

700 Series

# Powered Opening Solenoid Controlled Valve

- Zero pressure system control
- Network management optimizing
- Low pressure burst excess flow shut-off
- Reservoir distribution routing
- Filter drain-off prior to air scrubbing
- Gravity filter bed outlet control
- Sewerage "fill and flush" systems

The Model 710-B Powered Opening Solenoid Controlled Valve is a double chambered, hydraulically operated, diaphragm actuated control valve that either opens fully, regardless of valve differential pressure, or shuts off in response to electric signals.



# Features and Benefits

- Line pressure driven
  - Independent operation
  - No motor required
  - Long term drip tight sealing
- Solenoid controlled
  - Low power consumption
  - Low cost wiring
  - □ Wide ranges of pressures and voltages
  - □ Normally Open, Normally Closed or Last Position
- In-line serviceable Easy maintenance
- Double chamber
  - □ Full powered opening and closing
  - Non-slam closing characteristic
  - □ Protected diaphragm
- Semi-straight flow Smooth flow characteristics
- "Y" or angle, wide body Minimized pressure loss
- Flexible design Easy addition of features

# **Major Additional Features**

- Opening & closing speed control 710-03-B
- Relief override 710-3Q-B
- Flow over-the-seat (fail-safe close) **710-BO**
- Closing surge prevention 710-49-B

See relevant BERMAD publications.





700 Series

Model 710-B

## **Operation**

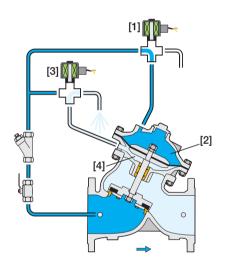
The Model 710-B is a solenoid controlled valve equipped with two 3-Way solenoid pilots.

The Normally Open solenoid [1] applies pressure to the upper control chamber [2], harnessing line pressure to power the diaphragm actuator while the Normally Closed solenoid [3] vents the lower control chamber [4], closing the main valve. Energizing the solenoids vents the upper control chamber pressure while applying line pressure to the lower control chamber, causing the main valve to powerfully open.

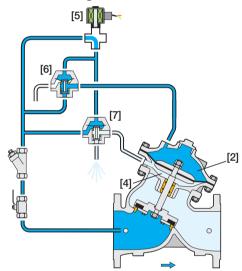
In cases where pipeline water is contaminated (corrosive, debris laden) or where vacuum conditions exist, external control fluid is often used.

For 10" and larger valves, a single solenoid [5] commands two accelerators [6] & [7] (replacing solenoids [1] & [3] used for the smaller valves) to powerfully open and close the main valve.

Size Range 11/2-8"



Size Range 10-20"



# **Engineer Specifications**

The Powered Opening Solenoid Controlled Valve shall either open fully, regardless of valve differential pressure, or shut off, in response to an electric signal.

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 actuator assembly shall not consist of any closing spring nor spring-like device. 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:** For sizes 1½-8", the control system shall consist of two 3-Way solenoids, an isolating cock valve, and a filter. For sizes 10" and larger, the control system shall consist of one 3-Way solenoid, two accelerators, isolating cock valve, and a filter. 4/2 and 5/2 solenoids shall be acceptable as well. All fittings shall be forged brass or stainless steel. The assembled valve shall be hydraulically tested.

**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.



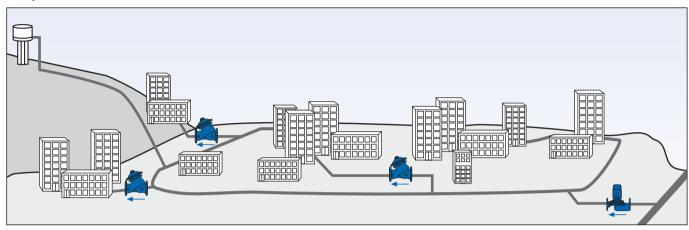


700 Series

Model 710-B

# **Typical Applications**

**Complex Distribution Networks** 



In complex distribution networks, management optimization of sources and consumers is essential:

- Sources are of various qualities and costs
- Source quality varies throughout the year
- Consumers demand various qualities
- Zones require isolation for maintenance
- Burst occurrence requires management
- Reservoirs call for systematic refreshing

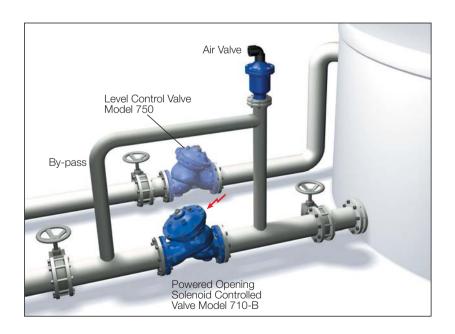
Low pipeline pressure normally exists at reservoir sites and sometimes occurs at other system points. The Model 710-B, as a powered opening valve, is well suited to meet all the above needs and more, even at very low line pressure.

It should be included for placement in multiple locations during the design stage or with changing needs.

## Reservoir Outlet Routing

In this reservoir system, the level is normally allowed to drop only as far as the level limiting by-pass. The Model 710-B fully opens, at near zero head, to allow flow of lower level "reserve" water for high priority or emergency services. In other reservoir contexts, the Model 710-B fulfills several other functions:

- Routing to multiple consumers, such as pumping station, lower lying consumers, other reservoirs and more
- Reservoir outlet shut-off upon distribution system burst
- Connection between two reservoirs when head differential is sometimes near zero







# 700 Series

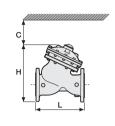
## Model 710-B

#### **Technical Data**

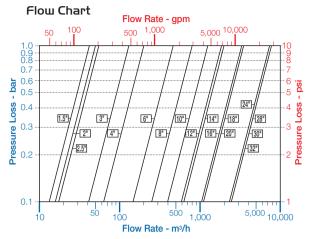
### Dimensions and Weights

Size		A, B		С		L		H		Weight	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	kg	lbs
40	11/2"	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	21/2"	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	381	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

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







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: 11/2-32" (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 Solenoid Standard Materials: Body: Brass or Stainless Steel

Elastomers: NBR or FPM Enclosure: Molded epoxy Solenoid Electrical Data:

Voltages:

(ac): 24, 110-120, 220-240, (50-60 Hz) (dc): 12, 24, 110, 220

**Power Consumption:** 

(ac): 30 VA, inrush; 15 VA (8W), holding or 70 VA, inrush; 40 VA (17.1W), holding

(dc): 8-11.6W

Values might vary according to specific solenoid model

#### Solenoid Selection

	Solenoid	d Model	Accelerator Model			
Valve Size	330 (2.0 mm)	311 (1.0 mm)	54	58		
11/2-8"						
11/2-6"						
10-20"						
8-20"						
24 -32"						
24 -32"		•				
PN	16		PN 25			

Option: 4/2 solenoid with manual override is available for size range 1½-20", maximum operating pressure: 6.5 bar (100 psi), 24V AC only.

**Accelerator Standard Materials:** Body: Brass or Stainless Steel Internals: Stainless Steel & Brass Elastomers: NBR or FPM

### How to Order

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

