

**Step by Step Procedure
For Assembly of a Pressure Seal Graphite Gasket**

Rev. 0

**This procedure is strictly for assembly.
Certain additional steps may be necessary at valve test.**

1. Clean and prepare the internals of the valve body and mating components using compressed air, rags and liquid solvent (de-mineralized or potable water, alcohol etc.). Ensure all grease and dirt has been removed.
2. Visually inspect all components. If required remove sharp edges, burrs etc. from the components.
3. Visually inspect sealing surface on body (1° taper) and on bonnet. All scratches or damage need to be removed by polishing with a fine emery cloth.
4. Place and secure the valve body over valve stands in vertical position.
5. Lower disc / wedge assembly along with the stem into the valve body. Inspect the disc / wedge contact, clearance between the wedge / disc and wedge / disc guides. Ensure wedge / disc slide up and down freely.
6. Lower the valve bonnet over the stem and then into the valve body. If necessary orient the bonnet as per the valve drawing. It may be convenient to place bottom packing plus two intermediate rings in packing chamber (when top of bonnet clears the threaded section of stem) to prevent unnecessary scoring.
7. Lower the new graphite gasket in to the valve body at the 1° taper bore. Ensure the gasket is straight and square in the 1° taper bore and verify that the gasket fits properly (snug fit) into the bore. Next, insert the spacer ring and gasket retainer segments. Orient the segments as indicated on the valve drawing.
Note: Ensure that spacer rings do not have claw marks / indentations / nibble marks.
8. Mount the bonnet / bonnet retainer fasteners to the bonnet. Apply anti-seize compound to the fastener threads.
9. Assemble the bonnet retainer over the valve body. Orient and match bonnet holes with the bonnet retainer, depending upon the style and design of the valve.

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10. Assemble all nuts to the studs. Hand tighten only until the bonnet, graphite gasket, spacer ring and gasket retainer are locked in. Do not torque at this moment, at this stage ensure that bonnet is square and straight into the body bore. This can be verified by measuring from the top of the bonnet to the top of the bonnet retaining ring at four places 90° apart. Must use measuring scale or depth micrometer or dial indicators for this purpose.
11. Pack the valve with a set of packings, quantity and arrangement as indicated on the drawing.
12. Assemble the gland bushing into the packing chamber over the stem on the top of the packing followed by packing flange studs. Only hand tighten nuts.
13. Assemble the yoke assembly consisting of gearbox, actuator, packing flange and torque arm, over the stem on the top of the valve body. If required use lifting arrangements such as a crane or chain blocks. (Turn the hand wheel of the gearbox / actuator to open the valve. This will cause the stem thread to engage with the gearbox / actuator and continue until the yoke assembly sits over the valve body. Use recommended lubricant; refer to the Velan Maintenance Manual, on the stem threads. Bonnet assembly without yoke is not advisable. With graphite gaskets, it has been verified that using yoke and gearbox best effects bonnet pull up.
14. Assemble the yoke / body fasteners using anti-seize compound on the fastener threads. Do not torque body / yoke fasteners at this moment.
15. Cycle the valve manually open / closed until a smooth cycle is observed. Note that there are no scratches developing on the stem.
16. Bring the valve into the open position manually back seated and torque the bonnet fasteners in 25% increments to the total torque value *, note that the stem must be re-back seated at each torque increment. Please refer to the torque table in the Velan Maintenance Manual and note the reference for graphite gaskets. Follow the tightening sequence in the manual and ensure the valve is in the fully open position and back seated, this will ensure that all mating components are in one plane and properly aligned. It will be necessary to re-verify bonnet squareness, as per earlier Step. 10. This step may be applied at testing, as appropriate.

*** Note:**

Use torque wrenches or calibrated nut runners for torquing of the fasteners, do not use impact guns. Either use hand tools or pneumatic nut-runners (impact free).

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17. Torque the packing flange as specified in the Maintenance Manual under “packing compression procedure”, in 25% increments to the total torque value.
18. Torque body/yoke fasteners in 20% increments to total torque value and as per tightening sequence in maintenance manual. The 2 previous procedures guarantee good workmanship.
19. Set torque arm at open, closed position verify the valve stroke per drawing.
20. Cycle the valve manually open / closed, until a smooth cycle is observed.

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