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JOHN C. ERNST LLC

PROCESS OBSERVATION SOLUTIONS

INSTALLATION, OPERATION & MAINTENANCE MANUAL

FOR MODEL: W16-LP & W16-MP

This manual is a guide for the personnel responsible for installation, operation and maintenance of these items.

John C. Ernst Sight Plugs are some of the most reliable solutions offered for simple process observation. These plugs have replaceable parts, which allow them to be maintained as opposed to replacing the whole unit. They can be easily configured with a reflector for dark liquids, and an indicating ball for clear liquids. Please contact our sales department if assistance is needed in choosing an item specific for your application.

⚠ WARNING

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

Always wear safety glasses when installing, servicing or operating sight plugs.

I. Installation

Upon receipt of the sight plug, check all components carefully for damage, which may have been incurred during shipping. If damage is evident or suspected, do not attempt installation. Contact the John C. Ernst Sales Department for assistance and/or to have a replacement shipped.

⚠ CAUTION

Only qualified experienced personnel who are familiar with their industry's equipment and thoroughly understand the implications of the tables and all the instructions should install these sight plugs. Failure to read and comply with the following instructions could result in personal injury or property damage.

Pre-Installation

Prior to installation, the user must confirm that:

- The user's purchase order, and the John C. Ernst Technical Drawing, are all within the application conditions in which the plug will be installed.
- The glass is free of scratches, chips, or other imperfections.
- The connections and inside of the plug are clean and free of any foreign material.
- The materials of construction are chemically compatible with both the media(s) and application's surrounding environment.
- The unit's retaining ring is properly torqued. We properly torque these units prior to shipment. In the event that the torque value is in question, use the following values with a ring tool or spanner wrench and a torque wrench to apply the proper torque.

Torque Values By Size	W16-MP Ft-lbs.	W16-LP Ft-lbs.
1/4" & 3/8"	2 - 4	2 - 3
1/2"	3 - 5	3 - 4
3/4"	4 - 6	4 - 5
1"	7 - 9	7 - 8
1-1/4"	10 - 12	10 - 12
1-1/2"	14 - 16	12 - 14
2"	23 - 27	12 - 14
3"	90	N/A

Installation Precautions

⚠ WARNING

Failure to confirm that the sight plug is in accordance with the Pre-Installation Sections could result in serious personal injury and property damage.

⚠ WARNING

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

Install the Sight Plug:

- 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 temperature application being exposed to a cold air blast or cold water wash.

- Wrap about 2½ wraps of Teflon® tape (or compatible equivalent) on the plug threads. Wrapping must be done counterclockwise, when viewing from the window end. Tighten the plug to approximately hand tightness, plus ¼ turn with a wrench.

II. OPERATION

Before starting operation, check that all installation procedures have been completed. Only qualified, experienced personnel may handle these procedures, who are familiar with this equipment and thoroughly understand the implications of the tables and instructions. Check that the connection is pressure tight and the glass is clean and free of any damage.

⚠ CAUTION

Sight plugs should be brought into service slowly to avoid excessive shock or stress on the glass. Rapid pressurization of a sight plug can cause a glass failure and fluid leakage. Hydrostatically pressure test the sight plug to 25 PSIG to safely check for leaks before proceeding.

III. MAINTENANCE

⚠ WARNING

DO NOT remove the sight plug while it is pressurized. Sight plugs in service must be freed of all pressure/vacuum, allowed to reach ambient temperature, and drained of all fluids before torquing.

Once installed, the following items should be inspected regularly.

- Glass for cleanliness and signs of damage or wear.
- Signs of leakage at glass or connection.
- Signs of internal or external corrosion.

Maintenance Procedures

1. Glass should be given regular and careful attention. Keep glass clean using a glass cleaner and a soft cloth. 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. 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. Detection of any damage, problem areas or surface wear is sufficient evidence to take the sight plug out of service.
2. Threaded connection leaks should be corrected by tightening the NPT connection or by taking the sight plug out of service and reapplying Teflon® tape to all male threads.
3. Corrosion may occur if improper materials were selected for the sight plug application. It is the responsibility of the user to choose materials of construction compatible with the contained fluid and the surrounding environment. If corrosion is present, an investigation must immediately be performed by the user.

Troubleshooting

Problem: *Leaking around main connection*
Potential Solutions:

- Insufficient Teflon® Tape & torque applied during installation. 2.5 wraps of Teflon® tape is usually sufficient.
- Debris could reside in threads. All male and female threads must be cleaned of debris.
- Plug is cross-threaded into pipeline. Carefully remove and re-thread. It may be necessary to re-tap the threads.
- Damaged connection threads on plug and/or receiving vessel threads.
- Existing threading not for NPT (National Pipe Taper). These plugs can only be used with NPT threads.
- Ensure that the receiving NPT has been machined within the proper spec established in ASME B1.20.1 and 1.20.3.

Problem: *Leaking around window*
Potential Solutions:

- The sight plug has been damaged and must be replaced. This may have been due to exceeding the stated pressures & temperatures, and/or damaged during transit, installation or operation.
- The retaining ring may not be torqued properly, check the table on the first page and using a torque wrench and ring tool or spanner wrench reapply torque to the correct value.
- If occurring after a period of time, the materials may not be compatible with media.