

aluminum and will certainly weaken the part. Heat treating the part again will also distort it, causing the mating surfaces to misalign. It is for that reason that welded crankcases typically leak oil. But the most skillful welder under the best circumstances still may not solve the problem. The original crack was almost certainly the result of fatigue or lack of strength in a critical area. Even after welding, porosity and invisible subsurface cracks may act as stress concentrators and cause premature failure. Dye penetrant inspection will not reveal this problem. Only X-ray produces a suitable inspection, but few operators have the equipment. All too frequently the result is failure in the same area.

Also be wary of the operator who recommends a top-overhaul; that should only be done when needed on the diagnosis of a competent mechanic. Too many engines get topped for no reason. The average engine should run to TBO if it received a good overhaul to begin with and is properly operated and well maintained.

Rebuilt Engines

The option to overhauling an engine is to purchase a rebuilt one (Figure 3-2). Rebuilt engines can only be done by the OEM because the finished engine is considered “zero time.” That means it is legally a new engine, with a new serial number, new logbook, and new nameplate. In fact, it is unlikely you will get your original crankcase back. All tolerances are factory new, and only new parts are used in the process.

Choosing an Overhaul Facility

Considering the options, where to get the work done can be a difficult question. While average FBOs (fixed-base operators) don't have the equipment, expertise, or labor to perform engine overhauls, that shouldn't stop an owner from contracting with them to have the work done. Your local FBO acts as the liaison between you and the overhaul facility. You give them your airplane with the old engine and they give it back to you ready to go. If anything goes wrong later on, it's nice to be able to stroll over to your local FBO, walk up to a familiar face, and have a little nose-to-nose chat.

As liaison, the FBO will do the R&R (removal and replacement) and often overhaul the accessories while the engine is out. The actual aircraft never leaves your home airport. They handle all the engine shipping and paperwork. And because most overhaul shops give FBOs a 10%–30% discount not available to the customer, the cost is the same as if the customer took it to the overhaul shop. Finally, you are supporting your local FBO at no cost, and significantly less trouble, to you.

If you prefer to contract directly with an overhaul facility, consider doing the following. There are numerous ads in trade magazines. Contact some overhaul shops and listen to what they have to say. Then ask for, and call, a number of references. Discuss your intentions with your local mechanic. Find out where the mechanics are sending their engines for overhaul. Ask prospective companies for a copy of their warranty and look it over very carefully. A warranty says a lot about what the facility thinks of its own work.