



Pressure Reducing Valve with Solenoid Control

Model 720-55

- Flow and leakage reduction
- Cavitation damage protection
- Pressure zone isolation
- Switching between “on-duty” valves
- Auto-refreshing of reservoirs

The Model 720-55 Pressure Reducing Valve with Solenoid Control is a hydraulically operated, diaphragm actuated control valve that reduces higher upstream pressure to lower constant downstream pressure regardless of fluctuating demand or varying upstream pressure. The valve opens and shuts off in response to an electric signal.



Features and Benefits

- **Line pressure driven** – Independent operation
- **Solenoid controlled**
 - Low power consumption
 - Wide ranges of pressures and voltages
 - Normally Open, Normally Closed or Last Position
- **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

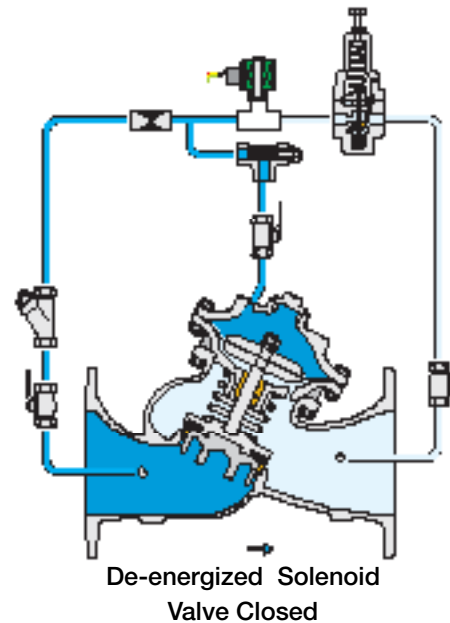
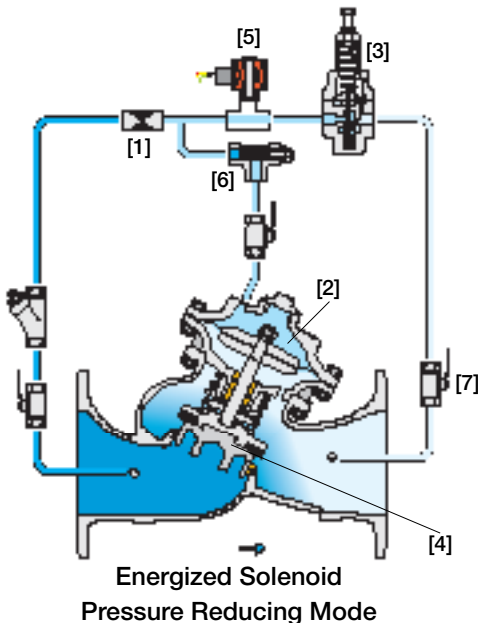
- Pressure management valve – **7PM-55**
- Solenoid control & check feature – **720-25**
- Downstream over pressure guard – **720-55-48**
- High sensitivity pilot – **720-55-12**
- Electrically selected multi-level setting – **720-55-45**
- Electronic multi-level setting, Type 4T – **720-55-4T**
- Electric override – **720-55-59**

See relevant BERMAD publications.



Operation

The Model 720-55 is a pilot controlled valve equipped with an adjustable, 2-Way, pressure reducing pilot and a solenoid pilot. The restriction [1] continuously allows flow from the valve inlet into the upper control chamber [2]. The pilot [3] senses downstream pressure. Should this pressure rise above pilot setting, the pilot throttles, enabling pressure in the upper control chamber to accumulate, causing the main valve to throttle closed, decreasing downstream pressure to pilot setting. Should downstream pressure fall below pilot setting, the pilot releases accumulated pressure, and the main valve modulates open. The V-Port plug (optional) [4] increases the ratio of flow to stem travel, providing more accurate, stable and smooth regulation. The integral orifice between the lower control chamber and valve outlet moderates valve reactions. Should the solenoid [5] close, pressure in the upper control chamber accumulate causing the main valve to shut off. The one-way flow control needle valve [6] stabilizes the valve's reaction in hard regulation conditions, by restricting the flow out of the control chamber. The downstream cock valve [7] enables manual closing. Normally closed, normally open and last position models are available.



Pilot System Specifications

Standard Materials:

Pilot:

Body: Stainless Steel 316 or Bronze
Elastomers: Synthetic Rubber
Spring: Galvanized Steel or Stainless Steel

Solenoid:

Body: Brass or Stainless Steel
Elastomers: NBR or FPM
Enclosure: Molded epoxy

Tubing & Fittings:

Stainless Steel 316 or Copper & Brass

Accessories:

Stainless Steel 316, Brass and Synthetic Rubber Elastomers

Pilot Adjustment Range:

0.5 to 3.0 bar ; 7 to 40 psi
0.8 to 6.5 bar ; 11 to 95 psi
1 to 16 bar ; 15 to 230 psi
5 to 25 bar ; 70 to 360 psi

Solenoid Electrical Data:

Voltages:

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

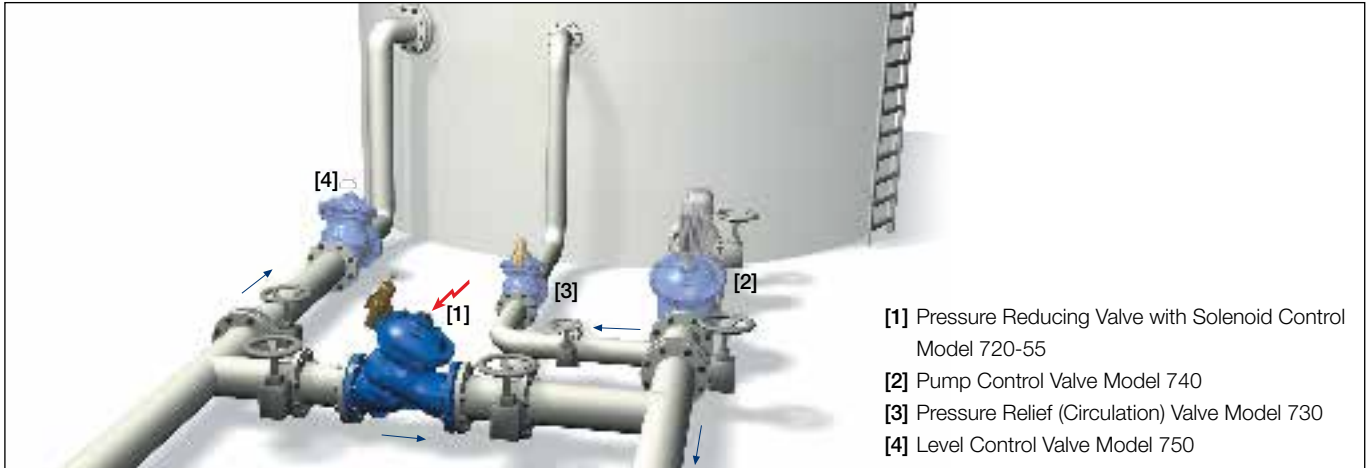
Notes:

- Inlet pressure, outlet pressure and flow rate are required for optimal sizing and cavitation analysis
- Recommended continuous flow velocity:
0.3-6.0 m/sec ; 1-20 ft/sec
- Minimum operating pressure: 0.7 bar ; 10 psi.
For lower pressure requirements consult factory



Typical Applications

Reservoir By-Pass



- [1] Pressure Reducing Valve with Solenoid Control Model 720-55
- [2] Pump Control Valve Model 740
- [3] Pressure Relief (Circulation) Valve Model 730
- [4] Level Control Valve Model 750

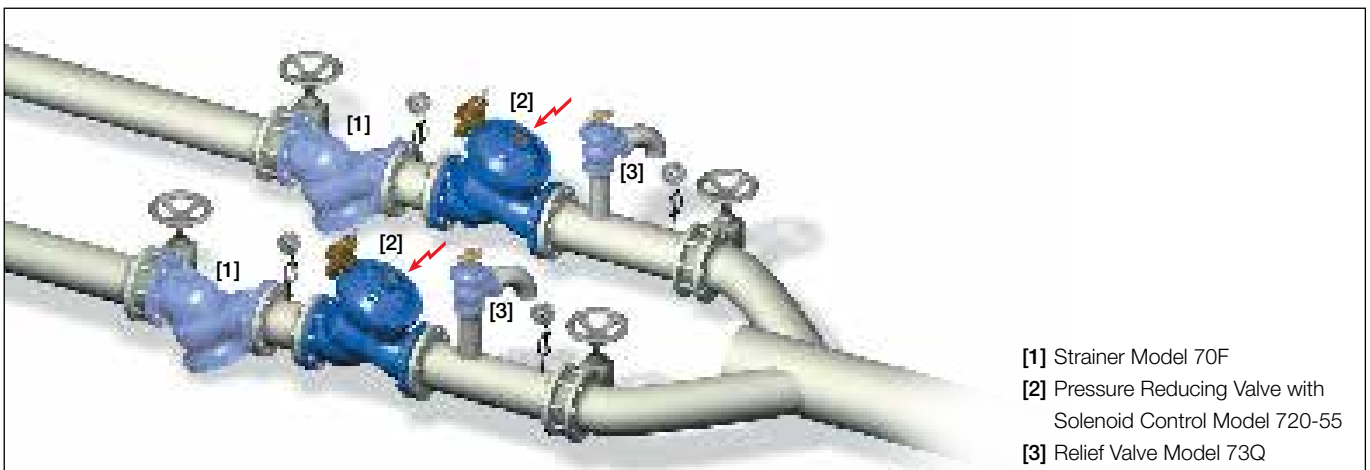
The Model 720-55 is installed as a by-pass between the reservoir supply line and the pump discharge line to the distribution network providing four major advantages:

- Saves energy and lowers costs by shortening pumping hours, when supply pressure is sufficient
- Protects the distribution network from excessive supply pressure
- Automatically refreshes the water in the reservoir by periodically forcing supply through reservoir
- Ensures uninterrupted supply during reservoir maintenance

Parallel or Multiple Sources

Where a distribution network is supplied by parallel and/or multiple sources, the solenoid controlled feature enables switching the “on-duty” valve and provides:

- Equalizing operating hours between valves
- Selecting source according to management considerations
- Isolating zones



- [1] Strainer Model 70F
- [2] Pressure Reducing Valve with Solenoid Control Model 720-55
- [3] Relief Valve Model 73Q

To complete the system, BERMAD recommends that the system also include:

- **Strainer Model 70F [1]** preventing debris from damaging valve operation
- **Relief Valve Model 73Q [3]** providing:
 - Protection against momentary pressure peaks
 - Visual indication of need for maintenance

For more information on BERMAD Pressure Reducing Systems, see BERMAD publication 720, Pressure Reducing Valve.



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

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)

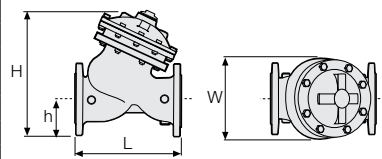
Kv = Metric system - valve flow coefficient
(flow in m³/h at 1 bar ΔP with 15°C water)

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	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	
		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	
		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	
700-ES	PN16; 25	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	
		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	
		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	
		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	
700-EN	PN16; 25	L (mm / inch)	-	-	-	-	-	310	12.2	350	13.8	480	18.9	600	23.6	730	28.7	850	33.5	-	-	-	-	-	-	-	-	-	
		W (mm / inch)	-	-	-	-	-	200	7.9	235	9.3	320	12.6	390	15.4	480	18.9	550	21.7	-	-	-	-	-	-	-	-	-	
		h (mm / inch)	-	-	-	-	-	100	3.9	118	4.6	150	5.9	180	7.1	213	8.4	243	9.6	-	-	-	-	-	-	-	-	-	
		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	-	-	-	-	-	-	-	-	-	
700 Flanged	"Y" PN16 Class 150	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	
		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	
		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	
		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	
		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	
700 Threaded	"Y" PN25 Class 300	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	
		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	
		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	
		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	
700 Threaded	"Y" PN16; 25 Class 150; 300	L (mm / inch)	155	6.1	155	6.1	212	8.3	250	9.8																			
		W (mm / inch)	122	4.8	122	4.8	122	4.8	163	6.4																			
		h (mm / inch)	40	1.6	40	1.6	48	1.9	56	2.2																			
		H (mm / inch)	201	7.9	202	8	209	8.2	264	10.4																			
		Weight (Kg/lb)	5.5	12	5.5	12	8	18	17	37																			
700 Threaded	Angle PN16; 25 Class 150; 300	L (mm / inch)	-	-	121	4.8	140	5.5	159	6.3																			
		W (mm / inch)	-	-	122	4.8	122	4.8	163	6.4																			
		R (mm / inch)	-	-	40	1.6	48	1.9	55	2.2																			
		h (mm / inch)	-	-	83	3.3	102	4	115	4.5																			
		H (mm / inch)	-	-	225	8.9	242	9.5	294	11.6																			
Weight (Kg/lb)	-	-	5.5	12	7	15	15	33																					



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 Bernad's Waterworks Ordering Guide



Trädgårdsteknik AB
Helsingborgsvägen 578
262 96 ÄNGELHOLM
Telefon: 0431-222 90
Telefax: 0431-222 70
info@tradgardsteknik.se
www.tradgardsteknik.se