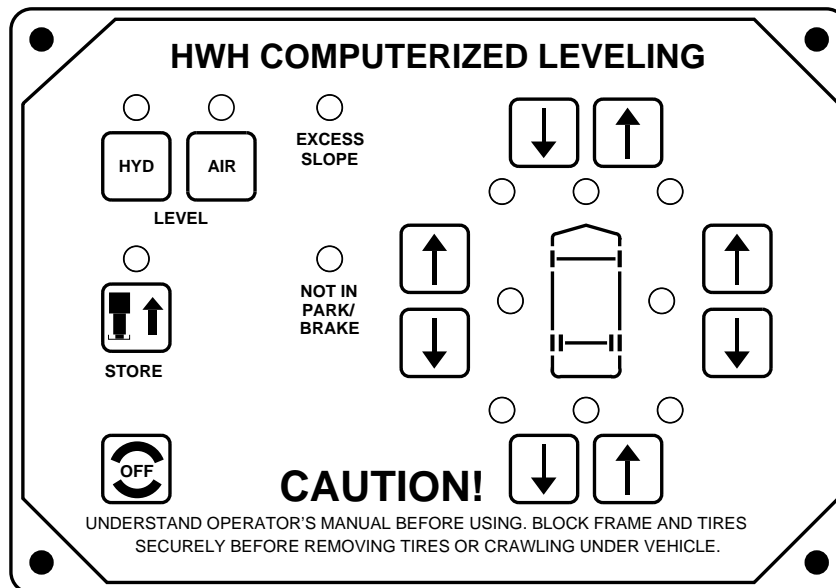




OPERATOR'S MANUAL

COMPUTER-CONTROLLED LEVELING SYSTEM COMBINATION HYDRAULIC/AIR LEVELING JET AIR SUSPENSION 610 SERIES

FEATURING:
TOUCH PANEL CONTROL
HYDRAULIC LEVELING
AIR LEVELING
TWO FRONT HWH JACKS ONLY



HWH CORPORATION
(ON I-80, EXIT 267 SOUTH)
2096 MOSCOW ROAD
MOSCOW, IOWA 52760
(800) 321-3494 / (563) 724-3396
INTERNET: <http://www.hwhcorp.com>

OPERATOR'S MANUAL

CAUTION !

READ THE ENTIRE OPERATOR'S MANUAL BEFORE OPERATING.

BLOCK FRAME AND TIRES SECURELY BEFORE CRAWLING UNDER VEHICLE. DO NOT USE LEVELING JACKS OR AIR SUSPENSION TO SUPPORT VEHICLE WHILE UNDER VEHICLE OR CHANGING TIRES. VEHICLE MAY DROP AND/OR MOVE FORWARD OR BACKWARD WITHOUT WARNING CAUSING INJURY OR DEATH.

KEEP ALL PEOPLE CLEAR OF VEHICLE WHILE LEVELING SYSTEM AND ROOM EXTENSION ARE BEING OPERATED.

THE JACKS MAY ABRUPTLY SWING UP WHEN THE FOOT CLEARS THE GROUND OR WHEN JACK REACHES FULL EXTENSION.

NEVER PLACE HANDS OR OTHER PARTS OF THE BODY NEAR HYDRAULIC LEAKS. OIL MAY PENETRATE SKIN CAUSING INJURY OR DEATH.

WEAR SAFETY GLASSES WHEN INSPECTING OR SERVICING THE SYSTEM TO PROTECT EYES FROM DIRT, METAL CHIPS, OIL LEAKS, ETC. FOLLOW ALL OTHER APPLICABLE SHOP SAFETY PRACTICES.

HOW TO OBTAIN WARRANTY SERVICE

THIS IS NOT TO BE INTERPRETED AS A STATEMENT OF WARRANTY

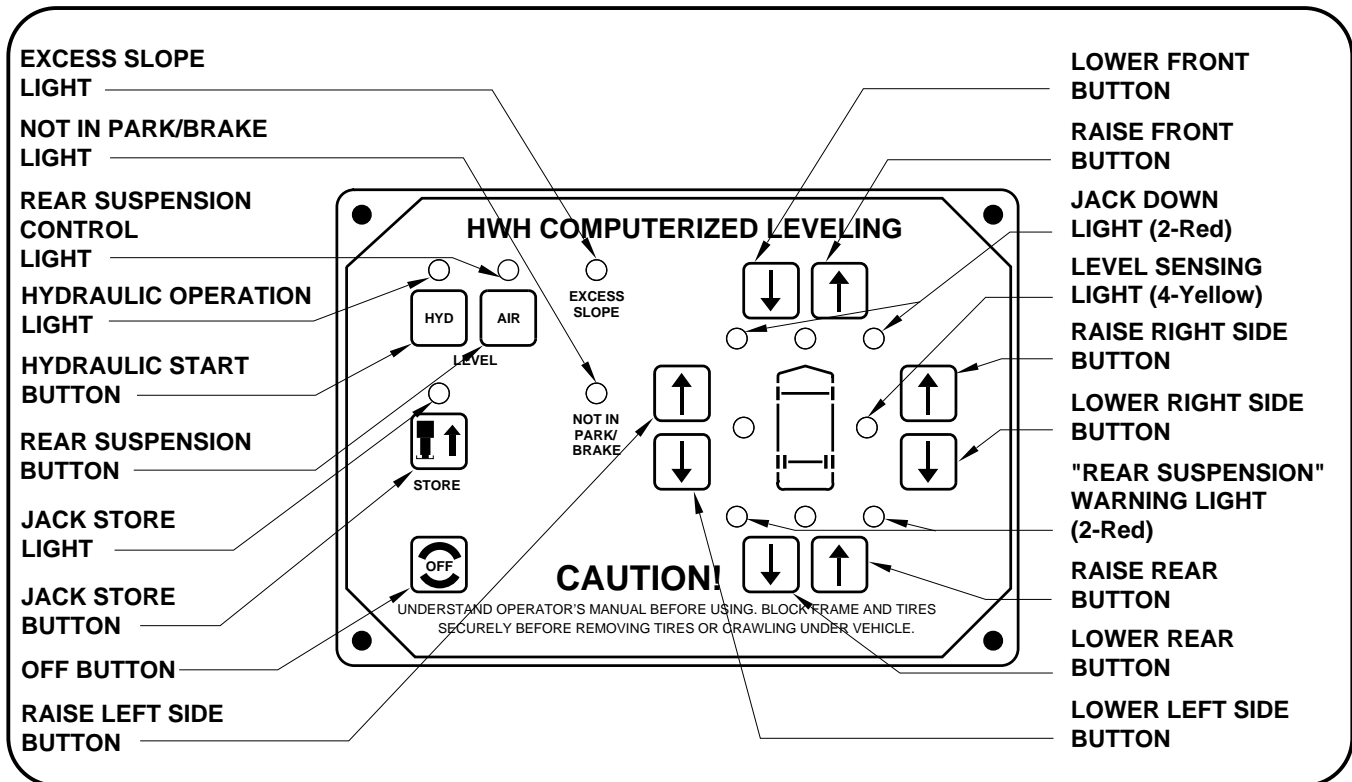
HWH CORPORATION strives to maintain the highest level of customer satisfaction. Therefore, if you discover a defect or problem, please do the following:

FIRST: Notify the dealership where you purchased the vehicle or had the leveling system installed. Dealership management people are in the best position to resolve the problem quickly. If the dealer has difficulty solving the problem, he should immediately contact the Customer Service Department, at HWH CORPORATION.

SECOND: If your dealer cannot or will not solve the problem, notify the Customer Service Department:
HWH CORPORATION 2096 Moscow Rd. Moscow IA. 52760
(563) 724-3396 OR (800) 321-3494. Give your name and address, coach manufacturer and model year, date the coach was purchased, or the date of system installation,

description of the problem, and where you can be reached during business hours (8:00 a.m. till 5:00 p.m. c.s.t.). HWH CORPORATION personnel will contact you to determine whether or not your claim is valid. If it is, HWH CORPORATION will authorize repair or replacement of the defective part, either by appointment at the factory or by the authorization of an independent service facility, to be determined by HWH CORPORATION. All warranty repairs must be performed by an independent service facility authorized by HWH CORPORATION, or at the HWH CORPORATION factory, unless prior written approval has been obtained from proper HWH CORPORATION personnel.

CONTROL IDENTIFICATION



CONTROL FUNCTIONS

CONTROLS

"HYDRAULIC START" Button - This button operates the automatic hydraulic leveling system.

"REAR SUSPENSION" Button - This button turns the manual rear suspension control on.

"JACK STORE" Button - This button automatically retracts the leveling system.

"OFF" Button - This button turns the panel off.

"RAISE AND LOWER" Left side buttons - These buttons control the left rear suspension air bag.

"RAISE AND LOWER" Rear buttons - These buttons control both rear suspension air bags.

"RAISE AND LOWER" Right side buttons - These buttons control the right side rear suspension air bag.

"RAISE AND LOWER" Front buttons - These buttons control both front jacks.

INDICATOR LIGHTS

"NOT IN PARK/BRAKE" Indicator light - This light is on when the control panel is "ON" and the hand/auto park brake is not set.

"EXCESS SLOPE" Indicator light - This light comes on when the leveling system cannot level the coach.

"REAR SUSPENSION CONTROL" Indicator light - This light indicates the manual rear suspension control is operable.

"HYDRAULIC OPERATION" Indicator light - This light indicates hydraulic leveling is on.

"JACK STORE" Indicator light - This light indicates automatic retracting is operating.

"JACK DOWN" Indicator light - These lights indicate the front jacks are vertical.

"LEVEL SENSING" Indicator light - These lights indicate the front, rear, right or left side is low.

"REAR SUSPENSION" Warning light - These lights indicate the rear axle position control will NOT function at this time.

OPERATING PROCEDURES

GENERAL INSTRUCTIONS

For normal travel the "REAR SUSPENSION CONTROL" should be OFF. The "REAR SUSPENSION WARNING LIGHTS" should be OFF. If these lights are ON the automatic rear axle position control will NOT function.

Park with the front of the vehicle facing downhill if possible. If parking on soft ground or asphalt paving, wood blocks or pads must be placed under the jacks.

Any time a hydraulic leveling process is interrupted, retract the jacks according to the "JACK RETRACTION" section and then restart the leveling process.

If the hand/auto brake is not set when the (HYD) button is pressed, the "NOT IN PARK/BRAKE" light will come on and the hydraulic leveling system will not operate. The light will remain "ON" only while the "HYD" button is pressed. "REAR SUSPENSION CONTROL" will function any time the ignition is "ON" or in the "ACC" position.

PREPARATION FOR TRAVEL

Before traveling, the red "JACK DOWN" warning lights must be off. The master "JACK DOWN" warning light on the dash should be off. If the lights are not correct for travel, retract the jacks as described in the "JACK RETRACTION" section. The "REAR SUSPENSION WARNING LIGHTS" should be "OFF". If these lights are "ON" the automatic rear axle position control will NOT function.

CAUTION: DO NOT RELY SOLELY UPON THE WARNING INDICATOR LIGHTS. IT IS THE OPERATOR'S RESPONSIBILITY TO VISUALLY CHECK THAT ALL JACKS ARE UP AND THE VEHICLE IS AT THE PROPER RIDE HEIGHT BEFORE MOVING THE VEHICLE.

SYSTEM OPERATION AUTOMATIC HYDRAULIC/AIR LEVELING

1. Place the transmission in the recommended position for parking and set the parking brake. Turn the ignition to the "ACC" or "ON" position.

2. Press the "HYDRAULIC START" (HYD) button. This will place the system in the hydraulic/air operation mode. The "HYDRAULIC OPERATION" indicator light will glow steady.

3. Press the "HYDRAULIC START" button a second time. The "HYDRAULIC OPERATION" light will start to flash. The left front jack will lower to the vertical position, then the right front jack will lower to the vertical position. As the jacks lower to the vertical position their respective "JACK DOWN" indicator light will come on. The two "REAR SUSPENSION WARNING LIGHTS" will come on. The dash mounted "JACK DOWN" warning lights and the "WARNING MANUAL MODE" light will come "ON". The pump will shut off and the "HYDRAULIC OPERATION" light will glow steady. At this time, the operator should check to make sure the jacks are vertical and place pads under the jacks if the ground will not support the vehicle.

4. Press the "HYDRAULIC START" button a third time. The "HYDRAULIC OPERATION" light will start to flash. The coach is then automatically leveled utilizing the rear suspension air bags and the front hydraulic jacks. The rear suspension air bags will inflate or deflate to do as much of the leveling as possible before the front jacks are utilized. If not used for leveling, the front jacks will be extended to the ground to help stabilize the coach. In the event the jacks and/or the rear suspension air bags are unable to level the coach, the "EXCESS SLOPE" indicator light will come "ON". One or two yellow lights will remain "ON". The leveling process may take as long as four to five minutes if an excess slope is involved.

5. After a pause of ten (10) seconds, the system will automatically shut off. (The dash mounted "JACK DOWN" warning light will remain "ON" as long as the ignition is in the "ON" or "ACC" position and the front jacks are in the vertical position.)

6. Turn the ignition switch to the "OFF" position.

OPERATING PROCEDURES

JACK RETRACTION

1. The operator must be sure that there are no objects under the vehicle and that all people are clear of the vehicle.
2. Turn the ignition switch to the "ON" or "ACC" position. Press the "HYDRAULIC START" button. The "HYDRAULIC OPERATION" indicator light will glow steady.
3. Press the "JACK STORE" (STORE) button. The "JACK STORE" indicator light will start to flash. As the two front jacks retract to the horizontal position, the respective "JACK DOWN" indicator light on the touch panel will go out. When both front "JACK DOWN" lights are out, the two "REAR SUSPENSION WARNING LIGHTS" will go out. The automatic rear suspension control will now function. The dash mounted "JACK DOWN"

warning light will go out. The "WARNING MANUAL MODE" indicator light will be "OFF". The coach may now be moved. The "JACK STORE" indicator light will continue to flash.

4. The system will continue to "retract" for six minutes, then automatically shut off. If a "JACK DOWN" indicator light stays on the system will continue to retract for thirty (30) minutes then shut off regardless of warning lights.

IMPORTANT: Do not interrupt power to the system until the system automatically shuts off.

5. If the jacks cannot be retracted by this procedure, see "MANUAL JACK RETRACTION" section.

MANUAL HYDRAULIC OPERATION

1. Place the transmission in the recommended position for parking and set the parking brake. Turn the ignition to the "ACC" or "ON" position.
2. Press the "HYDRAULIC START" button. This will place the system in the hydraulic/air operation mode. The "HYDRAULIC OPERATION" indicator light will glow steady.
3. Press the "HYDRAULIC START" button a second time. The "HYDRAULIC OPERATION" light will start to flash. The left front jack will lower to the vertical position, then the right front jack will lower to the vertical position. As the jacks lower to the vertical position, their respective "JACK DOWN" indicator light will come "ON". The dash mounted "JACK DOWN" warning light and the "WARNING MANUAL MODE" light will come "ON". The pump will shut off and the "HYDRAULIC OPERATION" light will glow steady. At this time, the operator should check

to make sure the jacks are vertical and place pads under the jacks if the ground will not support the vehicle.

4. The vehicle may be leveled using the manual raise and lower buttons on the right half of the panel. (Refer to the Control Identification and Function page.) If a yellow "LEVEL SENSING" indicator light is "ON", that side or end of the vehicle is low. Right to left leveling is done with the rear suspension air bags. If the front yellow light is on, it is best to lower the rear of the vehicle first. If the front light remains on, extend the two (2) front jacks until the front yellow light goes out. If not used for leveling, the two front jacks may be extended to the ground to help stabilize the coach.

- IMPORTANT:** Do not continue to push the front raise button for more than ten (10) seconds after the jacks are fully extended.
5. Turn the ignition switch to the "OFF" position.

MANUAL AIR OPERATION

1. The manual "REAR SUSPENSION CONTROL" (manual air operation) will operate any time the ignition switch is in the "ACC" or "ON" position. This function can be used to level the coach without the front jacks being lowered to the vertical position.
2. Press "REAR SUSPENSION CONTROL" (AIR) button. "REAR SUSPENSION CONTROL" indicator light will come "ON" steady. The "WARNING MANUAL MODE" indicator light (in dash) will come "ON". The two (2) red "REAR SUSPENSION WARNING LIGHTS" on the touch panel will come "ON".

NOTE: At this point, the automatic rear axle position control will not function.

3. Use the up and down arrow on the right side of the touch panel to inflate or deflate the rear suspension air bags. Only the right, left, and rear raise and lower buttons will operate at this time. Level the coach according to the yellow "LEVEL SENSING" indicator lights.

4. Pushing the "OFF" button will return the coach to the automatic rear axle position control. Turn the ignition switch to the "OFF" position.

OPERATING PROCEDURES

MANUAL JACK RETRACTION

1. Use the valve release "T" handles for retracting only if the "STORE" button on the control panel will not retract the jacks for travel.

CAUTION: KEEP AWAY FROM THE WHEELS, DO NOT CRAWL UNDER COACH, KEEP A SAFE DISTANCE IN FRONT AND REAR OF VEHICLE. THE VEHICLE MAY DROP AND/OR MOVE FORWARD OR BACKWARD WITHOUT WARNING OR AS THE VALVE RELEASE IS OPERATED.

2. Locate the 2 valve release "T" handles on the solenoid valves. The solenoid valves are located on the pump/manifold assembly. (See the Hydraulic Line Connection Diagram.)

3. Allow clearance for coach to lower.

4. Open the two valves slowly by turning counter clockwise. The handles may turn easily at first but as an internal spring is compressed, turning may become more difficult. The valves need only to be opened enough to retract the jack.

5. Check that both jacks are now retracted.

6. Close the valves by turning the release handles clockwise. Once the internal spring tension has been released, the handles will turn free for several turns. DO NOT tighten the handles past this point as internal damage may occur to the solenoid.

7. The system should not be repaired before being used again.

MAINTENANCE

SERVICING OF LEVELING SYSTEM

Retract the two front leveling jacks before checking oil level. Locate the pump/manifold assembly and clean any dirt away from the breather/filler cap on the oil reservoir. Check that the oil is within one (1) inch of the top of the reservoir.

The oil should be checked when the vehicle is first purchased and then once every two years. More often if there is an oil leak in the system.

FLUID: HWH Specialty Hydraulic Oil is recommended. In an emergency Dexron automatic transmission fluid can be used.

NOTE: Dexron automatic transmission fluid contains red dye and can cause staining should a leak occur. **DO NOT USE** brake fluid or hydraulic jack fluid. Use of these can damage seals.

VISUAL INSPECTION

Periodically inspect the leveling jacks for damaged or missing parts such as pivot bolts, springs, roller bearings or stops. Check the hydraulic lines and wiring for damage and wear.

Check that the jacks do not interfere with any part of the vehicle when they are in the horizontal position.

OPERATIONAL CHECK

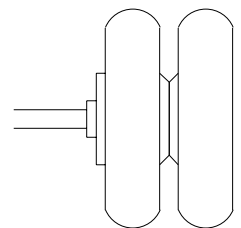
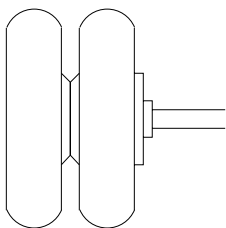
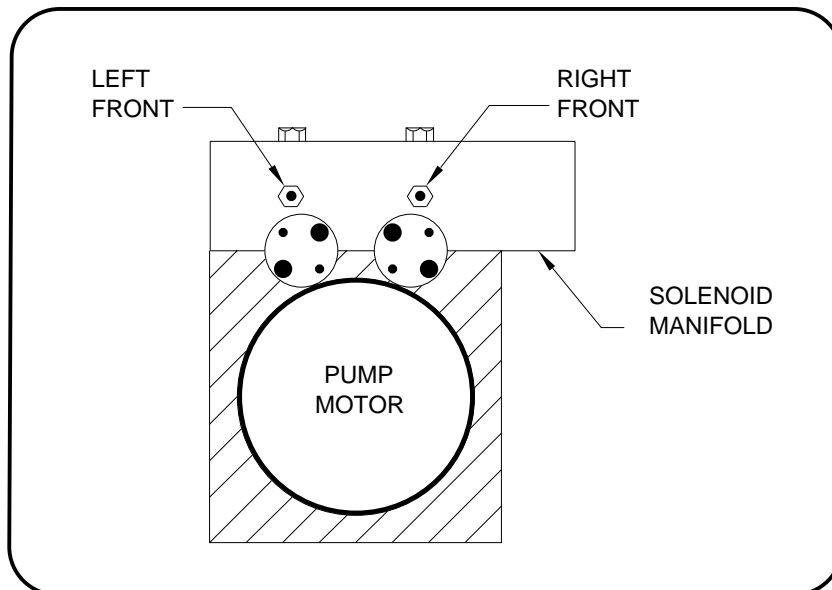
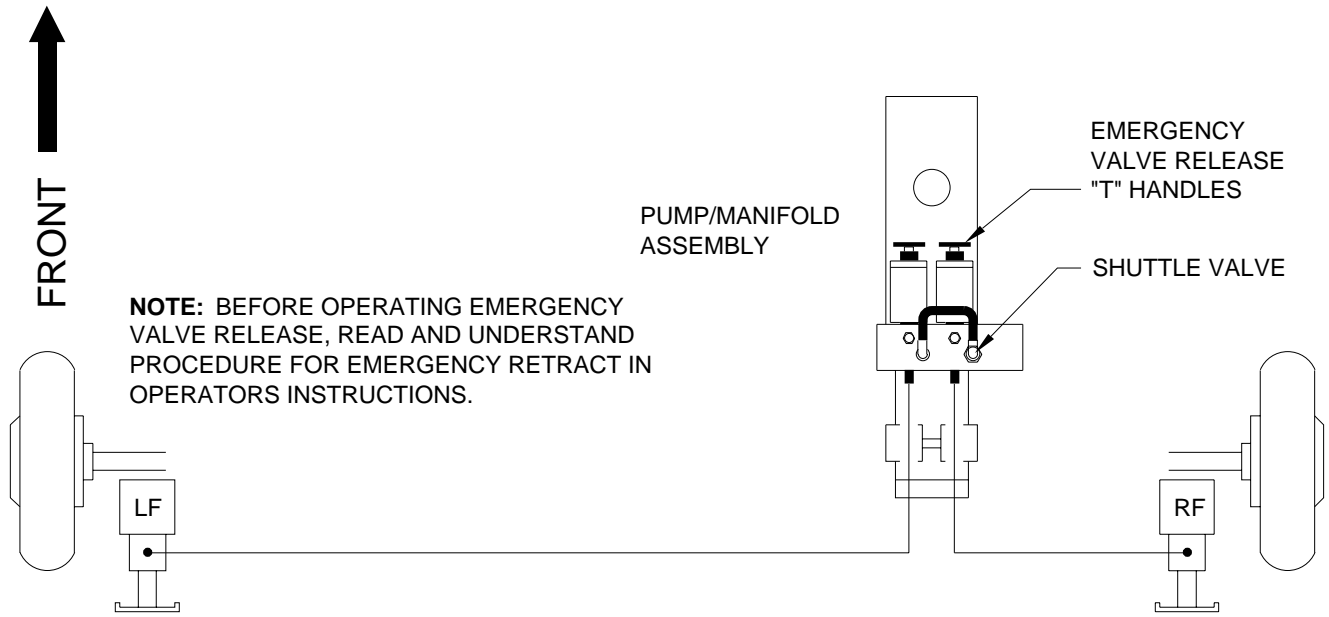
Review operator manual and confirm that the system is operating correctly.

"NOT IN PARK/BRAKE" CHECK

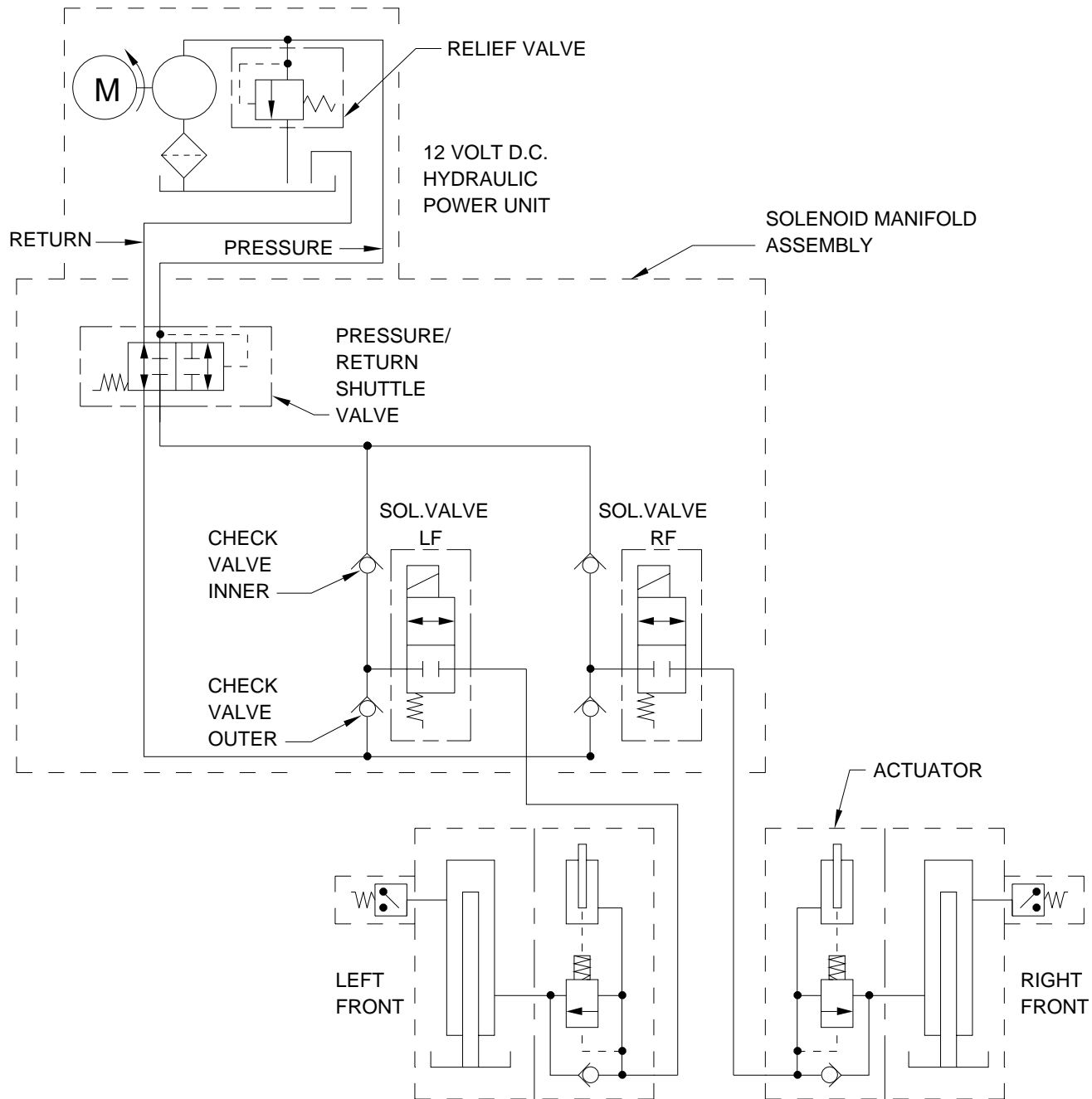
Set park brake. Switch ignition to "ACCESSORY" position. Continuously press (HYD) button on touch panel to turn on system. Release parking brake and confirm that the "NOT IN PARK/BRAKE" indicator light comes on. Reset parking brake. Switch ignition to "OFF" position.

NOTE: If any of the above checks or inspections reveal a problem or if there are other problems or questions, consult a qualified RV repair center, your vehicle or coach manufacturer, or HWH Corporation for service or repair.

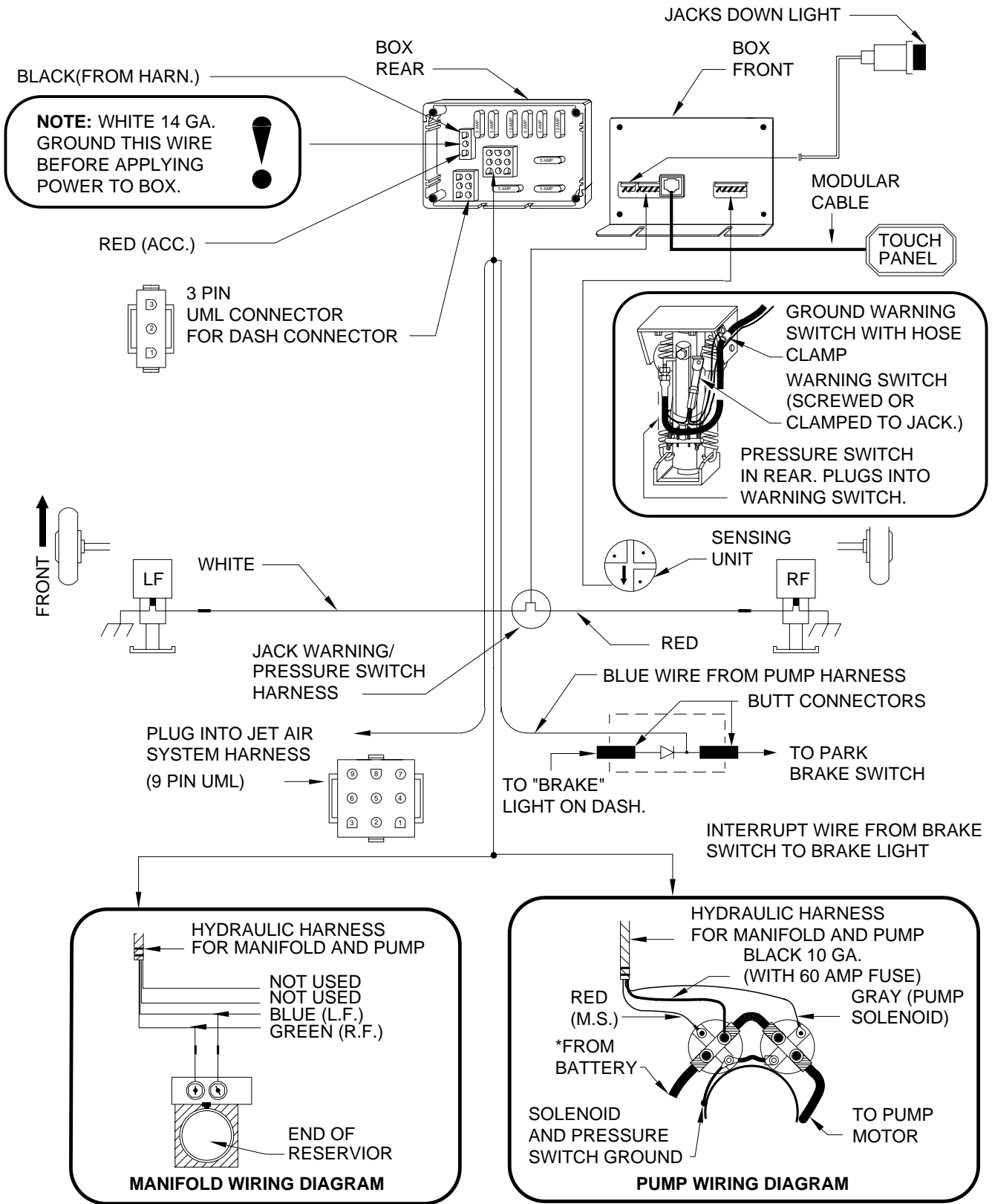
HYDRAULIC LINE CONNECTION DIAGRAM



HYDRAULIC SCHEMATIC BI-AXIS LEVELING SYSTEM WITH KICK-DOWN JACKS

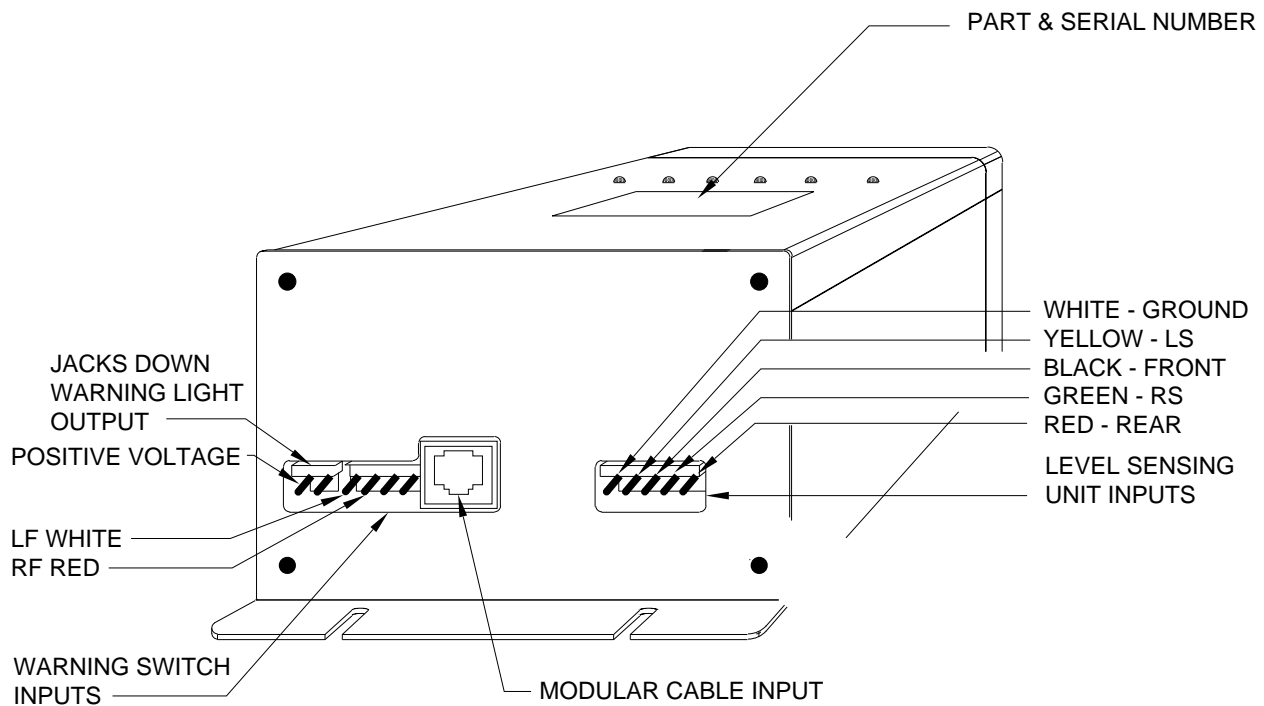
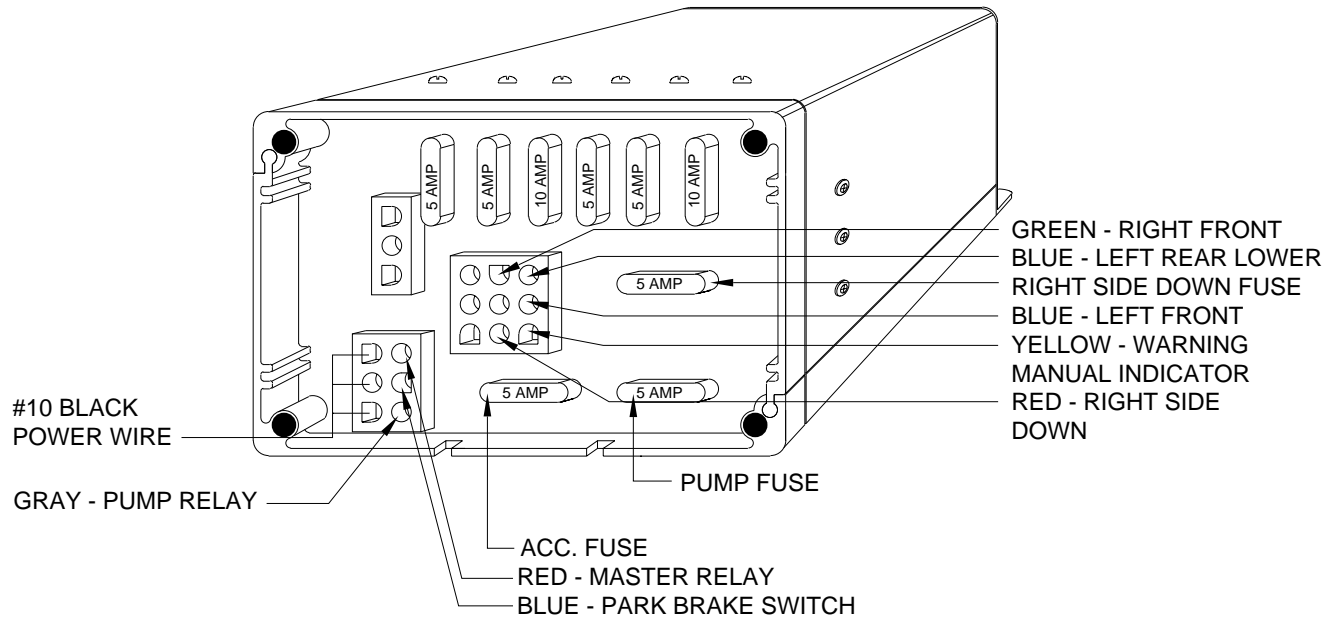


ELECTRICAL CONNECTION DIAGRAM FOR JET AIR SYSTEM



* FUSE MAY BE REQUIRED.
CHECK APPLICABLE CODE.

CONNECTION INFORMATION JET AIR SYSTEM



ELECTRICAL SCHEMATIC

