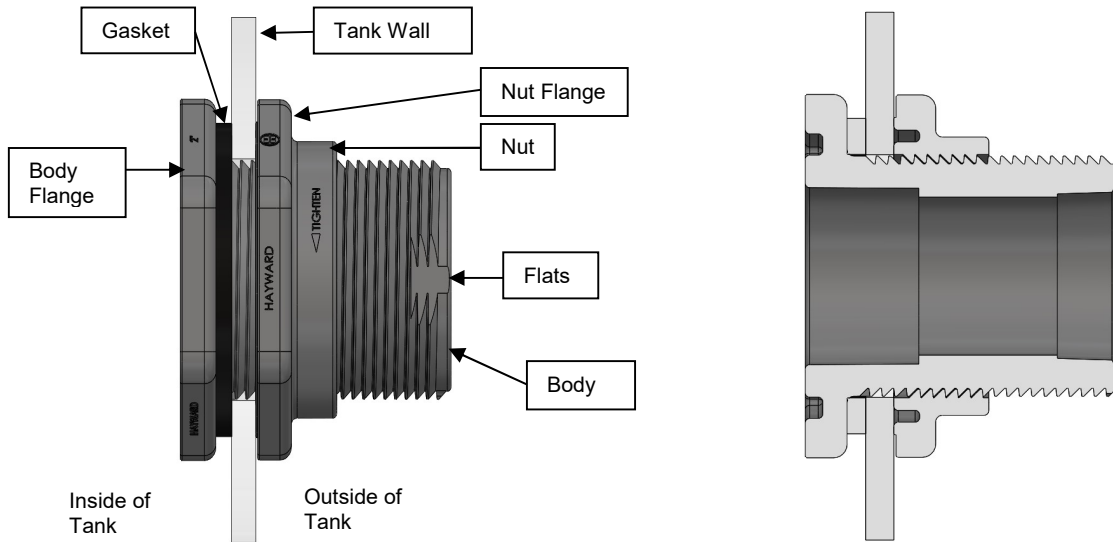


HAYWARD SERIES BFA and BFAS BULKHEAD FITTING INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS



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.

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.

4. The maximum recommended fluid velocity through bulkhead fittings 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 operation temperatures below 34°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.

8. 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.
9. Systems should always be depressurized and drained prior to installing or maintaining any Hayward product.
10. 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.

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.

DIMENSIONAL CONSIDERATIONS:

The following table contains recommended values. Values are in inches. "SF"= Standard Flange "LF"= Large Flange

Bulkhead size	Min Rigid Tank Radius	Min Flexible Tank Radius	Max Wall for BFA, SF and LF	Max Wall for BFAS	Min / Max Hole Size	
1/2"	7.25 SF / 12.00 LF	6.50 SF / 11.00 LF	2.08	1.08	1.38	1.41
3/4"	10.00 SF / 13.50 LF	9.25 SF / 12.75 LF	2.08	1.08	1.63	1.66
1"	11.75 SF / 20.50 LF	10.70 SF / 18.50 LF	2.08	1.08	1.87	1.91
1-1/4"	16.25	12.19	2.00	1.00	2.63	2.67
1-1/2"	16.25	12.19	2.00	1.00	2.63	2.67
2"	25.75	19.38	2.00	1.00	3.25	3.28
3"	30.00	25.25	2.12	1.02	4.50	4.54
4"	60.00	55.00	2.45	2.45	5.75	5.78
6"	114.00	97.00	3.25	--	8.00	8.06

INSTALLATION:

The bulkhead fitting should be installed with the body and the gasket on the inside of the tank. The “flange” portion of the nut is installed against the tank wall. The nut/body thread is a left-handed thread. Follow the tightening direction arrow on the nut. Tighten the nut while holding the body. The nut can be tightened from the outside of the tank by holding the flats on the body end while turning the nut. The nut should be hand tight plus 1/4 to 1/3 of a turn to insure a gasket seal. Once adjoining piping is connected and the system filled the fitting should be visually checked to insure that the gasket is sealing and there are no leaks at the pipe connection. If leaks are observed, drain the system, tighten the connections, and repeat the filling and checking process.

WARNING:
Do not use lubricants of any kind on the bulkhead fitting threads or nut threads. Use of lubricant on these threads is not necessary for proper installation and performance of the bulkhead fitting. Use of lubricants on these threads can potentially result in product damage, property damage, personal injury, or even death.
Any adjoining pipe or system components that are connected to the bulkhead fitting must be properly supported using pipe stands, or pipe hangers, to properly support the weight of the pipe and system components. Do not use the bulkhead fitting to support the weight of the adjoining pipe and system components.
NOTES:
The final assembly of the bulkhead fitting to an adjoining piping system should only be completed when the tank is in its final position with respect to the piping system.

THREADED CONNECTION:

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

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

Thread the end of the pipe into the threaded end of the bulkhead fitting until “hand tight”. Using a strap wrench only (never use a pipe wrench), tighten the pipe into the bulkhead fitting only to the point required to form a seal between the bulkhead fitting and the pipe thread; 1/2 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 bulkhead or the threaded end of the pipe.) Once the system is filled, visually check for leaks. If leaks are observed, drain the system, tighten the connections, and repeat the filling and checking process.

SOCKET CONNECTION (PVC and CPVC only):

Refer to solvent-cement manufacturer’s instructions and cure times.

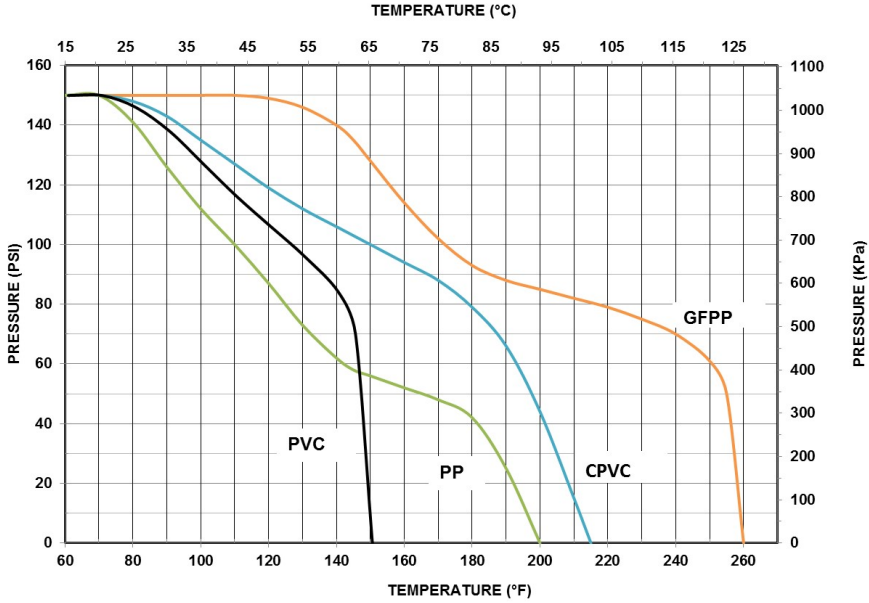
MAINTENANCE: The Hayward Series BFA and BFAS Bulkhead Fitting are not intended to be repaired. Fittings that are damaged during installation or operation should be replaced.

OPERATION:

The following ratings must be observed during operation:

Temperature Ratings, Minimum and Maximum		
Material	Minimum Operating Temperature	Maximum Operating Temperature
PVC	34°F (1.1°C)	140°F (60.0°C)
CPVC	34°F (1.1°C)	180°F (82.2°C)
PP	20°F (-6.6°C)	140°F (60.0°C)
GFPP	20°F (-6.6°C)	240°F (115°C)

Pressure rating of PVC, CPVC, PP, and GFPP Series BFA and BFAS at 70°F is 150 psi, non-shock. See Pressure vs. Temperature graph for pressure down rating due to temperature.



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