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BP20-TC

Stainless Steel In-Line Back Pressure Regulator Operating Instructions



- Applications
- Principle of Operation
- Maintenance and Repair
- Disassembly Instructions
- Reassembly and Testing Instructions
- Schematics

APPLICATIONS

The Sanitary Tri-Clamp Back Pressure Valve is a precise solution for backpressure regulation in low-pressure systems (0–20 psig). It is purpose-built to maintain constant pump discharge pressures, bypass excessive system pressure, and protect your clean lines. This valve handles filtered or strained liquids and gases, including water, steam, non-fluorinated chemicals, and inert gases. While traditional metal seats leak at low pressures, our engineered soft-seat design delivers a tight, zero-leak shut-off. For a high-performance, accurate upgrade to your sanitary process or piping system, this low-pressure specialist is an excellent choice.

PRINCIPLE OF OPERATION

This direct-acting valve uses an adjustable spring and flexible diaphragm that reacts immediately to system inlet pressure, delivering reliable accuracy. To dial in your exact process limits, simply turn the adjusting screw clockwise to raise the pressure setpoint or counterclockwise to lower it. The key advantage of this design is its sensitive 0–20 psig low-pressure control and resilient soft seat. It seals bubble tight as pressure drops, ensuring consistent regulation. This responsive opening action permits flow to the outlet, safely bypassing excess pressure while protecting your low-pressure process from disruptions and maintaining total system control.

MAINTENANCE & REPAIR

When the valve is shipped from the factory it is usually ready for operation. The valve can be preset to any set pressure within the specific valve spring range. If no set pressure was predetermined at the time of purchase, it will have to be set by the receiver.

Check to make sure that the discharge piping is not blocked off and that the valve does not operate against shut-off conditions. Check to make sure there is no visible leakage coming from the spring chamber. This is an indication of diaphragm seal failure. If after extensive use the valve begins to lose its ability to regulate, or if there is excessive seat leakage due to wear, which would cause an excessive pressure rise on the outlet side of the valve, or if there is external seal leakage, the valve will require parts to be replaced and/or the valve sent in for possible repair. Before removing the valve from service, make sure that the valve is isolated from the piping completely in order avoid any personal injury.

Usually, the valve seat is the most likely component to fail due to corrosion or deformation due to pressure and/or temperature. If there is excessive seat leakage, then the seat seal may require replacement or reworking. Removal of the spring chamber will expose the moving parts and seals of the valve so they can be visually inspected and replaced if necessary. It is more convenient to remove the valve from the piping to do maintenance; however, this valve is easy to repair in-line as long as all necessary precautions are taken to ensure the safety of the technician.

DISASSEMBLY INSTRUCTIONS

Before disassembling the valve, make sure that the process line is depressurized and securely isolated upstream and downstream to avoid any injury to the technician. Begin by relieving the compressive force of the spring used to adjust the set pressure. Turn the jam nut counterclockwise to unlock the adjusting screw. Then turn the adjusting screw counterclockwise until it is backed out entirely. Remove the V-band clamp to access the valve trim.

Remove all the components and inspect them for noticeable wear or deformation. This could include rough surfaces that would cause increased friction, parts that look bent or cracked, or similar damage. Look for any obstructions in seals or for components that are dirty or contain foreign objects. This could happen as a result of improper operation. If any of these are present, replacement of parts or remachining of components may be necessary to restore the valve to its original manufactured state and operating conditions.

Replacement parts are usually available for purchase through Stra-Val and are readily available. Please contact Stra-Val for recommendations on troubleshooting for this specific valve. Contact information is on the cover page.

REASSEMBLY AND TESTING

When all the valve parts are cleaned and inspected, the valve can be reassembled in reverse order. Make sure a valve seal lubricant is used to lubricate the seal and is compatible with the elastomer used. Do not lubricate the elastomers that come in contact with the valve seat; it could cause potential leakage from the valve seat. Make sure no dirt or foreign particles are embedded in the valve seat, which might cause the valve seat to stay partially open and cause unwanted leakage. Any threaded parts, as well as the contact surface of the adjustment screw and spring pusher, should be lubricated with an application-compatible anti-seize compound. When the spring and spring hardware are assembled and the spring chamber is clamped back onto the body, the valve is ready for final installation and test. Testing should be done with the valve completely installed into the process line with the discharge piped safely away. At the proper system overpressure, or set pressure, turn the adjusting screw until the valve begins to open. Next, reduce the system pressure to the normal operating pressure and check to see if the valve reseats properly and shuts off. If it is not possible to change the system pressure to an overpressure condition, at which point the valve must open, then the valve must be tested and set off-line using a hydrostatic testing device. Finally, when installing the valve, make sure there is minimal piping misalignment to keep distortion of the precision machined internal body seat to a minimum. If severe misalignment exists, consider installing expansion fittings to absorb any piping strain that may also be caused by temperature changes in the piping. When assembling and disassembling the valve, it is highly recommended to utilize the provided schematics.

SCHEMATICS

Note: Dimensions are approximate and are subject to change without notice.

