

VOLVO PENTA

Volvo Penta of the Americas
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Chesapeake, Virginia 23320-9810

Service Bulletin

Group	Number	Version
17-3	5	02

Winter Storage

All Gasoline Engines up to 1996

Distribution: M Date: 12-1996 Binder: C

When gasoline engines are removed from service for long periods (2 months or more), it is important that they are correctly stored or protected (internally).

The procedures for winterizing the engine should be followed as outlined in the appropriate Owner's Manual. The following is a summary of procedures found in the Owners Manuals for Volvo Penta engines and sterndrives that are currently produced. This summary is confined to the winterization of the engine and sterndrive only. For more detailed information concerning the winterization process, please refer to the appropriate Owner's and Workshop Manuals. ***Because of a large variety of accessories associated with cooling systems, this summary does not cover winterization for these accessories. Refer to the accessory manufacturer's instructions for proper winterization procedures.***

NOTE! There are differences in procedures between carbureted, multi-port fuel injected (MFi), and throttle body fuel injected (TBI) engines. Please follow the appropriate procedure for the model engine being serviced.

All Carbureted Engines

1. Stabilize Fuel

Add marine fuel stabilizer to the fuel system at the recommended rate stated on the container. This will stabilize the fuel and prevent the formation of varnish and gum deposits in the entire fuel system. Run engine under load so fuel stabilizer reaches all fuel system components. Do this before continuing with the following procedures.

2. Change Engine Oil and Filter

3. Fog Engine



WARNING! Make sure the engine room is well ventilated to prevent risk of explosion.

NOTE! The sterndrive must be submerged in water and/or accessory flushing adaptor must be used while operating the engine.

- Warm up engine to ensure fuel stabilizer is throughout system.
- Use 8 fl. oz. (236 ml) of fogging oil or 10 fl. oz. (295 ml) spray can P/N 1141651-8 to fog engine.
- Remove flame arrestor.
- Follow instructions on container, bring engine up to fast idle and slowly dispense 2/3 of fogging oil into air intake. Keep engine running while adding fogging oil.
- Slow engine, rapidly dispense the remaining 1/3 of fogging oil and allow engine to quit.
- Turn off ignition and reinstall flame arrestor.

4. Drain Cooling System

Engine

- Disconnect and drain large hose at circulating water pump housing.
- Remove cylinder block drains and clear holes with a wire.
- Loosen hose clamps and remove exhaust manifold inlet hoses.

NOTE! Ensure engine is level for complete drainage of the engine and exhaust manifolds.

Water Pump

- Loosen and slide clamps back. Remove hoses from the rear of water pump housing and drain.
- Crank the engine no more than 2 seconds (DO NOT START) to expel any trapped water in water pump. Reattach water pump hoses.

Pivot Housing (SX and DP-S only)

- Drain cavity in pivot housing, tilt drive unit to the full tilt (up) position and remove the water drain plug from the port side of the pivot housing.
- Tilt the drive unit to the full tilt down position.
- Allow unit to drain.
- After unit has drained completely, replace pivot housing plug.
- Inspect drive unit water intake screen for obstructions.

Oil Coolers

- Remove lower water hose from the oil cooler. If cooler is mounted horizontally, remove either hose, loosen mounting bolt, and tip open end of cooler down to drain.

5. Change Drive Unit Oil

- Place drive unit in the down position.
- Remove the oil drain plug and oil level dipstick.
- Allow the drive unit to drain completely.
- Fill the sterndrive with synthetic gear lube to the proper level.

6. External Lubrication Points

Pivot Housing (SX and DP-S only)

- Remove sterndrive and lubricate universal joint. Use EP wheel bearing grease and apply to the two grease fittings on the universal joints.
- Install sterndrive and grease Gimbal Bearing through grease fitting in transom shield.

Primary Shaft Bearings (DP only)

- Remove sterndrive and lubricate the primary shaft bearings through rear of the bell housing. Check universal joint and exhaust bellows for deterioration and damage before replacing sterndrive. The bellows should be replaced every other year regardless of condition.
- Lubricate steering fork upper bearing through grease fitting in tiller arm with water resistant grease.

Fuel Injected Engines – 5.0Fi, 5.8Fi, 5.8FSi, 7.4Gi, 7.4GSi, and 8.2GSi

1. Stabilize Fuel

Add marine fuel stabilizer to the fuel system at the recommended rate stated on the container. This will stabilize the fuel and prevent the formation of varnish and gum deposits in the entire fuel system. Run engine under load so fuel stabilizer reaches all fuel system components. Do this before continuing with the following procedures.

2. Change Engine Oil and Filter

3. Prepare an Engine 'Storage Mixture'

Prepare 'storage mixture' in a suitable container. The mixture will consist of:

- 1 gallon (3.78 liters) of fuel
- 1 pint (473 ml) fogging oil
- 1/2 fl. oz. (14.7 ml) of fuel stabilizer

Mix these ingredients thoroughly.

4. Fog Engine



WARNING! Make sure the engine room is well ventilated to prevent risk of explosion.

- Disconnect boat fuel line at the engine fuel pump.
- Attach 'storage mixture' fuel tank.
- Run engine on the 'storage mixture' for approximately 5 minutes at 1500 RPM. This will ensure that all fuel system and internal engine components are thoroughly protected.
- Shut engine off before the 'storage mixture' is used up.



CAUTION! Do not run the engine out of fuel or run the electric fuel pumps dry more than 20 seconds. Running the electric fuel pumps dry will cause damage.



CAUTION! To prevent fogging oil from building up in intake plenum and damaging throttle plates, do not fog engine through throttle plate assembly.

5. Drain Cooling System

Engine

NOTE! Ensure engine is level for complete drainage of the engine and exhaust manifolds.

- Disconnect long hose at thermostat housing. Lower alongside engine block and drain completely.
- Disconnect and drain large hose at water pump housing.
- Drain the small water bypass hose between fuel reservoir and the top of the thermostat housing.
- Disconnect at the reservoir side of the check valve.
- Blow out water in both directions.
- Inspect check valve for debris, then reassemble.
- Remove cylinder block drains and clear with a piece of wire.
- Loosen clamp and remove exhaust manifold hoses.

Water Pump

- Loosen and slide clamps back.
- Remove hoses from the rear of water pump and drain.
- Crank the engine over no more than 2 seconds (DO NOT START) to expel and trapped water in the water pump.
- Reattach water pump hoses.

Pivot Housing (SX and DP-S only)

- To drain cavity in pivot housing, tilt drive unit to the full tilt (up) position and remove the water drain plug from the port side of the pivot housing.
- Tilt the drive unit to the full down position. Allow unit to drain.
- After unit has completely drained, replace pivot housing plug.
- Inspect drive unit water intake screen for obstructions.

Oil Coolers

- Remove lower water hose from the oil cooler. If cooler is mounted horizontally, remove either hose, loosen mounting bolt, and tip open end of cooler down to drain.

6. Change Drive Unit Oil

- Place drive unit in the down position.
- Remove the oil drain plug and oil level dipstick.
- Allow the drive unit to drain completely.
- Fill the sterndrive with synthetic gear lube to the proper level.

7. External Lubrication points

Pivot Housing (SX and DP-S only)

- Remove sterndrive and lubricate universal joint. Use EP wheel bearing grease and apply to the two grease fittings on the universal joints.
- Install sterndrive and grease Gimbal Bearing through grease fitting in transom shield.

Primary Shaft Bearings (DP only)

- Remove sterndrive and lubricate the primary shaft bearings through rear of the bell housing. Check universal joint and exhaust bellows for deterioration and damage before replacing sterndrive. The bellows should be replaced every other year regardless of condition.
- Lubricate steering fork upper bearing through grease fitting in tiller arm with water resistant grease.

Fuel Injected Engines – 4.3Gi, 5.7GLi, 5.7Gi, and 5.7GSi

Add marine fuel stabilizer to the fuel system at the recommended rate stated on the container. This will stabilize the fuel and prevent the formation of varnish and gum deposits in the entire fuel system. Run engine under load so fuel stabilizer reaches all fuel system components. Do this before continuing with the following procedures.

1. Prepare an Engine 'Storage Mixture'

Prepare a 'storage mixture' in a suitable container. The mixture will consist of:

- 1 gallon (3.78 liters) of fuel
- 16 fl. oz. (473 ml) fogging oil
- 1/2 fl. oz. (14.7 ml) of fuel stabilizer

Mix these ingredients thoroughly.

2. Change Engine Oil and Filter

3. Fog Engine



WARNING! Make sure the engine room is well ventilated to prevent risk of explosion.

- Disconnect boat fuel line at the engine fuel pump. Attach 'storage mixture' fuel tank.
- Run engine on the 'storage mixture' for approximately 5 minutes at 1500 RPM. This will ensure that all fuel system and internal engine components are thoroughly protected.
- Shut engine off before the 'storage mixture' is used up.



CAUTION! Do not run the engine out of fuel or run the electric fuel pumps dry more than 20 seconds. Running the electric fuel pumps dry will cause damage.

4. Drain Cooling System

(MD, HU, and NC Models)

Engine

NOTE! Ensure engine is level for complete drainage of the engine and exhaust manifolds.

- Disconnect long hose at thermostat housing. Lower alongside engine block and drain completely.
- Disconnect and drain large hose at water pump housing.
- Drain the small water bypass hose between fuel reservoir and the top of the thermostat housing.
- Disconnect at the reservoir side of the check valve.
- Blow out water in both directions.
- Inspect check valve for debris, then reassemble.
- Remove cylinder block drains and clear with a piece of wire.
- Loosen clamp and remove exhaust manifold hoses.

(LK Models)

Engine

NOTE! Ensure engine is level for complete drainage of the engine and exhaust manifolds.

- Disconnect and drain large hose at circulating water pump housing.
- Disconnect water discharge hose that connects between the vapor separator tank and the port exhaust riser at the riser. Lower hose into the bilge.
- Disconnect the small water bypass hose at the top of the thermostat housing.
- Blow compressed air through the hose to ensure complete drainage.
- Remove cylinder block drains and clear holes with a piece of wire.
- Loosen clamp and remove exhaust manifold hoses and drain.

Water Pump

- Loosen and slide clamps back. Remove hoses from the rear of water pump and drain. Crank the engine over no more than 2 seconds (**DO NOT START**) to expel and trapped water in the water pump.
- Reattach water pump hoses.

Pivot Housing, (SX and DP-S Only)

- To drain cavity in pivot housing, tilt drive unit to the full tilt (up) position and remove the water drain plug from the port side of the pivot housing.
- Tilt the drive unit to the full down position.
- Allow unit to drain.
- After unit has completely drained, replace pivot housing plug.
- Inspect drive unit water intake screen for obstructions.

Oil Coolers

- Remove lower water hose from the oil cooler. If cooler is mounted horizontally, remove either hose, loosen mounting bolt, and tip open end of cooler down to drain.

5. Change Drive Unit Oil

- Place drive unit in the down position.
- Remove the oil drain plug and oil level dipstick.
- Allow the drive unit to drain completely.
- Fill the sterndrive with synthetic gear lube to the proper level.

6. External Lubrication Points

Pivot Housing (SX and DP-S only)

- Remove sterndrive and lubricate universal joint. Use EP wheel bearing grease and apply to the two grease fittings on the universal joints.
- Install sterndrive and grease Gimbal Bearing through grease fitting in transom shield.

Primary Shaft Bearings (DP only)

- Remove sterndrive and lubricate the primary shaft bearings through rear of the bell housing. Check universal joint and exhaust bellows for deterioration and damage before replacing sterndrive. The bellows should be replaced every other year regardless of condition.
- Lubricate steering fork upper bearing through grease fitting in tiller arm with water resistant grease.

