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SERVICE INSTRUCTION

DATE: April 12, 2011

Service Instruction No. 1497A
 (Supersedes Service Instruction No. 1497)
 Engineering Aspects are
 FAA (DER) Approved

SUBJECT: Engine Procedures for Flight Training Operations

MODELS AFFECTED: Lycoming IO-360-L2A engines installed in Cessna C172R and 172S aircraft used in training operations

TIME OF COMPLIANCE: As required during aircraft operations

NOTE

Incomplete review of all the information in this document can cause errors. Read the entire Service Instruction to make sure you have a complete understanding of the requirements.

The flight training environment makes an engine more susceptible to spark plug fouling, decreased efficiency, and excessive fuel consumption. Some of the flight training profiles that cause these conditions include over-priming, prolonged idling, a taxi at low engine speeds, and extended operation at full rich mixture.

This Service Instruction identifies recommended procedures that can decrease the aforementioned effects on the engine.

NOTE

These procedures are in addition to Cessna's published operating procedures.

A. Start-up and Ground Operations

1. Start the engine in accordance with the procedures given in the aircraft Pilot's Operating Handbook (POH) or Airplane Flight Manual (AFM). Do not engage in over-priming the engine. Over-priming can cause a delay in starting the engine and spark plug fouling.
2. Set the throttle to 1200 RPM for warm-up.
3. Once temperatures are stable, make the mixture Lean to Best Power.

Leaning Technique

- a. Slowly make the fuel mixture lean until the RPM decreases.
- b. Make the fuel mixture Rich until the engine operates smoothly.
4. Set the throttle to 1000 RPM.
5. Move the throttle as necessary to operate the engine as per specifications.



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6. Do a ground check in accordance with the POH or AFM.
7. After satisfactory ground check, set the engine power to 1200 RPM.
8. Do a check of the fuel mixture to make sure the engine is at Best Power.
9. Set the throttle to 1000 RPM and hold this setting until clearance for take-off.
10. For take-off, set the mixture to Full Rich. (For high elevation fields, fuel leaning could be necessary for smooth engine operation. Refer to the aircraft POH or AFM.)
11. Monitor engine indicators to make sure the engine is operating with specified limits in the aircraft POH or AFM.

B. Flight Operations

1. Climb

Below 3000 feet density altitude, use the Full Rich mixture.

Above 3000 feet density altitude, make the fuel mixture Lean to maximum RPM.

Leaning Technique

- a. Slowly make the fuel mixture Lean until the RPM decreases.
- b. Make the fuel mixture Rich until the engine operates smoothly.
- c. Make the fuel mixture Rich by turning the mixture knob an additional 1/2 turn (approximately 180 degrees rotation).

2. Cruise

Make the fuel mixture Lean to maximum RPM (all altitudes).

Leaning Technique

- a. Slowly make the fuel mixture Lean until the RPM decreases.
- b. Make the fuel mixture Rich until the engine operates smoothly.
- c. Make the fuel mixture Rich by turning the mixture knob an additional 1/2 turn (approximately 180 degrees rotation).

NOTE

Move engine controls smoothly and slowly. Always put the fuel mixture back to Full Rich before increasing power settings.

3. Landing

On approach, set the fuel mixture at Full Rich.

C. Ground Operation and Engine Shut Down

1. If an extended taxi is likely, make the fuel mixture Lean to Best Power during taxi.

Leaning Technique

- a. Slowly make the fuel mixture Lean until the RPM decreases.
- b. Make the fuel mixture Rich until the engine operates smoothly.

2. After engine temperature gages are stable within specified readings at 1000 to 1200 RPM, move the fuel mixture control to Idle Cut-Off.

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