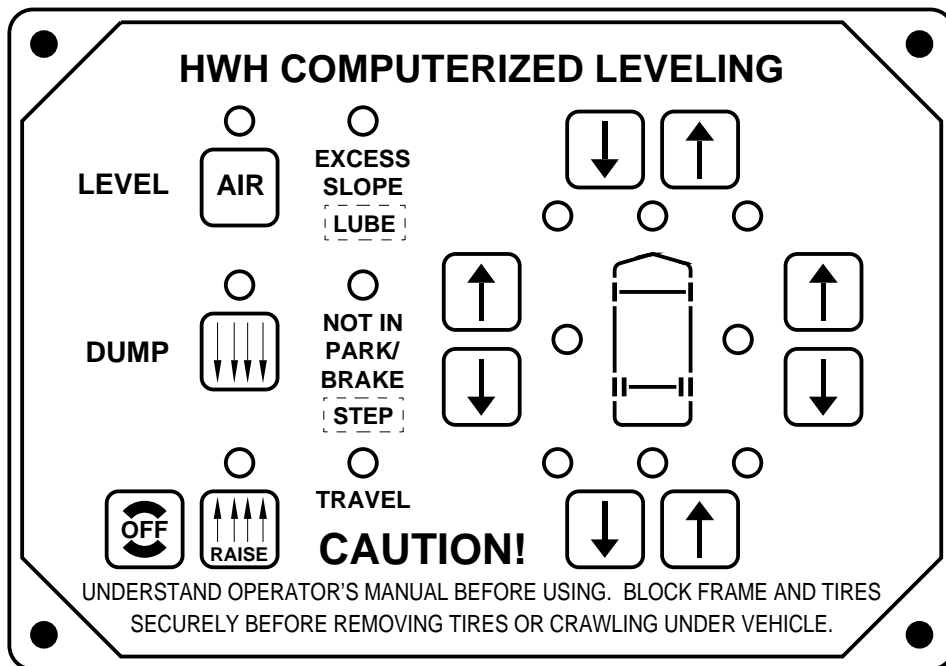




# OPERATOR'S MANUAL

## HWH COMPUTER-CONTROLLED LEVELING SYSTEM 600 SERIES

**FEATURING:**  
***TOUCH PANEL CONTROL***  
***FOUR POINT AIR LEVELING***



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

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# OPERATOR'S MANUAL

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## HWH LEVELING SYSTEM AIR LEVELING ONLY

### CAUTION !

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 LEVELING SYSTEM AND ROOM EXTENSION ARE BEING OPERATED.

DO NOT OPERATE LEVELING SYSTEM OR USE THE RAISE OR DUMP BUTTONS WHEN TRAVELING AT SPEEDS IN EXCESS OF 5 MPH.

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

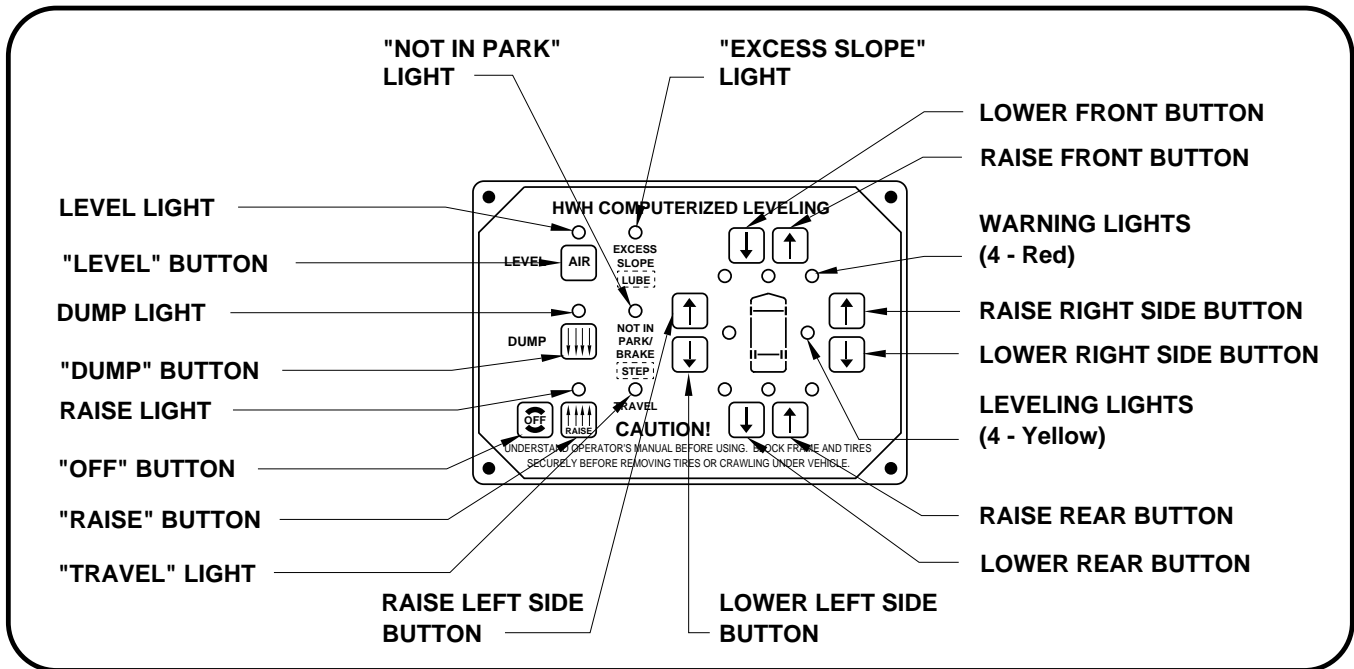
HWH CORPORATION strives to maintain the highest level of customer satisfaction. Therefore, if you discover a defect or problem, please do the following:

**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

**"LEVEL" (AIR) BUTTON:** This button is the system on button and automatic operation button.

**"OFF" BUTTON:** This button will turn the system off, but does NOT control power to the "DUMP" or "RAISE" buttons.

**"RAISE" BUTTON:** This button will raise the whole vehicle by adding air to the suspension system.

**"DUMP" BUTTON:** This button will lower the whole vehicle by exhausting air from the suspension system.

**UP ARROWS (RAISE BUTTONS):** These momentary buttons are used to manually operate the air leveling systems. Sides or ends of the vehicle will raise while these buttons are pushed.

**DOWN ARROWS (LOWER BUTTONS):** These momentary buttons are used to manually operate the air leveling systems. Sides or ends of the vehicle will lower while these buttons are pushed.

### INDICATOR LIGHTS

**LEVEL LIGHT:** This light will be on when the system is on, and flash during automatic leveling.

**DUMP LIGHT:** This light will flash when the "DUMP" button is being pushed.

**RAISE LIGHT:** This light will flash when the "RAISE" button is being pushed.

**"EXCESS SLOPE" LIGHT:** This light will be on if the leveling system can NOT level the coach.

**"TRAVEL" LIGHT:** This light will be on if the leveling system is off and the ignition is in the "ON" position. See "PREPARATION FOR TRAVEL".

**WARNING LIGHTS:** These red lights will function only with the ignition key in the "ON" position. If the system is on, all four lights will be on. If the system is off and an air bag has low pressure, its respective red light will be on.

**LEVELING LIGHTS:** One or two yellow lights can be on indicating the side, end or corner of the coach is low.

**"NOT IN PARK/BRAKE" LIGHT:** This light will be on if the "AIR" button is pushed and the park brake is not set, if the ignition switch is in the "ON" position.

**MASTER WARNING LIGHT:** This light will be on if the ignition switch is "ON" and the leveling system is on, or if an air bag has low air pressure.

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# OPERATING PROCEDURES

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## GENERAL INSTRUCTIONS

Press the "OFF" button at any time to stop the operation of the system.

**NOTE:** If the ignition switch is "ON" the vehicle's air suspension may return to travel height.

If the ignition is in the "ON" position and the hand/auto brake is not set, the "NOT IN PARK" light will come on and the system will not operate when the "AIR" button is pressed. The "NOT IN PARK" light will remain on only while the "AIR" button is pressed.

## PREPARATION FOR TRAVEL

Start the vehicle's engine and allow air pressure to build to the recommended level for traveling.

Before traveling, the red AIR BAG warning lights must off and the "TRAVEL" light must be on.

**CAUTION:** IT IS THE OPERATOR'S RESPONSIBILITY TO CHECK THAT THE VEHICLE IS AT THE PROPER RIDE HEIGHT FOR TRAVELING.

## AIR OPERATION

### AUTOMATIC AIR LEVELING

1. Set the hand/auto brake in the recommended position for parking. Leave the engine running to provide air for leveling.

**NOTE:** If the ignition switch is not in the "ON" position, the leveling system cannot be turned on. Once the system has been turned on, the ignition key can be turned off.

2. Press the "AIR" button once to enter the air mode. The AIR indicator light and the four AIR BAG warning lights will glow steady.

3. Press the "AIR" button a second time. The AIR indicator light will start flashing and the air leveling will begin.

4. When all four yellow LEVEL SENSING lights are out the leveling is complete. The AIR indicator light will stop flashing and turn steady red. The processor is now in the SLEEP MODE. The vehicle's engine may now be turned off.

After 30 minutes the processor will recheck the vehicle level, make any corrections required, and return to the SLEEP MODE. This will continue until the system is turned off by the pushing the "OFF" button or the hand/auto brake is released, if the ignition is in the "ON" position.

If the system was unable to level the vehicle, one or two yellow LEVEL SENSING indicator lights will remain on and the "EXCESS SLOPE" light will come on. If the coach is in an excess slope situation, the system will remain on, but will not function in the SLEEP MODE. The system will not perform any other automatic function until the panel is turned off and then back on.

### MANUAL AIR LEVELING

1. Place the hand/auto brake in the recommended position for parking. Leave the engine running to provide air for leveling.

2. Press the "AIR" button once to enter the air mode of operation.

3. Air may be dumped at this time by pressing the "DUMP" button.

**NOTE:** If the "DUMP" or "RAISE" buttons are pushed after the system is on, the system will shut off after the "DUMP" or "RAISE" button is released.

4. The vehicle is now leveled by pressing the "RAISE" or "LOWER" buttons on the right half of the panel in conjunction with the LEVEL SENSING indicator lights. If a yellow LEVEL SENSING light is on, that side or end of the vehicle is low. Thus, that side or end should be raised or the opposite side or end lowered. Always level the coach from side to side first.

5. The engine may now be shut off if desired.

**NOTE:** If one set of front air bags have low air pressure, the other side front air bags will not lower any further.

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# OPERATING PROCEDURES

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## AIR OPERATION (CONTINUED)

### AIR DUMP AND RAISE FUNCTIONS

The "DUMP" and "RAISE" functions are provided for operator convenience for purposes such as dumping air suspension when parked in the wind or raising or lowering the vehicle to avoid an obstacle.

**IMPORTANT:** "DUMP" and "RAISE" functions will automatically turn off when the button is released. If the ignition is "ON", the suspension will return to travel height.

**CAUTION:** REREAD CAUTIONS ON THE FIRST PAGE OF THIS MANUAL. THE VEHICLE MAY DROP OR RAISE AND/OR MOVE FORWARD OR BACKWARD WITHOUT WARNING CAUSING INJURY OR DEATH.

Do not operate the vehicle over 5 M.P.H. unless air suspension is at the proper height for travel.

1. Leave the engine running if the "RAISE" function is to be used. The hand/auto brake does not have to be in the parking position to use the "RAISE" or "DUMP" feature.

2. Press and HOLD the "RAISE" or "DUMP" button as desired to raise or lower the vehicle. The system will remain in the "RAISE" or "DUMP" mode only as long as the button is being held down. When the button is released the system will automatically turn off. If the ignition is "ON" the suspension will return to travel height.

3. If desired for clearing an obstacle, the vehicle may be moved while in the "RAISE" or "DUMP" mode for a short distance at a slow speed even though the "TRAVEL" light will not be on. Remember: The vehicle may return to travel height if the "RAISE" or "DUMP" button is released.

4. As soon as the function button is released, the vehicle will raise or lower to the travel height and the "TRAVEL" light will come on steady.

**CAUTION:** IT IS THE OPERATOR'S RESPONSIBILITY TO CHECK THAT THE VEHICLE IS AT THE PROPER RIDE HEIGHT FOR TRAVELING.

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# MAINTENANCE

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## OPERATIONAL CHECK

Review the operator's manual and check that all functions and lights work correctly.

"NOT IN PARK/BRAKE" Check: Set hand/auto park brake. Set the transmission in the recommended position for parking the vehicle. Turn the ignition on. Push the "AIR" button on the touch panel. Release the hand/auto park brake.

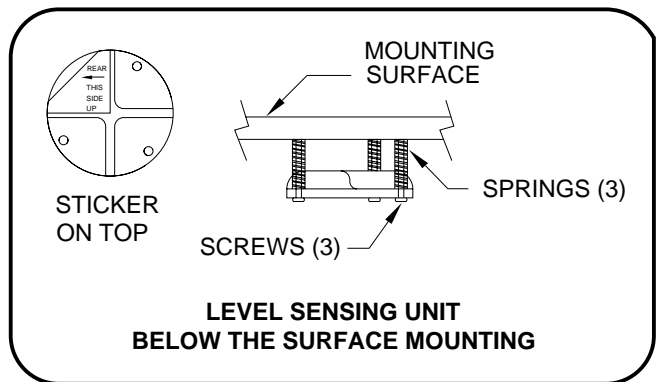
**CAUTION:** THE VEHICLE MAY MOVE FORWARD OR BACKWARD WHEN THE PARK IS RELEASED.

Check that the "NOT IN PARK/BRAKE" light comes ON. Reapply the park brake. The "NOT IN PARK/BRAKE" light should go out.

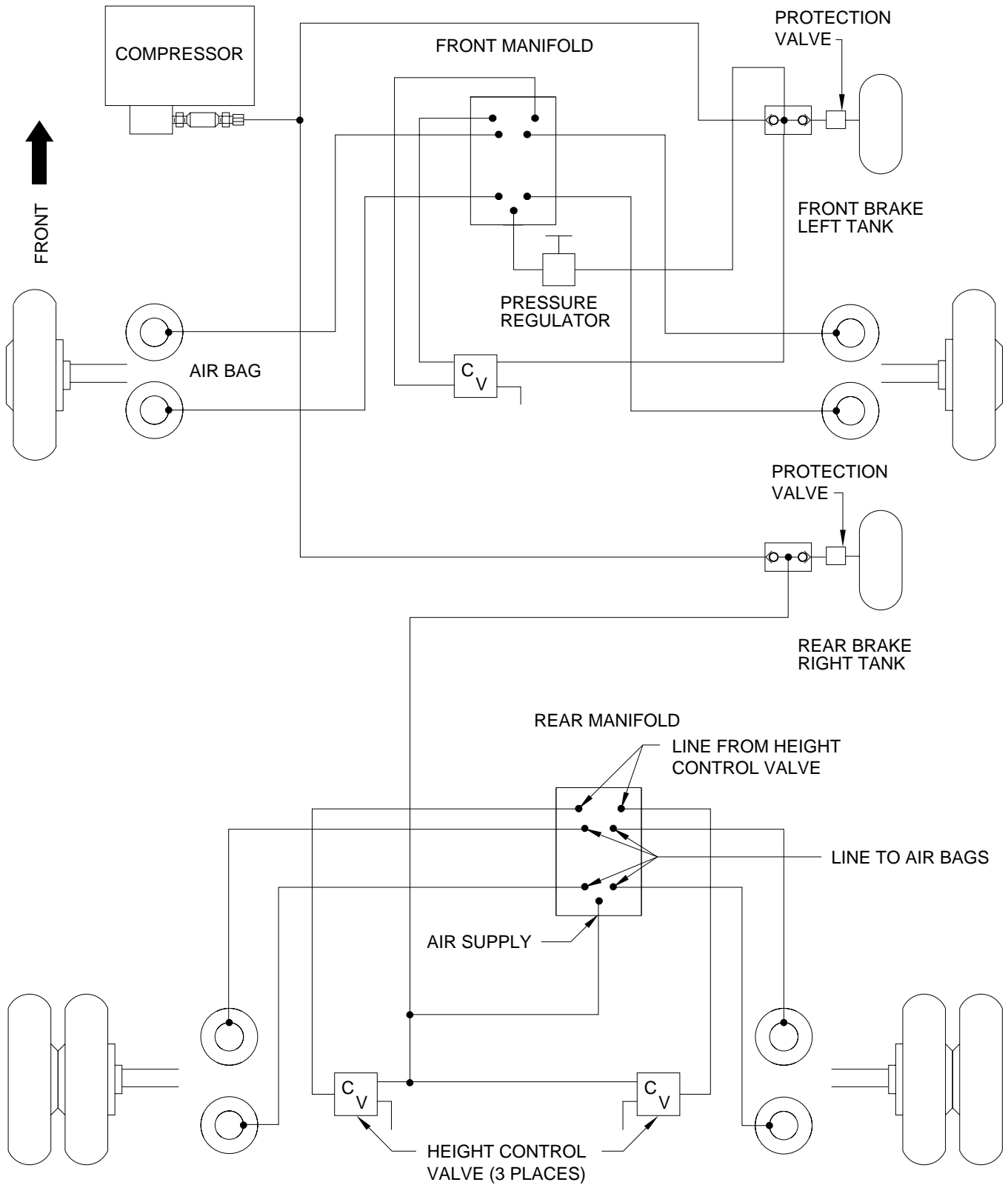
**NOTE :** IF ANY CHECKS REVEAL ANY PROBLEMS OR IF THERE ARE OTHER PROBLEMS OR QUESTIONS, CONSULT A QUALIFIED RV REPAIR CENTER, YOUR VEHICLE OR COACH MANUFACTURER OR HWH CORPORATION FOR SERVICE OR ASSISTANCE.

## 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.



# AIR LINE CONNECTION DIAGRAM

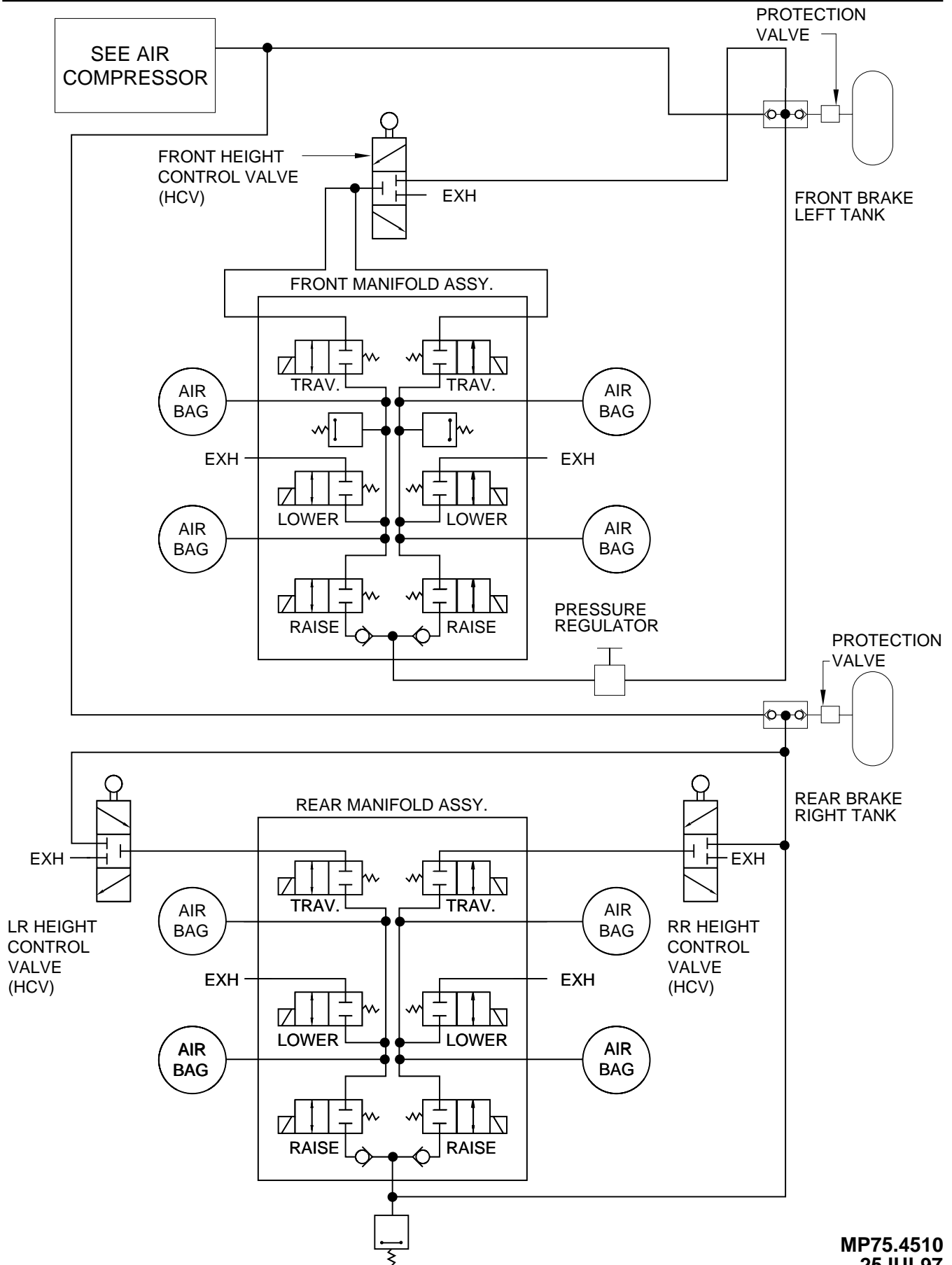


MANIFOLDS ARE MOUNTED TO MAIN CROSS MEMBERS. LEAVE AMPLE CLEARANCE FOR CONNECTION OF HOSES TO FITTINGS.

# AIR LEVEL SCHEMATIC

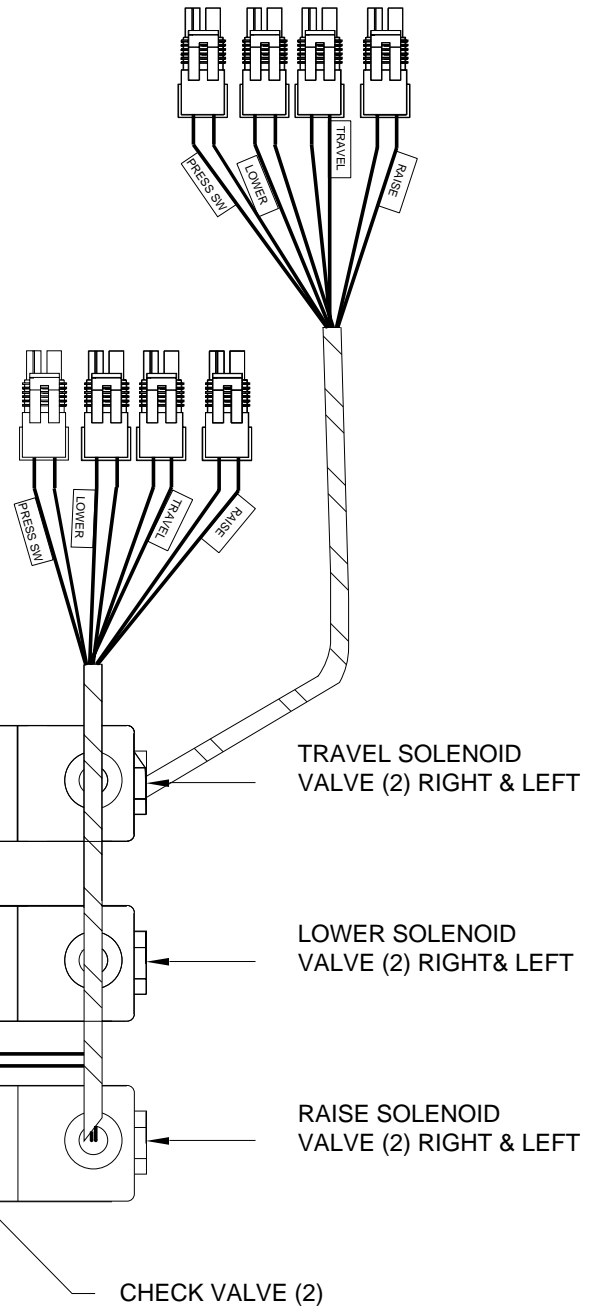
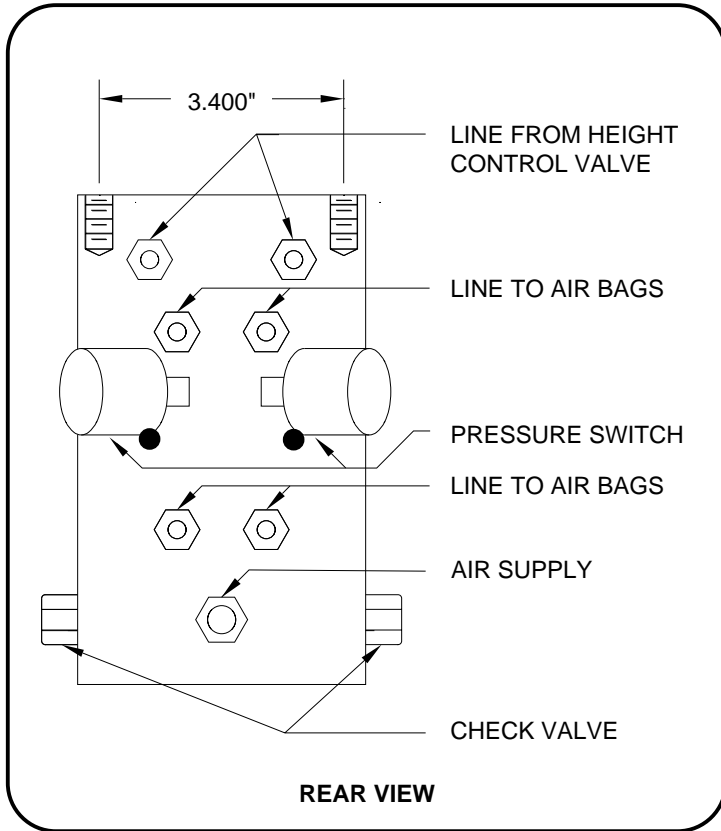
## 4-POINT LEVELING W/AIR COMPRESSOR

### PRESSURE SWITCHES FRONT AND REAR

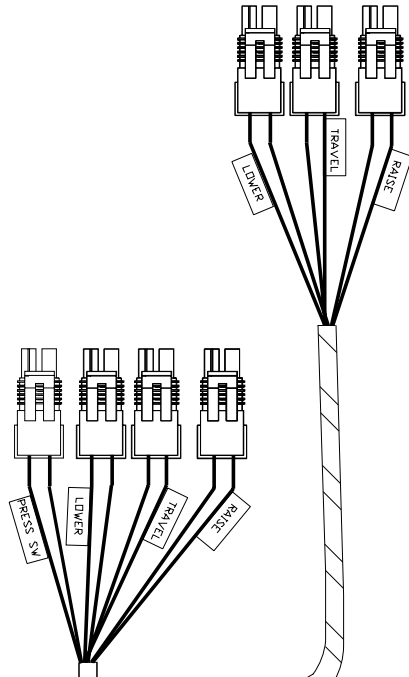
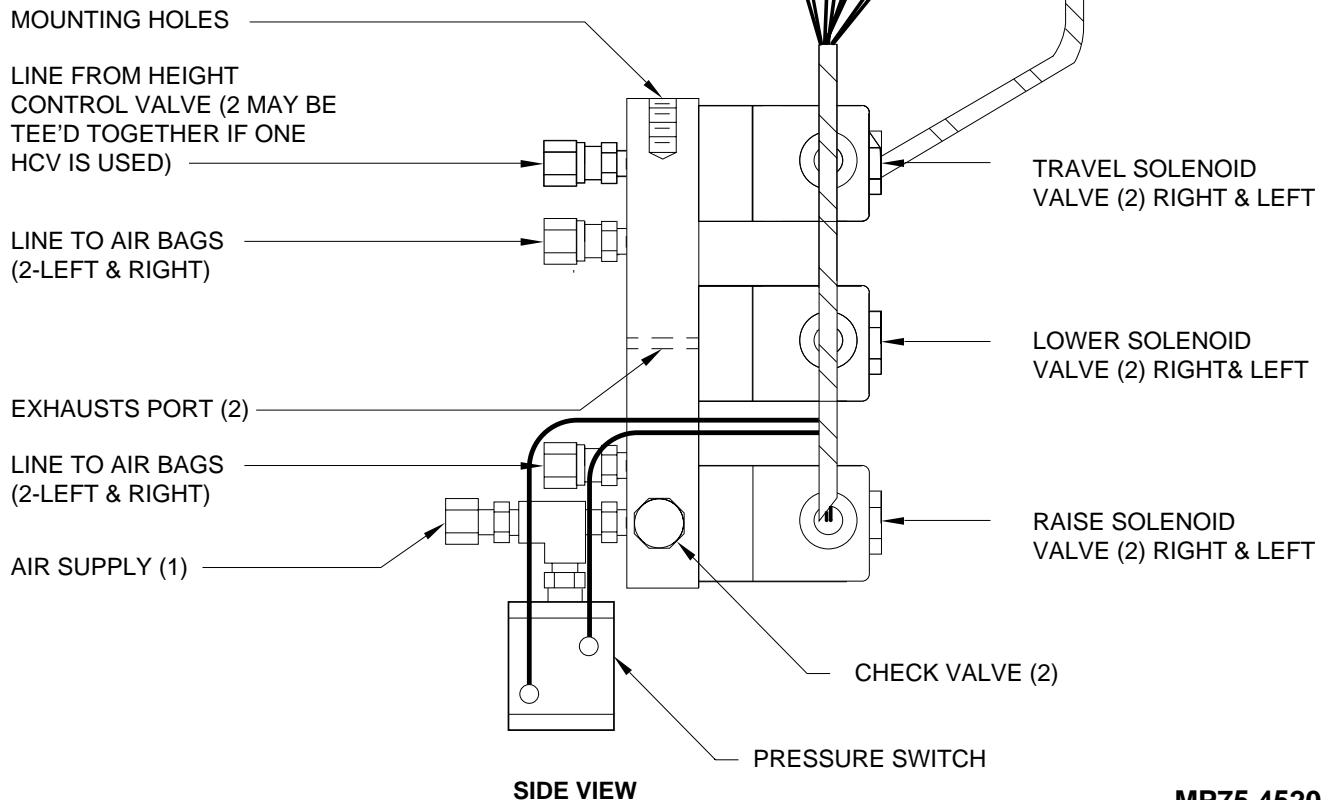
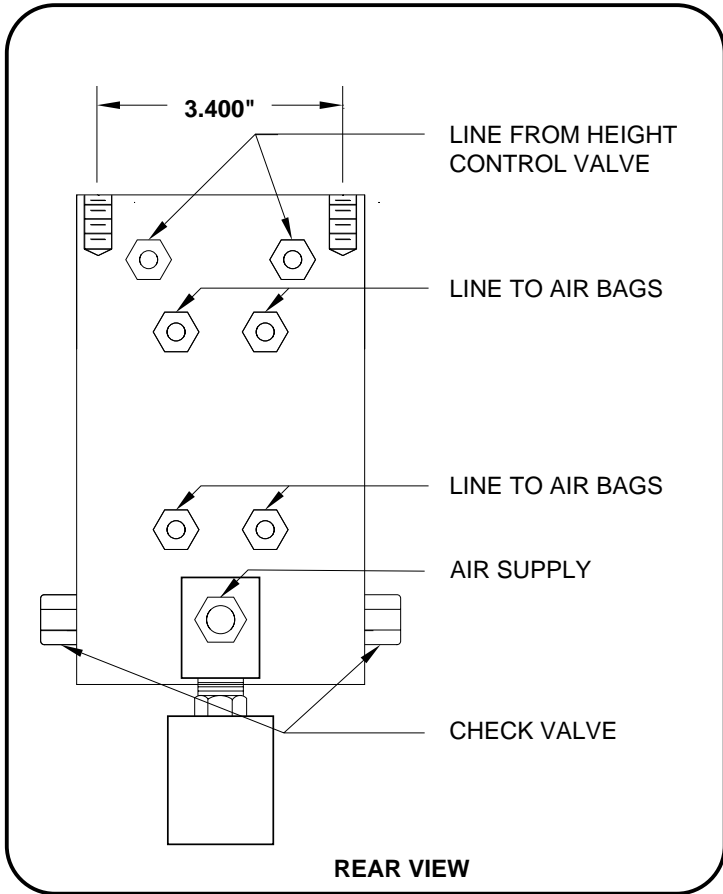




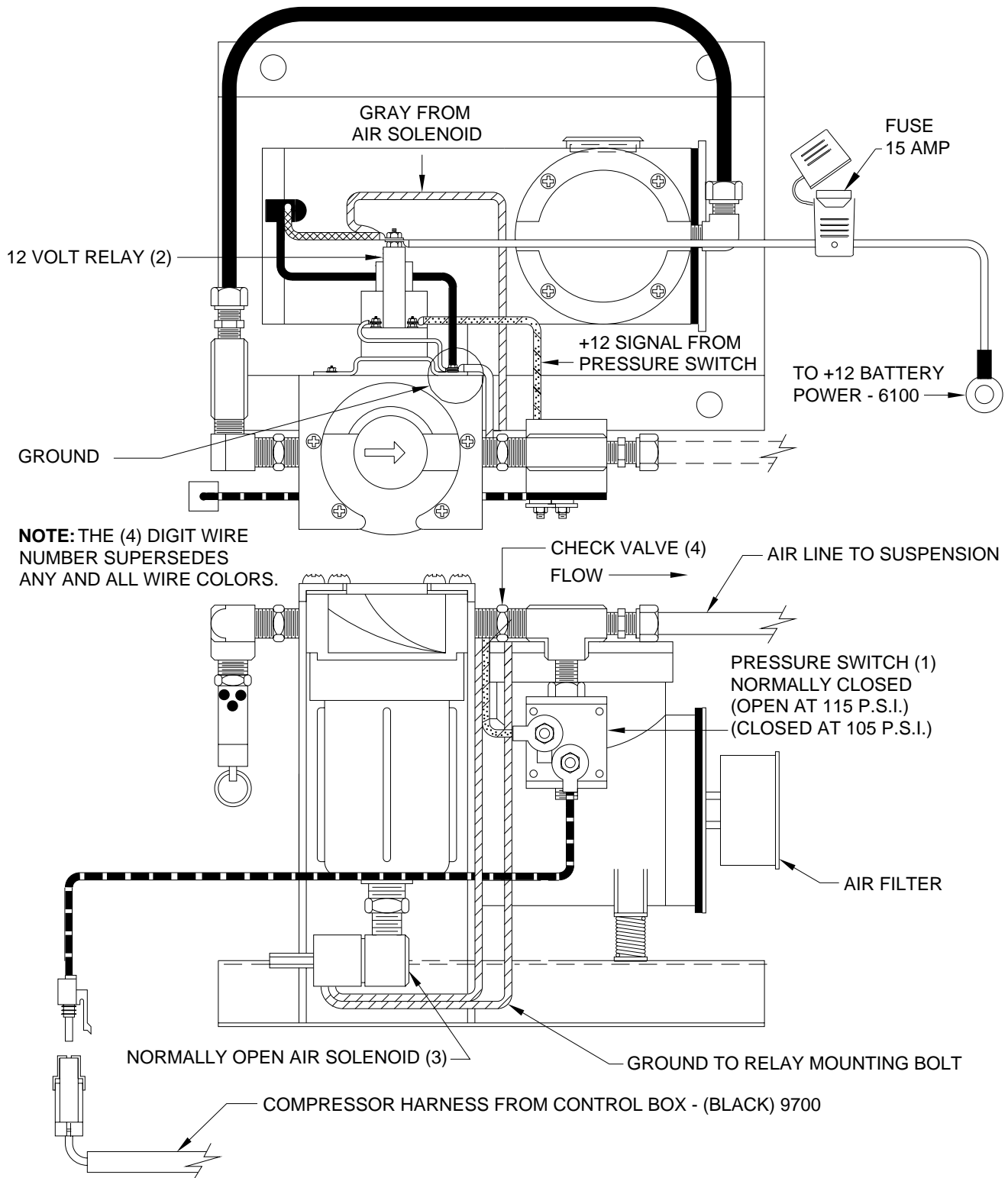
# AIR SOLENOID MANIFOLD 6 VALVE WITH TWO PRESSURE SWITCHES



# AIR SOLENOID MANIFOLD 6 VALVE WITH ONE PRESSURE SWITCH



# COMPRESSOR DIAGRAM

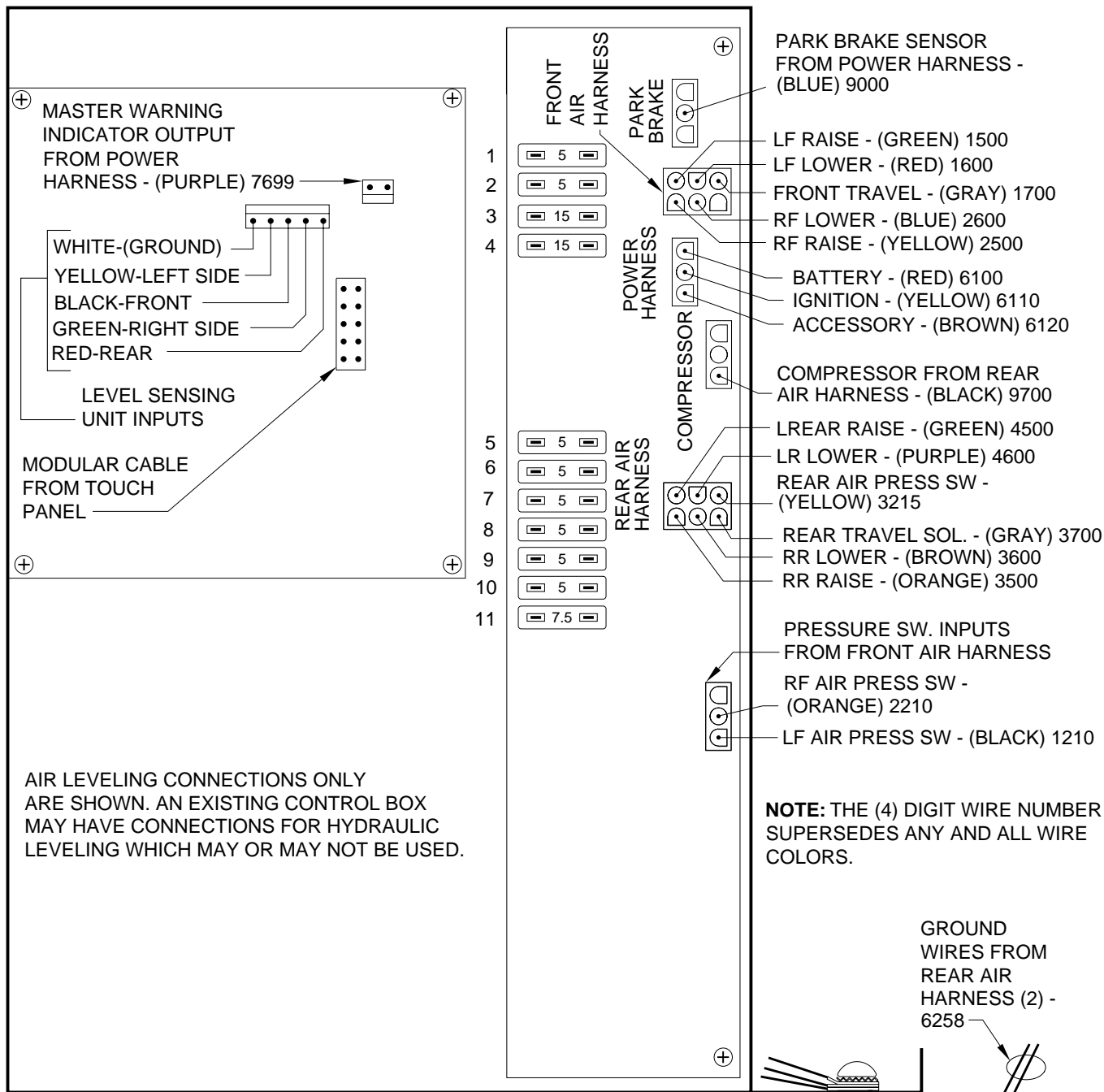


The control box sends a +12 signal to the normally closed pressure switch (1). If the pressure is low, the 12 volt relay (2) will energize and the compressor will run. The normally open air solenoid (3) will close allowing the compressor to build pressure. When the pressure builds to 115 P.S.I. the pressure switch will open, stopping the air compressor.

The normally open air solenoid (3) will open, allowing internal pressure & moisture to bleed off. The check valve (4) will keep the suspension air from bleeding back to the compressor. As air pressure drops below 105 P.S.I. the compressor will start.

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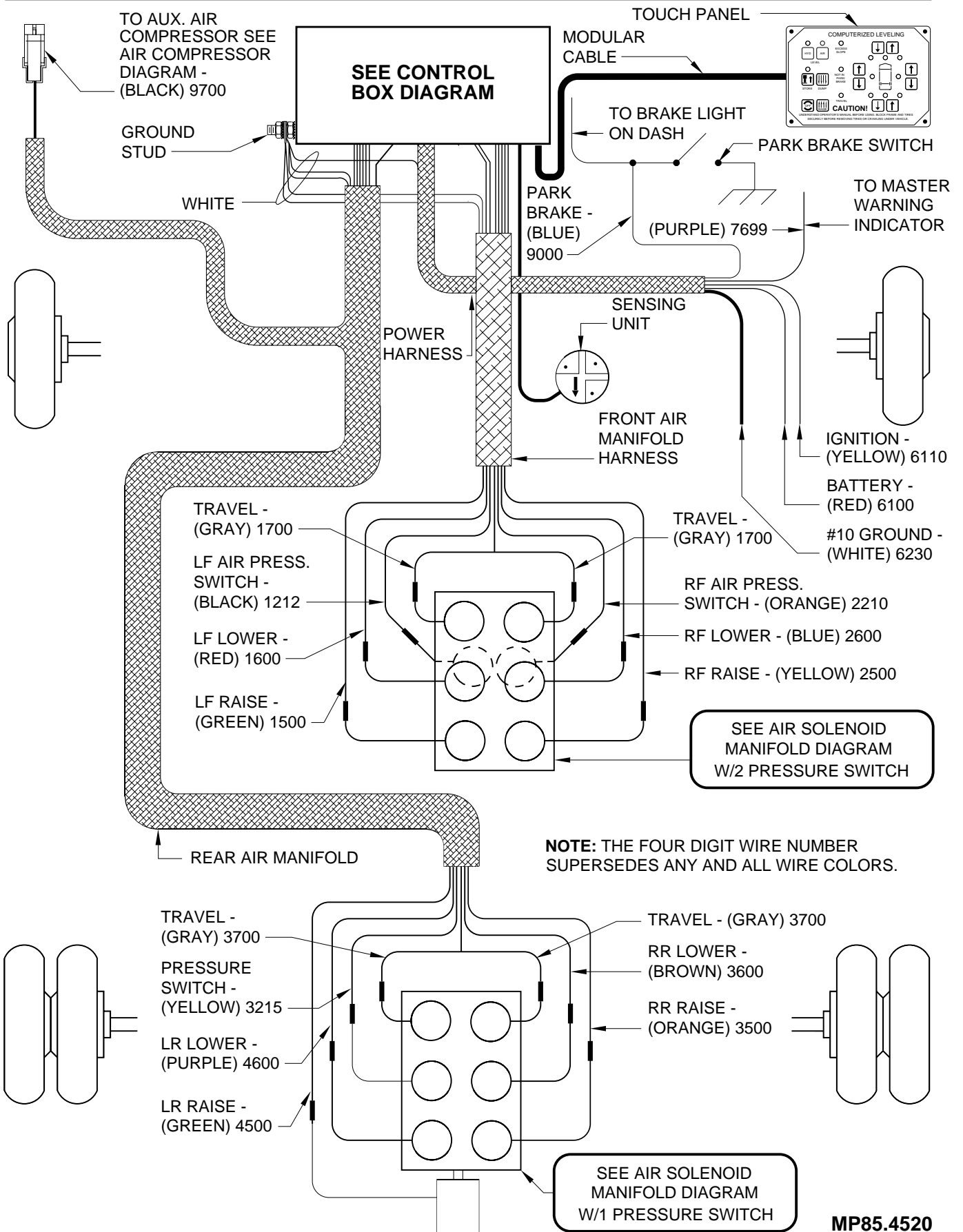
# 600 SERIES CONTROL BOX CONNECTION DIAGRAM 4-POINT AIR LEVELING



## FUSE DESIGNATION

- 1 RIGHT FRONT LOWER
- 2 RIGHT FRONT RAISE
- 3 BATTERY
- 4 IGNITION
- 5 RIGHT REAR LOWER
- 6 LEFT REAR LOWER
- 7 LEFT REAR RAISE
- 8 RIGHT REAR RAISE
- 9 LEFT FRONT RAISE
- 10 LEFT FRONT LOWER
- 11 TRAVEL

# ELECTRICAL CONNECTION FOR AIR LEVELING SYSTEM WITH TOUCH PANEL CONTROL



**NOTE: THE FOUR DIGIT WIRE NUMBER SUPERSEDES ANY AND ALL WIRE COLORS.**



# MOUNTING AND ADJUSTMENT INSTRUCTIONS

## LEVEL SENSING UNIT

The sensing unit must be mounted to a solid surface and must not be exposed to any heat sources. Toward the middle of the vehicle but outside the frame rails is best. The sensing unit may be mounted between frame rails on pusher vehicles and trailers. The sensing unit may be mounted in a compartment but needs to be protected from stored objects. It is critical that the sensing unit is mounted in the proper position according to the sticker on the sensing unit. (See figure below). The springs should be compressed to approximately 1.25 inches.

The correct method for adjusting the sensor is as follows:

First, level the vehicle by placing a 24" level in the center of the vehicle on the floor. With the vehicle level adjust the sensing unit until all yellow lights are out. This is done by drawing up or backing out the sensing unit screws. If a front light is on, adjust the front screw. If a side light is on adjust the side screw. If a rear light is on adjust the rear screws. One or more screws may have to be adjusted to turn the yellow lights out. After adjustment has been made, pull down on the sensing unit to make sure the unit is bottomed out on the screw heads. Check to make sure all yellow lights are out. If not, readjust. Rock the vehicle and recheck for yellow lights, readjust if needed.

**NOTE:** The sensing unit has an accuracy tolerance of +/- 1" side to side and +/- 5.4" front to rear on a 36' vehicle.

