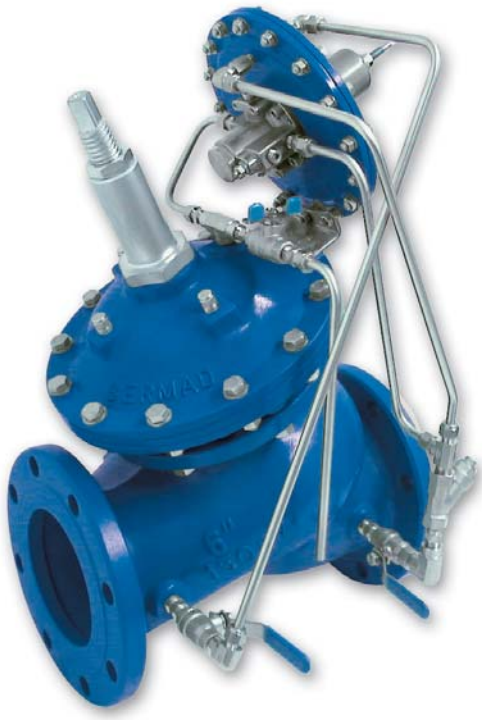
Burst Control Valve

Excessive Flow

- Zone shut off at burst
  - "Older" burst susceptible networks
  - Outlets from reservoir at earthquake risk
  - Vulnerable network infrastructure facilities
  - Networks at risk of mechanical damage



The Model 790-M Burst Control Valve is a hydraulically operated, diaphragm actuated control valve that upon sensing flow in excess of setting shuts off and locks drip tight, until it is manually reset. As long as flow is lower than the setting, the valve remains fully open, minimizing head loss.

Features and Benefits

- **Line pressure driven** – Independent operation
- **Mechanical flow stem**
  - Field adjustable
  - No moving parts
  - No electronic components
- **Highly sensitive hydraulic pilot**
  - Requires minimal valve-ΔP
  - Tight setting window
- **In-line serviceable** – Easy maintenance
- **Double chamber**
  - Moderated valve reaction
  - Protected diaphragm
  - No spring - Full opening
- **Flexible design** – Easy addition of features
- **"Y" or angle, wide body** – Minimized pressure loss
- **Obstacle free, full bore** – Uncompromising reliability

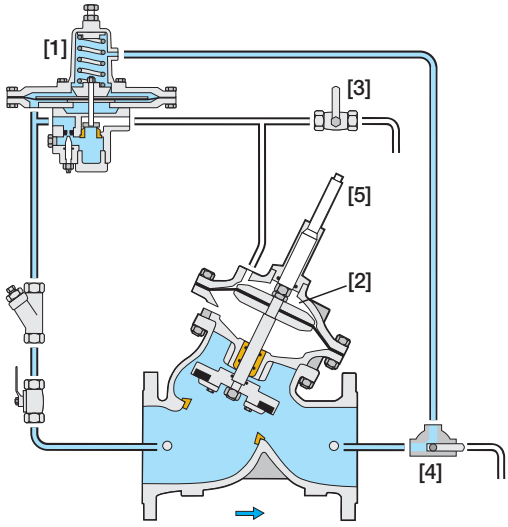
Major Additional Features

- Closing at pressure drop – **790-91**
- Pressure reducing – **792-U**
- Solenoid control – **790-55-M**
- Electric override – **790-59-M**

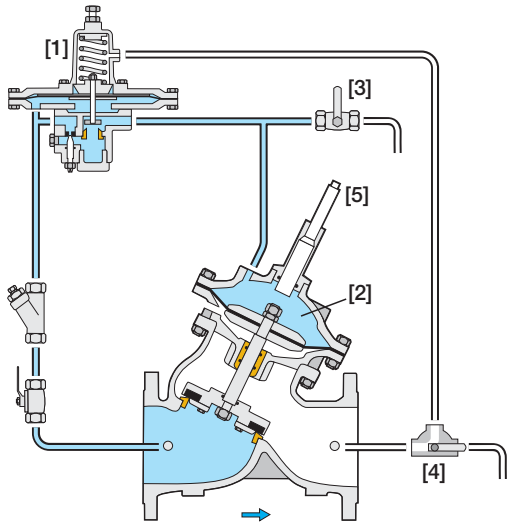
See relevant BERMAD publications.

Operation

The Model 790-M is a pilot controlled valve equipped with an adjustable, 2-Way, high sensitivity, differential pressure sustaining pilot.
The pilot **[1]**, senses valve differential pressure.
Should that pressure rise above pilot setting, the pilot opens, introducing upstream pressure into the upper control chamber **[2]**, causing the main valve to begin an irreversible “close & lock” process.
Opening and resetting the main valve requires manual intervention by means of the manual reset valve **[3]**.
When differential pressure is below pilot setting, the pilot blocks upstream pressure from the control chamber, and the main valve remains fully open.
The manual test valve **[4]** enables simulation of burst conditions and valve response. After testing, reset procedure is required.
The mechanical flow stem **[5]** enables adjusting the closing point, to meet various flow regimes.



Valve Open (normal flow)



Valve Closed & Locked

Engineer Specifications

Upon sensing flow in excess of setting, the Burst Control Valve shall shut off and lock drip tight until it is manually reset. As long as flow is lower than the setting, the valve shall remain fully open, minimizing head loss.

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 contain any closing spring or 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.

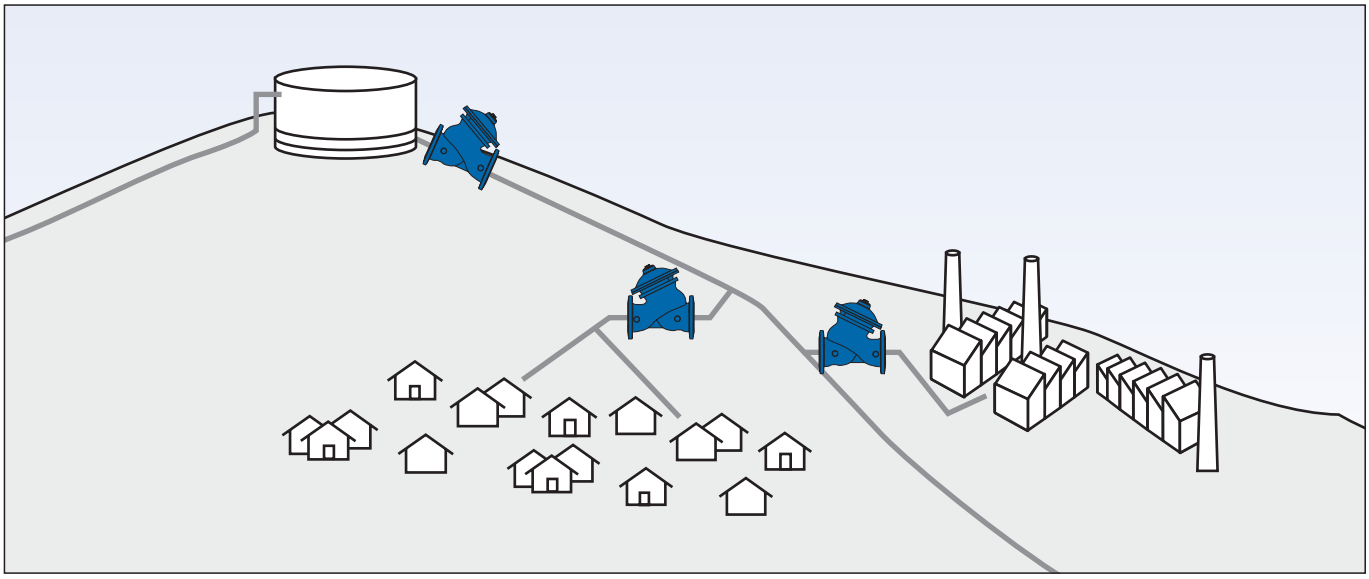
Control System: The control system shall consist of a 2-Way adjustable, direct acting, differential pressure sustaining pilot valve, a mechanical flow stem, cock valves, and a filter. All fittings shall be forged brass or stainless steel. The assembled valve shall be hydraulically tested and factory 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.

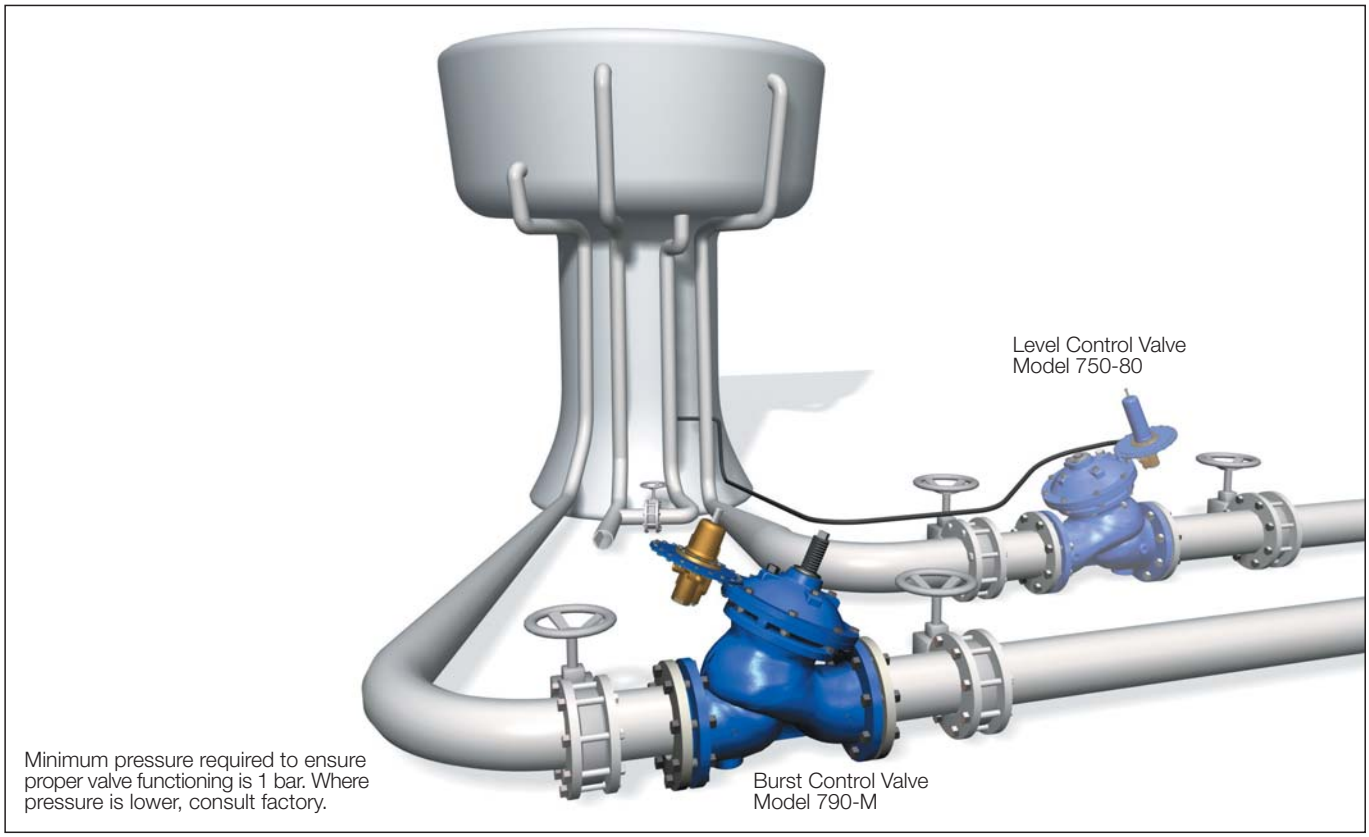
Typical Applications

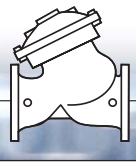
Burst Control Valves in a Network

Every water system is vulnerable to bursts, whether due to system problems or external mechanical damage. This illustration shows a reservoir feeding a downhill line with lower elevation consumers.
In case of burst, each Model 790-M protects against flooding lower elevation consumers.
The Model 790-M, installed at the reservoir outlet, also protects against reservoir emptying.



Typical Installation





700 Series

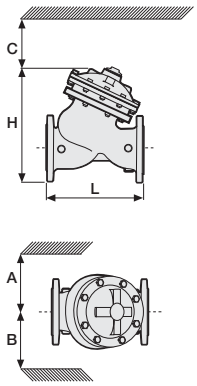
Model 790-M

Technical Data

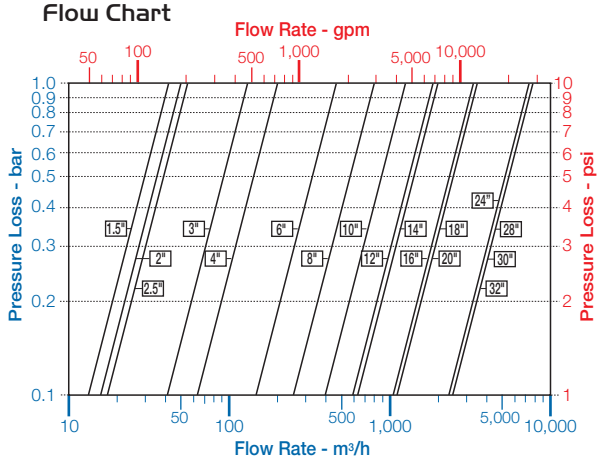
Dimensions and Weights

Size		A, B		C		L		H		Weight	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	kg	lbs
40	1½"	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	2½"	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



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: 1½–32" (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
Diaphragm covers: Fusion bonded epoxy coated steel
Elastomers: NBR
Springs: Stainless Steel
Internals: Stainless Steel

Pilot Valve Selection

Valve Size	PN	Pilot Type			
		#83	#3	#83HC	#3HC
1½-14"	16	■			
40-350 mm	25		■		
16-32"	16			■	
400-800 mm	25				■

■ Pilots are modified to: differential remote sensing-model "DR".

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	Additonal Attributes
WW	6"	790	00	Y	C	16	EB	–	CB	M

Sector: WW – Waterworks

Size: 6" – 1½ - 32"

Primary Feature: 790 – Burst Control

Additional Feature: 00

No Additional Feature	00
Closing and Opening Speed Control	03
Check Valve	20
Solenoid Controlled & Check Valve	25
Hydraulic Remote Controlled	50
Solenoid Controlled	55
Electric Override	59

Multiple choices permitted

Pattern: Y

Oblique (up to 20")	Y
Angle (up to 18")	A
Globe (24-32" only)	G

Body Material: C

Ductile Iron Standard	C
Cast Steel	S
St. Steel 316	N
Nickel Alumin. Bronze	U

End Connections: 16

ISO-16	16
ISO-25	25
ANSI-150	A5
ANSI-300	A3
JIS-16	J6
JIS-20	J2

Coating: EB

Epoxy FB Blue	EB
Polyester Green	PG
Polyester Blue	PB
Uncoated	UC

Voltage & Position: –

24VAC/50Hz - N.C.	4AC
24VAC/50Hz - N.O.	4AO
24VDC - N.C.	4DC
24VDC - N.O.	4DO
24VDC - L.P.	4DP
220VAC/50-60Hz N.C.	2AC
220VAC/50-60Hz N.O.	2AO

Use when additional electric control feature is selected

Tubing & Fittings: CB

Copper Tubing & Brass Fittings	CB
Plastic Tubing & Brass Fittings	PB
St. St. 316 Tubing & Fittings	NN

Additonal Attributes: M

Flow Stem	M
Large Control Filter	F
Orifice Assembly	U
Pitot Tube	j
St. St. 316 Control Accessories	N
St. St. 316 Internal Trim (Closure & Seat)	T
St. St. 316 Actuator Internal Assembly	D
Delrin Bearing	R
Viton Elastomers for Seals & Diaphragm	E

Multiple choices permitted

info@bermad.com • www.bermad.com