

700 Series

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-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.





Model 790-M 700 Series

Operation

The Model 790-M is a pilot controlled valve equipped with an adjustable, 2-Way, high sensitivity, differential pressure sustaining pilot.

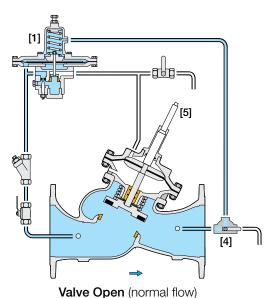
The pilot [1], senses valve differential pressure.

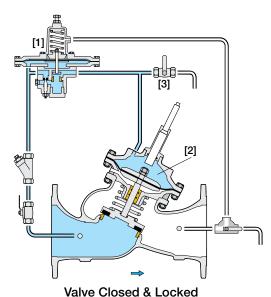
Should that pressure rise above pilot setting, the pilot opens, introducing upstream pressure into the upper control chamber [2], causing the main valve to begin an irreversible "close & lock" process.

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





Model 790-M 700 Series

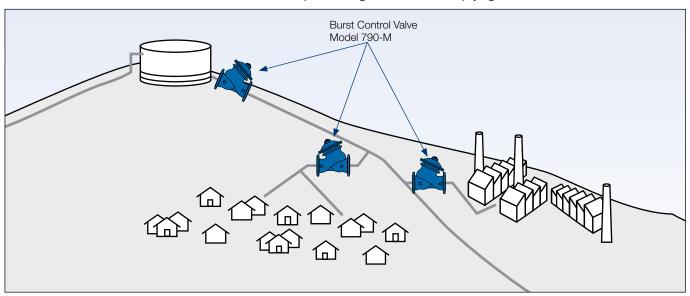
Typical Applications

Burst Control Valves in a Network

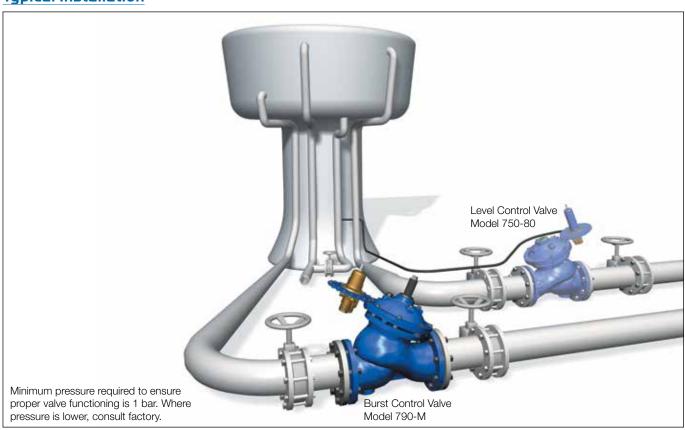
Every water system is vulnerable to bursts, whether due to system problems or external mechanical damage. This illustration shows a reservoir feeding a downhill line with lower elevation consumers.

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

Technical Data

Size Range: DN40-900; 11/2-36" 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

122 4.8

40 1.6 40 1.6 48 1.9 56

201

5.5 12 5.5

7.9 202 8

209 8.2 264

4.8 122 4.8

18 17

12 8

4.8 140 5.5 159

12

121

122

40 1.6 48 1.9 55

83 3.3 102 4 115

W (mm / inch) h (mm / inch)

H (mm / inch)

Weight (Kg/lb)

L (mm / inch)

W (mm / inch)

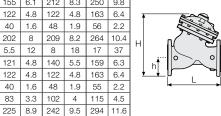
R (mm / inch)

h (mm / inch)

H (mm / inch)

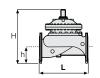
Weight (Kg/lb)

		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"
g	ES	Kv / Cv - Flat	54	62	57	66	60	69	65	75	145	167	395	456	610	705	905	1,045	1,520	1,756	-	-	2,250	2,599	-	-	4,070	4,701
Data	700ES	Kv / Cv - V-Port	46	53	48	56	51	59	55	64	123	142	336	388	519	599	769	888	1,292	1,492	-	-	1,913	2,209	-	-	3,460	3,996
Flow	⊗ H	Kv / Cv - "Y" Flat	42	49	50	58	55	64	115	133	200	230	460	530	815	940	1,250	1,440	1,850	2,140	1,990	2,300	3,310	3,820	3,430	3,960	3,550	4,100
正	700 & 700EN	Kv / Cv - "Y" V-Port	36	41	43	49	47	54	98	113	170	200	391	450	693	800	1,063	1,230	1,573	1,820	1,692	1,950	2,814	3,250	2,916	3,370	3,018	3,490
700-ES		L (mm / inch)	230	9.1	230	9.1	290	11.4	310	12.2	350	13.8	480	18.9	600	23.6	730	28.7	850	33.5	-	-	1,100	43.3	-	-	1,250	49.2
	25	W (mm / inch)	150	5.9	165	6.5	185	7.3	200	7.9	235	9.3	300	11.8	360	14.2	425	16.7	530	20.9	-	-	626	24.6	-	-	838	33
	16;	h (mm / inch)	80	3.1	90	3.5	100	3.9	105	4.1	125	4.9	155	6.1	190	7.5	220	8.7	250	9.8	-	-	320	12.6	-	-	385	15.2
2	PN1	H (mm / inch)	240	9.4	250	9.8	250	9.8	260	10.2	320	12.6	420	16.5	510	20.1	605	23.8	725	28.5	-	-	895	35.2	-	-	1,185	46.7
		Weight (Kg/lb)	10	22	10.8	23.8	13.2	29	15	33	26	57.2	55	121	95	209	148	326	255	561	-	-	437	960	-	-	1,061	2,334
		L (mm / inch)	-	-	-	-	-	-	310	12.2	350	13.8	480	18.9	600	23.6	730	28.7	850	33.5	-	-	-	-	-	-	-	-
Z	25	W (mm / inch)	-	-	-	-	-	-	200	7.9	235	9.3	320	12.6	390	15.4	480	18.9	550	21.7	-	-	-	-	-	-	-	-
700-EN	PN16;	h (mm / inch)	-	-	-	-	-	-	100	3.9	118	4.6	150	5.9	180	7.1	213	8.4	243	9.6	-	-	-	-	-	-	-	-
2	F.	H (mm / inch)	-	-	-	-	-	-	305	12	369	14.5	500	19.7	592	23.3	733	28.9	841	33.1	-	-	-	-	-	-	-	-
		Weight (Kg/lb)	-	-	-	-	-	-	21	46.2	31	68.2	70	154	115	253	198	436	337	741	-	-	-	-	-	-	-	-
		L (mm / inch)	205	8.1	210	8.3	222	8.7	250	9.8	320	12.6	415	16.3	500	19.7	605	23.8	725	28.5	733	28.9	990	39	1,000	39.4	1,100	43.3
	N16 150	W (mm / inch)	155	6.1	165	6.5	178	7	200	7.9	223	8.8	320	12.6	390	15.4	480	18.9	550	21.7	550	21.7	740	29.1	740	29.1	740	29.1
	SS P	h (mm / inch)	78	3.1	83	3.3	95	3.7	100	3.9	115	4.5	143	5.6	172	6.8	204	8	242	9.5	268	10.6	300	11.8	319	12.6	358	14.1
ged	 Ga	H (mm / inch)	239	9.4	244	9.6	257	10.1	305	12	366	14.4	492	19.4	584	23	724	28.5	840	33.1	866	34.1	1,108	43.6	1,127	44.4	1,167	45.9
Flanged		Weight (Kg/lb)	9.1	20	10.6	23	13	29	22	49	37	82	75	165	125	276	217	478	370	816	381	840	846	1,865	945	2,083	962	2,121
		L (mm / inch)	205	8.1	210	8.3	222	8.7	264	10.4	335	13.2	433	17	524	20.6	637	25.1	762	30	767	30.2	1,024	40.3	1,030	40.6	1,136	44.7
700	PN25	W (mm / inch)	155	6.1	165	6.5	185	7.3	207	8.1	250	9.8	320	12.6	390	15.4	480	18.9	550	21.7	570	22.4	740	29.1	740	29.1	750	29.5
	P SS	h (mm / inch)	78	3.1	83	3.3	95	3.7	105	4.1	127	5	159	6.3	191	7.5	223	8.8	261	10.3	295	11.6	325	12.8	357	14.1	389	15.3
	 Clas	H (mm / inch)	239	9.4	244	9.6	257	10.1	314	12.4	378	14.9	508	20	602	23.7	742	29.2	859	33.8	893	35.2	1,133	44.6	1,165	45.9	1,197	47.1
		Weight (Kg/lb)	10	22	12.2	27	15	33	25	55	43	95	85	187	146	322	245	540	410	904	434	957	900	1984	967	2,132	986	2,174
	0	L (mm / inch)	155	6.1	155	6.1	212	03	250	0.8	I -																	





		DN / Size	600	24"	700	28"	750	30"	800	32"	900	36"
	9	L (mm / inch)	1,450	57.1	1,650	65	1,750	68.9	1,850	72.8	1,850	72.8
	PN1 150	W (mm / inch)	1,250	49.2	1,250	49.2	1,250	49.2	1,250	49.2	1,250	49.2
	70	h (mm / inch)	470	18.5	490	19.3	520	20.5	553	21.8	600	23.6
	Globe Class	H (mm / inch)	1,965	77.4	1,985	78.1	2,015	79.3	2,048	80.6	2,095	82.5
	_G	Weight (Kg/lb)	3,250	7,150	3,700	8,140	3,900	8,580	4,100	9,020	4,250	9,350
	2	L (mm / inch)	1,500	59.1	1,650	65	1,750	68.9	1,850	72.8	1,850	72.8
	PN25 300	W (mm / inch)	1,250	49.2	1,250	49.2	1,250	49.2	1,250	49.2	1,250	49.2
	10	h (mm / inch)	470	18.5	490	19.3	520	20.5	553	21.8	600	23.6
	Globe	H (mm / inch)	1,965	77.4	1,985	78.1	2,015	79.3	2,048	80.6	2,095	82.5
	O	Weight (Kg/lb)	3,500	7,700	3,700	8,140	3,900	8,580	4,100	9,020	4,250	9.370





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

