Installation, Operation, & Maintenance Instructions
R500.E278A
6/23/2021

GAGE GLASS INSTALLATION WITH RELIANCE® BRONZE TYPE WATER GAGE VALVES

This manual covers BG200 Series, BG400 Series, BG500 Series, and TG600 Series Bronze Water Gage Valves

A PRODUCT OF CLARK-RELIANCE
16633 Foltz Parkway ● Strongsville, OH 44149 USA Telephone: +1 (440) 572-1500
www.clark-reliance.com ● RelianceAppEng@clark-reliance.com

STORAGE and HANDLING

The Reliance® Water Gage Valves and Gage Glasses meet or exceeds all applicable specifications when shipped from the factory. The equipment should be stored in an area protected from the elements and corrosive fumes, in a secure manner where they can neither fall, nor be struck by other objects. Avoid placing any objects on the valves, gage glass, or Boil-out Kit (if furnished) at any time. The temperature of the storage area should not exceed 150 degrees F. (65.5 degrees C) or drop below 32 degrees F (0 degrees C).

Unpacking and inspection

Upon receipt of the Boiler Drum Level instruments, examine the contents of the container(s) for damage. Care should be exercised as the items are uncrated. The shipment may contain fragile glass components. Report any faulty conditions as soon as possible to your carrier to avoid acceptance of damaged goods. Clark-Reliance will not be responsible for goods damaged in shipping or storage, or subsequent loss or damage due to improper storage or exposure as a result of damage to shipping containers. Submit a digital photo of any damaged equipment and container to Clark-Reliance, if possible.

Verify that all materials are present as recorded on the Packing List provided with each shipment. Report any discrepancies to Clark-Reliance immediately. Have the Clark-Reliance order number and shipping waybill available at the time of your call.

Handling

Your Clark-Reliance shipment has been carefully packed. However, the shipment may include spare parts, temporary water gages for “Boil-out” purposes, maintenance instructions, and engineering drawings. Upon receipt of the order, the equipment and above items should be identified and verified against the packing list. Any documentation that has been provided should be directed to the appropriate personnel.

Important:

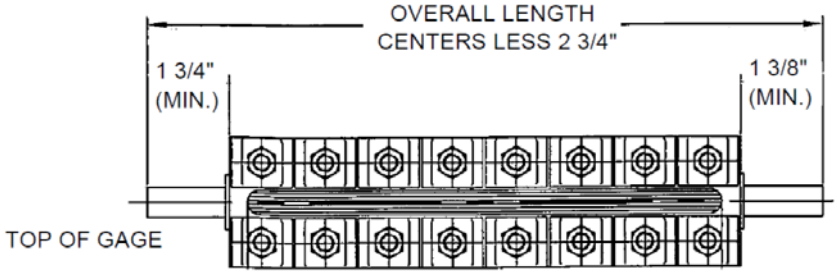
Before proceeding, follow any and all plant lock out - tag out procedures required. If under pressure, the equipment should be isolated, or the boiler should be shut down before proceeding with the installation. Open drain valve to eliminate any trapped pressure. All inspection and installation steps should be performed by a qualified technician and should be executed in accordance with all applicable national and local codes.

When mounting Water Gage Valves, make sure they are mounted in exact alignment, especially when tubular glass is used during Boil-out procedures. Any angular or offset misalignment of the valves will strain the tubular glass and may cause early failure. When installing the armored type gage glass, any misalignment could cause a leak from the packing cartridge that may result in damage to the valve or gage glass. When mounting the gage glass or tubular glass in vertical mounting applications, the overall length of the gage should be 2 ¾” less than the valve centers.

Make sure all lock-out/tag-out procedures are followed, and the water gage valves are completely closed and the drain valve is opened to relieve any trapped pressure.

- Note that the overall length of the gage glass, including the ¾” O.D. nipples when furnished with armored type gage glasses, is 2 ¾” less than the connection centers (for Clark-Reliance bronze water gage valves). Minimum nipple lengths are:

  All gages using Clark-Reliance Bronze valves -
  Upper Nipple 1 ¾” (44 mm) min.
  Lower Nipple 1 3/8” (35 mm) min.



Reliance®

A PRODUCT OF CLARK-RELIANCE

16633 Foltz Parkway ● Strongsville, OH 44149 USA Telephone: +1 (440) 572-1500
www.clark-reliance.com ● RelianceAppEng@clark-reliance.com

Gage Glass Installation:

1) Using a 1 ¾" wrench, remove the packing Glass Packing Nut (P/N BG403R-2) from the upper and lower valves.

2) Carefully remove the old nipple packing (P/N BG403R-12) and packing washer (P/N SG454-10) from the valve body chamber. You can use a small flat screwdriver or pointed tool to remove the packing. Discard the old packing, but save the packing washer. Use caution that the packing chamber does not get damaged.
3) Clean the cavity to remove any residue from the old packing, making sure that all residual material is clean from the wall of the cavity. Inspect the packing chamber for scratches and steam cut. If the chamber is damaged, the valve must be replaced.
4) To install the gage glass, lubricate the threads on the gage valves with a high temperature lubricant, such as a Teflon® based lubricant, rated at 500°F. (260°C.) or higher. Place the Glass Packing Nut on the top nipple.
5) Slide the packing washer and nipple packing on to the nipple as shown below.

6) Repeat on the bottom nipple.
7) Insert the upper nipple into the packing chamber of the upper valve as far as it will go.

8) Swing the gage glass over the bottom valve and carefully lower the bottom nipple into the valve.
9) Carefully slide the nipple packing washer and the nipple packing fully into the packing chamber in both the upper and lower valves.
10) Tighten the upper and lower packing nuts on the water gage valve.
11) Evenly tighten both nuts until the packing compresses around the gage nipple on both top and bottom valves.
12) Carefully open the valves. If a leak is observed, close the valves open the drain to relieve any trapped pressure and tighten the bolts. Close the drain and repeat opening the valves. If no leaks are observed, continue to open the valves.
13) If no further leaks are observed, continue to the hot-torque procedure.

Hot Torque Procedure

When a new piece of equipment, whether a Gage Glass or a Probe type device is installed, the hot torque procedure must be performed. This ensures that all bolting and components are properly seated for optimum performance. This procedure must also be performed after any maintenance is done to the equipment. Note that only the affected components, such as the installation of a new probe or glass kit, need to be hot torqued.

All work must be done by a qualified technician. All plant rules and procedures must be followed including any lock out / tag out requirements. Verify that all alarms and trips have been by-passed on probe columns before any maintenance is performed, to prevent any false alarms or wiring hazards.

The hot torque procedure should be performed as follows:

1) Isolate the gage glass or probe device from any pressure.
2) Fully open the drain valve to evacuate any built up pressures and to allow the contained steam and water to escape during equipment warm up.
3) Slowly open the steam valve to allow a gentle rush of steam to flow through the equipment. This should take approximately 5 –10 minutes. The observer should see the High Temperature lubricant "sizzling" and smoke emanating from the gage of column. This is an indication that the equipment has reached operating temperatures.
4) When the equipment has been properly heated, close the steam valve. The drain valve should remain open to allow any residual steam or pressure to escape.
5) Immediately re-torque the equipment to the correct values stated in the applicable instruction manual. There should be movement of 1/8th of a turn or more.
6) If there is no movement of the bolting or probes, the equipment was not heated properly. Repeat the procedure.
7) Once the hot torque procedure is completed, close the drain valve, and the equipment can be put back into service. Carefully check for any leaks in the equipment and verify proper operation of all illumination, relay controls and wiring, or other accessories.

See IOM R500.E239A Hot Torque Procedure for further detailed instructions.
Also, view our Hot Torque Procedure video at RelianceBoilerTrim.com.

Note that Model FSB Compression Type Probes and Model P4000/P4100 Series Simpliport Gages do not require hot torquing.

REPLACEMENT PARTS WARNING

THE USE OF NON-ORIGINAL EQUIPMENT MANUFACTURER PARTS (SUCH AS GLASS, GASKETS, PROBES, MODULES, ETC.) WILL VOID THE AGENCY APPROVAL (FM, UL, CAS, CRN, ABS, ETC.) PRESSURE/TEMPERATURE RATING, AND WARRANTY OF THE EQUIPMENT. CLARK-RELIANCE REQUIRES THE USE OF OEM PARTS FOR ALL REPAIRS IN ON THIS PRODUCT IN ORDER TO MAINTAIN PLANT AND PERSONNEL SAFETY, AND RELIABLE OPERATION.

Consult the factory or your local Clark-Reliance Representative with any questions. Please have the model numbers and/or reference drawing numbers available when calling. You can also contact us at our website www.relianceboilertrim.com or RelianceAppEng@clark-reliance.com.

.

Reliance®
A PRODUCT OF CLARK-RELIANCE
16633 Foltz Parkway ● Strongsville, OH 44149 USA Telephone: +1 (440) 572-1500
www.clark-reliance.com ● RelianceAppEng@clark-reliance.com