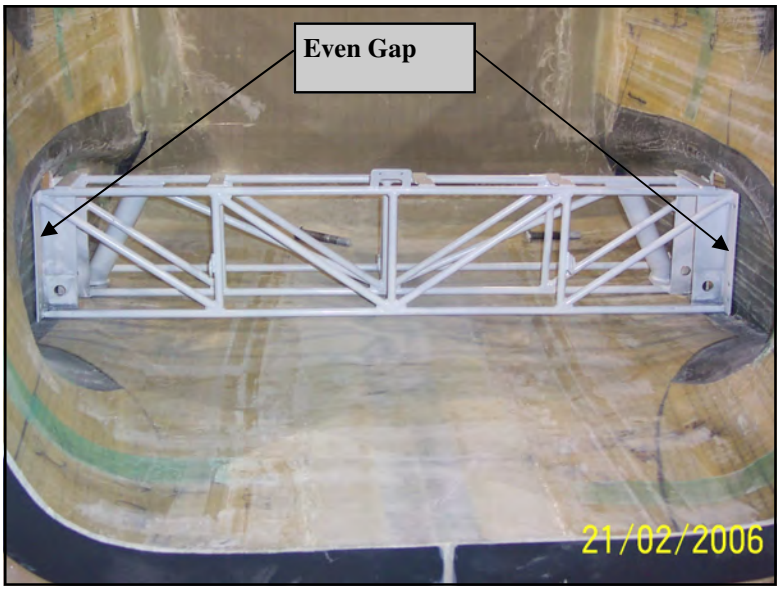
Section Objective: The purpose of this section is to give you an overview of the spar box installation. The detailed instructions for installing the box itself is found in **Section 11 Main Beam install and wing alignment**. However it is very important that this section be read and instructions followed as it is very important to the final assembly. The spar box installation is not part of this section because it is rather complex and needs to be outlined as a separate project.
Required Parts: Rear central beam ALS-0011, Front central beam ALS-0010, Left torsional support ALS-0013, Right torsional support ALS-0014, Flap torque tube ALS-0012, Plastic cable guides D2300
Required Hardware: 4 AN3-7A, 4 AN365-1032A elastic stop nut, 16 AN960-10, 3 AN4-4A, 2 AN4-6A, 5 AN365-428A elastic stop nuts, 9 AN960-416 washers, 4 MS24694s-99 structural counter sunk screw. 2 AN5-10A, 2 AN365-524A elastic stops nuts, 10 AN970-516 wide area washers.
Required tools: 1/8" bit, 3/16" bit, 1/4" bit, 5/16" bit, hack saw, files, countersink bit, 3/8" sockets and wrenches, 7/16" sockets and wrenches, 1/2" sockets and wrenches, Phillips screwdriver, electric drill.
Required Conditions: N/A
Required Skills or Training: Basic knowledge of hand tools.

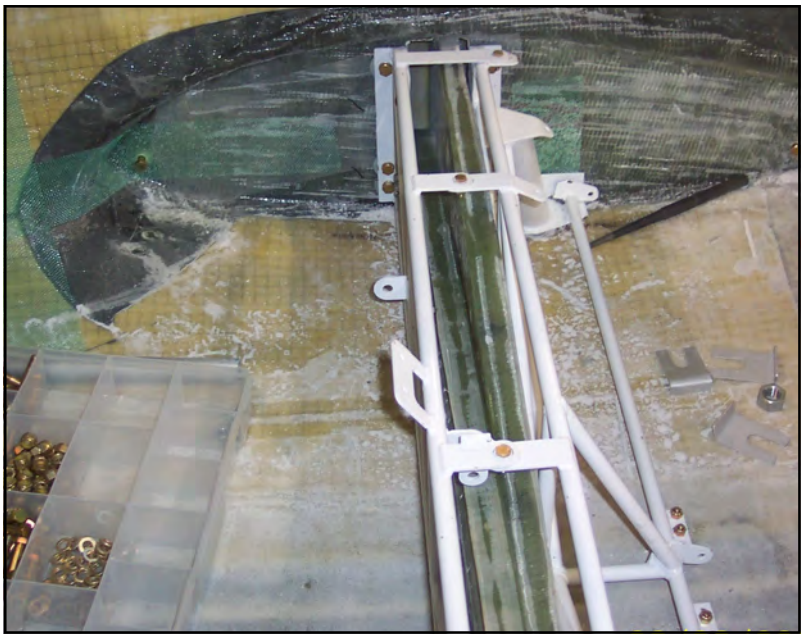
Date Completed	
	1. Inspect the spar box Front and rear half for damage due to shipping or any other imperfection.
	2. Trial fit the spar box halves to the wing spars while not installed in the aircraft.
	3. Check that the spar bolt will pass thru the box and spars smoothly.
	4. Some paint may have to be sanded out of the holes to get a good fit.
	5. If one bolt will go thru and the other will not, it is acceptable to sand out the hole evenly in both the left and right holes to achieve a good fit, no more than 1/16" a side.
	6. The spar box is smaller than the inside of the fuselage and will need to have wide area washers put between it and the fuse to take up the space.
	7. Set the box in place and determine how many washers near each bolt hole must be installed.
	8. Use a marker and write it on the inside near each hole, this will aid in final assembly later on.



9. Locate the small plastic **cable guides** from the kit.
10. Install these on the bottom of the tabs located at the rear bottom part of the back spar box.
11. Use a #10 drill bit to match drill the outside hole and than drill a new hole for the inside hole, the supplier of the original cable guides changed them and the new tabs have not made it into production.
12. Install with AN3-7A Bolts and 6 washers between the tab and the guide, this will space them out from the tab the correct distance. Use a nyloc nut on the back side.
13. Once installed use a hack saw or cutting wheel, cut down into the guide to open up the cable race, this must be as wide as the race in the guide.

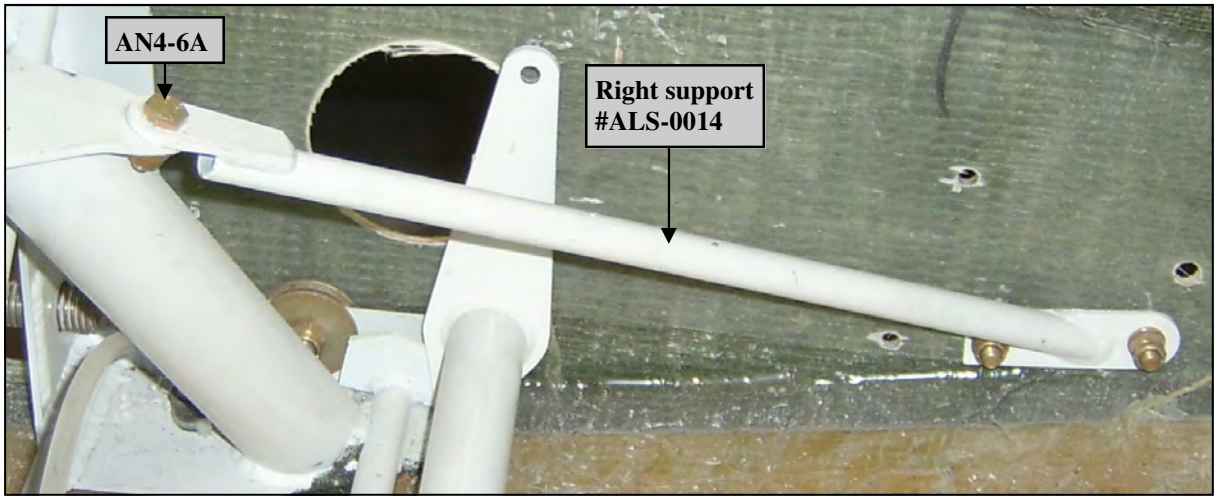
NOTE: Section 1, #8 thru #13 must be completed before proceeding.

14. Refer to **Section 11 Main Beam installation and wing alignment** and install the spar box as specified before continuing.

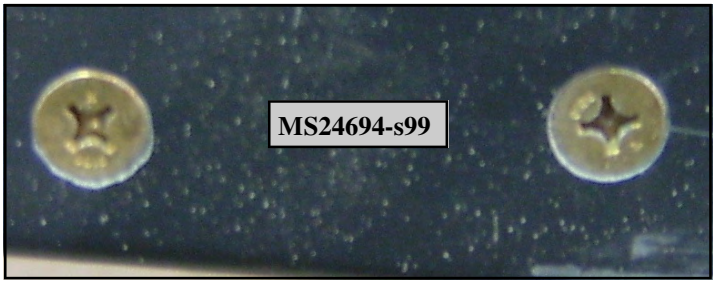


15. Install the **flap torque tube** with AN4-4A bolts and nyloc nuts, the center tabs in the part must face forward when installed correctly .
16. The torque tube may fit better on one side of the tabs than the other, if the mounting tabs must be bent slightly to fit this is ok.

Note: the following steps, #17 thru #25 are for the **Standard Landing Gear.** If your aircraft is equipped with the LSA Landing Gear than proceed further into this section to #26 for the correct final installation.



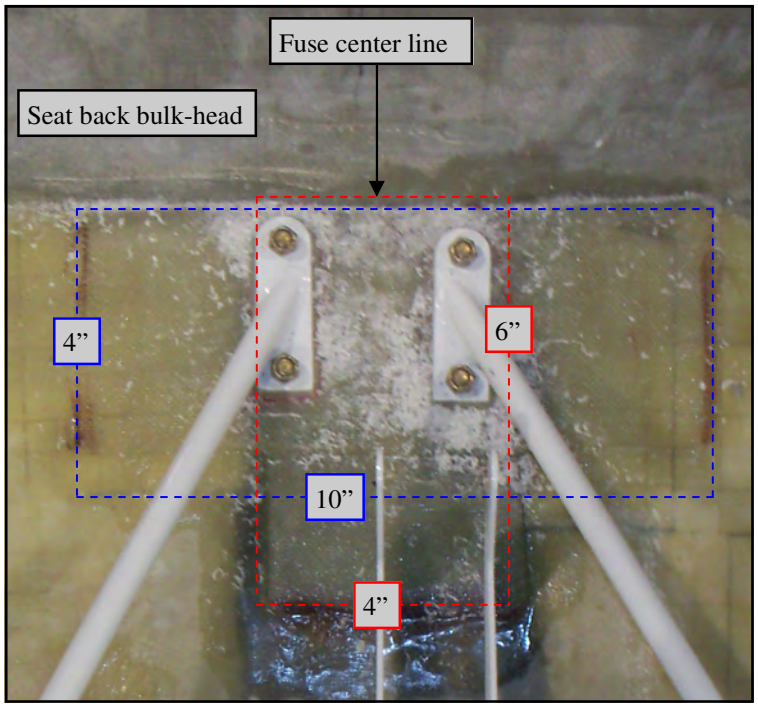
17. Locate the **Left torsional support** # ALS-0013.
18. Set the single hole end on the tab attached to the gear leg tube.
19. Match drill this 1/4" dole and install a AN4-6A bolt and nyloc nut **Do Not tighten Yet!**
20. Push the support up against the inside of the wing root area flush with the bottom of the fuselage.
21. Match drill the holes in the support thru the wing root.



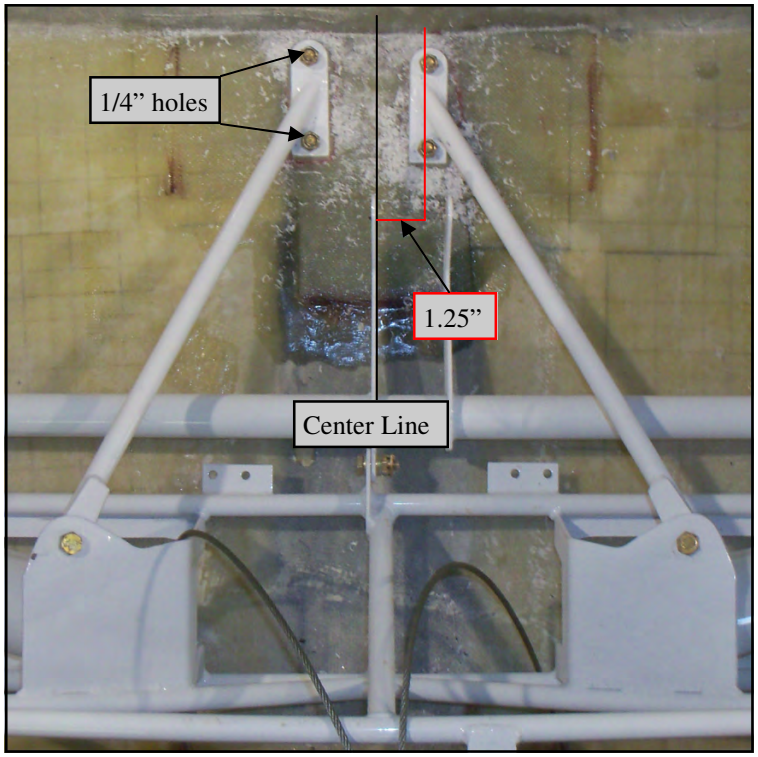
22. Counter sink the holes on the outside so that MS24694-s99 structural screw is completely flush.
23. Install the nyloc nuts on the inside and tighten down, if there is a gap at the front of the plate, **Do Not Bend** the support a wide washer can be placed between the glass and bracket.
24. Finish Tighten all bolts.
25. Repeat for right side.

Note: Starting from #26 thru the end is the installation section for the **LSA Landing Gear**

26. For the LSA Landing gear some fiberglass must be laid up first.
27. Cut from 10oz fiberglass cloth 8 pieces that are 4” by 6”. Marked as a dashed red line in the picture at right.
28. Cut from 10oz fiber glass cloth 2 pieces that at are 4” by 10” and are shown by the dashed blue line in the picture at right.
29. Sand the areas where the glass is to be layed up with 60grit paper. Clean with acetone when finished.
30. Mix up about 3oz total of Aeropoxy to layup the glass you just cut.
31. Lay up the 4” by 6” layers first as shown at right.
32. Lay up the 4” by 10” pieces last.
33. Let cure for at least 24 hours.
34. After the glass has cured the Spar box torsional supports may be installed.

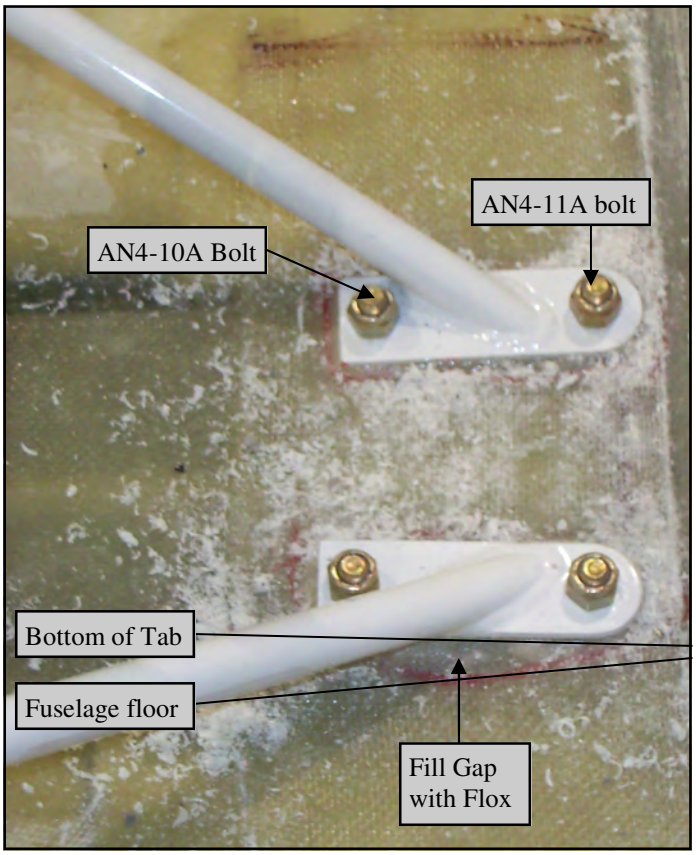


35. Locate ALS-0013 Left support and ASL-0014 Right support from the kit.
36. The supports are bolted to the tabs at the rear of the upper leg sockets. Attached with AN4-5A, and AN365 -428 elastic stop nuts. Do not tighten at this time.
37. Place the supports so they are sitting as shown in the picture.



38. The tabs that attach to the floor should be parallel to the center line of the fuselage. This would be about 1.25” off center to the center of the holes in the tabs.
39. With the support position correct match drill the holes in the tabs thru the floor of the fuse.

40. Use AN4-11A bolts in the rear holes. The bolt is inserted from under the plane up. The head of the bolt must have a AN970-4 large area washer under it to spread the load over the glass.
41. This bolt is slightly longer than it needs to be, for now use a stack of washers on top of the tab to take up the bolt length. The center seat belts will attach here eventually and the washers removed.
42. Secure with a AN365-428A elastic stop nut, do not tighten all the way
43. Install AN4-10A bolts in the front holes. Again a AN970 large area washer under the head and a AN365-428A nut to secure, but do not tighten.
44. The Tabs are not to be forced to the floor by tighten the bolts, these should lay naturally.
45. Fill the void between the tab and the floor with a mix of Aeropoxy and flox. Let this cure for 24 hours.
46. Tighten all AN4 bolts that secure the supports when the glue is dried.
47. The Spar box contains one more bolt to fit.



48. Measure back 2.5” from the center of the bolts already installed in the vertical portion of the box.
49. Draw a line straight back from the bottom of the lowest bolt in the box. Do not draw it on center, the last bolt to install is slightly lower than it, so use the bottom of the bolt as the reference line.
50. Drill a 5/16” hole thru the fuselage and spar box at this point.
51. Install a AN5-10A bolt, stack AN970-5 large area washer between the box and fuselage to take up the gap.
52. Secure with a AN365-524 elastic stop nut.