

## MAINTENANCE NOTES:

Pilots check for cause of propeller/engine vibration by:

1. Carefully inspect propeller blades for nicks, gouges.
2. Inspect spinner and hub areas for damage or cracks..
3. Inspect interior of spinner for damage and foreign objects.
4. Check for excess movement of blade tips.
5. Inspect nose-cowl /engine- hood assembly for damage, looseness and crack propagation..
6. Record the flight condition and power setting when unusual vibration is observed.
7. CAMS will be advised of findings and will service, repair or replace components as necessary.

Exerts from propeller and engine manufacturer publications.

1. Instances of abnormal vibration should be investigated immediately
2. Vibration which occurs only in a certain RPM band, or during a particular flight regime, are not often propeller related. Propeller vibration is normally felt throughout the RPM range, and increases in intensity with RPM.
3. All props vibrate to some extent during operation. Assuming that the engine itself is not at fault, propeller roughness may be caused by bent blades, blades out of track due to improper mounting of the prop on the engine shaft, imbalance, a propeller loosely mounted on engine shaft, blade angles between blades out of tolerance with respect to each other and spinner imbalance due to improper mounting or to dirt, snow or ice inside the shell.
4. The inherent vibration of a piston engine (especially the large-bore 4 cylinder opposed type we have) masks a certain level of prop imbalance and the added benefit, if any, of dynamic balance may not be noticeable.
5. Static balance of propeller is performed at factory, dynamic balance is performed on the airplane and is left to the operator's maintenance facility. Note that if dynamic balance correction is applied to a propeller in perfect static balance, then it is no longer statically balanced.
6. Other possible sources of power-plant vibration are aging engine mounts, worn engine bearings, worn piston rings and engine accessories such as the alternator. Engine timing and fuel/air mixture settings may also contribute to a less than smooth operation.
7. Lycoming does not recommend additional internal custom balancing of their engines.

Recommended action for CAMS to follow, before or during annual inspection.

1. Perform an accurate check of propeller blade tracking.
2. Perform all annual inspections and tests necessary to determine the overall health of the power-plant.

Please provide me with your inputs.

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