



LIPPERT COMPONENTS

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

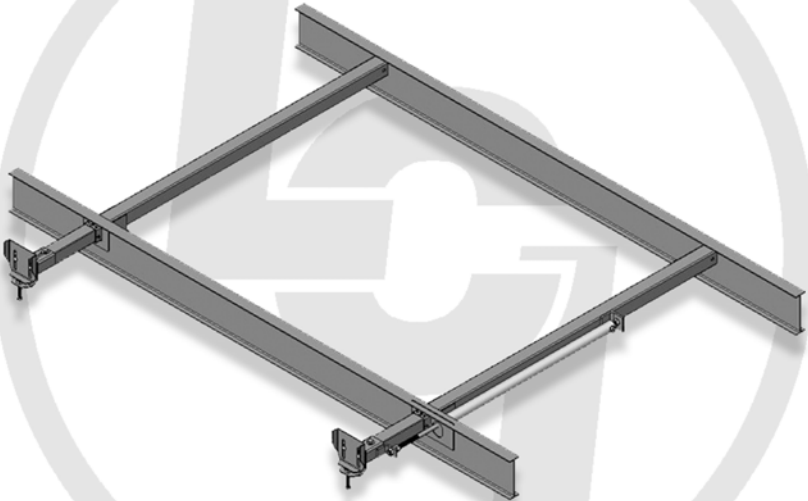




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SYSTEM

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).

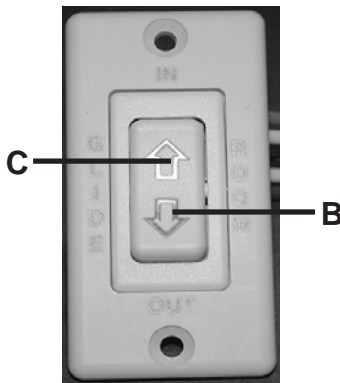
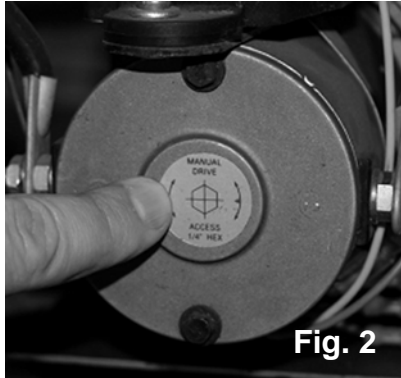


Fig.1

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

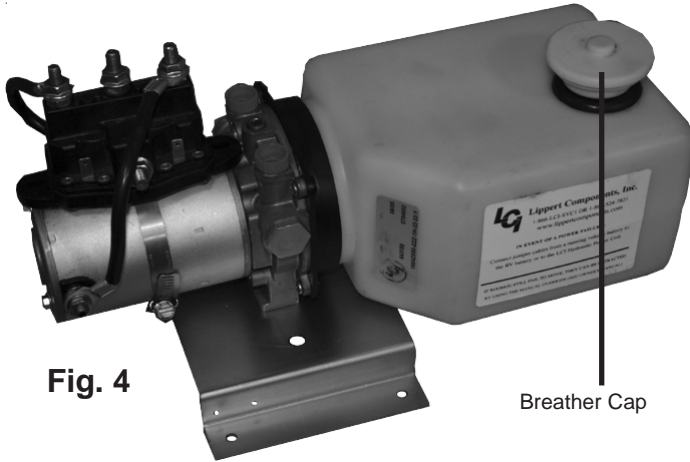


Fig. 4

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.

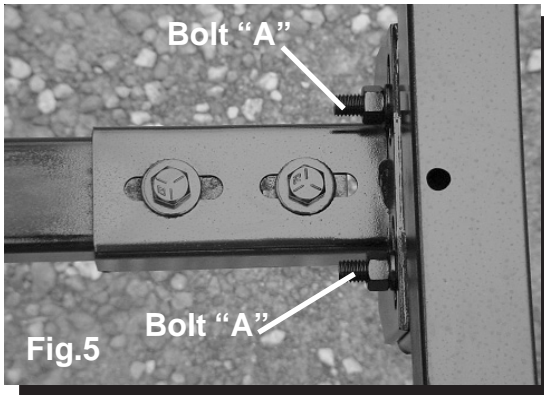
MECHANICAL ROOM ADJUSTMENT

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 device inserted into the opening between the room and coach.

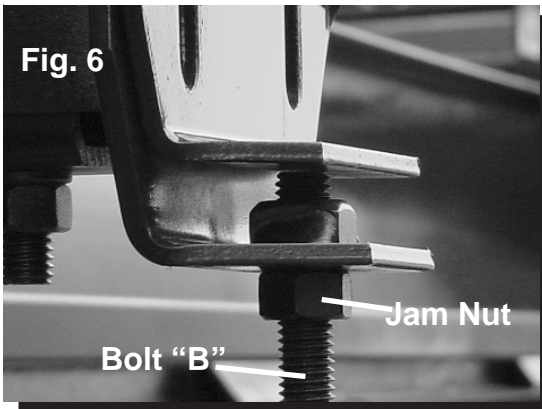


NOTE: Use caution when using prying device so seals do not become damaged.

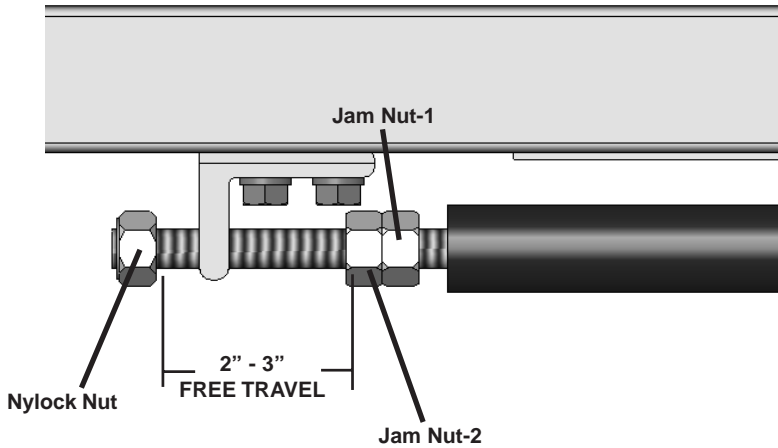
Vertical adjustment

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

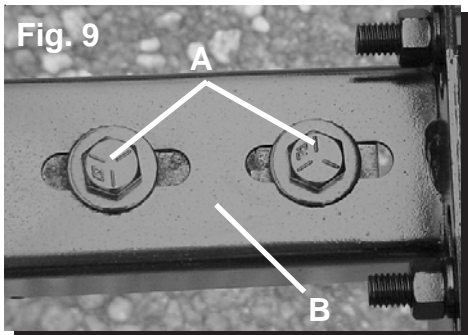
1. Locate cylinder coming through the frame;
2. On the end of the cylinder there is a threaded shaft mounted to the drive bracket with 3 nuts.
3. Loosen the Jam Nut-1 and set Jam Nut-2 to desired location.
4. Tighten down the Nylock Nut against bracket. Make sure Jam Nut-2 is adjusted for "FREE TRAVEL" (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

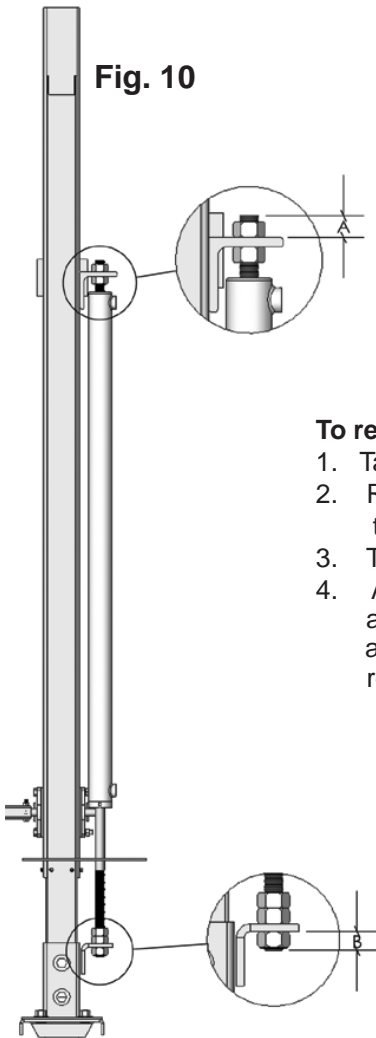


Fig. 10

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.

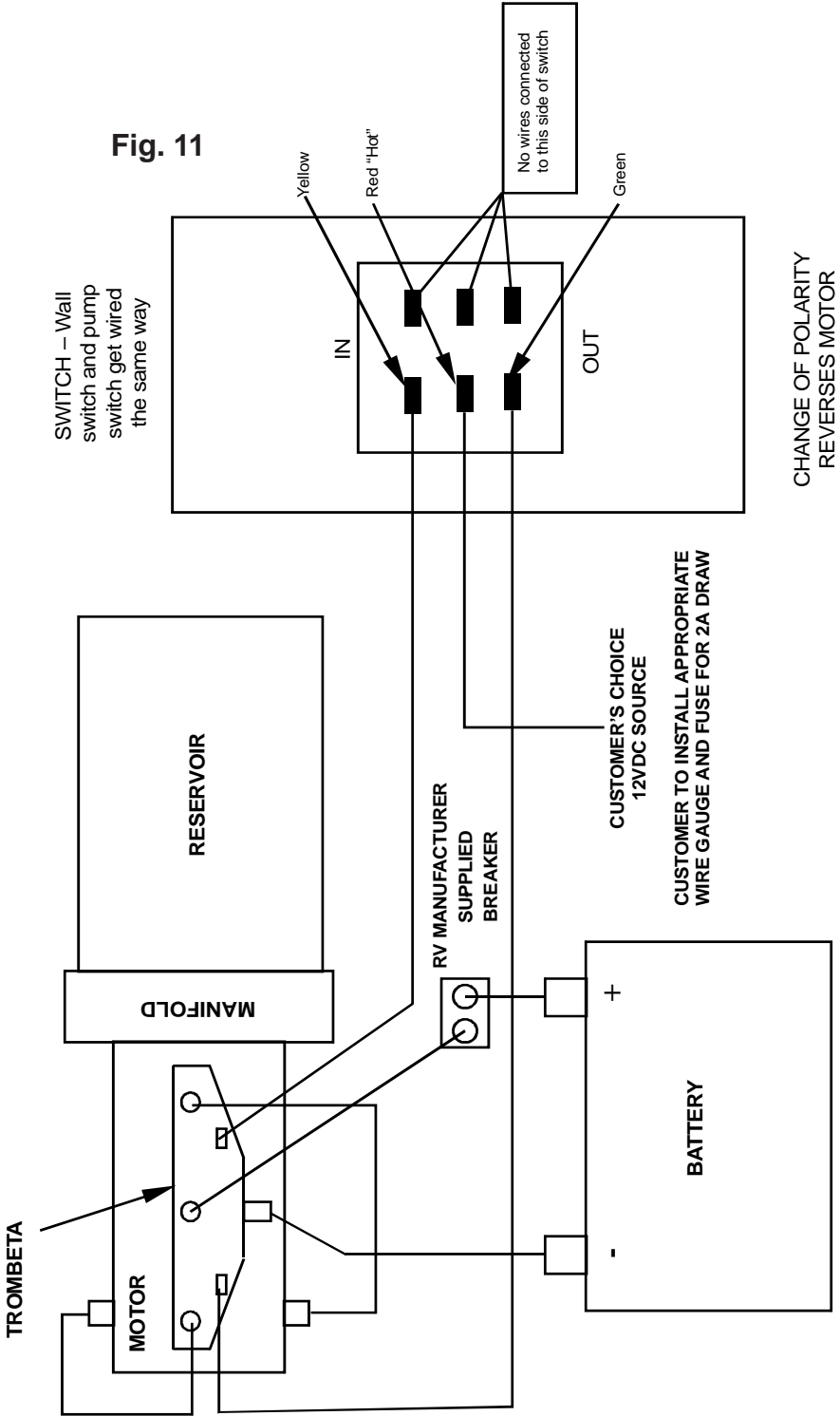
WARNING - *Be sure to reconnect and tighten hose at the “E” port before attempting to extend (open) the room or the system will experience RAPID FLUID LOSS.*

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



SWITCH – Wall switch and pump switch get wired the same way

Yellow
Red "Hot"
Green
No wires connected to this side of switch

IN
OUT

CUSTOMER'S CHOICE 12VDC SOURCE
CUSTOMER TO INSTALL APPROPRIATE WIRE GAUGE AND FUSE FOR 2A DRAW

CHANGE OF POLARITY REVERSES MOTOR

TROMBETA

MOTOR

MANIFOLD

RESERVOIR

RV MANUFACTURER SUPPLIED BREAKER

+

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BATTERY