

Inspection Program

Doe, John Q.
Lancair Evolution

Serial Number: EVO-????

Registration Number: N????

Address

1234 Main St.

Your town, Your state Your Zip Code

555.555.5555

EXAMINED AND APPROVED _____ DATED: _____

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Revisions

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List of Effective Pages

Page Number	Revision Number	Revision Date	Page Number	Revision Number	Revision Date
1	Original	4-Jun-11	20	Original	4-Jun-11
2	Original	4-Jun-11	21	Original	4-Jun-11
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A. Preface

1. Airworthiness Certificate Limitation

The Experimental Airworthiness Certificate for N???? will contain the following limitation.

No person must operate this aircraft unless within the preceding 12 calendar months it has had a Condition Inspection performed in accordance with this FAA approved program, and was found to be in a condition for safe operation. This inspection will be recorded in the aircraft maintenance records.

Inspections must be recorded in the aircraft maintenance records showing the following, or a similarly worded, statement:

“I certify that this aircraft has been inspected on *(insert date)* in accordance with the scope and detail of the Maintenance and Inspection Program for DOE, JOHN Q. Lancair Evolution, Serial Number EVO-???? FSDO-approved program dated *(insert date)*, and found to be in a condition for safe operation.”

The entry will include the aircraft total time in service, and the name, signature, certificate number, and type of certificate held by the person performing the inspection.

If there is any disagreement between this manual and the aircraft Operating Limitations issued to this aircraft by the FAA, the Operating Limitations will take precedence and the Inspection Program will be revised in accordance with Paragraph 10 to correct any disagreement with the Operating Limitations.

2. Inspection Program

- a. This inspection program was selected in accordance with Part 91.409(f)(4) and is identified in the aircraft maintenance records as “Doe, John Q. Lancair Evolution, Serial Number EVO-????, N????.”
- b. No person may operate this aircraft unless the replacements for life-limited parts specified herein are complied with. The aircraft, including the airframe, engine, propeller, appliances, survival equipment, and emergency equipment must be inspected in accordance with this program.
- c. The specified inspection intervals shall be complied with and at least one complete condition inspection must be accomplished every 12-calendar months by a properly rated repair station, a certificated mechanic, or the holder of the repairman certificate for this aircraft.

3. Responsibilities

a. Responsible Person

The owner responsible for scheduling inspections required under this inspection program is:

Registered Owner: John Q. Doe

Address: 1234 Main St.
Your town, Your state Your Zip Code

Phone: 555.555.5555

If the registered owner of this aircraft should change for any reason, the new registered owner must apply for a revision to this program prior to the next due inspection. The revision must be submitted to and approved by the geographically responsible FAA Flight Standards District Office.

b. Duties and Responsibilities

The person/organization listed above shall:

1. Maintain the Aircraft in accordance with the Maintenance & Inspection Program listed herein.
2. Ensure compliance with the airworthiness limitations sections of all appropriate manufacturer's maintenance manuals as well as all Airworthiness Directives.
3. Maintain a complete record of all maintenance performed on the aircraft. This record shall not be kept or carried onboard the subject aircraft.
4. Ensure that only qualified personnel maintain the aircraft.
5. Ensure that the aircraft is in safe operating condition before being returned to service.

4. Availability

A copy of this inspection program:

- a. Shall be kept in the possession of the person identified under Responsibilities.
- b. Shall be presented to any person performing inspections, tests, checks and life-limited parts replacement required by this inspection program.
- c. Shall be made available to the local Flight Standards District Office upon request.

5. Inspection Program Operation

- a. The status of this inspection program can be determined by referring to the aircraft records.
- b. The person identified under Responsibilities oversees, updates, and monitors the operation of this program.
- c. The person identified under Responsibilities reviews the inspection and maintenance requirements and then provides the person who is to perform the work with a list of work to be performed. Upon completion of the work, the Responsible Person will review the maintenance repair order and/or the inspection worksheets to ensure that all inspections, discrepancies, and Airworthiness Directives have been appropriately repaired or inspected at their prescribed intervals and recorded in the aircraft's permanent records.

6. Control of Inspection

In performing the inspection program of the airframe, engine, propeller and appliances (including the emergency equipment required to be inspected), the aircraft records will be used as a means of control. The aircraft owner is responsible for all aircraft records.

7. Airworthiness Directives

AD bulletins that are applicable to engine, propeller and/or accessories or component shall be complied with.

8. Defects Found During the Inspection

All defects found during an inspection, and any corrective action taken, will be maintained as a permanent part of the maintenance records.

9. Revisions to the Inspection Program

Revisions to this program determined as necessary due to maintenance and repair experience or modification of the aircraft's systems shall be made on an as needed basis. Revisions must be submitted to and approved by the local FAA office prior to issuing. The coverage of the original document and the record keeping requirements described herein shall not be minimized by any revisions. A history of revisions will be maintained.

10. Testing

All flight-testing results will be recorded in the aircraft maintenance records. Any major changes/alterations will require that the aircraft be flight tested again for a period of time to be agreed upon with the FAA. The action to be taken after the incorporation of any major changes/alterations shall be complied with in accordance with this aircraft's airworthiness certification operating limitations. This may require notification of the geographically responsible FSDO and entering into Phase I of operating limitations.

B. Introduction

This program lists the minimum inspection requirements for the DOE, JOHN Q. Lancair Evolution aircraft listed below. At a minimum, the aircraft will be inspected in accordance with the inspection program requirements prescribed herein. A complete condition inspection must be accomplished every 12-calendar months.

The inspection, maintenance procedures, methods and standards of airworthiness for the Pratt & Whitney engine recommended by the engine manufacturer will be complied with in accordance with the Pratt & Whitney Maintenance Manual 3043512, as revised. All other inspection and maintenance procedures will be done in accordance with standard aircraft requirements.

The inspection, maintenance procedures, methods and standards of airworthiness for the Hartzell propeller recommended by the propeller will be complied with in accordance with the Hartzell Propeller Owner's Manual No. 149, as revised. All other inspection and maintenance procedures will be done in accordance with standard aircraft requirements.

The inspection program and manufacturer's recommendations and procedures described herein are applicable to the following:

1. Aircraft

MAKE AND MODEL:	DOE, JOHN Q., Lancair Evolution
BUILT BY:	John Q. Doe
SERIAL NUMBER:	EVO-????
REGISTRATION:	N????

2. Power Plant

MAKE AND MODEL:	Your engine make and model
SERIAL NUMBER:	Your engine serial number
STATUS WHEN INSTALLED:	TT(?) TSHSI (?)

3. Propeller

MAKE AND MODEL:	Your propeller make and model
SERIAL NUMBER:	Your propeller serial number
STATUS WHEN INSTALLED:	TT(?) TSHSI (?)

C. Airframe Inspection Program

1. Inspection Requirements

a. Condition Inspections

§ Part 91.409(e) requires that DOE, JOHN Q. Lancair Evolution, N????, S/N EVO-???? receive a condition inspection by an authorized person each 12 calendar months in accordance with this approved inspection program and be in a condition for safe operation.

b. Unscheduled Inspections

If the limitations of the engine or airframe are exceeded, such as a hard or overweight landing, the likely affected components and systems must be inspected as indicated in this inspection program. Refer to Appendix B and Appendix C.

c. Component Inspections

Time limits and special inspection requirements may exist for equipment manufactured by other suppliers and installed on this aircraft (auto-pilot, air conditioning, etc.). These inspections and recommendations are determined by that manufacturer and shall be followed to ensure continued airworthiness using current manufacturer's maintenance and inspection manuals, as revised, for that component.

2. Time Limits

The Time Limits & Special Inspection Items table identifies either component time limits and/or required special inspections. These inspections must be incorporated into a scheduled or annual inspection as applicable. If it is anticipated that the component time limit and special inspection will occur before the next applicable required inspection, it must be incorporated in the current required inspection.

Time Limits & Special Inspection Items		
Special Inspection Item (Manufacturer)	Time Period	Reference Document
1. Emergency Locator Transmitter Alkaline Battery replacement .	24 Months	CFR 91.207
2. Altimeter & Static System Inspection - Refer to AC 43-203B and Appendix E of Part 43.	24 Months	CFR 91.411
3. Automatic Pressure Altitude Encoding System & Transponder inspection and test – Refer to AC-6A & Appendix F of Part 43.	24 Months	CFR 91.413
4. Main Aircraft Battery replacement (Concorde).	36 months	Concorde Instructions for Continued Airworthiness
5. Emergency Oxygen Bottle Re-Certification.	Every 5 Years	49 CFR 180
6. Sorcerer Trutrak Autopilot operational check.	100 Hours or Annually	TruTrak
7. Fire Extinguisher Bottle Inspection (if installed)	100 Hours or Annually	Manufacturer's Documents
8. Service nose strut.	200 Hours or Annually	Construction Manual
9. Repack new wheel bearings (nose and main landing gear) after first 100 hours, then every 400 hours thereafter. This should be done more frequently if experience indicates the need based on the type of operations conducted.	400 Hours	Construction Manual
10. Landing gear hydraulic pump brushes replace (Oildyne service manual).	1,000 Hours	Oildyne Service Manual
11. Check and record the control deflections on the ailerons, flaps, elevator, and rudder.	1,000 Hours or Every 5 Years	Construction Manual
12. Remove the rudder and check the hinges.	1,000 Hours or Every 5 Years	Construction Manual
13. On each main gear, remove the wheels, axles, and landing gear doors. Perform detailed inspection of the landing gear legs. Look for evidence of metal fatigue, corrosion, cracks, and deformation.	1,000 Hours or Every 5 Years	Construction Manual
14. Remove the Circuit Breaker Panel. Check the distribution bus and related wiring for chafing and security of electrical connections.	1,000 Hours or Every 5 Years	Construction Manual

3. Recommended Replacements

The *Recommended Replacements* table lists items that should be periodically replaced.

Recommended Replacements		
1. Cabin Pressurization Outflow Valve Filter	1200 hours or earlier as warranted by visual inspection	Outflow Valve Installation Manual
2. Fuel Filter	Annually	Construction Manual
3. Emergency Oxygen Bottle Replacement. This recommendation applies to composite bottles only.	15 years	Bottle Manufacturer's Documents
4. Disassemble the nose gear and replace all seals.	Every 2000 Hours	Construction Manual

4. Inspection Checklists

- a. This section contains the inspection items for the required and recommended inspections described above.
- b. Prior to each annual inspection, an engine start-up should be performed using the *Initial Startup Checklist*.
- c. Depending on the specific types of operations, the owner or operator may need to modify and/or increase the frequency of some inspection and/or servicing items.
- d. Persons performing an inspection under this program must use the appropriate checklist in this program. This checklist must be accompanied by the appropriate manufacturer's maintenance manual, as currently revised, for the component being inspected.

NOTE

All inspections and maintenance procedures must be in accordance with applicable Federal Aviation Regulations. Please refer to § parts 91.207, 91.403, 91.409, 91.411, and 91.413.

Inspection and Run-up Checklist

See last page for additional comments.

DOE, JOHN Q. Lancair Evolution Instructions for Continued Airworthiness Inspection and Maintenance Checklist	Annual Condition
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Post Run-up Checks

1. Exterior Lights – Check operation of the taxi and landing lights, position lights, and strobe lights.	☐
2. Pitot Tube Heater – Check operation. WARNING: Heater gets extremely hot! Check within 60 seconds after switching on. Do not operate longer than 2 minutes on the ground.	☐
3. Interior Lights – Check operation of the panel lights, instrument lights, overhead lights, electro luminescent panels, and all dimming rheostats.	☐
4. Annunciator Lights – Check operation.	☐
5. Flight Controls – Check for smooth operation of all flight controls with flaps in retracted and extended positions. Operate controls through full range of motion feeling for binding, ratcheting and sloppiness, and listening for unusual noises. Check and record the control deflections on the ailerons, flaps, elevator and rudder using a smart level and compare with construction manual values.	☐
6. Door Seal – Check operation of the door seal air pump and inspect for air leaks in seals.	☐
7. Trim Actuators – Check operation of all actuators and the accuracy of position indicator LED's.	☐
8. Brakes – Check for the absence of sponginess.	☐
9. Aircraft Batteries –Fully charge, clean the battery exterior surfaces, and clean the battery cables. Check the batteries for evidence of leakage.	☐
10. Access Panels, Fairings, Seats, Carpets, Covers, Side Panels, & Spinner – Remove for complete access for inspection. Check for missing or stripped screws.	☐

Aircraft Records

11. Aircraft Logbooks – Determine total times, times since overhaul and times since last required or recommended maintenance checks and record on Inspection Coversheet.	☐
12. Airworthiness Directives (AD's) & Service Bulletins – Check for new and recurring AD's, which may need to be complied with during this inspection. Also, check for applicable manufacturer's Service Bulletins.	☐
13. Aircraft Records – Check for presence and condition of aircraft federal registration form and airworthiness certificate and associated limitations. Verify that weight and balance information is current and correct.	☐

Fuselage Exterior & Empennage

14.	Fuselage Exterior Surface – Inspect for obvious signs of damage, including cracks, holes, buckling, and rippling. Check condition of the paint and cleanliness. Check drain holes for obstructions.	☐
15.	Windows – Inspect for cleanliness, condition, and sealing.	☐
16.	Cabin Door – Inspect for security and fit. Inspect skin, hinges, gas strut, latching mechanisms, door seal, and upholstery. Lubricate hinges and all moving parts with a quality petroleum or silicone-based oil. Check that the door seal inflates properly.	☐
17.	Baggage Door – Inspect for security and fit. Inspect door skin, upholstery, seal, hinge, and latching mechanism. Lubricate the hinges and all moving parts with a quality petroleum or silicone-based oil.	☐
18.	Entry Assist Step – Inspect for security and condition.	☐
19.	Pitot Port – Inspect for obstruction of the pitot, signs of damage, which may affect proper airflow, and security of attachment. Remove the pitot port before attempting to clear any obstructions. Test for proper operation after reinstallation.	☐
20.	Static System – Check the static system for evidence of water. Remove any water or other contaminants from the system. If the static system is opened to remove water or contamination, a pitot static system test is required. CAUTION: Do not apply compressed air to the system, since this will result in damage to the static air flight instruments.	☐
21.	Drain & Vent Lines – Inspect for security, condition, and obstructions.	☐
22.	Brake Fluid Reservoir – Inspect for condition, security, and fluid level. Service as necessary.	☐
23.	Foreign Objects – Check the engine compartment for foreign objects.	☐
24.	Rudder – Inspect for signs of damage, looseness, and condition of hinge attachments. Check security of static balance weight. Ensure the system makes full contact with the left and right capstan rudder stops with no interference.	☐
25.	Horizontal Stabilizer – Perform generalized inspection of the horizontal stabilizer for visible damage and evidence of latent damage. Inspect the hinge attach points for security and condition.	☐
26.	Elevators – Inspect for signs of surface damage, looseness, and condition of hinges and elevator horn. Ensure the elevator system makes full contact with the up and down elevator stops.	☐
27.	Elevator Trim Tab & Actuator – Inspect for condition and security.	☐
28.	Rudder Trim – Inspect for condition and security.	☐

Wings

29. Wing Skins & Exterior – Inspect for obvious signs of damage, including cracks, holes, buckling, and rippling. Check condition of paint and placards. Check fuel sumps for obstructions. Check fuel tank vents for obstructions.	☐
30. Landing & Taxi Light Assembly – Inspect for cracks, security of mounting, and cleanliness and condition of lens cover. Operate taxi and landing lights in a dark area and ensure that both lights are properly aimed. If the lights are not properly aimed, adjust as required.	☐
31. Aileron & Flap Attach Points – Inspect for security of attachment to the wing.	☐
32. Aileron, Left & Trim Tab – Inspect for damage, looseness, or play in attach bearings and condition of attachment. Check security of static balance weights. Inspect bonding straps and static wicks for condition. Check for obstruction of vent hole.	☐
33. Aileron, Right – Inspect for damage, looseness, or play in attach bearings and condition of attachment. Check security of static balance weights. Inspect bonding straps and static wicks for condition. Check for obstruction of vent holes	☐
34. Aileron Trim Tab Clevis – Inspect trim clevis and related hardware for evidence of corrosion and pitting. Check for proper security.	☐
35. Aileron Deflections – Ensure that both aileron bellcranks seat properly on their stops.	☐
36. Flaps – Inspect skins for condition and signs of debonding. Check hinges for play and attachment to wing and flap. Check hinges for corrosion. Check flap push-pull rods and rod end bearings for condition, and lubricate. Inspect condition of bonding strap.	☐
37. Flap Motor & Flap Actuators – Clean and cycle the flaps up and down to check for smooth operation.	☐
38. Flap Deflections – Ensure that flaps extend equally on each side of the airplane in both the takeoff and landing configurations. Measure the down deflection on each side using neutral ailerons as a reference point. The difference in static deflection should not be greater than 3 degrees.	☐
39. Fuel Leaks – Check the security of the fuel tanks by inspecting the outer skin tank areas for evidence of fuel stains.	☐
40. Fuel Filler & Caps – Inspect for proper locking, condition of o-ring and receptacle, and presence and legibility of placards.	☐
41. Wing Interior – Inspect the wing spar through the outer access panel for signs of cracking or debonding. Inspect visible bonded areas of ribs and other structures.	☐
42. Fuel Vent Hoses – Check for proper connection of the fuel vent hoses to the wing end rib tubes. Check the condition of the hoses.	☐
43. Flight Controls – Inspect all push-pull rods, rod end bearings, and bellcranks for condition, play, and security of attachment. Ensure all rod end jamb-nuts are tight.	☐
44. Contamination Test – Take fuel samples from both wings and fuel strainer. Inspect for contamination (water, particulate and microbiological) and proper grade of fuel.	☐
45. Gascolator – Replace or clean the fuel filter and screens, as necessary. Re-assemble the gascolator and perform a boost pump pressure test. Check for leaks.	☐

Landing Gear

46. Hydraulic Fluid – Check the level of landing gear hydraulic fluid.	☐
47. Service Nose Strut – Check the inflation pressure of the nose gear, and service as required. Strut should show 3-4” of chrome at proper inflation.	☐
48. Nose Gear & Shimmy Dampener – Place the nose gear on a rotating table (shallow height – sometimes referred to as a “Grease Plate”) with the normal static weight of the airplane applied to the table. A firm and consistent resistance to the steering rotation should be felt through the full range of movement.	☐
49. Lifting Airplane – Jack the aircraft until all tires clear the floor by 2 inches.	☐
50. Hydraulic Brake Lines – Inspect the brake lines for security and evidence of chaffing. Check for leaks as evidenced by the presence of hydraulic fluid stains. Check for bends and kinks in the brake lines as the gear swings and the struts move.	☐
51. Brake Calipers & Brake Lines – Clean and inspect for condition, fluid leakage, and security of components. Check the caliper for small amount of free-floating motion in the torque plate. Clean the anchor bolts and torque plate if the caliper does not free-float. Do not lubricate anchor bolts.	☐
52. Brake Linings – Inspect brake linings, and replace if the wear lines are not visible.	☐
53. Wheels & Brake Discs – Inspect for cracks and corrosion. Inspect brake discs for cracks, pitting, and signs of overheating. Inspect all hardware for signs of loss of torque in accordance with Cleveland Maintenance Manual AWBCMM0001-2/USA. Measure and record brake disc thickness: Left - _____inches, Right - _____inches.	☐
54. MLG Tires – Inspect for flat spots, wear, splitting, and dry rotting. Check tire pressure, and service as necessary. Maintain main gear tire pressure at 100PSIG. Nitrogen is preferred but compressed air may be used if nitrogen is not available	☐
55. MLG Wheel Assemblies – Rotate and check for binding, unusual noises, excessive friction, play in bearings, and security of attachment of axles.	☐
56. NLG Assembly – Verify operation of the NLG centering lock with the strut fully extended.	☐
57. NLG Strut – Inspect for cracks, corrosion, and scratches on piston, fluid leakage, and signs of overstress. Check for security of attachment of strut to engine mount. Check for presence of steering limit markings.	☐
58. NLG Fork Assembly – Inspect for cracks, corrosion, signs of overstress, and side loading. Inspect towing lug assemblies for cracks, distortion, and security of attachment.	☐
59. NLG Wheel Assembly – Inspect for cracks and corrosion. Check all hardware for signs of loss of torque.	☐
60. NLG Tire – Inspect for flat spots, wear, splitting, and dry rotting. Check tire pressure, and service as necessary. Maintain nose gear tire pressure at 45 PSIG.	☐
61. Wheel Bearings (All) – Every 400 hours, clean and inspect for damage, wear, and corrosion. Inspect bearing races for wear and damage. Repack with appropriate grease in accordance with Cleveland Maintenance Manual AWBCMM0001-2/USA. NOTE: Always wear rubber gloves when handling dry or repacked bearings!	☐
62. Gear Retraction Test – Perform retraction test through 5 cycles. On third extension, utilize the emergency gear extension system. Ensure entire retraction system operates normally following emergency extension test. Check all actuators for leaks and security. It is acceptable for the emergency gear to extend, but not lock the main gear down as air loads/yawing is used to assist the extension.	☐

63.	Landing Gear Safety Switch – Verify proper operation of the pitot pressure actuated landing gear safety switch by simulating airspeed at the pitot tube to initiate gear retraction after gear up has been selected in the cockpit. CAUTION: Do not apply excessive pressure to the pitot system. Avionics damage may occur.	☐
64.	All Landing Gear – Verify freedom of movement of gear doors. Ensure that gear retraction and extension are not inhibited by door interference and that doors fit and fair. Inspect gear doors for cracks and condition.	☐
65.	Lowering Airplane – Ensure all obstructions are clear from under the aircraft, landing gear indicates down and locked and is ready for aircraft weight, then lower aircraft.	☐

Fuselage Interior

66.	Main Battery, Left – Inspect for security of mounting and condition.	☐
67.	Main Battery, Right – Inspect for security of mounting and condition.	☐
68.	Flight Controls – Inspect for nicks, scratches, and dents in push-pull rods, play in rod end and linear bearings, security of linear bearing mounts and rudder cable guide tubes to fuselage.	☐
69.	Seats – Inspect all seat structures for cracks, corrosion, and general condition. Check seat controls for positive locking. Inspect cushions and upholstery for condition.	☐
70.	Seat Tracks & Stops – Inspect for cracks, wear of latching holes and tracks, and security of tracks and stops.	☐
71.	Restraint Systems – Inspect belts for cuts, fraying, and broken stitching. Check all buckles for proper locking and release. Check inertia reels for proper operation. Check attach points to structure for all belts.	☐
72.	Upholstery & Trim – Inspect for general condition, attachment, and cleanliness.	☐
73.	Placards – Inspect for presence and condition of all required interior placards.	☐
74.	Instruments – Check security of instruments in panel and legibility of markings. Ensure that no magnetic tools are used during this procedure.	☐
75.	Avionics – Check security of displays, audio panel, indicators and controls on panel and center console, touch screen, switches on main panel and overhead, legibility of markings and operation of knobs, security and cleanliness. Ensure that no magnetic tools are used during this procedure.	☐
76.	Magnetic Compass – Inspect for security, clarity of glass, and signs of oil leakage. Inspect compass correction card for presence and legibility of all headings. Ensure that no magnetic tools are used during this procedure. Perform compass swing to verify correction card values.	☐
77.	Instrument Panel Backside – Remove the glare shield and inspect all wires, lines, hoses, control cables, instruments, etc., for any interference, chafing, and loose or stressed connections. Inspect structure of forward bulkhead, engine mount support structures, etc., for cracks, debonding, and general condition. Inspect soundproofing material for condition and adhesion to forward bulkhead.	☐
78.	Auto Pilot Servos – Inspect for security of installation, wiring connection and security of linkage for pitch, roll, and yaw servos.	☐

79.	Reinstall Glare Shield - Check security of attachment and condition. Check pullout shield for freedom of movement, condition, and security.	☐
80.	ECS Ducts – Inspect for cracks, holes, routing, and chafing.	☐
81.	Rudder Pedals – Inspect for security, cracks, and play. Check for leakage from brake cylinders. Lubricate rudder cable clevis bolt and brake cylinder attach points with high quality petroleum or silicone-based oil. Do not lubricate rudder pedal torque tube pillow blocks.	☐
82.	Seat Box Structure – Inspect for cracks, debonding, and any signs of obvious damage.	☐
83.	Wing Spar Bolts – Inspect for cracks, and security of attachment to fuselage.	☐
84.	Floor & Supporting Structure – Inspect for cracks, holes and compression damage.	☐
85.	Flight Controls (Forward Fuselage through Pressure Vessel) – Inspect for nicks, scratches, and dents in push-pull rods, play in rod end bearings, security of elevator linear bearing mounts, and attachment of rudder cable guide tubes to fuselage.	☐
86.	Baggage Compartment Floor – Inspect for cracks, holes, and security.	☐
87.	Emergency Locator Transmitter (ELT) – Remove from tray and remove battery cover. Inspect for battery corrosion and any obvious internal or external damage to housing. Verify replacement date on battery matches date on housing placard. Reinstall battery cover. Test operation of G-switch in strict accordance with instructions in Kannad Operation Manual, DOC06006A Ref. 0141922A, page 604, Sec C. Record battery replacement due date: _____	☐
88.	ELT Installation & Support Shelf – Inspect ELT wiring and antenna cable for security, routing, and chafing. Check connectors for security of pins and proper connection. Inspect ELT tray and support shelf for cracks and security. Replace tray if any cracks are found. Check operation of remote switch. NOTE: This check shall only be conducted during the first five minutes of any UTC, (coordinated universal time) hour, and restricted in duration to not more than five seconds. Be sure to notify any nearby control tower of your intentions. (91.2076d).	☐
89.	Empennage Interior Structure – Inspect for cracks, debonding, or other signs of damage. Verify that all drain holes are clear of debris.	☐
90.	Access Panels & Fairings – Inspect for condition. Check fasteners and receptacles for condition.	☐
91.	Air Conditioning – Inspect all hoses, wiring, function test and, if service is necessary, service IAW manufacturer's recommendations.	☐
92.	Pressurization – Check cabin pressurization for leaks and cabin altitude warning system for proper operation.	☐

Inspection Wrap-up

93.	Fuselage & Wings – Verify the aircraft is free of any tools, parts, and debris, and reinstall all access fairings, panels, carpeting, seats, etc. removed for this inspection.	☐
94.	Engine – Verify the oil sump is properly serviced with oil and the engine compartment is free of tools, rags, and debris. Remove red debris/dust cover when complete with inspections and/or maintenance.	☐
95.	Engine – Run the engine and verify proper operation of all systems. After shutdown, check for leaks at fluid hose connections, fuel nozzles, and any other components removed during this inspection. Operate engine systems at appropriate engine speeds and complete all checks listed on Inspection Coversheet. If no leaks are noted, install cowlings.	☐
96.	Aircraft Records – Complete entries in logbooks, AD compliance lists, Lancair International Factory Service Bulletins, and any other required entries per § Part 43.	☐
97.	Completed Engine Inspection Checklist	☐
98.	Completed Propeller Inspection Checklist	☐
99.	Mechanics signature _____ Date _____ License number _____	☐

DOE, JOHN Q. Lancair Evolution Inspection Access Areas			
Area	Type of Access	Location	Inspection & Maintenance Items
LEFT WING	Wing tip	End of left wing, outboard	Pitot tube & fuel vent.
	Fuel System	Inboard from root to fuselage	Fuel lines & electric wiring.
	Access Panel	Underside of wing in front of landing gear	Fuel lines.
RIGHT WING	Wing tip	End of right wing, outboard	Fuel vent.
	Fuel System	Inboard from root to fuselage	Fuel lines & electric wiring.
	Access Panel	Underside of wing in front of landing gear	Fuel lines.
FUSELAGE EXTERIOR	Access Panel	Tail cone left side	Rudder bellcrank, elevator push-pull rod, autopilot pitch & yaw servos, yaw damper.
	Access Panels (2)	Vertical stabilizer, left and right side	Elevator bellcrank, elevator pushrod, tail nav & strobe wiring, tail surfaces trim wiring.
	Tail Cap	Tail Cap	GPS Antenna, VOR Antenna, ELT Antenna
	Engine Cowling – Top and Bottom	Forward of fuselage firewall	All engine and propeller parts and components.
FUSELAGE INTERIOR	Floor	Rear seat foot well	Wing attachment bolts, aft spar
	Floor	Pilot Side	Voltage regulator, primary bus distribution block, pilot O2 system
	Floor	Co-Pilot Side	Climate Control Unit (CCU), fuel lines, hydraulic lines
	Cabin, Side-Trim Panels	Pilot's side – runs from control stick to rear seat back	Aileron and elevator push-pull rods, circuit breaker panel, control stick switches wiring, air ducts.
	Cabin, Side-Trim Panels	Copilot's side – runs from control stick to rear seat back	Aileron and elevator push-pull tubes, communication wiring, control stick switches wiring, common wire bundle, air ducts
	Access Panel	Under rear seat	Flap actuator
	Baggage Compartment	Floor of aft baggage compartment	Elevator push-pull rods. Elevator autopilot servo
	Pressure Bulkhead	Aft of baggage area	Elevator push rod, rudder control cables, air conditioning condenser, AHRS, magnetometer, ELT
TRIM CONTROLS	Access Panels (3)	Right side of rudder, middle Left Elevator, lower surface Left Aileron, lower surface	Trim tab servomotor, rudder autopilot/trim servo

D. Pratt & Whitney PT6A-135A Inspection Program

1. General

The Engine Inspection Program specifies the frequency and extent of required inspections and maintenance of the engine and related systems. All required inspections and maintenance are to be accomplished by appropriately certificated personnel experienced with the maintenance and operation of turboprop aircraft engines.

The engine Inspection Program contains numerous references to specific chapters and pages in the complete Pratt & Whitney PT6A-135A Maintenance manual containing detailed technical specifications, inspection and maintenance procedures applicable to the corresponding tasks.

Appropriate and accurate records of inspections and maintenance accomplished in compliance with this program are to be maintained in appropriate logbooks.

Pratt & Whitney Maintenance Manual (Manual Part No 3043512), Volume 1 Section 72-00 pp 601-652 represents the inspection procedures for the various sections and mechanics of the PT6A-135A engine to include corrosion and sulphidation inspection, wash, and corrosion inhibition procedures.

Pratt & Whitney defines inspections as ROUTINE that coincides with the daily or preflight airframe inspection, MINOR inspection coincides with localized airframe inspection.

2. Time Limits

Hot section inspections are outlined in the applicable, approved service bulletins, which is updated on service experience and time-between-overhauls (TBO) (P&W, 72-00-00, latest revision). Hot sections are required every 1800 hours TIS and engine overhaul every 3600 hours TIS in accordance with PW&C SB 1803.

Reference Pratt & Whitney Maintenance Manual Part No. 3043512 Table 602, Periodic Inspection

Additional references of the Pratt & Whitney periodic inspection include, but are not limited to the following documents:

72-20-00	Air Screen Inlet
72-30-04	Gas Generator Case
72-30-01/-02	Fireseal Mount Rings
72-50-05	Exhaust Ducts (Maintenance Practices)
72-10-00	Propeller Shaft Seal
73-10-07/-08	Accessories
72-60-00	Starter-Generator
72-60-00	Oil System
79-20-04	Oil Filter Elements (Maintenance Practices)
79-20-02/-04	Magnetic Chip Detector Inspection/Check
72-60-00	AGB Internal Scavenge oil pump inlet Cleaning/Inspection

Additional references of the Pratt & Whitney periodic inspection include, but are not limited to the following documents (continued):

73-10-02/-06	Fuel System
73-20-00	FCU
73-10-04/-05	Fuel System Flow Control
73-10-01	Oil-to-fuel heater

74-10-00	Ignition System
74-20-00	Ignition Cables and Igniters/glow plugs
73-10-07	P3 Filter
75-30-00	Bleed Valve

Reference Pratt & Whitney Maintenance Manual Part No. 3043512 Table 602, Periodic Inspection
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Unscheduled Inspections are done when the engine is subjected to unusual stress or operating conditions, or exceeds operating limitations or gives unsatisfactory performance/handling (P&W 72-00-00). Please refer to the Pratt & Whitney Maintenance Manual, Part No. 3043512 for explicit instruction of the following:

- Overspeed
- Inadvertent Cut-Off and Relight During Taxi
- Overtemperature
- Overtorque
- Immersion in Water
- Dropped Engine or Component
- Material Ingestion (e.g. ice, stone, etc)
- Bird Strike/Soft Material Ingestion (e.g. rags, plastic bags, etc)
- Chip detection Circuit Completion and/or Debris in Oil Filter
- Propeller Sudden Stoppage or Strike
- Propeller Lighting Strike
- Propeller Electrical Leads Shorting
- Heavy/Hard Landing
- Aircraft Flown Through Volcanic Ash or Smoke
- Sustained Running at Oil Temperature Outside Limits
- Loss of Oil/Oil Pressure or Low Oil Pressure
- Oil Pressure Follows Throttle
- Contamination by Fire Extinguishing Agents
- Audible Rubbing, Binding or Scraping
- Propeller Windmilling after In-Flight Shutdown

- Contamination of Oil with Non-Metallic Foreign Material
- Starter-Generator Replacement

3. Post-Inspection Test Run Results

After completion of required inspections, the engine shall be run to determine satisfactory performance in accordance with the manufacturer's recommendations. Readings and observations shall be recorded in Appendix A: Engine Limitations and Test run results.

4. Safety Practices

Only qualified and trained personnel experienced with the maintenance and operation of turboprop aircraft engines should be permitted within close proximity of the engine when performing engine operational checks.

A fire extinguisher should be readily available, and no smoking or open flame should be permitted near the engine.

Avoid direct skin contact with fuel or oil. Wash thoroughly with soap and water immediately following accidental contact with engine fluids. Work in a well-ventilated area and avoid inhaling fumes from fuel or oil.

Standard aviation shop safety practices should be observed at all times.

5. Initial Installation and Startup

After initial installation, or after removal and subsequent re-installation of the engine, follow Pratt & Whitney initial run check list.

6. Rotor Components Service Life

Refer to P&WC S.B. No. 14002R13 to determine cycles.

E. Hartzell Propeller Inspection Program

1. General

The Propeller Inspection Program specifies the frequency and extent of required inspections and maintenance of the propeller and related systems. All required inspections and maintenance are to be accomplished by appropriately certificated personnel experienced with the maintenance and operation of turboprop aircraft engines.

Appropriate and accurate records of inspections and maintenance accomplished in compliance with this program are to be maintained in appropriate logbooks.

2. Time Limits

The Hartzell Propeller shall be overhauled every 4000 hours TIS or 72 months, whichever comes first in accordance with the Hartzell Propeller Owner's Manual 149.

3. Safety Practices

Only qualified and trained personnel experienced with the maintenance and operation of turboprop aircraft engines should be permitted within close proximity of the engine when performing engine operational checks.

A fire extinguisher should be readily available, and no smoking or open flame should be permitted near the engine.

Avoid direct skin contact with fuel or oil. Wash thoroughly with soap and water immediately following accidental contact with engine fluids. Work in a well-ventilated area and avoid inhaling fumes from fuel or oil.

Standard aviation shop safety practices should be observed at all times.

5. Propeller Inspection

Hartzell Propeller Owner's Manual, Section "Inspection and Check" 61-00-49 latest revision Section 4, pp.5-7 & 5-8 represent the Periodic Inspection and Maintenance schedule for the Hartzell propeller related to the Lancair Evolution. This includes the Inspection Procedures as defined in the owner's manual as 61-00-49, Section 5, pp. 5-18 thru 5-21. Propeller overhaul is to be accomplished every 4000 hours or 72 months, whichever comes first.

Required Periodic Inspection and Maintenance

- Detailed Inspection Every 400 Hours NTE twelve (12) months
 1. Blade Damage
 2. Grease or Oil Leakage
 3. Vibration
 4. Tachometer Inspection
 5. Blade Track
 6. Loose Blades
 7. Preload Plate Set Screw
 8. Corrosion
 9. Spinner Damage
 10. Ice Protection System

- Special Inspections Hartzell Manual 61-00-49 Sect 6, pp5-32 thru 5-42
 1. Overspeed/Overtorque
 2. Propeller Ground Idle Operating Restrictions
 3. Lightning Strike
 4. Foreign Object Strike/Ground Strike
 5. Fire Damage or Heat Damage

F. Appendices

Appendix A: Engine limitations

Pratt & Whitney PT6A-135A Engine Limitations Table 1 (REF. 71-00-00)

	SHP	N₁(Ng) (%)	N₂(Np) (RPM)	ITT (°C)	Torque (1)	Oil Temp (8) (°C)	Oil Press. (2) (PSI)
Maximum Continuous	750	101.6	1900	805	2080	10 to 99	85 to 105
Starting	---	---	---	1090 (4) (7)	---	-40 (min)	---
Idle	---	52.6 (typical)	---	685 (5)	---	-40 to 99	40 (min)
Takeoff	750	101.6	1900	805	2080	10 to 99	85 to 105
Max Climb	700	101.6	1900	805	1940	0 to 99	85 to 105
Max Cruise	700	101.6	1900	805	1940	0 to 99	85 to 105
Max Reverse	720	101.6	1825	805	2080	0 to 99	85 to 105
Transient	---	102.6 (4)	2090 (10)	880 (4)	2400 (11)	0 to 99	85 to 105

GENERAL NOTE: The operating parameters in this Table are individual limits for each engine parameter and do not apply simultaneously.

- (1) All limits are based on sea level and ambient temperatures as specified.
- (2) Minimum oil pressure above 27,000 Ng is 85 psig.
- (3) For over-temperature and over-torque action, refer to Figures 501, 502, 503 and to Chapter 72-00-00, Unscheduled Inspection.
- (4) These values are time limited to two (2) seconds.
- (5) Increase Ng to keep within this limit.
- (6) If maximum torque is used, Np must be set so as not to exceed power limitations. Reverse power operation is limited to one (1) minute.
- (7) Starting temperatures above 880°C (1616°F) should be investigated for cause.
- (8) For increased oil service life, an oil temperature below 80°C (176°F) is recommended.
- (9) In the event of failure of the propeller governor toward overspeed, it is permissible to complete a flight with propeller control via the overspeed governor (on engines so equipped) providing this limit is not exceeded.
- (10) In the event of failure of the propeller governor toward overspeed, it is permissible to complete a flight with propeller control via the overspeed governor (on engines so equipped) providing this limit is not exceeded.
- (11) These values are time limited to twenty (20) seconds.

TEST RUN RESULTS TABLE 2

Total Flight Time Since Installation:							
	OAT (C)	N1 (NG) (%)	N2 (Np) RPM	ITT (C)	TORQUE (%)	OIL TEMP (C)	OIL PRESS (PSI)
Idle		N/A					
Maximum Continuous							
Date:				Name (<i>Print</i>)			
Certificate Number:				Signature:			

TEST RUN RESULTS

Total Flight Time Since Installation:							
	OAT (C)	N1 (NG) (%)	N2 (Np) RPM	ITT (C)	TORQUE (%)	OIL TEMP (C)	OIL PRESS (PSI)
Idle		N/A					
Maximum Continuous							
Date:				Name (<i>Print</i>)			
Certificate Number:				Signature:			

TEST RUN RESULTS

Total Flight Time Since Installation:							
	OAT (C)	N1 (NG) (%)	N2 (Np) RPM	ITT (C)	TORQUE (%)	OIL TEMP (C)	OIL PRESS (PSI)
Idle		N/A					
Maximum Continuous							
Date:				Name (<i>Print</i>)			
Certificate Number:				Signature:			

TEST RUN RESULTS

Total Flight Time Since Installation:							
	OAT (C)	N1 (NG) (%)	N2 (Np) RPM	ITT (C)	TORQUE (%)	OIL TEMP (C)	OIL PRESS (PSI)
Idle		N/A					
Maximum Continuous							
Date:				Name (<i>Print</i>)			
Certificate Number:				Signature:			

Notes:

1. Refer to Pratt & Whitney Maintenance manual section 71-00-00 for procedure on how to attain and interpret data for this table, and take corrective action as necessary.
2. Do not exceed any limitation in Table 1 during data collection procedure.
3. Make photocopy of Table 2 for collection of data and maintain record with engine logbook.

Appendix B: Special and Un-scheduled Inspections

Whenever the aircraft is subject to handling operations or other conditions which present extraordinary or unexpected stresses on the airframe, engine, propeller or aircraft systems, the aircraft must be inspected in accordance with each component's Manufacturer's maintenance manual, propeller's owner's manual and Pratt & Whitney Maintenance manual to ensure that the affected areas and/or systems are free from damage or excessive wear. Defects found during the inspections will be recorded and will be corrected before the next flight. All defects found during an inspection, and the corrective action taken, will be maintained as a permanent part of the maintenance records.

Appendix C: Composite Inspections

Composite Structures are utilized throughout this aircraft. Most failures of composite structures are either through crushing or striking of objects (dents, cracks, etc.) or fatigue that can cause delamination of the various layers of structure. One method of inspection that can be utilized is through non-destructive testing (NDT) is ultrasound. When using ultrasound as a method of inspection, discontinuities of the structure can be discovered through the loss of ultrasonic energy through attenuation via absorption and dispersion. Various frequency wavelengths can determine discontinuity in composite structures – please see the ultrasound inspection device manufacturers instruction when performing ultrasound inspection on laminated carbon fiber (composite) structures as used in the Lancair Evolution.

The Coin Tap method can be utilized with accurate results. A crisp and solid sound is heard when a good region without defects or damages is tapped with a piece of metal such as a washer or a coin. When testing a bad section that has possible crushing and delamination damage, a dull thud or thunk sound exists. This method can also be used to find spars and determine connecting points within the structure. To increase accuracy, draw a grid in the region of testing and tap repeatedly in the suspected damage area to include the surrounding areas while listening for sound change. This will determine the estimated maximum area damaged. Please inspect any depressions, dents, or scratches at a minimum of a tap test should be performed.

It is suggested that tap testing be performed every 3000 hours for the following areas:

- Bonding of the two fuselage halves.
- Areas where the top and bottom of the wing skin are bonded to the spars and ribs.
- Seam area around the leading and trailing edges of the wing.
- Seam area around the leading and trailing edges of the flaps.
- Seam area around the leading and trailing edges of the Ailerons.
- Seam area around the leading and trailing edges of the rudder.

Additionally, aileron, rudder, and flaps should be visually inspected annually and a tap test should be performed to aid in detection of any latent damage, delaminations, or debonds.

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