

# SERVICE INSTRUCTION

DATE: May 9, 2014

Service Instruction No. 1141A  
(Supersedes Service Instruction No. 1141)  
Engineering Aspects are  
FAA Approved

SUBJECT: Replacement of Worn Starter Ring Gears

MODELS AFFECTED: All Lycoming direct drive engines

TIME OF COMPLIANCE: Whenever starter ring gear replacement is necessary

### NOTE

Incomplete review of all the information in this document can cause errors. Read the entire Service Instruction to make sure you have a complete understanding of the requirements.

This Service Instruction is a field procedure to replace worn or damaged starter ring gears.

1. Examine the propeller bolt holes in the support assembly. If any bolt holes are worn out-of-round, replace the entire starter ring gear and support assembly with a new one.
2. If the propeller bolt holes are satisfactory, grind down the ring gear where there is only a thin ring of ring gear metal (at the root of the gear teeth). Do not grind into support assembly.
3. Put the ring gear assembly on a flat metal surface and break the thin metal ring from the grinding operation. The ring gear will spring open for easy removal.
4. Examine ring gear support face. Do not reuse the ring gear support if it is damaged.
5. Put the ring gear support on a flat surface with the alternator/generator belt groove upward as shown in Figure 1.

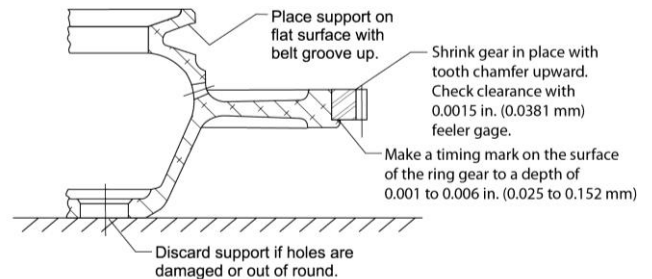


Figure 1  
Section Through Ring Gear Support

### NOTE

Table 1 identifies certified ring gear parts.  
Table 2 identifies experimental ring gear parts.

6. Refer to Table 1 or 2 to identify the correct pitch ring gear for each support assembly.
7. Heat the new ring gear in an oven or locally apply heat with a torch to approximately 450°F (232°C).
8. Assemble the heated ring gear, with the tooth chamfer upward, on the support



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9. Use a 0.0015 in. (0.0381 mm) feeler gage to measure the clearance between the ring gear and support at both locations where the ring gear and support surfaces make contact. Measure around the entire circumference. The clearance measurements must be same to ensure correct seating of the ring gear against the support face. Different clearance measurements are an

indication of incomplete assembly or warpage and must be corrected.

10. As the starter ring gear cools, it will shrink.

11. Find the timing mark on the ring gear support and extend it across the ring gear. Make a timing mark on the surface of the ring gear to a depth of 0.001 to 0.006 in. (0.025 to 0.152 mm).

Table 1  
Ring Gear and Support Assembly Part Number and Gear Tooth Pitch

Ring Gear and Support Assembly Part No.	Gear Tooth Pitch	Ring Gear and Support Assembly Part No.	Gear Tooth Pitch	Ring Gear and Support Assembly Part No.	Gear Tooth Pitch
68867	10/12	31M22194	12/14	LW-11572	12/14
74321	10/12	31M22246	12/14	LW-12226*	12/14
74460	10/12	31M22350	12/14	LW-12227	12/14
75550	10/12	31M22782	12/14	LW-13381*	12/14
76173	10/12	31M22972	12/14	LW-13382*	12/14
76944	10/12	31M22993	12/14	LW-14167	12/14
78652	10/12	77236	12/14	LW-15882	12/14
LW-11380	10/12	72245	12/14	LW-16064	12/14
LW-13675	10/12	72899	12/14	LW-16470	12/14
LW-14011	10/12	74329	12/14	LW-16471	12/14
LW-18695	10/12	74414	12/14	LW-16581	12/14
LW-19151	10/12	74977	12/14	LW-16635	12/14
31M19420	12/14	75030	12/14	LW-16795	12/14
31M19717	12/14	75221	12/14	LW-16904	12/14
31M19861	12/14	76628	12/14	LW-18506*	12/14
31M21308	12/14	74977	12/14	LW-18633	12/14
31M21951	12/14	LW-10184	12/14	LW-18736	12/14
31M21994	12/14	LW-10552*	12/14	LW-18768	12/14
31M22028*	12/14	LW-11151	12/14	LW-19163	12/14
31M22045	12/14	LW-11519*	12/14	-----	-----
* Reverse rotation					

NOTE

Experimental ring gear and support assembly part numbers are not FAA approved

Table 2  
Experimental Ring Gear and Support Assembly Part Number and Gear Tooth Pitch

Ring Gear and Support Assembly Part No.	Gear Tooth Pitch	Ring Gear and Support Assembly Part No.	Gear Tooth Pitch	Ring Gear and Support Assembly Part No.	Gear Tooth Pitch
31M26538-Y	10/12	31M22140-Y	12/14	P-12001-Y	12/14
31M26918-Y	10/12	31M22141-Y*	12-14	P-12168-Y	12/14
* Reverse rotation					

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