MAINTENANCE

Outboard Care

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.

Record maintenance performed in Maintenance Log at the back of this book. Save all maintenance work orders and receipts.

SELECTING REPLACEMENT PARTS FOR YOUR OUTBOARD

We recommend using original Mercury Precision or Quicksilver replacement parts and Genuine Lubricants.

⚠ WARNING

Using a replacement part that is inferior to the original part could result in personal injury, death, or product failure.

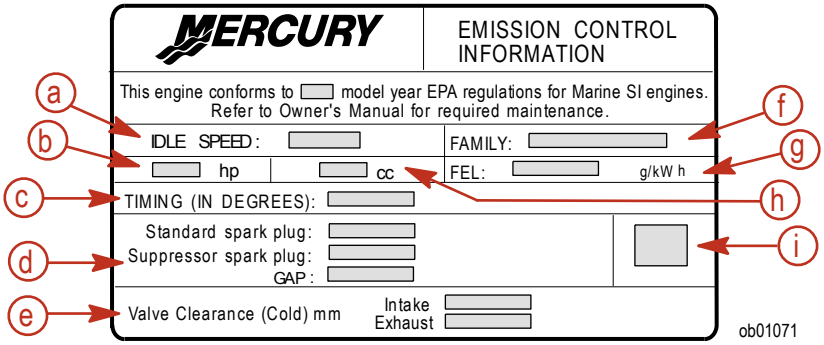
EPA Regulations

All new outboards manufactured by Mercury Marine are certified to the United States Environmental Protection Agency, as conforming to the requirements of the regulations for the control of air pollution from new outboard motors. This certification is contingent on certain adjustments being set to factory standards. For this reason, the factory procedure for servicing the product must be strictly followed and, wherever practicable, returned to the original intent of the design. **Maintenance, replacement, or repair of the emission control devices and systems may be performed by any marine spark ignition (SI) engine repair establishment or individual.**

EPA Emissions

EMISSION CERTIFICATION LABEL

An emission certification label, showing emission levels and engine specifications directly related to emissions, is placed on the engine at time of manufacture.



- **a -** Idle speed
- **b -** Engine horsepower
- **c -** Timing specification
- **d -** Recommended spark plug and gap
- **e -** Valve clearance (if applicable)
- **f -** Family number
- **g -** Maximum emission output for the engine family
- **h -** Piston placement
- **i -** Date of manufacture

OWNER RESPONSIBILITY

The owner/operator is required to have routine engine maintenance performed to maintain emission levels within prescribed certification standards.

The owner/operator is not to modify the engine in any manner that would alter the horsepower or allow emissions levels to exceed their predetermined factory specifications.

Inspection And Maintenance Schedule

BEFORE EACH USE

- Check that lanyard stop switch stops the engine.
- Visually inspect the fuel system for deterioration or leaks.
- Check outboard for tightness on transom.
- Check steering system for binding or loose components.

- Visually check steering link rod fasteners for proper tightness. See **Steering Link Rod Fasteners**.
- Check propeller blades for damage.

AFTER EACH USE

- Flush out the outboard cooling system if operating in salt or polluted water. See **Flushing the Cooling System**.
- Wash off all salt deposits and flush out the exhaust outlet of the propeller and gearcase with fresh water if operating in salt water.

EVERY 100 HOURS OF USE OR ONCE YEARLY, WHICHEVER OCCURS FIRST

- Lubricate all lubrication points. Lubricate more frequently when used in salt water. See **Lubrication Points**.
- Replace spark plugs at first 100 hours or first year. After that, inspect spark plugs every 100 hours or once yearly. Replace spark plugs as needed. See **Spark Plug Inspection and Replacement**.
- Replace fuel filter. See **Fuel System**.
- Replace compressor air intake filter. See **Compressor Air Intake Filter**.
- Inspect alternator belt. See **Alternator Belt Inspection**.
- Check corrosion control anodes. Check more frequently when used in salt water. See **Corrosion Control Anodes**.
- Drain and replace gearcase lubricant. See **Gearcase Lubrication**.
- Check power trim fluid. See **Checking Power Trim Fluid**.
- Inspect battery. See **Battery Inspection**.
- Check control cable adjustments.[1.]
- Lubricate splines on the driveshaft and shift shaft.[1.]
- Check tightness of bolts, nuts, and other fasteners.

EVERY 300 HOURS OF USE OR THREE YEARS

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

BEFORE PERIODS OF STORAGE

- Refer to Storage procedure. See **Storage** 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.

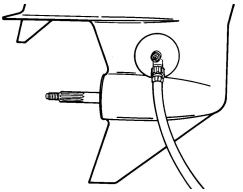
1. These items should be serviced by an authorized dealer.

Use a Mercury Precision or Quicksilver accessory (or equivalent) flushing attachment.

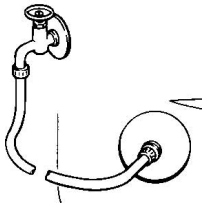
⚠ WARNING

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

1. Remove propeller. Refer to **Propeller Replacement**. Install the flushing attachment so the rubber cups fit tightly over the cooling water intake.



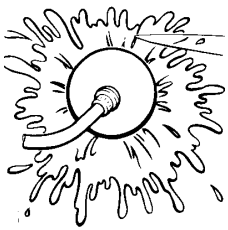
2. Attach a water hose to the flushing attachment. Turn on the water and adjust the flow so water is leaking around the rubber cups to ensure the engine receives an adequate supply of cooling water.



3. Start the engine and run it at idle speed in neutral shift position.

IMPORTANT: Do not run engine above idle when flushing.

4. Adjust water flow (if necessary) so excess water continues leaking out from around the rubber cups to ensure the engine is receiving an adequate supply of cooling water.



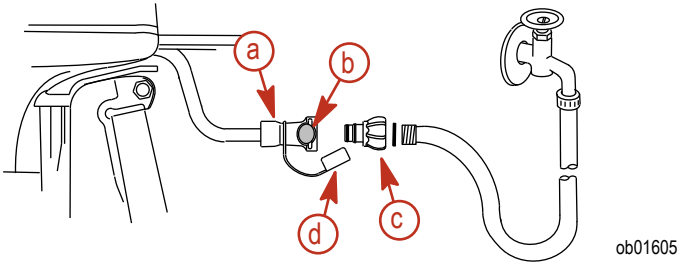
5. Check for a steady stream of water flowing out of the water pump indicator hole. Continue flushing the outboard for 3 to 5 minutes, carefully monitoring water supply at all times.

6. Stop the engine, turn off the water, and remove the flushing attachment. Reinstall the propeller.

Flushing The Cooling System - Models With Accessory Hose Flush Attachment

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 build up of deposits from clogging the internal water passages.

1. Thread a water hose into hose adaptor.
2. Remove dust cover and push the host adaptor into the flush connector until it locks (snaps) in place.



a - Flush connector
b - Button
c - Hose adaptor
d - Dust cover

NOTE: *Engine can be stopped or running at idle speed in neutral when flushing the cooling system. Do not flush engine using a water source that exceeds 6.5 kPa (45 psi).*

3. Turn on the water and flush the cooling system for a minimum of 3 minutes.

NOTE: *The hose adaptor shuts off the water flow whenever it is disconnected from the flush connector.*

4. Push button in to release the hose adaptor.
5. Reinstall dust cover.

FREEZING TEMPERATURE

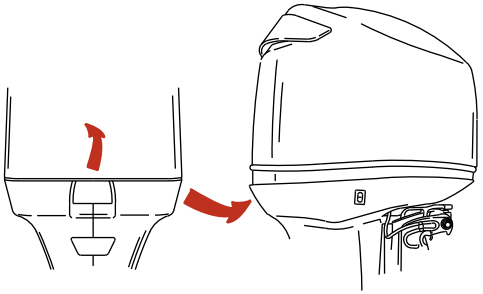
The water should be drained out of the engine flush hose if there is a chance of freezing temperature. Drain water as follows:

1. Remove water hose from the hose adaptor.
2. Insert the adaptor only into the flush connector.
3. Tilt the outboard up until all the water has drained out of the hose.

Top Cowl Removal And Installation

REMOVAL

1. Unlock the rear latch by pushing lever up.
2. Lift rear of cowl and disengage front hook.



INSTALLATION

1. Engage the front hook and push cowl back over the cowl seal.
2. Push cowl down and move the rear latch lever down to lock.

Cleaning Care for Top Cowl

IMPORTANT: Dry wiping (wiping the plastic surface when it is dry) will result in minor surface scratches. Always wet the surface before cleaning. Follow cleaning and waxing procedure.

CLEANING AND WAXING PROCEDURE

1. Before washing, rinse the top cowl with clean water to remove dirt and dust that may scratch the surface.
2. Wash the top cowl with clean water and a mild non-abrasive soap. Use a soft clean cloth when washing.
3. Dry thoroughly with a soft clean cloth.
4. Wax the surface using a non-abrasive automotive polish (polish designed for clear coat finishes). Remove the applied wax by hand using a clean soft cloth.

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 sign of fuel leakage.

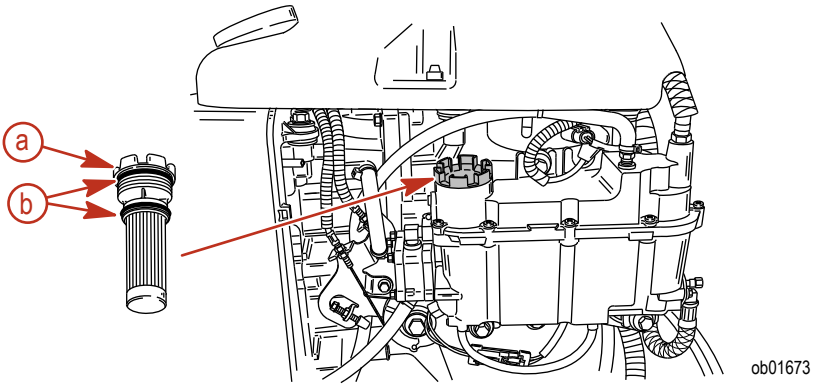
FUEL LINE INSPECTION

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.

FUEL FILTER REPLACEMENT

Removal

1. Use the shaft of a screwdriver between the lugs on the filter cap and unscrew the filter.



a - Filter **b -** O-rings

Installation

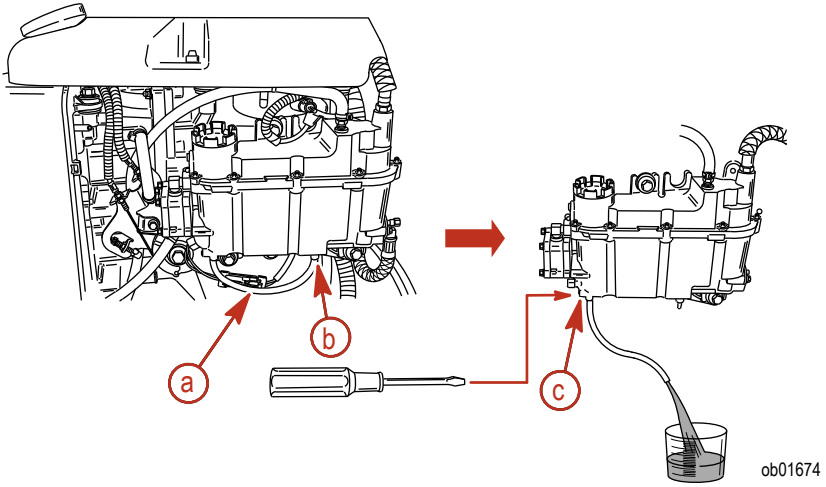
1. Lubricate the O-ring seals with oil.
2. Install the fuel filter and tighten securely.

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

DRAINING WATER FROM THE FUEL FILTER CHAMBER

NOTE: *If a sufficient amount of water has accumulated in the fuel filter chamber, the warning system will turn on. Draining the water from the fuel filter chamber is required.*

1. Pull the drain hose off the right side fitting. Hold open end of the hose over a container.
2. Loosen drain screw and drain the fuel filter chamber.



a - Drain hose
b - Right side fitting
c - Drain screw

3. Retighten drain screw and reattach hose.

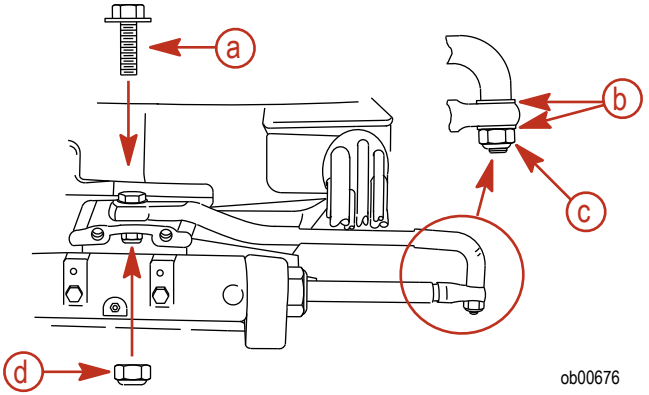
IMPORTANT: Visually inspect for fuel leakage from the drain screw by squeezing the primer bulb until firm, forcing fuel into the chamber.

Steering Link Rod Fasteners

IMPORTANT: The steering link rod that connects the steering cable to the engine must be fastened using special washer head bolt ("a" - Part Number 10-849838) and self-locking nylon insert locknuts ("c" & "d" - Part Number 11-826709113). 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.

⚠ 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.



a - Special washer head bolt (10-849838)
b - Flat washer (2)
c - Nylon insert locknut (11-826709113)
d - Nylon insert locknut (11-826709113)

Description	Nm	lb. in.	lb. ft.
Special washer head bolt	27		20
Nylon insert locknut "d"	27		20
Nylon insert locknut "c"	Tighten until seats, then back off 1/4 turn		

Assemble steering link rod to steering cable with two flat washers and self-locking nylon insert locknut. Tighten locknut until it seats, then back nut off 1/4 turn.

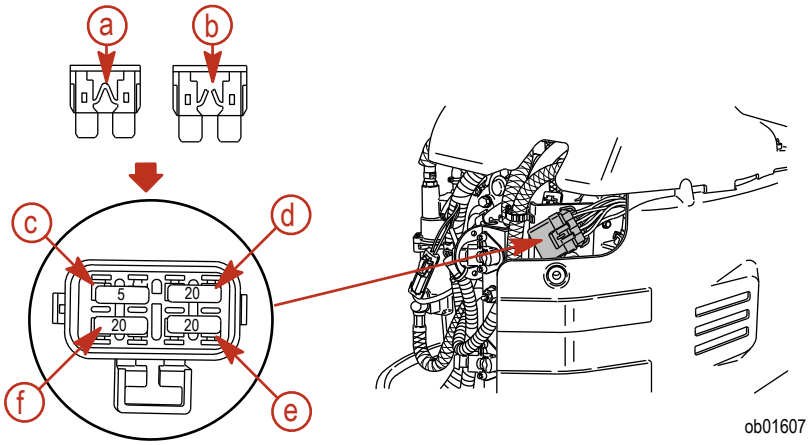
Assemble steering link rod to engine with special washer head bolt and self-locking nylon insert locknut. First torque bolt, then torque locknut to specifications.

Fuse Replacement

IMPORTANT: Always carry spare 5 and 20 AMP fuses.

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

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 rating.



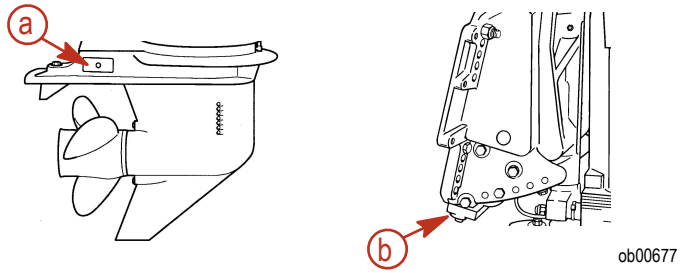
a - Good fuse
b - Blown fuse
c - SmartCraft data bus circuit - 5 amp fuse
d - Accessories - 20 amp fuse
e - Ignition coil circuit - 20 amp fuse
f - Electric fuel pump/ECM driver power/oil pump circuit - 20 amp fuse

Corrosion Control Anode

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

The gearcase has two corrosion control anodes, one on each side. A third anode is installed on the bottom of the transom bracket assembly.



a - Anode (2) on each side of gearcase

b - Anode on transom bracket assembly

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.

Battery Information

⚠ CAUTION

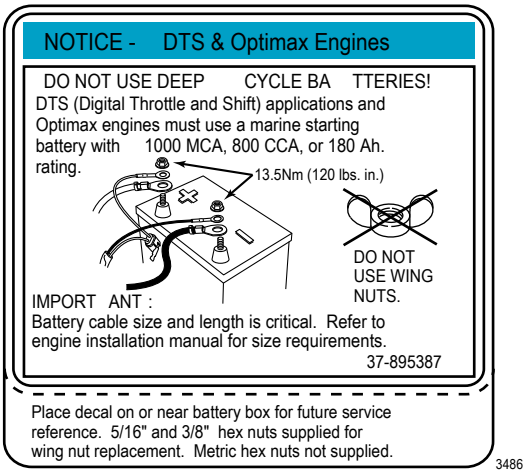
Hex nuts must be used to secure battery leads to battery posts to avoid loss of electrical power.

- Do not use deep cycle batteries. Engines must use a marine starting battery with 1000 MCA, 800 CCA or 180 Ah.
- When connecting engine battery, hex nuts must be used to secure battery leads to battery posts. Torque nuts to specification.

Description	Nm	lb. in.	lb. ft.
Hex nuts	13.5	120	

IMPORTANT: Battery cable size and length is critical. Refer to engine installation manual for size requirements.

Decal needs to be placed on or near battery box for future service reference. One 5/16 in. and one 3/8 in. hex nut are supplied per battery for wing nut replacement. Metric hex nuts are not supplied.



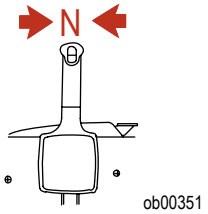
Propeller Replacement

IMPORTANT: Propellers used on this product require the Mercury Marine Flo-Torq III type hub or equivalent.

⚠ WARNING

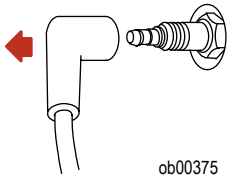
If the propeller shaft is rotated while the engine is in gear, there is the possibility that the engine will crank over and start. To prevent this type of accidental engine starting and possible serious injury caused from being struck by a rotating propeller, always shift outboard to neutral position and remove spark plug leads when you are servicing the propeller.

1. Shift outboard to neutral (N) position.

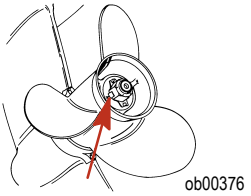


IMPORTANT: Refer to Spark Plug Inspection and Replacement for removing spark plug leads.

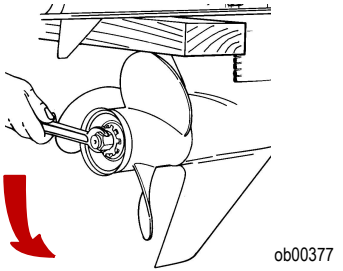
2. Remove spark plug leads to prevent engine from starting.



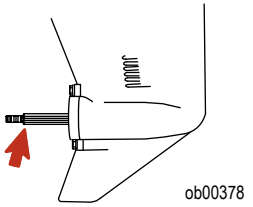
3. Straighten the bent tabs on the propeller nut retainer.



4. Place a block of wood between gearcase and propeller to hold propeller and remove propeller nut.



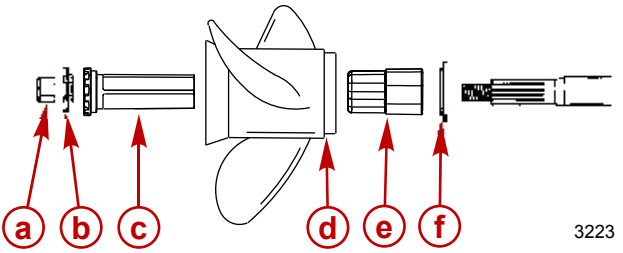
5. Pull propeller straight off shaft. If propeller is seized to the shaft and cannot be removed, have the propeller removed by an authorized dealer.
6. Coat the propeller shaft with Quicksilver or Mercury Precision Lubricants Anti-Corrosion Grease or 2-4-C.



Tube Ref No.	Description	Where Used	Part No.
94	Anti-Corrosion Grease	Propeller shaft	92-802867A 1
95	2-4-C	Propeller shaft	92-802859A 1

IMPORTANT: To prevent the propeller hub from corroding and seizing to the propeller shaft (especially in salt water), always apply a coat of the recommended lubricant to the entire propeller shaft at the recommended maintenance intervals and also each time the propeller is removed.

7. **Flo-Torq III Drive Hub Propellers** - Install forward thrust hub, replaceable drive sleeve, propeller, thrust hub, propeller nut retainer and propeller nut onto the shaft.

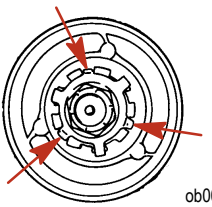


a - Propeller nut
b - Propeller nut retainer
c - Rear thrust hub
d - Propeller
e - Replaceable drive sleeve
f - Forward thrust hub

8. Place a block of wood between gearcase and propeller and torque propeller nut to specifications.

Description	Nm	lb. in.	lb. ft.
Propeller nut	75		55

9. Secure propeller nut by bending three of the tabs into the thrust hub grooves.

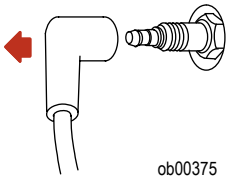


Spark Plug Inspection And Replacement

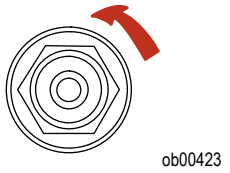
⚠ WARNING

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.

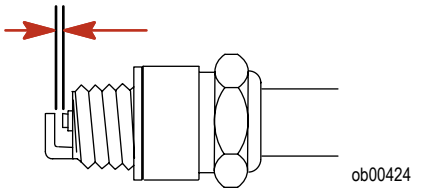
1. Remove the spark plug leads. Twist the rubber boots slightly and pull off.



2. Remove the spark plugs to inspect. Replace spark plug if electrode is worn or the insulator is rough, cracked, broken, blistered or fouled.



3. Set the spark plug gap to specifications.



Spark Plug	
Spark plug gap	0.80 mm (0.030 in.)

4. Before installing spark plugs, clean off any dirt on the spark plug seats. Install plugs finger tight, and then tighten to the specified value.

Description	Nm	lb. in.	lb. ft.
Spark plug	27		20

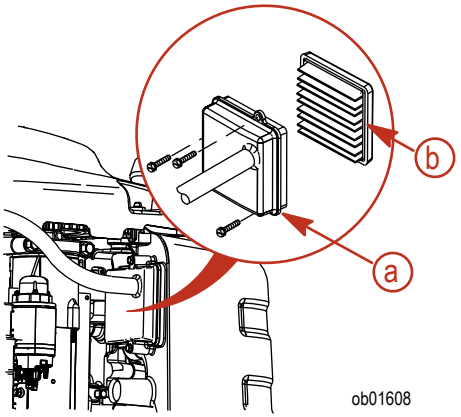
Compressor Air Intake Filter

The filter should be changed every 100 hours of operation, or once a season.

IMPORTANT: Never run the engine without the air filter.

REMOVAL

1. Remove three screws and filter cover from engine.
2. Remove filter from the cover.



a - Cover **b -** Filter

INSTALLATION

1. Install filter into cover.
2. Fasten filter cover with three screws.

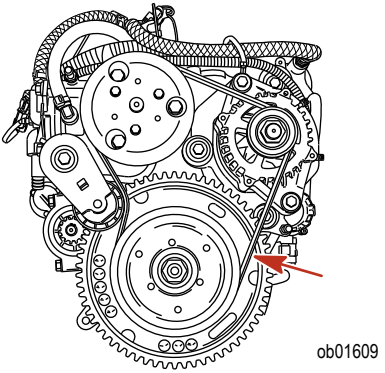
Alternator Belt Inspection

⚠ WARNING

Avoid possible serious injury. Make sure engine is shut off and ignition key is removed before inspecting belt.

1. Inspect the alternator belt and have it replaced by an authorized dealer if any of the following conditions are found.
   a. Cracks or deterioration in the rubber portion of the belt.
   b. Belt surfaces rough or uneven.

c. Signs of wear on edges or outer surfaces of belt.

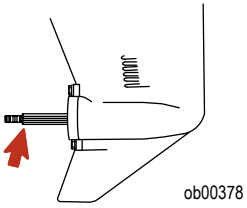


Lubrication Points

1. Lubricate the following with Quicksilver or Mercury Precision Lubricants Anti-Corrosion Grease or 2-4-C.

Tube Ref No.	Description	Where Used	Part No.
94	Anti-Corrosion Grease	Propeller shaft	92-802867A 1
95	2-4-C	Propeller shaft	92-802859A 1

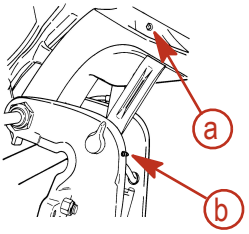
- Propeller Shaft - Refer to **Propeller Replacement** for removal and installation of the propeller. Coat the entire propeller shaft with lubricant to prevent the propeller hub from corroding and seizing to the shaft.



2. Lubricate the following with Quicksilver or Mercury Precision Lubricants 2-4-C or Special Lubricant 101.

Tube Ref No.	Description	Where Used	Part No.
34	Special Lubricant 101	Swivel bracket, tilt support lever, tilt tube, steering cable grease fitting	92-802865A 1
95	2-4-C	Swivel bracket, tilt support lever, tilt tube, steering cable grease fitting	92-802859A 1

- Swivel Bracket - Lubricate through fitting.
- Tilt Support Lever - Lubricate through fitting.



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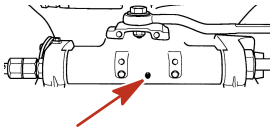
a - Swivel bracket **b -** Tilt support lever

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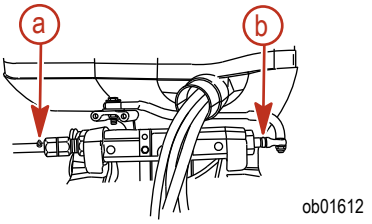
- Steering Cable Grease Fitting (If equipped) - Rotate steering wheel to fully retract the steering cable end into the outboard tilt tube. Lubricate through fitting.

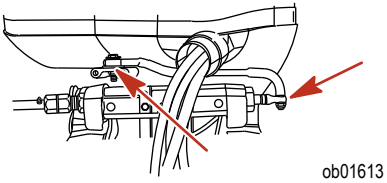
⚠ WARNING

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. A hydraulically locked steering cable will cause loss of steering control, possibly resulting in serious injury or death.



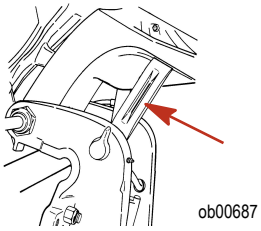
a - Fitting **b -** Steering cable end

3. Lubricate the following with light weight oil.
   - Steering Link Rod Pivot Points - Lubricate pivot points.

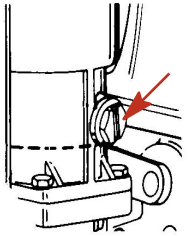


Checking Power Trim Fluid

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



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



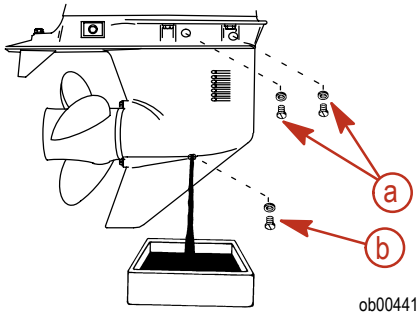
Gearcase Lubrication

When adding or changing gearcase 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 gearcase 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 gearcase.

Examine the drained gearcase lubricant for metal particles. A small amount of 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 GEARCASE

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 - Vent plugs **b -** Fill/drain plug