CAUTION

Be sure to close the seacock.

Neglecting to close the seacock could allow water to leak into the boat and may cause it to sink.

0000152en

CAUTION

The illustrations and descriptions of optional equipment in this manual, such as the operator's console, are for a typical engine installation. Refer to the documentation supplied by the optional equipment manufacturer for specific operation and maintenance instructions.

0000018en

CAUTION

If any indicator illuminates during engine operation, stop the engine immediately. Determine the cause and repair the problem before you continue to operate the engine.

0000029en

CAUTION

NEVER hold the key in the START position for longer than 10 seconds or the starter motor will overheat.

0000201en

CAUTION

NEVER clean the coolant system with caustic soda. The aluminum parts may be damaged.

0000175en

CAUTION

NEVER attempt to adjust the low or high idle speed limit screw. This may impair the safety and performance of the engine and shorten its life. If adjustment is ever required, see your authorized Yanmar marine dealer or distributor.

0000045enMarine

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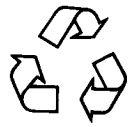
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7. Install heat exchanger. Ensure the drain cock **(Figure 12, (1))** on the heat exchanger is closed.
8. Remove the pressure cap **(Figure 12, (2))** from the heat exchanger.
9. Inspect the cap gasket and flange on the filler neck for damage. Replace if necessary.
10. Check the rubber hose connecting the coolant recovery tank to the heat exchanger. Be sure the hose is securely connected and there is no damage.
11. Pour coolant mix slowly into the heat exchanger to prevent the formation of air pockets. Fill until the heat exchanger is completely full.
12. Install the pressure cap and tighten firmly.
13. Remove the coolant recovery tank cap and fill with coolant mix to approximately 50 mm (2 in.) below the full line. Replace cap. Never fill to the full line.
14. After filling an empty cooling system, test-run the engine for about five minutes and check the engine coolant level at the recovery tank again.

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CAUTION



- **ALWAYS be environmentally responsible.**
- **Follow the guidelines of the EPA or other governmental agencies for the proper disposal of hazardous materials such as engine oil, diesel fuel and engine coolant. Consult the local authorities or reclamation facility.**
- **NEVER dispose of hazardous materials irresponsibly by dumping them into a sewer, on the ground or into ground water or waterways.**
- **Failure to follow these procedures may seriously harm the environment.**

0000013en

1. Disconnect the battery negative (-) cable.
2. Close the fuel tank cock.

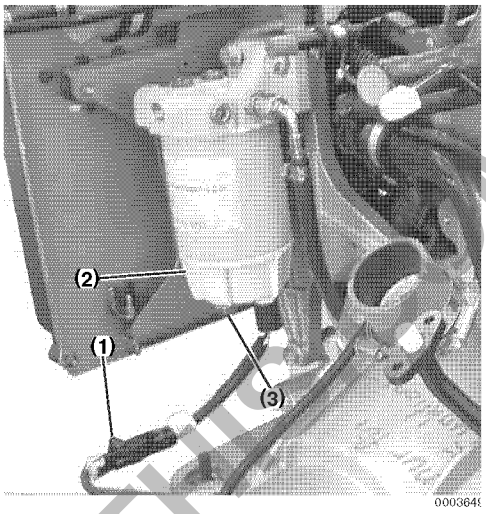


Figure 6

3. Loosen the drain plug **(Figure 6, (3))** on the bottom of the fuel filter / water separator and drain off any water or sediment.
4. Disconnect water sensor connector **(Figure 6, (1))**.
5. Turn the filter bowl **(Figure 6, (2))** counterclockwise to remove.
6. Remove the old filter element.

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Code	Part or System	Mode	Run Or Condition	Engine Can Start	Check Engine Alarm
P0122	Throttle Signal	Both throttle signals are missing / short circuit to Ground	1600	yes	alarm
	Throttle Signal	Throttle signal 1 is missing / short circuit to Ground	reduce	yes	alarm
P0123	Throttle Signal	Both throttle signals are short circuited to B+	1600	yes	alarm
	Throttle Signal	Throttle signal 1 short circuit to B+	reduce	yes	alarm

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CAUTION

- Only use diesel fuels recommended by Yanmar for the best engine performance, to prevent engine damage and to comply with EPA warranty requirements.
- Only use clean diesel fuel.

0000004enBY

CAUTION

If any problem is noted during the visual check, the necessary corrective action should be taken before you operate the engine.

0000021en

CAUTION

Be sure to close the seacock.

Neglecting to close the seacock could allow water to leak into the boat and may cause it to sink.

0000152en

CAUTION

Observe the following environmental operating conditions to maintain engine performance and avoid premature engine wear:

- NEVER run the engine if the ambient temperature is above +40°C (+104°F) or below -16°C (+5°F)
  - If the ambient temperature exceeds +40°C (+104°F) the engine may overheat and cause the engine oil to break down.
  - If the ambient temperature falls below -16°C (+5°F) rubber components such as gaskets and seals will harden causing premature engine wear and damage.
  - See your authorized Yanmar marine engine dealer or distributor if the engine will be operated in either temperature extreme.
- See your authorized Yanmar marine dealer or distributor if you need to operate the engine at high altitudes. At high altitudes the engine will lose power, run rough, and produce exhaust gases that exceed the design specifications.

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Checking Engine Oil

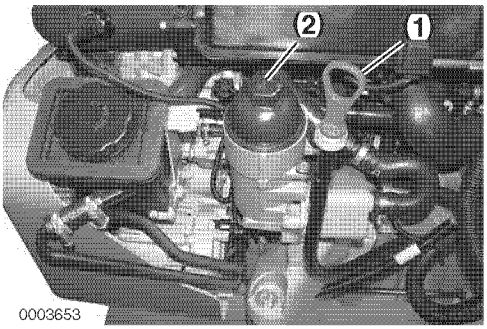


Figure 3

Note: 4BY series shown. 6BY is similar.

1. Remove dipstick **(Figure 3, (1))** and wipe with clean cloth.
2. Fully reinsert dipstick.

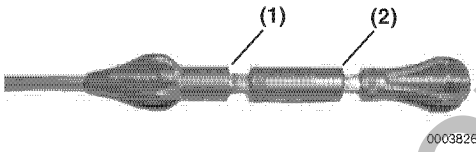


Figure 4

3. Remove dipstick. The oil level should be between upper **(Figure 4, (1))** and lower lines **(Figure 4, (2))** on the dipstick.
4. Fully reinsert dipstick.

Adding Engine Oil

CAUTION

- **NEVER overfill the engine with engine oil.**
- **ALWAYS keep the oil level between upper and lower lines on the dipstick.**

0000015enBY

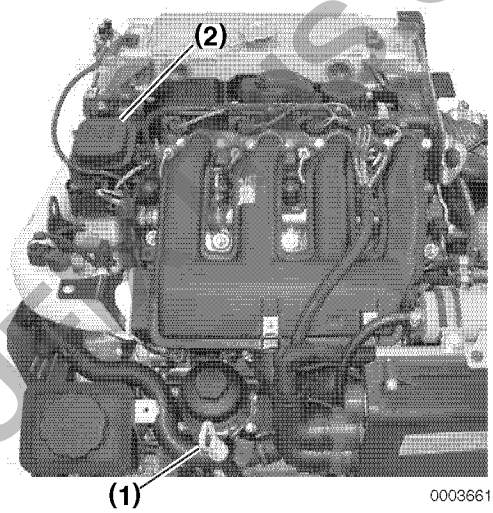


Figure 5

Note: 4BY series shown. 6BY is similar.

1. Remove the oil filler port cap **(Figure 5, (2))** and pour engine oil into filler port. *See Engine Oil Specifications on page 43.*
2. Fill with oil to the upper limit on the dipstick **(Figure 5, (1))**. Insert the dipstick fully to check the level.
3. Tighten the fill port cap securely by hand.

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RECORD OF OWNERSHIP

Take a few moments to record the information you need when you contact Yanmar for service, parts or literature.

Engine Model: _____

Engine Serial No.: _____

Date Purchased: _____

Dealer: _____

Dealer Phone: _____

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Right Side - 6BY

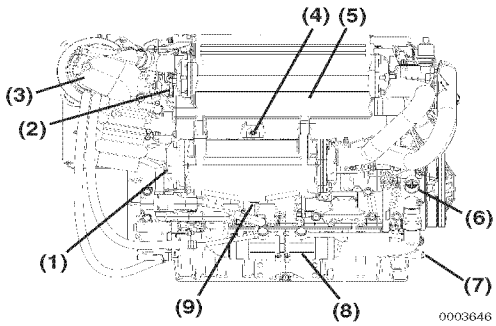


Figure 5

1 – Zinc Anode
2 – Zinc Anode
3 – Exhaust / Water Mixing Elbow
4 – Coolant Drain Cock
5 – Heat Exchanger
6 – Seawater Pump
7 – Seawater Drain Cock
8 – Hydraulic Oil Cooler
9 – Water Drain Plug

Top View - 6BY

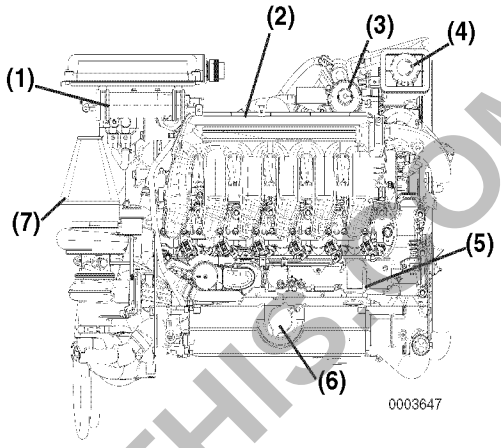


Figure 6

1 – Fuel Fine Filter
2 – Intake Air Manifold
3 – Engine Oil Filter
4 – Power Steering Filler Port (if equipped)
5 – Engine Oil Filler Port
6 – Coolant Filler Port
7 – Air Filter

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⚠ WARNING



SEVER HAZARD!

- Keep hands and other body parts away from moving / rotating parts such as the flywheel or PTO shaft.
- Wear tight fitting clothing and keep your hair short or tie it back while the engine is running.
- Remove all jewelry before you operate or service the engine.
- NEVER start the engine in gear. Sudden movement of the engine and / or vessel could cause death or serious personal injury.
- NEVER operate the engine without the guards in place.
- Before you start the engine make sure that all bystanders are clear of the area.
- Keep children and pets away while the engine is operating.
- Check before starting the engine that any tools or shop rags used during maintenance have been removed from the area.
- Failure to comply could result in death or serious injury.

0000002enMarine

⚠ WARNING

SUDDEN MOVEMENT HAZARD!

- Be sure the boat is in open water away from other boats, docks, and other obstructions before increasing rpm.
- Failure to comply could result in death or serious injury.

0000006enMarine

⚠ WARNING



EXHAUST HAZARD!

- NEVER operate the engine in an enclosed area such as a garage, tunnel, underground room, manhole or ship's hold without proper ventilation.
- NEVER block windows, vents, or other means of ventilation if the engine is operating in an enclosed area. All internal combustion engines create carbon monoxide gas during operation. Accumulation of this gas within an enclosure could cause illness or even death.
- Make sure that all connections are tightened to specifications after repair is made to the exhaust system.
- Failure to comply could result in death or serious injury.

0000003en

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4. If the level is lower than the minimum fill level **(Figure 3, (1))**, fill with distilled water **(Figure 3, (2))** (available locally) up to the upper limit **(Figure 3, (3))** of the battery.

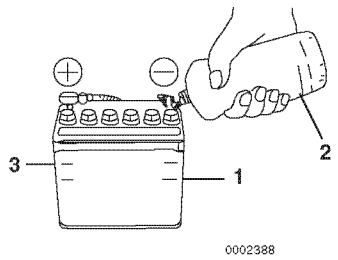


Figure 3

Note: The maximum fill level is approximately 10 - 15 mm (3/8 - 9/16 in.) above the plates.

Battery fluid tends to evaporate in high temperatures, especially in summer. In such conditions, inspect the battery more often.

Every 250 Hours of Operation

Perform the following maintenance every 250 hours of operation.

- **Drain the Fuel Tank**
- **Replace the Fuel Pre-Filter**
- **Replace the Fuel Fine Filter**
- **Replace the Fuel Filter / Water Separator Element**
- **Change the Engine Oil and Replace the Engine Oil Filter Element**
- **Check or Replace the Seawater Pump Belt**
- **Replace the Zinc Anodes**
- **Check or Replace the Seawater Pump Impeller**
- **Replace the Turbocharger Heat Shield**
- **Check the Exhaust / Water Mixing Elbow**
- **Clean or Replace the Air Filter Element**
- **Check or Replace the Alternator Belt**
- **Change the Power Steering Fluid**
- **Check the Shift Cable Adjustment**
- **Adjust the Propeller Shaft Alignment**
- **Check the Hydraulic Oil Cooler**
- **Check or Replace Rubber Hoses**

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