



TECHNICAL BULLETIN

1-800-237-0022

Stock No. L31 - 19" DOUBLE SHEAR BEAM LOAD CELL, SIMPLEX FIFTH WHEEL

CONCEPT:

These load cells are designed to fit under Simplex II Fifth Wheel Plates, replacing the standard risers. This provides immediate weight information without adding substantially to trailer height or tractor weight.

APPLICATION:

A system consists of two 19" DSB VULCAN fifth wheel load cells and two fifth wheel mounting kits (Stock No. H11). **Note:** The shoe bracket and rubber bracket are not supplied by Stress-Tek, Inc. and are available through Simplex distributors.

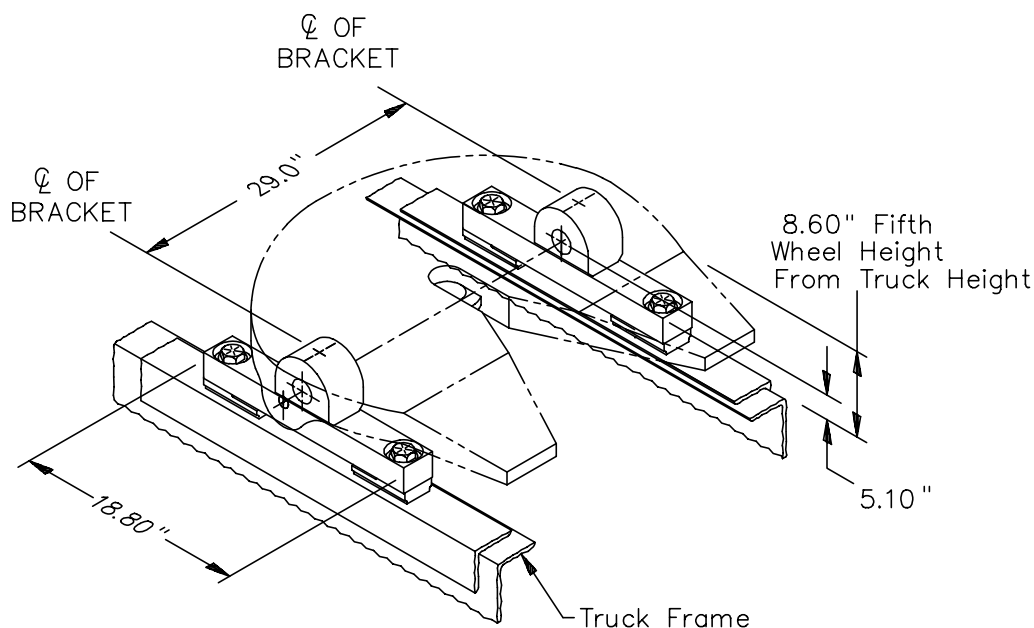


Figure 108-A



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SPECIFICATIONS:

- CAPACITY: 40,000 lb System Vertical load
150,000 lb System Draw bar pull.
- OUTPUT: 1.2 mV/V at 20,000 lb for each load cell.
- ACCURACY: Typical system error less than .5% full scale.
- MATERIAL: High strength alloy steel.
- PLATING: Vulcan load cells are plated for increased rust protection.

INSTALLATION:

Step 1 - FRAME PREPARATION

Install the steel mounting angle 3/8" x 4" x 4" x 36" minimum length, minimum steel grade shall be ASTM A 36 (Mild Steel). The mounting angle must sit flat and straight on top of the frame rail to prevent flexing and give uniform weight distribution. The fit between the angle and the top of the frame must not have any gaps.

Retrofit tractor frames and fifth wheel plates shall be cleaned and inspected for cracks, rusting, and other signs of damage or deterioration. Proper repair or replacement must be made prior to the installation of the load cells.

A minimum of five 5/8" diameter Grade 8 cap screws and 5/8" diameter Grade G flanged lock nuts or Grade B or better nuts with hardened steel washers, must attach each mounting angle to the frame rail. Distance between cap screws must not exceed 8" except where cut outs are required in the mounting angles. Larger diameter cap screws and fasteners may be used. Cap screws must be adequately tightened to proper torque for the specific cap screw size. See Figure 108-B.

Note: For aluminum frames, be sure to round all mounting angle edges and apply a substance to eliminate electrolysis between the aluminum frame and the steel mounting angle. Follow the tractor manufacturer's recommendations for applying an appropriate corrosion inhibitor.

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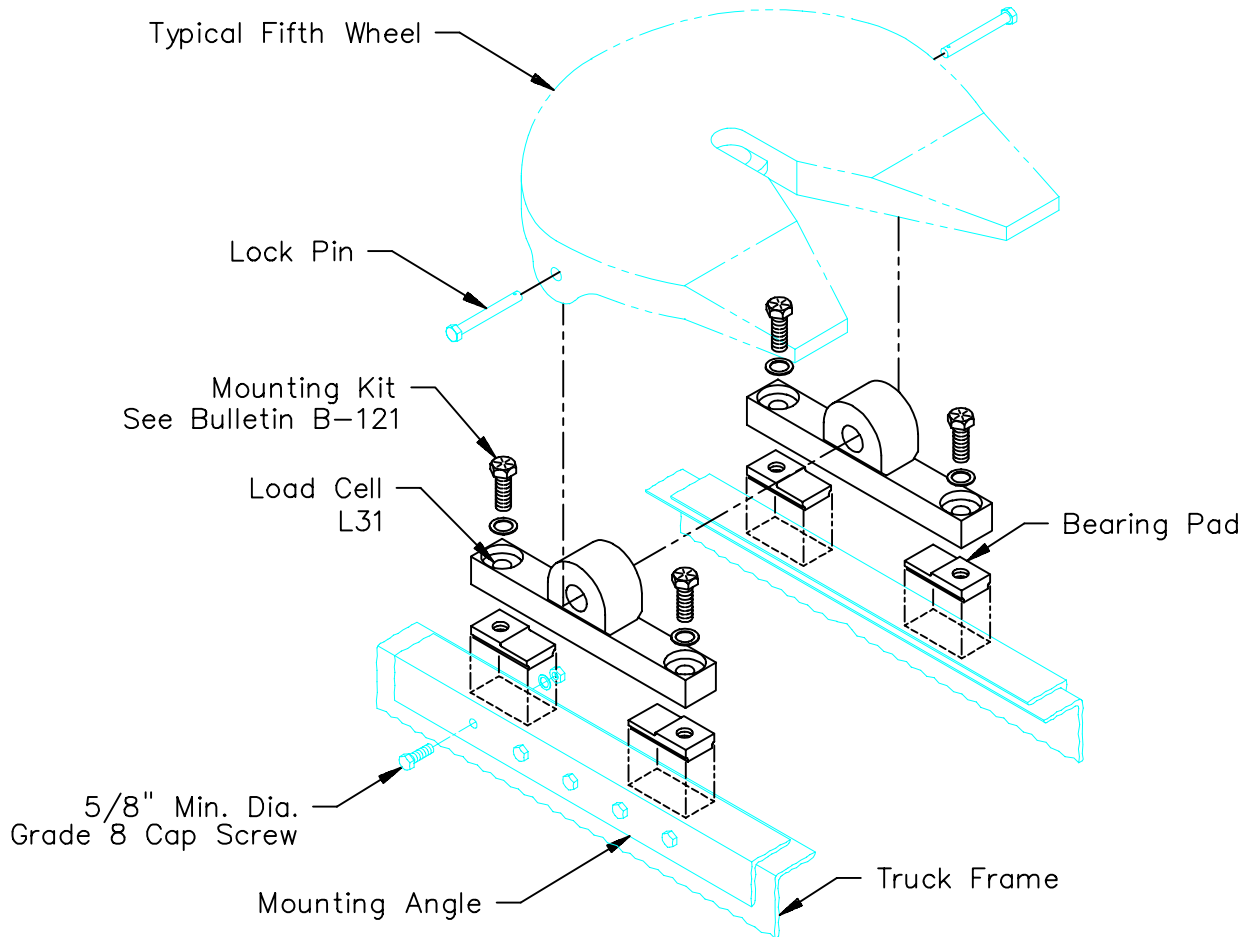


Figure 108-B: Typical Fixed Mounting

Step 2 - LOAD CELL ALIGNMENT

Assemble the fifth wheel load cells and bearing pads using the 1-1/8" diameter cap screws and washers from the mounting kit. Position assemblies in the pockets of the fifth wheel, ensure all bushings are in place and the lock pins are lubricated as required. Center the assembly on the mounting angles of the truck frame, the center of the king pin locks normally are positioned on or ahead of the truck suspension trunnion center line.



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Step 3 - WELDING BEARING PADS

Tack weld load cells bearing pads in place. **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 it must NOT be installed if this occurs. This, also, voids manufacturer's warranty. DO NOT ALLOW the load cells to exceed a temperature of 140 degrees Fahrenheit.**

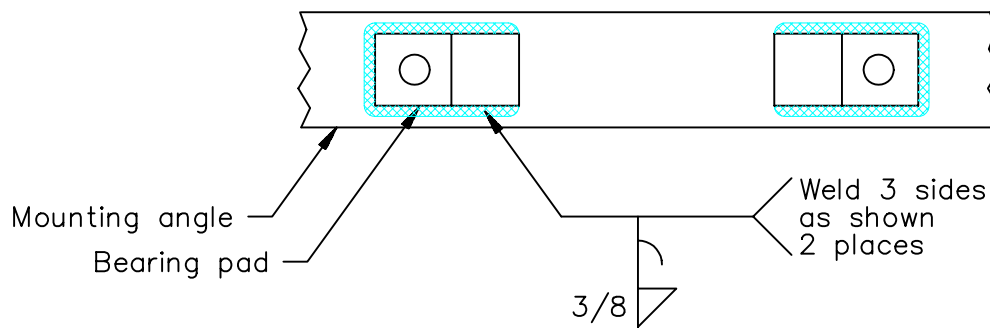


Figure 108-C

Remove the fifth wheel and load cell assembly, leaving the bearing pads tacked to the mounting angles. Shim any gaps between bearing pad and mounting angle over 1/32". Complete welding of the bearing pads to the mounting angles on the three outer sides, see Figure 108-C. All welding and welding procedures must meet American Welding Society specifications. Take precautions to ensure the tractor electrical system is not damaged by the welding.

Use "Never-Seize" or equivalent thread lubricant when installing all mounting cap screws. **DO NOT use the "Never Seize" on the load cell connectors.** Re-assemble the load cells and the fifth wheel assembly to the bearing pads and torque the 1-1/8" diameter mounting cap screws to 1000 - 1400 lb-ft.

DO NOT WELD ON THE TRACTOR FRAME.



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Step 4 - WIRING AND OPERATION

Secure Vulcorder to tractor and route the black cables to the load cells and the orange cable to the meter in the cab. Route the cables so they will not be damaged by road debris and allow for travel in the sliding bracket assembly if used. **Note: Do not** grease or lubricate inside the Vulcan load cell connector or Vulcorder 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.** Additional electronic installation notes and system operational procedures can be found in your "*Vulcan Operations and Maintenance Manual*" for V200 systems and the "*Owner's Manual*" for the V500 or V600 systems.

Starting calibration numbers for this system follow:

V200 Electronics - V04 2 lead Vulcorder - Cal Number 4100

V500 and V600 Electronics - V23 2 lead Vulcorder - Cal Number 2050

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 or V600 systems

Step 7 - MAINTENANCE

Look for mud, ice build-up, or other debris between the load cell and bracket.

Check load cell connectors 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 Vulcorder 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 Vulcorder 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.



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Check the torque on load cell cap screws monthly. New trucks must be checked once a week for 2 weeks. 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.

Load cell mounting cap screws must be checked periodically for proper torque.

	1-1/8"
SAE J429 - Grade 8	1000-1400 lb-ft

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.**

Apply lubricant to the bearing surface on the load cells through the grease fitting on the side of the fifth wheel plate. The plate must be lifted up slightly to relieve weight while applying lubricant.