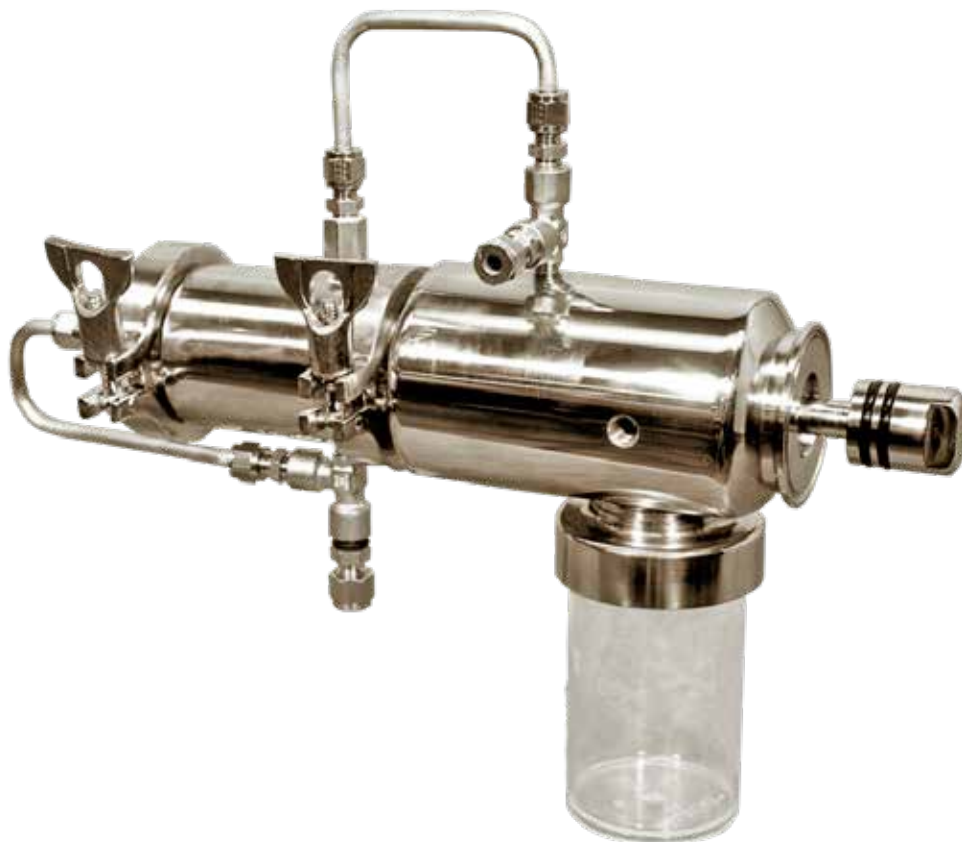


Original Instructions

Installation, Operation & Maintenance Manual

ISOLOK MSE Sampler Point Samplers

S-AS-IOM-00427-1 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.

CAUTION

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

WARNING

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

WARNING

Equipment rated TX. Equipment maximum surface temperature depends on operating conditions. Ensure maximum surface temperature shall stay below ignition temperature of dust or gas atmosphere where it is installed based on process conditions. Failure to comply could result in an explosion, causing serious injury or death to personnel and damage to equipment.

If the sampler is mounted directly to a non-electrically conductive surface, sampler shall be bonded to a grounding electrode. Failure to comply could result in sparking, which could lead to an explosion, causing harm to personnel and equipment.

If the sample container is removed from the sampler, do not insert any body part or other item into the sample discharge port. Crushing will occur.

NOTICE

To ensure proper sampler operation, be sure the sampler is installed in a pipe large enough for the sampler plunger to extend without impacting the pipe. Failure to comply will result in equipment damage and poor sample quality.

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.

The Sentry® ISOLOK® MSE automatic high viscosity sampler enables the collection of accurate samples of high viscosity materials such as toothpaste, peanut butter, tomato paste, juice concentrates, and even rocket propellant. The ISOLOK MSE sampler delivers a fixed volume of sample with each cycle. The sampler mounts onto the process line using a 2 in tri-clamp ferrule mount held with a clamp and gasket.

The ISOLOK MSE sampler's dual air cylinders extend the plunger into the process, and the annulus opens and draws in product. The plunger retracts, holding the sample in the annulus. Once fully retracted, the annulus collapses, ejecting the sample into the container. The operator is isolated from the process at all times by the sampler's seal design, and the sample captured in the container is locked out from external influences.

The maximum rated temperature of the ISOLOK MSE sampler is defined by the plunger seals. The plunger seals are selected based on material compatibility and temperature of the process being sampled. Reference the following chart:

TX	plunger seal material	maximum temperature
T2	Perfluorinated elastomer (FFKM)	550°F (288°C)
T3	Filled PTFE	500°F (260°C)
	Fluoroelastomer (FKM)	400°F (204°C)
T4	ECTFE	325°F (163°C)
T5	Ethylene propylene	250°F (121°C)
	95 Duro polyurethane	230°F (110°C)
	Nitrile	225°F (107°C)
	75 Duro polyurethane	212°F (100°C)
T6	UHMW PE	200°F (93°C)

NOTE

Figures in this manual may differ from actual purchased equipment. Please refer to the drawings in the appendices of this document.

Installation

Selection of Installation Location

Select a location to install the sampler where the material in the process stream is well mixed. Location of the sampler and controller is very important for accurate sampling results. They should be as close together as practical, within sight of each other, and protected from weather, traffic damage and normal work activities in the area.

When selecting a sampler location, ensure the sample collection container will clear vertical lines (or other obstructions) when mounted onto the sampler. The sampler can be used on a pipe or tank running horizontally, vertically or at an angle, but the preferred position is with the axis of the sampler horizontal.

Line Adapter Mounting (if provided)

1. Reference the accompanying drawing to determine which line adapter had been provided.
 - a. SADDLE SHAPE line adapters are machine cut to fit the OD of sampler diameter process pipes.
 - b. PLUG SHAPE line adapters are installed through the wall of larger diameter pipes or sides of tanks.
2. After selecting a location and verifying the sampler orientation, cut a hole in the process line (or tank) according to the shape of the line adapter. Exact size to cut is shown on the accompanying drawings
3. Protect bore and face of adapter from weld spatter.
4. Tack weld adapter in position. Again, check orientation and position before continuing to weld.

NOTICE

Use industry code procedures to protect adapter from distortion. Major distortion cannot be corrected and will prevent installation of sampler.

Sampler Mounting

1. ISOLOK samplers are designed to mount to a line adapter that is welded or otherwise attached to a process line.
2. PLUNGER CLEARANCE. Ensure that adequate clear space exists ahead of nose of sampler to allow for full plunger movement.
3. Check orientation of sampler and line mounting adapter, and ensure that axis of sampler is mounted as shown on the accompanying general arrangement drawing.

Controller (if provided)

1. Make connections as shown on the accompanying drawings.

Service Connections

1. Make air line connections as shown on the accompanying drawings.
2. For most installations, the sampler requires compressed air at normal flow capacity of 2 standard cubic feet per minute (SCFM) at normal regulated pressures between 30 psig (2.1 barg) and 80 psig (5.5 barg).
3. At 80 psig (5.5 barg), air consumption is approximately 0.06 SCF per sampler cycle for 2-3/4-inch cylinders.
4. AIR LINES. Connect two air outlet ports on controller to sampler air fittings P5 on head and P6 on rear of cylinder using 1/4 in OD air lines. Use no more line than is necessary.
5. An adjustable restrictor (flow-control valve) should be used to control exhaust air flow from the air cylinder. Consult Sentry Equipment Corp if not furnished as part of the operating controller system.
6. Connect lines so that sampler dwells in retracted position while in between cycles or when off.
7. Check for proper connection of air lines by extending the sampler plunger using the "HAND" or "GRAB" option of the controller.

Operation

DANGER

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

Sample Containers

1. Sample collection containers always should be clean and completely dry before being used. Containers (bottles) of polypropylene most often are utilized.
2. SCREW MOUNT CONTAINERS. The standard sampler body is provided with a 70 mm, 4 tpi threaded discharge port for direct mounting of the sample collection bottle.
3. SEPARATE CONTAINERS. Suitable piping connections for metal or plastic components can be arranged to conduct sample portions to a separate container. Whenever such piping is installed, avoid long runs with multiple fittings, joints or other areas where solids or crystals could build up and block flow.

NOTE

IMPORTANT. Select sample container size that will not be filled completely even during longest sampling times. Use care when setting a cycle rate that may nearly fill a container.

WARNING

Always ensure control is OFF before mounting or exchanging sample containers.

Controller (if provided)

ISOLOK samplers require an operating controller which determines the time interval between cycles, speed of the plunger and dwell in product stream. Filtered, compressed air or gas is provided from controller to sampler air cylinder for operation.

Operation can be manual-pneumatic, electric-pneumatic, all-pneumatic, etc. A few are described:

- Manual-Pneumatic Control includes a filter, regulator, gauge, and lever operated four-way air valve with speed controls and mounting bracket. The lever is depressed to extend the plunger and held approximately two seconds. The lever release retracts the plunger. A stainless steel enclosure with locking provision is optional.
- Electric-Pneumatic Control includes an electric power supply for the timer and solenoid operation with separate pneumatics. Time-based units include EXTEND-RETRACT adjustable plug-in timers to control time intervals and optional special time delay functions. Flow proportional or remote contact controls operate from the user's flow meter or pulse generating device and usually include an adjustable counter. NEMA 4 or NEMA 7 enclosure models are available.
- All-Pneumatic Control is suitable for explosion hazard-rated areas where compressed air is available for sampler operation or for areas where electric power supply is not available.

General Specifications

In most cases, an automatic electric sampler cycle controller requires an 115VAC power supply. IN ALL CASES controls require a suitable ground and means to disconnect the electrical supply.

Where connecting a contact closure or pulse input from the flow meter to the controller, using shielded cable is recommended if the run is more than 10 feet or if the conduit contains leads of higher voltage.

The controller location should be within sight of the sampler and require connecting air lines to the sampler of no more than 30 feet.

Connect a compressed air supply line to the sampler operating controller of nominal flow capacity in the range of 2 SCFM at 80 psig (5.5 barg) to 120 psig (8.3 barg). Dry, oil-free air gives best operation with minimum maintenance. Adequate use of air filters is recommended. Minimum pressure setting of 30 psig (2.1 barg) is required. The maximum pressure setting should be less than the incoming air supply to ensure steady, regulated pressure on the sampler.

Automatic Cycle Rate

Select a cycle rate on an adjustable delay timer that will provide an adequate sample composite for the container in use. DO NOT overfill the container. Sample delivery is charted for samplers with 14 cc liquid volumetric displacement per cycle. A partial chart is shown on the following page. Cycle rate is a combination of the time needed to fully extend the plunger into the product line, then completely retract and discharge the sample collected.

NOTE
The plunger should remain extended into the process flow for the shortest amount of time possible.

To convert cubic centimeters to fluid ounces, multiply by .0338. There are approximately 30cc (29.5735) to one fluid ounce, 128 fluid ounces to one U.S. gallon.

$$*CYCLE TIME = \frac{CC \text{ PER CYCLE} \times \text{TOTAL SAMPLING TIME (SEC)}}{\text{TOTAL SAMPLE (CC)}}$$

$$* CYCLE TIME (SEC) = \text{EXTEND TIME} + \text{RETRACT TIME}$$

Specialized controls are available on request to suit various requirements.

total sample (cc) at 10 cc per cycle						
	total sampling time					
cycle time*	5 min	10 min	30 min	1 hr	8 hr	24 hr
5 sec	600	1200	3600	7200	57600	172800
10 sec	300	600	1800	3600	28800	86400
15 sec	200	400	1200	2400	19200	57600
20 sec	150	300	900	1800	14400	43200
30 sec	100	200	600	1200	9600	28800
60 sec	50	100	300	600	4800	14400
120 sec	20	50	150	300	2400	7200
300 sec	10	20	60	120	960	2880
480 sec	--	10	30	70	600	1800
600 sec.	--	10	30	60	480	1440

The sampler design precludes marking each component of the sampler with a part or serial number. We recommend the user uniquely identify each sampler and controller. Equipment identification becomes invaluable when operating more than one sampling instrument serviced through a central maintenance facility. Identification tags can be provided from Sentry Equipment in laminated plastic or metal to be attached to the sampler or controller. Price of the tags is available upon request.

Sampling should be performed only when the product is moving. Sampling from stagnant (stationary) product can bias the sample. Starting and stopping the sampling system can be done manually or by interlocking to a pump or valve. Special controls are available for use with flow meters or for remote computer operation.

⚠ CAUTION

Product collected with each sampler plunger cycle drains from the discharge port (P1) of the sampler into the container. However, there is always some clingage to wetted parts. Those collecting samples should be instructed in proper techniques and care when handling containers. If required, users should wear protective equipment such as gloves, masks or other clothing at all times when operating sampling equipment where exposure to the sampled product could be hazardous.

Venting

Samplers used on pressurized lines – where expansion of entrained gas, air, steam or fumes could cause a pressure rise in the sample bottle – require adequate venting.

1. Venting may be provided by a port in the bottle adapter or body top port of the sampling instrument. Ensure any potentially hazardous fumes or product are conducted to a safe area. Periodically check to ensure the vents are open and unclogged.
2. Vent or drain ports always should be located to avoid accidental exposure of an operator to hazardous or hot material. Where evaporation or vapor loss through a vent is undesirable, the vent should be equipped with a proper control.
3. Contact Sentry Equipment Corp for clarification of any questions on venting of the sampler system.

Sample Collection Containers

⚠ WARNING

Always ensure controller is OFF before mounting or exchanging sample containers.

The sampler has been provided with one of a variety of sample collection container connections. See the accompanying drawing to identify which has been provided.

1. Sample collection containers always should be clean and completely dry before being used. Containers (bottles) of polypropylene are often used.
2. SCREW MOUNT CONTAINERS. These adapters have a suitable threaded port and mount onto a discharge port.

Maintenance

⚠ WARNING

Sampler must not be disassembled or removed from line until line is free of product, is at atmospheric pressure, all components are at safe temperature, and all services have been shut off.

Sampler Cleaning

1. Operating an accurate and valid sampling installation is critically dependent on effective cleaning procedures. ISOLOK samplers incorporate materials, finishes and design to allow effective cleaning of seals, ports, vents and interior body cavities.
2. Whenever a sampler is cleaned, it should be lubricated and inspected for wear and damage that can affect its continued successful operation. The sampler periodically should be checked for proper operation and to ensure that any wear is detected for preventive maintenance.
3. On continuous duty installations, the sampler should be checked once a day for proper operation. On all installations, a definite schedule of inspection should be established to ensure safe and accurate sampling

operation. ISOLOK samplers initially must be installed and periodically inspected to ensure all connections, clamps and fasteners are firmly tightened. Failure to keep screws or connections properly secured could result in leakage or damage.

4. Do not weld, machine or otherwise modify the sampler or control in any manner. Consult Sentry Equipment Corp before undertaking any changes. Follow your plant safety procedures whenever maintenance or inspection is required on this equipment.
5. We recommend that service records be maintained on sampling equipment. Data should include:
 - a. Sampler: Record date of installation, date of seal replacement, which seals were replaced and the condition of used seals, and the reason they were replaced. Accurate records will assist in determining seal life or if abnormal operating conditions exist. Contact Sentry Equipment Corp if unusual wear or chemical attack to the seals or the metal parts of the sampler occurs.
 - b. Controller: Record the date of installation, the date of timer or air valve replacement, items replaced and the condition of used parts. Indicate the reason they were replaced. Frequent replacement of timers may indicate an issue with the controller operating environment. Impurities in the air supply source may cause premature failure of pneumatic components.

Sampler Removal

WARNING

Sampler must not be disassembled or removed from line until line is free of product, is at atmospheric pressure, all components are at safe temperature, and all services have been shut off.

Refer to the included general arrangement and assembly drawings for removal information. All service to the sampler should be performed with it removed from the process line.

Plunger Seal Disassembly

WARNING

Sampler must not be disassembled or removed from line until line is free of product, is at atmospheric pressure, all components are at safe temperature, and all services have been shut off.

Remove the sampler to a clean, well-lighted bench area. Parts should be laid out on a clean towel in order of disassembly. The sampler assembly drawing should be at hand for reference.

1. Remove the upper manifold tube from Ports P5/P7. Remove the sanitary clamp between the body and cylinder barrel. Pull out the cylinder and plunger assembly, using a steady pull/twist force in line with axis of body. Remove the O-ring from the extended nose of the cylinder barrel.

CAUTION

Decompression of seals may occur as the plunger is removed. Protect personnel from exposure to sample material trapped between plunger seals.

2. Loosen the tube fitting nuts and remove the lower (plunger extend) manifold tube from Ports P6/P8. Remove the sanitary clamp, closure and O-ring seal from the cylinder barrel.
3. Insert an Allen wrench into the rear of the piston. Using a 3/4-inch open-end wrench on the flats of the spindle; carefully unscrew and remove the spindle rod and sleeve from the piston.

NOTICE

Do not nick or scratch seal seats.

4. Remove the sleeve from the spindle rod. Using thumb and forefinger, remove the O-rings from the outside diameter, including the O-ring piston seal. Remove the O-rings from the inside sleeve. A round, tapered wood toothpick is recommended as a tool to prevent scratching the metal. Remove the O-ring plunger seals from the spindle.
5. Insert finger into the small diameter of the cylinder barrel and push the piston free. Remove the O-ring seal from the piston.
6. Remove the O-ring rod seal from the small diameter of the cylinder barrel using a round, tapered wood toothpick.

Inspection and Cleaning

Each part should be carefully cleaned of any foreign residue inside and out. Stainless steel can dent easily; handle with care and prevent parts from bumping together. Use only mild abrasives and solvents.

1. Inspect the body for dents, scratches, and any evidence of uneven wear.
2. Check the front and rear mounting flanges for dents, burrs or any other deformation that would cause faulty alignment when reassembled.
3. Inspect the discharge opening from the body into the container port, the container mounting threads and the small vent on the side of the port. Ensure the air port is free and clear.
4. Inspect the spindle wrench flats for upset metal that may scratch the body bore. Examine the outside diameter and seal grooves.
5. Inspect the chrome-plated rod diameter for any deterioration that could damage the O-ring sleeve seals.
6. Examine the flat rod face back of the threaded end. Distortion on this face could cause misalignment when tightened against the piston rod, leading to plunger seal leakage in the body bore. Inspect the thread for dents, burrs, galling or bending.
7. Inspect the barrel's rear face, extended nose and clamp flanges for burrs, dents or other distortion.
8. Inspect the extended end and mounting face for flatness and dents that could misalign the body. Ensure the air ports are free and clear.
9. Examine both the external and internal O-ring seal grooves for dents and/or scratches. The minor diameter through the barrel should be smooth and free of burrs.
10. The bore should be smooth. Carefully examine for any metal scoring or deformation. The barrel has a chrome-lined cylinder bore and should not be extensively honed or polished. Replace with a new barrel if it is damaged.
11. Inspect the seal groove and surface that the rear of the piston bears against. The face should be smooth and flat. Dents or foreign material on this surface could misalign the piston. Ensure the air port is free and clear.
12. Examine the manifold air restrictors in Port P7 of the cylinder barrel and Port P8 of the cylinder closure. Ensure the 0.040-inch diameter hole is free and clear.

Plunger Seal Reassembly

Reassembly is done in reverse order of disassembly procedure. Always work with the sampler group drawing as a guide. The following techniques will be helpful in reassembling seals and components of plunger module.

1. Clean and polish metal components as appropriate, using a soft cloth. Avoid excessive abrasives. Use an approved high viscosity sanitary grease to lubricate the components. Wipe and clean the seal seats of the metal parts.

NOTICE

Do not use petroleum-based grease, oil or similar hydrocarbon lubricants on the EPDM plunger seals; they will swell the rubber material.

2. As a general procedure, it is more convenient to install all seals before beginning to assemble parts. Sort and identify the individual seals from the seal kit for installation in their proper location.
3. Lightly lubricate and stretch two (2) O-ring plunger seals onto the spindle and three (3) onto the sleeve. Always replace the plunger seals as a complete set.
4. Lubricate and install the two (2) O-ring inner diameter sleeve seals. A clean wood or plastic rod about 1/4-inch in diameter is helpful in getting the O-ring started into the grooves.
5. Lubricate and stretch the O-ring into the seal groove of the sleeve piston.
6. Lightly lubricate and slip the O-ring rod seal into the inner diameter seal groove of the barrel. Use finger to tuck the seal in place. Lubricate and stretch the O-ring into the seal groove of the extended nose.
7. Lubricate and stretch the O-ring seal into the seal groove of the piston.
8. Wipe lubricant onto the O-ring piston seal and the rod end of the piston. Insert the piston into the rear of the barrel, taking care not to pinch the O-ring seals. Slide the piston back and forth to ensure it operates smoothly.
9. Lightly lubricate the rod diameter of the spindle. Slide the sleeve over the spindle rod, taking care to guide the O-rings over the threaded rod end.
10. Wipe lubricant onto the thread of the spindle rod and turn the plunger assembly into the piston rod by hand. The 5/16-18NC thread in the piston rod is machined with a special self-locking thread form, so lock washers or seal nuts are not required.
11. Hold the piston with an Allen wrench. Using the 3/4-inch open-end wrench, torque the spindle to 12 ft.-lbs. Tighten firmly but do not over-torque the self-locking threads or bend the spindle rod.
12. Grasp the plunger and slide it back and forth several times to ensure it operates smoothly. With the plunger extended, move the sleeve back and forth on the spindle rod.
13. Install an O-ring seal between the barrel and the closure. Wipe lubricant onto the thread of the clamp screw and clamp the closure to the barrel. Tighten securely.
14. Reinstall the lower manifold tube and tighten the tube fitting nuts.
15. Apply a light film of lubricant inside the body bore and counterbore at the rear of the body. Wipe a light film of lubricant onto the plunger seals and sleeve piston seal.
16. Push the plunger back into the cylinder barrel and slip the body over the plunger assembly, taking care not to pinch the O-ring seals. The body should slide on smoothly with a light interference fit. If it appears overly loose, the O-rings may be undersized and could leak.
17. Align manifold Ports P5/P7. Wipe lubricant onto the thread of the clamp screw and clamp the body to the cylinder barrel. Tighten securely.
18. Replace the upper manifold tube and tighten the tube fitting nuts.
19. Reconnect the sampler to controller air lines and use the "HAND" cycle to manually activate the sampler controller. Cycle test the sampler for proper operation. Replace any thread-changing bottle adapters and/or accessory lines and return the sampler to service.

Troubleshooting

symptom	possible problem(s)	remedy
Sampler leaks product or air out of bottom ports	<ul style="list-style-type: none"> ▪ Worn seals ▪ Incorrect installation ▪ Other worn parts 	<ul style="list-style-type: none"> ▪ Thorough inspection is required ▪ Replace worn seals ▪ Check any recently replaced seals against drawings for correct installation ▪ Replace other worn sampler parts: Body, head, barrel or plunger
Sampler leaks product at pipe connection	<ul style="list-style-type: none"> ▪ Installation misaligned ▪ Fastener, clamp/gasket or seals issue 	<ul style="list-style-type: none"> ▪ Check installation for misalignment ▪ If the installation is threaded, replace locknut fastener and add commercial grade Teflon tape when reinstalling ▪ If the installation is tri-clamp or instrument hub, check the clamp/gasket (TC) or o-rings/fasteners (IH) attaching the sampler to the line adapter ▪ Replace seals if they are damaged or show signs of chemical attack
Sample discharge is decreasing	<ul style="list-style-type: none"> ▪ Buildup in sample spool cavity or sampler nose 	<ul style="list-style-type: none"> ▪ Check sample spool cavity for buildup; if present, add flush or air eject provision to sampler body ▪ Check sampler nose for buildup; if present on nose or pipe wall interior, remove the body from the line frequently and clean it using plant procedures
Sampler will not operate	<ul style="list-style-type: none"> ▪ Issues with power source and/or air connections 	<ul style="list-style-type: none"> ▪ Check power source and air connections; connect as required ▪ Check air lines for proper connection, as plunger must dwell retracted; air lines connected backwards will cause sampler to dwell (pause) extended into the process line ▪ Check for air bind; depending on the density of the product sampled, this sometimes can be resolved by opening a top port on the sampler ▪ Check sampler operating air pressure and process line pressures; operating air pressure must be sufficient to move the plunger against process pressure. Issue may be resolved by increasing or decreasing air to sampler or relocating sampler.
Controller does not operate	<ul style="list-style-type: none"> ▪ Issues with pneumatic and/or electric power source 	<ul style="list-style-type: none"> ▪ Verify correct 115V or other specified power to controller ▪ If using a remote contact unit, check the output signal to the controller from the flow meter; check purchase records, and if an incorrect output signal was specified, contact Sentry Equipment ▪ Secure a qualified technician to run a complete operating check of timing circuits, remote contact inputs and/or counter inputs that sequence the electric or pneumatic power valve

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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