

SERVICE BULLETIN 36

SUBJECT: INSPECTION FOR FUEL LEAKAGE AROUND MAIN SPAR ATTACH FITTING BOLTS

COMPLIANCE: MANDATORY

APPLICATION: Glasair I kits whose wings were closed prior to 12/16/83.

Description: The procedure described in the Old Taildragger Instruction Manual (before Revision F 12/16/83) used a Q-cell mixture to seal the main spar attach fitting bolts on the fuel tank side of the spar. Revision F changed the sealing procedure from a Q-cell mixture to use of a mill-fiber mixture with a 2-layer cover laminate.

The Q-cell mixture covering technique has proved difficult to do adequately. Some builders of aircraft completed prior to Revision F (12/16/83) have reported evidence of fuel leaking in the main spar fitting area via the main spar attach fitting bolt holes. This is a potentially hazardous condition.

We request all Glasair I builder/owners with flying aircraft, to make the following inspections.

Glasair I kits which are not yet completed should attempt to identify the the procedure used to seal the bolts installing the wing attach fittings in the spar. We recommend all wing attach fitting bolts be sealed with mill-fiber mixture and covered with a 2-layer laminate.

A. INSPECTION

Before the next flight inspect the following areas for fuel stains, fuel smell, or any other evidence of fuel leakage:

- A. The lower wing panel below the seat pans.
- B. The aft face of the main spar web.
- c. The upper wing skin in the area of the main wing attach fitting.

If any leakage is suspected proceed with the Section B.

If your wing was closed without complying with Revision F (dated 12/16/83) and no leakage is found, reinspect these areas listed every 50 hours of operation or 6 months which ever comes first.



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B. REPAIR OF LEAKING MAIN SPAR FITTING ATTACH BOLTS

To properly reseal the main spar attach fitting bolts the wing must be removed from the aircraft, and holes must be cut in the upper wing panel to provide access to the heads of the main spar attach fitting bolts which are inside the fuel tank.

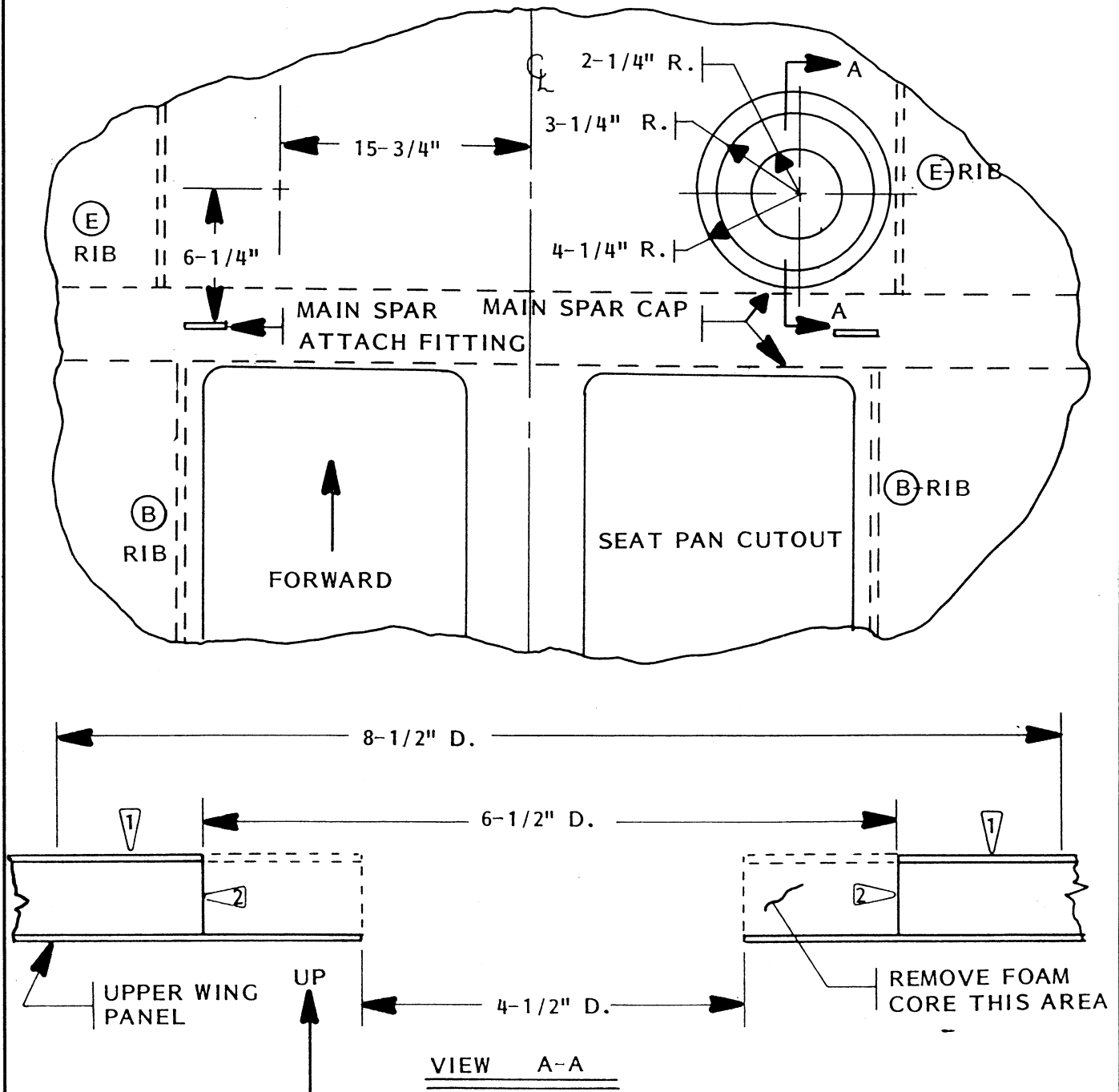


FIGURE (A)



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1. Drain and thoroughly purge all fuel and fuel vapor from the wing fuel tank. Vent the tank for several hours, before and during Step 8 below, with compressed air.
2. Remove the wing from the aircraft and place on padded sawhorses.
3. Locate and lay out the location for the (2) spar attach fitting bolt access holes in the upper surface of the wing fuel tank, as shown in FIGURE (A). Draw (3) concentric circles at each access hole, as shown in FIGURE (A). The smallest 4-1/2" diameter circle will later be cut through the inside wing laminates to form the access hole. The second 6-1/2" diameter circle defines the size of the cutout through the outer laminates and foam of the upper wing panel, as shown in FIGURE (A) VIEW A-A. The third 8-1/2" circle defines the outer size of the patching laminates when the repair is completed.
4. Sand all paint and Gel-coat off the upper surface of the wing between the second (6-1/2" D.) and third (8-1/2" D.) circles, as shown by Flagnote #1 FIGURE (A) View A-A. Sand just enough to expose the fiberglass laminates without cutting into them. NOTE: Complete the sanding of the wing prior to cutting any holes in the wing to avoid dust and grit contamination in the fuel cell.
5. Cut the second (6-1/2" D.) circle out on the upper wing skin laminates only, as shown in Flagnote 2 FIGURE (A) View A-A. Do not cut into the inside laminates of the upper wing panel to avoid weakening them.
6. Remove the foam core within the second (6-1/2" D.) circle. Carefully remove all the foam and Q-cell residue in the areas between the 4-1/2" & 6-1/2" circles to prepare a good surface for bonding.
7. Mark the 4-1/2" circle onto the inside of the upper wing panel (in the area where the foam core has been removed).
8. Cut out the 4-1/2" diameter circle on the lower laminates of the upper wing panel. Use a pneumatic vacuum (if available) during the cutting process, to remove the chips and dust to reduce the possibility of these contaminants entering the fuel cell.

CAUTION: Cut the hole by hand so that dust does not spread into the fuel bays. The use of any electrical tools around an open fuel cell is very hazardous.

9. Remove the old spar fitting attach bolts. Scrape or sand off all the original Q-cell mixture, taking care to avoid damaging the spar shearweb laminates. Blow out the bolt holes with compressed air to remove all moisture, debris, or fuel.

NOTE: If there is any evidence of corrosion on the bolts when they are removed, remove the main spar wing attach fittings and inspect them for corrosion damage. If any damage is found on the wing attach fittings, replace them with new parts. If any corrosion or rust is found on the wing attach fitting bolts, replace the bolts with new.



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10. Use Acetone to clean the spar web around the heads of the bolts. Sand a rectangular area, extending 1" around the bolt heads on the the face of the spar web, to prepare the area for the mill-fiber mixture and laminates to be installed later.

Replace the wing attach fitting bolts with new ones.

Dip the new bolts in resin (to seal the bolt holes) before installing the bolts in the spar web holes.

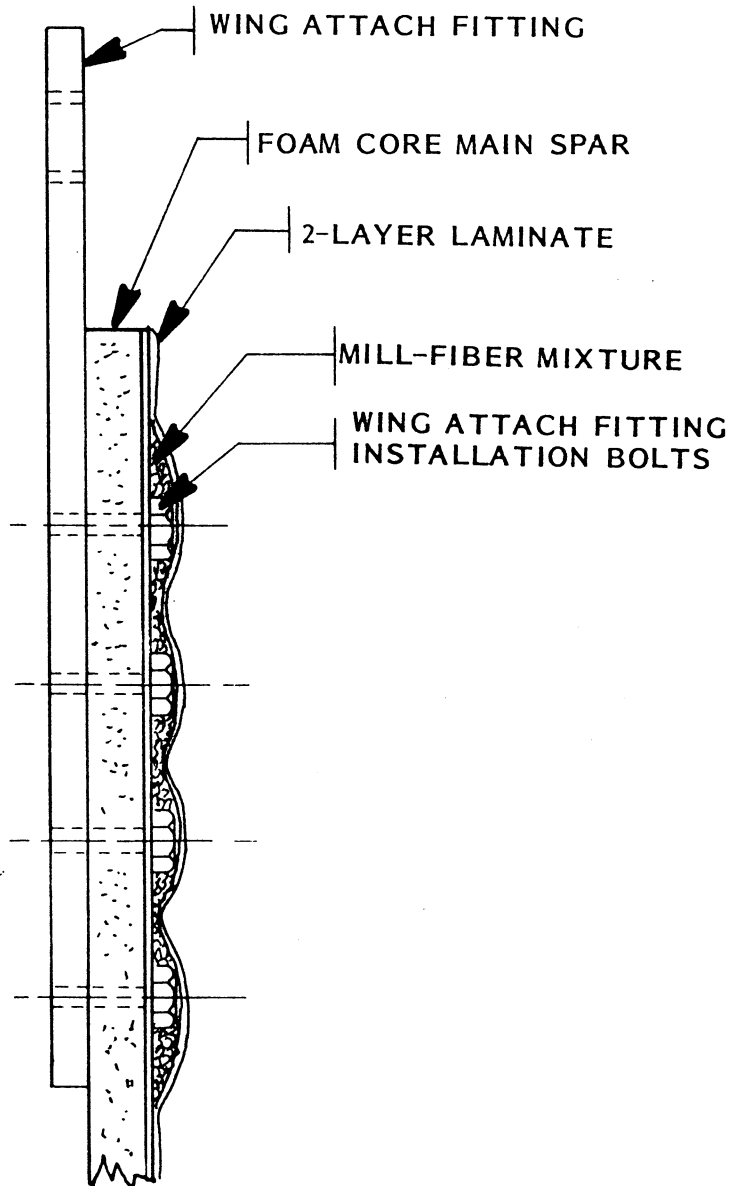


FIGURE (B)

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11. Mix sufficient mill-fiber/resin mixture to cover the wing attach fitting bolt heads, as shown in FIGURE (B).

12. Before the mill-fiber/resin mixture has cured, apply a 3" x 5" (2) layer bidirectional laminate (cut on a 45° bias) over the mill-fiber/resin coating on the bolts, as shown in FIGURE (B).

NOTE: Vent the tank with compressed air while curing to remove fuel and resin vapors which can inhibit the curing process. Let the internal laminates completely cure before putting fuel into the fuel cell.

NOTE: If Addendums #10 and #13 have not been complied with, in reference to the fuel metering tube baffle system, now is the time to do it. Stainless steel check valves, used on our new modles, are also available if desired and can be used in place of the metering tubes. Call out builder support department for details.

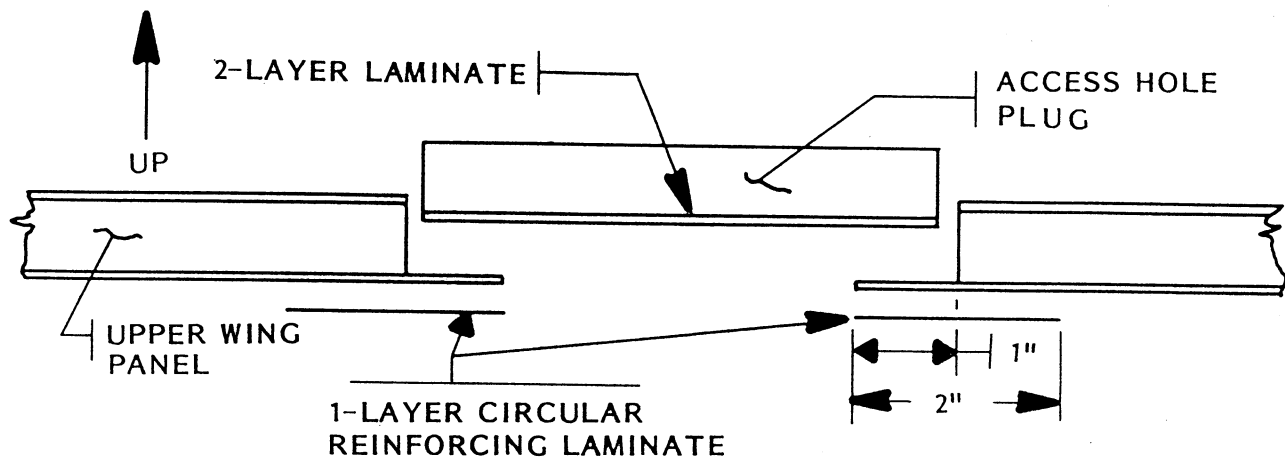


FIGURE (C)

13. Cut (2) 8-1/2" O.D. x 4-1/2" I.D. circular pieces from bidirectional cloth, one per access hole. Apply one of these circular laminates on the inside face of the upper wing panel around the access hole, as shown in FIGURE (C). Let cure.

14. Vacuum and wipe out with a tack cloth, all accessible areas within the fuel tank.

15. Cut (2) 6-1/4" diameter access hole plugs from 4.5 lb. foam, as shown in FIGURE (C). Coat one face of each plug with a thin Q-cell mixture. Let cure. Mark the upper surface of the plugs with an arrow pointing forward.

16. Apply a two layer laminate (on a 45° bias to the arrows) on the Q-celled face of each access hole plug, as shown in FIGURE (C).

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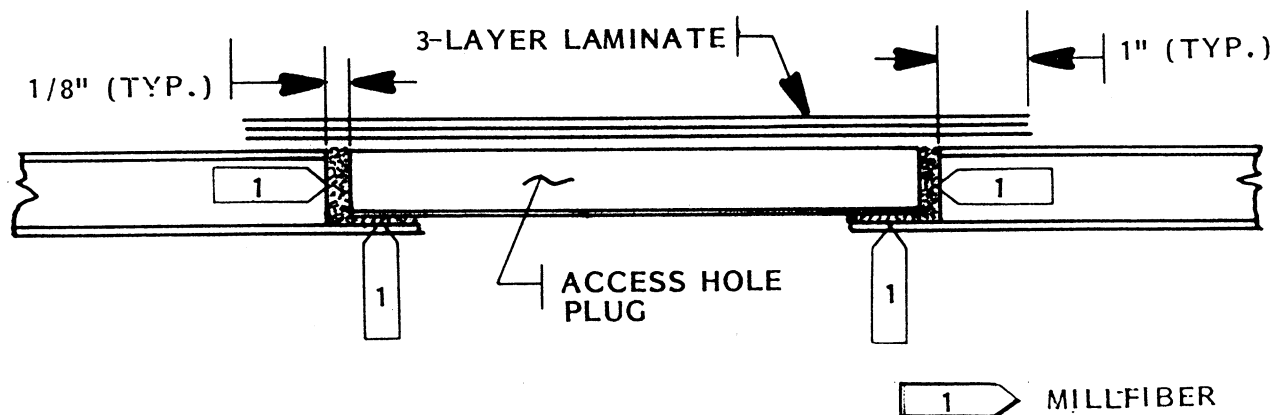


FIGURE (D)

17. Bond the access hole plug in the access hole openings (with the arrows pointing forward), using a mill-fiber/resin mixture, as shown by Flagnote 1 FIGURE (D). Weight the plugs lightly and let them cure. Allow air to flow through the tank to remove the resin vapors. (Stagnant resin vapors will inhibit the curing of the resin.)

18. Sand the upper surface of the access hole plugs flush with the upper surface of the wing.

19. Cut (6) 8-1/2" diameter pieces of bidirectional cloth and use these to form a (3) layer laminate on a 45° bias, over each access hole plug, as shown in FIGURE (D). Let cure.

20. Flush the tank out with fuel to remove any remaining contaminants.

21. Reinstall the wing on the aircraft.

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