



METER
ENVIRONMENT

COMPLETE METHOD: WIRE SPLICING AND SEALING TECHNIQUE FOR SOIL MOISTURE SENSORS

Employing a durable wire-splicing technique is very important when considering the harsh environments the connection must withstand. Strong connections that are sealed from moisture are more likely to resist failure due to corrosion, electrical shorts, or broken wire connections. Follow the instructions below to not only strengthen the area around the connection against physically breaking but also keep moisture out.

Alternative quick field method: [See instructions](#) for a quick and dirty technique that will work with our wire splicing kit when you're out in the field. For a more rigorous method, follow the instructions below.

COMPLETE METHOD INSTRUCTIONS

Supplies needed (Figure 1a)

- Wire cutters
- Wire strippers
- Soldering iron
- Heat gun
- Light-duty, rosin-core solder

Supplies needed (Figure 1b)

- Flux paste
- 1 Adhesive wall polyolefin heat-shrink tubing (3:1), 3 1/2 × 1/2 inches
- 1 Polyolefin heat-shrink tubing (2:1), 2 1/4 × 3/16 inches
- 2 Polyolefin heat-shrink tubing (2:1), 3/4 × 3/32 inches
- 1 Tube, 100% silicone rubber sealant

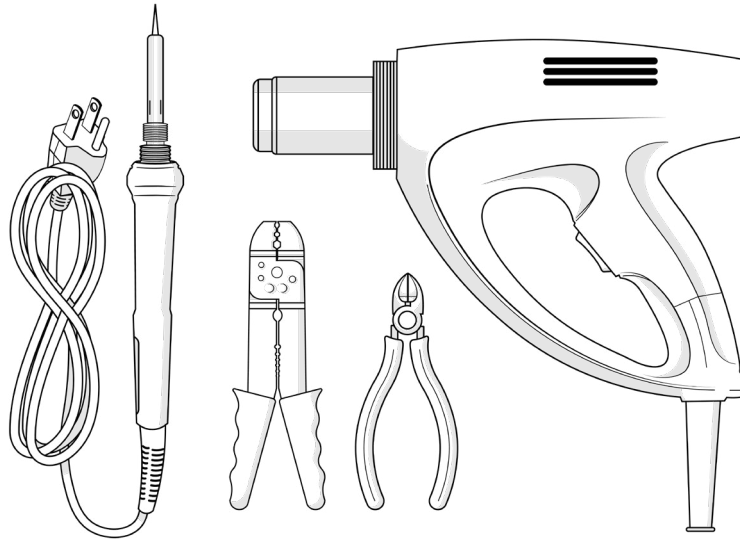


Figure 1a. Soldering iron, wire strippers, wire cutters, heat gun

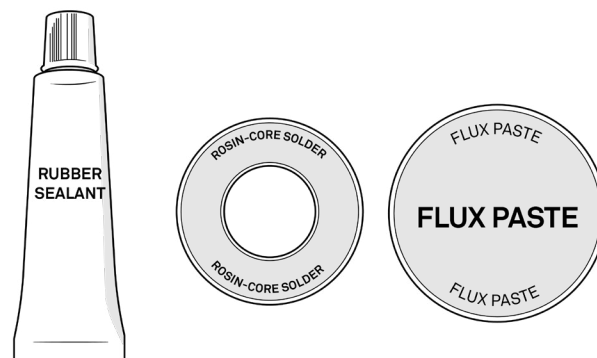


Figure 1b. Silicone rubber sealant, rosin-core solder, flux paste

PROCEDURE

1. Prepare the wire ends for tinning and soldering. Carefully cut 1 1/4 inches of the outer-wire sheath, exposing the three small wire leads. Do the same for each of the three small, inner-wire leads, carefully exposing 3/8 inches of bare wire (Figure 2).
2. Dip all exposed wire ends in flux paste (or liquid flux). Using rosin-core solder,

separately tin each of the wires with a hot soldering iron.

3. Slide both the 1/2 inch (diameter) adhesive-lined and 3/16 inch (diameter) heat-shrink tubing over one side of the wire to be soldered. Slide them sufficiently out of the way so as not to interfere with the soldering and heat-shrinking process of the smaller wires.
4. Slide one 3/32 inch piece of heat-shrink tubing over one of the small red wires. Dip both ends of the small red wires in flux.
5. Completely overlap and hold the bare wires in place so they are touching. Proceed to solder them together.
6. Slide the small heat-shrink tubing over the newly-soldered wires, and heat with the gun. No bare wire should be exposed (Figure 3).
7. Repeat steps 5 and 6 for the white lead; repeat step 5 for the third, bare lead. The bare-ground lead does not need heat shrink as long as the red and white leads don't have bare wire exposed (Figure 4).
8. Once all three leads have been soldered, generously coat with silicone rubber sealant (Figure 5). Slide the 3/16 inch piece of heat-shrink tubing over the three silicone-covered wires, and heat with gun.
9. Coat the area with another layer of silicone, slide the 1/2 inch adhesive-lined heat-shrink tubing over the entire spliced area, and heat with gun (Figure 6). Another thin layer of silicone can be applied to each end of the heat-shrink tubing to further seal off the splice.

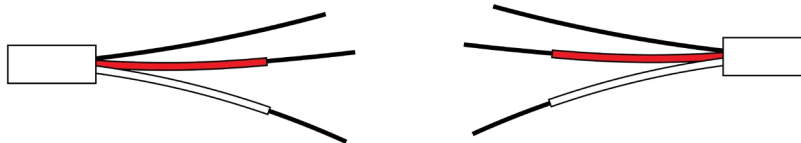


Figure 2. Small wire leads prepped for soldering

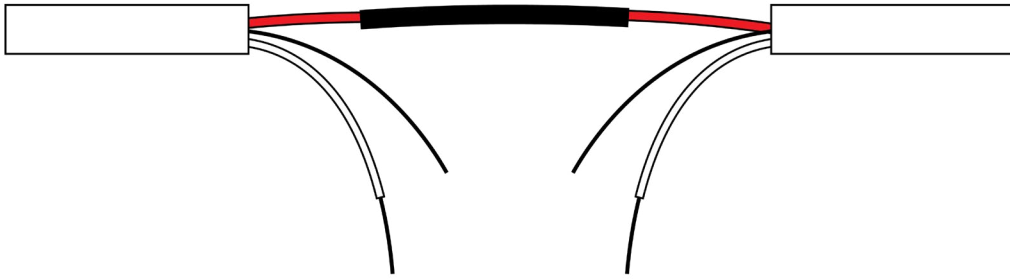


Figure 3. Small wire lead soldered, covered with heat shrink, and with no bare wire showing



Figure 4. All three wires soldered, covered, and prepped for sealing

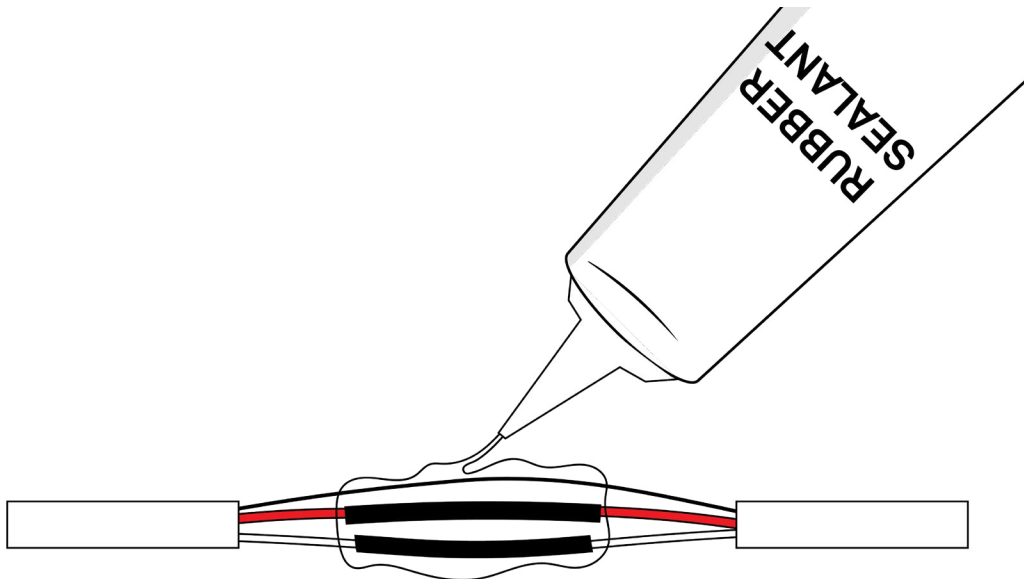


Figure 5. 100% Silicone is used to seal and keep moisture out of the connection

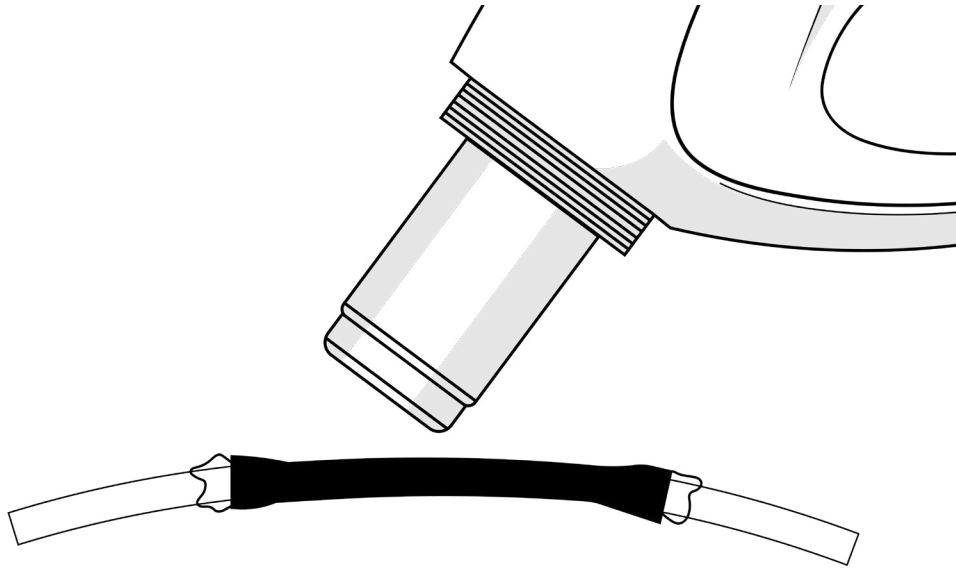


Figure 6. Heat shrink tubing with silicone over the entire connection



Figure 7. The final product