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

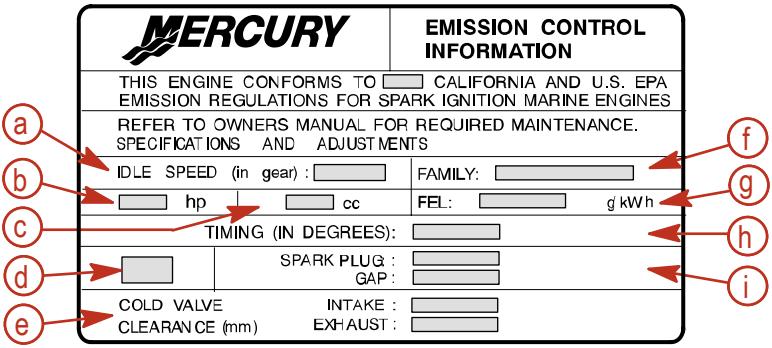
Using a replacement part that is inferior to the original part could result in personal injury, death, or product failure.

EPA Emissions 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 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.**

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.



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

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 engine oil level. See **Fuel & Oil - Checking and Adding Engine Oil**.
- 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**.
- 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. See **Changing Engine Oil**.
- 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**.
- Inspect thermostat visually for corrosion and broken spring. Make sure thermostat closes completely at room temperature.[1]
- Check engine low pressure fuel filter for contaminants. See **Fuel System**.
- Replace the high pressure fuel filter.[1]
- Check engine timing setup.[1]
- Check corrosion control anodes. Check more frequently when used in salt water. See **Corrosion Control Anodes**.
- Drain and replace gear case lubricant. See **Gearcase Lubrication**.
- Lubricate splines on the drive shaft.[1]
- Check and adjust valve clearance, if necessary.[1]
- Check power trim fluid. See **Checking Power Trim Fluid**.
- Inspect battery. See **Battery Inspection**.
- Check control cable adjustments.[1]
- Inspect timing belt. See **Timing Belt Inspection**.
- Check tightness of bolts, nuts, and other fasteners.

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

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.

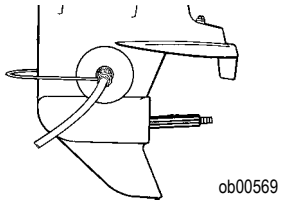
Use a Mercury Precision or Quicksilver accessory (or equivalent) flushing attachment.

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

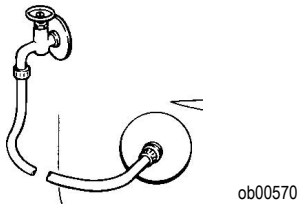
⚠ WARNING

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.



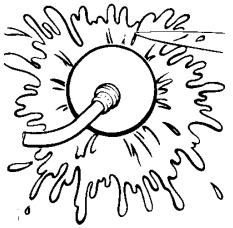
2. Attach a water hose to the flushing attachment. Turn on the water and adjust the flow so water is leaking around the rubber cups to ensure the engine receives an adequate supply of cooling water.



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.



ob00571

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.

Top Cowl Removal And Installation

REMOVAL

1. Unlock the rear latch by pulling lever up.

10190

2. Lift rear of cowl and disengage front hook.

10191

INSTALLATION

1. Lower the top cowl over the engine. Bring the front of the cowl down first and engage the front hook, then lower the cowl into its seated position with the bottom cowl.
2. Apply some downward pressure on the bottom cowl and than lock the cowl in place by pushing in the cowl latch. Ensure the top cowl is securely fastened by pulling up on the back of the cowl.

Exterior Care

Your outboard is protected with a durable baked enamel finish. Clean and wax often using marine cleaners and waxes.

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.

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.

MAINTENANCE

FUEL LINE INSPECTION

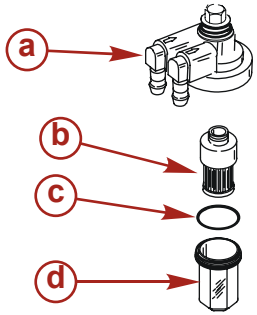
Visually inspect the fuel line and primer bulb for cracks, swelling, leaks, hardness, or other signs of deterioration or damage. If any of these conditions are found, the fuel line or primer bulb must be replaced.

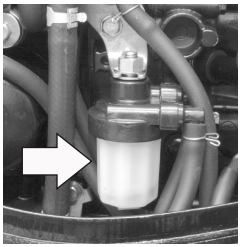
FUEL FILTER (LOW PRESSURE)

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.

REMOVAL

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





9694

a - Cover
b - Filter element
c - O-ring seal
d - Sight bowl

INSTALLATION

1. Push the filter element into the cover.
2. Place the O-ring seal into its proper position on the sight bowl and screw the sight bowl hand tight into the cover.
3. Push filter assembly back into mount.

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

Steering Link Rod Fasteners

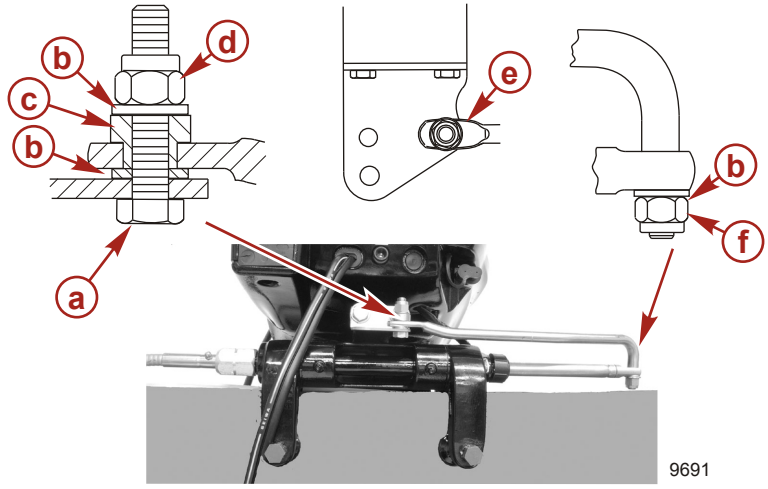
IMPORTANT: The steering link rod that connects the steering cable to the engine must be fastened using the steering link rod fastening hardware supplied with engine. Never replace the locknuts (11-16147--3) with common nuts (non-locking) as they will work loose and vibrate off, freeing the link rod to 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.

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

Assemble steering link rod to engine with bolt, locknut, spacer, and flat washers. Torque locknut to specifications.



a - Bolt (10-898101018)
b - Flat washer (12-95392-10)
c - Spacer (23-853826001)
d - Nylon insert locknut (11-16147--3)
e - Install steering link rod into side hole
f - Nylon insert locknut (11-16147--3) (tighten until seats then back off 1/4 turn)

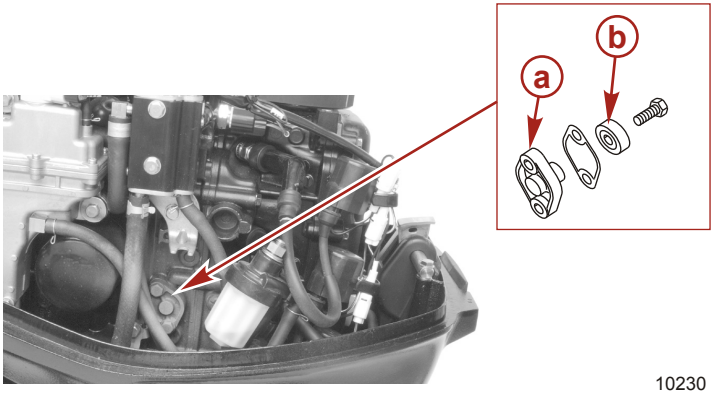
Description	Nm	lb. in.	lb. ft.
Nylon insert locknut "d"	27		20
Nylon insert locknut "f"	Tighten until seats, then back off ¼ turn		

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.

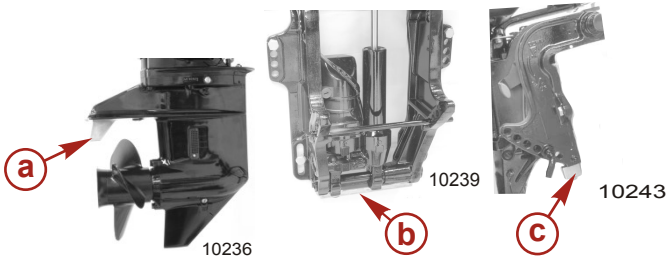
One anode installed in the engine block. Remove anode at location shown. Install anode to cover with bolt. Tighten bolt to specified torque. Reinstall cover with new gasket. Tighten bolts to specified torque



a - Cover **b -** Anode

Description	Nm	lb. in.	lb. ft.
Anode bolt	8	71	
Cover bolt (2)	8	71	

The second anode is the trim tab and the third anode is installed on the transom brackets.



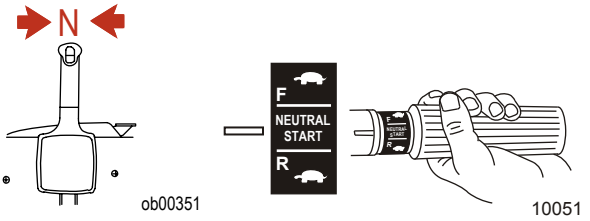
a - Trim tab
b - Transom bracket anode - long
c - Transom bracket anode - short

Propeller Replacement

⚠ WARNING

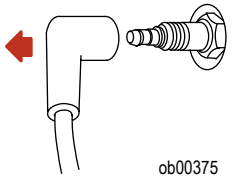
If the propeller shaft is rotated while the engine is in gear, there is the possibility that the engine will crank over and start. To prevent this type of accidental engine starting and possible serious injury caused from being struck by a rotating propeller, always shift outboard to neutral position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

1. Shift outboard to neutral (N) position.

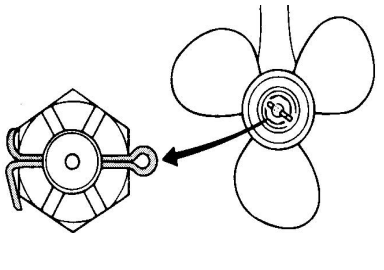


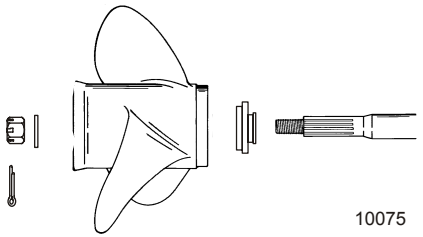
IMPORTANT: Refer to Spark Plug Inspection and Replacement for removing spark plug leads.

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



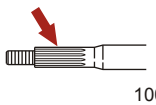
3. Straighten and remove cotter pin.
4. Place a block of wood between gearcase and propeller to hold propeller and remove propeller nut.
5. Pull propeller straight off shaft. If propeller is seized to the shaft and cannot be removed, have the propeller removed by an authorized dealer.





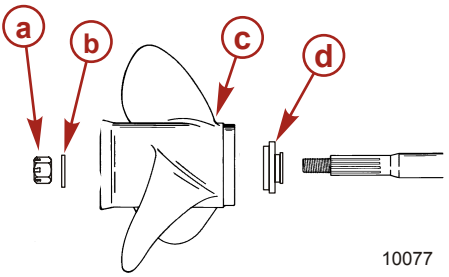
IMPORTANT: To prevent the propeller hub from corroding and seizing to the propeller shaft (especially in salt water), always apply a coat of the recommended lubricant to the entire propeller shaft at the recommended maintenance intervals and also each time the propeller is removed.

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

7. Install front thrust hub, propeller, rear thrust hub washer and propeller nut onto the shaft.

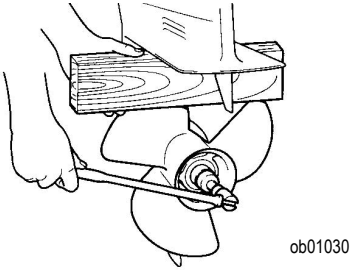


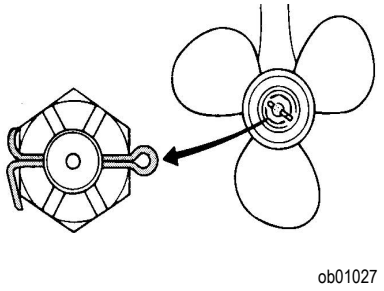
a - Propeller nut
b - Rear thrust washer
c - Propeller
d - Forward thrust hub

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

NOTE: *If the propeller nut does not align with the propeller shaft hole after tightening to the specified torque, then tighten the nut further to align it with the hole.*

9. Align the propeller nut with the propeller shaft hole. Insert a new cotter pin in the hole and bend the cotter pin ends.





Description	Nm	lb. in.	lb. ft.
Propeller nut	25		18

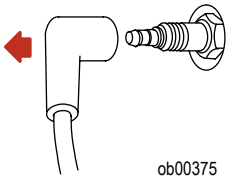
10. Install the spark plug leads.

Spark Plug Inspection And Replacement

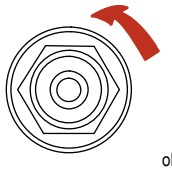
⚠ WARNING

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.

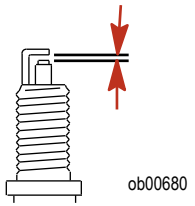
1. Remove the spark plug leads. Twist the rubber boots slightly and pull off.



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 Gap	
Spark plug	0.80-0.90 mm (0.031-0.035 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.

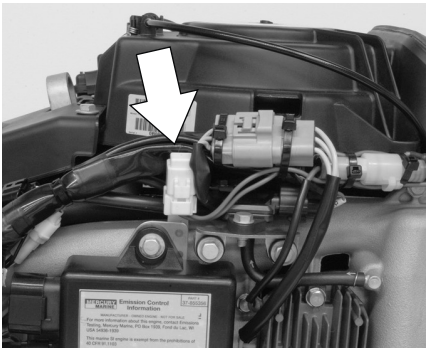
Description	Nm	lb. in.	lb. ft.
Spark plug	20		14

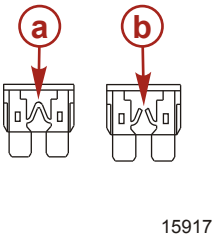
Fuse Replacement - Electric Start Models

IMPORTANT: Always carry spare SFE 20 AMP fuses.

The electric starting circuit is protected from overload by an SFE 20 AMP fuse. If the fuse is blown, the electric starter motor will not operate. 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 rating.





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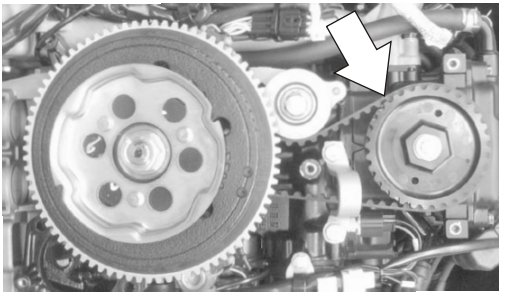
a - Good fuse **b -** Blown fuse

Timing Belt Inspection

1. Inspect the timing belt and have it replaced by an authorized dealer 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.



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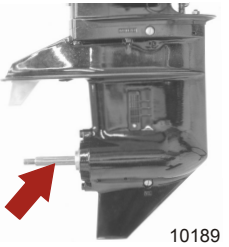
Lubrication Points

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.



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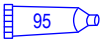
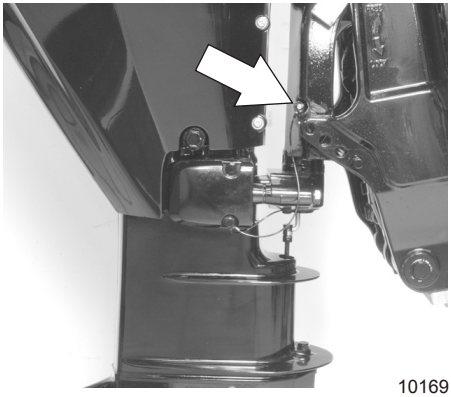
2. Lubricate the following with Quicksilver or Mercury Precision Lubricants 2-4-C or Special Lubricant 101.

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

- Swivel Bracket - Lubricate through fitting.



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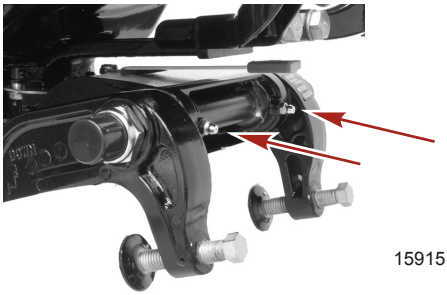
- Tilt Tube - Lubricate through fittings.



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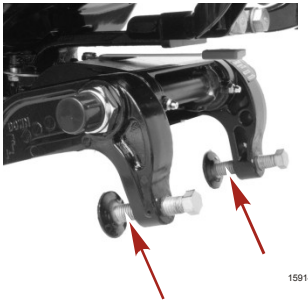
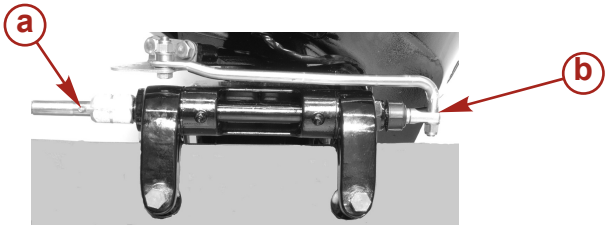
- Lubricate threads on transom clamp screws (if equipped).



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

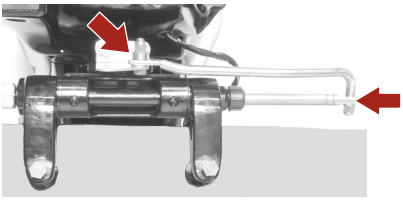


a - Fitting **b -** Steering cable end

⚠ 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.

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 lock.

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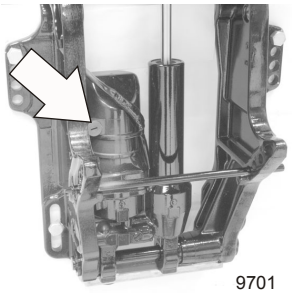
2. Remove fill cap and check fluid level. The fluid level should be even with the bottom of the fill hole. Add Quicksilver or Mercury Precision Lubricants Power Trim & Steering Fluid. If not available, use automotive (ATF) automatic transmission fluid.



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Changing Engine Oil

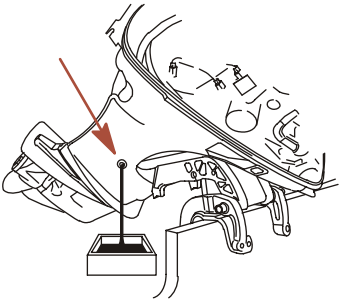
ENGINE OIL CAPACITY

Engine oil capacity is approximately 1.8 liter (1.9 quarts).

OIL CHANGING PROCEDURE

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.



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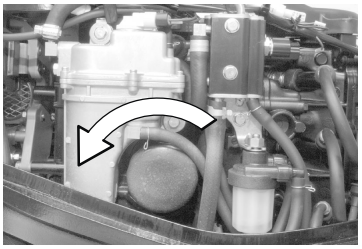
CHANGING OIL FILTER

1. Place a rag or towel below the oil filter to absorb any spilled oil.
2. Unscrew old filter by turning the filter to the left.



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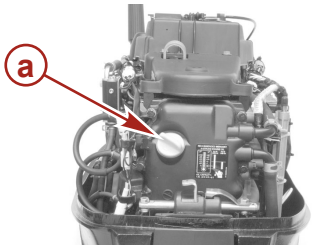
3. Clean the mounting base. Apply film of clean oil to filter gasket. Do not use grease. Screw new filter on until gasket contacts base, then tighten 3/4 to 1 turn.

OIL FILLING

1. Remove the oil fill cap and add oil to proper operating level.

2. Idle engine for five minutes and check for leaks. Stop engine and check oil level on dipstick. Add oil if necessary.



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a - Oil fill cap

Gearcase Lubrication

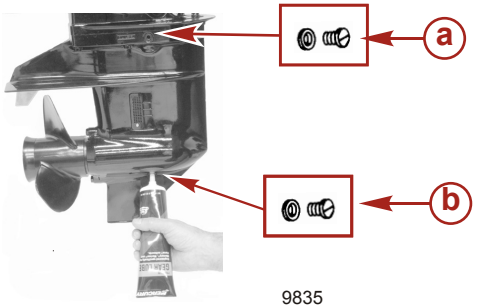
When adding or changing gearcase lubricant, visually check for the presence of water in the lubricant. If water is present, it may have settled to the bottom and will drain out prior to the lubricant, or it may be mixed with the lubricant, giving it a milky colored appearance. If water is noticed, have 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 drain pan below outboard.

3. Remove vent plug and fill/drain plug and drain lubricant.



a - Vent plug

b - Fill/drain plug

GEARCASE LUBRICANT CAPACITY

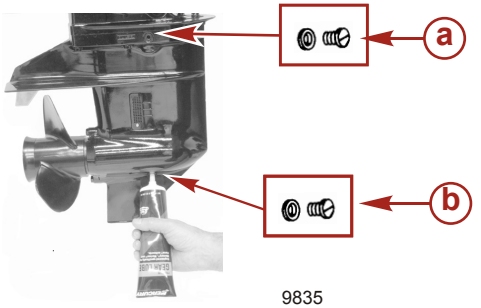
Gearcase lubricant capacity is approximately 280 ml (9.5 fl. oz.).

GEARCASE LUBRICANT RECOMMENDATION

Mercury or Quicksilver Premium or High Performance Gear Lubricant.

CHECKING LUBRICANT LEVEL AND REFILLING GEARCASE

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



a - Vent plug and sealing washer

b - Drain plug and sealing washer

IMPORTANT: Replace sealing washers if damaged.

4. Stop adding lubricant. Install the vent plug and sealing washer before removing the lubricant tube.

5. Remove lubricant tube and reinstall cleaned fill/drain plug and sealing washer.

Submerged Outboard

A submerged outboard will require service within a few hours by an authorized dealer once the outboard is recovered from the water. This immediate attention by a servicing dealer is necessary once the engine is exposed to the atmosphere to minimize internal corrosion damage to the engine.