4-10 Fresh Water System

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4-10.1 Water Supply and Distribution System

The fresh water tank is approximately 100 gallons. The dual purpose Tank Water Fill/Municipal Water inlet connection is located in the road side holding tank compartment, in Bay 4, left. The Tank Fill On-Off switch, located in Bay 4, left, diverts the municipal water input to fill the pure water storage tank, which is also located in Bay 4. System water pressure is provided by a water pump located in the roadside compartment, Bay 3, left. The fresh water tank is non-pressurized with the system water pressure developed by a demand pump when not connected to a municipal water system. The fresh water tank is equipped with a two inch drain. The tank also includes level indicators, located on the curbside end of the fresh water tank. All of the water supplied to the motor home is filtered through an activated carbon filter.

4-10.2 Municipal Water Hookup

When facilities are available, the Municipal Water hookup can be used to supply all motor home water system requirements. In this manner, the fresh water tank and pump system are automatically bypassed with the water pressure regulated by the municipal water system (approximately 40 psi).

4-10.3 Filling and Draining

To fill the fresh water tank, connect the water hose to the municipal water inlet, set the Tank Fill switch to ON, then turn on the water supply. When the tank is full, the level switch in the tank will close the tank fill solenoid. Set the Tank Fill switch to the OFF position, shut off the water supply and disconnect the hose. At this time, check that the Monitor panel readout indicates a full water tank. By pressing the Pure tank switch and observing that all, E through F indicator segments are lit.

NOTE: The Tank Fill switch should be ON only when the water tank is being filled. This switch must be in the OFF position at all other times.

4-10.3.1 Sanitizing

Water system sanitizing procedures should be followed before the system is used for the first time, after long idle periods where water may become stagnant, or after any suspected contamination of the water supply. Whenever possible, use a commercially approved tank sanitizer and follow the procedures on the product package. If it is not possible to use a commercial product, prepare your own mixture and sanitize the tank in accordance with the following procedures:

1. Empty the Fresh Water Tanks – To drain the tanks, open the 2-inch Cold Water Drain Valve located inside the opening below the fresh water tank on the roadside, Bay 4, left. Pull valve toward front of motor home. After the tank is completely drained, close the Cold Water Drain.
2. Prepare the Sanitizing solution – Each gallon of Sanitizing solution consists of ¼ cup of household bleach (sodium hypochlorite) solution and one gallon of water. This mixture results in a residual chlorine concentration of 50 ppm in the water system. Seven to eight gallons of sanitizing solution will be adequate for the fresh water tank. (Approximately 100 gallons).
3. Add sanitizing solution to water tank – Remove deck lid plug in the curbside close out panel. Remove 3/4 inch plug from the side of the tank in the curb side luggage compartment and pour the solution into the tank. Reinstall the plug in the tank.
4. Fill tank to capacity – Connect the hose to the municipal water inlet, turn on the Tank Fill Switch and fill the water tanks completely. Shut off the hose and turn off the Tank Fill switch. Turn on the water pumps. Open each faucet (hot and cold), and run the water until a distinct odor of chlorine can be detected. Shut off the water pump.
5. Allow the system to stand – Let stand for at least 4 hours when disinfecting with 50 ppm residual chlorine. If a shorter time period is desired, then a 100 ppm chlorine concentration should be permitted to stand in the system for at least one hour.

6. Drain tanks – Open the Cold Water Drain valve (as in Step 1), and allow the tank to drain completely.
7. Refill tanks – Close the Cold Water Drain valve and turn on the water supply to the municipal water inlet. Turn on the Tank Fill switch and fill the tank completely. When the tank is full, turn off the Tank Fill switch, shut off the water supply and disconnect the hose. Then replace the fill cap and turn on the water pump. When water flows from the opened faucets, close them and open the other faucets until water flows. This flushes the system, removing trapped air from piping and ensures that the fresh water supply is ready for use.

!!CAUTION: Do not permit sanitizing or antifreeze solutions to enter water filter.

8. Repeat steps 6 and 7 until the chlorine smell and taste is no longer present at the faucets.

4-10.3.2 Water Filter Replacement

Depending upon the condition of the municipal water used, the filter media will degrade with use. The only practical way to determine when replacement is required is to go by the sense of taste. It is recommended that the filter be changed after prolonged storage.

4-10.3.3 Water Heater

With the Webasto system at operating temperature, the domestic water is automatically heated as it is being used. Open any hot water faucet and a continuous supply of domestic hot water will be present within a few seconds. This is accomplished by the Webasto's domestic hot water zones, which are an integral part of the heating system. A mixer valve has been installed to ensure that excessively hot water does not flow to the faucets.

!!CAUTION: The mixer valve is not an anti-scald device. Always exercise reasonable caution when using hot water.

!!CAUTION: Do not turn the Webasto's unit off if the outside temperature is 32°F or lower when the potable water system is not drained.

4-10.3.4 Water Pump

The water pump is located in the road side luggage compartment (bay 3). The pump employs state-of-the-art electronics to automatically control motor speed. The pump adjusts its speed as you open and close water fixtures. If the pump has been out of service for a period of time, it is advisable to open a faucet before turning them on. When water flows steadily from the opened faucet, close the faucet and observe that the pump shuts off when the system becomes pressurized. (It may also be necessary to bleed the air from the other faucets as well.) When the fresh water supply tank level is low or empty, shut the pump off to prevent possible damage to the pump motor. In addition to integral motor overload protection; the pump mechanism is also protected from damage by the presence of a filter at the water pump inlet. The filter should be cleaned periodically.

Under normal usage, the water pump should require no periodic maintenance other than ensuring that the input water supply is properly filtered of particles that could damage the pump mechanism. Pump failures can generally be tied to the plumbing system or to electrical wiring. If a pump fails to operate properly, refer to the general troubleshooting guide.

Note that detailed pump repairs and overhaul should be performed by a qualified repair facility.

4-10.3.5 Water Pump Switch

The central control switch, labeled water pump, for the water pump is in the bathroom.

The associated indicator is lit whenever power is being supplied to the pump. Turning ON the switch pressurizes the water system, with the pump maintaining constant pressure. Continuous or erratic pump operation can indicate an empty water tank, system leakage or air lock in the water lines. Switches enabling the water pump are located in the bathroom, in the kitchen and in the roadside holding tank bay. These switches are labeled water pump.

4-10.3.6 Manifold

All cold and hot water is directed to the distribution manifold. Hot and cold water is distributed to each fixture via individual 3/8" I.D. lines. Individual shut-off valves are located on the manifold, and are used to shut off water to respective fixtures in the motor home. A 1/8" I.D. line is used for the refrigerator ice maker.

4-10.3.7 Water Pump Troubleshooting Guide

Symptom	Possible Cause	Corrective Action
Pump operates but no water flows through the faucet.	Low water level in the tank.	Add water.
	Suction lines or filters clogged.	Clear water lines and clean filters.
	Kink in the water suction hose.	Check water hose connections to tank and straighten or replace as necessary.
	Air leak in suction line.	Replace suction line.
	Defective water pump.	Rebuild or replace pump.
Pump cycles on and off when faucets are closed.	Water leak in plumbing.	Check for signs of leakage and tighten or replace fittings, pipe, etc.
	Defective toilet flush valve.	Repair flush valve.
	Defective water pump.	Rebuild or replace pump.
Pump operates roughly and has excessive noise and vibration.	Intake line is restricted, kink in suction hose or fittings are too small.	Check input hoses and straighten or replace, as necessary.
	Defective water pump.	Rebuild or replace pump.
Pump fails to start when faucet is opened:	Clogged pressure piping.	Blow out water lines with compressed air. Maximum pressure that can be used is 40 psi.
	No voltage to pump.	Check input wiring circuit breaker and switches.
	Defective water pump.	Rebuild or replace pump.
Pump gives low water pressure and flow;	Defective water pump.	Replace diaphragm or motor.
	Tank fill switch left on.	Turn off tank fill switch.

NOTE: Before blowing out water lines, be sure to remove both lines from pump to avoid blowing out towards pump. Procedure may be best performed by a certified technician.

4-10-4 Winterizing

If you are planning on storing your motor home in an unheated area during cold weather, it is necessary to winterize the water system to prevent damage from freezing conditions. Winterizing procedures are covered in the following paragraphs.

4-10.4.1 Draining and Winterizing the Fresh Water Supply System

The following procedures show the use of the various drain valves and controls to winterize the fresh water system.

1. Open the main circuit breaker box (located in bedroom) and turn off the Water Heater and Instant Hot circuit breakers.
2. Turn on Water Pump switch (located in bathroom) and open all faucets (galley sink, lavatory, shower, outside hose connection and toilet water valve – after depressing pedal insert block to maintain position). Note that the outside water faucet should always be left open when freezing temperatures are expected. Also, remove drain plugs at rear of toilet and at bottom of Instant Hot. Refer to the Icemaker and Toilet Sections for winterizing these units.)
3. Open the Cold and Hot Water Drain valves located in roadside Bay 4, luggage compartment. Open 2" water tank drain valve in road side first luggage compartment, Bay 4.
4. Allow water to drain completely before proceeding to the next step.

5. Turn off water pump switch.
6. Unroll coiled hose under road side end of fresh water tank. Hose is connected to valve assembly under tank (Bay 4).
7. Feed open end of hose into container of RV antifreeze. Approximately 3 to 5 gallons required.
8. Close the valve on the suction line coming from the fresh water tank and open the valve from the RV antifreeze line.
9. Close all fresh water manifold valves. Except the top hot water valve.
10. Turn on fresh water pump. Make sure RV antifreeze is moving into pump and into the manifold. Be ready to close the cold water drain valve, under manifold exiting the floor, when antifreeze exits the line under motor home. Also close hot water drain at this time.
11. Continue to run pump to fill the water heater and the hot water side of the manifold until antifreeze exits the hot water valve left open in step 9.
12. Open the hot water drain valve, closed in step 10, and close it again when antifreeze exits the hot water drain line.
13. Turn pump off at this time and close the valve on the antifreeze line. Stow hose in original location.
14. Make sure all the interior and exterior faucets, as well as, the ice maker, toilet and clothes washer are open.
15. At this point, the only water remaining in the system is contained in the P traps beneath the lavatory sink, shower drain, and kitchen sink (clothes washer optional). To prevent this water from freezing and damaging traps, put one pint of RV system anti-freeze into each drain. See WASTE SYSTEM winterizing.

NOTE: When reactivating the system, make sure (optional) Instant Hot is full of water before switching on.