Winterization Guide

This guide is intended to assist Heartland Owners in understanding how to winterize their water systems.

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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Contact Information

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Introduction

This guide is a subset of the Water Systems Guide which contains a comprehensive view of the water systems in your RV. The winterizing section of that guide has been extracted so users who are just looking for winterizing information can refer to a more concise document.

Please refer to the complete Water Systems Guide for complete information about your water systems.

Winterizing

There are 2 basic methods for winterizing: adding antifreeze or evacuating the water lines. Regardless of which method you use, you must start by doing the following:

1. Open a faucet inside the trailer
2. Open the fresh tank drain valve and completely drain the fresh water tank.
3. Dump the black and gray tanks.
4. If you have low-point drains (most recently built trailers do not), open those valves and drain the water lines.

Draining the Water Heater

Before doing anything else, you need to drain the water heater. If it remains full, and the water is not heated, the contents will freeze, damaging the tank.

***WARNING*: Before draining the tank, turn the water heater off and allow the water to cool. Then lift the pressure relief valve on the back of the water heater before loosening the anode rod/drain. If you skip these steps, you could be scalded by hot water, or the water pressure could cause the anode rod/plug to be propelled away from the RV at high speed, causing personal 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. 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.**
9. 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."

Antifreeze Method

WARNING: **Automotive antifreeze is toxic and should never be used in your water system. Be sure you are using RV/Marine antifreeze that is non-toxic and safe for potable water systems. Look for a label statement that the antifreeze is non-toxic. Propylene Glycol is a safe type of RV antifreeze that is also not harmful to the seals or other components of your water system.**

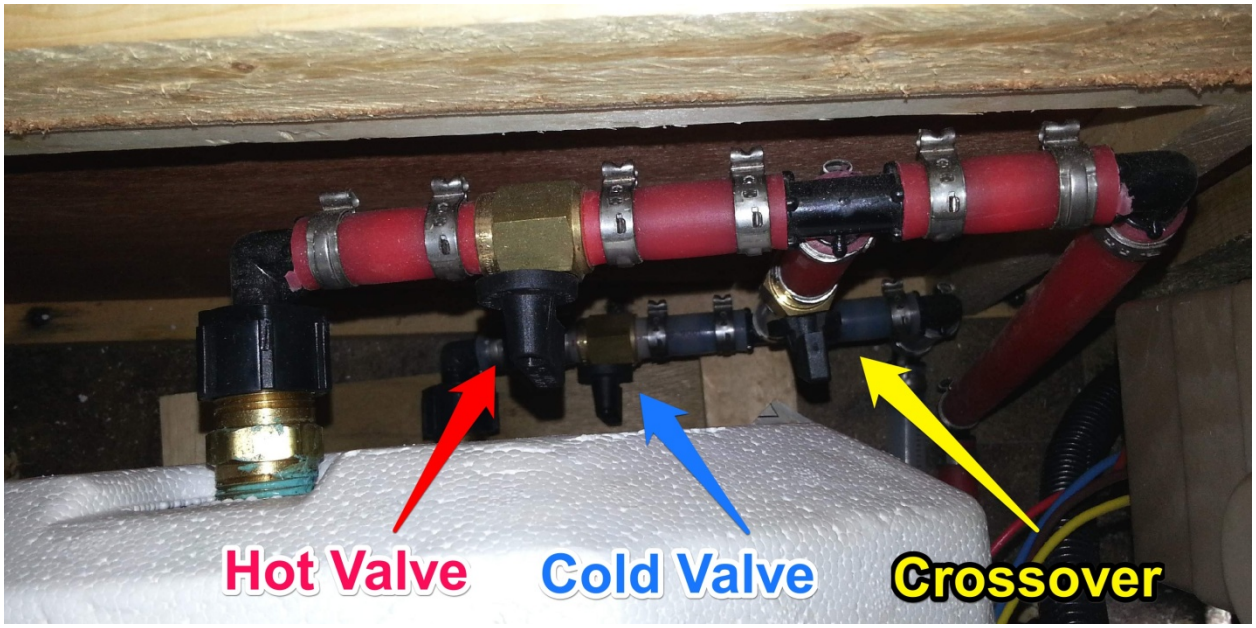
First Bypass the Water Heater

Be sure the water heater controls have been set to bypass. Antifreeze can damage the tank lining and inadvertently adding 12 gallons of antifreeze at $4.00/gallon would also be expensive.

There are two types of bypass controls. Larger trailers with a Universal Docking Center (UDC) will usually have a lever in the UDC marked Water Heater Bypass. Turning the handle 90 degrees will bypass the water heater. There is usually a large instruction label on the cargo hatch door that shows which way to turn the valve handle.

The other type of bypass uses three separate valves to bypass the water heater. These valves are usually located on the inside of the trailer, where the hot and cold water lines attach to the water heater inlet and outlet. Each of those lines will have a valve and there will be a third water line that bridges between the hot and cold lines. That third water line will also have a valve.

Rotate the hot and cold line valves 90 degrees to close off those lines and rotate the bridge line valve 90 degrees to open that line. The valve handles are usually constructed so that the handle is parallel to the water line when open, and perpendicular when closed. This picture from an MPG trailer illustrates.



Access to these valves varies on different trailers. On toy haulers, the valves may be accessed by removing the basement wall to gain access to the water heater connections. On travel trailers, there may be a panel that needs to be removed to gain access.

If you're not sure how to gain access, start by noting the position of the water heater and look on the inside of the trailer for a cabinet, drawer, or removable panel that is close to the water heater.

Preparing to Add Antifreeze

You'll probably need at least 2 gallons of antifreeze. If you have a larger trailer, and if you have a washing machine, you may need 3 or 4 gallons.

Locate the antifreeze suction hose. On trailers with a UDC, the suction hose is usually in the UDC. It may have a ½" plastic screw-on fitting on the end. There is usually additional tubing behind the UDC. Pull gently to extend the hose to a convenient position and insert into an antifreeze jug.

Some trailers have a second valve handle in the UDC that needs to be rotated 90 degrees in order to suck antifreeze through the hose. Check the label on the valve handle or the diagram on the cargo hatch door.

Antifreeze and the 4-way Anderson Valve

If your trailer has the 4-way Anderson Valve, you'll need a short piece of garden hose. Screw one end into the city water connection and put the other end into the antifreeze jug or a bucket of antifreeze. Turn the 4-way valve to the Winterize position.

Adding the Antifreeze

Start with the faucet furthest from the city water connection, usually the kitchen. Open the faucet and turn on the water pump. As soon as the pink antifreeze starts flowing out of the faucet, close the faucet.

Move to each faucet in turn opening it until antifreeze flows out of it.

Operate the toilet flush control to run it until antifreeze flows into the toilet.

Operate both hot and cold shower controls one at a time until antifreeze comes out the shower head for each.

Repeat this for the outside shower.

If you have Washing Machine Prep, but have not yet installed a washing machine, you need to protect the hot and cold water lines that supply water, and the p-trap in the washing machine drain. Insert one of the hoses into the drain and open its valve until antifreeze comes out and then close the valve. Repeat for the other hose, but let the antifreeze run into the drain for a few seconds to displace water in the p-trap with antifreeze.

Change antifreeze jugs as necessary.

> ***TIP*: To avoid running out of antifreeze in the middle of the procedure, and having to switch jugs, put all of your antifreeze into a 5 gallon bucket and insert the suction hose into the bucket.**

Adding antifreeze to the Washing Machine (Ariston/Splendide Stacked Unit)

Set the washing machine temperature control on HOT to run hot water through the hot water line, solenoid, and into the drum. Then set the dial to Wash setting 3 (Permanent Press) and start the machine. When you see pink antifreeze in the drum, stop the cycle.

Run a second time using the RINSE cycle to pump antifreeze through the rinse solenoid.

Set the dial to DRAIN to pump the mixture of antifreeze and water out of the washing machine.

Change the temperature setting COLD and run Wash setting 3 (Permanent Press) again. When you see antifreeze in the drum, stop the cycle.

Set the dial to DRAIN again to pump the pure antifreeze out of the washing machine and through the drain hose and into the p-trap.

Adding antifreeze to the Washing Machine (Ariston/Splendide Combo Washer/Dryer)

The procedure is essentially the same, but the controls differ a bit.

With WASH TEMP knob set to HOT, turn the selector knob to REGULAR in Cotton Heavy Duty. Start the cycle and wait for antifreeze to start filling the drum. Advance the selector knob to RESET and wait 5 seconds for the Status/Door Lock LED to begin blinking.

Use the SPIN cycle to drain antifreeze from the drum.

Advance the selector knob to RESET and wait 5 seconds for the Status/Door Lock LED to begin blinking.

Turn the WASH TEMP knob to COLD.

Again turn the selector knob to REGULAR in Cotton Heavy Duty.

Let the machine fill until you see antifreeze in the drum.

Advance the selector knob to RESET and wait 5 seconds for the Status/Door Lock LED to begin blinking.

Advance the selector knob to SPIN and let the antifreeze drain from the drum.

Icemaker/Water Dispenser Water Line

Note that it is not a good idea to get antifreeze in the icemaker/water dispenser line. It may be very hard to get rid of the taste. Winterizing this line will be covered as part of the compressed air method.

Adding antifreeze to drains and p-traps

Pour about ¼ cup of antifreeze into each kitchen drain and bathroom drain and shower drain. The p-traps under the drains hold water and need to have the water displaced by antifreeze to protect them from freezing.

De-winterizing

To remove the antifreeze from the system, you'll need to flush fresh water through the entire water system. An easy way to do this is to hook up to city water and add a few gallons of water to the fresh water tank. If you don't have city water available, you can bring a 5 gallon jug of fresh water and use the antifreeze suction hose as an alternative water supply (check that the antifreeze valve is set correctly).

Turn on the water pump and open each faucet in turn to let the fresh water push the antifreeze out of the faucet and down the drain. Do the same for the shower, toilet and outside shower. If you have Washing Machine Prep, put each hose in the drain and open its valve until fresh water comes out and then close the valve. Repeat for the other hose.

If you do have the washing machine, with the water temp set to WARM, alternately run the Wash setting 3 (Permanent Press) and DRAIN cycles several times to flush the antifreeze out of the drum completely (you may need additional water if you only brought a 5 gallon jug). The additional WASH and DRAIN cycles are needed to avoid staining clothing with antifreeze the next time you use the washing machine. Also run the RINSE cycle once to clear the RINSE solenoid. You may want to also run a complete wash cycle placing a ½ TBSP of powdered detergent (or liquid equivalent) in the machine's detergent compartment.

After flushing out all the antifreeze, remember to set the antifreeze valve and water heater bypass valve(s) back to the normal positions.

Compressed Air Method

You'll need an air compressor and a blowout fitting that connects the air compressor to the city water inlet. Water System Blowout Plugs are available at most RV dealers and from many online sources.

The air pressure on the compressor should be set between 20 and 40 psi. If your compressor doesn't have an adjustable output pressure control, you'll need to obtain one to insert in-line.

> TIP: When using the compressed air method, the hot water heater tank can be used as a compressed air cylinder to provide a constant supply of compressed air to the faucets. To use it this way, do not bypass the water heater.

Attach the blowout plug and air compressor, but don't turn it on yet.

Clearing the Water Pump Lines

The compressed air won't clear the water pump. With the fresh tank having already been drained, open a faucet and run the water pump to draw any remaining water out of the water line to the pump. Do this before evacuating the rest of the water lines. When no more water comes out the faucet, turn the pump off.

Now turn on the air compressor. If using the hot water tank as an air cylinder to maintain constant pressure, do not bypass it (you should have already drained it).

Starting with the faucet furthest away, usually the kitchen, open the faucet and allow the air pressure to evacuate all of the water from the faucet. Be sure to do so for both hot and cold settings to evacuate both water lines.

Repeat with each faucet, the shower, and the toilet flush valve. Also evacuate the water from the outside shower.

If you have Washing Machine Prep, but haven't yet installed a washing machine, you'll need to also protect the hot and cold water lines that go to the washer area. Place one hose in the drain and open its valve to let compressed air evacuate that line and then close the valve. Repeat for the other line.

It's a good idea to make two passes through the trailer to make sure all water is evacuated. It's normal for a mist to come out of the faucets as the residual water is pushed out by the air.

Adding antifreeze to the drains and p-traps

Although you've evacuated the water out of the pex lines, you still have to protect the drains and p-traps. Add ¼ cup of antifreeze to each drain to displace the water in the p-trap with antifreeze. Don't forget the washing machine drain if you have one.

Draining the Water Pump Filter Housing and Pump Assembly

Unscrew the filter housing on the input side of the water pump and dump the water out. Reinstall the housing. Unscrew the water line connection on the output side of the pump and lay it on a towel. Run the pump for a few seconds to make sure any remaining water is evacuated.

Washing Machine

Set the water temperature to HOT and turn the dial to Wash setting 3 (Permanent Press). The compressed air will evacuate water from the hot water line into the drum. After all of the water is out of the hot line, switch to COLD and run the Wash setting 3 (Permanent Press) cycle again. Run one more time using the RINSE cycle to clear the rinse solenoid.

After both hot and cold lines are blowing air only, set the wash cycle dial to DRAIN and allow the pump to empty the water out of the drum.

Pour antifreeze into the washing machine until you can see it coming just above the holes in the drum. Then run the DRAIN cycle to flush antifreeze through the pump, drain hose and p-trap.

When de-winterizing, with water temp set to WARM, use the Wash setting 3 (Permanent Press) cycle to add water to the drum, and the DRAIN cycle to pump it out. Do this several times to get all of the antifreeze out of the drums so it doesn't stain clothing.

Refrigerator with Water Dispenser/Ice Maker

Some of the components that carry water to the icemaker/dispenser are exposed to outside air and will freeze if not winterized. This will occur even if you're using the RV and it's a nice comfy 72 degrees inside.

Dometic recommends leaving this to qualified service personnel, but if you have an air compressor and a few basic tools, you should be able to do it yourself.

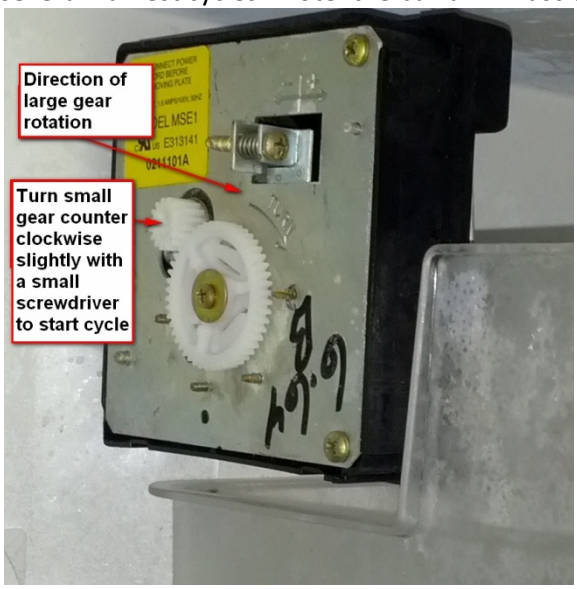
The essence of this job is to evacuate all of the water from 1) the ¼" clear plastic water supply line that brings water to the back of the refrigerator, 2) the solenoid that controls water flow, 3) the water lines in the refrigerator that go from the solenoid to the icemaker and water dispenser.

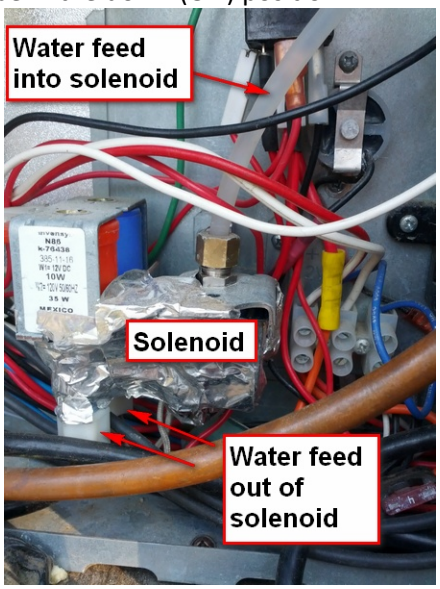
If you're winterizing the rest of the RV with RV Antifreeze, you'll have to follow the procedure outlined in the RM1350 manual that came with your refrigerator. You can download a copy from the Heartland Owners Forum, in the TOOLS/Heartland Owners Manuals section.

If you're winterizing with compressed air connected to the city water connector in the UDC, it's easy to winterize the refrigerator.

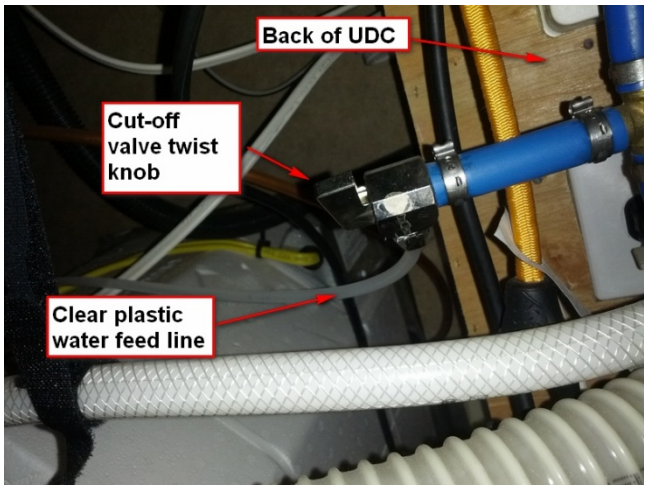
1. After you've used 20 psi of compressed air to evacuate water from the rest of the water system, leave it hooked up with the compressor running.
2. If you have a water dispenser, operate it to dispense water into a large container until only air is coming through. This will evacuate water from the supply line, the part of the solenoid that controls water flow, and the feed line to the dispenser.

   If you don't have a water dispenser, with the compressor off, disconnect the solenoid end of the ¼" clear plastic water feed line and turn the compressor on to blow the water out. Then reconnect the water hose to the solenoid. See pictures below.
3. Inside the freezer, remove the cover from the gear box by pulling it to the left. Use a small screwdriver to rotate the small gear counter-clockwise slightly to start the icemaker cycle. This will apply power to the solenoid, allowing air to push the water through the solenoid and water feed line and into the icemaker. The gears will turn until the cycle is complete. Repeat for several harvest cycles. Note: the bail arm must be in the down (ON) position.





4. After several cycles, the icemaker should be receiving only air.
5. If you have it, run the water dispenser again to flush out any remaining water.
6. Unscrew both large white plastic nuts on the bottom of the solenoid and allow any remaining water in the tubes to drain (there's only one if no water dispenser).
7. Run the water dispenser again (if you have one) and cycle the icemaker one more time.
8. Reconnect the nuts on the bottom of the solenoid.
9. Put the icemaker bail arm in the UP/OFF position.
10. Locate the icemaker water cut-off valve. On Landmark, Bighorn and many other models, it's behind the UDC. The basement wall will have to be removed to get to it. On some models it may be located elsewhere. If your refrigerator is NOT in a slide out, the cutoff is probably under the kitchen sink or in a drawer or cabinet under or near the refrigerator.



Rotate the cut-off valve arm 90 degrees away from the outlet of the valve to shut it off. Leave it that way until ready to use the icemaker again.

11. Disconnect the compressed air. You're done.

Using a "Cheater Cord" to operate the Icemaker

As an alternative to manually operating the icemaker in the steps above, you can build a cheater cord that will allow you to energize the icemaker solenoid without turning the gears.

Hardware stores such as Home Depot sell lamp wiring kits for a few dollars. You'll also need some spade lug connectors similar to the ones on the solenoid.

Cut the bulb fixture off the end and install spade lugs on the wires instead. There's an inline switch already on the wires.

Remove the existing wires from the solenoid connectors and connect the cheater cord spade lugs to the solenoid. If you're not sure which part of the solenoid is for the icemaker, use a voltmeter to check. On models with both water dispenser and icemaker, the water dispenser terminals will have 12V on one terminal.

Take care or how the existing wires are left hanging in case they become energized and make note of which one goes where so you put them back correctly.

Before running the ice maker solenoid, if you have a water dispenser, operate it to evacuate water from the ¼" feed line and from the dispenser section of the solenoid and water line going into the refrigerator. Catch the water in any large container.

Leave the ice container in place in the freezer to catch the water that will be forced through the lines and solenoid. The air compressor should still be on, with the water system pressurized with air.

Plug the cheater cord into an 110V receptacle, and turn it on for up to 20 seconds to energize the solenoid. The compressed air will force the remaining water that's in the ¼" feed line through the solenoid, up the line to the freezer, and into the ice container.

***CAUTION*: DON'T LEAVE THE SOLENOID ENERGIZED FOR MORE THAN 20 SECONDS. It's not meant for continuous duty and you could damage it. If you need more than 20 seconds, give it a few minutes to cool down before energizing it again.**

Modifications

Antifreeze Uptake Tube

Sometimes the antifreeze suction hose can curl up inside the antifreeze jug or bucket. If it does curl up, the flow of antifreeze may be interrupted before you actually run out, causing the pump to lose its prime. Constructing a simple Uptake Tube as shown below will solve this problem.

Use a 12" or longer piece of ½" PVC pipe with a small notch at one end. Insert the other end into a length of 5/8" clear vinyl tubing. Use a barbed male ½" nylon screw-on fitting at the other end of the vinyl. The male fitting screws onto the female fitting already on the antifreeze suction hose. If you have the 4 way Anderson Valve, instead of ½" male screw-on fitting, you'll need a barbed male garden hose fitting.

Revision History

July 26, 2013	Version 1 released
October 22, 2013	Version 1.1 released: update instructions on stackable washer for both compressed air and antifreeze methods to use Wash Cycle 3 instead of Rinse cycle.