Ceramic Tube Replacement for the Agilent Dual Plasma Burner with the 355 SCD

Accessory G6600-60037

Purpose

To replace the ceramic combustion tubes used in the Agilent Dual Plasma Burner with the 355 SCD.

Scope

The Dual Plasma Burner for use with the Agilent 355 SCD has two combustion tubes that require replacement: the upper ceramic tube and the large ceramic tube. Generally the tubes should be replaced only if sensitivity decreases. The "Troubleshooting" chapter of the *Operation and Maintenance Manual* provides additional information to assist in determining whether tube replacement may be necessary.

Safety

Make sure all devices are powered off while performing the installation.

Materials

- Dual Plasma Burner accessory kit
- Open-end wrenches: 9/16", 7/16", 5/16", 5/8", and 3/8"

Procedure

1. Turn off power to the GC and the Controller and let the system cool down under vacuum.
2. Turn off power to the vacuum pump.
3. Lift the Burner out of the shroud. It is recommended to remove the coil, noting the position of the ferrule. In some instances, if the coil can be uncoiled, it may be convenient to leave it attached to the Burner.
4. Disconnect the hydrogen and oxidant lines.
5. Disconnect the power connector that leads to the GC, if necessary.

6. Tilt the Burner at an angle, so that when loosening the union fitting the upper ceramic tube does not slide down into the large ceramic tube.

7. Loosen and disconnect the union fitting, and pull the splitter fitting and upper ceramic tube out of the Burner.

8. Slide the upper ceramic tube out of the splitter fitting.

9. Slide the upper ceramic tube into the splitter fitting, so that approximately 4 mm of the tube extends beyond the top of the fitting. Then, slide the double taper ferrule onto the tube (see Figures 1 and 2 for proper positioning). Gently holding these parts so that neither the ferrule nor the upper ceramic tube slip out of position, finger-tighten the union fitting onto the splitter fitting.

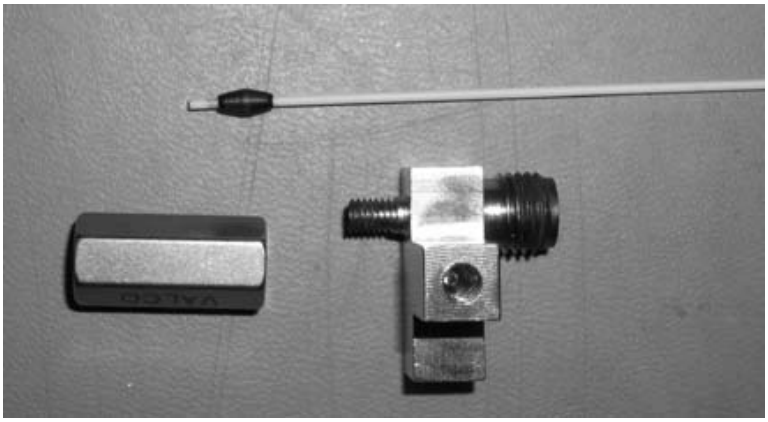

Figure 1 Orientation of the Double Taper Ferrule

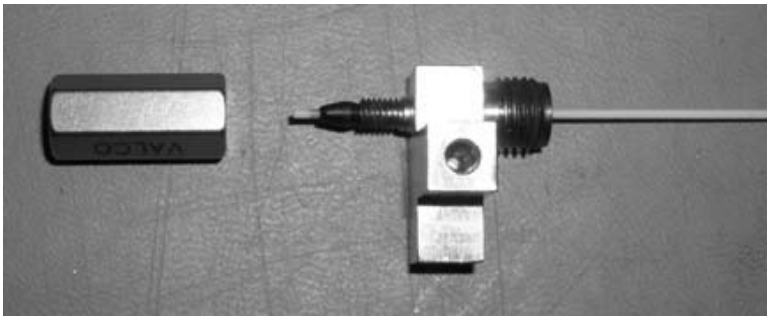

Figure 2 Positioning the Upper Tube in the Union Fitting

10. Holding the splitter fitting, gently insert the upper ceramic tube into the large ceramic tube coaxially, to avoid placing stress on the fragile upper ceramic tube. Lower the splitter fitting into place to engage the threads of the 1/4" Swagelok nut. Tighten finger-tight.

11. If you do not need to replace the Large Ceramic Tube, proceed to Step 19.

12. Remove the Tapered Union Fitting from the bottom of the Burner.

13. Slide the Large Ceramic Tube out of the Burner and remove it from the Quartz Heater Assembly.

14. Insert the new large ceramic tube into the quartz heater assembly. Position a 1/4" ferrule (flat end butted up against the top of the swivel

nut) onto the large ceramic tube. With the ferrule positioned against the swivel nut, approximately 0.5 cm of the large ceramic tube should extend outside of the nut. Insert the lower Burner tube into the center of the large ceramic tube and finger tighten the heater swivel nut onto the tapered union fitting.

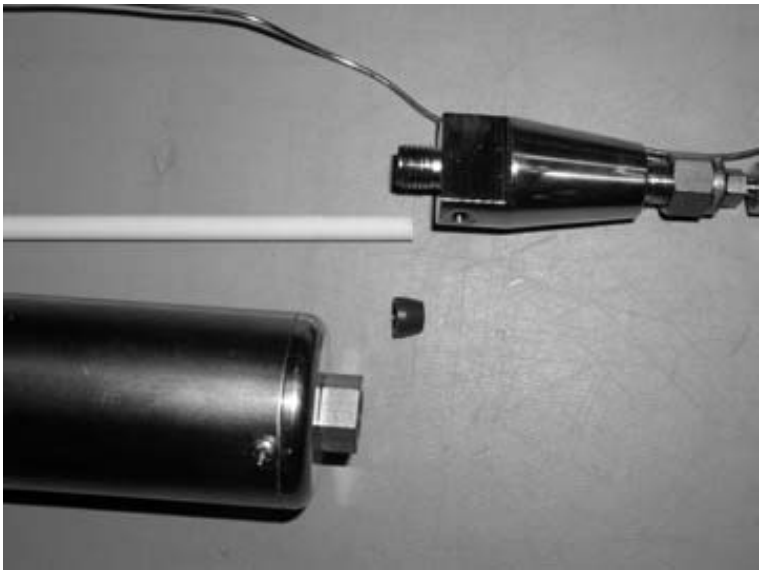

Figure 3 Proper Ferrule Orientation to the Large Ceramic Tube

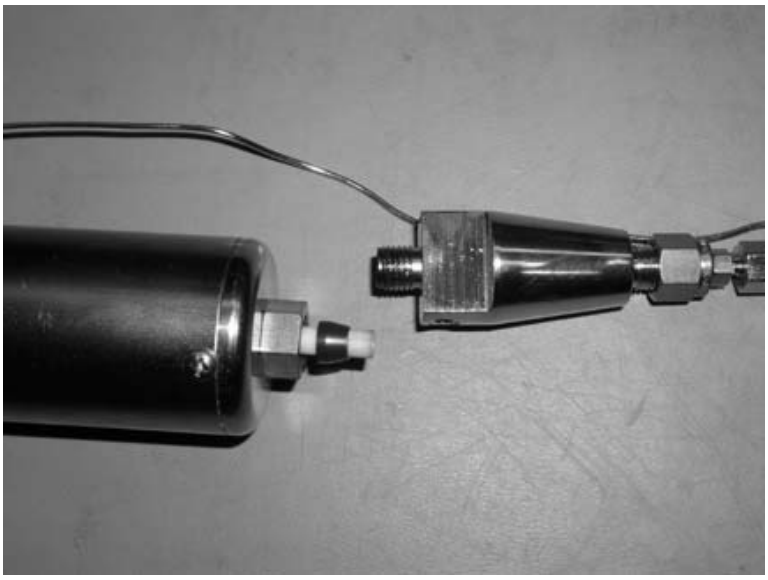

Figure 4 Large Ceramic Tube Properly Inserted into the Quartz Heater Assembly

15. Approximately 1.5 cm of the large ceramic tube should extend above the top of the quartz heater assembly. Slide a 1/4" Swagelok nut over the large ceramic tube and then also slide a 1/4" ferrule over the tube (flat side on back of the nut).

16. To begin the final alignment and tightening, use a 7/16" wrench and 5/16" wrench to tighten the 1/4" Burner adapter one-quarter turn past finger-tight.

17. Using a 5/8" wrench on the heater swivel nut and a 1/2" wrench on one of the flats of the tapered union fitting, tighten the heater swivel nut one-quarter turn past finger-tight. Using a 5/16" wrench on the ¼" Burner adapter, rotate this fitting so that the brazed H_2 line is aligned 180° (opposite) from the oxidizer Inlet port.

Figure 5 Tightening the Heater Swivel Nut

18. Making sure that the Burner inlet fitting does not loosen, use a 1/2" wrench on a flat of the tapered union fitting and 9/16" wrench on the 1/4" Swagelok nut of the Burner adapter to tighten the tapered union fitting one-quarter turn past finger-tight.

19. Rotate the quartz heater assembly so that the thermocouple and heater leads are in the same plane and pointed in the same direction as the peg on the Burner inlet fitting. Turn the splitter fitting so that H_2 inlet port is also aligned with the peg on the Burner inlet fitting.

Figure 6 Proper Alignment of the Burner

20. Tighten the nut on the splitter fitting one-quarter turn past finger-tight using a 9/16" wrench on the 1/4" nut and a 7/16" wrench on the flats of the splitter fitting.

21. Carefully bend the H_2 line into position so that the 1/16" Valco nut and ferrule can be screwed into the side port of the splitter fitting. Tighten the connection of the H_2 line to the splitter fitting using a 3/8" wrench on the vertical flat of the splitter fitting and 1/4" wrench on the Valco nut.

22. Make sure that no connections have loosened or moved out of alignment, if so, reposition or retighten the fittings as needed.

23. Replace the Burner in the shroud.

24. Follow the standard system start-up procedure, including column placement.

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