



## TECHNICAL BULLETIN

### 1-800-237-0022

**Stock No. L20 - AIR SENSOR, SINGLE PORT - 1 PER HEIGHT CONTROL VALVE**

**Stock No. L21 - AIR SENSOR, DUAL PORT - 1 PER 2 HEIGHT CONTROL VALVES**

**Stock No. L40 – VSL AIR SENSOR, SINGLE PORT - 1 PER HEIGHT CONTROL VALVE**

#### CONCEPT:

The air sensor is designed to provide an accurate measure of payload, by measuring air pressure in the vehicle suspension. The sensor can be used in conjunction with our load cells to provide complete weight information where air and spring suspensions are used together. The L20 (Figure 136-A) and the L40 (Figure 136-C) air sensors are used for single height control valve suspensions. The L21 (Figure 136-B) is used for a two height control valve suspension. Refer to Figure 136-A and 136-B for product differences.

#### APPLICATION:

The Vulcan Air Sensor is designed to measure a suspension pressure up to 120 psi. The sensor converts a change in the suspension air pressure into corresponding changes in weight as displayed by the Vulcan meter. The pressure sensor is fabricated from high-strength stainless steel and contains a 3/8-18 NPT internal pressure port. A standard 3/8-18 FNPT brass fitting is recommended for each port. Each air sensor is equipped with the same reliable military type, electrical connector used on all Vulcan products.

**Note:** For the scale system to function properly, a height control valve with a +/- 1.5 degree or less dead band **must** be used. A Hadley Products valve, Part # H00500C meets this requirement and is included with each Vulcan Air Scale System, and may be purchased separately from an authorized Vulcan dealer under part # 49-10116-001.

#### SPECIFICATIONS:

- **CAPACITY:** Maximum air pressure of 120 psi.
- **SAFE OVERLOAD:** 300%
- **ACCURACY:** Typical Air Sensor accuracy error less than .5% of full scale air pressure. System accuracy dependent on height control valve type, suspension type, and environmental factors.
- **MATERIAL:** Heat treated stainless steel sensor enclosed in a rugged corrosion resistant housing.



## TECHNICAL BULLETIN

1-800-237-0022

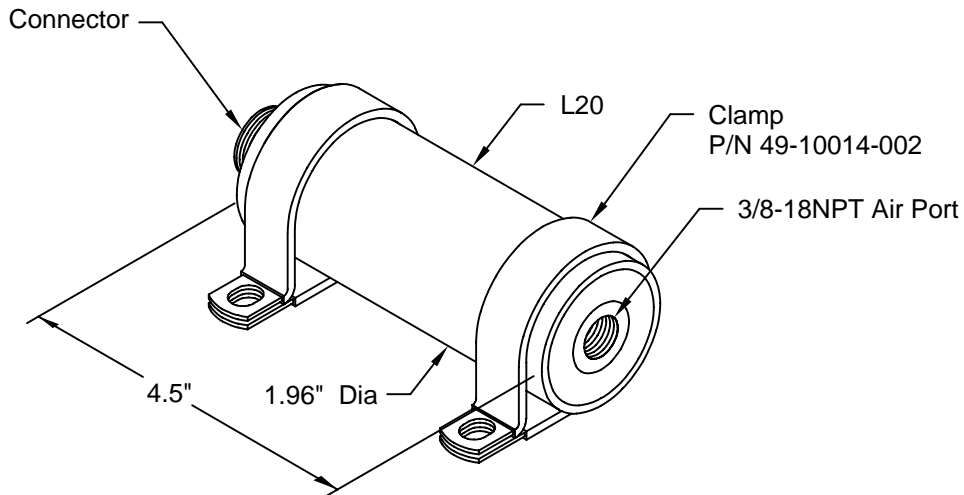


Figure 136-A: Single Port

The L20 single port and L21 dual port air sensors are sensors only. These sensors must be connected to an external VSL or V200 Vulcoder to provide an integrated weighing system.

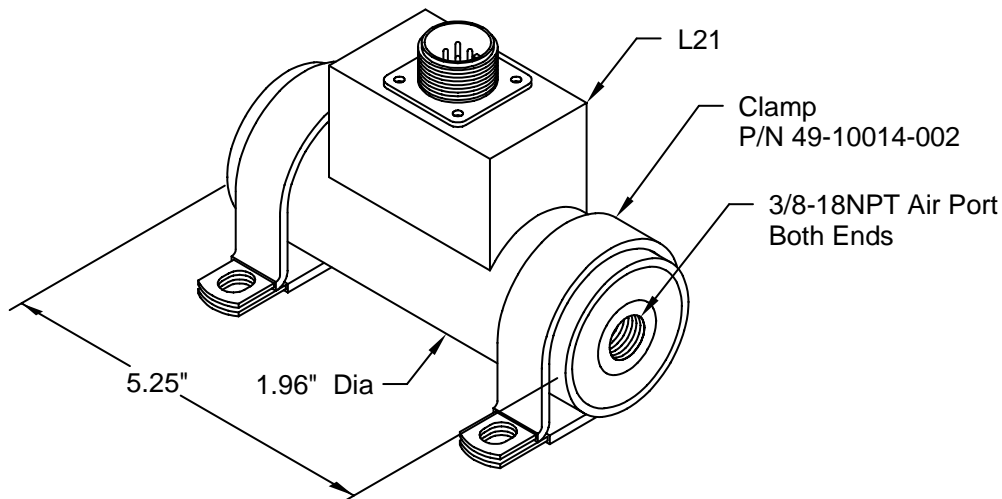


Figure 136-B: Dual Port

TECHNICAL BULLETIN  
1-800-237-0022

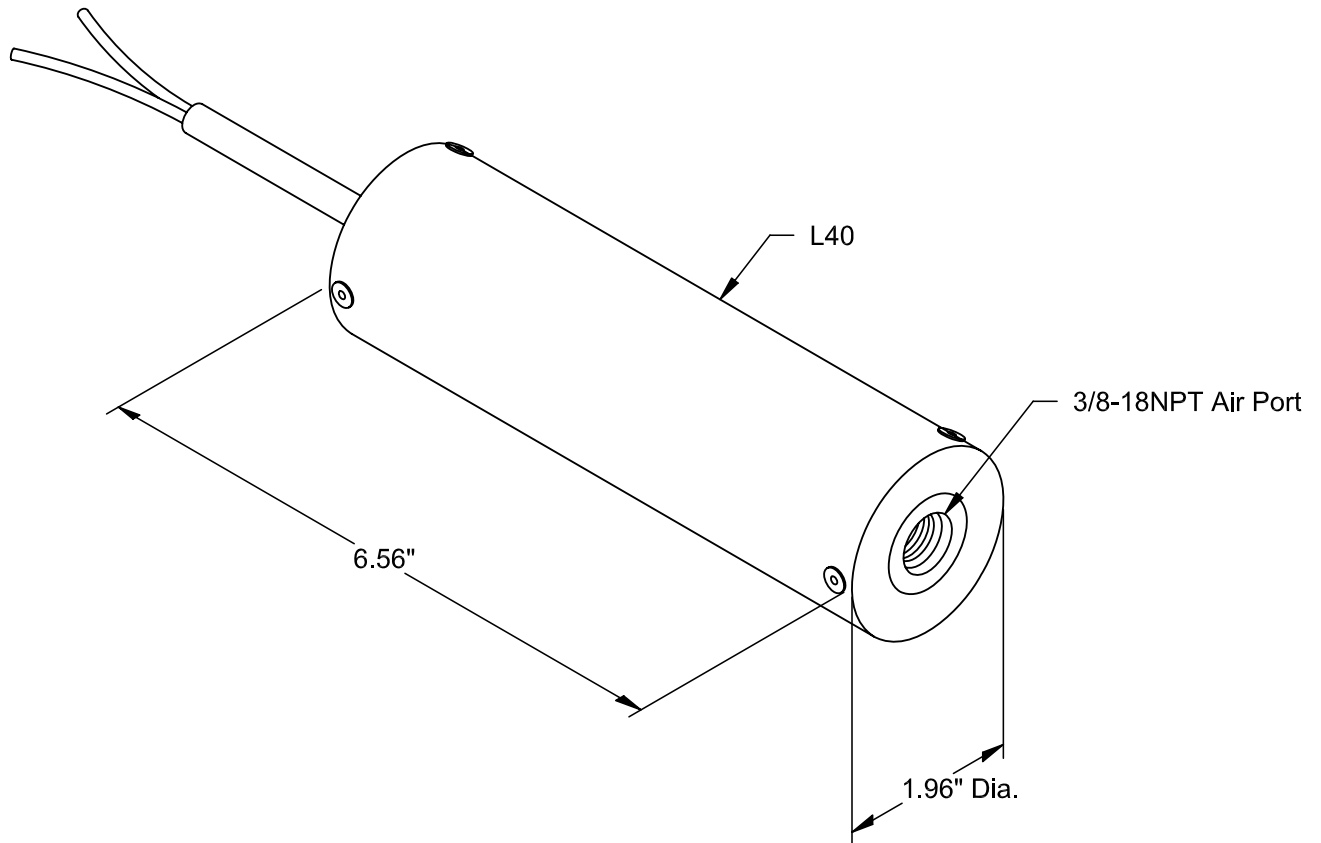


Figure 136-C: VSL Single Port

The L40 single port air sensor is an air sensor packaged together with a VSL Vulcoder. No external VSL Vulcoder is required. The provided orange cable connects directly to the VSL line coming from the meter. This product **is not** compatible with V200 electronics.



## TECHNICAL BULLETIN

### 1-800-237-0022

#### INSTALLATION OF HEIGHT CONTROL VALVE:

1. Locate the height control valve(s) and how many are used in the suspension.
2. See Hadley Installation Instructions supplied with each Hadley Height Control Valve.

**Note:** When replacing the following height control valves:

Freightliner / Wabco Valve  
Kenworth / Neway part # 905 54 241  
Navistar / Midland Grau - use after 1990 model  
Ridewell - all valve models

Hadley Products rubber ended linkage part # HPB 450-3 must be used to properly connect the height control valve and the axle mount. This part may also be purchased separately from an authorized Vulcan dealer under part # 49-10122-001.

#### INSTALLATION OF AIR SENSOR:

1. Mount air sensor on inside of truck frame rail or next to another structural member. Mounting surface must be in a protected area so air sensor is not damaged by road debris.
2. Secure the Vulcan Air Sensor, L20 and L21, to mounting location using the two clamps provided. Make sure each end of the sensor tube is securely fastened.

The Vulcan Air Sensor, L40, is designed to be strapped to the wiring bundle running down the truck frame. Secure the air sensor with large tie wraps to the wiring bundle.

3. Exhaust all air from the air suspension system.
4. Locate the air line that connects the height control valve to the air suspension bags.
5. The Vulcan Air Sensor must be installed on the air line between the height control valve and the air suspension bags, see Figure 136-D. Install hardware and fittings as required. Make sure additional air line is secured to frame.
6. Ensure that all fittings and clamps are securely fastened. Use pipe thread tape on all fitting threads.
7. Pressurize the air suspension and check for leaks.



## TECHNICAL BULLETIN

1-800-237-0022

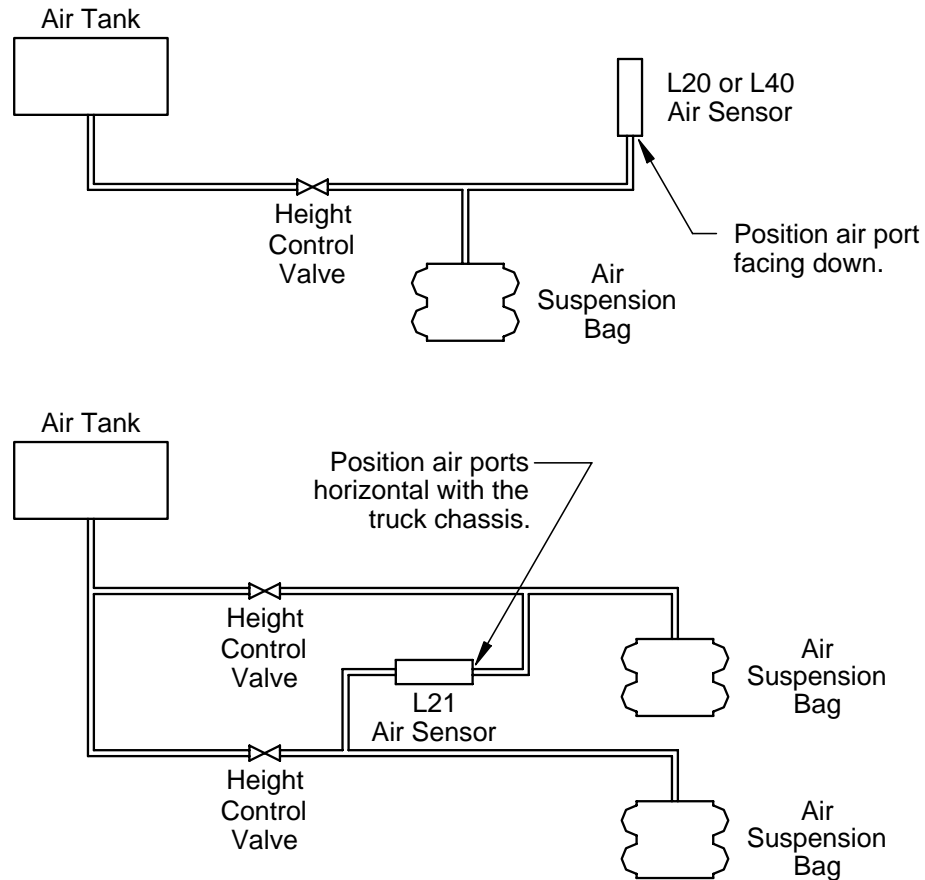


Figure 136-D

### INSTALLATION OF ELECTRONICS:

For additional electronic installation procedures and system operational procedures, see the *"Vulcan Operation and Maintenance Manual"* for the V200 electronics system, or see the *"Owner's Manual"* for the V300, V500 or V600 electronics systems.



## TECHNICAL BULLETIN

1-800-237-0022

# AIR SENSOR APPLICATION CAUTION

**PROBLEM:** The air sensors are designed to sense air pressure changes in truck or trailer air suspensions. When the suspension is regulated by the special Vulcan height control valve, the air pressure corresponds very closely with vehicle weight. There are some truck and trailer designs where the amount of air pressure may not correspond as well with weight. These suspensions are the "**slip spring and torque arm type suspension**", see Figure 136-E.

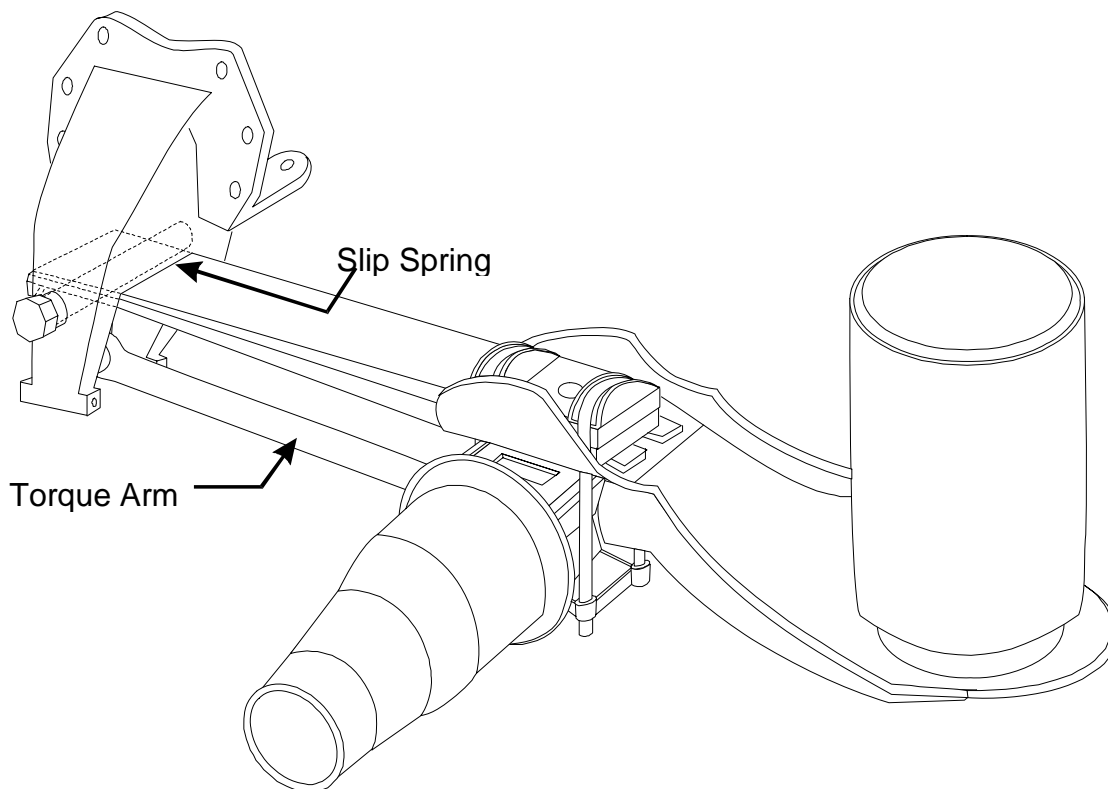


Figure 136-E: Typical slip spring and torque arm air suspension



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## TECHNICAL BULLETIN

### 1-800-237-0022

This "**slip spring and torque arm**" design allows the spring connected to the air bag to move while the torque arm keeps the axle in alignment. When there is movement in this component, the amount of air pressure that corresponds to weight can vary. This variance is a result of pressure transferring to the front suspension hanger, therefore bypassing the air bag and the height control system.

If an air sensor is installed in a "**slip spring and torque arm**" design, the scale may exhibit errors of several percent and may have repeatability problems, even with the approved height control valve. All of the truck manufacturers and some trailer manufacturers offer some air suspensions that are susceptible to this type of problem.

**SOLUTION:** If consistent accuracy (1% or less error) is required, weight bearing load cells, (fifth wheel, super beam, etc), should be used to scale the vehicle. The installer must be aware that air sensors used on "**slip spring and torque arm**" type suspensions may not work as accurately as other types of on-board scale systems.

Please contact our service department if you have any questions regarding the proper application of our sensors.