

**Winterizing Your Sail/Power Boat
General Notes and Recommendations
"Don't spoil the ship for a ha'porth of tar"**

Winter Commissioning Checklist for:

Date: _____

● **Just a few things that can go wrong...**

- Cracked engine block because of water or exhausted antifreeze left in the cooling system that froze.
- Bilge flooded with diesel because water separator was not emptied, froze & cracked and fuel tank not shut off.
- Boat scratched or damaged because of torn or improperly rigged boat cover.
- Bilge etc. flooded with water that froze because entry points not blocked.
- Interior of boat and 'stuff' are covered with mildew because of inadequate ventilation and high humidity
- Surprise failures of hoses while underway because early signs of failure not caught.
- Surprise engine stoppage because crud in fuel tank has plugged filters.
- Poor engine performance because of plugged air filter.
- Damaged or burst tanks, hoses, pumps, seacocks and/or valves because of frozen water.
- Surprise failures of running or standing rigging because of early signs of failure not caught.
- Damaged spars, winches or other equipment because of inadequate protection or precautions.
- Loss of valuable items through theft or vandalism over the winter.
- Accelerated rust damage because items not protected from water or high humidity.
- Battery(ies) frozen and/or burst because of inadequate charge or unexpected drain.
- Water seeps into and damages fiberglass during freeze/thaw cycles around cracks and hardware.
- Ice damage on deck, cockpit or scuppers because of drain blockage.
- Boat bites and serious injuries because of poor safety practices.

● **Priority & Effort Codes used for the Checklist**

Code	Priority	Effort (Work-Hours)
1	Critical for Winterization	Significant (4 - 8+)
2	Important before Launch	Moderate (2 - 4)
3	Recommended Winter Maintenance	Typical (0.5 - 2)
4	Good Preventive Maintenance	Modest (< 0.5)

- **Checklist items will vary from boat to boat - customization for your boat is recommended.**
- **Save and organize manufacturer's specifications, maintenance & troubleshooting information and operator's manuals. Many manufacturers have this information available for access by the internet.**
- **Keep a record or log of your winterization and maintenance activities, work-hours of effort, parts or resources required, diagrams, costs, sources, date of work, key usage information (e.g. engine hours) and any other relevant comments.**
- **Keep a detailed photographic record of your winterization & maintenance items and activities.**
- **Let the relative replacement or repair costs of major items guide you in performing winterization or maintenance activities.**
- **Read your boat insurance policy and winter storage provider terms & conditions.
You may need to take additional or different precautions, add riders or request exemptions.**
- **Follow safe practices for every activity. Always have back-up, if possible.**

Winterizing Your Sail/Power Boat Pre-Haul Out Checklist and Notes

Done	Priority	Effort	Activity - Task	Comments
[]	2	3	Boat Cover & Support Structure	Inspect and repair cover & support structure if necessary.
[]	3	3	Cradle	Inspect and repair cradle if necessary. Maintain with rust prevention paint and rust-check lubrication as appropriate.
[]	1	4	Engine - Antifreeze	Check antifreeze protection level. Change antifreeze regularly every 3-years on freshwater cooled engines because additives wear out. Consider changing to 'permanent' antifreeze. Be careful not to discharge ethylene glycol-based antifreeze - harmful to the environment.
[]	4	3	Engine - Misc.	Periodically checking the engine, transmission & propulsion system while underway is recommended. Use ear protection and take safety precautions whenever possible. Touch, listen, smell & look for the unusual and unexpected. Engine mounts can fail in just a few years - check for movement during Fwd/Rev and full load acceleration. When underway, the stuffing box (packing gland) should be warm but not hot to the touch.
[]	2	3	Engine & Transmission - Oil & Filter	Change oil & filter (with warm engine) before Winter lay-up, and every 100-200 hours Fill new filter with oil before installing. Used oil contains harmful acids & contaminants. If any sign of water in oil (miliness or like pancake batter) immediately seek expert help. Use Mfgr. recommended oil & parts. Be careful not to overfill. Run long enough to ensure no leaks. Consider analysis of used oil as a predictor of potential problems. Consider permanent valves and fittings to empty oil with a portable or fixed pump. Leave oil absorber pads (white-oil, off white-oil & water) under engine and around any known leaks. Fix any oil or fuel leaks immediately.
[]	2	4	Fuel & Tank(s)	Fill fuel tank(s) allowing room for expansion when warm. Water (from condensation or leaks) in diesel fuel causes microorganisms to grow, die and drop to the bottom as sludge that can plug filters. Add biocide and fuel conditioner, if possible. Consider tank inspection & cleaning every 10-15 years, or more often if fuel turnover is less than 2-tankfulls per year.
[]	1		Holding Tank	Pump out holding tank. Flush with fresh water and pump dry. Add 2-4L of non-toxic (propylene glycol) antifreeze for the winter. If equipped with a macerator, then run until antifreeze is visible at discharge.
[]	2	1	Mast & Standing Rigging	If possible, remove and store mast for the Winter. Periodically remove and inspect shrouds, turnbuckles, halyards, furling gear, antennae and related equipment. 'Fishhooks' in wire rigging, rust or micro cracks are all signs of potential problems (wire rigging life about 15-20-years). Repair or replace worn items before Spring launch. Mast should be cleaned and tightly wrapped in plastic for storage outside. Ensure keel stepped mast holes in cabin roof are properly covered and resistant to rain, snow & ice.
[]	3	2	Remove Miscellaneous Stuff	Remove stuff from boat while it is still in the water unless it is easier in the cradle.
[]	2	4	Transducers	If possible, remove speed transducer paddle wheels before haul out and replace with plugs. They have a tendency to get broken by slings in the haul out process.
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Winterizing Your Sail/Power Boat On the Hard Checklist and Notes

Done	Priority	Effort	Activity - Task	Comments
[]	1	3	Air Flow	Ensure adequate air flow into all parts of the boat during Winter. Leave drawers, hatches, lockers, etc. open if possible. Consider anti-mildew treatments, solar powered circulation fans. Inspect boat several times over the Winter, especially after thaws. Kill mildew ASAP with diluted bleach or other appropriate treatments.
[]	1	3	Battery(ies)	If practical, remove from the boat and store indoors for the winter. If not, ensure fluid level is topped up, batteries fully charged and top/posts are clean. Equalize (i.e. overcharging procedure) if appropriate. If possible, bring batteries up to a full charge several times during the winter. If a battery quickly loses its charge, it may have a bad cell. If not needed (e.g. bilge pump), disconnect batteries from electrical system. Consider a de-sulphator, trickle charge device (e.g. BatteryMinder) for older batteries.
[]	1	3	Bilge(s)	Pump out bilge(s) until dry and clean. Add some non-toxic antifreeze to bilge to keep any water from freezing. Ensure manual & electric bilge pump lines and float tanks are empty or filled with non-toxic antifreeze, especially if there are any check valves.
[]	3	4	Birds' Nests	Birds and some animals love to nest in boats. Ensure all holes (e.g. anchor locker, end of boom, exhausts) are properly plugged including any access through a boat cover.
[]	3	2	Boat Coverings	Ideally boats should be covered during the winter. Freeze/thaw cycles can cause problems around cracks or joints such as stanchions. Frames help to create room to work on board under the cover. Ensure plenty of air vents to allow air circulation. Consider shrink wrap unless topsides have been Awlgripped.
[]	3	3	Boom Storage	Ideally boom should be removed and stored in a secure area. If stored on the mast, ensure that it is properly secured from movement during high winds. Note any hardware or lines that should be replaced.
[]	2	1	Bottom & Topsides	Boat bottom and running gear should always be pressure washed immediately after haul out; however, some ablative bottom paints can be damaged- follow instructions Remove saltwater scum that usually occurs at the waterline and up a few inches - Salt-X is one product that works. Check for cracks, osmosis or other problems and repair accordingly. If weather permits, bottom can be painted with anti-fouling paint before Winter.
[]	2	1	Clean & Wax Boat	If possible, clean and wax (twice) boat before Winter storage. Perform any gelcoat and fiberglass repairs if weather permits. Seal any damaged areas that could be exposed to Winter rain, snow & ice.
[]	1	4	Cockpit & Scuppers	Ensure boat is oriented to properly drain water over the Winter, especially if uncovered. Typically, boat should be level and slightly nose up. Ensure scuppers and drains are free and clear of debris, leaves, etc. Look for and prevent other places that could catch and pool water.
[]	1	4	Deck Wash Down	Drain any seawater or freshwater systems for deck wash down or showers. Consider 3-way valve for winterizing and/or access to fresh water. Fill with non-toxic antifreeze, if possible.
[]	2	3	Dinghy	Store dinghy for Winter, inside and/or covered if possible. Drain any water. Deflate inflatables. Clean, inspect and repair dinghy and equipment before storage.

Winterizing Your Sail/Power Boat On the Hard Checklist and Notes

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[]	4	3	Electrical Wiring	<p>Inspect electrical wiring for cracks or corrosion. Replace with proper marine wiring (multi-strand copper, tinned). Spray electrical wiring with preserving spray (silicone based). Spray also good for rubber mounts and belts. Avoid using silicone (including silicone sealants) around fiberglass - Silicone penetrates into the fiberglass gelcoat and cannot be removed except by grinding off the underlying gel. It contaminates nearby surfaces which then become difficult if not impossible to paint over.</p>
[]	3	3	Electronics & Radios	<p>If practical, remove electronic & radio devices during Winter storage. Protect any exposed connectors, which corrode easily. Coax cable deteriorates over time and should be replaced every 5-8 years - best grades are UV & moisture resistant. Consider a sign on the outside of the boat indicating that all electronics and other valuables have been removed.</p>
[]	1	2	Engine - Add Antifreeze [also OK for in-the-water storage]	<p>Fill raw-water cooling system with non-toxic (propylene glycol) antifreeze. Inspect and clean strainer. Close engine intake seacock and disconnect hose. Add length to intake hose to suck-up non-toxic antifreeze from a pail or utilize strainer opening to pour in non-toxic antifreeze. Consider permanent hose ("Y" valve or dual valves) for winterizing and emergency bilge pump. Remove thermostat if engine is cold. Run engine until non-toxic antifreeze is clearly exiting exhaust, about 3-10 4L containers depending on size of the engine. Replace thermostat and intake hose. Drain the base of a water-lift muffler and/or drain pot muffler.</p>
[]	3	4	Engine - Air Filter & Spray Lubricant	<p>Check and clean/replace air filter if needed. Squirt some fogging oil into inlet manifold and turn engine over a few times (without starting) to spread oil around cylinder walls.</p>
[]	2	3	Engine - Air Flow	<p>Ensure adequate air flow around engine to avoid rusting but plug all openings (air inlet, breathers, exhaust, fuel tank vent). Be sure to remove in the Spring. Ensure that water cannot drip onto engine.</p>
[]	3	4	Engine - Belt(s)	<p>Check fan and other belts for signs of wear (black dust, cracks etc.). If worn, replace before Spring launch. If possible, loosen belts for Winter storage. Always carry spare belts and change regularly (every 2-5 years). Spray with silicone-based lubricant to preserve.</p>
[]	1	2	Engine - Drain Seawater [and/or Add Antifreeze - see next item]	<p>Completely drain the raw-water cooling system, taking particular care to empty all low spots. Inspect and clean the strainer. If seawater cooled, remove thermostat and run engine for a few seconds to remove any remaining water. Replace thermostat. Drain the base of a water-lift muffler and/or drain pot muffler. Remove water from low-lying areas of exhaust.</p>
[]	3	2	Engine - Exhaust System	<p>If possible, inspect and clean/repair exhaust system components such as risers, vented loops, raw water injection elbow, heat exchanger, etc.</p>
[]	3	3	Engine - Inspect, Clean & Protect	<p>Clean and carefully re-paint engine parts that are rusting. Spray rust-check or WD-40 where appropriate. Spray starter, alternator with WD-40.</p>
[]	4	3	Engine - Lubrication	<p>Grease or lubricate all grease points and moving parts.</p>
[]	1	3	Engine - Oil Cooler	<p>Ensure any transmission or engine oil coolers are also drained or prepared with non-toxic (propylene glycol) antifreeze.</p>
[]	2	4	Engine - Primary Fuel Filter	<p>Change engine fuel filter every two years or more often if experiencing dirty fuel. Use Zip-loc bag around filter to remove/reinstall. Use indelible marker (e.g. freezer pen) to put change dates on all filters.</p>

Winterizing Your Sail/Power Boat On the Hard Checklist and Notes

Done	Priority	Effort	Activity - Task	Comments
[]	1	3	Engine - Running out of water	NEVER insert hose under pressure into engine seawater intake or back into exhaust system. Water can be forced past pump and into cylinders (especially when engine is stopped) causing a hydraulic lock - very serious and potentially disastrous for the engine. Can utilize a hose extension into a bucket that is refilled by a garden hose.
[]	1	3	Engine - Seawater Pump Impeller	Remove rubber impeller from seawater pump. Check for signs of wear, cracking or 'taking a set'. If so, replace with new impeller in the Spring. Grease old impeller with white Teflon waterproof grease or petroleum jelly and install - most impellers will show signs of 'taking a set' over the winter. Leave cover screws loose. Replace impeller in Spring with 'good' or new. Always carry spare impellers and replace every year or two.
[]	4	3	Engine - Shift & Throttle Cables & Linkages	Check, repair and lubricate linkages and fittings. Use white Teflon waterproof grease - some require dry graphite lubricant.
[]	2	2	Engine - Spray Oil into Engine	Diesel: Squirt some oil into inlet manifold and turn engine over a few times (without starting) to spread oil around cylinder walls. Gas: Remove spark plugs and spray fogging oil into each cylinder and turn engine over a few times without starting. Clean & re-gap plugs or replace with new. Install plugs with proper gap and torque.
[]	3	3	Engine - Zincs	Check engine zincs and replace if less than 60% material left. Check again in Spring if boat stored in-the-water. Never use Teflon tape when installing a zinc or zinc plug because it may partially or completely isolate the zinc electrically.
[]	3	3	Fenders & Buoys	Remove fenders and buoys (e.g. anchor buoy). Inspect and repair or replace any damage. Clean over the Winter.
[]	3	3	Fire Extinguishers	Remove and have an expert inspect fire extinguishers. Material often cakes in a few years. Recharge or replace if necessary. Consider doubling the number of required fire extinguishers, or more.
[]	1	4	Flares & Flammables	Remove all flares (and other flammable materials) for safety reasons as well as staying compliant with insurance requirements. Check expiry dates and replenish at boat show or Spring sales.
[]	1	3	Freshwater System	Drain all freshwater tanks and plumbing including any pressurized tanks. Clean or replace any in-line filters. Disconnect hot water tank and drain by actuating check valve (coat hanger may work) in exit pipe. If practical, by-pass H/W tank and directly connect hot water output to cold water input hoses. Put enough non-toxic (propylene glycol) antifreeze in tank to pump through all fittings and sink drains. Do not put antifreeze in H/W tank - it will smell for weeks or be ruined if accidentally turned on before purging the antifreeze. Prevent H/W on/off switch from being used until tank is properly plumbed and full.
[]	1	3	Fuel Filter & Water Separator	Change Fuel Filter (2-10 micron). If possible, use a Zip-loc bag around filter to remove/reinstall. Retain, inspect element for signs of contaminants. Drain water from bowl. NOTE: If not drained, water will freeze and could cause a major diesel leak. Recommend tank shut-off valve - closed during winter. If not, use flat vise grips with rag to stop fuel flow during filter change. Ensure air has been bled out of system. Always carry several spare elements.

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[]	3	3	Ground Tackle	Remove anchor & rode for the Winter. Inspect and repair or replace any damage. Chain can be cleaned in a parts tumbler but may need re-galvanizing.
[]	1	3	Head(s)	Pump heads until dry. Fill with non-toxic antifreeze and pump into hoses. Ensure intake hose is dry or filled with antifreeze.
[]	2	3	Hoses & Clamps	Hoses need replacing every 10-15 years. Check for softening, cracking or bulging - especially on hot side of cooling system, fuel hoses and at clamps. Always use new 100% SS clamps (old clamps are stressed). Double clamp wherever possible. Always use proper marine certified hoses and clamps.
[]	2	3	Hydraulics	Inspect hydraulic hoses, mechanisms and oil (must be very clean). Repair or replace as needed.
[]	1	4	Ice Box, Fridge, Freezer	Empty, clean and drain any water from ice box, fridge and/or freezer. Ensure adequate air flow during Winter storage. Consider using open boxes of Baking Soda.
[]	4	3	Keel Bolts	Inspect and repair any damage to keel bolts. Loosen and re-torque periodically; however, be careful of damaging the SS bolts.
[]	3	3	Lines & Rope	Remove lines & rope such as dock lines for the Winter. Inspect and repair or replace any damage. Wash ropes over the Winter.
[]	1	2	Mast-up Storage	Periodically remove halyards leaving suitable tracers. Inspect, clean and repair accessible gear. Loosen turnbuckles so that shrouds are mildly tensioned and mast does not move too much in a high wind. Ensure keel stepped masts are properly sealed from rain, ice & snow. Ensure cradle & boat are secure and not subject to movement in high winds.
[]	2	3	Miscellaneous Items	If practical, remove everything possible from the boat, especially things susceptible to mildew or freezing like cushions, clothing, charts, books, liquids, etc.
[]	1	3	Outboard Motor	Follow Mfgr. Instructions. Flush with fresh water using flush muffs or barrel, then drain all water. Drain O/B fuel tank & lines. Change lower unit gear oil. Grease prop shaft and other fittings. Change zinc if needed. Remove spark plugs and replace or clean & re-gap. Spray fogging oil or engine oil into cylinders and turn over a few times. Loosely re-insert spark plugs. Inspect prop for dings, pitting and distortion - repair or replace. Clean and wax outside of O/B. Store up-right in a secure, heated area if possible. 4-cycle engines must be stored upright. Dispose of unused gasoline properly - do not use gas older than a few months.
[]	2	4	Prop & Shaft	Check prop shaft and prop for any damage, looseness or out-of-round. Clean thoroughly - may need to wet sand with fine grit. Ensure any cooling channels are clear. Inspect cutless bearing for wear and replace if necessary.
[]	2	4	Prop Shaft Anodes - Zincs	Inspect and replace prop shaft anodes or other anodes associated with bonding system as needed. Replace zincs if more than 40% deteriorated. If stored in water check for current leaks in surrounding water, if possible. Never paint or otherwise coat a zinc because it may partially or completely isolate the zinc electrically.

Winterizing Your Sail/Power Boat On the Hard Checklist and Notes

Done	Priority	Effort	Activity - Task	Comments
[]	1	4	Propane Tank	Remove propane tank for safety reasons as well as staying compliant with insurance requirements. Clean and re-paint if rusty. If possible, store outside and do not refill until Spring. Inspect "O" ring for signs of cracking. Always carry a spare "O" ring.
[]	1	4	Rudder & Post	Inspect rudder and rudder post including packing for any damage or leaks.
[]	3	3	Sails	Remove and, if possible, clean all sails. Have a sail maker inspect and repair any damage to sailcloth and stitches. Most stitches do not have UV protection.
[]	2	3	Seacocks & Valves	Open and close all seacocks to ensure there is no water. Lubricate seacocks regularly. Leave seacocks open if boat is on the hard. If boat is stored in-the-water over the Winter, remove hose on closed seacock and force water out by blowing while briefly opening the seacock. Add non-toxic antifreeze if possible before reinstalling hose. Use new 100% SS hose clamps and double clamp wherever possible. Always use proper marine seacocks and valves with solid backing & support.
[]	4	3	Spare Parts & Tools	After Winterization, inventory your spare parts, tools and miscellaneous hardware. Re-stock during boat show or Spring sales.
[]	1	2	Stern Drive(s)	Thoroughly inspect the stern drive and remove any plant life or barnacles from the lower unit. Drain the gear case and check for excessive moisture in the oil. This could indicate leaking seals that should be repaired. Clean the lower unit with soap and water. If your stern drive has a rubber boot, check it for cracks or pinholes. Grease all fittings and check fluid levels in hydraulic steering or lift pumps. Check with your owner's manual for additional recommendations by the manufacturer.
[]	2	3	Stuffing Box	Check prop shaft and packing gland (stuffing box) for signs of wear or inappropriate leaking. Packing gland material should be replaced every few years. If boat stored in-the-water during winter, tighten packing gland to stop any leaks; remember, to adjust in the Spring - adjustable plumbers wrench often required.
[]	3	4	Transducers	Remove transducers if appropriate. Clean and protect from damage. Do not reinstall 'paddlewheel' speed transducers until after launch, if possible.
[]	2	2	Winches & Hardware	If practical, remove winches from boat; the post can remain. Most winches can be removed within a minute or two using simple hand tools. Keep parts of each winch separate. Use the Winter to clean & grease winches. Always carry spare parts for winches. Inspect and repair or replace damaged hardware.
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