



TECHNICAL BULLETIN

1-800-237-0022

Stock No. L12 - UNITIZED CENTER HANGER LOAD CELL, HUTCH
PART NO. 58-10408-002

Stock No. L13 - UNITIZED CENTER HANGER LOAD CELL, TRANSPRO
PART NO. 58-10408-001

Stock No. L14 - UNITIZED CENTER HANGER LOAD CELL, SPLIT BUSHING
PART NO. 58-10408-003

CONCEPT:

These load cells were designed to fit into multi-leaf trailer suspensions without modifying the trailer frame and adding weight to the trailer.

APPLICATION:

- Compatible with fabricated Hutch H-7700, H-9700 and Transpro model 86 and 88 suspension systems.
- Performs with multi-axle suspensions; Tandem axles require two load cells, Tri-axle and Quad-axle suspensions require four load cells.
- Fits undermount, and split bushing applications.
- Center hanger load cells are provided with an equalizer cap screw (Part No. 30-14021-800) and locking flange nut (Part No. 30-62003-021).
- Transpro Part No. 0650-00 (49" Spread) fabricated equalizer, or equivalent, is required for use with this load cell.
- Transpro single hole equalizer bushings must be used with all center hanger load cells. Severson Industries urethane bushings may also be used with this load cell.

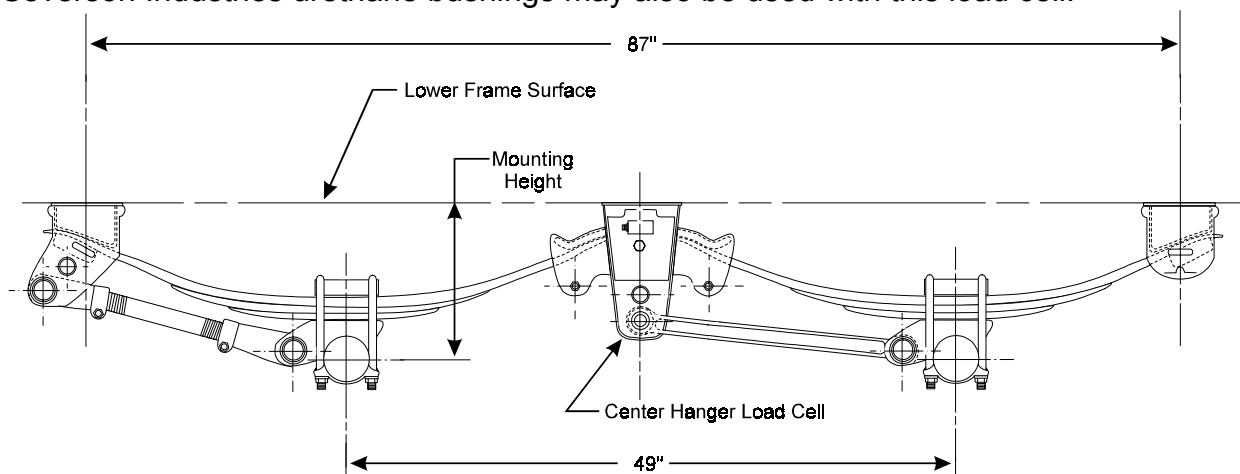


FIG. 106-A



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SPECIFICATIONS:

- CAPACITY: Maximum tandem axle system capacity 50,000 lb
- OUTPUT: 1.39 mV/V at 12,500 lb for each load cell.
- ACCURACY: Typical system error less than 1% of Full Scale.
- MATERIAL: Hanger material: Carbon steel.
Sensor material: High strength alloy steel.
- PLATING: Vulcan load cells are plated for increased rust protection.

EQUILIZER REQUIREMENTS:

VULCAN Center Hanger Load Cells are designed for spring suspensions with 49" axle spacing. We have found that optimum performance can be achieved by using the following components:

1. EQUILIZER - Using the Transpro Equalizer (Part No. 0650-00) provides the best form, fit and function, with the longest service life. A Hutch Equalizer (Part No. 750-03) can be used, if necessary.
2. BUSHING - Severson Industries Urethane Bushing (Part No. A80BI0019) will provide the best service in this load cell in most applications. A Transpro Bushing (Part No. 0649-02) can be used, if necessary.

Using other equalizers may damage or impair the performance of the VULCAN Center Hanger Load Cell. If other equalizers are used, they must conform to the following minimum specifications for the VULCAN warranty to remain in effect.

1. Vertical distance from the centerline of the equalizer bushing to the top of the equalizer *must* not be greater than 3.1" at all angles of articulation. This distance is required to guarantee clearance for the signal cable inside the load cell.
2. The equalizer *must* operate in the center hanger without touching the inside walls during use.
3. Equalizer guides cannot be used to control the equalizer alignment.
4. The equalizer bushing *must* have a width of 4.000" +.005/-0.010" to ensure a good fit and proper clamping of the hanger/equalizer assembly.



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5. The equalizer *must* have an angle of articulation of at least 15° but not greater than 22°.
6. Overload stops *must NOT* relieve the load to the frame until the equalizer is beyond the full travel of articulation. Prematurely removing load from the load cell *WILL* cause errors in the weight readings.

For axle spacing greater than 49", consult VULCAN Customer Service for additional requirements.

INSTALLATION:

Step 1 - PARTS ASSEMBLY:

It is recommended that you obtain a new equalizer and bushing when installing the new VULCAN Center Hanger Load Cell. Using the 1" x 8" Grade 8 Cap Screw and Grade G Locking Flange Nut, assemble the hanger and equalizer as shown in FIG. 106-B.

Step 2 - HANGER ALIGNMENT:

Use the suspension manufacturer's installation instructions for hanger spacing and alignment. Using these procedures will result in the longest service life and provide the best scale accuracy. VULCAN Center Hangers must be installed with the connectors on the inboard side.

CAUTION : Cocked, tilted or misaligned center hangers will fail prematurely. **DO NOT** hammer the center hanger or use excessive force in an effort to properly locate it.

RETROFIT trailer frames must be cleaned, inspected for cracks, rust and other signs of damage or deterioration. Proper repairs must be made prior to the installation of the center hanger load cell. Never assume that the structure is adequate for the new center hanger load cell - INSPECT IT! -- CORRECT IT! Consult frame manufacturer as required.



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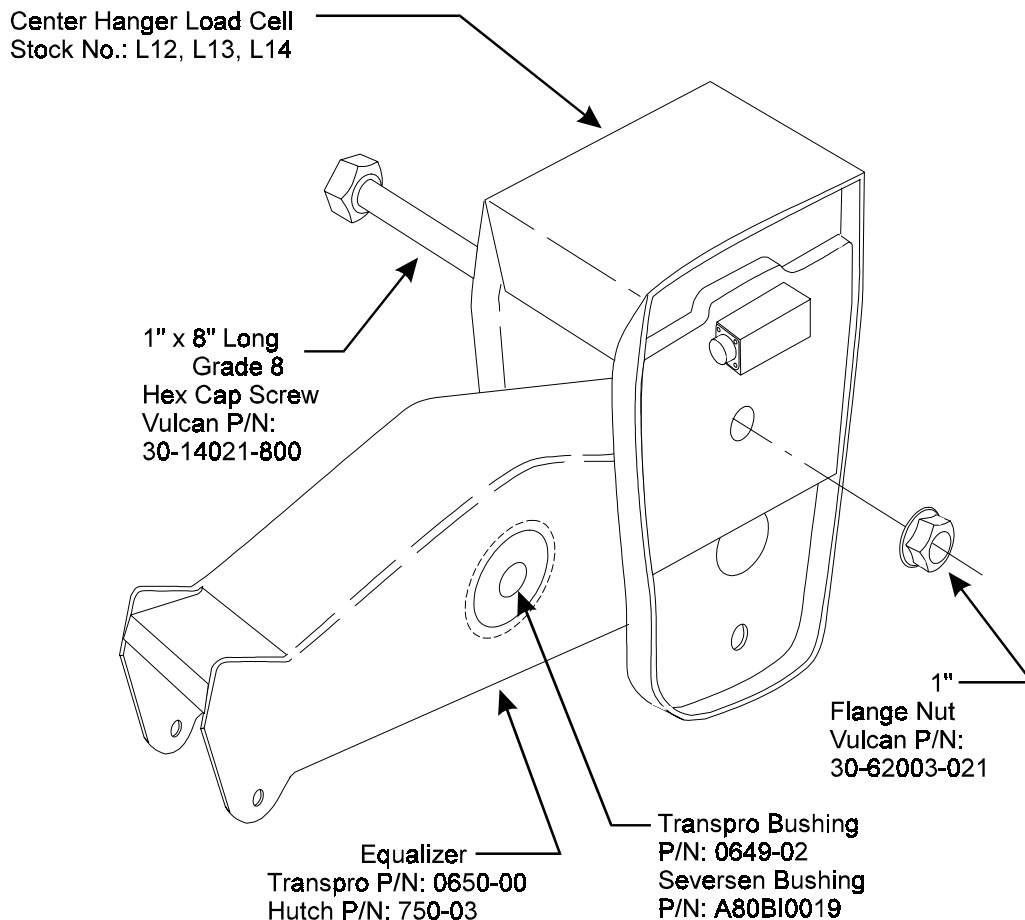


FIG. 106-B

Step 3 - WELDING:

All welding and welding procedures *must* meet the American Welding Society Specifications. The specification of the welding electrode as well as proper preparation of the weld area is dependent on the composition and thickness of the frame material. Should there be any doubt about which welding process to use, contact the frame manufacturer for clarification.

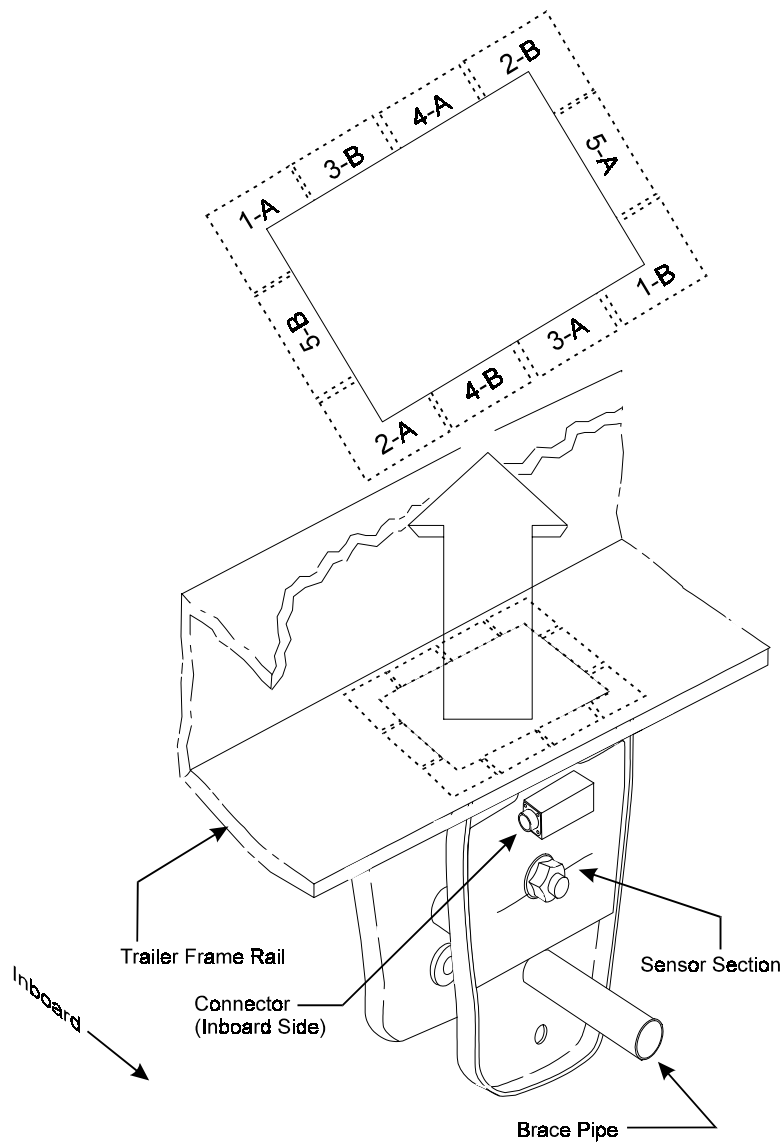
After suspension is aligned, tack the center hanger load cell in place. It is recommended that the welding process be done in a minimum of five steps as shown in FIG. 106-C. VULCAN load cells are extremely sensitive instruments! They are also easily damaged while being installed, therefore caution must be taken to avoid damage during welding. No weld or weld



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splatter should contact the sensor section. **Caution! Do not heat load cell sensor section to greater than 140 degrees Fahrenheit (60° C) at anytime.** Let each weld cool prior to continuing, you must be able to hold your hand on the welding area before starting the next weld. A CONTINUOUS WELD MUST BE COMPLETED AROUND EACH CORNER AS SHOWN IN FIG.106-C.



WELD PROCEDURE

AFTER TACKING:

- Weld 1-A and 1-B Cool 20 minutes
- Weld 2-A and 2-B Cool 20 minutes
- Weld 3-A and 3-B Cool 20 minutes
- Weld 4-A and 4-B Cool 20 minutes
- Weld 5-A and 5-B

FIG. 106-C



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Connect the brace pipe (1-1/4" diameter schedule 40) between both center hangers and weld per manufacturer's specifications, while remembering the above warnings. Reinforcing members can be added, if necessary, from the brace pipe to the trailer frame without affecting the performance of the load cell. Do not attach any additional reinforcing to the sensor area of the load cell as this would make the load cell non-functional. IF ADDITIONAL REINFORCEMENT IS INSTALLED, ENSURE THAT CLEARANCE IS AVAILABLE TO INSTALL AND TORQUE THE EQUALIZER CAP SCREW AND THE ELECTRONIC CONNECTORS.

Step 4 - TORQUE SPECIFICATIONS:

Transpro Torque Arm Grade 5 Cap Screw 7/8" Diameter	Hutch Torque Arm Grade 5 Cap Screw 1" Diameter	Equalizer Grade 8 Cap Screw 1" Diameter
300-325 lb-ft	350-375 lb-ft	480-500 lb-ft

Torque readings should be taken from nut only. Check torque periodically.

Step 5 - FINAL INSPECTION:

Make certain that all springs are properly seated on their wear pads. Twisted springs, springs with insufficient clearance or cocked hangers can cause uneven and excessive wear and possibly inaccurate scale readings.

Check the equalizers to be sure there is adequate clearance between the ends of the springs and the equalizer beam hub when the axle is unloaded and loaded.

Double check all fasteners to see that they have been tightened to the proper torque.

Step 6 - WIRING:

Secure Vulcoders to the trailer frame. Route black cables to the load cells so they will not be damaged by road debris. Route orange cable from Vulcoder to the Meter in the cab of truck (or NEMA enclosure on trailer). It is suggested that you use a separate cable (or two *dedicated* wires in 7 wire cable) between the truck and the trailer.

If a separate cable is used, a 4 pin "Berg" type connector can be used at each end of the cable. Additional electronic installation notes and system operational procedures can be found in your "*Vulcan Operations and Maintenance Manual*".

Starting calibration numbers for this system follow:



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V200 Electronics - V04 2 lead Vulcoder - Cal Number 3900

V400 Electronics - V08 2 lead Vulcoder - Cal Number 1950

V400 Electronics - V14 4 lead Vulcoder - Cal Number 3600

Input the starting "Cal" number and the correct "Tare" weight then start the calibration process as outlined in the *"Vulcan Operations and Maintenance Manual"*.

Step 7 - MAINTENANCE

Do not grease or lubricate inside the VULCAN load cell connector or Vulcoder connector. These components are highly sensitive to foreign substances and inaccurate readings will occur if these components are contaminated. **Your manufacturer's warranty does not cover the failure of VULCAN components due to contamination (use of grease or other conductive substance) in either of these component connectors.**

VULCAN load cells are plated for increased rust protection. Certain minimum maintenance will be necessary to claim warranty of load cells. Apply a high quality paint to the load cells. For environments where high concentrations of salts are used on road surfaces, undercoating is recommended (3M, Universal Rubberized Undercoating, 3M P/N: 8883). Spray undercoating when load cells are connected to electronics and fully assembled. See *"Vulcan Load Cell Maintenance"* document 44-20006-001 for further details.

Note: Retightening the fasteners in the center hanger after the scale system has been used may cause a shift in tare weight and/or scale operation. Recalibration may be needed.