

CLOSED LOOP SAMPLE SYSTEMS

Manual Continuous sample system is a closed loop liquid sampler that satisfies many sampling needs. This system will take emission free, representative samples of process while providing operator safety. Our patented valve design ensures zero dead volume throughout the sample valve assembly. Easy to install and operate, process pressure is used to dispense the sample into the sample bottle.



Applications:

- Oil refineries
- Petrochemicals
- Chemicals
- Natural gas
- Underground facilities
- Pharma and biotechnology

Samples:

- Crude oil
- Petroleum products
- LPG
- Natural gas
- Chemicals
- Petrochemical products

Principle of Operation

- Closed-loop gas sampling systems has been designed to take representative sample from the process.
- Using the special flow-through sample valve guarantees operator safety and zero dead volume.
- The first step is purging the line with process by opening inlet and outlet valves. Flow-through sample valve provides safe operation and avoids immediate pressure drop on the sample cylinder.
- Special quick connectors used in system capable to operate at deep vacuum to high pressure conditions, preventing the sample leakage.



MODCON SYSTEMS LTD.

Leaders in Analysis, Measurement and Automation



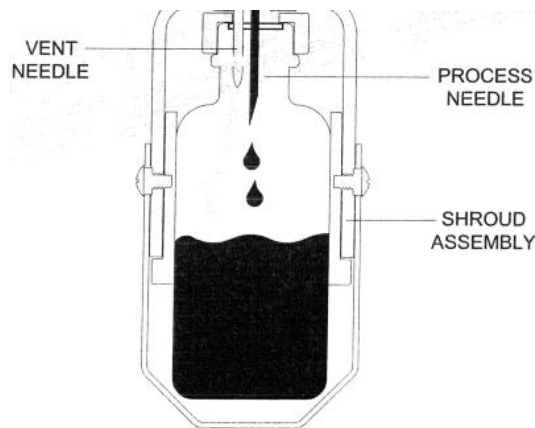
Registered in England and Wales with company number 3838753
Suite 1674, Lower Ground Floor, 145-157 St John Street, EC1V 4PW
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CLOSED LOOP SAMPLE SYSTEMS

Sampling in bottles

The Sampling System consists of a bottle, sealed with cap and septum. In one position, the product can flow into the sample bottle via the through flow-needle valve, while air and gases are vented. When the required sample is taken, the operator closes the sample flow and the bottle is pulled out. The septum reseals automatically.



Laboratory bottles

Laboratory bottles are made of the borosilicate glass 3.3, featuring excellent chemical properties and a high thermal resistance. They are chemically resistant and stable. After completion with a plastic pouring ring, they enable liquids to be easily poured out. All bottles of the volume 100ml and higher have the same thread size, the screw cups can be mutually interchangeable. The bottle, pouring ring, and screw cup can be sterilized.

Handling instructions:

a) Freezing of substances

- Freeze the bottle in a skew position (about 45°) and filled up to max. 3/4 (volume expansion).
- Temperature limit: -40 °C as plastic lids and pouring rings do not resist to lower temperatures.

b) Thawing of substances

- Thawing of a frozen material can be carried out by submerging the bottle into a liquid bath (temperature difference should not exceed 100 °C). The frozen material will thus be heated up uniformly from all sides and the bottle will not be damaged. Thawing can also be accomplished slowly from the top so that the surface is first liquefied and the material can expand.

c) Sterilization

- During sterilization, the screw cup can only lightly be fitted on the bottle (screwed with max. one rotation). Pressures are not equalized when the bottle is closed. The pressure difference created in this way can result in the bottle breakage.

d) Pressure resistance

- The laboratory bottles are not suitable for works under pressure or vacuum.

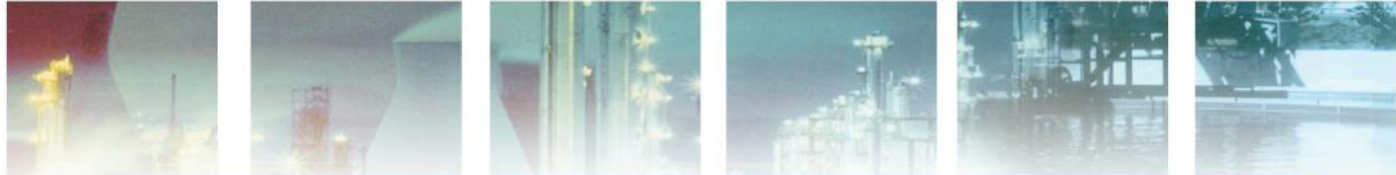


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Sampling in cylinders

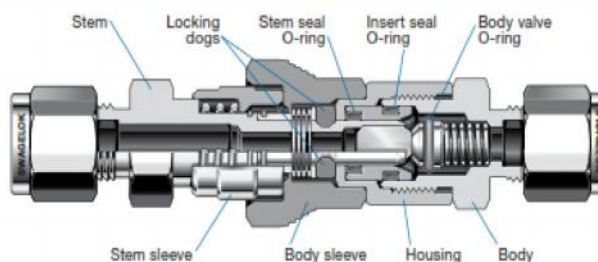
The Sampling System consists of a cylinder, at both ends equipped with needle valves and quick connectors. Once in position, the product can flow through the sample cylinder. When product is transferred to the cylinder, the operator closes the needle valves on the sample cylinder and allows the quick connect to be depressurized to a vent/flare connection. The cylinder may be then disconnected from the sampling system.



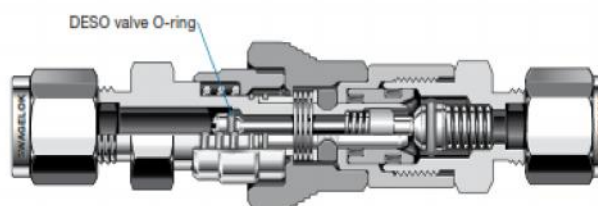
Instrumentation Quick-Connects QC Series

Features

- Redesigned stem insert requires just one O-ring seal, yet improves O-ring containment.
- New-design stems and bodies interchange with old-design stems and bodies.
- Locking dog mechanism with large contact area retains stem.
- Push-to-connect coupling enables quick, easy operation.
- Wide variety of options, including keyed quick-connects, are available.
- Heavy-duty sleeve shields open end of body.



Double-End Shutoff (DESO) – Red Stem Sleeve



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Sample Cylinders

Features

- Body made of seamless tubing provides consistent wall thickness, size, and capacity.
- Smooth internal neck transition allows easy cleaning and eliminates trapped fluids.
- Cold-formed female NPT threads provide greater strength.
- Heavy-wall end connections provide strength and resist flaring.
- Full-penetration gas tungsten arc-weld construction provides leak-tight sample containment.

Double-Ended Cylinders

- Sizes from 40 to 3785 cm³ (1 gal)
- Working pressures up to 5000 psig (344 bar)
- 304L and 316L stainless steel materials resist intergranular corrosion.



Outage Tubes

Features

- Made from 316 stainless steel or alloy 400 tubing
- Offered in 1/4 or 1/2 in. NPT sizes
- Marked "Outage Tube" for identification

Purpose

Outage tubes provide a vapor space of the desired volume in cylinders containing liquefied gases, so that liquid in the cylinder can expand if the temperature increases. Without enough vapor space, a small temperature increase can cause the liquid to expand and increase the pressure dramatically.

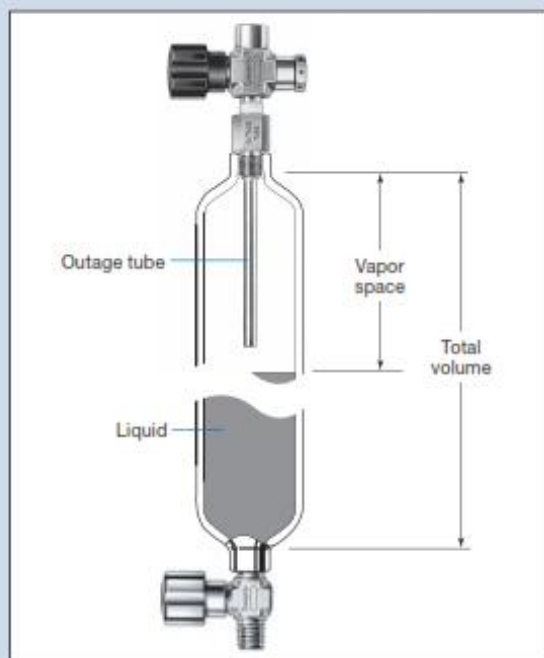
See local regulations and other appropriate guidelines for safe filling limits for your application.

Use

Outage is the vapor space in the cylinder expressed as a percentage of the total volume of the cylinder.

$$\% \text{ outage} = (\text{vapor space} / \text{total volume}) \times 100$$

The cylinder is held vertically with the outage tube at the top, as shown. The length of the outage tube determines the amount of vapor space. Sampling methods and the use of the outage tube are described in technical publications such as ASTM D1265, *Standard Practice for Sampling Liquefied Petroleum (LP) Gases (Manual Method)*.



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