

## >>Service Letter

Technical Aspects are FAA Approved

**Number: L96-08 D**  
**Replaces ServL 96-008C**

**Date:** 07/15/2004

**Subject:** Millennium Cylinder On-Aircraft Break-In Procedure

**Application:** All engines with newly installed Millennium cylinders that are to be broken-in on the aircraft.

To achieve satisfactory ring seating and long cylinder life, after top overhaul or a major engine overhaul, break-in is critical. The aircraft can be a suitable test stand for running-in cylinders. All original equipment manufacturer's and Superior Air Parts service information should be followed for a successful break-in. The following are some general guidelines for break-in.

**PRIOR TO START-UP:**

- Engine should be filled, according to the operator's manual, with 100% mineral oil (specific grade depending on ambient temperature).
- Engine must be pre-oiled and oil pressure obtained prior to start-up. See appropriate service data for procedures.
- Engine baffles and seals must be in good condition and properly installed.
- Verify accuracy of instruments.

**GROUND RUN:**

- Flight propeller may be used if test club is not available.
- Head aircraft into the wind.
- Start engine, and observe oil pressure. Oil pressure should be indicated within 30 seconds – if not, shut down engine, and determine cause.
- Run engine just long enough to confirm everything is properly adjusted, secured and there are no fuel and/or oil leaks.
- Install cowling.
- Operate engine at 1000-RPM until oil has reached minimum operating temperature.
- Check magneto drop at normal RPM.
- If engine is equipped with a controllable pitch propeller, cycle only to a 100-RPM drop.
- Shut down engine and check for fuel and/or oil leaks and repair any discrepancies.
- At no time should cylinder head temperature be allowed to exceed original airframe equipment manufacturer recommended maximum cruise limit.

**BREAK-IN FLIGHT OPERATION:**

- Perform normal pre-flight and run-up in accordance with engine operator's manual (remember: only cycle prop to a 100 RPM drop if you have a controllable pitch propeller). Keep ground runs to a minimum.
- Conduct normal take-off at full power, full rich mixture, to a safe altitude.
- Maintain a shallow climb at full power. Use caution to avoid overheating the cylinders. Should overheating occur, reduce power and adjust mixture appropriately. Refer to Pilot's Operating Handbook for specific procedures and temperatures including leaning to a fuel flow meter or leaning without EGT or fuel flow meters.
- Monitor RPM, oil pressure, oil temperature & cylinder temperature.
- During the first hour of operation, maintain level flight at 75% power. Vary the power setting every 15 minutes during the second hour between 65-75%.
- Avoid long descents at cruise RPM and low manifold pressure (could cause ring flutter).
- After landing, check again for any fuel and/or oil leaks, or other discrepancies, and repair.
- Continue flying at 65-75% power with mixture adjusted to approximately 75°F rich of peak EGT on subsequent flights until rings have seated, oil consumption stabilizes, and cylinder head temperatures drop. This is a sign that the cylinders are broken in. Refer to Pilots Operating Handbook for leaning with fuel a flow meter or leaning without fuel flow or EGT meters.
- After break-in, oil may be changed to ashless dispersent of the proper grade.
- At no time should cylinder head temperature be allowed to exceed original airframe equipment manufacturer recommended maximum cruise limit.

**NOTE:**

Verify that crankcase breather and vent lines are correctly installed and positioned. Excessive oil discharge through the breather can often be directly related to an improperly installed or restricted breather line.

**CAUTION:**

**Break-in of an engine in frigid conditions can lead to cylinder glazing and failed break-in due to low oil temperature. It is recommended that oil temperature be maintained between 180° and 190° F.**