CHAPTER 49

ADDITIONAL MAINTENANCE REQUIREMENTS FOR SMALL AIRCRAFT

0.0 LIST OF EFFECTIVE PAGES

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1.0 OBJECTIVE

This section provides guidance for evaluating, approving and administering aircraft inspection and additional maintenance requirements for a (nine or less seats) operator. Reference: ICAO, Annex 6, Part II, Chapter 8.

2.0 GENERAL

A. The aircraft's type certificated passenger capacity is the passenger seating capacity as indicated on the Type Certificate (TC) or Supplemental Type Certificate (STC). The manufacturer (type certificate holder) may have several approved passenger seating configurations allowing the TC or STC approved capacity to be reconfigured by converting from one to another. Removing passenger seats does not constitute a change in type certificated capacity unless the resulting cabin configuration conforms to an STC or approved data.

NOTE: It is not the intent of the Nig. CARs to allow operators to remove or block passenger seats in order to circumvent maintenance requirements.

B. Except as discussed in subparagraph C, aircraft type certificated for nine or less passenger seats must meet the inspection requirements of an Approved Aircraft Inspection Programme (AAIP), or a 50/100-hour Light Aircraft Maintenance Schedule (LAMS). The additional maintenance requirements in this section must be met in either case.

C. A (nine or less) operator/applicant may elect to maintain its aircraft under a continuous airworthiness maintenance programme. If the operator/applicant elects to use such a programme, it should be approved in accordance with vol 4 chapter 3,
Evaluate Continuous Airworthiness Maintenance Programme/Revision.

3. LIGHT AIRCRAFT MAINTENANCE SCHEDULE (LAMS)

A. Preamble

1. This Schedule has been prepared in general terms to cover various types of aeroplanes, the maximum certificated take-off mass of which does not exceed 2730 kg, and is approved by the NCAA for use when complying with the provisions of the Civil Aviation Regulations 2015, in respect, of the maintenance of aircraft to approved maintenance schedules. However, note must be taken of the contents of paragraph 6 relating to the responsibilities of the Operator for the accuracy of information which is subsequently entered in Sections 3-H, 3-I and 3-J on Page 4.2.21 of this Chapter.

2. The requirements of the Schedule shall be applied to the aeroplane as appropriate to the Certificate of Airworthiness (C of A) Category and to the design and construction of, and the equipment fitted to the aeroplane. (See also paragraphs 4, 5 and 6). The depth of inspection shall be related to the service history of the aeroplane.

   Note: Owners/operators who wish to change the Category of the C of A should consult the NCAA in writing.

3. The Schedule shall be interpreted against the background of current aeronautical maintenance practices appropriate to the type of aeroplanes.

4. In addition to the performance of the maintenance actions prescribed in the Schedule, compliance shall also be established with all appropriate mandatory requirements issued by the NCAA and by the recognised airworthiness authority of the country of origin of the aeroplane. Retirement life limitations prescribed by manufacturers shall also be observed unless otherwise authorized in writing by the Director General, NCAA.

5. Recommendations issued by the manufacturer of the aircraft, engines, propellers and equipment, in Maintenance Manuals, Service Bulletins, and other technical service information shall be evaluated and appropriate action shall be taken as considered necessary.

6. It is the responsibility of the Operator and/or his/her Maintenance Organization to ensure that Supplementary Special Inspection/Overhaul and Placard and Notice Requirements related to the specific aeroplane are accurately entered on the appropriate pages provided in Sections 3-H, 3-I and 3-J on Page 4.2.21. Additional pages should be numbered in the appropriate sequence.

7. In addition to compliance with this Schedule, persons employed in its implementation are expected to exercise their skill and judgment in noting at all times any other matters that could affect the airworthiness of the aeroplane.

8. The procedure for the renewal of Certificates of Airworthiness for aircraft of masses not exceeding 2730 kg requires an Operator's Report and Recommendation to be submitted to the NCAA.

B. General Inspection Standards.

1. When carrying out scheduled maintenance, the term "Inspect" shall be interpreted that the systems, components or items are to be inspected externally and in situ, taking into account the provisions of 1.1 to 1.5 unless otherwise stated, and their condition when so inspected should be such as to preserve continuing airworthiness.

   1.1 When inspecting metal parts (e.g. bodies or castings of units in systems and in electrical, instrument and radio installations, metal pipes, ducting, tubes, rods levers) account shall be taken of:

   (a) Cleanliness. External evidence of - damage; leaks; overheating or discharge. Fluid contamination. Obstruction or drainage or vent holes or of overflow pipe orifices. Correct seating of fairings and covers and serviceability of fasteners.

   (b) Freedom from - distortion; dents; scores; chafing; pulled or missing fasteners, rivets, bolts, screws. No evidence of - crack and wear; separation of bond; failure of welds and spots welds, corrosion, deterioration of protective treatments.

   (c) Security of attachments, connections, locking and bonding. See Note, Section B, Page 4.2.8.

1.2. When inspecting wooden parts (e.g. structural members) account shall be taken of:

(a) Cleanliness. External evidence of damage. Obstruction of drainage or vent holes. No evidence of fluid soakage or failure of glued joints. Protective treatments (finish) intact.

(b) Freedom from - splits; cracks; shakes; scores; distortion; mold; shrinkage or crushing. Distortion of attachment bolt holes - if dismantled.

(c) Security of attachments and bonding.
See Note, Section B, Page 4.2.8.

1.3 When inspecting rubber, fabric, glass, glass fibre and plastic parts (e.g. coverings, ductings, flexible hoses, flexible mountings, seals, insulation of electrical cables, windows) account shall be taken of:

(a) Cleanliness. Freedom from - cracks; chafing; kinking; twisting; crushing; contraction-sufficient free length; deterioration; crazing; loss of flexibility; overheating; fluid soakage.

(b) Security of - attachments (supports, packings and electrical bonding correctly positioned, serviceable and secure); connections and locking.

1.4 When inspecting control system components, in addition to the considerations of 1.1, 1.2 and 1.3, as appropriate, account shall be taken of: Correct alignment - Full and correct movements. Distortion. Evidence of - bowing; scoring; chafing; fraying; kinking; wear; flattening; cracks; loose rivets; deterioration of protective treatments; corrosion. Electrical bonding correctly positioned, undamaged and secure. Attachments, end connections and locking secure.

1.5 When inspecting electrical motors, alternators and generators, actuators, relays, solenoids and contractors, in addition to the consideration of 1.1, 1.2 and 1.3, as appropriate, account shall be taken of: Cleanliness, evidence of damage, overheating, corrosion, security of attachments and connections. If protective covers are required to be removed, check for cleanliness. Evidence of scoring or pitting, brushes free of holders and not excessively worn and correct bedding. Adequate spring tension. Evidence of overheating; fluid ingress.

2. Manufacturer's Recommendations

2.1 Overhaul, Test Periods and Published Life Limits relating to aircraft parts, engines, propellers, instruments and accessories shall be those recommended by the Constructors/Manufacturers and those required by the recognised airworthiness authority of the country of origin. In certain circumstances, the NCAA may revise these requirements. In relation to engines, see "Revising Time Limitations, Page 4.2.26. The NCAA must approve concessions to component lives. Except where otherwise agreed by the NCAA, servicing, overhaul and inspection of combustion heaters and their associated exhaust systems shall be in accordance with the instructions contained in the appropriate manuals produced by the aircraft constructor and the equipment manufacturer. If the instructions in the aircraft constructor's manual are more stringent, those of the aircraft constructor shall be assumed to be overriding. In addition to compliance with the provisions of the appropriate instructions, compliance shall (unless already accomplished in the course of aircraft maintenance) also be shown with (i) and (ii), at intervals not exceeding 500 heater operating hours or two years, whichever is the sooner. It must be assumed that heater hours are equal to aircraft flying hours; or some percentage of flying hours that has been agreed with the NCAA.

(i) Combustion heaters and their exhaust systems shall be completely dismantled and inspected, and restored to the extent necessary to ensure continued safe operation. Combustion chambers shall, in addition, be pressure tested.

(ii) The hot air outlet ducting adjacent to the heater shall be inspected for exhaust contamination and the appropriate action shall be taken where there is any evidence of contamination.

2.2 In the absence of specific recommendations, the following periods shall be used to establish the necessity to overhaul, test or renew, as appropriate, in respect of the following components:

(a) Combustion Heaters. (500 hrs. or two years, whichever is sooner)

(b) Pressure Vessels (excluding fire extinguishers). Five years from date of manufacture or last overhaul.

(c) Instruments

(i) Check calibrate the following instruments (in situ is permissible) at the periods shown:

<u>Air speed Indicators</u>. Public Transport and Aerial Work Category, not exceeding 12 months. Private Category, not exceeding 36 months.

<u>Altimeters.</u> Public Transport and Aerial Work Category, not exceeding 12 months. Private Category, not exceeding 36 months.

(ii) At the Annual Check coincident with the Certification of Airworthiness renewal, taking account of knowledge of previous maintenance history, operational environment and utilisation, carry out such checks as are necessary to establish that all aircraft instruments and indicators are reading or recording accurately. Such checks may be accomplished in situ by a comparison check with an instrument of known accuracy.

(d) Compasses. Check swing not exceeding 24 months.

(e) Spark Plug and Oil Changes: Spark plug service, 100 hours. Oil changes, 50 hours.

(f) Radio Equipment. Fixed overhaul periods are not prescribed for radio equipment. The requirements for maintaining the various installations are detailed in the Annual Check (Section F), and the out of phase requirements are detailed in the Radio Maintenance Appendix (Section G). The out of phase requirements may be performed during defect rectification on a not exceed basis out of phase with scheduled maintenance checks. The specific maintenance activity must be certified in the aircraft logbook by a Certificate of Release to Service (Airworthiness Release) when accomplished.

(g) Flexible Fuel and Oil Hoses - not exceeding 6 years from installation and every 3 years thereafter. Inspect and test in accordance with the manufacturer's instructions.

(h) Batteries.

Aeroplanes certificated in the Transport Category: <u>Capacity Check,</u> not exceeding 4 months.
Single-engine aeroplanes not certificated in the Transport Category: <u>Capacity Check</u> not exceeding 12 months.

3. Persons certifying the Annual Check shall assess the need to perform any of the following activities in addition to those prescribed in the Schedule. In making the assessment, account shall be taken of previous maintenance history, operational environment and utilisation.

(a) The internal examination of struts, control tubes and similar hollow members.

(b) The removal of flying control cables and control system components for detailed inspection.

(c) The pressure/bore testing of fluid system rigid pipelines and flexible hoses. (See also para.2.2 (g) above)

(d) The internal examination and pressure testing of fluid tanks/reservoirs.

(e) The testing of insulation resistance and bonding.

(f) The inspection of pipelines, wiring, controls, systems and components in areas not normally exposed by the removal of access panels.

(g) The detailed inspection for deterioration of wooden constructed aircraft in accordance with Section B, para. 1.2, Page 4.2.4, of this Schedule.

NOTE: To gain access, it may be necessary to remove or cut fabric to enable adequate inspection of the above areas. The fitment of Woods Rings or other repairs to fabric coverings to permit ease of re-inspection should be in accordance with the relevant aircraft manufacturer requirements or as approved by the NCAA.

C. Log Book Entries and Certification

1. Log Book Entries. On completion of any Check, except Check A, required by this Schedule, an entry shall be made in the appropriate logbook.

2. Certificates of Release to Service. Whenever work has been completed involving overhaul, repair, replacement, modification, schedule or mandatory inspection, a Certificate of Release to Service (Airworthiness Release) shall be issued, but see the following qualifying notes in respect of scheduled inspections only.

Notes: (1) A Certificate of Release to Service in Category ‘R’ (Radio) is only required at each Annual Check and when completing the out of phase Radio Appendix items of Section G of this Schedule.

(2) A Certificate of Release to Service is not required in Category ‘R’ (Radio) at any time where the Radio installation comprises VHF Communication equipment only.

(3) A Certificate of Release to Service is not required for the completion of a Check ‘A’ inspection.

3. Certificates of Maintenance Review. Certificates of Maintenance Review are required by this Schedule only for aircraft certificated in the Transport and Aerial Work Categories, and shall be raised in accordance with the requirements of the Regulations. Signatories shall have access to such documents and records as may enable them to issue the certificates, and shall make any inspection of the aircraft as may appear to them to be necessary.

3.1 The Certificate of Maintenance Review shall be certified at each Scheduled Maintenance Check by an appropriately licenced engineer

3.2 The period of validity of the Certificate of Maintenance Review must not exceed the due date of the next Annual Check, subject to the variation permitted by Notes 1 and 2 Section D, of this Schedule.

D. The Maintenance Check Cycle

1. Transport and Aerial Work Category

Check A -	Prior to first flight of the day.
50 Hour Check -	Not exceeding 50 flying hours, or 62 days, whichever is the sooner. *
100 Hour Check -	Not exceeding 100 flying hours. *
Annual Check -	Not exceeding 12 months, but see Note (2).

1.1 Checks shall be completed only by organisations approved by the NCAA.

2. Private Category

Check A -	Prior to first flight of the day.
50 Hour Check -	Not exceeding 50 flying hours. *
100 Hour Check -	Not exceeding 100 flying hours*
Annual Check -	Not exceeding 12 months, but see Note (2)

2.1 The Annual Check shall be completed only by organisations approved by the NCAA.

*Notes: (1) Provided that airworthiness is not impaired, it is permitted to extend the period prescribed for any complete maintenance check, with the exception of the Annual Check, by a maximum of 10%. Extensions are not required to be deducted from the next scheduled period. An extension may only be authorised by persons acceptable as signatories for the prescribed Check. The extension shall be recorded in the appropriate logbook.

(2) Annual Checks may be anticipated for scheduling up to sixty (60) days prior to the expiration of the current Annual Check. The next Annual Check will then become due twelve (12) months after the anticipated Annual Check has been completed.

E. Signatories For Maintenance Checks

1. General

1.1 Signatories shall have access to such documents and records as may enable them to issue the certificates, and shall make any inspection of the aircraft as may appear to them to be necessary.

1.2 50-hour, 100 hour and Annual Checks shall be recorded in the appropriate logbook.

1.3 There is no requirement for the check A to be certified, but the Check must be completed by a person to whom the Owner or Operator has entrusted the Check, and to the satisfaction of the Pilot.

1.4 Persons authorized as signatories shall be as follows.

1.4.1. 50- and 100-Hour Checks

The holder of a Nigeria Aircraft Maintenance License with the appropriate Type Ratings.

1.4.2 Annual Check

1. The holder of a Nigerian Aircraft Maintenance License with the appropriate Type Ratings.

2. The holder of a Nigerian Aircraft Maintenance License in Avionics.

F. Scheduled Maintenance

CHECK A

1. General

Check that the necessary aircraft documents are available and in order. Ensure all loose equipment is correctly stowed and the aircraft is free of extraneous items. If the aircraft has not been regularly used, ensure before resumption of flying that:

(a) Either (I) the engine has been turned weekly o r run fortnightly (each two weeks).

Or (ii) the manufacturer's recommendations have been complied with.

(b) Compression appears normal when engine turned by hand

(c) Previously reported defects have been rectified.

2. Power-Plant/Engine

Check - oil level: security of filler cap and dipstick. Inspect - engine, as visible, for leaks, signs of overheating, and security of all items. Inspect - air filter/air intake for cleanliness. Check - security of cowlings, access doors and cowl flaps.

3. Propeller

Inspect - blades and spinner for damage and security.

4. Windscreen

Inspect - for damage and for cleanliness.

5. Fuel System

Check visually that quantities are compatible with indicator readings. Drain fuel sample from each drain point into a transparent container and check for water, foreign matter and correct colour.

6. Wings

Inspect - skin/covering, bracing wires, struts and flying control surfaces for damage and security of all items. Inspect - pitot/static vents and drain holes for freedom from obstruction. Test operation of stall warning device.

7. Landing Gear

Check - shock-absorber struts for leaks and that extension appears normal. Check - tyres for inflation, damage and creep. Inspect - brake installation for external evidence of leaks, and for damage and security.

8. Fuselage and Empennage

Inspect - skin/covering, bracing wires, struts and flying control surfaces for damage and security of all items. Inspect - drain holes and vents for freedom from obstruction. Inspect - radio aerials for damage and security.

9. Cabin Area

Check - flying and engine controls, including trimmers and flaps, for full and free movement in the correct sense. Check - brake operation is normal. Check -instrument readings are consistent with ambient conditions. Perform manual override and disengagement check on autopilot. Check - avionics equipment operation, using self-test facilities where provided. Inspect - seats, belts and harnesses for satisfactory condition, locking and release. Check - emergency equipment properly stowed and inspection dates valid. Test operation of electrical circuits. Inspect - cabin and baggage doors for damage, security, and for correct operation and locking. Check that markings and full complement of placards are correctly positioned and legible.

10. Agricultural Installations

Inspect - hopper, hopper lid, tank, pump, fan, boom assemblies, pipe-runs blowers and spreaders for damage and security.

NOTE: At the conclusion of agricultural operations the aeroplane shall be completely cleaned to remove chemicals. Perform an inspection of those parts of the aircraft structure which are likely to have been contaminated, e.g. skin/covering and exposed control cables, shall be carried out before the aeroplane is returned to any work other than agricultural operations.

11. Marine Aircraft

Inspect - hull floats, spreaders, struts bracing wires, water rudders and alighting gear for damage, security and corrosion. Drain all bilge compartments. Check - water rudder system for full and free movement in the correct sense.

50 HOUR, 100 HOUR AND ANNUAL CHECKS

Item	Detail (Inspection required shown X)	50	100	Annual
1.	Inspect -external covering of fuselage tail booms, main planes, nacelles, empennage, control surfaces, flaps and other high lift devices. Inspect- normal and emergency windows and doors, and Check-satisfactory operation of latching and locking. Check-protective treatments; drain holes free from obstruction; access panels secure.	X	X	X
2.	Remove sufficient detachable panels and covers and/or fabric (see note Section B/ para.3 Page 4.2.8) to Inspect-internal structure of fuselage, floor bulkheads, tail booms, main planes, nacelles, empennage, control surfaces, flaps and other high lift devices, structural attachment joint assemblies; struts; bracing wires and their attachments; internal protective treatments; surface de-icer systems; check condition of static discharge wick.	X	X	
3.	Check-function of emergency exits by internal and external release methods. Inspect-condition of lightning strike bonding.			X
4.	Inspect-landing gear assemblies; shock-absorber struts or units for leaks and correct extension; brake system-brake linings, drum/discs; wheels and tyres. Check-tyre pressures; hydraulic brake system fluid level (s).	X	X	X

5.	Prior to raising aircraft carry out Item 4. With aircraft supported and mass/weight off the wheels, Inspect-structural members and attachment fittings, including pivot points; shock absorbing devices; bungee rubbers; torque links; main, nose/tail wheels, including bearings, skids. Anti-skid devices, hoses and lines; hydraulic and electrical actuators and hydraulic jacks. Check-main and parking brake systems for correct operations. Carry out normal and emergency retraction and extension checks, including operation of locking devices, doors and warning devices. Check hydraulic/pneumatic operating pressures.	X	X	X
6.	Check flying controls for full and free movement in the correct sense; position indicators agree with surface movement.	X	X	X
7.	Inspect-hinges; brackets; push-pull rods; bellcranks; control horns; balance weights; cables; pulleys chains; tubes; guides and fairleads; rollers; tracks and rails; screw jack/rams, including auxiliary gearboxes or other power-operated systems. Check turnbuckles/locking devices in safety. Inspect-flap asymmetric protection mechanisms.		X	X
8.	Check-all control cables for correct tension; control neutrals and travels. Record results.			X
9.	Inspect-hydraulic, pneumatic, vacuum and other fluid systems, as visible. for leaks and damage. Check-fluid levels in reservoirs; accumulator pressures; pitot/static vents clear; pitot head correctly aligned.	X	X	X
10.	Check-tanks; powerpacks; valves; pipelines; hoses actuators; filters; venturis. Check-systems for leaks with systems pressures during engine ground run.			X

11.	Check-pitot/static systems for leaks.			X
12.	Check-correct stowage of equipment and validity of date on emergency equipment; seats, belts/ harnesses for satisfactory condition, locking and release; fire extinguishers for leakage or discharge.	X	X	X
13.	(a) Check-cabin air system for correct operation. Inspect-heater for signs of overheating or contamination. Check-air conditioner for leaks and correct oil level. Inspect-ventilator blower; outflow valves; pressurisation controller; bleed system; shut-off valves.	X	X	
	(b) Carry out ground function pressurisation check.		X	
14.	Check-fire extinguisher (s) contents by pressure/weight.		X	
15.	Inspect-instruments for damage, and for legibility of markings and associated placards. Check-readings are consistent with ambient conditions; operation, as far as possible, on engine ground run; stall warning device operation.		X	X
16.	Inspect-instruments; panels; mounts; pipes; hoses; electrical wiring; gyro filters; flux detectors; instrument transmitters.		X	X
17.	Ensure-last compass swing will remain valid until next check (see Section B, para. 2.2 (d), Page 4.2.6. Instrument calibration periods will remain valid until next check (see Section B, para. 2,2 (c)).	X	X	X
18.	Inspect-displays; instruments; controllers. Check-operation, as far as possible, on engine ground run, and perform manual override and disengagement checks.	X	X	X
19.	Inspect-computers; amplifiers; power supplies; servo motors; connections to flying control systems; automatic trim systems; yaw dampers; manometric systems inter-connections.	X	X	X

20.	Maintain battery. Inspect-battery stowage/ compartment and vents/drains. Check-operation of all electrical circuits.	X	X	X
21.	Inspect-components; wiring; terminals; connectors. Check-correct type and rating of fuses and circuit breakers; correct spare fuses carried; flap asymmetric protection and all travel limit micro switches; lamps and lighting; fire circuits; brushes in starters and generators; drive belt tension and condition. Ensure voltage regulator load sharing is correct.		X	X
22.	Inspect-Antennas; insulators; controllers; instruments and displays; microphones and headsets. Check-placards and markings legible. Carry out VHF ground function test.	X	X	X
(a)	HF Communication-Test the function of the system			X
(b)	ADF-Carry out ground function test using station (s) of known establish bearing accuracy. Check-audio.		X	
(c)	ILS Localiser and Guide Slope-Carry out a check with a Field Test Set, including flag warnings of single tone failure. Check-centre-line accuracy's, sense and course widths. Check-audio.		X	
(d)	VOR-Carry out a check with a Field Test Set, including flag warnings omni-radial resolving and radio-magnetic indicators accuracy at 90 degree intervals. Check-sense and course width.			X
(e)	Marker-Carry out a check with a Field Test Set, including 3-Tone operational check. Check-High/ Low sensitivity.		X	
(f)	DME-Carry out a check with a Field Test Set, including range accuracy.		X	
(g)	ATC Transponder-Carry out a check with a Field Test Set. Check-frequency tolerance and side-lobe suppression. Check-Mode "C".		X	
(h)	Airborne Search/Weather Radar-Test the function of all models.	X		

(I)	Area Navigation-Establish accuracy of way point distance and bearing.		X	
(j)	Audio-Check 'Emergency' operation.		X	
23.	Verify by reference to Section G that all required maintenance activities have been complied with (see also Section B, para 2.2 (f)), Page 4.2.7.	X	X	X
24.	Inspect-cables and terminals; cooling systems; moisture trap areas.	X	X	
25.	Lubricate aircraft in accordance with manufacturer's recommendations.	X	X	X
26.	Inspect-blades for damage. Check-accumulator/ dome pressure.	X	X	X
27.	Inspect-spinner; back plate; constant speed unit (governor); accumulators; de-icing boots; slip rings/brushes; fluid systems; control systems. Check-pitch change mechanism for backlash; propeller hub for condition. Lubricate and check for oil leaks.		X	X
28.	Engine controls-Check for full and free movement of throttle, mixture and propeller controls over correct range.	X	X	X
29.	Check for evidence of leaks, overheating or other unsatisfactory operation.	X	X	X
30.	Inspect-crankcase; accessory housings; cylinder assemblies; valve operating mechanism; accessory drive belts; mount frames; bulkheads, firewalls and sealing; cooling baffles; cowlings; items in engine bay for mutual interference; compressor, turbine and gear housings; breathers and vents. Carry out compression check and record results and methods used.		X	X
31.	Inspect-air filter/intake for condition, and cleanliness; indication system and first stage compressor impeller for damage.	X	X	X

32.	Check-security of induction system components; correct operation of carburettor heat; alternative air bypass doors; flame traps; control systems; drains.		X	X
33.	Inspect-filters for cleanliness Drain samples from all drain points and check for water' foreign matter and correct colour. Check-tank vents unobstructed.	X	X	X
34.	Inspect-tanks; selector valves; pumps pipelines; hoses; carburetors; injector systems; throttle, mixture and fuel selector controls; turbine fuel control units; nozzles.		X	X
35.	Inspect-magnetos; harnesses; spark plug switches; starting vibrators; contact breakers. Check-magneto internal timing and timing to engine. Assess condition of plug leads and HT harnesses. Service and test spark plugs (but see Section B, para 2.2 (e)), Page 4.2.6. Check-magneto cam lubrication and ventilators; turbine ignitors and ignition units.		X	X
36.	Inspect-exhaust manifolds and mufflers for leaks, damage and security.	X	X	X
37.	Remove cabin heat exchanger shrouds and inspect for signs of exhaust gas leakage. Inspect-turbo-charger (especially for cracks in turbine housing, compressor damage and freedom of rotation). Check waste gate for correct operation. Inspect-turbo-charger control system, pipelines and hoses.	X	X	X
38.	Carry out pressure test or cabin heat exchanger.			X
39.	Inspect and check-filters; screens; magnetic plugs. Change oil (but see Section B, para 2.2, Page 4.2.6).	X	X	X
40.	Inspect-tanks; sumps; coolers; hoses; pipelines; vents. Lubricate engine and controls as required by manufacturer.		X	X
41.	Ensure that:			
	(a) All tools, rags or other loose articles are removed from the aircraft.	X	X	X
	(b) All mandatory requirements (modifications, inspections and other directives) have been complied with.			

(c) All applicable Service Bulletins and other technical information have been evaluated and action taken as appropriate.

(d) All applicable requirements entered in Sections 10 and 11 have been complied with.

(e) All mandatory placards are legible, correct positioned and worded.

(f) The logbooks have been correctly filled in and are up to date.

42.	Carry out engine ground run and check, as far as possible, all systems and services for correct operation. Check-power-plant installation for leaks following run. Ensure all cowling, access panels and doors are secure.	X	X	X
43.	Carry out Items 10 and 11 of the Check A when applicable to the type of aeroplanes.	X	X	X

G. Radio Maintenance

Annual Checks

1. Marker - Carry out check with a Field Test Set, including 3-tone operational check. Check - High/Low sensitivity.

2. DME - Carry out a check with a Field Test Set, including range accuracy.

3. ATC Transponder - Carry out a check with a Field Test Set. Check - frequency tolerance and side-lobe suppression. Check- Mode ‘C’.

4. Airborne Search/Weather Radar - Test the function of all modes.

5. Area Navigation - Establish accuracy of waypoint distance and bearing.

6. Audio - Check ‘Emergency’ operation.

7. Inspect - cables and terminals; cooling systems; moisture trap area.

Out Of Phase

8. HF Communication Check frequency tolerance of 48mths all transmitter crystals

9. VHF Communication Check frequency tolerance of 48mths all transmitter crystals

10. Aerials and Feeders Carry out VSWR check 36mths (DME and Transponder only) Carry out insulation check 36mths (HF Com only)

11. Bonding Carry out bonding check 36mths

H. PLACARD AND NOTICE REQUIREMENTS

A copy of these requirements must be lodged with the NCAA and incorporated into the operator's General Maintenance Manual (GMM) in a separate section.

Sign and date all entries.

I. MANDATORY REQUIREMENTS

These requirements must be entered in the GMM.

J. SUPPLEMENTARY INSPECTIONS AND SERVICING-SCHEDULED AT OR LESS THAN 100 FLYING HOURS:

A copy of these requirements must be lodged with the NCAA and incorporated into the operator's GMM in a separate section.

Sign and date all entries.

4. PROGRESSIVE INSPECTIONS

A. Each operator/applicant wanting to use a progressive inspection must submit a written request to the NCAA. The operator/applicant must have the following:

(1) A certificated and authorized holder of an Aircraft Maintenance Licence or a certificated airframe repair station to perform the inspection.

(2) A current inspection procedures manual that meets all CARS requirements.

(3) Enough housing and equipment for necessary disassembly and proper inspection of the aircraft.

(4) Appropriate current technical information for the aircraft.

5. PROGRESSIVE INSPECTION INTERVALS

A. A progressive inspection programme must provide for a complete inspection of the aircraft within each 12 calendar month period and be consistent with the manufacturer's recommendations, field service experience, and the kind of operation in which the aircraft is engaged. The inspection schedule must ensure that the aircraft is, at all times, airworthy and conforms to all applicable aircraft specifications, type certificate data sheets, Airworthiness Directives, and other approved data.

B. Inspection intervals should be based on manufacturer's recommendations, field service experience, malfunction and defect history, and the type of operation in which the aircraft is engaged.

(1) If the operator/applicant requires assistance in establishing inspection intervals, then the Aviation Safety Inspector (ASI) should provide assistance based upon his experience and knowledge of the particular aircraft.

(2) When adequate knowledge of service problems is lacking for a particular aircraft, the operator/applicant should be advised to establish reasonable initial routine and detailed inspection intervals and plan to adjust intervals based on service experience. The operator/applicant should be made aware of the responsibility for initiating an inspection frequency. This will result in a complete inspection of the aircraft.

C. Requirements

(1) Before an aircraft can be placed in a progressive inspection programme, it must undergo an inspection at least equal to a 100-hour inspection. After this initial inspection, routine and detailed inspections must be conducted as prescribed in the progressive inspection schedule.

(2) Routine inspections consist of visual examination or check of the aircraft, appliances, and components and systems insofar as practicable without disassembly.

(3) A detailed inspection consists of a thorough examination of these items with such disassembly as necessary. For the purposes of this subparagraph, the overhaul of a component or system is considered to be a detailed inspection.

(4) Before an aircraft can be removed from a progressive inspection programme and returned to an annual/100-hour inspection programme, the remaining portions of the progressive inspection must be completed.

6. ADDITIONAL MAINTENANCE REQUIREMENT

A. Each operator/applicant maintaining small aircraft must comply with these additional maintenance requirements or a programme approved by the NCAA. These requirements ensure that major maintenance tasks (overhaul, hot section inspections, etc.) are performed on engines, propellers, rotors, and emergency equipment. It also includes carry-on oxygen for medical purposes. These requirements do not apply to the airframe and are not intended to impose a continuous airworthiness maintenance programme or otherwise augment the aircraft inspection programme.

B. Engine requirements apply to the engine itself, including turbo-superchargers, appurtenances, and accessories necessary to its function. It does not include aircraft provisions such as mounts or cowling or accessories such as generators or starters. By definition a propeller includes controls supplied by the manufacturer. Most propeller type certificate data sheets specify the applicable control unit which should be considered part of the propeller.

C. The operator/applicant may use either the manufacturer's recommended maintenance requirements or develop a programme that includes equivalent requirements.

D. In meeting NCAA requirements an operator/applicant may use applicable portions of an aircraft manufacturer's recommended maintenance requirements for the engine, propeller, rotor, and emergency equipment; the manufacturer's programmes for individual items; or a combination of both. Manufacturer's requirements, such as pilot preflight or other inspection items within the scope of the inspections should not be included as additional maintenance requirements.

NOTE: The aircraft manufacturer's maintenance programme does not include the avionics equipment installed in the aircraft. It may be necessary to require the operator/applicant to develop an inspection and maintenance programme that includes the inspection and maintenance of the avionics equipment.

E. A manufacturer's maintenance programme is defined as one that is in the manufacturer's maintenance manual or instructions. It does not include individual authorizations or recommendations by a repair facility or manufacturer to a particular operator/applicant.

(1) These manuals and instructions generally include service bulletins, service letters, and other maintenance publications.

(2) Service bulletins and service letters concerning repairs, alterations, or other items beyond the meaning of the term "maintenance" do not fall within the scope of the CARSs and compliance is not required unless it is made mandatory by an airworthiness directive or the NCAA. The operator/applicant may include these items in the additional maintenance programme to support higher maintenance intervals or other inspection variables.

F. An operator/applicant may adopt a manufacturer's entire maintenance programme. The programme must apply to the specific make, model, configuration, etc., and meet the requirements of the CARSs If the aircraft manufacturer's programme does not include engine overhaul (or comparable heavy maintenance) and the engine manufacturer's programme does, the operator/applicant must incorporate the engine manufacturer's programme to the degree necessary to encompass the engine overhaul requirement. It may be necessary to designate service bulletins, other manufacturer's maintenance instructions, and a manufacturer's maintenance manual to ensure an adequate programme. Programme limitations must be shown on operations specifications.

G. Operator/applicant may develop their own maintenance programme. An operator/applicant-developed programme requires NCAA approval and the operator/applicant must justify the programme. In most cases, these programmes are derived from a manufacturer's maintenance programme, although they may contain variations such as a higher engine overhaul period. In evaluation the operator/applicant's programme, the ASI should consider industry experience in using the manufacturer's programme.

(1) Each change to an operator/applicant-developed programme requires NCAA approval. Changes to a manufacturer's programme should be considered but shall not be incorporated into an operator/applicant-developed programme without specific approval.

7.. MAINTENANCE PROGRAMME APPROVAL FOR CARRY-ON OXYGEN EQUIPMENT USED FOR MEDICAL PURPOSES

A. The CARSs require that equipment used for storage, generation, or dispensing of oxygen and carried aboard an aircraft must be maintained in accordance with the operator/applicant's approved maintenance programme. The CARSs do not have specific rules for maintaining and testing pressure cylinders. However, procedures in the CARs, U.S. Department of Transportation (DOT) regulations, or other foreign country's regulations where pressure cylinders are manufactured are considered acceptable for controlling hydrostatic and life-limits of pressure cylinders.

B. The schedule for performing inspections and maintenance, whether by time in service, calendar time, system cycles, or combination, must comply with the applicable regulations. Instructions and procedures for conducting the maintenance programme, including the necessary checks and test, must be in sufficient detail for maintenance personnel to correctly perform the maintenance without further guidance.

C. U. S. retest of a container, states that a container for which prescribed period retest has become due must not be charged and shipped until it has been properly retested. Pressure cylinders used as aircraft equipment that remain charged or partially charged on the date a hydrostatic test is due may remain in service beyond the test date provided the cylinder is tested before its next full or partial refilling.

D. The maintenance programme for carry-on oxygen equipment for medical purposes is approved for use on operations specifications paragraph D42 as an item of emergency equipment.

8. REVISING TIME LIMITATIONS

A. Revisions to inspections and overhaul time limitations for powerplants, propellers, rotors, and emergency equipment normally are based on service experience. An operator may request authorization for a time increase by submitting justification to support the requested increase.

The data must indicate that they increase will not adversely affect the airworthiness of the aircraft. If service records indicate that any item consistently requires repair, adjustment, or other maintenance within the current time limitations due to damage, wear, or deterioration, the operator must take corrective action.

B. Time limitations may be established in terms of hours of operations, cycles, or calendar time. Time limitations for items on which deterioration is not necessarily a function of hours of operation (such as electronic units and emergency flotation equipment) should be established in terms of calendar time.

C. Increases in engine overhaul intervals may be approved in increments mutually agreed upon by the operator and the ASI. Increases should be based on satisfactory service experience and/or or teardown examination of at least one exhibit engine. The engine chosen for exhibit should have operated to within 5 percent of the currently approved time interval.

D. The current operator must justify an inspection time interval increase by providing sampling documentation that supports the proposed increase. The ASI must ensure that the part or engine sampled represents the total sample population and that it has not been given special treatment or been subjected to early inspections by the operator. A substantial portion of the time in service should have been accrued by the current operator. Industry experience and manufacturer’s recommendations for similar equipment can be used as supporting justification, but should not be the sole source.

E. Time extensions shall not exceed 200 hours on reciprocating engines or 10 % of the previous time limitations for on turbine-powered engines.

F. Time limitation extensions are approved and authorized for use by amending operations specifications.

9. PROCEDURES

A. Brief the Operator/Applicant: The assigned team of airworthiness inspectors provides the operator/applicant with policies and regulatory requirements. Schedule and conduct a preliminary meeting, if necessary.

B. Review the Schedule of Events. If this task is to be performed as part of an original certification, review the Schedule of Events to ensure that the task can be accomplished.

C. Evaluate the Maintenance Manual Requirements. Ensure that the operator/applicant’s maintenance manual describes procedures, levels of authority, and information appropriate to the inspection and maintenance requirements of the CARs.

D. Evaluate the Inspection and Maintenance Requirements. Accomplish the following:

(1) Determine if the aircraft meets the nine or less passenger seat requirements.

(2) Verify with the operator/applicant the type of programme with which the aircraft is to be inspected.

(a) If the operator/applicant would prefer to be on a progressive inspection, ensure that the requirements specified in Paragraph 4, Page 4.2.22 are met.

(b) If the operator/applicant would prefer to be on a 50/100-hour/annual inspection, ensure that the requirements of Paragraph 3, Page 4.2.1 or this Section are met.

(3) Determine if the operator/applicant meets the additional maintenance requirements this section for engines, propellers and rotors (as applicable), and emergency equipment

(a) Determine if the operator/applicant intends to use the manufacturer’s maintenance programme or develop one of its own.

(b) Determine the time in service intervals for which the operator/applicant intends to apply.

E. Analyze Findings. Discuss with the operator/applicant any discrepancies and the changes required to resolve them.

10. TASKS OUTCOMES

A. Completion of this task, when all requirements for acceptance and approval of the inspection and maintenance programmes have been met, will result in approval or amendment of operations specifications.

B. Document Task. File all supporting paperwork in the operator/applicant's office file.

11. FUTURE ACTIVITIES.

Normal surveillance.