

lower surface skin and into the spar web should be repaired by an insertion member using a chordwise splice, as the panel is considerably shorter in this direction. If the damage is in a bay near the ends of the spar panel, remove and discard the short end. If the damage is located away from the ends of the spar panel, cut the spar panel on both sides and discard the damaged portion. Cut a sheet of .032 24ST alclad larger than the cutout, to accommodate rivets in the seams with proper edge distance, and form to the shape of the original section. Seams should be lap-spliced to the undamaged spar panel. Spanwise seams, at the lower surface closure strip and the trailing edge upper surface, should pick up existing rivet holes using AN470AD5 rivets with a minimum edge distance of 5/16 inch. Chordwise seams in the lower skin and web are to be identical with a Type II skin panel chordwise seam (see Paragraph 2-20 and Figure 2-3). Two rows of the AN470AD5 rivets are required chordwise and the spacing is permitted to vary between 3/4 inch and one inch, with 5/8 inch between rivet rows and 5/16 inch minimum edge distance. One by one inch .040 angles of 24ST alclad nesting against the spar web to upper surface and lower surface skin flanges are required, to form the effective spar cap splice. The angles are attached with 10 AN470AD1 rivets each side of a chordwise splice, picking up five rivets thru the spar web and five thru the skin. Four angles are required for a skin insertion away from the spar ends.

NOTE

The web splice must be located outside a lightening hole.

2-36. DAMAGE TO REAR SPAR REPAIRABLE BY INSERTION, STATION 130.0 TO TIP. Damage extending the width of the lower surface skin and into the spar web should be repaired by an insertion member. The method of repair is identical with Paragraph 2-35, except the chordwise seams are to be identical with Type I skin panel chordwise seams (see Paragraph 2-20 and Figure 2-3). A single chordwise row of AN470AD5 rivets are used and the spacing is permitted to vary between 3/4 inch and one inch with a minimum edge distance of 5/16 inch. Thru the spar web a double row of AN470AD5 rivets are required, at the above spacing with 5/8 inch between rows. The insertion is made from a sheet of .025 24ST alclad. The nesting angles are not required for this portion of the spar.

2-37. DAMAGE TO REAR SPAR REQUIRING REPLACEMENT. Replacement should be considered for a spar panel damaged more than 40% of its spanwise length. Only one insertion splice is permitted in each spar panel. Damaged extruded angle stiffener fittings on the rear web should be replaced. Allowable standard section substitutions are listed in Section VIII.

2-38. WING RIBS.

2-39. GENERAL. The wing ribs are formed channel sections of 24ST alclad sheet. There are nose ribs, mid sections and trailing edge portions strengthened with angles, plates and extrusions. Beads and lightening holes are introduced when possible. Ribs between Stations 0 and 50 are interrupted and formers are introduced to support the fuel tanks or to enclose the main landing gear well.

2-40. RIB AT STATION 0.

2-41. DESCRIPTION. This rib, within the fuselage, extends from the front spar to the rear spar. It is built up of 24ST alclad sheet and extrusions. It has

an I beam cross section, consisting of an .040 gage web, with flanged lightening holes, stiffening beads and angles, to which are bolted extruded angles to form the flanges.

2-42. NEGLIGIBLE DAMAGE. Rib web damage not exceeding the following limits requires no repair or reinforcement. Smooth dents free of cracks or abrasions and clear of lightening hole flanges may be disregarded, provided the dents do not exceed a depth of 1/8 inch and 1-1/2 inches in diameter and adjacent negligible dents are at a distance of 15 inches. Scratches which do not penetrate beyond the alclad coating may be disregarded. Negligible damage to the rib extruded caps shall not exceed the following limits. Nicks, cracks, and gouges relieved with a minimum of a 1/4 inch radius and faired, occurring in the lipped edges of the outstanding legs and not exceeding 1/8 inch in depth measured from the edge of the flange can be classified negligible damage, provided the damage is at least 1/2 inch from existing rivets and 5/8 inch from bolts.

NOTE

No damage is permitted to the extrusion corner material where the flanges are joined.

2-43. DAMAGE TO RIB WEB REPAIRABLE BY PATCHING. Punctures and holes in the rib web 1-1/2 inches clear of lightening hole flanges, cap angles, and the front and rear stiffeners may be repaired by a patch plate. Remove damaged area by cutting a circular or rectangular hole; minimum corner radii for rectangular cutout 1/2 inch. Smooth all edges to remove burrs. Cut web patch of .040 24ST alclad larger than the cutout to accommodate rivets to web with proper edge distance (see Figure B-3). Locate position of patch to provide equal overlap at all edges of cutout. Attach web patch to web with two rows of AN470AD5 rivets around the periphery of the cutout, spaced at 3/4 inch with 5/8 inch between rivet rows, maintaining 5/16 inch minimum edge distance. Damage to lightening hole flanges and web may be repaired similar to Figure 2-5. Clean out damaged area using generous radii and burr edges. Cut reinforcement from .040 24ST alclad allowing sufficient material for a 3/4 inch bent up flange and proper edge distance on all rivets. Attach patch to rib web with AN470AD5 rivets spaced at an average of 3/4 inch with a minimum edge distance of 5/16 inch. There must be two rows of rivets around each side of the break in the web. Damage or cracks not extending more than 1/3 the lightening hole flange width may be repaired as shown in Figure B-6.

2-44. DAMAGE TO RIB WEB REPAIRABLE BY INSERTION. Damage to the web which exceeds approximately 1/2 the cross section in a vertical direction may be repaired by inserting a new section or complete replacement of the rib, whichever is more expedient. If the damage is near the end of the rib, remove and discard the damaged end. If the damage is located away from the rib ends, cut the web vertically on both sides and discard the damaged portion. Cut a sheet of .040 24ST alclad the same size as the cutout and butt against existing web. Cut splice plates from .040 24ST alclad, 2-5/8 inches wide and the depth of the web between caps. The splice plates should stop just short of the inner edges of the caps. Locate splice plates with equal overlap, and attach splice plates to existing rib web and insertion web with AN470AD5 rivets at 3/4 inch spacing and 5/8 inch between rows, maintaining a minimum edge distance of 5/16 inch. Two rows of rivets are required on each side of a splice.