

Operating Instructions

Universal Sample Valve-Models

FMT-USV8, FMT-USV4

FMT-USV4-EL

FMT-SSV075 & FMT-SSV150

Introduction

The Universal Sample Valve™ (USV) is designed for mid-stream sampling of high purity water from pressurized distribution systems and storage tanks. The USV allows for syringe sampling directly into the water stream.

Instruments such as bacteria monitors, total organic carbon monitors, nonvolatile residue monitors and particle counters can be quickly and easily connected to the USV.

A sealing cap is included to prevent contaminants from entering the USV. The USV can be sanitized prior to use.

Description of Operation

The USV uses a precision laser-drilled septum. When the USV is closed, the septum is compressed and the hole is closed off preventing water from flowing through the USV. In the closed position, water only contacts the septum's Teflon® coating. Only a 1/4 turn is required to fully open the USV.

This relieves the pressure on the septum allowing the hole to re-open. The unique straight-through design of the USV allows a hypodermic needle to be inserted directly into the water flow.

Installation

Select a suitable sample location that allows the USV outlet to be in a horizontal position. Four different connection options are available depending on which model USV you ordered:

- 1/8 inch NPT threaded connector (Model FMT-USV8)
- 1/4 inch NPT threaded connector (Models FMT-USV4 & FMT-USV4-EL)
- 3/4 inch Sanitary connector (Model FMT-SSV075)
- 1 1/2 inch Sanitary connector (Model FMT-SSV150)

Note, each Sanitary valve comes with a white silicone gasket

If NPT threaded connectors are used it will be necessary to drill and tap an appropriate threaded hole in the pipe or storage tank. Do **not** attempt to install either USV in material with a wall thickness of less than schedule 80. Remove any burrs from the hole before installing the USV.

All USVs are supplied in an open position. It is important to align the inlet stem so that the beveled edge faces the direction of flow. Make sure that the end of the USV's threaded connector is as close to being flush to the internal wall surface as possible.

Once installed, practice opening and closing the USV a few times by turning the knurled cap approximately 1/4 turn. When closing the USV **do not over tighten the knurled cap** as this can put undesirable shear forces on the septum. To close the USV turn the knurled cap until water just stops flowing out of the valve.

USV Sanitization (for critical bacteria monitoring)

The USV is compatible with most sanitizing chemicals including periodic exposure to ozone. The USV should be sanitized before each sampling session. Wear powder-free latex gloves and a cleanroom-style hair bonnet. To sanitize:

- Apply 99% pure IPA (isopropyl alcohol) using a squirt bottle, to the exterior/interior surfaces of the USV. Wait 60 seconds.
- Fully open and close the USV ten (10) times.

- Fully open the USV and leave at full flow for at least 15 minutes.
- Thoroughly rinse the outside surfaces of the USV with a rinse bottle filled with DI water.
- Throttle back the USV until a steady laminar flow is achieved. As a rough guide the flow stream should remain "solid" so as not to entrain air with the sample. Allow water to flow for another 5 minutes.
- Avoid any further contact with the USV and make no further flow adjustments until sampling is complete.
- When you have finished sampling spray the outer USV surfaces with IPA, fill the red plastic cap with IPA and fit the cap onto the valve. This will keep the USV sanitized between sampling operations.

USV Operation

Syringe Sampling

- Follow the sanitizing procedure above.
- Attach a sterile blunt-ended hypodermic needle (Model FMT-SHN) to the sterile syringe (Model FMT-SY60).

- With the USV open and water flowing out of the valve, insert the hypodermic needle through the Luer® opening and through the septum until the needle is no longer visible.
- Gently close the USV until the water stops leaking around the hypodermic needle. At this time the syringe with automatically fill due to the pressure in the supply line.
- When the syringe is full, pull the needle out of the USV.
- Fully close the USV.
- Spray the outer USV surfaces with IPA, fill the red plastic dust cover with IPA and fit the cap onto the valve. This will keep the USV sanitized between sampling operations.

Directly Attached Bacteria Monitor

The USV's outlet port is a male Luer connector designed to fit directly into the inlet port of a standard bacteria culture monitor such as those manufactured by Sartorius and Millipore. Prior to the installation of the bacteria culture monitor, the USV should first be sanitized as described above. Refer to the bacteria monitor

manufacturer's specific sampling instructions for sampling details.

Securely Attached Sampling Instruments

A Galtek® connector is machined into the USV's knurled cap. Standard 1/4 inch Teflon tubing with a wall thickness of 0.047 inches (Model FMT-TFL4-10) must first be grooved with a Galtek Grooving tool (Model FW-GT4) and firmly pushed over the USV's male Luer connector. A Galtek retaining nut (Model FW-FN4) will now securely attach the tubing to the USV. This allows instruments such as nonvolatile residue monitors, total organic carbon monitors and particle counters to be attached to the USV.

Technical Information

Specification

- USV constructed of 316 L stainless steel, wetted surfaces electropolished to better than 25 R_a
- 1/8 inch NPT threaded connector for pipe diameters up to 1 1/2 inch diameter
- 1/4 inch NPT threaded connector for pipe diameters greater than 1 1/2 inch diameter
- USVs with sanitary connectors supplied with white silicone gasket

- Teflon-coated silicone septum
- Viton O-ring
- 400 mL/min flow rate with an inlet pressure of 45 psig.
- Maximum operating pressure 100 psig
- Replacement kit available as an option; Model FMT-USVKIT (includes septum, O-ring, retaining screw and red plastic dust cover) (specifications subject to change without notice)

Technical Support

Call 651-762-7762

Fax 651-762-7763

Warranty

The information contained herein is, to the best of our knowledge, true and accurate. Kanomax warrants the products against defects in the materials and workmanship when used in accordance with the operating instructions for a period of one (1) year from the date of shipment.

In the event of a warranty claim, Kanomax will repair or replace defective parts within the warranty period, provided the customer notifies Kanomax promptly of any such defect.

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