



Winterization

By Schooner Creek Boat Works

Let's look at the one thing we all seem to leave until the last minute: "winterizing". The job will go much easier if done while the weather is a bit moderate and your fingers are not sticking to frozen tools. The following is an overview of the winterization process and it will vary with each boat. If you have any questions or need assistance, Schooner Creek Boat Works can accomplish the work for you. Please call us at 503-735-0569.

The basic purpose of winterization is to prevent damage to the boat during the winter season. Before making any decisions as to the best winterization method to be employed, assess your anticipated boat use during the winter season and assess the potential for inclement weather. Consider your availability to inspect the boat or respond to an emergency. Look at your moorage or storage facility from the following standpoints:

- **Structural integrity of dock or storage area**
- **Piling height & security**
- **Protection from wind, rain, current, ice and snow**
- **Likelihood of power loss during severe weather**
- **Security of neighboring boats**

To Start

1. Give your correct address and phone numbers to your moorage office.
2. See that the neighboring boat owner knows how to reach you in an emergency.
3. Check your insurance policy, although most "yacht" policies include freeze damage it is sometimes excluded. In the case of any damage, your responsibility is to act immediately to prevent any further damage. You are required to proceed as if no insurance is in force and arrange for whatever work is required to secure the vessel. In plain terms, if a roof collapses on your boat and punches a hole in the deck, you should arrange for a tarp to cover the hole and prevent further damage. If the boat half sinks, you should arrange to have it pumped out and the engine pickled to avoid any further damage.
4. Arrange to have a responsible person as an emergency contact if you are going to be out of town. Alternately, arrange with a boatyard to act for you.
5. Check your dock lines and spring lines, check the lines of slip partners,
6. Get adequate fenders, and take the time to remove or repair any projections in your slip.
7. Repair any deck leaks; consider moving to a covered moorage or covering your boat if deck or cabin house problems exist.
8. Provide boat ventilation especially if heat is used in the boat.
9. Check automatic bilge pump operation and battery condition.
10. Consider the age and the serviceability of the battery charger.
11. Secure halyards or run extras up the mast
12. Remove sails from roller furlers and booms.
13. Perform engine service, tune up engines, change oil, and filters, fill fuel tanks to avoid condensation, add fuel stabilizer, and "fog" engines.

Freeze Protection

The freezing season in Oregon is normally between the months of November and March. The damage probability is low in temperatures between 28 and 30 degrees, moderate when the temperature is in the low 20's, and high when the temperature goes below the low 20's and high teens. The damage probability is greater if the boat is out of the water.

Protection Methods

Heating the Boat

- Pros:
1. It's easy
 2. The cost is relatively low
 3. The boat is available for use

- Cons:
1. Possible fire hazard
 2. A loss of power could cause damage
 3. The need for increased boat ventilation
 4. There is no protection away from your home dock i.e. boat yard

Method

1. Open engine compartment
2. Use ceramic heaters with a low temperature element and 'tip over' protection
3. Use marine 30 amp shore power wiring
4. Use a 14 or 12 gauge extension cord that is adequate for heater load
5. Secure the cord from accidentally disconnecting and beware of kinks and abrasions
6. Ventilate the boat
7. Monitor heater operation especially during storms
8. Have an alternate plan in mind if power is lost (i.e. emergency generator)

It is not advisable to use an onboard Webasto or Espar heating system on a continuous basis. Typical motor design life is approximately 2000 hours for an air-to-air heater and 4000 to 5000 hours for water heaters. Service and repair costs can result in this being a very expensive option.

Antifreeze

- Pros:
1. Antifreeze is foolproof if done correctly
 2. If the boat is correctly set up the process may be performed quickly and easily
 3. No reliance on outside power

- Cons:
1. Some expense in setting up the boat
 2. The cost of the anti-freeze
 3. Possible anti-freeze pollution of the river
 4. The need to flush the fresh water systems in the spring
 5. Engine must be re-winterized after each use

Antifreeze types

Propylene glycol is commonly known as 'RV antifreeze' and while normally dyed pink, it may be sold with a green dye. It is the only anti-freeze usable in potable water systems, as it is non-toxic. It does have a distinct taste; and must be thoroughly flushed from the water system in the spring. It could be used to protect the engine, although it is not as effective as ethylene glycol. It is not suitable for use as an engine operating coolant.

Ethylene glycol is the normal engine coolant. It is used to winterize engines and can be used for heads and holding tanks. It is highly toxic, and must never be used in potable water systems. It is recommended that a bio safe brand be used as the majority of this antifreeze ends up in the river.

Outboard Motors

Boats on trailers may utilize a flush adapter and a do-it-yourself winterizing kit such as the one made by Starbrite available from marine stores.

Stern Drive Engines & Inboard Engines

Pre-mix the antifreeze with water at a ratio of 50/50. Small inboard diesel auxiliaries will require 1-2 gallons of mix and larger block gas engines will require 4-5 gallons.

Start and warm up the engine until the operating temperature is reached and the thermostat is open.

Shut down the engine and close the engine water intake seacock.

Remove the hose from the seacock and insert it into the antifreeze mixture.

Re-start the engine and run it at idle until anti-freeze is observed coming from the engine exhaust.

Shut off the engine.

Reattach the hose but do not re-open the seacock

Label the engine ignition switch "seacock closed" to prevent accidental start up with seacock closed.

The easiest method is to install a Forespar engine flush out seacock. This seacock has a provision for an auxiliary garden hose to be installed. When the seacock is closed the auxiliary port automatically opens. Another option would be to install a Groco safety seacock or flush kit or to install a tee in the inlet line with a ball valve & hose.

Fresh water systems

Pump all freshwater tanks dry using onboard manual or pressure pumps

Add 2 gallons of RV anti-freeze to each water tank

Operate all pumps to pump RV antifreeze through each faucet, fixture and hose

A water heater bypass kit should be installed. The water heater tank is drained during this procedure and the water heater is bypassed. If no bypass kit is installed, use an additional 6 gallons (or water heater tank capacity) of RV antifreeze. Put the anti freeze in the freshwater tank, activate the pump, and open a hot water faucet until anti-freeze, not merely colored water, is observed to flow from the faucet. Proceed with step 3 flushing antifreeze through the system.

Alternately, a tee fitting and valve may be installed on the inlet side of the pressure water pump and used to suck anti-freeze from a gallon container. In this case, minimal antifreeze needs to be added to tanks, only enough to fill the hoses from the tanks to the pump.

Heads, holding tanks, shower sump pumps, etc.

1. Pump holding tank until completely empty
2. Place 1 gallon of RV antifreeze in the head bowl
3. Operate the head to pump antifreeze into the holding tank
4. Close the head intake and waste seacocks
5. If extremely cold temperatures are expected, remove the head intake hose and insert it into a container of anti-freeze. Operate the head to suck anti-freeze through pump assembly. Re-install the hose.
6. To winterize the macerator pump pour additional antifreeze into the holding tank and use the macerator to empty the tank. Then close the seacock.
7. Shower sump pumps are winterized by pouring RV antifreeze into shower drain and operating the pump. Then close the seacock.

Drain All Boat Systems

- Pros:
1. It's inexpensive
 2. It can be foolproof if done correctly
 3. Draining the systems is environmentally friendly
- Cons:
1. There is a possibility of damage if it is not done correctly
 2. The boat is laid up for the duration of the freeze season
 3. Draining systems is not always easy to do
 4. It is not always easy to tell if the parts are completely drained

Engine and Generator

Close the engine intake seacock

Open all drains on the engine

Drain the sea strainer, the muffler, and the water lock

Drain the engine. There are often several raw water-cooled items on an engine with several drains. Locate all of the drains. For example: Walter V drives are cooled with raw water running through the main case, Volvo transmissions are like wise. Mercruiser engines have two block drains, two exhaust manifold drains, two exhaust elbow drains, and two hoses that must be removed to drain the power steering cooler. Make sure that when you open a drain, all of the water comes out. Often, drain holes are partly occluded by rust and water may trickle out, the drain then re-clogs.

Replace plugs after draining to prevent damage to the engine upon start up in the spring.

Label the engine ignition switch "seacock closed" to prevent accidental start up with the seacock closed.

Fresh water

On a simple manual system, just pumping tanks dry should suffice. For pressure water systems, use the following steps:

1. Pump freshwater tank dry using the onboard pressure pump.
2. Drain the water heater tank and replace the plug. Be sure to lock off the AC breaker. The heating element will burn out if the water heater is operated without water in the heater tank.
3. Regulated (no more than 40 psi) compressed air should be forced through the water system to remove any remaining water. The most convenient way is to screw an adapter (available at West Marine) into your deck city water inlet. Open all faucets and close one at a time as water is expelled. With no deck fitting, the hot water heater connections should be disconnected and air introduced at that location.

Finishing Up

1. Close all seacocks with the exception of cockpit drains. Ensure that cockpit drains are clear.
2. Tag ignition keys "All seacocks closed"
3. Ensure batteries are charged
4. Turn off battery master switches
5. Ensure bilge pumps still work
6. You may consider removing sails and upholstery to dry storage at home.
7. If roller furl jibs are not removed, be sure to secure the jib to prevent it inadvertently unrolling. The cleat on the furling lines is usually not adequate in extremely strong winds; additional sail ties will be required.
8. Open all lockers, drawers, berth tops, ice box, fridge, etc for ventilation.
9. Secure vessel.

Please call Schooner Creek Boat Works at 503-735-0569 if you have any questions. We would be happy to give you advice or do the winterization for you. Remember, it is difficult to winterize everyone's boat on the same day that we get hit by a Siberian cold wave so please call early.