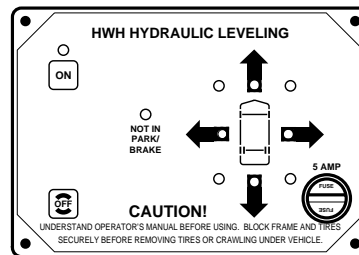
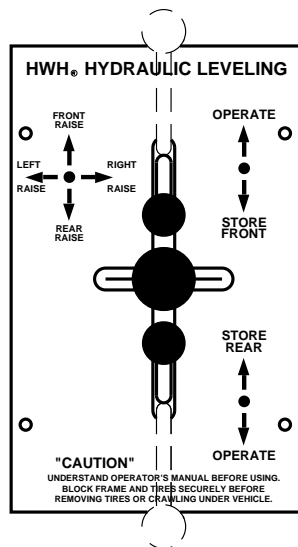




OPERATOR'S MANUAL

HWH® JOYSTICK-CONTROLLED 200 SERIES LEVELING SYSTEM and SPACEMAKER® ROOM EXTENSION SYSTEM

FEATURING:
Joystick BI-AXIS® Leveling Control
Hydraulic Leveling
Straight-Acting Jacks
Level-Out Floor Room Extension (With Synchronizing Cylinder)



HWH CORPORATION
(On I-80, Exit 267 South)
2096 Moscow Road | Moscow, Iowa 52760
Ph: 800/321-3494 (or) 563/724-3396 | Fax: 563/724-3408
www.hwh.com

OPERATOR'S MANUAL

CAUTION !

READ THE ENTIRE OPERATOR'S MANUAL BEFORE OPERATING.

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

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

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

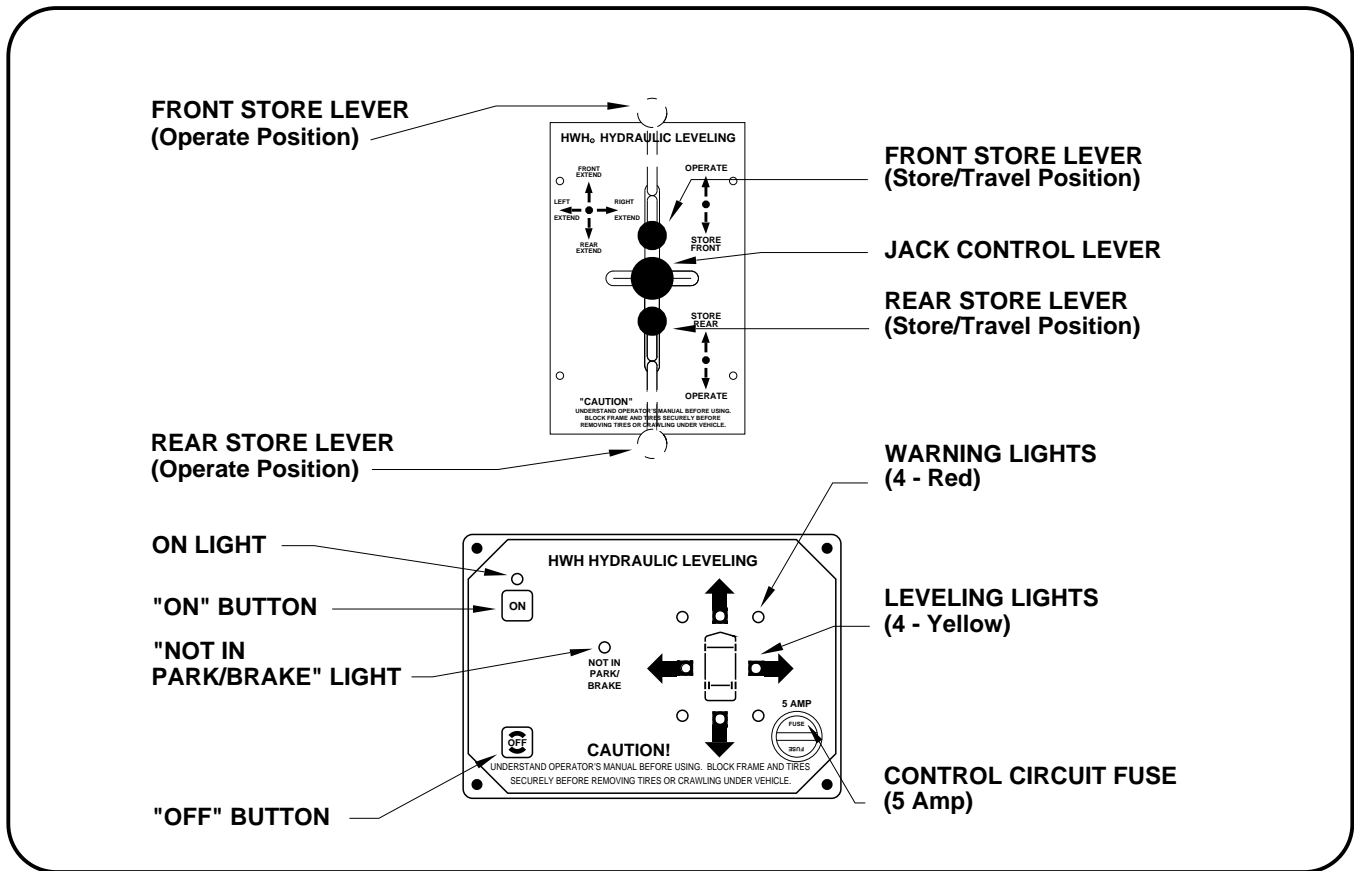
HWH CORPORATION strives to maintain the highest level of customer satisfaction. Therefore, if you discover a defect or problem, please do the following:

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



CONTROL FUNCTIONS

CONTROL BUTTONS

"ON" BUTTON: This is the "ON" button for the leveling system. It provides control power to operate the electrical relay on the pump, the LEVELING lights and the 4 red WARNING lights. It does not control power to the master "JACKS DOWN" warning light or buzzer.

"OFF" BUTTON: This button turns off control power to the leveling system, but not the master WARNING light or buzzer.

STORE LEVERS: These two levers are used to retract the jacks into the STORE/TRAVEL position. They must be in the operate position for leveling.

JACK CONTROL LEVER: Jacks are extended in pairs by pushing the jack control lever to one of the EXTEND positions. This movement of the lever activates the pump and directs hydraulic fluid to the jacks. When the lever is released it will return to the neutral (center) position, turning off the pump and stopping jacks in position.

INDICATOR LIGHTS

ON LIGHT: This light indicates the system is on.

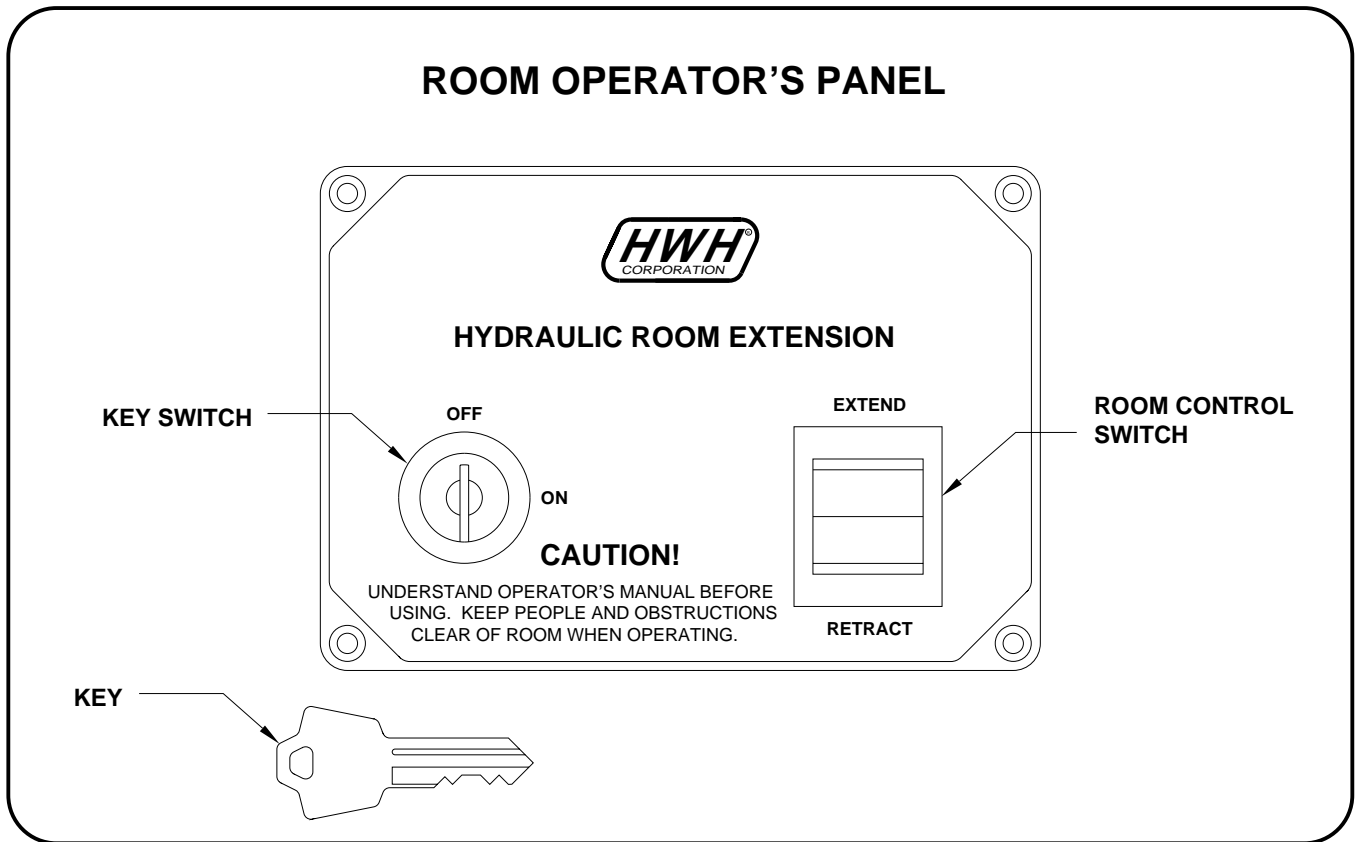
"NOT IN PARK/BRAKE" LIGHT: This indicator light is on when the "ON" button is pushed, but the hand/auto park brake is not set. The panel will not turn on.

LEVELING LIGHTS: If a yellow LEVELING light is on, that indicates a side or end of the vehicle is low. Extend the appropriate jack pairs to put out the yellow light. Only one yellow LEVELING light should be on at a time. The vehicle is level when all yellow lights are out.

WARNING LIGHTS: A red WARNING light will be on whenever the corresponding jack is extended 2 inches or more provided the ignition switch is in the "ACC" or "ON" position and the panel is on. Some vehicles are equipped with a dash mounted master "JACKS DOWN" light which will be on when one or more jacks are extended 2 inches or more, provided the ignition switch is "ON".

WARNING BUZZER: A buzzer will sound if a jack is extended 2 inches or more and the ignition switch is "ON".

CONTROL IDENTIFICATION



CONTROL FUNCTIONS

KEY SWITCH: The KEY SWITCH controls power to the ROOM CONTROL SWITCH. When the KEY SWITCH is in the "ON" position the room can be operated, provided the jacks are extended and the leveling system is off. The key cannot be removed. When the KEY SWITCH is in the "OFF" position the room cannot be operated, and the key can be removed.

ROOM CONTROL SWITCH: The ROOM CONTROL SWITCH is a two position momentary switch. Pressing the switch in the EXTEND position will extend the room. Pressing the switch in the RETRACT position will retract the room. Releasing the ROOM CONTROL SWITCH will halt the operation of the room.

OPERATING PROCEDURES

SITE SELECTION

Maintain adequate clearance in all directions for vehicle, room extensions, awnings, doors, steps ect. Vehicle may move in any direction due to jack extending or retracting,

settling of jacks or vehicle, equipment malfunction etc. If parking on soft ground or asphalt paving, wood blocks or pads should be placed under the jacks.

ROOM EXTENSION PROCEDURES

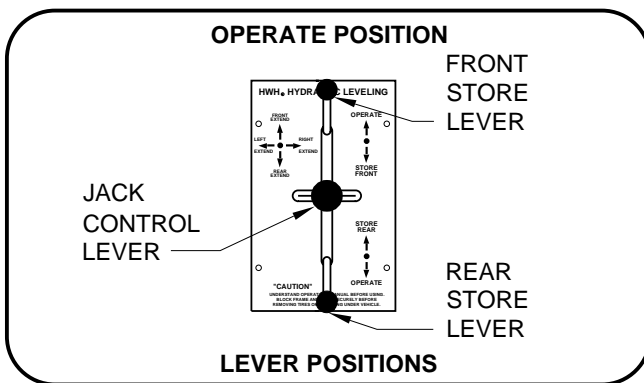
IMPORTANT: If the vehicle is equipped with a room extension read this section carefully.

Refer to the vehicle owner's manual for proper operation of room extensions.

If the vehicle is equipped with kick-down jacks, the wheels **MUST** be blocked securely. Do **NOT** operate any room extension until the leveling and stabilizing procedure is complete. Do **NOT** retract the leveling system until all room extensions are retracted. **NEVER** operate the leveling system when any room extensions are extended.

IMPORTANT: Do not use a room extension support when the vehicle is supported by the leveling system.

LEVELING PROCEDURE



NOTE: The respective RED WARNING LIGHT will come on when a jack is extended 2 or more inches.

5. A lit yellow LEVEL light indicates that the end, side or corner of the vehicle is low. Only one yellow LEVEL light should be lit at a time. If a corner of the vehicle is low a side LEVEL light will be on by itself.

Move the JACK CONTROL LEVER to the EXTEND position to extend jack pairs corresponding to a lit yellow light. Extend jack pairs accordingly until all yellow lights are out. It may take several movements from side to front, or side to rear to raise a low corner. If the ground is too uneven, the jacks may not have enough stroke to level the vehicle. The vehicle may have to be moved.

1. Place gear selector in the parking position, apply park brake and block tires securely.

NOTE: If the hand/auto park brake is not set, the "NOT IN PARK/BRAKE" light will come on while the "ON" button is pushed. The panel will not turn on if the park brake is not set.

2. Turn the ignition switch to "ACCESSORY".

3. Push the "ON" button on the light plate. The POWER ON light will be lit.

4. Move the FRONT and REAR STORE LEVERS to the OPERATE POSITION. Nothing should happen at this time. Place pads under jacks if necessary at this time.

6. After the vehicle is level, the jacks not used for leveling may be extended until they touch the ground. This provides additional stability against wind and activity in the vehicle. Do this by pushing the jack control lever to the rear and/or front as needed to extend any remaining jacks. Do not use the right or the left extend positions. Jacks used to stabilize the vehicle should lift the vehicle 3/4" to 1" after touching the ground.

7. Push the "OFF" button on the light panel.

8. Turn the ignition switch off.

OPERATING PROCEDURES

ROOM EXTEND PROCEDURE

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

CAUTION: OPERATING THE ROOM WITH ANY ROOM-LOCKING DEVICES LOCKED OR THE MANUAL-RETRACT WINCH ATTACHED CAN CAUSE PERSONAL INJURY AND VEHICLE DAMAGE. IT IS THE OPERATOR'S RESPONSIBILITY TO ENSURE THAT ALL ROOM-LOCKING DEVICES AND THE MANUAL RETRACT WINCH ARE DISENGAGED BEFORE OPERATING THE ROOM.

1. It is recommended to level the vehicle using the hydraulic leveling system before operating the room extension.

2. Unlock all room-locking devices.

NOTE: If the MANUAL RETRACT WINCH is attached to the room remove it before extending the room.

CAUTION: KEEP PEOPLE AND OBSTRUCTIONS CLEAR OF ROOM WHEN OPERATING.

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

3. To extend the room, press and hold the ROOM CONTROL SWITCH in the "EXTEND" position until the room is fully extended.

NOTE: Hold the switch to "EXTEND" three or four seconds after the room is fully extended. This assures proper pressurization of the cylinders. **During normal operation of the room, do not reverse direction of the room until the room is fully extended. If necessary, the direction of the room may be reversed, but watch for binding of the room. If the direction of the room has been reversed, DO NOT re-extend the room until the room has been fully retracted.**

IMPORTANT: Do not hold the ROOM CONTROL SWITCH in the "EXTEND" position for more than ten seconds after the room is fully extended or stops moving. **If either side of the room stops moving, release the room control switch immediately. DO NOT force the room. DO NOT reverse direction of the room, contact HWH Customer Service for assistance 1-800-321-3494.**

NOTE: Releasing the ROOM CONTROL SWITCH will halt the operation of the room.

ROOM RETRACT PROCEDURE

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

CAUTION: KEEP PEOPLE AND OBSTRUCTIONS CLEAR OF ROOM WHEN OPERATING.

1. It is recommended to retract the room(s) before retracting the jacks.

2. To retract the room press and hold the ROOM CONTROL SWITCH in the "RETRACT" position until the room is fully retracted.

NOTE: Hold the switch to "RETRACT" three or four seconds after the room is fully retracted. This assures proper pressurization of the cylinders. **During normal operation of the room, do not reverse direction of the room until the room is fully retracted. If necessary, the direction of the room may be reversed, but watch for binding of the room. If the direction of the room has been reversed, DO NOT retract the room until the room has been fully extended.**

IMPORTANT: Do not hold the ROOM CONTROL SWITCH in the "RETRACT" position for more than ten seconds after the room is fully retracted or stops moving. **If either side of the room stops moving, release the room control switch immediately. DO NOT force the room. DO NOT reverse direction of the room, contact HWH Customer Service for assistance 1-800-321-3494.**

NOTE: Releasing the ROOM CONTROL SWITCH will halt the operation of the room.

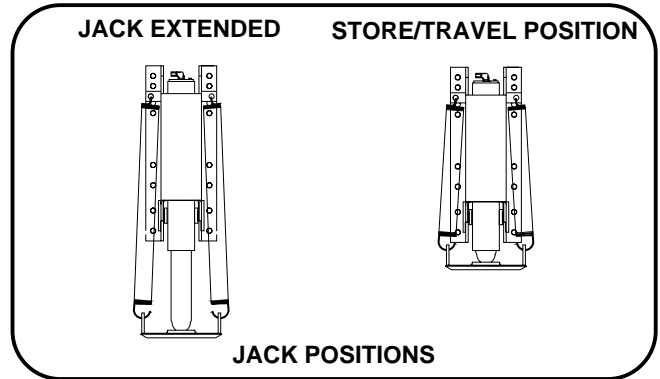
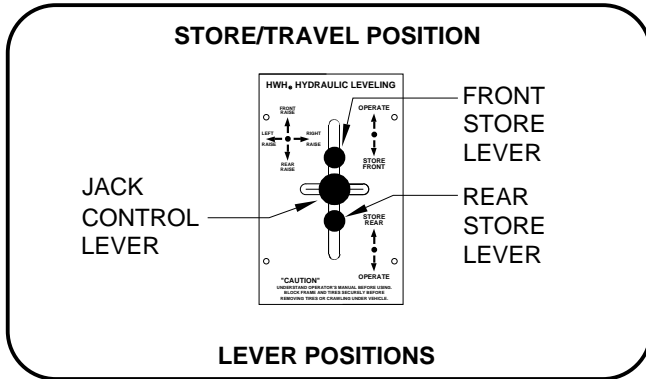
3. Engage all room-locking devices.

4. If the room will not retract see the MANUAL ROOM RETRACT PROCEDURE.

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

OPERATING PROCEDURES

LEVELING SYSTEM RETRACT PROCEDURE



IMPORTANT: Do not retract the jacks while the room is extended.

CAUTION: MAKE SURE THAT PEOPLE AND EQUIPMENT ARE CLEAR OF THE VEHICLE.

NOTE: Neither the Light Panel nor the Ignition have to be ON to store the jacks. The Ignition and Light Panel do have to be ON to check the four red WARNING LIGHTS.

1. To retract the jacks move the FRONT STORE LEVER then the REAR STORE LEVER to the STORE/TRAVEL POSITION.

NOTE: Pulling the STORE LEVERS slowly to the STORE position will allow the vehicle to lower slowly.

CAUTION: THE STORE LEVERS SHOULD BE KEPT IN THE "STORE" POSITION WHILE TRAVELING TO KEEP THE JACKS IN THE STORE/TRAVEL POSITION.

2. Visually check that each jack is in its STORE/TRAVEL POSITION.

CAUTION: DO NOT MOVE THE VEHICLE WHILE ANY JACKS ARE EXTENDED. THIS VEHICLE IS EQUIPPED WITH STRAIGHT-ACTING JACKS. MOVING THE VEHICLE WITH THE JACKS EXTENDED CAN CAUSE SEVERE DAMAGE TO THE JACKS AND THE VEHICLE AND CAN CREATE A DRIVING HAZARD. DO NOT RELY SOLELY UPON THE WARNING LIGHTS, THE "JACKS DOWN" LIGHT, OR THE WARNING BUZZER AS AN INDICATION THAT ALL THE JACKS ARE IN THE STORE/TRAVEL POSITION.

4. Press the "OFF" BUTTON if the Panel was turned ON.

5. Turn the ignition switch OFF or proceed to travel.

MANUAL ROOM AND GENERATOR SLIDE RETRACT PROCEDURE (WITH SOLENOID VALVES WITH VALVE RELEASE NUTS)

(USE ONLY WHEN THE ROOM WILL NOT RETRACT WITH THE ROOM CONTROL SWITCH)

OVERVIEW

The room can be retracted manually if a hydraulic or electric failure prevents the room from being retracted using the CONTROL SWITCH. For normal retract sequence see the ROOM SLIDE RETRACT PROCEDURES. Refer to the vehicle manufacturer for storage location of the winch and information for connecting the winch to the room.

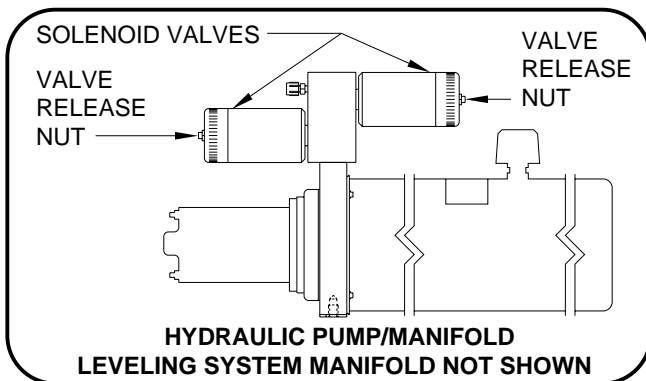
IMPORTANT: If the vehicle is not equipped with a winch, DO NOT use other pulling devices to retract the room. Follow steps 2 and 3 and try pushing the room in. Contact the vehicle manufacturer or HWH Customer Service at 1-800-321-3494 or 563-724-3396 for assistance.

CAUTION: THE MANUAL RETRACT WINCH IS EQUIPPED FOR MANUALLY RETRACTING THE ROOM ONLY. IT IS NOT TO BE USED FOR LIFTING OR ANY OTHER APPLICATION. HIGH FORCES ARE CREATED WHEN USING A WINCH, CREATING POTENTIAL SAFETY HAZARDS. FAILURE TO FOLLOW ALL CAUTIONS AND INSTRUCTIONS MAY CAUSE FAILURE OF THE MANUAL RETRACT WINCH OR CONNECTIONS RESULTING IN DAMAGE OR PERSONAL INJURY. MAINTAIN FIRM GRIP ON THE WINCH HANDLE AT ALL TIMES. NEVER RELEASE THE HANDLE WHEN RATCHET LEVER IS IN THE OFF POSITION AND THE WINCH IS LOADED. THE WINCH HANDLE COULD SPIN VIOLENTLY AND CAUSE PERSONAL INJURY. CHECK THE WINCH AND STRAPS FOR DAMAGE OR WEAR, AND CHECK FOR PROPER RATCHET OPERATION ON EACH USE OF THE WINCH. DO NOT USE IF DAMAGED OR WORN.

1. Retract jacks following the LEVELING SYSTEM RETRACT PROCEDURE.

NOTE : When manually retracting the room, make sure the jacks are retracted before retracting the room.

2. Locate the HYDRAULIC PUMP/MANIFOLD unit.



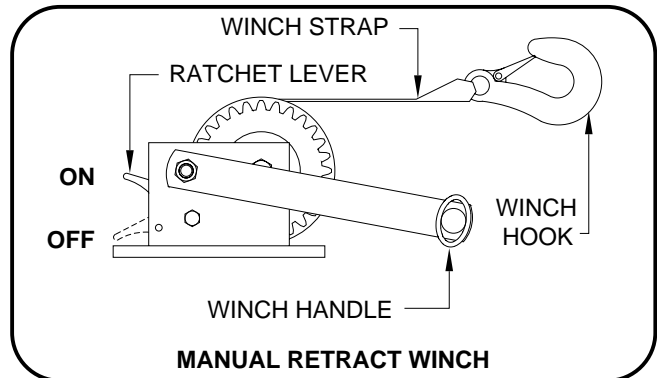
3. Open the Solenoid Valves by slowly turning the valve release nuts counter clockwise using the 1/4" nut driver supplied.

IMPORTANT: Only open the valves enough to retract the room. DO NOT turn the release nuts more than 4 and 1/2 turns. Turning the nuts more could damage the valves.

NOTE: Prior to APRIL 2002 a 1/4" Nut Driver was sent with the Operators Manual. As of APRIL 2002 the 1/4" Nut Driver has been incorporated into the Breather Cap. See the back page of this manual for further info.

NOTE: The room may move slightly as the SOLENOID VALVES are opened and internal pressure is released.

4. Locate the MANUAL RETRACT WINCH and connect it to the room according to the vehicle manufacturer's instructions. To extend the WINCH STRAP firmly grasp WINCH HANDLE, place RATCHET LEVER in its OFF position, and slowly rotate the WINCH HANDLE counter clockwise, keeping a firm grip on the handle. When enough WINCH STRAP is extended, place the RATCHET LEVER in its ON position and slowly rotate the WINCH HANDLE clockwise until the RATCHET LEVER locks.



5. Slowly winch the room in by turning the WINCH HANDLE clockwise. The RATCHET LEVER should produce a loud, sharp, clicking noise.

NOTE: Winching the room in quickly will raise pressure in the hydraulic fluid and make winching more difficult.

CAUTION: OPERATE THE MANUAL RETRACT WINCH BY HAND POWER ONLY. IF THE WINCH CANNOT BE CRANKED EASILY WITH ONE HAND IT IS PROBABLY OVERLOADED. IF WINCHING BECOMES TOO DIFFICULT STOP AND CHECK FOR OBSTRUCTIONS OR RESTRICTIONS ON THE ROOM AND ROOM EXTENSION MECHANISM.

6. When the room is fully retracted, engage the room locking devices. Leave the retract winch engaged and the solenoid valves open.

CAUTION: THE ROOM EXTENSION SOLENOID VALVE RELEASE NUTS MUST BE IN THE OPEN POSITION WHEN THE MANUAL RETRACT WINCH IS ENGAGED.

7. The system should be repaired before using again.

NOTE: After repairs are made, when closing the VALVE RELEASE NUTS, do not over tighten the nuts.

MP35.952D
01MAY02

MAINTENANCE

OIL LEVEL

It is important that the four jacks and any HWH rooms are fully retracted before checking the hydraulic oil level. To check the oil supply, remove the breather cap from the top of the hydraulic oil reservoir. The oil level should be approximately one inch below the top of the reservoir when adequately filled.

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.

UNUSUAL CONDITIONS

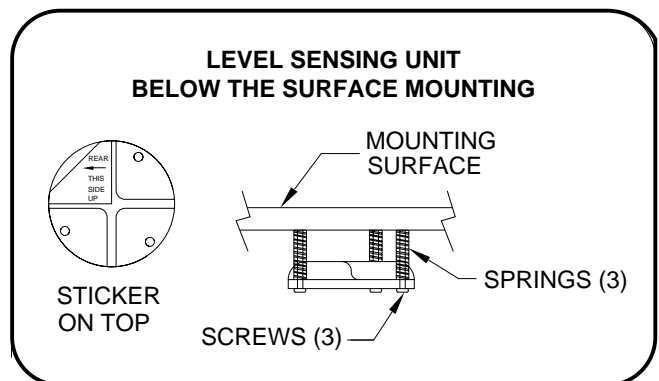
If driving conditions are unusually muddy, the jacks may become caked or clogged with mud. This condition may hamper the proper operation of the leveling system. This problem may be prevented or remedied by cleaning off each jack if they become excessively muddy. In wet or icy weather the jacks may become encrusted with ice. This may cause

the leveling system to function improperly. To eliminate this problem, periodically check the jacks and break loose any ice which may be causing improper operation.

NOTE: All major components of the system can be replaced with rebuilt parts or can be sent to HWH CORPORATION to be rebuilt, when the system is out of warranty.

LEVEL SENSING UNIT ADJUSTMENT

Level the vehicle by placing a circular bubble level in the center of the freezer floor or location within the vehicle that is to be level. With the vehicle level, adjust the sensing unit until all yellow lights are off. This is done by drawing up the corresponding screw if the sensing unit is mounted below the surface as shown or backing out the corresponding screw if the sensing unit is mounted above the surface. Bump the sensing unit to see that it has settled down in the level position.



TROUBLE SHOOTING

210/225 SERIES BI-AXIS VALVE

The following is a list of problems, and possible solutions, which might occur to the leveling system.

NOTE: Only qualified technicians should install or repair leveling systems on vehicles. A knowledge of hydraulics, welding, the vehicle's suspension and electrical systems as well as an understanding of the leveling system's hydraulic and electronics is required.

1. JACK RETRACTS AFTER COACH IS LEVEL.

- A. Hose or jack has external leak.
- B. Fluid is leaking back to reservoir through the control valve.
- C. Thermal contraction of fluid, jacks not lifting enough when stabilizing the vehicle.
- D. Bezel plate not installed properly - interferes with STORE levers.

2. JACKS WILL NOT RETRACT COMPLETELY.

- A. Jack clogged with mud or ice.
- B. Main rod bent or scored.
- C. Valve plunger is not completely depressed by valve handle.
- D. Spring weak or broken.
- E. Hydraulic line pinched.

3. IGNITION SWITCH IS ON, BUT NO POWER TO PUMP AND/OR LIGHTS.

- A. Park brake not set.
- B. 12 volts from power source not present.
- C. Faulty PC board.
- D. Faulty wire or electrical connection.

4. PUMP WILL NOT ACTIVATE.

- A. Grounding switch on valve not working.
- B. Pump relay not functioning.
- C. Pump not grounded.

5. HYDRAULIC PUMP ACTIVATES WITHOUT USE OF CONTROL VALVE HANDLES.

- A. Grounding switch at valve shorted.
- B. Pump relay stuck.
- C. Relay control wire shorted to ground.

6. HYDRAULIC PUMP ACTIVATES, BUT THE JACKS WILL NOT EXTEND.

- A. Store levers not in the operate position.
- B. Oil supply is low in reservoir.
- C. Pump is not developing pressure.
- D. Broken hydraulic line.

7. LEVELING LIGHTS (YELLOW) ARE NOT FUNCTIONING PROPERLY.

- A. Yellow lights will not go out when vehicle is level: adjust sensing unit.
- B. If two or more yellow lights are on replace PC board or check level sensing unit.

8. WARNING LIGHTS (RED) ARE NOT FUNCTIONING PROPERLY.

- A. Light will not come on: check for broken wire at warning switch on the jack.
- B. Lights will not go out: bad warning switch or wires are shorted to ground.
- C. Check PC board.

TROUBLE SHOOTING ROOM EXTENSION

The following is a list of problems, and possible solutions, which might occur to the room extension systems.

NOTE: Only qualified technicians should install or repair room extension systems. A knowledge of hydraulics, welding and the vehicle's suspension and electrical systems is required. In addition, an understanding of the room extension system's hydraulics and electronics is required.

1. HYDRAULIC PUMP WILL NOT ACTIVATE WHEN ROOM CONTROL SWITCH IS PRESSED.

- A. FUSE is blown.
- B. PUMP RELAY and/or HYDRAULIC PUMP are not properly grounded.
- C. 12 VOLT power to pump relay not present.
- D. Faulty wire, electrical connection, ROOM CONTROL SWITCH, PUMP RELAY, or PUMP MOTOR.
- E. Park brake is not set.

2. HYDRAULIC PUMP ACTIVATES, BUT ROOM WILL NOT EXTEND.

- A. EXTEND SOLENOID VALVE is not properly grounded.
- B. Reservoir oil supply is low.
- C. Hydraulic line is pinched or broken.
- D. Faulty wire, electrical connection, ROOM CONTROL SWITCH, EXTEND SOLENOID VALVE, HYDRAULIC PUMP, or HYDRAULIC CYLINDER.

3. HYDRAULIC PUMP ACTIVATES, BUT ROOM WILL NOT RETRACT.

- A. RETRACT SOLENOID VALVE IS NOT properly grounded.
- B. Reservoir oil supply is low.
- C. Hydraulic line is pinched or broken.
- D. Faulty wire, electrical connection, ROOM CONTROL SWITCH, RETRACT SOLENOID VALVE, HYDRAULIC PUMP, or HYDRAULIC CYLINDER.

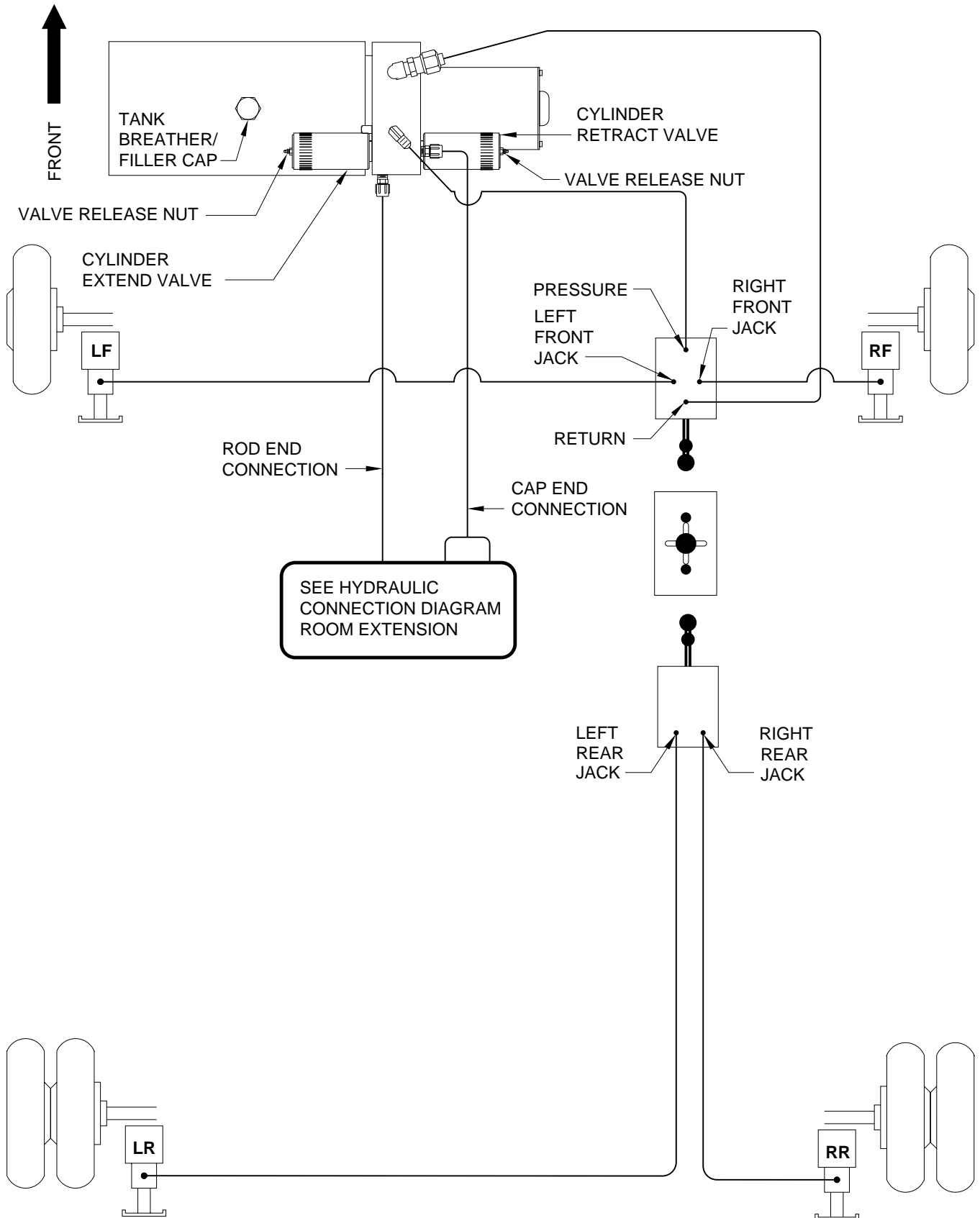
4. ROOM CREEPS OUT AFTER CLOSING.

- A. "T" HANDLE or VALVE RELEASE NUT on the EXTEND SOLENOID VALVE is not closed completely.
- B. EXTEND SOLENOID VALVE has an internal leak.
- C. HYDRAULIC CYLINDER has an internal leak.
- D. Manifold check valve is leaking.

5. ROOM CREEPS IN AFTER BEING EXTENDED.

- A. "T" HANDLE on RETRACT SOLENOID valve is not closed completely.
- B. RETRACT SOLENOID valve has an internal leak.

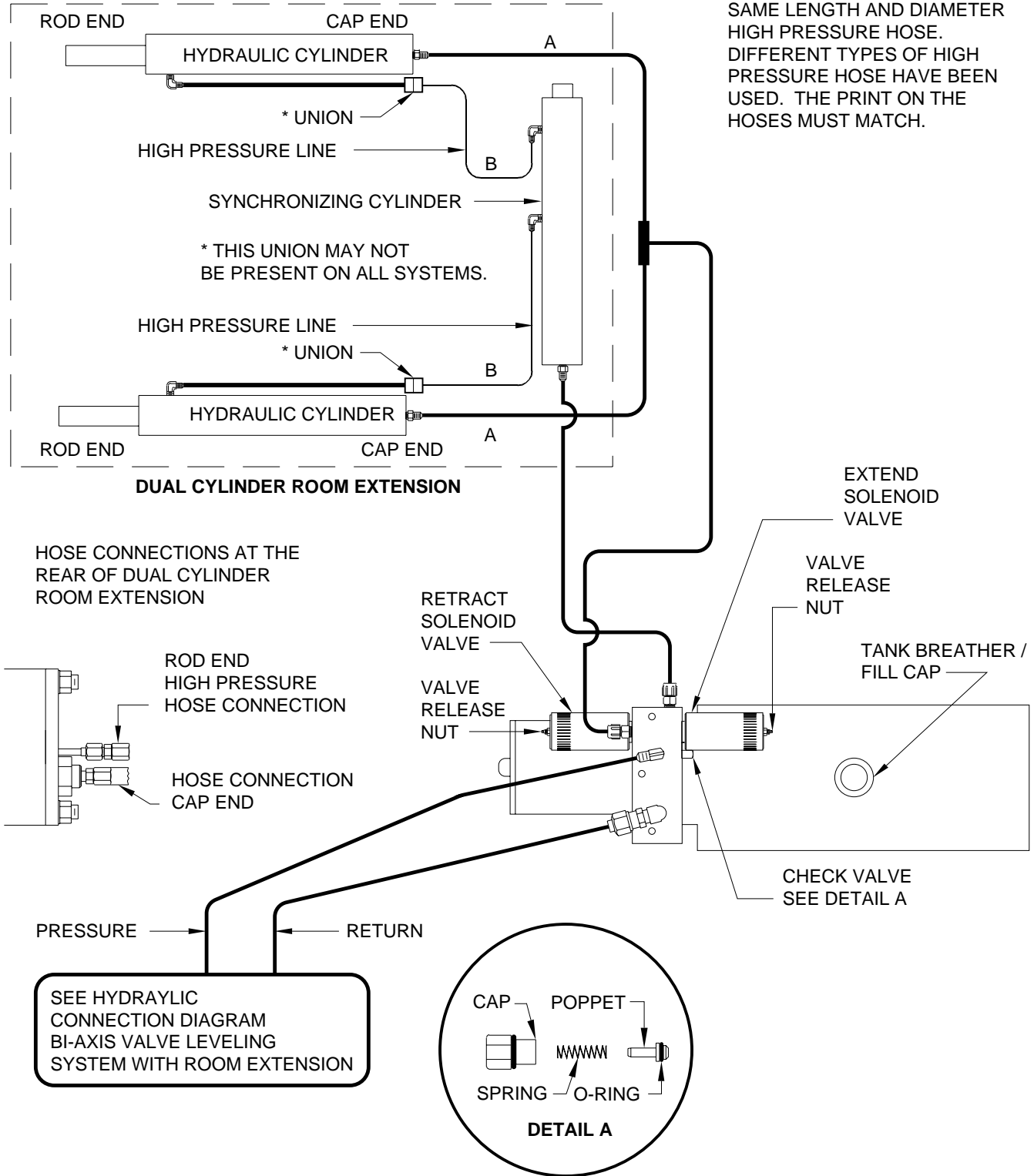
HYDRAULIC CONNECTION DIAGRAM BI-AXIS VALVE LEVELING SYSTEM WITH ROOM EXTENSIONS



HYDRAULIC CONNECTION DIAGRAM DUAL CYLINDER ROOM EXTENSION (WITH SYNCHRONIZING CYLINDER)

THE LINES (A) BETWEEN THE CAP END OF THE HYDRAULIC CYLINDER AND THE TEE MUST BE THE SAME LENGTH AND DIAMETER.

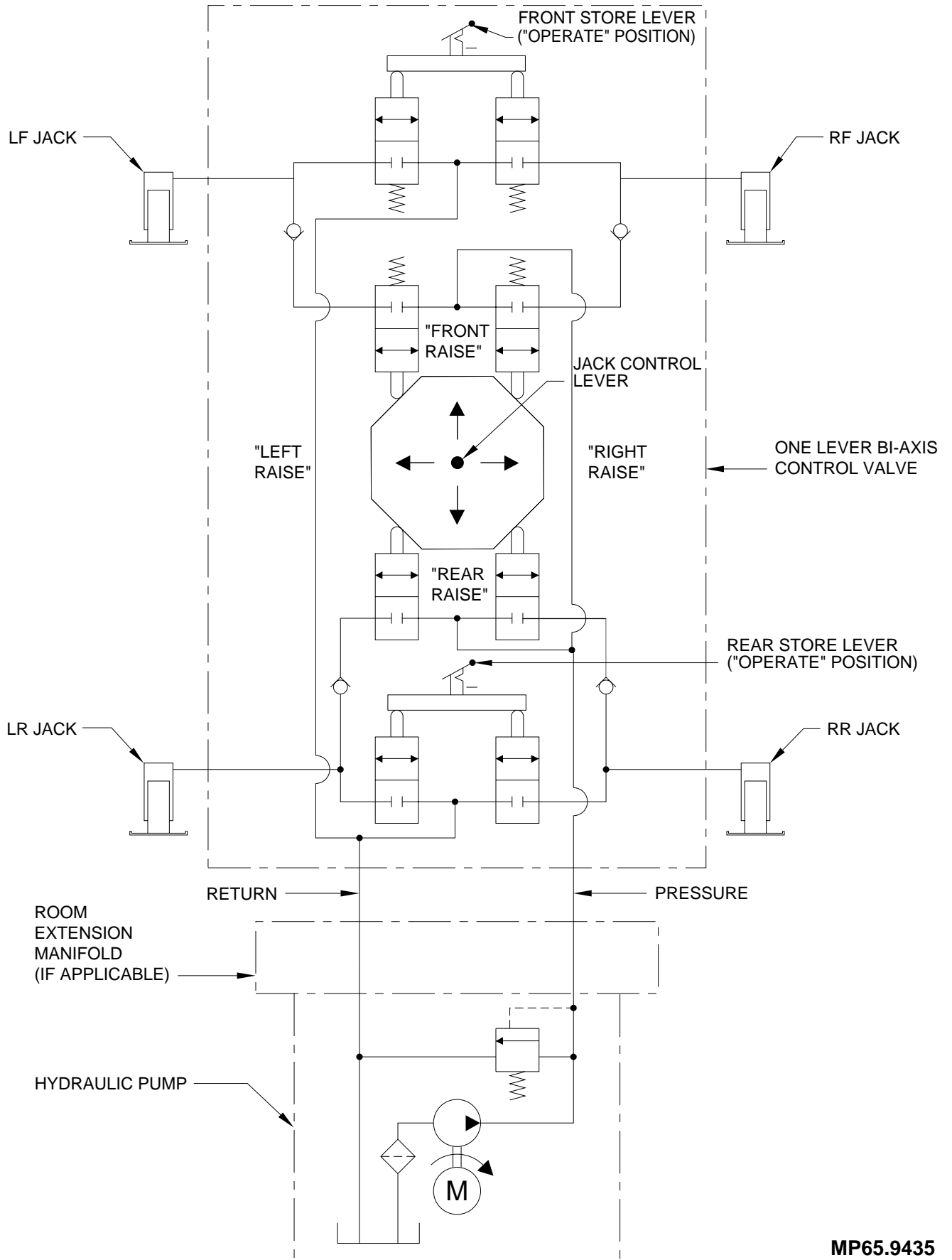
THE LINES (B) BETWEEN THE ROD END OF THE HYDRAULIC CYLINDERS AND THE SYNCHRONIZING CYLINDER MUST BE THE SAME LENGTH AND DIAMETER HIGH PRESSURE HOSE. DIFFERENT TYPES OF HIGH PRESSURE HOSE HAVE BEEN USED. THE PRINT ON THE HOSES MUST MATCH.



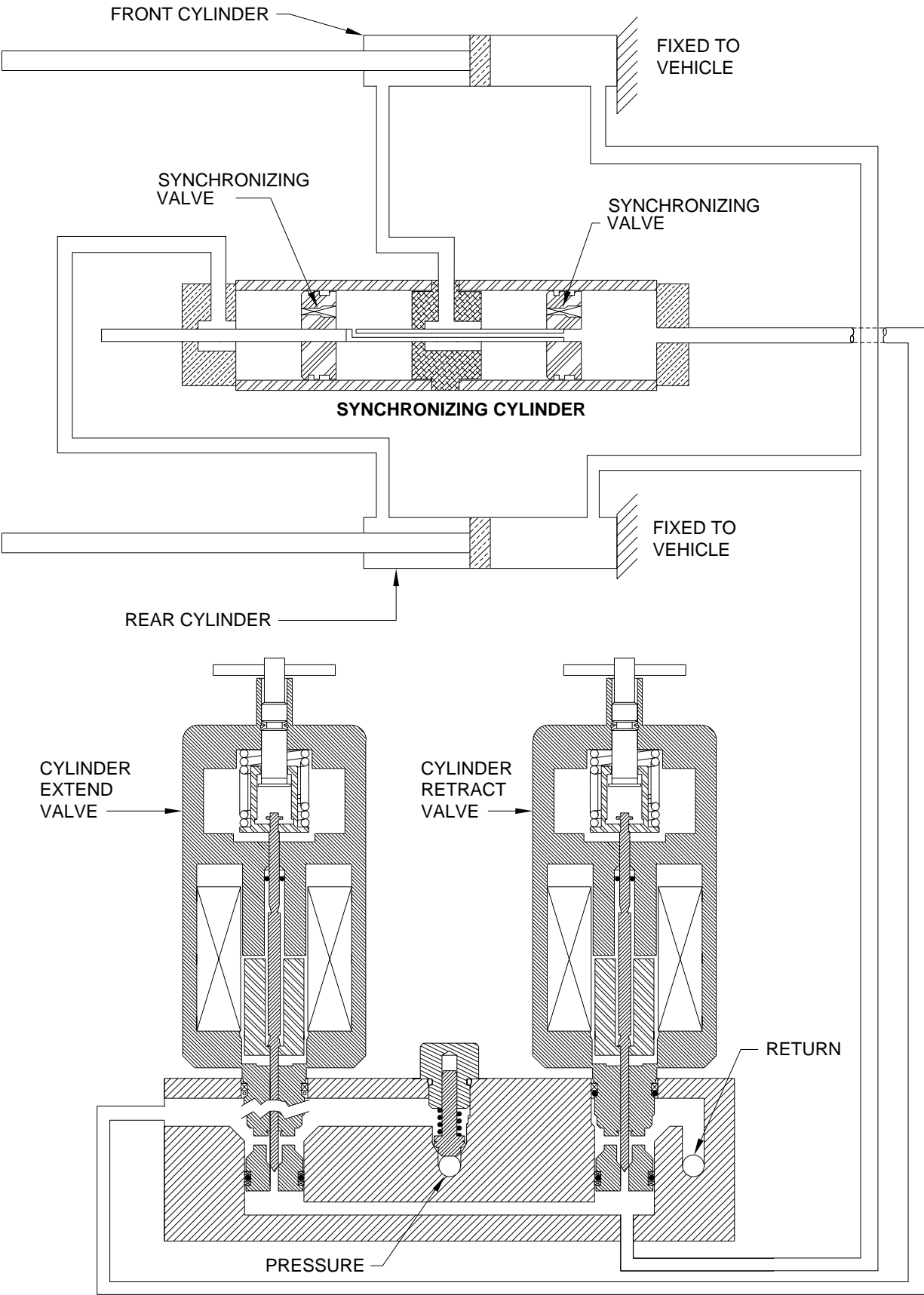
HYDRAULIC SCHEMATIC DIAGRAM

200/210/225 SERIES JOY STICK BI-AXIS LEVELING SYSTEM

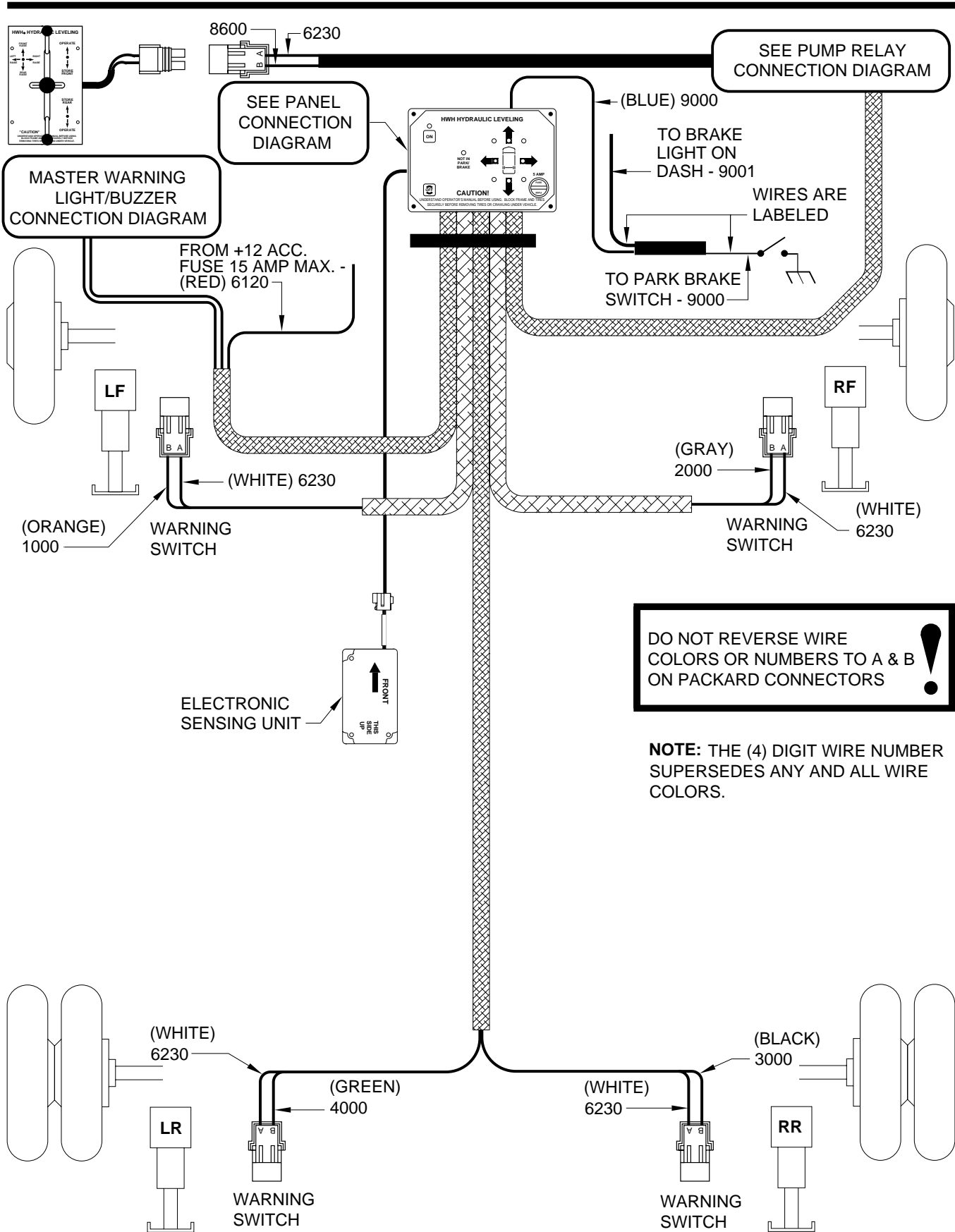
WITH STRAIGHT-ACTING JACKS



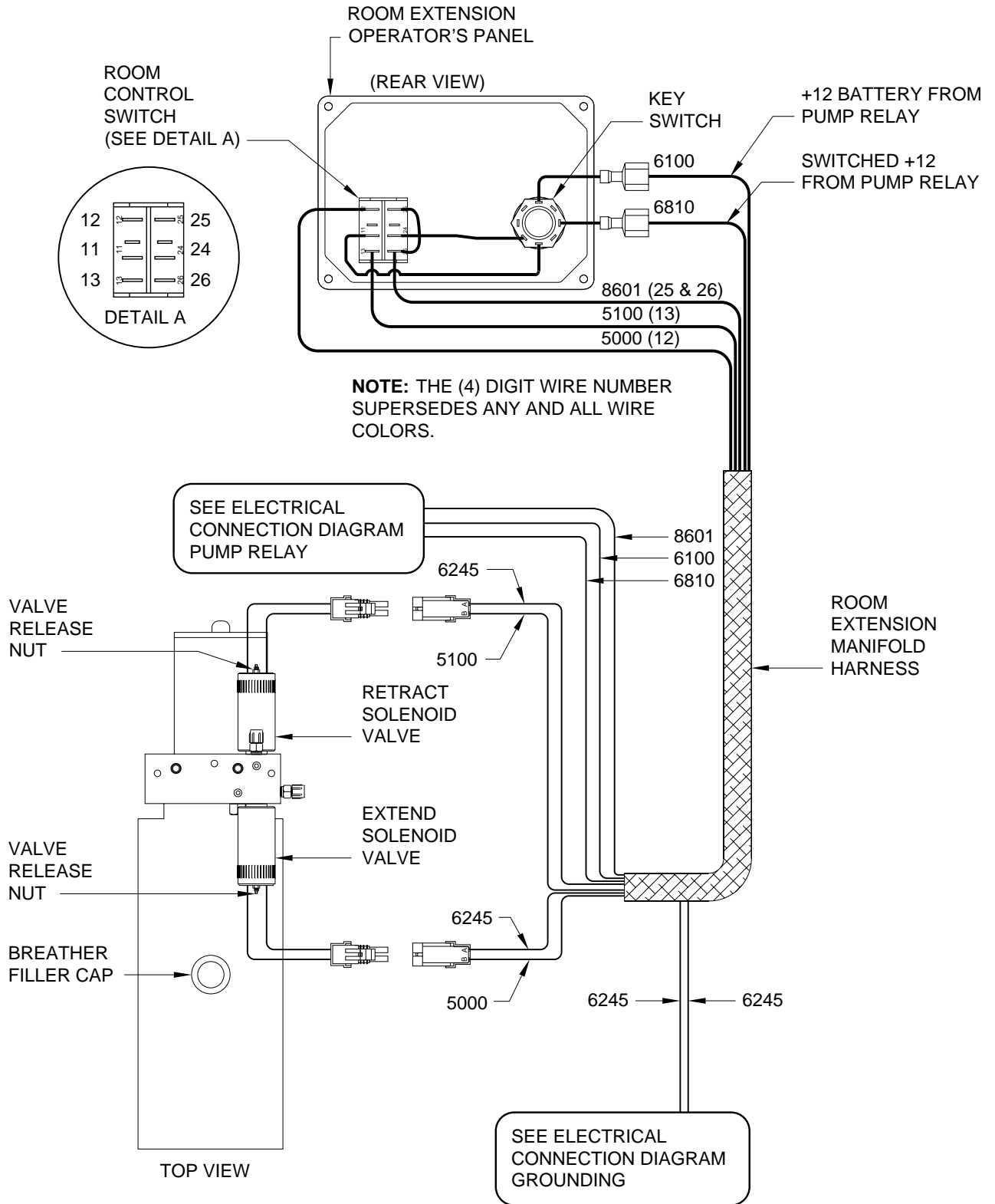
**HYDRAULIC FLOW DIAGRAM
VERTICAL ARM OR DUAL CYLINDER ROOM EXTENSION
WITH SYNCHRONIZING CYLINDER
STATIONARY POSITION**



ELECTRICAL CONNECTION DIAGRAM 200 SERIES LEVELING SYSTEM



ELECTRICAL CONNECTION DIAGRAM ROOM EXTENSION SYSTEM

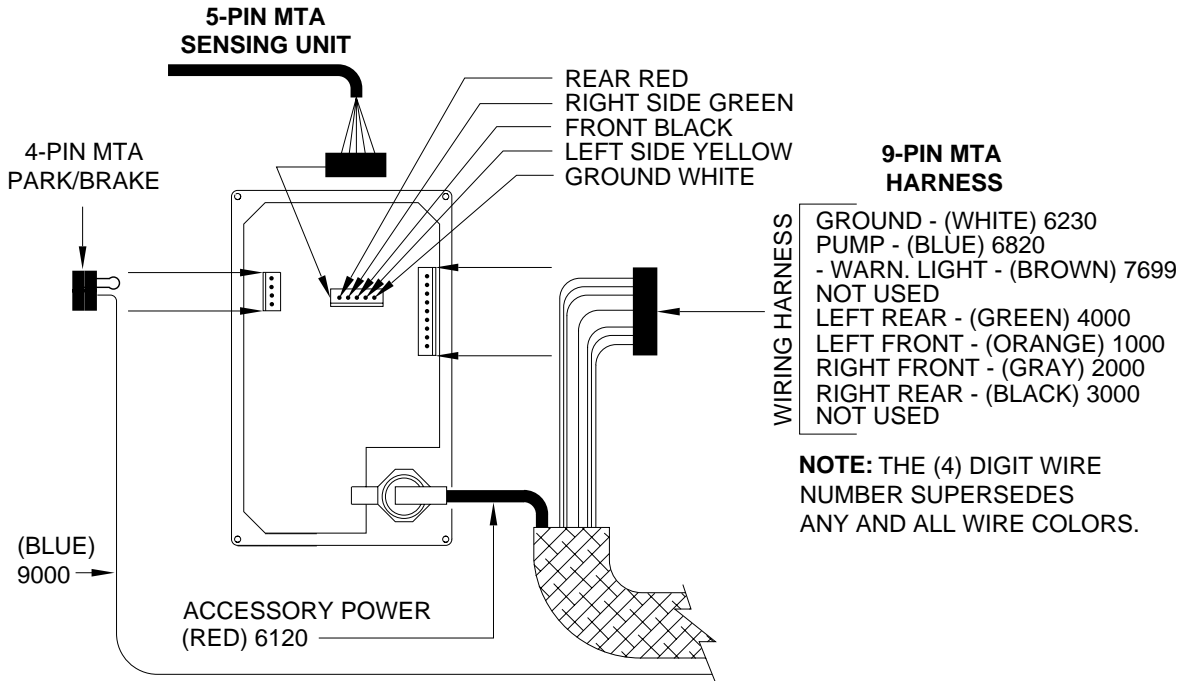


ELECTRICAL CONNECTION DIAGRAM

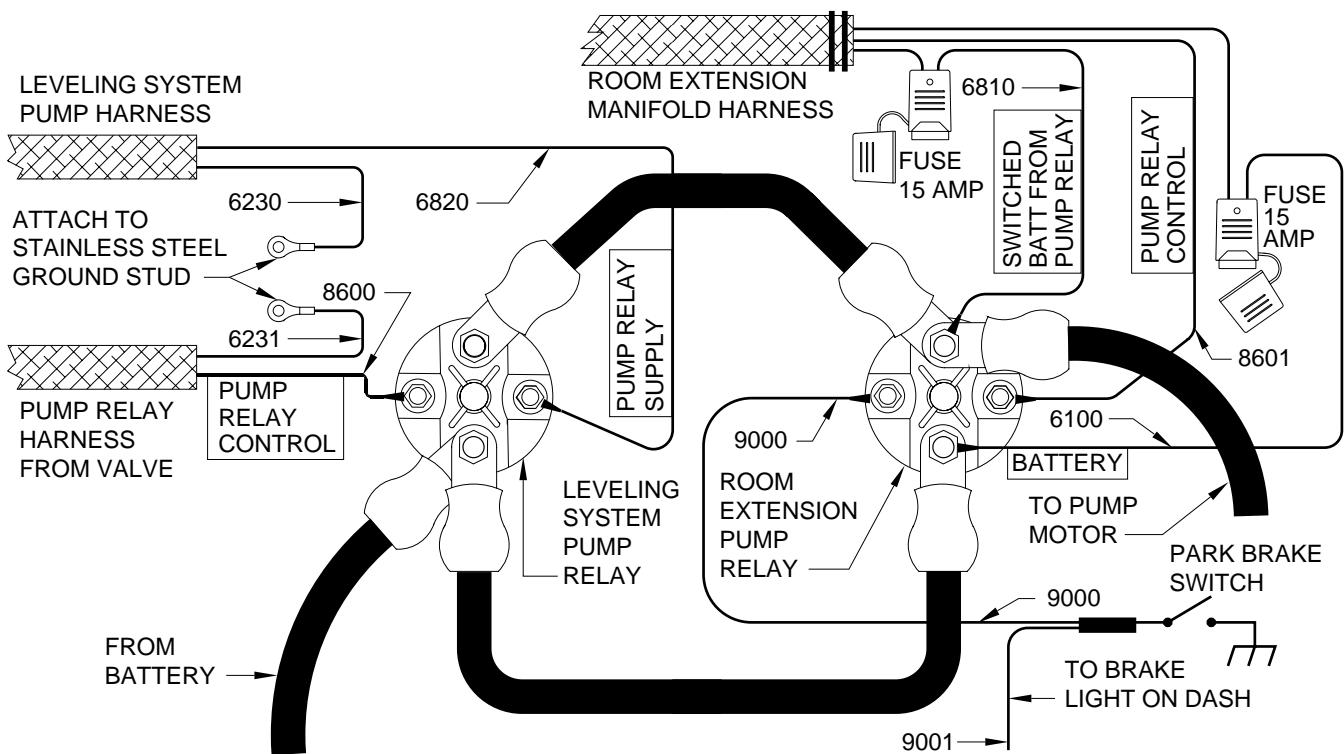
PANEL CONNECTIONS AND PUMP RELAYS

200 SERIES LEVELING SYSTEM WITH ONE ROOM EXTENSION

PANEL CONNECTION DIAGRAM



PUMP RELAY CONNECTION DIAGRAM

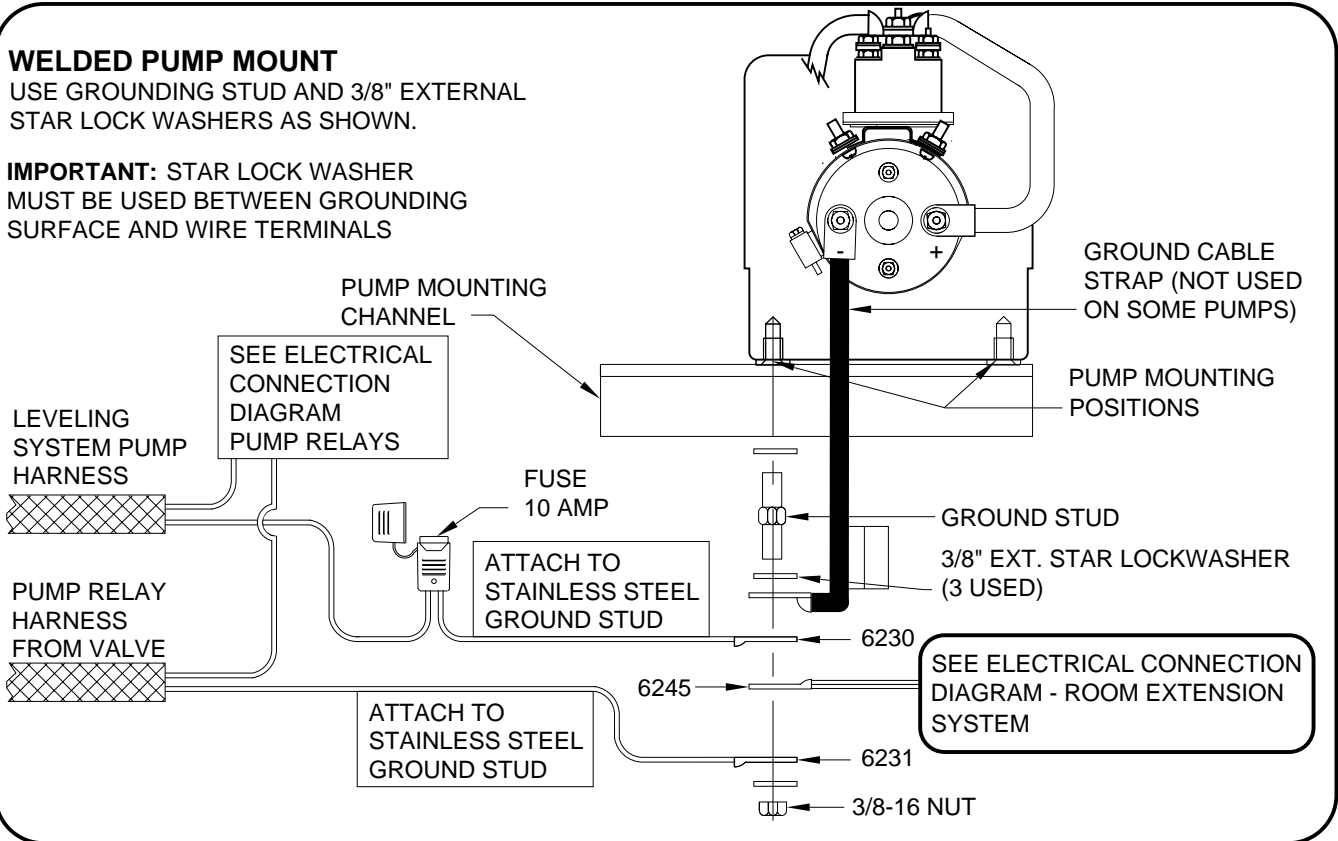


200 LEVELING SYSTEM ONE ROOM EXTENSION GROUNDING INSTRUCTIONS

WELDED PUMP MOUNT

USE GROUNDING STUD AND 3/8" EXTERNAL STAR LOCK WASHERS AS SHOWN.

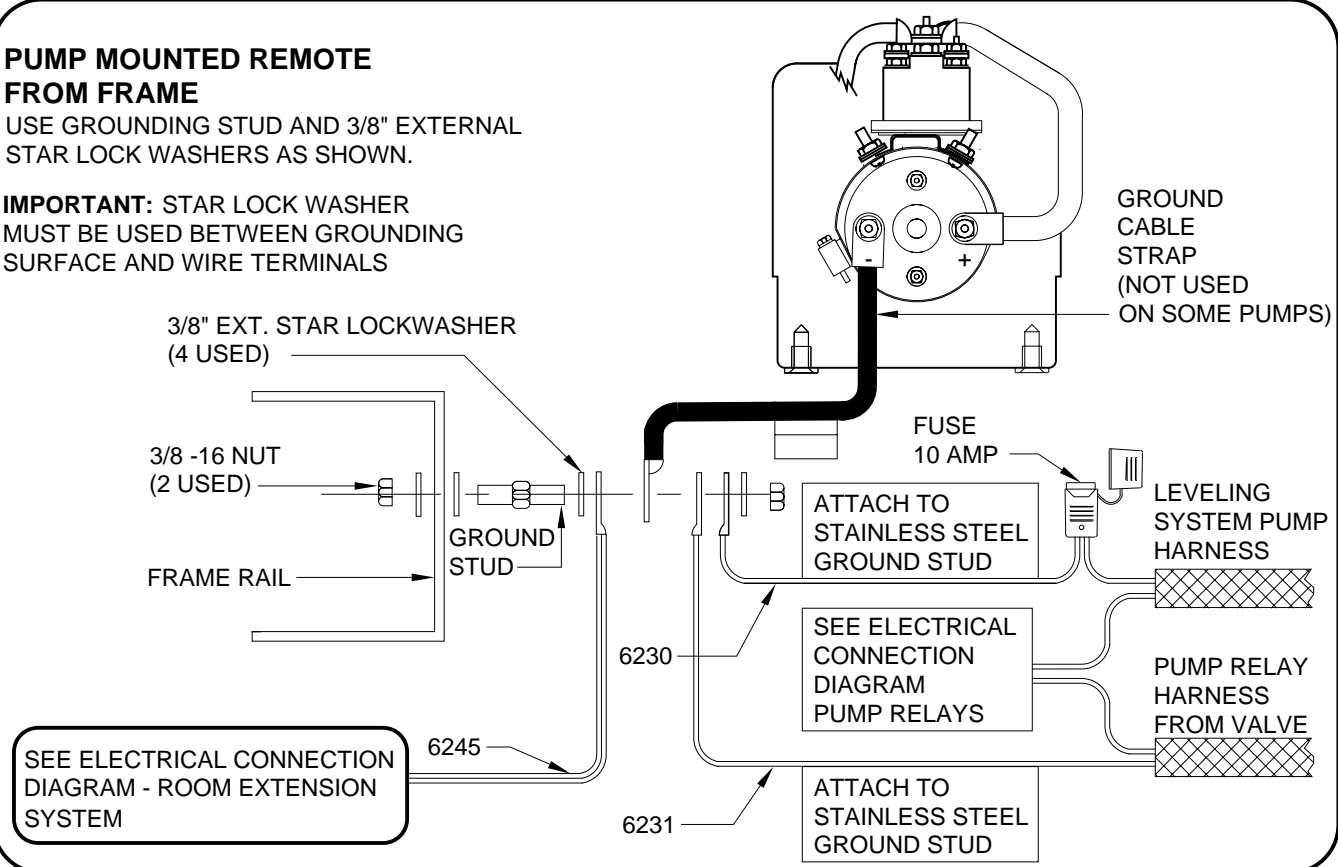
IMPORTANT: STAR LOCK WASHER MUST BE USED BETWEEN GROUNDING SURFACE AND WIRE TERMINALS



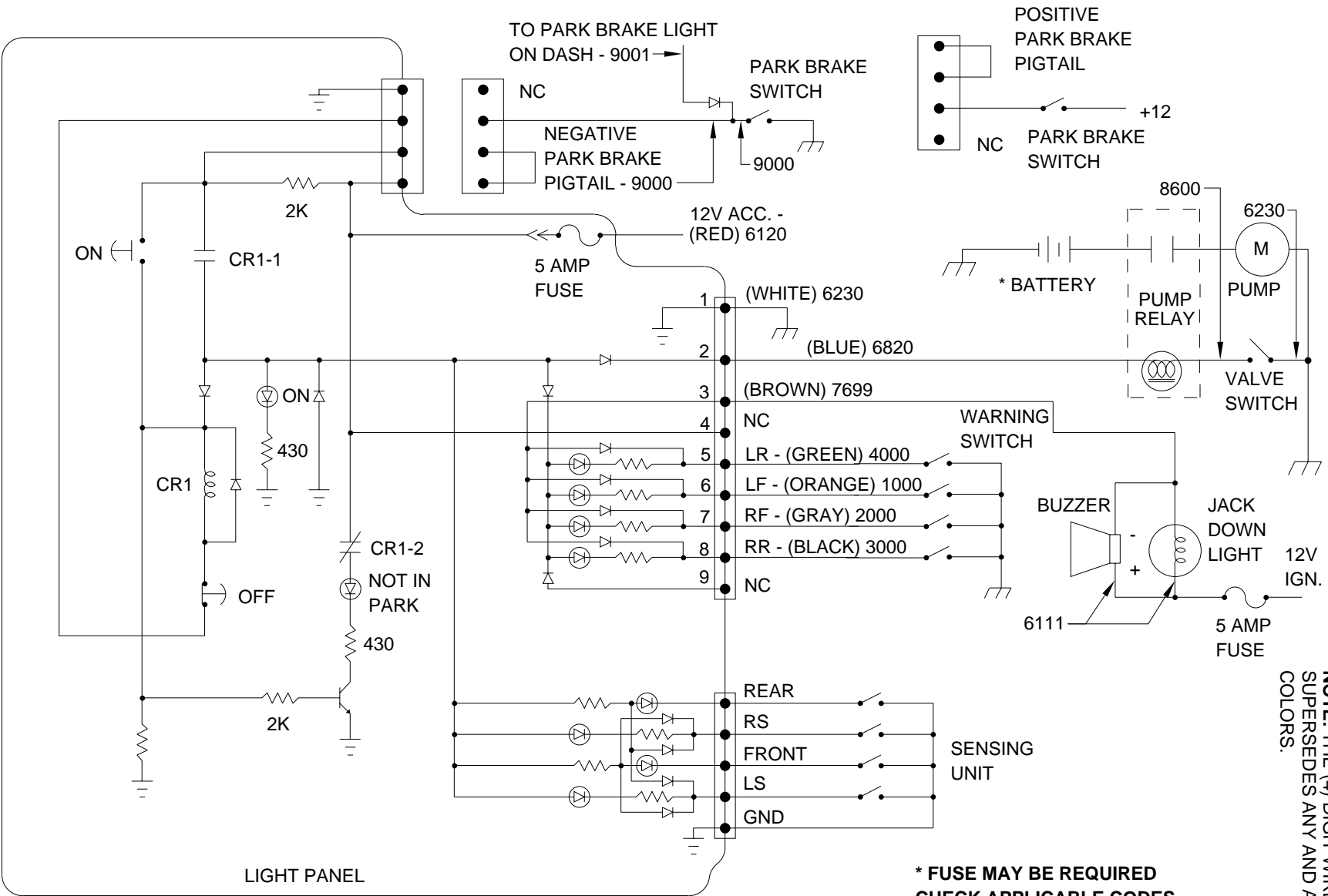
PUMP MOUNTED REMOTE FROM FRAME

USE GROUNDING STUD AND 3/8" EXTERNAL STAR LOCK WASHERS AS SHOWN.

IMPORTANT: STAR LOCK WASHER MUST BE USED BETWEEN GROUNDING SURFACE AND WIRE TERMINALS



ELECTRICAL SCHEMATIC 200 SERIES LEVELING SYSTEM LIGHT PANEL STRAIGHT-ACTING JACKS WITHOUT AIR DUMP FEATURE

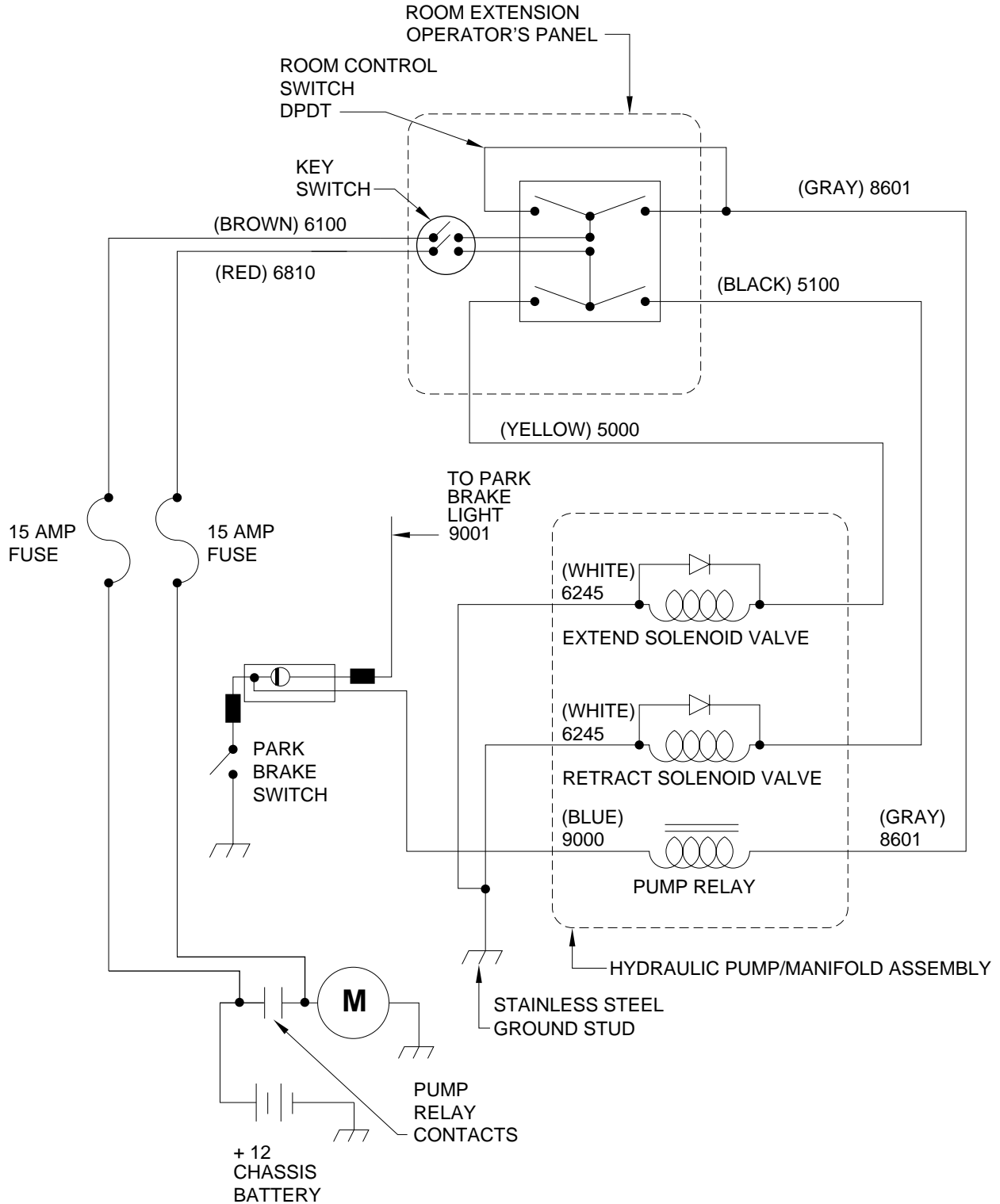


NOTE: THE (4) DIGIT WIRE NUMBER SUPERSEDES ANY AND ALL WIRE COLORS.

* FUSE MAY BE REQUIRED
CHECK APPLICABLE CODES

ELECTRICAL SCHEMATIC ROOM EXTENSION SYSTEM

NOTE: THE (4) DIGIT WIRE NUMBER SUPERSEDES ANY AND ALL WIRE COLORS.



MASTER LIGHT/BUZZER CONNECTION DIAGRAM MANUAL LEVELING SYSTEMS

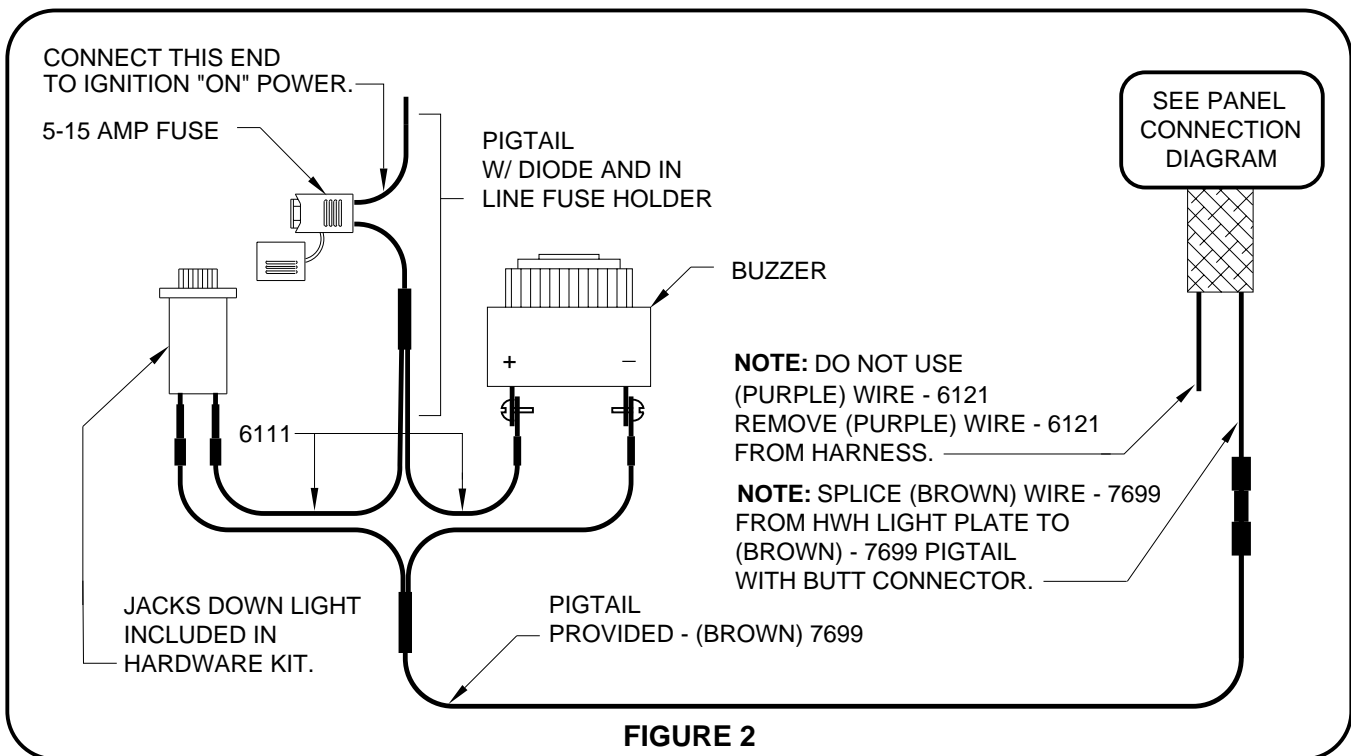
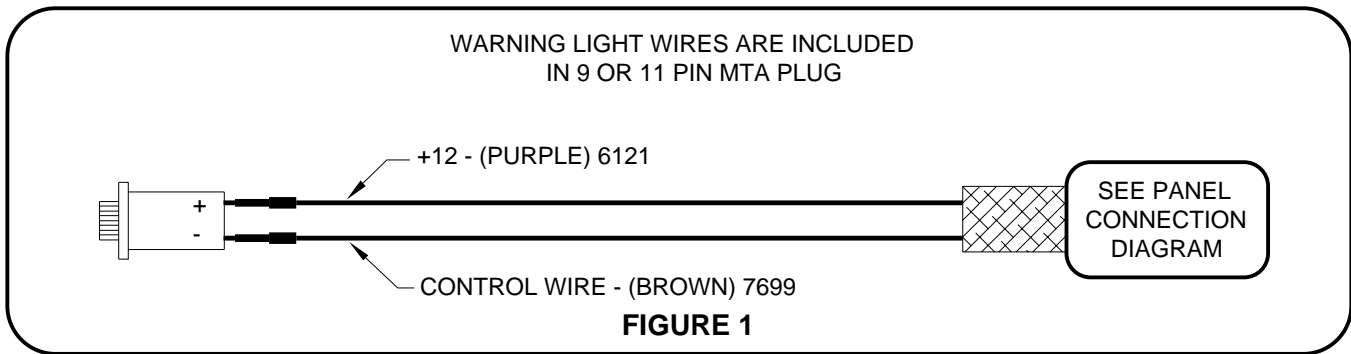
A MASTER WARNING INDICATOR SHOULD ALWAYS BE USED. WHEN THE LEVELING SYSTEM HAS STRAIGHT-ACTING JACKS A WARNING BUZZER MUST BE USED.

WHEN ONLY A RED MASTER WARNING LIGHT IS USED THE 12+ POWER FOR THE LIGHT COMES THROUGH THE CONTROL PANEL. (SEE FIGURE 1 BELOW.) WHEN BOTH A RED LIGHT AND WARNING BUZZER ARE USED THE +12 POWER FOR BOTH INDICATORS IS SUPPLIED BY THE IGNITION SWITCH. THE POWER MUST COME FROM THE "ON" SIDE OF THE IGNITION SWITCH, NOT THE "ACC" SIDE. (SEE FIGURE 2 BELOW)

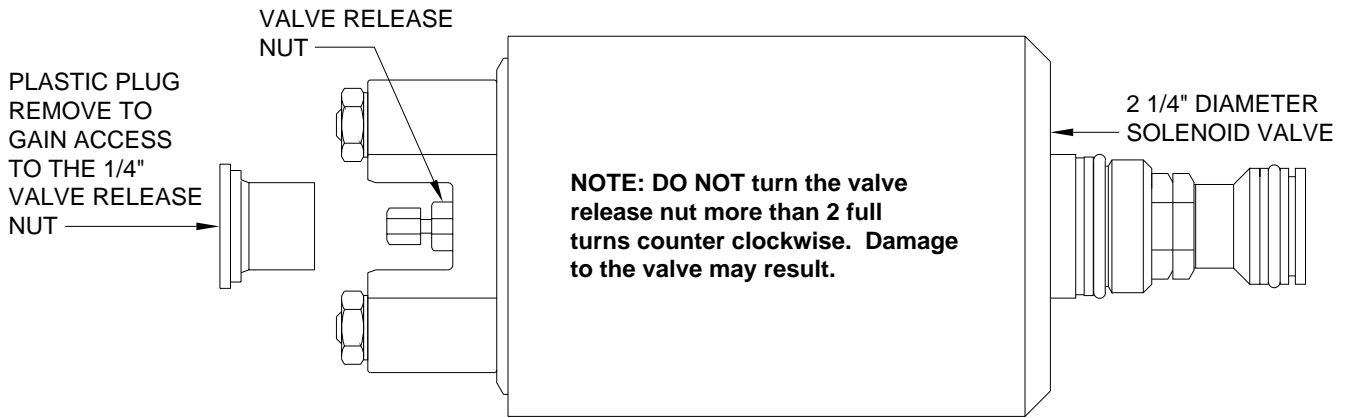
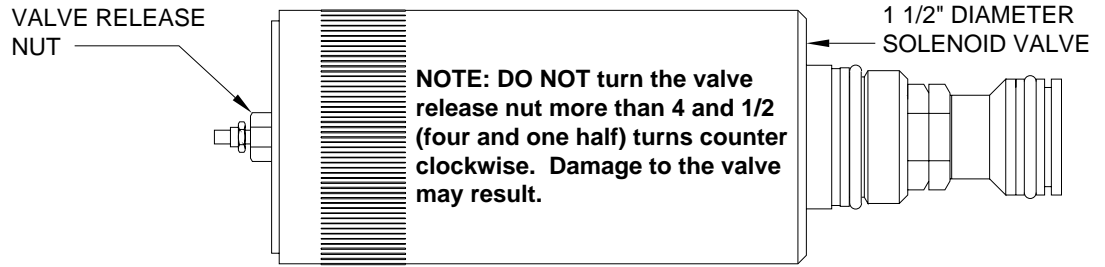
NOTE: BY SUPPLYING IGNITION POWER TO THE WARNING BUZZER AND LIGHT, AND "ACC" POWER TO THE CONTROL PANEL, THE SYSTEM MAY BE OPERATED IN ACCESSORY WITHOUT THE BUZZER SOUNDING. THE NEGATIVE SIGNAL FOR THE WARNING INDICATORS MUST ALWAYS COME FROM THE CONTROL PANEL.

CAUTION: THE PURPLE WIRE IN THE MASTER WARNING LIGHT HARNESS IS HOT WHENEVER THE IGNITION IS "ON" OR IN "ACC". THE PURPLE WIRE MUST BE REMOVED FROM THE HARNESS WHEN USING DIRECT IGNITION VOLTAGE FOR THE MASTER WARNING INDICATORS.

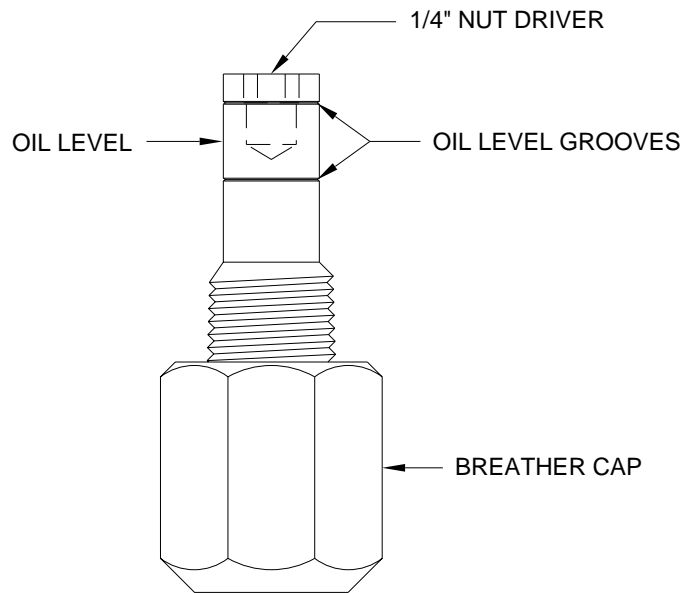
NOTE: THE (4) DIGIT WIRE NUMBER SUPERSEDES ANY AND ALL WIRE COLORS.



BREATHER CAP - DIPSTICK - 1/4" NUT DRIVER



NOTE: THE BREATHER CAP IS LOCATED ON THE TOP SIDE OF THE POWER UNIT RESERVOIR.



IMPORTANT: PRIOR TO REMOVING THE BREATHER CAP, EITHER TO CHECK THE OIL LEVEL OR TO USE THE 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.