



Gear Housing (Propeller Shaft)

REF. NO.	QTY.	DESCRIPTION	TORQUE		
			lb-in.	lb-ft	Nm
1	1	GEAR HOUSING ASSEMBLY			
45	1	TRIM TAB			
46	1	BOLT (M8x30)		17.1	23.2
47	1	WASHER			
48	1	TAPERED ROLLER BEARING			
49	1	CUP			
50	1	FORWARD GEAR (12-29)			
51	1	BUSHING			
52	1	CAM FOLLOWER			
53	1	SPRING			
54	1	CLUTCH			
55	1	CROSS PIN			
56	1	SPRING			
57	1	PROPELLER SHAFT			
58	1	REVERSE GEAR (12-29)			
59	1	BEARING CARRIER ASSEMBLY		80.0	108.5
60	1	ROLLER BEARING			
61	1	OIL SEAL (INNER)			
62	1	OIL SEAL (OUTER)			
63	1	O-RING			
64	1	PLATE			
65	3	BOLT (M5x16)	65		7.2
66	4	BOLT (M10 x 35)		40	54.2
67	4	WASHER			
68	1	THRUST HUB ASSEMBLY			
69	1	PROPELLER			
70	1	PROP NUT		16.7	22.6



General Service Recommendations

There may be more than one way to "disassemble" or "reassemble" a particular part(s), therefore, it is recommended that the entire procedure be read prior to repair.

IMPORTANT: Read the following before attempting any repairs.

In many cases, disassembly of a sub-assembly may not be necessary until cleaning and inspection reveals that disassembly is required for replacement of one or more components.

Service procedure order in this section is a normal disassembly-reassembly sequence.

Threaded parts are right hand (RH), unless otherwise indicated.

When holding, pressing or driving is required, use soft metal vise jaw protectors or wood for protection of parts. Use a suitable mandrel (one that will contact only the bearing race) when pressing or driving bearings.

Whenever compressed air is used to dry a part, verify that no water is present in air line.

BEARINGS

All bearings must be cleaned and inspected. Clean bearings with solvent and dry with compressed air. Air should be directed at the bearing so that it passes through the bearing. DO NOT spin bearing with compressed air as this may cause bearing to score from lack of lubrication. After cleaning, lubricate bearings with Quicksilver Gear Lubricant. DO NOT lubricate tapered bearing cups until after inspection.

Inspect all bearings for roughness, catches and bearing race side wear. Work inner bearing race in-and-out, while holding outer race, to check for side wear. When inspecting tapered bearings, determine condition of rollers and inner bearing race by inspecting bearing cup for pitting, scoring, grooves, uneven wear, imbedded particles and/or discoloration from over-heating. Always replace tapered bearing and race as a set.

Inspect gear housing for bearing races that have spun in their respective bores. If race(s) have spun, gear housing must be replaced.

Roller bearing condition is determined by inspecting the surface of the shaft that the roller bearing supports. Check shaft surface for pitting scoring, grooving, imbedded particles, uneven wear and/or discoloration from overheating. The shaft and bearing must be replaced if such a condition exists.

SEALS

As a normal procedure, all O-rings and oil seals SHOULD BE REPLACED without regard to appearance. To prevent leakage around seals, apply Loctite 271 to outer diameter of all metal case seals. When using Loctite on seals or threads, surfaces must be clean and dry. Apply 2-4-C w/Teflon on all O-rings and on I.D. of oil seals. Apply 2-4-C w/Teflon to bearing carrier threads and pilot diameters.

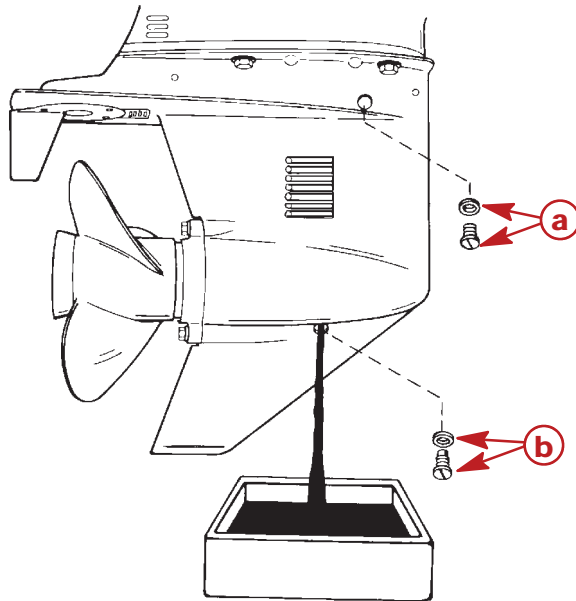


Draining and Inspecting Gear Lubricant

⚠ WARNING

If gear housing is installed on outboard, disconnect (and isolate) spark plug leads from spark plugs before working near the propeller.

1. With gear housing in normal running position, place a clean pan under housing and remove vent plug and fill/drain plug (with gaskets).



a-Vent Plug/Washer

b-Drain Plug/Washer

2. Inspect gear lubricant for metal particles (lubricant will have a "metal flake" appearance). Presence of fine metal particles (resembling powder) on the drain plug magnet indicates normal wear. Metal chips on the magnet indicate the need for gear housing disassembly and component inspection.
3. Note color of gear lubricant. White or cream color indicates presence of water.
4. Presence of water indicates the need for disassembly and inspection of oil seals, O-rings, gaskets and components for damage. Pressure check prior to disassembly to determine leak area.



Gear Housing Removal

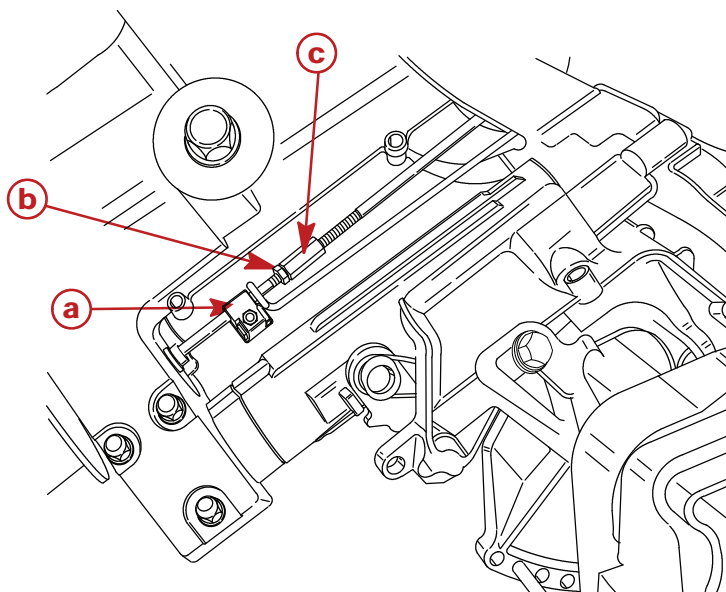
⚠ WARNING

To prevent accidental engine starting, remove (and isolate) spark plug leads from spark plugs BEFORE removing gear housing.

1. Tilt outboard to full "UP" position.

9.9/15 Bigfoot (4 Stroke)

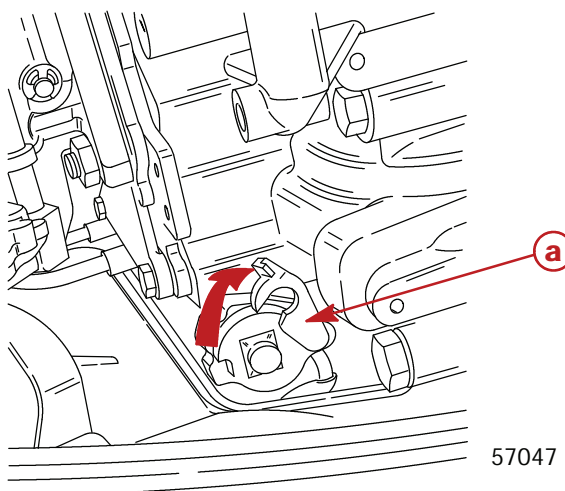
2. Remove reverse hook guide assembly from lower shift shaft.
3. Loosen jam nut and disconnect coupler. Remove jam nut to allow removal of gearcase.



- a**-Reverse Hook Guide
- b**-Jam Nut
- c**-Coupler

20/25 (2 Stroke)

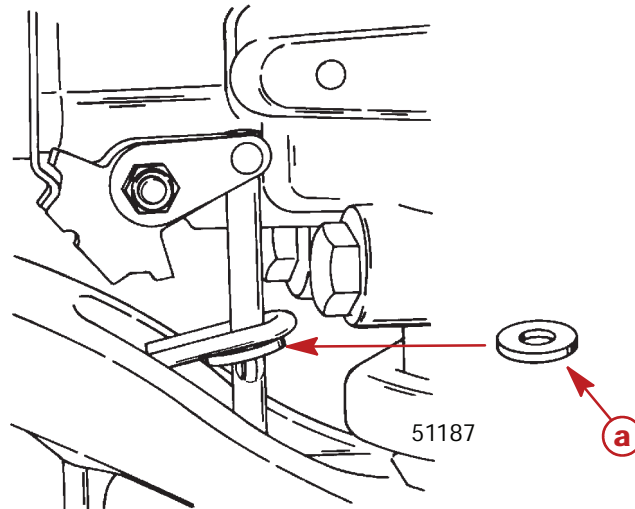
4. Unlatch and remove retainer to free shift shaft for removal of gearcase.



- a**-Retainer

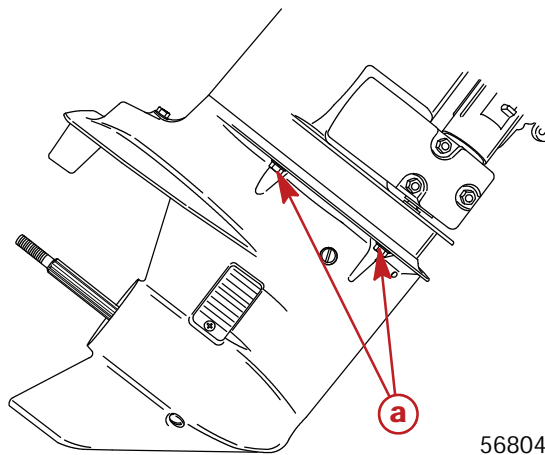


NOTE: A flat washer is located on the shift shaft near the top of the shaft. This washer may slide off shift shaft when gear case is removed. Do not lose washer as washer is necessary for reassembly.



a-Flat Washer

5. Remove four screws and remove gear housing.



a-Screws (4)

NOTE: If water tube should pull out of driveshaft housing, remove tube from water pump and insert tube back into driveshaft housing to aid in reassembly.

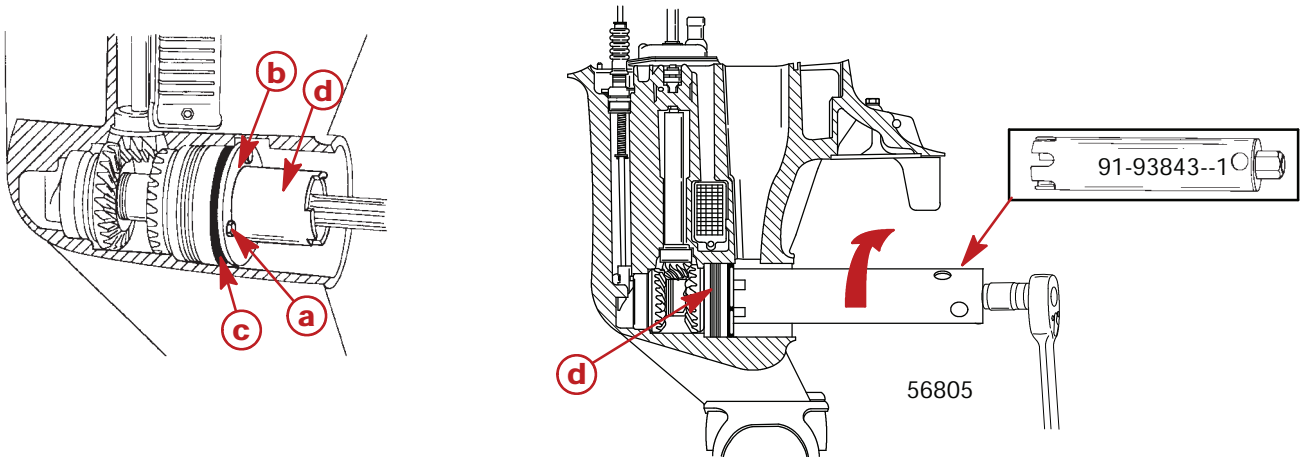


Disassembly

IMPORTANT: It is recommended that, during complete disassembly of gear housing, all O-rings and oil seals be replaced, regardless of their appearance.

Bearing Carrier

1. Remove 3 screws which secure the O-ring retainer plate and O-ring to the bearing carrier. Remove the O-ring retainer plate and O-ring from gear housing.
2. Remove bearing carrier using Special Tool 91-93843--1 (LEFT HAND THREAD).

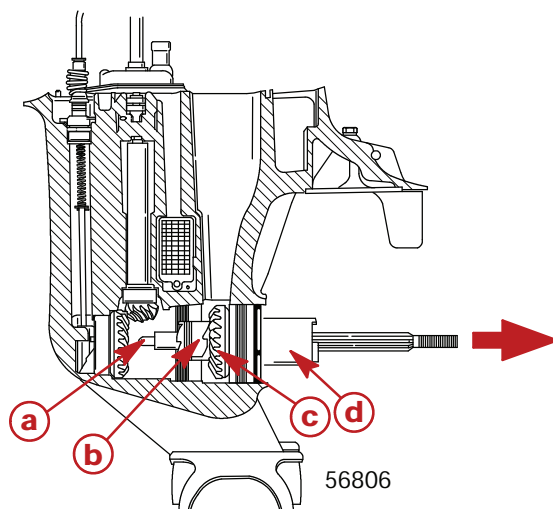


- a**-Screws (3)
- b**-O-Ring Retainer Plate
- c**-O-Ring
- d**-Bearing Carrier

3. While holding onto propeller shaft and bearing carrier, pull propeller shaft from propeller shaft cavity, as shown.

NOTE: Cam follower is free to slide out of propeller shaft.

4. Remove reverse gear and bearing carrier from propeller shaft.
5. Separate reverse gear from bearing carrier.

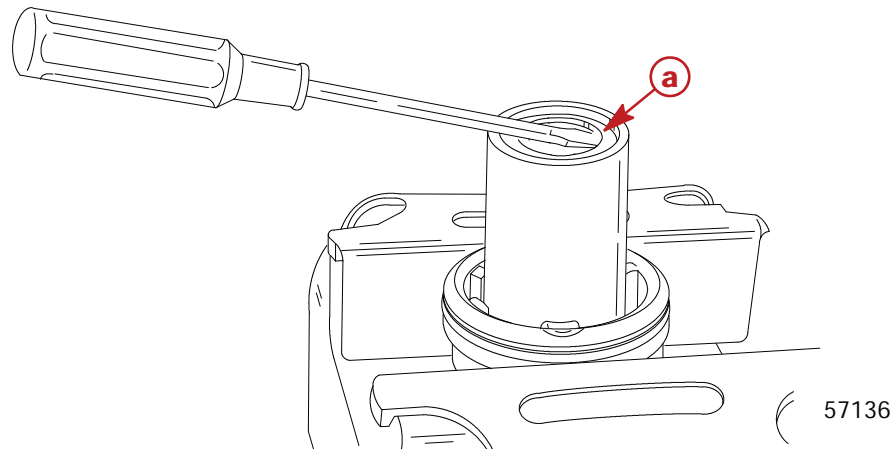


- a**-Cam Follower
- b**-Propeller Shaft Assembly
- c**-Reverse Gear
- d**-Bearing Carrier



NOTE: When using a screwdriver to remove carrier seals, be careful not to scar carrier seal surface. If carrier seal surface is damaged, replace carrier.

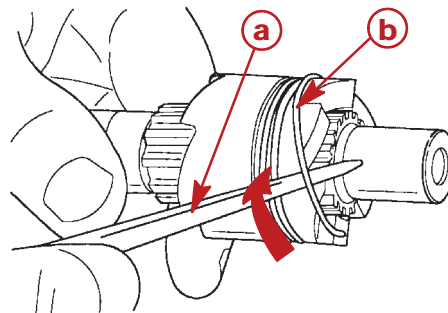
6. Secure bearing carrier in a vise. Using a screwdriver, pry out both seals from bearing carrier.



a-Oil Seals

Propeller Shaft

1. Insert a thin blade screwdriver or awl under first coil (from front) of cross-pin retainer spring.
2. Rotate propeller shaft to unwind spring from sliding clutch.



a-Awl

b-Cross Pin Retaining Ring

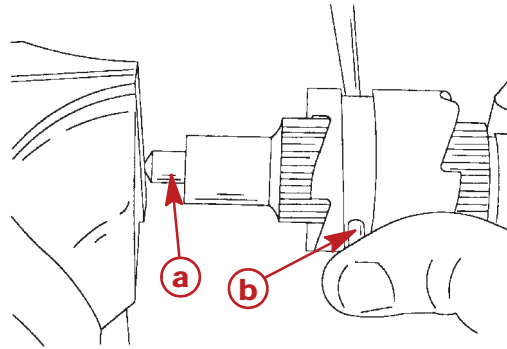
3. Insert flat end of cam follower into front end of propeller shaft.
4. Position cam follower against a solid surface.



⚠ WARNING

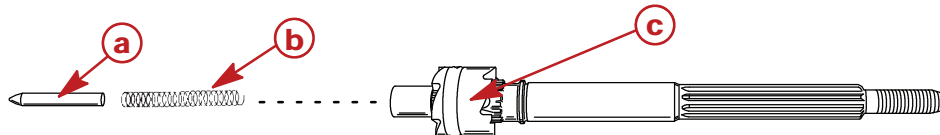
Use caution when removing cam follower. As the cross-pin is removed the cam follower can shoot out of the propeller shaft as a high speed projectile.

5. Push against cam follower. Use a punch or awl to push cross-pin out of sliding clutch.
6. Release pressure against cam follower.



a-Cam Follower
b-Cross Pin

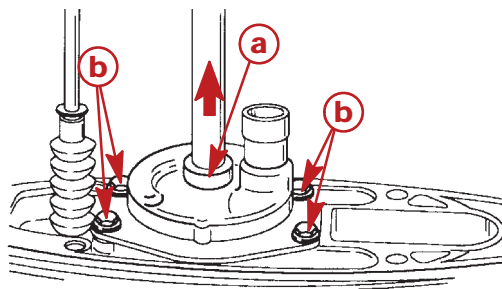
7. Remove cam follower, spring and sliding clutch from propeller shaft.



a-Cam Follower
b-Spring
c-Clutch

Water Pump

1. Slide centrifugal slinger off drive shaft.
2. Remove four (4) screws securing water pump to gear housing as shown in illustration.



a-Centrifugal Slinger
b-Water Pump Mounting Screws

3. Remove cover, nylon washers (above and below impeller), impeller and drive key from drive shaft.
4. It is recommended that impeller be replaced whenever gear case is being serviced.

NOTE: If impeller is not going to be replaced, DO NOT install impeller in reverse rotation to its original state as vanes have taken a set. Vanes will crack and break shortly after out-board is returned to service.