

INSPECTION

25-HOUR INSPECTION

Before beginning the inspection, determine that engine and propeller performance is normal and that all systems function properly.

1. Engine and engine compartment for fuel and oil leaks, security of parts, correct engine and propeller control travel, proper safetying, and visible defects.
2. Propeller and spinner for apparent damage or defects.
3. Remainder of airplane for security of attaching bolts, screws, and rivets, broken spot-welds, fuel leaks, and apparent exterior damage or defects.
4. Items for servicing and lubrication in accordance with Figure 2-4 as required at 25-hour intervals.

NOTE

50-hour and 75-hour inspections are 25-hour inspections repeated at these intervals. Also check any items of servicing and lubrication required at these intervals.

100-HOUR INSPECTION

The 100-hour (periodic) inspection is a thorough, searching inspection of the entire airplane. Unless the progressive inspection method is used, it is required every twelve months as a periodic inspection or every 100 hours, if the airplane is operated for hire, in accordance with Civil Air Regulations.

ENGINE RUN-UP.

Before beginning the inspection proper, start, run up, and shut down the engine in accordance with instructions in the Owner's Manual. During the run-up observe the following, making note of any discrepancies or abnormalities:

1. Engine temperatures and pressures.
2. Static rpm.
3. Magneto drop; note particularly any difference between the drop on the two magnetos.
4. Engine response to changes in power.
5. Any unusual engine noises.
6. Propeller response through pitch range.
7. Fuel tank selector or shut-off valve; operate engine on each tank and off positions long enough to make sure the valve functions properly.
8. Idling speed and mixture; proper idle cut-off.
9. Generator warning light or ammeter.
10. Suction gage.
11. Fuel flow indicator.

After the inspection has been completed, an engine run-up should again be performed to ascertain that any discrepancies or abnormalities have been corrected.

PREPARATION.

Remove engine cowling, and loosen or remove all fuselage, wing, empennage, and upholstery inspection doors, plates, and fairings as necessary to accomplish the inspection. Replace after the inspection has been completed.

ENGINE COMPARTMENT.

1. Engine oil for changing, screen for cleaning; filler cap, dipstick, drain plug, and screen for security and safetying as required. Refer to Figure 2-4 for aircraft equipped with external oil filters.

NOTE

Examine oil screens, filters, and sump oil for metal particles or contamination that could indicate internal damage to the engine.

2. Oil cooler for security, leaks, and obstructed air passages.
3. Induction air filter for servicing, proper fit, security, cracks in frame, and tears or bare spots in filter element. Paper element "dry" filters for replacement every 300 hours.
4. Entire engine assembly for cleanliness.
5. Induction airbox for internal cleanliness, cracks, and security; air valve and doors for operation and sealing; controls for security and operation.
6. Cold air and hot air flexible hoses for security, kinks, holes, chafing, and burnt spots.
7. Engine baffles for security, sealing, cracks, metal deformation, and attachment of sealing strips.
8. Cylinders for security, cracks, broken cooling fins; rocker box covers and push rod housings for security, oil leaks, cracks, and dents.
9. Crankcase, oil pan, reduction gear housing, and accessory section for security, oil leaks, safetying; front crankshaft seal for oil leakage.
10. All lines and hoses for security, leaks, cracks, dents, kinks, corrosion, hose deterioration, and chafing.
11. Intake system for security, leaks, deteriorated hoses, and loose or corroded clamps; manifold drains for proper operation, drain lines and hoses for security, leaks, and chafing.
12. Exhaust system for security, leaks, cracks, and burned-out spots. Refer to paragraph 12-74.
13. Ignition harness for security, chafing, burning, defective insulation, and loose or broken terminals.
14. Spark plugs for proper gap, cleanliness, and evidence of reliable operation. (Also see paragraph 12-40.)
15. Crankcase and vacuum system breather lines for security, obstructions, corrosion, cracks, and chafing.
16. All electrical wiring in the engine compartment for security, chafing, defective insulation, and loose or broken terminals.
17. Vacuum pump for security, oil leaks, and safetying.
18. Vacuum relief valve for security and the inlet screen for cleanliness, holes, corrosion, and safetying.
19. Vacuum system oil separator for security, cracks, oil leaks, and servicing.
20. Engine and propeller controls and linkage for security, proper rigging, binding, excessive wear, cracks, misalignment, corrosion, safetying, and chafing.
21. Engine shock mounts for security, safetying, deterioration; engine mount for cracks, corrosion, dents, bends, and evidence of overheating; ground straps for security, corrosion, fraying of braided straps, and cracking of metal straps.
22. Cabin heater valve and door for proper operation, sealing, cracks, and deformation; controls for security, binding, proper rigging, and alignment.
23. Starter for security, oil leaks, tight electrical connections; engagement lever for proper rigging and return spring tension. Every 200 hours, check starter brushes for sufficient length, binding; brush leads for fraying, chafing; commutator for glaze, pits, grooves, high mica, and cleanliness.
24. Generator for security and oil leaks if generator is fastened to accessory case; drive belt for cuts, fraying, and excessive wear; electrical connections for security. Every 200 hours, check generator brushes for sufficient length, ~~binding~~, brush leads for fraying, chafing; commutator for glaze, pits, grooves, high mica, and cleanliness.
25. Voltage regulator for security and tight electrical connections. Every 200 hours, check contact points for discoloration, pits, and corrosion.
26. Starting vibrator for security and tight electrical connections. Every 500 hours, check vibrator contact points for discoloration, pits, and corrosion.

27. Bendix-Scintilla Magnetos.
 - a. Breaker compartment for dirt and grease.
 - b. Breaker points for security, pits, burns, and carbon deposits.
 - c. Cam followers for correct lubrication.
 - d. Ventilator screens for cleanliness and security.
 - e. Magnetos for correct internal timing, timing to engine, and security of attachment.
28. Slick (formerly Case) Magnetos.
 - a. Magnetos for correct timing to engine and security of attachment.

NOTE

As long as Slick magneto timing is correct, the magnetos need be checked internally only at 500-hour intervals. Check the following items whenever a magneto is disassembled.

- b. Breaker points for security, pits, burns, and carbon deposits.
- c. Cam oiler pad for correct lubrication.
- d. Ventilator screens for cleanliness and security.
- e. Carbon brush for excessive wear. The brush should protrude a minimum of 1/32" from the shaft.
- f. Each end of the distributor gear shaft for correct lubrication.
- g. The magnetos for correct internal timing during reassembly, timing to the engine, and security of attachment.
29. Carburetor for security, cracks, corrosion, fuel leaks, cleanliness of inlet screen and proper safetying.
30. Fuel/air control unit for security, cracks, corrosion, fuel leaks, cleanliness of inlet screen, proper safetying, and security of cooling shrouds.
31. Engine-driven fuel pump for security, cracks, leaks, proper safetying, and security of cooling shrouds.
32. Fuel manifold valve (fuel injection distributor) for security, proper safetying, and leaks.
33. Fuel injection lines for security, kinks, cracks, dents, leaks, and chafing.
34. Fuel injection nozzles for cleanliness and security.
35. Engine cowling for cleanliness, proper fit, security, cracks, dents, cuts, tears, loose or broken hinges, defective latches or fasteners, and deteriorated paint.
36. Cowl flaps for cleanliness, proper fit, security, cracks, dents, cuts, tears, loose or broken hinges, and deteriorated paint; control for security, proper rigging, and binding.

PROPELLER.

1. Fixed-pitch propeller for track, nicks, cracks, corrosion, bends, dents, security, and proper safetying.
2. Constant-speed propellers for nicks, cracks, corrosion, bends, dents, loose nuts and bolts, oil leaks, freedom of blade movement, excessive looseness of blades, security, and proper safetying.
3. Hartzell constant-speed propeller for correct lubrication.
4. Propeller governor for security, safetying, cracks, oil leaks; control for correct rigging, security, binding, and proper safetying.
5. Spinner and spinner bulkhead for cracks, dents, alignment, security, and condition of paint.

FUEL SYSTEM.

1. Fuel strainer for internal cleanliness, security, leaks, and safetying; drain valve and control for proper rigging, operation, leaks, and security.
2. Electric fuel pumps for cleanliness of filter screens, security, leaks, proper operation, and tight electrical connections.
3. Fuel tank sump drains for water and sediment, leaks, security, and safetying; quick-drain valves for proper operation.
4. Underside of wings for evidence of fuel leaks; rubber fuel cells for loose fasteners attaching upper surface to wing; fuel tank filler cap placards for legibility; caps for leaks and security.

NOTE

At engine overhaul periods (or approximately 1000 hours), drain all fuel and inspect interior of rubber fuel cells for checks and cracks, and the area around the filler opening for visible defects. On metal fuel tanks, remove the wing skin above the tanks and check for deformed metal, chafing, condition of straps and rubber pads, and security. On rubber or metal tanks, check outlet screens for contamination. These are coarse screens, designed to filter out larger foreign particles.

5. Fuel vents for obstructions, operation of check valve, leaks, security, and proper position of vent behind wing strut.
6. Fuel selector valve, or shut-off valve, for proper operation, security, leaks, positive detent positions, and legibility and correct indexing of placard.
7. All fuel lines for security, chafing, leaks, cracks, dents, kinks, and corrosion.
8. Fuel line and selector valve drains for servicing, security, leaks, and safetying.
9. Fuel accumulator tank for cracks, dents, leaks, and security.
10. Fuel quantity gages (direct-reading), electrical fuel quantity gages, and fuel quantity electrical transmitters for security, correct indication, defective electrical wiring, cracked glass, legibility, and leaks.
11. Engine primer for proper operation, leaks, and security.
12. Vapor return line solenoid and fuel system check valves for proper operation, leaks and security.

LANDING GEAR.

1. Brakes for proper operation, sponginess, failure to hold pressure, and fluid level.
2. Master cylinders, brake lines, and hoses for security, leaks, cracks, dents, and chafing.
3. Brake linings for wear, cleanliness, chips, cracks, and security.
4. Brake discs for scoring, warping, excessive wear, and loose or broken brake clips.
5. Wheel and brake assembly for cracks, dents, corrosion, leaks, loose bolts, defective paint, freedom of moving parts, and excessive wear.
6. Axles for security, cleanliness, cracks, bends, defective threads; axle nuts for proper adjustment and safetying.
7. At the first 100-hour inspection and at 500-hour intervals thereafter, remove the wheel bearings and inspect for cleanliness, rust, cracks, pits, scoring, brinelling, discoloration, excessive wear, and lubrication.
8. Main landing gear spring struts for security, cracks, bends, deep scratches, dents, chipped or peeling paint, and security of steps.
9. Tires for proper inflation, sufficient tread, cleanliness, cuts, blisters, breaks, and uneven wear. Check wheel alignment if tires show uneven wear.
10. Tailwheel for lubrication, security, cracks; tire for proper inflation, cuts sufficient tread, breaks, and blisters; tailwheel spring, steering and anti-swivel mechanism for security, proper operation, cracks, frayed cables, and worn links.
11. Nose gear shock strut for proper servicing, leaks, cleanliness, proper operation, excessive wear, looseness, visible damage, and security.
12. Nose gear steering linkage for correct alignment, proper steering travel, lubrication, excessive wear, and visible damage or defects.
13. Torque links for lubrication, cracks, binding, security, safetying, and excessive wear.
14. Shimmy dampener for servicing, security, proper operation, leaks, and excessive wear.
15. Speed fairings for security, cleanliness, proper adjustment of scrapers, cracks, tears, separation of laminate, and condition of paint.
16. Parking brake for proper operation, correct adjustment, security, excessive wear, and full release.

AIRFRAME.

1. Pitot and static ports for obstructions; pitot and static lines for security, cracks, kinks, chafing, and moisture; pitot and static systems for leaks; pitot tube for alignment.
2. Aircraft exterior for cracks, metal distortion, broken spotwelds, loose or missing rivets, screws, and bolts, corrosion, condition of paint, and any other apparent damage or defects. Especially check wing and empennage tips for damage.

3. Aircraft structure for corrosion, cracks, metal distortion, loose or missing rivets, screws, and bolts, and evidence of excessive loads.
4. Windows and windshield for cleanliness, proper attachment, sealing, crazing, cracks, deep scratches, and discoloration.
5. Door and window hinges and latches for lubrication, alignment, proper operation, cracks, distortion, binding, and security.
6. Seats for ease of movement, positive locking, security, and seat stops; seat upholstery for rips, tears, holes, and cleanliness; seat structure for cracks, bends, and corrosion; seat rails for security, cracks, and damage.
7. Safety belts for security, proper latching, cuts, tears, fraying, and broken stitching; attaching parts for cracks, deformed metal, and excessive wear.
8. Control column for security, binding, cracks, looseness, and restricted travel; bearings, sprockets, and pulleys for cleanliness, lubrication, binding, security, and excessive wear; cables and chains for security, cleanliness, corrosion, fraying, binding, broken links, and misalignment; turnbuckles for safetying; bell-cranks for cracks, distortion, and binding.
9. Control wheels for alignment, binding, security, bent tube, and excessive wear; control lock for proper operation and availability.
10. Instruments for cracked glass, security, proper operation, cleanliness, and legibility of markings; gyro instrument air filters for replacement.
11. Magnetic compass for security, fluid discoloration, leaks, lighting, and proper operation. Accuracy of the compass on all cardinal headings should be checked whenever equipment replacement, modification, or relocation might cause compass deviation, and at engine overhaul periods (or approximately 1000 hours). Compensate the compass and record deviation on the compass correction card.
12. Instrument wiring and plumbing for security, chafing, leaks, cracks, kinks, defective insulation, loose terminals, and interference with control column travel.
13. Instrument panel for security, deteriorated shockmounts, cracks, damaged decorative cover, and legibility of all decals and labeling.
14. Defrosting, heating, and ventilating systems for proper operation, security, chafing, and deterioration; controls for proper rigging, binding, and security; ram air inlets for obstructions.
15. Cabin upholstery and trim for cleanliness, rips, tears, holes, and security; sunvisors for security and proper operation; ash trays for cleanliness and security.
16. Area beneath floor for cleanliness, chafing and security of lines, hoses, and electrical wires; control cables for fouling.
17. Stall warning horn and light for proper operation and security.
18. Electrical switches, circuit breakers, and fuses for security, proper functioning, correct rating, and legibility of placarding; wiring for security, proper insulation, and chafing; spare fuses for availability.
19. Instrument and cabin lights for proper operation, security, and cleanliness; instrument light rheostat for proper functioning.
20. Radios and radio controls for proper operation and security.
21. Radio components in the aft fuselage for security, proper shock mounting, cracked or deformed mounting brackets, and cleanliness.
22. Oxygen system for proper operation, leaks, security of oxygen bottle, lines, regulator, and gage; mounting brackets for cracks, security, and damaged metal; oxygen masks and hoses for availability; oxygen supply for servicing for anticipated requirements.
23. Battery for servicing, security, and corroded terminals; battery cables for condition of terminals, security, and defective insulation; battery box for cracks, corrosion, damaged mounting brackets, and security; vent line for corrosion, security, and obstructions.
24. Firewall for proper sealing, security of grommets and shields, cracks, dents, wrinkles, loose or missing rivets, screws, or bolts, and evidence of excessive loads.
25. Radio antennas for cleanliness, security, proper connections, corrosion, and cracked insulators; external loop housing for security, cleanliness, cracks, loose or missing screws, sealing, and obstructed drain hole.
26. Navigation lights, landing lights, and rotating beacon for proper operation, security, cleanliness, and cracked glass.
27. Stall warning sensing unit for freedom of vane, security, cleanliness, and proper operation.
28. Pitot and stall warning heaters for proper operation.

29. Aileron control system:
 - a. Ailerons for correct direction of movement when operated from the cabin.
 - b. Pulleys for security, cleanliness, binding, misalignment, cracks, cracked or deformed pulley brackets, and chipped or broken flanges.
 - c. Cables for cleanliness, security of terminals, corrosion, fraying, correct tension, and safetying of turnbuckles.
 - d. Bellcranks and push-pull rods for cleanliness, lubrication, security, binding, cracks, and distortion.
 - e. Fairleads and cable guards for security and excessive wear.
 - f. Aileron system for correct rigging and proper travel.
30. Ailerons for security of attachment, smooth operation, security of balance weights, cracks, corrosion, and skin or structural damage.
31. Flap control system:
 - a. Pulleys for security, cleanliness, binding, misalignment, cracks, cracked or deformed pulley brackets, and chipped or broken flanges.
 - b. Cables for cleanliness, security of terminals, corrosion, fraying, correct tension, and safetying of turnbuckles.
 - c. Bellcranks and push-pull rods for cleanliness, lubrication, security, binding, cracks, and distortion.
 - d. Fairleads and cable guards for security and excessive wear.
 - e. Flap system for correct rigging and proper travel.
 - f. Flap control lever for security, proper operation of latch, lubrication, and binding; flap decal for legibility.
 - g. Electric flap motor and transmission assembly for security, proper operation, security of electrical wires, and cleanliness; flap motor hinge for cracks, distortion, binding and cleanliness; screwjack threads for cleaning and relubrication as required.
 - h. Electric flap position transmitter for security, proper adjustment, proper operation of actuating linkage, cracked or deformed mounting bracket, and tight electrical connections.
 - i. Flap position indicator for cracked glass, security, proper indication, cleanliness and legibility of markings.
32. Flaps for security of attachment, smooth operation, binding rollers, cracked, bent, or loose tracks, corrosion, and skin or structural damage.
33. Elevator control system:
 - a. Elevators for correct direction of movement when operated from the cabin.
 - b. Pulleys for security, cleanliness, binding, misalignment, cracks, cracked or deformed pulley brackets, and chipped or broken flanges.
 - c. Cables for cleanliness, security of terminals, corrosion, fraying, correct tension, and safetying of turnbuckles.
 - d. Bellcranks and push-pull rods for cleanliness, lubrication, security, binding, cracks, and distortion.
 - e. Fairleads and cable guards for security and excessive wear.
 - f. Elevator downspring system for security and proper operation. Where the attachment to the push-pull tube is adjustable, check that the downspring system applies load to the elevator as it reaches the streamlined position (with stabilizer leading edge full down).
 - g. Elevator system for correct rigging and proper travel.
34. Elevators for security of attachment, smooth operation, security of balance weights, cracks, corrosion, and skin or structural damage.
35. Elevator or stabilizer trim control system:
 - a. Elevator trim tab or stabilizer for correct direction of movement when operated from the cabin.
 - b. Pulleys and sprockets for security, cleanliness, binding, misalignment, cracks, cracked or deformed brackets and chipped or broken flanges or teeth.
 - c. Cables and chains for cleanliness, security of terminals, corrosion, fraying, correct tension, broken or damaged links, and safetying of turnbuckles.
 - d. Push-pull rod for security, cracks, and distortion.
 - e. Fairleads, cable guards, and chain guards for security and excessive wear.
 - f. Trim control wheel for lubrication, cleanliness, security, binding, and operation of friction stop and position indicator; indicator for correct indexing and legible markings.
 - g. Trim tab or stabilizer actuators for security, cleanliness, lubrication, proper operation, corrosion, cracks, and excessive wear.
 - h. Trim control system for correct rigging and proper travel.

36. Movable stabilizer or elevator trim tab for security of attachment, smooth operation, cracks, corrosion, and skin or structural damage.
37. Rudder control system:
 - a. Rudder for correct direction of movement when operated from the cabin.
 - b. Rudder pedal assembly for binding, cleanliness, lubrication, security, cracks, bent linkage, and excessive wear.
 - c. Pulleys for security, cleanliness, binding, misalignment, cracks, cracked or deformed pulley brackets, and chipped or broken flanges.
 - d. Cables for cleanliness, security of terminals, corrosion, fraying, correct tension on "closed" systems, and safetying of turnbuckles.
 - e. Fairleads and cable guards for security and excessive wear.
 - f. Rudder system for correct rigging and proper travel.
38. Rudder for security of attachment, smooth operation, security of balance weight, cracks, corrosion, and skin or structural damage.
39. Rudder trim control system:
 - a. Trim control wheel for lubrication, cleanliness, security, binding, and proper operation.
 - b. Position indicator for proper operation, correct indexing, legible markings, and security.
 - c. Bungee for cleanliness, security, proper operation, excessive wear, and correct safetying.
 - d. Chain for cleanliness, proper tension, broken or damaged links, corrosion, and binding.
 - e. Sprockets and connecting shaft for security, binding, misalignment, cracks, excessive wear, cleanliness, and chipped or broken teeth.
 - f. Trim control system for correct rigging.
40. Wings, wing struts, and empennage for security of attachment, cracked fittings, loose or missing rivets and bolts, security of hinges, defective bearings, and evidence of elongated bolt holes and excessive wear of attaching parts.

PAPER REQUIREMENTS.

1. Check that all aircraft and engine documents are in accordance with current Civil Air Regulations.
2. Check FAA Airworthiness Directives and Cessna Service Letters for compliance at the time specified by them.

NOTE

A high-time inspection is merely a 100-hour inspection with the addition of an engine overhaul at the Continental-recommended overhaul periods given below. At the time of engine overhaul, constant-speed propellers, governors, and engine accessories should also be overhauled. Throughout the 100-hour inspection, note that certain items need only be inspected every 200 hours, 300 hours, etc.

O-200	1200 hours
O-300	1200 hours
GO-300	1000 hours
O-470	1200 hours
IO-470	1200 hours