VB04 Series Process Interface Valve Probe Maintenance Instructions

Swagelok



Carefully read entire instruction before servicing the valve.

Kit Contents







Snap ring



Seat (2)

Body seal

Tools Required

ΤοοΙ	Size	Component
Vise	_	Valve body
Open-ended wrench	Determined by valve configurationBore SizeWrench Size9.5 mm22 to 29 mm14 mm22 to 29 mm	Probe
Torque wrench	Capable of 790 in⋅lb (89.2 N⋅m)	Probe
Plastic pick	_	Seat
Lubricants/fluids	P-80 [®] (or equivalent) Molykote [®] 1000 (or equivalent)	Seat Probe threads
Pliers or grips	Molykote [®] G Rapid Plus (or equivalent) —	Anti-rotation pin



Symbols



Discard







Critical Sealing Surfaces

The surfaces highlighted in red are the critical sealing surfaces. These surfaces must be free of scratches, dents, disfigurement, and debris to ensure successful maintenance and leak-free performance.





▲ WARNING

Before removing valve from system, to avoid personal injury, you must:

- Depressurize the valve
- Cycle the valve
- Purge the valve to remove any residual system media left in the valve

Disassembly

1. Clamp the valve body in a vise. Turn the valves to the closed position.

NOTICE

Be careful not to scratch the critical sealing surfaces. Leakage could result.

- 2. Remove the snap ring and discard.
- 3. Remove the old probe by turning the probe counterclockwise with a wrench.
- 4. Remove the following internal components:
 - Body seal This may require using a plastic pick to remove from the body
 - Seats (2) Both seats surrounding the upstream ball
 - Ball
- 5. Discard the body seal and the seats. Carefully set aside the ball.

NOTICE

Be careful not to scratch the critical sealing surfaces. Leakage could result.

Probe Cutting

Complete these steps to determine cut length without the ball, seats, body seal, and snap ring reassembled.

1. Clean the valve, components, and all the critical sealing surfaces.

NOTICE

Do not use abrasive cleaners on critical sealing surfaces. Leakage could result.

2. Apply a heavy coat of Molykote 1000 lube to the new **probe threads** and a light coat of Molykote G Rapid Plus to the **OD surface** adjacent to the body seal diameter as shown below.



- 3. Install the new probe into the body (without the internal components in place, i.e., ball, seats, and body seal).
- 4. Torque the probe per the table below:

Bore Size	Torque, in.·lb (N⋅m)	
9.5 mm	430 to 530 (48.6 to 59.8)	
14 mm	650 to 790 (73.5 to 89.2)	

- 5. Mark the probe for the desired cut length and angle:
 - Probes must be cut so that the angle faces away from the first block. Reference the figures below.
 - The quill length (QL) $\pm 3 \text{ mm}$ (0.118 in.) is measured from the flange face to the center of the cut for flanged valves (Fig. 6) or the end face of the fitting to the center of the cut for threaded end connection valves (Fig. 7).



Fig. 7¶



- 6. After marking, remove the probe from the body. Cut probe to marked length and angle.
- 7. Deburr and clean the cut end of the probe to remove any metal burrs or chips.

NOTICE

Leakage or system damage could result if metal burrs or chips are not removed.

Reassembly

1. Secure the valve body vertically in a vise (with the **probe pocket** facing up.)

NOTICE

Clamp on the valve body only to be sure the assembly is secure.

2. Place the first **seat** concave face up in the **body**.

NOTICE

Be careful not to scratch the critical sealing surfaces. Leakage could result.

- 3. Verify the valves are in the closed position.
- 4. Lower the **ball** into the bore, orienting the ball slot with the stem tab. Use the plastic pick to orient the ball properly if needed.

NOTICE

Ensure the ball does not fall into the body, or the ball could be scratched. Leakage could result.

5. Before installing the second seat into the **probe**, apply a light coat of P-80 onto the seat pocket of the probe. Assemble the seat into the probe, concave side towards the ball.



Fig. 8¶

- 8. Assemble the body seal onto the probe.
- 9. Apply a light coat of Molykote G Rapid Plus to the OD surface adjacent to the body seal.
- 10. Apply a heavy coat of Molykote 1000 lube to the new **probe threads**.
- 11. Install the cut probe into the body finger-tight.
- 12. Torque the probe per the following table:

NOTICE

Ensure the seat remains in place before torquing and the valve remains in the closed position. Leakage could result.

Bore Size	Torque, in.·lb (N·m)	
9.5 mm	430 to 530 (48.6 to 59.8)	
14 mm	650 to 790 (73.5 to 89.2)	

- 13. Install the snap ring into the body.
- 14. Open and close the valve several times to inspect for smooth actuation.
- 15. Test each valve for proper operation and leak-tight integrity.



Fig. 10¶

For additional information, see swagelok.com.

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