



## Sanitary Tri-Clamp Sight Window Installation & Care Guide

### SAFETY

Pressure and vacuum systems are inherently dangerous, and proper precautions need to be taken when using Rayotek sight windows. If not properly handled or installed, sight windows can be dangerous. Safety glasses should be worn when working with or around Rayotek sight windows, in addition to any other personal protective equipment (PPE) necessary for the application. Failure to follow these procedures could cause bodily harm and/or death. **Customer/end-user assumes full responsibility for the safe and competent installation and use of any sight window manufactured by Rayotek. Any injury, damage, or loss resulting from improper installation or use is the sole responsibility of the customer/end-user.**

### WARNING

**Never use/operate triclamp sight windows below -40°C/-40°F. Operating below this temperature could result in catastrophic failure.**

### INSTALLATION

**Clamping Requirements:** Do Not exceed 8 ft-lbs. of torque for all Rayotek tri-clamp sight window sizes. In many cases a lower torque is sufficient for sealing and is recommended when using elastomeric gaskets to maintain ASME BPE SG-4.2 CATEGORY II Intrusion. Torque values may vary depending on the type of gasket material used. It is the responsibility of the customer to determine the torque appropriate for their application. Over-torquing the clamp may result in damage to the gasket and cracking of the sight window. The warranty is void on sight windows that have cracked due to over-torquing.

Before clamping the sight window, wearing clean gloves, inspect the sealing surfaces of the sight window and the mating ferrule (mating flange) to ensure they are clean and free of nicks, burrs, and scratches. Clean sealing surfaces with a soft cloth and solvent or soap appropriate for your application (e.g., isopropyl alcohol, methanol, anti-greaser, etc.). Wearing clean gloves, inspect the sealing gasket and ensure it is clean and not cracked or damaged. Choose a gasket material appropriate for the temperature and chemical requirements of your application.

**Aligning parts and clamping sight window:** Align gasket to sight window and ferrule flange. Good alignment is achieved when the inner diameter of the gasket is concentric with the inner diameter of the tri-clamp ferrule and the gasket bead fits the tri-clamp o-ring groove. Align sight window, gasket, and mating ferrule carefully, install the clamp and hand tighten the nuts while checking that all parts remain aligned. Never use the clamp to pull the sight window and mating flange into alignment. Apply torque to the nuts in a slow and steady manner using a socket torque wrench up to the required torque value, or maximum torque of 8ft-lbs. Use a high-quality precision-machined clamp rated to the pressure rating of the sight window or higher. Once the recommended torque is achieved, repeat the torquing cycle once more to ensure nuts are properly and evenly torqued down. Re-torque after the first pressurization of the gasket using a socket torque wrench.

## USE AND CARE

### Rayotek Triclamp Sight Window Ratings and Specifications

Material: 2205 duplex stainless steel with fused borosilicate glass

Maximum Operating Pressure [with properly rated clamp at 100°F (37.8°C)]:

- 1.5" (Rayotek P/N 101141-001) – 300 PSIG
- 2.0" (Rayotek P/N 101142-001) – 300 PSIG
- 3.0" (Rayotek P/N 101144-001) – 200 PSIG
- 4.0" (Rayotek P/N 101145-001) – 200 PSIG
- 6.0" (Rayotek P/N 101146-001) – 100 PSIG

Maximum Operating Temperature: 572°F (300°C) at 50 PSIG

Minimum Operating Temperature: -40°F (-40°C)

Contact Rayotek for pressure ratings at other temperatures. Cryogenic options available.

### General Information for All Sight Windows

Sight windows must be installed with closed-end wrenches or sockets. Figure 1 shows acceptable installation tools.



Socket Torque Wrench



Socket Wrench



Closed End Wrench

**Figure 1: Approved Installation Tools**

Do not use any kind of open-end wrench or impact gun to install or tighten sight windows. Figure 2 shows unacceptable installation tools. **Using one of these tools can damage your sight window and will void the warranty.**



Grip Type Tools like Pliers



Impact Wrenches



Crescent & Open-ended Wrenches

**Figure 2: Unapproved Installation Tools**

## Handling

Rayotek sight windows are designed and manufactured to be robust and reliable once installed. However, sight window integrity can be compromised by impacts with a hard or sharp object. Once impact with a hard or sharp object has occurred, even if no damage is visible on the clear aperture, damage may be present.

Never slide the face of sight windows across any hard or abrasive surfaces, as scratching may occur.

Any damage that occurs during the handling or installation of a sight window voids the warranty. User takes full responsibility and risk if a damaged sight window is installed. Use of a damaged sight window is not recommended and Rayotek will not be held liable for any damage or injuries resultant of such use.

Contact Rayotek if you have any questions about the handling of sight windows.

## Cleaning

Rayotek sight windows are cleaned like any other optical glass. Use a soft cloth (e.g., microfiber or lens cloth) with a cleaning solvent such as isopropyl alcohol, methanol, acetone, commercial degreaser, or mild dish soap.

**Do not use** paper towels, toilet paper, tissue paper, or any other paper/cloth not designed for optical cleaning purposes.

Contact Rayotek if you have any questions about the cleaning of sight windows.

## Inspection

Rayotek sight windows are inspected, and pressure tested at Rayotek's facility before packaging and shipping. However, damage could occur during shipping, so inspect carefully upon receipt.

**Inspect gasket sealing surfaces** on tri-clamp sight windows to ensure there is no damage to the sealing surfaces.

**Inspect clear apertures** to ensure there is no visible damage. For fused sight windows, bubbles at the glass-to-metal interface, annular cracks, and sight aberrations are normal occurrences that happen due to the fusing process. These are superficial and do not affect the safe performance of sight windows. Never use sight windows if there is any visible or known damage beyond these normal features. If any damage is found or there is concern about the integrity of a sight window, contact Rayotek before use.

## Storage

Store Rayotek sight windows in the box they were received in or an equivalent packaging system. Do not allow sight windows to come into contact with each other or other hard objects.

## WARRANTY & DISCLAIMERS

- **Rayotek Engineered Sight Windows** - Rayotek warrants that all Rayotek engineered sight windows are designed and manufactured within the specifications stated by Rayotek. Rayotek warrants for one (1) year from the date of shipment to the customer that all Rayotek engineered sight windows will function reliably and safely if they are properly installed and used within Rayotek's specifications. Specifications and test data are available upon request. See Terms & Conditions for Sale at [rayotek.com/terms-and-conditions.htm](http://rayotek.com/terms-and-conditions.htm) for warranty and liability details.
- **Modifications, Changes & Damages to Rayotek Sight Windows** - Any modification, change or damage to a Rayotek sight window could result in an unsafe sight window, and will void all warranties for the sight window(s). The customer/end-user takes full responsibility for any failure, injury, damage, or loss that occurs because of the use of a modified, changed, or damaged Rayotek sight window. If a Rayotek sight window is found to be damaged or is failing, it should be **left in place but immediately removed from service**, and Rayotek must be contacted as soon as possible to avoid failure and possible injury. See Terms & Conditions for Sale at [rayotek.com/terms-and-conditions.htm](http://rayotek.com/terms-and-conditions.htm) for warranty and liability details.