

Field Sampling Procedure Using Canisters with Quick-Connect (QC) Fittings: Vapor Collection Using Entech Critical Orifice Flow Controller

Equipment provided by the laboratory:

- Evacuated Canister
- Entech Critical Orifice <200 ml/min Flow Controller (maximum flow rate 150 ± 15 mL/min)
- Chain-of-Custody (COC)
- Teflon tubing (optional)
- Nut/pink ferrule (optional)

Preparing the canister for sample collection:

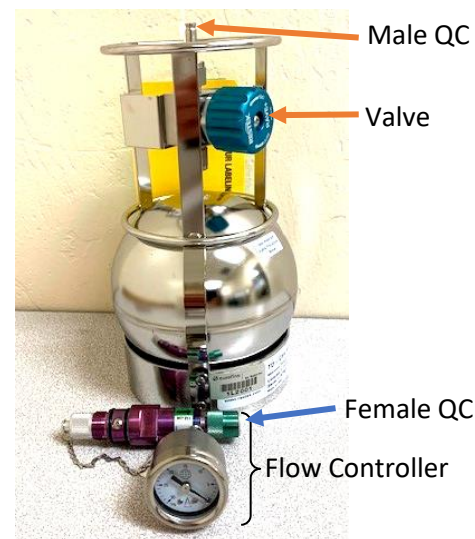


Figure 1. Male QC fitting check

- 1) Confirm canister valve is closed.
- 2) Check the male QC on the canister and verify the stem tip is tight. If loose, finger tighten by screwing tip clockwise (Fig 1.)

- 3) To install the flow controller on the canister, pull back on the sleeve of the female QC fitting (Fig 2.)
- 4) Place the female QC fitting over the male QT fitting located on top of the canister, then release the sleeve once fully seated. Gently pull up on the flow controller to make sure it is securely connected to the canister. Once installed, the vacuum gauge will read zero.
- 5) Verify initial canister vacuum and Flow Controller assembly connection.

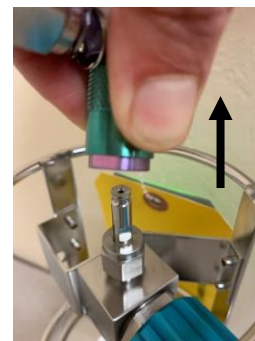


Figure 2. Female QC installation

- a. With the cap on the flow controller hand-tightened, open and close the valve quickly to register the vacuum of the canister.
- b. The vacuum on the gauge should read between **25 to 30 in Hg** and hold steady. If the vacuum reading drops toward zero, make sure the cap is hand-tightened, and the Entech FC body above the gauge is hand-tightened by rotating clockwise if needed (Fig 3.) **Do not use wrenches to seal the Entech flow controller body.**
- c. Record initial vacuum level ("Hg) on the Chain of Custody (COC) in the "Initial (in Hg)" field.

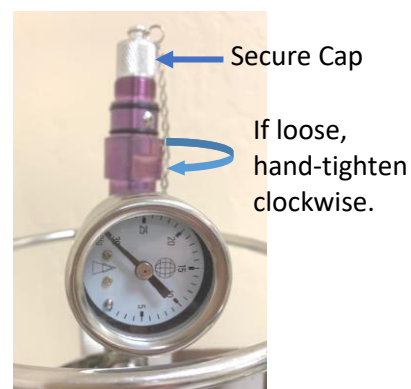


Figure 3. Pre-sample Vacuum check

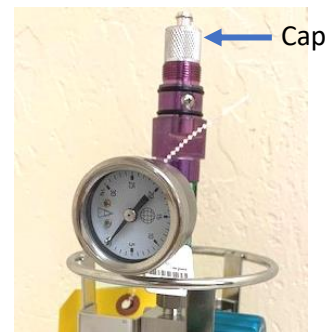
DO NOT USE WRENCHES ON THE ENTECH FLOW CONTROLLERS

Connecting sampling train to a vapor source using tubing (if applicable):**Figure 4. Seat Ferrule/Nut**

- 6) To install the tubing, ensure the valve is **CLOSED**, remove the cap on the flow controller. Attach the tubing to the flow controller inlet using a 1/4" nut and a pink ferrule positioned as shown in Figure 4.
- 7) Push the nut down the tubing to properly seat the ferrule onto the flow controller inlet and tighten the nut by hand (Fig 5) and a quarter turn using a 9/16" wrench. Verify the connection is secure by tugging on the tube to ensure it stays in place. (A shut-in test can be performed to verify connection is leak tight.)

**Figure 5. Secure Probe Tubing****Collecting the sample:**

- 8) To begin sampling, ensure the valve is **CLOSED**. If no tubing connection has been installed, remove the cap on the flow controller. Open the canister valve counter clockwise **no more than 1/2 turn** to begin sampling. Attempts to open the valve further can lead to valve damage and sample loss.
- 9) At the start of sampling, the vacuum gauge will read approximately 30 in Hg. When the gauge approaches 5 in Hg, close the valve by hand-tightening clockwise. A 1L canister will reach this vacuum in approximately 5 minutes and a 6L canister will require about 30 minutes.
- 10) To record the final field vacuum, detach the tubing from the flow controller (if applicable) and re-install the cap (Fig 6). Quickly open and close the valve on the canister. **Record the final vacuum to the nearest 0.5 in Hg on the COC.**

**Figure 6. Record final field vacuum****Preparing the canister sample for return shipment to lab:**

- 11) After all the sample fields on the COC have been completed, verify the valve on the canister is closed and detach the flow controller by pulling back the sleeve of the female QC fitting and lifting it upwards off of the canister.
- 12) Verify canister tags are filled out and match the COC. If cans are unused, please check the "unused" box on the canister tag. Return canisters and flow controllers in boxes provided by the laboratory using the packaging provided. Sign and date the "Relinquished by:" field and place the completed COC in each sample box. *Note: You may keep a carbon copy of the COC for your records.*
- 13) Securely tape box shut and ship to the laboratory via USPS, FedEx, or UPS. Canisters should be delivered within 10 days of sample collection to ensure laboratory has sufficient time to process samples within the 30 day sample hold time.

Return Address: Eurofins Air Toxics, 180 Blue Ravine Rd. Ste. B, Folsom, CA 95630