UNSCHEDULED MAINTENANCE CHECKS

1. DESCRIPTION

The following describes those maintenance checks and inspections on the aircraft which are dictated by special or unusual conditions which are not related to the time limits specified in 5-10, Scheduled Maintenance Checks. These includes inspections and checks for wing strike, hard/overweight landing, overspeed, severe air turbulence, lightning strike, high drag/side loads, ground gusts, operation in harsh environmental conditions, and operation on unimproved runway surfaces.

2. MAINTENANCE PRACTICES

A. Wing Strike

Aircraft that have suffered impact to the wing must be inspected for the following:

(1) Fuselage

(a) Aft Floor Structure - Above aft wing attach points and under seat areas, inspect for delamination, cracking, whitening, and any other evidence of structural damage.

B. Hard/Overweight Landing

A hard landing is any landing made at what is believed to be an excessive sink rate. An overweight landing is defined as landing the airplane at any gross weight which exceeds the maximum take-off weight as specified in the Pilot's Operating Handbook and the Airplane Flight Manual.

Note: If the hard/overweight landing is combined with high drag/side loads, additional checks are required.

(1) Fuselage

(a) Aft Floor Structure - Above aft wing attach points and under seat areas, inspect for delamination, cracking, whitening, and any other evidence of structural damage.

(2) Landing Gear

(a) Main gear struts - Inspect for security of attachment, permanent deformation, delamination, and cracking or splintering of strut.

(b) Main gear attachments and supporting structure - Inspect for security loose or failed fasteners, permanent deformation, damage to fairings, tire damage, and any other evidence of structural damage.

(c) Nose gear and attaching structure - Inspect for security, loose or failed fasteners, permanent deformation of strut or axle, strut weld cracks, puck delamination and cracks, puck pan weld cracks, engine mount weld cracks, damage to fairing, tire damage, and any other evidence of structural damage.

(3) Wings

(a) Wings surface - Inspect for skin cracks, loose of failed fasteners, and any evidence of structural damage.

(b) Trailing edge - Inspect for any deformation effecting normal flap operation.

C. Overspeed

An overspeed inspection must be performed anytime the airplane has exceeded one or both of the following:

- Airplane overspeed exceeding placard speed limits of flaps.

- Airplane overspeed exceeding design speeds.

(1) Landing gear

(a) Main gear axle and fittings - Inspect for cracks, security, and evidence of structural damage.

(b) Tires - Inspect tires for flat spots, excessive wear, and tire slippage on the wheel rim.

(2) Fuselage
  (a) Windshield and windows - Inspect for buckling, dents, loose or failed fasteners, and any evidence of structural damage.
  (b) All hinged doors - Inspect hinges, hinge attach points, latches and attachments, and any evidence of structural damage.

(3) Cowling
  (a) Inspect for buckling, cracks, loose or failed fasteners, and indications of structural damage.

(4) Stabilizers
  (a) Stabilizers - Inspect skins, hinges and attachments, moveable surfaces, mass balance weights, and attaching structure for cracks, dents, buckling, loose or failed fasteners, and evidence of structural damage.

(5) Wings
  (a) Flaps - Inspect for skin buckling, cracks, loose or failed fasteners, attachments and structural damage.
  (b) Fillets and fairings - Inspect for cracks, and loose or failed fasteners.

D. Severe Turbulence and/or Maneuvers

Atmospheric conditions producing violent buffeting of airplane. Severe maneuvers can be defined as any maneuvers exceeding the Pilot's Operating Handbook and the airplane's flight limits.

(1) Stabilizers
  (a) Horizontal stabilizer hinge fittings, and fittings - Inspect for security, loose or failed fasteners, and any evidence of structural damage.
  (b) Vertical stabilizer - Inspect for evidence of structural damage, and damage to hinges and fittings.
  (c) Elevator and rudder balance weight supporting structure - Inspect for security, loose or failed fasteners, and evidence of structural damage.

(2) Wing
  (a) Wing to body fittings and supporting structure - Inspect for security, loose or failed fasteners, and evidence of structural damage.
  (b) Trailing Edge - Inspect for and deformation affecting normal operation of flap and aileron.

E. Lightning Strike

If flown through a region of the atmosphere where electrical discharge is occurring, the airplane may become part of the discharge path. During a lightning strike, the current enters the airplane at one point and exits another, usually at opposite extremities. It is in these entrance and exit points where damage is most likely to occur. Burning and/or eroding of small surface areas of the skin and structure may be detected during inspection. In most cases, the damage is obvious. In some cases, however, hidden damage may result. In the case of lightning strike, this inspection must be accomplished before returning it to service.

(1) Communications
  (a) Antennas - Inspect all antennas for evidence of burning or eroding. If damage is noted, perform functional check of affected system.

(2) Navigation
  (a) Glidescope antenna - Inspect for burning and pitting. If damage is noted, perform a functional check of glidescope system.
  (b) Compass should be considered serviceable if the corrected heading is within plus or minus 10 degrees of heading indicated by the remote compass system. If remote compass is not within tolerance, remove, repair, or replace.

(3) Fuselage
  (a) Skin - Inspect surface of fuselage skin for evidence of damage.

(4) Stabilizers
  (a) Inspect surfaces of stabilizers for evidence of damage.
(5) Wings
  (a) Skin - Inspect for evidence of burning and eroding.
  (b) Wing tips - Inspect for evidence of burning and pitting.
  (c) Flight surfaces and hinging mechanisms - Inspect for burning and pitting.
(6) Propeller
  (a) Propeller - Remove from service and have inspected at an authorized repair station.
(7) Powerplant
  (a) Engine - Refer to the manufacturer's approved Instructions For Continued Airworthiness.
(8) Electrical System
  (a) Power Transient Voltage Suppressor (TVS) - Perform Inspection/Check - Power TVS. (Refer to 24-50)

F. High Drag/Side Loads Due to Ground Handling

A high drag/side load condition is defined as situations when the airplane skids or overruns from a prepared surface onto an unprepared surface. This condition can also be met due to landings short of prepared surfaces, landings which cause the blowing of tires, or skidding conditions where the safety of the airplane was in question. This covers takeoffs, landings, or unusual taxi conditions.

(1) Landing Gear
  (a) Main gear and fairings - Inspect for loose or failed fasteners, buckling, security, cracks, and evidence of structural damage.
  (b) Nose gear and fairing - Inspect for loose or failed fasteners, cracks, security, buckling, and evidence of structural damage.
(2) Wings
  (a) Wing to fuselage fittings and attaching structure - Inspect for security, loose or failed fasteners, and evidence of structural failure.

G. Ground Gusts

Ground gusts are defined as conditions where a parked or taxiing airplane is exposed to side, aft quartering, or aft wind gusts exceeding 40 knots. Such conditions can cause control system damage due to rapid oscillation and/or slamming of the control surfaces against system stops.

(1) Rudder
  (a) Hinges - Inspect for loose or failed fasteners, deformation, cracks, evidence of structural damage, and for any other evidence of damage or premature wear.
  (b) Rudder actuation arm bearing mount - Inspect for loose or failed fasteners, deformation, cracks, evidence of structural damage, and for any other evidence of damage or premature wear.
  (c) Attaching structure - Inspect for loose or failed fasteners, delaminating, cracks, evidence of structural damage, punctures, scratches, and for any other evidence of damage or premature wear.
  (d) Skin - Inspect for buckling, dents, misalignment, punctures, scratches, and for any other evidence of damage or premature wear.
  (e) Attaching hardware - Inspect for loose or failed fasteners, deformation, cracks, security of mass balance weights, balance weight supporting structure and for any other evidence of damage or premature wear.
  (f) Bellcrank - Inspect for failed fasteners, cracks and deformation.
(2) Elevator
  (a) Hinges - Inspect for loose or failed fasteners, deformation, cracks, evidence of structural damage, and for any other evidence of damage or premature wear.

(b) Attaching structure - Inspect for loose or failed fasteners, delaminating, cracks, evidence of structural damage, punctures, scratches, and for any other evidence of damage or premature wear.

(c) Skin - Inspect for buckling, dents, misalignment, punctures, scratches, and for any other evidence of damage or premature wear.

(d) Bellcrank - Inspect for failed fasteners, cracks and deformation.

(3) Aileron

(a) Hinges - Inspect for loose or failed fasteners, deformation, cracks, evidence of structural damage, and for any other evidence of damage or premature wear.

(b) Attaching structure - Inspect for loose or failed fasteners, delaminating, cracks, evidence of structural damage, punctures, scratches, and for any other evidence of damage or premature wear.

(c) Skin - Inspect for buckling, dents, misalignment, punctures, scratches, and for any other evidence of damage or premature wear.

(d) Actuation arm - Inspect for bends and evidence of jamming.

(4) Flaps

(a) Hinges - Inspect for loose or failed fasteners, deformation, cracks, evidence of structural damage, and for any other evidence of damage or premature wear.

(b) Attaching structure - Inspect for loose or failed fasteners, delaminating, cracks, evidence of structural damage, punctures, scratches, and for any other evidence of damage or premature wear.

(c) Skin - Inspect for buckling, dents, misalignment, punctures, scratches, and for any other evidence of damage or premature wear.

H. Operation in Harsh Environmental Conditions

In humid areas, special care should be taken to keep engine, accessories, and airframe clean to prevent oxidation. Fuel and oil should be checked frequently and drained of condensation to prevent corrosion. Visually inspect MCU, flight control surfaces, nose landing gear, cabin steps, torque tubes, and control yoke tube for corrosion in accordance with FAA AC 43.13-1B, Chapter 6, Section 5.

(1) Master Control Unit

Perform Inspection/Check - Master Control Unit. (Refer to 24-30)

(2) Control Yoke Assembly

Perform Inspection/Check - Control Yoke Assembly. (Refer to 27-10)

I. Operation on Unimproved Runway Surfaces

Operation on unimproved runway surfaces will cause additional wear and may require additional maintenance or inspection.

J. System Functional Tests

(1) Functional Test - Engine Monitoring System - *Serials 0002 & subs w/ EMax*

(a) Acquire necessary tools, equipment, and supplies.

Description	P/N or Spec.	Supplier	Purpose
USB Flash Drive	-	Any Source	Record data.
Computer with USB Port	-	Any Source	View data.

(b) Connect blank flash drive to USB port on MFD bezel.

(c) Set BAT 1, BAT 2, and AVIONICS switches to ON positions.

(d) Pull STARTER RELAY and FUEL PUMP RELAY circuit breakers.

(e) On MFD, when READY TO WRITE ENGINE DATA TO REMOVABLE MEDIA is displayed, press [Proceed].

(f) On MFD, verify the following:

1 ENGINE DATA LOG TRANSFER IN PROGRESS is displayed.

2 Status Bar displays as data is written.

3 LOG TRANSFER SUCCEEDED is displayed.

4 CONTINUE... is displayed.

(g) Remove data storage device from USB port on MFD.

(h) Reset STARTER RELAY and FUEL PUMP RELAY circuit breakers.

(i) Set BAT 1, BAT 2, and AVIONICS switches to OFF positions.

(j) Verify engine data was written to flash drive.

1 Connect flash drive to USB port on computer.

2 Navigate to flash drive and open EngineLog folder.

Note: The engine log files use the following naming convention:

Engine_070207_103017_out.log

where 070207 indicates the date (February 07, 2007) and 103017 indicates the time (10:30:17).

3 Open engine log file corresponding to date of functional test and verify engine data exists for the expected times.

4 If data exists, the engine monitoring recording system is functioning properly.

5 If no data exists, the engine monitoring recording system is malfunctioning. Contact Cirrus Design for disposition.

(2) Functional Test - Aircraft Data Logger System

Note: During the system power-up sequence, the diagnostic LED does illuminate briefly. This is a normal indication that the system is functioning properly.

(a) Open center armrest console, and remove glove box trim. (Refer to 25-10)

(b) Locate diagnostic LED, and observe if illuminated.

(c) If LED is not illuminated, the system is functioning properly.

(d) If LED is illuminated, the data transfer unit is not receiving communications from the recoverable data module. Perform the following:

1 Verify transfer cable connections between data transfer unit and recoverable data module.

2 If LED remains illuminated, replace data transfer unit. (Refer to 31-30)

3 If LED remains illuminated, replace recoverable data module. (Refer to 31-30)

4 If LED still remains illuminated, contact Cirrus Design for disposition.

(e) Install glove box trim. (Refer to 25-10)

Intentionally Left Blank