# INSTRUCTION MANUAL

# SIGHT FLOW INDICATOR

**Authorised Dealer**


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# Warning

Read all warnings and instructions before performing installation or maintenance. Safety glasses and gloves should be worn at all times when working with or examining water gauge glass and connections

# Danger

Improper installation or maintenance of gauge glass and connections can cause immediate or delayed breakage resulting in bodily injury and / or property damage.

# INSTALLATION

## 1. SYSTEM DESCRIPTION

- NK Instruments Sight Flow Indicators consists of three basic components
- **Frame :** It provides an in-line attachment capability for the Sight Flow Indicator. In addition, the body is machined to provide a recess for glass and PTFE bush fitment. The nut is screwed onto the top flange and provides an effective method of compressing and sealing PTFE Bush Sets on the glass ends to prevent leakage. The tie rods are riveted on the flanges at both ends.
- **PTFE Bush Sets :** PTFE Bush Sets are placed in the recess provided in the flanges and is compressed by the nut to effectively seal the gap and prevent leakage between the flange and the glass tube. The standard PTFE Bush set ensures compatibility to the fluid passing through the Sight Flow Indicator.
- **Glass Tube :** is the most vital component of the Sight Flow Indicator and is installed in series with the pipe line that is under observation and provides uninhibited view of the media passing through the glass tube

## 2. INSTALLATION

- Qualified experienced personnel who are familiar with this equipment and have read and understood all the instructions in this manual should undertake installation.
- The user should refer to NK Instruments product proposal to obtain overall dimensional information.
- Do not proceed with installation of the sight flow indicator unless:
  1) The glass is examined and is free of all imperfections. Glass that is chipped is weakened and should not be used under any circumstances.
  2) The connections and inside of the sight flow indicator have been cleaned and are free of any foreign material.

## 3. EFFECTS OF RELATED PIPING

- Do not impose system-piping loads on the sight flow indicators. Unit is not designed to be a load-bearing component. Piping must be supported and aligned with sight flow indicator end connections to reduce the possibility of stresses imposed on the unit. Large heavy units must be independently supported to avoid stressing the piping.
- Locate the sight flow indicator where it can be easily seen.
- Locate the sight flow indicator away from areas where objects may be dropped, thrown or generally allowed to effect contact with the viewing glass.
- Locate the sight flow indicator so it is protected from dust, grit, tools, and any other object that may scratch, chip or break the glass.
- Considerations should be given to locations where the glass will not be subjected to large

temperature variations. For instance, an indicator must not be placed in a hot process line where the opening of a door could inflict sudden blasts of cold air. Cold "Wash down" water is also a frequent enemy of glass in hot pipelines. A poor choice of installation locations could impose conditions of thermal shock where stress values approach twice those caused by temperature alone and are additive to mechanical stresses caused by pressure and bolting loads.

- When bolting units to adjacent piping, care must be taken to ensure that bolts or studs do not project sufficiently past the flange to strike any part of the sight flow indicator thus avoiding potentially stripped flange connections or movement of the preset retainers

**4. OPERATION**

Sight flow indicators provide a relatively inexpensive means of visually checking conditions of flow consistently and color of liquids and gases. They neither measure nor control flow but do offer an important human evaluation for checking or double checking systems.

# Maintenance

- Qualified experienced personnel who are familiar with this equipment and have read and understood all the instructions in this bulletin should undertake maintenance. Do not proceed with any maintenance unless the sight flow indicator has been relieved of all pressure or vacuum, has been allowed to reach ambient temperature and has been drained or purged of all fluids.
- Glass: Regular and careful attention must be given to the cleaning and inspection of glass. Glass that is etched or chipped is weakened and may break under pressure.
- Cleaning of Glass: Keep glass clean using a commercial glass cleaner and a soft cloth. Do not use wire brushes, metal scraper, or any device that could damage the glass.
- Inspect the surface of the glass for any signs of clouding, etching or deep physical damage such as bruises, checks or corrosions that extend through the outer surface of the glass into the interior, Detection of any such problem areas is sufficient evidence of damage. The sight flow indicator should be immediately taken out of service and the glass should be replaced.
- PTFE Bush Set: A sight flow indicator that leaks at the PTFE Bush Set must be immediately taken out of service. Do not proceed with the operation of a sight flow indicator until glass and PTFE Bush Set have been replaced.
- Connection Leaks: A sight flow indicator that leaks at the connection should be corrected by tightening the bolts at the connection
- Corrosion: may occur if the user has selected a material that is not compatible for the Model. Sight Flow Indicator application. It is the responsibility of the user to select materials that are compatible with both the contained fluid and the surrounding environment. If internal or external corrosion is evident, an investigation must be immediately performed by the user.

# Trboubleshooting

Do not proceed with the removal or disassembly of a Sight Flow Indicator from connecting pipelines unless it has been relieved of all pressure or vacuum, has been allowed to reach ambient temperature, and has been drained or purged of all fluids

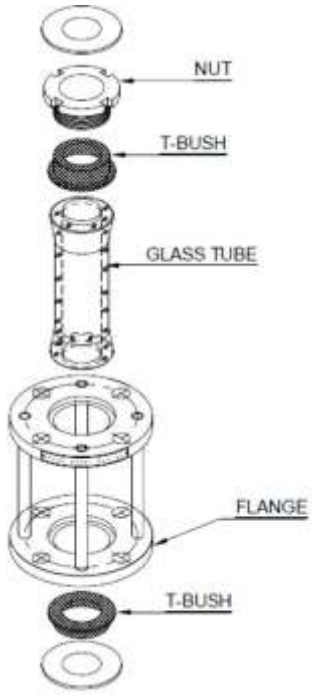
### 1. DISASSEMBLY

- Full View Sight Flow Indicators should be disassembled by standing the Sight Flow Indicator on the flange on a clean, level table surface. Ensure that the unit is stable and secure, hold the Sight Flow Indicator firmly and loosen the GFF Nut. Remove the glass and PTFE Bush Set from the indicator using appropriate safety precautions. Once a Sight Flow Indicator has been disassembled, all glass and PTFE Bush Set must be disposed of since they are permanently deformed by compression during service.
- DO NOT under any circumstances reuse glass or PTFE Bush set previously in service, since they can cause leaks or high stress points resulting in glass breakage and severe personal and property damage. Glass that is broken is dangerous and should be disposed of in a safe manner determined by the user

### 2. REASSEMBLY

- To prepare for installation of a new glass, clean the gasket seating surfaces on the flanges. This should be done using a soft metal scrapper to remove burrs, rust and remnants of the previous PTFE Bush Set. Exercise extreme care to avoid gouging or scarring gasket seating surfaces.
- Refer to the exploded view for component identification, assistance and position
- Carefully remove the glass tube from the shipping package and place in a safe area.
- Clean any material from PTFE Bush set seating cavity.
- Place new sealing PTFE Bush Set in the gasket-seating cavity of the flange.
- The GFF Nut threads are to be wound with PTFE tape.
- Carefully place the glass tube within the studs until it rests on the PTFE Bush Set in the bottom flange.
- Screw the GFF Nuts onto the top flange.
- Pressure test all installations hydraulically to at least 2 Kg/cm2, and correct any leakage before proceeding.
- After 24 hours in service relieve pressure or vacuum, drain the indicator and allow it to return to ambient temperature. Then compress the PTFE Bush set through the GFF Nut threads.
- DO NOT compress the GFF Nut through the threads while under pressure. A Sight Flow Indicator in service must be freed of all pressure or vacuum, allowed to reach ambient temperature and be drained or purged of all fluids before applying the compressive force through the threads on the GFF Nut. Failure to follow this procedure may result in severe personal injury or property damage

### 3. EXPLODED VIEW



# Product Warranty

NK Instruments, warrants its products as designed and manufactured by NK Instruments to be free of defects in material and workmanship for a period of one year after the date of installation or eighteen months after the date of manufacture, whichever is earliest. NK Instruments will, at its option, replace or repair any products which fail during the warranty period due to defective material or workmanship.

Prior to submitting any claim for warranty service, the owner must submit proof of purchase to NK Instruments and obtain written authorization to return the product. Thereafter, the product shall be returned to NK Instruments with freight prepaid.

This warranty shall not apply if the product has been disassembled, tampered with, repaired or altered outside of the NK Instruments factory, or if it has been subjected to misuse, neglect or accident.

NK Instruments responsibility hereunder is limited to repairing or replacing the product at its expense. NK Instruments shall not be liable for loss, damage, or expenses 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 NK Instruments 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.

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This document and the warranty contained herein may not be modified and no other warranty, expressed or implied, shall be made by or on behalf of NK Instruments unless modified or made in writing and signed by the Proprietor of NK Instruments.

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# USE And Care

DO NOT's
DO NOT use glass if it contains any scratches, chips, or any other visible signs of damage.
DO NOT reuse any glass packing.
DO NOT subject gauge glass to bending or torsional stresses.
DO NOT over tighten glass packing nuts.
DO NOT allow glass to touch any metal parts.
DO NOT exceed the recommended pressure of the gauge or gauge glass.
DO NOT clean the gauge or gauge glass while pressurized or in operation.

## DO's

DO verify proper gauge has been supplied.
DO examine gauge and packing carefully for damage before installation.
DO install protective guards and utilize automatic ball checks where necessary to help prevent injury in case of glass breakage.
DO inspect the gauge daily, keep maintenance records, and conduct routine replacements. DO protect glass from sudden changes in temperature such as drafts, water spray, etc.

## Maintenance

Examine the gauge regularly for any signs of clouding, scratching, erosion, or corrosion. This will help establish the routine inspection and routine replacement schedules.

# Inspection

Examine the surface of the gauge for scratches, corrosion, chips, cracks, surface flaws, or nicks.

# Storing

Keep the gauge in original packaging until ready to install.

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