

Winter Storage

In some areas “winter” means snow and sub-zero temperatures, while in others it may be just the occasional overnight freeze. Whichever it may be, it is necessary to protect your RV while not in use. The water system is the main item, but batteries are a close second and you will also need to consider taking action to prevent exterior damage and intrusion from animals looking for a cozy winter home.

Protecting the Water System

Unless your RV is kept inside a heated building, it will be necessary to protect the RV water system from freezing. This involves the fresh water tank & lines, water heater, waste drains and tanks, plus the ice maker, washing machine and dish washer if you have those.

Water Heater & Water Lines

You should drain and bypass the Water Heater so that you won't have to pump antifreeze or air through the tank when winterizing the water lines. To drain the water heater, first let it cool and open a hot water faucet to relieve pressure in the tank (pump and city water should be off). Then open the outside access panel and remove the plug at the bottom of the tank. Now is a good time to flush accumulated mineral salts out as well. Also, if you have a Suburban brand water heater, this is the time to inspect the anode rod for possible replacement.

Most RVs have a water heater bypass system, valve(s) that isolate the heater from the hot water lines. Newer RVs have just a single valve to turn, but older ones will have three valves. Set the valves in the Bypass position. If you don't have the information for your RV, this article at Wikihow.com can help: <http://www.wikihow.com/Bypass-the-Water-Heater-of-Your-RV>

If your water heater is not equipped with a Bypass system, consider installing one. Camco makes a kit for around \$20.

There are two different methods for protecting the fresh water lines from freezing: the *Antifreeze Method* or the *Blow-out Method*. With the Antifreeze Method you add enough antifreeze to the water in the system to prevent freezing, while in the Blow-out Method you remove all water from the system. Either one is effective if properly done.

In the *Antifreeze Method*, you use RV “potable water” antifreeze (propylene glycol), which is usually pink in color. It isn't poisonous, so won't harm you if any trace is left in the water lines after you flush it out in the spring. It won't help the taste any, though! Drain all but a couple gallons from the fresh water tank and then add enough antifreeze to make a moderately strong solution. 50% antifreeze is good, but a lesser percentage is OK where it doesn't get much below freezing. Using the RV water pump, pressurize the water lines and then open each water tap,



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one at a time, and let it run until you can see or smell the antifreeze solution. This assures there is antifreeze solution in each water line. Don't forget the shower heads (inside and out) and the toilet flush line. You will also need to do the ice maker, washing machine and dish washer if you have them, and they take some extra effort [see following paragraphs]. After running the antifreeze solution through each water line, you are done with this part of the job. You can leave the remaining antifreeze solution in the fresh tank to help protect it.

In the *Blow-out Method*, low pressure air is used to force all the water from the lines. This requires an air compressor and an adapter to connect it to the RV's city water inlet. You still use a small amount of antifreeze, though, to protect drain traps and other places that cannot be blown clear.



First drain as much water as you can from the lines and the fresh tank. Your RV probably has Low Point Drains to empty the hot and cold lines, and may have a tank drain as well. Next apply air pressure to the water lines using the adapter shown here. Air volume is more important than pressure here, so don't use high pressure. 25-30 psi is plenty, but in no case exceed the 45-50 psi your system normally runs at. Then open each water tap, one at a time, and let the air pressure expel the water. Don't be impatient – give the air plenty of time to remove all the water. Don't forget the shower (inside and out), toilet flush line, washing machine, ice maker and dish washer, if you have them.

Ice Maker

The ice maker is a bit of a chore to winterize. The ice maker itself is fine – it is supposed to freeze – but the solenoid valve that sends water to it is not. The ice maker solenoid is behind the fridge and accessed from the outside panel. While the water lines are pressurized with antifreeze or air (above), unscrew the water line to the solenoid valve and let the antifreeze or air bubble out. When complete, reconnect the water line and then disconnect the water line to the ice maker from the outlet side of the valve. Let it drip until no more water comes out and then replace. An alternate technique is to leave the lines connected to the solenoid and let the ice maker run through a normal ice making cycle, so that antifreeze or air moves through the solenoid and into the ice maker itself. If you use the antifreeze method, don't forget to purge the ice maker in the spring.

Washing Machine and Dish Washer

If you have a Splendide RV-style washer, it should have winterizing instructions in its manual or a supplement. Residential style washers may not. In general, when winterizing the water lines you need to let antifreeze or air bubble out of the washer's water inlet lines, just like you did with the faucets. In most washing machines you should run a spin cycle to remove as much water as possible, and then add some RV potable water antifreeze to the washer drum and run a brief drain or spin cycle to move

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it into the washer drain pump. A dish washer is done about the same way, first clearing its water inlet lines and then running some antifreeze down its drain by running a brief cycle. Do not drain all the antifreeze away – you want some left in the drain pump. The RV antifreeze is needed here whether you use the Antifreeze or the Blowout method on the rest of the system.

Toilets, drains and waste tanks

Your black & gray tank should be drained as much as possible. Then hold down the toilet flush pedal or button until antifreeze appears or air pushes the water out (depending on the method used), just as you do with the faucets. Pour about a pint of antifreeze down the toilet to put some in the black tank, to prevent the residual water from freezing. Last, pour a cup of antifreeze solution into the toilet bowl and let it sit there without flushing. This will keep the seal moist without risk of freezing.

Pour some potable antifreeze into each sink and shower drain to fill the P-trap so that water cannot freeze there. It doesn't need a lot – 3 or 4 ounces in each one should be sufficient. Adding extra simply makes it overflow into the gray tank.

Protecting your batteries

The electrolyte (“water”) in the battery can freeze if it becomes too discharged, so it is imperative to keep it well charged. Failure to do so will result in internal damage or even a burst battery. The best technique is to move the battery to a warm place, but if you can keep the RV plugged in or connected to an external battery charger, that is OK too. If you are relying on the RV's charging system and have a Battery Disconnect Switch, be aware that the switch may prevent charging too. Check with a voltmeter to be sure – the battery terminal voltage should stay above 13 volts if charging is active.

Preventing discharge is also good for your battery's long term health, so charge it periodically even if you have moved the battery to a warm place. Try to maintain at least 80% charge.

Critter invasion

Mice and other critters will be looking for a safe place to winter, so try to close off as many possible openings as you can. The area where water lines come to the interior is always a potential entry path – mice can flatten themselves to fit through tiny openings. Some RVs have ducts from the basement to the upper areas, to help circulate heat there. These are also raceways for critters. Besides prevention, it is a good idea to put out some mouse baits or traps so the little critters can't thrive if they do get in.

Tire protection

Most tire manufacturers recommend increasing the tire pressure when in storage and/or removing weight on the tires. You can pump the air pressure up to the sidewall

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maximum, or even up to 10 psi over, and you can use jacks to partially lift the RV frame to reduce the weight on the tires. Remember to reset everything back to normal in the spring, though. It is also beneficial to place something between the tires and the ground or raw concrete, either of which can leach chemicals from the rubber. Well-drained sand or gravel should not be a problem, but damp earth, clay, chemically treated wood or uncured concrete can be nasty to rubber. Rubber door mats or inexpensive plastic cutting mats or boards make good tire shields.

Preventing snow damage

If snow and ice are heavy in your area, you might consider placing a wood shield over the roof skylights and refrigerator roof vent. Both of those are vulnerable to crushing if snow and ice builds up on them and then goes through repeated freeze and thaw cycles. You can make a simple box shield with some scrap 2x4 lumber and a piece of plywood or sheet metal. Set the covered box over the skylight or vent so that it carries the snow load.

Covering the RV

Use of an RV cover for outside storage is always a hotly debated topic and there is no easy answer. They will provide some protection for the finish and also help prevent sun fading of the interior. But despite advertiser claims, they are a pain to put on and take off, so you may not want one if you need occasional access to the inside. However, some covers have zip-in doors or slits to make access easier. For larger RVs you will need ladders and helpers to get it on and off. The best covers are made from a material that “breathes” yet is water resistant. If you choose to cover, be very careful about leaving any place that can flap in the wind. A flapping cover will quickly wear away paint, decals, or even the gel coat from fiberglass. It will also wear holes in the cover quickly. Also watch for sharp corners on the RV that can tear the material.

Ventilation

Moisture build-up inside the RV can be a problem in some climates, so it is best to provide some air circulation if possible. If you can, leave a roof vent or window open a small amount. It may be necessary to put something over the vent or window to deflect rain and snow.