

# **TECHNICAL BULLETIN**

## **TRUCK HEIGHT CONTROL VALVE INSTALLATION & SETTING**

LIT NO: 49441-311

DATE: February 2025

REVISION: 04

### **INTRODUCTION**

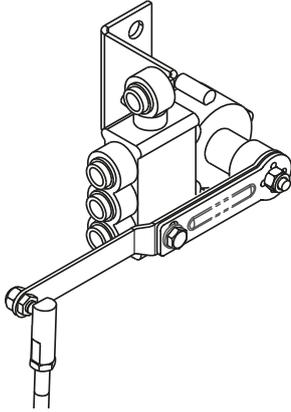


Figure 1: Hendrickson Truck Height Control Valve

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.

### **SAFETY WARNINGS**

Do not modify or rework parts other than outlined in this publication. Do not use substitute parts. Use of modified or substitute part(s) is not recommended as the part may not meet Hendrickson specifications, and could result in failure of the part, loss of vehicle control, and/or possible personal injury and/or property damage.

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.

### **MOUNTING RECOMMENDATIONS**

- **TANDEM** – Mount on the forward drive axle of the suspension group.
- **TRIAXLE** – Mount on the centre drive axle of the suspension group.

### **DUAL HCV NOTES**

If using dual height control valves, both must be the same design, be mounted in the same relative position and location on either side of the same axle.

**SERVICE HINT:** When inspecting or setting ride height on a lightly loaded vehicle with dual HCV, such as a bobtail tractor, equipped with dual height control valves, it is recommended to add a load. Loading the dual HCV vehicle to its normal operating condition, such with a loaded trailer, increases ride height setting accuracy.

### **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. Hendrickson recommends the HCV to be positioned on the front axle in tandem arrangements and the centre axle on triaxle arrangements. Refer to "[Plumbing Examples](#)" on page 6.

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 pre-set 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. Contact Hendrickson or vehicle manufacturer for individual requirements prior to installing dual height control valves 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 tyre placard in the vehicle door cavity to correctly determine the plumbing diagram required.



## HCV REMOVAL

1. Ensure vehicle is unloaded and parked on a stable level surface.
2. If vehicle has liftable auxiliary axles installed ensure they are properly supported or have been lowered.
3. 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.

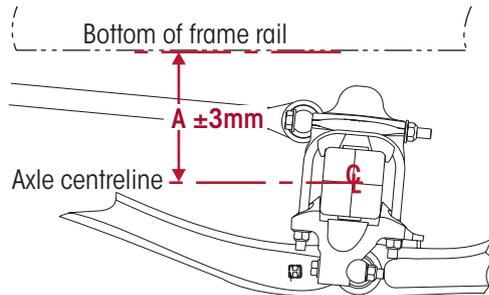


Figure 2: Ride Height Measurement (within  $\pm 3$  mm)

4. Find the vehicle manufacturer's ride height specification. This can be obtained from the vehicle manufacturer, vehicle handbook or suspension label. If these are unavailable, current vehicle ride height may be used as a reference. Ride height is measured from the underside of the chassis frame rail to the centre of the axle that has the height control valve attached. Check the height at each HCV location if equipped with dual height control valves. Refer Figure 2 and also to "Simple Ride Height Check" on page 5.

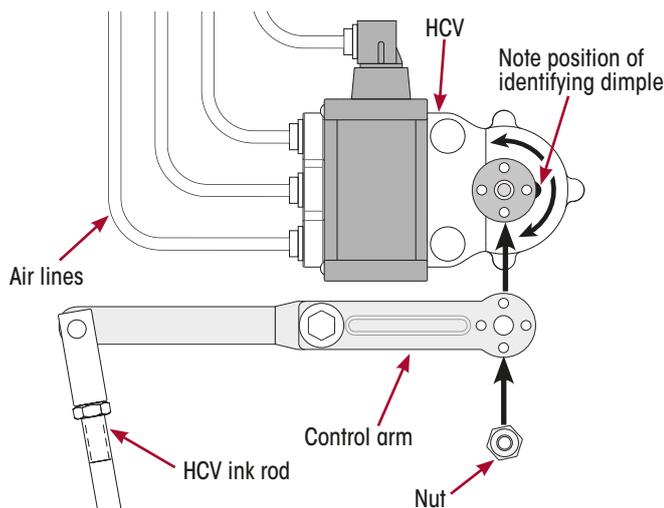


Figure 3: Note Component Location & Orientation

5. Find and carefully note the orientation and position of the HCV, air lines, arm and the identifying dimple on the HCV shaft. Photos taken with a mobile phone may be used as a handy reference. Refer Figure 3.

6. Disconnect and remove the link rod assembly.
7. Lower the HCV control arm below horizontal and exhaust any air in the suspension system.
8. Disconnect all lines from the valve and remove.

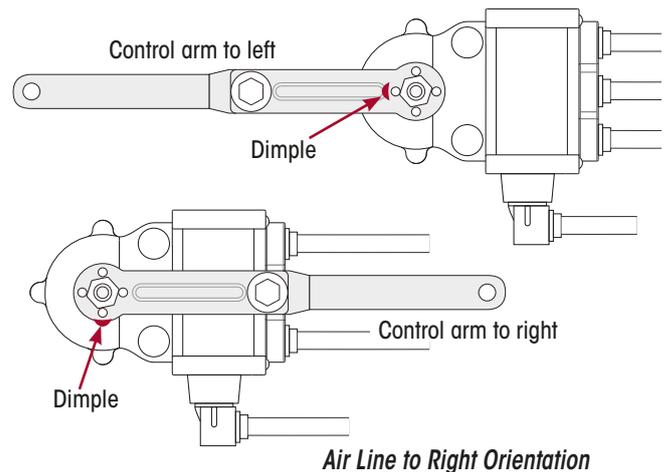
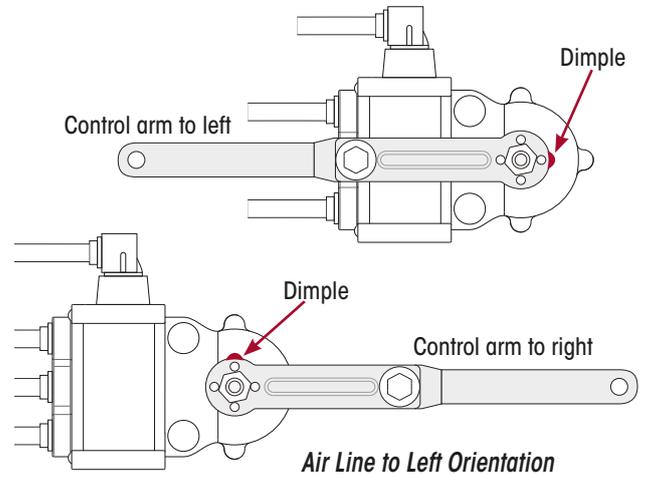


Figure 4: Valve & Arm Orientation with Identifying Dimple

## HCV INSTALLATION

**IMPORTANT:** The HCV will not function correctly if the orientation is set incorrectly.

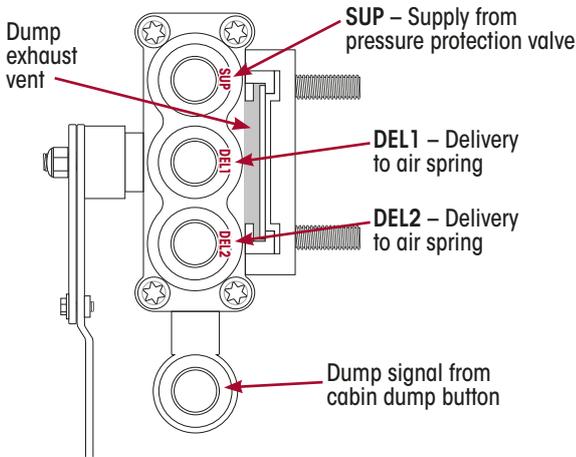


Figure 5: HCV Air Line Connections & Dump Vent

1. Refer to manufacturer's instructions or to the notes made before removing the previous HCV. The HCV may be installed in a vertical or horizontal position with the control arm in either left- or right-hand position. Determine the correct HCV dimple, control arm position and orientation for the vehicle. Refer [Figure 4](#).
2. Fasten the control arm to the valve body making sure the alignment identifier dimple on the cap is in the proper position for the valve orientation. Apply a thread locking compound to the shaft thread and tighten the Nyloc nut to 3 Nm (27 in. lbs.). Refer [Figure 4](#).
3. Rotate the control arm fully 3-5 times in both clockwise and anticlockwise directions to remove any adverse effects of storage.
4. For the metric HCV, if possible, install the air fittings to the valve prior to mounting to the vehicle. It is recommended that new air fittings with pre-applied sealing compound be used. If not available, use a small drop of oil or thread sealant compound. Use small amounts of sealant on threads only. Do not use Teflon tape or pipe sealing compound. The imperial HCV includes integral push to connect fittings.
5. Check that the link rod fits into the HCV arm-mounting hole. Enlarge hole in control arm if required.
6. If the kit includes an adjustable arm, assemble the arm in the centre position and torque adjustment bolt to 3 Nm (27 in. lbs.).
7. Assemble the HCV to the mounting bracket with the nuts provided. Torque to 10 Nm (88 in. lbs.).

8. 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 such as mounting brackets, nuts, bolts or linkage.
9. Connect air lines.
  - A). Connect the air supply from the tank to the HCV "SUP" supply port.
  - B). The HCV has two delivery ports to the suspension air springs. Connect an air spring air line to either HCV "DEL1" or "DEL2" delivery port. Refer [Figure 5](#). If only one delivery port is to be used the other port must be plugged.
10. Charge the air supply system.

**⚠ CAUTION:** Do not over inflate air springs once full suspension extension has been reached. Damage to shock absorbers, air springs or even personal injury may occur.

11. Assess HCV operation and installation by moving the control arm up to around 20 degrees above horizontal. Air pressure should begin inflating the air springs. Take care to ensure air springs are not over inflated.
12. Check the following items if the air springs do not inflate:
  - Air supply pressure is over 550 kPa (80 psi.) and sufficient to open the pressure protection valve.
  - Air lines are connected to the correct HCV port positions. Also check air lines are not blocked or kinked.
  - The dump switch has not been activated.
  - Confirm control arm and alignment dimple are in their correct positions. Refer [Figure 4](#).

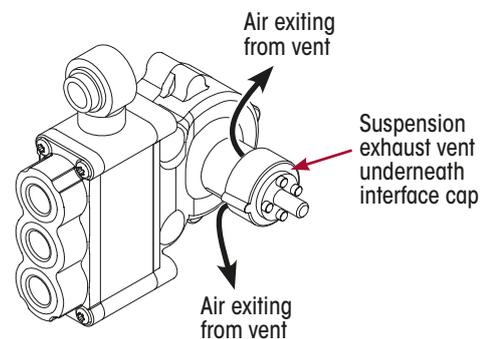


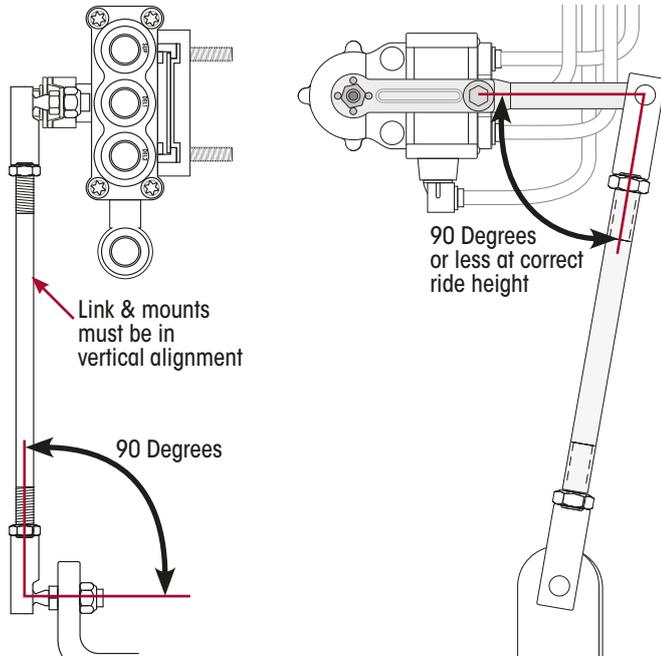
Figure 6: Suspension Exhaust Vent Under Interface Cap

13. Rotate control arm downwards to around 20 degrees below horizontal. The air spring should now begin deflating through the HCV exhaust port, which is underneath the interface cap. Refer [Figure 6](#). This is



different from the dump air vent, which is under a cover on the rear of the valve. Refer [Figure 5](#).

14. Use the height control valve to move the suspension to correct ride height.
15. Check that the link is the right length by fitting it into the mounting holes top and bottom. Adjust rod length if necessary.



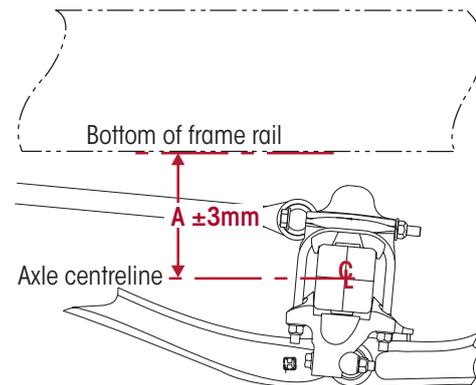
**Figure 7: Check Link Mounting and Alignment**

16. Check the linkage for interference and installed angle at ride height. Refer [Figure 7](#).
17. Especially if this is a new installation, it is important check linkage movement at full extension. With the link attached to the HCV arm but not at the bottom, move the arm up to fully inflate air springs. Connect the arm at the bottom. Check 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.
18. With link attached, allow HCV to bring vehicle down to ride height.
19. Check and adjust vehicle ride height if necessary.

## CHECKING RIDE HEIGHT

1. If not already done, prepare vehicle by driving onto a level surface, free suspension joints and chock the front wheels without setting parking brake.
2. When checking or adjusting ride height, verify and maintain the vehicle's air system at full operating pressure.

**SERVICE HINT:** The most accurate way to measure ride height is by dropping it down and allowing it to rise to the set height.



**Figure 8: Ride Height Measurement (within  $\pm 3$  mm)**

3. Check correct ride height setting by disconnecting the rod, at ride height, and lowering the arm for about 15 seconds to lower the suspension. Reconnect rod and measure ride height once the ride height has stabilised.

**NOTICE:** Ride height is measured from the underside of the chassis frame rail to the centre of the axle that has the height control valve attached. Refer to [Figure 8](#) and to "Simple Ride Height Check" on page 5. Check the height at each HCV location if equipped with dual height control valves.

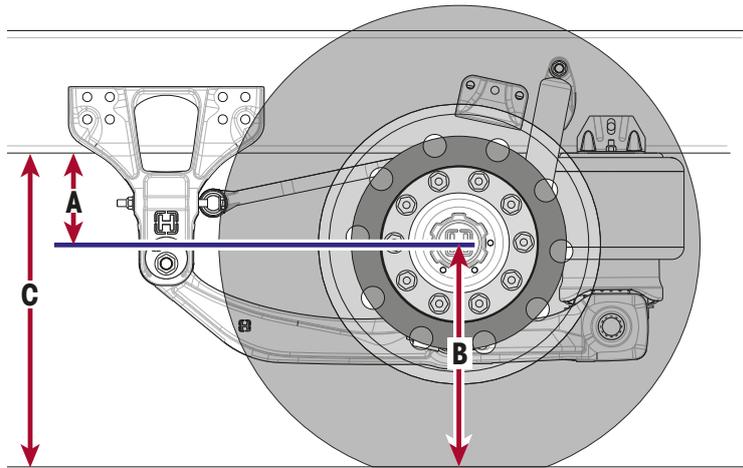
4. If fitted with an adjustable lever, use this for fine adjustments. Otherwise, adjust the link rod assembly to obtain correct vehicle in ride height. Loosen rod lock nuts and turn the rod to either lengthen or shorten the rod.
5. Disconnect rod to lower suspension for 15 seconds before reconnecting and allowing suspension to stabilise. Repeat measurement and adjustment procedure until the correct ride height has been reached. If dual HCV, repeat adjustment process for both height control valves.
6. Once the correct ride height is confirmed, ensure lever fine adjustment bolt is tightened to 3 Nm, the link rod nuts to 10 Nm and the rod locknuts are tightened to 10 Nm. Refer [Figure 10](#).

### SIMPLE RIDE HEIGHT CHECK

It is not always easy to determine the centre of the axle when measuring ride height, which is measured from the centre of the axle that has the height control valve. An alternative way of checking the height on a vehicle is by measuring the distance of the axle centreline above floor level, and then subtracting that from the height of the underside of the chassis frame rail above the floor.

First ensure that the tyre pressures are even and correct. Then measure and record the height of the hubcap centre above the floor (**B**). Subtract this distance from the height of the underside of the chassis frame rail above the floor (**C**) to find the ride height (**A**).

$$C - B = \text{Ride Height } A$$

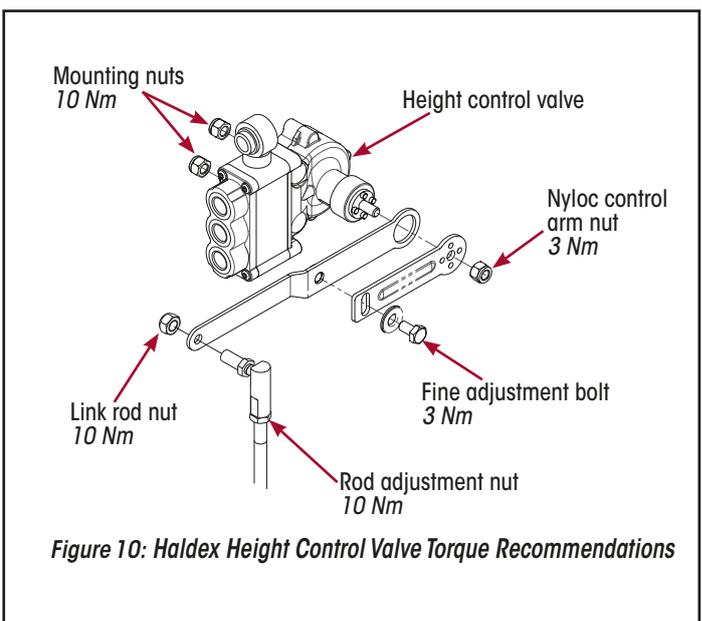


**Figure 9: Simple Ride Height Check**

For example, a truck may have a centre of hubcap to floor measurement (**B**) of 500 mm and underside of the chassis frame rail to floor (**C**) of 754 mm. 754 minus 500 corresponds to a ride height (**A**) of 254 mm.

7. Spray all air connections and fittings for leaks with a suitable foaming agent and verify all air fittings and fasteners are tight and no leaks are present.

**IMPORTANT:** Height control valves will often continue to exhaust air from the exhaust, located under the interface cap, 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 an HCV is leaking or faulty. Refer [Figure 6](#).

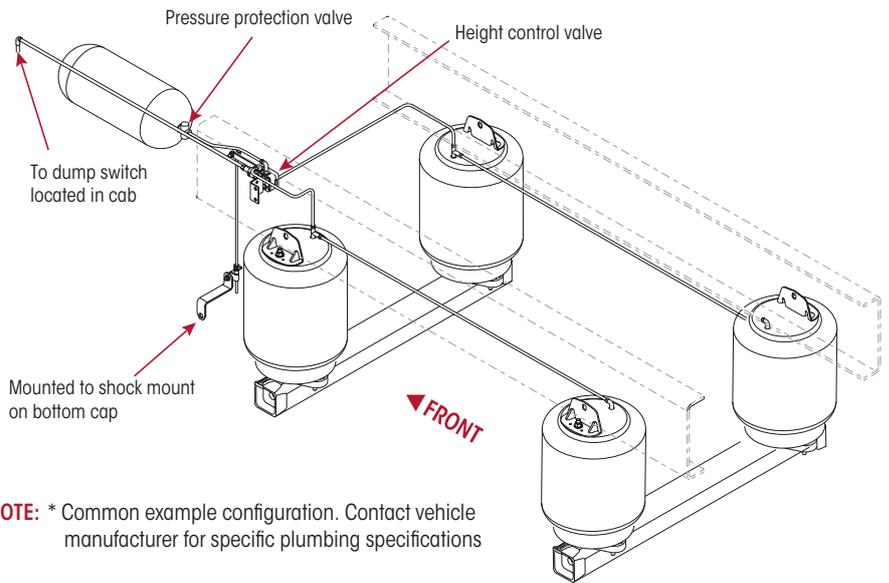
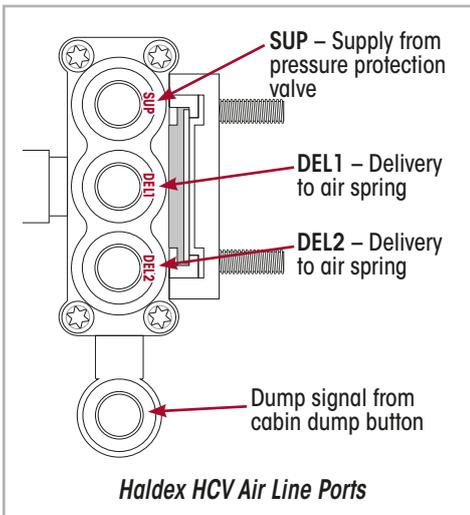


**Figure 10: Haldex Height Control Valve Torque Recommendations**



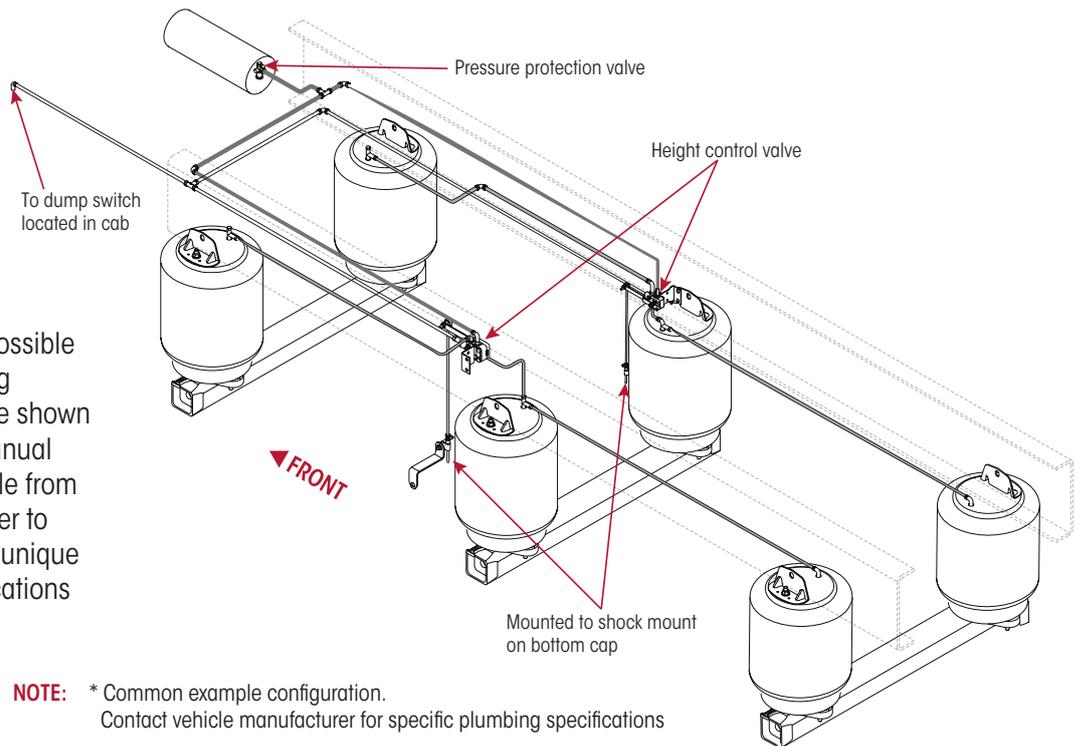
PLUMBING EXAMPLES

Tandem – Single Height Control Valve\* Example



**NOTE:** \* Common example configuration. Contact vehicle manufacturer for specific plumbing specifications

Triaxle – Dual Height Control Valve\* Example



**NOTE:** Shown here are two possible height control valve plumbing examples. More examples are shown in PRIMAAAX maintenance manual 97117-212, which is available from the [Hendrickson](http://Hendrickson.com) website. Refer to the vehicle manufacturer for unique plumbing layout and specifications for each vehicle.

**NOTE:** \* Common example configuration. Contact vehicle manufacturer for specific plumbing specifications

Revisions Table

| DATE     | REV | PAGE | DESCRIPTION   |
|----------|-----|------|---|
| Sep-2023 | 03  | 2, 5 | Expand Figure 3 to clarify components. Correct example numbers. |
| Feb-2025 | 04  | 5    | Amend fastener torque for consistency.                          |

*Actual product performance may vary depending upon vehicle configuration, operation, service and other factors. All applications must comply with applicable Hendrickson specifications and must be approved by the respective vehicle manufacturer with the vehicle in its original, as-built configuration. Contact Hendrickson for additional details regarding specifications, applications, capacities, and operation, service and maintenance instructions.*

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