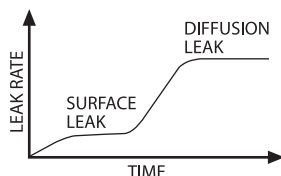


Internally Purged Valves

- Protect your work**
 Block any possible diffusion from the atmosphere
- Protect your workplace**
 Safely vent any fugitive emissions from the valve

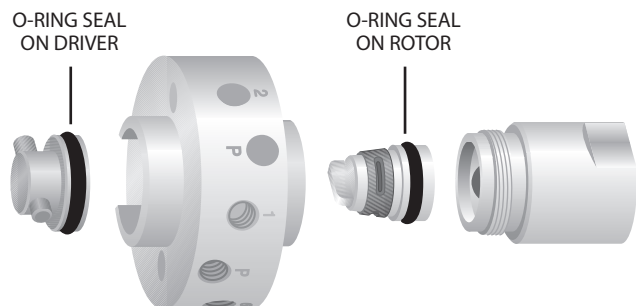
Description

The measurement of low ppb atmospheric gas concentrations may necessitate the purging of any leakage across the sealing surfaces and/or any diffusion through the sealing material.



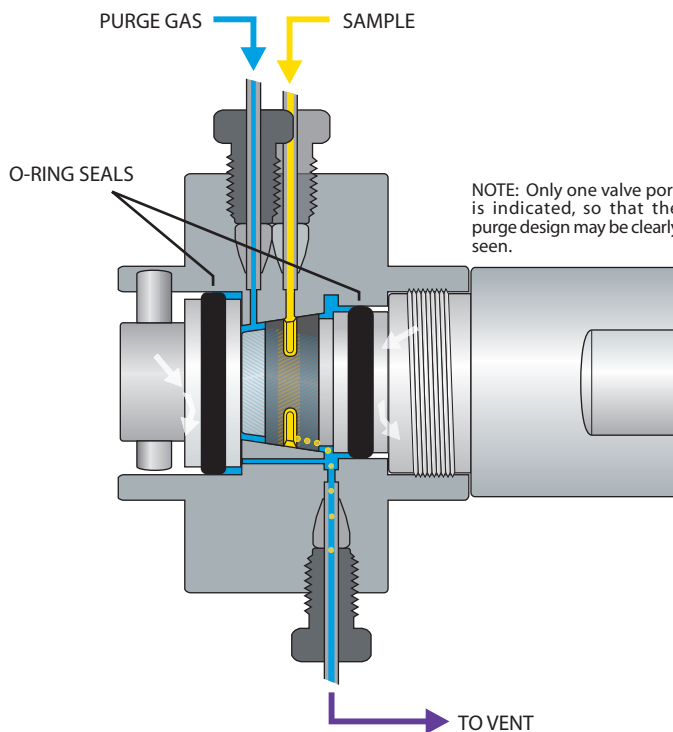
Designs which employ a "purging groove" on the rotor are successful at capturing surface leaks, but are ineffective at purging air which diffuses through the polymeric rotor.

Valco offers two methods for capturing and purging both types of leakage. You can choose a purge housing for a standard valve, or use an internally purged valve, as featured here.



Both methods are available for most Valco injectors and selectors with 1/16" or 1/8" fittings; however, space-saving internally purged versions are not available for some smaller bore 1/16" models.

We also offer mass spec leak rate certification. Please contact the factory to discuss your application.



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Internally Purged Valves

Valco internally purged two position and selector models have two additional ports for a purge gas and O-ring seals on the rotor and driver to eliminate any possible diffusion from the atmosphere into the valve, or safely vent fugitive emissions from the valve.

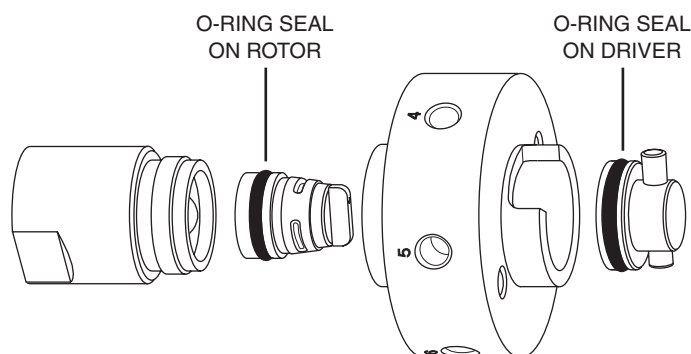


Figure 1: Internally purged 6 port sample injector

Instructions

All that is needed is a low flow of carrier gas (2-5 mL/min) in one purge port and out the other. It is important that the flow be controlled to that range, and even more important that the pressure does not exceed 10 psi. Excessive pressure can cause leakage around the O-rings, rendering the purge ineffective.

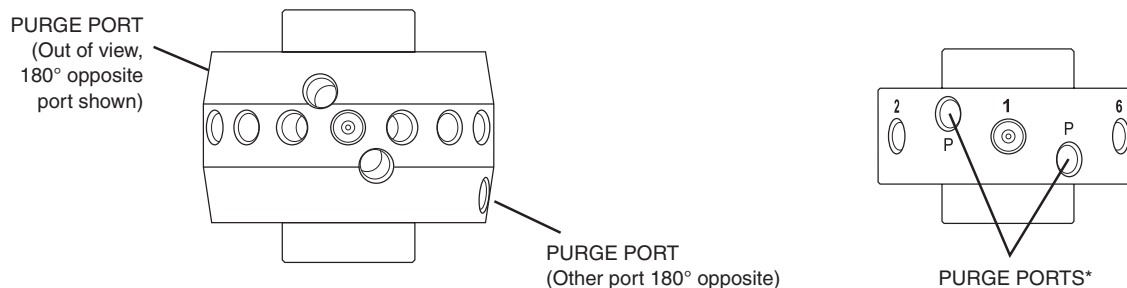


Figure 2: Purge port locations for selector (left) and injector (right)

* On internal sample valves, such as I4UW, CI4UW, I6UW, and CI6UW, the purge ports are stamped “PH” instead of “P”, to distinguish them from the “P” designation on the pump connection port.

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VALVE ACCESSORIES

Purge Housings for Valco Valves

Overview

Sample loops

Heaters for valves and columns

Position feedbacks

Purge housings

Tools

Purge housings for Valco valves eliminate any possible diffusion from the atmosphere into the valve, or safely vent fugitive emissions from the valve. They are typically used in trace level analyses to isolate the valve from ambient air, but can also be used as a safety measure to isolate a valve against leaks into the atmosphere, such as when pyrophoric, toxic, or carcinogenic materials are present in the sample stream.



Two screws secure each half of the purge housing to the valve, so that the rear chamber of the housing (the preload assembly/spring side of the valve) can be removed for rotor inspection or replacement without affecting the actuator side of the housing. [ILLUSTRATION >](#)

All Valco two position valves with two threaded mounting holes will accommodate a purge housing without modification. Some two position valves must be modified at the factory to accept the housing. The charge for modifying an existing valve includes the new purge housing.

TO ORDER

Because there are so many variables, purge housings should not be ordered without consulting one of our knowledgeable sales staff.

Ideally, the purge housing should be ordered at the same time as the valve so that it can be factory-installed.

Field installation of a purge housing is generally not recommended.

Description	Notes
On a new valve	<ul style="list-style-type: none"> ▪ Add suffix PH to valve product number, and contact the factory for the additional price. ▪ Requires standoff assembly, which can be 2", 3", 4", or 6" long. ▪ Selectors (multiposition valves) require an actuator.
On existing valve, factory installation	Contact factory
On existing valve, field installation	Not recommended

SPECS

Max temp: 175°C

Note: The purge housing limits the maximum temperature of the purged valve to 175°C regardless of the valve specifications.

MORE INFORMATION

- Instructions for disassembly and reassembly
- Illustration: exploded view
- Dimensional drawing

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VALCO INJECTORS AND SELECTORS

Leak Testing

Overview

About Valco valves

- Two position valves
- Selectors (multiposition valves)

- Internally purged versions

- Leak testing

- Materials of construction/ specifying a special material

GC injectors/valves

HPLC injectors/valves

Selectors

Sample loops

The standard test methods for cross-port and outport leakage ensure valve performance at pressures and temperatures up to the specifications listed. For valves used on mass spectrometers or for ultra-trace fixed gas analysis, we recommend an optional test method utilizing a helium mass spectrometer. (More below)

Leak rates for gas sampling valves

The actual minimum leak rates attainable vary widely with seal material and valve type. In general, the acceptable leak rates fall into three ranges, noted in the right column.

In order to seal to less than 10^{-7} , the valve loading tension is increased, which somewhat lowers the maximum operating temperature and the valve lifetime. Currently, only select material can seal to 10^{-8} in most valve styles. Valcon M rotor material can seal to 10^{-10} , but has a temperature limit of 50°C.

Not all valves can achieve these leak rates. As a general rule, the larger the valve seal and port size, the higher the leak rate.

Test method for liquid sampling valves

The standard test method for liquid valves is a pressure drop over time for both crossport and outport leakage, using isopropanol at the specified test pressure. This test is designed to ensure proper performance at the specification limit.

Optional leak testing with helium mass spectrometer

This optional test method utilizes a helium mass spectrometer, which provides data on mechanical leaks and on those due to seal porosity and permeability. With this method, we can certify leak rates as low as 10^{-10} cc-atm/sec.

To order a valve certified to have helium leak rates less than 10^{-7} cc-atm/sec, add the suffix "Z" to the valve product number and contact us about the additional price.

Certified valves are supplied with gold-plated stainless steel ferrules.

Please consult the factory prior to ordering, since the minimum leak rate will vary widely depending on valve configuration.

MORE INFORMATION

- Which valve do I need?
- Applications
 - Two position
 - Selector

RANGES FOR ACCEPTABLE LEAK RATES

Commercial use

10^{-4} to 10^{-5} cc-atm/sec
Not normally sold by VICI

General GC use

10^{-6} to 10^{-7} cc-atm/sec
Standard tension and components

Ultra trace gas analysis (ppb range)

10^{-8} to 10^{-10} cc-atm/sec
Higher tension and specially processed stator and rotor material

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