

AA5 ANNUAL INSPECTION CHECKLIST

EXPERT NOTES BY:

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PROPELLER GROUP			
1	Remove spinner and check for cracks, scratches, scoring, dents, nicks and distortions		
2	Inspect blades for erosion, scratches, nicks and cracks. Dress out nicks as required		
3	Inspect spinner back plate, bulkheads and doubler for cracks and secure mounting.		
4	Check front crankshaft seal for oil leaks		
5	Check propeller mounting bolt torque: _____ Foot pounds or _____ inch pounds. Resafety propeller; mounting bolts.		
6	Reinstall spinner. Check spinner run out _____ inch maximum.		
	It is important that when the propeller "front" doubler plate is on it must be removed to reveal potential cracks in the front aluminum bulkhead. They always crack "next" to the hole of the bolt, never out of the hole, due to pressure from the washer surface machined on the head of the bolt bottom side. Can not see cracks with doubler on.		
	Also need to inspect the front face of the propeller if a TCB bulkhead is installed on front due to corrosion of prop and graphite. This means inspecting this every annual. Always put brand new washers on each bolt every time as they will warp and crack bulkheads due to warpage.		
ENGINE GROUP			
	Before removing the cowling look to see how well the baffle seal is fitting into the gap on the nose bowl top to see if properly tucked into the bowl gap and secure. Also look at the rub pattern on the baffle seal as well as doors to look for "footprint" on the door surface and thus find potential air leaks.		
1	Remove engine cowl. Clean and check for cracks, wear, distortion, loose or missing fasteners and landing light attachment.		
	Once the cowling is off look very closely for security of cylinder aluminum wraps below cylinders and make sure all of them are secured to the inner cylinder support baffle with either springs or some wire technique to pull them tight. Also look at drain tubes on fuel pump and airboxes to see if they are there and secure.		
2	Drain oil sump. Remove oil screens, clean and inspect for metal particles. Reinstall and resafety. Replace oil filter Cut apart and inspect old filter for metal particles		
2	Check oil temperature sending unit, oil lines, cooler, and fittings		

3	for leaks, chafing, dents, cracks, and secure mounting.		
4	Fill engine with oil per lubrication chart		
5	Clean engine		
6	Check engine cylinder compression #1		
	Check engine cylinder compression #2		
	Check engine cylinder compression #3		
	Check engine cylinder compression #4		
7	Clean and regap or replace spark plugs as required (See latest revision of Lycoming Service Instruction No. 1042)		
8	Check ignition harnesses. Clean and inspect insulators .		
9	Check magnetos to engine timing, oil seal leakage, and distributor block for cracks, burned areas and corrosion		
10	Remove and service air filter (see Chapter 73 for details). Inspect carburetor heat control valve plate, shaft, valve plate to shaft screws and bearings for signs of wear and security. Replace filter and/or gasket if damaged or defective. Reinstall carburetor air filter		
11	Check induction air intake seals for leaks, deterioration and hardness. Check flex ducts for broken or loose strings, loose or displaced supporting wire and general overall condition for signs of wear or perforation		
	As for intake pipes, look very closely for cracks in gasket and "Blue" stains from potential leaks. Check security of induction hose clamps and security of tubes going into the sumps.		
12	Drain carburetor bowl. Reinstall drain plug. Remove and clean carburetor fuel inlet screen with acetone. Reinstall screen		
13	Remove and clean electric fuel pump filter. Reinstall and resafety		
14	Check fuel pump for proper operation and secure mounting.		
	Pressurize fuel system with electric pump and inspect fuel system and lines for leaks. Check fuel primer for operation and line leaks		
15	Check starter for secure mounting		
16	Check security of throttle arm on carburetor. Check throttle, carburetor heat, and carburetor mixture controls for proper travel, security, operating condition and control cushion		
17	Remove exhaust shroud and check muffler tailpipe, risers, clamps, gaskets and exhaust system for cracks, leaks and secure mounting. Reinstall shroud		
18	Check breather tube for obstructions and secure mounting		
19	Inspect cylinders for evidence of excessive heat indicated by burned paint on the cylinder. Check for cracks, loose bolts, oil leaks and general condition		

	As for cylinders make sure they look up into the cooling fins next to the bottom spark plug and to the right side going along the exhaust port. They will often crack inside those fins on the exhaust port and leave stains of oil burned there.		
20	Inspect engine mount for cracks, secure mounting and proper safety wiring. Check rubber vibration dampeners for signs of deterioration. Replace as required		
	As for engine mounts particularly on the Tigers AA5B and AG5Bs look at the horizontal tube weld joint on the left side where the horizontal tube below the carburetor attaches to tubes below the rubber mount. They will crack at that joint often. Also check to see if there is proper clearance between engine sump and engine mount on 0-360 engines on bottom. Sump will rub on the mount if rubbers are soft or weak or not properly spaced out with a washer.		
21	Check all baffles for cracks, loose or missing screws and deteriorated seal material		
22	Check alternator for secure mounting and lugs and brackets for cracks. Check condition and tension of alternator drive belt. Replace if required. Adjust belt tension to yield a 5/16 in. deflection at the center of the belt when applying a pressure equivalent to 14 pounds for new belts and 10 pounds for used belts		
	On alternator belts, a good way to get tension correct is to take torque wrench on nut of alternator pulley and hold prop and turn pulley with torque wrench. A new belt should be installed with 11 lbs drag torque on the belt. A used belt should slip on drag at 9 lbs. torque. On alternators if using the old DOFF10300 alternators the unit should be opened up every 500 hours as those brushes are prone to be worn out close to that time especially if a lot of oil is on alternator.		
23	Check battery electrolyte level and specific gravity. Clean and tighten battery terminals. Check battery box drains and vents for condition and drainage clear of aircraft structure		
24	Inspect vacuum system components (if installed) for secure mounting. Check vacuum pump drive for evidence of seal leakage. Replace seal and pump if required. Check all interconnecting lines and fittings for leaks, deterioration and damage. Replace as required		
25	Check ground straps for condition and secure attachment		
26	Check electrical wiring for condition and secure connections including shielded cable ground connections		
27	Check voltage regulator, starter relay and master switch relay for secure mounting and proper operation .		
28	Install cowl, checking for proper engagement of air intake duct and cowl latches		
	On carb heat control as well as mixture control make sure they are looked at very closely by the shielding and look for worn thin wires or "chatter" marks in the wire as it is moved back and forth. They can get very thin from rubbing on inside of the sleeve..		
CABIN GROUP			

1	Remove front seats, fold rear seat forward, remove cover from rear seat support and remove console side panels ..		
2	Check windshield, windows and canopy for cracks and secure mounting. Clean and lubricate canopy rails. Check canopy operation and locking devices . .		
3	Check seat belts and shoulder harnesses for condition and secure mounting		
4	Check elevator trim control for condition, secure mounting, proper operation and indication . .		
5	Check rudder pedal and brake system for proper operation and condition. Check brake fluid level. Replace rudder pedal springs at 1000 hours.		
	I want to encourage everyone to look at the age of their rubber hoses that interconnect pilot master cylinders to co-pilot actuators and then connect aluminum lines to brakes. For many operators those hoses are over forty years old. Made of Type "C" rubber and do and will "crumble" internally and flake off pieces of hose into the actuators causing them to get particles into the "O" ring on the piston and cause soft or failed brakes. If original hoses they should consider replacing them. Same thing with lines made of aluminum along gear struts, they are corroded by now and can and will develop pin holes in them inside the rubber fairing and leak and cause soft brakes		
6	Check control "T" for secure mounting and adequate clearance from other equipment		
7	Check chains, cables, pulleys, turnbuckles and cable ends for condition, secure attachment and safeties. Specifically check cables at pulleys for fraying while actuating controls through full travel. (Max. of four broken wires acceptable)		
8	Check cable tension at the average temperature for aircraft operation		
9	Check all controls for clearance and proper operation		
10	Check all interior bond lines for any indications of damage, peeling or cracking . .		
11	Check nose gear torque tubes and mounting brackets and bond bolts - joints for cracks and secure mounting. Check torque on mounting center center bearing bracket bolts 185-195 in.lb and end plate bolts 300-350 in. lb		
12	Check flap actuator, push rods, limit switches and indicator for proper operation and secure mounting . . .		
13	Lubricate per lubrication chart (Chapter 12)		
14	Check all plumbing in cabin for leaks and condition . .		
	As for lines, the fuel pressure line, the oil pressure line and the brake lines all made of aluminum can rub on cabin heat air ducts, wires, cables and misc. items along the firewall and cause leaks of fuel /oil/ or brake fluid ; usually starts as a pin hole leak. Must look over those aluminum lines closely under the panel.		

	While down there grab hold of the rudder cables where they attach to rudder bars, look for paint marks on the rudder bar indicating the clevis bolt and hole could be worn and elongated. IF you pull back on one rudder pedal and then move the slack rudder cable as you do so you will see if the hole is elongated or clevis pin possibly worn.		
	Also a good time to look at the nose gear torque tube to see if the bondment is broken. Have someone hold their hand on the "joint" while another person pulls up and down on the nose strut to "feel" any movement on bondment joint. This is where they "click" if broken bad enough.		
15	Disassemble, clean, lubricate and reassemble fuel selector valve every 500 hours. See fuel system section for details . .		
16	Check gyro system filters (if installed), replace if necessary.		
17	Check instruments for condition, secure mounting and legible markings		
18	Check electrical wiring switches, lights and electronic equipment for condition and security		
19	Inspect baggage compartment, baggage door and cargo tie-downs.		
20	Inspect all placards in cabin for condition and legibility .		
21	Reinstall cover over rear seat support, console side panels and front seats		
22	Check fresh air vents for proper operation		
23	Check and verify correct quantity: and rating of spare fuses mounted in right side of glove box		

FUSELAGE AND EMPENNAGE GROUP			
1	Remove tailcone and empennage covers		
2	Inspect emergency locator transmitter for security, operation and battery expiration date		
3	Inspect exterior surfaces for condition and damage. Check all drain holes in the fuselage bottom for obstructions		
4	Inspect bond lines for any indication of damage, peeling or cracks		
5	Check horizontal and vertical stabilizers for damage and secure mounting. Insure that horizontal stabilizer and elevator drain holes are open		
	There is a lot to look at inside the tail cone area. First of all, twist the elevators against each other pulling one up and the other down and look for play in the elevator bell crank bolt hole areas. Should be no movement in the elevator bell crank.		
6	Check elevator, elevator bearings and stops, rudder, rudder, bearings and stops, tab hinges and bell cranks for damage, travel and proper operation. Maximum allowable torque tube wear limit at bearing supports is 0.030 in. reduction in wall thickness		
7	Check elevator trim mechanism for secure mounting and proper operation		
8	Check rudder and elevator cables and pulleys for damage, proper operation and safeties. Check bellcrank attaching bolts for wear		
	Check out the play in the elevator trim tabs and rollers on the arms as well as on the "jackscrew" where those arms attach.		

	Also note the fore and aft play of the entire jackscrew assembly on the rear bulkhead, that assembly will wear out shim washers and allow the whole assembly to slide in or out. Need to add more washers on the shaft inside the tail forward of the bulkhead.		
	Need to look closely at the vertical supports for the horizontal stabilizer by big bolt in the middle as well as cracks at top or bottom as well as horizontal support. See Airworthiness Alert CE-04-34 for this issue.		
9	Lubricate per lubrication chart. (Chapter 12 below)		
	Grab a hold of the vertical fin quite high and push it back and forth or side to side; those bolts holding the vertical fin can get loose on the rear bulkhead.		
	Another issue connected to this is the "pop" rivets securing the "pan" to the tail section below the vertical fin. Check over all those rivets for "smoking" rivets and cracks in the vertical ears on that pan at front and rear. If there are a lot of loose rivets, good chance the vertical supports are cracked as well as I believe they are all connected. That "box needs triangulation supports built into it to make this box stop "twisting" and cracking.		
10	Inspect antenna mountings, wiring and electronic installations .		
11	Check position and anti-collision lights for secure mounting. . .		
12	Check static system lines and the alternate air source valve Drain any accumulated moisture from system drain		
13	Reinstall inspection covers		

WING GROUP			
1	Remove wing tips and access panels. Inspect surfaces, skins, ribs and tips for damage. Check position and anti-collision lights for secure mounting. Insure that all wing drain holes are open		
2	Visually inspect interior and exterior bond lines for any indication of damage, peeling or cracks		
3	Check ailerons, aileron bearings and stops, flaps, and flap bearings for secure mounting, damage, proper travel and wear. Maximum allowable aileron torque tube wear limit at bearing supports is 0.030 in. reduction in wall thickness. Check that aileron flap and drain holes are open.		
	I could spend a lot of time on this subject as well. Flaps especially are neglected and that affects the inner flap torque tubes, the heim rod end bearings, the bearings on the side of the fuselage and alignment issues between the aileron torque tube and the flap torque tube under the seat. Much too much to talk about here, will be glad to discuss with you.		
4	Check fuel vents and connecting lines for damage and restrictions		
5	Check fuel tanks, sump tanks and lines for evidence of leakage. Check sump tanks and lines for secure mounting		
6	Check fuel cap gaskets for air tight seal		
7	Check wing and outboard wing section attaching bolts. Torque to 60-85 in. lb		
8	Inspect fuel tank placards		
9	Check pitot heating element for proper operation (if installed)		
10	Check pitot tube opening and lines. Drain accumulated moisture .		
11	Check for interior corrosion of skin indicated by a white flaking ash		

	Study the parts catalog and see what the brackets look like that secure inner torque tube to the fuselage inside. Now open up the sump cover area and remove the step covers. Look for the two 3/8" bolt heads above the step that are vertically aligned and about 1 1/2" apart. Have one person pick up and push down on the flaps; watch those bolt heads real close. We are finding them either compromising the honeycomb and "moving in and out or they have gone so far as to start cracking out the outer skin of the honeycomb adjacent to the bolts. This is a big job to repair as it needs a doubler installed on the outside of the fuselage which means removal of wings / wing walks etc.		
MAIN LANDING GEAR GROUP			
1	Remove wheels and check for cracks. Check condition of brake linings, wheel cylinders, torque plates and mounting pins. Pack wheel bearings, reinstall wheels and key axle nuts at each 500 hours. Inspect wheel bearing grease at each annual.		
2	Check tires for approved type, wear and proper inflation - 35psi.		
3	Check brake lines for leaks and secure attachment		
4	Check struts for secure mounting. Inspect for cracks, delamination and nicks		
5	Inspect the upper main mounting brackets and spar attaching supports (center spar to fuselage) for wear, cracks and loose bolts		
6	Inspect wheel and strut fairings for damage and secure mounting		
	I have spoken often about this issue and will continue to emphasize the need to thoroughly inspect the carry through spar on the top surface under the wing walk. If you feel "lumps" or bumps in the aluminum spar it is already too far gone. Need to rub your hand across that spar as far as you can reach and also look it over with a mirror. Clean and apply ACF-50 to the spar and associated landing gear trunnions to stop any corrosion. If they feel like "sandpaper then it is getting pretty corroded and should be addressed soon. If smooth but just dirty then ACF 50 / corrosion X / Boeing T-9 will help stop it.		
NOSE GEAR GROUP			
1	Check nose gear strut for secure mounting, deformation, damage & cracks		
2	Remove nose gear strut from yoke and inspect for corrosion of the faying surfaces every year. Remove corrosion, paint surfaces w/ zinc-chromate and reassemble wet. Seal strut to yoke connection with RTV-102 by DOW CORNING		
3	Remove and check nose gear fork for deformation, wear and cracks. Maximum fork to strut bearing clearance is 0.035 in		
4	Grease fork and friction dampener, assemble and tighten to 10-22 lb. drag at axle		
5	Remove nose wheel, check for cracks, clean, inspect and repack bearings, reinstall wheel and safety axle at each 500 hours. Inspect wheel bearing grease for contamination and solidification at each annual.		
6	Inspect nose wheel for cracks, corrosion and loose or broken bolts		
7	Check tire for approved type, wear and proper inflation - 25psi		
8	Check wheel fairing for damage and secure mounting (note flange bearing)		

OPERATIONAL INSPECTION			
1	Check brake operation (including parking brake)		
2	Check fuel primer operation and lines for leaks		
3	Check booster pump operation		
4	Check fuel pressure		
5	Check starter for proper operation		
6	Check oil pressure and temperature		
7	Check engine controls for proper operation. Check throttle control for proper cushion		
8	Check magneto operation; both ON, left OFF; both ON, right OFF; both ON. (Maximum magneto drop 175 RPM .with 50 RPM maximum difference between magnetos). With engine at idle, turn switch to OFF position momentarily to check magneto grounding		
9	Check engine static RPM: 2150-2275		
10	Check carburetor heater for proper operation		
11	Check alternator output		
12	Check suction gauge and vacuum system output 4. 6 to 5. 4 in Hg.		
13	Check fuel selector valve operation and indexing		
14	Check heating, defrosting and ventilating system for proper operation		
15	Check radio for proper operation		
16	Check engine mixture setting and idle speed: 600-650 RPM		
17	Check idle cut off on carburetor for proper operation		
18	Check ailerons for proper operation		
19	Check elevators and trim tabs for proper operation		
20	Check flaps for proper operation		
21	Check fuel quantity gauges for condition and proper operation		
22	Check interior lights for proper operation and adjustment		
23	Check navigation and anti-collision lights for proper operation and landing lights for proper operation and adjustment		
24	Check pitot heat for proper operation		
25	Check stall warning device for operation		
26	Inspect engine after ground run-up. Flight test and inspect for oil leaks and secure mounting of all components		

GENERAL			
1	All FAA Airworthiness Directives complied with		
2	All manufacturer's Service Letters and Bulletins complied with		
3	Aircraft papers in proper order. Make log book entry		

LUBRICATION - CHAPTER 12

MAIN WHEEL BEARINGS - Grease with MIL-G-25760 grease every 100hr or as required
TIRES- Inflate nosetire to 25 psi and 35 psi on the maingear.
NOSE WHEEL BEARINGS- Grease with MIL-G-25760 grease every 100 hours or as required.

NOSE FORK SWIVEL- Grease with MIL-G-7711 grease every 100 hours or as required.

T-COLUMN NEEDLE BEARING:... Grease with MIL-G-7711 grease as required.

T-COLUMN, RUDDER AND FLAP TORQUE TUBE OILITE BEARINGS AND ROLLER CHAIN -
Oil with
MIL-L-7870 as required.

TRIM WHEEL GEARS- Grease with MIL-G-7711 as required.

SEAT TRACKS- Oil with MIL-L-7870 oil every 100 hours.

TRIM ACTUATOR SHAFT- Grease with MIL-G-7711 grease as required.

TRIM TAB BELLCRANKS- Oil with MIL-L-7870 oil as required.

RUDDER AND ELEVATOR BELLCRANK CLEVIS PINS- Oil with MIL-L-7870 oil as
required.

TRIM TAB HINGE- Oil with MIL-L-7870 oil (Note C).

CANOPY SLIDES- Spray with E-Z-Free lubricant as required.

ALL CONTROL SURFACE BEARINGS- Grease with Aeroshell No.6 or MIL-G-7711 as
required.

FUEL SELECTOR VALVE AND FUEL CAP GASKET- Grease with MIL-G-6032A grease as
required.

CANOPY LATCH- Grease with white grease, Lubriplate No. 501 or equivalent as
required.

FLAP DRIVE JACKSCREW- Oil with MIL-L-7870 oil. Coat with a light film for corrosion
prevention
only.

FLAP POSITION INDICATOR CABLE- Grease with MIL-G-21164 Molybdenum
Disulphide grease as
required.

BRAKE RESERVOIRS- Fill to within 1/4 inch of top with MIL-H-5606 hydraulic fluid,
as required.

NOTES:

A. Elevator bearings do not require lubrication.