2. STABILIZER.

a. GENERAL.—The stabilizer framework is a welded steel assembly incorporating tubing and channels. With the exception of a small clamp fastened on the trailing edge member of the left stabilizer frame, the frames are interchangeable. *(See figure 43.)*

The leading edge (front spar) of the stabilizer frame is made from a 7/8 x 0.035 inch Specification AN-T-3 (SAE X4130 steel tube) bent to the proper contour.

The trailing edge (rear spar) of the stabilizer consists of a straight section of 7/8 x 0.049 inch Specification No. AN-T-3 (SAE X4130 steel tubing). The rear spar is welded to the front spar at the outboard tip of the stabilizer.

The truss system is made up of five low-carbon steel channels, flanged in. These members are welded to the front and rear spars in the form of a modified Pratt truss. A section of channel, 13/16 x 3/4 x 0.037 inch, with the edges flanged in 1/16 inch, forms the inboard rib.

The surface is covered with Intermediate Grade fabric doped around the trailing edge and laced to the ribs. Drain grommets are located just in back of the leading edge on the bottom surface in each bay.

The elevator attachment hinges, two of which are located on each stabilizer, consist of short lengths of steel tubing welded to the rear spar, with a small steel plate incorporated between the hinge and the spar. Bushings are inserted in the hinges.

A tubular sleeve, reinforced by a washer on each end, is welded in the apex of the junction of the two most outboard ribs. A bolt is inserted in this sleeve for the attachment of the tail surface brace wires, both upper and lower.

The stabilizer is attached to the fuselage by sliding the open inboard ends of the leading and trailing edge tubes over short sections of 7/8-inch tubing welded to the fuselage. A hole 0.185 inch in diameter is then drilled through both tubes and an AN3-13 bolt is inserted into the hole. The bolt hole is drilled at time of assembly to insure proper alignment. Figure 43 shows the uncovered stabilizer.

b. REPAIR.—This structure is relatively simple in construction and repairs can be made with a minimum of tools and materials. Replacement of either the front or rear spar, or more than two ribs, is not advisable. Before attempting any repairs, a close visual inspection should be made of all fittings and welded joints to insure that no damage is left unrepaired.

(1) LEADING EDGE.—Damage to the front spar may be repaired by one of the methods outlined in section II, paragraphs 2.*a.*(3).*(b).* and 2.*a.*(3).*(d).* When repair is necessary involving the use of a sleeve or liner and the damage is in the curved section of the spar, the sleeve or liner must be formed to the proper contour. This may be done by selecting the proper size tube from tables I and II and bending over a hardwood block cut to the radius or curvature desired. The replacement tube should be cut slightly longer than required and filled with packed sand and plugged at both ends before attempting to bend. The packed sand will prevent flattening of the tube during the bending process.

(2) REAR SPAR.—The rear spar is a straight section as described in paragraph 2.*a.* of this section. Repairs may be made to this member by any of the methods outlined in section II, paragraphs 2.*a.*(3).*(b).* and 2.*a.*(3).*(d).* However, no liner or sleeve should be used at the outer hinge point or within 5 inches of the inboard end, as sleeves or liners at these points would cause misalignment of the hinges.

(3) RIBS.—Section II, paragraph 2.*a.*(5).*(c).*, describes a method by which channel steel sections may be repaired. This repair should be used after straightening of the slightest dent or bend to prevent future buckling of the member. A rib may be replaced by filing away the old weld, being careful not to cut the spar, and welding in the replacement rib.

(4) HINGES.—The hinges may be repaired as outlined in paragraph 1.*b.*(4). of this section.

(5) FABRIC COVER.—The fabric cover may be repaired by the methods described in section II, paragraph 3.*c.* Any drain grommet in the damaged area must be replaced. These grommets are made from nitrate or acetate plastic, 3/4-inch outside diameter with a 3/16-inch hole, and should be from 0.030 to 0.050 inch thick. These are doped in place by brushing dope on the fabric and pressing the grommets firmly in place. After the dope has dried, the fabric should be cut at the hole in the grommet.

(6) ATTACHMENT AT FUSELAGE.—The method of attachment to the fuselage is explained in paragraph 2.*a.* of this section. If the bolt holes become worn or elongated, these may be drilled or reamed to a maximum of 1/4-inch diameter. An AN 4-13 bolt should be used.

3. ELEVATOR.

a. GENERAL.—The elevators are welded assemblies constructed from steel tubing and channel sections. The right elevator *(figure 44)* consists of a single straight steel tube for a leading edge (torque tube) and a trailing edge made from a formed steel tube, both ends of which are bent back and welded to the front spar or torque tube. There are four tapered, flanged-in, channel section ribs welded perpendicular to the torque tube.

Two small tubular sections are welded to the torque tube at the hinge points for the attachment of the elevator to the stabilizer. These two small hinges form a type of clevis into which the larger hinge on the stabilizer fits. A clevis pin is inserted in the holes to complete the attachment.

A short tubular sleeve is slipped over and welded to the inboard end of the torque tube to assist in carrying the loads into the elevator horn.

RESTRICTED

DIST: 4, 7
FILE: BEH

AN 01-135DA-3

STRUCTURAL REPAIR INSTRUCTIONS

FOR

ARMY MODELS

L-2, L-2A and L-2B

AIRPLANES

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