GROUND CONTROL® 3.0 (5TH WHEEL) 4 POINT AND 6 POINT SERVICE MANUAL

LIPPERT COMPONENTS

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System and Safety Information



Failure to act in accordance with the following may result in death or serious personal injury. The use of the Ground Control® 3.0 leveling system to support the trailer for any reason other than which it is intended is prohibited by Lippert's limited warranty. The Lippert leveling system is designed as a "leveling" system only and should not be used to provide service for any reason under the trailer such as changing tires or servicing the leveling system. Any attempts to change tires or perform other service while trailer is supported by the Ground Control 3.0 leveling system could result in damage to the 5th wheel and/or cause death or serious injury.



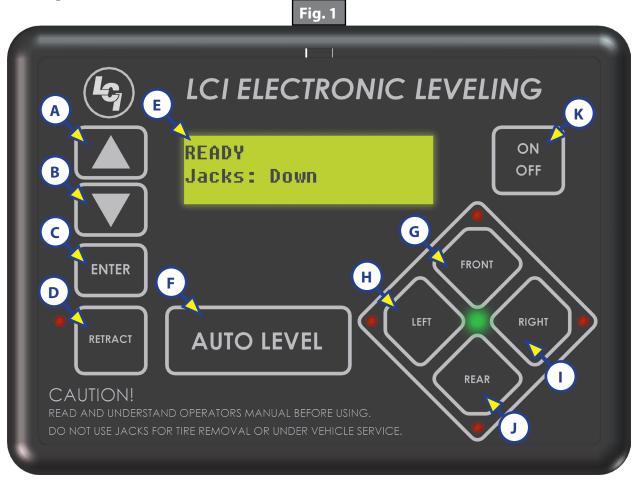
Moving parts can pinch, crush or cut. Keep clear and use caution.

Prior to Operation

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

- 1. The trailer is parked on a reasonably level surface.
- 2. Be sure all persons, pets, and property are clear of the trailer while the leveling system is in operation.
- 3. Make sure battery(ies) are fully charged and test at 12+VDC under load.

Touch Pad Diagram



Callout	Description
Α	Up Arrow - Scrolls up through the menu on LCD.
В	Down Arrow - Scrolls down through the menu on LCD.
С	Enter - Activates modes and procedures indicated on LCD.
D	Retract - Places leveling system into retract mode Press and hold down for 1 second to initiate Auto Retract.
Е	LCD Display - Displays procedures and results.
F	Auto Level - Places leveling system into auto level mode.
G	Front Jack Button - Activates front jacks in manual mode.
Н	Left Jack Button - Activates left jacks in manual mode.
I	Right Jack Button - Activates right jacks in manual mode.
J	Rear Jack Button - Activates rear jacks in manual mode.
K	Power Button - Turns leveling system on and off.

Operation



Be sure to park the trailer on solid, level ground. Clear all jack landing locations of debris and obstructions. Locations should also be free of depressions. When parking the trailer on extremely soft surfaces, utilize load distribution pads under each jack. People and pets should be clear of trailer while operating leveling system. Never lift the trailer completely off the ground. Lifting the trailer so the wheels are not touching the ground will create an unstable and unsafe condition.

Basic Jack Operation

Landing gear (front jacks) can be operated any time the system is "ON". By pushing the "FRONT" button (Fig. 1G), both front jacks can be extended. By pushing either the "FRONT" and "LEFT" (Fig. 1H) or "FRONT" and "RIGHT" (Fig. 1I) buttons, the individual front jacks can be extended. If the touch pad is put in the retract mode, indicated by the orange illuminated LED next to the "RETRACT" button (Fig. 1D), the front jacks can be retracted together by pushing the "FRONT" button (Fig. 1G) or individually by pressing "LEFT" (Fig. 1H) or "RIGHT" (Fig. 1I) buttons, while simultaneously pressing the "FRONT" button (Fig. 1G).

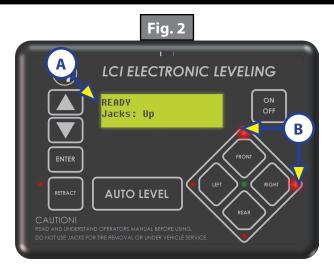
Middle jacks, if equipped, can not be extended or retracted in standard mode or manual mode. Middle jacks can only be operated in the special jack code error mode. In order to operate the middle jacks press "LEFT" (FIG. 1H) and "RIGHT" (FIG. 1I) buttons simultaneously.

The rear jacks can only be extended when the touch pad is in the manual mode. Once system is in manual mode, pressing the "REAR" button (Fig. 1J) will extend both rear jacks at the same time. To extend individual rear jacks, press the "LEFT" (Fig. 1H) or "RIGHT" (Fig. 1I) buttons while simultaneously pressing the "REAR" button (Fig. 1J), depending on which jack needs to be operated. If the touch pad is put in the retract mode, indicated by the orange illuminated LED next to the "RETRACT" button (Fig. 1D), the rear jacks can be retracted together by pushing the "REAR" button (Fig. 1J) or individually by pressing either the "LEFT" (Fig. 1H) or "RIGHT" (Fig. 1I) buttons, while simultaneously pressing the "REAR" button (Fig. 1J). If the rear jacks will not operate individually using the method described above, but they operate properly when Auto Level is performed, the Twist Prevention Protection system has locked out the operation to prevent damage to the frame of the trailer.

Unhitching From A Tow Vehicle

NOTE: Prior to unhitching from the tow vehicle, ensure the trailer is parked on a level surface and be sure to chock the tires of the trailer.

- 1. Extend the inner legs of both landing gear (front jacks) to within 4-5 inches of the ground by pulling on the quick-release pins.
- **2.** Push "ON/OFF" (Fig. 1K). LCD Screen will light up and display "READY JACKS: UP" (Fig. 2A).
- **3.** Push the "UP" arrow (Fig. 1A) to scroll to "Drop Front Jacks" option on LCD screen.
- **4.** Red indicator lights (Fig. 2B) may come on, indicating the current disposition of the trailer. In this case, the front and right sides of the trailer are low.
- **5.** Push "ENTER" (Fig. 1C). Both front jacks will go to ground and stop.
- 6. Push the "FRONT" button (Fig. 1G) extending the front jacks to a sufficient height, which raises the front of the trailer off of the tow vehicle's 5th wheel hitch plate.
- **7.** Pull tow vehicle away and park at a safe distance.



Auto Level

After unhitching from tow vehicle and parking the vehicle at a safe distance away from the trailer, press the "ON/OFF" button (Fig. 1K) and then press "AUTO LEVEL" (Fig. 1F).

NOTE: Once the automatic leveling cycle has been started, it is important that there is no movement in the trailer until the trailer has completed the leveling process. Failure to remain still during the leveling cycle could have an effect on the performance of the leveling system.

NOTE: In order for hitch recognition feature to function, the auto level sequence must be started with the front of the trailer above level.

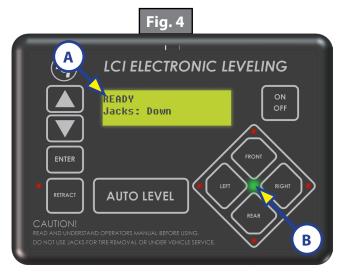
<u>Auto Level Sequence</u>

- 1. When Auto Level Sequence begins, the front of the trailer will lower slightly to a point below level.
- **2.** Rear jacks will be grounded.
- **3.** A side-to-side leveling sequence occurs.

NOTE: At this point on the 6 Point System, the two middle jacks are grounded to stabilize the trailer. The two middle jacks do not level the trailer.

- **4.** Each jack will perform a final grounding touch.
- **5.** LCD will read "AUTO LEVEL SUCCESS" (Fig. 3).
- **6.** LCD will then read "READY Jacks: Down" (Fig. 4A), and the green LED at the center of the four jack buttons will be illuminated (Fig. 4B).





NOTE: If the AUTO LEVEL sequence does not perform as described, place the system in manual mode and test that the jacks operate correctly by pushing their coordinating buttons on the touch pad; i.e. "FRONT" button operates only the front jacks, etc.

Hitch Recognition

- **1.** Turn on the touch pad.
- **2.** Push the "UP" arrow (Fig. 5A) to scroll to "Auto Reconnect" option on the LCD screen.
- 3. Push "ENTER" (Fig. 5B). The rear jacks and middle jacks (if equipped) will retract first, then the front jacks will extend to raise the trailer to the height where the auto level sequence was started.

with the front of the trailer in a belowlevel condition, the Hitch Recognition will not function and the LCD will display "Feature Disabled." In order for the Hitch Recognition feature to function, the auto level sequence must be started with the front of the trailer above level.



Troubleshooting

AWARNING

Ensure the trailer is supported at both the front and rear with jack stands before performing any troubleshooting or service to the trailer. Failure to do so may result in death or personal injury.

Manual Override

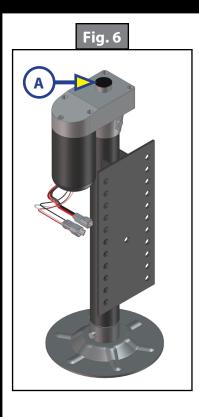
NOTE: For ease of manual override it is recommended to unplug the power harness to the motor prior to performing the manual override procedure.

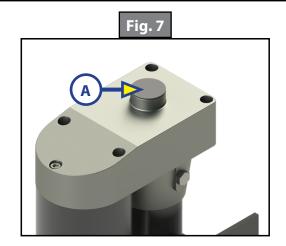
NOTE: Use of a 12-18 volt cordless screw gun or pneumatic screw gun is acceptable to manually override the jacks. Do not use an impact screw gun to perform any of the override procedures, as this may damage the motor. If manual override is necessary there are two options.

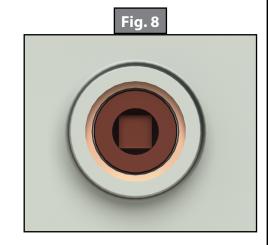
Top of Jack Motor Override:

Tools needed: $\frac{3}{8}$ " drive ratchet and extension (no socket)

- 1. Find the port on the top of the jack motor (Fig. 6A).
- **2.** Remove the rubber plug (Fig. 7A).
- 3. Insert the $\frac{3}{8}$ " drive into the port (Fig. 8).
- **4.** Turn override until the jack extends or retracts to desired position.



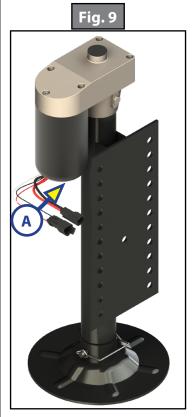


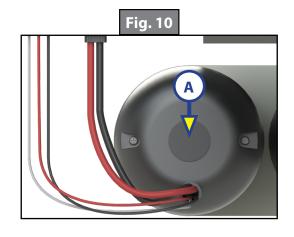


Bottom of Jack Motor Override:

Tools needed: $\frac{3}{8}$ " drive ratchet and extension, $\frac{5}{16}$ " socket

- 1. Find the port on the bottom of the jack motor (Fig. 9A).
- **2.** Remove the rubber plug (Fig. 10A).
- 3. Insert the $\frac{5}{16}$ " socket into the port (Fig. 11).
- **4.** Turn override until the jack extends or retracts to desired position.







Touch Pad Error Codes

NOTE: To clear an error code from the touch pad, repair or otherwise correct the issue, then press "ENTER." If the error is still present, the message will be displayed again.

LCD Message	What's Happening?	What Should Be Done?
****ERROR***	Controller not properly secured.	Check and secure controller placement.
Excess Angle	Excessive angle reached during auto operation.	Relocate the trailer.
****ERROR***	Controller not properly secured.	Check and secure controller placement.
Excessive Angle	Excessive angle reached during manual operation.	Relocate the trailer.
****ERROR**** Feature Disabled	Front of trailer below level when starting Auto Level process (only when trying to initiate Hitch Recognition).	Using manual mode on the touch pad, retract rear jacks (which includes the middle, if equipped) and set landing gear (front jacks) to hitch height.
	Touch pad power not cycled between consecutive leveling operations.	Turn touch pad off and then back on to reset the system.
	Zero point not set.	Set zero point.
****ERROR***	Battery voltage dropped below	Check wiring - repair or replace.
Low Voltage	10.8V.	Test battery voltage under load - charge or replace.
****ERROR**** Out Of Stroke	Jack has reached maximum stroke length and is unable to lift.	Check disposition of jacks. Relocate the trailer.
	Unexpected high amp current stall.	Check jacks in manual mode or perform manual override procedure. Repair or replace as needed.
		Check for bent or damaged jacks. Repair or replace as needed.
****ERROR**** External Sensor	Bad connection or wiring from the controller to the rear sensor.	Replace or repair connection to rear remote sensor.
****ERROR**** Jack Time Out	Time limit exceeded for the requested auto operation.	Check disposition of jacks.
****ERROR****	Unable to auto level due to uneven ground.	Check disposition of jacks. Relocate the trailer.
Auto Level Fail	Unable to auto level due to zero point being set incorrectly.	Reset zero point.
****ERROR**** Comm Error	Communication between controller and touch pad has been lost.	Check harness for proper connections or damage. Replace if necessary.
****ERROR**** Bad Calibration	Sensor calibration values are out of range.	Replace controller.
****ERROR**** Internal Sensor	Internal sensor problem.	Replace controller.
PANIC STOP Function Aborted	The user pressed a button on the touch pad during an automatic operation.	Restart automatic operation and then refrain from pressing any buttons on the touch pad.
****ERROR**** Hall Effect Short	Short circuit detected in one of the hall effect circuits.	Test for short and repair or replace.

Special Jack Error Codes

To clear one of the error codes listed below:

1. Correct or otherwise repair the issue (see the table below).

NOTE: In order to clear the special jack error code the jacks need to be "homed." In order to "home" jacks, each jack must be able to retract a minimum of 6".

- **2.** Extend all jacks to reach the 6" of minimum retract needed.
 - **A.** Press "FRONT" (Fig. 1G) to extend the front jacks (if required).
 - **B.** Press "REAR" (Fig. 1J) to extend the rear jacks (if required).
 - **C.** Press "LEFT" and "RIGHT" (Figs 1H and Fig. 1I) simultaneously to extend the middle jacks (if equipped and required).
- **3.** Press and hold the retract button until all of the jacks begin to retract. The jacks will retract until they reach the hard current limit.
- **4.** The jacks are now "homed" and the special jack error code will be cleared.

NOTE: If the jacks do not retract, an error should display on the touch pad screen. This is typically caused by wiring interruption.

LCD Message	What's Happening?	What Should Be Done?
ERROR LF Jack RF Jack LM Jack RM Jack LR Jack RR Jack RR Jack	circuit between controller and	Check harness connections at controller and at jack. Check harness for damage. Check fuses at controller.
	motor.	Repair or replace as necessary.

System Settings

Zero Point Calibration

The "Zero Point" is the programmed point that the trailer will return to each time the Auto Level feature is used.

NOTE: Prior to starting this procedure, double check all connections on the controller, jacks, and touch pad.

- 1. In manual mode, run the jacks to level the trailer. This is best achieved by placing a level in the center of the trailer and leveling it both front to back and then side to side. (See "Basic Jack Operation" for instructions on how to manually operate the system).
- 2. Once the trailer is level, turn off the touch pad.
- **3.** With the touch pad off, press and release the "FRONT" button (Fig. 1G) five (5) times and then press and release the "REAR" button (Fig. 1J) five (5) times.
- **4.** The touch pad will flash and beep and the display will read "ZERO POINT CALIBRATION ENTER to set, Power to Exit" (Fig. 12).
- **5.** To set the current position as the zero point, press the "ENTER" button (Fig. 1C).
- **6.** LCD display will read "Zero point stability check" (Fig. 13).
- **7.** LCD display will read "Zero point set successfully" once process is complete (Fig. 14).
- **8.** The system will set this point as its level state and the touch pad will turn off.

Fig. 12

ZERO POINT CALIBRATION ENTER to set, Power to Exit

Fig. 13

Zero point Stability check

Set successfully

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Homing Jacks

NOTE: When components are added or replaced the system will need to be homed. Run the system by pressing "FRONT" (Fig. 1G). A special jack error code should occur. If not, introduce the special jack error code.

NOTE: To introduce an error, disconnect 1 of the hall effect sensor wires from the controller. After attempting to operate the disconnected jack, the touch pad screen will display an error. Reconnect the hall effect sensor wire.

NOTE: In order to clear the special jack error code the jacks need to be "homed." In order to "home" jacks, each jack must be able to retract a minimum of 6".

- 1. Extend all jacks to reach the 6" of minimum retract needed.
 - **A.** Press "FRONT" (Fig. 1G) to extend the front jacks (if required).
 - **B.** Press "REAR" (Fig. 1J) to extend the rear jacks (if required).
 - **C.** Press "LEFT" and "RIGHT" (Fig. 1H and Fig. 1I) simultaneously to extend the middle jacks (if equipped and required).
- 2. Press and hold the retract button until all of the jacks begin to retract. The jacks will retract until they reach the hard current limit.
- **3.** The jacks are now "homed" and the special jack error code will be cleared.

NOTE: Note: If the jacks do not retract, an error should display on the touch pad screen. This is typically caused by wiring interruption.

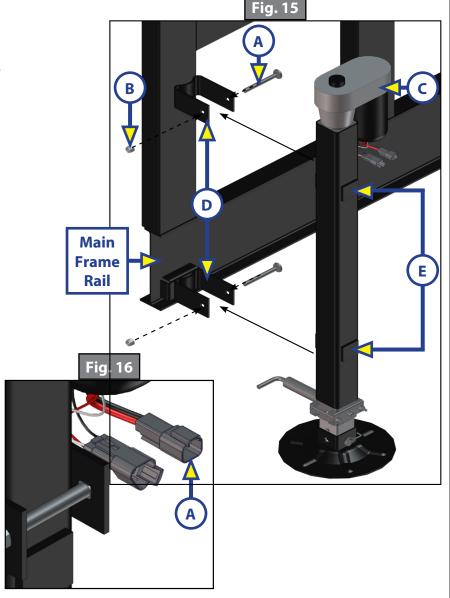
Component Replacement

NOTE: After replacing any of these components, you will need to "home" the jacks. See the corresponding sections for instructions.

Landing Gear Replacement

- 1. Remove existing landing gear from the trailer by removing the carriage bolts and nuts holding the landing gear in place in the brackets.
- 2. Using the new carriage bolts (Fig. 15A) and nuts (Fig. 15B), mount the new landing gear (Fig. 15C) in the mounting brackets (Fig. 15D) so that the tabs (Fig. 15E) on the new landing gear are positioned between the mounting brackets as shown in Fig. 15. Tighten the nuts on the carriage bolts until the bracket opening is less than 2 ½" (Fig. 16).
- 3. Connect the wire harnesses (Fig. 16A) to the landing gear motor wires and run the harnesses to the compartment where the controller will be mounted.

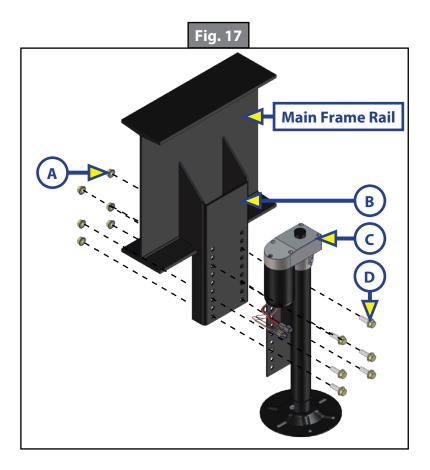
NOTE: LCI recommends zip-tying the harnesses tight against the landing gear motors to prevent damage to the harnesses.



Rear Jack Replacement

- 1. Mark mounting location of current rear jack on the bracket.
- **2.** Unbolt the jack from mounting bracket.
- 3. Bolt the new rear jack (Fig. 17C) to the mounting bracket (Fig. 17B) using six bolts (Fig. 17D) and nuts (Fig. 17A) per jack. Tighten the bolts to 90 lb.-ft. of torque.
- **4.** Ensure the new jack is mounted in the same location as the previous jack.
- **5.** Connect the wire harnesses to the rear jack motor wires.

NOTE: LCI recommends zip-tying the harnesses tight against the rear jack motors to prevent damage to the harnesses.



Rear Sensor Replacement

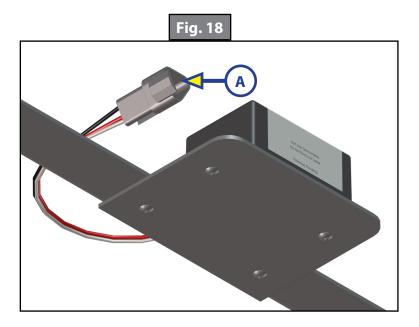
- 1. Locate the rear sensor in the underbelly of the trailer.
- 2. Cut an access panel in the underbelly using a knife. The rear sensor should be installed on the crossmember to the rear of the back axle, centered curbside to roadside on the trailer.



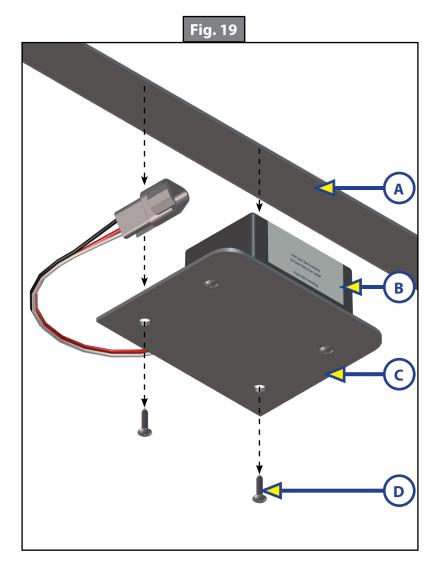
Be sure not to cut any hoses or wires that may be under the underbelly.

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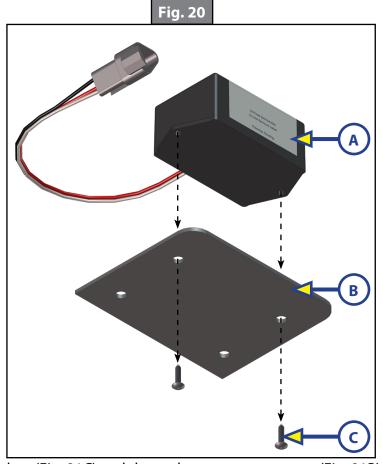
3. Disconnect the rear sensor harness from the connector on the rear sensor (Fig. 18A).



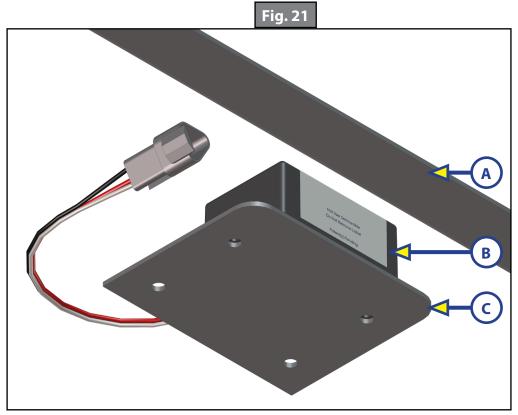
4. Remove the screws (Fig. 19D), mounting plate (Fig. 19C) and sensor (Fig. 19B) assembly from the crossmember (Fig. 19A).



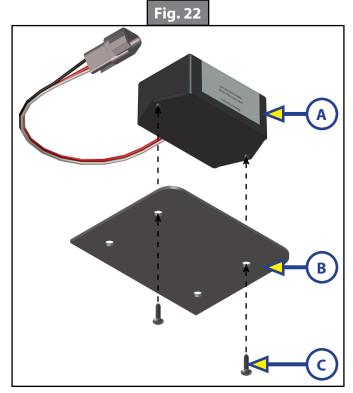
5. Remove the screws (Fig. 20C) from the rear sensor (Fig. 20A) and mounting plate (Fig. 20B) and remove the sensor from the plate.



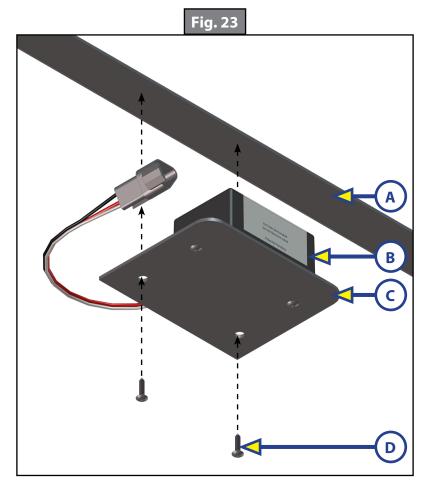
6. Dry fit the mounting plate (Fig. 21C) and the replacement rear sensor (Fig. 21B) to the crossmember (Fig. 21A). The pre-drilled holes in the plate are for mounting the rear sensor to the plate. Mark on the plate where the rear sensor will set. Space between the sensor and the crossmember must be left so the wire harness will not be pinched.



7. Attach the replacement rear sensor (Fig. 22A) to the mounting plate (Fig. 22B) using two 3/8" hex head self-tapping screws (Fig. 22C). Orientation is imperative for the correct operation of the leveling system.

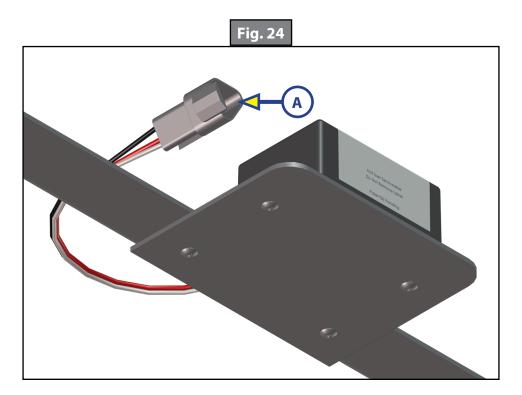


8. Attach the mounting plate (Fig. 23C) and replacement sensor (Fig. 23B) assembly to the crossmember (Fig. 23A) using two 3/8" hex head self tapping screws (Fig. 23D). Ensure that the plate is centered side to side on the frame and that the sensor is oriented properly (Fig. 23).



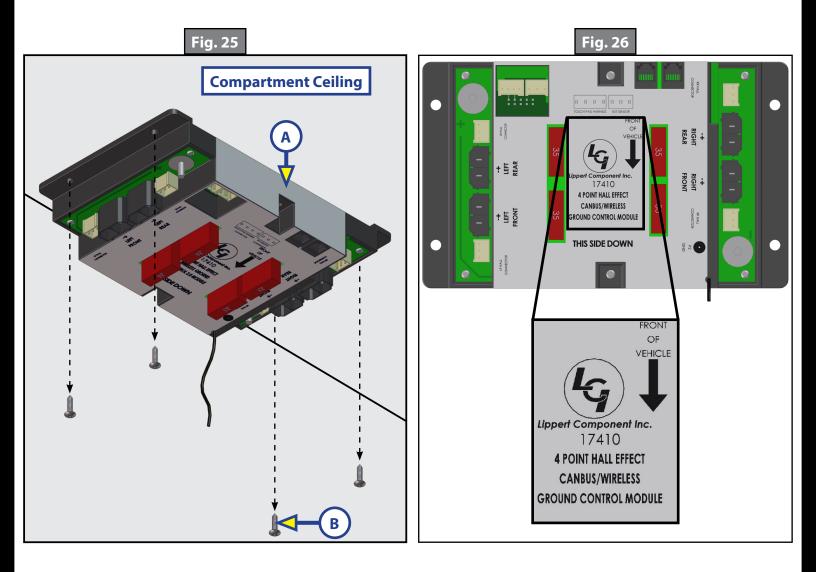
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9. Connect the rear sensor harness to the connector on the rear sensor (Fig. 24A) and run the harness through the frame and up to the compartment where the controller will be mounted.



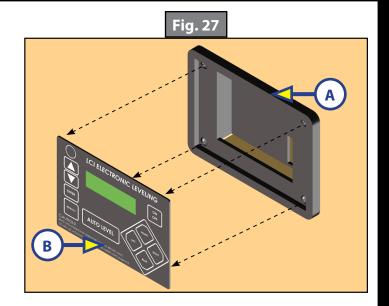
Controller Replacement

- 1. Disconnect all jack harnesses from the connectors on the controller.
- **2.** Remove the power and ground harness from the controller.
- **3.** Remove the controller (Fig. 25A) from the ceiling of the compartment.
- **4.** Using four #8 x 1" wood screws (Fig. 25B), attach the replacement controller (Fig. 25A) to the ceiling of the compartment, in the same position as the removed controller.
- 5. The controller should be positioned directly in the center of the trailer with the arrow on the label of the controller facing the front of the trailer (Fig. 26).
- 6. Some 6 point controllers do not have orientation arrows for the front of the trailer. When installing those controllers, ensure that the port labeled "LEFT FRONT" is pointing to the left-hand front of the trailer. This will ensure proper orientation and function of the controller.
- 7. Attach the power and ground harness to the corresponding posts on the replacement controller and then connect them to the correct posts on the house battery.
- **8.** Connect all jack harnesses to the appropriate connectors on the replacement controller.



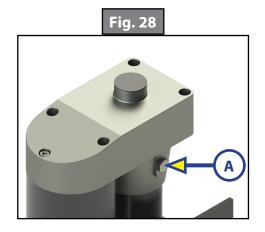
Touch Pad Replacement

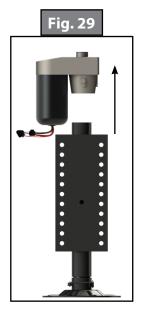
- 1. Remove the face plate of the touch pad (Fig. 27B) from the mounting bezel (Fig. 27A).
- **2.** Unplug the harness from the connector on the back of the face plate.
- **3.** Plug the touch pad harness into the connector on the back of the replacement touch pad face plate and snap the face plate into the bezel.



Jack Motor Replacement

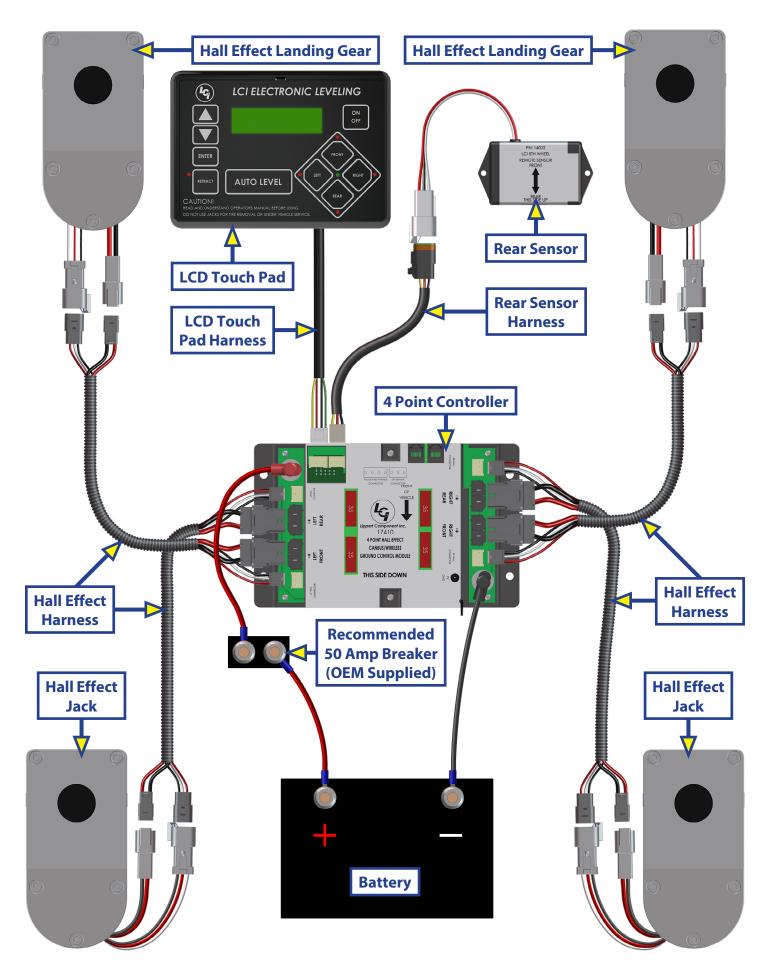
- 1. Using a ½" socket or wrench, remove the two motor retention bolts from the jack (Fig. 28A).
- 2. Remove the faulty motor from the top of the jack (Fig. 29).
- **3.** Gently position the replacement motor into the coupler found inside the jack.
- **4.** Replace and tighten motor retention bolts.

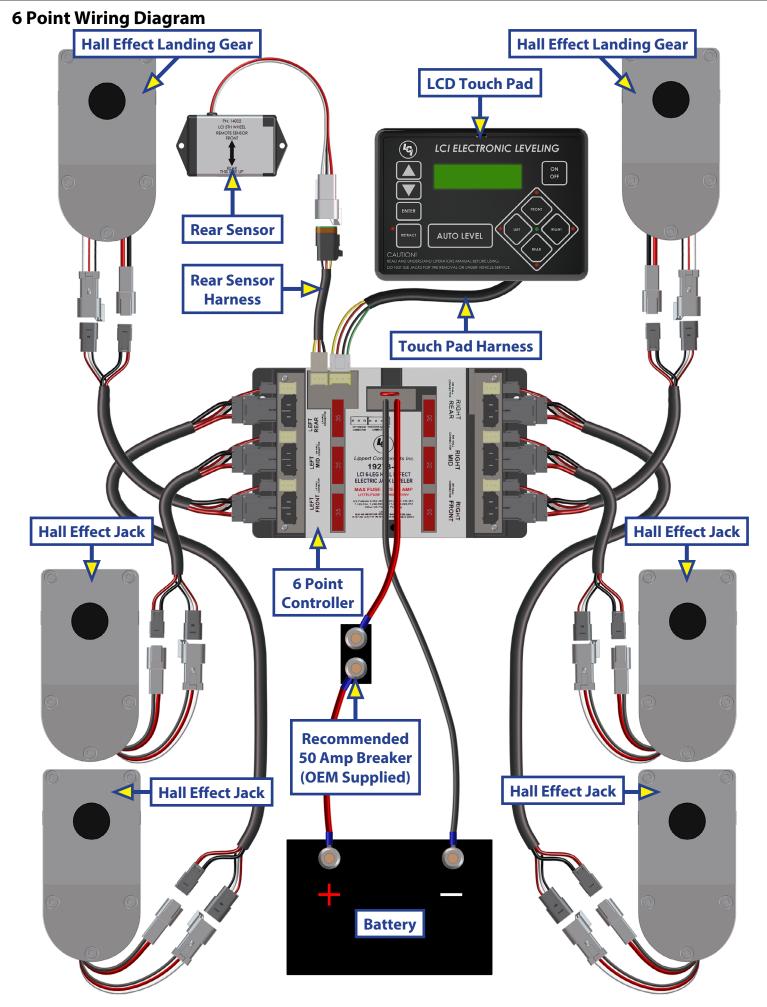




Preventive Maintenance

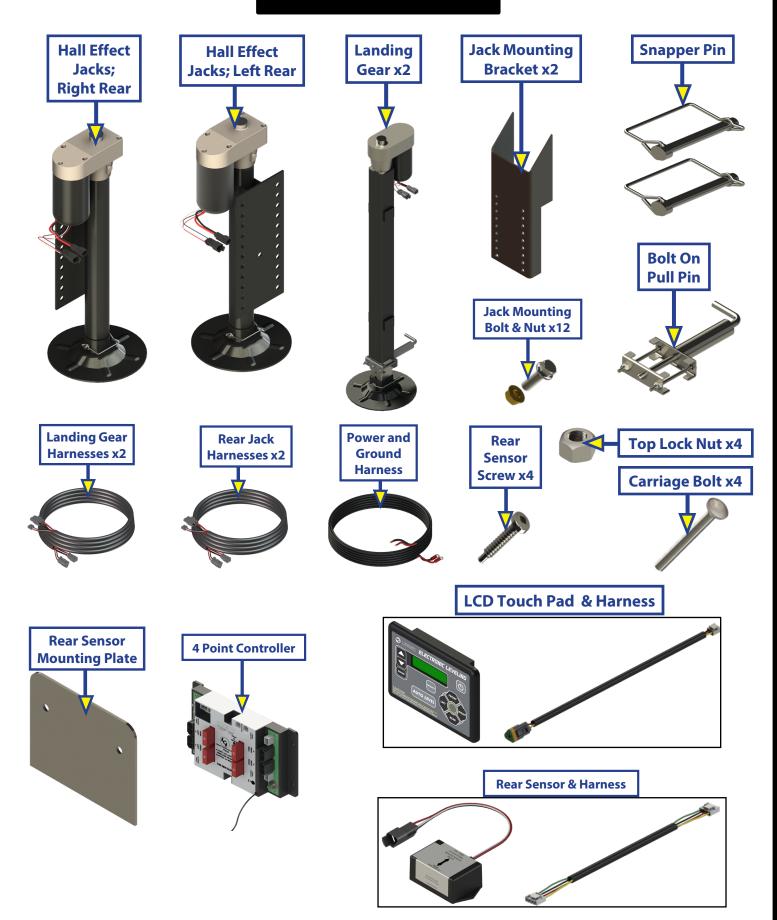
- 1. For optimum performance, the system requires full battery current and voltage. The battery must be maintained at full capacity.
- 2. Check the terminals and other connections at the battery, the controller, and the jacks for corrosion, and loose or damaged connections.
- **3.** Remove dirt and road debris from jacks as needed.
- 4. 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 the trailer is located in a salty environment, it is recommended to spray the rods every four to six weeks.







GROUND CONTROL® 3.0 4 POINT ASSEMBLY



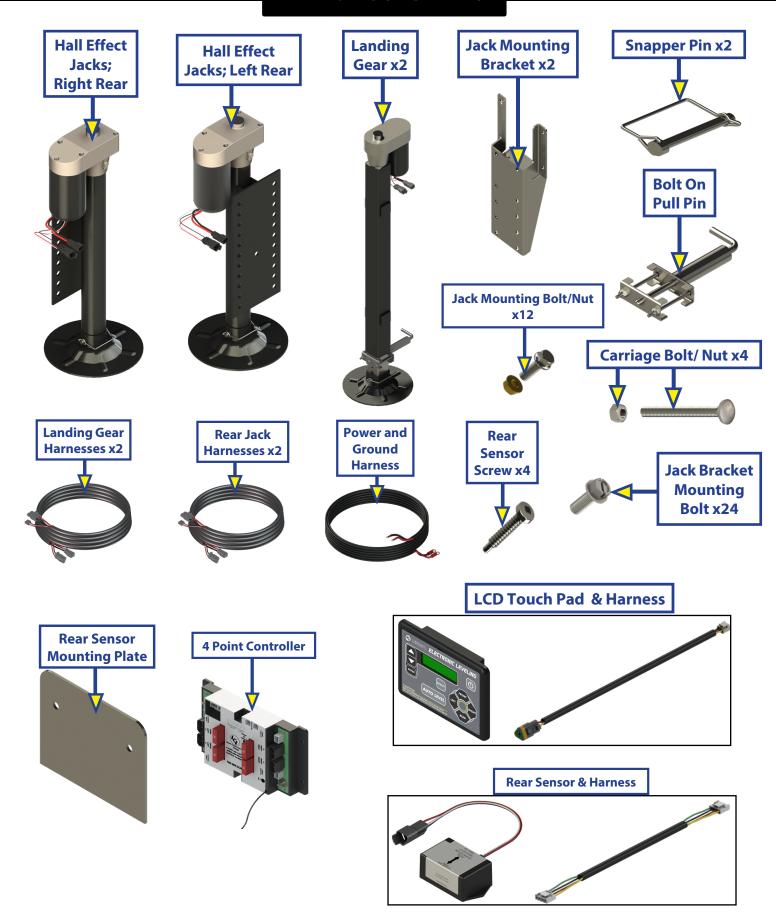


GROUND CONTROL® 3.0 6 POINT ASSEMBLY





GROUND CONTROL® 3.0 4 POINT AFTERMARKET ASSEMBLY

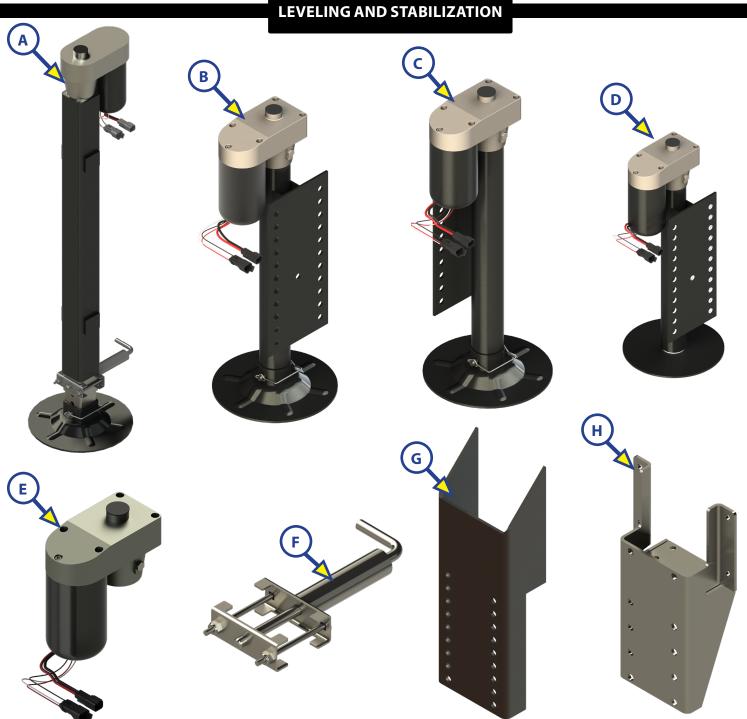




GROUND CONTROL® 3.0 6 POINT AFTERMARKET ASSEMBLY

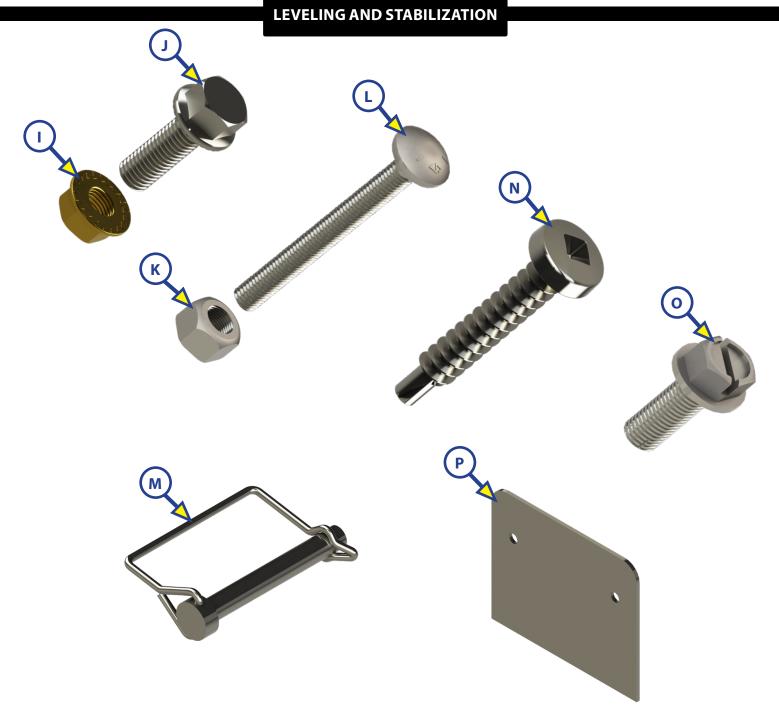






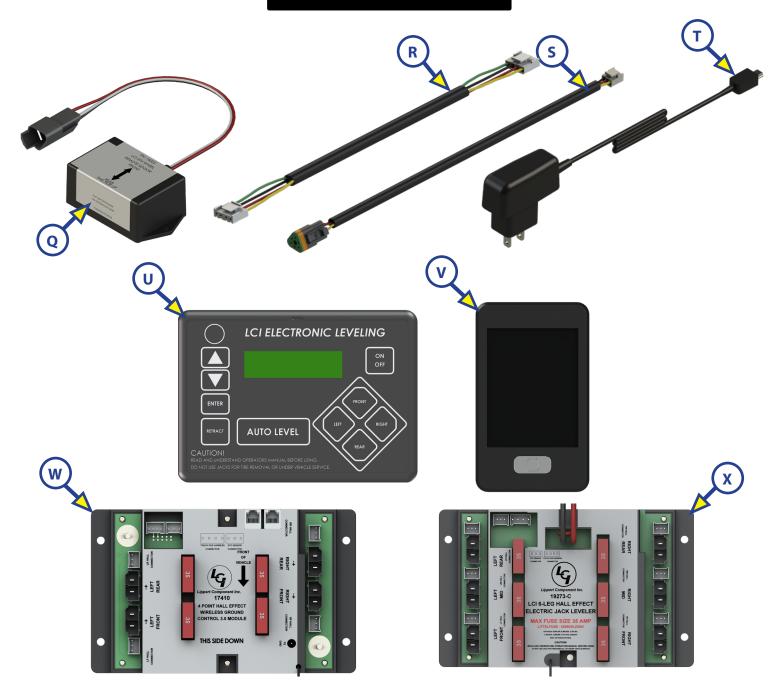
Callout	Part #	Description
Α	305340	Hall Effect Landing Gear; Front Stroke 19.8125"
В	305339	Left Hall Effect Jack; Rear and Middle 12.5" Stroke
С	344792	Right Hall Effect Jack; Rear and Middle 12.5" Stroke
D	342610	Hall Effect Jack; Rear Short 10.5" Stroke
E	343758	Hall Effect Jack Motor
F	119113	Bolt On Pull Pin
G	<u>134989</u>	Weld On Jack Mounting Bracket (OEM Only)
Н	349975	Bolt On Jack Mounting Bracket (Aftermarket Only)





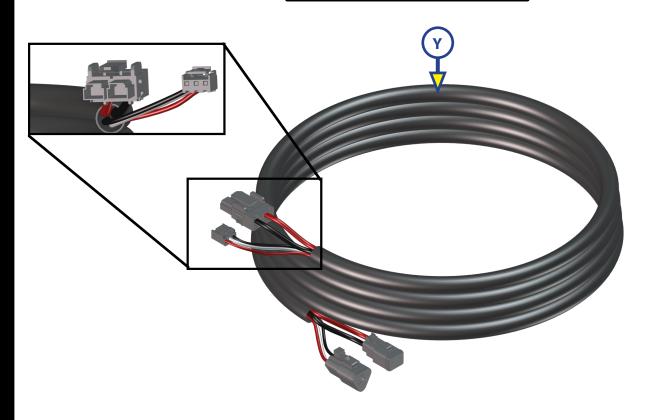
Callout	Part #	Description
I	<u>178210</u>	Jack Mounting Nut; ½" - 20
J	<u>118076</u>	Jack Mounting Bolt; $\frac{1}{2}$ " - 20 x 1 $\frac{1}{2}$ " Flange
K	119073	Top Lock Nut
L	125878	Carriage Bolt
М	<u>225598</u>	Snapper Pin; 3/8 x 3"
N	241940	Rear Sensor Mounting Screw
0	191021	Hex Head Bolt (Aftermarket Only)
Р	231775	Rear Sensor Mounting Plate





Callout	Part #	Description
Q	<u>232201</u>	Rear Sensor
R	232937	LCD Touch Pad Harness
S	<u>243688</u>	Rear Sensor Harness
Т	<u>267401</u>	Linc Remote Charger
U	<u>234802</u>	LCD Touch Pad
V	<u>329164</u>	Linc Remote
W	304136	4 Point Hall Effect Canbus Wireless Ground Control Controller
X	346005	6 Point Hall Effect Canbus Wireless Ground Control Controller







Callout	Part #	Description
	305115	Hall Effect Right Rear Sensor Harness
	306298	Hall Effect Left Rear Sensor Harness
	307489	Hall Effect Right Front Sensor Harness
Y	307490	Hall Effect Left Front Sensor Harness
	347012	Hall Effects Right Middle Sensor Harness
	347013	Hall Effects Left Middle Sensor Harness
Z	306176	Power and Ground Supply Harness



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