

Original Instructions

# Installation, Operation & Maintenance Manual

## Sentry SA Sampler Cross-Cut Samplers

S-AS-IOM-00478-5 11-17





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.

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# 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

The Sentry® SA cross-cut sampler obtains samples of dry, free-flowing segregated materials from vertical gravity spouts. A sample is taken when a solenoid-controlled air actuator or motor linkage drive swings a “pelican”-type diverter across the product flow. The material diverted is discharged through a flexible hose to a collection point.

Because the pelican cuts across the entire material stream, the sample obtained is truly representative. Product characteristics are not changed by the sampler, because no moving parts convey the product to the sample container. Sample size and frequency are regulated at the sampler controller.

### WARNING

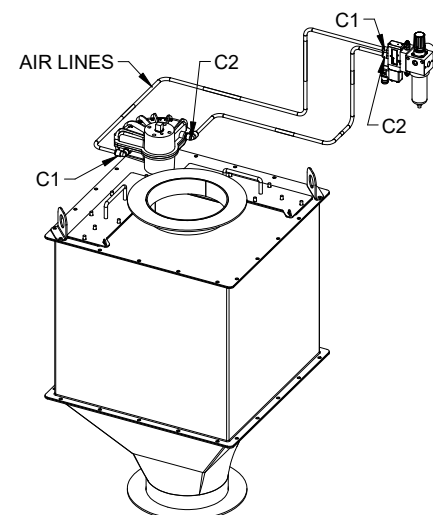
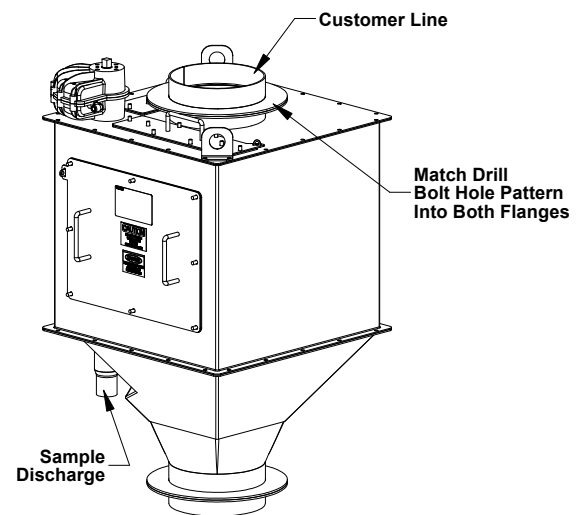
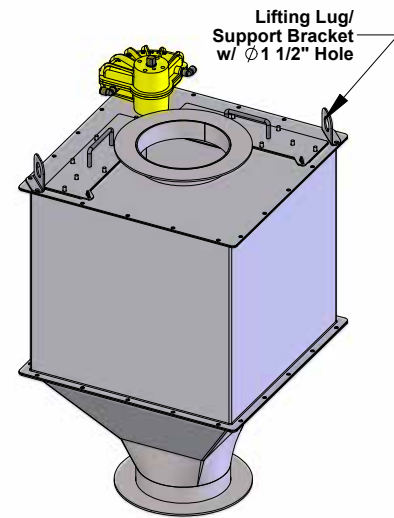
Read these instructions completely before proceeding to assemble, install or operate this machine. This machine should be installed, operated and serviced by qualified individuals. All drive guards and doors must be secured in place when this machine is being operated. Follow proper local, state and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

# Installation

## ⚠ CAUTION

Sampler must be supported in two planes to protect personnel and assets and prevent damage.

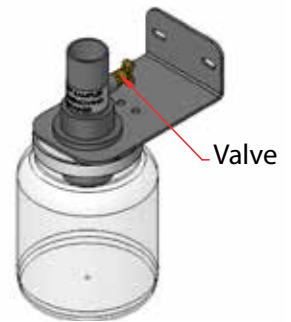
1. Choose a location for the sampler. Product should be evenly dispersed in the material line. Make sure that the mounting location is six to eight feet beyond all elbows or line irregularities.
2. Mount the sampler to the line. Make sure the pelican aperture faces the flow of material so the sample can enter. The product discharge must face down.
3. Remove a section of the chute equal to the height of the sampler.
4. Samplers are provided with blank flanges as standard, and the customer supplies the matching flanges unless otherwise stated. A bolt pattern is drilled into the sampler flanges and matching flanges.
5. Weld the customer flanges to the ends of the chute and bolt the sampler into position.
6. Mount the sample bottle assembly. It may be mounted in any convenient location below the sampler. Best results are obtained when, in the sampling position, the discharge of the sampler is in direct line with the intake of the sample bottle.
7. Connect a flexible hose from the sample discharge to the sample collection container. In certain applications, rigid metal tubing can be used following a short length of hose attached to the discharge.
8. For air-actuated models such as the SA/A, mount the filter-regulator and the solenoid valve. The bowl should be in a vertical position as close as possible to the sampler. Air pressure of 60 to 80 psi normally is recommended. The regulator and the restrictors are preset at the factory. Air usage is 281.6 cubic inch per stroke. CFM depends on how often the sampler is actuated.
9. Connect the lines from the solenoid valve marked C1 and C2 to the corresponding C1 and C2 marks on the air cylinders with 3/8 inch OD poly tube.
10. Connect a clean air supply to the inlet of the filter-regulator. Oil and moisture filters should be used before the filter-regulator, if necessary. If an air lubricant is added to the system, it should be placed immediately after the filter-regulator. Air lines should not be so long that sharp bends or kinks develop in the lines. If an air purge is supplied, connect a purge gas source to the solenoid valve mounted on the sampler purge connection.
11. For electric-actuated models, connect the motor leads to the sampler controller or PLC per the motor wiring diagram supplied with this manual.
12. Connect the optional pelican position and/or plug sensors to the appropriate connections on the sampler controller or PLC.



# Operation

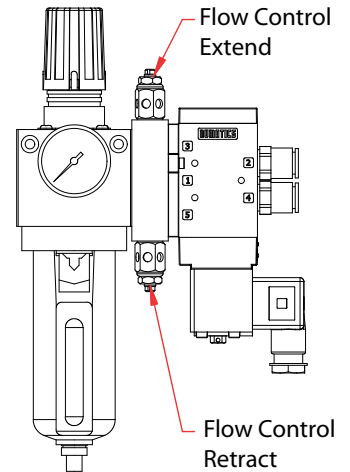
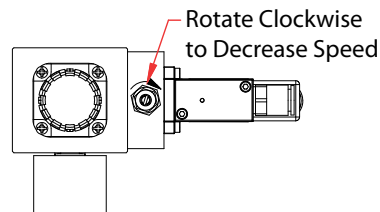
## Sample Bottle Assembly

The valve on the sample bottle assembly is used to release pressure in the container. The valve may be opened a one quarter turn to allow pressure to bleed slowly between sampling cycles. The valve must be closed when sampling on a vacuum line.



## Pelican Speed

The speed with which the sample pelican travels can be increased or decreased by turning the flow controls on the four-way valve (see figure, right). Each screw regulates the air exhausting from the cylinder. Turn the screw clockwise to decrease cylinder speed. When shipped from the factory, the advancing and retracting speeds are equal.



### NOTE

If you make an adjustment to the four-way valve, you may need to adjust the timers in the controller.

# Maintenance

## Filter Regulator

1. Drain the filter/regulator at least once a week by turning the thumb screw on the bottom of the bowl. Draining frequency depends upon the quality of the air supply and may be required daily.

### NOTE

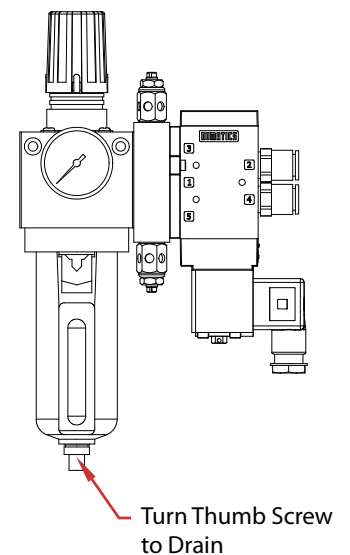
If an air lubricant is added to the system, it should be placed immediately after the filter regulator.

2. Excessive pressure drops or a visible coating on the filter element indicate cleaning of the filter regulator is necessary.
  - a. Shut off the air supply and remove the bowl.
  - b. Unscrew the lower gasket, allowing the filter element to fall out.
  - c. Wash the filter element with denatured alcohol.

### NOTICE

Use an alkaline solution (soapy water) and not a solvent for cleaning the polycarbonate bowl

- d. Clean the polycarbonate bowl with soapy water.
  - e. Reassemble the regulator and turn on the air supply.
3. Wash and blow out restrictors once a month or more frequently if necessary.
  4. Replaceable items for the filter-regulator are the filter, bowl and gauge.

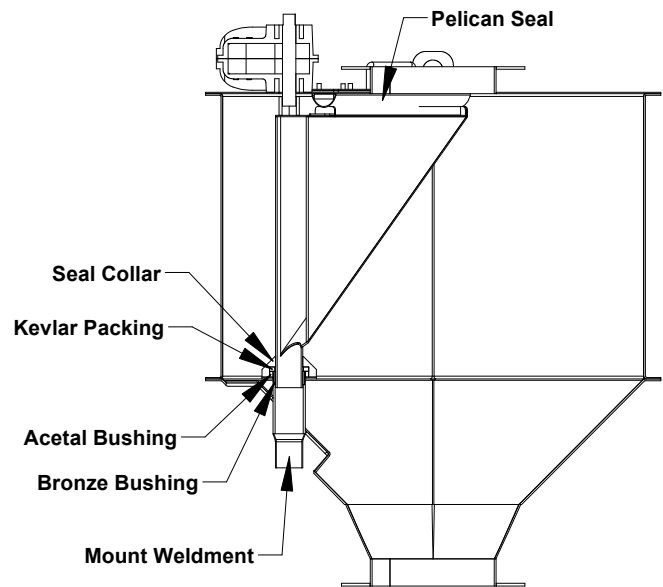


## Seals and Bushings

Because the Sentry SA sampler can be used with a wide variety of products and installations, there are no definite guidelines on how often maintenance should be performed. Maintain the sampler very closely for the first three to four months from initial installation and document wear vs. usage. Using this information, determine a maintenance program that fits your specific application and environment.

The pelican is supported by the mount weldment. The mount contains a bronze bushing in which the pelican rotates. The pelican consists of a seal collar that retains an acetal bushing and a Kevlar seal. The pelican assembly rests on the mount by means of the Kevlar seal. Check for wear on the bushings and the seal and replace as needed.

When the pelican is not in the sample mode, it rests under a nitrile seal. Check for wear on this seal and replace as needed.



### To remove the pelican:

1. Remove the access door
2. Support the pelican and then remove the mount
3. Slide the pelican from the air actuator shaft (for electric-actuated models, remove the drive arm bracket and slide it from the flange bearing)
4. Replace parts as needed
5. Reinstall in reverse order

When the pelican is not in sample mode, it rests under a nitrile seal. Check for wear on this seal and replace as needed.

### To replace seal:

1. Remove seal door(s)
2. Remove seal plate and seal from the seal door
3. Replace seal
4. Reinstall in reverse order

## Troubleshooting

The following information is a synopsis of the problems you may encounter prior to troubleshooting your equipment. Divide the unit into three sections and try solving the problem before you continue on.

### Potential Problems

#### Electrical

- Controller
- Connections
- Circuit breaker
- Solenoid
- Motor (if applicable)

#### Pneumatic

- Air pressure
- Filter-regulator
- Restrictors
- Four-way valves
- Air Cylinder
- Air lines

#### Mechanical

- Alignment (binding of pelican)
- Seals and bushings
- Motor coupler (if applicable)
- Loose set screws (if applicable)



## **⚠ WARNING**

Disconnect main power to controller before attempting any adjustments or disassembly.

## Troubleshooting Sequence

1. Controller
2. Solenoid
3. Tubing kinks
4. Air pressure
5. Restrictors
6. Air Cylinder
7. Seals and bushings
8. Alignment

### Electrical

1. See controller manual.

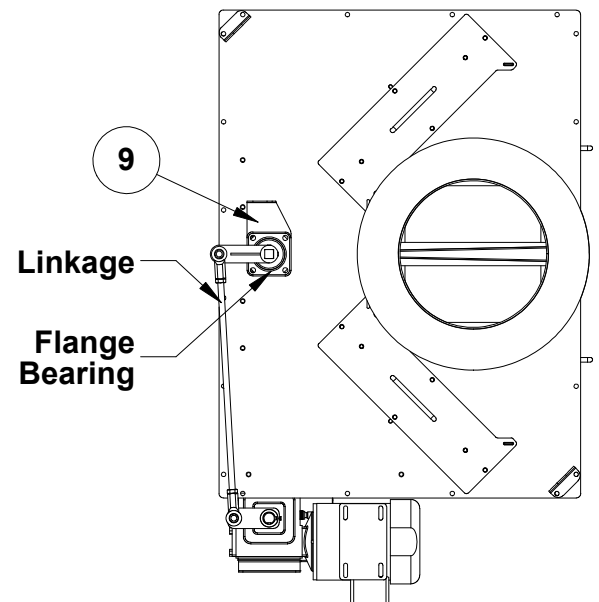
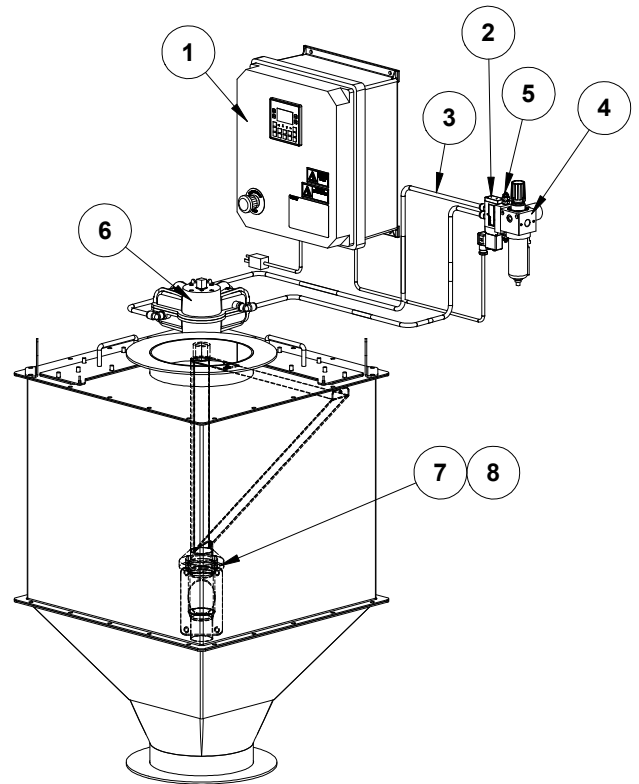
### Pneumatic

**2., 3., 4., 5.** Check air lines for kinks, breaks, etc. Air pressure to the filter/regulator should be 60-80 psi. If higher air pressure is required to activate the cylinder, then there is a possibility that the pelican is bound or the four-way valve needs cleaning. Look at the air restrictors and make sure they are open and not clogged.

- 6.** If the pelican slows up or stops when entering the product stream, the actuator seals may need replacing. If the main seal is worn, you may be able to hear air escaping around it.

### Mechanical

- 7.** If the pelican still does not function properly, check the seals and bushings for excessive wear or improper fit. If they need replacing, see the Seals and Bushings section of this manual.
- 8.** If the actuator is operating but the pelican does not move, turn off the power and air supply. Open the inspection door and attempt to move the pelican by hand. If the pelican is bound, disassemble and replace worn parts.
- 9.** Electrically-actuated: Most often, a bound pelican will cause the motor fuse to blow. To check the pelican, remove the drive linkage from the pelican shaft, open the inspection door and try to move the pelican by hand. If the pelican still doesn't move, check the top bearing and drive mechanism. The bearing may be frozen, so replace it and run the sampler.



# 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](http://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](http://www.sentry-equip.com/support).

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