

7-2.3. Engine Operation after Cylinder Replacement and/or Major Overhaul

NOTE: Instructions within this section apply to steel, nitrided, through-hardened, or chrome plated cylinders. For engine operating instructions with nickel silicon carbide (NiC3) plating, refer to the operating instructions in the latest revision of SB15-6.

Proper operation of the engine following cylinder replacement or major overhaul is extremely important. The following procedures should be followed to ensure that adequate lubrication is being provided to newly installed components and that the piston ring seating will occur as soon as possible.

1. Operation after Major Overhaul, Utilizing an Engine Test Cell:
 - a. Servicing and Pre-starting Procedures
 - 1) Service the lubricating system with mineral oil of the appropriate grade depending on ambient temperature (Section 3-1).
 - 2) Rotate the propeller by hand through several cycles with the spark plugs removed.
 - 3) Pre-oil the lubrication system using an external pre-oiling pressure system according to the instructions in Section 5-2.9. Spark plugs are installed during the pre-oiling instructions.
 - b. Test Cell Operational Procedure
 - 1) Perform the Post-Overhaul testing according to the instructions in the engine primary ICA (**Ref: Section 1-1.1**).
2. Operation after Major Overhaul, Utilizing The Aircraft (in lieu of an engine test cell):

The aircraft can be considered a suitable test stand for running-in overhauled engines contingent on the following conditions.

- a. Install engine cowling.
- b. Each cylinder should be equipped with a temperature sensing device to monitor the head temperature. If the aircraft cylinder head temperature gauge monitors one cylinder, the following precaution must be adhered to:
During ground runs do not permit monitored head temperatures to exceed 400°F or oil temperature to exceed 200°F.
- c. The flight propeller may be used contingent on careful observation of cylinder temperatures. Head the aircraft into the wind for this test.
- d. Calibration of the aircraft engine instruments must be performed.

3. Operation after New Cylinder Installation or Cylinder Overhaul:

CAUTION: Corrosion preventive mineral oil MIL-C-6529 can be used but must not be used after the first 25 hours, or six months, whichever occurs first as this oil can cause coking with extended use.

- a. Service the lubricating system with mineral oil of the appropriate grade depending on ambient temperature (Section 3-1).
- b. Ensure all engine and cylinder baffling is serviceable and properly installed.
- c. Start the engine and verify oil pressure rises to within the specified limits within 30 seconds.
- d. Operate the engine at 750 RPM for one minute; gradually increasing toward 1000 RPM in three minutes. Check the magneto circuit for grounding prior to a normal shut-down. Allow the engine to cool adequately and then perform a visual inspection for any irregularities.
- e. Start the engine again and operate it at 750 RPM; gradually increasing to 1500 RPM over a period of four minutes.
 - 1) If the engine is equipped with a controllable pitch propeller, cycle the propeller allowing only a 100 RPM drop.
 - 2) Return to the idle range and make adjustments to the idle mixture and RPM as required on carburetor engines and to the low unmetered fuel pressure, idle RPM, and mixture on fuel injected engines.
 - 3) Position the throttle to 1200 RPM to smooth the engine. Then, perform an idle mixture rise check. For continuous flow fuel injection systems, refer to Section 6-4.7 for fuel system specifications. For engines equipped with carburetors, refer to the primary ICA.
 - 4) Run engine up to full power for a period not to exceed 10 seconds. Visually inspect and correct any discrepancies. Check the oil level and service if required.
 - 5) Install aircraft accessories and cowling according to the aircraft manufacturer's instructions.
- f. Perform a "Flight Check" and "Engine Break-In" according to the instructions in Section 7-2.4.2 and Section 7-2.4.1.