



Learning How to Check Single Point Grounding

In past columns, I've stressed the importance of single point grounding as a way to avoid unnecessary transient damage to your scale system. Today, we'll talk about the steps you'll take to verify that the system is adequately grounded.

But first, let me clear up any confusion you may have about single point grounding. Connecting your load cell drain to the shield terminal of the load cell is generally a safe practice, but there is still a chance that RFI/EMI can cause stability problems. Instead, we recommend grounding your load cell shield to the indicator enclosure. This method keeps RFI/EMI interference, as well as ESD transients, from your circuitry and reduces your chances of sustaining damage.

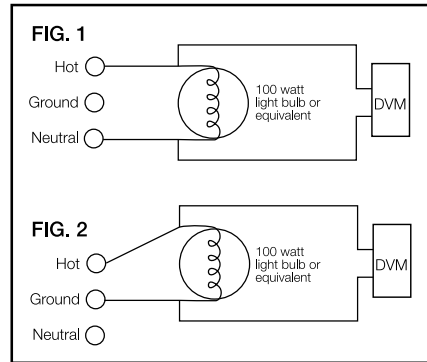
Now, let's get back to checking your ground. There are two basic steps to follow: checking your AC power supply, and checking your scale grounding.

Verify AC Power Supply

First we need to verify that the indicator is plugged into an outlet that is adequately grounded. If not, it is the responsibility of the building owner and/or the power company to resolve grounding issues.

An effective way to test the quality of a ground rod is to place a load across the hot and neutral sides of an AC outlet and measure the voltage across the load (fig. 1).

Then, disconnect the load and reconnect it



beginning with the connection to ground, followed by connecting the other side to hot (fig. 2).

Now, measure the voltage drop across the load. If it is within 2 to 3 volts, the ground is satisfactory. This test should be performed two to four times per year, as water table changes can affect the quality of a ground.

Verify Scale Grounding

Now that we have determined that the ground to the AC outlet is true, we have to verify that all parts of the scale system are grounded to a single point. This verification is the responsibility of the scaleman representing the company supplying the scale system. These checks should be implemented into every preventative maintenance plan.

Let's start with a basic truck scale system that doesn't incorporate transient protection:

- **Step 1:** To achieve single point ground-

ing, the scale base needs to be connected to the AC ground. We suggest using a bare 10 gauge copper wire connected to the frame of the scale base, then running the copper wire back to AC ground. This wire can be buried in the soil from the scale to the AC ground. *NOTE: The load cells need to have a braided wire (shunt) put across each load cell mount. Taking this precaution will ensure that transients pass through the shunt instead of the load cells.*

RESULT: Set the hand-held voltmeter to read resistance. It should read less than 1 ohm of resistance between the scale sections and the AC ground.

- **Step 2:** Now let's add transient protection to the scale system. We recommend using the EL226 for the AC power protector, and the UJB3T6 for any DC lines (load cell cable and serial communication cables). Transient protection devices used in a scale system need to be grounded to the 10 gauge wire used to connect the scale base to the AC ground.

RESULT: Set the hand-held voltmeter to read resistance. It should read less than 1 ohm of resistance between the transient protection grounds and the AC ground.

- **Step 3:** Check the AC power supplied to peripherals such as remote displays, printers and computers. A remote device may not have the same AC power source as the indicator; therefore, each device may not be grounded to the same point.

RESULT: Set the hand-held voltmeter to read resistance. The reading between the AC power ground points should be less than 1 ohm. *NOTE: Remember that these remote devices may also have transient protection on the serial lines (UJB3T6) and for the AC power (EL226). See step two for ground check.*

I hope these tips help you keep your system transient-free. Until next time, enjoy the rest of your summer!

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