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SERVICE INSTRUCTION

DATE: July 1, 2002

Service Instruction No. 1505
Engineering Aspects are
FAA Approved

SUBJECT: Cold Weather Starting

MODELS AFFECTED: All Lycoming aircraft engines.

TIME OF COMPLIANCE: At engine start in cold weather.

In extremely low temperatures, oil congeals, battery capacity is lowered, and the starter can be overworked. Improper cold weather starting can result in abnormal engine wear, reduced performance, shortened time between overhauls, or failure for the engine to operate properly.

The use of pre-heat will facilitate starting during cold weather, and is required when the engine has been allowed to drop to temperatures below +10°F/-12°C (+20°F/-6°C for –76 series engine models).

Be sure that the engine oil is in compliance with the recommended grades.

NOTE

The use of a heated dipstick is not approved because heat is not distributed throughout the engine, and concentrated heat may damage non-metal engine parts. Proper pre-heat requires a thorough decongealing of all oil.

To pre-heat using hot air:

1. Use a high-volume hot air heater.

CAUTION

DIRECT THE HOT AIR CAREFULLY TO AVOID HEAT DAMAGE TO NON-METAL PARTS. OPEN COWL FLAPS IF INSTALLED, SO THAT HEAT BUILD-UP DOES NOT DAMAGE WIRING, HOSES, ETC.

2. Apply hot air directly to the oil sump, external oil lines, cylinders, air intake, oil cooler and oil filter in 5 to 10 minute intervals. Between intervals, feel the engine to be sure that it is retaining warmth. Also check to be sure that there is no damaging heat build-up. During the last 5 minutes, direct heat to the top of the engine.

3. Immediately after pre-heating, start the engine according to the normal starting process. Avoid cranking for more than 5 seconds each start attempt.

NOTE

Due to the battery being cold and subject to rapid discharge, an auxiliary power source is recommended.

4. Avoid rapid acceleration after a cold start. Do not exceed idle RPM, recommended in the engine Operator's Manual, until oil pressure is stabilized above the minimum idling range. Allow up to one minute for oil pressure to stabilize, since lines to the gage may remain cold. If oil pressure is not indicated within 30 seconds, shut down the engine and determine the cause. If no leaks or damage is found, repeat the pre-heat before restarting.

5. Allow the engine to warm up at idle speed until oil pressure and temperature are stabilized within normal limits and proceed to ground check in accordance with the airframe manufacturer's Pilots Operating Handbook.

6. Cycle the propeller control in accordance with the airframe and propeller manufacturer's instructions to insure warm oil is circulated into the propeller dome.

7. After completing the ground check, and before attempting takeoff, check oil pressure, oil temperature, and cylinder head temperature to be sure that all are well within their normal operating ranges.

8. Insure that when takeoff power is applied smoothly, oil pressure, fuel flow, manifold pressure, and RPM are steady. Surges or fluctuations may indicate that the engine is not warm enough for takeoff.

CAUTION

THE ENGINE MAY NOT BE WARM ENOUGH FOR TAKEOFF IF THERE ARE INDICATIONS OF:

1. ENGINE ROUGHNESS
2. LOW, HIGH OR SURGING RPM
3. HIGH, LOW, OR FLUCTUATING OIL PRESSURE
4. HIGH OR LOW FUEL FLOW
5. EXCESSIVE MANIFOLD PRESSURE