

SERVICE

SERVICE LETTER NO. 75-9
"FAA DOA EA-4 APPROVED"

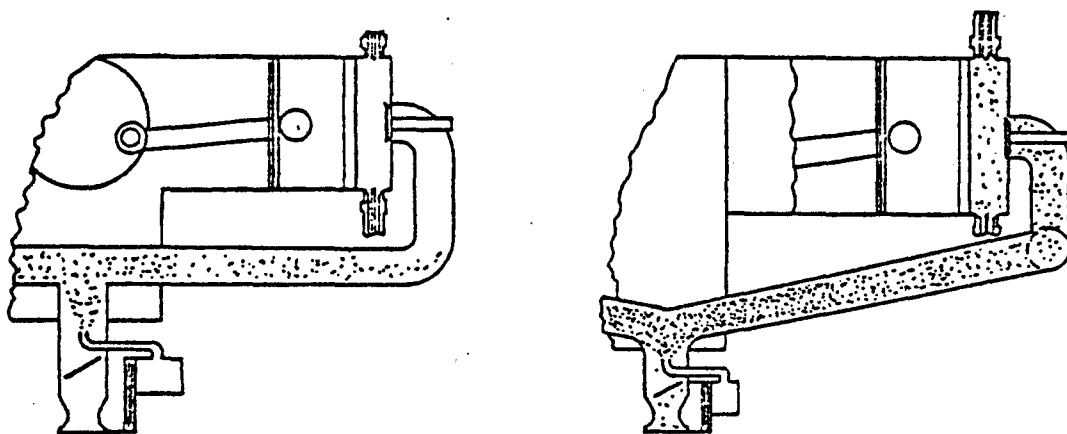
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DATE: November 17, 1975
SUBJECT: SPARK PLUG LEAD FOULING
SERIALS AFFECTED: All Aircraft

GENERAL

Aviation grade 100/130 fuels (100 AVGAS) in which the lead content is limited to 2 c.c. per gallon are approved for continuous use in all Avco Lycoming engines installed in Grumman American Aviation Corporation aircraft, however, continuous use may cause spark plug lead fouling, particularly on the O-235-C2C engine.

The schematics of the intake manifold are illustrating what is happening when the fuel mixture is too rich. The heavy ends of the fuel that contain tetra ethyl lead (T.E.L.) revert back to a solid once they come in contact with a cold manifold. These lead globules build up, and eventually work their way into the cylinder and find their way to the spark plug, causing the spark plug to foul.



Intake Manifold Schematic

Several procedures may be observed to limit spark plug lead fouling, however, the single most important item is proper fuel mixture leaning.

In addition to reduced lead fouling, there are other benefits which are realized. These include: economy of fuel means lower cost of operation; excessively rich running engines are rough - proper leaning makes them smooth, which protects engine mounts and engine accessories from vibration; leaning at cruise extends the range of the aircraft - a safety factor; correct leaning means cleaner combustion chambers - less likelihood of preignition from undesirable deposits.

FUEL MIXTURE LEANING PROCEDURES

The maximum recommended cruise power setting is 75% of the rated horsepower. True airspeeds, which are determined by the particular altitude and power setting chosen, can be obtained from the tables in the appropriate owners manual. For optimum fuel consumption and minimum spark plug lead fouling in cruise at 75% power or less, lean the mixture as follows:

NOTE

THE MIXTURE SHOULD BE FULL RICH DURING TAKE-OFF AND CLIMB AT ALTITUDES BELOW 5000 FEET MSL. HOWEVER, DURING TAKE-OFF OR CLIMB FROM HIGH-ALTITUDE AIRPORTS, THE ENGINE SHOULD BE LEANED TO ACHIEVE BEST POWER (MAXIMUM RPM).

1. Slowly move the mixture control from full rich position toward lean position.
2. Continue leaning until engine roughness is noted.
3. Enrich mixture slightly until engine runs smoothly.

ADDITIONAL PROCEDURES

In addition to leaning, the following techniques should be considered to minimize spark plug lead fouling: swap top spark plugs with bottom spark plugs at mid-spark plug servicing periods (50 hours); avoid closed throttle idle operation on the ground - wherever possible, idle engine in the 1000-1200 RPM range; insure that the idle mixture has been properly adjusted to avoid a rich condition; rather than closing the throttle, use other methods to drop airspeed to loose altitude - power landings prevent rapid temperature drop, retaining the advantage of proper operating temperatures; use the correct heat range spark plug.

Very truly yours,

GRUMMAN AMERICAN AVIATION CORPORATION



Russ E. Belles
Customer Service Manager

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