



IMPORTANT INFORMATION

Section 1B - Maintenance

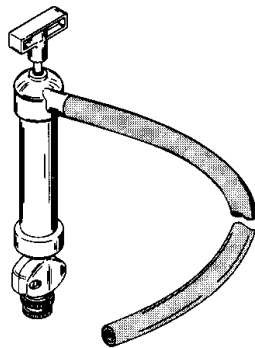
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Table of Contents

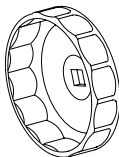
Special Tools	1B-1	Fuel System	1B-13
Quicksilver Lubricant/Sealant	1B-2	Fuel Filter	1B-13
Inspection And Maintenance Schedule	1B-4	Fuel Line Inspection	1B-13
Before Each Use	1B-4	Changing Engine Oil	1B-14
After Each Use	1B-5	Oil Changing Procedure	1B-14
Every 100 Hours of Use or Once yearly, Whichever occurs first	1B-5	Changing Oil Filter	1B-15
Every 300 Hours of Use or Three Years ...	1B-5	Checking and Adding Engine Oil	1B-15
Before Periods of Storage	1B-5	Changing Gear Case Lubricant	1B-16
Flushing the Cooling System	1B-6	3-1/4 In. (83mm) Diameter Gear Case ...	1B-16
Steering Link Rod Fasteners	1B-7	4-1/4 In. (108mm) Diameter Gear Case ..	1B-17
Corrosion Control Anode	1B-8	Storage Preparation	1B-18
Spark Plug Inspection and Replacement	1B-8	Fuel System	1B-19
Battery Inspection	1B-9	Protecting External Outboard Components	1B-19
Fuse Replacement – Electric Start Models ...	1B-9	Protecting Internal Engine Components ..	1B-19
Timing Belt Inspection	1B-10	Gear Case	1B-19
Lubrication Points	1B-10	Positioning Outboard for Storage	1B-19
Checking Power Trim Fluid	1B-12	Battery Storage	1B-19

Special Tools

1. Crankcase Oil Pump P/N 90265A5

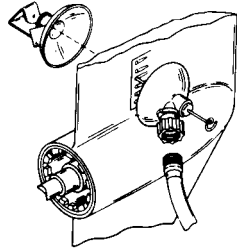


2. Oil Filter Wrench P/N 91-802653Q1



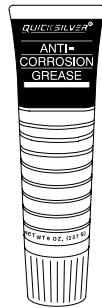


3. Flushing Attachment P/N 44357A2

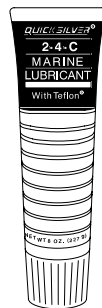


Quicksilver Lubricant/Sealant

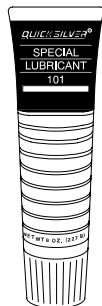
1. Quicksilver Anti-Corrosion Grease P/N 92-850735A1



2. 2-4-C Marine Lubricant with Teflon P/N 92-850736A1



3. Special Lubricant 101 P/N 92-13872A1





4. Quicksilver Power Trim and Steering Fluid P/N 92-90100A12



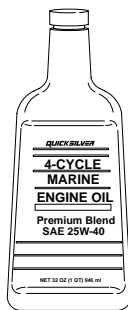
5. Quicksilver 4-Stroke Outboard Oil P/N 92-828000A12



6. Gear Lube-Premium Blend P/N 92-850737A1



7. Quicksilver 4-Cycle Marine Engine Oil P/N 92-832111A1





Inspection And Maintenance Schedule

To keep your outboard in the best operating condition, it is important that your outboard receive the periodic inspections and maintenance listed in the Inspection and Maintenance Schedule. We urge you to keep it maintained properly to ensure the safety of you and your passengers and retain its dependability.

WARNING

Neglected inspection and maintenance service of your outboard or attempting to perform maintenance or repair on your outboard if you are not familiar with the correct service and safety procedures could cause personal injury, death, or product failure.

Before Each Use

1. Check engine oil level.
2. Check that lanyard stop switch stops the engine.
3. Visually inspect the fuel system for deterioration or leaks.
4. Check outboard for tightness on transom.
5. Check steering system for binding or loose components.
6. Visually check steering link rod fasteners for proper tightness.
7. Check propeller blades for damage.



After Each Use

1. Flush out the outboard cooling system if operating in salt or polluted water.
2. If operating in salt water, wash off all salt deposits and flush out the exhaust outlet of the propeller and gear case with fresh water.

Every 100 Hours of Use or Once yearly, Whichever occurs first

1. Lubricate all lubrication points. Lubricate more frequently when used in salt water.
2. Change engine oil and replace the oil filter. The oil should be changed more often when the engine is operated under adverse conditions such as extended trolling.
3. Inspect thermostat visually for corrosion, broken spring, and to determine that the valve is completely closed at room temperature. If questionable, inspect thermostat as outlined in Section 4B “**Thermostat**”.
4. Inspect and clean spark plugs.
5. Check engine fuel filter for contaminants.
6. Check engine timing setup.
7. Check corrosion control anodes. Check more frequently when used in salt water.
8. Drain and replace gear case lubricant.
9. Lubricate splines on the drive shaft.
10. Check and adjust valve clearance, if necessary.
11. Check power trim fluid.
12. Inspect battery.
13. Check control cable adjustments.
14. Inspect timing belt.
15. Remove engine deposits with Quicksilver Power Tune Engine Cleaner.
16. Check tightness of bolts, nuts, and other fasteners.

Every 300 Hours of Use or Three Years

1. Replace water pump impeller (more often if overheating occurs or reduced water pressure is noted).

Before Periods of Storage

1. Refer to Storage procedure (this section).



Flushing the Cooling System

Flush the internal water passages of the outboard with fresh water after each use in salt, polluted or muddy water. This will help prevent a buildup of deposits from clogging the internal water passages.

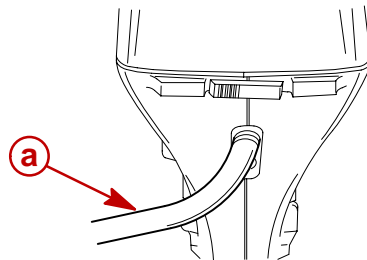
IMPORTANT: The engine must be run during flushing in order to open the thermostat and circulate water through the water passages.

NOTE: You can have the outboard tilted or in the vertical operating position during flushing.

WARNING

To avoid possible injury when flushing, remove the propeller. Refer to Propeller Replacement.

1. Place the outboard in either the operating position (vertical) or in a tilted position.
2. Remove propeller (refer to Propeller Replacement).
3. Thread a water hose into the rear fitting. Partially open the water tap (1/2 maximum). Do not open the water tap all the way, as this allows a high pressure flow of water.



a - Water Hose Threaded into Rear Fitting

IMPORTANT: Do not run engine above idle when flushing.

4. Shift outboard into neutral. Start the engine and flush the cooling system for at least 5 minutes. Keep engine speed at idle.
5. Stop the engine. Turn off the water and remove hose. Reinstall the propeller.

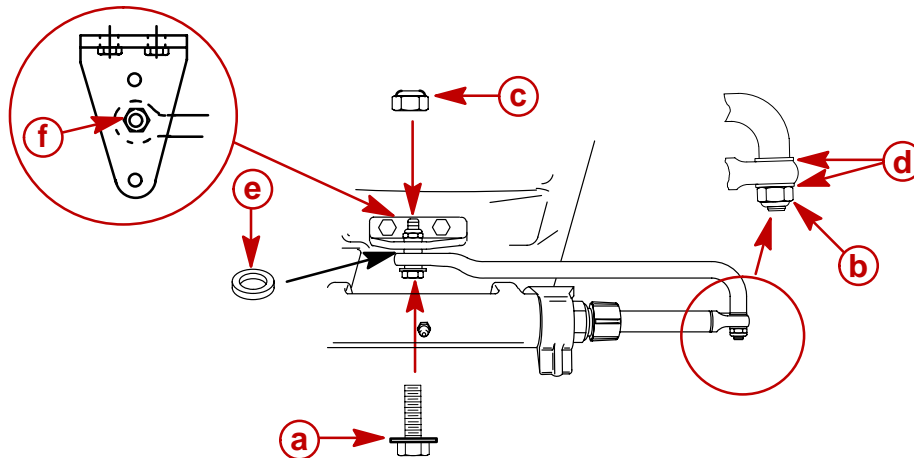


Steering Link Rod Fasteners

⚠ WARNING

Disengagement of a steering link rod can result in the boat taking a full, sudden, sharp turn. This potentially violent action can cause occupants to be thrown overboard exposing them to serious injury or death.

IMPORTANT: The steering link rod that connects the steering cable to the engine must be fastened using special washer head bolt (“a” – Part Number 10-90041) and self locking nylon insert locknuts (“b” & “c” – Part Number 11-34863). These locknuts must never be replaced with common nuts (non locking) as they will work loose and vibrate off, freeing the link rod to disengage.



- a** - Washer Head Bolt (10-90041)
- b** - Nylon Insert Locknut (11-34863)
- c** - Nylon Insert Locknut (11-34863)
- d** - Flat Washers
- e** - Spacer (12-71970)
- f** - Link Rod Mount Hole

1. Assemble steering link rod to steering cable with two flat washers (d) and nylon insert locknut (“b” – Part Number 11-34863). Tighten locknut (b) until it seats, then back nut off 1/4 turn.
2. Assemble steering link rod to engine with special washer head bolt (“a” – Part Number 10-90041), locknut (“c” – Part Number 11-34863) and spacer (“e” – 12-71970). First torque bolt (a) to 20 lb. ft. (27 N·m), then torque locknut (c) to 20 lb. ft. (27 N·m).

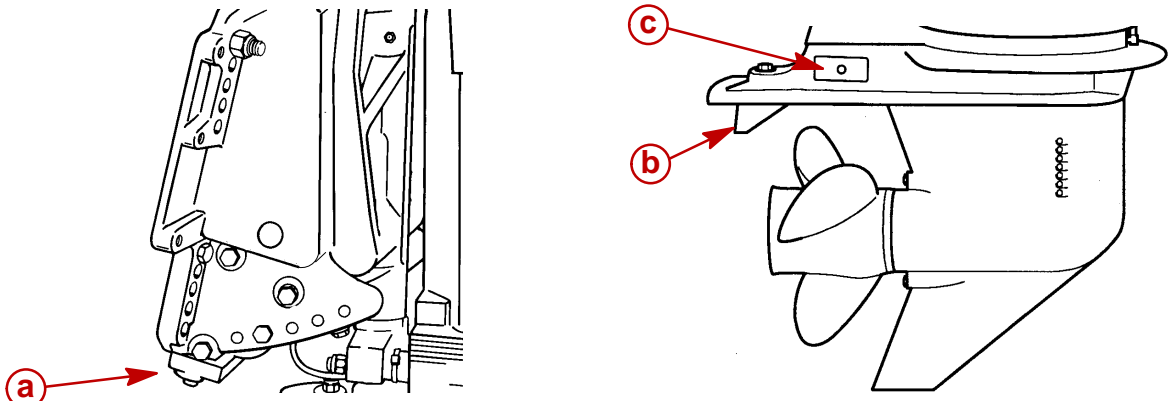


Corrosion Control Anode

Your outboard has control anodes at different locations. An anode helps protect the outboard against galvanic corrosion by sacrificing its metal to be slowly eroded instead of the outboard metals.

Each anode requires periodic inspection especially in salt water which will accelerate the erosion. To maintain this corrosion protection, always replace the anode before it is completely eroded. Never paint or apply a protective coating on the anode as this will reduce effectiveness of the anode.

1. The gear case has two corrosion control anodes. Another anode is installed on the bottom of the transom bracket assembly.



- a - Bottom Anode
- b - Trim Tab
- c - Side Anodes (Big Foot Models Only)

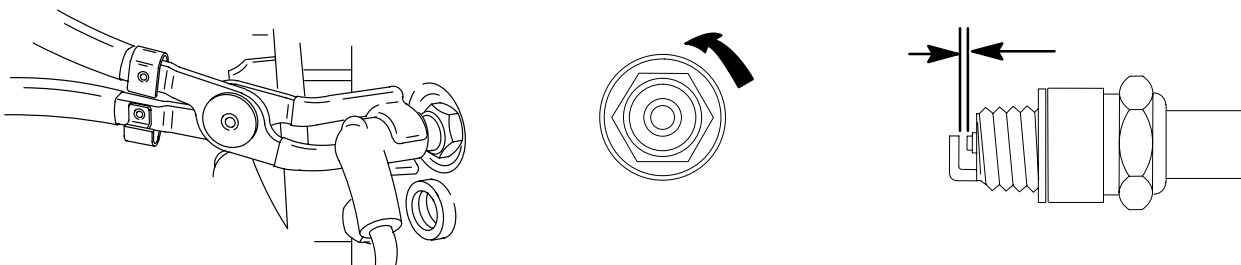
Spark Plug Inspection and Replacement

Inspect spark plugs at the recommended intervals.

⚠ WARNING

Avoid serious injury or death from fire or explosion caused by damaged spark plug boots. Damaged spark plug boots can emit sparks. Sparks can ignite fuel vapors under the engine cowl. To avoid damaging spark plug boots, do not use any sharp object or metal tool such as pliers, screwdriver, etc. to remove spark plug boots.

1. Remove the spark plug leads by twisting the rubber boots slightly and pulling off.
2. Remove the spark plugs to inspect and clean. Replace spark plug if electrode is worn or the insulator is rough, cracked, broken, blistered or fouled.



3. Set the spark plug gap. See Specification Chart.
4. Before reinstalling spark plugs, clean away dirt on the spark plug seats. Install plugs finger tight, and tighten 1/4 turn or torque to 12.5 lb-ft (17 Nm).



Battery Inspection

The battery should be inspected at periodic intervals to ensure proper engine starting capability.

IMPORTANT: Read the safety and maintenance instructions which accompany your battery.

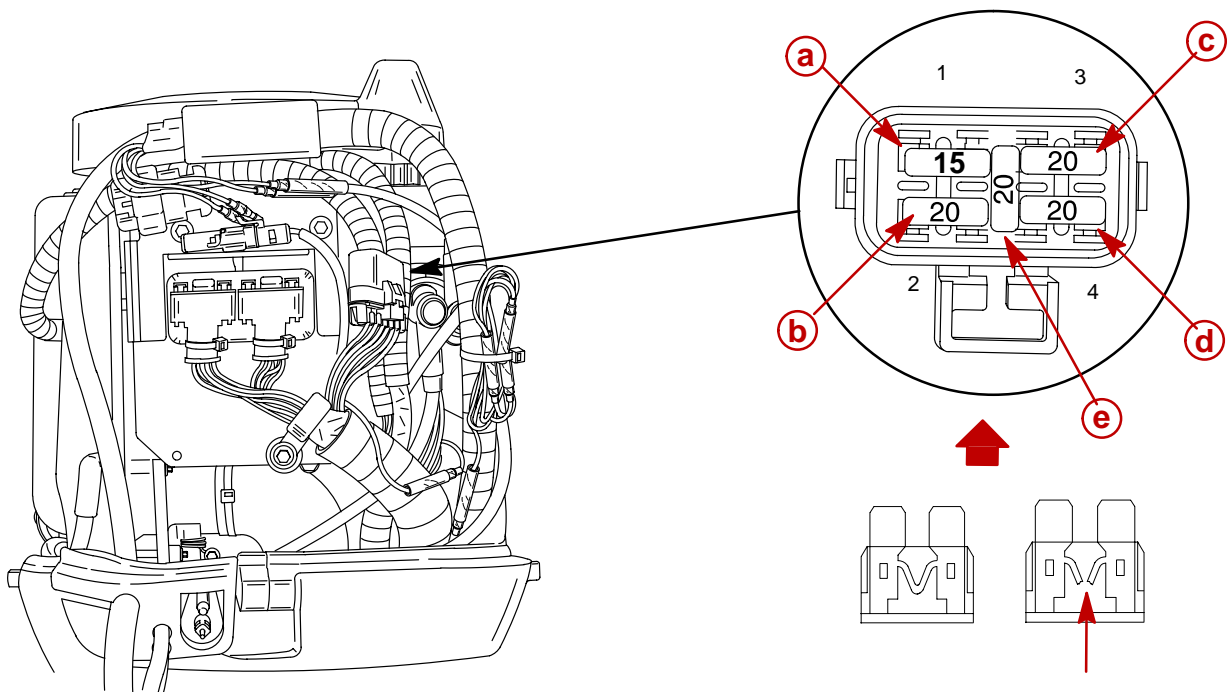
1. Turn off the engine before servicing the battery.
2. Add water as necessary to keep the battery full.
3. Make sure the battery is secure against movement.
4. Battery cable terminals should be clean, tight, and correctly installed. Positive to positive and negative to negative.
5. Make sure the battery is equipped with a nonconductive shield to prevent accidental shorting of battery terminals.

Fuse Replacement – Electric Start Models

IMPORTANT: Always carry spare 20 AMP Fuses.

The electrical wiring circuits on the outboard are protected from overload by fuses in the wiring. If the fuse is blown, try to locate and correct the cause of the overload. If the cause is not found, the fuse may blow again.

1. Open the fuse holder and look at the silver colored band inside the fuse. If band is broken replace the fuse. Replace fuse with a new fuse with the same amperage rating.

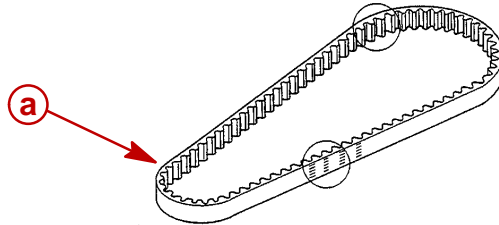


- a** - SmartCraft Data Bus Circuit - 15 AMP Fuse
- b** - Fuel Pump/Idle Air Control/Fuel Injector Circuits - 20 AMP Fuse
- c** - Main Relay/Accessories - 20 AMP Fuse
- d** - Ignition Coil Circuit - 20 AMP Fuse
- e** - Spare 20 AMP Fuse



Timing Belt Inspection

1. Inspect the timing belt and replace if any of the following conditions are found.
 - a. Cracks in the back of the belt or in the base of the belt teeth.
 - b. Excessive wear at the roots of the cogs.
 - c. Rubber portion swollen by oil.
 - d. Belt surfaces roughened.
 - e. Signs of wear on edges or outer surfaces of belt.

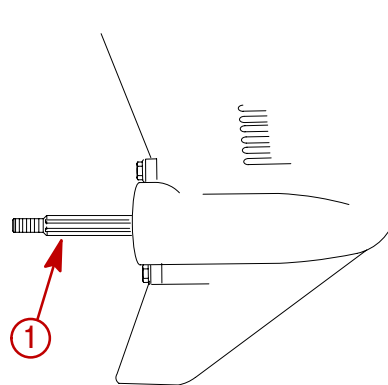


a - Timing Belt

Lubrication Points

Lubricate Point 1 with Quicksilver or Mercury Precision Lubricants Anti-Corrosion Grease or 2-4-C Marine Lubricant with Teflon.

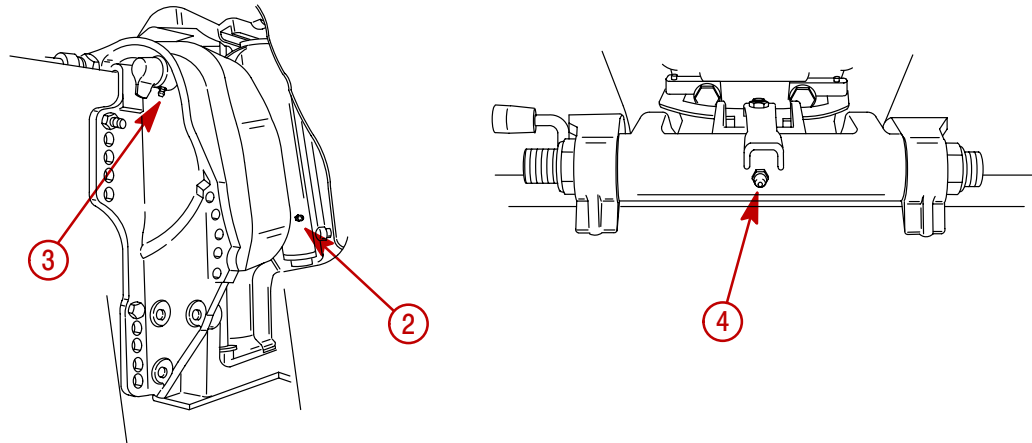
1. Propeller Shaft – Refer to Propeller Replacement for removal and installation of the propeller. Coat the entire propeller shaft with lubricant to prevent the propeller hub from corroding and seizing to the shaft.





Lubricate Points 2 thru 6 with Quicksilver or Mercury Precision Lubricants 2-4-C Marine Lubricant with Teflon or Special Lubricant 101.

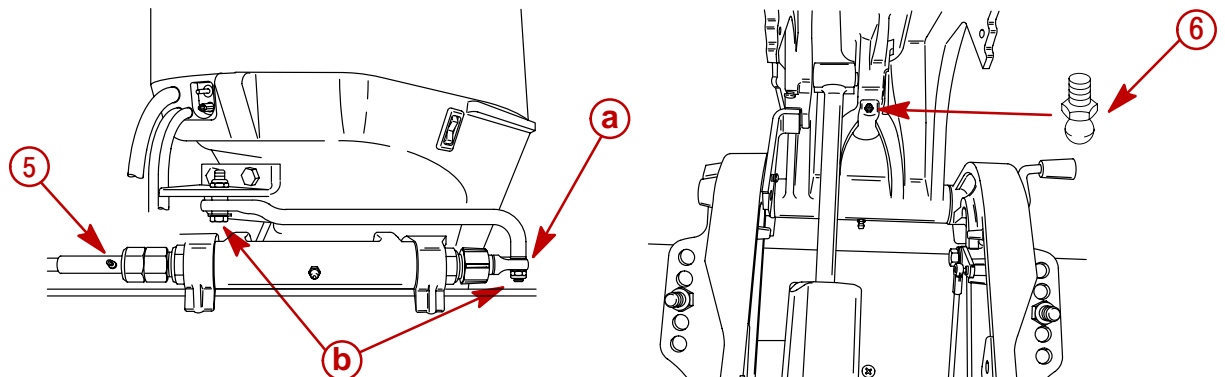
2. Swivel Bracket – Lubricate through fitting.
3. Tilt Support Lever – Lubricate through fitting.
4. Tilt Tube – Lubricate through fitting.



5. Steering Cable Grease Fitting (If equipped) – Rotate steering wheel to fully retract the steering cable end into the outboard tilt tube. Lubricate through fitting.

Lubricate Points b with light weight oil.

6. This grease fitting is for lubricating the threaded rod for the co-pilot.



- a** - Steering Cable End
b - Pivot Points

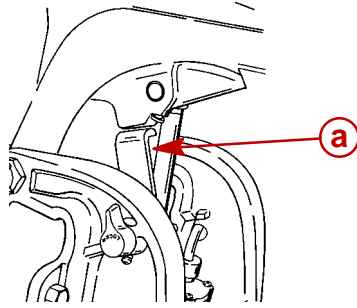
⚠ WARNING

The end of the steering cable must be fully retracted into the outboard tilt tube before adding lubricant. Adding lubricant to steering cable when fully extended could cause steering cable to become hydraulically locked. An hydraulically locked steering cable will cause loss of steering control, possibly resulting in serious injury or death.



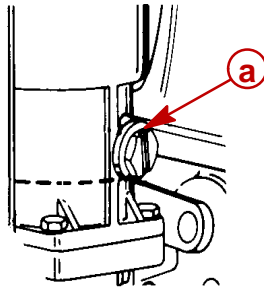
Checking Power Trim Fluid

1. Tilt outboard to the full up position and engage the tilt support lock.



a - Tilt Support Lock

2. Remove fill cap and check fluid level. The fluid level should be even with the bottom of the fill hole. Add Quicksilver Power Trim & Steering Fluid. If not available, use automotive (ATF) automatic transmission fluid.



a - Fill Cap



Fuel System

⚠ WARNING

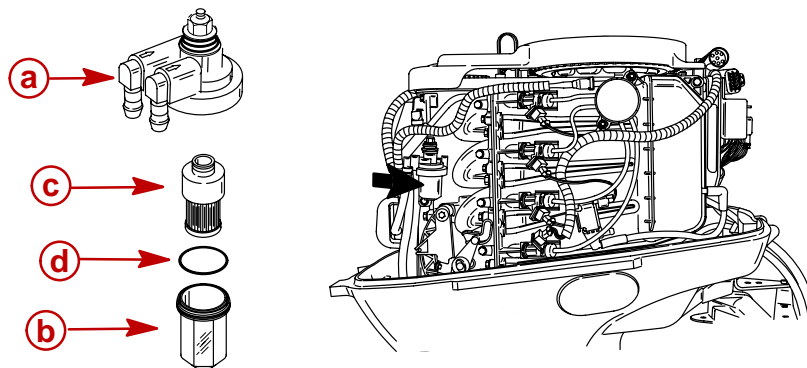
Avoid serious injury or death from gasoline fire or explosion. Carefully follow all fuel system service instructions. Always stop the engine and DO NOT smoke or allow open flames or sparks in the area while servicing any part of the fuel system.

Before servicing any part of the fuel system, stop engine and disconnect the battery. Drain the fuel system completely. Use an approved container to collect and store fuel. Wipe up any spillage immediately. Material used to contain spillage must be disposed of in an approved receptacle. Any fuel system service must be performed in a well ventilated area. Inspect any completed service work for signs of fuel leakage.

Fuel Filter

IMPORTANT: Visually inspect for fuel leakage from the filter by squeezing the primer bulb until firm, forcing fuel into the filter.

Check the fuel filter for water accumulation or sediment. If water is in the fuel, remove the sight bowl and drain the water. If the filter appears to be contaminated, remove and replace.



- a - Cover
- b - Sight Bowl
- c - Filter Element
- d - O-Ring

REMOVAL

1. Read Fuel System servicing information and Warning on the previous page.
2. Pull out the filter assembly from mount. Hold onto the cover to prevent it from turning and remove the sight bowl. Empty contents into an approved container.
3. Pull out the filter element and replace it if necessary.

INSTALLATION

4. Push the filter element into the cover.
5. Place the O-Ring seal into its proper position on the sight bowl and screw the sight bowl hand tight into the cover.
6. Push filter assembly back into mount.

Fuel Line Inspection

Visually inspect the fuel line and primer bulb for cracks, swelling, leaks, hardness, or other signs of deterioration or damage. If any of these conditions are found, the fuel line or primer bulb must be replaced.

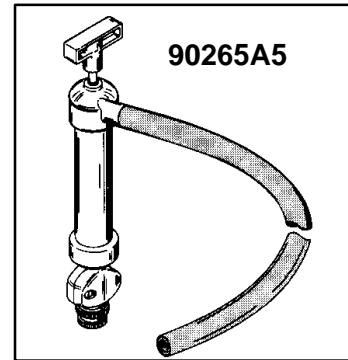
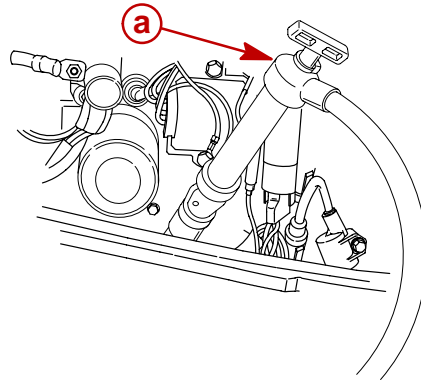


Changing Engine Oil

Oil Changing Procedure

Pump Method

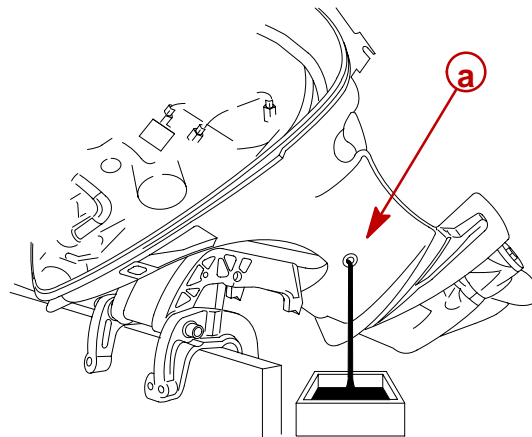
1. Place the outboard in an vertical upright position.
2. Remove dipstick and slide adaptor tube/pump down dipstick tube. Pump out the engine oil into an appropriate container.



a - Crankcase Oil Pump

Drain Plug Method

1. Tilt the outboard up to the trailer position.
2. Turn the steering on the outboard so that the drain hole is facing downward. Remove drain plug and drain engine oil into an appropriate container. Lubricate the seal on the drain plug with oil and reinstall.

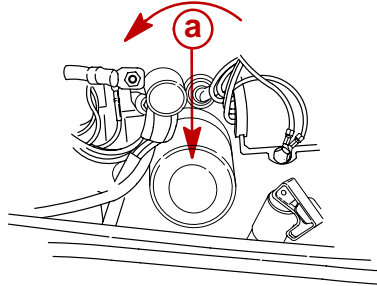


a - Drain Hole



Changing Oil Filter

1. Place a rag or towel below the oil filter to absorb any spilled oil.
2. Unscrew old filter by turning the filter counterclockwise.
3. Clean the mounting base. Apply film of clean oil to filter gasket. Do not use grease. Screw new filter on until gasket contacts base, then tighten 3/4 to 1 turn.

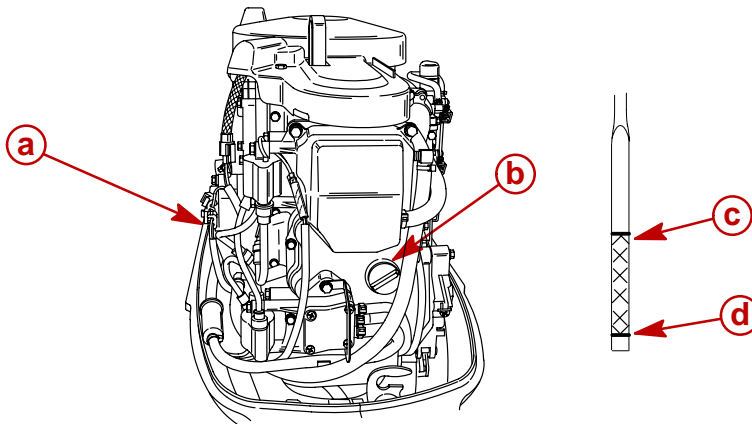


a - Oil Filter

Checking and Adding Engine Oil

IMPORTANT: Do not overfill. Be sure that the outboard is upright (not tilted) when checking oil.

1. Remove the oil fill cap and add oil to to proper operating level.
2. Idle engine for five minutes and check for leaks. Stop engine and check oil level on dipstick. Oil must be between full mark and add mark. Add oil if necessary.



- a** - Dipstick
b - Oil Fill Cap
c - Full Mark
d - Add Mark

Engine Oil Capacity
3 U.S. Quarts or (3.0 Liters)



Changing Gear Case Lubricant

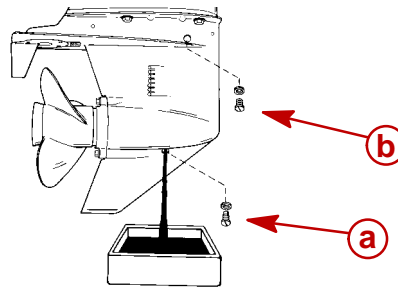
3-1/4 In. (83mm) Diameter Gear Case

When adding or changing gear case lubricant, visually check for the presence of water in the lubricant. If water is present, it may have settled to the bottom and will drain out prior to the lubricant, or it may be mixed with the lubricant, giving it a milky colored appearance. If water is noticed, have the gear case checked by your dealer. Water in the lubricant may result in premature bearing failure or, in freezing temperatures, will turn to ice and damage the gear case.

Examine the drained gear case lubricant for metal particles. A small amount of fine metal particles indicates normal gear wear. An excessive amount of metal filings or larger particles (chips) may indicate abnormal gear wear and should be checked by an authorized dealer.

DRAINING GEAR CASE

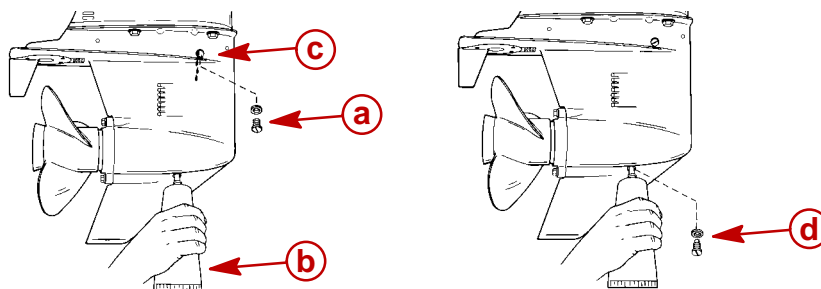
1. Place outboard in a vertical operating position.
2. Place a drain pan below outboard.
3. Remove vent plugs and fill/drain plug and drain lubricant.



- a** - Fill/drain Plug
b - Vent Plug

CHECKING GEAR CASE LUBRICANT LEVEL AND REFILLING GEAR CASE

Gear Case Lubricant Capacity
11.5 fl oz (340 ml)



1. Place outboard in a vertical operating position.
2. Remove vent plug (a).
3. Place lubricant tube (b) into the fill hole and add lubricant until it appears at the vent hole (c).

IMPORTANT: Replace sealing washers if damaged.

4. Stop adding lubricant. Install the vent plug and sealing washer (a) before removing the lubricant tube.
5. Remove lubricant tube and reinstall cleaned fill/drain plug and sealing washer (d).



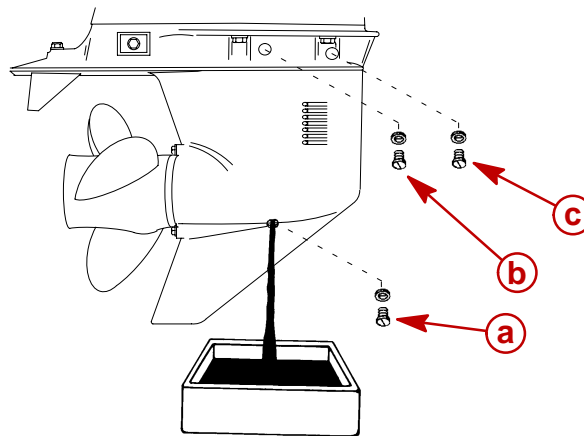
4-1/4 In. (108mm) Diameter Gear Case

When adding or changing gear case lubricant, visually check for the presence of water in the lubricant. If water is present, it may have settled to the bottom and will drain out prior to the lubricant, or it may be mixed with the lubricant, giving it a milky colored appearance. If water is noticed, have the gear case checked by your dealer. Water in the lubricant may result in premature bearing failure or, in freezing temperatures, will turn to ice and damage the gear case.

Whenever you remove the fill/drain plug, examine the magnetic end for metal particles. A small amount of metal filings or fine metal particles indicates normal gear wear. An excessive amount of metal filings or larger particles (chips) may indicate abnormal gear wear and should be checked by an authorized dealer.

DRAINING GEAR CASE

1. Place outboard in a vertical operating position.
2. Place a drain pan below outboard.
3. Remove vent plugs and fill/drain plug and drain lubricant.



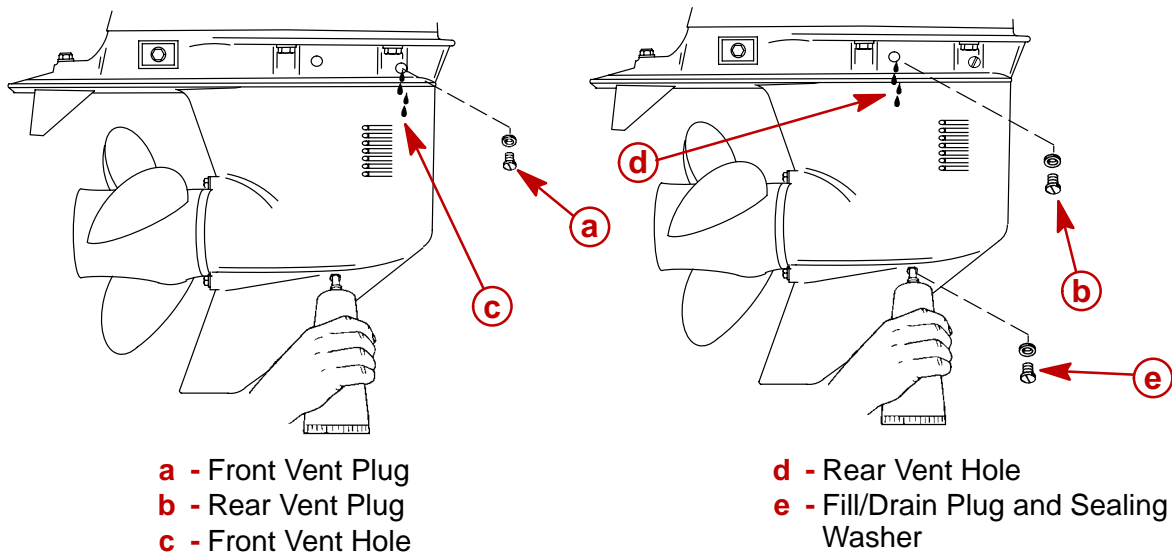
- a** - Fill/drain Plug
- b** - Rear Vent Plug
- c** - Front Vent Plug



CHECKING LUBRICANT LEVEL AND FILLING GEAR CASE

Gear Case Lubricant Capacity
24 fl oz (710 ml)

1. Place outboard in a vertical operating position.
2. Remove the front vent plug and rear vent plug.
3. Place lubricant tube into the fill hole and add lubricant until it appears at the front vent hole. At this time install the front vent plug and sealing washer.
4. Continue adding lubricant until it appears at the rear vent hole.
5. Stop adding lubricant. Install the rear vent plug and sealing washer before removing lubricant tube.
6. Remove lubricant tube and reinstall cleaned fill/drain plug and sealing washer.



Storage Preparation

The major consideration in preparing your outboard for storage is to protect it from rust, corrosion, and damage caused by freezing of trapped water.

The following storage procedures should be followed to prepare your outboard for out-of-season storage or prolonged storage (two months or longer).

CAUTION

Never start or run your outboard (even momentarily) without water circulating through the cooling water intake in the gear case to prevent damage to the water pump (running dry) or overheating of the engine.



Fuel System

IMPORTANT: Gasoline containing alcohol (ethanol or methanol) can cause a formation of acid during storage and can damage the fuel system. If the gasoline being used contains alcohol, it is advisable to drain as much of the remaining gasoline as possible from the fuel tank, remote fuel line, and engine fuel system.

Fill the fuel tank and engine fuel system with treated (stabilized) fuel to help prevent formation of varnish and gum. Proceed with following instructions.

1. Portable Fuel Tank – Pour the required amount of Quicksilver Gasoline Stabilizer (follow instructions on container) into fuel tank. Tip fuel tank back and forth to mix stabilizer with the fuel.
2. Permanently Installed Fuel Tank – Pour the required amount of Quicksilver Gasoline Stabilizer (follow instructions on container) into a separate container and mix with approximately one quart (one liter) of gasoline. Pour this mixture into fuel tank.
3. Remove the fuel filter sight bowl (see “Fuel Filter” above) and empty contents in a suitable container. Add 3 cc (1/2 teaspoon) of gasoline stabilizer into the fuel filter sight bowl and reinstall.
4. Place the outboard in water or connect flushing attachment for circulating cooling water. Run the engine for 15 minutes to allow treated fuel to fill the engine fuel system.

Protecting External Outboard Components

1. Lubricate all outboard components listed in the Inspection and Maintenance Schedule.
2. Touch up any paint nicks.
3. Spray Quicksilver or Mercury Precision Lubricants Corrosion Guard on external metal surfaces (except corrosion control anodes).

Protecting Internal Engine Components

1. Remove the spark plugs and inject a small amount of engine oil inside of each cylinder.
2. Rotate the flywheel manually several times to distribute the oil in the cylinders. Reinstall spark plugs.
3. Change the engine oil.

Gear Case

1. Drain and refill the gear case lubricant (refer to maintenance procedure).

Positioning Outboard for Storage

Store outboard in an upright (vertical) position to allow water to drain out of outboard.

CAUTION

If outboard is stored tilted up in freezing temperature, trapped cooling water or rain water that may have entered the propeller exhaust outlet in the gear case could freeze and cause damage to the outboard.

Battery Storage

1. Follow the battery manufacturer's instructions for storage and recharging.
2. Remove the battery from the boat and check water level. Recharge if necessary.
3. Store the battery in a cool, dry place.
4. Periodically check the water level and recharge the battery during storage.