INSTALLATION, OPERATION AND

MAINTENANCE GUIDE

ElastoTITE™ INSTALLATION, OPERATION AND MAINTENANCE GUIDE

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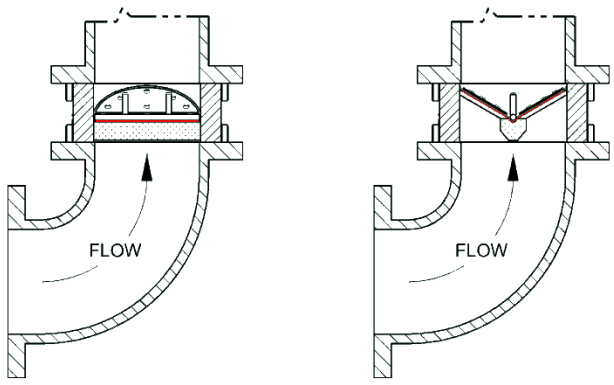
Placement in Pipeline System

When installing Process Development & Control's ElastoTITE™ Elastomer-Hinged Check Valves in a pipeline, a minimum of five pipe diameters should be maintained upstream and downstream between the check valve, pipe fittings, components and other valves. Positioning the check valve near other components may affect its performance and life expectancy. The ElastoTITE™ Elastomer-Hinged Check Valves mechanism of operation is via the actual fluid flow itself. Relatively continuous, non-pulsing, smooth, laminar flow is required for the check valve to operate properly and to yield a long, trouble free life. Care should be taken during installation so as not to place excessive counterforces on the valve to make up for system misalignment. Poor valve placement is the number one reason for poor valve operation and increased maintenance.

Valve Orientation

ElastoTITE™ Elastomer-Hinged Check Valves are normally installed in a horizontal pipeline with the hinge bar in a vertical position. This can be determined by observance of the external bolts mounting the internal hinge bar and sealing components to the housing. A flow arrow on the nameplate, label or valve body indicates the proper direction of normal flow through the valve.

Valves installed in a vertical pipe flow can normally be oriented with the hinge bar in any orientation. If a vertical down flow is required, an optional spring will need to be added to the valve assembly to ensure closure of the valve plates. A spring may also be required to improve performance for low back-flow or back pressure conditions in any orientation. Installations necessarily close to an elbow require correct positioning of the hinge bar as shown in the following cross-sections. This ensures equal loading of the valve plates with respect to the velocity of the gas or liquid. Failure to comply with these guidelines could result in an uneven loading of closure plates and improper operation of the valve.



CORRECT ORIENTATION

INCORRECT ORIENTATION

Operational Check

The valve plates in the ElastoTITE™ Elastomer-Hinged Check Valve should move freely from the closed to open position and back without binding. Move the plates manually from fully closed to full open positions noting any significant binding or interference. Some “drag” is normal due to the nature of the sealing member. The valve may appear not to close tightly when new during these trial operational cycles. This is normal and simply means that the sealing member has not assumed a “set” and should not be interpreted as a failure of the valve to close easily and seat tightly. This condition will moderate as the valve cycles a few times in service. If significant binding or interference is noted, please contact the factory for additional information to correct the issue.

Pressure and Temperature Rating

The pressure and temperature rating of each valve is indicated on the nameplate or label. Prior to the installation of the valve, the system pressure and temperature maximums should be confirmed to make sure they are within the specifications of the ElastoTITE™ Elastomer-Hinged Check Valve.

Maximum allowable operating pressures are given in the valve series data sheets and are generally limited by the internal components. ElastoTITE™ Elastomer-Hinged Check Valve flanges conform to ANSI standards dimensionally, but **DO NOT** meet the published pressures and temperatures tabled of those standards. The nameplate or label specifies the elastomer hinge check valve’s limitations. Pressures beyond those stated are considered special and the factory should be contacted with your requirements.

The maximum operating temperatures (intermittent exposure) are generally limited by the sealing member. Do not exceed the limiting temperature. Doing so could cause damage to your system. See the following table for limits. Consult the factory for verification if necessary.

SEALING MATERIAL	TEMPERATURE RANGE °F [°C]
Buna-N	-60 to 225 [-51 to 107]
EPDM	-40 to 300 [-40 to 149]
Viton®	-20 to 400 [-29 to 204]
Silicone	-100 to 500 [-73 to 260]

Optional Spring Assisted Valves

Valves may be provided with springs (without springs is standard unless otherwise requested) for installations requiring additional assistance to close. Such installations are vertical down flow and where a quick closure response to flow reversal is desired. If in doubt about your particular application, consult factory for recommendation as to the use of a spring. Although field installation of a spring is possible after the fact, it will require additional parts and instructions.

Opening and Closing Pressure

As a guideline, the ElastoTITE™ Elastomer-Hinged Check Valves crack open at .1 (.007 bar) to .2 (.014 bar) PSID and are fully open at .5 (.035 bar) PSID. There are variations in the valve assembly that may affect these values. Some valves positioned with flow upward will require more pressure to open to offset the effects of gravity on the valve plates. Valves with optional springs operate at around double these pressure differentials. Valves 12” and above may require less opening pressure due to their large surface area and may affect these values as well.

Flowing Differential Pressure and Velocity

The maximum differential pressure across the valve for flowing liquids is 1.0 PSI (.069 bar) and 0.1 PSI (.007 bar) for air/gas. The maximum velocity through the valve for flowing liquids is 18 FPS (5.5 mps) and 100 FPS (30 mps) for air/gas. Exceeding these values could damage the internal valve components, cause excessive wear, and/or result in poor system performance due to excessive pressure drop across the valve.

Storage

Valves should be stored indoors and in their original packaging/containers to keep them clean and protected from outside elements and damage. Avoid excessive exposure to sunlight, extreme environmental changes and temperatures.

Maintenance

No routine maintenance is required. The repair or replacement of most internal parts, if needed, is straightforward and requires no special skills or tools. At suitable intervals, in conformance to system requirements, the valve seal should be checked for deterioration or wear. Replacement of seals, as with all valve components, should be scheduled as part of routine maintenance. Replacement parts and instructions can be obtained from the factory.

End Connections

Male and Female Threaded End: Threaded joints are not physically strong in reference to bending. Thus, lines containing threaded joints must be supported to avoid external stresses on the threaded joints and valve body.

Preparation for assembly consists of cleaning the mating threads and wrapping the male pipe threads with Teflon® tape. Start the tape on the second thread from the end and wrap in the direction of the threads with a slight overlay. Teflon or any suitable pipe sealing/thread paste may also be used. Carefully thread the fittings together hand tight. Tighten the connection an additional ¾ to 1½ turns using a strap wrench or similar non-scarring tool. ***Do Not Use a Pipe Wrench*** or any other device with jaws. Care must be taken not to overtighten, which can cause distortion or thread failure.

Plain End: ElastoTITE™ Plain End style valves are intended to be used with compatible style hose and hose clamps rated for the system pressure and temperature.

Grooved End: ElastoTITE™ Grooved End valves meet ANSI/AWWA C-606 standards for groove dimensions. These valves easily integrate into systems designed for use with various commercial groove type connections - a Victaulic® Coupling or equal. Refer to the coupling manufacturer's instructions for proper installation.

Flanged: Flanged connections provide system flexibility and allow for occasional dismantling or reconfiguration. ElastoTITE™ Flanged Check valves are manufactured to ANSI B16.5 (150# Class) dimensions.

Full face or ring style elastomer gasket seals of 50 to 70 durometer "A" scale hardness and resistant to the fluids in the line is required between the corresponding style flanges. Appropriate fasteners, including flat washers used should be resistant to the chemicals in the system environment.

Carefully observe for proper alignment of bolt holes and flanges. The flanges are not to be used for final alignment of system piping. Poor alignment not only risks valve damage, but may result in immediate or future leakage.

Position gasket seal and insert well lubricated bolts or studs, flat washers and nuts. Using a torque wrench, tighten each fastener in a cross pattern sequence for uniform loading of the flanges. Perform the sequence in reasonable increments until finally reaching your desired torque value. Do not over torque flange bolts. **Note**: Tighten bolts in accordance with standard flange bolting sequences.

Short Form Wafer: The 125# and 150# Class ElastoTITE™ Short Form Wafer valves are installed in a similar manner as flanged valves, again requiring two gaskets. They are centered between two flanges and the length of fastener must be increased by the length of the valve. Be careful to center this valve in the flange openings before tightening the fasteners. This will permit optimum sealing and flow conditions.