



LIPPERT COMPONENTS, INC.

**ELECTRONIC/HYDRAULIC
LEVELING AND SLIDEOUT SYSTEM
OPERATION AND SERVICE MANUAL**

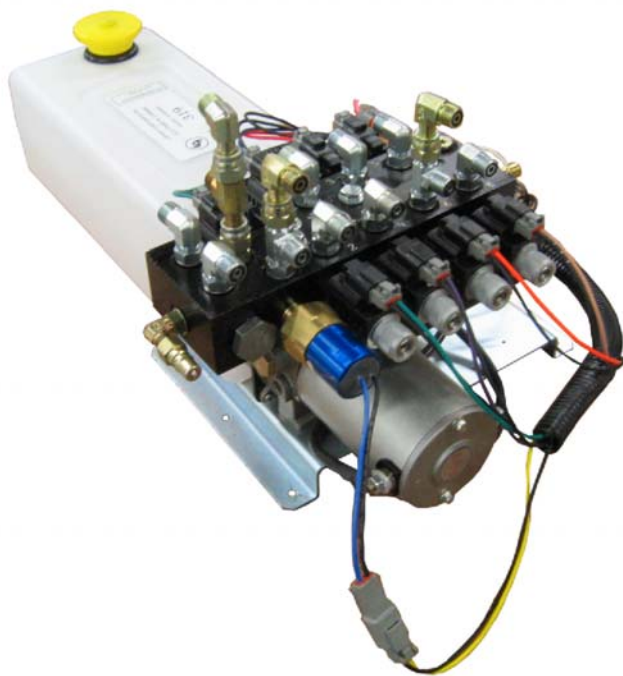


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SYSTEM

WARNING

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

THE USE OF THE *LIPPERT ELECTRONIC LEVELING AND SLIDEOUT SYSTEM* TO SUPPORT THE COACH FOR ANY REASON OTHER THAN WHICH IT IS INTENDED IS PROHIBITED BY LIPPERT'S LIMITED WARRANTY. *LIPPERT ELECTRONIC LEVELING AND SLIDEOUT SYSTEM* IS DESIGNED AS FOR LEVELING THE UNIT AND EXTENDING/RETRACTING SLIDEOUTS AND SHOULD NOT BE USED TO PROVIDE SERVICE FOR ANY REASON UNDER THE COACH SUCH AS CHANGING TIRES OR SERVICING THE SYSTEM.

LIPPERT COMPONENTS, INC. RECOMMENDS THAT A TRAINED PROFESSIONAL BE EMPLOYED TO CHANGE THE TIRE ON THE COACH. ANY ATTEMPTS TO CHANGE TIRES OR PERFORM OTHER SERVICE WHILE COACH IS SUPPORTED BY THE *LIPPERT ELECTRONIC LEVELING AND SLIDEOUT SYSTEM* COULD RESULT IN DAMAGE TO THE MOTOR HOME AND/OR CAUSE SERIOUS INJURY OR DEATH.

**WARNING! – BE SURE TO PARK THE COACH ON SOLID, LEVEL
GROUND.**

**WARNING! – CLEAR ALL JACK LANDING LOCATIONS OF DEBRIS
AND OBSTRUCTIONS. LOCATIONS SHOULD ALSO BE
FREE OF DEPRESSIONS.**

**WARNING! – WHEN PARKING THE COACH ON EXTREMELY SOFT
SURFACES, UTILIZE LOAD DISTRIBUTION PADS UNDER
EACH JACK.**

**WARNING! - PEOPLE AND PETS SHOULD BE CLEAR OF COACH
WHILE OPERATING LEVELING SYSTEM.**

**WARNING! – BE SURE TO KEEP HANDS AND OTHER BODY PARTS
CLEAR OF FLUID LEAKS. OIL LEAKS IN THE LIPPERT
LEVELING SYSTEM MAY BE UNDER HIGH PRESSURE
AND CAN CAUSE SERIOUS SKIN PENETRATING
INJURIES.**

**WARNING! - NEVER LIFT THE COACH COMPLETELY OFF THE
GROUND. LIFTING THE COACH SO THE WHEELS ARE
NOT TOUCHING GROUND WILL CREATE AN UNSTABLE
AND UNSAFE CONDITION AND MAY RESULT IN SERIOUS
PERSONAL INJURY OR DEATH.**

PRIOR TO OPERATION

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

1. The coach is parked on a reasonably level surface.
2. The coach "PARKING BRAKE" is engaged.
3. The coach transmission should be in the neutral or park position
4. The ignition is in the run position, or engine is running.
5. Be sure all person, pets and property are clear of the coach while Lippert Leveling System is in operation.

SYSTEM DESCRIPTION

Please read and study the operating manual before you operate the system.

The *Lippert Electronic Leveling and Slideout System* is an electric/hydraulic system. A 12V DC electric motor drives a hydraulic pump that moves fluid through a system of hoses, fittings and jacks to level and stabilize the coach.

The *Lippert Electronic Leveling and Slideout System* is totally integrated into the chassis of the coach at the manufacturer.

There are no serviceable parts within the electric motor. If the motor fails, pump must be replaced.

Disassembly of the Pump Assembly voids the warranty.

Mechanical portions of the *Lippert Electronic Leveling and Slideout System* are replaceable. Contact Lippert Components, Inc. to obtain replacement parts.

**FOR REPLACEMENT PARTS, CALL LIPPERT AT:
(866) 524-7821.**

COMPONENT DESCRIPTION The *Lippert Electronic Leveling and Slideout System* consists of the following major components:

Lippert jacks are rated at a lifting capacity appropriate for your coach. Each jack has a 9" diameter (63.5 square inch) shoe on a ball swivel for maximum surface contact on all surfaces. (12" dia. - 113 sq. in. shoe also available).

Each jack is powered from a central 12VDC motor/pump assembly, which also includes the hydraulic oil reservoir tank, control valve manifold, and solenoid valves.

The *Lippert Electronic Leveling and Slideout System* is controlled electronically from the driver's seat of the coach. The control panel is mounted in the dash. The system can be operated in a manual mode or a fully automatic mode.

The slideouts on this sytem are actuated by hydraulic cylinders integrated into the box of the slideout frames. Some rooms will have one cylinder per room, others will have two. Consult the manufacturer of the coach or the pump schmeatic provided with this manual to find out the cylinder configuration on your unit.

FLUID RECOMMENDATION

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

In colder temperatures (less than 10° F) the jacks may extend and retract slowly due to the fluid's molecular nature. For cold weather operation, fluid specially formulated for low temperatures may be desirable.

Please consult factory before using any other fluids.

PREVENTATIVE MAINTENANCE PROCEDURES

1. Change fluid in **RESERVOIR ONLY** every 36 months.
 - a) Check fluid only when jacks and slideouts are fully retracted.
 - b) Always fill the reservoir with the jacks and slideouts in the fully **retracted** position. Filling reservoir when jacks are extended will cause reservoir to overflow into its compartment when jacks and slideouts are retracted.
 - c) When checking fluid level, fluid should be within 1/2" of fill spout lip.
2. Check the fluid level every month.
3. Inspect and clean all Pump Unit electrical connections every 12 months. If corrosion is evident, spray unit with WD-40 or equivalent.
4. Remove dirt and road debris from jacks and slideout arms as needed.

WARNING:

Your coach should be supported at both front and rear axles with jack stands before working underneath.

Failure to do so may result in personal injury or death.

5. If jacks are down and slideouts extended for long periods, it is recommended to spray exposed leveling jack and slideout cylinder rods with a silicone lubricant every seven days for protection. If your coach is located in a salty environment, it is recommended to spray the rods every 2 to 3 days.

**IF YOU HAVE ANY PROBLEMS OR QUESTIONS CONSULT YOUR LOCAL
AUTHORIZED DEALER OR CALL LIPPERT AT:
(866) 524-7821.**

LCI HYDRAULIC JACK

Fig.1

CAPACITY - 7,000 lb.
STROKE - 13.75 in.
H - 18 1/4 in.
D - 2 3/8 in.
A - 2 1/2 in.
9" SHOE-STANDARD
12" SHOE-OPTIONAL

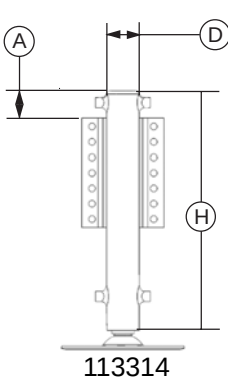
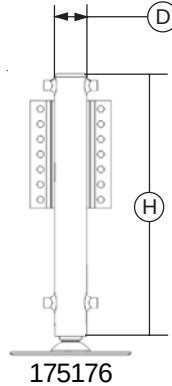


Fig. 2

CAPACITY - 12,000 lb.
STROKE - 15 in.
H - 19 1/2 in.
D - 2 3/8 in.
9" SHOE-STANDARD
12" SHOE-OPTIONAL



FOUND ON FR GT UNITS
357QS AND 391
ALL 4 JACKS ARE 12K.

LCI HYDRAULIC PUMP UNIT COMPONENTS



Isolator Valve



Hydraulic Switching Valve



Pressure Switch



Flow Divider



Fittings



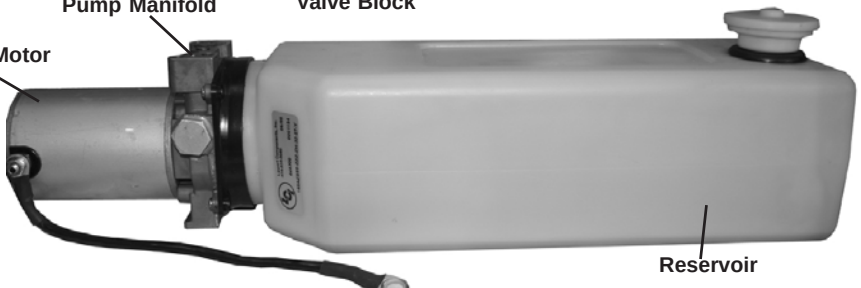
Trombetta



Pump Manifold

Valve Block

12V DC Motor



Reservoir

LCI HYDRAULIC SLIDEOUTS

117691 - Kitchen Slideout
On Model - GT 349



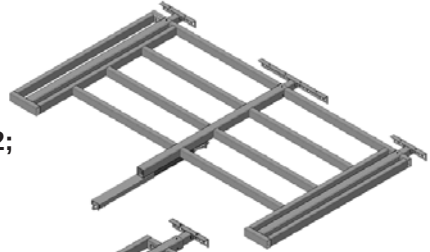
118069 - Kitchen Slideout
On Model - GT 340



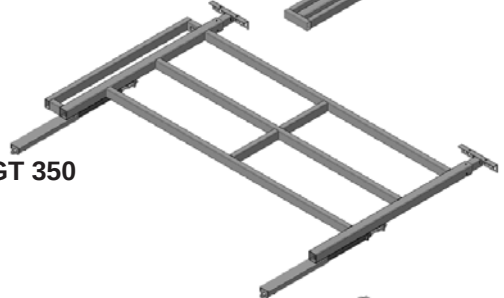
114797 - Kitchen Slideout
On Model - GT 375



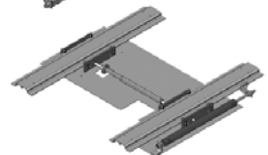
112809 - Main Room Slideout
On Models - GT 323; GT 326; GT 342;
GT 359; GT 349



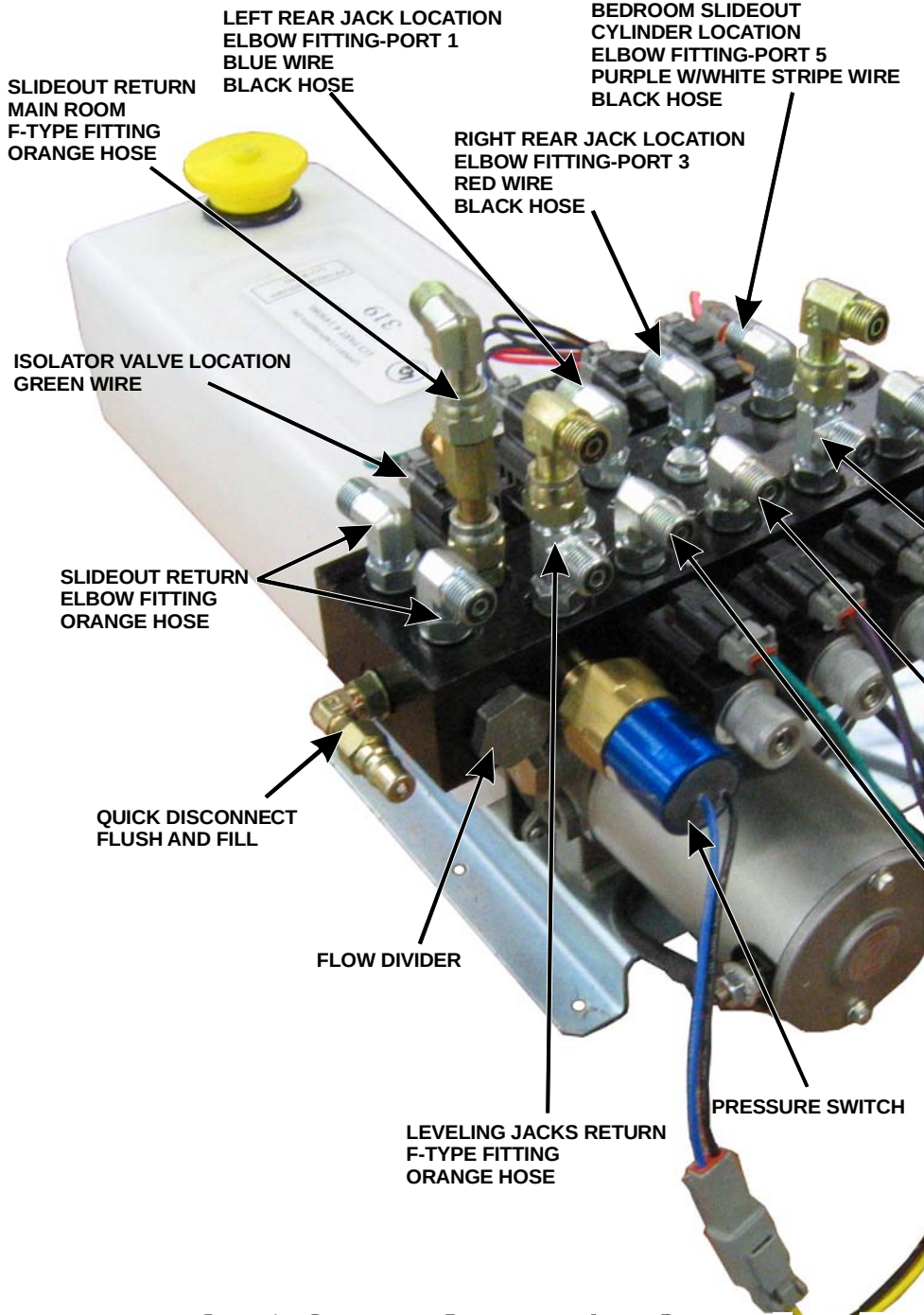
118126 - Main Room Slideout
On Models - GT 388; GT 340; GT 350



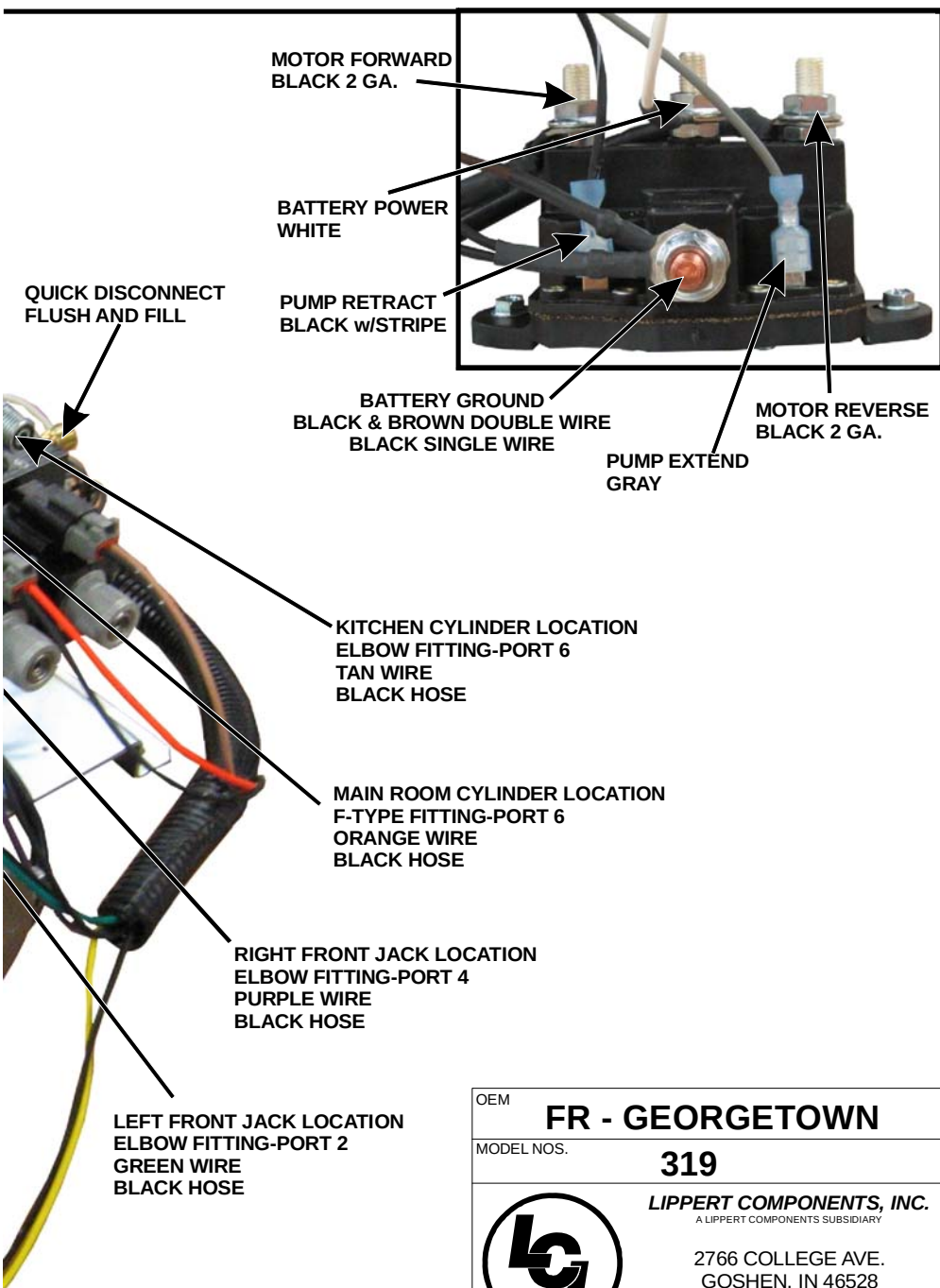
124244 - Bedroom Slideout
On Models - GT 323; GT 326; GT 342;
GT 359; GT 370; GT 375; GT 340; GT 349



124244 - Bedroom Slideout
On Model - GT 350



LEVELING +3 SLIDEOUT W/FLOW DIVIDER (L+3 W/FD)



LEFT FRONT JACK LOCATION
ELBOW FITTING-PORT 2
GREEN WIRE
BLACK HOSE

RIGHT FRONT JACK LOCATION
ELBOW FITTING-PORT 4
PURPLE WIRE
BLACK HOSE

MAIN ROOM CYLINDER LOCATION
F-TYPE FITTING-PORT 6
ORANGE WIRE
BLACK HOSE

KITCHEN CYLINDER LOCATION
ELBOW FITTING-PORT 6
TAN WIRE
BLACK HOSE

MOTOR FORWARD
BLACK 2 GA.

BATTERY POWER
WHITE

PUMP RETRACT
BLACK w/STRIPE

BATTERY GROUND
BLACK & BROWN DOUBLE WIRE
BLACK SINGLE WIRE

PUMP EXTEND
GRAY

MOTOR REVERSE
BLACK 2 GA.

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OEM

FR - GEORGETOWN

MODEL NOS.

319

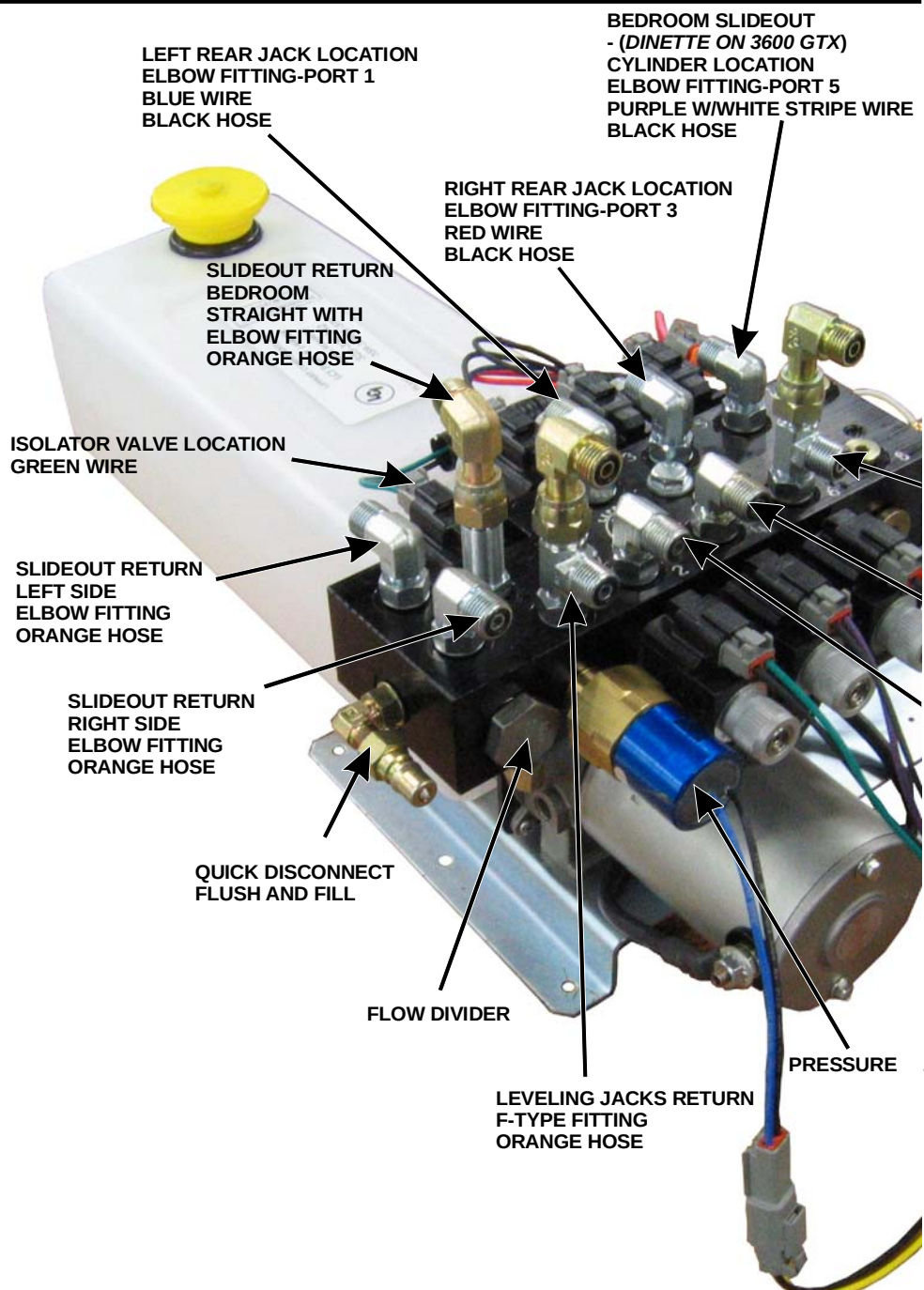


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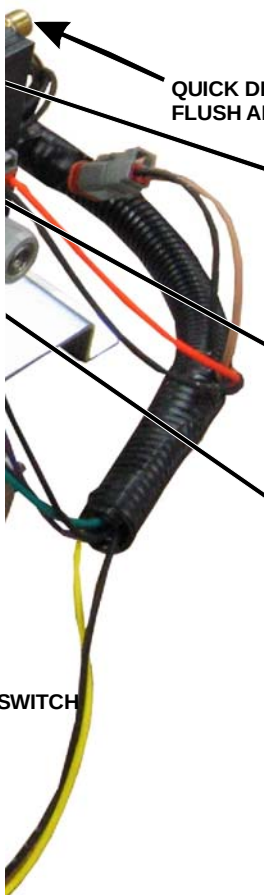
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(574) 534-7618 FAX

DWG. NO.

149086



LEVELING +2 SLIDEOUTS WITH FLOW DIVIDER (L+2 W/FD)



MOTOR FORWARD
BLACK 2 GA.

BATTERY POWER
WHITE

PUMP RETRACT
BLACK w/STRIPE

BATTERY GROUND
BLACK & BROWN DOUBLE WIRE
BLACK SINGLE WIRE

PUMP EXTEND
GRAY

MOTOR REVERSE
BLACK 2 GA.

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OEM MODEL NOS.

323-326-342-359
359RE-370-3600GTX



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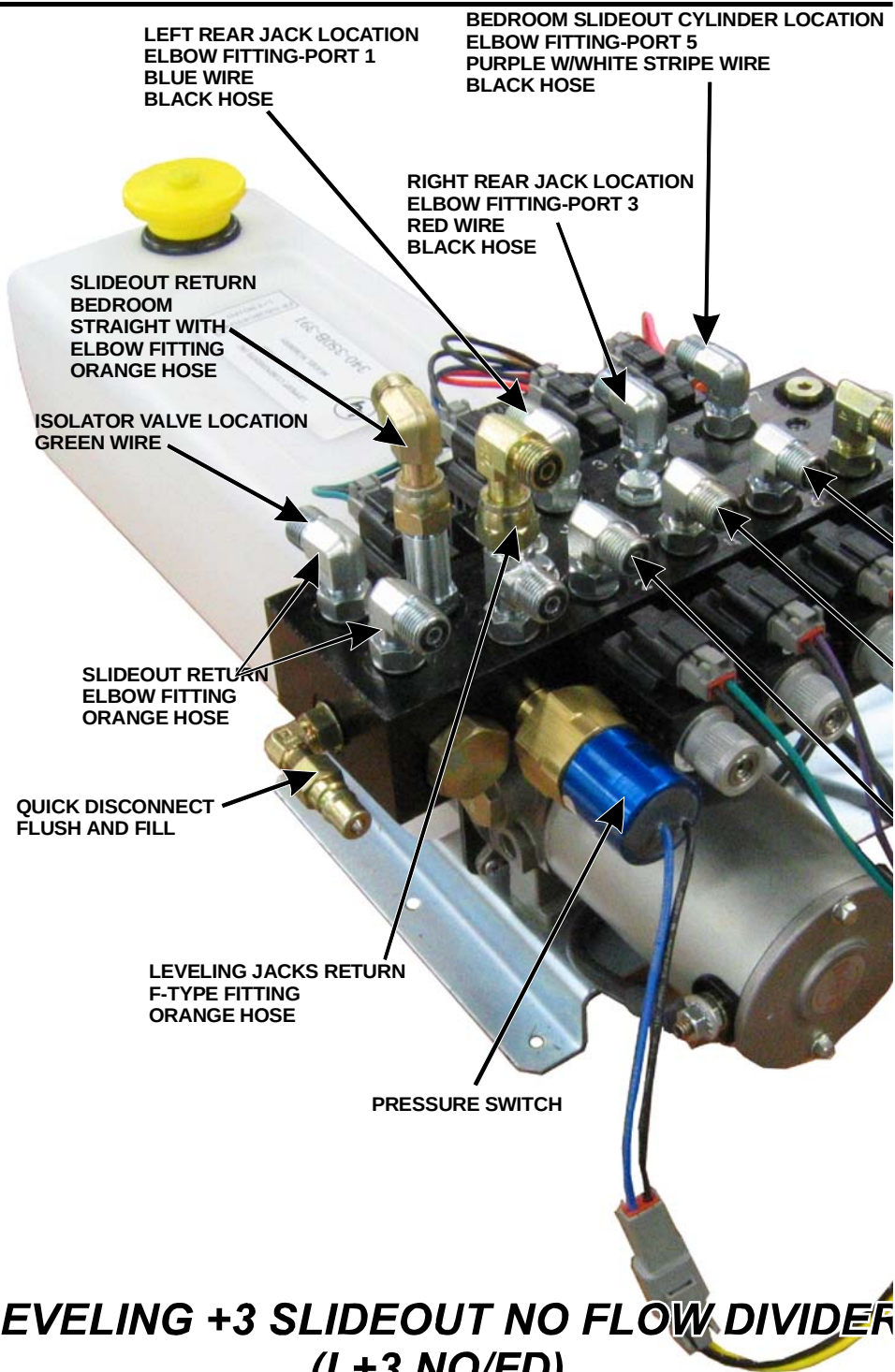
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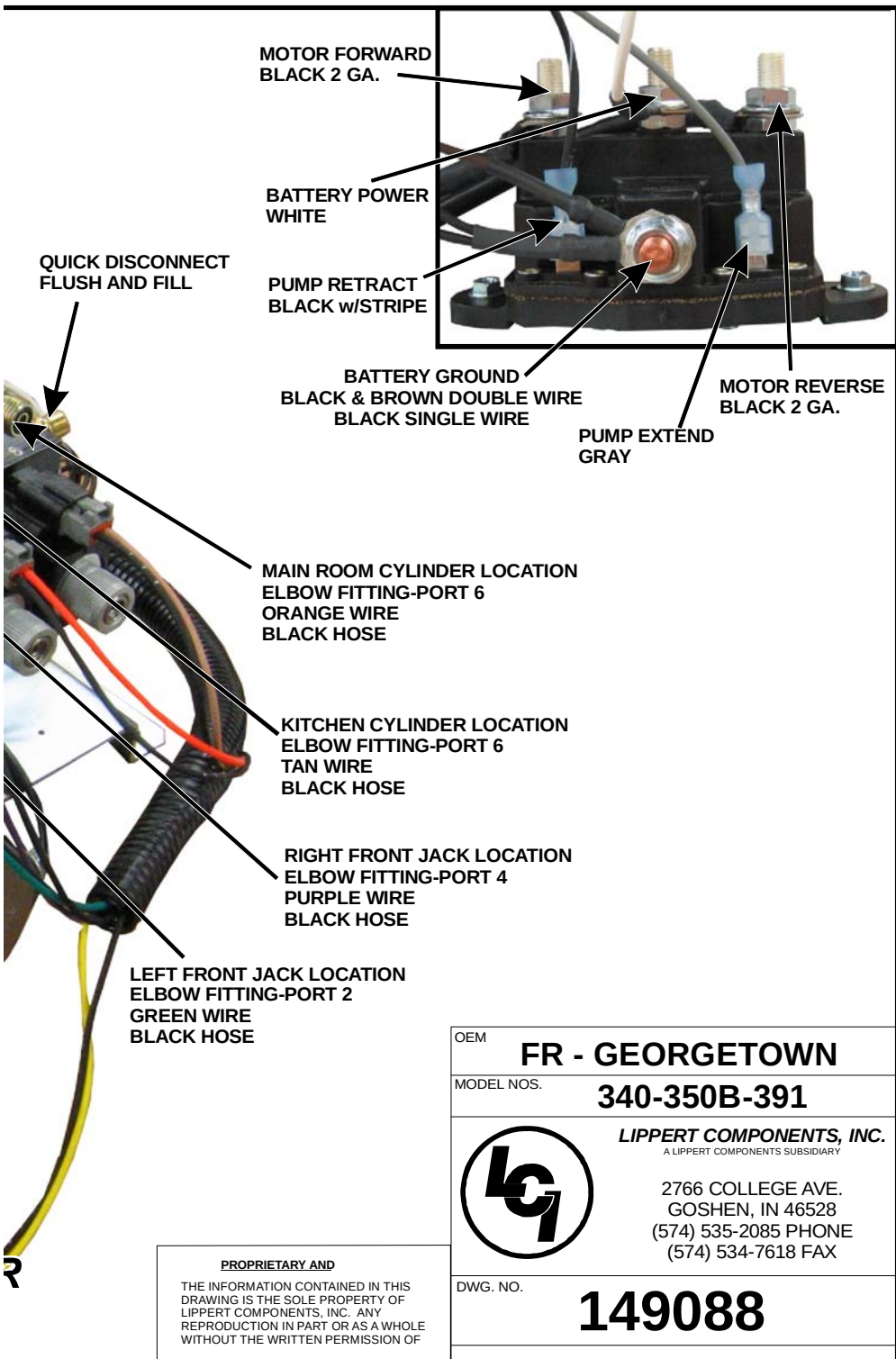
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LEVELING +3 SLIDEOUT NO FLOW DIVIDER (L+3 NO/FD)



OEM

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MODEL NOS.

340-350B-391



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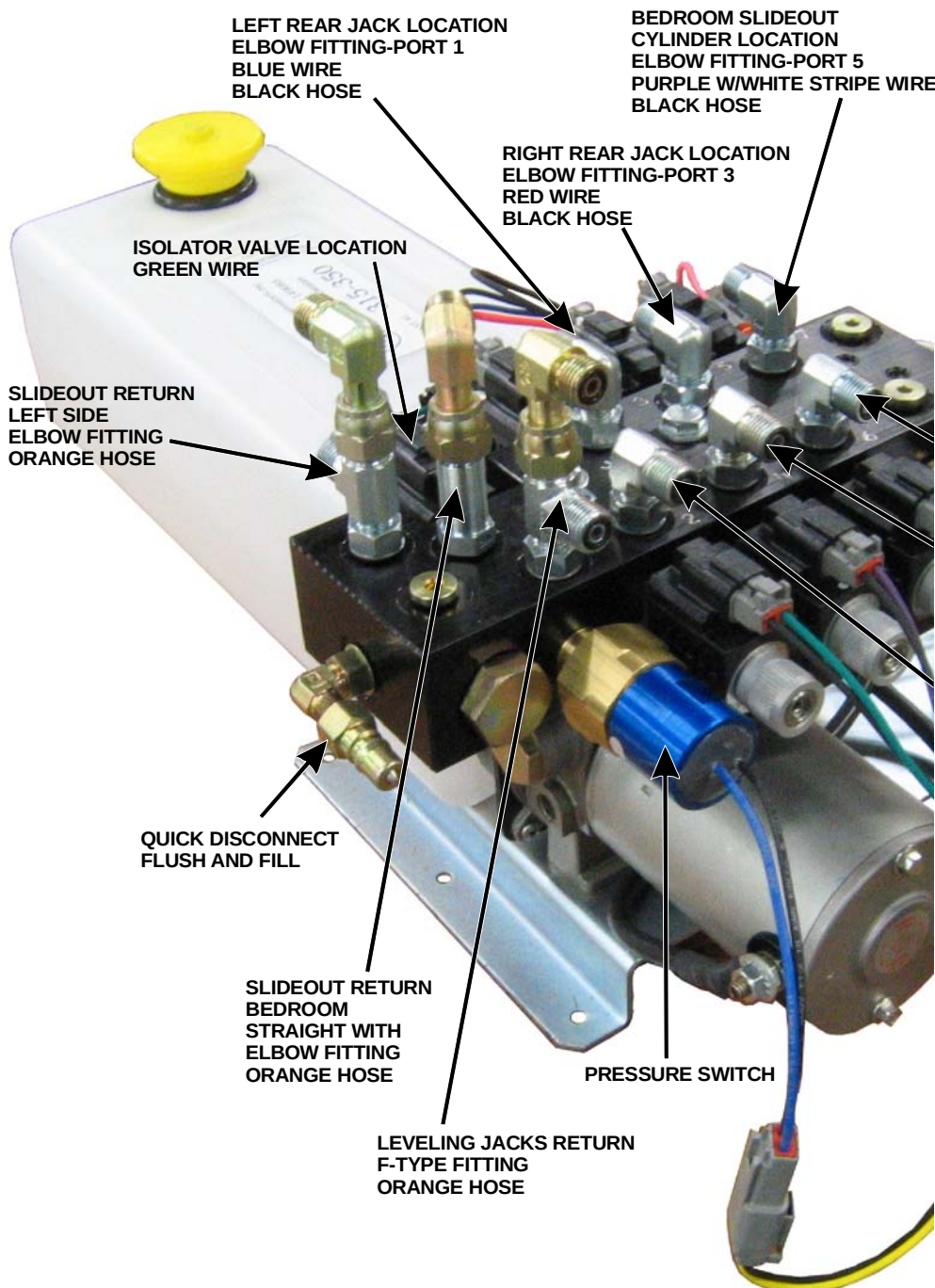
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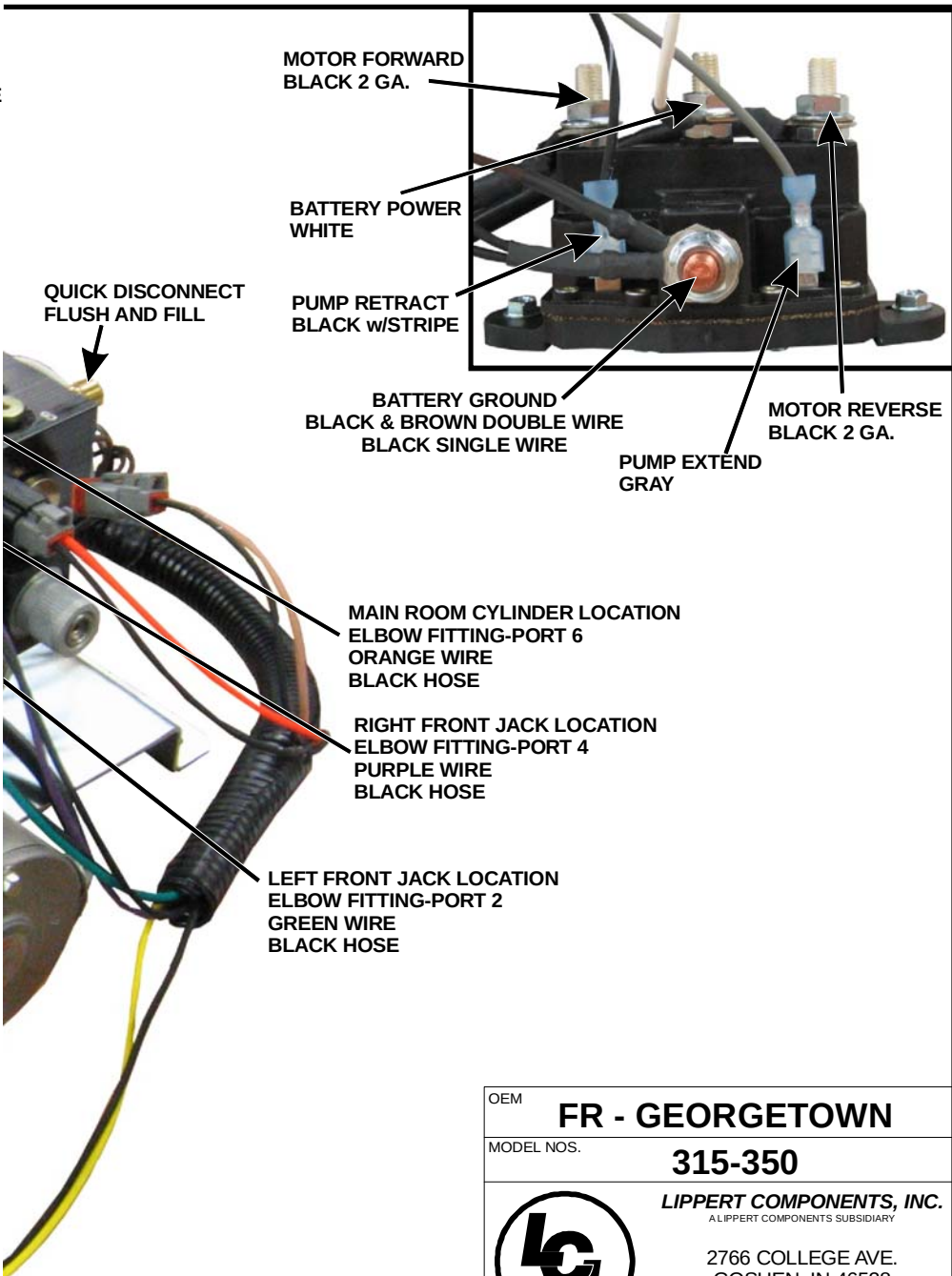
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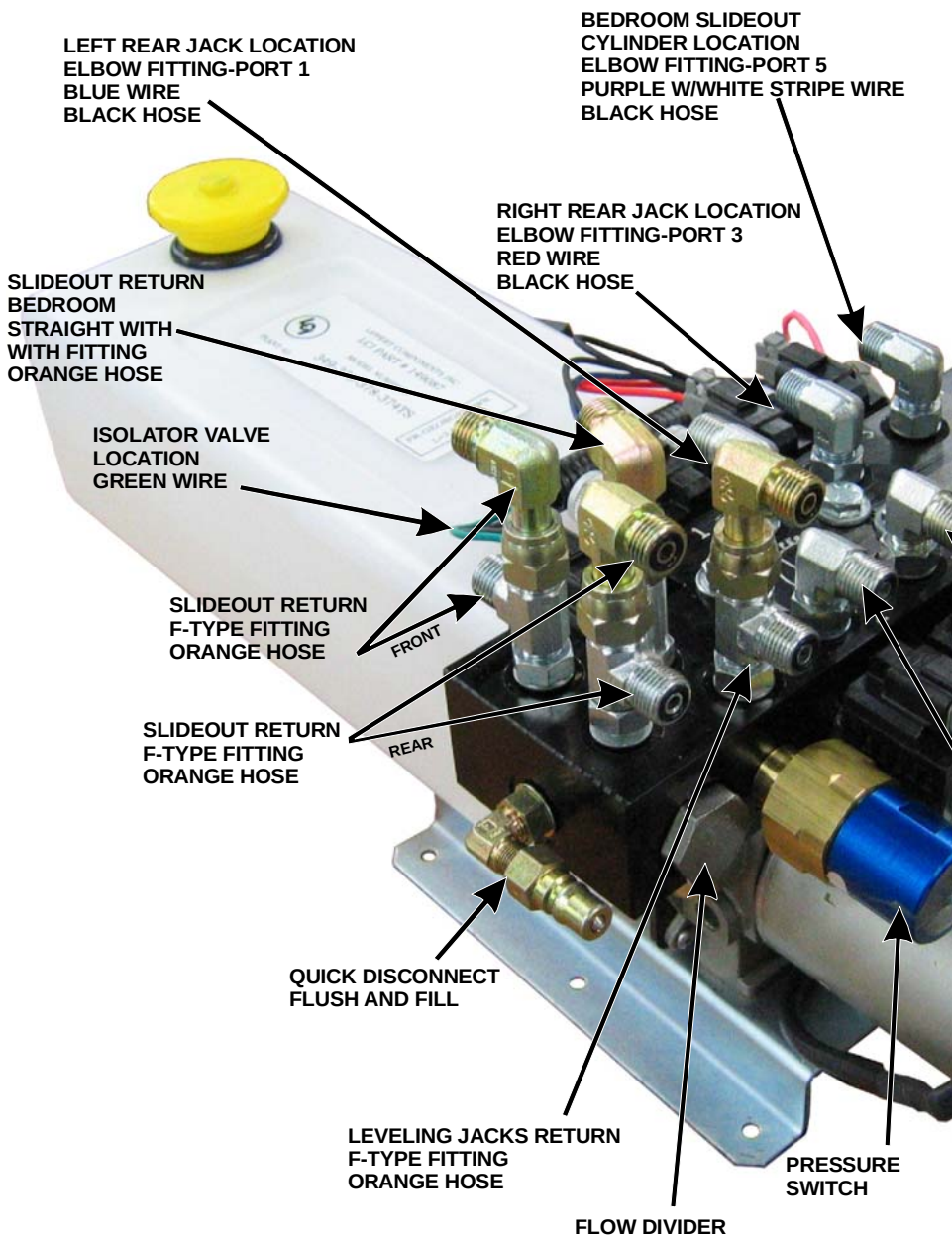
LEVELING +2 SLIDEOUTS NO FLOW DIVIDER (L+2 NO/FD)



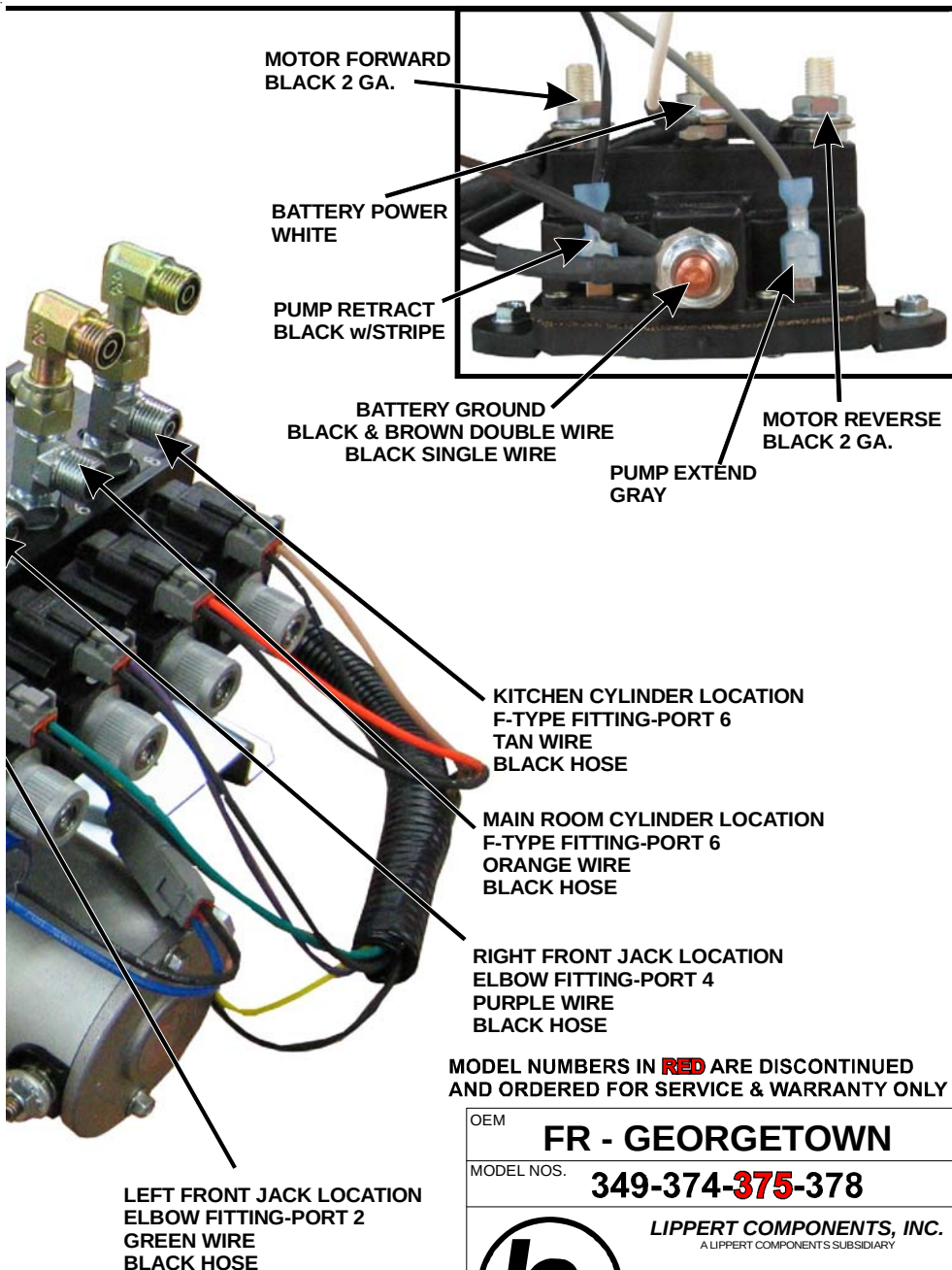
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LEVELING +3 SLIDEOUTS WITH FLOW DIVIDER (L+3 W/FD)



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MODEL NOS.

349-374-375-378



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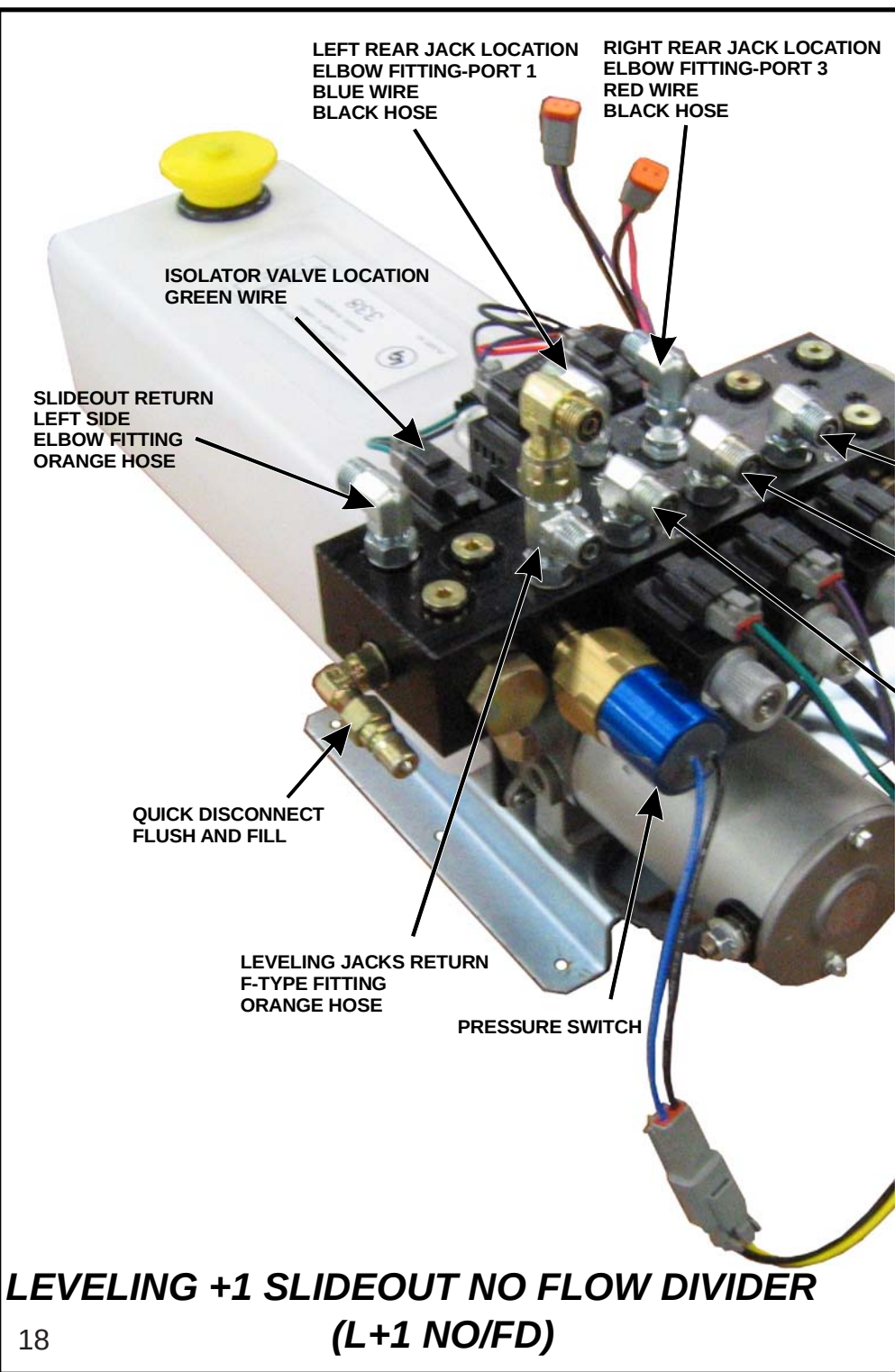
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**LEVELING +1 SLIDEOUT NO FLOW DIVIDER
(L+1 NO/FD)**

**MOTOR FORWARD
BLACK 2 GA.**

**BATTERY POWER
WHITE**

**PUMP RETRACT
BLACK w/STRIPE**

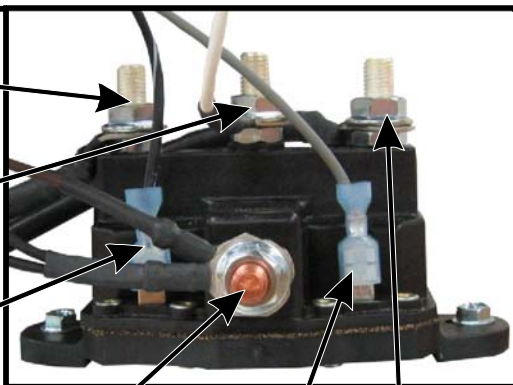
**BATTERY GROUND
BLACK & BROWN DOUBLE WIRE
BLACK SINGLE WIRE**

**QUICK DISCONNECT
FLUSH AND FILL**

**MAIN ROOM CYLINDER LOCATION
ELBOW FITTING-PORT 6
ORANGE WIRE
BLACK HOSE**

**RIGHT FRONT JACK LOCATION
ELBOW FITTING-PORT 4
PURPLE WIRE
BLACK HOSE**

**LEFT FRONT JACK LOCATION
ELBOW FITTING-PORT 2
GREEN WIRE
BLACK HOSE**



**MOTOR REVERSE
BLACK 2 GA.**

**PUMP EXTEND
GRAY**

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MODEL NOS.

338



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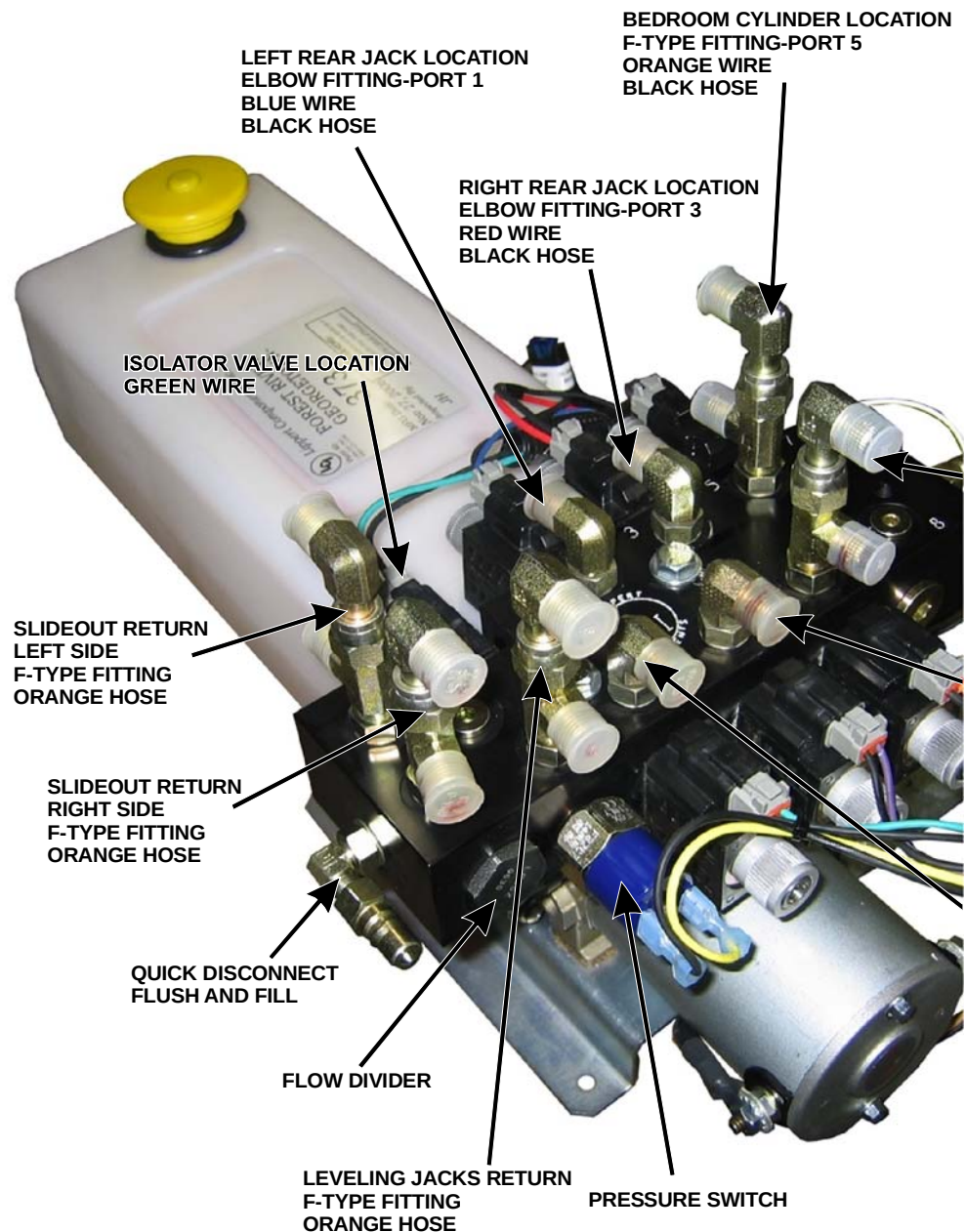
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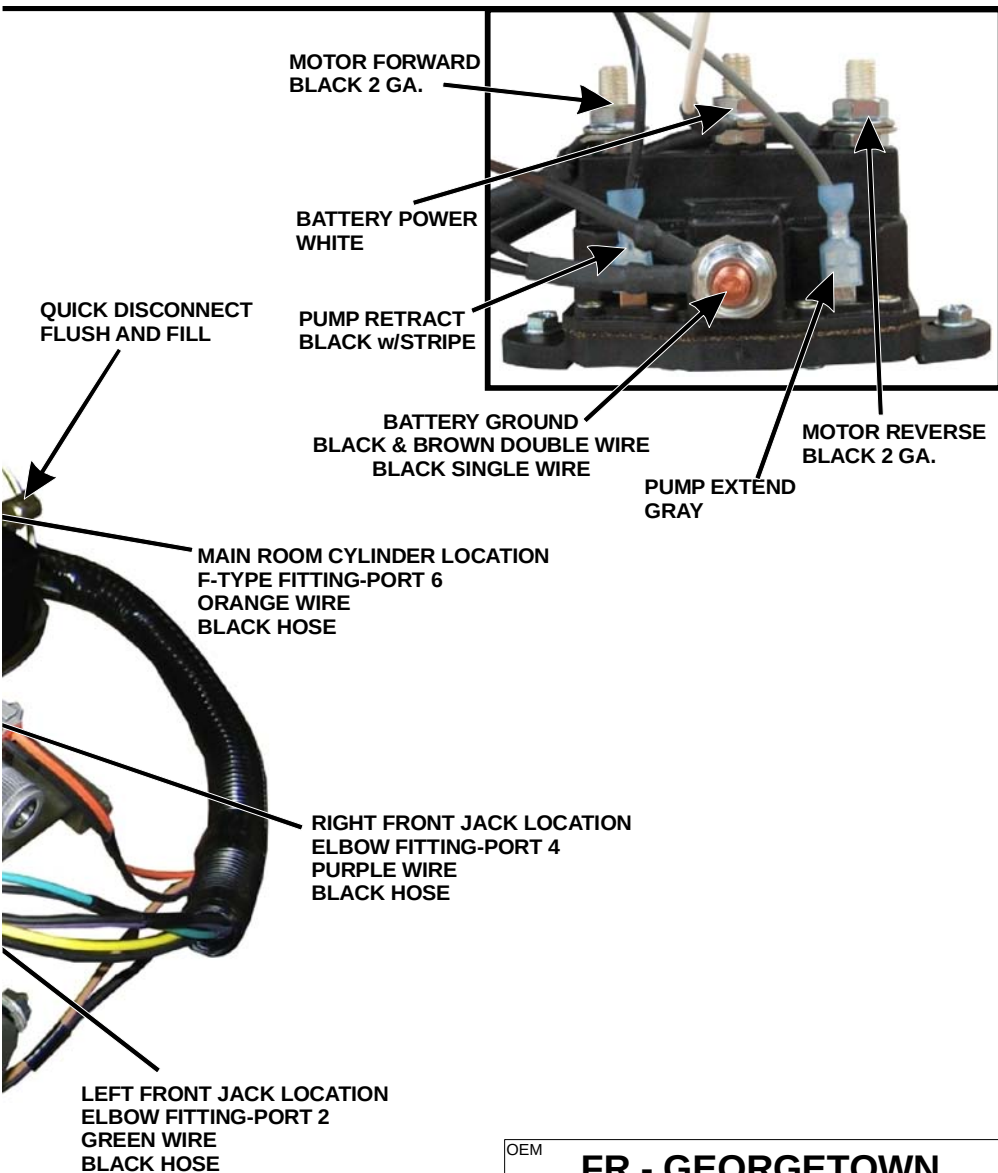
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**LEVELING +2 SLIDEOUTS WITH FLOW DIVIDER
(L+2 W/FD)**



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MODEL NOS.

373



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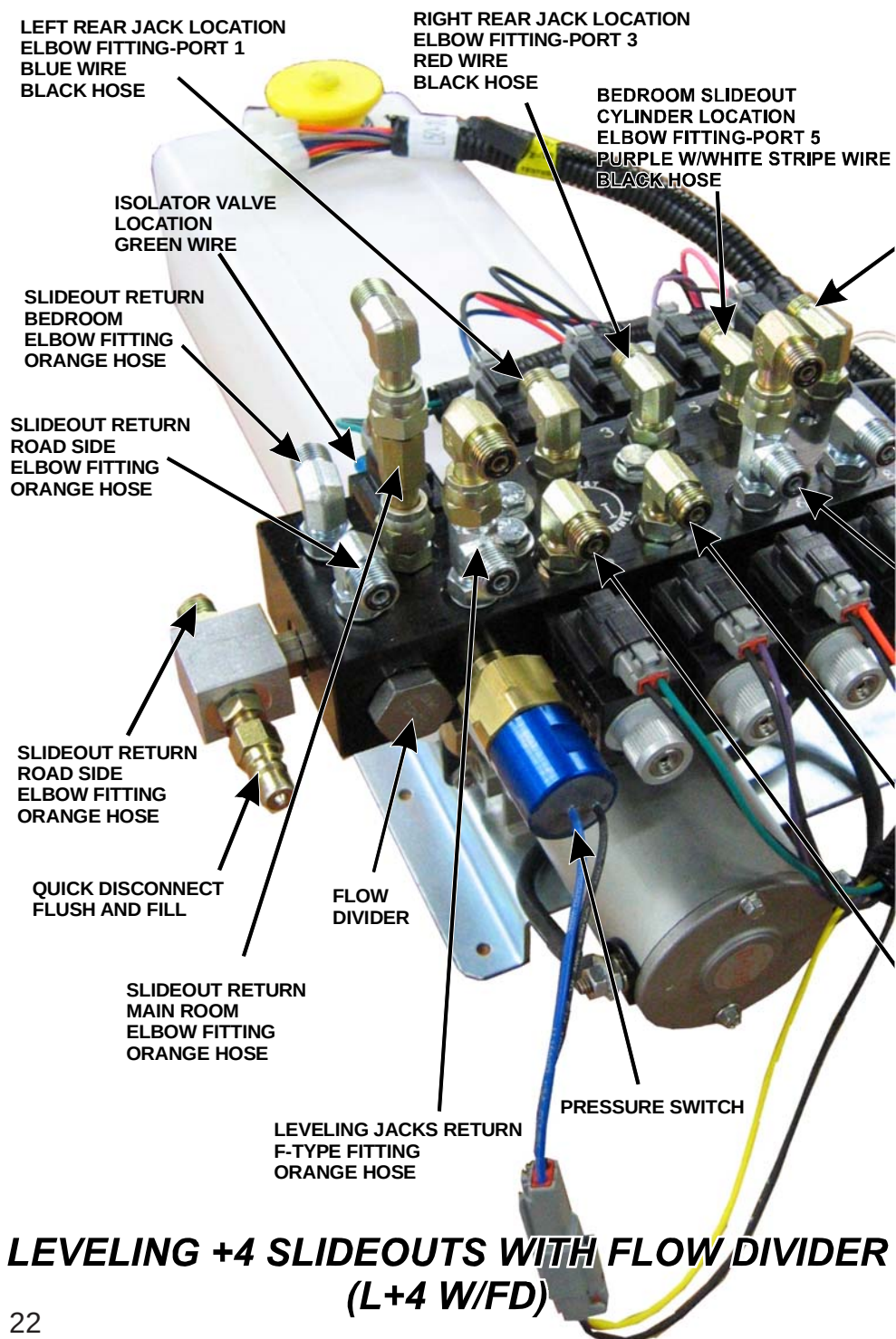
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LEVELING +4 SLIDEOUTS WITH FLOW DIVIDER (L+4 W/FD)

**MOTOR FORWARD
BLACK 2 GA.**

**BATTERY POWER
WHITE**

**PUMP RETRACT
BLACK w/STRIPE**

**BATTERY GROUND
BLACK & BROWN DOUBLE WIRE
BLACK SINGLE WIRE**

**MOTOR REVERSE
BLACK 2 GA.**

**PUMP EXTEND
GRAY**

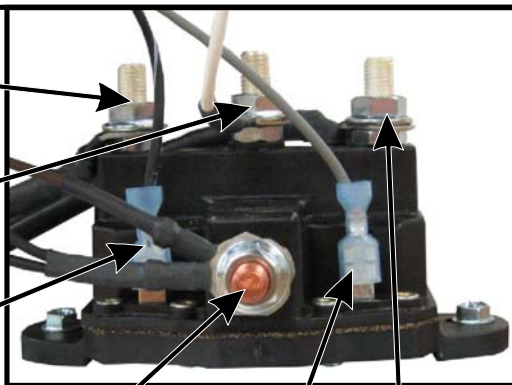
**QUICK DISCONNECT
FLUSH AND FILL**

**MAIN ROOM CYLINDER LOCATION
ELBOW FITTING-PORT 6
ORANGE WIRE
BLACK HOSE**

**MAIN ROOM CYLINDER LOCATION
F-TYPE FITTING-PORT 6
ORANGE WIRE
BLACK HOSE**

**RIGHT FRONT JACK LOCATION
ELBOW FITTING-PORT 4
PURPLE WIRE
BLACK HOSE**

**LEFT FRONT JACK LOCATION
ELBOW FITTING-PORT 2
GREEN WIRE
BLACK HOSE**



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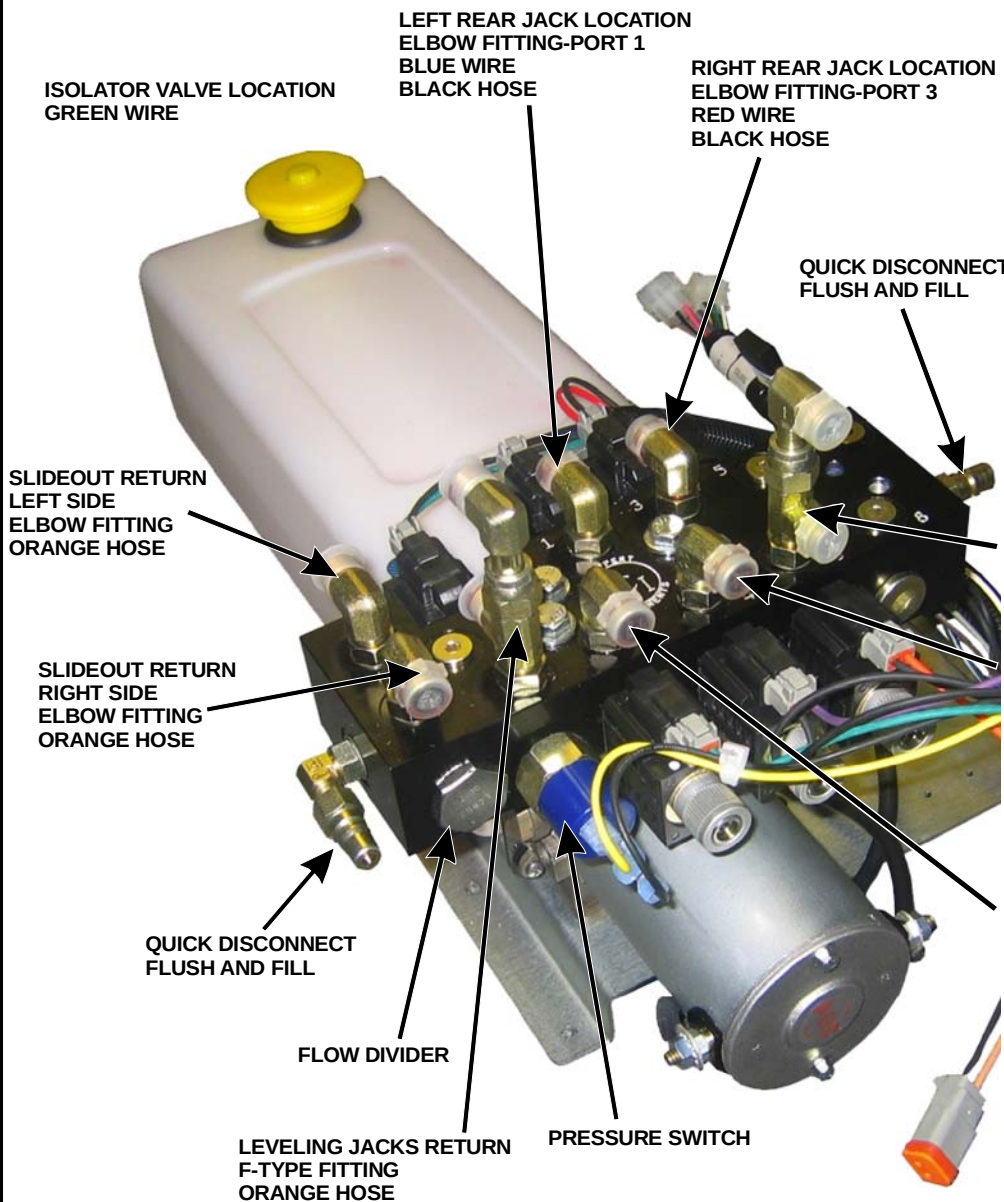
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LEVELING +1 SLIDEOUT WITH FLOW DIVIDER (L+1 W/FD)

**MOTOR FORWARD
BLACK 2 GA.**

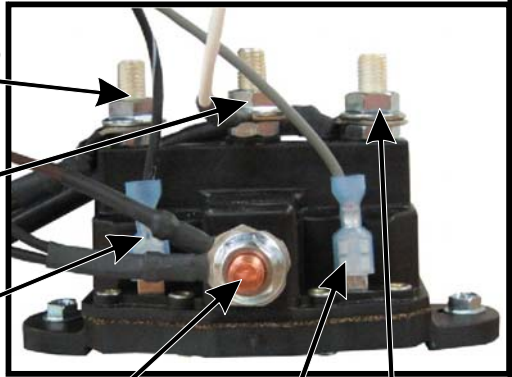
**BATTERY POWER
WHITE**

**PUMP RETRACT
BLACK w/STRIPE**

**BATTERY GROUND
BLACK & BROWN DOUBLE WIRE
BLACK SINGLE WIRE**

**PUMP EXTEND
GRAY**

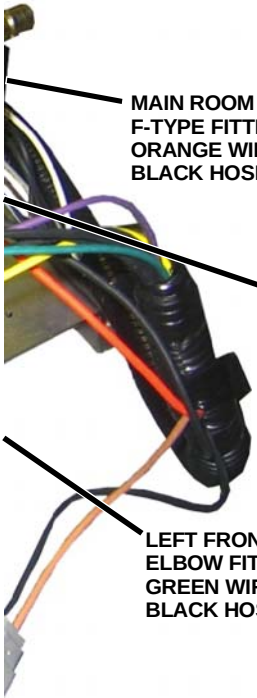
**MOTOR REVERSE
BLACK 2 GA.**



**MAIN ROOM CYLINDER LOCATION
F-TYPE FITTING-PORT 6
ORANGE WIR
BLACK HOSE**

**RIGHT FRONT JACK LOCATION
ELBOW FITTING-PORT 4
PURPLE WIRE
BLACK HOSE**

**LEFT FRONT JACK LOCATION
ELBOW FITTING-PORT 2
GREEN WIRE
BLACK HOSE**



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CONTROLS-LEVELING SYSTEM

LEVELING FEATURES

- Automatic extension of jacks from full retract position (with automatic ground detection).
- Automatic leveling of jacks.
- Manual leveling of jacks
- Automatic retraction of jacks (with automatic full retract detection).
- Air bag suspension features (configurable on/off).
- Emergency retract/User alarm mode (jacks not retracted and park brake disengaged).
- Automatic jack error detection and error mode.
- Configuration mode for Air features.
- Configurations mode for Leveling Zero Point.

SYSTEM WIRING REQUIREMENTS

- Battery power (2 ga. SAE J1127. Type SGX).
- Battery ground (2 ga. SAE J1127. Type SGX).
- Logic power (switched via ignition)
- Power brake signal (open=park brake disengaged, GND=park brake engaged).
- 4-wire harness connecting Controller to Touch Panel.
- Jacks status input-Switched to GND
 - Jacks not all up – switch closed to ground
 - Jacks all up – switch open

AIR AND AUXILIARY FEATURES

System has the option to control external Air and Auxiliary features.

When enabled, the feature works according to the following logic:

- Air bag pressure automatically lowered when starting the auto or manual sequence to maximize lift of jacks.
- An Auxiliary mode activated when starting an auto retract sequence to fill air bags.
- Auxiliary is active when jacks are all retracted and park brake is disengaged to fill airbags.

LEVEL ZERO POINT CALIBRATION

Before auto-leveling features are available, the Level Zero point must be set. This is the point to which the system will return when an auto leveling cycle is initiated.

To set the zero point (controller module must be fully secured in production intent location), first run a manual leveling sequence to get the vehicle to the desired level point. Then activate the Level Zero point configuration mode.

This mode is enabled by performing the following sequence:

1. Turn panel off. Then turn panel on.
2. Perform the following:
 - Press the FRONT switch 5 times.
 - Press the REAR switch 5 times.
3. At this point all LED outputs will blink, and the buzzer will be off.
4. You are now in IDLE mode ready to set Zero Point.
5. With a carpenter's level, manually level the coach. This will give the leveling controls the reference point for the Zero Point Configuration.
6. When coach is completely leveled manually press the RETRACT ALL switch 3 times to set the zero point.

For **DIESEL UNITS** with Airbag Suspensions **ONLY**:

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

AIR AND AUXILIARY FEATURE CONFIGURATION

For **DIESEL UNITS** with Airbag Suspensions **ONLY**:

- Feature is entered **ONLY** *after* zero mode programming.
- At this point the WAIT LED will blink for 20 seconds. You are now in Air/Auxiliary Feature Configuration mode.

To enable Air Auxiliary features, perform the following:

- Press the RETRACT ALL switch 3 times
- User must do this within 20 seconds of entering this mode.

To disable Air features, perform the following:

- Do nothing
- After 20 seconds, module will exit mode with features disabled.

ERROR MODE

If any problem is detected with the jacks, the system will enter error mode. Error mode may be recognized by the blinking of LEFT, LEVEL and RIGHT LEDs.

The following errors are detected by this system:

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

The user must respond by pressing ON/OFF switch, which resets operation.

All normal features are disabled in Error mode.

If panel loses communication with the controller for more than 5 seconds, the panel will blink the JACKS DOWN, PARK BRAKE and ON/OFF (if included) LEDs.

USER ALARM MODE

If the alarm system detects that the park brake has been disengaged while at least one jack is not fully retracted and the sensor value changes in any axis more than a predefined amount, the panel will signal this error to the user.

When in alarm mode, all LEDs will flash and the buzzer will beep. The Status LEDs will show the system status.

The system performs an automatic retract.

No other features are available in this mode.

MISCELLANEOUS

- The system will automatically shut down after 4 minutes of no operation.
- Auto leveling cycle cannot be started until all jacks are fully retracted. Make sure jacks are retracted before attempting to auto level (unit will perform full retract automatically if jacks are not down on the request of an auto cycle).
- System will refuse any operation when a low voltage condition is present.
- System will automatically alarm and retract if park brake is disengaged and jacks are not retracted with any change in sensor readings. In alarm mode, the only available feature is to retract all jacks.
- Please note the Wait LED shows the status of Air/ Auxiliary features.

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

“LATCHED OUT” WARNING



LATCHED ERROR mode is “WAIT,” “JACKS DOWN,” “PARK BRAKE,” “EXCESS SLOPE” AND “LOW VOLTAGE” lights flashing.

1. Battery voltage below 10.0V DC.
2. Retract time over 67 seconds in auto retract.
3. This is the only LATCHED ERROR MODE.
4. All revisions prior to “G” controllers treat this error as regular ERROR mode.

To RESET, push all 4 diamond-shaped jack buttons ★ at the same time.

CONTROL PANEL

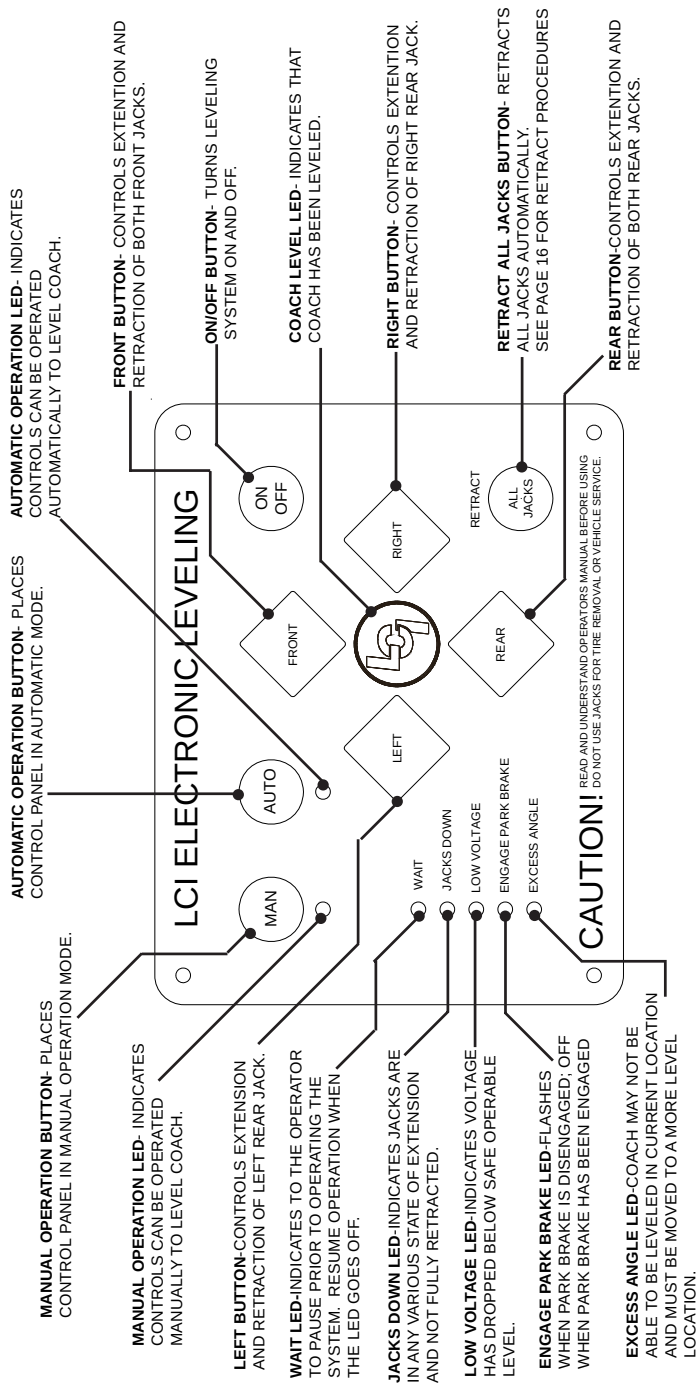


Fig. 4

OPERATION

SELECTING A SITE

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

AUTOMATIC LEVELING PROCEDURE

NOTE: REFER TO FIG. 4 FOR QUESTIONS REGARDING LOCATION AND FUNCTIONS OF THE LIPPERT COMPONENTS, INC. ELECTRONIC LEVELING SYSTEM.

NOTE: Coach must be running for LCI Electronic Leveling System to operate.

1. Push ON/OFF button on Control Panel. The system is now operational and the electronic level lights will become active.
2. Check to see that the Control Pad ENGAGE PARK BRAKE light is not flashing.

NOTE: Engage Parking Brake if ENGAGE PARK BRAKE light is flashing.

3. Push the AUTO button to begin the automatic leveling cycle.

WARNING: After starting the automatic leveling cycle it is very important that you do not move around in the coach until the unit is level and the green LCI logo light illuminates in the center of the touch pad. Failure to remain still during the leveling cycle could have an affect on the performance of the leveling system.

4. If further adjustments are necessary, simply push and hold the MAN button for approximately 5 seconds until the light under this button is illuminated. Push the appropriate leg button to override the system and level the coach to your liking.

WARNING!

**NEVER LIFT ALL THE WHEELS OFF THE GROUND
TO LEVEL THE COACH!**

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

5. Push ON/OFF button to de-energize the system.

MANUAL LEVELING PROCEDURES

NOTE: When leveling your coach, the coach should be leveled from **FRONT TO REAR** first (step 2-4). When the coach is level from **FRONT TO REAR**, then level the coach from **LEFT TO RIGHT** (step 5).

NOTE: Coach must be running for LCI Electronic Leveling System to operate.

1. Push ON/OFF button on control panel. The system is now operational and the ON/OFF light will be lit. If ON/OFF light is not lit, see **PRIOR TO OPERATION**, page 4.
2. Push and hold MAN button for 5 seconds.
3. Push FRONT button until jacks contact the ground.
4. Push REAR button until jacks contact the ground.
5. Push button FRONT or REAR; if bubble is towards front of coach push REAR button; if bubble is towards rear of coach, push FRONT button. Keep button depressed until bubble is centered.
6. Push LEFT or RIGHT button; if bubble is towards left of coach, push RIGHT button; if bubble is towards right of coach push LEFT button. Keep button depressed until bubble is centered in vial.

NOTE: The right and left jacks are used to level the coach side to side. Pushing the **LEFT** button on the control panel will extend both left jacks. Pushing the **RIGHT** button on the control panel will extend both right jacks. Jacks always work in pairs, both front jacks together, both right side jacks, etc.

7. Repeat steps 2 through 5 if needed.
8. Turn power off to leveling system by pushing ON/OFF button.
9. Visually inspect all jacks to ensure all shoes are touching ground. Should one of the rear jack shoes not be touching the ground, press the corresponding LEFT or RIGHT rear jack buttons to lower the corresponding jack to the ground.

WARNING!

NEVER LIFT ALL THE WHEELS OFF THE GROUND TO LEVEL THE COACH!
Lifting all wheels of the ground may result in serious personal injury or death.

JACK RETRACT PROCEDURES

1. Energize the system by pushing ON/OFF button on control panel.
The ON/OFF light will be lit.
2. Push the RETRACT ALL JACKS button. All the jacks will start to retract and returns to the full retract position. When all jacks return to full retract position the JACKS DOWN light will go out.

NOTE: If you wish to stop the jacks from retracting, turn the system off and back on again by pushing the on/off pad twice. You can then re-level the coach by following steps 1-5 again.

3. When the JACKS DOWN light goes out, push the ON/OFF button on the Control Panel to deenergize the system. After a brief visual inspection around the coach to verify the jacks are fully retracted, you may proceed to travel.

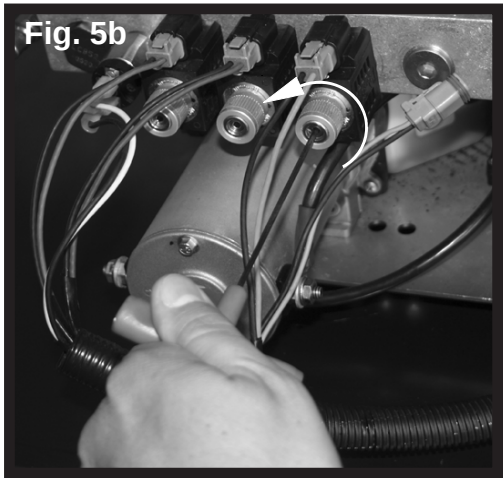
NOTE: When in the MANUAL mode, if the RETRACT button is pushed the jacks will only retract as long as the RETRACT button is depressed. In AUTOMATIC mode, the RETRACT button need only be pressed once and released for the jacks to fully retract.

MANUAL OVERRIDE

In the event that the jacks or slideouts will not extend or retract, the valves can be manually overridden. **THIS IS IN AN EMERGENCY SITUATION ONLY!** By using a 1/8" allen wrench to turn the manual override clockwise on the valve, see Fig. 5a, the leveling jacks can then be extended or retracted. Remember to turn the manual override completely counterclockwise, see Fig. 5b, until it will no longer turn, to close the valve after the jacks or slideouts have been completely extended or retracted.



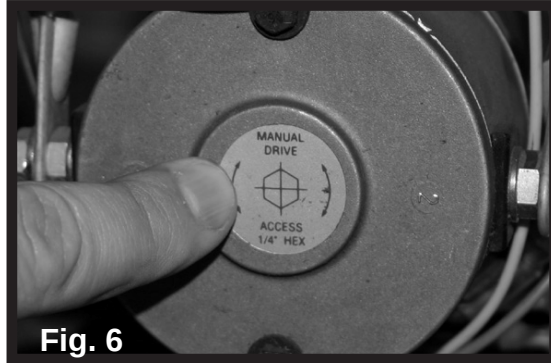
Clockwise for manual override



Counter-clockwise for normal operation

MANUAL OVERRIDE - POWER SYSTEM

The *Lippert Electronic Leveling and 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 jacks can be used. A standard handheld drill is all that is required. See the instructions below.



1. Remove protective label. (See Fig 6).
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, Fig. 7
4. Run drill forward or clockwise to extend jacks and in reverse or counterclockwise to retract jacks.

AUTOMATIC SAFETY SHUTOFF

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

DRIVE AWAY PROTECTION SYSTEM

If the ignition is in the "RUN" position, jacks are down, and the operator releases the parking brake, all indicator lights will flash and the alarm beeper will activate. The system will then automatically retract the jacks until the jacks are fully retracted or the operator resets the parking brake.

"JACKS DOWN" ALARM

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

1. A "RETRACT" hose leaks.
2. The pressure holding the jacks in the retracted position falls to a approximately 1500 psi to sound the alarm.

If the alarm sounds and the control panel illuminates and flash while driving the vehicle;

1. Immediately find an area to safely pull the vehicle off of the roadway.
2. Set the PARKING BRAKE.
3. Inspect all jacks hoses and check valve for leaks.
4. If no leaks are observed;
 - a. Turn control panel "ON."
 - b. Push "RETRACT ALL JACKS" button.
 - c. Wait until "JACKS DOWN" light and alarm are off.
 - d. Inspect jacks. If jacks are retracted and no leaks are observed, vehicle can be driven.

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

**IF YOU HAVE ANY PROBLEMS OR QUESTIONS CONSULT YOUR LOCAL
AUTHORIZED DEALER OR CALL LIPPERT AT:
(866) 524-7821.**

SERVICE

TROUBLESHOOTING

The *Lippert Electronic Leveling and Slideout System* is a new feature that allows the owner more options and flexibility for quickly and effectively leveling the coach. It is a totally integrated system with your coach's chassis and electronics.

Every coach has it's own personality and what may work to fix one coach may not work on another even if the symptoms appear to be the same.

When something restricts mechanized travel, system performances will be unpredictable. It is very important that leveling legs be free of contamination and allowed to travel freely the full distance. Dirt, sand, mud and other contaminants buildup during travel and can be potentially damaging to the performance of the system.

When beginning to troubleshoot the system, make sure the battery is fully charged, there are no visible signs of external damage to the legs, motor or hoses and that the motor is wired properly and all connections are secure.

IF YOU HAVE ANY PROBLEMS OR QUESTIONS CONSULT YOUR LOCAL
AUTHORIZED DEALER OR CALL LIPPERT AT:
(866) 524-7821.

TROUBLESHOOTING - CHART

SYSTEM WILL NOT TURN ON AND ON/OFF INDICATOR LIGHT DOES NOT ILLUMINATE

PROBABLE CAUSE	CORRECTIVE ACTION
Coach Ignition not in RUN position	Turn ignition to RUN position
Parking brake not set	Set parking brake
Controls have been on for more than four minutes and have timed out.	Turn ignition OFF and then back ON

CONTROL PAD TURNS ON BUT TURNS OFF WHEN LEG BUTTON IS PUSHED

PROBABLE CAUSE	CORRECTIVE ACTION
Low voltage on battery	Start coach to charge battery

CONTROL PAD TURNS ON, COACH WILL NOT AUTO-LEVEL, JACKS DOWN LIGHT IS ON, JACKS ARE RETRACTED

PROBABLE CAUSE	CORRECTIVE ACTION
Low fluid level	Check fluid level in reservoir, if fluid is low add fluid to FILL TO HERE line on reservoir If JACKS DOWN light remains on call Lippert Service.

JACKS WILL NOT EXTEND TO GROUND, PUMP IS RUNNING

PROBABLE CAUSE	CORRECTIVE ACTION
Little or no fluid in reservoir	Fill reservoir with DEXRON III ATF, See pg. 6
Leg valve is inoperative	Clean, repair or replace
Electronic signal is lost between control and leg valves	Trace wires for voltage drop or loss of signal Repair or replace necessary wires or replace control pad

ANY ONE OR TWO JACKS WILL NOT RETRACT

PROBABLE CAUSE	CORRECTIVE ACTION
Hose damaged or unconnected	Replace with new hose or reconnect hose
Return valve inoperative	Replace inoperative return valve
Electronic signal is lost between control and solenoid	Attempt to retract jacks in MANUAL mode. If successful, replace control pad; if not, test for voltage drop between control pad and leg valve repair bad wiring or replace defective board or valve.

"JACKS DOWN" LIGHT DOES NOT GO OUT WHEN ALL JACKS ARE RETRACTED

PROBABLE CAUSE	CORRECTIVE ACTION
Low fluid level	Fill reservoir to proper level with ATF, See pg. 6
Retract pressure switch inoperative	Check connection or replace

ALARM SOUNDS AND "JACKS DOWN" LIGHT STARTS FLASHING WHILE TRAVELING JACKS ARE FULLY RETRACTED

PROBABLE CAUSE	CORRECTIVE ACTION
Low fluid level	Fill reservoir to proper level with ATF, See pg. 6
Retract pressure switch inoperative	Check connection or replace

JACK BLEEDS DOWN AFTER BEING EXTENDED

PROBABLE CAUSE	CORRECTIVE ACTION
Valve Manual Override open	Close override, See pg. 17

TROUBLESHOOTING CHART - HLG

JACKS WILL NOT EXTEND TO GROUND, PUMP IS RUNNING

PROBABLE CAUSE	CORRECTIVE ACTION
Little or no fluid in reservoir	Fill reservoir with DEXRON III ATF, See pg. 6
Leg valve is inoperative	Clean, repair or replace
Electronic signal is lost between switch and leg valves	Trace wires for voltage drop or loss of signal Repair or replace necessary wires or replace switch.

ANY ONE OR TWO JACKS WILL NOT RETRACT

PROBABLE CAUSE	CORRECTIVE ACTION
Hose damaged or unconnected	Replace with new hose or reconnect hose
Return valve inoperative	Replace inoperative return valve
Electronic signal is lost between switch and solenoid	Attempt to retract jacks in MANUAL mode. If successful, replace control pad; if not, test for voltage drop between switch and leg valve Repair bad wiring or replace defective board or valve.

TROUBLESHOOTING – POWER UNIT

Before attempting to troubleshoot the Power Unit, make sure an adequate power source is available. The unit batteries should be fully charged or the unit should be plugged into to A/C service with batteries installed. Do not attempt to troubleshoot the Power Unit without assuring a full 12V DC charge.

The following tests require only a DC voltmeter (or DC test light) and a jumper lead.

Step 1 - Attach voltmeter (or test light) leads to the negative and positive terminals on motor solenoid (See Fig. 9). Does the meter indicate 12V DC? If **YES**, see **Step 2**; if **NO** see **Step 3**.

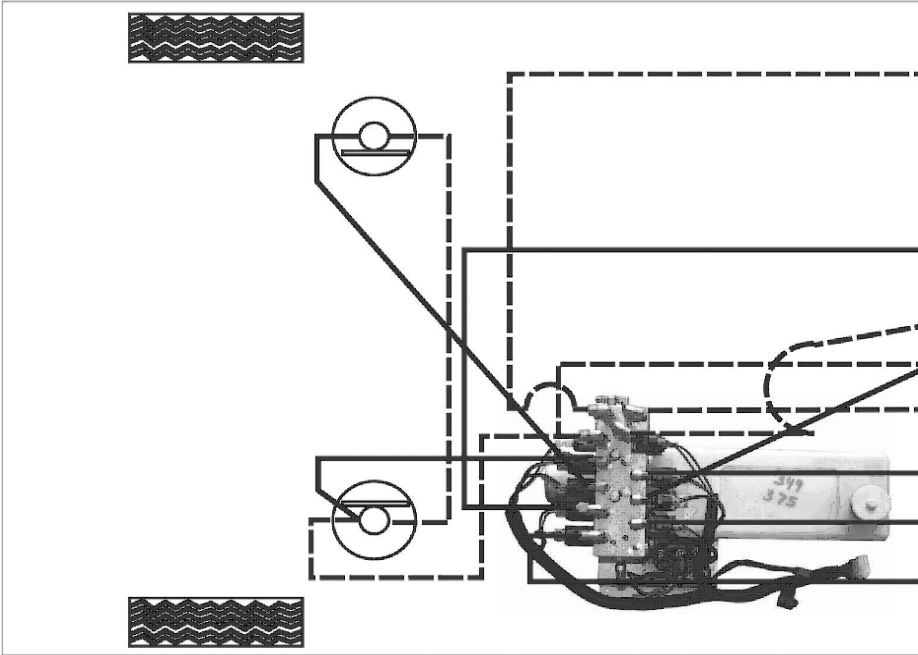
Step 2 - If **YES**, at the motor, activate system, check the incoming leads to 12V DC (if necessary, disconnect leads at wire splices). Does meter indicate 12V DC? If **YES**, Power Unit needs to be replaced. The motor is not field serviceable. **DO NOT ATTEMPT TO REPAIR**. If **NO**, Inspect all wires and connections between the motor solenoid and the motor. Repair connections or replace motor solenoid as necessary. Recheck as in **Step 1**.

Step 3 - If **NO**, Inspect all connections between battery and motor solenoid. Inspect Manual-reset Circuit Breaker in battery feed line. (See Fig. 9 for location). Recheck as above in **Step 1**.

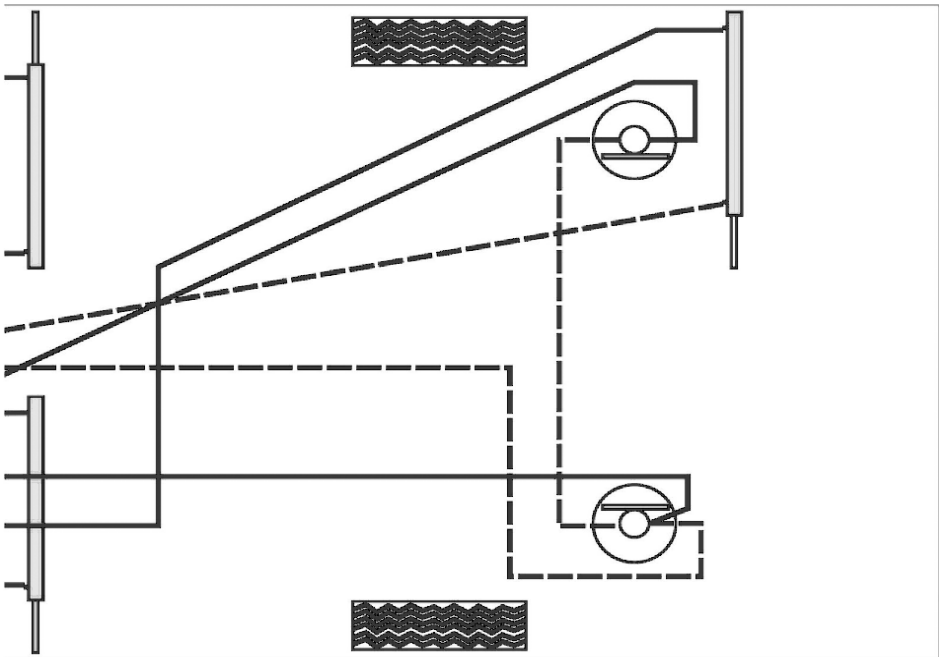
Since there are no field serviceable parts in the motor of the Power Unit, electrical troubleshooting and service is limited to replacing only those components as previously outlined.

Thorough inspection of wiring and connections is the only other electrical service that can be performed.

- NOTES** – 1. Hoses will vary in length by coach model.
Measure hose and consult LCI Service.
2. Pressure Switch
3. Hose Specs. 3000 p.s.i.; ½" in. I.D.

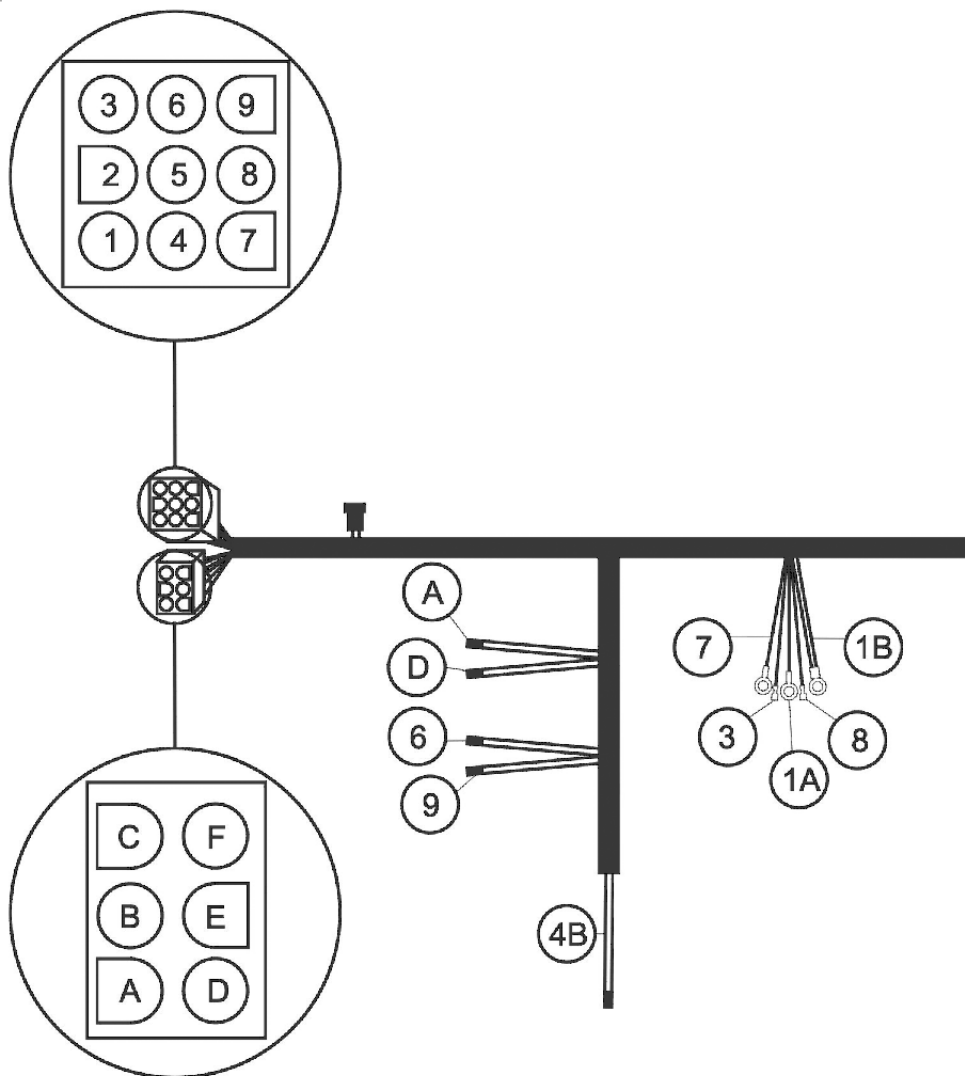


PLUMBING DIAGRAM



RETURN HOSE (ORANGE) ———

EXTEND HOSE (BLACK) ———



INLINE CIRCUIT BREAKER

Bussman Hi-Temp per SAE J1625
Manual Reset

3qt Reservoir (PN-643700) - 60/70* amp
4qt Reservoir (PN-644300) - 80*/90 amp
*preferred rating

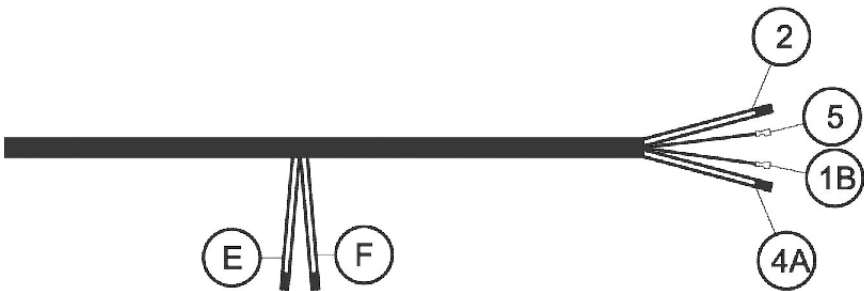
Due to variance in power, wire lengths and sizes/terminals etc., all new installations should be reviewed and tested prior to production release.

WIRING HARNESS DIAGRAM

Fig. 9

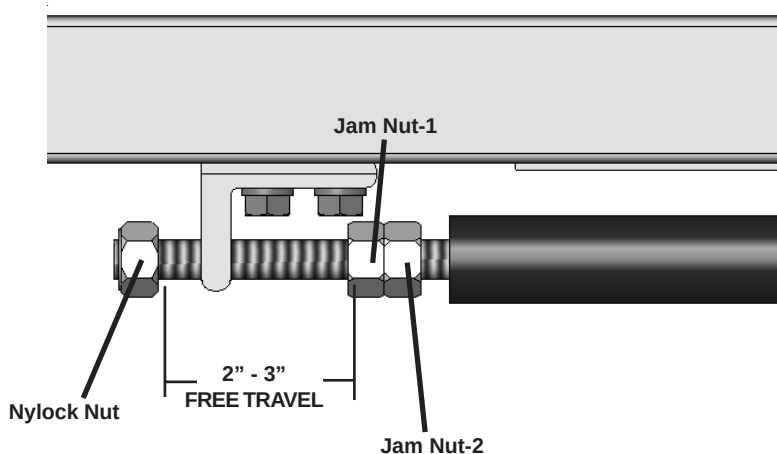
12-PIN WIRE HARNESS

- 1 – WHITE(12VDC)
- 2 – BLACK W/WHITE(PUMP RETRACT)
- 3 – RED(CURBSIDE REAR VALVE)
- 4 – GREEN (ROADSIDE FRONT VALVE)
- 5 – YELLOW (PSI SWITCH)
- 6 – BLUE (ROADSIDE REAR VALVE)
- 7 – BROWN (GROUND)
- 8 – PURPLE (CURBSIDE FRONT VALVE)
- 9 – GREY (PUMP EXTEND)



CONNECTOR KEY	
DEUTCH CONNECTOR	
SINGLE WIRE EYE CONNECTOR	
FEMALE SPADE CONNECTOR	
DOUBLE WIRE EYE CONNECTOR	
9-PIN HARNESS LEVELING CONTROL	6-PIN HARNESS SLIDEOUT CONTROL
1A – BROWN (GROUND - TROMBETTA) 1B - BLACK (GROUND FROM TROMBETTA) 2 – PURPLE (RF VALVE) 3 – BLACK W/STRIPE (PUMP RETRACT) 4A – GREEN (LF VALVE) 4B - GREEN (ISOLATOR VALVE) 5 – YELLOW PRESSURE SWITCH) 6 – BLUE (LR VALVE) 7 – WHITE (POWER - TROMBETTA) 8 – GREY (PUMP EXTEND) 9 – RED (RR VALVE)	A – PINK (AUXILIARY) B – BLACK W/STRIPE (PUMP RETRACT) C – GREY (PUMP EXTEND) D – LT. PURPLE W/STRIPE (BED SLIDE) E – TAN (KITCHEN SLIDE) F – ORANGE (MAIN ROOM SLIDE)

SLIDEOUT ADJUSTMENT



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 snug against bracket. 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. Move one of the nuts, (Jam Nut-2 or Nylock Nut) 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.