

# ABOUT THAT GEARBOX...

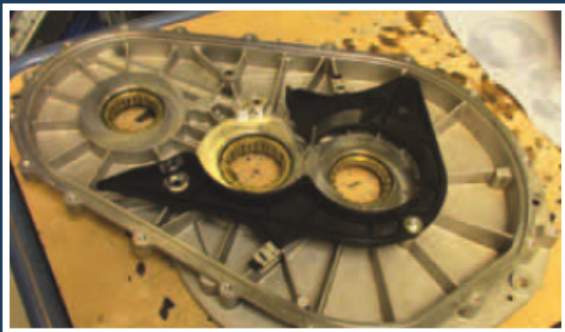
Other than radials, geared engines haven't enjoyed what we would call happy times in aviation. So-called GTSOs often appear in the same sentence with the words notorious or troublesome. But with the automotive engine that forms the Centurion core engine, a gearbox is unavoidable to reduce engine RPM to something a prop can ingest.

Further, because diesels have sharp torque pulses, the gearing has to be isolated to reduce wear on the component parts. The original Thielert company solved this problem effectively, if not durably. The original engines had what was basically an automotive-style clutch plate on the flywheel between the crankshaft output shaft and the gearbox input. It was designed to—and did—slip enough to knock the peaks off the torque pulses. The clutch itself worked well enough, but it was a replacement item in the engine's initial 300-hour gearbox inspection/replacement cycle. Continental's Niels Mundt said there were issues with leaking oil seals that trashed the clutch friction material, but these were addressed.

New engines are equipped with a dual-mass flywheel arrangement that uses captured springs to isolate torque pulses and this part is good for the 1500-hour current TBR of the 2.0 engines. But the gearbox still requires a 600-hour inspection and replacement.

The new gearboxes are cast rather than machined from billets, as the originals were, and, surprisingly, it's not the gears that need replacement but three bearings that contain the shafts, one from the crankshaft, one

to the prop and one an idler gear. In fact, most owners get overhauled gearboxes—at \$3450 a pop—with used gears, but new bearings. So clearly, the gears can go the distance



on the current TBR, or at least more hours. Mundt said Continental is still collecting wear data on the bearings toward life extension of the gearbox. No promises on when that will be. Continental CEO Rhett Ross said the company would like to get the gearboxes to half the life of the engine.

It's not a trivial consideration, either. Even if the gearboxes went to the current life of the engine, that's worth more than \$4 per operating hour. On a 2000-hour engine—a lifetime gearbox—that saves more than \$5. That might not sound like much, but it's \$10,000 over the life of the engine—half what it costs to overhaul a Lycoming O-360.