

MANDATORY

SERVICE BULLETIN

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Service Bulletin No. 398
Engineering Aspects are
FAA (DEER) Approved

SUBJECT: Recommendation Regarding Use of Incorrect Fuel

MODELS AFFECTED: All Avco Lycoming aircraft engines.

TIME OF COMPLIANCE: Anytime engine has been operated with unspecified fuel.

The incidence of engine malfunction due to use of fuels that are not suitable has noticeably increased during the past two years. Usually, this happens without the pilots' knowledge at the time the aircraft is refueled; and the degree of inefficiency of operation, or actual damage to the engine may range from unnoticeable to severe damage or failure. The extent of damage varies accordingly as the duration of run, engine power level and the type of unspecified fuel consumed; a blend of turbine fuel and Avgas can prove to be a particularly ruinous mixture in a very short time. Actually, any mixture of fuels and additive materials not approved for Avgas that result in a lower than specified octane rating are equally harmful. Consequently, because of the many variables that are a part of this problem; it is impossible to determine the airworthiness for any Avco Lycoming engine that has been operated with unspecified fuel – except by detailed inspection of the engine by qualified personnel. However, to help combat this problem we recommend the following:

1. Know what aviation fuel grades are specified for your engine and their color code.
2. Do not accept any aviation fuel that has a lower octane rating than that fuel specified for your engine.
3. If it has been determined that the engine has been run on unspecified fuel; do not continue to operate it unless it has been inspected and certified to be airworthy by competent maintenance personnel.

Primary damage to the engine by the use of unspecified fuels occurs in the combustion chambers and is typically characterized by increased temperatures resulting in tuliped intake valves and burned pistons. If detonation has been severe enough, further damage will occur to crank pins and main bearings, counterweights and valve train components. In view of the questionable possibilities, disassembly and inspection of the engine parts is the only safe recommendation that can be made after the engine has been operated with improper fuels.