Winterizing your Nordic Tug

Recommended typical exterior checklist…

- ✓ Haul and paint bottom.
- ✓ Change all underwater gear zincs including bow & stern thruster.
- ✓ Wash & wax hull, deck, and railing.
- ✓ Check & install all canvas covers.
- ✓ Clean tender & remove drain plug.
- ✓ Lubricate door tracks, hinges, and locksets.
- ✓ Clean all deck drains.
- ✓ Check all fenders and dock lines.

Recommended typical interior checklist…

- ✓ Pump out holding and gray water tank(s).
- ✓ Drain water from toilets to prevent freeze damage.
- ✓ Drain fresh water systems.
- ✓ Change oil & filters on main and generator.
- ✓ Top off fuel tanks
- ✓ Change engine zincs.
- ✓ Clean sea-strainers on main and generator.
- ✓ Flush raw water cooling systems with Propylene Glycol Anti-Freeze.
- ✓ Plug in engine block heater.
- ✓ Clean all bilges & wipe dry.
- ✓ Test bilge pumps in auto & manual mode.
- ✓ Clean battery terminals & check electrolyte on wet cells.
- ✓ Leave battery charger /Inverter on
- ✓ Remove all items from refrigerators & freezers. Clean & leave doors open.
- ✓ Leave all cabinet doors open for airflow.
- ✓ Turn up all mattresses and cushions to allow airflow.
- ✓ Lower all window shades or install sunshades to prevent UV fading of interior.
- ✓ Install air-dryers or ceramic heaters to circulate air throughout vessel.

Let's get started…

HAUL AND PAINT BOTTOM

Depending on your location and how much you use your boat, this will be an every, or every other year maintenance event. First, let us assume that you will have a qualified boat yard haul and pressure wash the bottom. After drying, the paint left needs to be inspected and any areas that they missed with the pressure washer will need to be cleaned.

Check for any loose paint or areas that the paint came off during washing. These will need to be sanded and cleaned with a solvent to remove any remaining wax to ensure that the new application of anti-fouling paint will adhere properly. Barnacles, muscles and any other sea life that may have attached to your hull or underwater metals should be completely removed.

Now is a great time to check all underwater metals for any signs of corrosion, either galvanic or electrolytic (see our article on electrolysis for more information). Check the main shaft cutlass bearing for wear visually and manually for "endplay". The keel shoe rudder bearing should also be checked, along with the stainless stop collar, which should have a clearance of approximately 3/8" from the upper hull bearing.

Check propeller(s) visually for any signs of damage. If you have noticed any vibration at any speeds, removing the propeller and having it checked for size, pitch and balance is a good idea. Check the thruster propeller(s) for any signs of damage and any signs of oil leaks from the gear housing seals.

CHANGE UNDERWATER GEAR ZINCS

Replace those used zincs, even if they look to have more than 50% life left in them. Studies have indicated that some zinc anodes do not remain electrochemically active, becoming relatively inert (passivated) over time due to a buildup of a dense, tightly adherent film on the zinc's surface. The passivating film's principal constituents were oxides of iron and the source of the iron was the elemental iron present in the zinc when the anodes were manufactured.

Before installing the new zincs, clean all metal surfaces thoroughly to ensure good contact between the two metals. Make sure and use Mil-Spec Zinc Alloy A-18001K zincs only to ensure optimum protection for your underwater hardware. Do not forget your thrusters!

WASH & WAX HULL, DECK, AND RAILING

Keeping your boat clean and waxed will not only assure that your Nordic Tug turns heads and maintains value, but will also make it much easier to keep clean since dirt and salt don't like sticking to a waxed surface. Use quality products with a proven history of service in the harsh marine environment such as the Maguire's product line. Yes Railing! Keeping salt off the rails and waxing them, will keep them looking new too.

CHECK & INSTALL CANVAS COVERS

Checking the stitching and snaps on your canvas covers before installing them can prevent losing them in a windstorm or under a heavy snow load.

CLEAN THE TENDER

Imagine your tender on the salon top or hanging on a stern davit filling up with water and becoming a bathtub. Water is approximately 8 lbs. a gallon and a typical tender can hold over 100 gallons which can do considerable damage to your boat.

LUBRICATE DOOR TRACKS & LOCKSETS

Your sliding doors will work much easier if the tracks are sprayed with a silicone lubricant. Also, lubricate the door hinges and locksets with your favorite snake oil. We use 3in1.

CLEAN ALL DECK DRAINS

Remove all that seaweed and dog hair from the deck drains and do not forget the hatch drains. Water freezing in these will cost plenty to fix in the spring.

FENDERS AND DOCKLINES

These keep your boat in its mooring and prevent hull damage so make sure they are in excellent condition and will not fail in a windstorm. If those lines are fraying where they rub on the cleats or shear, replace them. You may also want to

consider some of the line protector products out there, which will extend their life. Fenders deteriorate over time from the elements and should be replaced if they are rubbing off on the hull or dock.

INTERIOR CHECKLIST…

PUMP OUT HOLDING & GRAY WATER TANK(S)

Most marina's have pump out stations or portable pump out systems available. There are also pump out services that will come to your boat and take care of this for you, (for a fee). After pumping out the tank(s), refill with fresh water until the fluid coming out is clear. Add holding tank treatment to the holding tank only after proper rinsing to prevent odor from permeating the hoses. If your Tank Watch® panel indicators are not working properly, this is a good time to remove the float sensors and clean them.

DRAIN WATER FROM TOILETS

No matter what brand of toilet you have, water freezing in it can cause damage. Draining any water from the bowl will prevent surprises in the spring. Adding a pint of Propylene Glycol biodegradable anti freeze will also protect your toilet and keep any seals from drying out.

DRAIN FRESH WATER SYSTEM(S)

Some prefer to run the fresh water system pump to empty the tank(s), while I prefer to drain the tank by removing the supply hose at the tank, or if the tank is equipped with an extra plug at the bottom of the tank. Make sure and turn off the AC Breaker for the water heater before draining it. Last, is to drain the fresh water lines, or fill them with anti-freeze. Drain them by opening all the faucets and removing both, the hot and cold lines at their hot water tank connections and allow them to drain completely. You may also opt to use compressed air to ensure that all the lines are clear. (Don't forget the cockpit shower if equipped)

Another method of protecting your fresh water system is to utilize the winter loop valving at your water tank, which most Nordic Tugs came equipped with. This allows you to isolate the hot water tank and fill the lines with Propylene Glycol by removing the supply hose at the fresh water tank and drawing the anti-freeze from the gallon containers into the lines. Open one faucet at a time until the water is purged leaving the anti-freeze in the lines for the winter.

In the spring, purging the anti-freeze from the lines is simply a matter of filling the tanks, running the water system pump and opening the faucets to purge them, which doesn't take long since only the lines need purging, not the whole system.

CHANGE MAIN & GENERATOR OIL AND FILTERS

Why is it so important to change the oil as part of winterization? VISCOSITY BREAKDOWN!

Viscosity is defined as resistance to flow. It is the ability of the oil to stick to a metal surface, especially when the engine is turned off. Viscosity breakdown is when the oil gets so dirty, thin, or sludged up, that it can't cling to metal surfaces anymore when the engine is not running or when it is hot. Oddly enough, oil does not wear out, it just gets dirty and loses its ability to stick to the metal components of the engine. This is probably the main reason oil needs to be changed at regular intervals.

The worst wear on an engine is when it is first started. As oil loses its ability to stick to engine metal surfaces and drains to the oil pan when the engine is shut off, when restarted, it can take several seconds or more for the oil to be sent back up through the engine, especially to the top part of the engine farthest from the pan. Over a period of time, severe damage can be done, and it is multiplied every time the engine is started with the old, dirty oil.

Another critical problem is that oil removes heat from the engine. If the oil is thin or dirty, the heat buildup starts gluing the old, dirty oil to parts of the engine creating sludge. This sludge blocks the movement of the oil through the engine. It clogs up the oil flow galleries, causing further problems, until the wear is so bad that the engine, in whole or part, fails…

Begin by getting the engines up to normal operation temperature. If possible, run the boat under load for 30 minutes to make sure any contaminants are mixed well before changing. Same with the generator, run under load. Now remember that things are going to be hot, so be careful when removing filters and handling oil buckets. Most Nordic Tugs came with Reverso or Groco oil change system which really makes this job a snap. Open the corresponding valve to the engine and generator and turn on the pump. Pump the hot oil out into containers that you can put a lid on before walking up the dock. Remove the oil filters with a filter wrench, available from the auto parts store if you don't already have one. Ensure that the filter gasket (rubber flat ring or o-ring) comes off with the filter. (I can tell you several stories about how important this step is.)Now clean up all the oil that has spilled or dripped into the bilge, carpet and your pants. Close the valves on the oil change system and cap the outlet hose & secure. (I don't use the oil change system to fill the engines, preferring to fill through the valve cover and keep track of the exact amount of oil it takes to fill the engine.)

Before installing the new oil filter(s) wipe the engine block filter base down with a clean rag and visually inspect to make sure the old filter gasket is not there. Now add a drop of clean oil to the new filter gasket and if the filter installs with the gasket side up, fill the filter with clean oil, then install and tighten (hand tight only) DO NOT OVERTIGHTEN AND DO NOT USE A FILTER WRENCH TO INSTALL!

Add new oil, preferably at the supplied oil fill in the valve cover. DO NOT OVERFILL. Check the engine manufacturer's fluid level specifications and check the dipstick as you fill. If you filled the oil filter, you should be able to get real close to the full mark.

Double-check all of your work to this point before starting the engine. Start the engine and watch the oil pressure gauge closely, once up to a normal "cold" oil pressure reading, it is time to check the engine oil filter(s) for any signs of leaks, if there are any, shut down immediately and fix what went wrong. With the engine running and no leaks observed, let the engine run for a couple minutes and shut down. Now wait a minute and check the oil level. Bring the level to the "full" mark, but not above it. Next, start the engine again and do a final check for any leaks. Now you can repeat this entire procedure with the generator. Congratulations! You are done with the oil change.

<u>TOP OFF FUEL TANKS</u>

First, remember that water is the biggest enemy of your diesel fuel and engine(s). Topping the fuel tank(s) will prevent condensation and keep water out. Draining some fuel from the bottom of your tank(s) can provide insight as to the condition of your fuel, check for any signs of water, which will settle to the bottom since it is heavier than diesel. In addition, any algae or "sludge" will settle to the bottom and should be drained from the tank(s).

There is a lot of debate about fuel treatment products today and the best methods of maintaining and stabilizing the diesel in your tanks during the off-season, so here I will try to provide some information for you to consider…

1. Fuel Polishing Systems (scrubbing), are considered the best method of maintaining diesel fuel. Installed properly, these systems are very simple to operate and do an excellent job cleaning diesel fuel. Nordic Tug offered the ESI Fuel Polishing system as a standard option on all models, so if your Tug is equipped with one, you have the best method of keeping your diesel fuel maintained.

2. Fuel Treatments (additives) are products added while fueling to ensure adequate mixing with the diesel fuel. Below are a few that have proven to be effective and we can recommend.

a. Amsoil - Diesel Concentrate Performance Fuel Additive (ADF)
b. Biobor JF - Microbicide
c. PRI-D - Diesel Fuel Treatment

CHANGE ENGINE ZINCS

Zincs protect the oil coolers and heat exchanger on your engine(s) and need to be check and/or replaced regularly. Follow your engine manufacturer owner's manual for the location and replacement procedure of the engine zincs.

CLEAN SEA STRAINERS

Close the thru-hull valve, remove strainer lid & basket. Clean the basket, lid, and lens. Inspect the lid seal(s) and replace if worn. Leave the thru-hull valve closed for the next procedure.

FLUSH RAW WATER COOLING SYSTEM

This procedure will take from 5-10 gallons of anti-freeze, depending on your boat model and engine manufacturer. Use Biodegradable Propylene Glycol (BPG) to flush the raw water cooling system. With the main engine strainer lid off and thru-hull valve closed, fill the strainer with the BPG. Ready the remainder of the BPG to keep the strainer full while the engine is idling. Start the engine and run at idle while keeping the strainer full until the BPG begins to show at the exhaust outlet, and then shut down engine. Replace strainer basket and lid, leave thru-hull valve closed. Repeat this procedure for the generator(s).

PLUG IN BLOCK HEATER

If equipped, plug it in!

CLEAN BILGES

A clean bilge ensures proper operation of your bilge pumps and automatic float switches. Do not leave oil absorbent pads in bilge spaces with the bilge pumps since they can prevent the floats or pumps from working properly or at all. Clean bilges also make it easier to locate the source of a leak or a potential problem.

TEST BILGE PUMPS

Make sure that the pumps run in both auto and manual modes. Cleaning the bilge gives you the opportunity to ensure that they work properly. If you have check valves in the pump discharge lines, make sure that they are clean and functioning.

CLEAN BATTERY TERMINALS

If there is any corrosion on the terminals or lugs, disassemble and clean them up. Wear safety glasses and protective gloves when working with batteries. BE CAREFUL! DO NOT SHORT THE TERMINALS TOGETHER! USE INSULATED TOOLS! Re-assemble clean connections and use a battery terminal spray to prevent corrosion, such as CRC Marine Battery Terminal Protector. On wet-cell batteries check the electrolyte for proper level, top off with distilled water if needed, do not overfill.

LEAVE BATTERY CHARGER/INVERTERS ON

If you leave your boat in the water for the winter (assumed by the writer), leave the chargers on. Today's chargers will keep the batteries fully charged and if operating properly will not overcharge or boil out the electrolyte on a wet-cell battery. If your charger has a temperature switch setting such as the Xantrex Tru-Charge series and you do not have the battery temp sensor installed, you can set the battery temperature setting to "cool" for the winter, which will increase the voltage output to ensure the batteries are fully charged.

CLEAN OUT REFRIGERATOR/FREEZER

Remove all food items, wipe down all interior surfaces and racks with vinegar & water. Put a box of baking soda in each compartment and leave doors open slightly to allow for airflow.

ALMOST DONE…

Airflow, airflow, airflow. Mold and mildew hate airflow, so be sure and open up all cabinet doors, turn up all the mattresses and cushions to allow for proper airflow around and through them.

Window shades will prevent UV damage to the interior fabrics and woodwork.

Install electric air-dryers or ceramic heaters to circulate the air inside your Nordic Tug.

Remember, that these procedures are for a "typical" winterization, and your Tug may require additional service to be properly prepared for the harsh winter season. If your boat is equipped with a water maker, make sure and follow the manufacturer's recommendations for winterization procedures specific to the model installed.

FINALLY!

If you are unable to check your boat on a regular basis (at least twice a month), consider a winter maintenance program available at most marinas and/or service facilities. Make sure that you get a copy of the checklist that the technicians use while checking on your boat and that you get a copy of the report with each billing.