OVERHAUL OR IRAN?

Published TBOs for aluminum propellers vary, although they generally range from 1500 to 2400 hours of service or 60 to 72 months, whichever comes first. For reference, figure on $2000 to overhaul a two-blade prop on a Cessna 182, according to Bryan Mathews, President of H & S Propeller Shop in White Lake, Michigan—near Pontiac Airport.

If a blade is needed, plan on $1400 for a used, serviceable blade, or $3000 for a new one. Mathews told us that a set of blades usually will make it through three or four overhauls unless the prop is operated regularly on gravel or the owner delays overhauls. If it's been a long time since the prop was in the shop, there's a good chance there will be enough corrosion in the hub to require replacement of internal components—raising the price.

For a constant-speed propeller, an overhaul consists of an initial visual inspection; disassembly; cleaning of all components that are not to be replaced; inspect, measure, conduct nondestructive testing, which may include dye penetrant, eddy current and/or magniflux; rework/refinish components to be reused; cadmium plate components with a corrosion risk; finish/paint components; replace hub studs, miscellaneous hardware, seals and gaskets; reassemble; balance; and bench test—set pitch angles and assure the blades match at all reference stations.

Fixed-pitch props get reconditioned, although the process is often called an overhaul. H & S Prop charges $700 to recondition the prop on a Grumman Tiger. It consists of inspecting the entire prop and measuring blade width, thickness and angle at each reference station (defined distances from the hub), check face and edge alignment, grind out nicks and gouges, strip the paint, inspect for cracks, inspect the bolt holes and hub, correct any errors in blade angle and track and then paint and balance the prop.

Overhauling a prop at TBO is not required for Part 91 operators. In the real world virtually no one overhauls a prop at TBO (even some Part 135 operators have extensions). If you don't overhaul your prop at TBO, we think a wise alternative is to send it to the prop shop for what's called a reseal or IRAN (Inspect and Replace As Necessary).

That means taking the prop apart, inspecting it for wear and corrosion, making needed repairs, replacing seals and gaskets and putting it back together. According to Mathews, IRAN for a Cessna 182 prop costs $900 and often solves a developing internal problem, avoiding an overhaul that might otherwise soon be necessary.

The bottom line of the interviews we conducted and research we did was that waiting as long as possible before sending a prop out for work—usually an overhaul—increases the risk that the overhaul is going to be very expensive. This is because the effects of corrosion are going to require replacing a lot of components in the hub, or you're going to have to replace the entire prop.

We appreciated the approach Derek DeRuiter, a Part 135 operator, uses for his seaplanes—he sends props for reseal at 1000 hours because his experience has been that it means he's much less likely to have to pay for replacement parts when he sends them out for overhaul at TBO.

Our recommendation? For a fixed-pitch prop, have it reconditioned when you have the engine overhauled. For a constant-speed prop, if you haven't already done so, send it out for reseal/IRAN at engine overhaul—that way there's a good chance it won't need overhaul until the next time you overhaul the engine and even then, it may not need replacement blades or hub components.