

Chapter Four

may cause high operating temperatures. Even a faulty ignition system can show up on the CHT gauge as too hot.

The best plan of attack for unusually high temperatures is to enrich the mixture, open cowl flaps, reduce power, and reduce drag as much as possible to keep up the cooling air-flow. If none of those have the desired effect and the engine is above the safe operating temperature outlined in the POH, land the plane as soon as possible. Meanwhile, keep a sharp eye on the oil temperature gauge; if it too begins to rise beyond the maximum limit, you have a real problem on your hands and you should find a place to land immediately.

PREVENTIVE MAINTENANCE

Preventive maintenance starts with a proper preflight inspection and encompasses all aspects of engine operation, both on the ground and in the air. The best preventive maintenance is to use the engine in normal operations on a regular basis. Gaskets, seals, and O-rings need frequent lubrication to stay in condition, as long periods of inactivity lead to oil leaks. With time, oil thins and evaporates, allowing the moisture in the air to coat the cylinders and begin the rusting process. Changing the oil as recommended and flying the airplane at least once a week should take care of the worst situations.

If average humidity is below 70 percent, you need only fly the airplane once every two weeks. To be beneficial it is necessary to actually fly the airplane at cruise for at least 30 minutes each time. Anything less provides insufficient time for the oil-entrained moisture to dry out. Merely doing an occasional runup does more harm than good. It causes a dramatic temperature change in the engine that, when shut down, causes water to condense inside the cylinders, leading to rust and corrosion. Because ground operations in general aren't very good for an airplane, it shouldn't be difficult to imagine that they are pure poison as an airplane's sole weekly exercise.

While the FAA only requires private aircraft to undergo an annual inspection, next to regular use, the 100-hour inspection is the best preventive maintenance. Engines don't just quit; they gradually get sick. You'll see symptoms long before anything really nasty happens, and the 100-hour inspection looks for such telltale signs.

One of the prime indicators of improper operation and engine health is spark plugs. Every 100 hours, the plugs should be removed and checked; normal plugs will have a sort of brownish-gray color. There are three basic problems that this check will turn up: fuel fouling, lead fouling, and oil fouling. Fuel fouling is indicated by sooty, black deposits, commonly a result of not leaning during high-altitude operation (excessively rich mixture). Other conditions that may lead to fuel fouling are too rich an idle mixture, excessive ground operation, frequent power-off descents at full rich, and too low an operating temperature.

Lead fouling, indicated by gray deposits on the plugs, is normal in small amounts. Large buildups will require frequent plug cleaning and generally are the result of too high an octane fuel. Black, wet deposits, particularly on the bottom plugs, indicate oil fouling. Accompanied by high oil consumption in a high-time engine, this easily could mean that an engine overhaul is due. You probably will find excessive cylinder-wall wear, worn valve guides, or even a broken piston ring.