

San Juan Yachting Preventive Maintenance Schedule

Boat Owners and their MPs are responsible to keep this ONLINE PMS up to date so that owners, MPs, SJY staff and charter guests can see what has been done, and by whom, to assure a cosmetically and mechanically confident vessel. Obviously, failure to keep this PMS current will reflect adversely on the boat and the person who accepted responsibility for timely accomplishment. Inaccuracies are subject to penalty; falsification is grounds for de-certification.

Season:	2022		
Vessel:			
Maintenance Pro:			
Charter ready date:	4/15/2022	(To be selected by boat owner. Default date is 4/15/22.)	

RESPONSIBILITIES: *The Maintenance Pro (MP) will contact the Boat Owner (O) so the O can decide who does what, after which the MP will circle the "M" or the "O" by each task ON LINE). As each task is completed, the person completing the task will initial & date this ON LINE PMS.*

Preparation steps are completed, initialed & dated. If the boat is not certified "charter ready", charters will be moved to another vessel.

Complete Before:										
3/4/2022	·	Haulout	– completion at least six weeks before charter ready date.							
3/18/2022	·	Spring Pre-Season Preparation	– completion at least four weeks before charter ready date.							
3/25/2022	·	Interior Deep Clean	– completion at least three weeks before charter ready date.							
4/1/2022	·	Shakedown Cruise	– completion at least two weeks before charter ready date.							
4/8/2022	·	Exterior Deep Clean	– completion at least one week before charter ready date.							

WINTER

"M" & "O" assignments due by December 1. Unassigned items will be designated "M".

Choose one:		Date	Initial	Item
O	M	complete		
	M			1 Disassemble, lubricate and inspect anchor windlass. Clean and spray windlass switches. Check brushes, springs, and electrical connections and ground wire attachment bolt for tightness. Open solenoid box, if applicable, and check for arcing. Check for voltage drop. Verify snubber/bridle is in good condition and stored in correct location.
				2 Replace batteries in CO detector(s). Recommend at least one hard-wired CO detector. Check sensor for expiration date, replace as needed.
				3 Recommend installation of large display voltmeter for house battery bank, with label below that says "It's time to charge if battery below 12.2".
	M			4 In FEB or MARCH: Check battery voltages "at rest" for at least 4 hours, with neither load nor charging and, on unsealed batteries, at proper water level. Load test all batteries with electronic or 800 amp carbon pile load testers. Follow respective protocols for amp draws/time. Label batteries "Load tested: date and results" so as to track capacity trends. Assure all connections are tight and coated with silicone grease. RECOMMEND: AGM batteries. OPTION: Check battery capacity using a 40 (or other) watt 12 v bulb for a specified period of time, ideally on a timer, until 100 Ah have been consumed. Measure starting and ending voltages to determine remaining battery capacity. For example, if 12.8v is full on a boat, and 11.8v is considered empty (beyond which damage would occur) if voltage shows 12.3v after 100Ah has been consumed, there is 100Ah remaining, indicating a total battery usable capacity of 200Ah. This method, in addition to using less expensive equipment and likely fewer labor hours, taxes the house bank at its more normal rate of discharge.
				5 With flashlight and mirror, check all motor mounts for signs of "general wear" (crack in a bolt, weakening of rubber sometimes coming off mount, u-shaped bracket settling down onto base). If no obvious signs of wear, look for sagging/sinking of the engine toward any of the mounts. Replace if signs of wear or if engine is tilting forward, aft or to one side. (If realigning engine, tilt becomes more apparent.) Expect to replace motor mounts after 7-12 years.
				6 Color code electrical panel based on usage and verify that coding system is reflected in notes. For example, if using the dot system you might mark breakers that should never be turned off with 2 green dots, breakers that are on when underway (eg. chart plotter or radar) with one green dot, breakers that should only be on when in use and not left on (eg. macerator) with a yellow dot, and unused breakers or anything that should never be switched on during a charter (eg. a pickled watermaker) with a red dot. Photos of successful marking systems can be provided upon request.

M			7	Access back of electrical control panel. Test all electrical connections for corrosion and tightness. Check all electrical connections for tightness/corrosion in bilge and in engine compartment and any other areas that may be close to water. Check for burned out indicator lights on panel.
			8	Replace raw water impeller in engine(s) and generator using on-board spare(s). Replace spare with new. (Goal = to start spring with new impeller.) Label in engine compartment when changed and when due again.
			9	Replace primary fuel filter on engine(s) and the genset, bleed fuel system and assure no air locks, test for proper operation and no leaks. Replace in-line and/or secondary fuel filters every year or every other year depending on mfg specs.
			10	Run generator for an hour with a large load to blow out carbon. Verify voltage and cycle frequency are within normal parameters.
			11	Check belts for tension (1/2 inch deflection) and wear (look for black powder and cracks in belts). If in doubt, replace.
			12	Check integrity of heat exchanger, exhaust elbow and after-cooler on engine(s) and gen-set. Remove, inspect and pressure-test heat exchanger core (San Juan, Orca, Sea Camp or Whatcom Radiator can pressure test). Change engine zincs as needed.
			13	Inspect cleanliness of air filter, assure changed at least in even years unless it is the type that can be cleaned (most are foam that deteriorates over time).
			14	Wipe engine and mechanical components in engine compartment with oily cloth to remove dirt and grease (use degreaser if necessary). Remove any rust, spot paint engine and other components if necessary for "like new" appearance. Coat engine with <i>WD-40</i> , <i>Corrosion X</i> or <i>BOE SHIELD</i> anti-corrosion spray.
			15	Clean/check electrical connections on engine, including start solenoid.
			16	Check hydraulic steering systems for fluids and leaks. (If applicable, oil steering cable sheaves with #30 oil; check tension and wear of steering cable.)
			17	Check throttle and shift controls including cables, lines, connections and brass barrel ends. Lubricate, adjust or replace, as needed. Check pressure in Hydraulic system, if applicable. RECOMMENDED: Pre-run spare cable(s)/line(s) to engine(s) and transmission(s).
			18	Tighten all engine, transmission and generator (if applicable) fittings and motor mounting bolts. Check coupler bolts.
			19	If flying bridge, remove and check exterior ignition control panel for water intrusion, loose wires and corrosion, spray with <i>Corrosion X</i> or <i>BOE SHIELD</i> anti-corrosion spray to prevent corrosion/rust.
			20	Check all bolts, screws, hose clamps, engine fittings for tightness, throughout boat.
			21	Check hoses throughout boat for wear (i.e., chafe, cracking, swelling and general deterioration). Replace if in doubt. Add chafe guards as necessary.

				22	Renew interior varnish to “like new” varnished and/or oiled finish. Inspect bulkheads, tables, doors, steps and cabin sole. Expect to add an additional coat of varnish or polyurethane [inspect Polyurethane surfaces—may last more than one year] to heavy-traffic areas of your wooden sole annually. Clean carpeting as needed and replace if worn.
				23	Replace any non-skid on stairs if worn. Clear tape coated with varnish or brown non-skid tape recommended.
				24	Renew interior and exterior painted finishes as necessary, especially in bilge and lockers for pristine like-new appearance.
	M			25	Service the diesel cabin heater (follow service manual) or subcontract to authorized service technician or company. WEBASTO: <ul style="list-style-type: none"> · Forced Air System: inspect/replace filter, check lint/dust around cowling, clean combustion chamber, check ducting, check exhaust and exhaust blanket. Test run for 1-2 hours. · Hydronic System: inspect/replace filter, clean combustion chamber, check pH balance, check fans, check exhaust, quick air bleed, blow coils out. Test run for 2-4 hour. Change fuel nozzle, change water conditioner filter, wipe photo eye clean, clean electrodes.
O				26	Personally review, have MP review or contract with SJY professional writer to review “Owners Notes” and edit for accuracy and completeness. (NOTE: Inaccurate procedures or poor descriptions result in excess calls to and charges by your Maintenance Professional, or damage to the boat.)
				27	Inspect (and operate) stove top and oven burners for scale and rust. Assure proper operation. Change battery on ignitor, if applicable.
				28	Inventory tools in onboard toolbox against SJY’s required Tool List (list on next tab). Purchase and/or replace tools as necessary. Wipe down all metal tools and parts with WD-40.
	M			29	Inventory spare engine parts against SJY “Engine Spares” (list on next tab). Place items in plastic (e.g., Sterilite) box labeled “Engine Spares”. Confirm that <u>all</u> engine spares are aboard.
	M			30	Inventory general spare parts against SJY “General Spares” (list on next tab). Place items in plastic (e.g., Sterilite) box labeled “General Spares”. Confirm to SJY that <u>all</u> general spares are aboard.
O				31	OWNERS: Note location of tools, general spares and engine spares in Notes from the Owner and in Vessel Inventory.

				32	Check dates on head hoses. (If not dated and if installation date is known please label with "installed" year and "change in" year.) For saltwater heads, replace non-PVC head system waste hoses after 5 years. Use PVC pipe wherever possible, and top-quality thick-wall hose where necessary. On fresh water heads, or if "premium" hose (e.g. Trident) is used, hose replacement may be extended to every 10 years IF odor-free. Any lengths of PVC pipe can follow the every-10-year replacement interval. Use two stainless hose clamps on all hose connections. When hoses are changed make sure to write on hose (inside compartment, but visible when compartment is opened) with indelible marker both "hose installed (year)" AND "change in (year)".
	M			33	Verify chartplotter operation, in particular that the default settings have all vectors turned off except the COG vector.
	M			34	Verify AIS is transmitting and receiving and AIS targets are showing up on the chart plotter by default.
	M			35	Verify VHF radio DSC is programmed correctly and the radio is properly receiving GPS information.

SPARE PARTS INVENTORY

Date Completed: _____

ENGINE SPARES

INITIAL Assembled in BOX with clear plastic cover labeled: "Engine Spares"

- Spare fuel filters for engine, (generator if applicable)
- Spare raw water filters (for watermaker if applicable)
- Spare belts for engine(s), (generator if applicable)
- Spare impellers for engine(s), (generator if applicable)
- Impeller "pull" tool
- Spare impeller plate gaskets for each

INITIAL In a compartment (with location noted in Inventory):

- 1 gallon spare oil for each engine – write "Main Engines Only" on containers
- 1 quart spare oil for generator (if applicable) – write "Generator Only" on container
- 2 gallons of appropriate engine coolant (NOTE: Not automotive engine coolant.)
- If wet cell batteries, 2 gallons of battery water (distilled) – write "for batteries" on container (if applicable)

GENERAL SPARES

INITIAL Assembled in BOX with clear plastic cover labeled: "General Spares"

- Minimum of 2 spare light bulbs for each type of navigation and cabin lights
 - For fire safety and to reduce power consumption, assure that halogen bulbs are replaced with LED: Imtra – IMT ILBPG4-10c ("bright white" light for heads) and Imtra – IMT ILBPG4-10w ("warm white" light for all other areas)
- A set of outboard spark plugs
- Minimum of a dozen 12-inch zip ties
- 2 hose clamps for each size fitting
- 6 cotter rings, various sizes (if vessel has lifelines)
- Various screws, nuts, bolts
- 2 spare lifeline pins – clevis pins
- Spare oarlocks for dinghy
- Spare regulator for BBQ
- Stainless seizing wire
- Spare fuses for any in use onboard.

EQUIPMENT SPARES

INITIAL

- If manual toilet, replacement head pump plus a dozen pairs of surgical gloves;
- If VacuFlush head, 4 duckbill valves per toilet plus one bowl seal and one ball valve assembly.
- Spare davit remote
- Spare starter
- Spare alternator (unless deemed too complex by MP). Spare high output Balmar w/ smart regulator is expensive.
- Spare propeller(s) with prop nut assemblies, zincs, etc.

INITIAL If applicable, assembled in BOX with clear plastic cover labeled: "Hydronic Heater Spares"

- Coolant conditioner filter

	Fuel Nozzle
	Photo eye

"LONG TERM" SPARES

INITIAL	These can be stored in an out-of-the-way place as long as it is known to the Maintenance Pro:
	Alternator (required if single-screw, recommended for twin)
	Fuses for alternator
	Starter (required if single-screw, recommended for twin)
	Transmission fluid
	Raw water pump
	Domestic water pump
	Electric bilge pump
	Bilge float switch
	Head pump assembly for manual heads
	Nav light bulbs

TOOLS

Need both 1 and 2 below...or one tool box (or bag) containing all of the items below:

1. Tool box/bag containing:

	10 inch crescent wrench
	Channel locks
	One #1 and #2 of each: Slot (straight), Philips head and Robertson square screw drivers
	Small hack saw (tungsten or carbon blade preferred)
	Vice grips (large)
	Can of McLube SailKote – non dirt/grit attracting spray lubrication (SJY bulk buy)
	Assortment of small nylon, stainless steel and bronze bushes
	Small metal file
	Roll of rescue tape
	Roll duct tape
	Digital voltmeter (SJY bulk buy)

2. West Marine 133-piece tool set (SJY bulk buy). Can be taken out of plastic holder and stored with other tools in bag.

Set contains:

	Open-end box wrenches:
	• SAE 3/8"-5/8"
	• Metric 10,12,13,14,15mm
	Socket wrenches:
	• SAE 5/32"-1/2"x 1/4" drive
	• Metric 4-12mm 1/4"x drive
	• 3/8"-11/16"x 3/8" drive
	• 9-17mm 3/8"x drive
	• 5/8" & 13/16"x 3/8" drive
	Spark plug sockets, 1/4" adaptor
	3/8" drive ratchet
	6" adjustable crescent wrench

	5" needle nose pliers (with wire cutter)
	5" pliers
	Small needle nose pliers with built-in wire cutter
	Electrical crimping tool
	Small wire brush
	Small file
	#0 x 3" Philips screw driver
	Bit driver handles 1/8"-1/2", assorted terminal ends
	Allen wrenches:
	• SAE 1/16"-1/4"
	• Metric 1.5-6mm
	Assorted driver bits including Philips, slot, hex and star (<u>optional</u> with the 4 screw drivers above)

ANNUAL HAUL-OUT

Please complete this Checklist at least 6 weeks prior to first use.

To meet your charter ready date of 04/15/22 the annual haul-out must be completed by 03/04/22.

Assigned to:		Date		Item
O	M	completed	Initial	
Before Haul Out				
				1 Grease rudder shaft(s) (if zerk fitting available), check adjustment of rudder packing gland (if applicable).
Haul Out				
				2 Schedule boat for haulout with yard and deliver to yard.
				3 Pressure wash bottom (normally done by yard).
				4 Check hull for damage. Check running gear for damage: shaft(s), strut(s), prop(s), rudder(s), tabs. Report any damage to SJY. Arrange for any necessary repairs after consulting with SJY. (SJY expense if could be detected by diver, unless caused by owner.)
				5 Evaluate condition of bottom paint. Complete 5 and 6 below, or comment below. Note: ablative paints recommended; after years or coats of ablative, occasionally repainting may not be necessary. Some owners opt for the initial base coat in a different color than subsequent coats. This allows easy identification of when additional coats are needed.
				<ul style="list-style-type: none"> • Maintenance Professional's Paint Condition Evaluation/Comments:
				6 As permitted, sand or rough up existing paint surface (where needed) to prepare for fresh coat of bottom paint. For any bare fiberglass, wipe surface with acetone and add barrier coat prior to painting.
				7 Obtain paint, tape waterline with special painter's tape, then paint bottom. Add a second coat from the water line down 2 feet and on all leading edges.
				8 Sand propeller shaft(s) and propeller(s) with #400 sandpaper. (Optional: spray with PTFE grease to help inhibit marine growth.) Check cotter pin on propnut if applicable.
				9 Replace hull, shaft, rudder and trim tab zincs.
				10 Rub out hull gelcoat scratches with rubbing compound. Inspect for chips and scratches through the gelcoat. (Report any chips/scratches through gelcoat to SJY. Arrange for any necessary gelcoat repairs after consulting with SJY -- SJY expense, unless caused by gelcoat voids or by owner.)
				11 For non-painted hulls: Wash; if haze, buff lightly with buffing compound and wax hull. If no haze, polish only. For painted hulls: (optional) wash and apply paint brand's recommended restorative/protectant (NOTE: You may wait until there's a good "weather window" in March, April or May to buff/wax the smooth surfaces on deck and above-deck superstructure.)

				12	Operate all seacock valves. If stiff and do not open/close easily, disassemble, clean, emery cloth any scratches, grease and reassemble or replace. On the interior, yank on seacock to check integrity (not to exceed 50 lbs force). On exterior, tap seacocks with screwdriver and hammer—if pink pigment present, replace seacock. If bonded, check bonding. If not bonded, conduct ohm resistance test.
				13	Perform bonding test to check resistance between all underwater metals. Investigate anything over 1 ohm.
				14	Check condition of cutlass bearing(s) for wear.
				15	Check, re-pack or replace shaft seals as necessary.
				16	Evaluate rudder play. If excessive, find cause and correct.
				17	Service thruster(s)...if applicable. (Follow service manual and assure power disconnected.)
				18	Every 5 years , have the fuel tanks professionally checked. If sediment is found, polish the fuel in every tank to remove sediment and bacterial growth. Note: Below wood inspection plate, label or write on the tank with indelible marker “fuel polished 00/00”. (If no “fuel polished” date on tank, and if the boat is more than 5 years old, arrange for inspection by Petro-Clean.)
				19	Refloat boat, deliver boat to slip and secure.
				After Haul Out	
				20	If there is any indication that re-alignment may be required, after back in slip for 48 hours, check alignment of shaft with a feeler gauge, re align engine if necessary. During realignment, check tightness of the nut that secures the coupling to the transmission.
				21	Disconnect power from thrusters if present.

SPRING PRE-SEASON PREPARATION

"M" & "O" assignments due by December 1. Unassigned items will be designated "M".

Please complete this list at least 4 weeks before charter ready date.

To meet your charter ready date of 04/15/22 the preseason checklist must be completed by 03/18/22.

Choose one:		Date			
O	M	completed	Initial	Item	
					1 For AGM batteries perform deep cycle charge (draw down below 12v and charge hard) to reduce sulfation. Refer to battery manufacturer specifications.
					2 Check that the charge profile on battery charger, alternator, and solar (if applicable) match battery specifications.
					3 Reconnect power to thrusters and test.
					4 Start engines and genset (if applicable), verify proper operation.
					5 Leak tests propane system. Check propane locker drain. Check date on tank and replace or hydro if needed.
					6 Check exterior teak. Renew areas as necessary.
					7 Turn on running, anchor (assure LED), and exterior courtesy lights, check and replace as necessary. Replace all bulbs with LED (rated for non-RF noise) as they burn out.
					8 Assure windshield wipers are operational with supple rubber blades and sufficient pressure on glass to remove dew and rain effectively. Repaint arms and lubricate (or replace) springs as needed. Test washer system and assure fluid is topped off.
					9 Soak any teak decks for 20 minutes with mixture of 1/4 cup TSP, one cup bleach per gallon of water, or Zcare and Cascade dishwashing soap, or Boat Life teak deck powder, scrubbing across the grain. Rinse thoroughly. Do not oil teak decks!
					10 Install canvas if removed and inspect for mildew or dirt and if present, clean with "Oxy Clean" or other recommended mildew remover (or machine wash on gentle cycle with Woolite or Oxy Clean, line dry). Re-waterproof with silicone water proofing after washing. Replace tension bungees and snaps as necessary. Apply lubricant to all snaps. Assure all zippers operate smoothly and are lubricated.
					11 Assure each portable piece of canvas is labeled for location (including port, stb; and location if multiple pieces.)
					12 If inflatable tender, assure proper pressure. Confirm that there are no air leaks. Check air pump for operation - leaks, gaskets, proper fittings. Check painter for wear. Replace if necessary with a multi-filament soft polypropylene floating line (available from SJY, Owners Consumables Inventory)...minimum length 30', recommend 50'. Check bottom paint (if applicable), repaint as indicated. NOTE: For aluminum bottoms, use rubber washer in front of stop knot.

				13	On tenders with wheel steering, remove, clean and lubricate cable in tilt tube. Check running lights, anchor and electrical systems.
				14	Change to summer dock lines and inspect for wear, stiffness or fading. Replace as necessary.
				15	Before the first charter, remove all winter canvas (such as binnacle cover, winch covers, rail covers) and store in a dry location, not onboard
O				16	Make sure satellite TV or Sirius Radio subscriptions (if applicable) are current. Test all entertainment systems to assure proper operation, including cockpit speakers.
				17	Turn on all interior lights. Replace all halogen bulbs with LED (rated for non-RF noise) as they burn out.
				18	If the vessel has an electronic flare, replace batteries, check operation, assure distress flag present with flare.
				19	Replace batteries in CO detector(s) as needed. Check whether sensor is expired.
				20	Assure all navigational equipment is operational and updated, including chart data. Make sure data card has coverage to the north end of Vancouver Island.
				21	Before first use, open all seacocks. Assure that there are wooden plugs (appropriate size) attached with nylon string to each seacock. Assure all seacocks are labeled on hose or hull adjacent to seacock.
				22	If applicable, and normally commissioned, commission water maker, supply spare filters, check water quality.
				23	Fill water tank(s) and assure domestic water pump and all faucets including swim step shower are working. Check/clean/replace (if needed) any fresh water filters. Verify no damage to hoses over the winter, including sea water washdown pumps.
				24	Review invoices from the winter and remind owners of any work that would prompt necessary operational changes in Notes from the Owner.

Fall Winterization (2022)

"M" & "O" assignments due by October 15. Unassigned items will be designated "M".

Complete no later than November 15 (or earlier for freeze damage control):

Assigned to:		Date		Item
O	M	completed	Initial	
				1 Mark chain. SJY recommends weaving a single strand of yellow polypro line (or yellow Amsteel) through links to mark chain. Weave an 18"-24" section every 25'. Include a 2nd segment of line every 100' (eg. at 100' weave a 24" segment with polypro, leave a 12" gap and then weave 24" more inches). While marking chain empty all chain/rode from anchor well, clean well and assure drain clear. (Okay
				2 Anchor swivel: Assure that there is a shackle between anchor and swivel connector to chain. Assure shackle pins are secured with seizing wire, including on shackle at chain's bitter end. Check that pin is secure on SS swivels that cannot be seized; if in doubt, re-bed with blue Loctite. (Okay to defer this to haul out.)
				2 Assure hard plastic label from SJY office is affixed in vicinity of anchor lid (preferably under lid) giving chain marking info. Double check that owners notes provide correct anchor marking information.
				3 Make sure inverter won't automatically turn on (in case of power loss).
				4 Put hand on shorepower/boat connection. If warm, find source of heat buildup. Check shorepower cord connection (male end, at dock box) for signs of black electrical arcing on prongs or prong holes. If present, cord has a short inside...replace cord. Inspect (if arcing, replace) and lubricate prongs at vessel's electrical receptacle and at end of cord with dielectric silicon grease.
				5 Disable bow and stern thrusters.
				6 Perform load test on start and (if applicable) bow thruster batteries. Check battery voltages "at rest" for at least 4 hours, with neither load nor charging and, on unsealed batteries, at proper water level. Load test all batteries with electronic or 800 amp carbon pile load testers. Follow respective protocols for amp draws/time. Label batteries "Load tested: date and results" so as to track capacity trends. Assure all connections are tight and coated with silicone grease.
				7 Perform draw-down test on house batteries. Use a fixed draw (eg. a light bulb) to draw down all useable amp hours according to battery manufacturer voltage/capacity curve. If batteries are below 50% of their rated amount of useable amp hours either restore capabilities or replace batteries. Label batteries "Draw down tested: date and results" so as to track trends. Assure all connections are tight and coated with silicone grease.

				8	Check antifreeze level and freezing point in engine(s), (genset and diesel furnace hot water cabin heat system if applicable). Add protection if necessary. Test with PH test strips and add corrosion inhibitor to heating system and/or engine(s) as necessary or as recommended by manufacture.
				9	Assure fuel tanks are full. OPTIONAL: Add either STANADYNE (1 oz per 4 gallons) or DIESEL KLEEN (1 oz per 3 gallons) and Racor Biocide (1 oz per 40 gallons “shock”, per 80 gallons maintenance).
	M			10	Oil analysis recommended at every oil change but required once a year, preferably during the fall so that any findings may be addressed over the winter. (If, according to manufacturer specifications, engine, genset or transmission oil change will be due within the 1st or 2nd charter of the upcoming season, recommend changing during the fall to save work in the spring and allow for fall oil analysis.) Pick up oil sample kit from Tri-County Diesel. Take oil samples (old oil, before change) from main engine, transmission, (and genset if applicable) and submit to testing service for analysis and recording in oil sample log. Report any problems to owner and SJY.
				11	Check seals / O-rings on deck filler caps. If deteriorated, repair to prevent leaks (especially water into diesel tank and contamination into fresh water tanks). For any caps with detached lanyards that are difficult to re-secure, assure replacement caps are in spares. Assure spare fuel cap is Nitrile. Lubricate with NSF-approved SUPER LUBE.
				12	WINTERIZE DINGHY: 1) Thoroughly wash sand/rocks from inside hull. Remove floorboards or inflatable floor from inflatable dinghy, if applicable. If wood floorboards/transom, check condition and, if needed, re-varnish or repaint each with PETTIT EZ-POXY paint (gray recommended). 2) If inflatable, re-insert floorboards and re-inflate dinghy, verify leak-free. (Aquaseal recommended by LFS) 3) Clean with SUPER CLEAN (NOT acetone) or SEA POWER cleaner/wax. Protect with 303 AEROSPACE PROTECTANT or ISLAND GIRL protectant or FLEET WAX. 4) Clean any stainless steel on dinghy and coat with metal wax. 5) If dinghy will be staying on davit install cover (if applicable) and pull plug to allow water to drain. 6) Assure seat is attached with a lanyard. 7) Aluminum hulls should have bonding protection. 8) If dinghy stored on davit assure drain plug removed.
				13	Inspect davit/crane system. Inspect cable/line for damage/wear. Inspect crane body and attachment point for signs of stress/damage. Service per manufacturer recommendation. Spray terminals with BOESHIELD. Inspect where davit/crane attached to boat itself as well.
				14	Outboard serviced/winterized by maintenance pro or an outboard professional. Empty gasoline from carburetor and outboard tank. Remove outboard battery and connect to interior battery system for winter (or plan to replace battery in spring). If outboard is not removed and stored indoors (recommended) then assure that outboard is covered. If outboard has hose attachment flush with fresh water.

				15	Inspect BBQ and replace any worn parts, remove from rail and stow in cockpit locker for winter protection. Disassemble/clean burner (or replace burner).
				16	Check exterior teak. Renew areas as necessary. (Starting in September, look for first good weather window and break in boat's schedule.)
				17	Confirm all stanchions secure. Re-bed if necessary. Confirm rail gates, latches, swim ladder and securing mechanisms operate smoothly, lubricate. Tension any cables between stanchions as required for tightness and safety. Check stanchion cable fastener security.
				18	If your boat normally is bow in to the north, turn boat around so bow faces south for the winter.
				19	Change out 'summer' dock lines with older lines and add chafe gear. Double tie where you can.
				20	Thoroughly clean and dry bilge (all compartments). Recommend enzyme-action cleaners or bleach. (After season, vinegar is inadequate to eliminate bilge odors). Repaint if necessary. <i>NOTE: This item may be done anytime during the off-season, but fall is preferred.</i>
				21	Check ports and hatches for leaks. Reseal where necessary. Clean and coat opening port and hatch gaskets with glycerine or silicon grease.
				22	Ensure cabin is properly vented, heater(s) set properly, cushions lifted or removed, all drawers/doors secured open with blue painters' tape for ventilation and heat to prevent mildew. Recommend dehumidifier draining to bilge or sink (make sure corresponding seacock is open).
				23	Open all faucets and drain fresh water tanks, scrub interior (if accessible) to remove algae, rinse, treat to prevent algae build-up. Bleach will work for plastic and fiberglass tanks but not aluminum tanks (here use vinegar or Thetfolds). Next day, rinse, flush twice and drain tanks and lines to prevent freezing. Remove swim step shower fixture, attach to hose with zip tie. Also winterize windshield wiper washer system, washer and ice maker as applicable.
				24	Test the electric and manual bilge pumps to ensure they pump water. Protect manual pump(s) from freezing. (Assure there is one bilge pump on a float switch "hot wired" to the house bank.) Test high water alarm if installed.
				25	Close all seacocks below waterline except engine (genset if applicable) for winter months to minimize danger from seacock, pipe and hose breakage. (Exception for dehumidifier drainage.)
				26	"Pickle" watermaker (if applicable).

				27	Holding Tank: open inspection plate; add ½ box of baking soda or unchloric acid; fill with water to above level of gunk on walls; after 3 day soak, drain and pressure wash with hose nozzle to remove all gunk. Detach inlet hose from tank; pour continuously vinegar or unchloric acid into toilet and pump until vinegar/acid reaches tank end of inlet hose. Cap hose; allow to soak for 3 days. Flush hose and tank thoroughly. (A high pressure hose flush may be used as an alternative to un-chloric acid.) Add prescribed amount of “No Flex Digester” to tank via toilet (follow directions on container).
				28	Winterize the heads (and shower sumps, if applicable) per manufacturer recommendation.
				29	Service all manual manual toilets: Either replace flapper and duckbill valves, replace pump or replace entire toilet (fairly inexpensive). All other toilets, inspect and service as recommended by manufacturer. RECOMMEND: Replace any manual Jabsco or Raritan toilets with MasterFlush or Dometic fresh-water electric toilets.
				30	Check accuracy of holding tank “full” lights and gauges. If floating sensor mechanism, clean and lubricate. If in-tank sensors, clean off film. RECOMMEND: in-tank single-stage “red light full” type or external detectors, depending upon the type of tank. (None are totally reliable.)
				31	RECOMMEND: on all holding tanks, use 1" air vent hoses (replace vent fitting with 1") to prevent overflow clogs (debris) in the vent hoses leading to “vacuum lock” which prevents/hinders holding tank discharge, and for odor abatement (microbes in tank need lots of oxygen). For through-hull, use stainless steel (Mfg# THMB1.000S by Marine Hardware). In most cases, leave the “clam shell” off. OPTIONAL: For better aeration, microbial action and odor reduction, install <u>two</u> .
				33	Install winter canvas and associated protective items.
				34	Clean and reorganize all exterior lockers. Make sure stored items are clean, dry and belong in that location.
	M			35	Read Notes from the Owner while onboard the boat (for reference). Notify boat owner of any equipment that does not work as the Notes state, or information that has become obsolete due to equipment changes.