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INSTALLATION & OPERATIONS MANUAL FOR KSF SIGHT FLOW INDICATORS

**** IMPORTANT:** Not Recommended For Steam Service Applications.

STORAGE AND HANDLING

All units should be inspected for damage upon receipt in case it may be necessary to submit a claim to the carrier. Units should be stored where they will be protected from the elements and corrosive fumes. Proper storage should ensure that damage resulting from impact is completely avoided. Care should be taken to protect the end connections from damage. Under no circumstances should the glass ever have objects placed on top of it or be struck by other objects.

INSTALLATION INSTRUCTIONS

All units should be checked to insure that they contain no foreign matter and that the end connections are clean, undamaged, and in line with the adjoining pipe. Using a flashlight, examine the glass carefully for any indications of scratches or cloudiness, if any type of flaw is apparent, the unit must not be installed until the glass has been replaced.

Prepare proper supports to insure that pipeline that pipeline stresses will not be transmitted to the sight flow indicator. Any misalignment between adjacent connections must be corrected rather than forcing a fit-up. Large, heavy units must be independently supported to avoid stressing the piping. Be certain that the installation location provides access for comfortable viewing and maintenance. Keep in mind that the units must be placed so that damage cannot be inflicted by passing traffic.

Considerations should be given to locations where the glass will not be subjected to extreme 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 could impose conditions of thermal shock (I.E. rapid heating) where the stress values approach twice those caused by temperature alone and are additives to mechanical stresses caused by pressure and bolting loads.

FLOW INDICATOR POSITIONING

- The plain model can be mounted in any plane or position
- The propeller model can be mounted in any plane or position (except horizontally facing out and the nameplate upside down)
- The drip tube model should be mounted vertically with the flow downward
- The flapper model should be mounted horizontally or mounted vertically with the flow upward

START-UP

*** CAUTION: Prior to start up compare the data on the information tag to the conditions of the system. If any discrepancy is apparent, contact KENCO for clarification and advice.

Gaskets and seals frequently assume a compression-set (loss of resiliency) over a period of time. Some materials tend to compression-relieve or creep. It is recommended that the unit have its glass retainer fasteners retorqued to the proper value before start-up.

*** CAUTION: Do not tighten any fasteners while the equipment is in operation.

Check the glass in the unit prior to start-up to ensure that there are no chips, scratches, or blemishes. Use a flashlight or another source of bright concentrated light to examine the glass carefully. If any type of flaw is apparent, start-up should be delayed pending the replacement of the glass and gaskets.

MAINTENANCE

Periodic visual inspections should be made to ensure that no leaks are evident and that there is no clouding, scratching, or blemishing of the glass. In new installations, daily inspections are recommended to establish a routine inspection cycle.

Keep glasses clean, using commercial glass cleaners. Cleaning must be done without removing the glass. Never use harsh abrasives, wire brushes, steel wool, metal scrapers or other materials could scratch the glass.

*** CAUTION: Do not attempt to clean when the equipment is in operation.

A. GLASS INSPECTION

To examine for scratches, shine a bright concentrated light at about a 45 degree angle to the glass. Anything that glistens brightly must be looked at closely. Any scratch that glistens and catches a fingernail is cause for glass replacement. If the inner surface appears cloudy or roughened and will not respond to cleaning procedures, the glass must be replaced, since this is evidence of a chemical attack.

B. GLASS REMOVAL

Once a glass has been removed from its mounting in process equipment, regardless of the reason for removal, discard it and substitute a new piece. Used glass may contain hidden damage. Be sure that the glass is appropriate for the service application. Check any in-line safety devices for compatibility with temperature and pressure limitations of the glass. If glass is removed, protective shields to keep cold air, water or falling objects form damaging the glass must be put back into position. Gaskets must always be replaced with gaskets of the same material once a unit has been disassembled.

SERVICE INSTRUCTIONS

A. DISASSEMBLY

The units must be removed from the line and bench disassembled. Remove the heads by removing the cap screws or nuts on all models. Carefully remove the glass, gaskets and other hardware. Place everything on a clean work surface.

B. INSPECTION

The glass seating surfaces in the body and in the retainer should be carefully cleaned and checked to insure that there are no pieces of old gasket material, chips, residue, dirt or other material on the surfaces. Any foreign particles left on the surface could cause high local stresses in the glass, possibly resulting in its failure.

CRACKED GLASS CAN BE CAUSED BY THE FOLLOWING:

1. Pressure in excess of the glass rating
2. High local stresses, which can be due to uneven bolt torquing or foreign particles on the glass seating surface.
3. Thermal shock of the glass.

It is important to determine the cause of the glass crack. Simply putting in a new glass will not alleviate the cause for placement. Consultation with the manufacturer may greatly extend the service life and reliability of the units in service. Check you operating conditions against the ratings on the unit's nameplate or accompanying literature. If there are any questions about the ratings of the unit for the service intended, do not proceed without verifying the unit applicability with the maintenance supervisor or engineer.

C. GENERAL REASSEMBLY INSTRUCTIONS

Always reassemble sight flow indicators using new glass and gaskets. The potential of hidden damage makes used glass and gaskets an extreme safety risk. Check the new glass to ensure that there are no bumps, chips, scratches or other imperfections. Be certain that the gaskets are clean.

The glass and gaskets should be verified as correct for the application. Generally, a direct replacement of the glass and gaskets that were in the unit before disassembly should be correct, but you should check with the maintenance supervisor to avoid a costly mistake.

Use only gaskets that have been specified by the manufacturer or the supervising engineer. Be certain that they are clean and fresh with no bumps, tears or serious imperfections.

Using a torque wrench, tighten the fasteners in a regular pattern to avoid uneven loads on the glass. It is necessary to torque individual fasteners in small amounts, moving to the next fastener after each increment of torque. A maximum difference of 3 FT-LBS. between fasteners should be maintained on larger units; there should be less on smaller units. Continue torquing until the value recommended for the unit is attained.