

Water Heater Usage Guide

This guide is intended to assist Heartland Owners in understanding the operation and routine maintenance of their water heater. While the pictures are of the Suburban Water Heater, operation of Atwood Water Heaters is similar.

Important Notices

Who created this document?

This document has been created by Heartland Owners independently of the Heartland RV Company, and is posted to the Heartland Owners Forum as a service to the owner community.

Errors and Omissions

Because the authors are Heartland owners, not engineers or service technicians, it's possible that this document could contain errors or omissions. Readers are advised to also review the manufacturers' product documentation for more complete information and guidance.

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Table of Contents

Modes of Operation.....	3
Turning the Water Heater On	3
110 Volt Mode (Shore Power or Generator Power)	4
Secondary 110V Power Switch	4
How Can I Tell If There’s Water in the Water Heater?	5
LP Mode	5
Do I use LP or Electric Mode, or Both?	5
Routine Maintenance on the Water Heater	6
Draining the Water Heater / Winterizing	6
Anode Rod.....	7
Anode Rod Life	7
Seeping/Dripping	8
Unpleasant sulphur or rotten-egg odor.....	8
For Suburban Water Heaters	8
For Atwood Water Heaters.....	8

Water Heater Usage Guide

This guide is based on the Suburban Water Heater commonly found in most Heartland RVs. Atwood differences are noted.

Modes of Operation

Most water heaters have an electric mode that uses 110V shore power (or generator power), and an LP Gas mode that runs off the propane tanks. The heater can be run in either mode, or both at the same time for faster hot water recovery time. Note that the LP mode is dependent on proper functioning of the 12V systems in the RV.

Turning the Water Heater On



This picture is from a Landmark. Other brands will vary in what's included and where the switches are placed. In most trailers, the 110V switch is similar to a standard light switch, but lights up when turned on. The LP operation is controlled by a smaller rocker type of switch.

CAUTION: It's critically important that you check that the water heater is full of water before turning on the 110V heat. If there's no water, the heating element will burn out very quickly and will have to be replaced.

110 Volt Mode (Shore Power or Generator Power)

The main 110V switch is operated just like a light switch and most will illuminate when power flows through the switch. However, to prevent accidental damage, a secondary switch also needs to be turned on.

Secondary 110V Power Switch

Again, it's critically important that you check that the water heater is full of water before turning on the 110V heat. If there's no water, the heating element will burn out very quickly and will have to be replaced. Of course, even if your trailer is in warranty, burning out the electric element is user error which is not covered by the warranty.

If you're not sure how to check for water in the water heater, see the section below.

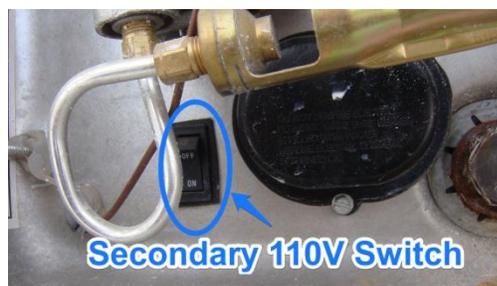
To protect against accidental damage to the element, there is a secondary 110V power switch on the back of the water heater. The switch is a rocker-type that can be pinned in the OFF position with a small cotter pin. On a new trailer, to turn it on the first time, you have to remove the cotter pin and rock the switch to the ON position.

You can leave the switch ON permanently. But be aware that when you winterize, the water heater tank will be emptied, and if subsequently, a visitor turns on the inside 110V switch, the element will be ruined. **So whenever the water heater tank is emptied, it's a good idea to turn the secondary switch to the OFF position.**

The secondary switch is accessed by removing the cover from the back side of the water heater. The location on the RV will vary, but it will look something like this.



On the Suburban, with the cover off, you'll find the secondary switch in the bottom left corner.



How Can I Tell If There's Water in the Water Heater?

First, check that the Water Heater Bypass is in the normal operating position. On many trailers, there is a diagram on the basement storage door showing normal and bypass settings. If you have a Universal Docking Center (UDC) for water connections, the Water Heater Bypass is probably located in the UDC. On other trailer configurations, the bypass valve will usually be inside, near water connections to the water heater, accessible by way of a drawer or panel.

Second, open a faucet and check that water flows equally when the faucet is full to Cold and full to Hot settings.

CAUTION: If the water heater is in bypass mode, checking water flow will be misleading. In bypass mode, with an empty water heater, the cold water supply will flow through both the hot and cold lines.

If not certain whether in water heater bypass mode, carefully open the temperature / pressure relief valve. With city water flowing, or the pump pumping water, when the water heater is full, water will come out of the relief valve. Exercise care. If hot water is released, you could be scalded.

While you're checking things, make sure if you have an outside shower that the faucets are turned off. If you leave them open, hot and cold water will mix and you will get lukewarm water from other faucets.

LP Mode

To operate in LP mode, turn on the smaller rocker switch (LP Switch in the photo at the top). A small indicator light will illuminate for about 15 seconds to let you know that the ignition sequence is underway. Once the burner is lit, the light will go out. During the 15 seconds, the control board will attempt to purge air from the propane feed line and will attempt to light the propane 3 times. If it fails, the water heater will lock the LP operation for safety reasons and the light will stay on. To clear the lockout, turn the switch off for 10 seconds and then turn on again to retry. Note that if the water in the tank is already heated, the ignition sequence may not occur until the water cools a bit.

Do I use LP or Electric Mode, or Both?

If you're boon docking and don't have shore power or generator power, you have to run on LP. Note that if your battery runs down, the water heater circuitry that depends on 12V will shut down and the LP controls will not operate.

When you have shore power, you'll probably want to run in electric mode using the 110V switch. Save your propane for other uses where electric operation is not available, like the stovetop and the furnace.

If you have a lot of people using taking hot showers in a short span of time, you may want to run both gas and electric modes at the same time. This will result in faster recovery time when you run out of hot water.

Routine Maintenance on the Water Heater

Draining the Water Heater / Winterizing

CAUTION: Before draining the tank or changing the anode rod, turn the water heater off and allow the water to cool. Then lift the pressure relief valve on the back of the heater before loosening the rod. If you skip these steps, you could be scalded by hot water, or the water pressure could cause the anode rod to be propelled away from the RV at high speed causing injury or property damage.

1. Turn off the water heater (110V and LP) and allow it to cool completely.
2. Turn off the secondary 110V switch on the back of the water heater
3. Turn off the city water and the water pump.
4. Open hot and cold water faucets
5. Open the pressure relief valve
6. After pressure is relieved, use an anode rod removal wrench, or standard 1-1/16" socket wrench to rotate the nut counter-clockwise and unscrew the anode rod. Note that Atwood water heaters will have a drain plug, but no anode rod.
7. Allow the water to drain completely. You may want to take this opportunity to clean the residue at the bottom of the water heater tank using a wand attached to your water hose.
8. If winterizing, turn the Water Heater Bypass control to the BYPASS position to prevent water or RV antifreeze from entering the water heater tank.
9. You may want to reinstall the anode rod/drain plug at this time, using Teflon tape or equivalent to prevent water leaks. Teflon tape will also make future removal easier. **Do not over tighten.**
10. Atwood only: The following is a quote from the Atwood Manual.

"After draining the tank, because of the placement of the Drain Plug, approximately two quarts of water will remain in the tank. This water contains most of the harmful corrosive particles. To remove these harmful corrosive particles flush the tank with either air or water. Whether using air or water pressure, it may be applied through the inlet or outlet on the rear of the tank or the Pressure Temperature Relief Valve. (If using the Pressure Temperature Relief Valve the Support Flange must be removed). The pressure will force out the remaining water and the corrosive particles. If you use water pressure, pump fresh water into the tank with the assistance of the on-board pump or use external water for 90 seconds to allow the fresh water to agitate the stagnant water on the bottom of the tank and force deposits through the drain opening. Continue repeating adding water and draining until the particles have been cleared from the water remaining in the tank."

Anode Rod



The water in the tank creates a chemical reaction that can attack and destroy the lining of the water heater. In order to protect the lining, a sacrificial anode rod is used. As the rod is worn away, it will eventually need to be replaced. A new anode rod costs about \$15, is available at most RV dealers, and from numerous online sellers, and can be installed without any special training. You will need a 1-1/16" socket to remove the old rod.

Note: Atwood Water Heaters have a different tank lining that doesn't require an anode rod. There will be a drain plug only.

CAUTION: Before draining the tank or changing the anode rod, turn the water heater off and allow the water to cool. Then lift the pressure relief valve on the back of the heater before loosening the rod. If you skip these steps, you could be scalded by hot water, or the water pressure could cause the anode rod to be propelled away from the RV at high speed causing injury or property damage.

See the procedure above for draining the water heater tank.

Using an anode rod removal wrench, or standard 1-1/16" socket wrench, rotate the nut counter-clockwise and unscrew the anode rod. Before inserting the new anode rod, wrap the threads of the rod with Teflon tape or equivalent to prevent water leaks. This will also allow easier future removal. **Do not over tighten.** Before you replace the anode rod, it's a good idea to flush out the residue that's at the bottom of the tank. You'll need a water hose with a narrow extension that will fit into the opening for the rod. Most RV dealer parts shops will carry an inexpensive tool made for this purpose.

Anode Rod Life

You should inspect the anode rod annually. If there's substantial (75% eroded) erosion, or if you can see the interior metal support, you should replace the element. If you empty the water heater when the RV is not in use, you may prolong the life of the anode rod.

Keep in mind that a new anode rod is very inexpensive compared to the cost of a new water heater if the inside lining is damaged because you let the anode rod wear out. For \$15, you might just replace the anode rod every year.

Seeping/Dripping

If the pressure relief valve on the back of the water heater seeps or drips water, you may have lost the air pocket that is normally present at the top of the water heater. This can occur over time.

To re-establish the air pocket, follow these steps.

1. Shut off the water heater (LP and electric)
2. If using city water, turn off the faucet. If on internal water, turn off the pump.
3. Open a hot water faucet in the RV.

CAUTION: If the water is still hot, you could get scalded in the next step)

4. Carefully open the pressure relief valve and allow water to flow out until it stops flowing.
5. Let the pressure relieve valve snap back to the closed position.
6. Close the hot water faucet and turn on the water supply.
7. Turn the water heater on and check for normal operation.

If the seeping/dripping continues, the pressure relieve valve is probably defective.

Unpleasant sulphur or rotten-egg odor

For Suburban Water Heaters, the following is a quote from the Suburban Manual.

“Sulphur water can be caused by a chemical action or by bacteria. The solution to eliminate is chlorination of the water system. Add about six (6) ounces of chlorinated common household liquid bleach to each 10 gallons in the water tank. Then run the chlorinated water throughout the system, opening each faucet one at a time until you smell the chlorine. Let the RV sit for a few days and the chlorine should take care of the problem. Then you will need to take care of the chlorine. Remove the chlorine by flushing the system with fresh water. This may take several attempts. You may consider adding a filtering system that removes chlorine and prevents sulphur water. If the sulphur or rotten egg smell continues, flush the system once again as described above and replace anode rod as necessary.”

For Atwood Water Heaters, the following is a quote from the Atwood Manual.

1. “Turn off main water supply. Drain the water heater tank and reinstall drain plug. Remove the pressure-temperature relief valve. Mix solution of 4 parts white vinegar to two parts water. With a funnel, carefully pour solution into tank.
2. Cycle water heater with the above solution, letting it run under normal operation 4-5 times.
3. Remove the drain plug and thoroughly drain all water from the tank.
4. Flush the water heater to remove any sediment. You may flush the tank with air pressure or fresh water. Pressure may be applied through either the inlet or outlet valves on the rear of the tank or through the pressure temperature relief valve coupling located on the front of the unit.”

Change History

February 26, 2013 Version 1.0 released.

- Initial release

June 13, 2015 Version 1.1 released

- Added note to page 5 about checking for water in tank by opening temp/pressure relief valve.