

Awakening the Dormant Ultralight/Light-Aircraft for Spring Flying Season

By Jim Willess, AFI

1. Cleaning- Uncover the aircraft and remove all dust, dirt and moisture.
2. Inspect the airframe for. (use checklist for 100 hour inspection)
 - a. Bent frame members tubing and struts
 - b. Corrosion on tubes mounts and fasteners. (replace all rusted bolts with new AN Hardware.)
 - c. Disconnected or loose wiring and switches
 - d. Flat or cracked tires
 - e. Damaged sails
 - f. Leaking fuel or oil reservoirs.
 - g. Seat belts and harnesses.
 - h. Instruments and indicators.
 - i. Switches.
 - j. Recharge battery. (test for full charge and replace if necessary)
3. Repair all discrepancies before flight
4. Inspect engine and prop.
 - a. Remove carburetors, clean and inspect needle valves, floats and orifices. A thorough cleaning will head off future problems. Clean bottom of carb bowl thoroughly.
 - b. Replace carb boots with NEW parts.
 - c. Check float level as per Carb Manual.
 - d. Remove propeller and inspect flange, bolts then check balance of prop. If wood repair, refinish and balance.
 - e. Re install propeller and track (do not over torque bolts) if corroded replace bolts.
 - f. Remove plugs and discard. Inspect inside cylinder dome.
 - g. Inspect and replace as necessary ignition wires and caps. (especially important for inverted engines)
 - h. Decarbon if necessary.
 - i. Remove exhaust system and inspect for bad joints, springs and holes in muffler-Use anti-size on joint upon reassembly. Inspect face of piston on exhaust and carb side for scuffing. If scuffing observed remove cylinders and re-hone cylinder and if pistons are damaged replace with factory parts.
 - j. Re assemble with NEW gaskets and torque heads to Rotax specs. (new exhaust gaskets).
 - k. Replace fuel, primer and pulse lines with NEW lines.
 - l. Replace filters (main on tank and one for each carb.)
 - m. Replace pulse pump.
 - n. Drain and refill gear box. (carefully check and clean magnetic drain plug)
 - o. On 582/618 drain and replace timing valve oil.

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- p. If oil injected, drain and replace injector oil.
- q. Install properly gapped plugs (use anti-seize on threads).
- r. Re-assemble engine.
- s. Drain and flush fuel tanks and fill with new, clean fuel.
- t. Run engine and observe proper operation, no leaks, some oil smoke, properly tracking prop, minimum vibration.
- u. If starter is dragging or faulty, remove and clean or re pair. (replace rope if necessary)
- v. Do not operate above high idle until warmed to minimum Cylinder head temp.(200 deg. Air Cooled-140deg Water temp if water cooled.
- w. Shut down and check for leaks and security.
- x. After all discrepancies repaired-ask another pilot to go over the whole airplane again. Consider carefully any recommendations he might have.

will have internal corrosion to contend with.

And finally, indicate the inspection , all parts replaced and all repairs done in the Aircraft / Engine Log Books. (this is important for the coming SPORT PLANE REGISTRAION AND LISCINCING) Include the Total time on the airframe and the engine and the repairman who did the work with the date and signature.

If you are not comfortable with the maintenance on your airplane, consider professional assistance. This might even mean sending your engine to shop for overhaul. Remember ROTAX recommends overhaul at 300 Hours or Ten years. The time on the engine is dependent on how much it is operated and at what intervals it runs. If he engine has been idle for 6 months or more you

APPENDIX 1. SAMPLE CHECKLIST FOR A CONDITION INSPECTION

AIRCRAFT IDENTIFICATION:

TYPE/SN. _____
 N NUMBER _____
 A/F TOTAL TIME _____
 OWNER _____

ENGINE MODEL/SN. _____
 PROPELLER MODEL/SN. _____
 ENGINE TOTAL TIME _____
 PROPELLER TOTAL TIME _____

GENERAL:

S = SATISFACTORY U = UNSATISFACTORY (correct all unsatisfactory items prior to flight)	Builder/Inspector			
	S	U	S	U
REGISTRATION/AIRWORTHINESS/OPERATION LIMITATIONS				
AIRCRAFT IDENTIFICATION PLATES INSTALLED				
EXPERIMENTAL PLACARD INSTALLED				
WEIGHT AND BALANCE/EQUIPMENT LIST (updated for each flight)				
RADIO LICENSE				
WINGS:				
REMOVE INSPECTION PLATES/FAIRINGS				
GENERAL INSPECTION OF THE EXTERIOR/INTERIOR WING				
FLIGHT CONTROLS BALANCE WEIGHTS FOR SECURITY				
FLIGHT CONTROLS PROPER ATTACHMENT (NO SLOP)				
FLIGHT CONTROL HINGES/ROD END BEARINGS SERVICEABILITY				
FLIGHT CONTROLS PROPERLY RIGGED/PROPER TENSION				
INSPECT ALL CONTROL STOPS FOR SECURITY				
TRIM CONTROL PROPERLY RIGGED				
TRIM CONTROL SURFACES/HINGES/ROD END BEARINGS SERV.				
FRAYED CABLES OR CRACKED/FROZEN PULLEYS				
SKIN PANELS DELAMINATE/VOIDS (COIN TEST)				
POPPED RIVETS/CRACKED/DEFORMED SKIN				
FABRIC/RIB STITCHING/TAPE CONDITION				
LUBRICATION				
WING ATTACH POINTS				
FLYING/LANDING WIRES/STRUTS FOR SECURITY				

APPENDIX 1. SAMPLE CHECKLIST FOR A CONDITION INSPECTION—Continued

S = SATISFACTORY U = UNSATISFACTORY (correct all unsatisfactory items prior to flight)	Builder/Inspector			
	S	U	S	U
CORROSION				
FOR U/L AIRCRAFT CHECK				
FLIGHT CONTROL BOLTS/PINS FOR SAFETY AND CONDITION				
WING/STRUT/CABLE ATTACHMENTS AND HARDWARE FOR SAFETY AND CONDITION				
FUEL SYSTEM:				
CORROSION				
FUEL LINES FOR CHAFING/LEAKS/ SECURITY/CONDITION				
SUMP ALL FUEL TANKS FOR WATER OR DEBRIS				
FUEL CAPS FOR SECURITY				
FUEL PLACARD				
FUEL VALVE/CROSS FEED/ FOR OPERATION AND SECURITY				
CLEAN FUEL FILTERS/GASOLATOR/FLUSH SYSTEM				
INSPECT FUEL TANK VENT SYSTEM				
LANDING GEAR:				
INSPECT STRUTS/TORQUE LINKS FOR ATTACHMENT				
INSPECT STRUTS FOR PROPER EXTENSION				

APPENDIX 1. SAMPLE CHECKLIST FOR A CONDITION INSPECTION—Continued

S = SATISFACTORY U = UNSATISFACTORY (correct all unsatisfactory items prior to flight)	Builder/Inspector			
	S	U	S	U
INSPECT FOR HYDRAULIC LEAKS				
CHECK ALL BUSHINGS FOR WEAR/FREE PLAY				
CHECK LUBRICATION				
INSPECT WHEELS FOR ALIGNMENT				
WHEEL/TIRES FOR CRACKS AND SERVICEABILITY				
WHEEL BEARINGS FOR LUBRICATION				
INSPECT FOR CORROSION				
INSPECT NOSE GEAR FOR CRACKS AND TRAVEL				
INSPECT TAIL WHEEL FOR CRACKS AND TRAVEL				
PERFORM GEAR RETRACTION TEST/CK INDICATOR LIGHTS				
EMERGENCY GEAR RETRACTION SYSTEM				
CHECK TIRE PRESSURE				
BRAKE LINING WITHIN LIMITS				
BRAKE DISKS FOR CRACKS, WEAR, AND DEFORMITY				
BRAKE HYDRAULIC LINES FOR LEAKS AND SECURITY				
FUSELAGE:				
REMOVE INSPECTION PLATES AND PANELS				
INSPECT BULKHEADS AND STRINGERS FOR POPPED RIVETS AND CRACKED SKIN				
INSPECT FOR DELAMINATED SKIN/VOIDS (COIN TEST)				
INSPECT THE SECURITY OF ALL INTERNAL LINES				
INSPECT WINDOWS/CANOPY FOR CRACKS AND FIT				
INSPECT DOOR OR CANOPY LATCHING MECHANISM				
INSPECT FIRE WALL FOR DISTORTION AND CRACKS				
INSPECT RUDDER PEDALS AND BRAKES FOR OPERATION AND SECURITY				
INSPECT BEHIND FIREWALL FOR LOOSE WIRES AND CHAFING LINES				

APPENDIX 1. SAMPLE CHECKLIST FOR A CONDITION INSPECTION—Continued

S = SATISFACTORY U = UNSATISFACTORY (correct all unsatisfactory items prior to flight)	Builder/Inspector			
	S	U	S	U
ENGINE:				
PERFORM COMPRESSION TEST #1 _____ #2 _____ #3 _____ #4 _____ #5 _____ #6 _____				
CHANGE OIL AND FILTER (CHECK FOR METAL)				
INSPECT IGNITION HARNESS FOR CONDITION AND CONTINUITY				
CHECK IGNITION LEAD CIGARETTES FOR CONDITION/CRACKS				
CLEAN AND GAP SPARK PLUGS				
CHECK MAGNETO TIMING/POINTS/OIL SEAL/DISTRIBUTOR				
INSPECT ENGINE MOUNT/BUSHINGS				
INSPECT ENGINE MOUNT ATTACHMENT BOLT TORQUE				
INSPECT ALTERNATOR/GENERATOR ATTACHMENT				
CHECK ALTERNATOR/GENERATOR BELT CONDITION				
INSPECT CYLINDERS FOR CRACKS/BROKEN FINS/ EXHAUST STAINS				
INSPECT ENGINE BAFFLES FOR CRACKS/CONDITION				
CHECK FOR OIL LEAKS INSPECT VACUUM PUMP AND LINES				
INSPECT OIL VENT LINES				
INSPECT ALL CABIN HEAT/CARB HEAT/DEFROSTER DUCTS FOR CONDITION				
INSPECT CARBURETOR FOR SECURITY & CLEAN INLET SCREEN				
INSPECT INTAKE HOSES/SEALS FOR SECURITY/LEAKS				
INSPECT THROTTLE/MIXTURE/CARB HEAT/CONTROL FOR PROPER TRAVEL AND SECURITY				
INSPECT CARB HEAT AIR BOX FOR CRACKS/OPERATION				
INSPECT CONDITION OF FLEXIBLE FUEL AND OIL LINES				
INSPECT OIL COOLER FOR LEAKS AND CONDITION				
CHECK EXHAUST SYSTEM FOR ATTACHMENT AND CONDITION				
CHECK MUFFLER/INTERNAL BAFFLE/ FOR SECURITY				
CHECK EXHAUST PIPES/FLANGES FOR SECURITY & ATTACHMENT				
REPACK EXHAUST GASKETS AS REQUIRED				
CHECK COWLING FOR CRACKS AND SECURITY				

APPENDIX 1. SAMPLE CHECKLIST FOR A CONDITION INSPECTION—Continued

S = SATISFACTORY U = UNSATISFACTORY (correct all unsatisfactory items prior to flight)	Builder/Inspector			
	S	U	S	U
FOR U/L:				
CHECK CARB BOOTS ON 2 CYCLE ENGINES FOR CRACKS				
CHECK SAFETIES ON EXHAUST SPRINGS				
PERFORM 2 CYCLE COMPRESSION TEST TO CHECK SEALS				
ENSURE SPARK PLUG CAPS ARE SAFETIED ON INVERTED ENGINES				
PROPELLER:				
CHECK SPINNER AND BACK PLATE FOR CRACKS				
INSPECT FOR CRACKS/STONE DAMAGE/NICKS				
CHECK FOR DELAMINATION (WOOD/COMPOSITE BLADES)				
CHECK PROP BOLTS TORQUE/SAFETY WIRE				
CHECK FOR OIL LEAKS (CRANKCASE NOSE SEAL)				
GREASE LEAKS (CONSTANT SPEED PROP)				
CHECK PROPELLER GOVERNOR FOR LEAKS AND OPERATION				
CHECK PROP TRACK				
CHECK PROP BALANCE (WOOD PROP)				
ELECTRICAL				
SPARE FUSES AVAILABLE				
BATTERY SERVICED AND FREE FROM CORROSION				
BATTERY BOX FREE FROM CORROSION				
ELT BATTERY FREE FROM CORROSION AND CURRENT BATTERY				
CHECK LANDING LIGHT OPERATION				
CHECK POSITION LIGHTS OPERATION				
CHECK ANTI COLLISION LIGHT FOR OPERATION				
INSPECT ALL ANTENNA MOUNTS AND WIRING FOR SECURITY				
CHECK ALL GROUNDING WIRES (ENGINE TO AIRFRAME, WING TO AILERON/ FLAP, ETC.)				
INSPECT RADIOS/LEADS/WIRES FOR ATTACHMENT & SECURITY				
INSPECT CIRCUIT BREAKERS/FUSES PANELS FOR CONDITION				

APPENDIX 1. SAMPLE CHECKLIST FOR A CONDITION INSPECTION—Continued

S = SATISFACTORY U = UNSATISFACTORY (correct all unsatisfactory items prior to flight)	Builder/Inspector			
	S	U	S	U
OPERATIONAL INSPECTION:				
VISUAL INSPECTION OF THE ENGINE/PROPELLER				
ALL INSPECTION PANELS AND FAIRINGS SECURE				
PERSONNEL WITH FIRE BOTTLE STANDING BY				
BRAKE SYSTEM CHECK				
PROPER FUEL IN TANKS				
ENGINE START PROCEDURES				
OIL PRESSURE/OIL TEMPERATURE WITHIN LIMITS				
VACUUM GAUGE CHECK				
MAGNETO CHECK/HOT MAG CHECK				
IDLE RPM/MIXTURE CHECK				
STATIC RPM CHECK				
ELECTRICAL SYSTEM CHECK				
COOL DOWN PERIOD/ENGINE SHUT DOWN				
PERFORM OIL, HYDRAULIC, AND FUEL LEAK CHECK				
PAPERWORK:				
AIRWORTHINESS DIRECTIVES				
RECORD FINDINGS AND SIGN OFF INSPECTION AND				
MAINTENANCE IN AIRCRAFT LOG BOOKS				