SECTION 4

PERIODIC INSPECTIONS

NOTE

Perhaps no other factor is quite so important to safety and durability of the aircraft and its components are faithful and diligent attention to regular checks for minor troubles and prompt repair when they are found.

The operator should bear in mind that the items listed in the following pages do not constitute a complete aircraft inspection, but are meant for the engine only. Consult the airframe manufacturer's handbook for additional instructions.

Pre-Starting Items of Maintenance – The daily pre-flight inspection is a check of the aircraft prior to the first flight of the day. The inspection is to determine the general condition of the aircraft and engine.

The importance of proper pre-flight inspection cannot be over emphasized. Statistics prove several hundred accidents occur yearly directly responsible to poor pre-flight.

Among the major causes of poor pre-flight inspection are lack of concentration, reluctance to acknowledge the need for a check list, carelessness bred by familiarity and haste.

1. DAILY PRE-FLIGHT.

a. Engine.

(1) Be sure all switches are in the "Off" position.

(2) Be sure magneto ground wires are connected.

(3) Check oil level.

(4) See that fuel tanks are full.

(5) Check fuel and oil line connections; note minor indications for repair at 50-hour inspection. Repair any leaks before aircraft is flown.

(6) Open the fuel drain to remove any accumulation of water and sediment.

(7) Make sure all shields and cowling are in place and secure. If any are missing or damaged, repair or replacement should be made before the aircraft is flown.

(8) Check controls for general condition, travel, and freedom of movement.

(9) Induction system air filter should be inspected and serviced in accordance with the airframe manufacturer's recommendations.

b. Turbocharger.

(1) Inspect mounting and connections of turbocharger for security, lubricant or air leakage.

(2) Check engine crankcase breather for restrictions to breather.

2. 25-HOUR INSPECTION (ENGINE). After the first twenty-five hours operation time; new, rebuilt or newly overhauled engines should undergo a 50-hour inspection including draining and renewing lubricating oil. If engine has no full-flow oil filter, change oil every 25 hours. Also, inspect and clean suction and pressure screens.

3. 50-HOUR INSPECTION (ENGINE). In addition to the items listed for daily pre-flight inspection, the following maintenance checks should be made after every 50 hours of operation.

a. Ignition System.

(1) If fouling of spark plugs is apparent, rotate bottom plugs to upper position.

(2) Examine spark plug leads of cable and ceramics for corrosion deposits. This condition is evidence of either leaking spark plugs, improper cleaning of the spark plug walls or connector ends. Where this condition is found, clean the cable ends, spark plug walls and ceramics with a dry, clean cloth or a clean cloth moistened with methyl-ethyl-ketone. All parts should be clean and dry before reassembly.

(3) Check ignition harness for security of mounting clamps and be sure connections are tight at spark plug and magneto terminals.

b. Fuel and Induction System – Check the primer lines for leaks and security of the clamps. Remove and clean the fuel inlet strainers. Check the mixture control and throttle linkage for travel, freedom of movement, security of the clamps and lubricate if necessary. Check the air intake ducts for leaks, security, filter damage; evidence of dust or other solid material in the ducts is indicative of inadequate filter care or damaged filter. Check vent lines for evidence of fuel or oil seepage; if present, fuel pump may require replacement.

c. Lubrication System.

(1) Replace external full flow oil filter element. (Check used element for metal particles.) Drain and renew lubricating oil.

(2) *(Engines Not Equipped with External Filter.)* Remove oil pressure screen and clean thoroughly. Note carefully for presence of metal particles that are indicative of internal engine damage. Change oil every 25 hours.

(3) Check oil lines for leaks, particularly at connections for security of anchorage and for wear due to rubbing or vibration, for dents and cracks.

d. Exhaust System – Check attaching flanges at exhaust ports on cylinder for evidence of leakage. If they are loose, they must be removed and machined flat before they are reassembled and tightened. Examine exhaust manifolds for general condition.

e. Cooling System – Check cowling and baffle for damage and secure anchorage. Any damaged or missing part of the cooling system must be repaired or replaced before the aircraft resumes operation.

f. Cylinders – Check rocker box cover for evidence of oil leaks. If found, replace gasket and tighten screws to specified torque (50 in.-lbs.).

Check cylinders for evidence of excessive heat which is indicated by burned paint on the cylinder. This condition is indicative of internal damage to the cylinder and, if found, its cause must be determined and corrected before the aircraft resumes operation.

Heavy discoloration and appearance of seepage at cylinder head and barrel attachment area is usually due to emission of thread lubricant used during assembly of the barrel at the factory, or by slight gas leakage which stops after the cylinder has been in service for awhile. This condition is neither harmful nor detrimental to engine performance and operation. If it can be proven that leakage exceeds these conditions, the cylinder should be replaced.

g. Turbocharger – All fluid power lines and mounting brackets incorporated in turbocharger system should be checked for leaks, tightness and any damage that may cause a restriction.

Check for accumulation of dirt or other interference with the linkage between the bypass valve and the actuator which may impair operation of turbocharger. Clean or correct cause of interference.

The vent line from the actuator should be checked for oil leakage. Any constant oil leakage is cause for replacement of piston seal.

Check alternate air valve to be sure it swings free and seals tightly.

h. Carburetor – Check throttle body attaching screws for tightness. The correct torque for these screws is 40-50 in.-lbs.

4. 100-HOUR INSPECTION. In addition to the items listed for daily pre-flight and 50-hour inspection, the following maintenance checks should be made after every one hundred hours of operation.

a. Electrical System.

(1) Check all wiring connected to the engine or accessories. Any shielded cables that are damaged should be replaced. Replace clamps or loose wires and check terminals for security and cleanliness.

(2) Remove spark plugs; test, clean and regap. Replace if necessary.

b. Lubrication System – Drain and renew lubricating oil.

c. Magnetos – Check breaker points for pitting and minimum gap. Check for excessive oil in the breaker compartment, if found, wipe dry with a clean lintless cloth. The felt located at the breaker points should be lubricated in accordance with the magneto manufacturer's instructions. Check magneto to engine timing. Timing procedure is described in Section 5, 1, b of this manual.

d. Engine Accessories – Engine mounted accessories such as pumps, temperature and pressure sensing units should be checked for secure mounting, tight connections.

e. Cylinders – Check cylinders visually for cracked or broken fins.

f. Engine Mounts – Check engine mounting bolts and bushings for security and excessive wear. Replace any bushings that are excessively worn.

g. Fuel Injection Nozzles and Fuel Lines – Check fuel injector nozzles for looseness, tighten to 60 in.-lbs. torque. Check fuel line for dye stains at connection indicating leakage and security of line. Repair or replacement must be accomplished before the aircraft resumes operation.

h. Turbocharger – Inspect all air ducting and connections in turbocharger system for leaks. Make inspection both with engine shut down and with engine running. Check at manifold connections to turbine inlet and at engine exhaust manifold gasket, for possible exhaust gas leakage.

CAUTION

DO NOT OPERATE THE TURBOCHARGER IF LEAKS EXIST IN THE DUCTING, OR IF AIR CLEANER IS NOT FILTERING EFFICIENTLY. DUST LEAKING INTO AIR DUCTING CAN DAMAGE TURBOCHARGER AND ENGINE.

Check for dirt or dust build-up within the turbocharger. Check for uneven deposits on the impeller. Consult AiResearch Div. Manual TP-21 for method to remove all such foreign matter.

5. 400-HOUR INSPECTION. In addition to the items listed for daily pre-flight, 50-hour and 100-hour inspection, the following maintenance check should be made after every 400 hours of operation.

Valve Inspection – Remove rocker box covers and check for freedom of valve rockers when valves are closed. Look for evidence of abnormal wear or broken parts in the area of the valve tips, valve keeper, springs and spring seats. If any indications are found, the cylinder and all of its components should be removed (including the piston and connecting rod assembly) and inspected for further damage. Replace any parts that do not conform with limits shown in the latest revision of Special Service Publication No. SSP1776.

6. NON-SCHEDULED INSPECTIONS. Occasionally, Service Bulletins or Service Instructions are issued by Lycoming that require inspection procedures that are not listed in this manual. Such publications usually are limited to specified engine models and become obsolete after corrective modification has been accomplished. All such publications are available from Lycoming distributors, or from the factory by subscription. Consult the latest revision of Service Letter No. L114 for subscription information. Maintenance facilities should have an up-to-date file of these publications available at all times.

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