

Gentle or Rough: How Do You Like It?

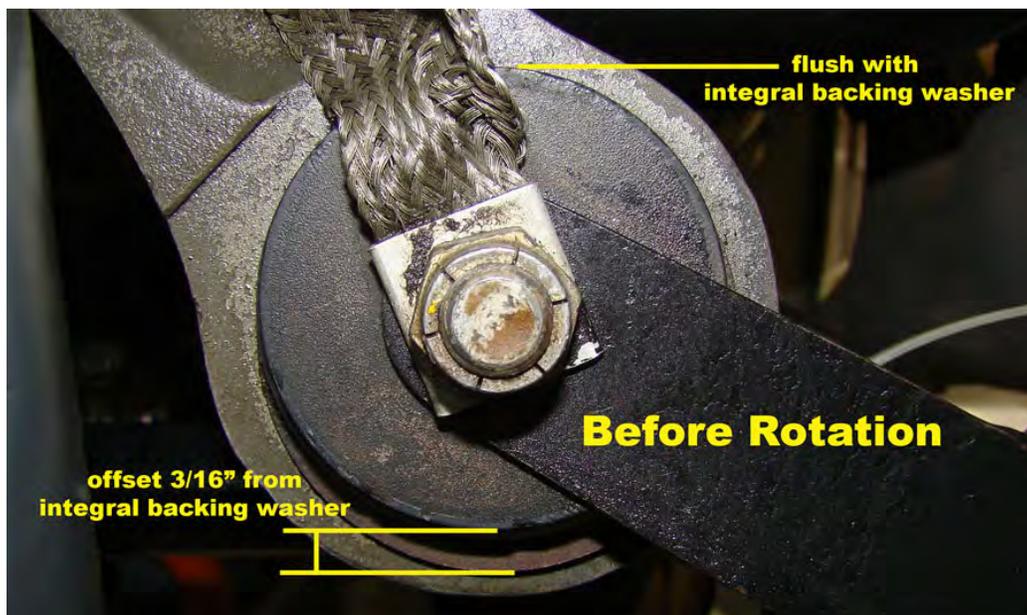
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A recent conversation with a C-182 Skylane operator reminded me of the need to be aware of any change in the “feel” of our aircraft. He mentioned his engine had been feeling rough for several years and getting rougher. The usual culprits – plugs, ignition timing, mag output, carb function and ignition wires – all checked good and unchanged. He was puzzled. Recalling an experience with one of my early 182s, I suggested he check his engine mounts. He switched them and now claims turbine-like smoothness; just like a Birddog.

Lord mounts don't last forever. Those resilient mounts can be recycled (sort of) but there comes a point when they must be replaced. With the annual operating hours typical in our fleet, you'll probably replace them midway to TBO. They'll deteriorate and age out before your engine times out. Once those mounts age out, your instruments will soon shake, rattle and roll their way to your favorite instrument overhaul shop. Your avionics shop owner will tell his kid to go ahead and complete that Harvard application.

The Check-Up:

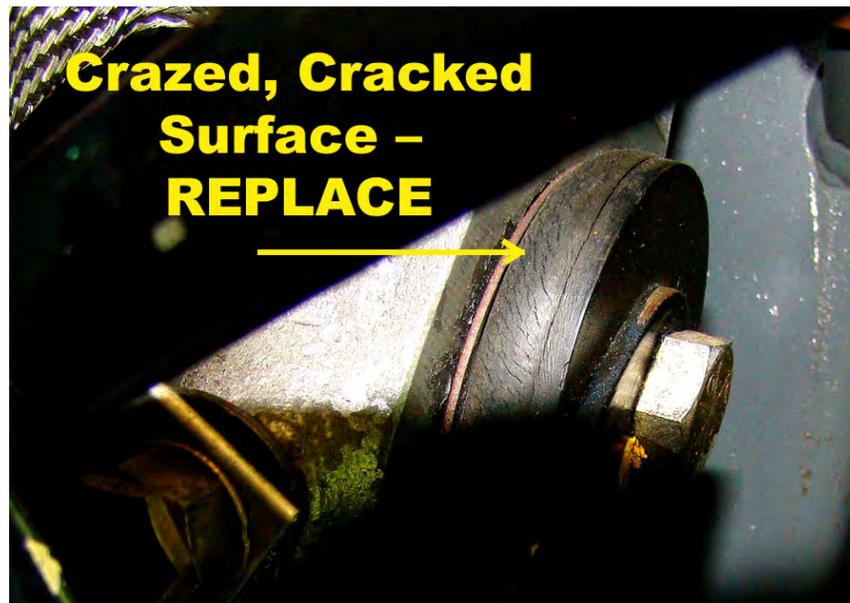
First, inspect your engine isolation mounts. Look for displacement of the Lord mounts' rubber donuts. For -11 mounts, that's one edge “squished” unevenly past the edge of the integral metal washer-like disk. The central mount bolt unevenly loads the rubber donuts and that, plus vibration, the many heat/cool cycles, huge volumes of ozone-containing air flowing through the cowl, and plain ol' aging cause degradation and slow migration of the rubber. The migration of the bolt from the center of the mount pushes the rubber to out-of-round. If that increased “squish” in one direction is an extra 1/16” or more larger than the rest of the mount's rubber margin, the mount should be serviced or replaced.





Examine the condition of the rubber. One of the best tools is your fingernail. Push straight in against the rubber with your fingernail:

- Does the rubber “give” or is it hard as a rock? Replace that rock.
- Does the depressed rubber return to the surface’s original height? If a noticeable depression remains, it’s time to replace the mount. An abrasion remaining on the surface is OK; a permanent dent is not.
- Is the rubber’s surface cracked and crazed like the sidewalls on Grandpa’s pre-WW II tires? Replace that mount.



The Replacement:

Replacement of the Lord mounts is straightforward. Your A&P has likely done dozens of sets – if not hundreds. Replacement is intuitive. But be sure to also follow the Depot Manual’s instructions while supporting the engine from the eye installed at top center of the crankcase. Correct torque of the mounting bolt–nut–washer(s) combination is very important to prevent premature rubber migration or excess vibration. Check and re-torque them after the full weight of the engine is back on the plane. Torque values are 200 in-lb, or 16.5 ft-lb.

The Numbers:

The O-470-11 engine series Lord mounts (Lord # J2245-1 rubber donut; 2/location, 4 locations/engine for a total of 8 required) and the O-470-15 engine series Lord mounts (Lord # J6545-1 assembly including two J3049-34 rubbers and a J6544-1 spacer, 4 locations/engine for a total of 4 required) can be spendy. But it need not be a deal-breaker. Check the usual sources as well as some not often utilized. Example: Our Lord J2245-1 rubbers for O-470-11s are also used with a number of the E-model engines installed in early Beech Bonanzas. The Beech part number is 352043. Remember, four *pairs* are required. Older Beech parts are often available at deep discount prices from many sources.

Within the past two years, I purchased a full set of four pair for \$280. That's less than the cost quoted by the usual sources for just a single pair. Get a Trade-A-Plane and check out Fresno Air Parts' ad just inside the front cover. Be sure to check their requirement for pre-payment by check or money order. I've repeatedly used Fresno and never had a hiccup.

When buying any resilient engine mount, check its cure date and condition. A packaged Lord mount with a cure date within the last five years means there should be no issues. An earlier cure date means you need to evaluate condition as described before; give your fingernail a workout. If the mount has been stored in a sealed bag or tight wrapping, protected from light and not exposed to air (ozone) circulation, you should see little difference between an unused three-year-old mount and unused fifteen-year-old mounts. The most recent mounts I purchased have a 1994 cure date and are as soft and resilient as others with a four-year-old cure date. Just be sure to check them and have your A&P confirm suitability for use.

The Service:

Servicing the mounts is less common than replacement. In this disposable society, mounts that were once serviced are now often discarded. If each rubber is uncracked, uncrazed and still resilient but you have that excess "squish" showing, you can service your existing Lord mounts.

With the engine weight borne by a hoist carrying the load through the engine's top center hoist point, loosen the center bolts for each engine mount one at a time. *Loosen and work on only one at a time.* With the bolt loosened, you may rotate the rubber donut 180 degrees to reverse the direction of load through the elastic mount. If you find one of the two in the pair has been deformed ("squished") and the other hasn't, swap the donuts – one with the other. Again, be sure the donut is rotated 180° from its original position. Retorque each bolt and nut to 200 in-lbs (16.5 ft-lbs) before moving on to the next mount. Accomplish the reorientation on all four pair.



That reorientation should be done only once. When you again see the displaced edge in a few years, your Lord mounts have most certainly arrived at end-of-life. At that point, new mounts are your only acceptable answer.

The Speedy Version:

The preceding information applies to the -11 style Lord mounts. For our high-speed -15 brethren, the same concepts apply PLUS you must be sure to swap the top and bottom rubbers at each mount's location. And, confirm you rotate each rubber 180° when reinserting them in each mounting pad's feed-thru hole. That is, the rubber edge that was a top half's outboard edge should become the inboard edge when it's installed as the bottom half.

That's It – That's all there is to it. Now, sit back and enjoy the feeling of a smooooth engine. Your instruments, avionics, exhaust components and check book will most certainly enjoy it, too. Too bad about that kid that planned to go to Harvard, though...

– Woof, Woof! –