Installation, Maintenance, and Inspection of Globe Valves Threaded End Connection

In its continuing quest for safety and quality performance, RegO® publishes a series of bulletins explaining the proper installation, inspection, and maintenance of various products. This document is not intended to conflict with federal, state, or local ordinances or regulations; these regulations should be observed at all times. RegO's products should be used only by persons properly trained in the safe use and handling of industrial gases and cryogenic products and industrial gases and cryogenic products equipment. ECI does not assume any responsibility for providing that training, and this document is not intended to be a substitute for such training.

Objective:
The purpose of this bulletin is to offer guidance for the installation, maintenance, and inspection of RegO globe valves, specifically valves with threaded end connections.

Installation:
The installation process depends on the end connection and use of the valve.

Common end connections used in the industry are butt weld, socket weld, silver brazed tube (brass valves), threaded, and flanged.

Steps for Vapor Phase Application:

1. Ensure that connections are clean and free of any debris.

2. Clean the nipple and valve threads and apply sealant that is appropriate for the intended service to male thread of the connection.

3. Position the valve such that the flow arrow is in the proper direction for the intended application. **The flow arrow direction of the valve should be oriented to ensure easy and safe maintenance of the packing system. When the valve is closed, the packing should be isolated from the media.**

4. Restrain the valve with a vise or suitable wrench, and using an appropriate wrench for the connection, apply the proper torque to the connection according to applicable codes and standards.

CAUTION: Do not over tighten pipes, as this may damage the valve and result in a leak.

5. Follow all local or national codes and standards for pressure testing and leak checking the installation before startup of the system.

Steps for Liquid Phase Application:

1. Disassemble the valve, fully removing the upper assembly, prior to applying any high temperature heat processes to avoid damage to the soft materials, such as gaskets and seals.

2. Ensure that connections are clean and free of any debris.

3. Clean the nipple and valve threads and apply flux.

4. Position the valve such that the flow arrow is in the proper direction for the intended application. **The flow arrow direction of the valve should be oriented to ensure easy and safe maintenance of the packing system. When the valve is closed, the packing should be isolated from the media.**

5. The brazing process must be completed according to applicable codes and standards. Proper welding and brazing technique are imperative to ensure the structural integrity of the joint and the components.

Figure 1: Brazing of BK9412T (Brass Globe Valve)

WARNING: USE TORCH PROPERLY; FAILURE TO DO SO MAY RESULT IN LEAKS. A common mistake during the silver brazing process is the improper use of a torch. One common example is when the torch is oversized and produces overheating of the valve body. If the overheating condition is combined with a fast-cooling process, then it can create porosity in the brass body material, which can result in body leaks.

6. Purge and clean the body and pipeline to avoid debris or pollution that could affect the sealing of the valve.

7. After the purging of the valve body and pipeline is complete, it is very important to use a new Teflon gasket in the valve body. RegO® includes two extra Teflon gasket attached to the topworks for this purpose. Place the topworks onto the body.

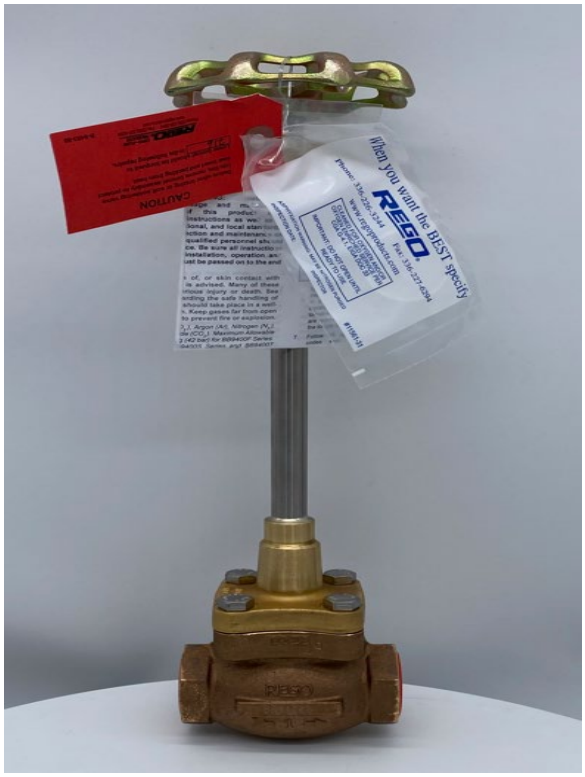

Figure 2: BB9408T Globe Valve (With Two Extra Gaskets)

8. Using an appropriate wrench for the bolts, tighten in a crisscross pattern into the body with the torque values in sequence from the instruction sheet supplied with the valve. After the final bolt is tightened using the crisscross pattern, return to each bolt in a CIRCULAR pattern and continue tightening until the final torque value is achieved.

9. Follow all local codes or national codes and standards for pressure testing and leak checking the installation before start up of the system.

WARNING: DO NOT REUSE GASKETS. If an old gasket is reused, then the probability of leakage is high as the gasket has already been previously deformed and is unable to properly fill the void space in the new position.

Figure 3: New Body Gasket

Figure 4: Used Body Gasket

Figure 5: Over Torqued Body Gasket

WARNING: DO NOT EXCEED THE TORQUE INDICATED; EXCESS TORQUE MAY DAMAGE GASKET AND RESULT IN LEAKAGE AT THIS JOINT. Some leak channels can appear over time, as a result of thermal cycles coupled with improper torque of the topworks. Do not exceed the torque indicated. Excess torque can cause damage to the gasket and cause premature leaking at this joint.

Figure 6:Reassembly of BK9412T with Torque Wrench

Inspection:
The inspection period and process of the valves depends on the application, service conditions, environment, and regulatory requirements. Many visual inspections can be accomplished without disassembling the valve. The primary inspection points are:

- Packing system
- Bonnet gasket
- Body and bonnet

During this inspection, verify that the valves do not have the below conditions:
1. Any signs of corrosion due to water, salt, industrial pollutants, chemicals and roadway contaminants.
2. Any physical damage that would prevent proper sealing or that may cause product failure under pressure.
3. Leaks in the valve bonnet area or between the body and end connections of the valve.

WARNING: The presence of any of these conditions could impair proper function of the valve and result in serious injury, property damage or both.

Maintenance:
The maintenance period and process of the valves depends on the application, service conditions, environment and regulatory requirements. In the absence of a preventative maintenance plan, the recommendation is to disassemble the valve a MINIMUM of every 10 years to inspect the internal condition of the components and replace as necessary. It is recommended that genuine RegO parts are used. **Always replace the gasket whenever the bonnet is removed.**

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