# FILTER BACKWASH HYDRAULIC VALVE

## 3X3 PLASTIC

**3x3-350-P**

The BERMAD Model 3x3-350-P is a compact 3-port valve, in a T configuration. It is double chambered, hydraulically operated, and diaphragm actuated.

Designed for automatic backwashing of filtration systems, the BERMAD Model 3x3-350-P is available in Angle flow (A) and Straight flow (S) configurations.

Angle Flow

Straight Flow

## Features and Benefits

- Line Pressure Driven
- Double Chambered Design
  - Wide application range
  - Requires low actuation pressure
  - Protected diaphragm
- Dynamic Sealing
  - Seals at very low pressure
  - Prevents seal friction and erosion
- Engineered Plastic Valve Design
  - Highly durable, chemical and cavitation resistant
- Short Valve Travel
  - Smooth changes of flow direction
  - Eliminates mixing of supply and waste water
- User-Friendly
  - Can be installed in various orientations
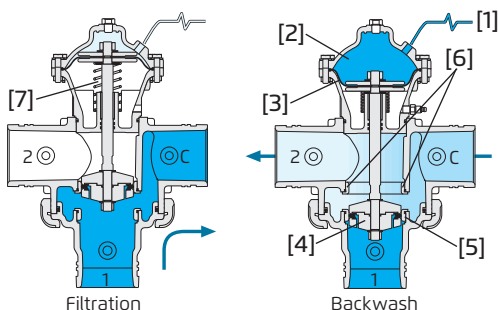  - Simple in-line inspection and service

## Typical Applications

- Automatic Backwash of Filter Batteries
  - Gravel Filters
  - Sand Filters
  - Disk Filters
  - Screen Filters
- Single Filter Autonomic Backwash System
- Angled or Straight Installations

**NSF** NSF 61 and 372 Certified

## Operation - Angle Flow

Filtration          Backwash

A Hydraulic Command [1], which pressurizes the Upper Control Chamber [2], forces the Diaphragm [3] actuated Plug Assembly [4] to move towards the Supply Port Seat [5], eventually sealing it drip tight. This allows flow from the filter through the Drain Port Seat [6]. Venting the upper control chamber causes the line pressure, together with the Spring [7] force, to move the Valve back to filtration mode.

**Note**: control chamber water must be vented to waste.

## Operation - Straight Flow
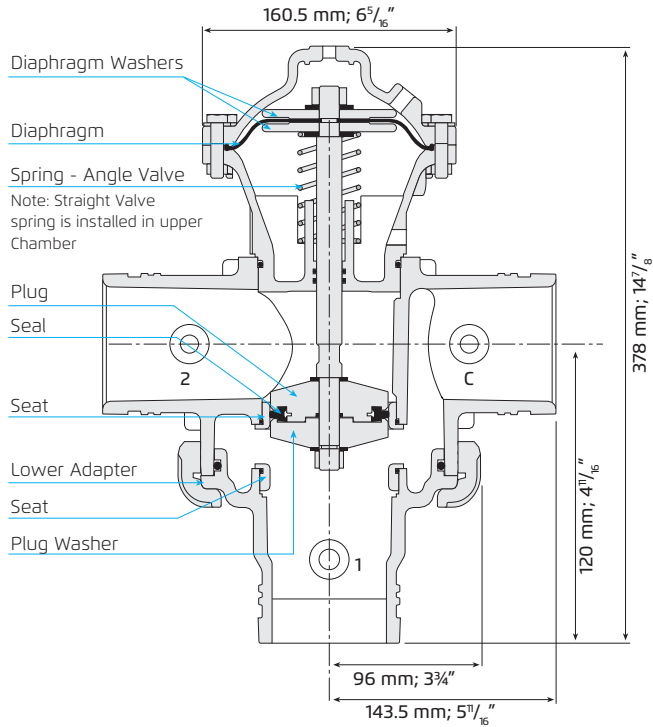
Filtration          Backwash
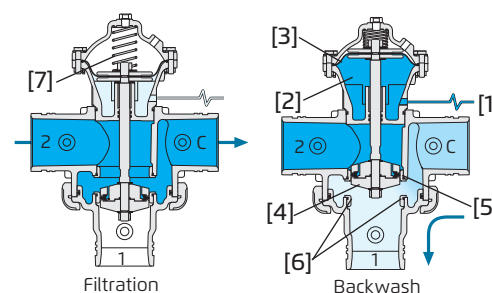
A Hydraulic Command [1], which pressurizes the Lower Control Chamber [2], forces the Diaphragm [3] actuated Plug Assembly [4] to move towards the Supply Port Seat [5], eventually sealing it drip tight. This allows flow from the filter through the Drain Port Seat [6]. Venting the upper control chamber causes the line pressure, together with the Spring [7] force, to move the Valve back to filtration mode.

## Technical Specifications



- Diaphragm Washers
- Diaphragm
- Spring - Angle Valve
  Note: Straight Valve spring is installed in upper Chamber
- Plug
- Seal
- Seat
- Lower Adapter
- Seat
- Plug Washer

Dimensions:
- 160.5 mm; $6^{5}/_{16}$"
- 378 mm; $14^{7}/_{8}$"
- 120 mm; $4^{11}/_{16}$"
- 96 mm; $3\frac{3}{4}$"
- 143.5 mm; $5^{11}/_{16}$"

## Hydraulic Data

| | Filtration 1→C | | Backwash C→2 | |
|---|---|---|---|---|
| Angle Flow | Kv=110 | Cv=127 | Kv=100 | Cv=115 |
| | Filtration 2→C | | Backwash C→1 | |
| Straight Flow | Kv=93 | Cv=107 | Kv=122 | Cv=141 |

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

Kv = m³/h @ ΔP of 1 bar
Q= m³/h
ΔP =  bar

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

Cv = gpm @ ΔP of 1 psi
Q= gpm
ΔP = psi

Cv = 1.155 Kv

## Technical Data

**Control Chamber Displacement Volume:**
0.34 liter; 0.09 gallon

**Operating Pressure:**
0.7-10 bar; 10-145 psi

**External Operating Pressure:**
85%-100% of operating pressure

**Maximum Temperature:**
65°C;150°F

**Weight:**
2.8 kg; 6.2 lbs

**End Connections:**
Grooved

**Flow Patterns:**
Angled Flow, Reverse Angled Flow,
Straight Flow, Reverse Straight Flow

## Materials

**Valve Body, Separating Partition & Lower Adapter:**
Polyamide 6 – 30GF Black
**Cover:** Polyamide 6 – 30GF
Angle Flow – Black,
Straight Flow – Gray
**Diaphragm:** NR-AL52 Nylon Fabric Reinforced
**Seats, Diaphragm Washers:** Brass
**Plug, Plug Washer:** Acetal Copolymer Black
**Stopper Disk:** PVC-U
**Seal, O-Rings:** NBR
**Spring:** Stainless Steel AISI 302
**Shaft:** Stainless Steel AISI 303
**External Bolts, Studs, Nuts & Disks:** Stainless Steel

## 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 | Compatibility | Pattern / Flow Option | Construction Materials | Drain Connections | End Connections | Additional Attributes | Coating | Voltage & Position | Tubing & Fittings |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WW | 3x3 | 350 | 00 | P2 | S | P | V | VI | - | UC | 00* | PP |

| | |
|---|---|
| No Addtional Feature | 00 |
| 3-Way Hydraulic Relay | 54 |
| Solenoid Controlled | 55 |

| | |
|---|---|
| Potable Water Approved | P2 |
| Unregistered | P0 |

| | |
|---|---|
| Angle Flow | A |
| Straight Flow | S |
| Straight & Reverse Flow | S-O |
| Angle & Reverse Flow | A-O |

| | |
|---|---|
| Grooved 4" Union Connector | V |
| (Havazelet) 75mm Grooved 4" x Int. | H |
| Thread 3" | VT |

| | |
|---|---|
| Grooved ANSI C606-81 | VI |

| | |
|---|---|
| Uncoated | UC |

| | |
|---|---|
| Plastic Tubing & Fillings | PP |

*Consult factory for available options