13 / FRESH WATER SYSTEM

Your trailer's fresh water system is a vital part of your traveling life while on the road. Your ability to depend on clean, fresh water can have a lot to do with how much you enjoy the RV lifestyle.

Your trailer is equipped with a dual fresh water system. The demand fresh water system operates from the trailer's own self-contained supply tank and water pump. A monitor panel indicates the water level in the fresh water tank. The "city water" hookup allows you to connect to a pressurized external system at a campground.

Fresh water for self-contained use is stored in a plastic tank located below the floor of the trailer. The tank is vented to allow proper and complete filling. This vent must remain open. The monitor panel level sensors are mounted in the tank, and a drain valve and/or removable plug allows you to drain the tank. Always drain the tank before storing the trailer for long periods. When the trailer is in use, drain and clean the tank every month or so. The entire fresh water system should be sanitized before the first use, after a period of nonuse, or if the system becomes contaminated. Sanitation and routine tank maintenance are covered later in this manual.

The easiest way to keep the tank full of clean water is to start with a dedicated, clean drinking water hose and an inline filter system. These two items are not included with your trailer.

Non-toxic, FDA-approved drinking water hoses are inexpensive and yield no taste or no odor to the water. They are usually white in color with a light blue stripe. This helps identify the hose and reminds you to keep it separate from other hoses, especially any hose, fittings or other hardware you use for waste drainage. You should consider using a special FDA-approved hose because many common garden hoses are made of re-ground rubber or other materials. As they age and the compounds break down, they can impart taste, odor and impurities to your fresh water supply.

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TIP! If you screw the two ends of the fresh water hose together following each use, you will minimize the possibility that impurities will get into the hose while it is in a storage compartment.

NOTICE

Do NOT leave hose unattended during filling of potable water. Turn water OFF immediately when tank is full. Damage may result from either overfilling or leaving hose unattended. Rapid filling of the fresh water tank may cause inadequate venting or water to escape the tank when full. Excessive pressure in the tank may cause damage to the tank.

IMPORTANT NOTE: The fresh water tank is mounted under the trailer to allow it to "belly down" as it is filled. It may appear to be unsupported. *It is designed to be this way.* If the tank is not allowed to expand downward, it will expand upward. The tank is mounted securely against the trailer floor, and if it expands upward, it may cause damage to the trailer floor, cabinetry and other components. **DO NOT ADD ADDITIONAL SUPPORT MEMBERS BELOW THE FRESH WATER TANK.**

Fresh water tank fill

There are two things to remember about your fresh water hose: ***Never use it for anything except filling the freshwater tank or connecting to city water, and always store it away from all other assorted hoses and plumbing supplies. Second, if possible, nothing should go through that hose unless it goes through an inline filter first.***

Filling the Fresh Water Tank

NOTE: Before filling the water tank, be sure the water supply is "potable", that is, drinking quality. Not all water supplies may be drinking quality. Water quality and contamination issues are discussed later in this chapter.

The gravity water tank fill inlet is not designed or intended for fast tank filling under pressure. The volume of air in the tank must be allowed to escape at the same rate the water is entering the tank. Sometimes filling too fast causes a back flow of water through the fill tube because the air in the system can't escape as fast as the water is coming in.

If you fill the tank too quickly, air can be trapped in the tank. This can cause the tank to bulge beyond its limits and possibly rupture. The excessive bulging can damage the trailer floor, surrounding cabinets, and chassis structure.

Fill the tank slowly, allowing the air inside to escape through the inlet vent. It takes a little more time, but slow filling will reduce the possibility of damaged tanks, damaged floors, and gushing water. ***Structural damage from overfilling tanks is not covered under warranty. It is considered operator error.***

SPECIAL NOTE: A flexible tank overflow tube is built into the top of the tank. This tube directs overflow water to the ground under the trailer. If you see water running out onto the ground under the trailer, you are overfilling the tank and the overflow tube is doing its job. STOP FILLING THE TANK.

To fill the fresh water tank:

1. Remove the cap from the tank fill on the side of the trailer. (The tank fill may be behind a lockable door on some models.)
2. Connect one end of a potable water transfer hose to a water supply, turn on the supply and let the water run until it is clean and clear. Turn off the supply. Place the other end into the water inlet on the side of the trailer. Turn on the water supply and fill the tank until water flows out the tank vent on the side of the trailer.
3. Remove and store the hose.

Connecting To City Water

The city water system is connected through a potable water hose to a hookup on the exterior wall of the trailer. Since campground water systems have varying pressures, a pressure regulator should be used to reduce the city water pressure to the trailer (see below).

To connect to the city water system:

1. Set the water pump switch to OFF.
2. Pull out the fresh water hose.
3. Turn on the site water supply and allow clean water to flow for a few seconds or until the water is clean and clear. Turn off the site supply valve and connect the fresh water hose to the supply.
4. Turn on the site supply valve.

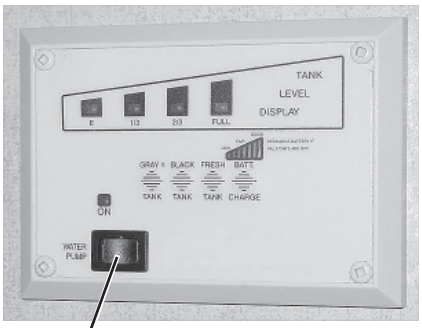
Pressure Regulators, Check Valves and Filters

Water pressure will frequently vary from location to location and too much pressure can damage your plumbing system and components. Always keep a water pressure regulator in the freshwater storage box and use it whenever you hook up to city/campground water. A number of reasonably priced, inline regulators are available.

The majority of these regulators are set to limit the pressure to the RV to 45 psi. Adjustable regulators are also available that allow you adjust the pressure and flow for your specific needs.

A check valve built into the water pump prevents city water from flowing into the fresh water tank. A check valve is also located at the city water inlet to prevent water pressurized by the water pump from flowing from the city water inlet.

A water filter or filtration system can be added to the city water inlet. Please see ***Fresh Water Filter Systems*** later in this chapter for more information.



Water pump switch on monitor panel (Location varies depending on model)

City water connection - note filter screen.

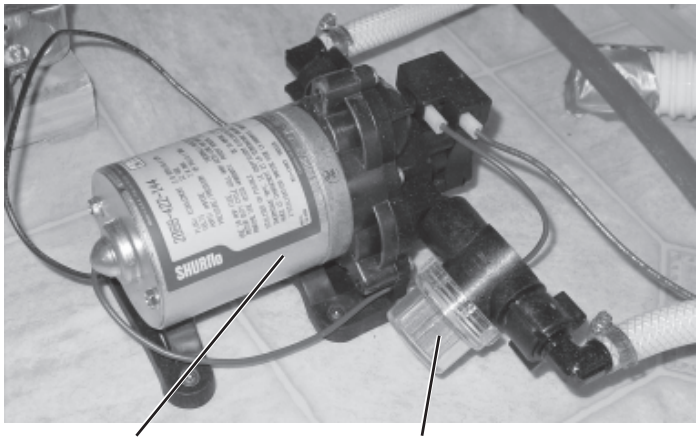
NOTICE

Whenever you leave the trailer for a period of time, turn off the water pump and/or shut off the city water supply. A sudden leak in the water system will allow the water system to run and flood the trailer.

Turn off the water pump while traveling. A faucet may come open while traveling and all your fresh water could be pumped out. If you leave a sink drain plugged, the sink will overflow causing the interior of the trailer to be flooded.

Water Pump

The water pump is a demand type pump that runs when a pressure drop in the water lines is detected, such as when a faucet is opened. The pump will continue to run until the faucet is closed and the pressure is restored. It is self-priming and can pump a constant rate of approximately 2.8 gallons per minute at approximately 40-45 psi. A switch for the water pump is located on the monitor panel, and an indicator light on the panel shows that the pump is operational.



Fresh water pump *Fresh water strainer*

Location and installation may differ depending on model and floorplan.

A transparent water strainer is installed on the supply side of the water pump. This strainer helps to filter out large particles, such as leaves, sand, etc., that might be in the fresh water supply. ***It does not filter out bacteria or chemical pollutants in the water.*** The strainer requires periodic cleaning. See **Plumbing System Maintenance** section in the ***"Care and Maintenance"*** chapter.

To help speed priming after the fresh water tank has been emptied:

1. Fill the fresh water tank.
2. Turn on the water pump switch. Open all faucets, both hot and cold. Allow time for the water heater to fill. Turn off each faucet as the water flow becomes steady and free of air.
3. When the water heater tank is full and all air is expelled from the system, close all faucets. The water pump should stop running. The system is now ready for use.

Sanitizing The Fresh Water Tank and System

For RVers who consume water from their RV tanks, the most important fact to remember is that potable water doesn't stay potable for long. Even though you may be completely confident in your water supply, by the time city water reaches the tap, the chlorine level is already reduced. Air, heat and the sloshing of the water will quickly dissipate the remaining chlorine. Any micro-organisms that the chlorine had inhibited but not killed will now become active. This new growth of micro-organisms will render the water unpalatable and perhaps unpotable, producing slime and algae in the tank and lines.

To prevent this problem, you as an RV owner must maintain a safe system, treat the water that is stored in your holding tank and consider installing a water purification system.

How To Maintain Your System

There are two sanitation procedures that you need to learn and use. One can be considered a "shock" treatment for serious contamination and before you use the system for the first time, and the other is for routine maintenance to keep the system fresh during your normal travels. We'll cover the "shock" treatment in the ***Care and Maintenance*** chapter.

The Environmental Protection Agency (EPA) advocates a method called "super-chlorination/de-chlorination" to prevent bacterial growth while traveling. This method adds chlorine to the water in increased amounts to provide a minimum chlorine residual of 3.0 ppm (parts per million) for a contact period of five minutes. Your tank will be full of water with a high concentration of chlorine. A granular activated carbon (GAC) filter can be used to remove the chlorine taste.

To super-chlorinate:

1. Connect your hose to your RV.
2. Pour 1 teaspoon of chlorine bleach for every ten gallons of tank capacity into the opposite end of the hose, prior to connecting it to the filling source.
3. Connect the hose to your water supply and fill normally.

Use chlorine every time you fill up with fresh water. This will also keep the filler hose sanitary and protect it from becoming contaminated. Use a chlorine test kit regularly to determine the residual chlorine level (3.0 ppm recommended). Testing should not be done immediately after filling, wait until the water has been "standing" for at least six hours.

Between trips or every few months you should do a routine tank sanitation to keep the tank and system fresh and odor-free.

Routine tank sanitation:

1. Drain the water tank completely, then refill halfway with clean, fresh water.
2. Mix 1/6-cup of regular chlorine bleach (not fragranted) for every 15 gallons of tank capacity into a container filled with a gallon or two of clean water.
3. Pour this mixture into the water tank.
4. Top off the water tank with fresh water. Drive the trailer around the block a couple of times to mix the solution.
5. Pump about a quart of water through each faucet so that all the lines are filled with the water/bleach mixture from the tank.
6. Because the hot water tank holds around 6 gallons of water, run the hot water faucets until this much of the water/bleach solution has passed to ensure that the old water has been purged from the tank and replaced by the new solution.
7. Let the water stand in the system for three to six hours.
8. Drain the entire water system, hot water tank included.
9. To remove the bleach odor, mix a cup of baking soda with a gallon of water and pour into the fresh water tank.
10. Fill the tank completely and pump this solution through the water heater and the rest of the water lines as in step 5. Let this solution sit in the system for a few days to neutralize the odor.
11. Drain the entire system and refill with fresh, clean water.

Fresh Water Filter Systems

Many water filters are designed to remove sediment and particles from the water. Removing sediment and particles can help reduce the cloudiness of the water. You can also purchase filters that will help remove odors and improve the taste of the water. Over time these filters will eventually become clogged with filtered sediment and must be replaced. When you notice reduced flow and decreased water pressure, it is time to replace the filter.

There are also filters that will reduce chemicals, bacteria, viruses, and various other organic impurities that can cause sickness. These filters are usually installed at the galley faucets or at a special filtered water faucet for drinking/cooking water only. If you will be traveling in places where the water supply is questionable, you might consider a filter system with these capabilities. Your dealer can advise you on specific filter systems for your needs.

Dealing With Water Contamination

Water contamination creates a challenge for RVers. Not only must RVers draw water from unfamiliar sources, they must deal with what can happen to the water once it's inside the holding tank and plumbing.

You can reduce health risks by following a few common-sense precautions. You might also consider using water purification equipment.

At The Campground

Always connect to a water supply of known quality. If water is being delivered as potable, it has probably been tested. Many campgrounds operate from their own wells which should be tested and labeled as approved. Since you may not be able to determine when the water was last tested and since contamination can show up at any time, always be on guard.

In The Great Outdoors

Drinking from *any* non-treated source such as a lake, pond or cool mountain stream is risky. Although mountain water rushes over rocks, gravel and sand, most harmful contaminants are still in the water. There is also the possibility that you are downstream from a dead animal, animal or even human waste.

Micro-organisms

The most formidable villains while on the road are microbes and cysts which includes bacteria, viruses, protozoa and fungi. Not all microbes are harmful to man, but those that are can be serious. Among these are the viruses that cause infectious hepatitis and the protozoans or amoebic cysts that lead to giardiasis and amoebic dysentery.

All of these contaminants can be present in any water supply that has been polluted by sewage. *This is the major reason why you should keep your fresh water hose and fittings away from any hardware or supplies you use for waste system chores.*

Giardiasis is caused by *giardia lambia*. It infects the small intestines and causes symptoms that may include severe diarrhea, cramps, nausea, vomiting and fatigue. It has been considered the most common disease-causing intestinal parasite in the United States. It resists typical chlorination and filtration procedures, and thrives in a wide range of temperatures. Giardiasis hits hardest those water systems that draw their water from mountain streams.

Chemical Contaminants

The vast majority of chemical contaminants have no taste or smell and leave the water appearing clear and clean. Even well water can't always be trusted. A common belief once was that if water came from the ground, it had to be safe.

Water contamination is a serious and complex problem. By taking a few precautionary measures, you can travel and enjoy the outdoors without risking illness. As said in the beginning, the simplest first line of defense is to ***use only water you are reasonably certain is potable.***