

HAYWARD FLOW CONTROL YC SERIES Y-CHECK VALVE INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

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

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

WARNING

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

WARNING

The YC Series Y-Check Valve 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.

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

Hayward PVDF products should not be used in services with operating temperature below 10°F.

- Due to differential thermal expansion rates between metal and plastic, transmittal of pipe vibration and pipe loading forces, **DIRECT INSTALLATION OF HAYWARD FLOW CONTROL PRODUCTS INTO METAL PIPING SYSTEMS IS NOT RECOMMENDED.** Wherever installation of Hayward product 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 product to compensate for the factors mentioned above.
- Published operating requirements are based on testing of new products using clean water at 70°F. Performance is affected by many factors including fluid chemistry, viscosity, specific gravity, flow rate, and temperature. These should be considered when sizing Hayward products.
- 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 any Hayward product may result in product damage, property damage, personal injury, or even death.

- 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.

The most recent revision to this document is available at
<http://www.haywardflowcontrol.com/images/flowcontrol/PDF/iom/YCIS.pdf>

1. INSTALLATION:

1.1. TRANSPORTING THE VALVE:

Valve should be stored inside factory packaging until product is ready to be installed. Packaged valve should be stored indoors, at room temperature, and out of direct sunlight. Avoid storing packaged valve in location where packaging may become wet. Valve should be moved as close to installation site as possible prior to removing from packaging. Do not cut through tape on box any more than necessary to avoid damaging valve. After removing valve from carton, care must be taken not to damage valve or to allow debris to enter valve.

1.2. FLOW DIRECTION AND VALVE ORIENTATION:

WARNING

System must be depressurized and drained prior to installing valve or performing maintenance. Failure to depressurize and drain system prior to installing or maintaining valve may result in product damage, property damage, personal injury, or even death.

CAUTION

Do not install valve directly to pump outlet. Allow a length of at least 10 pipe diameters between pump outlet and valve.

Do not install valve directly after a reducer / expansion fitting. Install at least 10 pipe diameters from an expansion or reducing fitting.

Pipe must be supported upstream and downstream of the valve. Sound piping system design principles should be applied when installing this valve.

Do not install valve directly into a metal system. Wherever installation of thermoplastic valves into metal piping systems is necessary, it is recommended that at least 10 pipe diameters in length of thermoplastic pipe be installed upstream and downstream of the thermoplastic valve.

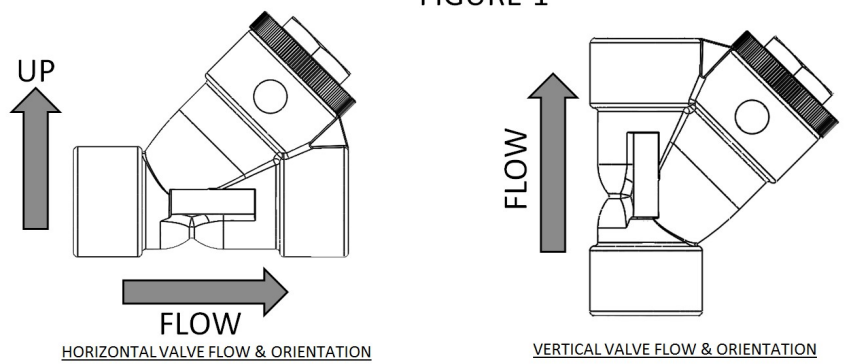
1.2.1. FLOW DIRECTION:

CAUTION

This valve is unidirectional and must be installed with the flow arrows on the valve properly oriented with the direction of system flow. (See Figure 1)

1.2.2. VALVE ORIENTATION:

Valve should be installed with cap upright. Do not install valve with cap upside down.



1.3. SEALING HEAD / BACK PRESSURE REQUIREMENTS:

This valve requires at least 2psi, or 4.5ft, of head to properly seat, or check against reverse flow.

1.4. SOLVENT-WELD SOCKET ENDS (TRUE UNION PVC and CPVC only):

CAUTION

Only solvent cement the end connector to a pipe end with valve separated. Trapped primer and solvent cement vapors can degrade the plastic and the o-ring.

- Disassemble true union from the valve. Remove the nut and end connector from the valve by rotating the nut counter clockwise.
- Protect o-ring seal from being exposed to primer, solvent, glue, and other contamination.
- Place nut over pipe end so that it can engage the end connector once the end connector is cemented to the pipe end. The open end of the thread will face the end of pipe so it can be threaded onto the valve during installation.
- Refer to solvent-weld manufacturer's instructions and cure times.
- Solvent weld the end connector to pipe per solvent cement manufacturer's instructions.
- Repeat steps 1-5 for opposite pipe.
- Set solvent cemented end connectors aside until solvent cement has fully cured.
- Once connections are fully cured, insure o-ring is still on end of valve.
- Make up the connections by threading nut onto the valve in a clockwise direction. Hand thread until tight.
- Verify the connections have sealed.

1.5. SOLVENT-WELD SOCKET ENDS (NON-TRUE UNION PVC and CPVC only):

CAUTION

Care must be taken not to leave any solvent cement or primer on any internal components.

- Protect internal components from being exposed to primer, solvent, glue, and other contamination.
- Refer to solvent-weld manufacturer's instructions and cure times.
- Solvent weld valve end to pipe per solvent cement manufacturer's instructions.
- Repeat steps 1-3 for opposite pipe.
- Verify the connections have sealed.

1.6. THREADED CONNECTION ENDS:

- Wrap male threads of pipe end with PTFE tape. Proper application of PTFE tap will provide a sufficient seal for PVC, CPVC and PVDF threaded joints.

WARNING

Do not use "pipe dope", liquid sealant, or thread sealant on any PVC, CPVC, or PVDF, threaded connections. Pipe dope and thread sealants may react with the PVC, CPVC, or PVDF, weakening the material and potentially resulting in failure of the joint, product damage, property damage, personal injury, or even death.

- For True-Union Valves: Place nut over pipe end so that it can engage the end connector once the end connector is threaded to the pipe end. The open end of the thread on the nut will face the end of pipe so it can be threaded onto the valve during installation.
- Thread the pipe end into the end connector (for true-union valves) or the valve (for non-true-union valves).
- Using a strap wrench only (never use a pipe wrench), tighten the pipe into the end connector only to the point required to form a seal; 1/4 turn past hand tight is typically sufficient to form a seal. (**Caution: Tightening beyond this point may introduce excessive stress that could cause failure of the end connector or the threaded end of the pipe or valve.**)
- Verify the connections have sealed.

1.7. FUSION-WELD SOCKET END CONNECTORS (PVDF ONLY):

Refer to pipe supplier's procedure or your internal fusion procedure.

1.8. FLANGED CONNECTION (PVC AND CPVC ONLY):

Flange bolts should be tight enough to slightly compress the gasket and make a good seal, without distorting or putting excessive stress on the flanges. Suitable washers should be used between the bolt head and flange and the nut and flange. Bolts should be tightened in alternating sequence.



Figure 2: Bolt Tightening Sequence

FLANGE SIZE	BOLT DIA. (IN)	TORQUE (FT. LBS.)
1/2"	1/2	10 – 15
3/4"	1/2	10 – 15
1"	1/2	10 – 15
1-1/4"	1/2	10 – 15
1-1/2"	1/2	10 – 15
2"	5/8	15 – 20
2-1/2"	5/8	20 – 25
3"	5/8	20 – 25
4"	5/8	20 – 25

2. STARTUP AND OPERATION:

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

WARNING
The YC Series Y-Check Valve 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.

WARNING
Hayward PVC and CPVC products should not be used in services with operating temperature below 34°F.
Hayward PVDF products should not be used in services with operating temperature below 10°F.

- 2.1. Ensure valve is installed in the proper direction or orientation. Check flow arrow on valve and make sure it is pointing in the direction of system flow. Start up system. (See Figure 1)
- 2.2. Slowly purge air from system as line fills with liquid.
- 2.3. Look for leaks around cap and end connections and check for proper valve operation. If any leaks are present, or valve does not perform properly, shut down system, depressurize and check all connections.
- 2.4. Periodically check valve for leaks or external damage.
- 2.5. Periodically check cap and / or flange connections.

3. MAINTENANCE:

WARNING
System must be depressurized and drained prior to installing valve or performing maintenance. Failure to depressurize and drain system prior to installing or maintaining valve may result in product damage, property damage, personal injury, or even death.

1. Remove the cap from the check valve by turning counter clockwise.
2. Remove the plastic spring and the disc.
3. Inspect all parts for wear and damage.
4. Replace the o-rings. Note that on the 3" & 4" the seat o-ring is permanently assembled to the disc, therefore, the entire disc assembly needs to be replaced if the seat is damaged.
5. Reinstall the disc, and the plastic spring.
6. Install the o-ring in the body groove.
7. Use a non-petroleum base lubricant to lubricate the o-ring and thread, and re-assemble the cap to the check valve.

4. PRODUCT SPECIFICATIONS:

Maximum Pressure: 150 psi @ 70°F (see Chart 1 for operating pressures at elevated temperatures)

Operating Temperature:

Material	Minimum Operating Temperature	Maximum Operating Temperature
PVC	34°F (1.1°C)	140°F (60.0°C)
CPVC	34°F (1.1°C)	190°F (87.8°C)
PVDF	10°F (-12.2°C)	240°F (115.6°C)

Maximum System Flow Velocity: 8 ft/s (2.4 m/s) for thermoplastic piping systems

Minimum Back Pressure to Seal: 2psi / 4.5ft of head (13.8KPa / 1.37m)

Sizes: PVC & CPVC: ½" thru 4"
PVDF: ½", ¾", and 1" only

Flow Capacity, Cv:

Size	Cv
1/2" (DN15)	0.8
3/4" (DN20)	3.0
1" (DN25)	9.0
1-1/4" (DN32)	26.0
1-1/2" (DN40)	45.0
2" (DN50)	65.0
2-1/2" (DN65)	75.0
3" (DN80)	110.0
4" (DN100)	240.0

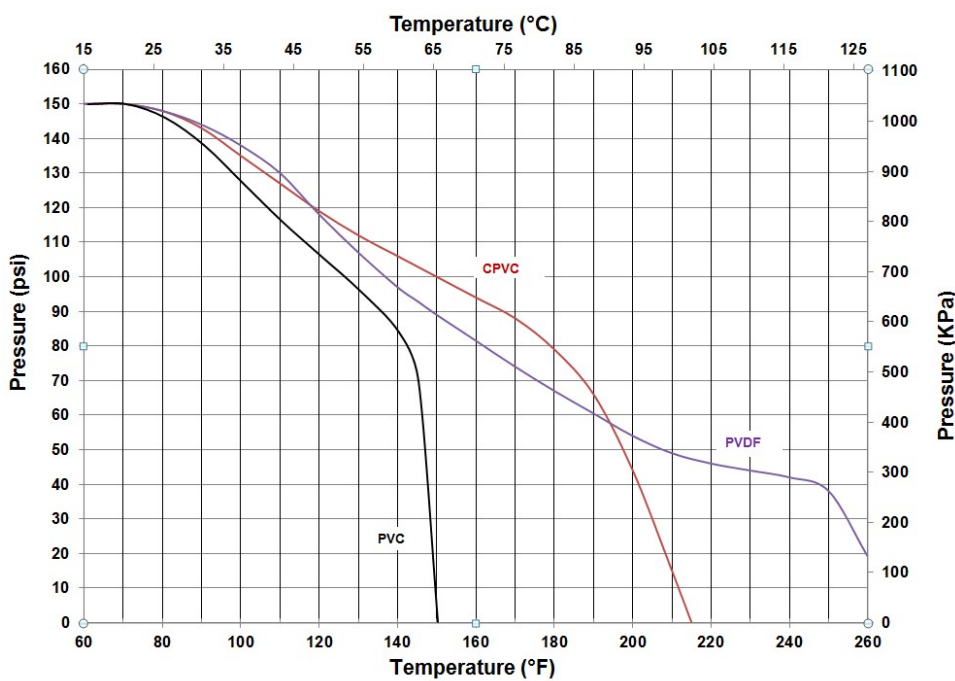
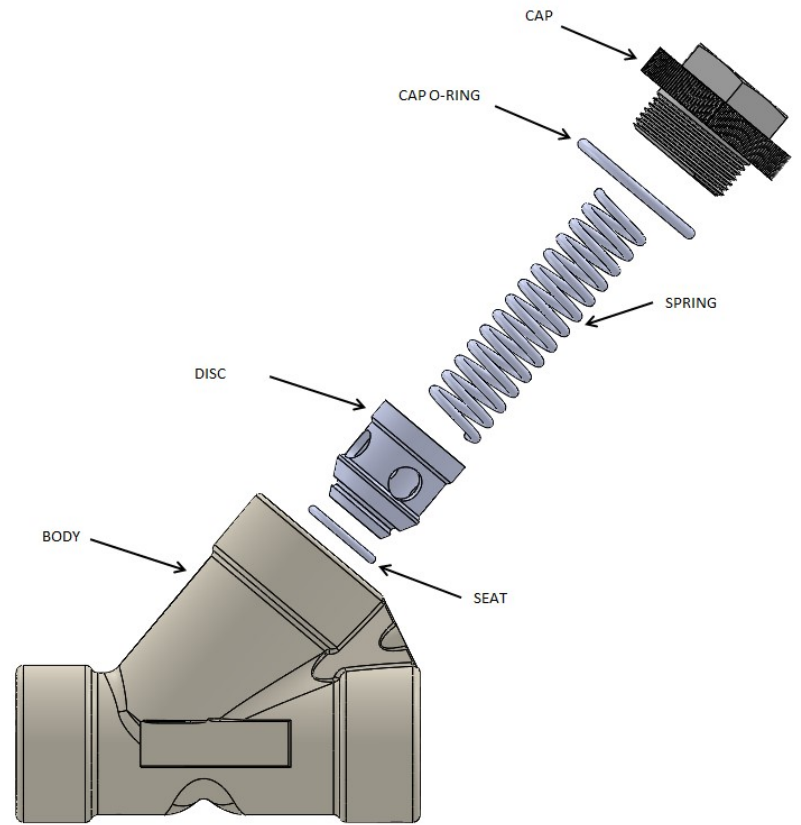


Chart 1: Operating pressures at elevated temperatures for YC-Series Y-Check Valves

WARNING
The maximum recommended fluid velocity through any plastic piping system is eight feet per second (8 ft/s). Higher fluid velocity can create excess water hammer effect, resulting in property damage, personal injury, or even death.

CAUTION
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 systems using Hayward products.

5. PARTS LIST:



6. TROUBLESHOOTING:

Problem	Solution
Leaks at end connections	• Check end connections
	• Tighten if needed
	• Replace PTFE tape on threaded ends
	• Replace end connector o-ring if leaking at end connector (true-union only)
Leaks at cap	• Replace valve or end connector if leaking at solvent cement joint
	• Check cap for tightness
	• Tighten if needed
Leaks at disc	• Replace o-ring if needed
	• Ensure at least 2psi, or 4.5ft of head, back pressure
	• Check disc seal o-ring and replace if necessary
	• Check chemical compatibility between system flow and o-ring material
No flow through valve	• Check for debris in valve
	• Check installation orientation and make sure that flow arrow on valve matches system flow direction
	• Replace valve and reinstall in proper direction

7. WARRANTY TERMS AND CONDITIONS:

THREE YEAR WARRANTY: All products manufactured by Hayward are warranted against defects in material or workmanship for a period of three years from date of shipment. Our sole obligation under this warranty is to repair or replace, at our option, any product or any part or parts thereof found to be defective. **HAYWARD MAKES NO OTHER REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.** The warranty set forth above is the only warranty applicable to Hayward products and in no event shall Hayward be liable for any delay, work stoppage, cartage, shipping, loss of use of equipment, loss of time, inconvenience, loss of profits of any direct or indirect incidental resulting from or attributable to a breach of warranty. **The remedies under this warranty shall be the only remedies available. OUR MAXIMUM LIABILITY SHALL NOT IN ANY EVENT EXCEED THE CONTRACT PRICE FOR THE PRODUCT.**