

Indmar Products – Storage and Winterization Procedures

NOTE: Please read the entire procedure before starting.

Storage or winter lay-up requires special preparation to prevent damage to the power package. Since winter lay-up is an annual event, it is wise to perform all of the annual maintenance at this time.

Without proper preparation, storage for long periods of time may cause internal parts of the engine and transmission to rust because of lack of lubrication. Or, if the boat is stored in below freezing temperatures, water in the engine may freeze and cause damage. Damage resulting from improper storage is not covered by Indmar's limited warranty.

WARNING

Because of the complexity of preparing your engine for winter storage, as well as the possibility of catastrophic engine damage from freezing water in the engine, we recommend that you have your dealer accomplish this task. Any damage caused by improper winterization/storage is not covered by the product warranty!

To do a complete winterization, you **MUST** be able to run the engine and bring it up to operating temperature. To do this, your boat must be in the water or be attached to a water supply via a hose and suitable adaptor that will allow an uninterrupted supply of water to the engine.

NOTE

This procedure covers only the power package portion of your boat. Consult your boat owners manual or boat manufacturer for specific boat winterizing instructions.

Before starting you will need the following supplies:

Sta-bil Gasoline Stabilizer

6 quarts of Pennzoil 15W40 Marine Engine Oil

Oil Filter

Fuel Filter

4-6 ounces of light weight oil in a pump-type oil can. (SAE 10W or Marvel Mystery Oil or Fogging Oil)

1 can WD40 or other Anti-Corrosion Spray

Transmission Oil (As Required)

For In-Line and Hurth V-Drive transmissions use Pennzoil Dexron 3 ATF

For Walters V-Drive use SAE 30W engine oil

Sierra Brand Anti Freeze (as Required For Closed Cooling System Engines Only)

Waterproof Marine Multipurpose Grease

Short Piece of Stiff Wire (Coat hanger wire)

Anti-Freeze Tester (Closed Cooling Engines Only)

Pipe Thread Sealant

Fuel System Treatment

If the boat is to be placed in storage with fuel in the fuel tank(s) that does not contain alcohol: Fill the fuel tank(s) with fresh fuel that does not contain alcohol and a sufficient amount of Sta-Bil gasoline stabilizer to treat the entire tank. Follow the instructions on the container.

If the boat is to be placed in storage with fuel in the fuel tank(s) that does contain alcohol (if fuel without alcohol is not available): Fuel tank(s) should be drained as completely as possible and Sta-Bil gasoline stabilizer added to any fuel remaining in the tank. Follow the instructions on the container.

Replace the fuel filter.

Make sure the boat is in the water or an uninterrupted supply of water is supplied to the engine.

Start the engine and check the fuel filter for fuel leaks. If leaks are found, stop the engine immediately and repair them. Recheck filter installation.

Start the engine and operate it at Idle RPM until it reaches normal operating temperature. (If using a hose and adapter, open the faucet to approximately ½ flow to avoid over-cooling the engine at low RPM) Run the engine for at least 15 minutes to ensure that the fuel stabilizer enters the engine's fuel system.

WARNING

Running the engine with the flame arrestor removed increases the possibility of fire or explosion if an engine backfire should occur and gasoline fumes are present. If the engine is operated without the flame arrestor secured, extreme care must be taken to ensure that the engine compartment is well ventilated and that no fuel leaks are present.

Carefully loosen the flame arrestor and lift it far enough to insert the end of the pump type oil-can or fogging oil can. Pump or spray 4-6 ounces of oil into the throat of the carburetor or throttle body. Shut off the engine. Reattach the flame arrestor.

Change the oil and oil filter.

Loosen all accessory drive belts. Check their condition. Replace if cracked or damaged.

Drain the seawater section of the cooling system.

All Engines

Drain the water from the exhaust manifolds. On older engines you have to remove the drain plugs from the rear of each manifold. On newer engines, a hose with a quick disconnect fitting connects the manifolds. Uncouple the hose and drain the manifolds. We suggest leaving the drain plugs out or the hose uncoupled till spring.

Putting the drain plugs in a plastic bag and attaching it to the steering wheel of the boat acts as a good reminder when you re-commission the boat in the spring.

Remove both hoses from the Sea-water pump on the front of the engine. Drain the water from the hoses.

Remove the raw water pump impeller from the pump housing. Lubricate the impeller with Vaseline and store it in an air-tight bag. Replace the impeller if it shows signs of damage or wear.

Remove the hose from the lower (rear) end of the transmission cooler. Inspect the cooler for any debris like weeds, bits of plastic bag etc.

On Walters V-Drive equipped units, remove the two small square headed drain plugs from the front and rear of the upper housing. Look for the words "Water Drain" on the housing. We suggest putting the plugs in a plastic bag and attaching it to the steering wheel of the boat as a reminder for spring recommissioning.

On units equipped with the Ski-Vee V-drive transmission assembly, remove one of the hoses that is attached to the heat exchanger at the rear of the V-drive to drain water from the heat exchanger and hoses.

On engines equipped with a fuel canister, remove the hose from the lower rear of the canister to allow the canister to drain.

Raw Water Cooled Engines

Remove the petcock or drain plug from each side of the engine. We suggest removing the petcocks completely, not just opening the petcock drain valve. Take a short piece of stiff wire and poke it around in the drain hole to ensure that any rust scale is broken up and the engine drains completely. Some engines have a knock sensor(s) located in the drain location. The knock sensor(s) must be carefully removed to drain the block. We suggest that you put the drain plugs in a plastic bag and attach it to the steering wheel of the boat to act as a reminder during re-commissioning in the spring.

Disconnect from the water-circulating pump the large diameter hose that runs from the circulating pump to the thermostat housing. Make sure all of the water drains from the hose.

Closed Cooled Engines

Remove the raw water inlet and outlet hoses from the seawater side of the heat exchanger.

Check the level of the coolant on the fresh water side of the heat exchanger. Also use the anti-freeze tester to test the strength of the mixture.

We recommend a 50:50 mix of Sierra Anti-Freeze and water, which gives protection down to minus 50 degrees F. If the coolant level is low, add a sufficient amount of coolant/water mix to fill the heat exchanger. When warm, the coolant level should be approximately $\frac{3}{4}$ " below the filler neck.

If the coolant in the heat exchanger is not of sufficient strength, we suggest taking your boat to your dealer and having the coolant replaced. This is not an easy task and it is best done by a professional.

Drive Train Preparation

Change the transmission fluid in the Hurth In-Line or V-Drive Transmission following the instructions in your Hurth Transmissions Owner's Manual. Add sufficient Pennzoil Dexron 3 automatic transmission fluid as required to bring the dipstick level between the full and add marks.

On Walter V-Drive units, change the oil in the V-Drive per the instructions in the Walter Owners Manual. Use SAE 30 Motor Oil and fill to the proper level.

Remove the attaching hardware from the propeller shaft coupling. Separate the flanges and coat the surfaces with Waterproof Marine Multipurpose grease.

General Power Package Preparation

Clean dirt, grime and grease from the painted surfaces of the engine and drive train.

Touch-up painted areas of the engine and transmission.

Lubricate throttle and shift linkages and cables with Waterproof Marine Grease.

Spray any unpainted parts with WD40 or other anti-corrosion lubricant.

Disconnect the battery cables from the battery and charge it fully. If you remove the battery from the boat, store it in a cool and dry place.

Leave the engine box cover propped open about 2" to help ventilate the engine compartment.

Re-Commissioning the Boat After Storage

Charge and install the battery in the boat. Make sure the terminals are clean and tight.

Coat the threads of the manifold drains plugs with pipe sealant and Install the manifold drain plugs in the back of the exhaust manifold or reconnect the exhaust manifold drain hoses.

Coat the threads of the block drains or petcock drains with pipe sealant. Install the drain plugs or petcock drains in the engine block. Some engines have a knock sensor located in one of the drain holes. If your engine has one of these, the knock sensor must be reinstalled without the use of any thread sealant. Do not over tighten the knock sensor. The torque specification for the knock sensor is 14-16 lb ft.

On Walter V-Drive units, coat the threads on the drain plugs with pipe sealant and reinstall the drain plugs on the front and rear of the transmission housing.

Reinstall the seawater pump impeller. Re-attach the inlet and outlet hoses to the sea water pump.

Reattach the large diameter hose to the water-circulating pump.

On models equipped with a fuel canister on the engine, reinstall the hose on the lower portion of the canister.

Reattach the water hose to the transmission cooler.

On closed cooling models, reattach the seawater inlet and outlet hoses.

Install a new set of spark plugs in the engine.

Tighten the accessory drive belts to the proper tension.

Check the condition of the distributor cap and rotor and replace if they are worn, damaged or corroded.

If the fuel tank was drained, fill tank with fresh fuel that does not contain alcohol.

Check all fluid levels on engine and drive train.

Check the engine compartment and bilge for nesting animals or empty nests. Clean as necessary.

Check the alignment between the output flange on the transmission and the prop shaft flange. If the maximum feeler gauge that can slip between the flange faces at any point is .003", the unit is properly aligned. If a thicker gauge can be inserted at any point, the engine must be readjusted until proper alignment is obtained.

With the boat in the water or a hose and adapter installed, cycle the key switch on then off 2-3 times before cranking the engine to allow the fuel pump to prime the fuel lines.

Start the engine. If you experience a no-start condition, do not crank the engine for more than 30 seconds without allowing a two-minute cool-down period.

When the engine starts, keep a close watch on the gauge readings. Check all of the hoses and drain plugs for leaks. Listen for abnormal noises. Let the engine run long enough to reach normal operating temperature and check for leaks again. If no leaks are found ...

GO BOATING ... HAVE FUN!!!!