

## **Appendix D**

### **DRI 12-Port Manifold Canister Sampling System Operator Instructions**

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**Operator Instructions**  
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**1.0 CONTACT**

Questions or comments regarding the manifold canister sampling system should be addressed to Larry Sheetz of the Desert Research Institute (e-mail [larrys@sage.dri.edu](mailto:larrys@sage.dri.edu), 702/677-3199).

**2.0 GENERAL DESCRIPTIONDESCRIPTION**

The manifold canister sampler is designed to collect up to twelve 6-liter canister samples simultaneously at a maximum flow rate of approximately 1.6 liters/min. A stainless steel Viton pump draws in ambient air from a 316 stainless steel 12-port manifold to fill and pressurize the canisters. A flow control device maintains a constant flow into the canisters over the desired sampling period. The sampling system is shipped in two pieces, which are both contained in one shipping box. The sampler is contained in a white 2'x2'x2' box. This box also contains the manifold assembly which is packed in an aluminum box, and a plastic bag containing all necessary fittings and tools. The twelve 1/8-inch stainless steel sampling lines that are used to connect the canisters to the sampling manifold are contained in a separate brown cardboard box.

**3.0 QUALITY ASSURANCE STATEMENTASSURANCE STATEMENT**

Prior to shipment of the manifold sampler, the 12-port manifold, fittings and stainless steel sampling lines are cleaned with deionized water and baked at 170°C for 24 hours. The canister sampling system is cleaned prior to field sampling by purging them with humidified zero air for 48 hours, followed by purging with dry UHP zero air for 1 hour. The canister sampling system is certified clean by the GC/FID analysis of humidified zero air collected through the sampling system. The system is considered clean if the concentration of any individual targeted compound is less than 0.2 ppbv and total NMOC concentration is less than 20 ppbC. In addition, a challenge sample, consisting of a blend of organic compounds of known concentration in clean humidified zero air, is collected through the sampling system and analyzed by the GC/FID method. The sampling system is considered non-biasing if recoveries of each of the challenge compounds is in the range of 80-120% (EPA document EPA/600-8-91/215). The 12-port manifold sampler is also pressure tested for possible leaks.

**4.0 PREPARATION FOR SAMPLINGFOR SAMPLING**

1. Before departing for the field, ensure that all sampling components that are described in section 2 are accounted for. Verify that all canisters are properly labeled and have at least -25 psi vacuum. Take appropriate number of blank field data sheets.

**5.0 SAMPLER SETUPSETUP**

2. Remove aluminum case and plastic bag from white sampling box.

3. Remove the 12-port sampling manifold from the aluminum case and place on the right edge of the white sampling box using the thumb screws to fasten in place (note photograph). The thumb screws can be left loose at this point to allow the manifold to slide until ¼-inch tubings are installed.
4. Remove the longer of the two ¼-inch tubing (marked with purple tape on one end) from the aluminum case. Use the 9/16-inch wrench (contained in the plastic bag) to remove the cap from the pump in the sampling box, and attach the end of the ¼-inch tubing with the purple tape. Connect the opposite end of the tube to the T-fitting on the 12-port sampling manifold (the connection pointing to the back of the sampler).
5. Remove the remaining ¼-inch tubing (marked with gray tape on one end) from the aluminum case. Remove the cap from the port marked canister on the sampler assembly, and attach the end of the ¼-inch tubing with the gray tape. Connect the opposite end of the tube to the 3-way T-fitting on the 12-port sampling (the connection pointing to the front of the sampler).
6. Tighten thumb screws on the sampling manifold after aligning the ¼-inch tubing. Attach the sampling line to filter holder. Adjust alignment of the filter holder before tightening.
7. Remove the 110-v power cord from plastic bag and plug cord into the power socket located in the right rear of the sample
8. Plug power cord into wall power source. Sampling fan and timer clock should come on.
9. Remove cap from sample exhaust (located above timer).

**6.0 ATTACHING CANISTERS TO THE 12-PORT SAMPLING MANIFOLD.  
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1. Place up to twelve cans in four rows of three as shown in the photograph.
2. After placing cans in position, remove 1/8-inch stainless steel canister sampling lines from cardboard box. Note that the shortest lines are marked lines 1 through 3. These numbers correspond to the position on the 12-port sampling manifold. Remove aluminum foil from both ends of the sampling line and connect the lines to the sampling manifold and canisters starting with the canisters closest to the sampler. Remove caps on the 12-port sampling manifold as each sampling line is installed. Check that caps on all unused ports are tightly fasten.

**7.0 OPERATION OF MANIFOLD SAMPLER OF MANIFOLD SAMPLER**

The valve (marked with a white arrow) on the 12-port sampling manifold has two positions: atmosphere and pressure. The sampling lines are open to the atmosphere when the arrow points to the back of the sampler. To pressurize the canister, the arrow is position to point to the front of the sampler.

1. Place manifold valve in pressure position (i.e., pointing to front of sampler).
2. Open canister valves one at a time noting that each canister is under vacuum by reading the pressure gauge nearest to the front of the sampler. All canisters should have been checked for vacuum back in the laboratory prior to going out to the field. Connecting a canister that is not under vacuum can cross contaminate all other open canisters that are connected to the manifold.
3. After connecting all canisters and turn manifold valve to atmosphere position (i.e., pointing to back of sampler). All canisters will come up to zero (ambient) pressure. Check pressure gauge.
4. Turn manifold valve to pressure position (i.e., pointing to front of sampler).
5. Turn pump on by positioning the toggle switch (located front left of the timer box) to the on position (right). Pump will come on and the red and green lights on the timer will come on. Red light means that the pump is on, and the green light means that the sampling solenoid is open.
6. Leave pump on until the gauge pressure reads 15 psi. At a flow rate of 1.6 liters/min, it should take approximately 40 minutes to fill twelve canisters.
7. To terminate sampling, turn toggle switch to the off position and immediately close all canister valves. Sampling is complete.
8. Fill out the appropriate information on the field data sheets.
9. Carefully reinstall all parts, manifold and sampling tubes.