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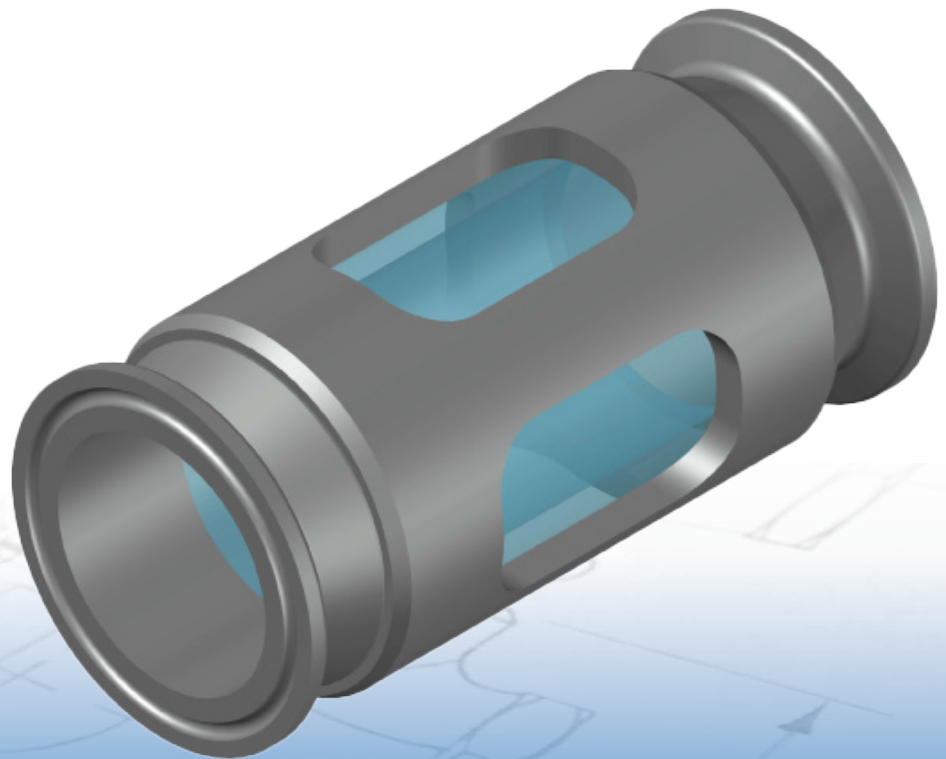
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**JOHN C.**  
**ERNST** LLC  
*PROCESS OBSERVATION SOLUTIONS*

# SIGHT FLOW INDICATORS

INSTALLATION, OPERATION & MAINTENANCE MANUAL  
FOR SERIES: **S23B**



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## PRODUCT QUICK SPECS.

Size	Max Pressure	Maximum Temperature			
		EPDM	Silicone	Viton®	FEP/Sil
3/8"	150 PSIG	265°F (129°C)	450°F (232°C)	400°F (204°C)	450°F (232°C)
1/2"	150 PSIG	265°F (129°C)	450°F (232°C)	400°F (204°C)	450°F (232°C)
3/4"	150 PSIG	265°F (129°C)	450°F (232°C)	400°F (204°C)	450°F (232°C)
1"	120 PSIG	265°F (129°C)	450°F (232°C)	400°F (204°C)	450°F (232°C)
1-1/2"	115 PSIG	265°F (129°C)	450°F (232°C)	400°F (204°C)	450°F (232°C)
2"	100 PSIG	265°F (129°C)	450°F (232°C)	400°F (204°C)	450°F (232°C)
2-1/2"	90 PSIG	265°F (129°C)	450°F (232°C)	400°F (204°C)	450°F (232°C)
3"	90 PSIG	265°F (129°C)	450°F (232°C)	400°F (204°C)	450°F (232°C)
4"	55 PSIG	265°F (129°C)	450°F (232°C)	400°F (204°C)	450°F (232°C)
6"	40 PSIG	265°F (129°C)	450°F (232°C)	400°F (204°C)	450°F (232°C)

Limited to Glass & Gasket Ratings

# I. INTRODUCTION

## NOTICE

John C. Ernst does not have any control over the manner in which its sight flow is handled, installed or used. John C. Ernst cannot and will not guarantee that a gauge is suitable or compatible for the user's specific application.

This manual has been prepared as a guide for personnel responsible for installation and maintenance of these items. All instructions must be read and understood thoroughly before attempting any installation, operation and maintenance.

John C. Ernst Sterile Flow Indicators have been designed to allow the visibility of high purity process media as they pass through enclosed pipelines. The unit creates a view-port to the fluid process so flow volumes, directions, and reactions can be observed without interrupting process flow. They feature an internal-flush style that meets FDA and 3-A specifications and can be mounted to detect flow in any direction.

With the appropriate indication type, these Sterile Flow Indicators can allow for monitoring of:

- Flow Direction
- Media Color & Clarity
- Foam Presence
- Air/Bubble Presence

These Sterile Flow Indicators consists of 4 primary components. The materials of each component will vary based on the characteristics of the application(s). If additional information of the materials is needed, see the Spare Parts section, or contact the John C. Ernst Sales Department.

- Body: The chamber containing the window and process flow.
- O-ring: There are a total of four FDA/USP Class VI Compliant O-rings used per indicator. Two are used to cushion the window against the body. Two are used to seal between the window and head connection to prevent leaks.
- Window: The transparent material allowing access to the process fluid.
- Head Connection: This produces the compressive force against the window and provides the physical connection to your process piping.

# II. INSPECTION

## Receiving Inspection

Upon receipt of the sterile flow indicator, check all components carefully to ensure that damage did not occur. If damage is evident or suspected, do not attempt installation.

## End User's Rating Inspection

Prior to installation the user(s) must confirm that:

1. The user's purchase order, Product Quick Specs, and the John C. Ernst Technical Drawing, all agree with the actual operating conditions at the installation site.
2. The glass lenses are free of scratches, chips or other imperfections.
3. The connections and inside of the unit are clean and free of any foreign material.
4. The materials of construction are chemically compatible with both the media(s) and unit's surrounding environment.

## ⚠ WARNINGS

Failure to follow instructions could result in a malfunction or breakage of the indicator, resulting in fluid escaping from the unit and fragmenting glass.

Always wear safety glasses when installing, servicing or operating sterile flow indicators.

Failure to follow precautions can result in personal injury and property damage.

## ⚠ WARNING

Exceeding the design ratings or application's data limits can cause the glass to break, the unit to leak, or sudden release of pressure. Failure to keep operations below design ratings may result in serious personal injury and property damage.



**WARNING:** Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

## III. INSTALLATION

### Installation Precautions

Do not impose system piping loads on the Sterile flow indicator. It is not designed to be a load bearing component. Piping must be supported and aligned with the sterile flow indicator end connections to reduce any bending or torsional stresses. Install the Sterile flow indicator:

- Away from areas where objects may be dropped or thrown.
- So that it is protected from dust, grit, and other objects that could damage the glass.

- So it is protected from external thermal shock. This could be a high a temperature application being exposed to a cold air blast or cold water wash.

#### **⚠ WARNING**

A sterile flow indicator in service must be freed of all pressure or vacuum, allowed to reach ambient temperature and drained or purged of all fluids before re-torquing. Failure to follow this procedure could result in serious personal injury and property damage.

## IV. OPERATION

Before starting operation, check that all installation procedures have been completed. Use only qualified, experienced personnel who are familiar with sterile flow indicator equipment and thoroughly understand the implications of the tables and all the instructions. Check that all connections are pressure tight and the glass is clean and free of any damage.

#### **⚠ WARNING**

These units should be brought into service slowly to avoid excessive shock or stress on the glass. Rapid pressurization of a sterile flow indicator can cause a glass failure and fluid leakage.

## V. MAINTENANCE

A maintenance schedule should be created for each Sterile flow indicator installation. Regularly check the following items:

- Glass for cleanliness and signs of damage or wear.
- Sterile flow indicator for signs of leakage at gaskets or connections.
- Sterile flow indicator for signs of internal or external corrosion.

struction compatible with the contained fluid and the surrounding environment. If internal and/or external corrosion are present, an investigation must immediately be performed by the user.

#### **⚠ WARNING**

Do not remove the sterile flow indicator while it is under pressure. Units in service must be freed of all pressure/vacuum, allowed to reach ambient temperature, and drained of all fluids before torquing, or personal injury may occur.

### Procedures

- 1. Window** should be given regular and careful attention. Keep glass clean using a commercial glass cleaner and a soft cloth. Inspect the surface of the glass for any chips, scratches, pits, cracks, and/or bubbles. Glass that is even slightly damaged will focus any stress to the damaged area(s), and may break under pressure. Shining a light at an approximately 45° angle will aid in detecting some of these conditions. Typical damaged areas will glisten more brightly than the surrounding glass because the light is reflected. Detection of any damage, problem areas or surface wear is sufficient evidence to take the sterile flow indicator out of service. Do not proceed with operation of the sterile flow indicator until the glass has been replaced.
- 2. O-ring** leaks must be repaired immediately. Do not proceed with operation of a sterile flow indicator until gaskets have been replaced.
- 3. Corrosion** may occur if improper materials were selected for the Sterile flow indicator application. It is the responsibility of the user to choose materials of con-

### Disassembly

- Remove the sanitary connections from the body.
- Remove the window and O-rings using the appropriate safety precautions.

#### **⚠ WARNING**

Do not reuse glass or gaskets from prior service under any circumstances. This can cause leaks or high stress points, potentially resulting in a glass failure, serious injury, and property damage.

### Reassembly

Reverse the order you disassembled the unit.

- Install new O-rings in the body.
- Install new O-rings in the sanitary connections.
- Thread one sanitary connection into the body. Continue until the connection firmly contacts the counter bore.
- Insert the window into the body.
- Thread the second sanitary connection into the body. Tighten the connection until it contacts the counter bore.

# LIMITED WARRANTY

## Period of Coverage

The John C. Ernst LLC. expressly warrants products to the original purchaser to be free from defects in the material and workmanship for 12 months from date of shipment. John C. Ernst LLC. will, at its option, replace or repair any products which fail during the warranty period due to defective material or workmanship. Evaluations, repairs, and replacements will most often occur in Sparta NJ 07871 USA, or another facility determined by the John C. Ernst LLC.. The warranty does not cover costs required to transport warranted units to or from the John C. Ernst facility.

## Limitations

The responsibility of the John C. Ernst LLC. is hereunder limited to repairing or replacing the product at its expense. This warranty shall not apply if the product has been disassembled, tampered with, repaired, subjected to misuse, neglect, accident, or otherwise altered in any way. The warranty does not guarantee products against normal wear, glass breakage, clouding, or corrosion. The John C. Ernst LLC. shall not be liable for loss, shipping costs, damage, or expenses related directly or indirectly to the installation or use of its products. It is expressly understood that the John C. Ernst LLC. is not responsible for damage or injury caused to other products, buildings, personnel, citizens, or property by reason of the installation or use of its products.

Advertised ratings apply only to units serviced with parts supplied by the John C. Ernst LLC. Service must be done in accordance with the instructions of the product that is being serviced.

THIS IS JOHN C. ERNST, LLC'S. SOLE WARRANTY AND IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED WHICH ARE HEREBY EXCLUDED, INCLUDING IN PARTICULAR ALL WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. WE WILL NOT BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY NATURE.

## How to get Warranty Service

Prior to submitting any claim for warranty service, the owner must submit proof of purchase, and obtain written authorization to return the product. All returns must be sent back with an MSDS for the application that the product was used in, and with a maintenance log of all service including inspections. Thereafter, the product shall be returned to the John C. Ernst LLC. with freight paid and packaged to prevent damage in transit. Should damage in transit occur the John C. Ernst LLC. will not be held liable.

# GENERAL PRESERVATION

## **Recommended Practice for Long Term Storage of John C. Ernst Products**

1. All units should be inspected upon receipt to ensure that no damage has been incurred during transit. If there has been damage, a claim should be filed with the carrier immediately. Units should be stored in an area protected from the elements and corrosive fumes, in a secure manner where they can neither fall nor be struck by other objects. Care should be taken to protect the glass and the end connections from damage. Avoid placing any objects directly on the glass(es) at any time.
2. Units should be checked to ensure that they contain no foreign matter and that the end connections are clean, undamaged, and in line with adjoining piping. Examine each glass carefully using a flashlight for any indications of chips, scratches, blemishes or cloudiness. Inspect for scratches, shining a bright concentrated light (powerful flashlight will suffice) at about a 45° angle. Any scratch that glistens and catches a fingernail, or star or crescent-shaped mark that glistens, is cause for replacement. Process surface that appears cloudy or roughened, after cleaning, is evidence of chemical attack and is cause for replacement. If any type of flaw is apparent, the unit should not be installed until the glass and gaskets have been replaced. Follow the torquing recommendations given by the gasket and piping manufacturers to achieve proper sealing pressures.
3. Some products are shipped unassembled, as they are to be welded into position and then assembled. Individual pieces should be carefully stored in a manner to avoid damage until installation. The glass requires special attention. It should not be stored or mixed with objects that may cause damage and should remain wrapped or boxed until assembly.
4. Gaskets frequently assume a compression-set over a period of time. Some materials, however, may compress/relieve or creep. Visually inspect the gaskets for gaps or looseness before start-up. If the gaskets are not compressed, adjust the unit gasket compression. Do not tighten any fasteners or clamps while the unit is in operation.
5. Periodic visual inspection should be made to ensure that no leaks are evident and that there is no clouding, scratching, or blemishing of the glass. Keep glasses clean using commercial glass cleaners. Cleaning should be done without removing glass. This may require recirculation of cleaning material if process side of glass is not accessible. Never use harsh abrasives, wire brushes, metal scrapers, or anything that may scratch the glass. Do not attempt to clean glasses while equipment is in operation.
6. Should leaking around the glass occur, first check the glass for damage. If the glass appears to be in good condition, the gasket seal should be checked, but only after the system pressure has been brought down to zero. If the gasket appears to be loose, or hardly compressed, the spacers must be adjusted. If the leak persists after repressurizing, disassemble and replace the gaskets.
7. Glass, shields and gaskets that have been removed, **MUST BE REPLACED**. Used parts may contain hidden damage. Induced stress in glass and de-tempering are **NOT** visible to the naked eye. Be sure that the replacement glass is proper for the service.
8. Inspect protective coating (if applied) for chipping.
9. Store within the temperature extremes of the nameplate or specification documents – do not expose to direct sunlight or other UV sources.
10. Products should be stored off of the floor on suitable skids, pallets, or racks and protected from dirt, debris, and exposure to direct sunlight, particularly to soft sealing surfaces.
11. Store in a cool dry place, room temperatures between 40°F - 80°F with a relative humidity level between 40 – 75%.
12. Store in dry areas, avoiding any contamination with any liquids. Products should be kept in a clean, heated, weather-tight (dry), well ventilated facility.
13. If a flanged product is to be stored for any extended period of time, the flange or end protector should be examined to ensure they are fastened securely, and any other open areas should be sealed to prevent any moisture damage.
14. Product assemblies with electrical components, pneumatic tubing, positioners, actuators, and other accessories should be protected from impact.
15. Useful Life When Stored:
  - a. Unit: Indefinite, based on ideal storage conditions.
  - b. Spare Gaskets: Indefinite, based on ideal storage conditions.
  - c. After 9 months, the torque of the bolting should be checked as the gasket relaxes. This should be done for units not in service as well as those installed in process.
  - d. The useful life of the material, when the storage conditions differ from the recommended factors is not known. It has been established, however, that room temperature has a significant influence on the shelf life of material.
  - e. Spare Gaskets should be stored flat.
16. Periodical checks at least every 6 months have to be carried out in the storage area to verify that the above mentioned conditions are maintained.

**If there are any questions or concerns, please contact the John C. Ernst LLC. Sales Office at 888-943-5000.**

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