OPERATOR’S MANUAL

2000 SERIES, COMPUTER-CONTROLLED HYDRAULIC LEVELING SYSTEM

FEATURING:
BI-AXIS® Touch Panel Control
4 - Straight-Acting (Power-Extend/Power-Retract) Jacks
1 - SpaceMaker® Single-Cylinder Guided Slide-Out
1 - SpaceMaker® Dual-Cylinder In-Floor Slide-Out
Swivel Manual/Hand Pump Back-Up
Suspension Air Dump

WARNING!
UNDERSTAND OPERATOR’S MANUAL BEFORE USING. BLOCK FRAME AND TIRES SECURELY BEFORE REMOVING TIRES OR CRAWLING UNDER VEHICLE.
OPERATOR’S MANUAL

WARNING!

READ THE ENTIRE OPERATOR 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 OPERATING LEVELING SYSTEM OR ROOM EXTENSIONS.

KEEP ALL PEOPLE CLEAR OF VEHICLE WHILE DUMPING AIR FROM THE VEHICLE’S SUSPENSION.

DO NOT MOVE THE VEHICLE IF THE VEHICLE IS NOT AT THE PROPER RIDE HEIGHT. CONTACT MANUFACTURER TECHNICAL SERVICE FOR MOVING THE VEHICLE WHEN NOT AT THE PROPER RIDE HEIGHT.

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 FUNCTIONS

"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.

"MANUAL DUMP" BUTTON: This is a manual button for dumping air from the vehicle suspension.

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.

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

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.

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.

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

"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".

BUZZER: This is a jacks down warning. It will sound if the master "JACKS DOWN" warning light is on.
CONTROL IDENTIFICATION

ROOM OPERATOR’S PANEL

HYDRAULIC ROOM EXTENSION

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, and 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.

CAUTION!
UNDERSTAND OPERATOR'S MANUAL BEFORE USING. KEEP PEOPLE AND OBSTRUCTIONS CLEAR OF ROOM WHEN OPERATING.
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 four 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 four 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 four 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 four 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 four 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.
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..

NOTE: This manual is intended for vehicles with a spring or air suspension. If the vehicle has an air suspension with a manual pilot air dump, refer to the vehicle manufacturer for operating instructions.

If parking on soft ground or asphalt paving, a wood block or pad should be placed under each jack.

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.

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

The HWH lighted reset switch is located on the vehicle dash. If there is a failure at any time in the HWH CAN network, the network will shut down. The leveling system will not operate. If the ignition is off, no indicator lights will come on. If the ignition is in the "ON" or "ACC" position, the lighted reset switch and the MASTER WARNING Light will come on.

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.

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 AND THE VEHICLE IS AT THE PROPER RIDE HEIGHT FOR TRAVELING. CONTACT MANUFACTURER TECHNICAL SERVICE BEFORE MOVING A VEHICLE THAT IS NOT AT PROPER TRAVEL HEIGHT.

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 AND THE VEHICLE IS AT THE PROPER RIDE HEIGHT FOR TRAVELING. CONTACT MANUFACTURER TECHNICAL SERVICE BEFORE MOVING A VEHICLE THAT IS NOT AT PROPER TRAVEL HEIGHT.

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.

ROOM EXTENSION PROCEDURES

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

Refer to the vehicle owners manual for proper operation of room extensions.

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

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.

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.

**WARNING:** PRIOR TO PUSHING THE “AUTO LEVEL” BUTTON THE OPERATOR MUST BE SURE THAT ALL PERSONS AND OBJECTS ARE CLEAR OF THE VEHICLE.

THE VEHICLE SUSPENSION WILL START TO DUMP AIR AND LOWER AS SOON AS THE AUTO LEVEL BUTTON IS PUSHED.

3. Press the “AUTO LEVEL” button one time. The AUTO LEVEL light will start to flash. Air will begin to dump air from the vehicle suspension. After approximately 25 seconds, the leveling process will begin.

**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 half (½) 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 when two jacks are 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 not 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. Move the vehicle to a more level position or level the vehicle as close as possible according to the MANUAL LEVELING section. Manual leveling will operate when the EXCESS light is on.

5. Turn the ignition switch to the “OFF” position.
OPERATING PROCEDURES
2000 SERIES LEVELING SYSTEM

JACK RETRACTION

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

1. Start the engine. Store the jacks immediately.

2. Press the "STORE" button. The store indicator light will flash. The vehicle should start to return to ride height. As each jack retracts, its red WARNING light will go out. The pump will run with all retract loads staying on until 10 seconds after the last red warning light goes out. If any warning light remains on the pump and all retract loads will remain on for (6) six minutes from the time the "AUTO STORE" button was pushed.

IMPORTANT: DO NOT interrupt power to the leveling system while the "STORE" indicator light is blinking. DO NOT push the "OFF" button or turn the ignition key. The system must be allowed to completely finish the STORE mode.

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 AND THE VEHICLE IS AT THE PROPER RIDE HEIGHT.

3. The vehicle can be moved as soon as the red warning lights are out, the jacks are in the STORE/TRAVEL position, the green "TRAVEL" light is on, and the suspension air bags are inflated to the vehicles proper ride height.

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.

4. If jacks cannot be retracted by the above procedure see MANUAL JACK RETRACTION Section.
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. The air must be dumped from the vehicle suspension before leveling. Push and hold the "DUMP" button. Hold the "DUMP" button until all air is exhausted from the vehicle suspension.

3. Place pads under the jack feet if the ground will not support the vehicle on the jacks.

4. 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 or end 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.

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

   **IMPORTANT:** Push the "STORE" button before traveling when manual operation of the leveling system is used.
OPERATING PROCEDURES

ROOM EXTEND PROCEDURE

WARNING: OPERATING A ROOM WITH ANY ROOM 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 ROOM LOCKING, CLAMPING OR MANUAL RETRACTING DEVICES ARE DETACHED OR DISENGAGED BEFORE OPERATING THE ROOM.

NOTE: It is recommended to complete any applicable Leveling Procedure before operating room extensions. It is recommended to retract room extensions before retracting a leveling system.

1. Follow applicable LEVELING AND STABILIZING PROCEDURES.

2. Unlock all room-locking devices to include travel clamps/locks supplied by manufacturers other than HWH.

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

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

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

3. Turn the room control panel KEY SWITCH to the "ON" position.

NOTE: The park brake must be set to operate the rooms.

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

IMPORTANT: If the room extension is a level out room, hold the room control switch to the extend position until the room is fully extended and has dropped to the completely lowered position.

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 (and down if applicable) 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.

5. Turn the room control panel KEY SWITCH to the "OFF" position.

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

ROOM RETRACT PROCEDURE

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

NOTE: It is recommended to retract room extensions before retracting a leveling system.

1. The park brake must be set. The room will not operate if the park brake is not set.

2. Turn the room control panel KEY SWITCH to the "ON" position.

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

Important: if the room extension is a level-out room, the room must raise completely before it will retract. If the room will not raise, do not force the room. Refer to the MANUAL ROOM LIFT PROCEDURES page.

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.

4. Turn the room control panel KEY SWITCH to the "OFF" position.

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

IMPORTANT: Room-locking devices should be locked while traveling.
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 retract device and information for connecting the device 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.

WARNING: A MANUAL RETRACT WINCH PROVIDED BY HWH 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 WARNINGS AND INSTRUCTIONS MAY CAUSE FAILURE OF THE MANUAL RETRACT WINCH OR CONNECTIONS RESULTING IN DAMAGE OR PERSONAL INJURY. MAINTAIN A 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, it is recommended the jacks are retracted before retracting the room.

2. Locate the HYDRAULIC PUMP and/or MANIFOLD unit. Some systems may have a remote manifold.

3. Open Nut Style Solenoid Valves by slowly turning the valve release nut counter clockwise using a 1/4” nut driver.

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.

Open Cam Style Style Solenoid Valves by following the instructions located on the last page of this manual MP84.9999.

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

4. Locate the MANUAL RETRACT DEVICE and connect it to the room according to the vehicle manufacturer’s instructions. To extend a 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.

WARNING: 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 TO DIFFICULT STOP AND CHECK FOR OBSTRUCTIONS/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.

WARNING: THE ROOM EXTENSION SOLENOID VALVE RELEASE 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.
AUXILIARY PUMP RUN SWITCH OPERATION

WARNING: KEEP AWAY FROM 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.

EXTEND JACKS OR ROOMS

NOTE: It is best if jacks are extended in pairs; both front, both rear, right front & right rear or left front & left rear. Only try to extend one room or step mechanism at a time.

1. Use the hydraulic connection diagrams to locate the appropriate valve(s) to extend the desired jack(s), room or step.
2. Locate the pump run switch on the power unit assembly.
3. Move the valve release cam(s) to the "VALVE OPEN" position.
4. Push the pump run toggle switch to the "RUN" position. Hold the toggle switch to "RUN" until the equipment is in the desired position.
5. Move the valve release cam(s) to the "VALVE CLOSED" position and release the the pump run toggle switch.

IMPORTANT: If the pump toggle switch is released before closing a valve when extending a jack, the vehicle will drop until the valve is closed.

IMPORTANT: RELEASE CAM MIGHT BE ROTATED TO ANY DIRECTION ON THE VALVE. MAKE SURE TO MOVE THE RELEASE CAMS IN THE CORRECT DIRECTION. INCORRECT MOVEMENT OF THE CAMS CAN DAMAGE THE VALVES.

RETRACTING

POWER - EXTEND / POWER - RETRACT JACKS ROOMS OR STEPS

IMPORTANT: POWER - EXTEND / SPRING - RETRACT JACKS (SINGLE ACTING CYLINDERS) CAN NOT BE RETRACTED WHEN THE PUMP IS RUNNING.

WARNING: DO NOT CRAWL UNDER THE VEHICLE TO OPEN JACK MANIFOLD VALVES. 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 VEHICLE FROM DROPPING RAPIDLY.

1. Use the hydraulic connection diagrams to locate the appropriate valve(s) to retract the desired jack(s), room or step.
2. Locate the pump run switch on the power unit assembly.
3. Move the valve release cam(s) to the "VALVE OPEN" position.
4. Push the pump run toggle switch to the "RUN" position. Hold the toggle switch to "RUN" until the equipment is fully retracted.
5. Move the valve release cam(s) to the "VALVE CLOSED" position and release the the pump run toggle switch.

IMPORTANT: WHEN RETRACTING JACKS - Start with the front jacks. Alternate between the left and right jack several times, partially opening the jack valve slowly. This will allow the jacks to retract slightly each time, until the weight of the vehicle is off the jacks. This will reduce the possibility of twisting the vehicle. With the weight of the vehicle off the front jacks, open the front jack valves and use the pump run toggle switch. When both front jacks completely retracted, repeat the process with the rear jacks.

PUMP RUN

PUMP RUN
4 MINUTE
RUN LIMIT

IMPORTANT: DO NOT hold the pump toggle switch to "PUMP RUN" for more than 4 minutes without allowing the pump motor to cool.
AUXILIARY HAND PUMP OPERATION

The auxiliary hand pump can be used to extend or retract the landing gear, jacks or room extensions anytime the pump handle is hitched to the tow vehicle before opening any valves.

The auxiliary hand pump is a two stage pump that will produce enough pressure to extend the landing gear and lift the vehicle as well as retract the landing gear. When operating the auxiliary pump to lift the vehicle or when the jacks are fully retracted, 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 handle into the handle receptacle and move the handle in an up and down motion.

NOTE: Each hydraulic function requires a pair of solenoid valves one each for the extend and retract procedures. The number of functions and the items controlled by each pair of solenoid valves will vary for each system. The diagrams shown on this page represent a (3) function system of (2) jacks and (1) room as indicated by the labels shown in FIG 1. Use the labels specific to your system when following these procedures. Room control solenoid valves may be located at the synchronizing cylinder, not on the pump manifold.

NOTE: If a room cannot be retracted using the auxiliary hand pump, see "MANUAL ROOM RETRACTION PROCEDURES".

WARNING: THE VEHICLE SHOULD BE SUPPORTED BY AUXILIARY STANDS OR SECURELY HITCHED TO THE TOW VEHICLE BEFORE OPENING ANY VALVES.

The auxiliary hand pump may work easier if only one valve is open at a time. Be careful to not twist the vehicle if only one solenoid valve is open.

IMPORTANT: FOLLOW THE "SET UP" AND "PREPARATION FOR TRAVEL" PROCEDURES WHEN USING THE AUXILIARY HAND PUMP.

It is recommended to operate the auxiliary hand pump occasionally to check its operation.

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

Any HWH hydraulic equipment, including jacks, slide-outs and steps should be fully retracted before checking fluid 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. Fluid level should be between the bottom of the dipstick and the center mark.

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.

UNUSUAL CONDITIONS

In general, to insure the smooth operation of the leveling system, it is a good idea to occasionally check the individual leveling units to prevent problems. This is especially true under the unusual conditions stated in the following:

If driving conditions are unusually muddy, the units 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 leveling unit if they become excessively muddy.

In wet or icy weather leveling units may become encrusted with ice. This may cause the leveling system to function improperly. To eliminate this problem, periodically check the leveling units and break loose any ice which may be causing improper operation.

Do not move the trailer while the leveling units are still in contact with the ground. Visually check to see if the leveling units have returned to the STORE/TRAVEL position before moving the trailer.

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

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.
To prime the hand pump, it will be necessary to remove a hose from one of the jacks. One of the front jacks would be best, but use the easiest hose to get to.

If the system has Double-Acting cylinders on the front, remove the rod end hose from either of the front jacks. Place the end of the hose in a bucket. Make sure the tank is at least half full. Pump the hand pump until a healthy flow of oil is coming from the hose.

**IMPORTANT: DO NOT ALLOW THE FLUID LEVEL IN THE TANK TO LOWER MORE THAN 1 INCH BEFORE ADDING FLUID.**

Reattach the hose and retry the hand pump. Repeat the procedure if the hand pump does not move the jacks.

If the system has only Single-Acting jacks with return springs, remove the easiest hose to access and place the end in a bucket. Using the release cam, manually open the EXTEND solenoid valve for that jack (if equipped with solenoid valves) or move the jack control hydraulic switch to "EXTEND" for that jack. Make sure the tank is at least half full. Pump the hand pump until a healthy flow of fluid comes from the hose.

**IMPORTANT: DO NOT ALLOW THE FLUID LEVEL IN THE TANK TO LOWER MORE THAN 1 INCH BEFORE ADDING FLUID.**

Reattach the hose and retry the hand pump. Repeat the procedure if the hand pump does not move the jacks.
SENSING UNIT MAINTENANCE/SERVICE

SENSING UNIT ACCURACY TOLERANCE

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

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 screwdriver 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.
HYDRAULIC LINE CONNECTION DIAGRAM

2000 SERIES LEVELING SYSTEM

4 - STRAIGHT-ACTING, POWER-EXTEND/POWER-RETRACT JACKS

JACK EXTEND VALVES (4)
OPPOSING VALVES ARE
JACK RETRACT VALVES (4)

TALL FITTING

CAP END HOSE

ROD END HOSE

LEFT FRONT JACK

RIGHT FRONT JACK

LEFT REAR JACK

RIGHT REAR JACK

RETURN LINE
PRESSURE LINE

SEE HYDRAULIC LINE CONNECTION DIAGRAM ROOM EXTENSION REMOTE MANIFOLDS

MP64.3922A
01AUG12
HYDRAULIC LINE CONNECTION DIAGRAM
REMOTE ROOM MANIFOLDS

ROOM 1
RETRACT ROOM TO
CHECK OIL LEVEL

SEE HYDRAULIC LINE
CONNECTION DIAGRAMS
SINGLE CYLINDER
GUIDED SLIDE OUT

VALVE FUNCTION

1E - ROOM 1 CYLINDER EXTEND
ROOM EXTEND

1R - ROOM 1 CYLINDER RETRACT
ROOM RETRACT

2E - ROOM 2 CYLINDER EXTEND
ROOM EXTEND

2R - ROOM 2 CYLINDER RETRACT
ROOM RETRACT

ROOM 2
RETRACT ROOM TO
CHECK OIL LEVEL

SEE HYDRAULIC LINE
CONNECTION DIAGRAMS
DUAL CYLINDER
IN-FLOOR SLIDE OUT

TOP VIEW OF
MANIFOLD

CAP END
CONNECTION - B

ROD END
CONNECTION - A

PRESSURE

RETURN

2R - ROOM 2 CYLINDER RETRACT
ROOM RETRACT

2E - ROOM 2 CYLINDER EXTEND
ROOM EXTEND

1R - ROOM 1 CYLINDER RETRACT
ROOM RETRACT

1E - ROOM 1 CYLINDER EXTEND
ROOM EXTEND

VALVE FUNCTION

ROD END
CONNECTIONS

CAP END
CONNECTIONS

CAP END
CONNECTION - B

ROD END
CONNECTION - A

VALVE RELEASE
CAM

PRESSURE

RETURN

CYLINDER
EXTEND
VALVES

CYLINDER
RETRACT
VALVES

MP64.5210A
08AUG12
NOTE: THE ROD END CONNECTION FROM THE MANIFOLD TO THE ROOM CYLINDER IS ALWAYS PRESSURIZED.

CAP END CONNECTION - B

ROD END CONNECTION - A

CYLINDER EXTEND - ROOM EXTEND
CYLINDER RETRACT - ROOM RETRACT
CHECK OIL LEVEL WITH ROOM RETRACTED.
HYDRAULIC LINE CONNECTION DIAGRAM
DUAL CYLINDER "IN FLOOR" ROOM EXTENSION
(WITH SYNCHRONIZING CYLINDER)
SINGLE CYLINDER "IN FLOOR" ROOM EXTENSION

DUAL CYLINDER "IN FLOOR" ROOM EXTENSION
(WITH SYNCHRONIZING CYLINDER)

CAP END
ROD END

ROD END CONNECTION - A
CAP END CONNECTION - B

CYLINDER EXTEND - ROOM EXTEND
CYLINDER RETRACT - ROOM RETRACT

SINGLE CYLINDER "IN FLOOR" ROOM EXTENSION

CAP END
ROD END

ROD END CONNECTION - A
CAP END CONNECTION - B

CYLINDER EXTEND - ROOM EXTEND
CYLINDER RETRACT - ROOM RETRACT
ELECTRICAL CONNECTION DIAGRAM
CENTRAL CONTROL MODULE
HARNESS ROUTING - PAGE 1 OF 4

SEE ELECTRICAL CONNECTION DIAGRAM - CONTROL MODULE CONNECTION INFORMATION PAGE 1 OF 5

DO NOT CUT TERMINATING RESISTOR

RESET SWITCH
RESET IN 7550
SWITCH LIGHT CONTROL 7599
SWITCH LIGHT SUPPLY 6230
RESET OUT 6100
WARNING LIGHT SUPPLY 6121
WARNING LIGHT CONTROL 7699
BUZZER CONTROL 7699

SEE MASTER WARNING LIGHT / BUZZER CONNECTION DIAGRAM

SEE ELECTRICAL CONNECTION DIAGRAM - LEVELING SYSTEM HYDRAULIC MANIFOLD

SEE ELECTRICAL CONNECTION DIAGRAM - MASTER AND PUMP RELAYS PAGE 1 OF 2

TO 12 PIN BLACK CONNECTOR

BATTERY 6100
IGN 6110
PARK BRAKE 9000

CENTRAL GROUND 6230

6245 6246 6230
**ROOM CONTROL PANEL PIN AND WIRE INFORMATION**

- **PIN 1**: 5000 (ROOM 1) 5001 (ROOM 2) - BLACK - SW+12 ROOM EXTEND
- **PIN 2**: 5100 (ROOM 1) 5101 (ROOM 2) - BLACK - SW+12 ROOM RETRACT
- **PIN 3**: 8601 - BLACK - SW+12 FOR PUMP CONTROL
- **PIN 4**: 6100 - RED - +12 BATTERY
- **PIN 5**: 6810 - (ROOM 1) 6811 (ROOM 2) - BLACK - SW+12 FROM PUMP RELAY
- **PIN 6**: NO CONNECTION

**NOTE:** THE ROOM PANEL HARNESS IS SUPPLIED BY THE VEHICLE MANUFACTURER. WIRE COLORS AND/OR NUMBERS MAY DIFFER FROM WHAT IS SHOWN.
## Electrical Connection Diagram

**Central Control Module**

WIRE AND CONNECTION INFORMATION - PAGE 1 OF 5

### Front View

![Front View Diagram](image)

TWO 12 PIN BLACK CONNECTORS ON TOP RING ARE NOT SHOWN

---

<table>
<thead>
<tr>
<th>PIN #</th>
<th>WIRE COLOR</th>
<th>WIRE NUMBER</th>
<th>WIRE DESCRIPTION AND FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>CN1</td>
<td></td>
<td></td>
<td>8 PIN BLACK CONNECTOR</td>
</tr>
<tr>
<td>1 AND 2</td>
<td></td>
<td></td>
<td>NO CONNECTION</td>
</tr>
<tr>
<td>3</td>
<td>RED</td>
<td>6800</td>
<td>SWITCHED +12 TO TOUCH PANEL</td>
</tr>
<tr>
<td>4</td>
<td>WHITE</td>
<td>6230</td>
<td>GROUND</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td>CAN SHIELD</td>
</tr>
<tr>
<td>6</td>
<td>RED</td>
<td>6110</td>
<td>IGNITION +12 - NOT USED</td>
</tr>
<tr>
<td>7</td>
<td>GREEN</td>
<td></td>
<td>CAN LOW</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td>CAN LOW</td>
</tr>
<tr>
<td>CN10</td>
<td></td>
<td></td>
<td>6 PIN GRAY CONNECTOR</td>
</tr>
<tr>
<td>1</td>
<td>BLACK</td>
<td>7599</td>
<td>RESET SWITCH LIGHT CONTROL-SWITCHED +12</td>
</tr>
<tr>
<td>2</td>
<td>RED</td>
<td>6100</td>
<td>RESET SWITCH SUPPLY +12</td>
</tr>
<tr>
<td>3</td>
<td>BLACK</td>
<td>7550</td>
<td>RESET SWITCH OUTPUT +12</td>
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<tr>
<td>4</td>
<td>RED</td>
<td>6121</td>
<td>WARNING LIGHT AND BUZZER SUPPLY +12</td>
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<td>5</td>
<td>WHITE</td>
<td>6230</td>
<td>RESET SWITCH LIGHT GROUND</td>
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<td>BLACK</td>
<td>7699</td>
<td>WARNING LIGHT AND BUZZER CONTROL - SWITCHED GROUND</td>
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<tr>
<td>CN11</td>
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<td></td>
<td>12 PIN GRAY CONNECTOR</td>
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<tr>
<td>1</td>
<td>RED</td>
<td>6110</td>
<td>SWITCHED +12 FROM IGNITION</td>
</tr>
<tr>
<td>2 THRU 4</td>
<td></td>
<td></td>
<td>NO CONNECTION</td>
</tr>
<tr>
<td>5</td>
<td>RED</td>
<td>6110</td>
<td>SWITCHED +12 FROM IGNITION</td>
</tr>
<tr>
<td>6</td>
<td>RED</td>
<td>6100</td>
<td>BATTERY +12</td>
</tr>
<tr>
<td>7</td>
<td>WHITE</td>
<td>6230</td>
<td>GROUND FOR PROCESSOR</td>
</tr>
<tr>
<td>8 THRU 10</td>
<td></td>
<td></td>
<td>NO CONNECTION</td>
</tr>
<tr>
<td>11</td>
<td>BLACK</td>
<td>9000</td>
<td>FROM PARK BRAKE SWITCH - SWITCHED GROUND</td>
</tr>
<tr>
<td>12</td>
<td>RED</td>
<td>6100</td>
<td>BATTERY +12</td>
</tr>
<tr>
<td>CN9</td>
<td></td>
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<td>8 PIN GREEN CONNECTOR</td>
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<tr>
<td>1</td>
<td>BLACK</td>
<td>8500</td>
<td>MASTER RELAY CONTROL SWITCHED +12</td>
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<td>2</td>
<td>BLACK</td>
<td>8100</td>
<td>SWITCHED GROUND FROM 3000 LB PRESSURE SWITCH</td>
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<td>3</td>
<td></td>
<td></td>
<td>NO CONNECTION</td>
</tr>
<tr>
<td>4</td>
<td>BLACK</td>
<td>8600</td>
<td>PUMP RELAY CONTROL SWITCHED +12</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td>NO CONNECTION</td>
</tr>
<tr>
<td>6</td>
<td>BLACK</td>
<td>9901</td>
<td>PUMP MONITOR - SWITCHED +12 FROM PUMP RELAY</td>
</tr>
<tr>
<td>7 AND 8</td>
<td></td>
<td></td>
<td>NO CONNECTION</td>
</tr>
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</table>
### FRONT VIEW

#### 12 PIN BLACK CONNECTOR

<table>
<thead>
<tr>
<th>PIN #</th>
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<th>WIRE NUMBER</th>
<th>WIRE DESCRIPTION AND FUNCTION</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>BLACK</td>
<td>6810</td>
<td>SWITCHED +12 FROM PUMP RELAY TO ROOM 1 CONTROL</td>
</tr>
<tr>
<td>2</td>
<td>BLACK</td>
<td>5000</td>
<td>SWITCHED +12 TO CONTROL BOX ROOM 1 EXTEND</td>
</tr>
<tr>
<td>3</td>
<td>BLACK</td>
<td>5100</td>
<td>SWITCHED +12 TO CONTROL BOX ROOM 1 RETRACT</td>
</tr>
<tr>
<td>4</td>
<td>BLACK</td>
<td>6811</td>
<td>SWITCHED +12 FROM PUMP RELAY TO ROOM 2 CONTROL</td>
</tr>
<tr>
<td>5</td>
<td>BLACK</td>
<td>5001</td>
<td>SWITCHED +12 TO CONTROL BOX ROOM 2 EXTEND</td>
</tr>
<tr>
<td>6</td>
<td>BLACK</td>
<td>5101</td>
<td>SWITCHED +12 TO CONTROL BOX ROOM 2 RETRACT</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td>NO CONNECTION</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td>KEYING PIN</td>
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<tr>
<td>9</td>
<td></td>
<td></td>
<td>NO CONNECTION</td>
</tr>
<tr>
<td>10</td>
<td>BLACK</td>
<td>8601</td>
<td>SWITCHED +12 TO CONTROL BOX - PUMP CONTROL</td>
</tr>
<tr>
<td>11</td>
<td>RED</td>
<td>6100</td>
<td>+12 BATTERY</td>
</tr>
<tr>
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<td>KEYING PIN</td>
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**ELECTRICAL CONNECTION DIAGRAM**  
**CENTRAL CONTROL MODULE**  
**WIRE AND CONNECTION INFORMATION - PAGE 3 OF 5**

### FRONT VIEW

<table>
<thead>
<tr>
<th>PIN #</th>
<th>WIRE COLOR</th>
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<th>WIRE DESCRIPTION AND FUNCTION</th>
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<tbody>
<tr>
<td>1</td>
<td>BLACK</td>
<td>5050</td>
<td>SWITCHED +12 FOR ROOM 1 CYLINDER EXTEND SOLENOID VALVE</td>
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<tr>
<td>2</td>
<td>BLACK</td>
<td>5150</td>
<td>SWITCHED +12 FOR ROOM 1 CYLINDER RETRACT SOLENOID VALVE</td>
</tr>
<tr>
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<td>SWITCHED +12 FOR ROOM 2 CYLINDER EXTEND SOLENOID VALVE</td>
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<tr>
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<td>BLACK</td>
<td>5151</td>
<td>SWITCHED +12 FOR ROOM 2 CYLINDER RETRACT SOLENOID VALVE</td>
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<tr>
<td>11</td>
<td>BLACK</td>
<td>6810</td>
<td>SWITCHED +12 BATTERY FROM PUMP RELAY</td>
</tr>
<tr>
<td>12</td>
<td>BLACK</td>
<td>6810</td>
<td>SWITCHED +12 BATTERY FROM PUMP RELAY</td>
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### SIDE VIEW

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<td>GREEN</td>
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<td>SWITCHED +12 FOR ROOM 1 CYLINDER EXTEND SOLENOID VALVE</td>
</tr>
<tr>
<td>2</td>
<td>GREEN</td>
<td>6810</td>
<td>SWITCHED +12 FOR ROOM 1 CYLINDER RETRACT SOLENOID VALVE</td>
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<tr>
<td>3</td>
<td>GRAY</td>
<td>5051</td>
<td>SWITCHED +12 FOR ROOM 2 CYLINDER EXTEND SOLENOID VALVE</td>
</tr>
<tr>
<td>4</td>
<td>GRAY</td>
<td>5050</td>
<td>SWITCHED +12 FOR ROOM 2 CYLINDER RETRACT SOLENOID VALVE</td>
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<tr>
<td>11</td>
<td>NO CONNECTION</td>
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<td></td>
</tr>
<tr>
<td>12</td>
<td>NO CONNECTION</td>
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**GREEN CONNECTOR**  
**12 PIN GREEN CONNECTOR**

<table>
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<tr>
<th>PIN 1</th>
<th>PIN 12</th>
<th>PIN 4</th>
<th>PIN 1</th>
<th>PIN 12</th>
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</thead>
<tbody>
<tr>
<td>BLACK</td>
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<td>WHITE</td>
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**GRAY CONNECTOR**  
**4 PIN GRAY CONNECTOR**

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**BLACK CONNECTOR**  
**12 PIN BLACK CONNECTOR**

<table>
<thead>
<tr>
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<th>PIN 12</th>
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<tbody>
<tr>
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</table>

**CN100**  
**12 PIN GRAY CONNECTOR**

<table>
<thead>
<tr>
<th>PIN 1</th>
<th>PIN 12</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLACK</td>
<td>BLACK</td>
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</tbody>
</table>
LED | DESCRIPTION | CN AND PIN | FUSE DESCRIPTION
--- | --- | --- | ---
1-RED | MASTER RELAY CONTROL | CN 9 - PIN 1 | PF1 - POLY FUSE - POWER TO MASTER WARNING LIGHT AND RESET SWITCH
2-RED | PUMP RELAY CONTROL | CN 9 - PIN 4 | F1 - 7.5AMP IGNITION - IN
3-RED | SWITCHED 12V FROM MASTER RELAY | CN 1 - PIN 3 | F2 - 15AMP HOUSE BATTERY - IN
4-RED | ENGINE BATTERY - IN | CN 9 - PIN 5 | F3 - 5AMP MASTER RELAY CONTROL
5-RED | NOT USED | CN 11 - PIN 7 & 8 | F4 - 5AMP PUMP RELAY CONTROL
7-RED | LINK LIGHT | CN 11 - PIN 8 & 9 | F5 - 15AMP SWITCHED BATTERY - IN
8-RED | NOT USED | NOT USED | F6 - 3AMP RESET OUT
9-NOT USED | NOT USED | NOT USED | F7 - 3AMP ACCESSORY - IN
10-RED | 3000 LBS PRESS SWITCH - ON | CN 9 - PIN 2 | F9 - 3AMP POWER TO CN100 (IF APPLICABLE)
11-RED | PARK BRAKE - ON | CN 11 - PIN 11 |
**ELECTRICAL CONNECTION DIAGRAM**  
**CENTRAL CONTROL MODULE**  
**LED - FUSE LOCATION AND DESCRIPTION - PAGE 5 OF 5**

### OUTPUT BOARD

- **LED**
  - 1-YELLOW
  - 2-RED
  - 3-RED
  - 4-YELLOW
  - 5-YELLOW
  - 6-RED
  - 7-RED
  - 8-YELLOW
  - 9-YELLOW
  - 10-RED
  - 11-RED
  - 12-YELLOW
  - 13-YELLOW
  - 14-RED
  - 15-RED
  - 16-YELLOW
  - 17-YELLOW
  - 18-RED
  - 19-RED
  - 20-YELLOW

- **RELAY DESCRIPTION**
  - LEFT FRONT EXT. - COIL
  - LEFT FRONT EXT. - CONTACT
  - LEFT FRONT RET. - CONTACT
  - RIGHT FRONT EXT. - COIL
  - RIGHT FRONT EXT. - CONTACT
  - RIGHT FRONT RET. - CONTACT
  - LEFT REAR EXT. - COIL
  - LEFT REAR EXT. - CONTACT
  - LEFT REAR RET. - CONTACT
  - RIGHT REAR EXT. - COIL
  - RIGHT REAR EXT. - CONTACT
  - RIGHT REAR RET. - CONTACT
  - LEFT FRONT RET. - COIL
  - LEFT FRONT RET. - CONTACT
  - LEFT FRONT EXT. - CONTACT

### FUSE
- **F1**
- **F2**
- **F3**
- **F4**
- **F5**
- **F6**
- **F7**
- **F8**
- **F9**
- **F10**

### BLACK
- **1-YELLOW**
- **2-RED**
- **3-RED**
- **4-YELLOW**
- **5-YELLOW**
- **6-RED**
- **7-RED**
- **8-YELLOW**
- **9-YELLOW**
- **10-RED**
- **11-RED**
- **12-YELLOW**
- **13-YELLOW**
- **14-RED**
- **15-RED**
- **16-YELLOW**
- **17-YELLOW**
- **18-RED**
- **19-RED**
- **20-YELLOW**

### LED - FUSE LOCATION AND DESCRIPTION - PAGE 3 OF 5

- **NOTE:** FOR DETAILED INPUT / OUTPUT INFORMATION ABOUT PIN CONNECTIONS SEE ELECTRICAL CONNECTION DIAGRAM - CENTRAL CONTROL / FRONT AIR / GEN SLIDE MODULE CONNECTION INFORMATION - PAGE 3 OF 5.

**HYDRAULIC PRESSURE AND WARNING SWITCH INPUTS**

<table>
<thead>
<tr>
<th>LED</th>
<th>RELAY DESCRIPTION</th>
<th>FUSE</th>
<th>BLACK</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR1 - PIN 1</td>
<td>HYD LEFT FRONT WARN SW</td>
<td>F1-15 AMP</td>
<td>PIN 1</td>
</tr>
<tr>
<td>CR2 - PIN 2</td>
<td>HYD RIGHT FRONT WARN SW</td>
<td>F2-15 AMP</td>
<td>PIN 2</td>
</tr>
<tr>
<td>CR3 - PIN 3</td>
<td>HYD RIGHT REAR WARN SW</td>
<td>F3-15 AMP</td>
<td>PIN 3</td>
</tr>
<tr>
<td>CR4 - PIN 4</td>
<td>HYD LEFT REAR WARN SW</td>
<td>F4-15 AMP</td>
<td>PIN 4</td>
</tr>
<tr>
<td>CR5 - PIN 5</td>
<td>NOT USED</td>
<td>F5-15 AMP</td>
<td>PIN 5</td>
</tr>
<tr>
<td>CR6 - PIN 12</td>
<td>HYD LEFT FRONT PRESS SW</td>
<td>F6-15 AMP</td>
<td>PIN 6</td>
</tr>
<tr>
<td>CR7 - PIN 8</td>
<td>HYD RIGHT FRONT PRESS SW</td>
<td>F7-15 AMP</td>
<td>PIN 7</td>
</tr>
<tr>
<td>CR8 - PIN 9</td>
<td>HYD LEFT REAR PRESS SW</td>
<td>F8-15 AMP</td>
<td>PIN 8</td>
</tr>
<tr>
<td>CR9 - PIN 10</td>
<td>HYD RIGHT REAR PRESS SW</td>
<td>F9-15 AMP</td>
<td>PIN 9</td>
</tr>
<tr>
<td>CR10 - PIN 11</td>
<td>NOT USED</td>
<td>F10-15 AMP</td>
<td>PIN 10</td>
</tr>
<tr>
<td>PIN 6</td>
<td>GROUND</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PIN 7</td>
<td>NOT USED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FUSE - F1</td>
<td>3 AMP SWITCHED BATTERY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LED - RED</td>
<td>+12 POWER TO BOARD</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
ELECTRICAL CONNECTION DIAGRAM
2000 SERIES CAN SYSTEM
LEVELING MANIFOLD CONNECTIONS

* THIS MAY BE A SMALL VALVE ON SOME UNITS

TOP VIEW (TANK NOT SHOWN)

LR-E = LEFT REAR JACK EXTEND
LR-R = LEFT REAR JACK RETRACT
LF-E = LEFT FRONT JACK EXTEND
LF-R = LEFT FRONT JACK RETRACT
RF-E = RIGHT FRONT JACK EXTEND
RF-R = RIGHT FRONT JACK RETRACT
RR-E = RIGHT REAR JACK EXTEND
RR-R = RIGHT REAR JACK RETRACT

TOP VIEW (TANK NOT SHOWN)

MOTOR

LF RET
RF RET
LR RET
RR RET

LR-E = LEFT REAR JACK EXTEND
LR-R = LEFT REAR JACK RETRACT
LF-E = LEFT FRONT JACK EXTEND
LF-R = LEFT FRONT JACK RETRACT
RF-E = RIGHT FRONT JACK EXTEND
RF-R = RIGHT FRONT JACK RETRACT
RR-E = RIGHT REAR JACK EXTEND
RR-R = RIGHT REAR JACK RETRACT

P.E.D

TO HWH CENTRAL GROUND ON PUMP

SEE ELECTRICAL CONNECTION DIAGRAM MASTER AND PUMP RELAYS - PAGE 1 OF 2

SEE ELECTRICAL CONNECTION DIAGRAM CENTRAL CONTROL MODULE HARNESS ROUTING - PAGE 3 OF 4

SEE ELECTRICAL CONNECTION DIAGRAM - CENTRAL CONTROL MODULE - WIRE AND CONNECTION INFORMATION - PAGE 3 OF 5 FOR WIRE AND CONNECTOR PIN INFORMATION

TO GREEN CN9

SIDE VIEW
MASTER AND PUMP RELAYS

SEE ELECTRICAL CONNECTION DIAGRAM - LEVELING SYSTEM HYDRAULIC MANIFOLD - CONNECTIONS AT PUMP
ELECTRICAL CONNECTION DIAGRAM
MASTER AND PUMP RELAYS
PAGE 2 OF 2

NOTE: WIRING FOR LEVELING SYSTEM AND RELAY GROUNDS ARE NOT SHOWN. REFER TO ELECTRICAL CONNECTION DIAGRAM - MASTER AND PUMP RELAYS - PAGE 1 OF 2
LINK LIGHT

HWH® COMPUTERIZED LEVELING

EXTEND
RETRACT
EXTEND
RETRACT
EXTEND
RETRACT
EXTEND
RETRACT

CAUTION!

UNDERSTAND OPERATOR’S MANUAL BEFORE USING. BLOCK FRAME AND TIRES SECURELY BEFORE REMOVING TIRES OR CRAWLING UNDER VEHICLE.

PIN 1

WIRE COLOR | WIRE NUMBER | WIRE DESCRIPTION AND FUNCTION
---|---|---
YELLOW | 6230 | GROUND FROM CONTROL BOX
GREEN | 6800 | SWITCHED BATTERY FROM CONTROL BOX
WHITE | | CAN SHIELD
RED | | CAN LOW
WHITE | | CAN HIGH

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

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

SEE ELECTRICAL CONNECTION DIAGRAM CENTRAL CONTROL MODULE WIRE AND CONNECTION INFORMATION
Solenoid Valves with Cam Release

The cam release style valves are direct replacements for all previous styles of HWH hydraulic solenoid valves.

Valve size and voltage are still factors to be considered when replacing any HWH hydraulic solenoid valve. Replace a small style 12 volt valve with a small style 12 volt valve. Replace a large style 12 volt valve with a large style 12 volt valve. This is true for 24 volt valves also.

Valve installation has not changed, simply turn out the old valve, confirm that no o-ring debris has been left in the manifold block and turn in the new valve.

After installing the valve and without creating stress on the wires at the point where they exit the valve body. Use a wire tie to secure the wires to the valve body to keep the wires from being pinched beneath the cam mechanism during operation.

Solenoid Valves with 1/4" Nut Release

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.