LJSTAR
INCORPORATED

Sterile Visual Flow Indicator

Sanitary Process Connection

Installation / Operation / Maintenance Manual

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L.J.STAR INCORPORATED

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1.00 Warranty

L. J. Star warrants its Sterile Visual Flow Indicator against defects in material and workmanship for a period of eighteen months from the date of shipment. L. J. Star will, at its option, repair or replace those products that fail to perform as specified with the following exceptions. This warranty does not apply to glass breakage or any other liability other than materials and workmanship.

1.10 Exceptions

Products repaired or modified by persons not authorized by L. J. Star.

Products subject to misuse, negligence or accidents.

Products that are connected, installed or otherwise used in a manner not in accordance with the manufactures instructions.

1.20 Provisions

L. J. Star's responsibility hereunder is limited to repairing or replacing the product at its expense. L. J. Star shall not be liable for loss, damage or expense directly or indirectly related to the installation or use of its products, or from any other cause or for consequential damages. It is expressly understood that L. J. Star is not responsible for damage or injury caused to other products, building, property or persons by reason of the installation or use of its products.

This warranty is in lieu of any other warranty expressed or implied by any party other than L. J. Star. Repairs and/or replacements shall be at the sole discretion of L. J. Star based upon the terms and conditions.

2.00 Introduction

L. J. Star's Sterile Visual Flow Indicators are designed to provide a safe and dependable system for observing your process flow in high purity applications. They feature an internal-flush style that meets FDA and 3-A specifications and can be mounted to detect flow in any direction.

Standard Sterile Visual Flow Indicators utilize sanitary clamp connections. They are available in tube sizes from 1/2" to 4" and pressure ratings up to 150 psig. Optional butt weld or flange process connections are available upon request.

2.10 Components

Each Visual Flow Indicator is comprised of four basic components.

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 visual access to the process fluid.

Head Connection
This produces the compressive force against the window and provides the physical connection to your process piping.

2.20 Pressure / Temperature Specifications

The allowable pressure / temperature limitations for your Sterile Visual Flow Indicator are size and O-ring material dependent. The combined effects of these two factors are displayed in Table 1.

DANGER

Do not exceed the listed design ratings. Operating beyond these limits could result in leaks, glass breakage or sudden escape of process fluid or pressure. Should this occur you risk severe personal injury and property damage.

Table 1

Sterile Visual Flow Indicator
Maximum Pressure / Temperature

Tube Size	Pressure (PSI)	Maximum Temperature of O-Ring (˚F)			
		EPDM	Silicone	Viton	FEP/Sil
3/8”	150	265	450	400	450
1/2”	150	265	450	400	450
3/4”	150	265	450	400	450
1”	120	265	450	400	450
1-1/2”	115	265	450	400	450
2”	100	265	450	400	450
2-1/2”	90	265	450	400	450
3”	90	265	450	400	450
4"	55	265	450	400	450
6"	40	265	450	400	450

All units are rated for Vacuum Service

Design ratings are independent of clamps and line gaskets.

Contact the factory for additional design rating information.

3.00 Installation

3.10 Unpacking

Upon receipt of your Sterile Visual Flow Indicator check all components carefully for damage incurred during shipment. If damage is discovered or suspected, do not attempt installation. Notify the carrier immediately and request a damage inspection.

Check each item against the enclosed packing list. Confirm that the attached identification tag lists the proper model and design rating for the intended application.

3.20 Visual Inspection

Insure your Sterile Visual Flow Indicator is free of any damage due to mishandling or improper storage before proceeding with installation. Specific areas of concern are the window and pipe connections.

Examine the window for evidence of scratches, chips or cracks. If any are present, do not proceed with installation. Surface abrasions weaken the window and it will not be able to support the listed design rating.

The pipe connections must be free of any foreign material. The presence of foreign material may prevent the unit from sealing.

3.30 Positioning the Sterile Visual Flow Indicator

Place your unit in an area free from excess mechanical or thermal stress. These forces will greatly reduce its serviceable life.

The following criteria should be used to determine the optimum location for your Sterile Visual Flow Indicator.

a) Do not impose system piping loads on the Sterile Visual Flow Indicator. The unit has not been designed as a load bearing component.
b) Protect it from objects that may come in contact with the window. This includes environmental contaminants, tools and machinery.
c) Do not subject it to rapid temperature changes. Avoid exposing it to cold air blasts or cold wash down water.

4.00 Start Up

Prior to placing your Sterile Visual Flow Indicator into operation, insure all installation procedures have been completed. Check the unit for any damage that may have occurred during installation.

Bring the Sterile Visual Flow Indicator into service slowly. Rapid pressurization or temperature change will subject the window to shock that could significantly shorten its service life or result in failure.

5.00 Maintenance

Periodic maintenance and inspection of your Sterile Visual Flow Indicator is recommended to insure the unit is in proper working order. The frequency of maintenance will vary with the application.

The end user must determine the appropriate maintenance schedule based upon their experience with the specific application. Realistic maintenance schedules can only be determined with full knowledge of the service and application involved.

WARNING

Do not proceed with any maintenance if the Sterile Visual Flow Indicator is still at operating pressure or temperature. Relieve the unit of pressure, allow it to reach ambient temperature and purge it of all fluids. Failure to do so could result in personal injury or property damage.

Any established maintenance procedure should include the following activities.
Check:

a) the window for signs of damage or wear.
b) the Sterile Visual Flow Indicator for signs of leaks at gaskets or process connections.
c) the Sterile Visual Flow Indicator for signs of internal or external corrosion.

5.10 Routine Maintenance Activities

WARNING

The use of personal safety apparatus when viewing the process fluid or during maintenance is highly recommended. This includes but is not limited to eye and skin protection. Failure to do so could result in personal injury.

5.11 Window

The window should be carefully and regularly inspected. Examine it for evidence of scratches, clouding, etching or any other physical damage. A damaged window has been weakened and is susceptible to breaking. Using a concentrated light at a 45° angle to the surface of the sight window will help detect any of these conditions. Damage areas will glisten more brightly than the surrounding surface.

Cleaning the surface of your sight window can be accomplished by using standard commercial glass cleaner and a soft cloth. Never use an abrasive material, wire brush or scraper.

If damage to the window is detected your Visual Flow Indicator should be taken out of service immediately. Do not continue with normal operation until the sight window has been replaced.

5.12 O-rings

Regularly check your Sterile Visual Flow Indicator for evidence of leaks at the gasket surface. If leaks are detected remove the unit from service immediately. Once the indicator has reached ambient pressure and temperature verify the window is firmly seated against the sanitary connections. If the window is seated, replace the O-rings.

5.13 Corrosion

Evidence of either internal or external corrosion is an indication that the proper material of construction may not have been chosen for your application. The end user is responsible for determining the material that is compatible with both the process fluid and the surrounding environment. If corrosion is detected the Sterile Visual Flow Indicator should be removed from service and the material compatibility investigated by the end user.

6.00 Disassembly / Reassembly

DANGER

Do not attempt to disassemble your Sterile Visual Flow Indicator while it is still in operation. Pressure increases the possibility of the window breaking and process fluid escaping. The unit must be relieved of pressure, allowed to reach ambient temperature and purged of all fluids prior to proceeding. Failure to do so could result in personal injury and property damage.

6.10 Disassembly

The first step in the disassembly of your Sterile Visual Flow Indicator is to remove the sanitary connections from the body. Once this is complete, remove the window and O-rings using appropriate safety precautions.

The used window and O-Rings should be disposed of immediately. They may contain hidden damage and pose a safety risk. Never attempt to reuse these components once they have been in service.

DANGER

Never attempt to reuse windows or O-rings that have been placed in service. Hidden damage or stress will greatly increase the possibility of the window breaking and process fluid escaping. Failure to follow this procedure could result in personal injury and property damage.

6.20 Reassembly

Reverse the order you disassembled your Sterile Visual Flow Indicator.

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

7.00 Telephone Assistance

For assistance with your L. J. Star Visual Flow Indicator contact your local representative or the factory. In order to answer your questions quickly and completely please have the following information available.

- Model Number
- Serial Number
- Date the unit was placed in service
- Process media
- Operating pressure
- Operating temperature
- Brief description of problem(s)

8.00 Exploded Cross Section View