

# TECHNICAL PROCEDURE

## HEIGHT CONTROL VALVE

SUBJECT: Installation Procedure

LIT NO: L98

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REVISION: D

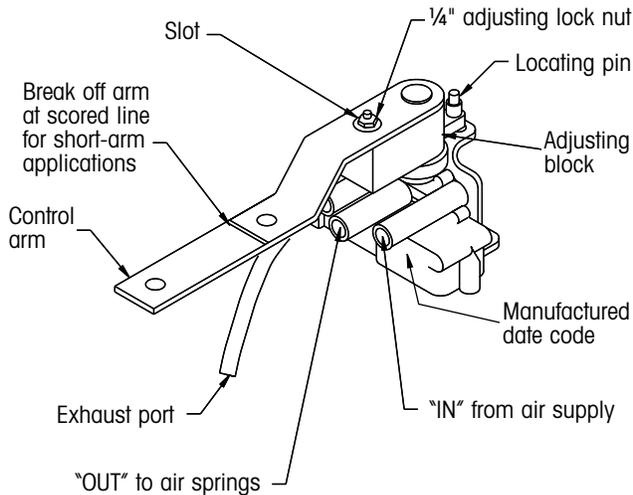


Figure 1. Height control valve terminology

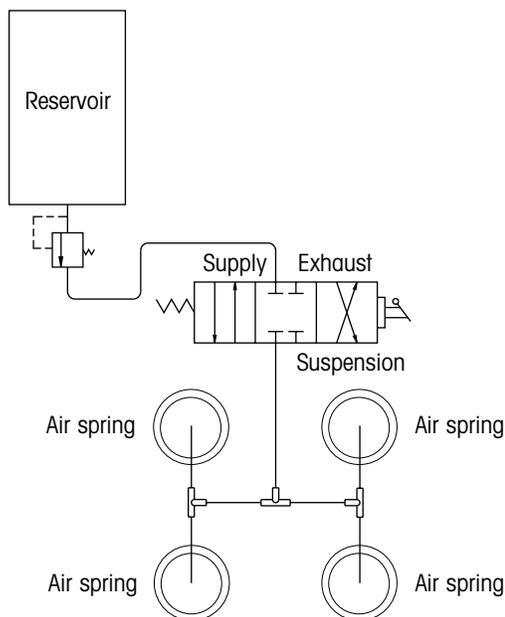


Figure 2. Schematic representation of a typical air suspension system

### INTRODUCTION

**NOTE:** This installation procedure is to be used only for height control valves that look similar to the one shown in figure 1 and have the following Hendrickson part numbers: A-1329, A-12391, A-14590 and A-10451.

The height control valve maintains a constant ride height by automatically adding air to or exhausting air from the air suspension system (figures 2 and 3). It accomplishes this without responding to short-duration dynamic changes in axle position.

Hendrickson air suspensions need only one height control valve per trailer, regardless of the number of trailer axles.

**IMPORTANT:** Unless approved in writing by the Hendrickson engineering department, DO NOT use more than one height control valve per trailer. The use of more than one height control valve will void the Hendrickson warranty.

This height control valve can be used in right-hand, left-hand, fore, aft and long- or short-control arm applications.

### INSTALLING THE HEIGHT CONTROL VALVE

1. Hendrickson suspensions are shipped with the height control valve mounting bracket pre-attached to the roadside frame bracket (figures 4 and 5). Use this mounting bracket to determine the proper control-arm length. For example if a short control arm is required, break or cut the control arm off at the scored line (figure 1).
2. Attach the height control valve to the mounting bracket on the roadside frame bracket (figures 4 and 5).



- Use a drop of oil or thread sealant to lubricate the threaded connections.

**IMPORTANT:** DO NOT use a pipe compound or teflon tape. These materials may contaminate the air system.

- The center (out) port on the valve is always connected to the air springs. Assemble the filter fitting to the valve. Then attach the air line to the fitting with the Delrin sleeve, brass insert and nut (if using plastic tubing for air lines) or with the brass sleeve and nut (if using copper tubing for air lines). Refer to figures 1 and 6.
- The top port (after the valve has been mounted) is always the exhaust port. Install the exhaust fitting into the top port of the valve and slip the exhaust hose over the end of the exhaust fitting. Refer to figures 1 and 6.
- The bottom port (after the valve has been mounted) is always connected to the air supply. Assemble the filter fitting to the valve. Then attach the air line to the fitting with the Delrin sleeve, brass insert and nut (if using plastic tubing for air lines) or with the brass sleeve and nut (if using copper tubing for air lines). Refer to figures 1 and 6.
- Insert the plastic locating pin (figure 1). This pin locks the control arm in the neutral position, simplifying installation and preventing inadvertent ride-height adjustment.

## ADJUSTING THE HEIGHT CONTROL VALVE

- Secure the vehicle. Chock the trailer wheels and release the trailer brakes.
- Before adjusting ride height, the trailer should be unloaded and placed on a flat, level work surface. The trailer should be parallel to the work surface and supported by the landing gear legs or coupled to a tractor.
- Pressurize the air system. Connect the trailer to a tractor or a compressed air supply with approximately the same pressure as the tractor's air system. Check the valve connections for leaks.
- When the air system is fully inflated, measure the suspension ride height. A suspension's ride

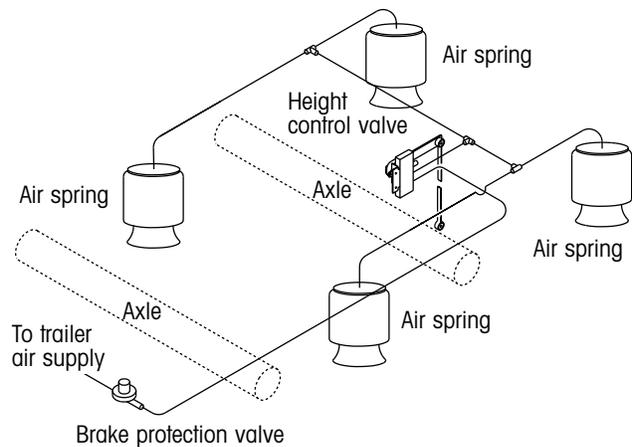


Figure 3. Overall view of a typical air suspension system

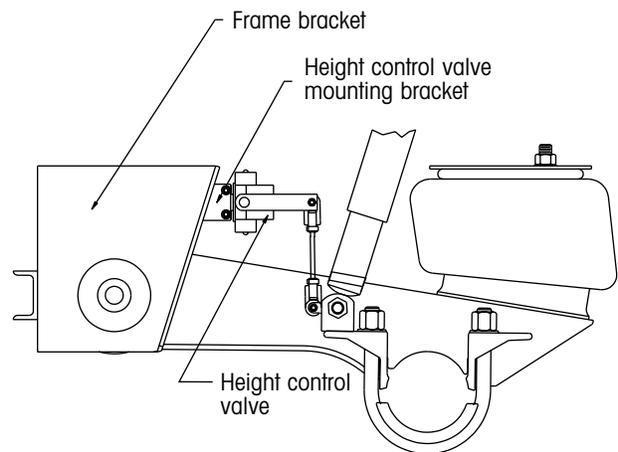


Figure 4. Installing the height control valve on HT suspensions

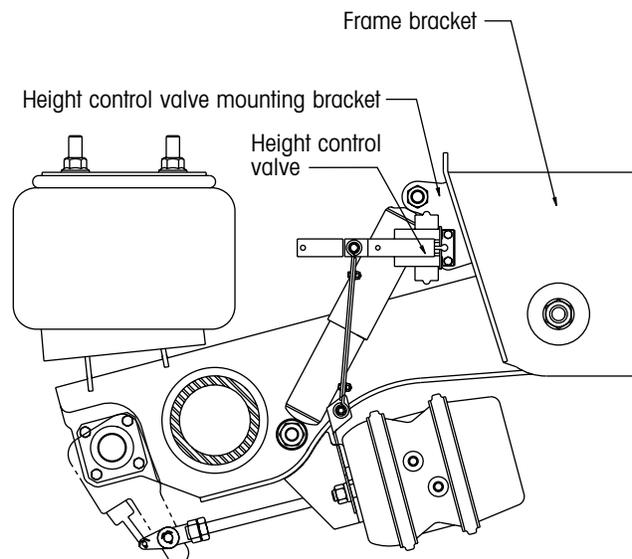


Figure 5. Installing the height control valve on INTRAAX suspensions



# HEIGHT CONTROL VALVE INSTALLATION PROCEDURE

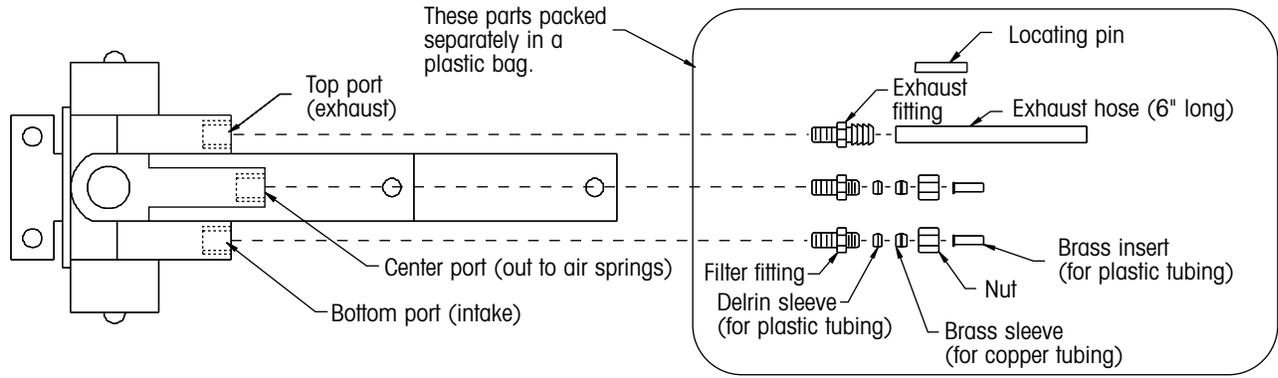


Figure 6. Proper installation of height control valve components

height is defined as the distance from the suspension mounting surface (the bottom of the trailer) to the center of the axle (see figure 7). There are two easy ways to measure ride height:

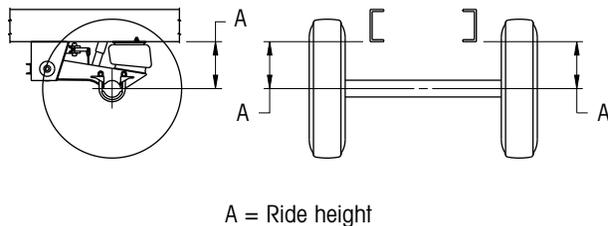
### Tape measure method

- Using a tape measure, measure the distance from the top of the axle to the mounting surface of the suspension.
- Add half of the axle diameter to this measurement to determine your suspension's ride height. For example, on a suspension with a five-inch axle, add 2½ inches to the measured distance.

### Ride Height Gauge method

- Using the Hendrickson Ride Height Gauge (figure 8), measure the distance between the axle and the mounting surface of the suspension.

For more information on the Hendrickson Ride Height Gauge, refer to Hendrickson publication



A = Ride height

Figure 7. Determining ride height

L638. To order a Ride Height Gauge, contact the Hendrickson customer service department at 866-RIDEAIR (866-743-3247) and specify part number A-23442 (for conventional, 13½- to 19-inch suspensions) or A-23445 (for low-ride, 6½- to 14-inch suspensions).

- Compare the measured ride height with the recommended or "designed" ride height (in other words, compare what you measured to what the ride height should be).

The recommended or "designed" ride heights for all current Hendrickson trailer suspensions can be found in publication L388, *Ride Height Settings* (available at [www.hendrickson-intl.com](http://www.hendrickson-intl.com)), or on the suspension identification tag. If you cannot determine the designed ride height from the information on the identification tag, contact the Hendrickson technical service department at 800-455-0043 in the United States or 800-668-5360 in Canada. They will

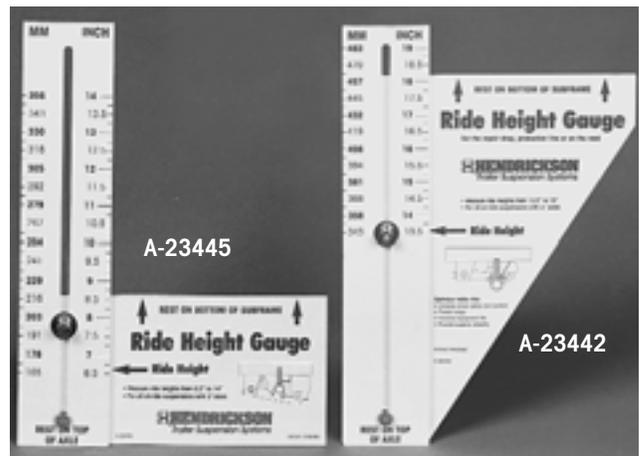


Figure 8. Hendrickson Ride Height Gauges

help you determine your suspension's designed ride height.

6. If necessary, adjust the ride height. The measured ride height must match the designed ride height.

**If measured ride height is too low** - Remove the plastic locating pin and push the control arm up to raise the ride height (add air to the air springs).

**If measured ride height is too high** - Remove the plastic locating pin and push the control arm down to lower the ride height (exhaust air from the air springs).

**IMPORTANT:** A minimum of 80 psi air pressure must be available to open the brake protection valve and allow air flow to the height control valve. A delay of five to 10 seconds may occur before the height control valve allows air flow to or from the air springs.

7. When the suspension is at the designed ride height, reinsert the plastic locating pin into the adjusting block and bracket on the height control valve. This will lock the control arm in the neutral position, preventing inadvertent ride-height adjustments when attaching the linkage in the next step.

8. Attach the height control valve linkage. Fasten one end of the linkage to the height control valve control arm and the other end to the suspension beam. Tighten the 1/4-inch locking nut onto the 5/16-inch shoulder bolt until snug. Ensure that the links rotate freely and do not bind. Two types of linkage are available (figure 9):

- a. **Bolted linkage** — Trim (if necessary) and bolt the two linkage halves together at the appropriate length to hold the height control valve arm in the neutral position when the suspension is at the designed ride height.

- b. **Clamped linkage** — If necessary, loosen one clamp, remove the rod from the link end and trim the rod to the appropriate length to hold the height control valve arm in the neutral position when the suspension is at the designed ride height. Insert the rod back into the link end and tighten both link end clamps.

9. Remove the plastic locating pin.

10. If minor adjustment is necessary, loosen the 1/4-inch lock nut on the control arm. This allows the control arm to be adjusted  $\pm 1$  inch. Re-tighten the 1/4-inch lock nut to a torque of 24 to 48 in. lbs. (3 to 6 N•m).

**IMPORTANT:** Ride height should be equal from side to side (figure 7) with the axle parallel to the trailer frame and the suspension beams parallel to each other.

11. Verify ride height by remeasuring it. When returning the height control valve to the center position, wait for the air to stop flowing through the valve before checking ride height. Use one of the approved methods presented in step four.

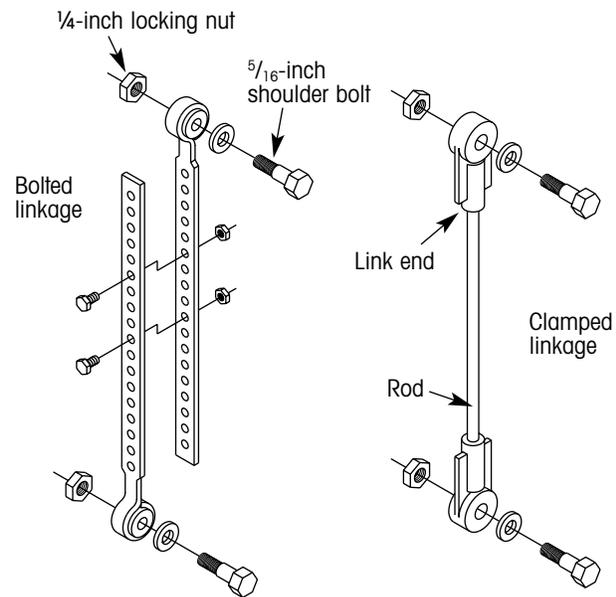


Figure 9. Types of height control valve linkage