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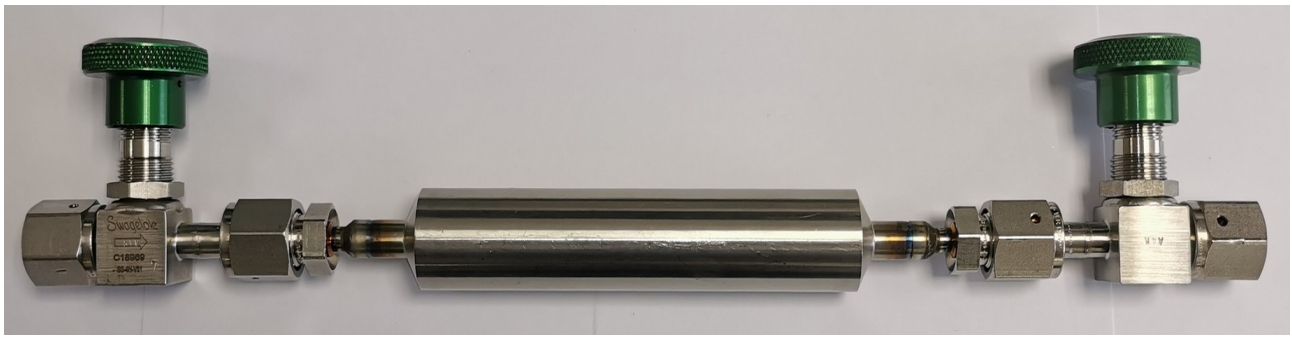
Instructions For Using Gas Sample Collection Cylinders

Single valve cylinder for dry box atmosphere sampling



Double valve cylinder for line sampling

CAUTION : COLLECTION CYLINDERS ARE SHIPPED TO YOU UNDER VACUUM. DO NOT OPEN VALVES UNTIL READY TO COLLECT SAMPLE. AFTER SAMPLE HAS BEEN COLLECTED, BE SURE TO CLOSE VALVES BY FINGER TIGHTENING ONLY.

ORS Gas Sample Collection Cylinders are used for collecting representative samples of sealing and process gases. The following instructions should be followed carefully to assure that the sample you collect is as representative of your process as possible.

1. Cylinders are shipped to the customer under vacuum (estimated vacuum is 10^{-7} to 10^{-8} torr). Do not open the valves until the cylinder is in place to collect the sample.

   There are several reasons for keeping the cylinder under vacuum : it minimizes possible contamination of the cylinder interior when not in use, it assures that residual gases from previous samples are not mixed with your sample, and it allows samples of unpressurized gases to be collected (i.e. sealer atmosphere, etc.).

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2. **To collect a sample of low pressure process stream gases,** connect a **double valve cylinder** using the gas tight Swagelok fittings to the gas supply at the desired location. When sealing the Swagelok fittings, tighten with a wrench only 1 ¼ turns past finger-tight. Do not overtighten the fittings. Slowly open the valve from the source (if appropriate) and check for leaks at the fittings. When all connections are secure, carefully open the inlet valve on the cylinder. The cylinder is under vacuum and the gas flow will be high initially. After the pressure has stabilized, open the valve fully. Slowly open the outlet valve on the cylinder so that a moderate gas flow passes through the cylinder. Allow the gas to purge through the cylinder for several minutes. This will assure the collection of a homogeneous sample. After several minutes, close the outlet valve. Then, close the inlet valve and the valve from the source. Carefully remove the cylinder from the gas source.

3. **To collect a sample of a dry box atmosphere,** pass a **single valve cylinder** into the sealer through the airlock. When ready to take the sample, slowly open the inlet valve of the cylinder slightly to allow the vacuum to begin drawing the sample into the cylinder. Once the pressure has stabilized, open the valve fully. Allow the cylinder to sit and achieve equilibrium for around 20 minutes. Close the inlet valve and remove the cylinder from the dry box.

   If a vacuum line is available inside the sealer, attach it to the outlet valve of a **double valve cylinder** using gas tight fittings. When ready to collect the sample, slowly open the inlet side of the cylinder slightly. After several seconds, fully open that valve. Once the pressure inside the cylinder has reach an equilibrium with the dry box, carefully open the outlet valve on the vacuum side of the cylinder to allow the vacuum to draw gas through the cylinder. After several minutes, close the vacuum side valve, wait for the pressure to stabilize, then close the inlet valve. Make sure the valves are properly closed. This technique can also be used to draw a sample from other non-pressurized sources such as the inside of sealing furnaces.

4. After collecting the sample, wrap tape around the valve(s) to minimize accidental tampering. Fill out the tag attached to the cylinder ; the information regarding the sample's pressure and approximate make-up is especially important. This information allows us to set all of the appropriate instrument parameters to assure accurate quantitation of your sample.

5. Carefully package the cylinder for shipment to ORS (use the original packing material, if possible).

If any questions or concerns arise, please call either
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