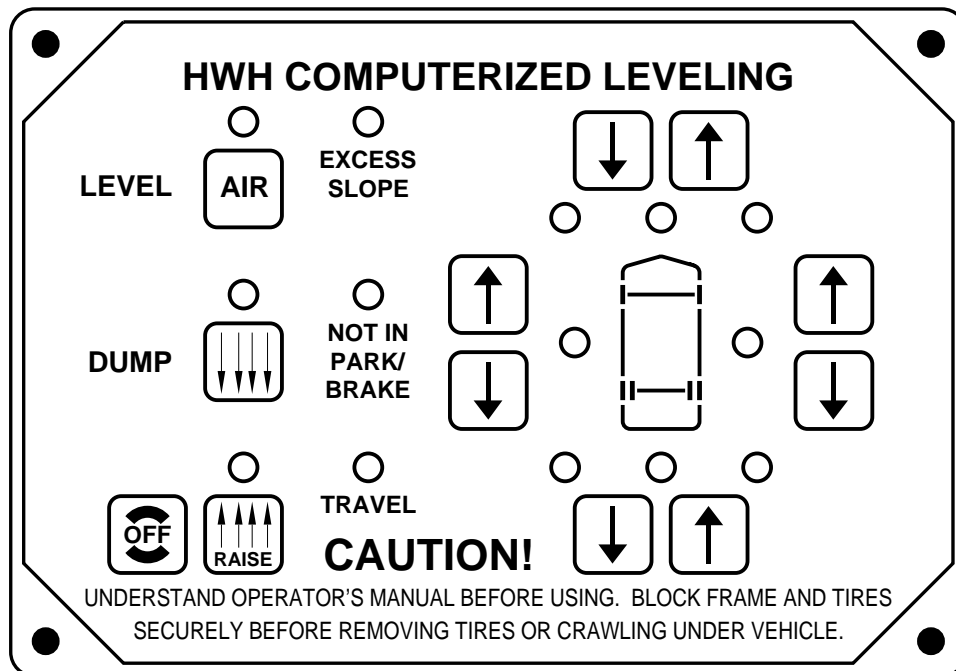




OPERATOR'S MANUAL

HWH COMPUTER-CONTROLLED LEVELING SYSTEM 600 SERIES

FEATURING:
TOUCH PANEL CONTROL
FOUR POINT AIR LEVELING
WITH TAG AXLE



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>

OPERATOR'S MANUAL

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

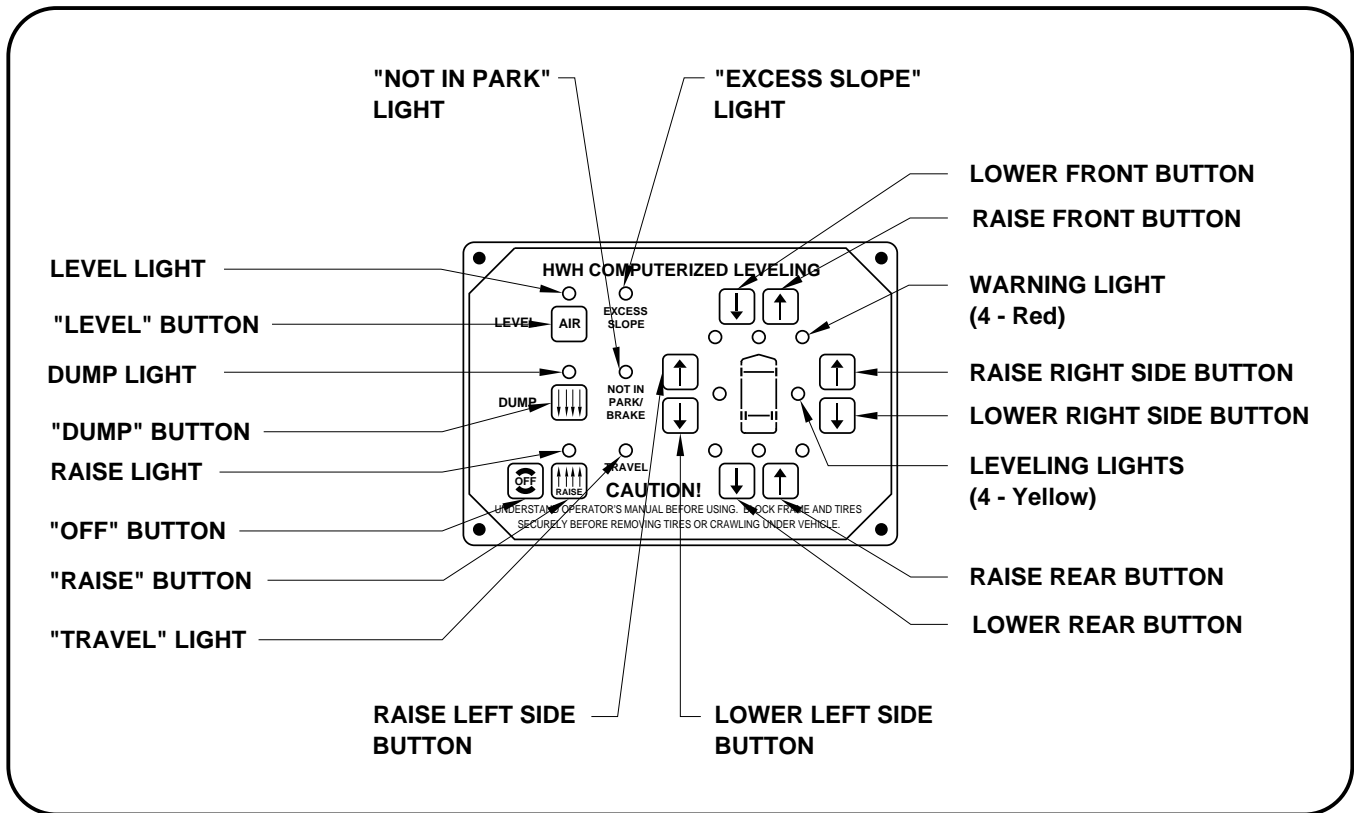
HWH CORPORATION strives to maintain the highest level of customer satisfaction. Therefore, if you discover a defect or problem, please do the following:

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" 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.

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

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

UP ARROWS (RAISE BUTTONS): These momentary buttons are used for manually operating 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" or "ACC" position. See "PREPARATION FOR TRAVEL".

WARNING LIGHTS: These lights will function only with the ignition key is in the "ON" or "ACC" position. They will be on if the system is 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.

OPERATING PROCEDURES

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.

IMPORTANT: The bypass valves must be closed (turned clockwise) for the air leveling system to function.

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.

The "DUMP" and "RAISE" buttons will function with the system and park brake off if the ignition is "ON". See "AIR DUMP AND RAISE FUNCTIONS".

CAUTION: DO NOT MOVE THE COACH WHEN THE AIR BAG WARNING LIGHTS ARE ON.

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 be off and the "TRAVEL" light must be on. If the vehicle will not return to the proper ride height for traveling, see the BYPASS VALVE SECTION.

CAUTION: DO NOT RELY SOLELY ON WARNING INDICATORS. IT IS THE OPERATOR'S RESPONSIBILITY TO CHECK THAT THE VEHICLE IS AT THE PROPER RIDE HEIGHT BEFORE MOVING THE VEHICLE.

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 key is not in the "ON" position, the leveling system cannot be turned on. Once the system is on, the ignition key may 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 a SLEEP MODE for 30 minutes. 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 pushing the "OFF" button or the transmission is taken out of the parking position and the park brake is released.

EXCESS SLOPE

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. The system will remain on but will not go into SLEEP MODE.

MANUAL AIR LEVELING

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

2. Press the "AIR" button. The "AIR" indicator light will glow steady.

3. Individual RAISE and LOWER buttons (UP and DOWN ARROWS) will add or dump air from suspension air bags to raise or lower coach for leveling. These are momentary buttons. The function will stop when the button is released.

NOTE: The "RAISE" and "DUMP" buttons can be used at this time, but the system will shut off after the button is released.

The yellow LEVEL lights indicate a side, end, or corner of the coach is low. Lower the opposite side or end of the coach to achieve leveling. If a level position cannot be achieved by dumping air, raise the coach according to lit yellow "LEVEL" lights.

IMPORTANT: Always give preference to any side light before leveling the coach front to rear.

4. Turn ignition switch "OFF". Turn the system off.

OPERATING PROCEDURES

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 obstacles. The "DUMP" and "RAISE" buttons will function with the system on or off.

IMPORTANT: "DUMP" and "RAISE" functions will automatically turn off when the button is released. If the ignition is in the "ON" position 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 park brake does not have to be set and the system does not have to be on to use the "RAISE" or "DUMP" functions.

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 as long as the button is held down. When the button is released the system will automatically turn off. If the ignition is in the "ON" position 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. Remember the vehicle will return to travel height when the "RAISE" or "DUMP" button is released and the leveling system is off.

BYPASS VALVE OPERATION

(FOR TEMPORARY BYPASS OF LEVELING SYSTEM)

In case of a malfunction of the leveling system, opening these valves will in most cases allow the vehicle suspension to return to the proper ride height for traveling.

CAUTION: THE VEHICLE WILL RAISE OR LOWER AS THE VALVES ARE OPENED. DO NOT CRAWL UNDER THE VEHICLE TO ACCESS THE VALVES. MAKE SURE THERE IS AMPLE ROOM TO OPEN THE VALVES SAFELY.

1. Locate the BYPASS valve T-handles. Refer to the AIR SOLENOID MANIFOLD page in the Diagram Section. There is usually one Air Solenoid Manifold for each axle on the vehicle.

2. Turn each T-handle counter-clockwise approximately two turns. Make sure there is ample clearance when opening the valves. Leave the valves open until the leveling system is repaired.

3. Check that the vehicle has returned to the proper ride height before moving the vehicle.

NOTE: The leveling system will not function properly if a bypass valve is opened.

Call HWH Customer Service, 1-800-321-3494, Monday through Friday, 8:00 a.m. to 5:00 p.m. Central time, for technical assistance.

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.

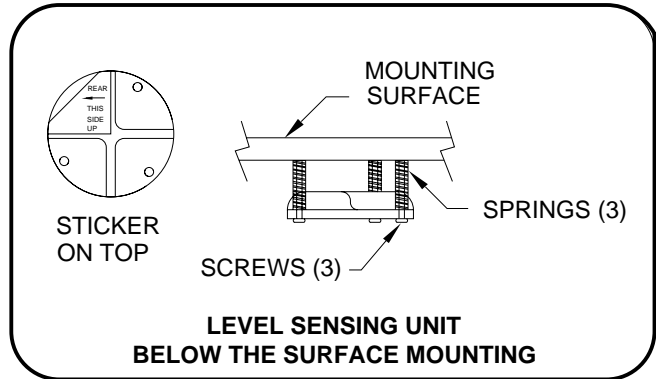
Check that the "NOT IN PARK/BRAKE" light comes ON. Re-apply the park brake. The "NOT IN PARK/BRAKE" light should go out.

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.

OPERATING PROCEDURES

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.



TAG AXLE DUMP

The tag axle dump-switch is supplied by Monaco.

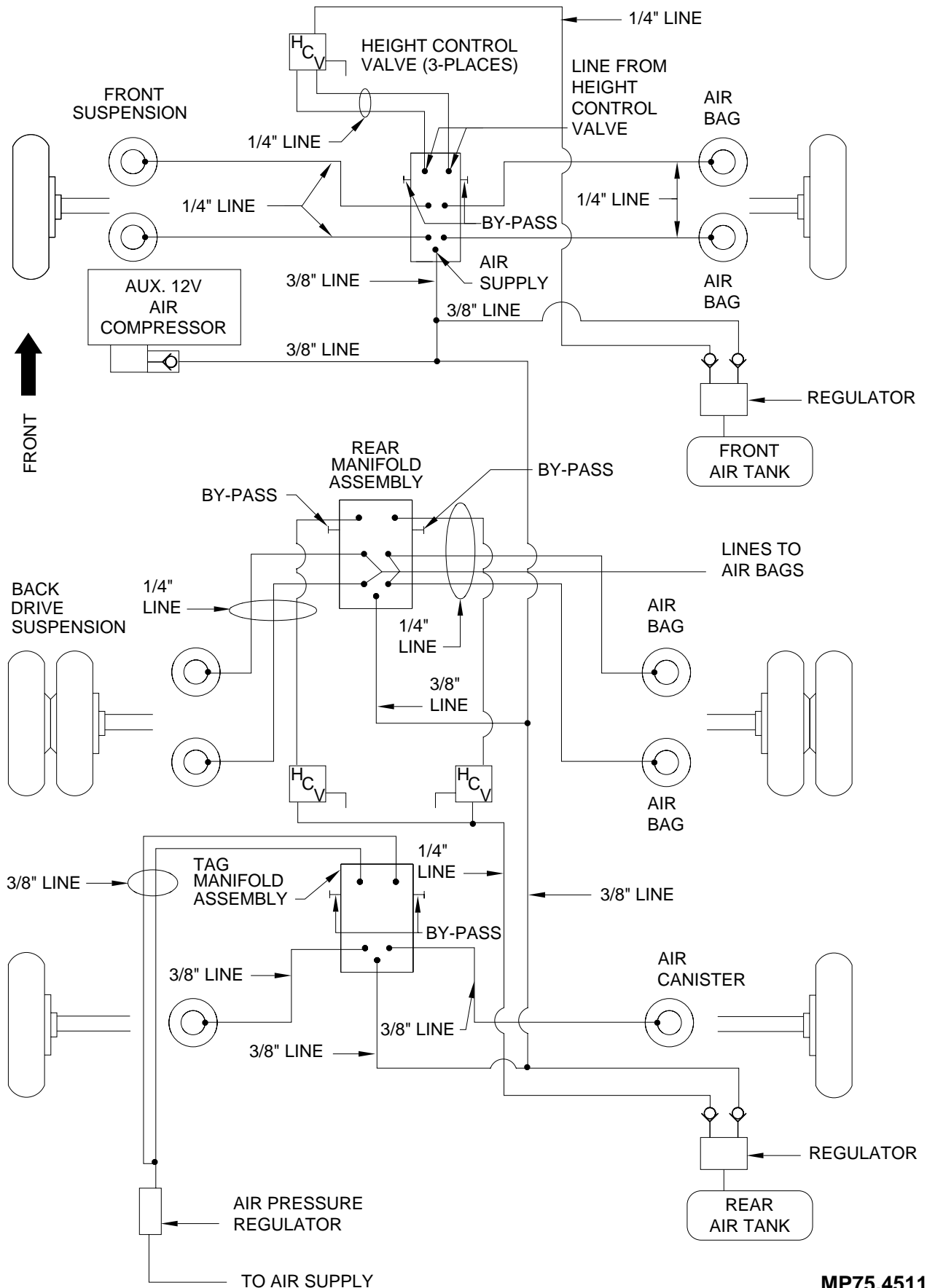
IMPORTANT: Refer to Monaco for the proper use of the Tag Dump feature.

The Tag Dump switch will work only with the ignition switch in the "ON" position and the leveling system panel off.

NOTE: If the Tag Dump switch is in the dump position and the ignition key is turned on (with the leveling system panel off) the tag axle air bags will go into the dump mode.

AIR LINE CONNECTION DIAGRAM

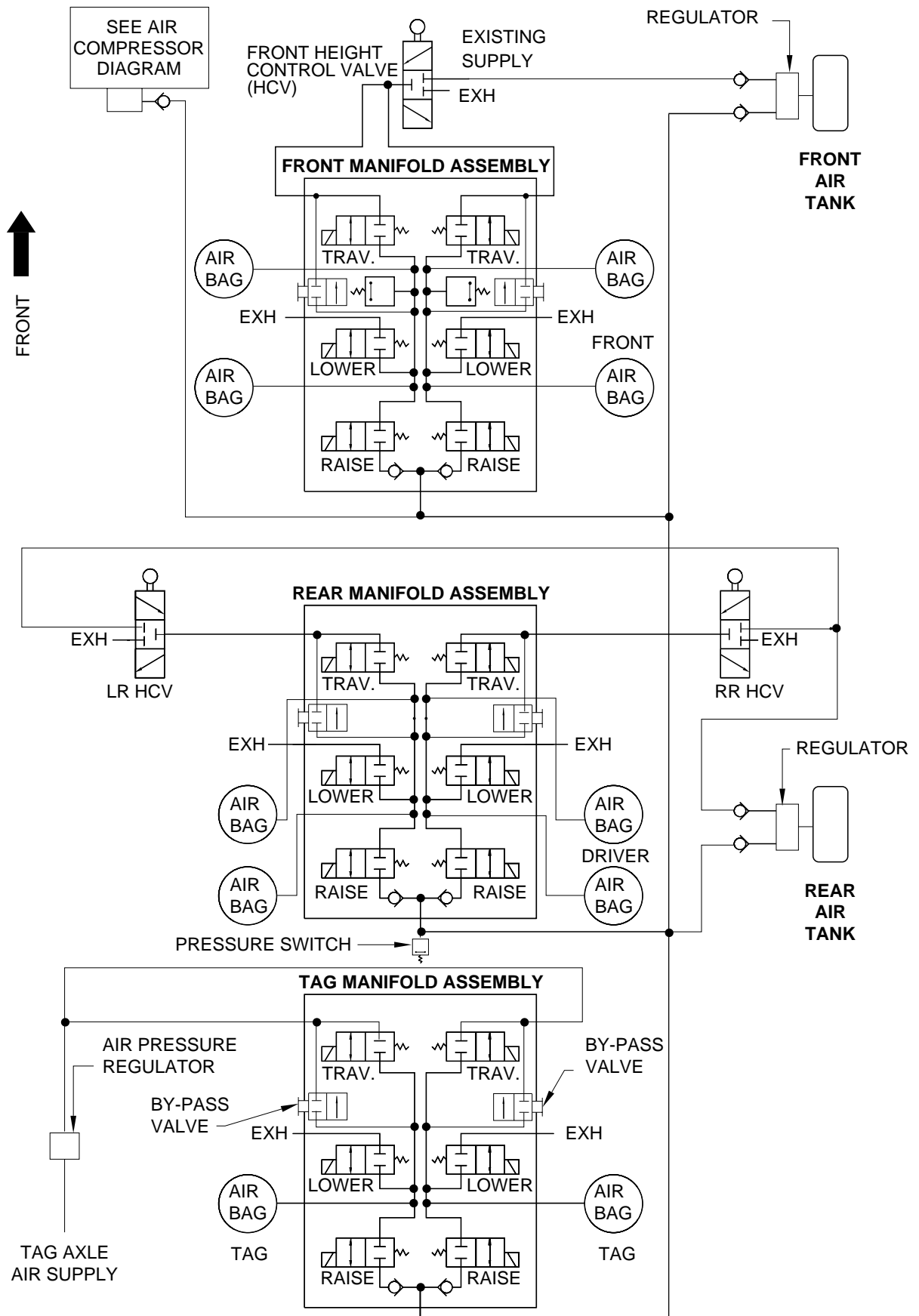
FOUR POINT AIR LEVELING WITH TAG AXLE - MONACO



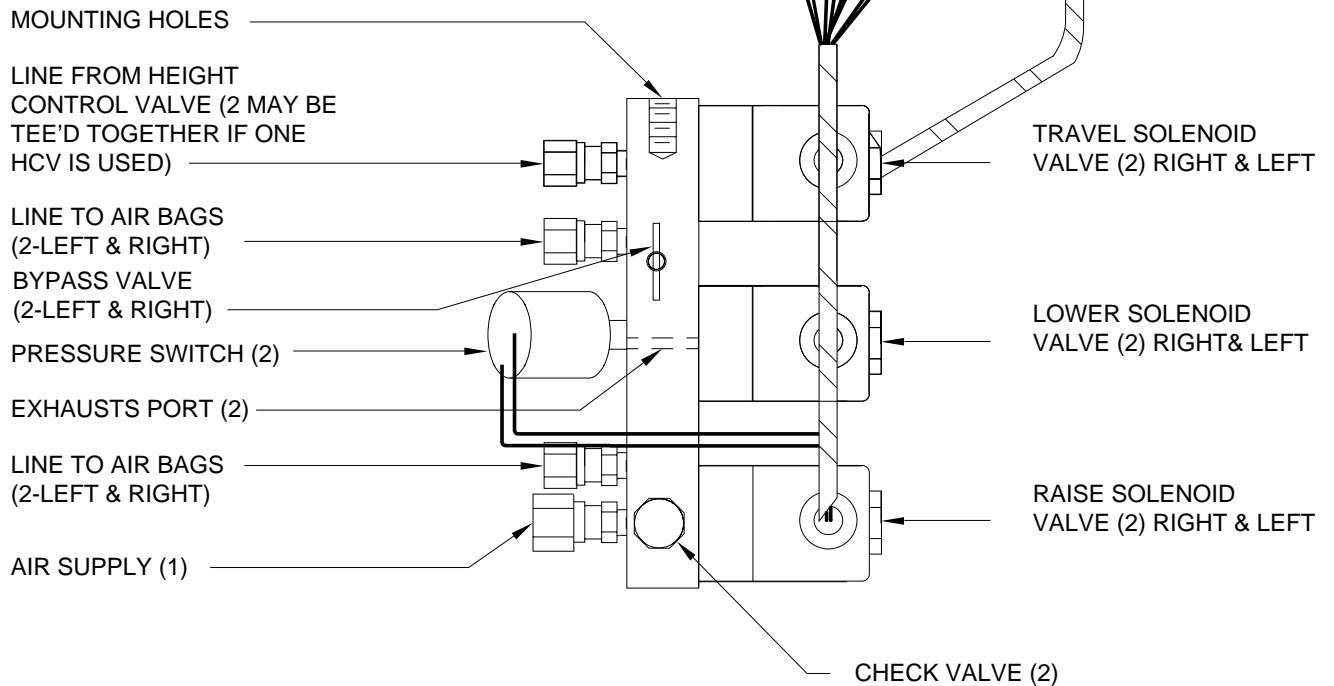
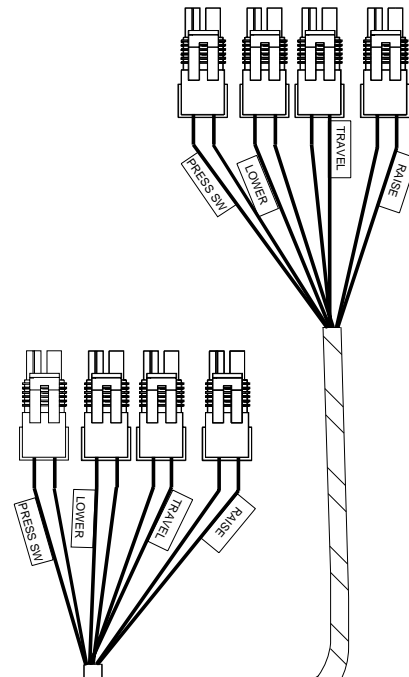
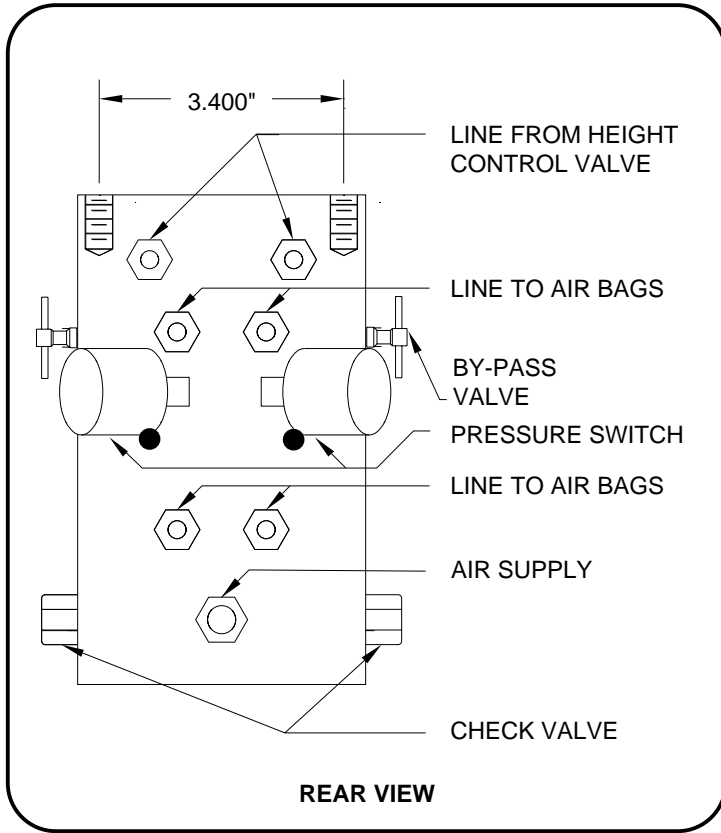
AIR LEVEL SCHEMATIC - MONACO

4-POINT LEVELING WITH AIR COMPRESSOR

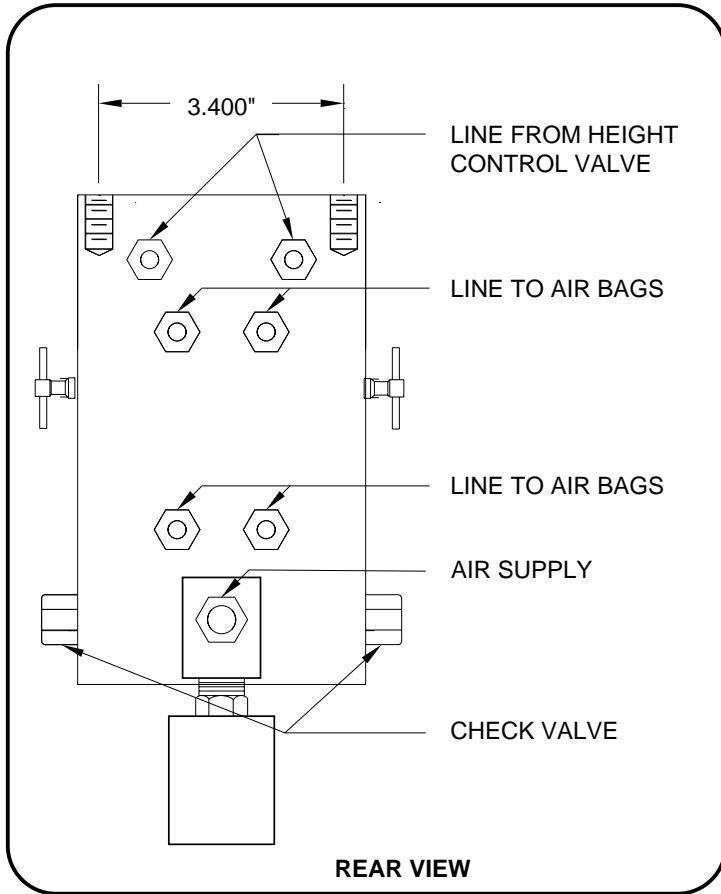
PRESSURE SWITCHES FRONT AND REAR DRIVE AXLE



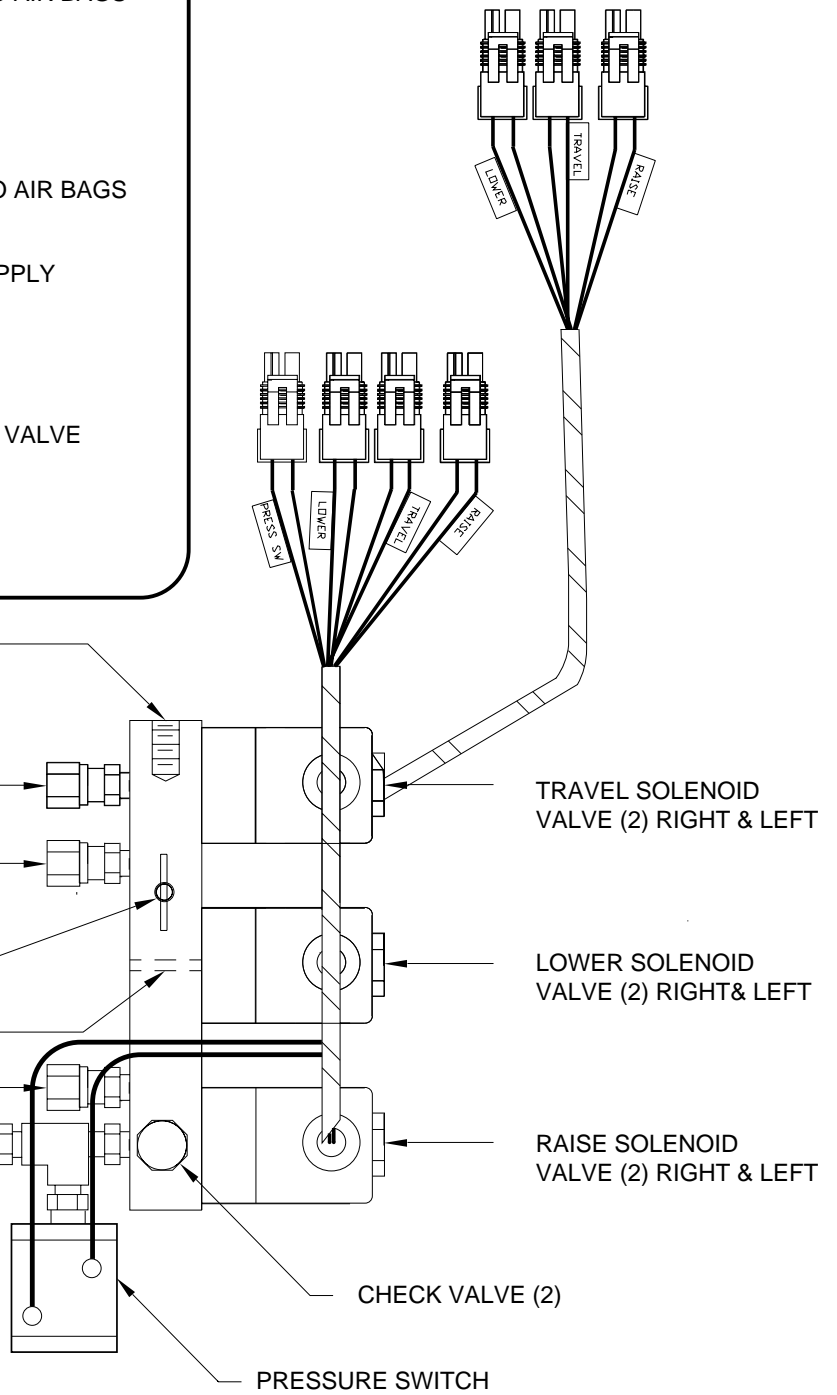
AIR SOLENOID MANIFOLD 6 VALVE WITH TWO PRESSURE SWITCHES AND BY-PASS VALVES



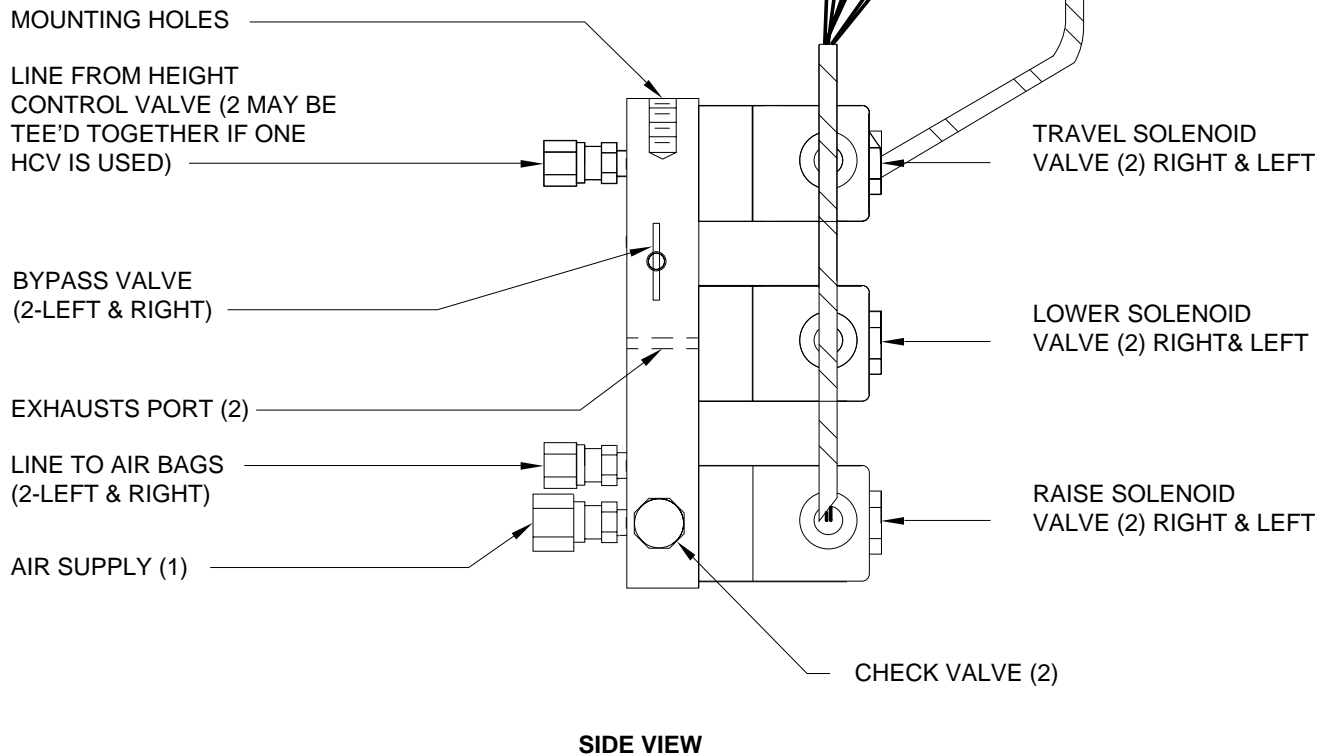
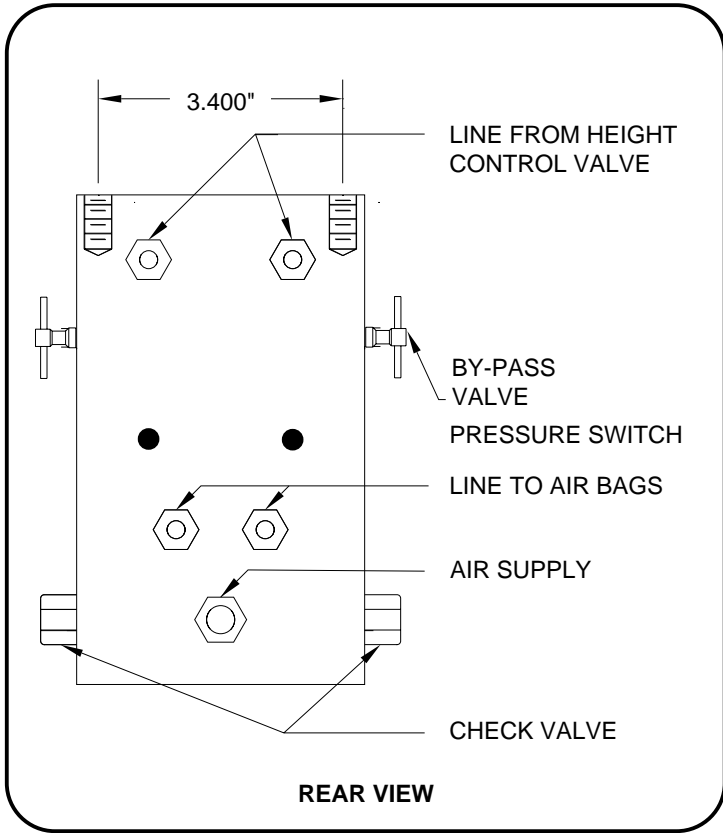
AIR SOLENOID MANIFOLD 6 VALVE WITH ONE PRESSURE SWITCH AND BY-PASS VALVES



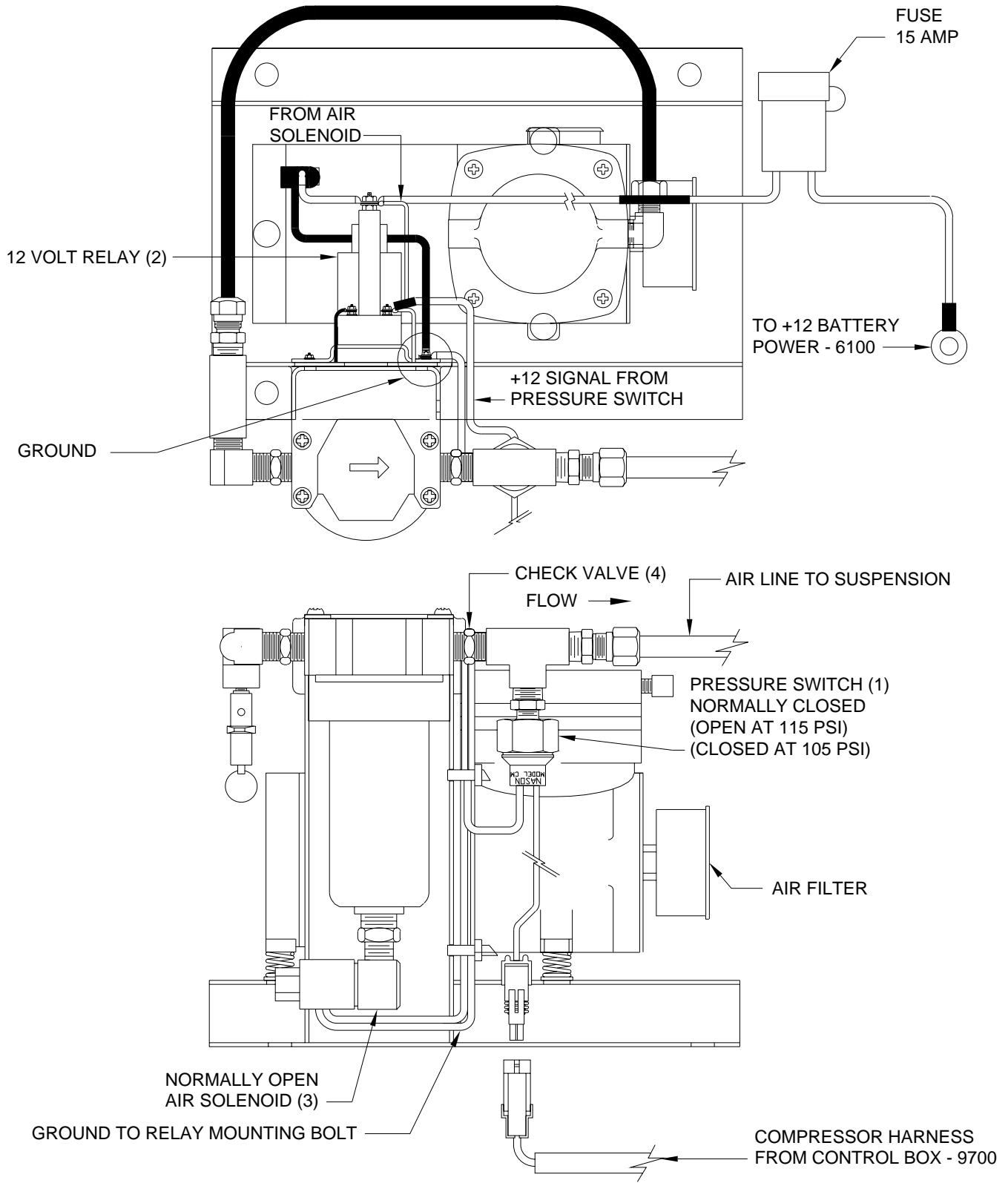
- MOUNTING HOLES
- LINE FROM HEIGHT CONTROL VALVE (2 MAY BE TEE'D TOGETHER IF ONE HCV IS USED)
- LINE TO AIR BAGS (2-LEFT & RIGHT)
- BYPASS VALVE (2-LEFT & RIGHT)
- EXHAUSTS PORT (2)
- LINE TO AIR BAGS (2-LEFT & RIGHT)
- AIR SUPPLY (1)



AIR SOLENOID MANIFOLD 6 VALVE WITH BY-PASS VALVES

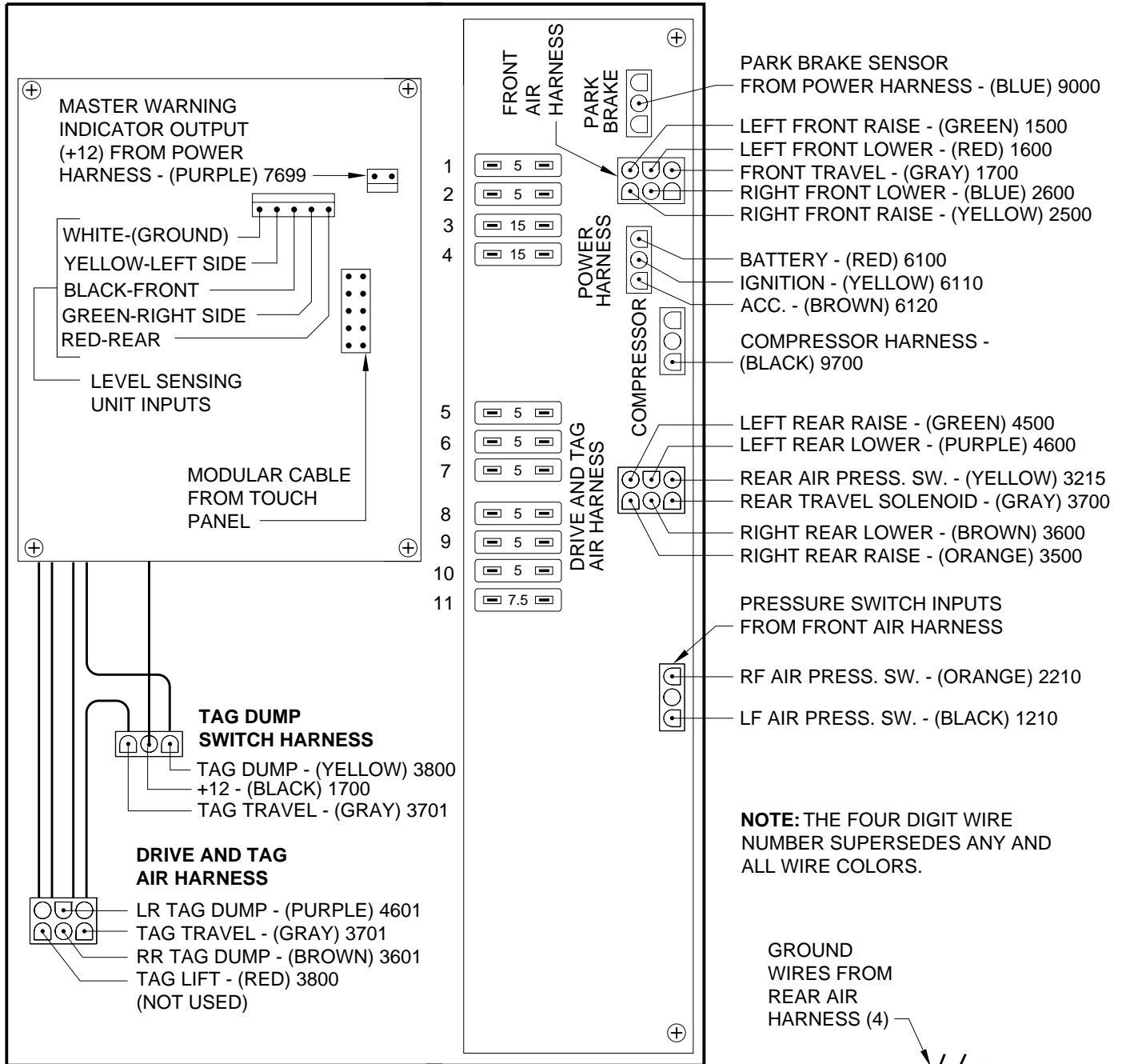


AIR COMPRESSOR DIAGRAM



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 psi 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 psi the compressor will start.

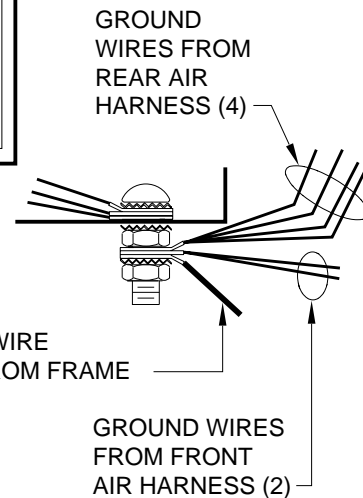
600 SERIES LEVELING SYSTEM CONTROL BOX CONNECTION DIAGRAM 4-POINT AIR LEVELING WITH TAG DUMP



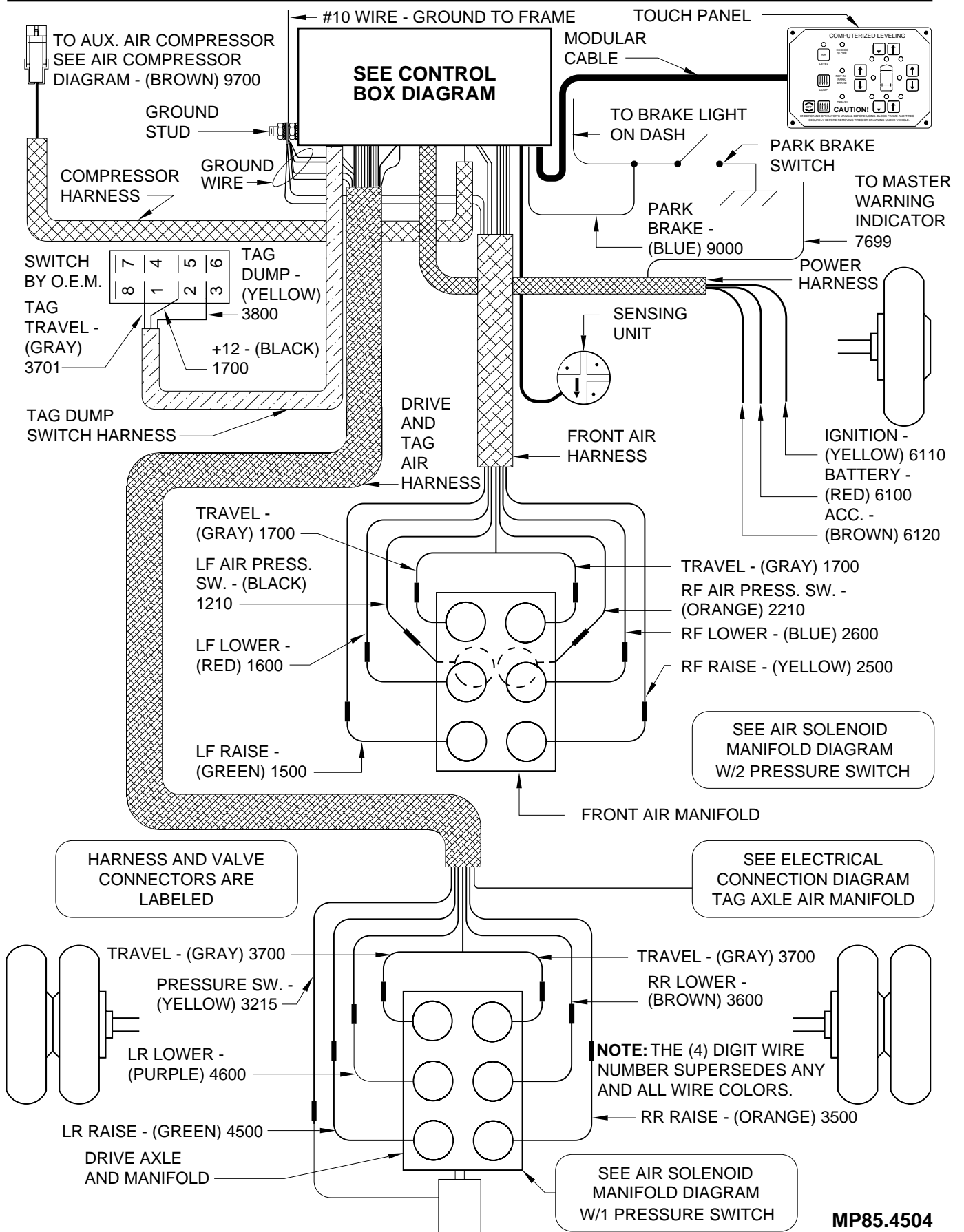
NOTE: THE FOUR DIGIT WIRE NUMBER SUPERSEDES ANY AND ALL WIRE COLORS.

FUSE DESIGNATION

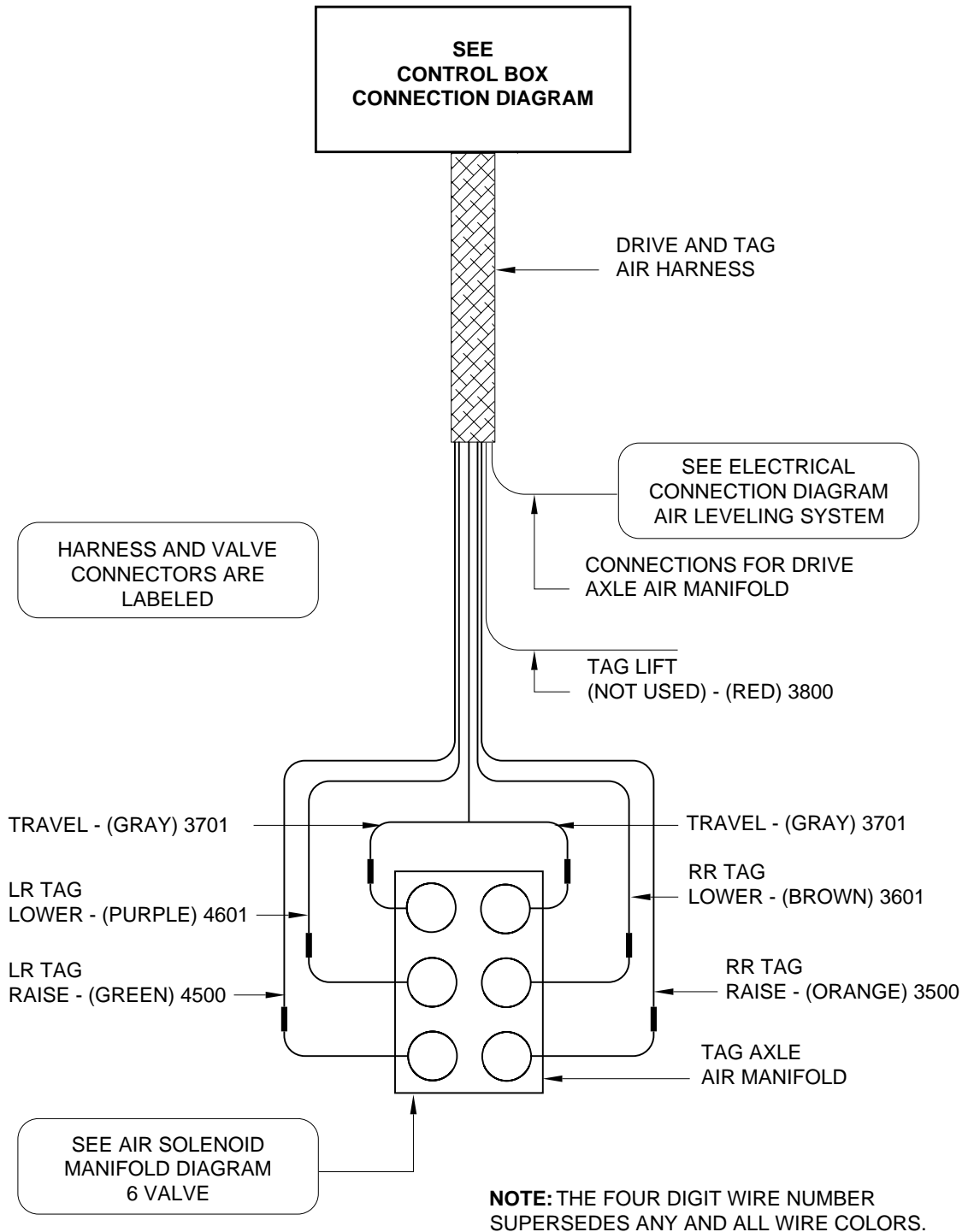
- 1 RIGHT FRONT LOWER
- 2 RIGHT FRONT RAISE
- 3 BATTERY
- 4 IGNITION
- 5 RIGHT REAR LOWER
- 6 LEFT REAR LOWER
- 7 LEFT REAR RAISE
- 8 RIGHT REAR RAISE
- 9 LEFT FRONT RAISE
- 10 LEFT FRONT LOWER
- 11 TRAVEL



ELECTRICAL CONNECTION DIAGRAM AIR LEVELING SYSTEM WITH TOUCH PANEL CONTROL



ELECTRICAL CONNECTION DIAGRAM TAG AXLE AIR MANIFOLD



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.

