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MP6520 Probe

The newly designed Geoprobe MP6520 is the most durable driven MIP produced. This probe features a replaceable thermocouple and newly engineered gas lines. These features give the MP6520 unprecedented life for MIP logging and virtually eliminate early probe failure. In addition, if some element of the MIP block system does fail (such as heaters or internal gas connections), the entire MP6520 probe can be returned to Geoprobe, the block and probe internals can be replaced, and the probe can be returned to service. In effect, the MP6520 probe can be recycled. The combined features of the MP6520 will yield benefits in lowering the cost of MIP logging operations, improving the quality of MIP logs, and improving the overall field experience of MIP operators.

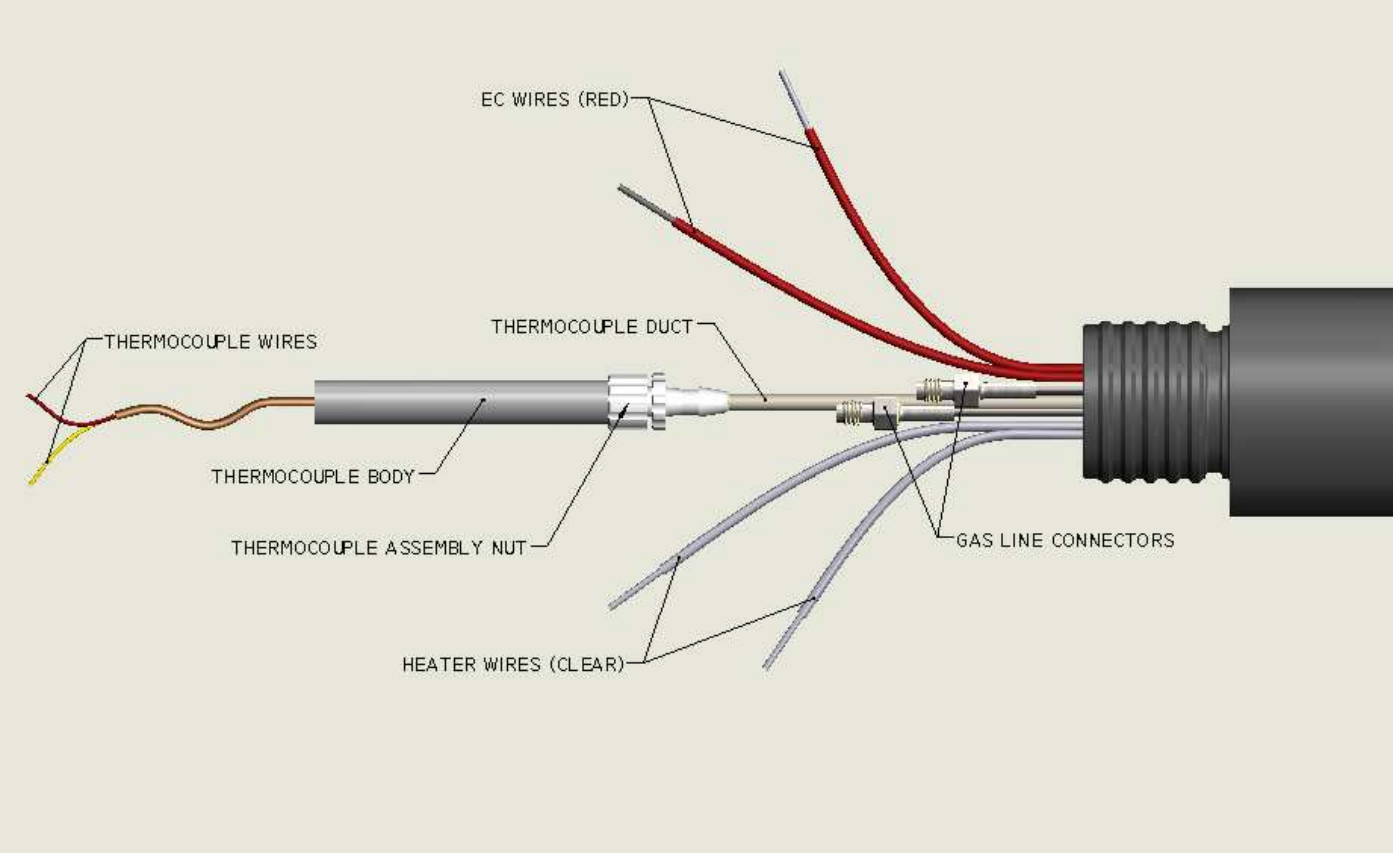

Fig. 1: MP6520 probe diagram

Required Tools

1. Wire cutter
2. Wire stripper
3. Wire crimper
4. ¼" open end wrench
5. 5/16" open end wrench
6. Small butane torch or lighter
7. Vaseline or dielectric grease
8. Heat shrink tape
9. Electrical tape
10. Pipe wrenches

Electrical Connections of the MP6520 to the Trunkline

1. Crimp together the yellow heater wires of the probe and trunkline and likewise the red conductivity wires. (Fig. 2) *The heater wires should have the shortest length between the trunkline and the probe to take the most stress of this connection.*
2. On the thermocouple, twist the yellow wires together and the red wires together and insert into the same end of the connector and crimp (Fig. 3).
3. Heat up the shrink tubing ends of the electrical connection after you have crimped down the connection (Fig. 4).

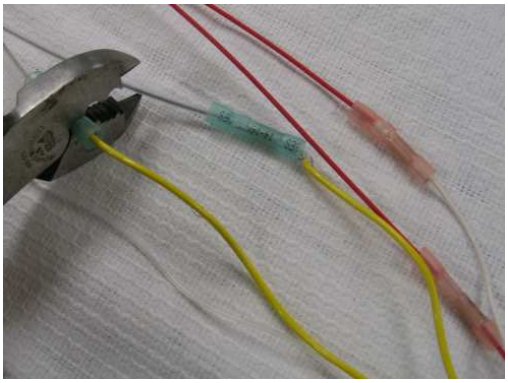

Fig. 2: Crimping a wire connector

Geoprobe does not recommend that wire nuts be used on any of the electrical connections. The crimp connectors provide a superior connection and lower risk of failure.

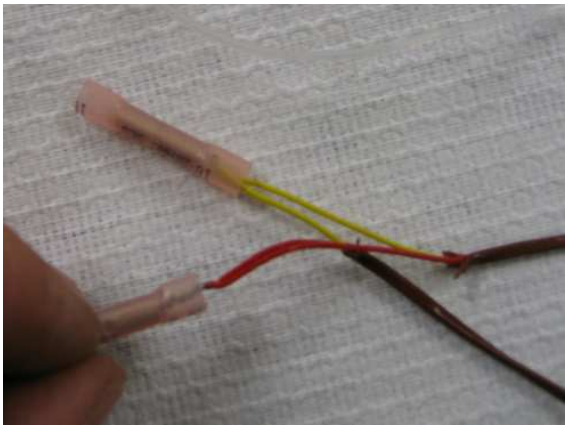

Fig. 3: Twist thermocouple wires together and insert into the same end of a crimp connector

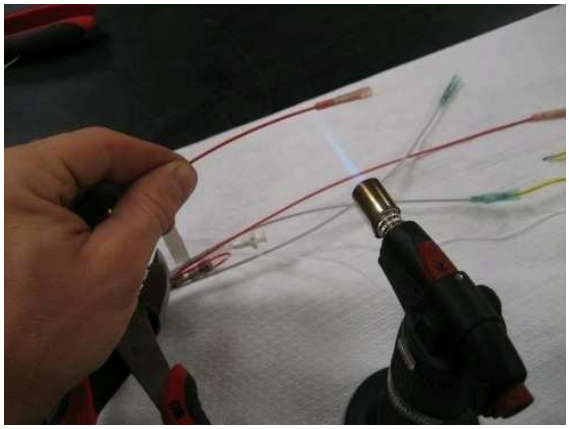

Fig. 4: Heating the shrink tube on the crimp connections

Connecting the Gas Lines

When connecting the gas lines (Fig. 8), whether using Teflon or Peek tubing, there should be slack in gas lines. If there is not enough slack, the tubing will stretch and break. If possible, wrap the excess gas line coming from the trunkline around the electrical wires in the connecting area (Fig. 5). This will help to take up the slack of the gas lines, allow for movement inside the connecting tube, and avoid any tight bends or folds of the gas line.

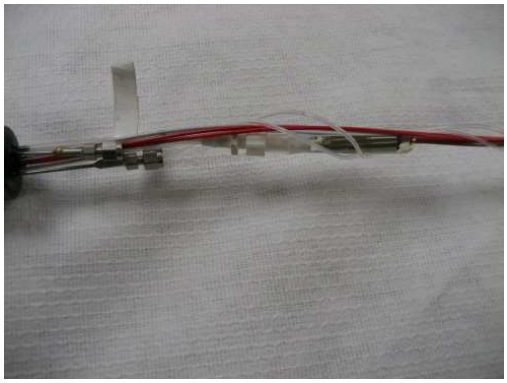

Fig. 5: Wrapping excess gas line around wires

1. Make sure you have a clean cut on the end of your gas line. Insert a swaglock nut and then the 1/16" back and front ferrules onto the gas line. Seat the ferrules onto the gas line using a 1/16" union. Remove the union.
2. Using a ¼" open end wrench, **hold** the swaglock fitting of the gas line that comes out of the probe steady, **do not turn this wrench**.
3. With your fingers, seat the swaglock nut of the trunkline gasline onto the swaglock connector of the probe gas line. Turn until snug, approximately a ¼ turn. **Do not twist the steel gas line of the probe.**
4. Now using a 5/16" open end wrench, turn the nut on the trunkline gas line end until snug (Fig. 7). This should be a ¼ turn of the wrench, if the ferrules have been previously seated onto the gas lines.
5. Check for leaks and check your flows. Return carrier flow should be within 4mL/min of your supply flow.

Fig. 7: Connecting the trunkline gas lines to the probe

Installing the Water Seal System

Using the water seal system will keep the inside of your MIP connection tube and all of the electrical and gas line connections completely dry.

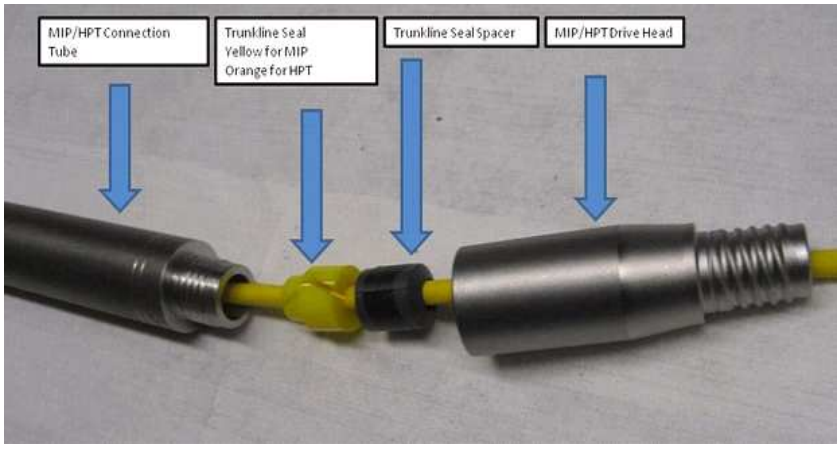

Fig. 8: Installation of the Water Seal System

1. Install the MIP connection tube (p/n 31641) onto the probe being careful of all of the wires.
2. Place the yellow trunkline seal (p/n 37032) around the trunkline at the top of the connecting tube (Fig.8). Placing some Vaseline or dielectric grease on the top seal will help ease the seating of the drive head (p/n 20712).
3. Insert the grey 2-piece trunklineseal spacer (p/n 36378) into the drive head and around the trunkline and then screw the drive head down onto the connecting tube. A pipe wrench will be needed on the final ¼ turn of the drive head.

Field Replacement of the Thermocouple

1. First remove the old thermocouple by cutting off the shrink tube that is placed at the assembly nut connection of the thermocouple.
2. Now you will be able of twist the assembly nut in a counter clockwise direction and slowly pull the thermocouple out of the thermocouple duct (Fig. 9) that leads into the probe.
3. The new thermocouple (Fig. 10) can now be inserted into the thermocouple duct (Fig. 11) of the probe. This tube is a specific length that will place the end of thermocouple exactly where it needs to be to accurately measure the probe temperature.

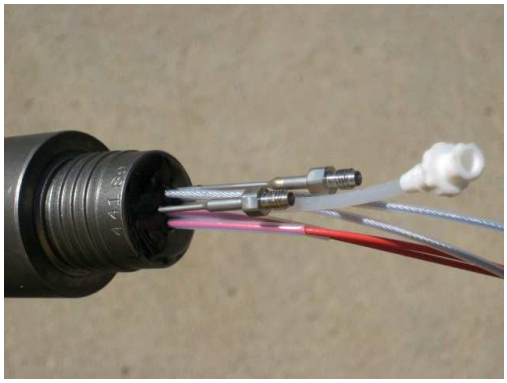

Fig. 9: Gas lines and thermocouple duct

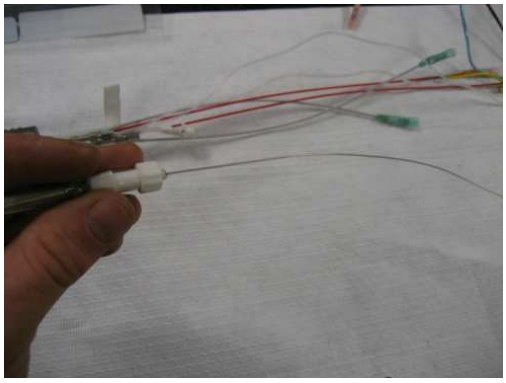

Fig. 10: View of the thermocouple and assembly nut

4. When the thermocouple has been placed into the probe, tighten the assembly nut down by hand.
5. Place shrink tubing around the assembly nut (Fig. 12). (A few wraps of electrical tape can be used if you do not have shrink tubing). This is very important since if the assembly nut is not secured, it has a tendency to loosen and the thermocouple will pull out of the duct while probing due to the vibrations. If this happens, the thermocouple will not be at the proper location in the probe and the temperature reading of the instrument will drop and will not be able to reach the set point of the instrument. When the continuity of the heaters and the thermocouple are measured they will provide accurate values. This can also cause damage to the probe since the actual heat of the probe is likely much hotter than the set point.
6. Test the heating of the probe. When the thermocouple is in the correct location, the probe will heat up to 121^{o}C in 55-70 seconds.

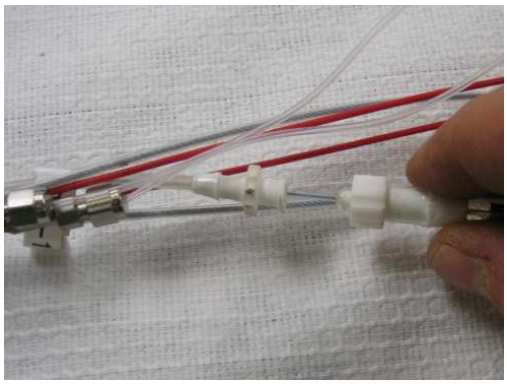

Fig. 11: Installing thermocouple into duct

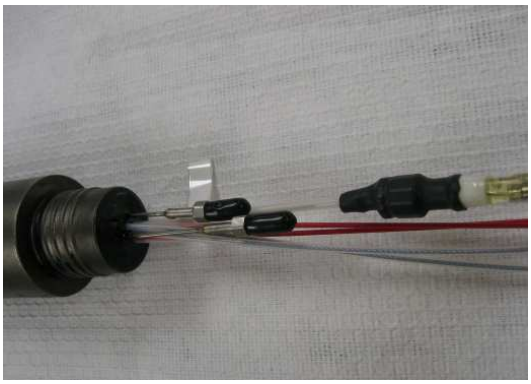

Fig. 12: Heat shrink around thermocouple connection