

## Burst Control Valve Excessive Flow

### Model 790-M

- 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.



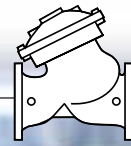
### Features and Benefits

- **Line pressure driven** – Independent operation
- **Mechanical flow stem**
  - Field adjustable
  - No moving parts
  - No electronic components
- **Highly sensitive hydraulic pilot**
  - Requires minimal valve- $\Delta P$
  - 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.

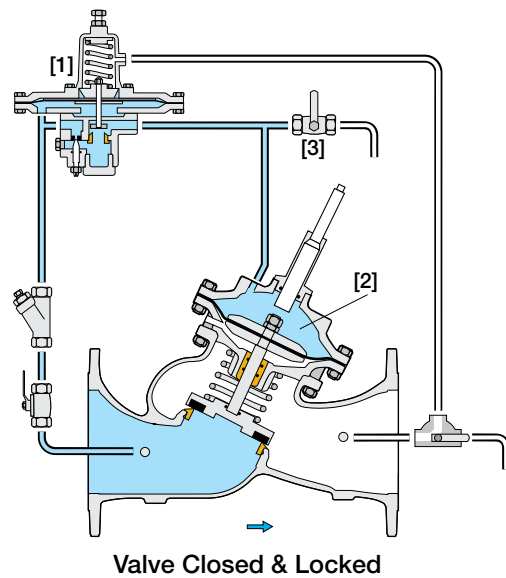
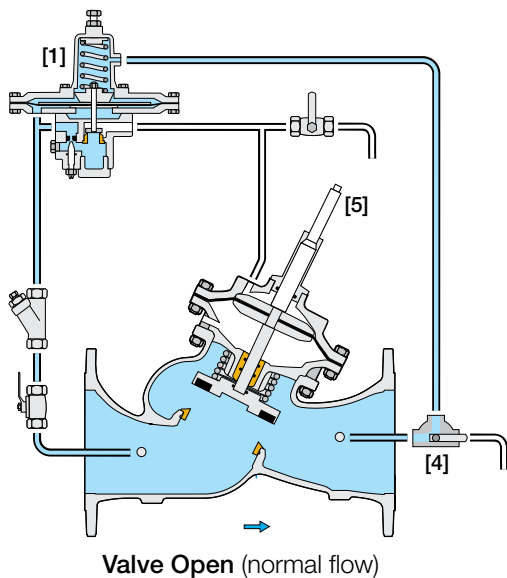
Should that pressure rise above pilot setting, the pilot opens, introducing upstream pressure into the upper control chamber [2], causing the main valve to begin an irreversible “close & lock” process.

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.



## Pilot System Specifications

### Standard Materials:

#### Pilot:

Body & Cover: Brass or Stainless Steel  
 Elastomers: Synthetic Rubber  
 Spring: Stainless Steel  
 Internal parts: Stainless Steel  
 Diaphragm Covers: Fusion bonded epoxy coated Steel or Stainless Steel

#### Tubing & Fittings:

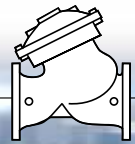
Stainless Steel 316 or Copper & Brass

#### Accessories:

Stainless Steel 316, Brass and Synthetic Rubber Elastomers

### Notes:

- Burst flow settings should be at least 25% higher than the maximum allowed system flow
- Recommended continuous flow velocity: 0.3-6.0 m/sec ; 1-20 ft/sec
- Minimum operating pressure: 1.0 bar ; 14.5 psi. For lower pressure requirements consult factory



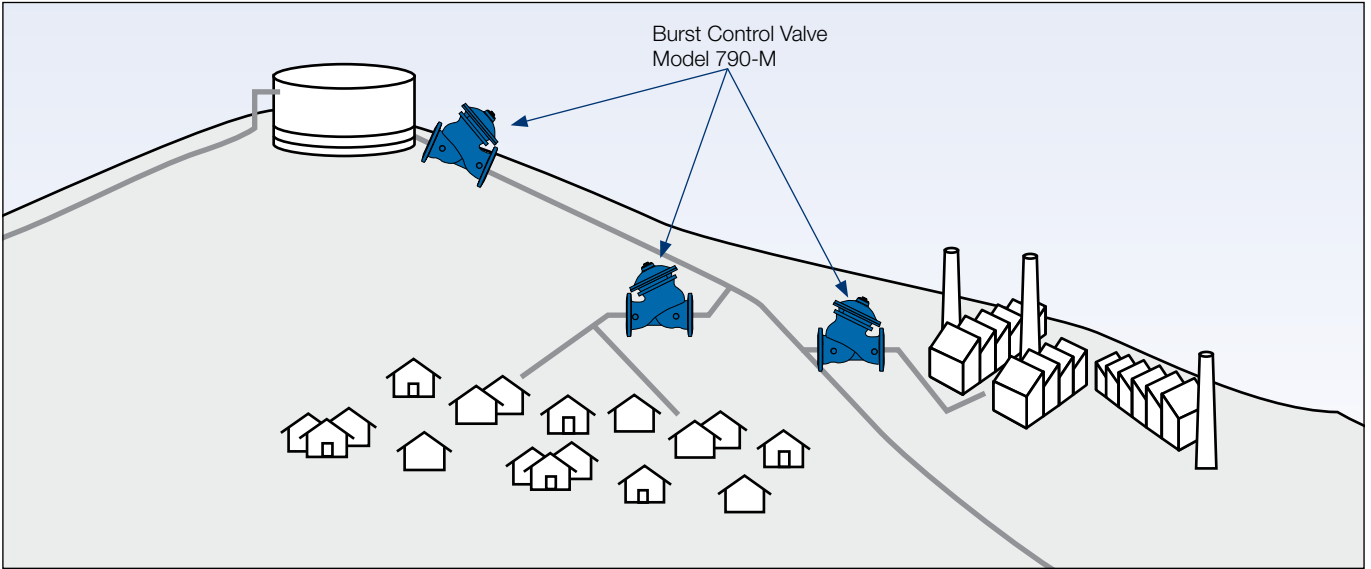
## Typical Applications

### Burst Control Valves in a Network

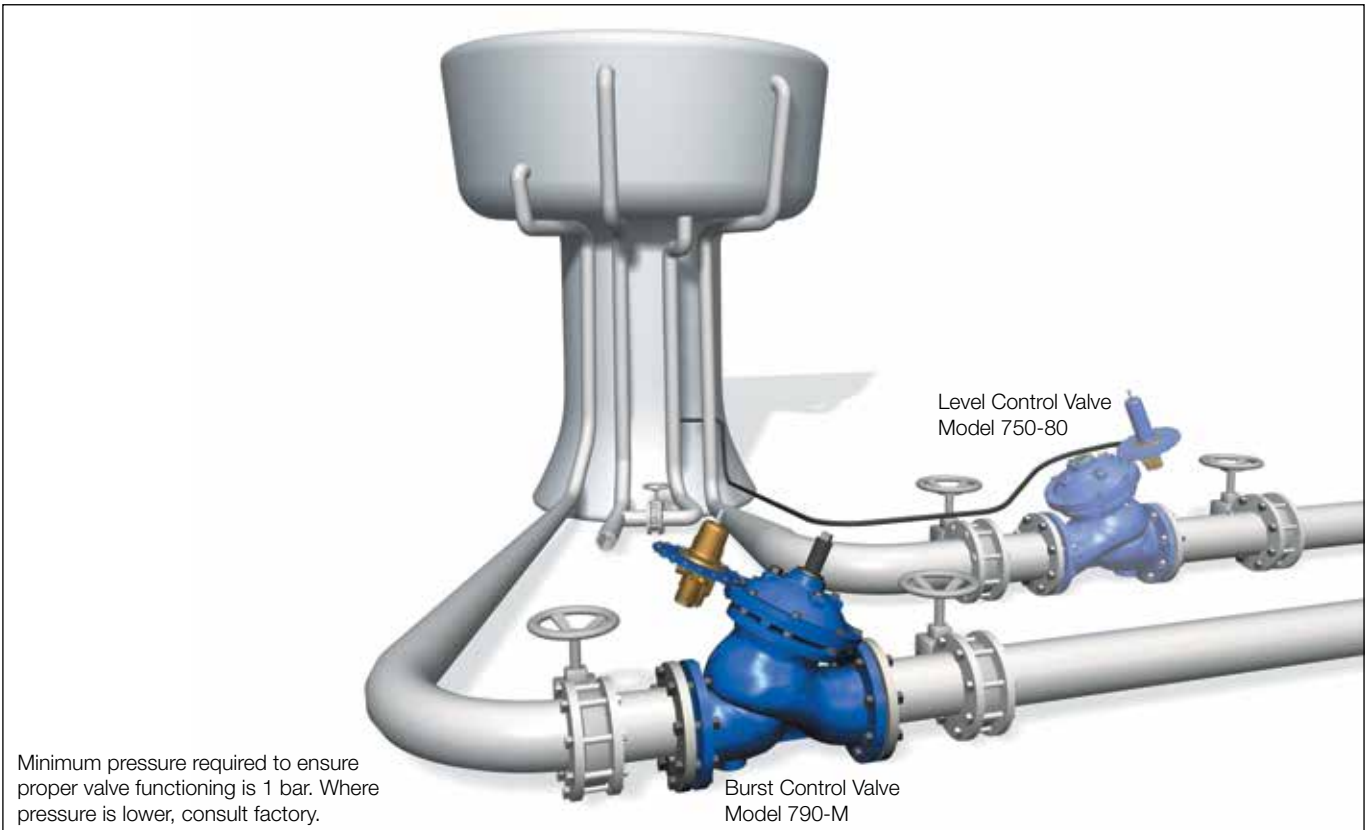
Every water system is vulnerable to bursts, whether due to system problems or external mechanical damage. This illustration shows a reservoir feeding a downhill line with lower elevation consumers.

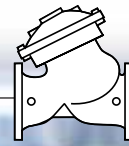
In case of burst, each Model 790-M protects against flooding lower elevation consumers.

The Model 790-M, installed at the reservoir outlet, also protects against reservoir emptying.



## Typical Installation





### Technical Data

**Size Range:** DN40-900 ; 1½-36"

**End Connections (Pressure Ratings):**

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

**Threaded:** BSP or NPT

**Others:** Available on request

**Valve Patterns:** "Y" (globe) & angle, globe (DN600-900 ; 24"-36")

**Working Temperature:** Water up to 80°C ; 180°F

**Standard Materials:**

**Body & Actuator:** Ductile Iron

**Internals:** Stainless Steel, Bronze & coated Steel

**Diaphragm:** Synthetic Rubber Nylon fabric-reinforced

**Seals:** Synthetic Rubber

**Coating:** Fusion Bonded Epoxy, RAL 5005 (Blue) approved for drinking water or Electrostatic Polyester Powder

### Differential Pressure Calculation

$$\Delta P = \left( \frac{Q}{Kv; Cv} \right)^2$$

**ΔP** = Differential Pressure for fully open valve (bar; psi)

**Q** = Flow rate (m³/h; gpm)

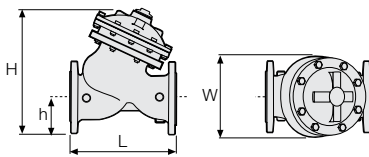
**Kv** = Metric system - valve flow coefficient  
(flow in m³/h at 1 bar ΔP with 15°C water)

**Cv** = US system - Valve flow coefficient  
(flow in gpm at 1 psi ΔP with 60°F water)

$$Cv = 1.155 Kv$$

### Flow Data & Dimensions Table

DN / Size		40	1.5"	50	2"	65	2.5"	80	3"	100	4"	150	6"	200	8"	250	10"	300	12"	350	14"	400	16"	450	18"	500	20"		
Flow Data	700 & 700ES	Kv / Cv - Flat																											
	700 & 700EN	Kv / Cv - "Y" Flat																											
	700 & 700EN	Kv / Cv - "Y" V-Port																											
700-ES	PN16; 25	L (mm / inch)																											
	PN16; 25	W (mm / inch)																											
	PN16; 25	h (mm / inch)																											
	PN16; 25	H (mm / inch)																											
	PN16; 25	Weight (Kg/lb)																											
700-EN	PN16; 25	L (mm / inch)																											
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700 Flanged	"Y" PN16 Class 150	L (mm / inch)																											
		W (mm / inch)																											
		h (mm / inch)																											
		H (mm / inch)																											
		Weight (Kg/lb)																											
	"Y" PN25 Class 300	L (mm / inch)																											
		W (mm / inch)																											
		h (mm / inch)																											
		H (mm / inch)																											
		Weight (Kg/lb)																											
700 Threaded	"Y" PN16; 25 Class 150; 300	L (mm / inch)																											
		W (mm / inch)																											
		h (mm / inch)																											
		H (mm / inch)																											
		Weight (Kg/lb)																											
	Angle PN16; 25 Class 150; 300	L (mm / inch)																											
		W (mm / inch)																											
		R (mm / inch)																											
		h (mm / inch)																											
		H (mm / inch)																											



### Specify when ordering:

- Size
- Main model
- Additional features
- Pattern
- Body material
- End connection
- Coating
- Voltage & main valve position
- Tubing & Fittings materials
- Operational data (according to model)
- Pressure data
- Flow data
- Reservoir level data
- Settings

\* Use BERMAD's Waterworks Ordering Guide

DN / Size		600	24"	700	28"	750	30"	800	32"	900	36"
Globe PN16 Class 150	L (mm / inch)	1,450	57.1	1,650	65	1,750	68.9	1,850	72.8	1,850	72.8
	W (mm / inch)	1,250	49.2	1,250	49.2	1,250	49.2	1,250	49.2	1,250	49.2
	h (mm / inch)	470	18.5	490	19.3	520	20.5	553	21.8	600	23.6
	H (mm / inch)	1,965	77.4	1,985	78.1	2,015	79.3	2,048	80.6	2,095	82.5
	Weight (Kg/lb)	3,250	7,150	3,700	8,140	3,900	8,580	4,100	9,020	4,250	9,350
Globe PN25 Class 300	L (mm / inch)	1,500	59.1	1,650	65	1,750	68.9	1,850	72.8	1,850	72.8
	W (mm / inch)	1,250	49.2	1,250	49.2	1,250	49.2	1,250	49.2	1,250	49.2
	h (mm / inch)	470	18.5	490	19.3	520	20.5	553	21.8	600	23.6
	H (mm / inch)	1,965	77.4	1,985	78.1	2,015	79.3	2,048	80.6	2,095	82.5
	Weight (Kg/lb)	3,500	7,700	3,700	8,140	3,900	8,580	4,100	9,020	4,250	9,370

