

Load Cell Troubleshooting

The following are step by step tests to be done in order. If one test fails, the load cell is bad and it is not needed to perform subsequent tests.

1. Physical Checks

- Check if the load cell cable has any obvious signs of damage. Any cuts, crimps, excessive aberration or exposed wires is a sign of damage.
- Check load cell element for any dents, deformation, cracks, rippling of metal, corrosion, and significant wear in the area of loading. Load cell contain sensitive components and any shocks caused by dropping or being hit can damage the electronics inside.
- Do visual check for flatness (for single point and double ended load cells). Use a straightedge and flashlight technique for correct visual inspection. Make sure there is no bending and bucking marks on the load cell. Even a very small deflection can have adverse effect on the load cell.

2. Electrical Checks

- Check for zero balance. Position the load cell with no load attached. Connect the input to a stable, low noise power supply. With a multi-meter measure the output voltage in mV and divide it by the input voltage in V to get mV/V. Refer to the calibration certificate of the load cell to see if this mV/V value is within the tolerance of load cell specification.
- (Optional) Check for zero return. Connect the load cell to a stable power supply and measure the mV/V output like the step before. Make sure it is within the allowed tolerance. Load the load cell between 50% to 100% of its capacity for 5 seconds. Remove the load and check if the mV/V output returns to the allowed tolerance.
- Check insulation. Use a multi-meter to check insulation of wire leads to the metal body of the load cell. If the resistance is below 2 Giga Ω , then the insulation is bad. Ideally the insulation resistance should be more than 5 Giga Ω .
- Check input and output resistance with a multi-meter (resistance accuracy of 0.025 Ω or better) to make sure it is within the allowed tolerance of the product. Refer to the calibration certificate. A different of more than 0.1 Ω signifies a bad load cell.
- Check resistance of strain gauges one by one. See diagram below for testing resistances. The numbers are examples only.
- Check input and output resistances. If these are more than 3 k Ω , then it is bad load cell and most likely due to electrical surges or lightening. Check calibration sheet for correct resistances.

