



TECHNICAL BULLETIN
1-800-237-0022

Stock No. L03 - DOUBLE SHEAR BEAM LOAD CELL, SINGLE POINT

PART NO. 58-10446-001

Stock No. L63 - DOUBLE SHEAR BEAM LOAD CELL, SINGLE POINT HEAVY DUTY

PART NO. 58-10446-002

CONCEPT:

These load cells are designed to fit a variety of trailers that use single point suspensions with 4" trunnion tubes. The load cells provide immediate weight information without adding substantially to trailer height or weight.

APPLICATION:

A system consists of two 17" DSB VULCAN Single Point load cells (Stock No. L03 or L63) and two Single Point Mounting Kits (Stock No. H10, See Bulletin B-121).

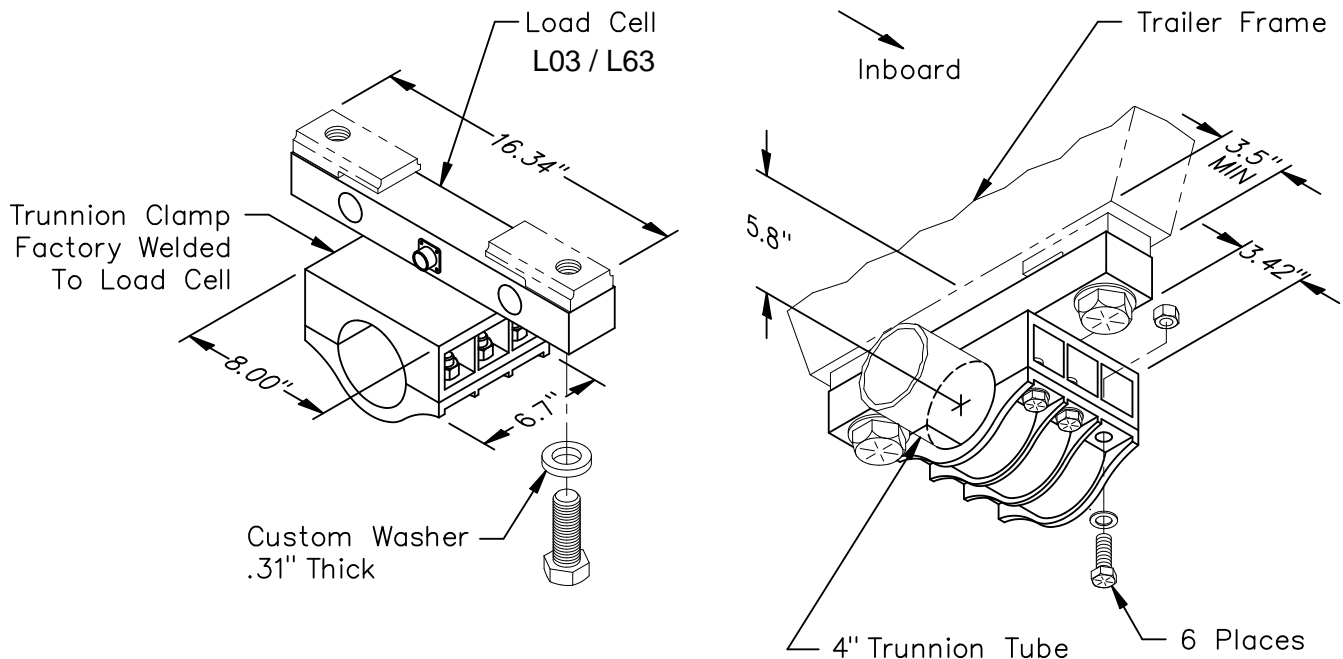


FIG. 123-A



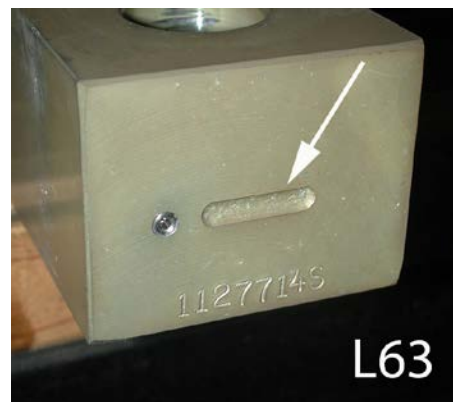
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SPECIFICATIONS:

- **CAPACITY:** 40,000 lbs. Vertical load per system (L03).
60,000 lbs. Vertical load per system (L63).
- **OUTPUT:** 1.17 mV/V at 20,000 lbs. for each load cell (L03).
0.72 mV/V at 20,000 lbs. for each load cell (L63).
- **ACCURACY:** Typical system error less than .5% full scale.
- **MATERIAL:** High strength alloy steel.
- **PLATING:** Vulcan load cells are plated for increased rust protection.

The L03 and L63 look very similar and use the same mounting kit and mounting screws. Because they have different outputs, they must be used in pairs. Do not mix L03's and L63's on the same channel. For identification, a groove has been machined into each end of the L63 load cell.



Note: Required for each trunnion clamp are six 5/8" - 18 UNF X 2" long, Grade 8 hex cap screws, six 5/8" - 18 UNF grade G steel lock nuts, and six 5/8" hardened steel washers. The six cap screws, nuts, and washers for clamping each trunnion clamp together are not supplied by Stress-Tek, Inc.



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INSTALLATION:

PRELIMINARY INSPECTION:

Frame mounting surfaces for load cell must be flat and rigid. If these surfaces are allowed to flex and bend, accurate weight readings may not be possible. Retrofit trailer frame surfaces must be inspected for cracks, rusting and other signs of deterioration. Proper repair or replacement must be made prior to load cell installation. Do not assume the structure is adequate for load cell installation. Consult frame manufacturer as required.

PROCEDURE: See FIG. 123-A

1. Assemble the Vulcan bearing pads to the load cell using the two cap screws and custom washers. Use "Never-Seize" or equivalent thread lubricant when installing all mounting cap screws. **DO NOT use the "Never Seize" on the load cell connectors.** Do not torque these cap screws *yet*.
2. Place load cell assembly on 4" trunnion tube. Ensure that the connector is facing towards the inside of the suspension and that there is an 1/8" thick by 4" I.D. washer between the Vulcan trunnion clamp and the suspension spring seat. Install the trunnion clamp cap using two of the required fasteners and tighten to a snug fit only.
3. Roll suspension under the trailer support members. Align suspension with the trailer frame as per manufacturer's specifications. Mounting surfaces for load cell must be flat and rigid. If these surfaces are allowed to flex and bend, accurate weight readings may not be possible.
4. Tack weld the corners of the bearing pads to the trailer frame. Shim any gaps over 1/32".
5. Remove the 1-1/8" end cap screws, roll the trailer suspension away, and complete welding of the bearing pads. **Note:** All welding and welding procedures must meet the American Welding Society specifications. Bearing pads must be welded securely to the trailer support plates on the three sides as shown in FIG. 123-B. **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.**



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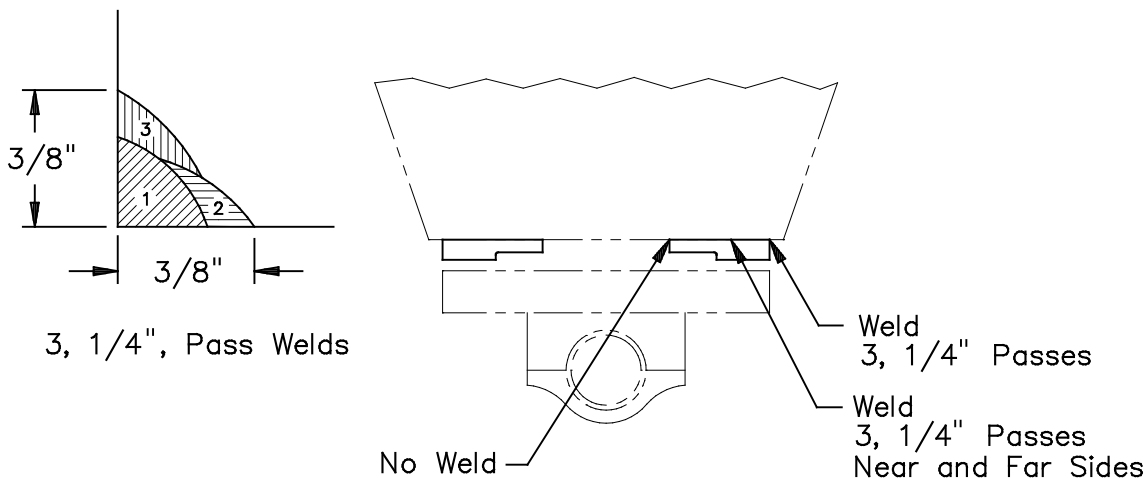


FIG. 123-B

6. 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 to the bearing pads and trunnion tube. Torque the mounting cap screws to the listed torque values:

Diameter	5/8"	1-1/8"
SAE J429 - Grade 8	210-240 lb-ft	1000-1400 lb-ft

Note: Check load cell torque values periodically.

7. Pre-loads may be induced in the load cell when torquing down the cap screws. Pre-loads can be monitored on the V200 meter by hooking up only one load cell at a time, setting the meter calibration number to 4200 for a 2mv/V Vulcorder and setting the meter display to read zero by adjusting the Tare Weight on the appropriate channel *before* torquing the cap screws. The allowable pre-load after all the cap screws are torqued is ± 800 lbs. per load cell.

For the V300 or the V600 Series meters, refer to the owner’s manual. Enter the system test menu and select test 5 (Load Cell offset). Read the offset for each load cell (bolts loose) and write these numbers down. Tighten the bolts to full torque. The offsets should not change by more than ± 800 lbs.

If more than 800 lbs. of change is seen, the mounting surfaces are not flat and parallel. Check surfaces for warpage, and shim or straighten as necessary. If you still have problems reducing preload, consult Stress-Tek factory.



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8. Load cells are designed to measure vertical forces. If the load cell is mounted in a manner that results in torsional forces in the load cell, its accuracy and life can be reduced. To prevent this, it is **important** that upper and lower mounting surfaces remain flat and parallel under load. This means that both upper and lower mounting surfaces must be stiff enough not to rotate when loaded, properly gusseted and supported upper and lower mounting brackets will eliminate the chance of a load cell failure under torsional (twisting) forces.
9. **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.**
10. 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, 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.
11. For additional electronic installation notes and system operational procedures, see the "*Vulcan Operation And Maintenance Manual.*"