**Pressure Reducing Valve**

- Flow and leakage reduction
- Cavitation damage protection
- Throttling noise reduction
- Burst protection
- System maintenance savings

The Model 720 Pressure Reducing Valve is a hydraulically operated, diaphragm actuated control valve that reduces higher upstream pressure to lower constant downstream pressure regardless of fluctuating demand or varying upstream pressure.

### Features and Benefits
- **Line pressure driven** – Independent operation
- **In-line serviceable** – Easy maintenance
- **Double chamber design**
  - Moderated valve reaction
  - Protected diaphragm
- **Flexible design** – Easy addition of features
- **Variety of accessories** – Perfect mission matching
- "Y" or angle, wide body – Minimized pressure loss
- **Semi-straight flow** – Non-turbulent flow
- **Stainless Steel raised seat** – Cavitation damage resistant
- **Obstacle free, full bore** – Uncompromising reliability
- **V-Port Throttling Plug** – Low flow stability

### Major Additional Features
- **UL Listed for fire protection** – FP-720-UL
- **Solenoid control** – 720-55
- **Check valve** – 720-20
- **Solenoid control & check valve** – 720-25
- **Proportional** – 720-PD
- **Automatic regulation override** – 720-09
- **High sensitivity pilot** – 720-12
- **Emergency pressure reducing valve** – 720-PD-59
- **Downstream over pressure guard** – 720-48
- **Electrically selected multi-level setting** – 720-45
- **Electronic multi-level setting, Type 4T** – 720-4T
- **Electronic pressure reducing valve** – 728-03

See relevant BERMAD publications.
**Operation**


Should this pressure rise above pilot setting, the pilot throttles, enabling pressure in the upper control chamber to accumulate, causing the main valve to throttle closed, decreasing downstream pressure to pilot setting.

Should downstream pressure fall below pilot setting, the pilot releases accumulated pressure, and the main valve modulates open.


**Engineer Specifications**

The Pressure Reducing Valve shall reduce higher upstream pressure to lower preset downstream pressure regardless of fluctuating demand or varying upstream pressure.

**Main Valve:** The main valve shall be a center guided, diaphragm actuated globe valve of either oblique (Y) or angle pattern design. The body shall have a replaceable, raised, stainless steel seat ring. The valve shall have an unobstructed flow path, with no stem guides, bearings, or supporting ribs. The body and cover shall be ductile iron. All external bolts, nuts, and studs shall be Duplex® coated. All valve components shall be accessible and serviceable without removing the valve from the pipeline.

**Actuator:** The actuator assembly shall be double chambered with an inherent separating partition between the lower surface of the diaphragm and the main valve. The entire actuator assembly (seal disk to top cover) shall be removable from the valve as an integral unit. The stainless steel valve shaft shall be center guided by a bearing in the separating partition. The replaceable radial seal disk shall include a resilient seal and shall be capable of accepting a V-Port Throttling Plug by bolting.

**Control System:** The control system shall consist of a 2-Way adjustable, direct acting, pressure reducing pilot valve, a needle valve, isolating cock valves, and a filter. All fittings shall be forged brass or stainless steel. The assembled valve shall be hydraulically tested and factory adjusted to customer requirements.

**Quality Assurance:** The valve manufacturer shall be certified according to the ISO 9001 Quality Assurance Standard. The main valve shall be certified as a complete drinking water valve according to NSF, WRAS, and other recognized standards.
**Typical Applications**

**Pressure Reducing System for Municipal Networks**

Network design requires establishing various pressure zones due to topography, distances, demands, energy costs, reservoir availability, etc.

The pump supplies water to the network and to the reservoir. System pressure is too high for the residential neighborhood, requiring a pressure reducing system.

**Pressure Reducing System – Typical Installation**

In addition to the **Model 720 Pressure Reducing Valve**, BERMAD recommends that the system also include:

- **Strainer Model 70F** prevents debris from damaging valve operation
- **Relief Valve Model 73Q** provides:
  - Protection against momentary pressure peaks
  - Visual indication of need for maintenance
- **By-Pass Pressure Reducing Valve** saves on maintenance costs. The larger (more costly to maintain) valve operates during peak demand. The smaller by-pass valve cuts operating hours of the larger valve, achieving greater return on investment.

For high differential pressure systems, see BERMAD publication 720-PD Proportional Pressure Reducing Valve.
For high pressure systems, see BERMAD publication 820 Piston Actuated Pressure Reducing Valve.
Pressure Reducing Systems in High-Rise Buildings

Water supply system design requirements for high-rise buildings present unique issues:

- Supply cut-off is unacceptable and single source supply is common.
- Valves are located in areas where water damage can be extremely expensive.
- Pressure reducing systems are often located next to prestigious residential and office space. Extraneous noise and maintenance activities are to be avoided.
- The main supply line of high-rise buildings is exposed to greater head at lower zones while pressure for the consumer must be kept within recommended levels. As a result, lower zone pressure reducing systems deal with greater differential pressure.

The Model 720 Pressure Reducing Valves together with BERMAD’S accumulated experience address these issues and provide appropriate solutions.

A Higher zone pressure reducing system installation
B Lower zone pressure reducing system (two-stage) installation
C Bottom reservoir level control system
D Roof reservoir level control system
E Potable water pumping system
F Fire protection pumping system
G Upper floors pumping system
Higher Zone Installation **A**

In addition to the municipal pressure reducing system for a high-rise building, BERMAD recommends the system also include:

- **Parallel Redundant Branches** ensuring uninterrupted supply by enabling unskilled personnel to temporarily shut off one of the branches.
- **Emergency System** including a downstream pressure switch and an Emergency Valve Model 720-PD-59.
  - **Pressure Switch [6]** signals a control panel of excessive downstream pressure.
  - **Emergency Valve [2]** is fully open during normal operation. Triggered by the control panel, it becomes a proportional pressure reducing valve.

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Lower Zone (Two-Stage) Installation **B**

When dealing with high differential pressure systems in lower zones of a high-rise building, BERMAD recommends a two-stage pressure reducing system. In addition to the typical higher zone installation, this high differential pressure system also includes:

- **Proportional Pressure Reducing Valve** Model 720-PD, as the first pressure reducing stage, absorbs part of the high differential pressure. By spreading the load of pressure reducing onto two components, cavitation damage and noise are reduced.
Technical Data

Dimensions and Weights

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Data is for Y-pattern, flat disk valves
Weight is for PN16 basic valves
"C" enables removing the actuator in one unit
For more dimensions and weights tables, refer to Engineering Section

Control System

Standard Materials:
- Bronze, Brass, Stainless Steel & NBR
- Tubing: Copper or Stainless Steel
- Springs: Galvanized Steel or Stainless Steel
- Internals: Stainless Steel

Accessories:
- Electric Override 59
- Hydraulic Control 50
- Downstream Over Pressure Guard 48
- Hydraulic Control 50
- Solenoid Controlled Check Valve 25
- Multi-Setting Levels - Electrically Selected 45
- Downstream Over Pressure Guard 48
- Electrical Overload 20
- Solenoid Controlled Check Valve 25
- Multi-Setting Levels - Electrically Selected 45
- Downstream Over Pressure Guard 48
- Hydraulic Control 50
- Electric Overload 20

Use when additional electric control feature is selected

How to Order

Please specify the requested valve in the following sequence: (for more options, refer to Ordering Guide)

- WW
- Size
- Primary Feature
- Additional Feature
- Pattern
- Body Material
- End Connections
- Coating
- Voltage & Position
- Tubing & Fittings
- Additional Attributes

Data is for Y-pattern, flat disk valves
For more flow charts, refer to Engineering Section