4500HT-9-5 Sensor

Connection Procedure

GEOKON®

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FIGURES

SENSOR CONNECTION PROCEDURE

If this splice will be subjected to high temperatures, all permanent materials used in the splice must be rated for the anticipated temperature.

TOOLS AND MATERIALS

- High temperature solder
- High temperature heat shrink tubing (rated to more than 250 °C)
- Grinder with cut-off wheel
- Torch
- Soldering iron
- Wire cutters/strippers
- Vice grips
- Two 12 mm (1/2") wrenches
- File

PROCEDURE

1. On the length of cable to be spliced to a sensor, use an ohm meter to ensure continuity for each signal wire from one end of the cable to another. Also check that there are no short-circuits between each signal wire and the stainless steel (SS) sheathing.
2. If there appears to be a problem with short-circuits or continuity, most likely the problem is near the end where the signal wires are exposed. You can use steps 3-5 to strip the SS sheathing back and prepare the end for the splice.
3. Use the grinder with a cut-off wheel to score the tubing about 20 mm from the ends of each cable. Do NOT cut through the SS casing, due to the risk to cutting the internal signal wires. Once scored, use the vice grips to work that 20 mm piece back and forth until it separates from the main section. Discard this piece and ensure there are no nicks in the sheathing of the internal wiring.

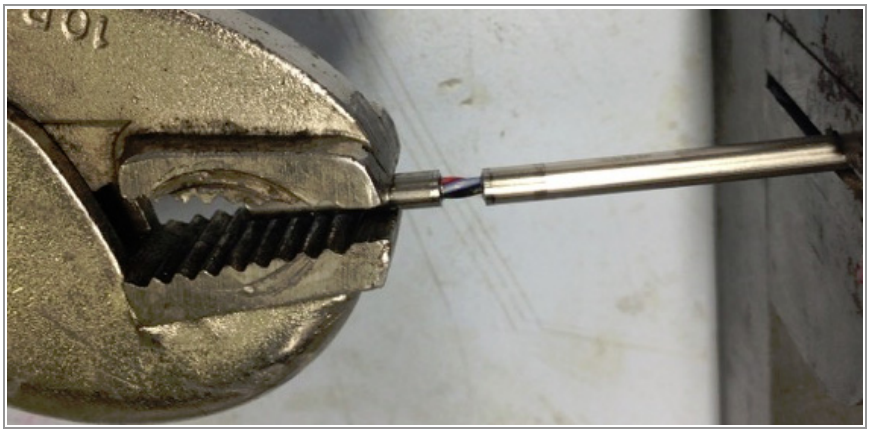

FIGURE 1: *Detach the 20 mm end piece using vice grips*

4. Slide the new 4 mm Swagelok nut and ferrules on the SS sheathing, making sure the orientation and order of the ferrules is correct. If the ferrules cannot be put on, the end of the SS sheathing may be flared from cutting. Use a file to remove the flare.

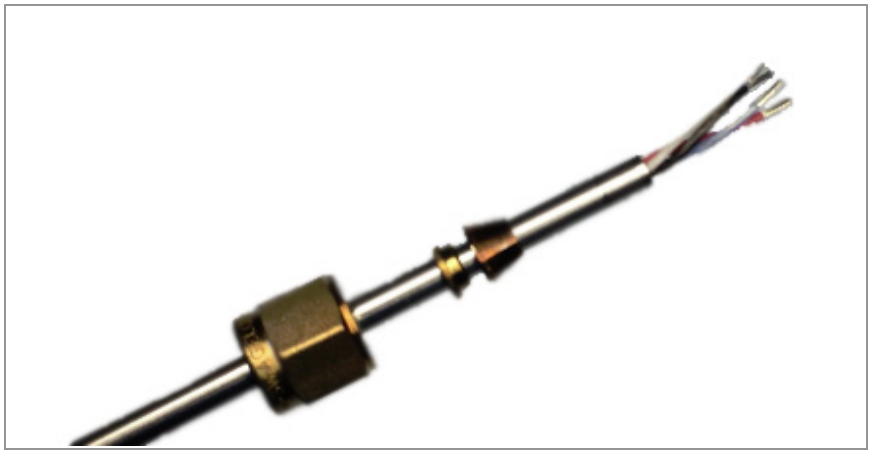

FIGURE 2: *Slide the Swagelok nut and ferrules onto the sheathing*

5. Strip the jacket off each of the four signal wires approximately 3 mm to 5 mm. Pre-tin the exposed ends with the high temperature solder. A temperature of about 415 °C is recommended for GEOKON solder.

   NOTE: High temperature solder contains lead (Pb). Slide an 8 mm length piece of heat shrink tubing on each of the four lead wires.

6. Overlap the pre-tinned parts of the corresponding signal wires from the cable and the sensor. The black, red, and white wires of the sensor should be attached to the matching wires of the signal cable. The green wire of the sensor should be attached to the blue wire of the signal cable. Apply enough heat to the overlapped wires to melt the solder and adhere the wires together.

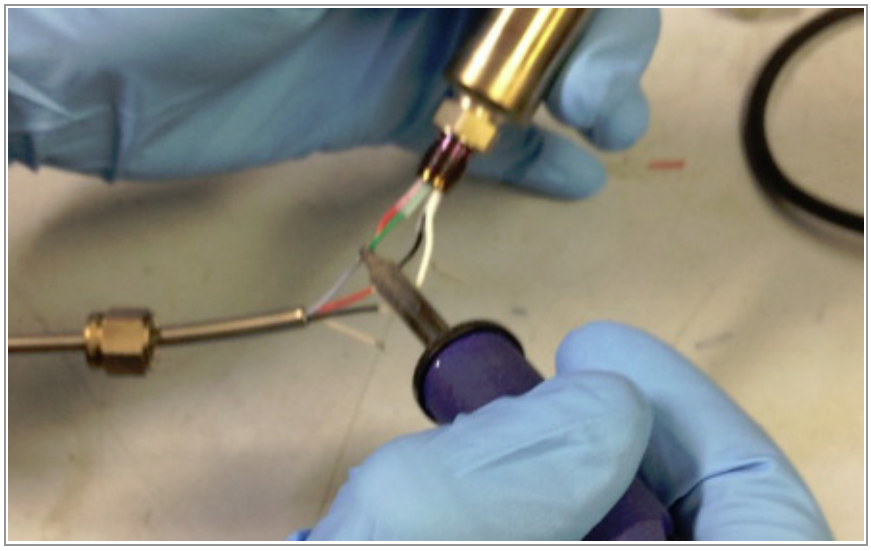

FIGURE 3: *Melt the solder and adhere the wires together*

7. Slide the high temperature heat shrink tubing so it is centered on each of the solder joints. Heat the shrink tubing so it is securely bonded with the signal wires.

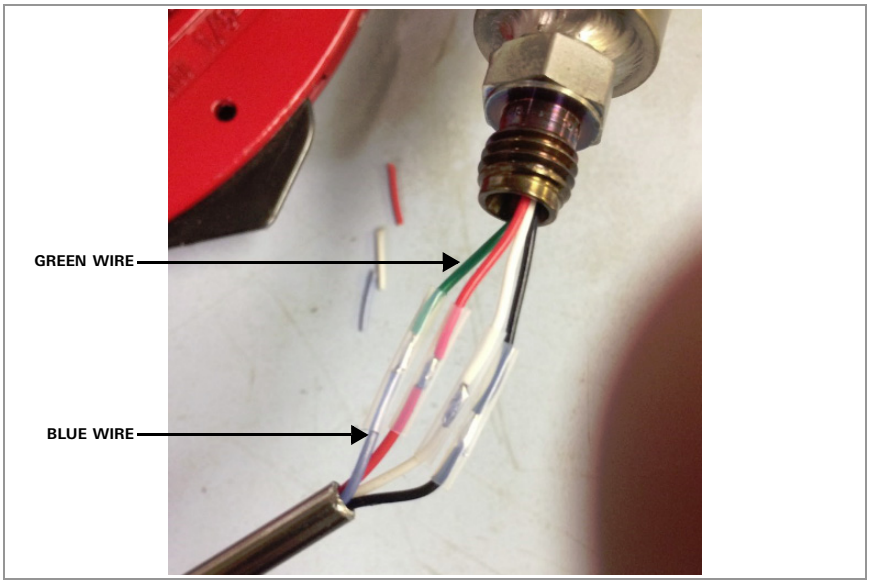

FIGURE 4: *Heat shrink tubing securely bonded to the wires*

8. Twist together and coil the wires in the piezometer so they become more stiff and make inserting the splice easier.

FIGURE 5: *Twist and coil the wires to simplify inserting the splice*

9. Check continuity from the end of the signal cable to the transducer.
10. Check that there are no short-circuits between the black/red pair and the blue/white pair, or to the SS cable housing. The black/red and blue/white pairs should both read 50 Ohms ±5, although long lengths of cable can affect this.
11. Slide the signal cable into the 4 mm Swagelok on the back end of the piezometer until it makes a positive stop, being careful not to pinch the signal wires. Tighten the 4 mm Swagelok 270 degrees past finger tight with the two 12 mm wrenches (see Figure 6).

NOTE: If the ferrule of the 4 mm Swagelok is already crimped on the tube, the nut needs to be only slightly tightened with a wrench.

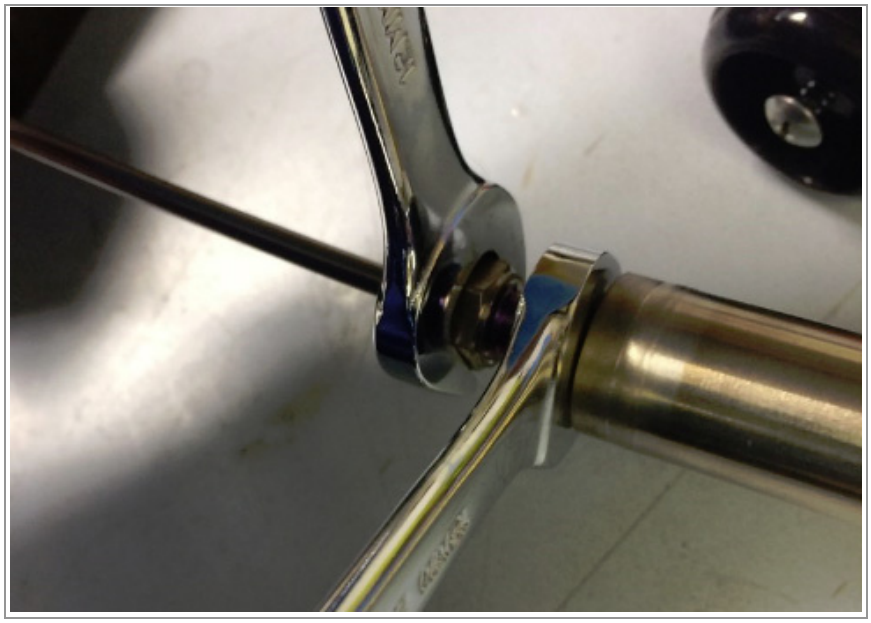

FIGURE 6: *Tighten the Swagelok*

Perform continuity and short-circuit checks to verify that the splice was successful.

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