

# Outboard motor - Drive and controls

Outboard motor engines need regular maintenance as covered in the rest of this course, especially:

- Air filter – clean or replace.
- Fuel filters – clean
- Engine oil change (4-stroke)
- Spark plug – clean and gap
- Cooling – keep intakes clear. Flush the system regularly.

This worksheet describes the maintenance jobs to do to parts other than the engine of an outboard motor. Check the manual for details for your motor.



## Lubrication points for the motor mounts

These may include:



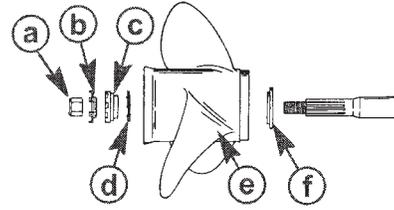
Swivel brackets –  
use grease 2 4 C with Teflon

Tilt or support levers/tubes –  
use grease 2 4 C with Teflon

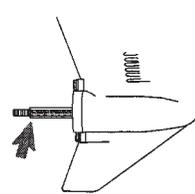
Steering linkages and pivot points –  
use light oil.

# Propeller shaft

Every few months, remove the propeller, cover the entire shaft with anti-corrosion grease, 2 4 C with Teflon or similar. This stops the shaft from corroding and/or the propeller seizing onto the shaft.



- a - Propeller nut
- b - Propeller nut retainer
- c - Rear thrust hub
- d - Continuity washer
- e - Propeller
- f - Forward thrust hub



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## Gear cases

Outboard Gear cases are sometimes called the outboard “Lower Unit”

### Drain and fill the gear case oil.

Look in the operators manual for your outboard to see how and where to check and change the oil in the gearcase. Every make/model is different in the position of filler, breather and drain points.

Most makers recommend a High Performance Gear Lubricant rather than standard automotive gear oil. It comes in bottles or tubes with special nozzles to fit the drain plug holes of the gearcase.

Unusually, most gear cases fill from the bottom, not the top! It seems odd – but that is the right way to do it. You can’t pour the oil into the top hole of the gear case because of the inside design of the gear chamber and the thickness of the oil.

- Start by draining the old oil. Place a tray under the gearcase, remove the lower fill plug. A small amount of oil will dribble out. Then, remove the top plug – and the oil will pour out.
- Insert the special nozzle of a new tube of gear oil into the drain hole – and squeeze. You fill the spaces of the gear chamber from the bottom up. Air comes out the top plug as you squeeze the tube.
- Most larger outboard lower units require two or more tubes of gear lube. If you need more than one tube of oil, replace the top plug before removing the used tube. Air pressure keeps the new oil in the case while you fit the new tube. Then open the top plug again.
- Squeeze oil in until it comes out the top hole. Then, replace the top plug, remove the tube and replace the bottom plug. Wipe up any spilled oil.



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The steps and pictures below show a typical process for some Mercury outboards.

## MAINTENANCE

### Gearcase lubrication

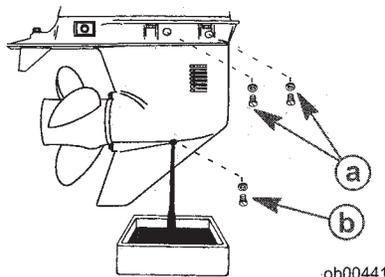
When adding or changing gearcase lubricant, visually check for the presence of water in the lubricant. If water is present, it may have settled to the bottom and will drain out prior to the lubricant, or it may be mixed with the lubricant, giving it a milky colored appearance. If water is noticed, have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

## MAINTENANCE



a - Vent plugs

b - Fill/drain plug

### GEARCASE LUBRICANT CAPACITY

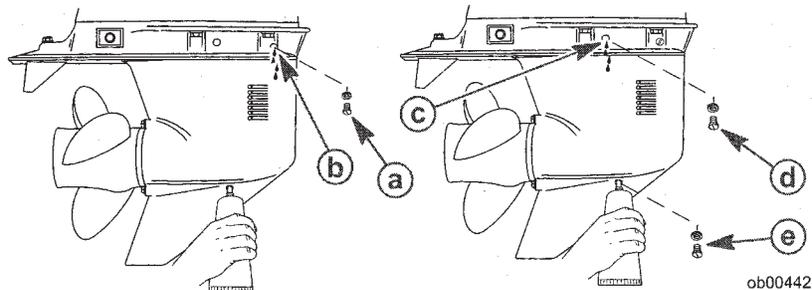
Gearcase lubricant capacity is approximately 666 ml (22.5 fl. oz.).

### GEARCASE LUBRICANT RECOMMENDATION

Mercury or Quicksilver Premium or High Performance Gear Lubricant.

### CHECKING LUBRICANT LEVEL AND FILLING GEARCASE

1. Place outboard in a vertical operating position.
2. Remove the front vent plug and rear vent plug.
3. Remove fill/drain plug. Place lubricant tube into the fill/drain plug hole and add lubricant until it appears at the front vent hole. At this time install the front vent plug and sealing washer.



a - Front vent plug  
b - Front vent hole  
c - Rear vent hole

d - Rear vent plug  
e - Fill/drain plug

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.

## Check the old oil

As you check or change the oil in the gear case, look for signs of water in the oil.

- The oil might look milky or coffee coloured – or
- Water might drain out from the plug before the oil.

Water in the oil shows you have a leaking propeller seal. The outboard will need to be fixed by a mechanic or workshop. If you go on using the outboard with water leaking into the oil you will damage the bearings and gears.

Also check the old oil for any small pieces of metal. These show damage inside the gear case. Again, the outboard will need to be fixed by a mechanic or workshop.

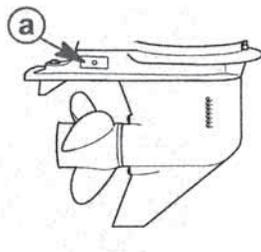
Dispose of the old oil in an environmentally safe way.

## Sacrificial anodes

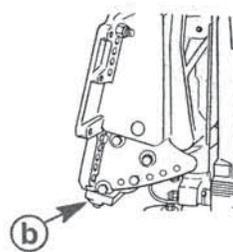
These anodes protect against corrosion. The reason they are called “sacrificial” is because the electric current from the water attacks the weaker metal of the anode instead of damaging more important – and expensive – parts (such as the aluminium housing and steel propeller) or the boat.

These anodes are usually made of zinc for salt water boating and they can be replaced easily. Most engines have 2 or 3 anodes. Look on the trim-tab and higher on the gear case.

Replace them once anodes have been eaten away by 50 percent or more.



a - Anode (2) on each side of gearcase



b - Anode on transom bracket assembly

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