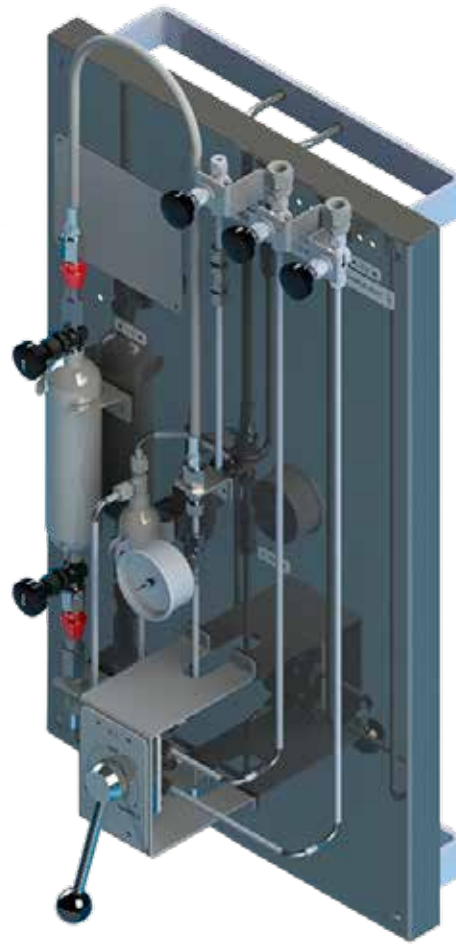


Original Instructions

Installation, Operation & Maintenance Manual

Sentry MLG Sampler Low Emission Samplers

S-MS-IOM-00415-1 11-17




COMPANY WITH
QUALITY SYSTEM
CERTIFIED BY DNV GL
= ISO 9001 =

 **SENTRY**

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 Do not install, maintain, or operate this equipment without reading, understanding, and following the appropriate Sentry Equipment Corp instructions. Otherwise, injury, damage, or both may result.

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Note

The information contained in this document is subject to change without notice.

Safety Information

Please read the entire manual before attempting to unpack, set up, or operate this product. Pay careful attention to all Warnings, Cautions, and Notes. Failure to do so could result in serious personal injury and/or equipment damage.

Use of Hazard Information

If multiple hazards exist, the signal word corresponding to the greatest hazard shall be used.

Definitions

DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

CAUTION, used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to personal injury.

NOTE

Information that requires special emphasis.

TIP

Alternate techniques or clarifying information.

SHALL: This word is understood to be mandatory.

SHOULD: This word is understood to be advisory.

General Safety Precautions

Product Selection, Installation, and Use

WARNING

Improper selection, installation, or use can cause personal injury or property damage. It is solely the responsibility of users, through their own analysis and testing, to select products suitable for their specific application requirements, ensure they are properly maintained, and limit their use to their intended purpose.

Follow proper local, state, and federal regulations for proper installation and operational requirements.

Always use caution and common sense when working with any chemical. Read the product label and Material Safety Data Sheets (MSDS) carefully and follow the instructions exactly.

Potential Equipment Hazards

WARNING

Hot surfaces! This equipment may have very hot surfaces. If an operator contacts a hot surface, injury may occur. Use protective clothing to prevent injury. If other equipment comes in contact with a hot surface, damage to the equipment may occur. Ensure the area around this equipment is kept clear to prevent damage from occurring.

High pressures! This equipment may contain fluids at very high pressures. Prior to installing, removing or maintaining this equipment, ensure that the equipment is isolated from all connecting piping, the equipment is depressurized, the contents have been drained, and the equipment is cool.

Moving parts! This equipment may contain moving parts. All drive guards and doors must be secured in place when this machine is being operated.

General Description

WARNING

Read these instructions completely before proceeding to assemble, install or operate this machine. This machine should be installed, operated and serviced by qualified individuals. All drive guards and doors must be secured in place when this machine is being operated. Follow proper local, state and federal regulations for proper installation and operational requirements.

Cylinder sample panels are the traditional method of sampling LPG and other two-phase liquids with high vapor pressures. The Sentry® MLG manual low-emission sampler incorporates a number of features to provide for safe, simple and accurate sampling. The six-port tandem valve simplifies sampling by replacing multiple valve operations with just one ergonomically-designed valve. It is very repeatable so the sample is always as representative as possible.

By using the expansion vessel to reduce sample cylinder volume after the sample is captured, both safety (outage space for transport of the cylinder assembly) and sample accuracy and representativity are assured. See the various modes and description of the sampling process in this manual.

Features

Allows for flushing of sample panel and cylinder to increase sample accuracy without discharging to the atmosphere or wasting product

Six-port/multi-function tandem valve simplifies operation and reduces valve maintenance

Ergonomic design reduces turning torque and eliminates repetitive wrist action

Specifications

specifications	
materials	316 SS cylinders; All process wetted parts - 316/316L SS, PTFE, Viton®
pressure rating	1800 psi (125 bar)
temperature rating	up to 300°F (149°C)
mounting	304 SS backplate

Options

- Sample cooler
- In-line filter
- Cooling water valves
- Carbon canister
- Check valves
- Nitrogen purge
- Flow indicator
- Cylinder relief valve
- Rupture disc
- Galvanized steel pipe stand
- Heater
- Enclosures

Installation

⚠ DANGER

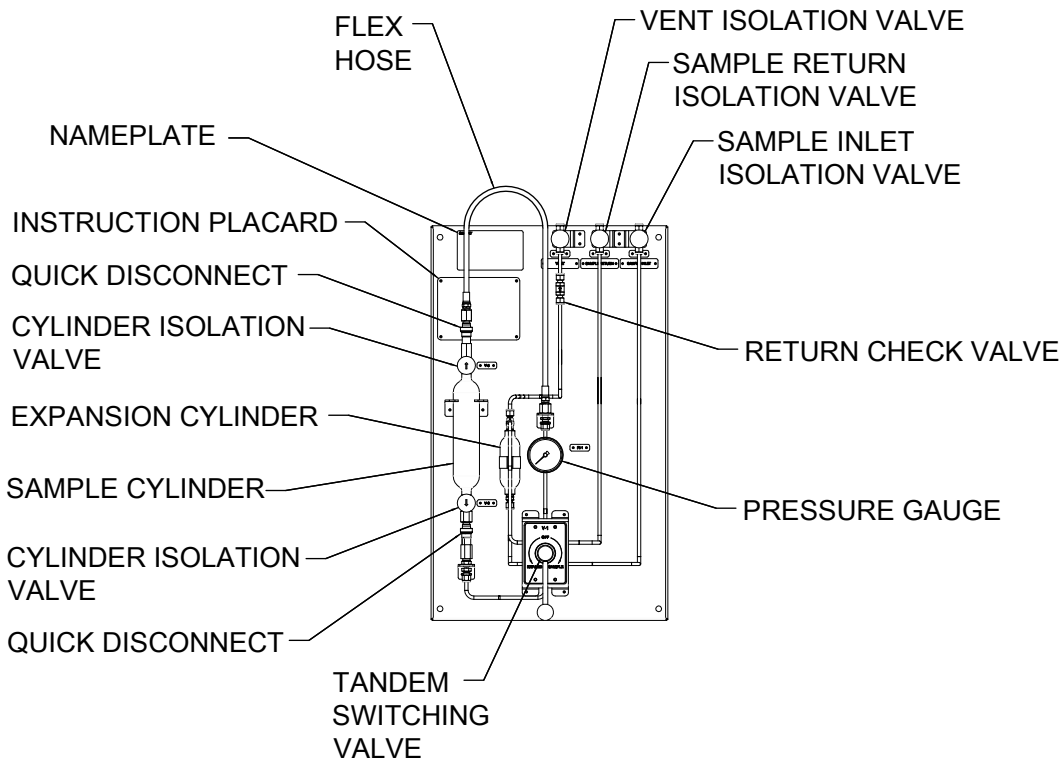
Dangerous gas! The gases emitted from the vent line may be hazardous and toxic upon exposure. The vent line should be directed to a charcoal canister, flare or other subatmospheric region for collection and treatment of sample vapors.

Mounting

The MLG manual low-emission sampler closed loop cylinder panel is equipped with four (4) 7/16 in (11 mm) diameter holes for surface mounting. The panel may be equipped with optional hardware for post mounting. Refer to the accompanying drawing for mounting details.

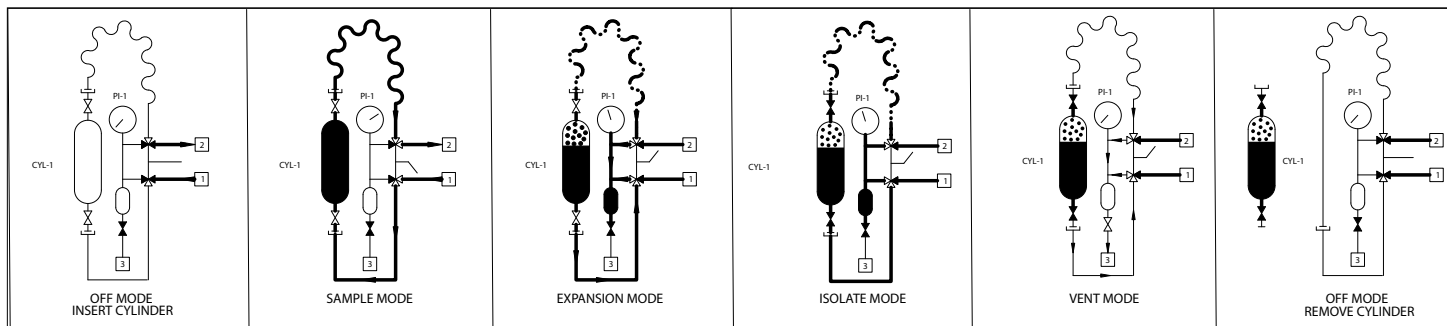
Piping

Refer to the accompanying drawing for connection sizes, types and locations.



Operation

Modes of Operation



Off mode (insert cylinder) – The tandem switching valve handle is turned to the Off position, blocking both side ports on both three-way valves on the switching valve. There is no flow through the sampler. An empty sample cylinder assembly is placed into the sampler in this mode in preparation for sampling.

Sample mode – The tandem switching valve handle is turned to the Sample position and sample flows through the sampler and the sample cylinder assembly. This is essentially a filling/purging process. Note that for LPG (and liquids) the sample inlet to the cylinder is on the bottom. This allows the liquids to push out any old sample or air to the sample return. The pressure gauge shows that system pressure is on the sampler.

Expansion mode – The tandem switching valve handle is turned to the Expansion position. This blocks the sample inlet and outlet lines and connects the sample cylinder to the expansion vessel. Since the expansion vessel is at vent/flare/atmospheric pressure, expansion of the liquefied gas into this vessel provides for approximately 20 percent outage space in the cylinder. The pressure gauge helps validate that the sample pressure has been lowered in the expansion mode. This process is highly repeatable from sample to sample and operator to operator so sample accuracy is greatly improved.

Isolate mode – The valves on the sample cylinder assembly are closed, isolating the sample.

Vent mode – The vent valve below the expansion chamber is now opened and the vapors/liquids in the sampler lines and the expansion chamber flash to the vent/flare header or local vapor recovery device.

Off mode (remove cylinder) – The switching valve handle is turned to the Off position, blocking both side ports on both three-way valves on the tandem-switching valve. Since the sampler lines are vented, disconnecting the cylinder is safely accomplished at atmospheric or sub-atmospheric pressure at the quick disconnects without contamination to the operator or the environment. The vent valve is closed.

Carbon Canister

An optional Sentry carbon canister is available. The carbon canister assembly is designed to absorb hydrocarbon gases vented from Sentry manual low-emission samplers.

The gas vent of the sampler panel is connected to the inlet of the carbon canister assembly. The gases then pass through a volume of activated carbon, where hydrocarbons, such as benzene, are absorbed. Often, there are specific gases, such as H₂S (hydrogen sulfide), that also are carried in the vented gas. To remove these, specially designed products such as impregnated activated carbon are used. In these instances, the carbon canister assembly is filled with impregnated activated carbon.

Both activated carbon and impregnated activated carbon have a finite ability to remove hydrocarbons and other gases. The life of the product is dependent on concentrations and volumetric flow of the gas. An optional “tell tale” assembly can be provided with the carbon canister assembly to provide a visual indication of when the carbon canister assembly requires recharging. The carbon canister assembly is designed for easy recharging. Instructions are below.

Carbon Canister Recharging

1. Remove clamp from carbon canister, allowing the container to be removed from the base assembly.
2. Place approximately 2 inches (uncompressed thickness) of glass wool at the bottom of the container.
3. Fill the container with activated carbon (or impregnated activated carbon) to about 1 inch from the top of the container.
4. Replace the container and reinstall the clamp.
5. Place the unit into operation.

Maintenance

Valve Packing

Occasionally during initial startup or restart of the sample panel, the low pressure/high pressure inlet isolation valve packing may leak. If this occurs, remove the handle, tighten the packing nut, and then replace the handle. If the packing continues to leak or other valves or o-rings require maintenance, please see the Parts & Accessories list in this manual.

Troubleshooting

symptom	possible problem(s)	remedy
Elevated sample temperature (for cooler option)	<ul style="list-style-type: none">▪ Loss of cooling water flow▪ Increase in cooling water inlet temperature▪ Scaled cooler▪ Increased sample flow	<ul style="list-style-type: none">▪ Check cooling water supply▪ Reduce cooling water temperature or increase flow▪ Chemically clean (see cooler maintenance)▪ Adjust sample flow rate
Reduced sample flow	<ul style="list-style-type: none">▪ Plugged line	<ul style="list-style-type: none">▪ Blowdown line and exercise flow control valve
Leaking valve stems	<ul style="list-style-type: none">▪ Loose or worn packing	<ul style="list-style-type: none">▪ Tighten packing nut or replace packing
Leaking cooler (for cooler option)	<ul style="list-style-type: none">▪ Loose housing from thermal shock or worn gasket	<ul style="list-style-type: none">▪ Tighten bolts on head assembly or replace gasket if cut or worn

Parts & Accessories

The following parts are recommended spares for the Sentry MLG sampler. Please consult the accompanying job-specific drawings for exact part numbers and descriptions.

- Tandem valve(s)
- Pressure gauge
- Cylinder assembly

Standard Warranty

Sentry Equipment Corp (“Seller”) warrants products manufactured by it and supplied hereunder (“Products”) to be free from defects in workmanship and, to the extent materials are selected by Seller, to be free from defects in materials, in each case for a period as defined in the table below:

Product Line	Product Category	Warranty Period
Sentry®	1. Automatic Sampling 2. Corrosion Monitoring 3. Manual Sampling 4. Sample Conditioning 5. Sampling & Analysis Systems 6. Replacement Parts (without expiration dates)	Eighteen months from date of shipment or twelve months from startup, whichever occurs first
Waters Equipment	1. Sampling & Analysis Systems 2. Replacement Parts (without expiration dates)	Twelve months from date of shipment

To view the full warranty, go to www.sentry-equip.com/warranty.

Customer Support

With proven sampling expertise since 1924, Sentry products and services provide business operations the critical insights to optimize process control and product quality. We deliver true representative sampling and analysis techniques to customers around the globe, empowering them to accurately monitor and measure processes for improved production efficiency, output, and safety. Standing behind our commitments, we are determined to tackle any application, anywhere.

We know that running an efficient operation isn’t easy. It requires thorough, careful analysis of controlled, real-time data achieved through reliable, accurate, and repeatable process monitoring, and measuring. By effectively conditioning, sampling, and measuring gas, liquid, slurry, powder, solids, steam, or water within their production environments, our customers obtain the critical insights they need to control and optimize their processes.

Yet, controlling your processes also means reliable customer support throughout the life cycle of your equipment.

- Customer Service—General information, warranty claims, order management.
- Installation Service—For systems that require specialized expertise upon installation.
- Technical Support—Troubleshooting, training, and technical manuals.
- Field Service & Retrofits—When a problem needs immediate attention.
- Replacements Parts & Consumables—Order your replacement parts and consumables.
- Sentry ProShield Services – select from four ProShield Guardian service plans providing different levels of support to protect your large system investments with regularly scheduled maintenance.

To learn more, go to www.sentry-equip.com/support.

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