack(s) via manual override.**

### Helpful Hints

- Front jack legs may work in tandem depending on your system. If either LF or RF DOWN or UP Keypad Buttons is pressed, both front jacks will respond.
- The all retract function only affects the rear jacks. The fronts will always be retracted by using the UP Buttons on the panel or the Dual Rocker Switch and Harness.
- Do Not allow excessive motion in the coach during the auto-level operation (don't move around in the coach). This could cause the system to Level Improperly.
- Your Auto-Level is a microprocessor controlled system. It is necessary to have at least 10.5V of lower at the pump in order for the system to operate properly.  
Proper and adequate battery voltage (12.5V +) 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

# Troubleshooting Guide

Symptom

Possible Cause

Corrective Action

Keypad will not turn on	Blown fuse at pump harness or in fuse panel	Replace fuse
	Faulty ground or power wire	Trace and repair
	Low Battery Voltage	Charge chassis and/or coach batteries
	Defective Keypad or Controller	Call Equalizer Tech Support
	Defective Keypad harness	Trace and repair
Keypad turns on – Jacks will not operate	Low Battery Voltage to Pump	Charge chassis and/or coach batteries
	Faulty electrical connection	Trace and repair
	Defective Keypad or Controller	Call Equalizer Tech Support
	Defective pump motor or solenoid	Replace
	Other system defect	Call Equalizer Tech Support
Jacks will retract but will not extend	Low Battery Voltage to Pump	Charge chassis and/or coach batteries
	Park Brake not set	Set park brake
	System Null not set	Set Null
	Anti-Twist Software Protocol has been Initiated	Lower opposite side of coach and/or Re-set Null and Level Coach
	Ignition Switch in wrong position	Check and change as needed
	Defective Keypad or Controller	Call Equalizer Tech Support
	Faulty electrical connection	Trace and repair
	System Defect	Call Equalizer Tech Support

# Troubleshooting Guide

Symptom

Possible Cause

Corrective Action

Symptom	Possible Cause	Corrective Action
Jacks will extend but will not retract	Low battery voltage	Charge chassis and/or coach batteries
	Incorrect hose connection at pump or jack	Trace and repair
	DV1 --faulty wire or valve	Check and repair
	Defective Keypad or Controller	Call Equalizer Tech Support
AUTO-LEVEL™ will not level	System Null not set	Set Null
	Controller installed improperly or has moved	Check controller orientation
	Ignition Switch in wrong position	Check and change as needed
	Damaged or defective Keypad harness	Call Equalizer Tech Support
	Defective Keypad	Call Equalizer Tech Support
	Other System Defect	Call Equalizer Tech Support
AUTO-LEVEL™ stops mid-cycle	Low battery voltage	Charge chassis and/or coach batteries
	Excessive vehicle motion during leveling sequence	Reset Control Panel and re-try
	System Null not set	Set Null
	Damaged or defective Controller	Check and replace
	Damaged or defective Keypad harness	Call Equalizer Tech Support
	Other System Defect	Call Equalizer Tech Support
	Jack LED's on panel stay on	Defective Pressure Switch or wiring
Defective Keypad Harness		Trace and repair or replace
Defective Keypad		Call Equalizer Tech Support

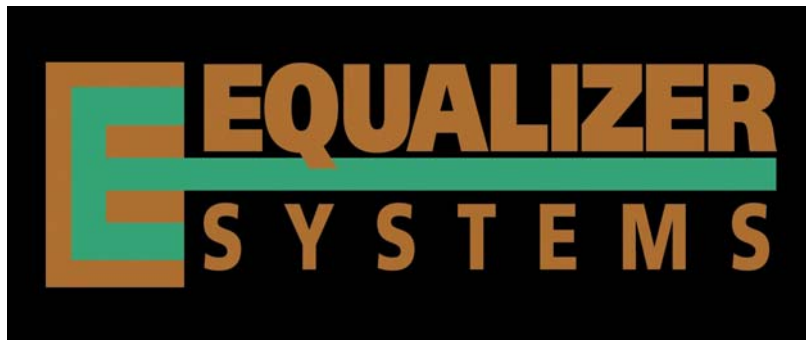
# Troubleshooting Guide

Symptom

Possible Cause

Corrective Action

Symptom	Possible Cause	Corrective Action
Hydraulic pump inoperative	Low battery voltage	Charge chassis and/or coach batteries
	Blown fuse or breaker in fuse panel	Replace fuse or reset breaker
	Faulty electrical connection	Trace and repair
	Defective pump motor or solenoid	Replace
Jack(s) bleed down from leveled position or stowed <sup>position</sup>	Air in hydraulic system	Purge air
	External fluid leak	Trace and repair
	Defective valve in pump	Clean or replace valve
	Defective jack	Replace jack
Jack(s) are jerky when retracting	Air in the system	Purge air
	Fluid level low	Check fluid level and add as necessary
Jack(s) will not retract from full extension	Low Battery Voltage at Pump	Charge chassis and/or coach batteries
	Low battery voltage or poor ground to Keypad	Charge chassis and/or coach batteries and ensure proper grounding
	Damaged or defective harness from Keypad to pump	Trace and repair
	Fluid level low	Check fluid level and add as necessary



## Equalizer Systems Limited Warranty Policy

1. Only warranty claims with prior written or verbal authorization from Equalizer Systems will be recognized, all other claims will be denied.
2. Equalizer Systems warrants slide out and leveling system components for a period of **two years** from the date of original sale of the vehicle. This warranty covers defects in material and workmanship only. Equalizer Systems 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 occurrence of the like. Equalizer Systems limited warranty is applicable to the Equalizer Systems 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 authorized by an Equalizer Systems representative. Purchased components used in authorized warranty repairs will be reimbursed at the original purchase price.
3. Labor and freight expenses due to warrantable parts defects or workmanship will be reimbursed for a period of **one year** from the date of original sale of the vehicle. Freight expenses will either be prepaid by Equalizer Systems or reimbursed at the UPS Ground rate only. Any additional shipping charges or requirements are the obligation of the vehicle owner or service center performing the warranty repair. The owner or service center’s obligation may include overseas shipping charges, border fees, brokerage fees and any other additional fee of the like.
4. Warranty labor will be reimbursed only for claims that have prior written or verbal authorization from an Equalizer Systems representative. Warranty labor compensation is required to correspond with the “Warranty Parts Replacement Time Guideline” published by Equalizer Systems. Any warranty repair not listed on this guideline will require prior authorization 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 authorization will be denied without exception. Time associated with learning about the repair or excessive diagnostic and installation time will not be reimbursed. Warranty labor will be reimbursed at the authorized service center’s published shop rate if the rate is reasonable for that region. Overtime labor will not be reimbursed without exception.
5. Labor, 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 center. Equalizer Systems reserves the right to charge back the service center for labor claim payments previously submitted if the installation of the warranted part is found to be inadequate at a later date.
6. Claims will be denied if the date submitted is greater than 30 days from the repair date.
7. Prior authorization is required before parts may be sent back to Equalizer Systems. A Return Authorization Number is required for items to be accepted.
8. Complete systems are not warranted unless authorized by an Equalizer Systems representative. There are absolutely no exceptions to this clause.

9. Consideration should be taken regarding the location and protection of Equalizer Systems' components prior to installation. Please reference our installation manuals for recommended locations and maintenance, or visit [www.equalizersystems.com](http://www.equalizersystems.com) for more information. The failure of any Equalizer Systems' component 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-authorized resellers (such as live or internet auctions) will be at the discretion of Equalizer Systems.

11. This warranty begins upon the original sale date of the vehicle and is transferable, with limitation, to subsequent owners upon furnishing the original sale date of the vehicle and proof of purchase. Only the remainder of the two year parts warranty is applicable. Warranty labor and freight are only applicable to original owner of the vehicle.

12. Equalizer Systems is not liable for loss of time, manufacturing costs, labor, material, and loss of profits, direct or indirect damages incurred by the vehicle manufacturer.

13. Excessive warranty labor resulting from inadequate access to the Equalizer Systems product will not be reimbursed.

14. Equalizer Systems will not pay a markup on warranty parts unless required by law.

15. Travel expenses, hotel, telephone, fuel or any other expenses of the like are not covered under warranty.

**Replacement Parts:**

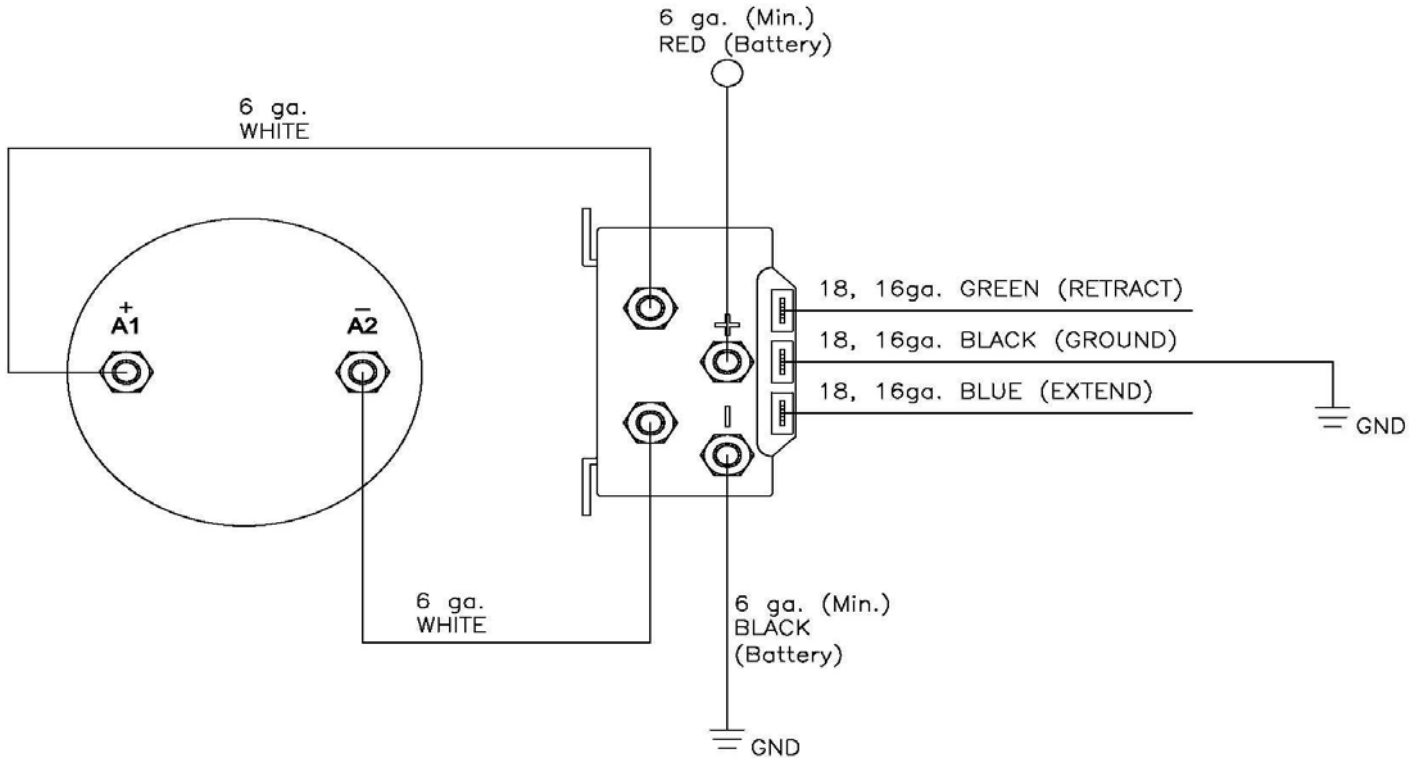
1. Replacement parts are warranted under the same guidelines listed above for the remainder of the original warranty or 90 days, whichever is longer. Proof of warranty repair date and original vehicle purchase date are required.

No additional warranties, expressed or implied, are authorized by Equalizer Systems

This warranty voids all previous issues. Questions concerning this warranty should be directed to:

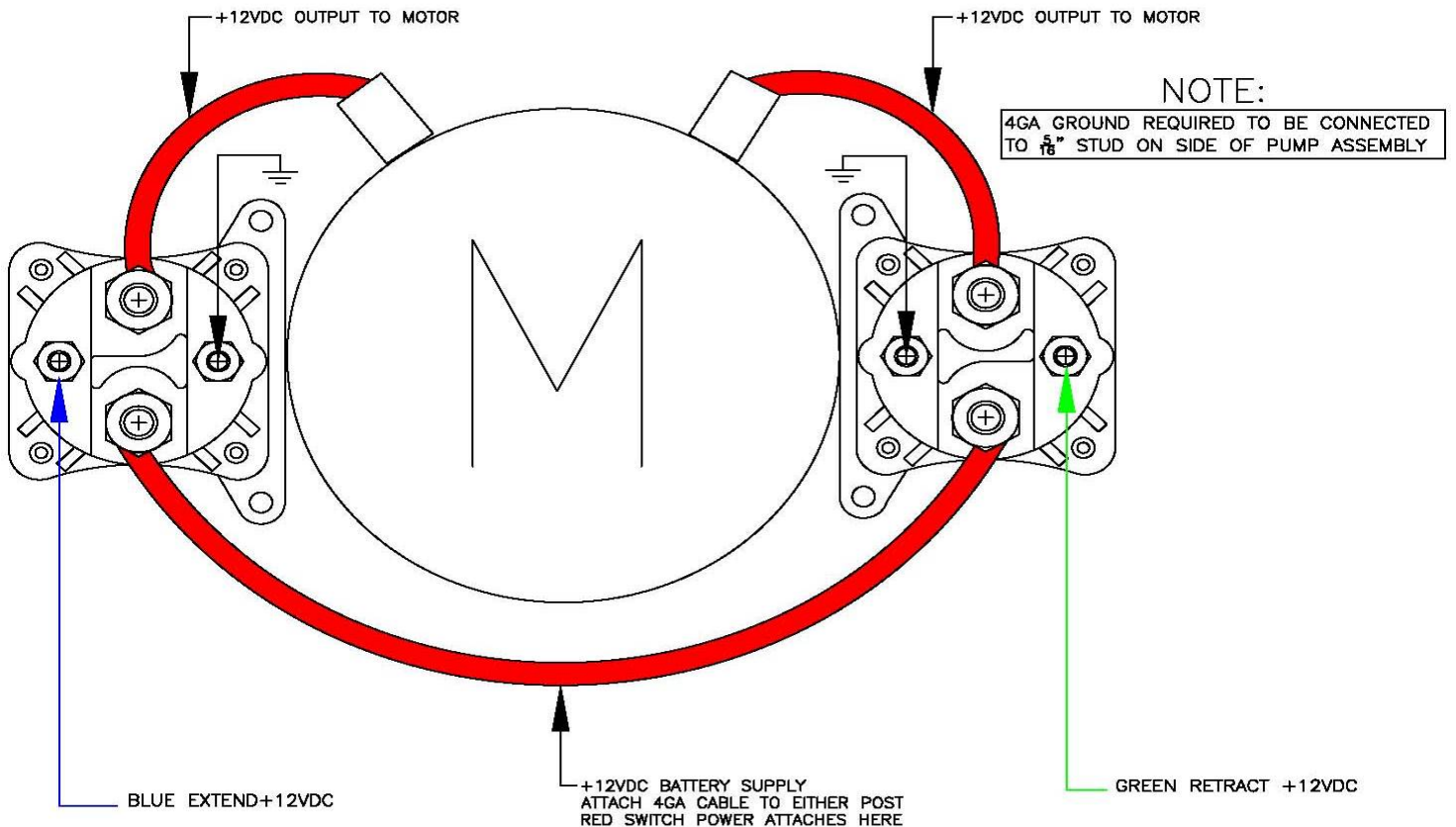
Equalizer Systems  
P.O. Box 668  
Elkhart, IN 46515  
1-(800) 846-9659  
1-(574) 266-6083 fax









## Wiring Diagram for bi-rotational pumps: # 3043



## Wiring diagram for bi-rotational pump: # 2532, 2542

### BIROTATIONAL WIRING CONFIGURATION



<b>Valve #- Function</b>	<b>Hose Label Color- Extend</b>	<b>Hose Label Color- Retract</b>	<b>Cartridge Valve Wire Color</b>	
V1= Left Front Leveling Jack		Brown	Brown w/ stripes	Brown
V2= Right Front Leveling Jack		White	White w/ stripes	White
V3= Left Rear Leveling Jack		Orange	Orange w/ stripes	Orange
4= Right Rear Leveling Jack		Yellow	Yellow w/ stripes	Yellow
V5= Slide-Out #1 (if equipped)		Green	Green w/ stripes	Green
V6= Slide-Out #2 (if equipped)		Purple	Purple w/ stripes	Purple
V7= Slide-Out #3 (if equipped)		Grey	Grey w/ stripes	Grey
V8= Slide-Out #4 (if equipped)		Red	Red w/ stripes	Red

