



Tips on Engine Care



*Your Personal Guide to the
Continental Engine*



Over time, the cylinder wall may develop a glazed coating which is generally beneficial to cylinder life as a rust inhibitor. The glaze is a residue of hydrocarbon constituents and lead deposits which serve as both a rust inhibitor and lubricant. Changes and variations in fuel constituents and types of oil used in recent years may impact this beneficial coating. Our revised hone pattern, reduced oil control ring tension and manganese phosphate coating are intended to offset this impact.



Typical Exhaust Valve



Burned Exhaust Valve

Ensure the intake and exhaust valves are inspected by a qualified technician to detect the cause of air leaks that can occur past a valve and look at general condition. Refer to most current version of Service Bulletin SB03-3.

Oil Consumption Trend Monitoring

A formal oil consumption record should be generated for the engine installation. If oil consumption is more than one quart every three hours of operation or if the oil consumption trend has changed substantially, conduct the differential compression and borescope examinations defined by sections 1 and 2 of the Cylinder Health Checklist. If the oil consumption trend is stable and the oil consumption is less than one quart every three hours, continue with the Cylinder Health Checklist.

1. Record type of oil used.
2. Record the number of quarts of oil added.
3. Record oil change interval.
4. At every oil change, strain the oil and examine for debris. Also, cut open the oil filter and examine it for unusual material content. Record examination results of the strained oil, oil filter or screen. The presence of a heavy amount of material will require investigation to determine the source prior to further engine operation.

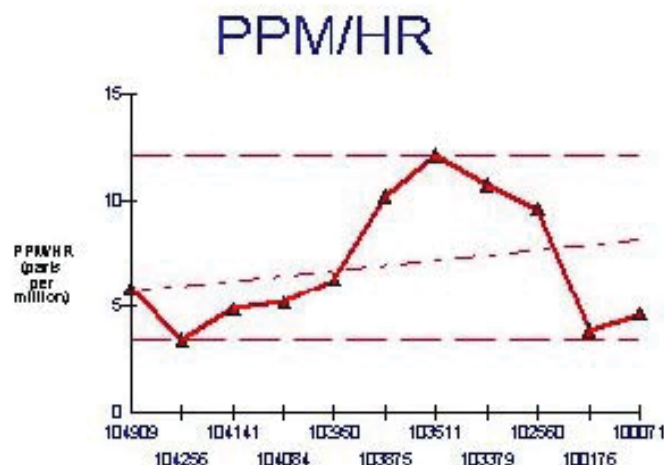
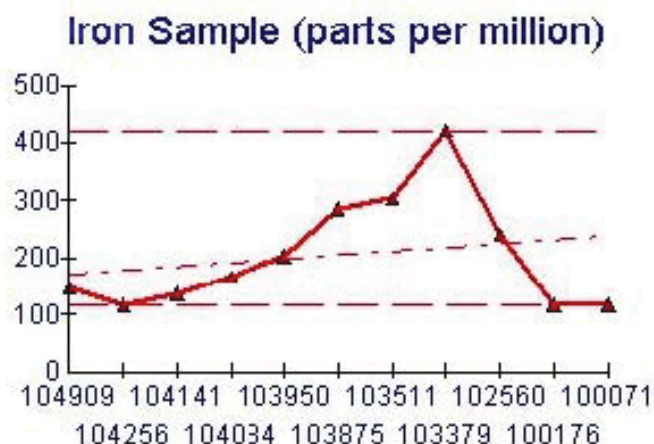
Aircraft piston engines continuously wear over their service life. One indication of the rate of wear, or indication of the need for inspection or service, is found in oil consumption trends. Every owner/operator and maintenance facility should maintain formal records on oil consumption in the aircraft log book.

Oil consumption can be expected to vary with each engine depending on the load, operating temperature, type of oil used and condition of the engine. A cylinder differential pressure check and borescope inspection should be conducted if oil consumption exceeds one quart every three hours or if any sudden change in oil consumption is experienced and appropriate action taken.



It is important to note that the current technology of general aviation aircraft reciprocating engines requires a certain level of oil consumption to ensure proper lubrication of the cylinder walls and rings. Aircraft engines operate under much greater loads and at higher temperatures than automotive engines and require correspondingly greater oil use. In addition to lubrication, oil serves as a coolant and as a means to transport contaminants, wear particles, acids and moisture from the engine at oil changes. Frequent oil changes based on operating hours or calendar time, are critical to engine life. Approved oils are listed in the latest version of the Continental Motors service bulletin concerning approved fuel and oil grades. *Oil consumption trends are excellent indicators of cylinder bore and ring condition.*

Oil Analysis Trend Monitoring



If an oil analysis profile has been established, review the results for indications of wear or contamination. Based on the latest oil analysis, record the results of the profile trend. If the trend indicates an abnormal increase in material amounts, reference the recommended actions provided by the oil analysis laboratory. If no prior oil analysis exists, initiate sampling according to the instructions you receive with the oil analysis kit.

Oil analysis is a tool to monitor wear material and contaminants in the engine. To be effective, a baseline of at least three analyses must be established from a single source to provide trend characteristics. For those engines with an established oil analysis profile, changes in iron, copper and other tracked elements can indicate unusual wear. In such cases, other diagnostic tools such as differential compression checks, borescope inspections, oil filter/screen examination and oil consumption trends can be useful in identifying the problem. Oil analysis can also detect air filtration or induction system leaks indicated by high silicon content. Note that oil analysis does not provide any indication of cracks, leaks or similar situations that could result in engine problems.

NOTE: To establish a meaningful data base for comparison, the oil samples must be taken on a regular schedule using the same sampling technique and laboratory. The engine must have operated long enough to obtain normal operational temperatures and the oil sample taken within 30 minutes after engine shut down. The tube or funnels used to drain the oil from the oil sump must be clean and free of any foreign material or residue. If the oil sample is taken from the oil as it drains from the sump, allow approximately 1/3 of the oil to drain prior to taking the sample. If the sample is taken via the oil filler or other location using a sampling tube it is critical that the sample not be taken from the bottom of the sump, but at a location 2 to 3 inches above the bottom of the sump. Under no circumstances should an oil sample be taken from the oil filter canister.