

ERCOUPE SERVICE MEMORANDUM
No. 53A

SUBJECT: Center section rear spar reinforcement

1. All Ercoupes, Serial Number 4869 and subsequent, were delivered with the rear center section beam reinforced by addition of a stiffener angle, part number 415-13109. Numerous inquiries requesting information and material to accomplish this installation on previously delivered airplanes make it appear desirable to issue an announcement of the availability of the material, and to issue instructions for its application.

2. The reinforcement modification will help prevent damage to the rear spar due to hard landings and rough usage. Addition of this reinforcement stiffener angle to a slightly damaged upper flange is an approved repair.

3. Kits containing all parts required for making the installation are now being prepared and will be shipped direct to each distributor upon request. This material is listed as Spar Reinforcing Kit, part number S.K. No 9.

4. The following parts are supplied in each kit:

QUANTITY	ITEM	PART NO.
2	Stiffener Angle	415-13109
14	Rivet	AN470AD-4-5
2	Rivet	AN470AD-4-6
8	Screw	AN515-832-6
8	Washer	AN960-8
8	Nut	AN365-832

Locate and secure stiffener angle according to this drawing.

Ercoupe MEMORANDUM

ERCOUPE
SERVICE
MEMORANDUM

No. **53.A**

SUBJECT: Center section rear spar reinforcement



1. All Ercoupes, Serial Number 4869 and subsequent, were delivered with the rear center section beam reinforced by addition of a stiffener angle, part number 415-13109. Numerous inquiries requesting information and material to accomplish this installation on previously delivered airplanes make it appear desirable to issue an announcement of the availability of the material, and to issue instructions for its application.

2. The reinforcement modification will help prevent damage to the rear spar due to hard landings and rough usage. Addition of this reinforcement stiffener angle to a slightly damaged upper flange is an approved repair.

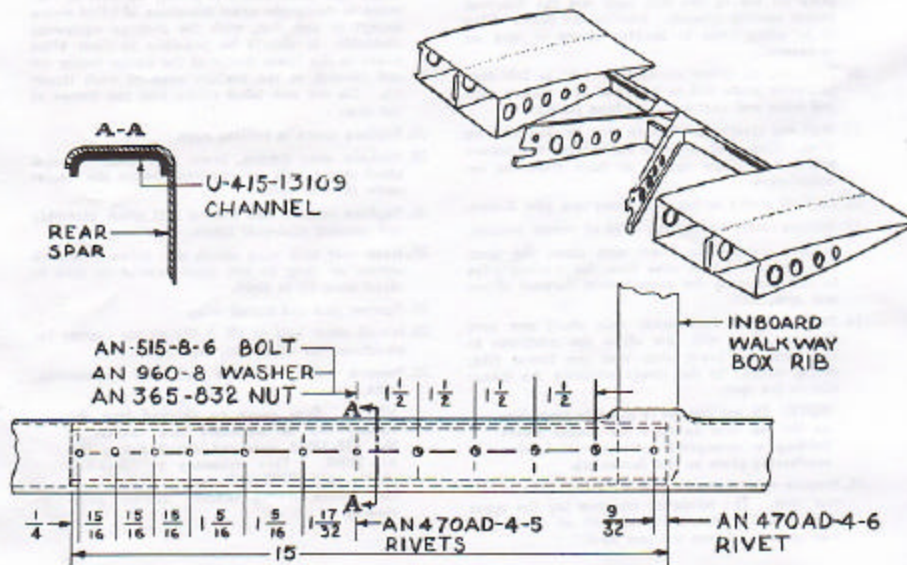
3. Kits containing all parts required for making the installation are now being prepared and will

be shipped direct to each distributor upon request. This material is listed as Spar Reinforcing Kit, part number S. K. No. 9.

4. The following parts are supplied in each kit:

QUANTITY	ITEM	PART NUMBER
2	Stiffener Angle	415-13109
14	Rivet	AN-470AD-4-5
2	Rivet	AN-470AD-4-6
8	Screw	AN-515-832-6
8	Washer	AN-960-8
8	Nut	AN-365-832

Locate and secure stiffener angle according to this drawing.



Instructions for Rear Spar Replacement

These instructions cover the replacement of only one half of the entire rear spar assembly. Should the need arise to replace the entire assembly; naturally the applicable steps listed will have to be performed on both sides of the center section.

1. Remove seat, seat back, seat braces, floorboards and baggage compartment fixtures if not already done at the time of inspection.
2. Remove wing.
3. Jack aircraft under front spar near the wing attaching fitting. Although the main gear is attached to this spar, the angle of attachment will cause a twisting action which, at the time of re-assembly, causes misalignment of the rivet holes if allowed to remain setting on the aircraft wheels.
4. Put stand under tail to allow mechanic to work aft of the rear spar without tilting of aircraft.
5. Disconnect the three aileron push-pull tubes at the aileron bell crank assembly. For ease in doing this, the mechanic may also want to remove the through bolt, tying the aileron bell crank to the rudder bell crank.
6. Remove the 4 bolts securing the entire bell crank assembly to the center section and slide the entire assembly to the rear of the aircraft out of the way.
7. Remove fairlead for the elevator cable from the rear spar flange.
8. Drill out rivets attaching the triangular brace plate on the top of the rear spar and the diagonal center section member. Remove the plate. This is to allow ease in bucking rivets in the spar on re-assembly.
9. Drill out all rivets connecting right or left spar to center plate and to the bulkhead, and remove the nuts and bolts and seat belt attaching fittings.
10. Drill out rivets and remove the rear section of the wing fillet. Also, remove rivets holding the two halves together to allow access to buck rivets on re-installation.
11. Drill all rivets on the top skin along the rear spar flange.
16. Drill pilot holes in the wing attaching fitting end of the spar to correct the size before inserting spar.
17. Insert the new spar in the center section, being careful not to bend flanges to any extreme on the center spar attaching plate. Because of the bind which will be put on the spar as it is inserted, this flange may require some slight rework. Also, because of the fact the mechanic is replacing a .040 spar with a .051 spar, there will probably be a slight offset in this center spar attach plate.
18. Cleco the spar in place using pilot holes provided in the new spar.
19. Because the pilot holes are No. 30 holes and the rivets removed were -6 rivets, it would be advantageous for the mechanic at this time to momentarily replace the wing and check for alignment of the wing and center section.
20. Re-rivet the spar to the center spar attaching plate and to the bulkhead and install the brace plate, nut, bolt and seat belt attaching fitting.
21. Since a spar reinforcing channel (SK 9 Kit) is still required, it would be advisable to install it at this time since it will be possible to replace the called-out 8-32 machine screws with AN470AD4-6 rivets, which will add additional strength.
22. Rivet the former ribs to the spar.
23. Replace rivets in the top skin and lower skin. Since the types of rivet sets and bucking bars available will determine the actual number of buckable rivets and blind rivets required, we will not attempt to designate the exact locations of the blind rivets except to say that, with the average equipment available, it should be possible to limit blind rivets to the lower flange of the center former rib and several at the trailing edge of each former rib. Do not use blind rivets into the flange of the spar.
24. Replace rivets in the trailing edge.
25. Replace the wing fairing, lower half first. Several blind rivets will be required toward the center under the rear spar.

12. Remove rivets on the trailing edge of the center section.

13. Remove rivets from the lower skin along the three fore and aft former ribs from the trailing edge to and including the second rivet forward of the rear spar.

14. Remove rivets from the lower skin along the rear spar flange. This will now allow the mechanic to lay back the lower skin from the former ribs, giving access to the rivets securing the former ribs to the spar.

NOTE: Do not attempt to use this procedure on the top skin as there are hidden rivets holding a corrugated walkway reinforcing plate to the former rib.

15. Remove rivets attaching the 3 former ribs to the rear spar. The mechanic can now lay the upper skin with its attached rear part of the former ribs up and pull out the rear spar.

26. Replace the fairlead and the aileron bell crank assembly and connect the push-pull tubes.

27. Ream the rear spar wing attach bolt holes with a 5/16" reamer as they do not come reamed to size to allow a snub fit in the field.

28. Remove the jack and install the wing.

29. Install the other half of the SK 9 Kit as per factory instructions on the other half rear spar.

30. Remove tail brace and re-install floorboards, seats, etc.

NOTE: Rear spars as shipped from the factory are an assembly and consist of No. 415-13048 spar and attach fitting No. 415-13009. This assembly is identified as No. 415-13103. Factory installation of the attach fitting insures correct positioning.