



# OPERATOR'S MANUAL

## HWH® COMPUTER-CONTROLLED 725 SERIES LEVELING SYSTEM

### **FEATURING:**

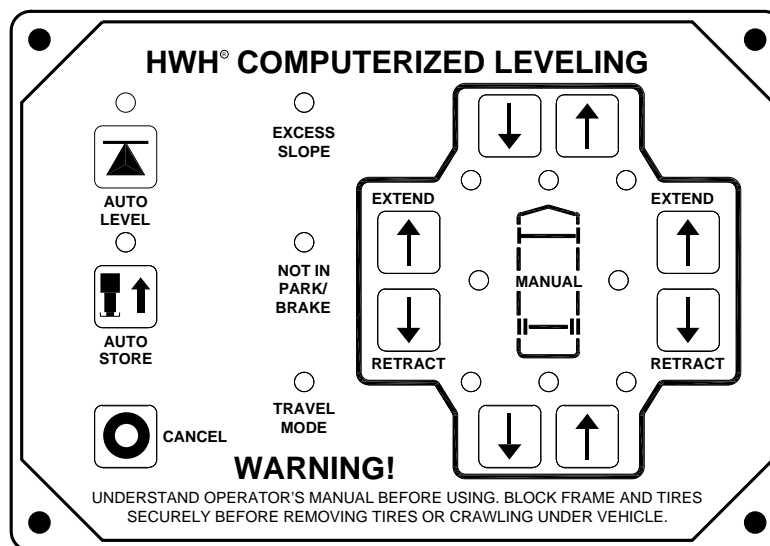
*Touch Panel Leveling Control*

*BI-AXIS® Hydraulic Leveling*

*Straight-Acting Jacks*

*Auxiliary Hand Pump*

*Canopy Lift*



### **HWH CORPORATION**

(On I-80, Exit 267 South)

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[www.hwh.com](http://www.hwh.com)

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# OPERATOR'S MANUAL

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## WARNING !

**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 IS IN USE.**

**WHILE HITCHING OR UNHITCHING, AVOID AREAS WHERE BODY MAY BE CRUSHED BY SUDDEN DROPPING OR SLIDING OF THE TRAILER.**

**DO NOT LIFT TOW VEHICLE WITH LEVELING SYSTEM.**

**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.**

**IMPORTANT: IF VEHICLE IS EQUIPPED WITH A ROOM EXTENSION, READ ROOM EXTENSION SECTION BEFORE OPERATING LEVELING SYSTEM.**

**KEEP ALL PEOPLE CLEAR OF VEHICLE WHILE CANOPY IS RAISING OR LOWERING.**

## 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.

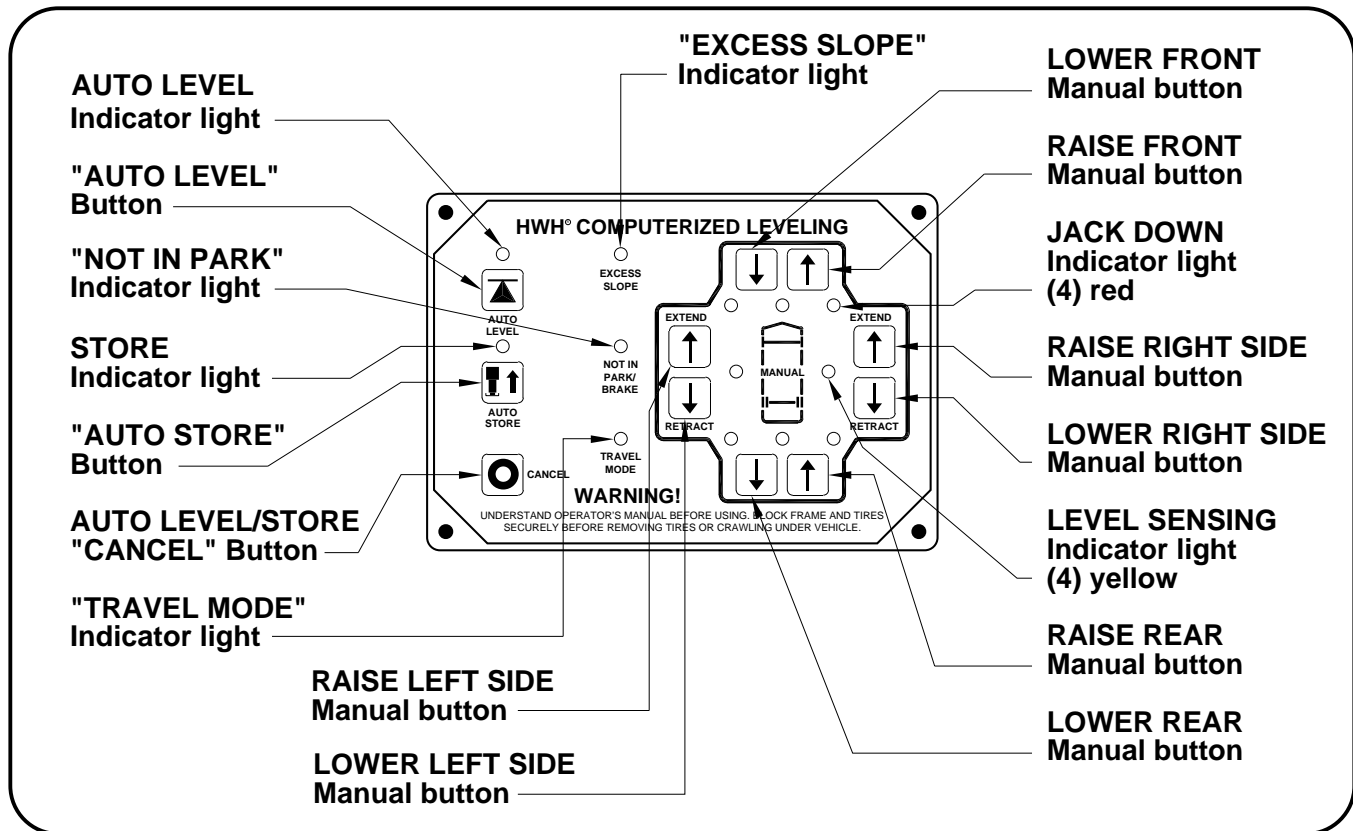
**SECOND:** If your dealer cannot or will not solve the problem, notify the Customer Service Department:  
HWH CORPORATION 2096 Moscow Rd. Moscow IA. 52760  
(563) 724-3396 OR (800) 321-3494. Give your name and address, coach manufacturer and model year, date the coach was purchased, or the date of system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

## 725 SERIES LEVELING SYSTEM

### COMPUTER-CONTROL



## CONTROL FUNCTIONS

### CONTROL BUTTONS

**"CANCEL" BUTTON:** Push this button to stop any leveling system operation.

**"AUTO LEVEL" BUTTON:** Push this button any time to start the automatic leveling function.

**"AUTO STORE" BUTTON:** Push this button to retract all four jacks at the same time.

**EXTEND BUTTONS (UP ARROWS):** These buttons will extend their respective jack pairs to lift the vehicle.

**RETRACT BUTTONS (DOWN ARROWS):** These buttons will retract their respective jack pairs to lower the vehicle.

### INDICATOR LIGHTS

**AUTO LEVEL INDICATOR LIGHT:** This light will flash during the automatic leveling function.

**STORE INDICATOR LIGHT:** This light will flash during the automatic store function.

### INDICATOR LIGHTS (CONTINUED)

**WARNING LIGHTS:** The four red lights surrounding the yellow level indicators are jacks down WARNING lights. They are functional only when the ignition is in the "ON" or "ACC" position, the system is on, and the jacks are extended 1/4 to 1/2 inch.

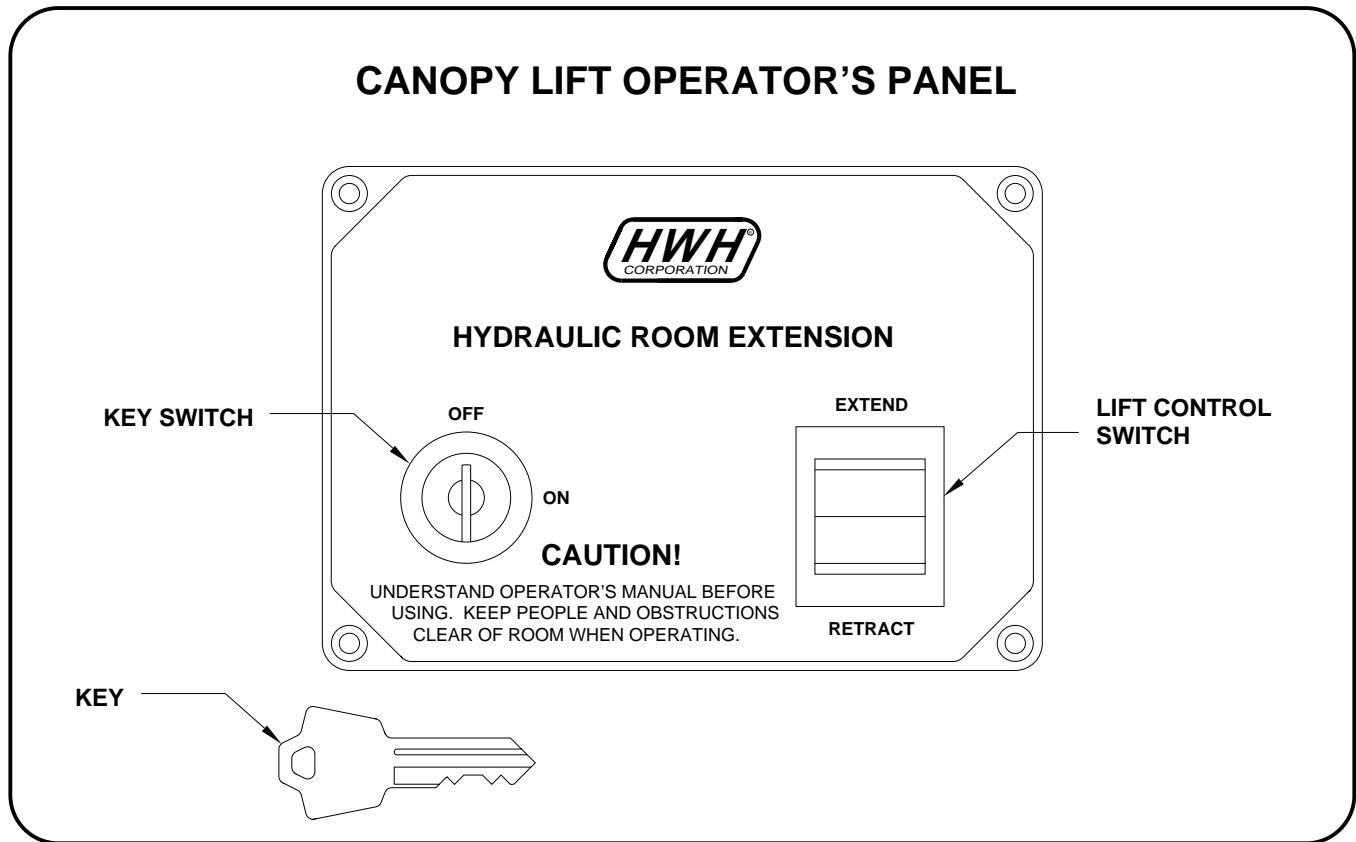
**LEVELING LIGHTS:** The four yellow indicating lights are level sensing indicators. When a yellow light is on, it indicates that its side, end, or corner of the vehicle is low. No more than two lights should be on at the same time. When all four yellow LEVEL lights are out, the vehicle is level.

**"EXCESS SLOPE" LIGHT:** This indicator will light when the leveling system cannot level the vehicle.

**"NOT IN PARK/BRAKE" LIGHT:** This indicator will light when the hand/auto brake is not set and the "AUTO LEVEL" button is being pushed.

**"TRAVEL MODE" LIGHT:** This indicator light will be on when the ignition is on, when the jacks are retracted and there are no red WARNING lights on.

## CONTROL IDENTIFICATION



## CONTROL FUNCTIONS

**KEY SWITCH:** The KEY SWITCH controls power to the LIFT CONTROL SWITCH and the leveling system touch panel. When the KEY SWITCH is in the "ON" POSITION the lift and the leveling system can be operated, and the key cannot be removed. When the KEY SWITCH is in the "OFF" position the lift and the leveling system cannot be operated, and the key can be removed.

**LIFT CONTROL SWITCH:** The LIFT CONTROL SWITCH is a two position momentary switch. Pressing the switch in the EXTEND POSITION will raise the canopy. Pressing the switch in the RETRACT POSITION will lower the canopy. Releasing the LIFT CONTROL SWITCH will halt the operation of the lift.

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## CONTROL IDENTIFICATION

### PUMP RUN TIME

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#### PUMP RUN TIME

Pump motors used with HWH leveling systems and room extension systems come in 3 different diameters; 3", 3.7" and 4.5". Contact the vehicle manufacturer or HWH for help with identifying the motor size. **It is important that any time the pump runs for more than three minutes with a 3" motor; or six minutes with a 3.7" or 4.5" motor that the motor is allowed to cool for thirty minutes before continuing. Continuous operation of the pump motor without allowing the motor to cool can damage the motor.** For cold weather information see "COLD WEATHER OPERATIONS" below.

The HWH systems with a computer processor monitor the pump run time and will turn the pump off if the run time exceeds a specified time. This time can vary with different systems. Due to available electronics or system design, the pump run time programs will also vary. Leveling systems and room extensions that are not controlled by a system processor have no pump run time protection. **DO NOT run the pump more than three or six minutes without allowing the pump motor to cool for thirty minutes.**

#### SYSTEM VARIATIONS FOR PUMP RUN TIME

Some systems with rooms run the rooms separate from the system processor. These systems do not monitor pump run time when operating the rooms. **DO NOT run the pump more than three or six minutes without allowing the pump motor to cool for thirty minutes.**

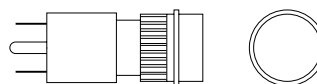
Some systems can be turned back on immediately after the processor turns the pump off. **DO NOT turn the system back on or run the pump without allowing the pump motor to cool for thirty minutes.**

When operating some leveling systems manually or operating the room extensions, the pump will turn off and back on while pushing the control button when the pump run time has been exceeded. **DO NOT continue without allowing the pump motor to cool for thirty minutes.**

With some systems, when the processor has turned the pump off because the run time has been exceeded, power to the HWH system must be turned off and back on before the system will operate. With motorized vehicles, turn the ignition off and back on. With non-motorized vehicles, turn the master power switch for the HWH system off and back on. **DO NOT continue without allowing the pump motor to cool for thirty minutes.**

Some HWH systems are equipped with a lighted reset switch. If the processor turns the pump off because the run time has been exceeded, the light in the reset switch will turn on. The system will not operate until the reset switch is pushed.

**DO NOT continue without allowing the pump motor to cool for thirty minutes.**



LIGHTED RESET SWITCH

**No matter what HWH system is on the vehicle, the pump should not be ran for more than three minutes (3" motors) or six minutes (3.7" or 4.5" motors) without allowing the pump motor to cool for thirty minutes. Continuous operation of the pump motor without allowing the motor to cool can damage the pump motor.**

Contact HWH corporation to get specific information about the system in this vehicle.

## COLD WEATHER OPERATIONS

HWH leveling and room extension systems are designed to function in cold weather down to 0 degrees Fahrenheit. Below freezing (32 degrees Fahrenheit) the jacks or rooms will operate slower than usual.

For operation in temperatures dropping below -20 degrees Fahrenheit, it is necessary that the system is equipped with oil designed for extreme cold weather application such as a synthetic oil. (Contact HWH for recommendations.)

**DO NOT run the pump motor continuously. It is important that any time the pump runs for more than three minutes with a 3" motor; or six minutes with a 3.7" or 4.5" motor that the motor is allowed to cool for thirty minutes before continuing. Continuous operation of the pump motor without allowing the motor to cool can damage the motor.** Continuous operation of the pump with slow moving jacks or rooms in cold weather, without allowing the pump motor to cool will cause the pump motor to burn up and damage the pump assembly.

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# OPERATING PROCEDURES

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## GENERAL INSTRUCTIONS

Maintain adequate clearance in all directions for vehicle, room extensions, awnings, doors, steps, etc. Vehicle may move in any direction due to jacks extending or retracting, settling of the jacks or the vehicle, equipment malfunction, etc..

If parking on soft ground or asphalt paving, wood blocks or pads must be placed under the jacks.

Press the "CANCEL" button and turn the master power switch "OFF" at any time to stop the operation of the system.

**WARNING: DO NOT MOVE THE VEHICLE IF ONE OR MORE JACKS ARE EXTENDED TO THE GROUND.**

The HWH or OEM supplied master power switch must be on for the leveling system or canopy to operate.

## PREPARATION FOR TRAVEL

Before traveling, the red jack warning lights must be off and the "TRAVEL MODE" light must be on. If lights are not correct for travel, retract jack as described in the JACK RETRACTION Section.

If the jacks are retracted but a red "WARNING" light is lit or the green "TRAVEL MODE" light is not lit, the system needs to be serviced.

The canopy should be fully retracted before traveling.

The master power switch and the canopy lift control panel key switch should be off while traveling.

**WARNING: DO NOT MOVE THE VEHICLE WHILE THE LEVELING JACKS ARE STILL IN CONTACT WITH THE GROUND OR IN THE EXTEND POSITION. THIS VEHICLE IS EQUIPPED WITH STRAIGHT-ACTING JACKS.**

**MOVING THE VEHICLE WITH THE LEVELING JACKS EXTENDED CAN CAUSE SEVERE DAMAGE TO THE JACKS AND OR THE VEHICLE AND CREATE A DRIVING HAZARD. DO NOT RELY SOLELY UPON WARNING LIGHTS. IT IS THE OPERATOR'S RESPONSIBILITY TO CHECK THAT ALL JACKS ARE FULLY RETRACTED INTO THE STORE/TRAVEL POSITION.**

Any time the "AUTO LEVEL" button has been pushed, push the "STORE" button before traveling.

If the jacks cannot be retracted according to the STORING JACK Section, retract the jacks according to the MANUAL JACK RETRACTION Section. The system should then be checked.

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# OPERATING PROCEDURES

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## AUTOMATIC HYDRAULIC LEVELING

The trailer must be unhitched from the tow vehicle before leveling the trailer.

**NOTE: Refer to the trailer manufacturers owner's manual for unhitching instructions.**

The trailer master power switch and the canopy lift control panel key switch must be on to operate the HWH leveling system jacks. The HWH panel will function in the manual mode with the master power switch and HWH key switch on.

The HWH front jacks may be used to lift the trailer for unhitching. Use the front UP ARROW button on the HWH touch panel to extend the front jacks.

**NOTE: Before extending the front jacks or leveling the trailer, the operator may want to check the jacks and place pads under the jacks if the ground will not support the trailer.**

If the rear yellow level light is on after unhitching, the front of the trailer should be lowered until the rear level light is off before starting the automatic leveling procedure.

### AUTOMATIC LEVELING

Press the "AUTO LEVEL" button one time.  
The AUTO LEVEL light will start to flash.

**IMPORTANT: During the Automatic Leveling procedures, pushing the "AUTO LEVEL", "AUTO STORE" or the "CANCEL" button on the HWH touch panel will stop the automatic leveling function.**

**AUTO LEVEL SEQUENCE:** During the automatic leveling sequence, after the system has extended the appropriate jacks to level the vehicle and has turned the yellow level indicator lights off, the system will then stabilize the vehicle.

Each jack has a pressure switch. The switch will turn on when the jack extends to the ground and lifts the vehicle slightly. Jacks that have lifted the vehicle for leveling should have pressure switches that are on.

The stabilize procedure is a specific sequence where the computer checks the jack pressure switches. If the switch is on, the jack is stabilizing the vehicle. If the switch is not on, the computer turns the pump and valve on for that jack until the pressure switch turns on.

The sequence starts with the right rear jack. If the pressure switch is not on, the system will extend the jack as necessary. If the switch is on (or when it comes on) the system will check the left rear jack pressure switch, extending the jack if necessary. If the left rear switch is on (or when it comes on), the system will recheck the right rear (extending if necessary) then recheck the left rear (extending if necessary). After checking and rechecking both rear jacks, the system then checks the front jacks. The system checks both front jacks at the same time. If either pressure switch is not on, the system will turn the pump on and open the valves for both front jacks. When both front pressure switches are on, the system turns the pump and front valves off.

If at this time a yellow level light is on, the system will automatically repeat the complete leveling and stabilizing sequence. The repeat sequence will only happen if a yellow level light is on at the end of the initial leveling and stabilizing sequence.

If a yellow level light is still on after the repeat sequence, the system will turn off, leaving the level light on.

The slight lift experienced during the stabilizing procedure normally is not sufficient to cause a level issue for the motor home. However, a feature of the single step leveling system is the manual leveling buttons will function anytime the ignition is in the ON or ACC. position and the park brake is set. If desired, the operator can use the UP ARROWS (extend jacks) that correspond to any lit yellow level indicator light to "bump" the vehicle up slightly to turn that yellow indicator light off.

**EXCESS SLOPE SITUATION:** In the event the jacks are unable to level the coach, the "EXCESS SLOPE" light will come on. Excess slope is one or two jacks fully extended without turning the yellow level light out. The system will not stabilize the vehicle if the "EXCESS SLOPE" light comes on. One or more jacks may be extended. The system will shut off leaving the "EXCESS SLOPE" light on. The "EXCESS SLOPE" light will remain on if there is power to the control box, until the jacks have been fully retracted using the "STORE" button, turning the red warning lights out. Refer to the HITCHING AND STORING JACKS section. Move the trailer to a more level position or level the trailer as close as possible according to the MANUAL LEVELING section. Manual leveling will operate when the EXCESS SLOPE light is on.

The canopy lift control panel key switch should be off when the leveling system or canopy lift are not in use.

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# OPERATING PROCEDURES

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## HITCHING AND STORING JACKS

**WARNING:** THE OPERATOR MUST BE SURE THAT THERE ARE NO OBJECTS UNDER THE TRAILER AND THAT ALL PEOPLE ARE CLEAR OF THE TRAILER.

### HITCHING

1. The master power switch and the HWH canopy lift control panel key switch must be on to hitch the trailer and store the jacks.

The manual UP (extend jacks) and DOWN (retract jacks) arrows will function anytime the master power switch and the HWH canopy lift control panel key switch are on if the "AUTO LEVEL" or AUTO STORE lights are not flashing.

2. Push the rear down arrow (RETRACT button) until the weight of the trailer is off the rear jacks.

3. Hitch the trailer to the tow vehicle according to the manufacturers instructions. Use the existing landing gear or the front UP (EXTEND jacks) and DOWN (RETRACT jacks) arrows.

**NOTE:** If the trailer is equipped with an air suspension, it is recommended to not connect the tow vehicle air supply to the trailer until the trailer is hitched to the tow vehicle and the jacks are not touching the ground.

### STORING JACKS

1. After the trailer is securely hitched to the tow vehicle, press the "AUTO STORE" button. The store indicator light will flash. The front jacks will retract for 5 seconds before the rear jacks will begin to retract. As each jack retracts, its red WARNING light will go out. The system will automatically shut down 1 minute after the four individual red "WARNING" lights are out. If any one red "WARNING" light does not go out, the system will continue to store for fifty minutes, then shut down regardless of the "WARNING" lights condition.

**IMPORTANT:** During the Automatic Store procedures, pushing the "AUTO LEVEL", "AUTO STORE" or the "CANCEL" button on the HWH touch panel will stop the automatic store function.

**NOTE:** When traveling thermal expansion may cause a jack to extend slightly. When the "AUTO STORE" button has been used to retract the jacks, the system will automatically retract any jack that extends due to thermal expansion.

**IMPORTANT:** If power to the system is interrupted after starting a store procedure the store procedure should be reinitiated and the jacks should be completely retracted with all four red WARNING lights out prior to traveling.

**WARNING:** ONLY USE THE "STORE" BUTTON IF THE TRAILER IS HITCHED TO A TOW VEHICLE OR SECURELY SUPPORTED BY THE AUXILIARY JACKS.

**WARNING:** DO NOT MOVE THE TRAILER WHILE THE LEVELING JACKS ARE STILL IN CONTACT WITH THE GROUND OR IN THE EXTEND POSITION. THIS TRAILER IS EQUIPPED WITH STRAIGHT-ACTING JACKS. MOVING THE TRAILER WITH THE LEVELING JACKS EXTENDED CAN CAUSE SEVERE DAMAGE TO THE JACKS AND OR THE TRAILER AND CREATE A DRIVING HAZARD. DO NOT RELY SOLELY UPON WARNING LIGHTS. IT IS THE OPERATOR'S RESPONSIBILITY TO CHECK THAT ALL JACKS ARE FULLY RETRACTED INTO THE STORE/TRAVEL POSITION.

2. Turn the master power switch and HWH key switch off before traveling.

3. The trailer can be moved as soon as the red warning lights are out, the jacks are in the STORE/TRAVEL position and the green "TRAVEL MODE" light is on.

If jacks cannot be retracted by the above procedure see the MANUAL JACK RETRACTION section.



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# OPERATING PROCEDURES

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## MANUAL TOUCH PANEL OPERATION

The trailer must be unhitched from the tow vehicle before leveling the trailer.

**NOTE: Refer to the trailer manufacturers owner's manual for unhitching instructions.**

The trailer master power switch and the canopy lift control panel key switch must be on to operate the HWH leveling system jacks. The HWH panel will function in the manual mode with the master power switch and HWH key switch on.

The HWH front jacks may be used to lift the trailer for unhitching. Use the front UP ARROW button on the HWH touch panel to extend the front jacks.

**NOTE: Before extending the front jacks or leveling the trailer, the operator may want to check the jacks and place pads under the jacks if the ground will not support the trailer.**

The vehicle may be leveled using the manual EXTEND (UP ARROW) buttons or RETRACT (DOWN ARROW) buttons on the right half of the panel. If a yellow LEVEL SENSING light is on, that side, end or corner of the vehicle is low. It is best to level the vehicle side to side first, if needed, before front to rear.

Jacks will extend (or retract) in pairs to raise (or lower) a side or end of the trailer.

Any jack not used for leveling can be extended to the ground. This provides additional stability against wind and activity in the trailer. Jacks used to stabilize the trailer after leveling is complete should lift the trailer slightly after touching the ground.

**IMPORTANT: DO NOT CONTINUE TO PUSH AN EXTEND BUTTON FOR MORE THAN TEN (10) SECONDS AFTER THAT PAIR OF JACKS ARE FULLY EXTENDED.**

Turn the canopy control panel key switch off anytime the leveling system or canopy lift is not in use.

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# OPERATING PROCEDURES

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## CANOPY LIFT RAISE PROCEDURE

**WARNING:** KEEP PEOPLE AND OBSTRUCTIONS CLEAR OF CANOPY WHEN OPERATING.

**NOTE:** Make sure there is adequate clearance to fully extend the canopy.

1. Insert the KEY and turn the KEY SWITCH to the "ON" POSITION. The trailer master power switch must be on.
2. To raise the canopy, press and hold the LIFT CONTROL SWITCH in the "EXTEND" POSITION. When the canopy is fully raised, release the LIFT CONTROL SWITCH.

**IMPORTANT:** Do not hold the LIFT CONTROL SWITCH in the "EXTEND" POSITION for more than ten seconds after the canopy is fully extended or stops moving. **IF EITHER SIDE OF THE CANOPY STOPS MOVING, RELEASE THE LIFT CONTROL SWITCH IMMEDIATELY.**

**NOTE:** Releasing the LIFT CONTROL SWITCH will halt the operation of the lift.

**IMPORTANT:** AS THE CANOPY BECOMES FULLY EXTENDED, ONE FRONT AND ONE REAR SAFETY LOCK SHOULD SNAP INTO PLACE. MAKE SURE THESE LOCKS ARE IN THE CORRECT POSITION FOR A RAISED CANOPY.

3. Turn the KEY SWITCH to the "OFF" POSITION.
4. Remove the KEY to prevent undesired operation of the lift.

## CANOPY LOWER PROCEDURE

**WARNING:** KEEP PEOPLE AND OBSTRUCTIONS CLEAR OF CANOPY WHEN OPERATING.

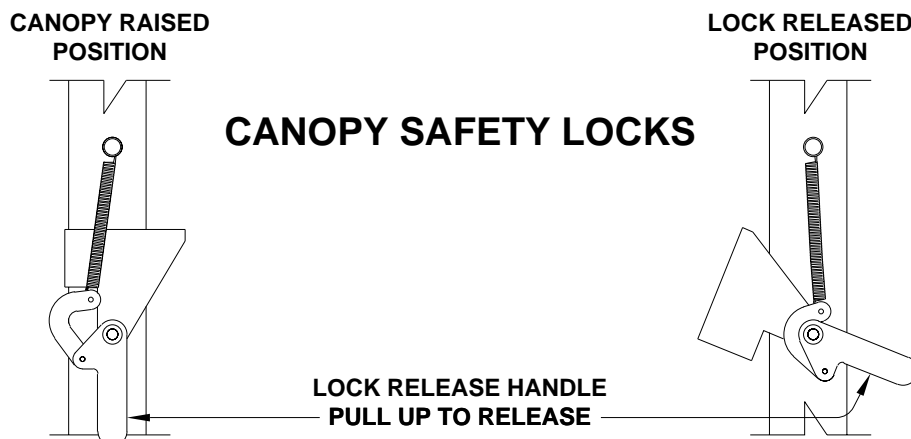
1. Insert the KEY and turn the KEY SWITCH to the "ON" POSITION. The trailer master power switch must be on.
2. Release the canopy safety locks. There is one front and one rear lock. They are on opposite sides of the trailer. Pull up on the safety lock release handle to move the safety lock. If necessary, push the canopy control switch to EXTEND to raise the canopy so the safety locks can be released.
3. To lower the canopy, press and hold the LIFT CONTROL SWITCH in the "RETRACT" POSITION. When the canopy is fully retracted, release the LIFT CONTROL SWITCH.

**NOTE:** The pump will not run while the canopy is lowering.

**IMPORTANT:** Do not hold the LIFT CONTROL SWITCH in the "RETRACT" POSITION for more than ten seconds after the canopy is fully retracted or stops moving. **IF EITHER SIDE OF THE CANOPY STOPS MOVING, RELEASE THE LIFT CONTROL SWITCH IMMEDIATELY.**

**NOTE:** Releasing the LIFT CONTROL SWITCH will halt the operation of the lift.

4. Turn the KEY SWITCH to the "OFF" POSITION.
5. Remove the KEY to prevent undesired operation of the lift.
6. If the room will not retract see the MANUAL CANOPY LOWER PROCEDURE.



# OPERATING PROCEDURES

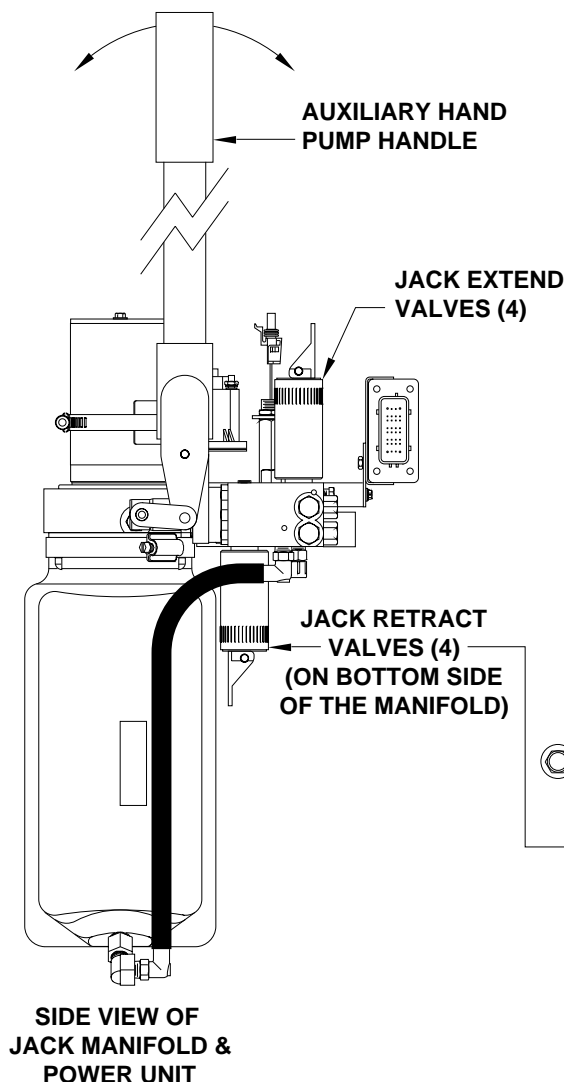
## AUXILIARY HAND PUMP OPERATION LEVELING SYSTEM

**WARNING:** KEEP PEOPLE AND OBJECTS CLEAR OF TRAILER WHEN OPERATING THE LEVELING SYSTEM.

The auxiliary hand pump can be used to extend the jacks anytime the pump will not function.

The auxiliary hand pump is a two stage pump that will produce enough pressure to extend the jacks and lift the vehicle. When operating the auxiliary pump to lift the vehicle, the pump handle will seem to "snap" as the pump goes to the second stage. The pumping action will be easier at first as the second stage starts to create more pressure.

To operate the auxiliary hand pump, open the appropriate solenoid valve(s). Insert the hand pump handle into the handle receptacle and move the handle in a fore and aft motion.



## EXTENDING JACKS

To extend jacks use the valve release cam to open the appropriate valve(s).

Operate hand pump in a fore and aft motion to extend jacks or lift the canopy.

**Note:** It is best if jacks are extended in pairs; both front, both rear, right front & right rear or left front & left rear.

Return valve release cams to valve closed position when finished.

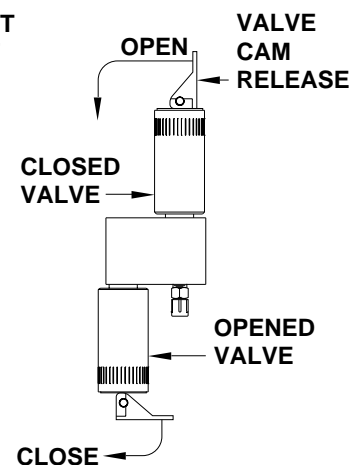
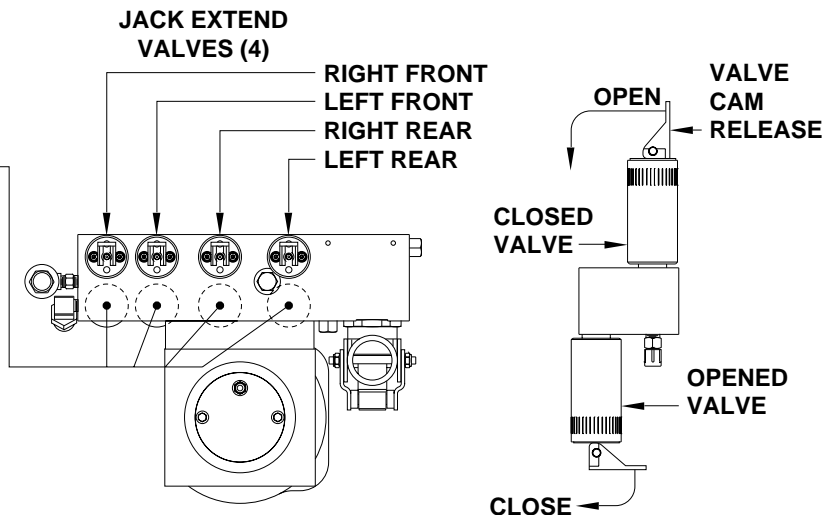
## RETRACTING JACKS

**WARNING:** ONLY USE THE RETRACT VALVE CAM RELEASES IF HITCHING THE TRAILER TO THE TOW VEHICLE OR IF THE TRAILER IS SUPPORTED BY THE AUXILIARY MANUAL JACK(S). ALLOW AMPLE ROOM FOR THE VEHICLE TO MOVE IN ANY DIRECTION WHEN A JACK MANIFOLD VALVE IS OPENED. OPEN THE VALVE RELEASE CAMS SLOWLY TO KEEP THE TRAILER FROM DROPPING RAPIDLY. TRAILER WILL DROP WHEN THE JACK RETRACT MANIFOLD VALVE IS OPENED.

The hand pump is not needed to retract the jacks. Move the retract valve cam release to the opened position to retract a jack.

It is recommended to retract the rear jacks before retracting the front jacks.

When the jacks are fully retracted, move the retract valve cam releases to the valve closed position.



# OPERATING PROCEDURES

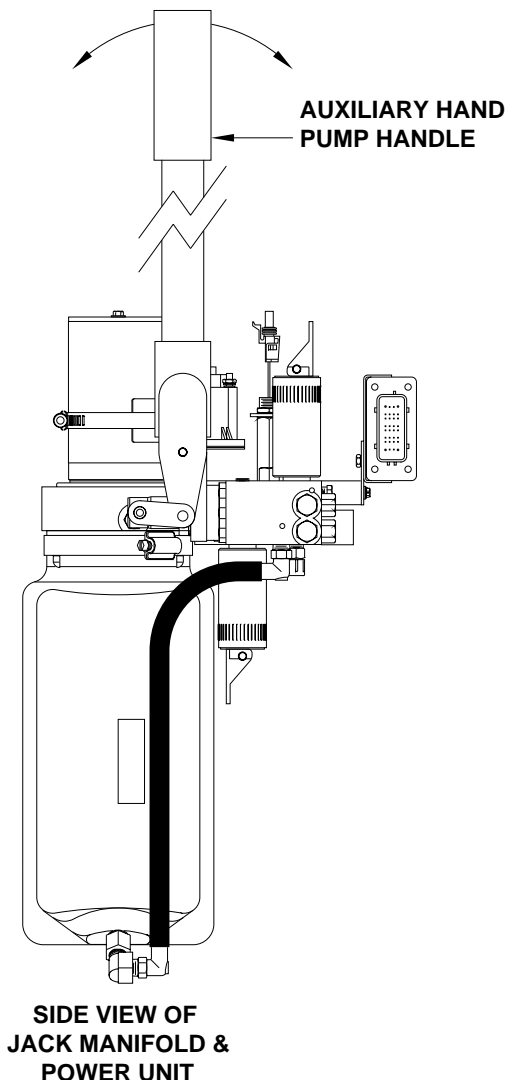
## AUXILIARY HAND PUMP OPERATION CANOPY LIFT

**WARNING:** KEEP PEOPLE CLEAR OF THE TRAILER WHEN OPERATING THE CANOPY LIFT.

The auxiliary hand pump can be used to raise the canopy lift anytime the pump will not function.

The auxiliary hand pump is a two stage pump that will produce enough pressure to lift the canopy. When operating the auxiliary pump to lift the canopy, the pump handle will seem to "snap" as the pump goes to the second stage. The pumping action will be easier at first as the second stage starts to create more pressure.

To operate the auxiliary hand pump, open the appropriate solenoid valve. Insert the hand pump handle into the handle receptacle and move the handle in a fore and aft motion.



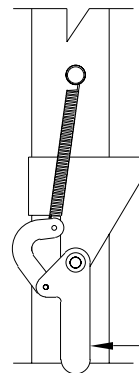
## LIFTING THE CANOPY

Move the canopy lift valve release cam to the valve open position.

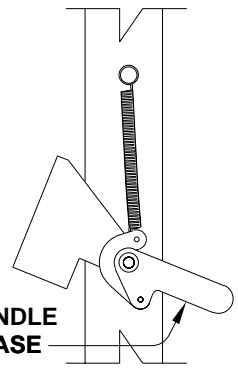
Operate the hand pump handle in a fore and aft motion until the canopy is fully lifted.

The canopy safety locks should snap into place as the canopy becomes fully lifted.

### CANOPY RAISED POSITION



### LOCK RELEASED POSITION



LOCK RELEASE HANDLE  
PULL UP TO RELEASE

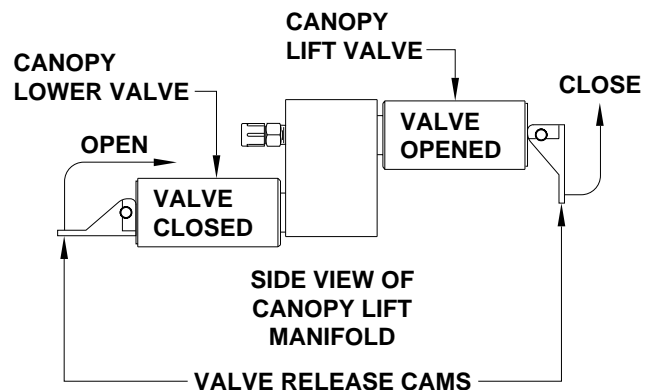
## LOWERING THE CANOPY

Release the canopy safety locks. There is a front and rear safety locks on opposite sides of the trailer.

**NOTE:** It may be necessary to raise the canopy slightly to release the safety locks.

Slowly move the canopy lower valve release cam to the valve opened position. The canopy should lower without using the auxiliary hand pump.

When the canopy is fully lowered, move the canopy lower valve cam release to the valve closed position.



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# MAINTENANCE

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## OIL LEVEL

All maintenance should be done as part of the normal servicing of the coach.

The oil level 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.

All jacks and the canopy lift should be completely retracted before checking the oil level. The oil reservoir is part of the pump / manifold assembly. The oil level is checked and filled through the breather cap. Clear any dirt away from the breather / filler cap before removing. The oil level should be within one inch of the top of the reservoir. Most breather caps have a dipstick.

**NOTE:** Overfilling the tank can cause leakage of oil through the breather cap.

**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.

## ELECTRICAL SYSTEM

The batteries should be in good condition and fully charged. Weak batteries can cause erratic operation. Battery cable terminals and battery posts and connections should be kept clean.

All electrical connections, especially ground connections, should be clean, tight, free from corrosion and protected from weathering.

## JACKS

There are very few user serviceable parts on the jacks. The jacks require very little maintenance. If the jacks are extremely dirty with caked on mud they should be washed.

If extremely dirty, the jack rods should NOT be wiped. The jack rods do not need to be oiled or sprayed with anything. See ML47149 for proper maintenance of all jacks.

## CANOPY LIFT

The HWH lift mechanisms need no maintenance. DO NOT grease or lubricate any parts of the HWH mechanism.

Any visible mechanism can be kept clean by washing with water.

## VISUAL INSPECTION

Periodically inspect the system for oil leaks and damaged or missing parts, such as pivot bolts or springs. Check the hydraulic lines and wiring for damage and wear. Check that the jacks do not interfere with any parts of the vehicle when they are in the "STORE" position.

The system will operate better if kept clean and free from caked on mud or ice.

## OPERATIONAL CHECK

Review the OPERATOR MANUAL. Run the system according to the SYSTEM OPERATION Section. Note any abnormal operation.

Check that all lights work according to the "INDICATOR LIGHT" Section. Correct function of the red "WARNING" light is important.

Review the "JACK RETRACTION" Section. Make sure the jacks will fully retract to the "STORE" position. Jacks should not interfere with any of the coach when in the "STORE" position.

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## MAINTENANCE

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### WINTER WEATHER DRIVING

Anti-icing / deicing agents when splashed on your vehicle, continue to absorb moisture from the air even after they have dried. This can facilitate corrosion of metallic components, such as HWH jacks.

To help reduce the corrosion of jacks after exposure to anti-icing / deicing agents, thoroughly wash jacks with warm soapy water.

# INSTRUCTION SHEET

## SENSING UNIT MAINTENANCE/SERVICE

### REMOTE MOUNTED "POTTED" ELECTRONIC SENSING UNIT

#### SENSING UNIT ACCURACY TOLERANCE

The sensing unit has an accuracy tolerance of  $\pm 5.4$  inches front to rear and  $\pm 1$  inch side to side on a 36 foot vehicle. Typical leveling results will be better.

#### SENSING UNIT ADJUSTMENT / WITH ADJUSTING ENHANCEMENT

Level the vehicle by placing a bubble level in the center of the freezer floor or upon whichever surface within the vehicle that is to be level. It is best if the level is placed close to the mounting area of the sensing unit. Using the Leveling System and the bubble level, ignoring the yellow LEVEL lights on the Touch Panel, level the vehicle until the bubble is centered.

With the vehicle level according to the bubble level, if there are no yellow lights lit on the Touch Panel, the sensing unit is properly adjusted. If there are yellow LEVEL lights lit on the Touch Panel, manual adjustments to the Sensing Unit are needed.

The ignition (motorized units) or master power switch (towable units) must be on. Remove the "Adjusting Enhancement Cap". **DO NOT LOSE THIS CAP.** There is a small pin beneath the cap. Use a jumper wire with an alligator clip to apply a ground to the pin. This will make the sensing unit very sensitive. The yellow lights may "jump" around while adjusting the sensing unit. Let the lights settle down after each adjustment. Small, gentle turns will work best. Turn mounting screws 1 and 3 to adjust the sensing unit. Turn screws as instructed to turn out all the yellow LEDs. When all the LEDs are out, remove the jumper wire and replace the adjusting enhancement cap. **DO NOT** over tighten.

Move the vehicle to an unlevel position and level the vehicle according to the yellow level sensing lights on the touch panel. Readjust if necessary.

**IMPORTANT: THE SENSING UNIT MOUNTING SPRINGS SHOULD BE COMPRESSED ABOUT 1/2 THEIR FREE LENGTH. SCREW NUMBER 2 SHOULD NOT BE TURNED WHILE ADJUSTING THE SENSING UNIT. AFTER ADJUSTING THE SENSING UNIT, BUMP THE SENSING UNIT TO SEE THAT IT IS SETTLED TIGHT AGAINST ALL THREE SCREW HEADS AND STILL INDICATES THAT THE UNIT IS LEVEL.**

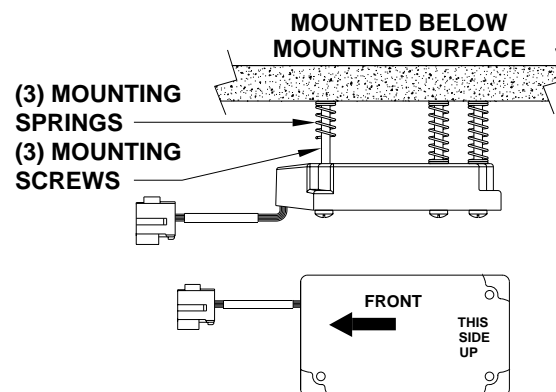
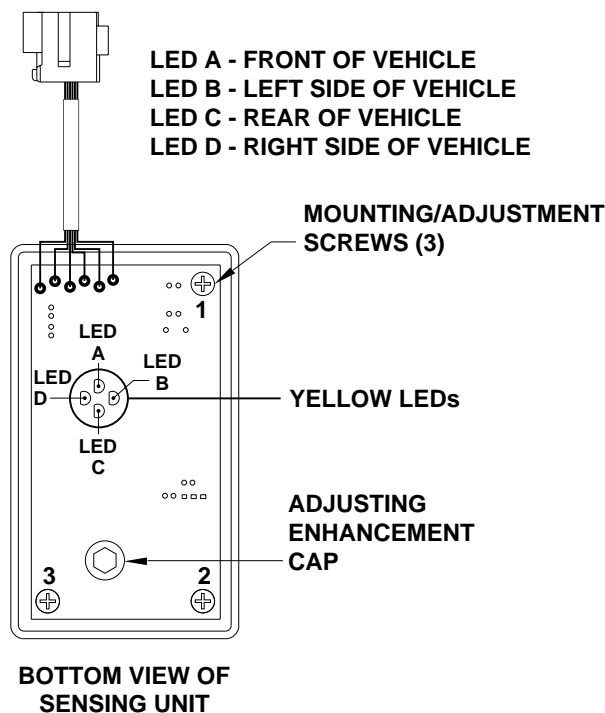
**NOTE: If opposing LED's are lit, there is a problem with the Sensing Unit.**

**If LED (A) is lit: Tighten adjustment screw number 1 until the LED is off.**

**If LED (C) is lit: Loosen adjustment screw number 1 until the LED is off.**

**If LED (B) is lit: Loosen adjustment screw number 3 until the LED is off.**

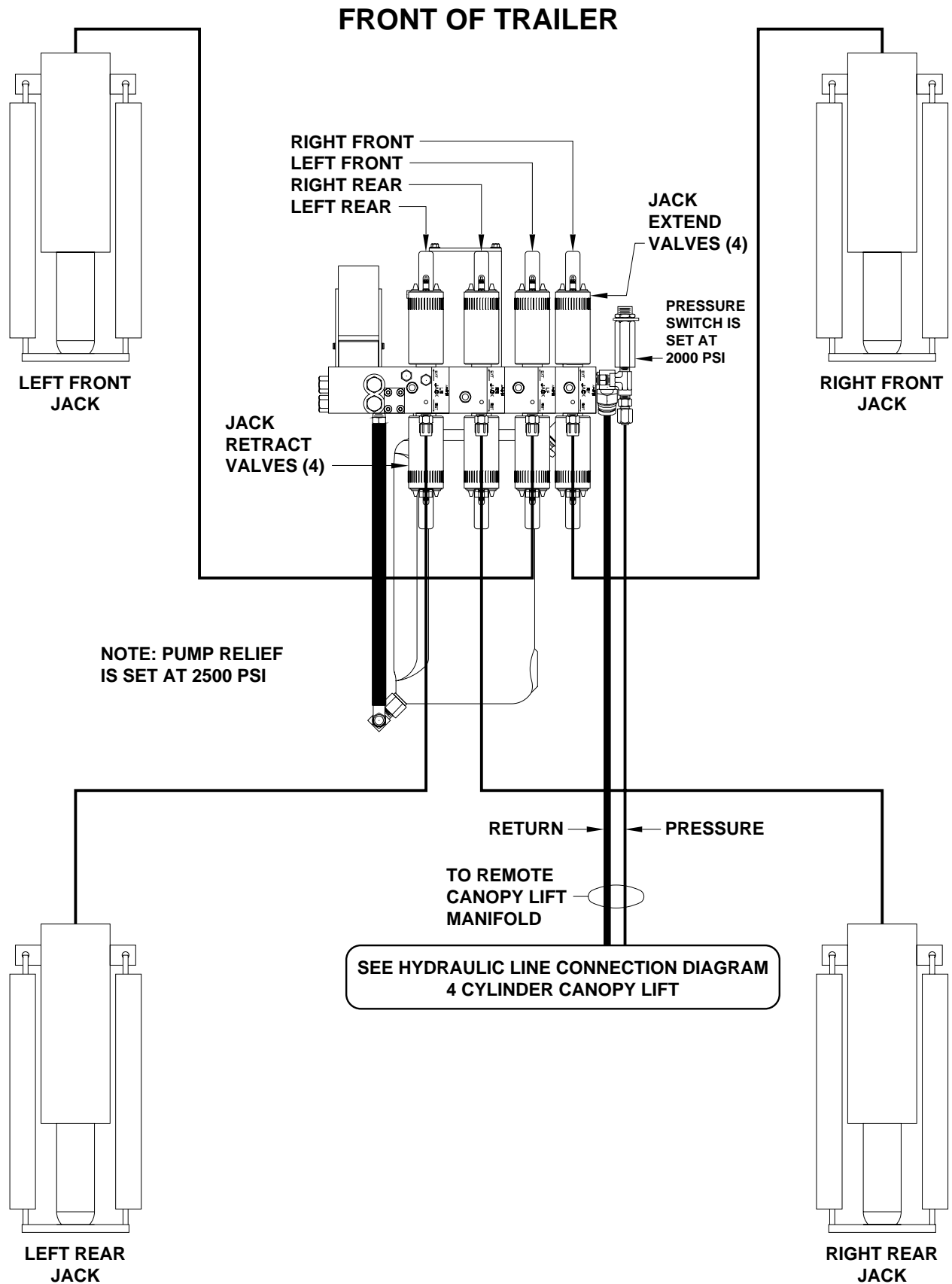
**If LED (D) is lit: Tighten adjustment screw number 3 until the LED is off.**



# HYDRAULIC LINE CONNECTION DIAGRAM

## 4 - FIXED JACKS

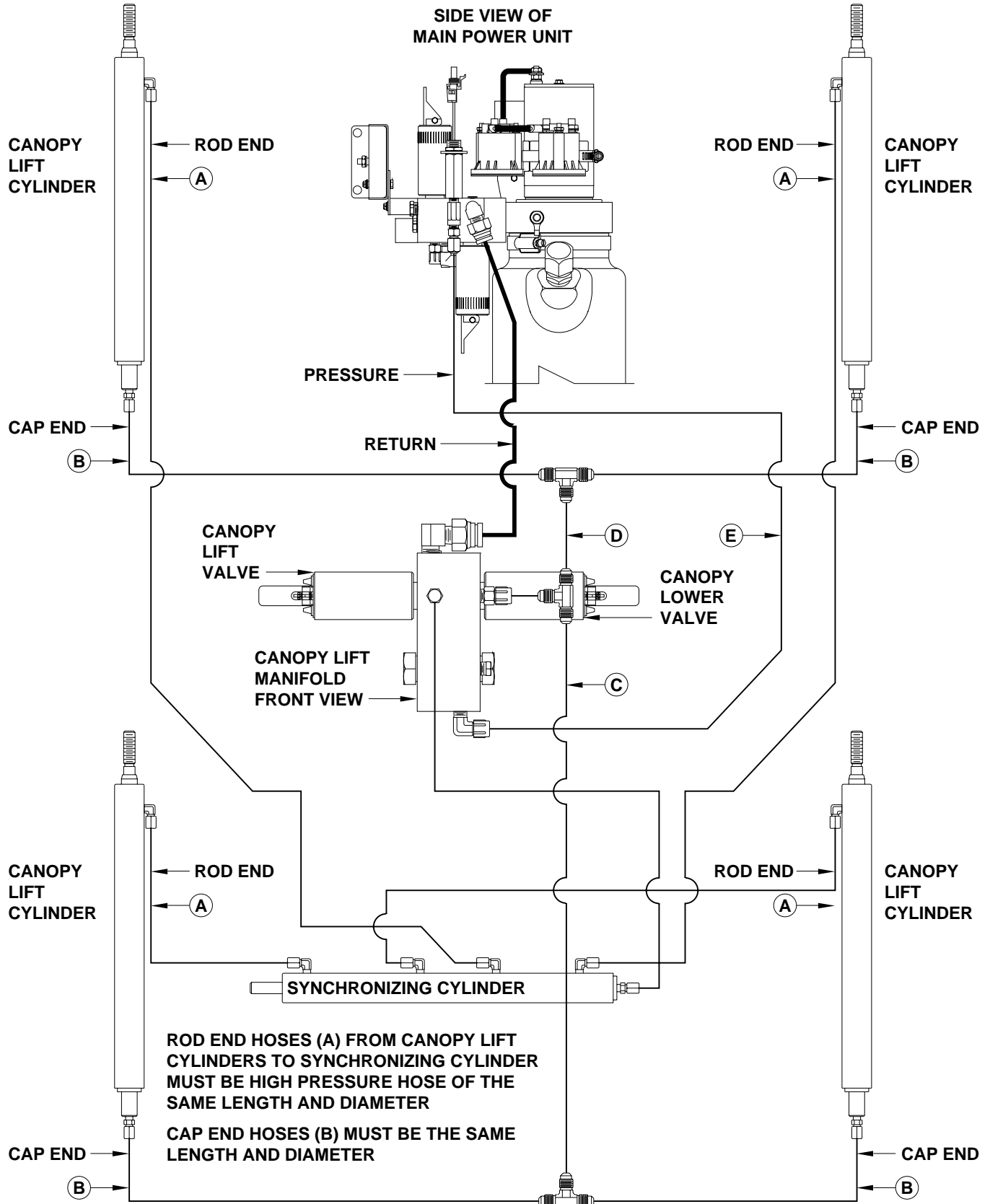
### REMOTE CANOPY LIFT MANIFOLD





# HYDRAULIC LINE CONNECTION DIAGRAM

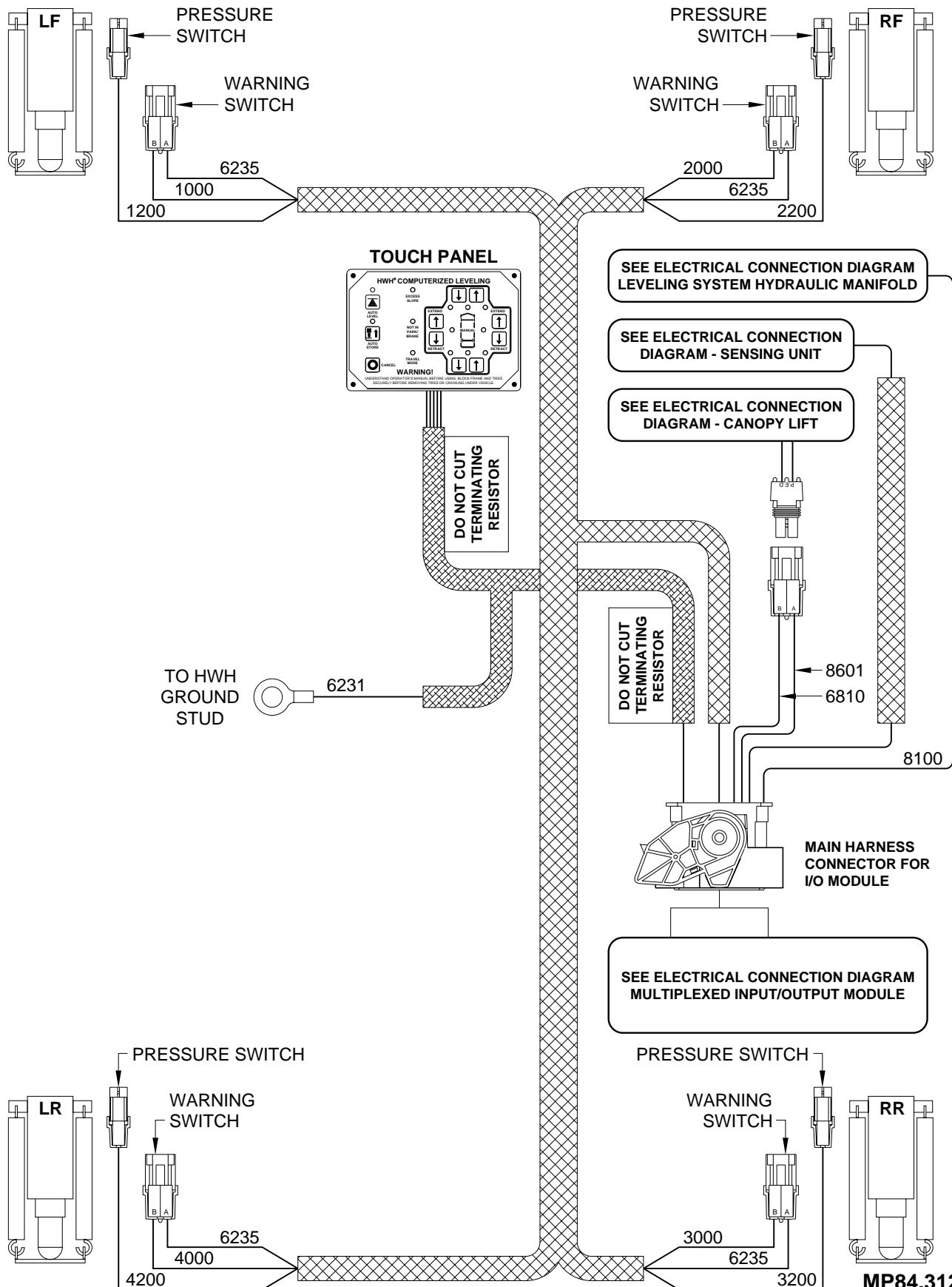
## 4 CYLINDER CANOPY LIFT



# ELECTRICAL CONNECTION DIAGRAM

## 725 SERIES SINGLE STEP LEVELING SYSTEM

### MAIN I/O MODULE HARNESS ROUTING



# ELECTRICAL CONNECTION DIAGRAM

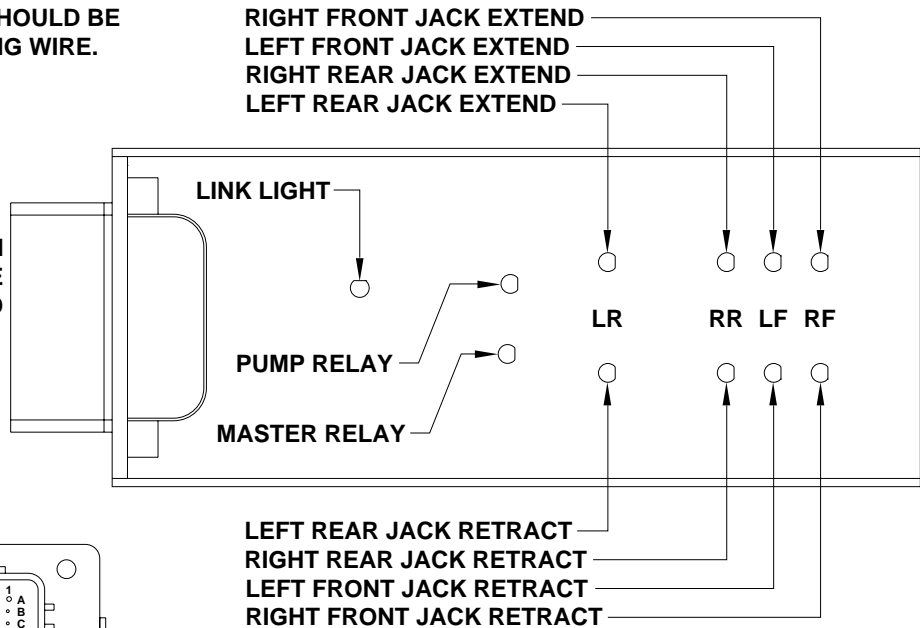
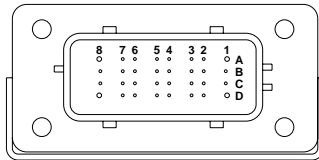
## MULTIPLEXED INPUT/OUTPUT MODULE

### LED AND WIRE/CONNECTION INFORMATION

A LIT RED LED INDICATES THERE SHOULD BE +12 VOLTS ON THE CORRESPONDING WIRE.

**LINK LIGHT:** LINK LIGHT FLASHING INDICATES PROPER COMMUNICATION BETWEEN THE I/O MODULE AND THE TOUCH PANEL. LINK LIGHT ON SOLID OR OFF INDICATES A FAILURE.

**FRONT VIEW  
OF I/O  
MODULE  
CONNECTOR**



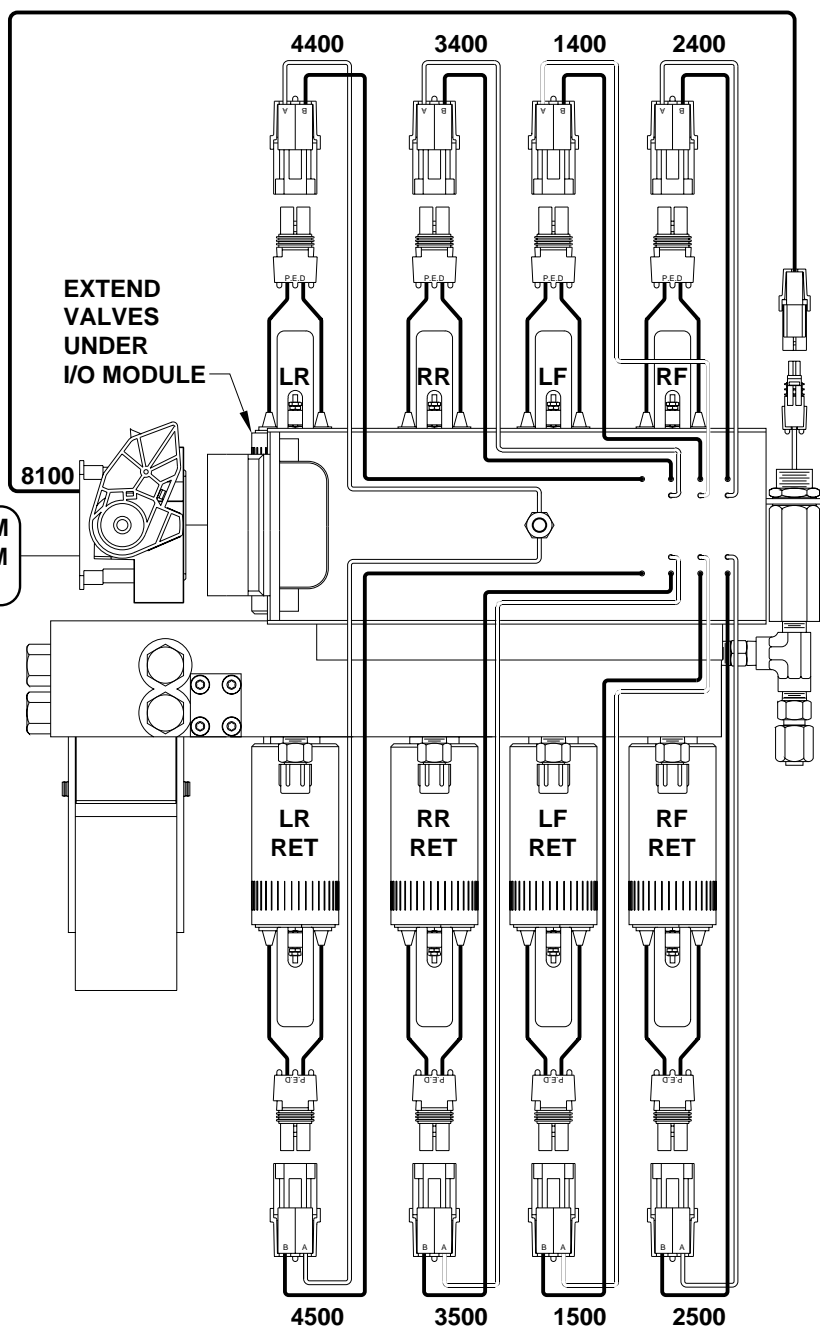
PIN #	WIRE COLOR	WIRE NUMBER	WIRE DESCRIPTION AND FUNCTION
A1 — — —	BLACK	8601	+12 PUMP REQUEST FROM LIFT CONTROL PANEL
A2 — — —	YELLOW	N/A	CAN HIGH COMMUNICATION WIRE
A3 AND A4 — — —			NO CONNECTION
A5 — — —	BLACK	2000	SWITCHED GROUND FROM RIGHT FRONT JACK WARNING SWITCH
A6 — — —	BLACK	2200	SWITCHED GROUND FROM RIGHT FRONT JACK PRESSURE SWITCH
A7 — — —	BLACK	3200	SWITCHED GROUND FROM RIGHT REAR JACK PRESSURE SWITCH
A8 — — —			NO CONNECTION
B1 — — —	RED	6800	+12 VOLT POWER TO THE TOUCH PANEL
B2 — — —	GREEN	N/A	CAN LOW COMMUNICATION WIRE
B3 — — —	WHITE	6230	GROUND TO THE TOUCH PANEL
B4 — — —			NO CONNECTION
B5 — — —	BLACK	3000	SWITCHED GROUND FROM RIGHT REAR JACK WARNING SWITCH
B6 — — —	BLACK	4200	SWITCHED GROUND FROM LEFT REAR JACK PRESSURE SWITCH
B7 — — —			NO CONNECTION
B8 — — —	BLACK	8100	SWITCHED GROUND FROM 2000 PSI MANIFOLD PRESSURE SWITCH
C1 — — —	RED	6121	+12 VOLT POWER FOR LEVEL SENSING UNIT
C2 — — —	N/A	N/A	SHIELD WIRE FOR GREEN & YELLOW CAN COMMUNICATION WIRES
C3 — — —	WHITE	6231	GROUND FOR LEVEL SENSING UNIT
C4 — — —	BLACK	0400	SWITCHED GROUND FROM SENSING UNIT - REAR
C5 — — —	BLACK	4000	SWITCHED GROUND FROM LEFT REAR JACK WARNING SWITCH
C6 AND C7 — — —			NO CONNECTION
C8 — — —	BLACK	0300	SWITCHED GROUND FROM SENSING UNIT - RIGHT SIDE
D1 — — —	BLACK	6810	+12 VOLT POWER FOR I/O MODULE FROM LIFT CONTROL PANEL
D2 — — —	WHITE	6235	GROUND FOR JACK WARNING SWITCHES
D3 — — —			NO CONNECTION
D4 — — —	BLACK	1000	SWITCHED GROUND FROM LEFT FRONT JACK WARNING SWITCH
D5 — — —	BLACK	1200	SWITCHED GROUND FROM LEFT FRONT JACK PRESSURE SWITCH
D6 — — —	BLACK	0100	SWITCHED GROUND FROM SENSING UNIT - LEFT SIDE
D7 — — —	BLACK	0200	SWITCHED GROUND FROM SENSING UNIT - FRONT
D8 — — —	BLACK	6231	GROUND

# ELECTRICAL CONNECTION DIAGRAM LEVELING SYSTEM HYDRAULIC MANIFOLD

1400 - LEFT FRONT JACK EXTEND  
 1500 - LEFT FRONT JACK RETRACT  
 2400 - RIGHT FRONT JACK EXTEND  
 2500 - RIGHT FRONT JACK RETRACT  
 3400 - RIGHT REAR JACK EXTEND  
 3500 - RIGHT REAR JACK RETRACT  
 4400 - LEFT REAR JACK EXTEND  
 4500 - LEFT REAR JACK RETRACT  
 8100 - 2000 PSI PRESSURE SWITCH

SEE ELECTRICAL CONNECTION DIAGRAM  
 725 SERIES SINGLE STEP LEVELING SYSTEM  
 MAIN I/O MODULE HARNESS ROUTING

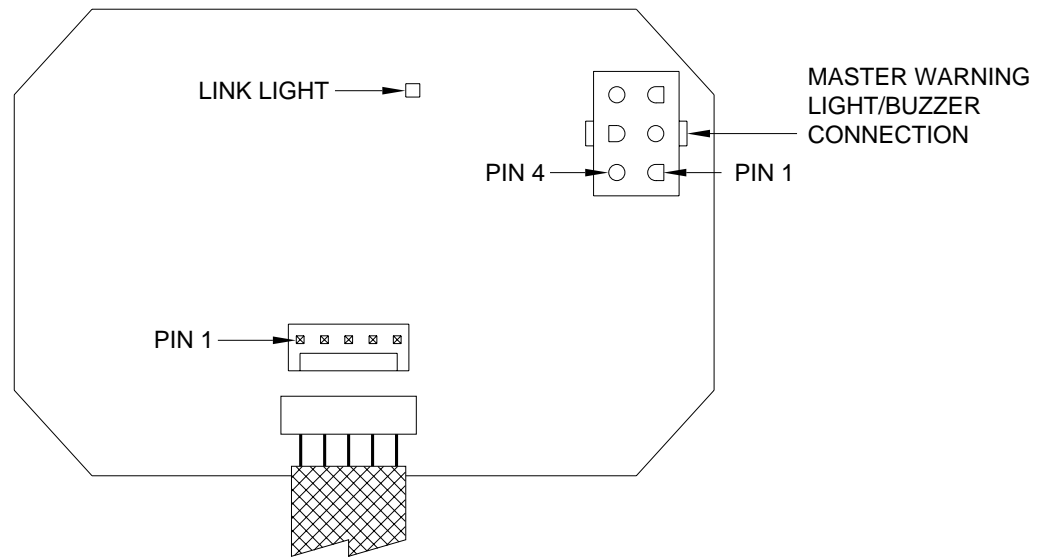
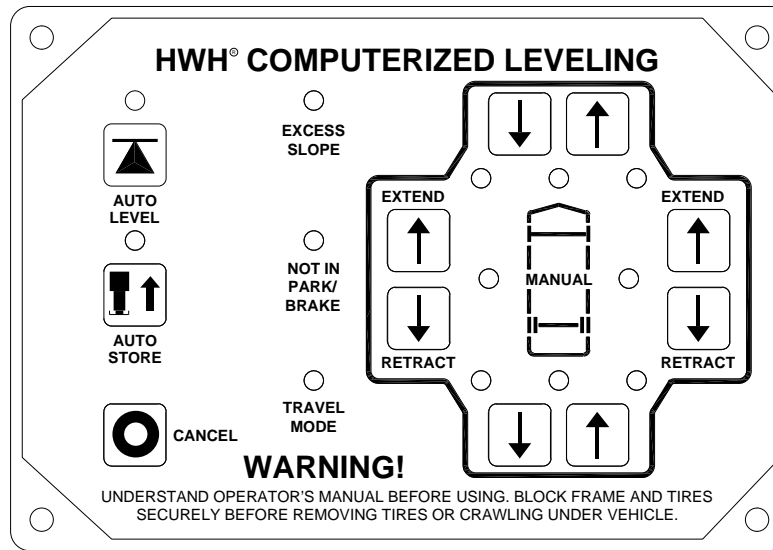
NOTE: MOTOR, RELAY AND SYSTEM  
 GROUNDS ARE NOT SHOWN. SEE  
 ELECTRICAL CONNECTION DIAGRAM  
 MASTER AND PUMP RELAY WIRING  
 FOR CONNECTION INFORMATION.



# ELECTRICAL CONNECTION DIAGRAM

## 725 SERIES LEVELING SYSTEM

### TOUCH PANEL CONNECTIONS

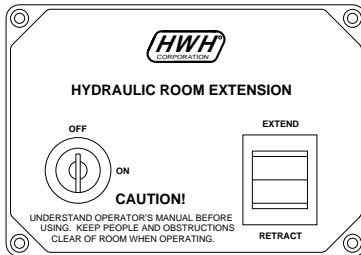


PIN #	WIRE COLOR	WIRE NUMBER	WIRE DESCRIPTION AND FUNCTION
<b>5 PIN MTA CONNECTOR</b>			
1	YELLOW		CAN HIGH
2	GREEN		CAN LOW
3			CAN SHIELD
4	WHITE	6230	GROUND FROM CONTROL BOX
5	RED	6800	+12 VOLTS FROM INPUT/OUTPUT MODULE
<b>6 PIN UML CONNECTOR</b>			
1			NO CONNECTION
2			NO CONNECTION
3			NO CONNECTION
4			NO CONNECTION
5	BLACK	7699	SWITCHED GROUND FOR MASTER WARNING
6			NO CONNECTION

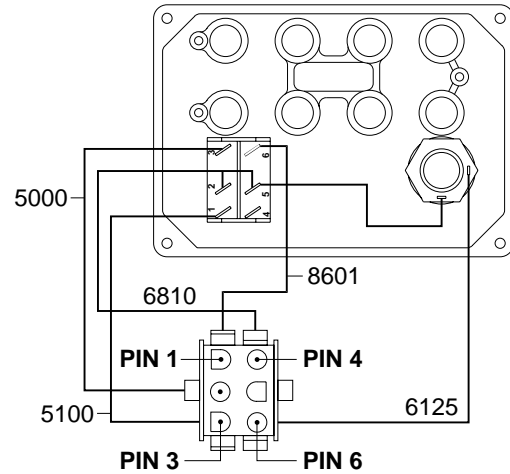
# ELECTRICAL CONNECTION DIAGRAM

## CANOPY LIFT

**CANOPY LIFT CONTROL PANEL  
FRONT VIEW**



**CANOPY LIFT CONTROL PANEL  
REAR VIEW**

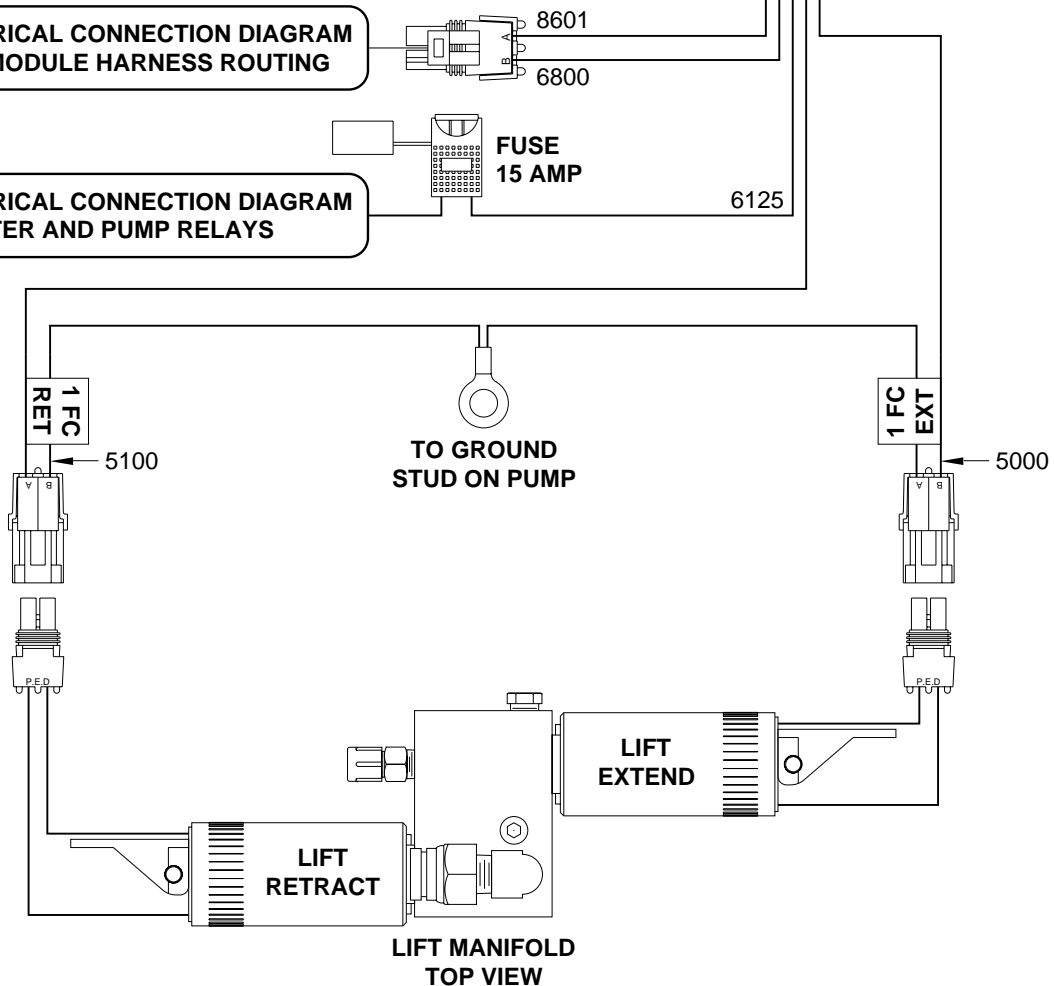


### UML CONNECTORS

- PIN 1 --- 8601 --- SW. +12 PUMP REQUEST
- PIN 2 --- 5000 --- SW. +12 CANOPY LIFT
- PIN 3 --- 5100 --- SW. +12 CANOPY LOWER
- PIN 4 --- 6810 --- SW. +12 TO I/O MODULE
- PIN 5 --- NO CONNECTION
- PIN 6 --- 6125 --- +12 BATTERY FROM MASTER RELAY

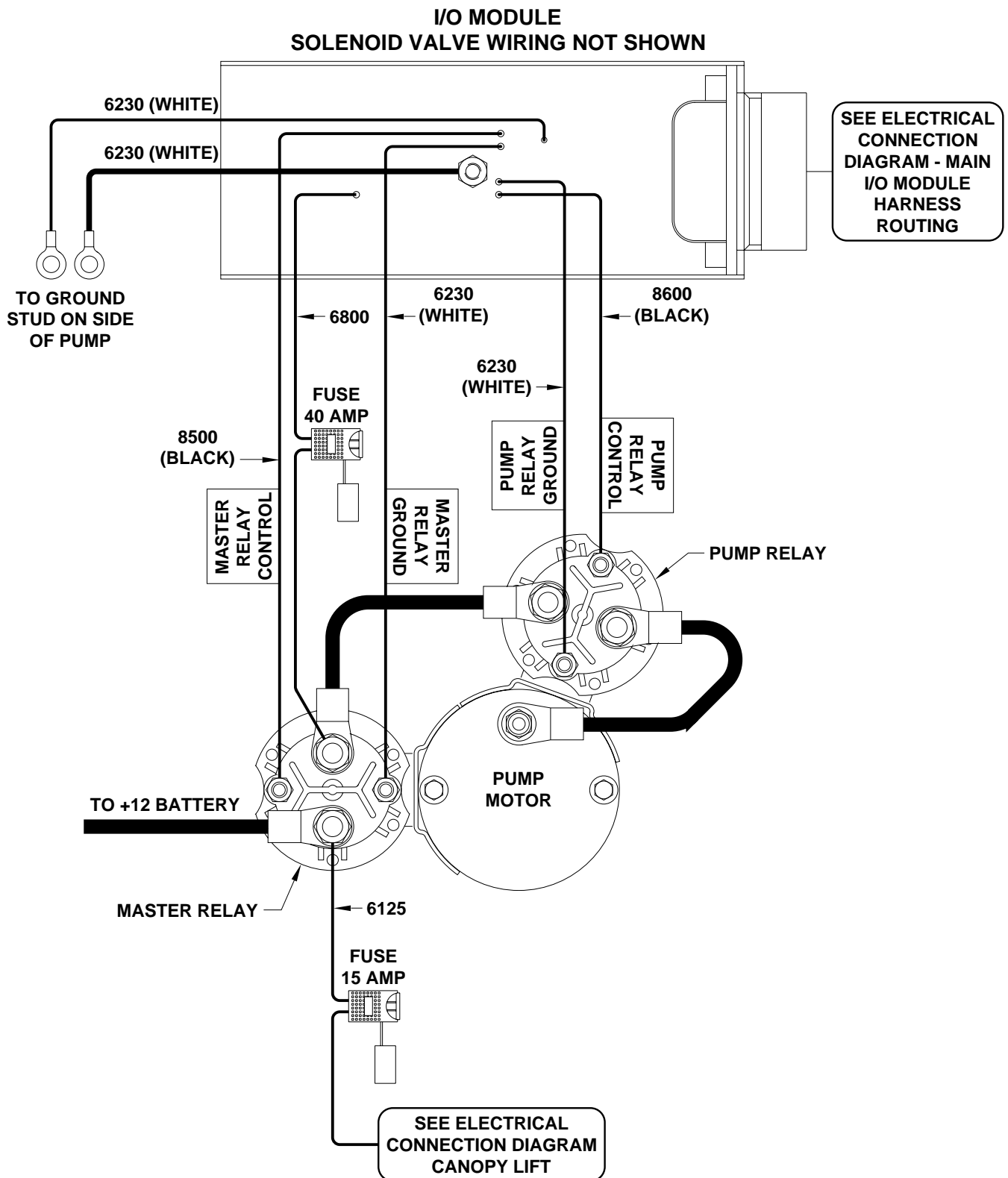
SEE ELECTRICAL CONNECTION DIAGRAM  
MAIN I/O MODULE HARNESS ROUTING

SEE ELECTRICAL CONNECTION DIAGRAM  
MASTER AND PUMP RELAYS



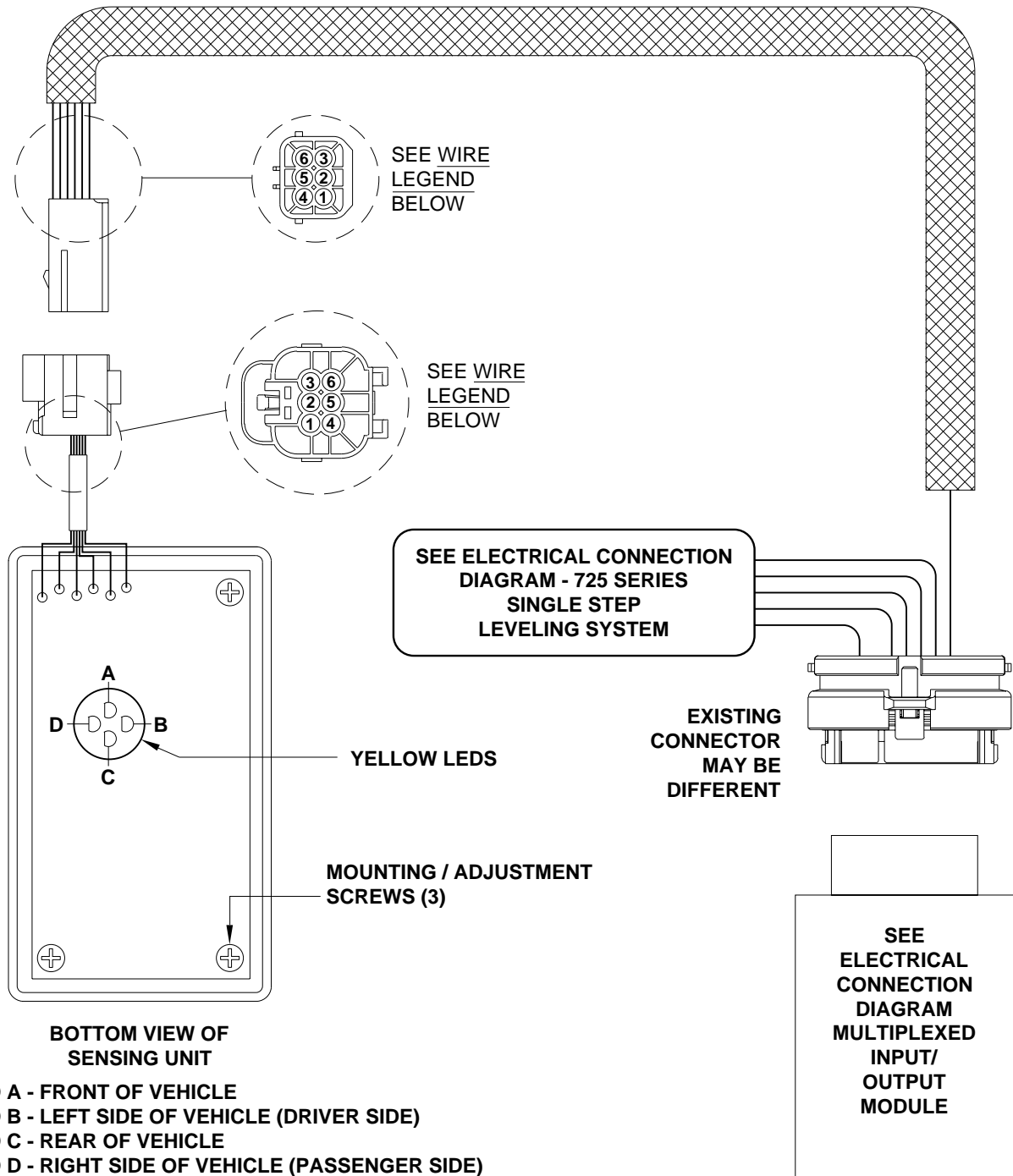
# ELECTRICAL CONNECTION DIAGRAM

## MASTER AND PUMP RELAYS



# ELECTRICAL CONNECTION DIAGRAM

## LEVEL SENSING UNIT



### WIRE LEGEND -

SENSING UNIT PLUG	HARNESS PLUG
PIN 1 - ORANGE	BLACK - 0400 - SWITCHED GROUND WHEN REAR IS LOW
PIN 2 - WHITE - - -	WHITE - 6231 - GROUND FROM SENSING UNIT
PIN 3 - RED - - - - -	RED - 6121 - +12 VOLT FOR SENSING UNIT
PIN 4 - YELLOW	BLACK - 0100 - SWITCHED GROUND WHEN LEFT SIDE IS LOW
PIN 5 - BLACK - - -	BLACK - 0200 - SWITCHED GROUND WHEN FRONT IS LOW
PIN 6 - GREEN - -	BLACK - 0300 - SWITCHED GROUND WHEN RIGHT SIDE IS LOW



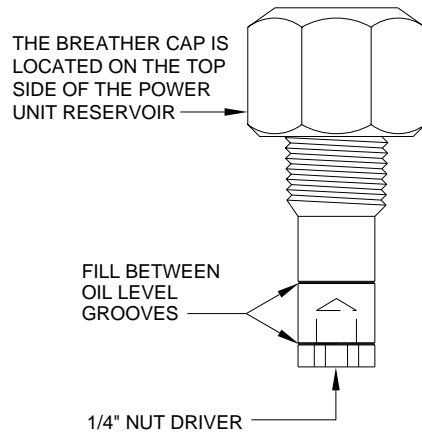
# INFORMATION/INSTRUCTION SHEET

## HYDRAULIC SOLENOID VALVE

### IDENTIFICATION - MANUAL OPERATIONS - REPLACEMENT

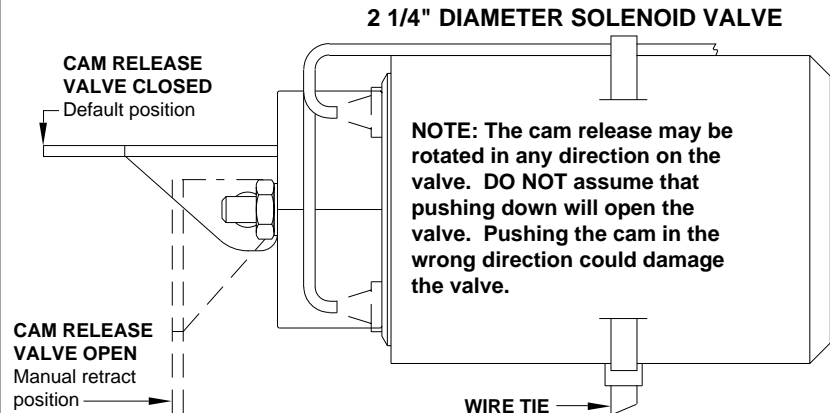
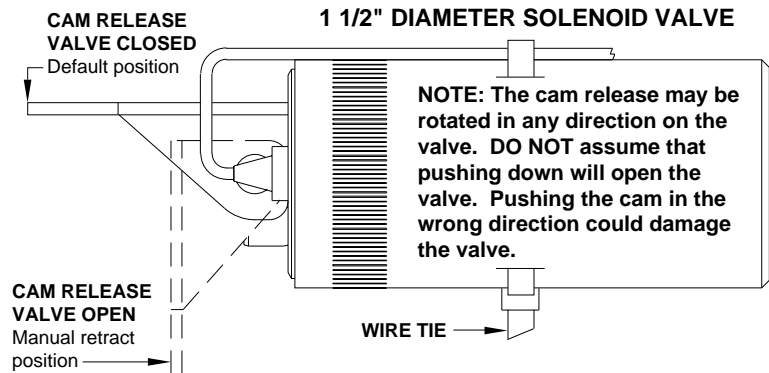
REPLACEMENT VALVES WILL HAVE A VALVE RELEASE CAM

#### BREATHER CAP W/NUT DRIVER

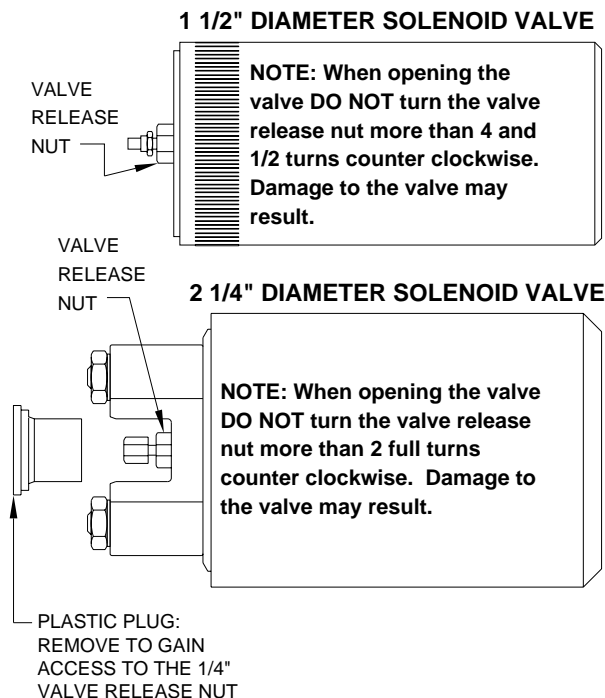


**IMPORTANT:** PRIOR TO REMOVING THE BREATHER CAP, EITHER TO CHECK THE OIL LEVEL OR TO USE 1/4" NUT DRIVER, CLEAN ANY DEBRIS FROM THE TOP OF THE RESERVOIR. BEFORE RETURNING THE BREATHER CAP TO THE RESERVOIR, REMOVE ANY PAINT CHIPS OR OTHER DEBRIS FROM THE DIPSTICK INCLUDING DEBRIS INSIDE THE 1/4" NUT DRIVER.

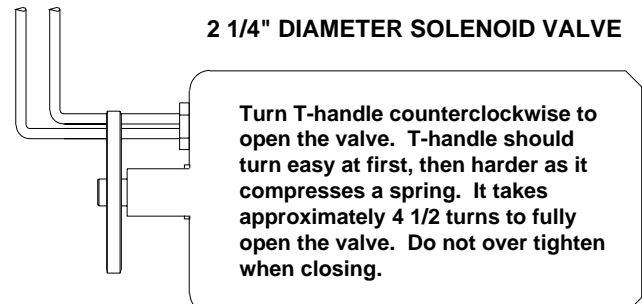
#### SOLENOID VALVES WITH CAM RELEASE



#### SOLENOID VALVES WITH 1/4" NUT RELEASE



#### SOLENOID VALVES WITH T-HANDLE RELEASE



**NOTE: OLD STYLE HEX SHAPED SOLENOID VALVES HAVE NO MANUAL VALVE RELEASE.**