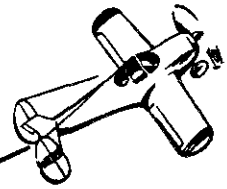


ERCOUPE
SERVICE
MEMORANDUM

No. **58**

Ercoupe MEMORANDUM

SUBJECT: Outer panel inspection and repair



1. During the past two years we have received reports of several serious Ercoupe accidents, apparently involving wing panel failures. Complete investigation does not indicate any inherent weakness of the wing structure, and, quite to the contrary, the ruggedness of Ercoupe construction was conclusively proven in each case. There are, however, some facts brought out in the investigations which we feel should be called to the attention of Ercoupe owners and all operators having occasion to inspect and repair Ercoupes.
2. Improper maintenance of the wing fabric was the initial cause of one fatal Ercoupe accident reported. In this case the fabric on the leading edge of the wing split and pulled off while plane was in flight.
3. It appears that the dope and fabric of the leading edge of the Ercoupe wings deteriorates more rapidly than the remainder of the wing covering. Special attention should therefore be given to the inspection of the leading edge area and steps taken to protect the fabric whenever cracks appear in the dope. With proper care Ercoupe wing fabric can be expected to maintain its strength for as long as 5 years. Exposure to the elements, especially sunlight, materially reduces the life of doped fabric.
4. C.A.A. Manual CAM-18 describes proper methods for maintaining and reconditioning wing fabric. The dope used on Ercoupe wings is a nitrate dope, (not "hot dope" as rumored) and may be rejuvenated with a high quality rejuvenator. The factory has tested and approved "Fabri-Coat" and "Sky Lac", both of which have proved to be satisfactory rejuvenators for the original dope. There are, however, other suitable rejuvenators available. If the wing fabric has already been rejuvenated or coated with lacquer or other material, rejuvenation is not recommended. If deterioration of the fabric has progressed far enough so that there is any question as to the strength of the fabric at the leading edge, it is recommended that the leading edges be reinforced. This may be done by application of a wide pinked tape, or with use of strips of aircraft fabric, doped to the surface after rejuvenation.
5. While we have particularly stressed the importance of preserving the leading edge of the Ercoupe wings, the remainder of the fabric surfaces should also be properly cared for. The complete fabric surface may be rejuvenated satisfactorily and re-doped with two or three coats of good grade nitrate dope. A panel should be completely re-covered if rejuvenation cannot be performed satisfactorily, or if the fabric does not test up to the required strength (56# per inch). The necessary covers, tape, and dope are available from the Ercoupe distributor dealer organization. Covers are part numbers 415-14001-3 L R, and are grade "A" fabric.
6. During investigation of the several Ercoupe accidents, the rivets in wing tip splices of Ercoupes in service were found to be loose. Suspicion existed that the outer panels may have collapsed while the planes were in flight, as a result of the wing tip joint failures. However, static tests on the loosest joint found during investigation showed decisively that in spite of the loose rivets the joint, and consequently the outer panel, was more than strong enough to carry the design air load.

7. While the loose rivet joint tested strong enough, it is recommended that the joints be checked and loose ones be repaired at 100 hour inspections. To check for such a loose joint, rock the airplane slowly by applying upward pressure on the wing at the beam tip. If the rivet joint is loose a slight motion will be felt between the main beam and the wing tip beam. This joint is approximately 36 inches from the wing tip (see Service Manual, figure 10, or Parts Catalog, Figure 7). The motion between the two parts will sometimes create a grating noise; however, a dry joint in the landing gear makes a similar noise.

8. If the joint is found to be loose the rivets should be replaced and the following procedure is recommended:

- a. For access, cut a large hole in the fabric of the lower wing surface on the forward side of the front beam at the splice joint, which is 48" from the spar tip.
- b. Cut a small access hole just large enough to uncover the rivets on the upper surface at the joint, which is 36" from the spar tip. Raise up the L. E. skin and trim it out to expose the rivet heads.
- c. Drill out the six countersunk rivets (AN 426-AD-4-5) attaching splice plate to the beam lower cap strip and the beam tip (415-14029), and the six similar countersunk rivets on the upper cap strip joint.
- d. Enlarge the rivet holes to 5/32" diameter. After this operation the countersink cut will still be visible; do not countersink further.
- e. Re-rivet the splice plates using 12 universal head rivets (GLM 25-2AD-5-5) placing the head of the rivet outside the wing. The rivet head will be deformed slightly in filling up the countersunk area. By working through the hole in the lower surface, the rivets in both upper and lower joints may be bucked.
- f. Cover the new rivets with masking or cellulose tape to protect the fabric and patch the fabric in accordance with C.A.A. Manual #18 or other approved method.

The outer panels of all Ercoupes after serial No. 4894 have universal head rivets installed in the wing tip splice joint at time of manufacture, and should therefore not develop the looseness described above.

9. It is recommended that a special inspection be made of all Ercoupe wing panels as soon as possible to determine condition of dope and fabric on them, and for loose tip joints in all Ercoupes prior to serial No. 4894. It is further recommended that owners be advised of the urgency to repair any deterioration or damage in the wing fabric of their airplanes as soon as such deterioration or damage is observed.