Master Owner's Manual

Chassis

LIPPERT COMPONENTS®

User notice

The Table of Contents is an interactive field. Click on the desired section to be taken immediately to the corresponding page.

Master Owner's Manual

The Master Owner's Manual is intended to provide information on Lippert Components Inc.'s most widely-used products. Products described in the Master Owner's Manual may not be on every trailer. The trailer may also have products not included in this manual. All manual information is subject to change without notice. Revised editions will be available for free download at lci1.com/support. Manual information is considered factual until made obsolete by a revised version. Manual information may be distributed as a complete document only, unless Lippert Components provides explicit consent to distribute individual parts.

TABLE OF CONTENTS

System and Safety Information

The Ice House is equipped with Ground Control™ 3.0 and pivot axles. LCI has taken its Ground Control Automatic Electric Leveling System to the next level. Its new leveling jacks are driven by Hall Effect Technology, which measures the jack leg motor revolutions instead of amps, ensuring more accurate leveling. The pivot axles offer a smooth operation to lower the ice house without disturbing the ice. We are continually offering better options for a better camping experience. Additional information about this product can be obtained from www.lci1.com/support or by downloading the free myLCI app. The app is available on iTunes® for iPhone® and iPad® and also on Google Play™ for Android™ users.

⚠WARNING

Any attempt to perform service while the unit is supported by the Ground Control 3.0 leveling system could result in death, serious injury or damage to the ice house.

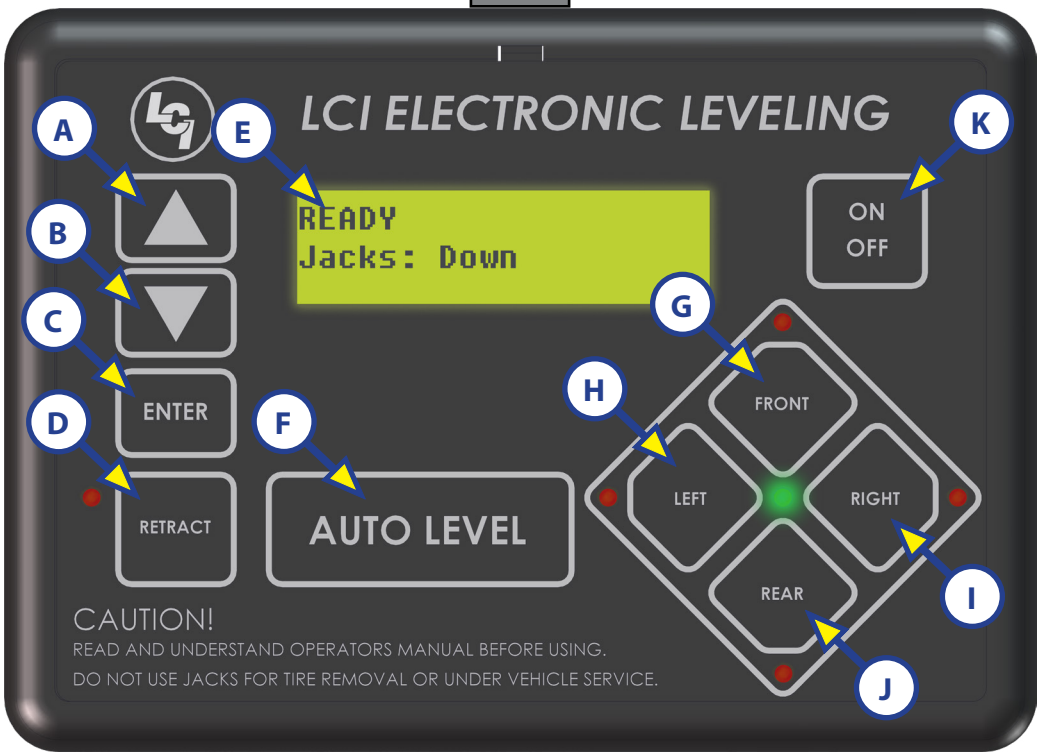
⚠CAUTION

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

NOTE: Lippert Components, Inc. recommends that inspections, troubleshooting, component replacement, and verifications be completed only by certified RV technicians.

Touch Pad Diagram

Fig.1



Callout	Description
A	Up Arrow - Scrolls up through the menu on LCD.
B	Down Arrow - Scrolls down through the menu on LCD.
C	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.
E	LCD Display - Displays procedures and results.
F	Auto Level - Extends all jacks simultaneously when pressed and held. **NOTE:** If retract button is pressed first, all jacks will retract simultaneously when pressed and held.
G	Front Jack Button - Activates front landing gear.
H	Left Jack Button - Activates left jack.
I	Right Jack Button - Activates right jack.
J	Rear Jack Button - Activates both rear jacks.
K	Power Button - Turns leveling system on and off.

Menus

Jack State – Displays the current state for the jack system (if at least one jack is not fully retracted, displways "Jacks: Down", otherwise displays "Jacks: Up").

Auto Retract All – Press Enter to automatically retract all of the jacks.

Auto Retract Rear – Press Enter to automatically retract the left rear and right rear jacks.

Front Stroke – Displays the stroke (inches of extension) of the front landing gear.

Rear Stroke – Displays the stroke (inches of extension) of the rear jacks.

Battery – Displays the current battery voltage.

Error - Displays an error. To clear the error, auto retract all jacks by pressing and holding retract (Fig. 1D).

NOTE: If any of the jacks are already retracted, extend them 6 inches and then retract all.

Prior to Operation

1. Park the trailer on level and stable ground/ice.
2. Be sure all persons, pets, and property are clear of the coach before and during operation.
3. Make sure battery(ies) are fully charged and test at 12+VDC under load.

⚠CAUTION

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

Operation

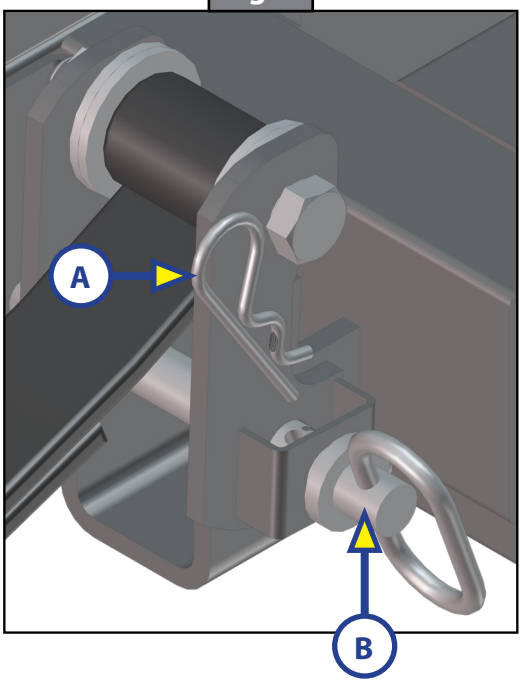
Cabin Mode

1. Extend the front jack.

NOTE: This can also be done with the switch on the front jack.

2. Disconnect the trailer coupler from the tow vehicle hitch.
3. Extend the rear jacks to make contact with the ground or ice.
4. Remove the cotter pin (Fig. 2A) from each hitch pin (Fig. 2B).
5. Remove the hitch pins (Fig. 2B) from the axle assemblies to free the axles.
6. Retract all jacks until the unit sets flat to the ground or ice.

Fig. 2



Travel Mode

1. Extend all jacks until axle assembly is returned to travel position.
2. Insert hitch pins (Fig. 2B) into each axle assembly and secure the cotter pins (Fig. 2A).
3. Retract rear jacks completely.
4. Connect the trailer coupler to the tow vehicle hitch.
5. Retract the front jack.

NOTE: This can also be done with the switch near the front jack.

Programming

NOTE: Begin with the touch pad off.

1. Press the "LEFT" button (Fig. 1H) on the touch pad 10 times.
2. Press the "RIGHT" button (Fig. 1I) on the touch pad 10 times.
3. The touch pad will read "Wireless Configuration" (Fig. 3).

NOTE: If the touch pad does not read "Wireless Configuration", repeat steps 1 and 2.

4. Press any button on the remote (Fig. 4) to sync the system.

Fig. 3

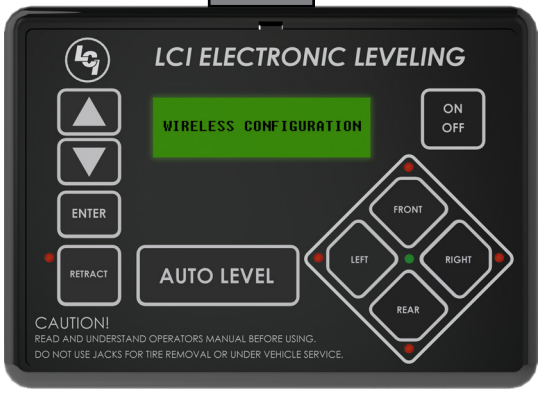


Fig. 4

Maintenance

Grease Specifications

LCI recommends a NLGI # 2 grade lithium complex EP grease for all applications contained within this manual. A molybdenum-based grease is preferred.

⚠ CAUTION

Do not mix lithium, calcium, sodium or barium complex greases. Chemical compatibility problems may occur. If you are changing from one chemical grease to another, be sure all old grease is removed prior to applying new grease. If the old grease is not removed completely, chemical compatibility problems may result in component failure or damage.

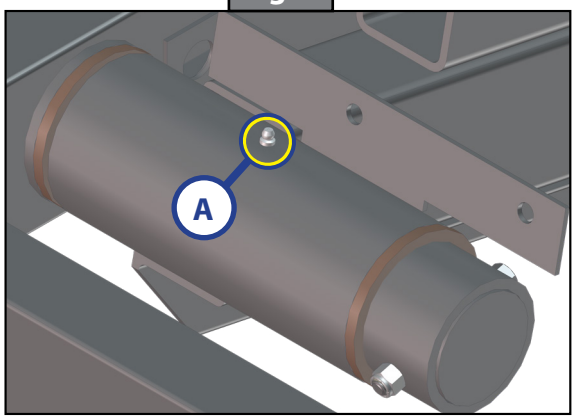
Grease Application

This maintenance must be completed every 3,000 miles or 3 months, which ever comes first.

1. Use a grease gun to grease the zerk (Fig. 5A) located on the front pivot tube.

NOTE: 80 milliliters or ⅜ of a cup of lithium-based multipurpose grease should be used on each side of the coach.

Fig. 5



Electric Leveling Maintenance Schedule				
Item	Function Required	Monthly (or as needed)	3 Months	[1]6 Months
Jacks	Remove dirt and road debris.	◆		
	[2]Lubricate inner jack legs.		◆	
	Jack mounting bolt torque (90 ft-lb).			◆
Wiring/Electrical	Inspect wiring for bare spots, fray, etc.			◆
	Inspect and ensure that all wiring harness connections are tight and free of corrosion.			◆
	Battery voltage (should be 12.75V DC)	At each use		
[1] 6-month interval could also be the beginning and end of the travel season if not a full-time traveler.				
[2] Lubricate inner jacks legs: A 3-month interval is for normal environments. A 4 to 6-week interval would be appropriate for coaches located in a salty environment.				

Pivot Axle and Brake Maintenance Schedule					
Item	Function Required	Weekly	3 Months / 3,000 Miles	6 Months / 6,000 Miles	12 Months / 12,000 Miles
Brakes	Test that they are operational.	At Every Use			
Breakaway System	Check battery charge and switch operation.	At Every Use			
Brake Adjustment	Adjust to proper operating clearance.		◆		
Brake Magnets	Inspect for wear and current draw.			◆	
Brake Linings	Inspect for wear or contamination.				◆
Brake Controller	Check for correct amperage and modulation.			◆	
Trailer Brake Wiring	Inspect wiring for bare spots, fray, etc.				◆
Hub/Drum	Inspect for abnormal wear or scoring.				◆
Wheel Bearing	Inspect for corrosion or wear. Clean and repack.				◆
Seals	Inspect for leakage. Replace if removed.				◆
Springs	Inspect for wear, loss of arch.				◆
Suspension Parts	Inspect for bending, loose fasteners, wear.			◆	
Hangers	Inspect welds.				◆
Wheel Nuts and Bolts	Tighten to specified torque values.		◆		
Wheels	Inspect for cracks, dents, or distortion.			◆	
Tire Inflation Pressure	Inflate tires to mfg's. specifications.	◆			
Tire Condition	Inspect for cuts, wear, bulging, etc.		◆		
Pivot Shaft	Apply grease through grease zerk (see grease specifications on page 5).		◆		

Troubleshooting

Error Codes

To clear one of these errors:

1. Correct or otherwise repair the issue (see the table below).
2. Extend all of the jacks at least six (6) inches, then press and hold the "RETRACT" button on the touch pad until the jacks begin retracting.
3. All of the jacks will retract fully to clear the error.

LCD Message	What Is Happening?	What Should Be Done?
ERROR Left Jack Right Jack	Error at a specific jack (left front, right front, left rear, right rear). Hall signal issue (open, short, malfunction).	Check harness connections at controller and at jack. Check that harness connections are in the proper location on the controller by verifying the labels on the harness and controller. Check harness for damage. Repair or replace as necessary.
	Unexpected high amp current stall.	
****ERROR**** Low Voltage	Battery voltage dropped below 10.8V.	Check wiring for loose connection.
		Test battery voltage under load - charge or replace.
****ERROR**** Comm Error	Communication between controller and touch pad has been lost.	Check harness for proper connections or damage. Replace if necessary.
****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.

Manual Override - Top of Jack Motor

NOTE: Use of a 12V-18V cordless screw gun or pneumatic screw gun is acceptable to manually override the jacks. Do not use an impact screw gun to perform the override procedure, as this may damage the motor.

If manual override is necessary on any jack in the system, there are two options. The following process will describe how to use the top override. See next page for the bottom override.

Tools needed: 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. 7).
3. Insert the 3/8" drive into the port (Fig. 8).
4. Turn override until the jack extends or retracts to desired position (Fig. 9).

Fig. 6

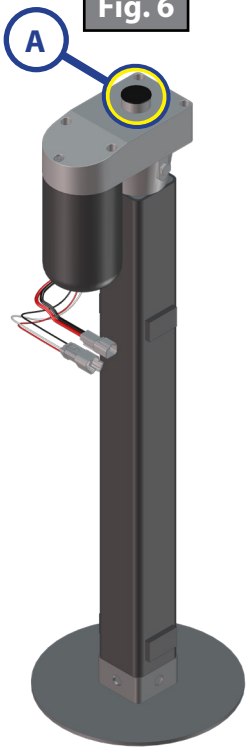


Fig. 7

Fig. 8

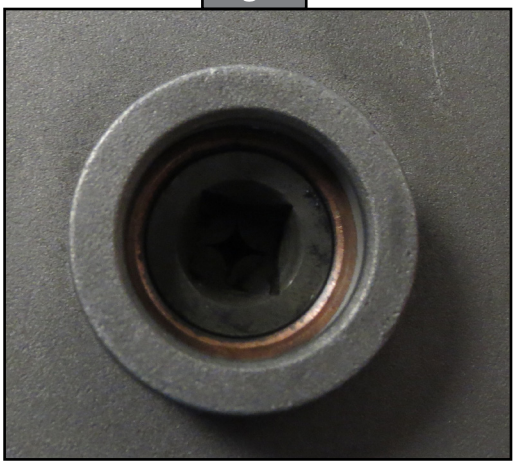
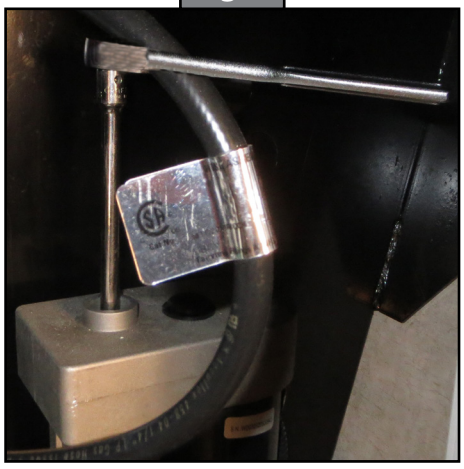


Fig. 9



Manual Override - Bottom of Jack Motor

NOTE: Use of a 12V-18V cordless screw gun or pneumatic screw gun is acceptable to manually override the jacks. Do not use an impact screw gun to perform the override procedure, as this may damage the motor.

If manual override is necessary on any jack in the system, there are two options. The following process will describe how to use the bottom override. See the previous page for the top override.

Tools needed: 3/8" drive ratchet and extension, 5/16" socket.

1. Find the port on the bottom of the jack motor (Fig. 10A).
2. Remove the rubber plug (Fig. 11).
3. Insert the 5/16" socket into the port (Fig. 12).
4. Turn override until the jack extends or retracts to desired position (Fig. 13).

Fig. 10

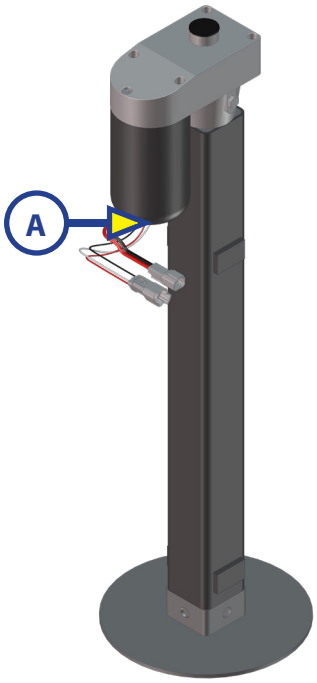


Fig. 11

Fig. 12

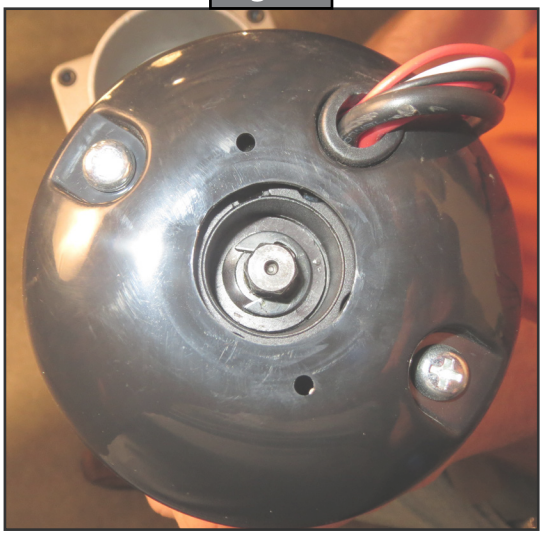
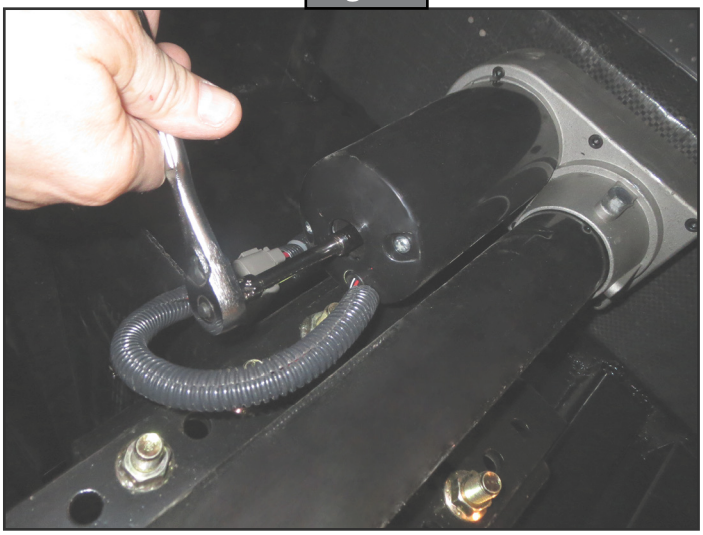


Fig. 13



X-RAMP™ HYDRAULIC LOWERING SYSTEM

Introduction

The lift and lower operation of the X-Ramp™ Hydraulic Lowering System, simplifies the lifting of the trailer's frame and body to an upper-most position, hydraulically locking the linkage into place so the linkage does not move during transport. The system also lowers the trailer's frame and body to the ground at a controlled rate of speed for ease of loading and unloading.

Additional information about this product can be obtained from lci1.com/support or by downloading the free myLCI app. The app is available on iTunes® for iPhone® and iPad® and also on Google Play™ for Android™ users.
iTunes®, iPhone®, and iPad® are registered trademarks of Apple Inc.
Google Play™ and Android™ are trademarks of Google Inc.

Safety Information

⚠WARNING

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

⚠WARNING

The trailer MUST be supported per manufacturer's recommendations before working underneath. Failure to do so may result in death, serious personal injury, product or property damage.

⚠CAUTION

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

⚠CAUTION

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

Resources Required

- ¼ hex bit
- Spray lubricant
- Spray electrical contact cleaner
- Grease gun
- Torque wrench
- Tire pressure gauge

Operation

Extending the cylinders will lower the trailer bed for loading and unloading. Retracting the cylinders maximum length will raise the trailer bed ready for travel.
Make sure the trailer is parked on solid, level ground. Clear area under trailer of debris and obstructions. Locations should also be free of depressions. When parking the trailer on extremely soft surfaces, utilize load distribution pads under rear of the trailer.
The trailer should always be hooked to the tow vehicle when loading and unloading.

Electronic Operation

⚠ CAUTION

Never travel with the trailer unless the bed is fully elevated.

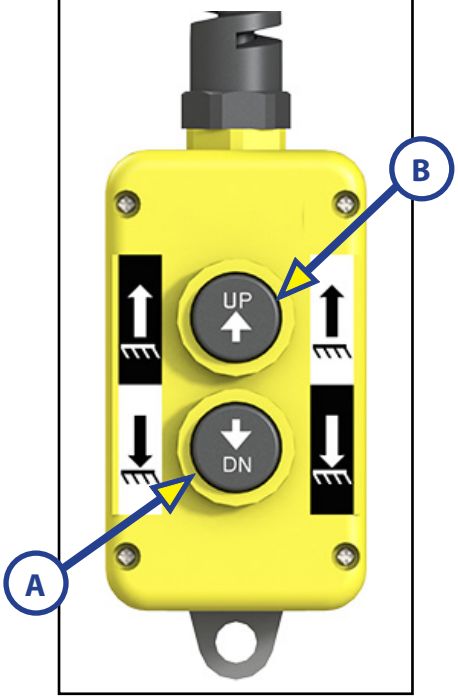
NOTE: Always maintain proper battery charge level.

1. Press the down (DN) button (Fig. 1A) on the pendant to raise the axles on the sub-frame, this will lower the trailer for loading and unloading.

NOTE: Always lower the trailer until the wheels of the sub-frame are completely off the ground.

2. Press the up (UP) button (Fig. 1B) on the pendant to lower the axles of the sub-frame chassis, which raises the trailer to the maximum height. Continue to hold the button 1-2 seconds after "full up" is achieved. Completing this action for 1-2 seconds after "full up" minimizes any linkage movement during transport and will extend linkage pin and cylinder life.

Fig. 1



Manual Override Procedure - Double Acting Hydraulic Power Unit

It is not recommended to manually extend/raise the trailer while it is loaded.

Retract

In the event of a dead battery, it is possible to operate the Low Entry Axle system manually.

NOTE: Unhook the power unit motor from the power source prior to attempting the manual override procedure.

1. Unthread the protective cap on top of the two-way retract cartridge valve, located on the hydraulic power unit (Fig. 2).
2. Turn the override knob counterclockwise until it stops.
3. Locate the manual override coupler on the front end of the power unit (Fig. 2).
4. Remove protective label (Fig. 3A) from the power unit, to reveal the manual override coupler.
5. Using a drill with a ¼" hex bit, run the drill counterclockwise (Fig. 4) to retract/lower the trailer.

NOTE: Do not use an impact gun to perform any of the override procedures, as this may damage the motor.

6. After retracting the trailer, make sure to turn the override knob clockwise (Fig. 2) until it stops.
7. Thread on the protective cap until it is finger tight.

Extend

1. Unthread the protective cap on top of the four-way extend cartridge valve, located on the hydraulic power unit (Fig. 2).
2. Turn the override knob counterclockwise until it stops.
3. Locate the manual override coupler on the front end of the power unit (Fig. 2).
4. Remove protective label (Fig. 3A) from the power unit, to reveal the manual override coupler.
5. Using a drill with a ¼" hex bit, run the drill counterclockwise (Fig. 4) to extend/raise the trailer.
6. After extending the trailer, make sure to turn the override knob clockwise (Fig. 2) until it stops.
7. Thread on the protective cap until it is finger tight.

Fig. 2

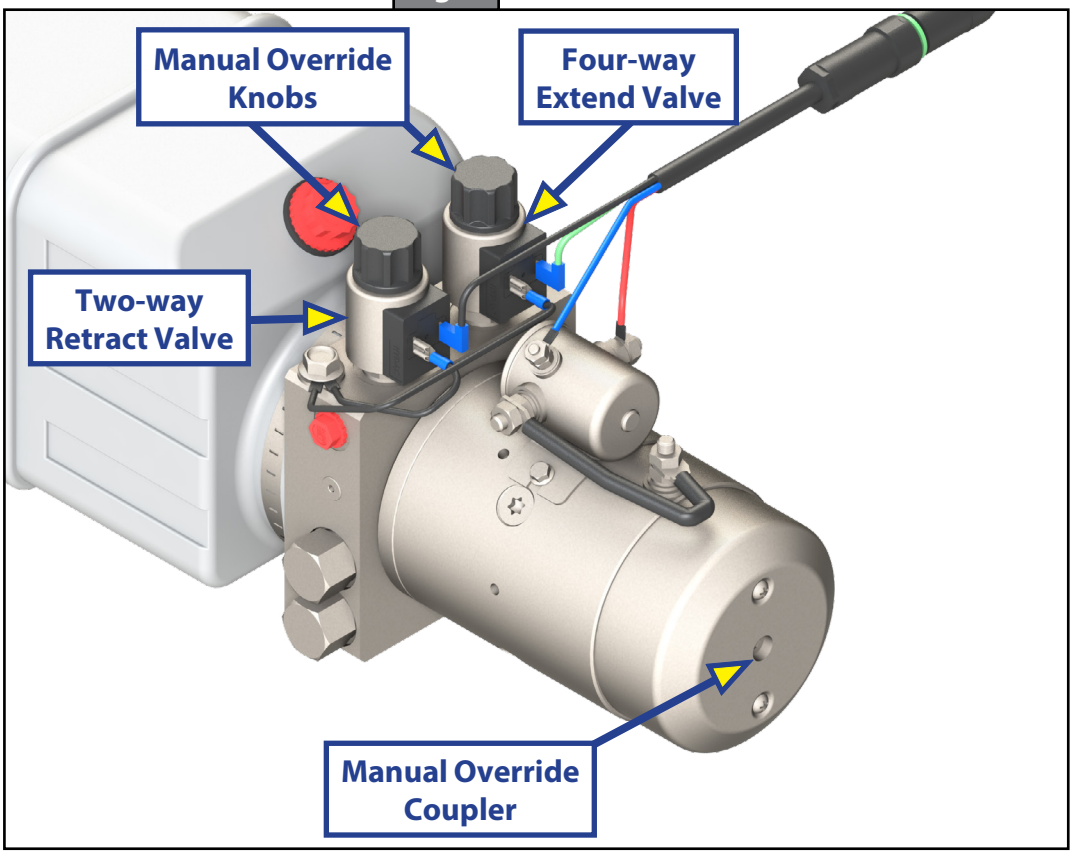


Fig. 3

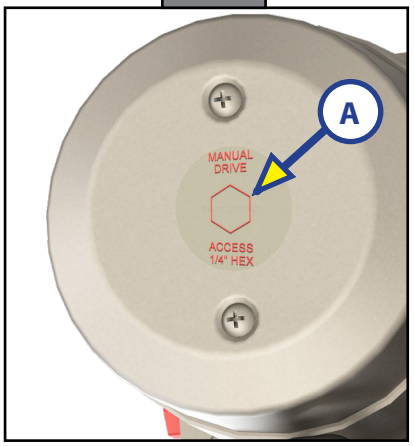
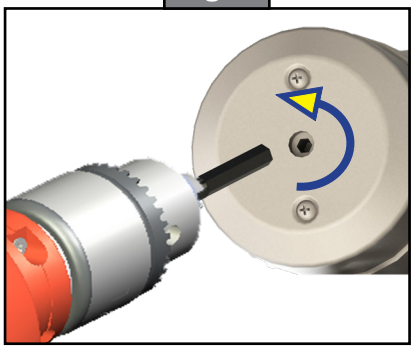
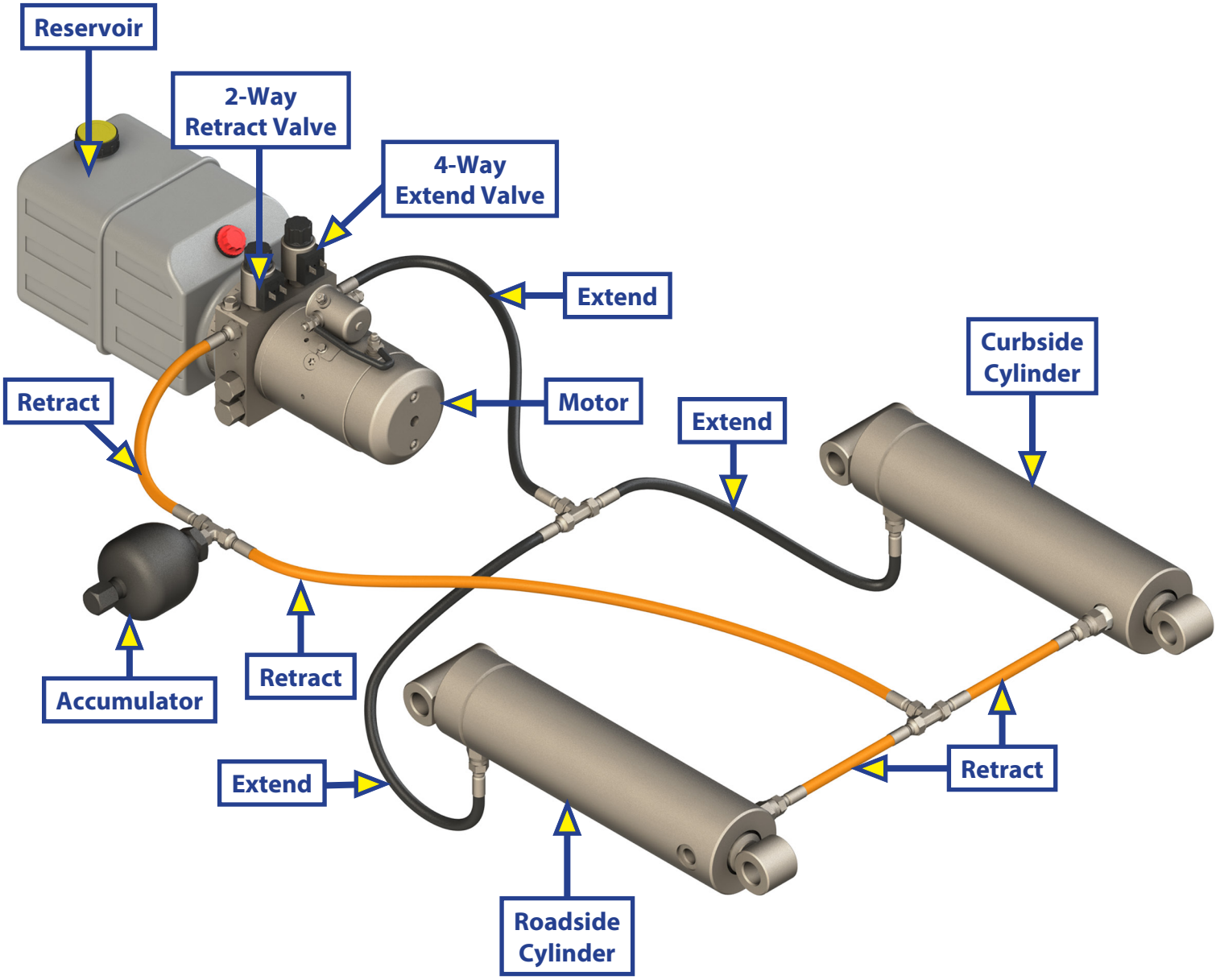


Fig. 4



Hydraulic Diagram



Maintenance

1. Check fluid reservoir every 12 months. If fluid is a clear red color, do not change. If fluid is milky, pink and murky and not clear red in color, drain reservoir and add new fluid. Hydraulic fluid in reservoir should be changed a minimum of every five years.

NOTE: Check the fluid only when all the cylinders are fully retracted.

NOTE: When checking the hydraulic fluid level, fill to within ¼" to ½" of fill spout.

2. Inspect and clean all power unit electrical connections every 12 months. If corrosion is evident, spray electrical connections with a small amount of lubricant to clean corrosion from contacts.
3. Contacts must be cleaned with a non-residue cleaner prior to use. LCI recommends use of an electrical contact cleaner spray.
4. Remove dirt and road debris from cylinders as needed.

Fluid Recommendation

Automatic transmission fluid (ATF) with Dexron® III or Mercon® V or a blend of both is recommended by Lippert Components, Inc. For a list of approved fluid specifications, see TI - 188. To obtain this Technical Information sheet on-line, go to: https://www.lci1.com/support-low-entry-axle then click on the Technical Information Sheets button.

NOTE: In colder temperatures (less than 10° F) the cylinders 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.

Lippert chassis maintenance

The Lippert Chassis needs relatively little maintenance. The chassis and its components are powder coated to resist rust and corrosive materials that cause rust.

A few simple guidelines should be kept in mind to maintain the integrity of the chassis structure.

1. Never overload the trailer. The chassis is built to the specifications for GVWR (Gross Vehicle Weight Rating) set forth by the manufacturer of the trailer. Overloading the trailer may cause damage to the structure of the chassis causing residual damage to the trailer.
2. In the event the trailer is pulled through winter conditions where salt on the road can be splashed up and onto the chassis or the trailer is pulled or located near coastal areas of the country, periodically rinsing down the chassis will wash away the corrosive salt and keep the powder coat clean.
3. Pinbox mounting bolts should be torqued 90 - 110 ft. lb. and checked annually.
4. Inspect welds of cross-members, outriggers bumpers and draw bars (A-frame with coupler on the front of a travel trailer).

Issues Resulting From Improper Maintenance

1. Cracks or “spider-webbing” in the powder coated surfaces.
2. Paint or powder coat flaking in large sheets.
3. Surface rust coming through powder coating.
4. Large areas of bubbling rust.

Axle Hangers

1. Axle hangers are welded to the underside of the main rails and are brackets used to mount the axle suspension. Axle hangers should be perpendicular to the ground and parallel to the length of the main rails. Bent or damaged hangers may cause tire wear or spring issues.

Lippert Chassis Maintenance and Inspection Schedule					
Area of inspection	Inspection point	As Needed	Before use if not moved in 6 months	1 year	Every 1500-2000 miles
Couplers	Latch function		x		x
	Hitch Ball peeling or flat spots		x		x
	Ball housing metal shavings or flat spots		x		x
	Lubricate hitch ball Dry lube	x			x
	Welds not broken for cracked			x	x
	Dry lubricant for latch	x			x
Pin Boxes	Pin level/ latching correctly by hitch manufacture guideline		x		x
	Skid plate bent/cracked or damaged		x		x
	Welds not broken or cracked			x	x
	Hitch rating sticker			x	
	Side plate bolts not cracked, bent or damaged		x		x
	Grease contact surface during use (skid plate or hitch plate)	x			x
	Bolt torque 95-110 ft-lbs		x		x
	Bolt holes on side plates no cracking or damaged		x		x

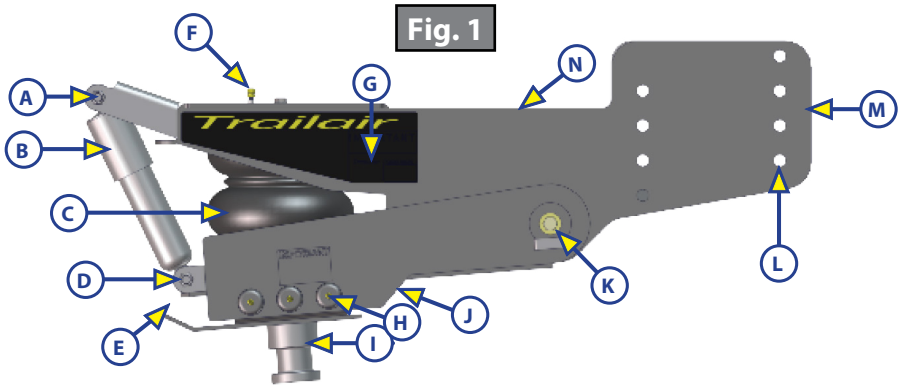
Lippert Chassis Maintenance and Inspection Schedule					
Area of inspection	Inspection point	As Needed	Before use if not moved in 6 months	1 year	Every 1500-2000 miles
General weld checks(broken or cracked)	A-Frame/Draw bars			x	x
	Upper Deck Risers			x	x
	Axle hangers			x	x
	Outriggers			x	
	Chain elbow cracking or damage (holds your safety chains on travel trailers)			x	
Powder Coating	Clean regularly (dirt and salt can cause rust, bubbling, flaking, and spider-webbing)	x			
Accessory Hitches	Welds not broken or cracked			x	x
	Hitch not bent or twisted			x	
	Hitch rating sticker			x	
Stabilizer Jack Brackets	Cracked or Damaged		x		x
	Bolts are not broken or bent (where applicable)		x		x
Axle Hangers	Welds not broken or cracked			x	x
	Axle bolt and holes no cracking or damaged		x		x
	Axle bolts tight 30-50 ft-lbs spring axles. Torsion Axles 120-150 ft-lbs		x		x

Lippert Chassis Maintenance and Inspection Schedule					
Area of inspection	Inspection point	As Needed	Before use if not moved in 6 months	1 year	Every 1500-2000 miles
Safety Chains	Latch Function		x		
	Bolts are not cracking or damaged for bolt-on safety chain			x	x
	Cracking or damaged		x		x
Landing Gear/ Leveling System Brackets	Welds not broken or cracked			x	
	Bolts are tight 30ft pounds for front electric LG Bracket. 52-64ft pounds for electric/ hyd level up legs to bracket		x		x
	Cracking or damage to brackets and bolts		x		x
Main Rails	I beam or tube not cracking or damaged			x	
Detachable A-Frame/ Draw Bars	Bolts are tight 95-110 ft-lbs		x		x
	Cracking or bent bolts on detachable plates		x		x

NOTE: Some of the items above are marked twice, please inspect whichever comes first. If there are any issues with any of these items please see your local RV dealership for repair or further inspection Any fabrication or addition of non-OEM parts will void warranty.

Lippert Chassis Maintenance and Inspection Schedule					
Area of inspection	Inspection point	As Needed	Before use if not moved in 6 months	1 year	Every 1500-2000 miles
Trail Air Pin Boxes	Pin level/latching correctly according to manufacturer's guideline.		x		x
	Skid plate (Fig. 1E) for bends, cracks, or other damage		x		x
	Hitch Rating Sticker (Fig. 1G)			x	
	Welds not broken or cracked			x	x
	Side Plate (Fig. 1M) bolts not cracked, bent, or damaged		x		x
	Grease contact surface during use (skid plate or hitch plate)	x			x
	Bolt torque 95-110 ft-lbs on side plates		x		x
	Bolt holes (Fig. 1L) on side plates not cracked or damaged		x		x
	Grease zerks greased (9 total) (Fig. 1H and J) Where applicable)				x
	Air bag (Fig.1C) ride height verified on shock. (Fig. 1B)	x	x		
	Air bag leak check using soapy water (spray entire air bag and look for bubbling while under load).	x			x
	Shock and pivot mounting bolts (Fig. 1A, D and K) torqued to 95-110 ft-lbs		x		x
	Check for standing water in recessed area on top of pin box (Fig. 1N). Drain water and remove debris as needed. Make sure area is clean and clear of all contaminants.	x			
NOTE: Recommended bag pressure is 100 PSI max. PSI will vary for each unit depending on load.					

Fig. 1



Axles

Bearings

Service and repack every 12 months or 36,000 miles. See Lippert Trailer Axle section for procedure and grease specifications. See also Technical Information Sheet TI-081.

Brakes

For brake inspection and maintenance information, see Technical Information Sheet TI-082. Also, new brake assemblies must go through a break-in period to set initial contact. See Technical Information Sheet TI-086.

Connecting Components

- Equa-Flex - Grease every 5,000 - 8,000 miles.
- Center Point - Check for proper inflation indicated by arms positioned vertically.
- Wet Bolts - Grease every 5,000 - 8,000 miles.

Kinro

Windows

Inspect glazing around window to be free of damage, cracks or holes and that glazing goes completely around the window. Replace if damaged.

Cargo Doors

Inspect seals for damage, cracks or holes. Replace if damaged.

Ramp Doors

Inspect seals for damage, cracking or holes.

Recommendations For Jacking the Frame to Change A Tire

1. Carrying a jack rated for the weight of the coach is essential. The jack must be rated between 8 and 12 tons.
2. To prevent damage to the coach, carry wood blocks to place between the jack and the main rail (I-beam or tube) of the coach and to go under the jack.
3. DO NOT jack the coach on the axle tube or black pipe gas lines that can sometimes be mounted to the bottom of the main rail.
4. Chock the wheels, both front and rear, on the opposite side of the coach.
5. If hitched to tow vehicle, stay hitched and set the parking brake.

⚠WARNING

DO NOT use the front landing gear, leveling system (if equipped), or rear stabilizer jacks to pick up the trailer to change a tire. This is dangerous and may result in death or serious bodily injury.

Slide-outs

Inspect for dirt.

- Inner Arms - Extend and wipe down and apply dry lube only.
- Hydraulic Cylinder - Extend and wipe down piston rod and apply dry lube. Inspect hoses and hose fittings at cylinder for leaks.
- Electric Actuator - Extend and wipe down inner actuator and apply dry lube. Do not leave extended for long periods of time.

NOTE: NOTE: If unit is near coastal areas or exposed to salt air, maintain above components at least once a month.

Electric Landing Gear

- Extend jacks and wipe down inner and outer jacks and apply dry lube to inner.
- Inspect bevel gears in top of jack to be free of dirt and contamination.

Hydraulic Landing Gear - Level-Up Jacks - Rear Hydraulic Stab Jacks

- Wipe down inner and outer. Rinse outer after winter travel or coastal or salt air travel. Extend and apply dry lube to inner and piston rod where applicable.
- Inspect Hoses and hose fittings for leaks.

Hydraulic Power Units

Inspect for leaks around ports, hoses and fittings. Be sure fluid in reservoir is full to within 1/4" of the top.

Maintenance Free Systems

- Touch audio
- TV lift
- Wireless remote systems
- Keyless entry
- Door alarm
- Door and slam latches
- Entry doors
- Manual steps
- Coachsteps

Notes

LIPPERT COMPONENTS®

Please recycle all obsolete materials.

For all concerns or questions, please contact

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