STANDARD PRACTICE MAINTENANCE MANUAL

SPARK IGNITED ENGINES

Technical Portions Accepted by the Federal Aviation Administration

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6-4.11. Cylinder Inspections

A complete cylinder inspection entails the tasks described in the respective sections Table 6-19 below. Performing all of the tasks in Table 6-19 ensures items that can affect cylinder operation have been inspected and verified for proper operation. Use a copy of the "Cylinder Inspection Checklist" on page 6-177 to record inspection progress and findings.

Table 6-19. Cylinder Inspection Tasks and References

Task[1]	Section Reference
Cylinder visual inspection	Section 6-4.11.1
Check cylinder differential pressure	Section 6-4.11.2
Inspect engine cylinders with borescope	Section 6-4.11.3
Inspect cylinder to crankcase mounting deck	Section 6-4.11.4
Inspect baffles	Section 6-4.11.5
Inspect cowling	Section 6-4.11.6

1. All tasks in this table must be performed for a complete cylinder inspection.

In addition to the instructions contained in this section, reference the following Service Documents to determine compliance requirements, based on engine model applicability.

Table 6-20. Additional Cylinder Service Document References

Document Number	Title
M92-8	Application of 4 -1/16 inch Diameter Cylinder Assemblies
M92-6	Rocker Shaft Retention Improvement for Inclined Valve Cylinder
M92-4	IO & L/TSIO-360 Rocker Shaft Stud Inspection
M91-7	Cylinder Barrel Ultrasonic Inspection
M91-6	Cylinder Barrel Inspection
M73-13	Rocker Shaft Bosses
M73-2	Cylinder, Non - H FAA AD #72-20-02

6-4.11.1. Cylinder Visual Inspection

Procedure

1. Remove the engine compartment cowling according to the aircraft manufacturer's instructions and perform steps 2 & 3 without cleaning the engine.
2. Inspect the cylinder barrel power stroke areas (Figure 6-65) with an inspection mirror and light for cracks, sharp indentations, chafing, damage or pitting. Repair discrepancies according to instructions in the primary ICA. The power stroke areas include the:
   - Twelve o'clock area on the first six fins below the head on the 1-3-5 side of the engine as mounted on the crankcase.
   - Six o'clock area on the first six fins below the head on the 2-4-6 side of the engine as mounted on the crankcase.
3. Inspect the external surfaces of the cylinder head including the fins, intake and exhaust ports, top and bottom spark plug bosses and fuel nozzle bosses for **cracks**, exhaust flange leakage or any signs of oil, fuel, or soot leakage indicating cylinder or the head-to-barrel junction **structural integrity breach**.

   Minor cylinder repairs may be accomplished using the instructions in the applicable primary ICA; however,

   a. replace any cylinder exhibiting cracks or a structural integrity breach.

   b. additionally, for liquid cooled cylinders, inspect the cylinder head cooling jackets for coolant leaks.
4. Thoroughly clean the exterior of the engine according to instructions in Chapter 12 and repeat steps 2 & 3.

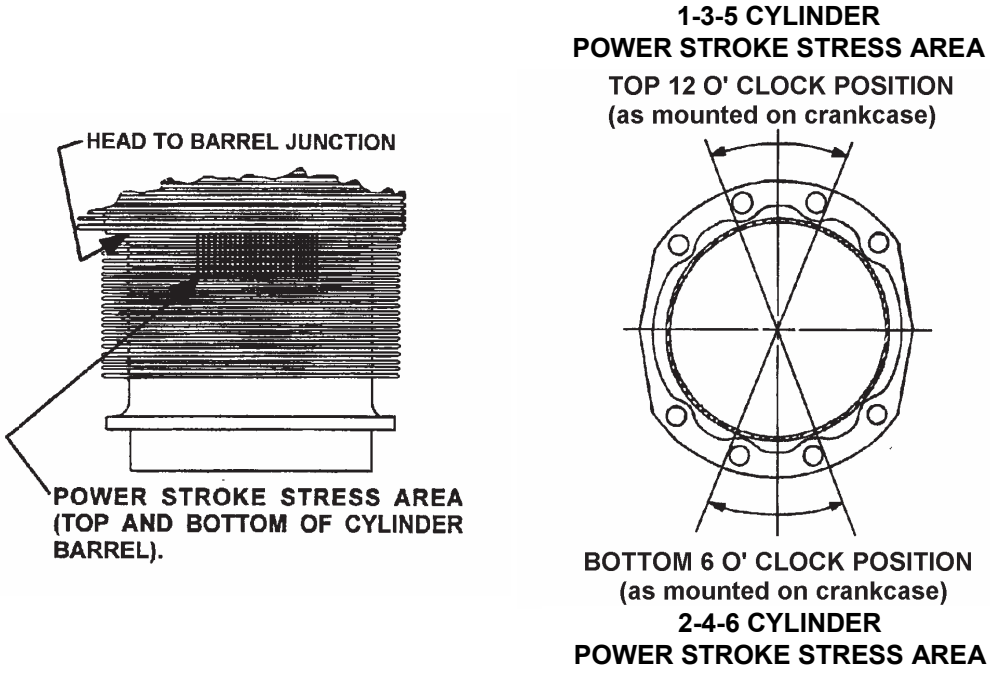

Figure 6-65. Cylinder Power Stroke Areas

For all -470, -520, and -550 series engines only:

CAUTION: Reference the latest version of Service Document (SB18-04) for replacement instructions of through-bolt flange nuts (P/N 652541) identified with the manufacturer's stamp "ZB" (purchased after 1 OCT 2017).

NOTE: The following steps supersede SB17-01A, "Flanged Nut (P/N 652541) Inspection and Corrosion Prevention."

5. Visually inspect the 1/2" through-bolt flanged nuts (P/N 652541) for corrosion.
   a. If flanged nuts exhibit no signs of damage or corrosion, proceed to step 6.
   b. If the crankcase hardware exhibits corrosion, replace the crankcase hardware (one nut at a time) according to the primary ICA crankcase hardware installation instructions.
   c. If a flanged nut exhibits a fracture, remove the engine from service and perform an inspection for possible bearing shift according to the primary ICA.
6. Thoroughly clean the crankcase hardware with mineral spirits to remove any residual corrosion inhibitor.

   CAUTION: When utilizing compressed air, wear OSHA approved protective eye wear. Never exceed 30 psi when using compressed gases for cleaning purposes (OSHA 1910.242(b)).
7. Completely dry crankcase hardware with compressed air.
8. Apply a single, light coating of LPS® Procyon (or LPS 3®) heavy duty corrosion inhibitor to the through-bolts, washers, and (Part No. 652541) flanged nuts according to the manufacturer's directions and Safety Data Sheet (SDS).
9. Create a log book entry indicating compliance with the flanged nut inspection.

6-4.11.2. Differential Pressure Test

Purpose

The Cylinder Differential Pressure Test is a nondestructive method of determining the internal condition of cylinders and cylinder components. As with any test or inspection, the Cylinder Differential Pressure Test has certain limitations that may necessitate its use in conjunction with other non-invasive inspections. The Cylinder Differential Pressure Test identifies leaks and the source of leaks, with the engine under static conditions (not running), using a regulated 80 psi pressure source. The Cylinder Borescope Inspection (Section 6-4.11.3) is used to assess the physical condition of the combustion chamber. Continental requires a borescope inspection to be performed in conjunction with the Differential Pressure Test. Marginal or unsatisfactory results of the Cylinder Differential Pressure Test or Cylinder Borescope inspections may indicate the need to perform additional inspections.

> NOTE: The static leak check does not relate directly to cylinder pressures developed during actual engine operations.

Monitor and record engine oil consumption, the appearance or color of the engine oil and any visual indications of high crankcase pressure (combustion blow-by) such as an oily, wet area on the aircraft belly or lower wing surface.

> NOTE: Prior to performing the cylinder differential pressure test, determine the baseline master orifice calibrated pressure reading according to instructions in Section 6-4.11.2.1.

Excess cylinder wall or piston ring wear, broken piston rings and burned valves exhibit additional symptoms that include, but are not limited to the following:

- Excessive cylinder barrel wear and/or piston ring wear:
  - Elevated crankcase pressure; see “Excess Crankcase Pressure” in Section 8-9.1.
  - Sudden increased oil consumption (based on trend monitoring)
  - Oil discolored within first 10 hours after an oil change
- Broken piston rings:
  - Scored, grooved cylinder wall, evident via a borescope inspection
  - Abnormal debris in oil filter or oil screen
- Burned valves:
  - Extremely low cylinder differential pressure test results
  - Usually evident during borescope inspection.

Many variables affect Differential Pressure Test results, such as:

- Abnormal amounts of oil in the cylinder
- Engine temperature and cylinder temperature uniformity
- Test equipment accuracy
- Capacity and quality of the compressed air source
- Techniques used by the technician when performing the test

Frequency

Perform the differential pressure test:

- During 100-hour or Annual inspections
- If excessive oil consumption or blow-by is suspected
- If the cylinder exhibits signs of accelerated wear

Test Equipment

- Dry, oil-free compressed air source capable of providing a minimum line pressure of 125 P.S.I. with a minimum flow capability of 15 Cubic Feet per Minute (CFM).

  NOTE: Master Orifice Tool (Part No. 646953A) is no longer available. Without the Master Orifice Tool, the Model E2A Differential Pressure Tester is not a valid test equipment option; the Model E2M Differential Pressure Tester must be used. If the facility performing the repairs is in possession of both a Model E2A Differential Pressure Tester and the Master Orifice Tool, the shop may continue to use them as alternatives to the Model E2M Differential Pressure Tester. Instructions in this manual apply only to the Model E2M Differential Pressure Tester.

  The Eastern Technology web site (eastertech.com) indicates a Model E2M-1000, with a 0.060 Master Orifice should be used on cylinders with a bore greater than 5.0 inches however, approved type certificate data pertaining to engines in this manual were approved by the FAA using a Model E2M Differential Pressure Tester with a 0.040 inch Master Orifice.

- Eastern Technology Corporation Model E2M (Figure 6-66) Cylinder Differential Pressure Tester. This Differential Pressure Tester incorporates a 0.040 Master Orifice Tool.

WARNING

Differential Pressure Test equipment must be calibrated annually. Failure to properly maintain and calibrate the Differential Pressure Test equipment may result in misleading or erroneous Differential Pressure Test readings.

Perform the "Differential Pressure Tester Setup" instructions in Section 6-4.11.2.1 to calibrate the test equipment prior to conducting the Cylinder Differential Pressure Test. Perform the Cylinder Differential Pressure Test as soon as possible after the aircraft has returned from flight. If the aircraft cannot be flown prior to performing the Cylinder Differential Pressure Test, operate it on the ground, with the cowling installed until a minimum of 300 to 350°F (149 to 177°C) is observed on the aircraft cylinder head temperature (CHT) gauge.

WARNING

Shut the fuel supply OFF and ground the magnetos prior to performing the Differential Pressure Test to prevent accidental engine starts. Take necessary precautions to prevent accidental rotation of the propeller while performing this test. Differential pressure tests are best performed with two people, one to adjust the pressure regulator and one to hold the aircraft propeller.

The “Master Orifice” is a calibration standard that must be used prior to performing the Cylinder Differential Pressure Test. The Master Orifice establishes the acceptable cylinder pressure leakage limit for the test equipment being used and the atmospheric conditions at the time of the test. Record the acceptable cylinder pressure leakage limit, along with the individual cylinder readings in the engine logbook and on a copy of “Cylinder Inspection Checklist” on page 6-177.

6-4.11.2.1. Differential Pressure Tester E2M Setup

Perform this procedure to prepare the Model E2M Differential Pressure Tester (Figure 6-66) for use and establish the acceptable cylinder pressure leakage limit.

Procedure

1. Turn the Differential Pressure Tester pressure regulator valve OFF.
2. Position the Master Orifice Valve to the OFF position; handle is horizontal and directly over the OFF label.
3. Position the Slow Fill Valve (next to the pressure regulator) to the OFF position; handle is vertical, pointing down.
4. With the Slow Fill Valve in the OFF position, connect the air source to the Differential Pressure Tester male quick disconnect.

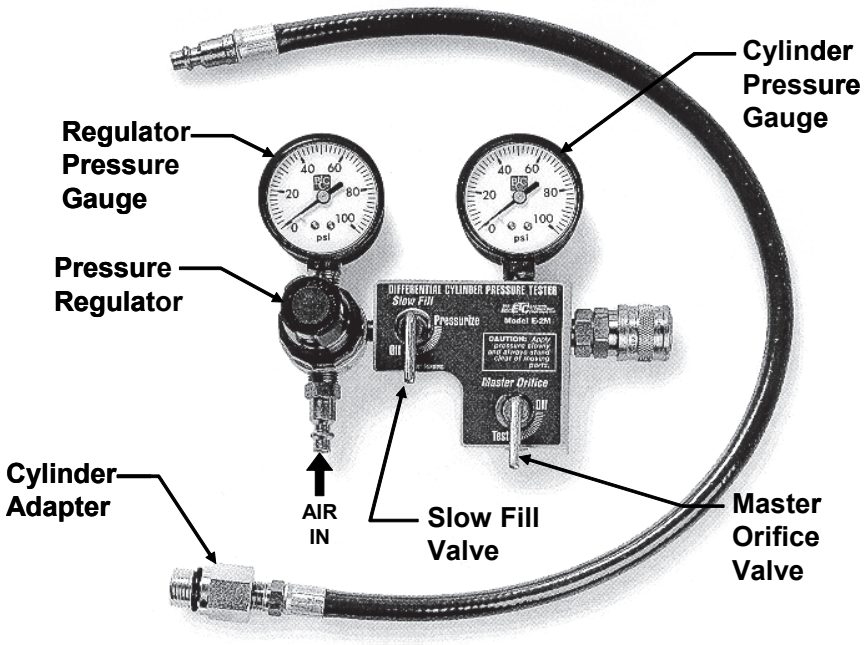

Figure 6-66. Model E2M Differential Pressure Tester

5. Adjust the pressure regulator for indicated 80 psi.
6. Set the Master Orifice Valve to the TEST position; handle is vertical, pointing down.
7. Turn the Slow Fill Valve to the PRESSURIZE position.
8. If necessary, adjust the pressure regulator to maintain an 80 psi indication on the regulator pressure gauge.
9. Record the cylinder pressure gauge indication on a copy of the Cylinder Inspection Checklist. This is the Acceptable Cylinder Pressure Leakage Limit.

10. Turn the Slow Fill Valve to the OFF position; handle is vertical, pointing down.
11. Turn the Master Orifice Valve to the OFF position; handle is horizontal, directly over the OFF label.
12. The Differential Pressure Tester is ready for use; proceed to Section 6-4.11.2.4, "Cylinder Differential Pressure Test."

6-4.11.2.2. Differential Pressure Tester Reliability Check

Keep the Differential Pressure Tester clean and check it periodically for accuracy:

1. Apply a line pressure of 100 to 120 psi; close the Slow Fill Valve.
2. Adjust the pressure regulator to 80 psi. The pressure in both gauges should stabilize with no leakage.

6-4.11.2.3. Leak Check

WARNING

Turn the Ignition Switch OFF and disconnect engine power before commencing maintenance or inspections. Do not stand or place equipment within the arc of the propeller.

Exercise care when opening the cylinder pressure valve, air pressure entering the cylinder may cause the crankshaft to rotate if the piston is not at bottom dead center.

This simple check will identify conditions undetectable by visual inspection that cannot be repaired. If the cylinder barrel to head junction is compromised, replace the cylinder; further inspection is unnecessary if the cylinder fails the leak check.

1. Have an assistant hold the propeller when applying air pressure to the cylinder to prevent propeller rotation.
2. With the compression tester connected, apply 5 psi oil free air to the cylinder.
3. Position the piston as close to bottom dead center on the compression stroke as possible, ensuring the intake valve remains closed to allow the cylinder to hold pressure.
4. Increase the pressure slowly to a maximum value of 80 psi. Saturate the exterior of the cylinder assembly with a mild non-alkaline soap and water solution.
5. Inspect the cylinder for leakage, indicated by an accumulation of air bubbles.
6. After cylinder inspection, relieve cylinder pressure and remove compression tester.
7. Repeat steps 1 through 5 for all cylinders. Rinse the cylinder thoroughly upon completion to remove the soap residue.

6-4.11.2.4. Cylinder Differential Pressure Test

Have an assistant hold the propeller when applying air pressure to the cylinder to prevent propeller rotation.

WARNING

Turn the Ignition Switch OFF and disconnect engine power before commencing maintenance or inspections. Do not stand or place equipment within the arc of the propeller.

Procedure

1. Perform the test as soon as possible after engine shut-down to ensure the piston rings, cylinder walls, and other engine parts are well lubricated and at operating clearance.
2. Remove the most accessible spark plug from each cylinder. Identify the cylinder number and position of the removed spark plugs. Examine the spark plugs to aid in diagnosing engine and cylinder conditions. Refer to the spark plug manufacturer's technical data.
3. Turn the crankshaft by hand in the direction of rotation until the piston in the cylinder under test is positioned just before its compression stroke.
4. Install the cylinder adapter in the spark plug hole and connect the Differential Pressure Tester to the cylinder adapter (Figure 6-67).

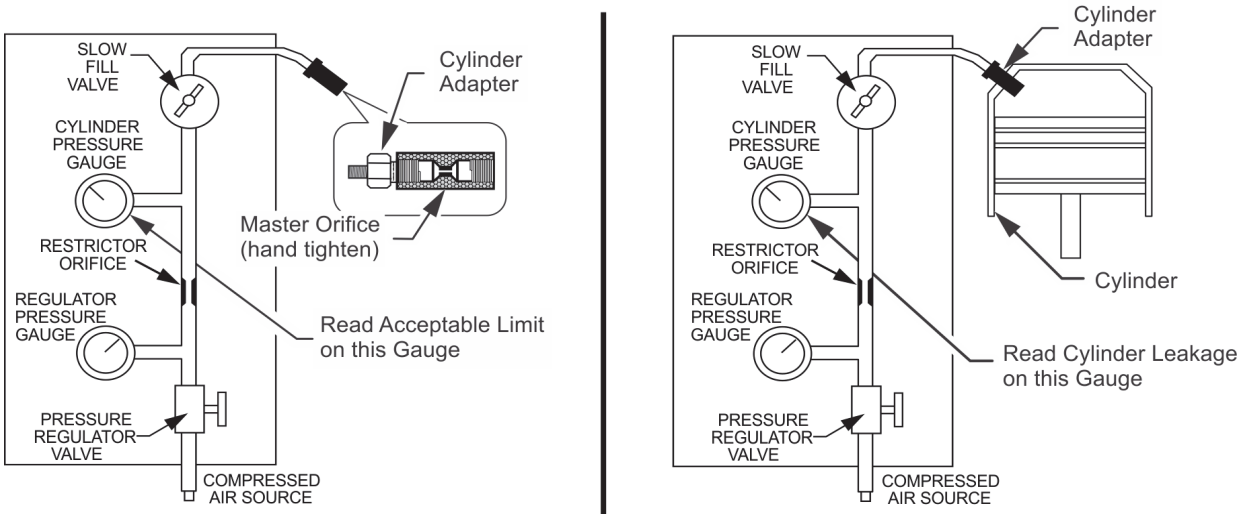

Figure 6-67. Differential Pressure Test Equipment Usage

NOTE: The Slow Fill Valve should be in the CLOSED position.

WARNING

Exercise care when opening the cylinder pressure valve. Air pressure entering the cylinder may cause the crankshaft to rotate if the piston is not at bottom dead center.

5. Have an assistant secure the propeller to prevent rotation and slowly turn the Slow Fill Valve in the direction of the PRESSURIZE position to pressurize the cylinder to 20 psi.

   NOTE: Some Continental engines feature a lightweight starter which restricts turning the propeller in the opposite direction of normal rotation. For these engines, remove the starter prior to commencing the test or continue to turn the propeller in the normal direction of rotation to seek the TDC position with the highest pressure indication on the cylinder pressure gauge.

6. Continue turning the propeller in the normal direction of rotation, against the pressure until the piston reaches Top Dead Center (TDC) indicated by a sudden decrease in the force required to turn the crankshaft. If the crankshaft is rotated too far, back up at least one-half revolution and start over again to eliminate the effect of valve train backlash and to keep the piston rings seated.

WARNING

The probability of air pressure in the cylinders turning the propeller during this procedure will be highest when the air pressure in the cylinder is raised to 80 psi in step 7. Stand outside the propeller arc with balanced footing while holding the propeller firmly to avoid injury.

7. With the piston at top dead center, open the Slow Fill Valve completely. Observe the regulator pressure gauge and adjust the pressure regulator, if necessary, for an 80 psi indication.
8. To ensure the piston rings are seated and the piston is square in the cylinder bore, move the propeller slightly back and forth with a rocking motion, while applying the regulated pressure of 80 psi, to obtain the highest indicated pressure reading on the cylinder pressure gauge. Adjust the pressure regulator, as necessary, to maintain a regulated pressure indication of 80 psi.
9. Record cylinder pressure gauge indication. The difference between indicated cylinder pressure and indicated regulator pressure is the amount of cylinder leakage. Record cylinder pressure indication as: $^{(\text{pressure reading})}/_{80\ \text{psi}}$.

   NOTE: Repeat steps 3 through 9 on each engine cylinder. Record Cylinder Differential Pressure Test results for each cylinder on a copy of the Cylinder Inspection Checklist.

10. Compare the recorded test results with Table 6-21 to determine what action, if any, is recommended.
11. Turn the Slow Fill Valve to the OFF position.
12. Disconnect the test equipment from the cylinder and proceed to Section 6-4.11.3, “Cylinder Borescope Inspection.”

Table 6-21. Differential Pressure Test Results

Air Discharge Source	Pressure Test Value	Symptoms and Observations	Recommended Action
Air discharge at oil filler/ crankcase breather.	Cylinder Differential Pressure Test reading above the acceptable cylinder pressure leakage limit.	Normal borescope indications. Oil consumption stable, no excessive oil discharge out engine breather	Continue engine in service. Repeat Differential Pressure Test at next 100-hour/annual inspection.
	Cylinder Differential Pressure Test reading below the acceptable cylinder pressure leakage limit.	Normal borescope indications. Oil consumption stable, no excessive oil discharge out engine breather.	Fly aircraft at Cruise Power setting[1] and repeat Cylinder Differential Pressure Test.
	Cylinder Differential Pressure Test reading below the acceptable cylinder pressure leakage limit after re-test.	Not applicable	Remove cylinder for repair.
	Cylinder Differential Pressure Test reading above or below the acceptable cylinder pressure leakage limit	Oil consumption abnormal[2], with oil discharge out engine breather. Borescope inspection reveals heavy carbon deposits in combustion chamber and on piston crown with excessive oil puddling in cylinder barrel.	Remove cylinder for repair.
Little to no air discharge at oil filler/crankcase breather.	Cylinder Differential Pressure Test reading abnormally high	Oil consumption abnormal[2], with oil discharge out engine breather. Borescope inspection reveals heavy carbon deposits in combustion chamber and on piston crown with excessive oil puddling in cylinder barrel.	Remove cylinder for repair.

Table 6-21. Differential Pressure Test Results

Air Discharge Source	Pressure Test Value	Symptoms and Observations	Recommended Action
Air discharge into induction system	Cylinder Differential Pressure Test reading above the acceptable cylinder pressure leakage limit.	Normal cylinder borescope inspection results.	Continue engine in service.
	Cylinder Differential Pressure Test reading below the acceptable cylinder pressure leakage limit.	Normal cylinder borescope inspection results.	Fly aircraft at cruise power setting[1] and repeat Cylinder Differential Pressure test.
	Cylinder Differential Pressure Test reading below the acceptable cylinder pressure leakage limit after re-check.	Not Applicable	Remove cylinder for repair.
Air discharge into exhaust system	Cylinder Differential Pressure Test reading above the acceptable cylinder pressure leakage limit.	Normal cylinder borescope inspection results.	Continue engine in service.
	Cylinder Differential Pressure Test reading below the acceptable cylinder pressure leakage limit.	Normal cylinder borescope inspection results.	Fly aircraft at cruise power setting[1] and repeat Cylinder Differential Pressure test.
	Cylinder Differential Pressure Test reading below the acceptable cylinder pressure leakage limit after re-check.	Not Applicable	Remove cylinder for repair.
Air escaping at spark plug spot face	Cylinder Differential Pressure Test readings not applicable	Dye check of area reveals cracks.	Remove cylinder for replacement.
Air discharge at cylinder head to barrel juncture or between barrel fins	Cylinder Differential Pressure Test readings above the acceptable cylinder pressure leakage limit.	First cylinder head fin above cylinder barrel wet with oil or baked on oil residue.	Remove cylinder for replacement.

1. Fly the aircraft at cruise power setting between 65 and 75 percent power according to the Aircraft Flight Manual/Pilots Operating Handbook (AFM/POH) for a duration that will allow engine oil and temperatures to stabilize, or at least 45 minutes. Repeat the differential pressure test on the suspect cylinder.
2. A sudden increase in oil consumption from the established, normal trend.

6-4.11.3. Cylinder Borescope Inspection

Regular engine operation provides an oil coating for the cylinder and minimizes rust formation. New cylinders are particularly sensitive to rust formation if the engine is infrequently used or not properly preserved during storage.

NOTE: Ground operation of the engine is an unacceptable substitute for in-flight engine operation. Ground operation does not provide adequate cylinder cooling and introduces water and acids into the lubrication system.

Purpose

The cylinder borescope inspection provides a non-destructive method of visually examining the internal cylinder components and must be used in conjunction with the "Differential Pressure Test" to assess the condition of the valve, piston top, deposits, and the hone pattern on the cylinder barrel and identify abnormal wear patterns which can contribute to low differential pressure readings or increased oil consumption.

The cylinder wall hone pattern consists of engineered surface "scratches" which aid in ring seating by allowing the ring and wall surface to wear uniformly and provides a reservoir of oil for lubrication during ring travel. The cylinder walls and rings are designed to wear over the life of the engine, particularly in the power stroke area. The visible hone pattern in the upper portion of the bore may disappear during normal operation; and is not cause for cylinder replacement.

Required Equipment

- Mechanics tools
- Borescope

Frequency

- During 100-hour/Annual inspection
- If oil consumption is excessive
- After an engine overspeed incident
- Whenever an anomaly is suspected

WARNING

Turn the Ignition Switch OFF and disconnect engine electrical power before commencing maintenance or inspections. Confirm continuity between the magneto capacitor and aircraft ground to prevent accidental engine start during maintenance. Do not stand or place equipment within the arc of the propeller.

Take preventive measures to avoid burns when performing a Cylinder Borescope Inspection on a hot engine.

Procedure

1. Remove the engine cowling as necessary to gain access to the top spark plugs.
2. Remove the top spark plug from each cylinder.
3. Position the piston at bottom dead center on the power stroke. The exhaust valve will be open with the piston in this position.
4. Insert the borescope probe through the upper spark plug hole and inspect the internal surfaces of each cylinder, including the exhaust valve and exhaust valve seat.
5. Position the piston at bottom dead center at the end of the intake stroke.
6. Insert the borescope through the upper spark plug hole and inspect the intake valve and valve seat. Use Table 6-22 and Figure 6-68 through Figure 6-71 to interpret inspection findings.

Table 6-22. Borescope Inspection Objectives and Corrective Actions

Inspection Item	Objective	If Abnormality Noted
Combustion Chamber	Inspect: • Valve seat inserts for erosion, burning • Spark plug heli-coils for protrusion into combustion chamber • Heavy carbon deposits/presence of excessive oil	Remove cylinder for repair
Exhaust Valve Face	Inspect for signs of leakage or damage indicated by: • Localized discoloration on the valve face circumference (Figure 6-69) • Minute cracks • Erosion (missing material)	Repair or replace cylinder
Intake Valve Face	Inspect for signs of leakage or damage indicated by: • Localized discoloration on the valve face circumference • Erosion (missing material)	Repair or replace cylinder
Cylinder Bore	Inspect exposed surface of bore for: • Heavy scoring/piston rub (Figure 6-72) • Piston pin rub (wide band pattern in horizontal plane at 3 o'clock and/or 9 o'clock position)	Repair or replace cylinder
	Corrosion (Figure 6-71)[1] Excessive oil in cylinder/heavy deposits of carbon in combustion chamber	Remove cylinder for repair
	Upper portion of cylinder bore has no visible hone pattern (Figure 6-73) and (Figure 6-74)	Normal indication for in service cylinders
Piston Head	Inspect for: • Piston crown for erosion, missing material • Visible damage from foreign debris	Remove cylinder for repair

1. Remove cylinder for repair or replacement. Perform complete inspection of connecting rod bushing for correct installation and finishing.

Figure 6-68.
Normal Combustion Chamber

Exhaust valve has reddish deposit in center with dark outer edge. Intake valve has light brown combustion deposits. Combustion chamber has light brown deposits.

Figure 6-69.
Burned Exhaust Valve

Note the edge of valve face has lost all combustion residue with striations moving toward center of valve.

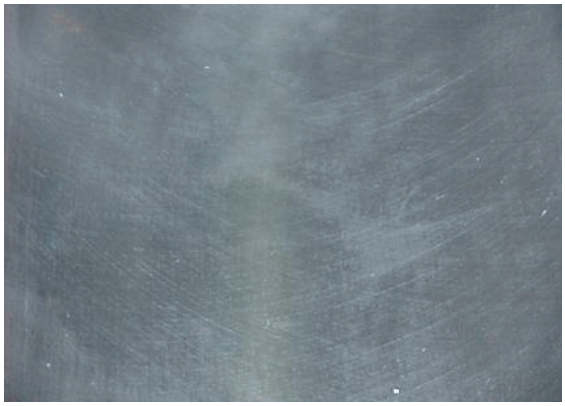

Figure 6-70.
Phosphate-Coated Cylinder with Revised Hone Pattern

Phosphate coating provides increased corrosion protection during initial hours of engine operation.

Figure 6-71.
Phosphate-Coated Cylinder with Corrosion

Phosphate coating in valleys of the cylinder bore hone pattern. Light corrosion at top of cylinder bore, above piston ring travel limit in this area is normal.

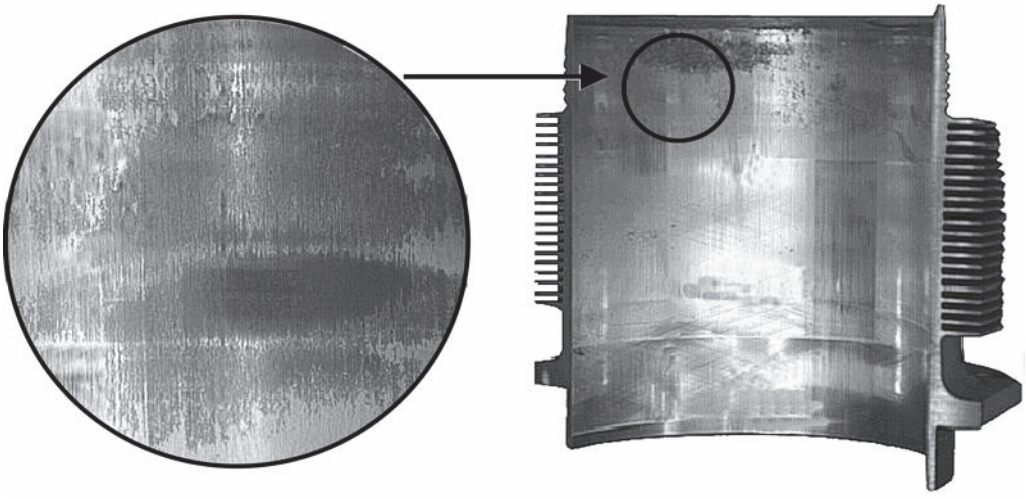

Figure 6-72. Cylinder Barrel Scoring and Piston Rub

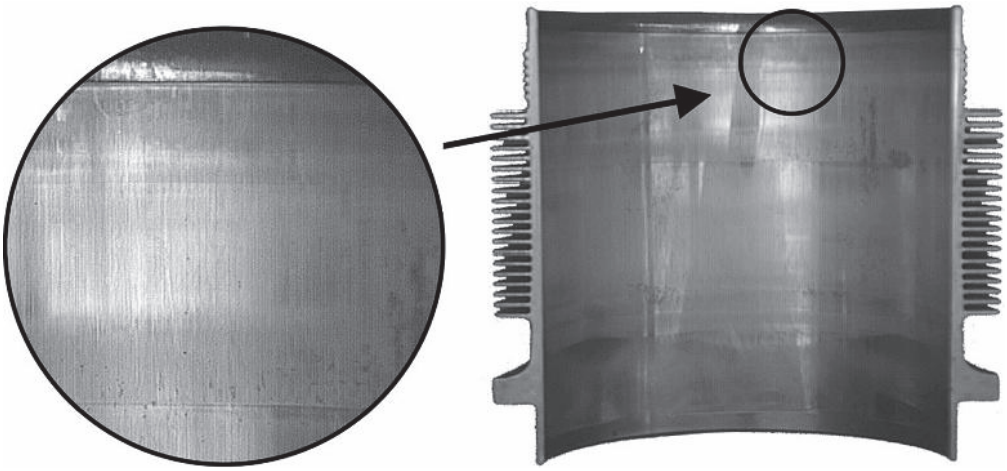

Figure 6-73. Typical Wear in Upper Ring Travel

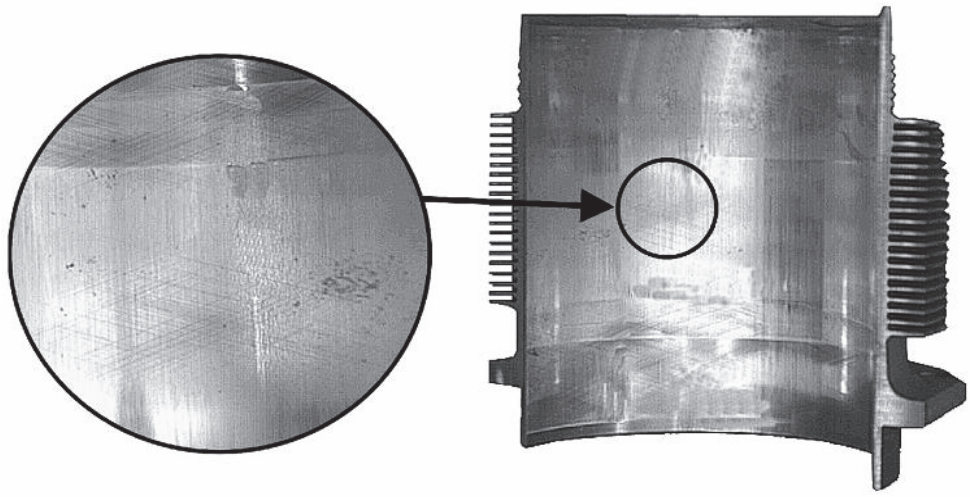

Figure 6-74. Typical Cylinder Wear

6-4.11.4. Cylinder to Crankcase Mounting Deck Inspection

Purpose

Proper cylinder torque requires a solid mounting surface. Foreign materials, such as grease or unauthorized sealants applied to the mounting base or flange will not allow proper fastener preload. Proper torque procedures are critical to engine operation.

Frequency

During 100-hour/Annual inspection

WARNING

Do not apply any form of sealant to the crankcase cylinder deck, chamfer, cylinder mounting flange, cylinder base O-ring, or cylinder fastener threads. The use of RTV, silicone, Gasket Maker or any other sealant on the areas listed above during engine assembly will cause a loss of cylinder deck stud or through-bolt torque. Subsequent loss of cylinder attachment load, loss of main bearing crush and/or fretting of the crankcase parting surfaces will occur. The result will be cylinder separation, main bearing movement, oil starvation and catastrophic engine failure. USE ONLY CLEAN 50 WEIGHT AVIATION ENGINE OIL ON SURFACES LISTED.

Procedure

Inspect the cylinder-to-crankcase mounting deck for evidence of silicone RTV sealant on the cylinder deck flange. If silicone RTV sealant or any other unauthorized sealant or adhesive is discovered, the engine must be completely disassembled, cleaned, inspected and assembled according to the overhaul instructions in the primary ICA.

1. Remove the engine from the aircraft according to instructions in Section 5-1.
2. Disassemble the engine according to the instructions in the primary ICA (Reference Section 1-1.1).
3. Clean the engine components according to the instructions in the Chapter 12 of this manual.
4. Inspect the engine components according to the instructions in the primary ICA (Reference Section 1-1.1).
5. Reassemble the engine according to instructions in the primary ICA (Reference Section 1-1.1).
6. Perform the “Post-overhaul Testing” according to instructions in the primary ICA (Reference Section 1-1.1).
7. Install the overhauled engine according to instruction in Section 5-2.