



Purchasing Specifications

Model No. 98-01/698-01

PRESSURE MANAGEMENT CONTROL VALVE

Function

The Pressure Management Control Valve shall be capable of controlling downstream pressure within a 25 psi adjustable range from high to low pressure with varying flow rate. As flow increases above a starting level, the outlet pressure shall increase continuously from a minimum to a preset maximum value. The minimum pressure, maximum pressure, and flow at which pressure begins to increase and at which it stops increasing shall be adjustable.

The Pressure Management Control Valve shall not have an orifice plate or other restriction in the main line as part of the valve control. It shall operate only under hydraulic control without electrical or electronic controls. It shall control downstream pressure over the entire range of demand flows, including emergency flows. When maximum pressure set point is achieved, pressure shall be capable of remaining at or near maximum pressure set point as flow continues to increase and until either the valve flow capacity is reached or the valve position is greater than 80% open.

The pilot system adjustments shall allow changes to be made to accommodate more or less pressure as demand changes over time without resizing of an orifice plate or reprogramming electronic control. Existing standard Pressure Reducing Valves from the same manufacturer shall be easily retrofitted to the Pressure Management Control Valve without removal of the valve from the line.

Valve sizes available shall be from 2 inch through 16 inch in the full port valves and 3 through 24 inch in the reduced port valves.

Main Valve

The valve shall be hydraulically operated, single diaphragm-actuated, globe or angle pattern. The valve shall consist of three major components: the body, with seat installed; the cover, with bearings installed; and the diaphragm assembly. The diaphragm assembly shall be the only moving part and shall form a sealed chamber in the upper portion of the valve, separating operating pressure from line pressure. Packing glands and/or stuffing boxes are not permitted and there shall be no pistons operating the main valve or pilot controls.

Main Valve Body

No separate chambers shall be allowed between the main valve cover and body. Valve body and cover shall be of cast ductile iron with interior/exterior heat fusion epoxy coating and stainless steel trim type 316. No fabrication or welding shall be used in the manufacturing process. The valve shall contain a resilient, synthetic rubber disc with a rectangular cross-section contained on three and one-half sides by a disc retainer and forming a tight seal against a single removable seat insert. No O-ring type discs (circular, square, or quad type) shall be permitted as the seating surface. The disc guide shall be of the contoured type to permit smooth transition of flow and shall hold the disc firmly in place. The cylindrical disc retainer shall be of a sturdy one-piece design capable of withstanding opening and closing shocks. It must have straight edge sides and a radius at the top edge to prevent excessive diaphragm wear as the diaphragm flexes across this surface. No hourglass shaped disc retainers shall be permitted and no V-type or slotted type disc guides shall be used.

The diaphragm assembly containing a non-magnetic 303 stainless steel stem; of sufficient diameter to withstand high hydraulic pressures shall be fully guided at both ends by a bearing in the valve cover and an integral bearing in the valve seat. The seat shall be a solid, one-piece design and shall have a minimum of a five-degree taper on the seating surface for a positive, drip-tight shut off. No center guides shall be permitted. The stem shall be drilled and tapped in the cover end to receive and affix accessories that aid in the valves performance. The flexible, non-wicking, FDA approved diaphragm shall consist of nylon fabric bonded with synthetic rubber compatible with the operating fluid. The vulcanized process or a rubber grommet sealing the center stem hole from the operating pressure must seal the center hole for the main valve stem. The diaphragm must withstand a Mullins Burst Test of a minimum of 600 x per layer of nylon fabric and shall be cycle tested 100,000 times to insure longevity. The diaphragm shall not be used as the seating surface. The diaphragm shall be fully supported in the valve body and cover by machined surfaces which support no less than one-half of the total surface area of the diaphragm in either the fully opened or fully closed position.



The flexible, non-wicking, FDA approved diaphragm shall consist of nylon fabric bonded with synthetic rubber compatible with the operating fluid. The center hole for the main valve stem must be sealed by the vulcanized process or a rubber grommet sealing the center stem hole from the operating pressure. The diaphragm must withstand a Mullins Burst Test of a minimum of 600 -PSI per layer of nylon fabric and shall be cycle tested 100,000 times to insure longevity. The diaphragm shall not be used as the seating surface. The diaphragm shall be fully supported in the valve body and cover by machined surfaces which support no less than one-half of the total surface area of the diaphragm in either the fully opened or fully closed position.

The main valve seat and the stem bearing in the valve cover shall be removable. The cover bearing and seat in 6" and smaller size valves shall be threaded into the cover and body. The valve seat in 8" and larger size valves shall be retained by flat head machine screws for ease of maintenance. The lower bearing of the valve stem shall be contained concentrically within the seat and shall be exposed to the flow on all sides to avoid deposits. To insure proper alignment of the valve stem, the valve body and cover shall be machined with a full circumference locating lip. No "pinned" covers to the valve body shall be permitted. Cover bearing, disc retainer, and seat shall be made of the same material. All necessary repairs and/or modifications other than replacement of the main valve body shall be possible without removing the valve from the pipeline. Packing glands and/or stuffing boxes shall not be permitted.

The valve manufacturer shall warrant the valve to be free of defects in material and workmanship for a period of three years from date of shipment, provided the valve is installed and used in accordance with all applicable instructions. Electrical components shall have a one-year warranty.

The valve manufacturer shall be able to supply a complete line of equipment from 1 1/4" through 48" sizes and a complete selection of complementary equipment. The valve manufacturer shall also provide a computerized cavitation chart which shows flow rate, differential pressure, percentage of valve opening, Cv factor, system velocity, and if there will be potential for cavitation damage.

Material Specification

Valve Sizes: 2" to 16" Full Port and 3" to 24" Reduced Port
Main Valve Body and Cover: Ductile Iron ASTM A-536
Main Valve Trim: Stainless Steel Type 316
End Detail: 150 # Flanged ANSI B16.42
Pressure Rating: 250-PSI Maximum Working Pressure
Temperature Range: To 180 Degrees Fahrenheit
Rubber Material: Buna-N
Coating: Internal/External Heat Fusion Epoxy Coating 6 mils thick

Pilot Control System

The variable outlet pressure reducing pilot control shall be a direct-acting, adjustable, spring-loaded, normally open, diaphragm valve designed to permit flow at or between predetermined pressure set points when controlled pressure is less than the spring setting. The pilot control is held open by the force of the compression on the spring above the diaphragm and it closes when the delivery pressure acting on the diaphragm exceeds the spring setting. The pilot control system shall include separate adjustments for setting the high pressure, low pressure, and flow rate at which pressure begins to increase.

The pilot control system shall include an adjustable speed control to tailor the valve response rate to system demand changes. The pilot system shall include an adjustable opening speed control. The pilot control shall have a second downstream port for installation of a pressure gauge. The pressure reducing pilot control shall have an adjustable low pressure setting up to 25 psi below high pressure setting.

The Pressure Management Control Valve shall include standard upstream and downstream pressure gauges.

Start-up

A direct factory representative shall be made available for start-up service, inspection and necessary adjustments.