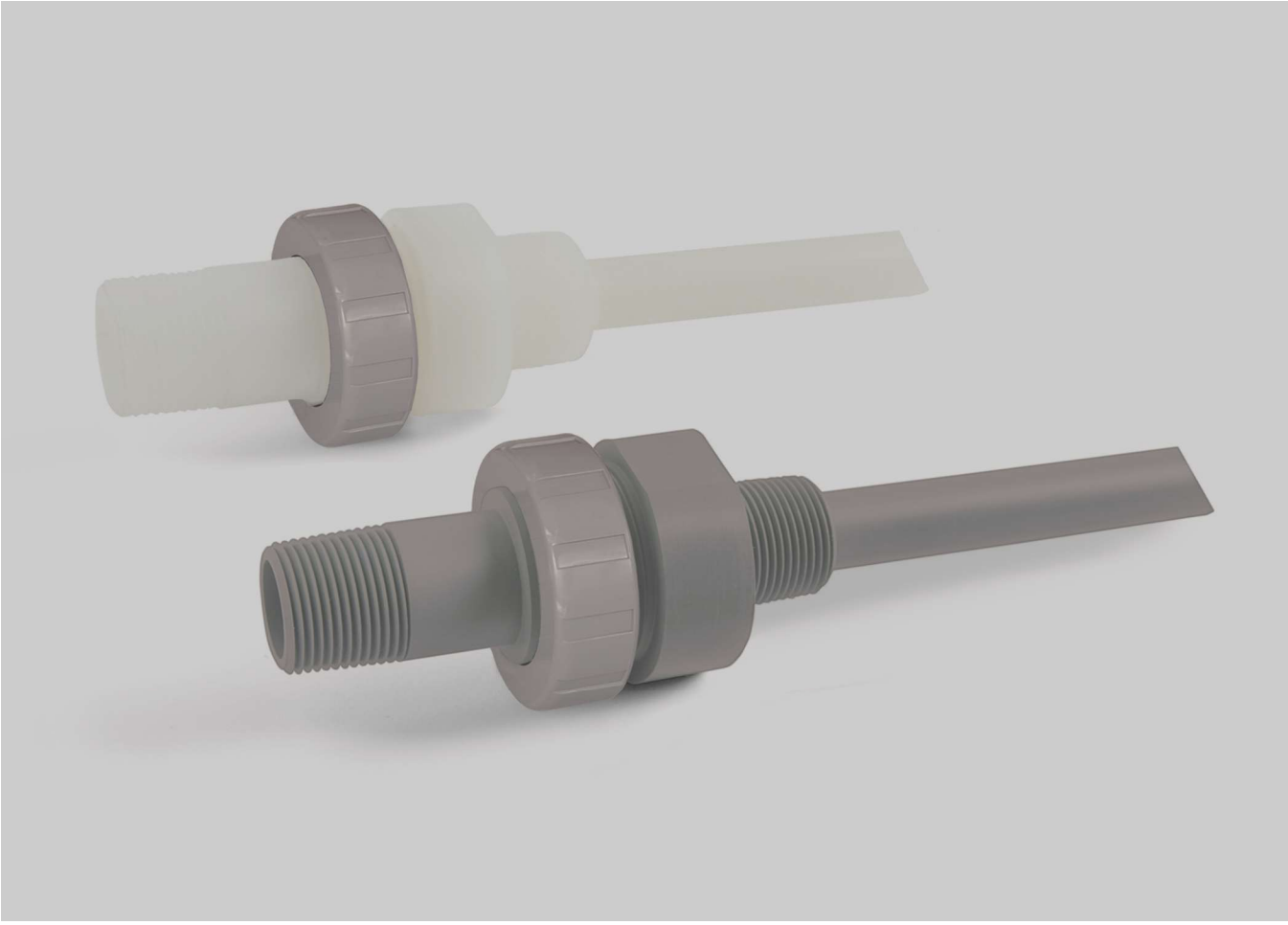
HAYWARD SERIES IV
INJECTION VALVES
INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS



SAFETY WARNINGS

PLEASE READ THE FOLLOWING INFORMATION PRIOR TO INSTALLING AND USING HAYWARD SERIES IV INJECTION 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, PP or PVDF 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 IV is intended for use in liquid service only. Do not attempt to use this valve for controlling 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 product using clean water at 70°F. Product 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.

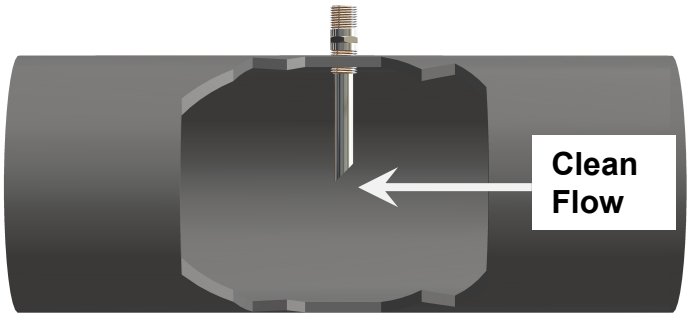
11. Always follow your site and or company procedures for any safety training and or site specific precautions or warnings in addition to those in this document.

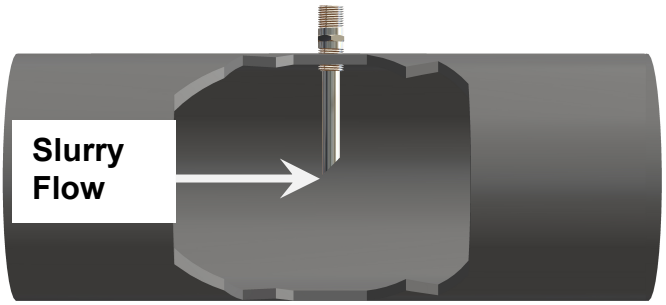
Operation:

Hayward injection valves are installed into the middle of a process pipe to deliver chemical to a desired application point. The integrated quill directs the chemical away from the wall of the pipe and will promote better mixing of the injected chemical with the process fluid. This is enhanced by the 45° angle at the quill tip. The ball check in the valve functions as a positive shut-off to ensure the process fluid does not reverse flow back up the chemical line.

Installation Instructions:

1. Identify location on pipe for quill placement.
2. Ensure interior of the pipe is empty and at equilibrium with ambient pressure.
3. Prepare the location for the injection port on the pipe with appropriate means for the installation.
4. Use PTFE tape on the pipe thread of the injection valve to prevent potential leaks.
5. Install the Injection Valve at the injection port so that the quill tip is close to the center of the pipe.
6. For clean liquids, the 45° angle should face the flow as shown. For slurries and other fluids that can clog the tip, the 45° angle should face away from the flow. This is achieved by tightening the valve all the way, until the arrow on the valve body faces the desired direction. (note arrow direction before installing)
7. Do not over tighten.
8. Orientation is not a concern if the quill has a flat end.
9. Connect chemical feed line to opposite end. It is recommended to connect to the chemical system pipe with a flexible line for ease of installation and maintenance.





Maintenance:

WARNING

Ensure the system is not under pressure and that the chemical lines are flushed with water or appropriate fluid before maintenance or disassembly.

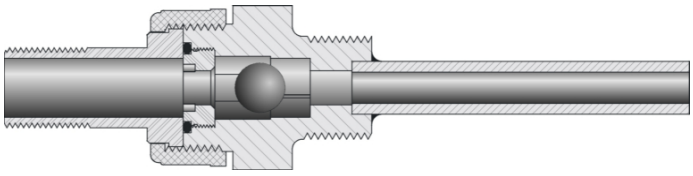
Periodic replacement of the internal components is required.

1. To facilitate inspection and replacement, the valve layout is such that inspection and removal of the ball, spring and o-ring can be done without taking the valve out of the chemical line.
2. Unscrew the union nut to allow for inspection of the internal components.
3. Replace parts as necessary.
4. After replacement, tighten the union nut back into position.

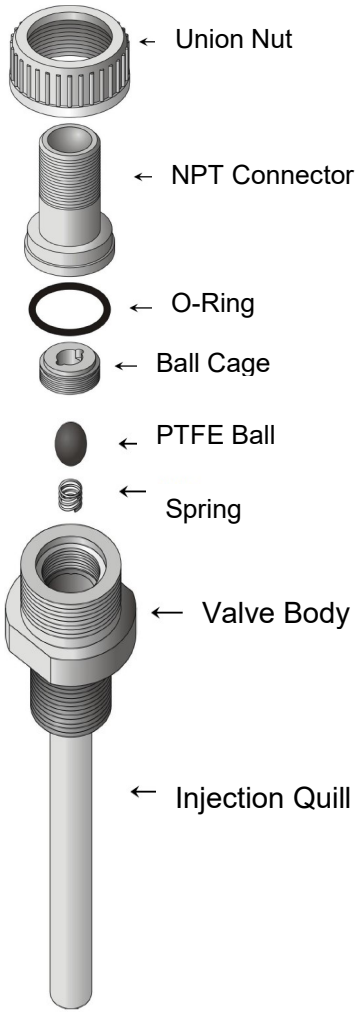
CAUTION:

DO NOT OVER-TIGHTEN UNION NUT

Sectional Drawing:



Technical Data:



Sizes	**1/2", 3/4", 1"**
Connections:	**MNPT, BSPT, Socket Connector X MNPT**
Maximum Temperature*	**140°F (60°C) PVC/PVC** **180°F (82.2°C) CPVC/CPVC** **180°F (82.2°C) PVDF /CPVC**
Maximum Operating Pressure at 70°F	**150 psi (10 Bar)) at 70°F (21.1°C)**
Materials of Construction:	
Valve Ball / Spring	**PTFE Ball / Hastelloy C Spring**
O-Ring	**FPM (Black with Green Dot), EPDM**
Valve Body /Union Nut	**PVC/PVC, CPVC/CPVC, PVDF/CPVC**
Check valve crack pressure	**3-6 psi (0.2 – 0.4 Bar)**

*Temperature is limited by Union Nut.