

Circulate to: Sales Manager Accounting Service Manager Technician Parts Manager

Gearcase Warranty Claims

Situation

The Warranty Receiving and Failure Analysis group receives and inspects all returned gearcases submitted for warranty. The vast majority of the gearcases have the failures confirmed and the warranty approved. There are a few cases where the warranty is denied because the failure was not caused by a manufacturing defect.

There are some obvious causes of failures that most service technicians can recognize as being non-warrantable such as scarred and damaged gearcases, bent propeller blades, twisted propeller shaft splines, fishing line in the seal area, etc. If any of these obvious conditions are observed while the customers are present, please advise them immediately. If there is a question of warranty, the customers will at least be aware that warranty denial is a possibility.

In some situations, gearcase replacements for warranty require a pre-authorization. Occasionally, a pre-authorization is misunderstood as an approval for warranty. **All pre-authorizations and parts returned for warranty are contingent upon the analysis of the failure by Mercury's Failure Analysis group.**

What to look for:

- Bent propeller shaft
- Twisted or broken splines on the propeller shaft or driveshaft



(a)

a - Driveshaft



(b)

b - Propeller shaft

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- Damage to the skeg
- Loose propeller nut
- Damage to the propeller
- Broken clutch or damaged clutch
- One tooth or one group of teeth sheared off on the pinion gear and the forward or reverse gear
- Combination of any of the above

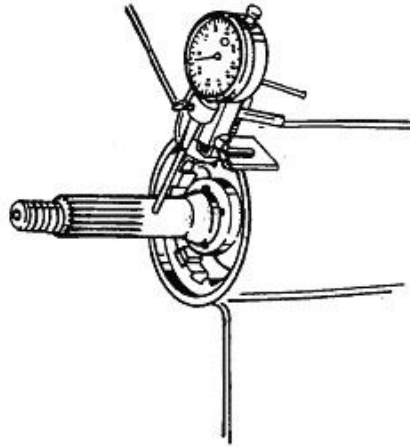
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The bent propeller shaft is the most frequent failure that is submitted for warranty and reason for claim denial. There is a very simple method that can be used to verify that the propeller shaft is bent.

Check for bent propeller shaft

- Set up a dial indicator on the gearcase.



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- Rotate the propeller shaft while observing the dial indicator.
- Measure immediately forward of the splines on 60 horsepower and higher engines.
- Measure between the splines and the propeller nut threads on 50 horsepower and lower engines.
- If the total indicated reading is more than 1.14 mm (0.010 inch) , the propeller shaft is bent.

WARRANTY

Gearcases received for warranty consideration and found to have no product defects will have the claims denied. Those gearcases will be returned.

Possible Gearcase Warranty Conditions			
Condition Found	Possible Cause	Warranty	
		Yes	No
Twisted splines – propeller shaft or driveshaft	Propeller contact with an underwater object		X
	Shifting at high RPM		X
	Boat became airborne		X
Propeller shaft broken	Engine mounted too high causing propeller shaft flexing		X
	Striking an underwater object		X
	Defective weld	X	
Rounded clutch dog edges	Shifting at high RPM		X
	Shifting too slowly		X
	Incorrect shift cable adjustment		X

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Possible Gearcase Warranty Conditions			
Condition Found	Possible Cause	Warranty	
		Yes	No
Water in lower unit	Seal leakage ¹ .	X	X
	Vent or drain screw not tightened properly		X
	Vent or drain screw sealing washer missing		X
	Foreign material in propeller shaft seal, i.e., fishline		X
Bent propeller shaft	Impact with an underwater object		X
Worn taper on propeller shaft	Improper torque on propeller nut		X
	Incorrect thrust washer		X
Excessive gear tooth wear	Insufficient gear lube		X
	Incorrect shimming ¹ .	X	X
	Contaminated gear lube ¹ .	X	X
Propeller shaft bearing failure	Damaged propeller		X
	Engine mounted too high		X
	Wrong rotation propeller		X
	Contaminated gear lube, i.e., water ¹ .	X	X
Bearing carrier/propeller shaft lost and gearcase shows signs of carrier loose in housing	Engine is mounted too high		X
	Damaged propeller		X
	Improper assembly ¹ .	X	X
Excessive propeller shaft end-play	Operation with wrong rotation propeller		X
	Improper assembly ¹ .	X	X
Burnt thrust surface on propeller shaft and reverse gear on engines 30-hp and lower	Propeller is "windmilling" while trailering		X

1. Cause of failure will determine warranty coverage

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