



# Hydraulic Non-Slam Check Valve

## With Opening & Closing Speed Control

- Pump check valve
- One-way zone isolation
- Return flow prevention
- Surge elimination

The Model 760-03-V Hydraulic Non-Slam Check Valve is a double chambered, hydraulically operated, diaphragm actuated control valve which is hydraulically powered to fully open during system flow when upstream pressure exceeds downstream pressure. If pressure conditions reverse, the valve gradually shuts off drip tight preventing back flow.



### Features and Benefits

- **Line-pressure driven** – Independent operation
- **Double chamber**
  - Powered opening and closing
  - Moderated valve reaction
  - Protected diaphragm
- **Opening and closing speed control** – Eliminates system surges
- **Balanced seal disk** – High flow capacity
- **In-line serviceable** – Easy maintenance
- **Flexible design** – Easy addition of features
- **"Y" or angle, wide body** – Minimal pressure loss
- **Semi-straight flow** – Non-turbulent flow
- **Obstacle free, full bore** – Uncompromising reliability
- **V-Port Throttling Plug** – Smooth closing characteristics

### Major Additional Features

- Valve position indicator – 760-03-VI
- Electric limit switch – 760-03-VS
- Pressure sustaining & check valve – 730-23-V
- Flow control & check valve – 770-23-UV
- Pressure reducing & check valve – 720-23-V

See relevant BERMAD publications.



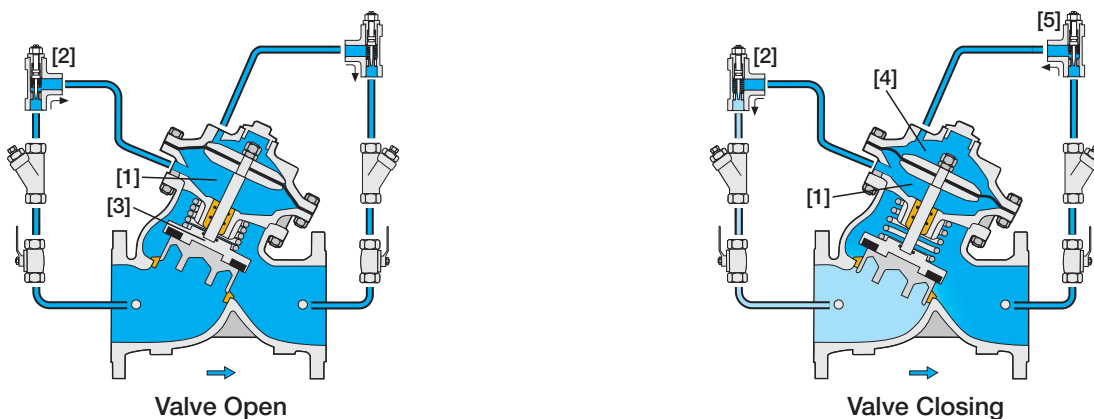
### Operation

The Model 760-03-V is a double chambered, hydraulically operated, diaphragm actuated control valve that operates independently of valve differential pressure.

During flow conditions, the higher upstream pressure is applied to the lower control chamber [1] through the "free-flow" direction of a One-Way Flow Control [2]. This opening force coupled with the upstream pressure exerted on the bottom-side of the seal disk [3] powerfully opens the valve.

Should pressure conditions reverse, the greater downstream pressure is applied to the upper control chamber [4] through the "free-flow" direction of another One-Way Flow Control [5]. This develops closing force that is coupled to the forces being applied to the top-side of the seal disk by the reversed flow and the actuator spring, and causes the valve to positively close, sealing drip tight. The pressure released from the lower chamber [1], through the One-Way Flow Control [2] restriction, provides cushioning for a smooth non-slam closing.

Both the opening and closing speeds can be adjusted by the flow controls.



### Engineer Specifications

The Non-Slam Hydraulic Check Valve shall be powered open during flow conditions by the superior upstream pressure. When downstream pressure exceeds upstream pressure, the check valve shall gradually shut off drip tight, preventing back flow. Both the opening and closing speeds shall be adjustable.

**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 a sealed inherent separating partition between the lower surface of the diaphragm and the main valve. 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 two One-Way Flow Controls, isolating cock valves and two filters. All fittings shall be forged brass or stainless steel. The assembled valve shall be hydraulically tested 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.



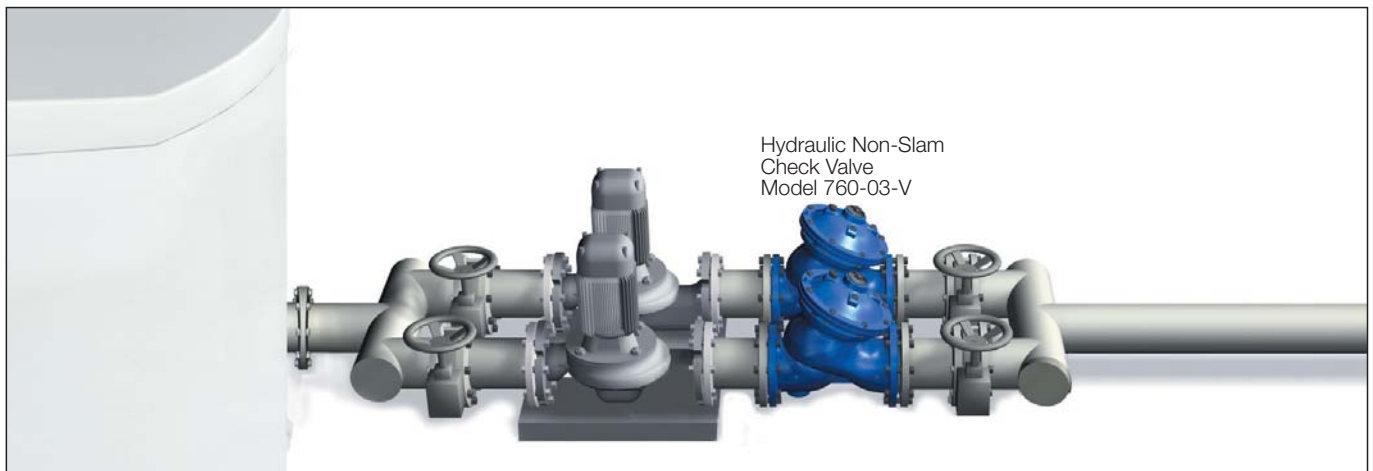
### Typical Applications

#### Pump Check Valve

In this system, a pump battery supplies the main line through a manifold.

The Model 760-03-V installed downstream from each pump:

- Prevents reverse flow from damaging pump
- Provides smooth starting and stopping of supplementary pumps
- Allows surge-free switching between “on-duty” pumps
- Delays reaction of variable speed primary pump to single speed supplementary pump going on line or off line.

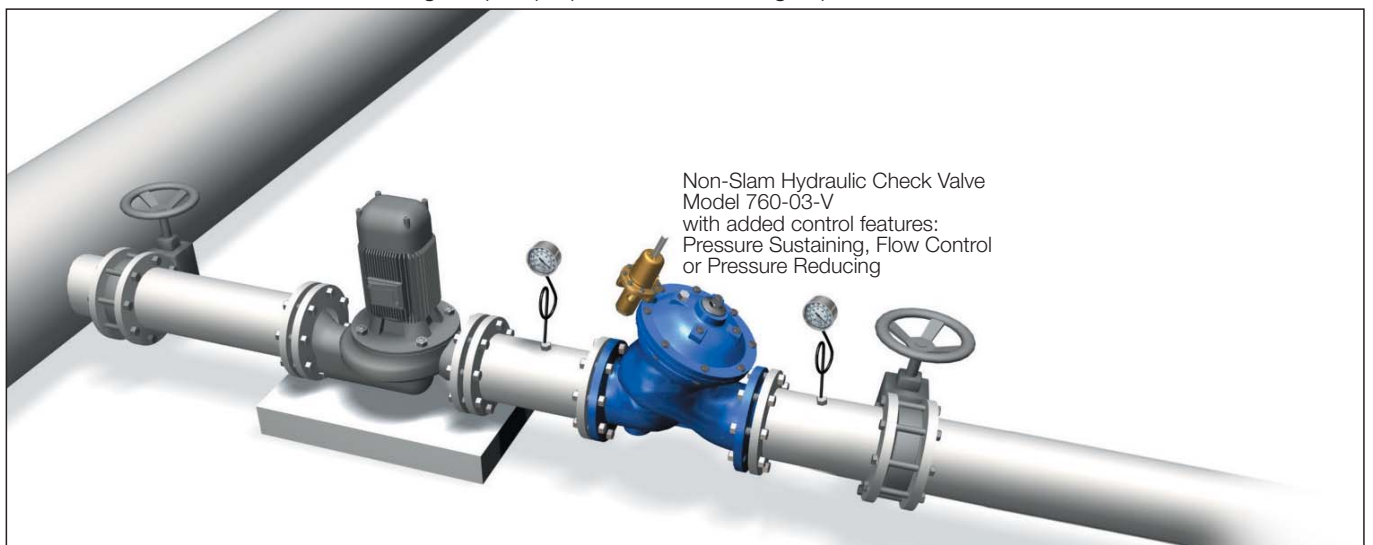


#### Pump Overload and Cavitation Protection

Network demand is greater than pump design specifications:

- During empty pipeline filling
- During over demand by consumers
- When pump pressure specification is higher than system resistance

Any of these factors might cause pump overload and cavitation damage. The Model 730-23-V adds a pressure sustaining feature to the Model 760-03-V ensuring the pump operates within design specifications.



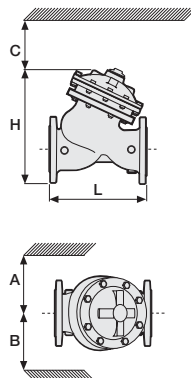
When the pump curve (Flow versus Pressure) is relatively flat, pump protection with respect to discharge pressure is not sufficient, and protection according to flow is recommended. The Model 770-23-UV, adds a flow limiting feature to the Model 760-03-V.



### Technical Data

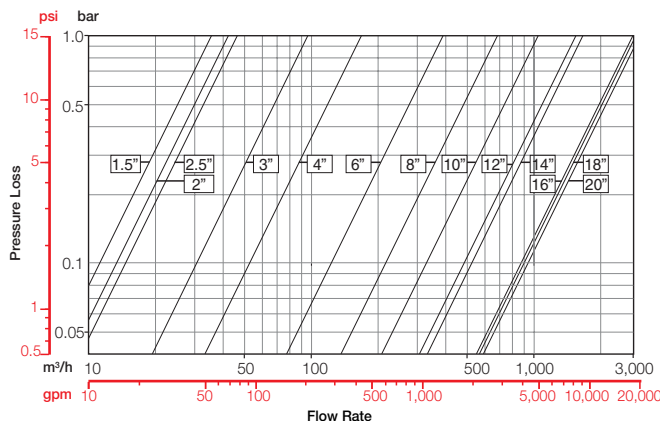
#### Dimensions and Weights

Size		A, B		C		L		H		Weight	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	kg	lbs
40	1 1/2"	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	2 1/2"	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

#### Flow Chart



Data is for Y-pattern, throttling plug (U-Type) valves  
 For more flow charts, refer to Engineering Section

#### Main Valve

**Valve Patterns:** "Y" (globe) & angle

**Size Range:** 1 1/2"-20" (40-500 mm)

For sizes 24-32"; 600-800 mm,  
 Consult BERMAD

**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:**

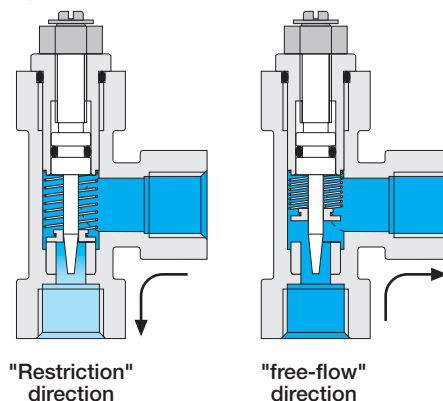
Bronze, Brass, Stainless Steel & NBR

**Tubing:** Copper or Stainless Steel

**Fittings:** Forged Brass or Stainless Steel

#### One-Way Flow Control

##### Operation Modes



### 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	Additional Attributes
WW	6"	760	03	Y	C	16	EB	-	CB	VI
Waterworks	1 1/2" - 20"	Hydraulic Non-Slam Check Valve	Oblique (up to 20") Angle (up to 18") Globe (24-32" only) G	Y A G	Ductile Iron Standard Cast Steel St. Steel 316 Nickel Alumin. Bronze U	ISO-16 ISO-25 ANSI-150 ANSI-300 JIS-16 JIS-20	Epoxy FB Blue Polyester Green Polyester Blue Uncoated	Copper Tubing & Brass Fittings St. St. 316 Tubing & Fittings Plastic Tubing & Brass Fittings	CB NN PB	V I S N T D R E 6
		Opening and Closing Speed Control	03					V-Port Throttling Plug Valve Position Indicator Electric Limit Switch St. St. 316 Control Accessories St. St. 316 Internal Trim (Closure & Seat) St. St. 316 Actuator Internal Assembly Delrin Bearing Viton Elastomers for Seals & Diaphragm Pressure Gauge		

Multiple choices permitted

