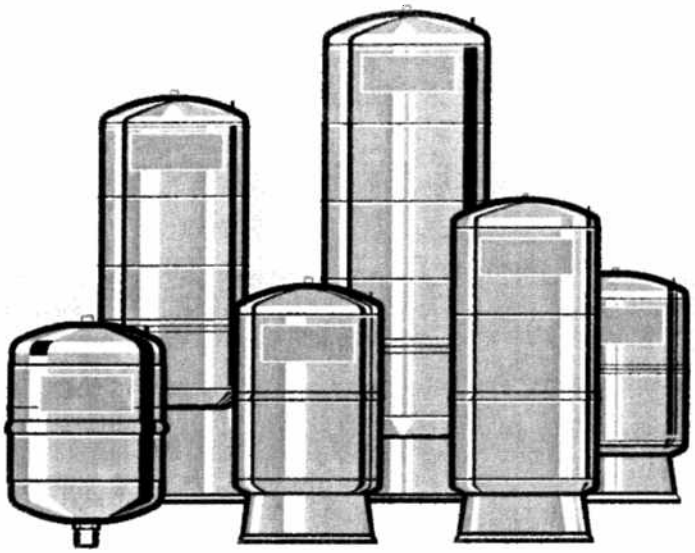
Owner's Manual

WATER SYSTEM TANK

- ***Safety Instructions***
- ***Installation***
- ***Operation***
- ***Maintenance***
- ***Warranty***



NSF

Certified to NSF/ANSI 61

⚠WARNING

Read and understand installation manual and safety messages before installing, operating or servicing this pump tank.

Failure to follow instructions and safety messages could result in death or serious injury.

French version begins on page 9.
La version française commence à la page 9.

Spanish version begins on page 17.
Para la versión en español vaya a la página 17.

Thank You for purchasing a Water System tank. Properly installed and maintained, it should give you years of trouble free service. If you should decide that you want the new Water System tank professionally installed, contact the "Company" from which it was purchased. They will arrange for prompt, quality installation by an authorized contractors.

ALL TECHNICAL AND WARRANTY QUESTIONS: SHOULD BE DIRECTED TO THE LOCAL DEALER FROM WHOM THE PUMP TANK WAS PURCHASED. IF YOU ARE UNSUCCESSFUL, PLEASE WRITE TO THE COMPANY LISTED ON THE RATING PLATE ON THE PUMP TANK.

KEEP THIS MANUAL FOR FUTURE REFERENCE WHENEVER MAINTENANCE ADJUSTMENT OR SERVICE IS REQUIRED.

READ AND FOLLOW SAFETY INSTRUCTIONS

Your safety and the safety of others is extremely important in the installation, use and servicing of this water tank.

Many safety-related messages and instructions have been provided in this manual and on your own water tank to warn you and others of a potential injury hazard. Read and obey all safety messages and instructions throughout this manual. It is very important that the meaning of each safety message is understood by you and others who install, use, or service this water tank.

⚠	**This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.**

⚠ DANGER	**DANGER indicates an imminently hazardous situation which, if not avoided, could result in death or injury.**
⚠ WARNING	**WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or injury.**
⚠ CAUTION	**CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.**

All safety messages will generally tell you about the type of hazard, what can happen if you do not follow the safety message and how to avoid the risk of injury.

IMPORTANT DEFINITION:

NSF (National Sanitation Foundation) - NSF International is The Public Health and Safety Company™, providing public health and safety risk management solutions to companies, governments and consumers around the world.

SAFETY INSTRUCTIONS

⚠ DANGER

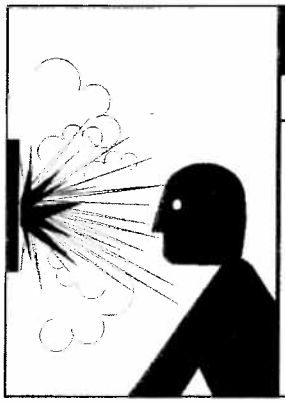
For your safety, the information in this manual must be followed to minimize the risk of electric shock, property damage, personal injury or death. Read and understand manual and safety messages before installing, operating or servicing this tank. This manual should remain with the tank for future reference.

Failure to follow the warnings may result in serious or fatal personal injury and/or property damage and will void the warranty.

It is your responsibility to make sure your installation meets all national and local plumbing and electrical codes.

⚠ WARNING

Before installing or servicing your pump or tank, be sure power source is disconnected. Failure to do this could result in death, serious bodily injury, or property damage.



⚠ WARNING

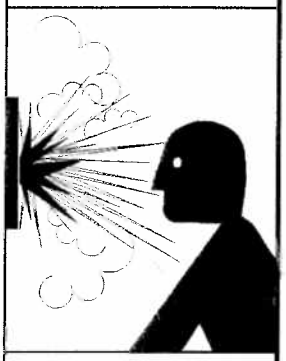
Explosion Hazard

Storage tanks are designed for use on ambient temperature (maximum temperature of 120°F, effective Feb. 2001) water systems. Use of this product on other applications could cause tank failure and possible personal injury. Use of this tank on other applications voids the warranty.

⚠ CAUTION

If a captive air water system tank replaces a standard galvanized tank on a submersible pump installation, bleeder orifices or other air charging charging devices must be removed. Air charging devices on jet pumps must be removed.

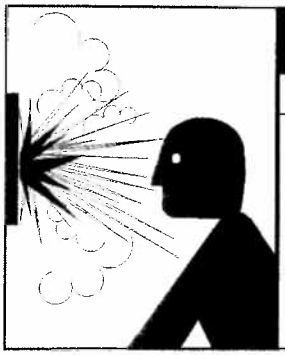
Complete pump, tank and piping system must be protected against freezing. Failure to do so will cause severe damage and will void the warranty.



⚠ DANGER

Explosion Hazard

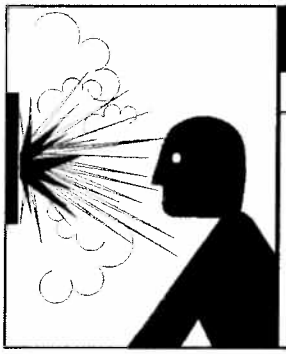
- This tank is designed for operation on ambient temperature water systems limited to a maximum working pressure of 100 PSIG. If your system has the ability to exceed 100 PSIG working pressure, a suitable safety device must be installed. This can be either a high pressure electrical cut-off switch and/or a pressure relief valve. Failure to follow these instructions can cause tank rupture or explosion and result in property damage, serious personal injury or death.
- Maximum allowable inlet water pressure is 100 PSIG. If daytime pressure is over 80 PSIG, nighttime pressure may exceed the maximum. Use a pressure reducing valve to reduce the pressure if necessary.
- A relief valve should be installed which is set to open at excessive pressures (75 PSIG or no more than the tank rated pressure of 100 PSIG). The relief valve should be installed close to the connection of the tank to the system piping and have a discharge equal to the pump's capacity at 75 PSIG.



⚠ DANGER

Explosion Hazard

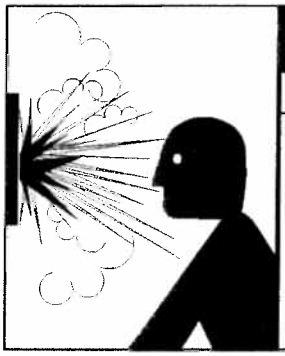
Tank contains air pressure. Do not puncture. Never discard tank into fire or incinerator. This could cause an explosion resulting in property damage, serious personal injury or death.



⚠ DANGER

Explosion Hazard

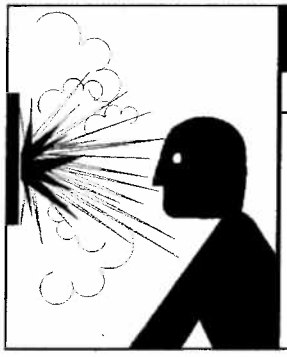
Do not adjust pressure or add pressure to a tank that is visibly corroded or damaged, as the tank could burst or explode, possibly causing property damage, serious personal injury or death. Only qualified professionals should check, adjust or reset the pre-charge pressure of the tank.



⚠ WARNING

Rupture Hazard

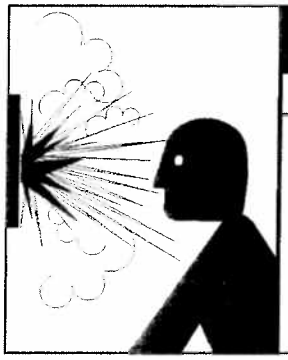
Install where tank will not be exposed to extreme temperatures (below freezing or above 120°F). Water freezing in the tank will cause it to split. Use of this tank with any other application could cause property damage, serious personal injury or death, and will void the limited warranty.



⚠ DANGER

Explosion Hazard

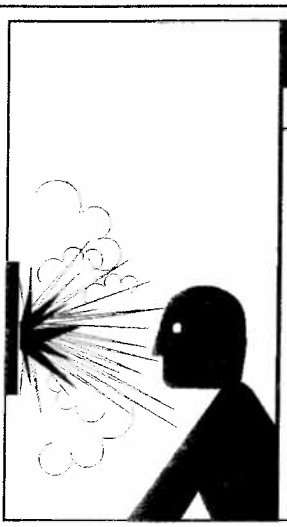
Tank must be sized in accordance with instructions from the manufacturer and in accordance with good industry practice. For proper sizing information please see the information in the pump manufacturers literature or the Water Systems Council "Water Systems Handbook". Failure to select the proper size tank could result in tank rupture or early pump motor failure.



⚠ DANGER

Explosion Hazard

Do not install tank where it will be subjected to spray from irrigation systems. Exposure to such spray could result in corrosion of the tank, eventually leading to an explosion which can cause property damage, serious personal injury or death.



⚠ DANGER

Explosion Hazard

This tank, like most tanks under pressure, will over time corrode or fail and/or may burst and/or leak or flood (and in rare cases explode) which can cause serious or fatal personal injury and property damage. To minimize risk, a licensed professional must install and periodically inspect and service the unit.

A drain pan connected to an adequate drain must be installed where leaking or flooding could cause property damage.

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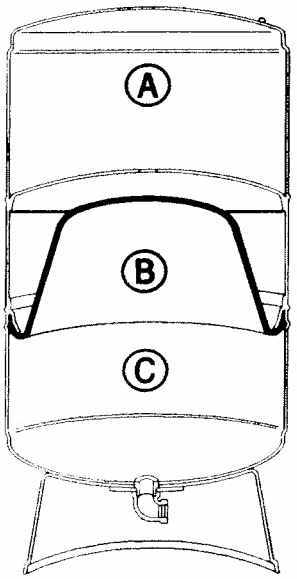
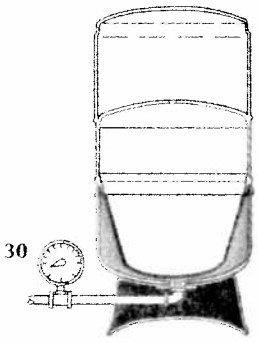
FEATURES AND OPERATING CYCLES

The Water Systems Tank Concept

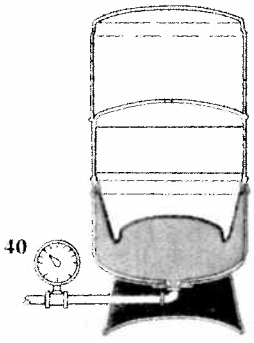
The water system tank does more than simply store water. It helps to protect the system components. A properly sized tank will provide adequate flow even when the pump is not running. It saves energy by reducing the number of pump starts. In addition, the water system tank provides increased system component life due to fewer pump cycles.

The water system tank consists of a steel tank (A) containing a sealed-in-place heavy duty diaphragm (B) which separates air from the water. The portion of the tank where water is stored (C) is lined to isolate water from the metal tank. This protects the tank from corrosion.

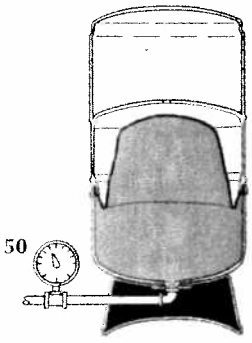




1. Prior to shipping, the tank is pressurized to a standard precharge as defined in the "OPERATION" part of this manual.

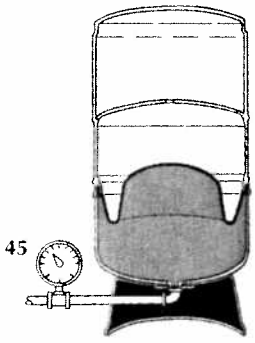


2. As water enters the tank, the air above the diaphragm is compressed and its volume is reduced by the volume of water that enters.



3. The pressure in the tank rises. Water continues to enter until the pump cut-out pressure is reached. The pump shuts off and the tank is now filled.

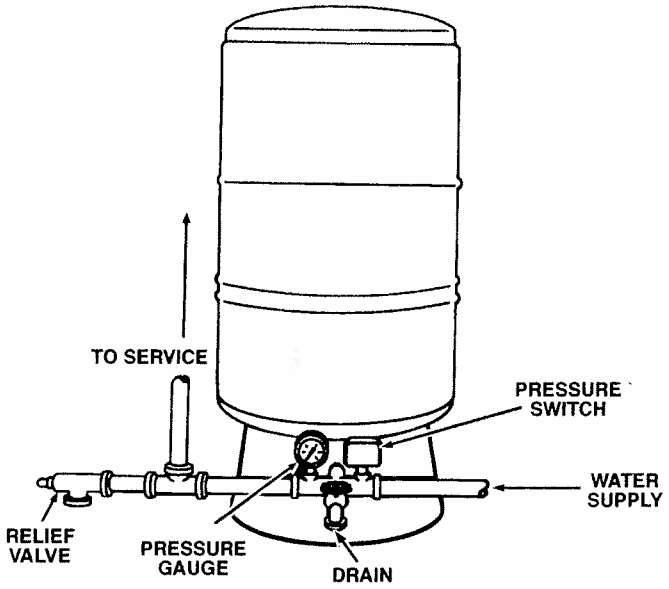
AIR WATER



4. The pressure in the air chamber forces water into the system when a demand occurs without causing the pump to operate immediately. Pressure in the chamber finally drops to the pump cut-in pressure, the pump switch activates the pump and repeats the filling cycle.

INSTALLATION PROCEDURES

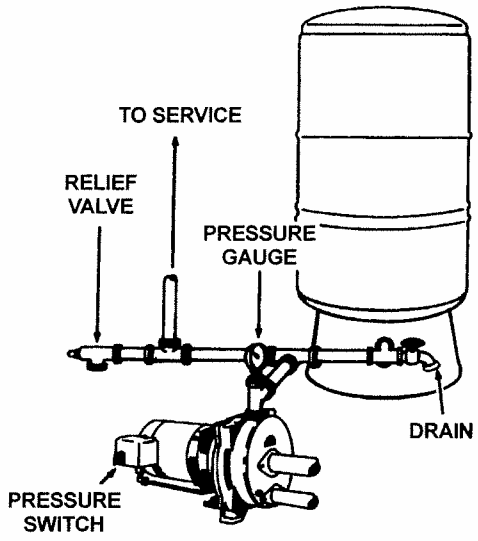
Typical Submersible Pump Installation



The water system tank should be installed as close as possible to the pressure switch (24 inches or less) to reduce the adverse effect of friction loss and elevation differences.

1. Disconnect electric power.
2. For installations replacing an existing water tank, drain system and remove old tank. On new system installation this step is unnecessary.
3. Locate the water system tank on a firm, level surface with adequate drainage. Typical installations are shown in the following section.

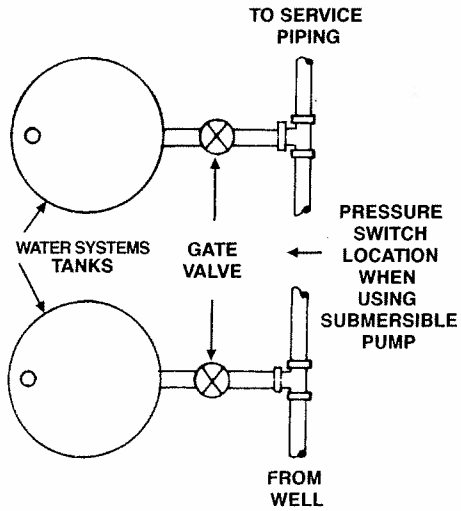
Typical Jet Pump Installation

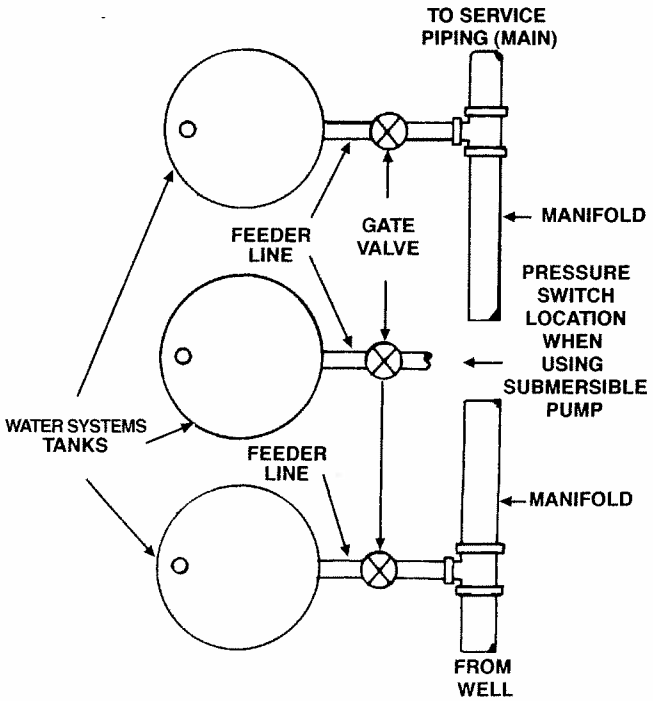


4. If your system is capable of exceeding a working pressure of 100 psig (typically submersible pumps), install a pressure relief valve (rated at 100 psig or less, but greater than turn off pressure) in the system near the tank. The valve should be the same pipe size as the tank outlet. This is not necessary on tank-mounted jet pump units.
5. Connect tank to the pump discharge line using the same size pipe as the pump tap, or larger. WARNING: Hold 90° tank street elbow with wrench when threading and tightening connecting pipe.
6. The tank should be flushed 5 times prior to household use, see Operation section.

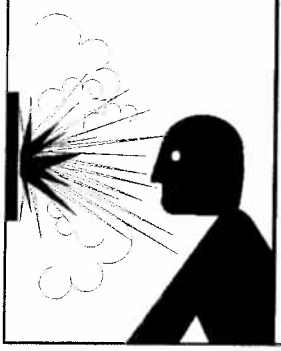
MULTIPLE TANK INSTALLATION PROCEDURE

Water system tanks can be connected together to increase the supply of usable water (drawdown). Two tanks of the same size will double the supply and three tanks will triple the supply. When using a high capacity pump, the manifold and pressure switch assembly must be installed in the pipe line as close to the center of the tanks as possible. Manifold and main should be 2 times the size of the feederline.





OPERATION



⚠ WARNING

Explosion Hazard

This water tank is designed for cold (ambient temperature) water systems at a maximum pressure of 100 PSIG. Any use with other than cold water or at a sustained or instantaneous pressure in excess of 100 PSIG is unsafe.

A pressure relief valve of adequate size must be incorporated into the system. Failure to follow these instructions can cause tank to explode and result in death, serious bodily injury, or property damage.

Before you operate the system you must check your water system tank and system to ensure proper operation.

All water system tanks are precharged to 38 psig at the factory. The final precharge pressure should always be 2 to 3 psig below the cut-in (pump turns on) pressure of the pressure switch. Release air or add air as required using the following procedure.

1. Determine the pump cut-in pressure setting. The pressure switch should have this information located on/in the cover.

2. With no water in the tank, measure the precharge of the water system tank using an accurate pressure gauge at the air valve (similar to an auto tire gauge).

3. Release air or add air to the tank to make the pressure in the tank 2 to 3 psig *LESS* than the pump cut-in pressure setting.

4. It will be necessary to expel air from the piping system on new installations. To do this open all faucets and turn on the pump. Observe that a mixture of water and air will sputter from the faucet. Run the system until a steady flow of water exists. Open and close the faucets several times to assure that all air has been removed. If streams do not become steady, an air leak may exist. Check for leaks on suction side piping.

5. It may be necessary to make final adjustments on the system pressure switch setting because at times the actual pressure switch setting will vary from what is stated on the cover. Such variation, though not harmful, could cause a momentary lag of water delivery. To make this adjustment follow these steps:

   a. Fill the system until the pump shuts off.

   b. Open a faucet and drain the water system tank until the pump starts.

   c. If there is a pause in the water flow from the time the water system tank is emptied and the pump starts up again, decrease the air pressure in the tank until it is 2 to 3 psig below the cut-in pressure setting. See Trouble Shooting section 3(a-b) for procedure.

   d. Close the faucets and refill the water system tank. Repeat steps (b) and (c) if necessary until there is no longer a pause in water flow.

TROUBLE SHOOTING

IF YOU THINK YOU HAVE A PROBLEM WITH YOUR WATER SYSTEM TANK, YOU SHOULD MAKE THE FOLLOWING TESTS AND OBSERVATIONS BEFORE YOU CALL YOUR PROFESSIONAL DEALER.

1. Observe water system operation and note any unusual occurrence such as water spurting from a faucet rather than a steady flow (indicates air in the system) or short cycling of the pump (rapid starts and stops).

2. In the event that evidence of a small leak near the water fitting appears, check at elbow. The introduction of cold water to a warm tank may form condensation especially in warmer climates. It is important to provide adequate drainage.

3. The tank drawndown is governed by the air pressure in the tank and the cut-in and cut-out pressure settings on the pressure switch. If you have concerns about the drawndown, you should check those settings as follows:

   a. **Air charge in Tank.** Turn off electric power to the pump. Open faucet nearby and drain the tank completely. Check the pressure in the water system tank using a standard, high quality tire gauge. If the air pressure in the tank is below the pump cut-in setting by more than 3 psi, add air to the tank to make it 2 psi less than the cut-in setting. Replace the valve stem cap. Check around the air stem using a soapy solution to check for leaks around weld seams on the remainder of the tank. If a leak appears on the tank itself then replacement of the tank will be necessary.

   b. **Pressure Switch Setting.** Start the pump and allow the system pressure to shut off pump. Note both the cut-in and cut-off pressure values on gauge. The difference should not exceed 25 psi. Adjust the pressure switch if necessary after shutting off the electric power to show a difference of 20 psi. Instructions from the pressure switch manufacturer will explain how to do this. Test the system after adjusting the limits. If the pressure switch can't maintain the proper differential then it may need replacement rather than the tank.

LIMITED WARRANTY

A.O. Smith Corporation, the warrantor, extends the following LIMITED WARRANTY to the owner of this water system tank.

1. TANK
   If within five years after installation the tank or a part thereof shall prove upon examination by the warrantor to be defective in material or workmanship, the warrantor, at his option, shall exchange or repair such part or portion. The warranty on the replacement tank will be limited to the unexpired term of the original warranty.

2. CONDITIONS AND EXPECTATIONS
   This warranty shall apply only when the tank is installed in accordance with local plumbing and building codes, ordinances and regulations, and good industry practices. In addition, a high pressure electrical cut-off switch and/or a pressure relief valve must be installed when the tank is installed on an ambient temperature water system whose maximum working pressure has the ability to exceed 100 pounds per square inch gauge (psig).
   a. This warranty shall apply only when the water system is used:
      (1) on ambient temperature water systems at pressures not exceeding the working pressure for the water system;
      (2) in the United States, its territories or possessions, and Canada.
   b. Any accident to the water system tank, any misuse, abuse (including freezing) or alteration of it, any operation of it in a modified form, any attempt to repair tank leaks will void this warranty.

3. SERVICE AND REPAIR EXPENSE
   Under this limited warranty the warrantor will provide only a replacement tank or part thereof. The owner is responsible for all other costs. Such costs may include but are not limited to:
   a. Labor charges for service, removal, repair, or reinstallation of the water system or any component part,
   b. Shipping and delivery charges for forwarding the new tank or replacement part from the nearest distributor and returning the claimed defective tank or part to such distributor except in the state of California where such charges are the manufacturer's responsibility.

4. LIMITATION ON IMPLIED WARRANTIES
   Implied warranties, including any warranty of merchantability imposed on the sale of this tank under state law are limited to five (5) year duration for the tank or any of its parts. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

5. CLAIM PROCEDURES
   Any claim under this warranty should be initiated with the dealer who sold the tank, or with any other dealer handling the warrantor's products. If this is not practicable, the owner should contact:

U.S. Customers	Canadian Customers
Telephone: (800) 323-2636	Telephone: (888) 479-8324

   a. The warrantor will only honor replacement with identical or similar tank or parts thereof which are manufactured or distributed by the warrantor.
   b. Dealer replacements are made subject to in-warranty validation by warrantor.

6. **DISCLAIMERS**
   NO OTHER EXPRESS WARRANTY HAS BEEN OR WILL BE MADE ON BEHALF OF THE WARRANTOR WITH RESPECT TO THE MERCHANTABILITY OF THE TANK OR THE INSTALLATION, OPERATION, REPAIR OR REPLACEMENT OF THE TANK. THE WARRANTOR SHALL NOT BE RESPONSIBLE FOR WATER DAMAGE, LOSS OF USE OF THE UNIT, INCONVENIENCE, LOSS OR DAMAGE TO PERSONAL PROPERTY OR OTHER CONSEQUENTIAL DAMAGE. THE WARRANTOR SHALL NOT BE LIABLE BY VIRTUE OF THIS WARRANTY OR OTHERWISE FOR DAMAGE TO ANY PERSONS OR PROPERTY, WHETHER DIRECT OR INDIRECT, AND WHETHER ARISING IN CONTRACT OR IN TORT.

   a. Some states do not allow the exclusion or limitation of the incidental or consequential damage, so the above limitations or exclusions may not apply to you.
   b. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Fill in the following for your own reference. Keep it. Registration is not a condition of warranty. The model and serial number are found on the water system tank.

Model No._____ Serial No._____ Date Installed _____

Dealer'sName_____

Dealer's Address _____ Phone No. _____

City and State (Provincial) _____ Zip (Postal Code) _____

Dangerous Goods Permit No. SU 5099 (Ren2) - by road or rail vehicle only, expiration date: March 31, 2003 (Pending Renewals)

KEEP THIS WARRANTY POSTED ADJACENT TO THE TANK FOR FUTURE REFERENCE.

NOTES