VULCAN®
ON-BOARD SCALES

TECHNICAL BULLETIN
1-800-237-0022

Stock No. H26 - MODULAR CENTER HANGER MOUNTING KIT, SPLIT BUSHING

Stock No. H32 - MODULAR CENTER HANGER MOUNTING KIT

CONCEPT:

This mounting kit, when used with our standard L02 load cells, will to fit into multi-leaf trailer suspensions without modifying the trailer frame. (U.S. PATENT 5,861,581)

APPLICATION:

- Compatible with cast or fabricated Hutch H-7700, H-9600, H-9700, Transpro model 86 and 88 suspension systems up to 67" axle spreads, and Fruehauf F-2 suspension systems up to 67" axle spreads.
- Designed for multi-axle suspensions; Tandem axles require two load cells and mounting kits, Tri-axle and Quad-axle suspensions require four load cells and mounting kits.
- Fits undermount and split bushing applications.
- Either Hutch or Severson Industries (urethane) single hole equalizer bushings must be used with all center hanger load cells.

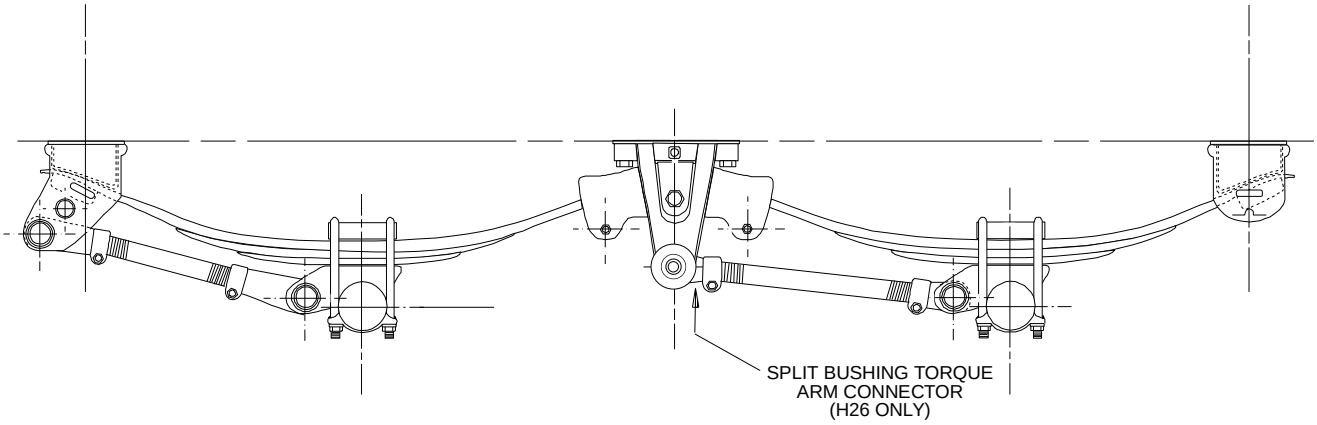


Figure 137-A

VULCAN®
ON-BOARD SCALES

TECHNICAL BULLETIN
1-800-237-0022

SPECIFICATIONS:

- CAPACITY: 25,000 lb per axle, maximum capacity.
- ACCURACY: Typical system error less than 1% of capacity for 2-axle suspensions only. Three and four axle suspensions may vary more than 1% depending on configuration.
- MATERIAL: High strength steel.

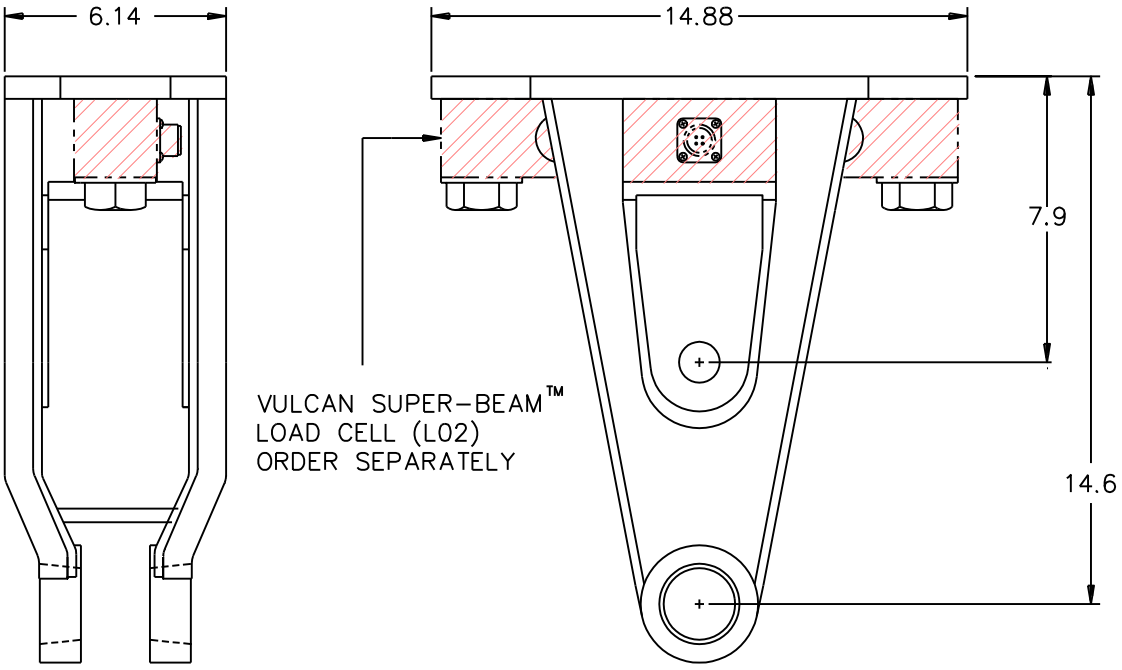


Figure 137-B H26 Split Bushing Hanger Shown

VULCAN®
ON-BOARD SCALES

TECHNICAL BULLETIN
1-800-237-0022

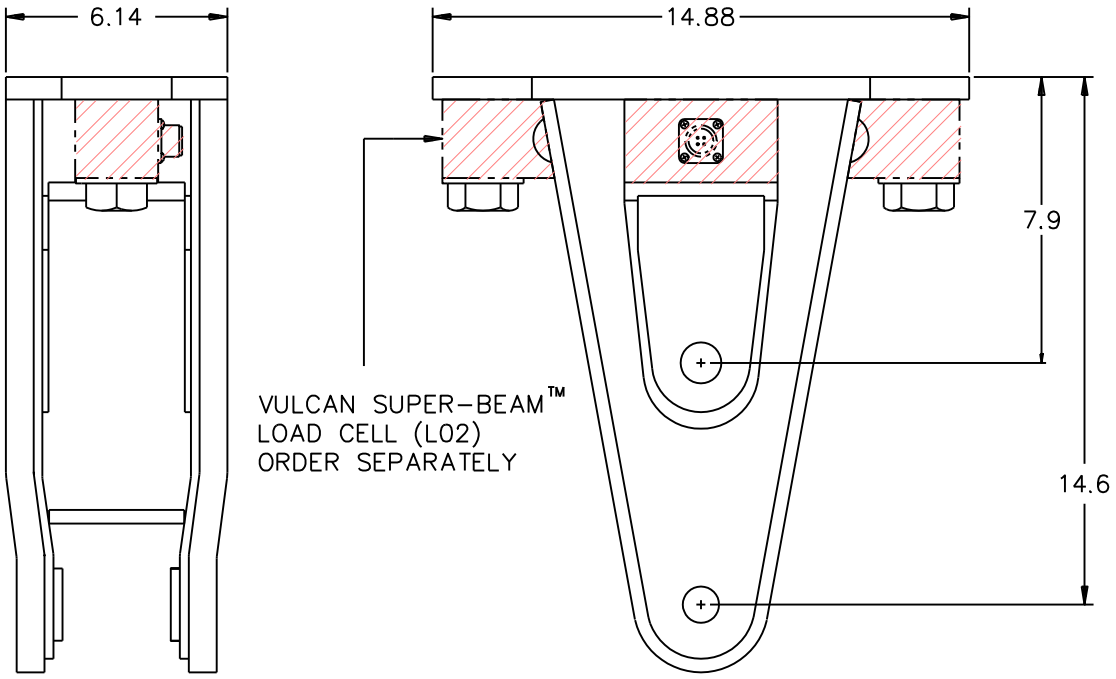


Figure 137-C H32 Hanger Shown

EQUALIZER AND SUSPENSION REQUIREMENTS:

VULCAN Center Hanger Mounting Kits are designed for spring suspensions with a 49" to 67" axle spacing. We found optimum performance can be achieved by using the following components:

1. EQUALIZER - A Hutch fabricated equalizer should be used.

2. EQUALIZER BUSHING - For most applications, Severson Industries Urethane Bushing (Part No. A80Bl8666) will provide the best service. Hutch single hole rubber bushings may also be used.

3. NO HOP AND UNDER SLUNG SUSPENSIONS – This scale system **is not** compatible with NO HOP AND UNDER SLUNG SUSPENSIONS. The non-level torque arm in these suspensions can divert a significant amount of weight away from the load cell causing scale inaccuracies. We recommend that the suspension be converted to a standard suspension where the torque arm is close to horizontal.

VULCAN®
ON-BOARD SCALES

TECHNICAL BULLETIN
1-800-237-0022

ADDITIONAL PARTS NEEDED, STRESS-TEK, INC. DOES NOT SUPPLY OR SELL THESE PARTS:

QTY	PART NUMBER	DESCRIPTION:
2	Hutch	Hutch 49" to 67" equalizer.
2	Severson A80Bl8666	Urethane equalizer bushing.
4	Hutch 07620-00	Split bushing torque arm bushing.
2	Hutch 12709-01	Step bolt.
4	Hutch 12710-01	Washer.
4	Hutch 12711-01	Plain washer.
2	Hutch 00034-02	Hex lock nut.
2	Hutch 16150-01	1 1/8" X 7", GR5 cap screw.
4	Hutch 837-00	1 1/8" washer.
2	Hutch 11154-00	1 1/8" - 7 UNC, GR5 hex lock nut.

Note: A Hutch 9600 series suspension has these parts. New parts would only be needed if existing one were worn.

INSTALLATION:

Note: On two axle trailers, the trailer ride height will be increased by 1-3/8". On three or four axle trailers, the trailer ride height will be increased 2-5/8" and the front and rear spring hangers will need to be lowered to match the added height of the center hanger. Be sure to check the trailer height for adequate bridge or bunker clearance.

Step 1 - PARTS ASSEMBLY:

A new equalizer and bushing should be used when installing the VULCAN Center Hanger Load Cell Mounting Kit in worn suspensions. Using the 1-1/8" x 7" Grade 5 Cap Screw and Grade 5 Hex Locking Nut, assemble the hanger, load cell and equalizer as shown in Figure 137-D.

Step 2 - HANGER ALIGNMENT:

Use the suspension manufacturer's installation instructions for hanger spacing and alignment. Following these instructions will result in the longest service life and provide the best scale accuracy. VULCAN load cells used in conjunction with the modular center hanger mounting kit must be installed with the connectors on the inboard side.

CAUTION: Cocked, tilted, or misaligned center hangers may cause inaccurate weight readings or cause premature bushing failure. **DO NOT** hammer the center hanger or use excessive force in an effort to properly position 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 mounting kit - INSPECT IT! -- CORRECT IT! Consult frame manufacturer as required.

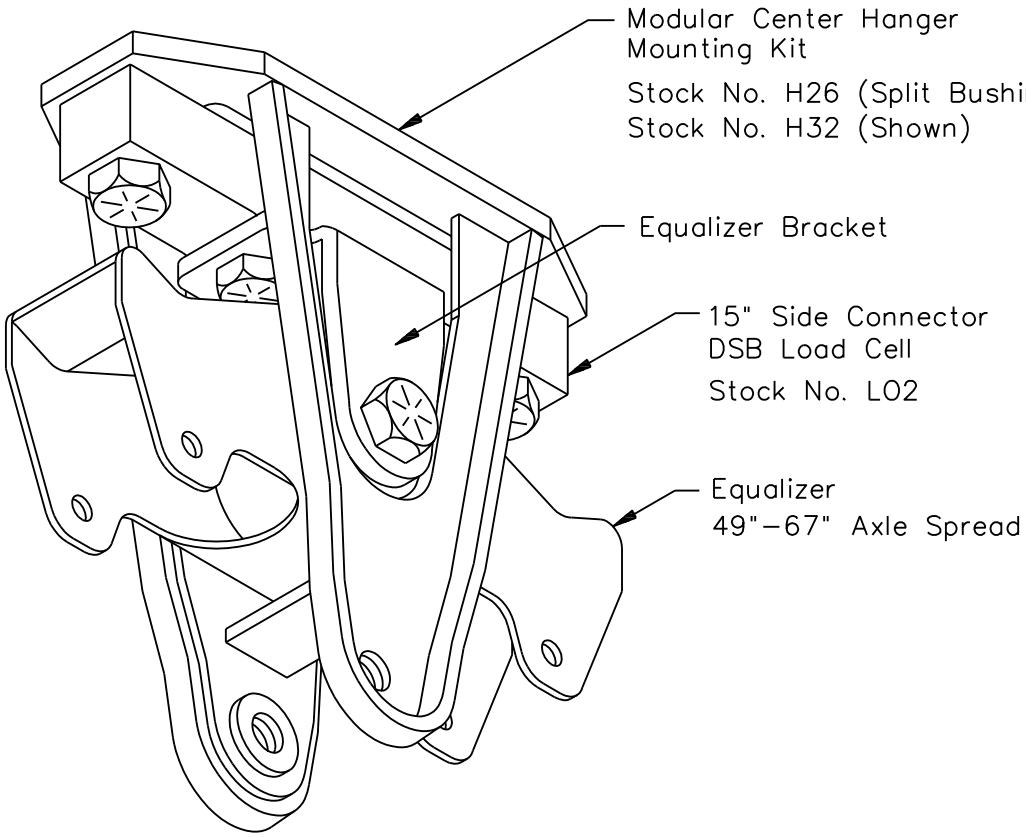


Figure 137-D

VULCAN®
ON-BOARD SCALES

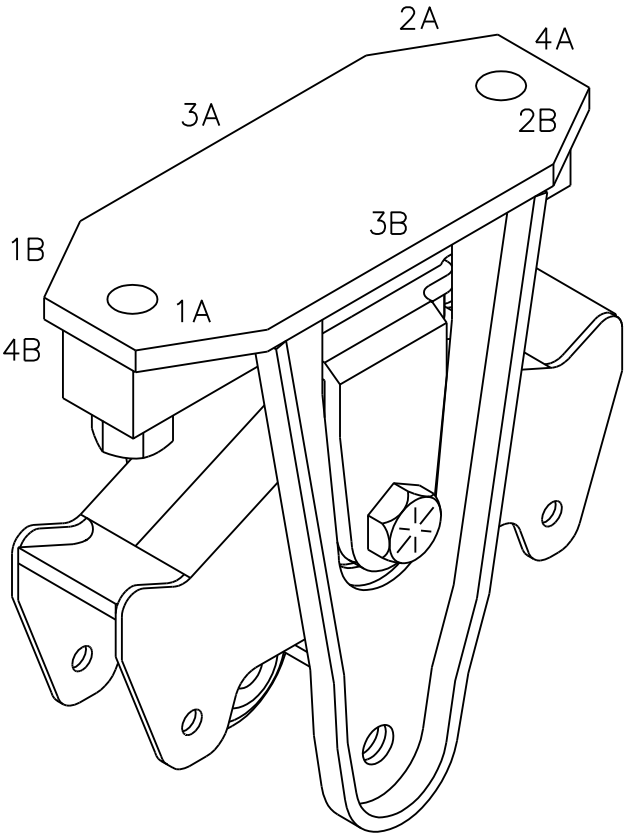
TECHNICAL BULLETIN
1-800-237-0022

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. If there is any doubt about which welding process to use, contact the frame manufacturer for clarification.

After the suspension is aligned, tack the center hanger in place. It is recommended that the welding process be done in a minimum of four steps as shown in Figure 137-E. VULCAN load cells are extremely sensitive instruments! They are also easily damaged while being installed; therefore **remove** the load cell from the center hanger mounting kit to avoid damage during welding. **Caution! Do not exceed 140 degrees Fahrenheit (60 C) on the load cell. Arcing on the body of the load cell may seriously damage the load cell's structural integrity and the load cell must NOT be installed if this occurs. This also voids manufacturer's warranty.** A CONTINUOUS WELD MUST BE COMPLETED AROUND EACH CORNER.

WELDING PROCEDURE



AFTER TACKING:

Weld 1A and 1B
Weld 2A and 2B
Weld 3A and 3B
Weld 4A and 4B

NOTE:
Remove load cell before welding center hanger to frame.

Figure 137-E

Connect the brace channel between both center hangers using a weld on tab and two 5/8" grade 8 cap screws with Grade G Locking Nuts. Reinforcing members can be added, if necessary, from the brace channel to the trailer frame without affecting the performance of the load cell. **Do not** attach any reinforcing to the load cell or the equalizer bracket, 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.

VULCAN®
ON-BOARD SCALES

TECHNICAL BULLETIN
1-800-237-0022

Step 4 - TORQUE SPECIFICATIONS:

Hutch 9600Torque Arm Grade 5 Step Bolt 1" Diameter	350 lb-ft, Oiled, 470 lb-ft, Dry
Hutch 9700Torque Arm Grade 8 Cap Screw 1" Diameter	540 lb-ft, Oiled, 720 lb-ft, Dry
Hutch 9600 or 9700 Equalizer Grade 8 Cap Screw 1-1/8" Diameter	590 lb-ft, Oiled, 790 lb-ft, Dry

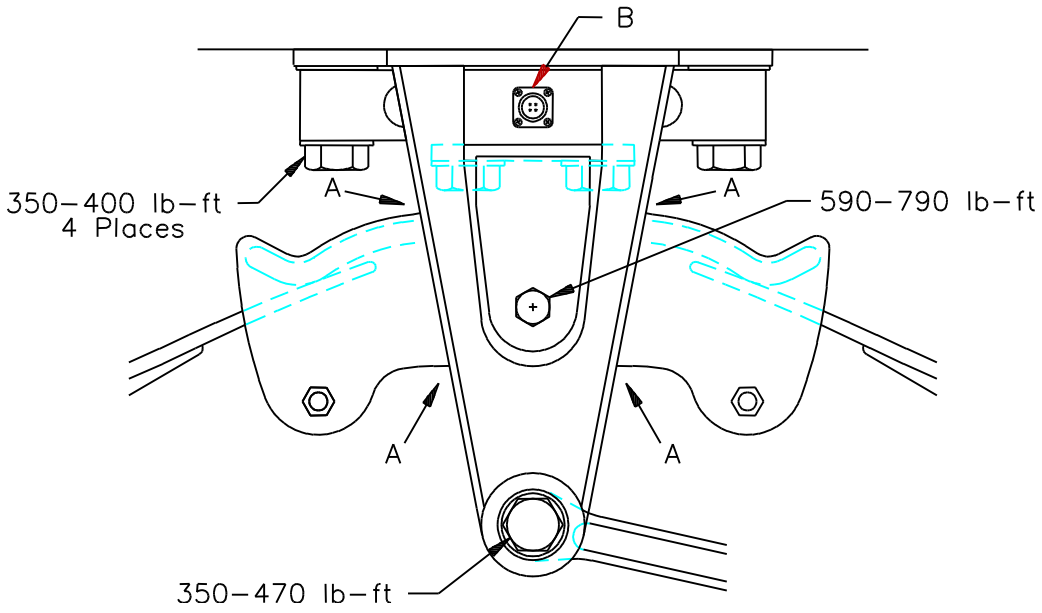


Figure 137-F

NOTE: 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”* for V200 and V400 systems and the *“Owner’s Manual”* for the V500 and V600 systems.

Starting calibration numbers for this system follow:

V200 Electronics - **V01** 2 lead Vulcoder - **Cal Number 4100**

V500 and **V600** Electronics - **V23** 2 lead Vulcoder - **Cal Number 4100**

V500 and **V600** Electronics - **V24** 4 lead Vulcoder - **Cal Number 4100**

Input the starting “Cal” number and the correct “Tare” weight then start the calibration process as outlined in the *“Vulcan Operations and Maintenance Manual”* for V200 systems and the *“Owner’s Manual”* for the V500 and V600 systems.

Step 7 - MAINTENANCE

Look for mud, ice build-up, or other debris between the load cell and bracket. Refer to **location A** shown on Figure 137-F.

Check load cell connectors (refer to **location B** shown on Figure 137-F) to make sure they are finger tight plus an additional 1/8 of a turn with channel lock pliers. The additional tightening is necessary to prevent scale errors, which can occur from moisture entering into the load cell connector. **Do not** grease or lubricate inside the Vulcan load cell connector or VSL 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 the Vulcan load cell connectors or VSL Vulcoder connectors.** If a connector is opened for any reason, you must clean the load cell connector and cable connector with cotton swabs and isopropyl alcohol, dry with a hair dryer **(DO NOT OVERHEAT)**, and replace the O-ring before reconnecting.

Check the torque on load cell cap screws monthly. New trucks must be checked once a week for 2 weeks. Vulcan On-Board Scales recommended torque values are shown on Figure 137-F. As a method of monitoring changes in fastener torque, Vulcan On-Board Scales recommends applying torque stripes to all fasteners. **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.

Vulcan load cells are plated for increased rust protection. Certain minimum maintenance will be necessary to claim warranty of load cells. **Annually,** apply a high quality paint to the load cells, bearing pads, and mounting brackets. 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 with bearing pads and brackets. See "Vulcan Load Cell Maintenance" document 44-20006-001 for further details.

Check welds on load cell brackets. **IMPORTANT**: If a weld repair is required, remove the load cell. **Caution! Do not exceed 140 degrees Fahrenheit (60 C) on the load cell. Arcing on the body of the load cell voids the manufacturer's warranty and may seriously damage the load cell's structural integrity. The load cell must NOT be installed if this occurs.**