For high pressure systems, see BERMAD publication 820 Piston Actuated Pressure Reducing Valve.

For high differential pressure systems, see BERMAD publication 720-PD Proportional Pressure Reducing Valve.

In addition to the Model 720 Pressure Reducing Valve, BERMAD recommends that the system also include:
- A larger Model 720 towards demand from damaging valve operation
- Relief Valve (Model 732 provides)
- Protection against momentary pressure peaks
- Visual indication of need for maintenance
- By-Pass Pressure Reducing Valve assist on maintenance costs. The larger (more costly to maintain) valve operates disproportionate 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 B20 piston actuated Pressure Reducing Valve.

**Pressure Reducing Valve – Typical Installation**

**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 resonant. System pressure is too high for the residential neighborhood, requiring a pressure reducing system.

The information herein is subject to change without notice. BERMAD shall not be held liable for
- 32
- 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**
- Low pressure driven – Independent operation
- In-line serviceable – Easy maintenance
- Double chamber design
- Stairless and smooth flow – Non-saturating flow
- Valve pressure drops – Air and water
- High pressure range
- Easy addition of features
- Variety of accessories – Perfect matching including
  - Y” or angle, side body – Modified pressure losses
  - Manual operation
- Automatic regulation
- Independent operation
- Electronic multi-level setting, Type 4T
- Downstream over pressure guard
- Easy maintenance
- Non-turbulent flow
- Easy addition of features
- Independent operation
- Electronic multi-level setting
- Low flow stability

**Major Additional Features**
- UL Listed for protection – FP-720-UL
- Stainless steel – 720-55
- Check valve – 720-20
- Control valve – 720-55
- Proportional – 720-PD
- Automatic regulation – 720-PD
- High sensitivity – 720-PD
- Emergency pressure reducing valve – 720-PD-09
- Downstream over pressure guard – 720-PD
- Electrically selected multi-level setting – 720-45
- Electronic multi-level setting, Type 4T – 720-47
- Electronic pressure reducing valve – 720-03

See relevant BERMAD publications.
Operation

The Needle Valve controls the closing speed. The downstream Cock valve moderates valve reactions. Should downstream pressure fall below pilot setting, the pilot releases accumulated pressure, and the main valve throttles closed, decreasing downstream pressure to pilot setting. 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 open.

Control System:

As an integral unit. The stainless steel valve shaft shall be center guided by a bearing in the separating partition. The replaceable diaphragm and the main valve. The entire actuator assembly (seal disk to top cover) shall be removable from the valve body and cover 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 shall have a Duplex stainless steel cover.

Quality Assurance:

All external bolts, nuts, and studs shall be 316 stainless steel. 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 plate shall include a resilient seal and shall be capable of accepting a #4 PB Thrust 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 check valves, and a filter. All fittings shall be forged brass or stainless steel. The assembly 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, NRL, and other recognized standards.

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 near to prestigious residential and office spaces. Excessive noise and maintenance activities are to be avoided.
- The main supply line of high-rise buildings is expected 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 Valve is a single stage, balanced seat valve with no stem guides, bearings, or supporting ribs. The body shall have a Duplex stainless steel cover.

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 2205. 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 plate shall include a resilient seal and shall be capable of accepting a #4 PB Thrust 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 check valves, and a filter. All fittings shall be forged brass or stainless steel. The assembly 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, NRL, and other recognized standards.

Higher Zone installation

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 unlimited 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 [4]** signals a control panel of excessive downstream pressure.

Emergency Valve [4] is fully open during normal operation. Triggered by the control panel, it becomes a proportional pressure reducing valve.

Lower Zone (Two-Stage) Installation

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, absolutes part of the high differential pressure. By spreading the load of pressure reducing onto two components, cavitation damage and noise are reduced.

For high differential pressure systems, see BERMAD publication 720 PD Proportional Pressure Reducing Valve. For high pressure systems, see BERMAD publication 720 Pilot Actuated Pressure Reducing Valve.
The pump supplies water to the network and to the main reservoir. System pressure is too high for the residential neighborhood, requiring a pressure reducing system.

Pressure Reducing System – Typical Installation

Main Valve
Valve size
1” x 1” 2” x 2”

Pressure Reducing Valve

Model 720

Technical Data

Dimensions and Weights

Flow Chart

Flow Rate - gpm

Flow Rate - lpm

How to Order

Pressure reducing valve for municipal networks

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

Pressure Reducing System for Municipal Networks

Model 720 provides:

- Easy maintenance
- Minimized pressure loss
- Easy addition of features
- Moderated valve reaction
- Moderate downstream pressure fluctuations
- Reduced noise, vibration and wear

Additionally to the Model 720 Pressure Reducing Valve, BERMAD recommends that the system also include:

- Model 73Q offers a lower total cost of ownership
- Reduces wear and tear on downstream equipment
- Lower maintenance costs

Features and Benefits

- Low pressure driven – independent operation
- Inflow serviceable – Easy maintenance
- Double chamber design
- Moderated valve reaction
- Protected diaphragm
- Flexible design – Easy addition of features
- Variety of accessories – Protects diaphragm
- “V” or “A” valve body – Modifies pressure loss
- Sanitary straight flow – Non-corrosive flow
- Stainless Steel raised seat – Cavitation damage resistant
- Optional free, full bore – Incorporating reliability
- V-Port throttling plug – Low flow stability

Major Additional Features

- UL listed for his protection - FF-720-1A
- Low cost control – 720-05
- Control valve – 720-25
- Dual valve and check valves – 720-25
- Proportional – 720-PD
- Automatic regulation control – 720-03
- High sensitivity pilot – 720-12
- Emergency pressure reducing valve – 720-PD-09
- Downstream over pressure guard – 720-45
- Electrically selected multi-level setting – 720-45
- Electronic multi-level setting - Type 6 - 720-47
- Electronic pressure reducing valve – 720-03

See relevant BERMAD publication.

For high pressure systems, see BERMAD publication. 720 PD Pressure Reducing Valve.

For high pressure systems, see BERMAD publication. 720 FB Pressure Reducing Valve.

For high pressure systems, see BERMAD publication. 720 EB Pressure Reducing Valve.
The integral orifice between the lower control chamber and valve outlet moderates valve reactions. Should downstream pressure fall below pilot setting, the pilot releases accumulated pressure, and the main valve opens. Should this pressure rise above pilot setting, the pilot throttles, enabling pressure in the upper control chamber to accumulate, downstream pressure.

Radial seal disk shall include a resilient seal and shall be capable of accepting a V-Port Throttling Plug by bolting. As an integral unit. The stainless steel valve shaft shall be center guided by a bearing in the separating partition. The replaceable diaphragm and the main valve. The entire actuator assembly (seal disk to top cover) shall be removable from the valve body.

Quality Assurance:
Hydraulically tested and factory adjusted to customer requirements.

阀体:
S-accumulated experience address these issues and provide appropriate solutions.

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

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, coated 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 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 certified as a complete drinking water valve according to NSF, WRAS, and other recognized standards.

Higher Zone Installation
In addition to the municipal pressure reducing system for a high-rise building, BERMAD recommends the system also includes:
- 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(es) signals a control panel of excessive downstream pressure.
- Emergency Valve(s) is fully open during normal operation. Triggered by the control panel, it becomes a proportional pressure reducing valve.

Lower Zone (Two-Stage) Installation
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, absorbing part of the high differential pressure. By spreading the load of pressure reducing onto two components, cavitation damage and noise are reduced.

For high-differential pressure systems, see BERMAD publication 720-PD Proportional Pressure Reducing Valve.
For high-pressure systems, see BERMAD publication 720 PD Proportional Actuated Pressure Reducing Valve.
**BERMAD Waterworks**

**Model 720**

**Operation**

The Model 720 is a pilot controlled valve equipped with an adjustable, 2-Way pressure reducing pilot. The needle valve [1] continuously allows flow from the valve inlet into the upper control chamber [2]. The pilot [2] senses downstream pressure. Should the pressure rise above pilot setting, the pilot throttle, enabling valve 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 module[s] 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 tires. The body and cover shall be ductile iron. All external bolts, nuts, and studs shall be Duallite® cast steel. All valve components shall be accessible and serviceable without removing the valve from the pipelines.

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 (seat disk to top cover) shall be removable from the valve body.

Control System: The control system shall consist of a 2-Way adjustable, direct acting, pressure reducing pilot valve, a needle valve, a downstream cock valve, and a filter. All fittings shall be forged brass or stainless steel. The assembled valve shall be certified as a complete drinking water valve according to NSF, WRAS, and other recognized standards.

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.

Pressure Reducing Systems in High-Rise Buildings

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

- **Supply cut-off**: in 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 spaces. Extraneous noise and maintenance activities are to be avoided.
- **The main supply line**: of high-rise buildings is expected to greater head at lower zones where 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 Valve in conjunction with BERMAD’s accumulated experience address these issues and provide appropriate solutions.

**Higher Zone Installation**

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 unavailable 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** signals a control panel of excessive downstream pressure.
- **Emergency Valve** (if in full open during normal operation. Triggered by the control panel, it becomes a proportional pressure reducing valve.)

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

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 include:

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

![Diagram of Pressure Reducing Systems in High-Rise Buildings](Image)

For high differential pressure systems, see BERMAD publication 720-PD Proportional Pressure Reducing Valve.

For high pressure systems, see BERMAD publication 300 Pilot Actuated Pressure Reducing Valve.

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**Notes**

1. Stainless Steel: SS304
2. For high pressure systems, see BERMAD publication 720-PD Proportional Pressure Reducing Valve.
3. By-pass Pressure Reducing Valve Model 720
4. Strainer Model 70F
5. Emergency Pressure Reducing Valve Model 720-PD-59
6. Primary/Secondary Pressure Reducing Valve Model 720
7. Pressure Switch
8. Emergency Pilot Pressure Reducing Valve Model 720-PD
9. Emergency Pressure Reducing Valve Model 720
For high pressure systems, see BERMAD publication 820 Piston Actuated Pressure Reducing Valve.

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

- Greater Model 720 than others depends on piping or valve operation
- Relief Valve Model 720 provides:
- Protection against momentary pressure peaks
- Visual indication of need for maintenance
- By-Pass Pressure Reducing Valve assist on maintenance costs. The larger (more costly to maintain) valve operates during peak demand. The smaller by-pass valve can operate during times of the larger valve, achieving greater return on investment.

For high pressure systems, see BERMAD publication 720-45 Pressure Reducing Valve. For high pressure systems, see BERMAD publication 820 Piston Actuated Pressure Reducing Valve.

**Pressure Reducing System – Typical Installation**

**How to Order**

- Pressure Reducing Valve
- Model 720
- Ensure not to choose a valve that is too large

**Technical Data**

**Dimensions and Weights**

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<thead>
<tr>
<th>Size Range (mm)</th>
<th>Flow Rate (gpm)</th>
<th>Fitting (NPT)</th>
<th>Pressure Loss (psi)</th>
<th>Flow Chart</th>
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**Features and Benefits**

- Low pressure driven – Independent operation
- In-line serviceable – Easy maintenance
- Double chamber design
- Over-ride valve reaction
- Protected diaphragm
- Flexible design – Easy addition of features
- Variety of accessories – Perfect mission matching
- “Y” or angle, wide body – Maintained pressure losses
- Non-turbulent flow – Non-turbulent flow
- Stainless steel raised seat – Corrosion damage-resistant
- Obstruction free, full bore – Incorporating reliability
- V-Port Throttling Plug – Low flow stability

**Major Additional Features**

- UL Listed for fire protection – FF-720-1A
- Solenoid control – 720-50
- Check valves – 720-30
- Control valve & check valves – 720-30
- Proportional – 720-20
- Automatic regulation override – 720-09
- High sensitivity pilot – 720-12
- Emergency pressure reducing valve – 720-09
- Downstream over pressure guard – 720-48
- Electrically selected multi-level setting – 720-45
- Electronic multi-level setting – Type 4 – 720-47
- Electronic pressure reducing valve – 720-03

See relevant BERMAD publications.