

TECHNICAL BULLETIN

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TRUCK AND TRAILER AIR SUSPENSIONS SUBJECT

HEIGHT CONTROL VALVE INSTALLATION INSTRUCTIONS

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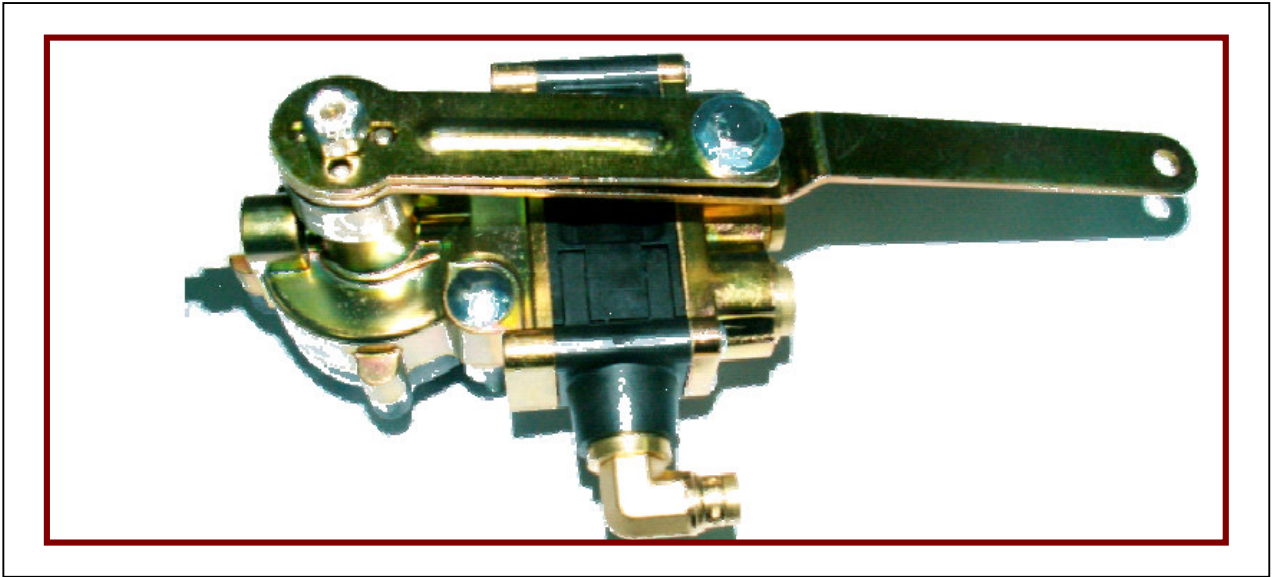


Figure 1. - (Imperial Valve Shown)

As part of our continuous product improvement program, Hendrickson wish to advise that a new height control valve (HCV) has been introduced. The HCV can be used for left hand or right hand and short or long control arm applications. An integrated dump valve feature with a push to connect fitting is included in the valve that simplifies air plumbing and eliminates the need for additional components. This valve is available from your Authorised Hendrickson Parts outlet in two configurations. There is a metric version with 12mm ports (Part Number 98606-059) and an imperial version with 3/8" ports (Part Number 98606-060). In most Hendrickson truck air suspension applications, this valve should be interchangeable. Refer figure 1.

Note the date of this publication. Hendrickson Asia Pacific periodically revises and updates all of its publications. If this copy is more than two years old, contact Hendrickson to determine if a later revision is available.

WARNINGS:-

HENDRICKSON REMINDS USERS TO ADHERE TO PUBLISHED CAPACITY RATINGS FOR THE SUSPENSIONS. ADD-ON AXLE ATTACHEMENTS, LIFTABLE AUXILIARY AXLES AND OTHER LOAD TRANSFERRING DEVICES CAN INCREASE THE SUSPENSION LOAD ABOVE THE RATED AND APPROVED CAPACITIES WHICH COULD RESULT IN FAILURE AND LOSS OF VEHICLE CONTROL, POSSIBLY CAUSING PERSONAL INJURY AND/OR PROPERTY DAMAGE.

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ALTERING HENDRICKSON SPECIFICATIONS AND SETTINGS ON THE PNEUMATIC SYSTEM MAY VOID WARRANTY, LOSS OF VEHICLE CONTROL, AND/OR POSSIBLE PERSONAL INJURY AND/OR PROPERTY DAMAGE.

PNEUMATIC CONTROL SYSTEM:-

The air system's primary function is to regulate the vehicles ride height. The system outlined in this bulletin operates from the vehicle's compressed air supply. A protection valve which prevents the loss of air pressure to the vehicles brake system should be installed. It is highly recommended a high quality filter is installed between the protection valve and the HCV. The HCV automatically responds to the relative position of the axle and vehicles frame. It also meters air into or out of the air springs (air bags). Variations of load and temperature can affect the adding or exhausting of air within air springs. Hendrickson recommends the HCV to be positioned on the front axle in tandem arrangements and the centre axle on tri-axle arrangements.

When the actuating lever or control arm of the HCV moves vertically upwards, the valve opens and supplies air to the air springs. When the actuating lever moves down, the valves exhaust port opens to vent air from the air springs. The vehicle is at the preset ride height and no airflow occurs when the control arm is in the horizontal position.

Hendrickson generally recommends one height control valve per suspension group; however, there are configurations or suspension models where multiple valves may be required. Plumbing diagrams are available for all suspension models. Contact Hendrickson or vehicle manufacturer for individual requirements prior to installing dual HCVs and/or any other modifications to the pneumatic control system.

Be sure to provide the suspension bill of material number obtained off the decal located near the tire placard in the vehicle door cavity to correctly determine the plumbing diagram required.

The air dump (exhaust) valve increases the vehicles stability during loading and unloading. When the air suspension is exhausted, the suspension is supported by the bump stopes to adequately support the suspension and limit the suspensions vertical travel (jounce). The dumping of air is approved in the following situations:-

- In coupling and uncoupling of trailers.
- A vehicle parked for a length of time.
- A vehicle during loading or unloading (eg. tipper).
- A vehicle experiencing a sudden off loading of cargo (eg. container).

REMOVAL OF OLD HCV:-

1). If a HCV is to be replaced, it is recommended to replace the HCV when the vehicle is not loaded.

2). Free and centre all suspension joints by slowly moving vehicle back and forth several times without using the brakes. When coming to a complete stop make sure the brakes are released. Chock the front wheels.

3). Measure and note the ride height of the vehicle (measured from the centre of the axle to underside of the chassis).

- The ride height is to be measured on the forward drive axle of the tandem suspension group regardless of where the HCV has been mounted.
- The ride height is to be measured on the centre drive axle of a tri-axle suspension group regardless of where the HCV has been mounted.

Alternatively, contact the vehicle manufacturer to obtain the vehicles recommended ride height.

4). If vehicle has liftable auxiliary axles installed ensure they are properly supported or have been lowered.

5). Disconnect and remove the link rod assembly.

6). Lower the HCV control arm below horizontal and purge or exhaust the air in the vehicles suspension system.

7). Disconnect all lines from the old valve. Remove the old valve.

INSTALLATION OF NEW HCV:-

1). The new HCV can be installed in a vertical or horizontal position with the control arm in either left or right hand position (refer figure 2). Determine the HCV control arm position and orientation on the vehicle. Fasten the control arm to the valve body making sure the alignment identifier dimple on the cap is in the proper position for your valve orientation. Use the nyloc nut provided and tightened to 20in. lbs. Refer figure 3.

Important Note:- If the incorrect orientation is set, the HCV **WILL NOT** function correctly.

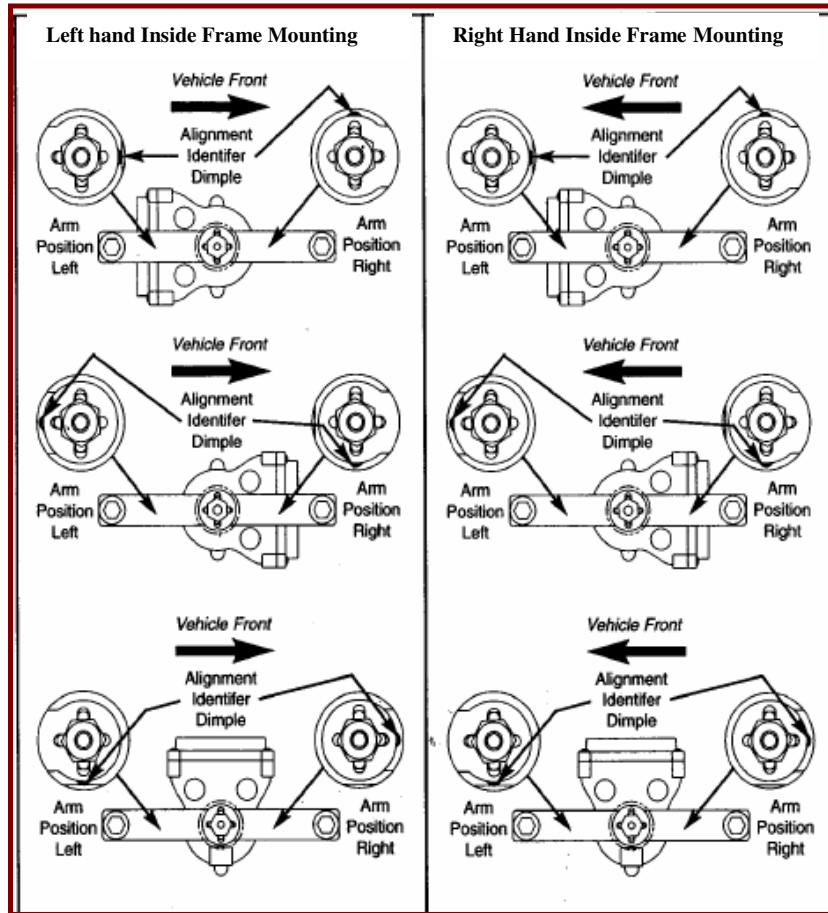


Figure 2. – HCV Control Arm Orientation

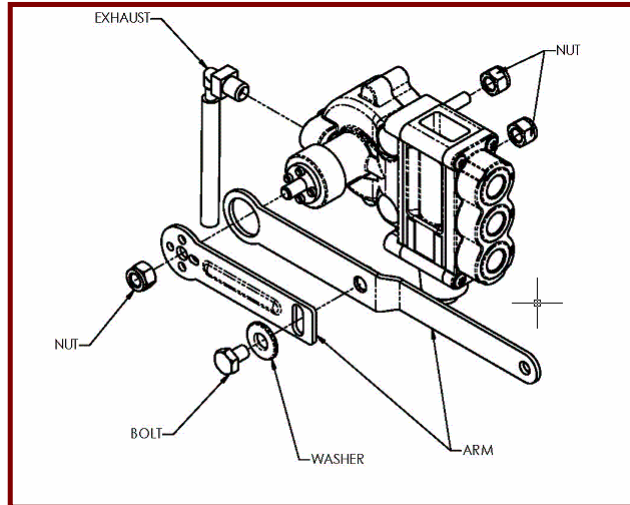


Figure 3. – HCV Control Arm Orientation

- 2). Rotate the control arm fully 3-5 times in both clockwise and anticlockwise directions to remove any adverse effects of storage.
- 3). Check that the link rod to be used fits the HCV arm-mounting hole. Enlarge hole in control arm if required.
- 4). For the metric HCV, if possible, install the air fittings to the valve prior to mounting to the vehicle. It is recommended that air fittings with pre-applied sealing compound be used. If not available, use a small drop of oil or threadlocker. Use small amounts of sealant on threads only. DO NOT use Teflon tape or pipe sealing compound. The imperial HCV already has push to connect fittings included.
- 5). Assemble the new HCV to the mounting bracket with the nuts provided (Torque to 4-8 ft.lbs.).
- 6). Assemble the exhaust fitting and exhaust tube to the HCV. The exhaust tube should point in a downward direction.
- 7). Mount the HCV to the vehicle. The HCV should be mounted as close to level as possible. If necessary, replace any worn or bent hardware (ie. mounting brackets, nuts, bolts, linkage, etc.).
- 8). A). Connect air line from air spring to “DEL” ports on HCV. Refer figure 4. The HCV has two air spring ports. If only one port is to be used the other port must be plugged.
 B). Connect the air supply from the tank to the “SUP” port on the HCV.
 C). Charge the air supply system.
- 9). Confirm the control arm is properly install by raising the control arm approximately 20deg. above horizontal. Air pressure should inflate the air springs. If the air spring do not inflate:-
 A). Verify the air supply pressure is sufficient to open the pressure protection valve. (> 80psi.).
 B). Recheck the airline for proper port connections or the airline have not become blocked or sharp bends are present.
 C). Check the dump switch has not been activated.

D). Determine the control arm and alignment identifier dimple on the cap is in the correct orientation. Refer figure 2.

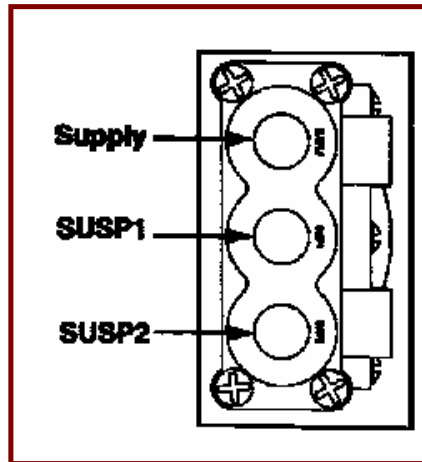


Figure 4 HCV Ports

If the HCV correctly inflates the air springs, rotate the control arm downwards approximately 20deg. below horizontal. Verify that air is flowing through the exhaust port of the HCV and that the air springs are deflating.

10). Bring the suspension to the vehicle manufacturers designed ride height, or as measured prior to commencing removal of the HCV. As mentioned previously in this bulletin, the ride height is measured from the centre of the axle to underside of the chassis.

- The ride height is to be measured on the forward drive axle of the tandem suspension group regardless of where the HCV has been mounted.
- The ride height is to be measured on the centre drive axle of a tri-axle suspension group regardless of where the HCV has been mounted.

11). Assemble the link rod to the suspension and the HCV.

12). Verify the vehicle is at correct ride with the link rod installed. Adjust the link rod assembly to obtain correct vehicle in ride height. Fine adjustments of the ride height can be made by loosening the bolt on the control arm (located half way from pivot to link rod), setting the desired height and retightening the bolt.

13). Spray all air connections and fittings for leaks (with soapy water) and verify all air fittings and fasteners are tight and no leaks are present.

14). Articulate the suspension through the vehicles entire suspension movement and ensure adequate component clearances have been provided. Pay special attention that the control arm cannot rotate past vertical during suspension movement. If control arm can rotate past vertical, the HCV position will need to be relocated.

15). HCVs will often continue to exhaust air for several minutes after a vehicle has stopped. This is a normal operating function of the HCV as the vehicle stabilises, hence, does not indicate a HCV needs to be replaced.