

»» **Service Letter**

Technical Aspects are FAA Approved

Number: L94-01A

Replaces ServL94-001

Date: 07/13/2004

Subject: Lifter or lifter body spalling, breakage and camshaft distress

Application: Any engine using Superior Air Parts, Inc. lifters or lifter bodies and/or camshafts.

Compliance: Any time lifters, lifter bodies or the camshaft is replaced or reground, or any time damaged lifters are found.

Superior Air Parts, Inc. has noted an increasing percentage of camshaft and lifter or lifter body premature failures. In our investigations, we have consistently noted the following causes for these problems.

1. Lack of proper lubrication being applied to lifter or lifter bodies and/or camshafts at assembly.
2. Engines that are not operated regularly allow lubricants to drain off the camshaft lobes and lifter faces, exposing them to excessive metal-to-metal stresses and possible corrosion.
3. Excessive lash clearance resulting in striking of the lifter face by the camshaft lobe.
4. Valve sticking, which results in excessive pressures between the camshaft lobes and lifter faces, and can result in side loads to the lifter body, which can further result in fracturing the upper portion of the lifter tube.
5. A corrosive atmosphere such as a salt water climate or heavy chemical environment leading to camshaft and lifter corrosion.
6. Improperly reground lifters or lifter bodies and camshaft.
7. A disassembly of the engine in which the lifters or lifter bodies are not re-mated to the same camshaft lobe as they were originally.

NOTE: Lifter spalling and the resultant camshaft damage has been consistently found to be caused by one of the above seven items and not by manufacturing defects in material or workmanship.

Because of the shortened service life and expensive repairs that can result from camshaft lifter distress, Superior Air Parts, Inc. strongly recommends the following guidelines be considered when our new replacement parts are used.

1. When a camshaft is replaced with a new or properly reground camshaft, then new lifters or lifter bodies should replace the original used lifters or lifter bodies.
2. If lifter or lifter bodies are to be replaced with new Superior Air Parts, Inc. lifters or lifter bodies, then a new or properly reground camshaft should replace the original used camshaft.
3. Used lifters or lifter bodies and camshafts are in questionable condition when they are not checked out by an FAA repair station certified to accomplish this work prior to reinstallation. Superior Air Parts, Inc. must refuse warranty on any new Superior Air Parts, Inc. lifter or lifter bodies or camshafts that are mated with used lifters or lifter bodies and camshafts that have not been re-certified for reuse by an appropriately-rated, authorized FAA-approved repair station.

Grinding of camshafts, lifters, and lifter bodies is specialized precise work. Anyone performing this work must have knowledge of original manufacturing and regrinding specifications for these units. Because of what has been stated in the foregoing text, Superior Air Parts, Inc. is adopting the following policy.

Superior Air Parts, Inc. will consider warranty only on those new Superior Air Parts, Inc. lifters or lifter bodies and camshafts which the claimant can substantiate were mated to new parts or to parts reground by an FAA-approved repair station certified to regrind the units involved and that the work was done properly.

Occasionally, flange headed lifters or tappet bodies (sometimes referred to as "mushroom" or "nail" head bodies) are returned to Superior Air Parts, Inc. with the flanged portion of the head broken off.

Extensive investigations have revealed the following results:

1. There are no manufacturing defects in material or workmanship in the lifter or tappet bodies as supplied by Superior Air Parts, Inc.
2. Pieces of metal or parts from other portions of the engine left in from an overhaul, routine maintenance of the engine, or that have come loose during operation, get between the flanged portion of the lifter or tappet body and the crankcase. When the lifter is pushed up in the crankcase by the camshaft in the lift mode, the foreign debris interferes with the free movement of the body, breaking off the flanged lifter head. Evidence of the foreign debris is revealed by pockets in the crankcase directly behind the flanged portion of the body, which may or may not contain metal. If these pockets are observed in this location of the crankcase, then the source of foreign debris should be located to determine the cause of failure.

Our analysis of camshaft/lifter spalling incidents since this service letter was originally issued has continued to reveal failure occurring early after overhaul. This would seem to indicate the possibility of inadequate pre-lubrication at engine assembly. Superior Air Parts, Inc. is, therefore, recommending the application of Dow Corning® G-n metal assembly paste or its equivalent, to camshaft lobes and lifter faces during engine build.