

SECTION III

TAIL GROUP

3-1. GENERAL.

3-2. DESCRIPTION. (See Figure 3-1.) The tail group is an all-metal structure consisting of a horizontal stabilizer with elevators, and a vertical stabilizer with rudder.

3-3. ALIGNMENT. Repair jigs for the horizontal stabilizer, elevator, vertical stabilizer, and rudder may be fabricated using figures 3-4 and 3-5.

3-4. HORIZONTAL STABILIZER.

3-5. DESCRIPTION. (See figure 3-1.) Each stabilizer assembly consists of a full span beam, 2.8 inches forward of the elevator hinge line, four formed ribs, stringers and skin. Removable tips, made from deep drawn 52 S0 are attached with anchor nuts and screws to the most outboard rib. Elevator hinge brackets with staked ball bearings are installed on the spar. All other parts are of 24 ST Alclad sheet.

3-6. ACCESS FOR REPAIRS. Access to a limited portion of the inboard section is afforded through the rib at station 8.5 and to an even smaller portion of the outboard section through the rib at station 75.1 where the tip assembly is readily removable. When damage to the structure is extensive it is necessary to remove the skin, make the necessary repairs to the structure and replace the skin. To repair or replace the skin, it may be necessary to install access holes to permit the bucking of rivets which attach the skin to the internal structure. If damage to the internal structure and skin is not extensive, enlarge the opening in the skin, repair the internal structure and then close the opening by installing an access cover plate. Installation details for access cover plates are described in paragraphs 3-12 and 3-13.

3-7. HORIZONTAL STABILIZER SKIN.

3-8. DESCRIPTION. The skin is .020, 24 ST alclad sheet. The nose panel extends the full semi-span of each stabilizer and laps over the upper and lower surface skin panels on the stringer at station 273.9. Modified Brazier head, 1/8 inch, A17ST aluminum rivets are used for this joint and the skin attachments to the aft stringers and stabilizer beam. The stabilizer tip assembly, formed of .040, 52 S0 aluminum sheet, is attached to the rib at station 75.1 by six anchor nuts and screws.

3-9. NEGLIGIBLE DAMAGE. Smooth shallow dents located anywhere on the stabilizer skin, free of cracks and abrasions may be disregarded, provided these dents do not exceed a depth of 1/8 inch and a diameter of 1-1/2 inches, and adjacent dents are at a distance of 15 inches. Dents exceeding the above limits and subsequently bumped back to contour without cracking or creasing the skin may be classified as negligible damage. Scratches which do not penetrate beyond the alclad coating are considered negligible damage.

3-10. DAMAGE REPAIRABLE BY PATCHING.

3-11. GENERAL. Any damage which exceeds the specified limits of negligible damage in Paragraph 3-9 must be repaired by means of patches as shown on Figures B-1 thru B-3. The original smoothness and

contour must be retained for leading edge repairs. Skin patches can be either access door type with a removable cover plate, or a completely riveted skin patch integral with the existing skin. Paint all bare surfaces and repair materials with two coats of zinc chromate primer. Stabilizer tips that are cracked or punctured may be repaired by welding. The tip must be thoroughly cleaned before welding. It is important, after repair by welding, to completely remove all welding flux in order to avoid possible corrosion.

3-12. ACCESS DOOR, CLEAR OF INTERNAL STRUCTURE. For damage to the skin clear of internal structure, or for the installation of access doors in the skin, see Figure B-1. Damage to the skin clear of internal structure may be repaired by installing a removable, access cover plate. Access doors also may be installed to facilitate repairs to the structure. The paragraph at the bottom of the figure provides information for the installation of access doors for all skin panels. The cover plate must be a close fit to provide a smooth surface. To install the access door, trim the existing skin panel beyond the damaged area by cutting a circular or rectangular cutout, leaving sufficient skin to allow for the installation of the doubler. Plate nuts and screws are substituted for rivets in attaching the access door to the doubler. The plate nuts attached to the doubler may be installed prior to the installation of the doubler. Rivet the doubler to the existing skin and install the cover plate.

3-13. ACCESS DOOR, OVER INTERNAL STRUCTURE. For damage to the skin over internal structure, or for the installation of access doors in the skin over internal structure, see Figure B-1. Damage to the skin and a rib may be repaired by repairing the rib and then installing the access door. Before attempting the repair, trim the skin beyond the damaged area, leaving sufficient existing skin to allow for the installation of the doubler. Repair the rib by nesting the repair member on the inside of the rib. Install the doubler as shown in the figure. The necessary repair data is provided at the bottom of the figure. After the doubler is installed, insert a filler between the rib repair member and the cover plate. If the gage of the doubler exceeds the gage of the rib, it may be necessary to insert fillers between the existing rib and the rib repair member. Plate nuts and screws are substituted for rivets in attaching the access door to the doubler and rib. The plate nuts required on the rib repair member can be installed on the bench. When installing the cover plate, be sure that the screws tying the plate to the rib are inserted.

3-14. RIVETED SKIN PATCH, CLEAR OF INTERNAL STRUCTURE. (See Figure B-1.) Flush skin patches integral with the damaged skin panel may be made by riveting the flush skin patch to the doubler. This type of skin patch may be installed, provided there is access through which the rivets can be bucked, or Cherry rivets (CR-163C) are used. In either case, the skin patch repair information is furnished at the bottom of the figure. The typical dimensions shown on the figure are applicable for the repair of all the skin panels. The procedure for making the repair is the same as the installation of an access door as described in paragraph 3-12, except that riv-