



# Flow Control and Pressure Reducing Valve

- Controlling over demand & pressure
- Balancing flow via parallel pressure reducing valves
- Controlling pipeline fill rate
- Pump cavitation & system over pressure protection
- Compensating during groundwater drawdown



The Model 772-U Flow Control and Pressure Reducing Valve is a hydraulically operated, diaphragm actuated control valve with two independent functions. It maintains both pre-set maximum flow and reduces higher upstream pressure to lower constant downstream pressure, regardless of varying demand or upstream pressure.

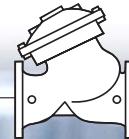
## Features and Benefits

- **Line pressure driven** – Independent operation
- **Hydraulic flow sensor (upstream installation)**
  - No moving parts
  - No electronic components
  - No need for flow straightening
- **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

- Solenoid control – 772-55-U
- Check feature – 772-20-U
- Solenoid control & check feature – 772-25-U
- Downstream over pressure guard – 772-48-U

See relevant BERMAD publications.



#### Operation

The Model 772-U is a pilot controlled valve equipped with an orifice assembly and two adjustable, 2-Way pilots for Flow Control (FC) and Pressure Reducing (PR), operating independently in series.

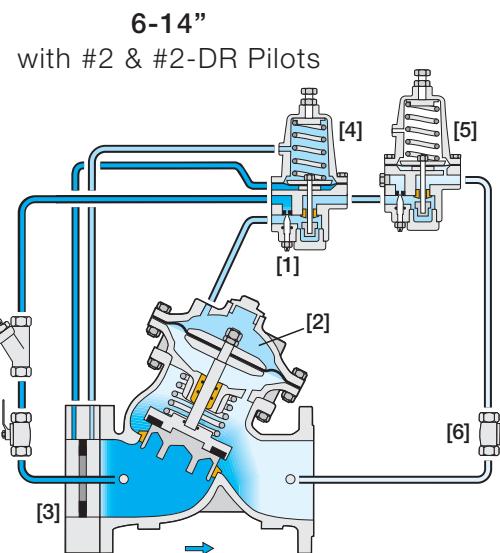
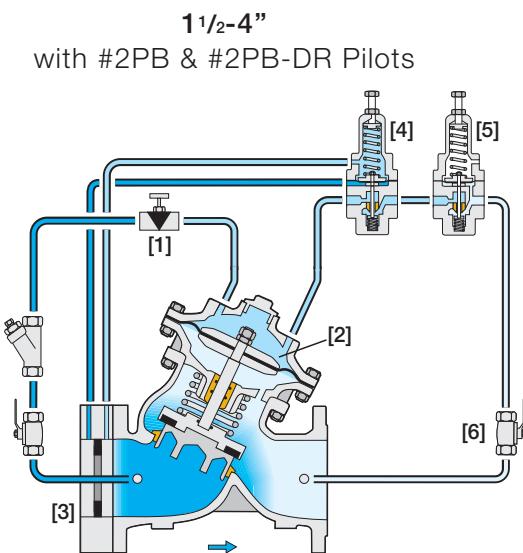
The needle valve [1] continuously allows flow from valve inlet into the upper control chamber [2].

Should orifice plate [3] differential pressure rise above FC pilot [4] setting, the pilot throttles causing pressure to accumulate in the upper control chamber. The main valve throttles closed maintaining maximum flow at pilot setting.

Should this differential pressure fall below FC pilot setting, the pilot releases accumulated pressure to the main valve outlet through the held open PR pilot [5] causing the main valve to modulate open.

Should opening the main valve cause downstream pressure to rise above PR pilot setting, the pilot closes, causing the main valve to throttle closed, reducing downstream pressure.

The needle valve controls the closing speed. The downstream cock valve [6] enables manual closing.



**Note:** For 16" and larger valves, refer to the relevant notes at the last page.

#### Engineer Specifications

The Flow Control and Pressure Reducing Valve shall maintain both pre-set maximum flow and reduce higher upstream pressure to lower constant downstream pressure, regardless of varying demand or 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 flow pilot valve, an adjustable direct acting pressure reducing pilot valve, an orifice plate, a needle valve, isolating cock valves, and a filter. The orifice shall be attached to the main valve inlet. All fittings shall be forged brass or stainless steel. The assembled valve shall be hydraulically tested and factory adjusted to customer requirements.

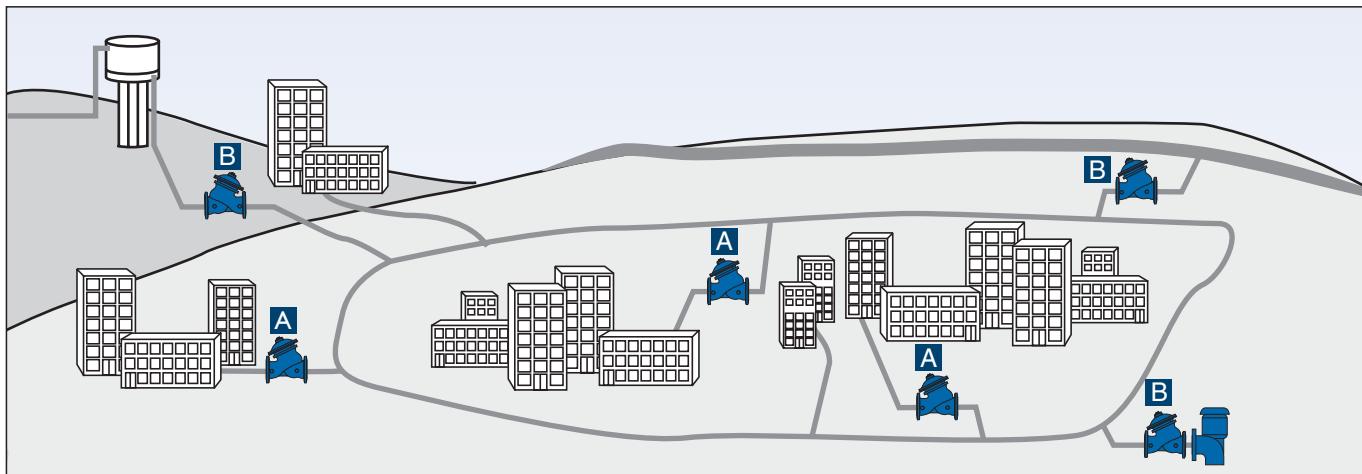
**Quality Assurance:** The valve manufacturer shall be certified according to the ISO 9001 Quality Assurance Standard. The main valve shall be certified as a complete drinking water valve according to NSF, WRAS, and other recognized standards.



#### Typical Applications

##### Distribution Networks

The Model 772-U synergizes the advantages of flow control and pressure-reducing in one valve.



##### Better than Just Flow Control

System design starts from expected flow range that determines major system components:

- Pump stations: Characteristics, location, quantity
- Supply lines: Layout, class, size
- Reservoirs: Location, volume, head

Significant deviation from designed flow range might disrupt water supply or even damage system components. Appropriate design, placement, and use of the Model 770-U protects the system from excessive flow.

When pressure reducing is also required, choosing the Model 772-U **[A systems]**, instead of the Model 770-U, completes the solution.

##### Better than Just Pressure Reducing

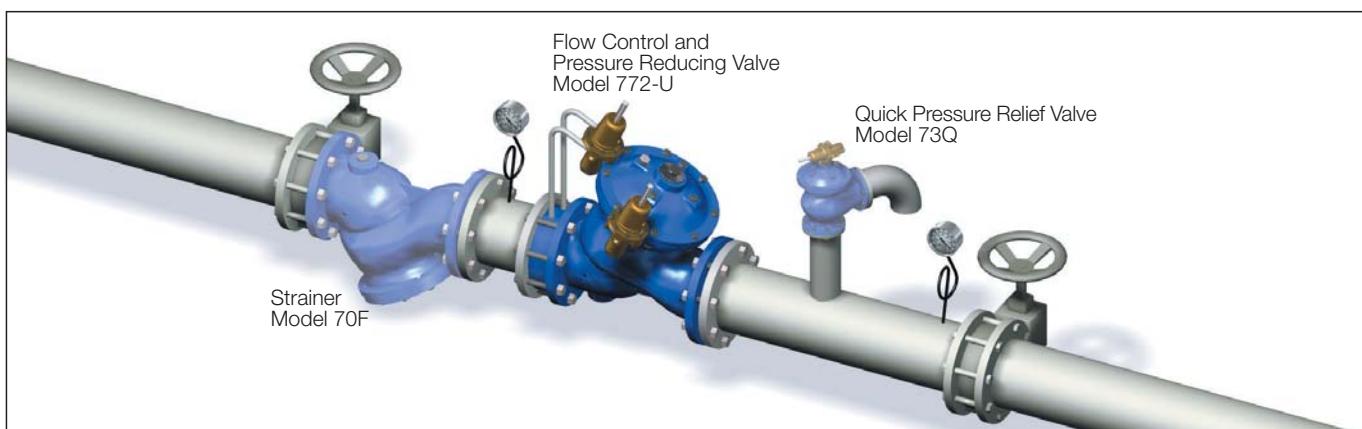
Where multiple sources with various pressures feed into a common network, multiple pressure reducing valves are installed to control network pressure. Their pressure settings are adjusted so that valves progressively "step-in" and "step-out" resulting in the minimum number of valves of the smallest size operating at any time.

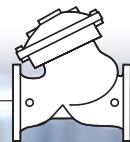
Where downstream pressure (as with the Model 720) is the only controlled characteristic, flow through any of the valves might rise above recommended values to damage the valves and cause each "step" to be fuzzy.

The Model 772-U **[B systems]** limits flow through each valve resulting in:

- Protection against excessive flow cavitation damage
- Sharp valve "step-in" and "step-out"

#### Typical Installation





#### Technical Data

##### Dimensions and Weights

Size	A, B		C		L		H		Weight	
mm inch	mm inch	mm inch	mm inch	mm inch	mm inch	mm inch	kg lbs	kg lbs	kg lbs	kg lbs
40 1 1/2"	350	14	180	7	205	8.1	239	9.4	9.1	20
50 2	350	14	180	7	210	8.3	244	9.6	10.6	23
65 2 1/2"	350	14	180	7	222	8.7	257	10.1	13	29
80 3"	370	15	230	9	250	9.8	305	12.0	22	49
100 4"	395	16	275	11	320	12.6	366	14.4	37	82
150 6"	430	17	385	15	415	16.3	492	19.4	75	165
200 8"	475	19	460	18	500	19.7	584	23.0	125	276
250 10"	520	21	580	23	605	23.8	724	28.5	217	478
300 12"	545	22	685	27	725	28.5	840	33.1	370	816
350 14"	545	22	685	27	733	28.9	866	34.1	38	840
400 16"	645	26	965	38	990	39.0	1108	43.6	846	1865
450 18"	645	26	965	38	1000	39.4	1127	44.4	945	2083
500 20"	645	26	965	38	1100	43.3	1167	45.9	962	2121

The orifice assembly adds 20 mm to valve length.

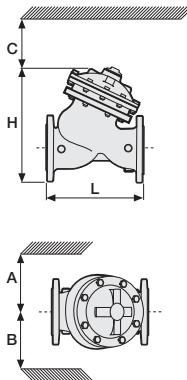
Data is for Y-pattern, flanged, PN16 valves

Weight is for PN16 basic valves

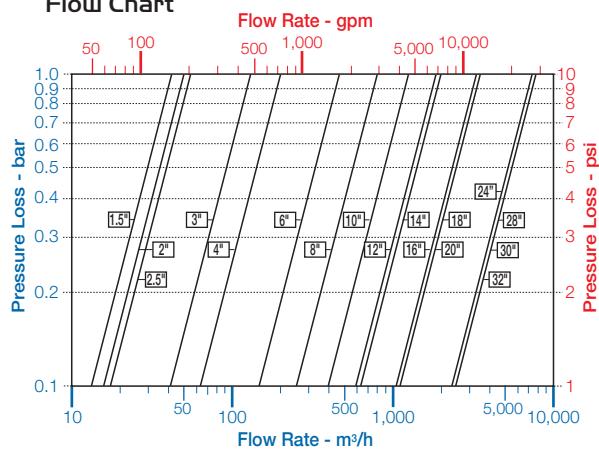
"C" enables removing the actuator in one unit

"L", ISO standard lengths available

For more dimensions and weights tables, refer to Engineering Section



##### Flow Chart



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

#### Main Valve

**Valve Patterns:** "Y" (globe) & angle

**Size Range:** 1 1/2"-32" (40-800 mm)

**End Connections (Pressure Ratings):**

**Flanged:** ISO PN16, PN25  
(ANSI Class 150, 300)

**Threaded:** BSP or NPT

**Others:** Available on request

**Working Temperature:**

Water up to 80°C (180°F)

**Standard Materials:**

**Body & Actuator:** Ductile Iron

**Internals:**

Stainless Steel, Bronze & coated Steel

**Diaphragm:**

NBR Nylon fabric-reinforced

**Seals:** NBR

**Coating:**

Fusion Bonded Epoxy, RAL 5005 (Blue)

NSF & WRAS approved or Electrostatic

Polyester Powder, RAL 6017 (Green)

#### Control System

**Standard Materials:**

**Accessories:**

Bronze, Brass, Stainless Steel & NBR

**Tubing:** Copper or Stainless Steel

**Fittings:** Forged Brass or Stainless Steel

**Pilot Standard Materials:**

**Body:** Brass, Bronze or Stainless Steel

**Elastomers:** NBR

**Springs:** Galvanized Steel or Stainless Steel

**Internals:** Stainless Steel

- For Flow Pilot Valve Selection table, refer to the Model 770-U.

- For pressure reducing "Pilot Valve Selection" refer to the Model 720.

#### Orifice Assembly Standard Materials:

**Body:** Fusion bonded epoxy Steel or Stainless Steel

**Orifice Plate:** Stainless Steel

**Sensing Ports:** 1/8" NPT

- Standard (calculated) differential pressure: 0.4 bar (5.5 psi)
- When minimum head loss is essential and flow velocity is higher than 1.0 m/sec, consider using the Model 770-j equipped with a pitot tube flow sensor and high sensitivity flow pilot #7.

#### How to Order

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

Sector	Size	Primary Feature	Additional Feature	Pattern	Body Material	End Connections	Coating	Voltage & Position	Tubing & Fittings	Additional Attributes
WW	6"	772	00	Y	C	16	EB	-	CB	UVI
Waterworks	1 1/2" - 32"	Flow Control and Pressure Reducin		Oblique (up to 20") Angle (up to 18") Globe (24-32" only)	Y A G		Epoxy FB Blue Polyester Green Polyester Blue Uncoated	EB PG PB UC	Copper Tubing & Brass Fittings Plastic Tubing & Brass Fittings St. St. 316 Tubing & Fittings	CB PB NN
No Additional Feature	00			Ductile Iron Standard Cast Steel St. Steel 316 Nickel Alumin. Bronze	C S N U			Valve Position Indicator Large Control Filter Orifice Assembly V-Port Throttling Plug Electric Limit Switch Valve Position Transmitter St. St. 316 Control Accessories	I F U V S Q	
Closing and Opening Speed-Control	03	ISO-16	16	24VAC/50Hz - N.C. 24VAC/50Hz - N.O.	4AC 4AO	24VDC - N.C. 24VDC - N.O.	4DC 4DO	St. St. 316 Internal Trim (Closure & Seat) St. St. 316 Actuator Internal Assembly	N	
Check Valve	20	ISO-25	25	24VDC - N.O.	4DC				T	
Solenoid Controlled & Check Valve	25	ANSI-150	A5	24VDC - N.O.	4DO				D	
Hydraulic Control	50	ANSI-300	A3	24VDC - L.P.	4DP				R	
Solenoid Controlled	55	JIS-16	J6	220VAC/50-60Hz N.C. 220VAC/50-60Hz N.O.	2AC 2AO			Delrin Bearing Viton Elastomers for Seals & Diaphragm Pitot Tube	E	
Electric Override	59	JIS-20	J2						J	
Multiple choices permitted							Use when additional electric control feature is selected	Multiple choices permitted		



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