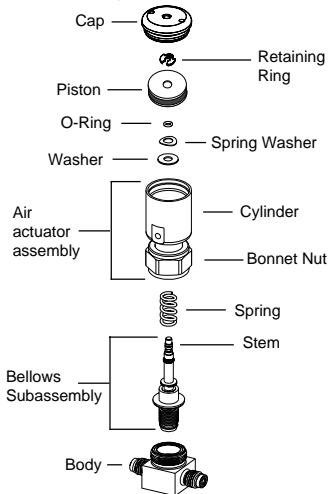


BN Series Pneumatically Actuated Bellows Valve

Bellows Subassembly Replacement Instructions

Normally Closed (C) Model

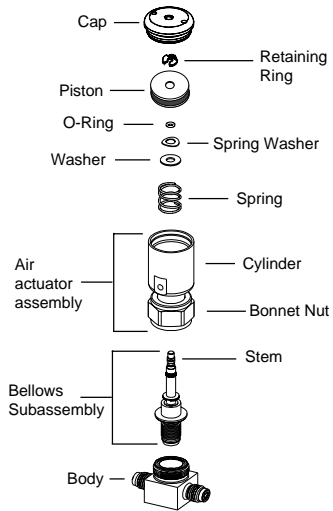


Valve Disassembly

Normally Closed and Normally Open Models

1. Relieve **system pressure** to valve and air actuator prior to disassembly.
2. Remove **cap** with special Swagelok spanner wrench, part number S-BN4-S60.
3. Remove piston **retaining ring** by sliding it out of the stem groove with a small screwdriver.
4. Remove **piston** from stem.
5. Remove **spring**, normally open models ONLY.
6. Cut **O-ring** near top of stem to remove, then discard.
7. Remove curved **spring washer** and flat **washer**.
8. Unscrew **bonnet nut** using 1 1/8 inch open-ended wrench.
9. Remove **air actuator assembly** from body.
10. Remove **bellows subassembly** through bottom of air actuator assembly.
11. Remove **spring**, normally closed models ONLY.
12. Discard old bellows subassembly.

Normally Open (O) Model



Valve Reassembly

Normally Closed (C) Model

1. Place new **bellows subassembly** into **body**.
2. Lubricate **O-ring** on bellows subassembly with thin film of silicone-based lubricant.
3. Place **spring** over **stem** of bellows subassembly, resting the spring on the washer that is on the bellows subassembly.
4. Place **air actuator assembly** over **bellows subassembly**.
5. Push down on top of **cylinder** until **stem tip** seats in body. While holding down assembly, thread **bonnet nut** onto **body** and tighten to 500 in.-lb (56.5 N·m) of torque.

Caution: Do not rotate body. It may damage the bead seal on the bellows subassembly.

6. Place flat **washer** over top of stem.
7. Place **spring washer** (concave side up) over top of stem so that it rests on the flat washer. *See Figure 1.*
8. Lubricate **O-ring** with thin film of silicone-based lubricant. Install O-ring into second groove from top of stem.
9. Lubricate inside of **cylinder** with silicone base-lubricant.
10. Inspect piston **O-ring** for nicks or damage. If replacement is necessary, lubricate new O-ring with thin film of silicone-base lubricant prior to assembly.
11. Install **piston** on **stem** with groove side of piston facing UP and chamfer side of piston facing DOWN. *See Figure 2.*
(If piston has NO groove or increased chamfer, either side may face DOWN). Carefully slide piston over the O-ring.
12. With pliers, push **piston** DOWN until stem groove is visible. Install piston **retaining ring** into stem groove with small screwdriver.

13. Assemble **cap** onto cylinder with spanner wrench. Tighten to approximately 25 in.-lb (3.3 N·m).
14. Test valve and air actuator to ensure proper operation and seal integrity.
See **Preseating Vespel Stem Tip** for BN Series valves with Vespel® stem tips.

Preseating Vespel Stem Tip

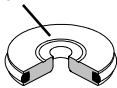
1. Thread a #10-32 cap screw into the top of the cap until it contacts the top of the stem.
2. Tighten the screw to a maximum of 15 in.-lb (1.7 N·m) of torque.
3. Remove the screw from the cap.
4. Test the valve and pneumatic actuator to ensure proper operation and seal integrity.

Figure 1



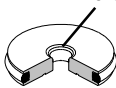
Figure 2

Groove



Top View

Chamfer



Bottom View

Swagelok®

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Valve Reassembly

Normally Open (O) Model

1. Install new **bellows subassembly** into **body**.
2. Lubricate **O-ring** on bellows subassembly with thin film of silicone-based lubricant.
3. Place **air actuator assembly** over bellows subassembly.
4. Place flat **washer** over top of stem.
5. Place curved **spring washer** (concave side UP) over top of stem so that it rests on the flat washer. *See Figure 1.*
6. Lubricate **O-ring** with thin film of silicon-based lubricant. Install O-ring into second groove from top of stem.
7. Place **spring** into cylinder bore.
8. Lubricate inside of **cylinder** with silicone-base lubricant.
9. Inspect piston **O-ring** for nicks or damage.
If replacement is necessary, lubricate new O-ring with thin film of silicone-base lubricant prior to assembly.
10. Install **piston** on **stem** with groove side of piston facing UP and chamfer side of piston facing DOWN. *See Figure 2.*
(If piston has NO groove or increased chamfer, either side may face DOWN). Carefully slide piston over the O-ring.
11. With pliers, push **piston** DOWN until stem groove is visible. Install piston **retaining ring** into stem groove with small screwdriver.
12. Assemble **cap** onto cylinder with spanner wrench. Tighten to approximately 25 in.-lb (3.3 N·m).
13. Thread bonnet nut onto body and tighten to 500 in.-lb (56.5 N·m)
Caution: Do not rotate body. It may damage bead seal on bellows subassembly.
14. Test valve and air actuator to ensure proper operation and seal integrity.

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