



LIPPERT COMPONENTS

***HYDRAULIC SLIDEOUT SYSTEM
OPERATION AND SERVICE MANUAL***

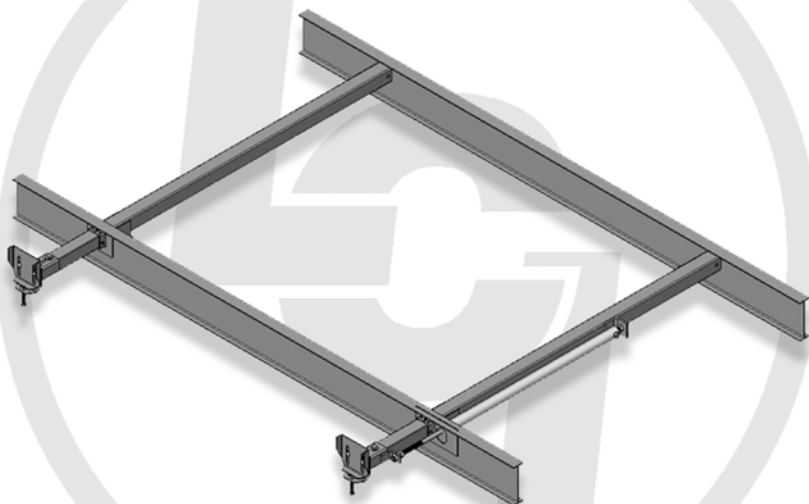




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SYSTEM

WARNING

FAILURE TO ACT IN ACCORDANCE WITH THE FOLLOWING MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.

The *Lippert Hydraulic Slideout System* is intended for the sole purpose of extending and retracting the slideout room. Its function should not be used for any other purpose or reason than to actuate the slideout room. To use the system for any reason other than what it is designed for may result in damage to the coach and/or cause serious injury or even death.

Before actuating the system, please keep these things in mind:

- 1. Parking locations should be clear of obstructions that may cause damage when the slideout room is actuated.**
- 2. Be sure all persons are clear of the coach prior to the slideout room actuation.**
- 3. Keep hands and other body parts away from slideout mechanisms during actuation. Severe injury or death may result.**
- 4. To optimize slideout actuation, park coach on solid and level ground.**

DESCRIPTION

The *Lippert Hydraulic Slideout System* is a rack & pinion guide system, utilizing a hydraulic actuator to move the room assembly. The power unite drives the cylinder rod in a forward and backward motion to drive the slide room in and out. The *Lippert Hydraulic Slideout System* is designed to operate as a negative ground system.

PRIOR TO OPERATION

Prior to operating the *Lippert Hydraulic Slideout System*, follow these guidelines:

- 1. Coach should be parked on the most level surface available.**
- 2. Leveling or stabilizing system should be actuated to ensure coach will not move during operation of Bed Lift System.**
- 3. Be sure battery is fully charged.**
- 4. Be sure to keep all persons and pets clear of Bed Lift System during operation.**

SYSTEM MAINTENANCE

The *Lippert Hydraulic Slideout System* has been static tested to over 4,000 continuous cycles with out any noticeable wear to rotating or sliding parts. It is recommended that when operating in harsh environments (road salt, ice build up, etc.) the moving parts be kept clean and can be washed with mild soap and water. No grease or lubrication is necessary and in some situations may be detrimental to the environment and long term dependability of the system.

Electrical System Maintenance

For optimum performance, the slide-out system requires full battery current and voltage. The battery must be maintained at full capacity. Other than good battery maintenance, check the terminals and other connections at the battery, the control switch, and the electric actuator motor for corrosion, and loose or damaged terminals. Check motor leads under the trailer chassis. Since these connections are subject to damage from road debris, be sure they are in good condition.

NOTE: The *Lippert Hydraulic Slideout System* is designed to operate as a negative ground system. A negative ground system utilizes the chassis frame as a ground and an independent ground wire back to battery is necessary (see page 19 for wiring diagram). It is important that the electrical components have good wire to chassis contact. Over 90% of unit electrical problems are due to bad ground connections.

Mechanical Maintenance

Although the system is designed to be almost maintenance free, actuate the room once or twice a month to keep the seals and internal moving parts lubricated.

Check for any visible signs of external damage after and before movement of the travel trailer.

NOTE: *For long-term storage: It is recommend that the room be closed (retracted).*

OPERATION

WARNING

FAILURE TO ACT IN ACCORDANCE WITH THE FOLLOWING MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.

ALWAYS MAKE SURE THAT THE SLIDEOUT ROOM PATH IS CLEAR OF PEOPLE AND OBJECTS BEFORE AND DURING OPERATION OF THE SLIDEOUT ROOM.

ALWAYS KEEP AWAY FROM THE SLIDE RAILS WHEN THE ROOM IS BEING OPERATED. THE GEAR ASSEMBLY MAY PINCH OR CATCH ON LOOSE CLOTHING CAUSING PERSONAL INJURY.

INSTALL TRANSIT BARS (IF SO EQUIPPED) ON THE SLIDEOUT ROOM DURING STORAGE AND TRANSPORTATION.

EXTENDING SLIDEOUT ROOM

1. Level the unit.
2. Verify the battery is fully charged and hooked-up to the electrical system.
3. Remove the transit bars (if so equipped).
4. Press and hold the IN/OUT switch (Fig. 1B) in the OUT position until the room is fully extended and stops moving.
5. Release the switch, which will lock the room into position.

NOTE: If the slideout switch is held after the room is fully extended, the control will sense that the room has stopped and will shut off the motor after a few seconds.

RETRACTING SLIDEOUT ROOM

1. Verify the battery is fully charged and hooked-up to the electrical system.
2. Press and hold the IN/OUT switch (Fig. 1C) in the IN position until the room is fully retracted and stops moving.
3. Release the switch, which will lock the room into position. **NOTE:** If the slideout switch is held after the room is fully retracted, the control will sense that the room has stopped and will shut off the motor after a few seconds.
4. Install the transit bars (if so equipped).

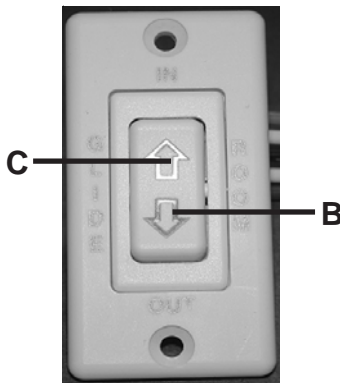
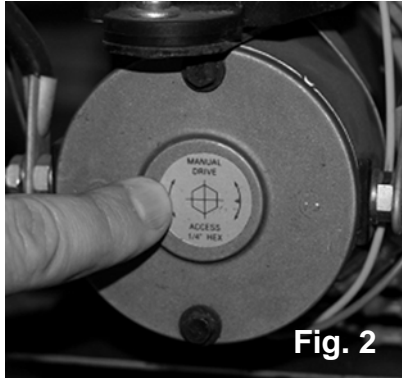


Fig.1

AUXILIARY OPERATION

The *Lippert Hydro-Sync Slideout 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 slideout room can be used. A standard handheld drill is all that is required. A standard 38" room will take approximately 45 seconds to retract. See the instructions below.



1. Remove protective label. (See Fig. 2).
2. Using a standard hex bit, insert into auxiliary drive device, i.e. cordless drill or screwdriver or ratchet wrench.



3. Insert hex bit into coupler found under protective label. (See Fig. 3)
4. Run drill forward or clockwise to extend slideout room and in reverse or counterclockwise to retract slideout room.

FLUID FILLING PROCEDURE

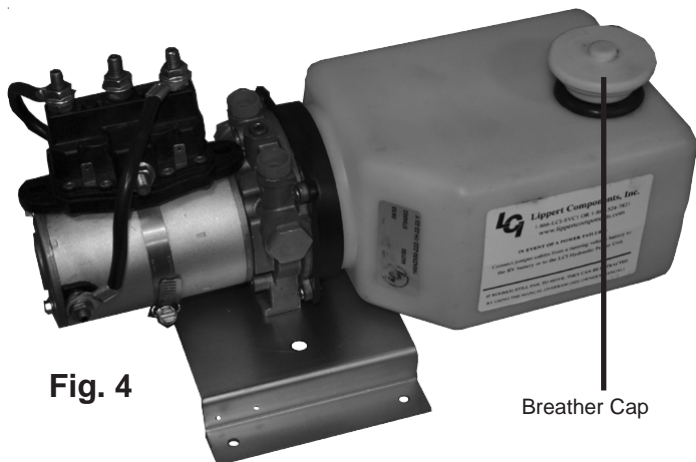


Fig. 4

Breather Cap

The *Lippert Hydraulic Slideout System* uses automatic transmission fluid (ATF). Any ATF can be used. A full synthetic or synthetic blend works best such as Dexron III or Mercon 5. For best operation, fill system within $\frac{1}{2}$ " of the top when all slideouts are completely retracted. The see through reservoir makes it easy to check oil level. It is recommended that the oil level be checked prior to operating the system. Make sure the breather cap is free of contamination before removing, replacing or installing.

FILLING DIRECTIONS

Remove Breather/Fill Cap

Pour ATF into Breather/Fill opening.

NOTE: Do not allow any contamination into reservoir during fill process.

NOTE: Standard reservoir holds approximately 2 quarts (1.89 liters) of ATF.

Fill to within $\frac{1}{2}$ " of top.

Replace Breather/Fill cap when finished.

NOTE: System is self-purging. By simply cycling the system 2-3 times, any air in the system will be forced back to the reservoir and out of the Breather/Fill cap.

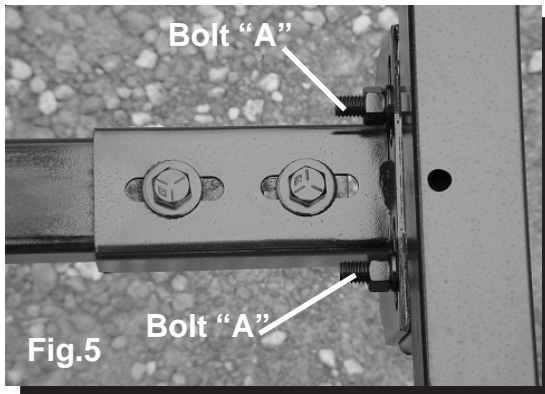
MECHANICAL ROOM ADJUSTMENT

Vertical & Horizontal Room Adjustment

NOTE: All slideout room adjustments must be performed by certified service technicians. Adjustments made by non-certified persons may void any and all warranty claims.

Horizontal adjustment

1. Loosen 2 carriage bolts "A" on each bracket located at the end of each guide tube.
2. Room is ready to be positioned horizontally by pushing on the outside, sidewall or by using a prying devise inserted into the opening between the room and coach.

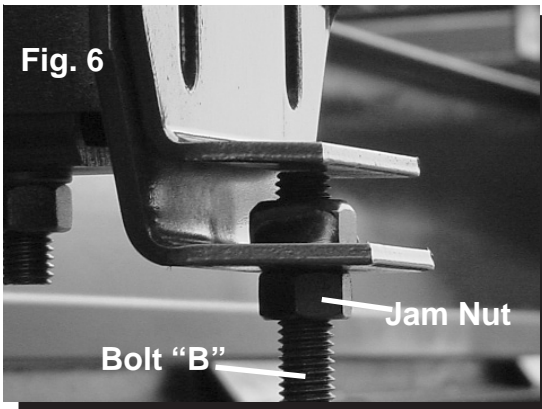


NOTE: Use caution when using prying device so seals do not become damaged.

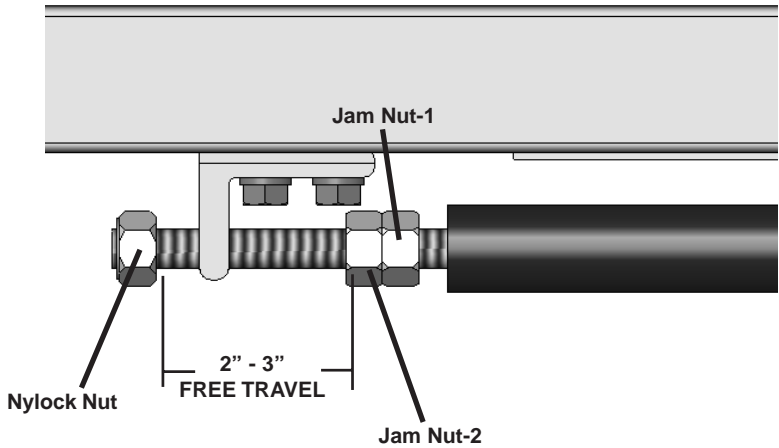
Vertical adjustment

1. Loosen 2 carriage bolts "A" on each bracket located at the end of each guide tube
2. Loosen jam nut
3. For vertical adjustment turn vertical adjustment bolt "B" up or down to locate room height.

Once room is located, tighten "A" and Jam Nut bolts.



MECHANICAL ROOM ADJUSTMENT-CONT.



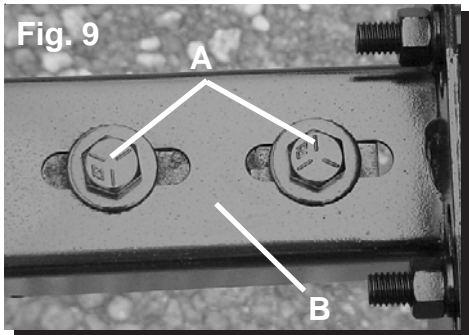
Adjusting room so it seals in the IN position

1. Locate cylinder coming through the frame;
2. On the end of the cylinder there is a threaded shaft mounted to the drive bracket with 3 nuts.
3. Loosen the Jam Nut-1 and set Jam Nut-2 to desired location.
4. Tighten down the Nylock Nut against bracket. Make sure Jam Nut-2 is adjusted for "FREE TRAVEL" (see above). Secure assembly by tightening Jam Nut-1 against Jam Nut-2. This will change the location of your seal going to the "in position".

Adjusting room so it seals in the OUT position

1. Locate actuator coming through the frame;
2. On the end of the cylinder there is a threaded shaft mounted to the bracket with 3 nuts.
3. Adjust Jam Nuts 1 & 2 one way or the other– this will change the location of your seal going to the "out position".
4. Make sure all nuts are tight.

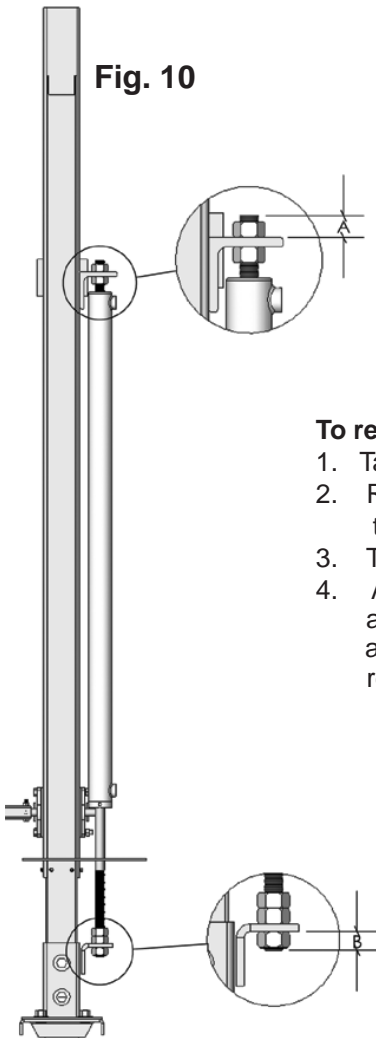
SYNCHRONIZING ROOM TRAVEL



The *Lippert Electric Slideout System* room travel (both sides of the room traveling the same distance) can be adjusted with specially designed synchronizing bracket mounted on the passive slide tube. The passive slide tube is the one that is not powered. The active slide tube is the one that has the cylinder attached. If one side of the room fails to seal adjust as follows:

1. Loosen bolts (Fig. 9A) on top of the passive slide tube (Fig. 9B)
2. Push or pull room (on the passive side) to align with the active side.

REMOVING AND REPLACING ACTUATOR



To replace actuator:

1. Take measurements A and B.
2. Remove both nylock nuts (2 total) from threaded shafts on actuator.
3. Take note of jam nut locations and remove.
4. After everything is disconnected, slide actuator out of frame. To replace with new actuator, follow previous directions in reverse.

TROUBLESHOOTING CHART

The following troubleshooting chart outlines some common problems, their causes and possible corrective actions. When reference is made to a "Power Unit," the term includes the motor and the actuator as a complete unit. All Power Units are shipped from the factory with a serial number and date code, which should be given to the service technician when asking for assistance.

ROOM DOESN'T MOVE WHEN SWITCH IS PRESSED

PROBABLE CAUSE	CORRECTIVE ACTION
Restrictions both inside and outside of unit	Check for and clear restriction
Low battery voltage, blown fuse, defective wiring	Check battery. Charge battery or add auxiliary power source. Check battery terminals, and all other wiring. Look for loose or corroded connections
Power Unit not functioning	See "Power Unit Troubleshooting" page 20 Hydraulic Slideout Manual online at www.lci1.com

POWER UNIT RUNS, ROOM DOES NOT MOVE

Restrictions both inside and outside of unit	Check for and clear restriction
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POWER UNIT RUNS, ROOM MOVES SLOWLY

Low battery, poor ground, extremely low outdoor temperature.	Charge battery, and check ground wire
Leaking cylinder	See "Checking for Bad Cylinder" page 12

ROOM DRIFTS IN BOTH IN & OUT POSITIONS

Check for leaks in the hydraulic system	Tighten fittings
Air in system	After checking all connections, cycle pump several times in and out

IN THE CLOSED POSITION, ROOM DRIFTS OUT

Leaking cylinder seal	See "Checking for Bad Cylinder" page 12
Fluid bypassing cylinder piston	See "Checking for Bad Cylinder" page 12
Hose from pump is leaking	Tighten fitting or replace hose
Air in system	After checking all connections, cycle pump several times in and out
Loose mounting bolts	Tighten mounting bolts

IN THE OPEN POSITION, ROOM DRIFTS IN

Hose from pump is leaking	Tighten fitting or replace hose
Leaking cylinder seal	See "Checking for Bad Cylinder" page 12
Fluid bypassing cylinder piston	See "Checking for Bad Cylinder" page 12

TROUBLESHOOTING – CHECKING FOR BAD CYLINDER

1. Retract (close) the slideout (room) completely.
2. Loosen hose from “E” (extend) port on the manifold of the Power Unit.

WARNING- *Do not attempt to run room out with the “E” port hose loose. The system will experience RAPID FLUID LOSS.*

3. Plug opening on manifold to prevent drawing air into the system.
4. Energize the Power Unit to retract (close) room.
5. Continue to run the room in and watch for fluid flow from hose/port “E”. Fluid flow greater than a few drops will indicate internal cylinder leaking (bypassing of piston seal). If there is no fluid flow, reconnect hose to “E” port and tighten.

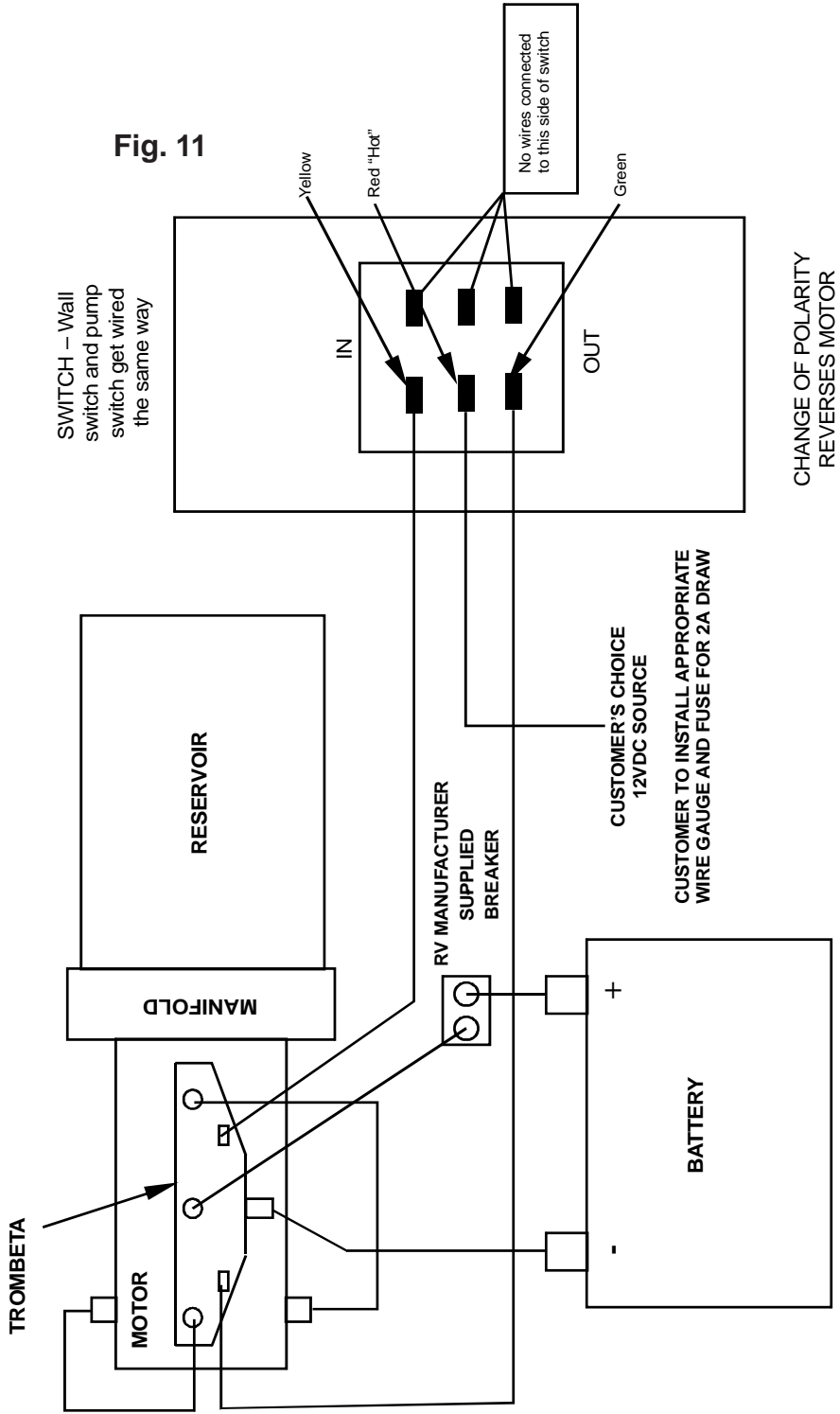
WARNING - *Be sure to reconnect and tighten hose at the “E” port before attempting to extend (open) the room or the system will experience RAPID FLUID LOSS.*

Contact qualified technician if there is excessive fluid flow. The cylinder should not be repaired in the field.

Refill the Power Unit Reservoir as recommended on Page 10 of this manual.

WIRING DIAGRAM

Fig. 11



LIMITED WARRANTY

THIS WARRANTY EXTENDS ONLY TO THE MERCHANT/ORIGINAL PURCHASER ("Purchaser") ACQUIRING THE PRODUCT, AS DEFINED HEREIN, DIRECTLY FROM A LIPPERT COMPONENTS FACILITY AND SHALL NOT BE CONSTRUED TO EXTEND TO ANY THIRD PARTY, INCLUDING BUT NOT LIMITED TO THE CONSUMER OR ULTIMATE PURCHASER OF THE END PRODUCT. IN PART, THE PURPOSE OF THIS PROVISION IS TO REQUIRE THAT ANY AND ALL WARRANTY CLAIMS BE MADE BY THE MERCHANT/ORIGINAL PURCHASER, AND NOT BY A CONSUMER. THIS WARRANTY SUPERCEDES ANY AND ALL PRIOR WARRANTIES.

LIPPERT COMPONENTS warrants the components of it's Recreational Vehicle Slide-Out System ("Product") against defects in materials and workmanship for the following time periods, beginning on the date of Retail Sale, so long as the Retail Sale occurs within six (6) months of the date Purchaser acquires the Product directly from a Lippert Components facility:

Three (3) Years – Any ball screw actuator, inner and out tube assembly, rack and gear assembly, electric motor and cross shaft.

Five (5) Years – Any fluid power components, limited to any hydraulic cylinder and hydraulic pump.

If a LIPPERT COMPONENTS Product is inspected by an authorized LIPPERT COMPONENTS representative and is determined to be defective in materials or workmanship within the aforementioned time period and pursuant to the requirements set forth herein, LIPPERT COMPONENTS will, in its sole and absolute discretion, do one of the following:

Repair or replace without charge FOB it's factory;

Send a service team to the then current location of the Product to repair or replace it on site; or allow credit for the Product.

All warranty claims MUST involve an inspection of the Product and be approved by an authorized LIPPERT COMPONENTS representative, and all repair procedures must be pre-approved by LIPPERT COMPONENTS before any repair work can begin. There are no exceptions to this procedure, so please contact your LIPPERT COMPONENTS division immediately before attempting any repairs or modifications on your LIPPERT COMPONENTS Product. No claim for Products alleged to be defective will be allowed until LCI has had a reasonable opportunity to investigate each claim.

This warranty does not cover customer instruction, installation or set up adjustments. Unless otherwise indicated by tangible evidence, LIPPERT COMPONENTS relies upon the engineering professionals of those that purchase its Products to design and specify a Product of sufficient size, dimension, strength and durability to support the structure the Purchaser intends to place upon the Product, and to design and specify a Product that is sufficient and adequate to function in the role the Purchaser intends to use and/or produced by its Purchasers and builds Products pursuant to those design specifications.

This warranty does not cover abuse, misuse or neglect, but is not limited to, improper usage, overloading, accident related damage, improper loading or incorrect weight bias loading, damage resulting from improper operation or maintenance, connection to improper towing unit or attempted repair by anyone other than an authorized representative of LIPPERT COMPONENTS. This warranty does not cover cosmetic damage, damage due to acts of God, commercial use or modification of the Product, or Products sold AS IS and/or WITH ALL FAULTS. This warranty is valid only in the United States and Canada.

EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAW, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. REPAIR, REPLACEMENT OR CREDIT AS PROVIDED UNDER THIS WARRANTY IS THE EXCLUSIVE REMEDY OF THE PURCHASER. IN NO EVENT WILL LIPPERT COMPONENTS BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

Claims – All claims are barred unless reported in writing by Purchaser to LIPPERT COMPONENTS, with full particulars, promptly after the damage was or reasonably should have been discovered and full facilities are offered LIPPERT COMPONENTS for inspection and investigation. LIPPERT COMPONENTS will not consider any claims for material that is not in the original form.

All written notices required by this warranty shall be sent to:

Lippert Components, Inc.
Attn: Risk Management Department
2375 Tamiami Trail N., Suite 1101
Naples, FL 34103

This warranty is invalid if factory applied identification criteria have been altered or removed from the Product.

Work performed by others must have the prior authorization of LIPPERT COMPONENTS to be honored.

Third-Party Events – In the event of any accident, injury to person, damage to property, loss or other occurrence involving a LIPPERT COMPONENTS Product, Purchaser shall notify LIPPERT COMPONENTS of such event within thirty (30) days of the event or within ten (10) days of the notification to Purchaser, whichever is earlier. Notwithstanding the foregoing, Purchaser shall notify LIPPERT COMPONENTS **immediately** upon learning that a survey, test or inspection is to be made with respect to the LIPPERT COMPONENTS Product and provide LIPPERT COMPONENTS with the opportunity to participate in any such survey, test or inspection, or to permit LIPPERT COMPONENTS to conduct its own survey, test or inspection. Failure to comply with each of the foregoing shall bar any claim by the Purchaser against LIPPERT COMPONENTS concerning any such event and shall require Purchaser to defend, indemnify and hold LIPPERT COMPONENTS harmless from all claims asserted against LIPPERT COMPONENTS concerning any liability of LIPPERT COMPONENTS arising out of such event.

Severability – Any legally or otherwise invalid provision hereof shall be considered severable.

Any conditions or exceptions which may be stated in any communication or document received by LIPPERT COMPONENTS from any entity or individual, including but not limited to the Purchaser, shall be of no effect unless specifically agreed to in writing by LIPPERT COMPONENTS.

The current warranties and terms outlined on LIPPERT COMPONENTS' website (www.lippertcomponents.com) on the date of the purchase shall take precedence over any other warranties whether verbal or written. LIPPERT COMPONENTS reserves the right to alter its warranties from time to time, as the laws and the company's business needs and industry change.

TO THE GREATEST EXTENT PERMITTED BY LAW, ANY CONTROVERSY OR CLAIM ARISING OUT OF OR IN RELATIONS TO THIS WARRANTY SHALL BE DETERMINED BY BINDING ARBITRATION IN NAPLES, FLORIDA (COLLIER COUNTY) IN ACCORDANCE WITH THE COMMERCIAL ARBITRATION RULES OF THE AMERICAN ARBITRATION ASSOCIATION. PURCHASE OF THE PRODUCT CONSTITUTES PURCHASER'S AGREEMENT TO THIS PROVISION.

Lippert Components, Inc. Warranty Registration Card

Attention Purchaser: Please fill out form as completely as possible, detach at the dashed line above and mail this card to Lippert Components, Inc. at the following address within 30 days of the retail purchase date of your unit to activate the warranty of this product.

Lippert Components, Inc. - Plant #39
Attn: Service and Warranty
2703 College Ave.
Goshen, IN 46528

Call us toll free at: (866) 524-7821

Find us on the web: <http://www.lci1.com/warranty.html>

RV Description	(Manufacturer)	(Model)	(Year)				
(VIN Number)		(Number of Slideouts)					
Date of Unit Manufacture	/	/	Date of Unit Purchase	/	/		
Check ALL that apply:							
<input type="checkbox"/>	Lippert Electric Slideouts	<input type="checkbox"/>	Lippert Hydraulic Slideouts	<input type="checkbox"/>	Lippert Leveling	<input type="checkbox"/>	Other Lippert Products
Owner Name							
Address							
(Apt No. or Lot No.)							
(City)							
(State)							
(ZIP Code)							
Phone Numbers: Cell() - - Home() - -							