

Raytheon Aircraft Company

BONANZA SERIES MAINTENANCE MANUAL

CHAPTER 5 - TIME LIMITS/MAINTENANCE CHECKS

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OVERHAUL AND REPLACEMENT SCHEDULE

The first overhaul or replacement must be performed not later than the recommended period. The condition of the item at the end of the first period can be used as a criterion for determining subsequent periods applicable to the individual airplane or fleet operation, provided the operator has an approved monitoring system.

The time periods for inspections noted in this manual are based on average usage and average environmental conditions.

NOTE: The recommended periods do not constitute a guarantee the item will reach the period without malfunction as the aforementioned factors cannot be controlled by the manufacturer.

SPECIAL CONDITIONS CAUTIONARY NOTICE

WARNING: Prior to performing maintenance on an engine or the Airframe, **ALWAYS** pull the starter control circuit breakers and the Landing Gear circuit breaker. This will remove power to the starter control as well as the igniter power relay and Landing Gear Control relay.

Airplanes operated for Air Taxi, or other than normal operation, and airplanes operated in humid tropics, or cold and damp climates, etc., may need more frequent inspections for wear, corrosion and/or lack of lubrication. In these areas, periodic inspections should be performed until the operator can set his own inspection periods based on experience.

NOTE: The date noted on the STANDARD AIRWORTHINESS CERTIFICATE, FAA Form No. 8100-2, which is issued with each new airplane, is to be used as the basis for all TBO or replacement components listed in the following schedule.

An engine cycle is defined as the period of time from the initial start to shutdown of the engine. This encompasses start-up, increase to full or partial power (as required during a flight regime) and back to complete engine shutdown. Normal operation results in the number of landings being equivalent to engine cycles.

Overhaul and Replacement Schedule

Item

Overhaul or Replace

NOTE

All items not listed are to be overhauled or replaced on condition. On condition items are to be overhauled or replaced if inspection reveals a potentially unsafe or unserviceable condition, if they are worn, inoperative, inaccurate, intermittent and not repairable through normal maintenance. Primarily items that are calendar, cycle or hour limited are included in the following list.

LANDING GEAR

Main Gear Assembly

On condition. (Leaking or collapsed struts that cannot be corrected by seal replacement will constitute the on condition requirement. Any pitting, corrosion, cracking, distortion or visible wear noted during the seal replacement will also constitute the requirement for an overhaul.)

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Overhaul and Replacement Schedule (Continued)

| Item | Overhaul or Replace |
|--|---|
| LANDING GEAR (<i>Continued</i>) | |
| Nose Gear Assembly | On condition. (Leaking or collapsed struts that cannot be corrected by seal replacement will constitute the on condition requirement. Any pitting, corrosion, cracking, distortion or visible wear noted during the seal replacement will also constitute the requirement for an overhaul.) |
| Nose Gear Retract Rod-Ends (All) | 2,000 hours |
| Actuator | 4,000 hours |
| Retract Motor | 2,000 hours |
| Retract Motor Brushes | 500 hours or On Condition. |
| Shimmy Damper | On condition. |
| Wheels and Tires | On condition. |
| Brake Assembly | On condition. |
| Brake Lining | On condition. |
| Master Cylinder | On condition. |
| Shuttle Valve Assembly | On condition. |
| Parking Brake Valve | On condition. |
| All Hoses | On condition. |

POWER PLANT

NOTE

A TBO (time between overhaul) recommendation is in no way to be construed as a warranty or engine life proration basis. The TBO recommendation is based on the projected time for most advantageous initial overhaul. The individual operator's experience may indicate a departure in either direction from the recommended TBO for the particular operation.

| | |
|----------------------------------|---|
| Cabin Heater Muff | On condition. |
| Engine | Refer to Teledyne Continental Service Information Letter SIL 98-9A, Rev A or subsequent, for detailed overhaul period instructions. |
| Engine Controls | On condition. |
| Engine Vibration Isolator Mounts | Engine overhaul or On Condition. |
| Exhaust System | On condition. |
| Starter | Inspect at engine overhaul, overhaul or replace On Condition. |
| Standby Generator | 1,500 hours |

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Overhaul and Replacement Schedule (Continued)

| Item | Overhaul or Replace |
|---|--|
| Standby Generator Brushes | 500 hours |
| POWER PLANT (Continued) | |
| Alternator | On condition. |
| Oil Cooler | On condition, replace if contaminated. |
| Propeller (McCauley) | Refer to McCauley Service Bulletin 137B or subsequent. |
| Propeller (Hartzell) | Refer to the latest revision of Hartzell Service Letter 61 for TBO. |
| Propeller Controls | On condition. |
| Propeller Governor (McCauley) | At engine overhaul or On condition but not to exceed 1,800 hours. |
| Propeller Governor (Woodward) | At engine overhaul or On condition. Refer to the latest revision of Woodward Service Bulletin 33580 or subsequent. |
| Air Pressure Pump | Airborne Pumps - refer to Airborne Replacement Schedule SI 300-17 or subsequent. See Supplier Data CAUTION at the end of this Chapter.* Aero Accessories Pump, Part Number AA442CW, Replace at 500 hours time-of-operation. Aero Accessories Pumps, Part Number AA216CW or AA3216CW, - Replace at 1,200 hours time-of-operation. |
| Standby Air Pressure Pump | Airborne Pumps - refer to Airborne Replacement Schedule SI 300-17 or subsequent except hours are to be pump operation time. See Supplier Data CAUTION at the end of this Chapter.* Aero Accessories Pumps, Part Number AA216CW or AA3216CW, - Replace at 1,200 hours time-of-operation. |
| All Hoses | Hoses carrying flammable liquids at engine overhaul or every 5 years, whichever occurs first since the last replacement or delivery date of the airplane from the factory; all other hoses On Condition. |
| Engine Air Filter | Clean every 50 hours of operation (10 times max.). Replace every 500 hours or 1 year, whichever occurs first. |
| Engine Baffle Seals | Replace as necessary or every 10 years of service. |
| Magneto (Bendix & Teledyne Continental Motors (TCM) | Engine overhaul or every four years, whichever comes first. Refer to TCM Service Bulletin 643. |
| Slick Magnetos (Unison Industries) | Refer to Slick Aircraft Products Maintenance Manual (P/N L-1363) and Slick Service Bulletin SB2-80C. |
| Turbocharger | Overhaul or replace as required in conjunction with the Engine requirements list above. |

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Overhaul and Replacement Schedule (Continued)

| Item | Overhaul or Replace |
|--|---|
| FLAPS AND FLIGHT CONTROLS | |
| Aileron Trim and Linkage | On condition. |
| Flight Controls | On condition. |
| Elevator Tab Actuator | On condition. |
| Flap Motor and Gearbox | Replace On Condition. |
| Flap Actuators | 2,000 hours |
| Flap Flexible Shaft | 2,000 hours |
| FUEL SYSTEM | |
| Fuel Cells | On condition. |
| Wing Fuel Quantity Transmitters | On condition. |
| Fuel Cell Drain Valve | On condition. |
| Fuel System Check Valves | On condition. |
| Fuel Selector Valve | Replace every 10 years. |
| Fuel Boost Pump | Overhaul every 10 years. |
| All Hoses | Hoses carrying flammable liquids at engine overhaul or every 5 years, whichever occurs first since the last replacement or delivery of the airplane from the factory; all other hoses On Condition. |
| Fuel Cell Reservoir Kit (If installed) | Replace foam insert every 10 years. |
| INSTRUMENTS | |
| Turn Coordinator | On condition |
| Altimeter | Every 24 months per FAA directive (inspect and calibrate). |
| Directional Gyro | On condition. |
| Gyro Horizon | On condition. |
| Gyro Pressure Gage | On condition. |
| Engine Gage Units | On condition. |
| Airspeed Indicator | On condition. |
| Rate-Of-Climb | On condition. |
| Fuel Flow/Manifold Pressure Indicator | On condition. |
| Tachometer | On condition. |
| Clock | On condition. |

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Overhaul and Replacement Schedule (Continued)

| Item | Overhaul or Replace |
|--|--|
| INSTRUMENTS <i>(Continued)</i> | |
| Flap Position Indicator | On condition. |
| Free Air Temperature Indicator | On condition. |
| Pressure System Filter (In-line and Intake) | Refer to Parker-Hannifin Airborne Service Letter 59 or subsequent. See Supplier Data CAUTION at the end of this Chapter.* |
| Standby Pressure System Filters (In-line and Intake) | Refer to Parker-Hannifin Airborne Service Letter 59 or subsequent except hours are to be pump operation time. See Supplier Data CAUTION at the end of this Chapter.* |
| Air Pressure Regulator Valve | On condition. |
| All Hoses | On condition. |
| Standby Air Pressure System Check Valve | Replace every 10 years. |
| ELECTRICAL SYSTEM | |
| Battery Master Relay | On condition. |
| All Other Relays | On condition. |
| Voltage Regulator | On condition. |
| Starter Relay | On condition. |
| Battery (Emergency Locator Transmitter) | Replace at 50% of useful life (as stated on the battery) or any time transmitter is used more than one cumulative hour. |
| MISCELLANEOUS | |
| Hand Fire Extinguisher | Inspect every 12 months, recharge as necessary. |
| Cabin Heating and Ventilating Ducts | Inspect every 12 months or On Condition. |
| Oxygen Regulator | On condition. |
| Air Conditioner Filter | On condition. |
| Air Conditioner Compressor | On condition. |
| Seat Belts or Shoulder Harnesses | Inspect every 12 months or On Condition. |
| Oxygen Cylinder (Lightweight 3HT Type) | Hydrostatically test every 3 years. Replace every 24 years or 4,380 refills (ICC regulation), whichever occurs first. |
| Oxygen Cylinder (Standard Weight 3AA Type) | Hydrostatically test every 5 years. |

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Overhaul and Replacement Schedule (Continued)

Item

Overhaul or Replace

WINGS

Wing-Attach Bolts

Replace 10 years after initial inspection or On Condition.
Refer to Chapter 57.

CAUTION

After removing wing attach nuts for any reason, always install new wing attach nuts. Do not reuse existing nuts.

**Supplier Data on this item may change without notice. Users of this manual should refer to the Parker Hannifin website (www.parker.com/airborne) for the latest information.*

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SCHEDULED MAINTENANCE CHECKS - MAINTENANCE PRACTICES

ELECTRIC PROPELLER DEICER (50 HOUR GUIDE)

The various components of the propeller deicer system should be inspected every 50 hours for the appearance of defects. The following inspections may provide means for detecting and correcting such defects before they render the deicer system inoperative:

- a. Lock the brakes and operate the engine at near takeoff power. Turn the deicer systems switch ON and observe the ammeter for at least 3 minutes. If the ammeter needle does not indicate amperage (refer to ELECTRIC PROPELLER DEICING, Chapter 30-60-00, for proper amperage) for 90 seconds at 90 second intervals, refer to the troubleshooting chart for the probable sources of trouble.

WARNING: Before moving propeller, make certain that ignition switch is OFF and that engine has cooled completely. There is always some danger of a cylinder firing when propeller is moved.

CAUTION: While following the instructions of Step b., move the propeller back and forth to prevent arcing between the brushes and slip ring.

- b. With the engine shut off, turn the deicer switch ON and feel the deicer boots on the propeller for the proper sequence of heater operation. The presence of local hot spots indicates service damage to the deicer heaters, which should be repaired before more serious damage develops.
- c. Remove the spinner and open all access doors pertaining to the wiring and components of the deicer system. Turn the deicer switch ON and station an assistant in the cockpit to observe the system ammeter. Flex all accessible wiring, particularly the lead straps, leads from the slip ring assembly, and the firewall electrical connectors and their wiring. Any movement of the ammeter, other than the cycling flicker that occurs at 90 second intervals, indicates a short or open circuit that must be located and corrected.
- d. To extend the life of the lead strap between the hub clamp and clip, reposition the bend in the strap at a point at least 1/2 inch from the existing location of the bend.
- e. Check for damaged brush rods or springs and for worn or damaged brushes.

ELECTRIC PROPELLER DEICER (100 HOUR GUIDE)

- a. Check for radio noise or radio compass interference by operating the engine at near takeoff power with the radio gear turned on. If, under these conditions, noise or interference occurs when the deicer switch is ON and disappears when the switch is OFF, refer to the troubleshooting chart for the probable source of trouble.

WARNING: Before moving propeller, make certain that ignition switch is OFF and that engine has cooled completely. There is always some danger of a cylinder firing when a propeller is moved.

- b. Check all clamps, clips, mountings, electrical connections and connectors for tightness and electrical soundness. Check also for loose, broken or missing safety wire.
- c. Closely check the deicer boots for wrinkles, loose or torn areas, particularly around the outboard end and at the point where the strap passes under the hub clamp. Look for abrasion or cuts along the leading edge of the flat or thrust face. If the heater wires are exposed in damaged areas or if the rubber is found to be tacky, swollen or deteriorated (as from contact with oil or solvent fluids), replace the damaged deicer boot.

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- d. Check that the hub clamps are tight. Inspect for cracks or other damage. Check to see that the cushioning material is not missing or damaged in the area under the hub clamp or on the edge of the spinner dome. Manually operate the propeller from "high pitch" to "low pitch" while checking that the deicer lead straps do not come under tension.
- e. Check the slip rings for gouges, roughened surfaces, cracks, burned or discolored areas, and for deposits of oil, grease or dirt. Clean greasy or contaminated slip rings with CRC-2-26 solvent (23, Chart 1, 91-00-00). After such a cleaning, allow a run-in time of 5 hours of engine operation before turning on the deicer system.
- f. If uneven wear or wobble is detected, check the alignment of the slip rings to the prop shaft with a dial indicator. While turning the prop to check the slip ring alignment, push in on the prop to eliminate play in the propeller thrust bearing. If the run out over 360° of rotation is over 0.005 inch or if over any 4-inch arc it exceeds 0.002 inch, refer to the paragraph on SLIP RING ALIGNMENT in Chapter 30-60-00.
- g. Examine the brush mounting bracket and housing for cracks, deformation, or other indications of damage. Make sure that connections are tight and that the leads are not chafed or binding.
- h. Check to see that each brush rides fully on its slip ring over 360° of rotation. If the brush is not properly aligned, add shims under the brush block or elongate the holes in the mounting bracket to raise or lower the brush block to the proper position. If the brushes ride BOTH high and low with respect to the slip rings in 360° of rotation, the slip ring assembly is eccentrically mounted and the spinner bulkhead must be replaced. For the correct angular location of the brushes to the slip ring, refer to the illustrations in Chapter 30-60-00.
- i. Check for proper spacing between the brush block and slip rings as indicated in DEICER BRUSH REPLACEMENT, Chapter 30-60-00. If this distance is not within the specified limits, loosen the mounting screws and reposition them in the elongated holes until the block is properly positioned. If necessary, add shims between the thrust bearing plate and mounting bracket until the brush block is properly located.
- j. Estimate the contact angle of the brush block in relation to the slip rings. If this angle is not approximately 2°, as indicated in DEICER BRUSH REPLACEMENT, Chapter 30-60-00, loosen the mounting screws and reposition the brush block until the proper angle exists between the brush block and slip rings. The spacing established in Figure 203, Chapter 30-60-00 must also be maintained after the proper contact angle is established.

CAUTION: *While following the instructions of Step k., move the propeller back and forth to prevent arcing between the brushes and slip ring.*

- k. With the deicer system operating and a man in the cockpit observing the ammeter, visually inspect and physically flex the wiring from the brush blocks to each component of the deicer system and to the aircraft power supply. Movement of the ammeter needle (other than the cycling that occurs when the timer switches at 90-second intervals) indicate loose or broken wiring in the area under examination at the moment. In such instances, continue to flex the wiring in the area that first indicated trouble while checking the continuity through the individual wires of the affected harness until the source of trouble is located. Use the wiring diagram to trace the circuitry of the deicer system.

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TURBOCHARGER (EA-11 AND AFTER)

25 HOURS

- a. Visually inspect oil leaks, exhaust system leaks and general condition.

50 HOURS

- a. Visually inspect oil leaks, exhaust system leaks and general condition.

100 HOURS

Inspect turbocharger system per the following method:

NOTE: On airplane serials EA-11 thru EA-241 without Kit No. 36-9006-1 installed there is a control system sump tank in the turbocharger oil system. On airplane serials EA-11 thru EA-241 with Kit No. 36-9006-1, and EA-242 and After, this sump tank has been removed (refer to Chapter 81-00-00).

- a. Remove compressor inlet duct assembly. Inspect the compressor wheel for nicks, cracks or broken blades. Turn wheel by hand and feel for excess bearing drag or wheel rubbing against housing. Reinstall air inlet duct.
- b. Check the oil inlet and outlet ports in center housing for leaks, and the turbine heat blanket for condition and security.
- c. Check for any interference with linkage between the bypass valve (wastegate) and actuator, its general condition and security.
- d. Inspect all exhaust system components for worn or damaged areas, loose clamps, cracks and leaks.
- e. Inspect lubrication system components for worn or damaged areas, loose clamps and leaks. Special attention should be given to the ducts downstream (pressure side) of the compressor.
- f. Inspect the fuel injection nozzle pressure reference manifold, for deteriorated hose, loose connections, leaks or obstructions.
- g. All fluid power lines should be checked for leaks and security.
- h. The compressor discharge reference line from the throttle air valve to the controller should be opened and inspected for oil leakage from the controller. Any leakage is cause for replacement of the controller.

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E33C, F33C SPIN INSPECTION (ACROBATIC CATEGORY)

This inspection is required on all E33C and F33C (CJ-1 and After) airplanes which are being acrobatically spun (even if the spin time is only a small part of total time). This inspection is NOT required if an airplane is performing acrobatic maneuvers other than spins (no spins at all). The regular 100-Hour Inspection (P/N 98-32227G or subsequent), Intermediate 100-Hour Inspection (P/N 98-38999 or subsequent) or Continuing Care Inspection Guide (P/N 98-36711D or subsequent) MUST also be complied with.

E33C, F33C SPIN INSPECTION (ACROBATIC CATEGORY)

| | FREQUENCY | PART | INSPECTION | CORRECTIVE ACTION | MECH | INSP |
|----|-----------|---|--|--|------|------|
| 1. | 50 Hours | Rudder pedal bellcrank support assembly | Check for cracks. | If cracks are found, contact the Technical Support Department of Raytheon Aircraft Company. | | |
| 2. | 50 Hours | Elevator to Elevator torque fitting casting joint | Check screw holes (4 per elevator) for proper hole diameter. | If hole diameter is more than 0.194 inch, ream hole to 0.208 ± 0.002 inch diameter and install NAS 2903-4 or NAS 6203-4X oversize bolt. If hole diameter exceeds 0.210 inch for oversize bolts, contact the Technical Support Department of Raytheon Aircraft Company. Torque bolt or screw to 30 to 40 in.-lbs. | | |
| | | | Check hole size in elevator inboard hinge mount hole in center of elevator torque fitting. | If hole diameter is greater than 0.251 inch, replace elevator torque fitting. | | |
| | | | Check elevator rod end mounting hole in the elevator torque fitting for proper diameter. | If hole diameter is greater than 0.379 inch, ream to 0.436 ± 0.001 inch and install one BS 105740-X-XC-0500 bushing. | | |

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E33C, F33C SPIN INSPECTION (ACROBATIC CATEGORY) (Continued)

| | FREQUENCY | PART | INSPECTION | CORRECTIVE ACTION | MECH | INSP |
|----|-----------|---|--|--|------|------|
| 3. | 50 Hours | Horizontal and vertical stabilizer attachment bolt holes (stabilizer spars and bulkheads) | <p>Horizontal stabilizer forward spar: Check diameter of 4 outboard bolt holes on each side (2 upper and 2 lower).</p> <p>Horizontal stabilizer rear spar: Check diameter of 2 outboard bolt holes on each side (1 upper and 1 lower).</p> <p>If any of these holes are oversize, check all other horizontal stabilizer holes and vertical stabilizer bolt holes for correct diameter.</p> | If bolt holes are more than 0.253 inch in diameter or elongated, ream the bushings to 0.270 ± 0.002 inch diameter and install NAS 2904-14 oversize bolts. If hole diameter exceeds 0.272 inch for oversize bolts, contact the Technical Support Department of Raytheon Aircraft Company. Torque the nuts to 85 to 100 in.-lbs. | | |
| 4. | 50 Hours | | Check torque on all nuts. | Torque the nuts to 85 to 100 inch pounds. | | |
| | | Inboard elevator hinge bolts | Check for straightness and wear. | Replace if bent or worn. | | |
| | | Elevator push-rods to elevator torque fitting bolt | Check for straightness and wear. | Replace if bent or worn smaller than 0.370 inch diameter. | | |
| 5. | 50 Hours | Upper and middle rudder hinges | Inspect for cracks, corrosion and excessive wear. | Replace if any of noted conditions exist. | | |
| | | Lower rudder hinge | Inspect for cracks, corrosion and excessive wear. | Replace if any of noted conditions exist. | | |

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E33C, F33C SPIN INSPECTION (ACROBATIC CATEGORY) (Continued)

| | FREQUENCY | PART | INSPECTION | CORRECTIVE ACTION | MECH | INSP |
|----|-----------|----------------------|---|--|------|------|
| 6. | 50 Hours | Elevator hinge joint | Check bearing for looseness and bearing bracket for cracks, corrosion and excessive wear. | Replace if noted conditions exist. | | |
| | | | Check bushing diameters. | If I.D. is greater than 0.191 inch or O.D. is under 0.310 inch, replace bushings. Replace if noted conditions exist. | | |
| | | | Check elevator hinge brackets hole diameter. | If greater than 0.200 inch, replace bracket. | | |
| | | | Check elevator hinge bracket for cracks, corrosion and excessive wear. | Replace if noted conditions exist. | | |
| | | | Check bolts for wear. | Replace if plating is worn or corroded. | | |
| | | | Check reassembled joint for looseness. | Install new parts as required. | | |
| 7. | 50 Hours | Elevator pushrods | Check for straightness, and cracks. | Replace pushrod if bent or cracked. | | |
| | | | Check rod end bearing for excessive free play. | Replace rod end bearing if excessive free play is noted. | | |
| | | | Check rod end mounting hole diameter. | If greater than 0.378 inch in diameter, replace rod end. | | |
| 8. | 50 Hours | Trim Tab | Check for cracks. | Replace if noted conditions exist. | | |
| | | | Check free play as indicated in Chapter 27-30-00. | Replace tab bushing and/or trim tab pushrod ends and/or trim tab actuator shaft and/or trim tab hinge if excessive free play is noted. | | |
| 9. | 50 Hours | Elevator | Check for cracks, especially between outboard hinge and elevator balance horn. | If cracks are found, contact the Technical Support Department of Raytheon Aircraft Company for repair. | | |

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E33C, F33C SPIN INSPECTION (ACROBATIC CATEGORY) (Continued)

| | FREQUENCY | PART | INSPECTION | CORRECTIVE ACTION | MECH | INSP |
|-----|-----------|--------------------------------------|--|---|------|------|
| 10. | 50 Hours | Trim tab pushrod assemblies | Check straightness. | Replace if bent. | | |
| 11. | 50 Hours | Trim tab actuator | Check output shaft for straightness. | Replace if bent. | | |
| | | | Check actuator installation for looseness. | Check attach bolts for proper torque. | | |
| 12. | 50 Hours | Elevator bellcrank | Check pushrod mounting hole for proper diameter. | If more than 0.379 inch, press out existing bushing and press in one BS105740X-XC0968 bushing and drill 0.377 ± 0.002 inch diameter hole through bushing. | | |
| 13. | 50 Hours | Bolt (elevator pushrod to bellcrank) | Check for straightness and wear. | Replace if bent or worn smaller than 0.370 inch. | | |
| 14. | 50 Hours | Inboard elevator hinge casting | Check for cracks. Check hinge bearings for looseness. | Replace if noted condition exists. | | |

100-HOUR OR ANNUAL INSPECTION GUIDE

The owner or operator is responsible for maintaining the airplane in an airworthy condition, including compliance with all applicable Airworthiness Directives as specified in Part 39 of Title 14 Code of Federal Regulations (14 CFR). It is further the responsibility of the owner or operator to make sure the airplane is inspected in conformity with the requirements covered in 14 CFR Parts 43 and 91. These 14 CFR Parts cover the requirements concerning the Inspection Guide. This Inspection Guide is not intended to be all inclusive, for no such guide can replace the good judgement of a certified airframe and power plant mechanic in the performance of his duties. As the one primarily responsible for the airworthiness of the airplane, the owner or operator should select only qualified personnel to maintain the airplane.

FACTS PROGRAM (MODELS A36 AND B36TC)

Airplanes delivered from the factory after August 1, 2001 will use the Factory Aircraft Comprehensive Tracking System (FACTS) which becomes the factory computerized maintenance tracking and forecasting system for the Model A36/B36TC series airplanes. The FACTS program for the Model A36/B36TC adheres to the guidelines established in this chapter of the maintenance manual. The Raytheon Aircraft approved inspection program contained in this chapter, and within the Raytheon factory computerized maintenance inspection program (FACTS), is specifically for the Model A36/B36TC series airplanes. Any variation to the inspection program must be approved in writing by the FAA Flight Standards District Office (FSDO), or Airworthiness Authority. The FACTS program meets the requirement of both 14 CFR 91 and 14 CFR 135.

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SPECIAL CONDITIONS CAUTIONARY NOTICE

The time periods for the inspections noted in this schedule are based on normal usage under average environmental conditions. Airplanes operated in humid tropics, or in cold, damp climates, etc., may need more frequent inspections for wear, corrosion, lubrication, and/or lack of maintenance. Under these adverse conditions, perform periodic inspections in compliance with this guide at more frequent intervals until the owner or operator can set his own inspection periods based on the contingencies of field experience.

NOTE: The required periods do not constitute a guarantee that the item will reach the period without malfunction, as the aforementioned factors cannot be controlled by the manufacturer.

This inspection program, in accordance with 14 CFR Parts 43 and 91, consists of, but is not limited to, inspection items listed in this Inspection Guide, any applicable Airworthiness Directives issued against the airframe or any equipment installed therein and conformity to Type Certificate Data Sheet as applicable.

Material contained in this guide, including the inspection intervals, may be changed at any time by the owner/operator, with prior notification and approval of the local FAA General Aviation District Office, when warranted by service experience or engineering recommendations. Information contained herein is applicable to all Bonanza series airplanes covered in this maintenance manual except where differences are indicated by serial effectivity.

While the Inspection Guide may be used as an outline, detailed information of the many systems and components in the airplane will be found in the various sections of this maintenance manual and the pertinent supplier publications. It is also recommended that reference be made to the applicable maintenance handbooks, service instructions, Raytheon Aircraft service bulletins, applicable FAA regulations and publications, and supplier bulletins and specifications for torque values, clearances, settings, tolerances, and other requirements. In the final analysis, it is the responsibility of the owner/operator to make sure the airframe and power plant mechanic inspecting the airplane has access to the previously noted documents as well as to this Inspection Guide.

NOTE: Any time an airplane is repainted or touched up, inspect all placards and decals to assure that they are not covered with paint, are easily readable, and are securely attached. Replace any placards that have been inadvertently defaced or removed.

In addition to the inspections prescribed by this schedule, the altimeter system and all ATC transponders **MUST** be tested and inspected at 24-month intervals in compliance with the requirements specified in 14 CFR Parts 91.411, and 91.413.

A complete inspection of the airplane must be accomplished within each 12-month period for compliance with the Title 14 Code of Federal Regulations. The time periods for inspections stated in this inspection guide should **NEVER** be exceeded by more than 10 hours, and then only if the additional time is required to reach a place where the inspection can be satisfactorily accomplished. However, the additional time used must be deducted from the next inspection time. If 10 hours were used to reach the inspection facility, the next inspection would be due in 90 hours for the next 100-hour inspection with no extension allowed.

An airplane must receive a complete (100-hour, annual, or complete continuing care inspection) inspection every 12 months regardless of the hours flown. The inspections completed during a 12-month period can be deleted from the items to be inspected. Rubber goods such as fuel lines are recommended to be changed at five year periods regardless of airplane time.

NOTE: Additional publications are listed in the current Publications Price List CD ROM (P/N 994-32808). For information on these publications contact the Technical Manual Distribution Center (TMDC) at 1-800-796-2665, FAX (316) 676-4824, E-mail TMDC@rac.ray.com or visit our web site at <http://raytheonaircraft.com>.

NOTE: All electrical systems operational inspections are to be made using an external power source capable of delivering and maintaining 28.25 ± 0.25 vdc.

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Raytheon Aircraft Company issues service information for the benefit of owners and operators in the form of two classes of Service Bulletins. MANDATORY (Red Border) Service Bulletins are changes, inspections or modifications that could affect safety. The factory considers compliance with these Service Bulletins mandatory. OPTIONAL (No Border) Service Bulletins cover changes, modifications, improvements or inspections which may benefit the owner. Due to the wide range of information covered by the OPTIONAL Service Bulletin, each owner or operator is responsible for conducting a thorough review of each OPTIONAL Service Bulletin to determine if compliance is required based on the applicability of the OPTIONAL Service Bulletin to his particular set of operating conditions. It is the responsibility of the owner or operator to make sure all Raytheon Aircraft Service Bulletins which are pertinent to his particular operation are complied with.

NOTE: Model E33C and F33C airplanes being spun MUST also have the AEROBATIC INSPECTION at 50 hours.

WARNING: During the performance of this inspection the airplane will be placed on three-point jacks. Make sure the landing gear is down and locked before removing the airplane from the jacks.

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100-HOUR OR ANNUAL INSPECTION

A - OPERATIONAL INSPECTION

| | MECH | INSP |
|--|------|------|
| 1. STARTER - Check for proper operation, unusual noise and dragging. Check starter energized light (if installed) and/or load meter to make sure starter disengages when starter switch is released. | | |
| 2. FUEL FLOW - Check for proper fuel pressure limits and fluctuations. Refer to Chapter 71-00-00 for fuel system setup. | | |
| 3. CYLINDER HEAD TEMPERATURE - Check for proper operation, temperature and fluctuations. | | |
| 4. ALTERNATOR - Check for proper output and unusual noises. | | |
| 5. STANDBY ALTERNATOR/GENERATOR - Check for proper operation in test mode. Perform a functional test as outlined in the Bonanza Series Maintenance Manual Chapter 24-31-00, or subsequent). Check wiring for security and condition. | | |
| 6. INSTRUMENT AIR SYSTEM - Check for proper operation and output pressure. | | |
| 7. STANDBY INSTRUMENT AIR (IF INSTALLED) - Check for proper operation. Check plumbing and wiring for security and condition. Refer to AFM Supplement 36-590006-23. | | |
| 8. PROPELLER OPERATION - Cycle propeller and check for proper rpm drop and smoothness of operation. | | |
| 9. PROPELLER DEICER - Check for proper operation and amperage drawn on ammeter. | | |
| 10. OIL PRESSURE AND TEMPERATURE - Check for proper pressure, temperature limits and unusual fluctuations. | | |
| 11. MAGNETOS - Check the performance of the magneto as outlined under the heading NORMAL PROCEDURES in the appropriate Pilot's Operating Handbook. | | |
| 12. POWER CHECK - Refer to NORMAL PROCEDURES in the appropriate Pilot's Operating Handbook. | | |
| 13. AMMETER - Check for proper indication and unusual fluctuations. | | |
| 14. HEATING AND VENTILATING SYSTEM - Check for proper operation, heat and airflow output. Check controls for freedom of movement. | | |
| 15. FIREWALL SHUTOFF VALVE - Check for proper operation and freedom of movement. | | |
| 16. IDLE RPM AND MIXTURE SETTINGS - Check for both proper rpm and mixture settings. Check controls for freedom of operation. | | |
| 17. IDLE CUT-OFF - Check for proper operation and freedom of movement. | | |

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BONANZA SERIES MAINTENANCE MANUAL

A - OPERATIONAL INSPECTION (Continued)

| | MECH | INSP |
|--|------|------|
| 18. IGNITION SWITCH - Rotate the ignition switch through the OFF position to the extreme limit of switch travel; if the engine stops firing, the switch is normal. If the engine continues to run with the switch held against the OFF stop, it is an indication that one magneto is still "hot" or ungrounded. When the switch is released, it should automatically return to OFF and the engine should stop running. However, any ignition switch exhibiting this abnormal condition should be replaced. | | |
| 19. ALL ENGINE CONTROLS - With the engine running, check for proper operational limits, engine response and rigging. Check friction locks for proper operation. | | |
| 20. FUEL QUANTITY GAGES - Check for proper operation and unusual fluctuations. | | |
| 21. AUXILIARY FUEL PUMP - Check pump for proper operation, unusual noise and fluctuations. | | |
| 22. FUEL TANK SELECTOR - Check for proper placarding, proper operation and feel for positive detent. | | |
| 23. ALL LIGHTS - Check for condition, attachment, cracked or broken lenses. Check switches, knobs and circuit breakers for looseness and operation. | | |
| 24. STALL WARNING SYSTEM - Check for proper operation and heating of the unit. | | |
| 25. RADIO OPERATION - Check for proper operation, security of switches and knobs. | | |
| 26. FLAPS - Check for noisy operation, full travel and proper indication. | | |
| 27. PITOT HEAT - Check for amperage drawn on ammeter and for proper heating of the unit. | | |
| 28. FLIGHT INSTRUMENTS - Check for condition and proper operation. | | |
| 29. BRAKES - Check for condition and wear, ease of operation and proper release of the parking brake. Check for unusual brake chatter. | | |
| 30. EMERGENCY LOCATOR TRANSMITTER - Check for proper operation. Tune radio to 121.5 MHz on VHF or 243 MHz on UHF, then turn ELT switch to ON and monitor for one signal. Turn ELT switch OFF, then place in ARM position. Make sure the ELT is armed when the airplane is returned to service. | | |
| 31. AIR-CONDITIONER - Operate the air conditioner and verify that the retractable condenser moves to the ground extended position when turned on and returns to the retracted position when turned off. Check for proper operation and unusual noise. | | |
| 32. OXYGEN SYSTEM - Functionally check the oxygen system for proper operation. Check the oxygen bottle shutoff valve for proper operation. | | |
| 33. SWITCHES, CIRCUIT BREAKERS - Check for proper operation. | | |
| 34. FLIGHT CONTROLS, TRIM CONTROLS AND TRIM INDICATOR - Check freedom of movement and proper operation through full travel with and without flaps extended. Check electric trim controls for operation. | | |

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B - POWER PLANT

| | MECH | INSP |
|---|------|------|
| 1. NACELLE SKIN - Check for deformation and obvious damage or cracks. Check for loose or missing rivets. | | |
| 2. NACELLE STRUCTURE - Check for cracks and deformation. Check for loose or missing rivets and concealed damage. | | |
| 3. COWLING - Check for condition, security and adjustment of latches. Open the upper cowling and clean. Inspect for cracks. | | |
| 4. COWL FLAPS - Check for travel, deformation and security. Inspect for cracks. | | |
| 5. SPARK PLUGS - Clean, inspect, adjust gap, test, and replace as necessary. Tighten spark plugs to proper torque and check ignition harness condition and for proper attachment. | | |
| 6. COMPRESSION - Perform differential compression test. | | |
| 7. BATTERY - Inspect for clean, tight connections and add distilled water to maintain a level of 3/8 inch above top of separators. Inspect the vents and overflow tube for obstructions. Check for security and proper attachment. Check for corrosion. Make certain the battery is clean. Water or dirt on battery surface can cause the battery to discharge. | | |
| 8. PLUMBING - Inspect plumbing and associated accessories for condition (such as cracks and fraying) and attachment. Check plumbing clearance and secure against possible chafing. | | |
| 9. BRAKE FLUID RESERVOIR - Check reservoir for security, open vent, proper fluid level and for leaks. | | |
| 10. ENGINE OIL TANK OR SUMP - Check for cracks, leaks, proper fluid level, deformation and security. | | |
| 11. CRANKCASE - Check security of crankcase thru-bolts. Inspect the dipstick tabs for security and that the tabs are not bent. | | |
| 12. OIL SUMP DRAINS AND SCREENS - Clean screens, check for holes in the screens and for obstructions. Check for metal particles or foreign matter on screens and filters. Check for proper torque after installation. | | |
| 13. OIL COOLER - Check oil cooler, lines and fittings for condition, security, chafing and leaks. | | |
| 14. PROPELLER AND MOUNTING BOLTS - Check for condition and security. Check the tip of the blades for evidence of lightning strikes. If there is evidence of lightning strikes, consult the propeller manufacturer, the engine manufacturer and Raytheon Aircraft Company. Inspect the blades for cracks, dents, nicks, scratches, erosion, corrosion, security and movement in the hub. | | |
| 15. PROPELLER SPINNER - Check for deformation, security and cracks. | | |
| 16. PROPELLER HUB - Check for cracks, excessively leaking seals and condition. | | |

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B - POWER PLANT (Continued)

| | MECH | INSP |
|---|------|------|
| 17. ALTERNATOR - Check for condition and attachment. Check wiring for proper attachment and possible chafing. Check for unusual noise. | | |
| 18. ALTERNATOR (PRESTOLITE OR DELCO REMY ONLY) - Remove and disassemble the alternator as necessary to inspect the rotor shaft bearings for condition and replace if necessary. Refer to Service Instructions No. 0546-359, Rev II or subsequent. | | |
| 19. STARTER - Check for condition, attachment and chafed or loose wires. | | |
| 20. STANDBY GENERATOR/ALTERNATOR - Check for condition, attachment, security of wires and for chafing. | | |
| 21. MAGNETOS - Check contact points for proper clearance. Points with deep pits or excessively burned areas must be discarded. Inspect the cam follower felt pad for proper lubrication and clean the compartment with a clean, dry cloth. Check ignition harness for proper connection, security and fraying. Check timing. Refer to the applicable magneto manufacturer's manual. | | |
| 22. MAGNETO PRESSURIZATION FILTER - Check for condition, cleanliness and security. | | |
| 23. CYLINDERS AND BAFFLES - Check cylinders and exhaust manifold for obvious leaks, security and cracks, check baffles for cracks and security. Check cylinders for broken cooling fins and loose or missing base nuts. | | |
| 24. EXHAUST SYSTEM - Check for deformation, security, cracks, leaks, loose or missing nuts and clamps. Check for thin wall condition which may occur due to normal internal erosion on stacks which have long service time. | | |
| 25. FIREWALL - Check for wrinkles, damage or cracks. Check all electrical and control access holes for proper sealing. | | |
| 26. HOSE AND DUCTS - Check all fuel, oil and air hose or duct for leakage, cracks, deterioration and damage. Check fittings for security. | | |
| 27. ENGINE ACCESSORIES - Check for condition, security and leaks. Check wiring, hoses and tubes for chafing, security and leaks. | | |
| 28. ENGINE MOUNTS - Check for cracks, corrosion and security. Inspect rubber cushions, mount bolts and nuts, and grounding straps for condition and security. | | |
| 29. CABIN HEATER SYSTEM - Check for cracks, distortion, corrosion, leaks and obstructions per Chapter 21-40-00. | | |
| 30. PROPELLER GOVERNOR - Check for leaks and corrosion and control arm for security. | | |
| 31. ENGINE CONTROLS - Check controls and associated equipment for condition, attachment, alignment and rigging. Remove cable connection bolts and check for wear each 300 hours. Refer to TCM Service Bulletin SB95-2 for engine locations and procedures. | | |
| 32. IGNITION HARNESS - Inspect for fraying and attachment. | | |
| 33. ELECTRICAL WIRING AND EQUIPMENT - Inspect electrical wiring and associated equipment and accessories for fraying and attachment. | | |
| 34. ALL DRAINS AND PLUGS - Check for condition, security and obstructions. Check for leaks and correct tightness. | | |

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B - POWER PLANT (Continued)

| | MECH | INSP |
|---|------|------|
| 35. PRESSURE PUMP INTAKE FILTER - Refer to Parker-Hannifin Airborne Service Letter 59 or subsequent. Refer to Chapter 5-10-00 for additional information. | | |
| 36. AIR-CONDITIONER COMPRESSOR - Check for security and attachment. Check refrigerant level and for oil leaks. Refer to Chapter 12 and Chapter 21. Check belt for tension and worn or frayed condition. | | |
| 37. INDUCTION AIR FILTER - Every 100 hours and annually, check for condition, cleanliness and security of paper induction filters. Every 500 hours, replace paper induction air filter with a new filter that is FAA approved for the airplane installation (Ref. AD 84-26-02, Amendment 39-4966). | | |
| 38. INDUCTION SYSTEM AND ALTERNATE AIR - Check hot and cold flexible air ducts for delamination of the inner lining. Check the alternate air valve for blockage, security, cracks, operation and wear. | | |
| 39. FUEL INJECTION CONTROL VALVE - Clean the screen and check for damage. Install screen and check for leaks. | | |
| 40. FUEL INJECTION SYSTEM - Inspect all fuel injection components, lines and fittings for evidence of fuel leaks, fraying and cracking. Procedure as referenced in TCM SB95-7. | | |
| 41. FUEL RETURN LINE (EA-11 THRU EA-439) - Check for chafing against the wastegate seal drain line, particularly in the area approximately six inches from the fire wall bulkhead fitting of the fuel return line. | | |
| 42. ELECTRIC PROPELLER DEICER - | | |
| a. Check for service damage to the deicer heaters, brush rods, springs and brushes. Check for attachment and security. | | |
| b. Check the lead strap and all other clamps, connectors and wiring for electrical soundness, security and attachment. | | |
| c. Check the slip rings for roughness, cracks, burned or discolored areas and for deposits of oil, grease or dirt. Check for security and attachment of all components. | | |
| d. Check deicer boots for wrinkles, loose or torn areas. | | |

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B - POWER PLANT (Continued)

| | MECH | INSP |
|---|------|------|
| 43. TURBOCHARGER SYSTEM - | | |
| a. Inspect the system for oil leaks, exhaust system leaks, cracks and attachment. | | |
| b. Inspect the compressor wheel for nicks, cracks or broken blades and freedom of movement. | | |
| c. Inspect the bypass valve (wastegate) for proper operation and inspect all linkage for interference, condition, security and attachment. | | |
| d. Inspect all exhaust system components for worn or damaged areas, loose clamps, cracks and leaks. | | |
| e. Inspect lubrication system components for worn or damaged areas, loose clamps, cracks and leaks. | | |
| f. Inspect the upper deck pressure reference lines and the fuel injection reference manifold for loose connections, leaks and possible chafing. | | |
| g. Check and calibrate the turbine inlet temperature indicator in accordance with Chapter 77-00-00. | | |
| h. Check manifold pressure controller linkage for wear. | | |
| 44. ENGINE BAFFLE SEALS - Inspect for security and condition at each 100-hour or annual inspection. Replace as necessary or every 10 years of service. | | |
| 45. FILTERS - Inspect pressure system in-line filter for condition, cleanliness and security. Refer to Parker-Hannifin Airborne Service Letter 59 or subsequent. Refer to Chapter 5-10-00 for additional information. | | |
| 46. PRESSURE PUMP (AIRBORNE) - Inspect as required by Parker - Hannifin Service Letter 43A or subsequent. Refer to Chapter 5-10-00 for additional information. | | |
| 47. PRESSURE PUMP (AERO ACCESSORIES PUMPS, P/N AA216CW OR AA3216CW) - Initially inspect at 600 hours time-in-service in accordance with Aero Accessories Service Letter No. 004 and thereafter as directed by the Service Letter. Refer to Chapter 5-10-00 for additional information. | | |

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C - CABIN AND BAGGAGE COMPARTMENTS

| | MECH | INSP |
|--|------|------|
| 1. SKIN - Inspect skins for deformation, cracks and loose or missing rivets. If damage is found, check adjacent structure. | | |
| 2. STRUCTURE - Check for cracks and deformation. Check for loose or missing rivets and concealed damage. | | |
| 3. CABLES, PULLEYS AND TURNBUCKLES - Check the flight control components, cables and pulleys. Replace control system components (pushrods, turnbuckles, end fittings, castings, etc.) that have bulges, splits, bends, or cracks. Check control cables, pulleys, and associated equipment for condition, attachment, alignment, clearance and proper operation. Replace cables that have more than 3 broken strands in any 3 foot length of cable or evidence of corrosion. Check cables for proper tension. | | |
| NOTE | | |
| It is important to operate controls through their full range so that the cables move away from pulleys and all portions of the cables are exposed for inspection. | | |
| 4. LANDING GEAR GEARBOX AND ACTUATING LINKAGE - Check for leakage, wear, condition and attachment. Check for unusual noise. Remove oil filler plug and check oil level by engaging and turning the emergency hand crank 1/2 turn to determine that oil is being picked up on the worm gear. The oil level should be maintained no more than necessary to cover 1/2 of the diameter of the worm gear. Install oil filler plug. | | |
| 5. FLAP MOTOR AND SHAFTS - Check for condition, security and wear at all points. Check drive shaft housing for security and check jam nuts for tightness. | | |
| 6. AUXILIARY FUEL PUMP AND FUEL LINES - Check for condition, security and leaks. Check lines for signs of chafing or cracks. | | |
| 7. BRAKE MASTER CYLINDER AND PARKING BRAKE VALVE - Check for condition, security and leaks. Check lines for signs of chafing or cracks. | | |
| 8. RUDDER PEDALS - Check for freedom of movement. Check cables, push/pull rods, bellcranks, pulleys, turnbuckles and fair leads for proper routing, condition and security. Check rudder pedal fore and aft positions for wear. Check locks and pins to verify positive lock. | | |
| NOTE | | |
| It is important to operate controls through their full range so that the cables move away from pulleys and all portions of the cables are exposed for inspection. | | |
| 9. CONTROL COLUMN, TRIM CONTROL AND INDICATOR (ELECTRIC AND MANUAL) - Check for freedom of movement. Inspect pulleys, sprockets, bearings, actuators, chains and turnbuckles for condition, security and operation. Check trim indicator for proper indication. | | |
| 10. ENGINE CONTROLS - Check for ease of operation through full travel. Check friction locks for proper operation. | | |

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C - CABIN AND BAGGAGE COMPARTMENTS

| | MECH | INSP |
|--|------|------|
| 11. ELECTRICAL WIRING AND EQUIPMENT - Check for condition, security and signs of chafing. | | |
| 12. PLUMBING - Check all plumbing and connections for security, leakage and general condition. | | |
| 13. WINDOWS AND DOORS - Inspect windows for scratches, crazing and general condition. Inspect doors for security of attachment. Check latching mechanism for proper engagement and ease of operation. Check that rotation of the interior door handle without depressing the handle lock release button does not unlatch the door. | | |
| 14. INSTRUMENTS AND INSTRUMENT PANEL - Inspect instrument panel, sub panels, placards and instruments for condition and attachment. Check all knobs for security. Inspect shock mounts and ground straps for cracks and security. | | |
| 15. SEATS, SEAT BELTS AND SHOULDER HARNESSSES - Inspect cabin seats, seat belts and shoulder harnesses for proper operation, condition and security of attachment. Inspect floorboards for condition and seat attachment. Check for operation of the seat stops. | | |
| 16. OXYGEN SYSTEM - Check condition of the oxygen system and check the oxygen masks for cleanliness and stowage. | | |
| 17. VENTILATING SYSTEM - Check all fresh air and heat outlet vents for proper movement and operation. | | |
| 18. FUEL SELECTOR VALVE - Inspect for leakage, security, freedom of movement, proper detent feel and condition. Clean strainer and check for condition. Check for proper placarding. | | |
| 19. EMERGENCY EXIT HATCH - Check emergency release handle and latch assembly for proper operation. Check that the hatch moves out freely. Check the complete latch assembly for condition and all moving parts for proper operation. With the hatch installed, check for proper latching and seal. Safety the emergency exit with 0.020 inch diameter copper wire after opening. | | |
| 20. STATIC SYSTEM - Check and drain water from the static lines. | | |
| 21. CABIN AIR BLOWER - Check for condition, mounting security and wear at all points. | | |
| 22. FUEL STRAINER - Drain and clean. On fuel cells with foam inserts, check for brown foam material. Refer to Safety Communique No. 67 and Service Bulletin No. 2109. | | |
| 23. CONTROL COLUMN (E-1946, E-2104, E-2111 AND AFTER; EA-320, EA-389 AND AFTER) - Inspect the control column U-joint roll pins and make sure they are not backing out. | | |

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D - WINGS AND CARRY-THROUGH STRUCTURE

| | MECH | | INSP |
|---|------|----|------|
| | LH | RH | |
| 1. SKIN - Check for deformation and obvious damage. Check for cracks, loose or missing rivets. If damage is found, check adjacent structure. Check for indications of hard landing or excessive flight loading. | | | |
| 2. STRUCTURE - Check for cracks, deformation and concealed damage. Check for loose or missing rivets. Refer to Chapter 53-10-00 of this Maintenance Manual for inspections for fuselage web cracks at the fuselage/wing spar carry through area. | | | |
| 3. ACCESS DOORS AND PANELS - Inspect for cracks, proper fit and attachment. | | | |
| 4. CABLES, PULLEYS, AND TURNBUCKLES - Check the flight control components, cables and pulleys. Replace control system components (pushrods, turnbuckles, end fittings, castings, etc.) that have bulges, splits, bends, or cracks. Check control cables, pulleys, and associated equipment for condition, attachment, alignment, clearance and proper operation. Replace cables that have more than 3 broken strands in any 3 foot length of cable or evidence of corrosion. Check cables for proper tension. | | | |
| NOTE | | | |
| It is important to operate controls through their full range so that the cables move away from pulleys and all portions of the cables are exposed for inspection. | | | |
| 5. AILERONS - Check for condition and security. Check for cracks, loose or missing rivets and freedom of movement. Check hinge bearings and brackets for condition, push/pull rods for security and rod ends for corrosion. | | | |
| 6. FUEL CELLS, CAPS AND VENTS - Inspect fuel cells, caps and vent lines. Refer to Chapter 28. Refer to Service Instruction Number 0632-280. | | | |
| 7. PLUMBING - Check for leakage, chafing, condition and security. | | | |
| 8. ELECTRICAL WIRING AND EQUIPMENT - Inspect for chafing, damage, security and attachment. | | | |
| 9. FLAP LIMIT SWITCHES - Check for condition, security and freedom of operation. | | | |
| 10. FLAPS AND ACTUATORS - Check for condition, security, binding or chafing of actuator drive shafts. Check flap skin and structure for cracks, loose or missing rivets. Check roller bearings and tracks for condition. Check stop area for condition and damage. | | | |
| 11. FLAP POSITION TRANSMITTER - Check for security and operation. | | | |
| 12. DRAIN HOLES - Check the drain holes in the upper wing attach fittings to make sure they are open and free of obstruction. | | | |
| 13. WING SPAR CAP - Inspect the wing spar cap for corrosion. Refer to Chapter 57. See Service Bulletin 2538. | | | |

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D - WINGS AND CARRY-THROUGH STRUCTURE (Continued)

| | MECH | | INSP |
|---|------|----|------|
| | LH | RH | |
| 14. WING BOLTS - Check wing bolts for proper torque at the first 100 hour inspection and at the first 100 hour inspection after each reinstallation of the wing attach bolts. Refer to Chapter 57 of this maintenance manual for wing bolt, nut and fitting inspection criterion and frequency. | | | |
| 15. RADAR ANTENNA COVER - Check the fiberglass for security, attachment and cracks. | | | |
| 16. FUEL VENTS AND AIR INLETS, PITOT TUBE, AND STALL WARNING VANE - Check for condition and obstruction. | | | |
| 17. FUEL CELL FLAPPER VALVE - Every 3 years, perform the INSPECTION OF FUEL CELL FLAPPER VALVE procedure. Refer to Chapter 28-10-00. | | | |
| 18. FUEL CELLS - Inspection of condition of fuel cells and possible see page of fuel. Do 28-10-00, FUEL CELL INSPECTION. | | | |

E - NOSE GEAR

| | MECH | INSP |
|---|------|------|
| 1. WHEEL AND TIRE - Check wheel for cracks and tire for wear, damage and proper inflation. Check wheel bearings for condition and wear. | | |
| 2. LANDING GEAR STRUT - Inspect the shock strut and components for cracks, attachment, proper inflation and evidence of leakage. | | |
| 3. ACTUATING LINKAGE - Check for wear at attach points. Check for cracks and security. | | |
| 4. GEAR DOORS AND LINKAGE - Check doors for damage and cracks to the structure and skins. Check linkage for wear and cracks at the attach points. Check for condition and security. | | |
| 5. NOSE GEAR STEERING LINKAGE - Inspect linkage for tightness, condition and security. Inspect linkage boots for condition. | | |
| 6. SHIMMY DAMPER - Check for condition and attachment. Check attach points for cracks. Check fluid level per Chapter 12-20-00. | | |
| 7. STRUT FLUID LEVEL - Check and maintain the proper fluid level in the strut as outlined in Chapter 12-20-00. | | |
| 8. STRUT AND A-FRAME HINGE BOLTS - Inspect for corrosion and security of attachment. | | |
| 9. STATIC CABLE (IF INSTALLED) - Inspect for condition, proper clearances and attachment. | | |
| 10. VISUAL INDICATOR - Check for condition. | | |

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E - NOSE GEAR (Continued)

| | MECH | INSP |
|--|------|------|
| 11. NOSE LANDING GEAR DRAG BRACE (P/N 002-820016-31, P/N 002-820018-3, OR WITH KIT 35-4012-1 INSTALLED) - Check that the two drag brace bracket attachment bolts (Item 22, Figure 204, Chapter 32-20-00) are secure. Check drag brace assembly for shear stress, wear and corrosion. At 2,000 hours, remove and inspect the two bracket attachment bolts. Replace all hardware with evidence of shear stress, wear and/or corrosion. | | |
| 12. NOSE LANDING GEAR RETRACT ROD ENDS - Check the retract rod ends for signs of cracking, sheer stress, wear and corrosion. | | |

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F - MAIN GEAR AND BRAKES

| | MECH | | INSP |
|---|------|----|------|
| | LH | RH | |
| 1. BRAKES, LINES, LINING AND DISCS - Check for condition, wear and security. Check lines for chafing and signs of leakage or cracks. Check discs for wear or warping. Check brake discs for cracks. | | | |
| 2. WHEELS AND TIRES - Check wheels for cracks and tires for wear, damage, condition and proper inflation. Check wheel bearings for condition and wear. | | | |
| 3. ACTUATOR GEARBOX, MOTOR AND SWITCHES - Check for leakage, condition and security. | | | |
| 4. LANDING GEAR STRUTS - Inspect the shock struts and components for cracks, attachment, corrosion, proper inflation and evidence of leakage. | | | |
| 5. ACTUATING LINKAGE - Check for wear and cracks at attach points. Check for condition and security. | | | |
| 6. GEAR DOORS AND LINKAGE - Check doors for damage and cracks to the structure and skins. Check linkage for wear and cracks at the attach points. Check for condition and security. Determine that all clevis retaining pins are in place and secured with cotter pins. | | | |
| 7. STRUT FLUID LEVEL - Check and maintain the proper hydraulic fluid level in the struts as outlined in Chapter 12-20-00. | | | |
| 8. STRUT AND A-FRAME HINGE BOLTS - Inspect for corrosion and security of attachment. | | | |

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G - MAIN GEAR OPERATION

| | MECH | | INSP |
|---|------|----|------|
| | LH | RH | |
| WARNING | | | |
| Under no circumstances should the landing gear be operated electrically while the hand crank is engaged. In the event of such an operation, a tear down and magnetic inspection should be performed to determine damage to the engagement slot in the worm shaft. | | | |
| CAUTION | | | |
| <i>Since the battery voltage is not sufficient to properly cycle the landing gear for this inspection, use only an external power source capable of delivering and maintaining 28.25 ± 0.25 vdc to the airplane's electrical system throughout the extension and retraction cycles when performing the landing gear retraction inspection. Refer to Chapter 32 for more specific information on the following items.</i> | | | |
| 1. DOORS - Check operation, fit and fair. Check for unusual noise. | | | |
| 2. POSITION LIGHTS - Check for security, adjustment and wiring for breaks, condition of insulation, loose connections and proper indication. | | | |
| 3. WARNING HORN - Check for proper operation. | | | |
| 4. UPLOCK CABLE TENSION - Check uplock cable mechanism for condition and security. Check uplock cable for proper tension and for possible fraying. | | | |
| 5. EMERGENCY EXTENSION - Check system for freedom of operation. Check for unusual noise. With the spar cover installed, check for proper engagement of the emergency extension handle and proper system operation. | | | |
| 6. DOWNLOCK TENSION - Check for proper deflection force on the main gear knee joints. | | | |
| 7. UPLOCK ROLLERS - Check condition and clearance of uplock rollers and lubricate as indicated in Chapter 12-20-00. Check for binding. | | | |
| 8. LIMIT SWITCH RIGGING - Check for security and proper adjustment of the limit switches. Refer to RIGGING THE LANDING GEAR in Chapter 32-30-00 of this maintenance manual for correct landing gear gearbox internal clearance. | | | |
| 9. SAFETY SWITCH - Check for security, proper rigging and operation. | | | |
| 10. GENERAL OPERATION - Place the airplane on jacks and cycle the landing gear while checking to ascertain that the position light switches operate in conjunction with the landing gear position. Check the condition and operation of the complete landing gear system. | | | |
| 11. DYNAMIC BRAKING ACTION - Verify proper operation of dynamic brake relay. | | | |
| 12. ASSIST STEP (IF INSTALLED) - Inspect the retractable step for cable and safety link condition, proper adjustment and operation. Check fixed link condition, proper adjustment and operation. Check fixed steps for security. | | | |

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H - NOSE GEAR OPERATION

| | MECH | INSP |
|--|------|------|
| <p style="text-align: center;">WARNING</p> <p>Under no circumstances should the landing gear be operated electrically while the hand crank is engaged. In the event of such an operation, a tear down and magnetic inspection should be performed to determine damage to the engagement slot in the worm shaft.</p> | | |
| <p style="text-align: center;">CAUTION</p> <p><i>Since the battery voltage is not sufficient to properly cycle the landing gear for this inspection, use only an external power source capable of delivering and maintaining 28.25 ± 0.25 vdc to the airplane's electrical system throughout the extension and retraction cycles when performing the landing gear retraction inspection. Refer to Chapter 32 for more specific information on the following items.</i></p> | | |
| 1. DOORS - Check operation, fit and fair. Check for unusual noise. | | |
| 2. NOSE GEAR UP TENSION - Check the up tension on the nose gear as indicated in RIGGING THE LANDING GEAR in Chapter 32-30-00. | | |
| 3. DOWNLOCK TENSION - Check the downlock tension on the nose gear as indicated in RIGGING THE LANDING GEAR in Chapter 32-30-00. | | |
| 4. GENERAL OPERATION - Place the airplane on jacks and cycle the landing gear while checking to ascertain that the position light switches operate in conjunction with the landing gear position. Check the condition and operation of the complete landing gear system. | | |
| 5. VISUAL INDICATOR - Inspect for proper adjustment and operation. | | |
| 6. NOSE GEAR STEERING - Check for condition and security. | | |

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BONANZA SERIES MAINTENANCE MANUAL

I - REAR FUSELAGE AND EMPENNAGE

| | MECH | INSP |
|---|------|------|
| 1. SKIN - Check for deformation, cracks and obvious damage. Check for loose or missing rivets. If damage is found, check adjacent structure. | | |
| 2. INTERNAL FUSELAGE STRUCTURE - Check for cracks and deformation. Check for loose or missing rivets. Check bulkheads, door posts, stringers and doublers for corrosion, cracks and buckles. | | |
| 3. STRUCTURE - Inspect the two most aft bulkheads for cracks, distortion, loose rivets or other obvious damage. | | |
| 4. CABLES, PULLEYS, AND TURNBUCKLES - Check the flight control components, cables and pulleys. Replace control system components (pushrods, turnbuckles, end fittings, castings, etc.) that have bulges, splits, bends, or cracks. Check control cables, pulleys, and associated equipment for condition, attachment, alignment, clearance and proper operation. Replace cables that have more than 3 broken strands in any 3 foot length of cable or evidence of corrosion. Check cables for proper tension. | | |
| NOTE | | |
| It is important to operate controls through their full range so that the cables move away from pulleys and all portions of the cables are exposed for inspection. | | |
| 5. CONTROL SURFACES - Check for deformation, cracks and security. Check for loose or missing rivets. Check for freedom of movement. Check for security of hinges and bond cables. Check the inboard elevator hinge casting (on the aft bulkhead) for cracks in mounting bolt holes. | | |
| 6. TRIM TABS AND ACTUATORS - Check for security and wear. Check free play per Chapter 27-30-00. Check hinges and trim tab actuators for security and wear. Check trim tabs for cracks and control rods for attachment. Lubricate trim tab hinges per Chapter 12-20-00. | | |
| 7. STATIC PORTS - Check for obstruction and clean as necessary. | | |
| 8. PLUMBING - Check for leakage, cracks, chafing, condition and security. | | |
| 9. ELECTRICAL WIRING AND EQUIPMENT - Inspect for chafing, damage, security and attachment. | | |
| 10. STATIC LINES - Check condition of static lines and drain. | | |
| 11. ANTENNAS - Check for condition and security. | | |
| 12. ELEVATOR/RUDDER (RUDDERVATORS) - | | |
| a. Check that the drain holes are open and clean. | | |
| b. Check that the ruddervator trim tab and hinge pin are correctly mated. Refer to ELEVATOR TRIM TAB INSTALLATION, Chapter 27-21-00. | | |
| c. Check for cracks on the trim tab hinge support channel. | | |
| d. Check the stabilizer front and rear spar attach points for cracks and looseness. | | |

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I - REAR FUSELAGE AND EMPENNAGE (Continued)

| | MECH | INSP |
|---|------|------|
| 13. RUDDER FORWARD SPAR (CE-748, CE-772 THRU CE-1425; CJ-149 THRU CJ-179; E-1111, E-1241 THRU E-2518; EA-11 THRU EA-500 AND AIRPLANES THAT HAVE NOT INSTALLED KIT 33-6001-1) - Refer to Service Bulletin No. 2333 every 500 flight hours or annually. | | |
| 14. RUDDER FORWARD SPAR (CE-1426 AND AFTER; CJ-180 AND AFTER; E-2519 AND AFTER; EA-501 AND AFTER AND AIRPLANES THAT HAVE INSTALLED KIT 33-6001-1) - Open inspection covers adjacent to the upper and center hinges. Inspect ribs, spar, hinges and all rudder components in area of the hinges for attachment security, cracks and general condition using a flashlight and mirror. Install covers. | | |

J - GENERAL

| | MECH | INSP |
|---|------|------|
| 1. Airplane cleaned and serviced. | | |
| 2. Airplane lubricated, after cleaning, in accordance with Chapter 12-20-00. | | |
| 3. Inspect all placards to make sure they are easily readable and securely attached. | | |
| 4. Make sure all Airworthiness Directives, Raytheon Aircraft Service Bulletins and previously issued Service Instructions are reviewed and complied with as required. | | |
| 5. For a complete or annual inspection of the airplane, all items on the airplane that are noted in this guide should be inspected. | | |

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BONANZA SERIES MAINTENANCE MANUAL

UNSCHEDULED MAINTENANCE CHECKS - MAINTENANCE PRACTICES

This subchapter is assembled in chart form to allow a technician to perform checks for damage after operating the airplane in conditions which could require unscheduled maintenance. Specific conditions, such as lightning strikes, turbulent air penetration or hard landings, etc., are included. Inspection instructions are included for each of the conditions listed.

WARNING: During the performance of these inspections the airplane could be placed on three-point jacks. Make sure the landing gear is down and locked before removing the airplane from the jacks.

UNSCHEDULED MAINTENANCE CHECKS

| Item | Inspection Requirement | Inspection Interval |
|------|------------------------|---------------------|
|------|------------------------|---------------------|

Operation After Sudden Stoppage Incidents

| | | |
|--------------------|---|-------------------------------|
| Propeller Governor | The propeller governors should be overhauled or replaced as instructed in the manufacturer's manuals. | After sudden engine stoppage. |
|--------------------|---|-------------------------------|

When Operating In Areas of High Dust Content

| | | |
|-------------------------------|---|-----------|
| Nose Landing Gear Shock Strut | Clean off and wipe dry exposed polished surfaces. | Routine. |
| Instrument Air Filters | Replace instrument line supply filters at or before 100 hours under extremely dusty conditions. | As noted. |
| Alternate Air Door | Make sure door is sealed around all edges and there is adequate spring tension on the door. | Routine. |

CAUTION

To avoid damaging the barometric sensor, disconnect the autopilot sensor line prior to applying reverse air pressure to the pitot and static lines.

| | | |
|------------------------|---|---------------------------|
| Pitot and Static Lines | Check for obstructions by applying reverse air pressure (not to exceed 20 psi) to the ends of the pitot and static lines with them disconnected from the instruments. | 200 hours or as required. |
|------------------------|---|---------------------------|

When Operating in Areas of High Humidity

| | | |
|-----------------|--|----------------------------|
| Floor Structure | Check structure under the floor for corrosion by removing a floor panel and inspection the structure, especially the channel sections. | At a scheduled inspection. |
| Aft Cabin | Remove aft cabin access covers and inspect for corrosion, especially aft of bulkhead points. | At a scheduled inspection. |
| Wing | Remove wing and center section access covers and check for corrosion. | At a scheduled inspection. |
| Empennage | Remove all fuselage access covers and check for corrosion. | At a scheduled inspection. |

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BONANZA SERIES MAINTENANCE MANUAL

UNSCHEDULED MAINTENANCE CHECKS (Continued)

| Item | Inspection Requirement | Inspection Interval |
|------|------------------------|---------------------|
|------|------------------------|---------------------|

After Receipt of Airplane

| | | |
|------|--|--|
| Wing | Check torque of the wing attach bolts. | After the first 100 hours and at the first 100 hours after adjustment of the wing. |
|------|--|--|

Operating from Very Soft or Unusual Terrain

| | | |
|-------------------|--|---|
| Landing Gear | | |
| Tires | Visually check for cuts, wear, deterioration and inflation. | Routine. |
| Main Landing Gear | Check strut inflation. | |
| a. Wheels | <ol style="list-style-type: none"> 1. Check for obvious damage. 2. Remove and clean; inspect for abrasions, cracks and chipped rims, bearing for wear, corrosion, fretting and bluing; check seals for distortion, deterioration, and proper fit and security. | <p>Routine.</p> <p>Every 100 hours and/or annually.</p> |
| b. Brake Units | <ol style="list-style-type: none"> 1. Check cylinders and associated lines for damage and leaks. 2. Check for evidence of overheating. 3. Check discs for scoring, distortion, damaged plating and evidence of overheating. | <p>Routine.</p> <p>Every 100 hours and/or annually.</p> <p>Every 100 hours and/or annually.</p> |
| c. Shock Absorber | Check surfaces for cleanliness, free from oil or grease deterioration. | Every 100 hours and/or annually. |
| d. Wheel Wells | Clean foreign material (dirt, etc.) from wheel wells. Inspect supports between main and aft spars in upper wheel well and the lift leg attach bracket at the main spar for deformation, cracks, etc. | As required. |
| Nose Landing Gear | | |
| a. Wheel | <ol style="list-style-type: none"> 1. Visually check for obvious damage. 2. Remove and clean. Inspect for abrasions, cracks and chipped rims, bearings for wear, corrosion, fretting and bluing; check seals for distortion, deterioration, proper fit and security. | <p>Routine.</p> <p>Every 100 hours.</p> |
| b. Shock Strut | <ol style="list-style-type: none"> 1. Check for obvious damage and leaks. Clean exposed surface of shock strut piston with clean cloth moistened with hydraulic fluid. | Routine. |

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BONANZA SERIES MAINTENANCE MANUAL

UNSCHEDULED MAINTENANCE CHECKS (Continued)

| Item | Inspection Requirement | Inspection Interval |
|------|------------------------|---------------------|
|------|------------------------|---------------------|

Operating from Very Soft or Unusual Terrain (Continued)

| | | |
|----------------------------|--|------------------|
| b. Shock Strut (Continued) | 2. Check for correct extension. | Every 100 hours. |
| | 3. Thoroughly clean and inspect for leaks, damage and security; service as necessary. | Every 100 hours. |
| c. Fork Assembly | Check for cleanliness and obvious damage. | Routine. |
| d. Nose Wheel Steering | Check for obvious damage, associated rods and connections for damage and security; steering and pulleys for wear and security. | Every 100 hours. |
| e. Actuator Linkage | Check for excessive play, safety and security. | Every 100 hours. |
| f. Shimmy Damper | Inspect for condition and attachment. | Every 100 hours. |

Inspection After Hard Landing

| | | |
|---|---|-----------------------|
| | Perform the following: | As applicable. |
| WARNING | | |
| Even though wrinkles in the wing or fuselage skin surface may be slight enough to be considered as negligible, a close inspection of the internal supporting structure may reveal serious damage. | | |
| NOTE | | |
| This inspection should be carried out after a hard landing and before the airplane is certified as ready for further flight. The inspections are conducted at two levels. The first level consists of determining if any external damage has occurred and looking for evidence of internal structural failure. The second level is concerned with a more detailed inspection of any damaged areas which were indicated in the findings of the first level inspection. If it is determined by the first level inspection that there is no damage to the airplane, it is not necessary to proceed to the second level inspection. | | |
| | FIRST LEVEL INSPECTION | Prior to next flight. |
| General Appearance | Determine that the airframe components (wings, fuselage and empennage) are in their normal configuration. | |
| Landing Gear | 1. Inspect tires for excessive wear, splits in the tread, bottoming out or folding over the sidewalls. | |
| | 2. Check the wheels (rims) for flat spots or cracked castings. | |
| | 3. Check shock struts and attachment lugs for cracks. | |
| | 4. Inspect hydraulic brake lines for leaks. | |
| | 5. Inspect nose drag legs and gear door retract linkage for damage. | |

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UNSCHEDULED MAINTENANCE CHECKS (Continued)

| Item | Inspection Requirement | Inspection Interval |
|--|--|---------------------|
| Inspection After Hard Landing (Continued) | | |
| Landing Gear (Continued) | 6. Inspect landing gear lift leg attach bracket at the main spar for deformation, cracks, etc. | |
| | 7. Inspect area around landing gear attach points. | |
| Nose Structure | 1. Inspect external skin surfaces for distortion, loose or missing rivets. | |
| | 2. Check cowling attachment for alignment or damage. | |
| | 3. Inspect engine control cables for smooth operation and check plumbing and wiring for security and attachment. | |
| | 4. Inspect engine support fittings for cracks or structural failure. | |
| | 5. Check tips of propeller for damage. | |
| | 6. Check propeller spinner and backplate for evidence of interference with cowling. | |
| | 7. Inspect wheel well structure for damage or cracks. Check area surrounding the landing gear attachment points. | |
| Wing Carry-Thru Structure | 1. Check wing attachment fittings for cracks. Perform a Dye Penetrant inspection. | |
| | 2. Inspect plumbing, wiring and actuator for damage and security of attachment. | |
| | 3. Check keel, front and rear spar on the lower side of fuselage for damage and alignment. | |
| Wings | 1. Inspect external wing surface skin for cracks, abnormal wrinkles and loose or missing rivets. | |
| | 2. Check wing attachment fittings for cracks. Perform a Dye Penetrant inspection. | |
| | 3. Inspect internal structure. | |
| | 4. Inspect plumbing and wiring for security of attachment. | |

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UNSCHEDULED MAINTENANCE CHECKS (Continued)

| Item | Inspection Requirement | Inspection Interval |
|--|---|---------------------|
| Inspection After Hard Landing (Continued) | | |
| Fuselage, Center Section | 1. Inspect external skin surface for cracks, abnormal wrinkles and loose or missing rivets. | |
| | 2. Inspect around cabin windows for structural cracks. | |
| Fuselage, Aft | 1. Check external skin surface the entire length for cracks, abnormal wrinkles and loose or missing rivets. | |
| | 2. Inspect empennage and control surfaces for freedom of movement. | |
| SECOND LEVEL INSPECTION | | As required. |
| <p>NOTE</p> <p>Because shock loading may be transmitted along one structural member to another, carefully inspect the surrounding and supporting structure in any damaged area found in the first level inspection.</p> | | |
| Landing Gear | 1. Place airplane on jacks and check shock strut for free up and down movement. | |
| | 2. Remove tires and inspect internally for cuts or broken areas. | |
| | 3. Disassemble and examine wheels (rims) for cracks or distortion. | |
| | 4. Visually inspect axle with 10-power glass. If suspect, dye check or magnaflux. | |
| | 5. Remove and replace or magnaflux the landing gear attach bolts, check bolt holes for cracks or elongation. | |
| | 6. Remove and replace or magnaflux drag link bolts and supports. | |
| | 7. Perform landing gear retraction test. | |
| Nose Structure | 1. If tips of propeller have been damaged, refer to the applicable Engine Maintenance Manual for engine inspection procedure. | |
| | 2. Inspect areas surrounding the engine support fittings. | |
| | 3. Check the internal structure of the wheel well for cracks or damage. | |
| | 4. Test plumbing and wiring for proper operation. | |

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UNSCHEDULED MAINTENANCE CHECKS (Continued)

| Item | Inspection Requirement | Inspection Interval |
|------|------------------------|---------------------|
|------|------------------------|---------------------|

Inspection After Hard Landing (Continued)

| | | |
|----------------------------------|---|--|
| Nose Structure (Continued) | 5. Inspect wheel well structure and surrounding areas for signs of structural failure. | |
| Wing Carry-Thru Structure | 1. Dye check wing attachment fittings; examine (magnaflux or replace) attachment bolts and check bolt holes for alignment and correct dimensions. | |
| | 2. Remove floorboards and access plates and inspect the front and rear spar, and keel structure for evidence of deformation or structural failure. | |
| | 3. Test plumbing, wiring, flaps, control cables, pulley mounts, and any other system found in this area for proper operation. | |
| Wings | 1. Dye check wing attachment fittings; examine (magnaflux or replace) attachment bolts and check bolt holes for alignment and correct dimensions. | |
| | 2. Test plumbing and wiring for proper operation. | |
| Fuselage, Center and Aft Section | 1. Examine stringers, frames and sidewalls for deformation structural failure. | |
| | 2. Test plumbing and wiring for proper operation. | |
| | 3. Inspect heating and air-conditioning ducts for damage. | |
| | 4. Examine the control cables and pulley mountings and check for clearance from structure at pass-through locations. Make sure operation is smooth. | |

REPAIR OF DAMAGE

Due to the variety and degree of structural damage which may be involved, the best repair or replacement procedure must be based on the findings of the individual airplane. If the hard landing inspection indicates that serious structural damage has occurred, contact Raytheon Technical Support, Raytheon Aircraft Company, Wichita, KS 67201 for assistance.

LOG BOOK ENTRY

Following a hard landing inspection, an entry covering the extent of inspection, the damage and the repair (if applicable) must be noted in the airplane permanent records.

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UNSCHEDULED MAINTENANCE CHECKS (Continued)

| Item | Inspection Requirement | Inspection Interval |
|--|--|-----------------------|
| Inspection After Encountering Turbulent Air | | |
| | Perform the following: | As applicable. |
| NOTE | | |
| <p>This inspection should be carried out after the airplane has been subjected to high G loading while flying through turbulent air and before the airplane is returned to service. The inspection is conducted on two levels. The first level consists of determining if any external damage has occurred and looking for evidence of internal structural failure. The second level is concerned with a more detailed inspection of damaged areas which were indicated in the findings of the first level inspection. If it is determined by the first inspection that there is no damage to the airplane, it is not necessary to proceed to the second level inspection.</p> | | |
| | FIRST LEVEL INSPECTION | Prior to next flight. |
| WARNING | | |
| <p>Even though wrinkles in the wing or fuselage skin surface may be slight enough to be considered as negligible, a close inspection of the internal supporting structure may reveal serious damage.</p> | | |
| General Appearance | Determine that the airframe components (wings, fuselage and empennage) are in their normal configuration. | |
| Wing Carry-Thru Structure | 1. Inspect the external skin surface for cracks, abnormal stress wrinkles and loose or missing rivets. | |
| | 2. Check wing attachment fittings for cracks. | |
| | 3. Inspect plumbing and wiring for damage and security of attachment. | |
| | 4. Check the keel and the front and rear spar on the lower side of the fuselage for damage and alignment. | |
| Nose Structure | 1. Inspect the external skin surfaces for wrinkles and loose or missing rivets. | |
| | 2. Check cowling attachment for alignment or damage. | |
| | 3. Inspect the engine support fittings for cracks or deformation or structural failure. | |
| | 4. Inspect engine control cables for smooth operation and check plumbing and wiring for security and attachment. | |
| | 5. Inspect structure in wheel well for damage or cracks. | |

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BONANZA SERIES MAINTENANCE MANUAL

UNSCHEDULED MAINTENANCE CHECKS (Continued)

| Item | Inspection Requirement | Inspection Interval |
|--|--|---------------------|
| Inspection After Encountering Turbulent Air (Continued) | | |
| Wings | 1. Inspect the top and bottom wing surface for cracks, wrinkles and loose or missing rivets. | |
| | 2. Inspect wing attachment fittings for cracks. | |
| | 3. Inspect aileron, aileron tab and flaps for wrinkles or cracks. | |
| | 4. Inspect internal structure and fuel cells through access panels. | |
| | 5. Inspect plumbing and wiring for security of attachment. | |
| Nose Structure | 1. Check external skin surface for cracks, wrinkles and loose or missing rivets. | |
| | 2. Inspect area forward of windshield for evidence of structural deformation or failure. | |
| Fuselage, Center Section | Inspect external skin surface for cracks, abnormal wrinkles and loose or missing rivets. | |
| Fuselage, Aft | 1. Inspect the entire length of the external skin surface for cracks, stress wrinkles and loose or missing rivets. | |
| | 2. Check the empennage surfaces for damage and free movement. | |
| | 3. Inspect for skin wrinkles at the juncture of the fuselage and empennage. | |
| SECOND LEVEL INSPECTION | | As required. |
| <p>NOTE</p> <p>Because G loading may be transmitted along one structural member to another, carefully inspect the surrounding and supporting structure in any damaged area found in the first level inspection.</p> | | |

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BONANZA SERIES MAINTENANCE MANUAL

UNSCHEDULED MAINTENANCE CHECKS (Continued)

| Item | Inspection Requirement | Inspection Interval |
|--|--|---------------------|
| Inspection After Encountering Turbulent Air (Continued) | | |
| Wing Carry-Thru Structure | 1. Dye check wing attachment fittings, examine (magnaflux or replace) attachment bolts and check bolt holes for alignment and correct dimension. | |
| | 2. Remove floorboards and access plates and inspect the front and rear spar and keel structure for evidence of deformation or structural failure. | |
| | 3. Operational test plumbing, wiring, flaps, control cables, pulley mounts and any other system found in this area. | |
| Nose Structure | 1. Inspect areas surrounding the engine support fittings. | |
| | 2. Inspect internal structure for cracks or damage. | |
| | 3. Operational test plumbing and wiring. | |
| Wings | 1. Dye check wing attachment fittings, examine (magnaflux or replace) attachment bolts. | |
| | 2. If there is evidence of damage to the fuel cells or fuel lines, remove the cells and inspect the fuel cell liners and liner support structure. | |
| | 3. Operational test the plumbing and wiring, flap actuator, aileron and tab control cables and pulley mounting. | |
| Fuselage, Center Section | 1. Examine stringers, frames and sidewalls for deformation or structural failure. | |
| | 2. Examine heating and air-conditioning ducts for damage. | |
| | 3. Operational test plumbing and wiring. | |
| | 4. Examine the control cables, pulley mountings and the cable clearance at areas the cables pass through the structure. Make sure operation smooth and normal. | |

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BONANZA SERIES MAINTENANCE MANUAL

UNSCHEDULED MAINTENANCE CHECKS (Continued)

| Item | Inspection Requirement | Inspection Interval |
|--|---|---------------------|
| Inspection After Encountering Turbulent Air (Continued) | | |
| Empennage | 1. Inspect elevator pushrods, torque tubes and bellcrank for damage. | |
| | 2. Inspect the attachment of the vertical stabilizer spars to the top of the fuselage for evidence of damage. | |
| | 3. Inspect skin surfaces for condition and loose or missing rivets. | |
| | 4. Check structure for cracks, loose rivets and/or concealed damage. | |
| | 5. Check rudder for freedom of movement and attachment. | |
| | 6. Check elevator for freedom of movement and attachment. | |
| | 7. Check trim tab actuators for smoothness of operation and attachment. Check the wiring of the electrical trim tab actuator for connection, security of attachment and condition. Check the electrical trim tab actuator for full travel and security of attachment. | |
| REPAIR OF DAMAGE | | |
| Due to the variety and degree of structural damage which may be involved, the best repair or replacement procedure must be based on the inspection findings of the individual airplane. If the turbulent air inspection indicates that serious structural damage has occurred, contact Raytheon Technical Support, Raytheon Aircraft Company, Wichita, KS 67201, for assistance. | | |
| LOG BOOK ENTRY | | |
| Following a turbulent air inspection, an entry covering the extent of inspection, the damage and the repair (if applicable) must be noted in the permanent records. | | |

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BONANZA SERIES MAINTENANCE MANUAL

UNSCHEDULED MAINTENANCE CHECKS (Continued)

| Item | Inspection Requirement | Inspection Interval |
|--|---|-----------------------|
| Inspection After Lightning Strike | | |
| | Perform the following: | Prior to next flight. |
| <p>CAUTION</p> <p><i>Propellers must be inspected and/or replaced utilizing the data provided in the manufacturers manuals prior to returning the airplane to service following any lightning strikes or other impact damage.</i></p> | | |
| Propeller | <ol style="list-style-type: none"> <li data-bbox="553 575 1110 1037">1. At times the difficulty is not in inspecting the airplane, but in determining if a strike has occurred. Most times, an exit location will indicate possible damage to the components. The entry point is most often the propeller. A darkened area in the propeller tip may be noticeable after a lightning strike. A 3- to 5-power magnifier will show slag at the bottom of a nick in the propeller blade. If a strike is suspected, inspect deep nicks in the blade. Damage after a lightning strike should be corrected utilizing the procedure specified by the manufacturer. <li data-bbox="553 1037 1110 1276">2. Blade overhaul must be accomplished by a mechanic certified by propeller manufacturer. Damage beyond the limits specified by the propeller manufacturer may require the blade to be returned to the factory or to a designated repair facility for evaluation. | |
| Engine | Inspect as instructed in the appropriate Engine Maintenance Manual. | |

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BONANZA SERIES MAINTENANCE MANUAL

UNSCHEDULED MAINTENANCE CHECKS (Continued)

| Item | Inspection Requirement | Inspection Interval |
|--|---|---------------------|
| Inspection After Lightning Strike (Continued) | | |
| Fuselage | 1. Carefully inspect the exterior of the airplane. Evidence of a strike will usually appear as a burned hole or as a series of burned holes in metallic surfaces. Plastic parts may be delaminated and/or deformed due to high internal pressures. Normally two or more points will be found, the entry and the exit points. Antennas are frequently an entry point of lightning and should be carefully inspected for evidence of arcing, sooting or pitting. | |
| | 2. From the point of entry, the strike usually spreads aft in a series of small holes or burn marks. After the points of entry and exit are found, the structure between these points should be carefully inspected. Attention should be given to hinges and hinge pins for possible pitting. Cables, pulleys, bearings, bolts and all bonding jumpers in the area should be inspected for possible damage. Antennas, electrical and electronic equipment should be visually checked for damage and functionally checked for operation. If the strike was near the fuel vent, all plumbing should be carefully inspected for damage. Steel components may exhibit magnetism and require degaussing so as not to affect compass systems. | |