

Replacing the Silicone Tube Permeation Membrane in the DGA/TOGA Permeation Loop Accessory

The DGA/TOGA (Dissolved Gas Analysis) (Transformer Oil Gas Analysis) Permeation Loop Accessory for the SRI 8610C GC is mounted on the top of the valve oven. The Permeation Loop allows gases dissolved in a liquid (water, oil etc.) to permeate from an inner silicone tube into an outer loop for subsequent injection into the column. The Permeation Loop (PL) Is thermostatted typically to 100C



Loosen the two hex head screws (use a 7/64" hex wrench) clamping the heater block against the glass outer loop. You don't need to completely remove the screws, just loosen them enough to slide the glass tube out of the clamshell.



Pull the glass tube clear of the heater block. Be careful not to break the glass tube.

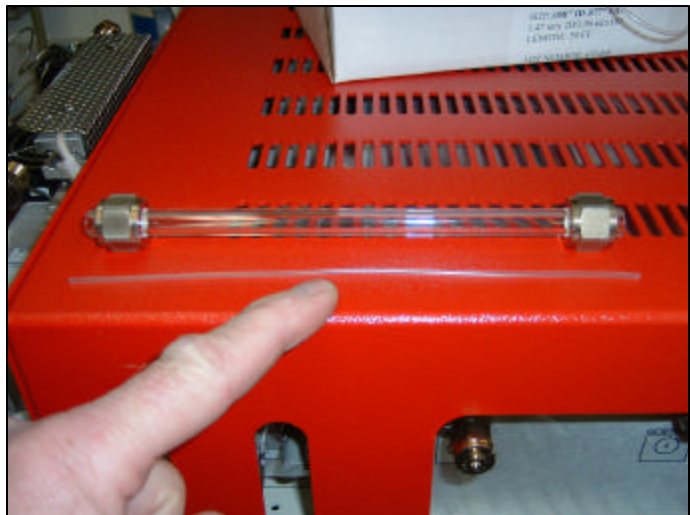


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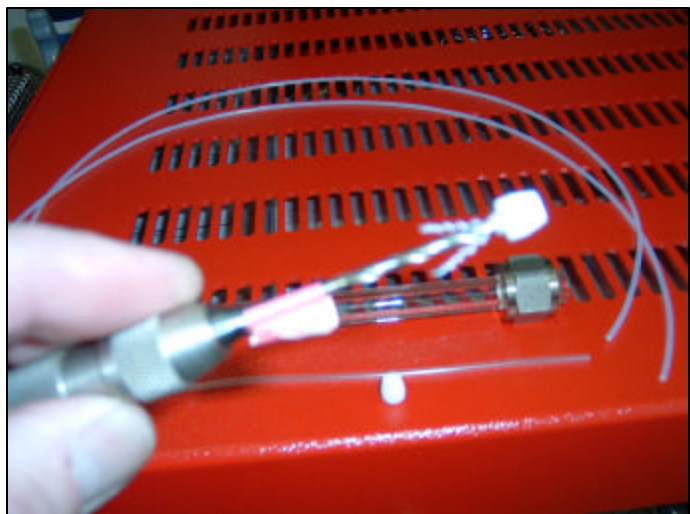
Using both a 5/8" and 11/16" wrench (always use two wrenches to avoid stressing the glass tube) loosen the nuts securing the glass tube to the end fittings.



Cut a piece of silicone tubing to the same length as the glass tube (7.25" 18cm.). The silicone tubing is .0062" ID 1.57mm and .095"OD 2.41mm. The silicone tubing is available from Helix Medical (800-266-4421) part# 60-411-46. The exact size of tubing is not critical, so use anything which is close.

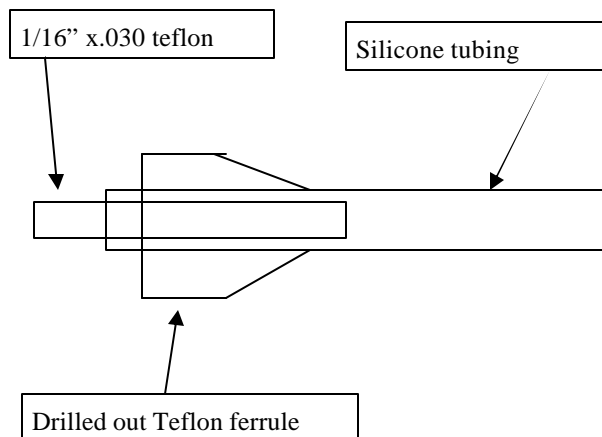


Drill two 1/8" Teflon ferrules out to .099" (2.51mm). It is easiest to start with 1/8" to 1/16" Teflon reducing ferrules and use a drill bit to open up the hole size. You will also need two 18" pieces of 1/16" Teflon tubing with an ID of .030". Using your fingers gently work the silicone tubing over the ends of the Teflon tubing so that 1/2" of the Teflon is covered by the silicone.

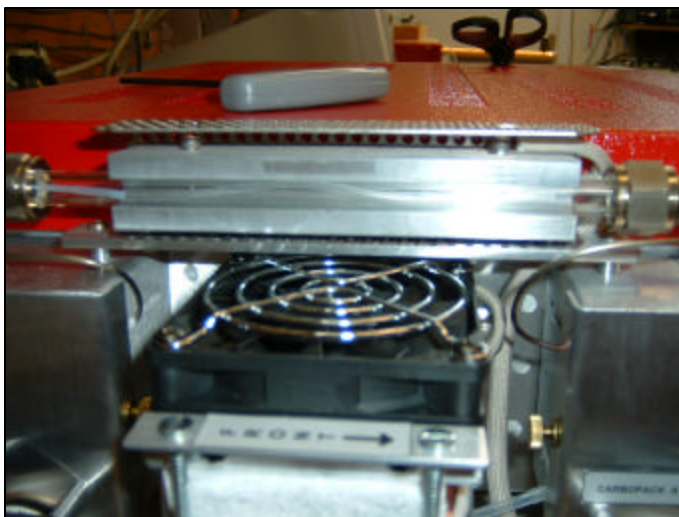


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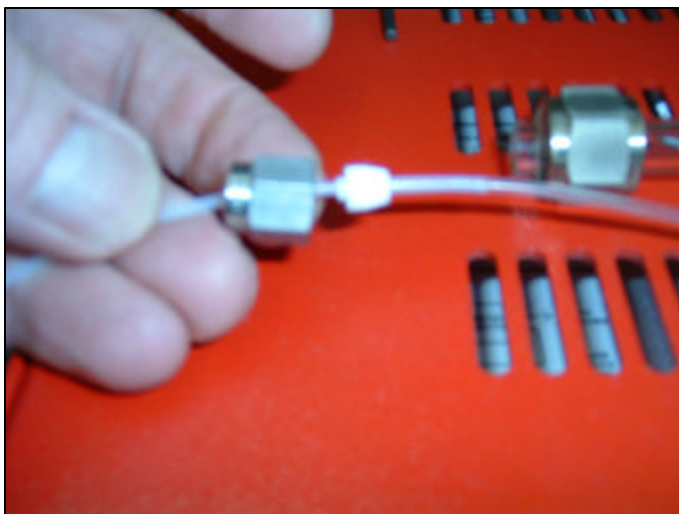
To prevent the silicone from slipping off the Teflon tubing the ferrule clamps the silicone and Teflon tubing together



Re-assemble the glass tubing into the heater block and secure with the two hex head screws. Don't over tighten the screws



Feed the Teflon/Silicone/Teflon tubing through the glass and tighten the first nut and ferrule so that the silicone is clamped tightly to the teflon under the ferrule.

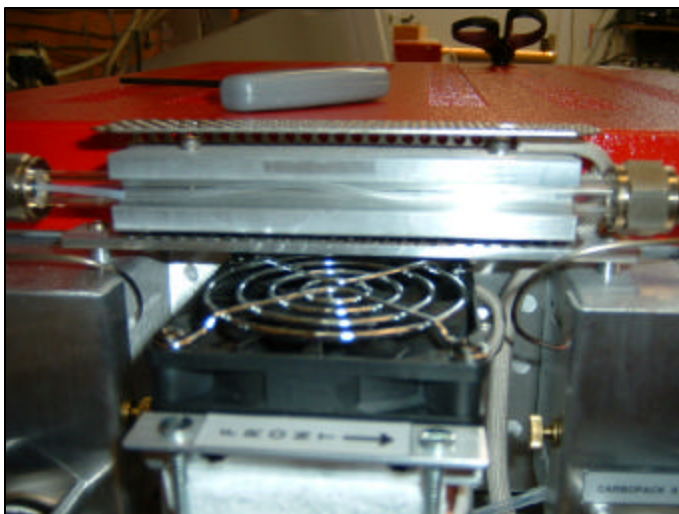


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Tighten the second nut and ferrule on the opposite side of the glass tubing. You will have to stretch the silicone making sure the silicone is clamped under the second ferrule. We stretch the tubing because transformer oil causes the silicone tubing to swell in length so to avoid having the tubing kink inside the glass is best to stretch it during the installation.



Re-assemble the glass tubing into the heater block and secure with the two hex head screws. Don't over tighten the screws. Note that you can see the silicone tubing inside the glass tube even when the heater is assembled. Periodically check the silicone to make sure it is not kinked, leaking or collapsed.



Attach several overlapping pieces of silicone/tygon tubing to connect the 1/16" teflon tubing exiting the permeation loop to the inlet of the peristaltic pump.

