



**HYDRAULIC LEVELING
(4 POINT /4 VALVE SPRINTER)
OWNER'S MANUAL**

L I P P E R T
C O M P O N E N T S®

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Introduction

The four-point four-valve hydraulic leveling system is a hydraulic system which includes four points of contact utilizing aluminum jacks and a four-valve manifold system. A 12V DC electric motor drives a hydraulic pump that moves fluid through a system of hoses, fittings and jacks, to level and stabilize the coach. Mechanical portions of the hydraulic leveling system are replaceable. Contact Lippert Components, Inc. to obtain replacement parts. The hydraulic leveling system is primed and tested at the factory. However, the system is shipped dry to avoid hazardous material restrictions.

Additional information about this product can be obtained from [lci1.com/support](https://support.lci1.com/support) or by downloading the free myLCI app. The myLCI app is available for free on Apple App Store® for iPhone® and iPad® and also on Google Play™ for Android™ users.

App Store® and iPad® are registered trademarks of Apple Inc.

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For information on the assembly or individual components of this product, please visit:

<https://support.lci1.com/hydraulic-leveling-support-motorized-leveling>.

Images used in this document are for reference only when assembling, installing and/or operating this product. Actual appearance of provided and/or purchased parts and assemblies may differ.

Safety

Read and understand all instructions before installing or operating this product. Adhere to all safety labels.

This manual provides general instructions. Many variables can change the circumstances of the instructions, i.e., the degree of difficulty, operation and ability of the individual performing the instructions.

This manual cannot begin to plot out instructions for every possibility, but provides the general instructions, as necessary, for effectively interfacing with the device, product or system. Failure to correctly follow the provided instructions may result in death, serious personal injury, severe product and/or property damage, including voiding of the LCI limited warranty.

WARNING

The "WARNING" symbol above is a sign that a procedure has a safety risk involved and may cause death or serious personal injury if not performed safely and within the parameters set forth in this manual.

WARNING

Failure to follow instructions provided in this manual may result in death, serious personal injury and/or severe product and property damage, including voiding of the component warranty.

WARNING

Lifting all wheels off the ground may result in serious personal injury or death.

WARNING

Your coach should be supported at both front and rear axles with jack stands before working underneath. Failure to do so may result in personal injury or death.

CAUTION

The "CAUTION" symbol above is a sign that a safety risk is involved and may cause personal injury and/or product or property damage if not safely adhered to and within the parameters set forth in this manual.

CAUTION

Always wear eye protection when performing service, maintenance or installation procedures. Other safety equipment to consider would be hearing protection, gloves and possibly a full face shield, depending on the nature of the task.

System Features

- Automatic extension of jacks from full retract position (with automatic ground detection).
- Automatic leveling of jacks.
- Manual leveling of jacks
- Automatic retraction of jacks (with automatic full retract detection).
- Emergency retract/User alarm mode (jacks not retracted and park brake disengaged).
- Automatic jack error detection and error mode.
- Configurations mode for Leveling Zero Point.
- Remote operation.

Fluid Recommendation

The Lippert Electronic Leveling System is pre-filled, primed and ready to operate direct from the manufacturer. Type "A" Automatic Transmission Fluid (ATF) is utilized and will work. ATF with Dexron III® or Mercon 5® or a blend of both is recommended by Lippert.

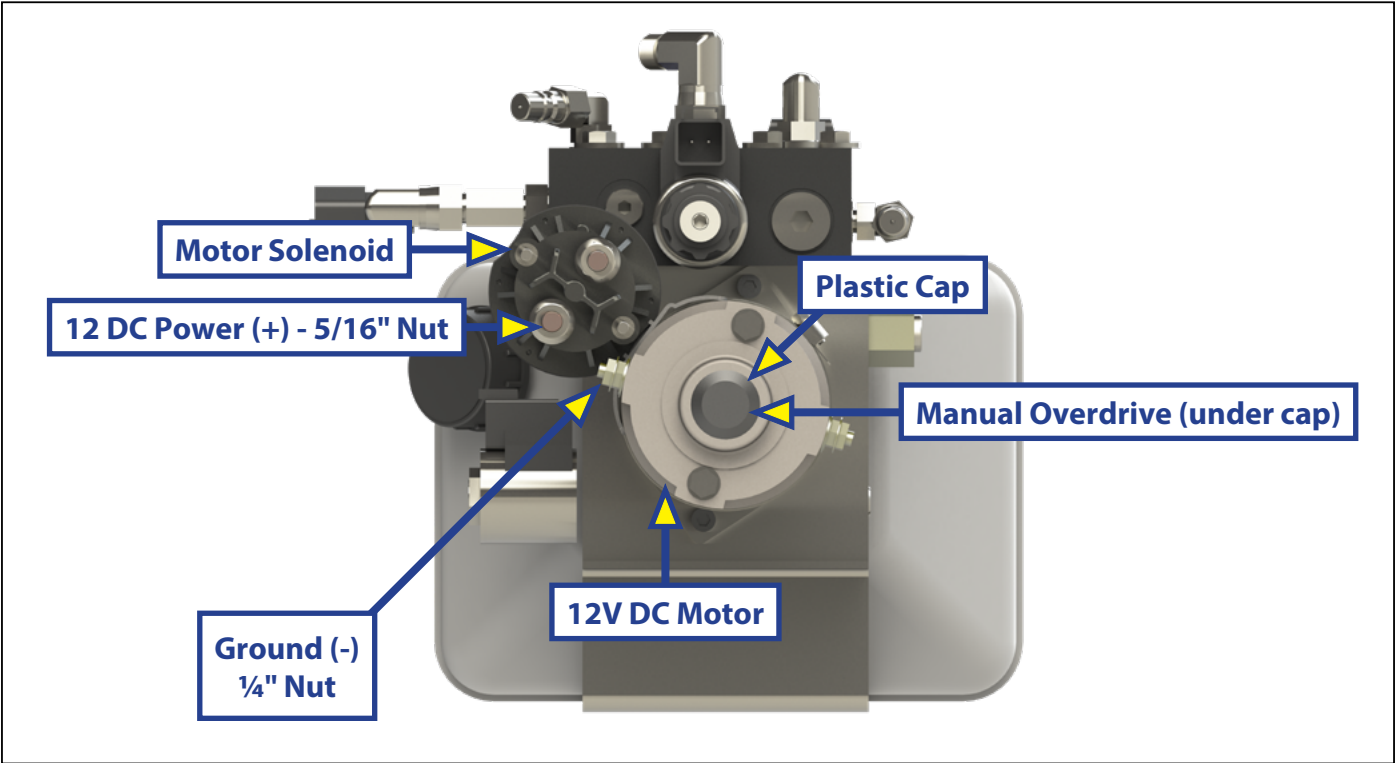
In colder temperatures (less than 10° F) the jacks may extend and retract slowly due to the fluid's molecular nature. For cold weather operation, fluid specially formulated for low temperatures may be desirable. For a list of approved fluid specifications, see [TI-188](#).

Component Description

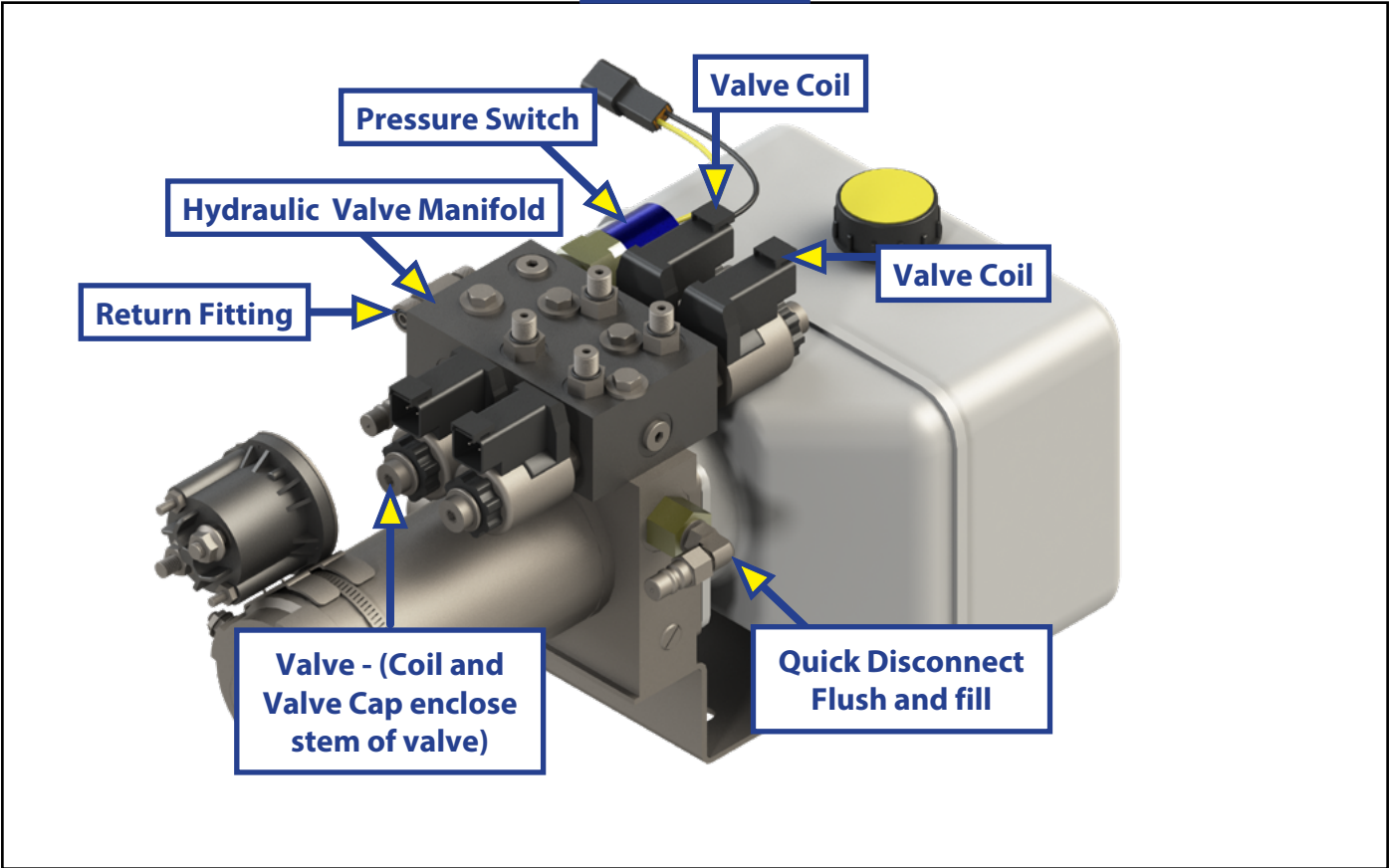
The Lippert Electronic Leveling System consists of the following major components:

- Lippert jacks are rated at a lifting capacity appropriate for your coach. Each jack has a 9" diameter (63.5 Square inch) shoe on a ball swivel for maximum surface contact on all surfaces. (12" Dia. - 113 Sq. In. shoe also available).
- Each jack is powered from a central 12V DC (Fig.1) motor/pump assembly, which also includes the hydraulic oil reservoir tank, control valve manifold, and solenoid valves.
- The Lippert Electronic Leveling System is controlled electronically from the driver's seat of the coach. The touchpad is mounted in the dash. The system can be operated in a manual mode or a fully automatic mode.

Fig. 1



Leveling Only



Prior to Operation

The leveling system shall only be operated under the following conditions:

1. The coach is parked on a reasonably level surface, engine running.
2. The coach "parking brake" is engaged.
3. All jack landing locations are cleared of debris and obstructions.
4. The coach transmission should be in the park position.
5. Locations should also be free of depressions.

NOTE: When parking the coach on extremely soft surfaces, utilize load distribution pads under each jack.

6. People and pets should be clear of coach while operating leveling system.
7. Be sure to keep hands and other body parts clear of fluid leaks. Oil leaks in the Lippert Leveling System may be under high pressure and can cause serious skin penetrating injuries.
8. Never lift the coach completely off the ground. Lifting the coach so the wheels are not touching ground will create an unstable and unsafe condition.

Operation

Selecting a Site

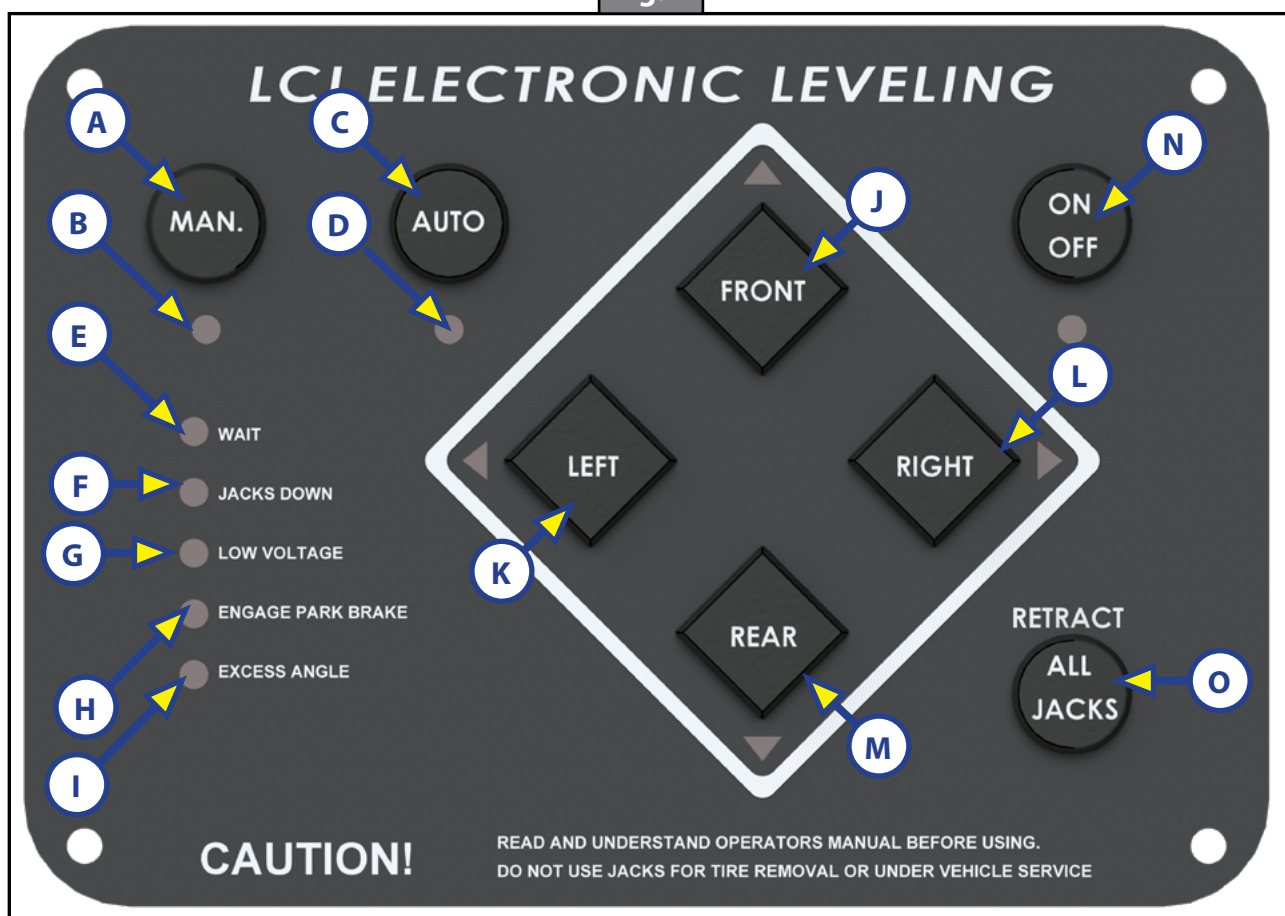
When the coach is parked on an excessive slope, the leveling requirements may exceed the jack lift stroke capability. If the coach is parked on an excessive slope, the coach should be moved to a more level surface before the leveling system is deployed.

- Make sure jacks are retracted before attempting to auto level. (The System will perform full retract automatically if jacks are not down on the request of an auto cycle).
- System will refuse any operation when a low voltage condition is present.
- System will automatically alarm and retract if park brake is disengaged and jacks are not retracted with any change in sensor readings.

When in alarm mode, the only available feature is to retract all jacks.

- The LEDs blink differently when in special controller modes (error, alarm and configuration). Learning how to recognize these modes is important.
- Excess slope LED blinks whenever the Y axis (vehicle length) is over 5 degrees from programmed level point.

Fig. 2



Callout	Description
A	Manual Operation - Places touchpad in manual operation mode.
B	Manual Operation LED - Indicates touchpad in manual operation mode.
C	Automatic Operation - Places touchpad in automatic operation mode.
D	Automatic Operation LED - Indicates touchpad in automatic operation mode.
E	Wait LED - Indicates to the operator to pause operation until the LED turns off.
F	Jacks Down LED - Indicates jacks are not fully retracted.
G	Low Voltage LED - Indicates voltage has dropped below safe operable level. Solid LED indicates voltage is too low to operate system.
H	Engage Park Brake LED - Flashes when park brake is disengaged; off when park brake has been engaged.
I	Excess Angle LED - Coach may not be able to level in current location and must be moved to a more level location.
J	Front Button - Controls operation of both front jacks.
K	Left Button - Controls operation of both left jacks.
L	Right Button - Controls operation of both right jacks.
M	Rear Button - Controls operation of both rear jacks.
N	Power Button - Turns system on and off.
O	Retract All Jacks - Retracts all jacks automatically.

Automatic Leveling Procedure

Refer to (Fig. 2) for questions regarding location and functions of the Lippert Components, Inc. Electronic Leveling System. Coach must be running and parking brake must be engaged for LCI Electronic Leveling System to operate.

1. Push ON/OFF (Fig. 2N) button on touchpad. The system is now operational and the electronic level lights will become active.
2. Check to see that the touchpad ENGAGE PARK BRAKE (Fig. 2H) light is not flashing.
3. Push the AUTO (Fig. 2C) button to begin the automatic leveling cycle.

NOTE: After starting the automatic leveling cycle it is very important that you do not move around in the coach until the coach is level. This could have an affect on the performance of the leveling system.

4. If further adjustments are necessary, refer to the Manual Leveling Procedures section.
5. Push power button to turn off the system.
6. Visually inspect all jacks to ensure all shoes are touching ground. Should one of the rear jack shoes not be touching the ground. Push the corresponding LEFT (Fig. 2K) or RIGHT (Fig. 2L) buttons to lower the corresponding jack to the ground.

Manual Leveling Procedures

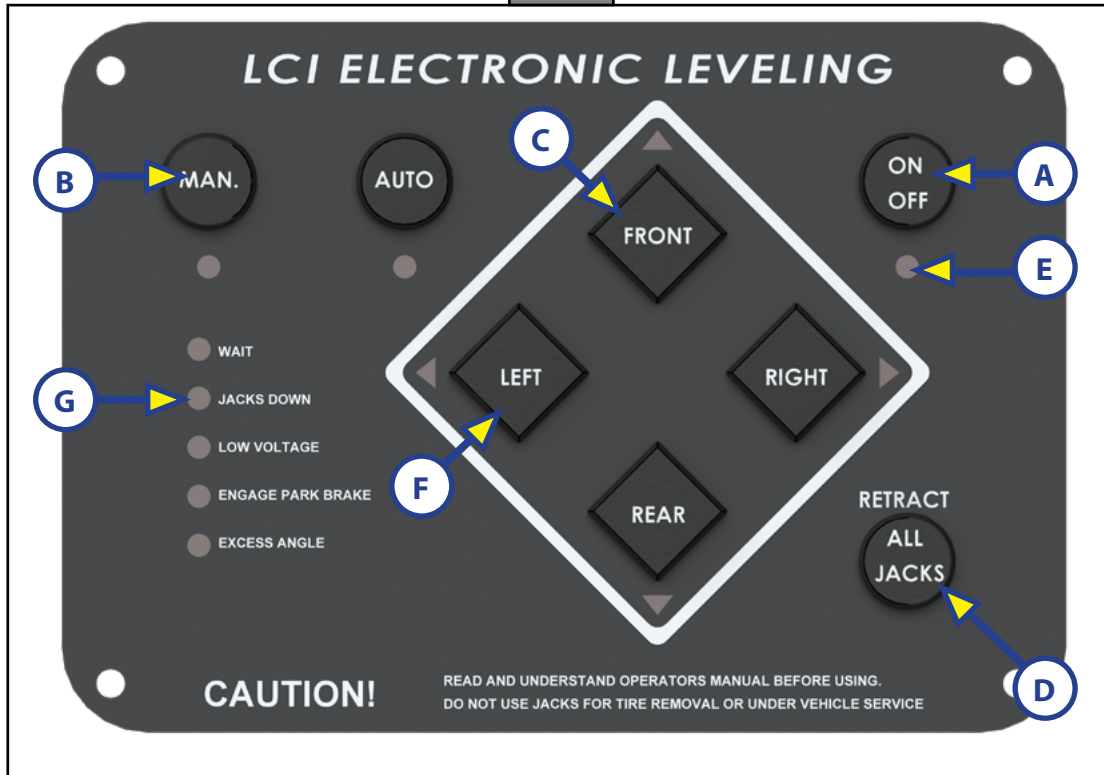
When leveling your coach, the coach should be leveled from front to rear first. When the coach is level from front to rear, then level the coach from left to right. Coach must be running for LCI Electronic Leveling System to operate.

1. Push ON/OFF (Fig. 2N) button on touchpad. The system is now operational, ON/OFF light will be lit.
2. Push and hold MAN (Fig. 2A) button for 5 seconds.
3. Push FRONT (Fig. 2J) button until jacks contact the ground and lift the front of the coach 1-2 inches.
4. Push REAR (Fig. 2M) button until jacks contact the ground and lift rear of coach.
5. Press FRONT (Fig. 2J) or REAR (Fig. 2M) button; if light is on at the FRONT button press the FRONT (Fig. 2J) button; if the light is on at REAR button press the REAR (Fig. 2M) button. Continue to hold until the light goes out.
6. Push LEFT (Fig. 2K) or RIGHT (Fig. 2L) button: If light is on at RIGHT button, push RIGHT button; if the light is on at LEFT button push LEFT button. Continue to hold until the light goes out.
7. The right and left jacks are used to level the coach side to side. Pushing the LEFT button on the touchpad will extend both left jacks. Pushing the RIGHT button on the touchpad will extend both right jacks. Jacks always work in pairs, both front jacks; both right side jacks, etc.
8. Repeat steps 2 through 6 if needed.
9. Turn power off to leveling system by pushing ON/OFF (Fig. 2N) button.
10. Visually inspect all jacks to ensure all shoes are touching ground. Should one of the rear jack shoes not be touching the ground, press the corresponding LEFT (Fig. 2K) or RIGHT (Fig. 2L) rear jack buttons to lower the corresponding jack to the ground.

⚠ WARNING

Lifting all wheels off the ground may result in serious personal injury or death.

Fig. 3



Jack Retract Procedures

1. Energize the system by pushing ON/OFF (Fig. 3A) button on touchpad. The ON/OFF light (Fig. 3E) will be lit.
2. Push the RETRACT ALL JACKS (Fig. 3D) button. All the jacks will start to retract and return to the full retract position. When jacks return to full retract position the JACKS DOWN (Fig. 3G) light will go out.
If you wish to stop the jacks from retracting, turn the system off and back on again by pushing the ON/OFF button twice. You can then re-level the coach by following steps 1-6 again.
3. When the JACKS DOWN (Fig. 3G) light goes out, push the ON/OFF (Fig. 3A) button on the touchpad to de-energize the system. After a brief visual inspection around the coach to verify the jacks are fully retracted, you may proceed to travel.

When in the MANUAL mode, if the RETRACT button is pushed the jacks will only retract as long as the RETRACT button is depressed. In AUTOMATIC mode, the RETRACT button need only be pressed once and released for the jacks to fully retract.

Troubleshooting

Automatic Safety Shutoff

If the touchpad is left on and inactive for four minutes it will shut off automatically. To reset the system the coach ignition must be turned off, then back on and the ON/OFF button must again be pushed.

Drive Away Protection System

If the ignition is in the "RUN" position, jacks are down, and the operator releases the parking brake, all indicator lights will flash and the alarm beeper will activate. The system will then automatically retract the jacks until the jacks are fully retracted or the operator resets the parking brake. The power unit will also operate to keep the jacks retracted in the event the leveling system loses pressure as the coach is being driven.

Error Mode

If any problem is detected with the jacks, the system will enter Error Mode. Error mode may be recognized by the blinking of Left, Center LCI and Right LEDs. The following errors are detected by this system:

- Jack over current/short circuit.
- Jack under current/ open circuit.
- Jack extending too long (ground not detected after 2 minutes).
- Jack retracting too long (fully retracted not detected after 2 minutes).
- Out of stroke detection during auto cycle (if enabled).

The user must respond by pressing On/Off switch, which resets operation. All normal features are disabled in Error Mode. If panel loses communication with the controller for more than 5 seconds, the panel will blink the Jacks Down, Park Brake and ON/OFF (if included) LEDs.

Level Zero Point Calibration

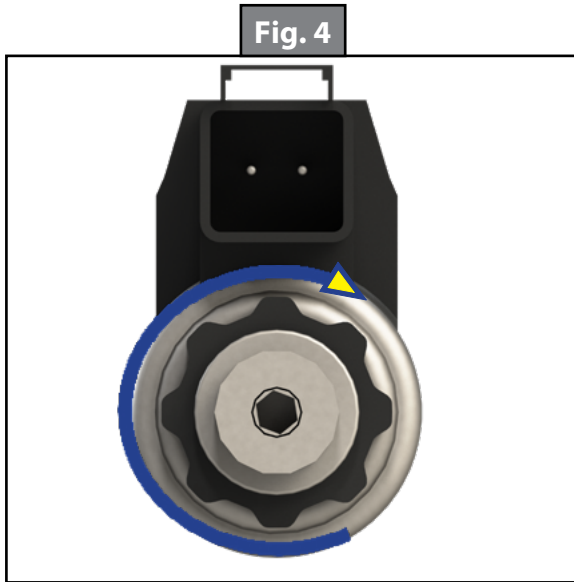
The Zero Point is the programmed point that the coach will return to each time the Auto Level feature is used. The Zero Point must be programmed prior to using the Auto Level feature to ensure the proper operation of the system. To set the zero point, the control module must be fully secured in the production intent location. Activate the Level Zero point configuration mode by following the steps below:

1. Turn system on by pressing the "ON/OFF" (Fig. 3A). The "ON/OFF" indicator light will illuminate.
2. Press the "MAN" (Fig. 3B) and hold for 2-3 seconds. The indicator light below the "MAN" button (Fig. 3B) will then illuminate.
3. Level the coach in "MANUAL" mode by using a carpenter's level on the floor. Level front to rear and then left to right.
 - A. Push the "FRONT" (Fig. 3C) button until jacks contact the ground and lift the front of the coach 1-2 inches.
 - B. Push "REAR" (Fig. 3D) button until jacks contact the ground and lift rear of coach. Keep button depressed until the carpenter's level bubble is centered.
 - C. Push "LEFT" (Fig. 3G) and "RIGHT" (Fig. 3H) buttons until level bubble is centered.
4. Turn Touch Pad "OFF" (Fig. 1A); then turn it on again.
5. With the coach leveled, press "FRONT" (Fig. 3C) 5 times.
6. Press "REAR" (Fig. 3D) 5 times. At this time all lights on the touch pad will flash with the exception of the ON/OFF indicator, it will remain solidly lit.
7. The touch pad is now in zero mode. If the coach has come out of it's level condition, it can be reset into level condition by following the procedure outlined in step 3.
8. With the coach in level condition, simultaneously press the "RETRACT ALL JACKS" (Fig. 3E) button and the "AUTO" (Fig. 3J) button to store this as the Zero Level Point reference.
9. The "WAIT" light (Fig. 3F) only will flash for approximately 5 seconds. After this, the control will emit an audible beep and revert back to normal operation mode. Zero Point calibration is now complete.

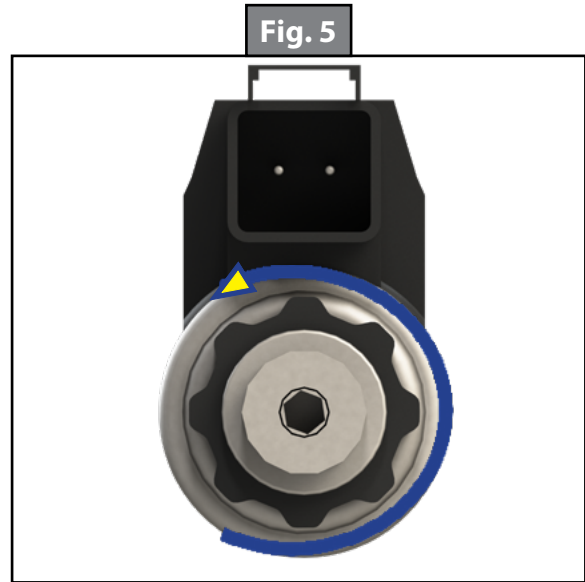
NOTE: You may also enter zero mode per above at anytime the system is in IDLE mode. The user then has control to extend any pair of jacks while in zero mode in order to position the vehicle properly prior to setting the zero point.

Manual Override - Jacks

In the event that the jacks will not extend or retract, the valves can be manually overridden by using a $\frac{5}{32}$ " or $\frac{5}{64}$ " hex wrench to turn the manual override clockwise on the valve. (Fig. 4). The leveling jacks can then be extended or retracted. Remember to turn the manual override completely counterclockwise (Fig. 5) until it will no longer turn, to close the valve after the jacks have been completely extended or retracted.



Clockwise for manual override

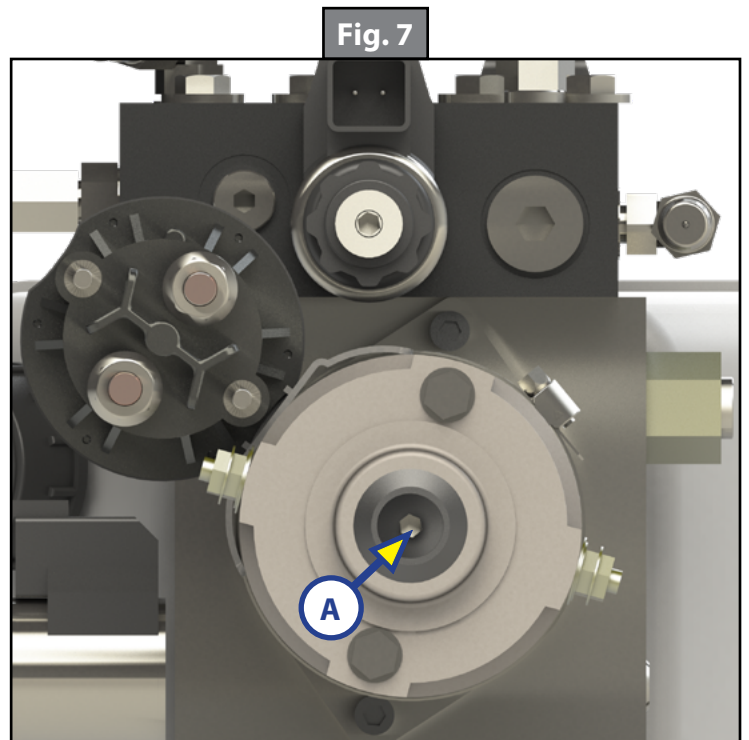
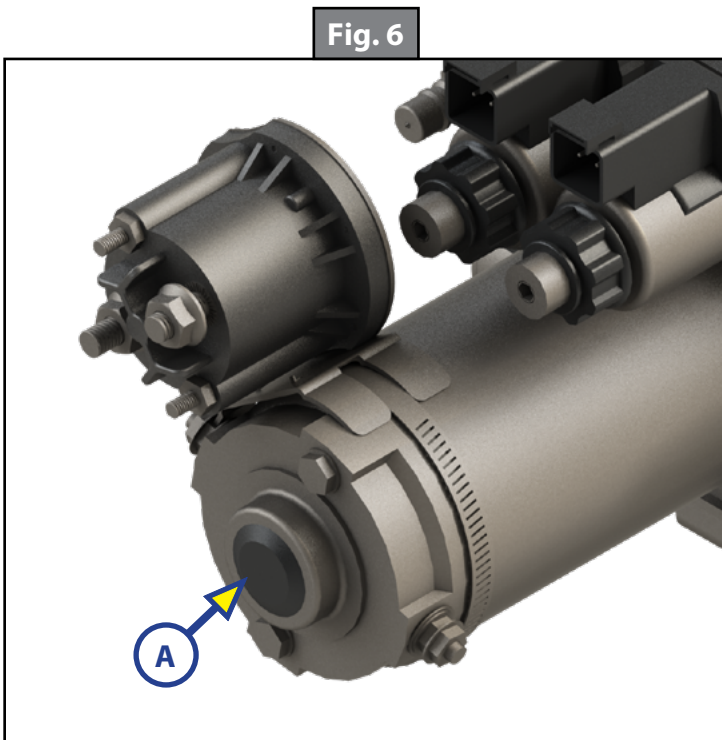


Counter-clockwise for normal operation

Manual Override - Power System

The Lippert Electronic Leveling System can be run with auxiliary power devices like electric drills, ratchet wrenches or cordless screwdrivers. In the event of electrical or system failure, this manual method of extending and retracting the jacks can be used. A standard handheld drill is all that is required.

1. Remove plastic cap (Fig. 6A).
2. Disconnect power cables on the motor.
3. Using a $\frac{1}{2}$ " socket, insert into auxiliary drive device, i.e. cordless or power drill. Insert socket onto coupler found under plastic cap (Fig. 7A).
4. Run drill in reverse or counterclockwise to retract jacks.



"Jacks Down" Alarm

The Lippert Electronic Leveling System is designed to sound an alarm and illuminate the control panel in the event of two (2) possible scenarios:

- A.** A "RETRACT" hose leaks.
- B.** The pressure holding the jacks in the retracted position falls to approximately 1500 psi to sound the alarm.

If the alarm sounds and the touchpad illuminates and flash while driving the vehicle:

- 1.** Immediately find an area to safely pull the vehicle off of the roadway.
- 2.** Set the PARKING BRAKE.
- 3.** Inspect all jacks hoses and check valve for leaks.

If no leaks are observed;

- 1.** Turn touchpad "ON."
- 2.** Push "RETRACT ALL JACKS" button.
- 3.** Wait until "JACKS DOWN" light and alarm are off.
- 4.** Inspect jacks. If jacks are retracted and no leaks are observed, vehicle can be driven.

If system is leaking or alarm does not subside after applying the above procedure, disconnect wires from pressure switch and proceed immediately to a service center. For prolonged travel to the service center, be sure to stop and check the disposition of the leveling jacks periodically to make sure they are not extending.

User Alarm Mode

If the alarm system detects that the park brake has been disengaged while at least one jack is not fully retracted and the sensor value changes in any axis more than a predefined amount, the panel will signal this error to the user. When in alarm mode, all LEDs will flash and the buzzer will beep. The status LEDs will show the system status. The system performs an automatic retract. No other features are available in this mode.

Low Voltage Signal

If LOW VOLTAGE light is on solid, it is an indication of a charging system problem. Turn ignition OFF and then back ON to reset system. If LOW VOLTAGE light persists, test battery under load at battery and at the motor solenoid on the pump unit. Check all power and ground connections at the battery, alternator and chassis.

Preventative Maintenance Procedures

1. Change fluid in RESERVOIR ONLY when contaminated.
 - A. Check fluid only when jacks are fully retracted.
 - B. Always fill the reservoir with the jacks in the fully retracted position. Filling reservoir when jacks are extended will cause reservoir to overflow into its compartment when jacks are retracted.
 - C. When checking fluid level, fluid should be within $\frac{1}{4}$ " of fill spout lip.
2. Check the fluid level every month.
3. Inspect and clean all Pump Unit electrical connections every 12 months. If corrosion is evident, spray unit with WD-40 or equivalent.
4. Remove dirt and road debris from jacks as needed.
5. If jacks are down for extended periods, it is recommended to spray exposed leveling jack rods with a silicone lubricant every three months for protection. If your coach is located in a salty environment, it is recommended to spray the rods every 4 to 6 weeks.

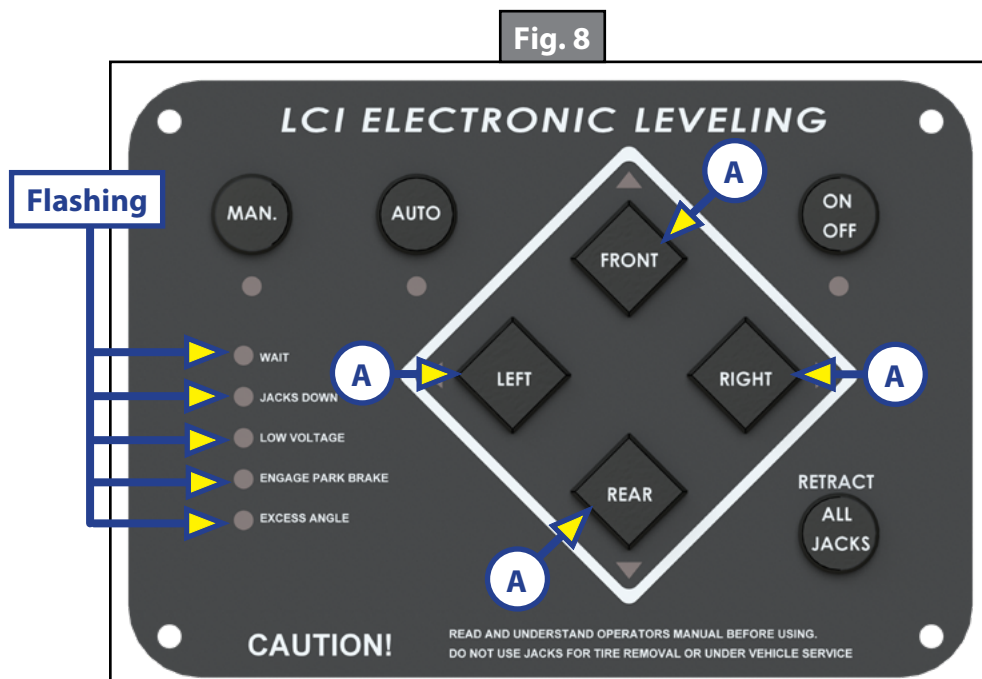
Latched Out Warning

⚠ WARNING

Your coach should be supported at both front and rear axles with jack stands before working underneath. Failure to do so may result in personal injury or death.

LATCHED ERROR mode is "Wait", "Jacks Down", "Park Brake", "Excess Slope" and "Low Voltage" lights flashing.

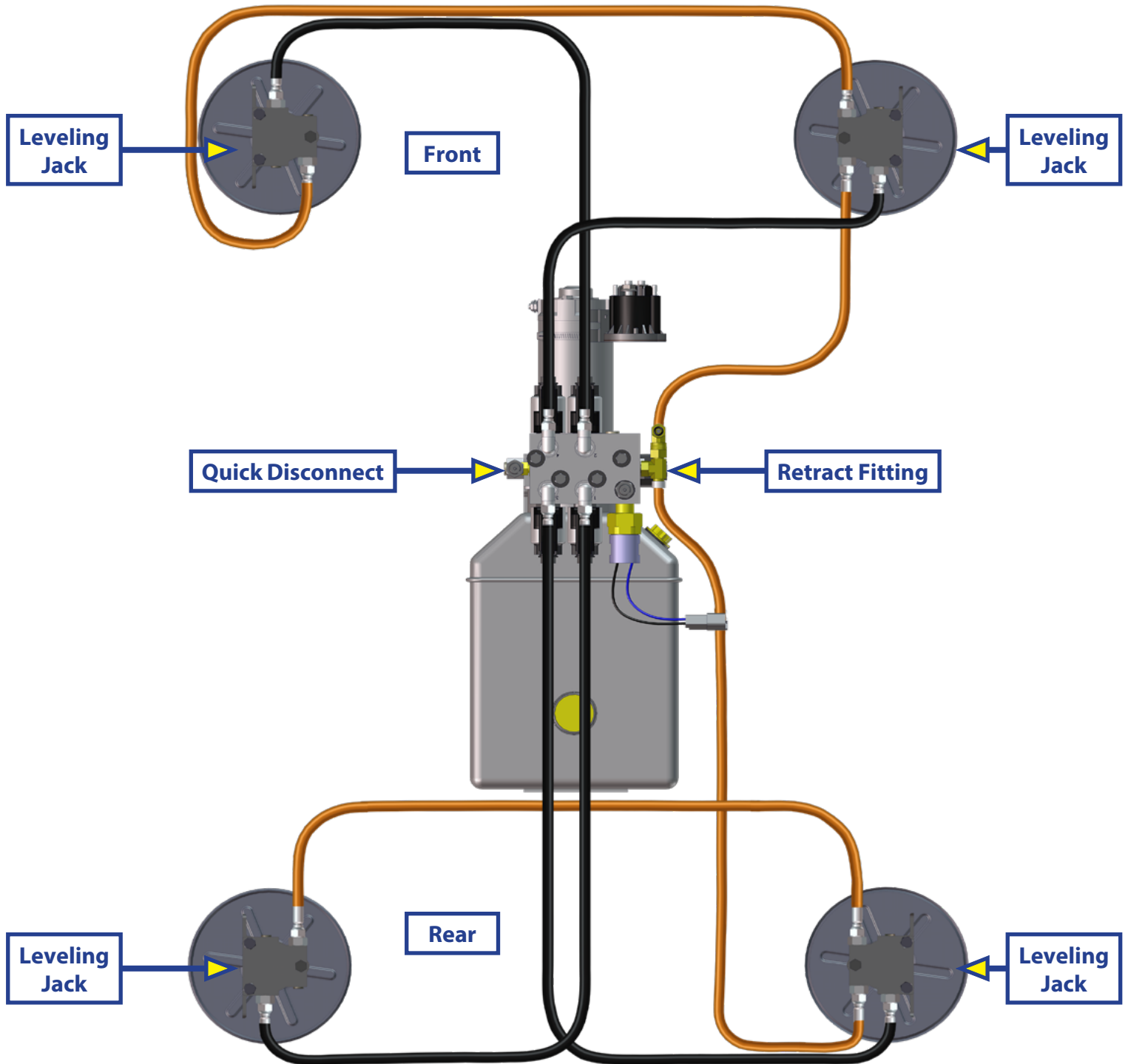
1. Battery voltage below 10.0V DC.
2. Retract time over 67 seconds in auto retract.
3. This is the only LATCHED ERROR mode.
4. To RESET, push all 4 diamond-shaped jack buttons at the same time (Fig. 8A).



Troubleshooting Chart

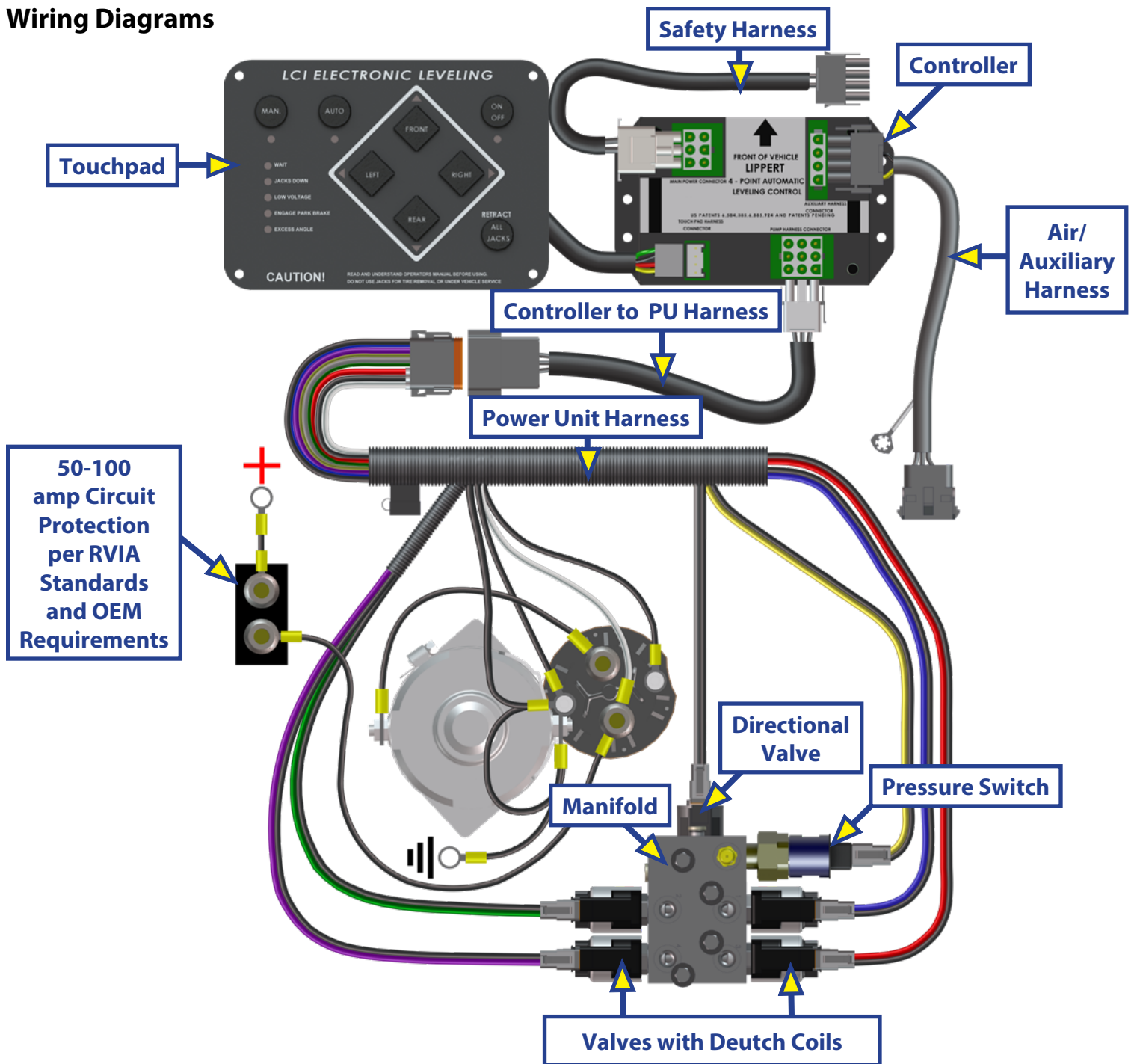
What Is Happening?	Why?	What Should Be Done?
System will not turn on and ON/OFF indicator light does not illuminate.	Coach ignition not in RUN position.	Turn ignition to RUN position.
	Parking brake not set.	Set parking brake.
	Controls have been on for more than four minutes and have timed out.	Turn ignition off and then back on.
Touchpad turns on, but turns off when jack button is pushed.	Low voltage on battery.	Start coach to charge battery.
Touchpad turns on, coach will not auto level, JACKS DOWN light is on, jacks are retracted.	Faulty pressure switch or low pressure in system.	Press RETRACT ALL JACKS button on touchpad. If JACKS DOWN light remains on, contact Lippert Customer Care.
Jacks will not extend to ground, pump is running.	Little or no fluid in reservoir.	Fill reservoir with recommended ATF.
	Jack valve is inoperative.	Clean, repair or replace.
	Electronic signal is lost between controller and jack valves.	Trace wires for voltage drop or loss of signal. Repair or replace necessary wires or replace controller.
Any one or two jacks will not retract.	Hose damaged or disconnected.	Replace with new hose or reconnect hose.
	Return valve inoperative.	Replace inoperative return valve.
	Electronic signal is lost between controller and solenoid.	Test for voltage drop between controller and jack valve. Repair bad wiring or replace defective controller or valve.
JACKS DOWN light does not go out when all jacks are retracted.	Insufficient pressure in system.	Contact Lippert Customer Care.
	Retract pressure switch inoperable.	Check connection or replace.
Alarm sounds and JACKS DOWN light starts flashing while traveling; jacks are fully retracted.	Loss of pressure in leveling system.	Contact Lippert Customer Care.
	Retract pressure switch inoperable.	Check connection or replace.
Jack bleeds down after being extended.	Valve Manual Override open.	Close override.
Touchpad powers up; LOW VOLTAGE light flashes.	Engine not running.	Start coach engine.
Low voltage light on solid.	Charging system faulty.	Turn key OFF, then back ON again to reset. Check power and ground connections on battery, alternator and chassis.
No power to touchpad.	Tripped circuit breaker.	Reset breaker.
	Ignition not on.	Turn on.

Plumbing Diagram



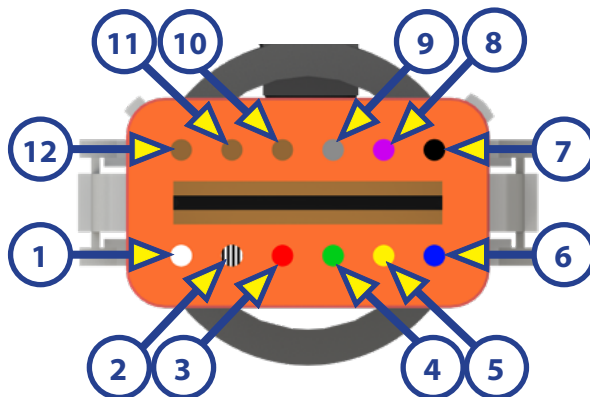
- Hoses will vary in length by coach model.
- Measure hose and consult LCI Service. Hose Specs. 3000 p.s.i.; ½" in. I.D.
- Curbside Front - Black Hose - PURPLE Label & Wire
- Roadside Front - Black Hose - GREEN Label & Wire
- Curbside Rear - Black Hose - RED Label & Wire
- Roadside Rear - Black Hose - BLUE Label & Wire
- Return - Orange Hose
- PSI Switch - Yellow Wire into Blue PSI Wire

Wiring Diagrams



12-Pin Wire Harness

1. White (Chassis Power)
2. Black w/ White (Pump Solenoid)
3. Red (Curbside Rear Valve)
4. Green (Roadside Front Valve)
5. Yellow (PSI Switch)
6. Blue (Roadside Rear Valve)
7. Black (Ground)
8. Purple (Curbside Front Valve)
9. Gray (Pump Solenoid)
10. Aux
11. Aux
12. Aux



This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



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