High Pressure Water
- Descale Valves -

VXXX Series

Quad-S™ Poppet Cartridge
Zero Leakage, Media Piloted
Raw Water Operation

Visit Us on the Web At:
www.bocwaterhydraulics.com
Overview

BOC’s high pressure water valves are designed and manufactured to withstand the harshest of operating environments … *descending*. BOC poppet-type descale valves offer several enhancements over other valves such as:

- **Long Operational Life** - Quad-S™ poppet cartridge is more dirt tolerant than conventional plunger type designs, giving long, reliable repeating performance
- **Reliable Shift** - Valve is shifted by descale water pressure and differential area, not large external air cylinder operator(s)
- **Zero Internal Leakage** - Dynamic poppet seals never cross ports, seal life very long resulting in minimal maintenance and longer system life
- **Smooth Operation** - Graduated flow holes in sleeve dampen open/close shock
- **Flexible Installation** - Valves are easily adapted to meet any existing mounting envelope. No mill changes required
- **Rugged Construction** – All surfaces in contact with fluid are stainless steel or protected with *Ollinite™* to prevent corrosion and erosion from raw water operations for extremely long life and performance

Media piloting for main valve operation is provided by BOC's 3/2 Way air operated, packed spool type directional control valve. The pilot valve provides a highly reliable source for pressurizing and venting the top of the main valve poppet. BOC recommends maintaining 100 microns or less for optimum pilot valve operation. External and internal pilot filtering options are available.

A variety of mounting options are available for 900#, 1500#, and 2500# rated flanges. Standard envelopes are interchangeable with Hunt Valve, Ellwood, Salem and other descale valves. Other flange arrangements are available at no additional charge. Valves are available in 4", 6", and 8". Smaller sizes are also available, please consult the factory.

**8” Descale Valve**
Quad-S™ Cartridge

All descale valves use a Quad-S™ (Stainless Steel, Soft Shift), zero leakage, 2-way, poppet cartridge element for primary valve action. The Quad-S™ cartridge offers numerous benefits over other spool or poppet type designs as highlighted below. High quality materials of construction and precision machining combine to make a long lasting valve cartridge.

Maintenance features of the cartridge are far superior to other valves. Features include such innovations as slots in the valve cap and cartridge sleeve for ease of field service. If maintenance is required, the valve cap is quickly and easily removed. The single piece sleeve then protrudes out of the valve housing and can be easily extracted using the slots. In some instances, it may be only be necessary to remove the poppet. Poppet removal is accomplished simply by installing a bolt in the threaded hole on top of the poppet and pulling. In all cases, the valve is extremely more economical to service than traditional spool type valves with external air operators which require costly repairs on a frequent basis.

In some applications, it may be necessary to provide continuous pre-fill flow across the main valve. The Quad-S™ cartridge can be adapted for installation of a removable pre-fill orifice to provide desired flow. Please consult factory for additional information.

All cartridges are capable of raw water operation up to 6000 psi. Quad-S™ cartridges are available in sizes ranging from Din 16 (3/4”) up through Din 200 (8”). Custom mountings are available - contact factory for more information.

Quad-S™ Cartridge

(Stainless Steel, Soft Shift)

Cross Section

- Slot for fast and easy cartridge removal during maintenance
- Dynamic seals which do not cross ports during valve shift results in long valve life and less maintenance
- Hardened stainless steel nose piece to minimize opening shock adding component life and lessening maintenance
- Threaded hole to support special functions (locking handle etc.) Commonality of parts reduces on hand spares inventory
- Single piece hardened stainless steel sleeve with graduated slots to minimize closing shock, giving component life and less downtime
- Ollinite™ stainless steel poppet with wrench flats produces long life and reduced wear and downtime
- Removable, reversible seat with range of material options (hard and soft) for drop tight sealing – double seal life reducing maintenance costs
Pre-fill Valves

Pre-fill operations often require separate, and smaller pre-fill valves. BOC’s provides Quad-S™ cartridge valves in a variety of flange mounted configurations. The 2” pre-fill valve shown below with 1500# flanges and a 3/2 way, air operated pilot valve is typical of valves used in such applications.

The valve is supplied with flange spacing meeting customer field requirements. Flanges can be in-line or offset, oriented either 90° or 180°. ANSI B16.5 or SAE flanges are available.

Please consult factory for special requirements.
Pilot Valves

All descale valves use BOC’s 10 gpm, 3/2 way, air operated, packed spool type, directional control valve for main valve pilot operation. The valve is designed and built specifically for the challenges of piloting descale valves. The valve is field proven and rated to 6000 psi in raw water applications. Normally closed or normally open versions are available. Valve envelope is as shown below.

Key features include a balanced spool for maximum seal life. The valve also incorporates an integral air cylinder with dual springs for positive shifting force. Air pressures of 90 psi is recommended to ensure positive shift. The resulting value is through flawless performance and minimal downtime.

Pilot filtration to 100 microns or less is recommended. A variety of filtering options exist, including external or internal filtration.

The valve contains all stainless steel internals. Valve cap and housing are protected with Ollinite™ to prevent corrosion and erosion from raw water operations. Housing mounting pattern conforms to NPFA, D05 standards. Higher pressure applications (>3000 psi) use six (6) mounting bolts.

3/2 Way, Air Operated, Packed Spool Type, Pilot Valve
Typical Envelope Dimensions

The following tables include approximate envelope dimensions for typical mounting arrangements. Please consult factory for confirmation and certification of dimensions or for alternate mounting requirements.

<table>
<thead>
<tr>
<th>Size</th>
<th>Flange Type</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>900# Flange</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4&quot;</td>
<td>X Strong Short Flange</td>
<td>18.75</td>
<td>10.25</td>
<td>13.75</td>
<td>11.50</td>
</tr>
<tr>
<td></td>
<td>X Strong, XX Strong, Sch 160</td>
<td>20.25</td>
<td>10.38</td>
<td>15.12</td>
<td>11.50</td>
</tr>
<tr>
<td>6&quot;</td>
<td>X Strong Short Flange</td>
<td>22.12</td>
<td>11.69</td>
<td>16.44</td>
<td>15.00</td>
</tr>
<tr>
<td></td>
<td>X Strong, XX Strong, Sch 160</td>
<td>23.56</td>
<td>11.88</td>
<td>17.69</td>
<td>15.00</td>
</tr>
<tr>
<td>8&quot;</td>
<td>X Strong Short Flange</td>
<td>29.25</td>
<td>14.62</td>
<td>23.62</td>
<td>18.50</td>
</tr>
<tr>
<td></td>
<td>X Strong, XX Strong, Sch 160</td>
<td>29.62</td>
<td>14.81</td>
<td>23.81</td>
<td>18.50</td>
</tr>
<tr>
<td></td>
<td>1500# Flange</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4&quot;</td>
<td>X Strong Short Flange</td>
<td>19.50</td>
<td>10.62</td>
<td>14.12</td>
<td>12.25</td>
</tr>
<tr>
<td></td>
<td>X Strong, XX Strong, Sch 160</td>
<td>21.00</td>
<td>10.75</td>
<td>15.50</td>
<td>12.25</td>
</tr>
<tr>
<td>6&quot;</td>
<td>X Strong Short Flange</td>
<td>24.25</td>
<td>12.75</td>
<td>17.50</td>
<td>15.50</td>
</tr>
<tr>
<td></td>
<td>X Strong, XX Strong, Sch 160</td>
<td>26.06</td>
<td>13.12</td>
<td>18.94</td>
<td>15.50</td>
</tr>
<tr>
<td>8&quot;</td>
<td>X Strong Short Flange</td>
<td>33.25</td>
<td>16.62</td>
<td>25.62</td>
<td>19.00</td>
</tr>
<tr>
<td></td>
<td>X Strong, XX Strong, Sch 160</td>
<td>33.62</td>
<td>16.81</td>
<td>25.81</td>
<td>19.00</td>
</tr>
<tr>
<td></td>
<td>2500# Flange</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4&quot;</td>
<td>XX Strong Short Flange</td>
<td>26.00</td>
<td>13.25</td>
<td>18.00</td>
<td>14.00</td>
</tr>
<tr>
<td></td>
<td>XX Strong, Schedule 160</td>
<td>26.25</td>
<td>13.38</td>
<td>18.12</td>
<td>14.00</td>
</tr>
<tr>
<td>6&quot;</td>
<td>XX Strong Short Flange</td>
<td>33.69</td>
<td>16.94</td>
<td>22.75</td>
<td>19.00</td>
</tr>
<tr>
<td></td>
<td>XX Strong, Schedule 160</td>
<td>34.06</td>
<td>17.12</td>
<td>22.94</td>
<td>19.00</td>
</tr>
<tr>
<td>8&quot;</td>
<td>XX Strong Short Flange</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>XX Strong, Schedule 160</td>
<td>41.88</td>
<td>20.94</td>
<td>29.94</td>
<td>21.75</td>
</tr>
</tbody>
</table>
Typical Installation

6” Descale Valve – The valve pictured below is a DIN 125, 2 Way, Normally Closed, Descale Valve with 6’, 1500 # flanges. Flange orientation is 90 degrees offset left. The valve is rated for raw water service at 3000 psi. Valve is piloted by a BOC V010 Series 3 Way, 2 Position, solenoid air operated pilot valve. Pilot sections contains an FAZ Series sandwich filter for.
Ordering Information

**APPLICATION**
- F01: Normally Open, Pump By-pass
- F02: Normally Closed, Descale Valves

**SEAT TYPE**
- 2: Hard Seat (Stainless Steel)
- 3: Other - Specify

**PILOT SECTION**
- 0: Valve without Pilot Installed
- 1*: With Air Solenoid Op. Pilot Valve
  - * Pilot Valve Normally Open - Descale Valve Normally Closed

**VALVE ASSEMBLY**
- VALVE TYPE
- BORE ASSEMBLY
  - F01: Normally Open, Pump By-pass
  - F02: Normally Closed, Descale Valves

**DIN CARTRIDGE SIZE**
- (mm) *Flow (gpm)
  - 080: 519
  - 100: 800
  - 125: 1230
  - 150: 1770
  - 200: 3142

* Flow rate though cartridge at 20 ft/sec velocity

**FLANGE SIZE**
- 3: 3" Nominal Pipe
- 4: 4" Nominal Pipe
- 6: 6" Nominal Pipe
- 8: 8" Nominal Pipe

**FLANGE RATING**
- 6: 600 lb.
- 9: 900 lb.
- 1: 1500 lb.
- 2: 2500 lb.

**FLANGE TYPE - BORE**
- 1: XS Short Flange
- 2: X Strong Flange
- 3: XX Strong Flange
- 4: Sch 160 Flange

**FLANGE ORIENTATION - TOP VIEW -**
- 4: 180 degrees
- 5: 90 degrees Left
- 6: 90 degrees Right

**FLANGE ORIENTATION - SIDE VIEW -**
- N: In-line
- Z: Off-set

**OPTIONAL FEATURES**
- 999: Special Features
- XF: External Pilot Filtration
- LHW: Lockout Handwheel
- CRN: TSSA Certified (Canada)
- BH: Brad Harrison Connector

**FLOW RATE**
- (mm) *Flow (gpm)
  - 080: 519
  - 100: 800
  - 125: 1230
  - 150: 1770
  - 200: 3142

* Flow rate though cartridge at 20 ft/sec velocity

Factory Assistance - Call
Phone: 330-332-4444
Fax: 330-332-1650