

Installation, Operation and Maintenance Manual

AquaSolve™

The eco-friendly solution for hard water.
Chemical-Free, Salt-Free, No Power Source Required

- Model M8407-COM • 10 gpm
- Model M8408-COM • 12 gpm
- Model M8409-COM • 16 gpm
- Model M8410-COM • 20 gpm
- Model M8412-COM • 30 gpm

⚠ WARNING



Read this Manual **BEFORE** using this equipment.
Failure to read and follow all safety and use information can result in death, serious personal injury, property damage, or damage to the equipment.
Keep this Manual for future reference.

Introduction

The PVI AquaSolve™ system provides protection from scale formation throughout the plumbing system. The AquaSolve™ system can be installed at the point of entry to treat your entire system, both hot and cold water, or it can be located directly before a water heater or other device (e.g. steamer, etc) that requires protection from hard water.

AquaSolve™ reduces or eliminates scale formation on internal plumbing surfaces as well as reducing spotting and streaking normally associated with hard water.

AquaSolve™ prevents scale by transforming the normal dissolved hardness minerals into undissolved crystal micro-particles. These crystals stay suspended in the water and have a greatly reduced ability to react and attach to surfaces like dissolved hardness does. Therefore, the problem of internal buildup of scale in pipes, water heaters and on fixtures and glass is greatly reduced.

AquaSolve™ is not a water softener – Low or phosphate-free cleaning products are recommended to achieve optimum results. Modern surfactant or detergent based, liquid soaps are preferred over old-fashioned caustic solid soaps.

Unlike softened water, AquaSolve™ treated water maintains the beneficial essential mineral content of your water and is safe to drink.



System is tested and certified by WQA against NSF/ANSI Standards 61 for material safety only and 372 for Lead Free.

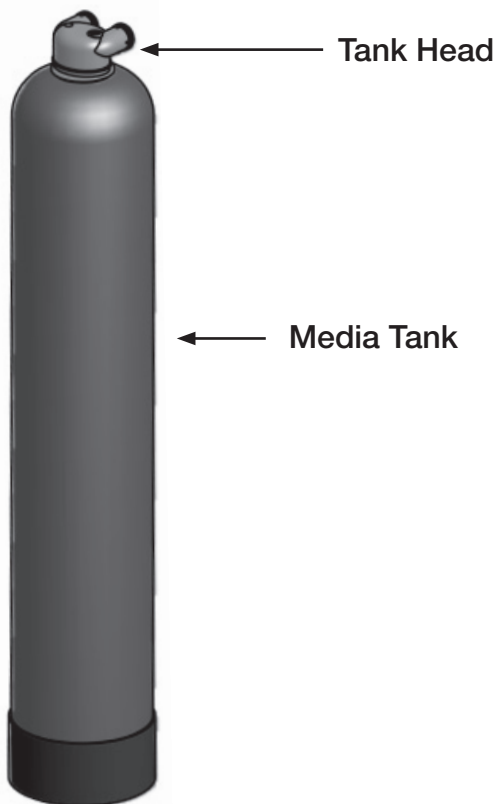


PVI[®]
A WATTS Brand

AquaSolve™ Benefits

- Chemical free scale prevention. Provides cost savings and environmental benefits
- Virtually maintenance free. No salt bags or other chemicals to buy, transport and store
- No electricity, no wastewater, completely self-contained
- Beneficial minerals retained for more healthful drinking water
- Improves the efficiency of water-using appliances.
- Simple installation – no electrical and drain hookup
- Safe for landscaping and lawn watering. No need for costly bypass plumbing
- Compatible with all on-site and community wastewater treatment systems
- Not subject to water softener restrictions and “bans”

System Overview



Standard Connections

1 inch NPT on models 10 to 16 gpm.

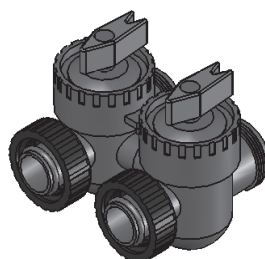
1-1/4 inch NPT on models 20 and 30 gpm.

Fittings are threaded onto the tank head.



Optional

2-way bypass valve assembly for all sizes. Remove the standard connections and thread bypass assembly onto tank head. Then thread standard connection onto bypass valve assembly and connect to building plumbing.



PVI Part Number 144056

Equipment Specifications

PVI AquaSolve™ systems are complete, self-contained, loaded with media and ready to use. A simple inlet and outlet connection is all that is required for installation. Please review operating pressures, temperatures and water chemistry limitations to ensure compatibility.

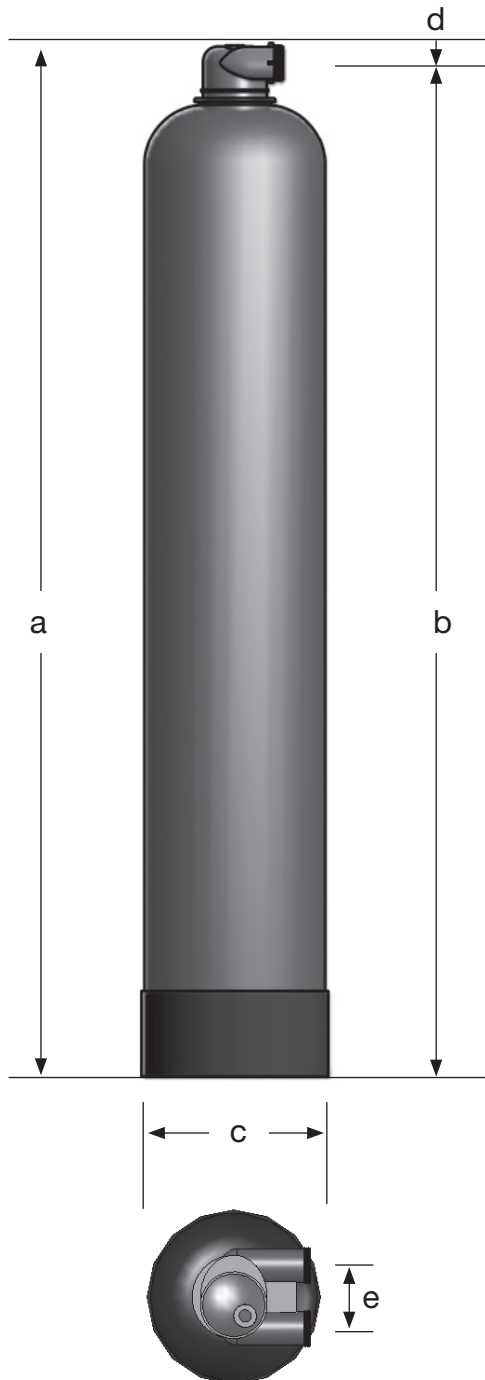
Feed Water Chemistry Requirements

pH	6.5-8.5
Hardness (maximum)	75 grains (1282 ppm CaCO3)
Water Pressure	15psi to 100psi (1.03 bar to 6.9 bar)
Temperature	40°F to 100°F (5°C to 38°C)
Free Chlorine	< 2 ppm
Iron (maximum)	0.3 ppm
Manganese (maximum)	0.05 ppm
Copper	1.3 ppm*
Oil & H2S	Must be Removed Prior to AquaSolve
Silica	20 ppm**

* See note about iron, manganese and copper on the next page.

NOTICE

**AquaSolve media does not reduce silica scaling. Silica can act as a binder that makes water spots and scale residue outside the plumbing system difficult to remove. This 20 ppm limitation is for aesthetic purposes.



Mechanical Specifications

Model	8407	8408	8409	8410	8412
Max Service Flow (gpm)	10	12	16	20	30
Pressure Drop at Full Flow Rate (psi)	2	2.5	4.5	7.1	16
Dry Weight (lbs)	22	25	29	35	43
Service Weight (lbs)	80	97	129	168	235

Dimensions (nominal - inches)

	8407	8408	8409	8410	8412
a	47	47	49	58	55
b	46	46	48	57	54
c	7	8	9	10	12
d	1.0	1.0	1.0	1.0	1.0
e	3.0	3.0	3.0	3.0	3.0

NOTICE

Important notice about iron, manganese and copper in the water supply

Iron and Manganese

Just as with conventional water softening media, AquaSolve™ needs to be protected from excess levels of certain metals that can coat the active surface, reducing its effectiveness over time. Public water supplies rarely, if ever, present a problem, but if the water supply is from a private well, confirm that the levels of iron (Fe) and manganese (Mn) are less than 0.3 mg/L and 0.05 mg/L respectively.

Copper

Pursuant to the EPA drinking water standards, the copper concentration permitted is up to 1.3 ppm. Typically originating from new copper plumbing, high levels of copper can foul AquaSolve media. For applications with copper concentration greater than 1.3 ppm, please consult PVI Technical Service. To further minimize any problem with excess copper, avoid applying excessive flux on the inner surfaces of the pipe and use a low-corrosivity water soluble flux listed under the ASTM B813 standard.

CAUTION

- Do not let the system freeze. Damage to the tank may result.
- System must be operated in a vertical position. Do not lay it down during operation. The system may be placed in any position for shipping and installation but must be operated in the vertical position.
- Place the system on a smooth, level surface. Because the system operates in an upflow, fluidized bed mode, having a level surface is more important than with a softener or media filter.
- A bypass valve should be installed on every system to facilitate installation and service.
- Observe all local plumbing and building codes when installing the system.

NOTICE RE: Installation

The AquaSolve™ system differs from a conventional softener or media filter in a number of key respects.

- The system is light and only partially filled with media. This is normal. The upflow operation of the system requires a lot of freeboard to allow the bed to fully fluidize.
- The system has no underbed so you can tip the system over without any fear of upsetting the media. This makes transportation and installation much easier than conventional systems.
- Because the AquaSolve™ system operates in the Upflow mode, the tank connections are opposite of what you're used to.
- Please see the Important note about iron, manganese and copper above.
- Please see the note about "Using AquaSolve™ with other water treatment equipment" on the next page
- Not for use on closed loop systems.

WARNING

Installation Precautions

- Do **NOT** install system on line pressure above 100psi.
- Do **NOT** install the system backwards with the feed water line connected to the outlet.
- Do **NOT** install system in direct sunlight or where system is exposed to harsh chemicals or may be subjected to being struck by moving equipment, carts, mops or any other item that may cause damage.
- Do **NOT** install the unit behind equipment where it may be difficult to access the system for media replacement.
- Do **NOT** install the AquaSolve™ system near any source of heat. Also, do not install the system near any device or break out area that would be adversely effected by water.
- **IF** water hammer is evident, install water hammer arrestors before the AquaSolve™ unit.
- Always back-up valves and fittings with a wrench when installing a fitting to avoid turning the valve.

Position the AquaSolve™ unit in a suitable location.

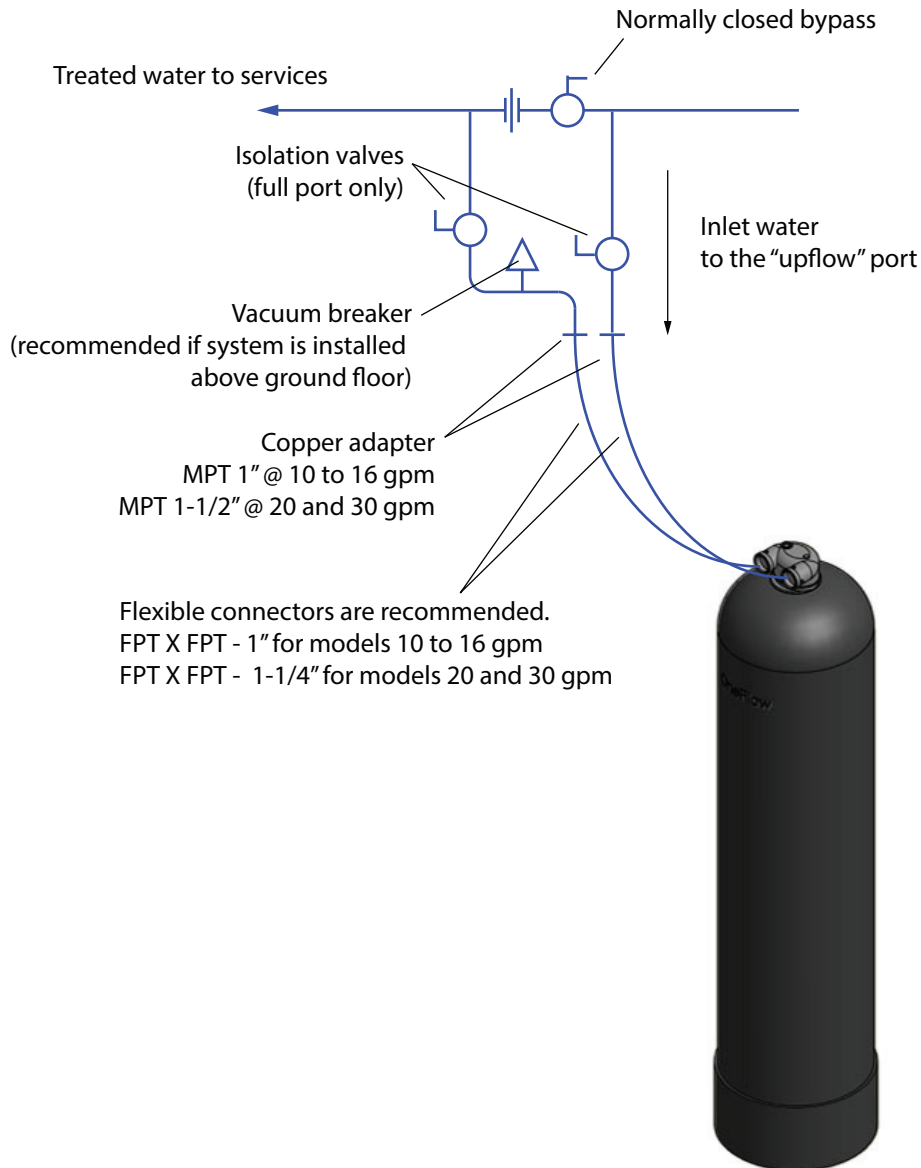
WARNING

Using AquaSolve™ with other water treatment equipment.

Due to the unique properties of AquaSolve™, there are some unique requirements for using AquaSolve™ in conjunction with filtration or other forms of water treatment.

1. AquaSolve™ must be the last stage in the treatment chain. Do not install any filters after AquaSolve™ or before any devices for which scale prevention is required. POU filters, e.g. carbon or RO are exempt from this requirement.
2. The addition of soaps, chemicals, or cleaners, before or after AquaSolve™ treatment, may reverse its anti-scale treatment effects and/or create water with a heavy residue or spotting potential. Any adverse conditions caused by the addition of soaps, chemicals, or cleaners are the sole responsibility of the end user.

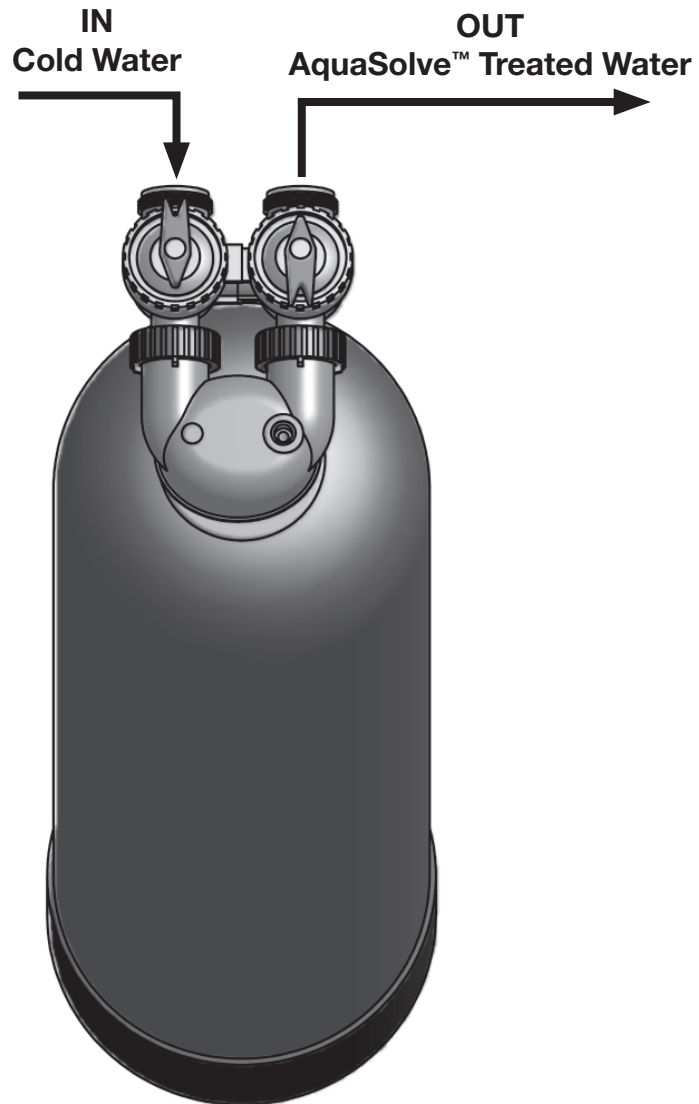
Piping Recommendation



Installation and Startup

1. Place the system in the desired location.
2. Connect the cold water supply to the inlet of the AquaSolve™ system.
NOTE: The AquaSolve™ system operates in the UP-flow mode which is opposite of a conventional softener.
3. Place a bucket under the outlet port or run a line from the outlet port to a drain.
4. Slowly open the supply valve (user supplied) to the AquaSolve™ system. Allow the tank to fill with water. Close the supply valve when a steady stream of water comes out of the outlet port.
5. Connect the outlet of the AquaSolve™ system to the cold water supply of the building.
6. Open the supply valve to the AquaSolve™ system.
7. Open faucets downstream from the AquaSolve™ system to relieve any air.
8. Check for leaks. Repair as needed.
9. The system is now ready for service.

Optional Tank Mounted By-Pass Valves



Bypass Valve Modification

Service Position down-flow tank.	As shipped, the bypass is set-up for down-flow use. The arrow shape of the handles points in the wrong direction for UP-flow use. To convert it to UP-flow use, pull up on the red handles until they come off. Rotate the handle 180° and put it back on the valve stem.
Service Position UP-flow tank.	Bypass Position UP-flow tank.

Replacing the Media

NOTICE

Your AquaSolve™ media should be replaced every (3) years.

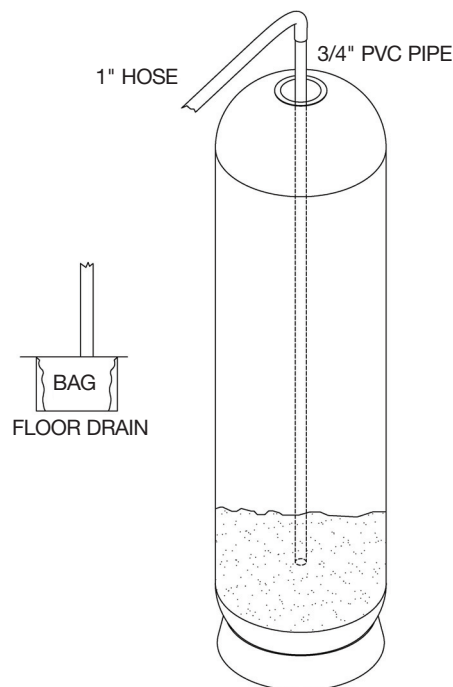
1. Shut off the primary feed supply going to the AquaSolve™ tank.
2. Open up a downstream spigot or faucet to release pressure in the tank and in the distribution lines before and after the system.
3. Shut the isolation valves immediately before and after the tank.
4. Disconnect the unions on the inlet and outlet of the tank, and then disconnect flex connectors from head.
5. Using a step ladder and strap wrench, remove the threaded head assembly connection (turning counter-clockwise) and remove the complete upper assembly including grey-colored PVC strainer. Rinse these parts in a nearby sink or bucket of water. Do not drain the tank.
6. Remove the distributor tube with the bottom strainer. Rinse these parts in a nearby sink or bucket of water.
7. Get a 6ft length of 3/4" sch. 40 PCV and a length of 1" poly-vinyl hose. The length of hose depends on the distance to the nearest floor drain. (Both of these can be acquired at Home Depot or Lowes.)
8. Insert one end of the pipe inside the hose and put the other end of the pipe into the top of the tank and down into the media. Put the other end of the hose inside a rice bag and put the rice bag on the floor drain.
9. Get a garden hose and put it on the open end of the poly hose to fill the hose and pipe with water. Air will bubble out of the tank. Once all the air is out of the hose and pipe, you can start a siphon to remove the media. Put the garden hose in the top of the tank and turn it on to keep the tank full of water. Push the pipe up and down in the media to get it all out. The rice bag will catch the media and allow the water to go down the drain.
10. Try not to be too aggressive when extracting the media. You need to take it out in small bites. If you let the whole pipe/hose fill with media it will plug up. You need to let slugs of water flush out the pipe as you go.
11. When all the old media is removed turn off the garden hose and continue to siphon until the tank is about half full with water.
12. Using the step ladder again, reinstall the distributor tube with bottom strainer that was removed in step #6. Center the distributor tube in the bottom of the tank. Keeping any and all media from entering the distributor tube, carefully pour-in a new bag(s) of media that specifically meets the replacement requirement of the tank. For example, an OF1665-75TM system requires (x1) OF1665RM Replacement Media.
13. Inspect the threaded connection on the top of the tank to ensure no loose beads of media are stuck to the internal threads. If visible, wipe away the beads with a damp cloth.
14. Re-attach the head assembly onto the distributor tube and thread the head assembly back onto the tank. Hand-tighten until the final turn when a strap wrench can help tighten the connection.
15. Reconnect the flex connectors and union connections.
16. Open the feed water inlet (slowly) to fill the tank.
17. Purge the air at a downstream faucet close to the system.
18. Once the tank is full, wait 4 hours for media to "hydrate".
19. Put the tank in service.

Alternative Method for Replacing Media

Follow steps 1 – 6 then,

- Remove center distributor tube and lower basket and siphon all water from tank
- Lay tank down on its side and tip upside down while using hose to flush media out
- When all the old media is removed, stand tank back up and install in original position. Fill the tank so that it is about half full with water.

Then continue with steps 12 – 19.



Replacement Media	
PVI Part Number	AquaSolve GPM
M8407-COM-RM	10
M8408-COM-RM	12
M8409-COM-RM	16
M8410-COM-RM	20
M8412-COM-RM	30

Limited Warranty

- The AquaSolve™ tank system is warranted to be free of defects in materials and workmanship for 5 years from the date of original shipment.
- The AquaSolve™ media is warranted for performance for a period of 2 years from the date of the original installation when installed and operated in accordance with the instructions in the corresponding Installation and Operation Manual.

Conditions

1. The AquaSolve™ system must be installed in applications with municipally supplied water adhering to EPA guidelines.
2. Any component failure must not result from abuse, fire, freezing or other acts of nature, violence, or improper installation.
3. Equipment must be installed and operated in compliance with the local plumbing codes and on an approved water supply.
4. Equipment is limited to use at water pressures and temperatures that do not exceed our published specifications.
5. Water supply must not exceed 2.0 PPM chlorine. For water supply exceeding 2.0 PPM chlorine, pretreatment is required. (Please contact your water treatment specialist.)
6. Information, including model number, serial number, and date of installation, must be provided for any claims pertaining to equipment in warranty.
7. Defective parts are subject to inspection by either PVI or any authorized representative before final commitment of warranty adjustment is made.
8. PVI reserves the right to make changes or substitutions in parts or equipment with material of equal quality or value and of then current production.

Limitations

Our obligation under this warranty with respect to the tank or valve is limited to furnishing a replacement for, or at our option, repairing any part or parts to our satisfaction that prove defective within the warranty period stated above. Such replacement parts will be delivered to the owner F.O.B. nearest factory, at no cost, excluding freight and local labor charges, if any.

Our obligation under this warranty with respect to the AquaSolve™ media will be limited to furnishing a replacement for the media within two years from date of original installation. Such replacement media will be delivered to the owner F.O.B. nearest factory, at no cost, excluding freight and local labor charges, if any. Damage to the media due to chlorine, other oxidizers or fouling caused by local water conditions or any other operation outside of the limits shown under Specifications, is not covered by this warranty.

THE WARRANTY SET FORTH HEREIN IS GIVEN EXPRESSLY AND IS THE ONLY WARRANTY GIVEN BY PVI WITH RESPECT TO THE PRODUCT. PVI MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED. PVI HEREBY SPECIFICALLY DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

The remedy described under this warranty shall constitute the sole and exclusive remedy for breach of warranty, and PVI shall not be responsible for any incidental, special or consequential damages, including without limitation, freight, handling, lost profits or the cost of repairing or replacing other property which is damaged if this product does not work properly, other costs resulting from labor charges, delays, vandalism, negligence, fouling caused by foreign material, damage from adverse water conditions, chemical, or any other circumstances over which PVI has no control. This warranty shall be invalidated by any abuse, misuse, misapplication or improper installation of the product.

Some states do not allow limitations on how long an implied warranty lasts, and some states do not allow the exclusion or limitation of incidental or consequential damages. Therefore the above limitations may not apply to you. This warranty gives you specific legal rights, and you may have other rights that vary from state to state. You should consult applicable state laws to determine your rights. SO FAR AS IS CONSISTENT WITH APPLICABLE STATE LAW, ANY IMPLIED WARRANTIES THAT MAY NOT BE DISCLAIMED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO THE APPLICABLE WARRANTY PERIODS STATED ABOVE.



WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.