



OPERATOR'S MANUAL

HWH® 625S Series, Computer-Controlled Hydraulic Leveling System

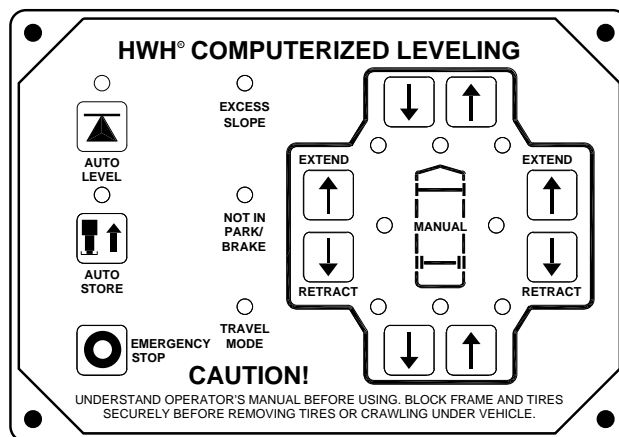
FEATURING:

Single Touch - Touch Panel Leveling Control

BI-AXIS® Hydraulic Leveling

Straight-Acting Jacks

Step Mechanism



HWH CORPORATION

(On I-80, Exit 267 South)

2096 Moscow Road | Moscow, Iowa 52760

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www.hwh.com

OPERATING MANUAL

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, ROOM EXTENSIONS AND OTHER MOVABLE MECHANISMS ARE BEING OPERATED.

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 COACH IS EQUIPPED WITH A ROOM EXTENSION, READ ROOM EXTENSION SECTION BEFORE OPERATING LEVELING SYSTEM.

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.

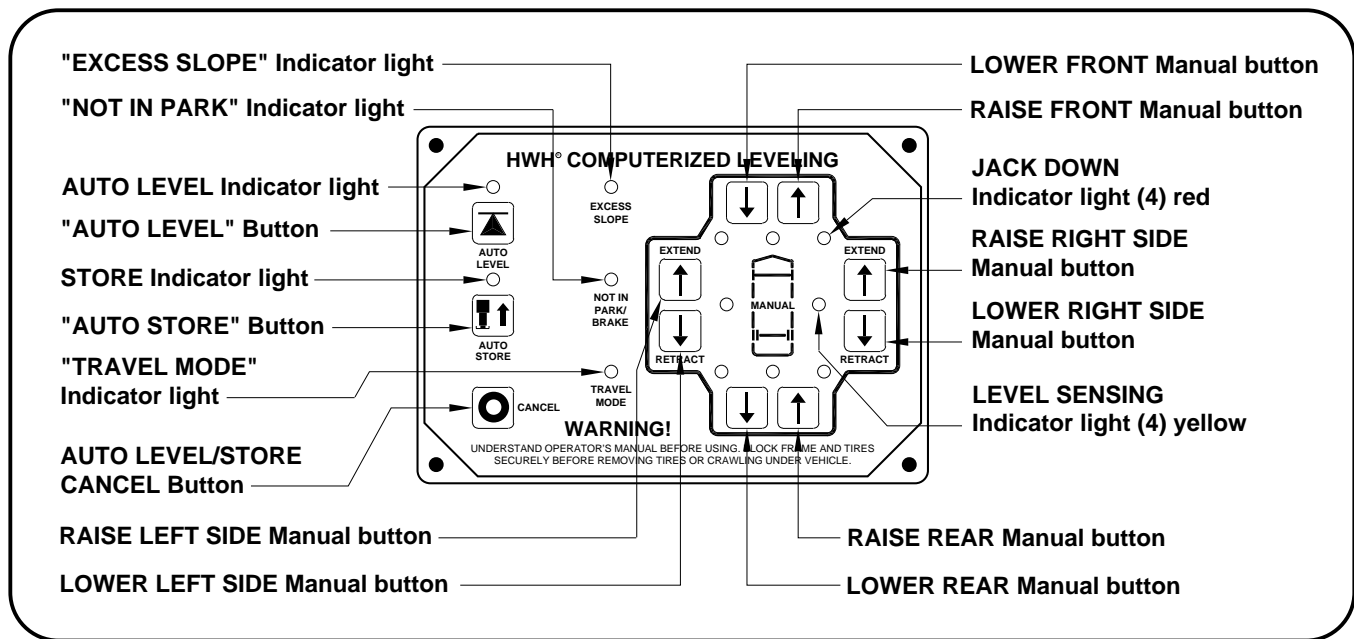
SECOND: If your dealer cannot or will not solve the problem, notify the Customer Service Department:
HWH CORPORATION 2096 Moscow Rd. Moscow IA. 52760
(563) 724-3396 OR (800) 321-3494. Give your name and address, coach manufacturer and model year, date the coach was purchased, or the date of system installation,

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

625S / 725 / 2000 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.

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.

INDICATOR LIGHTS (CONTINUED)

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.

MASTER "JACKS DOWN" WARNING LIGHT: This is a light mounted in the dash separate from the touch panel. It will be on when any one or more jacks are extended and the ignition is "ON".

AUDIBLE ALARM: This is a jacks down warning. It will sound if the master "JACKS DOWN" warning light is on.

CONTROL IDENTIFICATION

PUMP RUN TIME

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.**

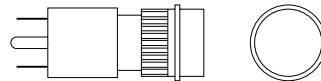
Some systems can be turned back on immediately after the processor turns the pump off. **DO NOT turn the system back on or run the pump without allowing the pump motor to cool for thirty minutes.**

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.

OPERATING PROCEDURES

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, a wood block or pad should be placed under each jack.

Press the "EMERGENCY STOP" button or turn the ignition switch "OFF" at any time to stop the operation of the system.

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 "AUTO LEVEL" button is pressed, the "NOT IN PARK/BRAKE" light will come on. When the "AUTO LEVEL" button is released the "NOT IN PARK/BRAKE" light will go out. The Automatic Leveling function will not start.

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

PREPARATION FOR TRAVEL

IMPORTANT: 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 the system needs to be serviced.

Any room extension or generator slide should be fully retracted before 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.

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

NOTE: If the vehicle is parked or stored with the jacks extended for an extended period of time and the jacks fail to retract completely, extend the jacks back down to the ground then retract the jacks again.

OPERATING PROCEDURES

625 SERIES LEVELING SYSTEM

AUTOMATIC HYDRAULIC LEVELING (HWH TOUCH PANEL CONTROLS)

1. Place transmission in the recommended position for parking the vehicle and set parking brake. Turn the coach engine off. Turn the ignition to the "ACCESSORY" position.

NOTE: One or two yellow level indicator lights on the leveling system touch panel can be on anytime the vehicle ignition is in the ON or ACC. position and the park brake is set.

2. At this time, the operator may want to check the jacks and place a pad under each jack if the ground will not support the vehicle.

3. 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. While the system is stabilizing the vehicle, the yellow level indicator lights are inhibited from coming on. Stabilizing the vehicle is accomplished by extending any jacks to the ground that were not used to level the vehicle. This is done by monitoring a pressure switch on each jack. Any jack used to stabilize the vehicle will lift the vehicle approximately one (1) inch. This "bumps" the vehicle up slightly when stabilizing. Due to the ½ degree accuracy tolerance of the sensing unit, one or two yellow level indicator lights may come on after the red auto level indicator light turns off.

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 extending 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 not be extended. The system will shut off leaving the "EXCESS SLOPE" light on. The "EXCESS SLOPE" light will remain on if the ignition is in the "ON" or "ACC" position, until the jacks have been fully retracted turning the red warning lights out. Push the "STORE" button to retract the jacks. Move the vehicle to a more level position or level the vehicle as close as possible according to the MANUAL HYDRAULIC OPERATION section.

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

OPERATING PROCEDURES

625 SERIES LEVELING SYSTEM

JACK RETRACTION (HWH TOUCH PANEL CONTROLS)

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

NOTE: When the jacks are stored with the ignition in the ON position, the warning buzzer will sound until the jacks have retracted to the STORE position. If desired, the jacks can be stored with the ignition key in the accessory position. This will eliminate the warning buzzer while the jacks are retracting.

1. Press the "AUTO STORE" button. The store indicator light will flash. The front jacks will retract for 2 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 six minutes 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 thirty minutes, then shut down regardless of the "WARNING" lights condition.

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 with either the touch panel or the remote rocker switch, the store

procedure should be reinitiated and the jacks should be completely retracted with all four red WARNING lights out prior to traveling.

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.

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.

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

IMPORTANT: If a red warning light and buzzer come on while traveling, the jacks should be checked as soon as a safe parking location is found.

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

OPERATING PROCEDURES

MANUAL HYDRAULIC OPERATION

1. Place transmission in the recommended position for parking the vehicle, and set the parking brake. Turn the ignition to the "ACCESSORY" position.
2. Place pads under the jack feet if the ground will not support the vehicle on the jacks.
3. The vehicle may be leveled using the manual EXTEND (UP 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 vehicle.

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

4. When leveling is completed, turn the ignition switch to the "OFF" position.

NOTE: The manual UP and DOWN arrows will not function if the system is in the Auto Level or Auto Store modes.

MANUAL JACK RETRACTION

The solenoid valves on the power unit valve assembly are equipped with a manual valve release. Use the manual valve release for retracting only if the "AUTO STORE" button on the control panel will not retract the jacks for travel.

NOTE: Assemblies can have different combinations of large and / or small valves.

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

1. Locate the manual valve release on each solenoid valve. The solenoid valves are located on the power unit/valve assembly.

2. Allow clearance for the vehicle to lower.

Large and small valves will be equipped with a valve release cam. The cam might be rotated in any direction on the valve. Pushing the release cam in the wrong direction may damage the valve.

3. Retract the front jacks by slowly opening the two center valves.

4. Repeat the process for the rear jacks by opening the two outer valves.

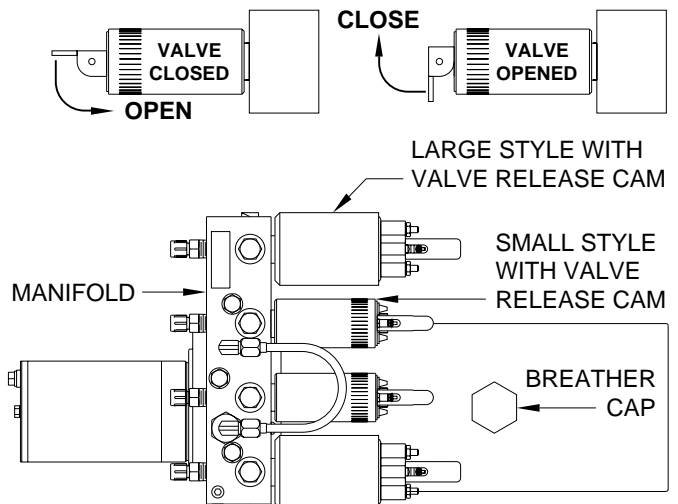
5. Check that all four jacks are now retracted.

6. Close the valves by moving the valve release cam to the closed position.

NOTE: The valve release cam should be slightly loose when in the closed position.

7. The system should now be repaired before using again.

VALVE RELEASE CAM OPERATION



OPERATING PROCEDURES

STEP EXTEND PROCEDURE

NOTE: The park brake must be set before a step can be extended or retracted.

WARNING: OPERATING A STEP WITH ANY LOCKING, CLAMPING OR MANUAL RETRACTING DEVICES ATTACHED OR ENGAGED CAN CAUSE PERSONAL INJURY AND VEHICLE DAMAGE. IT IS THE OPERATOR'S RESPONSIBILITY TO ENSURE THAT ALL STEP LOCKING, CLAMPING OR MANUAL RETRACTING DEVICES ARE DETACHED OR DISENGAGED BEFORE OPERATING THE STEP.

Refer to vehicle manufacturer for proper sequence of room extension and leveling system operation.

1. There may be a master power switch that must be on to operate the step. Refer to the vehicle manufacturer for information concerning a master power switch.
2. Unlock all locking devices.

NOTE: If a MANUAL RETRACT DEVICE is attached or has been used, remove it before extending the step.

WARNING: KEEP PEOPLE AND OBSTRUCTIONS CLEAR OF STEP WHEN OPERATING. STEP AND HANDRAIL WILL UNFOLD AFTER STEP IS FULLY EXTENDED.

NOTE: Make sure there is adequate clearance to fully extend and unfold the step and handrail.

3. To extend the step, press and hold the STEP CONTROL in the "EXTEND" position until the step is fully extended and unfolds the lower part of the assembly and handrails.

NOTE: Hold the control to "EXTEND" three or four seconds after the step is fully extended. This assures proper pressurization of the cylinders.

IMPORTANT: Do not hold the STEP CONTROL in the "EXTEND" position for more than ten seconds after the step is fully extended or stops moving. **If either side of the step stops moving, or the step and handrail seem to be binding, release the step control immediately. DO NOT force the step. If direction of movement is reversed, be careful to not damage the steps or handrail. Contact HWH Customer Service for assistance 1-800-321-3494.**

NOTE: Releasing the STEP CONTROL will halt the operation of the step.

OPERATING PROCEDURES

STEP RETRACT PROCEDURE

NOTE: The park brake must be set before a step can be extended or retracted.

WARNING: KEEP PEOPLE AND OBSTRUCTIONS CLEAR OF STEP WHEN OPERATING. LOWER STEP AND HANDRAIL WILL FOLD UP BEFORE THE STEP STARTS TO RETRACT.

Refer to vehicle manufacturer for proper sequence of room extension and leveling system operation.

1. There may be a master power switch that must be on to operate the step. Refer to the vehicle manufacturer for information concerning a master power switch.
2. To retract the step press and hold the STEP CONTROL in the "RETRACT" position until the step is fully retracted. The lower step and handrail will fold up before the step starts to retract.

NOTE: Hold the switch to "RETRACT" three or four seconds after the step is fully retracted. This assures proper pressurization of the cylinders.

IMPORTANT: Do not hold the STEP CONTROL in the "RETRACT" position for more than ten seconds after the step is fully retracted or stops moving.

If either side of the step stops moving, or the step and handrail seems to be binding, release the step control immediately. DO NOT force the step. If the direction of movement is reversed, be careful to not damage the step or handrail. Contact HWH Customer Service for assistance 1-800-321-3494.

NOTE: Releasing the STEP CONTROL will halt the operation of the step.

3. Engage any locking devices.
4. If the step will not retract see the MANUAL STEP RETRACT PROCEDURE.

IMPORTANT: Step-locking devices should be locked while traveling.

OPERATING PROCEDURES

MANUAL STEP RETRACT PROCEDURES

If the system is equipped with an auxiliary pump run switch or an auxiliary hand pump, refer to the "OPERATING PROCEDURES" pages for the pump run switch or hand pump before using the manual step retract procedure. Use this procedure if a step control switch does not work only if the main pump or hand pump will not retract the step.

WARNING: KEEP AWAY FROM PINCH POINTS OF STEPS AND HANDRAIL WHILE FOLDING STEPS. PINCH POINTS CAN CAUSE SERIOUS INJURY.

1. Locate the correct valves for the step being retracted. Contact vehicle manufacturer for location.
2. Open the EXTEND and RETRACT solenoid valves for the step. Move the valve release cams to the open position.
3. Lift the bottom step up and fold it back onto the main step assembly. The handrail(s) should fold to the retract position at the same time.

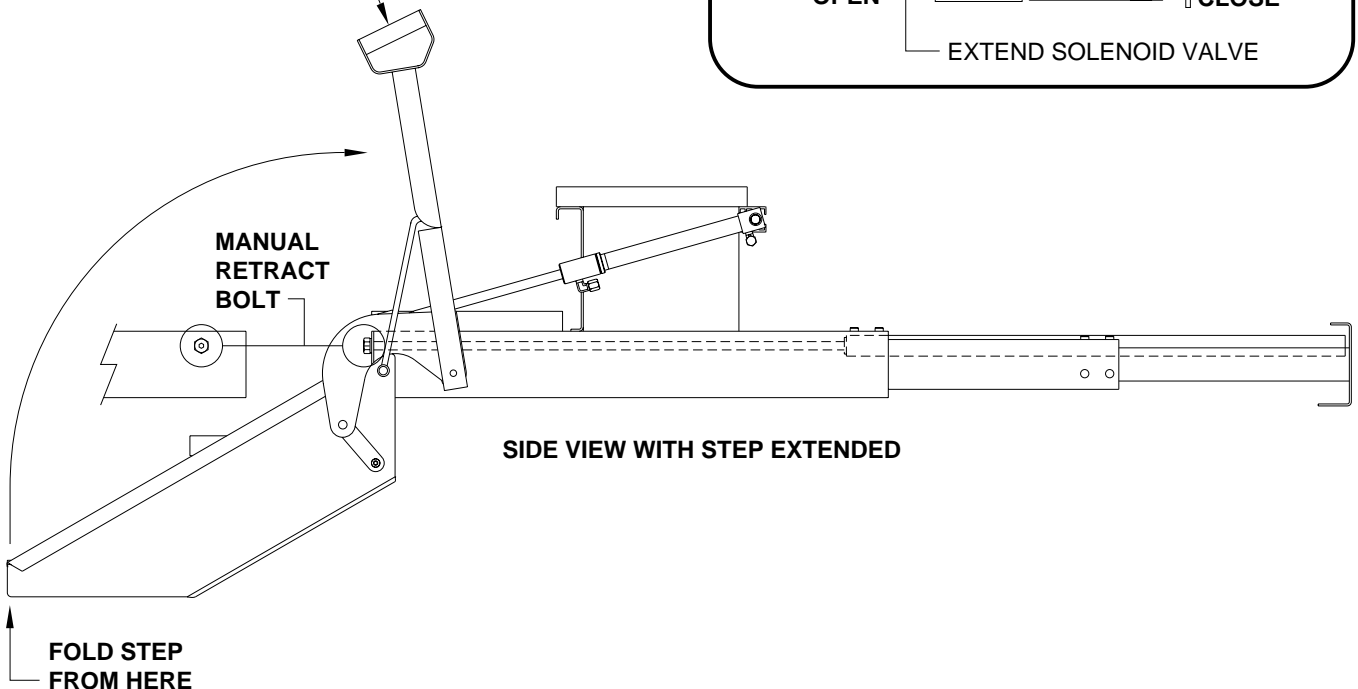
IMPORTANT: ONLY MOVE THE RELEASE CAM IN THE DIRECTION SHOWN. MOVING THE CAM IN THE OPPOSITE DIRECTION CAN DAMAGE THE VALVES.

4. It may be possible to simply push the step back in. If not, use the manual retract bolt on the front of the step. Use a 13/16 wrench or 1/4" allen wrench to slowly turn the bolt clockwise until the step is retracted. DO NOT use an impact wrench.

5. Close both step solenoid valves.

IMPORTANT: THE MANUAL RETRACT BOLT MUST BE TURNED COUNTERCLOCKWISE UNTIL IT IS BACK TO THE OPERATE POSITION. TURN THE BOLT COUNTERCLOCKWISE UNTIL IT STOPS BUT DO NOT OVERTIGHTEN IT. THE RETRACT BOLT MUST BE TURNED BACK TO THE OPERATE POSITION BEFORE THE STEP CAN BE EXTENDED.

HANDLE ASSEMBLIES
MAY HAVE 1, 2 OR NONE



SIDE VIEW WITH STEP EXTENDED

MAINTENANCE

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 four jacks, and the step mechanism 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.

LEVELING JACKS

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

The jack rods should NOT be wiped and do not need to be oiled or sprayed with anything.

ROOM EXTENSIONS

The HWH room 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. Refer to the vehicle manufacturer for correct maintenance of the room seals.

VISUAL INSPECTION

Periodically inspect the leveling 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 jacks should be cycled at least once a month or whenever the coach is serviced. 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 (LEVELING) Section. Note any abnormal operation.

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.

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

MAINTENANCE

NOT IN PARK/BRAKE CHECK

WARNING: WHEN MAKING THIS CHECK, BLOCK THE COACH WHEELS SECURELY SO THE COACH CANNOT ROLL FORWARD OR BACKWARD.

Apply the brake so the coach cannot roll. Turn the ignition to the "ACC" or "ON" position. Release the parking brake. Push the "AUTO LEVEL" button. The "NOT IN PARK/BRAKE" indicator light should come on while the "AUTO LEVEL" button is pushed. Release the "AUTO LEVEL" button and set the park brake. The leveling system should now function.

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.

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.

SENSING UNIT MAINTENANCE/SERVICE

SENSING UNIT ADJUSTMENT

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. 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. A Phillips screw driver or sockets w/driver or box end wrenches of 7/8, 3/4, 1/2, 5/16 or 1/4 sizes will be needed.

The Sensing Unit is mounted inside the Control Box. The Control Box is mounted to the power unit/valve assembly.

There are four LED's on the Sensing Unit, A,B,C and D. Refer to the drawing below. The Sensing Unit is adjusted by turning the adjustment nut to turn out LED's B and D. The adjustment screw will turn out LED's A and C. If the adjustment nut has to be turned more than 1/2 flat or the adjustment screw has to be turned more than 3/4 turn to turn the LED out, there may be a problem with the Sensing Unit or the mounting of the Control Box. If two LED's are on, it is best to make the B-D adjustments first, then hold the adjustment nut from moving while making the A-C adjustment.

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

If LED (A) is lit: Turn the adjustment screw COUNTER CLOCKWISE until the LED is off.

If LED (C) is lit: Turn the adjustment screw CLOCKWISE until the LED is off.

If LED (B) is lit: Turn the adjustment nut COUNTER CLOCKWISE until the LED is off.

If LED (D) is lit: Turn the adjustment nut CLOCKWISE until the LED is off.

IMPORTANT: When all 4 LED's are off, move the vehicle to an unlevel position so one or two yellow lights are on. Level the vehicle according to the yellow LEVEL lights. Recheck the level. If more adjustment is needed, DO NOT try to adjust the sensing unit until the yellow level lights go out, instead just "tweak" the sensing unit, ignoring the LED's on the sensing unit.

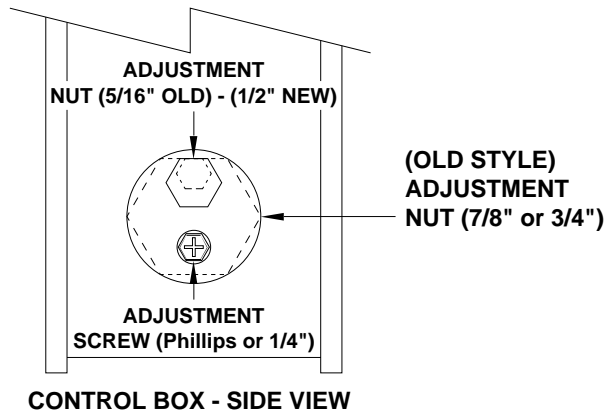
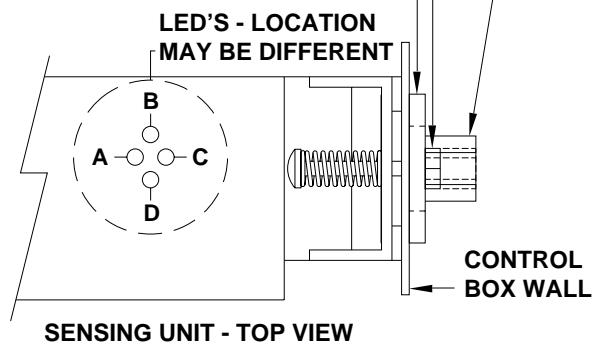
Example: After the initial adjustment and releveling the vehicle, the front is still low. This means the front yellow level light is turning off too soon. Determine which sensing unit light is the front light, A-B-C or D. Move the adjustment for that light very, very, slightly in the OPPOSITE direction that is given in the above instructions for LED's A, B, C, and D. This will allow

the front yellow light to stay on slightly longer to bring the front up more. Again, unlevel the vehicle then relevel the vehicle using the yellow level lights on the touch panel. Recheck with a level. Repeat the "tweaking" process until the system levels the vehicle properly.

ADJUSTMENT NUT (5/16" OLD) - (1/2" NEW)

ADJUSTMENT SCREW (Phillips or 1/4") (OLD STYLE)

ADJUSTMENT NUT (7/8" or 3/4")



NOT IN PARK/BRAKE CHECK

CAUTION: WHEN MAKING THIS CHECK, BLOCK THE COACH WHEELS SECURELY SO THE COACH CANNOT ROLL FORWARD OR BACKWARD.

Set the park/brake. Switch the ignition to the "ACC" or "ON" position. Push the "ON/OFF" switch toward "ON". Release the parking brake and confirm that the "PARK" indicator light comes on. Reset the parking brake. The "PARK" indicator light should go out. Switch the ignition to "OFF".

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.

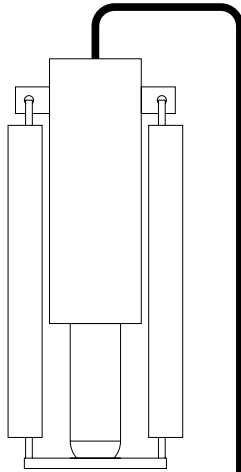
HYDRAULIC LINE CONNECTION DIAGRAM

625/725 SERIES LEVELING SYSTEM

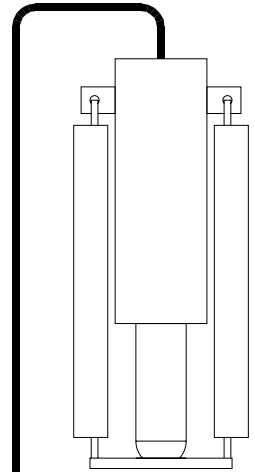
(WITH 4 STRAIGHT-ACTING JACKS)

MANIFOLDS MAY HAVE FOUR (4) LARGE VALVES OR FOUR (4) SMALL VALVES

NOTE: BEFORE OPERATING MANUAL VALVE RELEASE, READ AND UNDERSTAND PROCEDURE FOR MANUAL JACK RETRACTION IN OPERATOR'S INSTRUCTIONS. VALVES MAY BE EQUIPPED WITH VALVE RELEASE NUTS OR RELEASE CAMS.

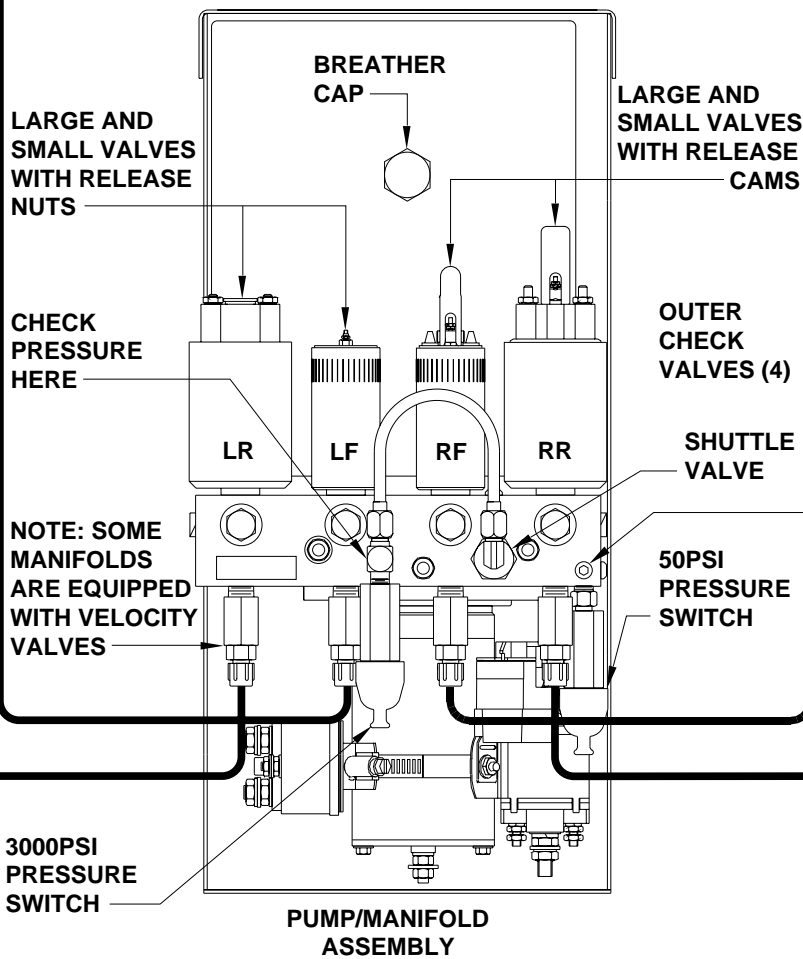


LEFT FRONT

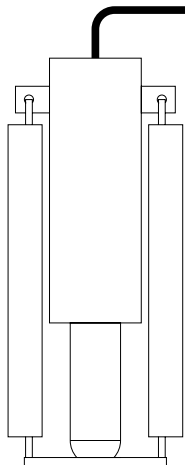
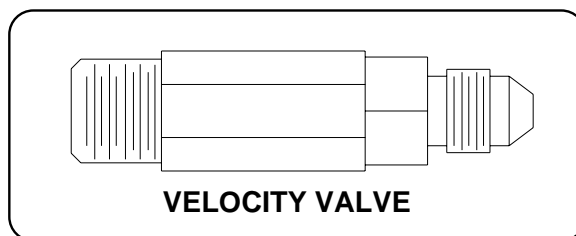


RIGHT FRONT

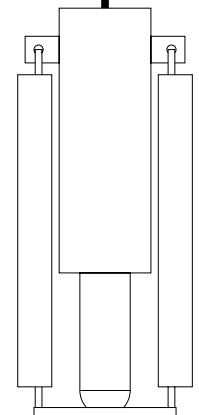
NOTE: Load center is not shown, load center may need to be removed to access shuttle valve and shuttle valve tube.



ALTERNATE 3000 PSI PRESSURE SWITCH LOCATION



LEFT REAR



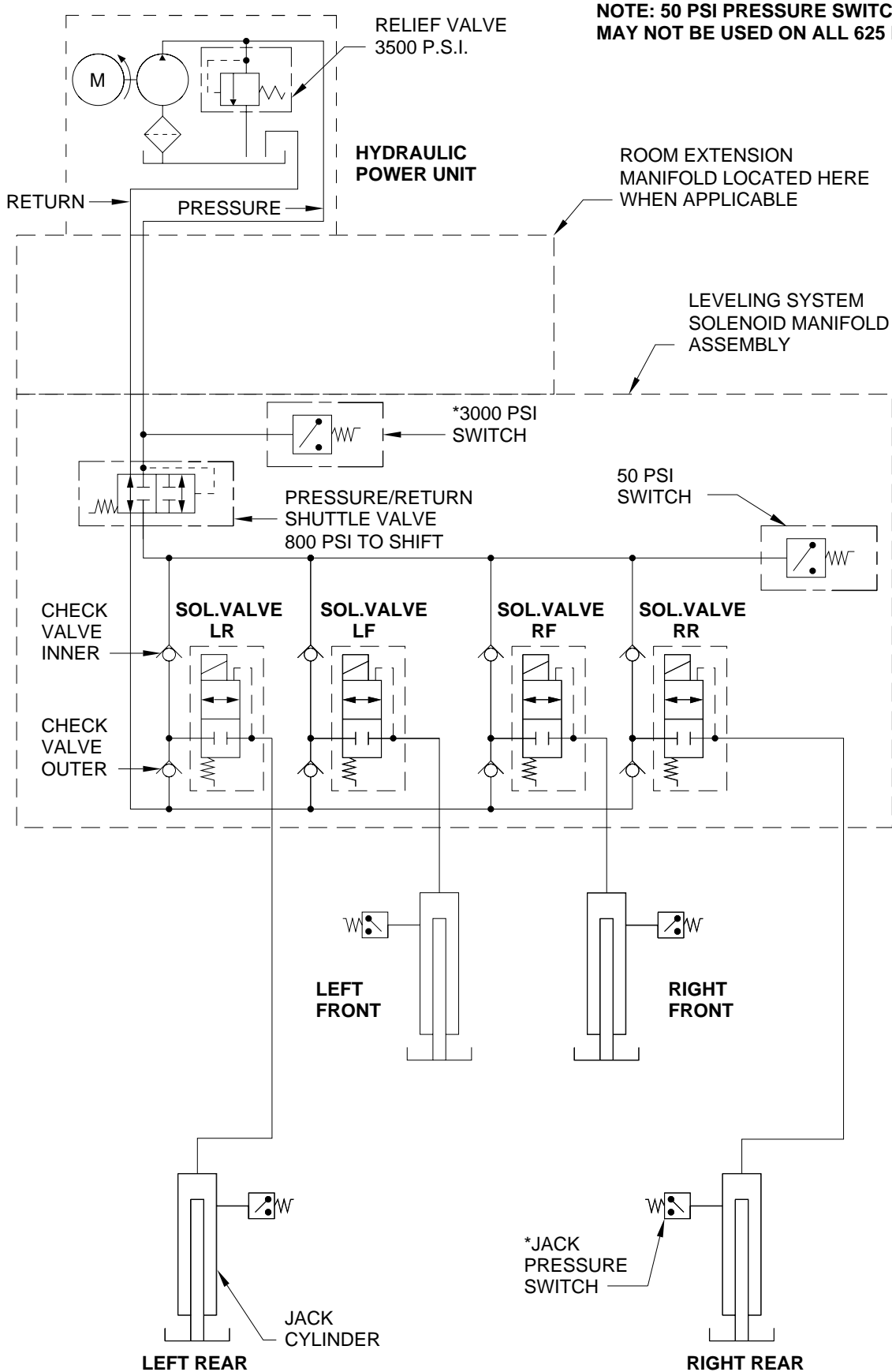
RIGHT REAR

MP64.3917
17APR19

HYDRAULIC SCHEMATIC DIAGRAM

BI-AXIS LEVELING WITH STRAIGHT-ACTING JACKS

625, 625S OR 725 SERIES



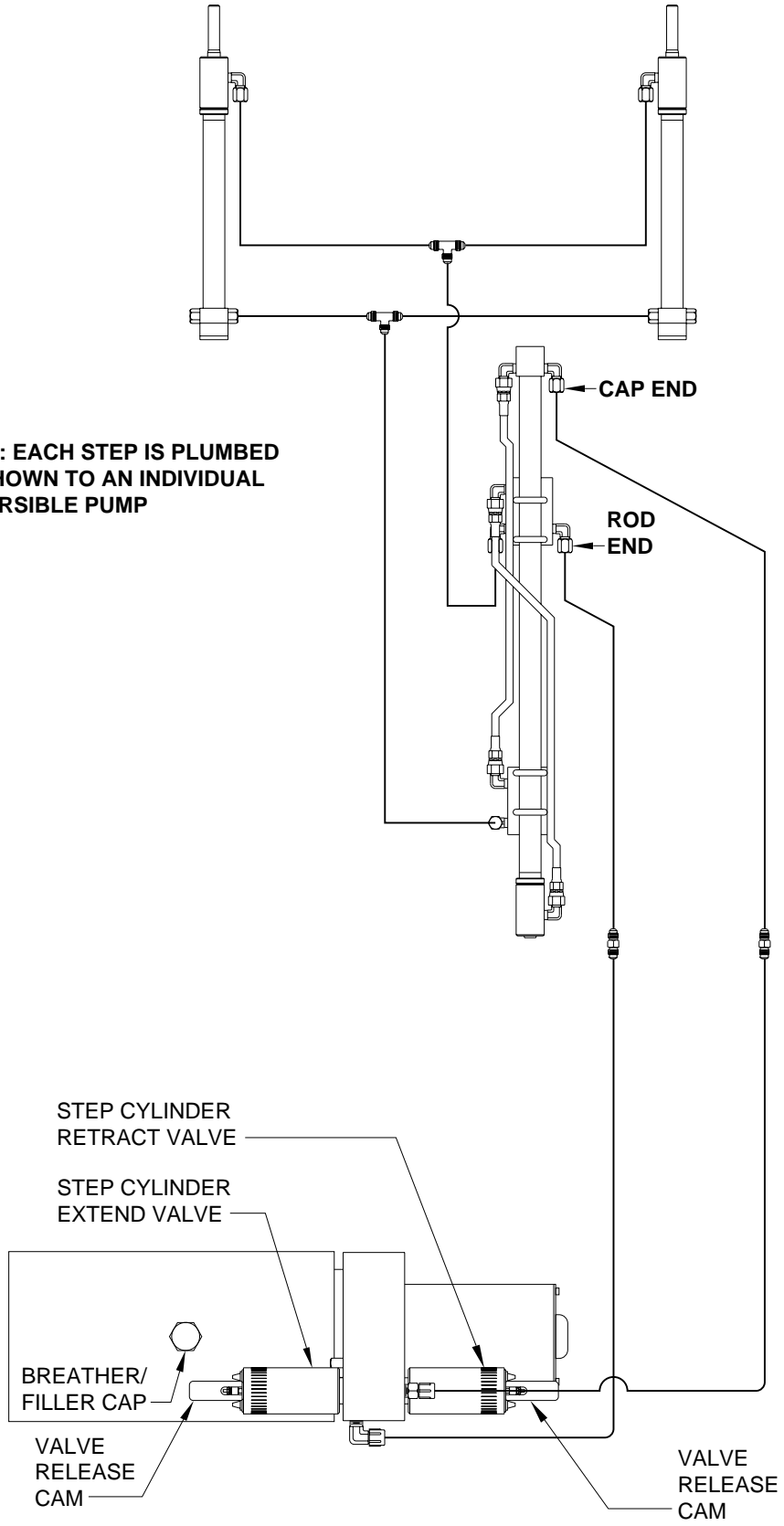
* USED ON AUTOMATIC SYSTEMS ONLY

MP64.4530
29MAR10

HYDRAULIC LINE CONNECTION DIAGRAM

STEP MECHANISM

NOTE: EACH STEP IS PLUMBED AS SHOWN TO AN INDIVIDUAL REVERSIBLE PUMP



NOTE: LEVELING MANIFOLD NOT SHOWN

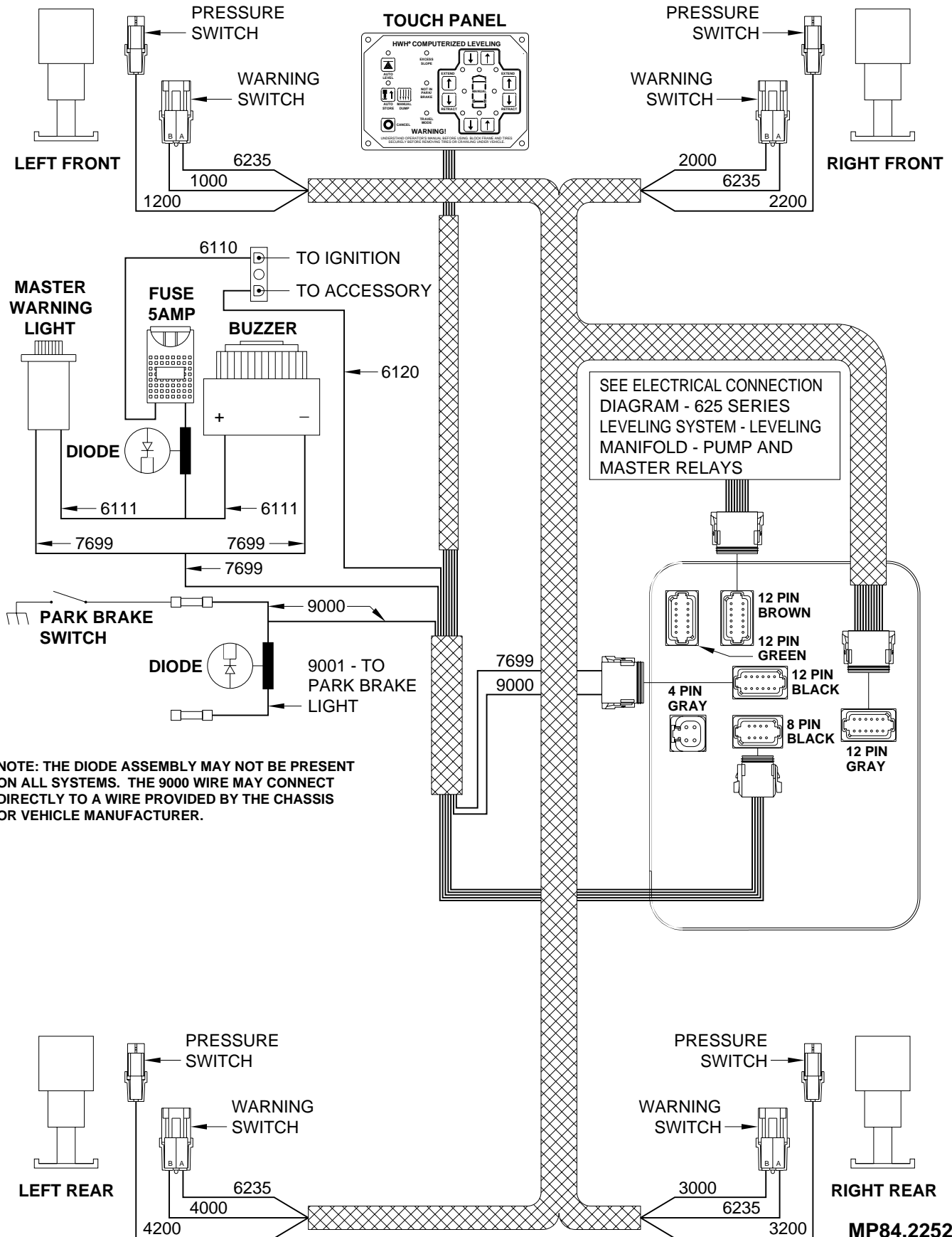
**MP64.9500B
24OCT13**

ELECTRICAL CONNECTION DIAGRAM

625 SERIES LEVELING SYSTEM

PARK BRAKE - MASTER WARNING LIGHT AND BUZZER

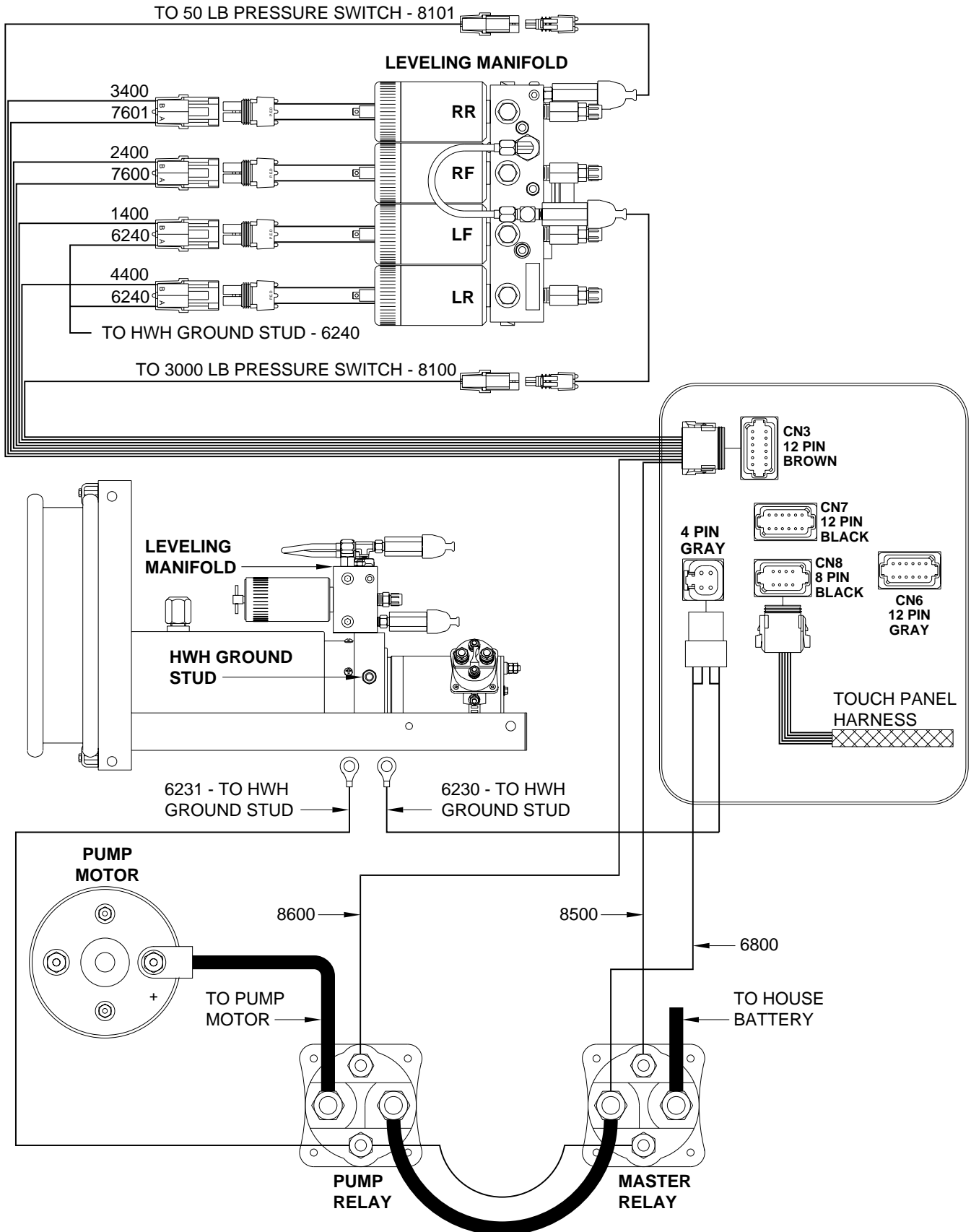
TOUCH PANEL - JACK WARNING LIGHTS AND PRESSURE SWITCHES



SECTION IV - ELECTRICAL CONNECTION DIAGRAM

625 OR 625S SERIES LEVELING SYSTEM

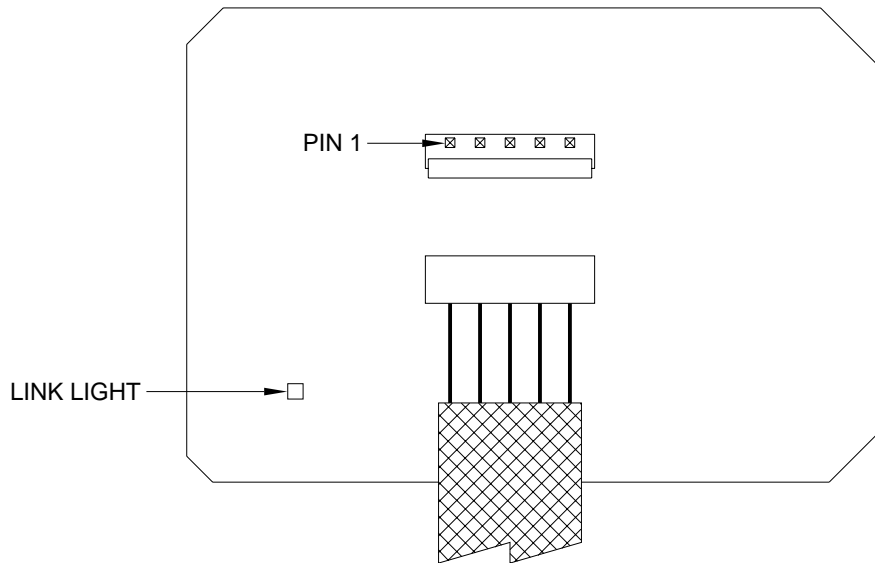
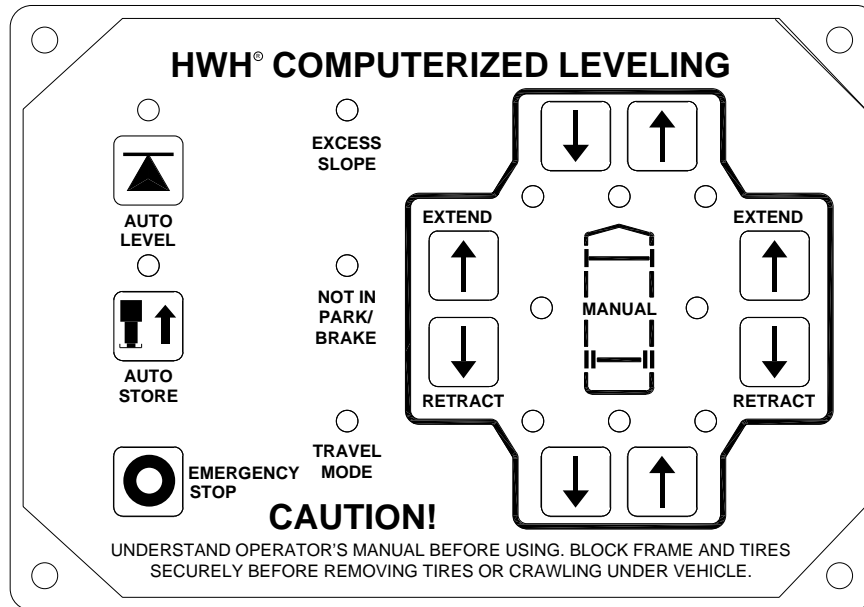
LEVELING MANIFOLD - PUMP AND MASTER RELAYS



ELECTRICAL CONNECTION DIAGRAM

625 SERIES LEVELING SYSTEM

TOUCH PANEL CONNECTIONS

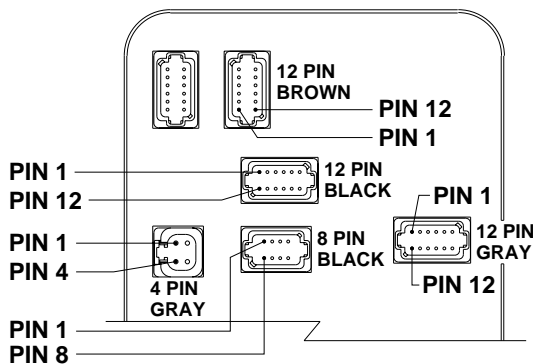


PIN #	WIRE COLOR	WIRE NUMBER	WIRE DESCRIPTION AND FUNCTION
5 PIN MTA CONNECTOR			
1	YELLOW		CAN HIGH
2	GREEN		CAN LOW
3			CAN SHIELD
4	WHITE	6230	GROUND FROM CONTROL BOX
5	RED	6800	SWITCHED BATTERY FROM CONTROL BOX

ELECTRICAL CONNECTION DIAGRAM

625 SERIES LEVELING SYSTEM

CONTROL BOX CONNECTION INFORMATION

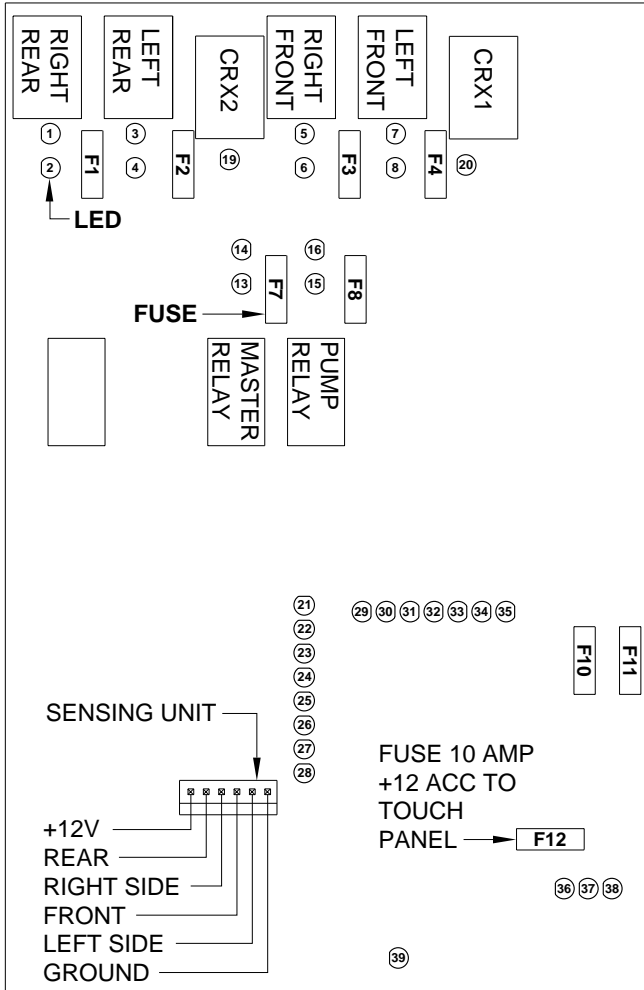


PIN #	WIRE COLOR	WIRE NUMBER	WIRE DESCRIPTION AND FUNCTION
4 PIN GRAY CONNECTOR			
1	BLACK	6800	SWITCHED +12V BATTERY POWER FROM MASTER RELAY
2	BLACK	6800	SWITCHED +12V BATTERY POWER FROM MASTER RELAY
3	WHITE	6230	GROUND FROM HWH GROUND STUD
4	WHITE	6230	GROUND FROM HWH GROUND STUD
12 PIN BROWN CONNECTOR			
1	BLACK	8500	MASTER RELAY CONTROL - SWITCHED +12
2	BLACK	8100	3000 LB PRESSURE SWITCH - SWITCHED GROUND
3	BLACK	8101	50 LB PRESSURE SWITCH - SWITCHED GROUND
4			NO CONNECTION
5	BLACK	1400	SWITCHED +12 FOR LEFT FRONT SOLENOID VALVE
6	BLACK	7600	GROUND FOR RIGHT FRONT SOLENOID VALVE
7	BLACK	7601	GROUND FOR RIGHT REAR SOLENOID VALVE
8	BLACK	4400	SWITCHED +12 FOR LEFT REAR SOLENOID VALVE
9	BLACK	3400	SWITCHED +12 FOR RIGHT REAR SOLENOID VALVE
10	BLACK	2400	SWITCHED +12 FOR RIGHT FRONT SOLENOID VALVE
11			NO CONNECTION
12	BLACK	8600	PUMP RELAY CONTROL - SWITCHED +12
12 PIN BLACK CONNECTOR			
1 THRU 6			NO CONNECTION
7	BLACK	9000	SWITCHED GROUND FROM PARK BRAKE SWITCH
8 THRU 10			NO CONNECTION
11	BLACK	7699	BUZZER & MASTER WARNING LIGHT CONTROL - SWITCHED GROUND
12			NO CONNECTION
8 PIN BLACK CONNECTOR			
1 AND 2			NO CONNECTION
3	RED	6800	SWITCHED BATTERY
4	WHITE	6230	GROUND
5			CAN SHIELD
6	RED	6120	SWITCHED +12 ACCESSORY
7	GREEN		CAN LOW
8	YELLOW		CAN HIGH
12 PIN GRAY CONNECTOR			
1 AND 2			NO CONNECTION
3	BLACK	1000	SWITCHED GROUND FROM LEFT FRONT WARNING SWITCH
4	BLACK	2000	SWITCHED GROUND FROM RIGHT FRONT WARNING SWITCH
5	BLACK	1200	SWITCHED GROUND FROM LEFT FRONT PRESSURE SWITCH
6	BLACK	2200	SWITCHED GROUND FROM RIGHT FRONT PRESSURE SWITCH
7	BLACK	3200	SWITCHED GROUND FROM RIGHT REAR PRESSURE SWITCH
8	BLACK	4200	SWITCHED GROUND FROM LEFT REAR PRESSURE SWITCH
9	BLACK	3000	SWITCHED GROUND FROM RIGHT REAR WARNING SWITCH
10	BLACK	4000	SWITCHED GROUND FROM LEFT REAR WARNING SWITCH
11			NO CONNECTION
12	WHITE	6235	SHARED GROUND FOR WARNING SWITCHES

ELECTRICAL CONNECTION DIAGRAM

625 SERIES LEVELING SYSTEM

CONTROL BOX - LED - FUSE LOCATION AND DESCRIPTION



LED	RELAY DESCRIPTION	FUSE
1-YELLOW	RIGHT REAR COIL	F1 - 15 AMP
2-RED	RIGHT REAR OUTPUT	
3-YELLOW	LEFT REAR COIL	F2 - 15 AMP
4-RED	LEFT REAR OUTPUT	
5-YELLOW	RIGHT FRONT COIL	F3 - 15 AMP
6-RED	RIGHT FRONT OUTPUT	
7-YELLOW	LEFT FRONT COIL	F4 - 15 AMP
8-RED	LEFT FRONT OUTPUT	
13-YELLOW	MASTER RELAY COIL	F7 - 5 AMP
14-RED	MASTER RELAY OUTPUT	
15-YELLOW	PUMP COIL	F8 - 5 AMP
16-RED	PUMP OUTPUT	
19-YELLOW	CRX 2	
20-YELLOW	CRX 1	
21-YELLOW	LEFT FRONT WARN SW	
22-YELLOW	RIGHT FRONT WARN SW	
23-YELLOW	RIGHT REAR WARN SW	
24-YELLOW	LEFT REAR WARN SW	
25-RED	LEFT FRONT PRESS SW	
26-RED	RIGHT FRONT PRESS SW	
27-RED	RIGHT REAR PRESS SW	
28-RED	LEFT REAR PRESS SW	
29-RED	NOT USED	
30-YELLOW	NOT USED	
31-GREEN	3000 LB PRESS SW INPUT	
32-RED	MASTER WARN CONTROL	
33-GREEN	50 LB PRESS SW INPUT	
34-RED	JACK INTERRUPT	
35-RED	PARK BRAKE	
36-RED	BOARD ENABLE	
37-RED	ACCESSORY IN	F10 - 5 AMP
38-RED	ACCESSORY OUT FOR MASTER WARNING	F11 - 3 AMP
39-RED	LINK LIGHT	

NOTE: FOR DETAILED INPUT / OUTPUT INFORMATION ABOUT PIN CONNECTIONS SEE ELECTRICAL CONNECTION DIAGRAM - CONTROL BOX CONNECTION INFORMATION.

NOTE: A LIT YELLOW LED INDICATES THERE IS A GROUND SIGNAL TO TURN THE CORRESPONDING RELAY ON.

A LIT RED LED INDICATES THERE IS VOLTAGE ON IT'S CORRESPONDING OUTPUT PIN.

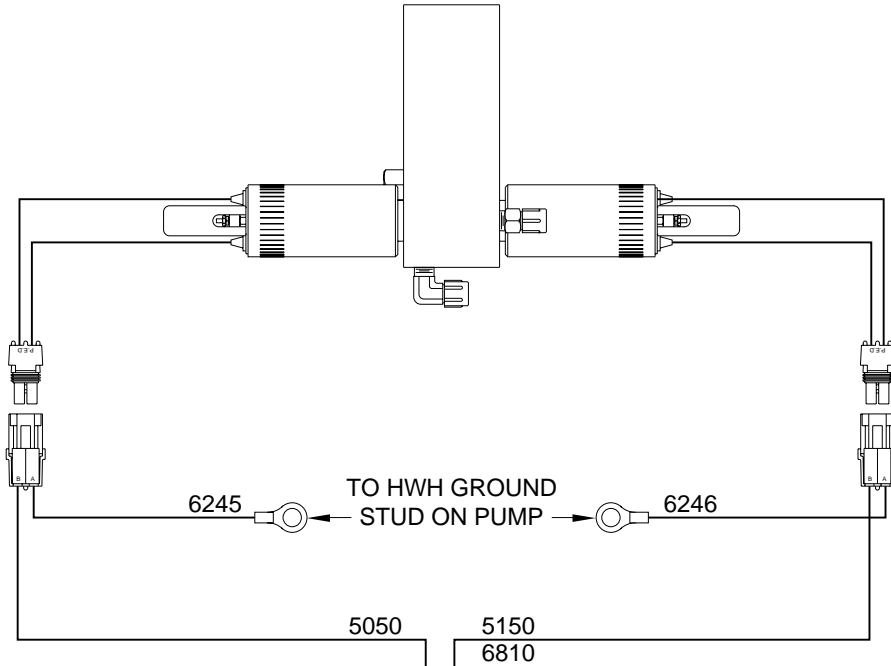
IF A YELLOW LED IS LIT AND THE CORRESPONDING RED LED IS OFF, EITHER IT'S FUSE IS BLOWN OR THE RELAY IS BAD.

IF THE YELLOW LED'S ARE WORKING BUT NO RED LED IS COMING ON THERE MAY BE PROBLEM WITH INPUT VOLTAGE IN THE 4-PIN CONNECTOR.

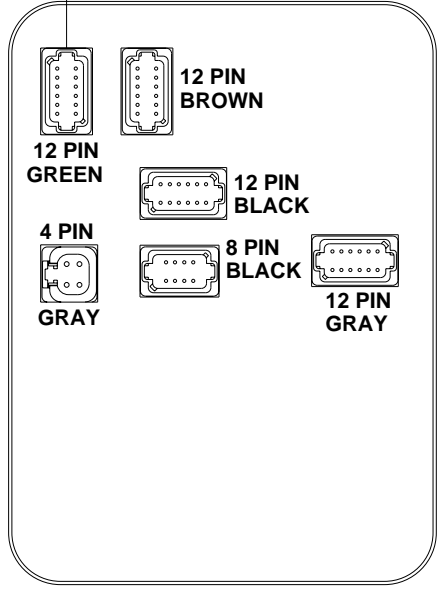
IF A YELLOW LED IS NOT LIT, THERE IS A PROBLEM WITH THE CONTROL BOX, TOUCH PANEL OR CONNECTION CABLE

ELECTRICAL CONNECTION DIAGRAM STEP MECHANISM

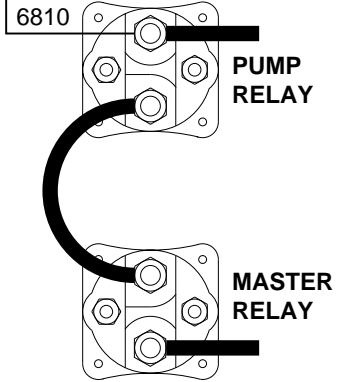
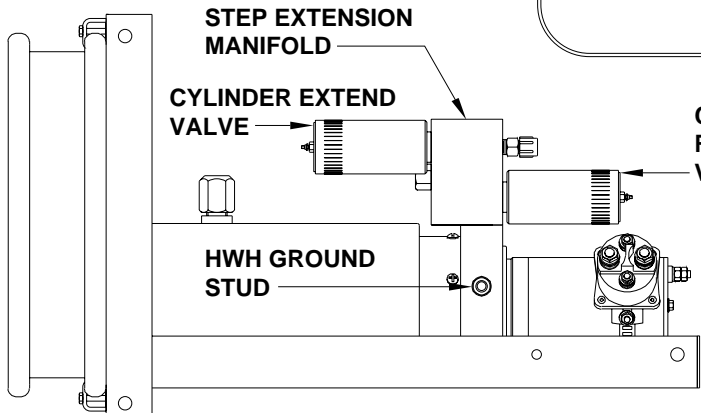
TOP VIEW



1E - STEP 1 CYL EXTEND - STEP EXTEND
1R - STEP 1 CYL RETRACT - STEP RETRACT



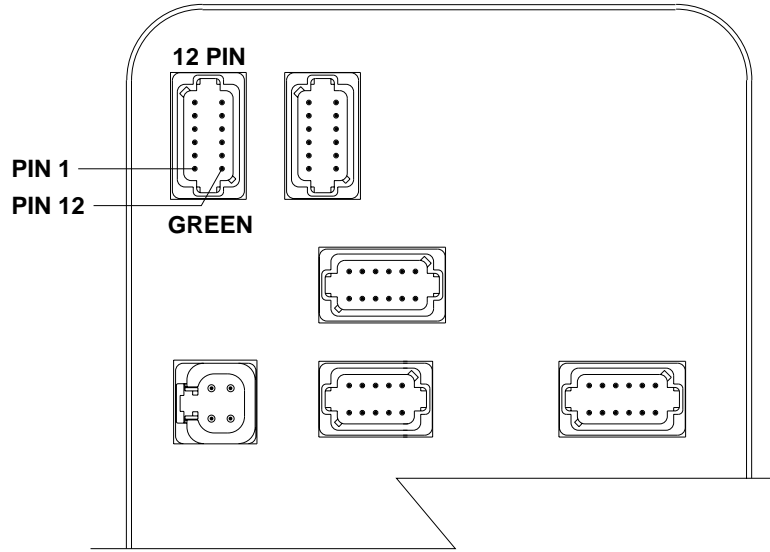
**NOTE: LEVELING SYSTEM
MANIFOLD NOT SHOWN.**



ELECTRICAL CONNECTION DIAGRAM

STEP MECHANISM

CONTROL BOX CONNECTION INFORMATION

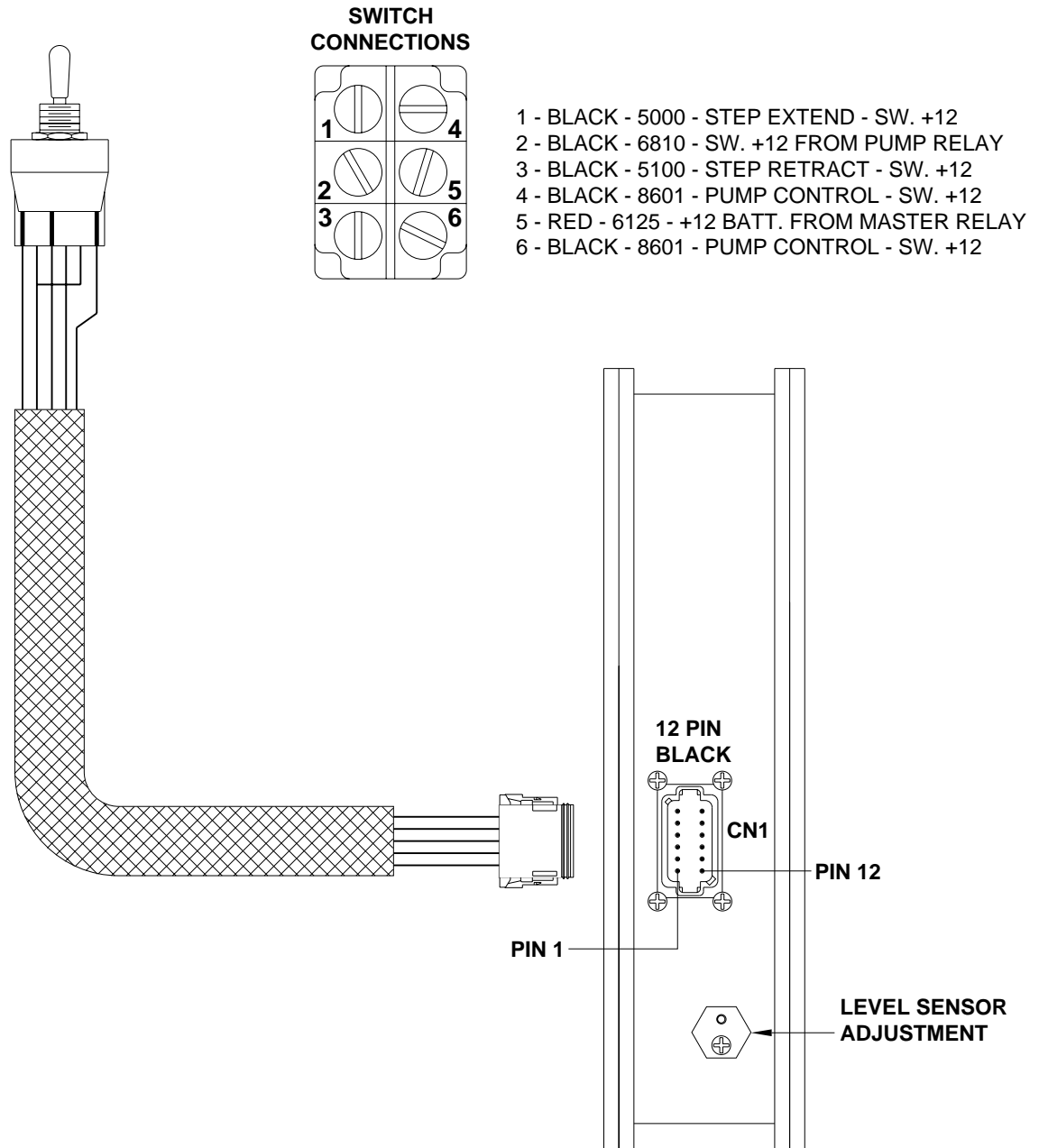


PIN #	WIRE COLOR	WIRE NUMBER	WIRE DESCRIPTION AND FUNCTION
GREEN CONNECTOR			12 PIN GREEN CONNECTOR
1	BLACK	5050	SWITCHED +12 FOR ROOM 1 CYL EXT SOLENOID VALVE
2	BLACK	5150	SWITCHED +12 FOR ROOM 1 CYL RET SOLENOID VALVE
3 THRU 8			NO CONNECTION
9	BLACK	6810	+12 BATTERY FROM MASTER RELAY
10 THRU 12			NO CONNECTION

ELECTRICAL CONNECTION DIAGRAM

STEP CONTROL TOGGLE SWITCH

CONTROL BOX CONNECTION INFORMATION



PIN #	WIRE COLOR	WIRE NUMBER	WIRE DESCRIPTION AND FUNCTION
CN1 - 12 PIN BLACK CONNECTOR (SIDE MOUNTED)			
1	BLACK	6810	SWITCHED +12 BATT FROM PUMP RELAY
2	BLACK	5000	SWITCHED +12 FOR ROOM EXT FROM CONTROL TOGGLE SWITCH
3	BLACK	5100	SWITCHED +12 FOR ROOM RET FROM CONTROL TOGGLE SWITCH
4 THRU 7			NO CONNECTION
8			NO CONNECTION (KEY PIN)
9			NO CONNECTION
10	BLACK	8601	SWITCHED +12 FOR PUMP RELAY FROM CONTROL TOGGLE SWITCH
11	RED	6100	+12 BATTERY FROM MASTER RELAY
12			NO CONNECTION (KEY PIN)

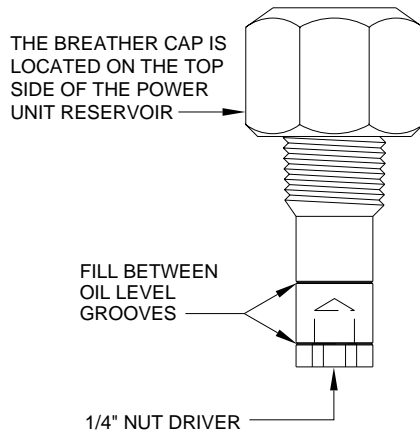
INFORMATION/INSTRUCTION SHEET

HYDRAULIC SOLENOID VALVE

IDENTIFICATION - MANUAL OPERATIONS - REPLACEMENT

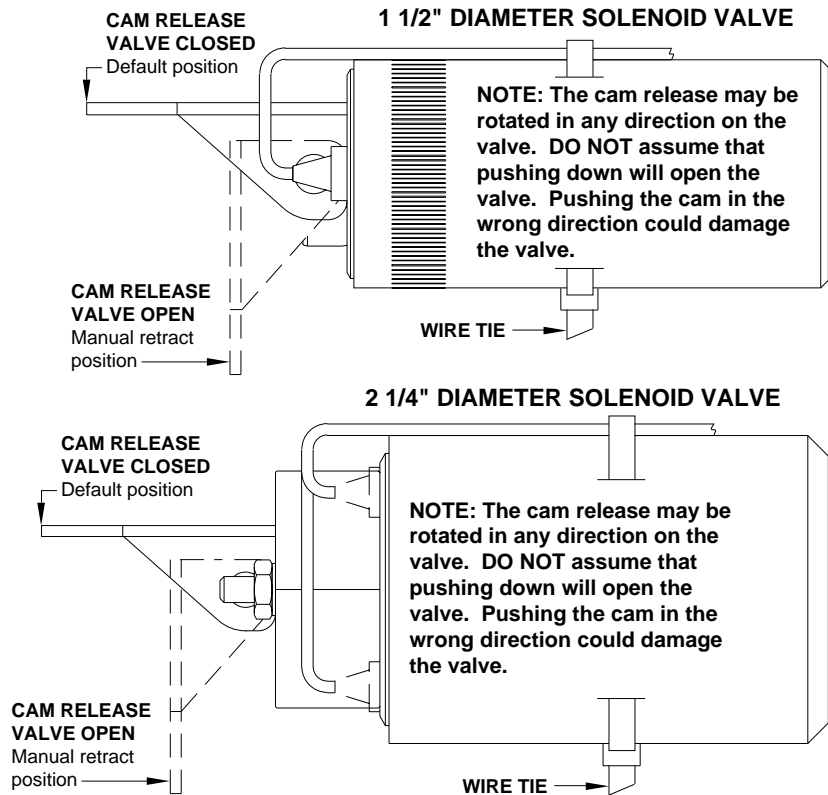
REPLACEMENT VALVES WILL HAVE A VALVE RELEASE CAM

BREATHER CAP W/NUT DRIVER

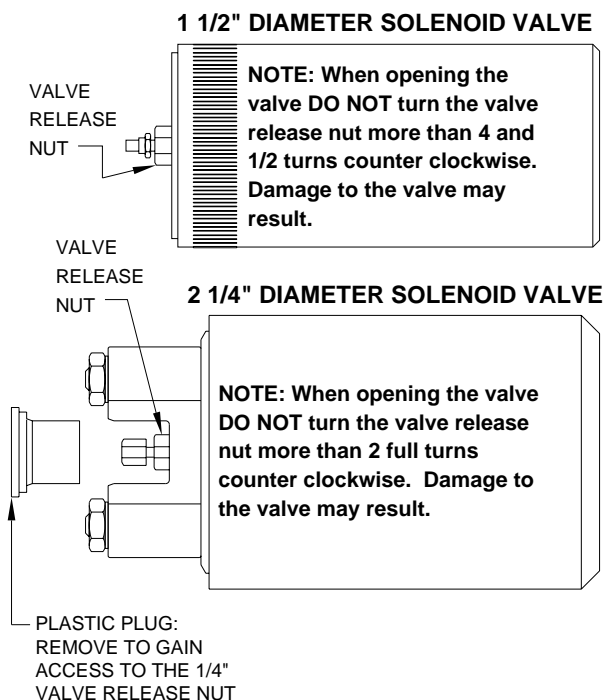


IMPORTANT: PRIOR TO REMOVING THE BREATHER CAP, EITHER TO CHECK THE OIL LEVEL OR TO USE 1/4" NUT DRIVER, CLEAN ANY DEBRIS FROM THE TOP OF THE RESERVOIR. BEFORE RETURNING THE BREATHER CAP TO THE RESERVOIR, REMOVE ANY PAINT CHIPS OR OTHER DEBRIS FROM THE DIPSTICK INCLUDING DEBRIS INSIDE THE 1/4" NUT DRIVER.

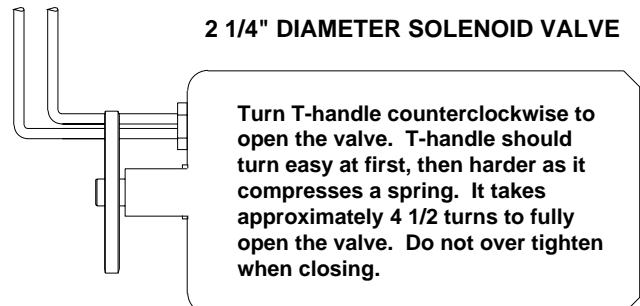
SOLENOID VALVES WITH CAM RELEASE



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.