

CHECKLIST: ZODIAC CH 601 series and 650

September 2009

INTRODUCTION

Use this inspection check list before flying your aircraft for the first time, when performing a major inspection (annual) or when reassembling the aircraft, after performing major alterations or repairs or in the event that you purchased the aircraft or just want to confirm that the aircraft meets the design drawings, after a hard landing, after exceeding the airframe design limitations, etc.

This checklist is a useful guide to help you thoroughly inspect your aircraft. However, it may not accurately reflect your aircraft as it was originally built or equipped, especially as it relates to installed engine, engine accessories, options, installed avionics and other systems.

USE THE ZODIAC CH 601 or 650 COMPLETE SET OF BLUEPRINTS AS YOU ASSEMBLE AND INSPECT YOUR AIRCRAFT.

USE THE ENGINE MANUALS AS YOU ASSEMBLE AND INSPECT YOUR AIRCRAFT.

USE THE PROPELLER MANUALS AS YOU ASSEMBLE AND INSPECT YOUR AIRCRAFT.

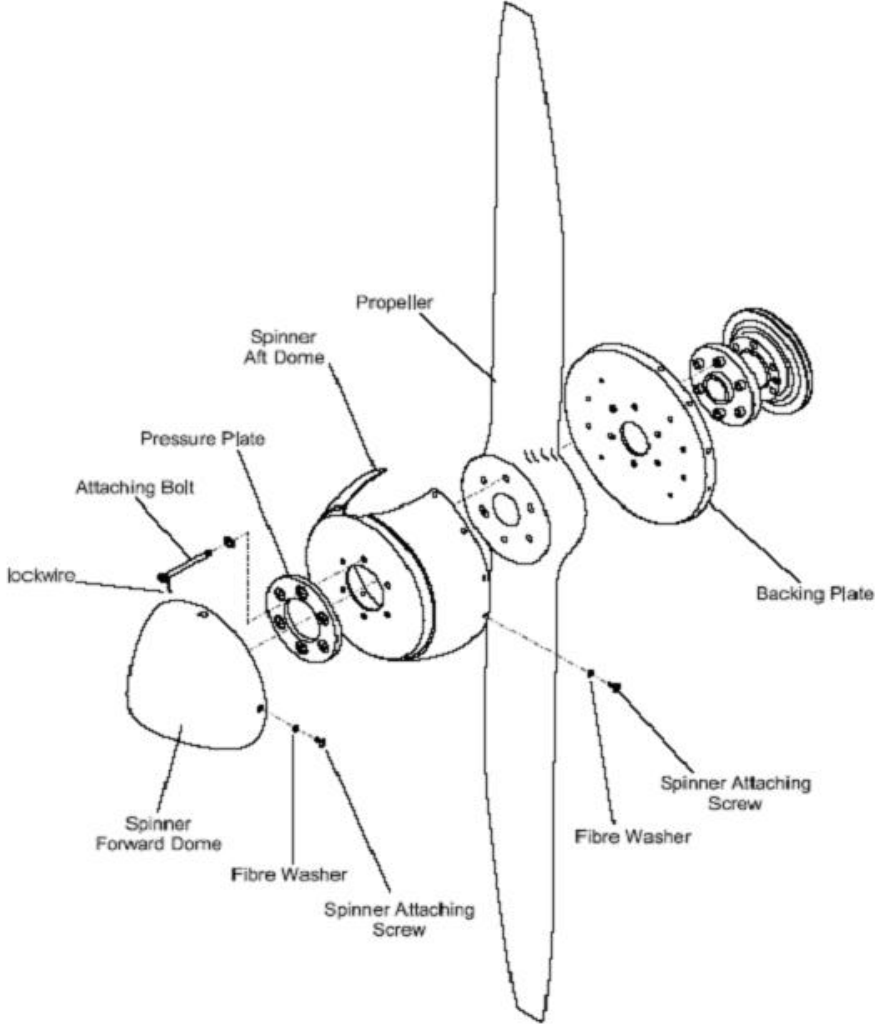
Other supporting documents:

- Zodiac kit assembly instructions (Zenith Aircraft Co.)
- Zodiac ground test procedure (AMD)
- Production flight test procedure (AMD)
- Service Manual (AMD)
- Flight Manual (AMD)
- Parts catalogue (Zenith Aircraft Co.)
- AC43-13-1b and AC43-13-2a (FAA)
- Design and Construction Manual (Zenith Aircraft Co.)
- Contact your local EAA Chapter for support and for a Technical Advisor
- Contact your local A&P Mechanic

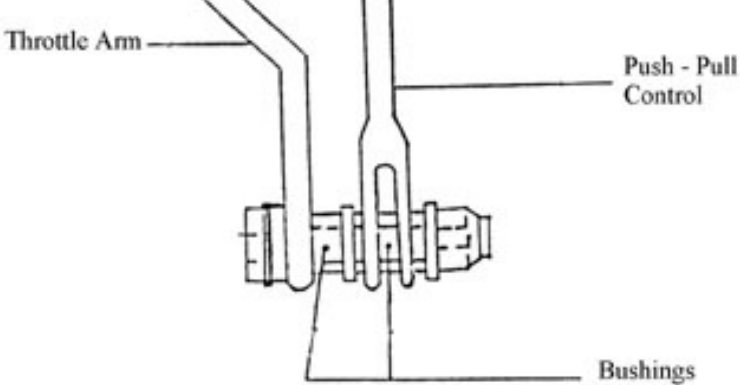
As you inspect your aircraft and find discrepancies, write them down in the space provided under the inspection so that you can go back and make appropriate changes.

For amateur built aircraft, some of this information may not be applicable based on your installed equipment, options, and/or configuration.

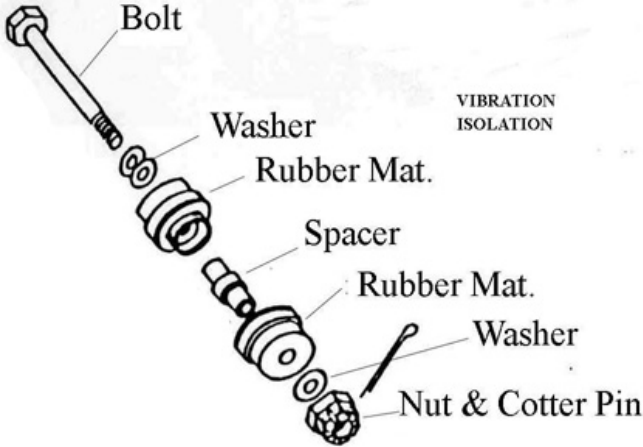
Description		
Propeller Group area – Remove spinner		
For a wood propeller, see Service Manual Section XII		
1. Inspect propeller bolts and safety wire. Confirm that the propeller bolts are torqued to proper specifications. Make sure that the propeller bolt threads are not bottoming out on the engine hub (too long) or that the bolts are not too short.  See AC43-13-1B section 7 Safetying for more info on safety wire. Use minimum 0.041" stainless steel safety wire on the prop bolts.		

2. Inspect blades and hub for damage, etc. Make sure that the spinner and backing plate do not contact the propeller blades.		
3. Inspect spinner and backing plate. Thread locking compound needs to be used on spinner screws.		
 Typical propeller and spinner installation.		
<u>Engine Group area</u>		
Cowling area – <i>with cowling on</i>		
1. Inspect general condition of cowling and baffle clearance.		

2. Inspect muffler down tube clearance at bottom of cowling.		
3. Inspect nose gear leg clearance at bottom of cowling.		
4. Inspect cowling at fuselage all around the firewall. The cowling should fit tightly to the fuselage.		
5. Inspect cowling fasteners and make sure they are easy to install.		
6. Inspect oil door, Dzus fasteners and nylon retaining washers – door must be tight to cowling.		
7. Inspect baffle clearance – look through oil door opening.		
8. Inspect baffle tape and staples. Must be tight to top cowling. Look through front of cowl with flashlight.		
9. With propeller installed, check propeller spinner clearance. Must have minimum clearance of ¼” between front of cowling and propeller.		
10. Make sure that oil dip stick is not contacting the oil door on cowling.		
11. Physically move cowling at front, it must be tight.		
12. Inspect oil level.		
<i>Run Engine then remove cowling at this time</i>		
13. When removing cowling, make sure that screws are easy to remove. Cowling must be re-installed and inspected if any changes need to be made to the cowling.		
14. Inspect cowling anchor nuts.		
15. Inspect cowling for indications of anything rubbing on the cowling such as baffling, air intake box, hoses, ect.		
Inspect oil system area		
16. Confirm that proper oil type was used (see engine manuals for specific information).		
17. Inspect oil filter area for leaks.		
18. Oil filter cooling sleeve must be tight and hose clamps must be tight.		

19. Inspect breather line.		
20. Check safety wire on oil cooler, filter, oil drain, sump, etc.		
Fuel System		
21. Inspect fuel lines for fuel leaks.		
22. Inspect fuel line ends and fire sleeve ends.		
23. Inspect fuel lines for any sharp edges. They must not make contact with any sharp edges.		
24. Inspect (optional) electric fuel pump bolts to firewall and primer line.		
25. Inspect engine mechanical fuel pump, bolts, and safety.		
26. Inspect the push/pull throttle cable in the cabin. It must feel smooth "IN" to OUT".		
27. Throttle cable must be 1/8" out from instrument panel in "IN" position. Cable stop needs to be at the carburetor and not the instrument panel.		
28. Inspect cable jam nut at fork for the throttle cable at the carburetor.		
29. Throttle cable at carburetor. Inspect fork that it moves freely on carburetor. Inspect arm and clearance through the full range of travel.		
		
30. Throttle cable "IN" and "OUT" position must stop at carburetor stops.		

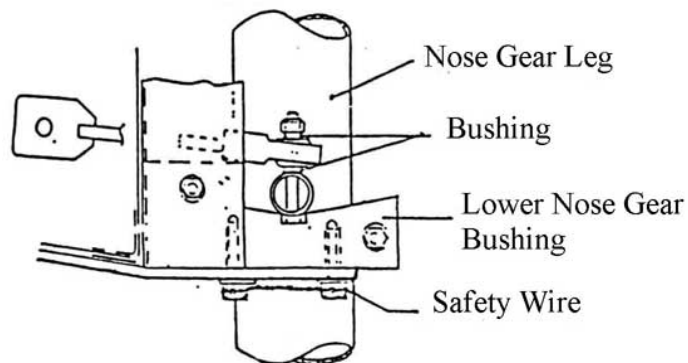
31. Mixture cable must be 1/8" out from instrument panel in "IN" position. Cable stop needs to be at the carburetor and not the instrument panel.		
32. Mixture cable at instrument panel must feel smooth "IN" to OUT".		
33. Mixture cable at engine mount must be tied with Adel clamps to engine mount so that it cannot move.		
34. Mixture cable at carburetor must be bolted and cable end must be bent.		
35. Mixture cable "IN" and "OUT" position must stop at carburetor stops.		
36. Disconnect the fuel line at the carburetor. Check the fuel flow by running the electric fuel pump and pumping fuel from the tanks into an appropriate container. Fuel flow should be at least 2 times the required fuel flow at maximum throttle setting.		
Inspect carburetor air intake box area		
37. Inspect carburetor bolts to carburetor air intake box / safety wire or safety washers.		
38. Inspect carburetor bolts / safety washers to engine.		
39. Inspect carburetor air intake box filter at front. Check bolts and proper fitting of filter.		
40. Inspect carburetor air intake box control cable bolts and safety washers.		
41. Inspect carburetor air intake box - muffler heat flap movement by moving cable.		
42. Carburetor heat pull-push cable must feel smooth from the "IN" to "OUT" position.		
43. Carburetor heat cable must be 1/8" out from instrument panel in "IN" position.		
44. Carburetor heat cable must be bolted, bolt must rotate freely, and cable end must be bent.		
45. Carburetor heat cable arm at air box must not contact the carburetor.		
Muffler area		
46. Inspect muffler nuts bolting muffler to engine.		
47. Inspect muffler nuts. Nuts must be self locking heat type.		

48. Inspect muffler clearance at bottom of firewall area and bottom of engine mounts. Must have at least ¼" clearance.		
49. Inspect muffler shroud hose clamps positioned on shroud.		
50. Inspect SCAT hose from muffler shroud to carburetor air box clamps. SCAT hose must not have sharp bends as to make sure that airflow is not limited.		
51. Inspect SCAT hose from muffler shroud to cabin air box – must be tightly secured.		
Engine mount area		
52. Inspect SL large nuts at engine mount.		
53. Inspect nuts and cotter pins at engine / engine mount.		
 The diagram illustrates the assembly for engine vibration isolation. It shows a bolt being inserted through a sequence of parts: a washer, a rubber mat, a spacer, another rubber mat, a washer, and finally a nut and cotter pin. The text 'VIBRATION ISOLATION' is positioned above the two rubber mats, indicating their purpose in the assembly.		
54. Inspect paint on engine mount – any paint chips or cracks?		
55. Inspect cables close to engine mount for any rubbing or loose cables.		
56. Inspect the rubber engine vibration isolating mounts for proper installation.		
57. Inspect grounding strap. Make sure that there is no paint under strap connection and there is good conductivity to ground.		
Engine gauge sender units		
58. Inspect fuel pressure sender unit.		

59. Inspect oil pressure sender unit on engine. Must be tight and safety with thread locking compound.		
60. Inspect oil temperature sender unit. Must be tight and safety with thread locking compound.		
61. Check tachometer cable or wires.		
Engine baffle area		
Note that baffle tape must touch top of cowling as to force air into engine cylinders. Aluminum Baffles must not contact cowling as to minimize baffle wear and cracking. Fiberglass cowling must not contact engine.		
62. Check general condition of engine baffles.		
63. Check the baffle tape and staples. Also make sure that baffle strips are riveted to front of bottom cowling area. They must be tight on front engine cylinders when cowling is installed.		
64. Inspect baffles, left and right, to cowling clearance at front. Look for wear marks on baffles from cowling.		
65. Inspect baffle black sealer all around baffles at rear.		
66. Inspect baffle spring holding bottom cylinder baffles.		
67. Inspect baffle screws to engine. Make sure they are tight and have safety washers.		
68. Inspect air scoop at front baffle.		
69. When installing top and bottom cowlings, they must be easy to install and bolts must be easy to install. Everything must fit nicely.		
70. Inspect baffle clearance at front of cowling, left and right.		
Cabin heat air intake area		
71. Inspect SCAT hose and clamps at baffle to muffler shroud, it must be tight.		
72. Inspect SCAT hose and clamps from muffler shroud to air box at firewall.		
73. Open and close air box at firewall from inside cabin. Make sure that in the closed position the box flap closes completely.		

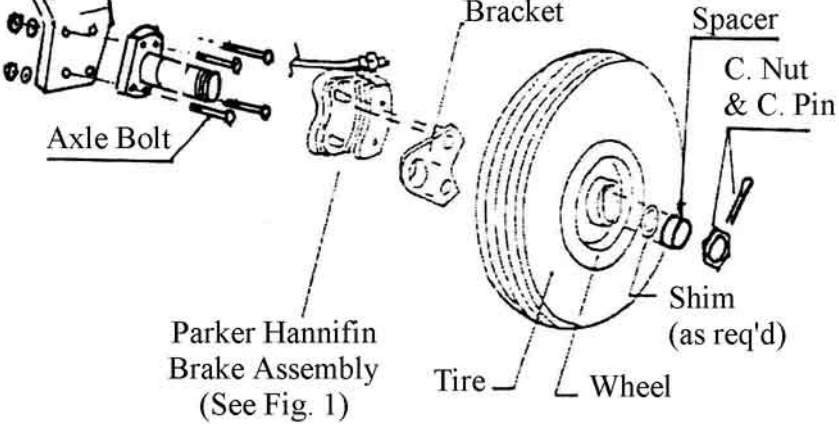
74. Check air box bolt movement and clearance, cable connection, and that the cable end is bent.		
75. Check that cabin heat cable at instrument panel is out 1/8" when closed.		
Fuel primer area – (Fuel Primer is optional)		
76. Check fuel primer line coming out at fuel manifold.		
77. Check that there is a big loop in the fuel primer line near engine in order to absorb vibrations.		
78. Check that fuel primer line is well connected at engine and not rubbing on anything hard or sharp.		
79. Check that fuel primer line has clearance at baffles.		
Electrical area		
80. Inspect voltage regulator connections and tightness of wires, ties, and not contacting any sharp edges.		
81. Inspect alternator connections and tightness of wires, ties, and not contacting any sharp edges.		
82. Inspect noise suppressor at alternator connections and tightness of wires, ties, and not contacting any sharp edges.		
83. Inspect starter connections and tightness of wires, ties, and not contacting any sharp edges.		
84. Inspect starter mounting bolts and safety to engine.		
85. Inspect starter wires at firewall connections and tightness of wires, ties, and not contacting any sharp edges.		
86. Inspect starter solenoid on firewall.		
87. Inspect starter solenoid unit connections and tightness of wires, ties, and not contacting any sharp edges.		
88. Inspect ignition system insulated wire and that insulator is grounded. Inspect connections and tightness of wires, ties, and not contacting any sharp edges. Do this for both left and right sides.		
89. Inspect ignition system wire connections from key switch. Nuts at ignition system must be tight.		
90. Inspect fuel pump connections and tightness of wires, ties, and not contacting any sharp edges.		
91. Inspect top and bottom spark plug leads and ties. They must not rub on engine mount, baffles, or top of engine.		

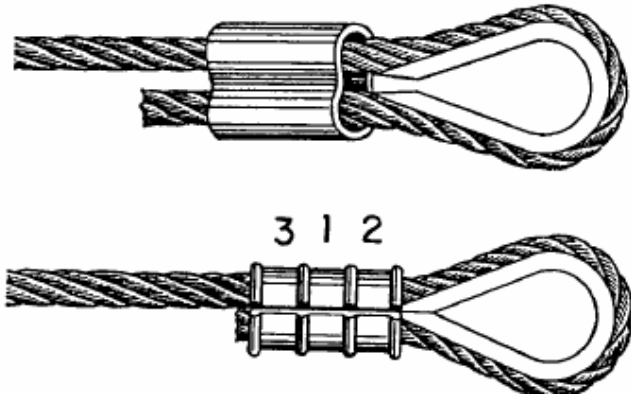
92. Make sure that no wires can / are touching any sharp edges.		
Nose wheel area		
93. Inspect bungee condition.		
94. Inspect bungee pin and safety.		
95. Inspect bungee clearance with rivets in center firewall stiffener on sides.		
The diagram shows a side view of the nose gear assembly. A red arrow points to the bungee cord that is attached to the gear and the firewall stiffener. The text next to it states: 'Nose gear bungee must not touch sides of center firewall stiffener (U channel)'. Nose gear bungee must not touch sides of center firewall stiffener (U channel) Bungee must be properly installed and must not touch or rub against stiffener sides or rivets. If bungee is damaged, replace.		
96. Inspect clearance at center firewall stiffener and steering rods at full deflection left and right.		
97. Inspect clearance on firewall slots for steering rods at full deflection left and right.		
98. Inspect nose gear self centering at full deflection left and right. Nose wheel must snap back to center by itself.		
99. Inspect top and bottom nose gear bearings and safety wire bolts on bottom.		



100. Inspect rudder pedal rod ends and witness holes at nose gear area.		
101. Inspect nose wheel gear fork and bolts.		
102. Inspect nose wheel axel, bolt, and side shimming of wheel.		
103. Inspect grease at top and bottom bearings on nose gear strut.		
104. Inspect tire pressure and condition of tire.		
Firewall area		
105. Inspect all rivets THROUGH firewall. Make sure that there are no open holes. Inspect firewall sealer.		
106. Inspect holes through firewall are sealed with fire type sealer. Sealer also needs to be applied around firewall edge.		
107. Confirm bolt torques and inspect engine mount bolts and safety at firewall.		
108. Inspect area around engine mount fittings at firewall. Fittings must be tight at firewall.		
109. Inspect general condition of firewall and installed items to firewall.		
Battery Area		
110. Inspect battery strap and bolts. Battery must be tightly secure.		
111. Inspect bottom extrusion holding battery up.		

112. Inspect battery terminals. Check that they are tight and have SL nuts or lock washers.		
Main gear area	Left	Right
1. Inspect the main landing gear left and right steel bracket on fuselage.		
2. Inspect top and bottom rubber pads. They must be centered on the gear supports and must be squeezed tight. Inspect left and right sides of gear. Note: Torque value on the four bolts, tighten snug. Do not bend bracket / extrusion when tightening. Make sure that the rubber padding, bottom and top, are in place before tightening and that the aircraft is sitting on the gear.		
 Rubber pad on bottom and top of gear Above photo is for the narrower Grove gear.		
3. Make sure that gear is centered on the fuselage.		
4. Inspect gear cut-outs for welded bolts rear-front, L+R. They must be filed smooth. Gear must be tight at bolts, so that gear does not shift.		
5. Inspect left and right rear bottom extrusions and SL nuts.		
6. Inspect gear axel, bolts, and nuts.		

		
7. Inspect the left and right brake calipers. Brake assembly must be loose to wheel hub around brake disc. See manufactures recommendations for bolt torque.		
8. Inspect the left and right axel nut and cotter pin.		
9. Inspect the left and right tire pressure and condition of tire and area.		
10. Inspect the left and right brake fitting at caliper.		
11. Inspect brake line at wheel and up to fuselage. Confirm that the lines are not contacting any sharp edges.		
12. Inspect brake line entering fuselage. Check grommet and that brake line is not tight or contacting any sharp edges.		
Control cables		
NOTE: Before inspecting the aircraft control cables, make sure that they were properly installed with the proper tools.		



See AC43-13-1a for cable ends and safety, chapter 7. Sleeve must be very tight inside cable.

SWAGE SLEEVE GAUGE PART NO: TP353

Gauges the following size swages: 1/32", 3/64", 1/16", 3/32", 1/8", 5/32" and 3/16"



Available from US Tool. 1-800-521-4800. Use this go-no-go gauge to confirm that each nicopress is properly installed.



Use a calibrated cable gauge. Squeeze ball handle, put gauge on cable, release handle, and read tension on rotation dial. See manufacturer's manual for specific instructions.

AUTOMATIC SAFETY WIRE TWISTERS

PART NO: TP68SR

- 9" overall length
- Automatic (spring return)
- "Three-in-one" tool: plier, twister & cutter
- Use on wire .060 or less



When installing safety wire, use the proper tools. This wire twister is available from US Tool.

AIRCRAFT SAFETY WIRE

PART NO: TP65 .032 diameter

PART NO: TP66 .041 diameter

PART NO: TP67 .020 diameter

1 lb. spool

- 302 MS - 20995-C stainless steel wire
- Conforms to Mil Spec W6713



Use aviation grade safety wire and proper diameter. Diameter varies on bolt diameter etc.

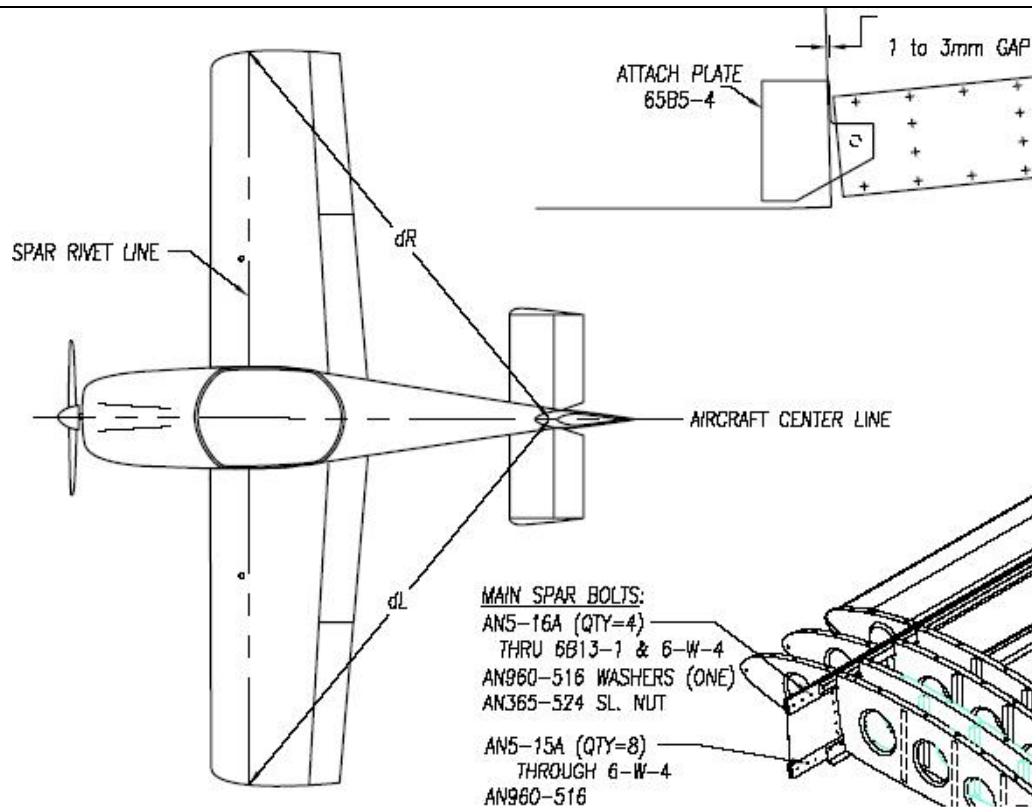
Wing Group

Left

Right

1. Inspect the main spar to fuselage attachment bolts from cabin seat area and from rear fuselage. Confirm minimum one washer under nut and threads are past nut.

2. With a torque wrench, check all 6 spar main bolts. If there are too many threads past the nut, replace bolt or add washers. Not recommended to add more than 3 washers. 1 under head, 2 under nut.



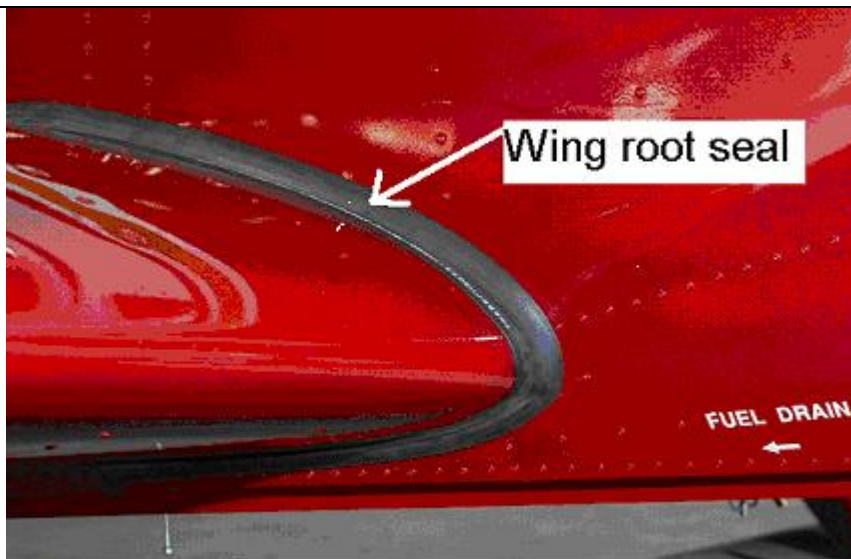
WING INSTALLATION:

- 1) BOLT SPAR TO CENTER WING SPAR 6-W-4
- 2) MOVE WING BACK TOWARDS FUSELAGE SO THAT A GAP OF 1 TO 3mm IS ACHIEVED. CLAMP IN PLACE.
- 3) CHECK WING ANGLE: SAME ON BOTH WINGS.
- 4) CHECK THAT $dL = dR$
- 5) DRILL AND BOLT REAR CHANNEL.

Confirm that the above has been checked and is correct.

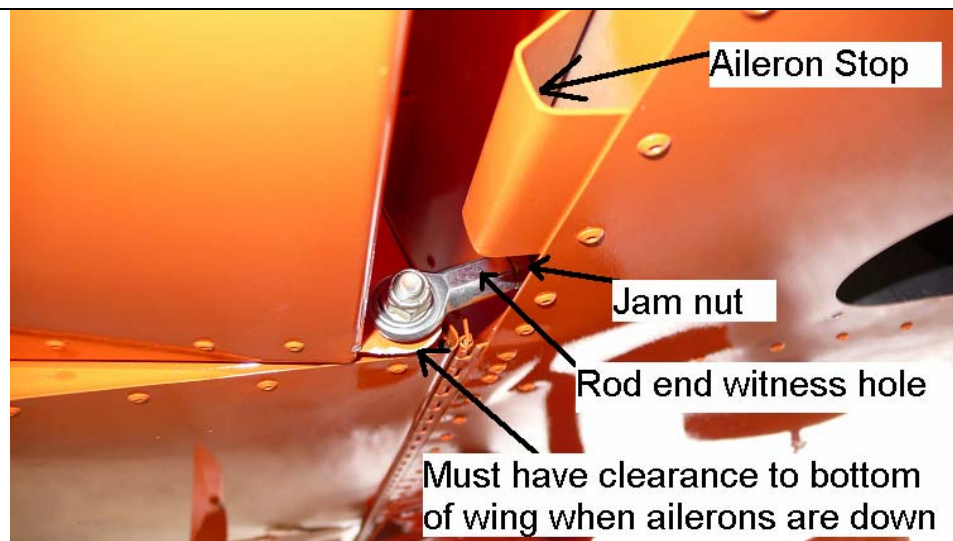
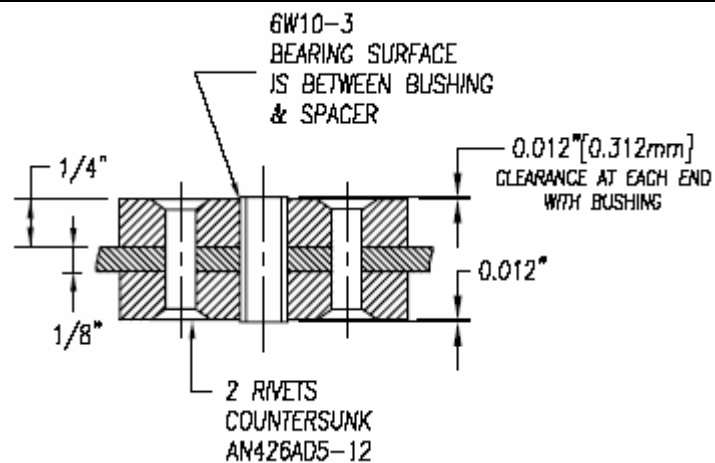
3. Inspect the rear spar to fuselage attachment bolt, check the bolt is at the proper torque value. Confirm minimum one washer under nut and threads are past nut.

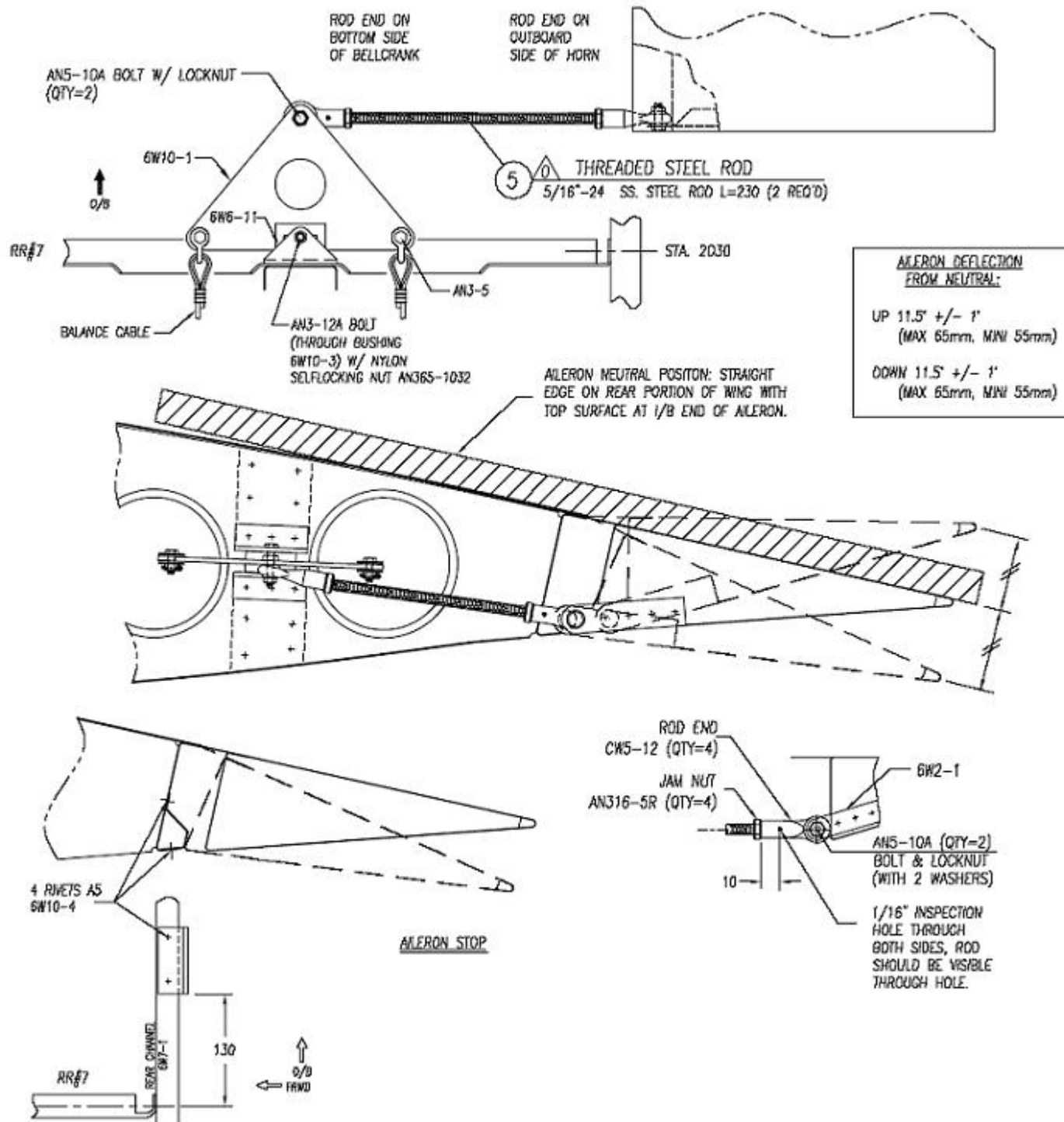
4. Inspect wing root black rubber seal. Check that it is glued to the wing.



Typical root seal is glued to wing and fuselage from rear spar, wrapping around leading edge.

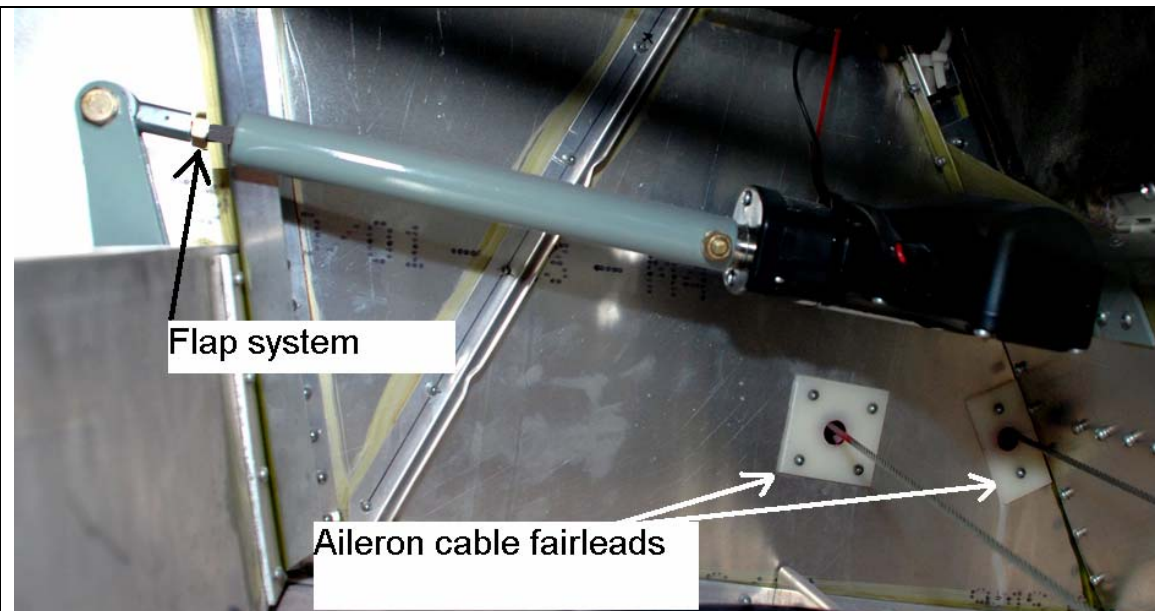
5. Inspect upper and lower wing skins and leading edges for missing rivets, loose fasteners, damage, etc.		
6. Inspect wing tip light and area.		
7. Inspect the external surfaces of the ailerons and flaps for clearance to wing and each other, missing rivets, and general condition.		
8. Inspect the aileron hinge pin area for clearance. When flight controls are not locked when parked on the ground, severe wind can do a significant amount of damage to the ailerons, stops, etc. See AMD Notification letter of January 2009.		
9. Inspect the aileron rod for binding at the rod ends. The aileron rod should easily rotate by hand.		
10. Inspect aileron bellcrank, rod, rod jam nuts, cotter pins, and cables. When inspecting the jam nuts, physically confirm tightness of jam nut with a wrench. Bellcrank is held in place with a bolt which goes through a bushing. Make sure that bolt is tight on bushing. Also make sure that bushing is not rusted and that it is lubricated.		





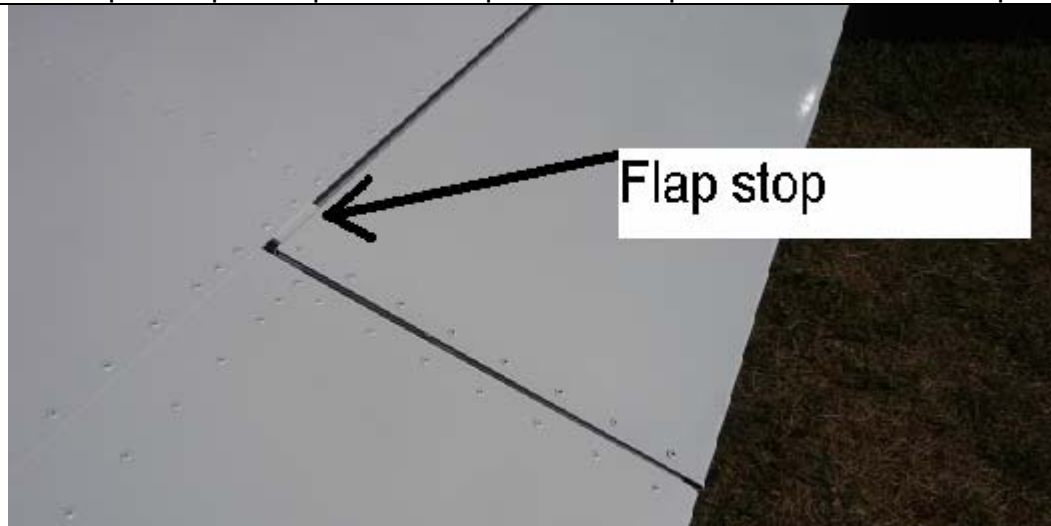
When Checking the aileron connection and deflections, use above.

11. Inspect aileron bellcrank stops and bellcrank bolt in rotating bushing. Inspect cable ends at bellcrank.		
12. Make sure that aileron rod end witness holes are in tolerance. Physically test each rod end witness hole with a wire.		
13. Inspect safety wire on both ends of aileron piano hinge.		
SAFETY ON BOTH ENDS OR SQUEEZE END OF HINGE TO RETAIN PIN OR USE PIN LONGER THAN HINGE AND BEND OVER. All piano hinges need to be safety tied at each end.		
14. Inspect aileron stop. Move the control stick left and right. Confirm that aileron does touch stops at full deflections.		
Aileron balance cable This area must not bend when moving ailerons to full deflections. If bending, add L agles to sides. Rivet with A4 P30 Inside rear fuselage.		

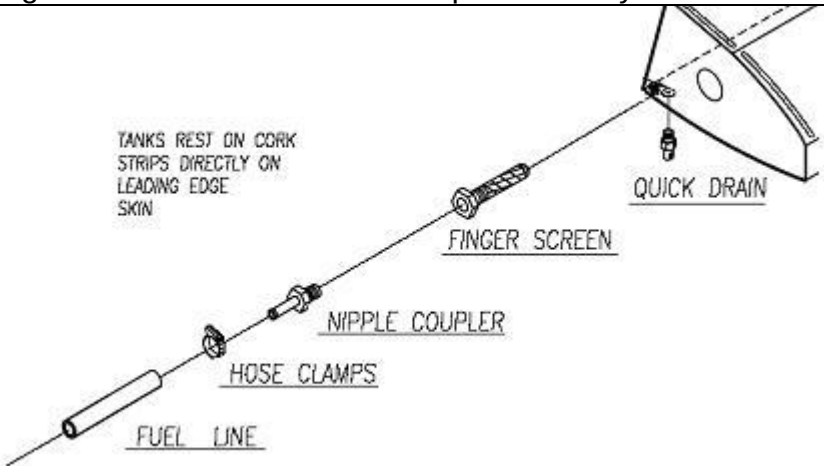


Inside rear fuselage. Check that control cables are only touching fairleads and that the fairleads are not worn by cables. Check left and right sides, including elevator and rudder cable fairleads, and properly lubricate the fairleads.

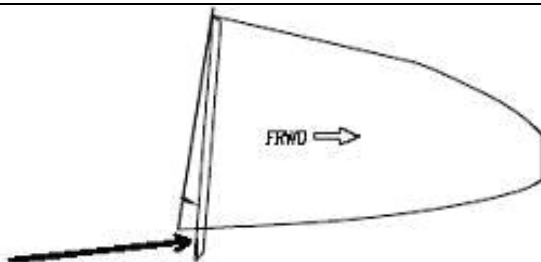
15. Inspect flap "UP" position. Flap must have positive contact with flap stop.



16. LOWER flap and inspect the steel flap pin going into flap and clearance at fuselage. With flaps down, physically move the flap up and down by hand. There must not be play in the flap control system.

17. Left and right flap are connected with a torque tube. Both flaps must be evenly lined up with the top of the wings at the same time.		
18. Inspect the clearance between the flap and fuselage while deflecting the flap UP and Down. Flap and steel torque tube must not contact fuselage side.		
19. Inspect safety wire on both ends of flap piano hinge.		
20. Check lubrication on the aileron and flap hinges, control rod ends, and bellcranks.		
21. Check for fuel leaks and safety on fuel line hose clamp at fuel tank outlet. Confirm proper installation of fuel tank finger screen and that hose clamps are safety tied.		
 The diagram illustrates the fuel system components and their installation. A fuel line is shown with a hose clamp and a nipple coupler. A finger screen is installed at the fuel tank outlet, and a quick drain is also shown. The fuel tanks are resting on cork strips directly on the leading edge skin. TANKS REST ON CORK STRIPS DIRECTLY ON LEADING EDGE SKIN QUICK DRAIN FINGER SCREEN NIPPLE COUPLER HOSE CLAMPS FUEL LINE Use aviation type fuel sealer when installing – reinstalling fuel fittings.		
22. Drain some fuel from wing fuel tank using sump drain. Check sump drains for leaks and debris.		
23. Inspect gas tank fuel breather. Breather must be cut at 45 Deg. at front of tube.		

With a sealed fuel cap, it is recommended to drill an 1/8" hole that the rear of the fuel venting tube, just outside of the wing skin, to prevent possible siphoning.

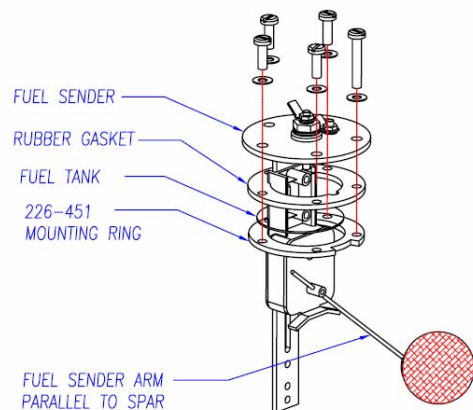


24. Inspect fuel line between wing and fuselage. Check position of grommets. Fuel line must not contact any sharp edges.

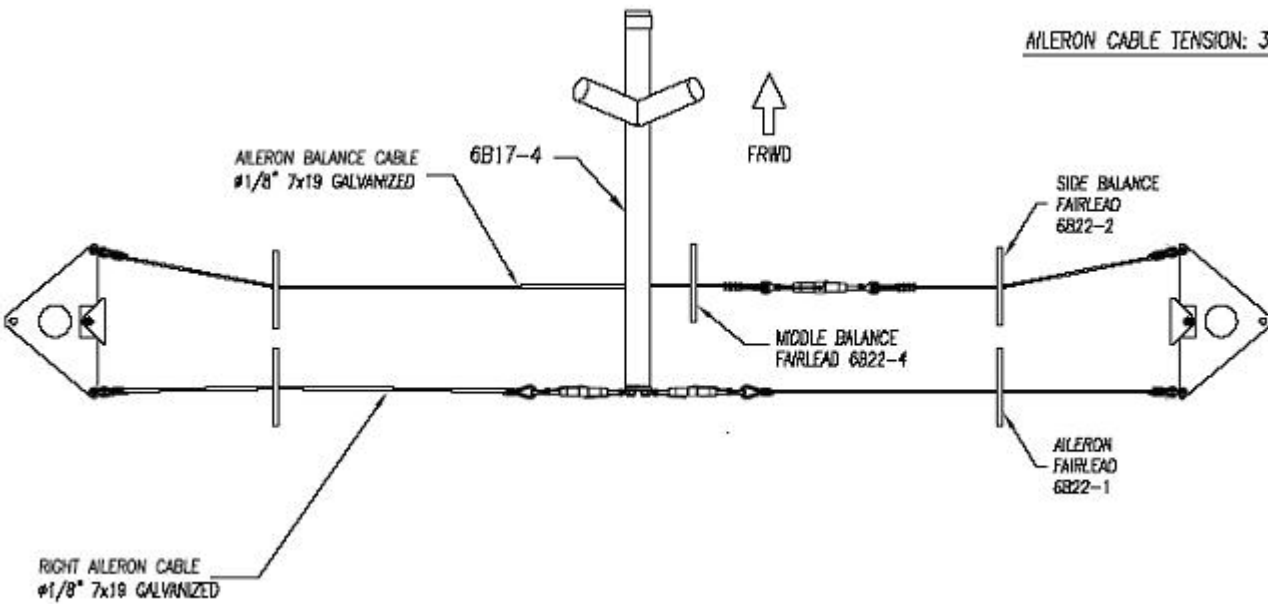
25. Inspect electric wires between wing and fuselage. Check grommets and wires should not contact any sharp edges.

26. Check fuel tank filler cap for security and condition. If your gas tank does not have a fuel breather line, make sure that your fuel cap is properly vented.

27. Inspect fuel tank sender unit access cover. The cover should be tightly secured to the wing.



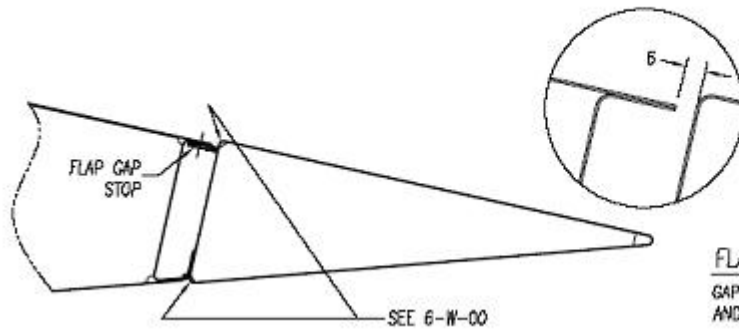
Typical installation of fuel sender. Calibrate fuel gauge by filling tank in ¼ increments. Adjust calibration by adjusting the fuel sender arm. If sender outlet is leaking, remove unit, and install a new rubber gasket. Aviation fuel type sealer can also be used.

28. Confirm aileron cable tension.  The diagram illustrates the aileron cable system. A central vertical mast is labeled '6B17-4'. An arrow points upwards from the mast, labeled 'FRWD'. Two horizontal cables run from the mast to the ailerons. The top cable is labeled 'AILERON BALANCE CABLE #1/8" 7x19 GALVANIZED'. The bottom cable is labeled 'RIGHT AILERON CABLE #1/8" 7x19 GALVANIZED'. On the right side, there are three fairlead components: 'SIDE BALANCE FAIRLEAD 6B22-2' at the top, 'MIDDLE BALANCE FAIRLEAD 6B22-4' in the middle, and 'AILERON FAIRLEAD 6B22-1' at the bottom. A note at the top right states 'AILERON CABLE TENSION: 30pounds ±5pounds'.		
29. Inspect aileron cables for obstructions. The aileron cables should ONLY make contact with fairleads. If wires, fuel line, pitot tubes, ect. could possibly make contact with the aileron cables, secure the obstruction or reroute the obstruction clear of the aileron cables.		
30. Inspect aileron cable fairleads for proper lubrication.		
31. Inspect flap deflection.		

FLAP DEFLECTION

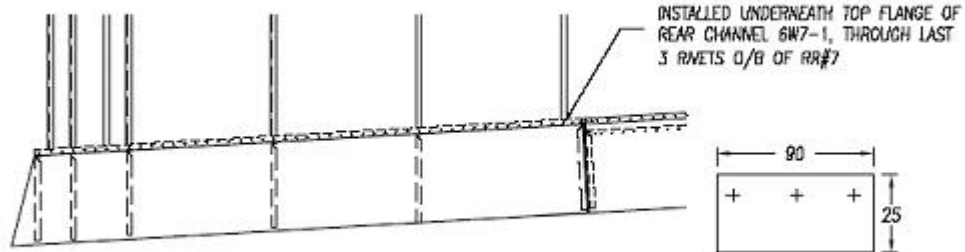
DOWN: 20 to 23°

LINEAR ACTUATOR DE12-17W41M05F5
HAS BUILT IN LIMIT SWITCHES.



FLAP NEUTRAL

GAP BETWEEN AFT EDGE OF TOP SKIN
AND FRONT EDGE OF FLAP



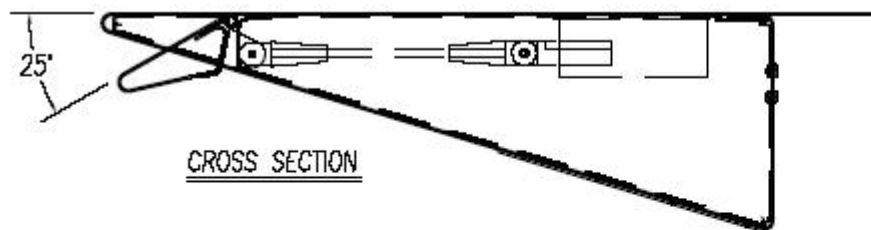
① FLAP GAP STOP
PLASTIC BEARING MATERIAL 1/8" qty=2

32. Inspect Pitot tube and area. Confirm that ASI and ALT work.

33. Inspect landing/taxi lights. Confirm that they work and are properly positioned.

34. Inspect wing locker (optional) area. Check the piano hinges are safety tied, opening and closing the door is easy, and check the screws.

33. Inspect the aileron trim.



CROSS SECTION

AILERON TRIM TAB DEFLECTIONS

NEUTRAL: TOP SURFACE IS IN LINE WITH
TOP SURFACE OF AILERON

UP: 25 DEGREES

DOWN: 25 DEGREES



TRIM TAB UP HEAVY LEFT

TRIM TAB DOWN HEAVY RIGHT

Aileron trim system.

34. Inspect the aileron trim electrical wire from aileron to rear wing spar. Check rubber grommets and that wire does not interfere with aileron movement. Make sure that the cable is not contacting any sharp edges.

35. Inspect trim motor arm. Check jam nut and cotter pin.

36. Move trim up-down full deflection and check deflection.

37. Inspect trim motor arm in full up-down movement for clearances.

FUSELAGE - REAR AREA

1. Inspect fuselage bulkheads and stiffeners. Make sure that rivets were properly set.

2. Inspect rear spar channel, upright, and rivets behind seat.

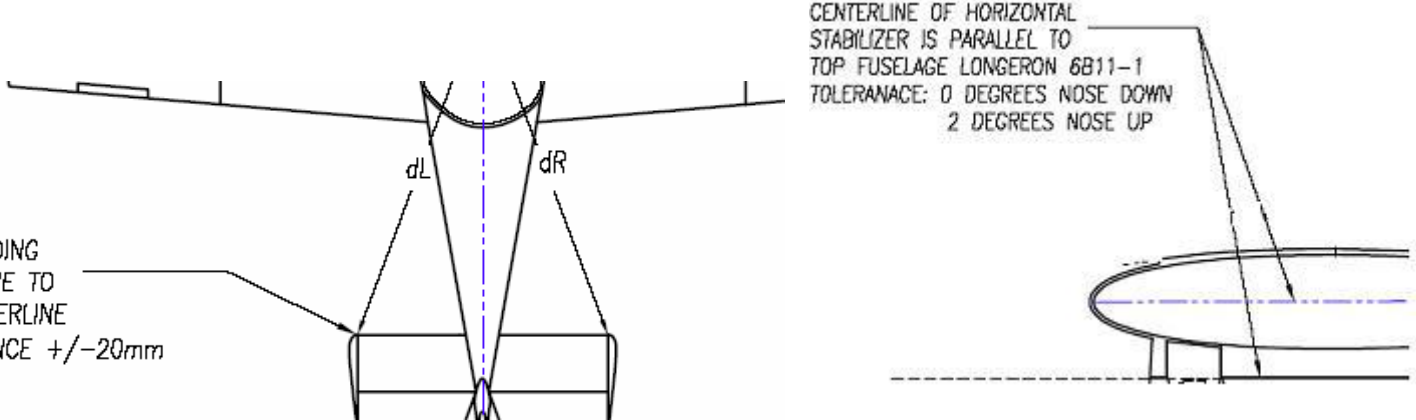
3. Inspect rudder control cables and fairleads. Inspect cotter pins, turn buckle threads, and safety.

4. Inspect rudder and elevator control cables in rear fuselage.

5. Inspect rudder and elevator control cables and fairleads at main wing spar area.

6. Inspect control cables for proper clearance between seats.

7. Inspect elevator control cable ends between seats. Inspect cotter pins, turn buckle safety, and threads.		
8. Inspect aileron control cable clearance around rudder and elevator cables behind seat.		
9. Inspect aileron control turnbuckles for safety pins / wire and for turn buckle thread behind seat.		
10. Inspect aileron cable connection at aileron torque tube behind seat. Check cotter pins, turn buckle safety, and threads.		
11. Check flight control torque tube bearings and lubrication.		
12. Inspect electrical wiring for condition, security, routing on RIGHT side of fuselage in the cabin area.		
13. Inspect electrical wiring for condition, security, routing on LEFT side of fuselage in the cabin area.		
14. Inspect electrical wire at flap motor. Check connection plug and bracket and that plug has silicone.		
15. Inspect flap motor area and welded bracket riveted to seat channel. Check rivets, bolts, and nuts.		
16. Move flap "UP" and "DOWN". Check clearance at rear spar.		
17. Inspect flap torque tube at fuselage sides. Check clearances around the flap torque tube.		
18. Inspect flap bolts on torque tubes and flap control arm.		
19. Inspect brake lines, safety, and grommets in floor.		
20. Inspect main wing spar grommets and general area.		
21. Inspect rear seat panel rivets.		
22. Inspect left and right seat back hinges.		
TAIL AREA – Stabilizer / Elevator		
1. Check that stabilizer is parallel to top of main wing center spar section. The stabilizer should be perpendicular to the aircraft center line and level to the main wing center spar section.		

2. Inspect general condition of stabilizer and elevator, including rivets and fiberglass tips.		
3. Line up top of elevator and stabilizer. Make sure that from left to right side, there is no twist. Elevator trailing edge must be in line with stabilizer.		
 STABILIZER LEADING EDGE IS SQUARE TO AIRCRAFT CENTERLINE dL=dR TOLERANCE +/-20mm CENTERLINE OF HORIZONTAL STABILIZER IS PARALLEL TO TOP FUSELAGE LONGERON 6B11-1 TOLERANCE: 0 DEGREES NOSE DOWN 2 DEGREES NOSE UP Lining up the stabilizer with the fuselage.		
4. Check that trailing edge of elevator skins are even from side-to-side at rudder.		
5. Inspect stabilizer bolts attaching the tail to the fuselage sides.		
6. Inspect piano hinge stabilizer to the elevator. Check safety at ends, lubrication, etc.		
7. Inspect elevator control cable ends and cotter pins.		
8. Check that in full "UP" and "DOWN" position the elevator horn does not contact anything.		
9. Inspect fiberglass saddle and clearance with rudder. Must be checked when elevator and rudder are at full deflections up-down / left-right.		
10. Inspect safety wire at trim tab piano hinge ends.		
11. Inspect the electrical trim wire from elevator and stabilizer to rear fuselage. Check rubber grommets and wire does not interfere with elevator movement. Make sure that the cable does not touching any sharp edges and is properly tied.		

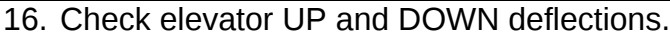


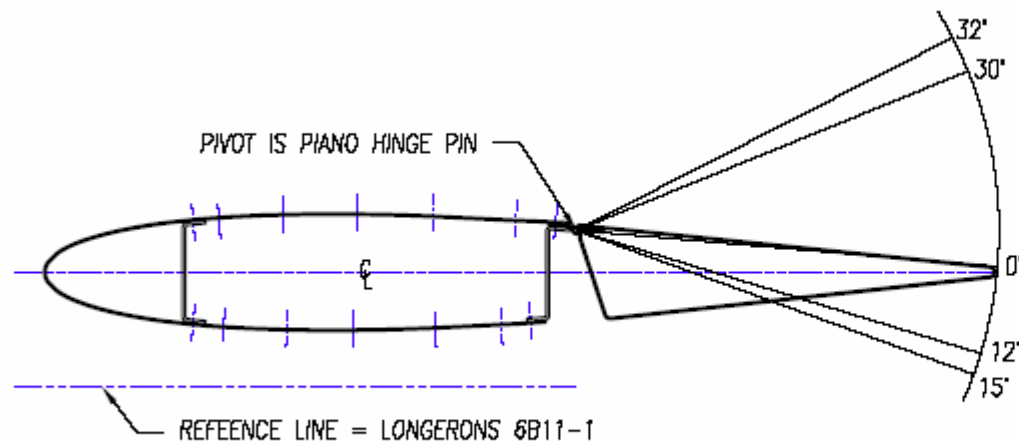
12. Inspect trim motor arm. Check the jam nut and cotter pin.

13. Move trim up and down to full deflection and check deflection angles.

14. Inspect trim motor arm in full up and down movement for clearances.

15. Inspect elevator deflection stops.





ELEVATOR DEFLECTIONS

NEUTRAL: TRAILING EDGE OF ELEVATOR IS IN LINE WITH STABILIZER CENTERLINE.

DEFLECTION:

UP: MIN 30° MAX 32°

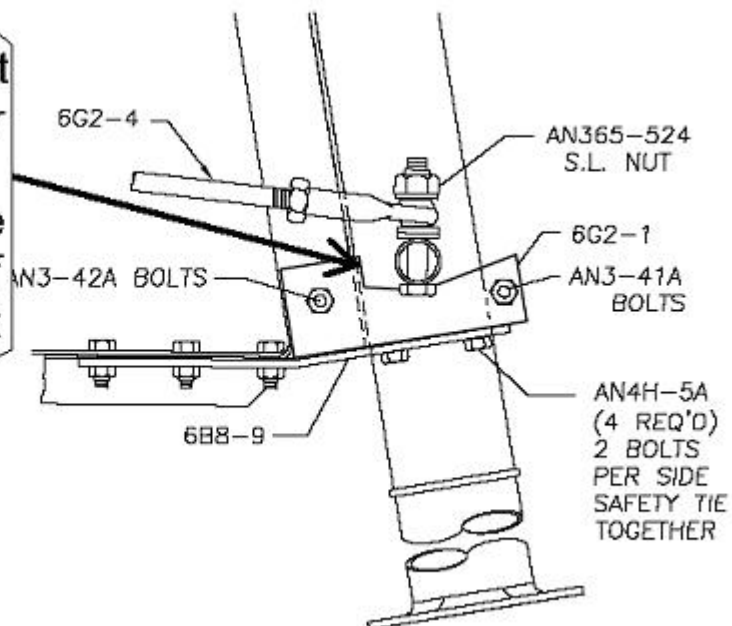
DOWN: MIN 12° MAX 15°

(TOTAL TRAVEL FROM UP TO DOWN: MIN 42° MAX 47°)

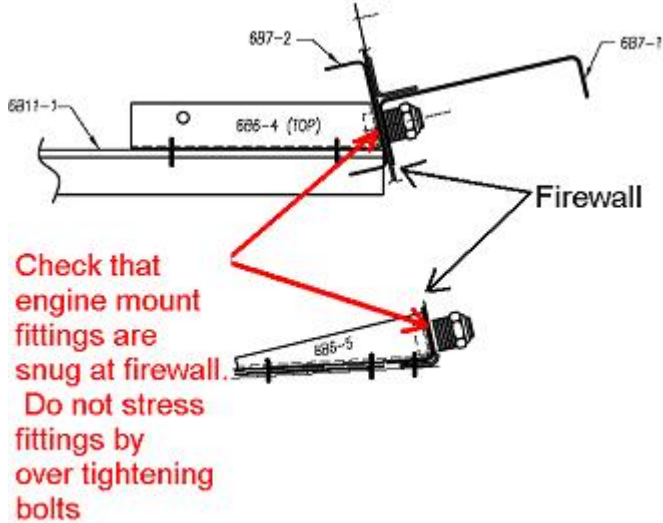
17. Check cable tension of elevator control cables from inside of fuselage.

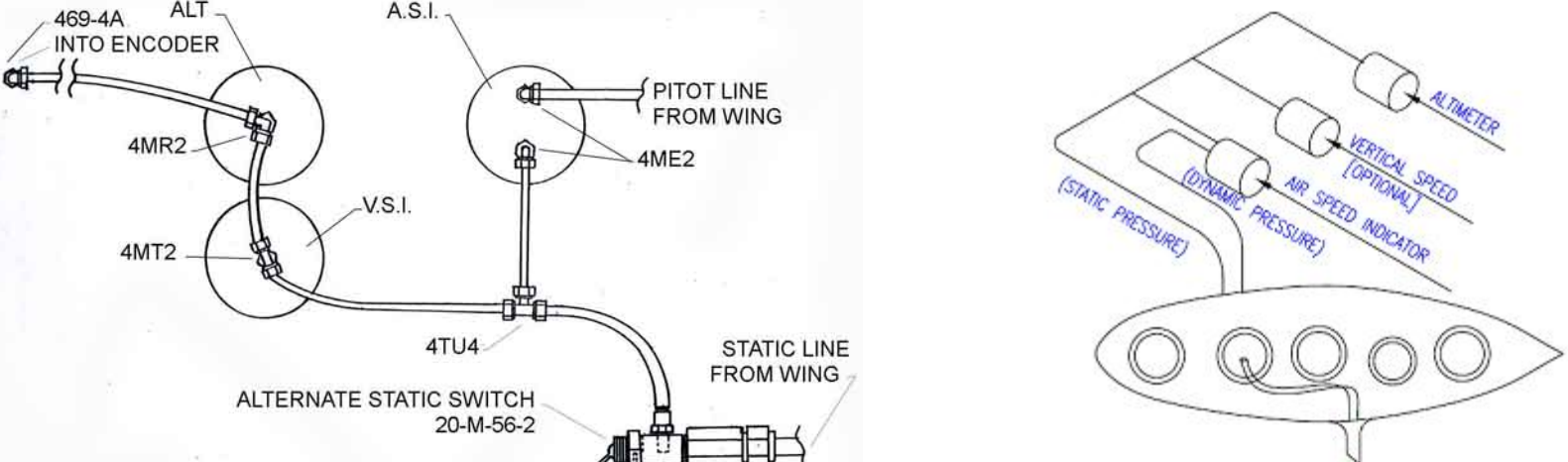
18. Check deflections of rudder.

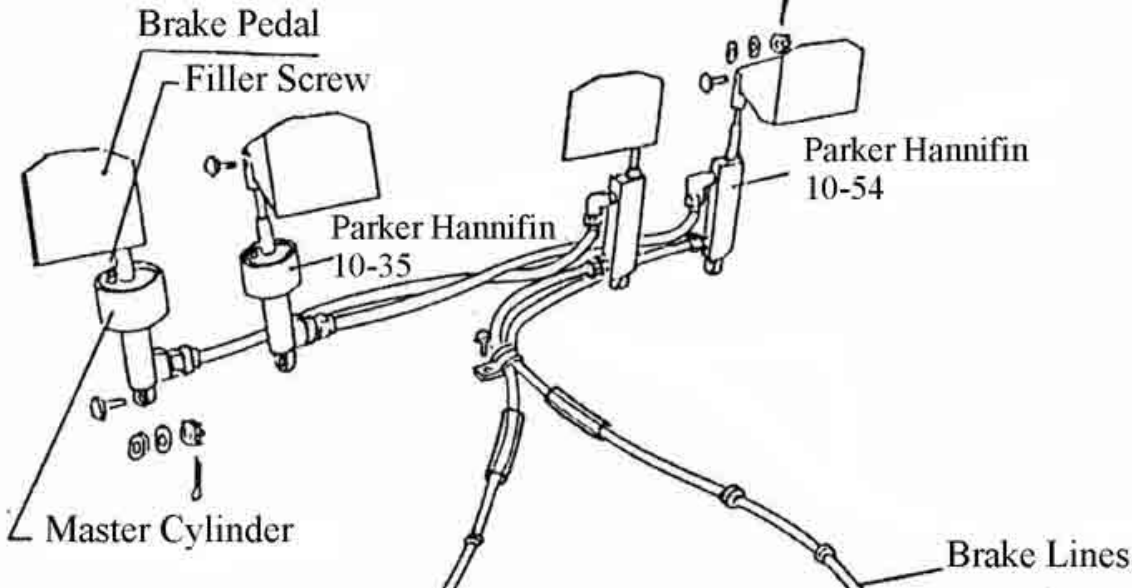
In order to get proper rudder deflection, you may have to file edge of bearing block

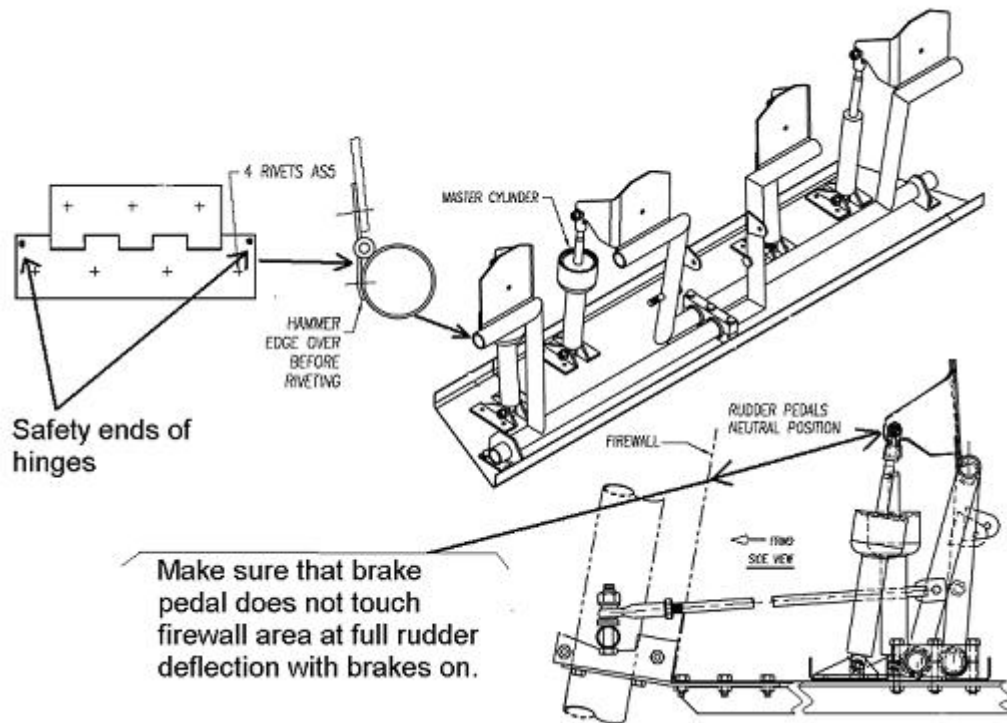


6T4-3 AN3-10A BOLT W/LOCKNUT 6B2-8 65B2-7 BUSHING DETAIL LOCKNUT AN365-1032 CLAMPS BUSHING BETWEEN EXTRUSIONS ON HINGE PLATES (BOTTOM) 65T5-4 6B1-2 4 RIVETS A5 6B2-4 6T5-3 6B2-8 653-1 AN3-5A BOLT W/ LOCKNUT LOWER RUDDER HINGE ASSEMBLY 69 15 90° RUDDER STOPS t=.063" 6061-T6 (2 REQ'D) 6B1-2 6B3-1 PROTRACTOR REFERENCE EDGE TO HOLD PROTRACTOR CLAMP A "T" SHAPED JIG (MADE OF TWO PIECES WOOD) TO THE DOWN RING TO PROVIDE A STABLE SUPPORT TO HOLD FRONT EDGE OF PROTRACTOR. CHECK THAT FRONT OF PROTRACTOR IS SQUARE TO AIRCRAFT CENTER LINE AND IS CENTERED OVER 1 BOLT. RUDDER DEFLECTION TEMPLATE TRIM APPROXIMATELY OF FUSELAGE SIDE S MAKE ROOM FOR RIV FAIRING IN FULL RUG DEFLECTION PROTRACTOR NEUTRAL: TRAILING EDGE IS IN LINE WITH AIRCRAFT CENTERLINE. (MARK CENTERLINE ON UNDERSIDE OF BOTTOM RIB FOR REF.) DEFLECTION: LEFT AND RIGHT: MIN 20° MAX 22° (TOTAL TRAVEL FROM LEFT TO RIGHT: MAX 40° MAX 44°)		
19. Inspect rudder deflection stops. The rudder horn must contact the stops at full deflection.		
20. Check cable tension of rudder.		
21. Inspect rudder turnbuckles, safety pins, and threads.		
22. Inspect rudder cable fairleads and cable fairings on outside of fuselage sides.		
23. Inspect rudder top and bottom hinge area, bolts, and bushings.		
24. Check that at full deflection the bottom hinge is not touching fuselage hinge.		

25. Check at full deflection, the rudder front fairing is not contacting anything.		
26. Inspect general condition of the rudder, rivets, etc.		
27. Inspect rudder tail light fairing condition and quality of fiberglass fairing.		
28. Inspect tail tie down area, bolts, and nuts.		
Note: when checking deflections, someone in the pilot seat must move the controls and the inspector must check at the tail for full movement. This applies to the ailerons, rudder, and elevator.		
Cabin Area – Behind Instrument panel and firewall area		
Remove the top skin over the instrument panel or lower your head underneath the panel so that you can get an excellent view of everything.		
1. Inspect the overall condition of all items and that they are not rubbing on any sharp edges, etc.		
2. Inspect rear of firewall engine mount fittings. Check for cracks, SL nuts, etc.		
 Check that engine mount fittings are snug at firewall. Do not stress fittings by over tightening bolts Welded steel fittings must have the same angles as the firewall as to fit properly. If angles are not the same, steel fittings will be stressed.		
3. Make sure that when cables are routed through the firewall that fire retardant type sealer is used and that no sharp edges are / can damage the cables, fuel line, electrical wires, etc.		

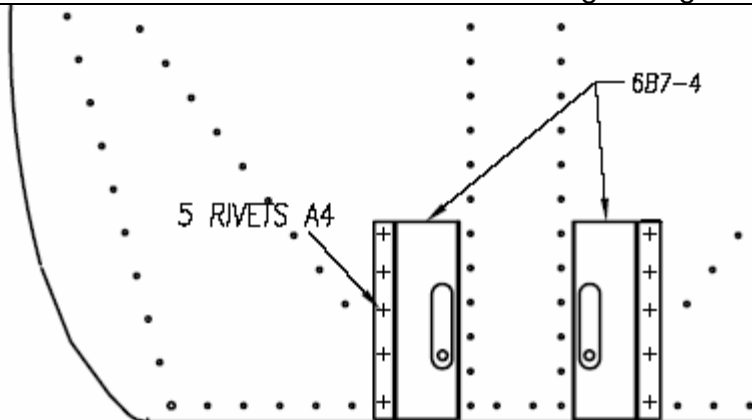
4. Pitot static system. Check routing and connections of lines. Check that lines are clear of any sharp edges. Try to minimize low areas in the lines to minimize humidity build up.		
		
5. Check that there are no sharp or tight bends in the pitot / static lines.		
6. Transponder-Encoder and pitot static tests: FAR 91.411 (<i>...No person may operate an airplane, or helicopter, in controlled airspace under IFR unless...Within the preceding 24 calendar months, each static pressure system, each altimeter instrument, and each automatic pressure altitude reporting system has been tested and inspected and found to comply...</i>) FAR 91.413 (<i>No persons may use an ATC transponder.....unless, within the preceding 24 calendar months, the ATC transponder has been tested and inspected and found to comply...</i>) You need to consult with your local airworthiness requirements on this.		
7. Inspect Rudder Pedal master cylinders. Check for leaks, safety, etc.		

 The diagram illustrates the hydraulic brake system. On the left, the Master Cylinder is shown with a Filler Screw on top. Two brake lines originate from the Master Cylinder, passing through Parker Hannifin 10-35 components. These lines then pass through Parker Hannifin 10-54 components before reaching the Brake Pedal. The Brake Lines are shown as a series of connected segments.		
8. Inspect (the optional) rudder pedal slave cylinder. Check for leaks, safety, etc.		
9. Inspect cylinder cotter pins, top and bottom, and jam nuts. Cylinders must move freely.		
10. Inspect brake lines and safety ties. Check that lines are not contacting any sharp edges.		
11. Inspect RUDDER pedal center “green” nylon bearing and SL bolts going through the floor. Maintain proper lubrication on the bearing.		
12. Inspect side rudder pedal bearings and SL bolts going through the floor. Maintain proper lubrication on the bearings.		
13. Inspect brake pedals attached to rudder pedals. Check for safety on piano hinge, etc.		
14. Check firewall clearance of brake pedals with full rudder deflection with brakes applied.		



15. Inspect Rudder cable ends and cotter pins.

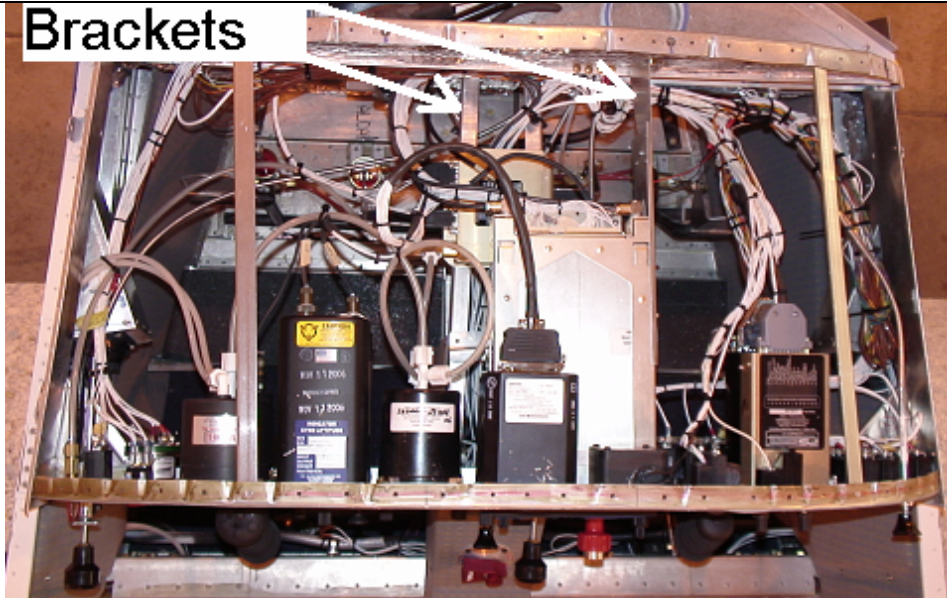
16. Check holes in firewall where steering rods go through to nose gear leg. Holes need to be fire sealed.



Shown here are two metal plates with another plate inside that slides up and down with movement of rudder rods. Baffle tape can also be used. Check the slides do not bind on the covers.

17. Inspect ELECTRICAL system behind instrument panel. Check that all electric wires are not contacting any sharp edges. Check safety ties.		
18. Inspect attachment of encoder.		
 Typical installation of instrumentation.		
19. Inspect static line from flight instruments to encoder.		
20. Inspect rear of avionics and make sure that they are properly attached to instrument panel.		
21. When installing avionics that extend close to the firewall, it is recommended that aluminum brackets be made and installed from the avionics box to the firewall. This will minimize vibrations and damage to instrument panel.		

Brackets



Aluminum brackets are installed from the avionics box to the firewall

22. Inspect avionic wires. Check that they are tied and not close to controls or contacting any sharp edges.

23. Inspect headphone jack plugs.

24. Inspect throttle and mixture cables behind instrument panel. Check that they are tight at panel.

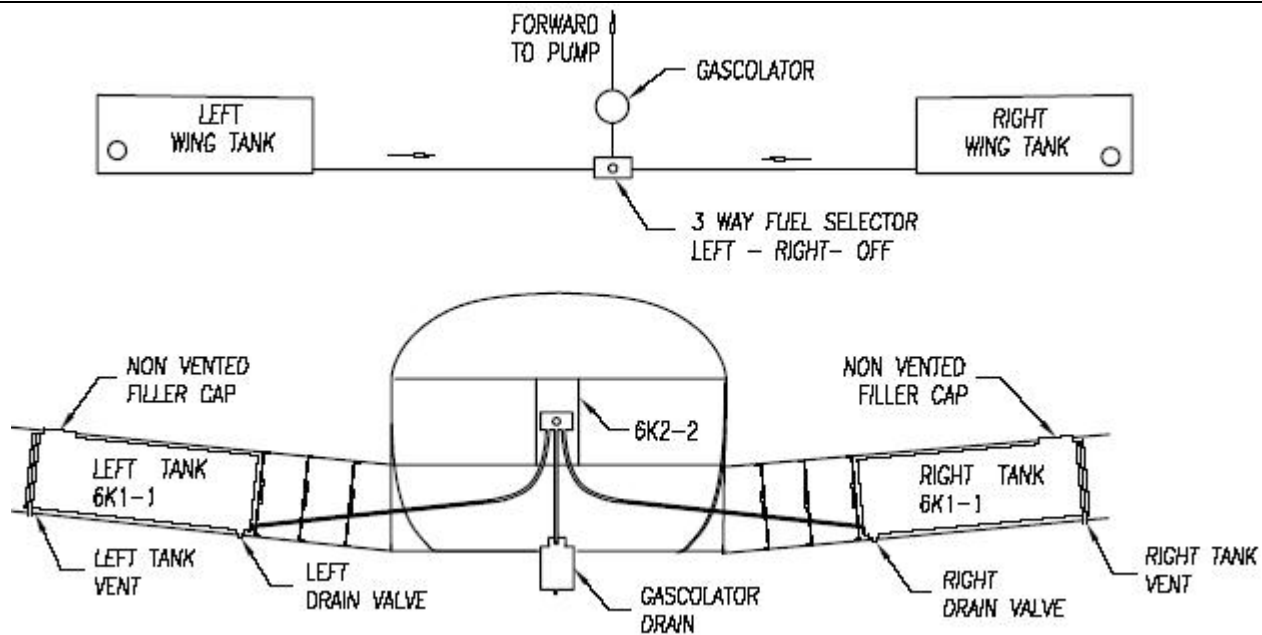
25. Inspect cabin heat and carburetor heat cables behind instrument panel. Check that they are tight at panel.

26. Inspect fuel primer lines behind instrument panel. Check for clearances and safety ties. Check for fuel leaks.

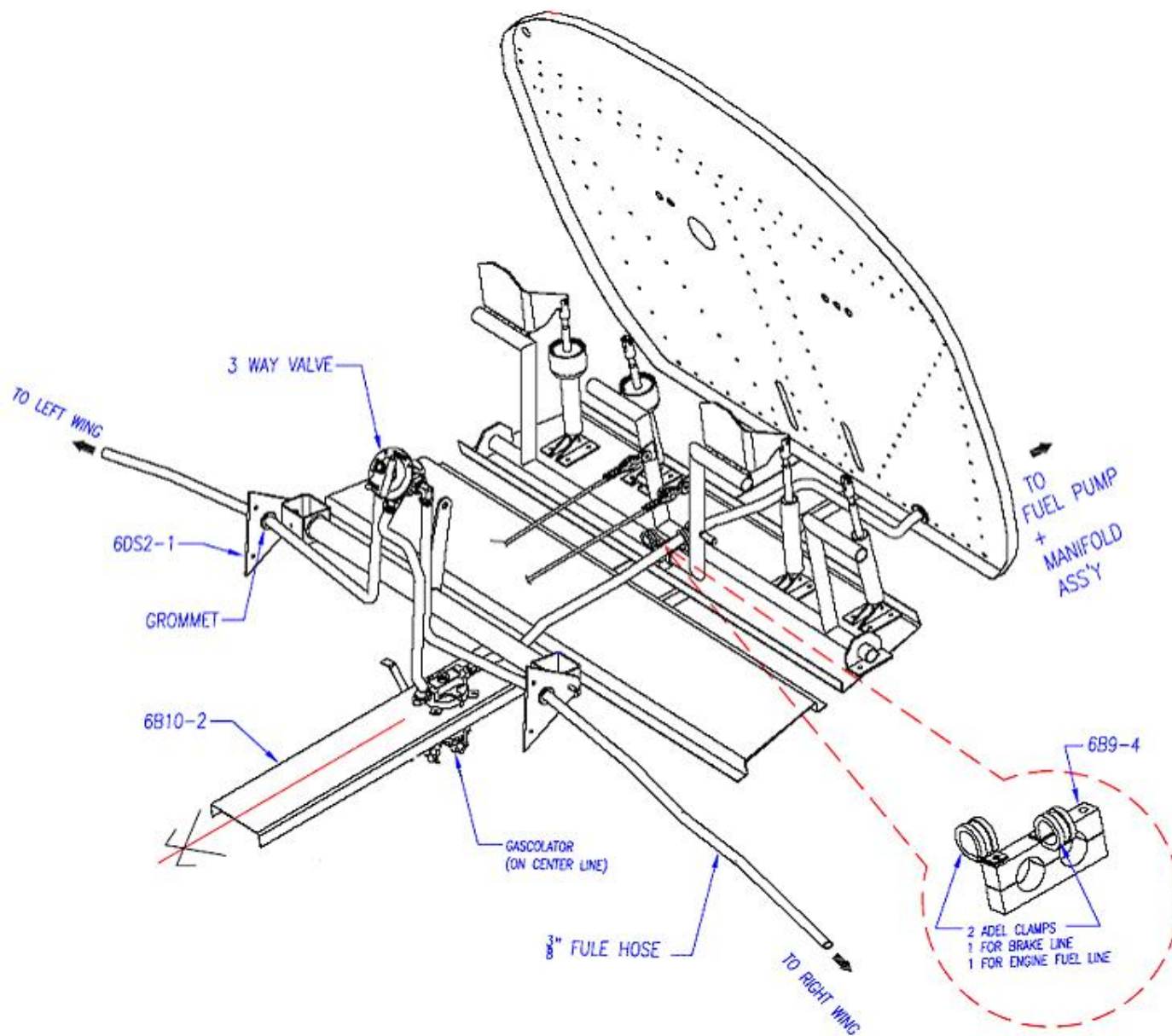
27. Inspect tightness of primer at instrument panel.

28. Inspect tachometer cable behind instrument panel. Check tightness of cable nut at instrument.

29. Inspect fuel line safety clamps and safety wire. Check that clamps and fuel lines are tight on barbed fittings.



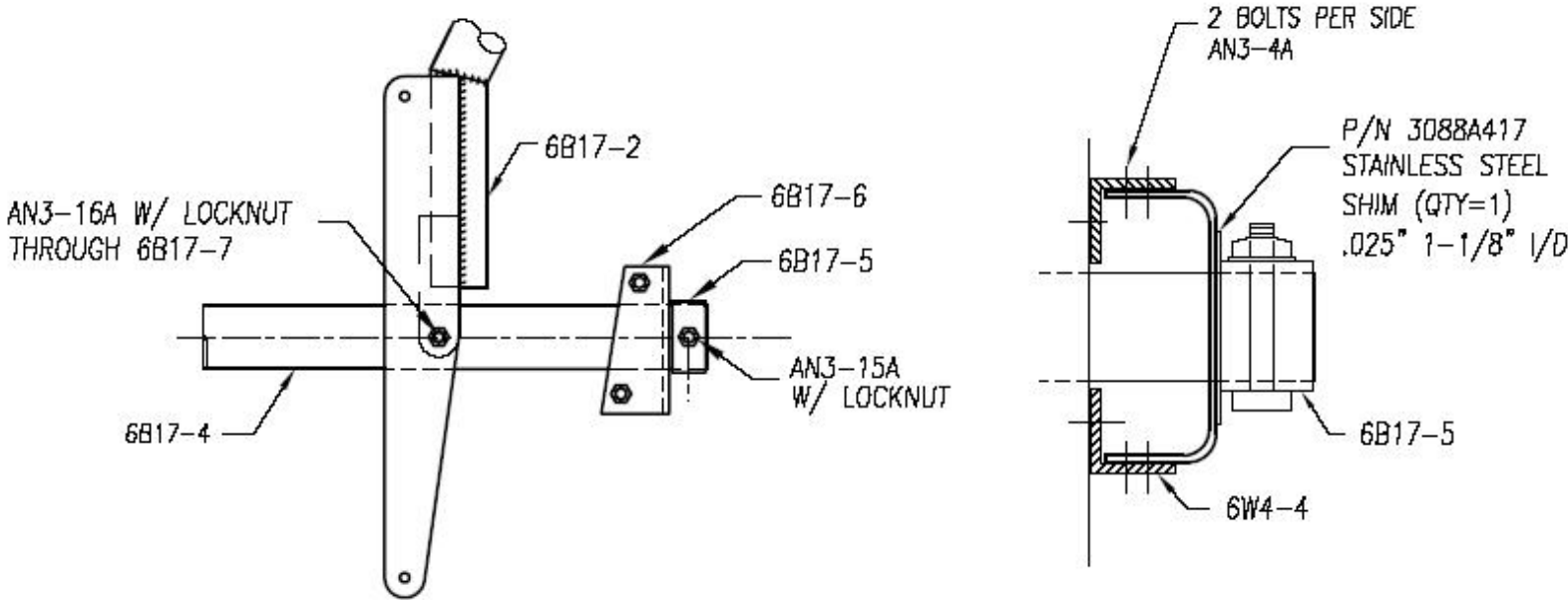
Note that in order to not have water accumulate in the fuel lines, there cannot be any low points in the fuel lines. The lowest points are at the drains.



30. Inspect fuel lines at fuel selector valve. Check that clamps and fuel lines are tight on barbed fittings.

31. Inspect fuel selector valve. Check operation and installation screws.

32. Inspect fuel line going to gascolator in front of seats.		
33. Inspect gascolator. Check that silicone is used to seal around gascolator and bottom skin.		
34. From outside aircraft, inspect gascolator. Confirm that gascolator bowl can be removed easily for inspection. Check wire safety. Make sure that screen is clean and fitted properly.		
35. Inspect fuel line from gascolator to firewall. Make sure that it does not contact control cables, rudder pedals, or any sharp edges.		
36. Inspect fuel fitting at firewall. Check for fuel leaks.		
37. Inspect antenna installation and cables.		
38. Inspect grommets going through main wing spar.		
39. Inspect LEFT and RIGHT seat back and bottom condition. Check seat bottom Velcro at front spar.		
40. With upholstery side panels REMOVED, inspect wire conduits and ties on fuselage sides, LEFT and RIGHT.		
CANOPY AREA	Left	Right
41. Inspect and operate latches from inside the aircraft. It is important that you can properly close the latches when seated.		
42. Once the canopy is closed, push up and sideways on the canopy to see if it is truly closed. Also do this from outside the aircraft.		
43. Inspect canopy seals.		
44. Inspect general condition of canopy.		
45. Inspect side of canopy at front hinges and bolts.		
46. Inspect side of canopy installation, flashings, and air vents.		
47. Inspect gas strut area. Check top and bottom fittings and cotter pins.		

48. Inspect seatbelt attachment between seats.		
49. Inspect seatbelt attachment on side at fuselage. Check bolt and nut.		
50. Inspect seatbelt attachment in baggage area. Check bolts and nuts.		
51. Inspect fitting of seatbelt when sitting in seat. Sit in seat and put the seatbelts on and remove.		
52. Inspect cabin lights baggage area. Check for operation.		
53. Inspect ELT and that battery life time placard is installed with expiration date.		
INSTRUMENT PANEL AREA		
54. Inspect stick(s) and PPT. Check that stick (s) handle grips do not move.		
55. Inspect stick(s) for free movement sideways and front-rear. Upholstery or arm rest must not limit stick movement.		
 Check control stick installation.		
56. Inspect elevator control cable connections at stick. Upholstery around the stick may have to be removed in order to properly inspect.		

57. Make sure that moving the control stick to all control limits nothing is touching the control cables or stick.		
58. Inspect rudder cables going between the seats as you are inspecting the elevator cables. Cables must not rub on things other than fairleads.		
59. Inspect straightness of stick(s) with the ailerons in the neutral position. Stick must not get too close to instrument panel when stick is in full forward position.		
60. Inspect instrument for straightness. Check that all bolts and nuts are tight.		
61. Inspect and check all instrument panel screw and nuts. Everything must be tight.		
62. Confirm that placards are as per Flight Manual.		
63. Confirm ASI gauge markings comply with aircraft drawings. See Appendix 1 of the AMD Service Manual.		
64. Confirm instrument markings and warning notices such as NO SMOKING, NO SPINS, NO AEROBATICS, etc.		
65. Inspect all electrical breakers and markings. Make sure that breaker sizes are as per electrical drawings and manufacturers recommendations.		
Normal Pre-Flight: In addition to a normal pre-flight inspection go over the “Chris Heintz” letter of July 7 th , 2009. You can view it at http://zenithair.com/zodiac/xl/data/c-heintz-letter-7-2009.pdf		
AMD Safety Alerts, Service Bulletins and notices: http://www.newplane.com/amd/CH2000_Service.html		