

Installation, Operation & Maintenance Manual

Sentry Cobra C Sampler Low Emission Samplers

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

The Sentry® Cobra C sampler makes the task of collecting representative samples from gas and light liquid hydrocarbon applications simple and safe. The Cobra C sampler uses a multi-ported valve so that the extraction process is simplified while maintaining the integrity of the sample itself. Installation is fast and straightforward, and quick cylinder disconnects allow the sample cylinder to be removed without tools. The Cobra C sampler complies with LDAR and MACT requirements. A sample is collected in a DOT rated stainless steel cylinder for transport. The Cobra C sampler ensures the quality and reliability of the sample.

Designed with safety in mind for the operator as well as the environment, the Cobra C sampler provides a low-maintenance solution to sampling requirements. It also offers low-emission sampling, with low spills and low volatile organic compound (VOC) emissions, keeping both pollution and sample contamination levels to an absolute minimum. The Cobra C sampler is ideally suited for use in the petrochemical, refinery and natural gas industries.

NOTE

Please refer to your job drawings for specific information on your system.

Specifications

| | |
|-------------------------------|--|
| wetted materials | body: 316 stainless steel (other materials available upon request) O-rings: Viton® or Kalrez® |
| process pressure range | 0-1500 psi (higher ratings available upon request) |
| process temperature | <140°F; cooler recommended for temps >140°F |
| sampler interface | 1/4 in NPT (1/2 in NPT or compression fitting available upon request) |
| vent connection | 1/4 in NPT (compression fitting available upon request) |
| sample cylinder | 300 cc or 500 cc |
| options | pipe stand (2 in); dual pipe stand for mounting cooler; enclosure process isolation valves (inlet and/or return) sample pump return to vent (flare; emission filter) level gauge sight glass rotameter N ₂ purge |

Installation

⚠ DANGER

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

Mounting

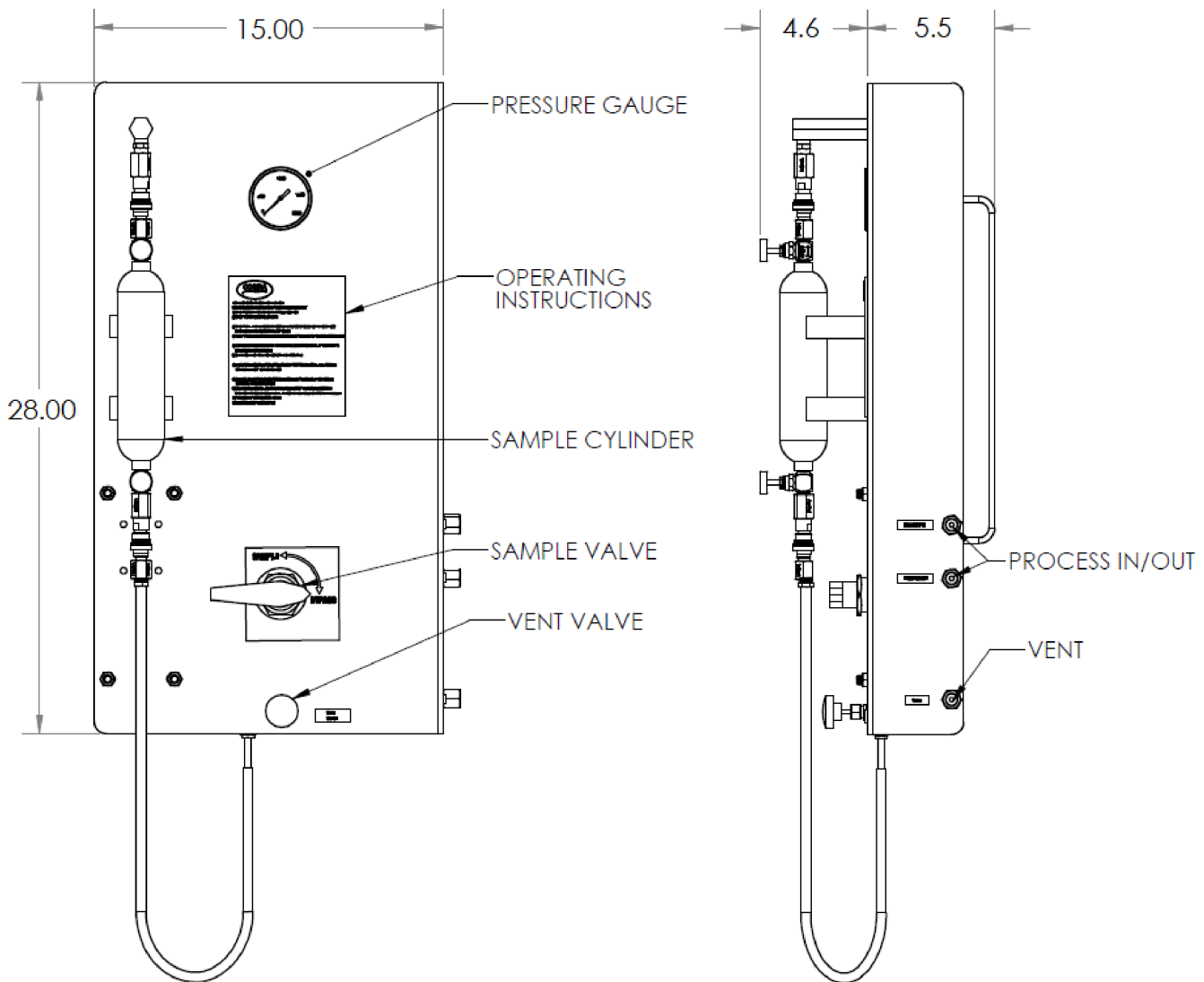
The Sentry Cobra C sampler is equipped with two (2) 2" NPS Pipe Mounting U-Bolts for mounting to a standard 2" NPS Instrument Pipe Stand. Refer to the accompanying drawing for mounting details.

Piping

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

➔ NOTE

Figures in this manual may differ from actual purchased equipment. Please refer to your job drawings for specific connection information.



Operation

Sampling a Gas with the Cobra C Sampler

1. Prior to sampling, verify the following:
 - Sample valve is in BYPASS position
 - Vent valve is closed
 - All upstream and downstream valves are open to allow representative sample to be taken
 - Vent line is open to allow safe venting of quick disconnects
2. Carefully insert sample cylinder to sample station at both top and bottom quick connects.
3. Open both top and bottom cylinder valves.
4. Turn sample valve to SAMPLE position. Gas sample fills the sample cylinder from top to bottom.
5. After a representative sample has been obtained, turn sample valve to BYPASS position.
6. Close both top and bottom cylinder valves.
7. With sample valve in BYPASS position, slowly turn vent counter-clockwise and observe pressure gauge until pressure is reduced to vent pressure.
8. Turn vent valve clockwise to close.
9. Carefully remove sample cylinder.

Sampling a Liquid with the Cobra C Sampler

1. Prior to sampling, verify the following:
 - Sample valve is in BYPASS position
 - Vent valve is closed
 - All upstream and downstream valves are open to allow representative sample to be taken
 - Vent line is open to allow safe venting of quick disconnects
2. Carefully insert sample cylinder to sample station at both top and bottom quick connects
3. Verify that the sample cylinder has an outage tube at the top of the cylinder.

CAUTION

Do not sample liquids with high vapor pressure without an outage tube.

4. Open both top and bottom cylinder valves.
5. Turn sample valve to SAMPLE position. Liquid sample fills the sample cylinder from bottom to top.
6. After a representative sample has been obtained, turn sample valve to BYPASS position.
7. Slowly open vent valve and observe proper liquid level in sight flow indicator
8. When proper liquid level is achieved, turn vent valve clockwise to close
9. Close both top and bottom cylinder valves.
10. With sample valve in BYPASS position, slowly turn vent counter-clockwise and observe pressure gauge until pressure is reduced to vent pressure.
11. Turn vent valve clockwise to close.
12. Carefully remove sample cylinder.

Maintenance

Routine Inspection

The sampler should be checked periodically for proper operation and to ensure that any wear is detected for preventive maintenance. A definite schedule of inspection should be established to ensure safe and accurate sampling operation. Such inspection should include:

- checking fittings for leaks
- checking for signs of corrosion
- performing a sample to ensure moving parts remain operable (this is particularly important in cases where the station is not used frequently)

Valve Blockages (needle valve or 4-way ball valve)

Any blockages normally can be cleared by fully opening the valve. Care must be taken to ensure that temperature and pressure limits are not exceeded during this process.

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, tighten the packing nut. If the packing continues to leak or other valves or o-rings require maintenance, please see the Parts & Accessories list in this manual.

Sample Cooler

For installation and operating instructions for the sample cooler, please see the Installation, Operation & Maintenance manual for Sentry sample coolers.

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. Fill the container with activated carbon (or impregnated activated carbon) to about 1 in from the top of the container.
3. Place approximately 2 in (uncompressed thickness) of glass wool (Sentry part number 4-04825A) at the bottom of the container.
4. Replace the container.
5. Reinstall the clamp.
6. Place the unit into operation.

Detailed, panel-specific operating instructions are included with 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▪ Inspect and/or replace needle assembly |
| 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 Cobra C sampler. Please consult the accompanying job-specific drawings for exact part numbers and descriptions.

- 4-way valve
- cylinder assembly
- vent valve
- check valve
- quick connects

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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966 Blue Ribbon Circle North, Oconomowoc, WI 53066 U.S.A. | +1-262-567-7256 | support@sentry-equip.com