HAYWARD FLOW CONTROL
BY SERIES BUTTERFLY VALVE
INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

PLEASE READ THE FOLLOWING INFORMATION PRIOR TO INSTALLING AND USING HAYWARD BY SERIES BUTTERFLY VALVES. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PRODUCT DAMAGE, PROPERTY DAMAGE, PERSONAL INJURY, OR EVEN DEATH.

1. Hayward Flow Control (Hayward), a division of Hayward Industries, guarantees its products against defective material and workmanship only. Hayward assumes no responsibility for property damage or personal injury resulting from improper installation, misapplication, or abuse of any product.

2. Hayward assumes no responsibility for property damage or personal injury resulting from chemical incompatibility between its products and the process fluids to which they are exposed. Determining whether a particular PVC, CPVC, or PP product is suitable for an application is the responsibility of the user. Chemical compatibility charts provided in Hayward literature are based on ambient temperatures of 70°F and are for reference only.

3. Hayward products are designed for use with non-compressible liquids.

   WARNING
   Hayward PVC and CPVC products should NEVER be used or tested with compressible fluids such as compressed air or nitrogen. Use of PVC and CPVC products in compressible fluid applications may result in product damage, property damage, personal injury, or even death.

   WARNING
   The Series BY Butterfly Valve is intended for use in liquid service only. Do not attempt to use this valve for checking air or gases. Use of this product in air or gas service may result in product damage, property damage, personal injury, or even death.

4. The maximum recommended fluid velocity through any Hayward product is eight feet per second (8 ft/s). Higher fluid velocity can result in damage due to the water hammer effect.

5. Piping systems must be designed and supported to prevent excess mechanical loading on Hayward products due to system misalignment, weight, shock, vibration, and the effects of thermal expansion and contraction.

6. The effect of temperature on plastic piping systems must be considered when the systems are initially designed. The pressure rating of plastic systems must be reduced with increasing temperature. Maximum operating pressure is dependent upon material selection as well as operating temperature. Before installing any Hayward product, consult Hayward product literature for pressure vs. temperature curves to determine any operating pressure or temperature limitations.

7. PVC and CPVC plastic products become brittle below 40°F. Use caution in their installation and operation below this temperature.

   WARNING
   Hayward PVC and CPVC products should not be used in services with operating temperature below 34°F.

8. Due to differential thermal expansion rates between metal and plastic, transmittal of pipe vibration and pipe loading forces, DIRECT INSTALLATION OF PLASTIC VALVES INTO METAL PIPING SYSTEMS IS NOT RECOMMENDED. Wherever installation of plastic valves into metal piping systems is necessary, it is recommended that at least 10 pipe diameters in length of plastic pipe be installed upstream and downstream of the plastic valve to compensate for the factors mentioned above.

9. Published operating requirements are based on testing of new valves using clean water at 70°F. Valve performance is affected by many factors including fluid chemistry, viscosity, specific gravity, flow rate, and temperature. These should be considered when sizing Hayward products.

10. Systems should always be depressurized and drained prior to installing or maintaining any Hayward product.

   WARNING
   Failure to depressurize and drain system prior to installing or maintaining valve may result in product damage, property damage, personal injury, or even death.
INSTALLATION:

Hayward Butterfly Valves should be installed between two pipe flanges. In dead end service, it is recommended they be installed between one pipe flange and a downstream companion or blind flange. The use of additional gaskets is not necessary and not recommended.

When installed between two existing flanges, the flanges should be separated to provide clearance on the face to face of the valve. This will prevent the valve sealing surfaces from distortion during installation. Pipe flanges should be clean and, free of debris including old gasket material. A light coating of a lubricant applied to the flange sealing surface will aid in installation.

Hayward Butterfly Valves are designed for use with all pipe flanges that have bores equal to or larger than Schedule 80 pipe as listed below. The inside of the pipe flange must be chamfered at a 45 degree angle to a diameter listed if the inside bore is smaller than listed. Sharp edges and burrs must be removed.

Valves can be opened to approximately 15º when installed. Do not open fully during installation to prevent damage to the edge of the disc by the mating flanges.

Install the valves using well lubricated studs or bolts and nuts. For plastic flanges metal washers are recommended between nut/bolt head and pipe flange. With a torque wrench, uniformly tighten nut to approximately 10 foot pounds in an alternating sequence, diametrically opposed to the previously tightened nut. Final tightening should be performed in the same sequence following the recommended torque in the following chart.

For plastic Schedule 80 pipe the maximum allowable displacement is 1/8” off center in any direction. Maximum angular misalignment of 1/16” is allowable.

Normal pipe hanger spacing is recommended. Do not allow valve to support the weight of pipe. When using pneumatic or electric actuators, additional support directly to the actuator is recommended.

Manual Butterfly Valves are shipped without the lever installed. The lever is installed by aligning the point of the lever with the arrow stamped on the shaft and carefully engaging the mating hexes. Install the flat washer, the lock washer and the 1/4” screw. Push the “H” black cap into the lever.

<table>
<thead>
<tr>
<th>Size Nominal</th>
<th>Minimum Pipe / Flange Bore (in.)</th>
<th>Stud Dia (in.) x Length (in)</th>
<th>Bolt Dia (in.) Thread</th>
<th>Flat Face Type Flange Torque Ft * Lb.</th>
<th>Van-Stone Type Flange Torque Ft * Lb.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 1/2”</td>
<td>1.450</td>
<td>1/2 x 4.5</td>
<td>1/2-13 UNC</td>
<td>10-15</td>
<td>5-10</td>
</tr>
<tr>
<td>2”</td>
<td>1.880</td>
<td>5/8 x 4.5</td>
<td>5/8 11 UNC</td>
<td>15-25</td>
<td>10-20</td>
</tr>
<tr>
<td>3”</td>
<td>2.830</td>
<td>5/8 x 5.5</td>
<td>5/8 11 UNC</td>
<td>20-25</td>
<td>10-20</td>
</tr>
<tr>
<td>4”</td>
<td>3.750</td>
<td>5/8 x 6.0</td>
<td>5/8 11 UNC</td>
<td>20-25</td>
<td>10-20</td>
</tr>
<tr>
<td>6”</td>
<td>5.680</td>
<td>3/4 x 6.5</td>
<td>3/4-10 UNC</td>
<td>30-40</td>
<td>20-30</td>
</tr>
<tr>
<td>8”</td>
<td>7.540</td>
<td>3/4 x 7.0</td>
<td>3/4-10 UNC</td>
<td>30-40</td>
<td>20-30</td>
</tr>
<tr>
<td>10”</td>
<td>9.470</td>
<td>7/8 x 9.5</td>
<td>7/8-9 UNC</td>
<td>50-60</td>
<td>40-50</td>
</tr>
<tr>
<td>12”</td>
<td>11.270</td>
<td>7/8 x 10.0</td>
<td>7/8-9 UNC</td>
<td>50-60</td>
<td>40-50</td>
</tr>
</tbody>
</table>

NOTE: “LUG” design not available on 1 1/2”.

FLANGE BOLT TORQUE SEQUENCE

Hayward Flow Control www.haywardflowcontrol.com 1-888-HAY-INDL (1-888-429-4635) BYIS Rev H 10/2012 Pg. 2 of 4
OPERATION:

When installation is complete, check for proper alignment. Fully open and close the valve 3 or 4 times. With a lever installed, fully squeeze the handle and hold in for the full stroke 90° stroke of the lever. For optimum operation the lever handle should be held up until full stroke of valve is reached. The handle should be relaxed only at end of stroke.

Maximum operation pressure at ambient temperature is 150 PSI.

See Chart Below for pressure in PSI derating at temperature.
MAINTENANCE & DISASSEMBLY OF VALVE:

I. Minimal valve maintenance is required. The valve is field repairable.

II. Actuator Assembly: Actuators can be removed and installed without removing valve from the line. The line should be depressurized before any actuator is removed.
   A. Handle Assembly: remove black logo bezel by lifting with a thin bladed screwdriver of knife. Remove exposed slotted head screw and flat washer. Lift the handle off.
   B. Gear Actuators: remove four (4) hex nuts and the washers that hold the actuator to the body.
   C. Pneumatic / Electric Actuator: removed by unscrewing either four (4) socket head cap screws or hex nuts which hold the actuator to the valve.

III. VALVE DISASSEMBLY

1. Depressurize and drain line.
2. Remove valve from line and wash thoroughly.
3. For 8” and smaller valves remove cap plug from valve bottom (use a 1/2” drive ratchet). For 10” and 12” remove wedge from body utilizing a small punch to drive wedge out of body.
4. Remove shaft by pushing down on shaft from top, out through bottom of valve body. Note placement of O-ring around plug removed.
5. Remove upper elastomeric moisture seal.
6. Remove upper bearing or 3 bearings on 10” and 12” valves, (use the shaft to twist out).
7. Remove lower bearing (use the shaft to twist out).
8. To remove seal retainers, place shaft through one seal retainer and approximately 3/4 through the disc. Rotate disc approximately 30º, push shaft through disc against opposite seal retainer. Corner of shaft will push against flats of seal retainer. Remove shaft, and insert from opposite side of disc. Rotate disc approximately 30º and push out remaining seal retainer.
9. Slide disc out of liner.
10. Inspect all parts for wear and replace as required. NOTE: The liner is not a replaceable part of the valve.
11. To reassemble: lightly lubricate all moving parts and seals and reverse above procedure.