

Circulate to:  Sales Manager  Accounting  Service Manager  Technician  Parts Manager

## Verado Gear Ratios

### Models Affected

Models Covered	Serial Number Or Year
L6SC 200 - 300 Verado	1B517434 - 1B530885

### Situation

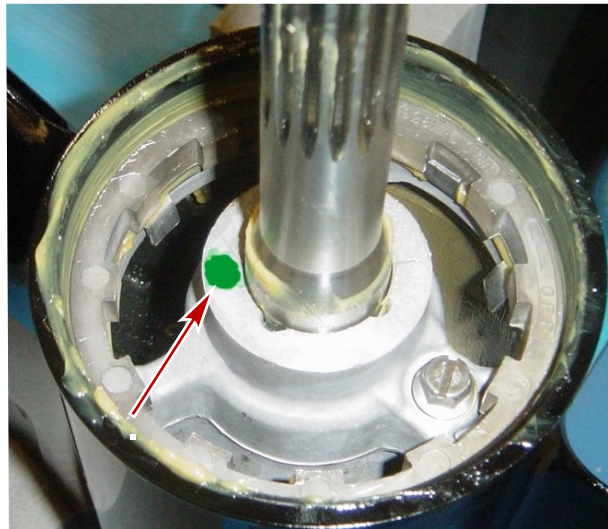
Mercury Marine has created a new gear ratio 1.75:1 for the 300 HP Verado. Visually, the gearcase externally is the same, making the new gearcase difficult to discern from the standard 1.85:1 ratio gearcase.

An incorrect ratio may be apparent by engines not matching in WOT RPM on multiple engine vessels. It may also be apparent on a proven well-known setup and the engine will not reach the proper WOT RPM with a given prop. The ratio will give a step function in RPM where the RPM will be off by one step in prop pitch, or for an example; 17" pitch to 19" pitch (200 - 350 RPM).

### Inspection/Test

The following procedures may be used to identify the ratio on the Verado gearcase.

A green dot has been added to the bearing carrier on the Verado 300 HP 1.75:1 standard rotation gearcase.



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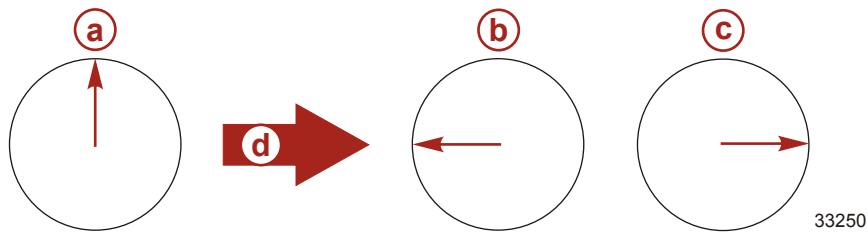
A gearcase ratio decal has been added to the Verado and 3.0L OptiMax gearcases with the starting serial number of:

L4SC	1B546402
L6SC	1B546419
3.0L OptiMax	1B529774



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The gear ratio can be determined by placing the engine in forward gear and then rotating the prop shaft five full revolutions. The distance of travel on the flywheel will then determine the gearcase gear ratio.




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**a** - Flywheel starting position (12:00)  
**b** - Flywheel ending position (9:00),  
 1.75:1 ratio

**c** - Flywheel ending position (3:00),  
 1.85:1 ratio  
**d** - Five turns on prop shaft

### Tools Required

Description	Part Number
Propeller shaft/Driveshaft adapter	91-61077T
12 mm box end wrench	

Propeller Shaft/Driveshaft Adapter	91-61077T
 <p>10805</p>	Provides a wrench surface to turn the propeller shaft or the driveshaft.

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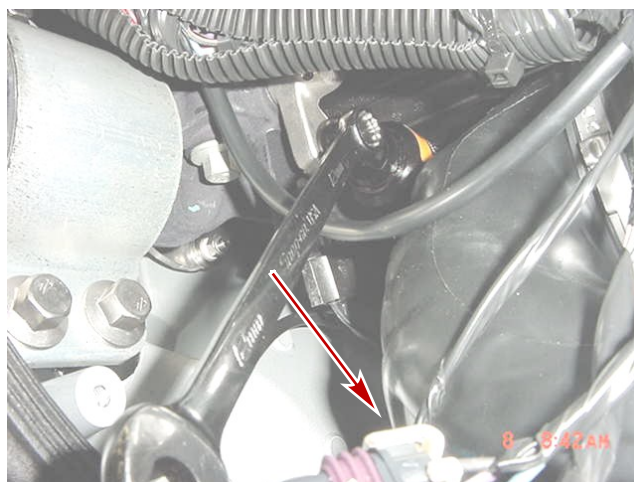
**IMPORTANT:** The direction in which the prop shaft is rotated is critical. Failure to follow procedure can result in a jump in the timing chain.

1. Remove top cowl and set aside.
2. Disconnect battery.
3. Locate 12 mm screw head on shift actuator (lower starboard side of engine.)



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4. With 12 mm wrench on shift actuator screw head, push until actuator piston is fully compressed.



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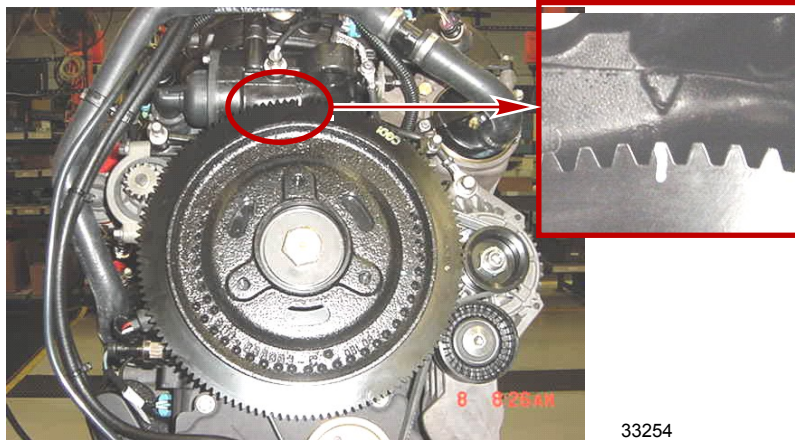
**Putting into forward gear**

**NOTE:** If engine is in neutral, flywheel will not turn when prop shaft is rotated.

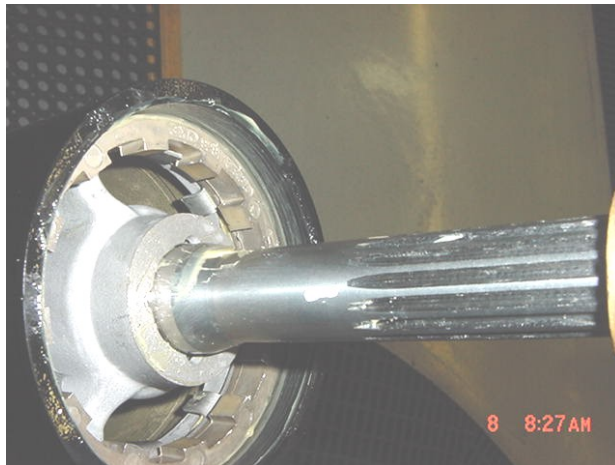
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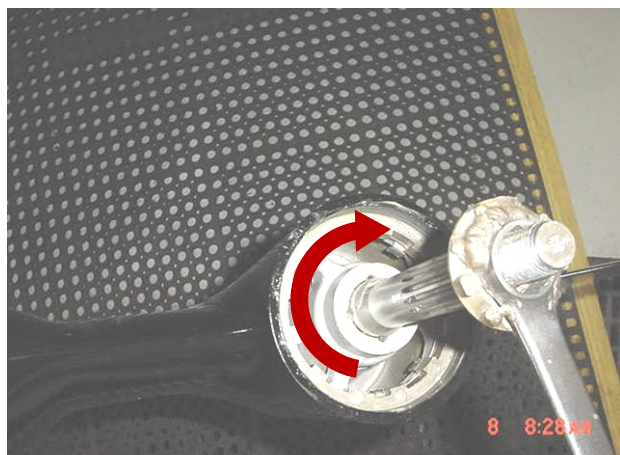
5. Mark a flywheel tooth with a paint marker stick at the 12:00 position. See inset photo below.



6. Mark prop shaft at the 12:00 position to keep track of revolutions rotated.



7. If standard rotation gearcase: Use special spline socket to rotate prop shaft five complete revolutions in a clockwise direction.

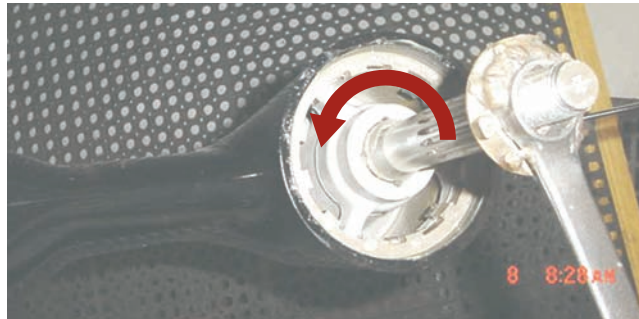


**Standard rotation gearcase must be rotated clockwise**

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8. If counter rotation gearcase: Use special spline socket to rotate prop shaft five complete revolutions in a counterclockwise direction.

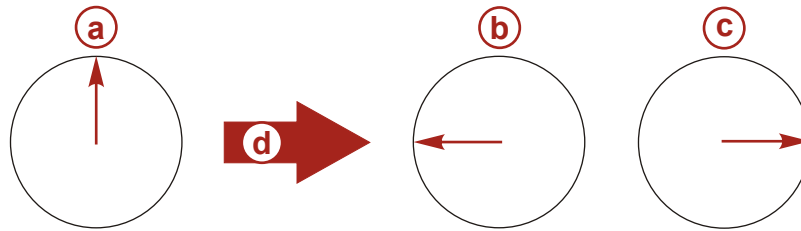


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**Counter rotation gearcase must be rotated counterclockwise**

**IMPORTANT:** The direction in which the prop shaft is rotated is critical. Failure to follow procedure can result in a jump in the timing chain.

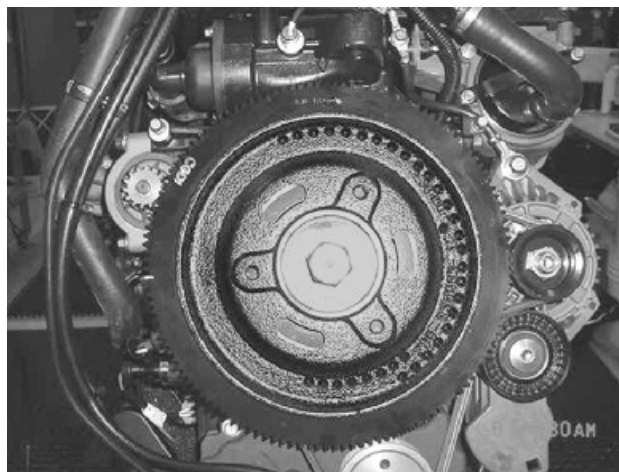
9. Observe the location of the flywheel mark after the prop shaft has been rotated five complete revolutions.
  - 300 HP Verado's should have 1.75:1 ratio.
  - 200 - 275 HP Verado's should have 1.85:1 ratio.



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**a** - Flywheel starting position (12:00)  
**b** - Flywheel ending position (9:00),  
 1.75:1 ratio

**c** - Flywheel ending position (3:00),  
 1.85:1 ratio  
**d** - Five turns on prop shaft



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**Paint mark at 9:00 position indicates this engine has a gearcase with a 1.75:1 gear ratio**

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