CHAPTER 55

STABILIZER

TABLE OF CONTENTS

STABILIZERS

1. General

A. This chapter contains information regarding structural components of the vertical fin, horizontal stabilizer, rudder and tabs, elevator and tabs, and dorsal fin.

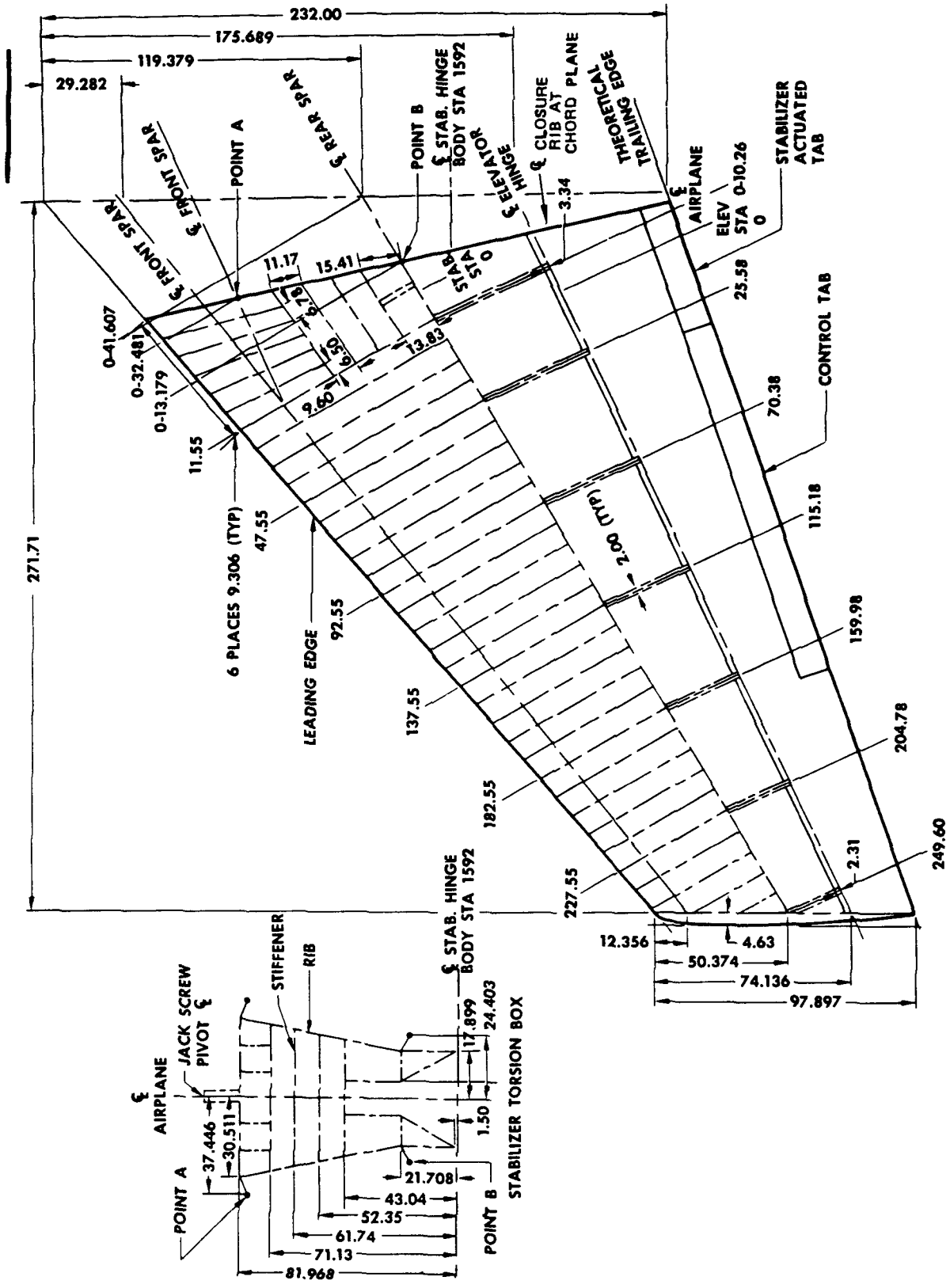
B. Materials of these structural components are tabulated, and their locations and arrangements shown by illustration.

C. Allowable damage to structural components is defined and illustrated in 55-2-1.

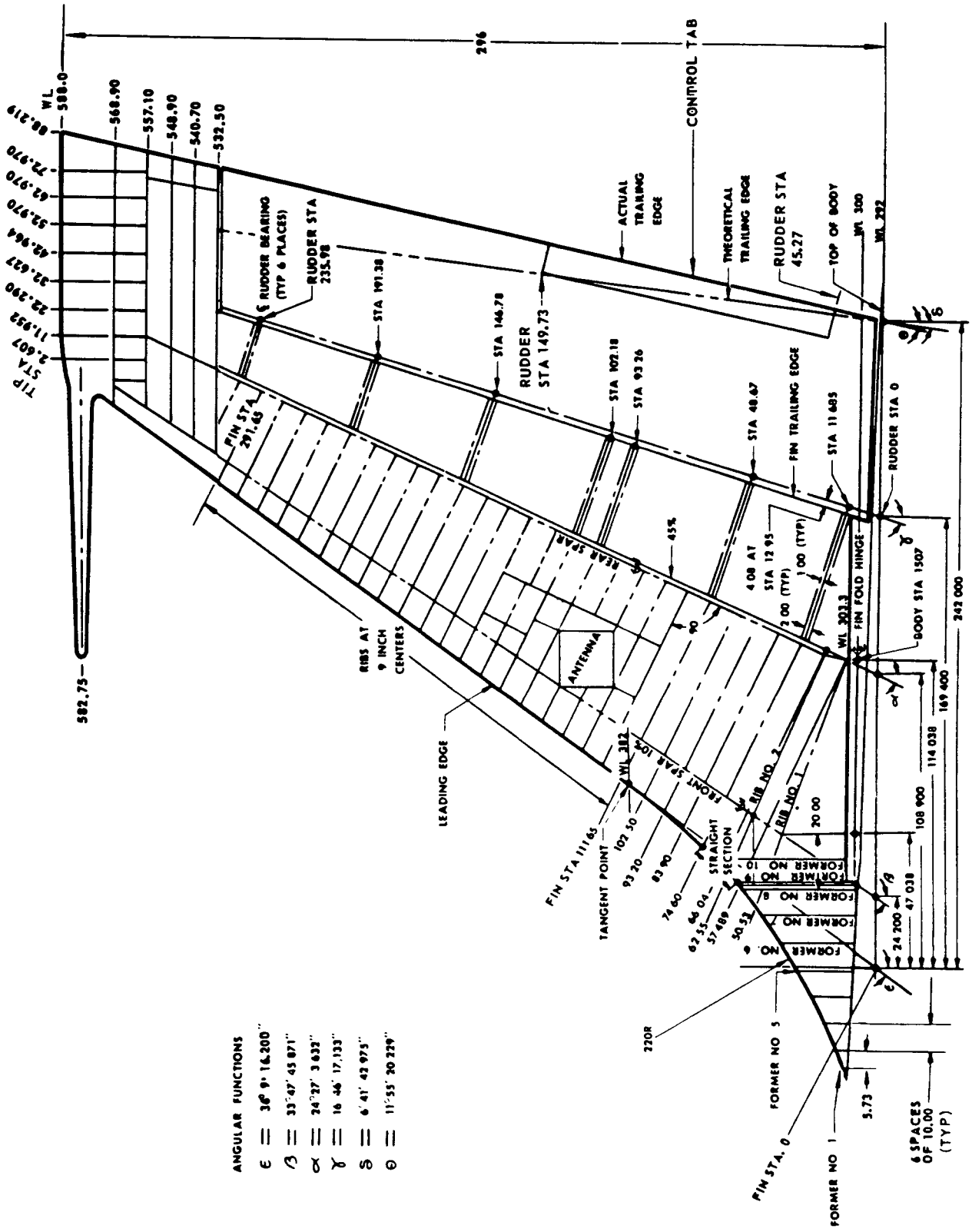
D. Typical repairs with instructions and illustrations are included in this chapter. Procedures for repair of metal bonded assemblies are described in 51-9-1. For repair of aluminum honeycomb structure refer to 51-10-1.

E. Procedure for moisture removal from aluminum honeycomb assemblies is described in 51-10-2.

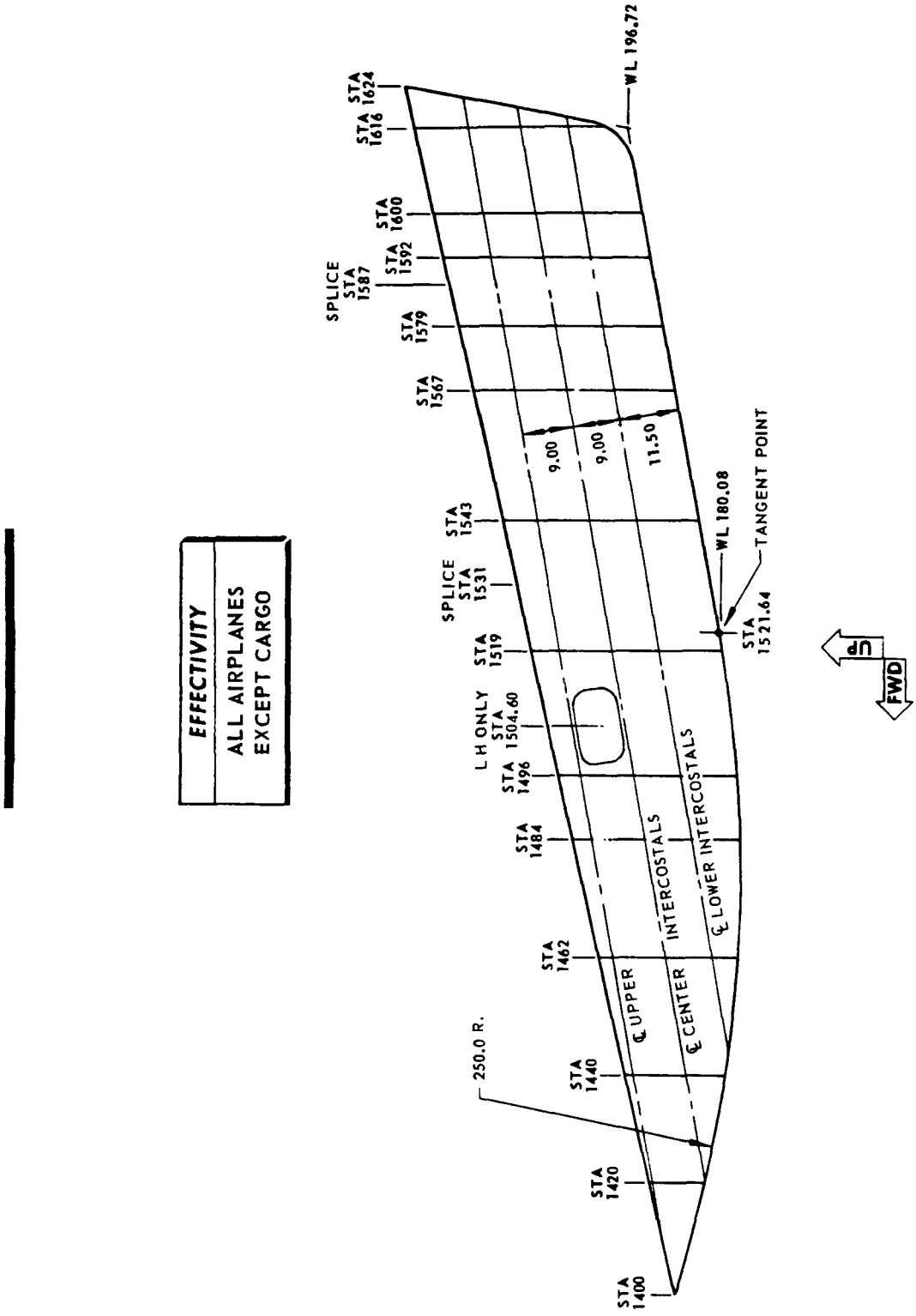
F. Removal and reinstallation of the static dischargers is described in 23-12-02 of the Maintenance Manual. If static dischargers do not have a non-conductive corrosion preventive sealant, they should be installed per SB 3010.



Horizontal Stabilizer and Elevator Station Diagram
Figure 1



Vertical Fin and Rudder Station Diagram
Figure 2



Ventral Fin Station Diagram
Figure 3

NOTE

FOR GENERAL REPAIR PROCEDURES SEE 51-13-1.

MAINTAIN EDGE MARGIN ON ALL FASTENERS

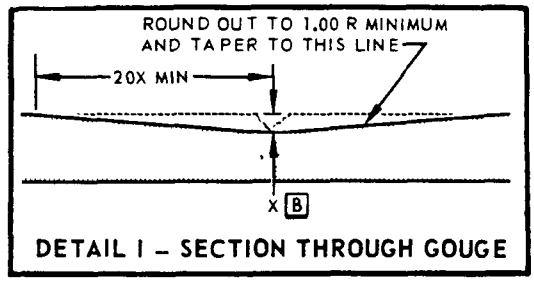
[A] MAXIMUM ALLOWABLE CROSS SECTIONAL AREA REMOVED FROM SPAR WEB SHALL NOT EXCEED 20 PERCENT, INCLUDING EXISTING HOLES AND SCRATCHES OR GOUGES

[B] MAXIMUM DEPTH OF ALLOWABLE DAMAGE (X):
20 PERCENT OF WEB THICKNESS FOR SPAR,
25 PERCENT OF SKIN THICKNESS,
0.20 INCHES FOR FLANGES OF RIBS AND SPARS.
ALL SCRATCHES AND GOUGES MUST BE ROUNDED OUT.

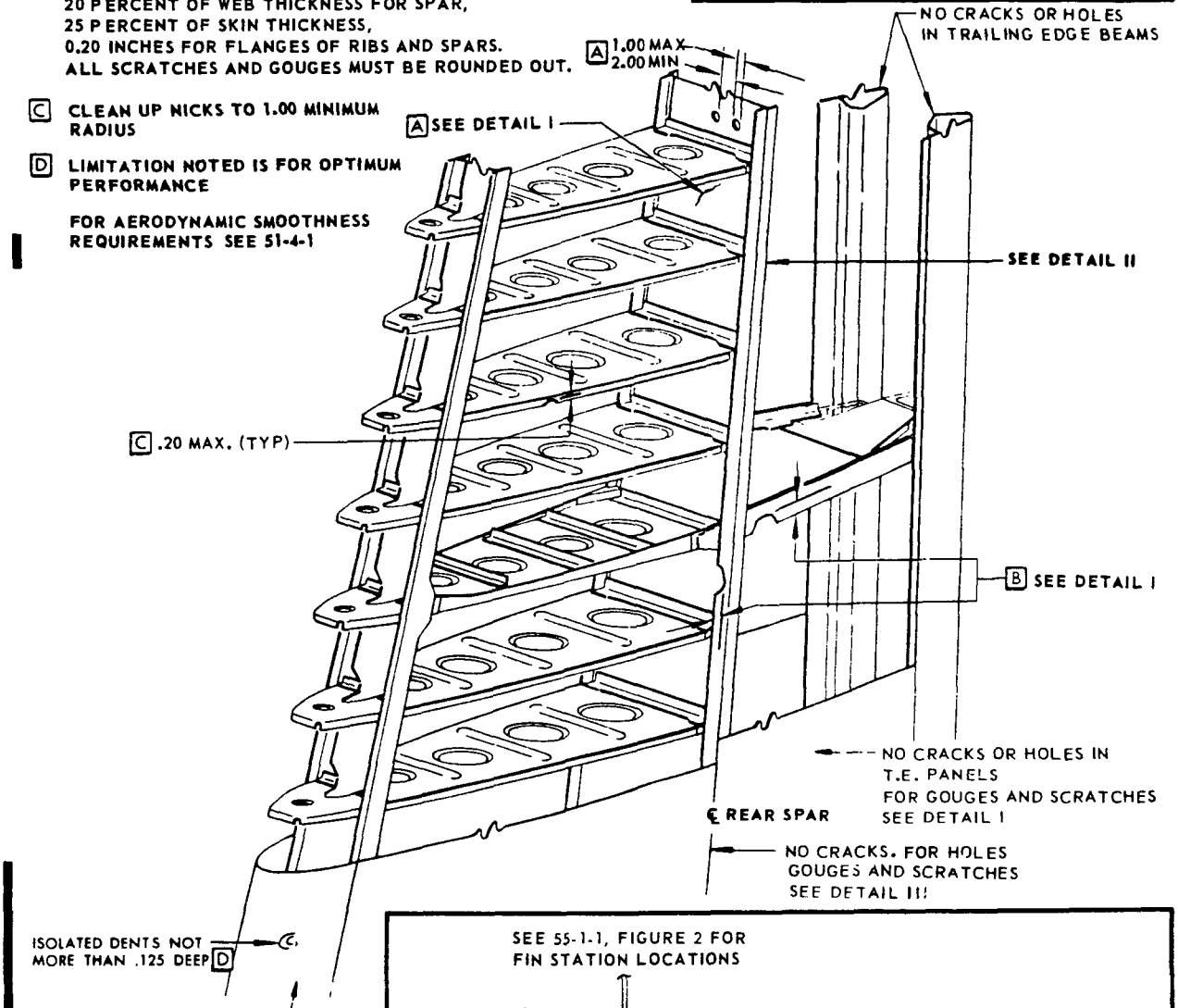
[C] CLEAN UP NICKS TO 1.00 MINIMUM RADIUS

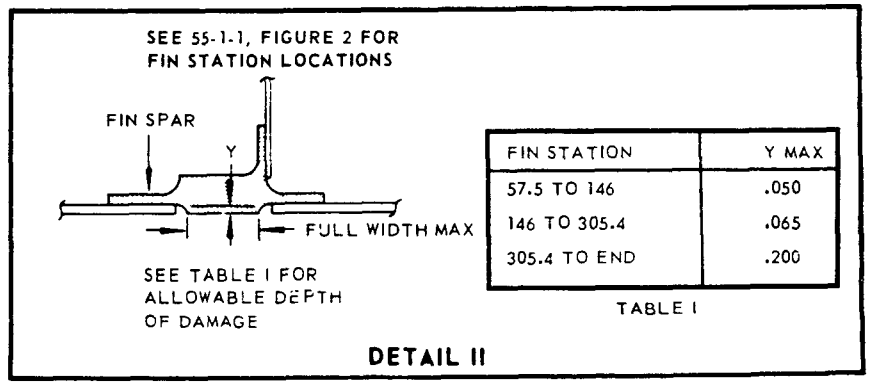
[D] LIMITATION NOTED IS FOR OPTIMUM PERFORMANCE

FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS SEE 51-4-1



DETAIL I – SECTION THROUGH GOUGE



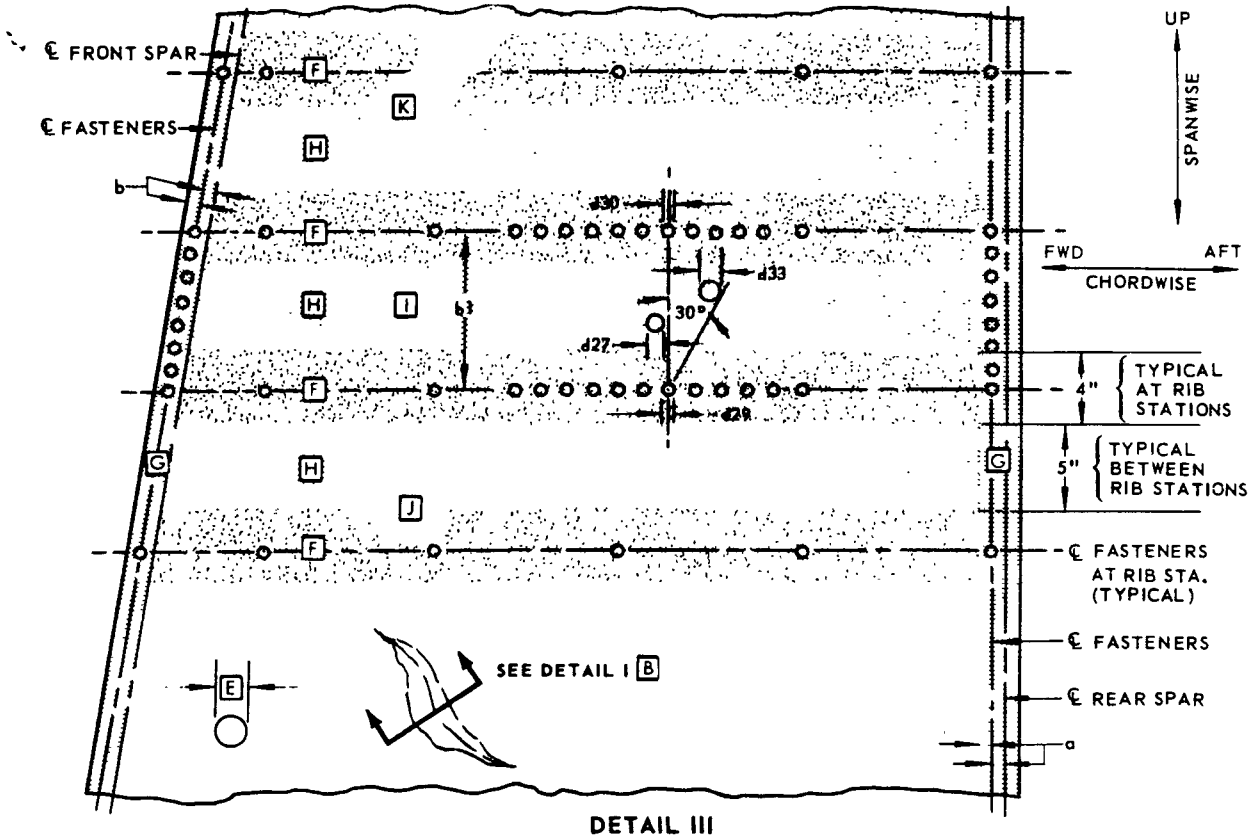


FIN STATION	Y MAX
57.5 TO 146	.050
146 TO 305.4	.065
305.4 TO END	.200

TABLE I

DETAIL II

Allowable Damage - Vertical Fin
Figure 1 (Sheet 1 of 2)



DETAIL III

NOTE

SEE 51-2-8 FIGURE 5, FOR AVERAGE DIAMETERS OF FASTENERS WHICH REQUIRE COUNTERSINKING OPERATIONS PRIOR TO INSTALLATION.

HOLES AND GOUGES IN INTERSPAR SKIN (CRITERIA FOR USE IN DETERMINATION OF ALLOWABLE DAMAGE AS AREA OUT, IN SPANWISE DIRECTION.) ON A REFERENCE LINE, DRAWN THROUGH ONE FASTENER OF A ROW, (AND APPROXIMATELY PERPENDICULAR TO IT) WHICH IS EXTENDED TO A SIMILARLY LOCATED FASTENER IN AN ADJACENT ROW (EXCEPT AT THE SPAR CHORDS) THE CROSS SECTIONAL AREA REMOVED SHALL NOT EXCEED 15%. INCLUDE ANY HOLE (ALSO GOUGE OR SCRATCH TYPE DAMAGE ETC. EXPRESSED IN DIAMETERS) WITHIN 30° OF THE CLOSEST HOLE ON THE REFERENCE LINE, IN THE TOTAL CROSS SECTIONAL AREA OUT.

$$\frac{\frac{d29}{2} + d27 + d33 + \frac{d30}{2}}{b1} = .15 \text{ MAX}$$

E MAXIMUM DIAMETER OF ANY HOLE SHALL BE 4T OR 0.50 WHICHEVER IS GREATER.

F MAXIMUM AREA OUT (CHORDWISE) DUE TO DAMAGE IN THIS REGION + 5%. (AREA OUT, OTHER THAN STANDARD FASTENER HOLES.)

G MAXIMUM AREA OUT (CHORDWISE OR SPANWISE) DUE TO DAMAGE IN THIS REGION + 1%. (AREA OUT, OTHER THAN STANDARD FASTENER HOLES.)

H MAXIMUM AREA OUT (CHORDWISE) DUE TO DAMAGE IN THIS REGION 15%.

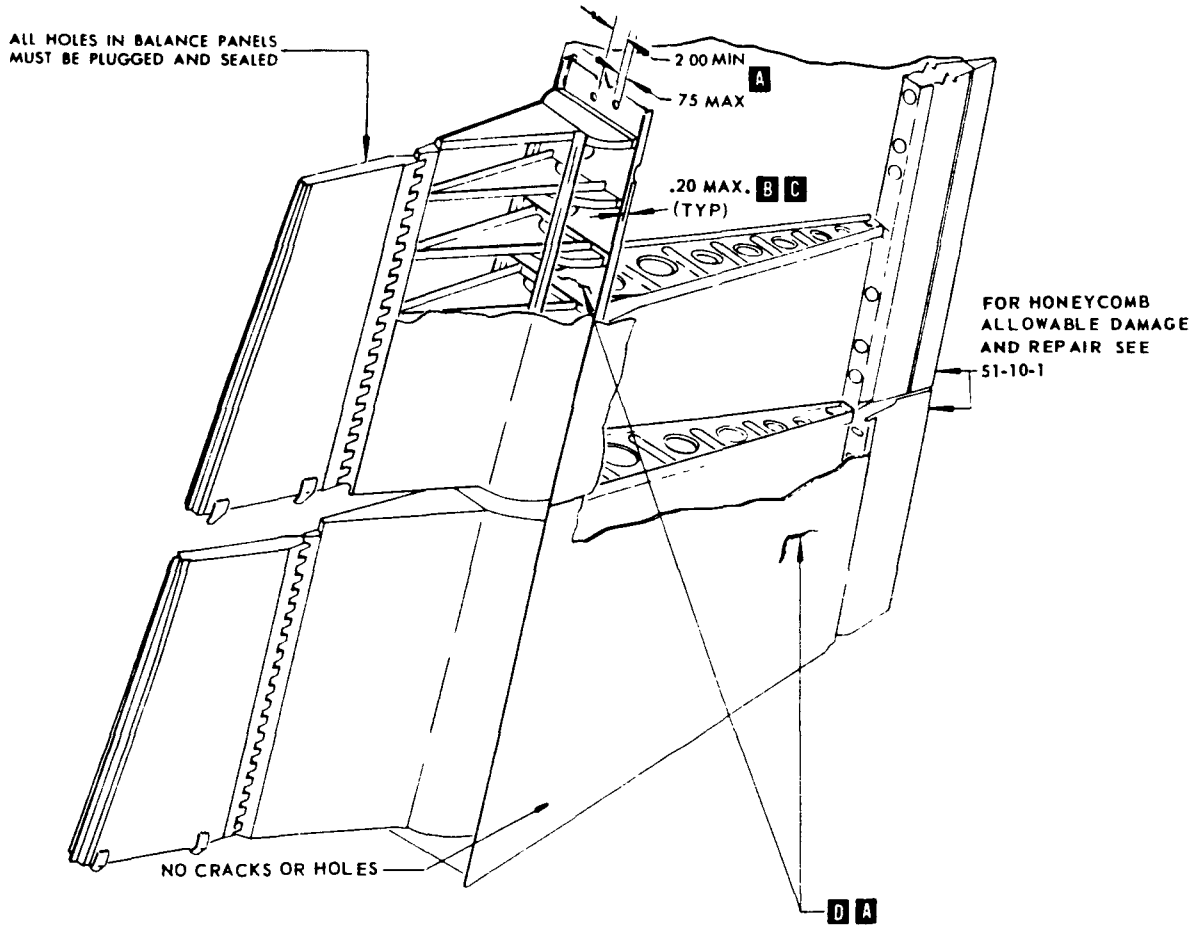
EXAMPLES OF DAMAGE OTHER THAN HOLES OR CRACKS IN VARIOUS SKIN REGIONS.

I MAXIMUM AREA OUT IN SPANWISE DIRECTION 15%, MAXIMUM AREA OUT IN CHORDWISE DIRECTION 15%, AFTER CLEANUP.

J MAXIMUM AREA OUT IN SPANWISE DIRECTION 15%. MAXIMUM AREA OUT IN CHORDWISE DIRECTION PER F OR H AFTER CLEANUP. (IF ALLOWABLE PER EITHER NOTE F OR H ARE EXCEEDED, A REPAIR IS REQUIRED.)

K MAXIMUM AREA OUT IN SPANWISE DIRECTION 15%. MAXIMUM AREA OUT IN CHORDWISE DIRECTION PER F OR H AFTER CLEANUP. (IF ALLOWABLE PER EITHER NOTE F OR H ARE EXCEEDED, A REPAIR IS REQUIRED.)

Allowable Damage - Vertical Fin
Figure 1 (Sheet 2 of 2)



NOTE

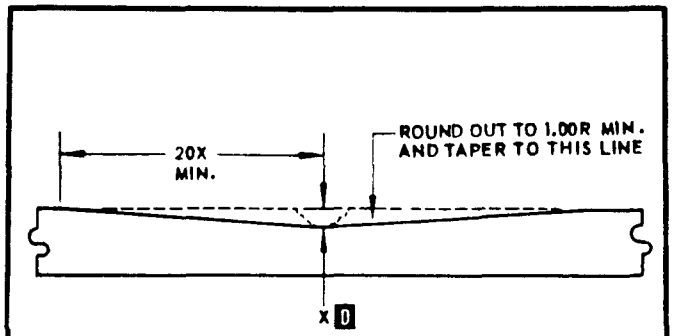
FOR GENERAL REPAIR PROCEDURES SEE 51-13-1.

A MAXIMUM ALLOWABLE AREA REMOVED FROM WEB INCLUDING HOLES AND SCRATCHES SHALL NOT EXCEED 20 PERCENT

B MAINTAIN EDGE MARGIN ON ALL FASTENERS

C CLEAN UP NICKS TO 1.00 MINIMUM RADIUS

D MAXIMUM DEPTH OF SCRATCH OR GOUGE IS 25 PERCENT SHEET THICKNESS. ROUND OUT AND TREAT ALL SCRATCHES AND GOUGES PER DETAIL I



DETAIL I

SECTION THROUGH GOUGE

NOTE

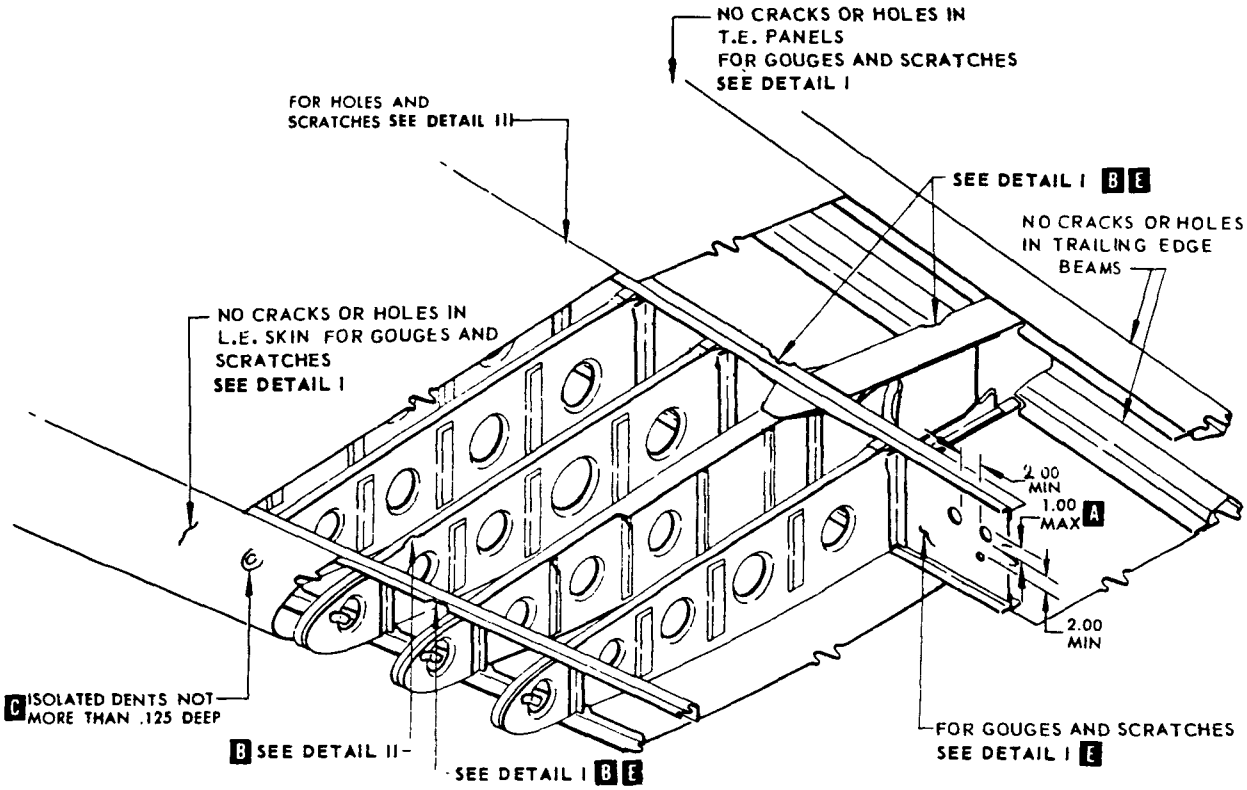
FOR GENERAL REPAIR PROCEDURES SEE 51-13-1.

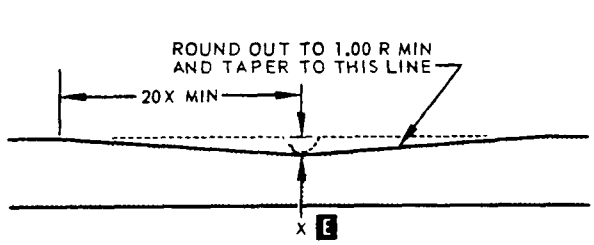
FOR AERODYNAMIC SMOOTHNESS REQUIREMENT SEE 51-4-1

[A] MAXIMUM ALLOWABLE CROSS SECTIONAL AREA REMOVED FROM SPAR WEB SHALL NOT EXCEED 20 PERCENT, INCLUDING EXISTING HOLES AND SCRATCHES OR GOUGES

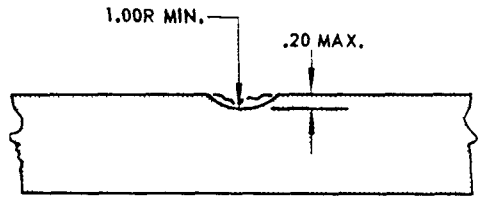
[B] MAINTAIN EDGE MARGIN ON ALL FASTENERS

[C] LIMITATION NOTED IS FOR OPTIMUM PERFORMANCE



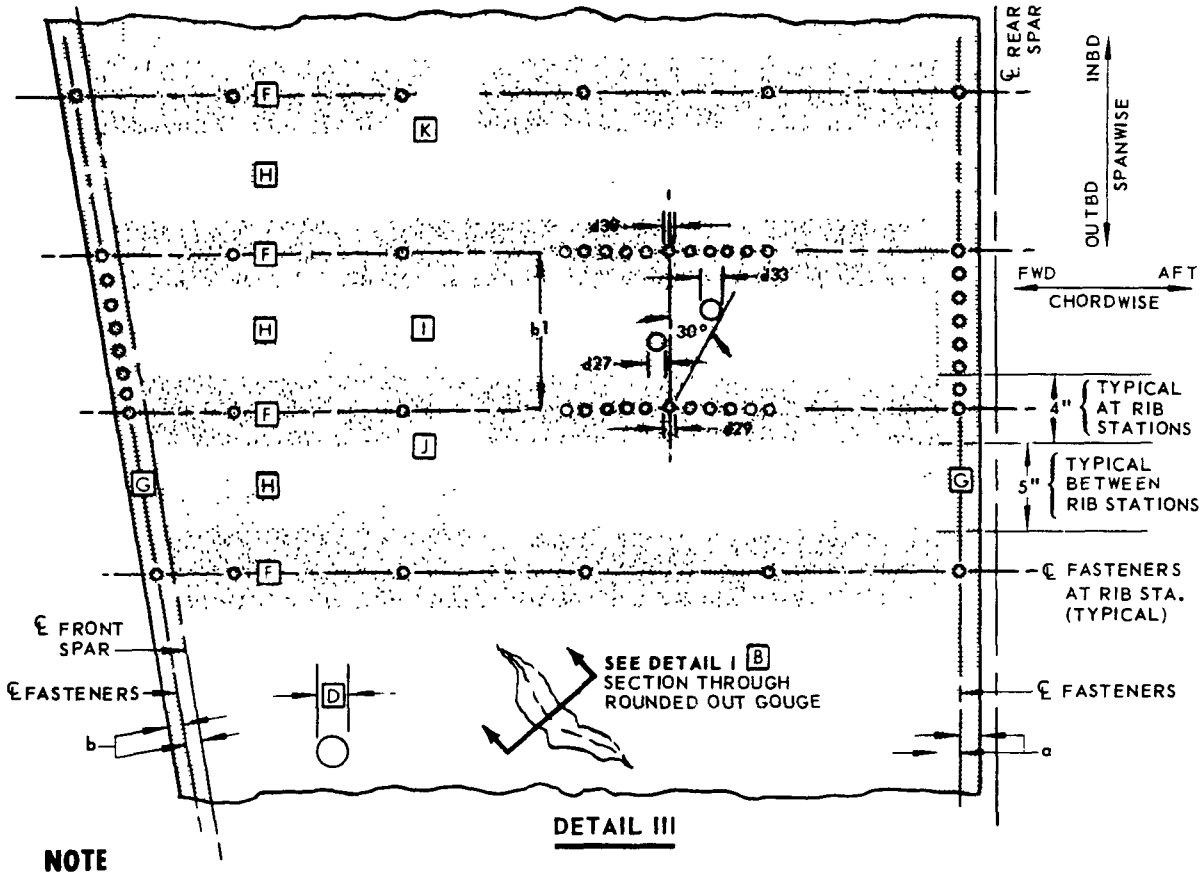


DETAIL I - SECTION THROUGH GOUGE



DETAIL II- SECTION THROUGH GOUGE

Allowable Damage - Horizontal Stabilizer
Figure 3 (Sheet 1 of 2)



DETAIL III

NOTE

SEE 51-2-8 FIGURE 5, FOR AVERAGE DIAMETERS OF FASTENERS WHICH REQUIRE COUNTERSINKING OPERATIONS PRIOR TO INSTALLATION.

HOLES AND GOUGES IN INTERSPAR SKIN (CRITERIA FOR USE IN DETERMINATION OF ALLOWABLE DAMAGE AS AREA OUT, IN SPANWISE DIRECTION.) ON A REFERENCE LINE, DRAWN THROUGH ONE FASTENER OF A ROW, (AND APPROXIMATELY PERPENDICULAR TO IT) WHICH IS EXTENDED TO A SIMILARLY LOCATED FASTENER IN AN ADJACENT ROW (EXCEPT AT THE SPAR CHORDS) THE CROSS SECTIONAL AREA REMOVED SHALL NOT EXCEED 15%. INCLUDE ANY HOLE (ALSO GOUGE OR SCRATCH TYPE DAMAGE ETC. EXPRESSED IN DIAMETERS) WITHIN 30" OF THE CLOSEST HOLE ON THE REFERENCE LINE, IN THE TOTAL CROSS SECTIONAL AREA OUT.

$$\frac{\frac{d29}{2} + d27 + d33 + \frac{d30}{2}}{b1} = .15 \text{ MAX}$$

D MAXIMUM DIAMETER OF ANY HOLE SHALL BE 4T OR 0.50 WHICHEVER IS GREATER.

E MAXIMUM DEPTH OF ALLOWABLE DAMAGE (X): 25 PER CENT SHEET THICKNESS FOR SKIN AND SPAR WEB, 20 PER CENT FOR FLANGES OF RIBS AND SPARS. ALL SCRATCHES AND GOUGES MUST BE ROUNDED OUT.

F MAXIMUM AREA OUT (CHORDWISE) DUE TO DAMAGE IN THIS REGION ↑ 5%. (AREA OUT, OTHER THAN STANDARD FASTENER HOLES.)

G MAXIMUM AREA OUT (CHORDWISE OR SPANWISE) DUE TO DAMAGE IN THIS REGION ↑ 1%. (AREA OUT, OTHER THAN STANDARD FASTENER HOLES.)

H MAXIMUM AREA OUT (CHORDWISE) DUE TO DAMAGE IN THIS REGION 15%.

EXAMPLES OF DAMAGE OTHER THAN HOLES OR CRACKS IN VARIOUS SKIN REGIONS.

I MAXIMUM AREA OUT IN SPANWISE DIRECTION 15%, MAXIMUM AREA OUT IN CHORDWISE DIRECTION 15% AFTER CLEANUP.

J MAXIMUM AREA OUT IN SPANWISE DIRECTION 15%. MAXIMUM AREA OUT IN CHORDWISE DIRECTION PER F OR H AFTER CLEANUP. (IF ALLOWABLE PER EITHER NOTE F OR H ARE EXCEEDED, A REPAIR IS REQUIRED.)

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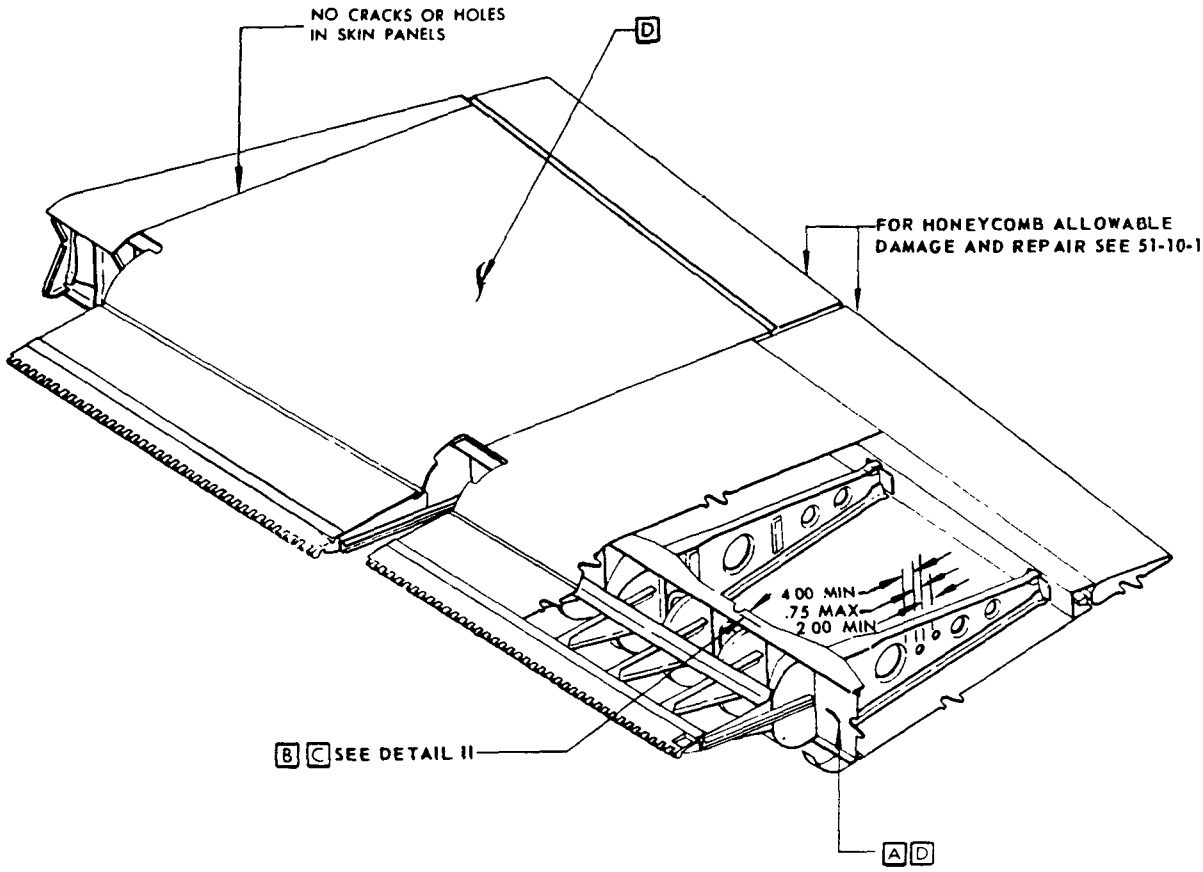
Allowable Damage - Horizontal Stabilizer
Figure 3 (Sheet 2 of 2)



NOTE

FOR GENERAL REPAIR PROCEDURES SEE 51-13-1.

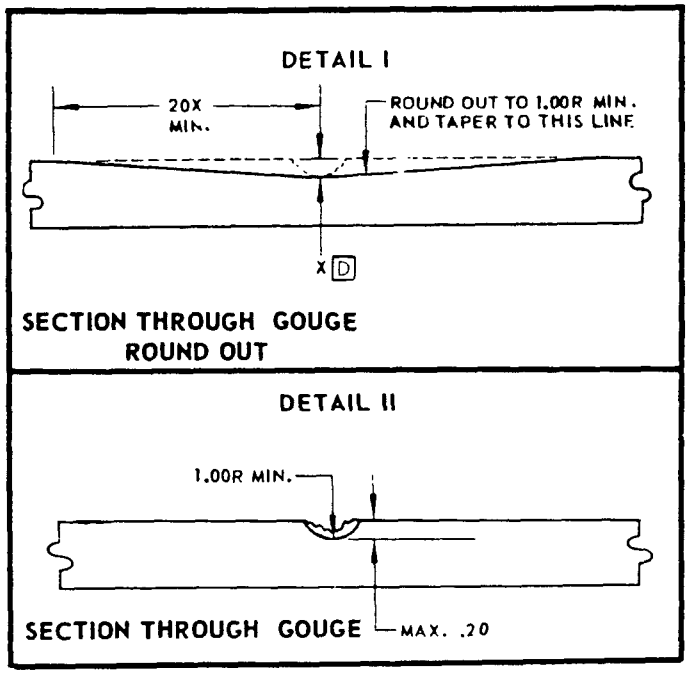
ALL HOLES IN BALANCE PANELS MUST BE PLUGGED AND SEALED

[A] MAXIMUM ALLOWABLE CROSS SECTIONAL AREA REMOVED FROM WEB SHALL NOT EXCEED 20 PERCENT INCLUDING EXISTING HOLES AND SCRATCHES OR GOUGES SEE DETAIL I

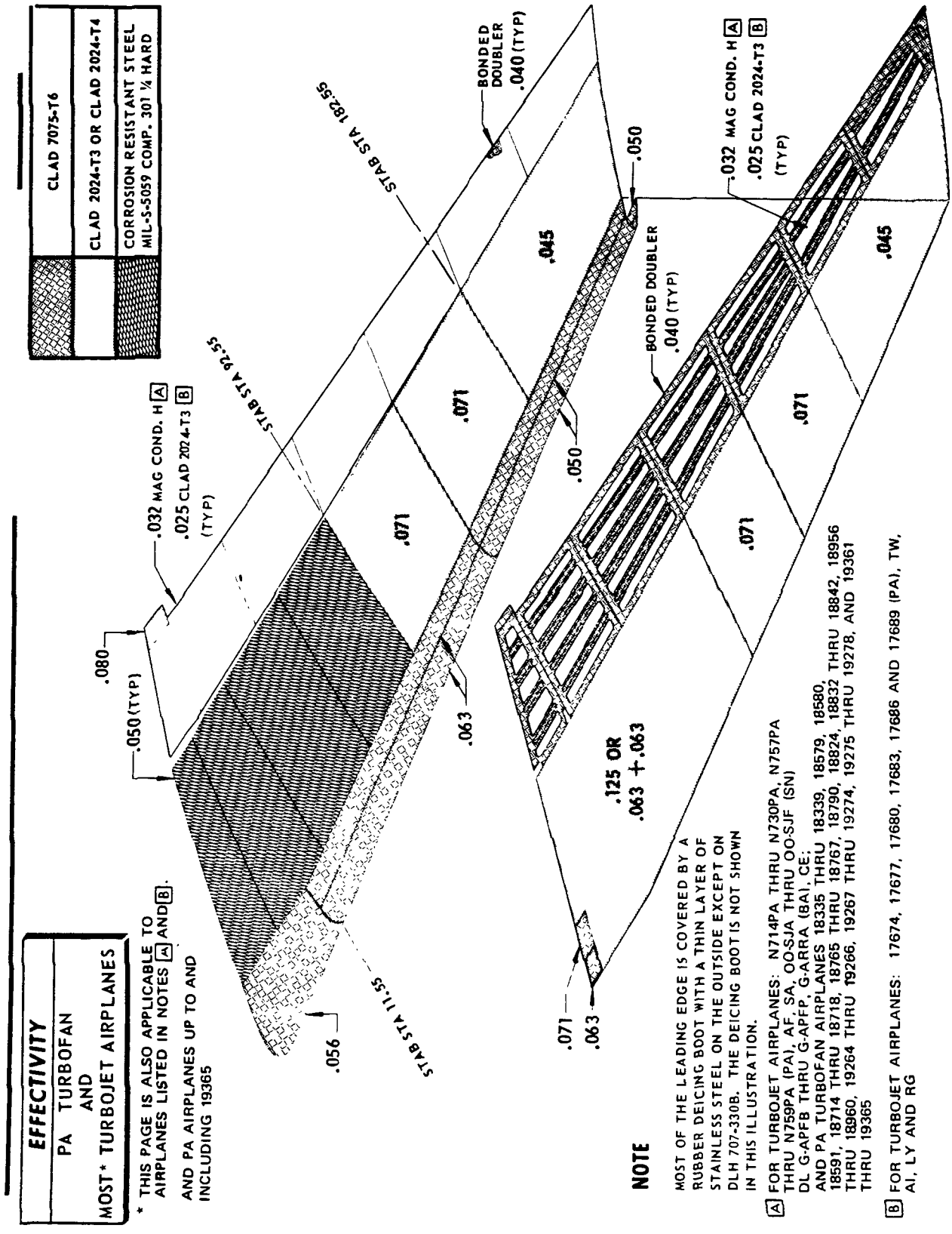
[B] MAINTAIN EDGE MARGIN ON ALL FASTENERS

[C] CLEAN UP NICKS TO 1.00 MINIMUM RADIUS SEE DETAIL II

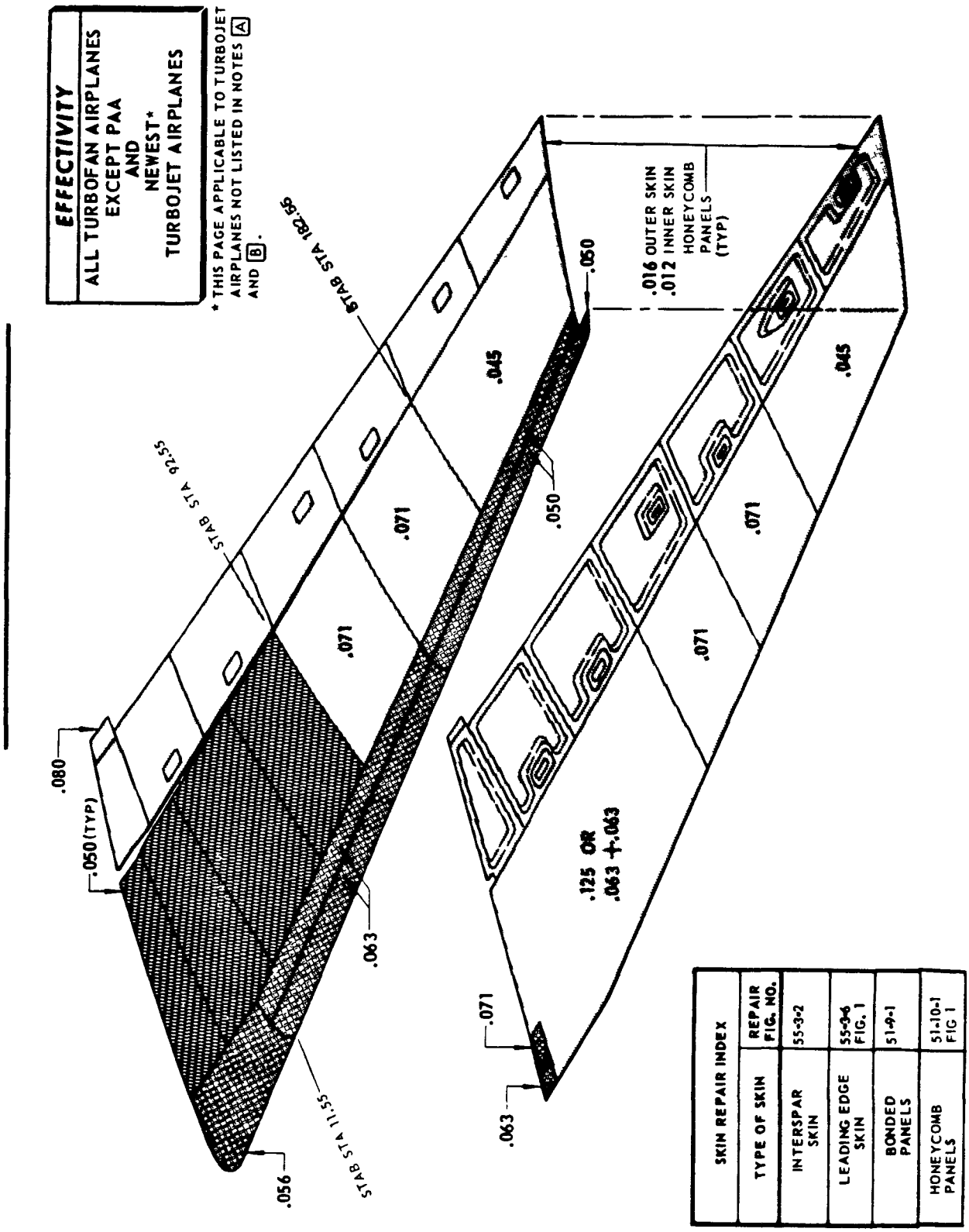
[D] MAXIMUM ALLOWABLE DEPTH SHALL BE 25 PERCENT SHEET THICKNESS. ALL SCRATCHES AND GOUGES MUST BE ROUND OUT



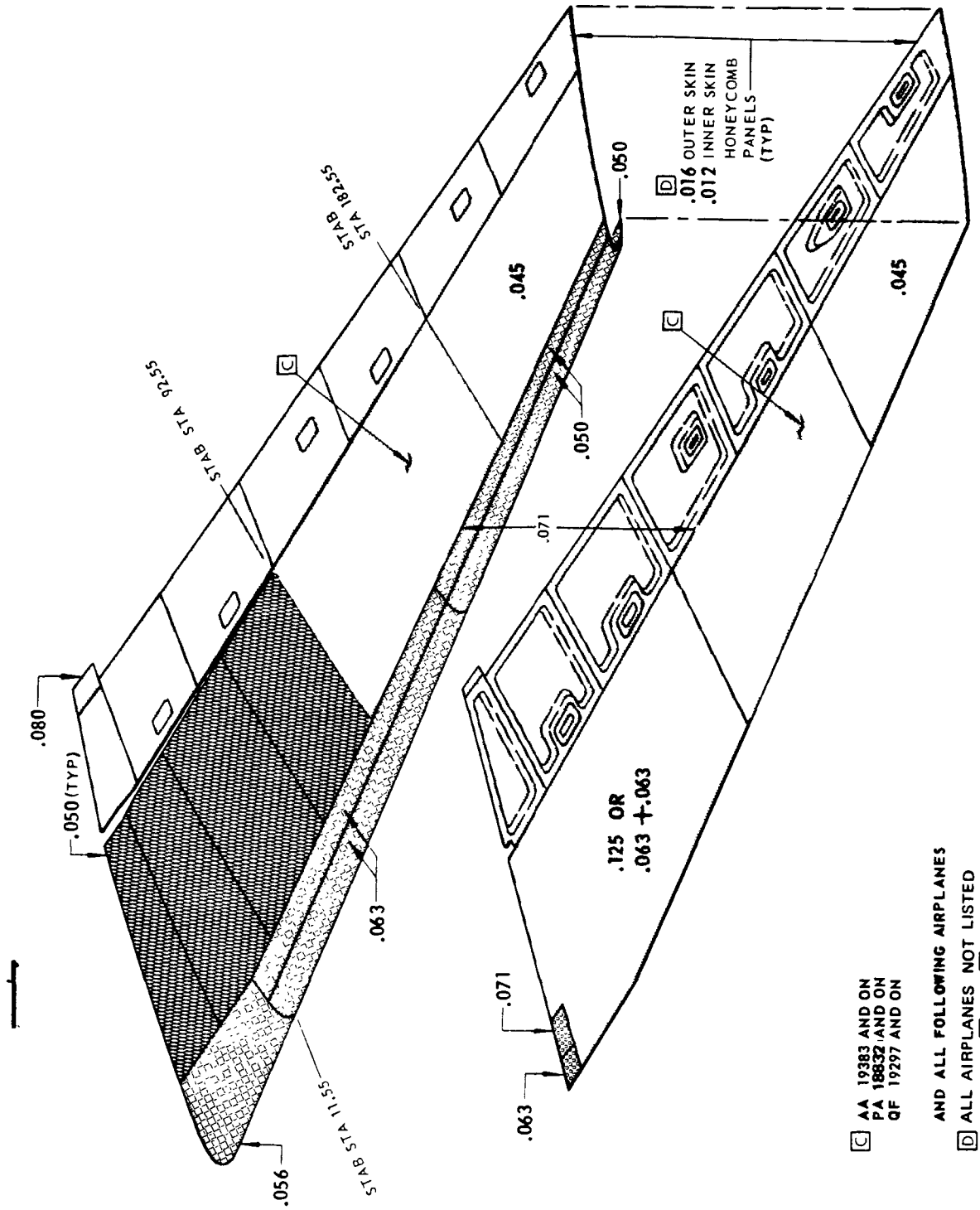
Allowable Damage - Elevator and Tabs
Figure 4



Horizontal Stabilizer Skin Material Identification
Figure 1 (Sheet 1 of 3)



Horizontal Stabilizer Skin Material Identification
Figure 1 (Sheet 2 of 3)



Horizontal Stabilizer Skin Material Identification
Figure 1 (Sheet 3 of 3)

HORIZONTAL STABILIZER SKIN REPAIRS

1. General

   A. For interspar skin repairs, see figure 1 and 2.

   B. For repair of the leading edge skin, see 55-3-6.

   C. For repair of the bonded panels of the trailing edge of the horizontal stabilizer, see 51-9-1.

REPAIR INSTRUCTIONS

1. This repair is an external patch applicable to the upper and lower interspar skins. For optimum performance of the airplane, the external patch should be replaced with the flush repair shown in Figure 2 at the earliest convenient time.
2. Stop drill cracks in the skin with 0.25 inch drill. Make the damaged projections smooth and to origional contour. When necessary, trim out the skin around the damaged area rounding the corners of the cutout to not less than 0.50 inch radius. Remove all burrs, nicks and sharp edges.
3. Make a patch large enough to cover the damage and to accommodate repair rivets with adequate edge margins as shown in Fig. 1. Chamfer all edges of the patch.
4. Drill rivet holes for the repair fasteners through the patch and the skin. See 51-2-5 for fastener hole sizes.
5. Attach the external patch to the skin using 3/16 BB352 protruding head blind bolts or NAS1103 close tolerance steel bolts with AN310, AN320 or AN363 nuts and cadmium plated washers under them. All fastener holes in corrosion resistant steel shall receive wet zinc chromate primer immediately prior to installation of fasteners.

NOTE

BREAK SHARP EDGES 0.03 ALL REPAIR PARTS AND TRIMMED ORIGINAL PARTS

SEE 51-2-0 FOR FASTENER CODE, REMOVAL AND INSTALLATION, HOLE SIZES AND EDGE MARGINS.

SEE 51-8-0 FOR METAL PROTECTIVE TREATMENT

SEE 51-13-1 FOR DEFINITION OF AN EXTERNAL REPAIR

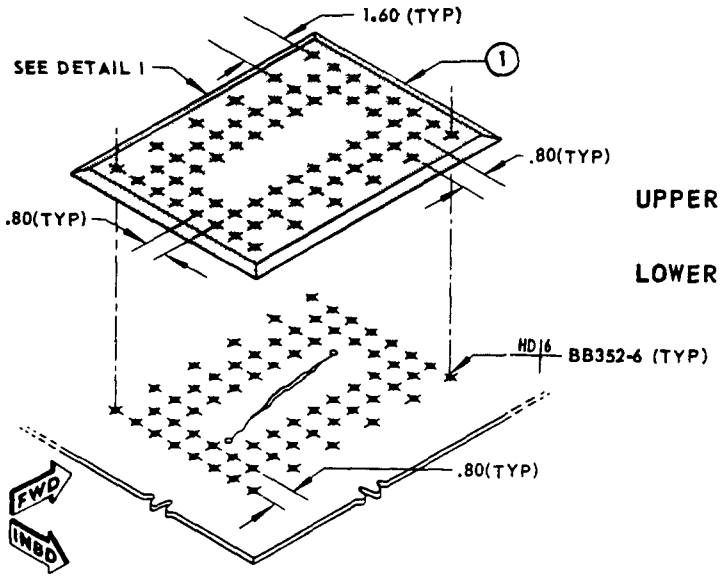
SEE 51-4-1 FOR PERFORMANCE CONSIDERATIONS IN REGIONS OF CRITICAL SMOOTHNESS

⊕ REPAIR FASTENER LOCATIONS

[A] .050 CORROSION RESISTANT STEEL AISI 301, 1/4 HARD

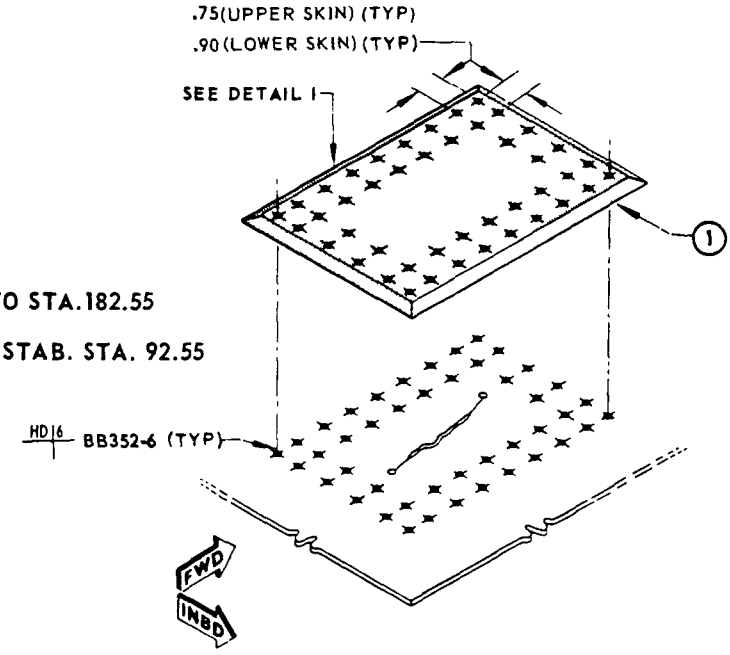
LOCATION STABILIZER STATION ▶	FROM BODY TO STA. 92.55		STA. 92.55 TO STA. 182.55		STA. 182.55 TO TIP	
PART	QTY	MATERIAL	QTY	MATERIAL	QTY	MATERIAL
UPPER SKIN						
(1) PATCH	1	[A]	1	.080 CLAD 2024-T3	1	.050 CLAD 2024-T3
LOWER SKIN						
(1) PATCH	1	.125 CLAD 2024-T3	1	.071 CLAD 2024-T3	1	.050 CLAD 2024-T3

Horizontal Stabilizer Interspar Skin - External Repair
Figure 1 (Sheet 1 of 2)



APPLICABLE TO:
UPPER SKIN FROM STAB. STA. 0-41 TO 92.55 AND STA 182.55 TO TIP.

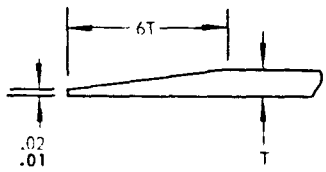
LOWER SKIN FROM STAB. STA. 92.55 TO TIP.



APPLICABLE TO:

UPPER SKIN FROM STAB. STA.92.55 TO STA.182.55

LOWER SKIN FROM STAB. STA. 0-41 TO STAB. STA. 92.55



DETAIL I

LOCATION STABILIZER STATION	FROM BODY TO STA. 92.55		STA. 92.55 TO STA. 182.55		STA. 182.55 TO TIP	
PART	QTY	MATERIAL	QTY	MATERIAL	QTY	MATERIAL
UPPER SKIN						
(1) INSERT	1	[B]	1	.071 CLAD 2024-T3	1	.045 CLAD 2024-T3
(2) DOUBLER	1	[B]	1	.071 CLAD 2024-T3	1	.045 CLAD 2024-T3
[A] FASTENER		SAL 100-T6		SAL 100-T6		AN 426D6
LOWER SKIN						
(1) INSERT	1	.125 CLAD 2024-T3	1	.071 CLAD 2024-T3	1	.045 CLAD 2024-T3
(2) DOUBLER	1	.125 CLAD 2024-T3	1	.071 CLAD 2024-T3	1	.045 CLAD 2024-T3
[A] FASTENER		HS51P-6		HS 51P-6		AN426D6

REPAIR INSTRUCTIONS

1. This repair is applicable to the upper and lower interspar skins. To accomplish this repair, access from inside the structure is necessary, which may be gained through the front spar after removing the leading edge of the horizontal stabilizer.
2. Make all damaged projections of the skin smooth and to original contour. Trim out the damaged area with sides of cutout parallel to the ribs. Smooth edges of the cutout and round corners to not less than 0.50 inch radius. Break corners of all faying surfaces. Remove all burrs, nicks and sharp edges.
3. Make an insert 1 of the same thickness sheet metal as the skin. The insert should fit within the skin cutout with not more than 0.03 inch clearance. Make a doubler 2 large enough to accommodate the fasteners. See tabulation for gage and material.
4. Lay out the fastener pattern as shown in the figure. Drill holes for fasteners. For fastener holes sizes, see 51-2-5.
5. Attach the insert to the doubler and the doubler to the skin with countersunk 3/16 fasteners as tabulated. All fastener holes and countersinks in corrosion resistant steel shall receive wet zinc chromate primer immediately prior to installation of fasteners.
6. Apply zinc chromate primer to all interior surfaces of the repair Section 51-2-0 of the 707 Maintenance Manual.
7. Apply aerodynamic smoother BMS 5-13, per 51-3-0 of the 707 Maintenance Manual.
8. Restore the origional surface finish per Section 51-2-0 of the 707 Maintenance Manual.

NOTE

BREAK SHARP EDGES 0.03 ALL REPAIR PARTS AND TRIMMED ORIGINAL PARTS

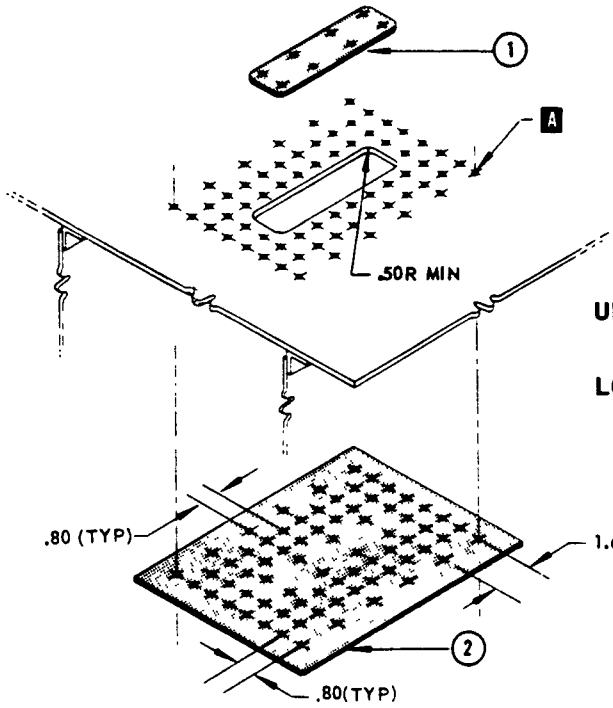
SEE 51-2-0 FOR FASTENER CODE, REMOVAL AND INSTALLATION, HOLE SIZES AND EDGE MARGINS.

SEE 51-8-0 FOR METAL PROTECTIVE TREATMENT

REPAIR FASTENER LOCATIONS

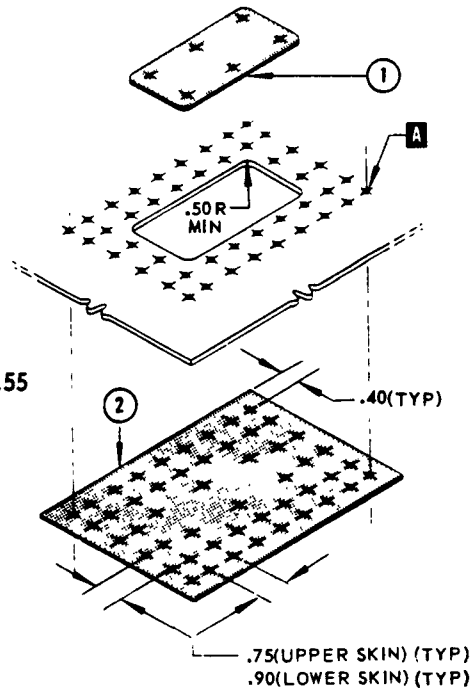
[B] .050 CORROSION RESISTANT STEEL AISI 301, 1/4 HARD

Horizontal Stabilizer Interspar Skin Flush Repair
Figure 2 (Sheet 1 of 2)



APPLICABLE TO:
UPPER SKIN FROM STAB. STA. 0-41 TO 92.55 AND STA 182.55 TO TIP.

LOWER SKIN FROM STAB. STA. 92.55 TO TIP.



APPLICABLE TO:

UPPER SKIN FROM STAB. STA.92.55 TO STA.182.55

LOWER SKIN FROM STAB. STA. 0-41 TO STAB. STA. 92.55

Horizontal Stabilizer Interspar Skin Flush Repair
Figure 2 (Sheet 2 of 2)

ITEM	UPPER CHORD		WEB OR FORMED SEC		LOWER CHORD	
	MATERIAL	REPAIR FIG NO.	MATERIAL	REPAIR FIG NO.	MATERIAL	REPAIR FIG NO.
(1)	BAC 1505-45585 7075-T6	51-14-4 FIG. 1	.025 CLAD 2024-T3	51-14-2 FIG 1	BAC 1505-45585 7075-T6	51-14-4 FIG. 1
(2)	BAC 1514-1407 7075-T6				BAC 1514-1408 7075-T6	
(3)	BAC 1503-100121 7075-T6	51-14-4 FIG. 1			BAC 1503-100121 7075-T6	51-14-4 FIG. 1
(4)			.050 CLAD 2024-T4	51-14-3 FIG 1		
(5)			.063 CLAD 2024-T4	51-14-3 FIG. 1		
(6)			.040 CLAD 2024-T4			
(7)	AND 10136-2001 7075-T6	51-14-4 FIG. 1	.032 CLAD 7075-T6	51-14-2 FIG. 1	AND 10136-2001 7075-T6	51-14-4 FIG. 1
(8)	BAC 1503-2729 7075-T6	55-3-4 FIG. 1	.025 CLAD 2024-T4	51-14-2 FIG. 1	BAC 1503-2729 7075-T6	55-3-4 FIG. 1
(9)	AND 10136-2003 7075-T6	51-14-4 FIG. 1	.025 CLAD 2024-T3	51-14-2 FIG. 1	AND 10136-2003 7075-T6	51-14-4 FIG. 1
(10)	AND 10133-1001 7075-T6	55-3-4 FIG. 1	.025 CLAD 2024-T4	51-14-2 FIG 1	BAC 1503-2729 7075-T6	55-3-4 FIG. 1
(11)	AND 10141-2002 7075-T6	51-14-4 FIG. 1	.025 CLAD 7075-T6	51-14-2 FIG 1	AND 10141-2002 7075-T6	51-14-4 FIG. 1
(12)	BAC 1503-1512 7075-T6	55-3-4 FIG. 1	.025 CLAD .2024-T4	51-14-2 FIG. 1	BAC 1503-1061 7075-T6	55-3-4 FIG. 1
(13)	BAC 1503-1061 7075-T6	55-3-4 FIG. 1	.025 CLAD 2024-T4	51-14-2 FIG. 1	BAC 1503-1061 7075-T6	55-3-4 FIG. 1
(14)	AND 10141-2001 7075-T6	51-14-4 FIG 1	.025 CLAD 7075-T6	51-14-2 FIG. 1	AND 10141-2001 7075-T6	51-14-4 FIG. 1
(15)	BAC 1503-1512 7075-T6	55-3-4 FIG. 1	.025 CLAD 2024-T4	51-14-2 FIG. 1	BAC 1503-1512 7075-T6	55-3-4 FIG. 1
(16)	BAC 1506-964 7075-T6	51-14-4 FIG. 1	.025 CLAD 7075-T6	51-14-2 FIG. 1	BAC 1506-964 7075-T6	51-14-4 FIG. 1
(17)	BAC 1506-1294 7075-T6				BAC 1506-1293 7075-T6	
(18)	BAC 1506-1291 7079-T6		.032 CLAD 2024-T3	51-14-2 FIG. 1	BAC 1506-1291 7079-T6	
(19)	AND 10134-1202 7075-T6	55-3-4 FIG. 1	.032 CLAD 2024-T4	51-14-2 FIG. 1	AND 10134-1202 7075-T6	55-3-4 FIG. 1
(20)	AND 10134-1202 7075-T6	55-3-4 FIG. 1	.016 CLAD 2024-T3	51-14-2 FIG. 1	AND 10134-1202 7075-T6	55-3-4 FIG. 1
(21)	AND 10136-2402 7075-T6	51-14-4 FIG. 1	.025 CLAD 7075-T6	51-14-2 FIG 1	AND 10136-2402 7075-T6	51-14-4 FIG. 1
(22)	AND 10136-2002 7075-T6	51-14-4 FIG. 1	.040 CLAD 7075-T6	51-14-2 FIG. 1	AND 10136-2002 7075-T6	51-14-4 FIG. 1
(23)	BAC 1503-100121 7075-T6	51-14-4 FIG. 1	.056 CLAD 7075-T6	51-14-2 FIG 1	BAC 1503-100121 7075-T6	51-14-4 FIG. 1
(24)			.056 CLAD 2024-T4	51-14-3 FIG. 1		
(25)	BAC 1506-1310 7075-T6	51-14-4 FIG. 1	.040 CLAD 7075-T6	51-14-2 FIG. 1	BAC 1506-1309 7075-T6	51-14-4 FIG. 1

Horizontal Stabilizer Structure Identification
Figure 1 (Sheet 1)

ITEM	UPPER CHORD		WEB OR FORMED SEC		LOWER CHORD	
	MATERIAL	REPAIR FIG NO.	MATERIAL	REPAIR FIG NO.	MATERIAL	REPAIR FIG NO.
26			.071 CLAD 7075-T6	51-14-3 FIG. 1		
27	BAC 1506-1283 7075-T6	51-14-4 FIG. 1	.071 7075-T6	51-14-2 FIG. 1	BAC 1506-1284 7075-T6	51-14-4 FIG. 1
28	BAC 1503-100066 7075-T6	51-14-4 FIG. 1	.025 CLAD 2024-T3	51-14-2 FIG. 1	BAC 1503-100066 7075-T6	51-14-4 FIG. 1
29	BAC 1503-100043 7075-T6	51-14-4 FIG. 1	.025 CLAD 2024-T4	51-14-2 FIG. 1	BAC 1503-100043 7075-T6	51-14-4 FIG. 1
30	AND 10134-1202 7075-T6	51-14-4 FIG. 1	.025 CLAD 2024-T4	51-14-2 FIG. 1	AND 10134-1202 7075-T6	51-14-4 FIG. 1
31	BAC 1506-1257 7079-T6				BAC 1506-1257 7079-T6	
32	BAC 1520-868 7079-T6		CENTER CHORD BAC1520-868 7079-T6		BAC 1520-868 7079-T6	
33	.090 7075-T6	51-14-3 FIG 1	.040 CLAD 7075-T6	51-14-2 FIG. 1	.090 7075-T6	51-14-3 FIG. 1
34	.100 7075-T6	51-14-3 FIG. 1	.040 CLAD 7075-T6	51-14-2 FIG. 1	.100 7075-T6	51-14-3 FIG. 1
35	.071 CLAD 7075-T6	51-14-3 FIG. 1	.040 CLAD 7075-T6	51-14-2 FIG. 1	.071 CLAD 7075-T6	51-14-3 FIG. 1
36	.071 CLAD 2024-T3	55-3-7 FIG. 1			.071 CLAD 2024-T3	55-3-7 FIG. 1
37	.063 CLAD 7075-T6	51-14-3 FIG 1	.025 CLAD 7075-T6	51-14-2 FIG. 1	.063 CLAD 7075-T6	51-14-3 FIG 1
38	AND 10136-2001 7075-T6	51-14-4 FIG. 1	.025 CLAD 7075-T6	51-14-2 FIG. 1	AND 10136-2001 7075-T6	51-14-4 FIG. 1
39	BAC 1505-100332 7075-T6	51-14-4 FIG. 1			BAC 1505-100332 7075-T6	51-14-4 FIG. 1
40	BAC 1504-2583 7075-T6				BAC 1504-2563 7075-T6	
41			.090 2024-T3			
42	.071 CLAD 7075-T6				.071 CLAD 7075-T6	
43			.045 CLAD 7075-T6			
44			.080 2024-T3			
45	BAC 1520-857 7079-T6		.125 7075-T6	51-14-2 FIG. 1	BAC 1520-857 7079-T6	
46	DIE FORGING 7079-T6				DIE FORGING 7079-T6	
47	BAC 1505-38983 7075-T6	51-14-4 FIG. 1			BAC 1505-38983 7075-T6	51-14-4 FIG. 1
48	BAC 1505-100329 7075-T6	51-14-4 FIG. 1	.056 AND .040 CLAD 7075-T6	51-14-2 FIG 1	BAC 1505-100329 7075-T6	51-14-4 FIG. 1
49	AND 10135-1201 7075-T6	51-14-4 FIG. 1			AND 10134-1403 7075-T6	51-14-4 FIG. 1
50	STEEL FORGING 4330		.160 AND .140 7075-T6	51-14-2 FIG.1	STEEL FORGING 4330	

Horizontal Stabilizer Structure Identification
Figure 1 (Sheet 2)

ITEM	UPPER CHORD		WEB OR FORMED SECTION		LOWER CHORD	
	MATERIAL	REPAIR FIG. NO.	MATERIAL	REPAIR FIG. NO.	MATERIAL	REPAIR FIG. NO.
(51)			0.040 CLAD 2024-T3	51-14-2 FIG. 1		
(52)			0.063 2024-T3	51-14-2 FIG. 1		
(53)			0.071 2024-T3	51-14-2 FIG. 1		
(54)			0.100 7075-T6	51-14-2 FIG. 1		
(55)			0.125 7075-T6	51-14-2 FIG. 1		
(56)			0.140 7075-T6	51-14-2 FIG. 1		
(57)			0.160 7075-T6	51-14-2 FIG. 1		
(58)			0.080 2024-T3	51-14-2 FIG. 1		
(59)			FORGING 7075-T73			
(60)			BAC1520-857 7075-T73511			
(61)			FORGING 7075-T651 OR 7075-T6			
(62)			MACHINED FROM 7075-T7351 PLATE			
(63)			0.25 PLATE 7075-T7351			
(64)			BAC1520-857 7079-T6			
(65)	BAC1506-1257 7075-T73511				BAC1506-1257 7075-T73511	
(66)	BAC1506-1291 7075-T73511				BAC1506-1291 7075-T73511	
(67)	BAC1520-868 EXTR. 7075-T73511		CENTER CHORD BAC1520-868 7075-T73511		BAC1520-868 7075-T73511	
(68)			DOUBLER 0.312 2024-T351			
(69)					STIFFENER BAC1517-3000 OR 1.20 BAR 7075-T73511	
(70)					STIFFENER BAC1517-3001 OR 0.88 BAR 7075-T73511	
(71)	FAIL SAFE STRAP 0.25 15-5PH CRES HT 180-200 KSI					
(72)	FAIL SAFE FITTING 2.75 OR 3.00 15-5PH CRES HT 180-200 KSI					
(73)	FATIGUE STRAP 1.0 PLATE 7075-T7351					
(74)			SUPPLEMENTAL CHORD 2.30 X 7.0 BAR 7075-T6511			
(75)			SUPPLEMENTAL CHORD 2.50x7.0 BAR 7075-T6511			

Horizontal Stabilizer Structure Identification
Figure 1 (Sheet 3)

NOTES:

[A] FORGINGS OF 7079-T6 MATERIAL HAVE BEEN SUPERSEDED BY FORGINGS OF 7075-T73 MATERIAL ON LATE PRODUCTION AIRPLANES. FORGINGS OF 7075-T73 MATERIAL ARE RECOMMENDED AS REPLACEMENTS.

[B] EXTRUSIONS OF 7079-T6 MATERIAL HAVE BEEN SUPERSEDED BY EXTRUSIONS OF 7075-T73511 MATERIAL ON LATE PRODUCTION AIRPLANES. EXTRUSIONS OF 7075-T73511 MATERIAL ARE RECOMMENDED AS REPLACEMENTS.

[C] FORGINGS OF 7075-T6 OR 7075-T651 HAVE BEEN SUPERSEDED BY ACTUATOR FITTING ASSEMBLY MADE FROM 7075-T7351 PLATE ON LATE PRODUCTION AIRPLANES. ACTUATOR FITTINGS OF 7075-T7351 MATERIAL ARE RECOMMENDED AS REPLACEMENTS.

[D] FOR AIRPLANES WITH SB 3067 INCORPORATED.

[E] EXISTING STOCKS OF 7079-T6 EXTRUSIONS HAVE BEEN SHOT PEENED TO IMPROVE RESISTANCE TO STRESS CORROSION UNTIL 7075-T73511 EXTRUSIONS ARE RECOMMENDED AS REPLACEMENTS.

[F] FOR AIRPLANES CA 20714, 20715 AND AIRPLANES WITH SB 3001 INCORPORATED

[G] FOR AIRPLANES WITH SB 3211 INCORPORATED

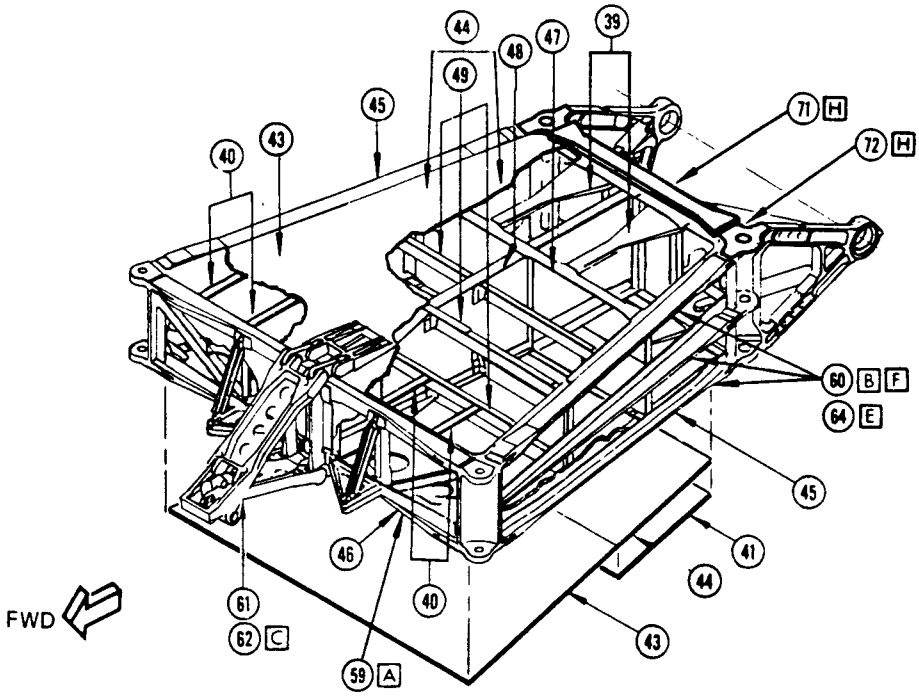
[H] FOR CUM LINE NUMBERS: 936 AND ON AND EARLIER AIRPLANES WITH SB 3331 INCORPORATED

[I] FOR AIRPLANES UP TO CUM LINE NUMBER 935 BEFORE INCORPORATION OF SB 3313

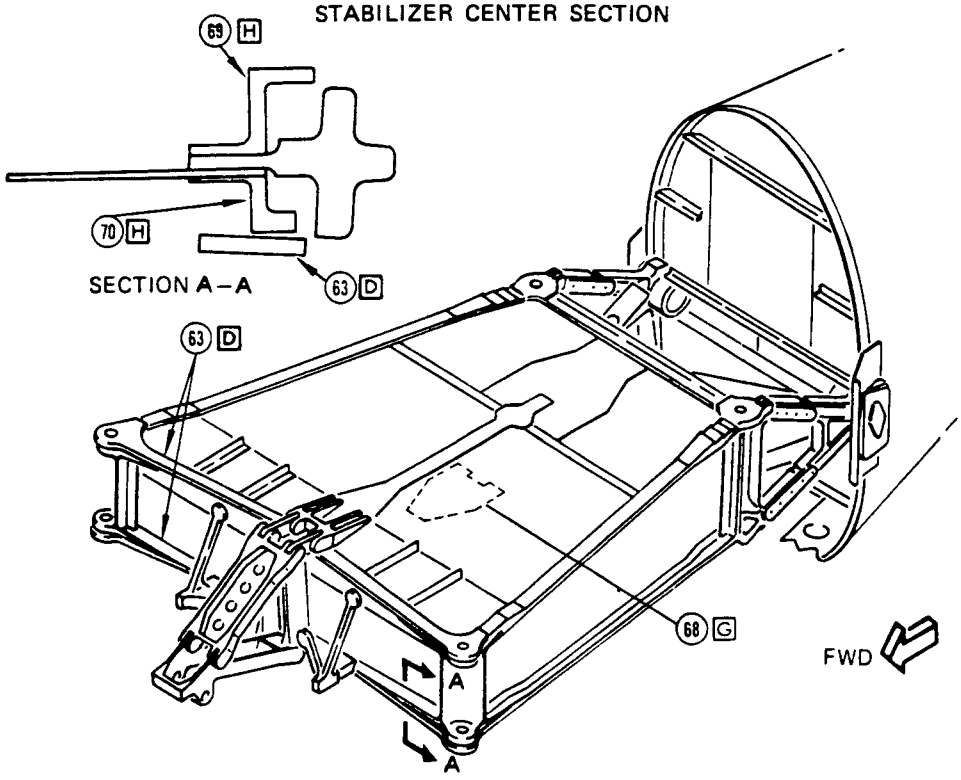
[J] FOR CUM LINE NUMBERS: 936 AND ON AND EARLIER AIRPLANES WITH SB 3313 INCORPORATED

Horizontal Stabilizer Structure Identification
Figure 1 (Sheet 4)

REF DWG
50-9781

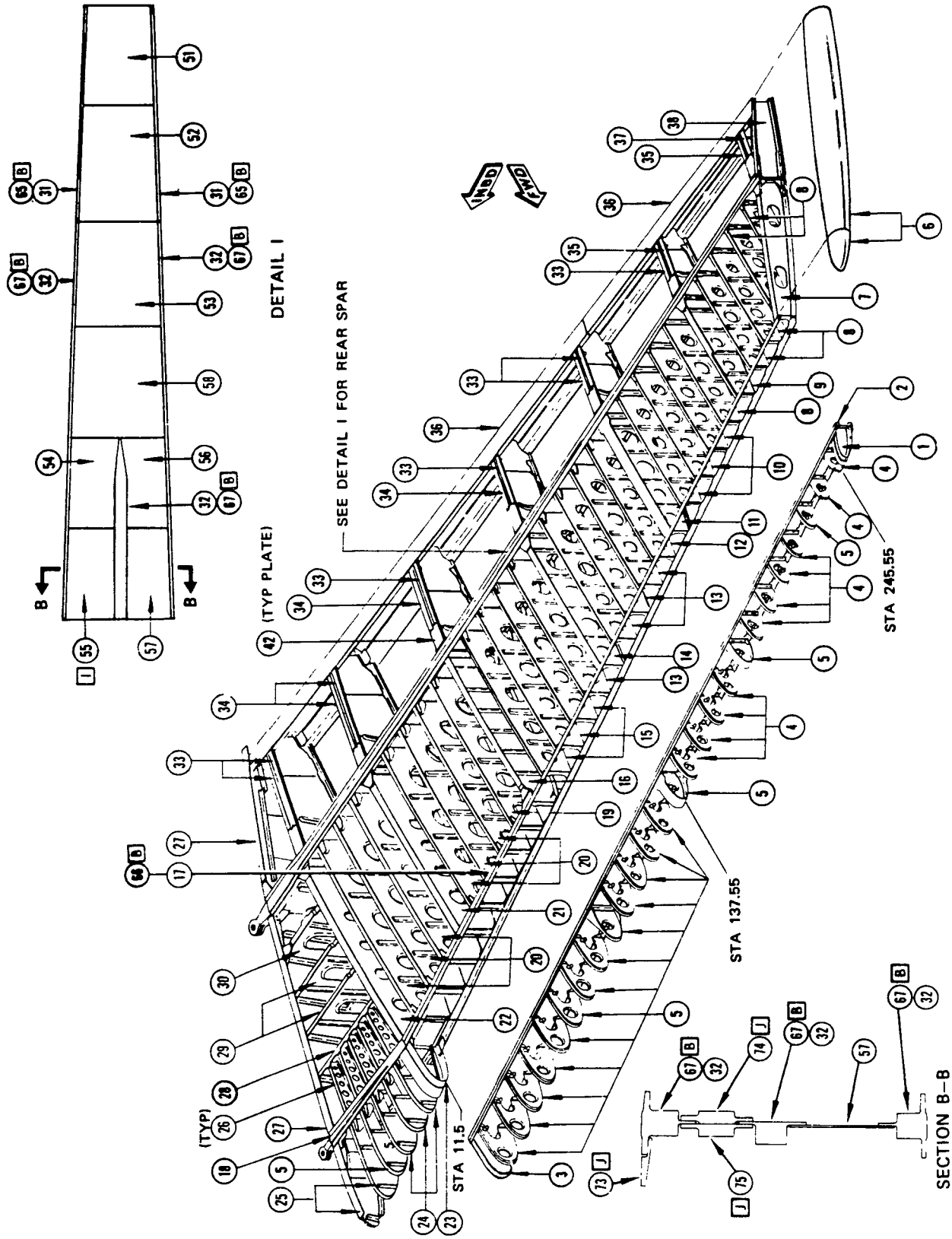


STABILIZER CENTER SECTION



STABILIZER CENTER SECTION FRONT SPAR STRAP INSTALLATION

Horizontal Stabilizer Structure Identification
Figure 1 (Sheet 5)



Horizontal Stabilizer Structure Identification
Figure 1 (Sheet 6)

REPAIR MATERIAL

UPPER CHORD

LOCATION ➧		STA 20.55 TO 83.55		STA 101.55 TO 119.55, 173.55		STA 128.55 TO 164.55 STA 191.55 TO 209.55		STA 218.55 TO 263.55	
PART		QTY	MATERIAL	QTY	MATERIAL	QTY	MATERIAL	QTY	MATERIAL
(1)	ANGLE	1	.100 CLAD 7075-0 HT-T6 [A]	1	.071 CLAD 7075-0 HT-T6 [A]	1	.063 CLAD 7075-0 HT-T6 [A]	1	.050 CLAD 7075-0 HT-T6 [A]
(2)	FILLER	1	.094 [B]	1	.070 [B]	1	.063 [B]	1	.050 [B]
[C]	RIVET	4	BAC R15CE-5D	3	BAC R15CE-5D	3	BAC R15CE-5D	3	BAC R15CE-5D
[D]	RIVET	7	AN470D-5	5	AN470D-5	5	AN470D-5	5	AN470D-5

REPAIR MATERIAL

LOWER CHORD

LOCATION ➧		STA 20.55 TO 83.55		STA 101.55 TO 119.55		STA 128.55 TO 173.55		STA 191.55 TO 263.55	
PART		QTY	MATERIAL	QTY	MATERIAL	QTY	MATERIAL	QTY	MATERIAL
(3)	ANGLE	1	.100 CLAD 7075-0 HT-T6 [A]	1	.071 CLAD 7075-0 HT-T6 [A]	1	.063 CLAD 7075-0 HT-T6 [A]	1	.050 CLAD 7075-0 HT-T6 [A]
(4)	FILLER	1	.094 [B]	1	.070 [B]	1	.063 [B]	1	.050 [B]
[E]	RIVET	4	AN426D-5	3	AN426D-5	3	AN426D-5	3	AN426D-5
[F]	RIVET	7	AN470D-5	5	AN470D-5	5	AN470D-5	5	AN470D-5

REPAIR INSTRUCTIONS:

1. This repair is applicable to interspar ribs at locations where their chords consist of an extruded angle trimmed to 0.62 x 0.62 inch size or to 0.75 x 0.65 inch size.
2. Access from inside the structure is necessary to accomplish this repair. Access may be gained through the front spar after removing the leading edge.
3. Make all damage projections smooth and to original contour. If necessary, cut out the damaged portion of the chord and replace it with a filler. Remove all burrs, nicks and other surface irregularities.
4. Make a repair angle of the required material and size as shown in the figure.
5. Assemble the repair as shown and install rivets. See 51-2-5 for rivet hole sizes.
6. Apply zinc chromate primer to all interior surfaces of the repair. See the 707 Maintenance Manual, Section 51-2-0, for finish requirements.

NOTE

BREAK SHARP EDGES 0.03 ALL REPAIR PARTS AND TRIMMED ORIGINAL PARTS

SEE 51-2-0 FOR FASTENER CODE, REMOVAL AND INSTALLATION HOLE SIZES AND EDGE MARGINS.

NUMBER OF FASTENERS REQUIRED IS FOR EACH SIDE OF DAMAGE.

ORIGINAL FASTENER LOCATIONS

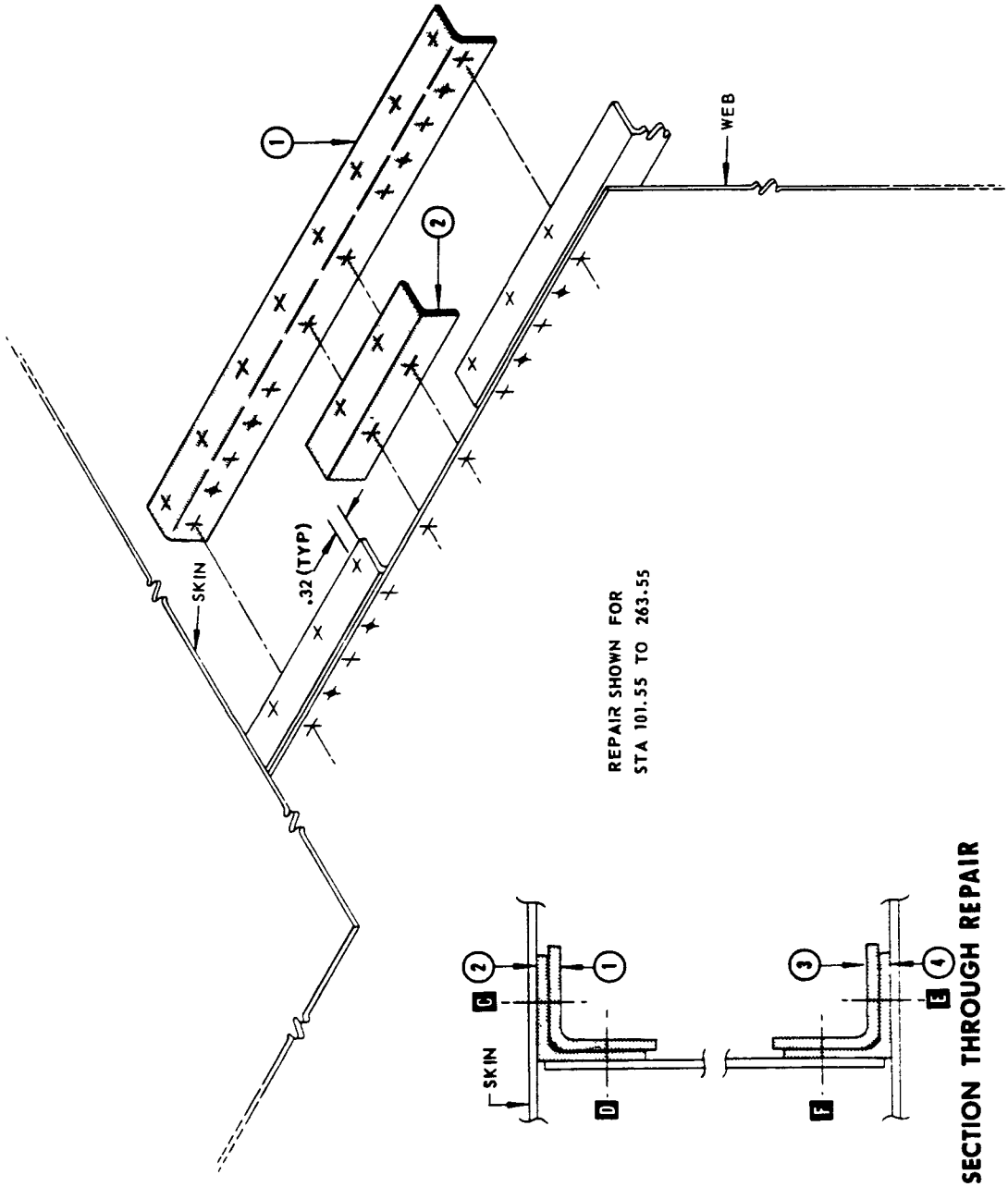
REPAIR FASTENER LOCATIONS

SEE 51-8-0 FOR METAL PROTECTIVE TREATMENT

[A] FABRICATE ANGLE WITH LEGS OF THE SAME LENGTH AS THOSE OF THE CHORD ANGLE TO BE REPAIRED.

[B] 7075-T6 EXTRUSION. ANY EXTRUDED ANGLE OF THE REQUIRED GAGE MAY BE USED WHEN TRIMMED TO THE SIZE OF THE ORIGINAL CHORD ANGLE. OPTIONAL FILLER MATERIAL 2024-T3 7075-T6, 7178-T6 PLATE

Horizontal Stabilizer Interspar Rib Repair
Figure 1 (Sheet 1 of 2)



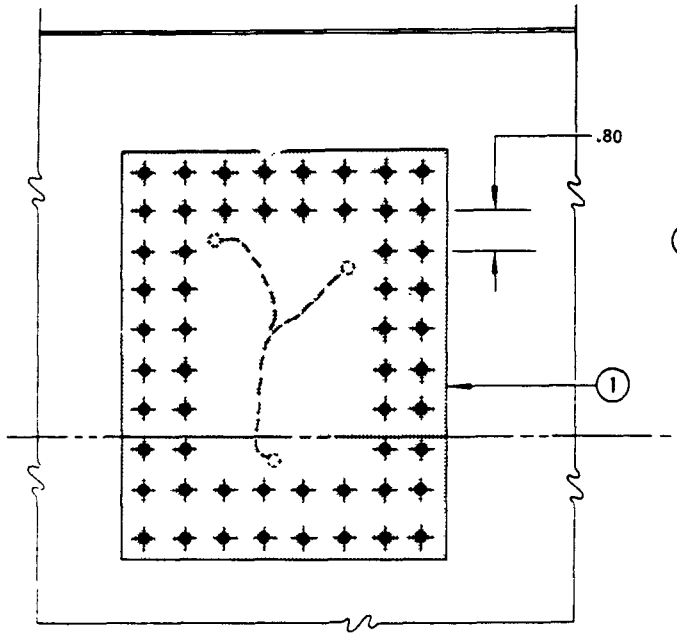
Horizontal Stabilizer Interspar Rib Repair
Figure 1 (Sheet 2 of 2)

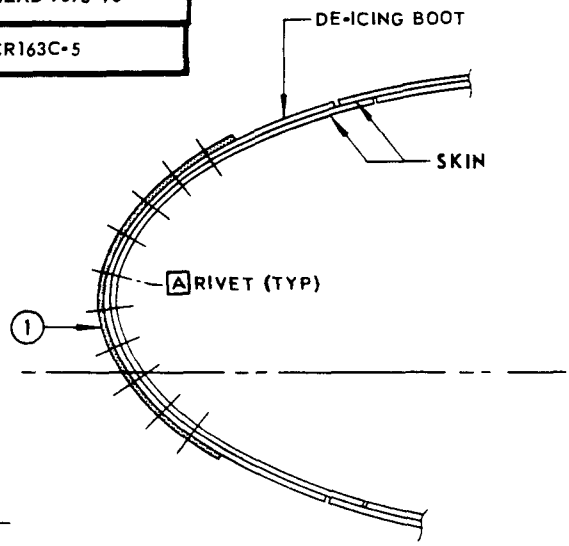
HORIZONTAL STABILIZER SPAR REPAIRS

For repairs to the horizontal stabilizer components see 53-3-3, Figure 1.

REPAIR MATERIAL

LOCATION STAB. STA.		INBD OF 137.55		137.55 TO TIP	
PART		QTY.	MATERIAL	QTY.	MATERIAL
(1)	PATCH	1	.063 CLAD 7075-T6	1	.050 CLAD 7075-T6
[A]	FASTENER		CR163C-6		CR163C-5





SECTION THROUGH REPAIR

NOTE

BREAK SHARP EDGES 0.03 ALL REPAIR PARTS AND TRIMMED ORIGINAL PARTS

SEE 51-2-0 FOR FASTENER CODE, REMOVAL AND INSTALLATION, HOLE SIZES AND EDGE MARGINS.

SEE 51-8-0 FOR METAL PROTECTIVE TREATMENT

SEE 51-13-1 FOR DEFINITION OF AN EXTERNAL REPAIR

SEE 51-4-1 FOR PERFORMANCE CONSIDERATIONS IN REGIONS OF CRITICAL SMOOTHNESS

✦ REPAIR FASTENER LOCATIONS

REPAIR INSTRUCTIONS

1. This external repair is used when the leading edge skin has been damaged, as well as the deicing boot that covers it.
2. Disconnect the electric leads to the damaged de-icing boot section. Make all damaged projections of the skin smooth and to original contour. Stop drill all cracks with 0.25 inch diameter holes. Make cut-outs as required not less than 0.50 inch radius. Remove all burrs, nicks and sharp edges.
3. Form patch to contour, lay out rivet pattern, and install. See tabulation for material and fasteners.
4. For fasteners and fastener hole sizes see 51-2-1.
5. NOTE: With this repair installed, the airplane may be flown only under conditions where it is permissible to fly with stabilizer de-icing provisions inoperable. Replace this repair with the flush repair shown in figure 2 as soon as possible.

REPAIR MATERIAL

LOCATION		INBOARD OF STA. 137.55		STA. 137.55 TO 182.55		STA. 182.55 TO TIP	
PART		QTY	MATERIAL	QTY	MATERIAL	QTY	MATERIAL
(1)	DOUBLER	1	.063 CLAD 7075-T6	1	.050 CLAD 7075-T6	1	.050 CLAD 7075-T6
(2)	INSERT	1	.053 CLAD 7075-T6	1	.050 CLAD 7075-T6	1	.040 CLAD 7075-T6
[A]	RIVETS		BACR15CE-6D		BACR15CE-5D		BACR15CE-5D

REPAIR INSTRUCTIONS

1. Remove the damaged leading edge section. Remove the de-icing boot, if damaged, as described in Maintenance Manual, section 30-1-61.
2. Cut out the damaged skin to a smooth outline.
3. Make an insert to match the skin cutout and a doubler large enough to accommodate the required fasteners. Form the insert and the doubler to the contour of the skin.
4. Apply zinc chromate primer to all interior surfaces of the repair per Maintenance Manual, section 51-1-0.
5. Attach the insert to the doubler, and the doubler to the skin with rivets as shown in the figure.
6. Apply aerodynamic smoother BMS 5-13 per Maintenance Manual, section 51-3-0.
7. Replace the deicing boot, if removed, per Maintenance Manual, section 30-1-61. Restore the original surface finish per Maintenance Manual, Section 51-2-0.

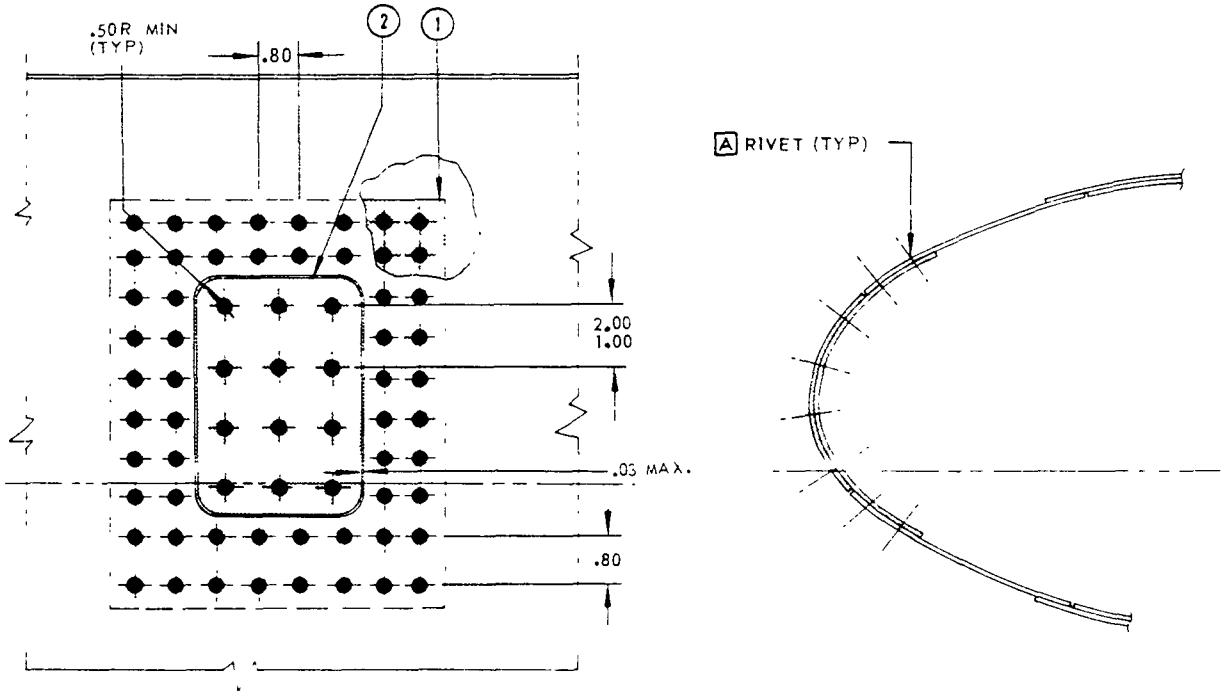
NOTE

BREAK SHARP EDGES 0.03 ALL REPAIR PARTS AND TRIMMED ORIGINAL PARTS

SEE 51-2-0 FOR FASTENER CODE, REMOVAL AND INSTALLATION, HOLE SIZES AND EDGE MARGINS.

SEE 51-8-0 FOR METAL PROTECTIVE TREATMENT

REPAIR FASTENER LOCATIONS



Horizontal Stabilizer Leading Edge Skin Flush Repair
Figure 2

REPAIR INSTRUCTIONS

1. Remove fasteners and trailing edge panels to gain access to the trailing edge beams. Remove elevator per the Maintenance Manual.

2. Remove trailing edge beam from airplane.

3. Remove existing splice fasteners and drill out rivets as required to disassemble the beam.

4. If the crack damage has progressed through a distance less than 2/3 of the beam width, drill 0.25 diameter stop holes at the ends of the crack that do not end in a fastener hole. Repair as described in par. 7 thru 15.

5. If the crack damage has progressed through a distance more than 2/3 of the beam width, cut through the remaining portion and separate the beam in two parts. Clean up cuts and repair as described in par. 7 thru 15.

6. If the crack damage is found to be over a hinge rib, cut out and replace with a section same as the original. Repair as shown in illustration and par. 7 thru 15.

7. Fabricate and form repair parts.

8. Locate and drill fastener holes in repair parts to match the original parts.

9. Remove all burrs, nicks, scratches, sharp edges and corners. Chamfer or radius 0.03 on all cut edges of repair parts and trimmed original parts.

10. Brush alodize cut and trimmed edges including edges of drilled and countersunk holes.

11. Install repair parts, shims and fasteners.

    (a) If a section has been cut from the beam check that the assembled beam is of the same length as the original and that all fasteners at the hinge ribs match.

    (b) If the repair is outboard of elevator station 204 use part 4 and drill through as shown in cross section (Elevator Station 204 to 254.90)

12. Restore original finish.

13. Install trailing edge beam on airplane. Use same fasteners as originally used.

14. Replace trailing edge panels.

15. Replace the elevator per Maintenance Manual.

Stabilizer Trailing Edge Beam Repair
Figure 1 (Sheet 1)

REPAIR MATERIAL							
LOCATION ⇩		ELEVATOR STA. 27.68 TO 87		ELEVATOR STA. 87 TO 174		ELEVATOR STA. 174 TO 260 [D]	
PART		QTY	MATERIAL	QTY	MATERIAL	QTY	MATERIAL
(1)	PLATE	1	0.080 CLAD 2024-0 HT-T3	1	0.080 CLAD 2024-0 HT-T3	1	0.071 CLAD 2024-0 HT-T3
(2)	FILLER	1	0.071 CLAD 2024-0 HT-T3	1	0.071 CLAD 2024-0 HT-T3	1	0.071 CLAD 2024-0 HT-T3
(3)	PLATE	1	0.080 CLAD 2024-0 HT-T3	1	0.080 CLAD 2024-0 HT-T3	1	0.071 CLAD 2024-0 HT-T3
(4)	FILLER BLOCK	[A]	FIBERGLAS LAMINATE MIL-P-15035B TYPE FBM	[A]	FIBERGLAS LAMINATE MIL-P-15035B TYPE FBM	[A]	FIBERGLAS LAMINATE MIL-P-15035B TYPE FBM
(5)	SHIM	[B]	CLAD 2024-T3 0.03 TO 0.06 MAX	[B]	CLAD 2024-T3 0.03 TO 0.06 MAX	[B]	CLAD 2024-T3 0.03 TO 0.06 MAX
(6)	PLATE [H]	1	0.071 CLAD 2024-0 HT-T3 [C]	1	0.071 CLAD 2024-0 HT-T3 [C]	1	0.071 CLAD 2024-0 HT-T3 [C]
(7)	PLATE [H]	1	0.071 CLAD 2024-0 HT-T3 [C]	1	0.071 CLAD 2024-0 HT-T3 [C]	1	0.071 CLAD 2024-0 HT-T3 [C]

NOTES

REF 51-2-0 FOR FASTENER CODE, REMOVAL, AND INSTALLATION, HOLE SIZES AND EDGE MARGINS

REF 51-8-0 FOR METAL PROTECTIVE TREATMENT

REFINISH PER 51-2-0 OF THE MAINTENANCE MANUAL

[A] IF DAMAGE OCCURS OVER A HINGE RIB REMOVE EXISTING LAMINATE PLASTIC PART AND REWORK TO FIT OR REPLACE WITH A REPAIR PART 4 SIMILAR TO ORIGINAL

[B] ADD PART 5 SHIMS AS REQUIRED BETWEEN THE SURFACES INDICATED. SHIM THICKNESS MUST NOT EXCEED 0.06 MAX

[C] BEND TO SAME SHAPE AS ORIGINAL

[D] BLIND 100° FASTENERS CNNOT BE INSTALLED OUTBOARD OF ELEVATOR STATION 204. INSTALL BACR15CE6D FASTENERS IN HOLES DRILLED AT LOCATIONS SHOWN IN CROSS SECTION

[E] NAS1739E6-4 BLIND RIVETS. USE 4 ON EACH SIDE OF DAMAGE IN EACH ROW

[F] NAS1739E6-4 BLIND RIVETS. USE 5 ON EACH SIDE OF DAMAGE IN EACH ROW

[G] BACR15CE6D RIVET, COUNTERSINK BOTH SIDES. USE 4 ON EACH SIDE OF DAMAGE IN EACH ROW.

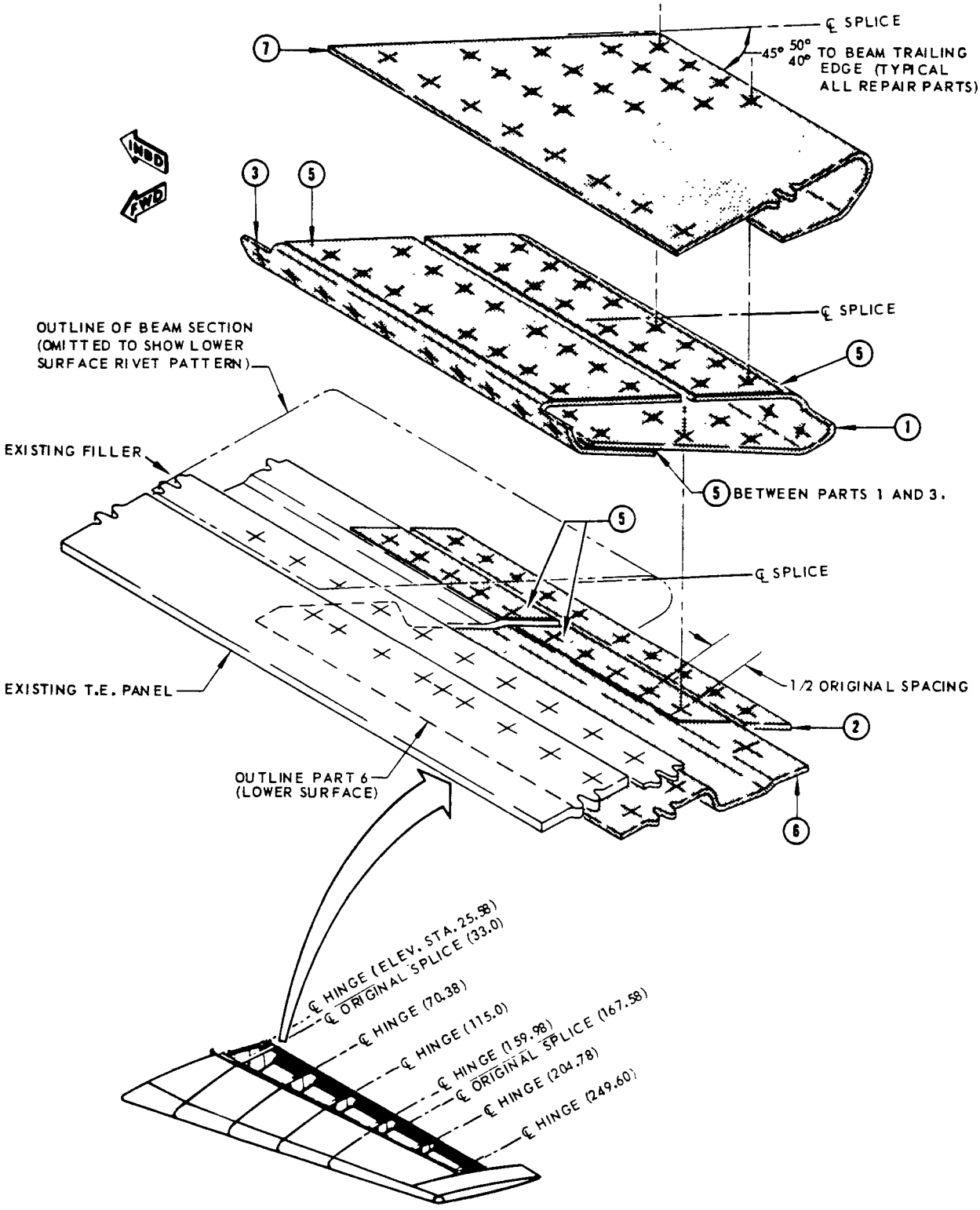
[H] THESE PARTS NOT REQUIRED FOR REPAIR OF CRACK DAMAGE UNLESS A PORTION OF TRAILING EDGE SECTION IS REMOVED

SYMBOLS

+ REPAIR FASTENER LOCATIONS

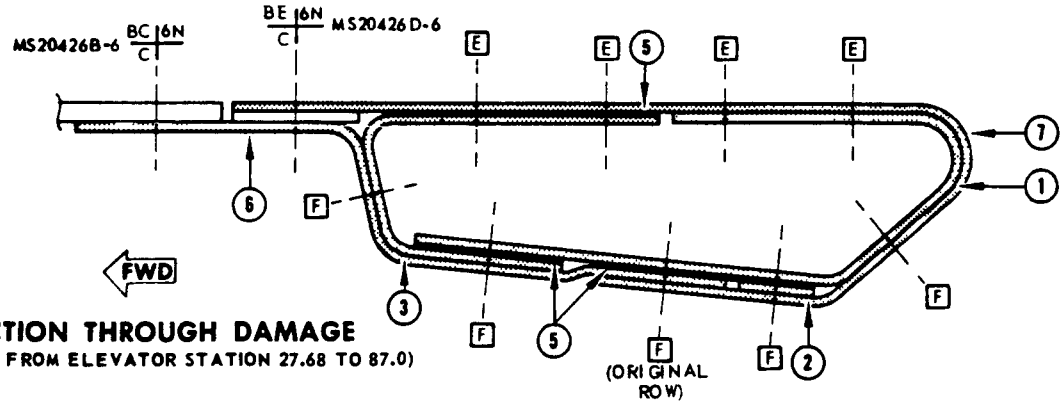
✦ ORIGINAL FASTENER LOCATIONS

Stabilizer Trailing Edge Beam Repair
Figure 1 (Sheet 2)

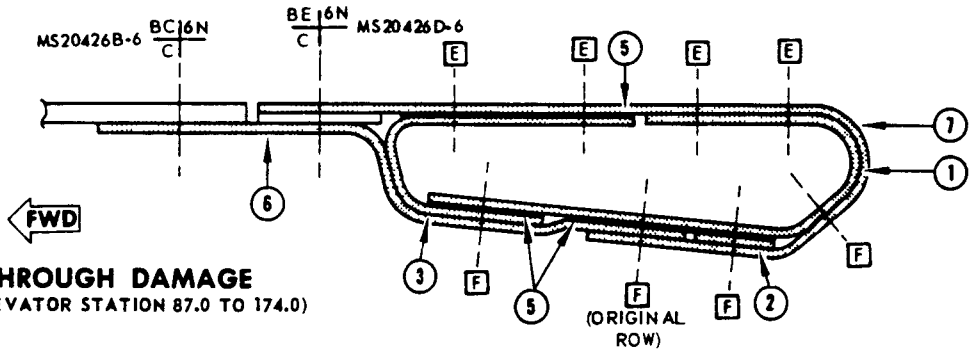


SPLICE THROUGH ONE END OF REPAIR SHOWN – OPPOSITE END TYPICAL.

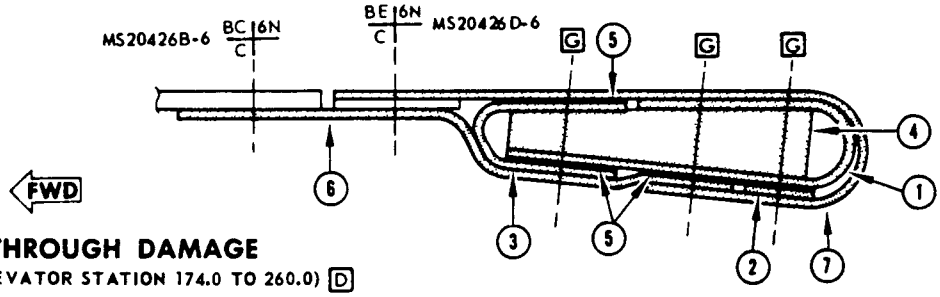
Stabilizer Trailing Edge Beam Repair
Figure 1 (Sheet 3)



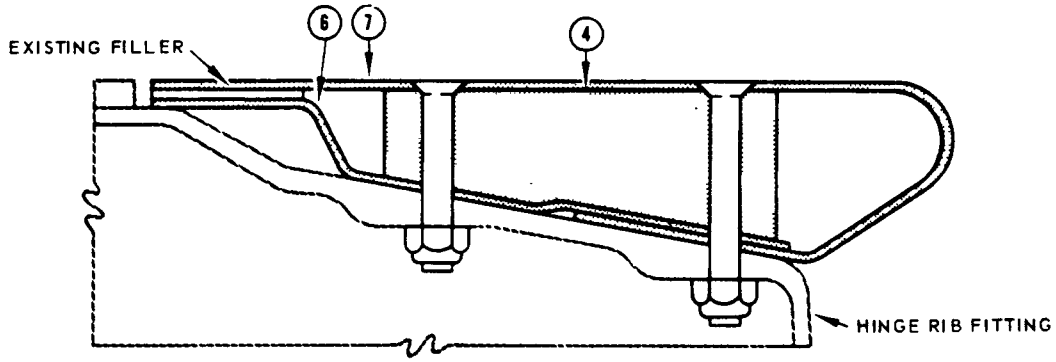
SECTION THROUGH DAMAGE
(TYPICAL FROM ELEVATOR STATION 27.68 TO 87.0)



SECTION THROUGH DAMAGE
(TYPICAL FROM ELEVATOR STATION 87.0 TO 174.0)



SECTION THROUGH DAMAGE
(TYPICAL FROM ELEVATOR STATION 174.0 TO 260.0) D



FWD

SECTION THROUGH DAMAGE
(TYPICAL AT HINGE RIB LOCATIONS)

Stabilizer Trailing Edge Beam Repair
Figure 1 (Sheet 4)

HORIZONTAL STABILIZER - CENTER SECTION - REMOVAL OF FRONT SPAR

Removal Procedure Using Ream Fixture P/N 5RF50-2548 or Locating Jig P/N LJ50-9781-1

1. Attach the ream fixture (P/N 5RF50-2548) or locating jig (P/N LJ50-9781-1) to the terminal fittings on the front and rear spars of the center section.

2. With the ream fixture or locating jig supported, so that there is no load on the four locating pins, measure and record the clearances between the fixture or jig and terminal fittings at the forward upper and lower, and aft upper and lower positions.

3. Install a suitable length of stock angle extrusion on the upper surface of the center section to connect the left and right sections of the ream fixture only as follows:

   A. Remove fasteners from the center section structure and drill matching holes in the angle.

   B. Locate angle on center section and ream fixture using suitable pins and distance pieces to ensure all components are rigidly connected.

   C. Ensure that the clearances obtained in step 2 have been maintained and that ream fixture locating pins rotate freely in the terminal fittings.

   D. Remove ream fixture and angle or locating jig.

4. Remove the fasteners from the skins and upper and lower chords of the front spar. (MS20470D6 rivets and BACB30N pan head lock bolts.)

5. Remove the bolts and nuts from the BL0.00 rib and the upper and lower chords of the front spar. NAS464D6A bolts and AN364-624 nuts (12 each) are installed in the rib and upper and lower chord.

6. Remove the NAS1105-13W bolts, AN364-524 nuts, and the AN960-316L washers (4 each) from the forward end of each closure rib and the upper and lower chords of the front spars.

7. Remove the BACR15AY fasteners from the web of each closure rib and front spar.

8. Remove the BACR15AY fasteners and MS20470D8 rivets from the BL0.00 rib and the front spar.

HORIZONTAL STABILIZER - CENTER SECTION - INSTALLATION OF FRONT SPAR

1. Locate the replacement front spar on the center section and secure in position with the ream fixture (P/N 5RF50-2548) or locating jig (P/N LJ50-9781-1). Lock the ream fixture in position with the angle and locating pins. Ensure that all locating pins may be rotated freely and that the clearances at the spar terminals have been met. Refer to 55-3-8, paragraph 2.

2. Locate and drill 12 holes (0.3737 to 0.3752 diameter) in the upper and lower chords of the front spar to match the holes at the forward end of the ribs at BL0.00.

3. Locate and drill four holes (0.3112 to 0.3122 diameter) in the upper and lower chords of the spar terminals to match the holes at the forward end of the left and right closure ribs.

4. Back-drill holes in front spar to match fasteners in forward ends of the web of rib at BL0.00 and in the two closure ribs. (Refer to 51-2-5 for hole sizes.)

5. Back-drill fastener holes in upper and lower chords of front spar to match existing holes in upper and lower skins. (Refer to 51-2-5 for hole sizes.)

6. Remove the ream fixture or locating jig and withdraw the front spar from the center section.

7. Remove all swarf from the center section and deburr all holes and edges of the reworked structure.

8. Alodize all holes and bared surfaces, and apply a coat of BMS 10-11 primer to each of the mating surfaces.

9. Locate the front spar on the center section and align using the locating jig or ream fixture and right) and the angle as described in step 1. Locating pins must rotate freely in the terminals of the front and rear spars.

10. Install four NAS1105-13W bolts, AN960-516L washers and AN364-524 nuts in each of the spar terminal lugs and the left and right closure ribs. Install bolts wet with BMS 10-11 primer and tighten the nuts within the torque range of 60 and 85 inch-pounds. Use shims (BAC540A-32-40 as required) to reduce the gap to a maximum of 0.005 inch between the spar lugs and the rib chord.

11. Install 12 NAS464D6A16 bolts and AN364-624 nuts in the forward end of the rib at BL0.00 and upper chord of front spar. Install bolts wet with BMS 10-11 primer and tighten the nuts within the range of 95 and 110 inch-pounds.

    NOTE: Tapered fillers (BAC1513-56X2.80 inches long) are required under the nuts at the two aft locations on each side of the rib. Shims (BAC540A-16-104) may be used as necessary to reduce gap on these mating faces.

12. Install 12 NAS464D6A17 bolts and AN364-624 nuts in the forward end of the BL0.00 rib and lower chord of center section front spar as detailed in step 11.

    CAUTION: ENSURE THAT LOCATING PINS IN JIG AND SPAR TERMINAL LUGS MAY BE ROTATED EASILY DURING AND AFTER INSTALLATION OF BOLTS.

13. Install the fasteners in the BL0.00 rib, the left and right closure ribs, and the front spar. See details I and II.

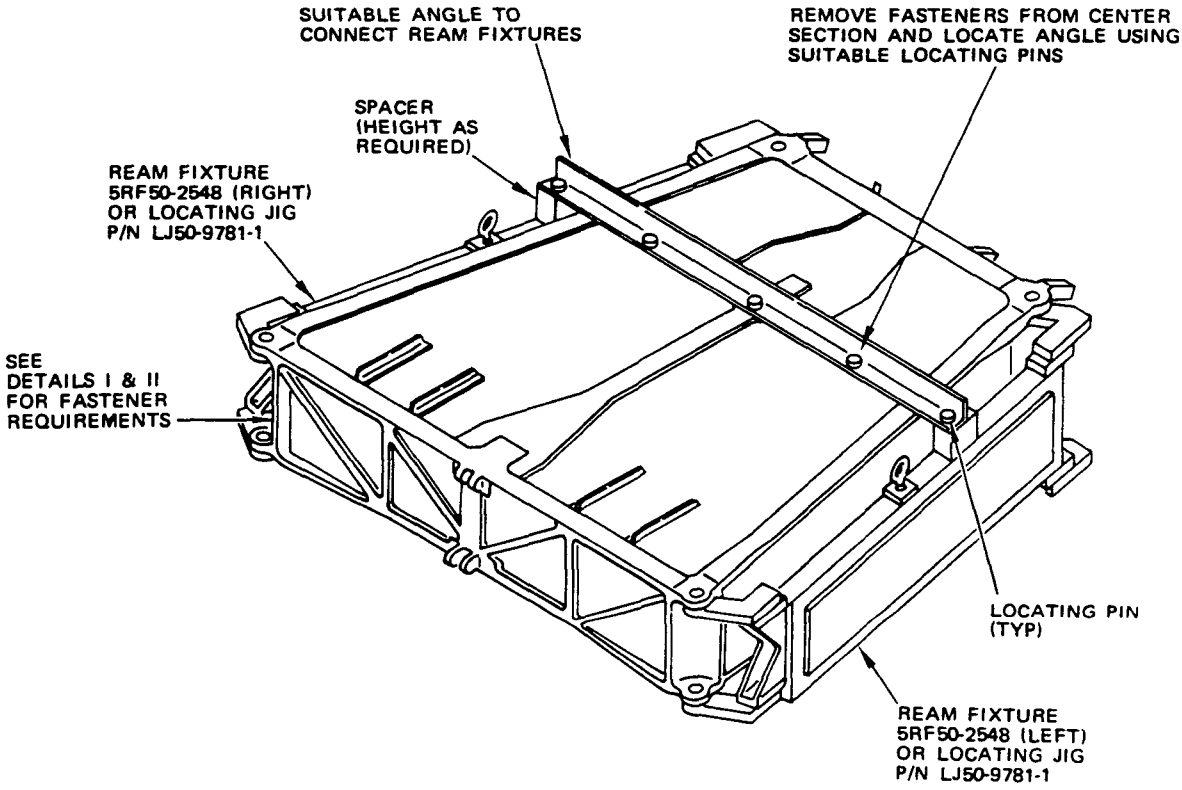
14. When necessary, drill and ream the holes for the stabilizer actuator fitting and the two buffers, as follows:

    A. Make jigs to match the holes in the existing spar.

    B. Drill and line ream (0.995 to 1.005 inch) the upper and lower pairs of actuator fixture mounting lugs.

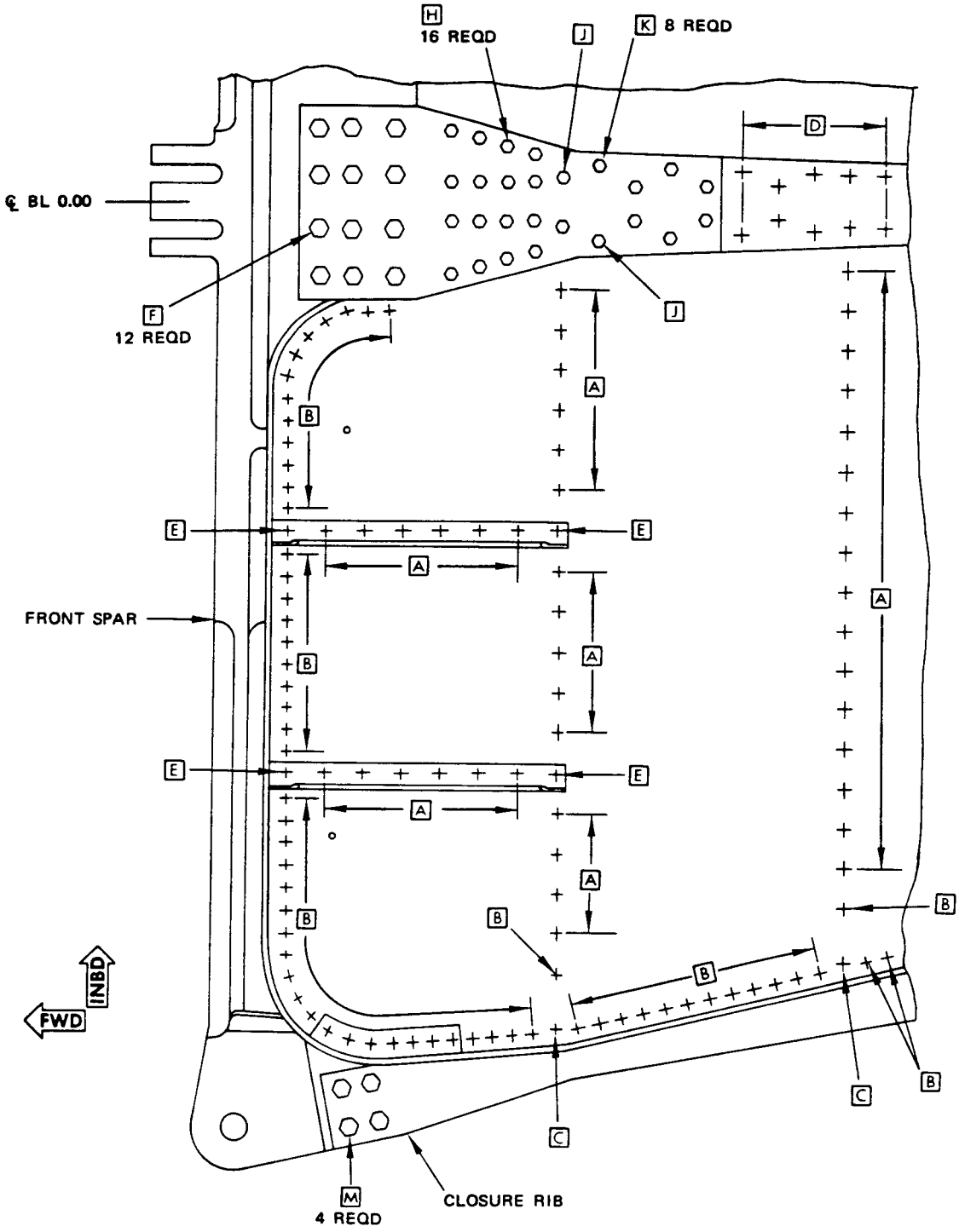
    C. Drill and ream (0.313 to 0.317 inch) the three holes in the front spar for each of the two buffers.

15. Remove the ream fixture or locating jig and install fasteners to replace those removed to provide location points for the fixture.



NOTE: THIS FIXTURE (OR SIMILAR JIG) IS REQUIRED TO POSITION THE FRONT SPAR DURING ASSEMBLY AND FOR LINE REAMING THE TERMINAL HOLES AT ENDS OF FRONT SPAR

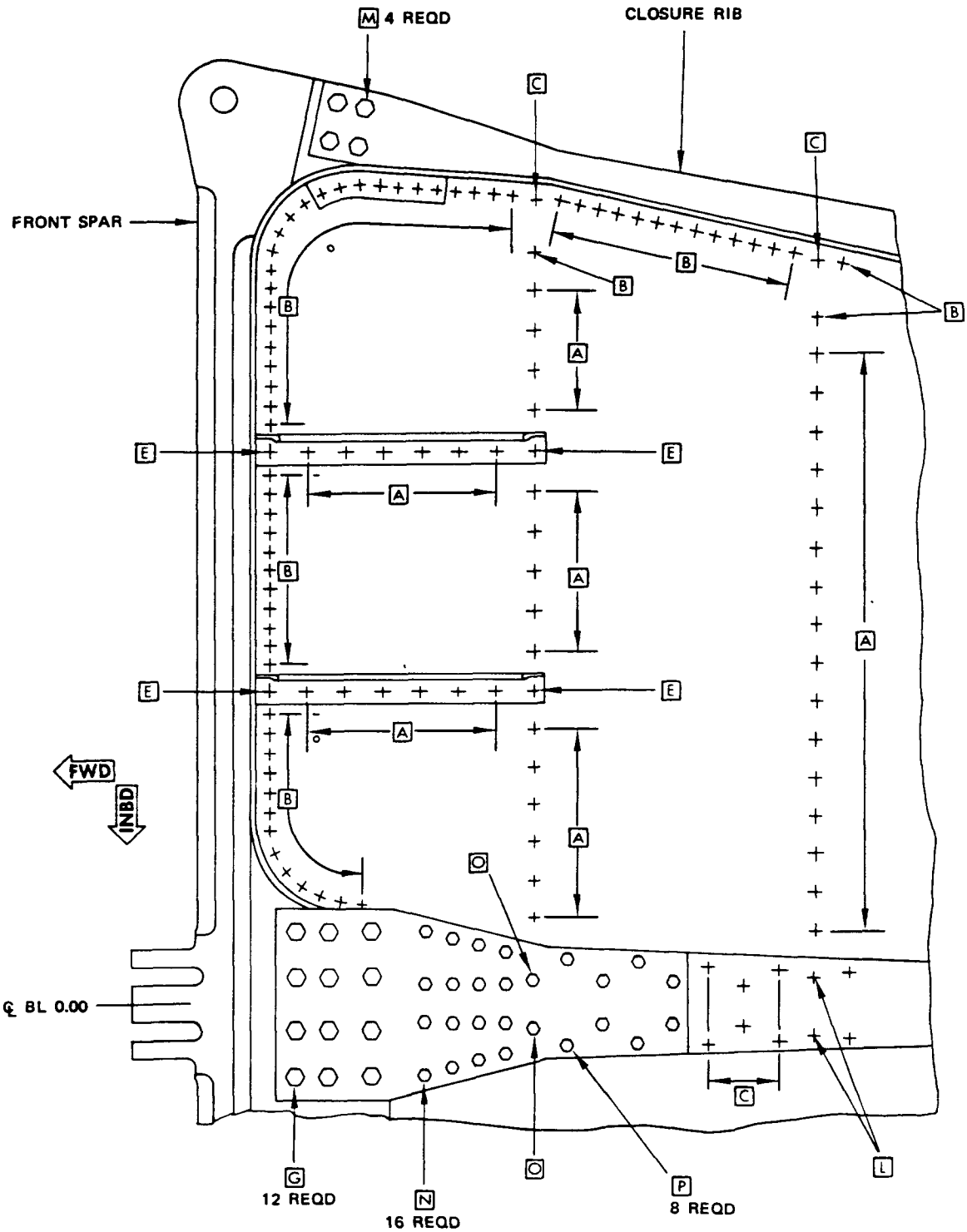
Horizontal Stabilizer - Center Section -
Removal and Installation of Front Spar
Figure 1 (Sheet 4)



(LEFT SIDE SHOWN: RIGHT SIDE OPPOSITE)
VIEW ON UPPER SURFACE

DETAIL I

Horizontal Stabilizer - Center Section -
Removal and Installation of Front Spar
Figure 1 (Sheet 5)



(LEFT SIDE SHOWN: RIGHT SIDE OPPOSITE)
VIEW ON LOWER SURFACE
DETAIL II

Horizontal Stabilizer - Center Section -
Removal and Installation of Front Spar
Figure 1 (Sheet 6)

FASTENER CODE

[A] MS20470D5 - Universal Head Solid Rivet 5/32 Dia

[B] MS20470D6 - Universal Head Solid Rivet 3/16 Dia

[C] MS20470D8 - Universal Head Solid Rivet 1/4 Dia

[D] BACB30AU8 - Protruding Head Blind Bolt 1/4 Dia

[E] NAS1446-6 - Protruding Head Lockbolt 3/16 Dia
BACB30GW

[F] NAS464P6A16 - Bolt
AN364-624 or MS20364P - Nut

[G] NAS464P6A17 - Bolt
AN364-624 or MS20364P - Nut

[H] NAS464P4A11 - Bolt
H10-428 - Nut

[J] NAS464P4A13 - Bolt
H10-428 - Nut

[K] NAS464P4A10 - Bolt
H10-428 - Nut

[L] NAS1446-8 - Protruding Head Lockbolt 1/4 Dia
BACB30GW8

[M] NAS1105-13W - Bolt
AN364-524 - Nut
AN960-516L - Washer

[N] NAS464P4A12 - Bolt
H10-428 - Nut

[O] NAS464P4A14 - Bolt
H10-428 - Nut

[P] NAS464P4A10 - Bolt
H10-428 - Nut

REPAIR INSTRUCTIONS

1. Remove stabilizer from airplane per Maintenance Manual section 55-1-21. Support the stabilizer on customer designed and provided supports, located at the front spar, rear spar and trailing edge beams.

2. Attach Boeing tool number 2MIT65-3409, pinning thru 4 attach points, 2 each on the forward and aft stabilizer fittings. See detail I. Allow tool to rest on inboard face of rear spar lower fittings with airplane attaching bolts in place.

3. Making sure attach bolts can rotate freely, measure for shim thickness between front spar lower fitting and tool face. Use 0.060 feeler shim if possible. Make up and install required shim. Check free rotation in attach bolts again.

4. Remove leading edge rib and closure rib of stabilizer.

5. Leaving approximately 3/16 gap between stabilizer and tool, attach the outboard extending portions of tool to the front spar using a minimum of 6 holding screws each on the upper and lower chord.

   NOTE: Do not deflect stabilizer structure or tool parts when tightening screws.

6. In areas attached in number 5 above, apply a parting agent to the tool and stabilizer structure. Build a dam around tool parts and stabilizer structure and fill with epoxy. Allow time for epoxy to set. Recheck shims and attach bolts.

7. Remove tool, leaving epoxied portions of tool in place. See detail II. Remove clevis fitting.

8. Prepare new clevis fitting by locating, drilling and reaming to .4986/.5010 diameter the 8 holes common to the fitting and spar chords. This can be accomplished by using Boeing tool number DJ4-5201-3011 (-3012 opp).

   NOTE: Spare part should have full size terminal pin holes but all other holes should be undrilled.

9. Install new fitting in approximate location. Reinstall tool including shims and attach bolts. Check bolts for free rotation.

Front Spar Clevis Fitting Repair
Figure 1 (Sheet 1)

10. Check alignment of holes reamed in 8 above. If holes do not match or if corrosion exists in holes through chord flanges, line ream through the replacement fitting and spare chord flanges to .5142/.5157 dia for installation of BACB30NF8-()X (1/16 oversize) fastener in place of those removed. If misalignment or corrosion is still evident, ream holes to .5297/.5307 diameter for BACB30NF8-()Y (1/32 oversize) fasteners.

    CAUTION: SHIMS MUST BE FABRICATED TO FILL GAP BETWEEN REPLACEMENT FITTING AND SPAR CHORD FLANGE SUCH THAT NO MORE THAN A 0.003 GAP WILL EXIST PRIOR TO TIGHTENING OF FASTENERS.

11. Reinstall new fitting with all fasteners per engineering drawing 4-5201. Tighten fasteners one at a time, checking attach bolt for free rotation at all times.

12. Remove tool from stabilizer as in 7 above.

13. Reinstall leading edge and closure ribs.

14. Reinstall tool to stabilizer. Check attach bolts for free rotation.

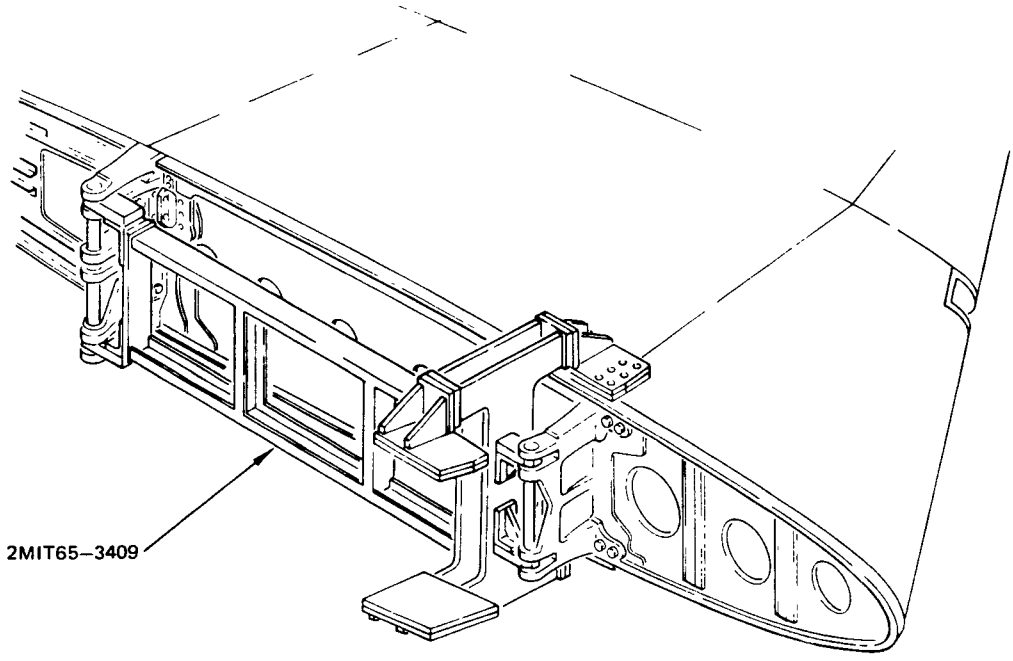
15. Remove entire tool from stabilizer making sure no epoxy remains on airplane.

16. Reinstall stabilizer.

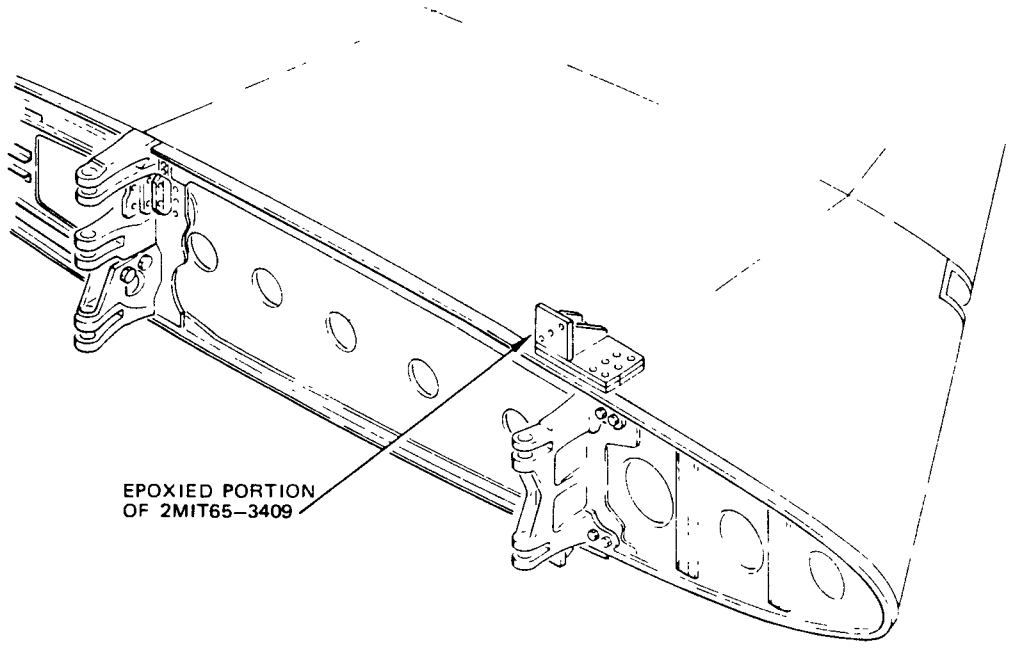
NOTES:

- BARE METAL MUST BE COATED WITH BMS 10-11 TYPE I PRIMER.
- INSTALL ALL PARTS WITH BMS 5-95 CORROSION SEALANT.

Front Spar Clevis Fitting Repair
Figure 1 (Sheet 2)



DETAIL I



DETAIL II

REPAIR INSTRUCTIONS

1. Remove stabilizer from airplane per Maintenance Manual section 55-1-21. Support the stabilizer on customer designed and provided supports located at front spar, rear spar and trailing edge beam.

   NOTE: During replacement of upper chord, the attachment of the trailing edge structure is much reduced; therefore, care should be exercised to prevent movement of structure.

2. Install Boeing tool number 9MIT65-6088 holding and reaming fixture on the stabilizer rear spar and determine the position of the upper chord relative to the lower chord by fitting shims between the tool and clevis faces. Identify and record shims for later use.

   NOTE: The 9MIT is used in conjunction with 8MIT65-6088 or 2MIT65-6088.

3. Remove tools from stabilizer.

4. Remove the leading edge, the removable (lower) and the fixed (upper) trailing edge skin panels to stabilizer station 182.

5. Remove the 6 upper inspar skins that are between the side of body closure rib to the rib at stabilizer station 182 and from the rear spar to the front spar.

6. Remove the removeable balance panel cove members from the aft side of the rear spar.

7. Remove fasteners common to the spar chord and the spar web and spar chord to rib chord attachment. Also remove the 3 9/16 diameter fasteners at the inboard end of spar chord (attachment to center chord).

8. Remove spar chord.

9. Install replacement chord. Using the 9MIT and the shims determined in 2 above to locate the vertical position of the inboard end, make sure the outboard end is positioned to fair with the outboard section of the chord.

10. Reinstall all fasteners using 1/64 or 1/32 oversize drawing type as required.

11. Reinstall all structural members in reverse order to its removal.

12. Replacement chord will not have full size terminal pin hole in clevis and will require reaming, using pilots and reaming tools which are part of the 9MIT65-6088. Flap peen holes per engineering drawing 65-3321 and install new bushings in wet BMS10-11 type I primer in previously primed holes.

NOTES:

- INSTALL ALL PARTS WITH BMS5-95 CORROSION SEALANT.

Rear Spar Upper Chord Repair
Figure 2 (Sheet 1)

REPAIR INSTRUCTIONS

1. Remove stabilizer from airplane per Maintenance Manual section 55-1-21. Support the stabilizer on customer designed and provided supports located at front spar, rear spar and trailing edge beam.

   NOTE: During replacement of upper chord, the attachment of the trailing edge structure is much reduced, therefore, care should be taken to prevent movement of structure.

2. Install Boeing tool number 9MIT65-6088, (using 8MIT65-6088 or 2MIT65-6088 in conjunction) on the stabilizer rear spar. Using shims or suitable measurements determine and record the vertical location of the inboard end of the chord. Remove the 9MIT65-6088.

3. Remove the leading edge, 5 of the removable (lower) and 5 of the fixed (upper) trailing edge skin panals.

4. Remove 5 of the inspar skins.

5. Remove the removable balance panel cove members from the aft side of the rear spar.

6. Remove the fasteners which are common to the center chord and spar webs, and the fasteners common to the center chord and the shear fittings.

7. Remove the chord.

8. Airplanes before cum line no. 884 will require rework of certain ribs. These are:

   A. Rib at inboard, end between spars. Machine the aft edge of the gusset plate to a 0,20X30° chamfer.

   B. Rib at inboard end, aft of rear spar. Machine the forward inboard edge of the web and the gusset plate in the area of the center chord to a 0.10X45° chamfer. See detail I.

   C. Rib at stabilizer station 11.55, between spars. Enlarge the cut out in the web and the gusset by removing 0.32 minimum from the forward edge of the cutout. Remove enough material so that the holes for the 3 AN4700 rivets are removed and add a new vertical row of 4 AN4700 rivets 0.60 $\pm$ 0.05 forward of the 3 rivet pattern with 1.10 $\pm$ 0.05 spacing vertically, positioned symmetrically across the gusset. See detail II.

   D. Rib at stabilizer station 20.55 between spars. Remove 0.10 x 0.03 from the forward edge of the cutout in the rib web and gusset plate. See detail III.

9. Install replacement chord, using the 9MIT65-6088 and positioning the outboard end such that fastener edge margins will be approximately equal on upper and lower chord flanges.

Rear Spar Center Chord Repair
Figure 3 (Sheet 1)

REPAIR INSTRUCTIONS (CONT)

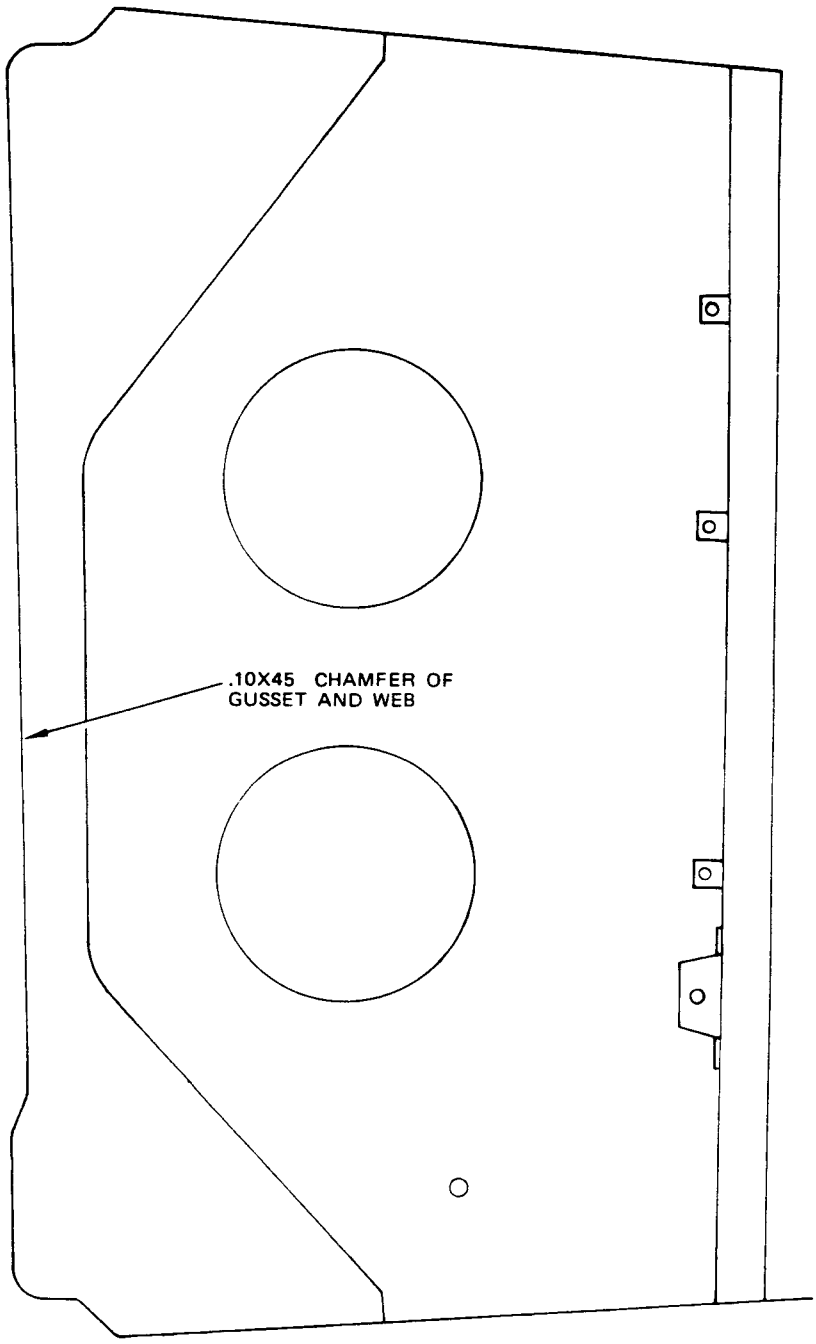
10. Reinstall all fasteners using 1/64 or 1/32 oversize drawing type as required and install all parts in reverse order to its removal as outlined above.

11. Ream full size terminal pin holes in replacement chord by using 9MIT65-6088. Flap peen holes per engineering drawing 65-3323 and install new bushing with wet BMS10-11 type 1 primer in previously dry primed holes.

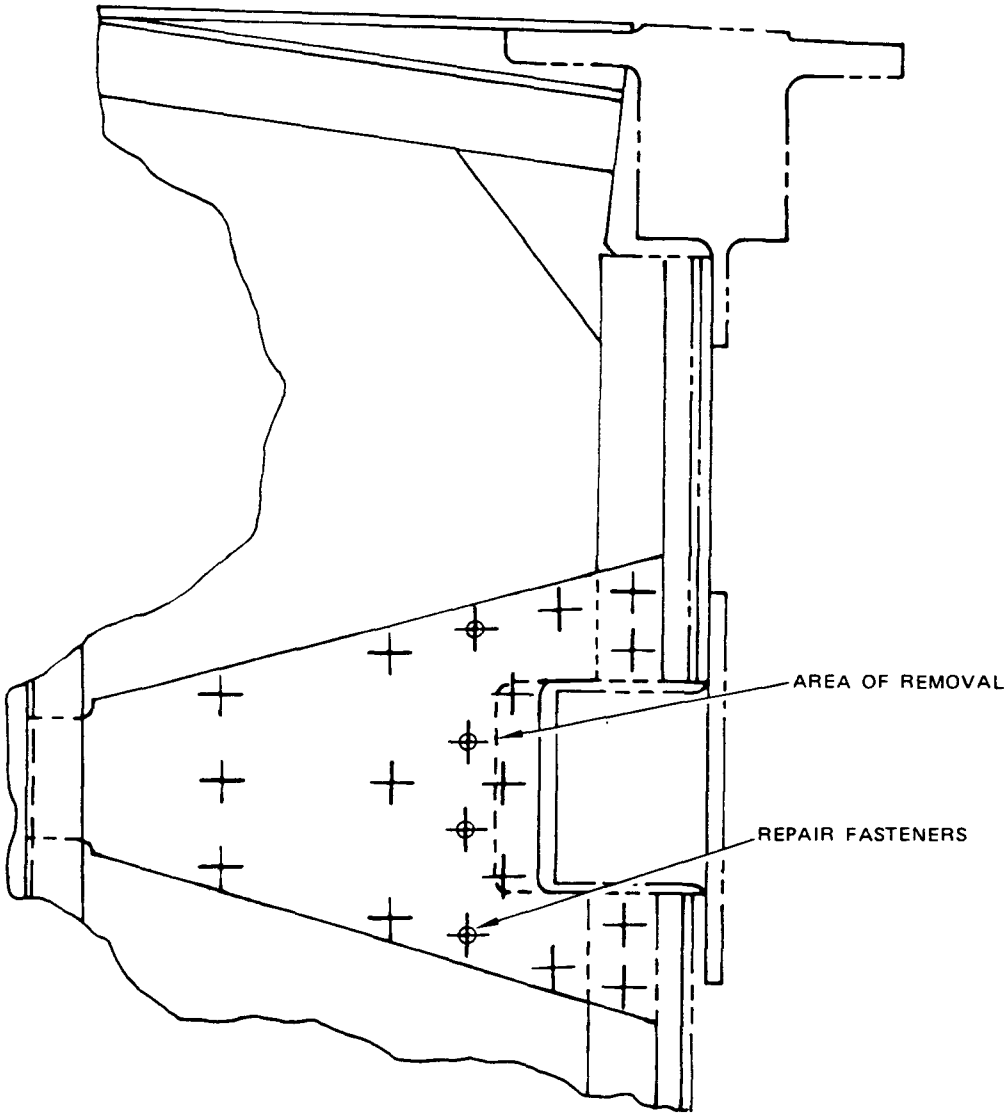
NOTES:

- INSTALL ALL PARTS WITH BMS 5-95 CORROSION SEALANT.

Rear Spar Center Cnord Repair
Figure 3 (Sheet 2)

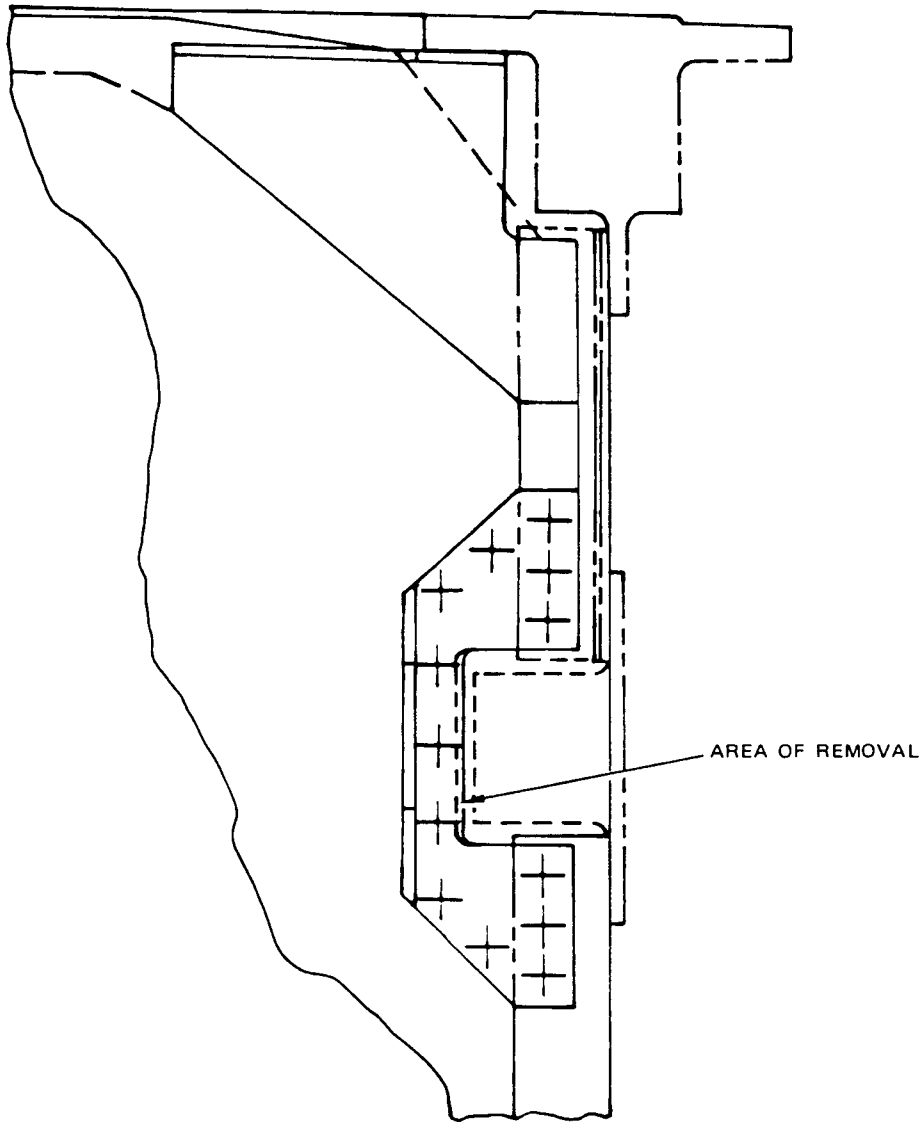


DETAIL I



DETAIL II

Rear Spar Center Chord Repair
Figure 3 (Sheet 4)



DETAIL III

Rear Spar Center Chord Repair
Figure 3 (Sheet 5)

REPAIR INSTRUCTIONS

1. Remove stabilizer from airplane per Maintenance Manual section 55-1-21. Support the stabilizer on customer designed and provided supports located at the front spar, rear spar and trailing edge beam.

2. Working from the outboard side of the closure rib and aft of the stabilizer rear spar, use a rotary file to remove 2 portruding areas of the middle section of the shear fitting to make a smooth curve as shown in detail I.

3. Remove the 3/4 dia and the 7/8 dia fasteners common to the shear fitting and the rear spar lower chord. Remove the single 3/4 dia fastener common to the shear fitting and the rear spar lower chord.

4. Remove the fasteners common to the shear fitting and closure rib.

5. Remove fasteners attaching lower spar chord to skin and spar web from the closure rib out to elevator station 25.5. Using a jack screw or other suitable tool for applying pressure, spring the lower chord down sufficiently to permit sliding the shear fitting inboard to remove it.

6. Remove the 2 portruding areas on the new shear fitting as in 2 above if not already accomplished.

7. Prepare new shear fitting for installation by locating, drilling and reaming the 2 outboard bolt holes to .7486/.7506 and the inboard bolt hole to .8735/.8763 dia. This can be accomplished by using Boeing tool number DJ4-5203-3821 (-3822 opp) to locate these fastener holes relative to the machined lower surface and 2.000 dia bushing hole.

8. Prime all bare metal surfaces and install part on stabilizer.

9. If holes do not align properly, insure the alignment of the 2.000 dia hole and line ream the other holes. The 3/4 and 7/8 dia fastener holes may respectively be reamed to .7642/.7662 dia and .8891/.8919 dia for 1/64 oversized fasteners or .7798/.7818 dia and .9047/.9075 dia for 1/32 oversize fasteners.

   NOTE: Shim between shear fitting and chord lugs so that the gap will be 0.003 or less prior to tightening bolts. Coat shims with BMS 10-11 type I prior to installation. Replacement fasteners will be BACB30NF12-()X, BACB30NF14-()X, BACB3NF12-()Y or BACB3NF14-()Y as required. Install new fasteners of drawing type common to shear fitting and stabilizer closure rib webs.

Rear Spar Lower Chord Shear Fitting Repair
Figure 4 (Sheet 1)

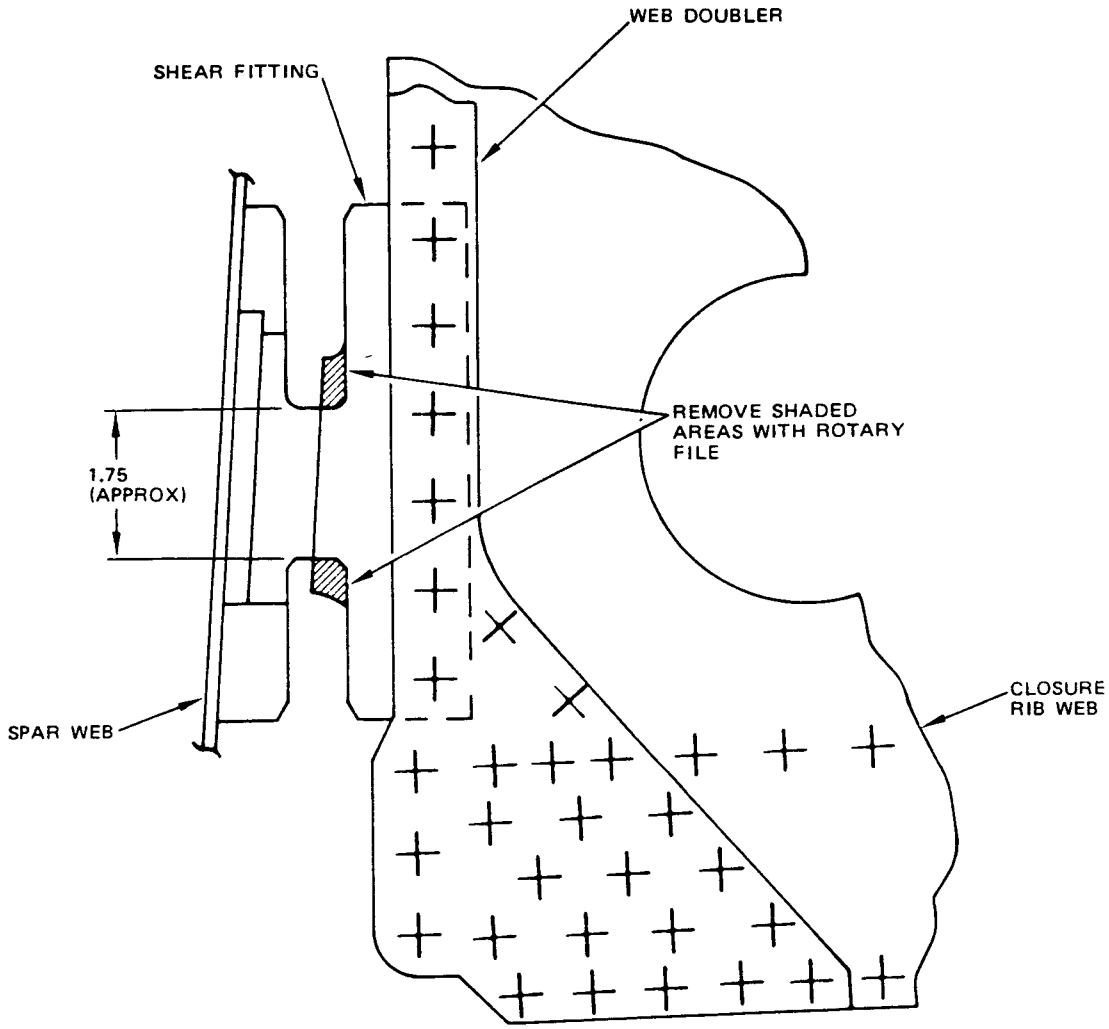
REPAIR INSTRUCTIONS (CONT)

10. Reinstall fasteners common to skins and chords and webs using drawing type rivets or Hi-Loks installed using long handled bars or wrench extensions with access from front spar.

NOTE:

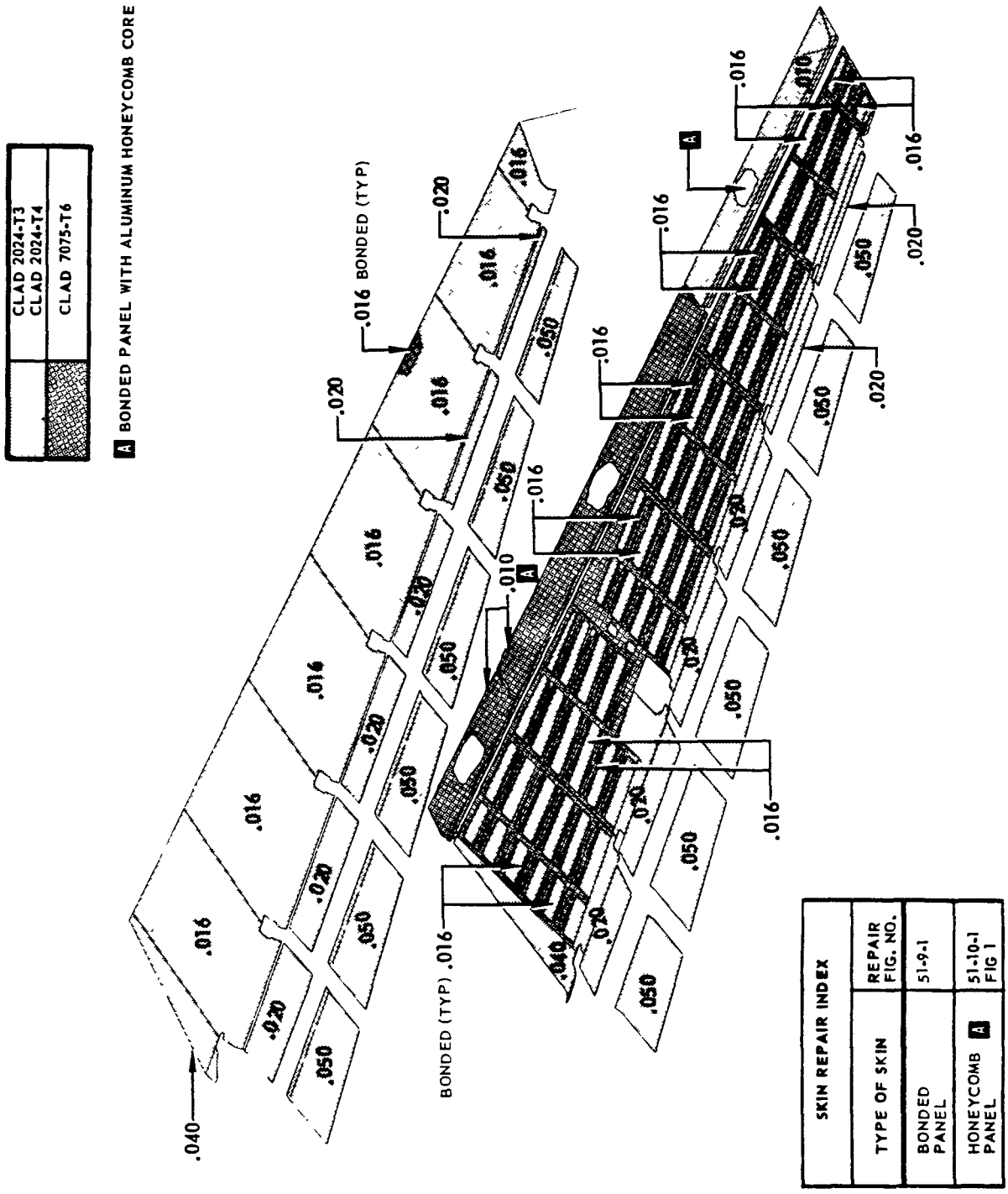
- INSTALL ALL PARTS WITH BMS 5-95 CORROSION SEALANT.

Rear Spar Lower Chord Shear Fitting Repair
Figure 4 (Sheet 2)



REAR SPAR LOWER CHORD SHEAR FITTING REPAIR
DETAIL I

Rear Spar Lower Chord Shear Fitting Repair
Figure 4 (Sheet 3)



Elevator and Tabs Skin Materials Identification
Figure 1

ELEVATOR AND TABS SKIN REPAIRS

1. General

A. For bonding of elevator panel repairs, see 51-9-1.

B. For repair of the elevator tabs, see 51-10-1.

REPAIR INSTRUCTIONS

1. Drill a 0.25 diameter hole at each end of crack according to 51-2-10.
2. Fabricate repair part.
3. Prepare the faying surfaces of the bonded panel and the repair part as described in 51-9-1.
4. Apply a primer coat as described in 51-9-1, and bond according to 51-9-1.
5. Install fasteners.
6. Seal the repair as described in 51-9-1.
7. Restore the finish according to 51-2-0 of the maintenance manual.
8. Refer to 51-15 for balance adjusting when repairing any control surface.
9. For required performance considerations in regions of critical smoothness, see 51-4-1.

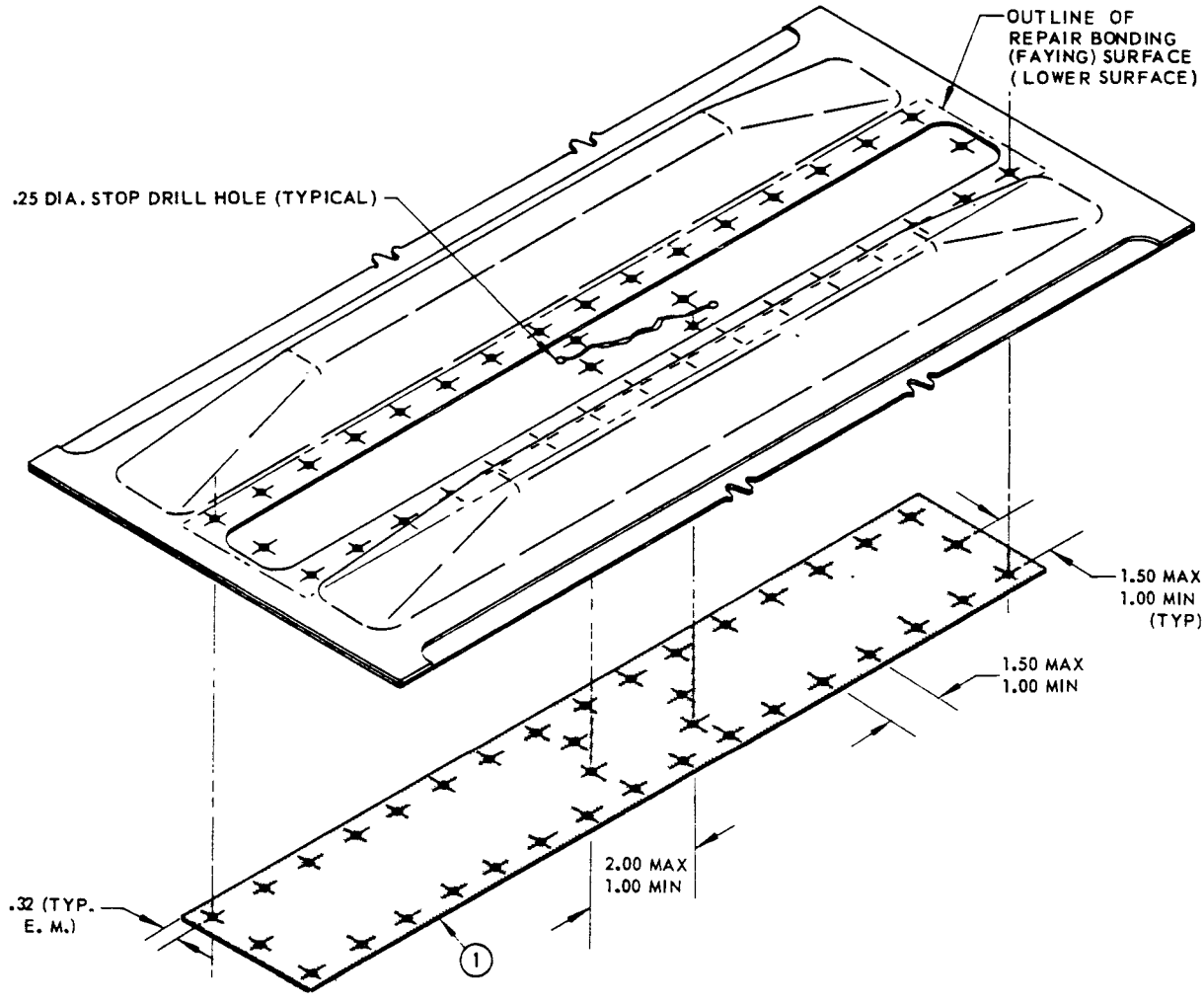
NOTE

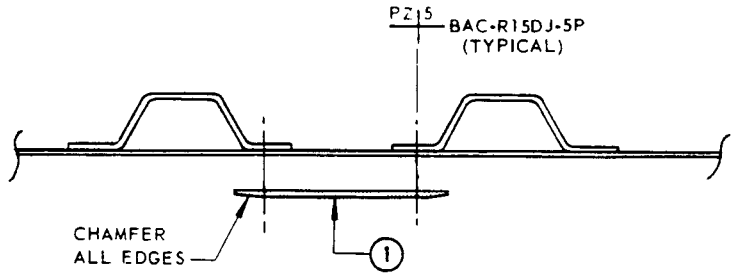
- SEE 51-2-0 FOR FASTENER CODE, REMOVAL AND INSTALLATION, HOLE SIZES AND EDGE MARGINS.
- SEE FIGURE 3 FOR OPTIONAL SKIN REPAIR.

✦ REPAIR FASTENER LOCATIONS.

REPAIR MATERIAL			
PART		QTY	MATERIAL
①	PATCH	1	SAME AS DAMAGED SKIN

Skin Repair - Empennage Bonded Metal Panels
Figure 1 (Sheet 1)





SECTION THROUGH REPAIR

Skin Repair - Empennage Bonded Metal Panels
Figure 1 (Sheet 2)

REPAIR INSTRUCTIONS

1. Drill a 0.25 diameter hole at each end of crack according to 51-2-10.
2. Fabricate repair part.
3. Prepare the faying surfaces of the bonded panel and the repair part as described in 51-9-1.
4. Apply a primer coat as described in 51-9-1, and bond according to 51-9-1.
5. Install fasteners.
6. Seal the repair as described in 51-9-1.
7. Restore the finish according to 51-2-0 of the maintenance manual.
8. Refer to 51-15 for balance adjusting when repairing any control surface.
9. For required performance considerations in regions of critical smoothness, see 51-4-1.

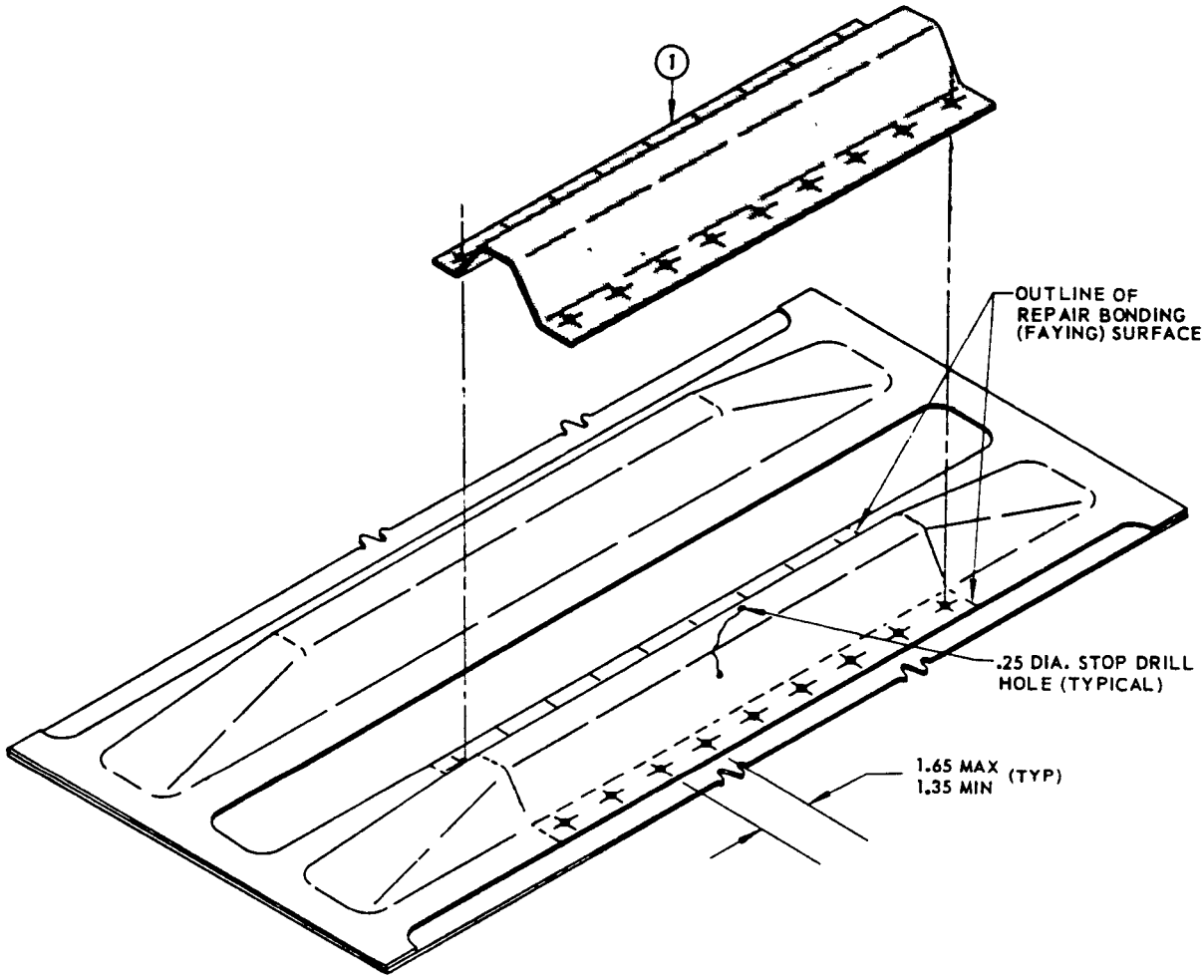
NOTE

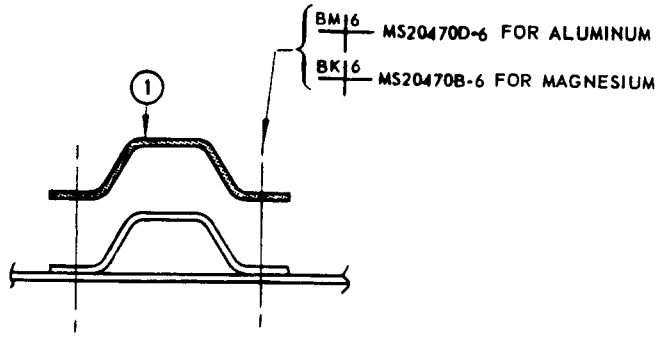
- SEE 51-2-0 FOR FASTENER CODE, REMOVAL AND INSTALLATION, HOLE SIZES AND EDGE MARGINS.

✦ REPAIR FASTENER LOCATIONS.

REPAIR MATERIAL			
PART		QTY	MATERIAL
①	DOUBLER	1	SAME AS DAMAGED SKIN STIFFENER

Skin Beaded Doubler Repair - Empennage Bonded Metal Panels
Figure 2 (Sheet 1)





SECTION THROUGH DAMAGE

Skin Beaded Doubler Repair - Empennage Bonded Metal Panels
Figure 2 (Sheet 2)

REPAIR INSTRUCTIONS

1. Drill a 0.25 diameter hole at each end of crack according to 51-2-10.
2. Fabricate repair part.
3. Prepare the faying surfaces of the bonded panel and the repair part as described in 51-9-1.
4. Apply a primer coat as described in 51-9-1, and bond according to 51-9-1.
5. Install fasteners.
6. Seal the repair as described in 51-9-1.
7. Restore the finish according to 51-2-0 of the maintenance manual.
8. Refer to 51-15 for balance adjusting when repairing any control surface.
9. For required performance considerations in regions of critical smoothness, see 51-4-1.

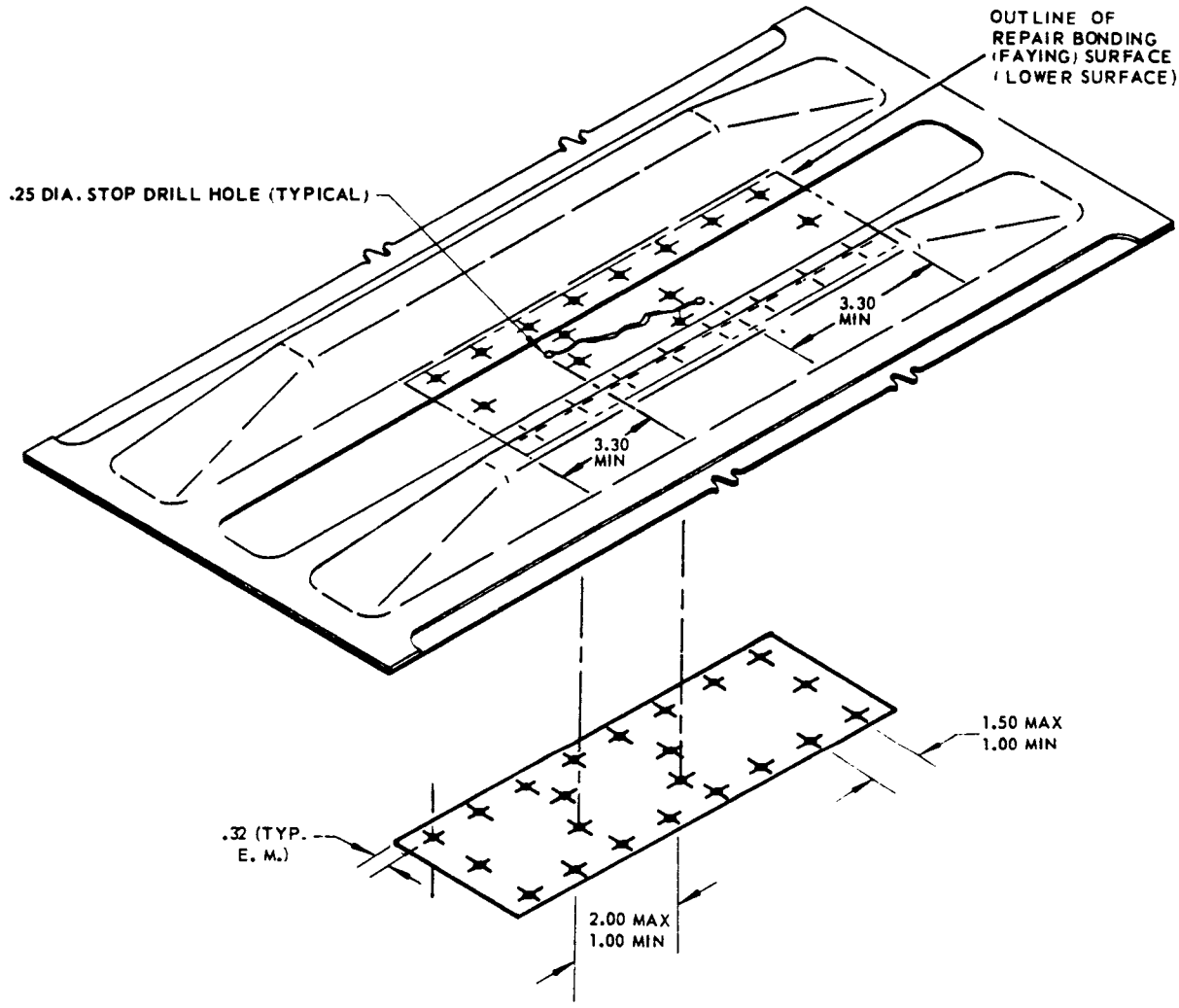
NOTE

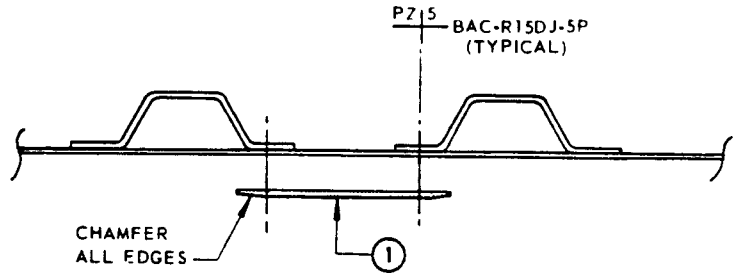
- SEE 51-2-0 FOR FASTENER CODE, REMOVAL AND INSTALLATION, HOLE SIZES AND EDGE MARGINS.
- SEE FIGURE 1 FOR OPTIONAL SKIN REPAIR.

✦ REPAIR FASTENER LOCATIONS.

REPAIR MATERIAL			
PART		QTY	MATERIAL
①	PATCH	1	SAME AS DAMAGED SKIN

Skin Repair - Empennage Bonded Metal Panels
Figure 3 (Sheet 1)





SECTION THROUGH REPAIR

Skin Repair - Empennage Bonded Metal Panels
Figure 3 (Sheet 2)

REPAIR INSTRUCTIONS

1. Drill a 0.25 diameter hole at each end of crack according to 51-2-10.
2. Fabricate repair part.
3. Prepare the faying surfaces of the bonded panel and the repair part as described in 51-9-1.
4. Apply a primer coat as described in 51-9-1, and bond according to 51-9-1.
5. Install fasteners.
6. Seal the repair as described in 51-9-1.
7. Restore the finish according to 51-2-0 of the maintenance manual.
8. Refer to 51-15 for balance adjusting when repairing any control surface.
9. For required performance considerations in regions of critical smoothness, see 51-4-1.

NOTE

- SEE 51-2-0 FOR FASTENER CODE, REMOVAL AND INSTALLATION, HOLE SIZES AND EDGE MARGINS.

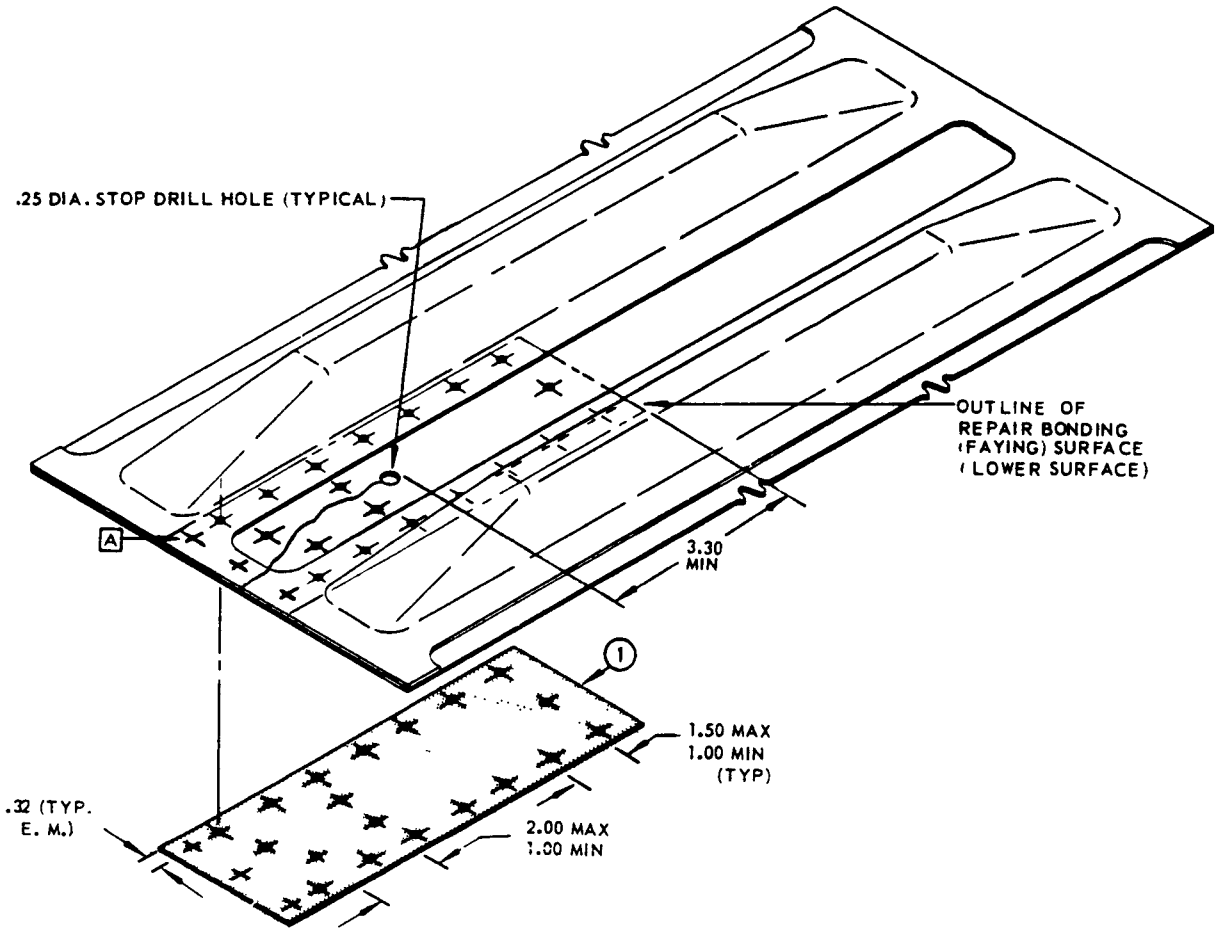
✦ REPAIR FASTENER LOCATIONS.

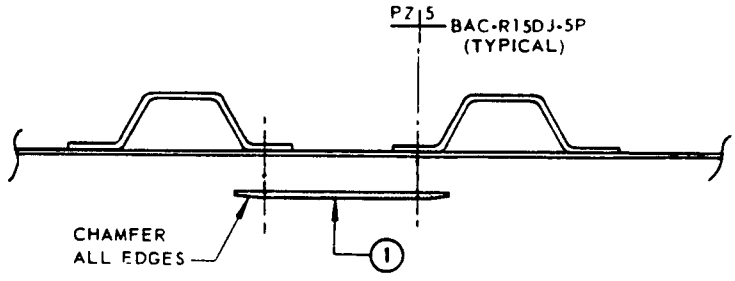
┼ ORIGINAL FASTENER LOCATIONS.

[A] LOCATE AND DRILL FASTENER HOLES AT THE SAME SPACING AND DIAMETER AS THE ORIGINAL FASTENERS. EXTRA FASTENERS, IF REQUIRED, MUST BE FLUSH THIS SIDE.

REPAIR MATERIAL			
PART		QTY	MATERIAL
①	PATCH	1	SAME AS DAMAGED SKIN

Skin Repair - Empennage Bonded Metal Panel Edges
Figure 4 (Sheet 1)





SECTION THROUGH REPAIR

Skin Repair - Empennage Bonded Metal Panel Edges
Figure 4 (Sheet 2)

ITEM	CHORDS		WEB	
	MATERIAL	REPAIR FIG NO.	MATERIAL	REPAIR FIG NO.
1	BAC1514-925 7075-T6 (UPPER)	51-14-4 FIG 1	.025 CLAD 2024-T3	51-14-2 FIG 1
	BAC1514-1344 7075-T6 (LOWER)	51-14-1 FIG 1		
2	BAC1514-925 7075-T6 (UPPER)	51-14-4 FIG 1	.025 + .025 2024-T3 DOUBLER .016 2024-T3	
	BAC1514-1344 7075-T6 (LOWER)	51-14-1 FIG 1		
3	BAC 1505-29222 7075-T6	51-14-4 FIG. 1	.025 CLAD 2024-T3	51-14-2 FIG. 1
4	BAC 1506-1061 7075-T6		.050 CLAD 7075-T6	51-14-2 FIG. 1
5	BAC 1506-1053 7075-T6	55-4-4 FIG. 1	.025 CLAD 7075-T6	51-14-2 FIG. 1
6	BAC 1505-26400 7075-T6	55-4-4 FIG. 1	.025 CLAD 2024-T4	51-14-2 FIG. 1
7	BAC 1506-1053 7075-T6 (UPPER)	55-4-4 FIG. 1	.025 CLAD 2024-T4	51-14-2 FIG. 1
8	BAC 1505-26400 7075-T6 (LOWER)	55-4-4 FIG. 1		
9	BAC 1506-1053 7075-T6	55-4-4 FIG. 1	.032 CLAD 7075-T6	51-14-2 FIG. 1
10	BAC-1506-1053 7075-T6	55-4-4 FIG. 1	.025 CLAD 2024-T4	51-14-2 FIG. 1
11			.025 CLAD 2024-T4	51-14-3 FIG. 1
12			.050 CLAD 2024-T4	51-14-3 FIG. 1
13			.010 CLAD [A] 2024-T3	51-10-1 FIG. 1
14			HINGE 2024-T4	51-10-1 FIG. 1
15			.010 CLAD [A] 7075-T6	51-10-1 FIG. 1
16			.032 CLAD 2024-T4	51-14-3 FIG. 1
17			.040 CLAD 7075-T6	51-14-3 FIG. 1
18			.025 CLAD 7075-T6	51-14-3 FIG. 1
19			.032 CLAD 7075-T6	51-14-3 FIG. 1
20			.050 CLAD 7075-T6	51-14-3 FIG. 1
21			.071 CLAD 7075-T6	51-14-3 FIG. 1
22			.063 CLAD 7075-T6	51-14-3 FIG. 1

ITEM	CHORD		WEB	
	MATERIAL	REPAIR FIG. NO.	MATERIAL	REPAIR FIG. NO.
(23)	0.050 CRES SHEET AISI 301 1/2 HARD [D]			
(24)			0.090 CLAD 2024 - T42 [D]	
(25)	BAC1490-2609 7075-T6 [D]			

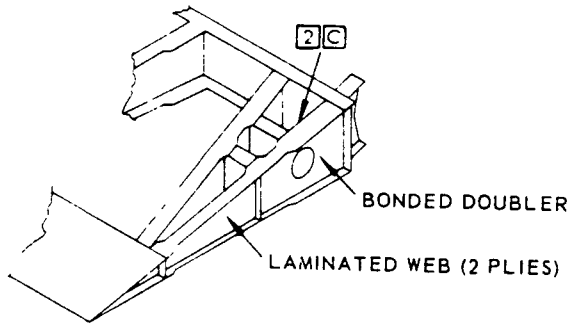
NOTE

[A] PANEL CONTAINS ALUMINUM HONEY-COMB CORE.

[B] FOR ALL AIRPLANE SERIAL NUMBERS NOT LISTED IN [C].

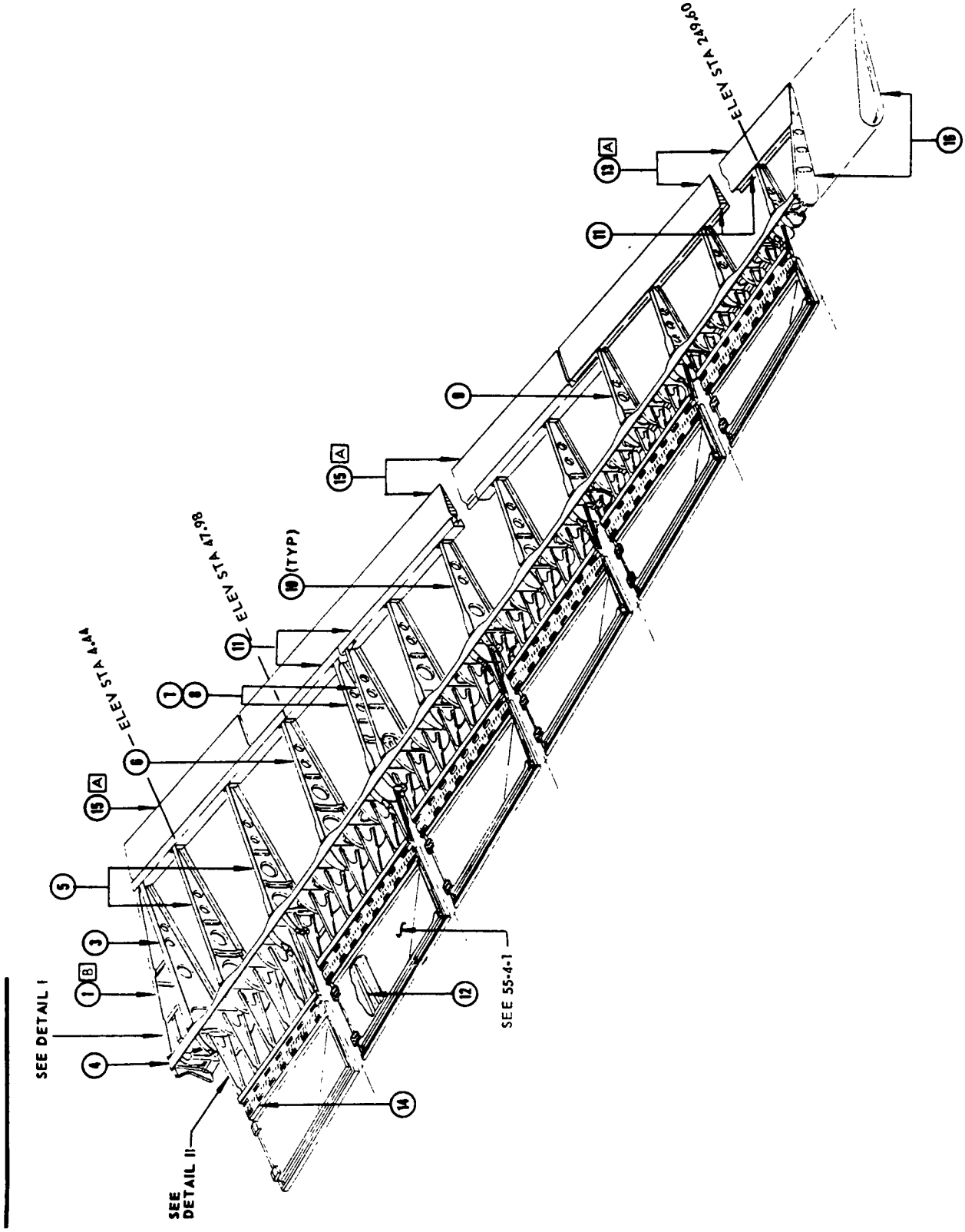
[C] FOR AIRPLANES WITH SERVICE BULLETIN NO. 2664 INCORPORATED.

[D] FOR AIRPLANES WITH SERVICE BULLETIN 2386 INCORPORATED.

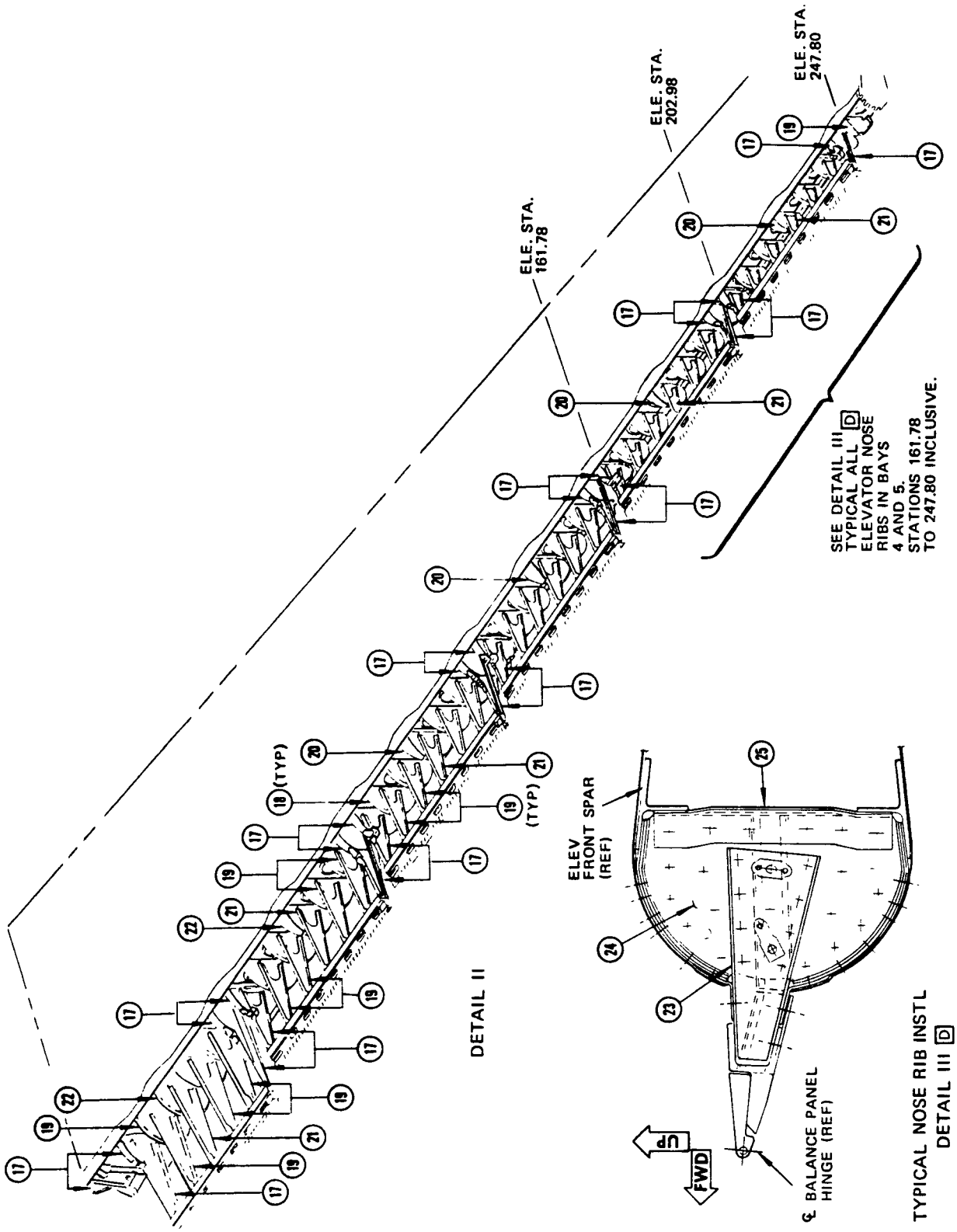


DETAIL I

Elevator and Tabs Structure Identification
Figure 1 (Sheet 2 of 4)



Elevator and Tabs Structure Identification
Figure 1 (Sheet 3 of 4)



Elevator and Tabs Structure Identification
Figure 1 (Sheet 4 of 4)

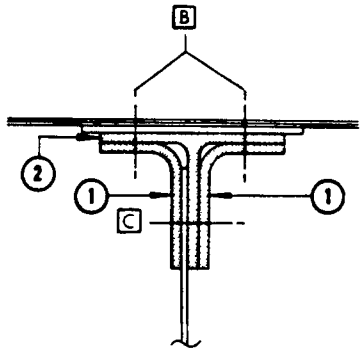
FAA Approved Repair

BOEING Intercontinental 707

STRUCTURAL REPAIR

REPAIR MATERIAL

LOCATION		ELEV. STA. 4.44 TO 25.58		ELEV. STA. 47.98 TO 249.60	
PART		QTY.	MATERIAL	QTY.	MATERIAL
(1)	ANGLE	2	.050 CLAD 7075-0 HT -T6	2	.050 CLAD 7075-0 HT-T6
(2)	FILLER [A]	1	BAC 1506-1053 7075-T6	1	BAC 1506-1053 7075-T6
[B]	FASTENER	4	BAC R15-CE-5D OR BAC B30AY-5	8	BAC R14-CE-5D OR BAC B30AY-5
[C]	FASTENER	4	AN470D-5	3	AN470D-5



SECTION THROUGH DAMAGE

NOTE

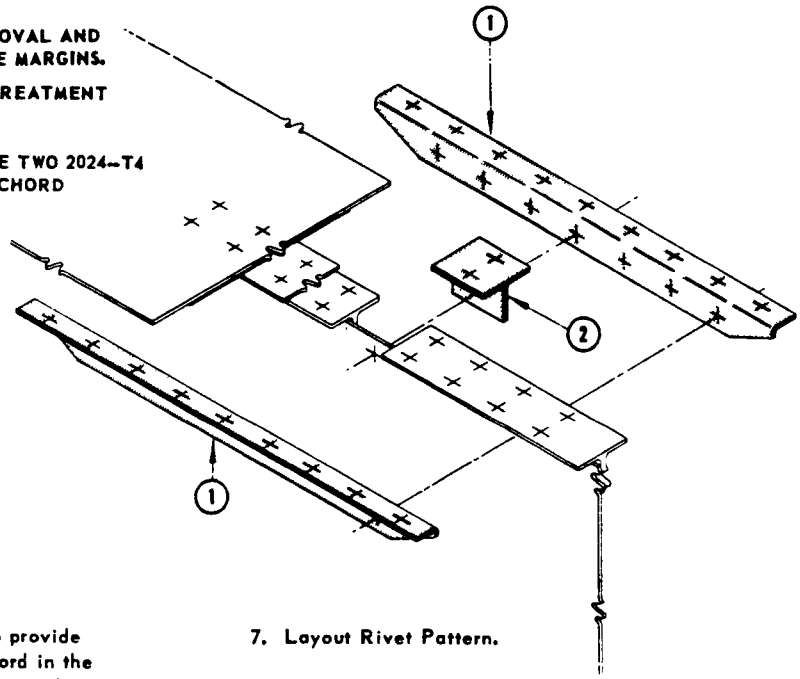
NUMBER OF FASTENERS REQUIRED IS FOR EACH SIDE OF DAMAGE.

SEE 51-2-0 FOR FASTENER CODE, REMOVAL AND INSTALLATION, HOLE SIZES AND EDGE MARGINS.

SEE 51-8-0 FOR METAL PROTECTIVE TREATMENT

+ ORIGINAL FASTENER LOCATIONS

[A] IF EXTRUSION IS NOT AVAILABLE, USE TWO 2024-T4 PLATES OF SAME GAGE AS ORIGINAL CHORD



REPAIR SHOWN FOR STA 47.98 TO 249.60

REPAIR INSTRUCTIONS

1. Remove panel over the damaged area to provide access for repair fabrication. If the chord in the center of the panel is damaged, the one panel is removed. If the chord at the joint of two panels is damaged, the two panels will have to be removed.
2. Remove minimum amount of material to clean up damage.
3. Fabricate two pieces of part 1 and one piece of part 2.
4. Remove required number of rivets through chord and web at both ends of damage. See Table.
5. All cleaned up damaged areas and repair parts must be free of scratches, burrs, nicks, sharp edges and corners.
6. Before installation alodize per 51-8-0 all holes and areas of original structure and repair parts having no protective finish.
7. Layout Rivet Pattern.
8. Tack rivet or spotweld part 2 to part 1.
9. Install repair parts.
10. Replace panel with shear head rivets (5/32 DIA) BAC-R15CE-D5, or, if it is impossible to use these, replace with BAC-B30AY-5 (Jo-Bolts). If panel has been damaged, repair per 51-9-1 before replacement.
11. Replace original finish per 51-2-0 of the 707 Maintenance Manual.
12. Rebalance per 51-15-7.

Elevator Rib Tee Chord Repair
Figure 1

NOTES

MOST OF THE LEADING EDGE IS COVERED BY A RUBBER DEICING BOOT WITH A THIN LAYER OF STAINLESS STEEL ON THE OUTSIDE. THE DEICING BOOT IS NOT SHOWN IN THIS ILLUSTRATION. PA 707-321C AIRPLANES, TW 707-331B AND LH 707-330B AIRPLANES HAVE NO DEICING BOOT.

BONDED PANEL

FIBERGLASS CLOTH REINFORCED PLASTIC

FIBERGLASS ACCESS PANEL RIGHT SIDE ONLY

THE FOLLOWING AIRPLANES HAVE 0.032 MAG. CONDITION "A" SKINS

AF 17613 THRU 17622, 17918 THRU 17924, 18245 THRU 18247, 18686
BA 18372, 18373
CO 18825, 18826
IN 18737, 18880
LH 17718 THRU 17721, 18056, 18462, 18463, 18686
NW 18746 THRU 18748
PA 17592 THRU 17608, 18083 THRU 18085, 18335 THRU 18339, 18579, 18580, 18591, 18714 THRU 18718, 18765 THRU 18767 18790, 18824, 19267
SA 17928, 17930
SN 17623 THRU 17627, 18374, 18460, 18890
TW 18738, 18709
WY 18582, 18583, 18707

ALL AIRPLANES NOT LISTED IN HAVE 0.025 x 2024-T3 SKINS AT THIS LOCATION

ALL AIRPLANES NOT LISTED IN HAVE 0.032 x 7075-T6 SKINS AT THIS LOCATION

FOR AIRPLANES

AF 17613 THRU 17622, 18245 THRU 18247, 17918 THRU 17924, 18375
AI 17722 THRU 17724, 18055, 18414, 18415
BA 17704 THRU 17717, 18372, 18373, 18411 THRU 18413
LH 17718 THRU 17721, 18056
LY 18070, 18071, 18357
PA 17592 THRU 17608, 17674, 17677, 17680, 17683, 17686, 17689, 18083 THRU 18085, 18335 THRU 18339
RG 17905, 17906
SA 17624 THRU 17627, 17928 THRU 17930, 18374, 18460
SN 17623, 18247, 18374
TW 17673, 17675, 17676, 17678, 17679, 17681, 17682, 17684, 17685, 17687, 17688, 17690

FOR AIRPLANES:

AA 18689 AND ON
AF 18456 AND ON
AI 18708 AND ON
AR 19238 AND ON
AV 19741
BA 18924 AND ON
BO 19000 AND ON
BN 19104 AND ON
CO 18825 AND ON
EG 19590
EJ 19417
ET 19736
FT 18975 AND ON
IN 18737 AND ON
LH 18462 AND ON
LN 21223 AND ON
LY 20035 AND ON
ML 19737 AND ON
MS 19844, 19845
NW 18584 AND ON
PA 18832 AND ON
PK 19284 AND ON
QF 18808 AND ON
RD 19416
RG 18694
SA 18891 AND ON

Vertical Fin Skin Material Identification
Figure 1 (Sheet 1)

NOTES (CONTINUED)

[H] (CONTINUED)
SB 19840 AND ON
SN 18890 AND ON
ST 19820 THRU 19822
SV 19809, 19810
TP 18961 AND ON
TW 18405 AND ON
WA 19963 AND ON
WD 19789
WY 18582 AND ON
ZC 19415 AND ON

[K] 0.050 FIBERGLASS FAIRING ON WT 20669

[M] THE FOLLOWING AIRPLANES HAVE 0.064 MAGNESIUM ALLOY CONDITION H FIN-BODY FAIRINGS
AF 17613 THRU 17622, 17918 THRU 17924, 18245 THRU 18247, 18375, 18456 THRU 18459, 18685, 18686
BA 17703 THRU 17717, 18411 THRU 18413, 18372, 18373
CO 18825, 18826
IN 18737, 18880
LH 17718 THRU 17721, 18056 18462, 18463
NW 18584 THRU 18586, 18693, 18710, 18746 THRU 18748
PA 17593 THRU 17608, 18083 THRU 18085, 18335 THRU 18339, 18579, 18580, 18591, 18714 THRU 18718, 18765 THRU 18767, 18790, 18824
SA 17928 THRU 17930
SN 17623 THRU 17627, 18374, 18560, 18890
TW 18738, 18709
WY 18582, 18583, 18707

[N] ALL OTHER AIRPLANES NOT SHOWN IN [K] AND [M] HAVE 0.050 CLAD 2024-T3 FIN-BODY FAIRINGS.

[P] FOR AIRPLANES WITH CRASH POSITION INDICATOR INSTALLED

[Q] FOR VIP AIRPLANES WITH TV ANTENNA

[R] FOR CUM LINE NUMBER: 911

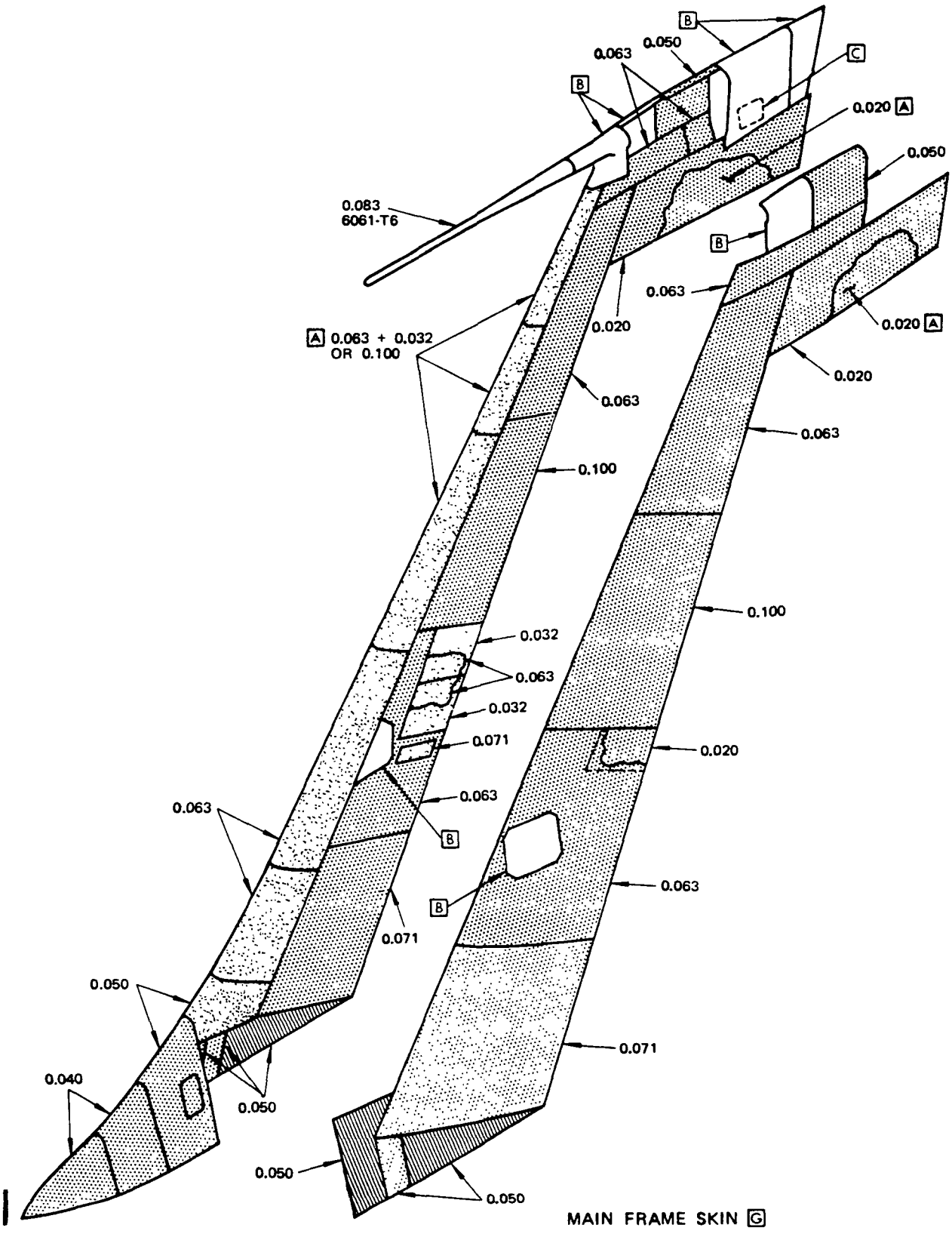
[S] ANTENNA FIN CAP 0.040 CLAD 2024-T4

[T] FOR AIRPLANES WITH TV ANTENNA EXCEPT CUM LINE NUMBER: 911

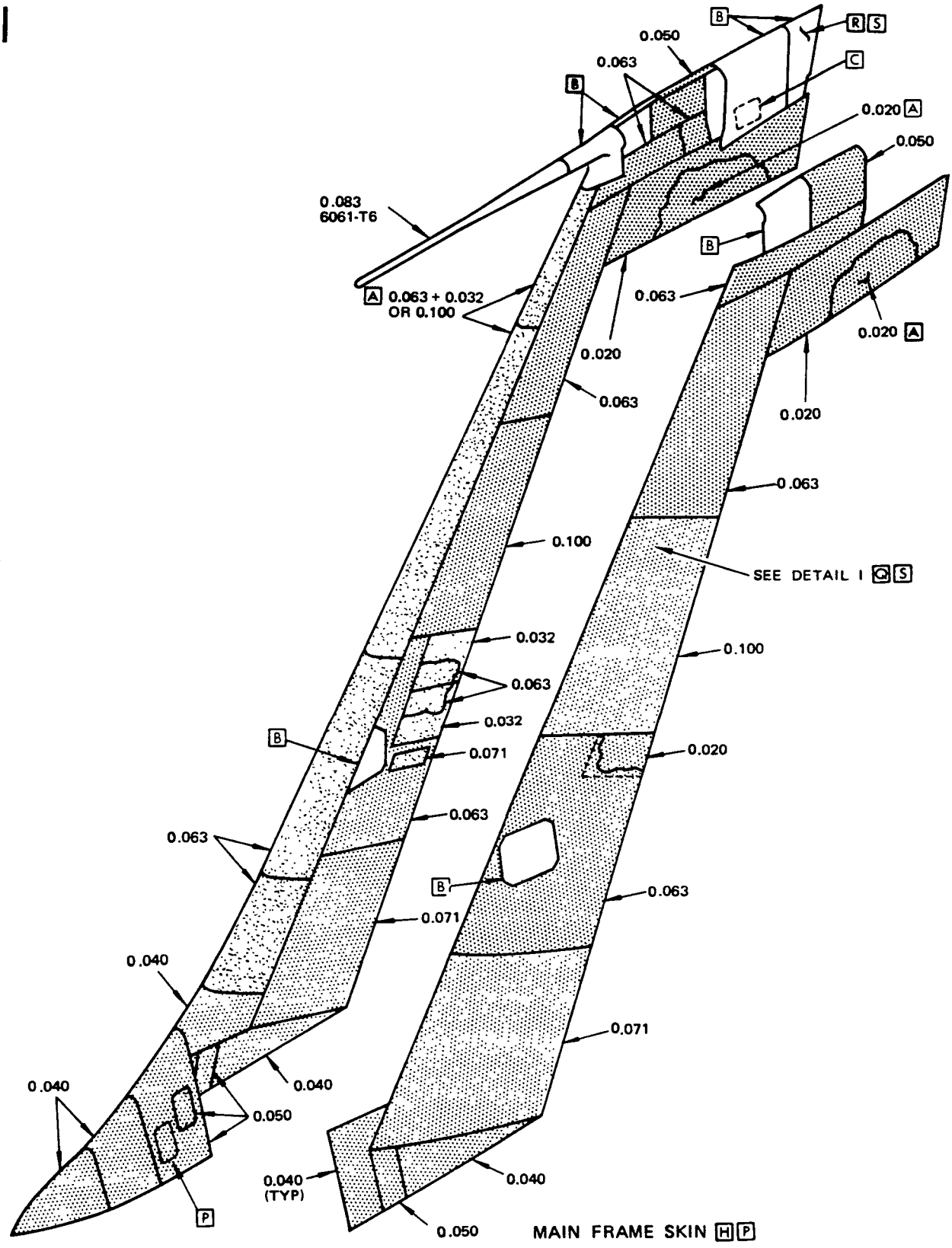
SKIN REPAIR INDEX	
TYPE OF SKIN	REPAIR FIG. NO.
INTERSPAR SKIN	55-5-2 FIG. 1 & 2
LEADING EDGE SKIN	55-5-6 FIG. 1 & 2
BONDED PANELS	51-9-1
REINFORCED PLASTIC [B]	51-11-1 FIG. 1

	CLAD 2024-T3 CLAD 2024-T4
	CLAD 7075-T6
	MAG COND A MAG COND H

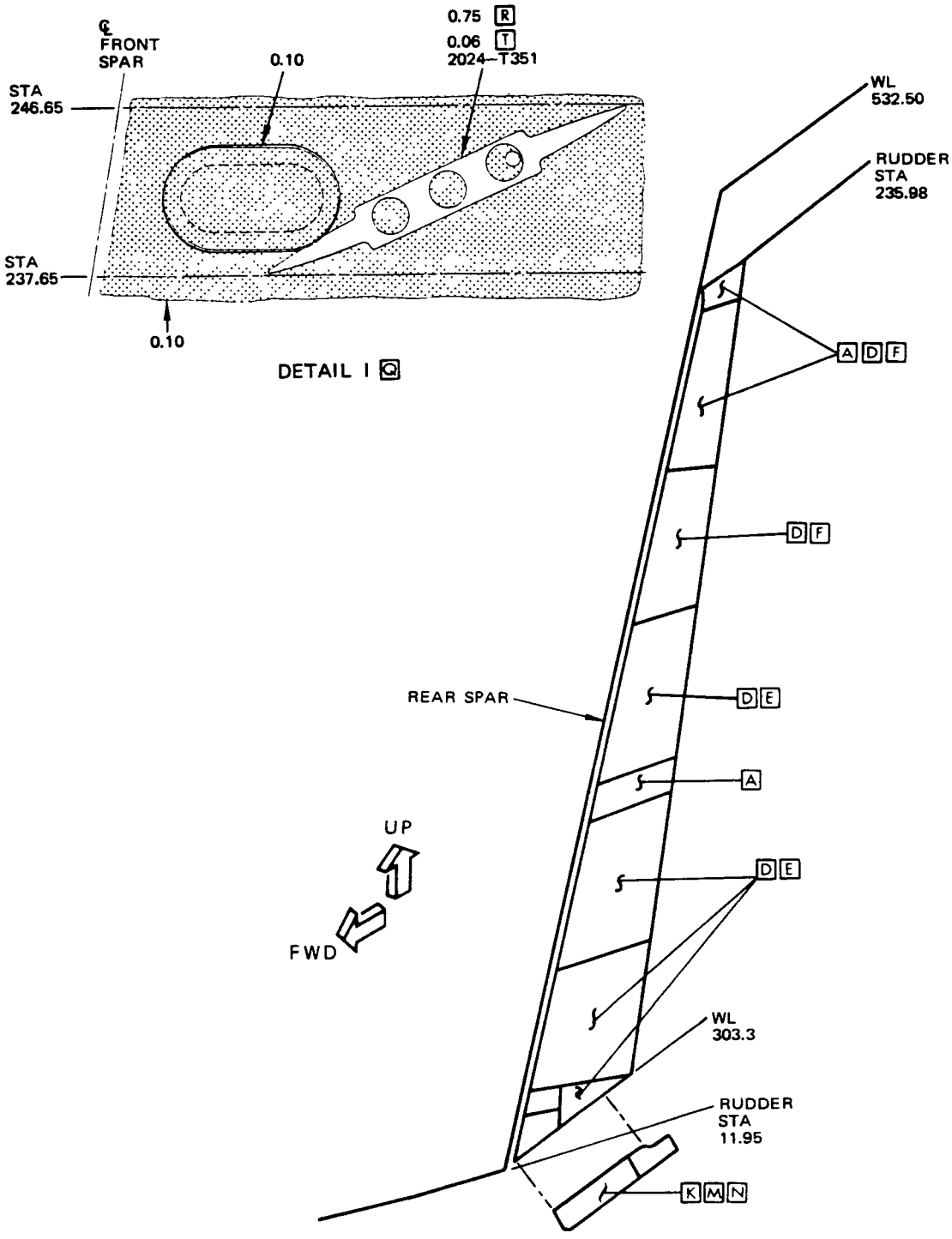
Vertical Fin Skin Material Identification
Figure 1 (Sheet 2)



Vertical Fin Skin Material Identification
Figure 1 (Sheet 3)



Vertical Fin Skin Material Identification
Figure 1 (Sheet 4)



Vertical Fin Skin Material Identification
Figure 1 (Sheet 5)

VERTICAL FIN SKIN REPAIRS

1. General

   A. For interspar skin repairs, see figure 1 and 2.

   B. For repair of the leading edge skin, see 55-5-6.

   C. For repair of the bonded panels of the trailing edge of the vertical fin, see 51-9-1.

REPAIR INSTRUCTIONS

1. This repair is an external patch applicable to interspar skin from fin station 50.53 to the tip of the vertical fin. For optimum performance of the airplane, the external patch should be replaced with the flush repair shown in Figure 2 at the earliest convenient time.

2. Stop drill all cracks in the skin with 0.25 inch drill. Make the damaged projections smooth and to original contour of the skin. When necessary, trim out the skin around the damaged area rounding the corners of the cutout to not less than 0.50 inch radius. Remove all burrs, nicks and sharp edges. Make the cutout rectangular in shape.

3. Make a patch large enough to cover the damage and to accommodate repair rivets with adequate edge margins as shown in Figure 1. Chamfer all edges of the patch.

4. Drill rivet holes for the repair fasteners through the patch and the skin. See 51-2-5 for fastener hole sizes.

5. Attach the external patch to the skin, using blind bolts as tabulated.

NOTE

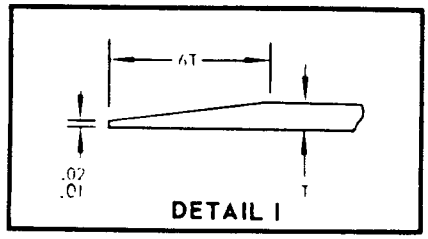
SEE 51-2-0 FOR FASTENER CODE, REMOVAL AND INSTALLATION, HOLE SIZES AND EDGE MARGINS.

SEE 51-8-0 FOR METAL PROTECTIVE TREATMENT

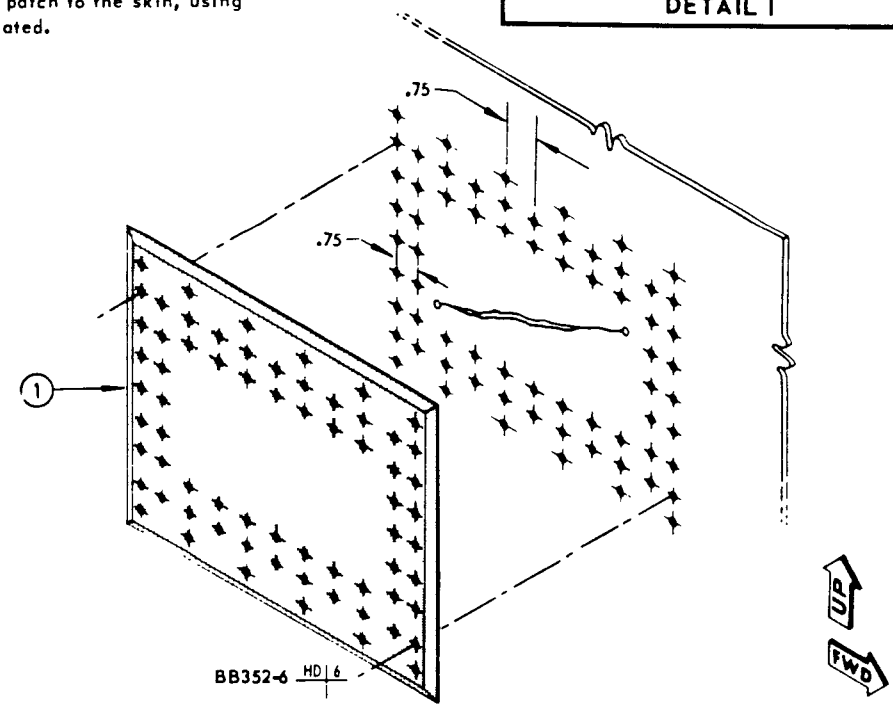
SEE 51-13-1 FOR DEFINITION OF AN EXTERNAL REPAIR

SEE 51-4-1 FOR PERFORMANCE CONSIDERATIONS IN REGIONS OF CRITICAL SMOOTHNESS

✦ REPAIR FASTENER LOCATIONS



DETAIL I



REPAIR MATERIAL

LOCATION	STA. 50.53 TO 111.65		STA. 111.65 TO 183.65, 255.65 TO TIP		STA. 183.65 TO 255.65	
PART	QTY	MATERIAL	QTY	MATERIAL	QTY	MATERIAL
(1) PATCH	1	.080 CLAD 2024-T3	1	.071 CLAD 2024-T3	1	.112 CLAD 2024-T3

Vertical Fin Interspar Skin - External Repair
Figure 1

REPAIR INSTRUCTIONS

1. This repair is applicable to interspar skin from fin station 50.53 to the tip of the vertical fin. To accomplish this repair, access from inside the structure is necessary, which may be gained through the front spar after removing the leading edge of the vertical fin.

2. Make all damaged projections of the skin smooth and to original contour. Trim out the damaged area with sides of cutout parallel to the ribs. Smooth edges of the cutout and round corners to not less than 0.50 inch radius. Remove all burrs, nicks and sharp edges.

3. Make a sheet metal insert 1 that fits within the skin cutout with not more than 0.03 inch clearance. Make a doubler 2 large enough to accommodate the required fasteners. See tabulation for gage and material.

4. Lay out the fastener pattern as shown in the figure. Drill holes for fasteners. See 51-2-5 for fastener hole sizes.

5. Attach the insert to the doubler and the doubler to the skin with countersunk rivets shown in the tabulation.

6. Apply zinc chromate primer to all interior surfaces of the repair per section 51-2-0 of the 707 Maintenance Manual.

7. Apply aerodynamic smoother per BMS 5-13 to .03 maximum gap at part 1 in accordance with the requirements of section 51-3-0 of the 707 Maintenance Manual.

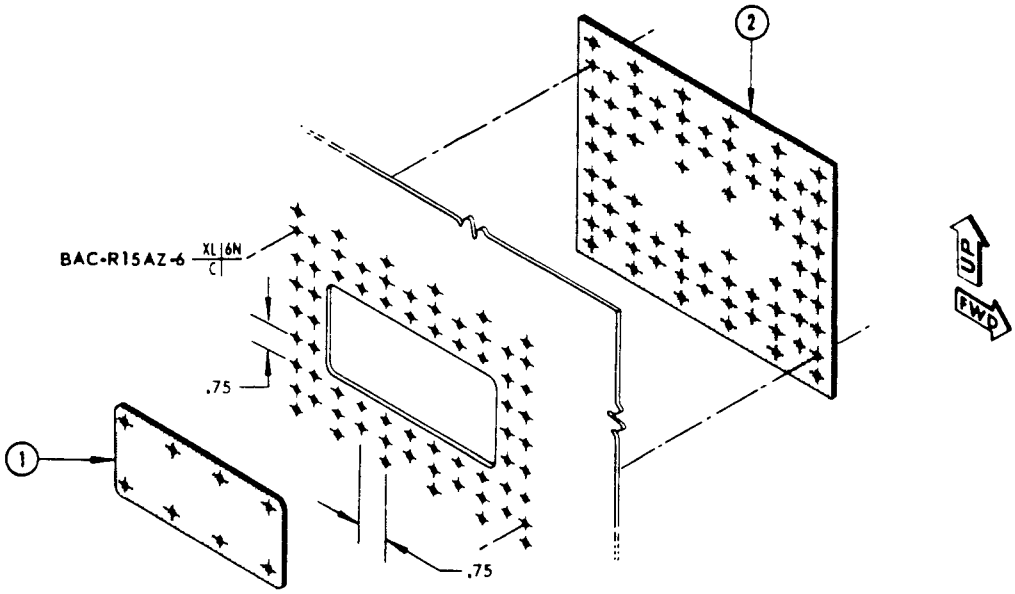
8. Restore the original surface finish per section 51-1-0 of the 707 Maintenance Manual.

NOTE

SEE 51-2-0 FOR FASTENER CODE, REMOVAL AND INSTALLATION, HOLE SIZES AND EDGE MARGINS.

SEE 51-8-0 FOR METAL PROTECTIVE TREATMENT

REPAIR FASTENER LOCATIONS



REPAIR MATERIAL

LOCATION FIN STA.	STA. 50.53 TO 111.65		STA. 111.65 TO 183.65, 255.65 TO TIP		STA. 183.65 TO 255.65	
PART	QTY	MATERIAL	QTY	MATERIAL	QTY	MATERIAL
(1) INSERT	1	.071 CLAD 2024-T3	1	.063 CLAD 2024-T3	1	.100 CLAD 2024-T3
(2) DOUBLER	1	.080 CLAD 2024-T3	1	.071 CLAD 2024-T3	1	.112 CLAD 2024-T3

Vertical Fin Interspar Skin Flush Repair
Figure 2

ITEM	CHORDS		WEB OR FORMED SEC.	
	MATERIAL	REPAIR FIG NO.	MATERIAL	REPAIR FIG NO.
(1)	BAC 1505-100203 7075-T6	51-14-4 FIG. 1	.025 CLAD 2024-T4	51-14-2 FIG. 1
(2)	BAC 1503-100121 7075-T6	51-14-4 FIG. 1	.032 CLAD 2024-T4	51-14-2 FIG. 1
(3)	BAC 1503-1512 7075-T6	51-14-4 FIG. 1	.025 CLAD 2024-T4	51-14-2 FIG. 1
(4)	BAC 1505-100186 7075-T6	51-14-4 FIG. 1	.032 CLAD 2024-T4	51-14-2 FIG. 1
(5)	BAC 1503-100044 7075-T6	55-5-4 FIG. 1	.025 CLAD 2024-T4	51-14-2 FIG. 1
(6)	BAC 1503-100045 7075-T6	51-14-4 FIG. 1	.032 CLAD 2024-T4	51-14-2 FIG. 1
(7)			.040 CLAD 2024-T4	51-14-3 FIG. 1
(8)			.032 CLAD 2024-T4	51-14-3 FIG. 1
(9)			.050 CLAD 7075-T6	51-14-2 FIG. 1
(10)	BAC 1514-1221 7075-T6			
(11)	BAC 1506-997 7075-T6		.071 7075-T6	51-14-2 FIG. 1
(12)	BAC 1505-100052 7075-T6	51-14-4 FIG. 1	.032 7075-T6	51-14-2 FIG. 1
(13)	BAC 1505-100067 7075-T6	51-14-4 FIG. 1	.032 CLAD 7075-T6	51-14-2 FIG. 1
(14)	BAC 1503-100045 7075-T6	55-5-4 FIG. 1	.025 CLAD 2024-T4	51-14-2 FIG. 1
(15)	BAC 1505-100174 7075-T6	51-14-4 FIG. 1	.025 CLAD 2024-T3	51-14-2 FIG. 1
(16)	BAC 1505-29222 7075-T6	51-14-4 FIG. 1	.025 CLAD 2024-T3	51-14-2 FIG. 1
(17)	L.H. BAC 1503-2731 7075-T6	51-14-4 FIG. 1	.025 CLAD 2024-T4	51-14-2 FIG. 1
	R.H. BAC 1503-2811 7075-T6	51-14-4 FIG. 1		
(18)	.071 CLAD 7075-T6			
(19)	BAC 1505-100155 7075-T6	51-14-4 FIG. 1	.025 CLAD 2024-T3	51-14-2 FIG. 1
(20)	BAC 1506-1001 7075-T6		.025 CLAD 2024-T3	51-14-2 FIG. 1
(21)	BAC 1505-100052 L.H. 7075-T6	51-14-4 FIG. 1	.025 CLAD 2024-T3	51-14-2 FIG. 1
	BAC 1503-2771 R.H. 7075-T6	51-14-4 FIG. 1	.025 CLAD 2024-T3	51-14-2 FIG. 1
(22)	BAC 1503-2771 7075-T6	55-5-4 FIG 1	.025 CLAD 2024-T4	51-14-2 FIG. 1
(23)	AND 10136-2404 7075-T6	51-14-4 FIG. 1	.063 CLAD 7075-T6	51-14-2 FIG. 1

Vertical Fin Structure Identification
Figure 1 (Sheet 1)

ITEM	CHORDS		WEB OR FORMED SEC.	
	MATERIAL	REPAIR FIG NO.	MATERIAL	REPAIR FIG NO.
24	BAC 1503-100030 7075-T6	55-5-4 FIG. 1	.025 CLAD 2024-T4	51-14-2 FIG. 1
25	BAC 1505-100008 7075-T6	51-14-4 FIG. 1	.025 CLAD 2024-T3	51-14-2 FIG. 1
26	AND 10136-1703 7075-T6	51-14-4 FIG. 1	.025 CLAD 2024-T4	51-14-2 FIG. 1
27	BAC 1506-998 7075-T6		FWD & AFT .100, MIDDLE .080 7075-T6	51-14-2 FIG. 1
28	.063 2024-T3			
29	BAC 1506-996 7075-T6		.080 7075-T6	51-14-2 FIG. 1
30	.156 7075-T6			
31	BAC 1503-100045 7075-T6	51-14-4 FIG. 1	.025 CLAD 2024-T4	51-14-2 FIG. 1
32			.025 CLAD 2024-T3	51-14-3 FIG. 1
33	.080 CLAD 7075-T6	51-14-3 FIG. 1	.040 CLAD 7075-T6	51-14-2 FIG. 1
34	.090 CLAD 7075-T6	51-14-3 FIG. 1	.040 CLAD 7075-T6	51-14-2 FIG. 1
35	BAC 1506-1045 7075-T6		.020 CLAD 7075-T6	51-14-2 FIG. 1
36	.071 CLAD 2024-T3	55-5-7 FIG. 1		
37	.063 CLAD 2024-T3	55-5-7 FIG. 1		
38	BAC 1520-817 2024-T4		SEE DETAIL IV	51-14-2 FIG. 1
39			.063 7075-T6	51-14-2 FIG. 1
40			.020 CLAD 7075-T6	51-14-2 FIG. 1
41	BAC1505-100275 7075-T6	51-14-4 FIG. 1	.040 CLAD 7075-T6	51-14-2 FIG. 1
42	AND 10134-1003 L.H. 7075-T6	51-14-4 FIG. 1	.025 CLAD 2024-T3	51-14-2 FIG. 1
	AND 10134-1204 R.H. 7075-T6	51-14-4 FIG. 1		
43	BAC 1503-100140 7075-T6	51-14-4 FIG. 1	.040 CLAD 7075-T6	51-14-2 FIG. 1
44	.063 CLAD 7075-T6	51-14-3 FIG. 1	.020 CLAD 7075-T6	51-14-2 FIG. 1
45	AND 10136-2001 2024-T4	51-14-4 FIG. 1	.020 CLAD 2024-T3	51-14-2 FIG. 1
46	.050 CLAD 2024-T3	51-14-3 FIG. 1	.040 CLAD 2024-T4	51-14-2 FIG. 1
47			.040 CLAD 7075-T6	51-14-2 FIG. 1

ITEM	CHORDS		WEB OR FORMED SEC.	
	MATERIAL	REPAIR FIG. NO.	MATERIAL	REPAIR FIG. NO.
48	BAC 1505-100155 7075-T6	51-14-4 FIG. 1	.025 CLAD 7075-T6	51-14-2 FIG. 1
49	BAC 1503-100044 7075-T6	51-14-4 FIG. 1	.025 CLAD 2024-T3	51-14-2 FIG. 1
50			.050 CLAD 2024-T4	51-14-3 FIG. 1
51			.032 CLAD 7075-T6	51-14-2 FIG. 1
52	BAC 1503-100044 7075-T6	51-14-4 FIG. 1		
53			.090 7075-T6	51-14-2 FIG. 1
54	MACHINED BAR 1.70 2024-T4		.050 CLAD 7075-T6	51-14-2 FIG. 1
55	BAC 1503-100044 7075-T6	51-14-4 FIG. 1	.025 CLAD 2024-T4	51-14-2 FIG. 1
56			FIBERGLAS CLOTH REINFORCED PLASTIC	51-11-1 FIG 1
57	MACHINED BAR .50 2024-T4			
58	BAC1505-100164 7075-T6	51-14-4 FIG. 1	.050 CLAD 7075-T6	51-14-2 FIG. 1
59	AND10134-1005 7075-T6	51-14-4 FIG. 1	.032 CLAD 7075-T6	51-14-2 FIG. 1
60	BAC1505-100164 R.H. 7075-T6	51-14-4 FIG. 1	.063 CLAD 7075-T6	51-14-2 FIG. 1
61	.063 CLAD 7075-T6	51-14-3 FIG. 1	.063 CLAD 7075-T6	51-14-2 FIG. 1
62	BAC1505-100365 2024-T4	51-14-4 FIG. 1	.063 CLAD 7075-T6	51-14-2 FIG. 1
63	AND10136-2001 7075-T6	51-14-4 FIG. 1	.040 CLAD 7075-T6	51-14-2 FIG. 1
64	EXTRUDED BAR 1.80 7075-T6			
65			.063 CLAD 2024-T4	51-14-3 FIG. 1
66	BAC1506-1416 7075-T6	51-14-4 FIG. 1	.040 CLAD 7075-T6	51-14-2 FIG. 1
67	FWD BAC1505-100067 7075-T6	51-14-4 FIG. 1	FWD .032 CLAD 7075-T6	51-14-2 FIG. 1
	AFT AND10134-1204 7075-T6	51-14-4 FIG. 1	AFT .050 CLAD 2024-T3	51-14-2 FIG. 1
68	BAC1505-39375 2024-T4		.050 CLAD 7075-T6	51-14-2 FIG. 1
69	BAC1506-1435 7075-T6			

Vertical Fin Structure Identification
Figure 1 (Sheet 3)

ITEM	CHORDS		WEB OR FORMED SEC.	
	MATERIAL	REPAIR FIG. NO.	MATERIAL	REPAIR FIG. NO.
(70)	FWD BAC1505-100361 7075-T6	51-14-4 FIG. 1	0.032 CLAD 2024-T3	51-14-2 FIG. 1
	AFT AND10134-1201 7075-T6	51-14-4 FIG. 1	0.050 CLAD 2024-T3	51-14-2 FIG. 1
(71)	7079-T6 FORGING			
(72)	7075-T73 FORGING [C]			
(73)	ACTUATOR SUPPORT FITTING 7075-T73 FORGING			
(74)			0.050 CLAD 2024-T4	51-14-2 FIG 1
(75)			0.050 CLAD 2024-T42	51-14-2 FIG 1
(76)	BAC1505-100789 7075-T6	51-14-4 FIG. 1	0.025 CLAD 2024-T42	51-14-2 FIG. 1
(77)			ANGLE 0.080 CLAD 2024-T42	
(78)			CHANNEL 0.080 CLAD 2024-T42	
(79)			CHANNEL 0.040 CLAD 2024-T42	
(80)	BAC1505-100789 7075-T6	55-5-4 FIG. 1	0.025 CLAD 2024-T4	51-14-2 FIG. 1
(81)	BAC1503-100230 7075-T6	51-14-4 FIG. 1	0.025 CLAD 2024-T4	51-14-2 FIG. 1
(82)			ANGLE 0.080 CLAD 2024-T3	
(83)			CHANNEL 0.080 CLAD 2024-T3	
(84)			CHANNEL 0.040 CLAD 2024-T3	

Vertical Fin Structure Identification
Figure 1 (Sheet 4)

NOTES

[A] FOR AIRPLANES:
AF 17619 THRU 17622, 17918 THRU 17924
BA 17703 THRU 17717
LH 17720, 17721
PA 17689
RG 17905, 17906, 18694, 19320 THRU 19322
SA 17928 THRU 17930, 18891, 19133, 19705, 19706, 20011, 20230, 20283
SN 17627
TW 17688, 17690

[B] FOR ALL AIRPLANES NOT LISTED IN [A]

[C] FORGINGS OF 7079-T6 MATERIAL HAVE BEEN SUPERSEDED BY FORGINGS OF 7075-T73 MATERIAL ON LATE PRODUCTION AIRPLANES. FORGINGS OF 7075-T73 MATERIAL ARE RECOMMENDED FOR REPLACEMENT

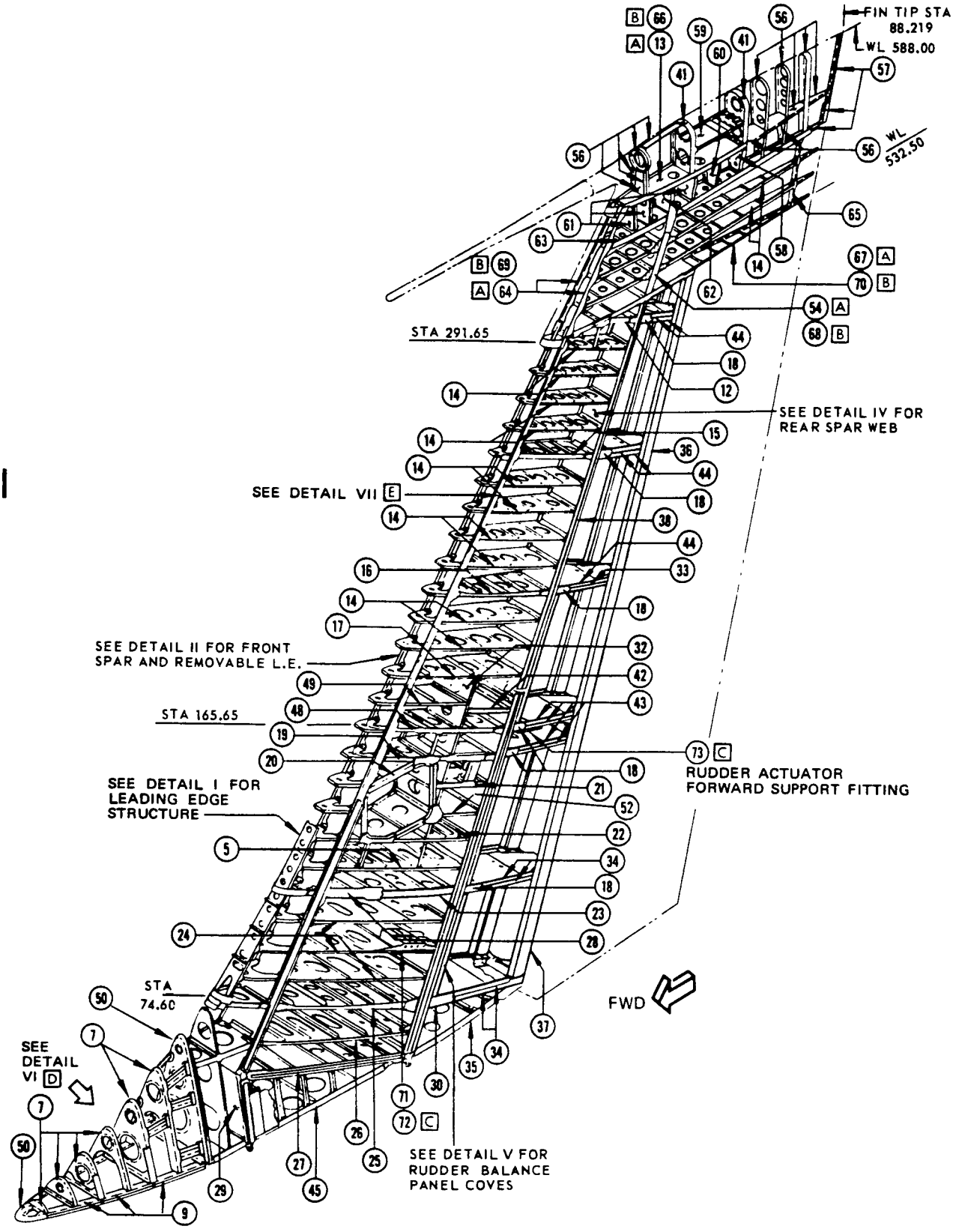
[D] FOR AIRPLANES WITH CRASH POSITION INDICATOR INSTALLED

[E] FOR VIP AIRPLANES WITH TV ANTENNA

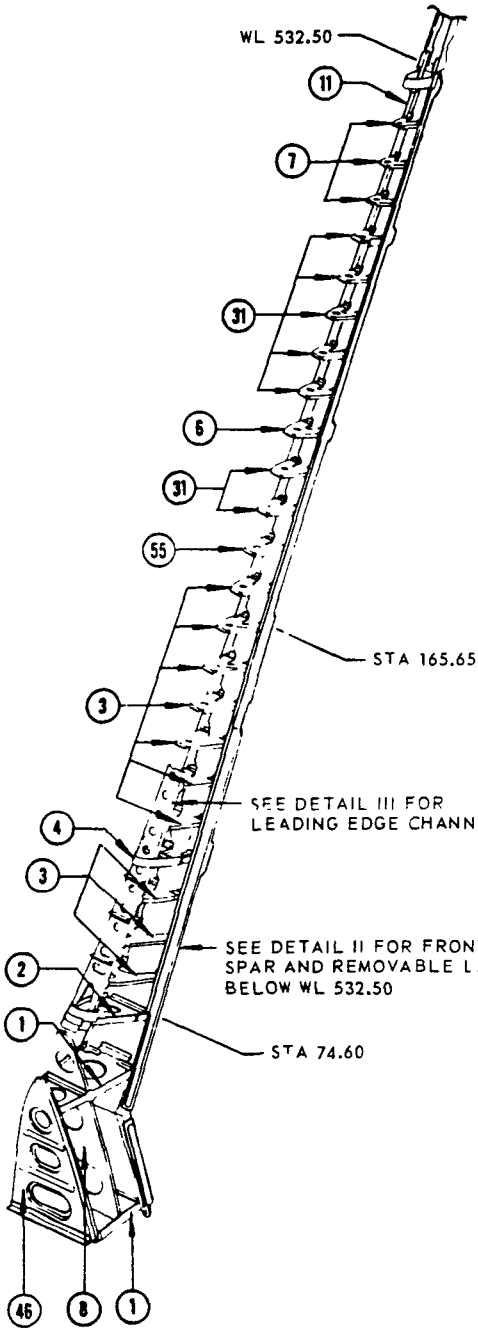
[F] FOR CUM LINE NUMBER:
911

[G] FOR ALL AIRPLANES WITH TV ANTENNA EXCEPT CUM LINE NUMBER:
911

Vertical Fin Structure Identification
Figure 1 (Sheet 4A)

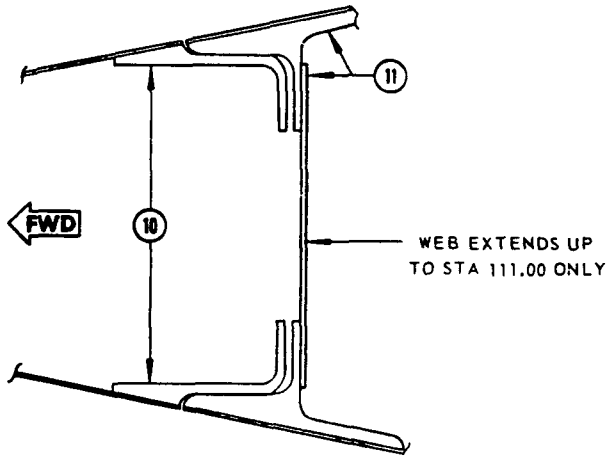


Vertical Fin Structure Identification
Figure 1 (Sheet 5)



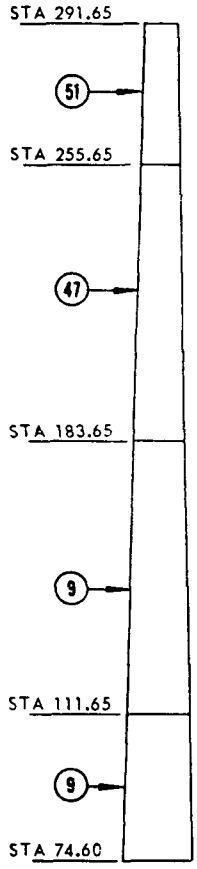
LEADING EDGE STRUCTURE

DETAIL I



BELOW WL 532.50
FRONT SPAR AND REMOVABLE LEADING EDGE

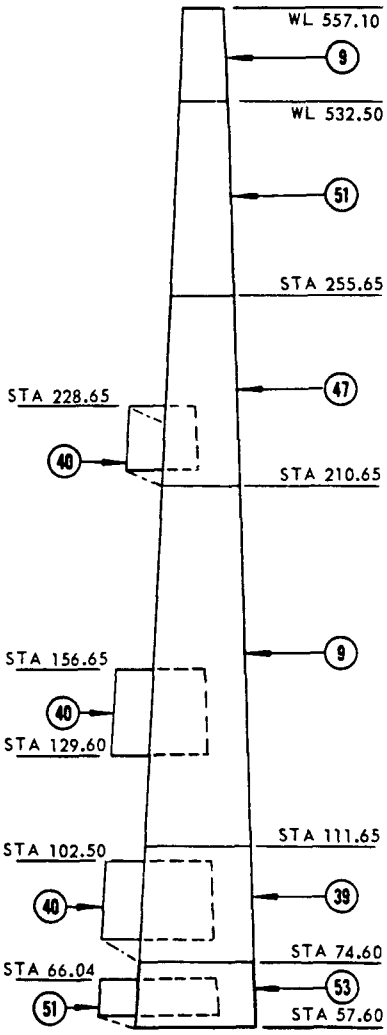
DETAIL II



LEADING EDGE CHANNEL

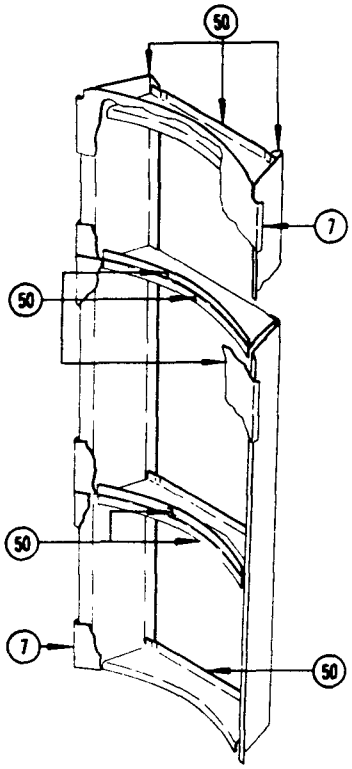
DETAIL III

Vertical Fin Structure Identification
Figure 1 (Sheet 6)



REAR SPAR WEB

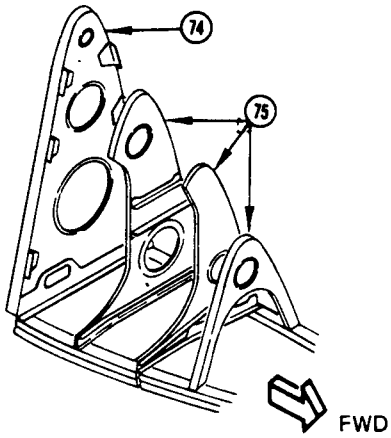
DETAIL IV



RUDDER BALANCE PANEL COVES

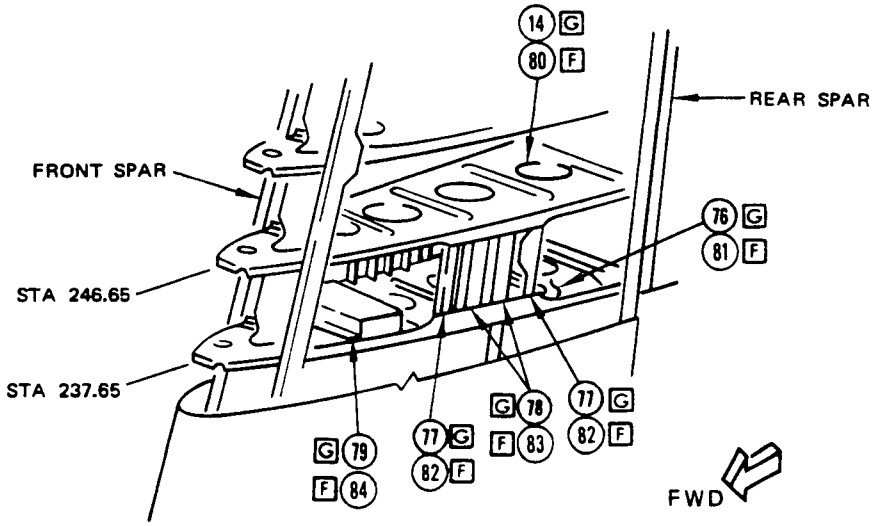
DETAIL V

Vertical Fin Structure Identification
Figure 1 (Sheet 7)



DETAIL VI

DORSAL FIN FOR AIRPLANES WITH CRASH POSITION INDICATOR INSTALLED



DETAIL VII

STRUCTURE FOR AIRPLANES WITH TV ANTENNA

Vertical Fin Structure Identification
Figure 1 (Sheet 8)

REPAIR MATERIAL

LOCATION		STA. 83.90 TO 102.50		STA. 120.65 AND 129.65		STA. 192.65 AND UP	
PART		QTY.	MATERIAL	QTY.	MATERIAL	QTY.	MATERIAL
(1)	ANGLE	1	.071 CLAD 7075-0 HT-T6 D	1	.063 CLAD 7075-0 HT-T6 D	1	.050 CLAD 7075-0 HT-T6 D
(2)	FILLER B	1	.070 A C	1	.062 A C	1	.050 A C

REPAIR INSTRUCTIONS

1. This repair is applicable to interspar ribs at locations where their chords consist of an extruded angle trimmed to 0.62 x 0.62 inch size.
2. Access from inside the structure is necessary to accomplish this repair. Access may be gained through the front spar after removing the leading edge.
3. Make all damage projections smooth and to original contour. If necessary, cut out the damaged portion of the chord and replace it with a filler, Part 2. Remove all burrs, nicks and other surface irregularities from both damaged area and repair parts.
4. Make a repair angle, Part 1, of the required material and size as shown in the figure.
5. Assemble the repair as shown and install rivets. See 51-2-5 for rivet hole sizes.
6. Apply zinc chromate primer to all interior surfaces of the repair. See the 707 Stratoliner Maintenance Manual, Section 51-2-0, for finish requirements.

NOTE

SEE 51-2-0 FOR FASTENER CODE, REMOVAL AND INSTALLATION, HOLE SIZES AND EDGE MARGINS.

SEE 51-8-0 FOR METAL PROTECTIVE TREATMENT

ORIGINAL FASTENER LOCATIONS

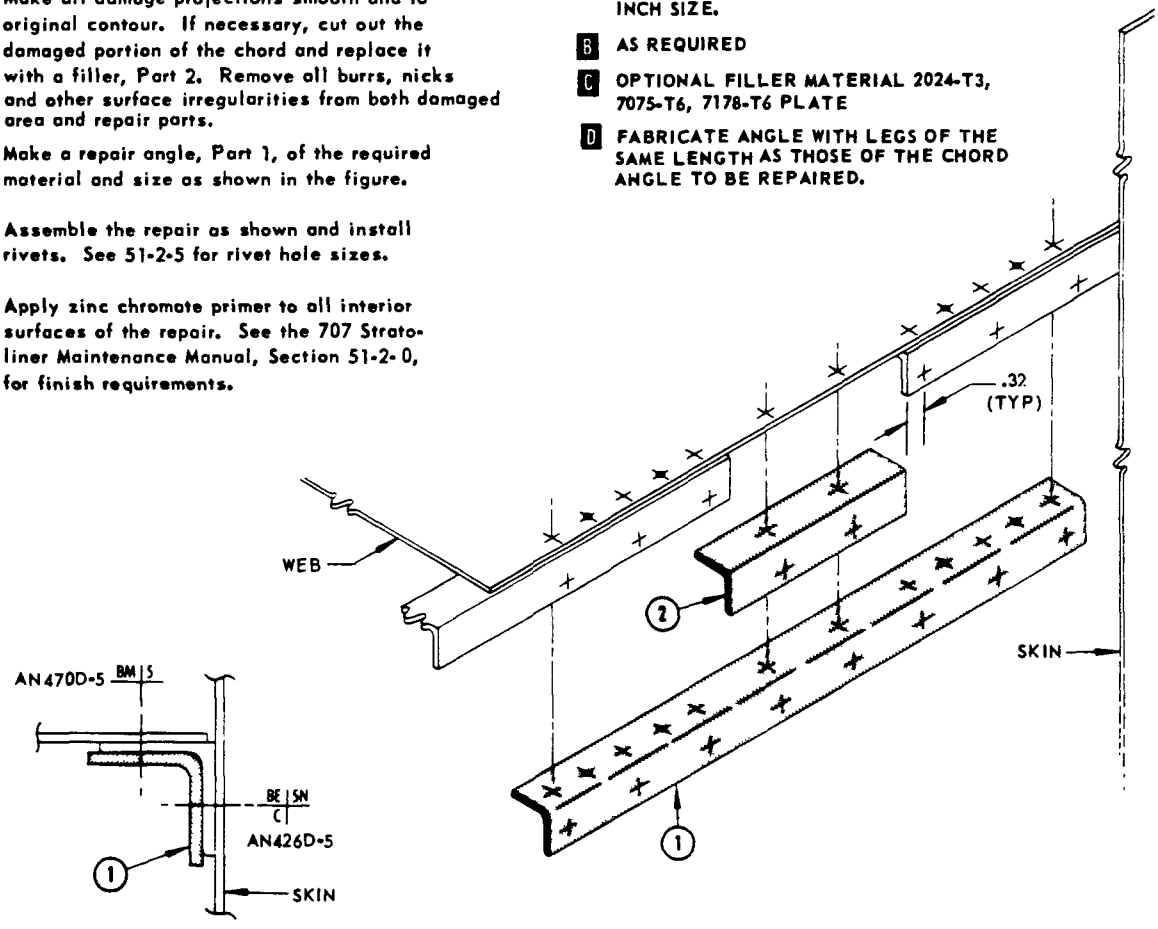
REPAIR FASTENER LOCATIONS

A 7075-T6 EXTRUSION. ANY EXTRUDED ANGLE OF THE REQUIRED GAGE MAY BE USED WHEN TRIMMED TO 0.62 X 0.62 INCH SIZE.

B AS REQUIRED

C OPTIONAL FILLER MATERIAL 2024-T3, 7075-T6, 7178-T6 PLATE

D FABRICATE ANGLE WITH LEGS OF THE SAME LENGTH AS THOSE OF THE CHORD ANGLE TO BE REPAIRED.



SECTION ADJACENT TO DAMAGE

Vertical Fin Interspar Rib Repair
Figure 1

VERTICAL FIN SPAR REPAIRS

1. Repair to components of these structures will be released when available.

END

FAA Approved Repair

BOEING Intercontinental 707

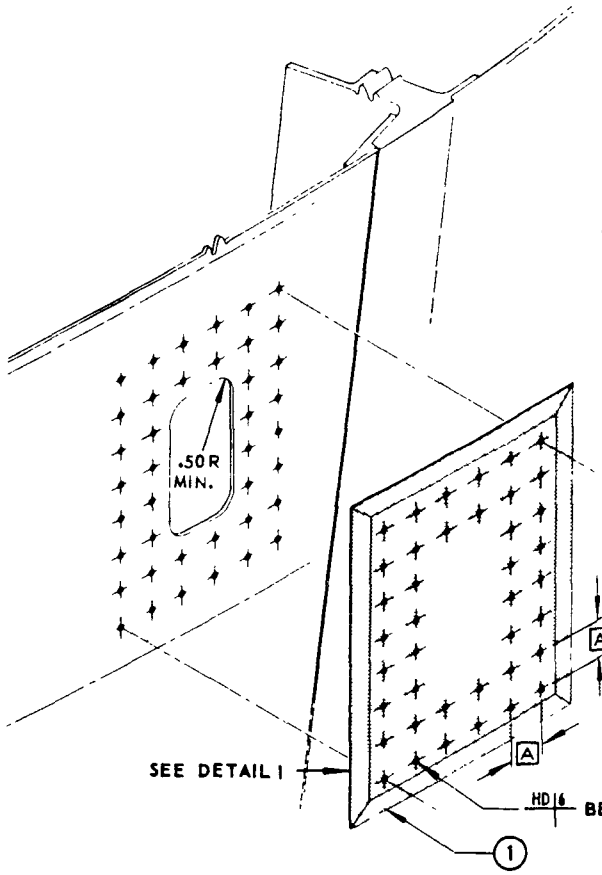
STRUCTURAL REPAIR

REPAIR MATERIAL			
PART		QTY.	MATERIAL
(1)	DOUBLER	1	SAME AS ORIGINAL SKIN

REPAIR INSTRUCTIONS

1. Stop drill all cracks with 0.25 diameter holes. Make all damage projections smooth and to original contour. Remove all burrs, nicks and sharp edges. Make cutouts as required not less than 0.50 inch radius.
2. Make an external patch per the tabulation to accomodate the tabulated fastener sizes and rows. The doubler should be rectangular in shape and must conform to skin contour. Bevel all edges of doubler.
3. If the damage is in that leading edge portion which is covered by the de-icing boot, disconnect the electric leads to the damaged de-icing boot section and attach the patch over the boot.

   NOTE: With this repair installed, the airplane may be flown only under conditions where it is permissible to fly with fin de-icing provisions inoperable.
4. Replace this repair with the flush repair shown in Figure 2 as soon as possible.
5. Restore the required surface finish per 51-2-0 of the Maintenance Manual.



NOTE

SEE 51-2-0 FOR FASTENER CODE, REMOVAL AND INSTALLATION, HOLE SIZES AND EDGE MARGINS.

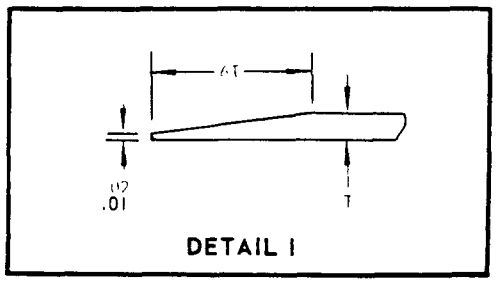
SEE 51-8-0 FOR METAL PROTECTIVE TREATMENT

SEE 51-13-1 FOR DEFINITION OF AN EXTERNAL REPAIR

SEE 51-4-1 FOR PERFORMANCE CONSIDERATIONS IN REGIONS OF CRITICAL SMOOTHNESS

REPAIR FASTENER LOCATIONS

BREAK SHARP EDGES 0.03 ALL REPAIR PARTS AND TRIMMED ORIGINAL PARTS



DETAIL I

REPAIR FASTENER		
LOCATION	FASTENER	SPACING [A]
STA 74.60 TO 183.65	BB 352 -6	.70
STA 183.65 TO TIP	BB 352 -6	1.15

Vertical Fin Leading Edge Skin - External Repair
Figure 1

REPAIR MATERIAL

LOCATION ◆		STA. 74.60 TO 183.65		STA. 183.65 TO TIP	
PART		QTY.	MATERIAL	QTY.	MATERIAL
(1)	DOUBLER	1	.063 CLAD 7075-T6	1	.100 CLAD 7075-T6
(2)	INSERT	1	.063 CLAD 7075-T6	1	.100 CLAD 7075-T6
[A]	FASTENER SPACING		.70		1.15

REPAIR INSTRUCTIONS

1. Remove the damaged leading edge section. Remove the de-icing boot, if damaged, as described in the Maintenance Manual, Section 30-1-61.

2. Carefully cut out the skin to a square or rectangular shape in such a manner that an edge of the cutout is parallel to a leading edge rib. All cuts must be smooth. Remove all burrs, nicks or sharp edges. Make all cutout corners not less than 0.50 inch radius.

3. Make a doubler and insert per the tabulation. The doubler should be square or rectangular in shape to conform with the skin cutout. It must also fit the inner contour of the skin.

4. Apply zinc chromate primer to all interior surfaces of the repair per section 51-2-0 of the 707 Maintenance Manual.

5. Apply aerodynamic smoother per BMS 5-13 to gap at skin per the requirements of section 51-3-0 of the 707 Maintenance Manual.

6. Replace the de-icing boot, if removed, per Maintenance Manual, Section 30-1-61. Restore the original surface finish per Maintenance Manual, Section 51-2-0.

NOTE

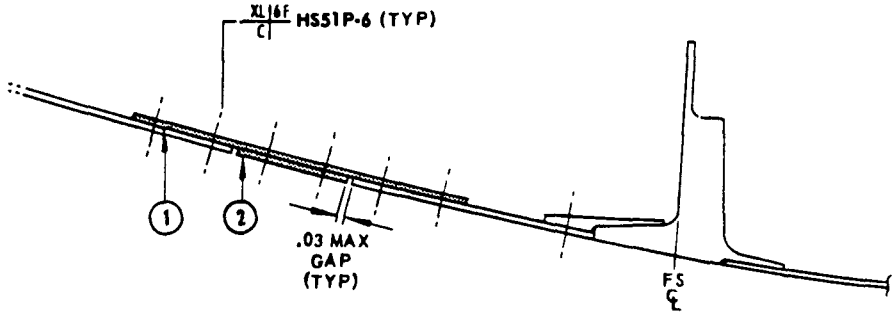
BREAK SHARP EDGES 0.03 ALL REPAIR PARTS AND TRIMMED ORIGINAL PARTS

SEE 51-2-0 FOR FASTENER CODE, REMOVAL AND INSTALLATION, HOLE SIZES AND EDGE MARGINS.

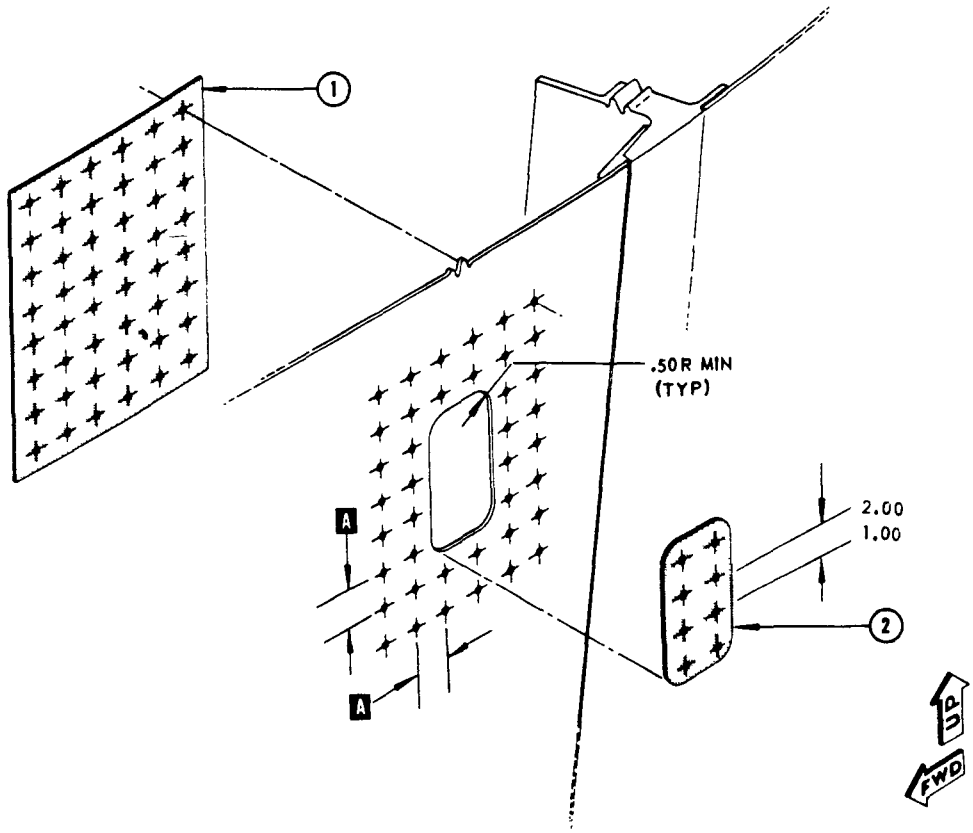
SEE 51-8-0 FOR METAL PROTECTIVE TREATMENT

✦ REPAIR FASTENER LOCATIONS

Vertical Fin Leading Edge Skin Flush Repair
Figure 2 (Sheet 1 of 2)



SECTION THROUGH REPAIR



Vertical Fin Leading Edge Skin Flush Repair
Figure 2 (Sheet 2 of 2)

FAA Approved Repair

BOEING Intercontinental 707

STRUCTURAL REPAIR

REPAIR INSTRUCTIONS

1. Remove fasteners and trailing edge panels to gain access to the trailing edge beams. Remove rudder per the Maintenance Manual.
2. Remove trailing edge beam from airplane.
3. Remove existing splice fasteners and drill out rivets as required to disassemble the beam.
4. If the crack damage has progressed through a distance less than 2/3 of the beam width, drill .25 diameter stop holes at the ends of the crack that do not end in a fastener hole.
5. If the crack damage has progressed through a distance more than 2/3 of the beam width, cut through the remaining portion and separate the beam in two parts. Clean up cuts and treat as required in instruction paragraphs 9. and 10.
6. If the crack damage is found to be over a hinge rib, cut out and replace with a section same as the original. Repair as shown in illustration and paragraph 7 through 15.
7. Fabricate and form repair parts.
8. Locate and drill fastener holes in repair parts to match the original parts.
9. Remove all burrs, nicks, scratches, sharp edges and corners. Chamfer or radius .03 on all cut edges of repair parts and trimmed original parts.
10. Brush alodize cut and trimmed edges including edges of drilled and counter sunk holes.
11. Install repair parts, shims and fasteners.
    (a) If a section has been cut from the beam check that the assembled beam is of the same length as the original and that all fasteners at the hinge ribs match.
    (b) If the repair is outboard of rudder station 200 use part 4 and drill through as shown in applicable cross section.
12. Restore original finish.
13. Install trailing edge beam on airplane. Use same fasteners as originally used.
14. Replace trailing edge panels.
15. Replace the rudder per Maintenance Manual.

REPAIR MATERIAL

LOCATION ➧		RUDDER STA. 12 TO 93		RUDDER STA 102 TO 234 D	
PART		QTY	MATERIAL	QTY	MATERIAL
(1)	PLATE	1	.063 CLAD 2024-0 HT-T3	1	.071 CLAD 2024-0 HT-T3
(2)	FILLER	1	.063 CLAD 2024-0 HT-T3	1	.071 CLAD 2024-0 HT-T3
(3)	PLATE	1	.063 CLAD 2024-0 HT-T3	1	.071 CLAD 2024-0 HT-T3
(4)	FILLER BLOCK	A	FIBERGLAS LAMINATE MIL-P-15035B TYPE FBM	A	FIBERGLAS LAMINATE MIL-P-15035B TYPE FBM
(5)	SHIM	B	CLAD 2024-T3 .03 TO .06 MAX	B	CLAD 2024-T3 .03 TO .06 MAX
(6)	PLATE	1	.063 CLAD 2024-0 HT-T3 C	1	.071 CLAD 2024-0 HT-T3 C
(7)	PLATE	1	.063 CLAD 2024-0 HT-T3 C	1	.071 CLAD 2024-0 HT-T3 C

NOTE

SEE 51-2-0 FOR FASTENER CODE, REMOVAL AND INSTALLATION, HOLE SIZES AND EDGE MARGINS.

SEE 51-8-0 FOR METAL PROTECTIVE TREATMENT

REFINISH PER 51-2-0 OF THE MAINTENANCE MANUAL.

⊕ REPAIR FASTENER LOCATIONS

+ ORIGINAL FASTENER LOCATIONS

A IF DAMAGE OCCURS OVER A HINGE RIB REMOVE EXISTING LAMINATE PLASTIC PART AND REWORK TO FIT OR REPLACE WITH A REPAIR PART 4 SIMILAR TO ORIGINAL.

B ADD PART 5 SHIMS AS REQUIRED BETWEEN THE SURFACES AS INDICATED. THICKNESS OF SHIM MUST NOT EXCEED .06 MAX.

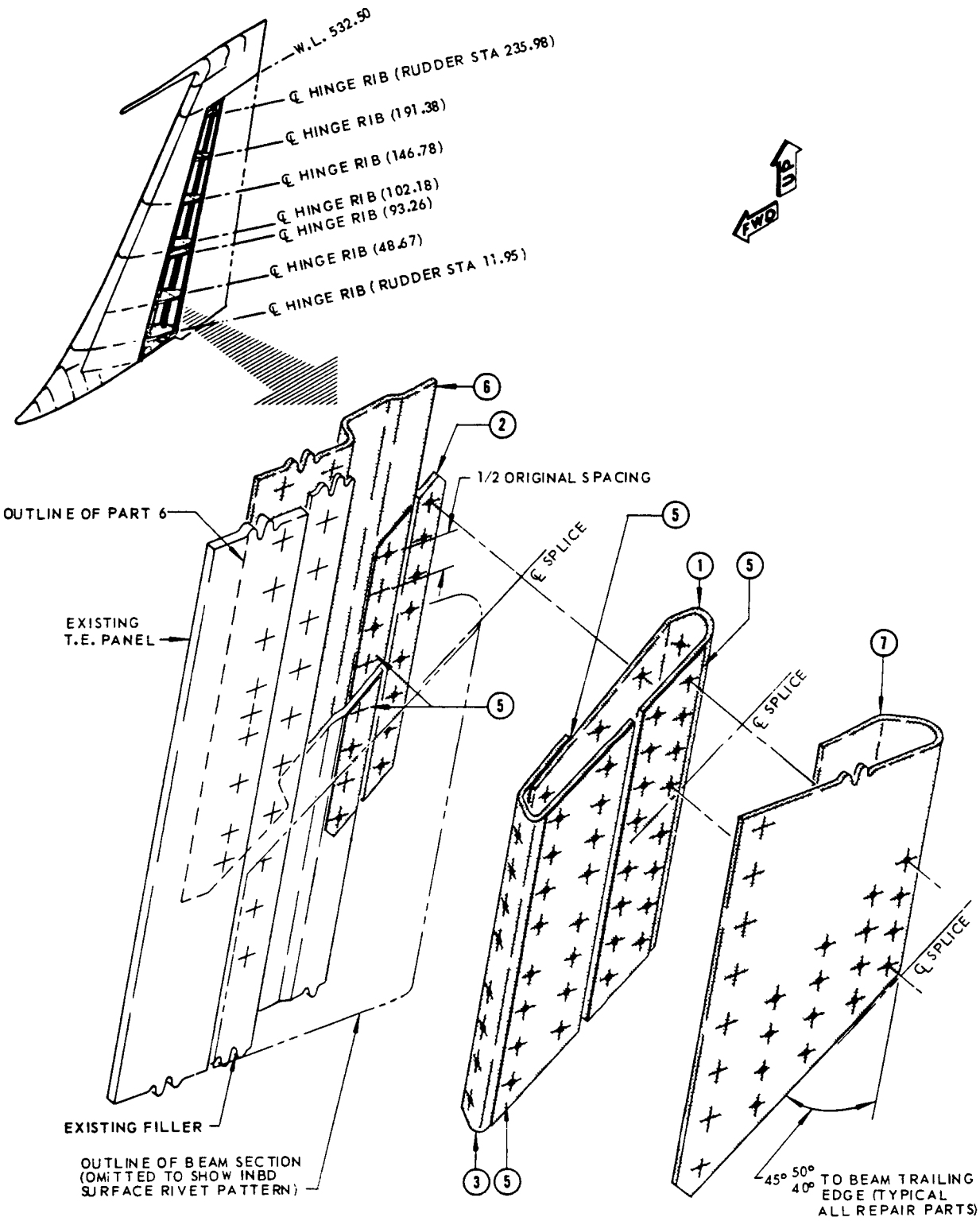
C BEND TO SAME SHAPE AS ORIGINAL.

D BLIND 100° FASTENERS CANNOT BE INSTALLED OUTBOARD OF RUDDER STATION 200. INSTALL BAC R15CE6D FASTENERS IN HOLES DRILLED AT LOCATIONS SHOWN IN CROSS SECTION.

E BAC R15DJ-6-4 RIVET (CR 2248-6). USE 4 ON EACH SIDE OF DAMAGE IN EACH ROW.

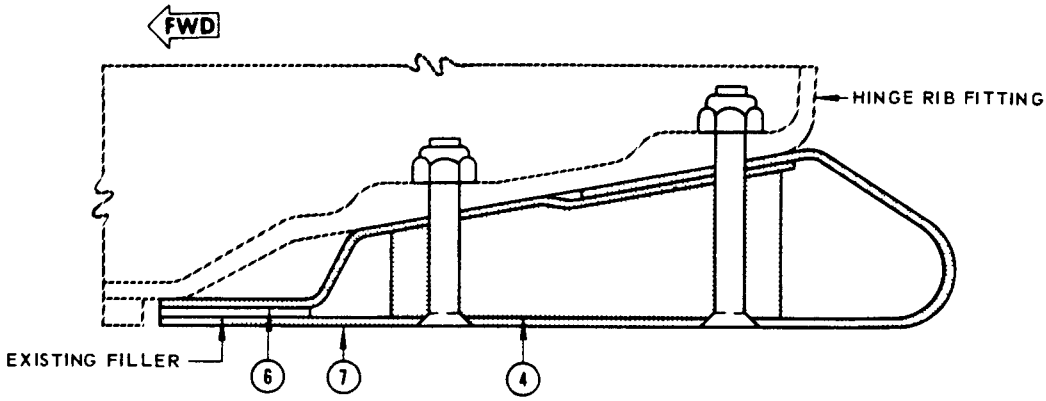
F BAC R15CE-6D RIVET, COUNTERSINK BOTH SIDES. USE 4 ON EACH SIDE OF DAMAGE IN EACH ROW.

Vertical Fin Trailing Edge Beam Repair
Figure 1 (Sheet 1 of 3)

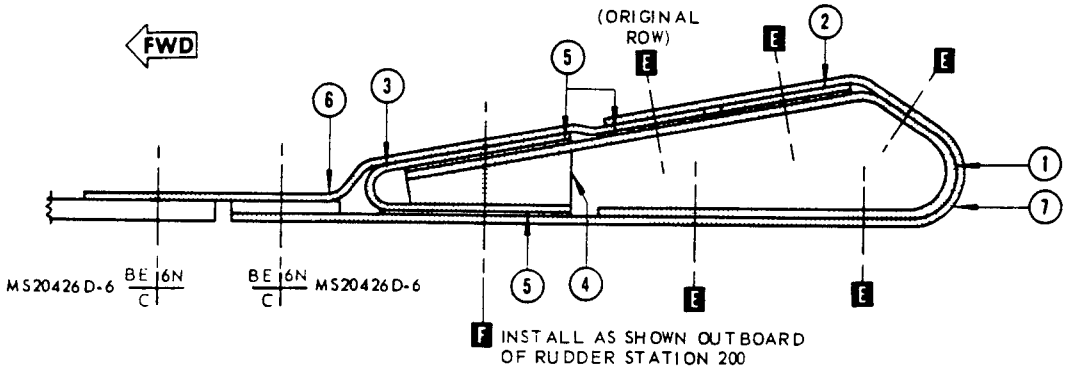


SPLICE THROUGH ONE END OF REPAIR SHOWN – OPPOSITE END TYPICAL.

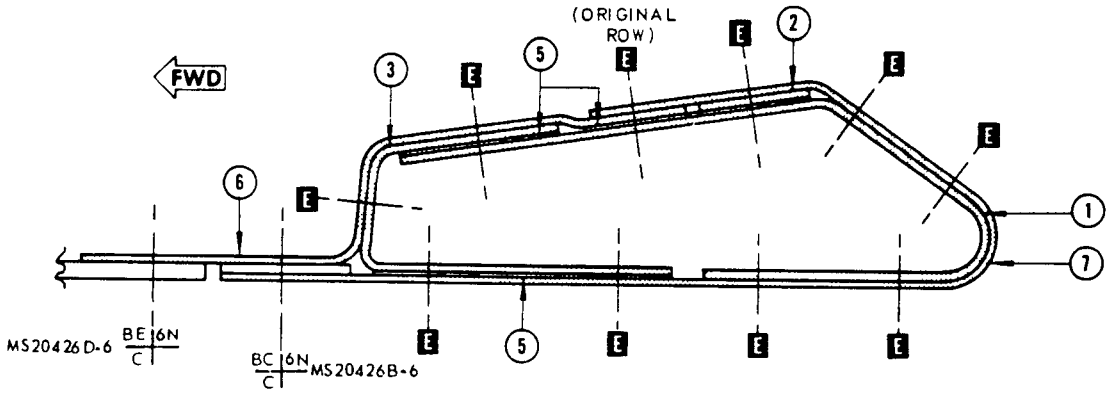
Vertical Fin Trailing Edge Beam Repair
Figure 1 (Sheet 2 of 3)



SECTION THROUGH DAMAGE
(TYPICAL AT HINGE RIB LOCATIONS)

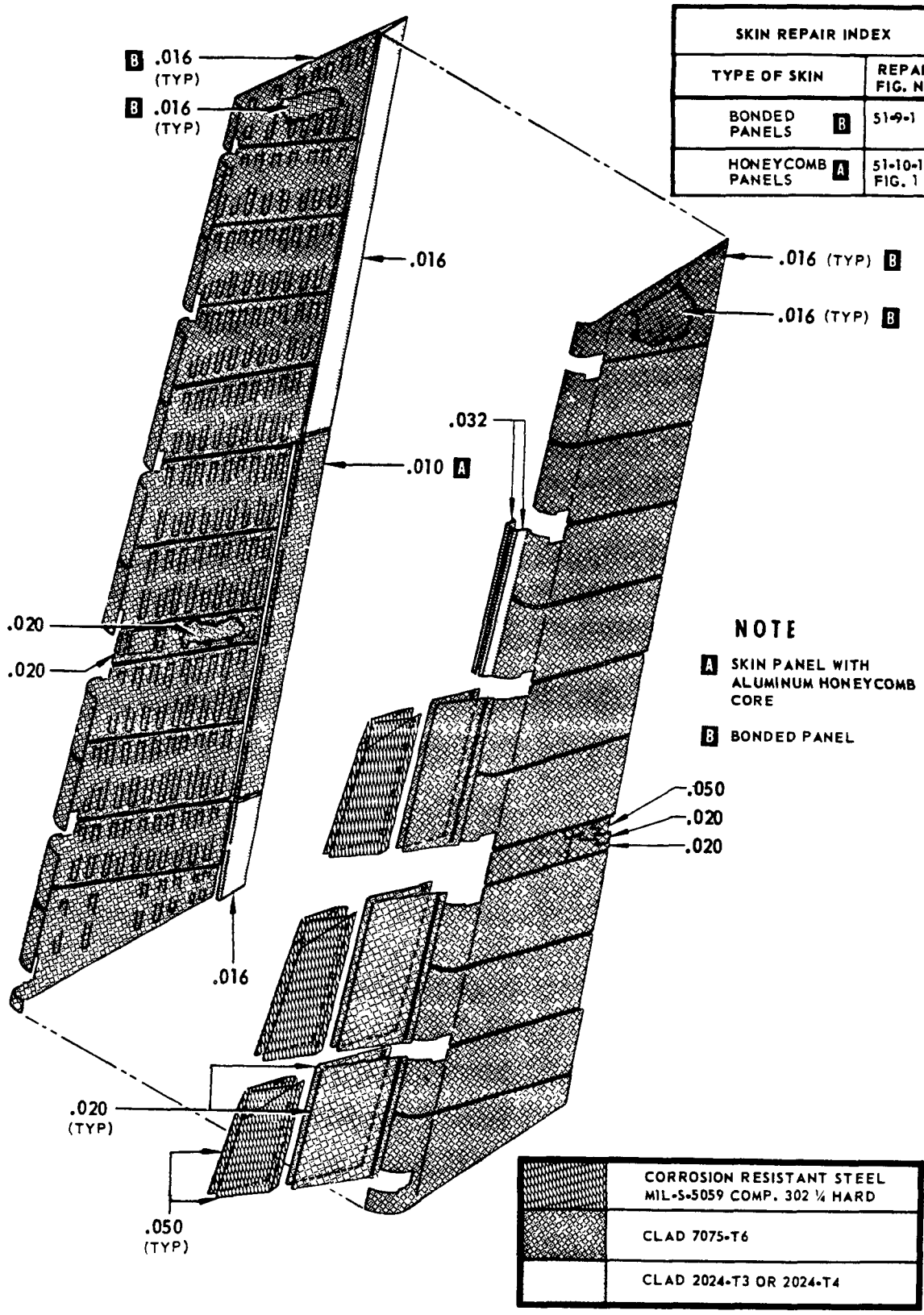


SECTION THROUGH DAMAGE
(TYPICAL FROM RUDDER STATION 102.0 TO 234.0) D



SECTION THROUGH DAMAGE
(TYPICAL FROM RUDDER STATION 12.0 TO 93.0)

Vertical Fin Trailing Edge Beam Repair
Figure 1 (Sheet 3 of 3)



SKIN REPAIR INDEX	
TYPE OF SKIN	REPAIR FIG. NO.
BONDED PANELS B	51-9-1
HONEYCOMB PANELS A	51-10-1 FIG. 1

Rudder and Tabs Skin Material Identification
Figure 1

RUDDER AND TABS SKIN REPAIRS

1. General

A. For repair of the bonded panels of the rudder, see 51-9-1.

B. For repair of the rudder tabs, see 51-10-1.

END

ITEM	CHORDS		WEB OR FORMED SEC.	
	MATERIAL	REPAIR FIG NO.	MATERIAL	REPAIR FIG NO.
①			0.032 CLAD 7075 - T6	51-14-3 FIG. 1
②	BAC 1506 - 1053 7075 - T6	55-6-4 FIG. 1	0.025 CLAD 7075 - T6	51-14-2 FIG. 1
③	BAC 1506 - 1026 7075 - T6	55-6-4 FIG. 1	0.025 CLAD 7075 - T6	51-14-2 FIG. 1
④	ALUMINUM CASTING			
⑤	BAC 1520 - 746 7075 - T6			
⑥			0.071 CLAD 7075 - T6	51-14-3 FIG. 1
⑦			0.063 CLAD 7075 - T6	51-14-3 FIG. 1
⑧	0.063 CLAD 7075 - T6	51-14-3 FIG. 1	BONDED 0.016 + 0.016 CLAD 7075 - T6	51-14-2 FIG. 1
⑨	BAC 1510 - 296 2024 - T4			
⑩	BAC 1506 - 1058 7075 - T6	51-14-4 FIG. 1	0.025 CLAD 7075 - T6	51-14-2 FIG. 1
⑪			0.016 CLAD 2024 - T4	
⑫			0.025 CLAD 7075 - T6	51-14-3 FIG. 1
⑬			0.040 CLAD 7075 - T3	51-14-3 FIG. 1
⑭	BAC1510-368 2024-T4, LATER 2024-T6		0.010 CLAD 2024 - T3	51-10-1 FIG. 1
⑮			0.063 CLAD 2024 - T4	51-14-3 FIG. 1
⑯	BAC 1520 - 790 AL. BRONZE			
⑰	BAC 1506 - 1039 7079 - T6	55-6-4 FIG. 1	0.040 CLAD 7075 - T6	51-14-2 FIG. 1
⑱	BAC 1506 - 1323 7075 - T6	55-6-4 FIG. 1	0.025 CLAD 7075 - T6	51-14-2 FIG. 1

ITEM	CHORDS		WEB OR FORMED SEC	
	MATERIAL	REPAIR FIG NO.	MATERIAL	REPAIR FIG NO.
⑲			0.050 CLAD 7075 - T6	51-14-3 FIG. 1
⑳			0.025 CLAD 2024 - T4	51-14-3 FIG. 1
㉑			0.040 CLAD 2024 - T4	51-14-3 FIG. 1
㉒			0.080 CLAD 7075 - T6	51-14-3 FIG. 1
㉓			0.080 CLAD 2024 - T4	51-14-3 FIG. 1
㉔	BAC 1520 - 884 AL. BRONZE (HINGE)	51-10-1 FIG. 1		
㉕			0.071 CLAD 2024 - T4	51-14-3 FIG. 1
㉖	BAC 1520 - 846 2024 - T4 (HINGE)	51-10-1 FIG. 1		
㉗	BAC 1527 - 5 4130 STEEL			
㉘	0.020 CLAD 2024-T3			
㉙	BAC1506-1039 7075-T73511 EXTR.	55-6-4 FIG. 1	0.040 CLAD 7075-T6	51-14-2 FIG. 1

NOTE

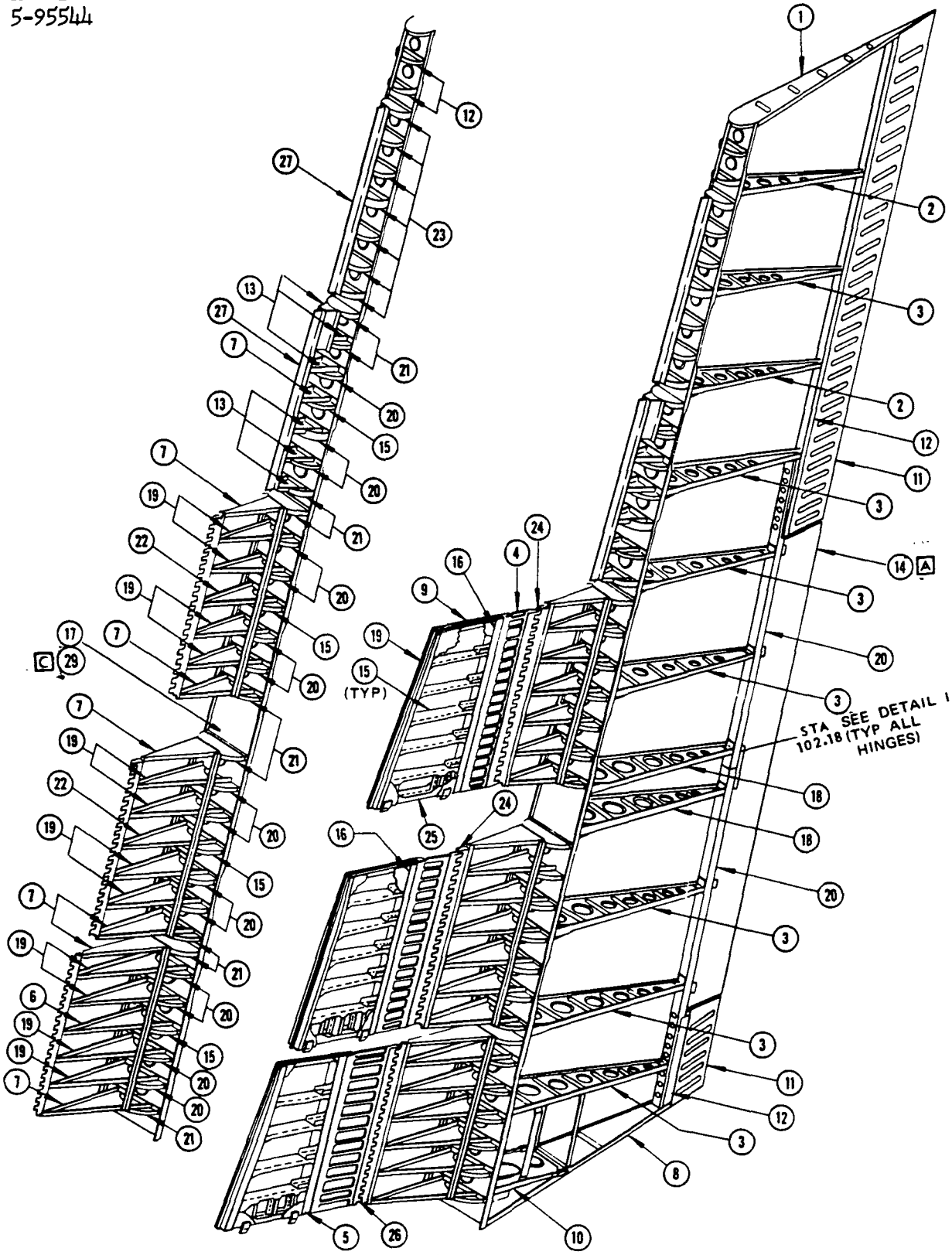
[A] TAB CONTAINS ALUMINUM HONEYCOMB CORE

[B] FOR AIRPLANES WITH SERVICE BULLETIN 3007, INCORPORATED.

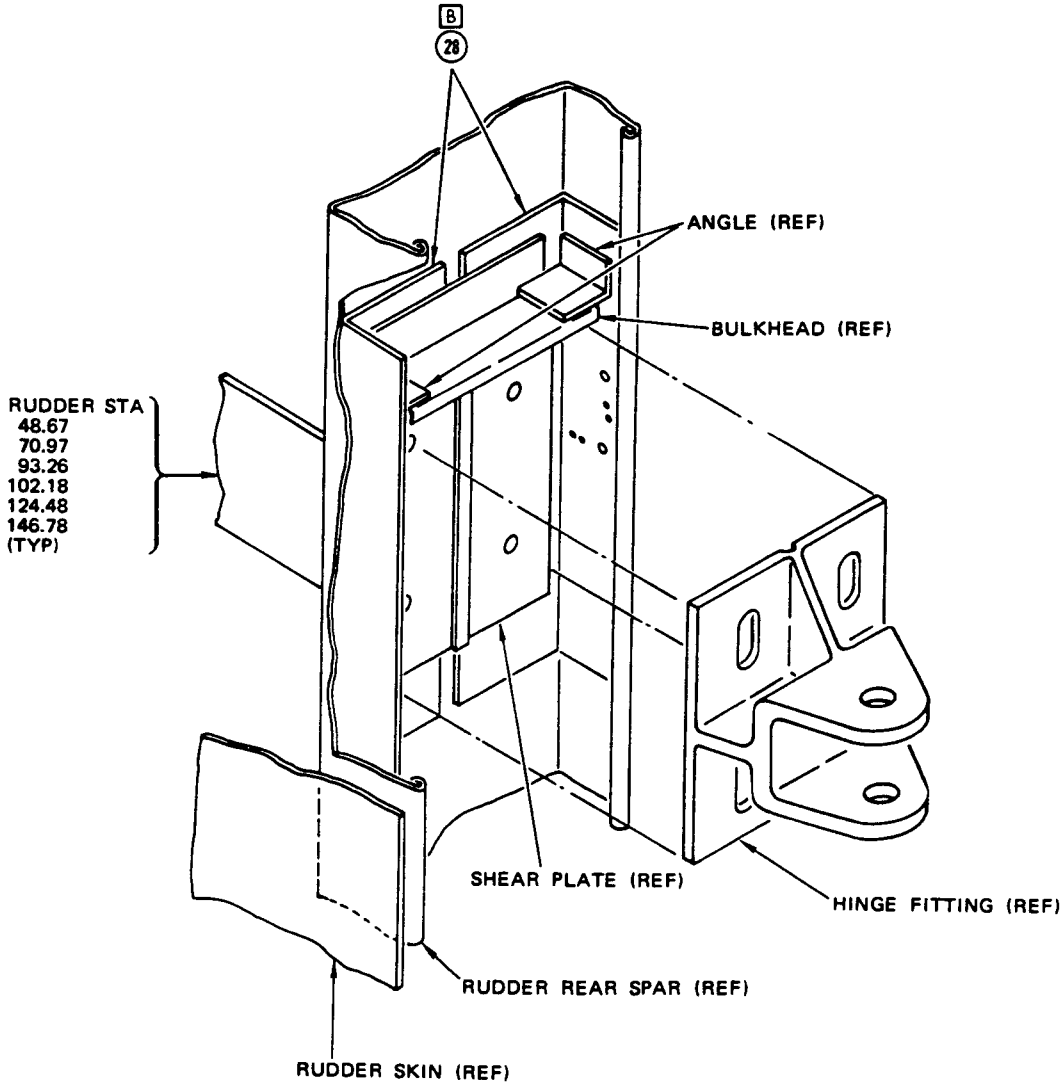
[C] EXTRUSIONS OF 7079-T6 MATERIAL HAVE BEEN REPLACED BY 7075-T73511 EXTRUSIONS IN PRODUCTION. 7075-T73511 EXTRUSIONS ARE RECOMMENDED WHEN EXISTING STOCKS OF 7079-T6 EXTRUSIONS ARE EXHAUSTED.

Rudder and Tab Structure Identification
Figure 1 (Sheet 1)

REF DWG
5-95544



Rudder and Tab Structure Identification
Figure 1 (Sheet 2)



DETAIL I

Rudder and Tab Structure Identification
Figure 1 (Sheet 3)

FAA Approved Repair

BOEING Intercontinental 707

STRUCTURAL REPAIR

REPAIR MATERIAL

LOCATION ➧		RUDDER STATIONS			
		30.31 TO 70.97 124.48 TO 235.98		93.26 AND 102.18	
PART		QTY	MATERIAL	QTY	MATERIAL
(1)	ANGLE	2	.050 CLAD 7075-0 HT-T6	2 [D]	.100 CLAD 7075-0 HT-T6
(2)	FILLER [A]	1	BAC 1506-1026 7075-T6	1	BAC 1506-1323 7075-T6
[B]	RIVET	6	BAC R15CE-D5 OR BAC B30AY-5 OR BAC B30CQ-5	8	BAC-R15CE-D5 OR BAC B30AY-5 OR BAC B30CQ-5
[C]	RIVET	4	MS20470D-5	5	MS20470D-5

REPAIR INSTRUCTIONS

1. Remove both panels attaching to the damaged chord to provide access for repair fabrication.
2. Remove minimum amount of material to clean up damage.
3. Remove existing rivets that will be replaced by repair rivets.
4. Fabricate two pieces of part 1 and one piece of Part 2.
5. All cleaned up damage areas and repair parts must be free of scratches, burrs, nicks sharp edges and corners.
6. Before installation alodize per 51-8-0 all holes and areas of original structure and repair parts having no protective finish.
7. Layout rivet pattern.
8. Tack-rivet or spotweld part 2 to part 1.
9. Install repair parts.
10. Replace skin panels with shear head rivets (5/32 DIA) BAC - R 15 CE-D5, or, if it is impossible to use these, replace with 5/32 countersunk blind bolts. If panel has been damaged, repair per 51-9-1 before replacement.
11. Replace original finish per 51-2-0 of the Maintenance Manual.
12. Rebalance per 51-15-11.

NOTE

NUMBER OF FASTENERS REQUIRED IS FOR EACH SIDE OF DAMAGE.

SEE 51-2-0 FOR FASTENER CODE, REMOVAL AND INSTALLATION, HOLE SIZES AND EDGE MARGINS.

SEE 51-8-0 FOR METAL PROTECTIVE TREATMENT

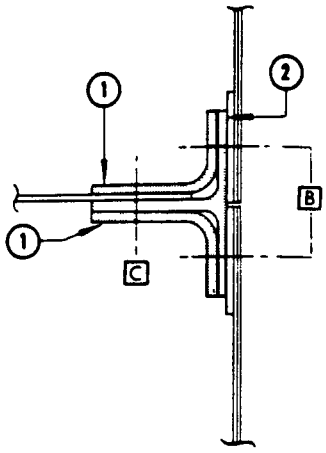
+ ORIGINAL FASTENER LOCATIONS

✦ REPAIR FASTENER LOCATIONS

[A] IF EXTRUSION IS NOT AVAILABLE, USE TWO 2024-T4 PLATES OF SAME GAGE AS ORIGINAL CHORD

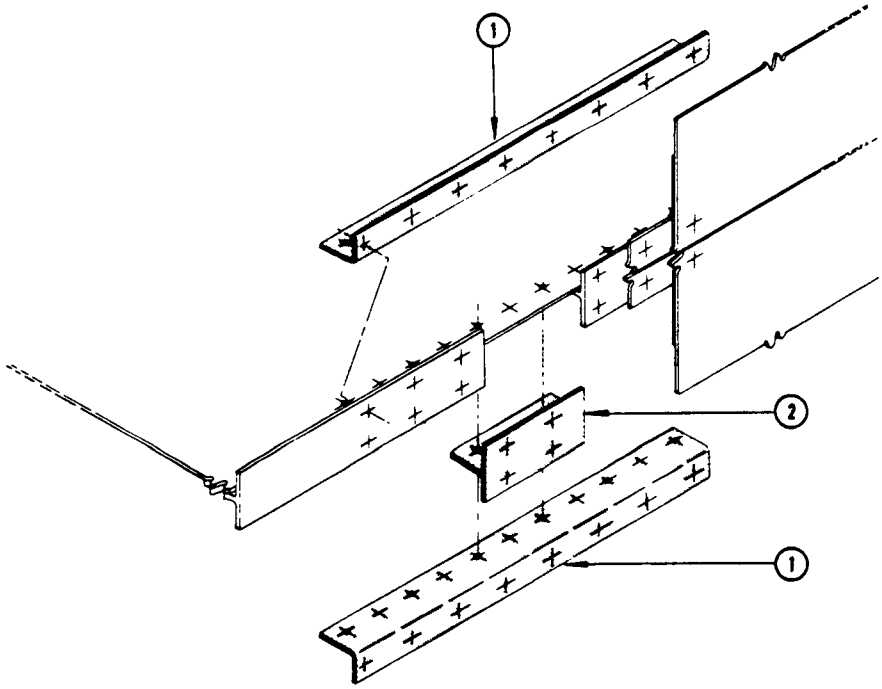
[D] USE AN ADDITIONAL FILLER PLATE, WHEN NECESSARY, IN ORDER THAT STEEL FASTENERS DO NOT RIDE THE RADIUS OF THE ANGLE

FAA Approved Repair



SECTION THROUGH REPAIR

CHORD REPAIR SHOWN
AT STATION 70.97

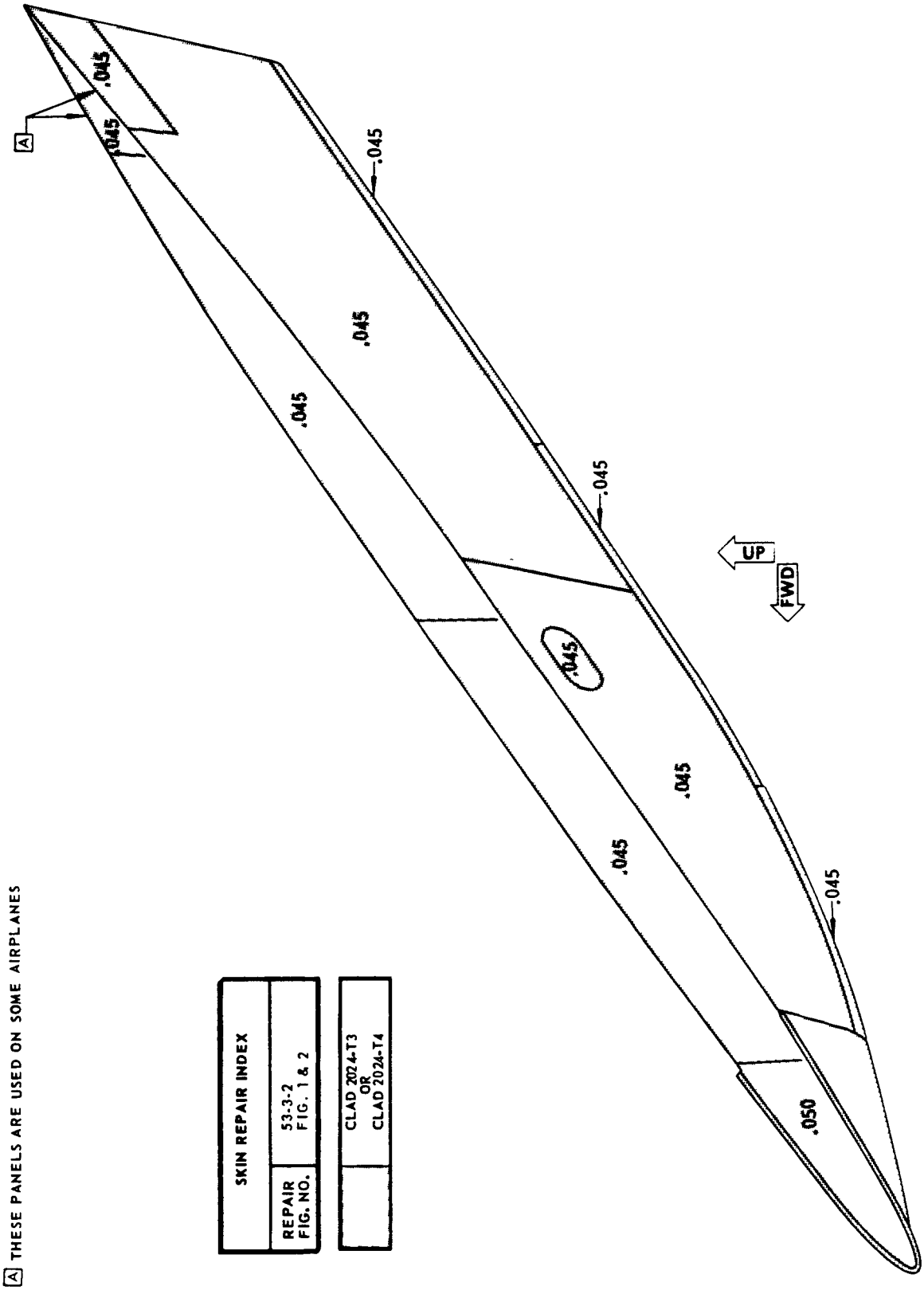


Rudder Rib Tee Chord Repair
Figure 1 (Sheet 2 of 2)

FITTINGS, MATERIALS AND HEAT TREATMENT

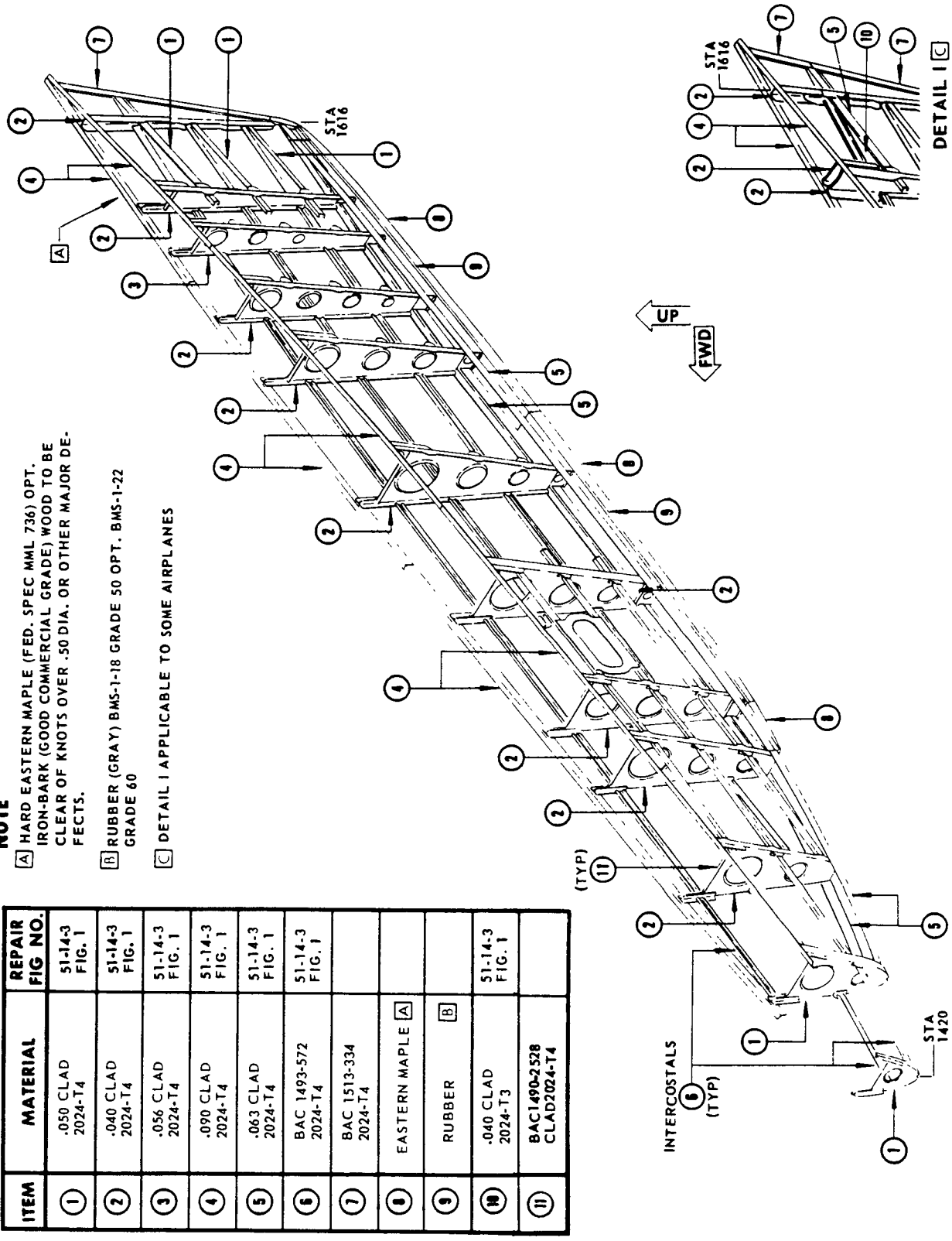
1. Stabilizers structural fittings are normally replacement items and are identified in 55-3-3, 55-4-3, 55-5-3 and 55-6-3.

2. Refer to production drawings for heat treatment information.



NOTE
A THESE PANELS ARE USED ON SOME AIRPLANES

Vertical Fin Skin Materials Identification
Figure 1



NOTE

A HARD EASTERN MAPLE (FED. SPEC MML 736) OPT. IRON-BARK (GOOD COMMERCIAL GRADE) WOOD TO BE CLEAR OF KNOTS OVER .50 DIA. OR OTHER MAJOR DEFECTS.

B RUBBER (GRAY) BMS-1-18 GRADE 50 OPT. BMS-1-22 GRADE 60

C DETAIL I APPLICABLE TO SOME AIRPLANES

ITEM	MATERIAL	REPAIR FIG NO.
1	.050 CLAD 2024-T4	51-14-3 FIG. 1
2	.040 CLAD 2024-T4	51-14-3 FIG. 1
3	.056 CLAD 2024-T4	51-14-3 FIG. 1
4	.090 CLAD 2024-T4	51-14-3 FIG. 1
5	.063 CLAD 2024-T4	51-14-3 FIG. 1
6	BAC 1493-572 2024-T4	51-14-3 FIG. 1
7	BAC 1513-334 2024-T4	
8	EASTERN MAPLE A	
9	RUBBER B	
10	.040 CLAD 2024-T3	51-14-3 FIG. 1
11	BAC1490-2528 CLAD2024-T4	

Vertical Fin Structure Identification
Figure 1