

HAYWARD FLOW CONTROL MFLV SERIES CARTRIDGE FILTER VESSEL INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

PLEASE READ THE FOLLOWING INFORMATION PRIOR TO INSTALLING AND USING HAYWARD MFLV SERIES CARTRIDGE FILTER VESSELS. 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 FLV cartridge filter vessel is intended for use in liquid service only. Do not attempt to use this vessel for filtering 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 VESSELS INTO METAL PIPING SYSTEMS IS NOT RECOMMENDED.** Wherever installation of plastic vessels 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 vessel to compensate for the factors mentioned above.
9. Published operating requirements are based on testing of new vessels using clean water at 70°F. Vessel 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 vessel may result in product damage, property damage, personal injury, or even death.

1.0 INSTALLATION:

1.1 Installing the Vessel into a System:

- 1.1.1 Install vessel per FLV-Series IOM (Hayward part number FLVIOM).

1.2 Installing the Cartridge Kit into the Vessel:

WARNING

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

- 1.2.1 Remove cartridge kit from packaging.
 - 1.2.1.1 Verify that product is defect free and meets specifications.
- 1.2.2 Install the five longer perforated tubes into appropriately sized bores in lower adapter plate.
 - 1.2.2.1 Lower adapter plate is the thickest of the plates, has five thru holes, and the only plate with an o-ring.
 - 1.2.2.2 Perforated tubes will require light pressure to install.
- 1.2.3 Install lower adapter plate into vessel.
 - 1.2.3.1 Plate must be installed with perforated tubes facing upwards (towards top of vessel).
 - 1.2.3.2 Install plate by lowering plate into vessel. NOTE: Be careful to keep plate square to bore of vessel to prevent damage to o-ring.
 - 1.2.3.3 Fully seat lower retainer plate using supplied PVC pipe.
 - 1.2.3.3.1 Place pipe over perforated tubes and gently tap pipe with a rubber mallet.
 - 1.2.3.3.2 Move pipe from one perforated tube to the next in a circular pattern to evenly lower adapter plate until plate bottoms out on stops inside body bore
- 1.2.4 Install the five shorter perforated tubes into appropriately sized bores in upper adapter plate.
 - 1.2.4.1 Upper adapter plate is 1/2" thick and has five counter-bores sized to fit perforated tubes.
 - 1.2.4.2 Perforated tubes will require light pressure to install.
- 1.2.5 Install cartridges (not included) into vessel.
 - 1.2.5.1 Cartridges install over perforated tubes in lower adapter plate.
- 1.2.6 Install upper adapter plate on top of cartridges.
 - 1.2.6.1 Perforated tubes installed in upper adapter plate should be inserted into filter cartridges.
 - 1.2.6.2 NOTE: Upper plate acts as a centering ring for cartridges. Upper plate should not fit tightly to bore of body and does not seal to body bore.
- 1.2.7 Install anti-rotation ring
 - 1.2.7.1 Anti-rotation ring is 1/4" thick with a thru hole in the center.
 - 1.2.7.2 Anti-rotation ring simply sits on top of upper adapter plate.
 - 1.2.7.3 NOTE: Anti-rotation plate is required only for use with double open end cartridges. Anti-rotation plate should not be used with O-Ring cartridges (222 x Bayonet).
- 1.2.8 Install cover to vessel.
- 1.2.9 Pressurize vessel per FLV-Series IOM (Hayward part number FLVIOM).

2.0 OPERATION:

2.1 Replacing Cartridges

WARNING

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

- 2.1.1 Depressurize and drain vessel per FLV-Series IOM (Hayward part number FLVIOM).
- 2.1.2 Remove cover from vessel.
- 2.1.3 Remove anti-rotation ring and upper adapter plate from inside vessel.
- 2.1.4 Remove old cartridges from vessel.
- 2.1.5 Install new cartridges into vessel.
 - 2.1.5.1 Cartridges install over perforated tubes in lower adapter plate.
- 2.1.6 Install upper adapter plate on top of cartridges.
 - 2.1.6.1 Perforated tubes installed in upper adapter plate should be inserted into filter cartridges.
 - 2.1.6.2 NOTE: Upper adapter plate acts as a centering ring for cartridge. Upper plate should not fit tightly to bore of body and does not seal to body bore.
- 2.1.7 Install anti-rotation ring.
 - 2.1.7.1 Anti-rotation ring simply sits on top of upper adapter plate.
 - 2.1.7.2 NOTE: Anti-rotation plate is required only for use with double open end cartridges. Anti-rotation plate should not be used with O-Ring cartridges (222 x Bayonet).
- 2.1.8 Install cover to vessel.
- 2.1.9 Pressurize vessel per FLV-Series IOM (Hayward part number FLVIOM).

3.0 MAINTENANCE:

WARNING

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

- 3.1 Maintain vessel per FLV-Series IOM (Hayward part number FLVIOM).

4.0 PRODUCT SPECIFICATIONS:

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

Max. Temperature: GFPP: 240°F (see Chart 1)
 CPVC: 180°F (see Chart 1)
 PVC: 140°F (see Chart 1)
 PP: 180°F (see Chart 1)

NOTE: PVC and CPVC available as end connections only. Vessels only provided with GFPP housing. Cartridge kits only provided in PP. Service temperature limited by end connector material selection and cartridge kit material.

Max. Flow: 1-1/4" – 2": 100 GPM, Size 1 (16") and Size 2 (32") vessels
 2-1/2" – 4": 150 GPM, Size 2 (32") vessels

NOTE: Flow rate may be limited by cartridge selection.

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 vessels using clean water at 70°F. Vessel performance is affected by many factors including fluid chemistry, viscosity, specific gravity, flow rate, and temperature. These should be considered when sizing Hayward products.

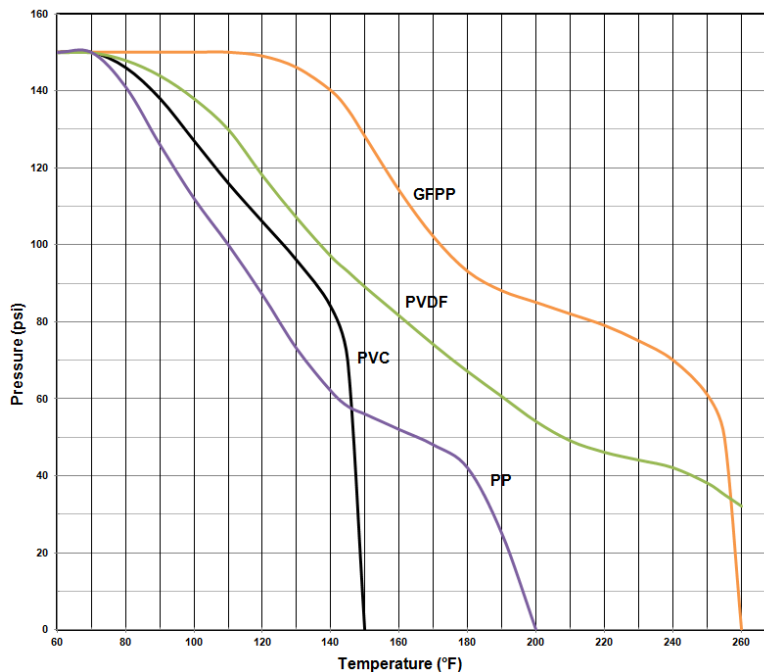


Chart 1: Operating pressures at elevated temperatures

5.0 WARRANTY TERMS AND CONDITIONS:

TWO YEAR WARRANTY: All products manufactured by Hayward are warranted against defects in material or workmanship for a period of two 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.**

5.0 PARTS LIST:

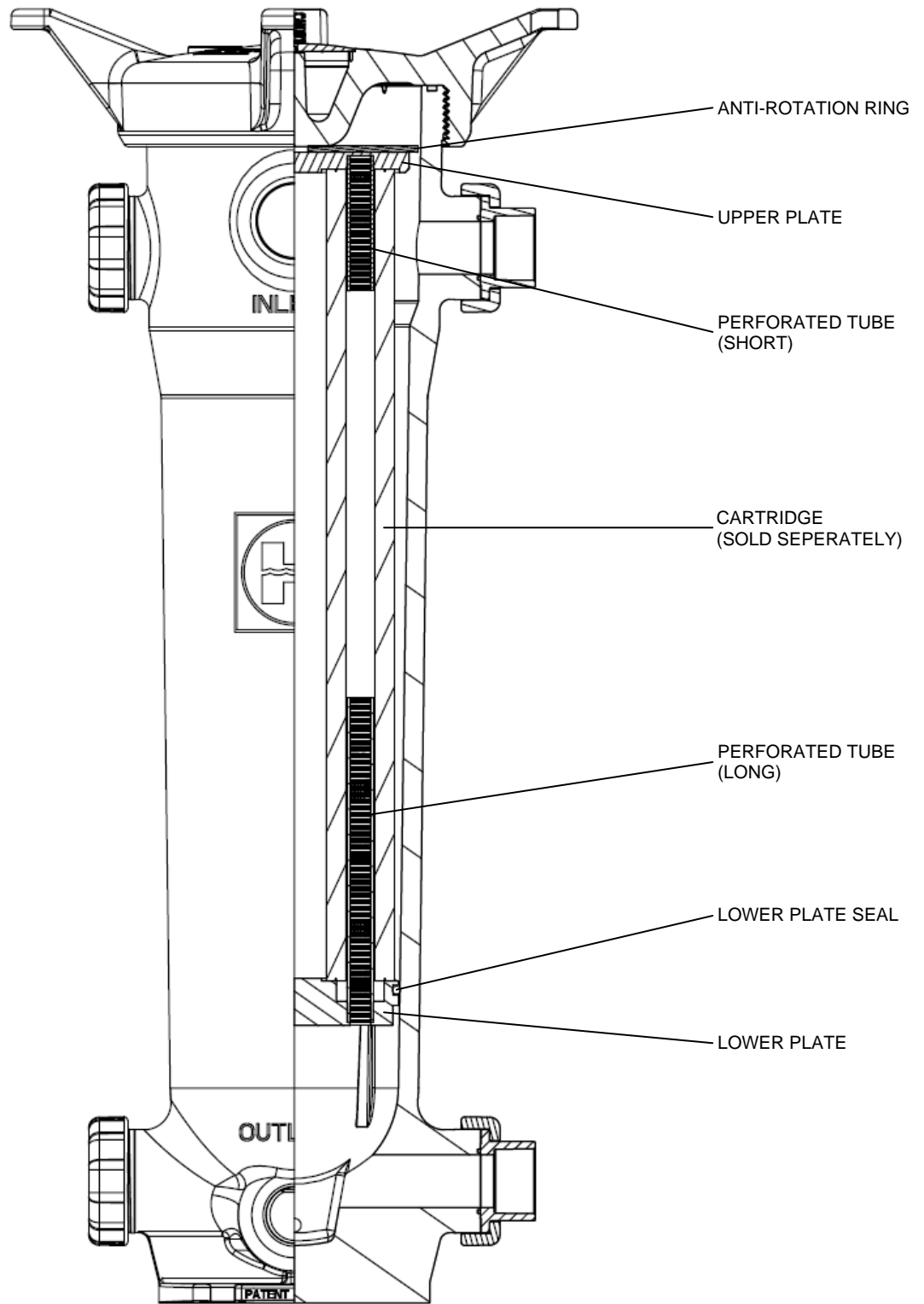


Fig. 1: Cross-Section View of MFLV-Series Multi-Cartridge Kit Components