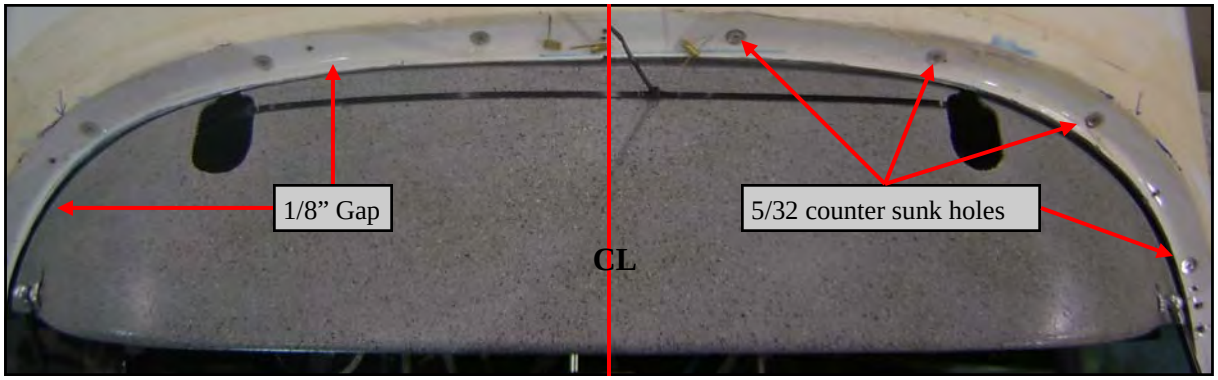
Instrument Panel installation for serial numbers 52 to current

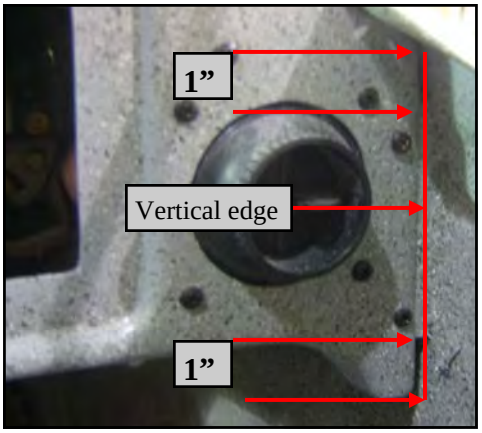
Section Objective: Installation of the instrument panel pod. Installation of all the accessories including; vents gas strut supports, engine control cables. Fabrication and installation of the fuel sub panel.
Required parts: Panel box PN#104-105, panel vent SV-5, vent adapter SV-2, strut ball ends, Aluminum angle stock; 1" by 1" by 8" and .125" thick, 1" by 1" by 7" and 0.0625 " thick. Aluminum flat stock 12" by 12" by 0.040" thick, 3 feet 2 1/4" SCAT hose, 4 2.5" hose clamps.
Required hardware: 8 #8 3/4" CS stainless screws, 8 #8 timmerman washers, 34 #8 1" black screws, 24 AN365-832A elastic stop nuts, 24 AN960-8 washers, 22 #8 nut plates, 44 3/32" CS rivets, aeropoxy PR2032 resin, aeropoxy PH3660 hardener, 12" of 2" wide 8oz glass cloth, west system G/5 5minute epoxy parts A & B, cotton flox,
Required tools: Ruler, sharpie, 3/32" bit, 5/32" bit, 2.5" hole saw, 5/32" clecos, 1/8" cleco's, cut-off wheel, block sander, dremel tool or equivelant air-tool, rivet hand squeezer, electric drill, band-saw, files, mixing cups, popsicle sticks, digital scale.
Required conditions: Air temperature above 60 degrees for 24 hours.
Required skills and training: Simple knowledge of hand tools and use, ability to read CAD drawings, ability to properly mix epoxy and lay up laminates.

Date Completed

1. Measure from the panel face on each side to the firewall, the measurements should be equal when square.
2. There must also be a 1/8" gap between the cockpit joggle and the joggle in the panel box.

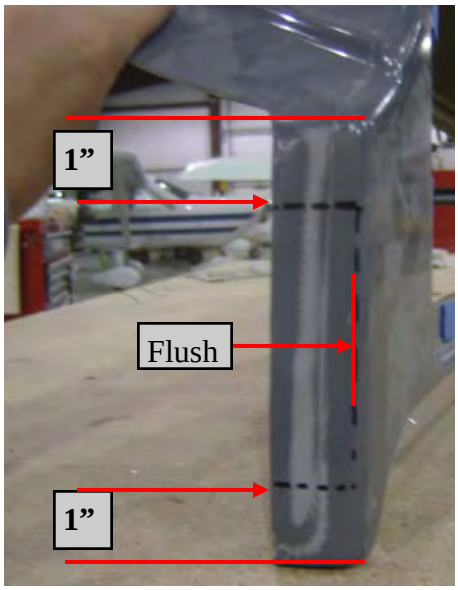


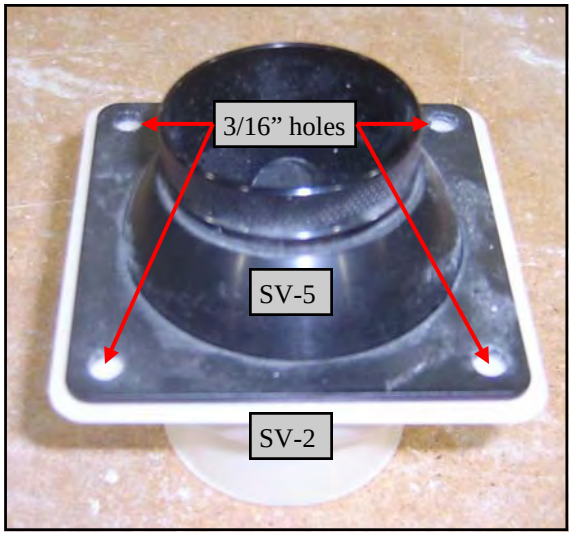
3. This contour is very close and the panel should only fit in one spot.
4. Drill the first 5/32" hole in the flange @ 3.5" from center line and in the center of the flange. Put a cleco to hold it up. Do the same for the other side of center.
5. The other 3 holes are placed 6" on center from hole to hole, in the center of the flange.
6. Mark where the panel sides meet the airframe, be sure that the panel face is vertical.
7. Measure down 1" from the cockpit flange and mark it.
8. Measure 1" up from the bottom of the panel where it contact the airframe, mark it.
9. This should be a 3.5" spot and this is where the lower attach bracket will be bonded.



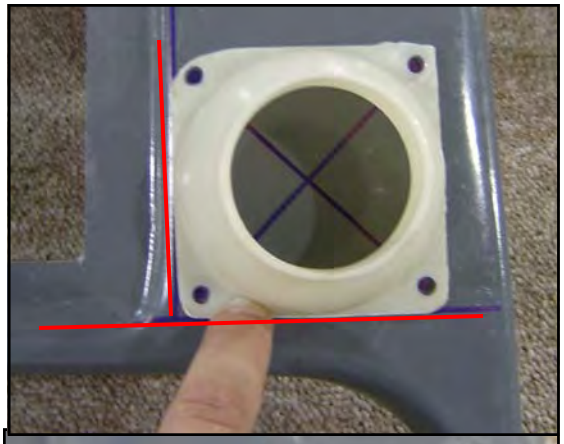
Date Completed

10. Repeat for the other side.
11. Remove panel box for now.
12. Mark the out side edges of the panel box the same way as the fuselage was marked
13. 1” down from the top of the flange and 1”up from the bottom of the flange.



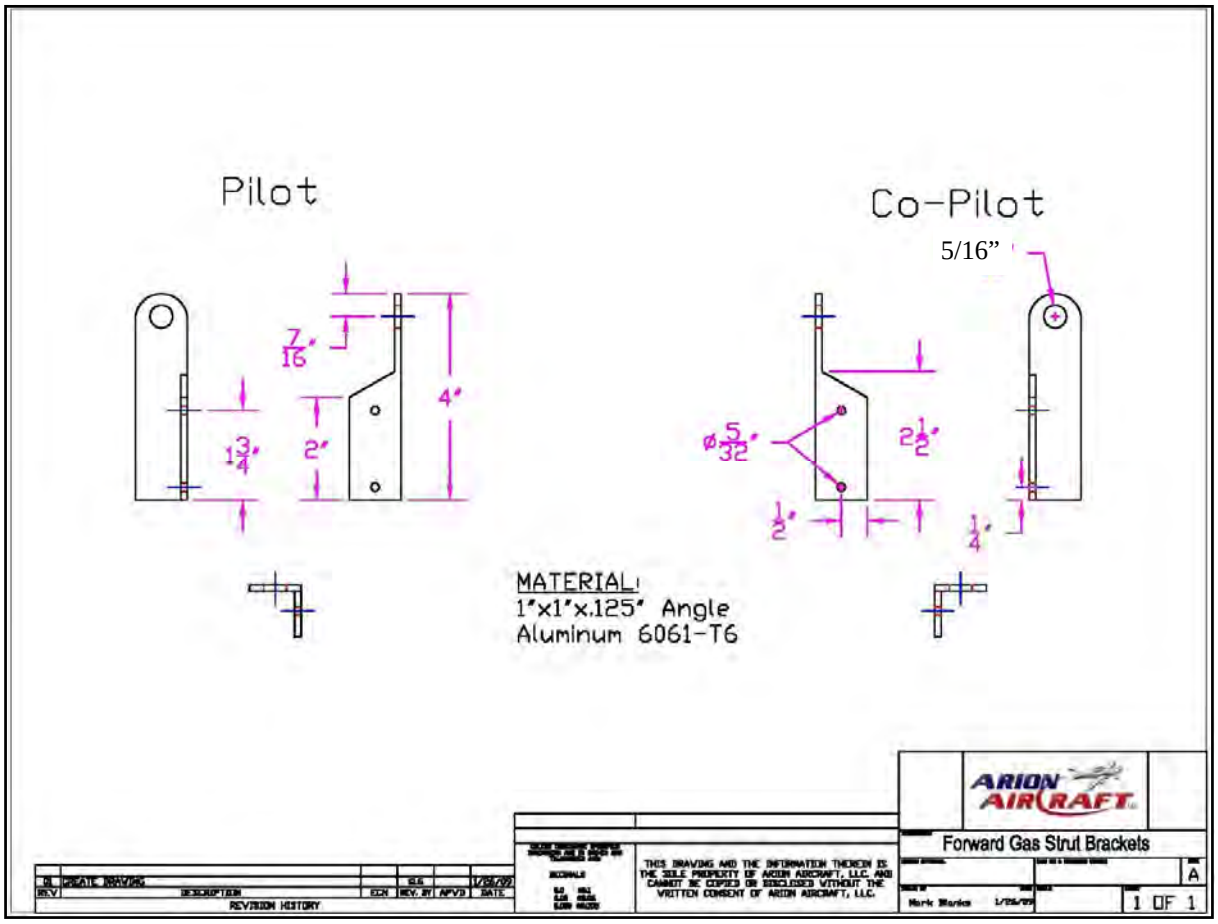


14. Cut out the dashed area and sand the edge flush with the panel face.
15. Locate The panel vents SV-5 and the vent adapters SV-2.
16. Match drill the vent to the adapter with a 3/16” drill, this will be over sized but will make matching everything up behind the panel easier later on.
17. Use SV-2 as a guide. Position the flange so that it is at the vertical edge of the panel and the bottom is flush with an extended line from the panel bottom.



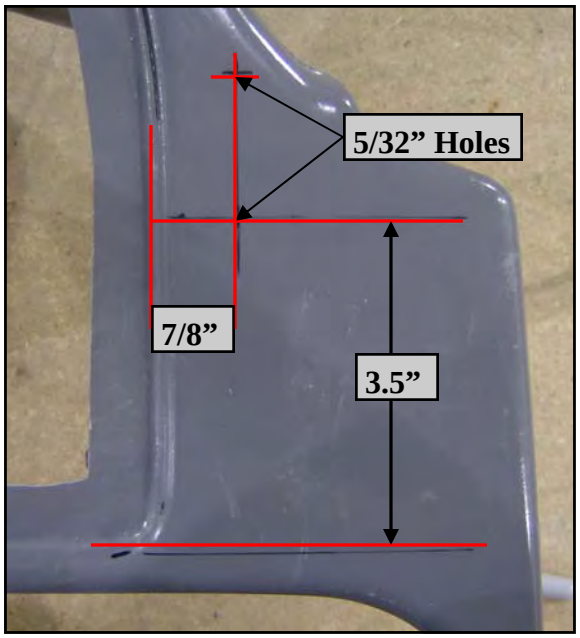
18. Match drill the holes in the flange thru the panel box with a 5/32” drill bit.
19. Use a straight edge to “connect the dots” and find the center of the flange.
20. First use a small drill bit to make a pilot hole, than use a 2.5” hole saw to drill the finish hole.
21. Lightly sand the hole edges to clean up the burrs.

22. **Do not install the vents at this time.** Set aside for now.
23. Use the drawing below to fabricate the gas strut bracket which attaches to the inside of



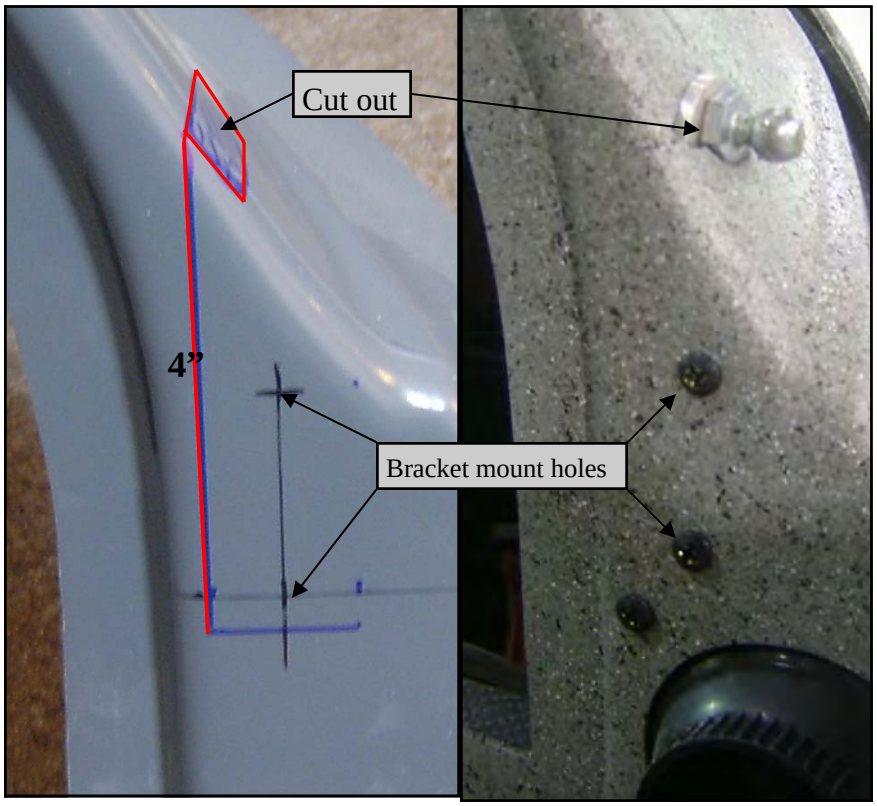
the instrument panel. Use the 1/8" thick aluminum angle supplied in the kit.

24. To install the brackets refer to the picture.
25. Use the extended line drawn from the bottom of the panel for the air vents as the base line.
26. Draw a line 3.5" up from the base line that is parallel to it.
27. Measure over 7/8" from the panel joggle. This will be the first 5/32" hole
28. Measure up from there 1.5" for the other

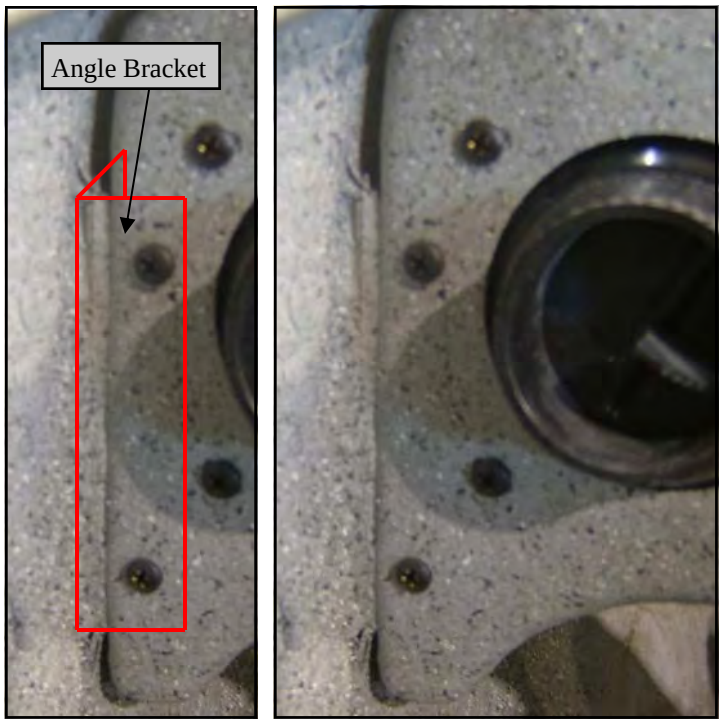


mounting hole.

29. Repeat for the other side.
30. Since the upper horizontal line is for the lower mount hole you will have to start down 1/4” from it.
31. Measure straight up 4”, this will represent where the bracket will protrude thru the top.
32. Measure back form this point onto the hood 1 1/16”
33. Cut a slot from this line and below about 1/2” wide, this may have to be adjusted once the bracket is trial fitted.



34. The strut bracket may be mounted at this time, or left out until finishing the panel box.
35. On to finishing the **panel installation.**
36. Locate the 1/16” thick 1” aluminum angle from the kit and make two 3.5” parts.
37. Make sure that the marks on the side of the fuselage from step 6 are still clear.
38. Sand the fuselage where the bracket will contact.
39. Sand both sides of the flange on the angle which will contact the fuselage.
40. Tack bond the bracket to the fuselage with 5 min and flox.
41. Once dry mix up some 24 hour epoxy and wet out over the flange and surrounding glass on the fuselage.
42. Mix some of the epoxy with flox and pack the underside of the bracket with it.
43. Lay 2 layers of 8oz glass 2” wide



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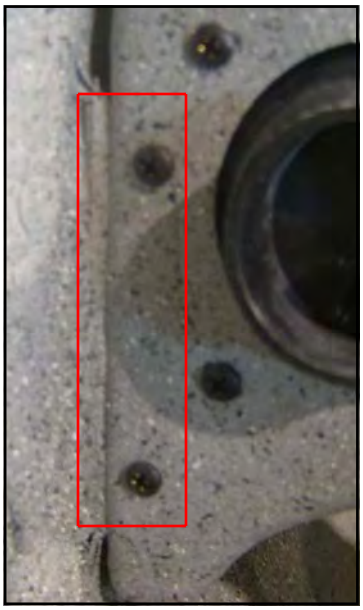
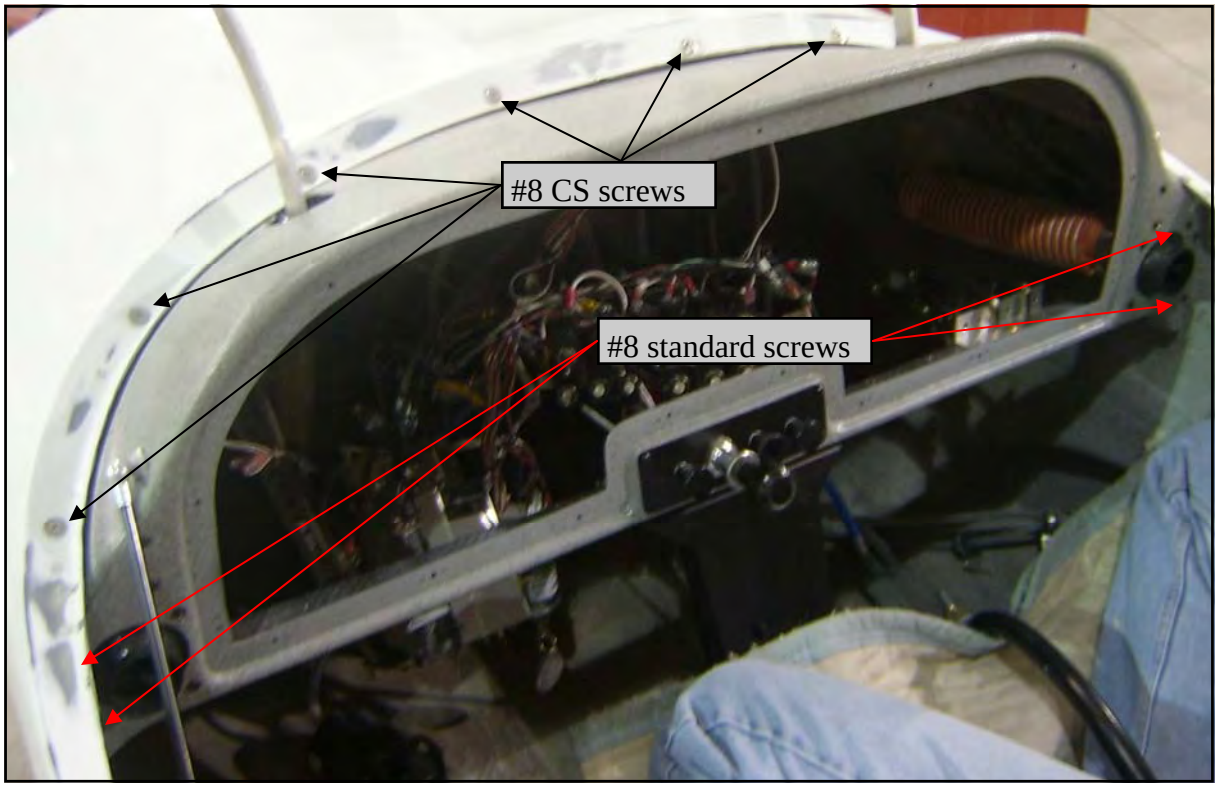
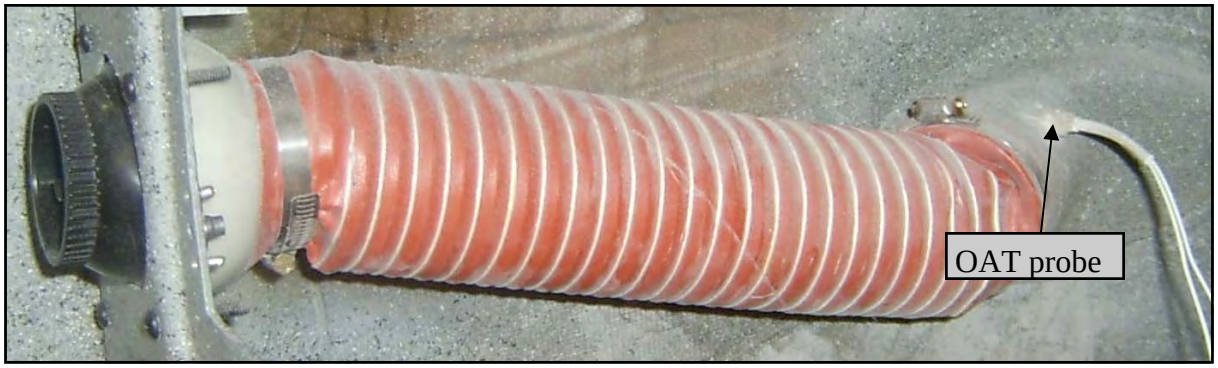


by 6” long over the flange on the fuselage. Let cure for 24 hours.

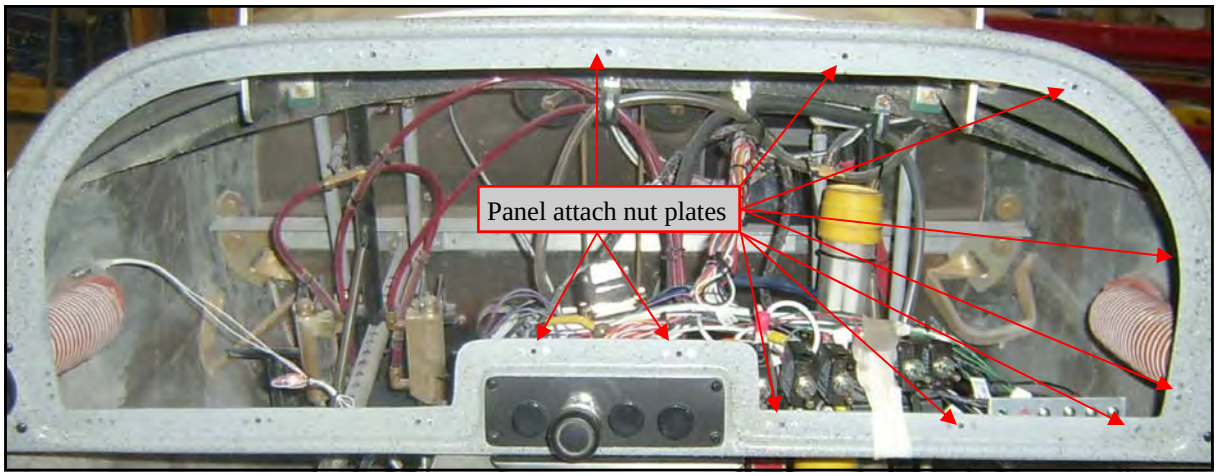
44. Repeat for other side.
45. Once the brackets have cured, re install the panel box with clecos.
46. Using a 5/32” drill bit, drill thru the panel box and the bracket, 1/2” down from the top of the bracket and 1/2” up from the bottom of the bracket. Pay close attention to the edge distance. You must determine the amount of overlap of the metal bracket and the panel box and drill on center.
47. Hold in place with clecos.



48. Remove the clecos 1 at a time around the front and install #8 countersunk screws and a timermann washers, secure with a large area washer and nyloc nut on the back side.
49. Secure the lower portion near the air vents with standard #8 screws and nyloc nuts.
50. Install air-vents on the back side of the panel box. Use #8 screws, washers and nyloc nuts

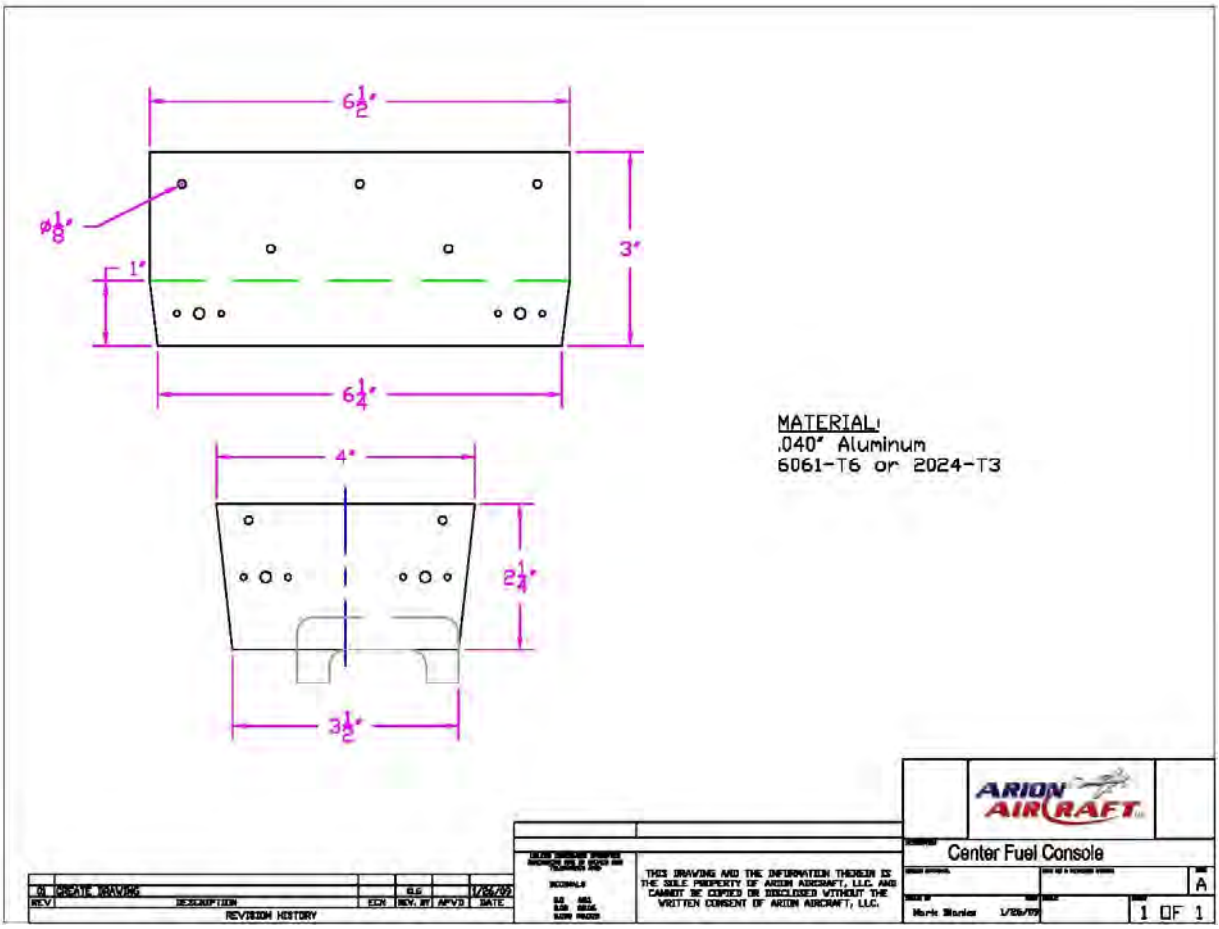


to secure.
51. Install the correct length of SCAT hose and clamps
52. If using an OAT probe install this in the NACA scoop as shown.
53. Every panel layout is different so use the panel picture below as a guide for installing the mounting screws for the panel face. Be sure not to put anything with in 3/4" of the panel edge as this would compromise the mounting flange.



54. The canopy tip up supports are the only limiting factor in panel depth . These are mounted between 9"-10" from the center line of the aircraft. Be sure to keep these in mind when designing the panel as adequate space is crucial.
55. For the instrument panel attach screws, the following are recommended spacing.
56. All screws will be mounted evenly spaced on the flange, this should be about 3/8" out from the molded joggle.
57. The first hole is in the center of the panel top.
58. Place the other holes around the top and sides with 6" spacing. The only exception is the last hole should be in the lower corner and can be moved from 6" to accommodate.

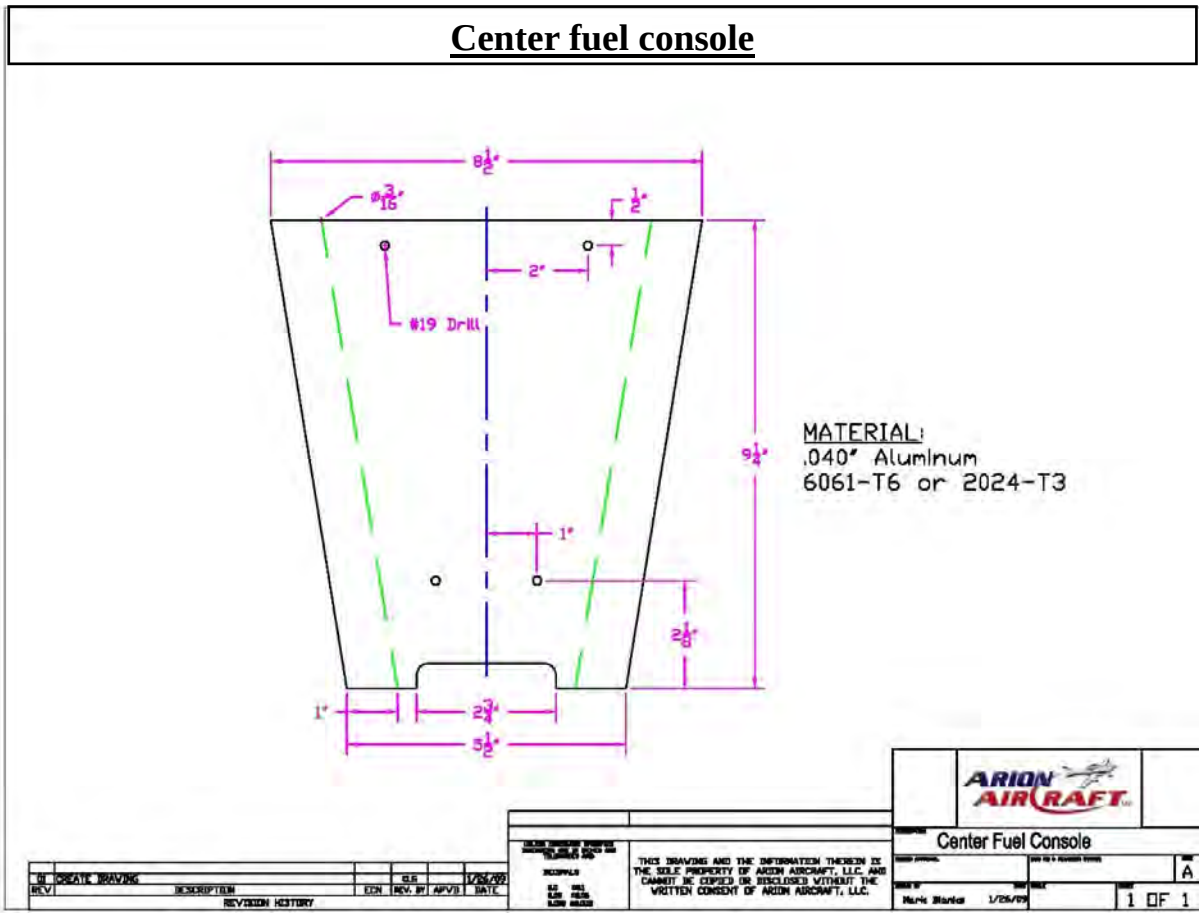
Fuel console upper and lower mounting tabs



Date Completed

59. There should be 3 holes evenly spaced across each bottom.
60. 2 holes in the flange above the throttle plate each being 1/2” in from the corners.
61. Install a #8 nut-plate at each hole you just drilled.
62. Using the material specified in the drawing, fabricate a lower and upper fuel console mounting tabs. Making these separate from the console it self will add in removal later on if needed.
63. Bend the larger tab (upper tab) on the green dashed line, about 70 degrees or so, the tab here should point a the spar box tab with the correct amount of angle.
64. Set aside for now.
65. Using the drawing on the next page cut out a fuel console.
66. Bend the sides over 90 degrees on the green dashed line.
67. **Note:** There are no specific dimensions in the panel for mounting the fuel valve. The builder should choose where in the console they want the valve or valves mounted.
68. Set aside for now.
69. Clamp the upper mounting tab to the bottom of the instrument panel box. It should be mounted in the center of the box with the bend flush with the start of the rolled panel box lip. Match drill the 1/8” holes with the panel box and temporarily hold in place with

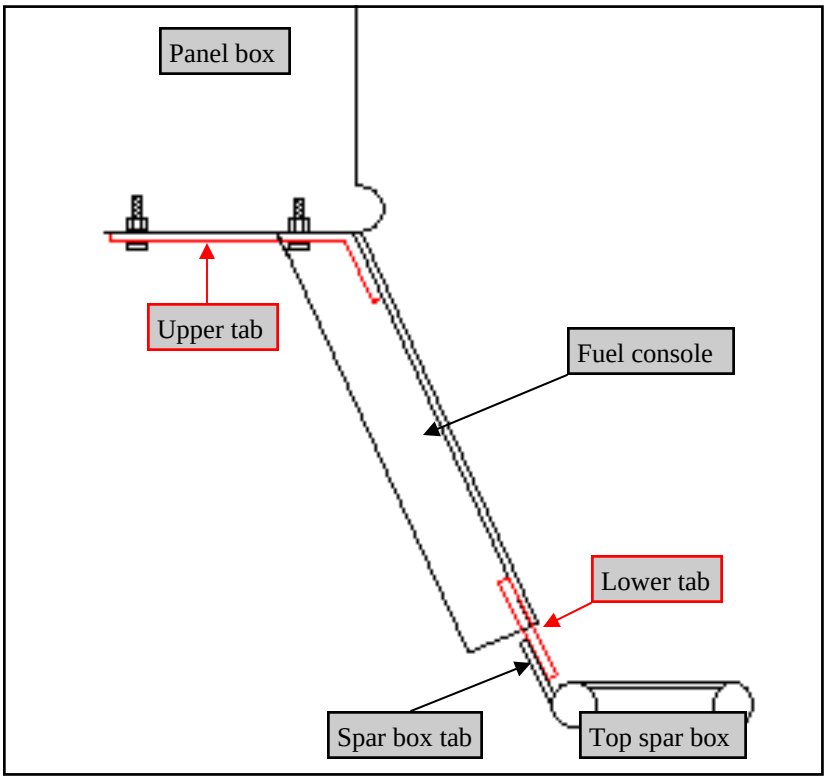
Center fuel console



Date Completed

cleco's.

70. Match the holes in the bent down portion of the upper tab with the holes in the top of the fuel console made earlier. Hold together temporarily with cleco's.
71. Cleco the lower mounting tab to the bottom holes of the fuel console.
72. Match drill the lower mounting tab to the mounting tab that is welded to the spar box with a #30 or 1/8" drill bit.
73. Remove all parts and drill the 5 holes in the



upper tab that will mount to the panel box with a 5/32” bit and the panel box too.

74. Drill the two holes out which attach the lower tab to the spar box to 5/32”.
75. The 2 holes in the upper mounting tab which the fuel console will attach must have #8 nut plates installed.
76. Do the same for the lower mounting tab to the holes which the lower end of the fuel console will attach, fit #8 nut plates.
77. Attach the upper mounting tab to the bottom of the instrument panel box with 5 of the 3/4” #8 screws a AN970-8 wide washer and than a AN365-832A elastic stop nut.
78. Attach the lower mounting tab to the spar box tab with 2 of the 3/4” #8 screws and AN365-832 elastic stop nuts.
79. Install what ever items you are going to fit to the fuel console before final installation.