





Baumann 84000 Valve Elastomer Change-Out

Symbology Legend: □ Picture in column list

Process Step	Instruction	Visual Aid
1 Safety	<p>1.1. All engineering activities must be carried out in accordance with your company's health and safety protocols. And in all circumstances refer to the products IOM, paying attention to the safety instructions.</p> <p>1.2. Identify all other works in the area and assess the safety requirements to eliminate risks.</p> <p>1.3. Lockout/Tagout plan to be completed.</p> <p>1.4. Line breaking must be completed as per your company's procedures.</p> <p>1.5. Ensure a Safe Plan of Action is in place.</p> <p>1.6. Identify the required PPE for the area and task.</p> <p>1.7. Follow all safety requirements for the site and specific areas, if in doubt consult the area manager for Health and Safety.</p> <p>1.8. Ensure all controls identified in relevant risk assessments have been implemented.</p>	<p>□ 1 Valve clamped in bench vice.</p> 
2 Setup	<p>2.1. Confirm that the correct Baumann 84000 Control Valve has been identified and that they match the work order details.</p> <p>2.2. Inform Operations and other personnel in the area that reliability activities are about to start.</p> <p>2.3. Inspect the outside of the Baumann 84000 Control Valve. Check for any signs of damage, such as dents, discolouration, or staining.</p>	<p>□ 2 Remove DVC Controller & Air Lines</p> 
3 Remove the Baumann 84000 Control Valve from the Process Line	<p>3.1. Following line break procedures, remove the valve from the process line and re-locate to the workshop.</p> <p>3.2. Clamp the valve into a bench vice using soft vice jaw protectors. □ 1</p>	
4 Change out the Valve Diaphragm.	<p>4.1. Remove the DVC Controller and air lines to the valve. □ 2</p> <p>4.2. Clamp the top valve stem lock nut and loosen off the bottom valve stem lock nut. Bring all the way to the bottom of the thread. Loosen the top valve stem lock nut and thread all the way down until it is adjacent to the bottom valve stem lock nut. □ 3</p> <p>4.3. Using a spanner on the bottom valve stem lock nut, thread the valve stem up into the actuator stem until the pressure has been taken off the wave springs. The stem should feel loose once the pressure has been taken off.</p> <p>4.4. Remove the 4 bolts from the valve body and separate. □ 4</p> <p>4.5. Loosen the bonnet drive nut and unthread. Unthread the valve stem from the actuator stem and separate the bonnet assembly from the actuator assembly. □ 5</p> <p>4.6. Remove the travel indicator, washer and valve stem lock nuts and set aside. □ 6</p> <p>4.7. Push down on the valve stem so the wave springs exert pressure on the compressor. Spin off the old diaphragm by spinning counterclockwise (when looking from below). □ 7</p> <p>4.8. Remove the retaining snap ring. □ 8</p> <p>4.9. Remove the wave springs and inspect. Replace if damaged □ 9</p> <p>4.10. Inspect the drive mechanism, valve stem and piston. Replace if any components are damaged. □ 10</p>	<p>□ 3 Valve Stem Lock Nuts</p>  <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: 100px;"> <p>Valve Stem Lock Nuts</p> </div>
5 Reassemble the Baumann 84000 Valve		<p>□ 4 Valve Upper & Lower Body</p> 

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6 Bench Set the Baumann Valve

- 5.1. Grease the threaded portion of the valve stem and insert through the bonnet while twisting. Retract the piston fully so it does not foul the drive mechanism when it is inserted and orient it in relation to the weep hole as shown. □11
 - 5.2. Insert the drive mechanism into the bonnet and orient the piston, drive mechanism and weep holes as per □11 & □12
 - 5.3. Ensure the shoulders of the drive mechanism fit into the recess of the bonnet. For this, the top rollers should be retracted inside the frame of the drive mechanism when inserting. □13
 - 5.4. Insert the compressor with the flat side resting against the extended roller bearings. □14
 - 5.5. Grease the bottom of the wave springs and insert them with the gaps facing down offset from each other by 180°. □15 □16 (Use Kluberpaste UH1 84-201 Food Grade Grease)
 - 5.6. Install the snap ring with the opening located on the downside of the wave spring. □17
 - 5.7. Push down the bonnet assembly to drive the piston stem assembly into the drive mechanism and compress the wave springs, thus providing tension on the compressor.
 - 5.8. Lubricate the diaphragm screw thread and the 2 surfaces of the compressor, as illustrated. Do not over apply grease. □18. □19
 - 5.9. Thread the diaphragm onto the compressor until hand tight, then come back slightly. DO NOT OVERTIGHTEN. □20
 - 5.10. Place the complete bonnet assembly onto the valve body. The diaphragm must fit into the valve body groove for proper concentricity.
 - 5.11. For NPS 1" valves, the bolted flange configuration should be tightened for metal-to-metal contact between the flange and the valve body. Grease the flange bolts using Kluberpaste UH1 84-201 and torque to 60 Nm. □21
 - 5.12. For NPS 1.5" & 2" valves..... □22
 - 5.13. Clamp the valve assembly into a vice and tighten.
 - 5.14. Thread on the 2 valve stem lock nuts onto the valve stem with the washer and travel indicator on top. The lock nuts should be threaded to the bottom of the available thread on the valve stem.
 - 5.15. Install the actuator assembly onto the bonnet assembly. Spin the actuator assembly so that the actuator stem threads onto the valve stem. Keep spinning until the bonnet body fits snugly to the bottom of the actuator assembly.
 - 5.16. Thread on the actuator drive nut and tighten. □23
 - 5.17. Adjust the valve stem down into the valve until resistance is felt between the diaphragm and the valve body.
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- 6.1. Place the appropriate end caps, gaskets and clamps over the pipe ends. □24
 - 6.2. Place the Valve Flow Rig onto the workbench and connect 8mm pneumatic tubing between the compressor, valve flow rig and valve. □25
 - 6.3. Make sure all pneumatic connections are tight and spin both regulators anti-clockwise so that no pressure is applied to the valve initially. □26 □27
 - 6.4. Turn the compressor output regulator anti-clockwise to completely close off the output and switch on the compressor. Allow the compressor to build up pressure to 8 bar.
 - 6.5. Turn the output regulator clockwise to 4 bar.

□5 Separate Bonnet Assembly from Actuator Assembly



□6 Travel Indicator, Washer & Valve Stem Lock Nuts



Travel Indicator, washer & valve stem locknuts.

□7 Old Diaphragm



□8 Retaining Snap Ring



Retaining Snap Ring

□9 Wave Springs

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7 Replace DVC Controller and Check

- 6.6. Apply the lower range bench set pressure (3-5 psi) to the pneumatic input of the lower half of the actuator body (Failed closed). □ 27
- 6.7. From the flow rig, apply 20 Psi to the upstream pneumatic connection of the valve.
- 6.8. Adjust the valve stem down until the air flow can no longer be felt by hand from the pneumatic tubing connected to the downstream pipe endcap.
- 6.9. On the upstream pipe connection, increase the regulated air supply to 50 Psi and insert the end of the pipe into a plastic container of water. □ 27
- 6.10. Adjust the valve stem down until no more than 1 bubble appears per minute.
- 6.11. Thread both valve stem lock nuts back to the top of their adjustment with the travel indicator in place.
- 6.12. Replace the magnet indicator between the 2 spacers and lock into place with the stem lock nuts.
- 6.13. Remove the flow rig actuator air supply including the press-in fitting.

- 7.1. Replace the DVC Controller onto the valve including the hard piping from the air set to the actuator.
- 7.2. Connect the engineering laptop with Valvelink mobile with a HART modem to the DVC controller along with 4-20 mA loop power.
- 7.3. Drive the valve open in increments of 0.2 mA. Valve should lift and bubbles seen between 4.5-6 mA.
- 7.4. Inform area owner when LOTO is removed.
- 7.5. AA
- 7.6. AA



Wave Springs

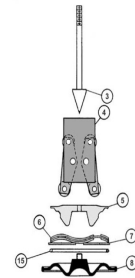
□ 10 Drive Mechanism & Valve Stem/Piston



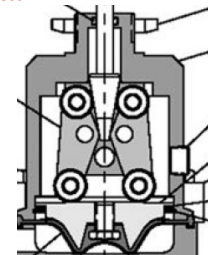
□ 11 Retract the Valve Stem Piston



□ 12 Correct Piston/Drive Mechanism Orientation



□ 13 Seat the Drive Mechanism into the top Bonnet Recess.



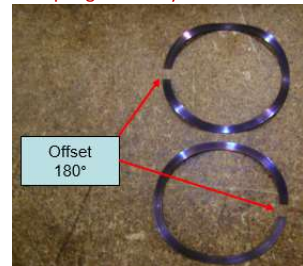
□ 14 Compressor on top of Drive Mechanism

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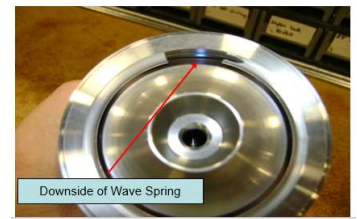
 15 Wave Springs offset by 180°



 16 Grease bottom of Wave Springs




 17 Install Snap Ring



 18 Grease thread of Diaphragm



 19 Grease 2 surfaces of compressor adjacent to lip. Do not grease the lip.

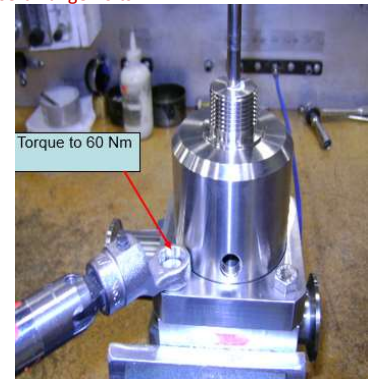
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 20 Thread Diaphragm onto Compressor



 21 Place Bonnet Assembly onto Valve Body and insert Flange Bolts.



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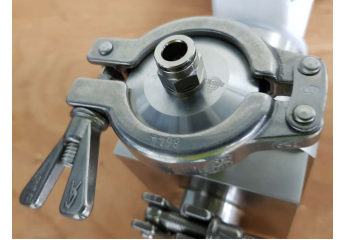
 23 Thread on the Actuator Drive Nut and tighten



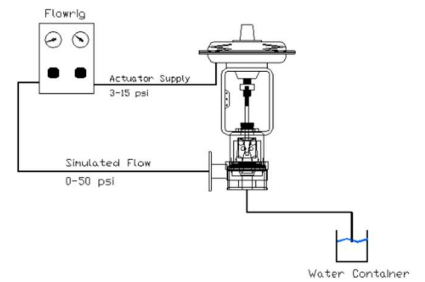
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□24 Place the end caps, gaskets, and clamps over the valve pipe connections.



□25 Connect the flow rig to the valve and to the actuator.



□26 Valve Flow Rig



□27 Flow Rig Set Up with Valve

