T. O. 1F-80A-3
(Formerly AN 01-75FJ-3)
NAVY AN 01-75FJ-3

HANDBOOK
STRUCTURAL REPAIR INSTRUCTIONS

USAF SERIES

F-80A, F-80B
F-80C, RF-80A

NAVY MODEL

TV-1

AIRCRAFT

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FIGURE 1A DELETED IN REVISION DATED 3 OCTOBER 1946

PREFACE

Many modifications have been incorporated on USAF Series F-80A, F-80B, F-80C, and RF-80 airplanes and Navy Model TV-1 (TO-1) airplanes subsequent to their delivery to the Air Force. These modifications have been made in accordance with instructions issued as Lockheed Service Bulletins, Lockheed Service Instructions, Air Force Technical Orders, or Air Force Engineering Drawings.

Modifications which affect aircraft structure and/or structural repairs are reflected in this handbook. If the modification is applicable to all models of the F-80 series aircraft, the basic illustrations have been changed to agree. If the modification applies only to a certain group or model, illustrations are provided for both the modified and unmodified conditions.

Visual examination of the structure will show whether the modification has or has not been effected.

SECTION I

GENERAL

1. INTRODUCTION.

This handbook provides instructions for the structural repair of USAF series F-80A, F-80B, F-80C, and RF-80A airplanes, and Navy model TV-1 (TO-1) airplanes. Reference diagrams and repair drawings apply to all models unless specifically noted otherwise.

Note

USAF series F-80C and Navy Model TV-1 (TO-1) airplanes are identical in all structural aspects. Repairs indicated herein for USAF Model F-80C airplanes apply to Navy Model TV-1 (TO-1) airplanes without variance.

This handbook employs the use of both the prefix "P" and the prefix "F" with model designations. It is intended that all models will be identified eventually with the prefix "F." Refer to the following table for corresponding USAF designations.

Model	*Identical To*
P-80A	F-80A
P-80B	F-80B
P-80C	F-80C
FP-80A	RF-80A

Repair items of a general nature not covered in this handbook, will be found in AN 01-1A-1, "General Manual for Structural Repair."

2. TYPE OF CONSTRUCTION.

All models are all-metal, low-wing, single place, land airplanes. Propulsion power for all models is derived from a single jet unit positioned in the fuselage mid section.

See figures 1, 2, 2A, 22, 22A, and 23 for details of construction.

3. INVESTIGATION OF DAMAGE.

Examine the airplane to determine the extent of damage before making repairs. Examine not only the obviously-damaged area, but the surrounding area as well, to determine that no secondary damage remains undetected.

4. CLASSIFICATION OF DAMAGE.

After the damage has been investigated, classify it in one of the following categories:

a. NEGLIGIBLE DAMAGE.—Damage consisting of the removal or displacement of material, but which does not affect the structural requirements of the component involved, may be considered negligible, and does not require repair. (See column marked "Negligible Damage" on the keys to the reference diagrams.)

b. REPAIRABLE DAMAGE.—Damage which exceeds the allowable negligible limits must be repaired by using reinforcement or splice members which will return the part to the required strength. (See column marked "Repairs" on the keys to the reference diagrams.)

c. DAMAGE NECESSITATING REPLACEMENT. For certain damaged members, replacement rather than repair is recommended. Small members which are inaccessible for repair, should be replaced. Parts constructed of heat-treated steel, forgings, castings, etc., must be replaced. Items not indicated on the keys to the reference diagrams must be considered non-repairable and must be replaced if the damage is in excess of that described as negligible.

d. DAMAGE REPAIRABLE BY INSERTION.— Damage which can be repaired by splicing in a length of member identical in shape and material to the damaged part is classified as damage repairable by insertion. The length of member spliced into the existing member is known as the insertion member. The insertion member is fitted into the space resulting from removal of the damaged portion of the structural member involved. Allow a clearance not exceeding 0.06 inch at each end of the insertion member. Splice connections at each end of the insertion member provide for load transfer continuity between existing and insertion members. Insertion repairs generally are used to simplify repair operations when the damaged portion of a member is relatively long, or when interference with other structure members is to be avoided. Suppose, for example, that repair members installed to splice a stringer would interfere with a bulkhead, therefore necessitating rework of the bulkhead cutout. An alternate repair could be made by cutting out a length of existing stringer passing through the cutout, and installing an insertion member

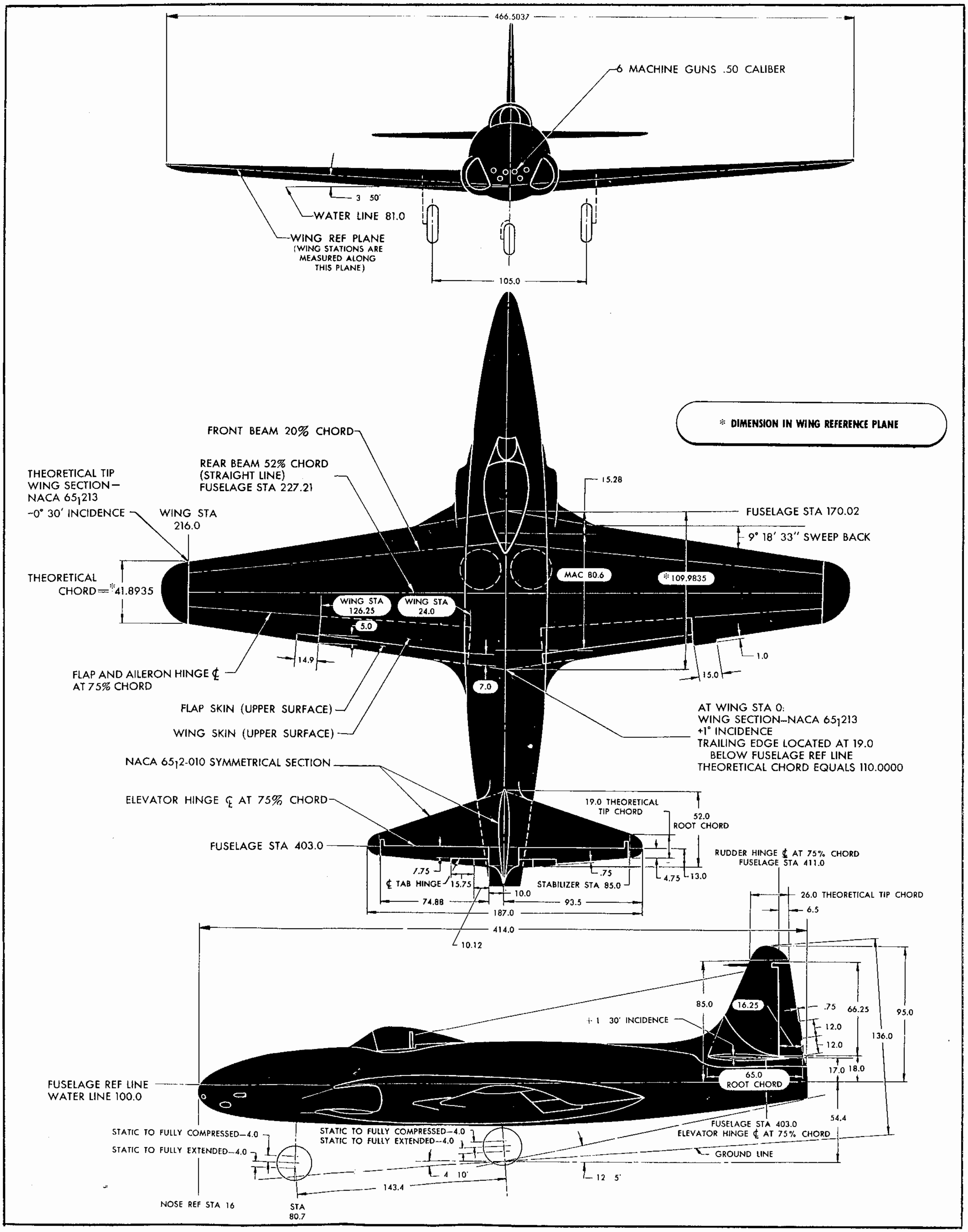


Figure 2 — Principal Dimensions, P-80A, P-80B, and P-80C Airplanes

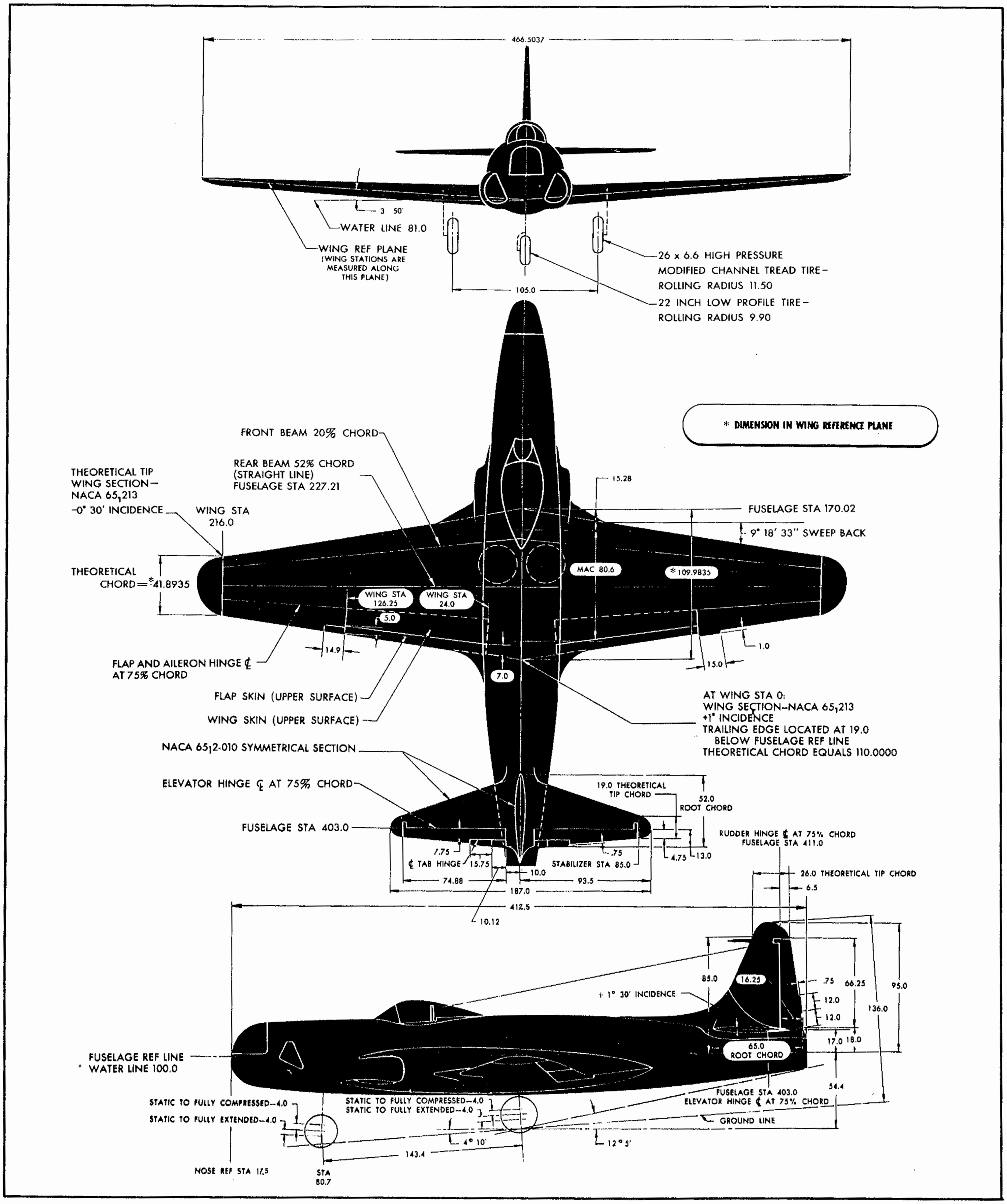


Figure 2A — Principal Dimensions, FP-80A Airplanes for the portion of stringer removed; the splice specified under "Damage Repairable by Patching" then is used on each side of the cutout to splice the insertion member to the existing member. One of the most common uses of insertion repairs is the replacement of large portions of skin.

The method of adapting the repairs provided in this handbook to the installation of insertion members is shown in figures 2B and 2C. The method shown is applicable to any member in any part of the airplane. If a repair is provided in this handbook for the member, the repair can be used to effect an insertion repair.

5. SUPPORT OF STRUCTURE DURING REPAIR.

Damaged parts must be returned to their original contours, and if the part is to be replaced, the original shape must be duplicated. If the damage has caused distortion, the portion of the airplane affected must be supported firmly by means of jigs or trestles while repairs are being made.

Methods of constructing templates and jigs are described in the following paragraphs.

a. CONSTRUCTION OF JIGS.—Construct jigs of welded or bolted steel frames whenever conditions permit. Employ rigid materials under any circumstances to provide as solid a support as possible. Basic dimension diagrams for use in the construction of jigs will be found in the applicable section for each component. The method of utilizing the basic dimension diagrams is described in the following example:

EXAMPLE

Assume that a jig is required for the aileron. (See figure 3.) Plan the jig frame so that there will be approximately one foot clearance between the inside framework of the jig and the aileron, to provide working space. Refer to figure 34 for dimensions. Note that dimensions are measured from the hinge center line, therefore a line simulating the aileron hinge center line must be established on the jig. This is accomplished by installing wire (A) and tension screw (E).

Determine the outside contour from the dimensions given on figure 34. Install the "V"-shaped support blocks (D, figure 3) on the lower base of the jig to conform to these measurements. Place support blocks as shown, and fasten securely to the base of the jig. The end blocks should be removable to provide for installation of the aileron. Clamp the aileron in the jig by means of bar (B), which is tightened in place by bolts (C). Maintain rigidity along the flat of the aileron by a form block made to the shape of the spar, as described in paragraph *b*, following.

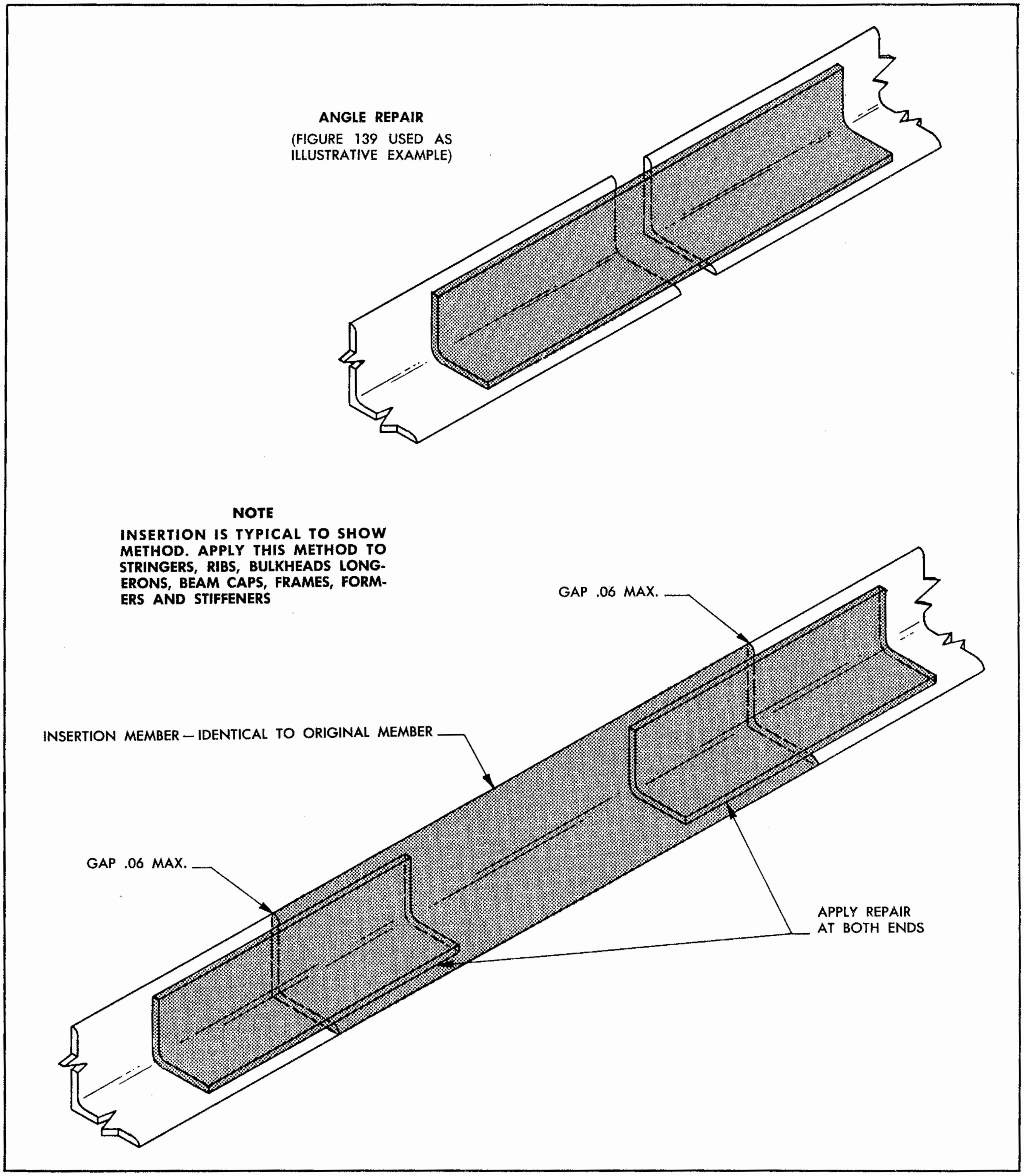


Figure 2B — Example of Stringer Insertion

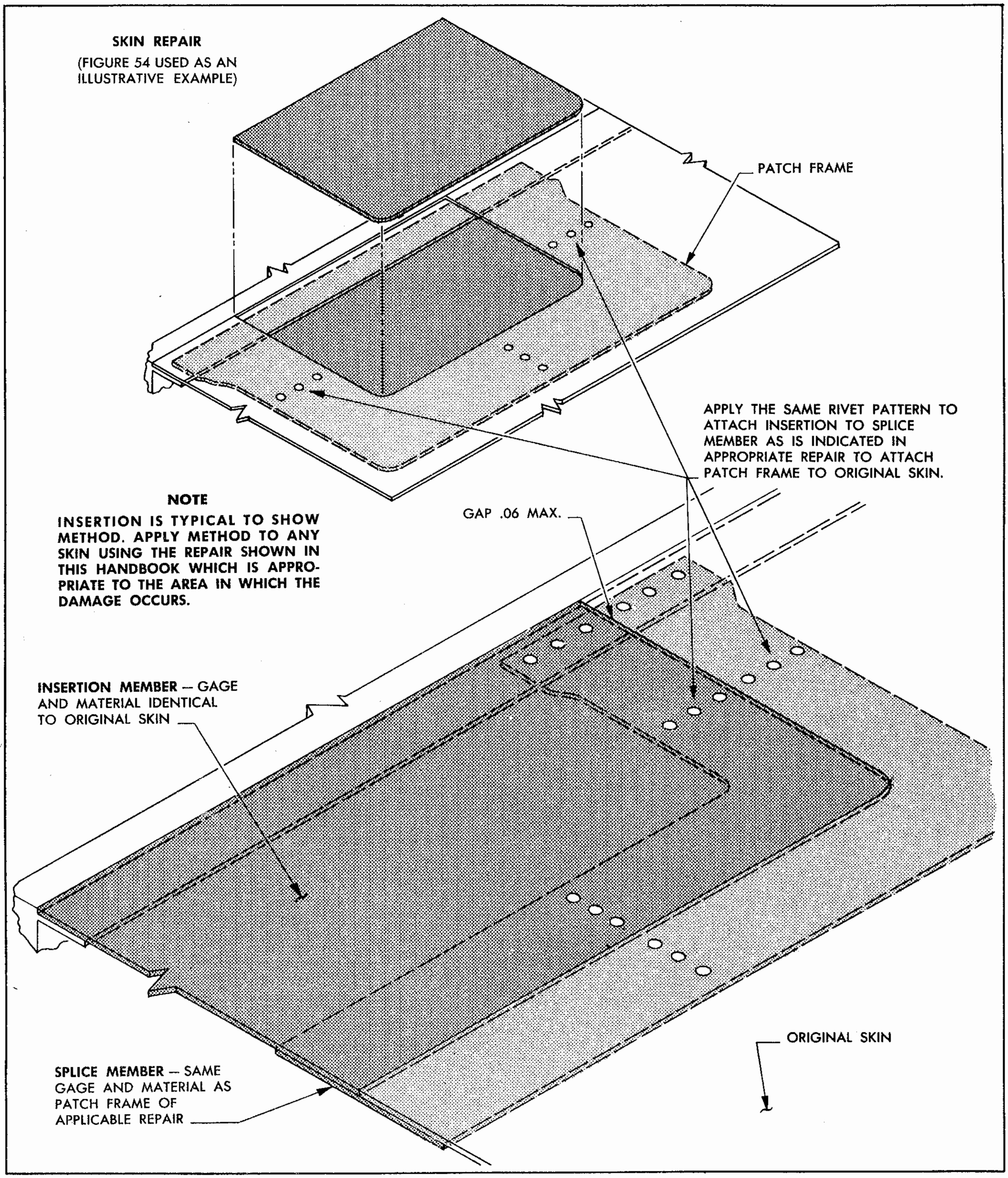


Figure 2C — Example of Skin Insertion

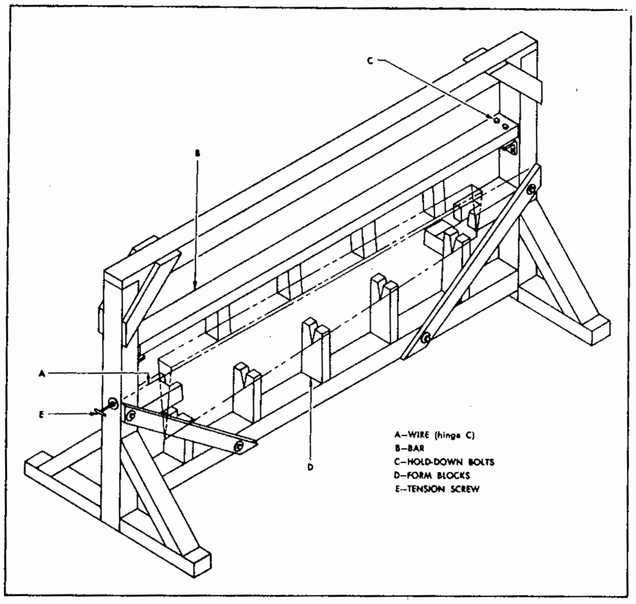


Figure 3 — Sample Jig

b. LAYOUT AND CONSTRUCTION OF TEMPLATES AND FORM BLOCKS.—Use the basic dimension diagrams to lay out templates. All basic dimensions are measured to the outside skin line with the exception of those for the fillets, which are measured to the inside skin line. When basic dimensions are measured to the outside skin line, deduct the skin gage from the basic dimension to determine the contour of ribs and frames.

EXAMPLE

Assume that the stabilizer rib at station 40 has been damaged, and must be replaced. The original shape of the rib must be duplicated, and the airfoil contour maintained. Build the rib to an accurately constructed template as follows: Scribe the rib contour on a metal plate. Use the station 40 dimensions in the key to figure 63. Deduct the skin thickness from each dimension to provide proper skin contour. Cut out the template as shown in figure 4, and then construct a hard-wood block from the template. Round the corners to conform to the flange bend radius obtained from AN 01-1A-1, "General Manual for Structural Repair." Form

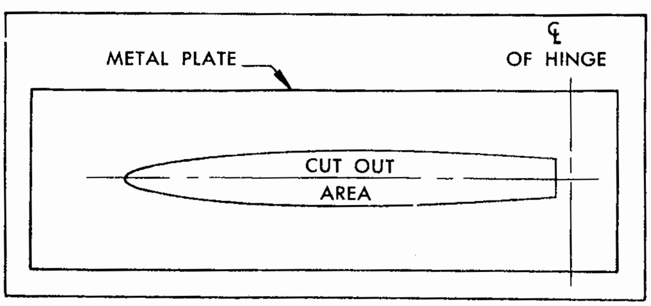


Figure 4 — Sample Template

the rib on the form block and check the completed part against the template.

c. CHECKING ALIGNMENT.—Before repairs are started, take measurements between reference points on adjacent parts unaffected by the damage. Compare these measurements with related points on the repaired member to determine whether distortion has occurred. Damage involving the major components, or large portions of the airplane, will require an alignment check of the airplane after repairs have been completed. See paragraph 10, this section, for instructions for checking alignment and symmetry.

6. LOCATION OF LEVELING POINTS.

The leveling pads are located on the lower fuselage longerons in the nose wheel well, as shown in figure 5. Level the airplane by jacking at the nose and wing jack points as shown in figure 18.

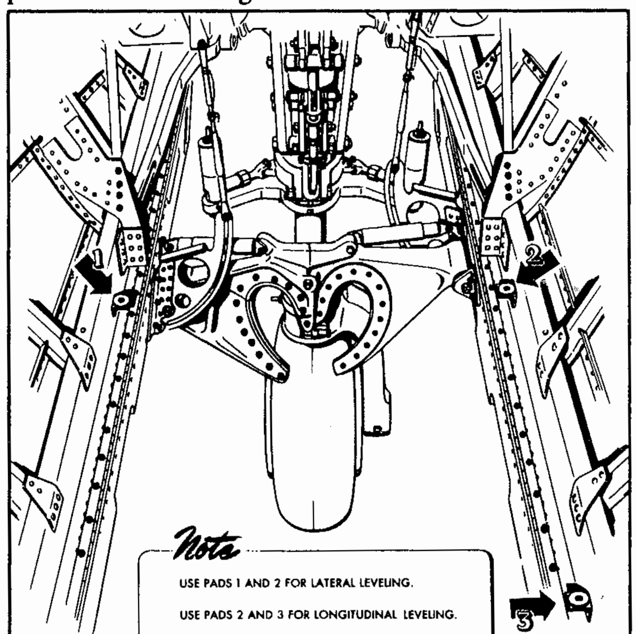


Figure 5 — Leveling Points

7. TYPES OF REPAIRS.

Most parts of the airplane may be repaired with patches and splices of aluminum Alclad sheet or NE8630 steel sheet (normalized). Rivets and bolts are the most common fasteners for attaching patches and splices. Do not use a blind fastener unless its use is specified by the applicable repair drawing.

a. MATERIAL FOR REPAIR AND REPLACEMENT.—Make replacement parts from material identical to that of the original part, as indicated on the keys to the reference diagrams included in this handbook. If identical materials are not available, the specification tables in section VI of AN 01-75FJA-2, "Handbook of Erection and Maintenance Instructions," will give a basis for the substitution of comparable materials.

Note

Repairs described in this handbook are based on allowable values of materials as specified. The substitution of materials having a lower value is not authorized.

Sheet metal has been used for repair material wherever possible. It is permissible to use sheet metal substitutes for extruded sections provided the cross-sectional area of the replacement is equal to or greater than that of the original member, and that the general shape is similar to that of the original member.

(1) ALUMINUM ALLOYS.—The most common material used for repairs is 24S Alclad which may be formed in most cases in its heat-treated or S-T condition. For severe forming, 24S-O (soft) Alclad is preferable, but in all cases, this material must be heat-treated to 24S-T condition before installation on the airplane. Once 24S-O has been heat-treated and brought to an S-T condition, it may not be annealed, as this will destroy the corrosion-resistant qualities of the alloy.

(2) STEELS.—Steels most frequently used for repairs are NE8630 (SAE X4130), Specification AN-S-12, and 347-1A (corrosion and heat resistant), Specification AN-QQ-S-757. In the repair of any steel tube or plate member, the heat-treatment properties of the original part, when called out on the reference diagram keys, must be observed strictly. Due to work-hardening tendencies, the 347-1A steel offers forming difficulties, and one or more annealing operations may be required during severe forming. This material may not be torch-welded. Refer to AN 01-1A-1, "General Manual for Structural Repair," section 3, for additional information.

b. STANDARD PARTS FOR REPLACEMENT AND REPAIR.—Whenever possible, use attaching parts (rivets, bolts, nuts, screws, etc.) which are called out on the repair drawings, or such as were used in the original construction of the airplane. The drawings and data in section IX list suitable alternate parts in case substitution is necessary.

Note

Repairs described herein are based on allowable values of standard attaching parts as specified. Substitution of parts of lower value is not authorized. If alternate parts having equivalent or greater strength but different dimensions must be used, check carefully to determine that no interferences are introduced, and that required edge distances are maintained. In general, a more suitable balance will be maintained if the rivet and bolt callouts are observed strictly.

8. PROCEDURE FOR EFFECTING REPAIRS.

Most repairs are a combination of typical and specialized repairs. In order that the procedure for making repairs, and the use of this handbook be made clear, the following example is given.

Assume that a sharp object has damaged the leading edge of the stabilizer in such a manner that the skin is crushed in and one of the ribs is crumpled. Evaluate the damage and choose the repairs as follows:

a. REFERENCE TO PERTINENT SECTION.—Refer to the section of the handbook which deals with the damaged component. In this instance, refer to section III, paragraph 2.

b. INVESTIGATION OF DAMAGE. — Determine which parts of the structure are affected. Damaged parts involved in this repair are the skin, hat-section stringers, and one rib. Investigation (figure 6) discloses that no rivets in the adjacent ribs have been pulled, therefore rib damage is confined to the one rib.

c. SUPPORT OF STRUCTURE.—This damage has not distorted the main structure sufficiently to warrant the erection of a special trestle.

d. CLEAN-UP OF DAMAGE.—Cut away the damaged areas of the affected members as shown in figure 7. Provide the radius in each corner and file all sharp or burred edges smooth.

e. CLASSIFICATION OF DAMAGE.—After the damaged parts have been cleaned up, make a careful examination and classify the damage by its extent as described in paragraph 4, preceding. Refer to the repair drawing indicated on the key to the applicable reference diagram for necessary remedial action. In the repair discussed in this example, the leading-edge rib should be repaired by the method shown in figure 151, which is a typical repair, and the skin and hat-section stringers by means of the specialized repairs shown in figures 74 and 73 respectively.

f. CORROSION PREVENTION.—After the damage has been cleaned up as shown in figure 7, and before any repair parts are installed, give all exposed metal surfaces a protective treatment. Refer to section 14 of AN 01-1A-1, "General Manual for Structural Repair." Apply protective treatment also to all repair parts before installation.

g. SEQUENCE OF REPAIRS.—The sequence of repairs is determined by relative accessibility. As a general rule, make interior repairs first, and skin repairs last. In this sample repair, the members are treated in the following order: leading-edge rib, stringer, and skin.

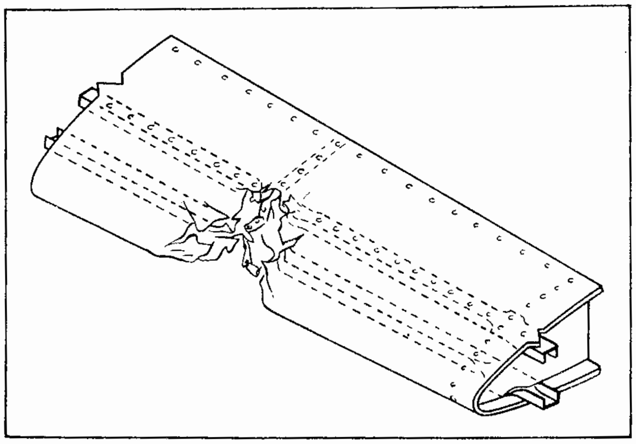


Figure 6 — Sample Repair Damaged Members

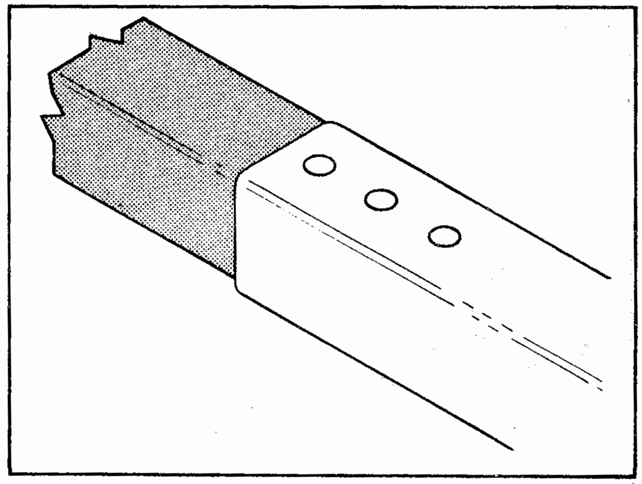


Figure 9 — Sample Repair Stringer Splice

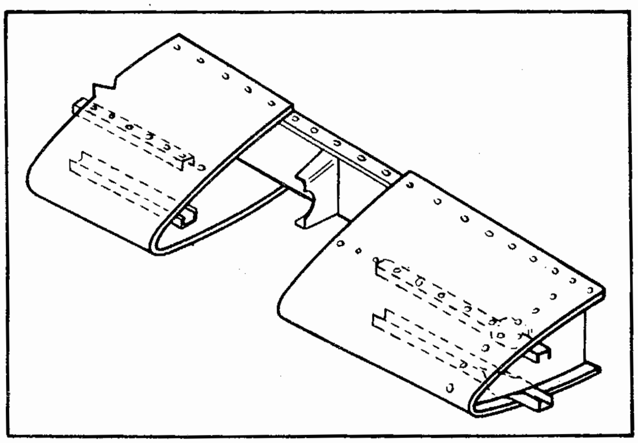


Figure 7 — Sample Repair Damage Cleaned Up

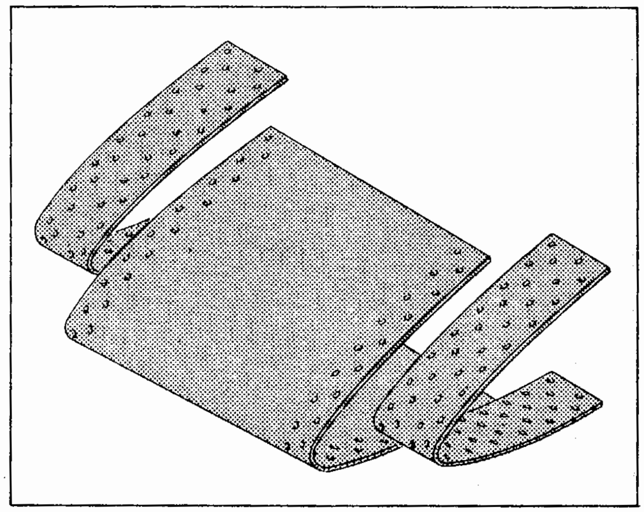


Figure 10 — Sample Repair Skin Repair

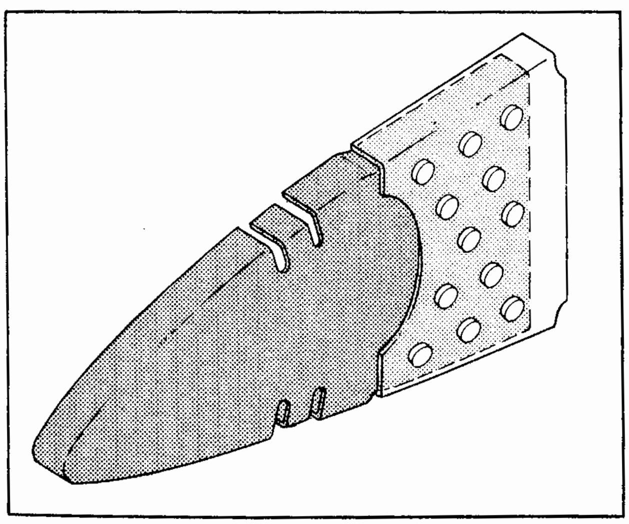


Figure 8 — Sample Repair Rib Repair

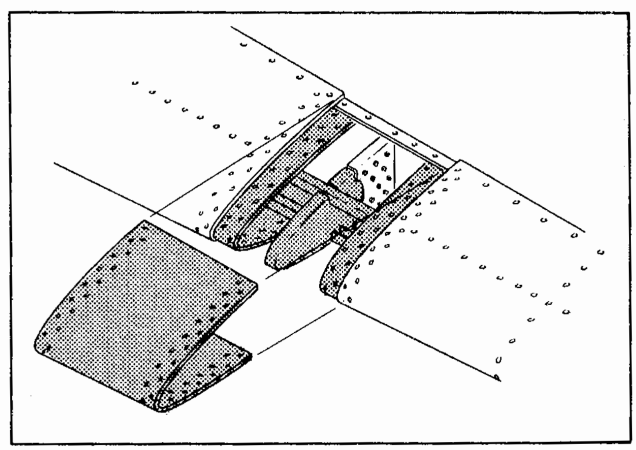


Figure 11 — Sample Repair Completed

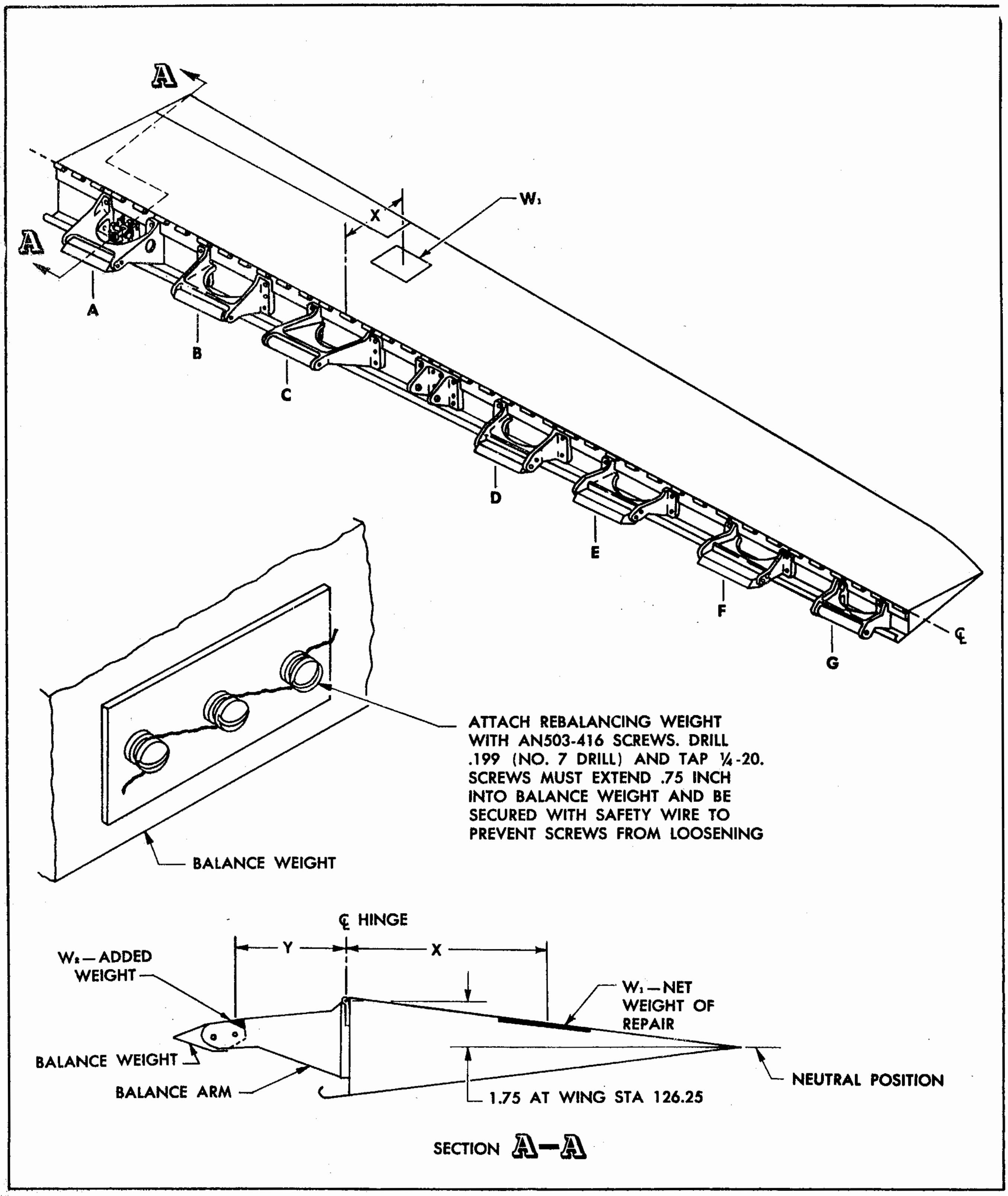


Figure 12 (Sheet 1 of 2 Sheets)—Aileron Mass Balance Diagram

WEIGHT OF BALANCE WEIGHTS

WEIGHT

	A	B	C	D	E	F	G
L.H. AILERON	175043 3.58 LBS	175045 1.21 LBS	175046 1.33 LBS	175042-5 1.99 LBS	175042-6 2.08 LBS	175042-7 1.91 LBS	175047 2.09 LBS
R.H. AILERON	175046 1.33 LBS	175045 1.21 LBS	175046 1.33 LBS	178250 2.29 LBS & 178249★ 0.68 LBS	178250 2.29 LBS & 178249★ 0.68 LBS	175042-7 1.91 LBS	175047 2.09 LBS
	NOTE: ALL WEIGHTS $^{+.05}_{-.00}$ LBS DRILLED AND READY TO INSTALL						

★ AIRPLANES SERIAL NO. AF49-1848 AND SUBSEQUENT, INCORPORATE LS640A-4-160 SPACERS IN THE 178249 BALANCE WEIGHTS. WEIGHTS IN AIRPLANES PRIOR TO SERIAL NO. AF49-1848 INCORPORATE LS642A-5-16 SPACERS. REPLACE ALL LS642A-5-160 SPACERS WITH LS640A-4-160 SPACERS; SEE SECTION IX FIGURE 128A FOR MANUFACTURING DIMENSIONS

INCH POUND TOLERANCE

(AILERON EQUIPPED AS SHOWN AND IN NEUTRAL POSITON)

	OVERBALANCE (INCH-POUNDS)	UNDERBALANCE (INCH-POUNDS)
AILERON — L.H.	0.2 TO 14.2	NO
AILERON — R.H.	11.2	2.8

NOTES:

1. SEE TEXT FOR METHOD OF COMPUTING REBALANCING WEIGHT W_2
2. CHECK STATIC BALANCE TO THE INCH-POUND TOLERANCES PROVIDED IN ATTACHED TABLE IN THE ATTITUDE SHOWN IN VIEW A-A. AILERON MUST BE EQUIPPED AS SHOWN
3. ADD REBALANCING WEIGHTS IN THE LOCATION SHOWN IN VIEW A-A TO THE WEIGHT OR WEIGHTS CLOSEST TO THE REPAIRED AREA. ATTACH AS SHOWN
4. WHEN BALANCE WEIGHTS MUST BE REPLACED, USE THE ATTACHED TABLE TO DETERMINE MINIMUM WEIGHT. THE WEIGHT MATERIAL IS LEAD, SPEC QQ-L-171 Gr. B
5. REPLACEMENT WEIGHTS OR REBALANCING WEIGHTS W_2 MUST NOT STRIKE WING STRUCTURE WITH AILERONS RIGGED 20° UP AND 20° DOWN FROM NEUTRAL POSITION

Figure 12 (Sheet 2 of 2 Sheets) — Aileron Mass Balance Diagram

b. APPLICATION OF INDIVIDUAL REPAIRS.—Refer to the basic dimension diagram (figure 63) for the construction of the leading-edge rib insertion, and build the replacement part as described in paragraph 5 *b*, preceding. Attach the rib and stringer insertions with AN430AD4 rivets. The leading-edge skin repair must meet the following requirements:

(1) It must retain the exact contour of the original leading edge, as shown in figure 63.

(2) It must be flush. Mill the rivet heads in the manner described in paragraph 14, this section.

(3) The exterior surface must be treated and painted as described in paragraph 24, this section.

The application of individual repairs is shown in figures 8, 9, and 10; the completely repaired area in figure 11.

9. REBALANCE OF CONTROL SURFACES.

a. GENERAL.—The ailerons, elevator, and rudder are balanced control surfaces. Both static and dynamic balance has been considered carefully in the original design of the airplane. The dynamic balance may be maintained only by observing the methods prescribed in this paragraph and on the referenced illustrations. The dynamic balance is controlled by the static balance and the point of attachment of rebalancing weights. Do not deviate from the indicated points of attachment. Rebalancing will be necessary when repairs or changes have been made on the balanced control surface unless a check, as described in paragraph *c* following, shows the surface to be within the prescribed inch-pound tolerance.

b. REBALANCING WHEN THE NET WEIGHT INCREASE IS KNOWN.—If the net weight increase is known, the control surface may be rebalanced mathematically. A description of the various symbols used in figures 12, 13, and 14 is as follows:

W_1 = net weight increase due to repair

W_2 = necessary additional rebalancing weight

X = distance of center of repair aft of hinge line

Y = distance of rebalancing weight W_2 ahead of hinge line

Z = distance between center of repair and inboard end of elevator measured parallel to elevator hinge line. (See figure 13.)

(1) Calculate the rebalancing weights W_2 for the rudder and aileron by the following formula:

$$\frac{W_1 \times X}{Y} = W_2$$

(2) Add W_2 in the locations prescribed on figures 12 and 14 dependent upon the location of the added weight W_1.

(3) Calculate the rebalancing weight W_2 for the elevator by the following formula:

$$\frac{W_1 \times X \times Z}{341} = W_2$$

(4) Add W_2 to the outboard weight only as shown on figure 13.

c. REBALANCING WHEN NET WEIGHT INCREASE IS NOT KNOWN.—If the net weight increase is not known, the condition of balance can be checked by measuring the inch-pound overbalance or underbalance as follows:

(1) Remove the control surface from the airplane and mount it on a bench as shown in figure 16C. Suspend the surface at the hinge.

Note

The surface must be equipped as shown in figures 12, 13, or 14. Ailerons must include counter weights, tabs, tab shaft, and tab gear box; do not include flexible tab shaft. Elevators must include counter weights, tabs, tab shaft, and tab gear box; do not include flexible tab shaft or elevator horn. Rudders must include counter weights including lower weight; do not include any of the rudder control mechanism.

(2) Check visually to see if the surface is overbalanced or underbalanced. The trailing edge will be above the neutral position if overbalanced; below the neutral position if underbalanced.

(3) If the surface is overbalanced, place a scale under one of the balance weights, and weigh the force required to hold the surface in neutral position. If the surface is underbalanced, place a scale under the trailing edge, and weigh the force required to hold the surface in neutral position. Neutral position for each control surface is indicated on figures 12, 13, and 14. The scale position is shown in figure 16C for checking underbalance; overbalance checking is accomplished with the scale placed under the balance weight.

(4) Determine the inch-pound underbalance or overbalance by multiplying the net weight required to hold the surface in neutral position, by the distance from the hinge center line, to the point where the force is weighed. This procedure is indicated in figure 16C as:

$$W \times L = \text{inch-pounds.}$$

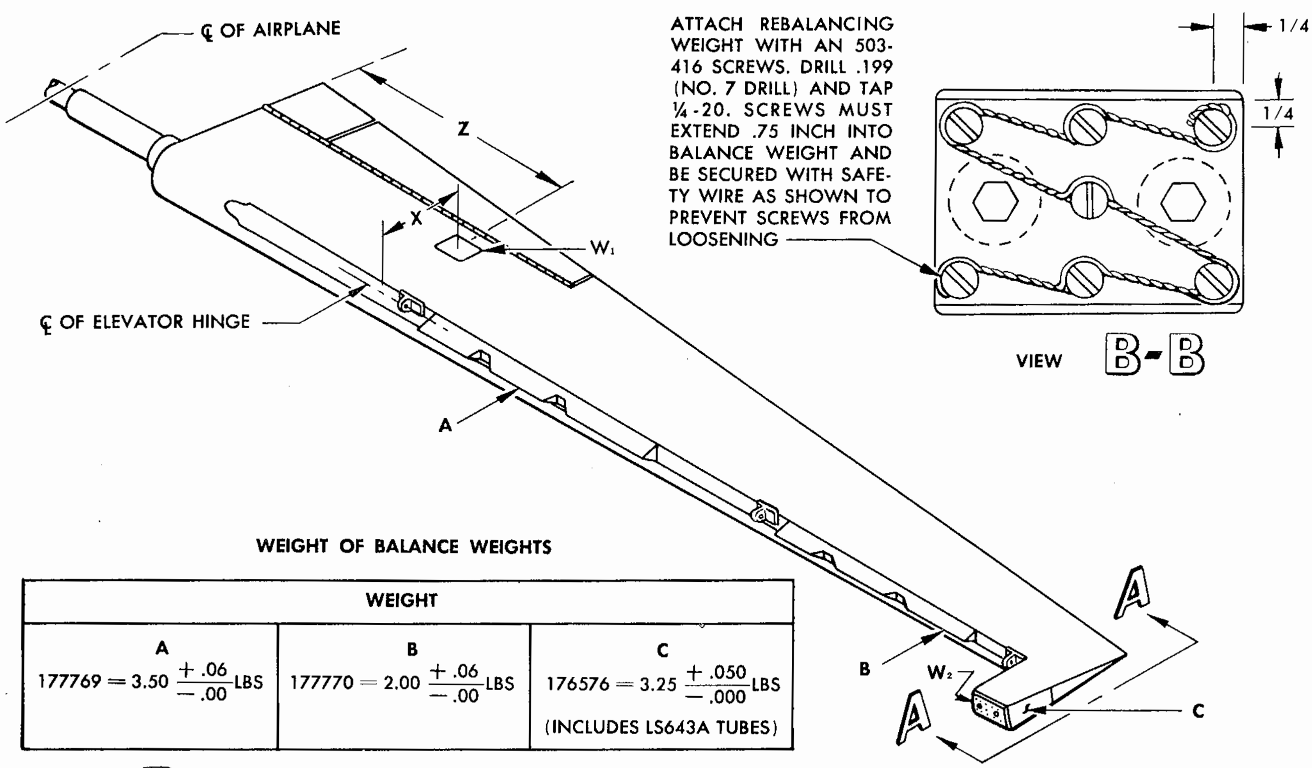
d. INSTALLATION OF REBALANCING WEIGHTS (W_2).—Install rebalancing weights in the locations shown in figures 12, 13, and 14 only.

CAUTION

Do not install any rebalancing weight in a position that will interfere with the free operation of the control surface.

9A. REPLACEMENT OF BALANCE WEIGHTS.

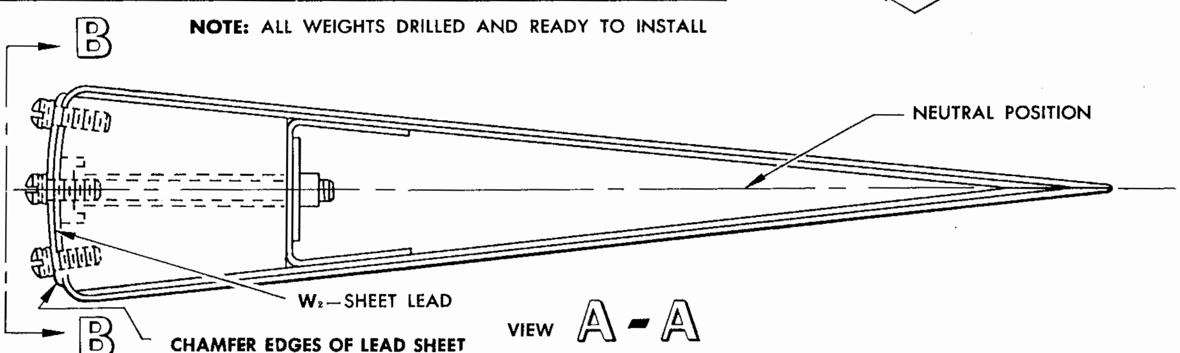
Damage to the balance weights other than small dents, usually removes enough weight to make a balance check necessary as described in paragraph 9*c* preceding. If a balance check shows the surface to be underbalanced below the prescribed limits shown in figures 12, 13, and 14, then the balance weights should be checked to the values shown. If the balance weights are replaced, be sure to include any necessary W_2 rebalancing weight which was found necessary due to repairs. The weights of the balance weights shown on figures 12, 13, and 14, include all bushings and installation holes drilled, and weights ready to install.



WEIGHT OF BALANCE WEIGHTS

WEIGHT		
A	**B**	**C**
177769 = 3.50 $\frac{+.06}{-.00}$ LBS	177770 = 2.00 $\frac{+.06}{-.00}$ LBS	176576 = 3.25 $\frac{+.050}{-.000}$ LBS (INCLUDES LS643A TUBES)

NOTE: ALL WEIGHTS DRILLED AND READY TO INSTALL



INCH POUND TOLERANCE

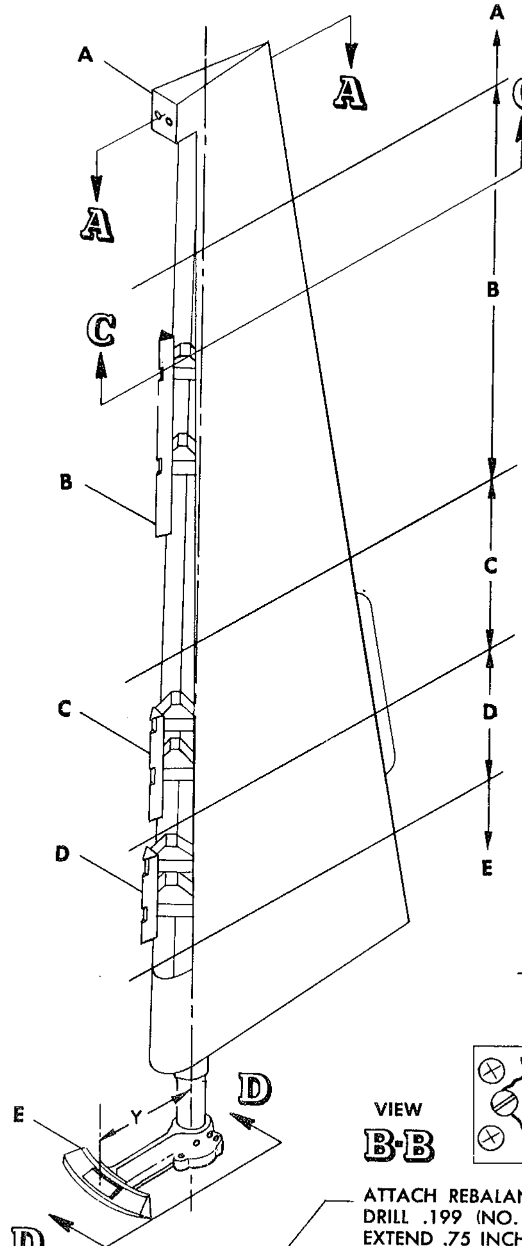
(ELEVATORS EQUIPPED AS SHOWN AND IN NEUTRAL POSITION. DO NOT INCLUDE FLEXIBLE SHAFT)
UNDERBALANCE 14.5 TO 19.5

NOTES:

1. SEE TEXT FOR METHOD OF COMPUTING REBALANCING WEIGHT W_2
2. CHECK STATIC BALANCE TO THE INCH-POUND TOLERANCES PROVIDED IN THE ATTACHED TABLE. PLACE ELEVATOR IN NEUTRAL POSITION AS SHOWN IN VIEW **A-A**. ELEVATOR MUST BE EQUIPPED AS SHOWN
3. ADD REBALANCING WEIGHTS TO THE OUTBOARD BALANCE WEIGHT **C** AS SHOWN IN VIEW **B-B**. ATTACH AS SHOWN
4. WHEN BALANCE WEIGHTS MUST BE REPLACED, USE THE ATTACHED TABLE TO DETERMINE MINIMUM WEIGHT. THE WEIGHT MATERIAL IS LEAD, SPEC QQ-L-171 Gr. B FOR WEIGHT **C** AND NAVAL BRASS FOR WEIGHTS **A** AND **B**.
5. REPLACEMENT WEIGHTS OR REBALANCING WEIGHT W_2 MUST NOT STRIKE STABILIZER STRUCTURE WITH ELEVATORS RIGGED 38° UP AND 16° DOWN FROM NEUTRAL POSITION

AB 5804

Figure 13 — Elevator Mass Balance Diagram



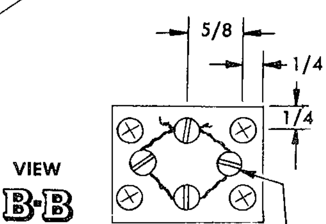
NOTES:

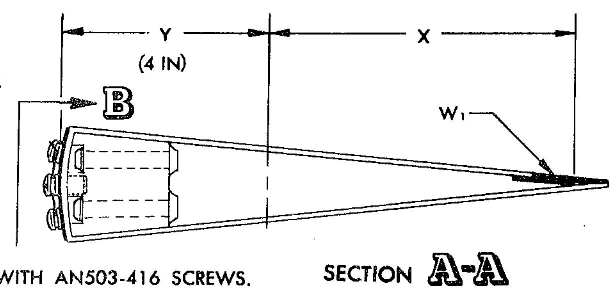
1. SEE TEXT FOR METHOD OF COMPUTING REBALANCING WEIGHT W_2
2. CHECK STATIC BALANCE TO THE INCH-POUND TOLERANCES PROVIDED WITH THE RUDDER IN NEUTRAL POSITION AS SHOWN IN SECTION **C-C**. RUDDER MUST BE EQUIPPED AS SHOWN
3. ADD REBALANCING WEIGHTS IN THE LOCATIONS SHOWN IN SECTIONS **A-A** AND **C-C** AND IN VIEW **D-D** DEPENDENT ON THE AREA AND TYPE OF BALANCING WEIGHT. ATTACH AS SHOWN IN VIEW **B-B**. CORRECT RUDDER UNBALANCE BY CONFINING THE CORRECTIVE MEASURES TO THE AREAS INDICATED **A, B, C, D,** AND E.
4. WHEN BALANCE WEIGHTS MUST BE REPLACED, USE THE ATTACHED TABLE TO DETERMINE MINIMUM WEIGHT. THE MATERIAL FOR ALL WEIGHTS IS LEAD, SPEC QQ-L-171 Gr. B
5. REPLACEMENT WEIGHTS OR REBALANCING WEIGHTS W_2 MUST NOT STRIKE FIN STRUCTURE WITH RUDDER RIGGED 30° BOTH SIDES FROM NEUTRAL POSITION

INCH POUND TOLERANCE
(RUDDER EQUIPPED AS SHOWN AND IN NEUTRAL POSITION)
OVERBALANCE — 0 TO 10 INCH POUNDS
UNDERBALANCE — NONE

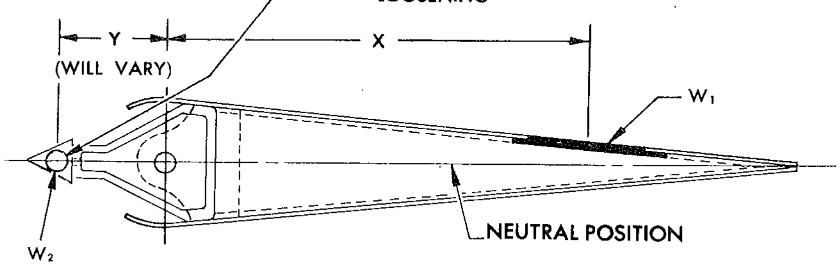
WEIGHT OF BALANCE WEIGHTS

A	B	C	D	E
175870-8	175874-4	175874-3	175874-2	176561
4.85 $^{+.10}_{-.00}$ LBS.	2.75±.10 LBS	0.83±.05 LBS	0.83±.05 LBS	3.67±.10 LBS
NOTE: ALL WEIGHTS DRILLED AND READY TO INSTALL WITH SPACERS AND FRAMES IN PLACE				



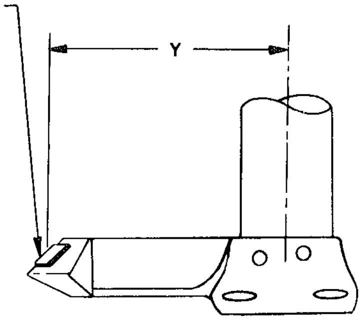


ATTACH REBALANCING WEIGHT WITH AN503-416 SCREWS. DRILL .199 (NO. 7 DRILL) AND TAP ¼-20. SCREWS MUST EXTEND .75 INCH INTO BALANCE WEIGHT AND BE SECURED WITH SAFETY WIRE AS SHOWN TO PREVENT SCREWS FROM LOOSENING



CENTER RUDDER BALANCE WEIGHTS-B, C, D

SECTION C-C



LOWER RUDDER BALANCE WEIGHT E

VIEW D-D

Figure 14 — Rudder Mass Balance Diagram

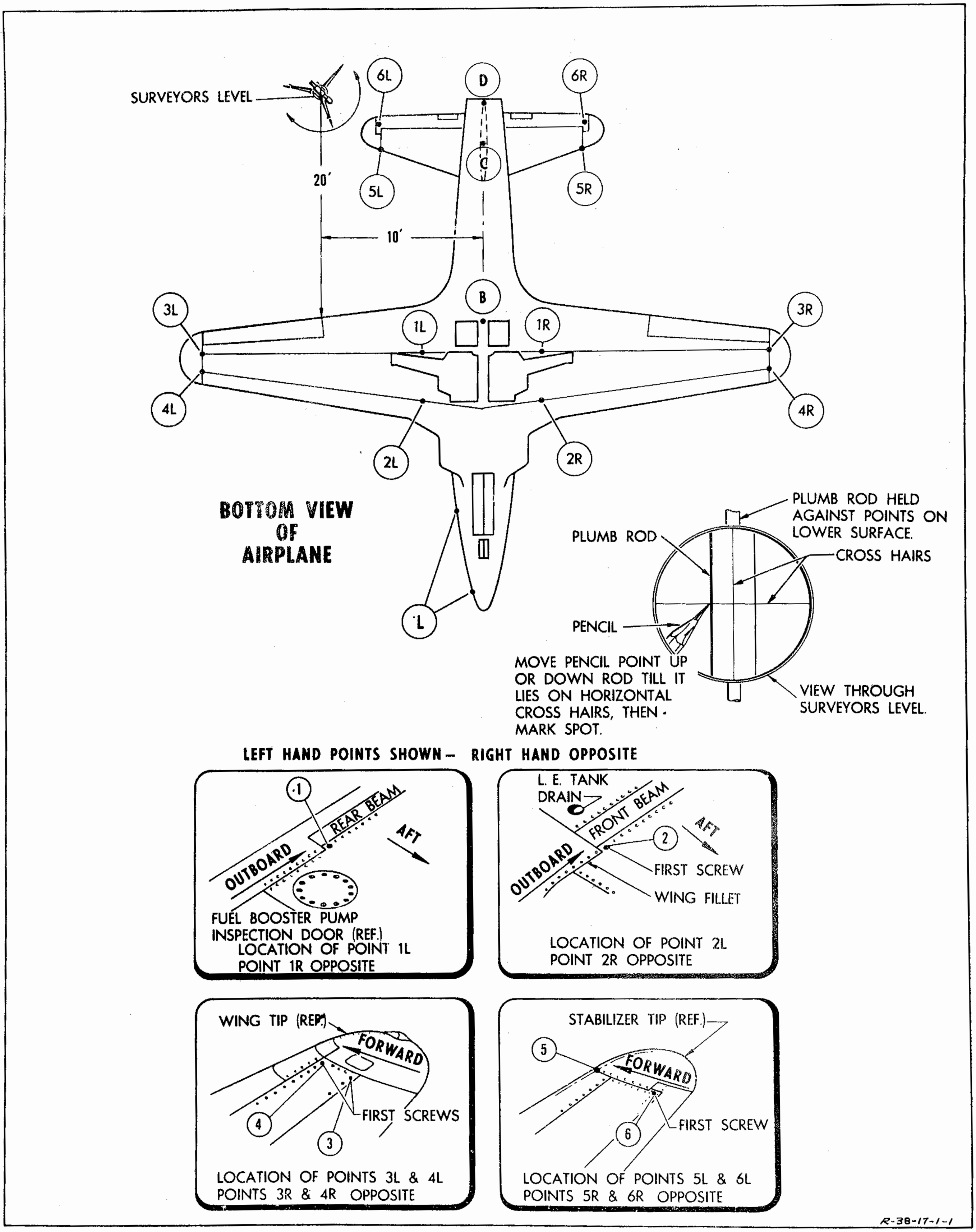
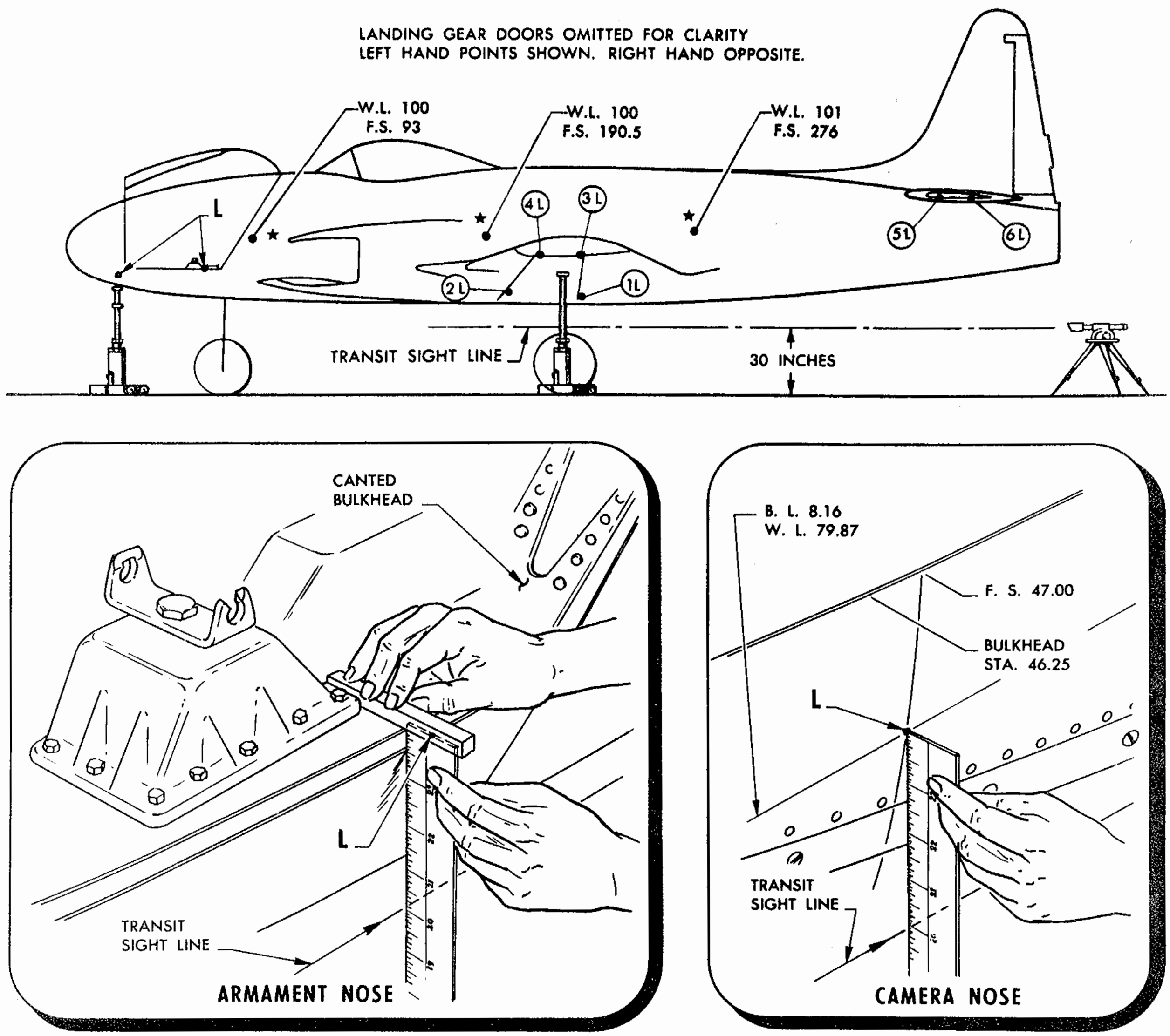


Figure 15 (Sheet 1 of 2 Sheets) — Symmetry Diagram



★ NO. 50 HOLES DRILLED IN FUSELAGE L. H. ONLY

WING AND EMPENNAGE DIHEDRAL

STRUCTURE	POINT	ABOVE SIGHT LINE	ABOVE (+) or BELOW (−) POINTS 1L and 1R	
			MEAS.	ALLOWABLE
WING	1L			
	1R			
	2L			+0.71 ± .030
	2R			+0.71 ± .030
	3L			+13.33 ± .75
	3R			+13.33 ± .75
	4L			+13.37 ± .75
	4R			+13.37 ± .75
EMPENNAGE	5L			+37.53 ± .50
	5R			+37.53 ± .50
	6L			+36.41 ± .50
	6R			+36.41 ± .50

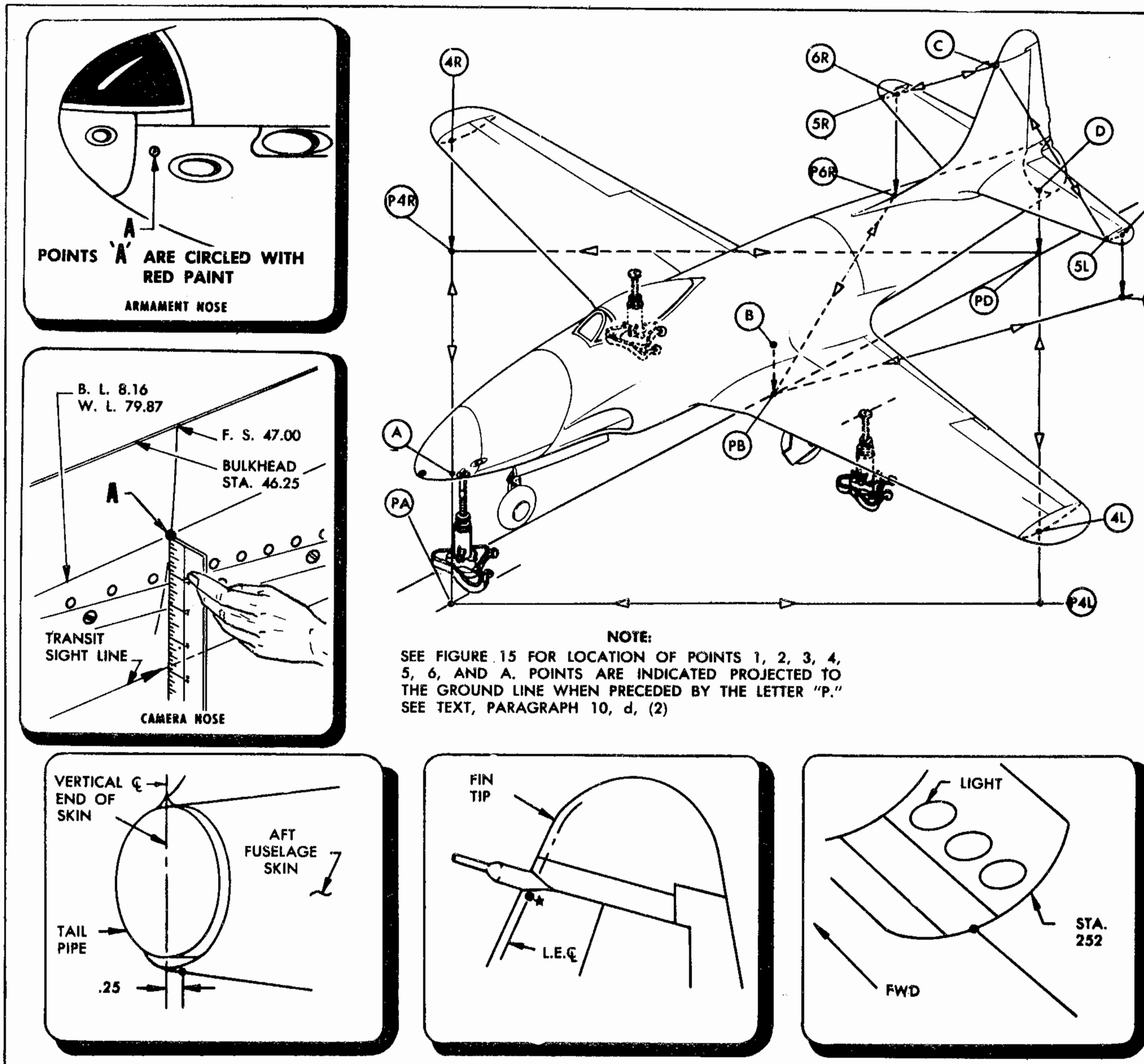
WING AND EMPENNAGE INCIDENCE

	POINT	DIFFERENCES BETWEEN LEFT & RIGHT HAND MEASURMENTS	
		MEAS.	ALLOWABLE
	2L-1L		0.710 ± .030
	2R-1R		0.710 ± .030
CONDITION 1	4L-3L		0.040 ± .080
	4R-3R		0.040 ± .080
CONDITION 2	(4L-3L)-(4R-3R)		0.000 ± .080
CONDITION 3	5L-6L		1.120 ± .100
	5R-6R		1.120 ± .100
CONDITION 4	(5L-6L)-(5R-6R)		0.000 ± .100

NOTE: CONDITIONS 1 AND 2 MUST BOTH BE MET
CONDITIONS 3 AND 4 MUST BOTH BE MET

AB .185

Figure 15 (Sheet 2 of 2 Sheets — Symmetry Diagram

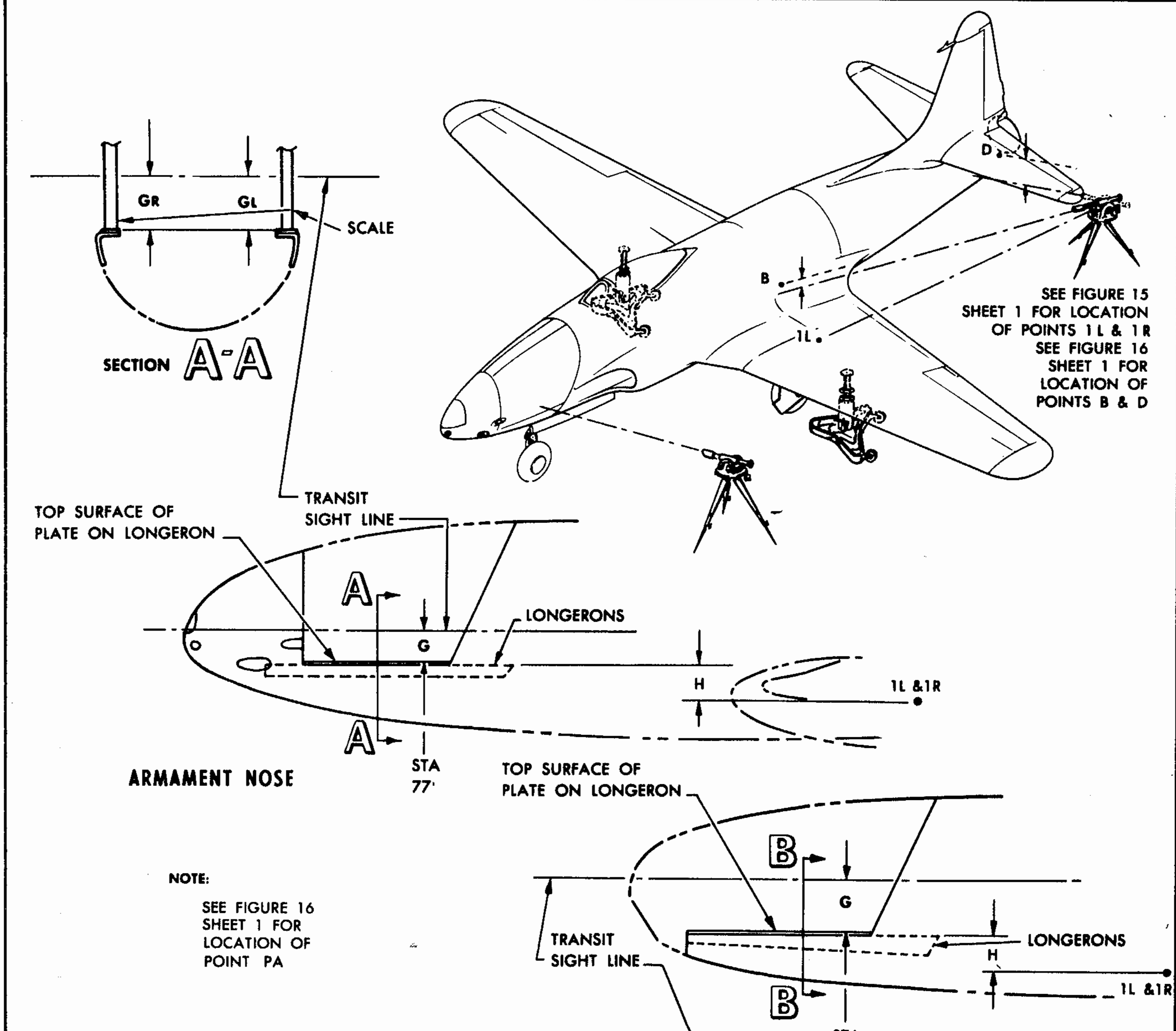


* PITOT TUBE LOCATION CHANGED AT SERIAL NO. 45-8598. USE ℄ OF FIN AT JUNCTURE OF FIN TIP TO LOCATE POINT C FOR AIRPLANES SUBSEQUENT TO ABOVE SERIAL NUMBER

WING AND EMPENNAGE ALIGNMENT

STRUCTURE	DIMENSION	DISTANCE	
		MEASURED	ALLOWABLE
WING	PA TO P4L (F-80A AND F-80B)		283.48 ± .25
	PA TO P4L (RF-80A)		265.42 ± .25
	PA TO P4R (F-80A AND F-80B)		290.94 ± .25
	PA TO P4R (RF-80A)		278.56 ± .25
	PD TO P4L		304.10 ± .25
	PD TO P4R		304.10 ± .25
EMPENNAGE	C TO 5L MUST EQUAL		
	C TO 5R		0.00 ± .25
	PB TO P6L		169.44 ± .25
	PB TO P6R		169.44 ± .25

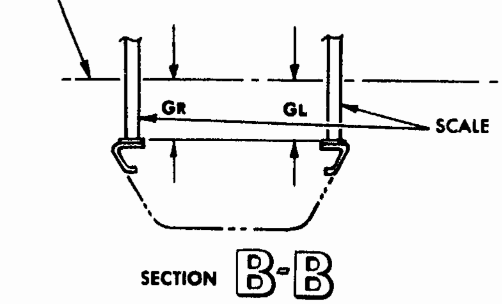
Figure 16 (Sheet 1 of 2 Sheets) — Alignment Diagram



FUSELAGE SYMMETRY

POINT	DISTANCE ABOVE (+) or BELOW (−) POINTS 1L & 1R	
	MEAS.	ALLOWABLE
L (F-80A, F-80B, F-80C and TO-1) USE FOR LEVELING (SEE FIG. 15, SHT 1)		6.63
L (RF-80A) USE FOR LEVELING (SEE FIG. 15, SHT 1)		0
B		−7.87±.12
D		+9.37±.50
H (F-80A and F-80B, F-80C and TO-1)		+6.58±.12
H (RF-80A)		+8.19±.12

DIMENSION	DISTANCE	
	MEAS.	ALLOWABLE
PA to LINE PD (F-80A, F-80B, F-80C and TO-1)		5.00±.06
PA to LINE PD (RF-80A)		8.16±.06
GL MUST EQUAL GR		0±.25



CAMERA NOSE

Figure 16 (Sheet 2 of 2 Sheets)—Alignment Diagram

FIGURES 16A AND 16B DELETED IN REVISION DATED 18 NOVEMBER 1947

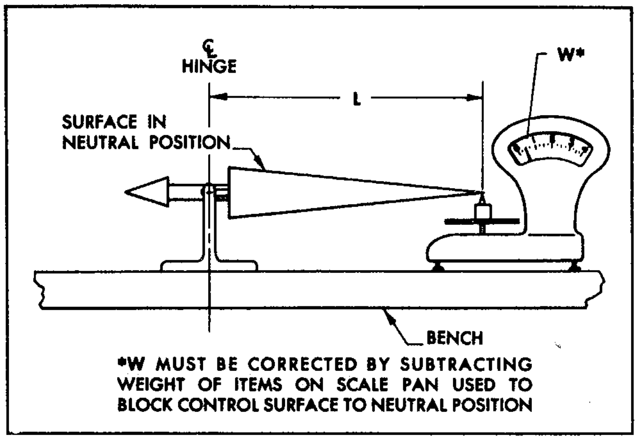


Figure 16C — Weighing Overbalance and Underbalance

10. AIRPLANE SYMMETRY AND ALIGNMENT.

a. GENERAL. — Make an alignment check when major repairs are made which involve the main portions of the airplane, or when any doubt exists regarding the alignment of the airplane.

Figures 15, 16, and 17 have been arranged and the following text has been assembled so that a check may be run on individual portions of the structure or alighting gear, or so that a check may be made on the complete airplane. The preferred sequence for checking the complete airplane is described in the following paragraphs.

Perform symmetry and alignment checks in still air and on a hard-surfaced floor. If air is moving over the wing and control surfaces, measurements cannot be taken with accuracy.

Make sure that the airplane is set up as prescribed for each operation. If a complete check is to be made, make the alighting gear check last, with the nose wheel check as the final operation.

b. MATERIALS REQUIRED.—A symmetry check requires a transit (or "Y" level), an 18-inch level, a two-foot scale (or rod), a six-foot scale (or rod), two wing jacks, a nose jack, and jack pads. The jacks and jack pads are shown in figure 18. If rods are used in place of scales, a six-foot measuring tape will be required.

An alignment check requires a transit (or "Y" level), a two-foot scale, a 50-foot tape, a six-foot flexible rule, two plumb bobs on 10-foot strings, a 50-foot chalk line, chalk (plumbers blue), roll of two-inch masking tape, and two wing jacks. (See figure 18.) A nose jack is not used for fuselage alignment check.

An alighting gear check requires three wood blocks (two inches thick, four inches high, and five inches long), two plumb bobs as shown on figure 17, sheet 2, a six-foot flexible rule, a 50-foot length of chalk line, chalk (carpenters blue), a six-foot straightedge, and a roll of masking tape.

c. WING AND EMPENNAGE INCIDENCE AND DIHEDRAL.—Check incidence and dihedral with the airplane in the level flight condition. Position the airplane solidly so there will be no movement during the time the measurements are being taken. Support the airplane on two wing jacks and a nose jack.

(1) LEVELING THE AIRPLANE. *(See figure 15.)*

(a) Place a spirit level on the leveling pads as shown in figure 5. Adjust the three jacks until the airplane is approximately level longitudinally.

(b) Set up the transit (or "Y" level) as shown in figure 15. The transit telescope should be no more than 30 inches above the floor level.

(c) Adjust the wing jacks until points 1L and 1R are the same distance above the transit sight line. This levels the airplane laterally.

Note

The transit sight line is on a horizontal plane through the cross-hairs of the transit telescope.

(d) Level the F-80A, F-80B, and F-80C airplanes longitudinally by adjusting the nose jack until point L is 6.63 inches above points 1L and 1R.

(e) Level the RF-80A airplanes longitudinally by adjusting the nose jack until point L is level with points 1L and 1R.

Note

The three No. 50 (.070) holes shown on figure 15, sheet 2, are on water lines 100.00 and 101.00 (21.13 inches and 22.13 inches above points 1L and 1R) on airplanes Serial No. AF45-8576 and subsequent. These holes may be used to check the longitudinal level of the airplane.

(2) WING AND EMPENNAGE DIHEDRAL. *(See figure 15.)*

(a) Prepare a duplicate of the dihedral table on which to record the following measurements.

(b) Measure the vertical distances of points 1L, 1R, 2L, 2R, 3L, 3R, 4L, 4R, 5L, 5R, 6L, and 6R above the transit sight line as shown in figure 15, and enter the distances on the table.

(c) Complete the table by deducting the vertical distance to points 1L and 1R from points 2L, 2R, 3L, 3R, 4L, 4R, 5L, 5R, 6L, and 6R. The results obtained must fall within the allowable tolerances shown on the table

(3) WING AND EMPENNAGE INCIDENCE. *(See figure 15.)*

(a) Prepare a duplicate of the incidence table on which to record the following measurements.

(b) Complete the table by subtracting 1L from 2L, 1R from 2R, 3L from 4L, 3R from 4R, 6L from 5L, and 6R from 5R. The result obtained must fall within the tolerances shown on the table.

d. WING AND EMPENNAGE ALIGNMENT. *(See figure 16.)*—Check wing and empennage alignment with the airplane in the level flight condition. Support the airplane on two wing jacks and a nose jack.

(1) Set up a transit (or "Y" level) in the position shown in figure 15.

(2) Level the airplane laterally by adjusting the wing jacks until points 1L and 1R are the same distance above the transit sight line.

(3) Level the airplane longitudinally as described in paragraph *c,* (1), *(d)* preceding.

(4) Drop plumb bobs from points A, B, D, 4L, 4R, 6L, and 6R. Hold the plumb bob string against the point on the airplane structure, suspending the plumb bob approximately 1/8 inch above the floor. Place a small square of masking tape on the floor under the plumb bob. When the bob is stationary, release the string, permitting the bob to mark a point on the masking tape as shown in figure 16. Points so projected to the floor are indicated on figure 16 by the prefix letter "P." Thus, when point 4L is projected to floor level by dropping a plumb bob, the point so projected becomes "P4L."

(5) Prepare a duplicate of the alignment table on which to record the following measurements.

(6) Measure the distances PA to P4L, PA to P4R, PD to P4L, and PD to P4R, and enter the dimensions in the table. These measurements determine wing-to-fuselage alignment.

(7) Measure the distances PB to P6L and PB to P6R, and enter the dimensions on the table. These measurements determine empennage-to-fuselage alignment.

(8) Measure the distances C to 5L and C to 5R, and enter the dimensions on the table. These measurements determine fin-to-stabilizer alignment.

Note

The distances C to 5L and C to 5R are measured directly from point to point on the airplane structure. All other distances must be measured from projected points at floor level.

(9) All measurements must fall within the tolerances shown on the table.

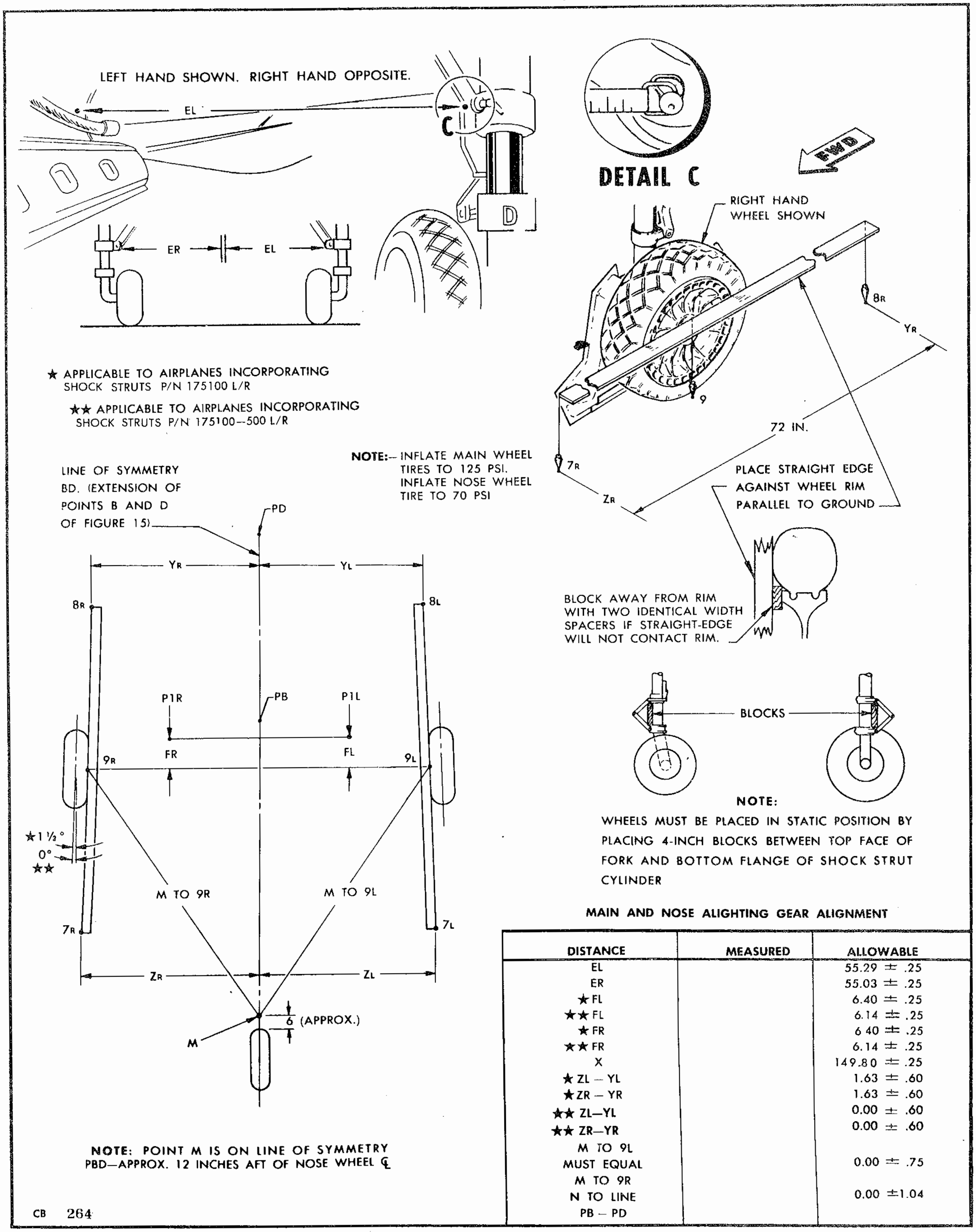
e. FUSELAGE SYMMETRY. *(See figure 16.)*—Check fuselage symmetry with the airplane in level flight condition. Support the aft portion of the airplane with wing jacks. Do not use any support for the nose structure other than the nose wheel. If the nose structure is supported on a jack, the true condition of symmetry cannot be determined.

(1) Set up the transit as shown in figure 15, and level the airplane laterally by adjusting the wing jacks until points 1L and 1R are the same height above the transit sight line.

(2) Level the airplane longitudinally by adjusting the nose shock strut. The F-80A, F-80B, and F-80C airplanes are level when point L is 6.63 inches above points 1L and 1R. The RF-80A airplanes are level when point L is the same height as points 1L and 1R.

Note

Inflate or deflate the nose shock strut as necessary to level the airplane longitudinally. Make sure there is no side load on the wheel, and that there is no torsional or side load on the fuselage nose structure.



MAIN AND NOSE ALIGHTING GEAR ALIGNMENT

DISTANCE	MEASURED	ALLOWABLE
EL		55.29 ± .25
ER		55.03 ± .25
★FL		6.40 ± .25
★★FL		6.14 ± .25
★FR		6 40 ± .25
★★FR		6.14 ± .25
X		149.80 ± .25
★ZL — YL		1.63 ± .60
★ZR — YR		1.63 ± .60
★★ ZL—YL		0.00 ± .60
★★ ZR—YR		0.00 ± .60
M TO 9L MUST EQUAL M TO 9R		0.00 ± .75
N TO LINE PB — PD		0.00 ±1.04

Figure 17 (Sheet 1 of 2 Sheets) — Alighting Gear Alignment

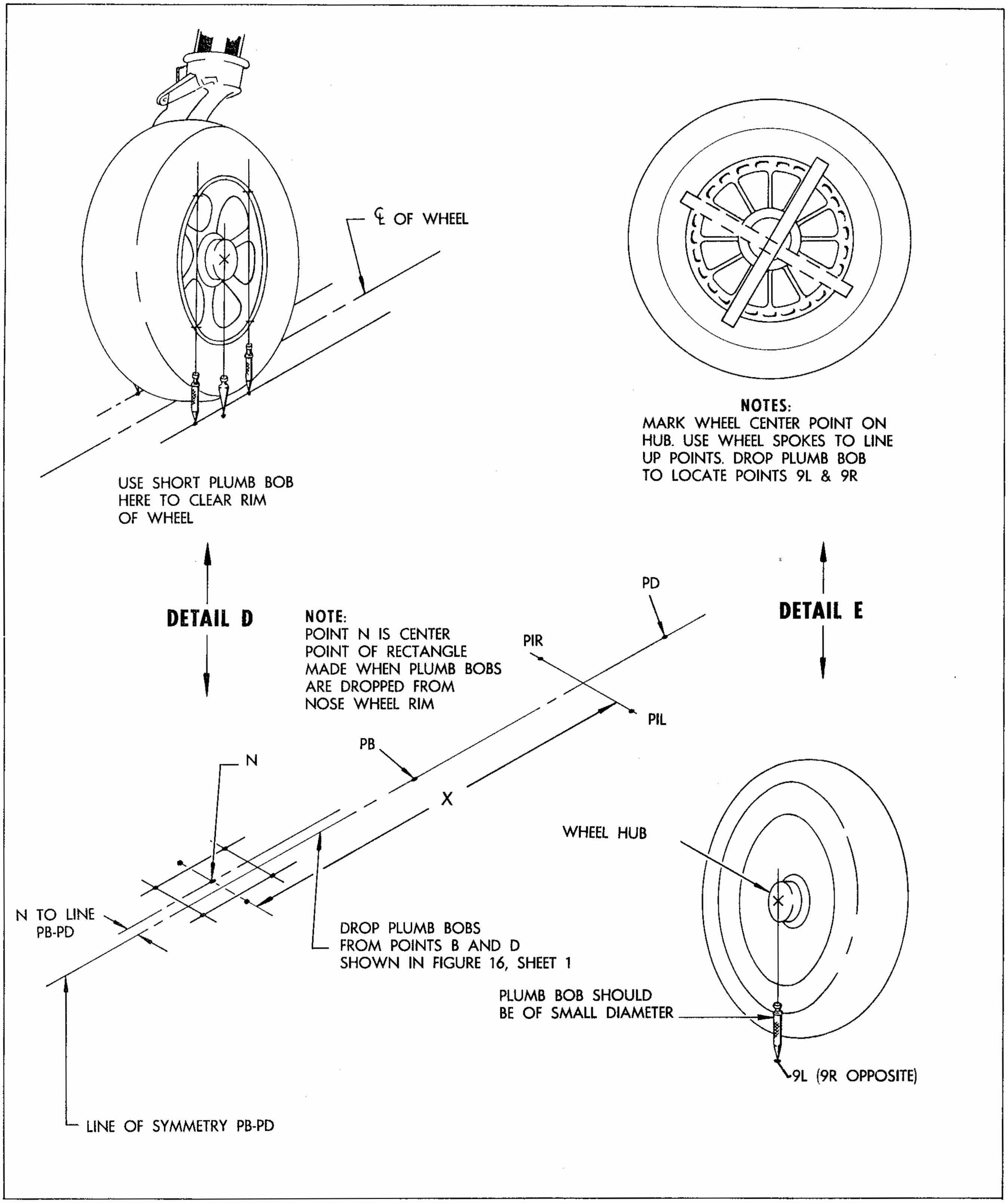


Figure 17 (Sheet 2 of 2 Sheets)—Alighting Gear Alignment

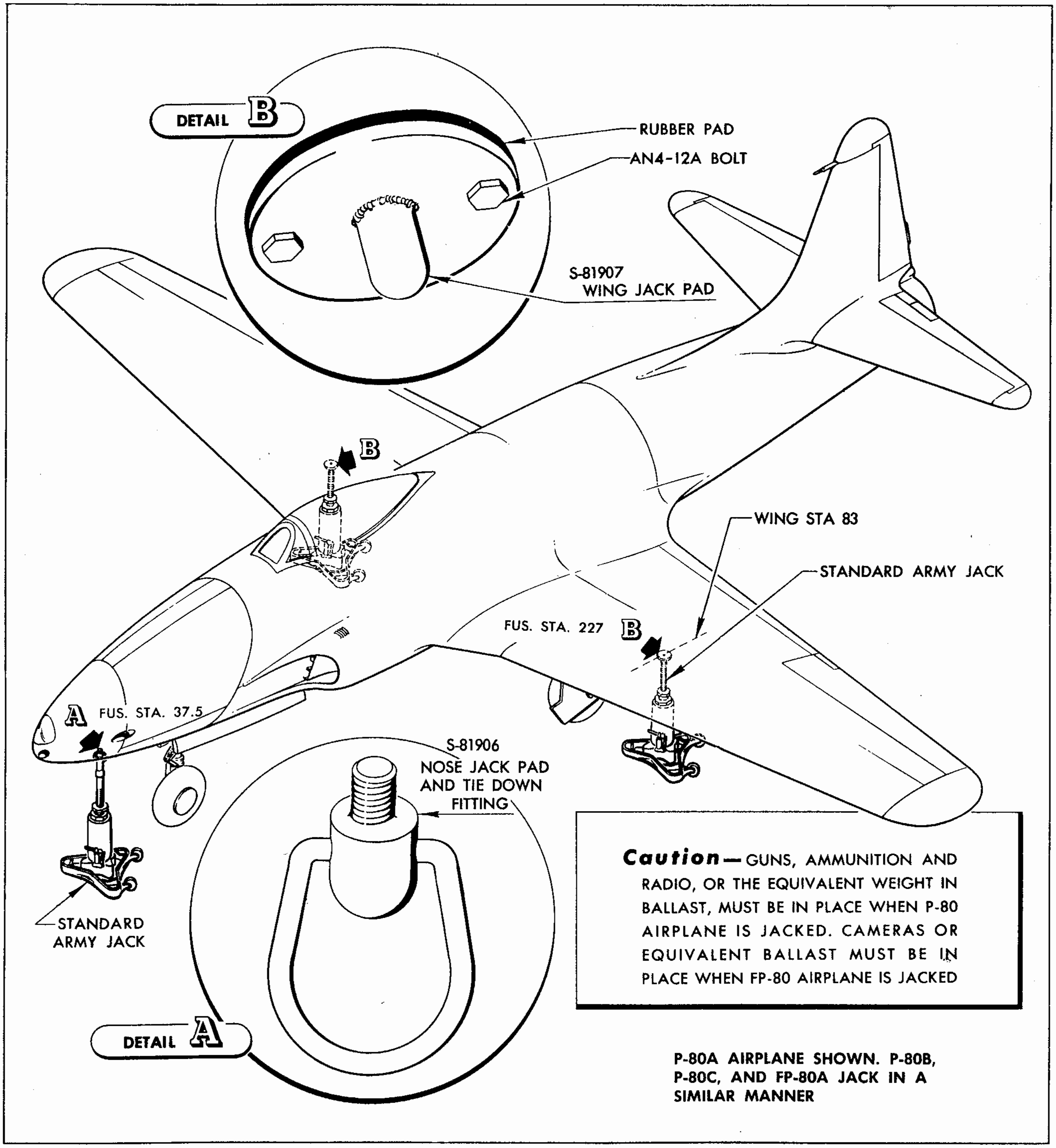


Figure 18 — Jacking Diagram

(3) Prepare a duplicate of the table shown on figure 16, sheet 2 on which to record the measurements indicated in the following paragraph.

(4) Measure the vertical distance of points B and D above points 1L and 1R and enter the measurements taken on the table. The transit must be in the same position as that set up for leveling in order to read a rod suspended from points 1L and 1R. This check will show the relative horizontal position of the fuselage nose and aft sections.

(5) Check fuselage nose twist by the dimensions GL and GR. The transit must be re-set ahead of the wing and above the nose fuselage longerons in the position shown on figure 16, sheet 2. Sight across the top of the longerons and measure the relative heights of GL and GR as shown in view A-A and B-B of figure 16 sheet 2. Enter the measured distances on the table; GL should equal GR within plus or minus .25 inch.

(6) Establish a longitudinal line of symmetry. Drop plumb bobs from points B and D to establish points PB and PD. Snap a chalk line through points PB and PD; this is the longitudinal line of symmetry.

(7) Check fuselage lateral alignment by dropping a plumb bob from point A to establish point PA and measure from point PA to the line of symmetry. Point PA to the line of symmetry should be 5.00 (± .06) inches for F-80A, F-80B, and F-80C airplanes, and 8.16 (± .06) inches for RF-80A airplanes.

Note

The fuselage nose lateral alignment should be checked as a final operation as it will probably be necessary to move the airplane to extend the longitudinal line of symmetry to permit measurement from point PA.

(8) Lateral alignment of the fuselage is indicated by measurements PA to P4L, PA to P4R, PD to P4L, and PD to P4R as described in paragraph 10*d*(4) preceding. For example, if PA to P4L and PD to P4L are both shorter than PA to P4R and PD to P4R respectively, a lateral left bow in the fuselage is indicated. See table in figure 16, sheet 1 for nominal dimensions.

f. ALIGHTING GEAR ALIGNMENT.

(1) Prepare a duplicate of the alighting gear alignment table shown in figure 17, sheet 1 on which to record the measurements indicated in the following paragraphs.

(2) Inflate main wheel tires to 125 psi, and nose wheel tire to 70 psi. Lighten the airplane as much as possible. These steps are necessary in order to reduce tire bulge, so a plumb bob can be dropped from the wheel hub without interference.

(3) Place four-inch blocks between the top faces of the lower forks and the bottom flanges of all three shock struts, and let the blocks take the airplane weight.

(4) Reduce wheel side loads to a minimum by backing the airplane 10 feet beyond the intended placement and then pulling it straight forward into position. Back and pull the airplane by means of the upper towing lugs. Refer to "Handbook of Erection and Maintenance Instructions," AN 01-75FJB-2.

(5) Establish a longitudinal line of symmetry by snapping a chalk line through points PB and PD as shown in figure 17, sheet 1. Points PB and PD are established by dropping plumb bobs from points B and D respectively. (See figure 16, sheet 1.)

(6) Determine main gear toe-out as shown in figure 17, sheet 1. Place a six-foot straightedge against the wheel rims and drop plumb bobs as shown in figure 17, sheet 1 to establish points 7L, 8L, 7R, and 8R. ZL, YL, ZR, and YR are the distances from points 7L, 8L, 7R, and 8R respectively to the line of symmetry. Subtract the distance YL from the distance ZL, and the distance YR from the distance ZR. Enter the resultant differences on the table, and compare with the allowables given. The differences must fall within the tolerances. Pressure may be required to force the six-foot straightedge into contact with the wheel rim. If the tire has become enlarged so that it is no longer possible to force the straightedge in against the rim, shim the straightedge with blocks of equal thickness as shown in figure 17, sheet 1.

(7) Determine main gear fore-and-aft position by the dimensions FL, FR, M to 9L, and M to 9R. Drop plumb bobs from points 1L and 1R to establish points P1L and P1R. Snap a chalk line through points P1L and P1R to establish a lateral line of symmetry. Determine the center of each main wheel hub as demonstrated in the upper sketch of detail E. Use the wheel ribbed stiffeners to determine the hub center point. Drop plumb bobs from the hub centers to establish points 9L and 9R. Use a slender plumb bob to clear tire bulge. Snap a chalk line through points 9L and 9R and measure the distance from points P1L and P1R to this line. These are the dimensions FL and FR. Select a point M on the longitudinal line of symmetry just aft of the nose wheel, and measure the distances M to 9L and M to 9R. Enter the distances FL, FR, M to 9L, and M to 9R on the table. The distances must not exceed the allowable tolerances.

(8) Check the main gear lateral position by the dimensions EL and ER. Use a 50-foot tape which is equipped with a metal loop. Hook the loop around the

grease fitting at the end of the lower side strut as shown in view C and measure directly inboard to the fuselage keelson at fuselage station 225. The allowable dimensions and tolerances are shown on the table.

Note

Check nose gear position as a final operation.

(9) Check nose gear fore-and-aft position and nose gear lateral position. Drop plumb bobs from both sides of the wheel and the hub center as shown in detail D. Roll the airplane forward far enough to expose the wheel pattern on the floor. Determine the center rectangular pattern formed on the floor as shown in detail D; this center point is point N. The lateral position of the nose wheel is determined by measuring from point N to the extension of the line of symmetry (line through points PB and PD.) The longitudinal position is measured to the lateral line of symmetry (line through points P1L and P1R) and is shown as the distance X on figure 17, sheet 1. Dimensions must not exceed the tolerances given on the table.

10A. IDENTIFICATION OF SYMMETRY AND LEVELING POINTS.

The symmetry, alignment, and leveling points indicated in figure 15 and described in paragraph 10 above, are identified by black dots on the airplane structure on airplanes serial No. AF44-8478 and subsequent. The position of these points is identical for P-80A, P-80B, and P-80C airplanes. The FP-80A airplanes differ only in the points located in the fuselage nose structure as shown in figures 15 and 16.

11. DELETED IN REVISION DATED 3 OCTOBER 1946.

FIGURE 19 DELETED IN REVISION DATED 3 OCTOBER 1946.

12. DUPLICATION OF RIVET HOLES.

A tool for duplicating rivet holes in lapped-type patches or patch frames may be constructed as shown in figure 20. A separate duplicator will be required for each diameter rivet hole.

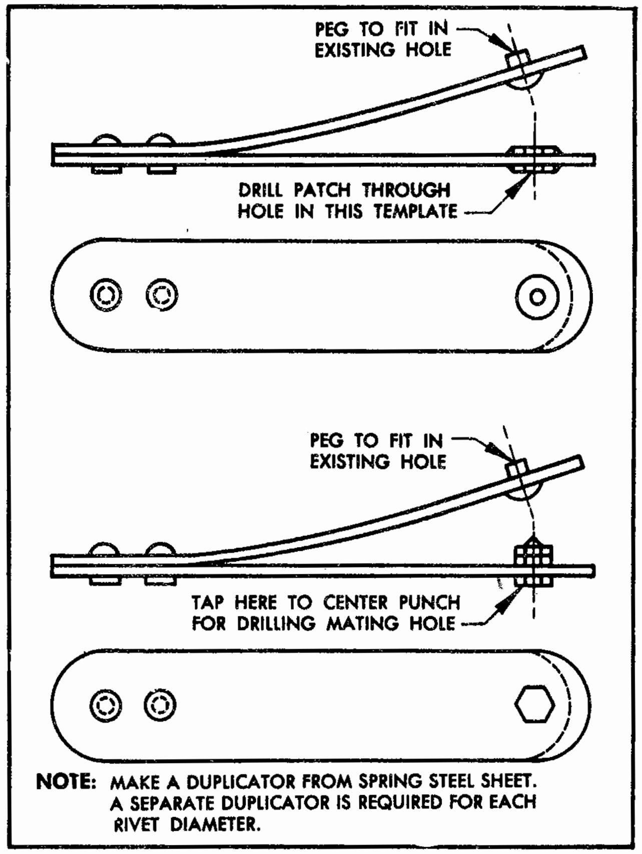


Figure 20 — Hole Duplicator

13. DRIVING DD (24S-T) RIVETS.

Refer to AN 01-1A-1, "General Manual for Structural Repair," for the method of driving DD (24S-T) rivets. If cold storage facilities are not available, drive the shank of the rivet with a conical rivet set and buck the head with a flat bar.

14. INSTALLATION OF FLUSH SKIN RIVETS.

Flush rivets must be installed in permanent repairs in the outside skin, and the rivet heads must be milled or ground smooth with the skin. Install the rivets, either Cherry (LS1126) or solid (AN426) so that 0.001 to 0.009 inch of the rivet head protrudes above the skin line, as shown in figure 21. If a rivet milling tool is not available, a tool for grinding rivet heads may be constructed as shown. Attach a broken 1/4-inch drill to a 5/8-inch diameter hardwood block, and cement an abrasive, such as carborundum paper, to the wood block. (See figure 21.) After rivet heads are milled or ground smooth, apply finish to the skin surface as described in paragraph 24, this section.

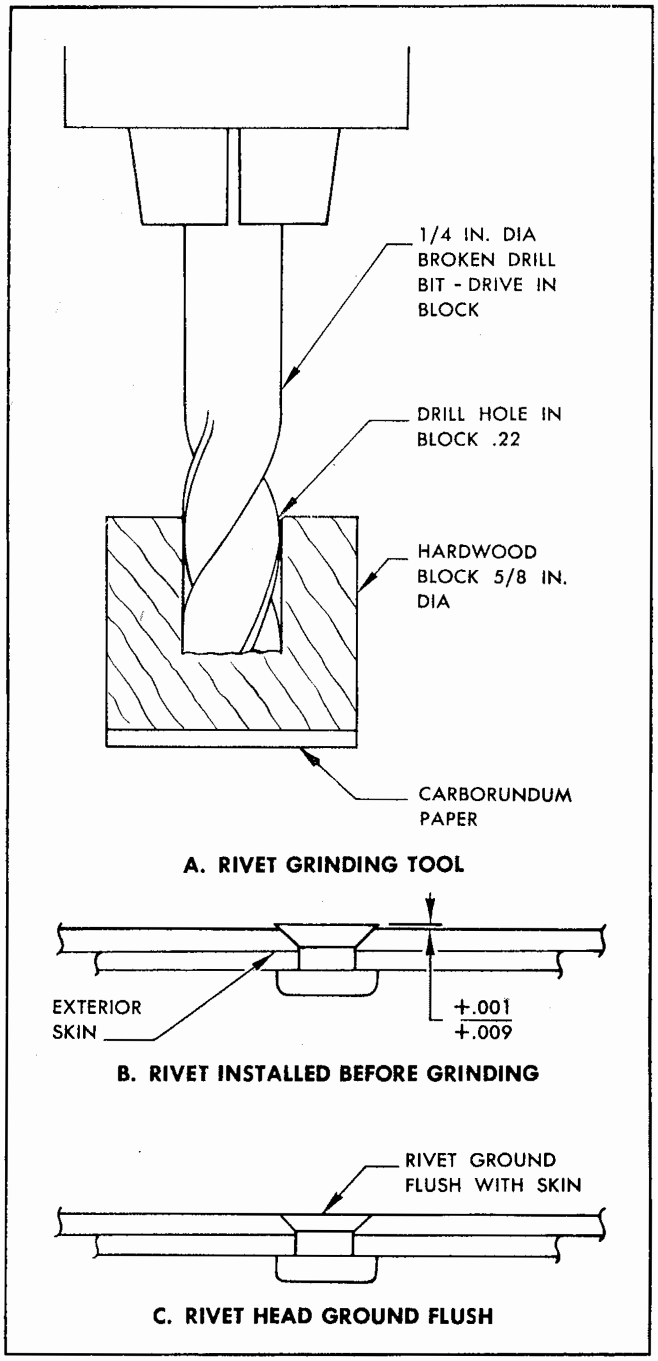


Figure 21 — Flush Rivet Installation

15. RIVET AND BOLT SUBSTITUTION.

a. SUBSTITUTION OF SELF-PLUGGING CHERRY OR DUPONT RIVETS FOR SOLID RIVETS.—Do not substitute Cherry rivets or Dupont explosive for solid rivets unless specifically authorized by the repair drawings included in this handbook.

Note

Do not use a Dupont explosive rivet unless operator is skilled in the technique of its application.

WARNING

Do not install a Dupont explosive rivet in any area in which explosive fumes might be trapped.

b. SUBSTITUTION OF BOLTS FOR RIVETS.—Do not substitute bolts for rivets except where specifically authorized in this handbook. Where bolt-for-rivet substitution is permitted, the bolt holes must be drilled small enough to provide a drive fit for the bolts, as shown in table 1. An edge distance of 2d, and center-to-center distance of 3d must be maintained. (See paragraph 18, this section.)

c. SUBSTITUTION OF AD FOR DD RIVETS.—Substitution of AD rivets for 1/4-inch DD rivets is not authorized. One-quarter inch AD rivets may be substituted for 3/16-inch DD rivets if necessary, if a minimum of 2d edge distance and 3d center-to-center spacing can be maintained.

d. SUBSTITUTION OF BOLTS FOR HIGH-SHEAR RIVETS (ANS178).—AN3, AN4, AN5, and AN6 bolts may be substituted for NAS178-6, NAS178-8, NAS178-10, and NAS178-12 high-shear rivets respectively. Use either AN310 or AC365 nuts for securing the bolts.

16. ENLARGED RIVET HOLES.

For round-head and brazier-head rivets, drill the enlarged hole to accommodate the next larger diameter rivet. Do not repair holes for flush rivets by this method as a larger-diameter flush rivet has larger head dimensions which affect the installation of the rivet in a countersunk or dimpled hole. Select a countersunk-head rivet of the original type and diameter but of a slightly greater length. Compress the rivet longitudinally in a vise to enlarge the shank sufficiently to fill the hole. Drive in the normal manner.

Note

Maintain a minimum edge distance of 2d and a minimum spacing of 3d in all instances.

17. ENLARGED HOLES, BOLTED, BUSHED, PINNED.

Examine all bolt and taper pin holes for elongation. If the holes are enlarged, replace the part or install oversize bushings. (See paragraph 20, following.)

18. INSTALLATION OF BOLTS.

Replacement bolts must have the same dimensions and be of the same material or equivalent, and be heat-treated to the same value as the original bolt. Do not install bolts with threads in bearing. If necessary, install standard spacer washers for a tight joint and to

Type	*Bolt Shank Diameter*	*Drill Size for Ream*		*Ream Diameter*	*Max. Allowable Reamer Tolerances (+ = over bolt diameter) (— = under bolt diameter)*
No. 6	0.138	Not to be used for patch attachment			
No. 8	0.164	Not to be used for patch attachment			
AN3	0.189	No. 17	0.173	0.1860	+ 0.001
	0.1865		0.178	0.1875	— 0.003
AN4	0.249	No. A	0.234	0.2450	+ 0.001
	0.246		0.240	0.2470	— 0.003
AN5	0.3115	No. M	0.295	0.3090	+ 0.001
	0.3085		0.302	0.3100	— 0.003

Table 1 — Drill Sizes for Various Diameter Bolt Holes — Drive Fit

avoid having threads in bearing. If possible, assemble fittings so that all bolts which are horizontal will be inserted with heads forward, and all bolts which are not horizontal will be inserted with heads uppermost. Lock replacement bolts the same as original bolts. Do not re-use cotter pins and lock wire.

Provide a good bearing surface for bolt and screw heads. This is mandatory for bolts used in primary structure and in structure that flexes when landing or air loads are applied.

Employ drive fits for bolts used for attaching patches. Refer to table 1 for the minimum pre-drill and ream sizes for drive fits. If a reamer is not available, finish-drill the hole carefully with a drill that has a diameter comparable to the ream size specified in table 1.

19. INSTALLATION OF TAPER PINS.

The small end of a threaded taper pin must project through the hole far enough so the end of the tapered portion will be no less than flush, nor extend more than 1/16 inch beyond the end of the hole. If the small tapered end of the pin extends beyond the end of the hole, place a washer over the end extending and secure with either a castellated shear nut and cotter pin or a self-locking nut. The large end of a taper pin should project through the connected part 1/8 inch (±1/16 inch).

Taper pins smaller than those which require threaded ends should be safetied by lock wire. Insert lock wire in the large end, continue around the joint, and twist wire so that the pin will be drawn into the tapered hole. The lock-wire hole should be not less than one-fourth the diameter of the large end of the taper pin, and the wire size should be in proportion to the size of the hole. Use the same or equivalent type of pin as originally used and safety in the same way as the original unit.

20. BUSHINGS.

Replacement or repair bushings must be constructed either of the same material as that of the original bushing or of that called out in the bushing and reaming illustrations in the applicable sections of this handbook. The call-outs in the tables will take preference. The inner hole must be the same size as the original hole after reaming. The outside diameter of a replacement bushing should be slightly larger than the diameter of the hole into which the bushing is pressed. The amount of difference (interference) is shown in table 2.

Do not install oversize bushings unless specifically authorized in this handbook, or unless a special analysis of the joint approves the installation. Reaming and bushing allowables of joints subject to wear are provided in the following sections of this handbook. These tables prescribe the maximum size to which the hole may be drilled and reamed. The inside and outside diameters of the bushings have been indicated as well as the material and heat-treat requirements. This rework applies to holes that have not been bushed previously, as well as to those that originally included bushings as standard equipment.

Install bushings with an arbor press, or suitable alternate, and line ream the hole for the joining bolt or pin after the parts are mated. Ream taper-pin bushings so that the small end of the tapered bushing will be flush to 0.060 inch below the surface of the fitting.

There must be no end thrust directly on the bushing. The ends of the bushings can be as much as 0.010 inch below the surface of the fitting, but must not extend above. Stake the bushing, or use other mechanical means to prevent the bushing from turning in its socket.

Hole Diameter	*Tolerance*				*Interference*	
	Hole		*Bushing*			
	Max.	*Min.*	*Max.*	*Min.*	*Max.*	*Min.*
0.0000 thru 0.2500	+ .0008	— .0000	+ .0014	+ .0010	.0014	.0002
0.2501 thru 0.5000	+ .0008	— .0000	+ .0016	+ .0011	.0016	.0003
0.5001 thru 0.7500	+ .0009	— .0000	+ .0018	+ .0012	.0018	.0003
0.7501 thru 1.0000	+ .0009	— .0000	+ .0020	+ .0013	.0020	.0004
1.0001 thru 1.5000	+ .0010	— .0000	+ .0023	+ .0015	.0023	.0005
1.5001 thru 2.0000	+ .0010	— .0000	+ .0025	+ .0016	.0025	.0006
2.0001 thru 2.5000	+ .0011	— .0000	+ .0028	+ .0018	.0028	.0007
2.5001 thru 3.0000	+ .0011	— .0000	+ .0031	+ .0020	.0031	.0009

Table 2 — Bushing Fits

21. INSTALLATION OF PATENTED FASTENERS.

"Airloc" fasteners are used for attachment of all non-stressed inspection doors. Do not replace these fasteners with any type with a lower tension value. Do not install a replacement fastener that is not flush with the outside skin when the fastener is in the locked position.

22. WELDING.

See AN 01-1A-1, "General Manual for Structural Repair," sections 3 and 10.

23. CORROSION PREVENTION.

See AN 01-1A-1, "General Manual for Structural Repair," section 14.

24. FINISH REQUIREMENTS.

Prior to serial No. AF44-85425, the airplanes were painted on their exterior surface. When repairs or replacements are made to these airplanes, the finish must be restored as described in section VII of AN 01-75FJA-2, "Handbook of Erection and Maintenance Instructions."

In addition to the foregoing, any repair or replacement made to any of the parts of the P-80 series airplanes must be given a protective treatment and finish in accordance with U.S. Army Specification No. 3-100.

25. ACCESS PROVISIONS AND STATION POINTS.

Inspection doors and removable panels, through which access is gained to the inner structure, are described in the "Handbook of Erection and Maintenance Instructions," AN 01-75FJA-2 for Model P-80A and FP-80A airplanes, and AN 01-75FJB-2 for P-80B and P-80C airplanes. Additional doors may be installed wherever specifically permitted in the following sections of this handbook.

Station points are shown in inches on figures 22 and 22A. Stations for the horizontal tail surfaces and the wing emanate from the center line of the airplane. Stations for the ailerons and flaps start at the inboard ribs of each surface. Wing, flap, and aileron station lines are measured along the wing reference plane; all other station lines are measured 90° to the fuselage reference line. The fuselage reference line is vertical station 100.

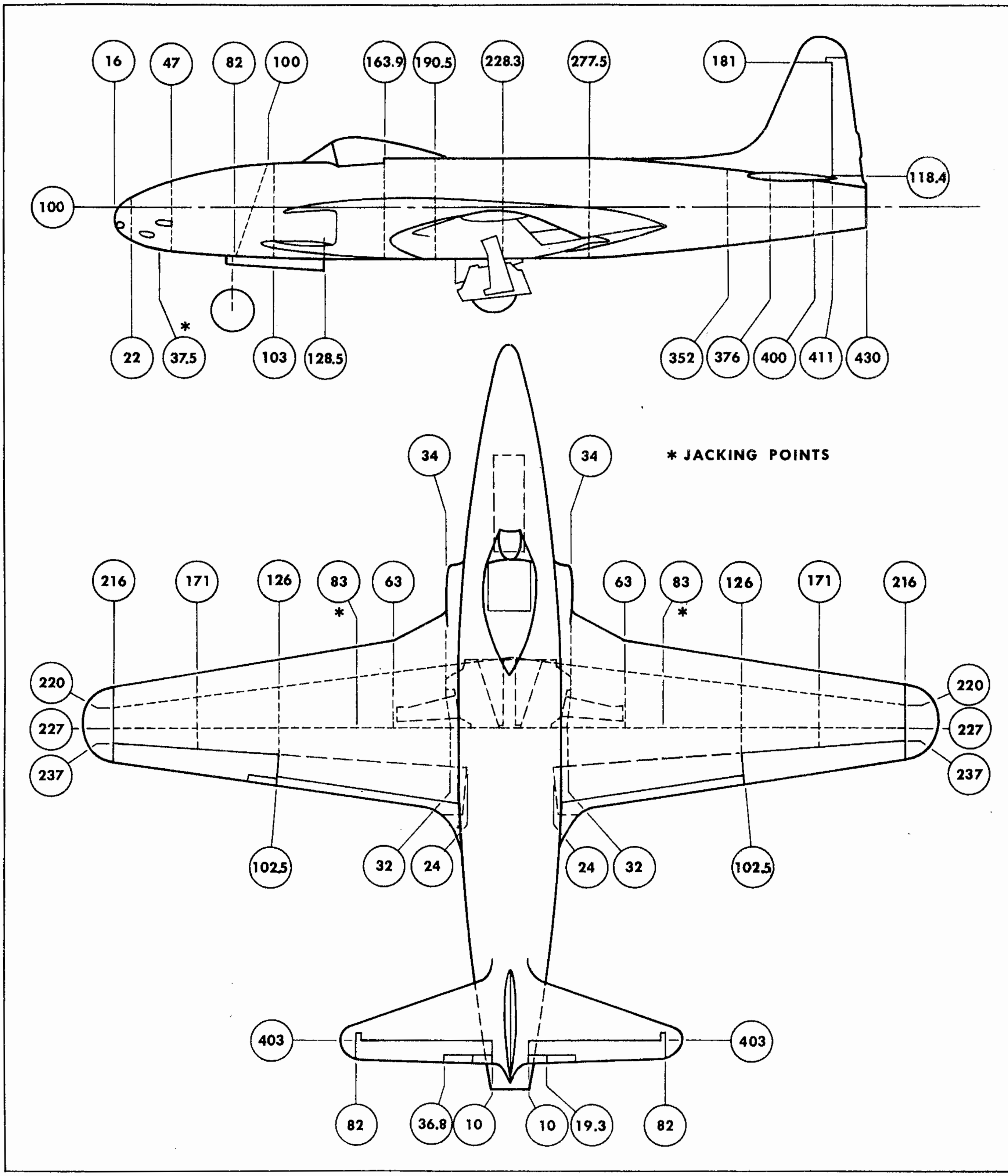


Figure 22 — Stations Diagram, P-80A, P-80B, and P-80C Airplanes

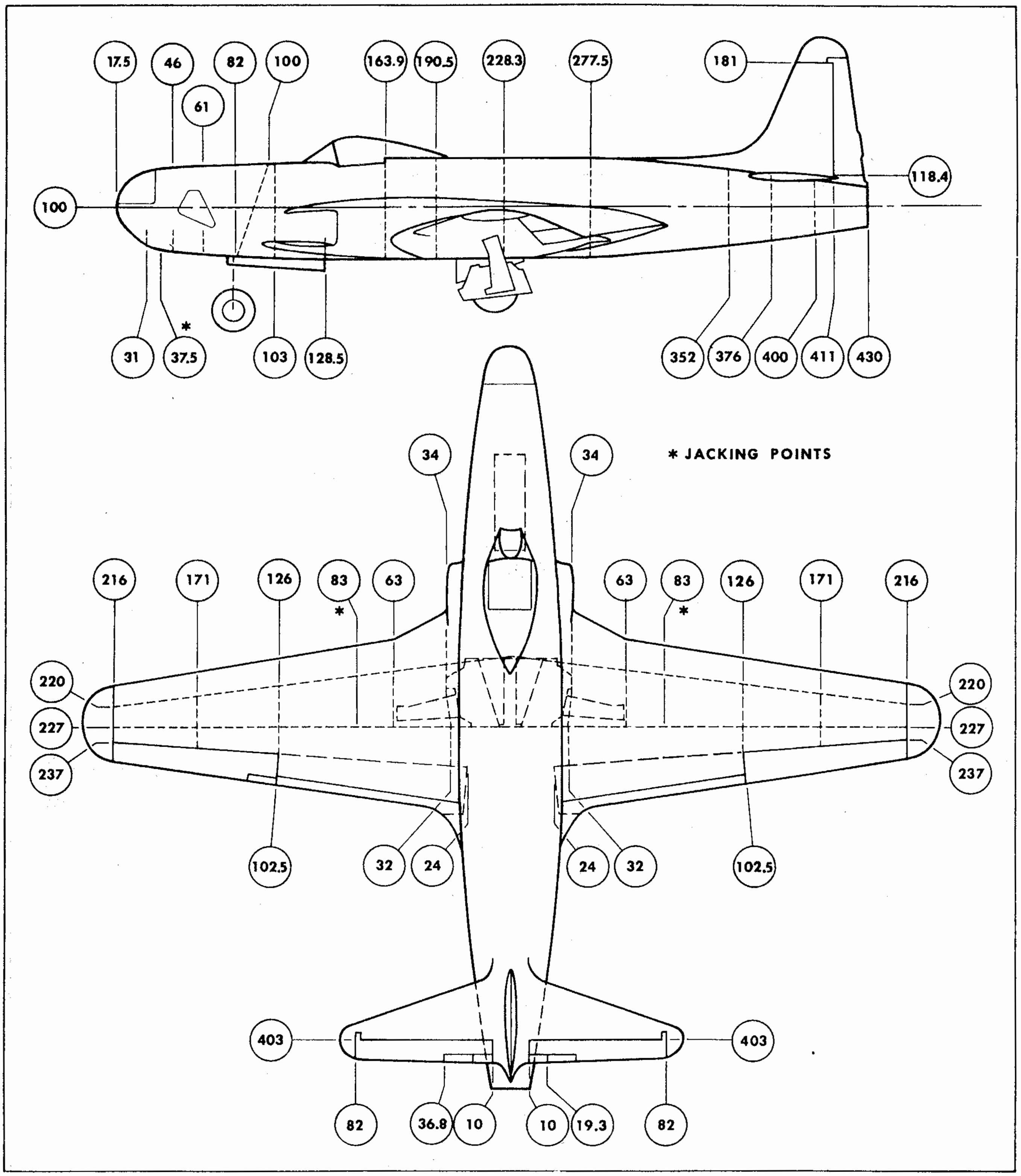
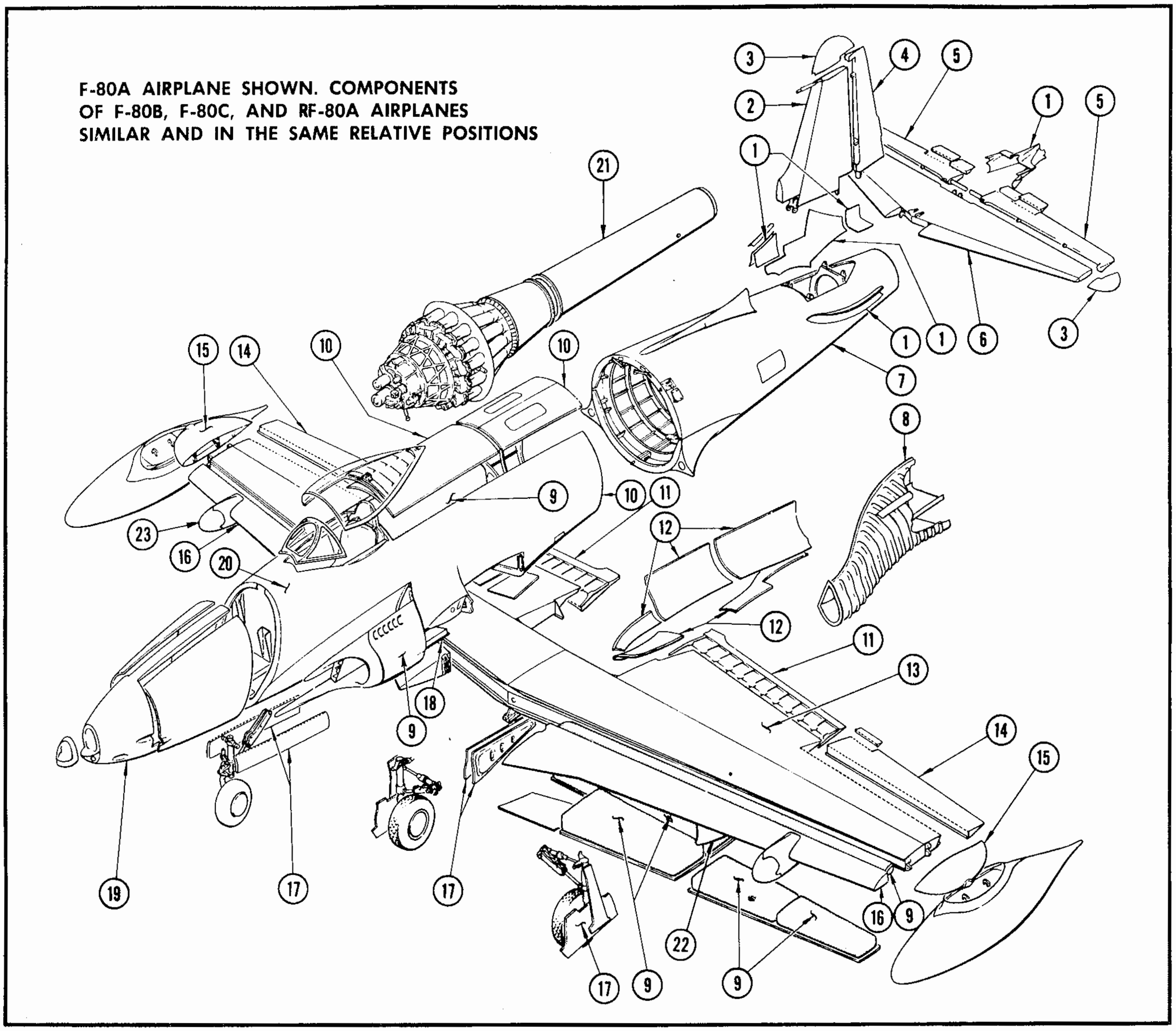


Figure 22A — Stations Diagram, FP-80A Airplanes



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Item	*Part Name*	*Reference Diagrams* *Structure*	*Reference Diagrams* *Skin and Stiffeners*
1	Tail Fillets	71	71
2	Fin	68, 69, 69A	68, 69, 69A
3	Stabilizer & Fin Tips	67, 68	67, 68
4	Rudder	68, 70, 70A	68, 70, 70A
5	Elevator	63, 66, 66A	63, 66, 66A
6	Stabilizer	63, 64	63, 64
7	Aft Fuselage	86, 93, 93A	86, 94, 94A
8	Air Ducts	123	123
9	Self-sealing Fuel Tanks	See AN 01-1A-1	
10	Fuselage Mid Section (Sta. 163-277)	86, 91, 91A, 91B	86, 92, 92A
11	Wing Flaps	36, 37	36, 37
12	Wing Fillets	38	38
13	Wing Wing Beams	24, 25, 25A 26, 27, 28	24, 29, 30

Item	*Part Name*	*Reference Diagrams* *Structure*	*Reference Diagrams* *Skin and Stiffeners*
14	Ailerons	34, 35	34, 35
15	Wing Tips	24, 33	24, 33
16	Wing Leading Edge	24, 31	24, 31
17	Landing Gear Doors	121	121
18	Dive Flaps	95, 95A, 95B	95, 95A, 95B
19	Fuselage Nose Section	86, 87, 87A, 87B	86, 88, 88A, 88B
20	Fuselage Mid Section (Sta. 81-163)	86, 89, 89A	86, 90, 90A
21	Tail Pipe	124	124
22	Wing Bomb Pylon	30C, 30E	30D, 30F
23	Gun Camera Pod	30G	30G

Figure 23 — Exploded View and Index to Reference Diagrams

SECTION II

WING GROUP

1. GENERAL.

The wing group includes the wing, wing tips, ailerons, flaps, and wing fillets. All components are of all-metal construction. The wing is laminar flow design, and is full cantilever. (See figures 25 through 33 for construction details.) Removable panels on the lower surface give access to fuel bags as shown in figures 30, 30A, and 30B. Figure 30 applies to all serials except as noted on the illustration; construction details which apply only to airplanes equipped for rocket launching (serial Nos. AF49-460 and subsequent) are shown on figures 30A and 30B. Wing tip fairings are attached to the wing by screws distributed about the periphery of wing station 216, and screws through ribs and formers extending from the wing; heat-treated steel members are attached directly to the wing beams to support the center-line tip tanks. Refer to figure 33 for details of wing tip fairing construction. The ailerons, which are balanced statically and dynamically, are supported by piano-type hinges. For construction details see figure 35. The split type flaps are supported by piano hinges, and in the retracted position form a portion of the wing trailing edge. See figure 37 for construction details. Fillets fair the wing to the fuselage, and are stressed for air loads. See figure 38 for construction details. Refer to figures 24, 34, and 36 for basic dimensions.

2. NEGLIGIBLE DAMAGE.

Refer to negligible damage drawings indexed on keys to figures 25 through 38. Negligible damage not indexed is restricted to nicks and dents which, after being cleaned up to a regular shape, do not exceed $1/16$ inch in depth, and do not occur closer than $3/8$ inch from a rivet or attaching hole. One loop of the aileron or flap hinge may be removed if there is a minimum distance of 8 inches from the removed loop to the nearest hinge splice.

3. DAMAGE REPAIRABLE BY PATCHING.

A smooth undisturbed wing contour is mandatory, therefore no negligible damage is permitted to those areas exposed to air flow. All nicks and dents in this area must be smoothed out, and the finish restored as described in section I, paragraph 24.

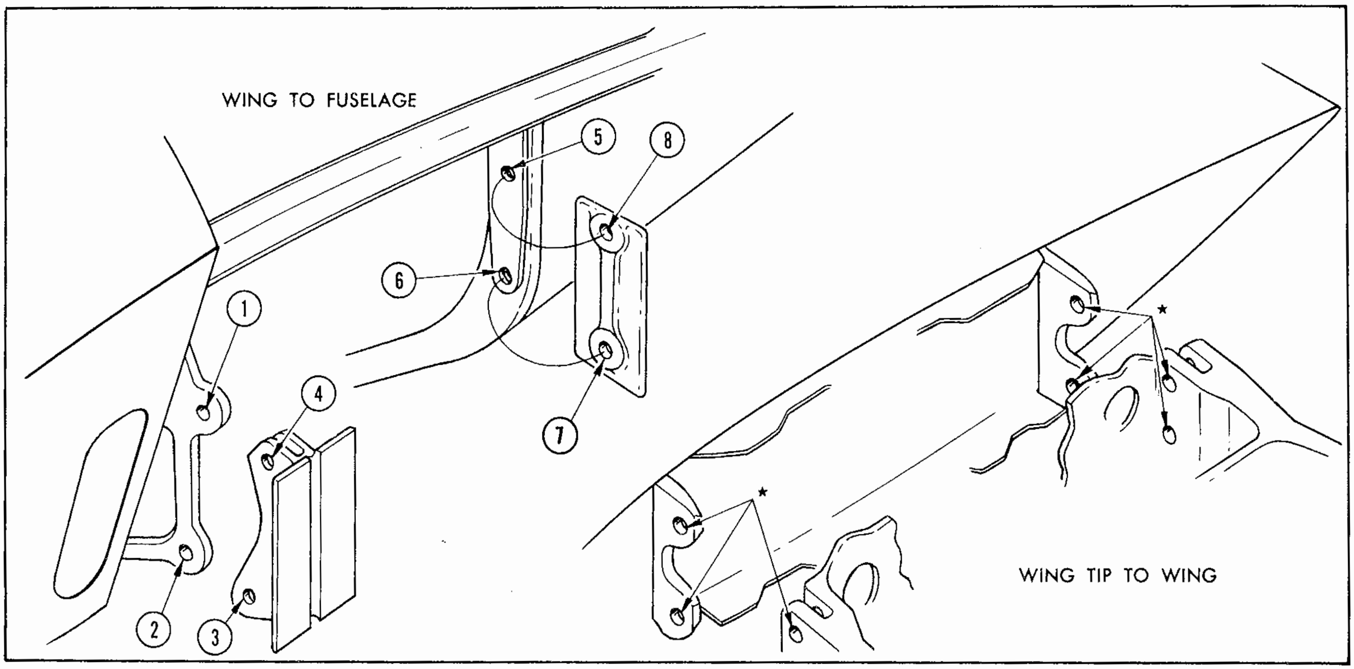
The repairs to the components of the wing group are indexed on the keys to figures 25 through 38. Parts not indexed are not repairable and are those items which are either too highly loaded, inaccessible for repair, or too small to be repaired economically.

a. STRINGERS AND FORMERS.—The stringers and formers are to be repaired by the methods shown in figures 40, 51, and 52. Use steel sheet (NE8630) to make repairs. Treat the contacting surfaces as described in section 14 of AN 01-1A-1, "General Manual for Structural Repair," to prevent corrosion caused by the mating of dissimilar metals.

b. BEAMS AND BEAM CAPS. Repair beams and beam caps as specified by repair figures indexed on the structure reference diagrams. Repair of a completely severed beam upper or lower cap is prohibited inboard of wing station 126.50; the only beam cap repairs authorized inboard of station 126.50 are the flange repairs shown on figures 43, 43A, 43B, 43C, and 43D. The repairs shown on figures 43A and 43B include particularly localized repairs designated for the rear beam upper cap cracked at the fillet of the web attachment flange (figure 43A) and at the fillet of the skin attachment flange (figure 43B). The repairs shown on figures 43C and 43D include particularly localized repairs, designed for the rear beam lower cap forward skin attachment flange (figure 43C) and for the rear beam lower cap cracked at the fillet of the web attachment flange (figure 43D). Damage requiring such specialized repairs could result from an exceedingly hard landing, and from a landing roll or taxi accident.

c. SKIN.—Skin repairs must be flush in areas exposed to the air stream. Cut all stringers and formers (if damaged) back to the edge of the patch frame. This will provide most of the necessary filler for a flat seat of mating parts. Restore the original finish as described in section I, paragraph 23. Figure 43B illustrates the method of inserting a new section of upper surface skin between the front and rear beams.

d. AILERONS.—The ailerons must be checked and, if necessary, rebalanced after each repair. See section I, paragraph 9, for rebalancing instructions and tolerances.



ALLOWABLE WEAR TOLERANCES

Joint	*Original Equipped With Bushing*	*Orig. Max. Hole or Bushing ID*	*Original Minimum Shaft OD*	*Original Maximum Clearance*	*Maximum Clearance Due to Wear*
1	Yes	.5635	.5575	.0060	.0122
2	Yes	.5635	.5575	.0060	.0122
3	Yes	.5635	.5575	.0060	.0122
4	Yes	.5635	.5575	.0060	.0122
5	Yes	.6260	.6200	.0060	.0122
6	Yes	.6260	.6200	.0060	.0122
7	Yes	.6260	.6200	.0060	.0122
8	Yes	.6260	.6200	.0060	.0122
★	Yes	.4384	.4330	.0054	.0121

NOTE: Data included herein are intended for use as guides and are subject to revision pending further field experience.

PERMISSIBLE REAMING AND BUSHING

Joint	*Orig. Hole Dia. (Nom.)*	*Oversize Reamed Hole Diameter*		*Bushing*				
					ID		*OD*	
		Min.	*Max.*	*Material & Heat Treat*	*Min.*	*Max.*	*Min.*	*Max.*
1	.6875	.8125	.8134	NE8630 Stl HT 150,000-170,000 psi	.5623	.5635	.8138	.8145
2	.6875	.8125	.8134	NE8630 Stl HT 150,000-170,000 psi	.5623	.5635	.8138	.8145
3	.6875	.8125	.8134	NE8630 Stl HT 125,000-140,000 psi	.5623	.5635	.8138	.8145
4	.6875	.8125	.8134	NE8630 Stl HT 150,000-170,000 psi	.5623	.5635	.8138	.8145
5	.7500	.8750	.8759	NE8630 Stl HT 150,000-170,000 psi	.6248	.6260	.8763	.8770
**6	.7500	.7500	.7509	NE8630 Stl HT 150,000-170,000 psi	.6248	.6260	.7512	.7518
7	.6250	.8750	.8759	NE8630 Stl HT 150,000-170,000 psi	.6248	.6260	.8763	.8770
8	.6250	.8750	.8759	NE8630 Stl HT 150,000-170,000 psi	.6248	.6260	.8763	.8770

NOTES: ★No rework.
**Do not enlarge original hole. Install original OD bushing only.
See Section I, paragraph 20 and table 2 for bushing installation.

Figure 23A — Allowable Wear Tolerances and Permissible Reaming and Bushing at Wing Attachments

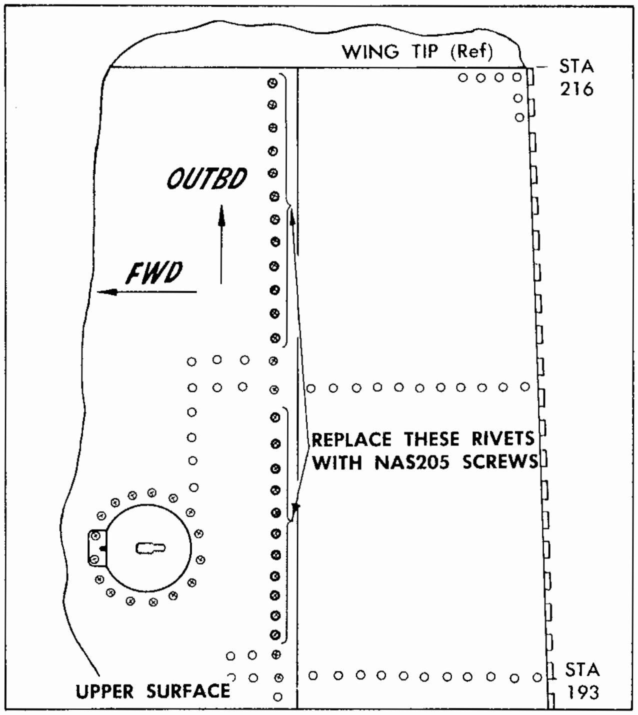


Figure 23B — Replacement of Loosened Wing Rivets, Wing Stations 193-216

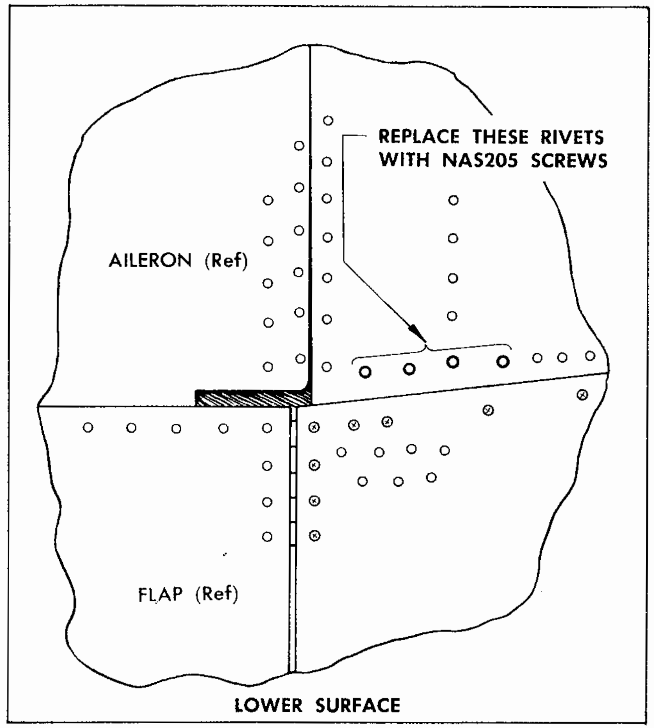


Figure 23C — Replacement of Loosened Wing Rivets, Wing Station 126

4. DAMAGE NECESSITATING REPLACEMENT.

Damage in excess of that described as negligible to items not indicated on the keys to the reference diagrams will necessitate the replacement of the item involved. Skins originally constructed of aged material (24S-T80, 24S-T81, and 24S-T86) must be replaced with identical aged material. The gage of the replacement part must be the same gage as the original part, as the next heavier gage 24S-T will change the wing contour enough to cause aerodynamic disturbances. Interior structural items originally constructed of aged 24S-T may be replaced with the next heavier gage 24S-T if no interferences are encountered.

5. REAMING AND BUSHING OF ELONGATED OR ENLARGED HOLES.

It will be permissible to ream certain attaching holes to a larger diameter and install bushings. Use bolts having the same diameter and material as the original bolt.

The joints which can be reworked and the diameters of the reamed holes are shown in figure 23A. The hole size and bushing sizes indicated on the table are the maximum diameters permitted. Do not ream to maximum measurements unless it is necessary.

6. REPLACEMENT OF WING PANEL RIVETS.

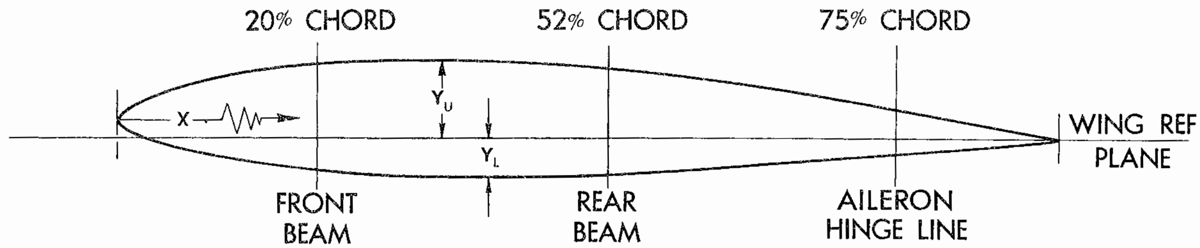
Install bushings as described in section I, paragraph 20, and use the bushing material called for on figure 23A.

Loosened rivets in the wing lower surface, on the forward side of the rear beam cap between wing stations 193 and 216, may be replaced with CT205 screws as shown in figure 23B. The screws have approximately the same head dimensions as the rivets, and therefore no additional rework will be necessary.

Note

Substitution of screws for only a portion of the rivets is not acceptable practice. When screws are substituted, they must be continuous from rib to rib, as shown in figure 23B.

Loosened rivets on the lower surface, in the aft rib forward of the aileron beam at wing station 126, may be replaced with CT205 screws as shown in figure 23C. Four rivets may be replaced. The rivets in this attachment are AD4 type, therefore the holes must be recountersunk to accept the heads and shanks of the CT205 screws.



NOTE: X = DISTANCE AFT OF WING LEADING EDGE
MEASUREMENTS ARE TO OUTSIDE SKIN LINE

Sta	0			10			20			34		
% Chord	Y_U	Y_L	X	Y_U	Y_L	X	Y_U	Y_L	X	Y_U	Y_L	X
0	2.220	+1.912	0							1.832	+1.553	0
1.25	3.778	+ .462	1.374							3.239	+ .247	1.240
2.50	4.438	− .038	2.749							3.838	− .201	2.481
5.00	5.457	− .760	5.499							4.763	− .849	4.963
7.50	6.241	−1.323	8.248							5.475	−1.351	7.444
10	6.900	−1.792	10.998							6.074	−1.772	9.926
20	8.706	−3.138	21.996	8.416	−3.088	21.366	8.126	−3.039	20.735	7.720	−2.970	19.853
30	9.666	−3.960	32.995	9.353	−3.881	32.049	9.040	−3.803	31.103	8.602	−3.694	29.779
40	9.932	−4.217	38.494	9.616	−4.263	42.732	9.301	−4.169	41.741	8.860	−4.036	39.706
50	9.458	−4.270	54.991	9.037	−4.173	53.415	8.746	−4.076	51.839	8.339	−3.940	49.632
60	8.116	−3.690	65.990	7.862	−3.604	64.098	7.608	−3.519	62.207	7.253	−3.400	59.559
70	6.173	−2.770	76.988	5.980	−2.706	74.781	5.787	−2.642	72.575	5.517	−2.552	69.485
80	3.938	−1.679	87.986	3.814	−1.641	85.464	3.690	−1.603	82.943	3.517	−1.550	79.412
90	1.675	− .596	98.985	1.621	− .584	96.148	1.567	− .572	93.310	1.493	− .555	89.339
100	.032	.032	109.983	.032	.032	106.831	.032	.032	103.678	.032	.032	99.265
Sta	41			48			55.5			63		
% Chord	Y_U	Y_L	X	Y_U	Y_L	X	Y_U	Y_L	X	Y_U	Y_L	X
0							1.587	+1.326	0	1.501	+1.247	0
1.25							2.899	+ .112	1.156	2.781	+ .064	1.126
2.50							3.547	− .304	2.312	3.327	− .340	2.253
5.00					− .886	4.742	4.325	− .905	4.624	4.172	− .925	4.506
7.50					−1.363	7.113	4.990	−1.370	6.936	4.821	−1.376	6.759
10					−1.763	9.485	5.551	−1.759	9.248	5.369	−1.754	9.013
20	7.518	−2.936	19.411	7.315	−2.901	18.970	7.098	−2.864	18.497	6.880	−2.827	18.028
30	8.383	−3.640	29.117	8.165	−3.585	28.455	7.430	−3.527	27.746	7.696	−3.468	27.039
40							8.182	−3.833	36.995	7.945	−3.763	36.053
50							7.713	−3.731	46.244	7.495	−3.658	45.066
60							6.708	−3.216	55.492	6.518	−3.152	54.079
70							5.102	−2.415	64.741	4.958	−2.367	63.093
80							3.251	−1.469	73.990	3.159	−1.440	72.106
90							1.377	− .529	83.239	1.377	− .520	81.119
100	.032	.032	97.059	.032	.032	94.323	.032	.032	92.488	.032	.032	90.123
Sta	71.2			80.4			89.6			98.8		
% Chord	Y_U	Y_L	X	Y_U	Y_L	X	Y_U	Y_L	X	Y_U	Y_L	X
0	1.408	+1.160	0	1.303	+1.063	0	1.198	+ .966	0	1.093	+ .869	0
1.25	2.651	+ .013	1.094	2.505	− .044	1.057	2.360	− .102	1.021	2.214	− .160	.985
2.50	3.182	− .379	2.188	3.020	− .423	2.115	2.858	− .468	2.043	2.696	− .512	1.970
5.00	4.004	− .946	4.376	3.817	− .971	4.231	3.629	− .995	4.086	3.442	−1.019	3.941
7.50	4.637	−1.383	6.565	4.429	−1.391	6.347	4.222	−1.399	6.130	4.015	−1.407	5.912
10	5.170	−1.750	8.753	4.946	−1.744	8.463	4.723	−1.739	8.173	4.499	−1.733	7.883
20	6.643	−2.787	17.507	6.376	−2.742	16.927	6.110	−2.697	16.347	5.843	−2.651	15.767
30	7.439	−3.404	26.261	7.152	−3.332	25.391	6.864	−3.261	24.521	6.376	−3.189	23.651
40	7.687	−3.685	35.015	7.397	−3.598	33.855	7.107	−3.511	32.695	6.817	−3.424	31.535
50	7.256	−3.579	43.769	6.988	−3.490	42.319	6.721	−3.400	40.869	6.453	−3.311	39.419
60	6.310	−3.082	52.523	6.077	−3.004	50.783	5.844	−2.925	49.043	5.610	−2.847	47.303
70												
80												
90												
100	.032	.032	87.539	.032	.032	84.638	.032	.032	81.238	.032	.032	78.833

Figure 24 (Sheet 1 of 2 Sheets) — Wing Basic Dimensions

Sta	108			117.2			126.25			137.45		
% Chord	Y_U	Y_L	X	Y_U	Y_L	X	Y_U	Y_L	X	Y_U	Y_L	X
0	.988	+ .772	0	.883	+ .674	0	.780	+ .579	0	.652	+ .461	0
1.25	2.069	− .219	.949	1.923	− .277	.912	1.780	− .334	.877	1.602	− .404	.833
2.50	2.534	− .556	1.898	2.371	− .600	1.825	2.212	− .644	1.754	2.014	− .697	1.666
5.00	3.254	−1.043	3.796	3.066	−1.067	3.651	2.882	−1.091	3.509	2.653	−1.120	3.332
7.50	3.808	−1.415	5.695	3.600	−1.422	5.477	3.396	−1.430	5.263	3.149	−1.440	4.999
10	4.276	−1.728	7.593	4.053	−1.723	7.303	3.833	−1.717	7.018	3.561	−1.711	6.665
20	5.577	−2.606	15.187	5.310	−2.561	14.607	5.048	−2.516	14.037	4.729	−2.461	13.330
30	6.289	−3.117	22.781	6.001	−3.045	21.911	5.718	−2.975	21.055	5.368	−2.887	19.996
40	6.527	−3.338	30.375	6.236	−3.251	29.215	5.951	−3.165	28.074	5.598	−3.059	26.661
50	6.185	−3.222	37.969	5.917	−3.133	36.519	5.654	−3.045	35.092	5.328	−2.936	33.327
60	5.377	−2.769	45.563	5.144	−2.690	43.823	4.914	−2.613	42.111	4.630	−2.517	39.992
70							3.738	−1.963	49.129	3.522	−1.891	46.658
80							2.377	−1.201	56.148	2.238	−1.159	53.323
90							.999	− .444	63.166			
100	.032	.032	75.938		.032	73.038	.032	.032	70.185	.032	.032	66.654

Sta	148.65			159.85			171			182.25		
% Chord	Y_U	Y_L	X	Y_U	Y_L	X	Y_U	Y_L	X	Y_U	Y_L	X
0	.524	+ .342	0	.397	+ .224	0	.270	+ .106	0	.141	− .011	0
1.25	1.455	− .475	.789	1.248	− .545	.744	1.072	− .616	.701	.894	− .687	.656
2.50	1.817	− .751	1.578	1.619	− .805	1.489	1.423	− .858	1.402	1.225	− .912	1.313
5.00	2.425	−1.150	3.156	2.197	−1.179	2.979	1.969	−1.208	2.804	1.740	−1.238	2.626
7.50	2.892	−1.499	4.734	2.639	−1.459	4.469	2.388	−1.468	4.206	2.135	−1.478	3.939
10	3.289	−1.704	6.312	3.016	−1.698	5.959	2.746	−1.691	5.607	2.472	−1.684	5.253
20	4.399	−2.406	12.624	4.074	−2.351	11.918	3.751	−2.296	11.216	3.425	−2.241	10.506
30	5.017	−2.800	18.937	4.667	−2.713	17.878	4.319	−2.626	16.824	3.967	−2.538	15.759
40	5.245	−2.954	25.249	4.892	−2.848	23.837	4.540	−2.743	22.431	4.186	−2.636	21.013
50	5.002	−2.828	31.562	4.676	−2.719	29.796	4.352	−2.611	28.039	4.025	−2.502	26.266
60	4.346	−2.422	37.874	4.064	−2.326	35.756	3.780	−2.231	33.647	3.494	−2.135	31.519
70	3.306	−1.820	44.187	3.090	−1.748	41.715	2.875	−1.677	39.255	2.658	−1.605	36.772
80	2.100	−1.116	50.499	1.962	−1.074	47.674	1.824	−1.032	44.863	1.685	− .979	42.046
90							.759	− .390	50.471	.699	− .377	47.279
100	.032	.032	63.124	.032	.032	59.593	.032	.032	56.078	.032	.032	52.532

Sta	193.5			204.75			216		
% Chord	Y_U	Y_L	X	Y_U	Y_L	X	Y_U	Y_L	X
0	.013	− .130	0	− .114	− .249	0	− .243	− .368	0
1.25	.716	− .758	.612	.538	− .829	.568	.360	− .900	.523
2.50	1.026	− .966	1.224	.828	−1.020	1.136	.630	−1.075	1.047
5.00	1.510	−1.267	2.449	1.281	−1.297	2.272	1.052	−1.327	2.094
7.50	1.881	−1.487	3.673	1.628	−1.497	3.408	1.375	−1.507	3.142
10	2.199	−1.678	4.898	1.926	−1.671	4.544	1.652	−1.665	4.189
20	3.099	−2.185	9.797	2.773	−2.130	9.087	2.448	−2.075	8.378
30	3.615	−2.450	14.695	3.263	−2.362	13.631	2.912	−2.275	12.568
40	3.831	−2.530	19.594	3.476	−2.424	18.175	3.122	−2.318	16.757
50	3.697	−2.393	24.493	3.370	−2.284	22.719	3.042	−2.175	20.946
60	3.209	−2.039	29.391	2.924	−1.943	27.263	2.639	−1.848	25.136
70	2.441	−1.533	34.290	2.224	−1.461	31.807	2.008	−1.390	29.325
80	1.546	− .947	39.188	1.407	− .904	36.351	1.268	− .862	33.514
90	.639	− .363	44.087	.579	− .350	40.895	.519	− .337	37.704
100	.032	.032	48.986	.032	.032	45.439	.032	.032	41.893

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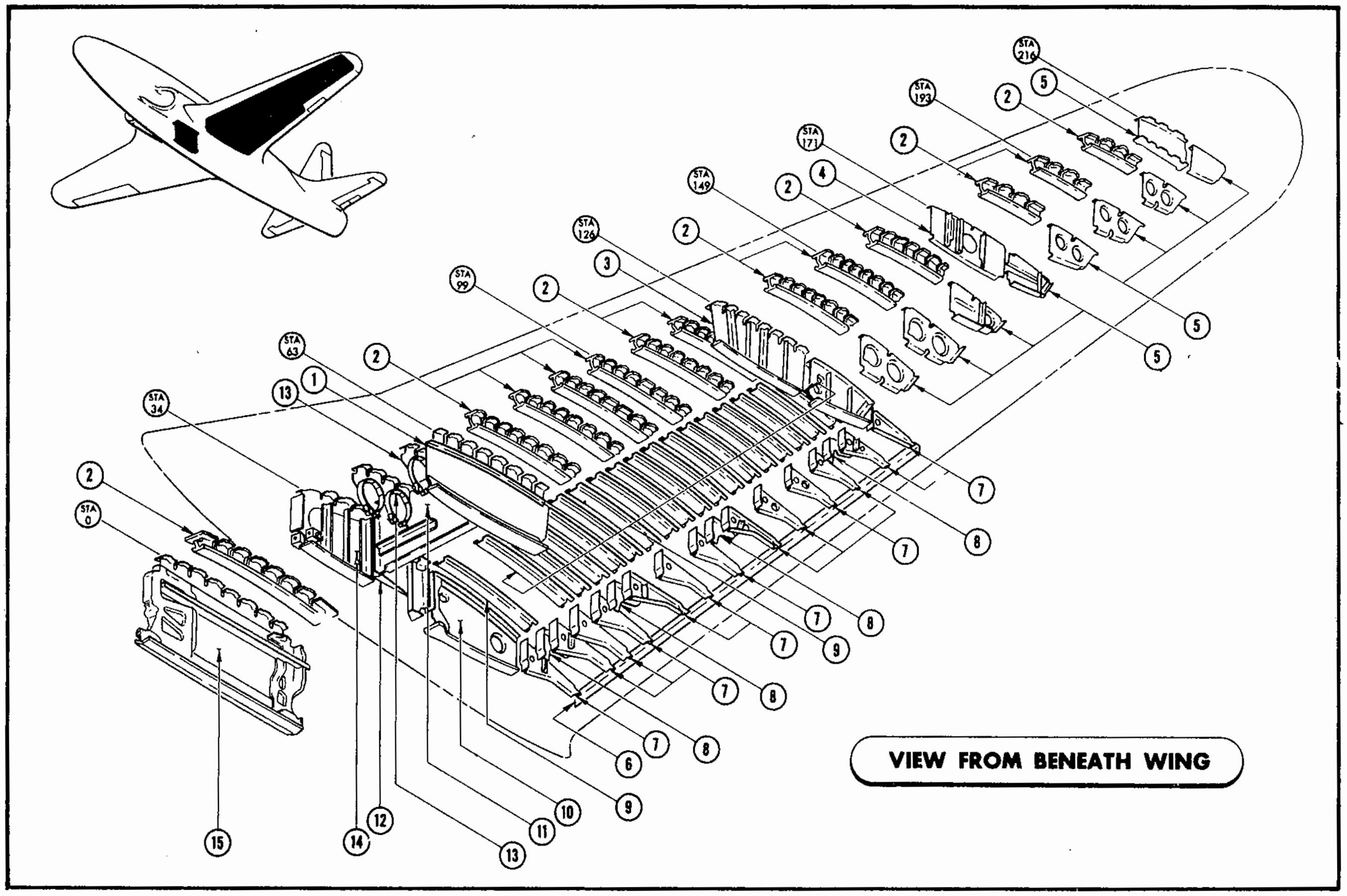
Figure 24 (Sheet 2 of 2 Sheets) — Wing Basic Dimensions

7. ALLOWABLE WEAR.

The attaching holes shown in figure 23A may be checked for permissible elongation or wear to the limits shown on the key to figure 23A. The wear may be considered negligible until the indicated clearances are exceeded. Wear which exceeds the allowables should be repaired by bushing to the limits provided in the companion table.



Item	Part Name	Figure Reference Neg. Damage	Repair	Remarks
1	Rib			
	Web	133	152, 153	24S-T80 — .064
	Center Stiffener	132	139	LS3257
	Front and Rear Stiffeners	132	139	LS3224
	Upper Cap	132	139	LS3441
	Lower Cap	132	* NR	LS318
2	Former	132	39	LS3701—24S-T80
3	Rib			
	Web	133	152, 15[illegible]	24S-T80 — .040
	Fwd Stiffeners	132	139	LS3229
	Aft Stiffeners	132	139	LS3230
	Bottom Cap, Fwd	132	* NR	LS318
	Bottom Cap, Aft	132	* NR	LS495
4	Rib			
	Web	133	152, 151	24S-T80 — 0.51
	Stiffeners	131	147, 148	
5	Ribs	134	149, 150, 151	24S-T80 — .032
6	Trailing Edge	132	53	LS3233
7	Trailing Edge Ribs	134	149, 150, 151	24S-T80
8	Bulkheads	134	150, 151	24S-T80
9	Hat Sect. Stiffeners	131	40	24S-T80
10	Aft Rib			
	Web	133	152, 153	24S-T81
	Upper Cap	133	146	LS3216 24S-T8X
	Lower Cap	133	146	LS495 24S-T8X
	Stiffeners	132	145	LS174 24S-T81
11	Intermediate Beam			
	Web	133	152, 153	24S-T86
	Vert. Angle Stiff.	132	139	LS3230
	Vert. "T" Stiff.	132	146	LS3473
	Lower Cap	133		LS3567
12	Canted Rib and Stiffener			
	Stiffener	132	41	LS3510 24S-T8X
	Web	133	*NR	.072 — 24S-T80
	Upper Cap	133	139	.072 — 24S-T80
13	Former			
	Web	134	149, 150, 151	
	Stiffener	132	139	LS3230
14	Rib			
	Web	133	* NR	24S-T80
	Up. Flange Angle	133	139	24S-T80
	Lower Cap	132	146	LS628
	Vert Stiffeners	132	139	LS3234 24S-T8X
15	Rib, Sta. 0			
	Web	133	* NR	24S-T86
	Upper Cap	133	146	LS484
	Lower Cap	133	146	LS483
	Stiffener	131	145	LS181

NOTES: All material 24S-T unless otherwise noted.
Parts not indicated are not repairable.
* See text, section II, paragraph 3.
NR indicates not repairable.

Figure 25 — Wing Structure Reference Diagram — Serial Nos. AF44-84992 through AF44-85191

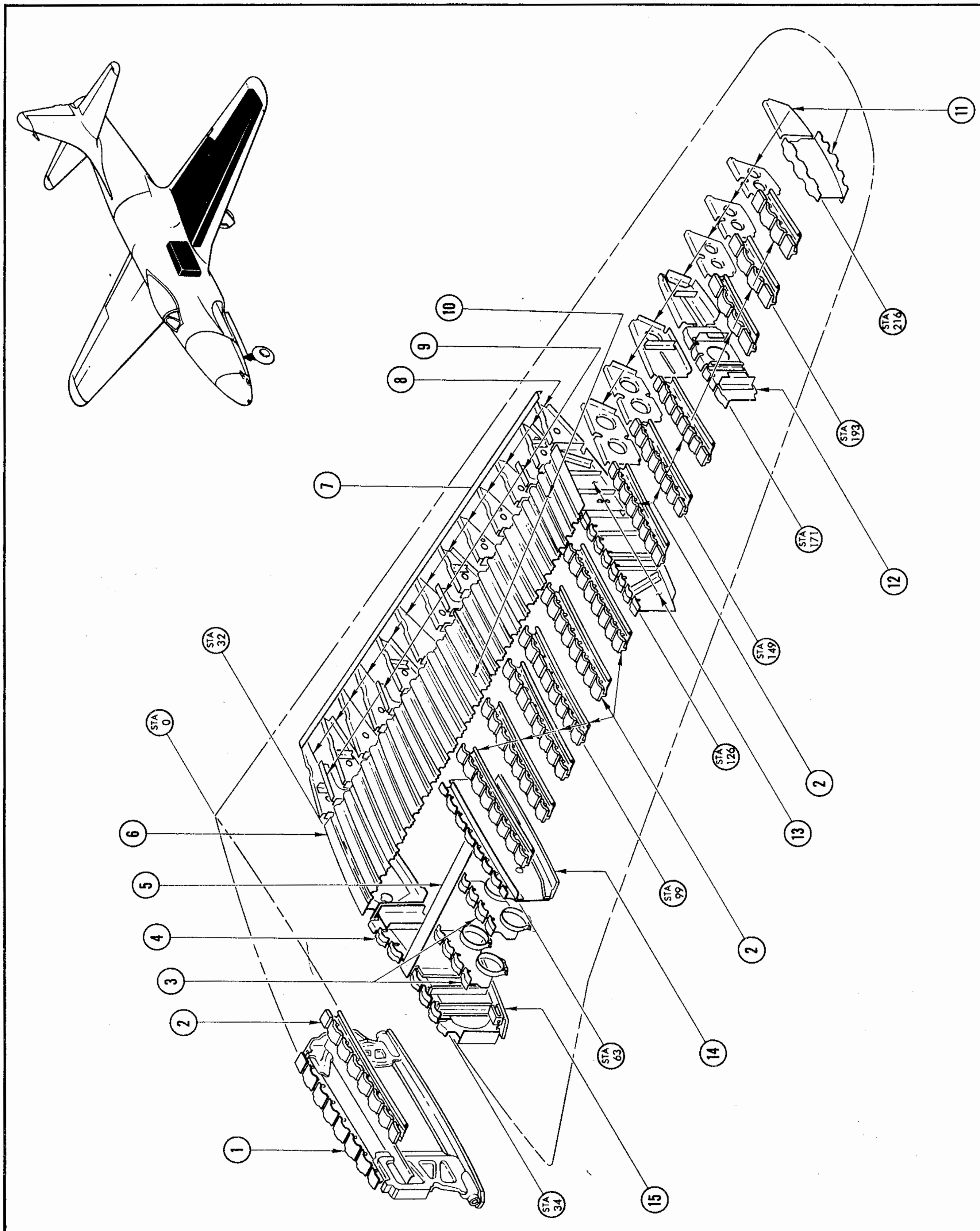


Figure 25A — Wing Structure Reference Diagram — Serial Nos. AF44-85192 and Subsequent

Item	*Part Name*	*Figure Reference Neg. Damage*	*Figure Reference Repair*	*Remarks*
1	Rib - Sta O			
	Web	133	NR	24S-T86
	Upper Cap	133	146	LS484
	Lower Cap	133	146	LS483
	Stiffener	131	145	LS181
2	Formers	132	39	LS3701 — 24S-T8X
3	Former			
	Web	134	149, 150, 151	
	Stiffener	132	139	LS3230
4	Canted Rib and Stiffener			
	Stiffener	132	41	LS3510 — 24S-T8X
	Web	133	NR	.072 — 24S-T80
	Upper Cap	133	139	.072 — 24S-T80
5	Intermediate Beam			
	Web	133	152, 153	24S-T86
	Vert Angle Stiffener	132	139	LS3230
	Vert "T" Stiffener	132	146	LS3473
	Lower Cap	133		LS3567
6	Aft Rib			
	Web	133	152, 153	24S-T81
	Upper Cap	133	146	LS3216 — 24S-T8X
	Lower Cap	133	146	LS495 — 24S-T8X
	Stiffeners	132	145	LS174 — 24S-T81
7	Trailing Edge	132	53	LS3233
8	Trailing Edge Ribs	134	149, 150, 151	24S-T80
9	Bulkheads	134	150, 151	24S-T80
10	Corrugations	131	40A	.051 — 24S-T80
11	Ribs	134	149, 150, 151	.032 — 24S-T80
12	Rib			
	Web	133	151, 152	.051 — 24S-T80
	Stiffeners	131	147, 148	
13	Rib			
	Web	133	152, 153	.040 — 24S-T80
	Fwd Stiffeners	132	139	LS3229
	Aft Stiffeners	132	139	LS3230
	Bottom Cap Fwd	132	NR	LS318
	Bottom Cap Aft	132	NR	LS495
14	Rib			
	Web	133	152, 153	.064 — 24S-T80
	Center Stiffener	132	139	LS3257
	Front and Rear Stiffeners	132	139	LS3224
	Upper Cap	132	139	LS3441
	Lower Cap	132	NR	LS318
15	Rib			
	Web	133	NR	.072 — 24S-T80
	Upper Flange Angle	133	139	24S-T80
	Lower Cap	132	146	LS628
	Vert Siffeners	132	139	LS3234 — 24S-T8X

NOTES: All material 24S-T unless otherwise noted.
Parts not indicated are not repairable.
NR indicates not repairable.

Key to Figure 25A

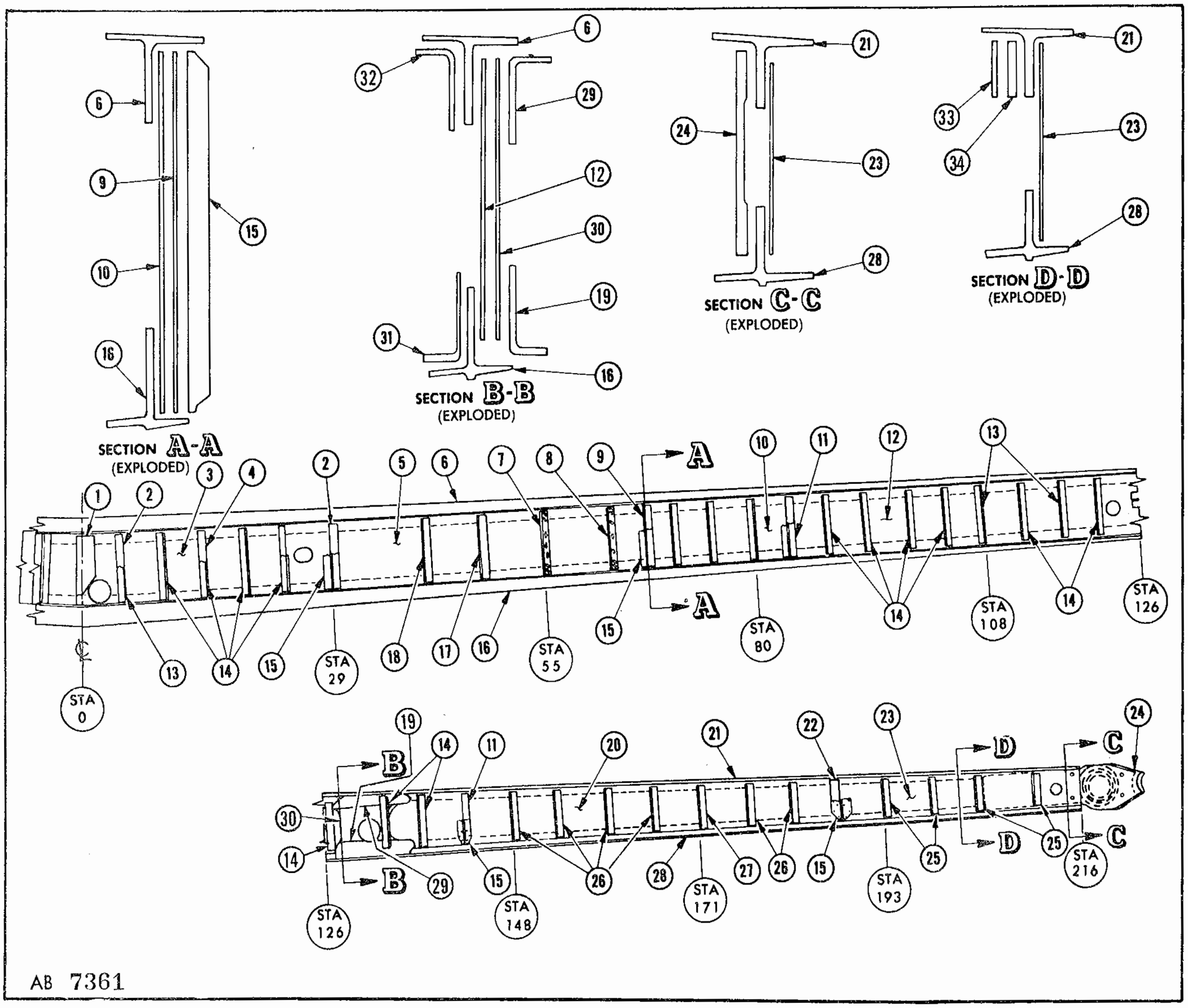


Figure 26 — Wing Front Beam Reference Diagram

Item	*Part Name*	*Figure Reference* *Neg. Damage*	*Figure Reference* *Repair*	*Remarks*
1	Plate	—	NR	.064 24S-T1 Alclad
2	Doubler	—	NR	.051 24S-T86 Alclad
3	Web, Sta 0 to 29	133	48	.072 24S-T86 Alclad
4	Doubler	—	NR	.064 24S-T86 Alclad
5	Web, Sta 29 to 68	133	48	.125 24S-T86 Alclad
6	Upper Cap, Sta 0 to 132	42	43	LS3700
7	Stiffeners, Fwd & Aft Sides			
	Fwd Side	132	NR	LS3378
	Aft Side	132	NR	LS3234-2
8	Stiffeners, Fwd & Aft Sides			
	Fwd Side	132	NR	LS3200
	Aft Side	132	NR	LS3200-3
9	Filler	—	NR	.051 24S-T Alclad
10	Web, Sta 68 to 86	133	48	.072 24S-T86 Alclad
11	Filler	—	NR	.010 24S-T Alclad
12	Web, Sta 86 to 144	133	48	.064 24S-T86 Alclad
13	Stiffener	132	NR	LS3224
14	Stiffener	132	NR	LS3228
15	Stiffener	132	NR	LS3473
16	Lower Cap, Sta 0 to 132	42	43	LS3699
17	Stiffener	132	NR	LS3378
18	Stiffener	132	NR	LS3200
19	Splice, Lower Fwd	—	NR	LS2221
20	Web, Sta 144 to 188	133	48	.051 24S-T86 Alclad
21	Upper Cap, Sta 132 to 216	—	44	LS538
22	Filler	—	NR	.020 24S-T Alclad
23	Web, Sta 188 to 216	133	48	.072 24S-T86 Alclad
24	Fitting, Fwd Tank Support	—	NR	NE8630 Steel
25	Stiffener	132	NR	LS3283
26	Stiffener	132	NR	LS3253
27	Stiffeners, Fwd & Aft Sides			
	Fwd Side	132	NR	LS3253
	Aft Side	132	NR	LS3253-2
28	Lower Cap, Sta 132 to 216	—	45	LS448
29	Splice, Upper Fwd	—	NR	LS358
30	Doubler	—	NR	.035 NE8630 Steel
31	Splice, Lower Aft	—	NR	LS491
32	Splice, Upper Aft	—	NR	LS2211
33	Reinforcement	—	NR	24S-T Alum. Alloy
34	Splice	—	NR	5/16 NE8630 Steel

NOTE: NR indicates non-repairable; items recommended for replacement when damaged.

Key to Figure 26

Item	Part Name	Figure Reference: Neg. Damage	Figure Reference: Repair	Remarks
1	Web, Sta 0 to 22	133	48	.072 24S-T86 Alclad
2	Doubler	133	NR	.081 24S-T86 Alclad
3	Filler	——	NR	.051 24S-T Alclad
4	Upper Cap, Sta 0 to 132	42	43, 43A, 43B	LS3698
5	Fitting	——	NR	14S-T Alum. Alloy
6	Web, Sta 22 to 57	133	48	.125 24S-T Alclad
7	Doubler, Sta 44 to 57	——	NR	.187 24S-T Alclad
8	Stiffeners, Fwd & Aft Sides			
	Fwd Side	132	NR	LS3498
	Aft Side	132	NR	LS3237
9	Doubler, Sta 63 to 71	——	NR	.091 24S-T86 Alclad
10	Web, Sta 57 to 95	133	48	.072 24S-T86 Alclad
11	Stiffener & Support			
	Stiffener	132	NR	LS2242
	Support	131	NR	.040 24S-T Alclad
12	Stiffener & Support			
	Stiffener	132	NR	LS3473
	Support	131	NR	.040 24S-T Alclad
13	Web, Sta 95 to 199	133	48	.064 24S-T86 Alclad
14	Stiffener & Support			
	Stiffener	132	NR	LS3224
	Support	131	NR	.040 24S-T Alclad
15	Doubler, Sta 120 to 127	133	NR	.040 24S-T86 Alclad
16	Stiffeners, Fwd & Aft Sides			
	Fwd Side	132	NR	LS2209
	Aft Side	132	NR	LS3415
17	Stiffener & Support			
	Stiffener	132	NR	LS3200
	Support	131	NR	.040 24S-T Alclad
18	Lift Lug Fitting	——	NR	195-T6 Alum. Alloy
19	Stiffener & Support			
	Stiffener	132	NR	LS3394
	Support	131	NR	.040 24S-T Alclad
20	Stiffener	132	NR	LS3473
21	Stiffener	132	NR	LS3254
22	Stiffener	132	NR	LS3237
23	Lower Cap, Sta 0 to 132	42	43, 43C, 43D	LS3697
24	Upper Splices, Fwd & Aft			
	Fwd Splice	——	NR	LS2211
	Aft Splice	——	NR	LS2212
25	Stiffener	132	NR	LS3228
26	Upper Cap, Sta 132 to 216	42	46	LS978
27	Stiffener	132	NR	LS210
28	Filler	——	NR	.188 24S-T Alclad
29	Web, Sta 199 to 216	133	48	.072 24S-T86 Alclad
30	Reinforcement	——	NR	24S-T Alum. Alloy
31	Fitting Assembly	——	NR	NE8630 Steel
32	Stiffener	132	NR	LS3224
33	Stiffeners, Fwd & Aft Sides			
	Fwd Side	132	NR	LS2242
	Aft Side	132	NR	LS2209
34	Lower Cap, Sta 132 to 216	42	47	LS439
35	Lower Splices, Fwd & Aft	——	NR	LS492
36	Support	131	NR	.032 24S-T81 Alclad
37	Support	131	NR	.040 24S-T Alclad

NOTE: NR indicates non-repairable; items recommended for replacement when damaged.

Key to Figure 27

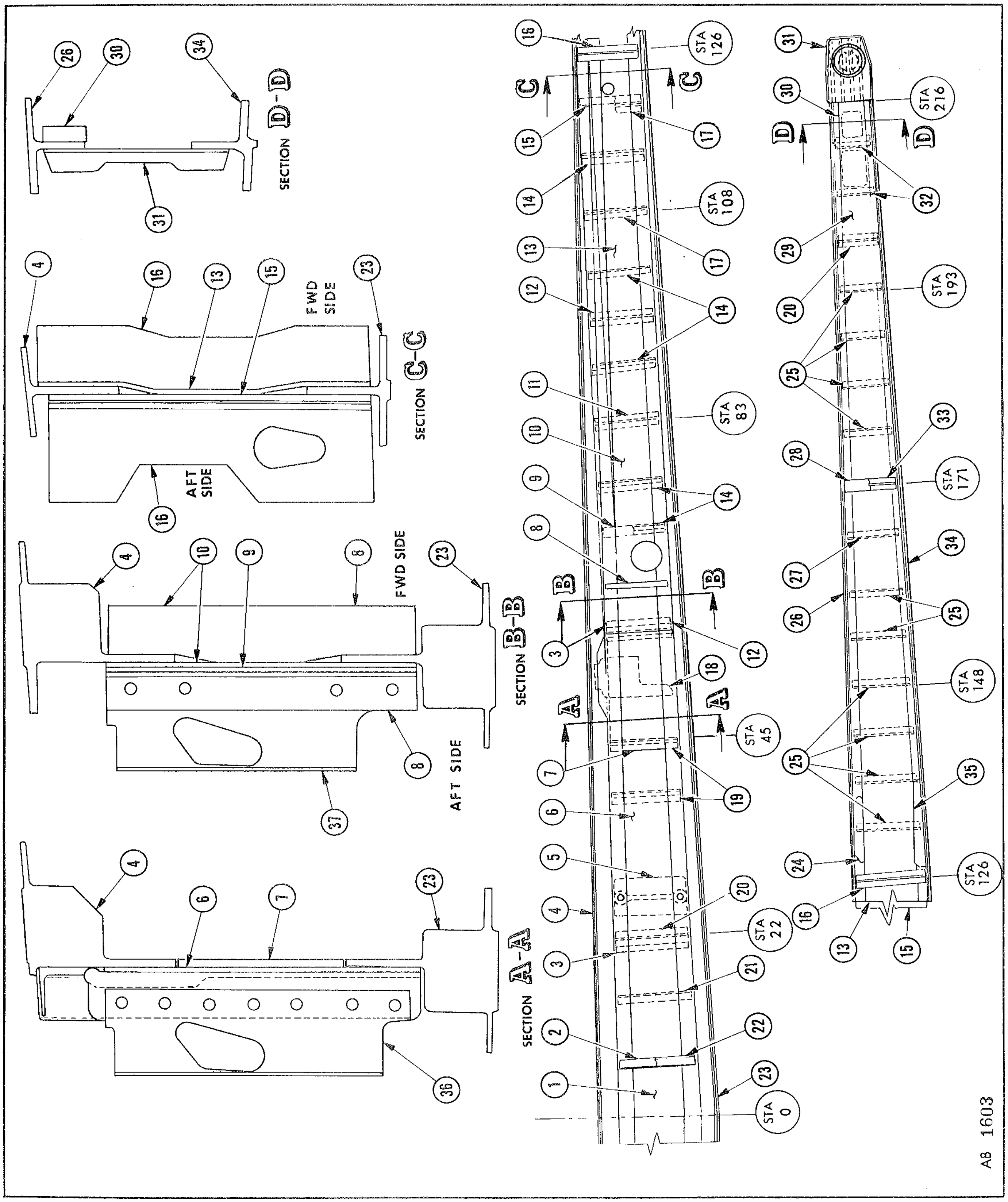
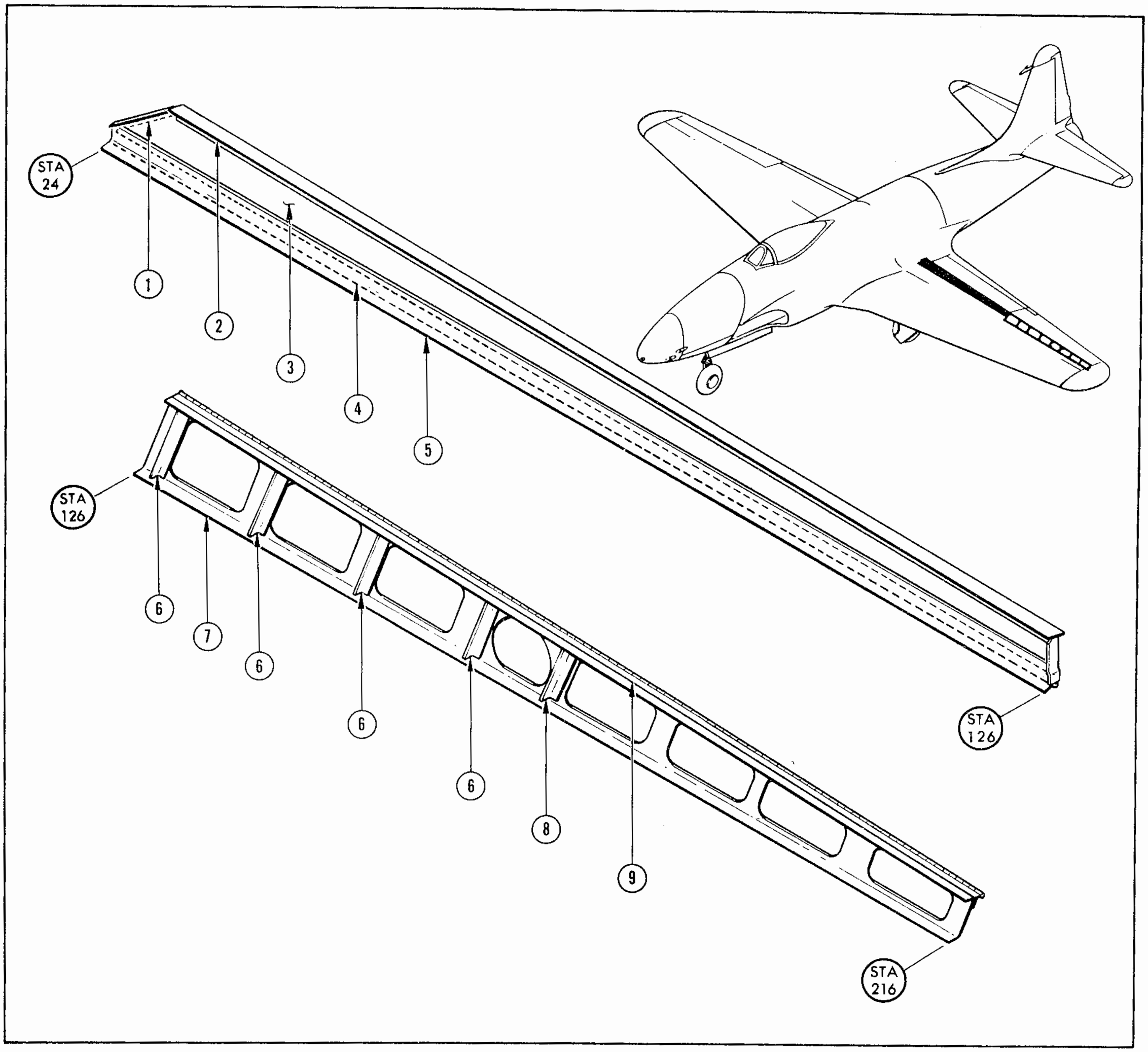


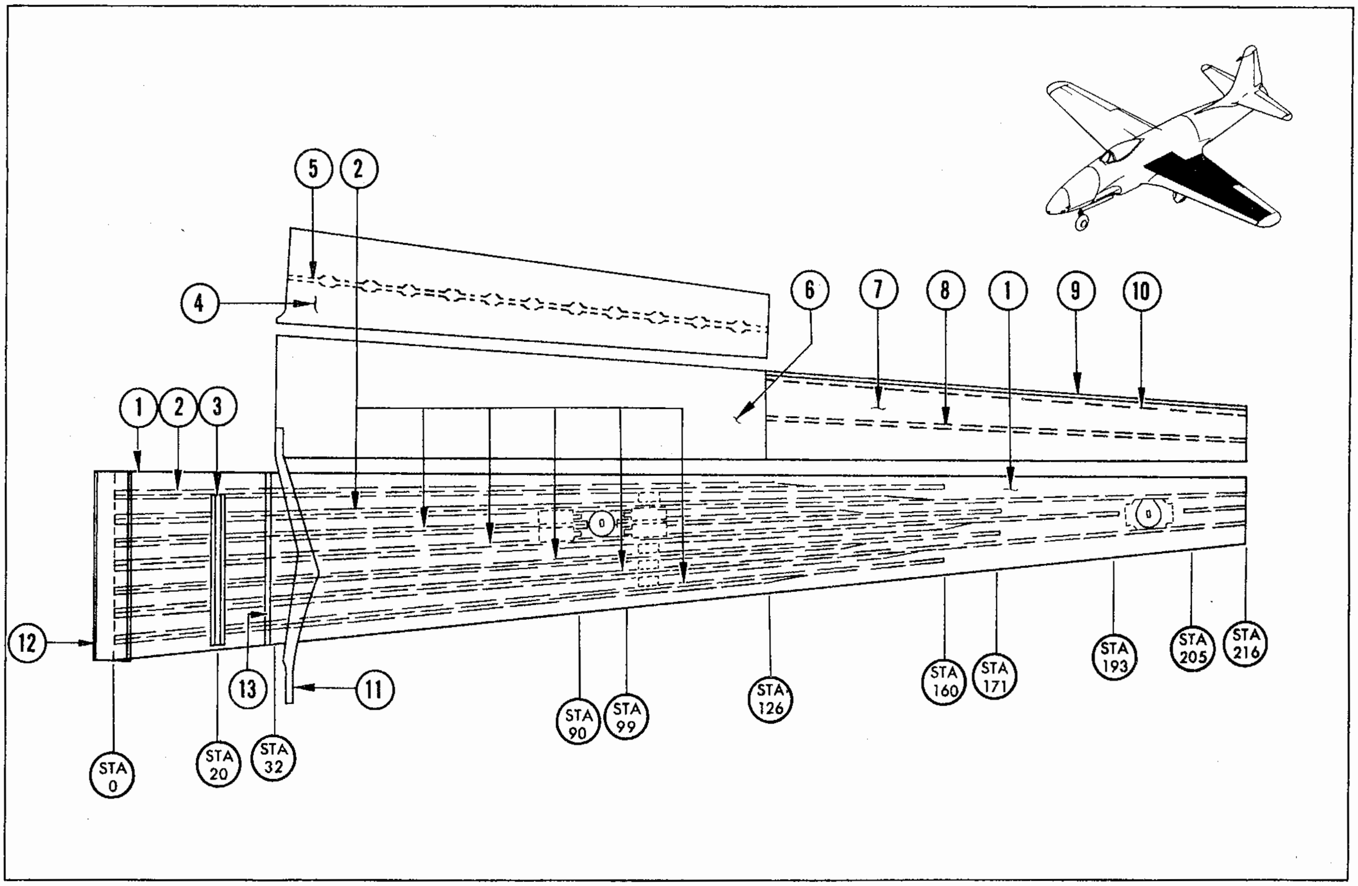
Figure 27 — Wing Rear Beam Reference Diagram



Item	Part Name	Figure Reference Neg. Damage	Figure Reference Repair	Remarks
1	Attach. Angle	132	139	LS3458
2	Upper Cap	133	49	LS3280
3	Web	133	49	24S-T86 — .032
4	Hinge		50	LS406-2
5	Lower Cap	133	49	LS210
6	Stiffeners	131	139	LS115-2
7	Web	133	149, 151	
8	"T"	132		LS236
9	Upper Cap	133	50	LS203

NOTES: All material 24S-T unless otherwise noted.
Items not indicated are not repairable.

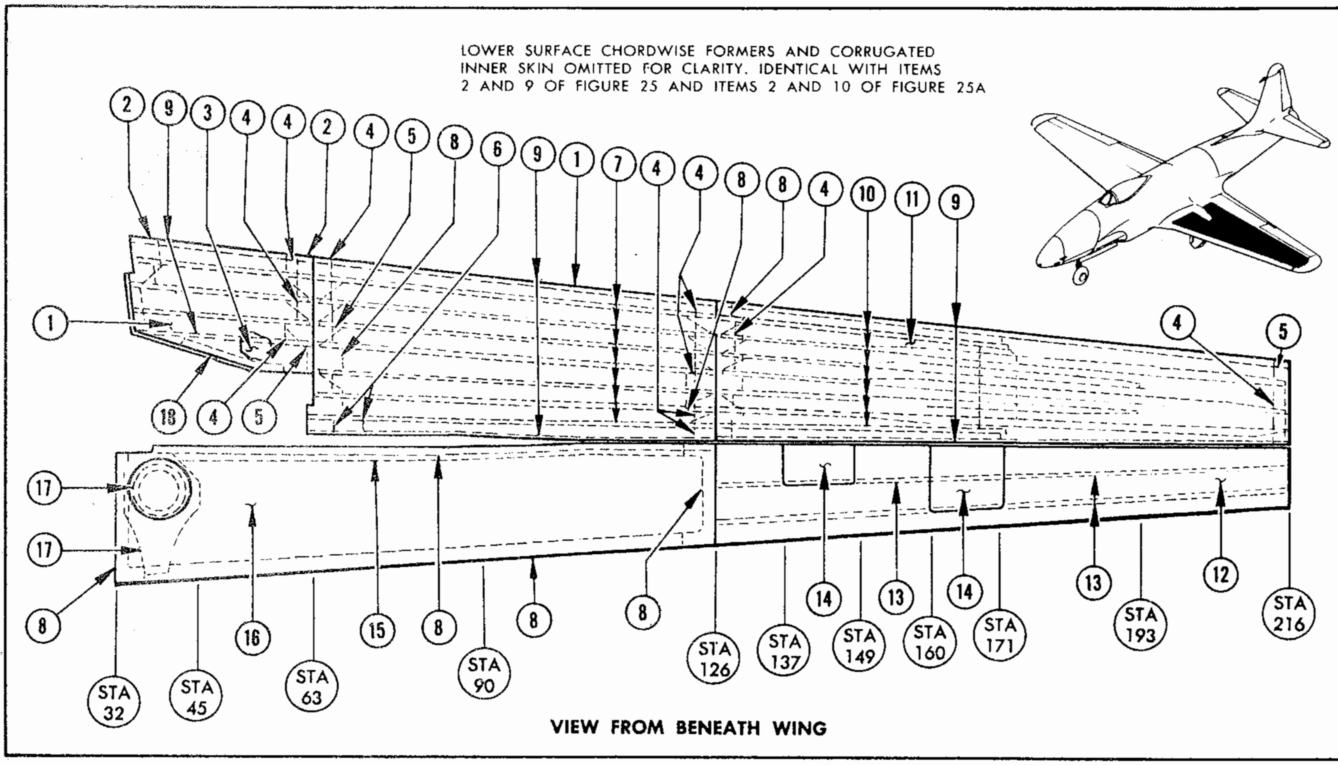
Figure 28 — Wing Auxiliary Beams Reference Diagram



Item	Part Name	Figure Reference: Neg. Damage	Figure Reference: Repair	Remarks
1	Skin	130	135, 54	24S-T86 — .051
2	Stringers	132	51	24S-T8X — LS3702
3	Former	131	NR	LS478
4	Skin	130	135, 136, 137	24S-T81 — .040
	Stiffener, Aft	132	53	LS3233
5	Stiffener	131	73	LS133
6	Skin	130	135, 55	24S-T81 — .040
7	Skin	130	135, 58	24S-T86 — .040
8	Stiffener	131	144	LS169-3
9	Hinge		50	LS406-2
10	Hinge Reinforcement	132	50	LS203
11	Reinforcement		NR	24S-T86 — .375
12	Stiffener	132	NR	24S-T80 — .102
13	Serrated Strip		NR	X4130 Steel — .078

NOTES: All material 24S-T unless otherwise noted.
Items marked "NR" are not repairable.
Items not indicated are not repairable.

Figure 29 — Wing Skin and Stiffener Reference Diagram — Upper Surface



Item	Part Name	Figure Reference Neg. Damage	Figure Reference Repair	Remarks
1	Skin	130	135, 54, 57	24S-T86 — .051
2	Doubler	130	NR	24S-T86 — .091
3	Skin Doubler	130	135, 54, 57	24S-T86 — .032
4	Filler	130	NR	24S-T86 — .064
5	Plate	130	NR	24S-T86 — .125
6	Doubler	130	NR	24S-T86 — .032
7	Stringer	132	52	LS549
8	Plate	130	NR	24S-T86 — .081
9	Cap	132	57	LS637
10	Stringer	132	52	LS636
11	Skin	130	135, 54, 57	24S-T86 — .051
12	Skin	130	135, 137	24S-T86 — .040
13	Stringer	131	144	LS169-3
14	Door		NR	24S-T86 — .040
15	Doubler			24S-T86 — .102
16	Skin	130	135, 55	24S-T86 — .040
17	Support and Ring	131	NR	24S-T86 — .072
18	Stiffener	132	139	LS3253

NOTES: Items marked "NR" are not repairable. Items not indicated are not repairable.

Refer to figures 30A and 30B for details of airplanes provided with rocket launcher installation.

Figure 30 — Wing Skin and Stiffener Reference Diagram — Lower Surface

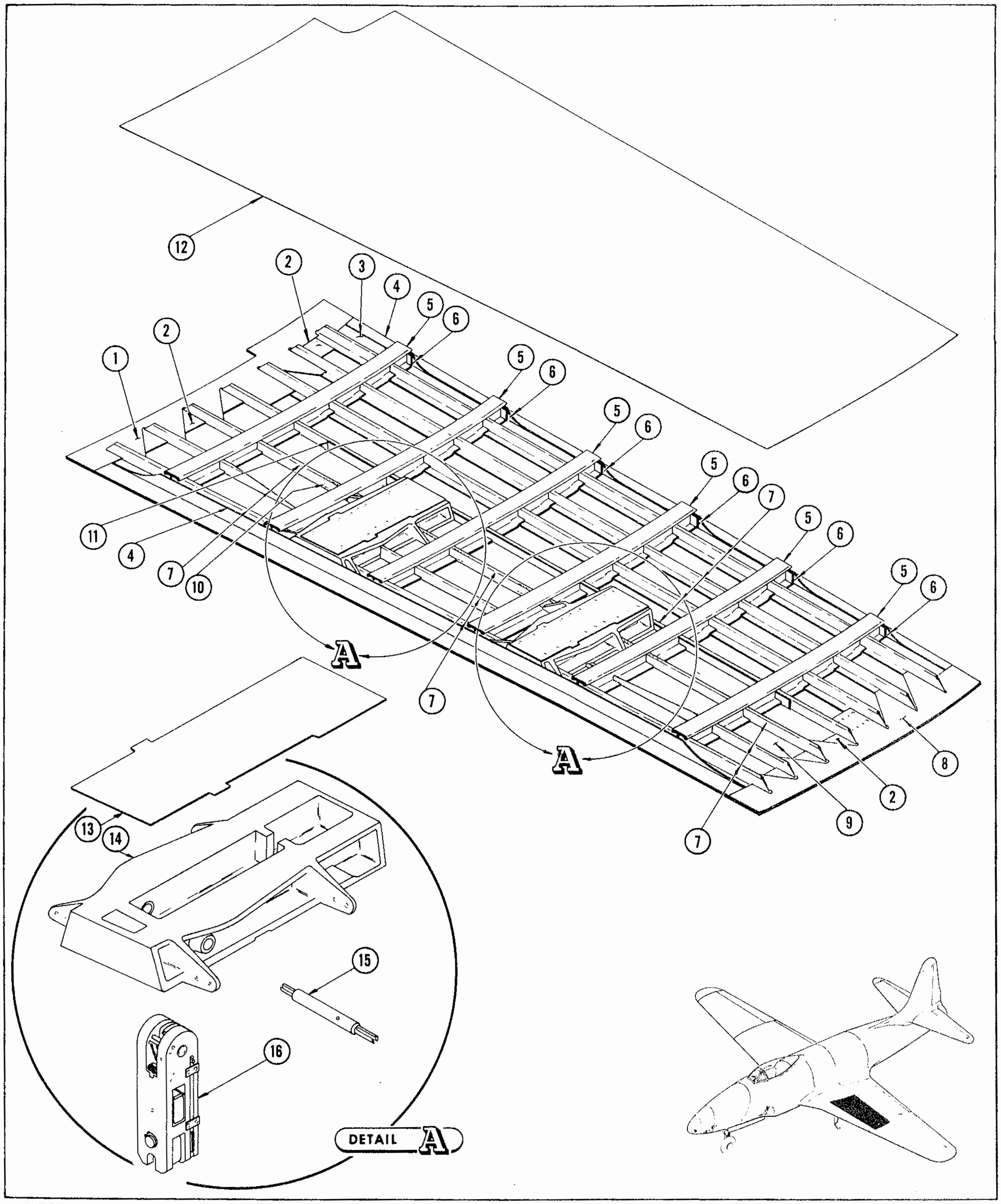


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Figure 30A — Lower Center Panel Reference Diagram — Airplanes Equipped for Rocket Launching

Item	*Part Name*	*Figure Reference* *Neg. Damage*	*Repair*	*Remarks*
1	Plate	130	NR	24S-T86 — .125
2	Filler	130	NR	24S-T86 — .064
3	Doublers	130	NR	24S-T86 — .032
4	Cap	132	57	LS637
5	Former	132	39	LS3701
6	Clip (Typical)	132	NR	LS3215
7	Stringer	132	52	LS549
8	Plate	130	NR	24S-T86 — .081
9	Skin	130	135, 54, 57	24S-T86 — .051
10	Strips (Stringers 1 & 3)		NR	LS1088
11	Strips (Stringer 4)		NR	LS496
12	Panel			Lam. Glass Cloth
13	Cover	130	NR	302-1A Steel — .040
14	Fitting Assembly			
	Fitting		NR	356-T6 Alum. Alloy
	Bushings (HT 125-145,000 psi)		NR	NE8630 Steel
15	Pin (HT 180-200,000 psi)		NR	NE8630 Steel
16	Post (HT 125-145,000 psi)		NR	NE8630 Steel

NOTES: All material 24S-T unless otherwise indicated. Items marked "NR" are not repairable.
Items not indicated are not repairable.

Key to Figure 30A

Item	*Part Name*	*Figure Reference* *Neg. Damage*	*Repair*	*Remarks*
1	Support	131	NR	24S-T80 — .072
2	Doubler (Peripheral)	130	NR	24S-T86 — .081
3	Doubler	130	NR	24S-T — .051
4	Corrugation Panel	131	40A	24S-T80 — .051
5	Skin	130	135	24S-T86 — .040
6	Hat Section	131	145	24S-T0 — .051
7	Support			LS478
8	Fitting Assembly			
	Fitting		NR	356-T6 Alum. Alloy
	Fwd Bushings (HT 125-145,000 psi)		NR	NE8630 Steel
	Aft Bushings		NR	1117 Steel
9	Post (HT 125-145,000 psi)		NR	NE8630 Steel
10	Pin (HT 125-145,000 psi)		NR	NE8630 Steel
11	Panel			Lam. Glass Cloth

NOTES: All material 24S-T unless otherwise indicated. Items marked "NR" are not repairable.
Items not indicated are not repairable.

Key to Figure 30B

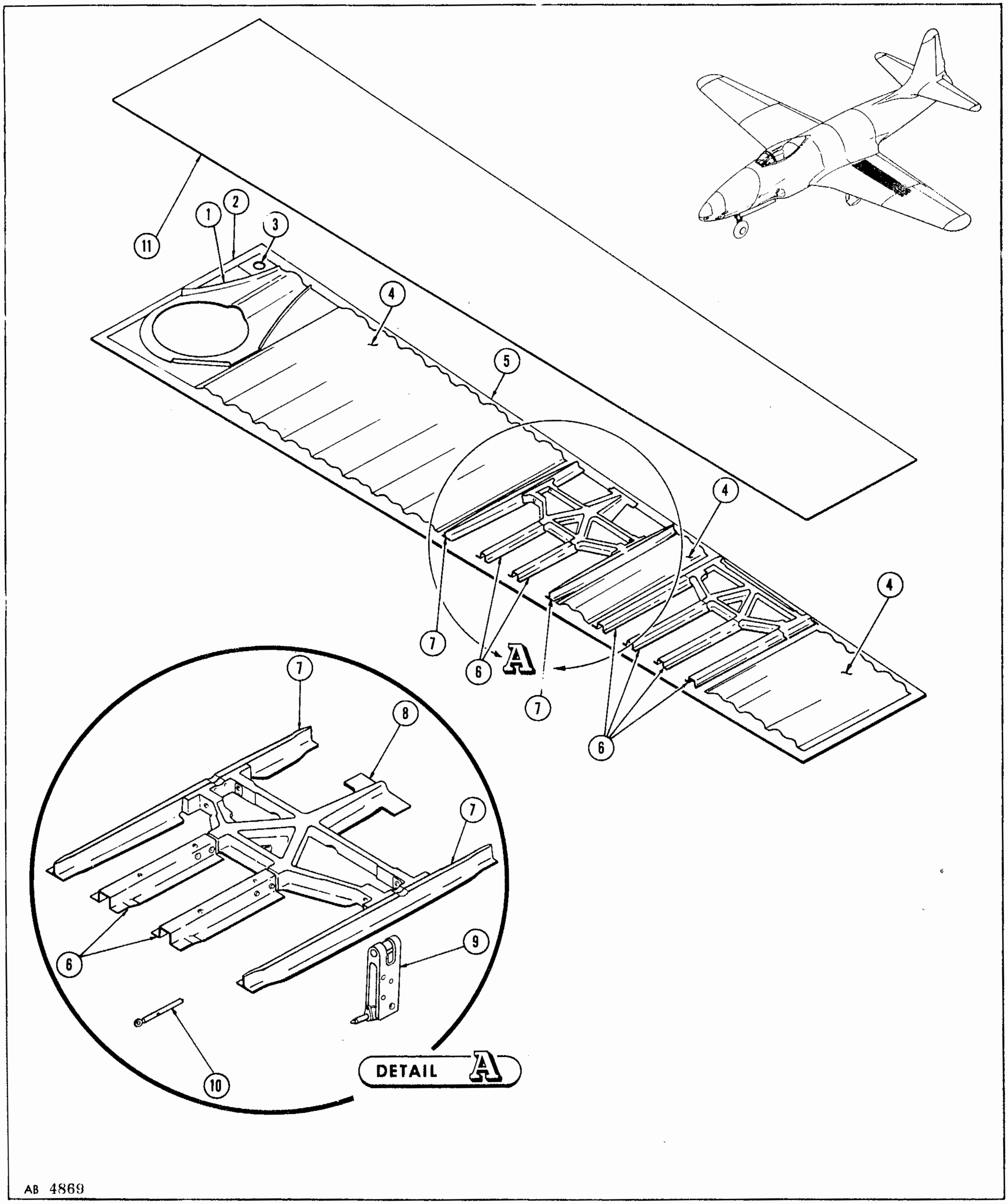
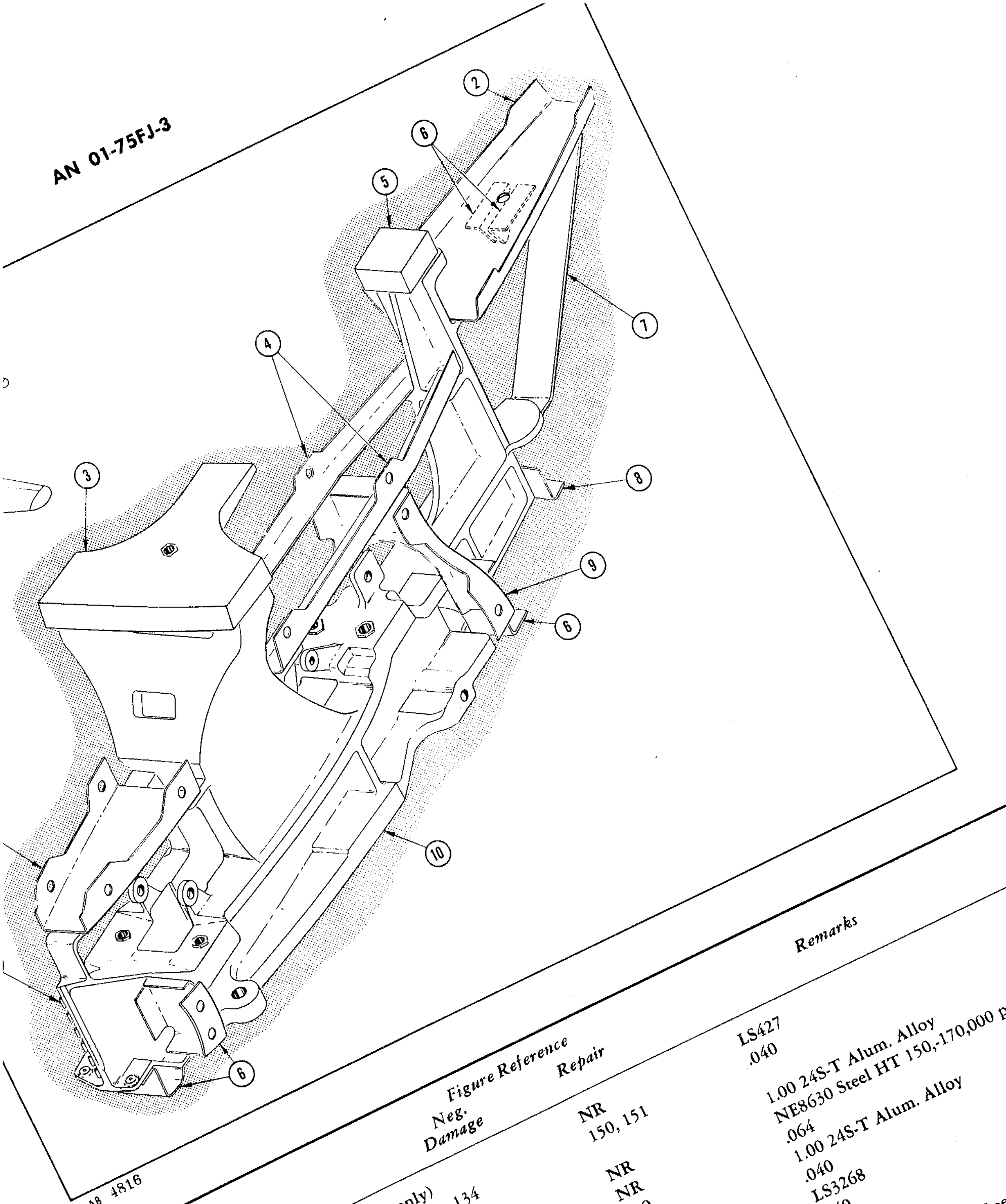


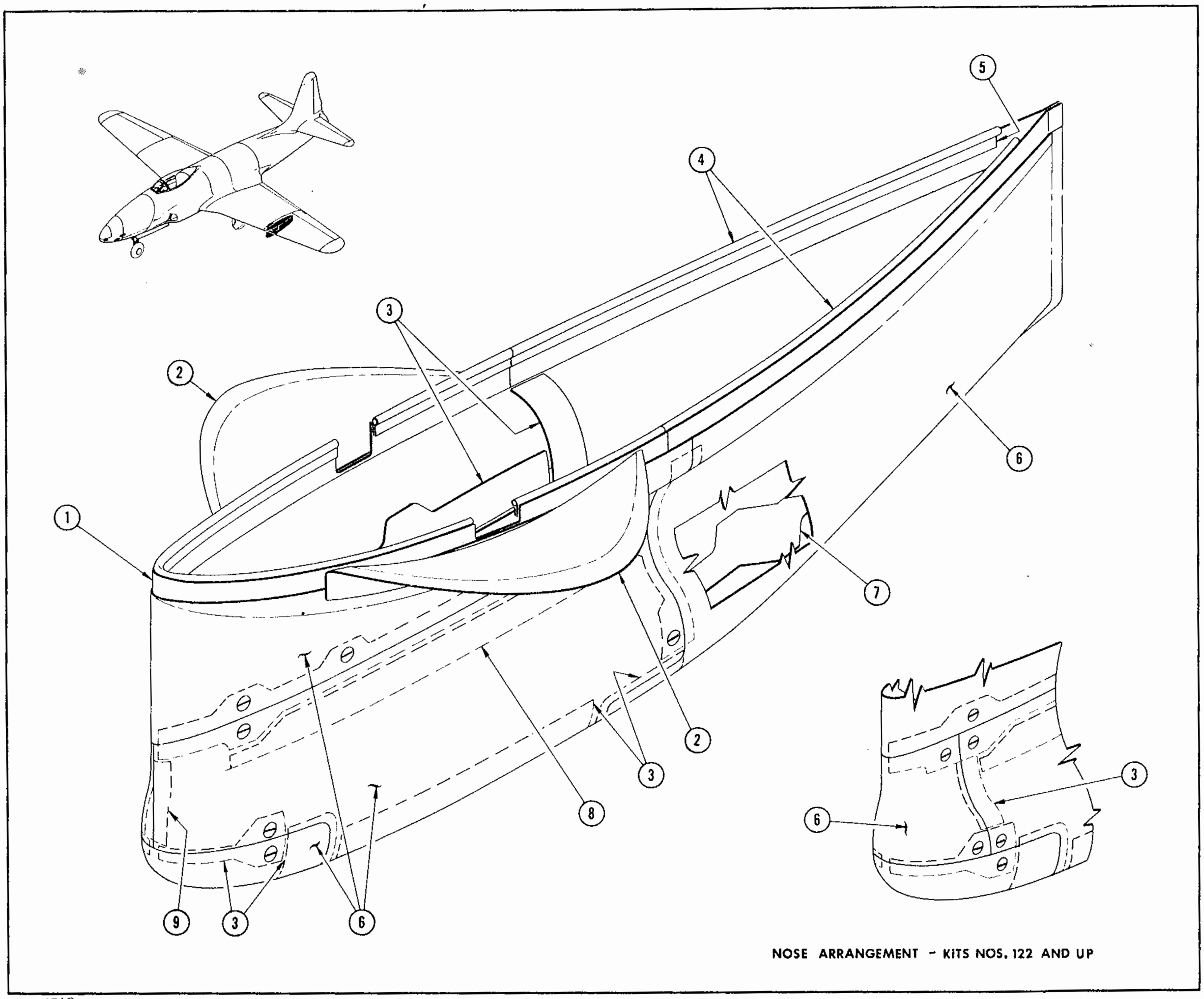
Figure 30B — Lower Aft Panel Reference Diagram — Airplanes Equipped for Rocket Launching



Item	Part Name	Figure Reference Neg. Damage	Figure Reference Repair	Remarks
1	Half Hinge (Kits No. 1 thru 121 only)		NR	LS427
2	Rib	134	150, 151	.040
3	Fitting Installation			
	Fitting		NR	1.00 24S-T Alum. Alloy
	Bushing		NR	NE8630 Steel HT 150,-170,000 psi
4	Angle	131	139	.064
5	Spacer		NR	1.00 24S-T Alum. Alloy
6	Bracket	131	R	.040
7	Knee Brace	132	139	LS3268
8	Angle	131	R	.040
9	Bulkhead	134	151	.040
10	Support Assembly			
	Support		NR	AZ63 Mag. Alloy, Spec AN-M-36, Comp A
	Bushings		NR	NE8630 Steel

NOTES: All material 24S-T Alclad unless otherwise noted.
NR indicates non-repairable; R indicates items recommended for replacement.

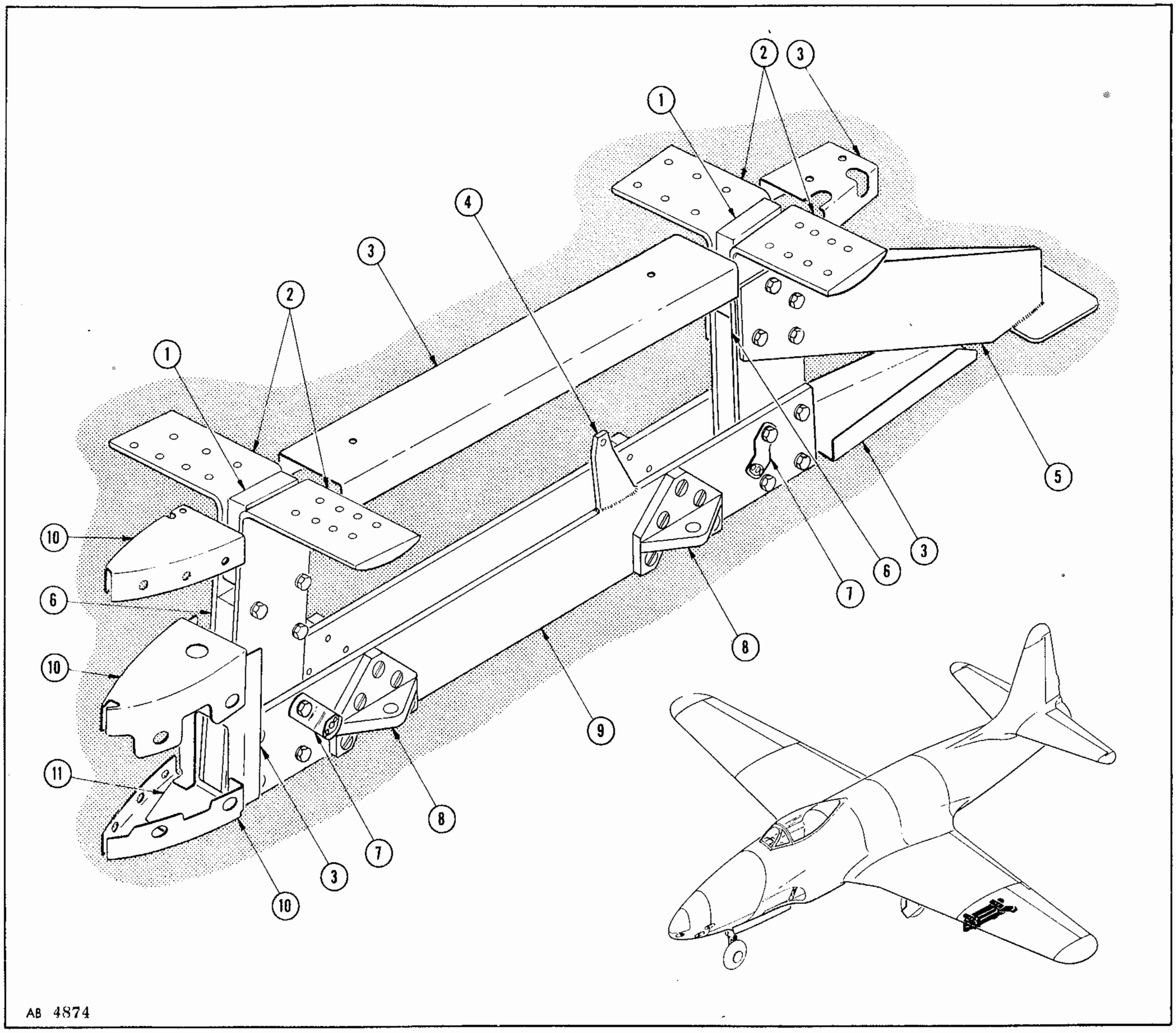
Figure 30C — Lockheed Wing Pylon Structure Reference Diagram



Item	Part Name	Figure Reference Neg. Damage	Figure Reference Repair	Remarks
1	Collar		R	.051
2	Fairing (Kits No. 1 thru 121 only)	130	135, 136, 137	.081 24S-T Alum. Alloy
3	Doubler	130	R	.040
4	Seal		NR	LS2942
5	Retainer		R	.032
6	Skin	130	135, 136, 137	.040
7	Doubler	130	R	.032
8	Stiffener	131	139	.040
9	Half Hinge (Kits No. 1 thru 121 only)		NR	LS1713

NOTES: All material 24S-T Alclad unless otherwise noted.
NR indicates non-repairable; R indicates items recommended for replacement.

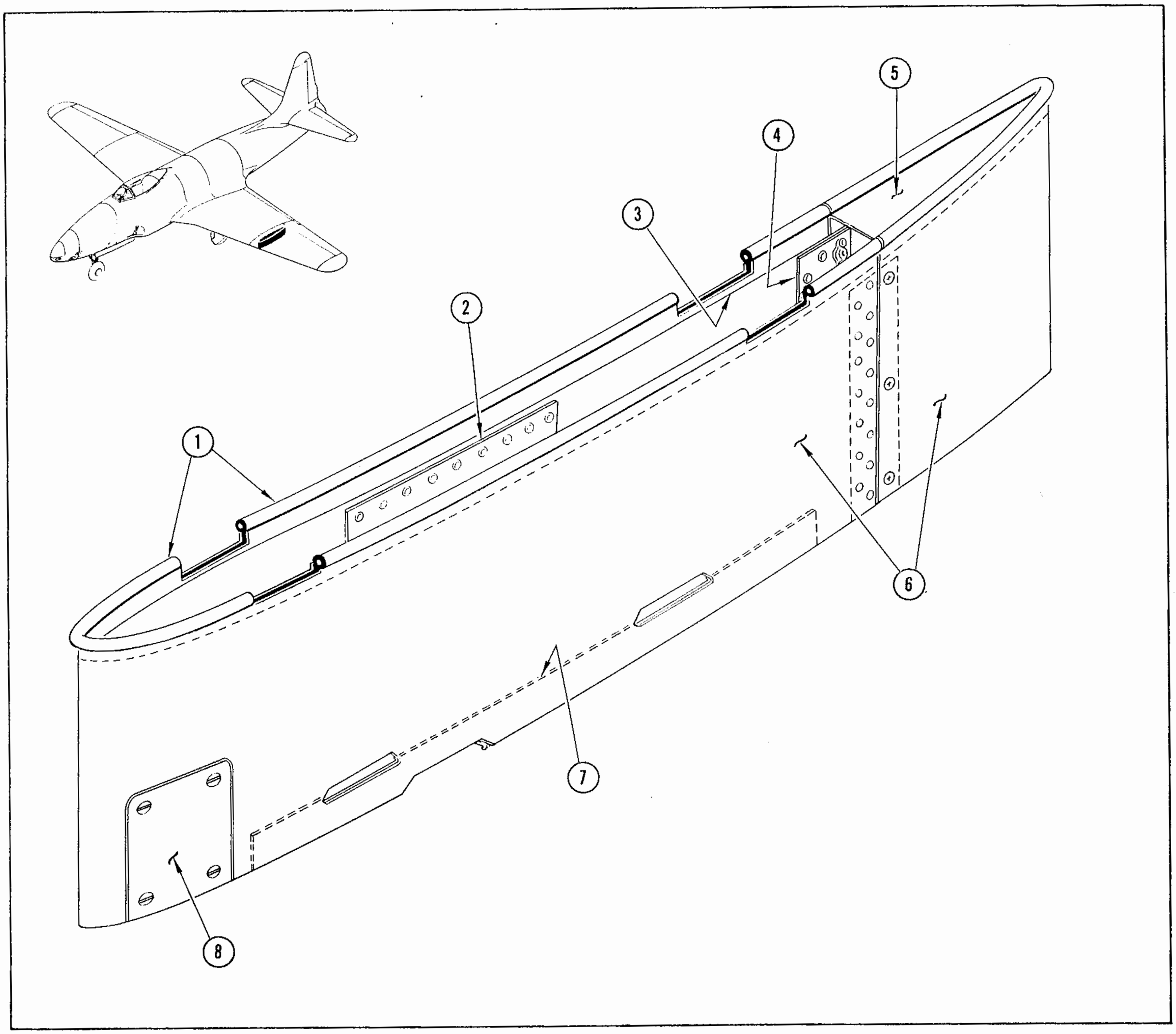
Figure 30D — Lockheed Wing Pylon Skin and Doublers Reference Diagram



Item	Part Name	Figure Reference Neg. Damage	Figure Reference Repair	Remarks
1	Spacer Block		NR	.75 SAE1020 Cor. Res. Steel
2	Bracket		★	.375 8630 Steel
3	Channel	134	143, 150, 151	.064
4	Support		★	.125 8630 Steel
5	Deflector Assembly		★	.125 Low-carbon Steel
6	Spacer		NR	.75 24S-T Alum. Alloy
7	"Z"		NR	.064 24S-T Alum. Alloy
8	Bracket		NR	C1018 Steel Forging
9	Plate		★	.375 8630 Steel
10	Former	134	150, 151	.064
11	Plate Assembly		NR	.064 24S-T1 Alclad

NOTES: All material 24S-T Alclad except as noted.
NR indicates non-repairable.
★ Repair with welded patches.

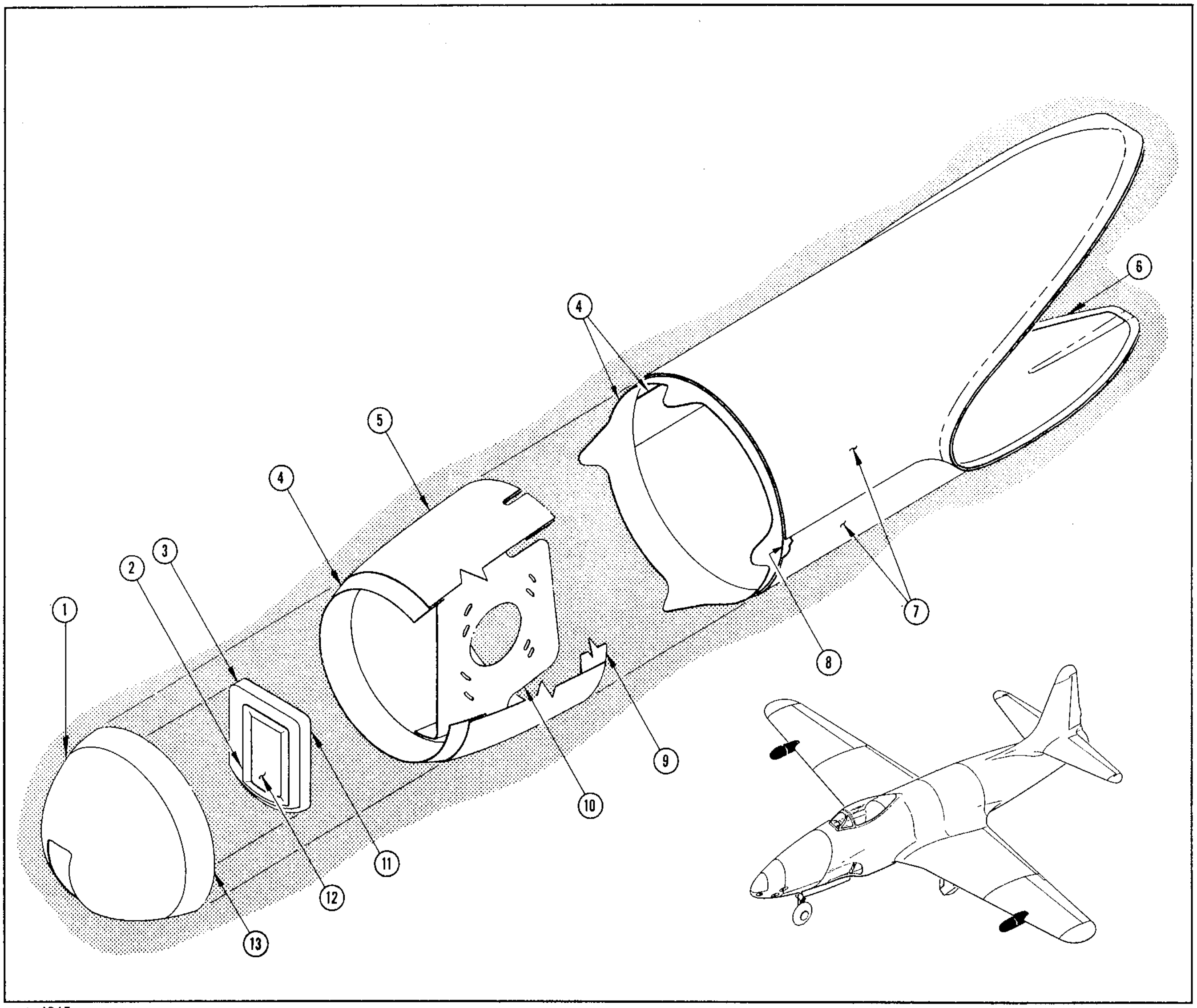
Figure 30E — AMC Wing Pylon Structure Reference Diagram



Item	Part Name	Figure Reference Neg. Damage	Figure Reference Repair	Remarks
1	Seal		NR	LS1495
2	Doubler	130	R	.064 24S-T1 Alclad
3	Reinforcing Strip		R	.064 24S-T1 Alclad
4	Tab		R	.064 24S-T1 Alclad
5	Former	134	150, 151	.064
6	Skin	130	135, 136, 137	.064
7	Reinforcing Strip	131	139	.064
8	Door	130	NR	.064

NOTES: All material 24S-T Alclad except as noted.
NR indicates non-repairable; R indicates items recommended for replacement.

Figure 30F — AMC Wing Pylon Skin and Doublers Reference Diagram



Item	Part Name	Figure Reference Neg. Damage	Figure Reference Repair	Remarks
1	Nose		NR	Plastic
2	Seal		NR	LS2936
3	Filler		NR	.344 Phenolic Resin
4	Doubler		R	.064
5	Shell	130	135, 137	.072
6	Chafing Strip		NR	1/16 Synthetic Rubber
7	Skin	130	135, 137	.064
8	Filler		R	.081
9	Doubler		R	.081
10	Bracket		R	.125
11	Keeper		NR	.064
12	Glass		NR	¼-in. Select Plate Glass
13	Bulkhead		R	.072

NOTES: All material 24S-T Alclad unless otherwise noted.
NR indicates non-repairable; R indicates items recommended for replacement.

Figure 30G — Gun Camera Pod Structure Reference Diagram

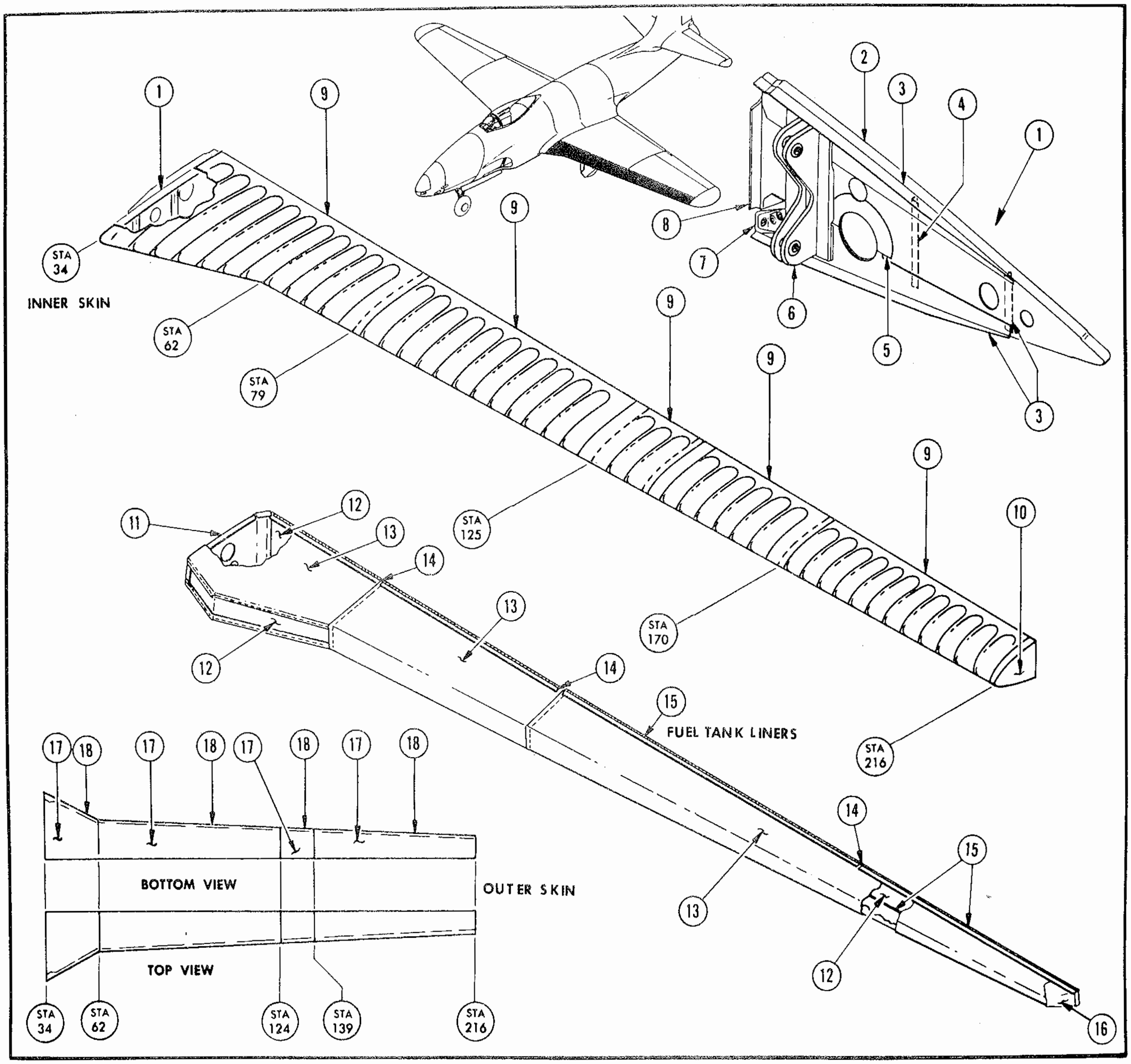


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Figure 31 — Wing Leading Edge Reference Diagram

Item	Part Name	Figure Reference Neg. Damage	Figure Reference Repair	Remarks
1	Root Rib Assembly			
2	Rib	134	149, 150, 151	.064 24S-T80 Alclad
3	Angle	131	NR	.064 24S-T80 Alclad
4	Angle	132	NR	LS482
5	Doubler	——	NR	.064 24S-T Alclad
6	Fitting	23A	23A	LS494
7	Fitting, Inbd & Outbd	——	NR	14 S-T Alum. Alloy
8	Tee	——	NR	LS709
9	Corrugated Inner Skin	131	59, 59A	.051 24S-T80 Alclad
10	Rib Assembly			
	Rib, Inbd & Outbd	134	NR	.051 24S-T80 Alclad
	Doubler, Inbd Face	——	NR	.091 24S-T1 Alclad
11	End Bulkhead	130	135, 152	.025 24S-T0 Alclad
12	Plate	130	135, 152	.025 24S-T0 Alclad
13	Panel	130	135, 152	.025 24S-T0 Alclad
14	Hinge Pin	——	NR	.080D 302-1H Steel
15	Hinge	——	NR	LS426
16	End, .030 Laminated Glass Cloth	——	NR	LAC Spec 1-826
17	Outer Skin	130	59, 59A	.051 24S-T81 Alclad
18	Leading Edge Doubler	131	50, 50A	.051 24S-T81 Alclad

NOTE: NR indicates non-repairable; items recommended for replacement when damaged.

Key to Figure 31

FIGURE 32 DELETED

ALL MATERIAL DELETED FROM PAGE 30A

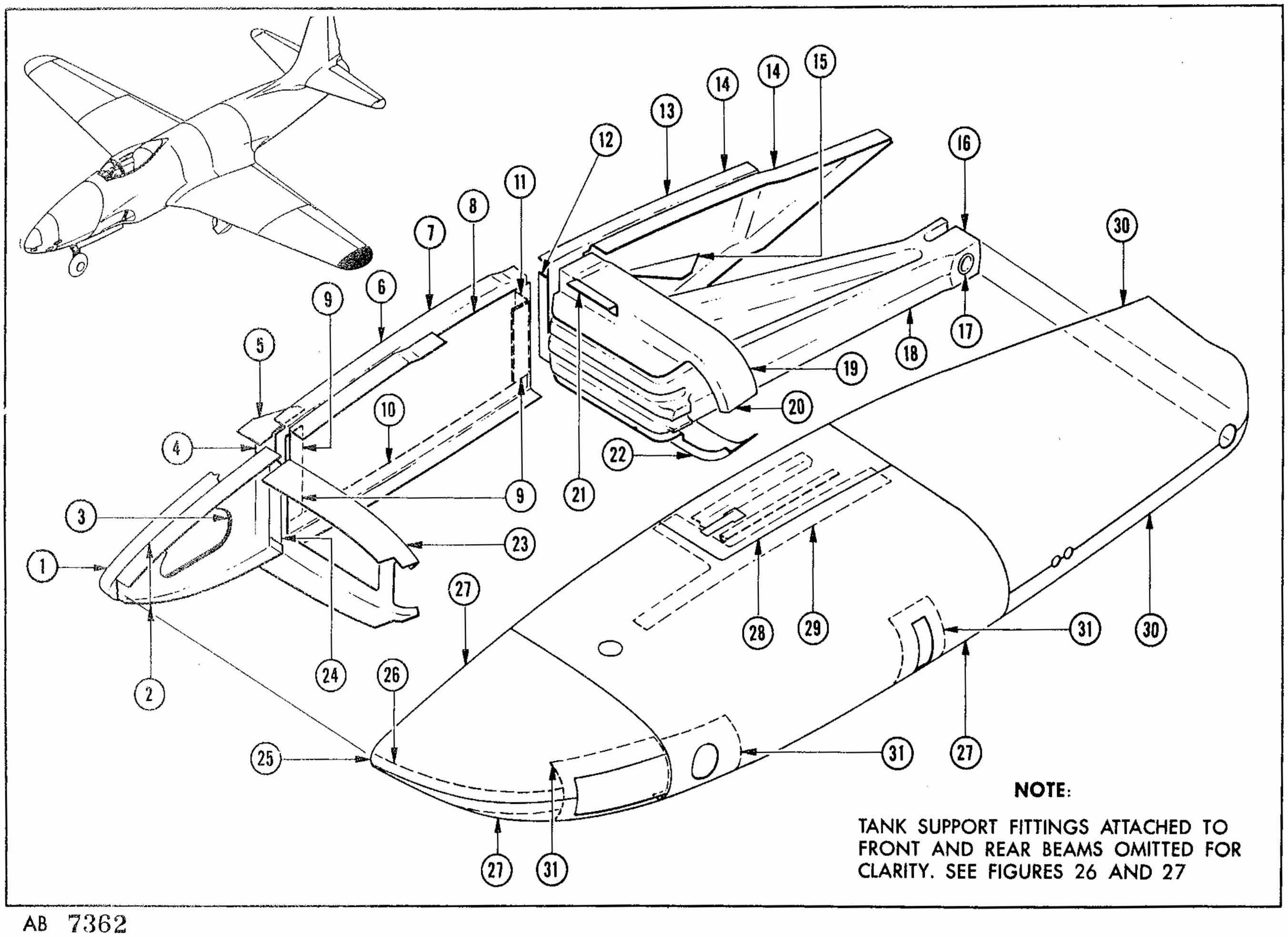


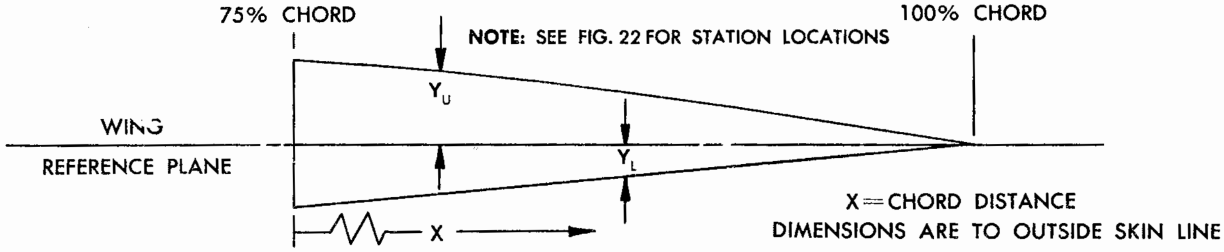
Figure 33 — Wing Tip Reference Diagram

FIGURES 33A AND 33B DELETED

Item	Part Name	*Figure Reference* Neg. Damage	Repair	Remarks
1	Nose Rib Assembly			
2	Rib, Inbd & Outbd	134	149, 150, 151	.051 24S-T80 Alclad
3	Doubler, Inbd Face	134	149, 150, 151	.091 24S-T1 Alclad
4	Clip	132	NR	LS1247
5	Gusset (Typical)	—	NR	.091 24S-T0 Alclad
6	Mid Rib Assembly			
7	Cap Angle, Upper	132	NR	LS3228
8	Web	134	149, 150, 151	.064 24S-T0 Alclad
9	Filler	—	NR	.091 24S-T0 Alclad
10	Cap Angle, Lower	132	NR	LS1143
11	Clip	132	NR	LS3237
12	Clip	132	NR	LS3255
13	Tail Rib Assembly			
14	Rib, Inbd & Outbd	134	149, 150, 151	.051 24S-T0 Alclad
15	Bracket	—	NR	LS3255
16	Fitting Assembly			
17	Bushing	—	NR	NE8630 Steel
18	Support	—	NR	14S-T Alum. Alloy
19	Former Assembly			
20	Former	—	NR	.051 24S-T0 Alclad
21	Clip	—	NR	.051 24S-T0 Alclad
22	Former	—	NR	.051 24S-T0 Alclad
23	Rib	134	NR	.051 24S-T0 Alclad
24	Angle	132	NR	LS1450
25	Fairing Assembly			
26	Splice	—	NR	.051 24S-T0 Alclad
27	Skin	130	NR	.051 24S-T0 Alclad
28	Door Assembly			
	Door	130	135, 137	.051 24S-T0 Alclad
	Stiffeners	131	NR	.051 24S-T0 Alclad
	Clip, Aft End	—	NR	.051 24S-T0 Alclad
29	Stiffener	—	NR	.051 24S-T0 Alclad
30	Skin	130	135, 137	.051 61S-W Alum. Alloy
31	Doubler	—	NR	.051 24S-T0 Alclad

NOTE: NR indicates non-repairable; items recommended for replacement when damaged.

Key to Figure 33



STA.	.625			4.6			9.6			15.6		
% CHORD	Y_U	Y_L	X	Y_U	Y_L	X	Y_U	Y_L	X	Y_U	Y_L	X
75	3.057	−1.588	0	2.994	−1.567	0	2.915	−1.542	0	2.820	−1.511	0
80	2.368	−1.196	3.470	2.319	−1.181	3.408	2.257	−1.162	3.330	2.184	−1.139	3.237
85	1.664	−.799	6.941	1.629	−.789	6.817	1.585	−.777	6.661	1.533	−.762	6.474
90	.996	−.440	10.411	.976	−.436	10.225	.949	−.430	9.991	.918	−.423	9.711
95	.408	−.146	13.802	.400	−.145	13.634	.389	−.144	13.322	.375	−.143	12.948
100	.032	−.032	17.352	.032	−.032	17.042	.032	−.032	16.653	.032	−.032	16.185

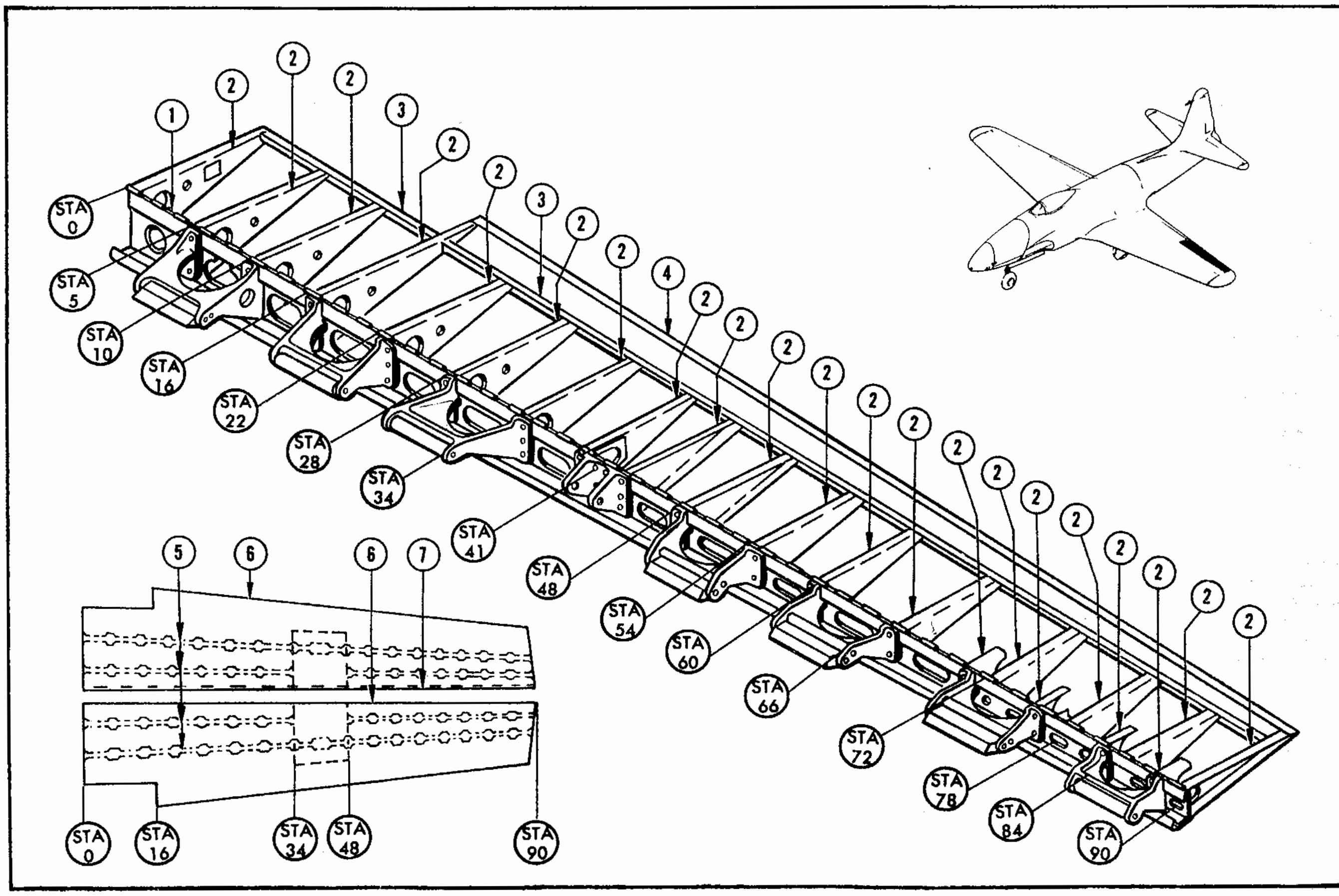
STA.	21.6			27.6			33.6			39.575		
% CHORD	Y_U	Y_L	X	Y_U	Y_L	X	Y_U	Y_L	X	Y_U	Y_L	X
75	2.724	−1.481	0	2.629	−1.450	0	2.534	−1.419	0	2.439	−1.389	0
80	2.110	−1.116	3.143	2.036	−1.093	3.050	1.962	−1.076	2.956	1.888	−1.047	2.863
85	1.480	−.748	6.277	1.427	−.733	6.100	1.374	−.719	5.912	1.322	−.704	5.726
90	.886	−.416	9.430	.854	−.409	9.150	.823	−.402	8.869	.791	−.395	8.589
95	.362	−.141	12.574	.349	−.140	12.200	.336	−.138	11.825	.323	−.137	11.453
100	.032	−.032	15.717	.032	−.032	15.250	.032	−.032	14.782	.032	−.032	14.316

STA.	47.575			54.2			60.2			66.2		
% CHORD	Y_U	Y_L	X	Y_U	Y_L	X	Y_U	Y_L	X	Y_U	Y_L	X
75	2.312	−1.348	0	2.206	−1.314	0	2.111	−1.284	0	2.016	−1.253	0
80	1.789	−1.017	2.738	1.708	−.991	2.635	1.634	−.968	2.541	1.560	−.945	2.448
85	1.251	−.685	5.477	1.163	−.668	5.270	1.140	−.654	5.083	1.087	−.639	4.896
90	.749	−.386	8.215	.714	−.378	7.905	.683	−.371	7.625	.651	−.364	7.344
95	.365	−.135	10.954	.291	−.133	10.541	.277	−.132	10.167	.264	−.130	9.792
100	.032	−.032	13.692	.032	−.032	13.176	.032	−.032	12.708	.032	−.032	12.241

STA.	72.2			78.2			84.2			87.25		
% CHORD	Y_U	Y_L	X	Y_U	Y_L	X	Y_U	Y_L	X	Y_U	Y_L	X
75	1.921	−1.223	0	1.825	−1.192	0	1.730	−1.161	0	1.681	−1.146	0
80	1.486	−.923	2.354	1.412	−.900	2.261	1.338	−.877	2.167	1.300	−.865	2.120
85	1.034	−.625	4.709	.982	−.610	4.522	.929	−.595	4.335	.902	−.588	4.340
90	.619	−.357	7.664	.588	−.350	6.783	.556	−.344	6.502	.540	−.340	6.360
95	.251	−.129	9.418	.238	−.127	9.044	.225	−.126	8.670	.218	−.125	8.480
100	.032	−.032	11.770	.032	−.032	11.305	.032	−.032	10.837	.032	−.032	10.600

NOTE: USE THESE BASIC DIMENSIONS IN THE MANUFACTURE OF JIGS AND TEMPLATES AS DESCRIBED IN SECTION I PARAGRAPH 5

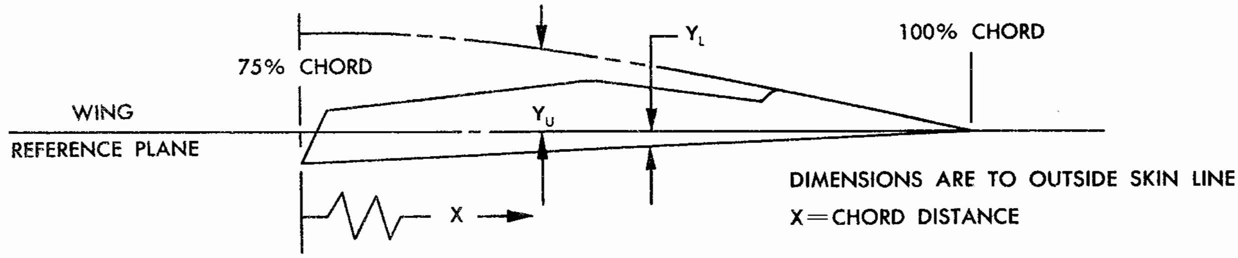
Figure 34 — Aileron Basic Dimensions



Item	Part Name	Figure Reference Neg. Damage	Figure Reference Repair	Remarks
1	Spar	133	139, 148	
2	Ribs	134	149, 150, 151	
3	Rear Spar	134	143	
4	Trailing Edge		60	
5	Stringers	131	73	LS133 — .020
6	Skin	130	60	
7	Hinge	*	50	LS406-2

NOTES: All material 24S-T unless otherwise indicated.
Items not indicated are not repairable.
* See text, section II, paragraph 2.

Figure 35 — Aileron Reference Diagram



STA.	0			.75			8.44			18.44		
% CHORD	Y_U	Y_L	X	Y_U	Y_L	X	Y_U	Y_L	X	Y_U	Y_L	X
75	4.696	−2.114	0	4.684	−2.110	0	4.562	−2.071	0	4.403	−2.020	0
80	3.640	−1.590	5.078	3.631	−1.587	5.066	3.536	−1.558	4.947	3.413	−1.520	4.791
85	2.572	−1.050	10.157	2.565	−1.048	10.133	2.498	−1.029	9.894	2.410	−1.005	9.582
90	1.540	− .560	15.235	1.536	− .559	15.200	1.496	− .550	14.841	1.443	− .539	14.373
95	.635	− .172	20.314	.633	− .172	20.267	.616	− .170	19.788	.594	− .167	19.164
100	.032	− .032	25.393	.032	− .032	25.334	.032	− .032	24.735	.032	− .032	23.955

STA.	28.19			36.5			44.88			53.19		
% CHORD	Y_U	Y_L	X	Y_U	Y_L	X	Y_U	Y_L	X	Y_U	Y_L	X
75	4.248	−1.970	0	4.116	−1.928	0	3.983	−1.885	0	3.851	−1.843	0
80	3.292	−1.482	4.639	3.190	−1.451	4.509	3.087	−1.419	4.378	2.984	−1.387	4.249
85	2.324	− .981	9.278	2.251	− .961	9.019	2.177	− .941	8.757	2.104	− .921	8.498
90	1.391	− .527	13.917	1.348	− .518	13.528	1.304	− .508	13.136	1.260	− .498	12.748
95	.573	− .165	18.556	.555	− .163	18.038	.536	− .161	17.515	.518	− .159	16.997
100	.032	− .032	23.195	.032	− .032	22.547	.032	− .032	21.894	.032	− .032	21.246

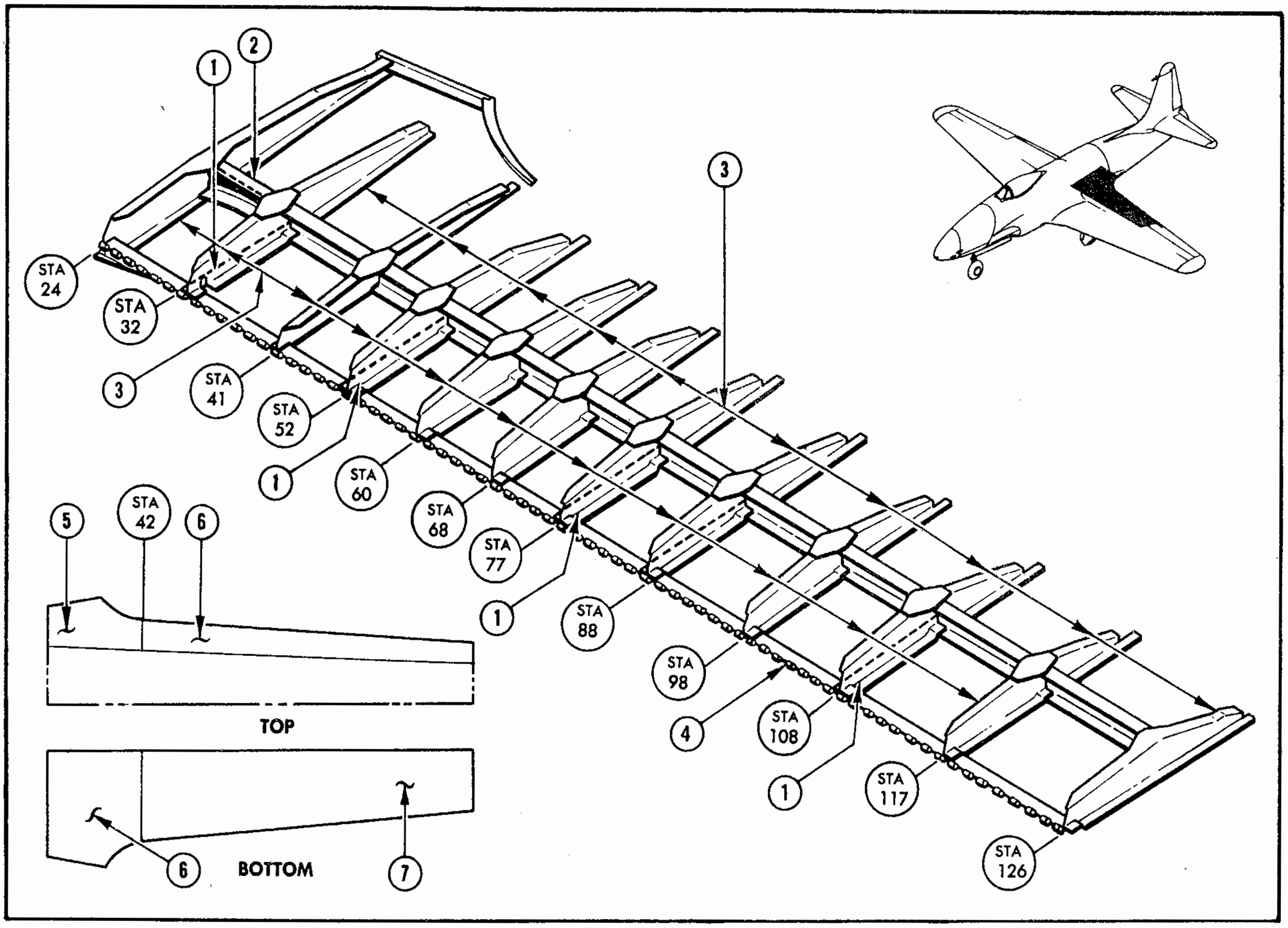
STA.	63.81			74.06			84.44			93.14		
% CHORD	Y_U	Y_L	X	Y_U	Y_L	X	Y_U	Y_L	X	Y_U	Y_L	X
75	3.682	−1.789	0	3.519	−1.736	0	3.355	−1.683	0	3.216	−1.634	0
80	2.853	−1.346	4.083	2.727	−1.307	3.924	2.599	−1.267	3.762	2.492	−1.234	3.626
85	2.010	− .895	8.167	1.920	− .870	7.848	1.829	− .844	7.524	1.752	− .823	7.253
90	1.207	− .486	12.251	1.150	− .474	11.772	1.095	− .462	11.286	1.049	− .452	10.879
95	.495	− .156	16.335	.472	− .154	15.696	.449	− .151	15.048	.430	− .149	14.506
100	.032	− .032	20.418	.032	− .032	19.619	.032	− .032	18.810	.032	− .032	18.132

STA.	101.645		
% CHORD	Y_U	Y_L	X
75	3.081	−1.596	0
80	2.387	−1.202	3.493
85	1.678	− .803	6.987
90	1.004	− .442	10.481
95	.412	− .147	13.975
100	.032	− .032	17.469

NOTES:

1. USE THESE BASIC DIMENSIONS IN THE MANUFACTURE OF JIGS AND TEMPLATES AS DESCRIBED IN SECTION I PARAGRAPH 5
2. PLUS (±) INDICATES DISTANCE ABOVE MINUS (—) INDICATES DISTANCE BELOW WING REFERENCE PLANE

Figure 36 — Flap Basic Dimensions



Item	Part Name	Figure Reference Neg. Damage	Figure Reference Repair	Remarks
1	Angle	131	139	
2	Spar	133	61	LS536
3	Rib	134	148	
4	Hinge	*	50	LS406-2
5	Skin	130	135, 136, 137	.040
6	Skin	130	135, 136, 137	24S-T80 — .040
7	Skin	130	135, 62	24S-T81 — .040

NOTES: All material 24S-T unless otherwise noted.
Items not indicated are not repairable.
* See text, section II, paragraph 2.

Figure 37 — Wing Flap Reference Diagram

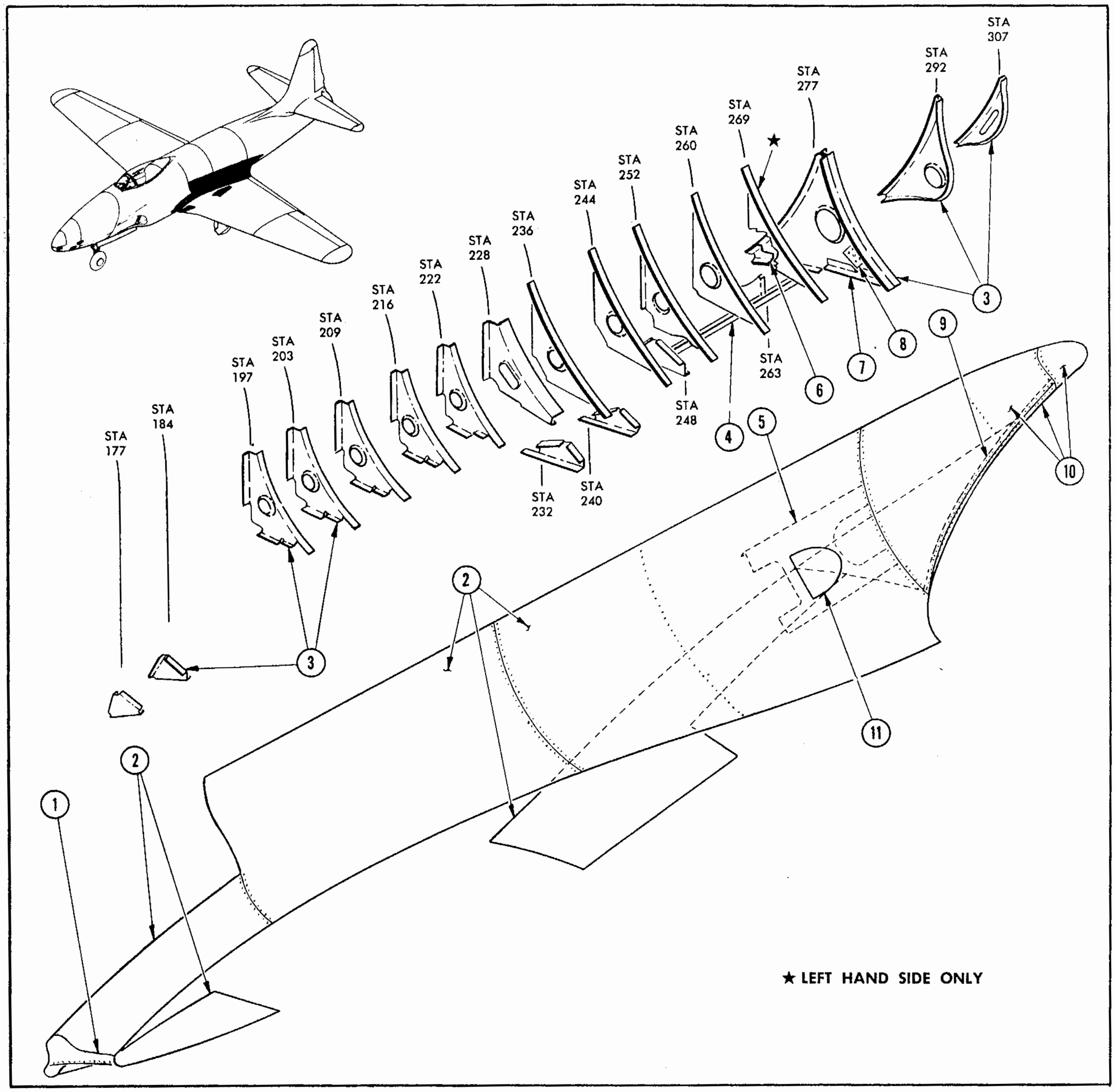


Figure 38 — Wing Fillets Reference Diagram

Item	Part Name	Figure Reference Neg. Damage	Figure Reference Repair	Remarks
1	Doubler		NR	.020 302-1A Cor. Res. Steel
2	Fillet	130	135, 136, 137	.040
3	Former (Typical)	134	149, 150, 151	.040
4	Angle	131	139	.051
5	Doubler (RH side only)	130	R	.064 24S-T0 Alclad
6	Channel		NR	.040 24S-T0 Alclad
7	Angle	131	139	.040
8	Doubler		NR	.188 24S-T86 Alclad
9	Strip		NR	.062 3S-½H Alum. Alloy
10	Fillet	130	135, 136, 137	.040 24S-T0 Alclad
11	Door (RH side only)	130	NR	.040 24S-T1 Alclad

NOTES: All material 24S-T Alclad except as noted.
Items not indicated are not repairable.
NR indicates non-repairable; R indicates items recommended for replacement.

Key to Figure 38

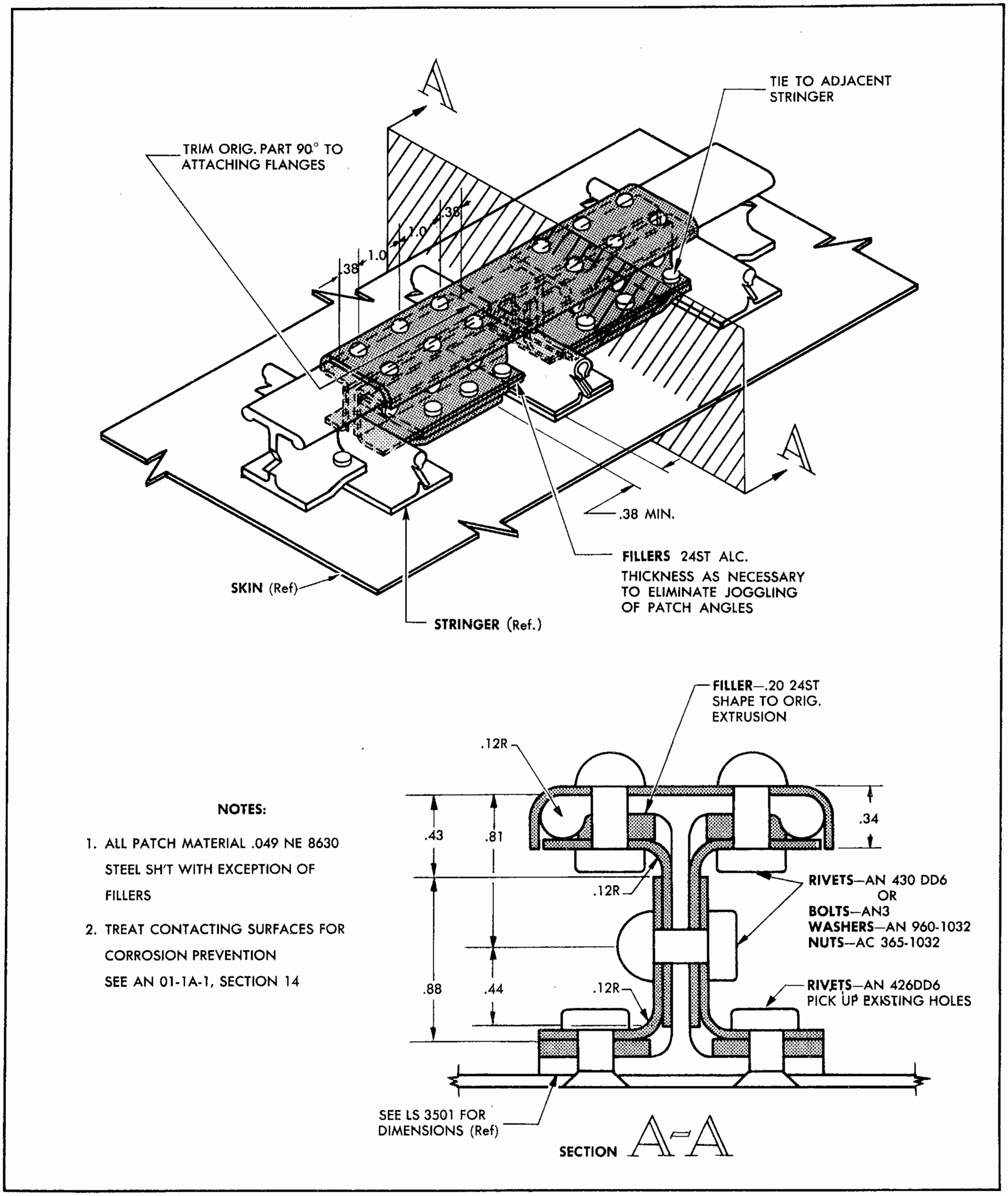


Figure 39 — Former Repair — Extruded

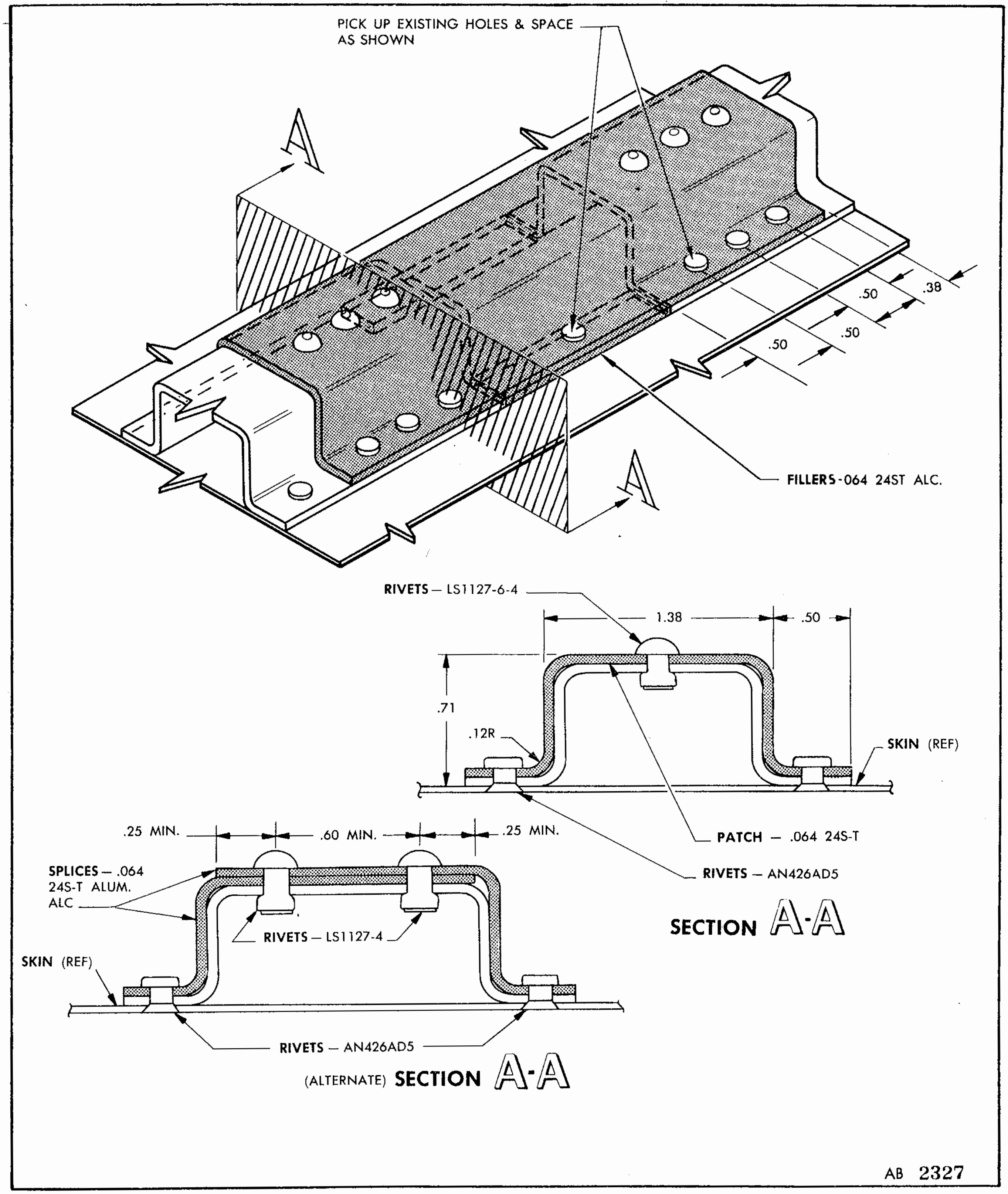
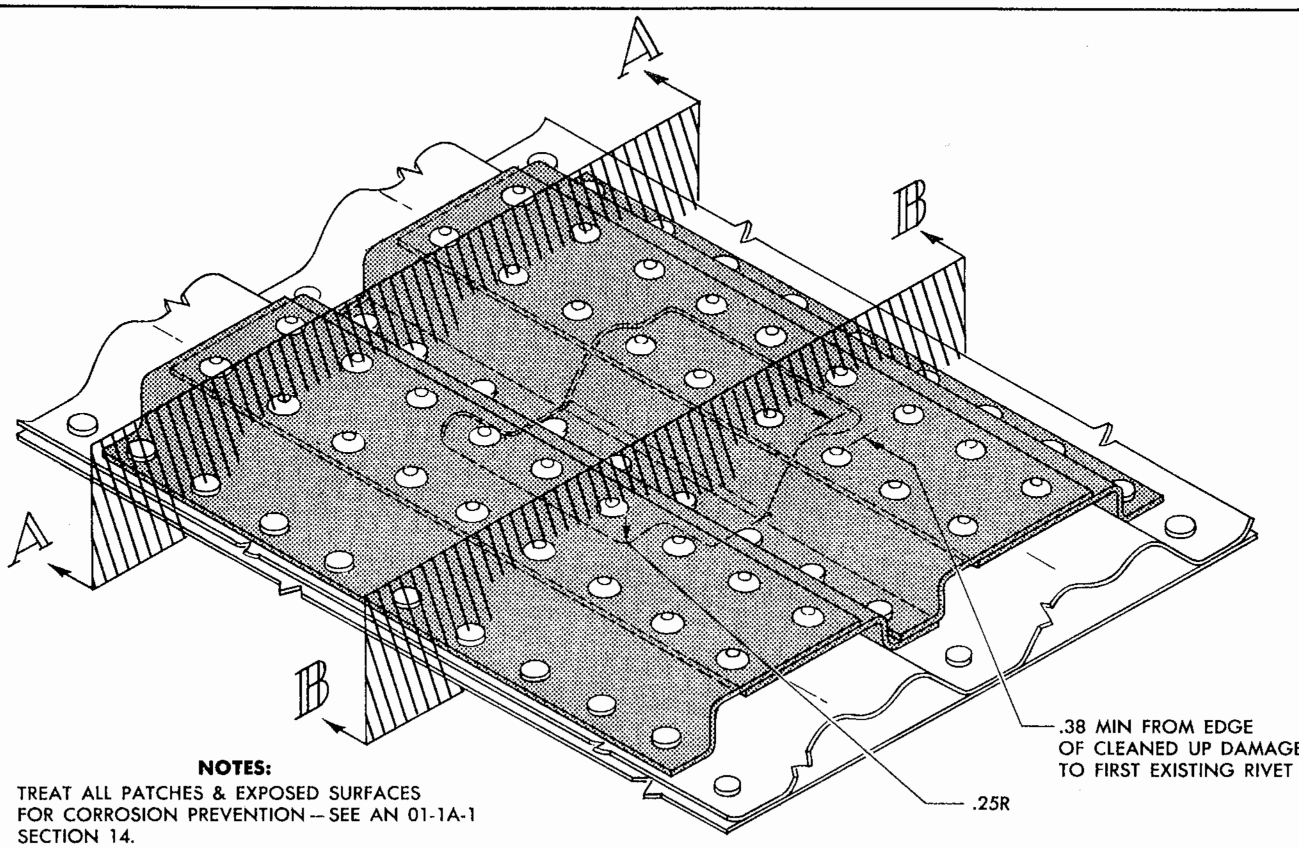
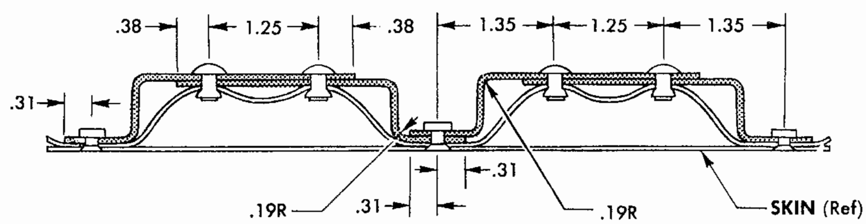


Figure 40 — Former Repair — Sheet Metal

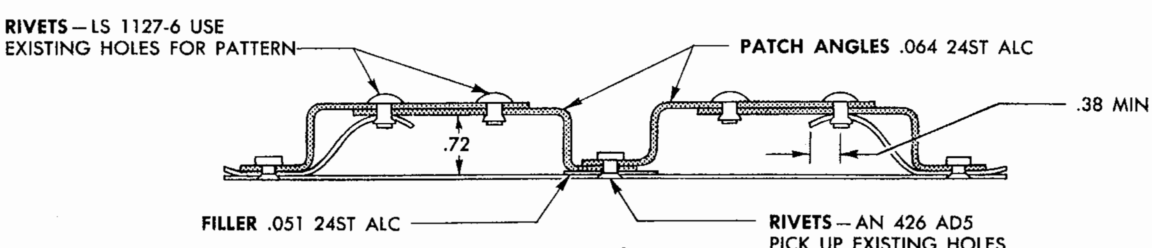


NOTES:

1. TREAT ALL PATCHES & EXPOSED SURFACES FOR CORROSION PREVENTION—SEE AN 01-1A-1 SECTION 14.
2. RIVETS MUST NOT EXTEND INTO RADII
3. MILL RIVETS FLUSH WITH SKIN LINE—SEE SECTION I, PARAGRAPH 14.
4. RESTORE ORIGINAL FINISH AS PER SECTION I, PARAGRAPH 24.



SECTION A-A



SECTION B-B

Figure 40A — Corrugation Repair — Wing Aft Inboard

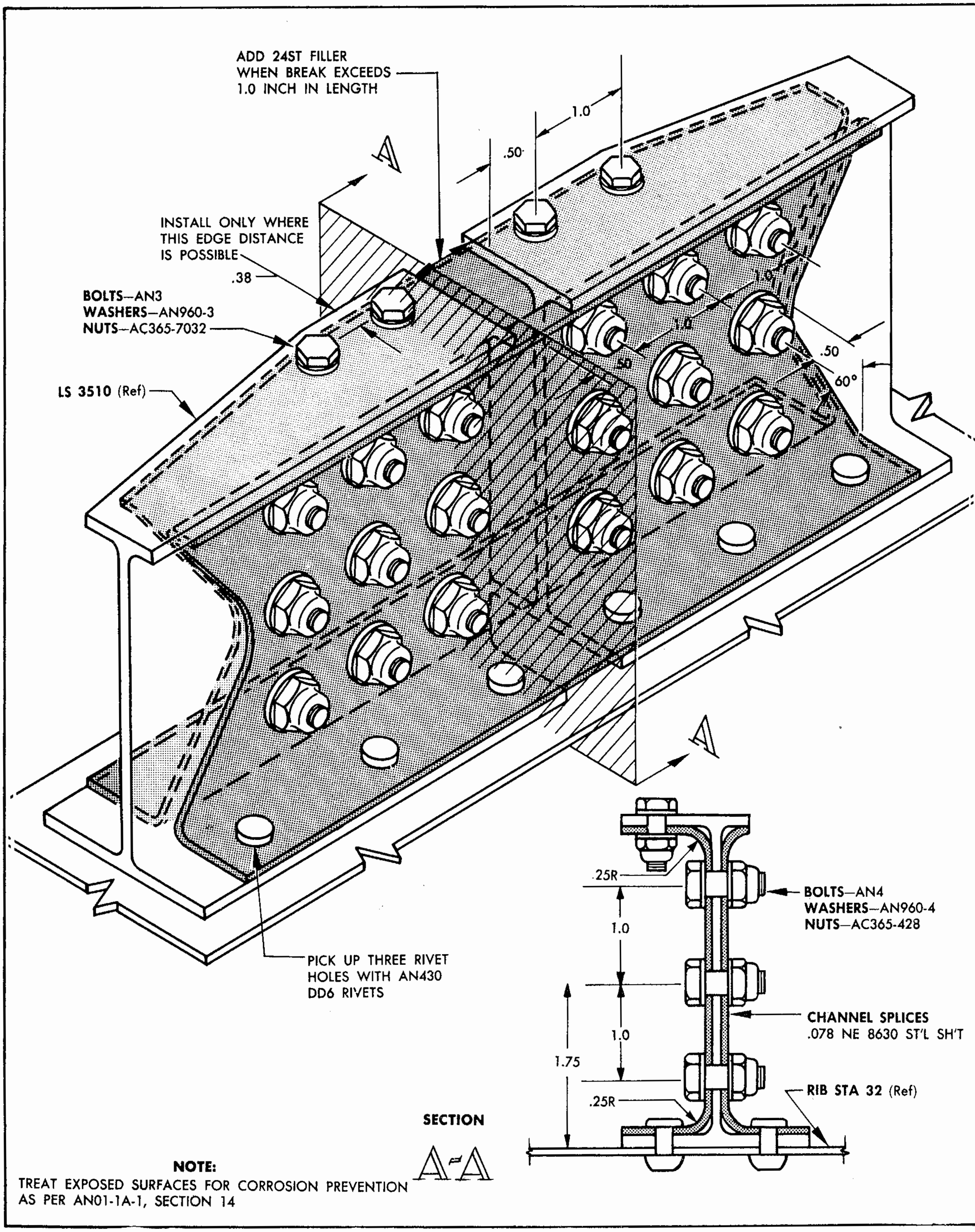
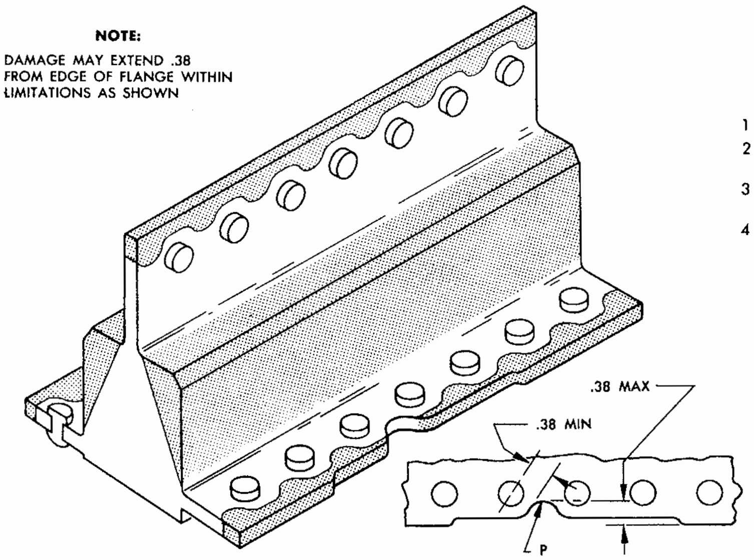


Figure 41 — Drag Strut Stiffener Repair

NOTE:
DAMAGE MAY EXTEND .38 FROM EDGE OF FLANGE WITHIN LIMITATIONS AS SHOWN



NOTES:

1 ONLY DAMAGE IN SHADED AREAS IS NEGLIGIBLE
2 DAMAGE MUST BE CLEANED UP TO THE MINIMUM RADII INDICATED IN VIEW A-A. SAND OUT ALL FILE MARKS.
3 STRAIGHTEN ALL BENT FLANGES. APPLY GRADUAL FORCE AND CHECK FOR CRACKS.
4 CLEANED UP CROSS-SECTIONAL AREA REMOVED, MUST NOT EXCEED 7 PERCENT OF TOTAL CROSS-SECTIONAL CAP AREA AT THE POINT AT WHICH THE DAMAGE OCCURS.

SAMPLE CALCULATION:

1 ASSUME THAT FRONT LOWER BEAM CAP FLANGE HAS BEEN DAMAGED AT WING STATION 45 AND CLEANED UP AS SHOWN IN VIEW A-A.
2 THE MAXIMUM AMOUNT OF CROSS-SECTIONAL AREA REMOVED IS AT POINT P. IF THIS DEPTH MEASURES .30 INCH AND THE FLANGE THICKNESS IS .20 THEN THE CROSS-SECTIONAL AREA REMOVED IS .2 x .3 OR .06 SQ IN.
3 THE TOTAL CROSS-SECTIONAL AREA OF THE CAP AT WING STATION 45 IS 3.62 SQ IN.

NOTE:
CROSS-SECTIONAL AREAS ARE DETERMINED FROM THE CHART BELOW
SEVEN PERCENT OF THIS AREA IS 3.62 x .07 = .254 SQ IN.

4 THE DAMAGE IS NEGLIGIBLE AS THE AREA REMOVED (.06 SQ IN) DOES NOT EXCEED 7 PERCENT OF THE CAP AREA (.254 SQ IN)

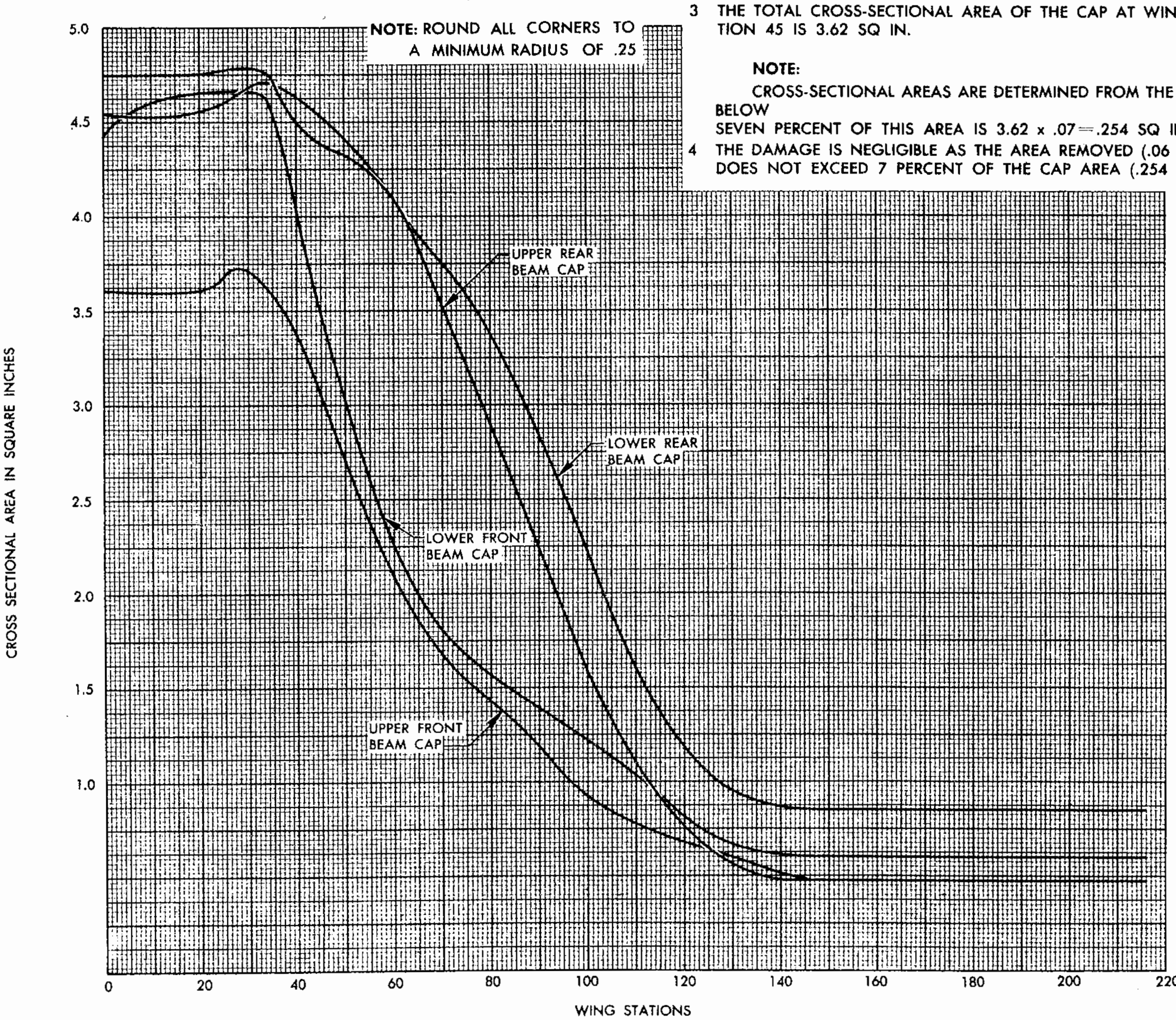
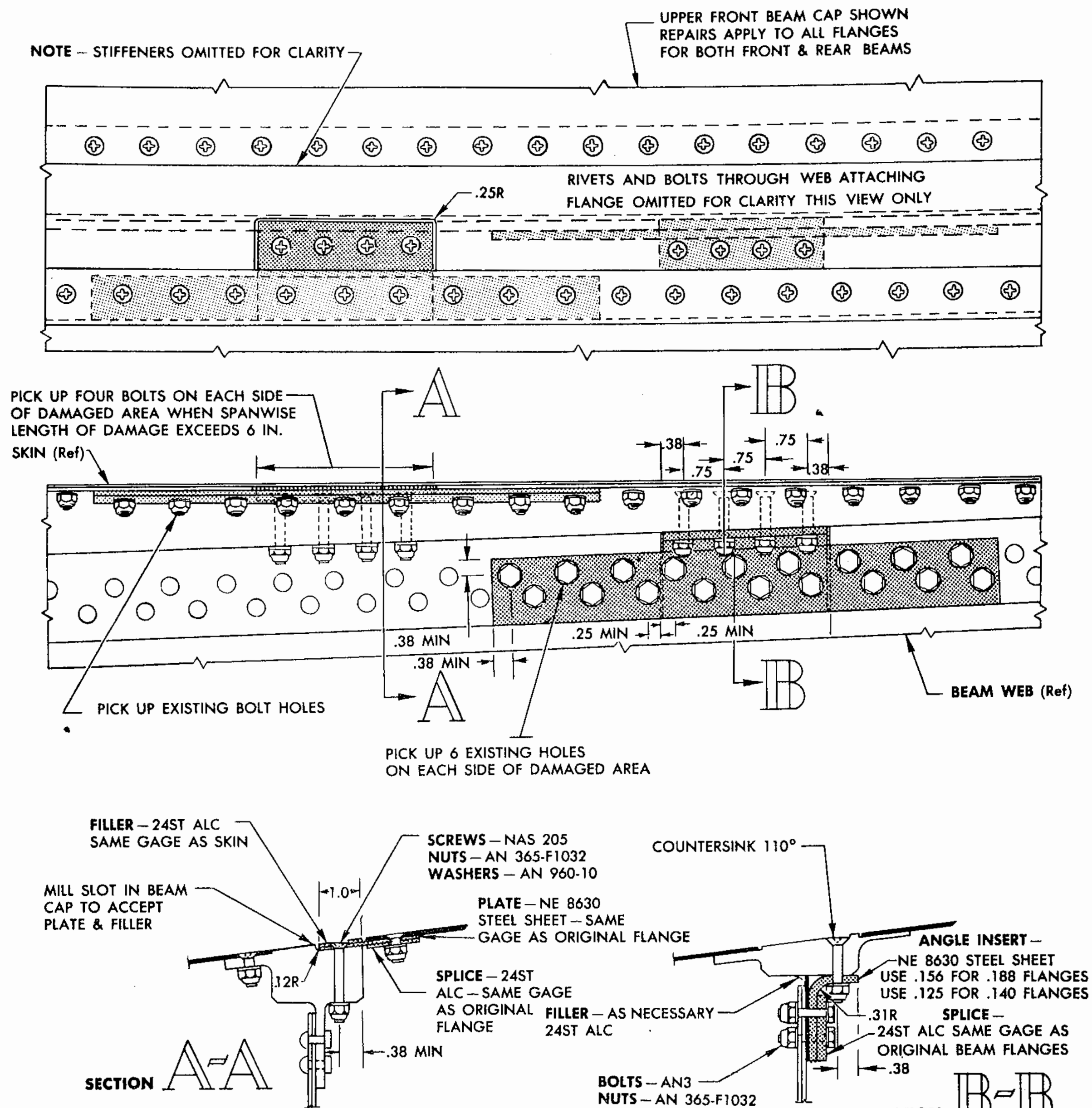


Figure 42 — Negligible Damage — Front and Rear Beam Caps

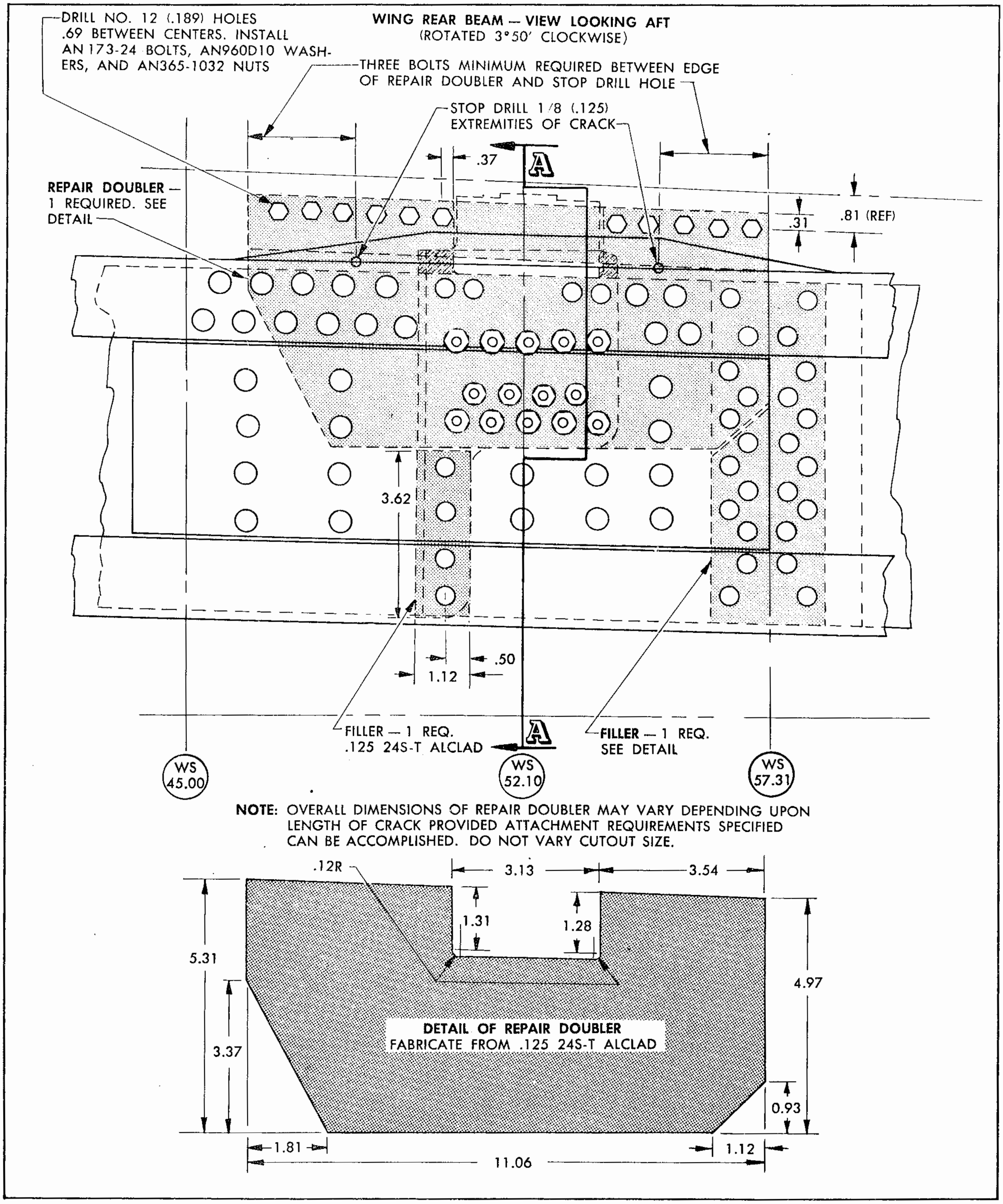


NOTES

1. BEAM CAP FLANGE DAMAGE MUST BE CLEANED UP 90° TO FLANGE WITH SMOOTH CORNER RADII AS SHOWN.
2. REPAIR OF SKIN ATTACHING FLANGE REQUIRES BEAM CAP TO BE NOTCHED TO ACCEPT ATTACHING PLATE AND SKIN FILLER. USE A POWER GRINDER OR PORTABLE MILL WITH POSITIVE DEPTH SETTING TO PROVIDE A FLAT SEAT AND GOOD BEARING SURFACE FOR ATTACHING PLATE.
3. GRIND WASHERS, IF NECESSARY, TO PROVIDE POSITIVE BEARING FOR BOLT HEADS AND NUTS.
4. REPAIR THE FORWARD FLANGE OF THE UPPER FRONT SPAR CAP AS FOLLOWS:
   A. FABRICATE A DOUBLER PLATE OF .051 24S-T ALCLAD WITH ONE DIMENSION 3 TIMES THE LENGTH OF THE FLANGE CUT-OUT AND THE OTHER DIMENSION EXTENDING FAR ENOUGH FORWARD OF THE SPAR CAP TO PICK UP 3 ROWS OF RIVETS.
   B. CUT OFF THOSE PORTIONS OF THE INNER SKIN CORRUGATIONS THAT MATE WITH THE LOWER SURFACE OF THE UPPER SPAR CAP AND INTERFERE WITH THE DOUBLER PLATE.
   C. INSTALL DOUBLER PLATE SO THAT 1/3 OF DOUBLER EXTENDS ON EACH SIDE OF THE FLANGE CUTOUT. A MINIMUM OF 3 SCREWS MUST BE PICKED UP IN EACH 1/3 SECTION.
   D. ADD 24S-T FILLER PLATES (SAME GAGE AS ORIGINAL) BETWEEN THE CORRUGATIONS AT THE RIVETS ROWS TO PROVIDE FLUSHNESS WITH THE DOUBLER PLATE.
5. TREAT EXPOSED AND CONTACTING SURFACES FOR CORROSION PREVENTION AS PER AN-01-1A-1, SECTION 14.
6. RESTORE ORIGINAL FINISH AS PER SECTION 1, PARAGRAPH 24.

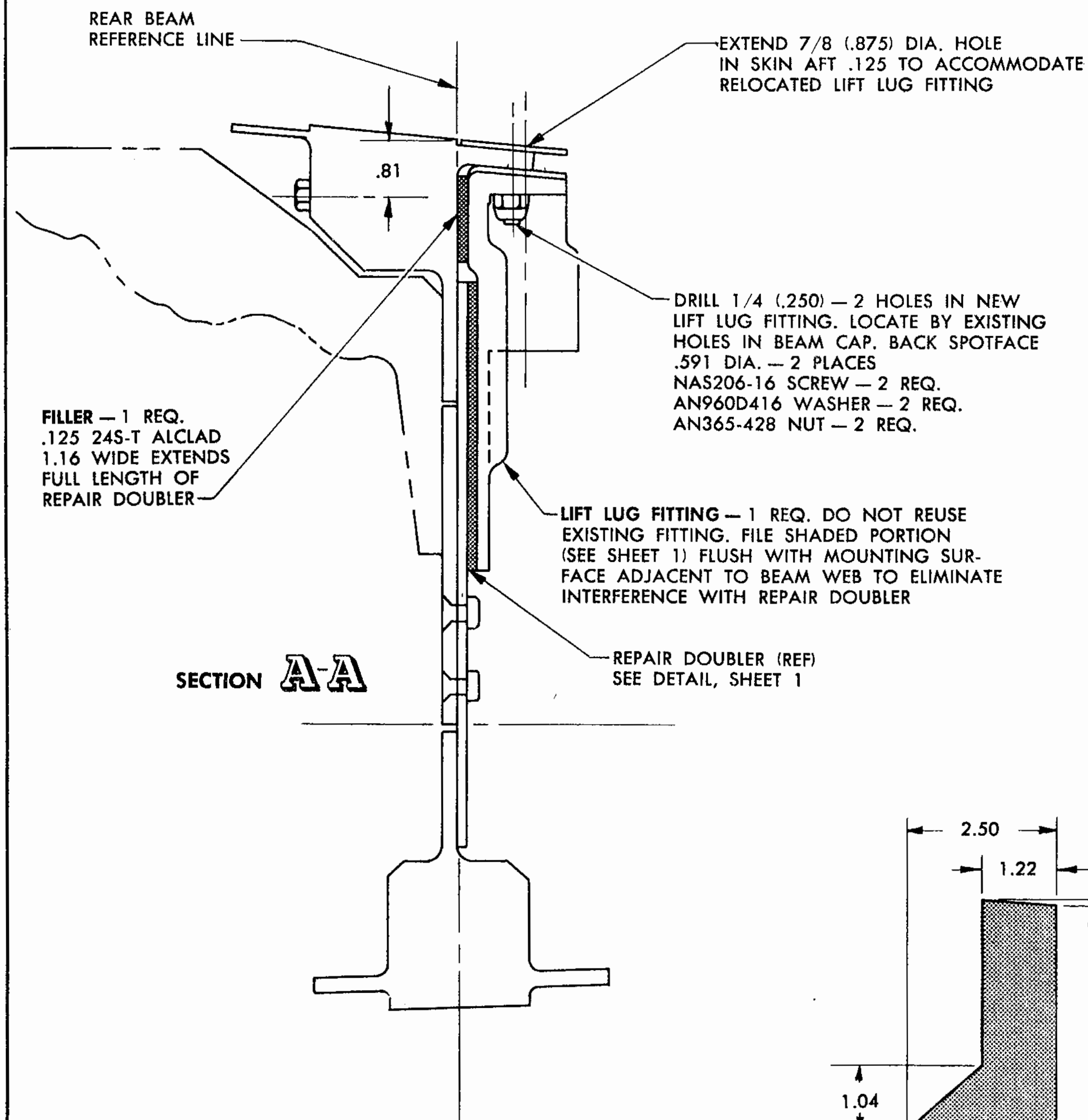
AB 7500

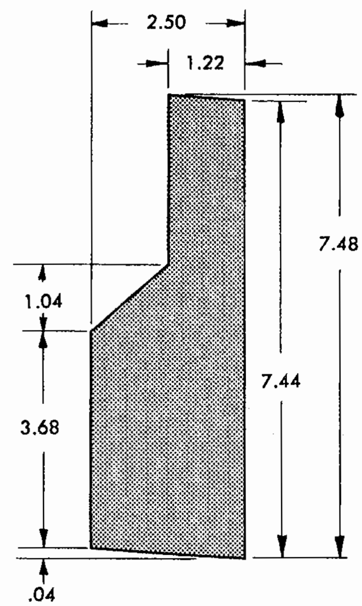
Figure 43 — Front and Rear Beam Cap Flange Repair



AB 7367

Figure 43A (Sheet 1 of 2 Sheets) — Repair to Rear Beam Upper Cap Web Attaching Flange at Landing Gear Trunnion





DETAIL OF FILLER
FABRICATE FROM .125 24S-T ALCLAD

NOTES:

1. PARTS NOT SPECIFICALLY CALLED OUT ARE EXISTING MEMBERS
2. DRILL ATTACHMENT HOLES THROUGH ADDED AND REPLACED PARTS LOCATED FROM EXISTING HOLES IN STRUCTURE
3. PICK UP EXISTING ATTACHMENTS INDICATED ON SHEETS 1 AND 2 USING SAME TYPES AND SIZES OF BOLTS, SCREWS, AND RIVETS ALLOWING FOR ADDED THICKNESS OF REPAIR MEMBERS
4. REPLACE RIVETS WITH RIVETS — DO NOT SUBSTITUTE BOLTS OR SCREWS
5. REPAIR OF LEFT SIDE SHOWN — REPAIR OF RIGHT SIDE OPPOSITE

Figure 43A (Sheet 2 of 2 Sheets) — Repair to Rear Beam Upper Cap Web Attaching Flange at Landing Gear Trunnion

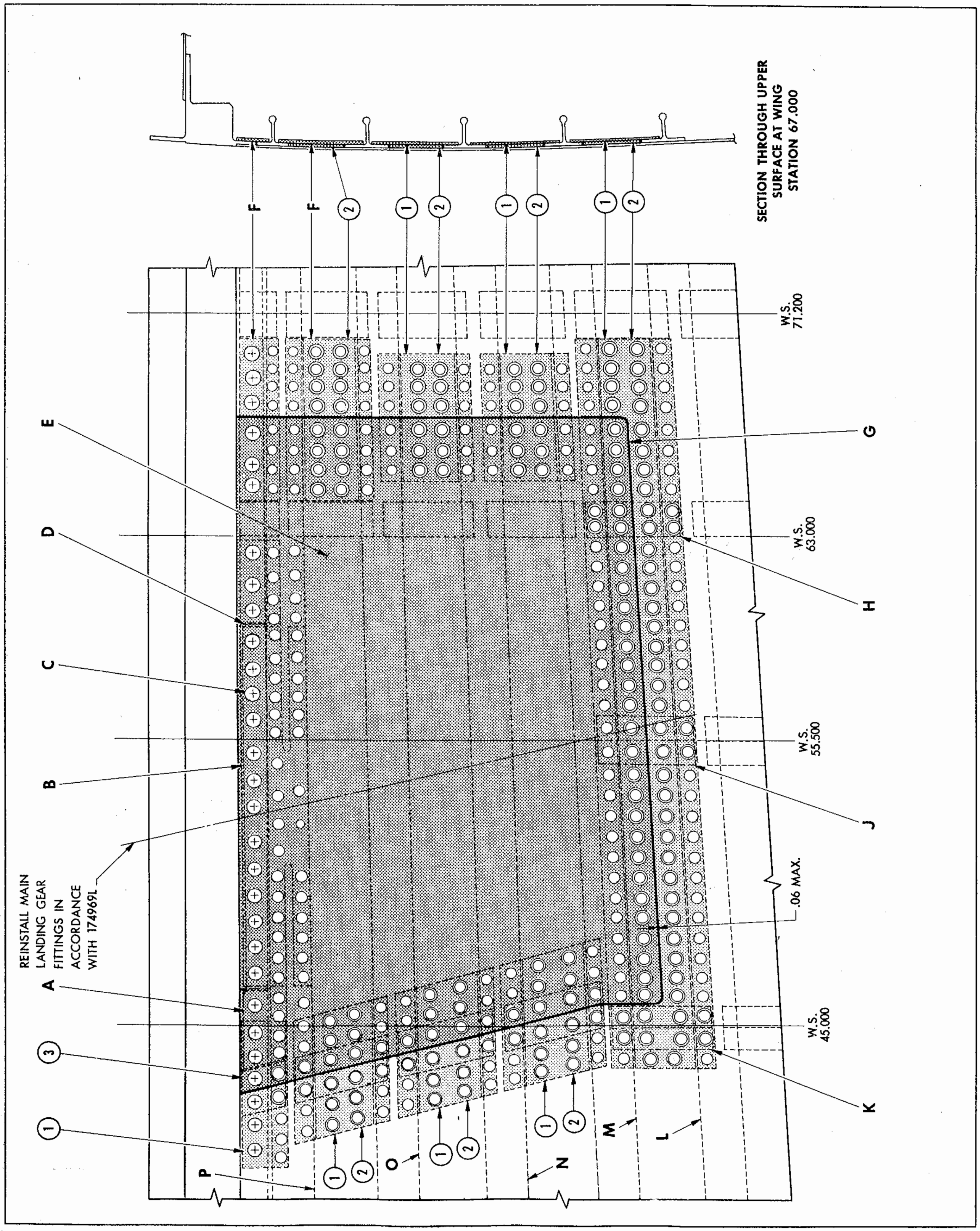


Figure 43B (Sheet 1 of 3 Sheets) — Repair of Wing Upper Surface and Rear Beam Skin Attachment Flange

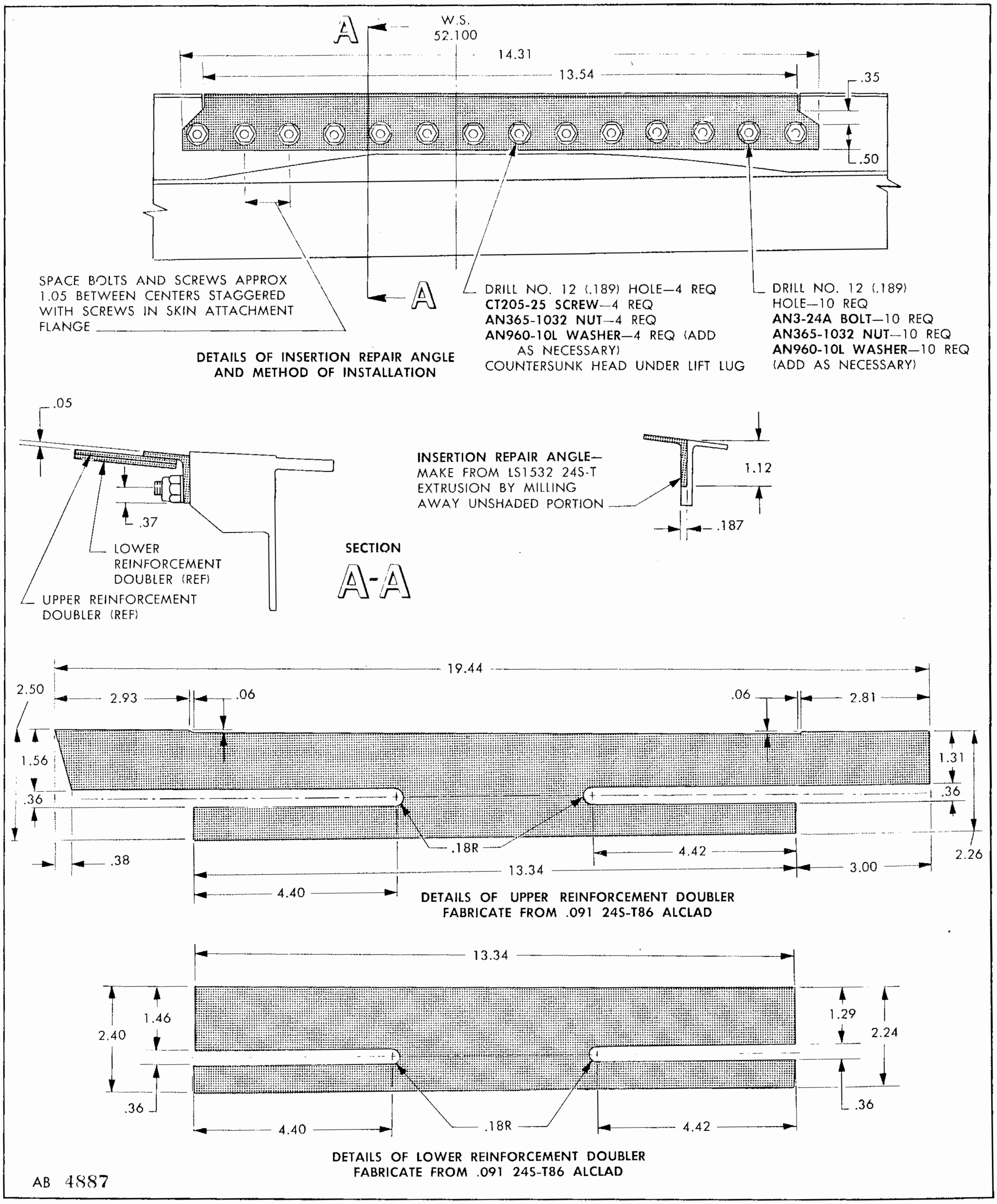
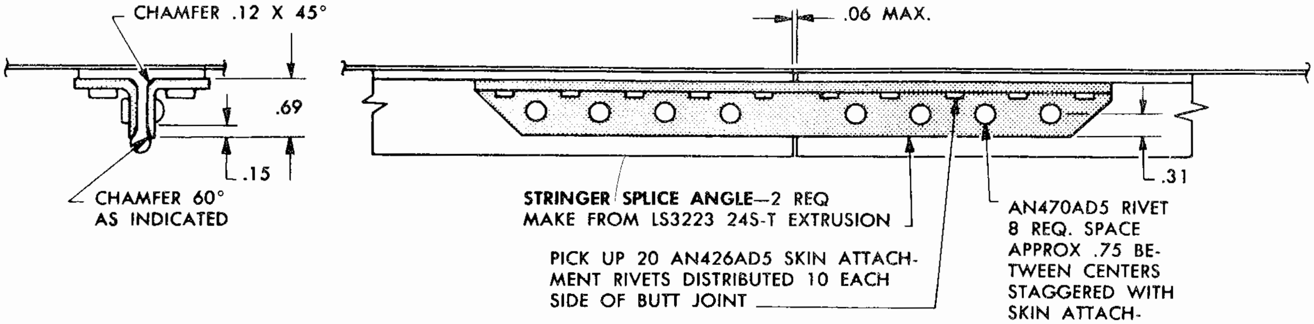


Figure 43B (Sheet 2 of 3 Sheets) — Repair of Wing Upper Surface and Rear Beam Skin Attachment Flange



DETAILS OF STRINGER SPLICE

REMOVE DAMAGED PORTION OF STRINGER TO POINTS ON EACH SIDE OF SKIN REPAIR AREA CONVENIENT FOR INSTALLATION OF SPLICE ANGLES. INSERTION STRINGER IS FABRICATED FROM LS3702 24S-T84 EXTRUSION. ATTACH INSERTION STRINGER TO STRUCTURE SAME AS ORIGINAL STRINGER

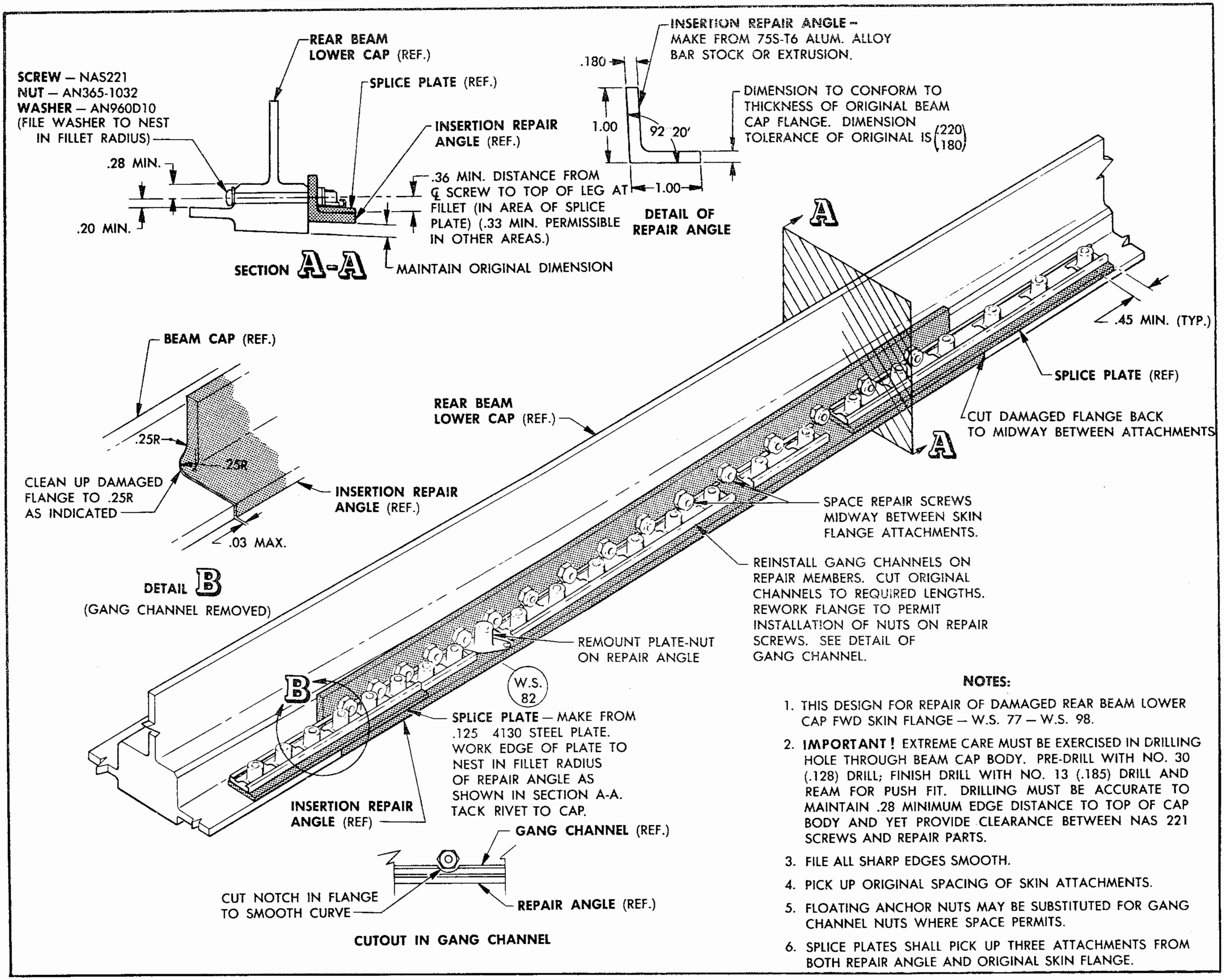
NOTES: (SEE SHEET I)

1. SKIN PATCH — .064 24S-T ALCLAD
2. FILLER — .091 24S-T ALCLAD. FIT FILLER BETWEEN SKIN AND SKIN PATCH
3. 174896 FORMER — REMOVE EXISTING FORMER. REPLACE WITH FORMER FABRICATED FROM LS3701 24S-T EXTRUSION (AGED TO 24S-T80 CONDITION) AND FORMED TO CONTOUR, BUT DO NOT JOGGLE FOR STRINGERS — SKIN FILLERS ELIMINATE NECESSITY FOR JOGGLES. FORMER IS LOCATED .064 LOWER TO ACCOMMODATE SKIN PATCH.
4. USE EXISTING ATTACHMENT HOLES WHERE POSSIBLE, EXCEPT WHERE SPECIFICALLY DIMENSIONED, SCALE ATTACHMENT DISTRIBUTION FROM THIS DRAWING. ATTACHMENT CODE USED IS AS FOLLOWS:
   ○ INDICATES AN426AD5 RIVET (.31 E.D. MIN.)
   ◎ INDICATES AN426DD6 RIVET (.38 E.D. WHERE POSSIBLE — .31 E.D. MIN.)
   ⊕ INDICATES CT205 SCREW (.38 E.D. WHERE POSSIBLE — .31 E.D. MIN.)
5. REPAIR OF LEFT SIDE SHOWN — REPAIR OF RIGHT SIDE OPPOSITE
6. PERFORM ALIGNMENT AND SYMMETRY CHECK ON AIRPLANE AND GEAR WHEN REPAIR IS COMPLETED — SEE SECTION I
7. OBSERVE .25 IN. CORNER RADII IN SKIN CUTOUT

A. UPPER REINFORCEMENT DOUBLER — SEE SHEET 2 FOR DETAILS
B. LOWER REINFORCEMENT DOUBLER — SEE SHEET 2 FOR DETAILS
C. CT205 SCREWS SPACED 1.05 BETWEEN CENTERS IN INSERTION ANGLE
D. INSERTION ANGLE FOR SKIN ATTACHMENT FLANGE OF 174874 SPAR CAP. TRIM AWAY DAMAGED PORTION OF BEAM CAP AS INDICATED AND FIT REPAIR ANGLE IN PLACE. SEE SHEET 2 FOR REPAIR ANGLE DETAILS
E. REINSTALL 174864-34 DOOR ASSEMBLY IN ACCORDANCE WITH 174864, SHEET 5
F. SKIN PATCH — .102 24S-T ALCLAD
G. SKIN INSERTION PANEL — .051 24S-T86 ALCLAD. TRIM AWAY DAMAGED SKIN AS INDICATED AND FIT INSERTION PANEL IN PLACE. ATTACH TO INTERNAL STRUCTURE IN ACCORDANCE WITH 174864.
H. 174930-14L RIB ASSEMBLY (REF). REWORK LEVEL OF SKIN ATTACHMENT FLANGE TO ACCOMMODATE SKIN PATCH AND FILLER
J. 174898L FORMER ASSEMBLY (REF). REWORK LEVEL OF SKIN ATTACHMENT FLANGE TO ACCOMMODATE SKIN PATCH AND FILLER
K. 174897L FORMER ASSEMBLY (REF). REWORK LEVEL OF SKIN ATTACHMENT FLANGE TO ACCOMMODATE SKIN PATCH AND FILLER
L. 174935-4 STRINGER (REF)
M. 174935-5 STRINGER (REF)
N. 174935-6 STRINGER (REF)
O. 174935-7 STRINGER (REF)
P. INSERTION MEMBER FOR 174935-8 STRINGER. MAKE FROM LS3702 24S-T84 EXTRUSION — SEE SHEET 2 FOR SPLICE DETAILS.

CB 7243
R38-19-2-1

Figure 43B (Sheet 3 of 3) — Repair of Wing Upper Surface and Rear Beam Skin Attachment Flange



NOTES:

1. THIS DESIGN FOR REPAIR OF DAMAGED REAR BEAM LOWER CAP FWD SKIN FLANGE — W.S. 77 — W.S. 98.
2. **IMPORTANT!** EXTREME CARE MUST BE EXERCISED IN DRILLING HOLE THROUGH BEAM CAP BODY. PRE-DRILL WITH NO. 30 (.128) DRILL; FINISH DRILL WITH NO. 13 (.185) DRILL AND REAM FOR PUSH FIT. DRILLING MUST BE ACCURATE TO MAINTAIN .28 MINIMUM EDGE DISTANCE TO TOP OF CAP BODY AND YET PROVIDE CLEARANCE BETWEEN NAS 221 SCREWS AND REPAIR PARTS.
3. FILE ALL SHARP EDGES SMOOTH.
4. PICK UP ORIGINAL SPACING OF SKIN ATTACHMENTS.
5. FLOATING ANCHOR NUTS MAY BE SUBSTITUTED FOR GANG CHANNEL NUTS WHERE SPACE PERMITS.
6. SPLICE PLATES SHALL PICK UP THREE ATTACHMENTS FROM BOTH REPAIR ANGLE AND ORIGINAL SKIN FLANGE.

Figure 43C — Wing Rear Beam Lower Cap Forward Skin Attachment Flange Repair

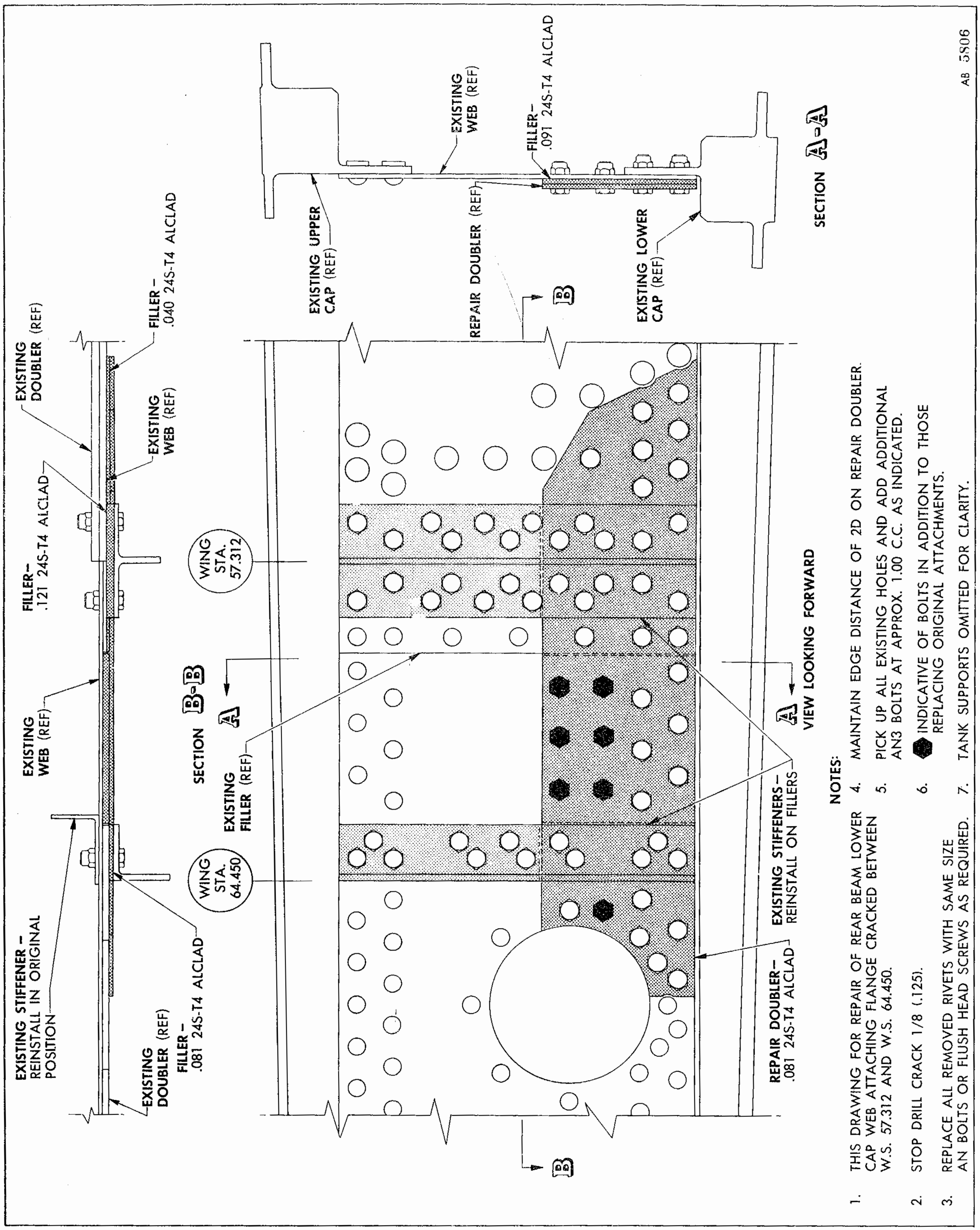


Figure 43D — Repair of Crack in Wing Rear Beam Lower Cap Web Attachment Flange

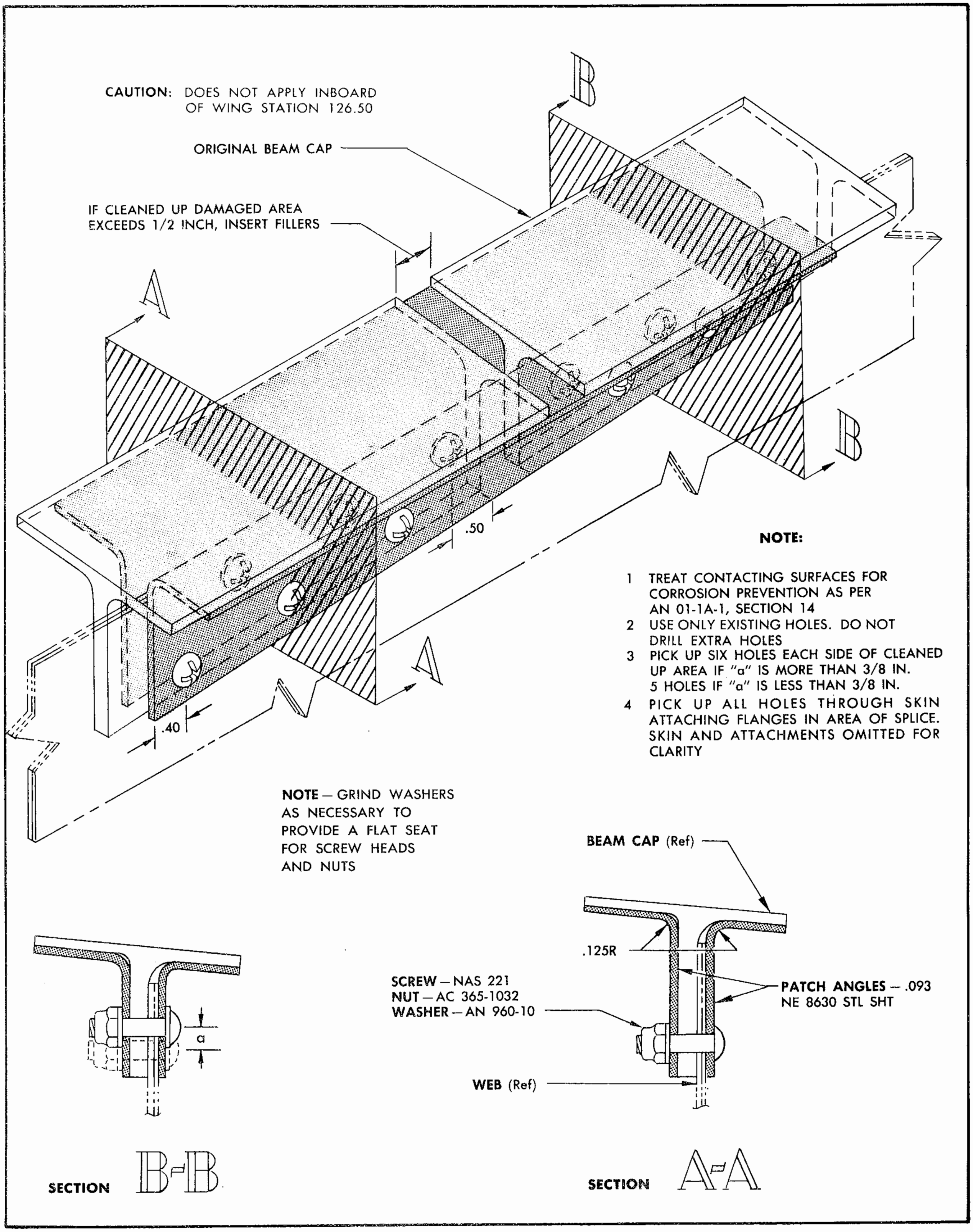


Figure 44 — Beam Cap Repair, Upper Front

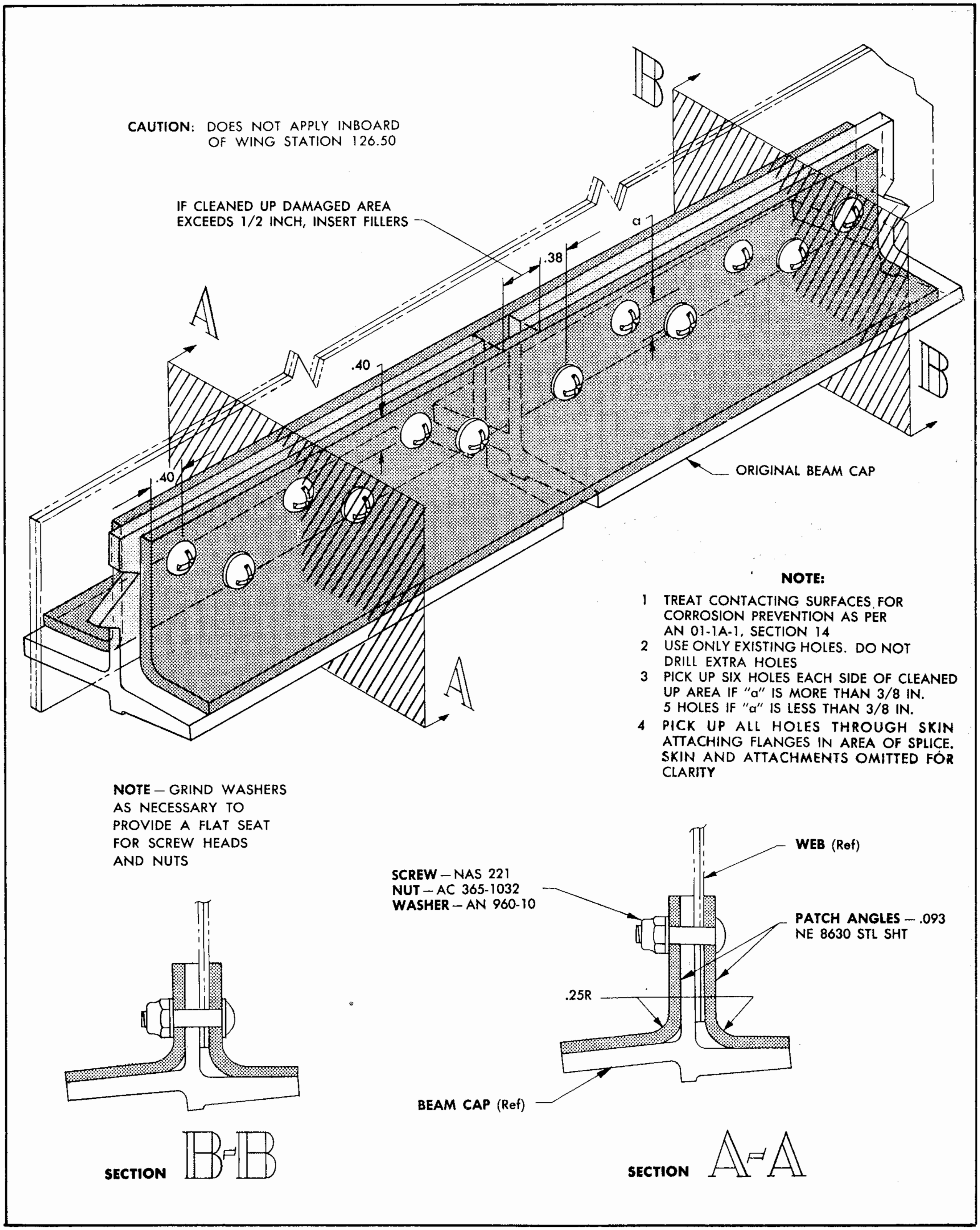


Figure 45 — Beam Cap Repair — Lower Front

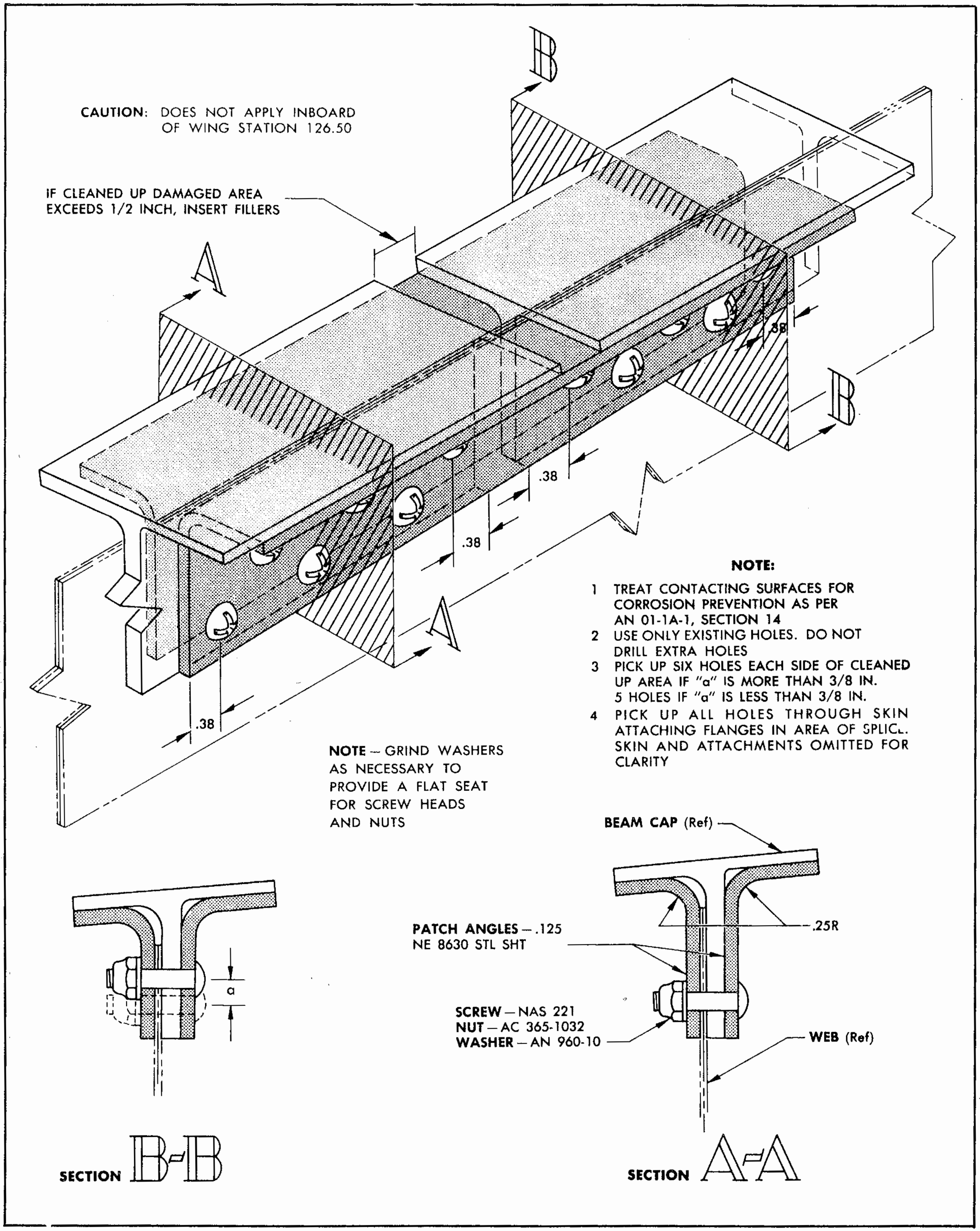


Figure 46 — Beam Cap Repair — Upper Rear

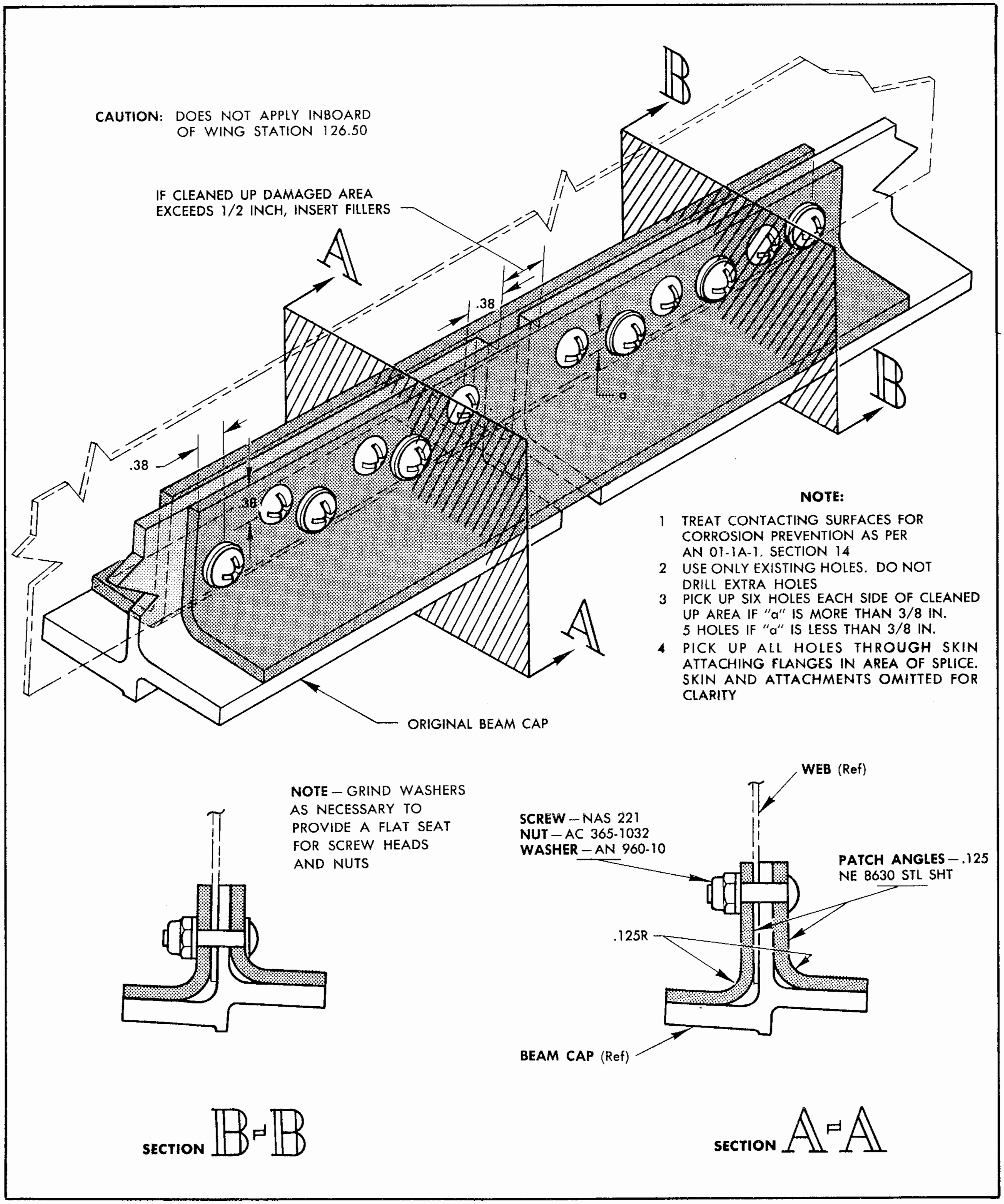
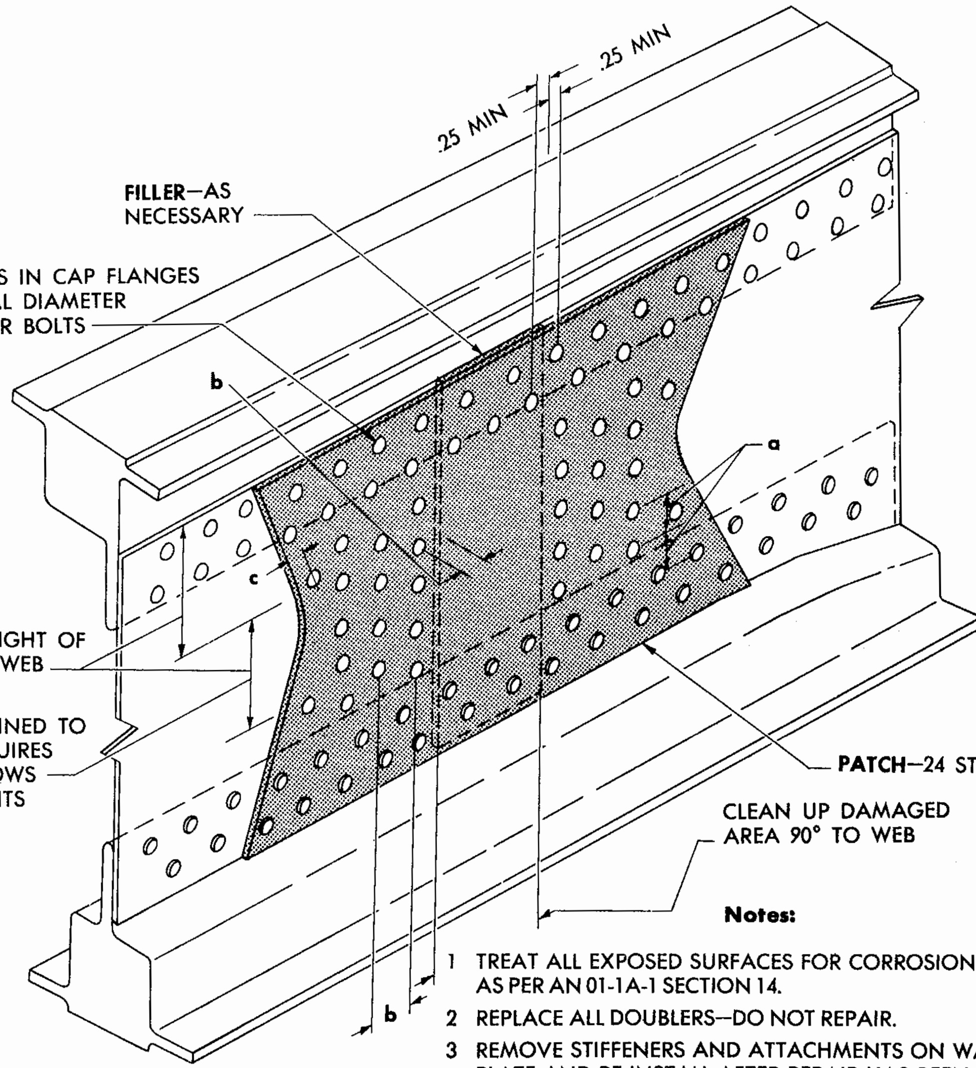


Figure 47 — Beam Cap Repair — Lower Rear



Notes:

1 TREAT ALL EXPOSED SURFACES FOR CORROSION PREVENTION AS PER AN 01-1A-1 SECTION 14.
2 REPLACE ALL DOUBLERS—DO NOT REPAIR.
3 REMOVE STIFFENERS AND ATTACHMENTS ON WAY OF PATCH PLATE AND RE-INSTALL AFTER REPAIR HAS BEEN COMPLETED—CO-ORDINATE MATING PARTS BY JOGGLING.

Web Gage	Patch Gage	Filler Gage	Attachment	a	b	c
.051	.064	.051	AN430AD6 Rivets	.88	.88	.50
.064	.072	.064	AN430 DD 6 Rivets	.88	.88	.50
.072	.081	.072	AN 3 Bolts AC 365-1032 Nuts AN960-10 Washers	.88	.88	.50
.125	.156	.125	AN 4 Bolts AC 365-424 Nuts AN960-416 Washers	1.12	1.12	.75

Figure 48 — Beam Web Repair

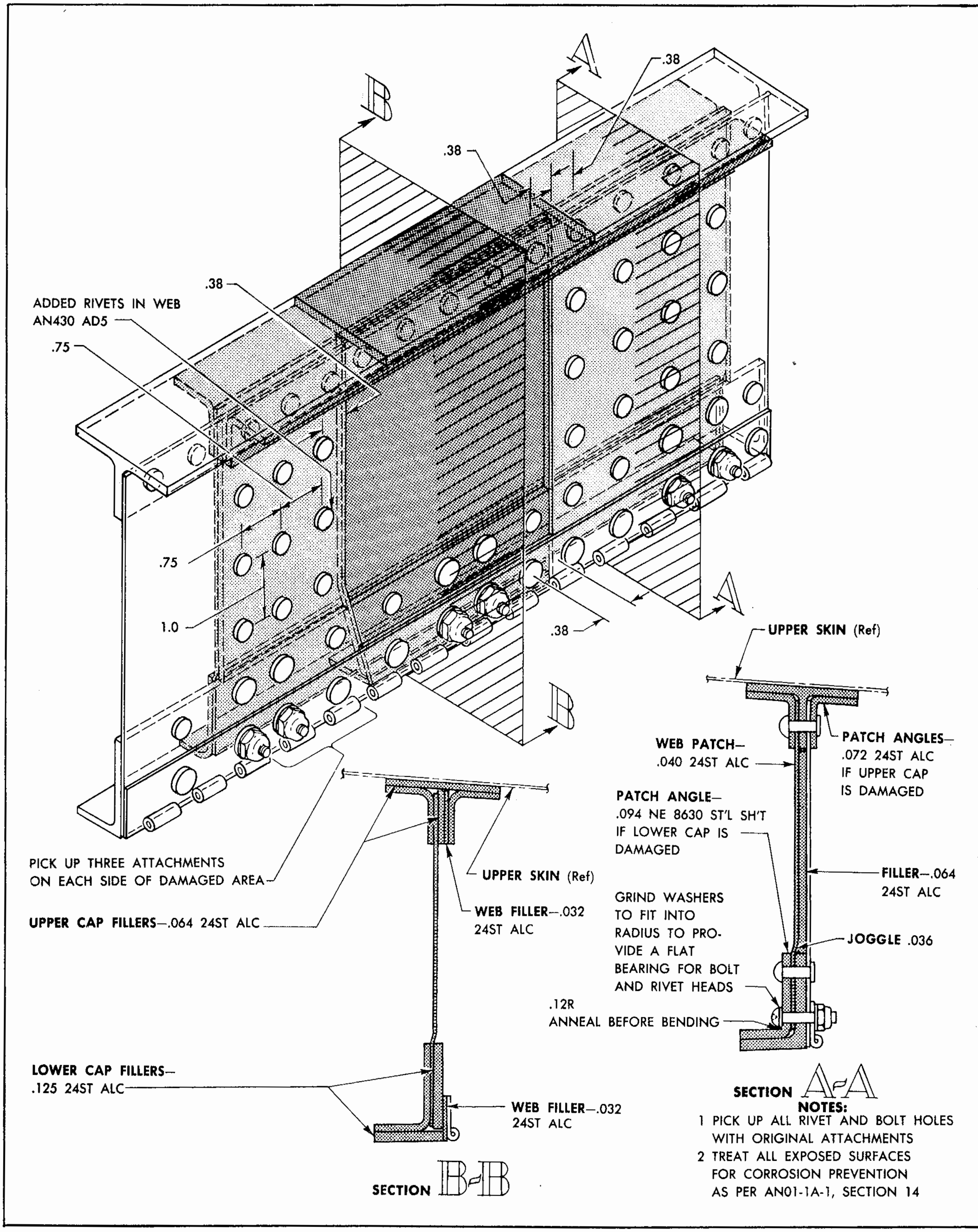


Figure 49 — Auxiliary Beam Repair

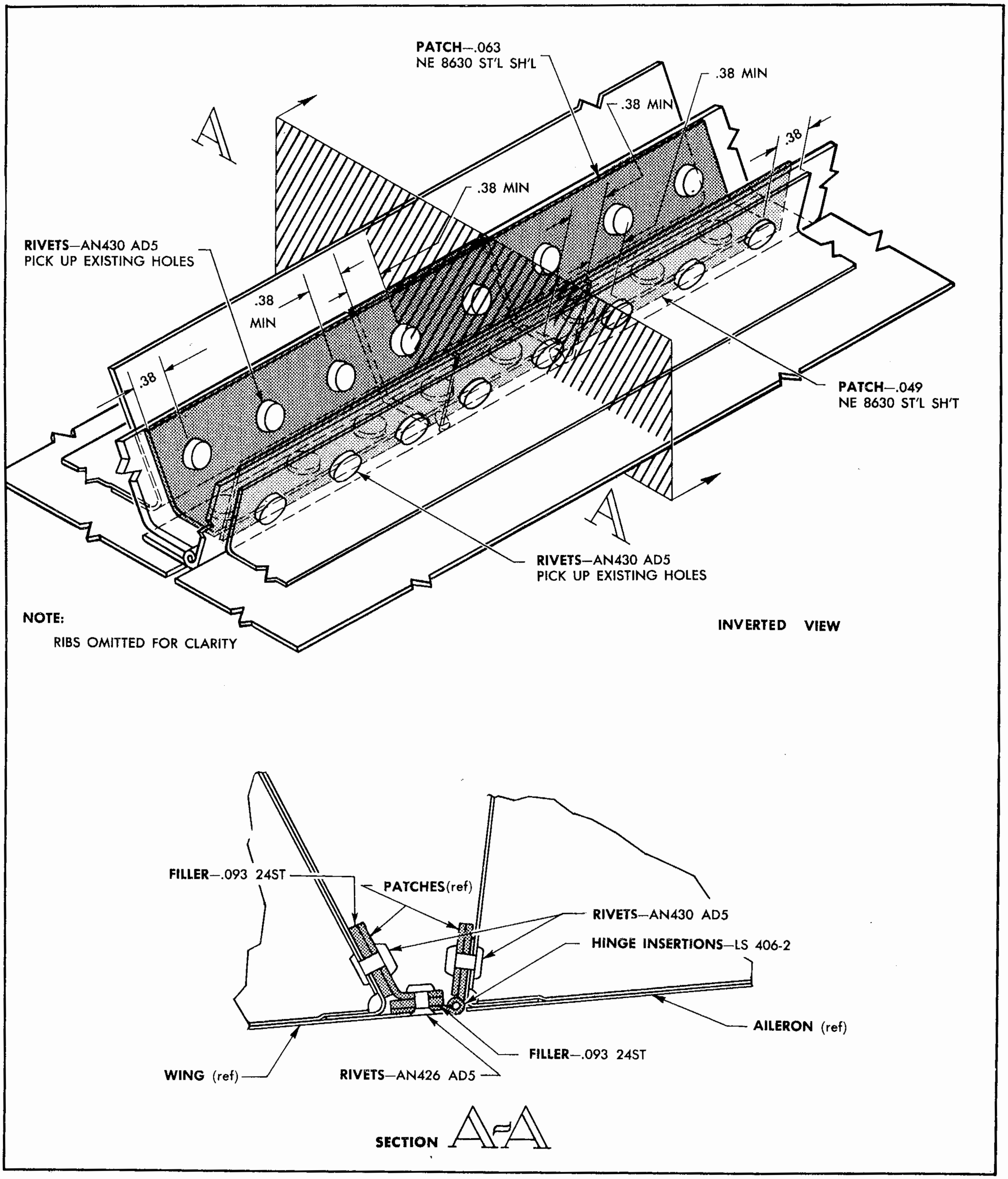


Figure 50 — Hinge Splice

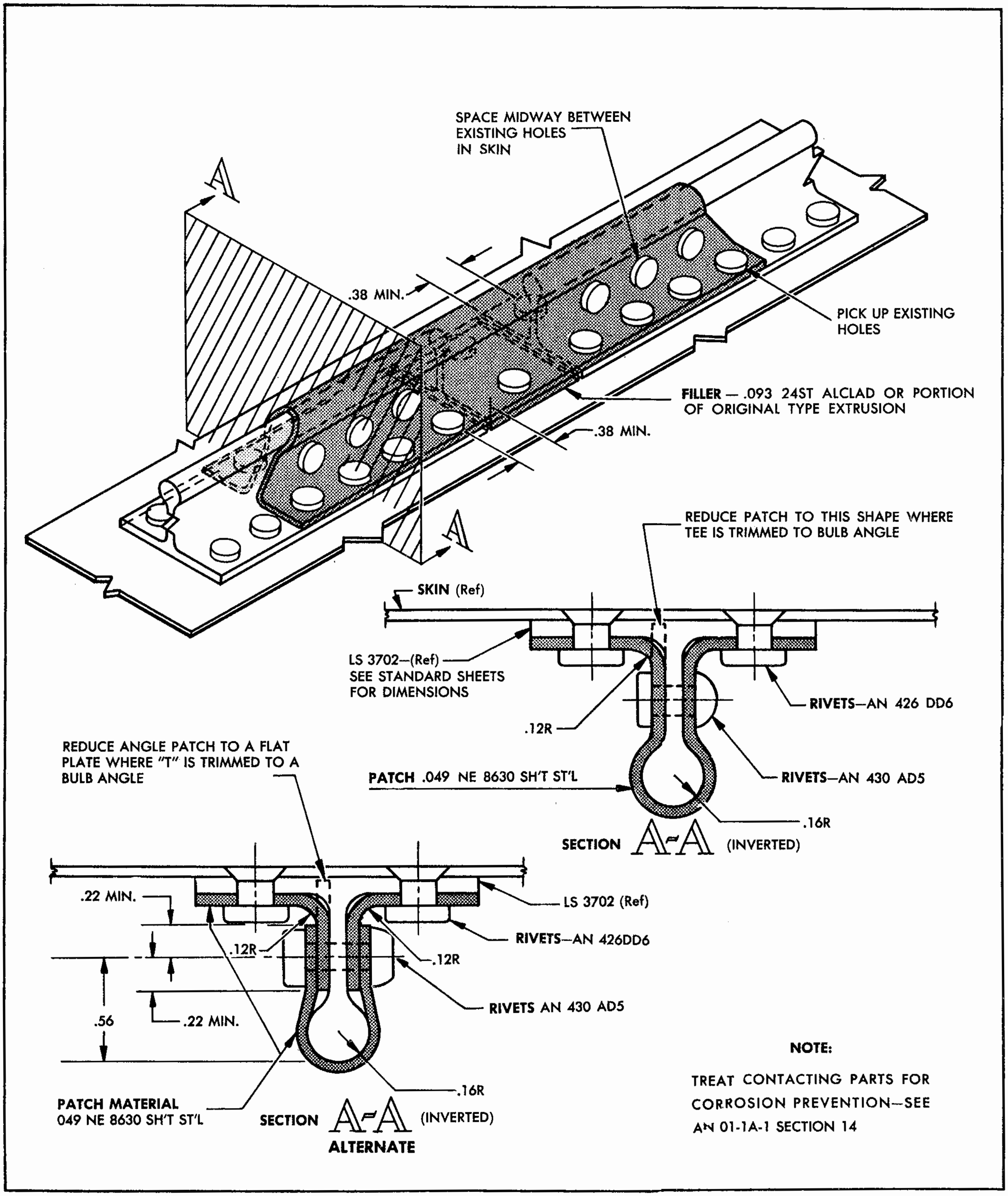


Figure 51 — Stringer Repair — Upper Surface

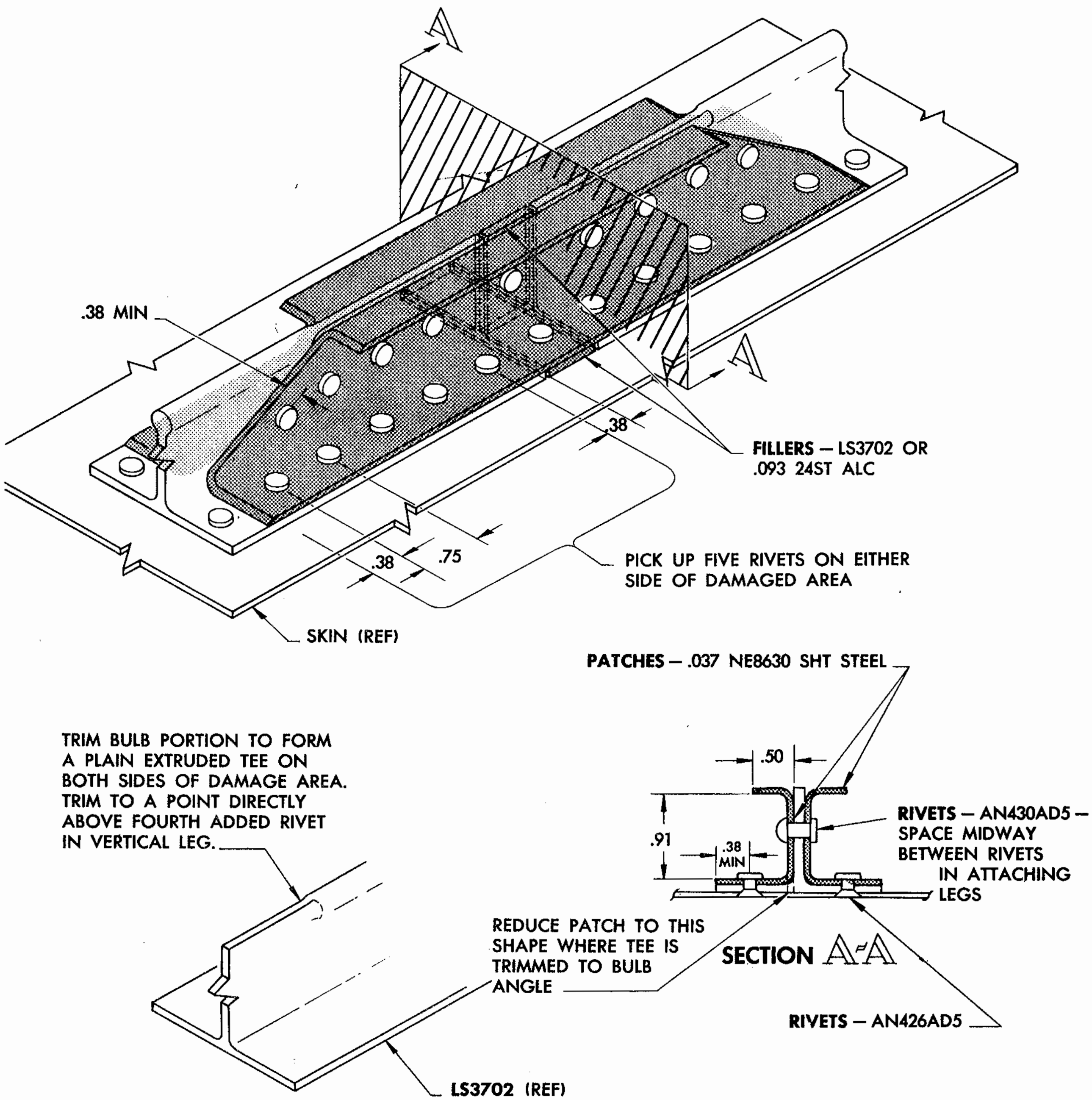


Figure 51A — Stringer Repair (Alternate) — Upper Surface

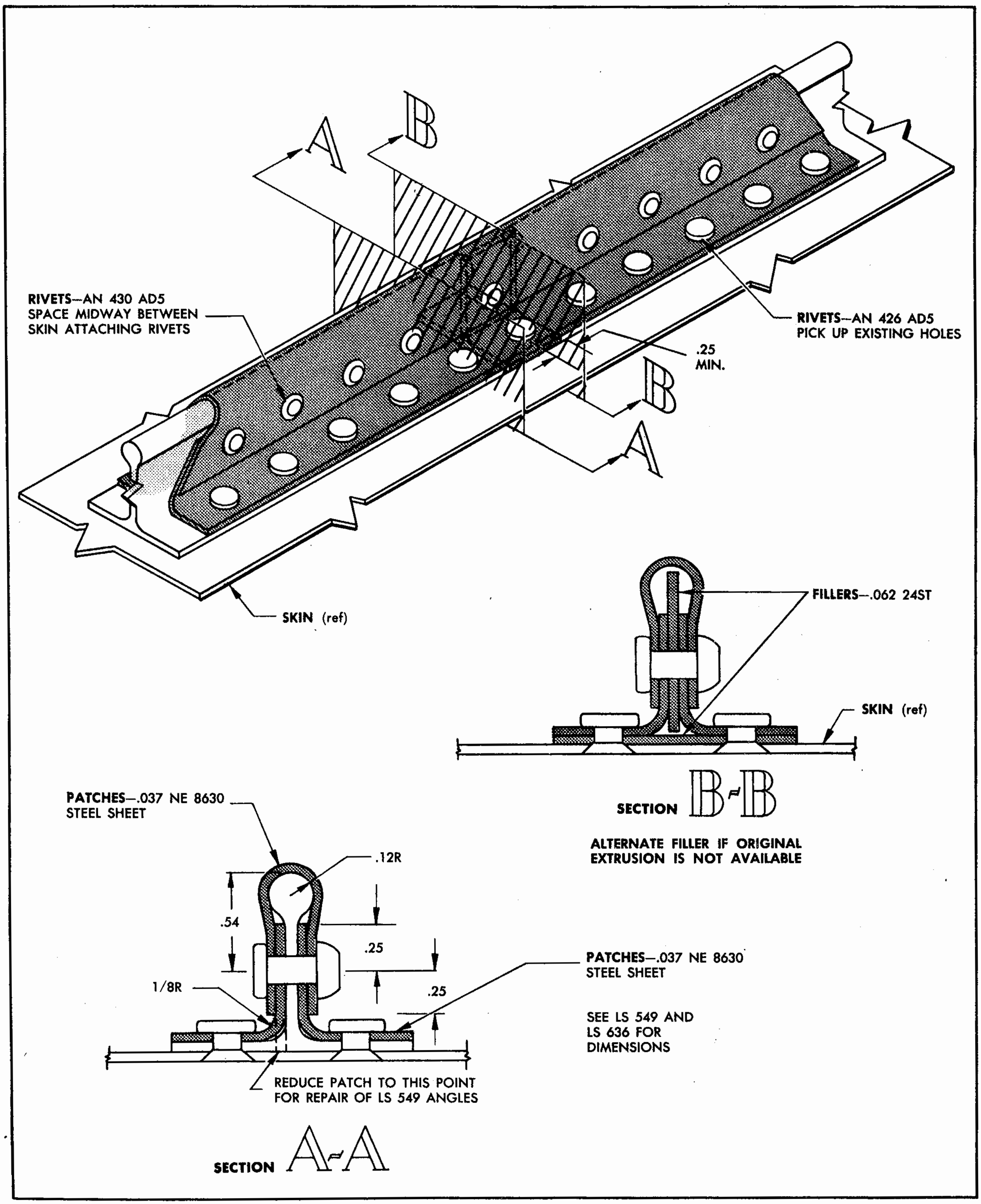
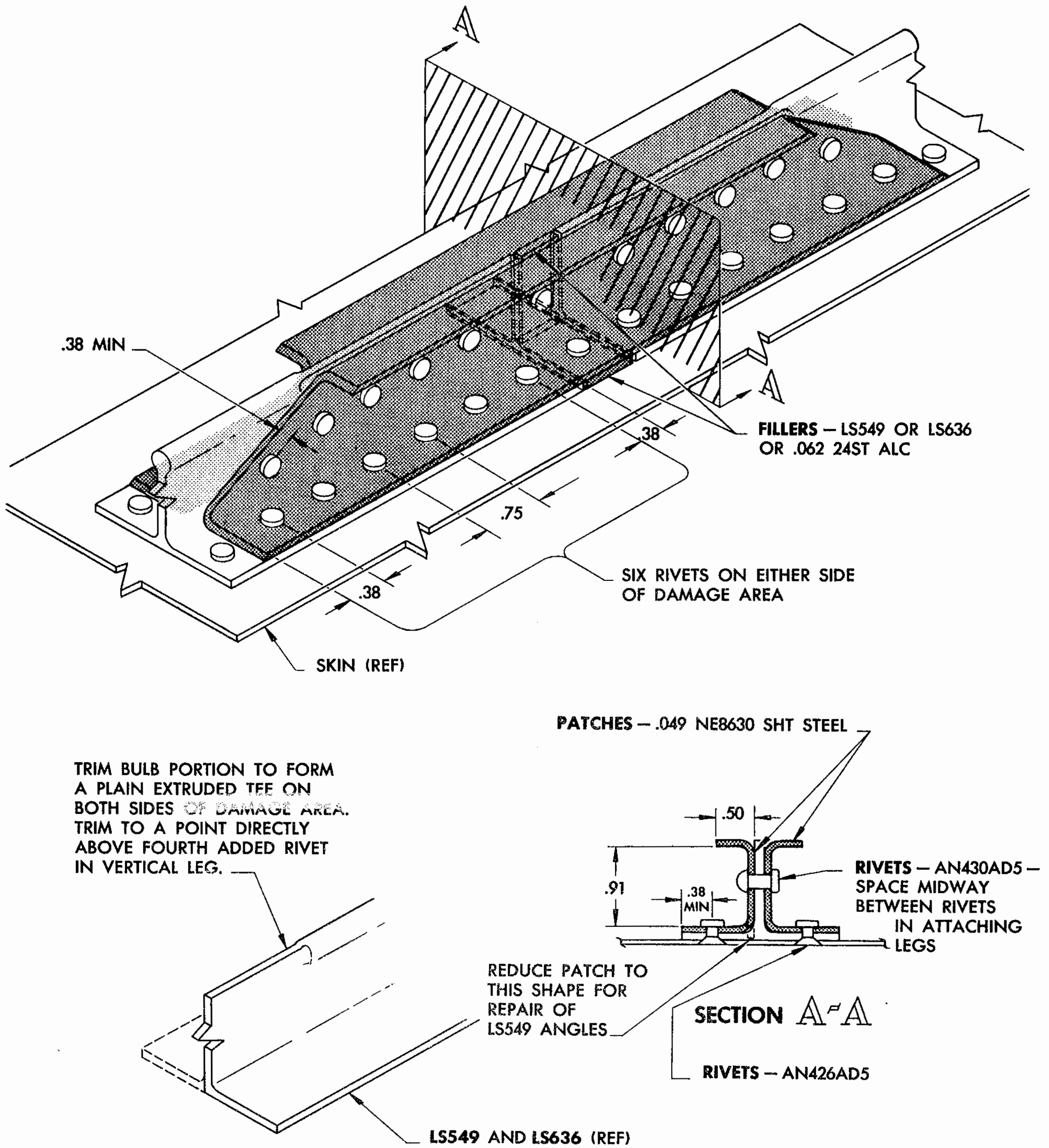


Figure 52 — Stringer Repair — Lower Surface



NOTE:
TREAT CONTACTING SURFACES FOR CORROSION PREVENTION — SEE AN-01-1A-1 SECTION 14

Figure 52A — Stringer Repair (Alternate) — Lower Surface

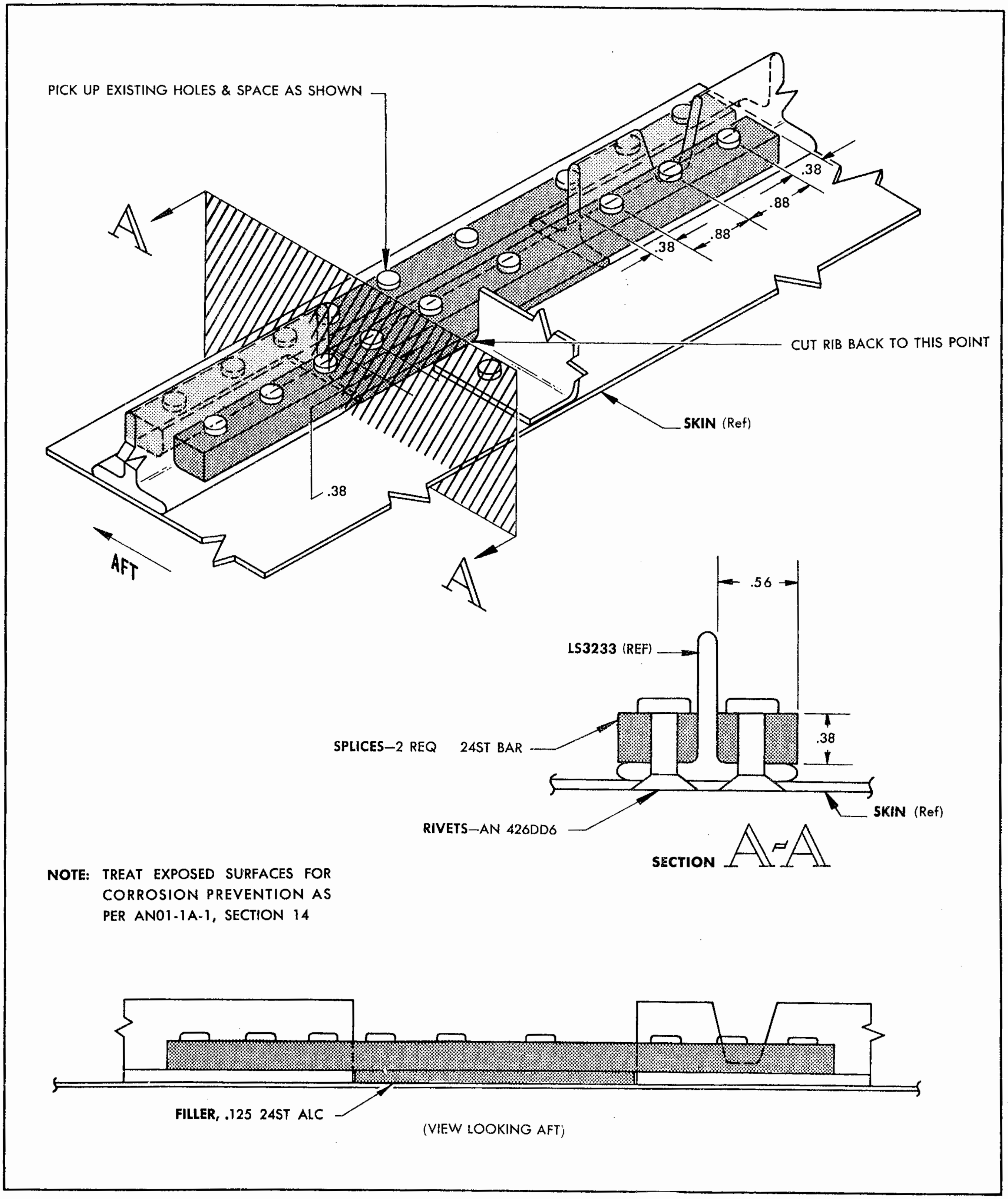


Figure 53 — Trailing Edge Stiffener Repair — Aft Inboard

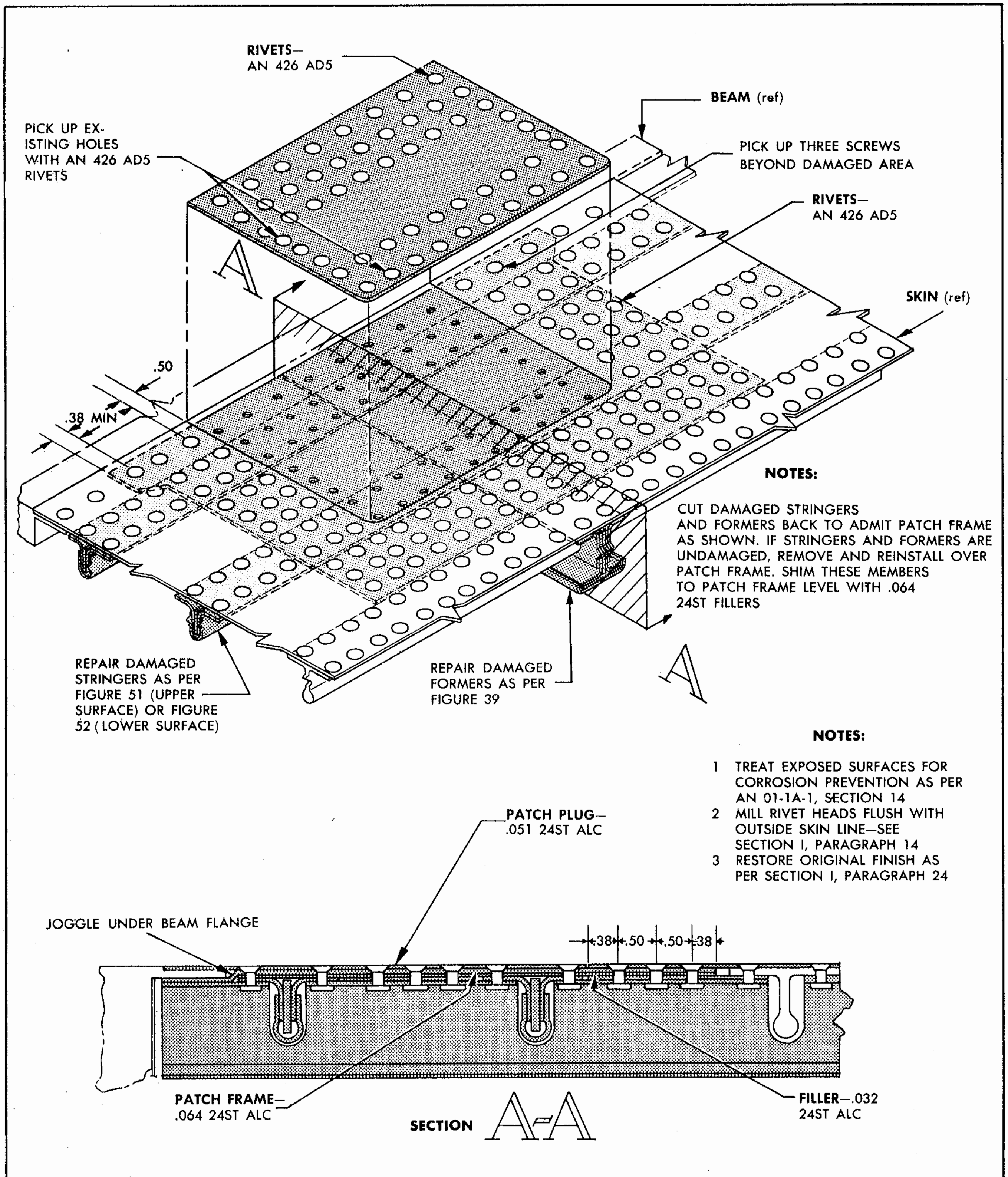


Figure 54 — Skin Repair Between Front and Rear Beams

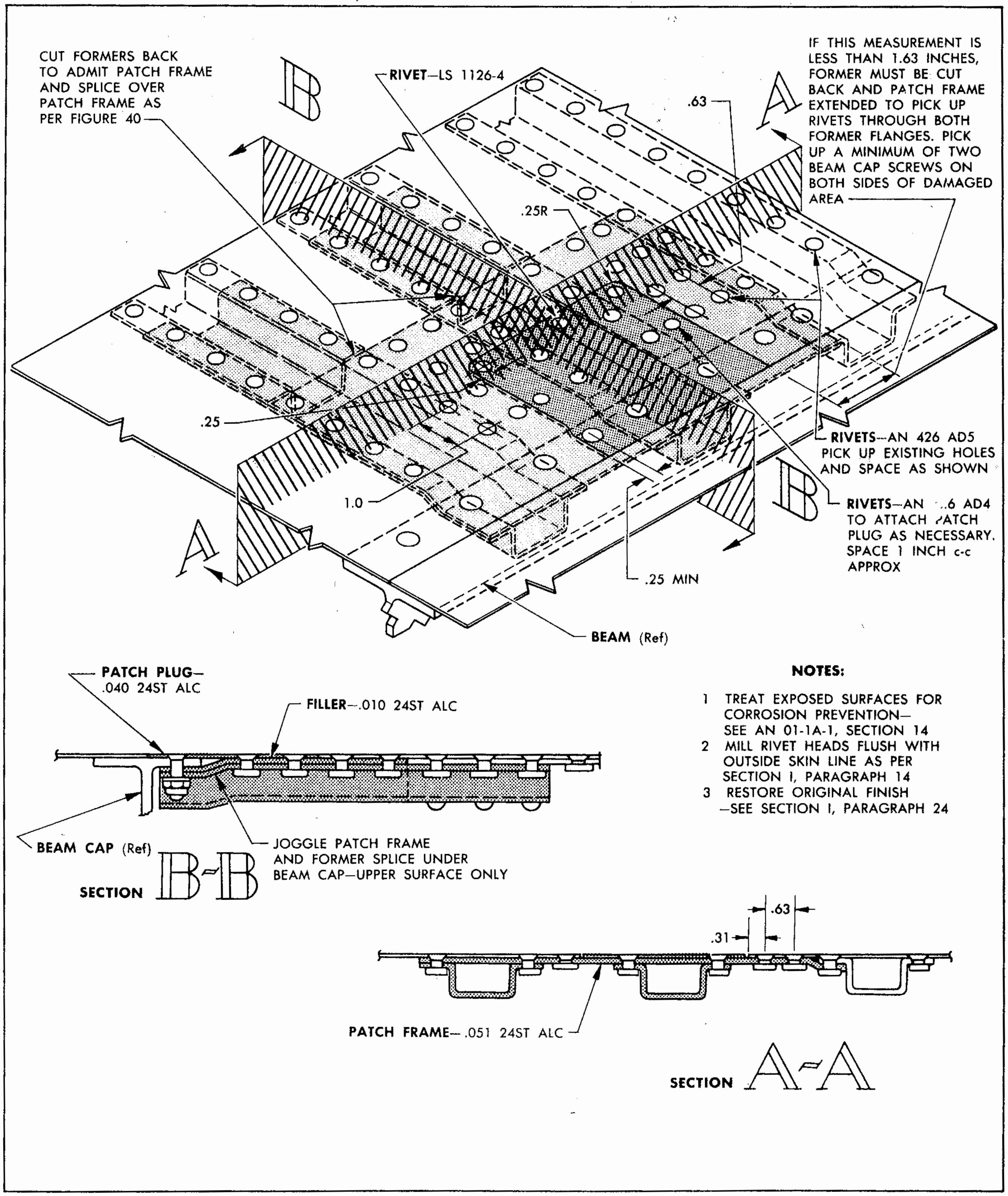


Figure 55 — Skin Repair Aft of Rear Beam — Inboard

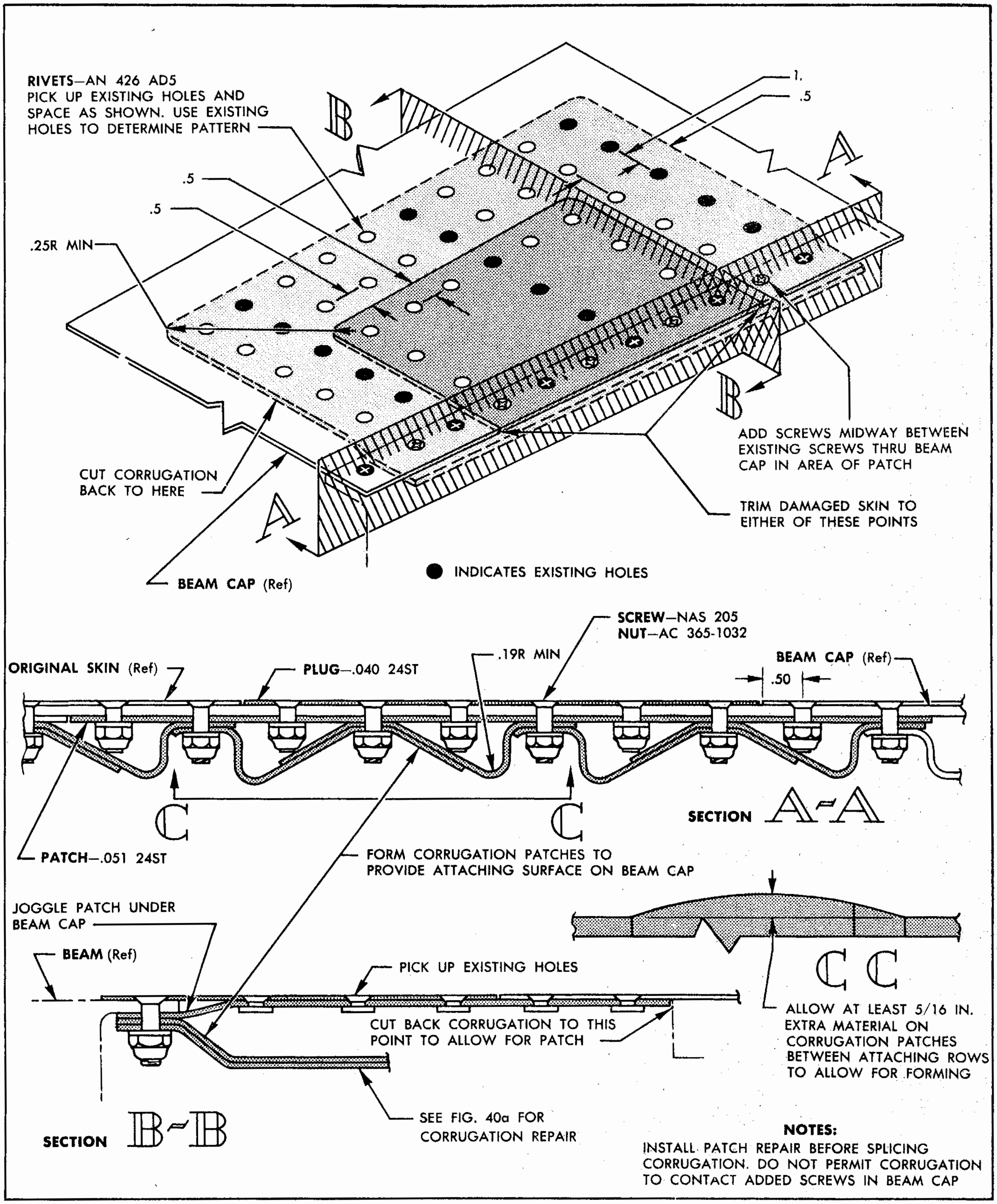
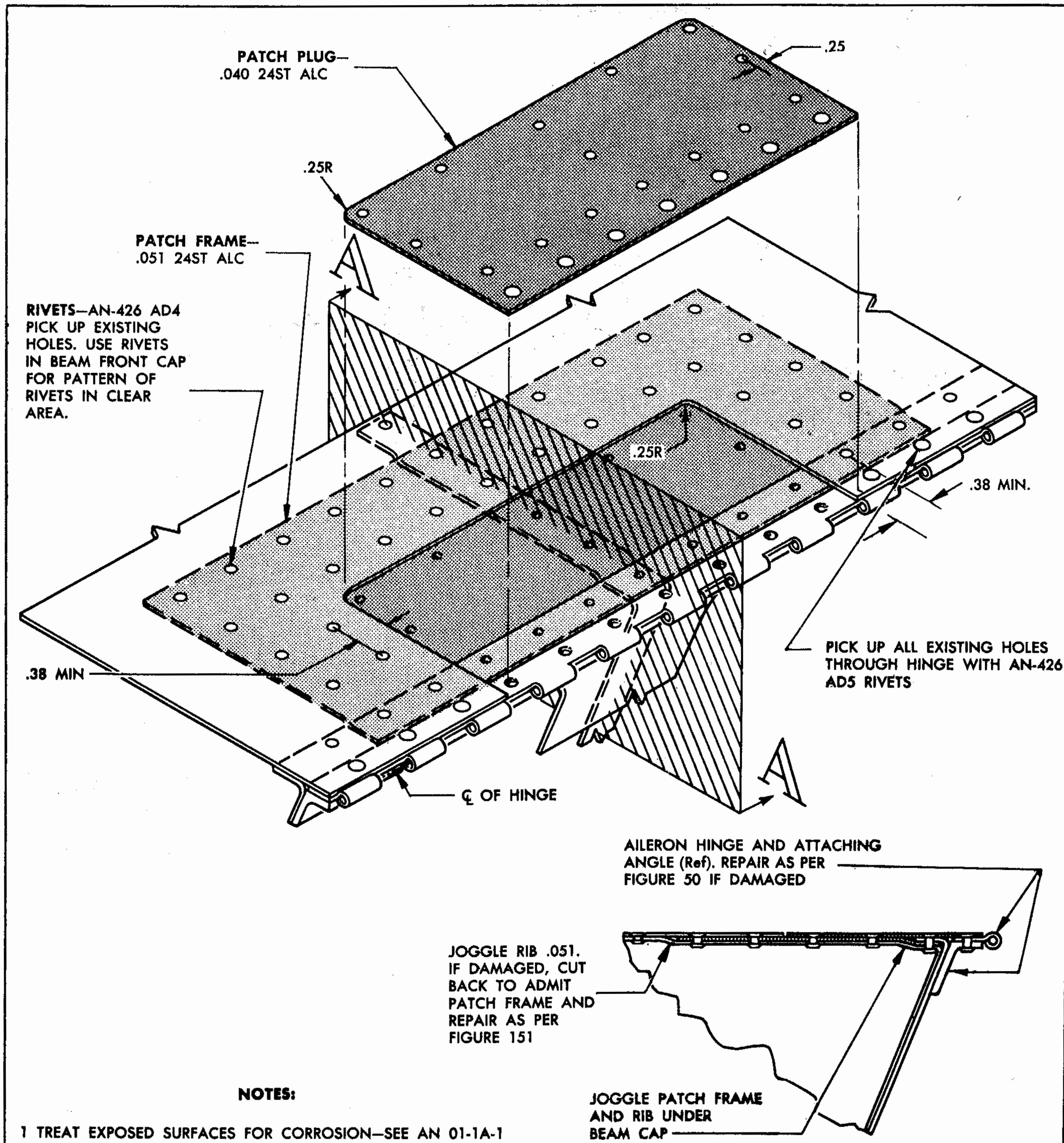


Figure 55A — Skin Repair Aft of Rear Beam — Corrugation Reinforced



NOTES:

1 TREAT EXPOSED SURFACES FOR CORROSION—SEE AN 01-1A-1 SECTION 14
2 MILL RIVET HEADS FLUSH WITH OUTSIDE SKIN LINE AS PER SECTION I, PARAGRAPH 14
I, PARAGRAPH 14
3 RESTORE ORIGINAL FINISH AS PER SECTION I, PARAGRAPH 24

SECTION A-A

Figure 56 — Skin Repair at Aileron Hinge

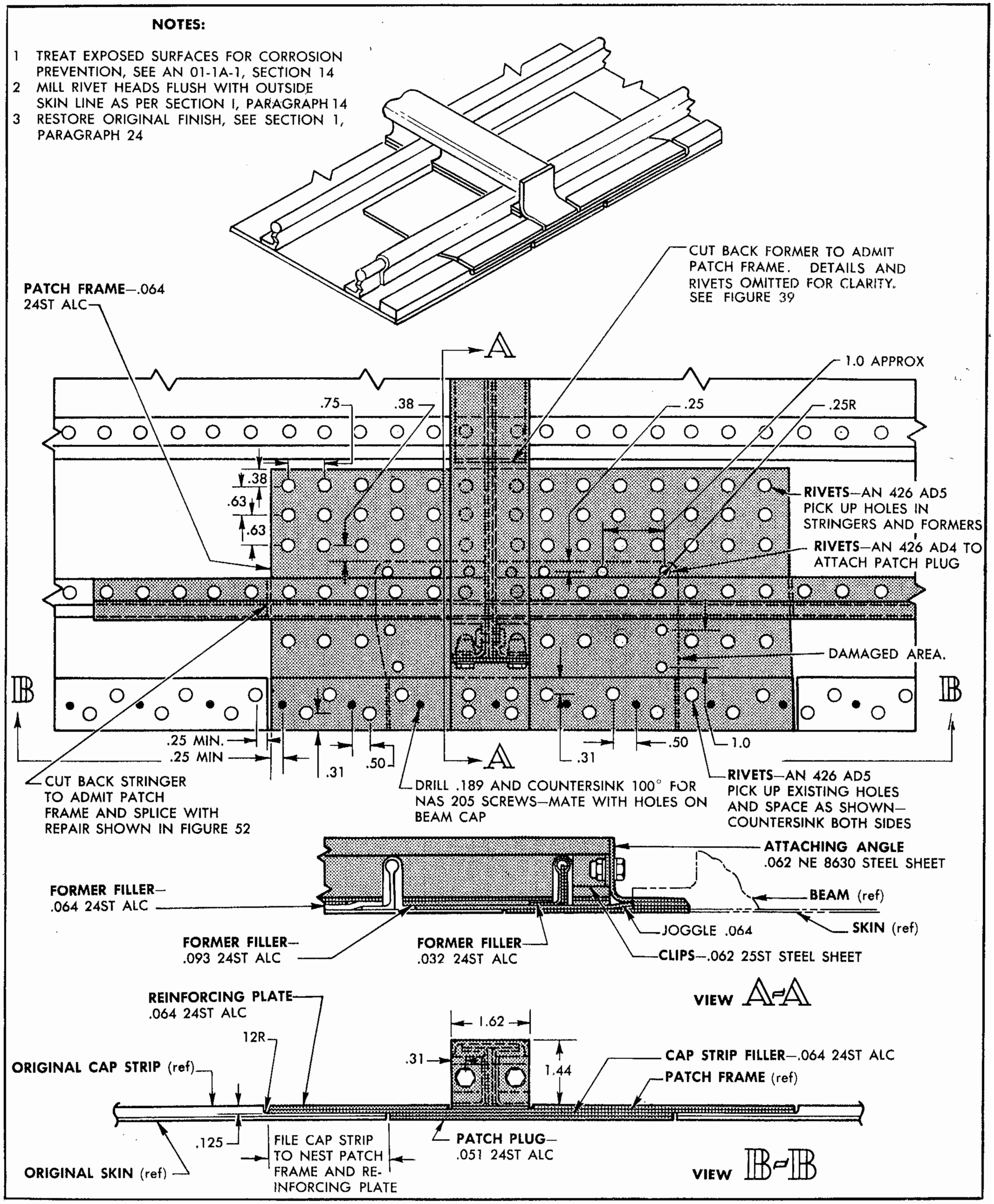


Figure 57 — Skin Repair at Tank Panel Attachment

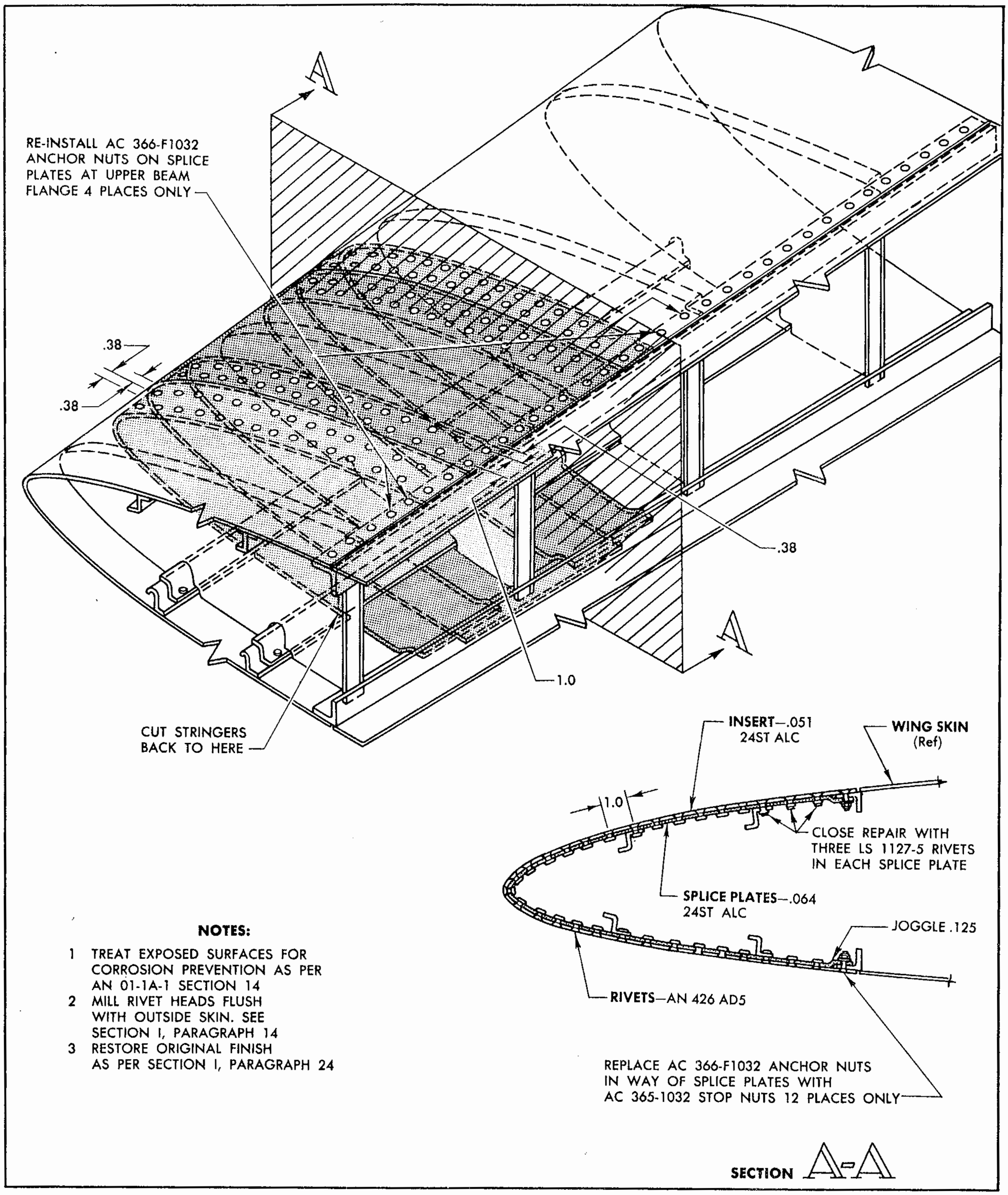
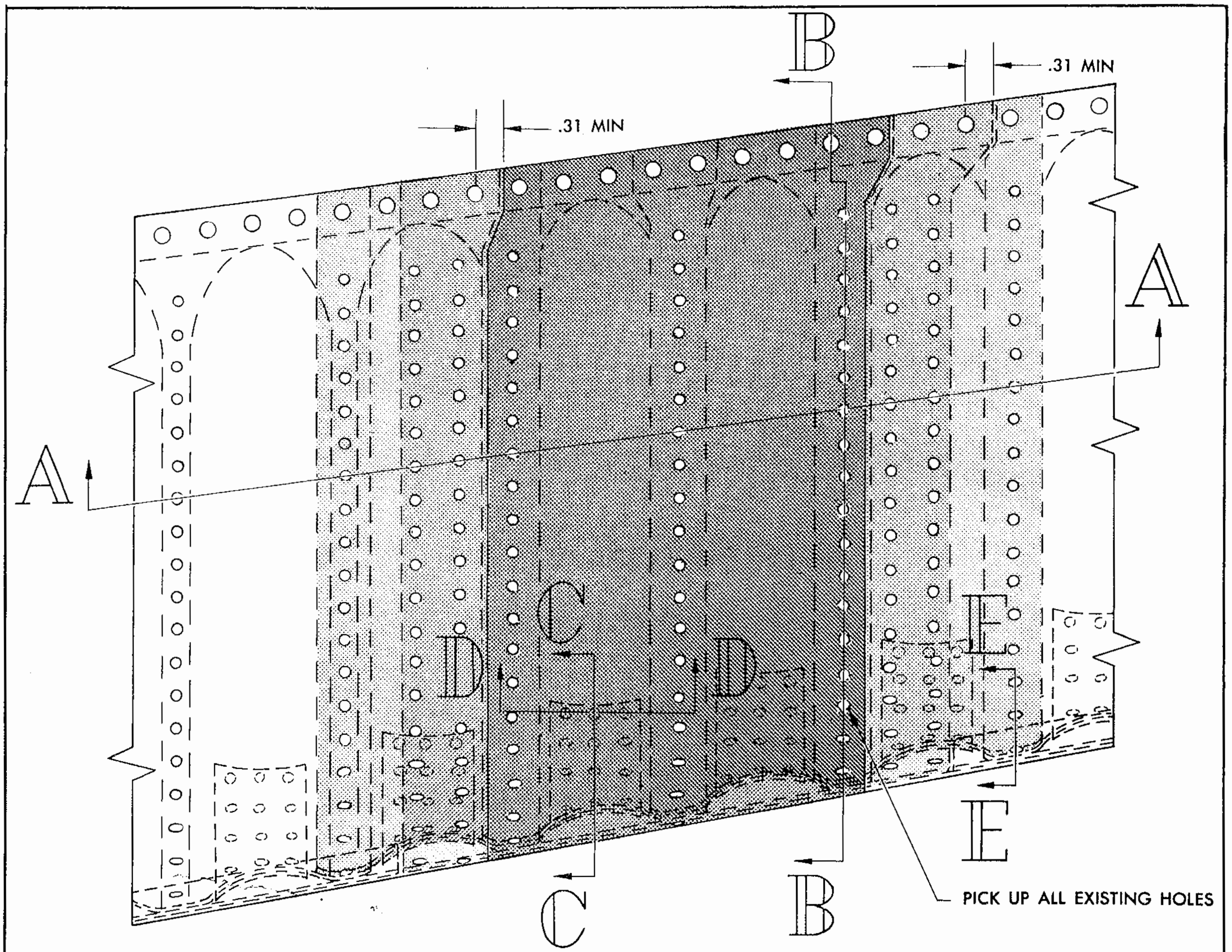


Figure 58 — Leading Edge Skin Splice



NOTES

1 REMOVE LEADING EDGE BEFORE MAKING REPAIR
2 USE AN 426AD5 RIVETS SPACED .75 c-c UNLESS OTHERWISE NOTED.
3 TRIM DAMAGED AREA .50 PAST NEXT ADJACENT RIVET LINE AS INDICATED
4 CUT LEADING EDGE DOUBLER & CORRUGATION BACK TO ADMIT PATCH FRAME AS INDICATED
5 INSTALL PATCH FRAME & PATCH PLUG—DO NOT INSTALL RIVETS ATTACHING CORRUGATION SPLICES
6 MAKE CORRUGATION SPLICES AND GUSSETS TO CONFORM WITH WING CONTOURS GIVEN TO FIGURE 24
7 ATTACH GUSSETS TO ONE HALF OF CORRUGATION SPLICES POSITION CORRUGATION ASSEMBLIES IN LEADING EDGE & TEMPORARILY ATTACH GUSSETS TO REMAINING HALF OF CORRUGATION SPLICES. REMOVE CORRUGATION ASSEMBLIES & RIVET GUSSETS IN PLACE.
8 INSTALL CORRUGATION SPLICE ASSEMBLY
9 TREAT CONTACTING SURFACES FOR CORROSION PREVENTION AS PER AN 01-1A-1, SECTION 14
10 MILL RIVET HEADS FLUSH WITH SKIN LINE SEE SECTION I, PARAGRAPH 14
11 RESTORE ORIGINAL FINISH SEE SECTION I PARAGRAPH 24

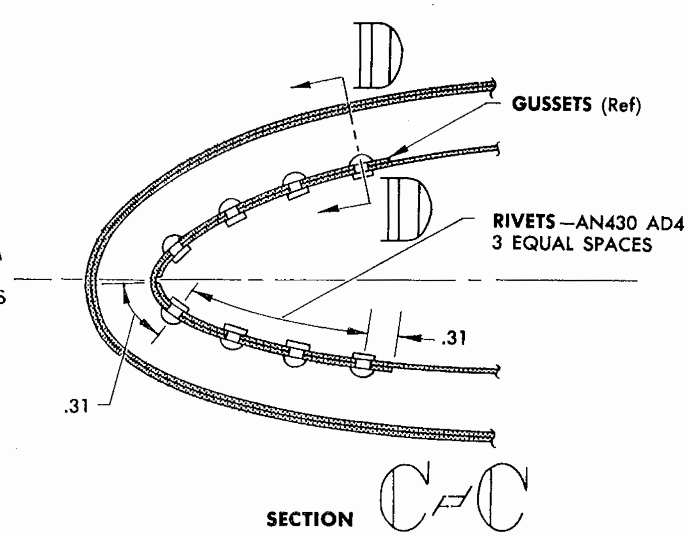


Figure 59 (Sheet 1 of 2 Sheets)—Leading Edge Insertion

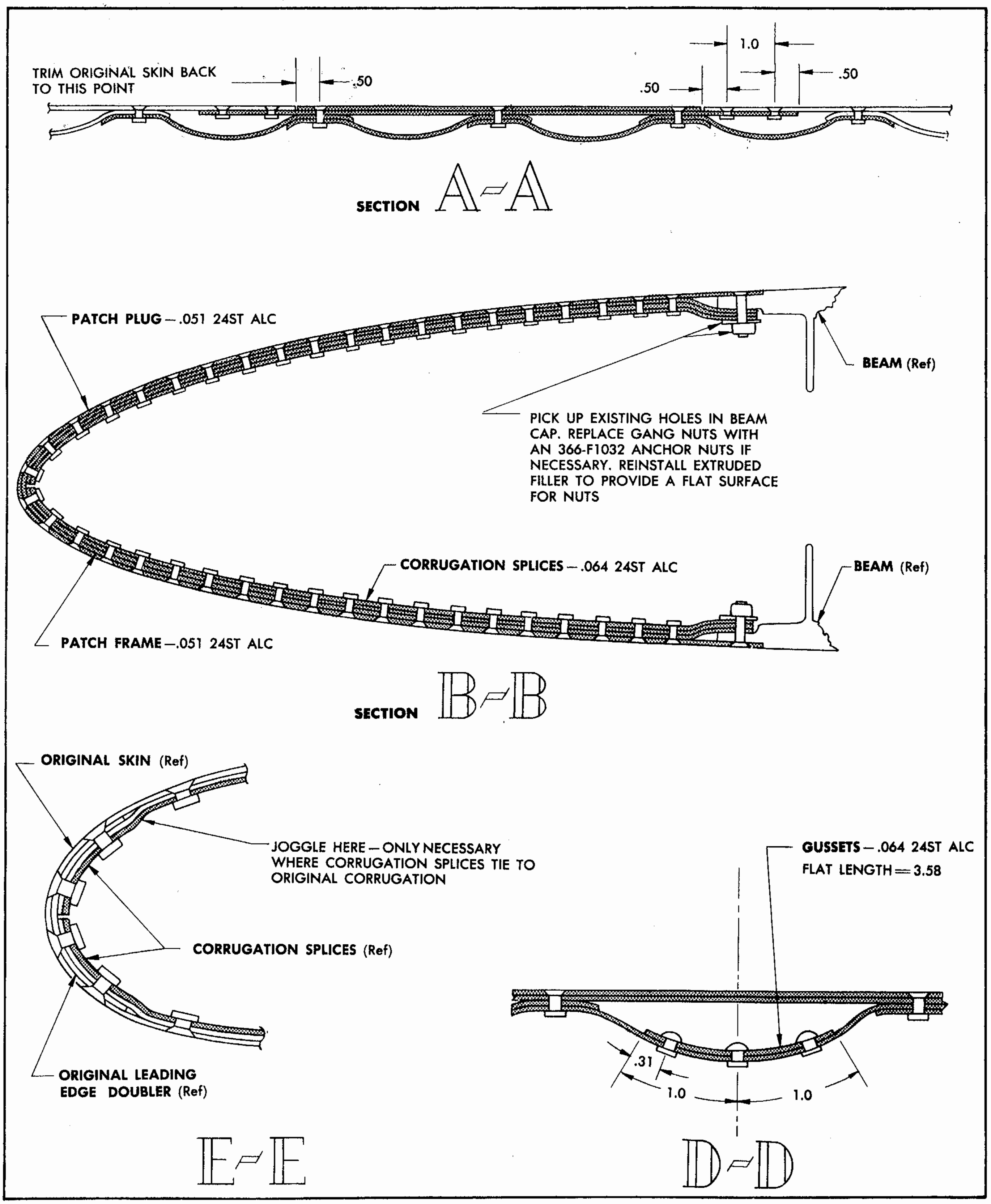
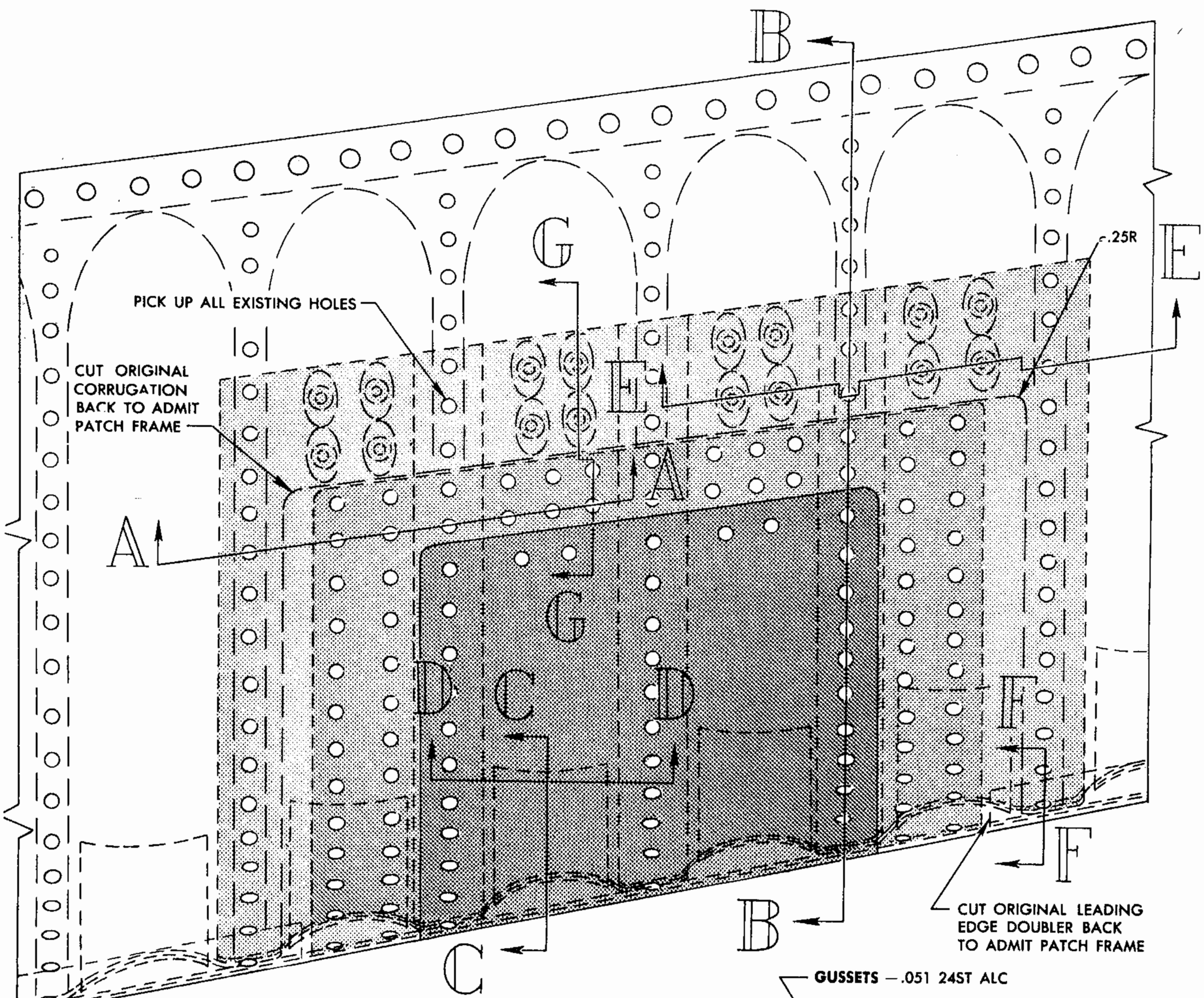
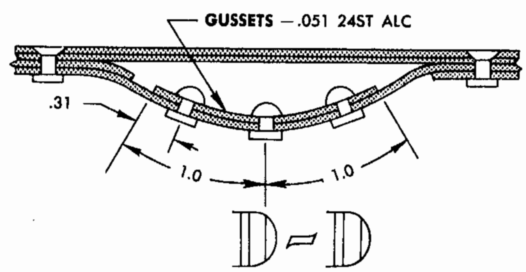


Figure 59 (Sheet 2 of 2 Sheets) — Leading Edge Insertion



NOTES

1. REMOVE LEADING EDGE BEFORE MAKING REPAIR
2. USE AN 426 AD RIVETS SPACED .75 c-c UNLESS OTHERWISE NOTED.
3. TRIM DAMAGED AREA .50 PAST NEXT ADJACENT RIVET LINE SPANWISE & MIDWAY BETWEEN FIRST RIVETS CHORDWISE AS INDICATED
4. CUT LEADING EDGE DOUBLER & CORRUGATION BACK TO ADMIT PATCH FRAME AS INDICATED
5. INSTALL F 1032 ANCHOR NUTS
6. INSTALL PATCH FRAME & PATCH PLUG—ALL RIVETS ATTACHING CORRUGATION SPLICES
7. MAKE CORRUGATION SPLICES AND GUSSETS TO CONFORM WITH WING CONTOURS GIVEN TO FIGURE 24
8. ATTACH GUSSETS TO ONE HALF OF CORRUGATION SPLICES POSITION CORRUGATION ASSEMBLIES IN LEADING EDGE & TEMPORARILY ATTACH GUSSETS TO REMAINING HALF OF CORRUGATION SPLICES. REMOVE CORRUGATION ASSEMBLIES & RIVET GUSSETS IN PLACE.
9. INSTALL CORRUGATION SPLICE ASSEMBLY
10. TREAT CONTACTING SURFACES FOR CORROSION PREVENTION AS PER AN 01-1A-1, SECTION 14
11. MILL RIVET HEADS FLUSH WITH SKIN LINE SEE SECTION I, PARAGRAPH 14
12. RESTORE ORIGINAL FINISH SEE SECTION I PARAGRAPH 24



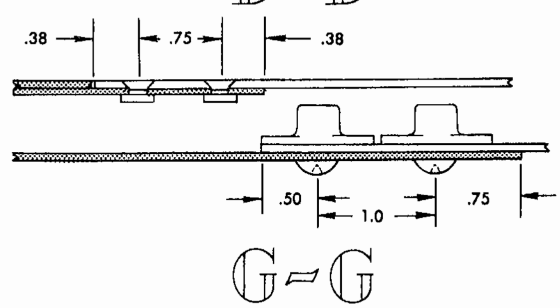


Figure 59A (Sheet 1 of 2 Sheets) — Leading Edge Partial Repair

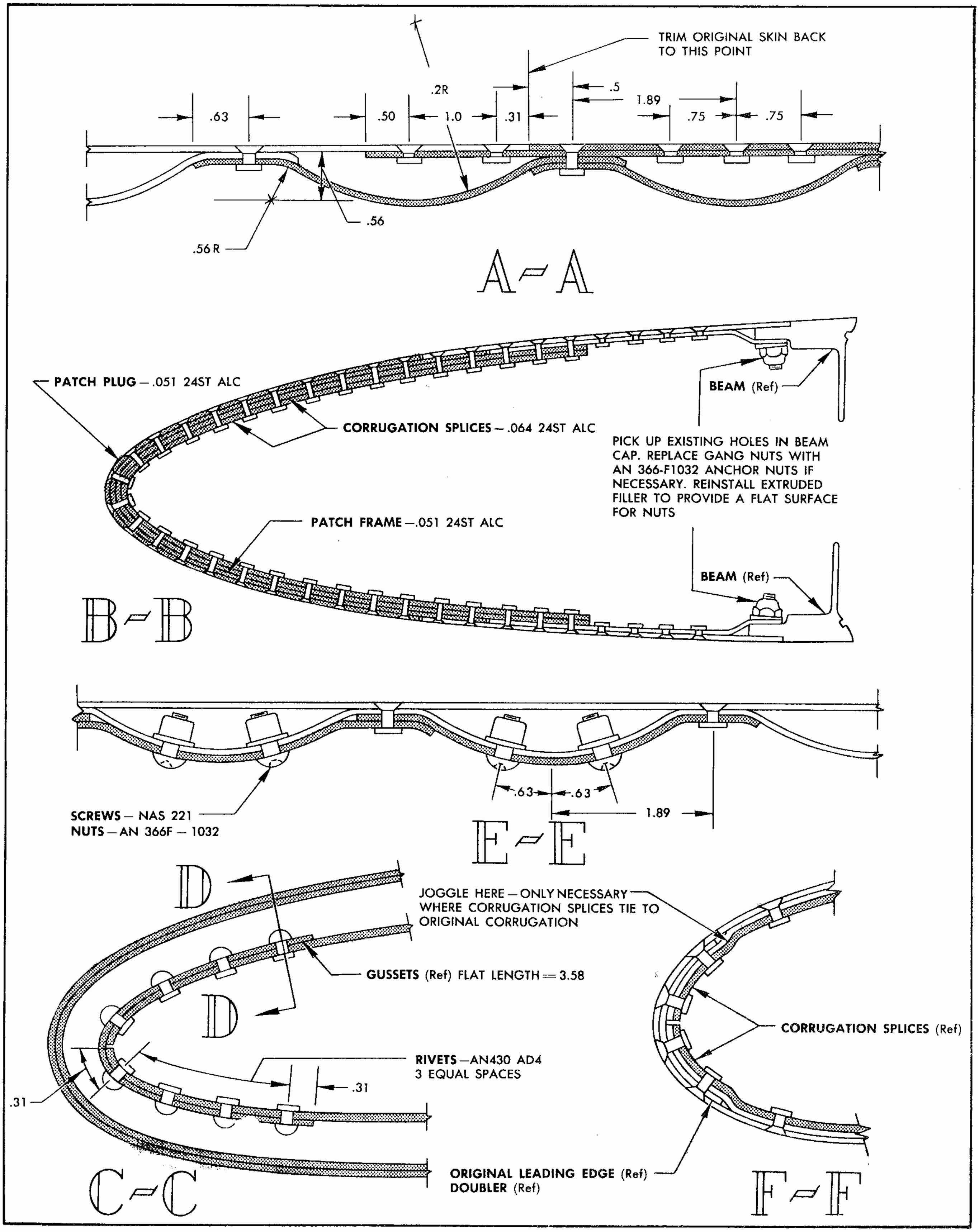
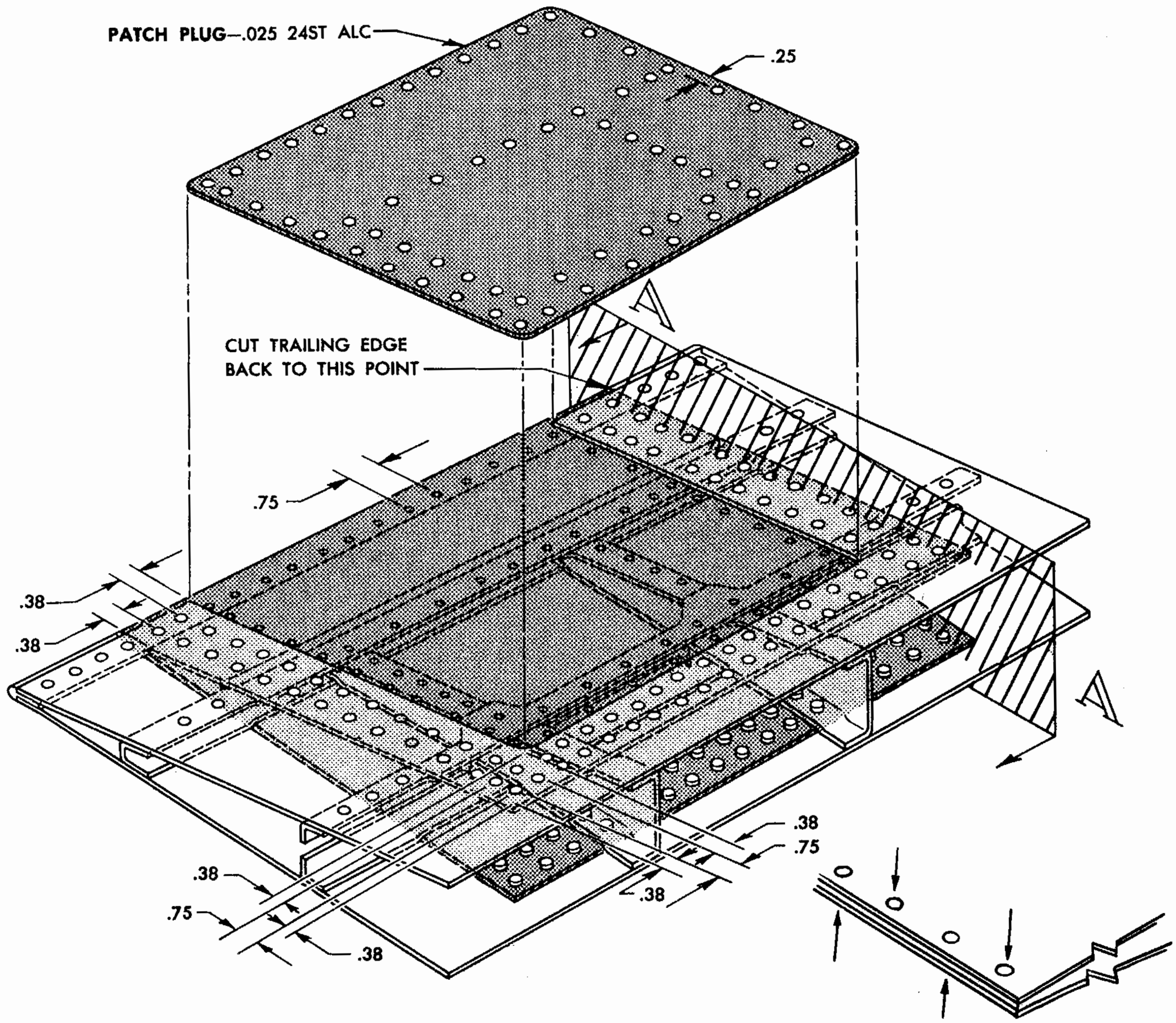
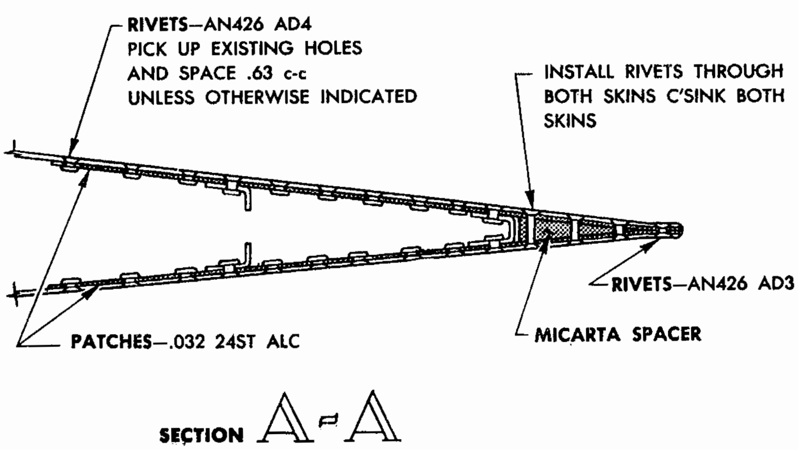


Figure 59A (Sheet 2 of 2 Sheets) — Leading Edge Partial Repair



NOTE: BUCK ALL TRAILING EDGE RIVETS ALTERNATELY FROM OPPOSITE SIDES TO PREVENT TRAILING EDGE FROM BUCKLING.

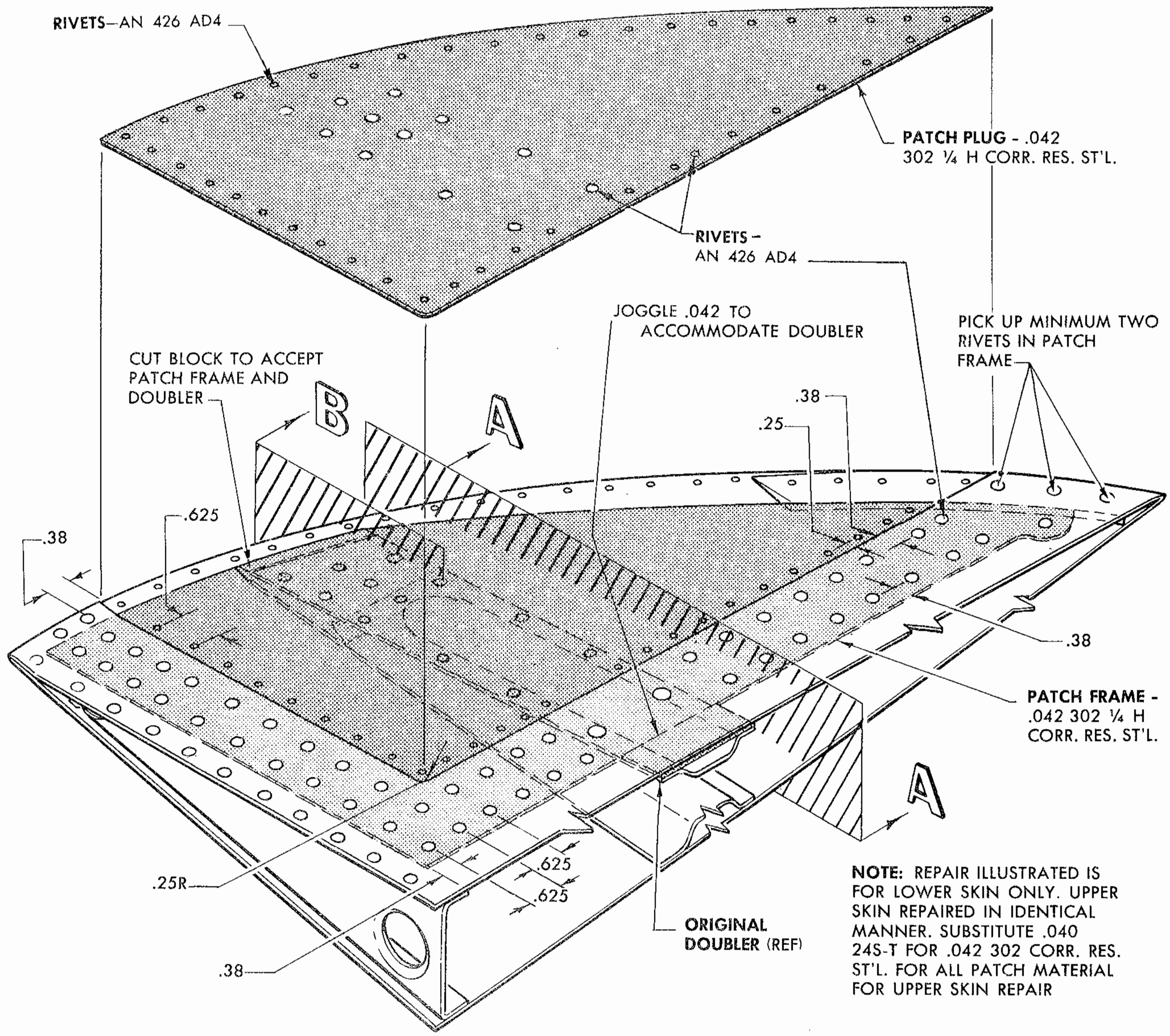


SECTION A-A

NOTES:

1. CUT DAMAGED STIFFENERS AND RIBS BACK TO EDGE OF PATCHES IF RIBS AND STIFFENERS DO NOT REQUIRE REPAIR, JOGGLE AS NECESSARY TO PROVIDE A SMOOTH EXTERIOR SURFACE.
2. TREAT EXPOSED SURFACES FOR CORROSION PREVENTION SEE AN01-1A-1, SECTION 14.
3. MILL RIVET HEADS FLUSH WITH EXTERIOR SKIN LINE; SEE SECTION I, PARAGRAPH 14.
4. RESTORE ORIGINAL FINISH AS PER SECTION I, PARAGRAPH 24

Figure 60 — Aileron Skin Repair



NOTES:

1. DRILL OUT ALL RIVETS THAT RETAIN ORIGINAL DOUBLER.
2. TRIM BACK SKIN LEAVING EDGE DISTANCE NOTED
3. FABRICATE PATCH FRAME OBSERVING RIVET SPACING NOTED
4. FABRICATE .042 302-1A FILLER TO RAISE DOUBLER TO LEVEL OF PATCH FRAME
5. TRIM FORM BLOCK TO ACCOMMODATE PATCH FRAME AS SHOWN IN SECTION B-B
6. INSTALL FILLERS AND FORM PATCH PLUG
7. INSTALL PATCH PLUG, FRAME BLOCK, AND ORIGINAL DOUBLER

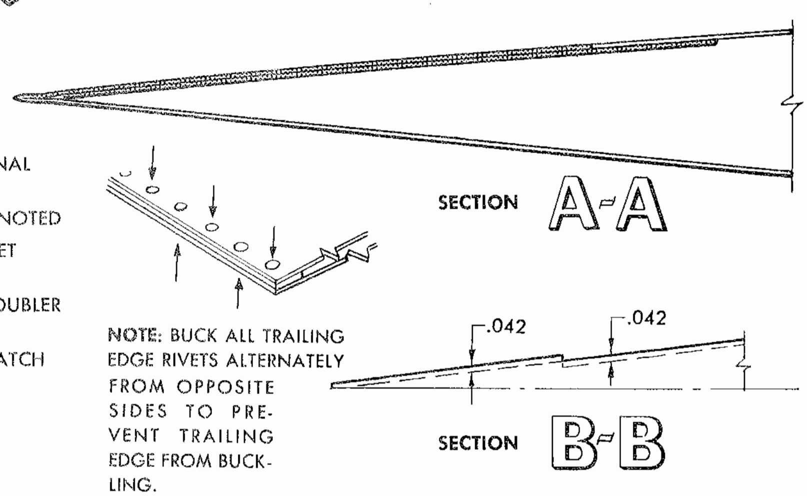


Figure 60A — Wing Tip Skin Repair

FIGURE 60B DELETED

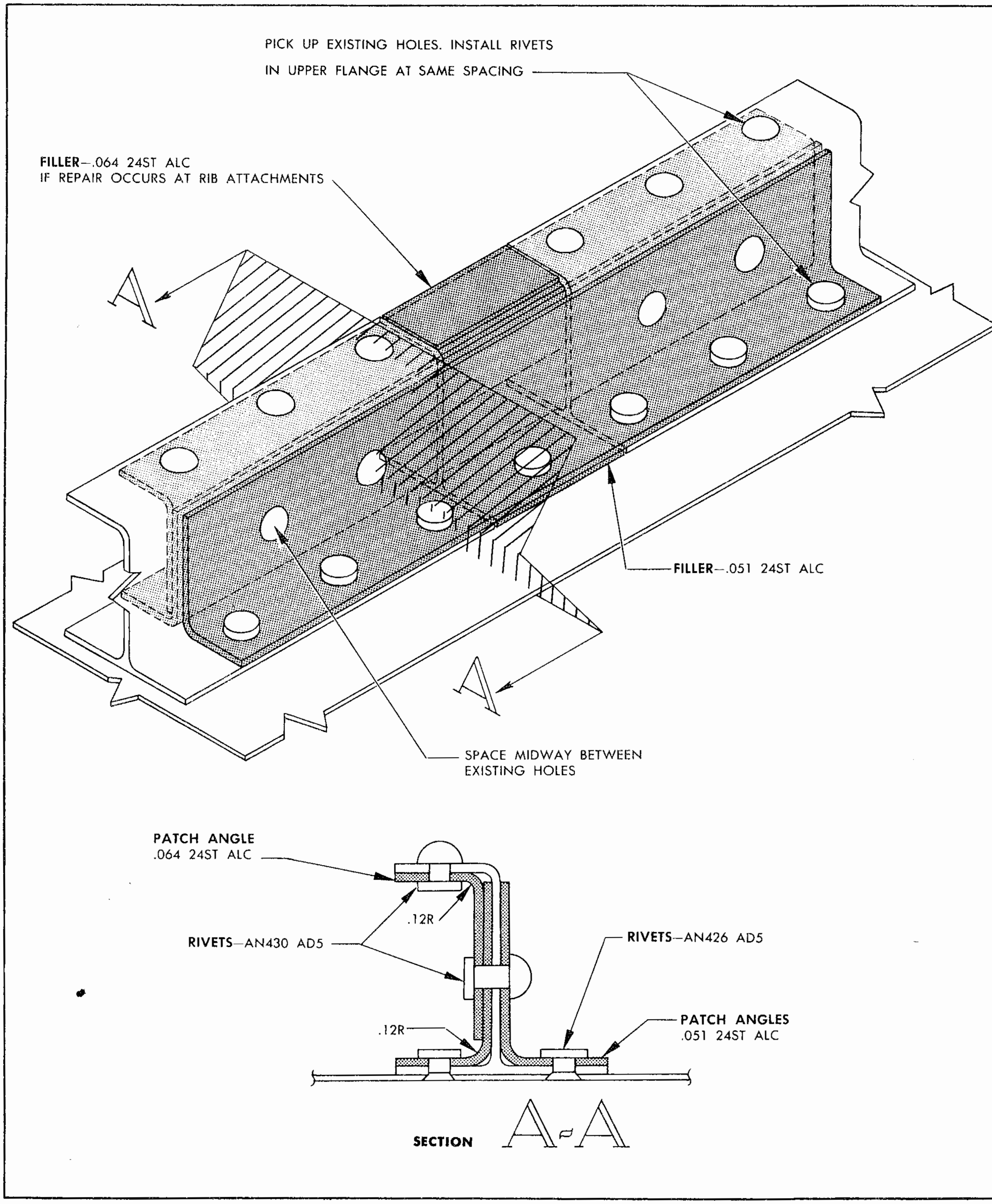
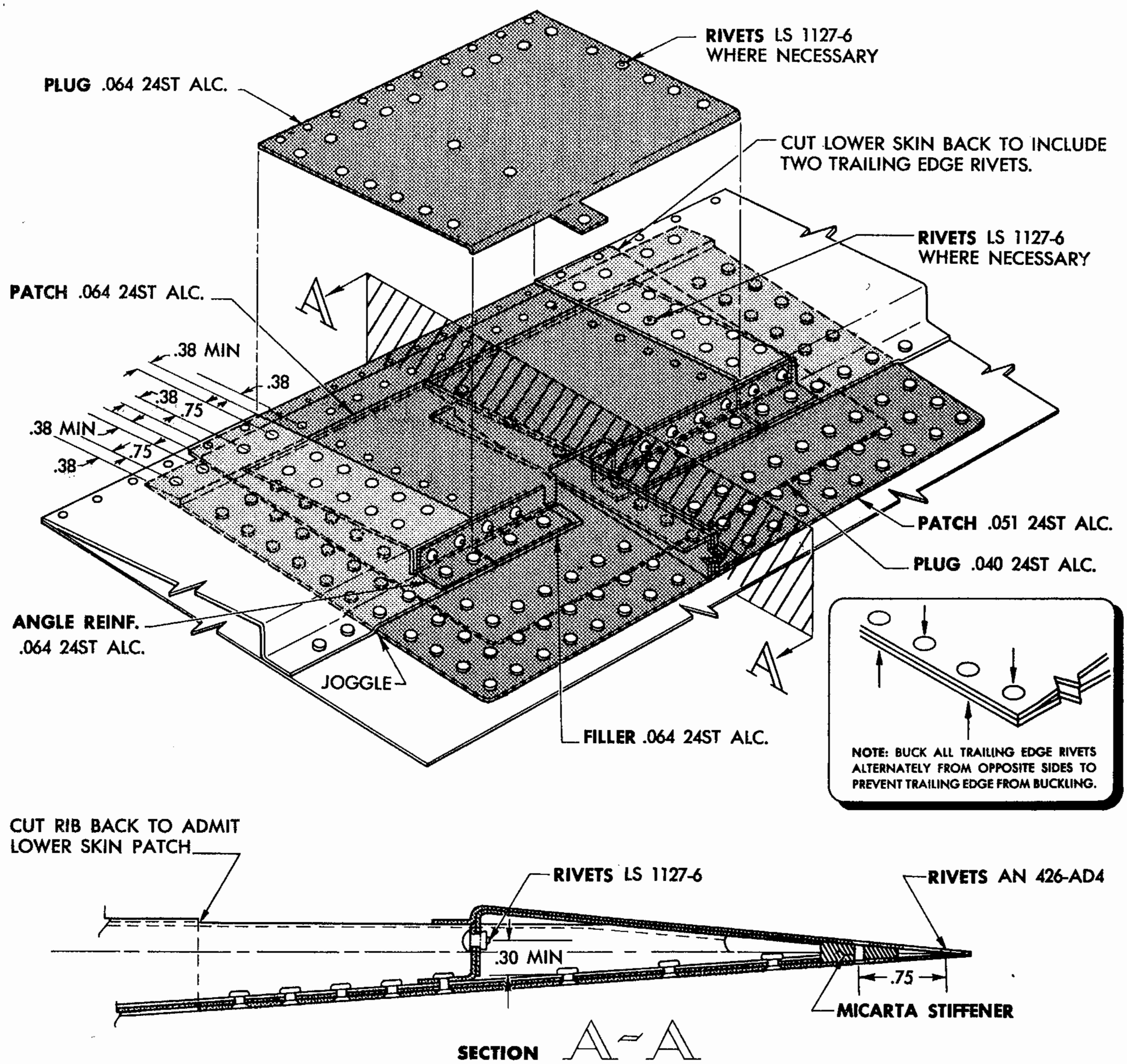


Figure 61 — Flap Spar Repair



NOTES:

1. RIVETS AN 426 AD5 UNLESS OTHERWISE SPECIFIED, SPACE .75c-c UNLESS OTHERWISE NOTED. PICK UP ALL EXISTING HOLES.
2. INSTALL LOWER SKIN PATCH FIRST. BUCK RIVETS IN UPPER SKIN PATCH THROUGH OPENING IN TRAILING AND LEADING EDGE. INSTALL AS MANY SOLID RIVETS AS POSSIBLE.
3. SPLICE RIBS WITH REPAIR FIGURE NO.
4. PROVIDE .25 RADII IN ALL CORNERS OF CUTOUTS AND PATCHES.
5. TREAT ALL EXPOSED SURFACES FOR CORROSION PREVENTION—SEE AN-01-1A-1, SECTION 14.
6. MILL ALL C'SUNK RIVETS FLUSH WITH SKIN LINE—SEE SECTION I, PARAGRAPH 14.
7. RESTORE ORIGINAL FINISH AS PER SECTION 1, PARAGRAPH 24.

Figure 62 — Flap Trailing Edge Repair

Part No.	*Spec. No.*	*Material Title*	*Size or Gage*	*Remarks*
24S-T	AN-A-13	Sheet, Aluminum Alclad	.025	For repair of ailerons and small internal items.
24S-T	AN-A-13	Sheet, Aluminum Alclad	.032	For repair of aileron skin and ribs, wing ribs — fillers.
24S-T	AN-A-13	Sheet, Aluminum Alclad	.040	For repair of wing and flap skin, ribs and beams.
24S-T	AN-A-13	Sheet, Aluminum Alclad	.051	For repair of wing and flap skin, ribs and beams.
24S-T	AN-A-13	Sheet, Aluminum Alclad	.064	For repair of wing skin, beams, ribs.
24S-T	AN-A-13	Sheet, Aluminum Alclad	.072	For repair of beam webs and ribs.
24S-T	AN-A-13	Sheet, Aluminum Alclad	.081	For repair of beam webs and ribs.
24S-T	AN-A-13	Sheet, Aluminum Alclad	.091	For replacement of fillers and doublers and stringers.
24S-T	AN-A-13	Sheet, Aluminum Alclad	.125	For repair of rib caps and stringers.
24S-T	AN-A-13	Sheet, Aluminum Alclad	.156	For repair of beam web.
*24S-T	AN-A-13	Sheet, Aluminum Alclad	.025	For replacement of aileron skin.
*24S-T	AN-A-13	Sheet, Aluminum Alclad	.032	For replacement of ribs.
*24S-T	AN-A-13	Sheet, Aluminum Alclad	.040	For replacement of ribs flap skin, ribs and wing skins.
*24S-T	AN-A-13	Sheet, Aluminum Alclad	.051	For replacement of main wing skin and beam webs.
*24S-T	AN-A-13	Sheet, Aluminum Alclad	.064	For replacement of beam webs, ribs and doublers.
*24S-T	AN-A-13	Sheet, Aluminum Alclad	.072	For replacement of beam webs and doublers.
*24S-T	AN-A-13	Sheet, Aluminum Alclad	.081	For replacement of doublers and webs.
*24S-T	AN-A-13	Sheet, Aluminum Alclad	.091	For relacement of doublers.
*24S-T	AN-A-13	Sheet, Aluminum Alclad	.125	For replacement of beam webs and doublers.
*24S-T	AN-A-13	Sheet, Aluminum Alclad	.188	For replacement of doublers.
NE8630	AN-S-12	Sheet, Steel	.037	For repair of lower surface stringers.
NE8630	AN-S-12	Sheet, Steel	.049	For repair of extruded formers, upper stringers.
NE8630	AN-S-12	Sheet, Steel	.063	For hinge repair.
NE8630	AN-S-12	Sheet, Steel	.078	For repair of drag strut support and replacement of serrated strip.
NE8630	AN-S-12	Sheet, Steel	.094	For beam repair.
24S-T	QQ-A-354	Bar, Aluminum Alloy	.38 x .56	For trailing edge repair.

Table 3 (Sheet 1 of 5 Sheets) — Material for the Repair of Wings

Part No.	Material: Spec. No.	Material: Title	Material: Size or Gage	Remarks
LS115	AN-A-13	Angle, Sheet Metal	.032	For replacement of aux. wing beam stiffeners.
LS133	AN-A-13	Channel, Sheet Metal	.020	For replacement of aileron stringers.
LS169	AN-A-13	"J" Section, Sheet Metal	.032	For replacement of wing stringers.
LS169	AN-A-13	"J" Section, Sheet Metal	.040	For replacement of leading edge stringers.
*LS174-2	AN-A-13	"V" Section, Sheet Metal	.040	For repair and replacement of stiffeners — rib sta. 34.
LS181-6	AN-A-13	"V" Section, Sheet Metal	.064	For repair and replacement of stiffeners — rib sta. 0.
LS203	QQ-A-354	Angle Extrusion	.094	For replacement of auxiliary wing beam upper caps.
LS210	QQ-A-354	Angle Extrusion	.125	For replacement of auxiliary wing beam lower caps.
LS236	QQ-A-354	"T" Extrusion	.065	For replacement of auxiliary wing beam stiffeners.
LS318	AN-A-8	"T" Extrusion	.188	For replacement of wing rib caps — sta. 32 and 63.
LS358	QQ-A-354	Angle Extrusion		For replacement of main beam upper cap forward splice.
LS406-2	AMS5515	Hinge	.050	For replacement of aileron and flap hinge.
LS426	QQ-A-331	Hinge Extrusion		For replacement of hinge sections supporting leading edge tank liner.
LS439	AN-A-8	"T" Extrusion		For replacement of rear beam lower cap.
LS448	AN-A-8	"T" Extrusion		For replacement of front beam lower cap.
LS478	QQ-A-354	"T" Extrusion		For replacement of upper surface former.
LS482	QQ-A-354	Angle Extrusion		For replacement of leading edge root rib stiffener.
LS483	AN-A-8	"T" Extrusion		For replacement of lower cap — rib sta. 0.
LS484	AN-A-8	"T" Extrusion		For replacement of upper cap — rib sta. 0.

Table 3 (Sheet 2 of 5 Sheets) — Material for the Repair of Wings

Part No.	Material Spec. No.	Material Title	Size or Gage	Remarks
LS491	QQ-A-354	"T" Extrusion		For replacement of main beam lower cap aft splice.
LS492	QQ-A-354	"T" Extrusion		For replacement of rear beam lower cap fwd and aft splices.
LS494	AN-A-8	"H" Extrusion		For replacement of leading edge root rib fuselage attachment fitting.
LS495	QQ-A-354	"T" Extrusion		For replacement of lower cap — rib sta. 34 and 63.
LS536	QQ-A-354	"T" L Extrusion		For replacement of flap spar.
LS538	QQ-A-354	"T" Extrusion		For replacement of front beam upper cap.
LS549	QQ-A-354	Bulb Angle Extrusion	.062	For replacement of lower surface stringers.
LS628	QQ-A-354	"T" Extrusion	.188	For replacement of lower cap — rib sta. 32.
LS636	QQ-A-354	Bulb "T" Extrusion	.062	For replacement of lower surface stringers.
LS637	QQ-A-354	Angle Extrusion		For replacement of lower surface attaching cap.
LS639	QQ-A-331	Extruded Strip		For replacement of aileron trailing edge.
LS709	QQ-A-354	"T" Extrusion		For replacement of leading edge root rib beam attachment clip.
LS978	QQ-A-354	"T" Extrusion		For replacement of rear beam upper cap.
LS1143	QQ-A-354	Angle Extrusion		For replacement of wing outboard rib lower cap angle.
LS1247	QQ-A-354	Angle Extrusion		For replacement of clip on wing outboard rib.
LS1450	QQ-A-354	"T" Extrusion		For replacement of angle on wing outboard rib.
LS2209	QQ-A-354	"T" Extrusion		For replacement of rear beam stiffeners.
LS2211	QQ-A-354	Angle Extrusion		For replacement of rear beam upper cap fwd splice.
LS2212	QQ-A-354	Angle Extrusion		For replacement of rear beam upper cap aft splice.
LS2221	QQ-A-354	Channel Extrusion		For replacement of main beam lower cap fwd splice.

Table 3 (Sheet 3 of 5 Sheets) — Material for the Repair of Wings

Part No.	Material Spec. No.	Material Title	Size or Gage	Remarks
LS2242	QQ-A-354	"T" Extrusion	.125	For replacement of rear beam stiffeners.
LS3200	QQ-A-354	Angle Extrusion	.188	For replacement of beam stiffeners.
*LS3216	QQ-A-354	"T" Extrusion	.050	For replacement of upper cap — rib sta. 34.
LS3224	QQ-A-354	Angle Extrusion	.125	For replacement of beam stiffeners.
LS3228	QQ-A-354	Angle Extrusions	.094	For replacement of beam stiffeners.
LS3229	QQ-A-354	Angle Extrusions	.062	For replacement of rib stiffeners — sta. 63.
LS3230	QQ-A-354	Angle Extrusion	.070	For replacement of rib stiffeners.
LS3233	QQ-A-354	"T" Extrusion	.125	For replacement of wing trailing edge.
LS3234	QQ-A-354	Angle Extrusion	.094	For replacement of front beam stiffeners.
LS3237	QQ-A-354	Angle Extrusion	.125	For replacement of rear beam stiffeners.
LS3253	QQ-A-354	Angle Extrusion	.094	For replacement of wing stiffeners.
LS3254	QQ-A-354	Angle Extrusion	.125	For replacement of rear beam stiffeners.
LS3255	QQ-A-354	Angle Extrusion		For replacement of clips on wing outboard rib.
LS3257	QQ-A-354	Angle Extrusion	.094	For replacement of rib stiffeners — rib sta. 63.
LS3280	QQ-A-354	"T" Extrusion	.062	For replacement of auxiliary beam upper cap.
LS3283	QQ-A-354	Angle Extrusion	.094	For replacement of front beam stiffener.
LS3378	QQ-A-354	Angle Extrusion	.188	For replacement of front beam stiffeners.
LS3394	QQ-A-354	Angle Extrusion	.250	For replacement of rear beam stiffeners.
LS3415	QQ-A-354	"T" Extrusion		For replacement of stiffeners on rear beam aft side.
LS3441	QQ-A-354	Angle Extrusion	.125	For replacement of upper cap — rib sta. 63.
LS3458	QQ-A-354	Angle Extrusion	.051	For replacement of auxiliary beam inboard attach. angle.
LS3473	QQ-A-354	"T" Extrusion		For replacement of wing stiffeners.
LS3498	QQ-A-354	Angle Extrusion	.063	For replacement of rear beam stiffeners.

Table 3 (Sheet 4 of 5 Sheets) — Material for the Repair of Wings

Part No.	Material Spec. No.	Material Title	Material Size or Gage	Remarks
*LS3510	QQ-A-354	"I" Extrusion		For replacement of drag strut stiffener.
LS3567	QQ-A-354	Angle Extrusion	.156	For replacement of intermediate beam—lower cap.
LS3697	AN-A-8	"T" Extrusion		For replacement of rear beam lower cap.
LS3698	AN-A-8	"T" Extrusion		For replacementof rear beam upper cap.
LS3699	AN-A-8	"T" Extrusion		For replacement of front beam lower cap.
LS3700	AN-A-8	"T" Extrusion		For replacement of front beam upper cap.
LS3701	QQ-A-354	"I" Extrusion	.093	For replacement of wing formers.
*LS3702	QQ-A-354	Bulb "T" Extrusion	.93	For replacement of upper wing stringers.
	AN426AD3	Countersunk Head Rivets	3/32	For repair of aileron skin.
	AN426AD4	Countersunk Head Rivets	1/8	For external repairs.
	AN426AD5	Countersunk Head Rivets	5/32	For external repairs.
	AN426DD6	Countersunk Head Rivets	3/16	For external repairs.
	AN430AD4	Roundhead Rivets	1/8	For internal repairs.
	AN430AD5	Roundhead Rivets	5/32	For internal repairs.
	AN430DD6	Roundhead Rivets	3/16	For internal repairs.
	AN430DD8	Roundhead Rivets	1/4	For replacement and repair of beam webs.
LS1126-4		Cherry Rivets	1/8	For repair of aileron skin.
LS1127-4		Cherry Rivets	1/8	For internal repairs.
LS1127-5		Cherry Rivets	5/32	For internal repairs.
LS1127-6		Cherry Rivets	3/16	For internal repairs.
	AN-3	Bolts	3/16	For internal repairs.
	AN-4	Bolts	1/4	For internal repairs.
	AC365-1032	Stopnuts	3/16	For AN3 bolts.
	AC365-428	Stopnuts	1/4	For AN4 bolts.
	AN960	Washers	Assorted	
	HH-P-256 GR.L	Micarta	3/4 x 3	For trailing edge filler aileron and flap repair.

*Aged materials. Aged 10 hours at 190° C (375° F).

Table 3 (Sheet 5 of 5 Sheets) — Material for the Repair of Wings

SECTION III

TAIL GROUP

1. GENERAL.

The tail group includes the stabilizer, elevator, fin, rudder, and fillets. All units are aluminum alloy stressed skin construction with the exception of the fin tips installed on airplanes serial No. AF44-85407 and subsequent which are plastic construction as shown in figure 67.

The stabilizer and fins are full cantilever construction and are constructed of front and rear beams interconnected with conventional flanged ribs. The P-80B and P-80C stabilizer is identical with that installed on the P-80A airplanes as shown in figure 64. The P-80A fin structure is shown in figure 69. The P-80B and P-80C fin structure incorporates an antenna installation which requires a fiberglas base to provide insulation, as shown in figure 69A.

Note

Do not substitute any other material for the ECC181 Fiberglas panel. This panel is impregnated with selection resin and is designated No. 5003.

The elevators and rudder have single leading edge beams that extend the full length of each unit. The structure shown in figures 66 and 70 apply to P-80A and P-80B airplanes prior to AAF serial number 45-8558; figures 66A and 70A apply to P-80B and P-80C airplanes serial No. AF45-8558 and subsequent. The rudders and elevators are balanced by four counterbalance weights on each unit. The elevator is dynamically balanced, and 60 percent statically underbalanced. The rudder is balanced both statically and dynamically. Whenever repairs or replacements are made involving either the elevator or rudder, the unit involved must be carefully checked and rebalanced as described in section I, paragraph 9.

Tail group fillets are all-metal and are supported by sheet metal formers as shown in figure 71. Basic dimensions are provided for construction of new parts and for reference purposes in figures 63 and 68.

2. NEGLIGIBLE DAMAGE.

Refer to the negligible damage drawings indexed on the keys to figures 64, 65, 66, 66A, 67, 69, 69A, 70, 70A, and 71 for permissible negligible damage to most of the tail group. Negligible damage not indexed on these keys is limited to nicks and dents which, after being cleaned up to regular shape, do not exceed 1/16 inch in depth and do not occur closer than 3/8 inch to a rivet or attaching hole. All nicks, dents, or scratches in the outside skin must be smoothed out, and the finish restored to its original state as prescribed in section I, paragraph 24.

3. REPAIRABLE DAMAGE.

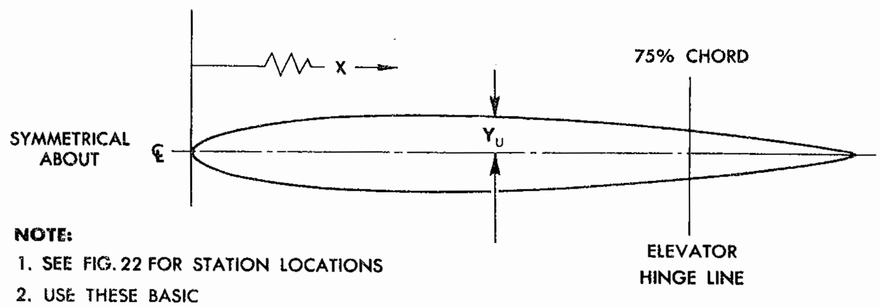
The applicable repairs for all the tail group are indexed on the keys to figures 64, 65, 66, 66A, 67, 69, 69A, 70, 70A, and 71. Items not indexed are not repairable. All skin repairs must be made flush and the rivets must be milled or ground flush with the outside skin line, as described in section I, paragraph 14. Skin patches must be treated and painted as described in section I, paragraph 24. Do not attempt repairs on the elevator torque tube. The elevator and rudder spar assemblies are not to be repaired by patching inboard of station 19, or below station 126 respectively; however, they may be repaired by splicing with new spar sections. Splice the elevator spar outboard of station 19, and the rudder spar above station 129. The extruded angles of the fin spars are not repairable. Violent maneuvers may induce high speed buffeting on the rudder or elevator with the resultant failure of the structure at the tip weight attachment. Repairs are provided for this type of damage in figures 77A and 77B.

Violent maneuvers may induce high speed buffeting on the rudder or elevator with the resultant failure of the structure at the tip weight attachment. Repairs are provided for this type of damage in figures 77A and 77B.

4. DAMAGE NECESSITATING REPLACEMENT.

Damage in excess of that described as negligible to items not indexed on the keys to the reference diagrams will necessitate replacement of the item involved. Parts constructed of 24S-RT and age-hardened material may be replaced with parts made of 24S-T if the next heavier gage 24S-T is used than that employed in the original construction, provided that this substitution is not employed for outside skins. See figures 63 and 68 for basic dimensions and rib contours.

DIMENSIONS ARE TO OUTSIDE SKIN LINE



NOTE:

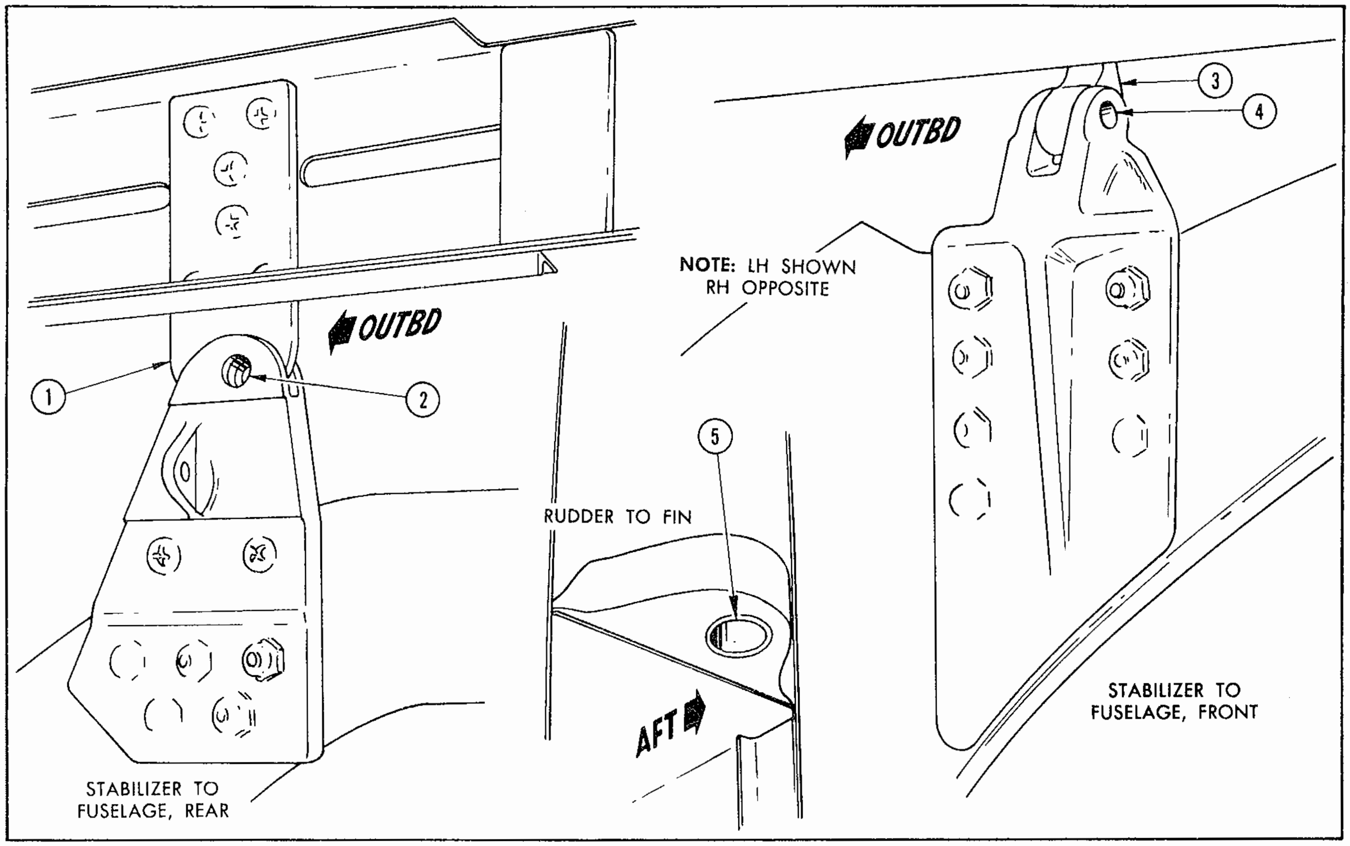
1. SEE FIG. 22 FOR STATION LOCATIONS
2. USE THESE BASIC DIMENSIONS IN THE MANUFACTURE OF JIGS AND TEMPLATES AS DESCRIBED IN SECTION I PARAGRAPH 5

Sta	0	
% Chord	Y_U	X
1.25	.600	.650
2.50	.810	1.300
5.00	1.130	2.600
7.50	1.375	3.900
10.00	1.580	5.200
20.00	2.155	10.400
30.00	2.475	15.600
40.00	2.60	20.800
50.00	2.495	26.000
60.00	2.140	31.200
70.00	1.620	36.400
80.00		41.600
90.00		46.800
100.00		52.000

Sta	10		15		20		30		40	
% Chord	Y_U	X	Y_U	X	Y_U	X	Y_U	X	Y_U	X
1.25	.555	.601	.532	.577	.510	.522	.465	.504	.421	.455
2.50	.749	1.202	.719	1.154	.688	1.105	.628	1.008	.567	.911
5.00	1.045	2.405	1.002	2.308	.960	2.211	.875	2.017	.791	1.823
7.50	1.272	3.608	1.220	3.463	1.169	3.317	1.066	3.026	.963	2.735
10.00	1.461	4.811	1.402	4.617	1.343	4.423	1.225	4.035	1.107	3.647
20.00	1.994	9.623	1.914	9.235	1.833	8.847	1.673	8.070	1.512	7.294
30.00	2.290	14.435	2.197	13.852	2.105	13.270	1.920	12.105	1.736	10.941
40.00	2.405	19.247	2.308	18.470	2.211	17.694	2.017	16.141	1.823	14.588
50.00	2.308	24.058	2.215	23.088	2.122	22.117	1.935	20.176	1.749	18.235
60.00	1.980	28.870	1.900	27.705	1.820	26.541	1.660	24.211	1.500	21.882
70.00	1.498	33.682	1.438	32.323	1.377	30.964	1.256	28.247	1.135	25.529
80.00										
90.00										
100.00	.025	48.117	.025	46.176	.025	44.235	.025	40.352	.025	36.470

Sta	50		60		70		80		85 — Tip	
% Chord	Y_U	X	Y_U	X	Y_U	X	Y_U	X	Y_U	X
1.25	.376	.407	.331	.358	.287	.310	.242	.261	.220	.237
2.50	.507	.814	.446	.717	.385	.620	.325	.523	.295	.475
5.00	.706	1.629	.621	1.435	.537	1.241	.452	1.047	.410	.950
7.50	.860	2.444	.757	2.152	.654	1.861	.551	1.570	.500	1.425
10.00	.988	3.258	.870	2.870	.752	2.482	.634	2.094	.575	1.900
20.00	1.352	6.517	1.191	5.741	1.030	4.964	.870	4.188	.790	3.800
30.00	1.551	9.776	1.366	8.611	1.182	7.447	.997	6.282	.905	5.700
40.00	1.629	13.035	1.435	11.482	1.241	9.929	1.047	8.376	.950	7.600
50.00	1.562	16.294	1.376	14.352	1.189	12.411	1.003	10.470	.910	9.500
60.00	1.340	19.552	1.180	17.223	1.020	14.894	.860	12.564	.780	11.400
70.00	1.014	22.811	.892	20.094	.771	17.376	.650	14.658	.590	13.300
80.00										15.200
90.00										17.100
100.00	.025	32.588	.025	28.705	.025	24.823	.025	20.941	.025	19.000

Figure 63 — Stabilizer and Elevator Basic Dimensions



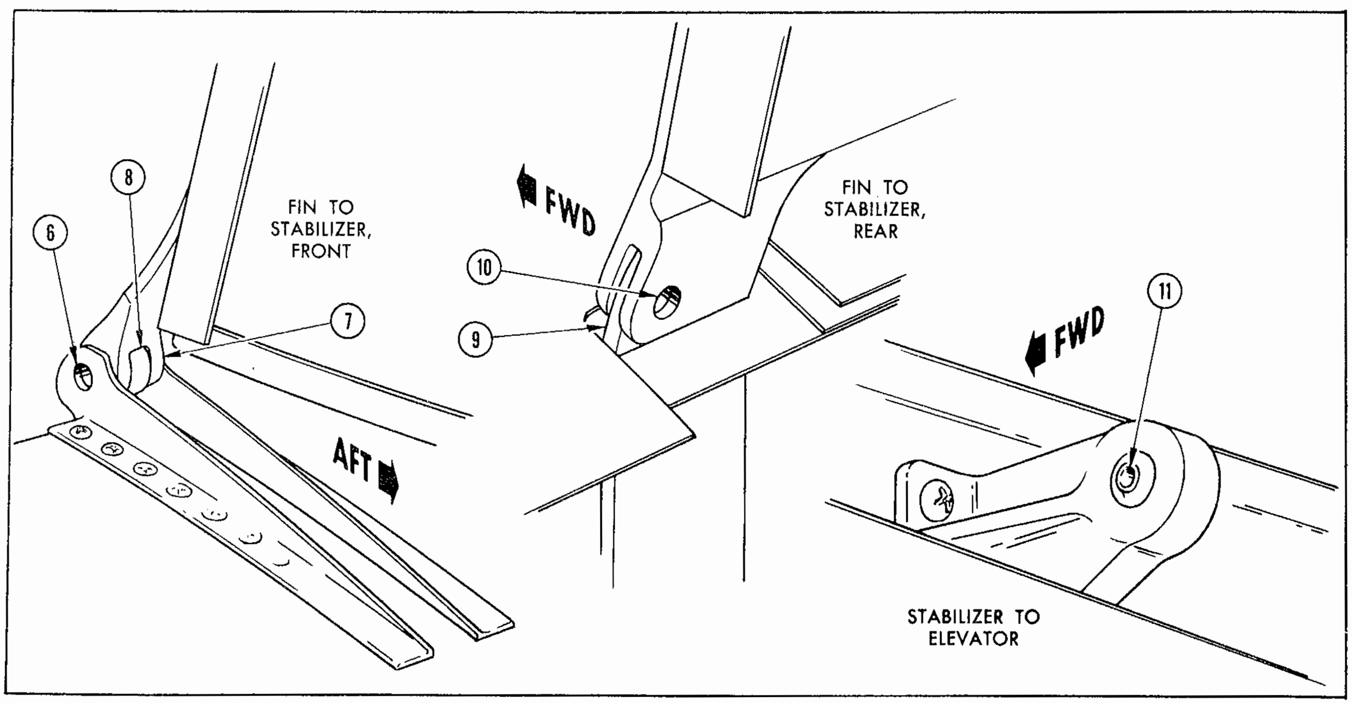


Figure 63A — Allowable Wear Tolerances and Permissible Reaming and Bushing, Empennage to Fuselage Attachment

ALLOWABLE WEAR TOLERANCES

Joint	*Original Equipped With Bushing*	*Orig. Max. Hole or Bushing ID*	*Original Minimum Shaft OD*	*Original Maximum Clearance*	*Maximum Clearance Due to Wear*
1	No	.4384	.4362	.0022	.0037
2	No	.4384	.4362	.0022	.0037
3	No	.4384	.4362	.0022	.0037
4	No	.4384	.4362	.0022	.0037
5			Excessive Wear Indicated by Loose Bearing		
6	No	.4384	.4362	.0022	.0037
7	No	.4384	.4362	.0022	.0037
8	No	.4384	.4362	.0022	.0037
9	No	.5009	.4986	.0023	.0039
10	No	.5009	.4986	.0023	.0039
11			Excessive Wear Indicated by Loose Bearing		

NOTE: Data included herein are intended for use as guides and are subject to revision pending further field experience.

PERMISSIBLE REAMING AND BUSHING

Joint	*Orig. Hole Dia. (Nom.)*	*Oversize Reamed Hole Diameter*		*Bushing*				
				Material and Heat Treat	*ID*		*OD*	
		Min.	*Max.*		*Min.*	*Max.*	*Min.*	*Max.*
1	.4375	.6250	.6259	NE8630 Steel	.4373	.4385	.6262	.6368
2	.4375	.5312	.5321	NE8630 Steel	.4373	.4385	.5324	.5330
3	.4375	.6875	.6884	NE8630 Steel	.4373	.4385	.6887	.6893
4	.4375	.6875	.6884	NE8630 Steel	.4373	.4385	.6887	.6893
5	.7500	.8750	.8759	NE8630 Steel	.7498	.7510	.8763	.8770
6	.4375	.6875	.6884	NE8630 Steel	.4373	.4385	.6887	.6893
7	.4375	.6875	.6884	NE8630 Steel	.4373	.4385	.6887	.6893
8	.4375	.6875	.6884	NE8630 Steel	.4373	.4385	.6887	.6893
9				No Rework				
10	.5000	.5937	.5946	NE8630 Steel	.4998	.5010	.5949	.5955
11	.9000	1.0250	1.0260	NE8630 Steel	.8998	.9010	1.0265	1.0273

NOTES: Material is normalized steel tubing.
See Section I, paragraph 20 for installation of bushings.

Key to Figure 63A

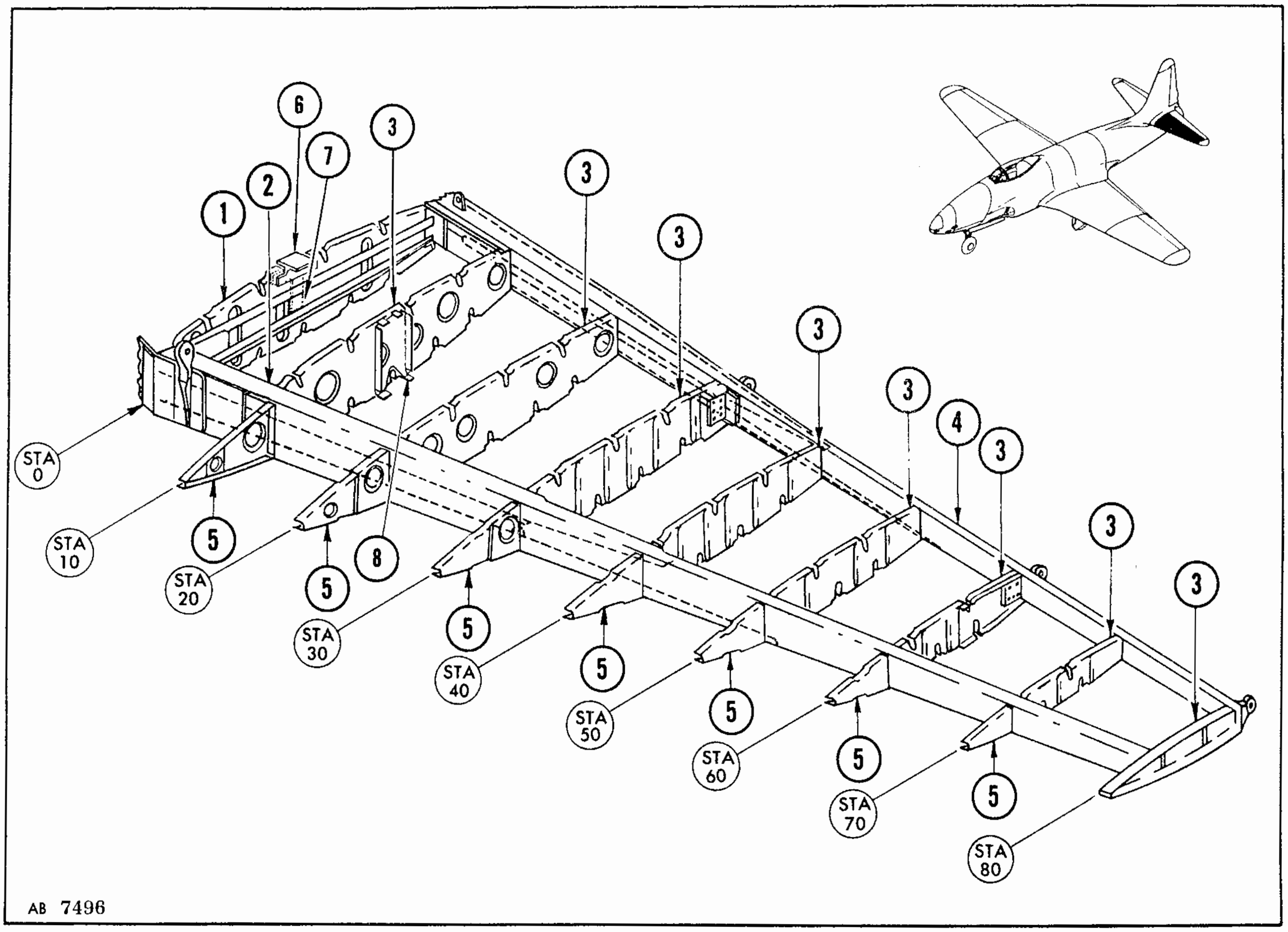
5. REAMING AND BUSHING OF ELONGATED OR ENLARGED HOLES.

The holes in the tail fins and stabilizer that can be reamed oversize are shown in figure 63A. Ream only as necessary to produce a round hole. Do not ream to maximum dimensions unless it is necessary to clean up the damages. Figure 63A shows the maximum permissible hole sizes.

Reaming other than that shown in figure 63A will require special engineering approval. See section I, paragraph 20 for instructions on bushing installation.

6. ALLOWABLE WEAR OF ATTACHING HOLES.

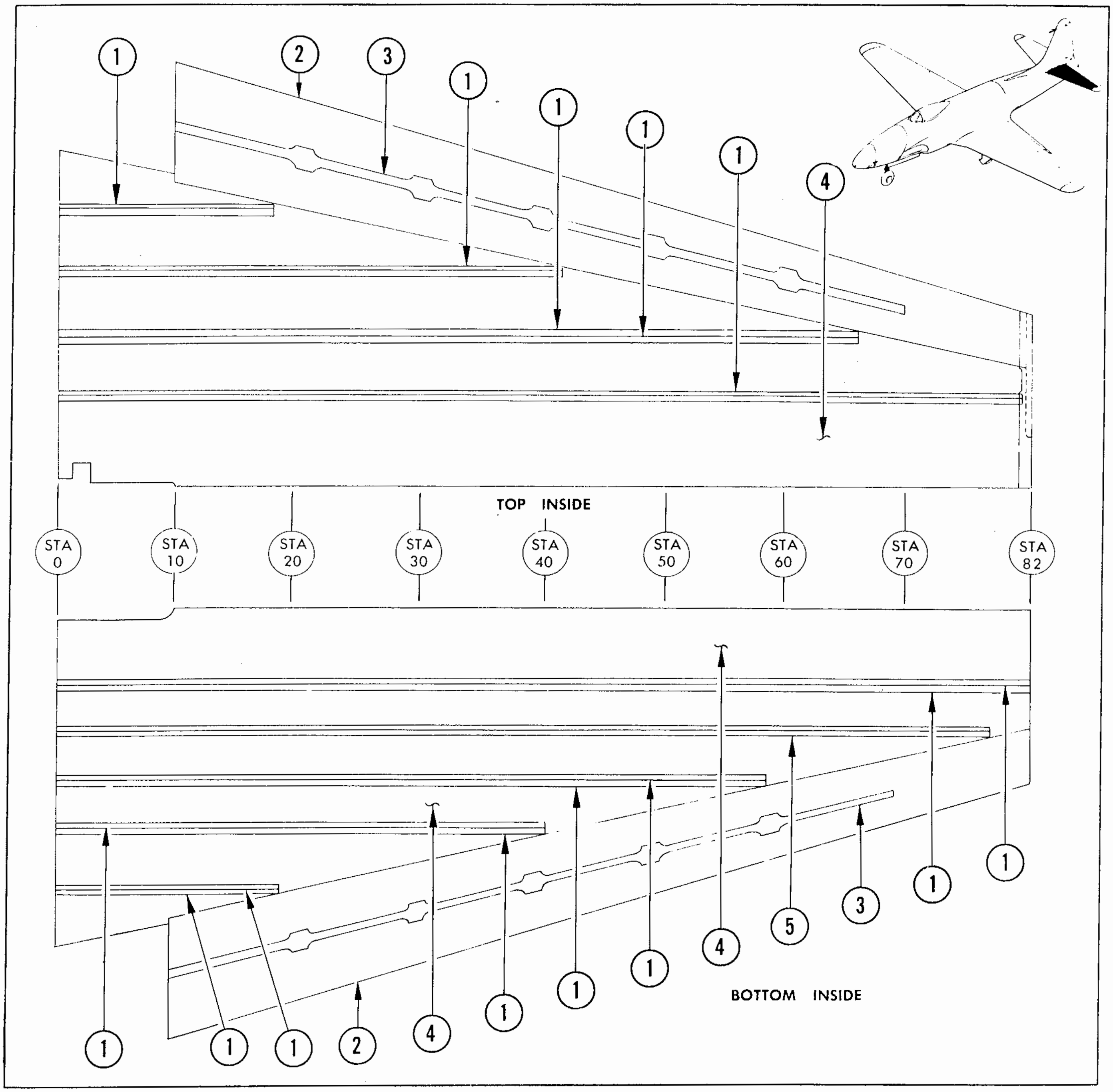
The attaching holes shown in figure 63A may be checked for permissible elongation or wear to the limits shown on the key to figure 63A. The wear may be considered negligible until the indicated clearances are exceeded. Wear which exceeds the allowables should be repaired by bushing to the limits provided in the companion table.



Item	Part Name	Figure Reference Neg. Damage	Repair	Remarks
1	Rib			
	Web	134	150, 151	
	Stiffener	131	139	
2	Front Spar	133	72	
3	Ribs	134	149, 150, 151	
4	Rear Spar	133	72	
5	Leading-edge Ribs	134	149, 150, 151	
6	Tee		R	LS2242
7	Plate		R	.125
8	Bulkhead		R	.040

NOTES: All material 24S-T Alclad unless otherwise noted.
Items not indicated are not repairable.
R indicates items recommended for replacement.

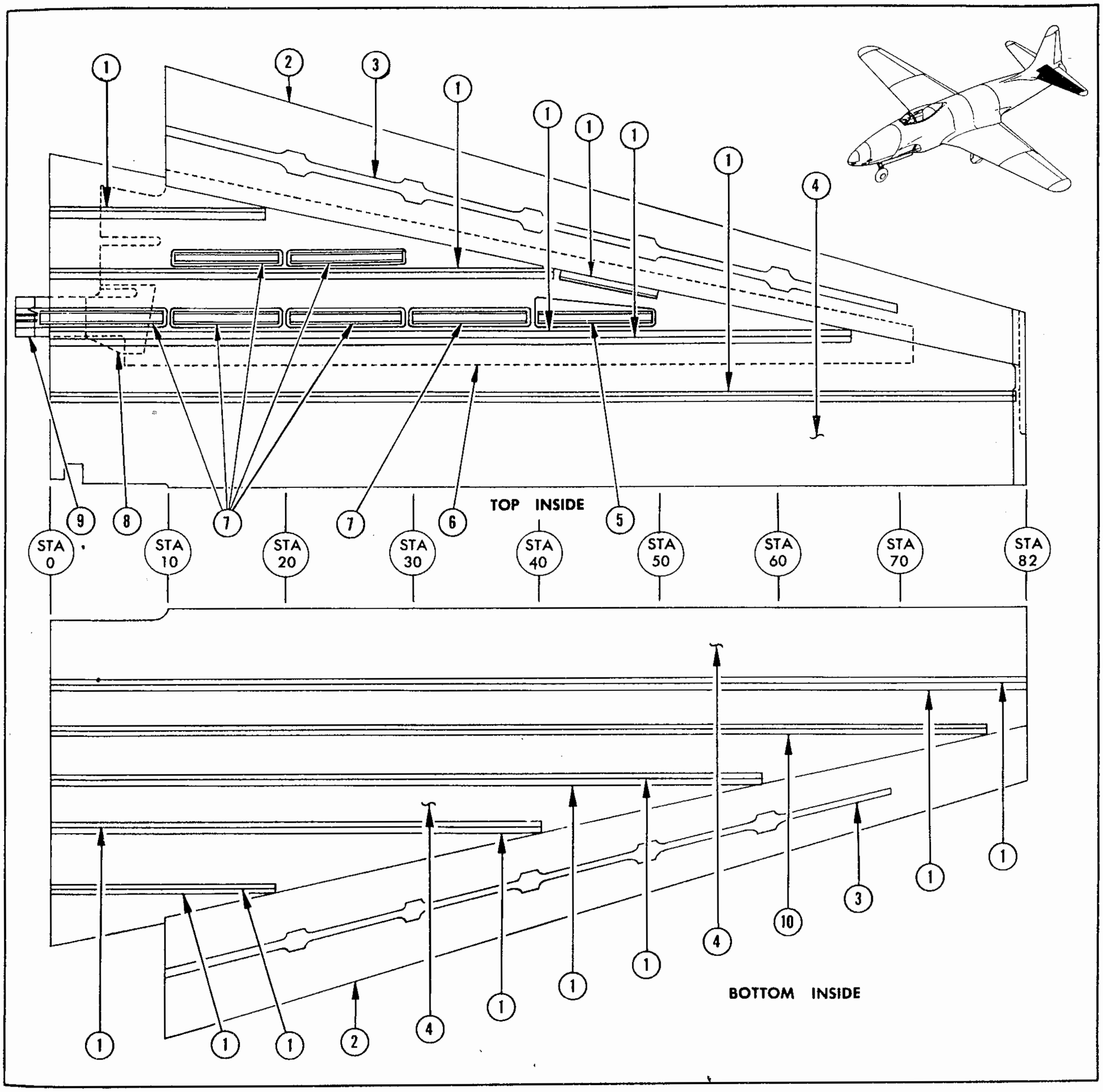
Figure 64 — Stabilizer Structure Reference Diagram



Item	Part Name	Figure Reference Neg. Damage	Repair	Remarks
1	Stringer	132	73	LS303
2	Skin	130	74	
3	Stringer	131	73	LS133 — .025
4	Skin	130	75	24S-RT
5	Stringer	132	73	LS248

NOTES: All material 24S-T unless otherwise noted.
Items not indicated are not repairable.

Figure 65 — Stabilizer Skin and Stiffeners Reference Diagram — Without Upper Surface Exterior Doubler



Item	Part Name	Figure Reference Neg. Damage	Figure Reference Repair	Remarks
1	Stringer	132	73	LS303
2	Skin	130	74	
3	Stringer	131	73	LS133 — .025
4	Skin	130	75, 75A	24S-RT
5	Intercostal	131	NR	24S-T0
6	Doubler		75A	75S-T
7	Intercostal	132	NR	LS3245
8	Plate		NR	75S-T
9	Doubler		NR	75S-T
10	Stringer	132	73	LS248

NOTES: All material 24S-T Alclad unless otherwise noted.
Items not indicated are not repairable.

Figure 65A — Stabilizer Skin and Stiffeners Reference — With Upper Surface Exterior Doubler

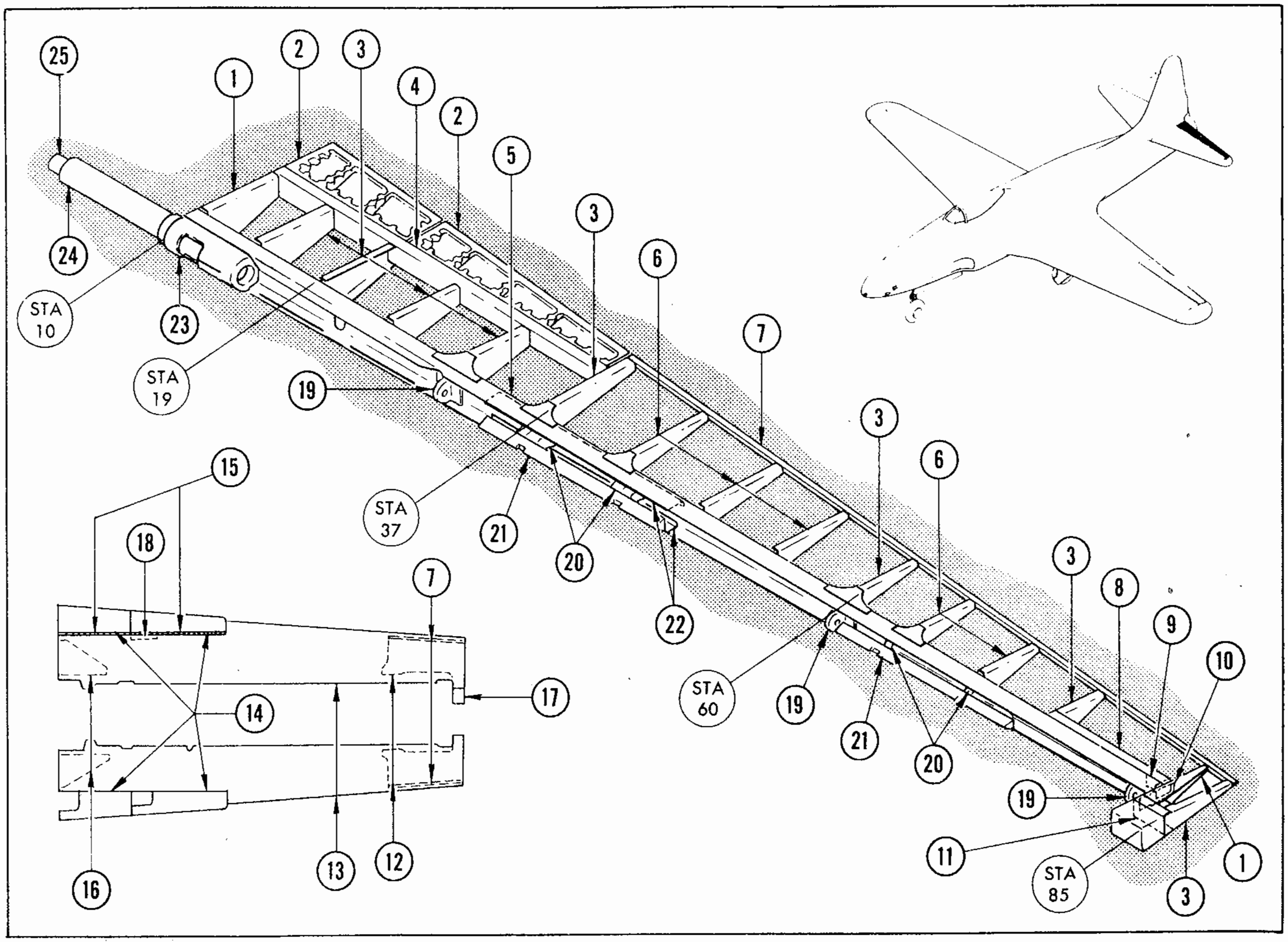


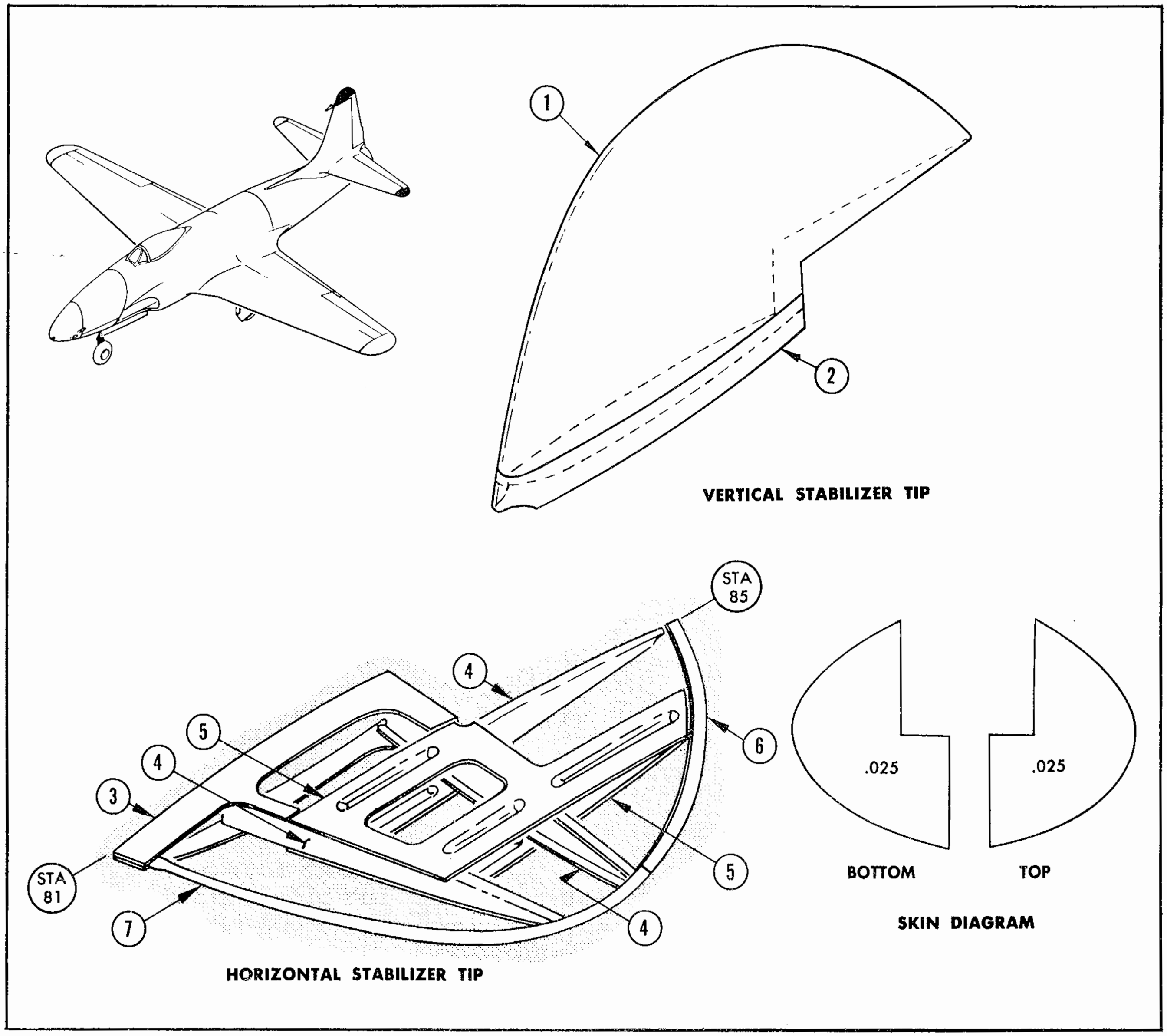
Figure 66A — Elevator Reference Diagram

FIGURE 66 DELETED.

Item	Part Name	Figure Reference Neg. Damage	Repair	Remarks
1	Rib	134	150, 151	.040
2	Frame		NR	13 Alum. Al. Die Casting Spec. AN-QQ-366
3	Ribs	134	150, 151	.032
4	Spar	133	143	.032
5	Spar	133	☆76	.040
6	Ribs	134	150, 151	.025
7	Trailing Edge		77	LS537 53S-T
8	Channel	133	143	.032
9	Clip		R	LS689
10	Plate		R	.206 (Min.)
11	Rib	134	77B	.051
12	Doublers		77B	.032
13	Skins	130	77, 77B	.032 24S-RT
14	Skins	130	R	.025
15	Hinges		R	LS2227
16	Doublers		R	.040
17	Cover		R	.020
18	Angle		R	.040
19	Fitting		NR	B195-T-6 Permanent Mold Spec. AN-QQ-A-383
20	Fitting		NR	220-T-4 Alum. Alloy Casting Spec. AN-QQ-A-392
21	Counterweight		NR	Naval Brass Bar Spec. AN-QQ-B-636
22	Stiffeners	133	☆76	.051
23	Bracket		NR	195-T-6 Alum. Alloy Spec. AN-QQ-390
24	Torque Tube		NR	NE8630 Steel Tube Spec. AN-T-15 Normalized
25	Torque Tube		NR	NE8630 Steel Rod, HT 125,000-145,000 psi

NOTES: All material is 24S-T aluminum Alclad unless otherwise noted.
Items not indicated are not repairable. R indicates items recommended for replacement. NR indicates non-repairable items.
☆See text, section III, paragraph 3.

Key to Figure 66A

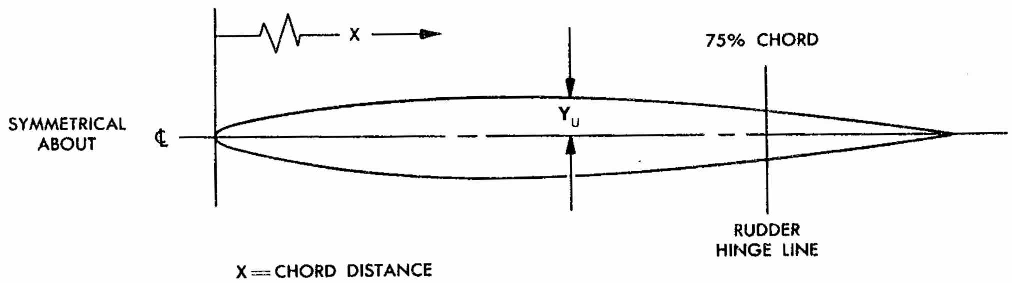


AB 4807

Item	Part Name	Figure Reference Neg. Damage	Figure Reference Repair	Remarks
1	Plastic Tip		NR	
2	Plate		NR	.064
3	Doubler	130	79	
4	Rib	134	150, 151	
5	Stiffener	130	78	
6	Trailing Edge		78	
7	Leading Edge		78	

NOTES: All material 24S-T Alclad unless otherwise noted.
Items not indicated are not repairable.

Figure 67 — Stabilizer and Fin Tips Reference Diagram



DIMENSIONS ARE TO OUTSIDE SKIN LINE

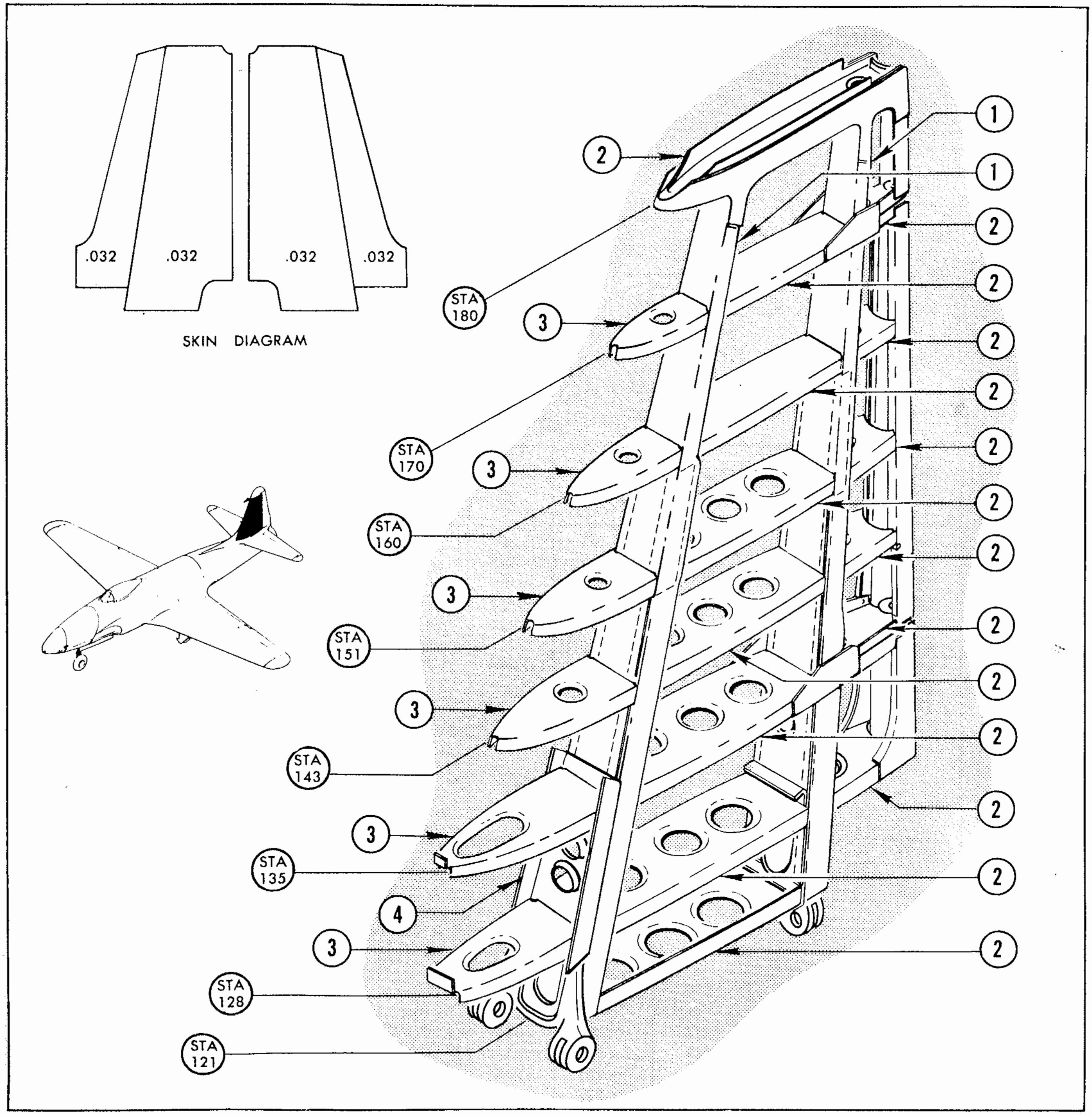
NOTE: SEE FIG. 22 FOR STATION LOCATIONS

Sta.	118		124		128		135		143	
% Chord	Y_U	X	Y_U	X	Y_U	X	Y_U	X	Y_U	X
1.25	.75	.810		.768	.682	.739	.635	.688	.582	.630
2.50	1.015	1.625		1.537	.923	1.479	.860	1.377	.787	1.261
5	1.410	3.250		3.075	1.283	2.958	1.195	2.755	1.094	2.522
7.50	1.720	4.875		4.613	1.565	4.438	1.457	4.132	1.333	3.783
10	1.975	6.500		6.150	1.798	5.917	1.674	5.510	1.532	5.044
20	2.695	13.00		12.301	2.453	11.835	2.285	11.020	2.092	10.089
30	3.095	19.5		18.452	2.818	17.753	2.624	16.531	2.402	15.134
40	3.25	26.0		24.602	2.958	23.671	2.755	22.041	2.522	20.179
50	3.12	32.5		30.753	2.840	29.589	2.644	27.552	2.420	25.223
60	2.675	39.0		36.904	2.435	35.507	2.267	33.062	2.076	30.268
70	2.025	45.5		43.055	1.843	41.425	1.716	38.573	1.571	35.313
80										
90										
100	.025	65.00	.025	61.507	.025	59.179	.025	55.104	.025	50.447

Sta.	151		160		170		181		185-Tip	
% Chord	Y_U	X	Y_U	X	Y_U	X	Y_U	X	Y_U	X
1.25	.528	.572	.467	.506	.400	.434			.3	.325
2.50	.714	1.144	.632	1.013	.541	.868			.405	.650
5	.993	2.289	.880	2.027	.754	1.736			.565	1.300
7.50	1.210	3.434	1.071	3.041	.916	2.604			.685	1.950
10	1.391	4.579	1.232	4.055	1.055	3.473			.79	2.6
20	1.899	9.158	1.682	8.110	1.441	6.946			1.080	5.2
30	2.181	13.737	1.932	12.165	1.655	10.419			1.24	7.8
40	2.289	18.316	2.027	16.220	1.736	13.892			1.3	10.4
50	2.196	22.895	1.944	20.276	1.664	17.365	1.356	14.164	1.245	13.00
60	1.884	27.474	1.668	24.331	1.429	20.838	1.165	16.997	1.070	15.6
70	1.426	32.053	1.263	28.386	1.082	24.311	.882	19.829	.810	18.2
80										
90										
100	.025	45.791	.025	40.552	.025	34.731	.025	28.328	.025	26.00

NOTE: USE THESE BASIC DIMENSIONS IN THE MANUFACTURE OF JIGS AND TEMPLATES AS DESCRIBED IN SECTION I PARAGRAPH 5

Figure 68 — Fin and Rudder Basic Dimensions



Item	Part Name	Figure Reference Neg. Damage	Figure Reference Repair	Remarks
	Skin	130	74, 75, 135	
1	Front and Rear Beams	133	151	
	Caps		NR	LS3246
	Attaching Angles	132		LS3289
2	Ribs	134	149, 150, 151	
3	Leading-edge Ribs	134	149, 150, 151, 154	
4	Reinf. Channel	134	155	

NOTES: All material 24S-T unless otherwise noted.
Items not indicated are not repairable.
Items marked "NR" are not repairable.

Figure 69 — Fin Reference Diagram, F-80A and F-80C Airplanes

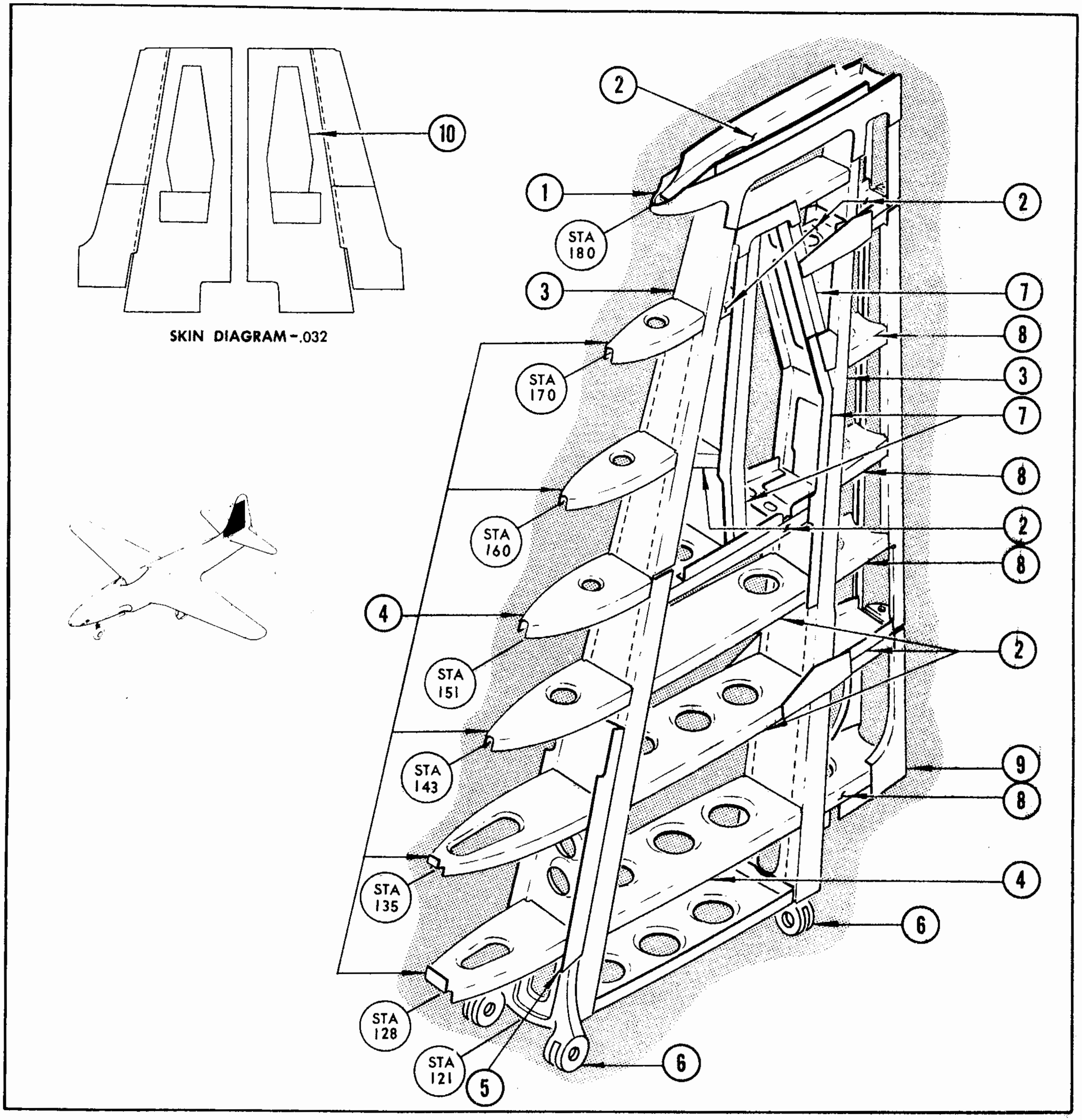


Figure 69A — Fin Reference Diagram, F-80B Airplanes

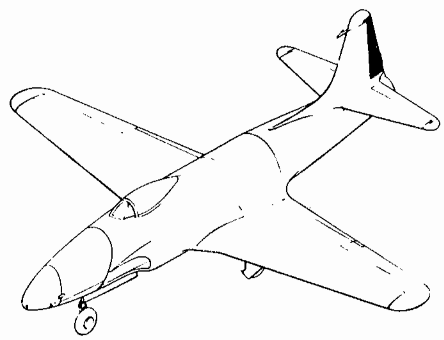
Item	Part Name	Figure Reference Neg. Damage	Figure Reference Repair	Remarks
	Skin	130	74, 75, 135	
1	Doubler	130		.032
2	Ribs	134	149, 150, 151	.032
3	Beam, Front and Rear			
	Webs	133	151	.051
	Caps	132	NR	LS3296
	Attaching Angles	132	NR	LS3289
4	Ribs, Nose	134	149, 150, 151, 154	.032
5	Reinforcing Angle	134	155	.032
6	Fitting	See sec. I, para. 5	NR	NE8630 Steel, HT 150,000-170,000 psi
7	Ribs	134	149, 150, 151	.040
8	Ribs	134	149, 150, 151	.025
9	Reinforcement	134	NR	.072
10	Cover	130	75, 135	.064

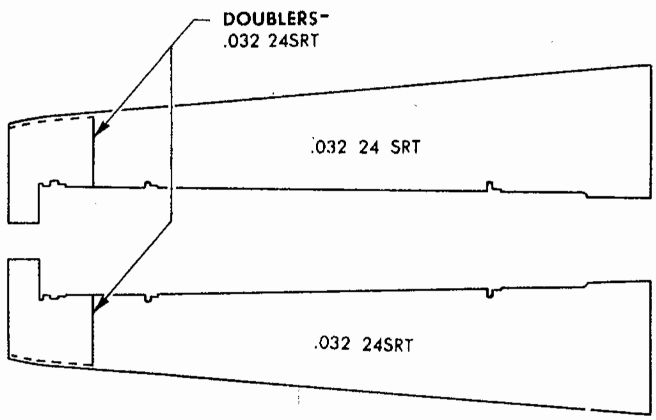
NOTES: All material is 24S-T unless otherwise noted. Items not indicated are not repairable.
NR indicates non-repairable.

Key to Figure 69A

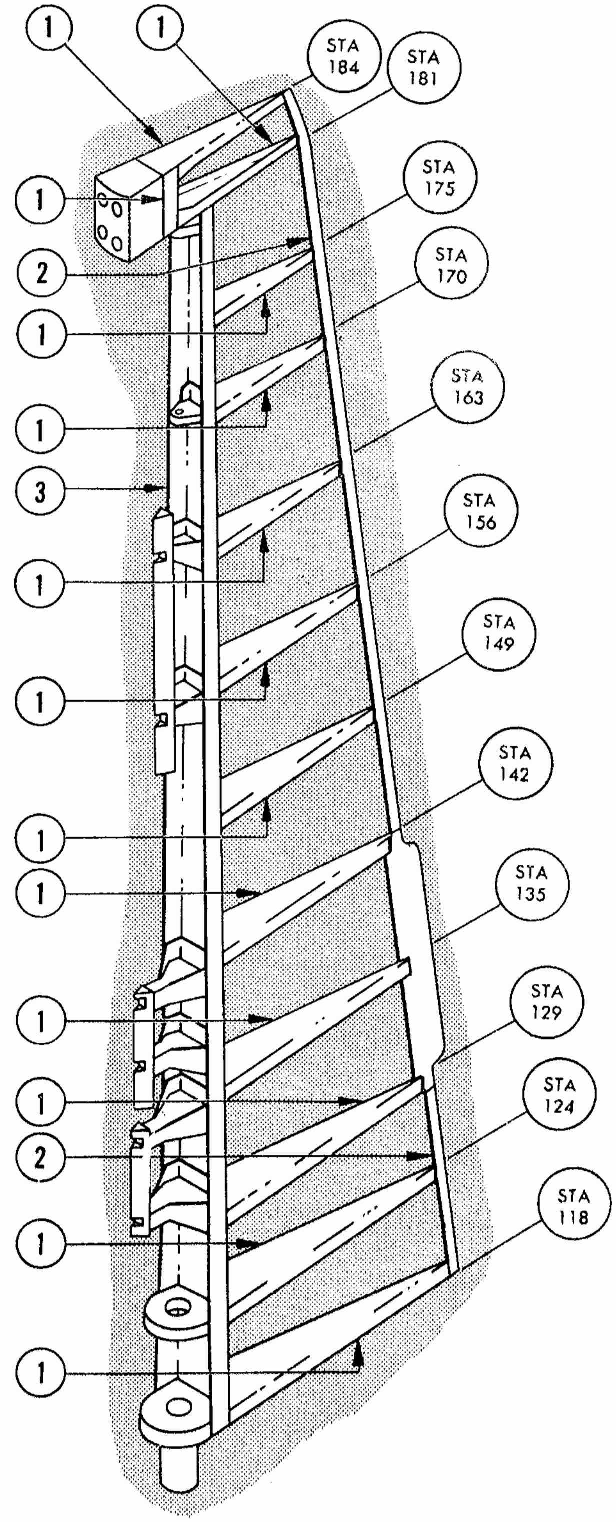
FIGURE 70 DELETED.

PAGE 72C DELETED.





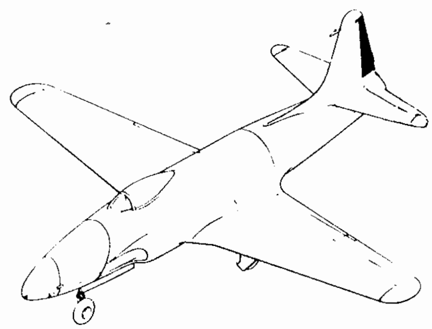
SKIN DIAGRAM

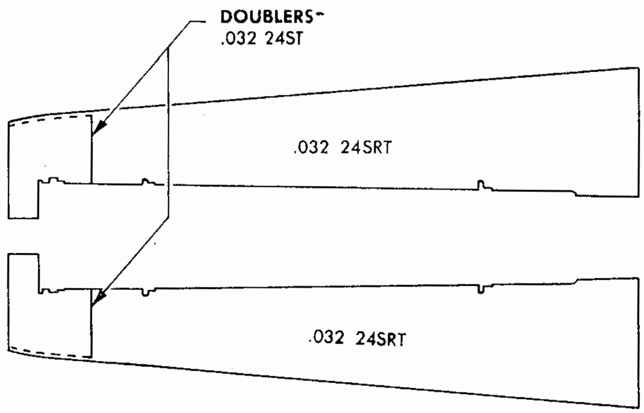


Item	Part Name	Figure Reference Neg. Damage	Repair	Remarks
	Skin	130	77, 77A	24S-RT-.032
1	Rib	134	150, 151 (77A)	
2	Trailing Edge			LS537
3	Spar	134	Above sta. 129 155 Below sta. 129 NR	

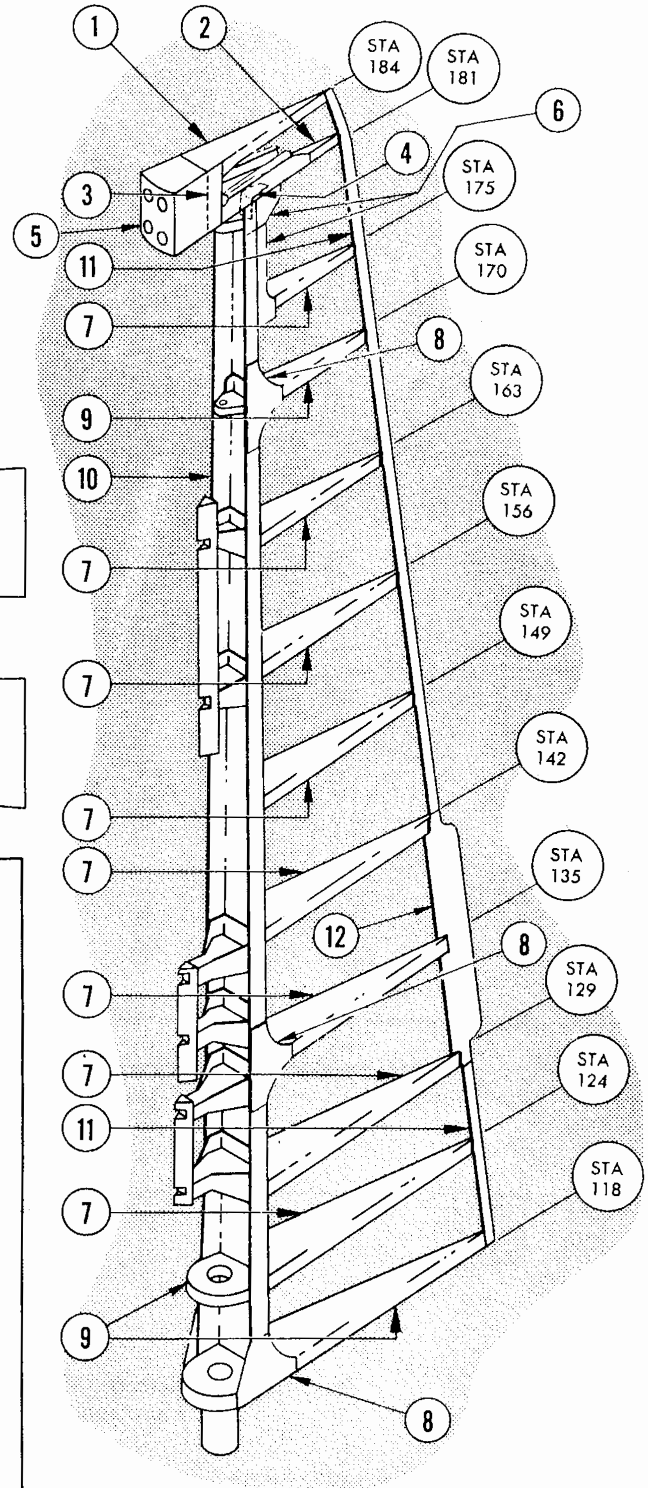
NOTES: All material 24S-T unless otherwise noted.
Items marked "NR" are not repairable.
Items not indicated are not repairable.

Figure 70 — Rudder Reference Diagram — Prior to Serial No. AF45-8558





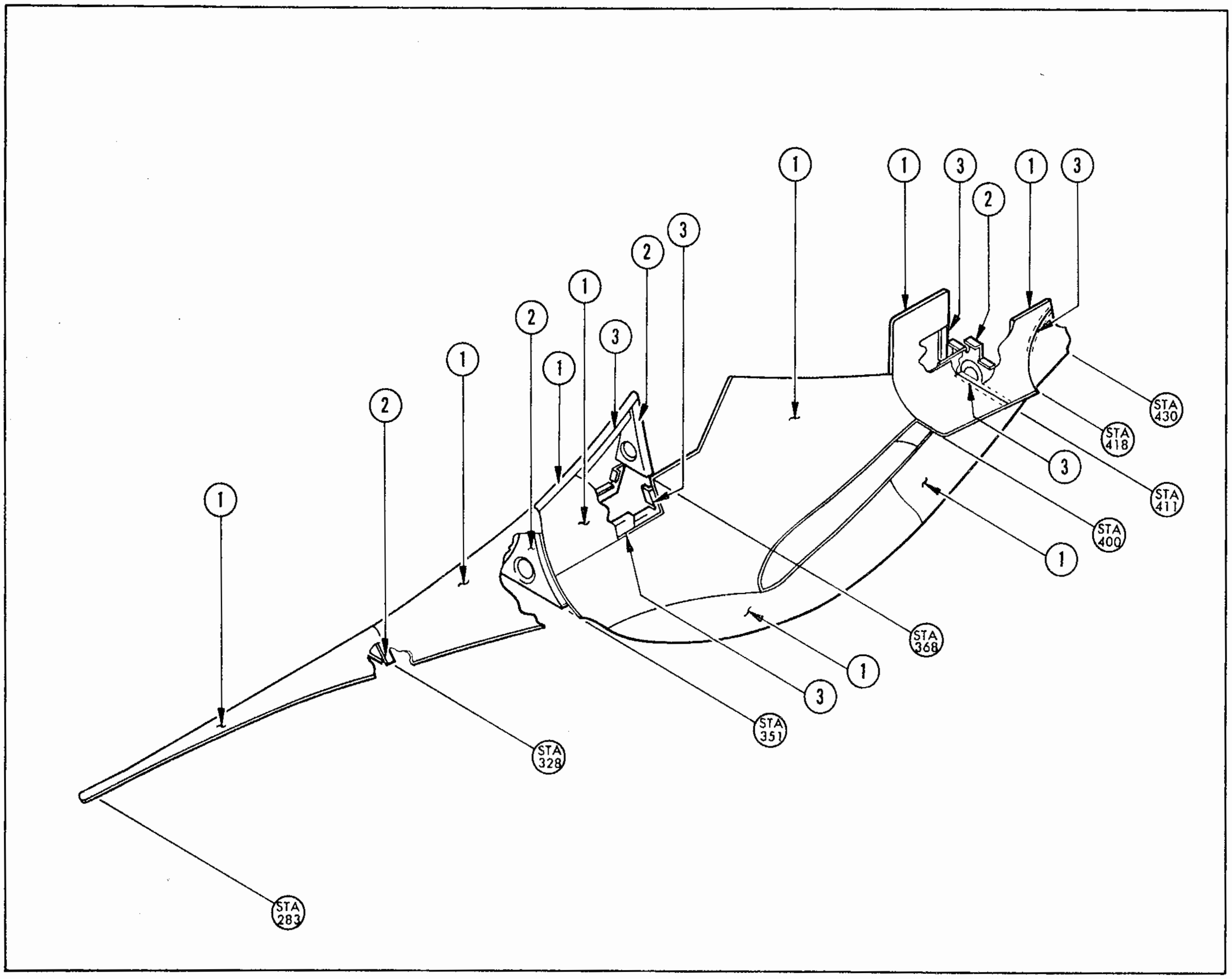
SKIN DIAGRAM



Item	*Part Name*	*Figure Reference Neg. Damage*	*Repair*	*Remarks*
	Skin	130	77, 77A	.032 24S-RT
1	Rib	134	R (77A)	.032
2	Rib	134	R (77A)	.040
3	Rib	134	R (77A)	.051
4	Clip		NR	LS3539
5	Cup		NR	.020
6	Channel		R	.032
7	Rib	134	150, 151	.025
8	Doubler		R	.032
9	Rib	134	150, 151	.032
10	Spar	134	155 (Above Sta. 129)	.032 (NR Below Sta. 129)
11	Trailing Edge		NR	LS537
12	Tab		R	.032

NOTES: Material is 24S-T Alclad unless otherwise noted.
NR indicates non-repairable.
R indicates items recommended for replacement.

Figure 70A — Rudder Reference Diagram



Item	Part Name	Figure Reference Neg. Damage	Figure Reference Repair	Remarks
1	Skin	130	135, 136, 137	.025
2	Former	134	149, 150, 151	
3	Stiffener	131	139	

NOTES: All material 24S-T Alclad unless otherwise noted.
Items not indicated are not repairable.

Figure 71 — Tail Fillets Reference Diagram

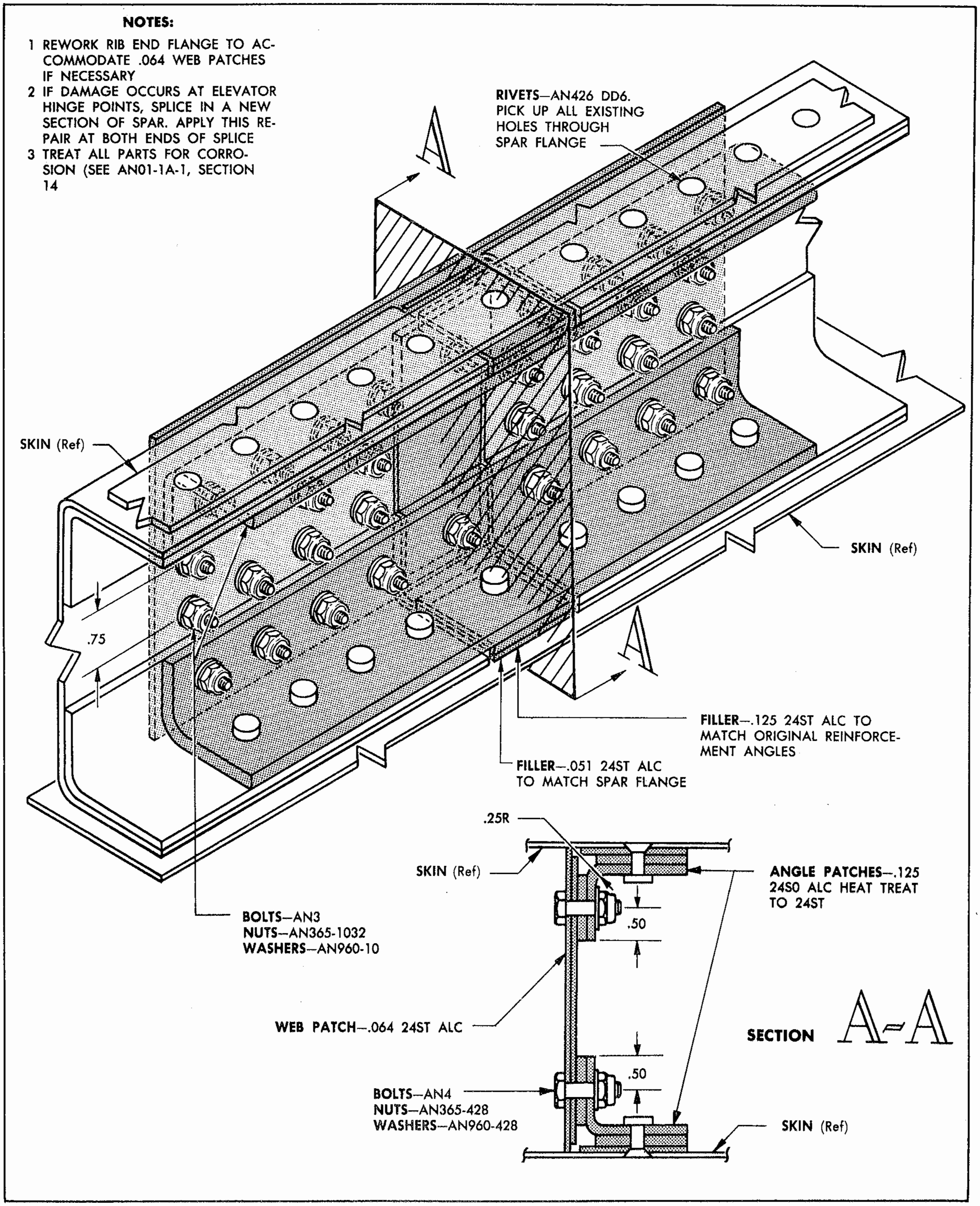


Figure 72 — Stabilizer Beam Splice

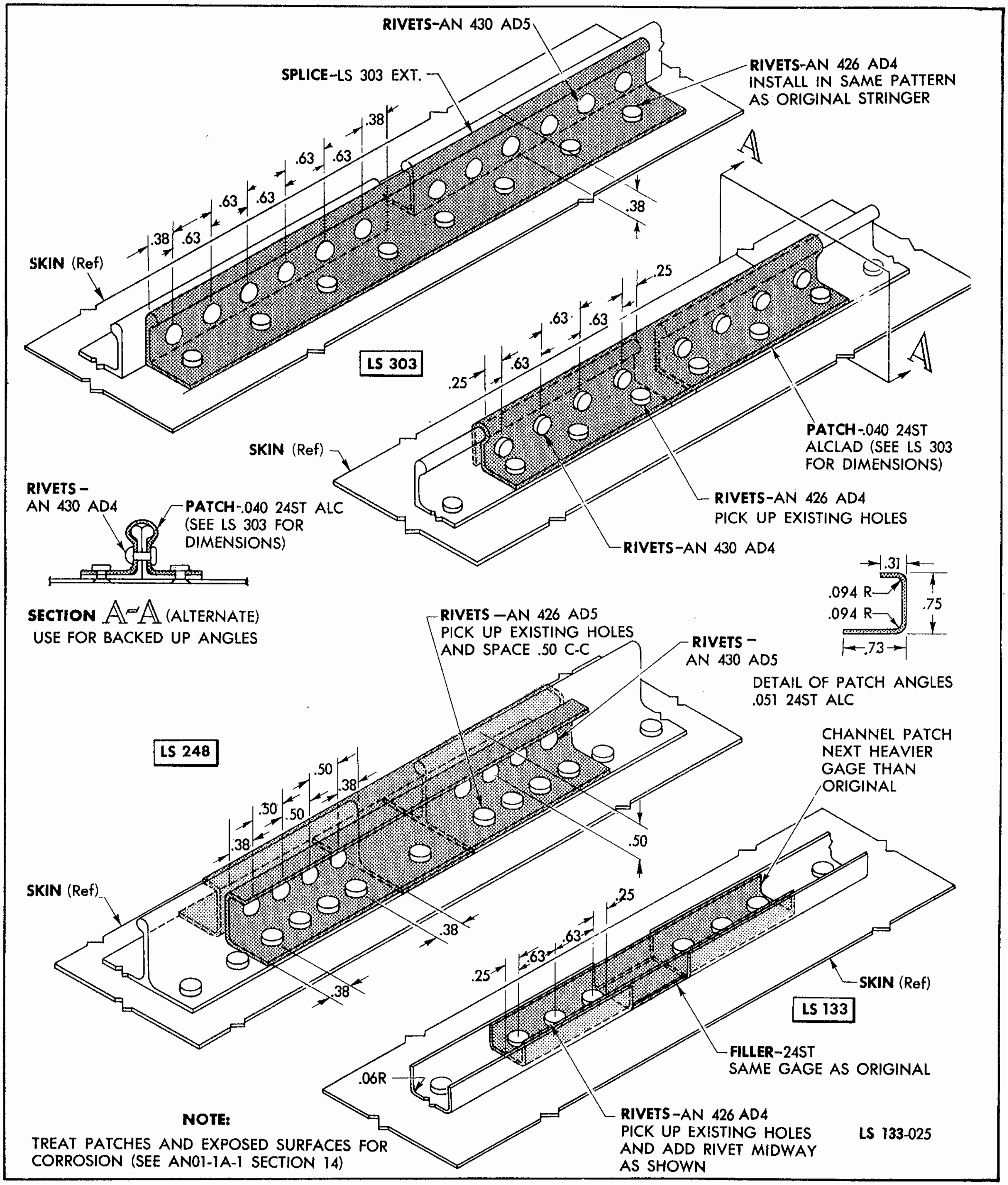


Figure 73 — Stabilizer Stringer Repairs

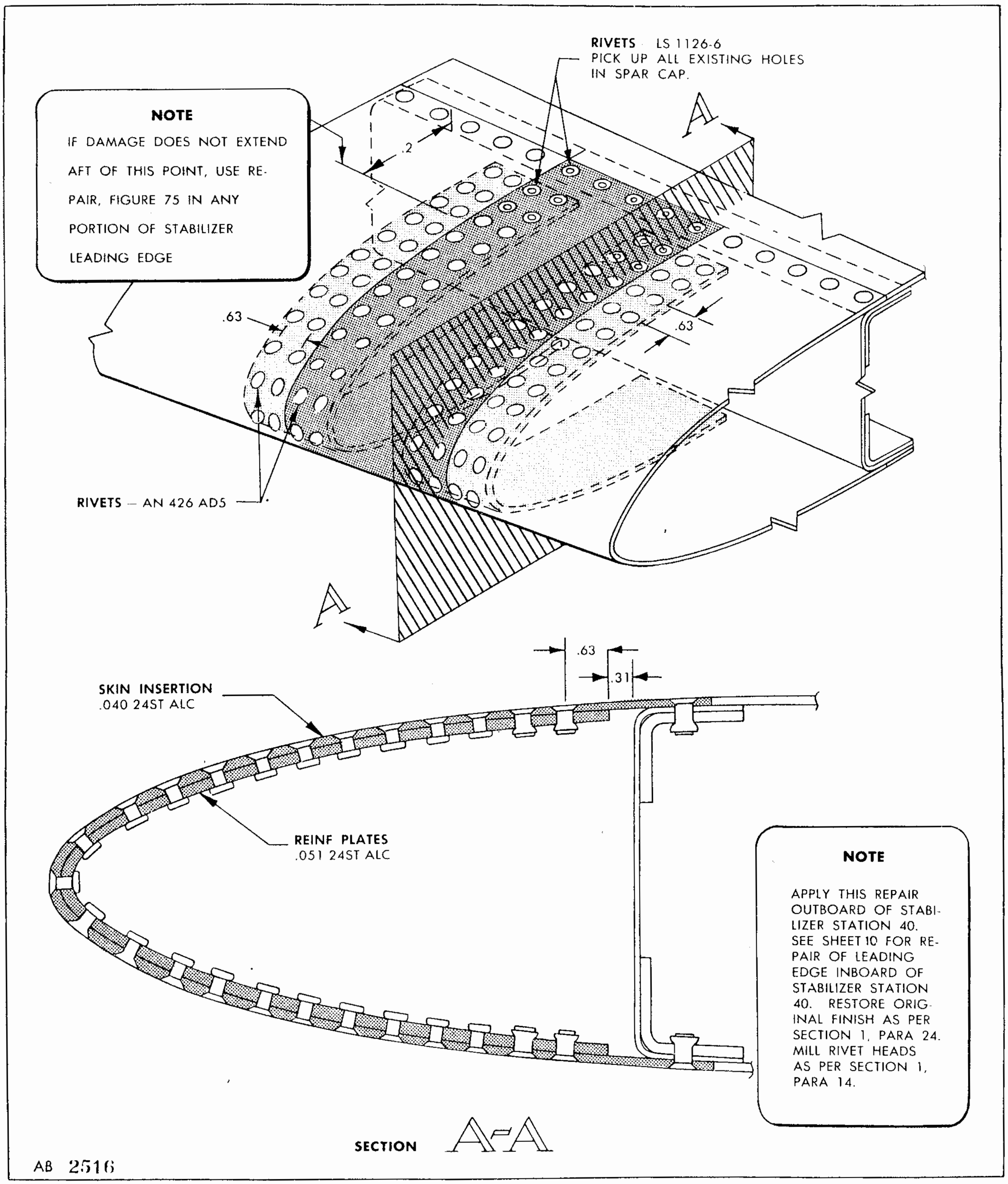


Figure 74 (Sheet 1 of 10 Sheets) — Stabilizer Leading Edge Repair

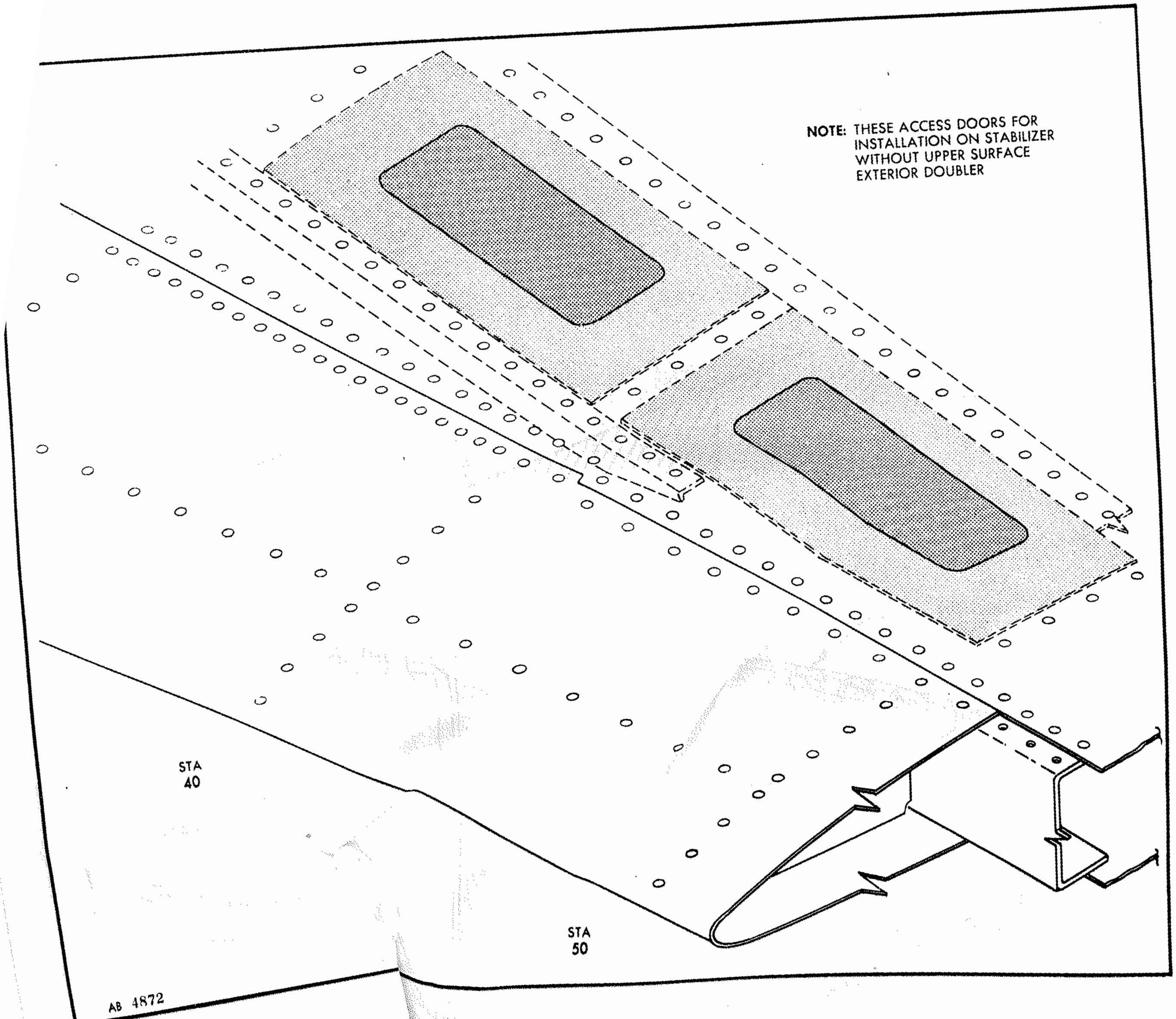
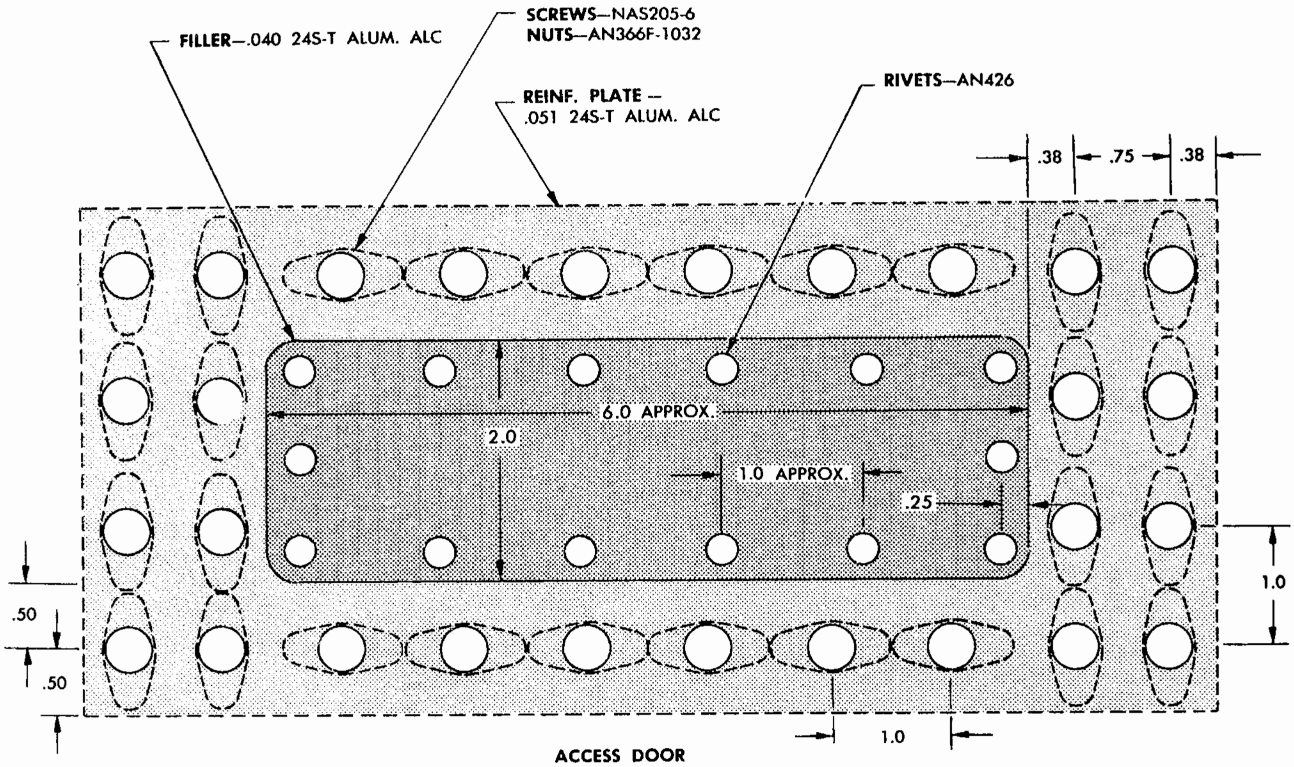
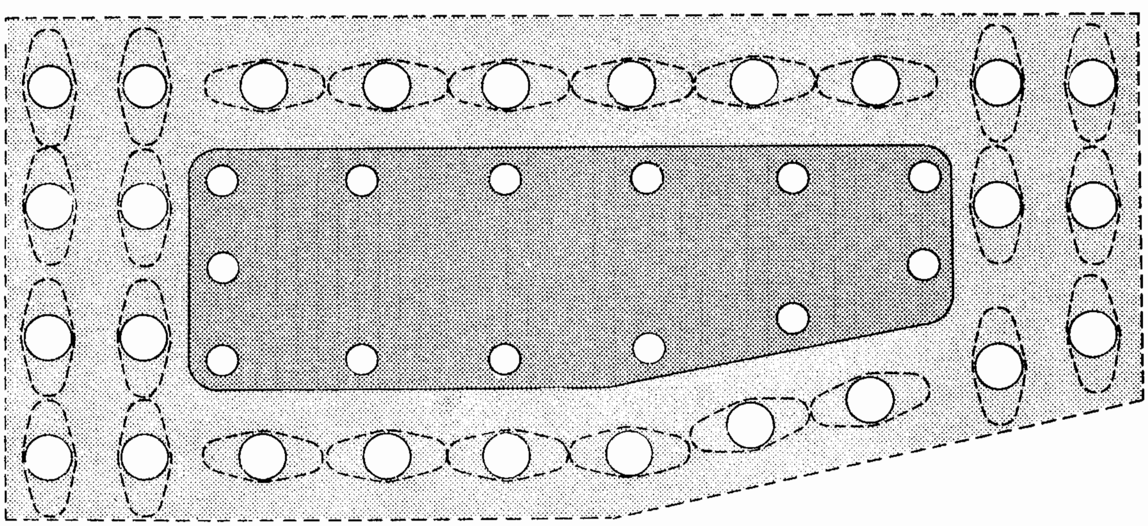


Figure 74 (S f 10 Sheets) — Stabilizer Leading Edge Repair



ACCESS DOOR
INBOARD OF STABILIZER STA 40



ACCESS DOOR
STABILIZER STATION 40-50

NOTE: 1. THESE ACCESS DOORS FOR INSTALLATION ON STABILIZERS WITHOUT UPPER SURFACE EXTERIOR DOUBLER
2. LAY OUT SCREW PATTERN AS INDICATED
3. CUT ACCESS HOLE TO APPROXIMATE SIZE AS INDICATED
4. FABRICATE FILLER AND REINF PLATE AND ATTACH FILLER TO REINF PLATE
5. INSERT DOOR ASSEMBLY IN STABILIZER 90° TO POSITION

AB 4873

Figure 74 (Sheet 3 of 10 Sheets) — Stabilizer Leading Edge Repair

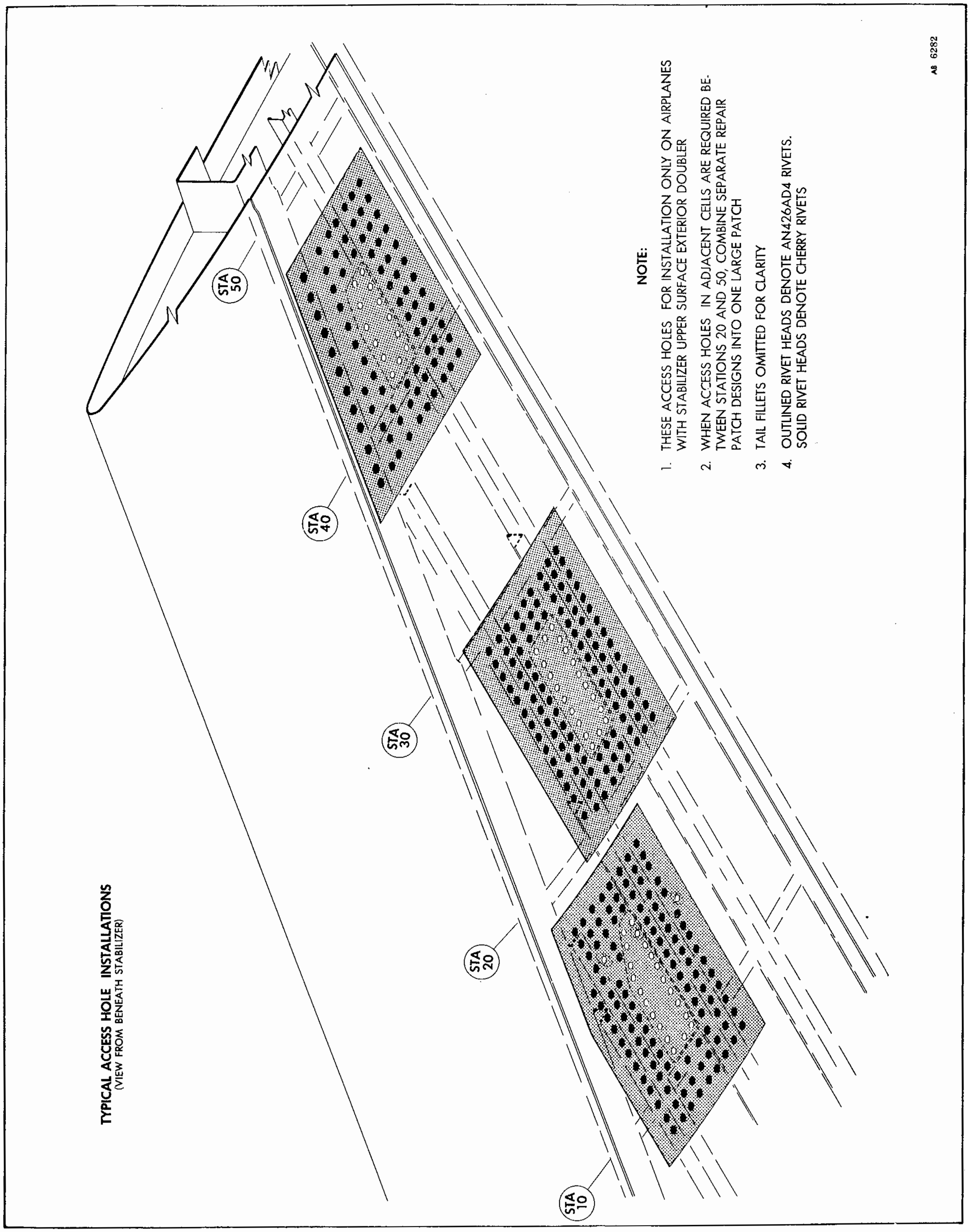
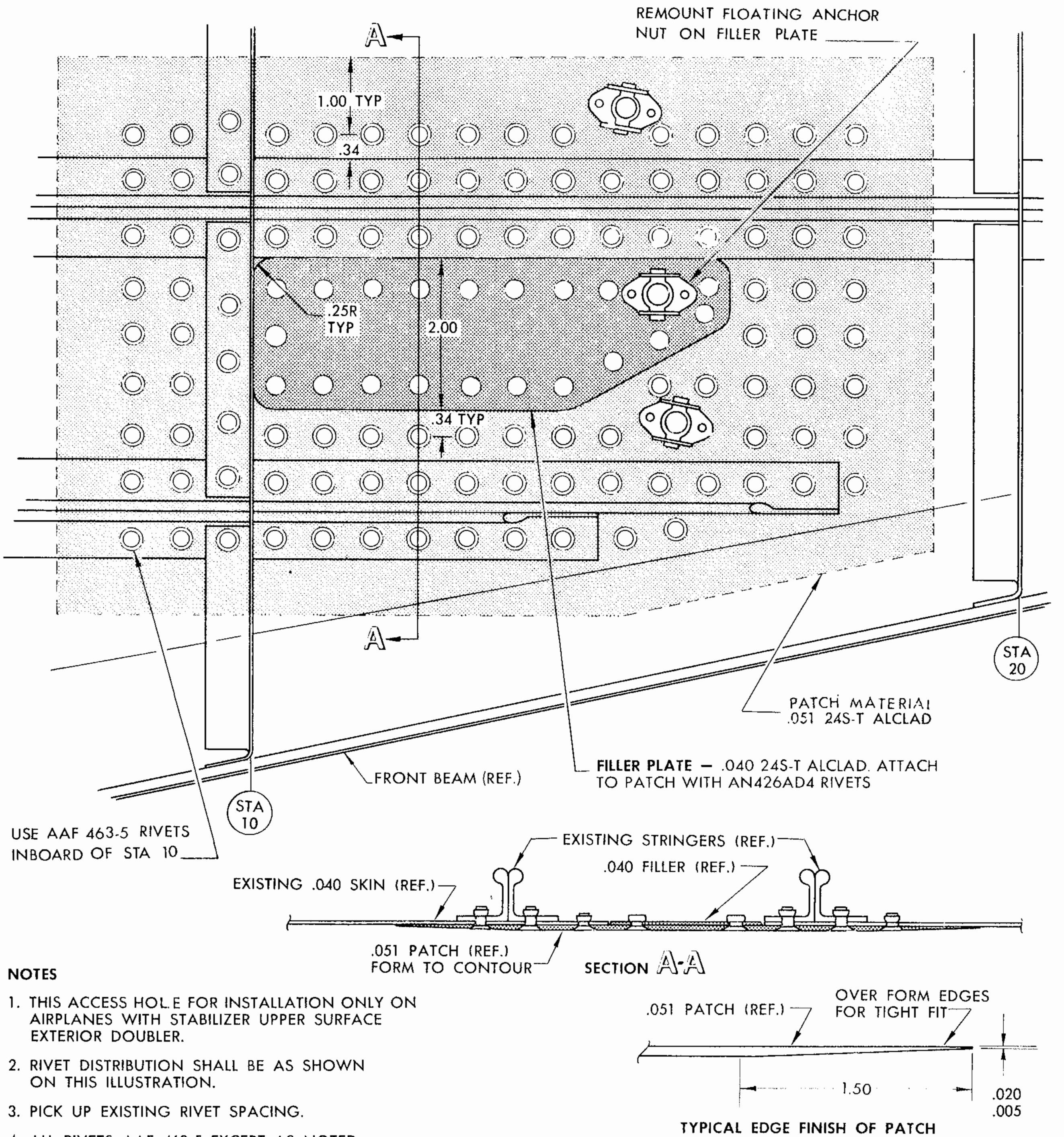


Figure 74 (Sheet 4 of 10 Sheets) — Stabilizer Leading Edge Repair



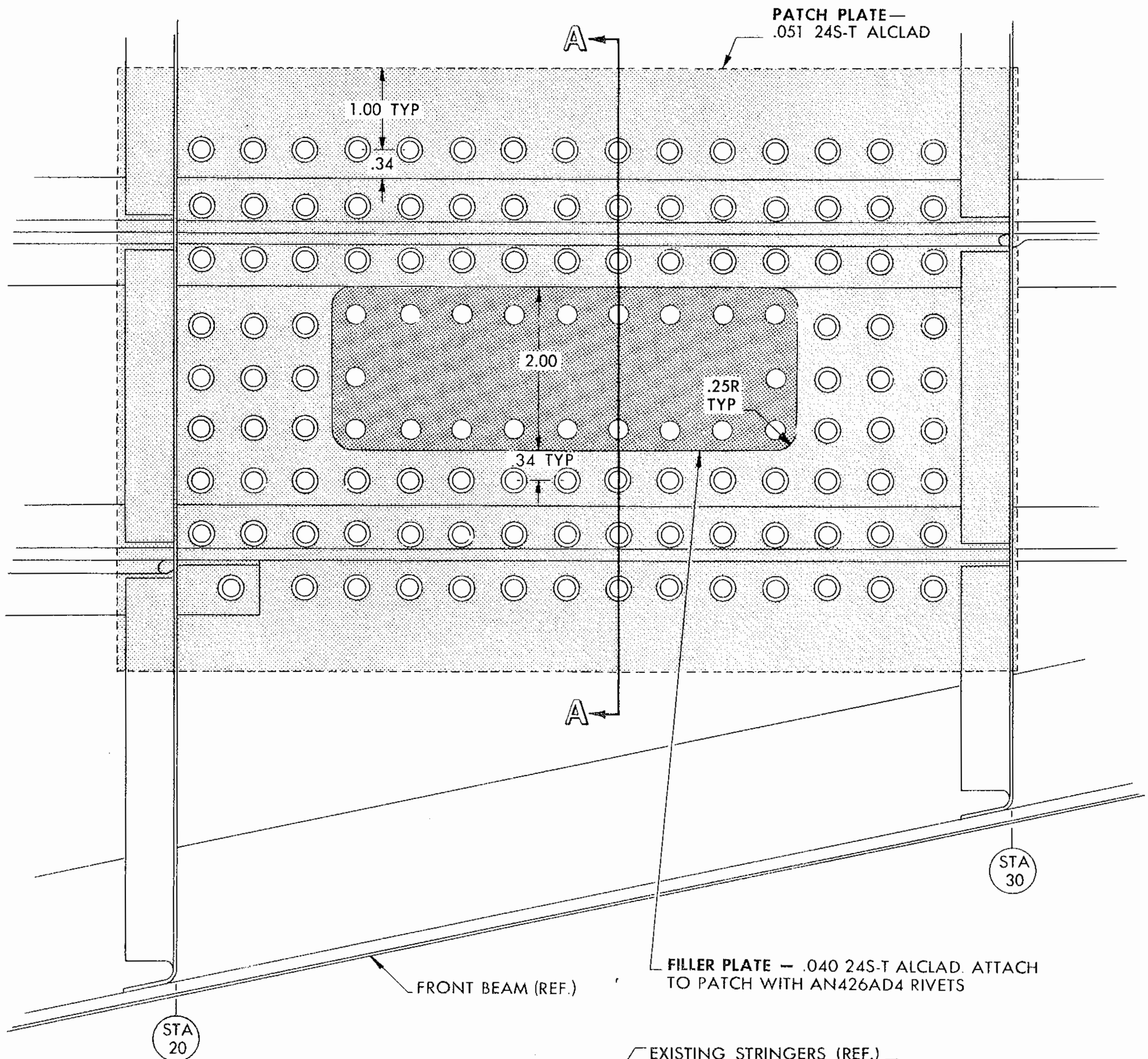
NOTES

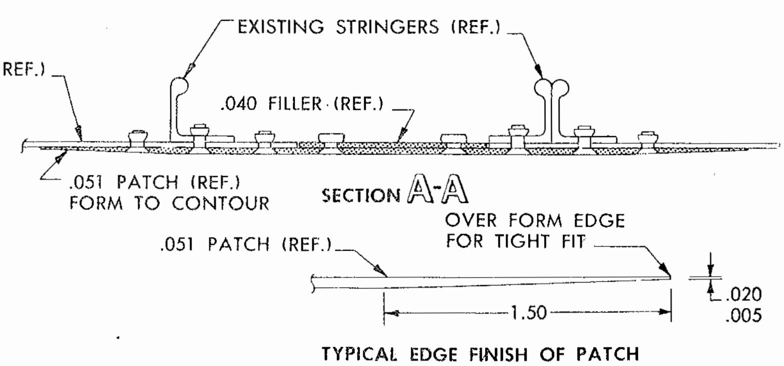
1. THIS ACCESS HOLE FOR INSTALLATION ONLY ON AIRPLANES WITH STABILIZER UPPER SURFACE EXTERIOR DOUBLER.
2. RIVET DISTRIBUTION SHALL BE AS SHOWN ON THIS ILLUSTRATION.
3. PICK UP EXISTING RIVET SPACING.
4. ALL RIVETS AAF 462-5 EXCEPT AS NOTED.
5. FILL COUNTERSINKS AS DETAILED ON SHEET 9 OF THIS ILLUSTRATION.
6. REWORK TAIL FILLET TO FIT OVER PATCH.

LOWER SURFACE ACCESS HOLE INSTALLATION–STABILIZER STA 10-20

AB 4993

Figure 74 (Sheet 5 of 10 Sheets) — Stabilizer Leading Edge Repair





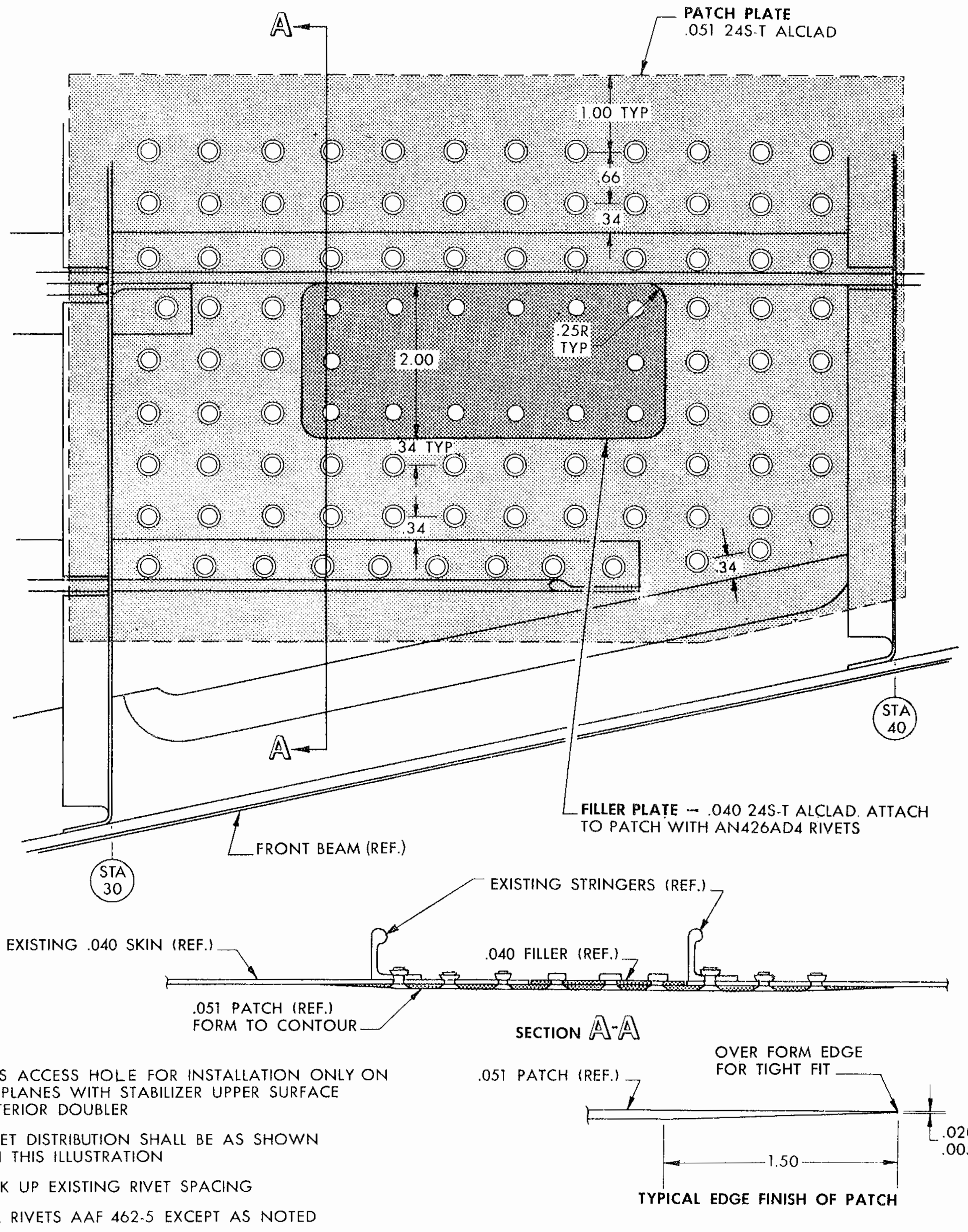
NOTES

1. THIS ACCESS HOLE FOR INSTALLATION ONLY ON AIRPLANES WITH STABILIZER UPPER SURFACE EXTERIOR DOUBLER.
2. RIVET DISTRIBUTION SHALL BE AS SHOWN ON THIS ILLUSTRATION.
3. PICK UP EXISTING RIVET SPACING.
4. ALL RIVETS AAF 462-5 EXCEPT AS NOTED.
5. FILL COUNTERSINKS AS DETAILED ON SHEET 9 OF THIS ILLUSTRATION.

LOWER SURFACE ACCESS HOLE
INSTALLATION-STABILIZER STA 20-30

AB 1992

Figure 74 (Sheet 6 of 10 Sheets) — Stabilizer Leading Edge Repair



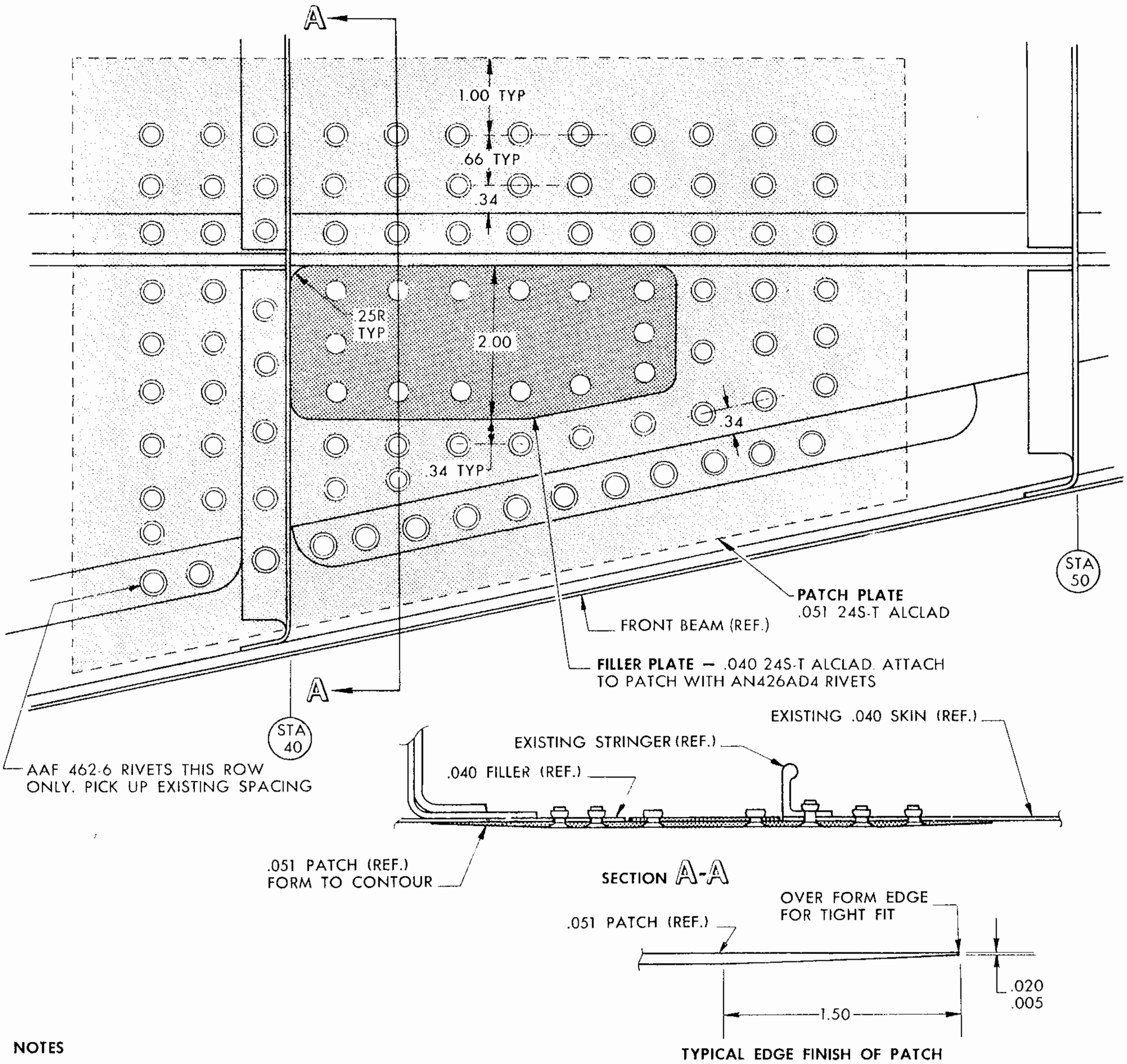
NOTES

1. THIS ACCESS HOLE FOR INSTALLATION ONLY ON AIRPLANES WITH STABILIZER UPPER SURFACE EXTERIOR DOUBLER
2. RIVET DISTRIBUTION SHALL BE AS SHOWN ON THIS ILLUSTRATION
3. PICK UP EXISTING RIVET SPACING
4. ALL RIVETS AAF 462-5 EXCEPT AS NOTED
5. FILL COUNTERSINKS AS DETAILED ON SHEET 9 OF THIS ILLUSTRATION

LOWER SURFACE ACCESS HOLE
INSTALLATION-STABILIZER STA. 30-40

AB 4991

Figure 74 (Sheet 7 of 10 Sheets) — Stabilizer Leading Edge Repair



NOTES

1. THIS ACCESS HOLE FOR INSTALLATION ONLY ON AIRPLANES WITH STABILIZER UPPER SURFACE EXTERIOR DOUBLER
2. RIVET DISTRIBUTION SHALL BE AS SHOWN ON THIS ILLUSTRATION
3. PICK UP EXISTING RIVET SPACING
4. ALL RIVETS AAF 462-5 EXCEPT AS NOTED
5. FILL COUNTERSINKS AS DETAILED ON SHEET 9 OF THIS ILLUSTRATION

LOWER SURFACE ACCESS HOLE INSTALLATION-STABILIZER STA 40-50

AD 1001

Figure 74 (Sheet 8 of 10 Sheets) — Stabilizer Leading Edge Repair

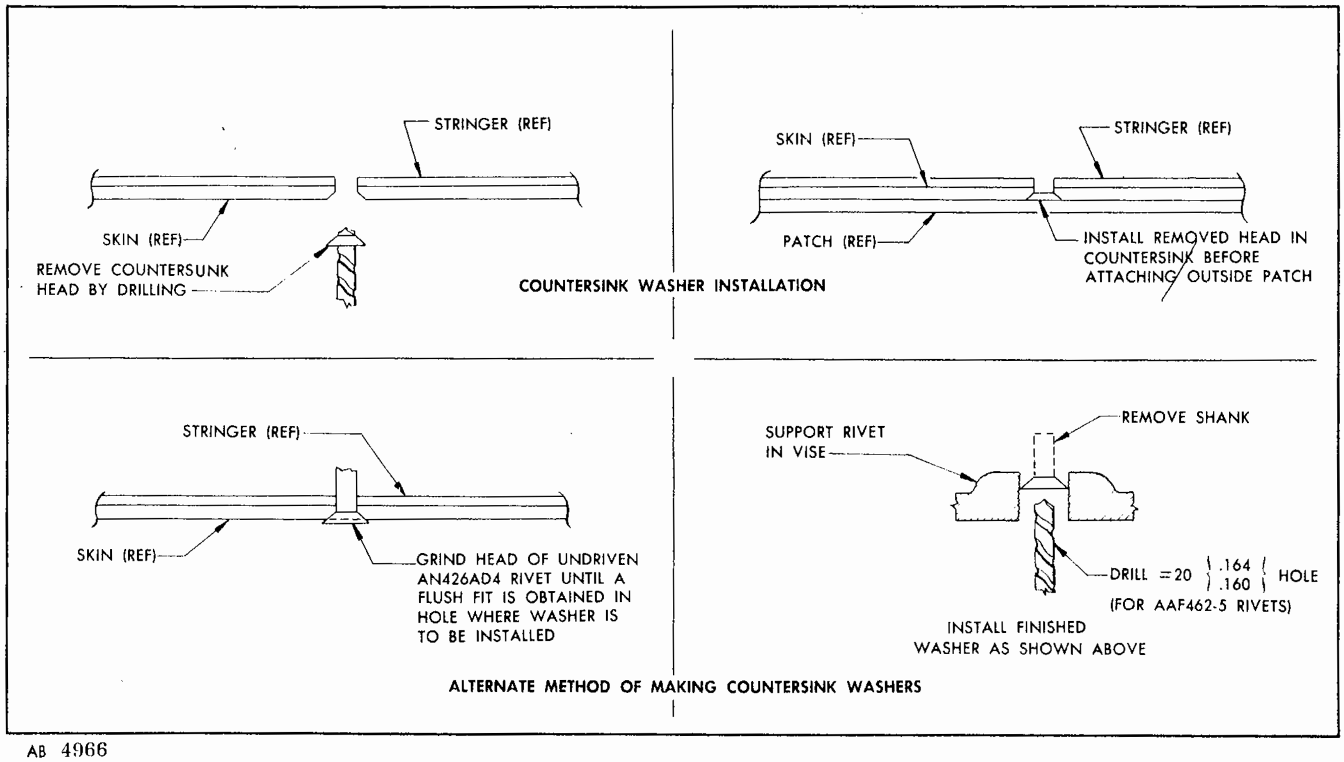


Figure 74 (Sheet 9 of 10 Sheets) — Stabilizer Leading Edge Repair

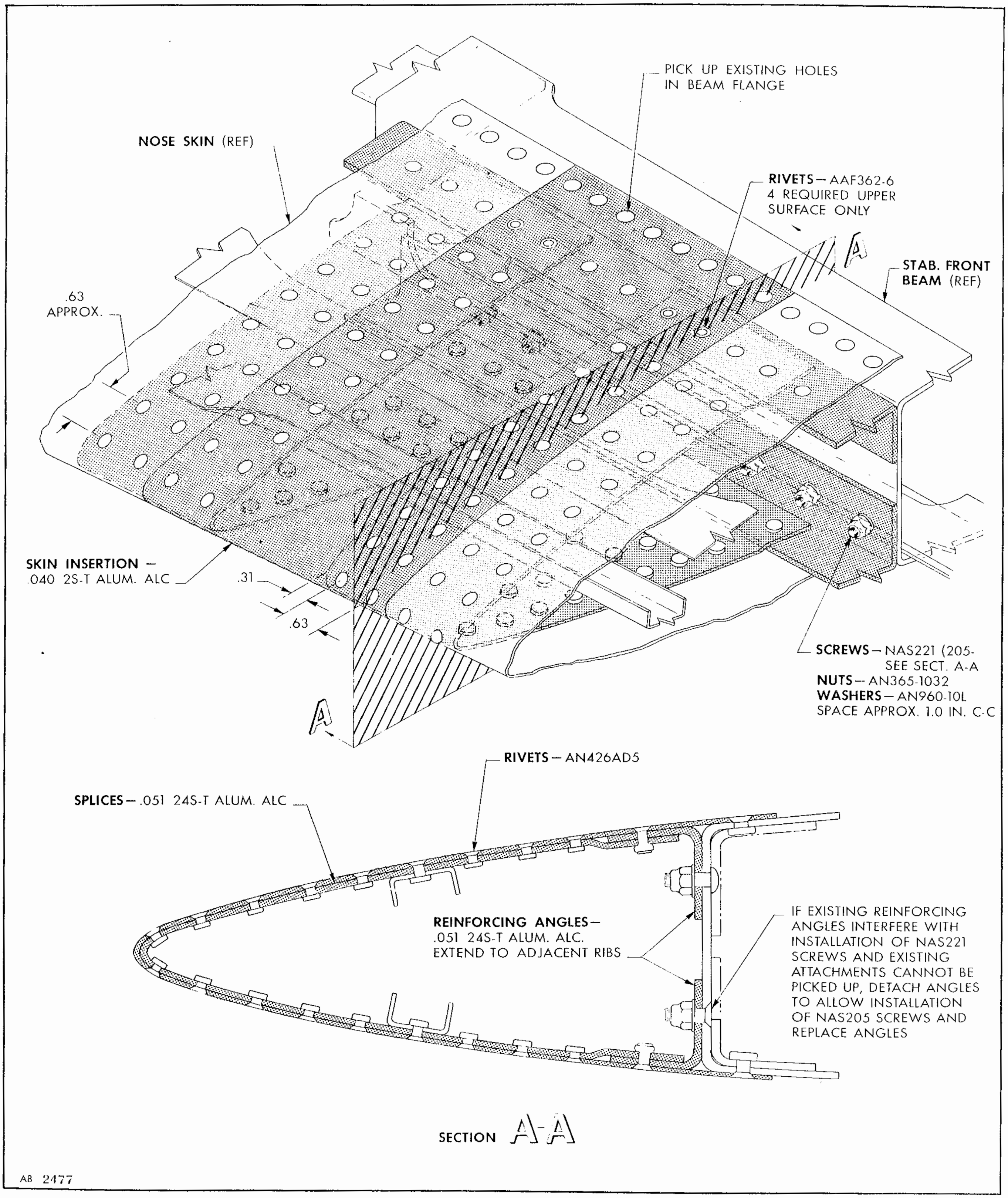
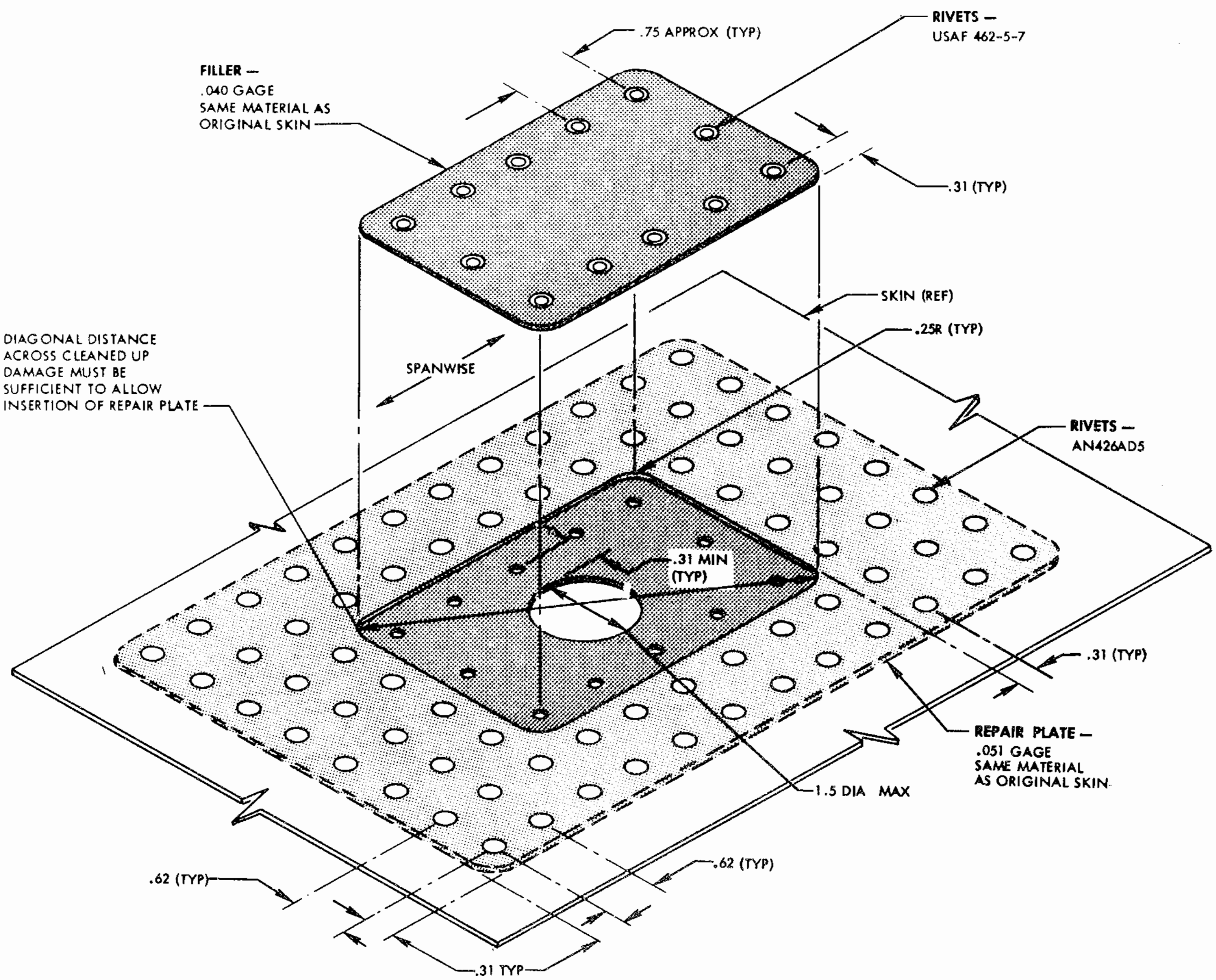


Figure 74 (Sheet 10 of 10 Sheets)—Stabilizer Leading Edge Repair

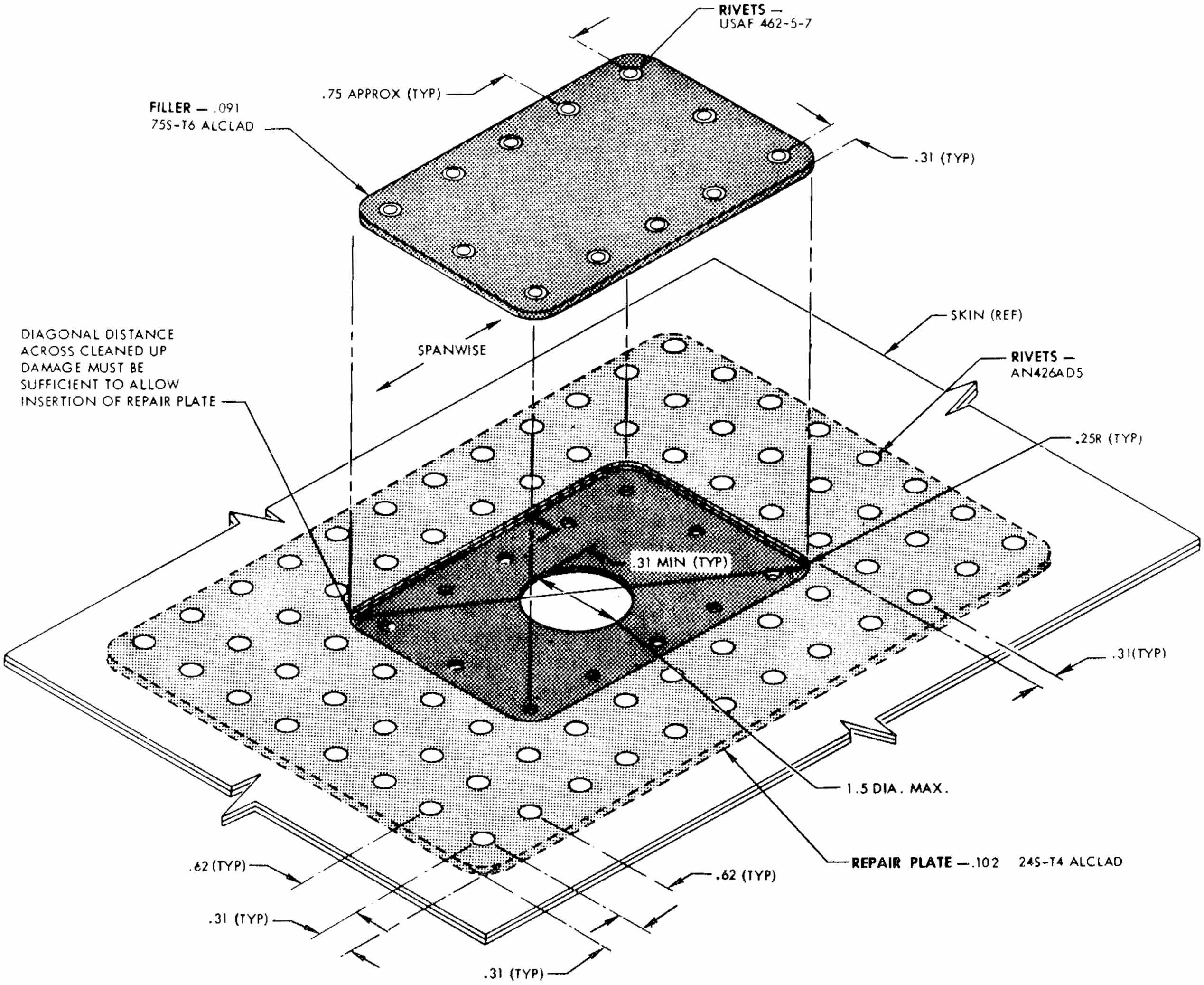


NOTES:

1. BUCK RIVETS THROUGH HOLE IN REPAIR PLATE
2. FINISH OUTSIDE SURFACE AS PER SECTION 1, PARAGRAPH 24
3. TREAT EXPOSED SURFACES FOR CORROSION (SEE AN01-1A-1, SECTION 14)
4. MILL RIVET HEADS FLUSH AS PER SECTION 1

R38-19-3-1
CB 7187

Figure 75 — Stabilizer Skin Repair, Surface Without Doubler



NOTES:

1. BUCK RIVETS THROUGH HOLE IN REPAIR PLATE
2. TREAT EXPOSED SURFACES FOR CORROSION (SEE AN01-1A-1, SECTION 14)
3. MILL RIVET HEADS FLUSH (SEE SECTION 1)

R38-19-3-2
CB 7159

Figure 75A — Stabilizer Skin Repair, Upper Surface with Doubler

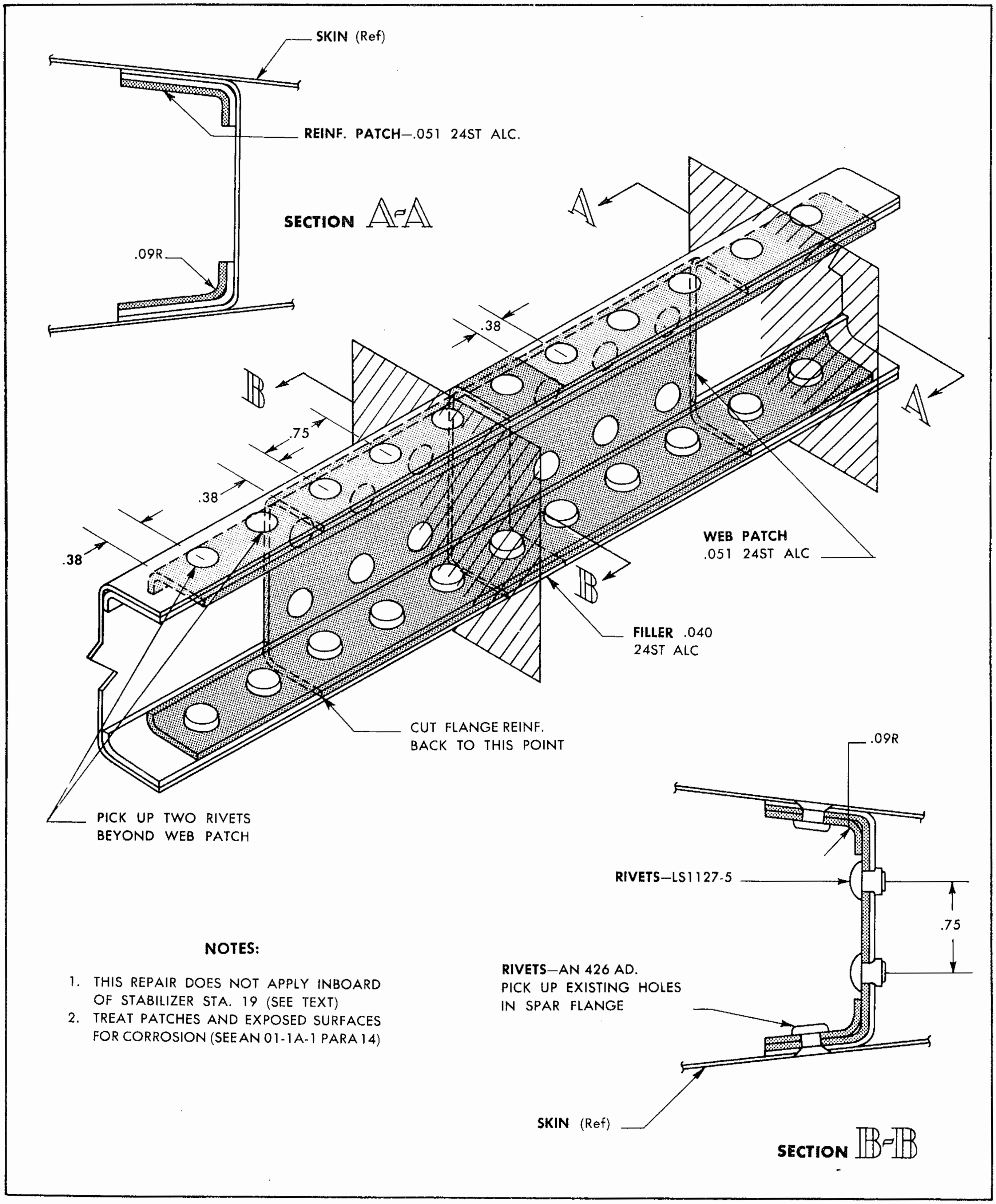


Figure 76 — Elevator Spar Repair

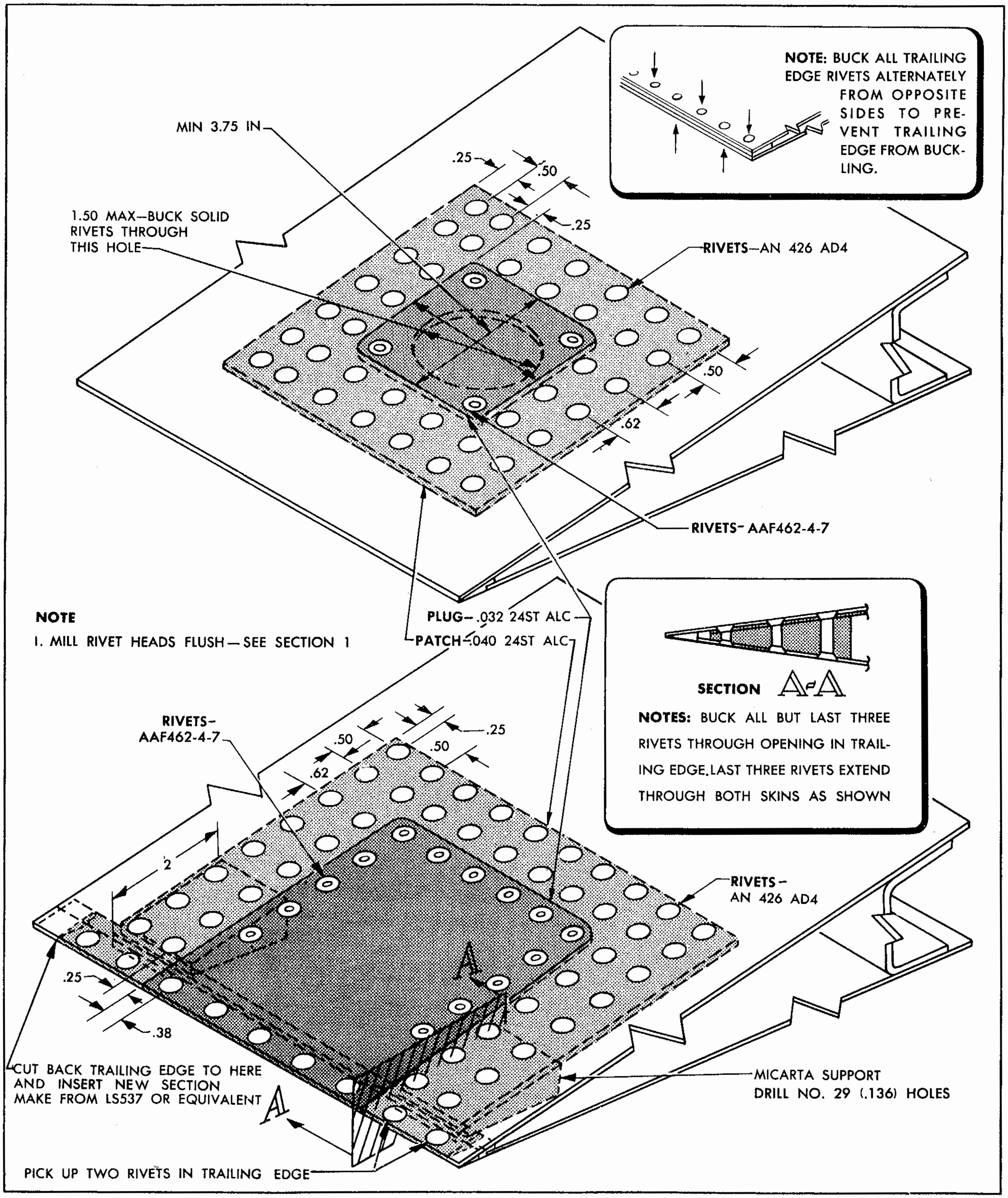
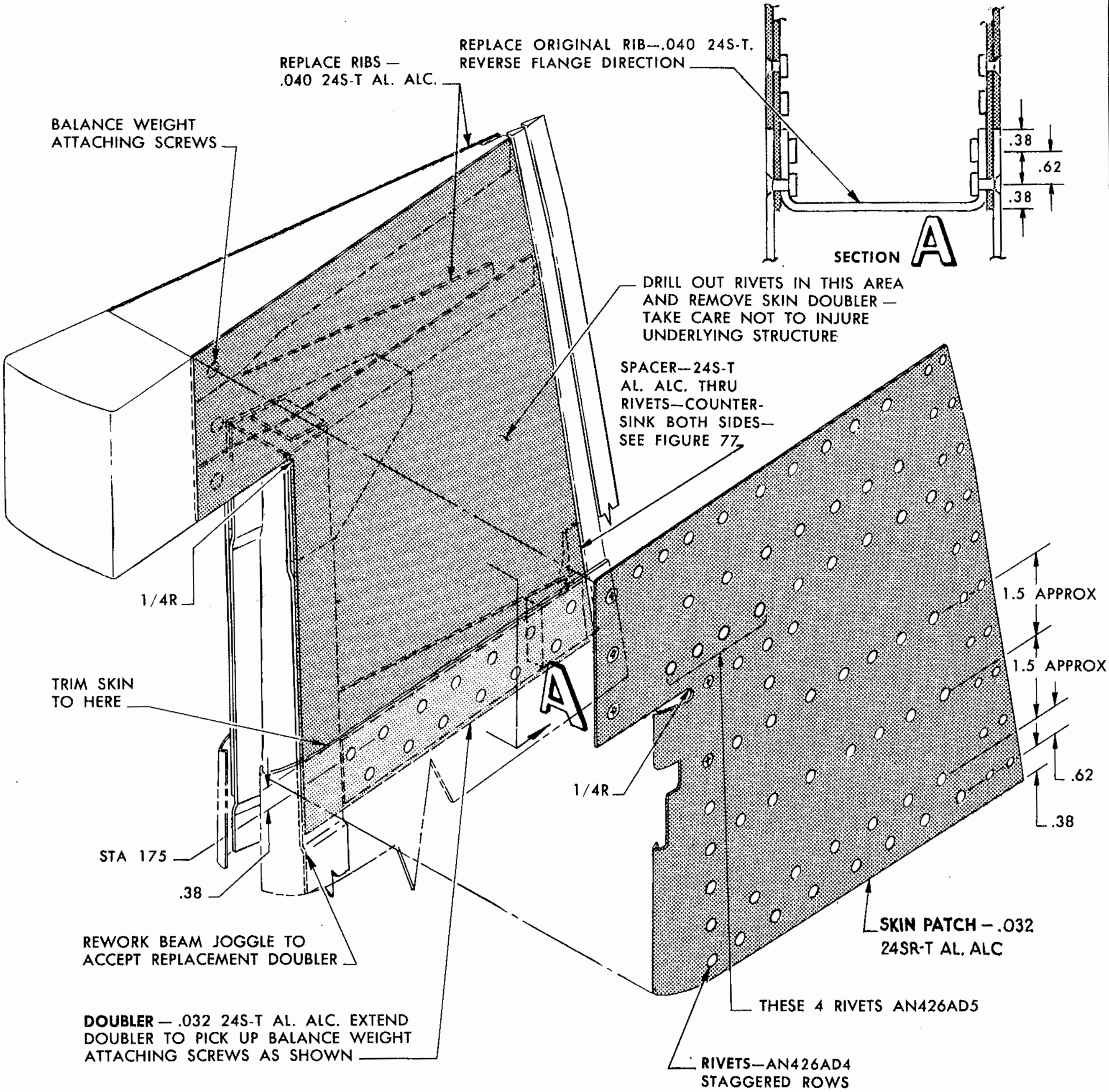


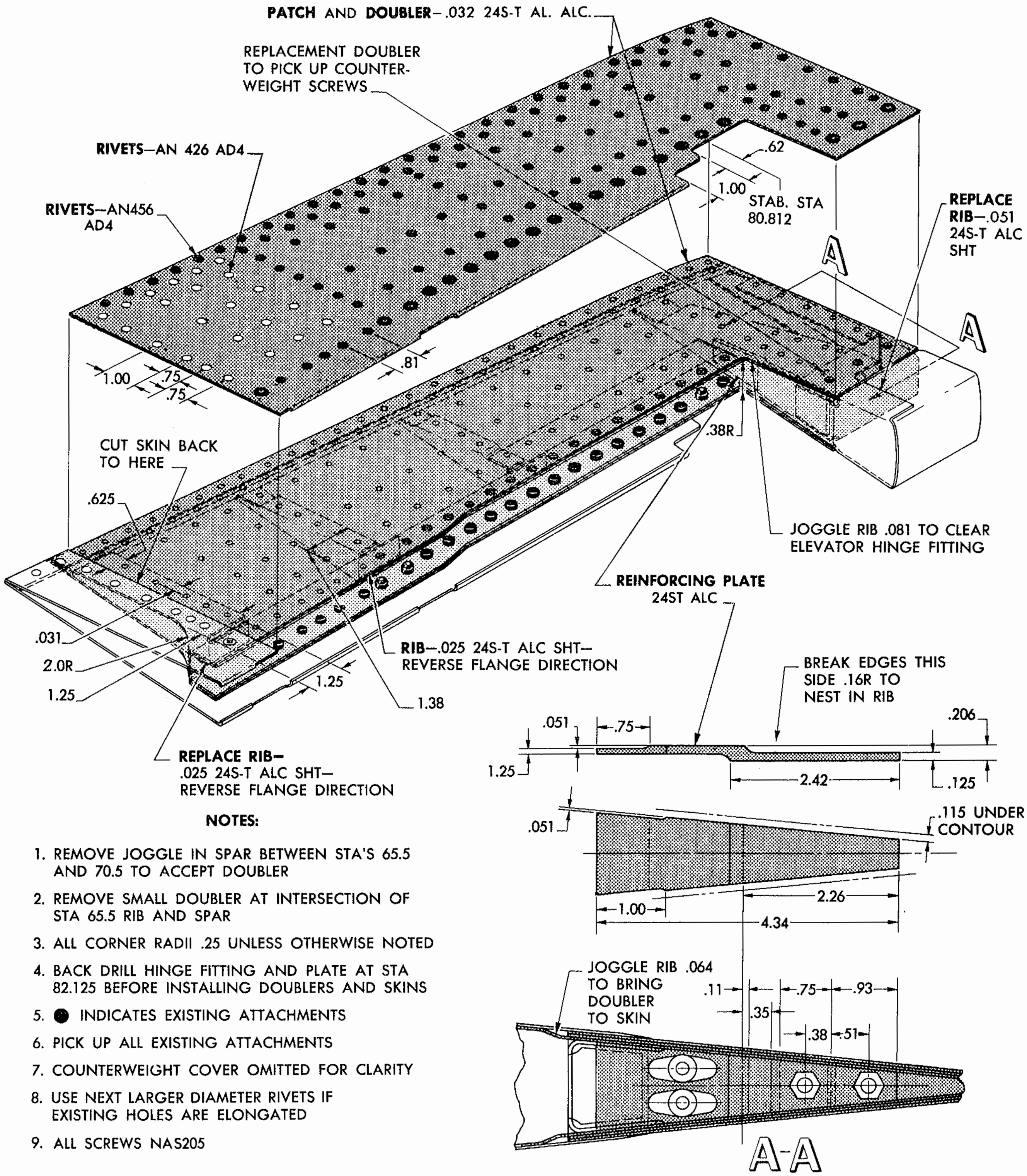
Figure 77 — Elevator and Rudder Skin Repair



NOTES:

1. DRILL OUT ALL RIVETS ABOVE RUDDER STATION 175
2. CUT SKINS AS INDICATED AND REMOVE SKINS AND DOUBLERS. DO NOT DAMAGE UNDERLYING STRUCTURE
3. REPLACE RIBS AS NECESSARY
4. INSTALL NEW DOUBLERS AND SKINS. BE SURE TO PICK UP THE THREE BALANCE WEIGHTS ATTACHING SCREWS
5. PICK UP ALL EXISTING RIVET HOLES OR SPACE .75 C-C UNLESS OTHERWISE NOTED

Figure 77A — Rudder Skin Repair at Balance Weight Attachment



NOTES:

1. REMOVE JOGGLE IN SPAR BETWEEN STA'S 65.5 AND 70.5 TO ACCEPT DOUBLER
2. REMOVE SMALL DOUBLER AT INTERSECTION OF STA 65.5 RIB AND SPAR
3. ALL CORNER RADII .25 UNLESS OTHERWISE NOTED
4. BACK DRILL HINGE FITTING AND PLATE AT STA 82.125 BEFORE INSTALLING DOUBLERS AND SKINS
5. ● INDICATES EXISTING ATTACHMENTS
6. PICK UP ALL EXISTING ATTACHMENTS
7. COUNTERWEIGHT COVER OMITTED FOR CLARITY
8. USE NEXT LARGER DIAMETER RIVETS IF EXISTING HOLES ARE ELONGATED
9. ALL SCREWS NAS205

Figure 77B — Elevator Skin Repair at Balance Weight Attachment

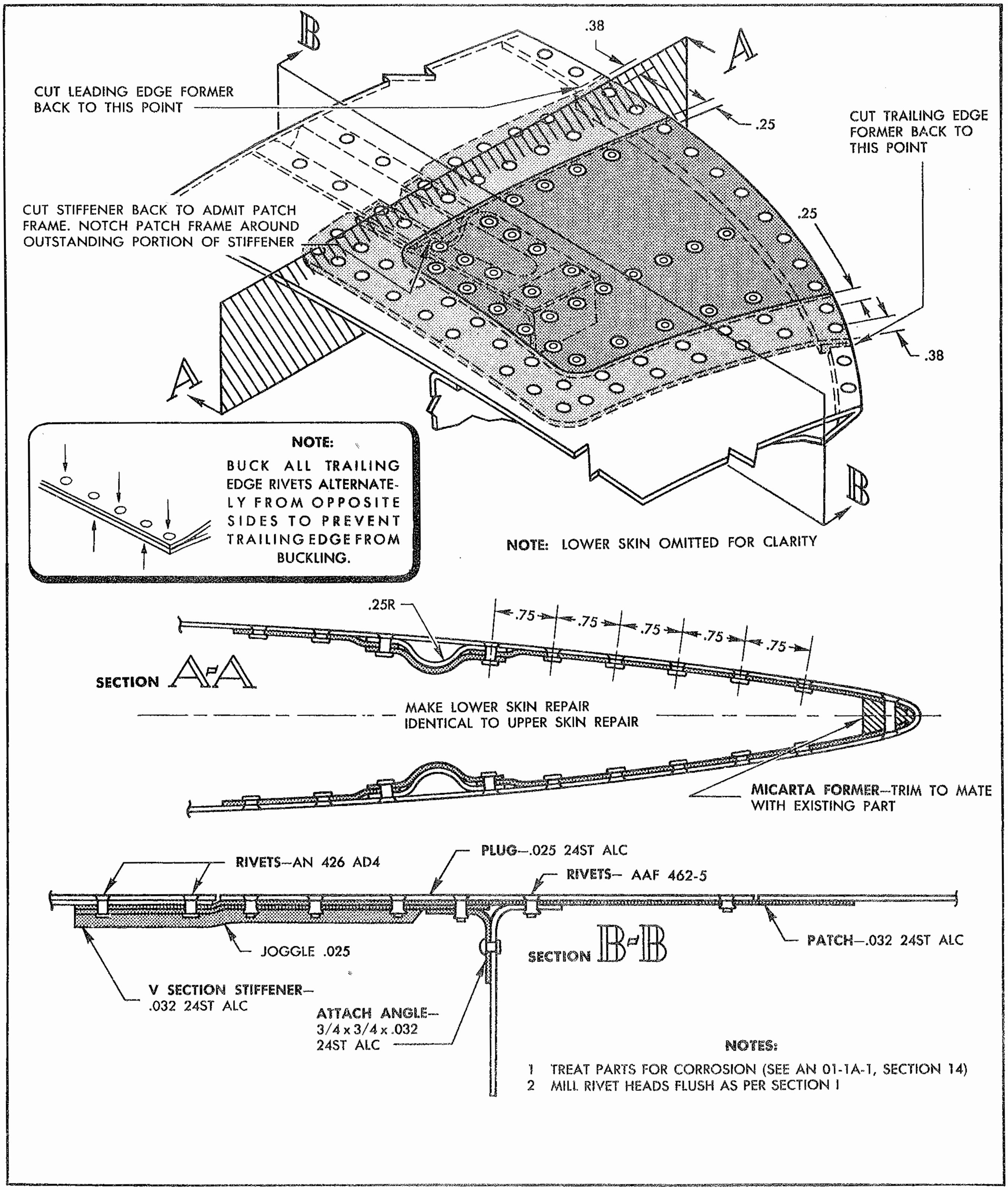
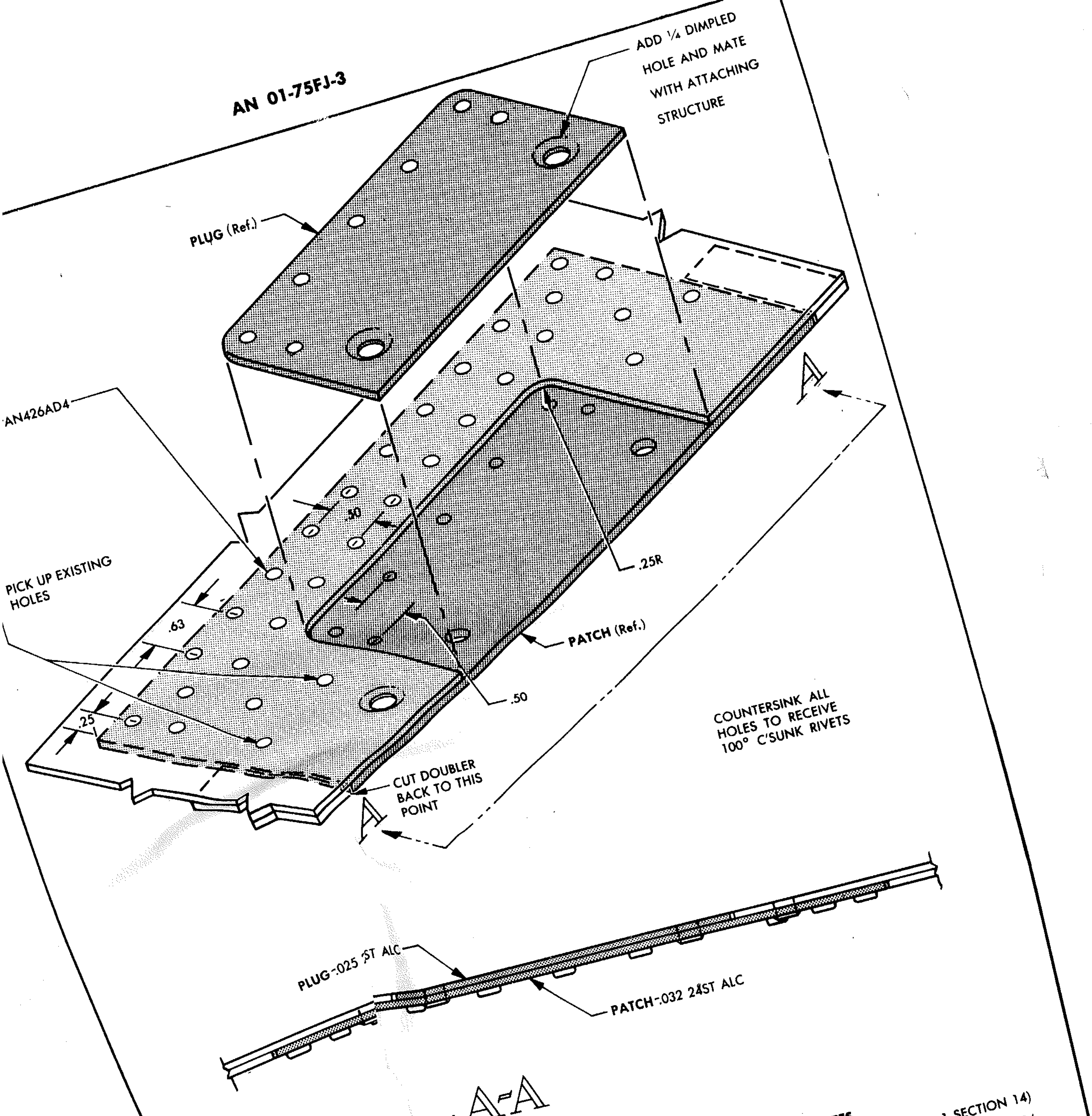


Figure 78 — Tip Skin Repair



NOTES

1. TREAT PARTS FOR CORROSION (SEE AN01-1A-1 SECTION 14)
2. RESTORE ORIGINAL FINISH AS PER SECTION I PARAGRAPH 24
3. MILL RIVET HEADS FLUSH AS PER SECTION I PARAGRAPH 14

F Tip Skin Repair at Attachment

Part No.	Spec. No.	Material Title	Size or Gage	Remarks
24S-T	AN-A-13	Sheet, Aluminum Alclad	,025	For replacement of tip skins.
24S-T	AN-A-13	Sheet, Aluminum Alclad	.032	For replacement and repair of fins, rudders and elevators.
24S-T	AN-A-13	Sheet, Aluminum Alclad	.040	For replacement of stab. skin, repair of all components.
24S-T	AN-A-13	Sheet, Aluminum Alclad	.051	For repair of stab. skin, repair of spars.
24S-T	AN-A-13	Sheet, Aluminum Alclad	.064	For repair of spars.
24S-T	AN-A-13	Sheet, Aluminum Alclad	.125	For replacement of fillers.
24S-RT	AN-A-13	Sheet, Aluminum Alclad	.032	For replacement of rudder skin.
24S-RT	AN-A-13	Sheet, Aluminum Alclad	.040	For replacement of stabilizer skin.
	AN-QQ-A-366	Die Casting		For trailing edge replacement.
LS248	QQ-A-354	Bulb "T" Extrusion	.050	For replacement of stabilizer stringers.
LS303	QQ-A-354	Bulb Angle Extrusion	.051	For replacement of stabilizer stringers.
LS537	QQ-A-537	Trailing Edge Extrusion		For replacement of rudder trailing edge.
LS2242	QQ-A-354	"T" Extrusion		For replacement of sta 0 rib reinforcement.
LS3246	QQ-A-354	Angle Extrusion	.156	For replacement of fin spar caps.
LS3289	QQ-A-354	Angle Extrusion	.094	For replacement of fin attaching angles.
	AN426AD3	Rivets—100° Countersunk	3/32	For replacement of .025 skins.
	AN426AD4	Rivets—100° Countersunk	1/8	For skin replacement and repairs.
	AN426AD5	Rivets—100° Countersunk	5/32	For skin repairs.
	AN426AD6	Rivets—100° Countersunk	3/16	For stabilizer beam repair.
	AN430AD4	Rivets—Roundhead	1/8	For interior repairs.
	AN430AD5	Rivets—Roundhead	5/32	For interior repairs.
LS1126-5		Rivets—100° Countersunk Cherry	5/32	For skin repairs.
LS1126-6		Rivets—100° Countersunk Cherry	3/16	For stabilizer skin repairs.
LS1127-5		Rivets—100° Countersunk Cherry	5/32	For interior repairs.
LS1127-6		Rivets—100° Countersunk Cherry	3/16	For interior repairs.
	AN-3	Bolts	3/16	For stabilizer beam repair.
	AN-4	Bolts	1/4	For stabilizer beam repair.
	HH-P-256 GR.L	Micarta	3/4 x 3	For trailing edge repairs.

Table 4 — Material for the Repair of Tail Group

SECTION IV

BODY GROUP

1. GENERAL.

The body group consists of the fuselage and dive flaps. The fuselage is stressed skin semi-monocoque construction reinforced with longerons, bulkheads, and stringers. Numerous structural changes have been made in the F-80 series fuselages. These changes are reflected in the various reference diagrams included in this section, with pertinent structures identified by model designation in the titles of the illustrations.

The RF-80A is the camera equipped version of the F-80A which differs from the F-80A only forward of fuselage station 81 as shown in figures 87A and 88A.

The fuselage is constructed in three sections, the nose section, the mid section, and the aft section. The mid section has been considered in two portions in this handbook for purposes of clarity. Figures 87 and 88 show the fuselage nose structure for F-80A airplanes; F-80B and F-80C nose sections are illustrated in figures 87B and 88B. The forward portion of the mid section from fuselage station 81 to fuselage station 163 is illustrated in figures 89, 89A, 90, and 90A. Figures 91, 91A, 91B, 91C, 92, and 92A show the fuselage structure from station 163 aft to station 277.5. The fuselage aft section which extends from station 277.5 to station 403 is shown in figures 93, 93A, 93B, 94, 94A, and 94B. The F-80A aft section, shown in figures 93 and 94 is constructed of 24S-T aluminum skin, stiffeners, and bulkheads.

The construction of the aft fuselage for the F-80B and F-80C airplanes incorporates stainless steel bulkheads and longerons as shown in figures 93A, 93B, 94A, and 94B. Figures 93A and 93B are applicable to airplanes prior to Serial Nos. AF49-734. Figures 93B and 94B apply to airplanes Serial No. AF49-734 and subsequent. Note that figures 93B and 94B illustrate additional reinforcement at all fuselage bulkheads stations 376 and 400.

The changes effected in the fuselage aft section have rquired repair redesign for the bulkheads at fuselage stations 376 and 400. These repairs are illustrated in figures 115, 115A, and 115B, and are identified with the applicable aft section structure by the title of the illustration. It is recommended that all damaged parts other than the bulkhead itself be replaced rather than repaired. The spot-welded reinforcements and doublers should be considered as a portion of the bulkhead ring.

Many parts of the fuselage are constructed of aged 24S-T aluminum alloy. These parts are indicated on the various reference diagram keys. When replacement parts are constructed for these parts, the equivalent strength must be duplicated. It will not be acceptable to substitute 24S-T for 24S-T aged material.

Dive flaps are provided for all models and are attached to the lower portion of the fuselage mid section between fuselage stations 131 and 190. Dive flaps for F-80A and RF-80 airplanes are shown in figure 95; figure 95A shows the dive flaps for F-80B and F-80C airplanes.

Some of the F-80B and F-80C airplanes are equipped with jato assist for take-off. The structural changes in the fuselage mid section necessary for this installation are shown in figure 91C.

Basic dimensions are provided in figure 86 for the replacement of bulkheads, determining fuselage contours, and for reference purposes.

2. NEGLIGIBLE DAMAGE.

Refer to the negligible damage drawings indexed on the keys to the reference diagrams for permissible negligible damage to the fuselage and dive flaps. Negligible damage not indexed on the keys to these diagrams is restricted to dents and nicks which, after being cleaned up to a regular shape, do not exceed 1/16 inch in depth and do not occur closer than 3/8 inch to a rivet or attaching hole.

Wear in attachment holes is negligible damage provided the wear or elongation does not exceed the limits prescribed in the allowable wear tables. See paragraph 7 following for detailed description of allowable wear tolerances and for reference to applicable tables.

3. DAMAGE REPAIRABLE BY PATCHING.

Repairs applicable to the fuselage are indexed on the keys to the reference diagrams. Parts not indexed are not repairable, and have not been called out due to inaccessibility or because the part is too small to be repaired economically. Some of the longerons and bulkheads are to be repaired with NE8630 sheet steel. If the original bulkhead is constructed of aluminum alloy, the contacting surfaces of the patch and the original parts must be treated as prescribed in section 14 of AN 01-1A-1, "General Manual for Structural Repair," to prevent corrosion between dissimilar metals. All repairs in structure comprising the walls of the cockpit must be sealed to prevent leakage. (See paragraph 5 following.) All skin repairs must be flush in areas exposed to the air stream. Doublers and splices must be replaced, not repaired.

4. DAMAGE NECESSITATING REPLACEMENT.

Damage in excess of that described as negligible to items not indicated on the keys to the reference diagrams requires the replacement of the item involved. Skins originally constructed of aged materials (24S-T80 and 24S-T81) must be replaced with identical aged materials. The gage of the replacement must be the same gage as that of the original part, as the next heavier gage 24S-T will change the contour of the fuselage and introduce aerodynamic disturbance. Interior structure originally constructed of aged 24S-T may be replaced with parts constructed of 24S-T unaged material of the next higher gage, if no interferences are encountered.

5. COCKPIT SEALING.

a. GENERAL.—The cockpit, from fuselage station 103 to station 163, is sealed to withstand a pressure of 2.75 psi. The cockpit canopy is sealed by rubber tubes which are installed in the canopy rail and windshield frame as shown in figure 80. The tubes are inflated by pressure from the engine compressor. The windshield glass is sealed by formed rubber strips as shown in figure 81. The joint between the aileron torque tube and the cockpit structure is sealed by a tapered leather washer as shown in figure 82. The elevator push-pull tube is sealed at the aft end of the aileron torque tube by a rubber washer as shown in figure 83. The rudder cables are sealed by rubber grommets where the cables pass through the bulkhead at station 163, as shown in figure 84. The Simmonds control cable is also sealed by a rubber grommet as shown in figure 84A. All structural parts in this area are sealed as described in paragraph *b* following.

b. SEALING PLEXIGLAS AND LAMINATED GLASS.—Doors and windows are sealed by the use of formed rubber seals; seals and windows are cemented to the structure as described in the following text and as shown in figures 80 and 81.

(1) MATERIALS, SOLVENTS, AND CLEANERS.

(a) Cement the window seals to the structure and to the plastic or glass with EC226 (Minnesota Mining and Manufacturing Company) as shown in figures 80 and 81. If it is necessary to clean the plastic or glass before installation, use only Turco Plexiglyst (Turco-Products, Los Angeles, California). If the EC226 becomes thick, thin it with white gasoline as a solvent but do not apply the gasoline directly to the plastic or glass as a cleaner.

CAUTION

Avoid the use of methyl-ethyl ketone, naphtha or similar solvent, or any cement containing this type of solvent, with transparent enclosures. The cement EC226 (See above materials requirement) may be used in close proximity to and in contact with plastics, or with the bond for laminated glass, without harmful effects.

(b) Attach the rubber seal shown in figure 80 with Cement General Purpose, Synthetic Rubber, Spec 26609. Attach the rectangular rubber seal shown in fig-

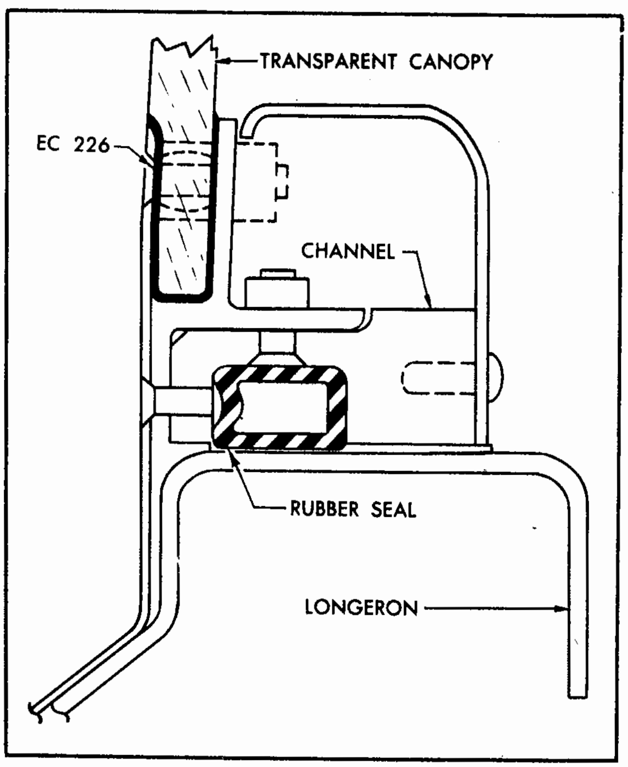


Figure 80 — Cockpit Sealing — Canopy Seal

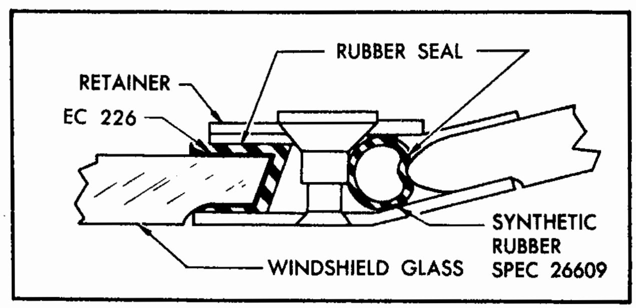


Figure 81 — Cockpit Sealing — Windshield Seal

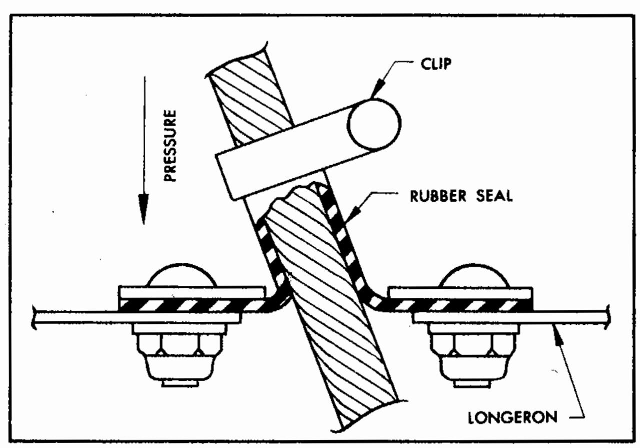
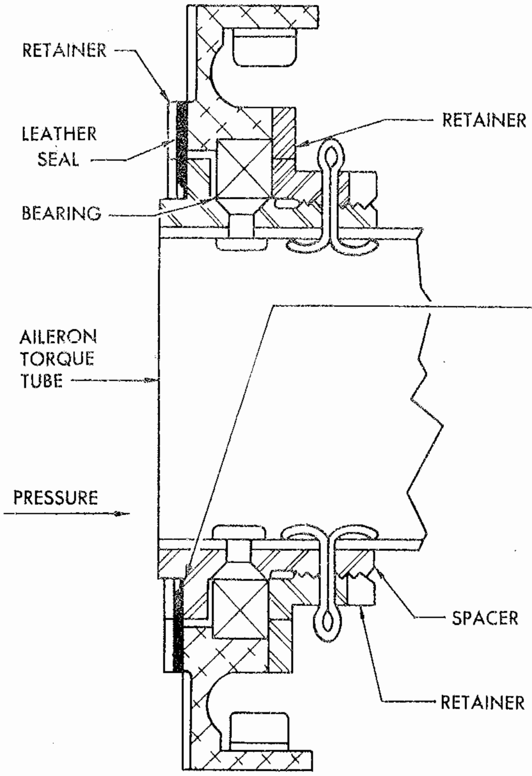


Figure 81A — Cockpit Sealing — Simmonds Control



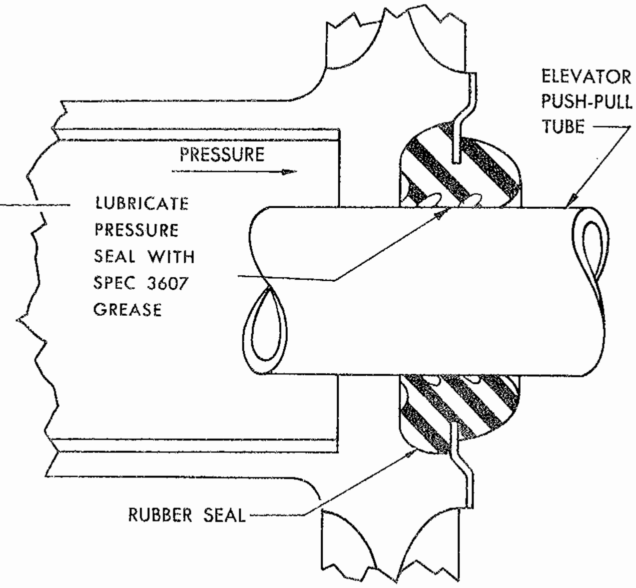


Figure 82 — Cockpit Sealing — Aileron Torque Tube Seal

Figure 83 — Cockpit Sealing — Elevator Push-pull Tube Seal

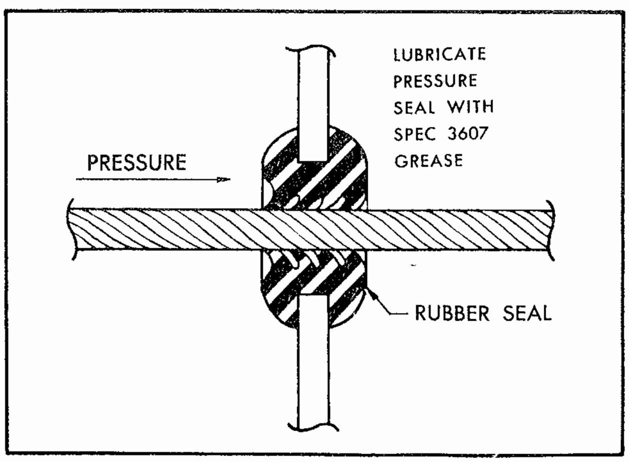


Figure 84 — Cockpit Sealing — Rudder Cable Seal

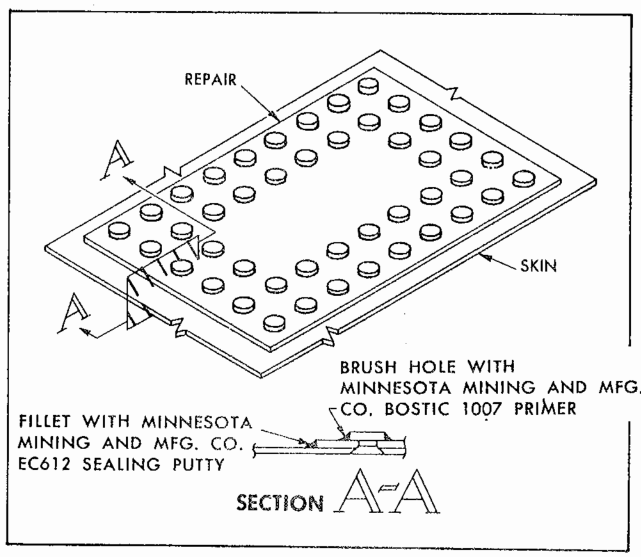


Figure 85 — Cockpit Sealing — Sealing Structure

ure 81 with Cement General Purpose, Synthetic Rubber, Spec 26609. If these cements become thick, thin with acetone. Use naphtha or acetone as a cleaner to remove old seals or to prepare the surface to which the new seal is to be attached.

(2) PROCEDURE.—Cement all rubber seals to the structure to prevent leakage, as follows:

(a) Remove all previously applied cement, and thoroughly clean the surface to which the new cement is to be applied. Use naphtha or acetone for cleaning doors which do not contain plastics or glass, and Turco Plexiglyst for doors that contain transparent enclosures.

(b) Apply a thin even coat of cement to each surface to be cemented as shown in figures 80 and 81. Allow a one-hour drying period for EC226 to permit the petroleum solvent to evaporate.

Note

The EC226 must be relatively free of solvent before the seal or the window is installed. Trapped or free solvent in the cement will attack the plastic and the bond for laminated glass and will cause "crazing."

A 10 minute drying period will be sufficient for Cement General Purpose, Synthetic Rubber, Spec 26609 under normal conditions.

(c) Apply an additional thin coat of Spec 26609 cement to the surfaces shown in figure 80. Do not allow this coat of cement to dry but press the seal firmly into place immediately after the application of the cement. Install all seals carefully making sure that contact is made at all points of the structure and door.

c. SEALING STRUCTURAL REPAIRS, RUBBER AND LEATHER SEALS.—Rubber and leather seals are not repairable and must be replaced if worn or damaged. All structural repairs and replacements must be sealed as shown in figure 85 and as described in the following.

(1) MATERIALS REQUIRED.

(a) Bostick 1007 primer S/N 7300-780200.

(b) EC612 seam sealer.

(c) Cable sealing and control rod grease Spec 3607.

(2) PROCEDURE.

(a) Clean repaired surfaces with acetone, being sure to remove all old sealing material.

(b) Apply EC612 sealing putty as shown in figure 85. Apply this material in the form of a fillet at patch edges, joggles, and corners, in sufficient quantity to effect a smooth coat approximately 1/4 inch thick.

Note

Do not apply sealing tapes to the contacting surfaces of joints or seams. Accomplish all sealing after parts have been assembled and riveted. Apply all sealing compound to the cockpit side of the structure. Allow one hour for drying time after this putty has been applied.

(c) Apply Bostick 1007 primer over all sealing seams, rivet heads, and bends. Take care to insure that the sealing primer thoroughly covers rivet heads, bolt heads, and nuts. Apply this compound with a brush. Allow a minimum of one hour for drying Bostick 1007 primer before applying additional sealers.

(d) Seal all seams with EC612 seam sealer. Apply this material with a flow gun. Use a pressure pot that is equipped with a booster pump and an air-motor drive and reduction gear. Flow a 1/8-inch diameter bead along the edges of all angles, channels, fillers, bulkheads, or fittings to be sealed in the cockpit area. The bead must be continuous in order to insure adequate sealing. Allow EC612 seam sealer to dry for at least four hours before pressure testing.

(e) Apply sealing grease to all cables where the cables pass through the rubber seals. See figures 81A, 82, 83, and 84.

(f) Pressure test the cockpit to 2.75 psi as directed in AN 01-75FJA-2 and AN 01-75FJB-2, "Handbook of Erection and Maintenance Instructions."

WARNING

Sealing compounds are highly inflammable. Use precautions to prevent explosion. Also, these materials are toxic, and should be applied in a well ventilated area. Allow full time for drying between each type of sealing compound, as prescribed in the preceding paragraphs.

6. PERMISSIBLE REAMING AND BUSHING.

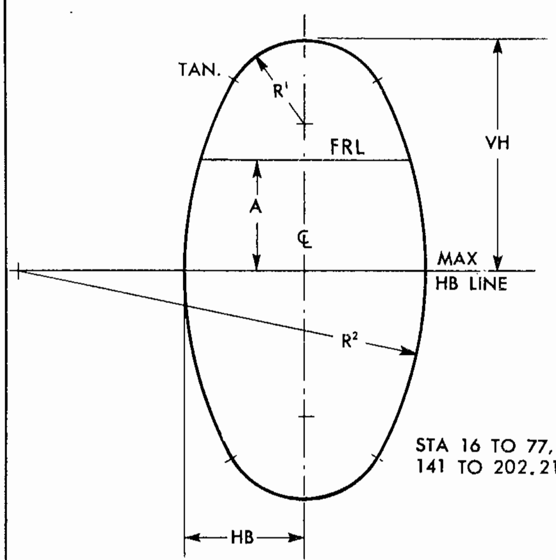
Bush and ream the attaching pin and bolt holes of the operating units of the dive flaps when the allowable wear tolerances shown in figure 86C are exceeded. Use the tabular information shown in the table on figure 86B to make the bushing installations. Be sure that the bushing ID conforms to that indicated on the table. The tolerances shown are identical to those manufactured into the original part.

The wing-to-fuselage attachments at the sides of the fuselage are shown in figure 23A, and discussed in paragraph 5 of section II. The wing-to-fuselage attachments at the center of the fuselage are shown in figure 91A. The fuselage mid-section to aft-section attachments are shown in figure 86A. Note that it will not be necessary to consider reaming and bushing for the aft-to-mid fuselage attachments, as the parts comprising these attachments are easily removed and replaced. The holes in the fittings through which the attaching bolts pass are intentionally oversize. Install bushings according to instructions in section I, paragraph 20.

7. ALLOWABLE WEAR TOLERANCES.

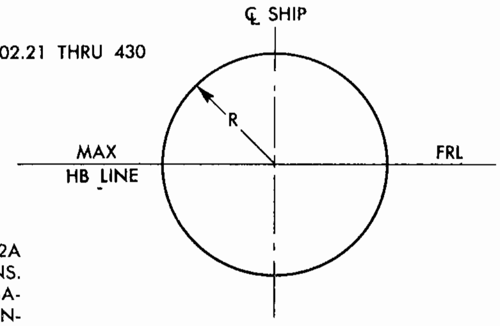
Figure 86C illustrates the joints that have been provided with wear tolerances for the dive flap operating units.

The original clearances shown on the table are the original maximum manufacturing clearances. If the clearance between the pin and hole exceeds that indicated on the table, either bush the hole as described in figure 86B or replace pin or bolt, or both. The maximum original ID of the hole and the original minimum OD of the bolt or pin is indicated in the key to figure 86C to provide data for determining which of the units has worn.



STA 16 TO 77,
141 TO 202.21

STA 202.21 THRU 430



NOTE
SEE FIGURE 22 AND 22A FOR STATION LOCATIONS. P-80A, P-80B, AND P-80C BASIC DIMENSIONS ARE IDENTICAL. FP-80A IS IDENTICAL WITH P-80A, P-80B, AND P-80C AFT OF FUSELAGE STATION 81. FP-80A BASIC DIMENSIONS FORWARD OF STATION 81 NOT GIVEN DUE TO COMPLEXITY OF CONTOURS.

STA	R	STA	R
202.21	28.000	322.5	24.243
208.5	28.000	337.5	22.683
214.5	28.000	352	21.038
220.5	28.000	364	19.575
228.3	28.000	376	18.036
238	28.000	388	16.432
252	28.000	400	14.798
263	27.912	411	13.320
277.5	27.552	418	12.373
292.5	26.789	430	10.750
307.5	25.644		

STA	A	VH	HB	R^1	R^2
16	5.000	0	0	0	0
22	4.664	9.802	5.080	3.558	17.127
27	4.217	12.748	6.898	4.914	21.375
37	3.582	16.922	9.660	7.037	26.976
47	3.010	19.751	11.854	8.828	30.054
54.5	2.625	21.285	13.308	10.099	31.199
61.3	2.304	22.358	14.562	11.269	31.587
69	1.968	23.376	15.874	12.544	31.826
77	1.644	24.249	17.136	13.824	31.888
141	.116	27.700	25.110	23.483	29.762
152	.040	27.848	26.073	24.914	29.207
163.9	.005	27.946	26.892	26.181	28.727
170.25	.000	27.977	27.228	26.715	28.524
177.25	.000	28.000	27.524	27.194	28.344
184.25	.000	28.000	27.749	27.573	28.179
190.5	.000	28.000	27.886	27.806	28.081
196.5	.000	28.000	27.970	27.949	28.021

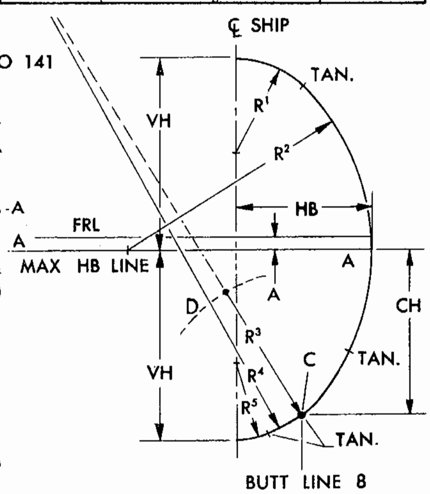
NOTE: USE THESE BASIC DIMENSIONS IN THE MANUFACTURE OF JIGS AND TEMPLATES AS DESCRIBED IN SECTION I, PARAGRAPH 5

ALL DIMENSIONS TAKEN TO OUTSIDE SKIN LINE

STA 77 TO 141

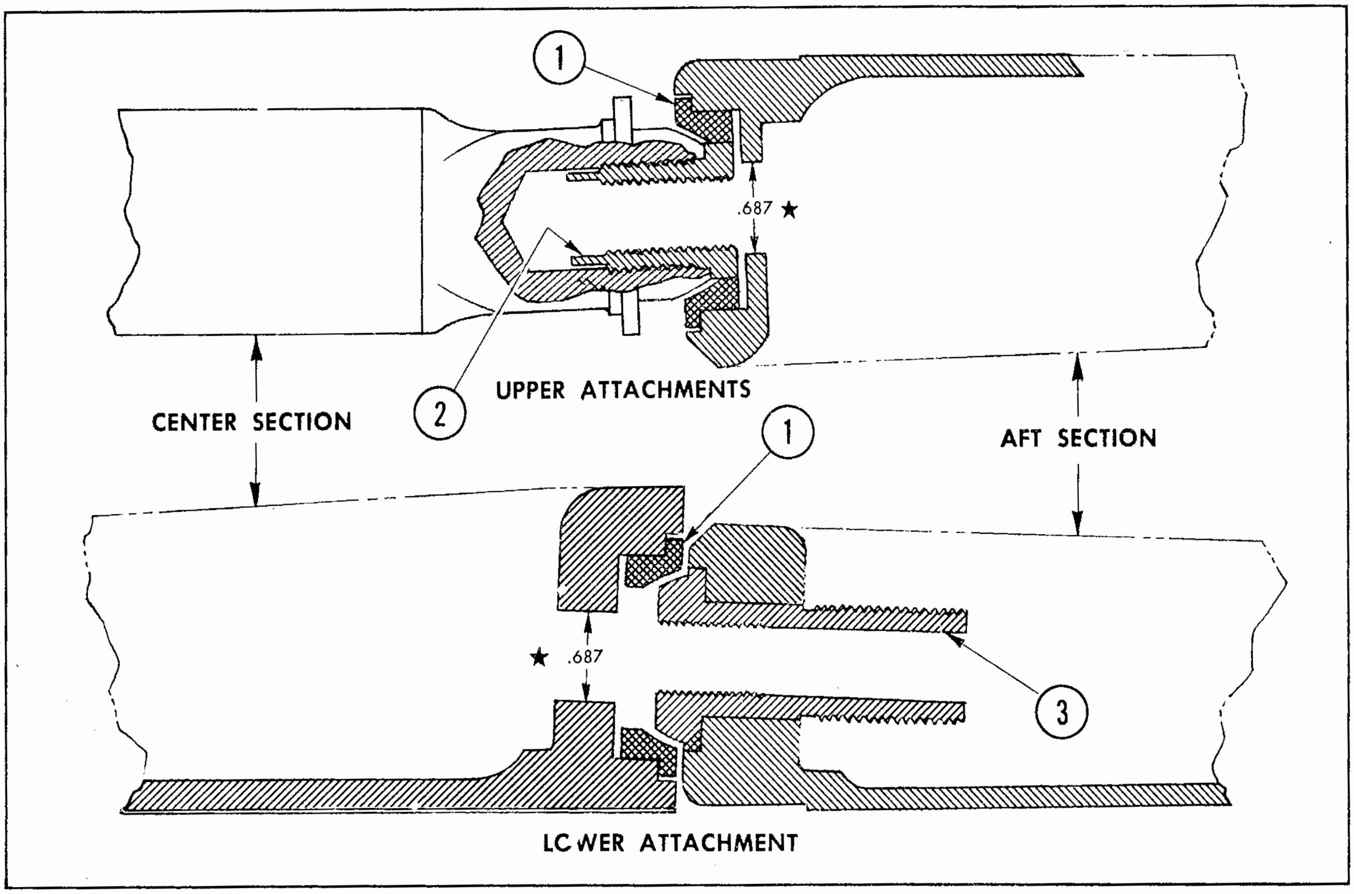
NOTES

1. LAY OUT LINE A-A PARALLEL TO AND DISTANCE A (SEE TABLE) BELOW FRL
2. LOCATE HB ON LINE A-A (SEE TABLE)
3. LAY OUT VH, UPPER & LOWER, ON ℄ (SEE TABLE)
4. SCRIBE ARCS R^1, R^2 & R^5 (SEE TABLE FOR RADII R^1 R^2 & R^5
5. LOCATE POINT C ON BUTT LINE 8 USING VERTICAL HEIGHT CH FROM TABLE
6. SCRIBE ARC D USING R^3 AS A RADIUS AND POINT C AS A CENTER (SEE TABLE FOR RADIUS R^3)
7. LOCATE CENTER OF ARC R^3 ON ARC D BY TRIAL THRU POINT C AND TANGENT TO ARC R^2
8. LOCATE CENTER OF ARC R^4 (SEE TABLE FOR RADIUS R^4) ON A LINE EXTENDED FROM POINT C THRU THE CENTER OF ARC R^3. SCRIBE ARC R^4 TANGENT TO ARCS R^3 & R^5.



STA	A	CH	VH	HB	R^1	R^2	R^3	R^4	R^5
77	1.644	21.650	24.249	17.136	13.824	31.888	14.303	18.616	13.629
93	1.062	23.127	25.613	19.452	16.325	31.682	18.537	38.449	13.209
103	.767	23.951	26.260	20.810	17.899	31.361	19.989	38.802	13.426
111	.570	24.578	26.698	21.832	19.133	31.084	20.913	36.941	14.263
119.5	.396	25.194	27.075	22.847	20.411	30.744	21.625	32.553	16.542
128.5	.264	25.802	27.391	23.848	21.728	30.352	22.073	25.179	20.599
131	.231	25.926	27.467	24.112	22.085	30.243	22.315	24.382	21.312

Figure 86 — Fuselage Basic Dimensions



Item	Lockheed Part No.	Name	Remarks
1	174650-4	Insert	When joints show wear,
2	174650-2	Insert	replace these parts
3	177588	Adapter	only.

☆These holes are intentionally oversize.

Figure 86A — Permissible Reaming and Bushing, Fuselage Attachments

JOINT	OVERSIZE REAMED HOLE DIA. MIN.	MAX.	BUSHING MATERIAL AND HEAT TREAT	I.D. MIN.	I.D. MAX.	O.D. MIN.	O.D. MAX.
1	.5625	.5634	NAVAL BRASS	.4375	.4395	.5637	.5643
2	1.3750	1.3760	NAVAL BRASS	.4998	.5010	1.3765	1.3773
3	1.3750	1.3760	NAVAL BRASS	1.1248	1.1258	1.3765	1.3773
4	.5625	.5634	NAVAL BRASS	.3123	.3135	.5637	.5643
5	.5000	.5008	NE8630 STL. NORM.	.3123	.3135	.5011	.5016
6	.6875	.6884	NAVAL BRASS	.4373	.4385	.6887	.6893
7	.5625	.5634	NE8630 STL. NORM.	.4375	.4395	.5637	.5743
8	.5625	.5634	NE8630 STL. NORM.	.4375	.4395	.5637	.5643
9	REPLACE ORIGINAL ALUMINUM BRONZE BUSHING						

NOTE: SEE SECTION 1
FOR INSTALLATION OF BUSHINGS

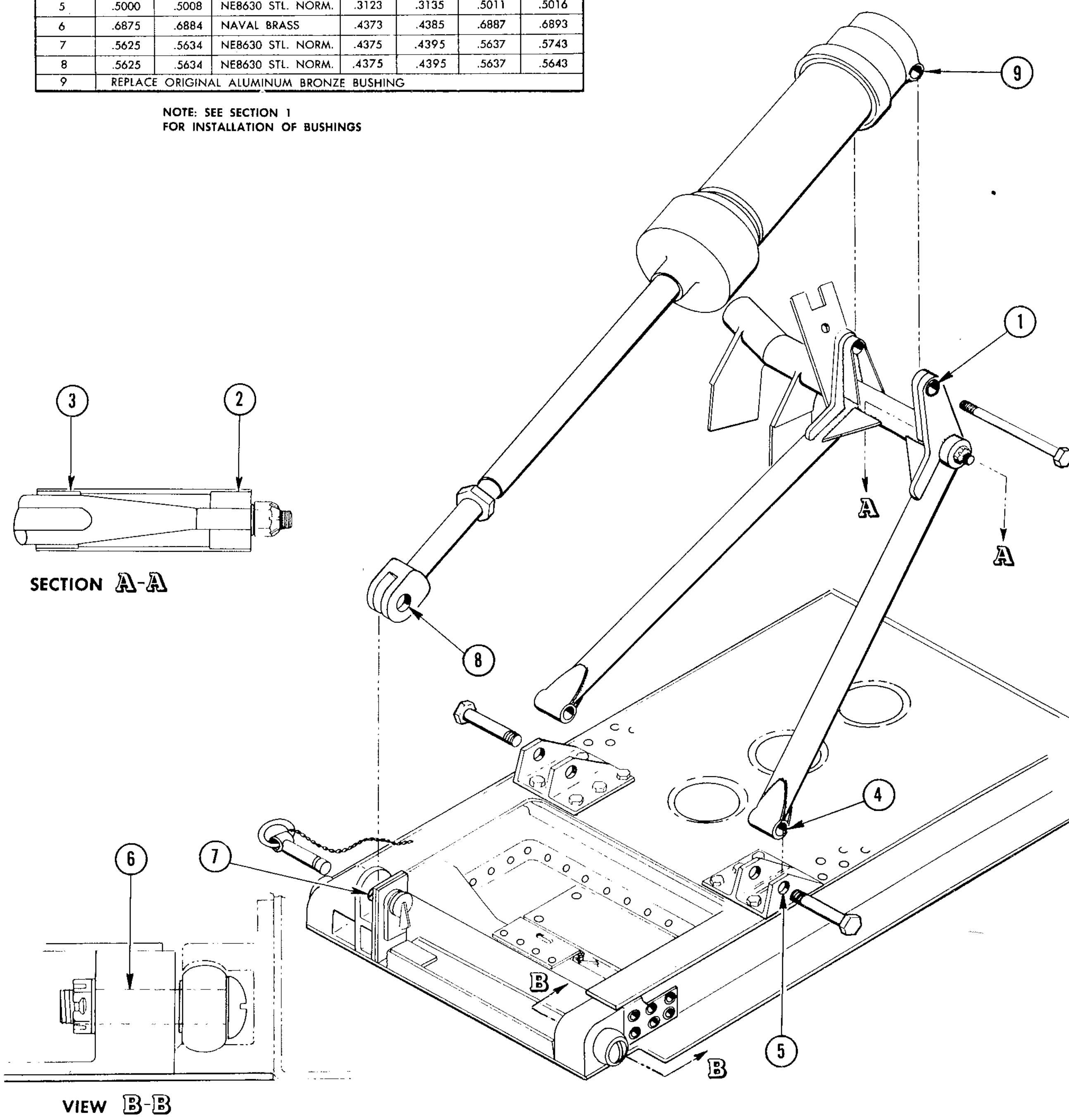


Figure 86B — Permissible Reaming and Bushing, Dive Flap Attachments

JOINT	ORIGINAL EQUIPPED WITH BUSHING	ORIG. MAX. HOLE OR BUSHING I.D.	ORIGINAL MINIMUM SHAFT O.D.	ORIGINAL MAXIMUM CLEARANCE	MAXIMUM CLEARANCE DUE TO WEAR
1	NO	0.4395	0.4362	.0033	.0055
2	YES	0.4395	0.4362	.0033	.0055
3	NO	0.3135	0.309	.0045	.0120
4	YES	0.3134	0.309	.0044	.0120
5	YES	0.4395	0.4362	.0033	.0055
6	NO	0.4395	0.4362	.0033	.0055
7	YES	1.1258	1.1238	.0020	.0037
8	YES	0.5009	0.4981	.0027	.0048
9	NO	0.4385	0.4340	.0045	.0120
10		1.253	1.240	.013	.0190

NOTE:

THE NOTED MAXIMUM CLEARANCES ARE TO BE USED ONLY AS A GUIDE FOR INSPECTING THE DIVE FLAPS. WEAR CLEARANCES ARE SUBJECT TO REVISION WHEN SUBSTANTIATED BY FURTHER EMPIRICAL DATA

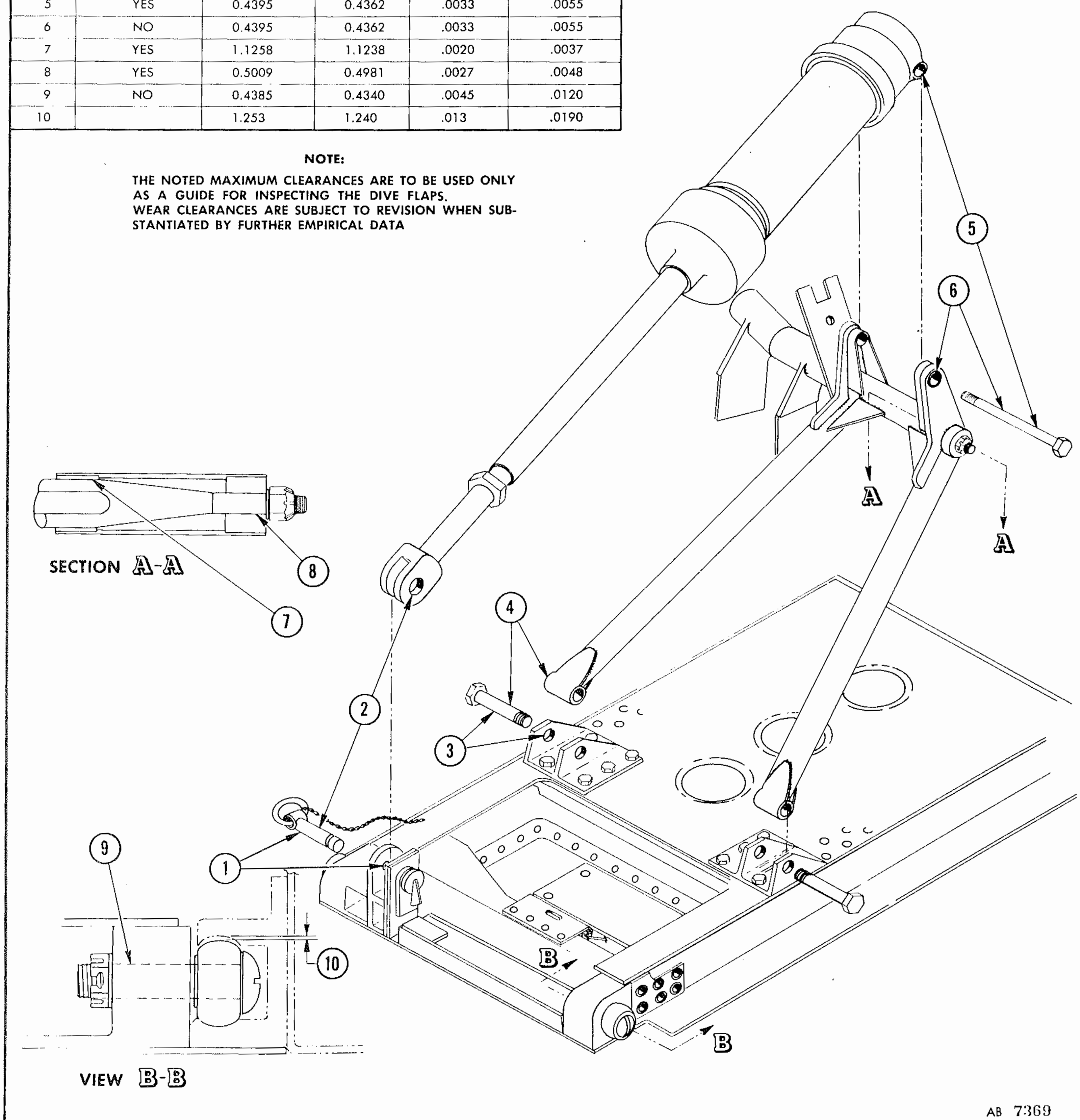
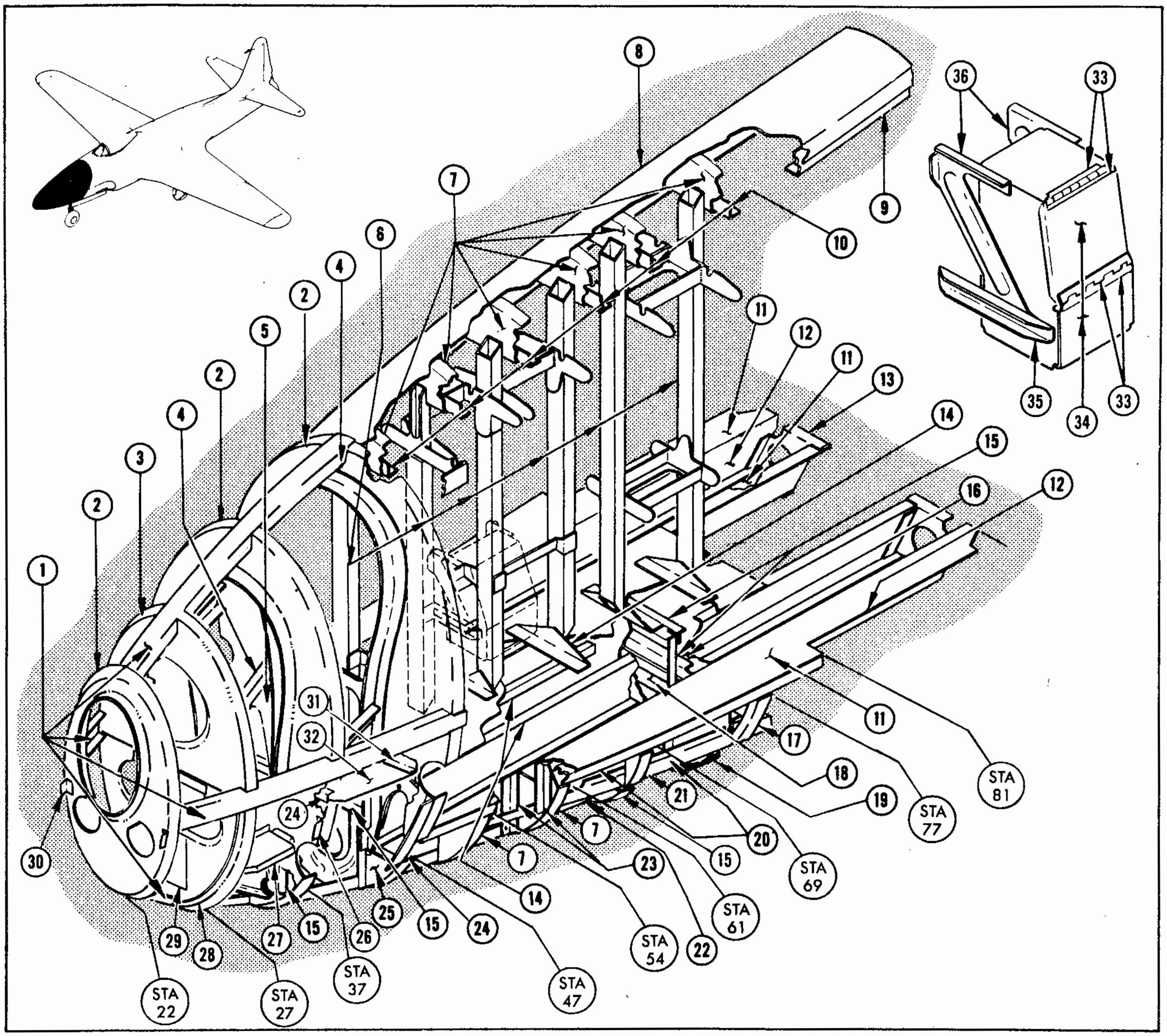


Figure 86C — Allowable Wear Tolerances, Dive Flap Attachments



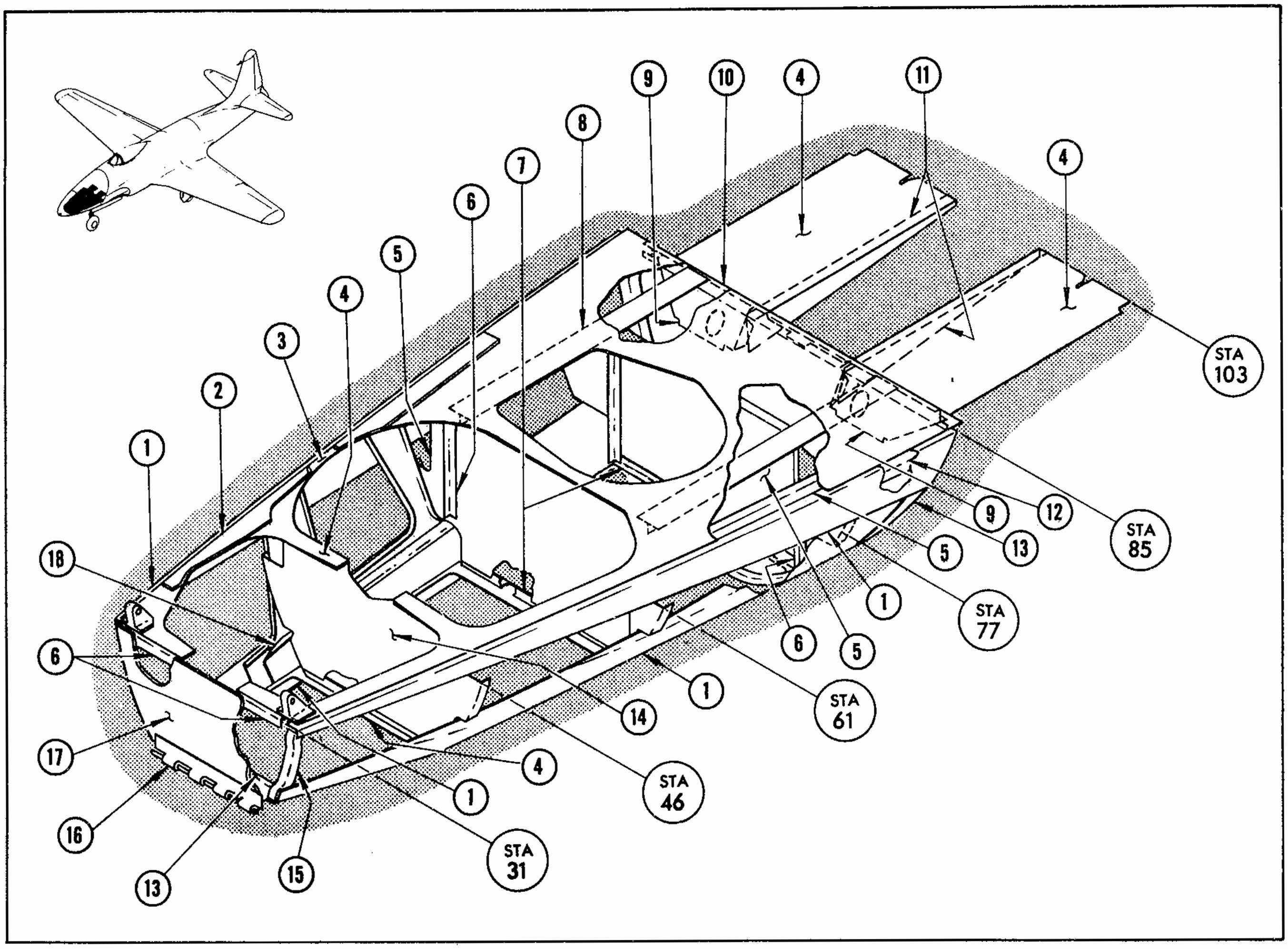
AB 4889

Figure 87 — Fuselage Nose Structure Reference Diagram, F-80A Airplanes

Item	Part Name	Figure Reference Neg. Damage	Figure Reference Repair	Remarks
1	Channels	131	143	.051
2	Bulkhead	134	96	.040
3	Bulkhead	134	96	.064
4	Angle	132	139	LS3357
5	Web		135, 152	.032
6	Supports		97	LS3251
7	Formers	134	150, 151	.051
8	Channel		98	24S-T80 — .051
9	Angles	131	98	24S-T80 — .051
10	Angles	132	NR	LS2207
11	Floor		135	.051
12	"Z" Section	132	99	LS477
13	Bulkheads	134	149, 150, 151	.051
14	Angles	132	NR	LS3228
15	Angles	132	139	LS3357
16	Channel		143	24S-T80 — .072
17	Former	132	139	LS3357
18	Channel	132	101	LS476
19	Bulkhead	134	150, 152	.051
20	Longeron		100	24S-T80 — .188
21	Former	134	96	
22	Angle	131	139	.125
23	Angles	132	NR	LS3254
24	Angle	132	139	LS3201
25	Bulkhead	134	150, 152	.032
26	Clip	132	NR	LS516 24S-T0 Alum. Alloy
27	Bracket Assy			
	Bracket	134	150, 152	.050 302-1A Cor. Res. Steel
	Doubler		NR	.062 302-1A Cor. Res. Steel
	Channel		NR	.064
28	Doubler	134	96	.064
★29	Splice Plate		NR	.064
30	Angle	131	NR	.064 302-1A Cor. Res. Steel
31	Angle	132	NR	LS3283
32	Bracket	134	150, 152	.072 24S-T0 Alclad
33	Hinges		NR	LS413
34	Sides		★★135	1010 Body Steel
35	Channel		★★143	NE8630 Sheet Steel
36	Trusses		★★	1010 Body Steel

NOTES: All material 24S-T Alclad unless otherwise noted.
Items not indicated are not repairable.
NR indicates non-repairable.
★ In Service Kit modifications only.
★★ Repair with welded patches.

Key to Figure 87



No.	Item	Figure Reference Neg. Damage	Figure Reference Repair	Remarks
1	Longeron	131		.188
2	Reinforcement			.750 NE8630 Stl Bar
3	Plate			.188 NE8630 Stl Bar
4	Floor	133	135, 152	
5	Bulkheads	133		
6	Stiffener	132	139	LS3224
7	Stiffener	132	139	LS347
8	"T"	132	146	LS2242
9	Support	133	135, 152	
10	"Z"	131	148	
11	Stringer	132	139	LS3399
12	Angle	131		
13	Angle	132	139	LS501
14	Bulkhead	133		.125 1010 Body Stl
15	Angle	131		
16	Hinge			LS3484
17	Plate	133	152	
18	Splice			

NOTES: All material 24S-T Al Alc unless otherwise noted. Items not indicated are not repairable.

Figure 87A — Fuselage Nose Structure Reference Diagram — Camera Installation

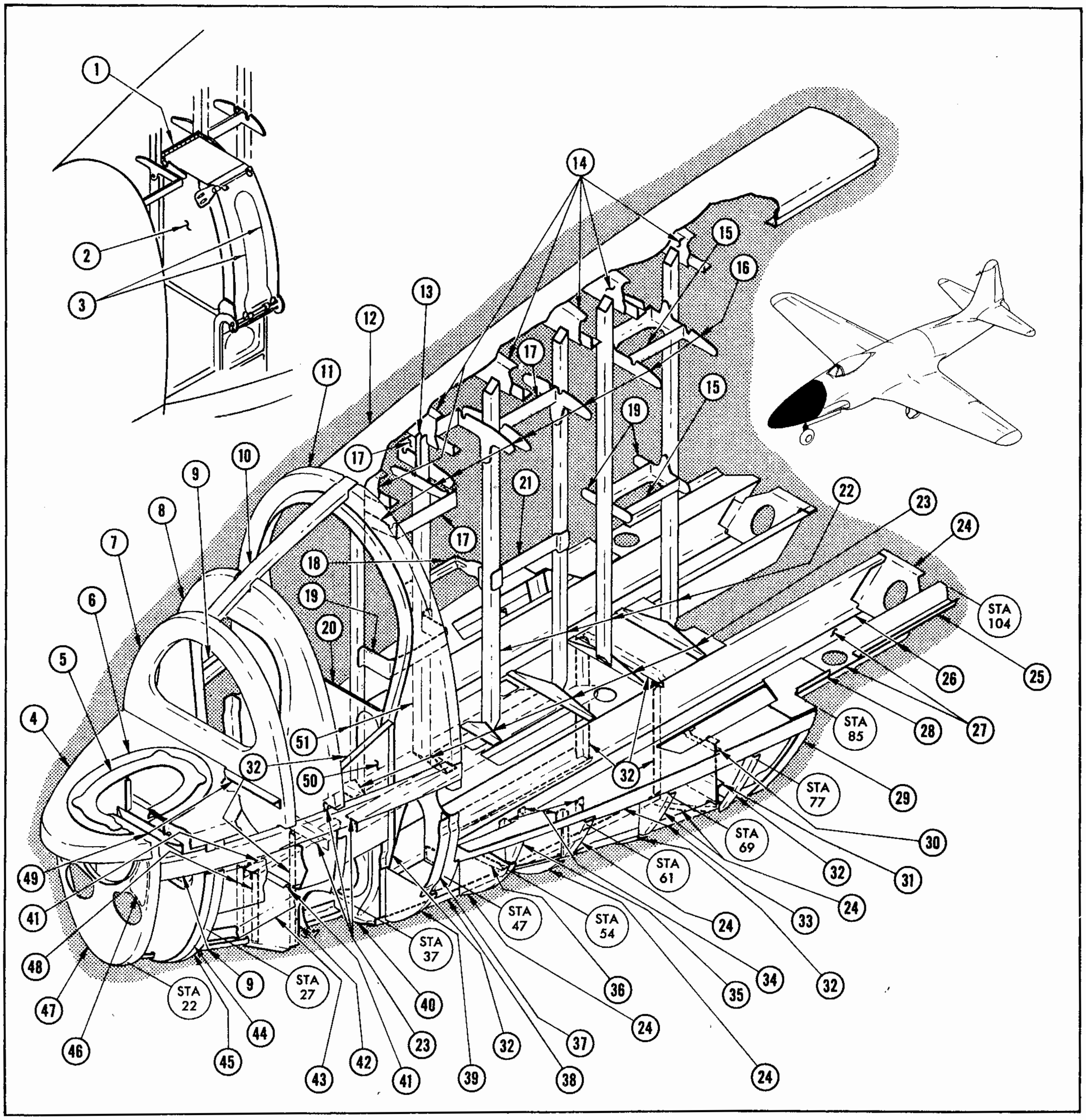
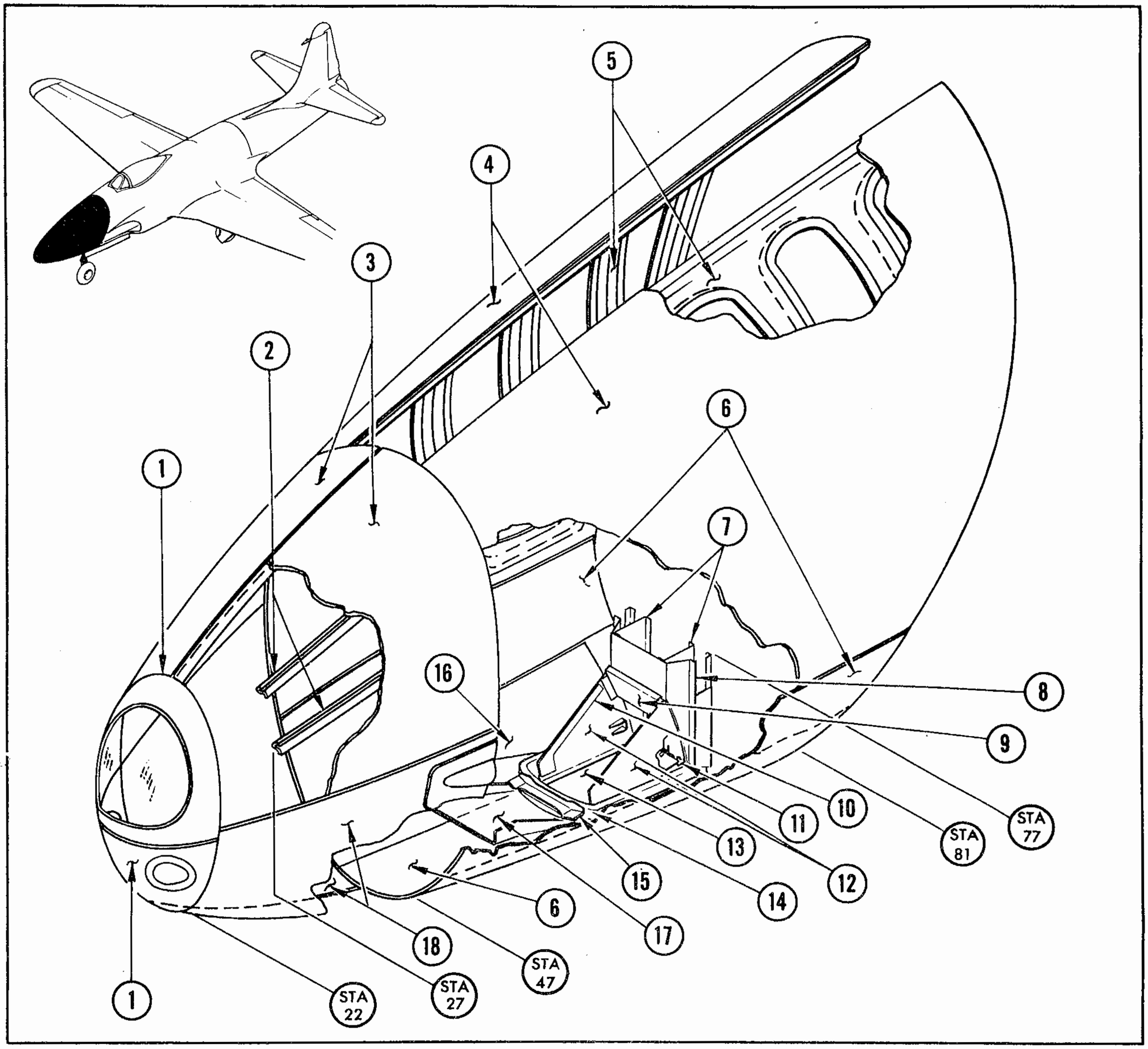


Figure 87B — Fuselage Nose Structure Reference Diagram, P-80B and P-80C Airplanes

Item	Part Name	Figure Reference Neg. Damage	Figure Reference Repair	Remarks
1	Hinge		NR	LS427
2	Sides		☆	1010 Steel
3	Guides		R	.035, 302–¼H Corr. Res. Stl.
4	Floor	134	135, 152	.051, 24S-T80
5	Ring		R	.064
6	Ring		R	.062, 302–¼H Corr. Res. Stl.
7	Bulkhead	134	96	.051, 24S-T80
8	Bulkhead	134	96, 96C	.040
9	Former	131	143	.051
10	Former	131	143	.051, 24S-T80
11	Bulkhead	134	96, 96D	.040
12	Channel	134	98	.051, 24S-T80
13	Fitting		NR	NE8630 Steel Bar
14	Ribs	134	150, 151	.051
	Angles	132	139	LS2207
15	Channel	134	R	.035, NE8630 Sht. Steel
16	Track		NR	.218, NE8630 Sht. Steel
17	Bumper		R	.062, NE8630 Sht. Steel
18	Guard		R	.062, NE8630 Sht. Steel
19	Guard		R	.062, NE8630 Sht. Steel
20	Reinforcement	134	96D	.091
21	Guard		NR	.187, NE8630 Sht. Steel
22	Posts		97	LS3251
23	Angles	132	139	LS3228
24	Bulkheads	134	150, 151	.051
25	Angle	131	139	.051
26	Stringers	132	99	LS477
27	Floor		135, 152	.051
28	Doubler		150	.051
29	Angle	132	139	LS501, 24S-T8X
30	Channel	131	R	.072, 24S-T80
31	Channel	132	110	LS476
32	Angle	132	139	LS3357
33	Longeron		100	.188, 24S-T80
34	Angles	132		LS3254
35	Bulkhead	134	150	.040
36	Angle	131	139	.051
37	Angle	132	139	LS3201
38	Stringer	131	139	.125
39	Bulkhead	134	150, 152	.032
40	Doubler		R	.064
41	Channel	133	150, 152	.064
42	Doubler		R	.072
43	Bracket		R	.050, 302-1A Corr. Res. Stl.
44	Doubler	134	96B	.064, 24S-T80
45	Bulkhead	134	96, 96B	.064, 24S-T80
46	Doubler		96A	.051, 24S-T80
47	Bulkhead	134	96, 96A	.040, 24S-T80
48	Angles	132	139	LS3200
49	Angles	132	139	LS3572
50	Web	134	150, 152	.032
51	Posts		97	LS700

NOTES: ☆Repair with welded patches. All material is 24S-T aluminum Alclad unless otherwise noted.
NR indicates non-repairable items. R indicates items recommended for replacement.

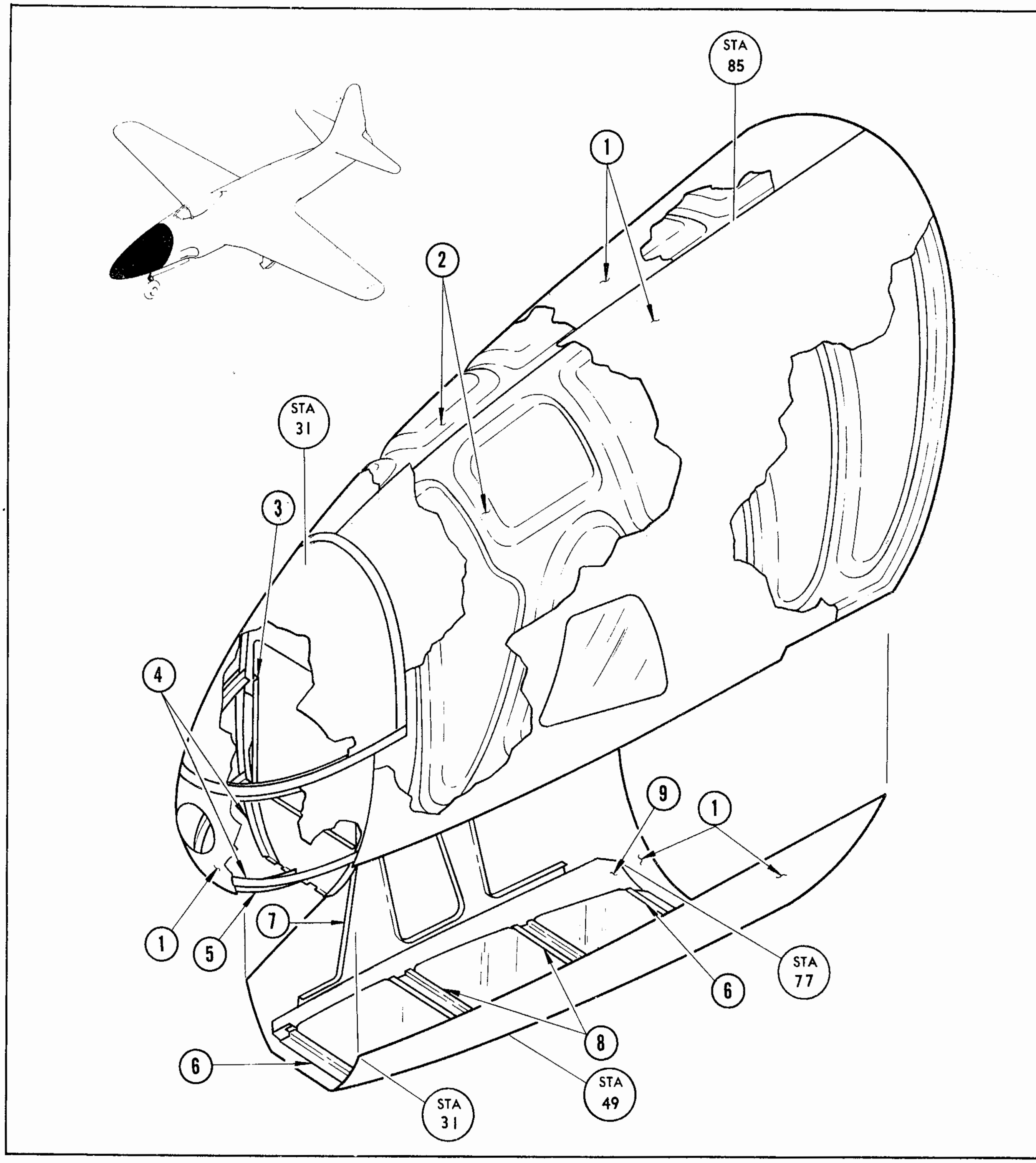
Key to Figure 87B



Item	Part Name	Figure Reference Neg. Damage	Figure Reference Repair	Remarks
1	Nose☆☆☆	130	104, 135	.050 347-1A Corr Res Stl
2	Stringers	131	102	LS169
3	Skins	130	103, 104, 135	.040
4	Door Skins, Outer	130	103, 104, 135	.040 24S-T81
5	Door Skins, Inner	130	145	.040 24S-T81
6	Skins	130	103, 104, 135	.064
7	Formers	131	☆143	.035 347-1A Corr Res Stl
8	Lining		☆135	.035 347-1A Corr Res Stl
9	Shield		☆135	.035 347-1A Corr Res Stl
10	Doubler		☆	.062 345-1A Corr Res Stl
11	Hinge		☆	.093 NE8630 Sheet Steel
12	Sides		☆	.062 347-1A Corr Res Stl
13	Skin		☆103, 104, 135	.050 347-1A Corr Res Stl
14	Frame			
15	Angle			LS501
16	Doubler			
17	Channel	131	☆☆143	.035 302-1A Sheet Steel
18	Skins	130	☆103, 104, 135	.035 347-1A Corr Res Stl

NOTES: Material is 24S-T aluminum Alclad unless otherwise noted. Items not indicated are not repairable. ☆ 347-1A may be welded. ☆☆ 302-1A may not be welded. ☆☆☆Gage increased from .035. Replace damaged parts with .050 gage material.

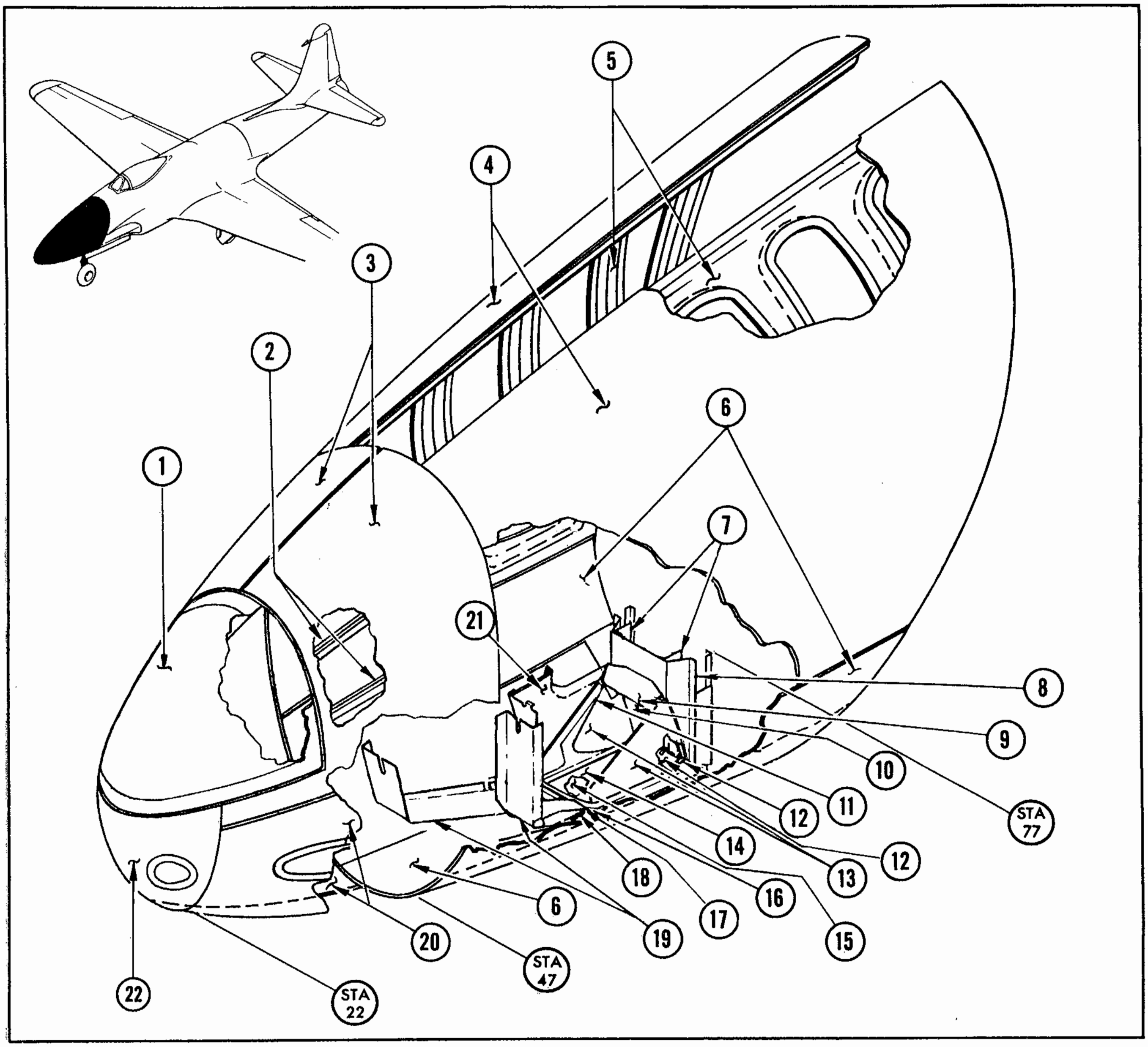
Figure 88 — Fuselage Nose Section Skin and Stiffeners Reference Diagram, P-80A Airplanes



Item	*Part Name*	*Figure Reference Neg. Damage*	*Repair*	*Remarks*
1	Outer Skins	130	103, 103A 104, 135	
2	Inner Skins	130	103A	
3	Web	133	152	
4	Former	131	139	
5	Stiffener	131	139	
6	Retainer	131		
7	Frame	130	103A	
8	Retainer	131		
9	Pan	131		
10	Retainer	131		

NOTES: All material 24S-T Alclad unless otherwise noted. Items not indicated are not repairable.

Figure 88A — Fuselage Nose Section Skin and Stiffeners Reference Diagram — Camera Installation



Item	Part Name	Figure Reference Neg. Damage	Figure Reference Repair	Remarks
1	Laminate, Static Grounding		NR	Lockheed Spec. 1-828A
2	Stringers	131	102	LS169
3	Skins	130	103, 104, 135	.040 24S-T Alum. Alc.
4	Door Skins, Outer	130	103, 104, 135	.040 24S-T80
5	Door Skins, Inner	130	145	.040 24S-T80
6	Skins	130	103, 104, 135	.064 24S-T Alum. Alc.
7	Angles	134		.040 24S-T Alum. Alc.
8	Lining		135, 137	.040 24S-T Alum. Alc.

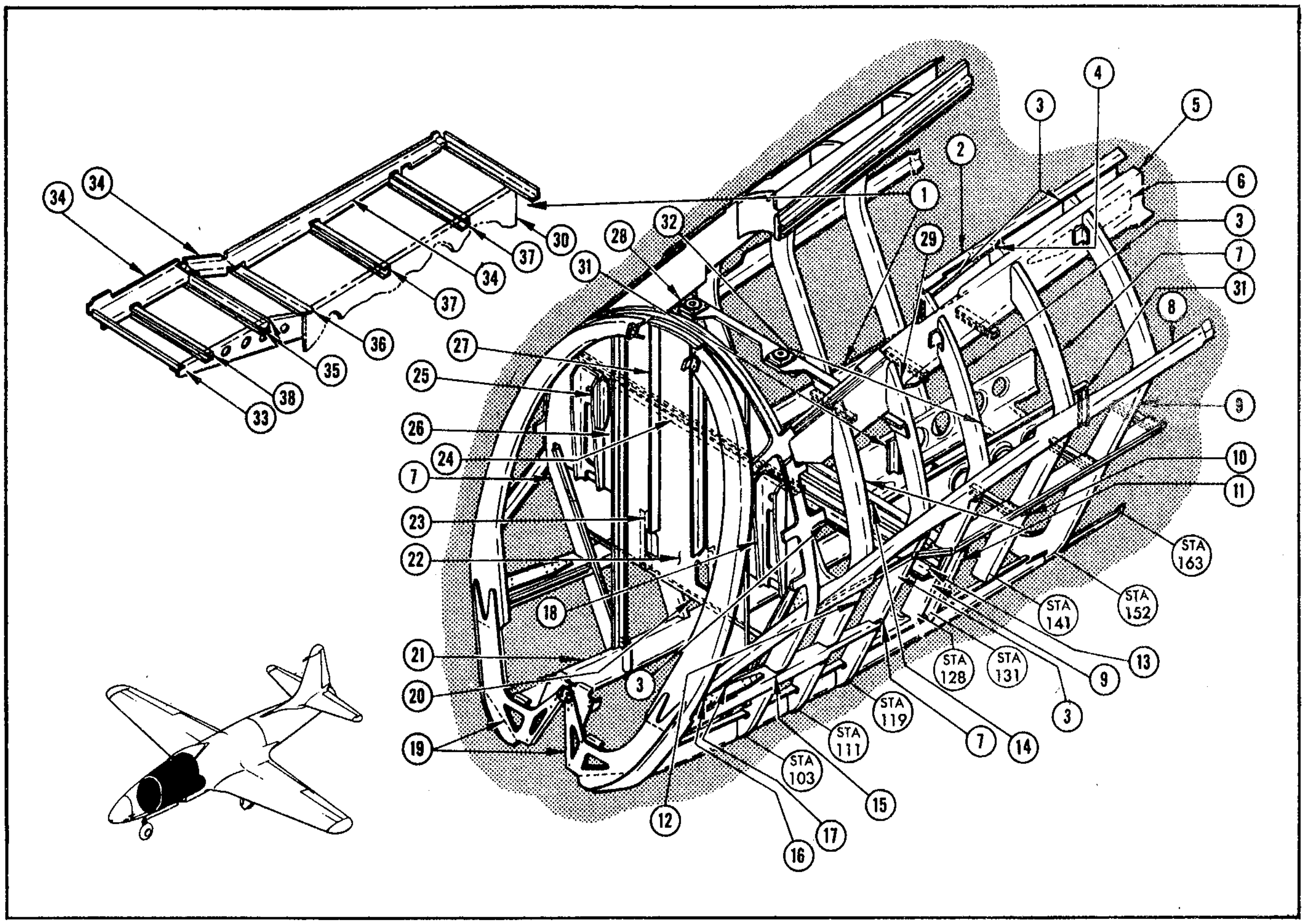
Figure 88B — Nose Section Skin and Stiffeners Reference Diagram, P-80B and P-80C Airplanes

Item	Part Name	Figure Reference Neg. Damage	Figure Reference Repair	Remarks
9	Guard		☆	.062 347-1A Corr. Res. Stl.
10	Back		☆	.062 347-1A Corr. Res. Stl.
11	Doubler		☆	.062 347-1A Corr. Res. Stl.
12	Bracket		☆	.062 NE8630 Steel
13	Sides		☆	.062 347-1A Corr. Res. Stl.
14	Doubler		☆	.062 347-1A Corr. Res. Stl.
15	Skin		☆135	.050 347-1A Corr. Res. Stl.
16	Frame		R	.035 302-1A Corr. Res. Stl.
17	Hinges		NR	LS3684
	Pin		NR	LS500-188
18	Angle	132	R	LS501
19	Lining		☆135, 137	.078 302-¼H Corr. Res. Stl.
20	Skins	130	☆103, 104, 135	.035 347-1A Corr. Res. Stl.
21	Side		☆135, 137	.035 347-1A Corr. Res. Stl.
22	Nose Skin	130	☆104, 135	.050 347-1A Corr. Res. Stl.

NOTES: R indicates items recommended for replacement; NR indicates non-repairable items.

☆ 347-1A steel may be welded. 302 steel may not be welded. Revise repairs for all corrosion-resistant steel parts to use patch material of same type as that of original part, and Monel rivets of same diameter as that listed on repair illustration.

Key to Figure 88B



Item	Part Name	Figure Reference Neg. Damage	Repair	Remarks
1	Floor Support Assem.			
2	Longeron		105	.091
3	Rings	134	96	.051
4	Ring	134		24S-T80 — .064
5	Longeron		137	24S-T81 — .091
6	Doubler			24S-T86 — .064
7	Ring	134	96	24S-T80 — .064
8	Longeron, Side		107	24S-T81 — .064
9	Channels	131	96	.040
10	Channel	131	96	24S-T81 — .040
11	Channel	131	96	24S-T80 — .051
12	Former	131	149, 150, 155	24S-T80 — .040
13	Angle	131	139	24S-T81 — .081
14	Support Assembly			
	Angles,			
	Sheet Metal	131	139	
	Angle	132	110	LS3368
	Web			24S-T81 — .081
15	Longeron			24S-T80 — .125
16	Doubler			24S-T81 — .102
17	Angle	131	139	.064
18	Channel			24S-T80 — .125
19	Plate			24S-T81 — .250
20	Angle	132	139	LS3228
21	Longeron		108	24S-T80 — .102
22	Web		135, 152	.025
23	Angle	132	139	LS3203
24	Channel		110	24S-T80 — .125
25	Angle	132		LS3224 8X
26	Angle	131	139	24S-T80 — .072
27	Angle	132	139	LS3224
28	Angle	131	139	LS358
29	Ring	134	96	24S-T80 — .072
30	Tunnel		155	24S-T80 — .064
31	Clip			LS3230
32	Channel		143	.064
33	Beam	134	140, 150, 155	.051
34	Longeron		109	.051
35	Angles	131	139	.051
36	Angle	131	139	.032
37	Support	131	143	24S-T80 — .072
38	Channel	131	143	.051

NOTES: All material 24S-T unless otherwise noted.
Items not indicated are not repairable.

Figure 89 — Fuselage Mid Section Structure Reference Diagram, Stations 81 - 163, P-80A Airplanes

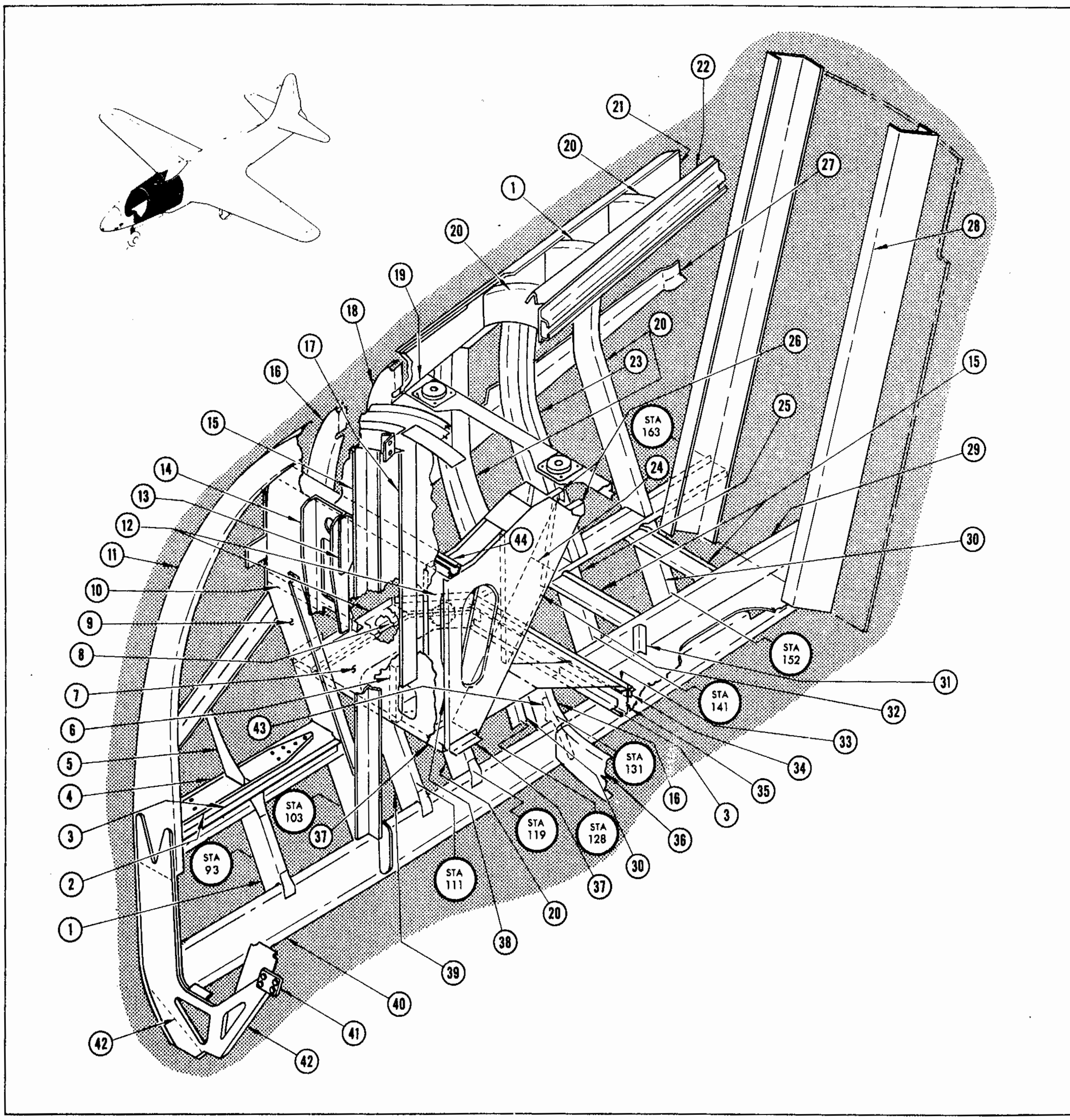
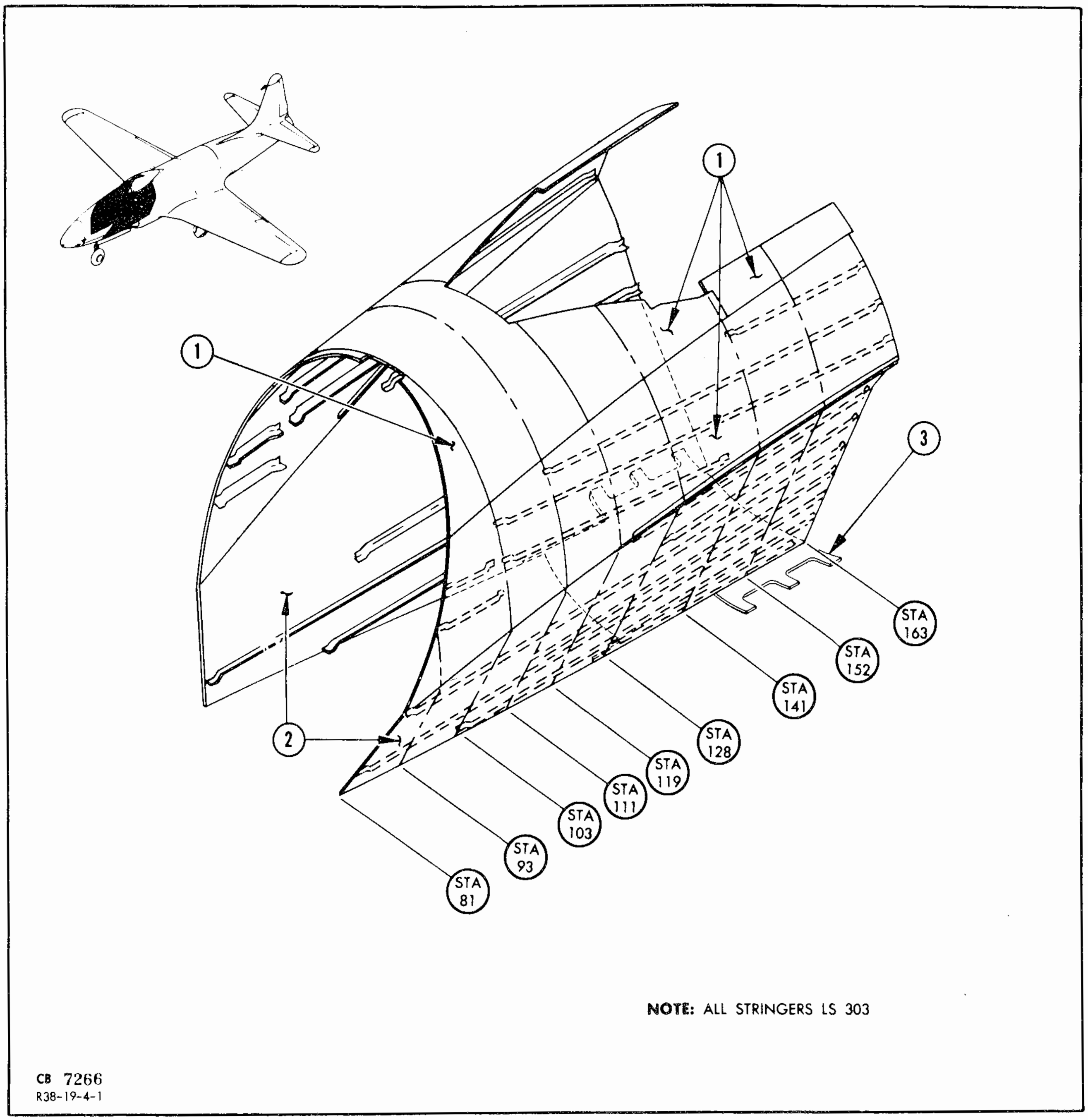


Figure 89A — Fuselage Mid Section Structure Reference Diagram, Stations 81-163, P-80B and P-80C Airplanes

Item	Part Name	Figure Reference Neg. Damage	Figure Reference Repair	Remarks
1	Former	131	96	24S-T80—.064
2	Doubler		NR	24S-T81—.081
3	Angle	131	139	.064
4	Longeron		NR	24S-T80—.125
5	Former	131	96	.051
6	Angle	132	NR	LS3203
7	Floor, Pilot's		135, 152	.072
8	Angle	131	139	.072
9	Web	☆	135, 152	.025
10	Angle	132	139	LS3247
11	Ring	131	96	24S-T80—.064
12	Longeron		109	.051
13	Angle	132	NR	LS3224 24S-T8X
14	Channel			24S-T80—.125
15	Angle	131	139	24S-T80—.072
16	Ring	131	96	24S-T80—.051
17	Angle	132	139	LS3224
18	Ring	131	96	24S-T80—.072
19	Support	132	139	LS358
20	Ring	131	96	24S-T80—.051
21	Longeron, Upper		106	24S-T81—.091
22	Longeron		105	24S-T81—.091
23	Ring	131	96	24S-T80—.064
24	Plate		NR	24S-T81—.051
25	Ring	131	96	24S-T81—.040
26	Gusset		NR	24S-T81—.051
27	Longeron, Side		107	24S-T81—.064
28	Track		NR	LS1545
29	Tunnel		155	24S-T80—.064
30	Channel	131	96	.040
31	Clip	132	NR	LS3230
32	Doubler		NR	.051
33	Angle	131	139	.032
34	Angle	131	139	.051
35	Channel	131	96	24S-T81—.081
36	Former	131	96	.064
37	Angle	132	NR	LS3228
38	Side		135, 152	24S-T81—.051
39	Ring	131	96	24S-T80—.040
40	Longeron		108	24S-T80—.102
	Doubler		NR	24S-T81—.125
41	Plate		NR	24S-T81—.187
42	Plate		NR	24S-T81—.250
43	Gusset		NR	24S-T86—.188
44	Channel		110	24S-T80—.125

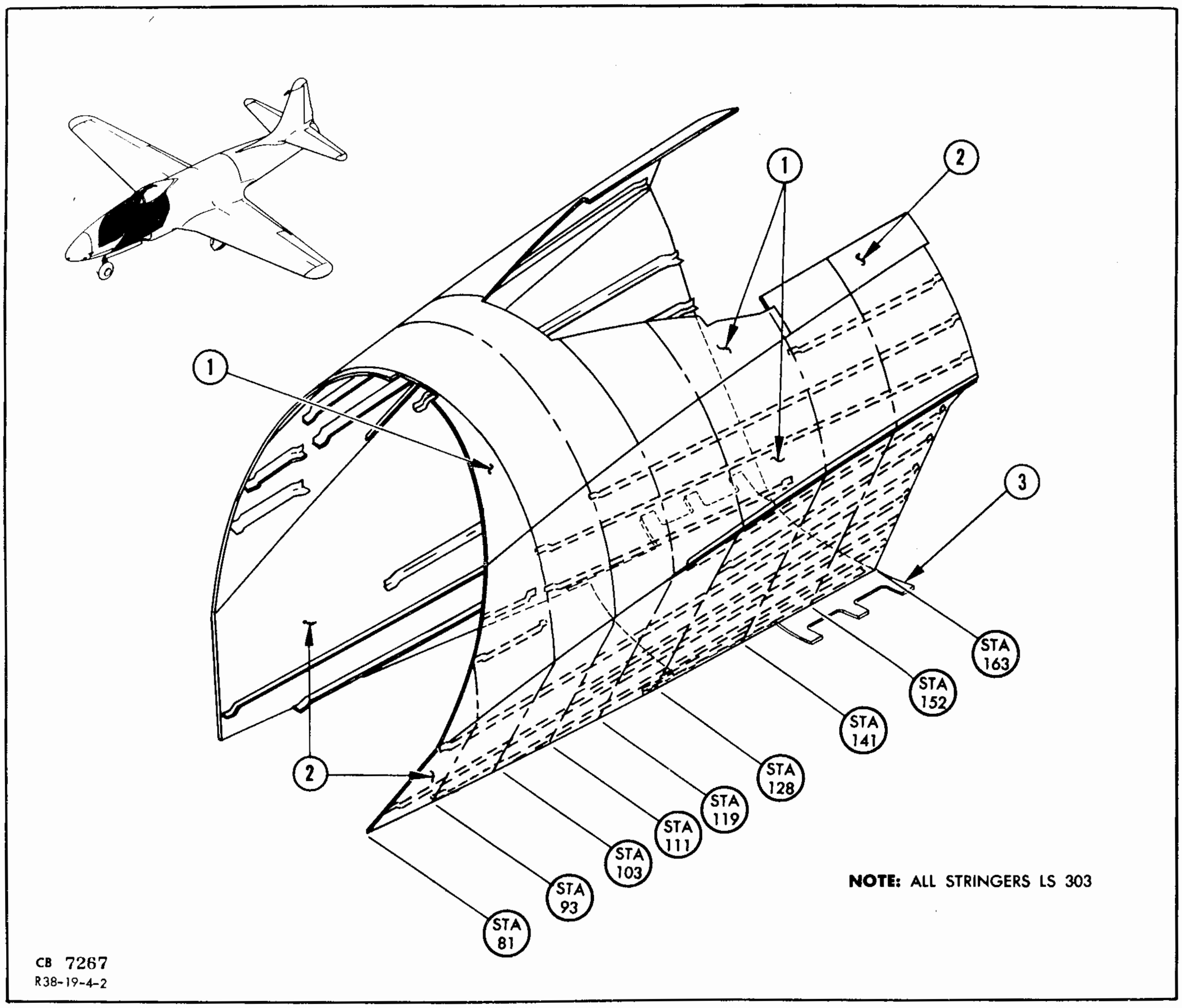
NOTES: Material is 24S-T aluminum unless otherwise noted. Items not indicated are not repairable.
NR indicates non-repairable.
☆Must be sealed. See section IV, paragraph 5.

Key to Figure 89A



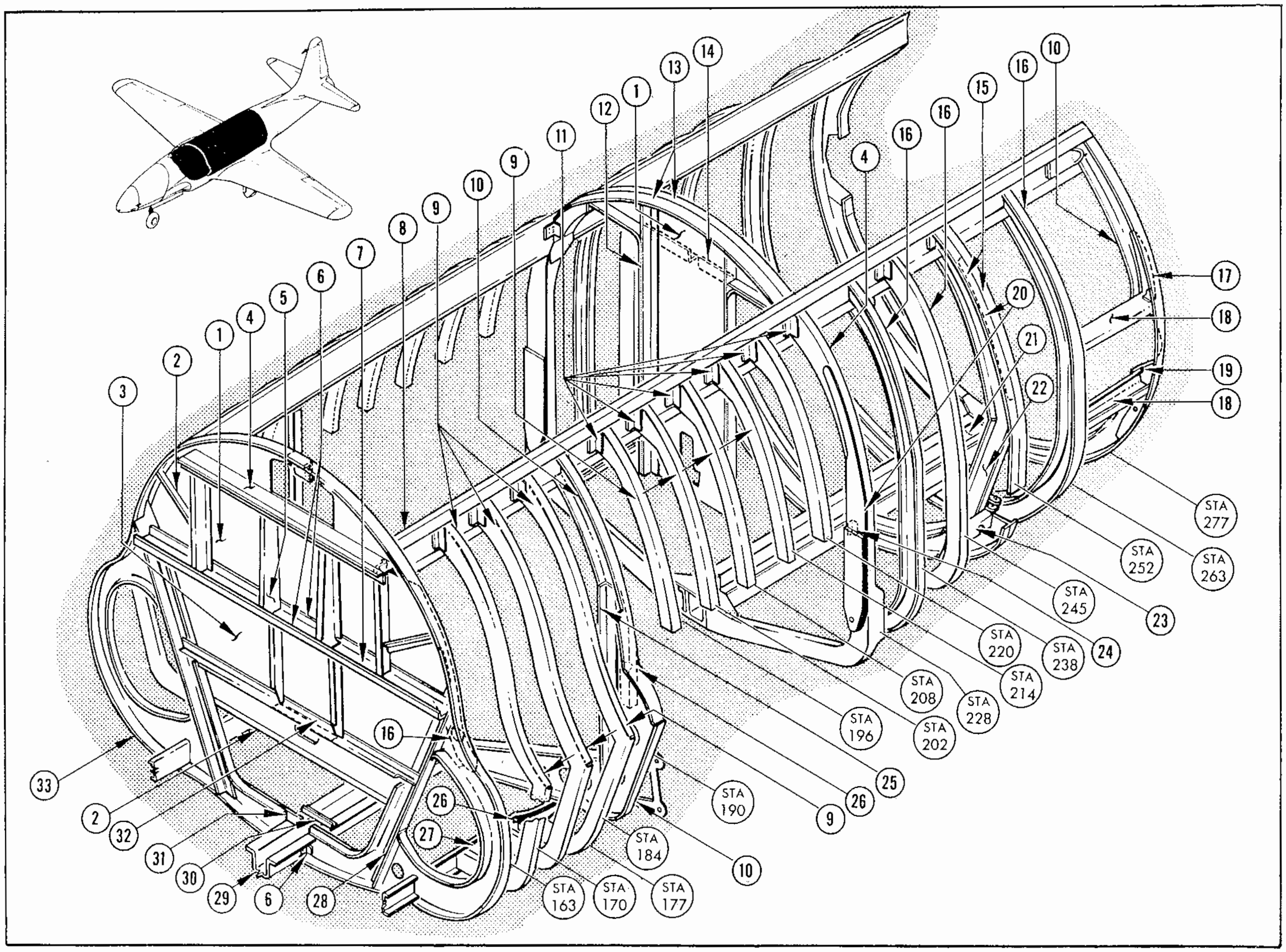
Item	Part Name	Figure Reference Neg. Damage	Figure Reference Repair	Remarks
1	Skin	130	135, 103, 104	24S-T81 — .040
2	Skin	130	135, 103, 104	24S-T80 — .040
	Stringers	132	140, 141	LS303
3	Skin	130	104	24S-T80 — .091

Figure 90 — Fuselage Mid Section Skin and Stiffeners Reference Diagram, Stations 81 - 163, F-80A Airplanes



Item	Part Name	Figure Reference Neg. Damage	Figure Reference Repair	Remarks
1	Skin	130	135, 103, 104	24S-T81 — .040
2	Skin	130	135, 103, 104	24S-T80 — .040
	Stringers	132	140, 141	LS303
3	Skin	130	104	24S-T80 — .091

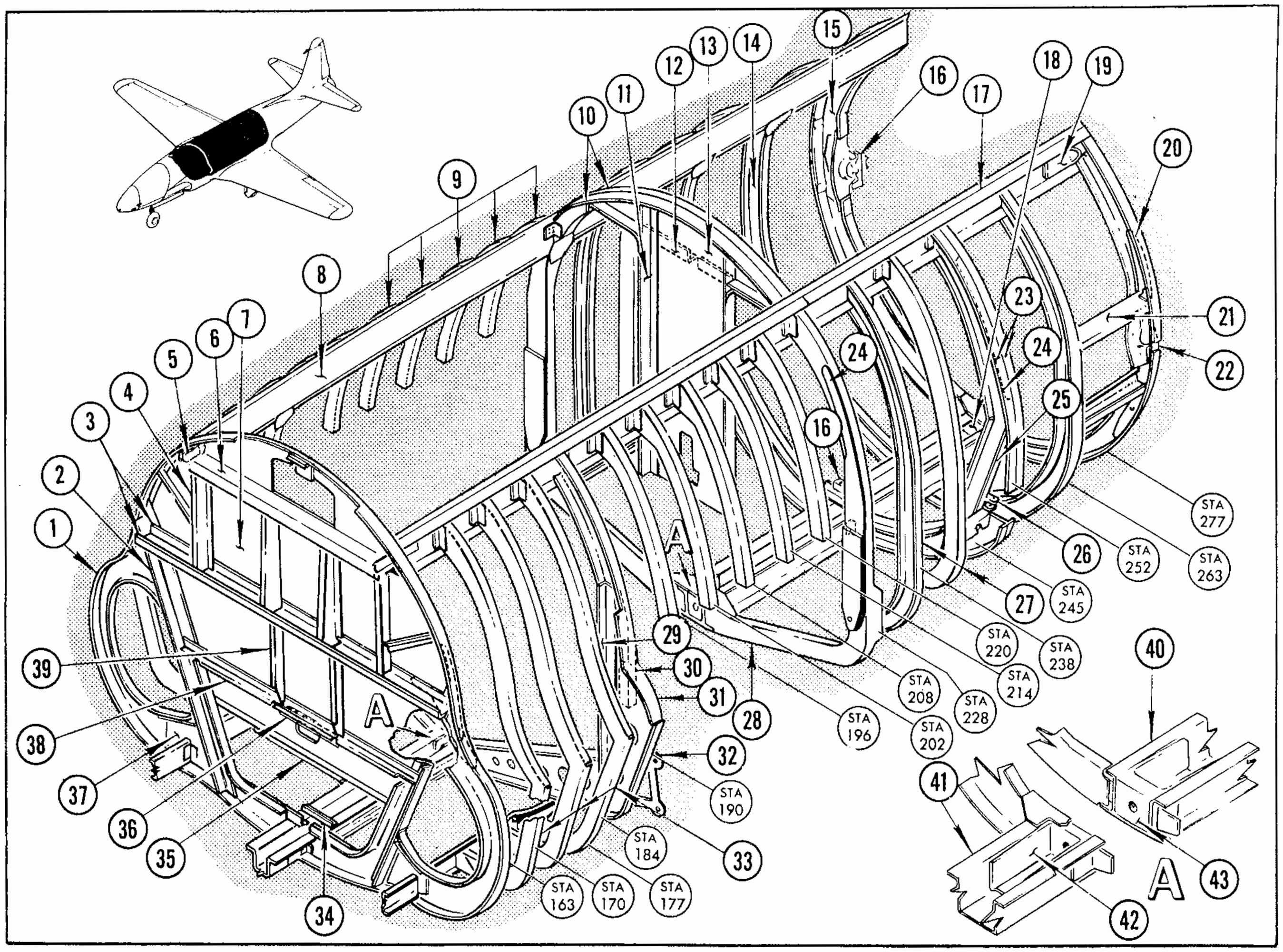
Figure 90A — Fuselage Mid Section Skin and Stiffeners Reference Diagram, Stations 81-163, F-80B and F-80C Airplanes



Item	Part Name	Figure Reference Neg. Damage	Figure Reference Repair	Remarks
1	Web	*	152	
2	Stiffener	130	139	
3	Stiffener	131	144	LS151 .040 SRT
4	Channel	131	155	24S-T80 — .081
5	Support	131	150, 155	
6	Angles	132	139	LS3228
7	Web	133	153	
8	Upper Longeron		106	
9	Rings	*	96	
10	Bulkhead	*	111A	24S-T80 — .091
11	Clips	132		LS3230
12	Angle	131	139	24S-T81 — .064
13	Partial Blkhd	*	139	24S-T80 — .051
14	Angle	131	139	LS106 — .051
15	Bulkhead	*	111	24S-T80 — .051
16	Bulkhead	*	96	24S-T80 — .051
17	Gussets	*		24S-T80 — .125
18	Channels	*	143	24S-T80 — .125
19	Plates	*		24S-T86 — .188
20	Slab	*		24S-T81 — .250
21	Lwr. Longs.	*		LS393
22	Angle	132	139	LS3224
23	Beam	*		24S-T81 — .072
24	Clip	132		LS3228
25	Angle	*	139	24S-T80 — .091
26	Stiffener	*	139	24S-T80 — .072
27	Dive Flap Support Channel	*		24S-T80 — .091
	Track	*		LS986
28	Angle	131	139	24S-T80 — .051
29	Bottom Longeron			
	Channel		113	24S-T80 — .125
	Support			24S-T80
	Clip			LS3320
30	Angle	132	139	LS3572
31	Angle	132	139	LS3234
32	"Z" Section	131	148	
33	Bulkhead	*	111	24S-T80 — .064

NOTES: All material 24S-T unless otherwise noted.
Items not indicated are not repairable.
*See text, section IV, paragraphs 4 and 5.

Figure 91 — Fuselage Mid Section Structure Reference Diagram, Stations 163-277, F-80A Airplanes



Item	Part Name	Figure Reference Neg. Damage	Repair	Remarks
1	Bulkhead	☆	111	24S-T80—.064
2	Angle	131	139	24S-T80—.051
3	Angles	132	139	LS3228
	Web			24S-T86—.040
4	Stiffener	131	144	LS161—.040 SRT
5	Fitting		NR	LS304 14S-T
6	Channel	131	155	24S-T80—.081
7	Web	☆	152	.025
8	Longeron		106	24S-T81—.091
9	Bulkheads	131	96	.051
10	Rings	131	139	24S-T80—.051
11	Vertical Stiffener	131	139	24S-T81—.064
12	Stiffener	131	139	LS106—.051
13	Web		152	.025
14	Bulkhead, Station 263	131	96	24S-T80—.051
15	Bulkhead, Station 277		111A	24S-T80—.091

Figure 91A — Fuselage Mid Section Structure Reference Diagram, Stations 163-277, F-80B and F-80C Airplanes

Item	Part Name	Figure Reference Neg. Damage	Figure Reference Repair	Remarks
16	Fitting (Engine)			
	Socket		NR	14S-T, Spec AN-QQ-A-367 Gr 5
	Cap		NR	LS468 Spec AN-QQ-A-354
17	Doublers		106	.032
18	Fitting		NR	14S-T Spec AN-QQ-A-367
19	Fitting		NR	NE8630 Spec AN-S-14
20	Plate		NR	24S-T86—.188
21	Channels		96	24S-T80—.125
22	Gusset		NR	24S-T86—.125
23	Rings		111	24S-T80—.064
24	Slab	☆☆	NR	24S-T80—.025
25	Angle	132	139	LS3224
26	Fitting		NR	220-T4 Spec AN-QQ-A-392
27	Bulkheads	131	96	24S-T80—.051
28	Bulkhead		111	24S-T80—.081
29	Angle		NR	24S-T80—.091
30	Angle		NR	24S-T80—.072
31	Bulkhead		111	24S-T80—.091
32	Fitting	☆☆	NR	24S-T80—.625
33	Bulkheads	131	96	.051
34	Angle	132		LS3572
35	Stiffener	132		LS1163
36	Angle	132		LS3254
37	Doubler		NR	.081
38	"Z" Section	131	148	.051
39	Stiffener	131	139	.032
40	Longeron, Sta. 228-277		112	LS393—24S-T8X
41	Longeron, Sta. 131-191		113	24S-T80—.125
42	Fitting, Fwd.	☆	NR	14S-T Forging
43	Fitting, aft	☆	NR	14S-T Forging

NOTES: Material is 24S-T unless otherwise noted. NR indicates non-repairable. Items not indicated are not repairable.
Mating hole in wing station O rib is bushed with X4130 threaded bushings which must be replaced in event of elongation. Rework of threads is not permitted.
☆Must be sealed. See text section IV, paragraph 5.
☆☆See figure 23A for permissible reaming and bushing.
☆☆☆Attachment hole in longeron fitting is intentionally oversize.

Key to Figure 91A

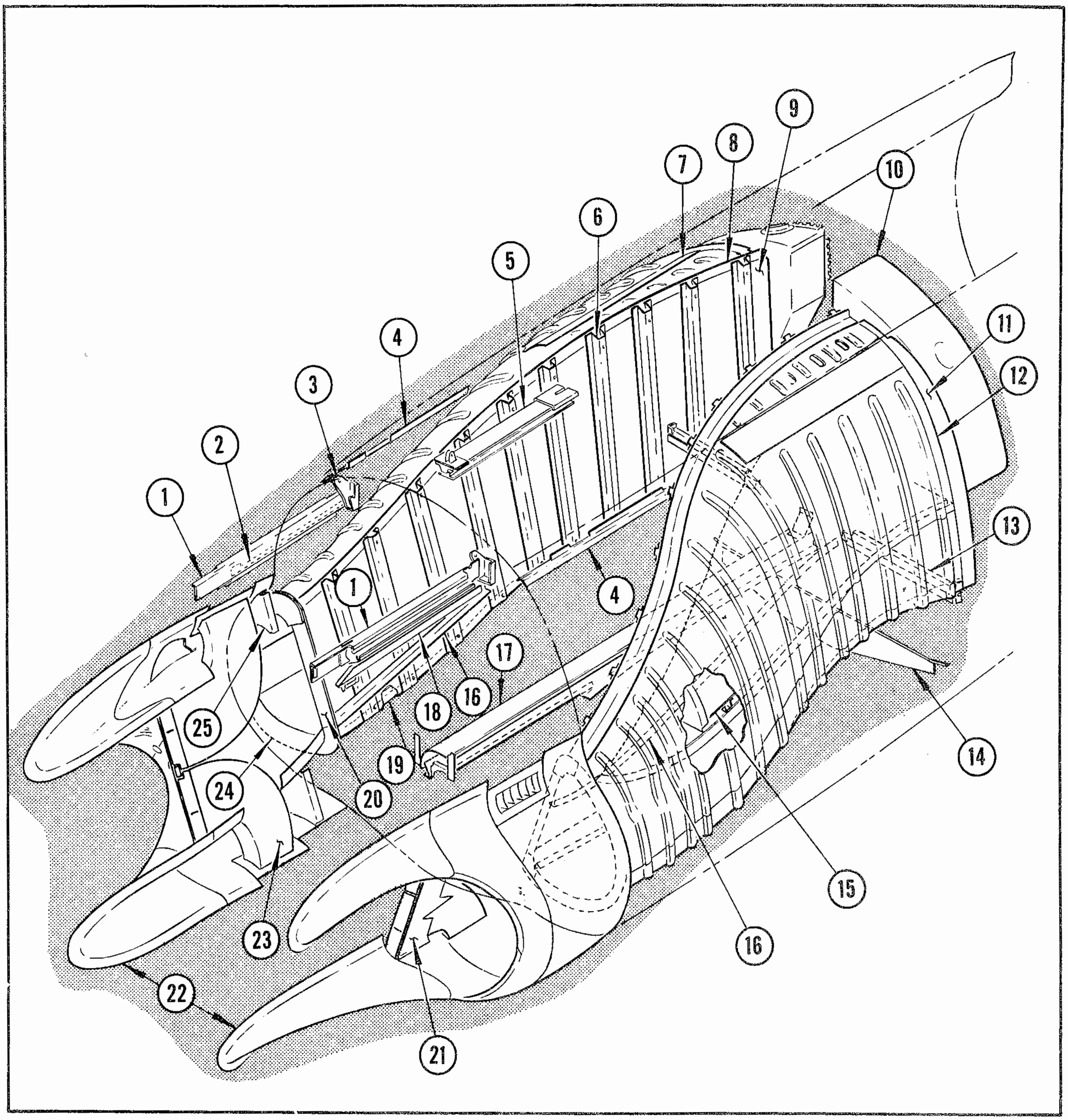
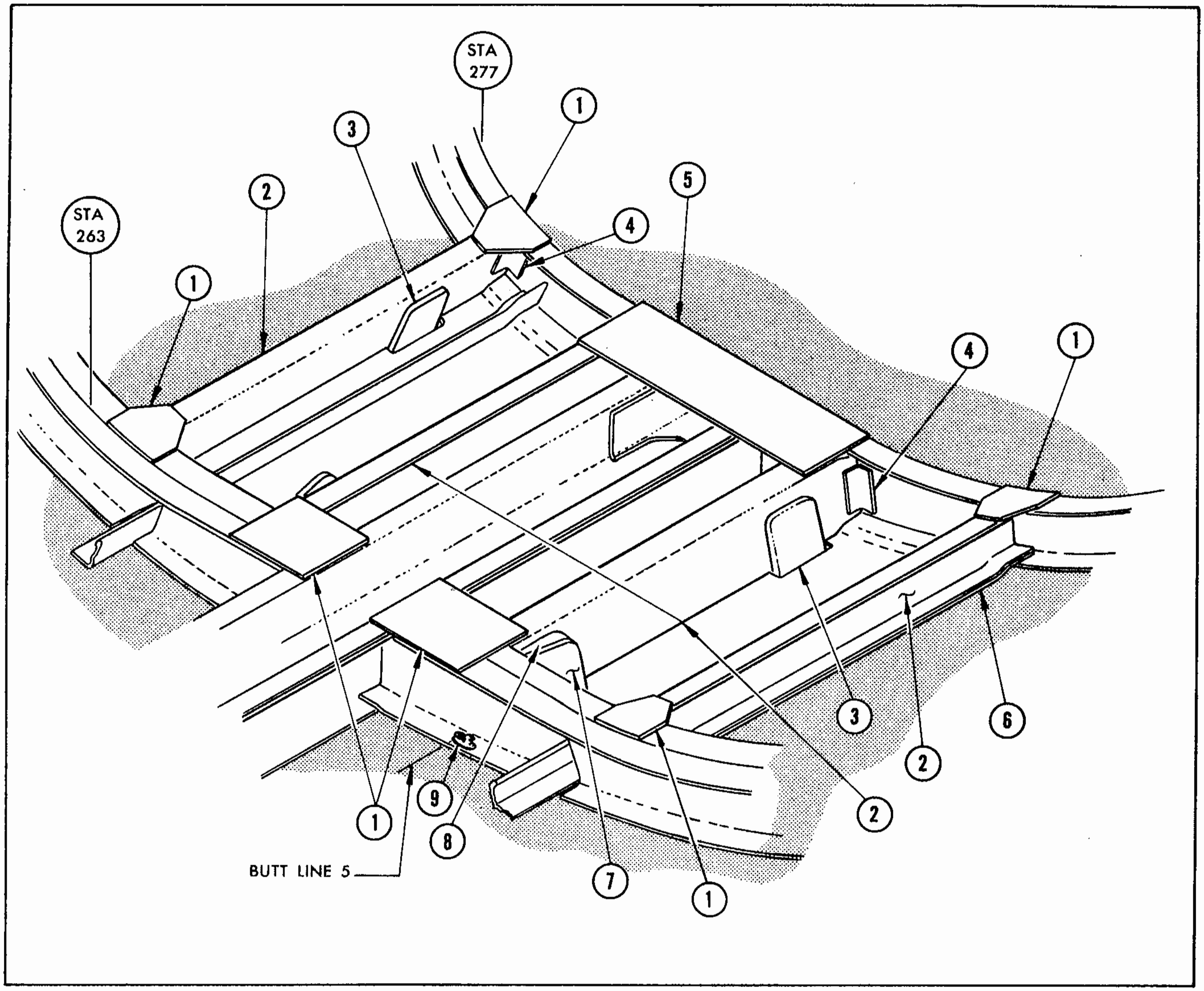


Figure 91B — Fuselage Mid Section Details, P-80B and P-80C Airplanes

Item	Part Name	Figure Reference Neg. Damage	Figure Reference Repair	Remarks
1	Channel, Canopy Operating Mechanism		NR	LS317
2	Guide, Canopy Operating Mechanism		NR	LS1552
3	Fitting		NR	356T6 Alum. Alloy Spec AN-QQ-A-394
4	"Z" Section	131	148	.040
5	Track, Aft Canopy		NR	LS1552
6	Hat Stiffeners	131	145	24S-T80—.064
7	Doubler		NR	24S-T81—.081
8	Angle	131	131	24S-T80—.081
9	Skin, Inner, Hat Reinforced	☆	135, 136, 137	24S-T80—.040
10	Cover Assemblies	☆	135, 136, 137	.040
11	Skins, Outer, Bead Reinforced	☆	135, 136, 137, 120A-1	24S-T81—.032
12	Beaded Reinforcements		103A, 120A-1	24S-T80—.040
13	Channel	131	143	24S-T80—.064
	Seal		NR	LS2910
14	Backing Strip	131	148	24S-T80—.025
	Seal		NR	LS2910
15	Upper Panel, Tank Supporting	☆	135, 136, 137	24S-T81—.020
	Lower Panel, Tank Supporting	☆	135, 136, 137	24S-T81—.040
	Attaching Angles	131	139	24S-T80—.072
	Hat Stiffeners	131	145	24S-T—.040
	Bulkhead	134	150, 151	24S-T—.051
16	Angle, Floor Supporting	131	139	24S-T80—.081
17	Tunnel			
	Cover	134	135, 152	24S-T80—.091
	Angles, Attaching	131	139	24S-T80—.081
	Angle, Inner	131	139	24S-T81—.072
18	Jettison Operating Mechanism			
	Channel		NR	LS1553
	Bar		NR	LS1552
19	Angle	131	139	24S-T80—.081
20	Angle	131	139	24S-T80—.064
21	Boundary Layer Scoop Skin	☆	135, 136, 137	24S-T—.064
22	Scoop Assembly			See Fig. 123
23	Ducts			See Fig. 123
24	Angle	131	139	24S-T80—.091
25	Bulkheads			See Fig. 123

NOTES: Material is 24S-T aluminum unless otherwise noted. Items not indicated are not repairable. NR indicates non-repairable.
☆Negligible damage restricted to dents. All holes must be repaired to prevent leakage of air. See section IV, paragraph 5.

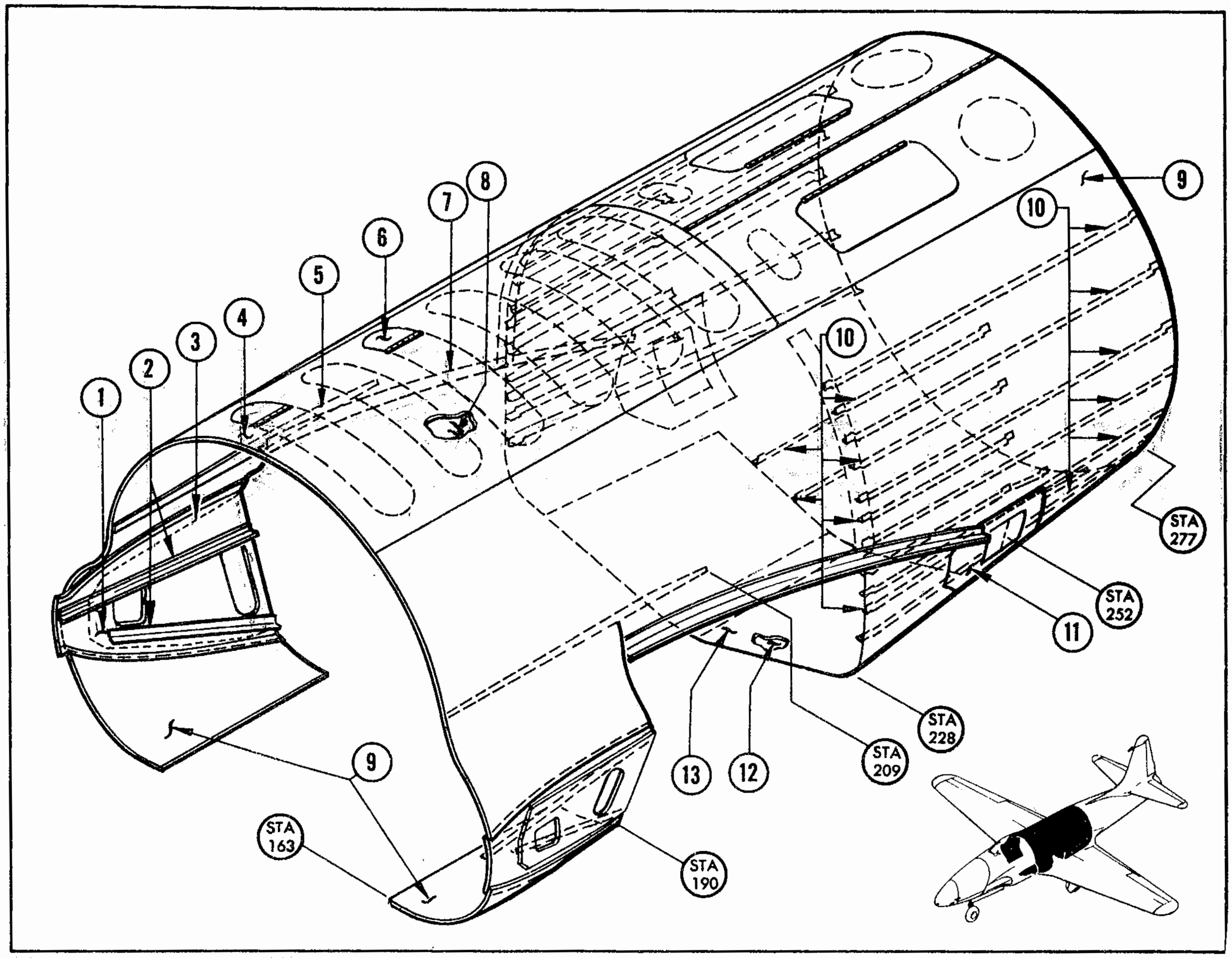
Key to Figure 91B



Item	Part Name	Figure Reference Neg. Damage	Figure Reference Repair	Remarks
1	Gusset		R	.072
2	Channel	133	96	.072 24S-T80
3	Hook		NR	.187 NE8630 Steel HT 145,000-170,000 psi
4	Clip		R	LS347
5	Gusset		R	.072
6	Doubler		R	.064
7	Latch		NR	.093 NE8630 Steel Bar HT 150,000-170,000 psi
8	Spacer		NR	LS1596
9	Plate Nut			Screw Head Indicates Aft Plumb Point

NOTES: Material is 24S-T aluminum Alclad unless otherwise noted.
NR indicates non-repairable; R indicates items recommended for replacement.

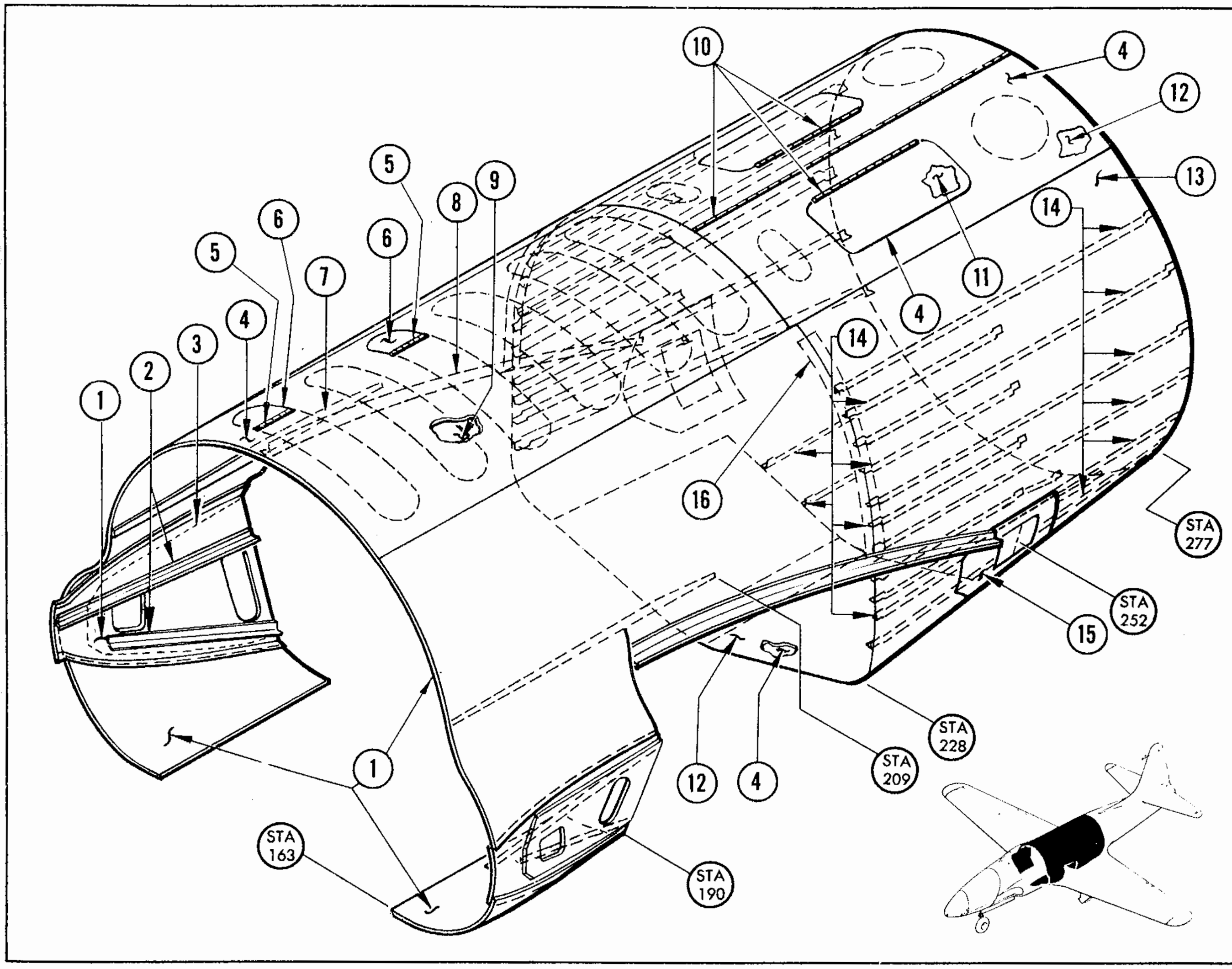
Figure 91C — Fuselage Mid-section Details, Jato Installation



Item	Part Name	Figure Reference Neg. Damage	Figure Reference Repair	Remarks
1	Skin	130	103, 104, 135	24S-T80 — .040
2	Stiffener	132	139	LS3458
3	Doubler	130		24S-T81 — .081
4	Tank Cover Outer Skin	130	122	.032
5	Reinforcement	*		24S-T86 — .188
6	Doors	130		.032
7	Attaching Angle	*		24S-T80 — .091
8	Tank Cover Inner Skin	130	122	24S-T80 — .040
9	Skin	130	103, 104, 135	24S-T81 — .040
10	Stringers	132	140, 141, 142	LS303
11	Doublers			.064
12	Door Outer Skin			.032
13	Door Inner Skin			.040

NOTES: All material 24S-T unless otherwise noted.
Items not indicated are not repairable.
*See text, section IV, paragraph 4.

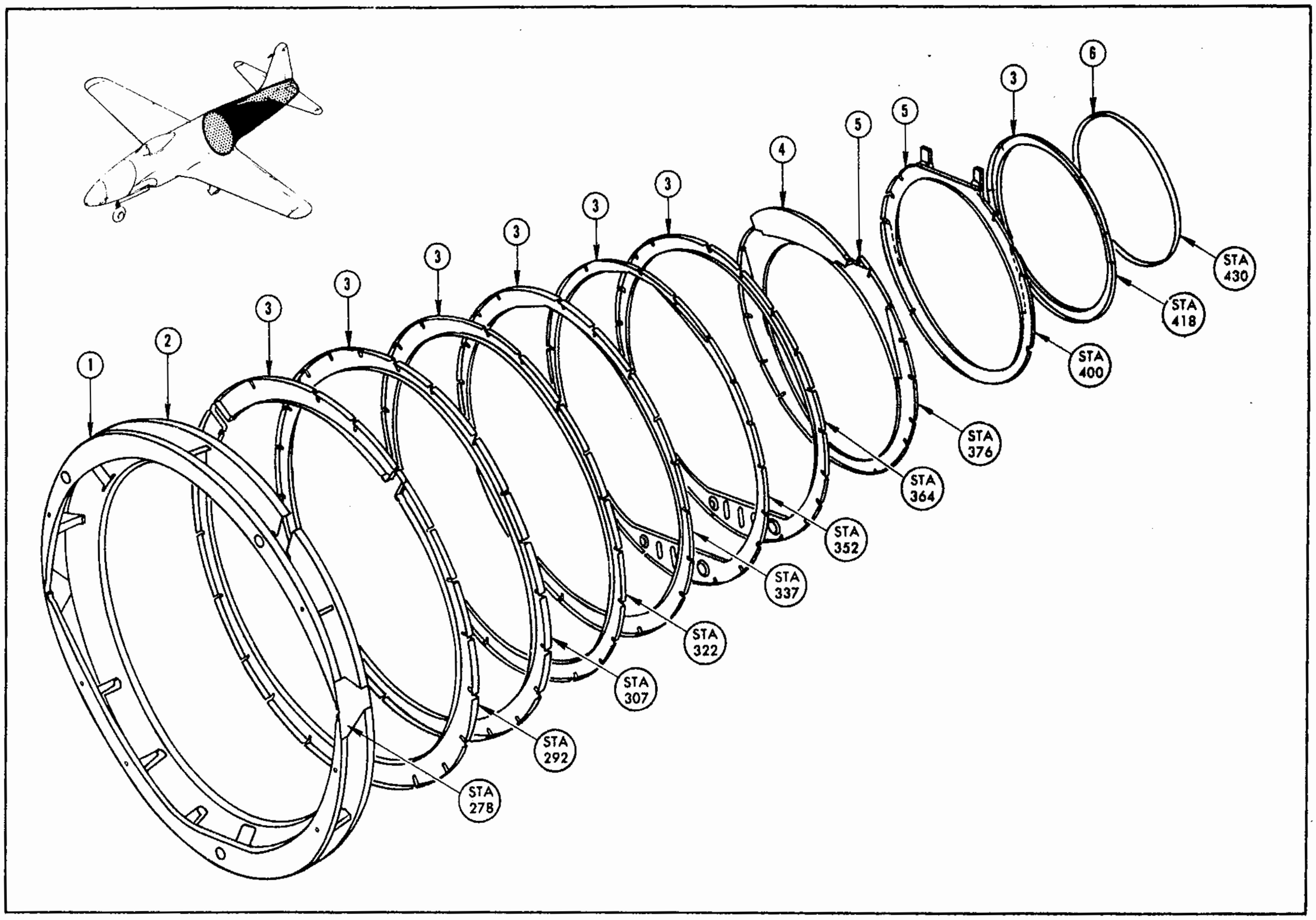
Figure 92 — Fuselage Mid Section Skin and Stiffeners Reference Diagram, Stations 163 - 277, P-80A Airplanes



Item	Part Name	Figure Reference Neg. Damage	Figure Reference Repair	Remarks
1	Skin	130	103, 104, 135	24S-T80—.040
2	Angles	131	139	LS3458
3	Doubler		NR	24S-T81—.081
4	Skin, Tank Cover, Outer		122	.032
5	Hinge		NR	LS404
	Pin		NR	.091 304-1H Stl Wire
6	Door		NR	.032
7	Tie Plate		NR	24S-T86—.188
8	Attaching Angle		NR	24S-T80—.091
9	Skin, Tank Cover, Inner		122	24S-T80—.040
10	Hinges		NR	LS2274
	Pins		NR	.091 302-1H Stl Wire
11	Inner Skin		103, 135, 136, 137	.040
12	Inner Skin		122, 135, 136, 137	.040
13	Outer Skin		135, 136, 137	24S-T81—.040
14	Stringers		140, 141, 142	LS303
15	Doubler		NR	.064
16	Strap		NR	24S-T81—.051

NOTES: Material is 24S-T aluminum Alclad unless otherwise noted. Items not indicated are not repairable. NR indicates non-repairable. Outer skin repairs must be flush.

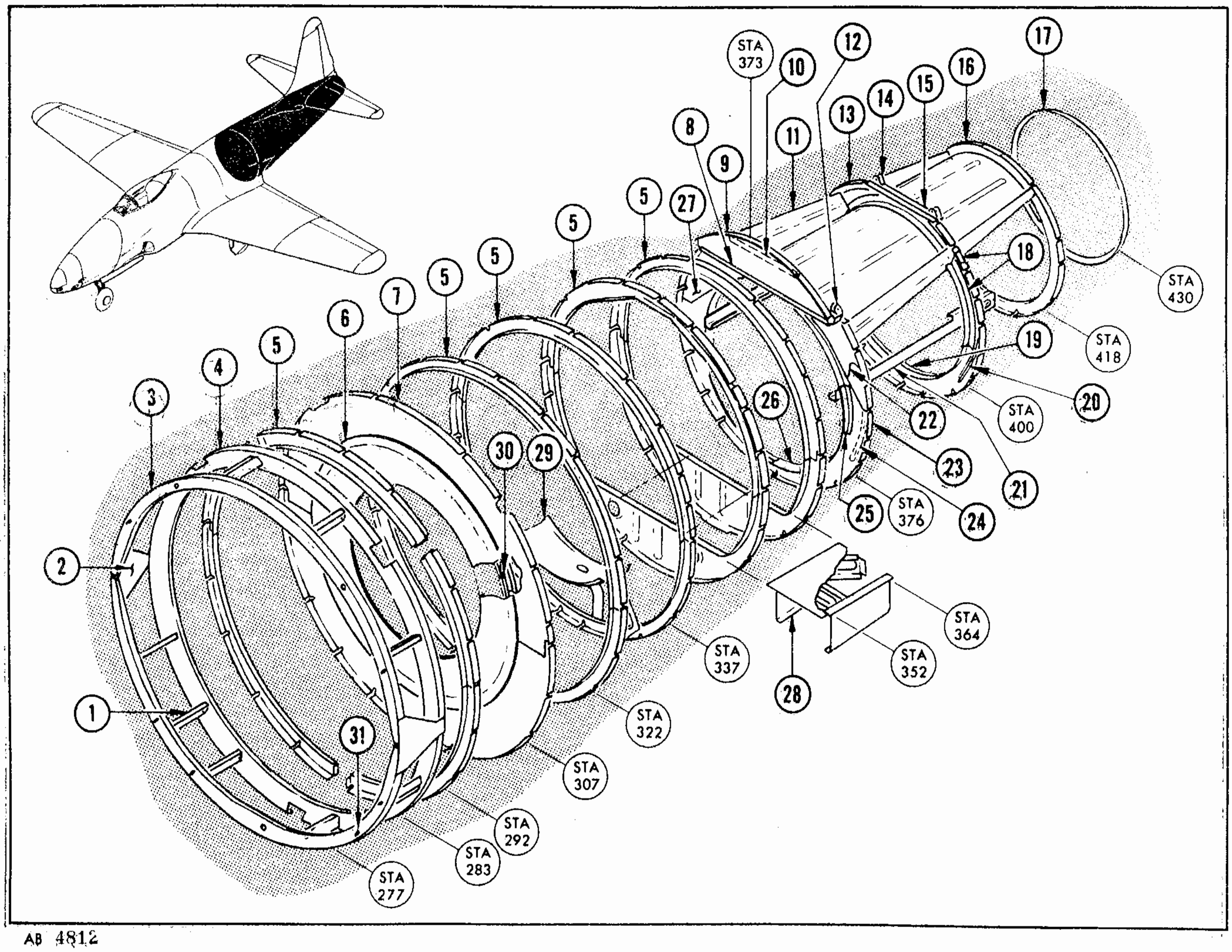
Figure 92A — Fuselage Mid Section Skin and Stiffeners Reference Diagram, Stations 163-277, P-80B and P-80C Airplanes



Item	Part Name	Figure Reference Neg. Damage	Figure Reference Repair	Remarks
1	Bulkhead Ring	134	114	24S-T80
2	Bulkhead Ring	134	116	
3	Circumferential Stiffener	134	118	
4	Partial Bulkhead	134	148	
5	Bulkhead Ring	134	115	24S-T80
6	Bulkhead Ring		117	X4130 Steel Sheet (NE8630)

NOTE: All material 24S-T unless otherwise specified.

Figure 93 — Fuselage Aft Section Structure Reference Diagram, P-80A Airplanes



Item	Part Name	Figure Reference Neg. Damage	Figure Reference Repair NR	Remarks
1	Brackets	131	NR	.064
2	Gussets		NR	.091
3	Bulkhead	134	114	.072 24S-T80
4	Baffle	134	118A	☆.020 302 Corr Res Stl
5	Bulkhead Rings	134	118	.032
6	Diaphragm	134	118B	☆.020 302-1A Corr Res Stl
7	Ring	134	118A	☆.025 302-1A Corr Res Stl
8	Angle	131	139	.040
9	Bulkhead	134	148, 150	.032
10	Angle	131	139	.040
11	Shroud		152	.025
12	Fitting	63A	63A	☆☆14S-T Alum. Alloy Forging
13	Bulkhead		115C	☆.030 302½H Corr Res Stl
14	Fitting	63A	63A	NE8630 Stl Forging HT 125,000-145,000 psi

Figure 93B — Fuselage Aft Section Structure Reference Diagram, F-80B, F-80C, and TO-1 Airplanes

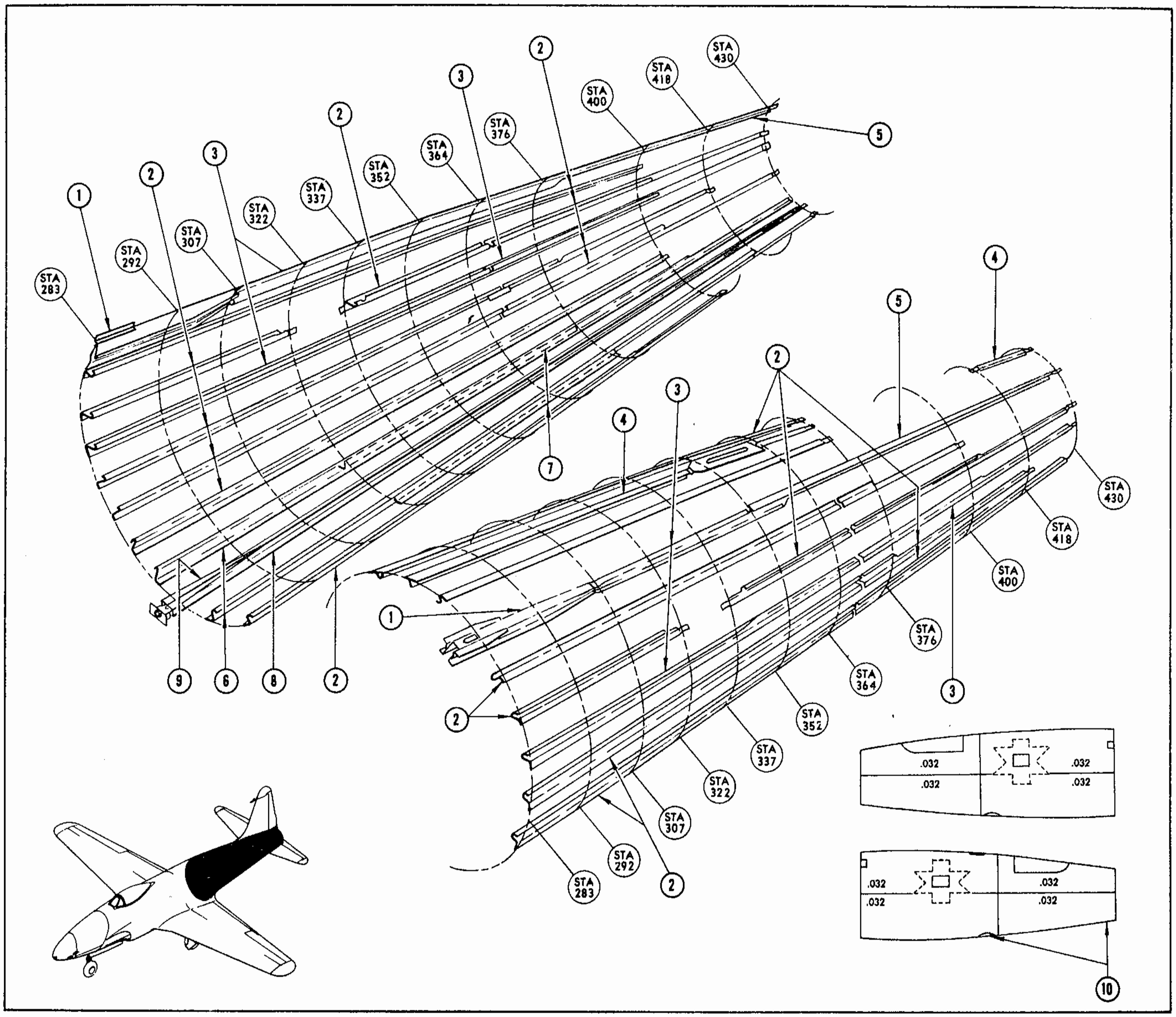
FIGURE 93A DELETED.

Item	*Part Name*	*Figure Reference* *Neg. Damage*	*Repair*	*Remarks*
15	Doubler		115C	☆.025 302 ½H Corr Res Stl
16	Bulkhead	134	118	.040
17	Bulkhead	134	117	X4130 Stl Bar, HT 125,000-145,000 psi
18	Angles		115C	☆.035 302H Corr Res Stl
19	Angle		115C	☆.032 302½H Corr Res Stl
20	Angle		115C	☆.040 302½H Corr Res Stl
21	Track		NR	
22	Gusset		115B	.093 NE8630 Stl Sheet
23	Bulkhead		115B	☆.030 302½H Corr Res Stl
24	Angle		115B	☆.025 302H Corr Res Stl
25	Angle		115B	☆.050 302½H Corr Res Stl
26	Cap Strip		115B	☆.050 302½H Corr Res Stl
27	Doubler		115B	☆.025 302H Corr Res Stl
28	Compass Compartment			
	Covers	133	152	.025
	Sides	131	152	.032
	Stiffeners	131	151	.032
29	Scupper		Weld	52S-O Alum. Alloy
30	Diaphragm Seal		NR	LS471
	Retainer	131	139	.025
31	Pins		NR	NE8630 Stl Bar

NOTES: Material is 24S-T Alclad unless otherwise noted.
Items not indicated are not repairable.
NR indicates non-repairable.
☆ Spec AMS5518
☆☆ Spec AN-QQ-A-367, Gr 5

Key to Figure 93B

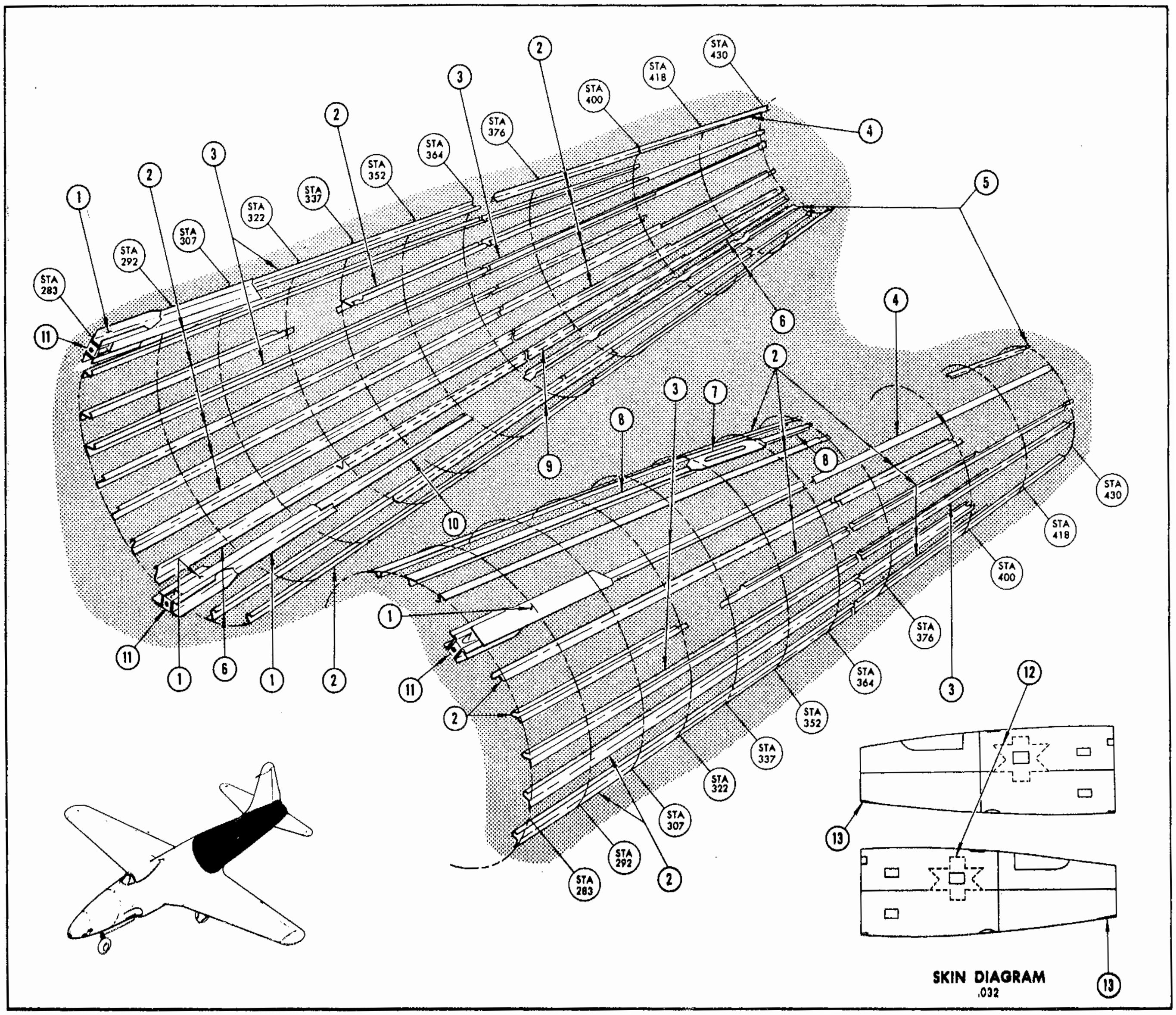
ALL MATERIAL DELETED FROM PAGE 94D



Item	Part Name	Figure Reference Neg. Damage	Figure Reference Repair	Remarks
	Skin	130	119, 135, 137	
1	Longeron	131	143	
	Reinforcement	132	NR	LS3206
2	Stringer	131	102	24S-RT — .032, LS156
3	Stringer	131	102	24S-RT — .032, LS159
4	Stringer	132	146	LS383
5	Stringer	132	102	LS3215
6	Stringer	131	102	24S-RT — .040, LS156
7	Stringer	132	142	LS703
8	Fitting	132	146	LS2270
9	Fitting	131	139	24S-T80 — .091

NOTES: All material 24S-T unless otherwise noted.
Items marked "NR" are not repairable.
Items not indicated are not repairable.

Figure 94 — Fuselage Aft Section Skin and Stiffeners Reference Diagram, P-80A Airplanes



Item	Part Name	Figure Reference Neg. Damage	Repair	Remarks
	Skin	130	119, 135, 137	.032
1	Longeron		102A	☆.050 302 ¼H
	Brace			☆.050 302 ¼H
2	Stringers	131	102	24S-RT—.032 LS156
3	Stringers	131	102	24S-RT—.032 LS159
4	"T"	132	102	LS3215
5	Channels	131	143	.040
6	Stringer	131	102	.040 LS156
7	Doubler		NR	.032
8	"T"	132	146	LS383

Item	Part Name	Figure Reference Neg. Damage	Repair	Remarks
9	Angle	132	142	LS703
10	"T"	132	146	LS2270
11	Fittings		NR	☆☆14S-T
12	Doubler	130		24S-RT—.032
13	Scuff Plate			☆☆☆302H—.050

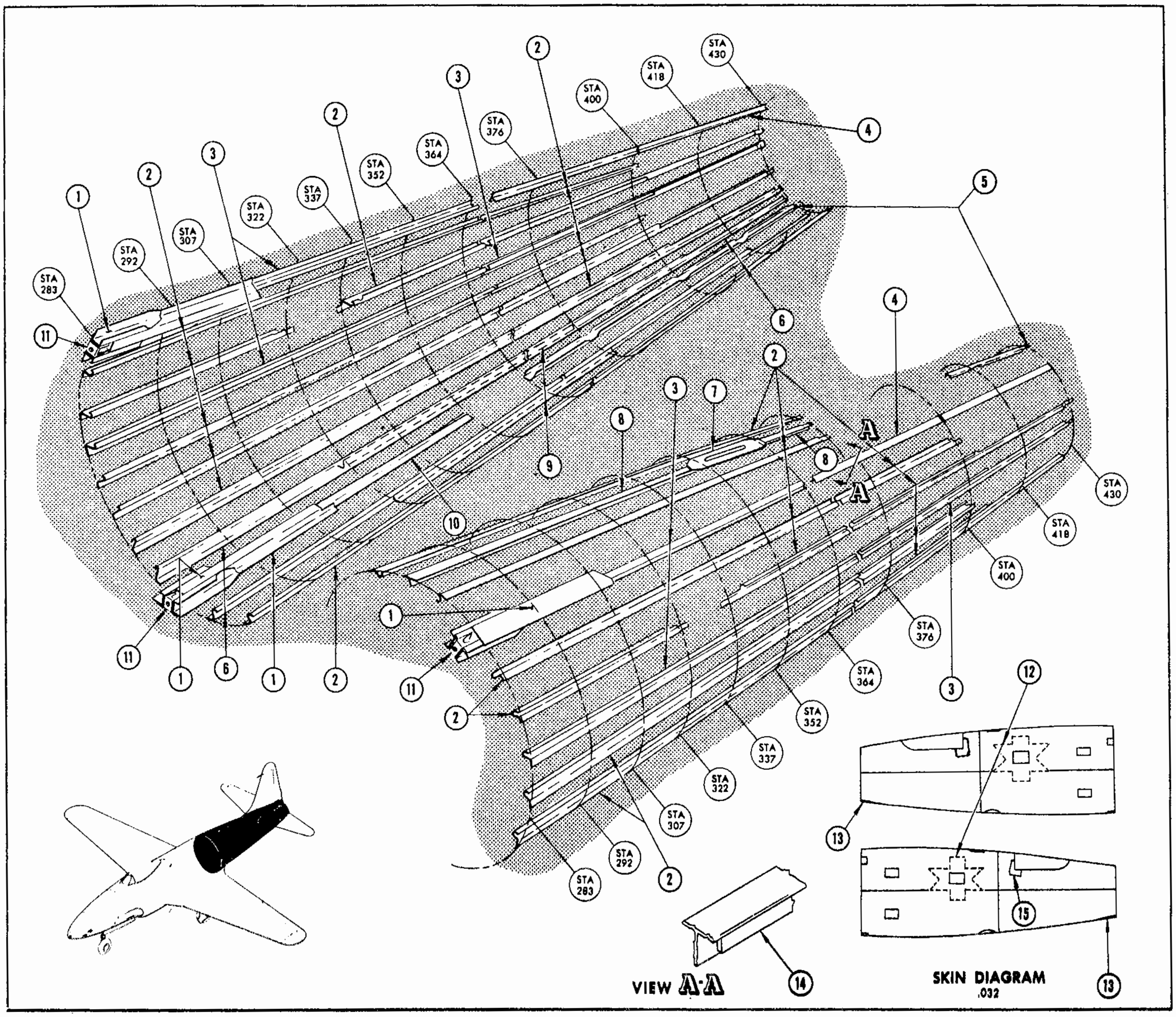
NOTES: Material is 24S-T aluminum Alclad unless otherwise noted. Items not indicated are not repairable. NR indicates non-repairable.

☆Spec. AN-QQ-S-772.

☆☆Spec. AN-QQ-A-367, Gr. 5.

☆☆☆Spec. AMS5519.

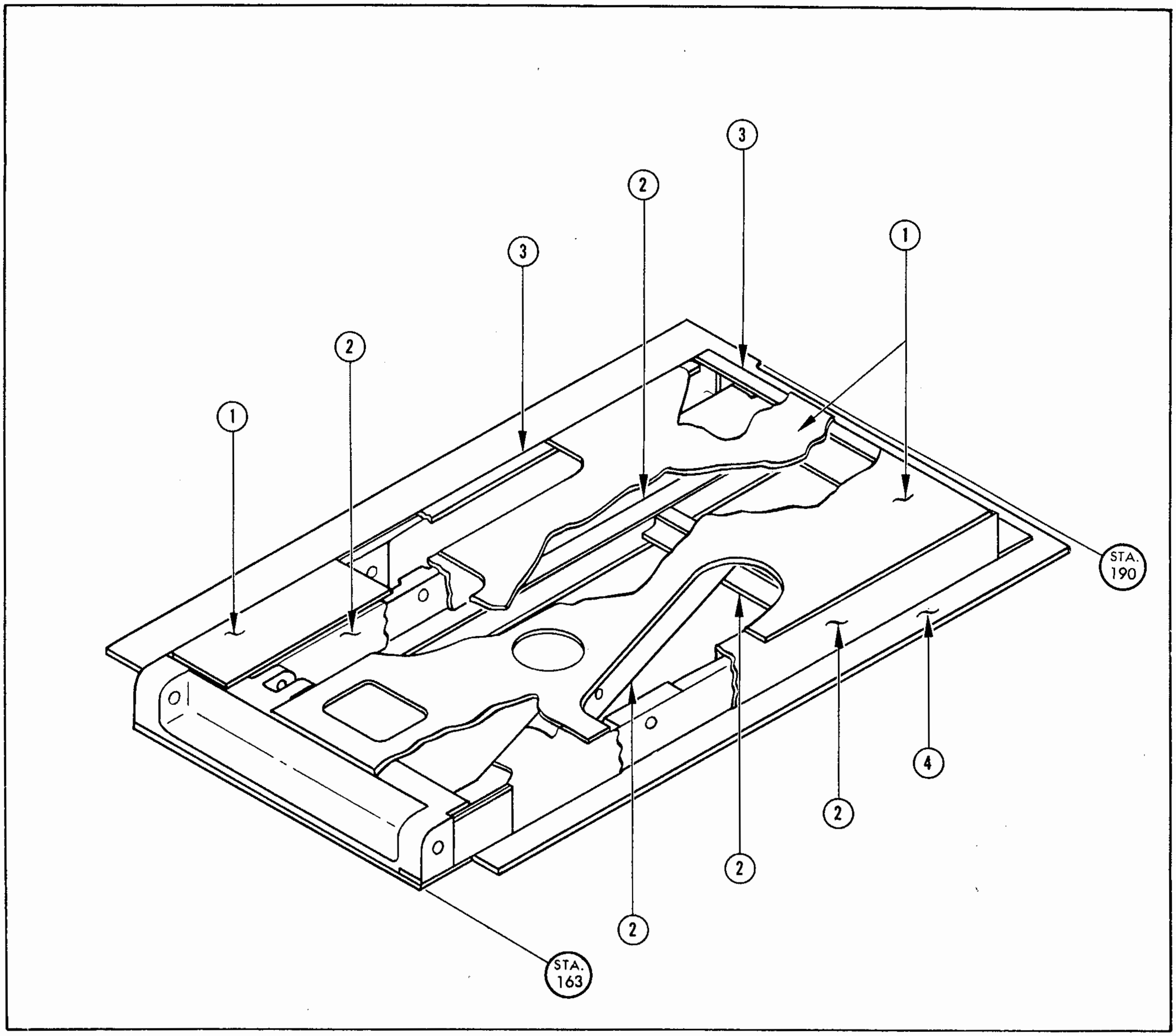
Figure 94A — Fuselage Aft Section Skin and Stiffeners Reference Diagram, F-80B and F-80C Airplanes Prior to Serial No. AF49-734



Item	Part Name	Figure Reference Neg. Damage	Figure Reference Repair	Remarks
	Skin	130	119,135,137	.032
1	Longeron		102A	☆.050 302¼H
	Brace		NR	☆.050 302¼H
2	Stringers	131	102	.032 LS156, 24S-RT
3	Stringers	131	102	.032 LS159, 24S-RT
4	"T"	132	102	LS3215
5	Channels	131	143	.040
6	Stringer	131	102	.040 LS156
7	Doubler		NR	.032
8	"T"	132	146	LS383
9	Angle	132	142	LS703
10	"T"	132	146	LS2270
11	Fittings		86A	☆☆ 14S-T
12	Doubler	130	R	24S-RT
13	Scuff Plate		R	☆☆☆.050 302H
14	Plate		NR	.125
15	Gusset		NR	.051

NOTES: Material is 24S-T Alclad unless otherwise noted.
R indicates items recommended for replacement.
NR indicates non-repairable.
☆ Spec AN-QQ-S-772 Stainless Steel
☆☆ Spec AN-QQ-A-367, Gr 5
☆☆☆ Spec AMS5519

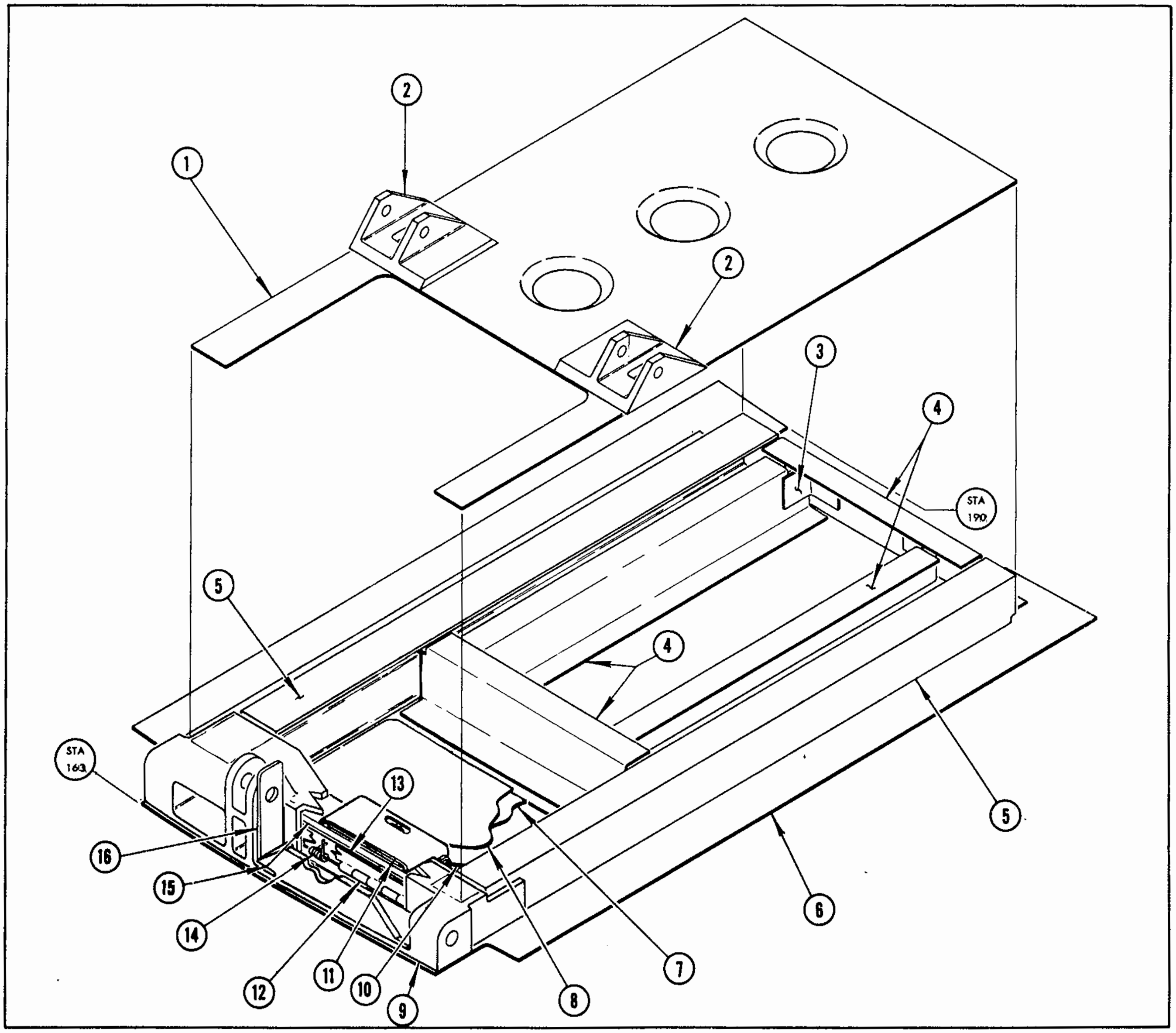
Figure 94B — Fuselage Aft Section Skin and Stiffeners Reference Diagram, F-80B and F-80C Airplanes Serial No. AF49-734 and Subsequent



Item	Part Name	Figure Reference Neg. Damage	Figure Reference Repair	Remarks
1	Plate			24S-T86 — .091
2	Channel	131	143	24S-T80 — .072
3	"Z"		120	24S-T80 — .072
4	Skin	130	120	24S-T86 — .064

NOTE: Items not indicated are not repairable.

Figure 95 — Dive Flaps Reference Diagram, F-80A Airplanes



Item	Part Name	Figure Reference Neg. Damage	Figure Reference Repair	Remarks
1	Plate		120A	.091, 24S-T86
2	Fittings		☆86B	LS1543
3	Clip		R	LS3257
4	Formers	131	120A	.072, 24S-T80
5	Channel	132	120A	LS3515
6	Skin, Outer		120A	.064, 24S-T86
7	Door, Outer Skin		R	.064, 24S-T
8	Door, Inner Skin	130	R	.064, 24S-T
9	Fitting		☆86B	220-T2 Al. Alloy, AN-QQ-A-392
10	Spring		NR	.091 Dia. Music Wire, AN-W-17
11	Bracket		NR	.081, 24S-T
12	Hinge (on door)		NR	LS2227
13	Hinge (on frame)		NR	LS226
14	Spring		NR	LS1010—.041 Music Wire, AN-QQ-W-441
15	Angles		R	LS3395
16	Angle			.050 NE8630 Steel

NOTES: NR Indicates non-repairable. R indicates items recommended for replacement.
☆No repairs permitted with exception of permissible reaming and bushing.

Figure 95A — Dive Flap Reference Diagram, F-80B and F-80C Airplanes

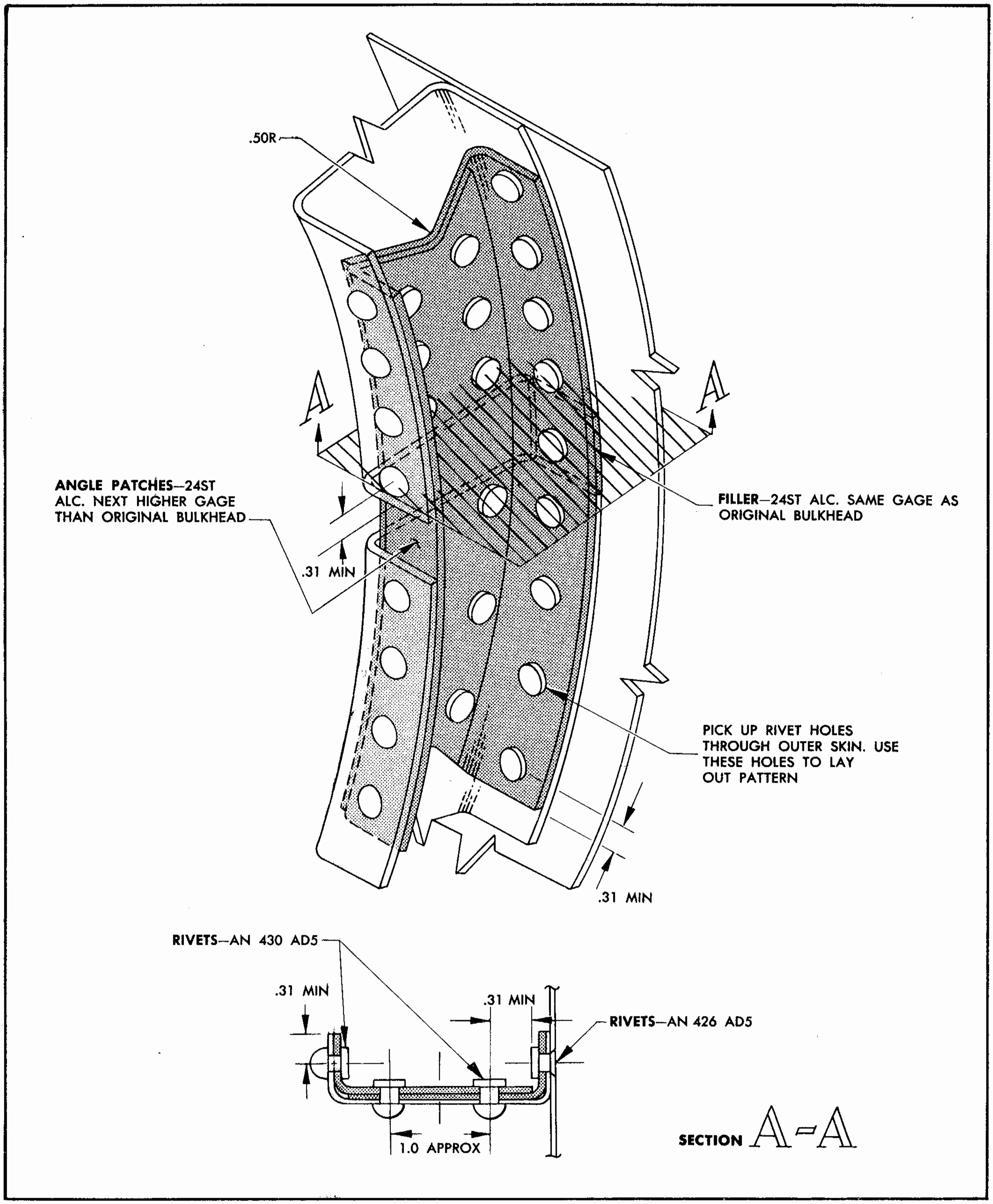
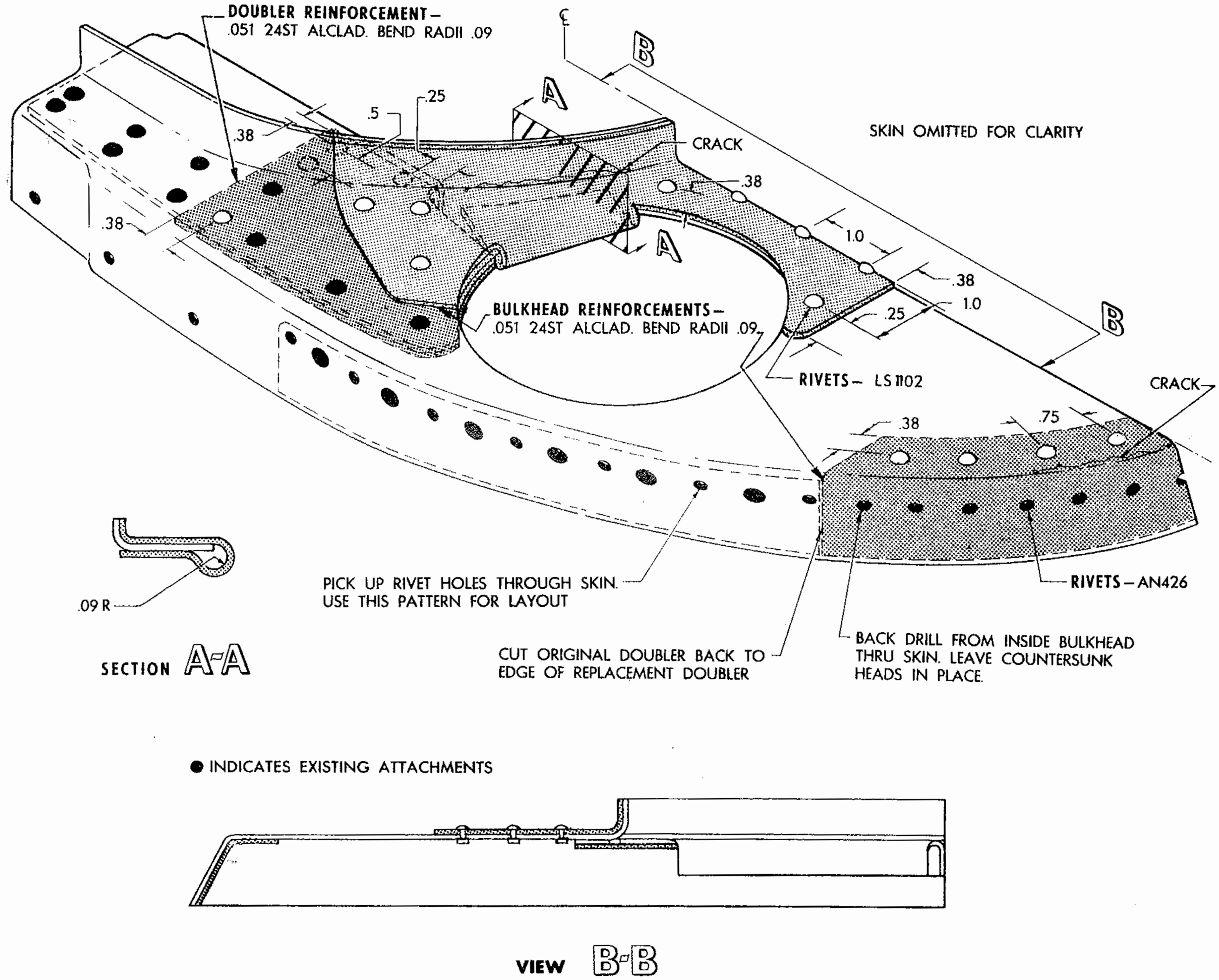


Figure 96 — Mid Section Bulkhead Ring Repair

NOTE

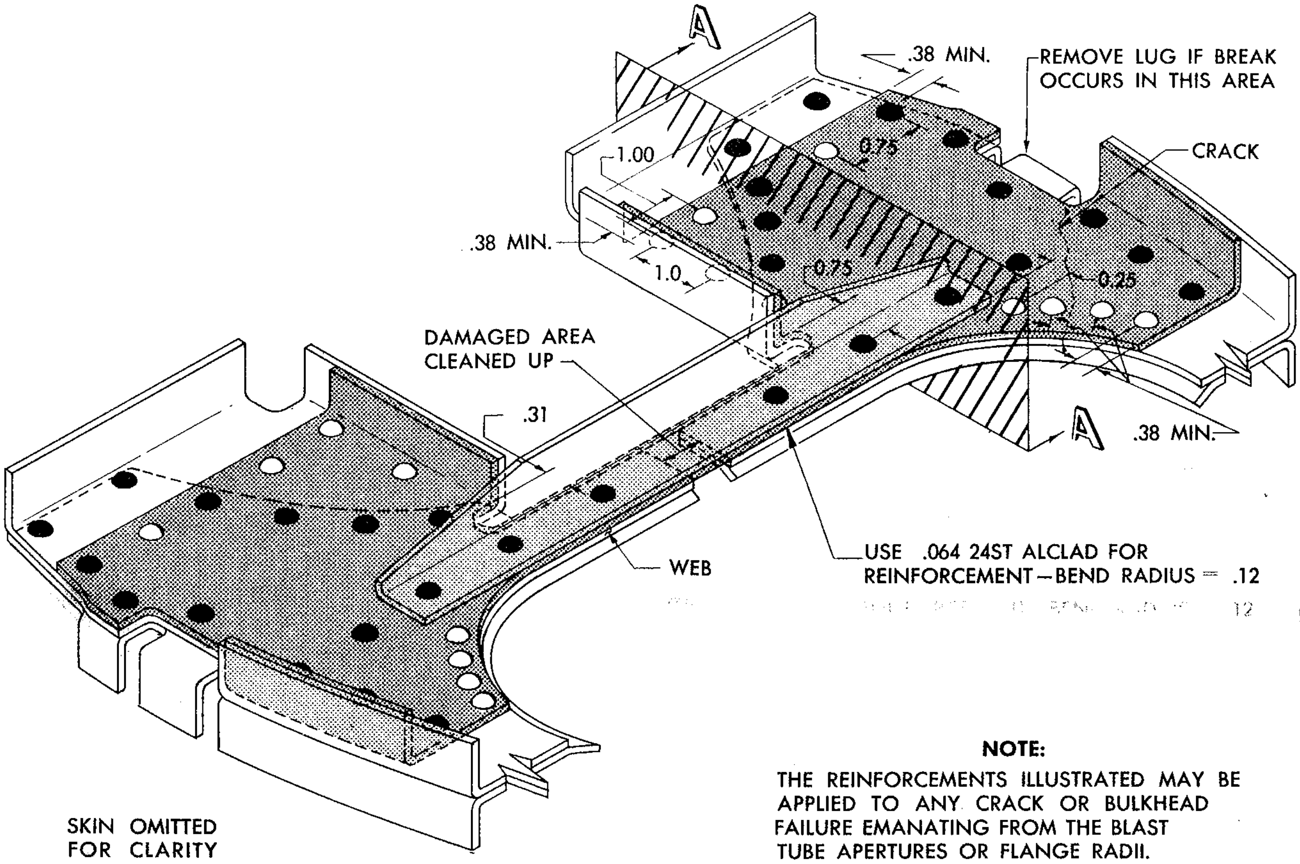
THE REINFORCEMENTS ILLUSTRATED MAY BE APPLIED TO ANY CRACK OR BULKHEAD FAILURE EMANATING FROM THE BLAST TUBE APERTURES OR FLANGE RADII. CRACKS SHOWN ARE PURELY ILLUSTRATIVE.



NOTES

1. PICK UP EXISTING RIVET HOLES
2. USE NEXT LARGER DIAMETER RIVET IN ELONGATED HOLES PROVIDING EDGE DISTANCES PERMIT
3. STOP DRILL CRACKS WITH 1/16 INCH HOLES PRIOR TO INSTALLATION OF REINFORCEMENT
4. ALL RADII .25 INCH UNLESS OTHERWISE NOTED
5. SHOULD CLEANED UP DAMAGED AREA BETWEEN BLAST TUBE HOLES EXCEED 1.00 INCH PARALLEL TO THE BULKHEAD CENTER LINE, FILL GAP WITH .040 24ST ALCLAD AND RIVET TO REINFORCEMENT
6. PICK UP MINIMUM OF TWO RIVETS ON EACH SIDE OF DAMAGED AREA
7. ALL RIVETS AN430AD UNLESS OTHERWISE NOTED

Figure 96A — Bulkhead Repair, Fuselage Nose, Sta 22



NOTE:

THE REINFORCEMENTS ILLUSTRATED MAY BE APPLIED TO ANY CRACK OR BULKHEAD FAILURE EMANATING FROM THE BLAST TUBE APERTURES OR FLANGE RADII. CRACK SHOWN IS PURELY ILLUSTRATIVE.

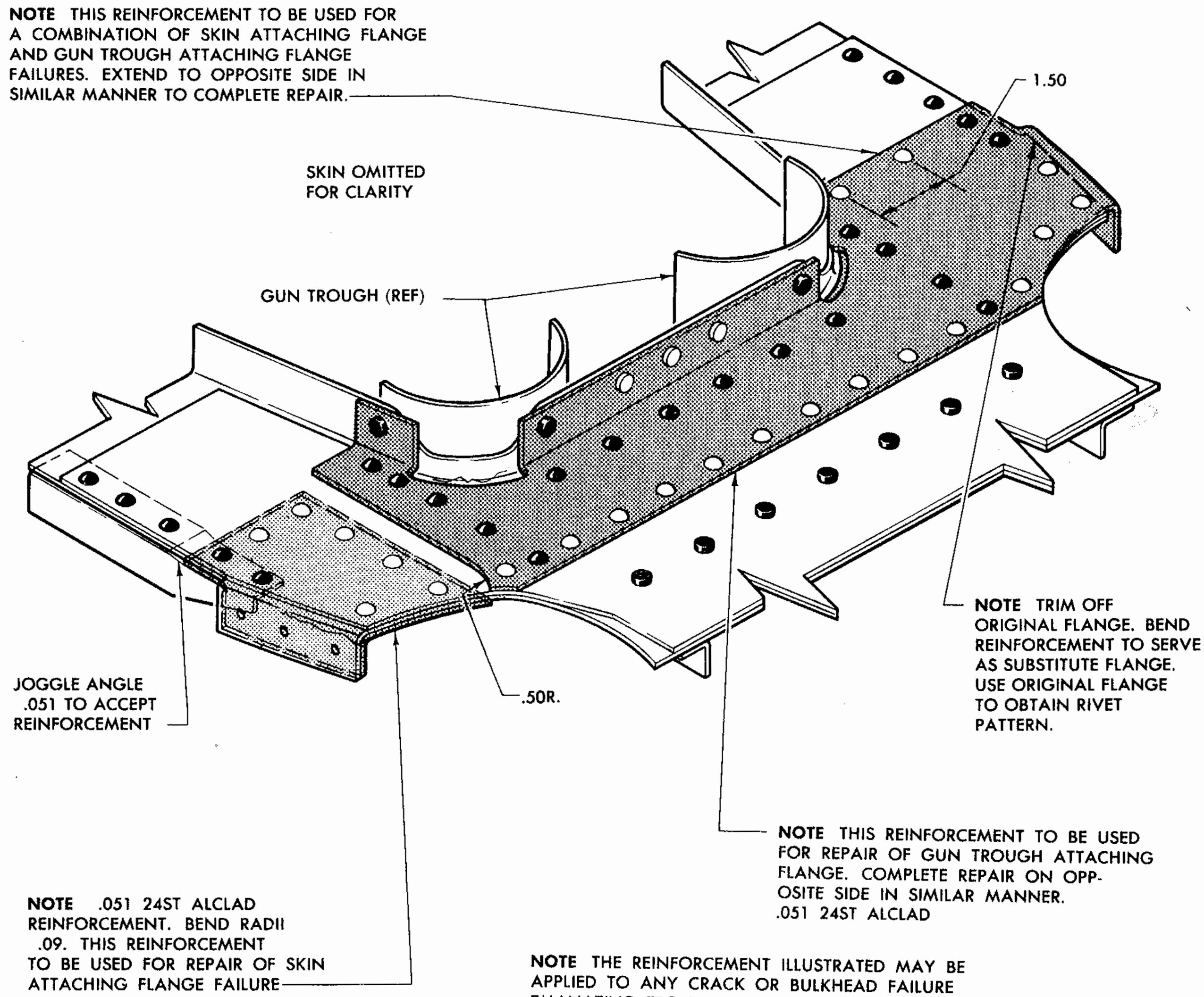
● INDICATES EXISTING ATTACHMENTS

SECTION A-A

NOTES:

1. PICK UP ALL EXISTING RIVETS
2. USE NEXT LARGER DIAMETER RIVET IN ELONGATED HOLES
3. STOP DRILL CRACKS WITH 1/16" HOLES PRIOR TO INSTALLATION OF REINFORCEMENT
4. SHOULD CLEANED UP DAMAGED AREA BEHIND ANGLE EXCEED 1.00 INCH, FILL GAP WITH 0.064 24ST ALCLAD AND RIVET TO REINFORCEMENT
5. PICK UP MINIMUM OF TWO RIVETS ON EACH SIDE OF DAMAGED AREA
6. ALL RIVETS AN430AD5 UNLESS OTHERWISE NOTED.

Figure 96B — Bulkhead Repair, Fuselage Nose, Sta 27

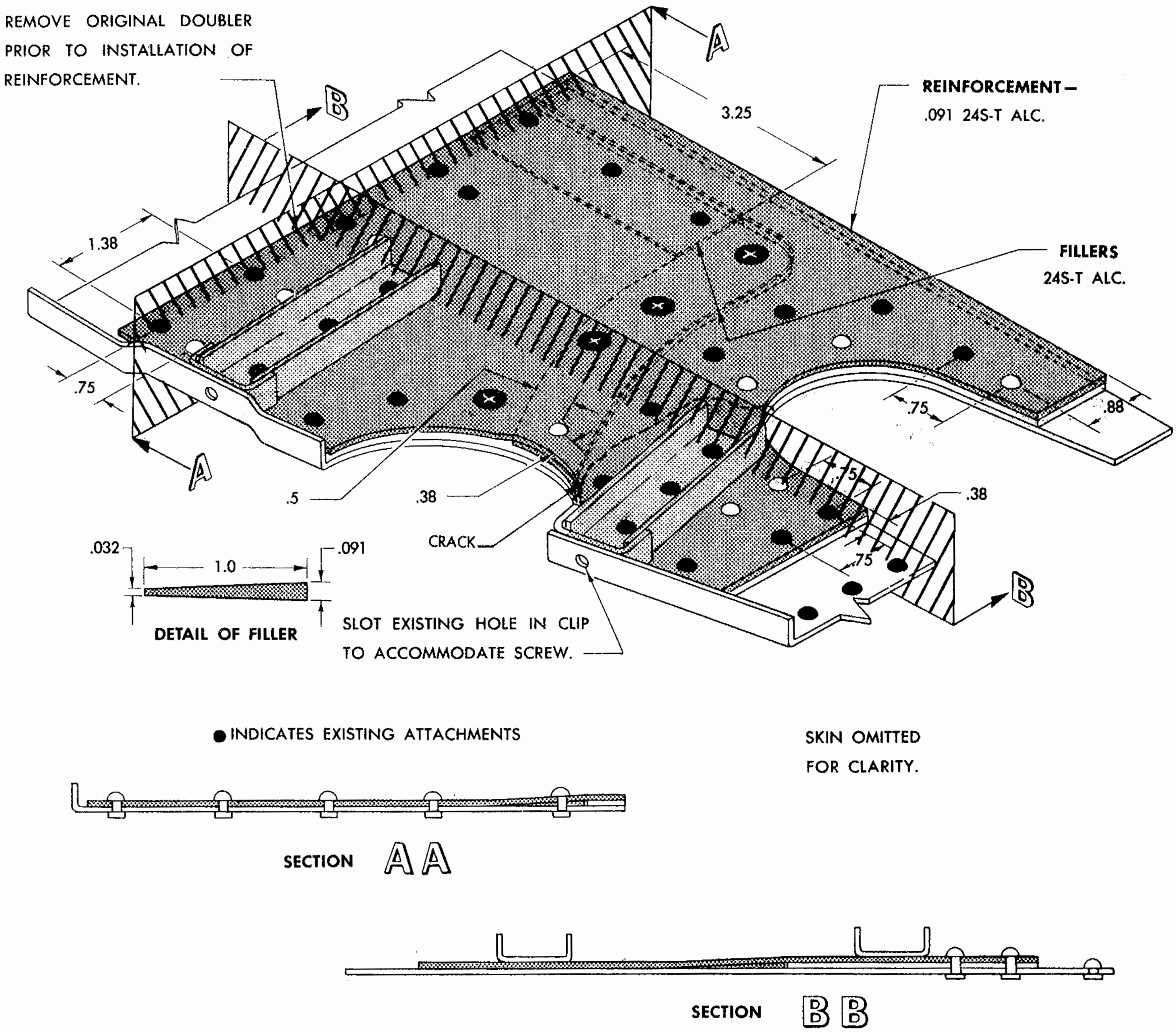


NOTE THE REINFORCEMENT ILLUSTRATED MAY BE APPLIED TO ANY CRACK OR BULKHEAD FAILURE EMANATING FROM THE BLAST TUBE APERTURES OR FLANGE RADII. CRACKS SHOWN ARE PURELY ILLUSTRATIVE.

NOTES:

1. PICK UP ALL EXISTING RIVETS.
2. USE NEXT LARGER DIAMETER RIVET IN ELONGATED HOLES.
3. STOP DRILL CRACKS WITH 1/16 DRILL PRIOR TO INSTALLATION OF REINFORCEMENT.
4. PICK UP MINIMUM OF TWO ROWS OF RIVETS ON EACH SIDE OF DAMAGED AREA.
5. ALL RIVETS AN430AD-4 UNLESS OTHERWISE NOTED.
6. ALL ADDED RIVET SPACING TO BE 1.00 C-C EXCEPT AS NOTED.
7. ALL EDGE DISTANCE TO BE .38

Figure 96C — Bulkhead Repair, Fuselage Nose, Sta 37



NOTES

1. PICK UP ALL EXISTING RIVETS.
2. USE NEXT LARGER DIAMETER RIVET IN ELONGATED HOLES.
3. STOP DRILL CRACKS WITH 1/16 INCH DRILL PRIOR TO INSTALLATION OF REINFORCEMENT.
4. ALL RIVETS AN430AD4 UNLESS OTHERWISE NOTED.
5. IF CLEANED UP DAMAGED AREA EXCEEDS 1 INCH, FILL GAP WITH .040 24ST AL. ALC. SHT AND RIVET TO REINFORCEMENT.

Figure 96D — Bulkhead Repair, Fuselage Nose, Sta 47

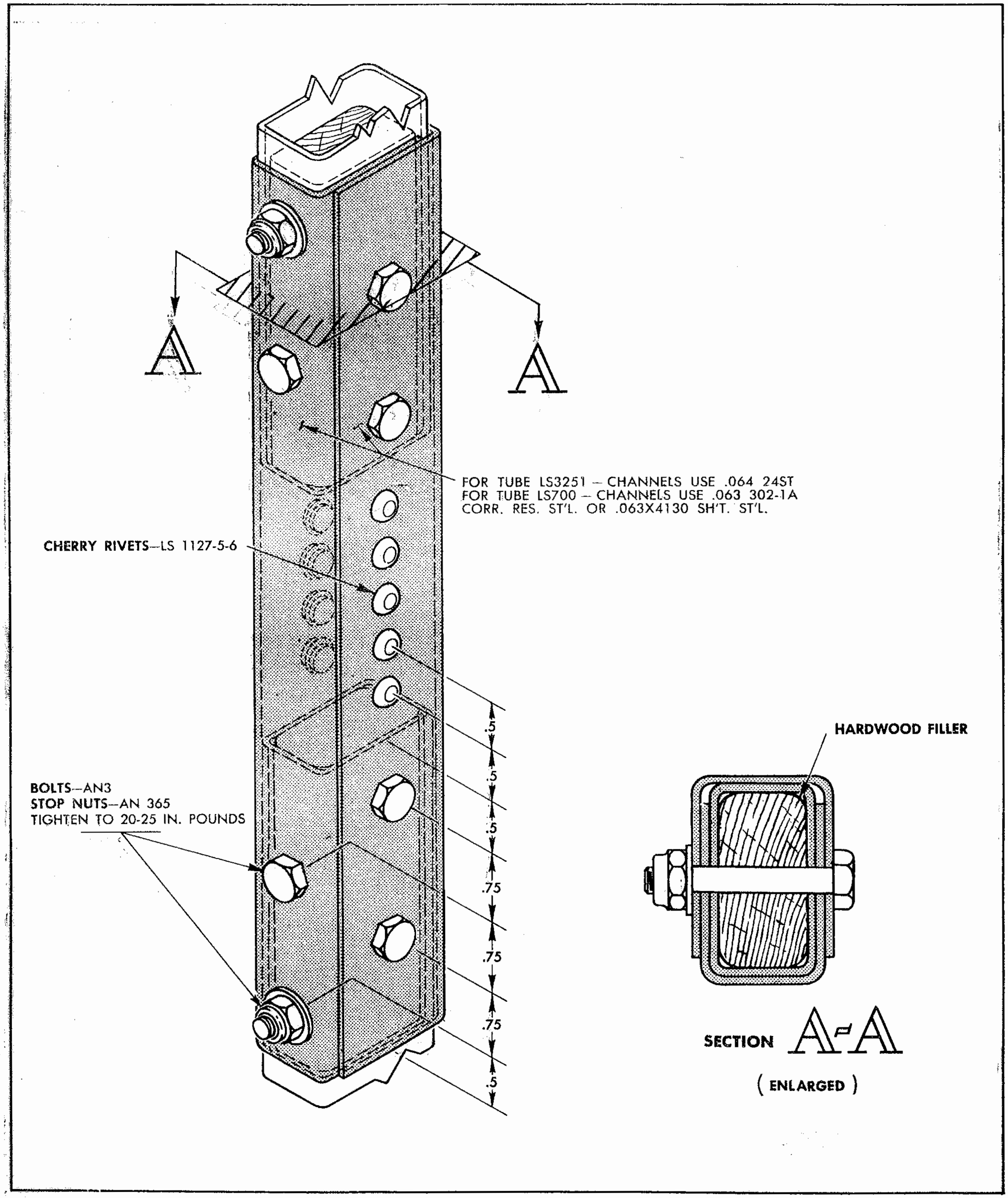
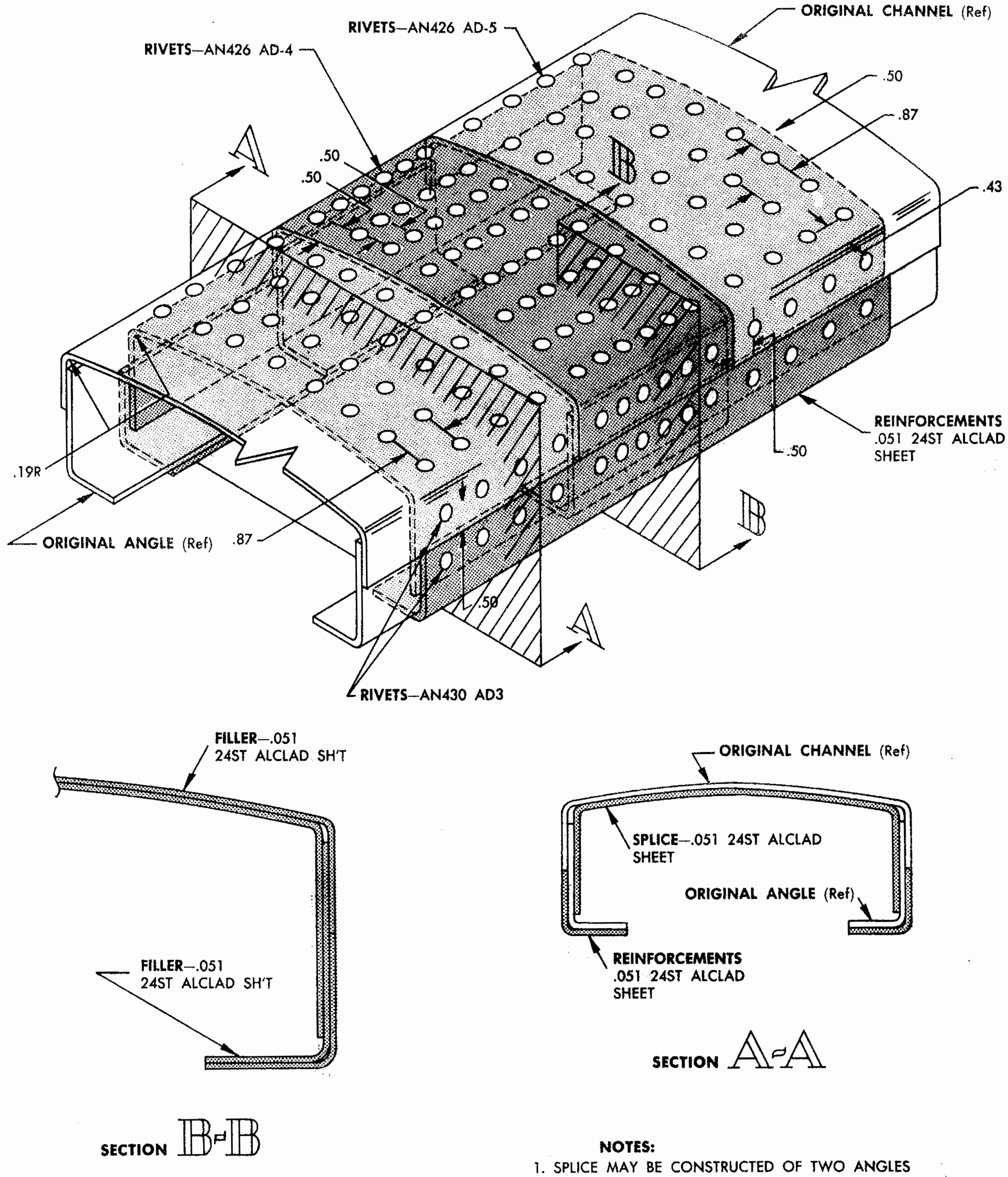


Figure 97 — Square Tube Repair



NOTES:

1. SPLICE MAY BE CONSTRUCTED OF TWO ANGLES IF DIFFICULT TO INSERT
2. TREAT PARTS FOR CORROSION AS PER AN01-1A-1 SECTION 14

Figure 98 — Armament Door Support Repair

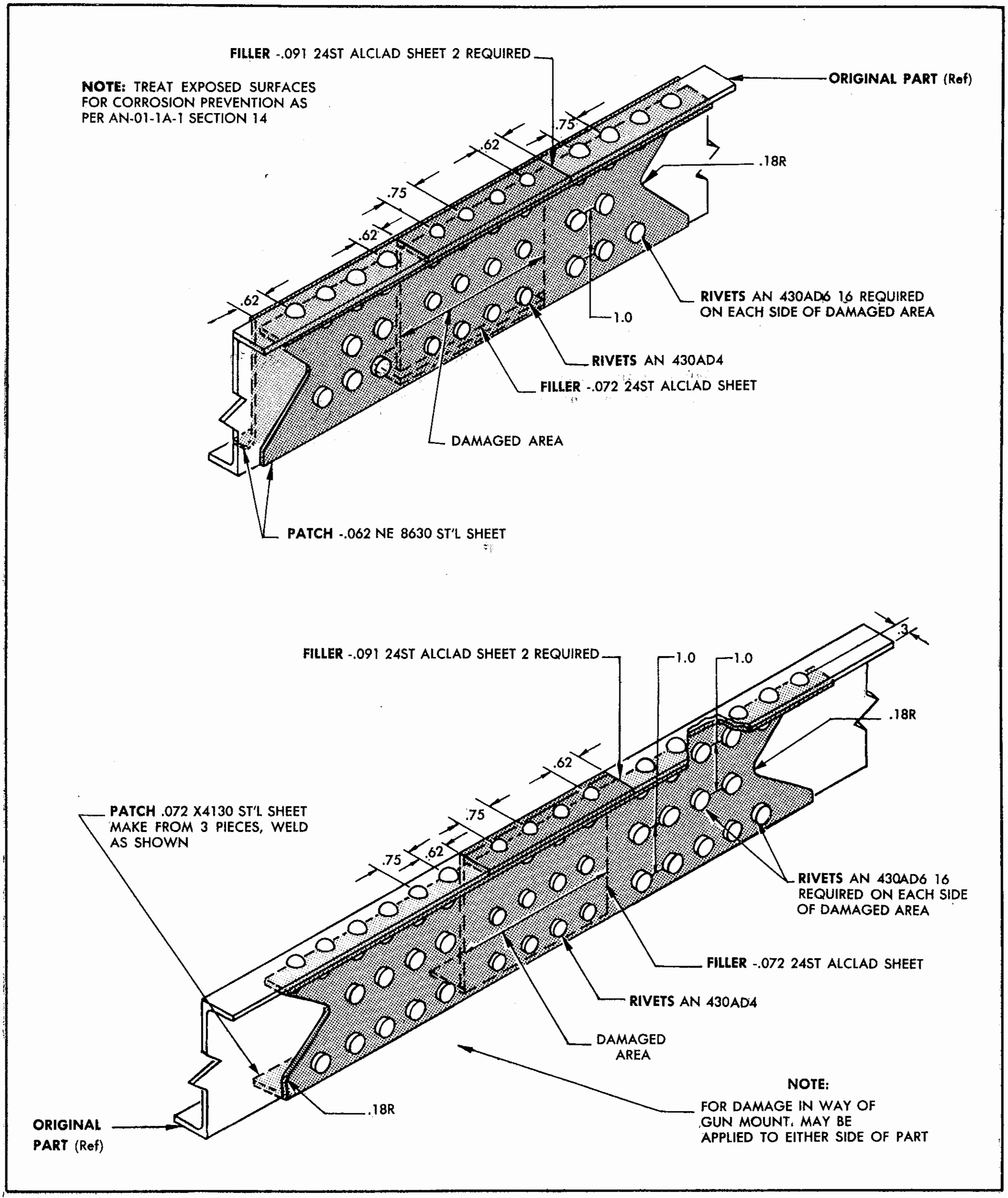


Figure 99 — Extruded "Z" Section Repair — Armament Compartment

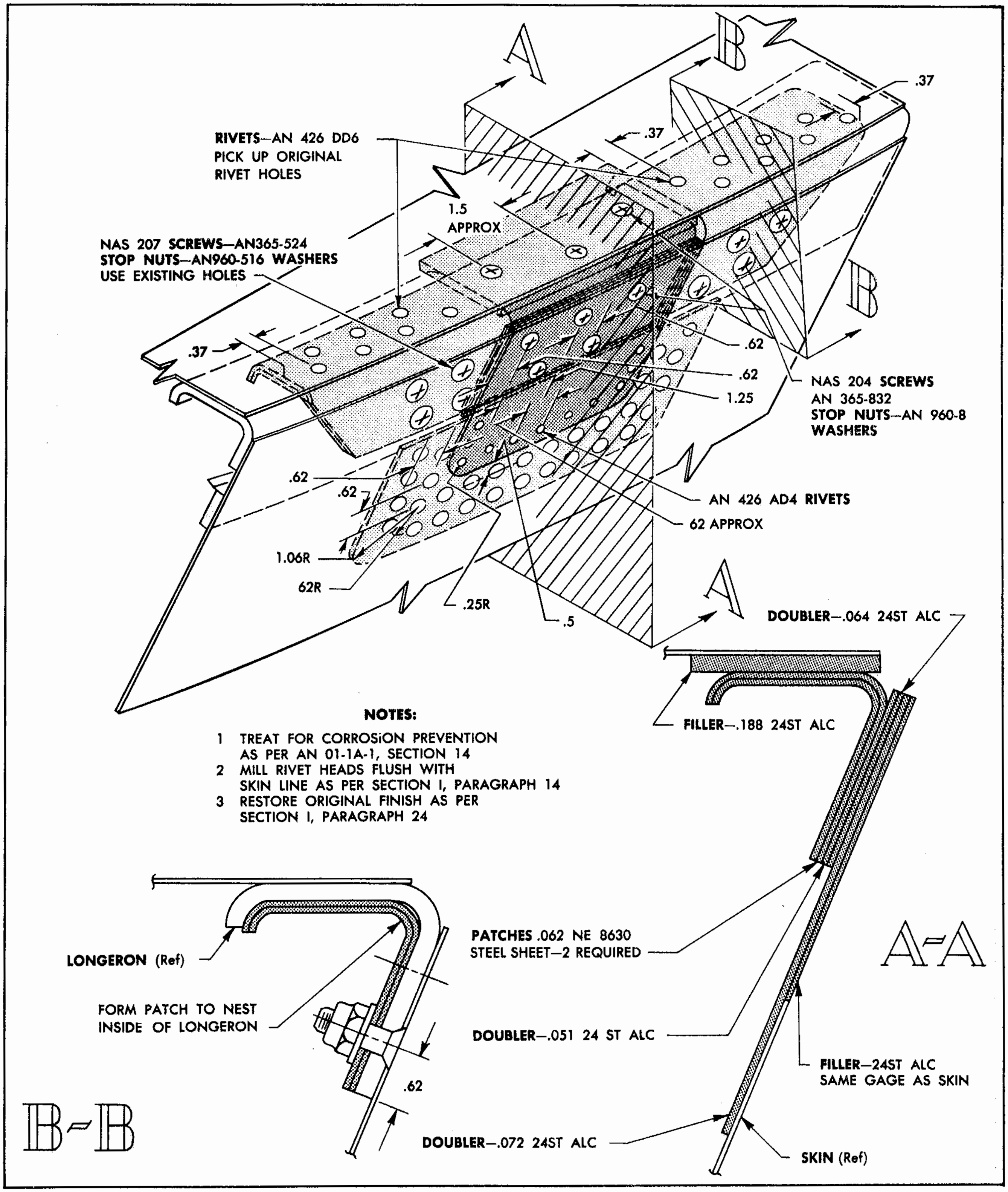
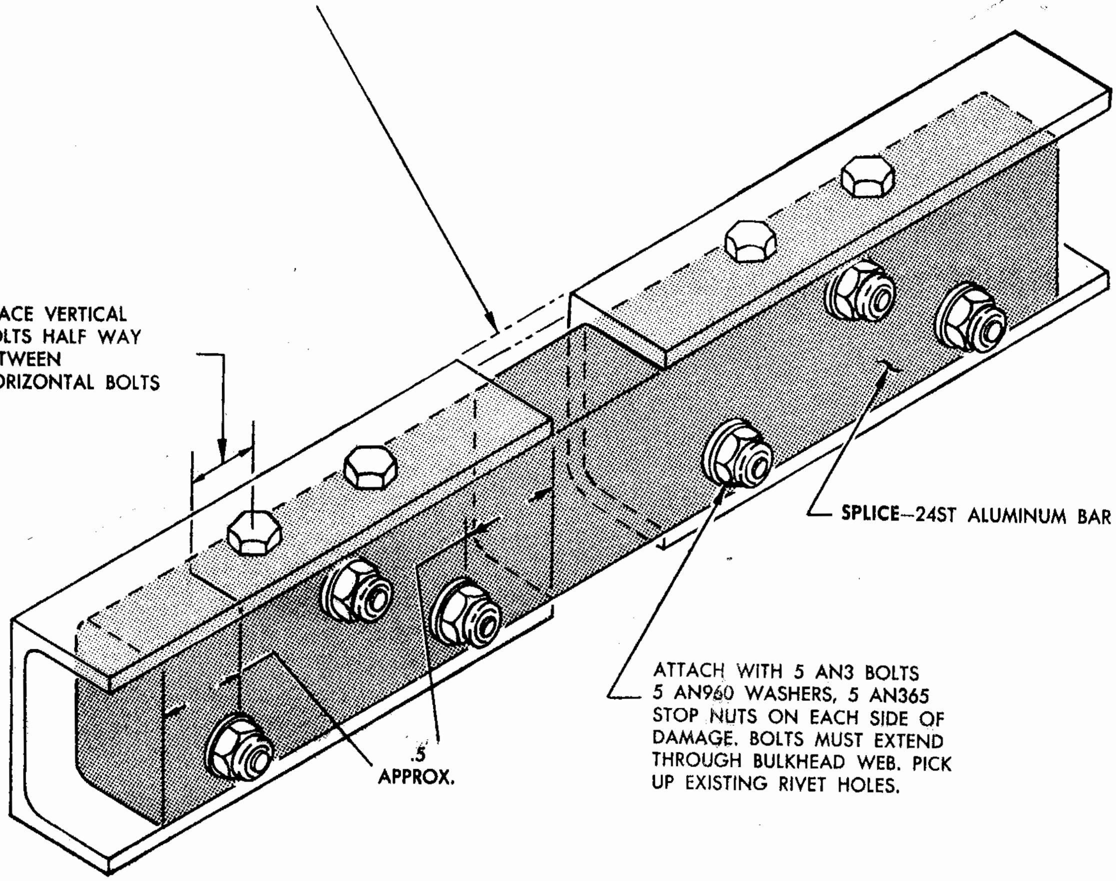


Figure 100 — Longeron Repair — Armament Compartment



NOTES:

1 FIT SPLICE INTO CHANNEL TIGHTLY

2 TREAT CONTACTING SURFACES FOR CORROSION PREVENTION AS PER AN 01-1A-1, SECTION 14

Figure 101 — Channel Repair — Armament Compartment

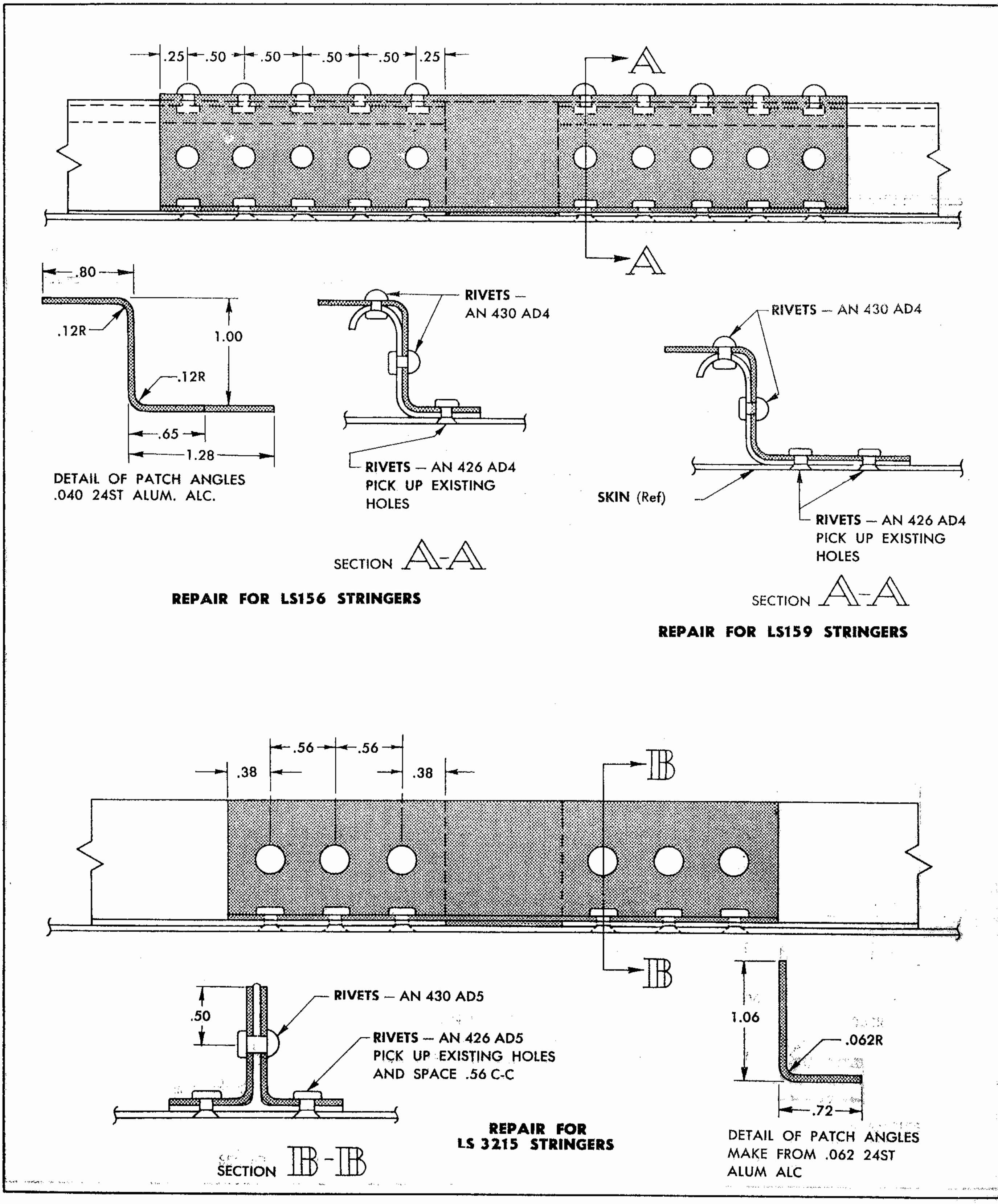
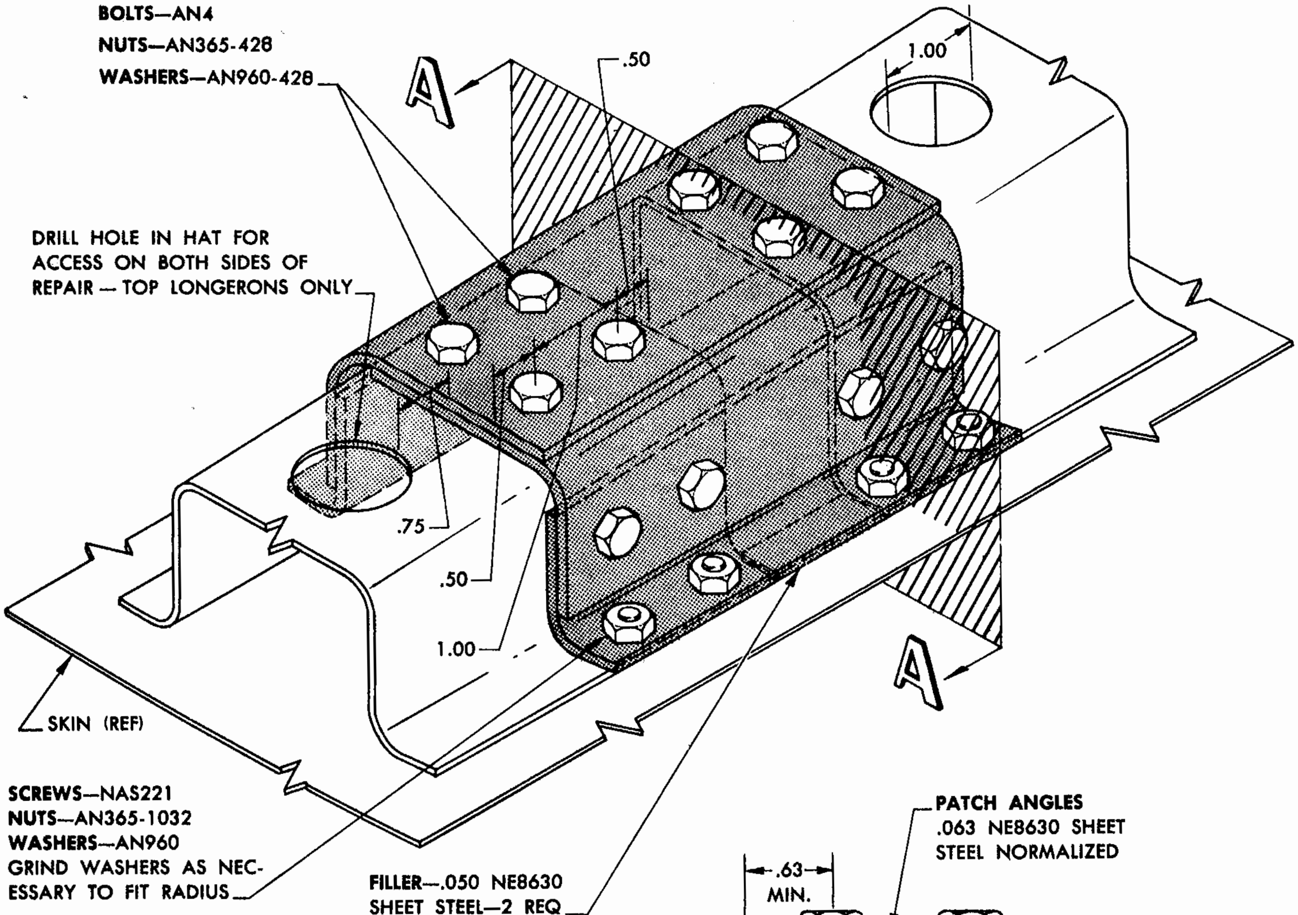
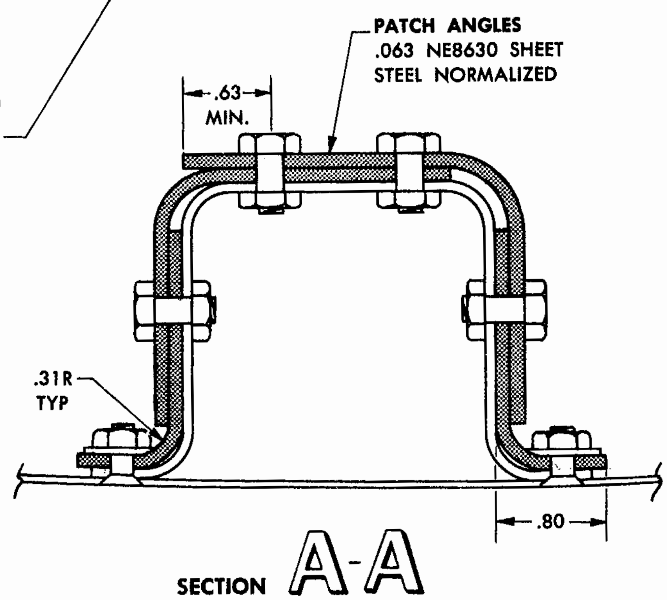


Figure 102 — Fuselage Stringer Repairs, Aluminum Alloy





NOTES:

PICK UP EXISTING HOLES IN SKIN. REPLACE ALL DOUBLERS AND SHORT ANGLES. DRILL ACCESS HOLES IN TOP ON ℄ OF HAT TO INSTALL PATCH ANGLES.

REPAIR SHOWN IS APPLICABLE WITHOUT CHANGE FOR UPPER SIDE LONGERONS. BE SURE TO INSTALL PLATES OVER ACCESS HOLES AFTER REPAIR IS EFFECTED TO PREVENT FLAMES FROM CHANNELING THROUGH LONGERON. (TOP LONGERON ONLY.)

REPAIR FOR LOWER LONGERON IS SIMILAR TO THAT SHOWN. EXISTING ACCESS HOLES WILL COMPLICATE REPAIR. HOWEVER, REPAIR SHOWN MAY BE APPLIED BY EXTENDING PATCH ANGLES SO THAT .50 IN. EDGE DISTANCE CAN BE MAINTAINED FROM ACCESS HOLES ON BOTH SIDES OF DAMAGED AREA

Figure 102A — Fuselage Longeron Repairs, Corrosion Resistant Steel

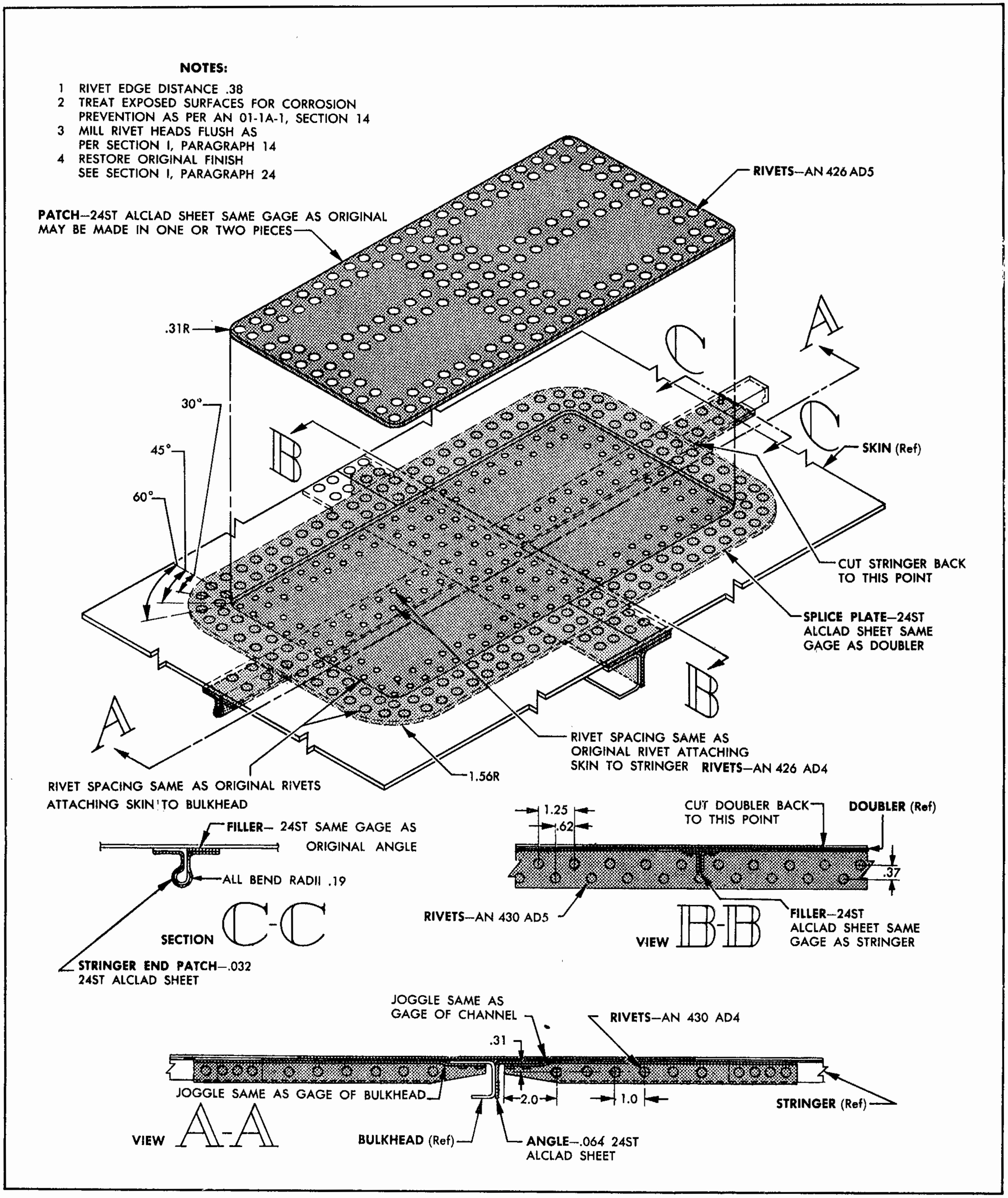


Figure 103 — Fuselage Skin Repair at Joints

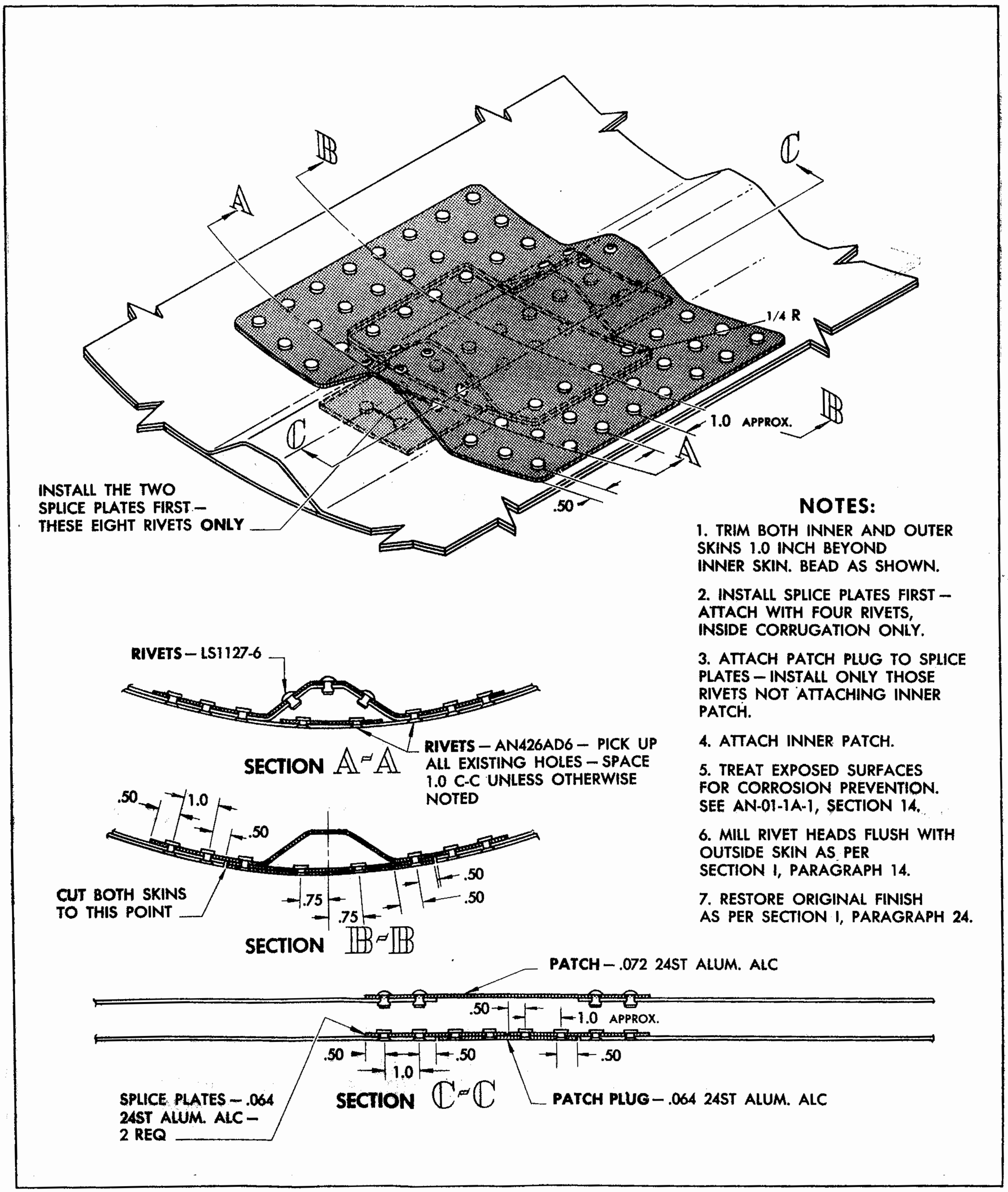
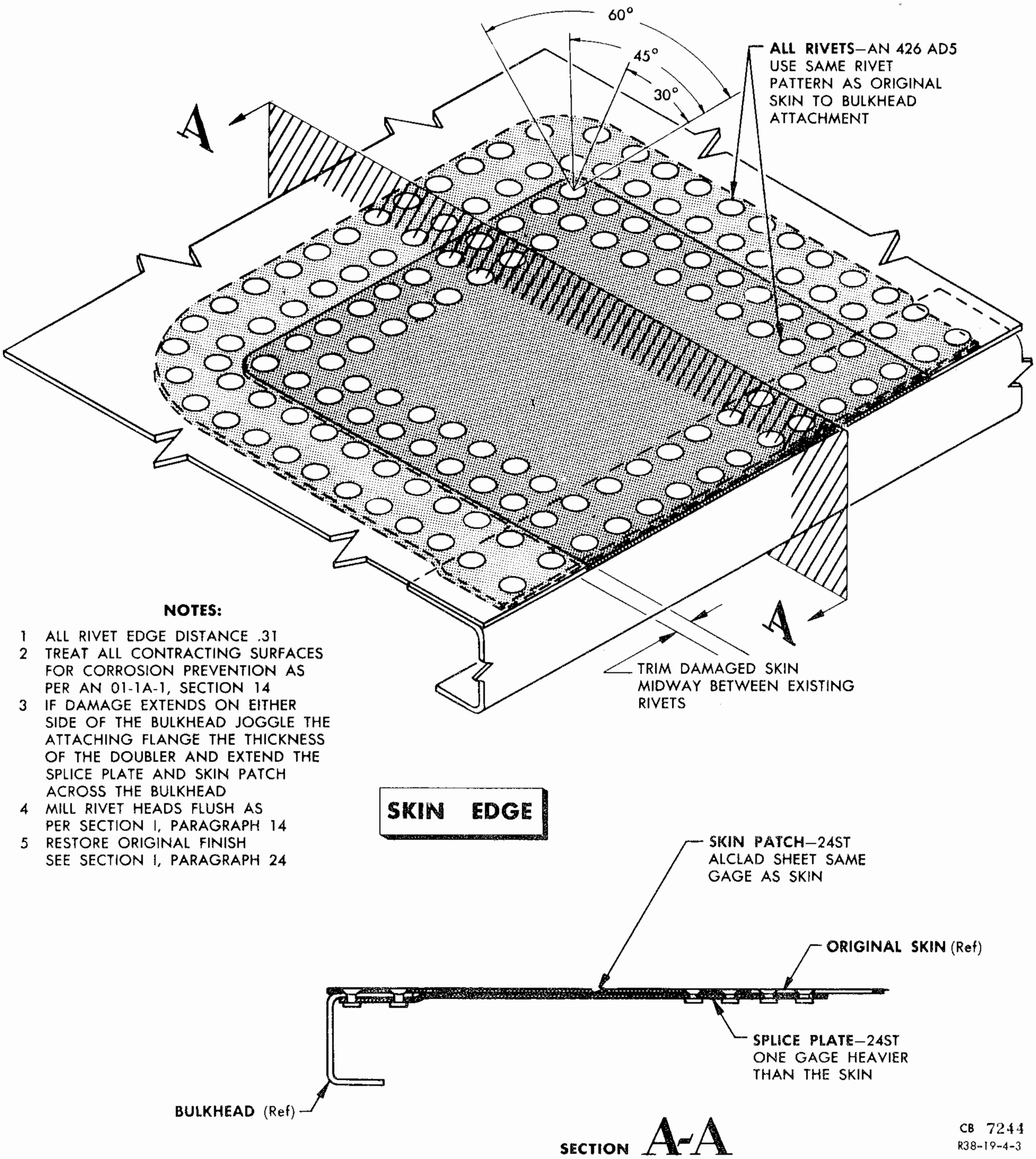


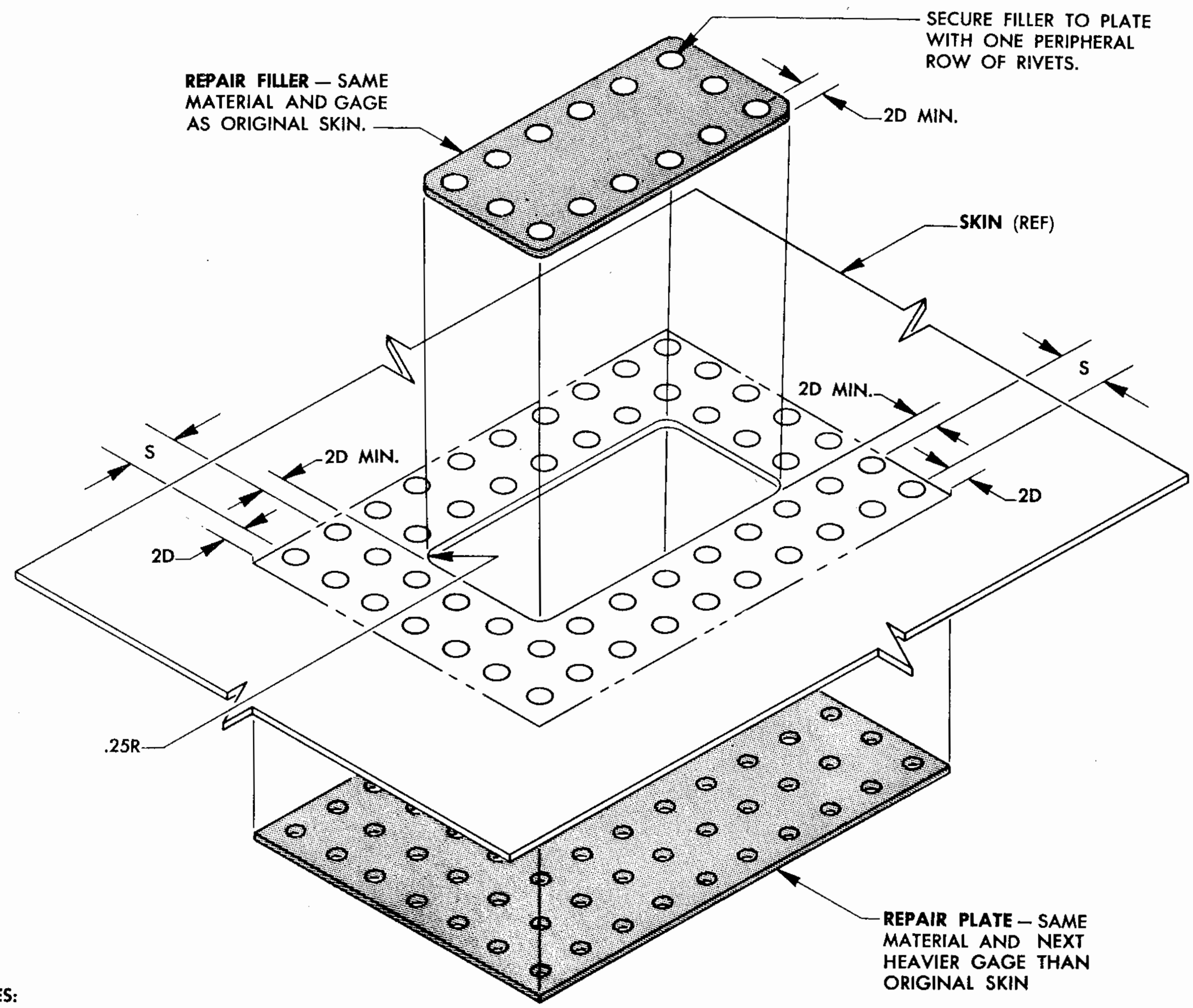
Figure 103A — Skin and Doubler Repair, Camera Door



NOTES:

1. ALL RIVET EDGE DISTANCE .31
2. TREAT ALL CONTRACTING SURFACES FOR CORROSION PREVENTION AS PER AN 01-1A-1, SECTION 14
3. IF DAMAGE EXTENDS ON EITHER SIDE OF THE BULKHEAD JOGGLE THE ATTACHING FLANGE THE THICKNESS OF THE DOUBLER AND EXTEND THE SPLICE PLATE AND SKIN PATCH ACROSS THE BULKHEAD
4. MILL RIVET HEADS FLUSH AS PER SECTION I, PARAGRAPH 14
5. RESTORE ORIGINAL FINISH SEE SECTION I, PARAGRAPH 24

Figure 104 (Sheet 1 of 2) — Fuselage Skin Repair



NOTES:

1. DIMPLE 100° FOR RIVETS IN SKINS .051 OR THINNER. COUNTERSINK 100° FOR RIVETS IN SKINS .064 OR THICKER.
2. USE FLUSH HEAD AN426AD OR DD SOLID RIVETS, OR USAF462 BLIND SELF-PLUGGING RIVETS.
3. ORIGINAL FINISH MUST BE MAINTAINED.
4. NOT SUITABLE FOR STAINLESS STEEL SKINS.

GAGE	RIVET REQUIREMENTS											
	NUMBER OF ROWS REQUIRED			RIVET SIZE REQUIRED			SPACING (S)			EDGE DISTANCE (2D)		
	AD	DD	BLIND	AD	DD	BLIND	AD	DD	BLIND	AD	DD	BLIND
.016	2			3			.41			.19		
.020	3			3			.50			.19		
.025	3		3	3		−4	.46		.55	.19		.25
.032	3		4	3		−4	.42		.56	.19		.25
.040	3		4	4		−5	.63		.70	.25		.31
.051	3		5	5		−5	.71		.73	.31		.31
.064	6	5	7	6	6	−6	1.11	1.13	1.11	.38	.38	.38
.072	7	5	8	6	6	−6	1.14	1.11	1.13	.38	.38	.38
.081	7	5	8	6	6	−6	1.08	1.04	1.04	.38	.38	.38
.091	7	5	8	6	6	−6	1.04	1.00	1.06	.38	.38	.38

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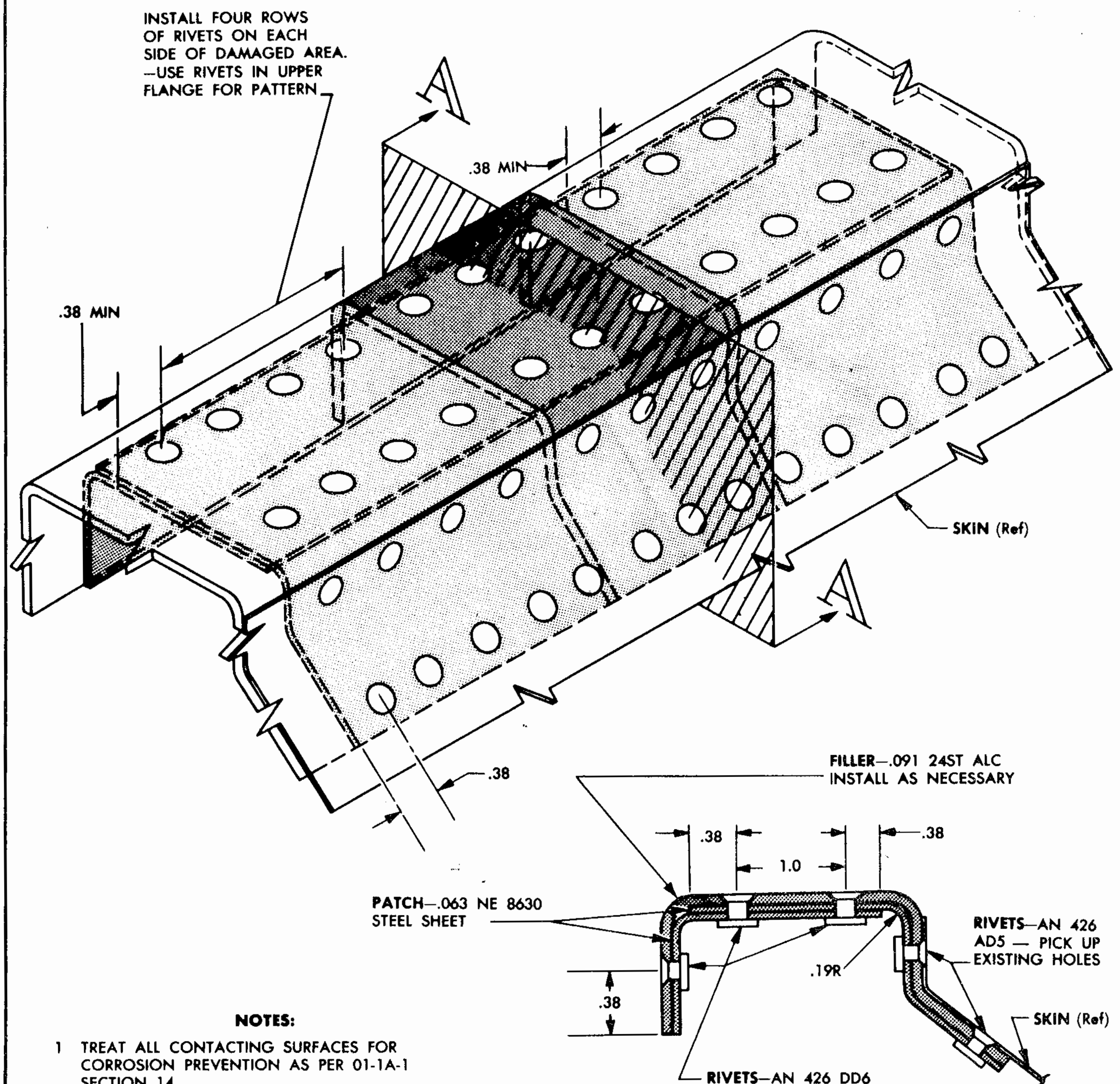
Figure 104 (Sheet 2 of 2) — Fuselage Skin Repair



NOTES:

1 TREAT ALL CONTACTING SURFACES FOR CORROSION PREVENTION AS PER 01-1A-1 SECTION 14
2 MILL RIVET HEADS FLUSH WITH OUTSIDE SKIN LINE AS PER SECTION I, PARAGRAPH 14.
3 IF REPAIR IS MADE IN WAY OF BULKHEADS, REMOVE BULKHEAD ATTACHMENTS AND GUSSETS AND REINSTALL OVER PATCH PLATE.

Figure 105 — Longeron Repair — Cockpit Rail

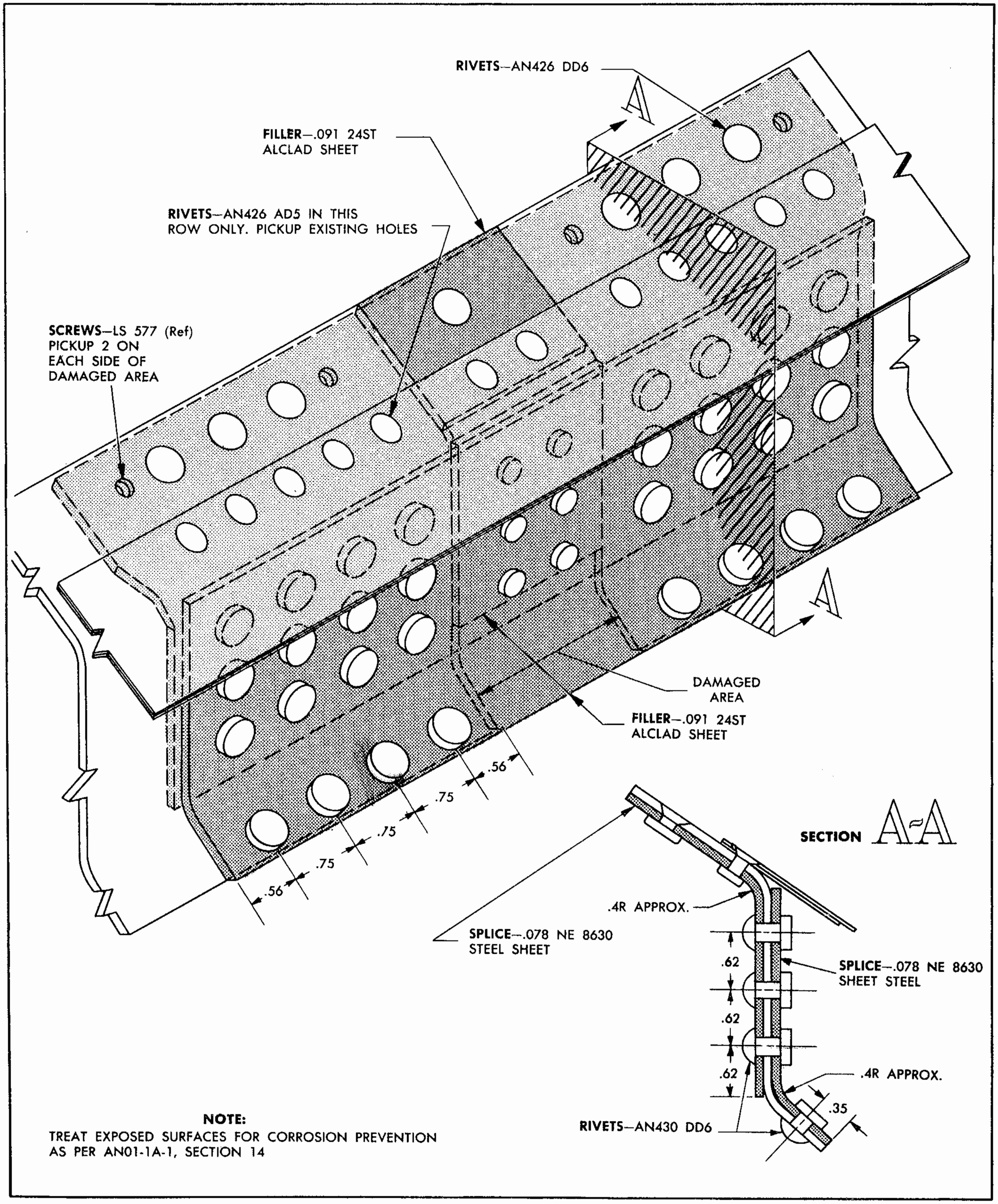


Figure 106 — Upper Longeron Repair — Station 103-277

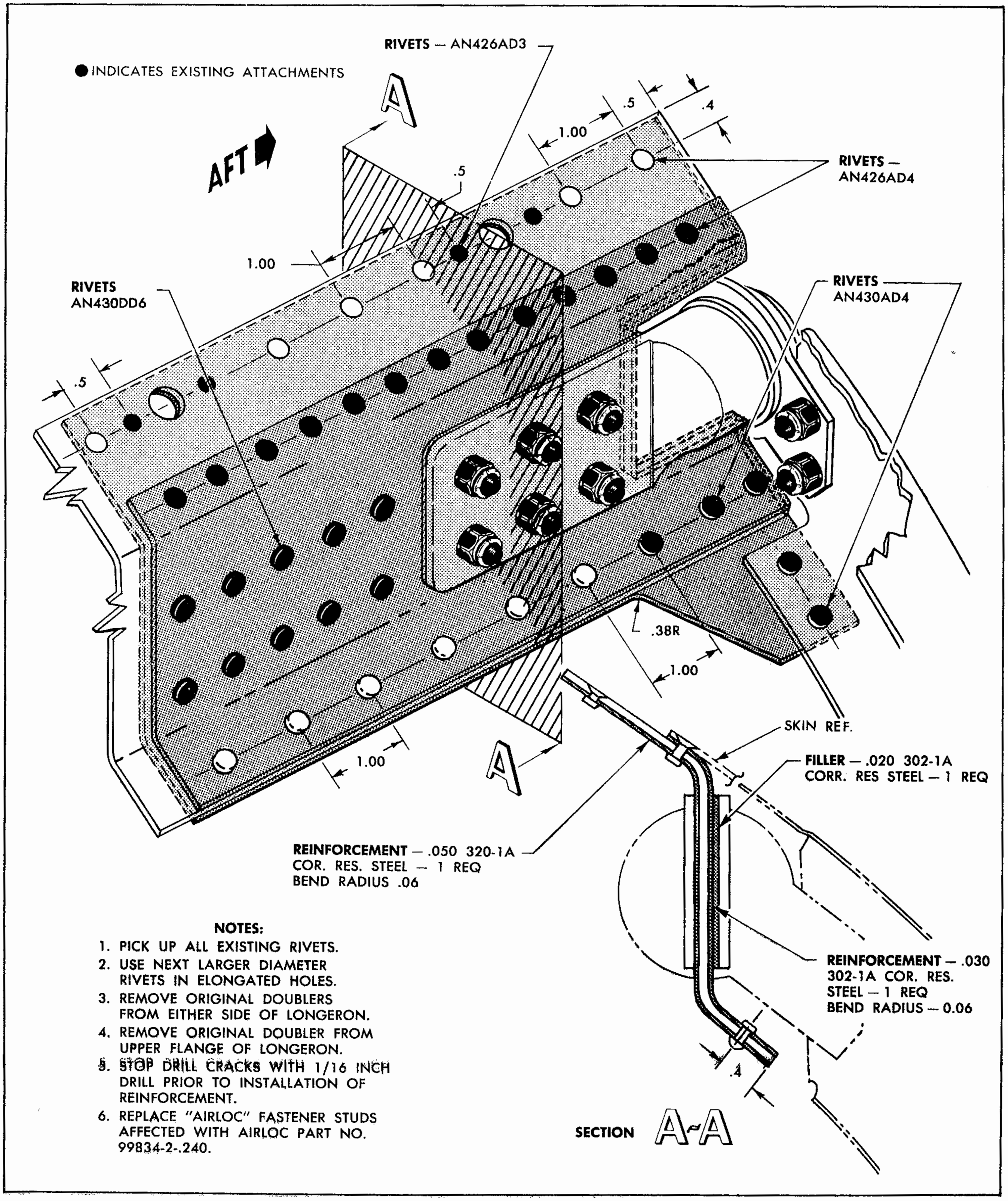
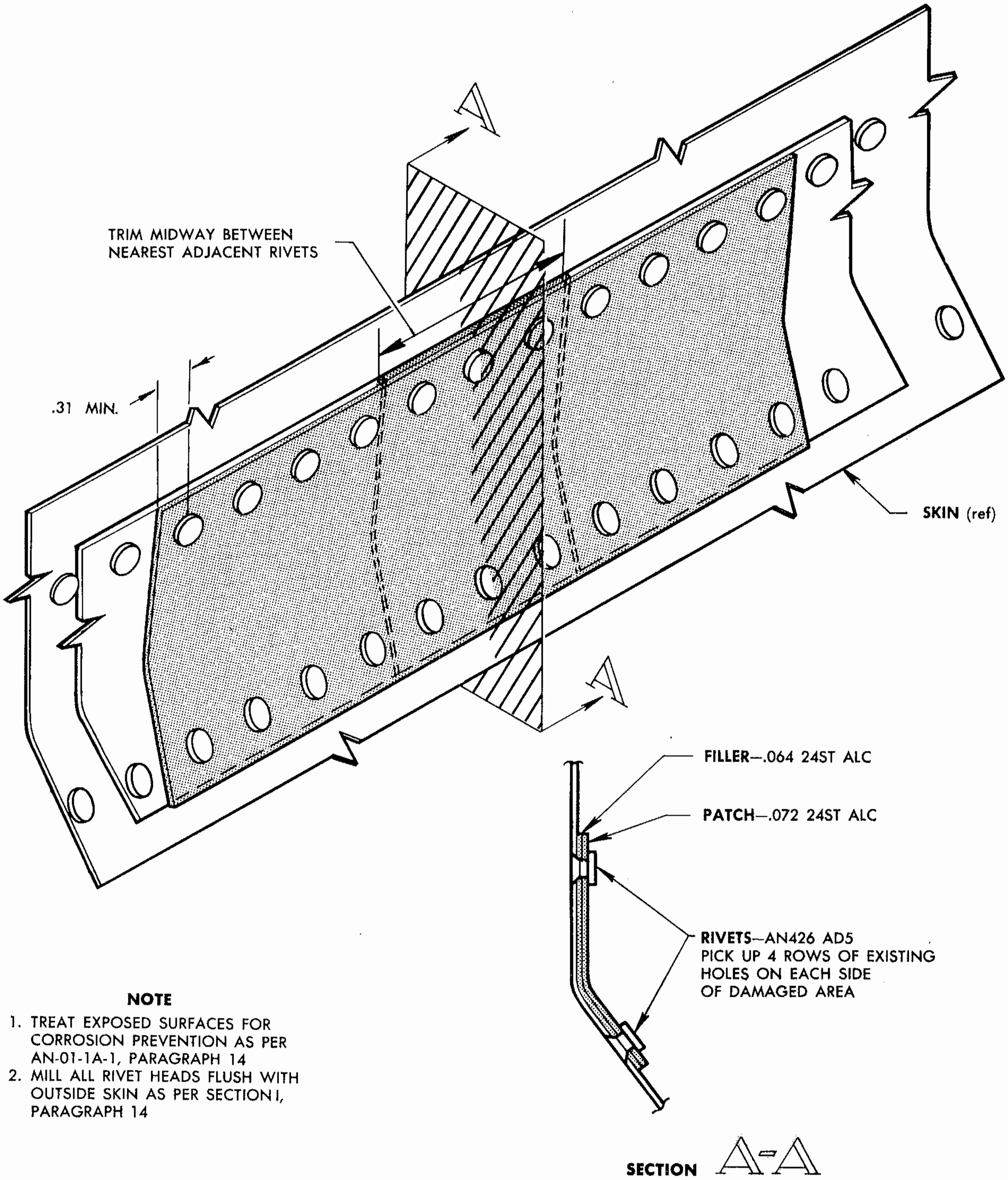


Figure 106A — Upper Longeron Reinforcement, Station 277



NOTE

1. TREAT EXPOSED SURFACES FOR CORROSION PREVENTION AS PER AN-01-1A-1, PARAGRAPH 14
2. MILL ALL RIVET HEADS FLUSH WITH OUTSIDE SKIN AS PER SECTION I, PARAGRAPH 14

Figure 107 — Side Longeron Repair

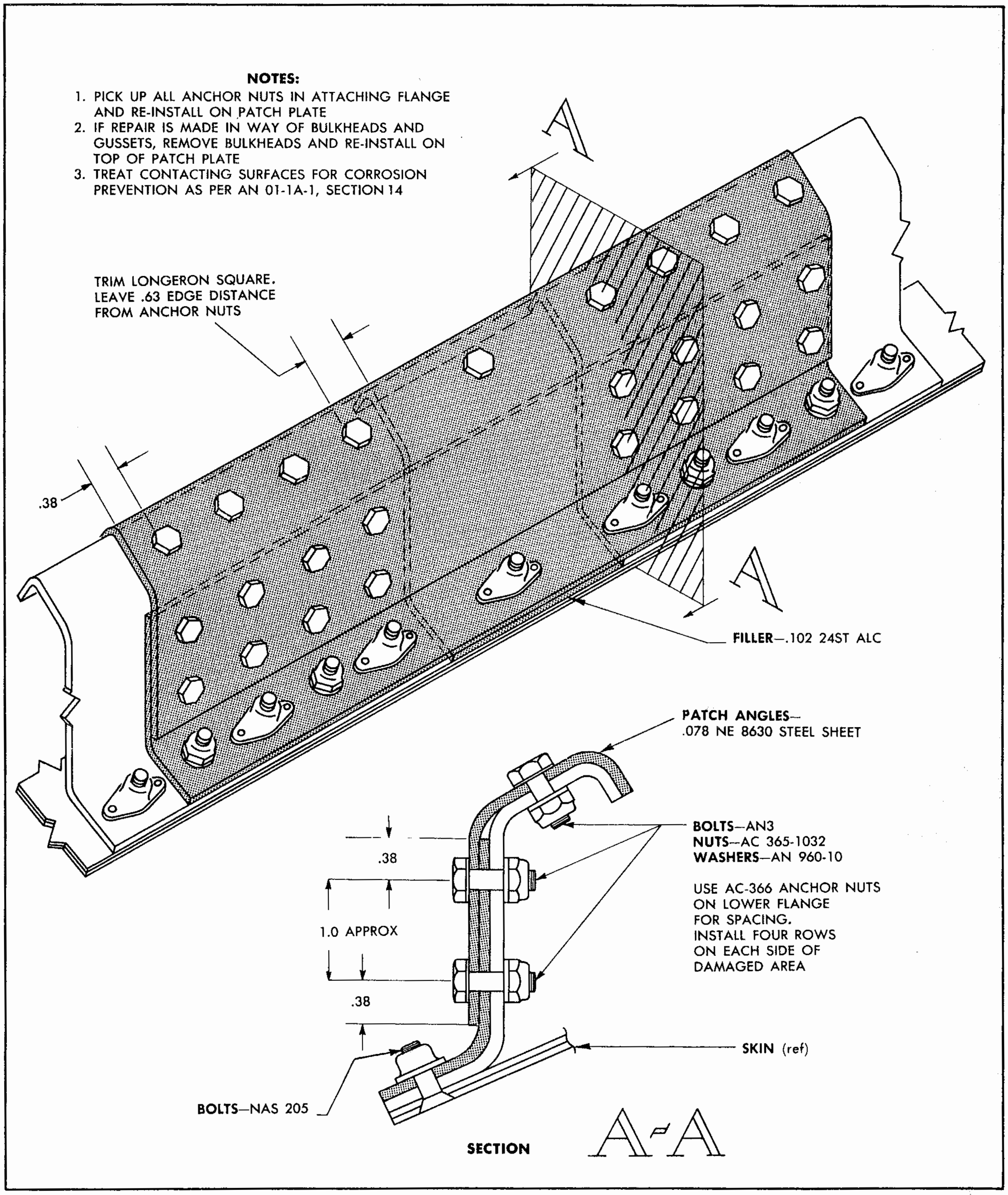


Figure 108 — Lower Longeron Repair — Cockpit

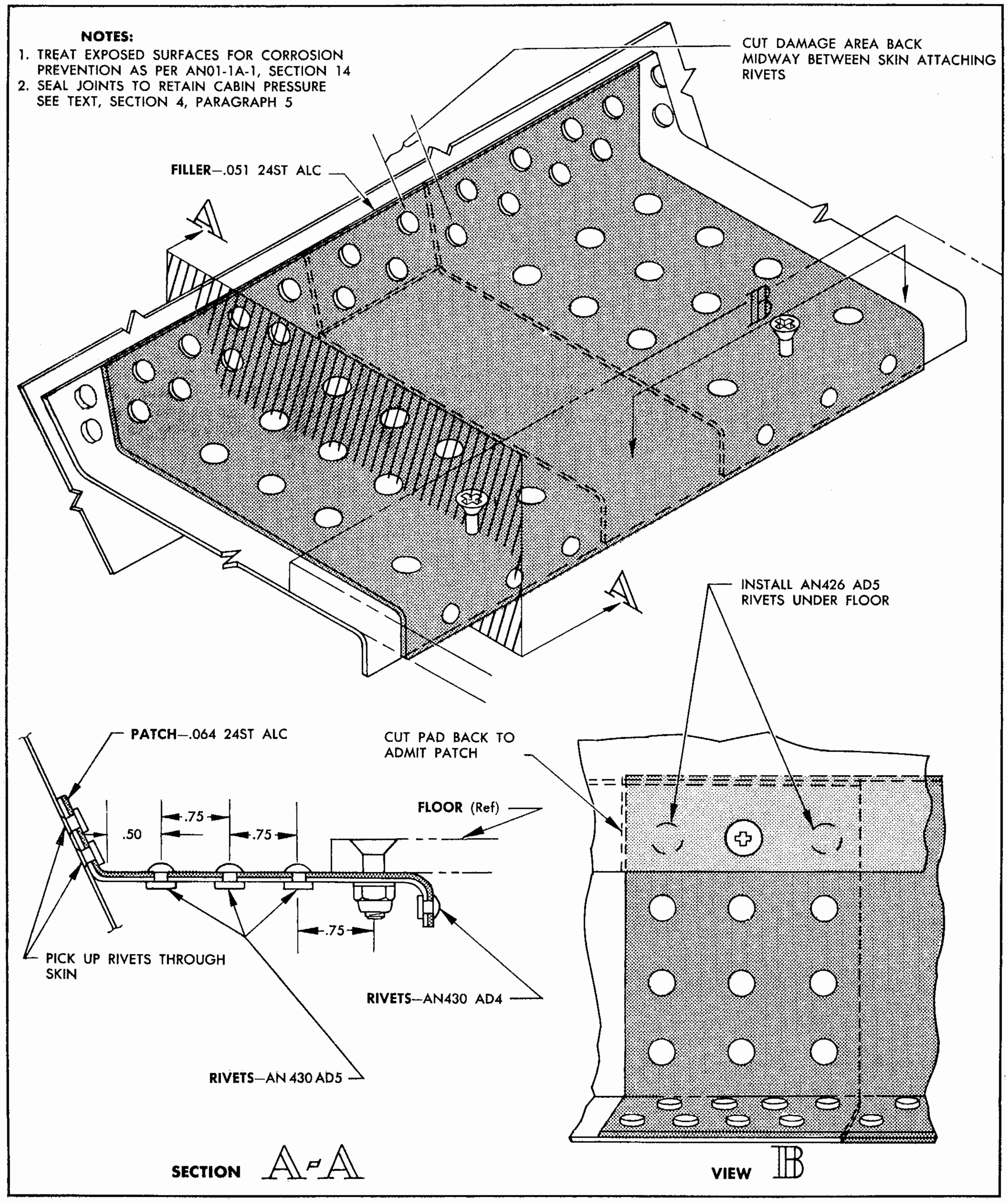


Figure 109 — Floor Support Repair

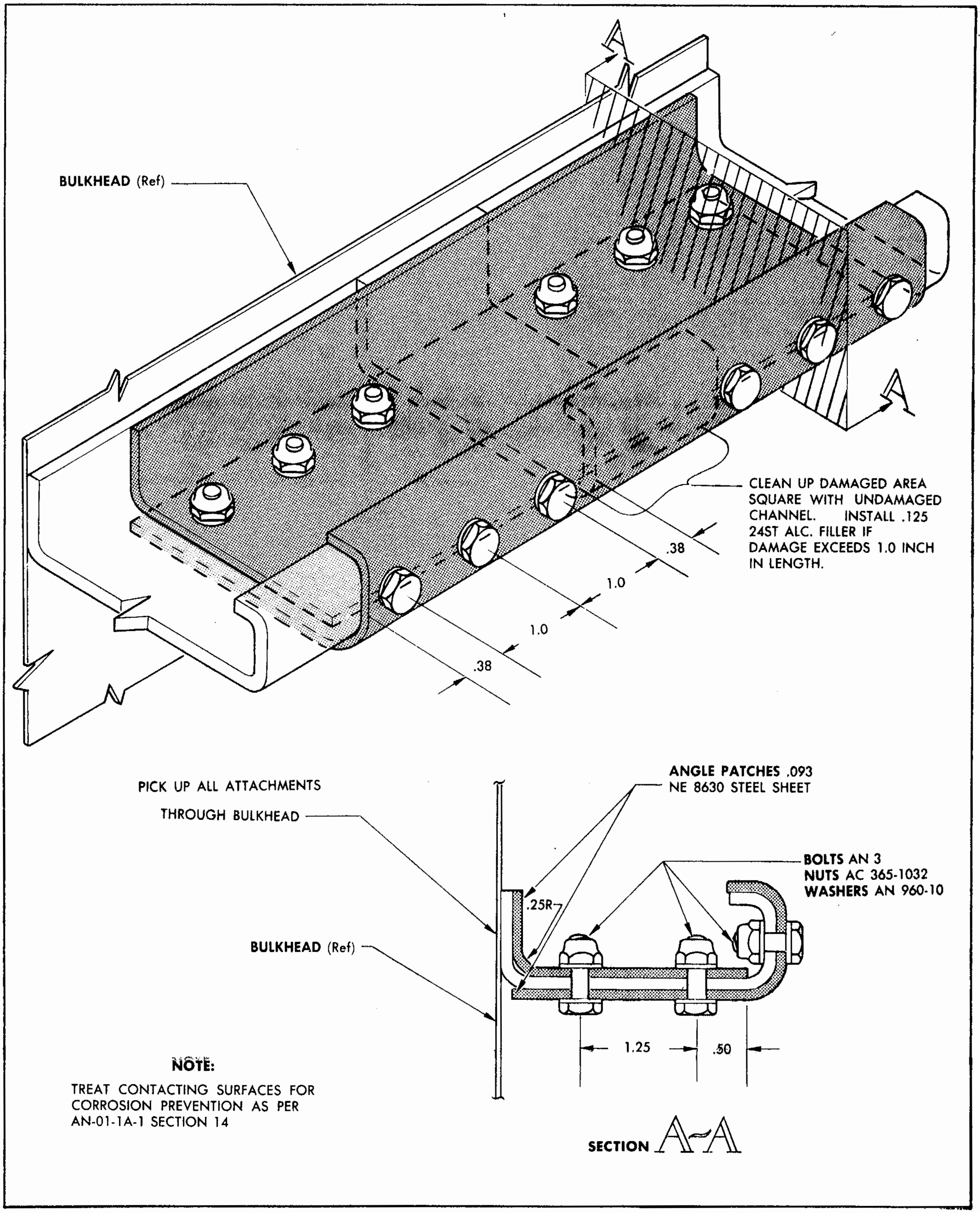
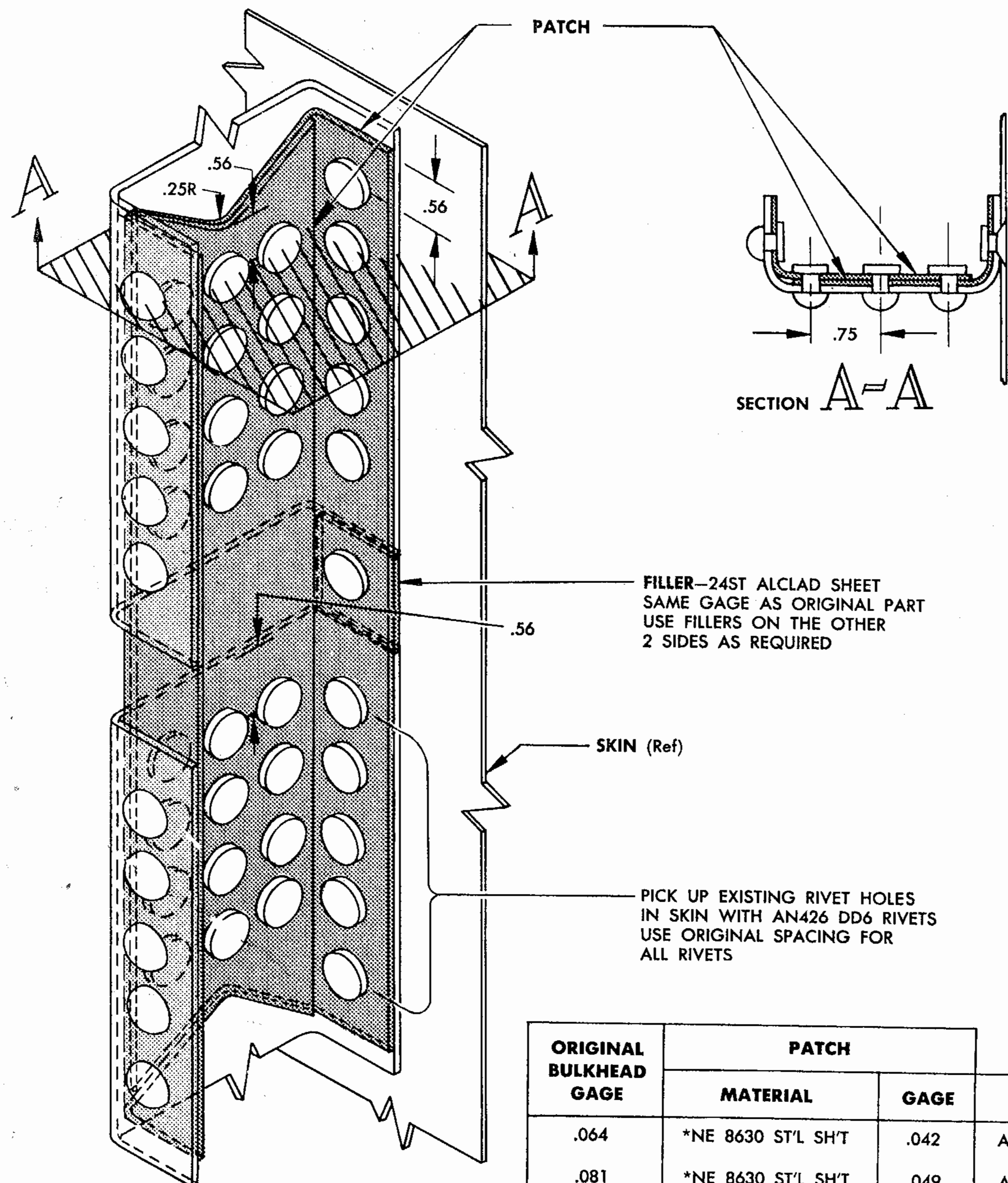


Figure 110 — Channel Repair — Control Support



ORIGINAL BULKHEAD GAGE	PATCH		FASTENER
	MATERIAL	GAGE	
.064	*NE 8630 ST'L SH'T	.042	AN430 DD6 RIVETS
.081	*NE 8630 ST'L SH'T	.049	AN3 BOLTS
.091	*NE 8630 ST'L SH'T	.063	AN3 BOLTS

*NE 8630 STEEL SHEET MUST BE NORMALIZED

TREAT ALL CONTACTING SURFACES FOR CORROSION PREVENTION AS PER AN01-1A-1, SECTION 14

Figure 111 — Bulkhead Repair — Mid Section

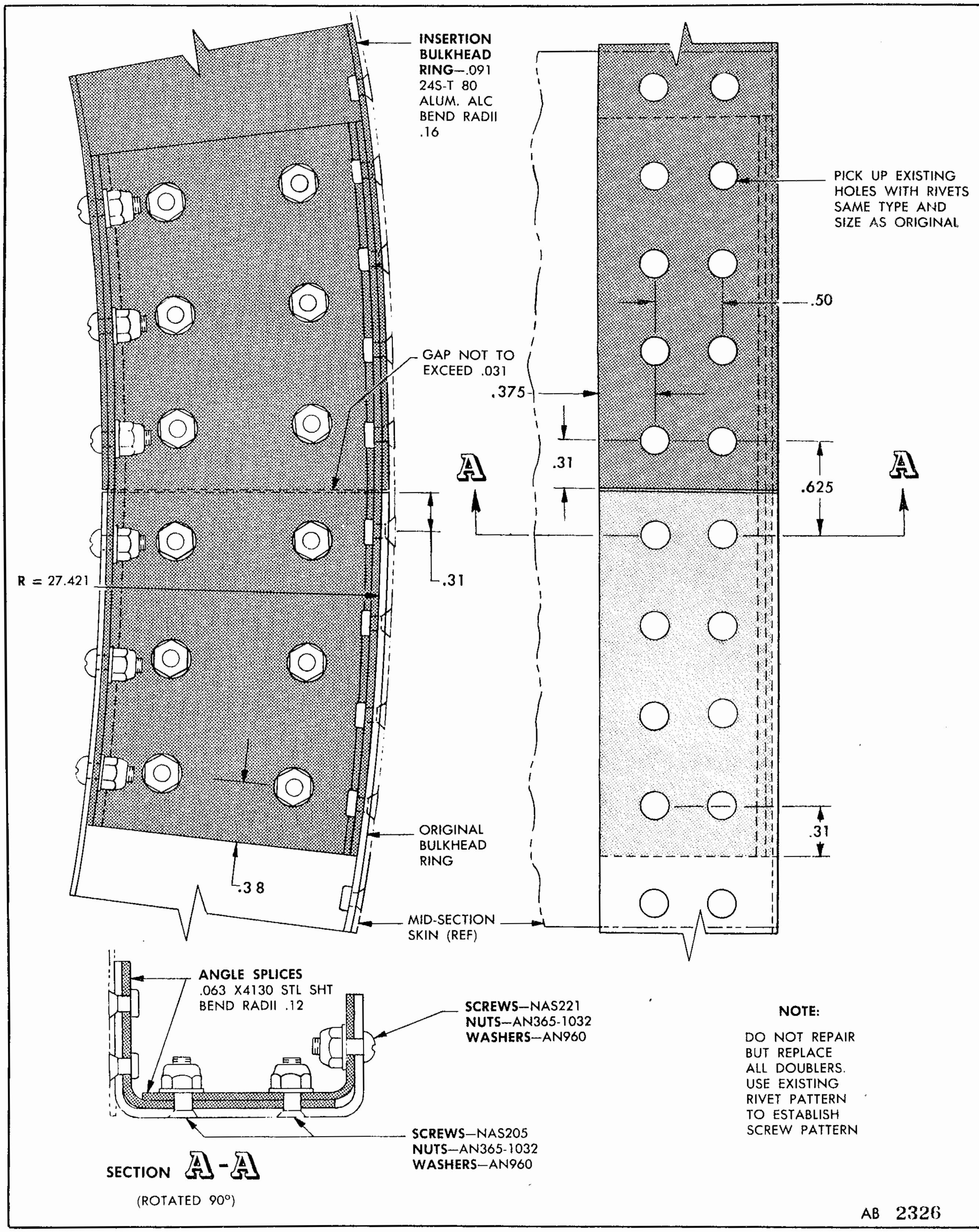
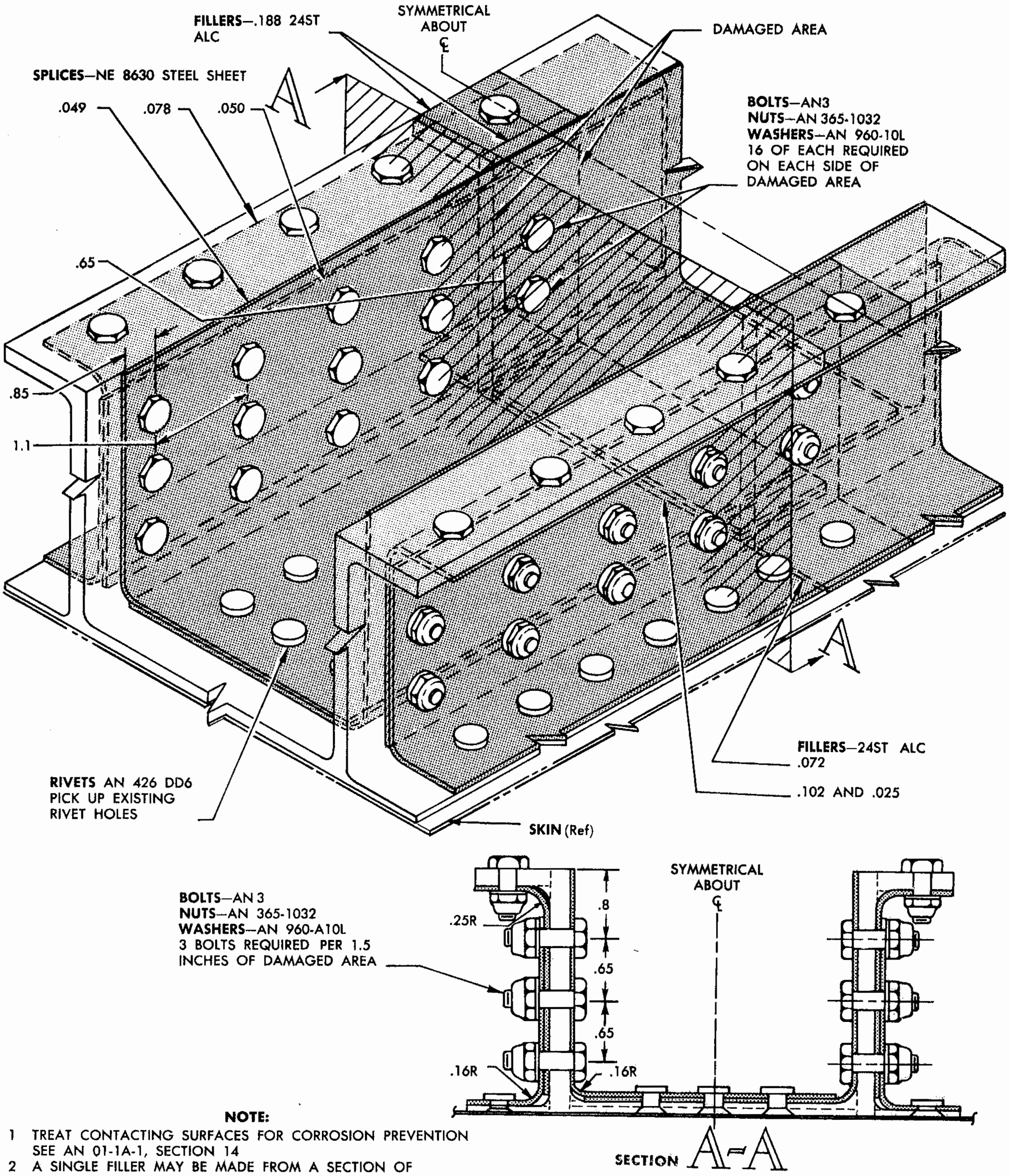


Figure 111A — Mid Section Bulkhead Repair, Fuselage Station 277.5



NOTE:

1 TREAT CONTACTING SURFACES FOR CORROSION PREVENTION SEE AN 01-1A-1, SECTION 14
2 A SINGLE FILLER MAY BE MADE FROM A SECTION OF LS 393 EXTRUSION

Figure 112 — Lower Longeron Repair — Station 228-277

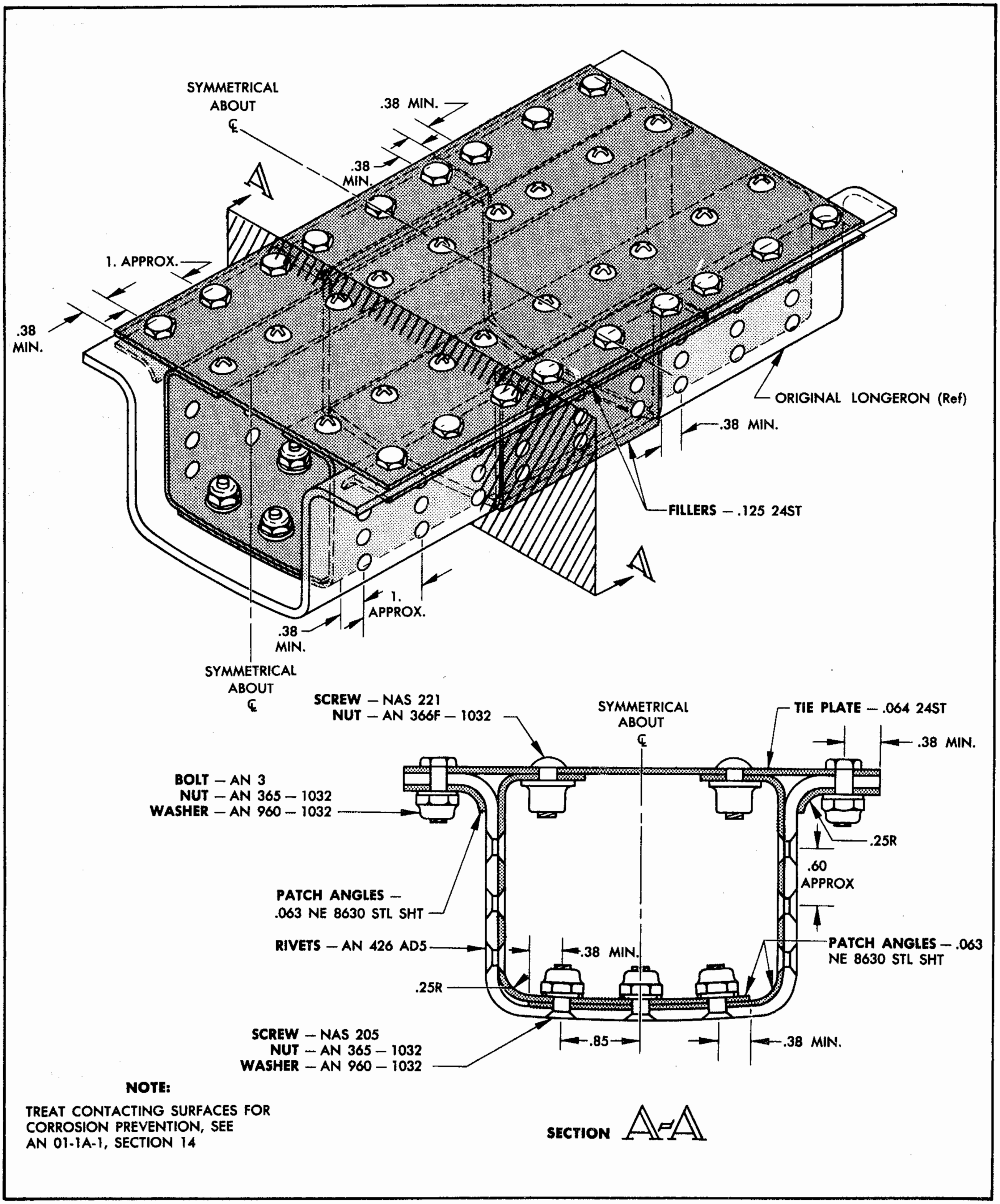


Figure 113 — Lower Longeron Repair — Station 131-190

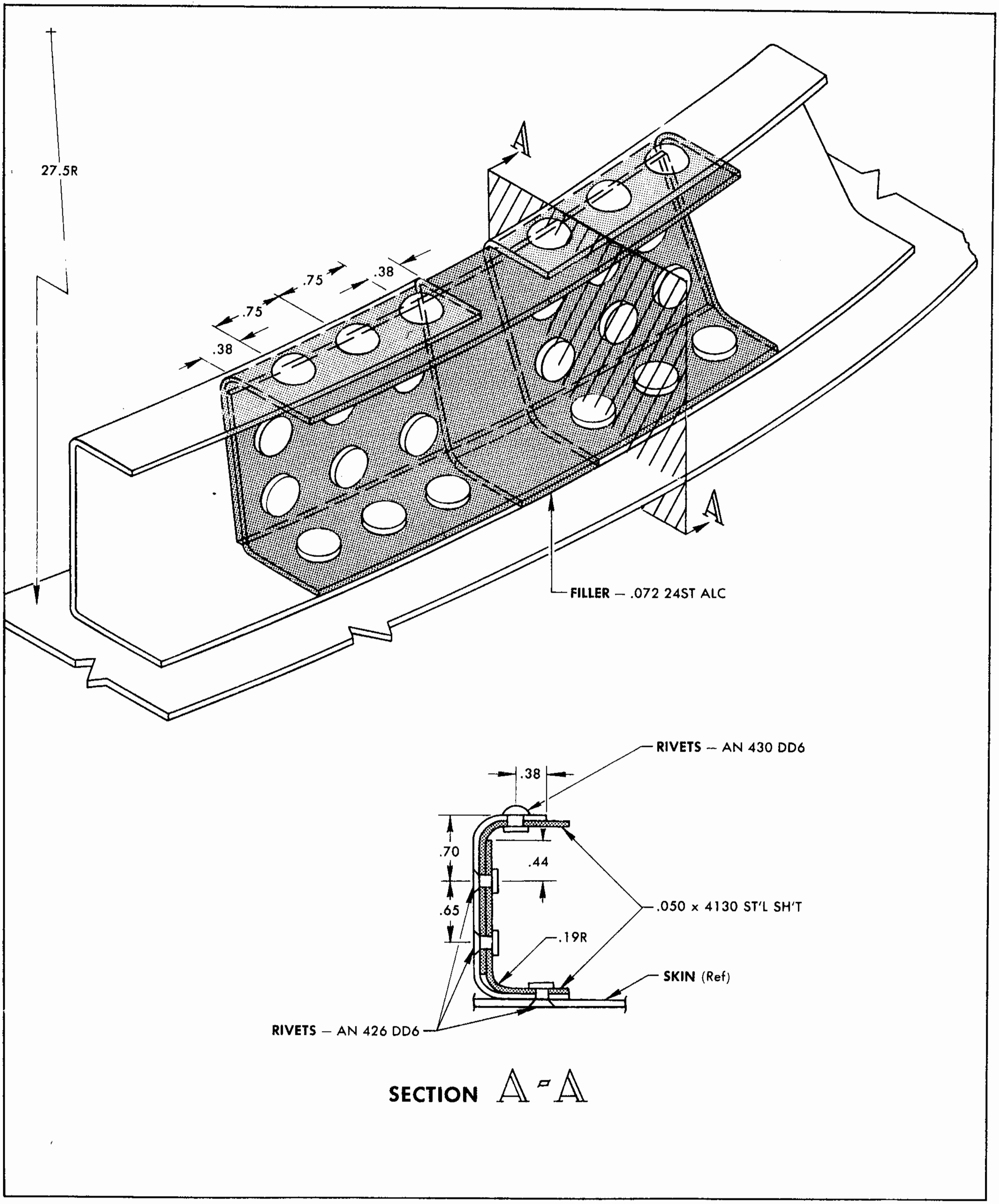
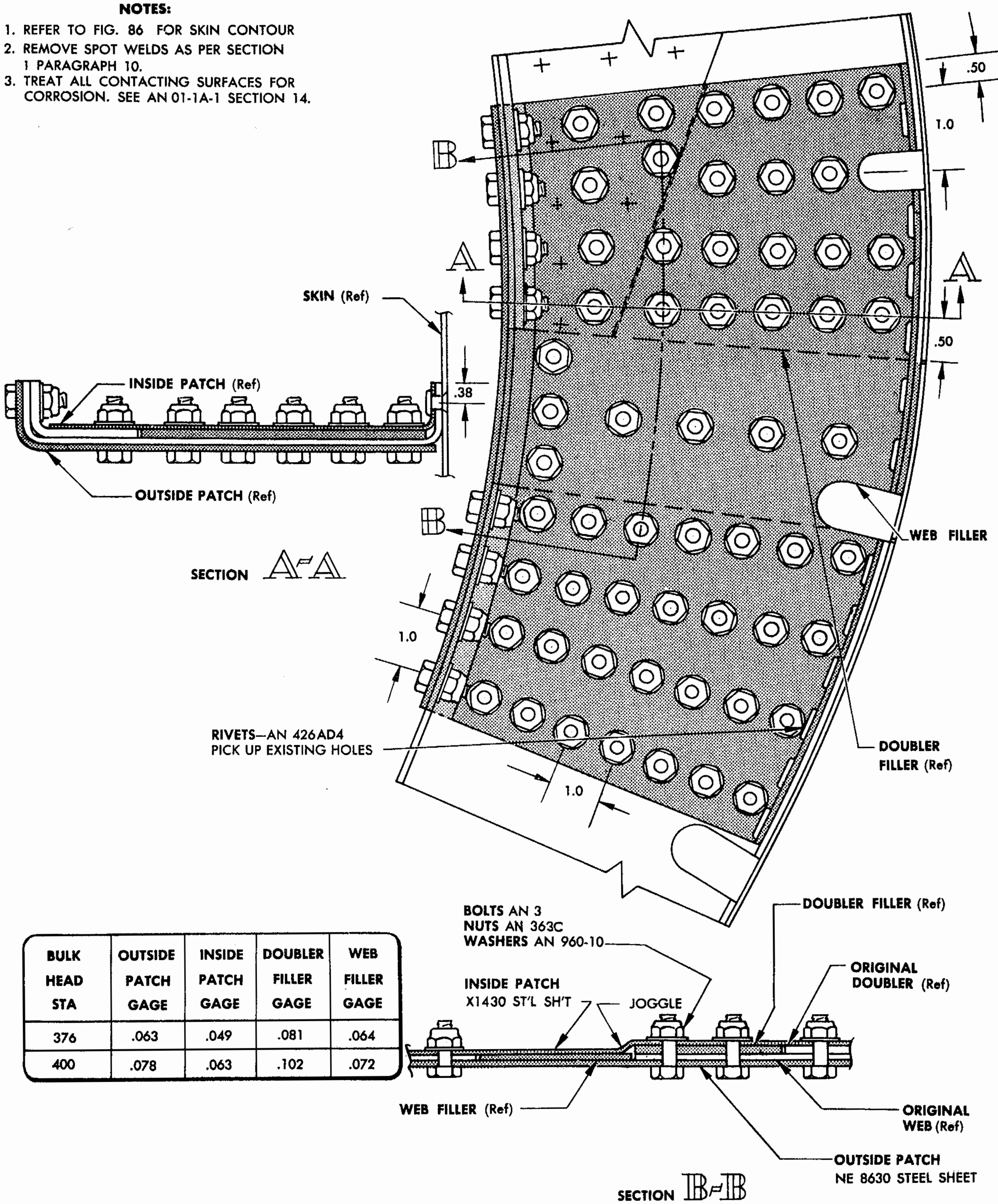


Figure 114 — Bulkhead Repair — Station 278



BULK HEAD STA	OUTSIDE PATCH GAGE	INSIDE PATCH GAGE	DOUBLER FILLER GAGE	WEB FILLER GAGE
376	.063	.049	.081	.064
400	.078	.063	.102	.072

Figure 115 — Bulkhead Repair, Stations 376 and 400, P-80A Airplanes

BULKHEAD	1	2	3	4	5
STA 376	.072	.072	.025	.063	.030
STA 400	.072	.072	.035	.072	.030

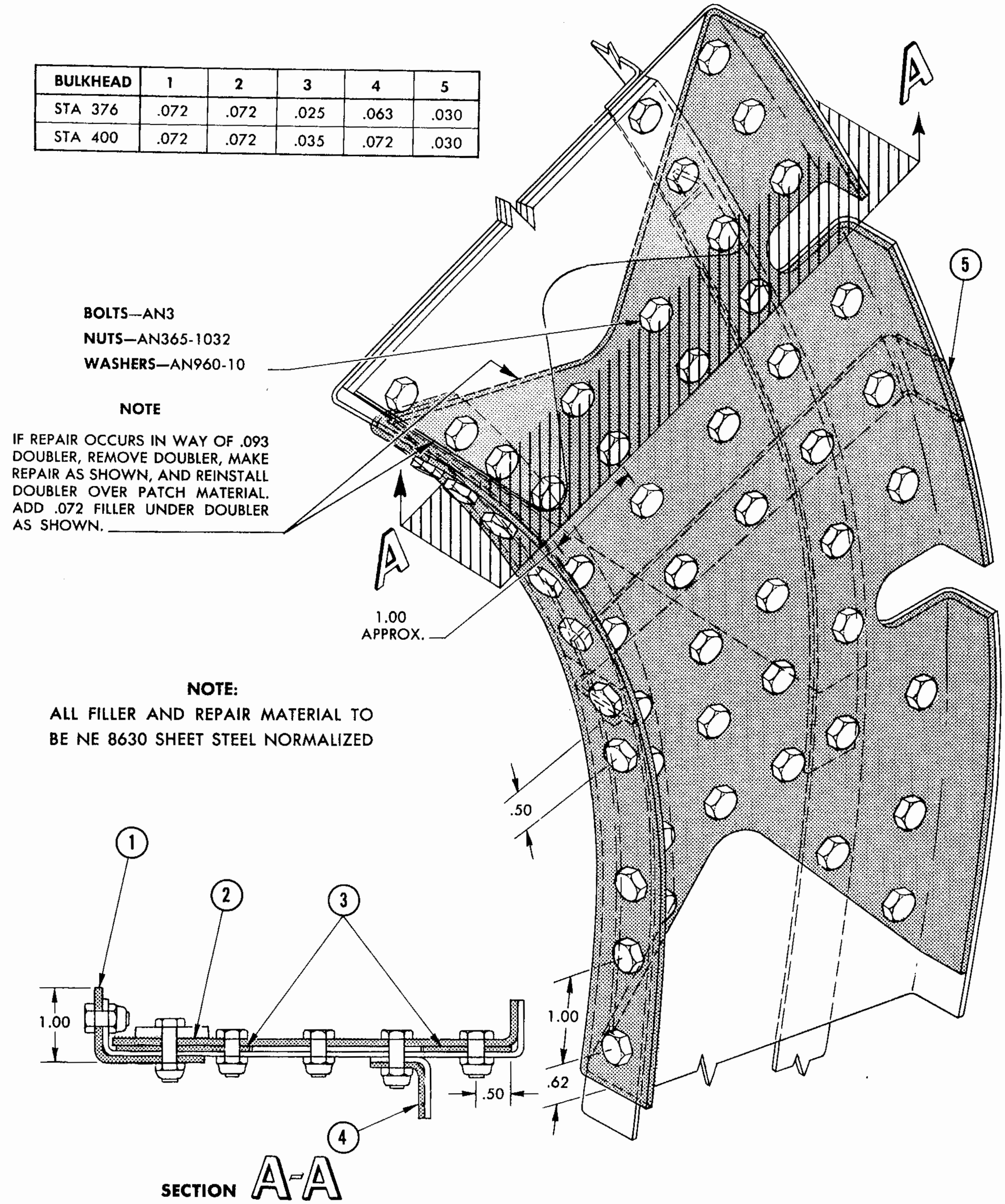
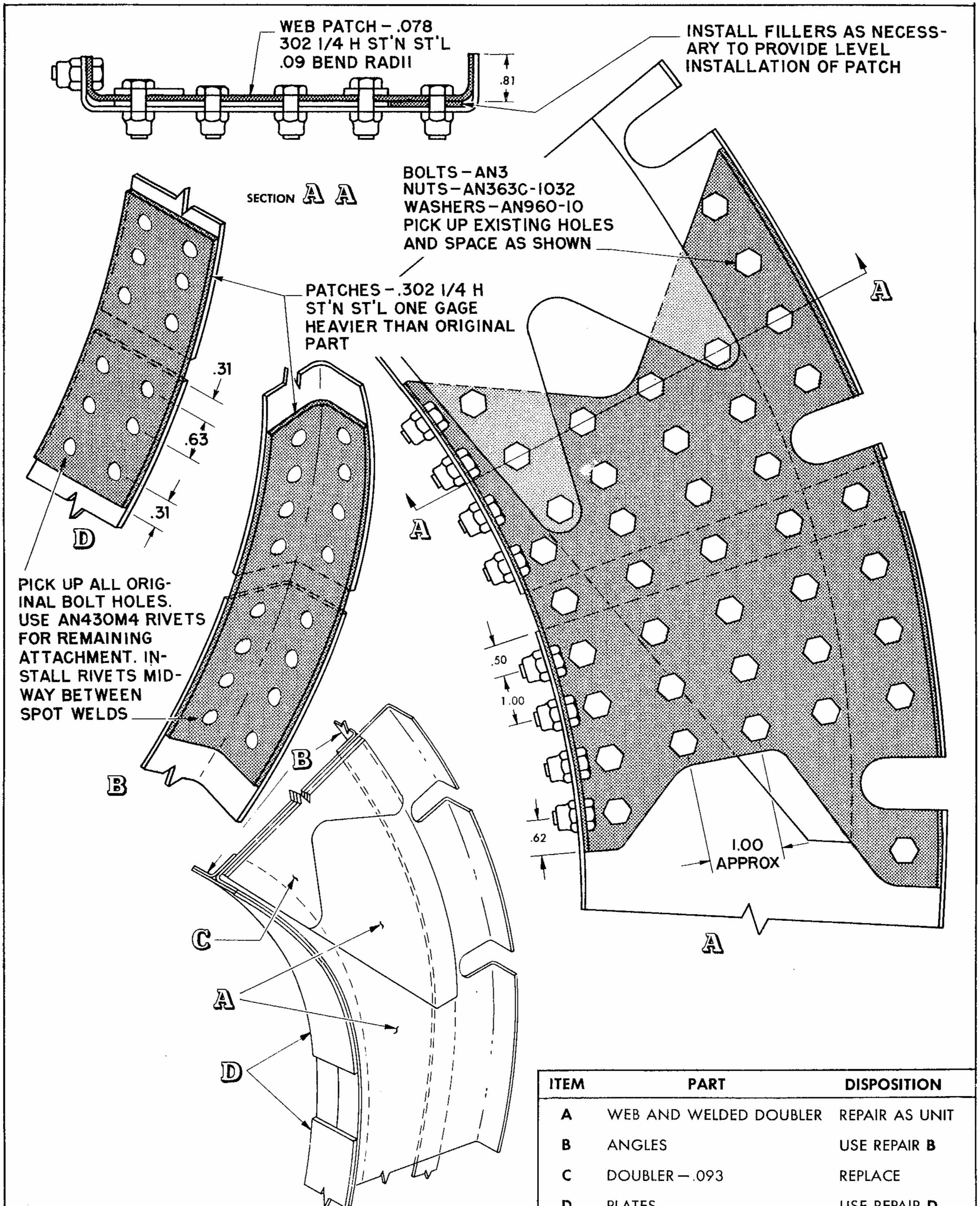


Figure 115A — Bulkhead Repair, Stations 376 and 400, F-80B and F-80C Airplanes Prior to Serial No. AF49-734



ITEM	PART	DISPOSITION
A	WEB AND WELDED DOUBLER	REPAIR AS UNIT
B	ANGLES	USE REPAIR **B**
C	DOUBLER — .093	REPLACE
D	PLATES	USE REPAIR **D**

Figure 115B — Bulkhead Repair, Station 376, F-80B and F-80C Airplanes Serial No. AF49-734 and Subsequent

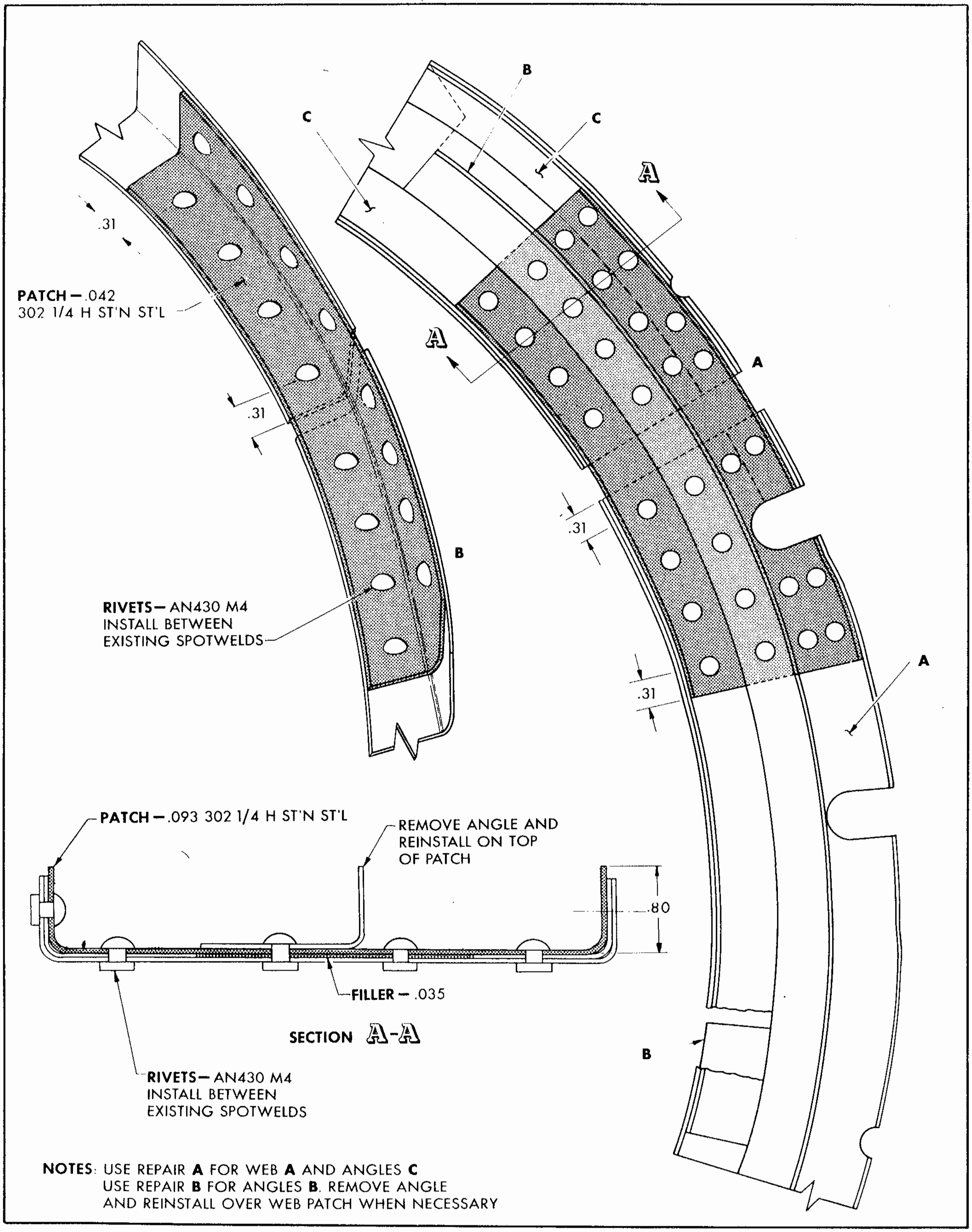


Figure 115C — Bulkhead Repair, Station 400, F-80B and F-80C Airplanes Serial No. AF49-734 and Subsequent

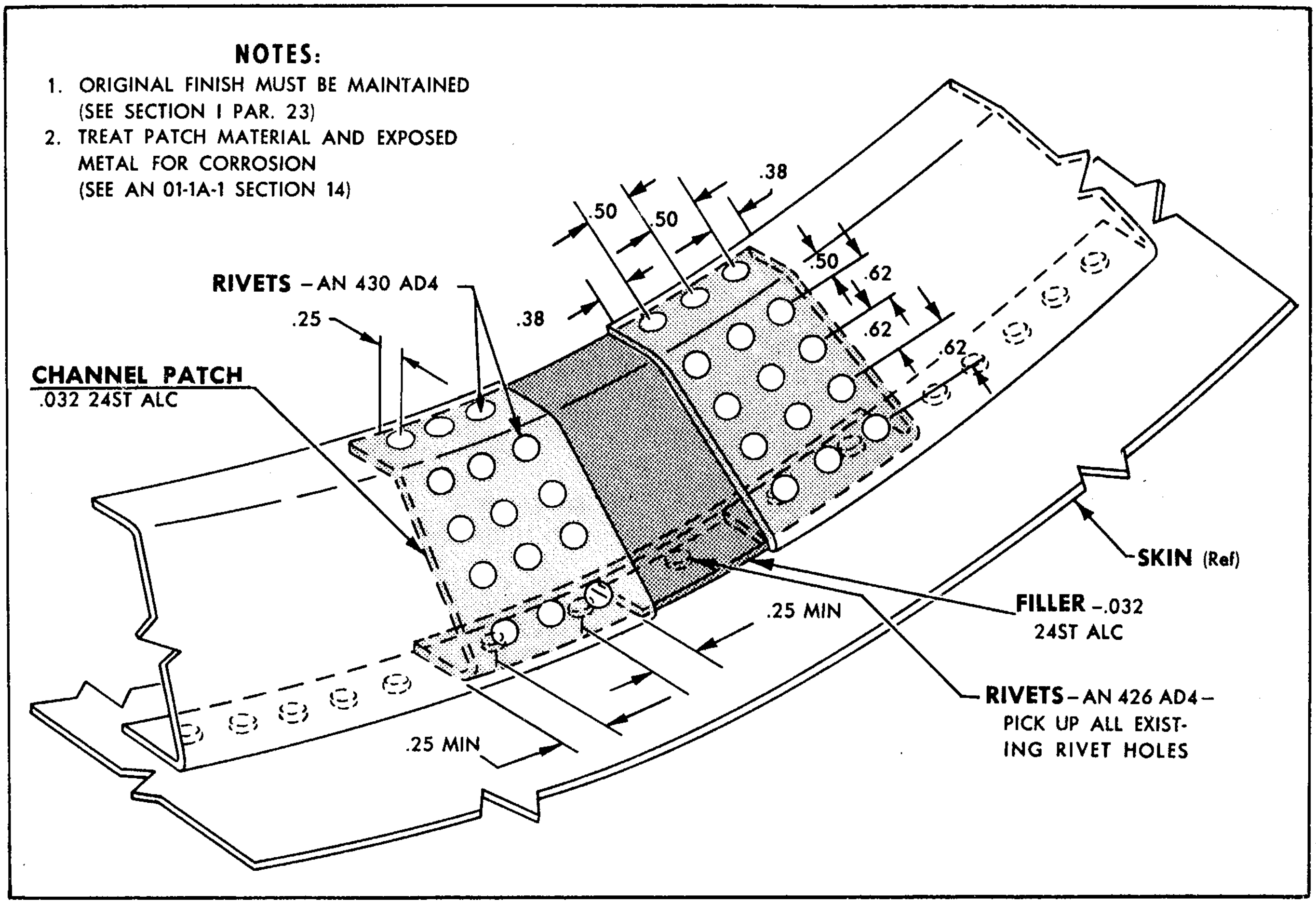


Figure 116 — Bulkhead Repair — Station 283

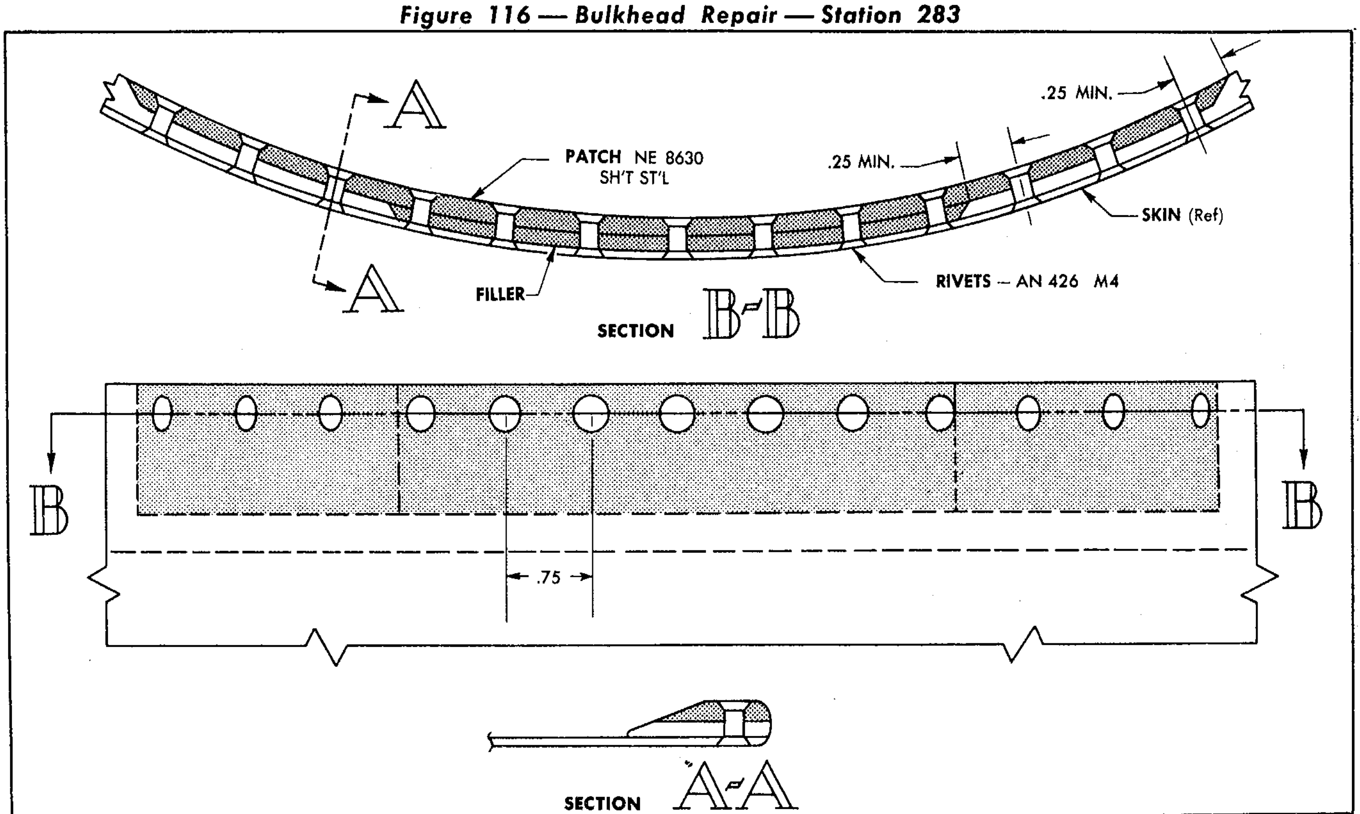


Figure 117 — Bulkhead Repair — Station 430

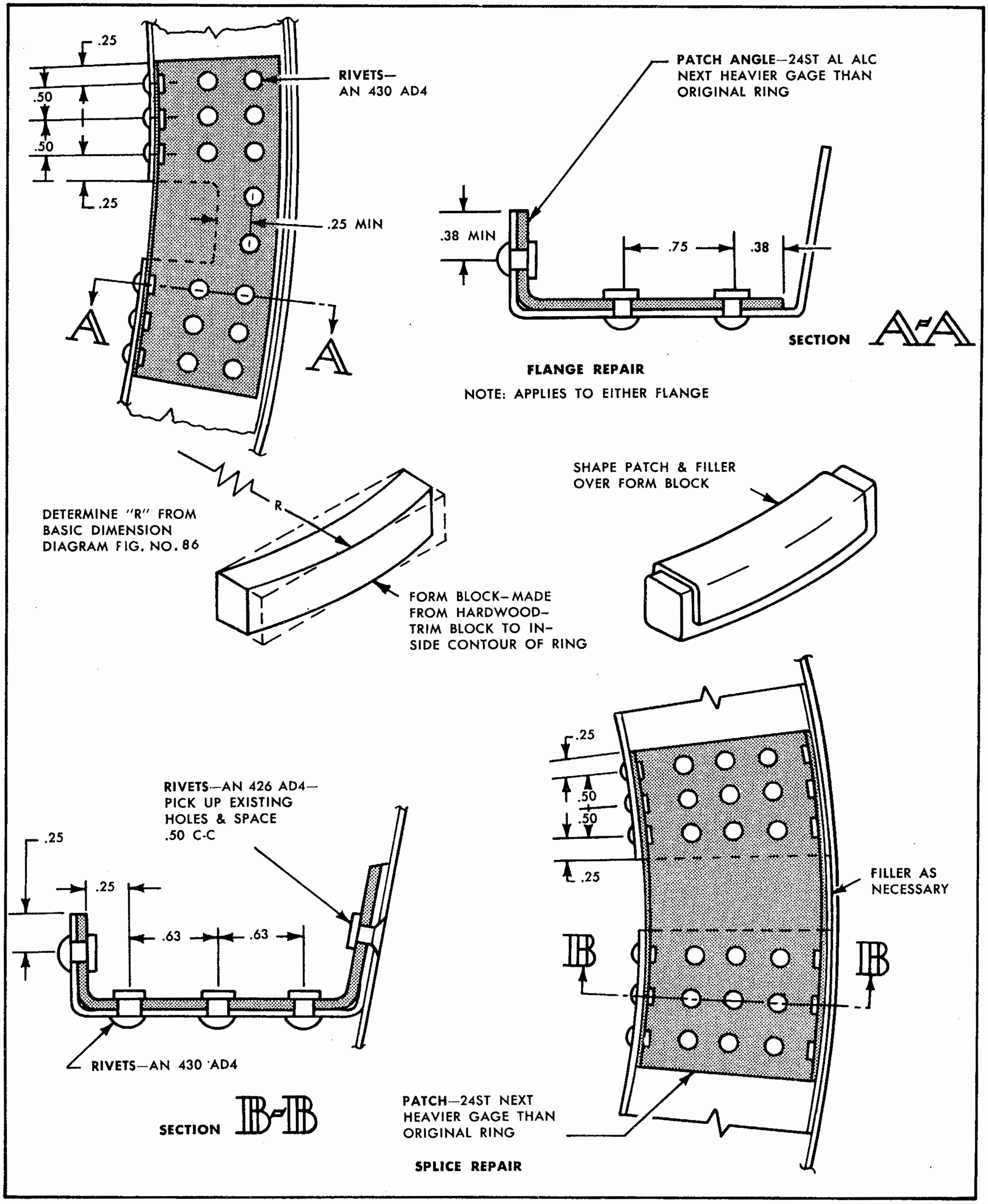


Figure 118 — Bulkhead Ring Repair — Aft Fuselage Section

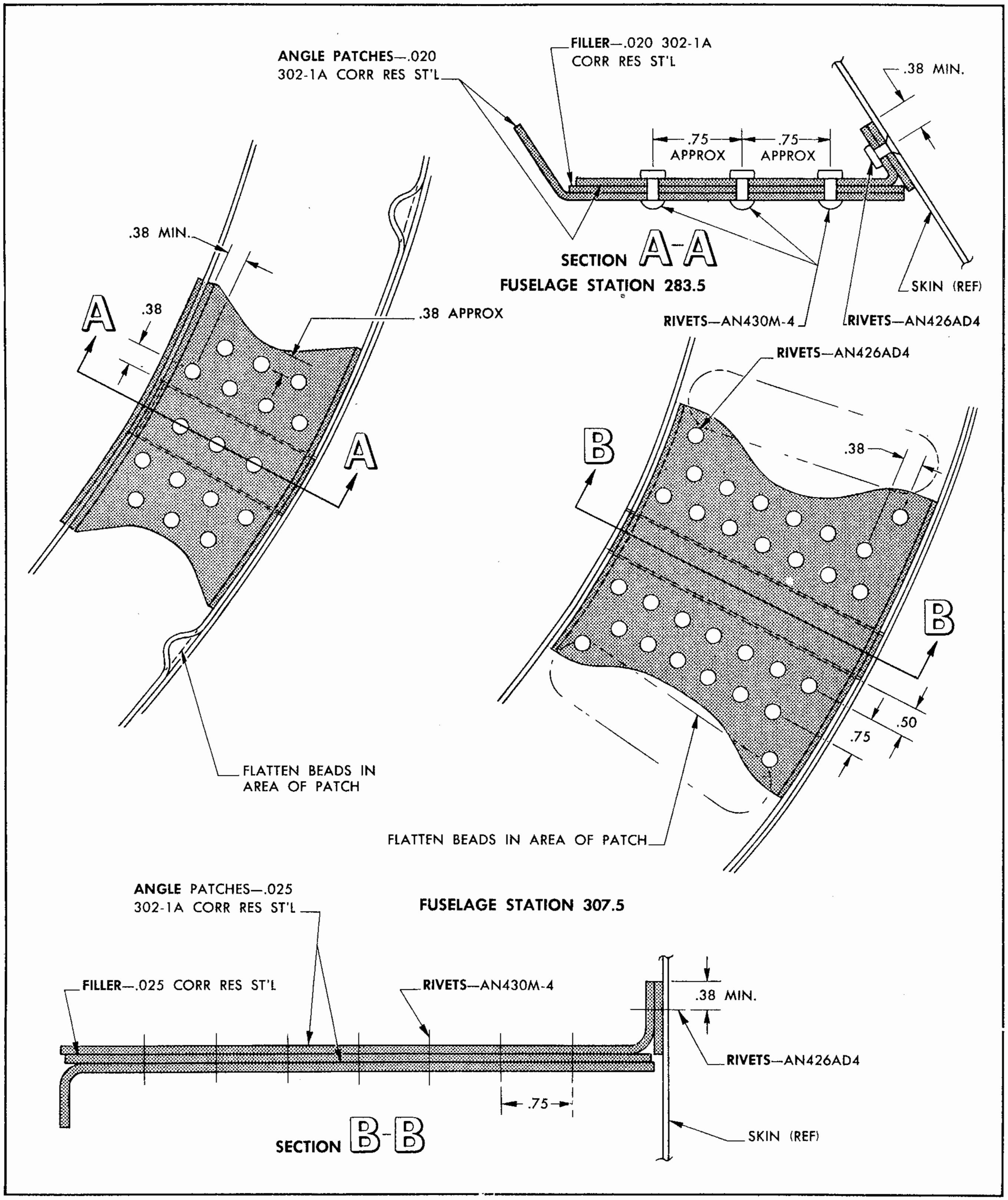
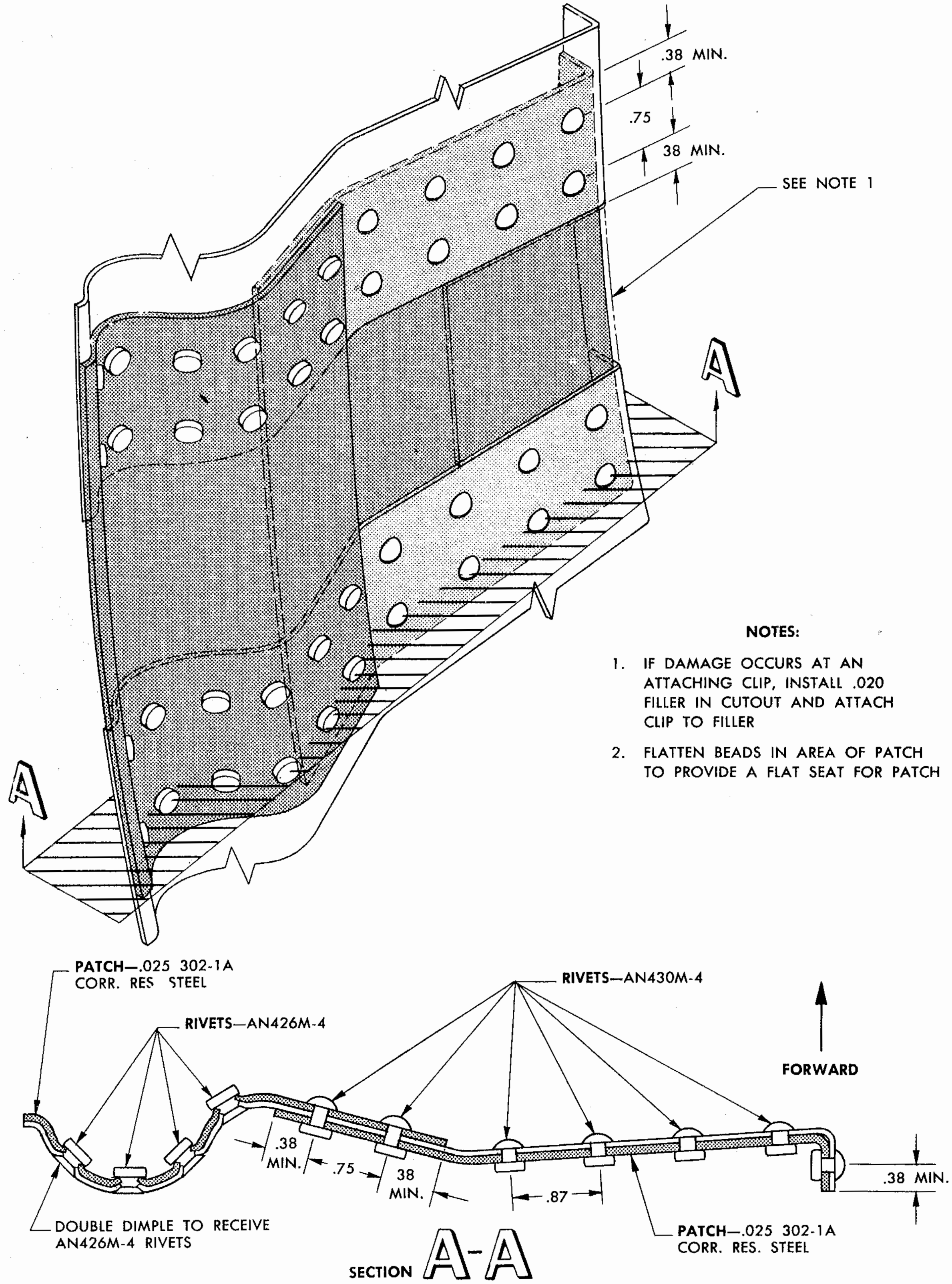


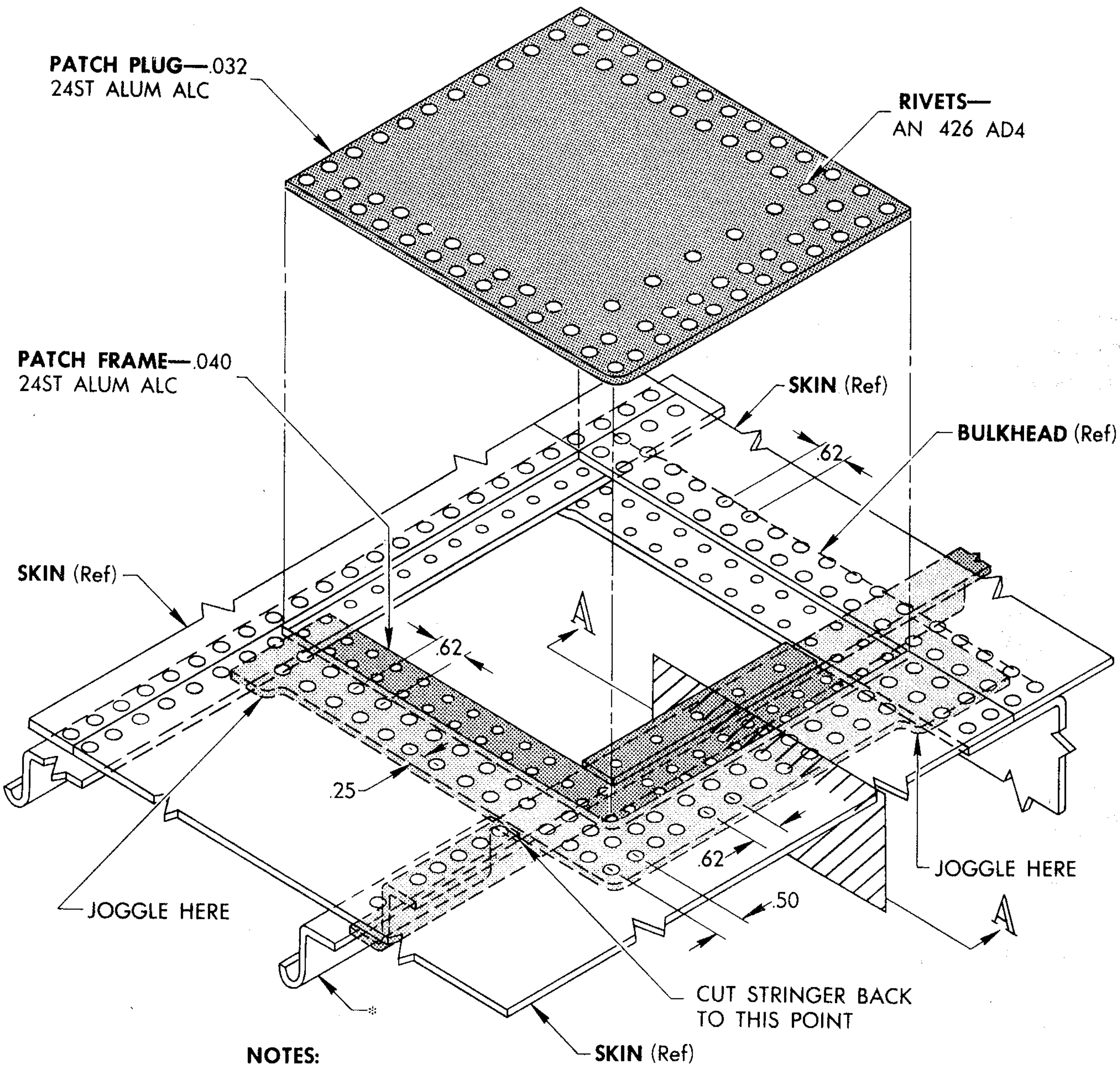
Figure 118A — Steel Bulkhead Repairs, Stations 283.5 and 307.5, P-80B and P-80C Airplanes



NOTES:

1. IF DAMAGE OCCURS AT AN ATTACHING CLIP, INSTALL .020 FILLER IN CUTOUT AND ATTACH CLIP TO FILLER
2. FLATTEN BEADS IN AREA OF PATCH TO PROVIDE A FLAT SEAT FOR PATCH

Figure 118B — Engine Diaphragm Repair, P-80B and P-80C Airplanes



NOTES:

* STRINGER REPAIR – SEE FIG. 144

1. MILL RIVET HEADS FLUSH AS PER SECTION I, PAR. 14
2. ALL CORNERS MUST HAVE .25 MIN RADIUS
3. ORIGINAL FINISH MUST BE MAINTAINED (SEE SECTION I, PAR. 24)
4. TREAT ALL PATCH MATERIAL AND EXPOSED METAL FOR CORROSION (SEE AN 01-1A-1, SECTION 14)

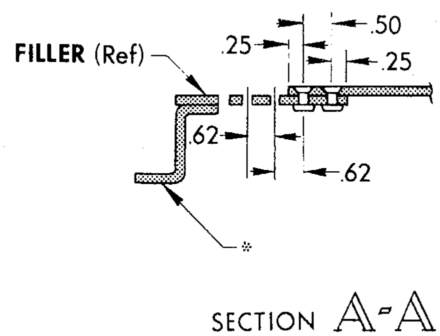
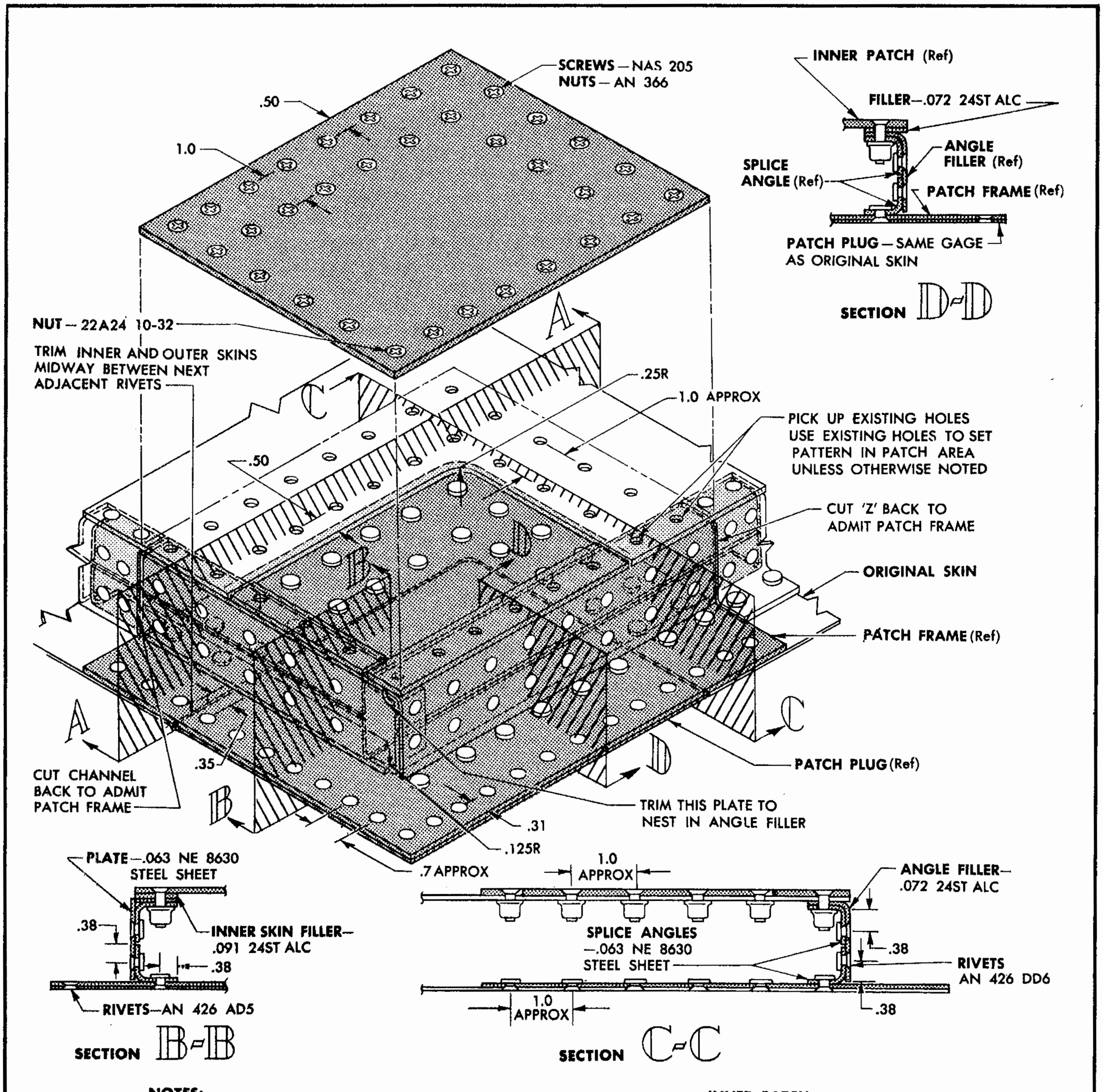


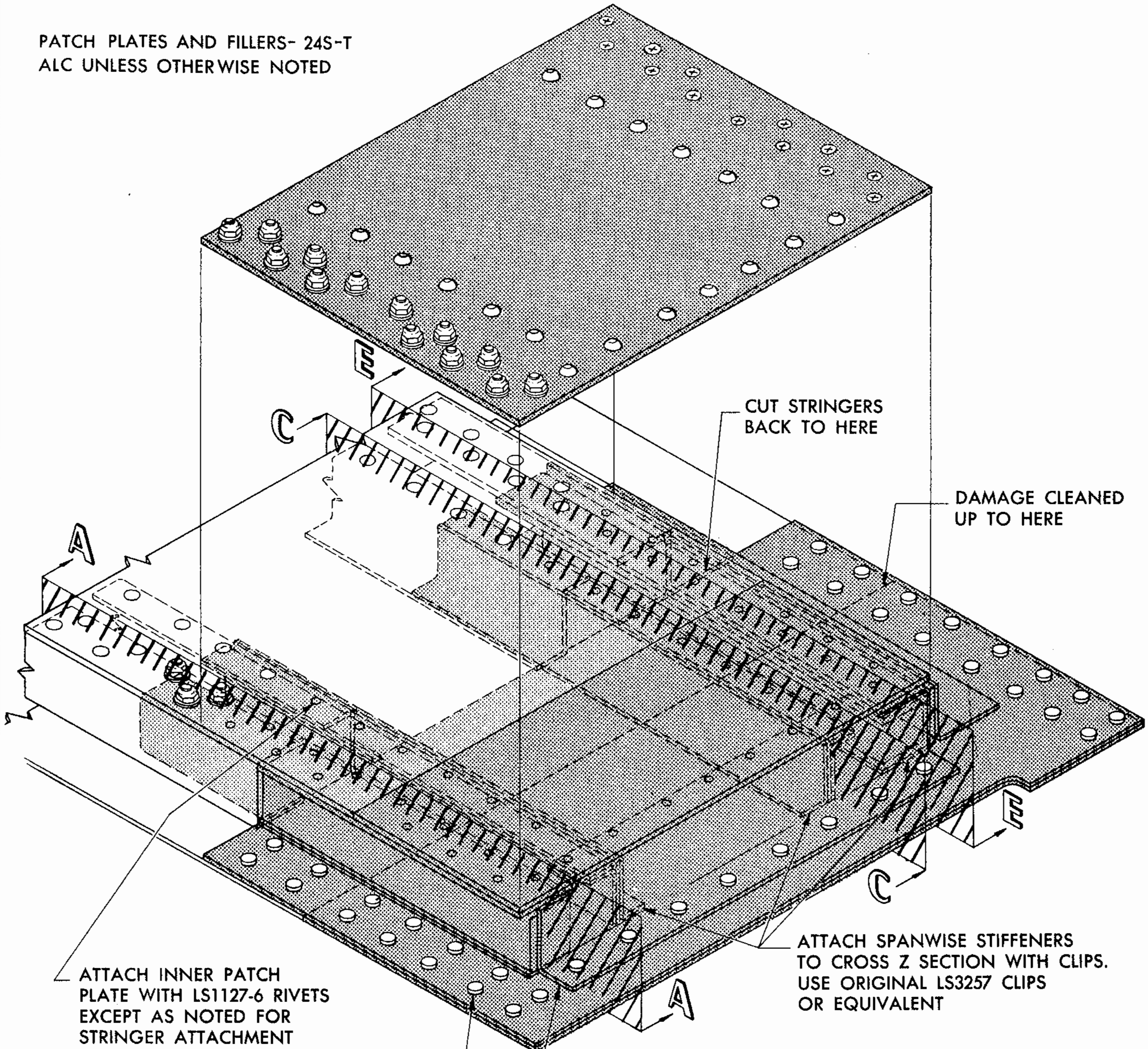
Figure 119 — Skin Repair — Aft Section



NOTES:

1. TREAT PARTS FOR CORROSION AS PER AN 01-1A-1 SECTION 14
2. MILL RIVET HEADS FLUSH WITH SKIN LINE AS PER SECTION 1 PARAGRAPH 14
3. RESTORE ORIGINAL FINISH AS PER SECTION 1 PARAGRAPH 24

Figure 120 — Dive Flap Repair, P-80A Airplanes



NOTES:

1. REPAIR SHOWN PROVIDES FOR COMPLETE FRACTURE OF FLAP. IF DAMAGE IS LESS EXTENSIVE THAN THAT SHOWN, USE APPLICABLE PORTION OR PORTIONS.
2. ℄ CROSS Z SECTION SHOWN REPLACED. REPLACEMENT Z MUST BE .072 SHORTER IN VERTICAL CROSS SECTION THAN ORIGINAL TO ALLOW FOR INSTALLATION OF OUTSIDE SKIN PATCH.
3. USE ORIGINAL RIVET PATTERN FOR ALL ATTACHMENT UNLESS OTHERWISE SPECIFIED. USE AN426AD6 RIVETS UNLESS OTHERWISE NOTED.
4. ATTACHMENT FOR STRINGER SPLICES OMITTED FOR CLARITY — SEE SHEET 2.

Figure 120A (Sheet 1 of 2 Sheets) — Dive Flap Repair, P-80B and P-80C Airplanes

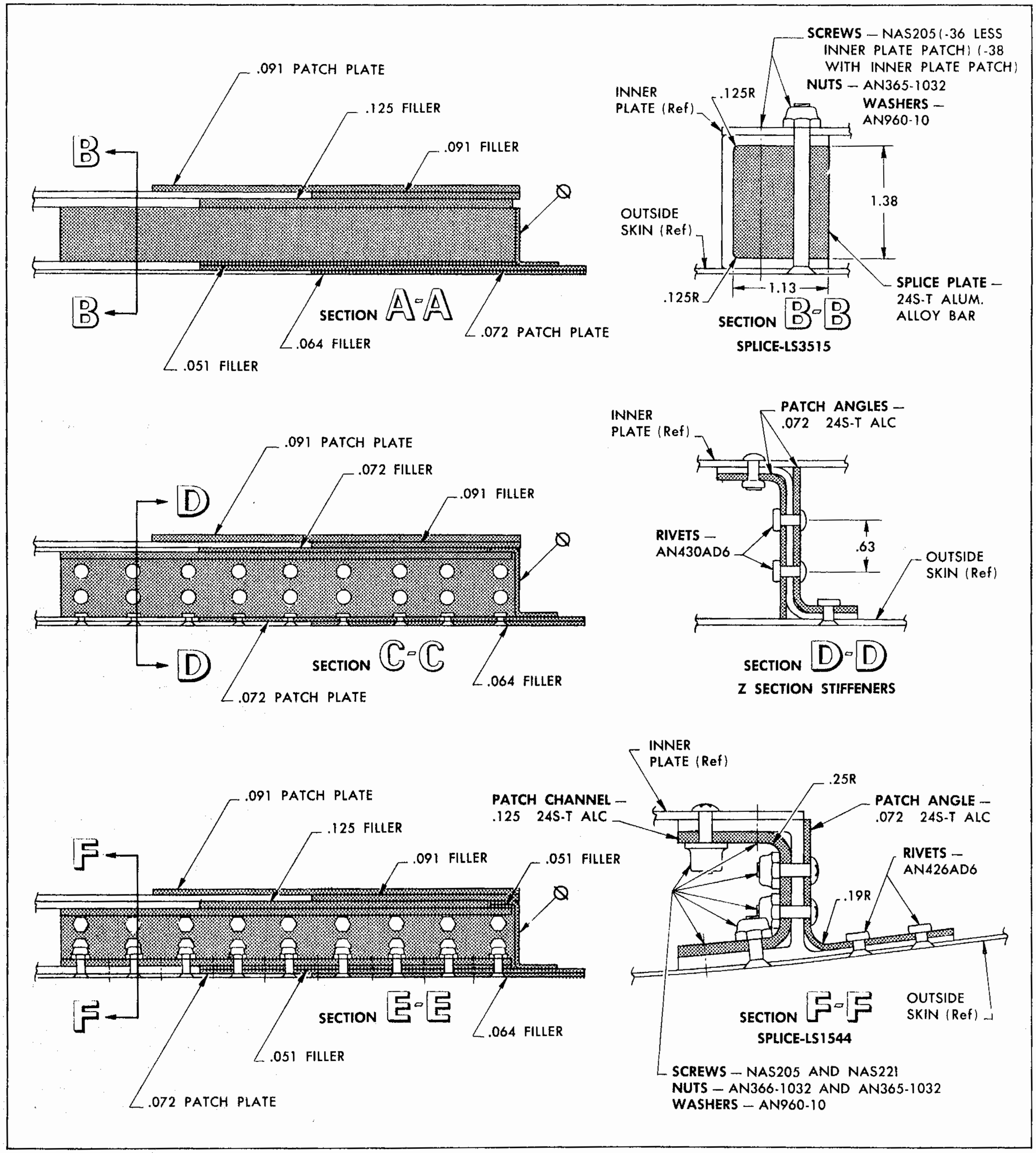


Figure 120A (Sheet 2 of 2 Sheets) — Dive Flap Repair, P-80B and P-80C Airplanes

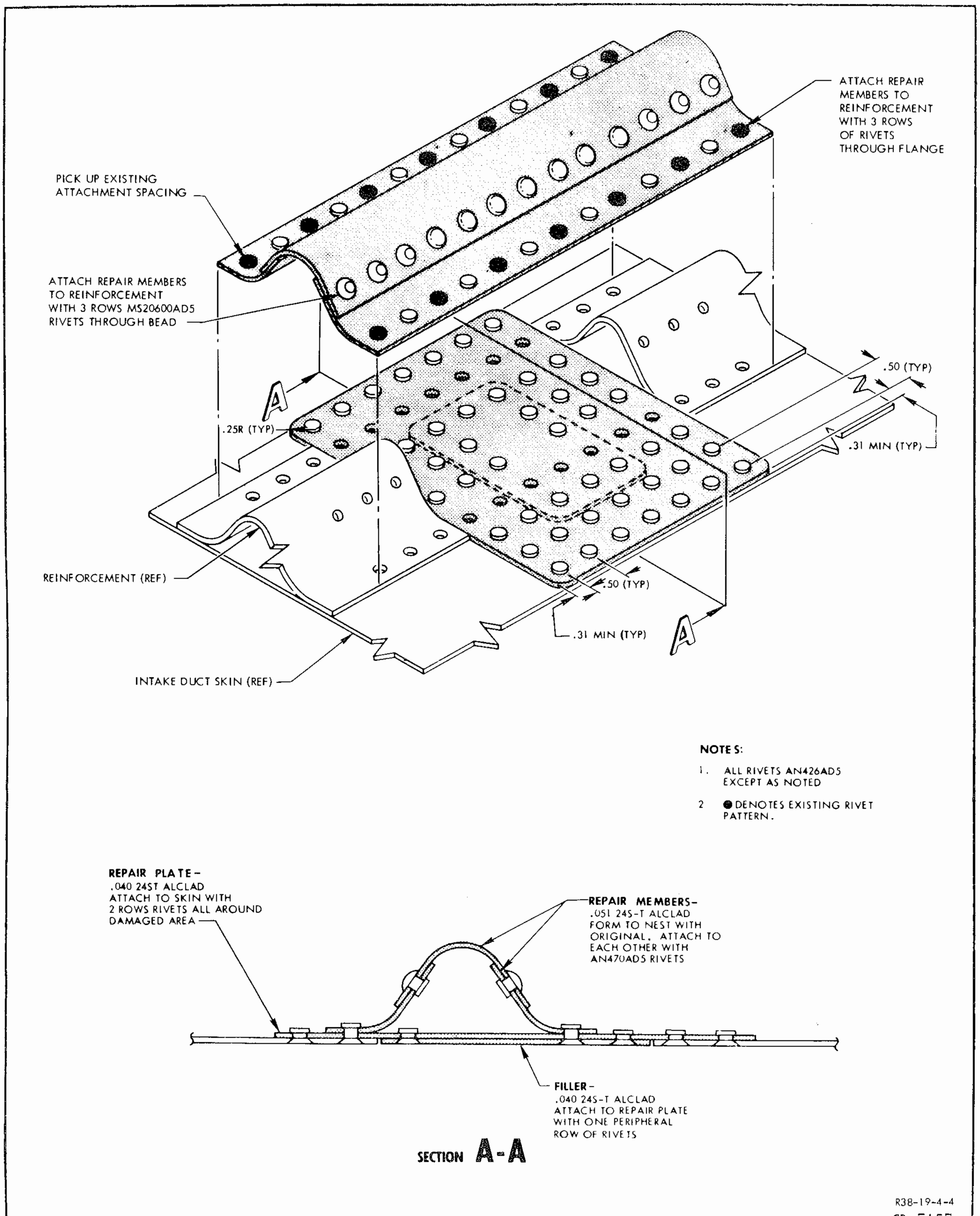


Figure 120A-1 — Duct Skin, and Reinforcement Repair

Part No.	Material			Remarks
	Spec. No.	Title	Size or Gage	
24S-T	AN-A-13	Sheet, Aluminum Alclad	.032	For replacement of aft skin. Repair of rings.
24S-T	AN-A-13	Sheet, Aluminum Alclad	.040	For repair of skin and interior structure.
24S-T	AN-A-13	Sheet, Aluminum Alclad	.040	For replacement of skin panels.
24S-T	AN-A-13	Sheet, Aluminum Alclad	.051	For repair of bulkhead rings, stringers, and formers.
24S-T	AN-A-13	Sheet, Aluminum Alclad	.064	For repair of interior structure and replacement of nose skin.
*24S-T	AN-A-13	Sheet, Aluminum Alclad	.072	For replacement of bulkheads.
*24S-T	AN-A-13	Sheet, Aluminum Alclad	.081	For replacement of bulkheads.
*24S-T	AN-A-13	Sheet, Aluminum Alclad	.091	For replacement of bulkheads and longerons.
*24S-T	AN-A-13	Sheet, Aluminum Alclad	.102	For replacement of bulkheads and longerons.
*24S-T	AN-A-13	Sheet, Aluminum Alclad	.125	For replacement of bulkheads and longerons.
*24S-T	AN-A-13	Sheet, Aluminum Alclad	.188	For replacement of bulkhead reinforcements.
*24S-T	AN-A-13	Sheet, Aluminum Alclad	.250	For replacement of bulkhead reinforcements.
24S-T	QQ-A-354	Bar Aluminum Alloy	1¼ x ¾	For channel repair — armament compartment.
NE8630	AN-S-12	Sheet, Steel	.042	For bulkhead repairs.
NE8630	AN-S-12	Sheet, Steel	.049	For bulkhead repairs.
NE8630	AN-S-12	Sheet, Steel	.063	For bulkhead and longeron repairs.
NE8630	AN-S-12	Sheet, Steel	.078	For bulkhead and longeron repairs.
NE8630	AN-S-12	Sheet, Steel	.093	For longeron repairs.
302-1A	AMS5515	Corr. Res. Steel	.035	For replacement of armament compartment parts.
302-1A	AMS5515	Corr. Res. Steel	.042	For repair of armament compartment parts.
347-1A	AN-QQ-S-757	Corr. and Heat Res. Steel	.035	For replacement of nose skins.
347-1A	AN-QQ-S-757	Corr. and Heat Res. Steel	.042	For repair of nose skins.
LS106	AN-A-13	Sheet Metal Angle	.051	For replacement of bulkhead stiffeners.
LS169	AN-A-13	Sheet Metal "J" Section	SRT .040	For replacement of mid section stiffeners.

* Aged Material. Age for ten hours at 375° F.

Table 5 (Sheet 1 of 3 Sheets) — Material for the Repair of Body Group

Part No.	Material			Remarks
	Spec. No.	Title	Size or Gage	
LS156	AN-A-13	Sheet Metal "J" Section	SRT .032	For replacement of aft fuselage stiffeners.
LS156	AN-A-13	Sheet Metal "J" Section	SRT .040	For replacement of aft fuselage stiffeners.
LS159	AN-A-13	Sheet Metal "J" Section	SRT .032	For replacement of aft section stringers.
LS303	QQ-A-354	Bulb Angle Extrusion	.051	For replacement of stringers.
LS358	QQ-A-354	Angle Extrusion	.125	For replacement of instrument panel support.
LS383	QQ-A-354	Bulb "T" Extrusion	.040	For replacement of aft section stiffener.
LS393	QQ-A-354	Hat Extrusion		For replacement of lower longeron — station 227-277
LS476	QQ-A-354	Extruded Channel	.125	For replacement of gun support channel.
LS477	QQ-A-354	"Z" Extrusion		For replacement of armament comp. stiffeners.
LS703	QQ-A-354	Bulb Angle Extrusion	.078	For replacement of aft fuselage stringers.
LS986	AN-A-8	Extruded Track		For replacement of dive flap tracks.
LS2207	QQ-A-354	Angle Extrusion	.078	For replacement of stiffeners — armament compartment.
LS2270	QQ-A-354	Bulb "T" Extrusion		For replacement of aft fuselage attachment.
LS3201	QQ-A-354	Angle Extrusion	.094	For replacement of stiffeners.
LS3203	QQ-A-354	Angle Extrusion	.062	For replacement of stiffeners.
LS3215	QQ-A-354	"T" Extrusion	.062	For replacement of aft section stringer.
LS3224	QQ-A-354	Angle Extrusion	.125	For replacement of stiffeners.
LS3228	QQ-A-354	Angle Extrusion	.094	For replacement of stiffeners.
LS3230	QQ-A-354	Angle Extrusion	.070	For replacement of stiffeners.
LS3234	QQ-A-354	Angle Extrusion	.094	For replacement of stiffener — station 163.
LS3251	QQ-A-354	Square Tube Extrusion	.062	For replacement of armament comp. supports.
LS3254	QQ-A-354	Angle Extrusion	.125	For replacement of stiffeners — armament compartment.
LS3320	QQ-A-354	Angle Extrusion	.188	For replacement of clips.
LS3357	QQ-A-354	Angle Extrusion	.078	For replacement of formers.
LS3458	QQ-A-354	Angle Extrusion	.051	For replacement of stiffeners.

Table 5 (Sheet 2 of 3 Sheets) — Material for the Repair of Body Group

Part No.	Material			Remarks
	Spec. No.	*Title*	*Size or Gage*	
LS3572	QQ-A-354	Angle Extrusion	.062	For replacement of stiffeners.
	AN426AD4	Rivets—100° Countersunk	1/8	For exterior repair.
	AN426AD5	Rivets—100° Countersunk	5/32	For exterior repair.
	AN426AD6	Rivets—100° Countersunk	3/16	For repair of longerons.
	AN426DD6	Rivets—100° Countersunk	3/16	For repair of bulkheads and longerons.
	AN430AD4	Rivets—Roundhead	1/8	For interior repairs.
	AN430AD5	Rivets—Roundhead	5/32	For interior repairs.
	AN430DD6	Rivets—Roundhead	3/16	For bulkhead and longeron repairs.
	AN3	Bolts	3/16	For repair of bulkheads, longerons and extrusions.
	AN4	Bolts	1/4	For repair of bulkheads and longerons.
	AN365-1032	Stop Nuts	3/16	For AN3 bolts and screws.
	AN366-1032	Anchor Nuts	3/16	For AN3 bolts and screws.
	AN365-428	Stop Nuts	1/4	For AN4 bolts and screws.
	AN366-428	Anchor Nuts	1/4	For AN4 bolts and screws.
	NAS205	100° Countersunk Screws	3/16	For longeron and bulkhead repairs.
	NAS206	100° Countersunk Screws	1/4	For longeron and bulkhead repairs.
	AN960	Washers	Assorted	
		Hardwood	1 3/8 x 3/4	For armament compartment support repairs.
SM-50	Navy S-142, Class A-1	Sealing Compound Prestite Eng. Co.		For cockpit pressure sealing.
TL-9840		Sealing Compound W. T. Fuller Paint Co.		For cockpit pressure sealing.
EC-800		Sealing Compound Minnesota Mining & Manufacturing Co.		For cockpit pressure sealing.
		Aluminum Foil		For cockpit pressure sealing.
		Paint Brush		For application of TL-9840 and EC-800 compounds.
		Ethyl Acetate		For thinning TL-9840 and EC-800 compounds.

Table 5 (Sheet 3 of 3 Sheets) — Material for the Repair of Body Group

SECTION V

ALIGHTING GEAR

1. LANDING GEAR.

The landing gear consists of two main gears that retract inboard into the wing, and one nose gear that retracts aft into the fuselage.

Negligible damage for the main and nose gear and the operating units of each gear, other than attachment holes, is restricted to nicks and dents which, after being cleaned up to regular shape, do not exceed 1/16 inch in depth and do not occur closer than 3/8 inch from an attachment hole. Wear in the attachment holes is negligible damage provided the wear or elongation does not exceed the limits prescribed in the allowable wear tolerance illustrations, figures 120D and 120E. The original clearances shown in the table are the original manufacturing clearances. If the clearance between the pin and hole exceeds that indicated on figures 120D and 120E, either bush the hole as described in figures 120B and 120C, or replace the pin or bolt, or both. Do not install oversize bolts or pins. The maximum original ID of the hole and the original OD of the pin or bolt are indicated in the keys to figures 120D and 120E to provide data for determining which of the units has worn. See section I, paragraph 20, for installation of bushings.

No additional repairs other than reaming and bushing of attachment holes is authorized for the main or nose landing gear.

2. LANDING GEAR DOORS.

a. GENERAL.—Doors cover all landing gear so that they fair into the fuselage and wing and form portions of the airplane contour. See figure 121 for details of construction.

b. NEGLIGIBLE DAMAGE.—Refer to the negligible damage drawings indexed on the key to reference diagram, figure 121, for permissible damage to the landing gear doors. Negligible damage for landing gear doors other than attachment holes and damage not indexed on figure 121 is restricted to nicks or dents which, after being cleaned up to a regular shape, do not exceed 1/16 inch in depth and do not occur closer than 3/8 inch from

Part No.	*Material*			*Remarks*
	Spec. No.	*Title*	*Size or Gage*	
24S-T	AN-A-13	Sheet, Aluminum Alclad	.040	For outer skin insertions.
24S-T	AN-A-13	Sheet, Aluminum Alclad	.051	For skin and interior repairs.
24S-T	AN-A-13	Sheet, Aluminum Alclad	.064	For interior repairs.
24S-T	AN-A-13	Sheet, Aluminum Alclad	.072	For channel repairs.
24S-T	AN-A-13	Sheet, Aluminum Alclad	.081	For "Z" section repair.
☆24S-T	AN-A-13	Sheet, Aluminum Alclad	.040	Ror replacement of skin and doublers.
☆24S-T	AN-A-13	Sheet, Aluminum Alclad	.051	For replacement of skin and "Z" sections.
☆24S-T	AN-A-13	Sheet, Aluminum Alclad	.064	For replacement of channels.
☆24S-T	AN-A-13	Sheet, Aluminum Alclad	.072	For replacement of "Z" sections.
☆24S-T	AN-A-13	Sheet, Aluminum Alclad	.125	For replacement of support.
LS348	QQ-A-331	Extruded Hinge		For replacement of hinge.
LS3228	QQ-A-354	Angle Extrusion	.094	For replacement of angle.
	AN426AD4	Rivets—100° Countersunk	1/8	For skin repair.
	AN426AD5	Rivets—100° Countersunk	5/32	For skin repair.
	AN430AD5	Rivets—100° Countersunk	5/32	For interior repair.
	AN430DD6	Rivets—100° Countersunk	3/16	For interior repair.

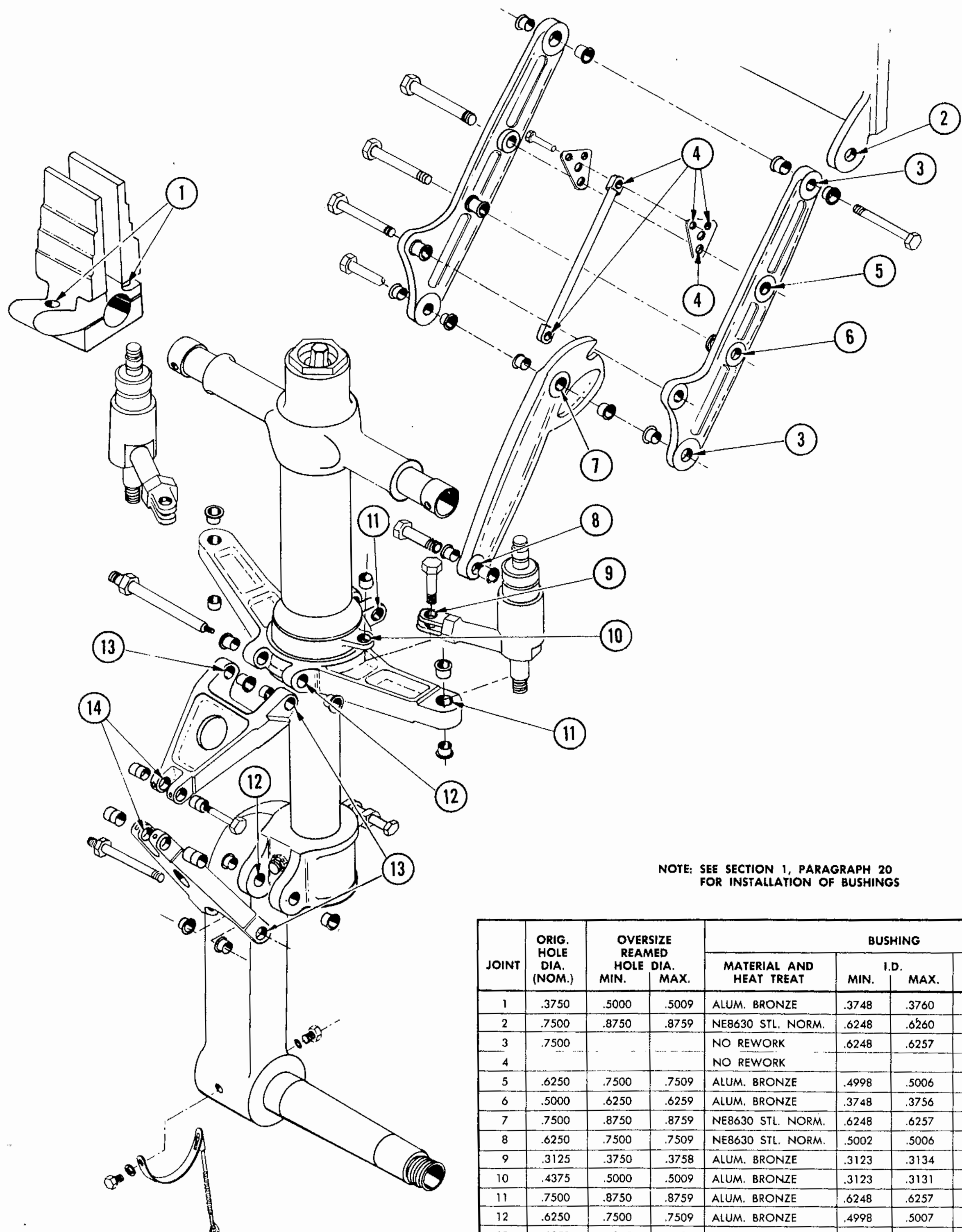
☆Aged Material. Aged for ten hours at 375° F.

Table 6 — Material for Repair of Landing Gear Doors

a rivet or attachment hole. Elongated or worn holes is negligible damage provided the wear or elongation does not exceed the limits prescribed in the allowable wear diagram, figure 121A. The original clearances noted in figure 121 are the original manufacturing maximum clearances. Bushings in the door operating mechanism may be replaced, but not with oversize bushings. As the nose-gear door forms a portion of the lower nose fuselage contour, and the main-gear doors form a part of the lower wing skin surface, all dents and nicks in the outside skins must be smoothed and the contour restored, to prevent aerodynamic disturbances.

c. DAMAGE REPAIRABLE BY PATCHING.—The applicable repairs are indexed on the key to reference diagram, figure 121. Parts not indexed are not repairable, and are those items that are either too highly loaded, too inaccessible, or too small to be repaired economically.

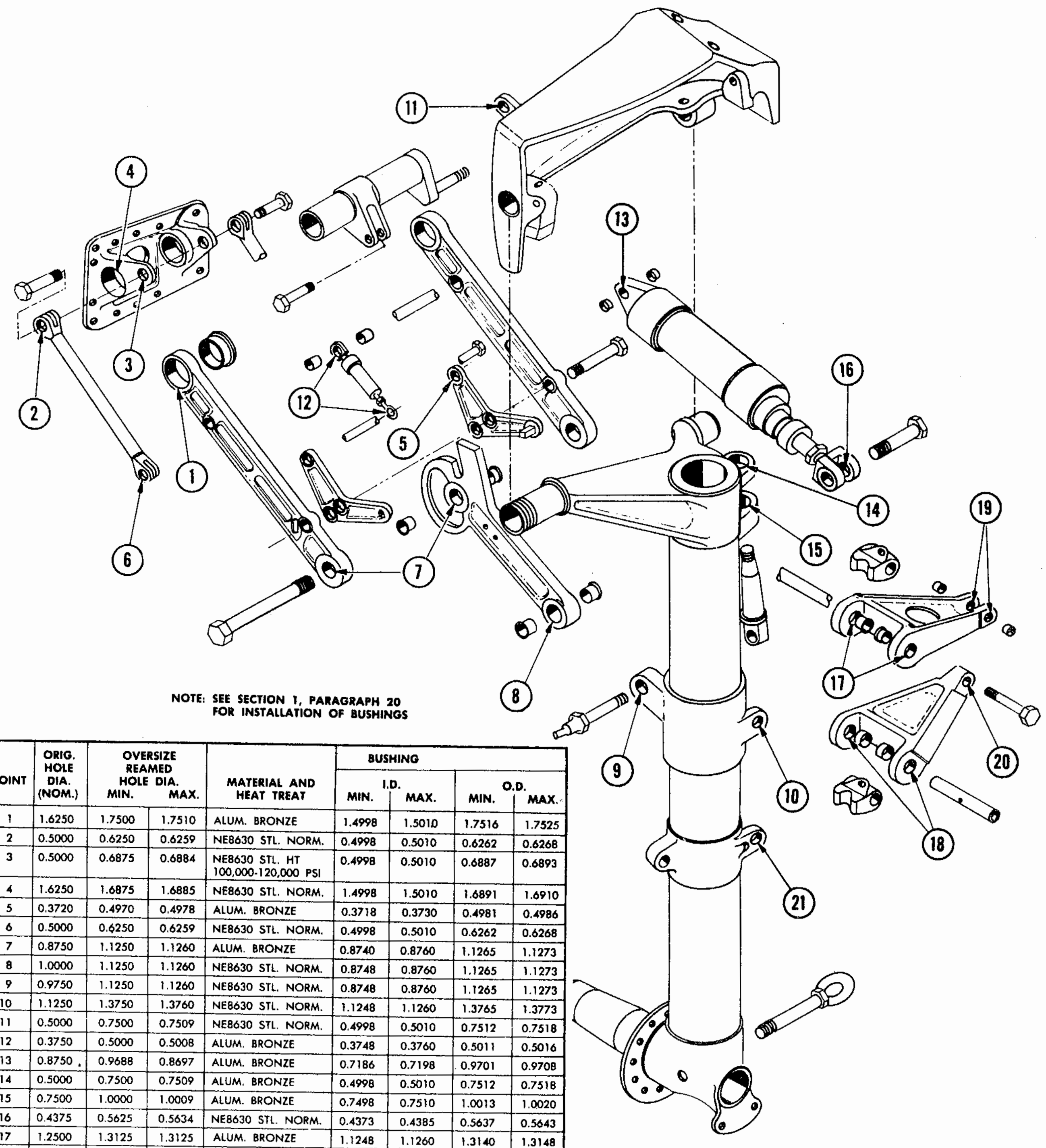
d. DAMAGE NECESSITATING REPLACEMENT. Damage in excess of that described as negligible to items not indicated on the key to the reference diagram require replacement of the item involved. Skin originally constructed of aged material (24S-T80 and 24S-T81) must be replaced with identical material. The gage of the replacement part must be the same gage as that of the original, as the next heavier gage 24S-T will change the contour of the wing or fuselage. Interior structure originally constructed of aged 24S-T may be replaced with the next heavier gage 24S-T unaged, provided interferences are not so introduced.



NOTE: SEE SECTION 1, PARAGRAPH 20 FOR INSTALLATION OF BUSHINGS

JOINT	ORIG. HOLE DIA. (NOM.)	OVERSIZE REAMED HOLE DIA.		BUSHING				
		MIN.	MAX.	MATERIAL AND HEAT TREAT	I.D. MIN.	I.D. MAX.	O.D. MIN.	O.D. MAX.
1	.3750	.5000	.5009	ALUM. BRONZE	.3748	.3760	.5011	.5016
2	.7500	.8750	.8759	NE8630 STL. NORM.	.6248	.6260	.8763	.8770
3	.7500			NO REWORK	.6248	.6257		
4				NO REWORK				
5	.6250	.7500	.7509	ALUM. BRONZE	.4998	.5006	.7512	.7518
6	.5000	.6250	.6259	ALUM. BRONZE	.3748	.3756	.6262	.6268
7	.7500	.8750	.8759	NE8630 STL. NORM.	.6248	.6257	.8763	.8770
8	.6250	.7500	.7509	NE8630 STL. NORM.	.5002	.5006	.7512	.7518
9	.3125	.3750	.3758	ALUM. BRONZE	.3123	.3134	.3761	.3766
10	.4375	.5000	.5009	ALUM. BRONZE	.3123	.3131	.5011	.5016
11	.7500	.8750	.8759	ALUM. BRONZE	.6248	.6257	.8763	.8770
12	.6250	.7500	.7509	ALUM. BRONZE	.4998	.5007	.7512	.7518
13	.6250	.6875	.6884	ALUM. BRONZE	.4998	.5006	.6887	.6893
14	.3750	.5000	.5009		.2498	.2506	.5011	.5016

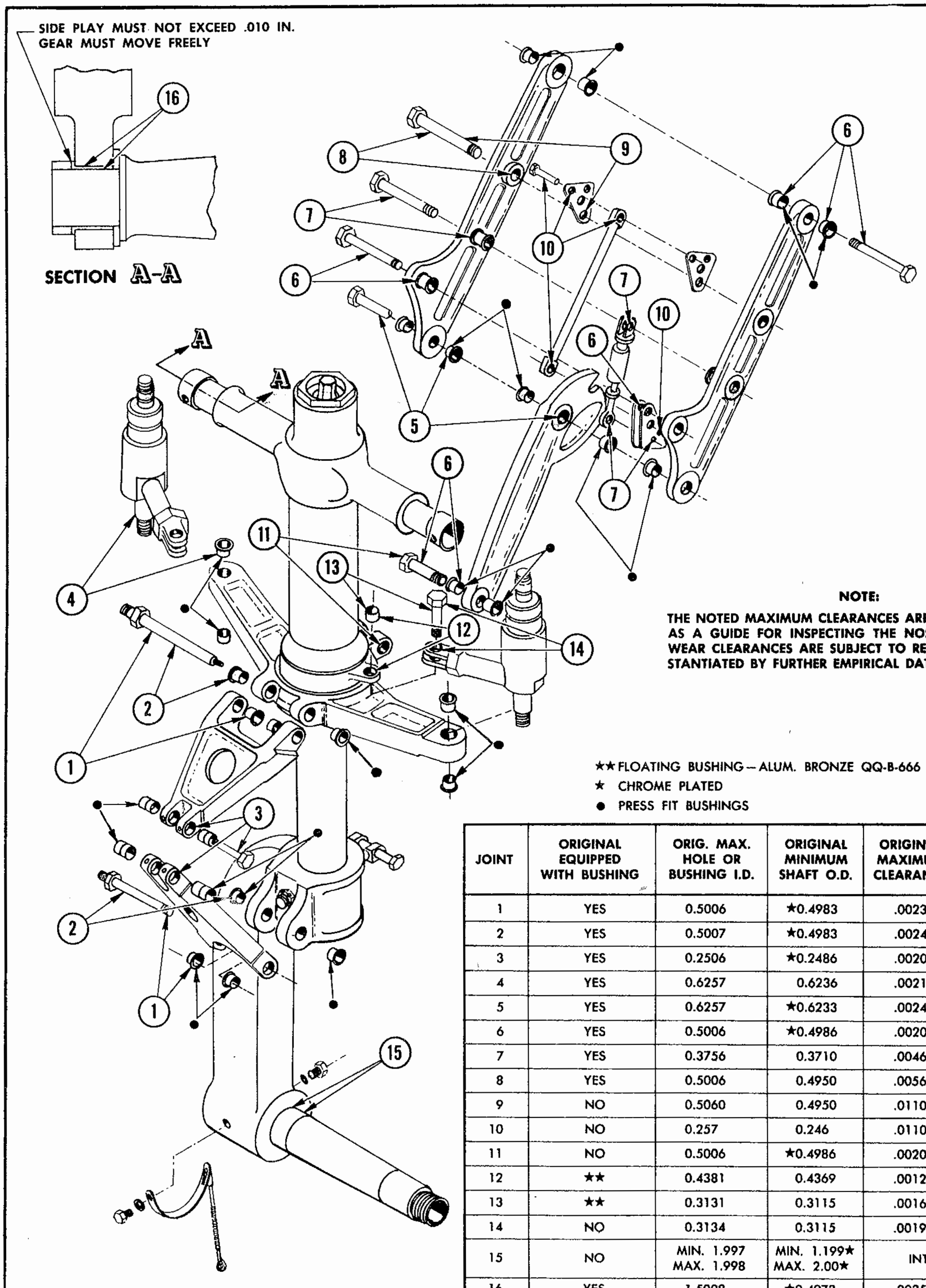
Figure 120B — Permissible Reaming and Bushing, Nose Landing Gear



NOTE: SEE SECTION 1, PARAGRAPH 20 FOR INSTALLATION OF BUSHINGS

JOINT	ORIG. HOLE DIA. (NOM.)	OVERSIZE REAMED HOLE DIA. MIN.	MAX.	MATERIAL AND HEAT TREAT	BUSHING I.D. MIN.	MAX.	O.D. MIN.	MAX.
1	1.6250	1.7500	1.7510	ALUM. BRONZE	1.4998	1.5010	1.7516	1.7525
2	0.5000	0.6250	0.6259	NE8630 STL. NORM.	0.4998	0.5010	0.6262	0.6268
3	0.5000	0.6875	0.6884	NE8630 STL. HT 100,000-120,000 PSI	0.4998	0.5010	0.6887	0.6893
4	1.6250	1.6875	1.6885	NE8630 STL. NORM.	1.4998	1.5010	1.6891	1.6910
5	0.3720	0.4970	0.4978	ALUM. BRONZE	0.3718	0.3730	0.4981	0.4986
6	0.5000	0.6250	0.6259	NE8630 STL. NORM.	0.4998	0.5010	0.6262	0.6268
7	0.8750	1.1250	1.1260	ALUM. BRONZE	0.8740	0.8760	1.1265	1.1273
8	1.0000	1.1250	1.1260	NE8630 STL. NORM.	0.8748	0.8760	1.1265	1.1273
9	0.9750	1.1250	1.1260	NE8630 STL. NORM.	0.8748	0.8760	1.1265	1.1273
10	1.1250	1.3750	1.3760	NE8630 STL. NORM.	1.1248	1.1260	1.3765	1.3773
11	0.5000	0.7500	0.7509	NE8630 STL. NORM.	0.4998	0.5010	0.7512	0.7518
12	0.3750	0.5000	0.5008	ALUM. BRONZE	0.3748	0.3760	0.5011	0.5016
13	0.8750	0.9688	0.8697	ALUM. BRONZE	0.7186	0.7198	0.9701	0.9708
14	0.5000	0.7500	0.7509	ALUM. BRONZE	0.4998	0.5010	0.7512	0.7518
15	0.7500	1.0000	1.0009	ALUM. BRONZE	0.7498	0.7510	1.0013	1.0020
16	0.4375	0.5625	0.5634	NE8630 STL. NORM.	0.4373	0.4385	0.5637	0.5643
17	1.2500	1.3125	1.3125	ALUM. BRONZE	1.1248	1.1260	1.3140	1.3148
18	1.2500	1.3125	1.3125	ALUM. BRONZE	1.1248	1.1260	1.3140	1.3148
19	0.5000	0.6250	0.6259	ALUM. BRONZE	0.4998	0.5010	0.6262	0.6268
20	0.6250	0.7500	0.7509	ALUM. BRONZE	0.4998	0.5010	0.7512	0.7518
21	1.1250	1.3750	1.3760	NE8630 STL. NORM.	1.1248	1.1260	1.3765	1.3773

Figure 120C — Permissible Reaming and Bushing, Main Landing Gear

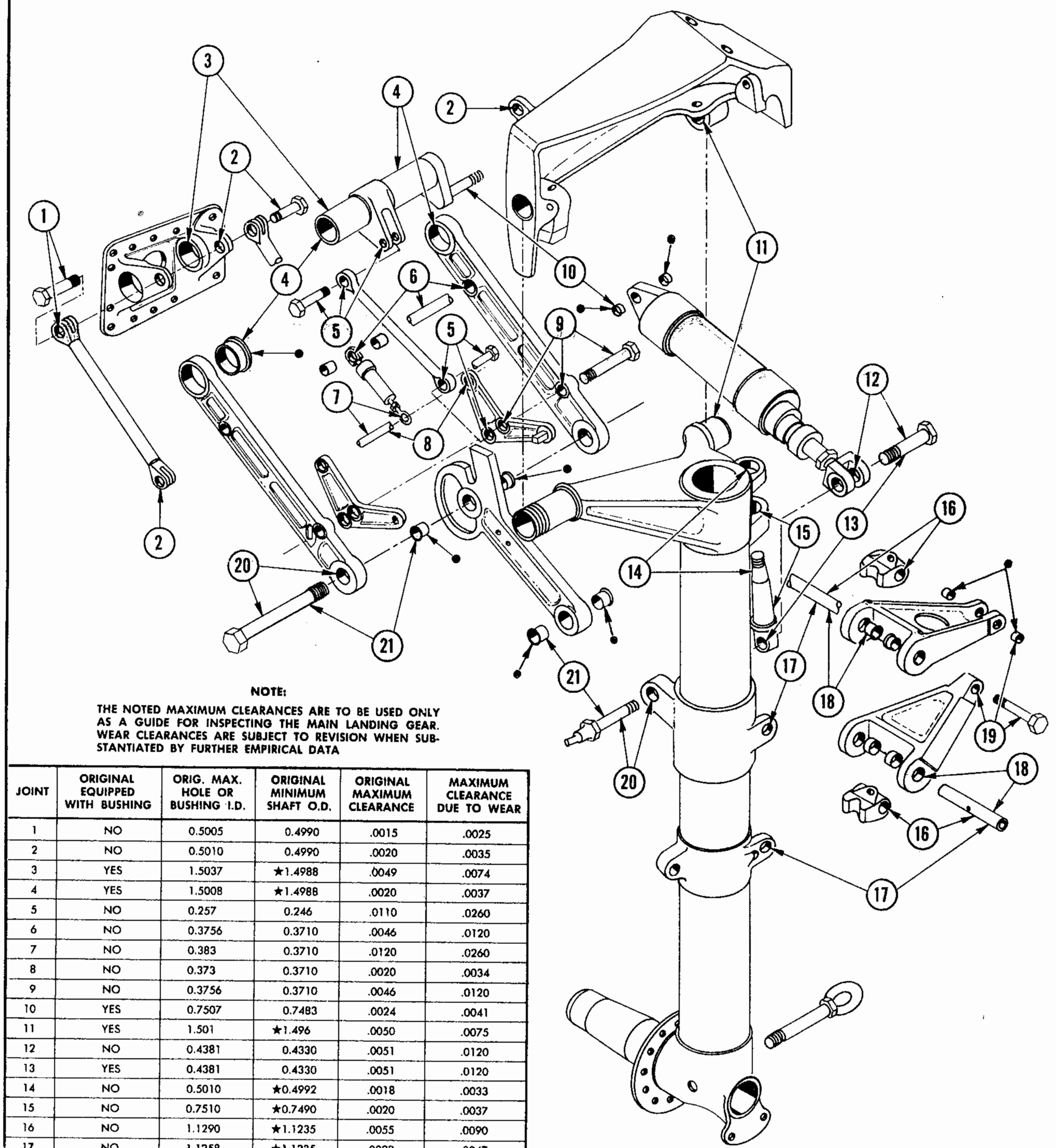


NOTE:
THE NOTED MAXIMUM CLEARANCES ARE TO BE USED ONLY AS A GUIDE FOR INSPECTING THE NOSE LANDING GEAR. WEAR CLEARANCES ARE SUBJECT TO REVISION WHEN SUBSTANTIATED BY FURTHER EMPIRICAL DATA

★★ FLOATING BUSHING — ALUM. BRONZE QQ-B-666 GR 8
★ CHROME PLATED
● PRESS FIT BUSHINGS

JOINT	ORIGINAL EQUIPPED WITH BUSHING	ORIG. MAX. HOLE OR BUSHING I.D.	ORIGINAL MINIMUM SHAFT O.D.	ORIGINAL MAXIMUM CLEARANCE	MAXIMUM CLEARANCE DUE TO WEAR
1	YES	0.5006	★0.4983	.0023	.0042
2	YES	0.5007	★0.4983	.0024	.0042
3	YES	0.2506	★0.2486	.0020	.0038
4	YES	0.6257	0.6236	.0021	.0034
5	YES	0.6257	★0.6233	.0024	.0041
6	YES	0.5006	★0.4986	.0020	.0034
7	YES	0.3756	0.3710	.0046	.0120
8	YES	0.5006	0.4950	.0056	.0120
9	NO	0.5060	0.4950	.0110	.0200
10	NO	0.257	0.246	.0110	.0200
11	NO	0.5006	★0.4986	.0020	.0034
12	★★	0.4381	0.4369	.0012	.0022
13	★★	0.3131	0.3115	.0016	.0025
14	NO	0.3134	0.3115	.0019	.0030
15	NO	MIN. 1.997 MAX. 1.998	MIN. 1.199★ MAX. 2.00★	INTERFERENCE FIT	
16	YES	1.5008	★0.4973	.0035	.0069

Figure 120D — Allowable Wear Tolerances, Nose Landing Gear

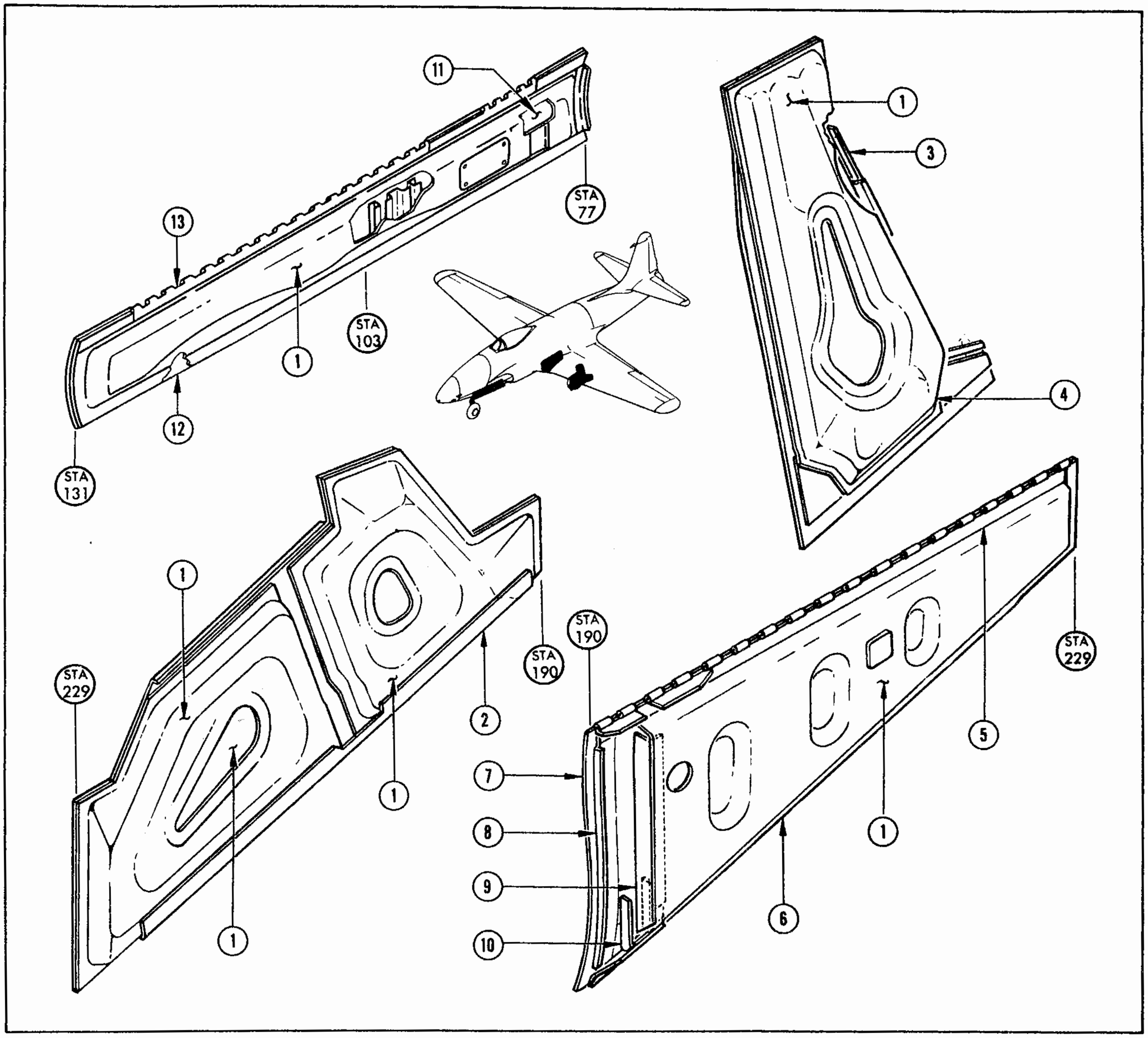


NOTE:
THE NOTED MAXIMUM CLEARANCES ARE TO BE USED ONLY AS A GUIDE FOR INSPECTING THE MAIN LANDING GEAR. WEAR CLEARANCES ARE SUBJECT TO REVISION WHEN SUBSTANTIATED BY FURTHER EMPIRICAL DATA

JOINT	ORIGINAL EQUIPPED WITH BUSHING	ORIG. MAX. HOLE OR BUSHING I.D.	ORIGINAL MINIMUM SHAFT O.D.	ORIGINAL MAXIMUM CLEARANCE	MAXIMUM CLEARANCE DUE TO WEAR
1	NO	0.5005	0.4990	.0015	.0025
2	NO	0.5010	0.4990	.0020	.0035
3	YES	1.5037	★1.4988	.0049	.0074
4	YES	1.5008	★1.4988	.0020	.0037
5	NO	0.257	0.246	.0110	.0260
6	NO	0.3756	0.3710	.0046	.0120
7	NO	0.383	0.3710	.0120	.0260
8	NO	0.373	0.3710	.0020	.0034
9	NO	0.3756	0.3710	.0046	.0120
10	YES	0.7507	0.7483	.0024	.0041
11	YES	1.501	★1.496	.0050	.0075
12	NO	0.4381	0.4330	.0051	.0120
13	YES	0.4381	0.4330	.0051	.0120
14	NO	0.5010	★0.4992	.0018	.0033
15	NO	0.7510	★0.7490	.0020	.0037
16	NO	1.1290	★1.1235	.0055	.0090
17	NO	1.1258	★1.1235	.0023	.0047
18	YES	1.1258	★1.1235	.0023	.0047
19	YES	0.5006	★0.4986	.0020	.0034
20	NO	0.8757	★0.8730	.0027	.0048
21	YES	0.8757	★0.8730	.0027	.0048

★ CHROME PLATED
● PRESS FIT BUSHINGS

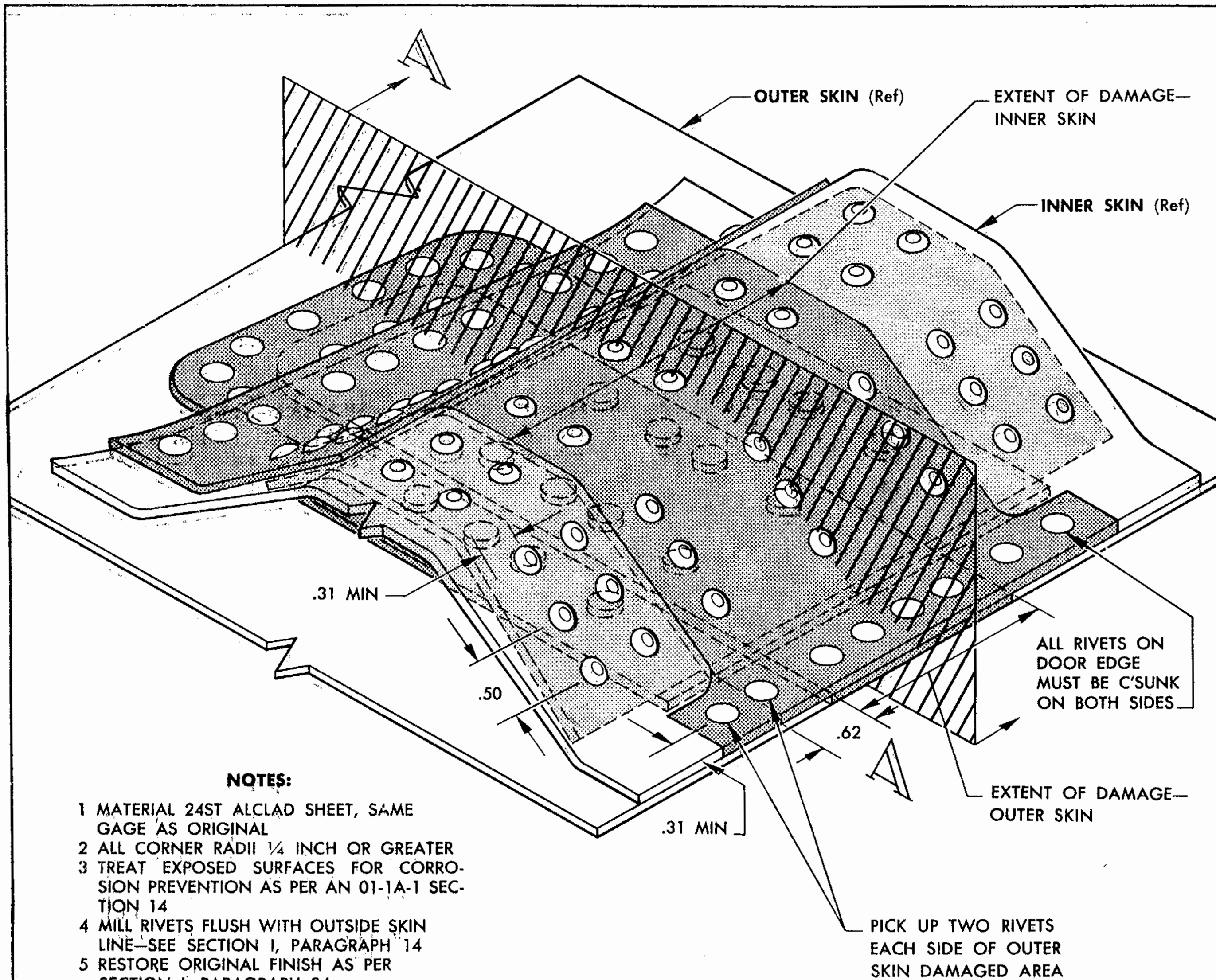
Figure 120E — Allowable Wear Tolerances, Main Landing Gear



Item	*Part Name*	*Figure Reference Neg. Damage*	*Figure Reference Repair*	*Remarks*
1	Inner Skin	130	122	24S-T80 — .051
2	"Z"	131	148	24S-T80 — .051
3	Channel	131	143	24S-T80 — .064
4	Outer Skin	130	122	24S-T80 — .040
5	Hinge			53S-T Extr., LS3487
6	"Z"	131	148	24S-T80 — .072
7	Outer Skin	130	122	24S-T— .064
8	Doubler			24S-T80 — .040
9	Angle	132	139	LS3228
10	Support			24S-T80 — .125
11	Outer Skin	130	122	24S-T81
12	Strip			LS1542
13	Hinge			LS3560 (or LS1162)

NOTE: Items not indicated are not repairable.

Figure 121 — Landing Gear Doors Reference Diagram



NOTES:

1. MATERIAL 24ST ALCLAD SHEET, SAME GAGE AS ORIGINAL
2. ALL CORNER RADII ¼ INCH OR GREATER
3. TREAT EXPOSED SURFACES FOR CORROSION PREVENTION AS PER AN 01-1A-1 SECTION 14
4. MILL RIVETS FLUSH WITH OUTSIDE SKIN LINE—SEE SECTION I, PARAGRAPH 14
5. RESTORE ORIGINAL FINISH AS PER SECTION I, PARAGRAPH 24

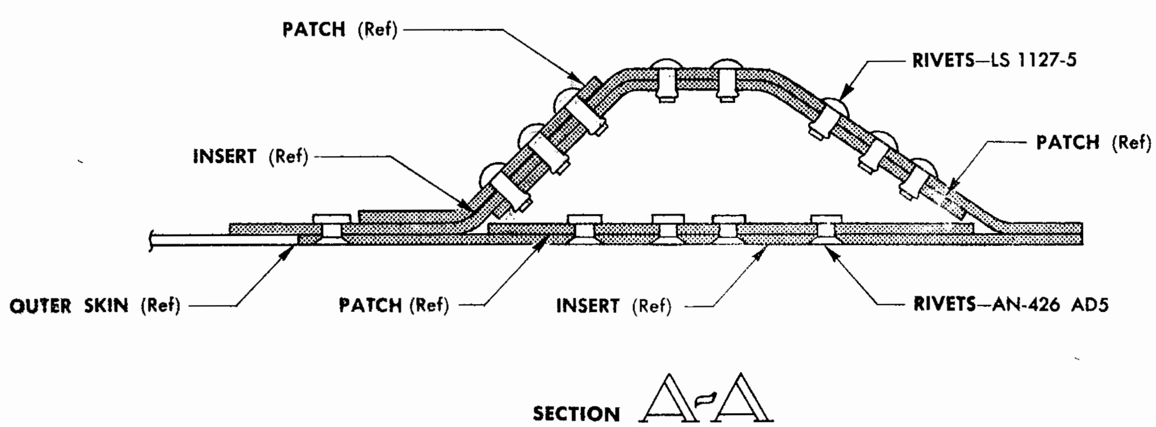
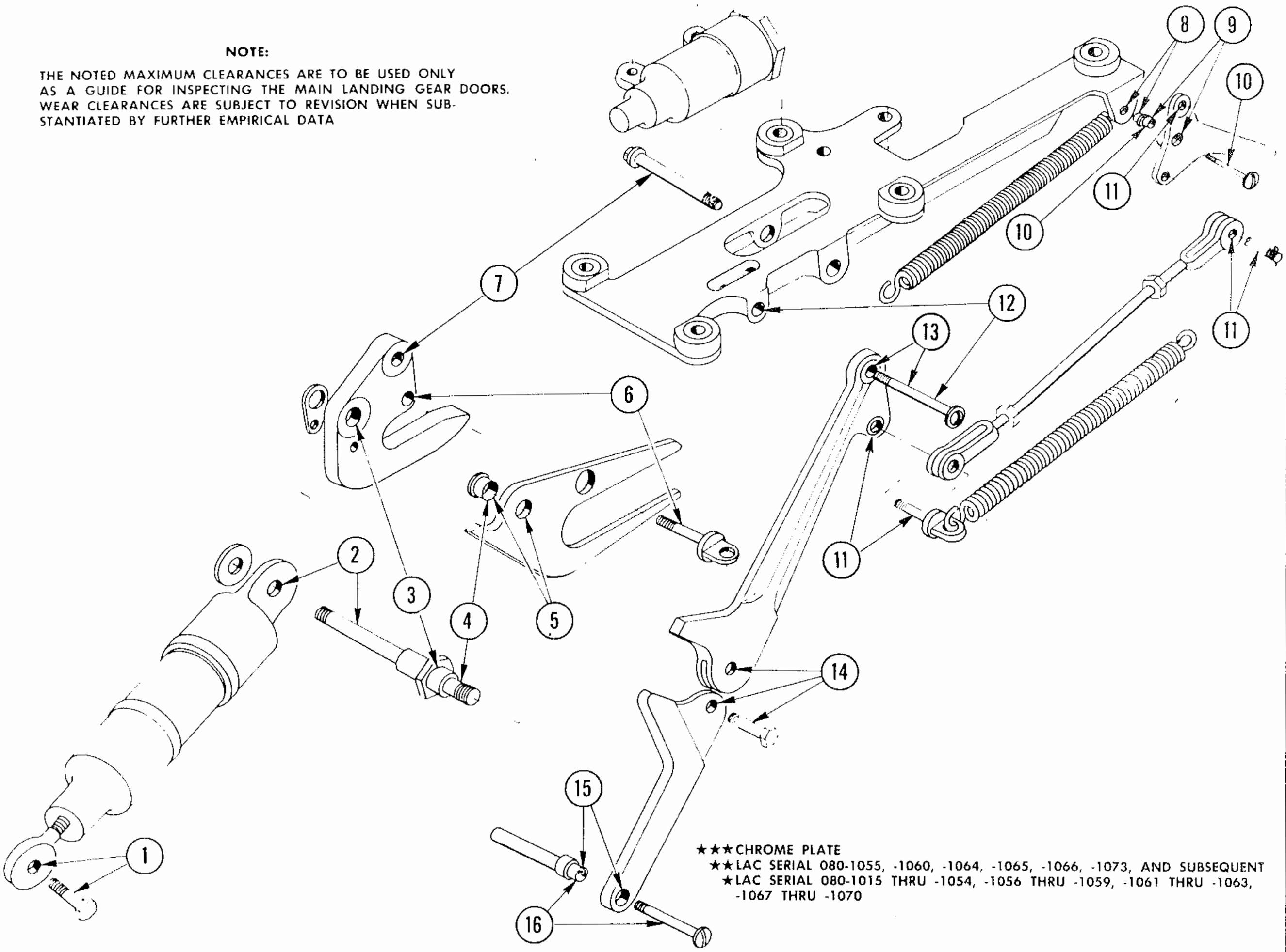


Figure 121A—Landing Gear Door Skin and Doubler Repair

NOTE:
THE NOTED MAXIMUM CLEARANCES ARE TO BE USED ONLY AS A GUIDE FOR INSPECTING THE MAIN LANDING GEAR DOORS. WEAR CLEARANCES ARE SUBJECT TO REVISION WHEN SUBSTANTIATED BY FURTHER EMPIRICAL DATA



★★★CHROME PLATE
★★LAC SERIAL 080-1055, -1060, -1064, -1065, -1066, -1073, AND SUBSEQUENT
★LAC SERIAL 080-1015 THRU -1054, -1056 THRU -1059, -1061 THRU -1063, -1067 THRU -1070

JOINT	ORIGINAL EQUIPPED WITH BUSHING	ORIG. MAX. HOLE OR BUSHING I.D.	ORIGINAL MINIMUM SHAFT O.D.	ORIGINAL MAXIMUM CLEARANCE	MAXIMUM CLEARANCE DUE TO WEAR
1	YES	0.3125	0.309	.0035	.0100
2	YES	0.3125	0.3085	.0040	.0120
3★	NO	0.3759	0.3710	.0049	.0120
3★★	NO	0.5634	0.5610	.0024	.0041
4	NO	0.3134	0.3085	.0049	.0120
5	NO	0.4384	0.4356	.0028	.0048
6	NO	0.1930	0.1860	.0070	.0120
7	NO	0.3759	0.3710	.0049	.0120
8	NO	0.3134	0.3106	.0028	.0048
9	NO	0.3144	0.3106	.0028	.0048
10	NO	0.1980	0.1840	.0140	.0190
11	NO	0.1940	0.1840	.0100	.0140
12	NO	0.1883	0.1840	.0043	.0120
13	NO	0.1908	0.1840	.0068	.0120
14	NO	0.1908	0.1889	.0019	.0030
15	NO	0.3134	0.3106★★★	.0028	.0048
16	NO	0.1940	0.1840	.0100	.0140

Figure 122 — Allowable Wear Tolerances, Landing Gear Doors

SECTION VI

ENGINE SECTION

1. GENERAL.

The intake ducts and the tail pipe are the only repairable portions of the engine section discussed in this handbook. The ducts for the F-80A and the RF-80A are shown in figure 123. Alcohol-water injection has been added for the F-80B and F-80C airplanes as shown in figures 91B and 123C. Intake duct leading edges are 3S aluminum, and are adaptable to welded repairs.

2. NEGLIGIBLE DAMAGE.

Refer to the negligible damage drawings listed on the keys to figures 123, 123C, and 91B. Negligible damage not listed in these keys is restricted to small nicks or dents which, after being cleaned up to a regular shape, do not exceed $1/16$ inch in depth and do not occur closer than $3/8$ inch to a rivet or attaching hole. All holes in the skins must be repaired to prevent leakage.

3. REPAIRABLE DAMAGE.

The applicable repairs to intake ducts are indexed on the keys to reference diagrams, figures 123, 123C, and 91B. Parts not indexed are not repairable. Be sure that repairs to the inside skins do not permit leakage of air. The portion of the intake ducts constructed of 3S aluminum may be repaired by welded patches.

Temporary repairs are approved for the tail pipe as shown in figure 124. Use a section of used tail pipe as repair material. Tailpipe repairs for cracks up to 12 inches in length and without any visible damage to the surrounding area, are to be closed by hammering the edges into a concentric surface, stop drilling the ends of the crack, and welding. Oxyacetylene, arc-weld or heli-arc can be used in welding, but heli-arc is recommended when available. The welded surface does not require grinding for finishing purposes. Doubler strips are to be used on cracks over 12 inches in length. Use the same procedure as above except the drilled holes at the ends of the crack will not be filled with weld material, since they will be used as vent holes for any air or gases trapped between the doubler strip and the tailpipe. After the crack is welded, place the doubler strip over the welded crack and seamweld to the parent material from the outside. If the crack has been welded smoothly, no grinding is necessary before welding on the doubler. In instances where the area surrounding the crack shows signs of damage or when large sections of the tailpipe have been blown out, a patch will be welded into the pipe after the necessary preparations have been completed to prepare damaged area for welding.

4. DAMAGE NECESSITATING REPLACEMENT.

Damage in excess of that described as negligible for items not indicated on the keys to figures 123, 123C, and 91B requires replacement of the item involved. Skins and doublers originally constructed of aged material (24S-T81) must be replaced with identical material. The gage of the replacement part must be the same as the original skin or doubler. Interior structure originally constructed of aged 24S-T may be replaced with parts constructed of 24S-T unaged material if no interferences are encountered.

5. F-80 exhaust tail pipe assemblies, H077000000, condemned due to cracking at cutouts for the installation of channel assemblies V371010400 and V371010600, will be repaired as follows:

a. Locally manufacture channel assembly, V371010400, in accordance with figure 122A. Dimensions will be the same except for the over-all length. Old length 4.380 inches, new length will be 6.880 inches.

Locate and drill 2 additional holes in new channel assembly (one at each end) 1 inch outboard from center of the last hole in original channel assembly, V371010-400.

Drill 2 additional holes in reinforcement channel to align with the 2 additional holes in newly manufactured channel.

Install new channel assembly using 5 screws, AN 525-10-32, 5 nuts, AN 363-10-32, and 5 washers, AN 960-10, to each new channel.

b. Locally manufacture channel assembly, V371010600 in accordance with figure 122B. Dimensions will be the same except for the overall length. Old length 3.500 inches, new length will be 6.250 inches.

Locate and drill 2 additional holes in new channel assembly (1 at each end) 1.375 inches outboard from center of the last hole in the original channel assembly, V371010600.

Drill 2 additional holes in reinforcement channel to align with the 2 additional holes in newly manufactured channel.

Install new channel assembly using 5 screws, AN 525-10-32, 5 nuts, AN 363-10-32, and 5 washers, AN 960-10 to each new channel.

Part No.	Material			Remarks
	Spec. No.	*Title*	*Size or Gage*	
24S-T	AN-A-13	Sheet, Aluminum Alclad	.032	For repair of duct skins.
24S-T	AN-A-13	Sheet, Aluminum Alclad	.040	For repair of skins.
24S-T	AN-A-13	Sheet, Aluminum Alclad	.051	For repair of lips.
24S-T	AN-A-13	Sheet, Aluminum Alclad	.064	For repair of hat and ring stiffeners.
24S-T	AN-A-13	Sheet, Aluminum Alclad	.072	For repair of stiffeners.
24S-T	AN-A-13	Sheet, Aluminum Alclad	.102	For angle repair.
24S-T	AN-A-13	Sheet, Aluminum Alclad	.020	For repair of tail pipe outer skin
*24S-T	AN-A-13	Sheet, Aluminum Alclad	.032	For replacement of skin.
*24S-T	AN-A-13	Sheet, Aluminum Alclad	.040	For replacement of skin.
*24S-T	AN-A-13	Sheet, Aluminum Alclad	.064	For replacement of hat stiffeners and angles.
*24S-T	AN-A-13	Sheet, Aluminum Alclad	.081	For replacement of angles and doublers.
*24S-T	AN-A-13	Sheet, Aluminum Alclad	.091	For replacement of angles.
347-1A	AN-QQ-S-757	Corr. & Heat Res. Steel	.030	For replacement of rings, skins, and doublers.
347-1A	AN-QQ-S-757	Corr. & Heat Res. Steel	.037	For repair of rings, skin, and doublers.
347-1A	AN-QQ-S-757	Corr. & Heat Res. Steel	.063	For repair of tail pipes.
3SO	QQ-A-359	Aluminum Alloy	.051	For repair of leading edge skin.
	AN426AD4	Rivets—100° Countersunk	1/8	For skin repairs.
	AN426AD5	Rivets—100° Countersunk	5/32	For skin repairs.
	AN430AD4	Rivets—Roundhead	1/8	For angle repairs.
	AN430AD5	Rivets—Roundhead	5/32	For angle and stiffener repairs.
	AN430AD6	Rivets—Roundhead	3/16	For stiffener repairs.
	QQ-R-571	Welding Rod, Type D		For welding leading edge skins.
	AC11313	Flux		For QQ-R-571 welding rod.
	AZ00604	Nut—Solar Aircraft Co.		For tail pipe repair members.

*Aged materials. Age 10 hours at 375°F.

Table 7 — Material for Repair of the Engine Section

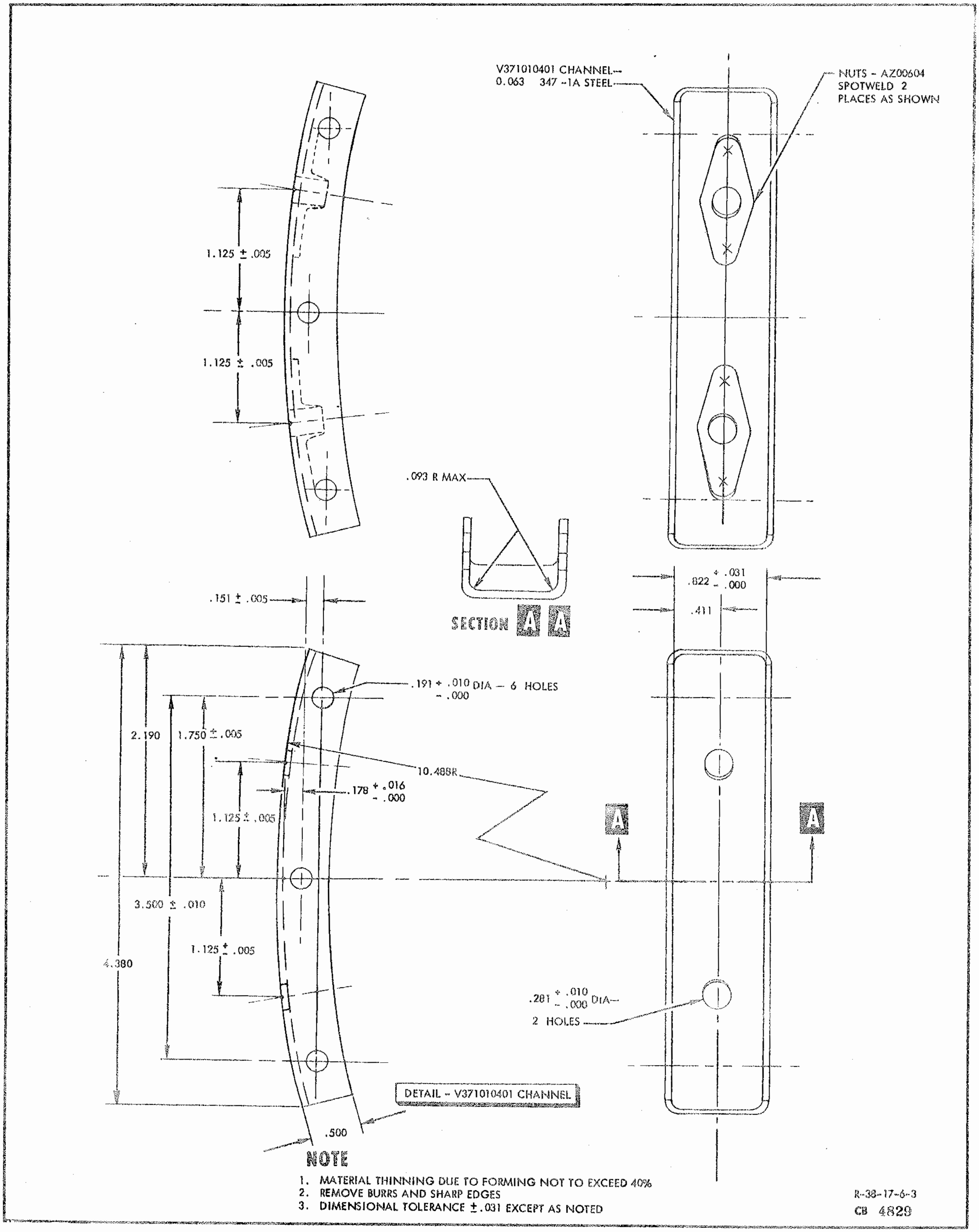


Figure 122A — Channel Assembly, Part Number V371010400

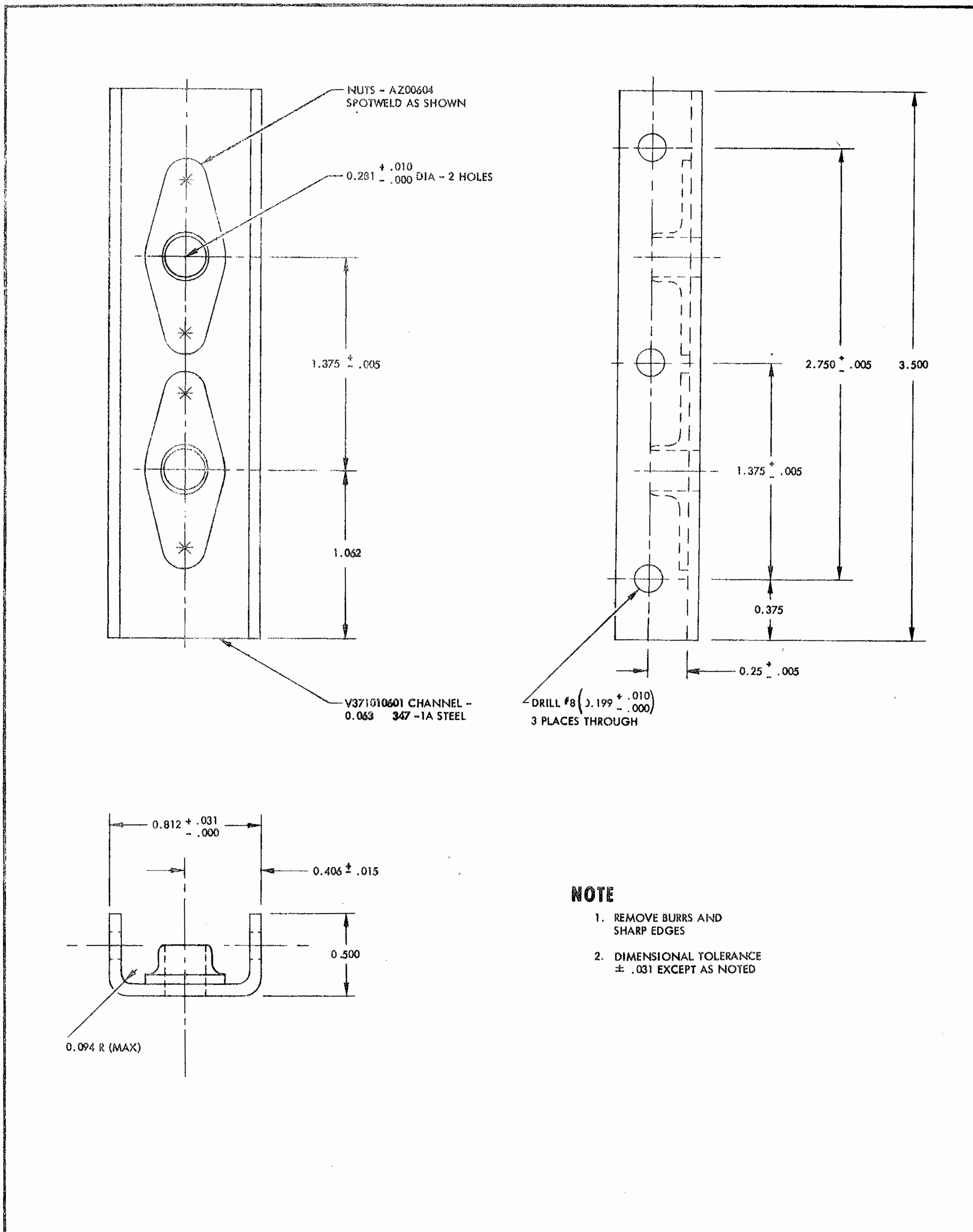


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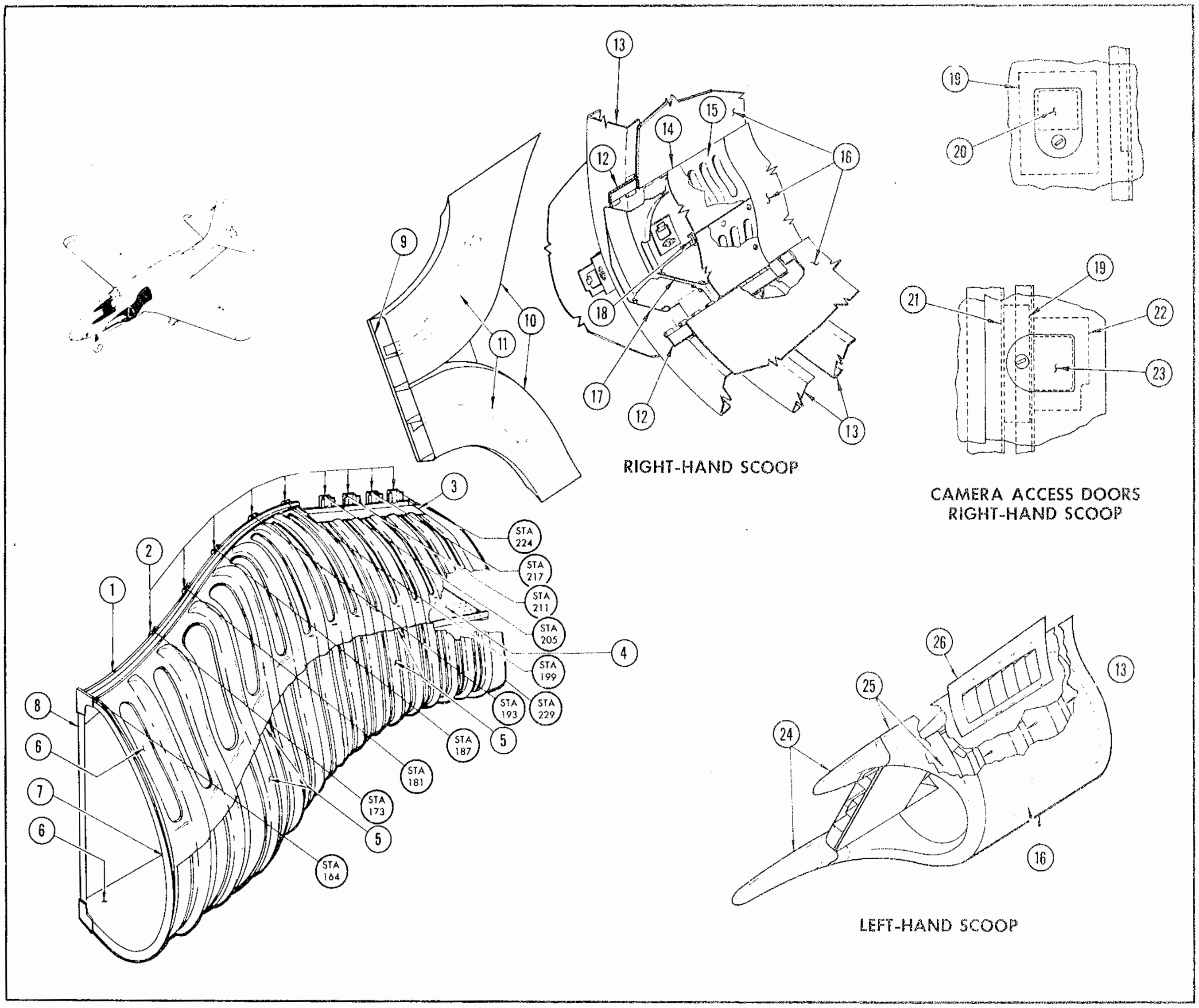
Figure 122B — Channel Assembly, Part Number V371010600



Item	Part Name	Figure Reference Neg. Damage	Repair	Remarks
1	Angle	131	139	.081 24S-T80
2	Hat Stiffeners	131	145	.064 24S-T80
3	Doubler		NR	.081 24S-T81
4	Vane		★★NR	.081 AMC 52S-O Mag Sht Spec AN-M-29
	Edge Strips			LS1187
5	Reinforcement	131	145	.040 24S-T80
6	Skin	130	135, 137	.032 24S-T81
7	Angle	131	139	.091 24S-T80
8	Angle	131	139	.064 24S-T80
9	Leading Edge		NR	LS1188
10	Covers		135, 136, 137	.040
11	Vane		NR	.040
12	Hinge		NR	LS427 53S-T Alum. Alloy

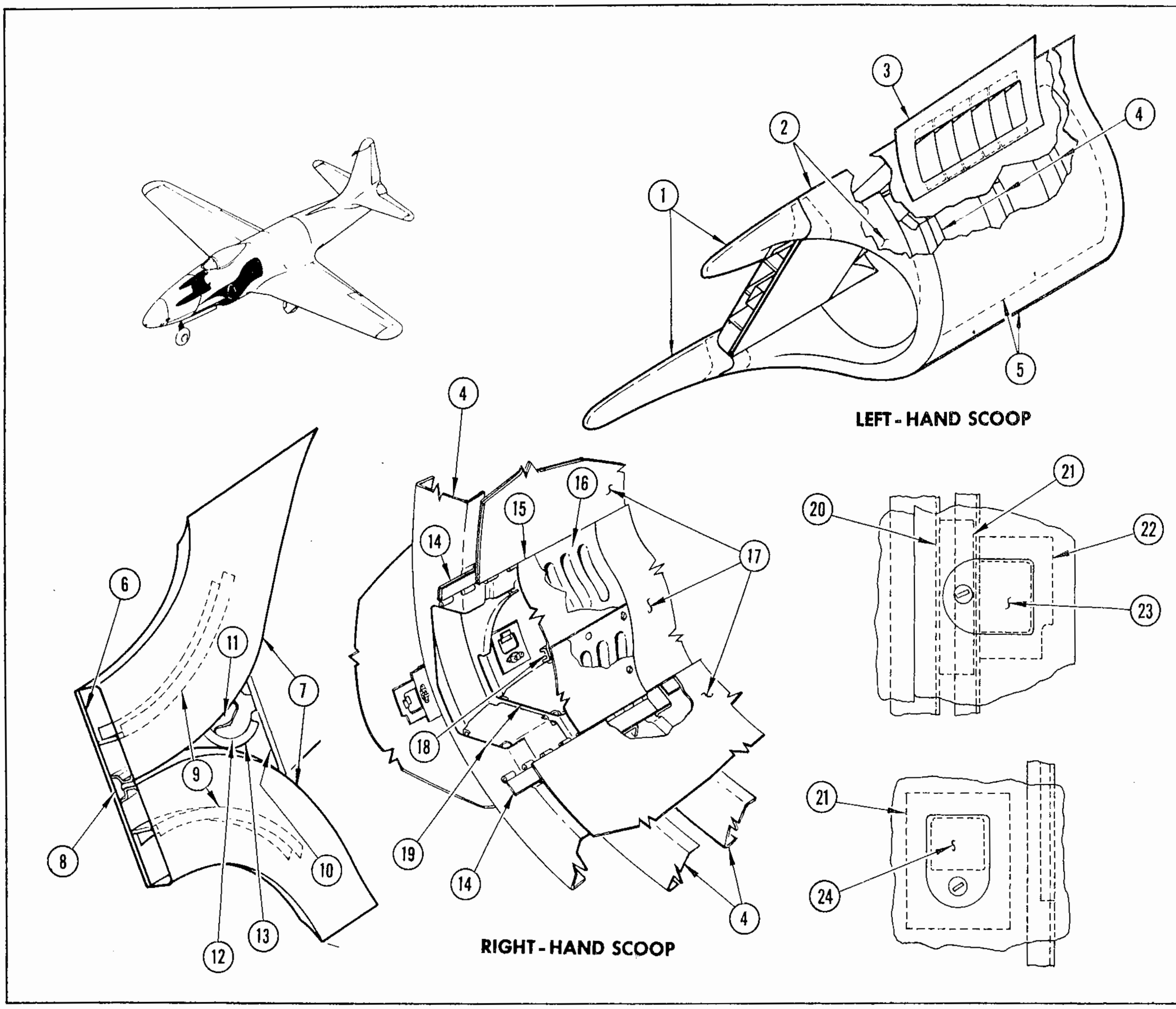
NOTES: Material is 24S-T alum. unless otherwise noted. Items not indicated are not repairable. NR indicates not repairable; R indicates items recommended for replacement.

Item	Part Name	Figure Reference Neg. Damage	Repair	Remarks
13	Rings	131	118	.064
14	Door Skin, Outer		103A	.040
15	Door Skin, Inner		103A	.040
16	Skins	130	135, 136, 137	.040
17	Formers		135, 136, 137	.051
18	Channel		R	.064
19	Doubler		R	.064
20	Door		NR	.040
21	Filler		R	.064
22	Doubler		R	.051
23	Door		NR	.051
24	Lips		135, 136, 137	.051
25	Skin		★135, 136, 137	.051 3S-0 Alum.
26	Louvers		NR	

★ 3S-0 skins may be repaired by welding.

★★ Magnesium vanes of F-80A airplanes may be replaced with 24S-T Alclad. Vanes are deleted on F-80B airplanes. See figure 91B.

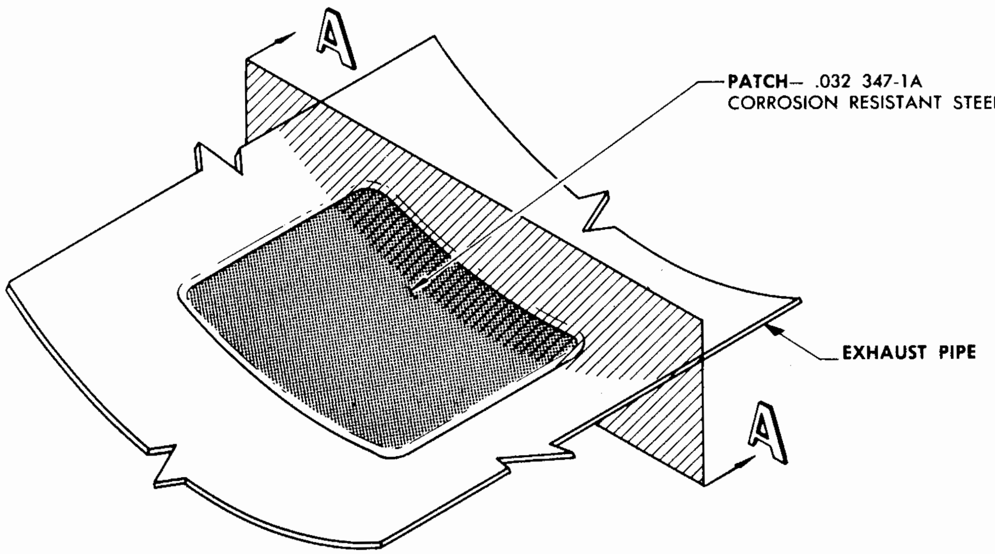
Figure 123 — Air Ducts Reference Diagram, F-80A Airplanes



Item	Part Name	Figure Reference Neg. Damage	Repair	Remarks
1	Lips		135, 136, 137	.051
2	Skin		☆135, 136, 137	.051 3S-O Alum.
3	Louvers		NR	
4	Rings	131	118	.064
5	Skins	130	135, 136, 137	.040
6	Apron		135, 137	.064
	Leading Edge		NR	LS1188
7	Covers		135, 136, 137	.040
8	Tube		R	.065 23S-W Alum.
9	Vanes		NR	.040
10	Strip		NR	.064
11	Door		NR	.064
12	Plate		NR	.081
13	Ring		NR	.091
14	Hinges		NR	LS427 53S-T
15	Outside Skin		103A	.040
16	Inside Skin		103A	.040
17	Skins		135, 136, 137	.040
18	Channel		R	.064
19	Formers		135, 136, 137	.051
20	Filler		R	.064
21	Doubler		R	.064
22	Doubler		R	.051
23	Door		NR	.051
24	Door		NR	.040

☆ 3S-O skins may be repaired by welding.
NOTES: Material is 24S-T aluminum Alclad unless otherwise noted.
R indicates items recommended for replacement.
NR indicates non-repairable.

Figure 123C — Air Ducts Reference Diagram, P-80B and P-80C Airplanes

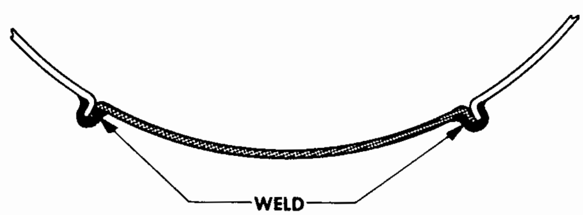


NOTES:

1 PATCH MAY BE EITHER HELI-ARC, TORCH OR ARC WELDED. HELI-ARC WELDING IS RECOMMENDED WHEN AVAILABLE

2 ATTACH PATCH TO PIPE WITH CONTINUOUS WELD

3 REFER TO PARAGRAPH 3 FOR INSTRUCTIONS FOR THE REPAIR OF CRACKED TAIL PIPES



SECTION A-A

CB 7158
R38-19-6-3

Figure 124 — Tail Pipe Repairs

SECTION VII

FABRIC REPAIRS AND ATTACHMENT

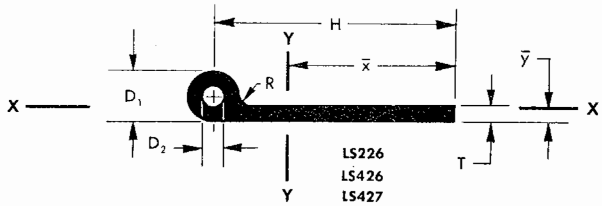
Does not apply to this airplane.

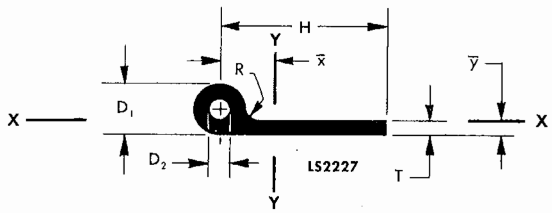
SECTION VIII—EXTRUSION CHARTS

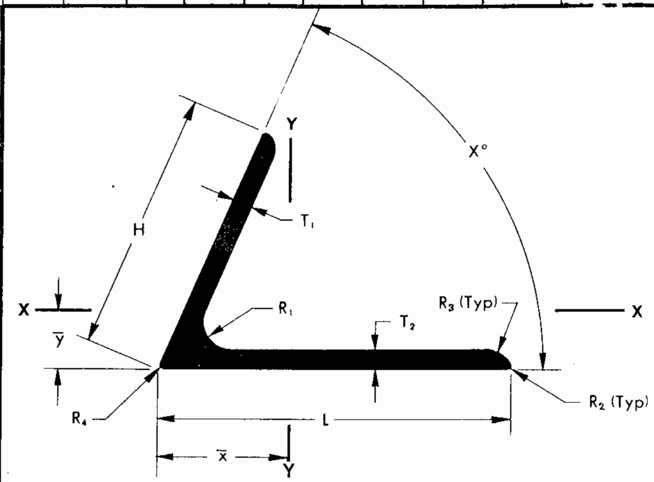
Standard Section	*Fig. 125 Sheet No.*	*Standard Section*	*Fig. 125 Sheet No.*	*Standard Section*	*Fig. 125 Sheet No.*
LS202	1	LS709	3	LS3233	13
LS203	1	LS951	8	LS3234	2
LS210	2	LS977	9	LS3237	2
LS226	1	LS978	5	LS3245	17C
LS236	13	LS986	9	LS3246	2
LS248	1	LS1010	14	LS3247	2
LS303	3	LS1143	2	LS3251	10
LS304	13	LS1047	2	LS3253	2
LS308	2	LS1088	17A	LS3254	2
LS317	13	LS1162	9	LS3255	2
LS318	3	LS1163	15	LS3257	2
LS347	2	LS1187	14	LS3268	3
LS358	2	LS1188	15	LS3277	1
LS383	3	LS1247	1	LS3280	3
LS389	4	LS1450	13	LS3283	2
LS393	4	LS1532	3	LS3289	16
LS406–2	5	LS1542	15	LS3315	1
LS426	1	LS1543	15	LS3316	3
LS427	1	LS1544	15	LS3320	2
LS439	5	LS1545	16	LS3357	2
LS448	5	LS1552	2	LS3368	10
LS468	13	LS1553	16	LS3378	2
LS471	14	LS1596	17A	LS3394	2
LS473	17	LS1713	17C	LS3395	10
LS476	6	LS2207	1	LS3399	2
LS477	6	LS2209	3	LS3415	3
LS478	13	LS2211	1	LS3441	2
LS482	2	LS2212	1	LS3458	2
LS483	6	LS2221	6	LS3473	3
LS484	6	LS2227	1	LS3484	17
LS491	7	LS2242	3	LS3487	10
LS492	7	LS2270	9	LS3498	16
LS494	17C	LS2274	17B	LS3510	10
LS496	17A	LS2910	17B	LS3515	17
LS495	7	LS2936	17C	LS3523	16
LS501	2	LS2942	17C	LS3539	13
LS516	2	LS3200	2	LS3560	17
LS536	7	LS3201	2	LS3567	2
LS537	14	LS3203	2	LS3572	2
LS538	7	LS3206	16	LS3667	3
LS549	8	LS3215	3	LS3684	17
LS628	14	LS3216	3	LS3697	11
LS636	8	LS3220	17	LS3698	11
LS637	8	LS3223	2	LS3699	12
LS639	17A	LS3224	2	LS3700	12
LS689	3	LS3228	2	LS3701	12
LS700	17A	LS3229	2	LS3702	8
LS703	3	LS3230	2		

Index of Standard Sections

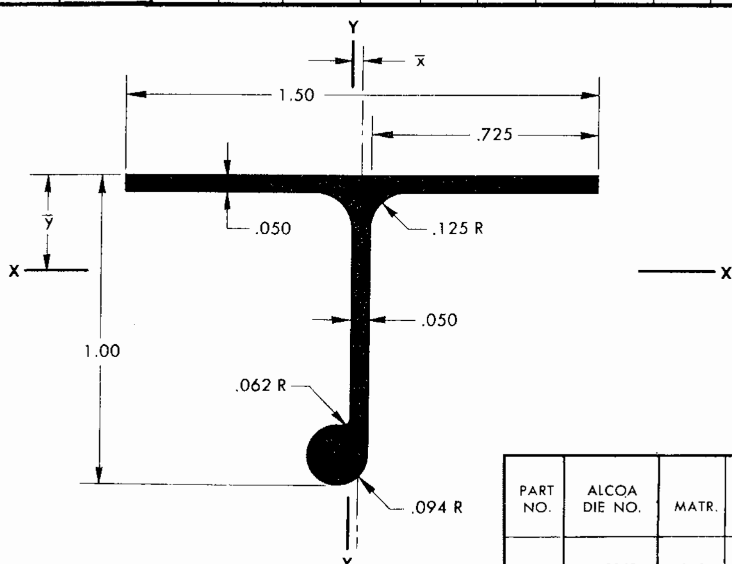
PART NO.	ALCOA DIE NO.	H	D_1	D_2	R	T	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
										Ixx	$\bar{y}$	ρ_{xx}	Iyy	$\bar{x}$	ρ_{yy}	Ixy
LS226	K-22806	1.125	.195	.094	.050	.094	53S-T	.076	.0076	.0002	.0470	.0466	.0109	-.7189	.3734	-.0007
LS426	K-22737	.625	.195	.098	.094	.050	53S-T									
LS427	BOHN-10199	1.125	.195	.095	.050	.094	53S-T	.079	.008	.0002	.0470	.0466	.0109	-.7189	.3739	-.0007
LS2227	K-22737	.625	.195	.195	.094	.050	53S-T	.053	.0053	.0002	.058	.053	.002	.187	.211	-.0003







PART NO.	ALCOA DIE NO.	H	L	X°	T_1	T_2	R_1	R_2	R_3	R_4	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
														Ixx	$\bar{y}$	ρ_{xx}	Iyy	$\bar{x}$	ρ_{yy}	Ixy
LS202	K-15618	1.125	1.125	67°30′	.094	.094	.125	.010	.094	.010	24S-T	.202	.020	.019	.279	.306	.015	.417	.277	-.0041
LS203	K-15619	1.062	.875	111°45′	.094	.094	.188	.010	.094	.010	24S-T	.175	.017	.017	.312	.314	.022	.116	.356	-.0157
LS1247	32082	1.250	2.000	96°	.125	.125	.188	.010	.093	.010	24S-T4	.394	.0394	.0488	.282	.352	.173	.623	.663	-.0564
LS2207	L-23993	1.000	.750	80°30′	.070	.070	.062	.010	.062	.010	24S-T	.116	.017	.011	.304	.312	.004	.236	.194	.0028
LS2211	L-24170	2.000	1.250	97°	.125	.125	.188	.010	.125	.010	24S-T	.391	.039	.156	.649	.633	.063	.203	.402	-.0695
LS2212	L-24171	2.000	1.250	83°	.125	.125	.188	.010	.125	.010	24S-T	.392	.039	.154	.637	.626	.037	.355	.307	-.0296
LS3277	K-12870	.750	1.000	100°45′	.093	.093	.125	.010	.010	.010	24S-T	.158	.016	.007	.094	.217	.081	.284	.343	-.0077
LS3315	K-22382	1.500	1.312	80°30′	.125	.125	.125	.010	.047	.010	24S-T	.337	.034	.071	.433	.458	.042	.419	.352	-.0236



PART NO.	ALCOA DIE NO.	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					Ixx	$\bar{y}$	ρ_{xx}	Iyy	$\bar{x}$	ρ_{yy}	Ixy
LS248	L-23853	24S-T	.150	.0150	.019	-.307	.360	.014	-.013	.308	.0011

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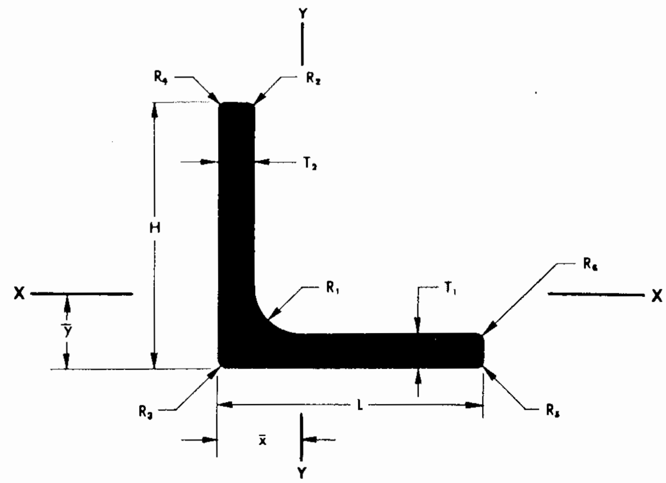
Figure 125 (Sheet 1 of 17 Sheets) — Extruded Standards



PART NO.	ALCOA DIE NO.	L	H	T_1	T_2	R_1	R_2	R_3	R_4	R_5	R_6	MATERIAL	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
															I_{xx}	$\bar{y}$	ρ_{xx}	I_{yy}	$\bar{x}$	ρ_{yy}	I_{xy}
LS210	K-12200	1.75	1.000	.125	.125	.125	.062	.010	.010	.010	.062	24S-T4	.330	.0330	.025	.227	.275	.163	.598	.560	-.0291
LS308	K-22637	1.50	2.00	.064	.064	.125	.010	.010	.010	.010	.010	24S-T4	.223	.0223	.094	.588	.648	.047	.342	.455	.0384
LS347	3000-J1	.88	.880	.094	.094	.094	.094	.010	.010	.010	.094	24S-T4	.155	.0155	.011	.248	.263	.011	.248	.263	-.0063
LS358	31177	2.20	1.750	.125	.125	.125	.125	.032	.010	.010	.125	24S-T4	.475	.0475	.129	.426	.521	.229	.649	.895	-.101
LS501	BOHN L-12261	1.50	2.25	.090	.146	.125	.010	.010	.010	.010	.010	24S-0	.454	.0454	.244	.827	.732	.069	.275	.391	-.0718
LS1047	7345	2.50	2.00	.125	.125	.250	.125	.010	.010	.010	.125	M. BRNZ.	.554	.0554	.196	.477	.596	.345	.721	.789	-.1514
LS3200	78-A	1.25	1.25	.188	.188	.188	.125	.010	.010	.010	.125	24S-T4	.436	.0436	.059	.374	.369	.059	.374	.369	-.0344
LS3201	78-C	.750	.750	.094	.094	.125	.094	.010	.010	.010	.094	24S-T4	.131	.0131	.007	.214	.220	.007	.214	.220	-.0037
LS3203	78-K	.750	.750	.062	.062	.125	.094	.010	.010	.010	.094	24S-T4	.089	.0089	.004	.199	.220	.004	.199	.220	-.0025
LS3224	77-B	1.00	1.00	.125	.125	.125	.094	.010	.010	.010	.094	24S-T4	.234	.0234	.021	.290	.298	.021	.290	.298	-.0122
LS3228	78-F	1.00	1.00	.094	.094	.125	.094	.010	.010	.010	.094	24S-T4	.178	.0178	.016	.276	.301	.016	.276	.301	-.0094
LS3229	472	.750	.750	.062	.062	.016	.010	.010	.010	.010	.010	24S-T4	.090	.0090	.005	.210	.232	.005	.210	.232	-.0029
LS3230	1288	1.00	.750	.070	070	.062	.031	.010	.010	.010	.031	24S-T4	.118	.0118	.006	.186	.222	.012	310	.318	-.0049
LS3234	734-FF	1.25	.750	.094	.094	.094	.047	.010	.010	.010	.047	24S-T4	.180	.0180	.008	.175	.208	.029	.421	.399	-.0086
LS3237	734-HH	1.25	1.00	.125	.125	.125	.062	.010	.010	.010	.062	24S-T4	.267	.0267	.023	.265	.292	.040	.389	.389	-.0177
LS3246	734-GG	1.50	1.00	.156	.156	.156	.078	.010	.010	.010	.078	24S-T4	.369	.0369	.029	.255	.279	.081	.501	470	-.0278
LS3247	734-RR	2.50	1.50	.250	.250	.250	.125	.010	.010	.010	.125	24S-T4	.945	.0945	.157	.371	.408	.584	.865	.786	-.1721
LS3253	78-J	1.00	1.00	.062	.062	.062	.031	.010	.010	.010	.031	24S-T4	.122	.0122	.012	.272	.313	.012	.272	.313	-.0071
LS3254	734-JJ	1.00	.750	.125	.125	.062	.062	.010	.010	.010	.062	24S-T4	.202	.0202	.009	.205	.213	.019	.329	.309	-.0077
LS3257	78-Y	1.25	1.25	.094	.094	.094	.047	.010	.010	.010	.047	24S-T4	.227	.0227	.034	.344	.387	.034	.344	.387	-.0201
LS3283	22993	1.25	1.00	.094	.094	.094	.047	.047	.010	.047	.047	24S-T4	.203	.0203	.018	.256	.299	.032	.380	.396	-.0142
LS3357	K-14653	.625	.625	.078	.078	.094	.047	.010	.010	.010	.047	24S-T4	.092	.0092	.003	.181	.187	.003	.181	.187	-.0018
LS3378	734-LL	1.50	1.25	.188	.188	.188	.125	.010	.010	.010	.125	24S-T4	.481	.0481	.085	.236	.420	.100	.469	.457	-.0991
LS3394	77-G	1.25	1.25	.250	.250	.188	.125	.010	.010	.010	.125	24S-T4	.563	.0563	.074	.397	.363	.074	.397	.363	-.0423
LS3399	734-6	2.50	1.25	.125	.125	.188	.094	.010	.010	.010	.094	24S-T4	.457	.0457	.051	.252	.335	.297	.866	.807	-.0696
LS3441	734-2	1.625	1.25	.125	.125	.125	.125	.010	.010	.010	.125	24S-T4	.340	.0340	.045	.310	.363	.087	.495	.507	-.0367
LS3458	12883	.750	.625	.051	.051	.062	.062	.010	.010	.010	.062	24S-T4	.067	.0067	.002	.156	.183	.003	.217	.232	-.0017
LS3567	K-12422	1.00	1.00	.156	.156	.156	.078	.016	.016	.016	.078	24S-T4	.290	.0290	.025	.302	.296	.025	.302	.296	-.0147
LS3572	5401	.750	.750	.062	.062	.062	.010	.010	.010	.010	.010	24S-T4	.090	.0090	.005	.209	.232	.005	.209	.232	-.0028
LS535		.780	1.125	.062	.062	.062	.031	.010	.010	.010	.031	24S-T4	.115	.0115	.0151	.355	.362	.0060	.183	.230	-.00563
LS1169		1.250	.750	.063	.063	.125	.063	.010	.010	.010	.063	24S-T4	.124	.0124	.0054	.159	.209	.0198	.403	.400	-.00589
LS1256		1.000	1.000	.125	.125	.125	.094	.010	0	.010	.094	24S-T4	.233	.0233	.0203	.287	.295	.0183	.316	.2804	-.00997
LS3208	734-CC	1.500	1.250	.125	.125	.188	.125	.010	.010	.010	.125	24S-T4	.329	.0329	.0438	.320	.365	.0700	.442	.461	-.0324
LS3283	22993	1.250	1.000	.094	.094	.094	.047	.047	.010	.047	.047	24S-T4	.203	.0203	.0183	.256	.299	.0320	.380	.396	-.0142
LS3320	734-U	2.500	2.000	.188	.188	.250	.125	.010	.010	.010	.125	24S-T4	.815	.0815	.285	.505	.591	.501	.751	.784	-.221
LS1552		.650	.430	.188	.250	.030	.016	.016	.016	.016	.016	24S-T4	.183	.0813	.025	.165	.118	.0062	.259	.185	.0017

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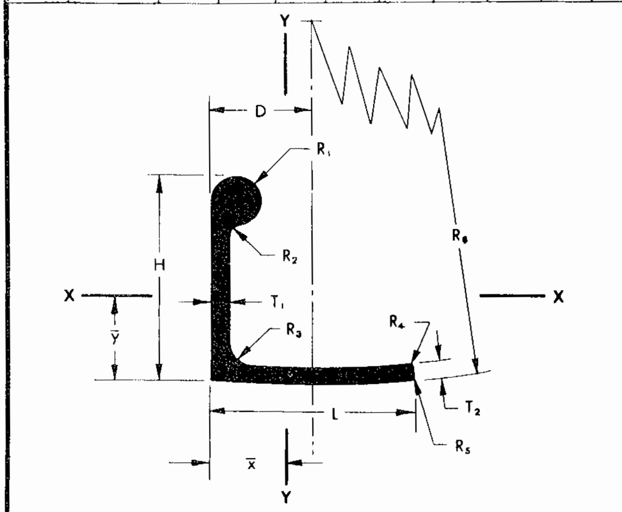
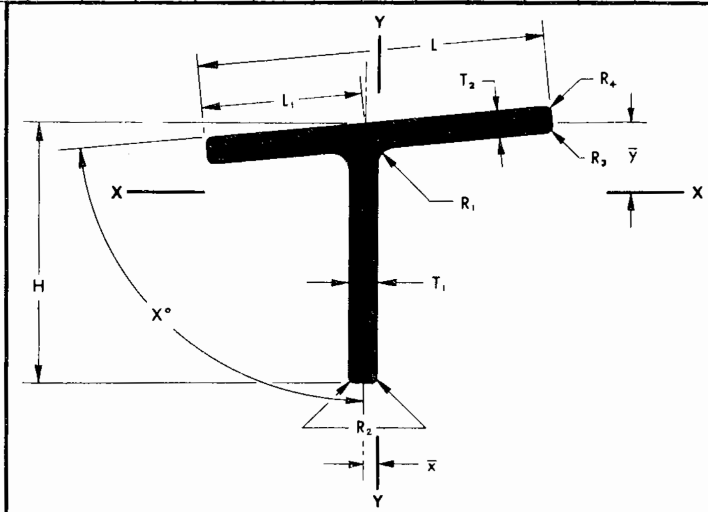
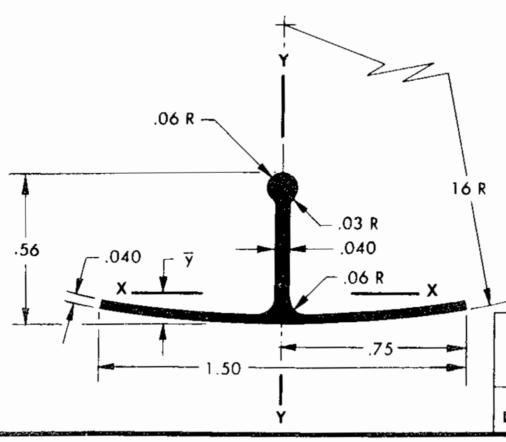
Figure 125 (Sheet 2 of 17 Sheets) — Extruded Standards

NO PART	ALCOA DIE NO.	H	L	T_1	T_2	D	R_1	R_2	R_3	R_4	R_5	R_6	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
																Ixx	$\bar{y}$	ρ_{xx}	Iyy	$\bar{x}$	ρ_{yy}	Ixy
LS303	31233	.687	.656	.051	.051	.406	.078	.062	.062	.010	.010	5.000	24S-T	.080	.008	.004	.266	.244	.002	.164	.187	-.0018
LS703	31448	.880	1.00	.078	.062	.500	.078	.125	.094	.010	.010	18.000	24S-T	.137	.014	.012	.282	.297	.012	.253	.298	-.0068





PART NO.	ALCOA DIE NO.	H	L	L_1	T_1	T_2	R_1	R_2	R_3	R_4	X°	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X—X			AXIS Y—Y			PRODUCT OF INERTIA
															Ixx	$\bar{y}$	ρ_{xx}	Iyy	$\bar{x}$	ρ_{yy}	Ixy
LS318	31235	1.500	2.000	1.000	.188	.188	.090	.010	.010	.010	90°	14S-T	.626	.0632	.120	-.390	.439	.126	0	.449	0
LS689	31445	4.000	1.94	1.010	.093	.081	.120	.010	.081	.010	90°	24S-T	.525	.0525	.911	-1.430	1.317	.0498	-.0120	.308	-.00875
LS709		4.000	2.080	1.140	.170	.120	.190	.030	.050	.010	84°15′	24S-T	.923	.0923	1.571	1.493	1.304	.0925	.0258	.317	-.0249
LS1450	32476	4.375	4.000	2.000	.250	.375	.160	.010	.010	.010	90°	24S-T	2.511	.251	4.227	-1.059	1.297	2.052	0	.904	0
LS2209	L-24096	2.312	1.875	.938	.093	.081	.125	.040	.040	.040	90°	24S-T	.364	.0364	.203	-.695	.747	.0437	0	.347	0
LS2242	L-24008	1.000	2.000	1.000	.125	.125	.094	.010	.010	.010	90°	24S-T	.363	.0363	.0263	-.214	.269	.0835	0	.479	0
LS3215	2499	1.125	1.500	.750	.062	.062	.062	.031	.031	.031	90°	24S-T	.161	.0160	.0183	-.262	.338	.0171	0	.326	0
LS3216	3094	1.550	1.250	.625	.050	.050	.094	.010	.010	.010	90°	24S-T	.141	.0141	.0351	-.438	.498	.0082	0	.240	0
LS3280	K-23409	1.000	1.875	.938	.062	.062	.094	.010	.010	.010	86°	24S-T	.178	.0178	.0142	-.195	.282	.0339	.0012	.436	.00241
LS3316	K-15069	2.125	2.188	1.094	.188	.135	.250	.010	.010	.010	86°	24S-T	.696	.0696	.316	.642	.674	.119	.0009	.413	.0079
LS3415	L-28539	2.500	2.000	1.000	.125	.125	.125	.032	.032	.032	90°	24S-T	.552	.0552	.353	-.734	.799	.0829	0	.388	0
LS3473	30816	1.000	2.500	1.250	.100	.070	.094	.050	.031	.031	90°	24S-T	.270	.0270	.0214	-.205	.282	.0899	0	.577	0
LS3593	L-29232	1.250	4.375	2.375	.125	.093	.063	.010	.010	.010	90°	24S-T	.553	.0553	.0581	-.210	.324	.653	-.138	1.086	-.0125
LS3667	K9805	4.000	3.000	1.500	.125	.125	.125	.063	.032	.010	89° 30′	24S-T	.863	.0863	1.438	-1.173	1.291	.288	0	.577	0



PART NO.	ALCOA DIE NO.	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					Ixx	$\bar{y}$	ρ_{xx}	Iyy	$\bar{x}$	ρ_{yy}	Ixy
LS383	31217	24S-T	.089	.0089	.003	.128	.171	.011	0	.355	0

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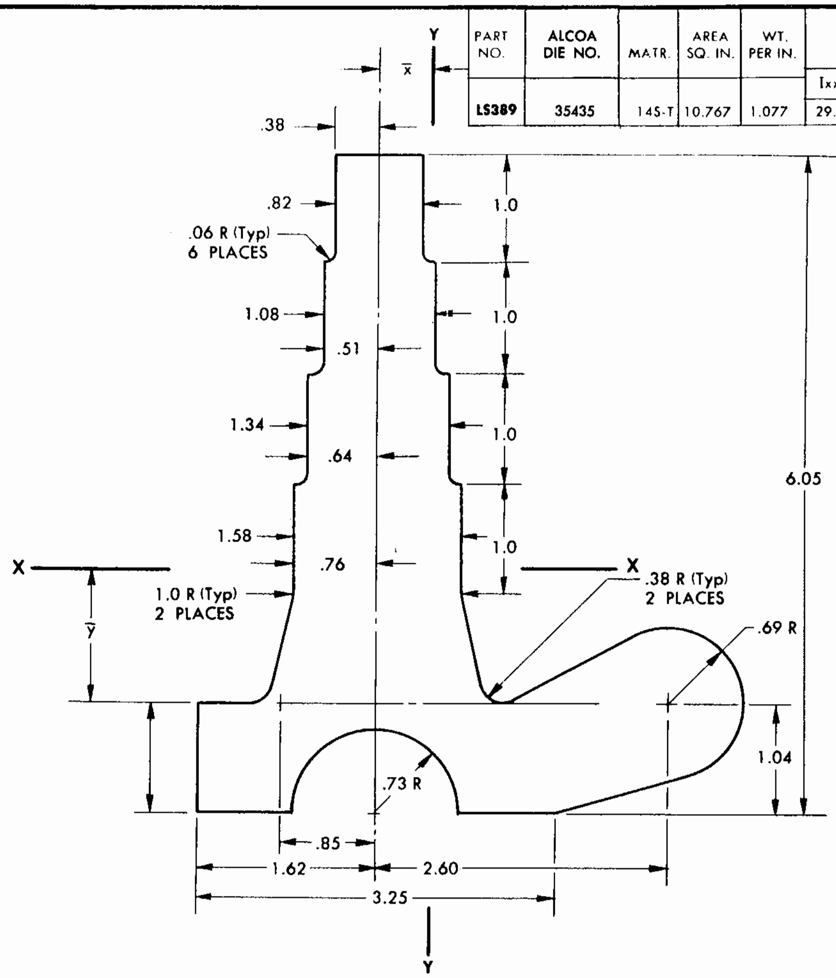
Figure 125 (Sheet 3 of 17 Sheets) — Extruded Standards

PART NO.	ALCOA DIE NO.	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					Ixx	$\bar{y}$	ρ_{xx}	Iyy	$\bar{x}$	ρ_{yy}	Ixy
LS389	35435	14S-T	10.767	1.077	29.69	1.132	1.626	13.94	.461	1.114	-5.896



PART NO.	ALCOA DIE NO.	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					Ixx	$\bar{y}$	ρ_{xx}	Iyy	$\bar{x}$	ρ_{yy}	Ixy
LS393	31218	24S-T	1.991	.1991	2.029	-1.544	1.01	6.192	0	1.753	0

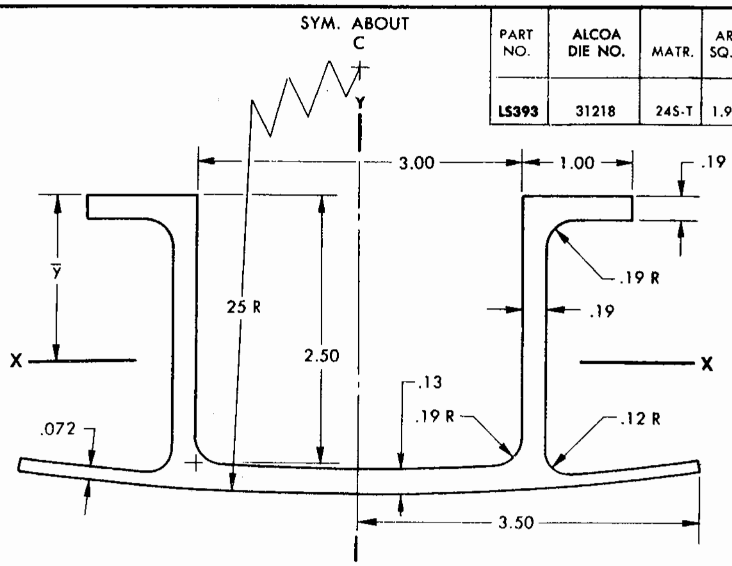
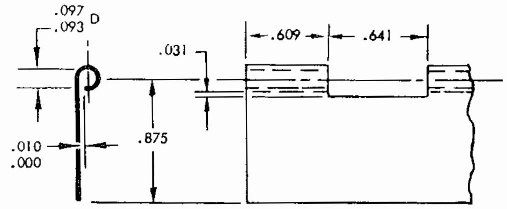
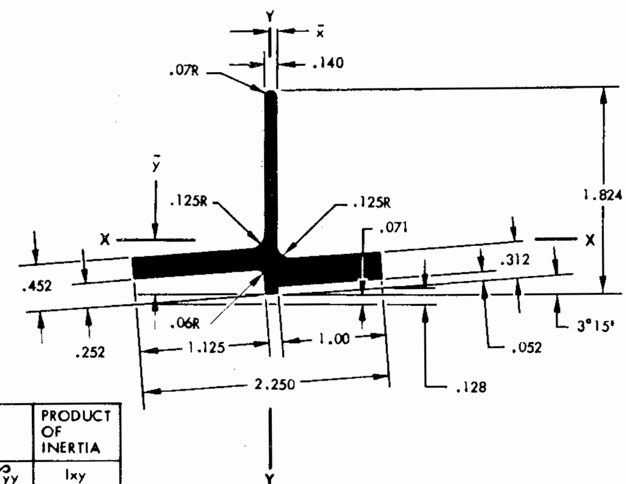


Figure 125 (Sheet 4 of 17 Sheets) — Extruded Standards

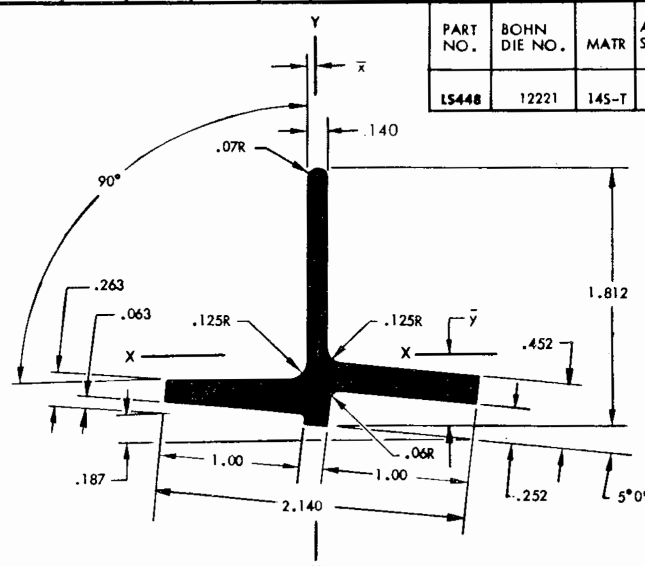


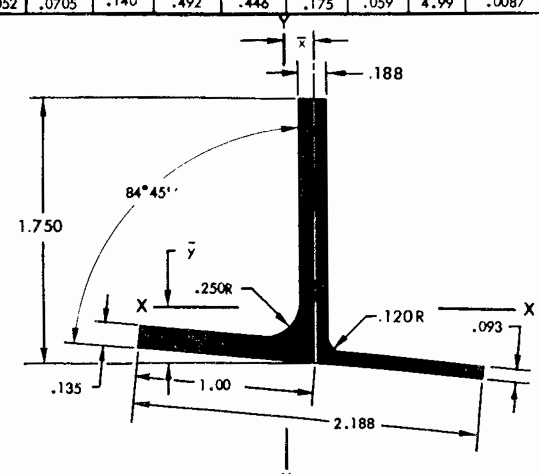
PART NO.		MATERIAL	WEIGHT
LS406-2		CORROSION RES ST'L	.0187 - ONE LOOP AND ONE SPACE



PART NO.	ALCOA DIE NO.	MATR	AREA SQ IN.	WT PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					Ixx	ȳ	ρxx	Iyy	x̄	ρyy	Ixy
LS439	31250	14S-T	.7435	.0743	.142	.479	.437	.219	.166	.542	.0129

PART NO.	BOHN DIE NO.	MATR	AREA SQ IN.	WT PER IN	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					Ixx	ȳ	ρxx	Iyy	x̄	ρyy	Ixy
LS448	12221	14S-T	.7052	.0705	.140	.492	.446	.175	.059	4.99	.0087





PART NO.	BOHN DIE NO.	MATR	AREA SQ IN.	WT PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					Ixx	ȳ	ρxx	Iyy	x̄	ρyy	Ixy
LS978	12751	24S-T	.595	.059	.179	.519	.549	.105	.033	.420	-.0044

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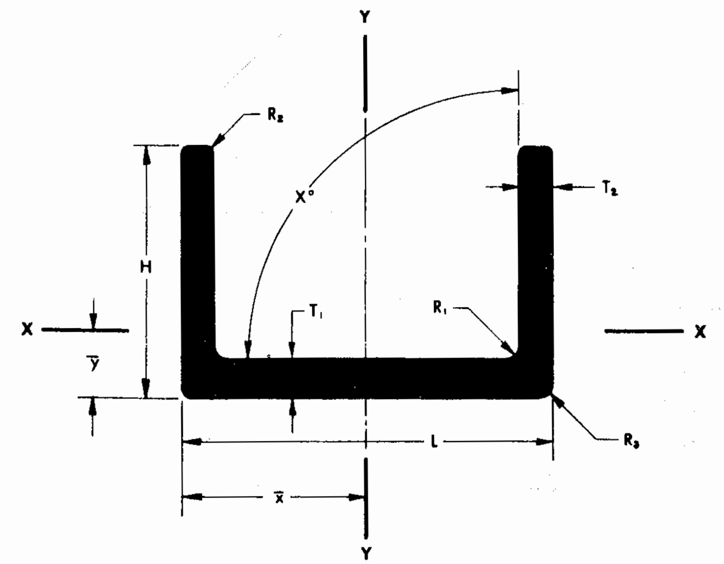
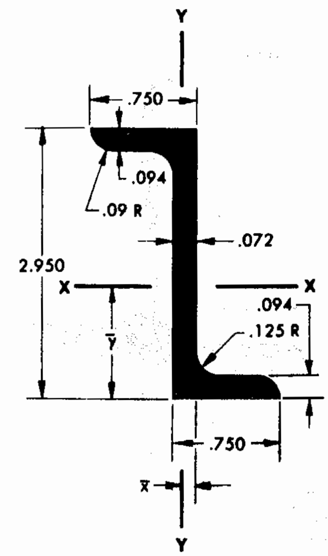
Figure 125 (Sheet 5 of 17 Sheets) — Extruded Standards

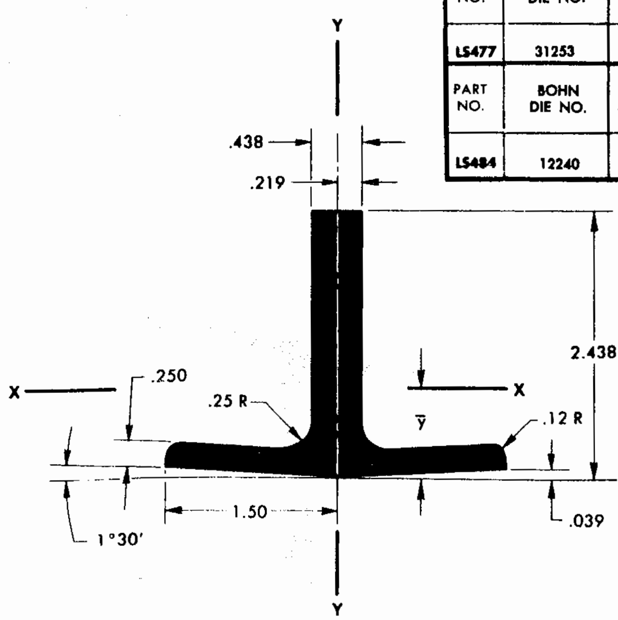
PART NO.	ALCOA DIE NO.	H	L	T_1	T_2	R_1	R_2	R_3	X°	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
													I_{xx}	$\bar{y}$	ρ_{xx}	I_{yy}	$\bar{x}$	ρ_{yy}	I_{xy}
LS476	31269	.875	1.460	.875	.875	.12	0	0	91°45'	24S-T	.377	.037	.027	.282	.267	.104	.735	.525	.0005
LS2221	L-23981	1.875	1.375	.250	.094	125	.010	.010	90°	24S-T	.655	.065	.211	.563	.568	.182	0	.527	0

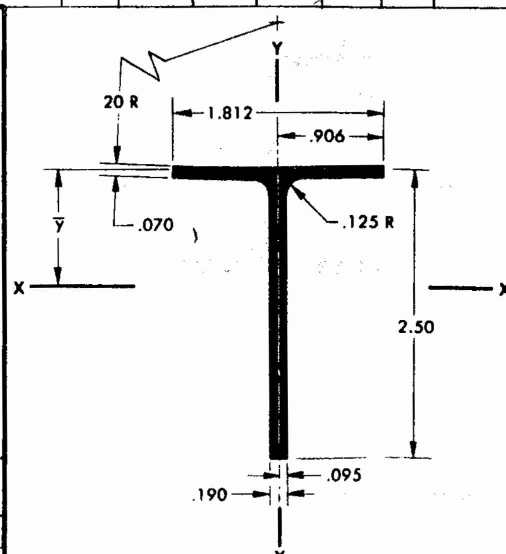




PART NO.	ALCOA DIE NO.	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					I_{xx}	$\bar{y}$	ρ_{xx}	I_{yy}	$\bar{x}$	ρ_{yy}	I_{xy}
LS477	31253	24S-T	.343	.0343	.418	1.491	1.104	.023	-.036	.258	-.0686

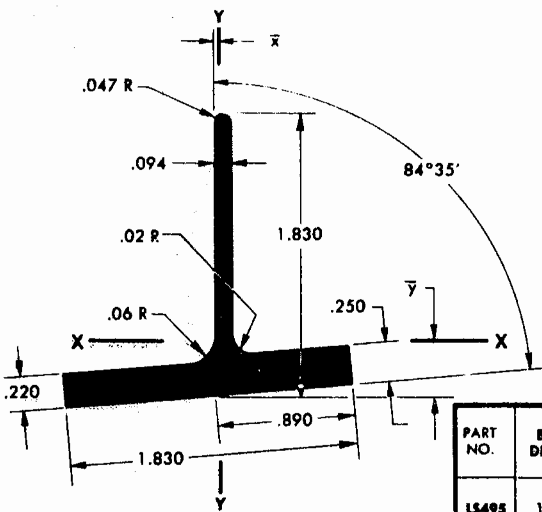
PART NO.	BOHN DIE NO.	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					I_{xx}	$\bar{y}$	ρ_{xx}	I_{yy}	$\bar{x}$	ρ_{yy}	I_{xy}
LS484	12240	24S-T	.595	.0595	.391	-1.003	.810	.036	0	.247	0

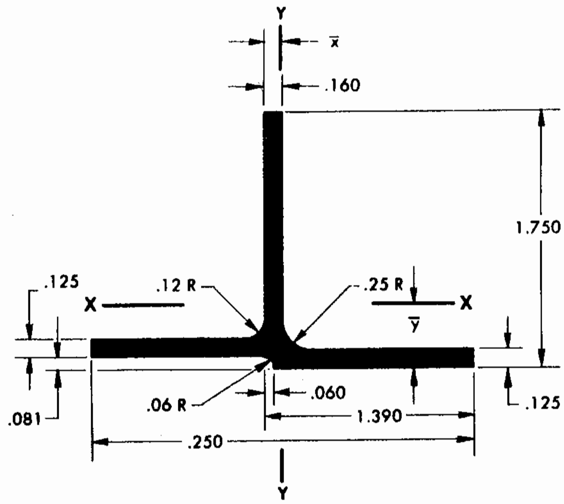




PART NO.	BOHN DIE NO.	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					I_{xx}	$\bar{y}$	ρ_{xx}	I_{yy}	$\bar{x}$	ρ_{yy}	I_{xy}
LS483	12239	14S-T	1.728	.1728	.996	.812	.759	.562	0	.570	0

Figure 125 (Sheet 6 of 17 Sheets) — Extruded Standards

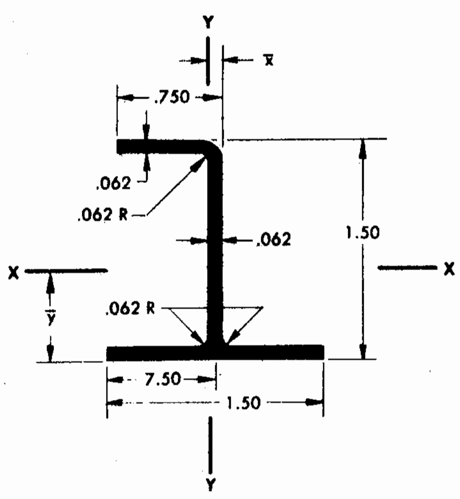


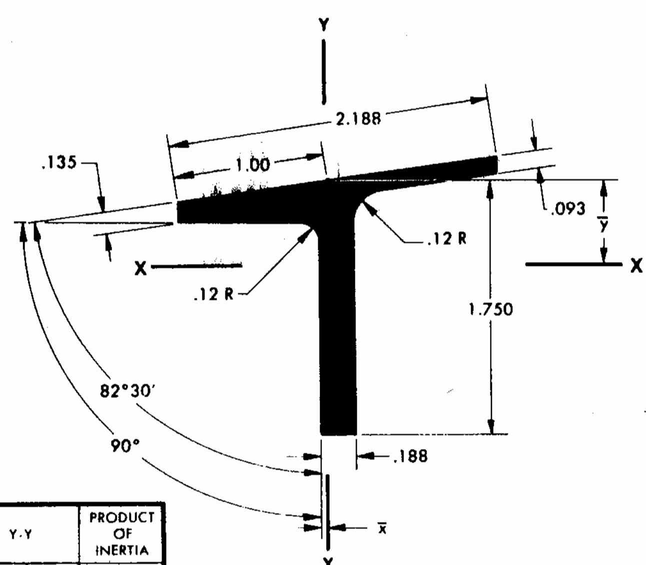


PART NO.	BOHN DIE NO.	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					I_{xx}	$\bar{y}$	ρ_{xx}	I_{yy}	$\bar{x}$	ρ_{yy}	I_{xy}
LS495	12260	24S-T	.5862	.0586	.158	.473	.520	.164	.115	.529	-.0154

PART NO.	ALCOA DIE NO.	H	L	L_1	T_1	T_2	T_3	R_1	R_2	R_3	X°	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
															I_{xx}	$\bar{y}$	ρ_{xx}	I_{yy}	$\bar{x}$	ρ_{yy}	I_{xy}
LS491	31297	1.830	1.830	.890	.094	.220	.250	.047	.120	.160	84°35'	24S-T	.584	.0584	.128	.354	.468	.119	.008	.451	.0179
LS492	31257	1.690	2.080	.840	.094	.210	.320	.047	.120	.160	87°18'	24S-T	.674	.0674	.104	.299	.393	.191	.087	.532	-.0211

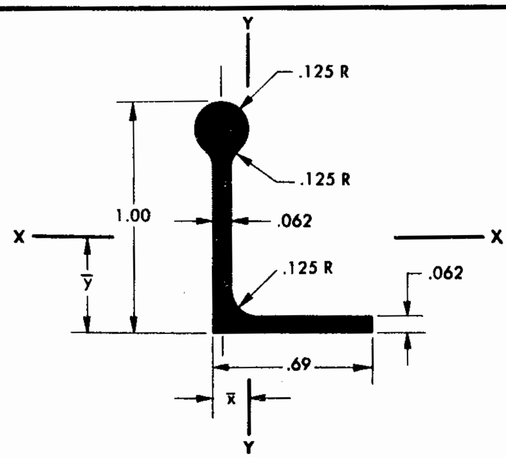
PART NO.	ALCOA DIE NO.	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					I_{xx}	$\bar{y}$	ρ_{xx}	I_{yy}	$\bar{x}$	ρ_{yy}	I_{xy}
LS538	31336	24S-T	.6271	.0627	1.825	-.504	.539	.108	.015	.416	-.0037



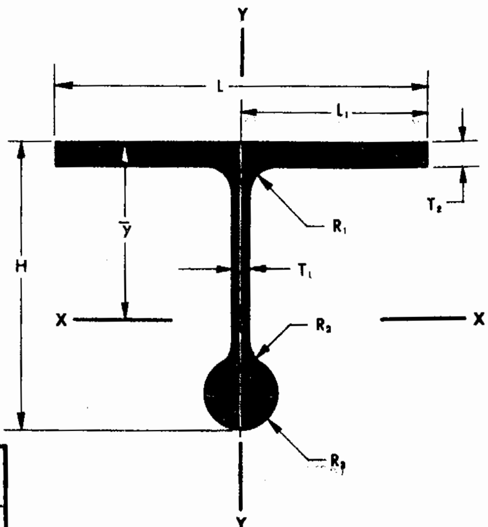


PART NO.	ALCOA DIE NO.	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					I_{xx}	$\bar{y}$	ρ_{xx}	I_{yy}	$\bar{x}$	ρ_{yy}	I_{xy}
LS536	42803	24S-T	.2081	.0208	.074	.627	.598	.021	-.077	.316	-.0130

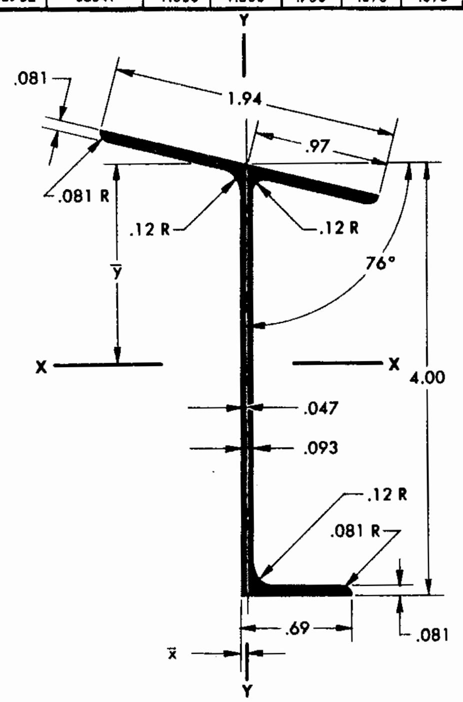
Figure 125 (Sheet 7 of 17 Sheets) — Extruded Standards



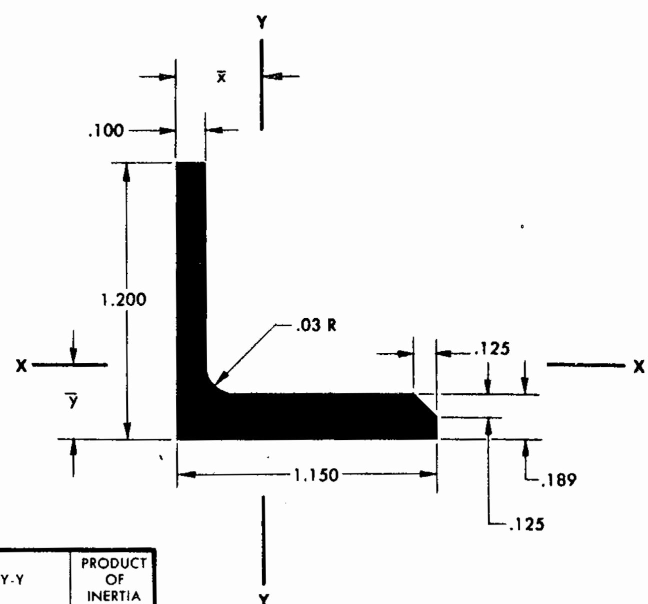
PART NO.	ALCOA DIE NO.	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					I_{xx}	$\bar{y}$	ρ_{xx}	I_{yy}	$\bar{x}$	ρ_{yy}	I_{xy}
LS549	31404	24S-T	.141	.0141	.019	.438	.371	.005	.127	.185	-.0055



PART NO.	ALCOA DIE NO.	H	L	L_1	T_1	T_2	R_1	R_2	R_3	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
													I_{xx}	$\bar{y}$	ρ_{xx}	I_{yy}	$\bar{x}$	ρ_{yy}	I_{xy}
LS636	31332	1.000	1.314	.657	.062	.062	.125	.125	.125	24S-T	.183	.0183	.025	-.358	.368	.012	0	.256	0
LS3702	36541	1.000	1.500	.750	.093	.093	.120	.160	.160	24S-T	.285	.0285	.035	-.345	.351	.027	0	.307	0



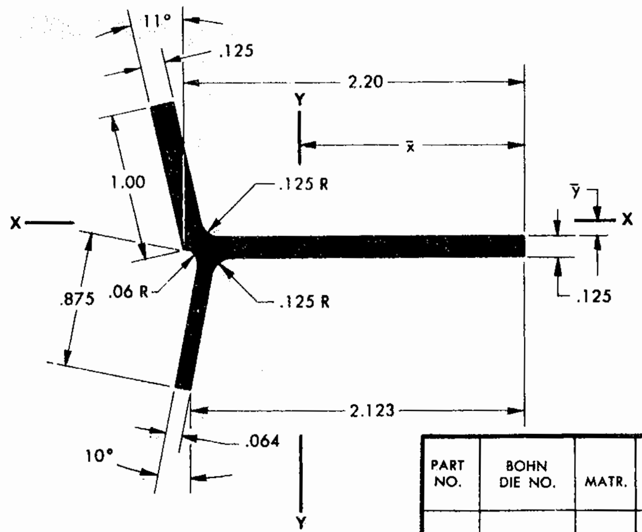
PART NO.	ALCOA DIE NO.	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					I_{xx}	$\bar{y}$	ρ_{xx}	I_{yy}	$\bar{x}$	ρ_{yy}	I_{xy}
LS637	31331	24S-T	.3109	.0311	.034	.288	.330	.039	.390	.355	-.0209

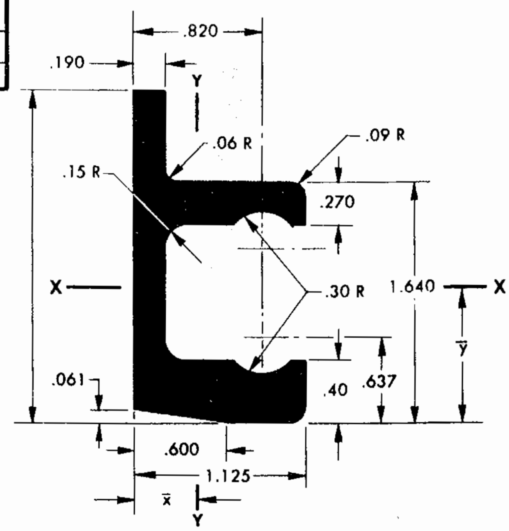


PART NO.	BOHN DIE NO.	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					I_{xx}	$\bar{y}$	ρ_{xx}	I_{yy}	$\bar{x}$	ρ_{yy}	I_{xy}
LS951	12750	24S-T	.5837	.0584	1.242	-1.66	1.459	.055	.031	.307	-.0351

Figure 125 (Sheet 8 of 17 Sheets) — Extruded Standards

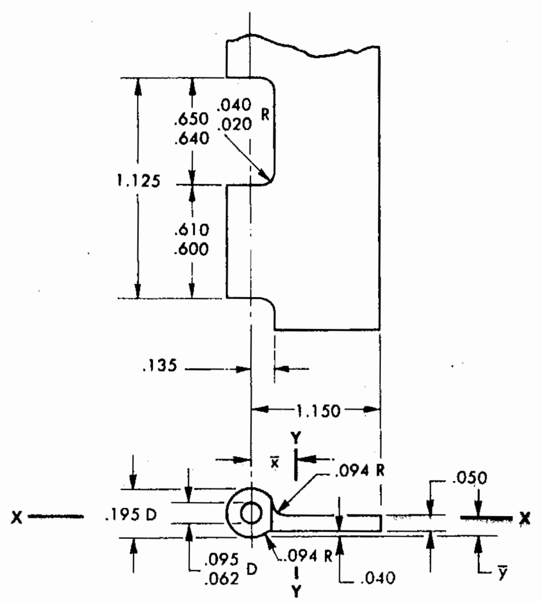
PART NO.	BOHN DIE NO.	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					I_{xx}	$\bar{y}$	ρ_{xx}	I_{yy}	$\bar{x}$	ρ_{yy}	I_{xy}
LS977	12750	24S-T	.4486	.0448	.0504	.1229	.336	.243	-1.529	.738	-.0222

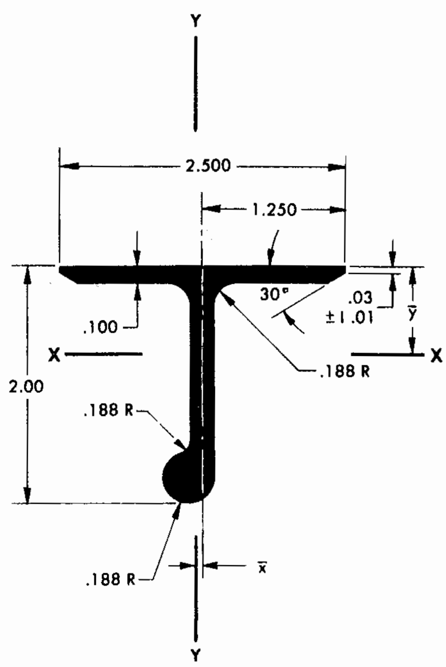




PART NO.	BOHN DIE NO.	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					I_{xx}	$\bar{y}$	ρ_{xx}	I_{yy}	$\bar{x}$	ρ_{yy}	I_{xy}
LS986	12753	14S-T	.998	.099	.439	.888	.662	.120	.422	.346	.056

PART NO.	ALCOA DIE NO.	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					I_{xx}	$\bar{y}$	ρ_{xx}	I_{yy}	$\bar{x}$	ρ_{yy}	I_{xy}
LS2270	37098	24S-T	.674	.0674	.324	-.725	.696	.121	-.015	.425	.011

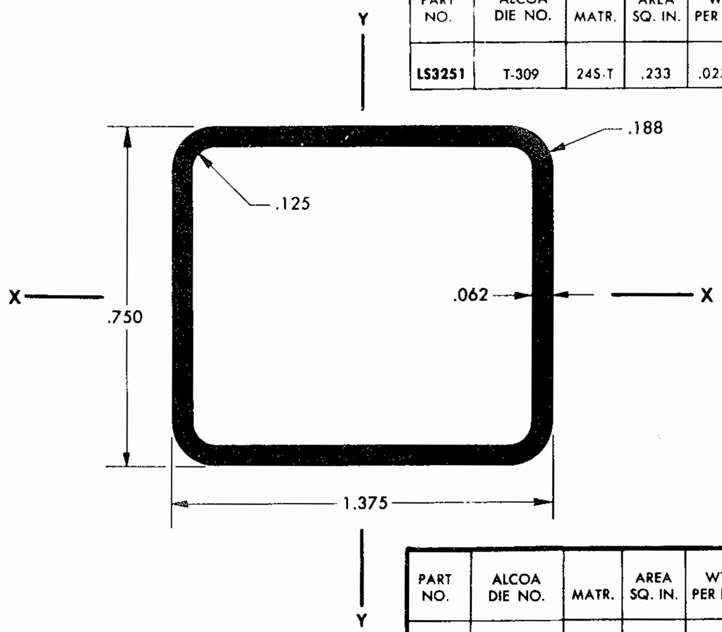


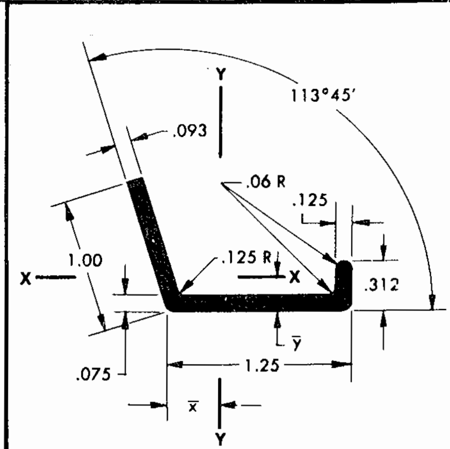


PART NO.	ALCOA DIE NO.	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					Ixx	Y	ρ_{xx}	Iyy	x	ρ_{yy}	Ixy
LS1162	10170	53S-T	.0792	.0079	.0001	.0757	.0372	.0116	.4171	.3832	-.0003

Figure 125 (Sheet 9 of 17 Sheets) — Extruded Standards

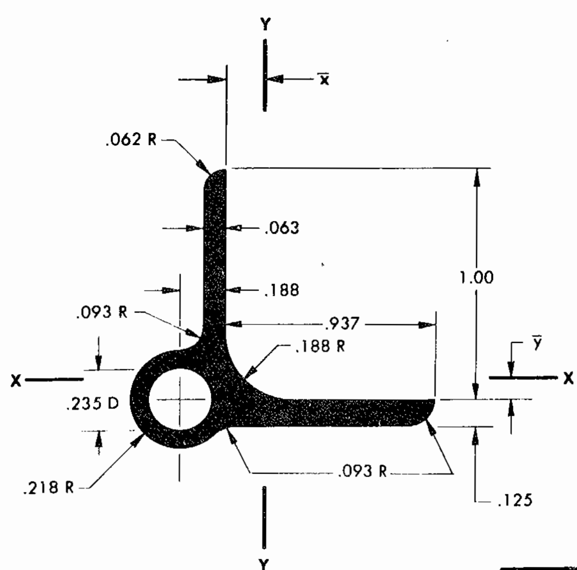
PART NO.	ALCOA DIE NO.	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					Ixx	$\bar{y}$	ρ_{xx}	Iyy	$\bar{x}$	ρ_{yy}	Ixy
LS3251	T-309	24S-T	.233	.0233	.020	0	.296	.051	0	.467	0

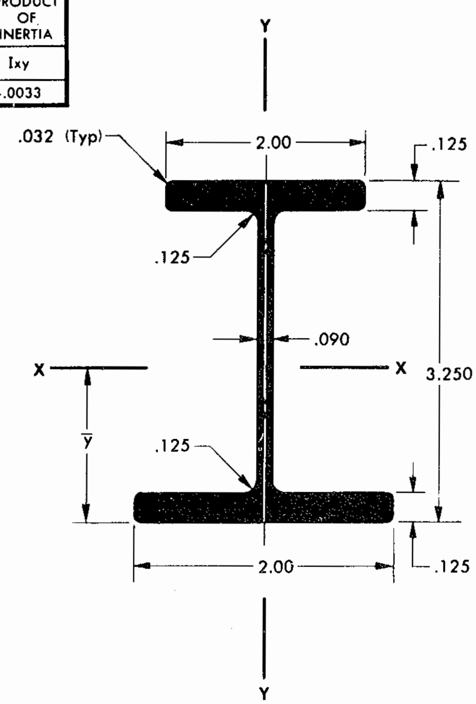




PART NO.	ALCOA DIE NO.	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					Ixx	$\bar{y}$	ρ_{xx}	Iyy	$\bar{x}$	ρ_{yy}	Ixy
LS3368	30074	24S-T	.2114	.0211	.016	.251	.271	.064	.364	.549	.021

PART NO.	ALCOA DIE NO.	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					Ixx	$\bar{y}$	ρ_{xx}	Iyy	$\bar{x}$	ρ_{yy}	Ixy
LS3487	30857	53S-T	.154	.0154	.001	.035	.086	.024	.318	.399	-.0033

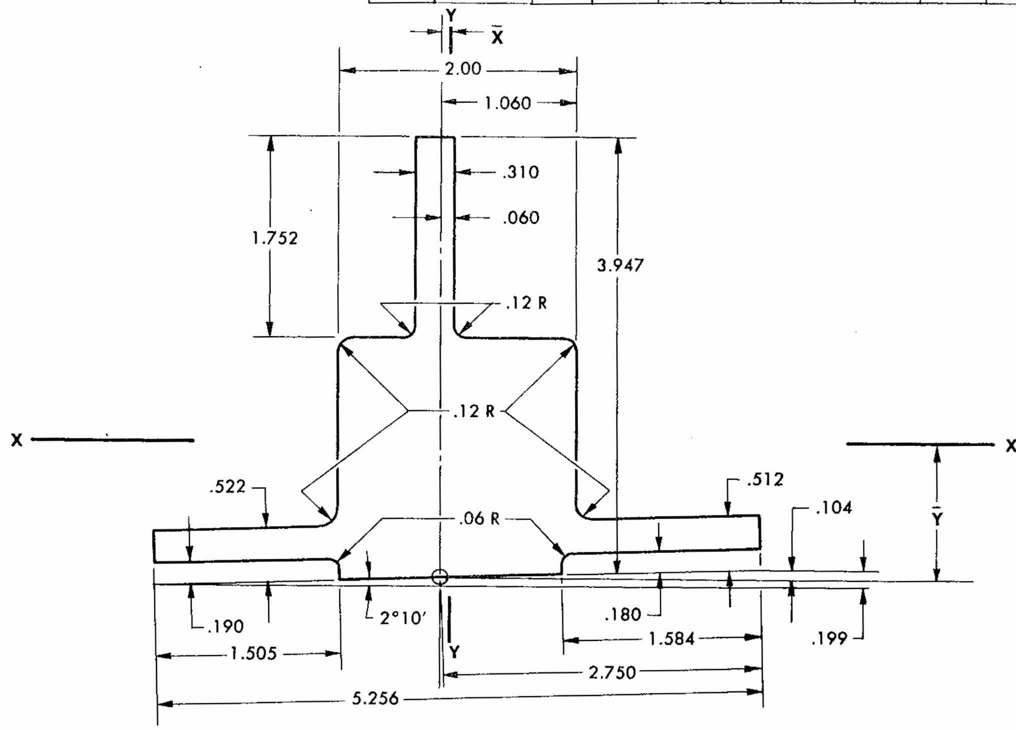


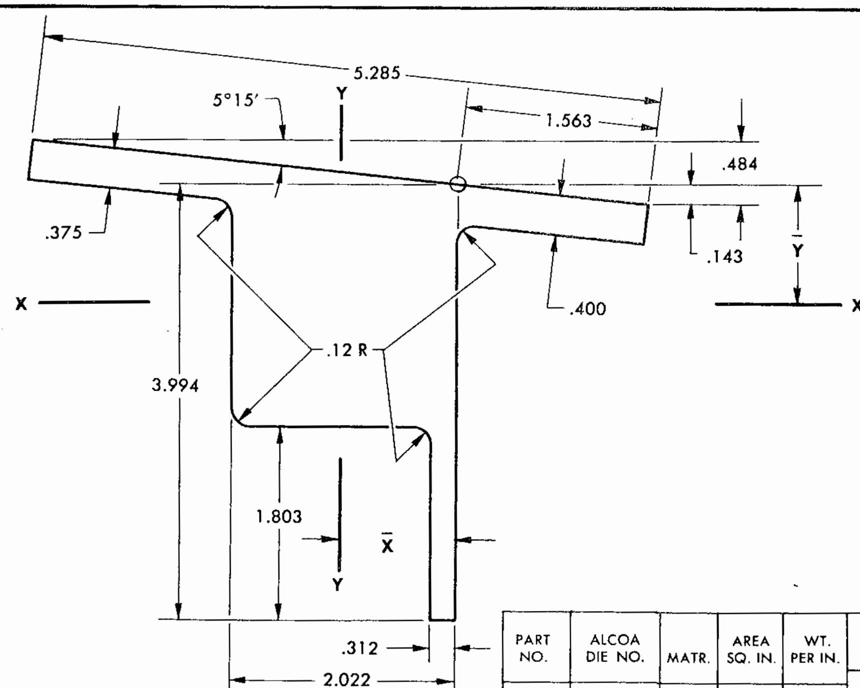


PART NO.	ALCOA DIE NO.	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					Ixx	$\bar{y}$	ρ_{xx}	Iyy	$\bar{x}$	ρ_{yy}	Ixy
LS3510	30892	24S-T	.804	.0804	1.654	1.750	1.434	.165	0	.453	0

Figure 125 (Sheet 10 of 17 Sheets) — Extruded Standards

PART NO.	ALCOA DIE NO.	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					I_{xx}	$\bar{y}$	ρ_{xx}	I_{yy}	$\bar{x}$	ρ_{yy}	I_{xy}
LS3697	38207	14S-T	5.996	.606	4.517	1.131	.868	5.240	.053	.935	−.0899





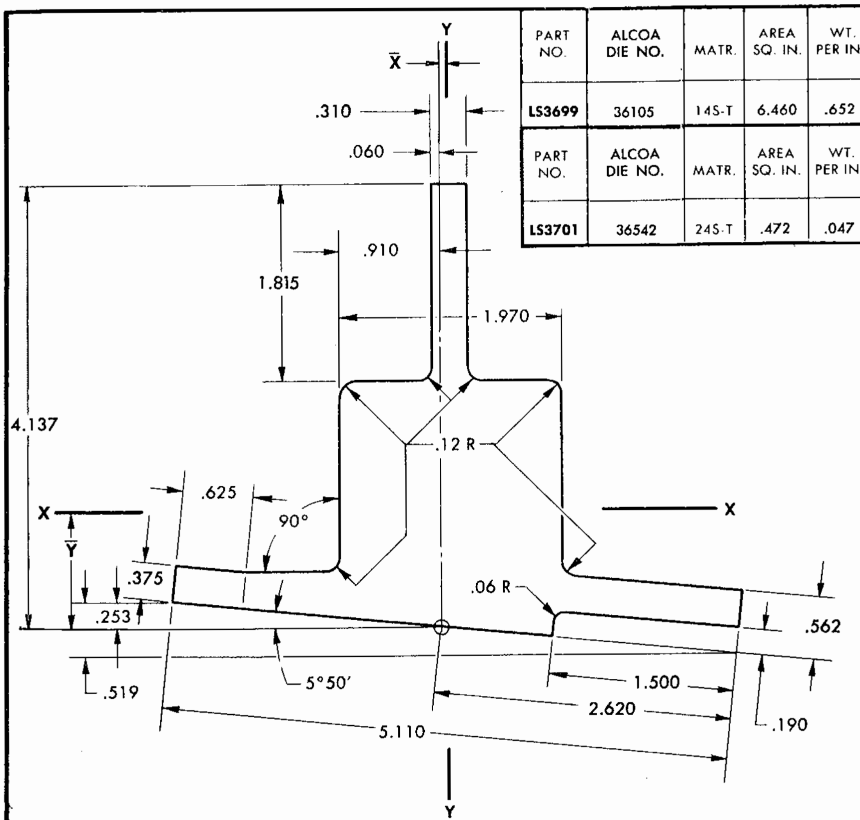
PART NO.	ALCOA DIE NO.	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					I_{xx}	$\bar{y}$	ρ_{xx}	I_{yy}	$\bar{x}$	ρ_{yy}	I_{xy}
LS3698	36107	14S-T	6.450	.651	5.723	1.040	.972	6.433	.060	1.000	−1.5744

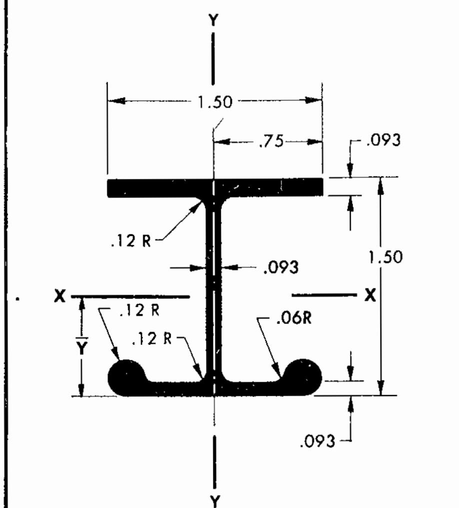
AB 6311

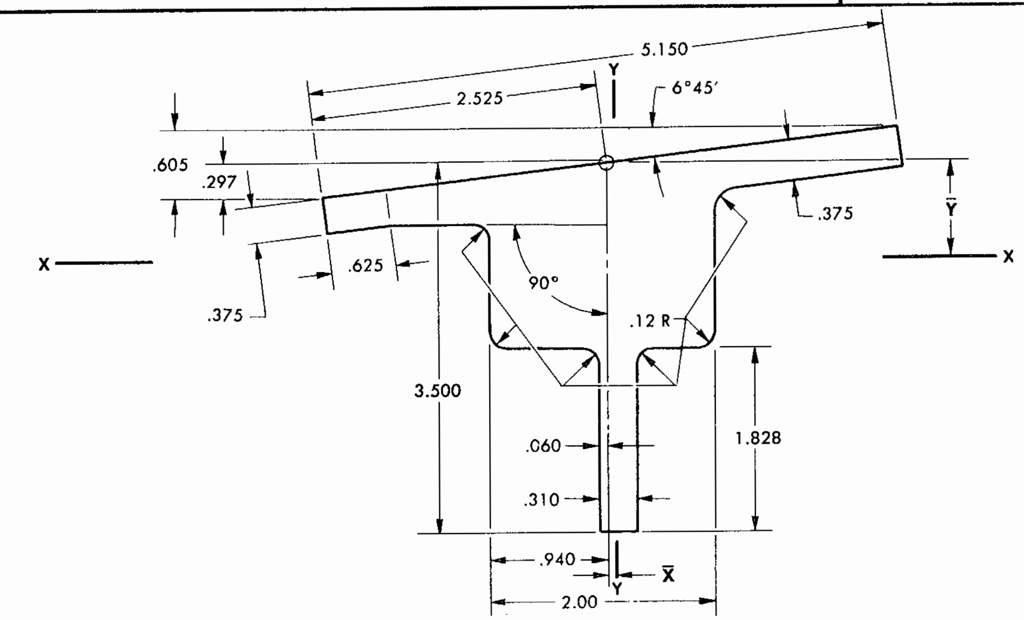
Figure 125 (Sheet 11 of 17 Sheets) — Extruded Standards

PART NO.	ALCOA DIE NO.	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					Ixx	ȳ	ρxx	Iyy	x̄	ρyy	Ixy
LS3699	36105	14S-T	6.460	.652	5.634	1.170	.939	5.492	.085	.927	—.2586

PART NO.	ALCOA DIE NO.	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					Ixx	ȳ	ρxx	Iyy	x̄	ρyy	Ixy
LS3701	36542	24S-T	.472	.047	.177	.685	.612	.072	0	.390	0



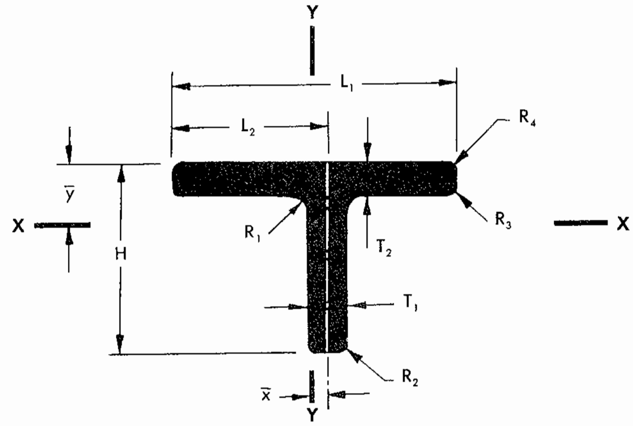




PART NO.	ALCOA DIE NO.	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					Ixx	ȳ	ρxx	Iyy	x̄	ρyy	Ixy
LS3700	36104	14S-T	5.155	.521	3.264	.872	.796	5.166	.071	1.001	+.4979

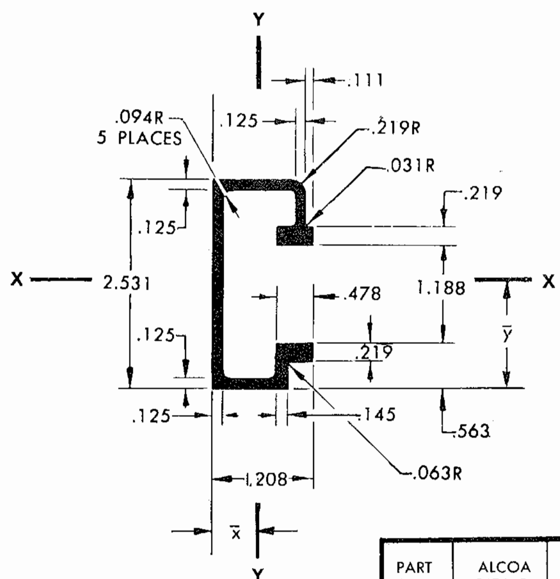
AB 6312

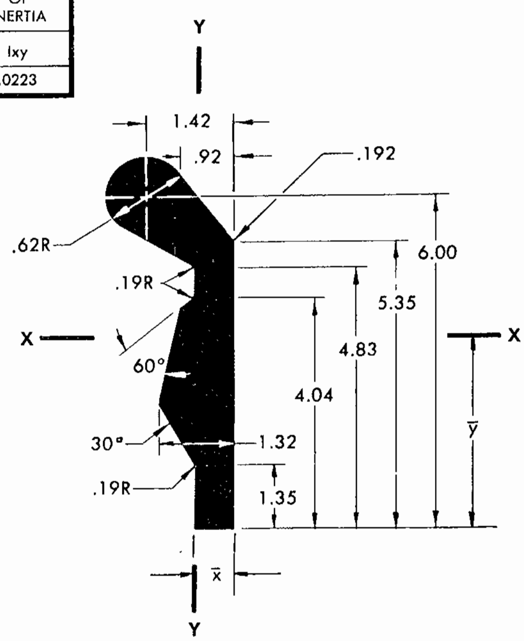
Figure 125 (Sheet 12 of 17 Sheets) — Extruded Standards



PART NO.	ALCOA DIE NO.	H	L_1	L_2	T_1	T_2	R_1	R_2	R_3	R_4	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
														Ixx	$\bar{y}$	ρxx	Iyy	$\bar{x}$	ρyy	Ixy
LS236	K-22088	1.000	1.500		.065	.065	.125	.015	.032	.010	24S-T	.166	.0166	.0140	– .219	.291	.007	0	.335	0
LS304	31221	4.750	2.800	1.525	.250	.750	.160	.010	.010	.010	14S-T	3.111	.314	5.254	–1.140	1.300	1.388	–.084	.668	–.2008
LS478	31261	1.000	1.870		.620	.093	.125	.125	.010	.010	24S-T	.736	.0736	.072	– .428	.312	.069	0	.305	0
LS1450		4.375	4.000	2.000	.250	.375	.160	.010	.010	.010	24S-T4	2.511	.251	4.227	1.0597	1.297	2.0524	0	.904	0
LS3233	599	1.000	1.250		.125	.125	.062	.062	.062	.062	24S-T	.262	.0262	.022	– .266	.291	.019	0	.271	0
LS3539	L-24989	1.500	4.000	2.359	.094	.094	.094	.010	.010	.010	24S-T	.512	.0512	.077	– .241	.388	.514	–.264	1.002	–.0262

PART NO.	ALCOA DIE NO.	MATR.	SQ. IN. AREA	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					Ixx	$\bar{y}$	ρxx	Iyy	$\bar{x}$	ρyy	Ixy
LS317	31210	14S-T	.821	.0821	.670	1.268	.900	.145	.501	.418	.0223

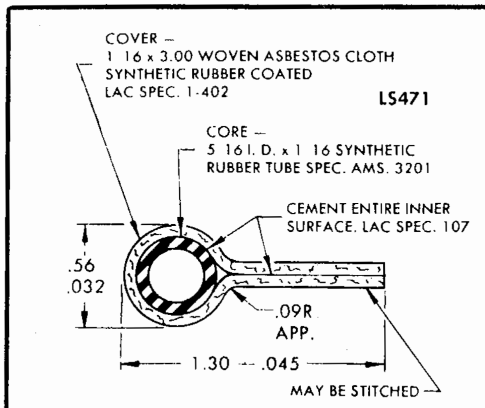




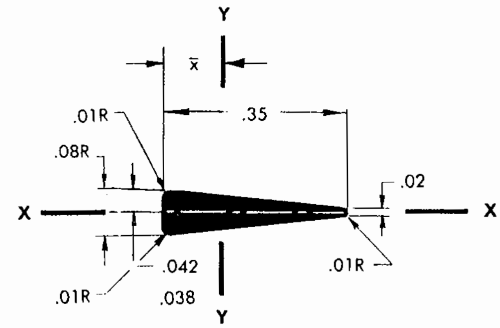
PART NO.	ALCOA DIE NO.	MATR.	SQ. IN. AREA	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					Ixx	$\bar{y}$	ρxx	Iyy	$\bar{x}$	ρyy	Ixy
LS468	35446	24S-T	6.579	.6579	22.714	3.606	1.858	1.499	–.673	.477	–3.230

AB 7366

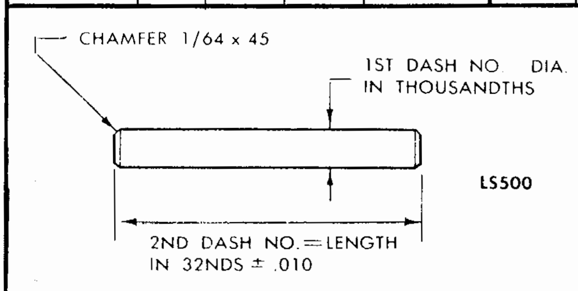
Figure 125 (Sheet 13 of 17 Sheets) — Extruded Standards

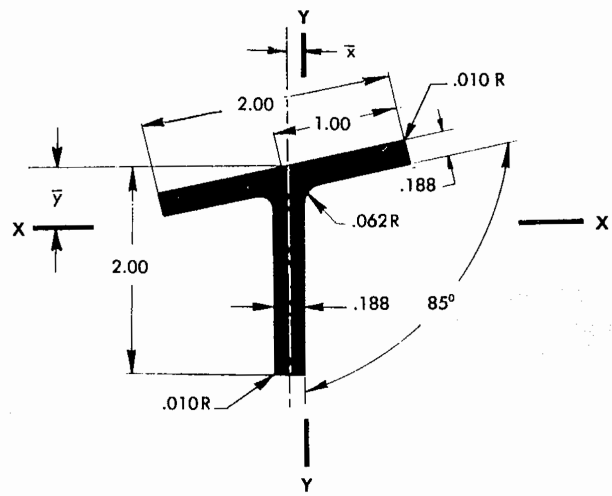


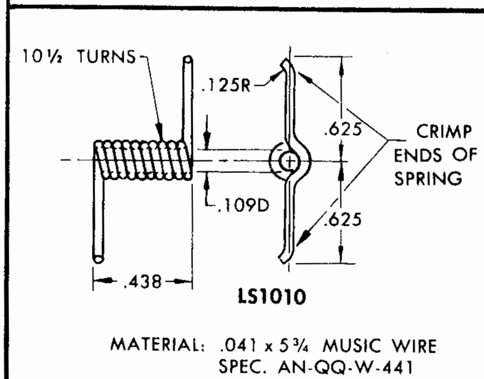
PART NO.	AREA SQ. IN.	WT. PER IN.
LS471	.283	.0037



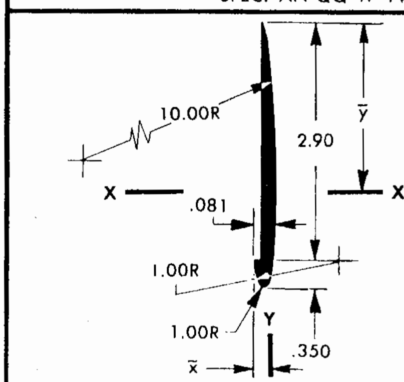
PART NO.	ALCOA DIE NO.	MATR.	SQ. IN. AREA	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					Ixx	ȳ	ρxx	Iyy	x̄	ρyy	Ixy
LS537	31341	53S-T	.017	.0017	0	0	0	.0002	.140	.099	0







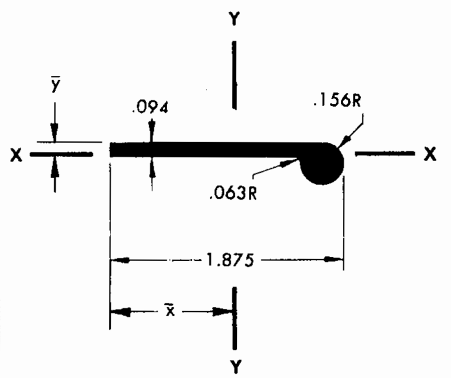
PART NO.	ALCOA DIE NO.	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					Ixx	ȳ	ρxx	Iyy	x̄	ρyy	Ixy
LS628	42694	24S-T	.718	.0718	.275	—.568	.618	.125	.004	.418	.0123



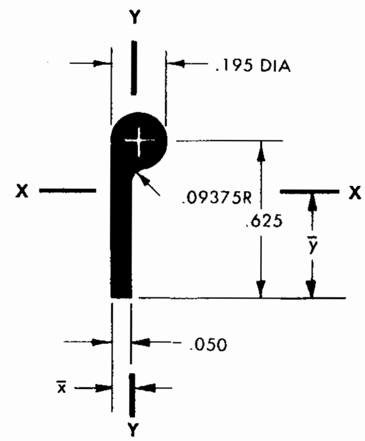
PART NO	ALCOA DIE NO.	MATR.	SQ. IN. AREA	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					Ixx	ȳ	ρxx	Iyy	x̄	ρyy	Ixy
LS1187	31775	24S-T	.554	.0554	.351	—1.937	.796	.003	.257	.079	.0029

Figure 125 (Sheet 14 of 17 Sheets) — Extruded Standards

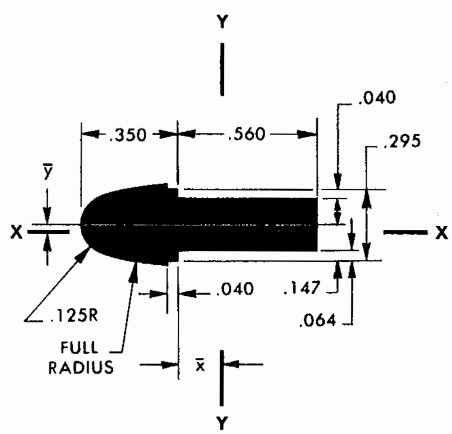
PART NO.	ALCOA DIE NO.	MATR.	SQ. IN. AREA	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					Ixx	$\bar{y}$	ρ_{xx}	Iyy	$\bar{x}$	ρ_{yy}	Ixy
LS1163	13435	24S-T	.229	.0229	.001	—.083	.072	.076	1.115	.575	—.0050



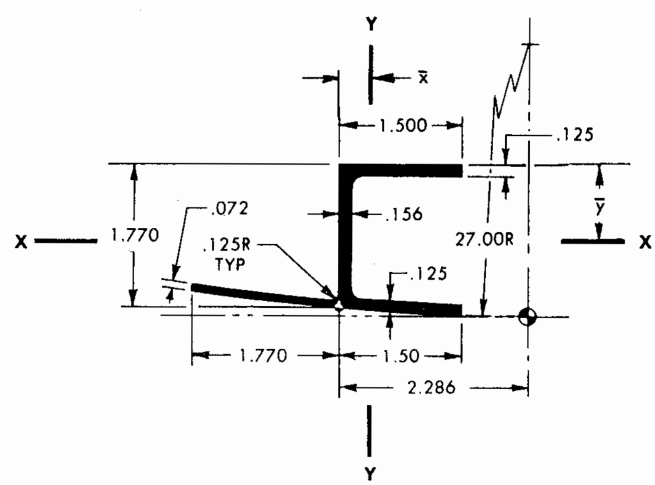
PART NO.	ALCOA DIE NO.	MATR.	SQ. IN. AREA	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					Ixx	$\bar{y}$	ρ_{xx}	Iyy	$\bar{x}$	ρ_{yy}	Ixy
LS1542	32965	24S-T	.060	.006	.003	.460	.205	.0002	.062	.052	.0004

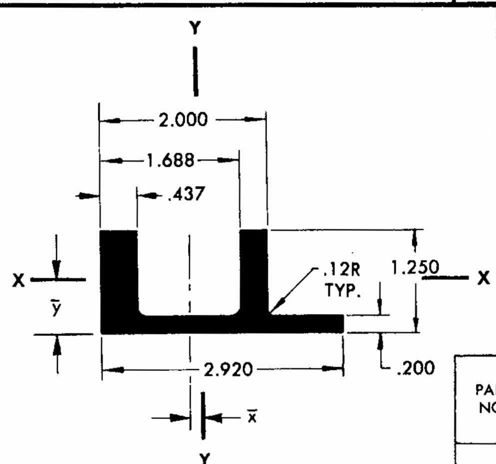


PART NO.	ALCOA DIE NO.	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					Ixx	$\bar{y}$	ρ_{xx}	Iyy	$\bar{x}$	ρ_{yy}	Ixy
LS1188	31916	24S-T	.200	.020	.001	.007	.070	.013	.078	.253	.0003



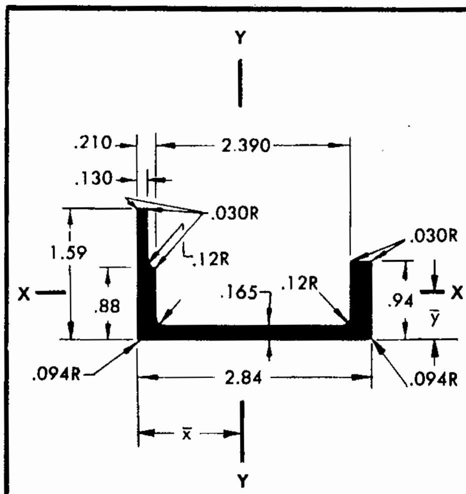
PART NO.	ALCOA DIE NO.	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					Ixx	$\bar{y}$	ρ_{xx}	Iyy	$\bar{x}$	ρ_{yy}	Ixy
LS1544	32989	24S-T	.749	.0749	.390	—1.044	.722	.376	.262	.708	.0985



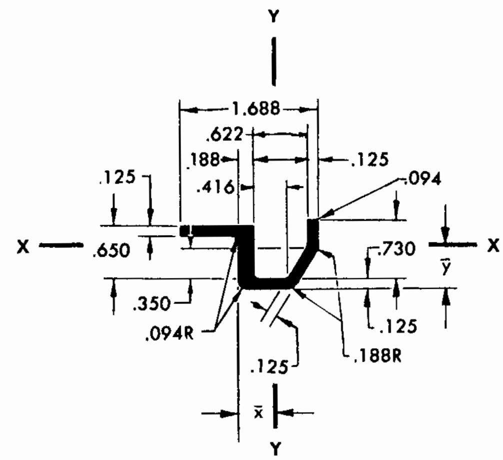


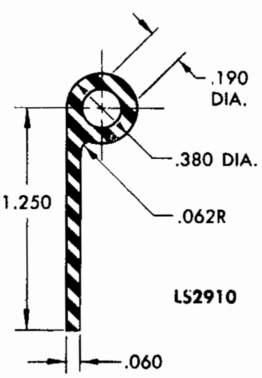
PART NO.	ALCOA DIE NO.	MATR.	SQ. IN. AREA	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					Ixx	$\bar{y}$	ρ_{xx}	Iyy	$\bar{x}$	ρ_{yy}	Ixy
LS1543	32988	24S-T	1.413	.1413	.211	.463	.387	1.076	1.127	.873	-.1226

Figure 125 (Sheet 15 of 17 Sheets) — Extruded Standards



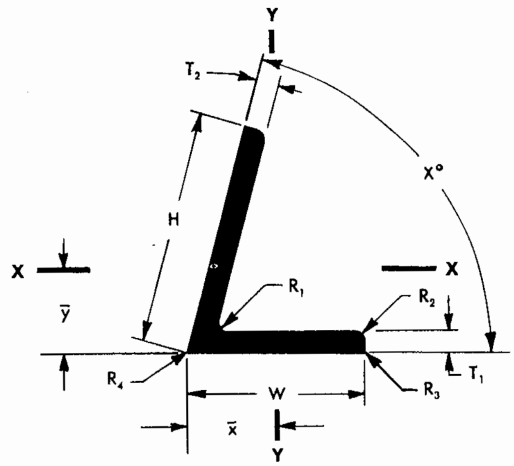
PART NO.	ALCOA DIE NO.	MATR.	SQ. IN. AREA	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					Ixx	ȳ	ρxx	Iyy	x̄	ρyy	Ixy
LS1545	32902	75S-T	.902	.0911	.139	.374	.392	1.058	1.326	1.083	–.0959





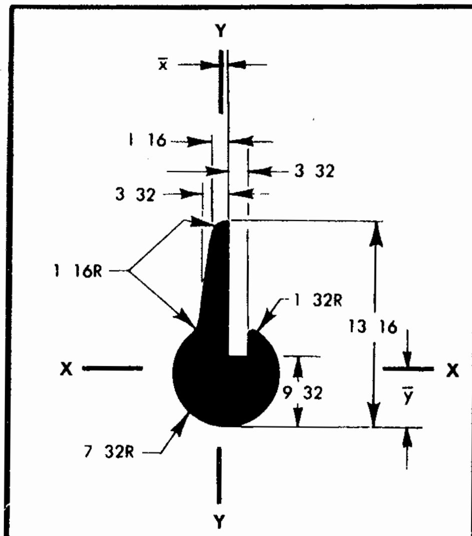
MATERIAL: RUBBER
SPEC. AMS. 3208

PART NO.	ALCOA DIE NO.	MATR.	SQ. IN. AREA	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					Ixx	ȳ	ρxx	Iyy	x̄	ρyy	Ixy
LS1553	32976	24S-T	.398	.0398	.027	.430	.263	.081	.239	.452	–.0158

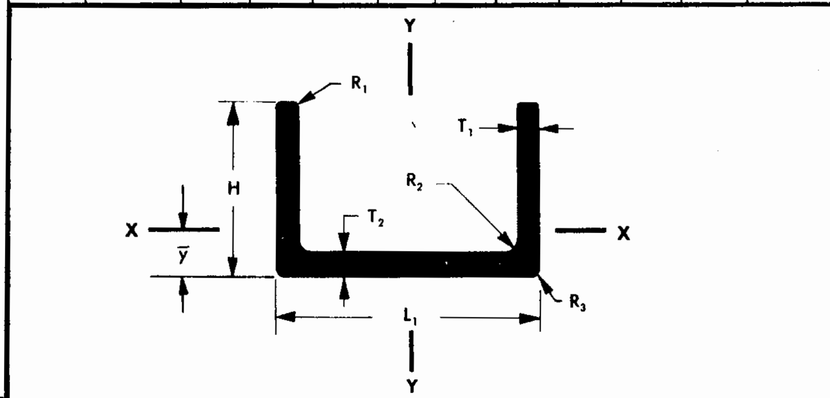


PART NO.	ALCOA DIE NO.	H	L	T_1	T_2	R_1	R_2	R_3	R_4	X°	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
														Ixy	ȳ	ρxx	Iyy	ȳ	ρyy	Ixy
LS3206	734-P	1.250	2.000	.125	.125	.188	.125	.010	.010	90	24S-T	.391	.0391	.047	.279	.348	.158	.647	.634	–.0498
LS3289	L-24512	1.000	1.000	.094	.094	.125	.047	.010	.010	106	24S-T	.182	.0182	.016	.277	.299	.025	.208	.368	–.0147
LS3395	77-D	1.500	1.500	.250	.250	.188	.125	.010	.010	90	24S-T	.688	.0688	.135	.460	.443	.135	.460	.443	–.0781
LS3498	K-11472	1.000	1.500	.063	.063	.063	.031	.010	.010	90	24S-T	.154	.0154	.013	.222	.294	.036	.471	.486	–.0129
LS3523	A30949	1.250	2.750	.120	.120	.188	.125	.010	.010	90	24S-T	.466	.0466	.049	.235	.324	.366	.973	.886	–.0747

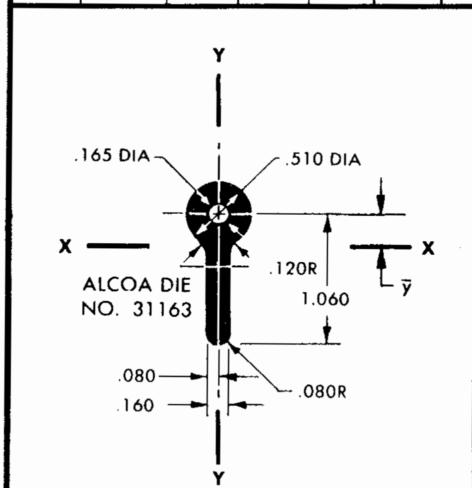
Figure 125 (Sheet 16 of 17 Sheets) — Extruded Standards

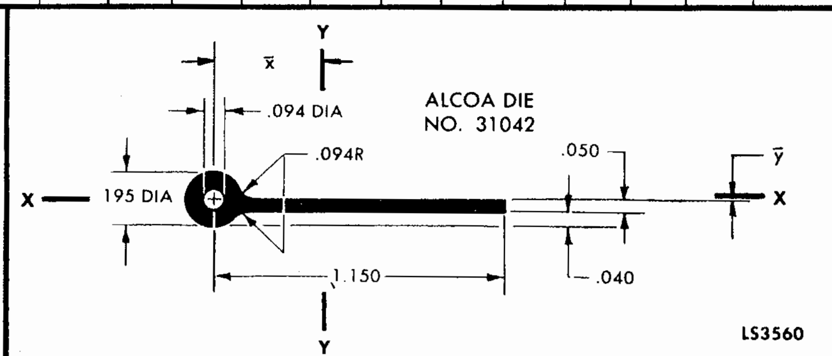


PART NO.	ALCOA DIE NO.	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y [1]			PRODUCT OF INERTIA
					Ixx	$\bar{y}$	ρ_{xx}	Iyy	$\bar{x}$	ρ_{yy}	Ixy
LS3220	K-6086	24S-T	.163	.0163	.006	.276	.185	.002	.010	.103	-.0004



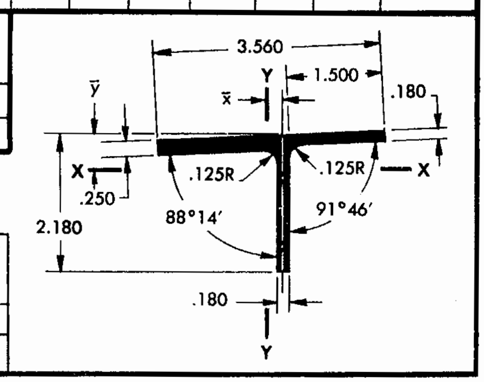
PART NO.	ALCOA DIE NO.	H	L	T_1	T_2	R_1	R_2	R_3	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
												Ixx	$\bar{y}$	ρ_{xx}	Iyy	$\bar{x}$	ρ_{yy}	Ixx
LS3484	L-24051	1.000	1.500	.188	.188	.010	.031	.010	24S-T	.588	.0588	.054	.354	.304	.185	0	.561	0
LS3515		1.250	1.630	.125	.125	.062	.125	.010	24S-T	.489	.0489	.075	.419	.393	.207	0	.650	0





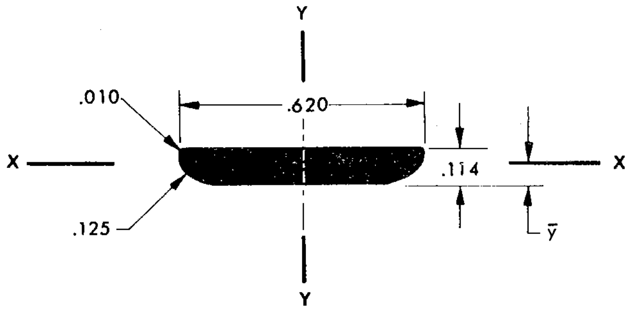
PART NO.	ALCOA DIE NO.	MATR.	SQ. IN. AREA	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					Ixx	$\bar{y}$	ρ_{xx}	Iyy	$\bar{x}$	ρ_{yy}	Ixy
LS3560	31042	53S-T	.568	.0568	.065	.312	.339	.521	0	.958	0

PART NO.	ALCOA DIE NO.	MATR.	SQ. IN. AREA	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					Ixx	$\bar{y}$	ρ_{xx}	Iyy	$\bar{x}$	ρ_{yy}	Ixy
LS3684	31163	53S-T	.304	.0304	.041	.265	.364	.004	0	.107	0

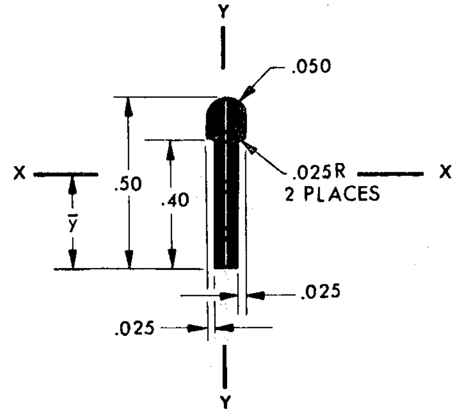


PART NO.	ALCOA DIE NO.	MATR.	SQ. IN. AREA	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					Ixx	$\bar{y}$	ρ_{xx}	Iyy	$\bar{x}$	ρ_{yy}	Ixy
LS473	31377	14S T	1 139	.114	399	-.459	.592	.819	-.224	.848	-.0493

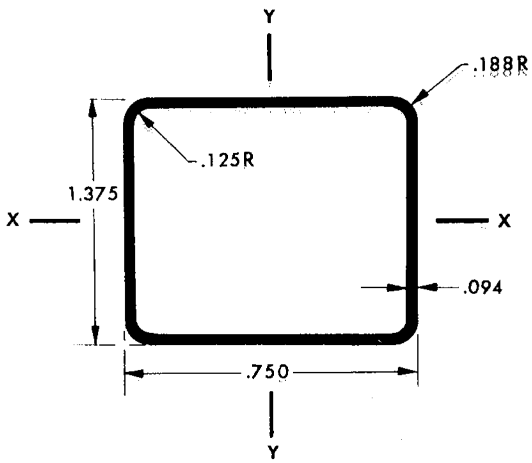
Figure 125 (Sheet 17 of 17 Sheets) — Extruded Standards



PART NO.	ALCOA DIE NO.	MATR	AREA SQ IN.	WT PER IN.	AXIS X-X Ixx	$\bar{y}$	ρ_{xx}	AXIS Y-Y Iyy	$\bar{x}$	ρ_{yy}	PRODUCT OF INERTIA Ixy
LS496	31278	24S-T	.064	.0064	.0001	.0602	.0331	.0017	0	.164	0

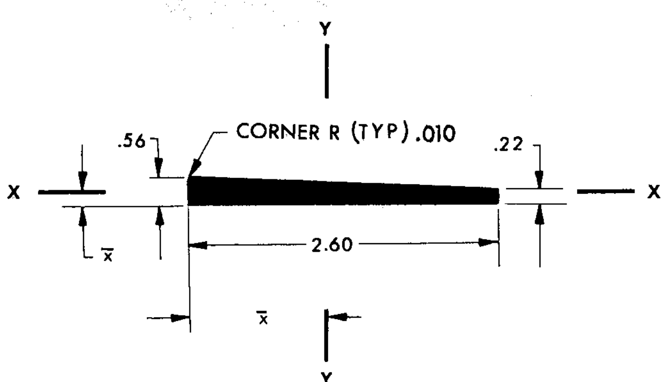


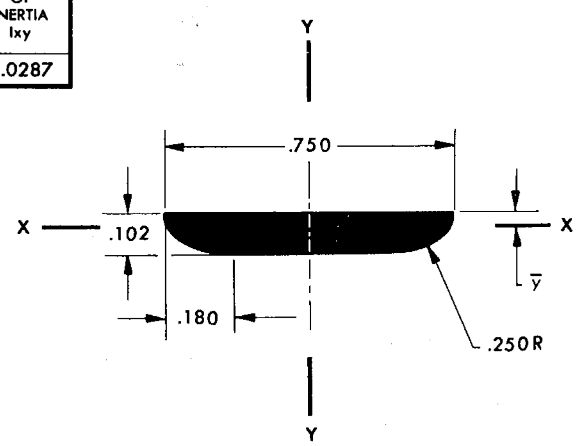
PART NO.	ALCOA DIE NO.	MATR	AREA SQ IN.	WT PER IN.	AXIS X-X Ixx	$\bar{y}$	ρ_{xx}	AXIS Y-Y Iyy	$\bar{x}$	ρ_{yy}	PRODUCT OF INERTIA Ixy
LS639	31371	53S-T	.0289	.0029	.0007	.2735	.1515	.0001	0	.0185	0



PART NO.	ALCOA DIE NO.	MATR	AREA SQ IN.	WT PER IN.	AXIS X-X Ixx	$\bar{y}$	ρ_{xx}	AXIS Y-Y Iyy	$\bar{x}$	ρ_{yy}	PRODUCT OF INERTIA Ixy
LS700		24S-T	.336	.0336	.0716	0	.461	.0272	0	.284	0

PART NO.	ALCOA DIE NO.	MATR	AREA SQ IN.	WT PER IN.	AXIS X-X Ixx	$\bar{y}$	ρ_{xx}	AXIS Y-Y Iyy	$\bar{x}$	ρ_{yy}	PRODUCT OF INERTIA Ixy
LS1596	43177	24S-T	1.014	.1014	.0612	.2074	.1316	1.624	1.111	.606	-.0287



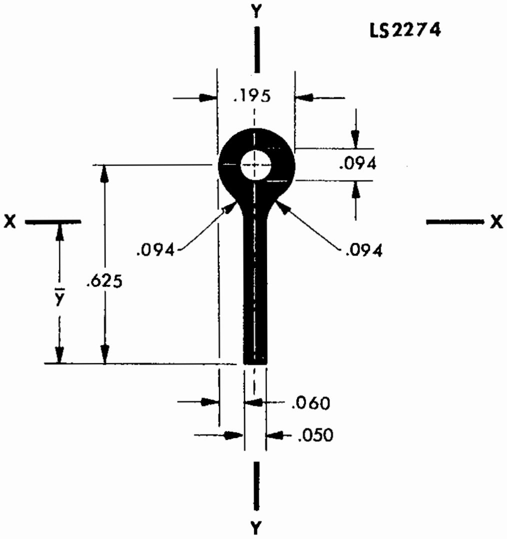


PART NO.	ALCOA DIE NO.	MATR	AREA SQ IN.	WT PER IN.	AXIS X-X Ixx	$\bar{y}$	ρ_{xx}	AXIS Y-Y Iyy	$\bar{x}$	ρ_{yy}	PRODUCT OF INERTIA Ixy
LS1088	31601	75S-T	.0678	.0068	.0001	-.047	.0297	.0026	0	.197	0

AB . . 61

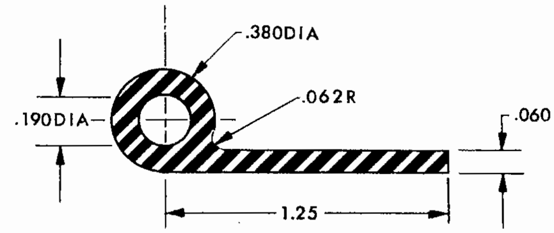
Figure 125 (Sheet 17A of 17 Sheets) — Extruded Standards

LS2274



PART NO.	ALCOA DIE NO.	MATR	AREA SQ IN.	WT PER IN.	AXIS X-X Ixx	$\bar{y}$	ρ_{xx}	AXIS Y-Y Iyy	$\bar{x}$	ρ_{yy}	PRODUCT OF INERTIA Ixy
LS2274	L-24733	53S-T	.050	.005	.0023	.4359	.2132	.0001	0	.0397	.0001

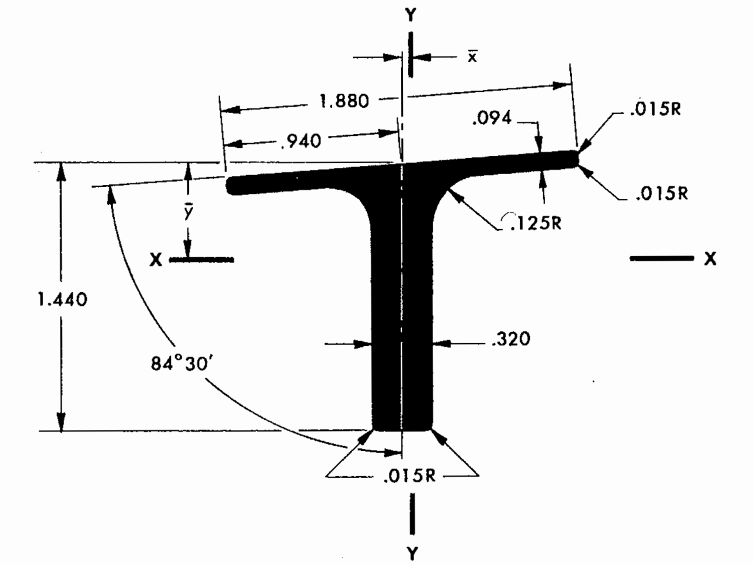
LS2910

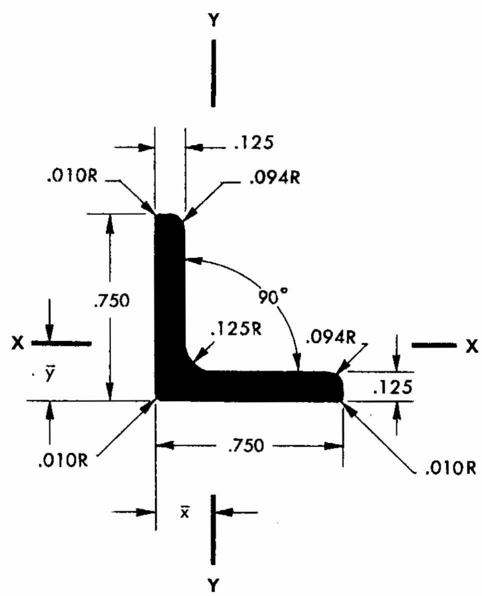


MATR—EXTRUDED SYNTHETIC RUBBER SPEC AMS 3208

AREA SQ IN.—.1576

WT PER IN.—.0071





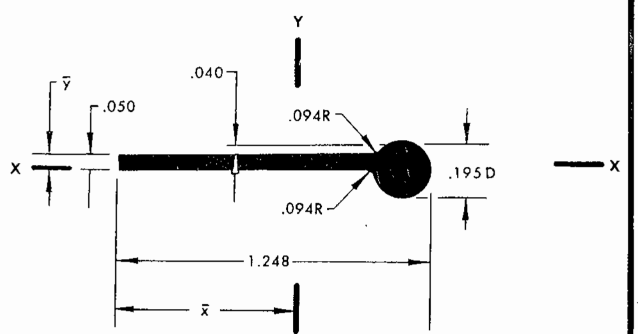
PART NO.	ALCOA DIE NO.	MATR	AREA SQ. IN.	WT. PER IN.	AXIS X-X Ixx	$\bar{y}$	ρ_{xx}	AXIS Y-Y Iyy	$\bar{x}$	ρ_{yy}	PRODUCT OF INERTIA Ixy
LS1532	32757	24S-T4	.622	.0622	.134	-.554	.465	.057	.003	.302	.0058

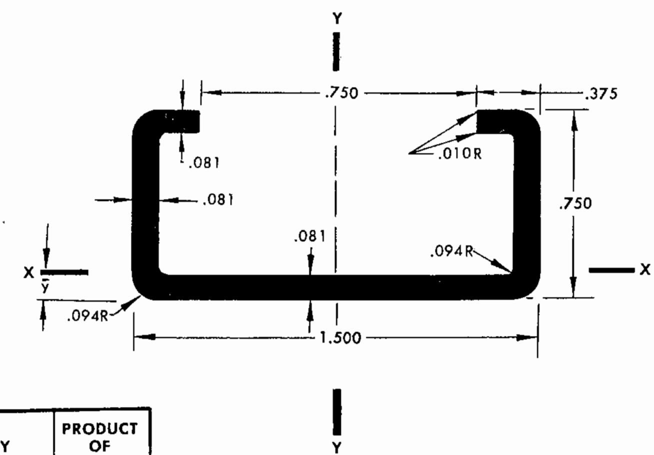
PART NO.	ALCOA DIE NO.	MATR	AREA SQ. IN.	WT. PER IN.	AXIS X-X Ixx	$\bar{y}$	ρ_{xx}	AXIS Y-Y Iyy	$\bar{x}$	ρ_{yy}	PRODUCT OF INERTIA Ixy
LS3223	77-A	24S-T	.171	.0171	.008	.227	.218	.008	.227	.218	−.0047

AB 2382

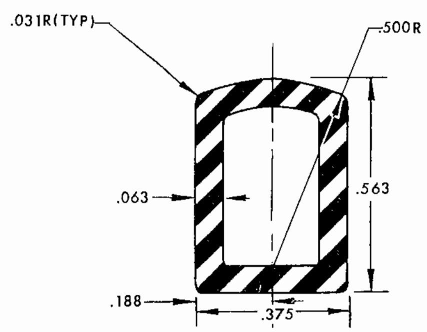
Figure 125 (Sheet 17B of 17 Sheets) — Extruded Standards

PART NO.	HARVEY DIE NO.	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					Ixx	ȳ	ρxx	Iyy	x̄	ρyy	Ixy
LS1713	12143-3	53S-T	.086	.0086	.0001	.037	.035	.012	.757	.385	.0004

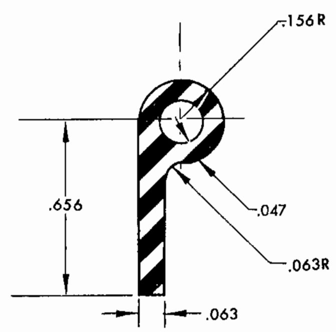




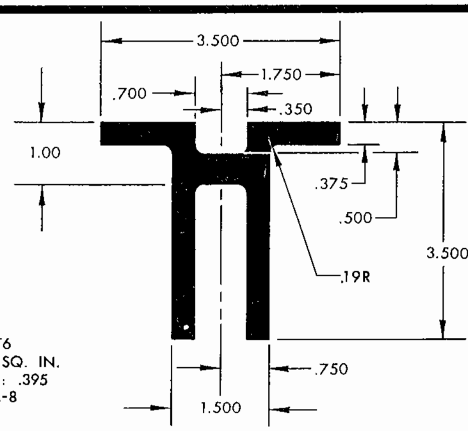
PART NO.	ALCOA DIE NO.	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					Ixx	ȳ	ρxx	Iyy	x̄	ρyy	Ixy
LS3245	L 24758	24S-T4	.259	.0259	.0191	.296	.272	.0805	0	.558	0



LS2936
AREA: .0994 SQ. IN.
WT. PER IN.: .00447
SPEC. AMS 3208



LS2942
AREA: .0771 SQ. IN.
WT. PER IN.: .0035
SPEC. AMS 3240



LS494
MAT'L: 14S-T6
AREA: 3.947 SQ. IN.
WT. PER IN.: .395
SPEC. AN-A-8

AB 7364

Figure 125 (Sheet 17C of 17 Sheets) — Extruded Standards

SECTION IX
MATERIALS, SPECIFICATIONS, AND STANDARDS

1. UNIT WEIGHT OF MATERIALS.

Materials	*Unit Weight*
A. METALS	
2S	.098 lb/cu in.
3S	.099 lb/cu in.
14S	.101 lb/cu in.
24S	.100 lb/cu in.
195T	.100 lb/cu in.
220T	.092 lb/cu in.
Aluminum Bronze	.280 lb/cu in.
Brass, Cast. & Sheet	.313 lb/cu in.
Brass, Naval	.304 lb/cu in.
Bronze, Tobin	.304 lb/cu in.
Cadmium	.313 lb/cu in.
Copper	.323 lb/cu in.
Inconel	.310 lb/cu in.
Iron, Cast.	.261 lb/cu in.
Lead, Grade B	.393 lb/cu in.
Lead, Pure	.409 lb/cu in.
Manganese Bronze	.302 lb/cu in.
Magnesium Alloy	.065 lb/cu in.
Monel	.318 lb/cu in.
Stainless Steel	.286 lb/cu in.
Steel	.283 lb/cu in.
Zinc, Pure	.258 lb/cu in.
B. LIQUIDS	
Kerosene at 60 degrees	6.60 lb/U.S. gal.
Hydraulic Fluid, (Spec. AN-VV-O-366A)	7.03 lb/U.S. gal.
(Spec. 3580)	7.23 lb/U.S. gal.
(Spec. 3586)	7.87 lb/U.S. gal.
Oil, Lubricating	7.50 lb/U.S. gal.
C. PAINTS	
Clear Nitrate Dope	.0052-.0076 lb/sq ft.
Pigmented Dope	.0056-.0083 lb/sq ft.
Lacquer	.0056-.0090 lb/sq ft.
Primers	.0035-.0069 lb/sq ft.
D. FABRIC	
Mercerized Cotton	
Grade A (All except 90 inch width)	.00020 lb/sq in.
Grade A (90 inch width)	.00022 lb/sq in.
Grade B (All except 90 inch width)	.00022 lb/sq in.
Grade B (90 inch width)	.00023 lb/sq in.
E. WELDING	
Steel	.0035 lb/in.
Aluminum	.0012 lb/in.

Note

See AN 01-75FJA-2, section VI, for material specifications.

2. STANDARD MATERIALS.

In the original manufacture of the airplane, the contractor has made every effort to utilize standard materials to the fullest extent, particularly plate, tubing, electric wiring, cable, etc. If these standard materials are available, they should in all cases be used. Otherwise substitutions may be made, observing the specifications on physical properties, as well as applicable "remarks" shown on the material specification tables in section VI of AN 01-75FJA-2. The tables comprise the standard materials commonly used in P-80 series airplanes.

3. PHYSICAL PROPERTIES OF MATERIALS.

Physical properties of materials, as specified in the tables shown in section VI of AN 01-75FJA-2, are minimum values unless otherwise noted. Symbols used to denote physical properties, together with the meaning of these symbols, are given below:

F_{tu} — Ultimate Tensile Stress

F_{ty} — Tensile Yield Stress

F_{su} — Ultimate Shear Stress

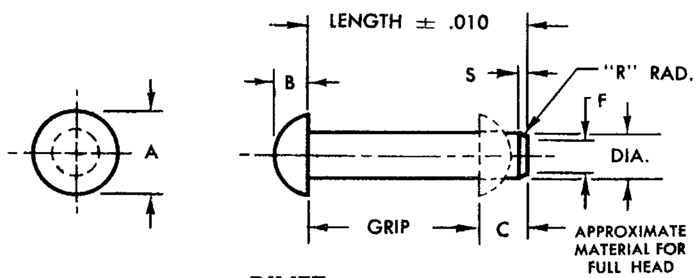
F_{br} — Ultimate Bearing Stress

Physical properties indicated for heat-treated materials represent the lower limit of the range which must be specified for heat treat. Values for cast materials are minimum values for cast test bars.

4. VALUES OF MODULI OF ELASTICITY.

The following are values of moduli of elasticity for materials included in the specification tables in section VI of AN 01-75FJA-2.

Material	*Modulus (PSI)*
Steel, Low Carbon	28×10^6
Steels, Alloy	29×10^6
Steel, Stainless	26×10^6
Aluminum Alloys	10.3×10^6
Magnesium Alloys, Wrought	6.5×10^6
Magnesium Alloys, Cast	6×10^6
Inconel (Nickel, Chromium, Iron Alloy)	31×10^6
Bronze, Aluminum	14×10^6



RIVET

STAINLESS STEEL

LS 1106

DIA.	3/32 + .003 − .001	1/8 + .003 − .001	5/32 + .004 − .001	3/16 + .004 − .001
A	.166	.219	.273	.327
B	.071	.094	.117	.140
C	9/64	3/16	15/64	9/32
F	.071	.092	.118	.137
S	.023	.031	.039	.047
R	.029	.039	.049	.059
		D I A M E T E R		
LENGTH	3/32	1/8	5/32	3/16
3/16	3-3			
1/4	3-4	4-4		
5/16	3-5	4-5		
3/8	3-6	4-6	5-6	6-6
7/16	3-7	4-7	5-7	6-7
1/2	3-8	4-8	5-8	6-8
9/16	3-9	4-9	5-9	6-9
5/8	3-10	4-10	5-10	6-10
11/16	3-11	4-11	5-11	6-11
3/4	3-12	4-12	5-12	6-12
13/16	3-13	4-13	5-13	6-13
7/8	3-14	4-14	5-14	6-14
15/16	3-15	4-15	5-15	6-15
1	3-16	4-16	5-16	6-16
1 1/8		4-18	5-18	6-18
1 1/4		4-20	5-20	6-20
1 3/8		4-22	5-22	6-22
1 1/2		4-24	5-24	6-24
1 3/4			5-28	6-28
2			5-32	6-32

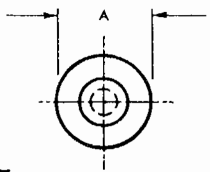
NOTE: CHAMFER DIMENSIONS "F," "S" AND "R" APPLY ONLY TO LENGTHS ABOVE HEAVY LINE.

MATERIAL: CORROSION RESISTANT STEEL SPEC. AN-QQ-S-771 COMP. G SUITABLE FOR SEVERE COLD UPSETTING
FINISH: NONE.
HEAT TREAT: ANNEAL. 70,000 TO 85,000 T.S.

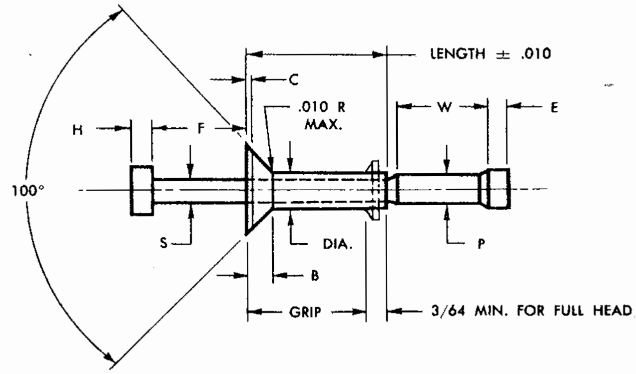
LIMITS: (UNLESS OTHERWISE SPECIFIED
ANGULAR ± 1/2°
FRACTIONAL ± 1/32
DECIMAL ± .010

EXAMPLE OF PART NO.: LS 1106-3-4 — STEEL RIVET, 3/32 DIA. x 1/4 LONG

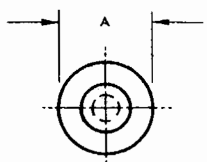
Figure 126 (Sheet 1 of 2 Sheets) — Rivets, Round Head Monel



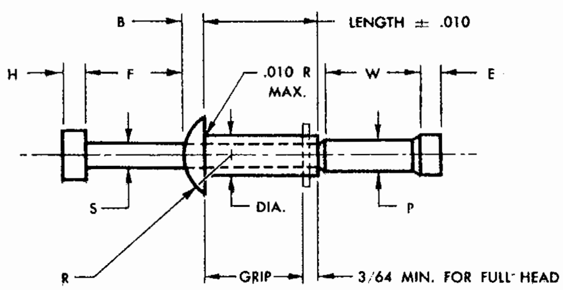
RIVET
100° COUNTERSUNK HEAD
SELF-PLUGGING BLIND
LS 1126



DIA.	1/8 + .0035 − .0010	5/32 + .004 − .001	3/16 + .004 − .001	DIA.		1/8 + .0035 − .0010	5/32 + .004 − .001	3/16 + .004 − .001
A	.219 ± .004	.281 ± .004	.344 ± .005	S		.085 + .002 − .001	.109 + .002 − .001	.128 + .002 − .001
B	.042 ± .002	.055 ± .002	.070 ± .003					
C	.003 ± .002	.033 ± .002	.004 ± .002					
E (MIN.)	3/64	3/64	1/16	GRIP	LENGTH	DASH NUMBERS		
F (MIN.)	1/4	1/4	3/8	1/16	1/8	4-2	5-2	
H (MIN.)	1/16	3/32	7/64	1/8	3/16	4-4	5-4	6-4
P	.102 ± .001	.127 ± .001	.152 ± .001	3/16	1/4	4-6	5-6	6-6
W	9/32	9/32	9/32	1/4	5/16	4-8	5-8	6-8



RIVET
BRAZIER HEAD
SELF-PLUGGING BLIND
LS 1127

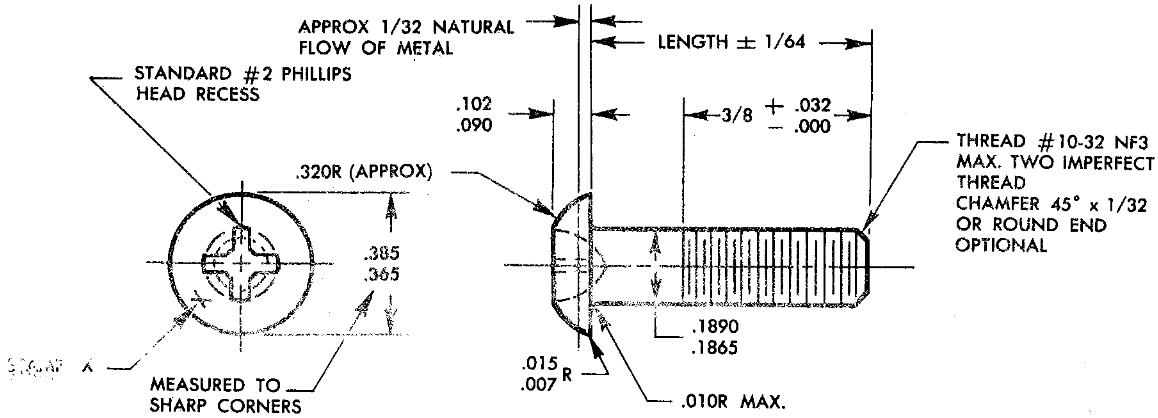


DIA.	1/8 + .0035 − .0010	5/32 + .004 − .001	3/16 + .004 − .001	DIA.		1/8 + .0035 − .0010	5/32 + .004 − .001	3/16 + .004 − .001
A	15/64 ± .005	5/16 ± .006	25/64 ± .020	S		.085 + .002 − .001	.109 + .002 − .001	.128 + .002 − .001
B	3/64 ± .0025	1/16 ± .003	5/64 ± .005					
R	.170 ± .0025	.227 ± .003	.283 ± .010					
E (MIN.)	3/64	3/64	1/16	GRIP	LENGTH	DASH NUMBERS		
F (MIN.)	1/4	1/4	3/8	1/16	1/8	4-2	5-2	
H (MIN.)	1/16	3/32	7/64	1/8	3/16	4-4	5-4	6-4
P	.102 ± .001	.127 ± .001	.152 ± .001	3/16	1/4	4-6	5-6	6-6
W	9/32	9/32	9/32	1/4	5/16	4-8	5-8	6-8

MATERIAL: RIVET—A17ST ALUMINUM ALLOY, SPEC. AN-QQ-W-298
STEM—17ST ALUMINUM ALLOY, SPEC. AN-QQ-W-298
FINISH: ANODIZE—SPEC. AN-QQ-A-696
HEAT TREAT: DO **NOT** RE-HEAT TREAT BEFORE USING

LIMITS: (UNLESS OTHERWISE SPECIFIED)
ANGULAR ± 1/2°
FRACTIONAL ± 1/64
DECIMAL ± .008

Figure 126 (Sheet 2 of 2 Sheets)—Rivets, Cherry



SCREW
NO. 10-32 NICKELSTEEL
LS 560

DASH NO.	LENGTH	GRIP
4	1/4	1/16
5	5/16	1/16
6	3/8	1/16
7	7/16	1/16
8	1/2	1/8
9	9/16	3/16
10	5/8	1/4
11	11/16	5/16
12	3/4	3/8
13	13/16	7/16
14	7/8	1/2
16	1	5/8
18	1 1/8	3/4
20	1 1/4	7/8
22	1 3/8	1
24	1 1/2	1 1/8
28	1 3/4	1 3/8
32	2	1 5/8
48	3	2 5/8

NOTE: 1 THREAD TO WITHIN 1/16 $^{+.000}_{-.015}$ OF ALL SIZES UNDER 1/2" LENGTH, UNLESS OTHERWISE SPECIFIED.
2 HEAD TO BE CONCENTRIC WITH SHANK WITHIN TOTAL RUNOUT OF .005.
3 DIMENSIONS TO BE MET AFTER PLATING.
4 THREAD IN ACCORDANCE WITH SPEC. AN-GGG-S-T26.

MATERIAL: 2330 STEEL SPEC. AN-QQ-S-689

HEAT TREAT: 125,000 TO 145,000# T. S. SPEC. 98-10025

FINISH: CADMIUM PLATE. SPEC. AN-QQ-P-421

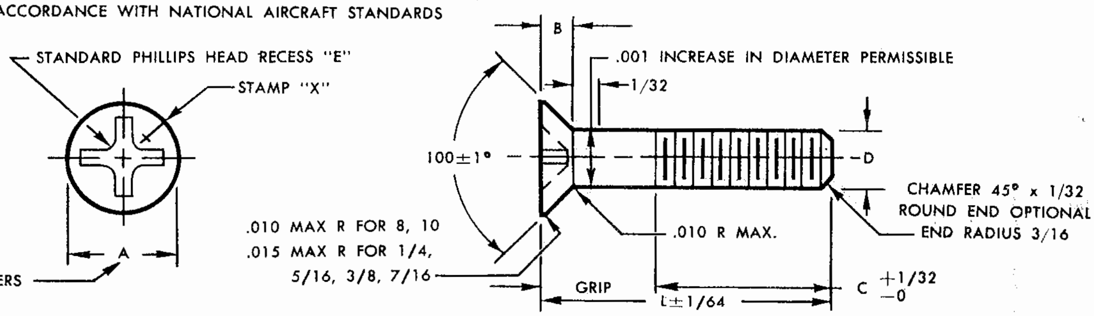
LIMITS: UNLESS OTHERWISE SPECIFIED ±.010 * STRESS APPROVAL BY INSPECTION ONLY

Figure 127 (Sheet 1 of 5 Sheets)—Screws, 10-32 Nickel Steel Round Head

NOTE: DIMENSIONS ARE IN ACCORDANCE WITH NATIONAL AIRCRAFT STANDARDS

SCREWS
100° COUNTERSUNK
PHILLIPS HEAD

HEAD TO BE CONCENTRIC WITH SHANK WITHIN TOTAL RUNOUT OF .005



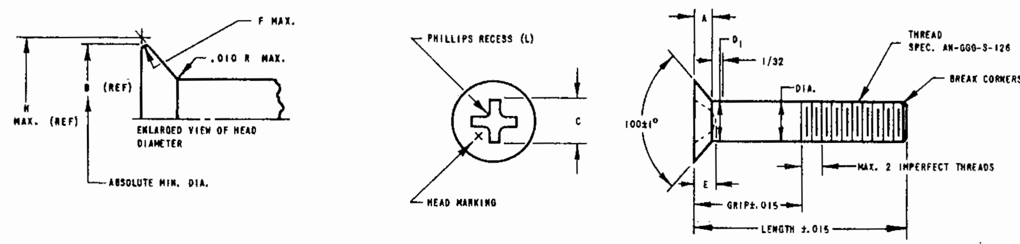
THREAD	8-32 NC3		10-32 NF3		1/4-28 NF3		5/16-24 NF3		3/8-24 NF3		7/16-20 NF3	
A	5/16		3/8		1/2		39/64		3/4		7/8	
B	.069 .063		.080 .074		.106 .100		.132 .126		.158 .152		.186 .180	
C	3/8		3/8		7/16		7/16		1/2		1/2	
D	.1640 .1615		.1890 .1865		.2490 .2465		.3115 .3090		.3740 .3715		.4365 .4340	
E	NO. 2		NO. 2		NO. 3		NO. 4 (MODIFIED)		NO. 4		NO. 4	
LENGTH ("L")	GRIP	PART NO.	GRIP	PART NO.	GRIP	PART NO.	GRIP	PART NO.	GRIP	PART NO.	GRIP	PART NO.
1/4	★	LS 576-4										
5/16	★	LS 576-5	★	LS 577-5								
3/8	★	LS 576-6	★	LS 577-6								
7/16	★	LS 576-7	★	LS 577-7								
1/2	1/8	LS 576-8	1/8	LS 577-8								
9/16	3/16	LS 576-9	3/16	LS 577-9	1/8	LS 578-9						
5/8	1/4	LS 576-10	1/4	LS 577-10	3/16	LS 578-10	3/16	LS 579-10				
11/16	5/16	LS 576-11	5/16	LS 577-11	1/4	LS 578-11	1/4	LS 579-11				
3/4	3/8	LS 576-12	3/8	LS 577-12	5/16	LS 578-12	5/16	LS 579-12				
13/16	7/16	LS 576-13	7/16	LS 577-13	3/8	LS 578-13	3/8	LS 579-13				
7/8	1/2	LS 576-14	1/2	LS 577-14	7/16	LS 578-14	7/16	LS 579-14				
15/16			9/16	LS 577-15	1/2	LS 578-15	1/2	LS 579-15	7/16	LS 582-15		
1	5/8	LS 576-16	5/8	LS 577-16	9/16	LS 578-16	9/16	LS 579-16	1/2	LS 582-16		
1 1/16					5/8	LS 578-17						
1 1/8	3/4	LS 576-18	3/4	LS 577-18	11/16	LS 578-18	11/16	LS 579-18	5/8	LS 582-18	5/8	LS 573-18
1 3/16			13/16	LS 577-19	3/4	LS 578-19	3/4	LS 579-19				
1 1/4	7/8	LS 576-20	7/8	LS 577-20	13/16	LS 578-20	13/16	LS 579-20	3/4	LS 582-20		
1 5/16			15/16	LS 577-21	7/8	LS 578-21	7/8	LS 579-21				
1 3/8	1	LS 576-22	1	LS 577-22	15/16	LS 578-22	15/16	LS 579-22	7/8	LS 582-22		
1 7/16			1 1/16	LS 577-23	1	LS 578-23	1	LS 579-23				
1 1/2			1 1/8	LS 577-24	1 1/16	LS 578-24	1 1/16	LS 579-24	1	LS 582-24		
1 9/16			1 3/16	LS 577-25								
1 5/8			1 1/4	LS 577-26	1 3/16	LS 578-26	1 3/16	LS 579-26	1 1/8	LS 582-26		
1 11/16			1 5/16	LS 577-27	1 1/4	LS 578-27	1 1/4	LS 579-27				
1 3/4	1 3/8	LS 576-28	1 3/8	LS 577-28	1 5/16	LS 578-28	1 5/16	LS 579-28	1 1/4	LS 582-28		
1 13/16					1 3/8	LS 578-29						
1 7/8			1 1/2	LS 577-30	1 7/16	LS 578-30	1 7/16	LS 579-30	1 3/8	LS 582-30		
2	1 5/8	LS 576-32	1 5/8	LS 577-32	1 9/16	LS 578-32	1 9/16	LS 579-32	1 1/2	LS 582-32	1 1/2	LS 573-32
2 1/8			1 3/4	LS 577-34	1 11/16	LS 578-34	1 11/16	LS-579-34	1 5/8	LS 582-34		
2 1/4			1 7/8	LS 577-36	1 13/16	LS 578-36	1 13/16	LS 579-36				
2 3/8			2	LS 577-38	1 15/16	LS 578-38	1 15/16	LS 579-38				
2 1/2			2 1/8	LS 577-40	2 1/16	LS 578-40						

★ THREAD TO HEAD ALL SIZES ABOVE HEAVY LINE

MATERIAL: S.A.E. 2330 STEEL, SPEC. AN-QQ-S-689
FINISH: CADMIUM PLATE, SPEC. AN-QQ-P-421
HEAT TREAT: 125,000 TO 145,000 T.S., SPEC. 98-10025
LIMITS: UNLESS OTHERWISE SPECIFIED, ± .010
NOTE: DIMENSIONS TO BE MET AFTER PLATING

EXAMPLE OF PART NOS.: LS 577-8=10-32 NF3 SCREW 1/2 LONG, NO. 2 HEAD RECESS.
LS 582-26=3/8-24 NF3 SCREW 1 5/8 LONG, NO. 4 HEAD RECESS, THREAD SPEC. AN-GGG-S-126.

Figure 127 (Sheet 2 of 5 Sheets) — Screws, 100° Countersunk Phillips Head, LS576 — 582



THREAD	#8-32 NC-3	#10-32 NF-3	1/4-28 NF-3	5/16-24 NF-3	3/8-24 NF-3	7/16-20 NF-3	1/2-20 NF-3	9/16-18 NF-3
DIAMETER	.1640	.1890	.2490	.3115	.3740	.4365	.4990	.5515
	.1615	.1865	.2460	.3085	.3710	.4330	.4955	.5575
A	.0690	.0800	.1060	.1320	.1580	.1860	.2140	.2440
	.0630	.0740	.1000	.1260	.1520	.1800	.2080	.2380
B	.2750	.3250	.4290	.5530	.6760	.8040	.9320	1.0640
C	.1660	.1810	.2600	.3140	.3570	.3900		
	.1560	.1710	.2500	.3040	.3470	.3800		
E	.0980	.1130	.1480	.1650	.2080	.2420		
	.0880	.1030	.1380	.1550	.1980	.2320		
F	.0100 R	.0100 R	.0150 R	.0150 R	.0160 R	.0150 R	.0150 R	.0200 R
G	9/16	5/8	11/16	3/4	13/16	7/8	1 1/16	1 3/16
H	.3310	.3830	.5060	.6320	.7570	.8880	1.1080	1.1540
L	#2	#2	#3	#4	#4	#4	#4	#5
MINIMUM TENSILE STRENGTH AT ROOT DIAMETER	1449	2136	3982	6431	9955	13435	18358	23314
MINIMUM YIELD TENSILE STRENGTH AT ROOT DIAMETER	1111	1638	3053	4930	7632	10300	14074	17874
MINIMUM SINGLE SHEAR STRENGTH AT FULL DIAMETER	1536	2049	3565	5506	8108	11044	14462	18308

PART NUMBERS		NAS-204	NAS-205	NAS-206	NAS-207	NAS-208	NAS-209	NAS-210	NAS-211
DASH NO.	LENGTH	GRIP	GRIP	GRIP	GRIP	GRIP	GRIP	GRIP	GRIP
-5	5/16	SEE NOTE 5	SEE NOTE 5						
-6	3/8	SEE NOTE 5	SEE NOTE 5						
-7	7/16	SEE NOTE 5	SEE NOTE 5						
-8	1/2	SEE NOTE 5	SEE NOTE 5						
-9	9/16	5/32							
-10	5/8	7/32	3/16						
-11	11/16	9/32	1/4	3/16					
-12	3/4	11/32	5/16	1/4	7/32				
-13	13/16	13/32	3/8	5/16	9/32	7/32			
-14	7/8	15/32	7/16	3/8	11/32	9/32	1/4		
-15	15/16	17/32	1/2	7/16	13/32	11/32	5/16		
-16	1	19/32	9/16	1/2	15/32	13/32	3/8		
-17	1 1/16	21/32	5/8	9/16	17/32	15/32	7/16	5/16	
-18	1 1/8	23/32	11/16	5/8	19/32	17/32	1/2	3/8	
-19	1 3/16	25/32	3/4	11/16	21/32	19/32	9/16	7/16	11/32
-20	1 1/4	27/32	13/16	3/4	23/32	21/32	5/8	1/2	13/32
-21	1 5/16	29/32	7/8	13/16	25/32	23/32	11/16	9/16	15/32
-22	1 3/8	31/32	15/16	7/8	27/32	25/32	3/4	5/8	17/32
-23	1 7/16	1 1/32	1	15/16	29/32	27/32	13/16	11/16	19/32
-24	1 1/2	1 3/32	1 1/16	1	31/32	29/32	7/8	3/4	21/32
-26	1 5/8	1 7/32	1 3/16	1 1/8	1 3/32	1 1/32	1	7/8	25/32
-28	1 3/4	1 11/32	1 5/16	1 1/4	1 7/32	1 5/32	1 1/8	1	29/32
-30	1 7/8	1 15/32	1 7/16	1 3/8	1 11/32	1 9/32	1 1/4	1 1/8	1 1/32
-32	2	1 19/32	1 9/16	1 1/2	1 15/32	1 13/32	1 3/8	1 1/4	1 5/32
-34	2 1/8	1 23/32	1 11/16	1 5/8	1 19/32	1 17/32	1 1/2	1 3/8	1 9/32
-36	2 1/4	1 27/32	1 13/16	1 3/4	1 23/32	1 21/32	1 5/8	1 1/2	1 13/32
-38	2 3/8	1 31/32	1 15/16	1 7/8	1 27/32	1 25/32	1 3/4	1 5/8	1 17/32
-40	2 1/2		2 1/16	2	1 31/32	1 29/32	1 7/8	1 3/4	1 21/32
-42	2 5/8		2 3/16	2 1/8	2 3/32	2 1/32	2	1 7/8	1 25/32
-44	2 3/4		2 5/16	2 1/4	2 7/32	2 5/32	2 1/8	2	1 29/32
-46	2 7/8		2 7/16	2 3/8	2 11/32	2 9/32	2 1/4	2 1/8	2 1/32
-48	3		2 9/16	2 1/2	2 15/32	2 13/32	2 3/8	2 1/4	2 5/32
-52	3 1/4							2 1/2	2 13/32
-56	3 1/2							2 3/4	2 21/32
-60	3 3/4							3	2 29/32
-64	4							3 1/4	3 5/32

ENGINEERING INFORMATION

MATERIAL: ALLOY STEEL

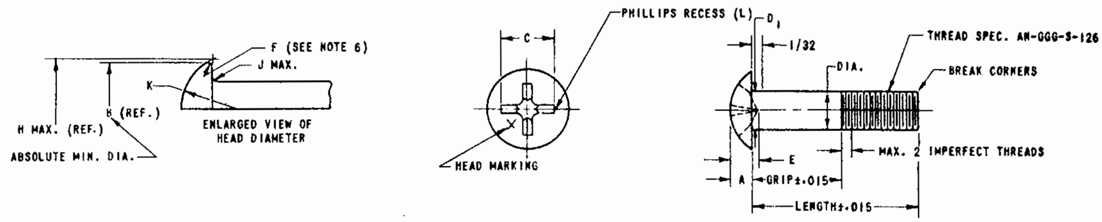
FINISH: CADMIUM PLATE SPEC. AN-QQ-P-421

LENGTH CODE: LENGTH TO BE SPECIFIED IN 1/16 INCH INCREMENTS UP TO 1-1/2 INCHES, 1/8 INCH INCREMENTS FROM 1-1/2 INCHES TO 3 INCHES AND 1/4 INCH INCREMENTS FOR LENGTHS OVER 3 INCHES.

EXAMPLE: NAS 205-10 = SCREW - 5/8 LONG, ALLOY STEEL

NOTES:
1. DIMENSIONS TO BE MET AFTER PLATING.
2. ROLLED OR CUT THREAD OPTIONAL.
3. HEAD TO BE CONCENTRIC WITH SHANK WITHIN TOTAL RUNOUT OF .005
4. .001 INCREASE IN D_1 OVER DIAMETER WILL BE PERMISSABLE.
5. THREAD TO WITHIN .032 $\pm^{.032}_{.000}$ OF THE HEAD FOR ALL SCREWS LESS THAN G IN LENGTH

Figure 127 (Sheet 3 of 5 Sheets) — Screws, 100° Countersunk Phillips Head, NAS



THREAD		#8-32	#10-32	1/4-28	5/16-24	3/8-24	7/16-20	1/2-20	9/16-18
DIAMETER		.1640 .1615	.1890 .1865	.2490 .2465	.3115 .3090	.3740 .3715	.4365 .4340	.4990 .4965	.5615 .5590
A		.089 .079	.102 .090	.131 .119	.163 .149	.194 .180	.224 .210	.254 .240	.285 .271
B		.306	.365	.470	.573	.678	.781	.884	.988
C		.155 .145	.170 .160	.245 .235	.310 .300	.349 .339			
E		.100 .090	.115 .105	.155 .145	.193 .183	.234 .224			
F		.010 .005	.015 .007	.020 .010	.025 .012	.030 .015	.034 .016	.038 .018	.043 .021
G		7/16	1/2	9/16	5/8	5/8	11/16	13/16	7/8
H MAX.		.326	.385	.490	.593	.698	.801	.904	1.008
J MAX.		.010	.010	.010	.015	.015	.015	.015	.015
K		.213R	.236R	.292R	.349R	.408R	.468R	.527R	.584R
L		#2	#2	#3	#4	#4	#4	#4	#5
MINIMUM TENSILE STRENGTH AT ROOT DIA.		1448	2136	3982	6431	9855	13435	18358	23314
MINIMUM YIELD TENSILE STRENGTH AT ROOT DIA.		1111	1636	3053	4930	7632	10300	14074	17874
MINIMUM SINGLE SHEAR STRENGTH AT FULL DIAMETER		1536	2049	3565	5606	8108	11044	14462	18306
PART NO.		NAS 220	NAS 221	NAS 222	NAS 223	NAS 224	NAS 225	NAS 226	NAS 227
DASH NO.	LENGTH	GRIP	GRIP	GRIP	GRIP	GRIP	GRIP	GRIP	GRIP
-7	7/16	1/32							
-8	1/2	3/32	1/16						
-9	9/16	5/32	1/8	1/16	1/32				
-10	5/8	7/32	3/16	1/8	3/32				
-11	11/16	9/32	1/4	3/16	5/32	3/32	1/16		
-12	3/4	11/32	5/16	1/4	7/32	5/32	1/8		
-13	13/16	13/32	3/8	5/16	9/32	7/32	3/16	1/16	
-14	7/8	15/32	7/16	3/8	11/32	9/32	1/4	1/8	
-15	15/16	17/32	1/2	7/16	13/32	11/32	5/16	3/16	
-16	1	19/32	9/16	1/2	15/32	13/32	3/8	1/4	
-17	1- 1/16	21/32	5/8	9/16	17/32	15/32	7/16	5/16	
-18	1- 1/8	23/32	11/16	5/8	19/32	17/32	1/2	3/8	9/32
-19	1- 3/16	25/32	3/4	11/16	21/32	19/32	9/16	7/16	11/32
-20	1- 1/4	27/32	13/16	3/4	23/32	21/32	5/8	1/2	13/32
-21	1- 5/16	29/32	7/8	13/16	25/32	23/32	11/16	9/16	15/32
-22	1- 3/8	31/32	15/16	7/8	27/32	25/32	3/4	5/8	17/32
-23	1- 7/16	1- 1/32	1	15/16	29/32	27/32	13/16	11/16	19/32
-24	1- 1/2	1- 3/32	1- 1/16	1	31/32	29/32	7/8	3/4	21/32
-26	1- 5/8	1- 7/32	1- 3/16	1- 1/8	1- 3/32	1- 1/32	1	7/8	25/32
-28	1- 3/4	1-11/32	1- 5/16	1- 1/4	1- 7/32	1- 5/32	1- 1/8	1	29/32
-30	1- 7/8	1-15/32	1- 7/16	1- 3/8	1-11/32	1- 9/32	1- 1/4	1- 1/8	1- 1/32
-32	2	1-19/32	1- 9/16	1- 1/2	1-15/32	1-13/32	1- 3/8	1- 1/4	1- 5/32
-34	2- 1/8	1-23/32	1-11/16	1- 5/8	1-19/32	1-17/32	1- 1/2	1- 3/8	1- 9/32
-36	2- 1/4	1-27/32	1-13/16	1- 3/4	1-23/32	1-21/32	1- 5/8	1- 1/2	1-13/32
-38	2- 3/8	1-31/32	1-15/16	1- 7/8	1-27/32	1-25/32	1- 3/4	1- 5/8	1-17/32
-40	2- 1/2		2- 1/16	2	1-31/32	1-29/32	1- 7/8	1- 3/4	1-21/32
-42	2- 5/8		2- 3/16	2- 1/8	2- 3/32	2- 1/32	2	1- 7/8	1-25/32
-44	2- 3/4		2- 5/16	2- 1/4	2- 7/32	2- 5/32	2- 1/8	2	1-29/32
-46	2- 7/8		2- 7/16	2- 3/8	2-11/32	2- 9/32	2- 1/4	2- 1/8	2- 1/32
-48	3		2- 9/16	2- 1/2	2-15/32	2-13/32	2- 3/8	2- 1/4	2- 5/32
-52	3- 1/4							2- 1/2	2-13/32
-56	3- 1/2							2- 3/4	2-21/32
-60	3- 3/4							3	2-29/32
-64	4								3- 5/32

ENGINEERING INFORMATION

MATERIAL: ALLOY STEEL

FINISH: CADMIUM PLATE SPEC. AN-QQ-P-421.

LENGTH CODE: LENGTH TO BE SPECIFIED IN 1/16 INCH INCREMENTS UP TO 1-1/2 INCHES, 1/8 INCH INCREMENTS FROM 1-1/2 INCHES TO 3 INCHES AND 1/4 INCH INCREMENTS FOR LENGTHS OVER 3 INCHES.

EXAMPLE: NAS 205-10 = SCREW - 5/8, LONG, ALLOY STEEL.

NOTES:
1. DIMENSIONS TO BE MET AFTER PLATING.
2. ROLLED OR CUT THREAD OPTIONAL.
3. HEAD TO BE CONCENTRIC WITH SHANK WITHIN TOTAL OF .005.
4. .001 INCREASE IN D_1 OVER DIAMETER WILL BE PERMISSABLE.
5. THREAD TO WITHIN $.032^{+.032}_{-.000}$ OF THE HEAD FOR ALL SCREWS LESS THAN G IN LENGTH.
6. CORNERS TO BE BROKEN AND FREE FROM FINS AND BURRS.

Figure 127 (Sheet 4 of 5 Sheets) — Screws, Brazier Head, NAS

The primary difference between the two types of screws is the thread length, the NAS (National Aircraft Standard) series having a longer thread length than the LS (Lockheed Standard) series. Make substitutions on the basis of equivalent grip lengths.

When NAS screws do not correspond to LS screws, use the next shorter grip length NAS screws if possible.

CAUTION

Do not select a grip length that will put threads in bearing. See section I, paragraph 18.

LS576 and LS577 screws are threaded to the head while NAS screws are not. Therefore, when substituting NAS screws for LS screws, special consideration should be given to grip lengths for these sizes.

The following table lists only LS screws which are matched by NAS screws having equivalent grip length. All other substitutions must have the correct combination of screw length and washers (or shims) determined individually.

Equivalent Diameters

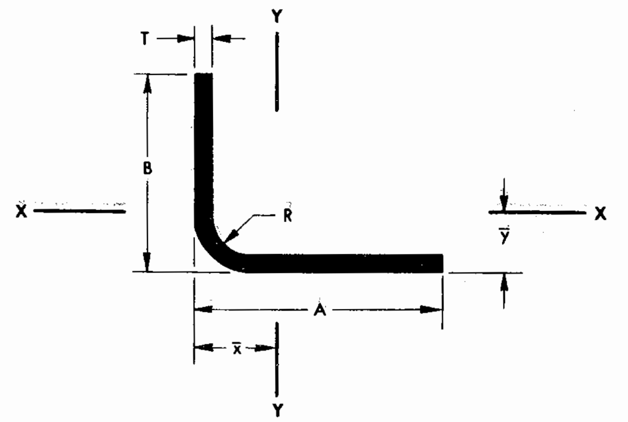
NAS204 replaces LS576
NAS205 replaces LS577
NAS206 replaces LS578
NAS207 replaces LS579
NAS208 replaces LS582
NAS209 replaces LS573

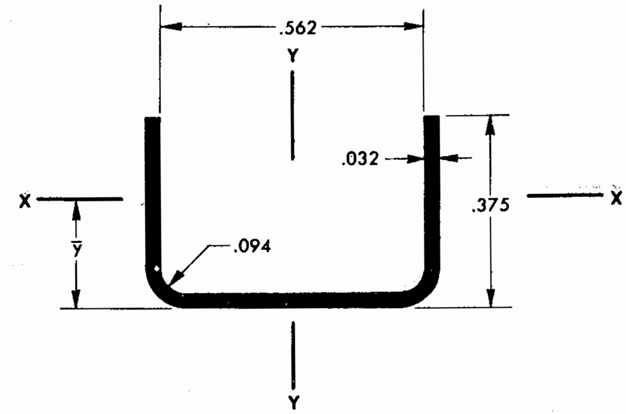
EQUIVALENT GRIP LENGTHS

LS Screw	*NAS Screw*	*LS Screw*	*NAS Screw*	*LS Screw*	*NAS Screw*
LS573-18	NAS209-20	LS577-18	NAS205-19	LS578-14	NAS206-15
LS573-22	NAS209-24	LS577-19	NAS205-20	LS578-15	NAS206-16
LS573-24	NAS209-26	LS577-20	NAS205-21	LS578-16	NAS206-17
LS573-32	NAS209-34	LS577-21	NAS205-22	LS578-17	NAS206-18
LS577-9	NAS205-10	LS577-22	NAS205-23	LS578-18	NAS206-19
LS577-10	NAS205-11	LS577-23	NAS205-24	LS578-19	NAS206-20
LS577-11	NAS205-12	LS577-25	NAS205-26	LS578-20	NAS206-21
LS577-12	NAS205-13	LS577-27	NAS205-28	LS578-21	NAS206-22
LS577-13	NAS205-14	LS577-29	NAS205-30	LS578-22	NAS206-23
LS577-14	NAS205-15	LS578-10	NAS206-11	LS578-23	NAS206-24
LS577-15	NAS205-16	LS578-11	NAS206-12	LS578-25	NAS206-26
LS577-16	NAS205-17	LS578-12	NAS206-13	LS578-27	NAS206-28
LS577-17	NAS205-18	LS578-13	NAS206-14	LS578-29	NAS206-30

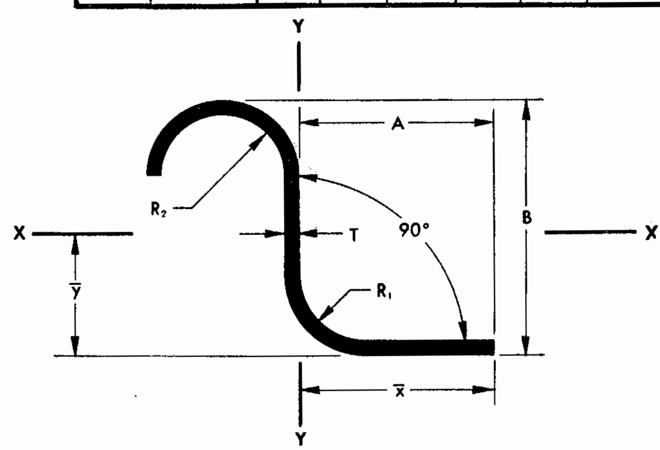
Figure 127 (Sheet 5 of 5 Sheets) — Interchangeability of NAS and LS Screws

PART NO.		T	A	B	R	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
									I_{xx}	$\bar{y}$	ρ_{xx}	I_{yy}	$\bar{x}$	ρ_{yy}	I_{xy}
LS106-4		.051	.750	.750	.188	24S-T	.0692	.0069	.004	.221	.235	.004	.221	.235	-.0025
LS115-2		.032	.625	.375	.094	24S-T	.0294	.0029	.0003	.087	.109	.001	.219	.202	-.0004



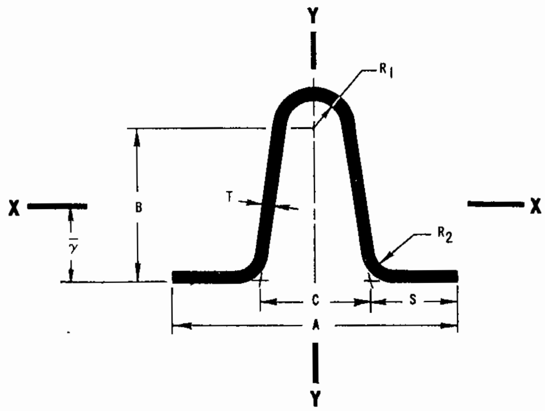


PART NO.		MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
					I_{xx}	$\bar{y}$	ρ_{xx}	I_{yy}	$\bar{x}$	ρ_{yy}	I_{xy}
LS133-2		24S-T	.0379	.0038	.0006	.124	.119	.002	0	.243	0



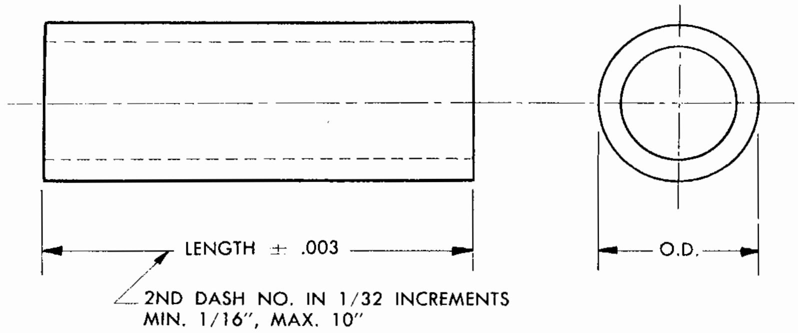
PART NO.		T	A	B	R_1	R_2	MATR.	AREA SQ. IN.	WT. PER IN.	AXIS X-X			AXIS Y-Y			PRODUCT OF INERTIA
										I_{xx}	$\bar{y}$	ρ_{xx}	I_{yy}	$\bar{x}$	ρ_{yy}	I_{xy}
LS156-5		.032	.688	1.000	.125	.188	24S-T	.0663	.0066	.010	.453	.392	.005	-.646	.268	.0055
LS156-6		.040	.688	1.000	.125	.188	24S-T	.0832	.0083	.013	.459	.392	.006	-.651	.272	.0070
LS159-3		.032	1.312	1.000	.125	.188	24S-T	.0865	.0086	.013	.353	.391	.020	-1.050	.475	.0120
LS161-2		.040	.625	1.250	.125	.188	24S-T	.0907	.0091	.021	.595	.480	.005	-.612	.238	-.0080
LS166-1		.051	.719	1.000	.156	.188	24S-O	.108	.0108	.017	.462	.393	.008	-.679	.287	-.0096
LS169-3		.032	.625	.750	.125	.125	24S-T	.0520	.0052	.004	.319	.294	.003	-.552	.233	-.0027

Figure 128 (Sheet 1 of 2 Sheets) — Sheet Metal Standards



PART NO.	STOCK NUMBER ONLY	T	A	B	C	R_1	R_2	S	MATERIAL	AREA SQ. IN.	WEIGHT PER IN.	AXIS X-X			AXIS Y-Y	
												I_{xx}	y	ρ_{xx}	I_{yy}	ρ_{yy}
LS172	-4	.010	1.50	.38	.75	.19	.06	.38	302 1/4 H	.021	.0061	.0009	.214	.208	.003	.389
	-1	.020							24ST ALCLAD	.043	.0043	.002	.220	.208	.006	.388
	-2	.025								.054	.0054	.002	.223	.208	.008	.388
	-3	.032					.19			.068	.0068	.003	.208	.208	.010	.388
LS182	-1	.020	1.75	.38	.75	.19	.06	.50	24ST ALCLAD	.048	.0048	.002	.198	.207	.0098	.452
	-2	.025								.060	.0060	.0026	.201	.207	.0122	.452
LS173	-1	.020	2.12	.50	1.00	.25	.06	.56	24ST ALCLAD	.060	.0060	.005	.277	.277	.018	.549
	-2	.025								.075	.0075	.006	.280	.277	.022	.549
	-3	.032					.09			.095	.0095	.007	.285	.277	.029	.549
	-4	.040					.12			.119	.0119	.009	.291	.277	.036	.549
LS177	-1	.032	2.19	1.06	.88	.28	.12	.66	24ST	.136	.0136	.032	.555	.486	.038	.526
	-2	.040								.170	.0170	.040	.563	.487	.047	.527
LS179	-2	.020	2.25	.22	1.12	.38	.125	.56	24ST	.056	.0056	.003	.226	.232	.021	.609
	-1	.025								.070	.0070	.004	.228	.232	.026	.608
	-4	.025							24SO							
	-3	.032								.090	.0090	.005	.232	.232	.033	.608
LS174	-7	.032	2.38	.81	.75	.19	.19	.81	24SRT	.120	.012	.015	.345	.358	.039	.568
	-3	.040							24ST	.150	.015	.019	.350	.358	.049	.569
	-4	.051								.191	.0191	.024	.357	.358	.062	.569
	-8	.051							24SRT							
	-5	.064							24ST	.239	.0239	.031	.366	.359	.077	.569
	-6	.072								.268	.0268	.035	.371	.359	.087	.570
LS181	-4	.040	2.38	1.19	.81	.19	.12	.78	24ST	.178	.0178	.042	.517	.487	.051	.537
	-5	.051								.227	.0227	.054	.525	.487	.066	.537
	-3	.064							24SO	.284	.0284	.068	.529	.488	.082	.536
	-6	.064							24ST							
LS178	-1	.040	2.50	1.38	1.00	.28	.16	.75	24ST	.202	.0202	.070	.677	.590	.066	.574
	-2	.051								.256	.0256	.089	.684	.590	.085	.574
LS164	-2	.064	2.75	.75	.88	.25	.25	.94	24ST	.256	.0256	.034	.362	.364	.121	.684
	-3	.072								.288	.0288	.0388	.367	.364	.136	.684
	-4	.091								.363	.0363	.0493	.380	.366	.173	.686
LS175	-1	.051	2.88	1.56	1.12	.31	.22	.88	24ST	.292	.0292	.130	.766	.667	.127	.659
	-2	.064								.365	.0365	.163	.775	.667	.159	.659

Figure 128 (Sheet 2 of 2 Sheets)—Sheet Metal Standards



MATERIAL: X4130 STEEL TUBING, SPEC AN-WW-T-850
FINISH: CADMIUM PLATE, SPEC AN-QQ-P-421

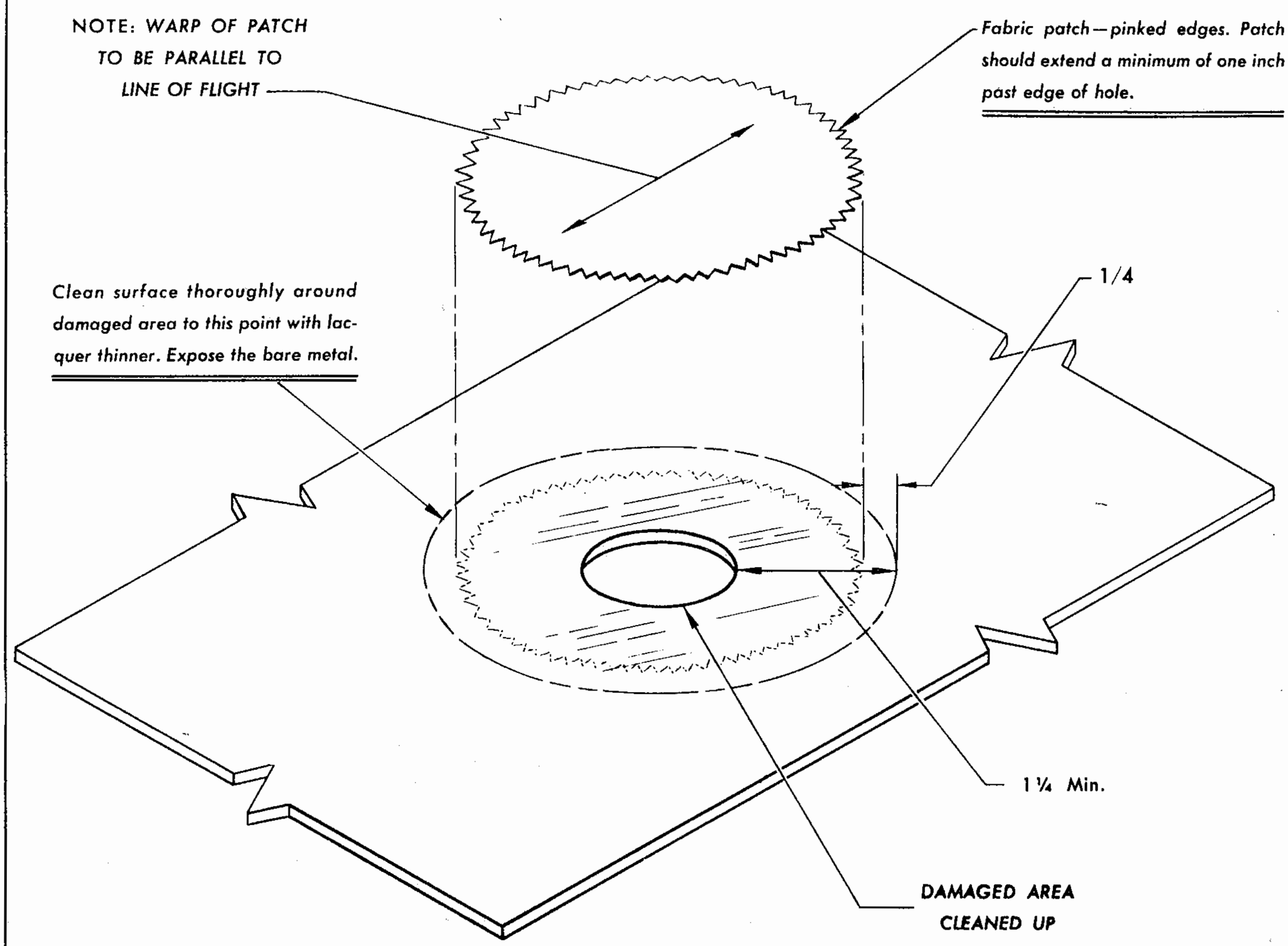
O.D.	PART NO. AND FIRST DASH NO.			
	.028 WALL	MIN. I.D.	.049 WALL	MIN. I.D.
3/16	LS640-3-	.1181	LS642-3-	.0697
1/4	LS640-4-	.1806	LS642-4-	.1322
5/16	LS640-5-	.2431	LS642-5-	.1947
3/8	LS640-6-	.3056	LS642-6-	.2572
7/16			LS642-7-	.3197
1/2	LS640-8-	.4334	LS642-8-	.3872
5/8	LS640-10-	.5584	LS642-10	.5122
3/4			LS642-12	.6372
7/8			LS642-14	.7622
1			LS642-16	.8872
1-1/8			LS642-18	1.0122
1-1/4			LS642-20	1.1372
1-3/8			LS642-22	1.2622
1-1/2			LS642-24	1.3822

AB 44

Figure 128A — Steel Spacers

SECTION X

TYPICAL REPAIRS

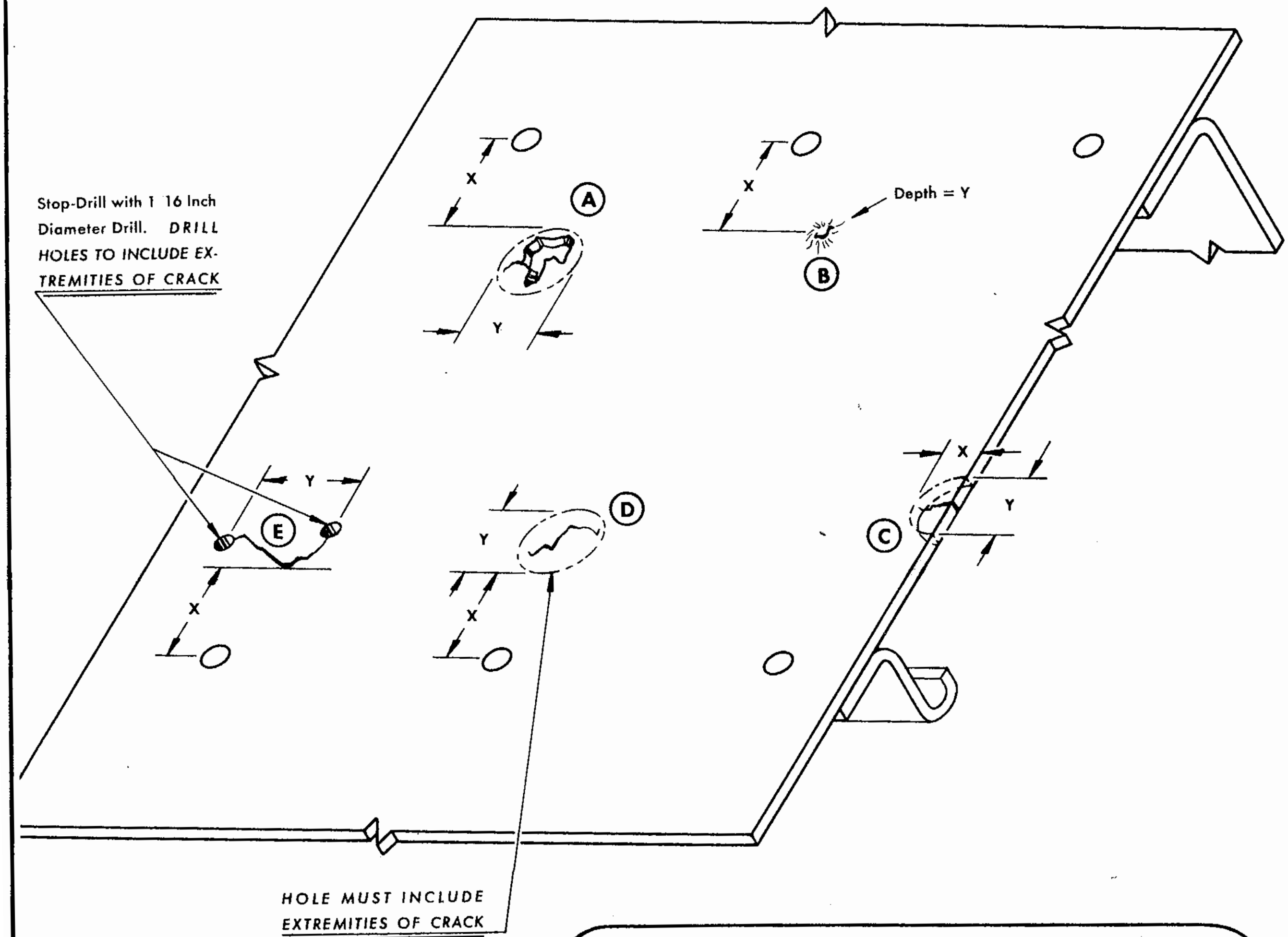


TO APPLY PATCH:

1. PAINT SURFACE ABOUT DAMAGED AREA WITH A HEAVY COAT OF NITRATE DOPE.
2. SATURATE FABRIC PATCH WITH DOPE AND APPLY PATCH OVER HOLE; SMOOTH THE PATCH FLAT.
3. APPLY 4 OR 5 COATS OF DOPE OVER PATCH, ALLOWING THE DOPE TO DRY BETWEEN EACH APPLICATION. SMOOTH THE SURFACE BETWEEN EACH COAT WITH FINE SANDPAPER.
4. WHEN LAST COAT IS DRY AND PATCH IS DRAWN TIGHT, APPLY FINISH LACQUER TO MATCH ADJACENT PAINT.

IMPORTANT: *DOPE MUST OVERLAP EDGE OF PATCH ¼ INCH TO PREVENT EDGE FROM CURLING*

Figure 129 — Fabric Patch Application



A. SKIN PUNCTURE CLEANED UP WITH A CLEAN, ROUND HOLE.

B. SMALL INDENTATION FREE FROM CRACKS AND ABRASIONS.

C. DAMAGE AT EDGE OF SHEET CLEANED UP TO SMOOTH CONTOUR.

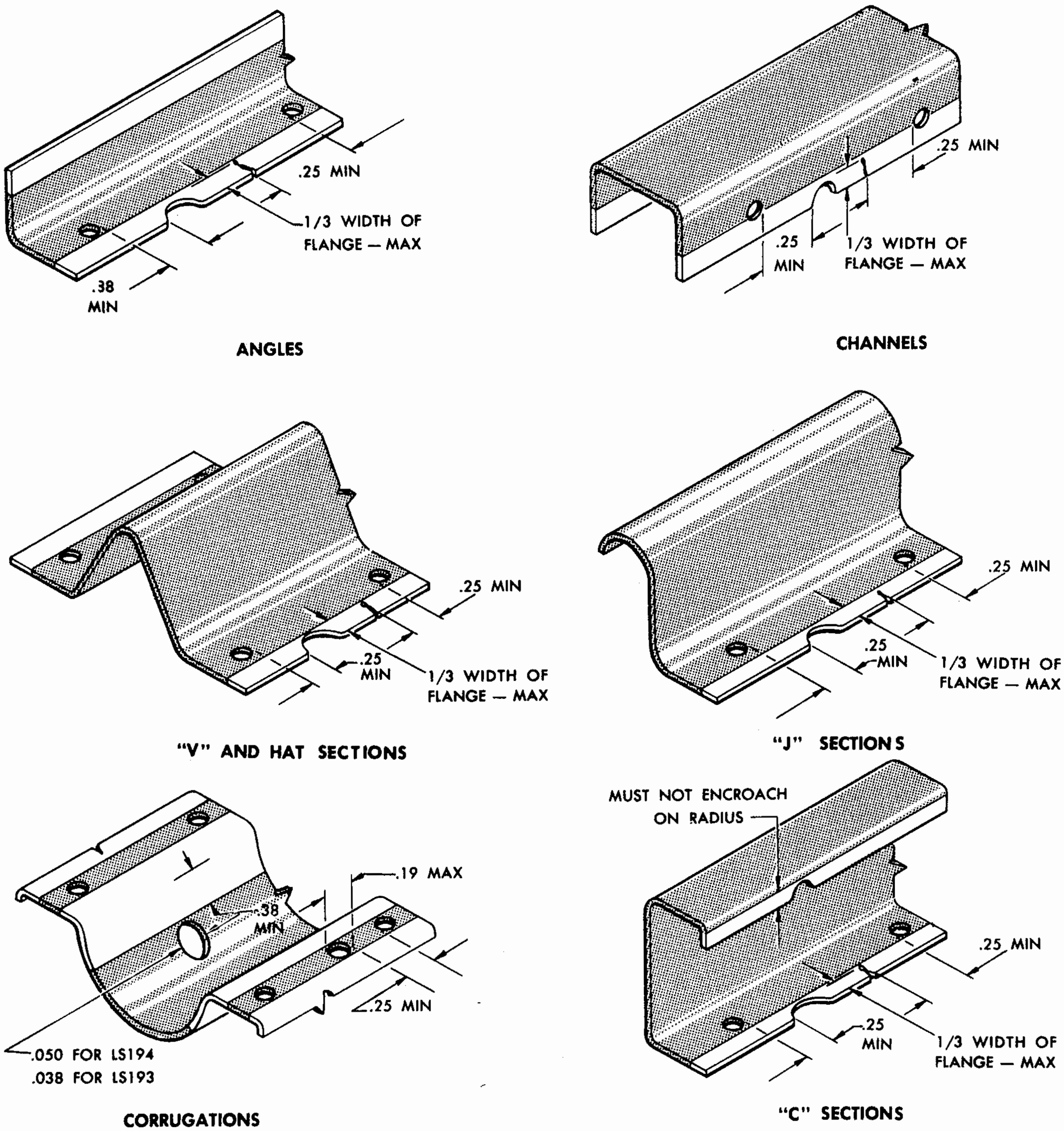
D. CRACK CLEANED UP WITH A CLEAN, ROUND HOLE.

E. CRACK STOP-DRILLED AT EXTREMITIES.

	A		*B*		*C*		*D*		*E*	
	X	*Y*	*X*	*Y*	*X*	*Y*	*X*	*Y*	*X*	*Y*
*Wing	1½	½	1½	1/32	¼	½	1½	½	1½	½
Wing Tips, Ailerons and Flaps	None		1½	1/32	None		None		None	
**Fuselage	1½	½	1½	1/32	1½	½	1½	½	1½	½
***Dive Flaps	1½	¾	1½	1/32	¼	½	1½	¾	1½	¾
Fillets	None		1½	1/32	None		None		None	
*Stabilizer & Fin	1½	½	1½	1/32	1½	½	1½	½	1½	½
Elevator & Rudder	None		1½	1/32	None		None		None	
***LG Doors	1½	½	1½	1/32	1½	½	1½	½	1½	½
****Tail Pipe	1½	1	1½	1/16	1½	1	1½	1	1½	1

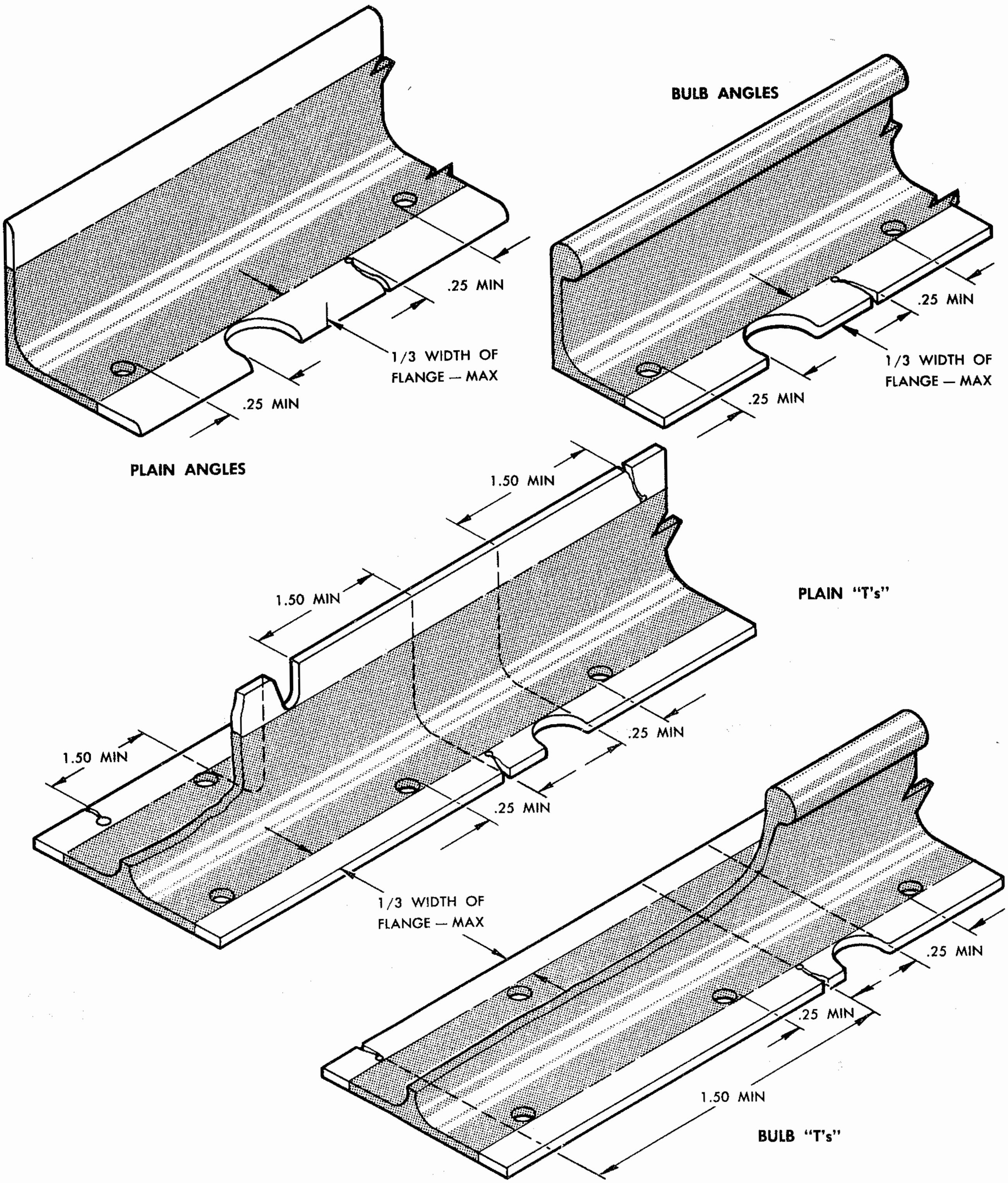
NOTES: *Area contained within the fuselage or fillets only.
**Type A, C, D, or E damages apply aft of station 300 only.
***Type A, C, D, or E damages apply to inner skins only.
****Type A, C, D, or E damages apply to outer skins only.

Figure 130 — Negligible Damage, Skin



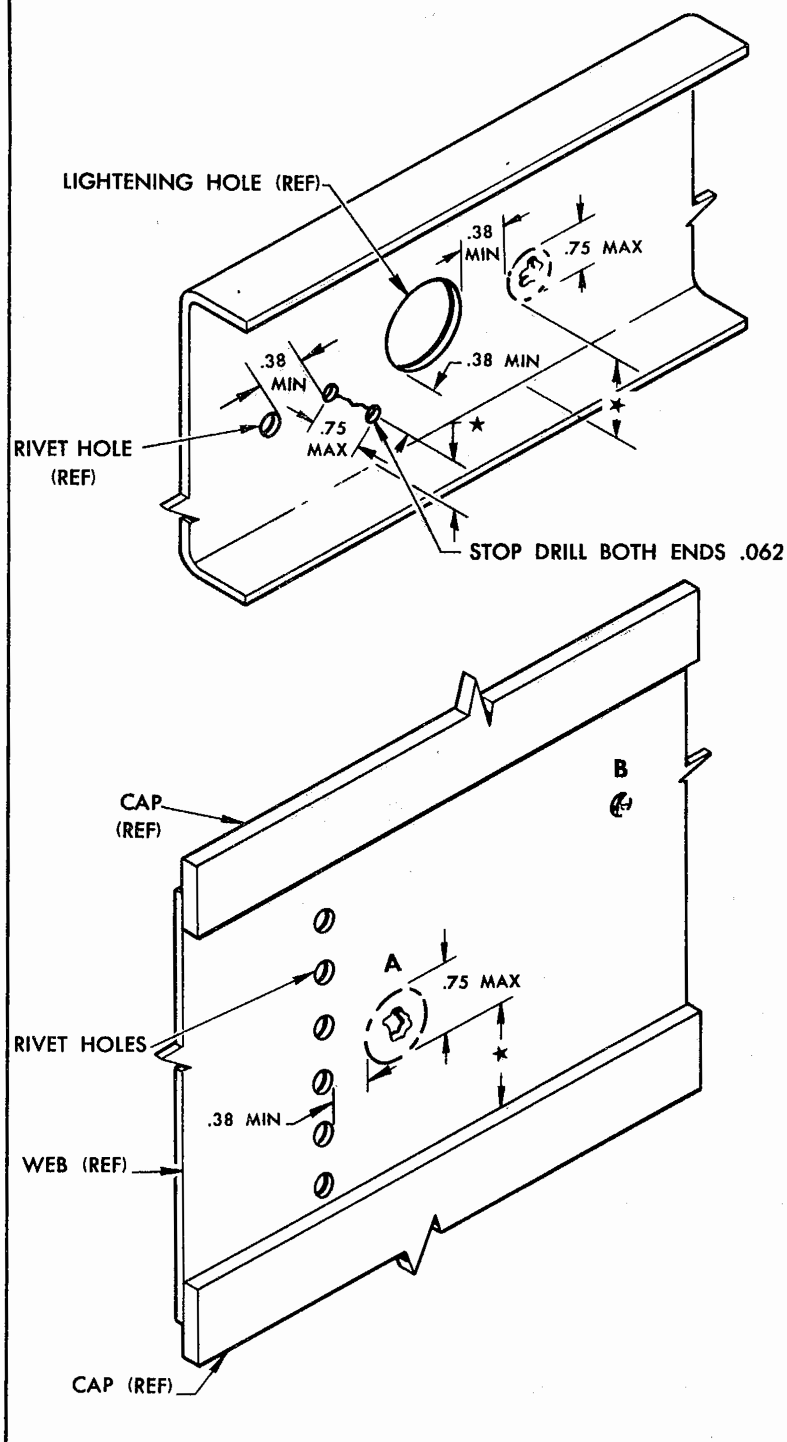
NOTE: NO DAMAGE PERMITTED IN AREAS INDICATED
DAMAGE SHOWN APPLIES TO ANY SIMILAR FLANGE.

Figure 131 — Negligible Damage, Sheet Metal Stringers



NOTES: 1. Negligible damage to more than one leg must be separated to limits specified.
2. No allowable negligible damage in areas indicated

Figure 132 — Negligible Damage, Extruded Stringers



TYPE I

SHEET METAL BEAM WEBS
(FLANGES INTEGRAL WITH WEBS)

TYPE II

SHEET METAL BEAM WEBS
(EXTRUDED AND SEPARATE FLANGES

NOTES:

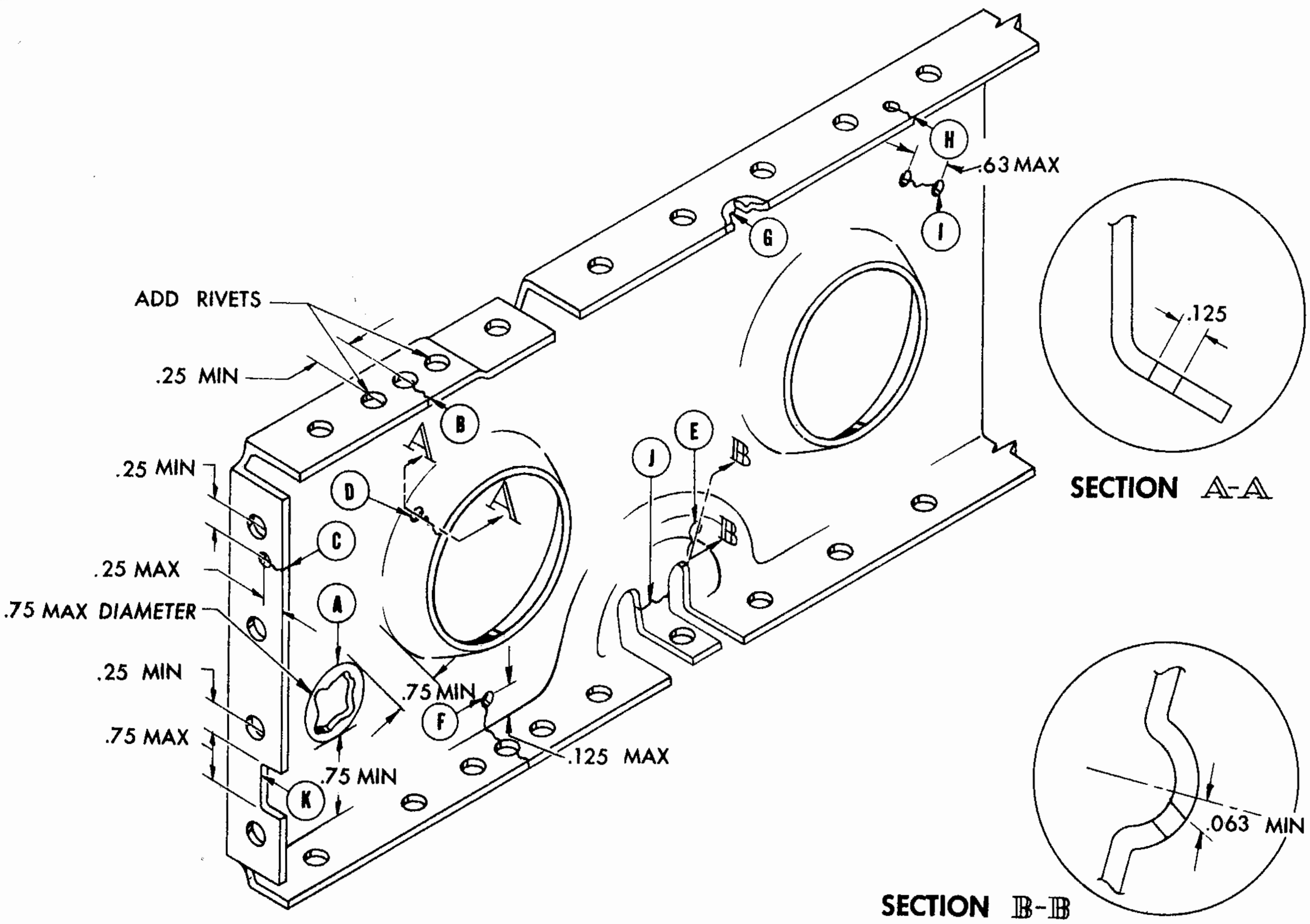
A. Clean up cracks or perforations, leaving a smooth round hole.

CAUTION: Stop-drilling cracks not permissible. Not applicable to beam webs in center section box beam and inner wing box beam or front beam of outer wing.

★This dimension must be a minimum of .75 inch for sheet metal flanges and 2.0 inches for extruded flanges.

B. Small indentations must not exceed .062 inch in depth. Smooth to a regular shape free from sharp corners and abrasions.

Figure 133 — Negligible Damage, Spars



(A) Damage to web—clean up leaving a smooth round hole (¾-inch maximum permissible).

(B) Crack through rivet hole to edge of flange, or crack within ¼ inch of rivet hole—add rivets on either side of crack as shown.

(C) Crack not approaching within ¼ inch of rivet hole— stop-drill.

(D) Crack in flange of lightening hole—ignore if stop drill does not encroach in radius.

(E) Crack from cut-out in bead—ignore if 1/16 inch from crown of bead.

(F) Crack through rivet hole extends maximum of ⅛ inch past bend radius—add rivets on both sides of crack.

(G) Nick in flange—clean to a regular shape.

(H) Crack in flange—stop-drill.

(I) Crack in web—stop-drill both ends.

(J) Break at this point—ignore. (Replace rivet through stringer if loose or damaged.)

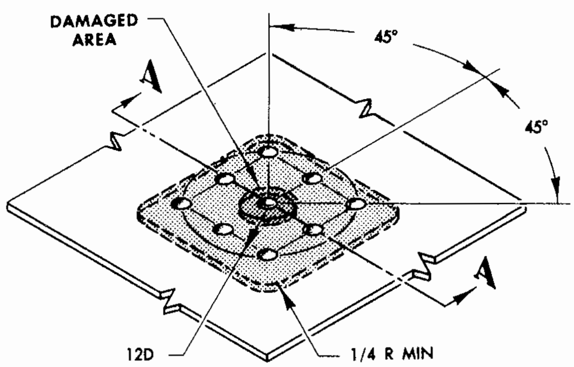
(K) Damage to edge of flange—clean to a regular contour.

NOTES:

1. Damage such as (A) or (I) must be at least six inches from similar damage.
2. Damage such as (D), (G), or (H) must be at least two inches from any other damage.
3. Depth of (G) and (K) must not exceed one-third width of flange.
4. Ends of all cracks must be completely removed by stop-drilling ⅛-inch diameter holes at the crack extremities.

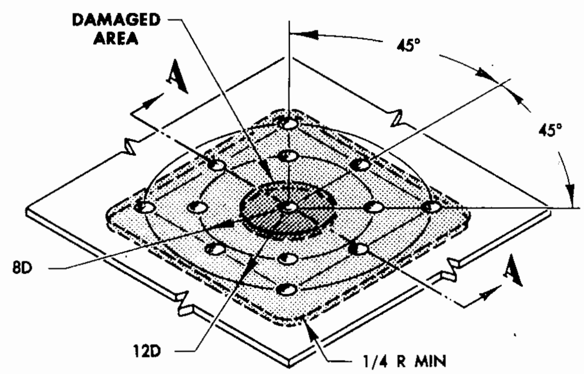
Figure 134 — Negligible Damage, Channels

FLUSH TYPE PATCHES

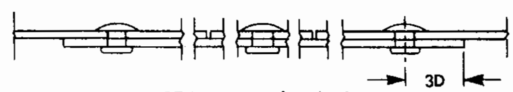


FOR DAMAGE UP TO 5/8 INCH DIAMETER

FLUSH TYPE PATCHES



FOR DAMAGE FROM 5/8 TO 1 5/8 INCH DIAMETER



SECTION A - A

NOTES:

PATCH PLATES AND FILLERS SAME MATERIAL AND GAGE AS ORIGINAL PART.

USE AN470 OR USAF 463 RIVETS FOR FRAME TO SKIN ATTACHMENT.

3D EDGE DISTANCE TO BE MAINTAINED FROM CENTER OF RIVET EDGE TO EDGE OF SHEET IN ALL INSTANCES.

RIVET REQUIREMENTS

MATERIAL GAGE	RIVET DIAMETER		
	AD	DD	CHERRY
.025	1/8		1/8
.032	1/8		1/8
.040	5/32		5/32
.051	3/16	5/32	3/16
.064	1/4	3/16	★3/16
.072		3/16	
.091		1/4	

★ ADD ADDITIONAL CHERRY RIVETS AT THE RATIO OF 7-5

NOTE: "D" INDICATES SHANK DIAMETER OF RIVET.
EXAMPLE: 3D (FOR 1/8 INCH DIAMETER RIVET) INDICATES 3/8 INCH.

CB 7160
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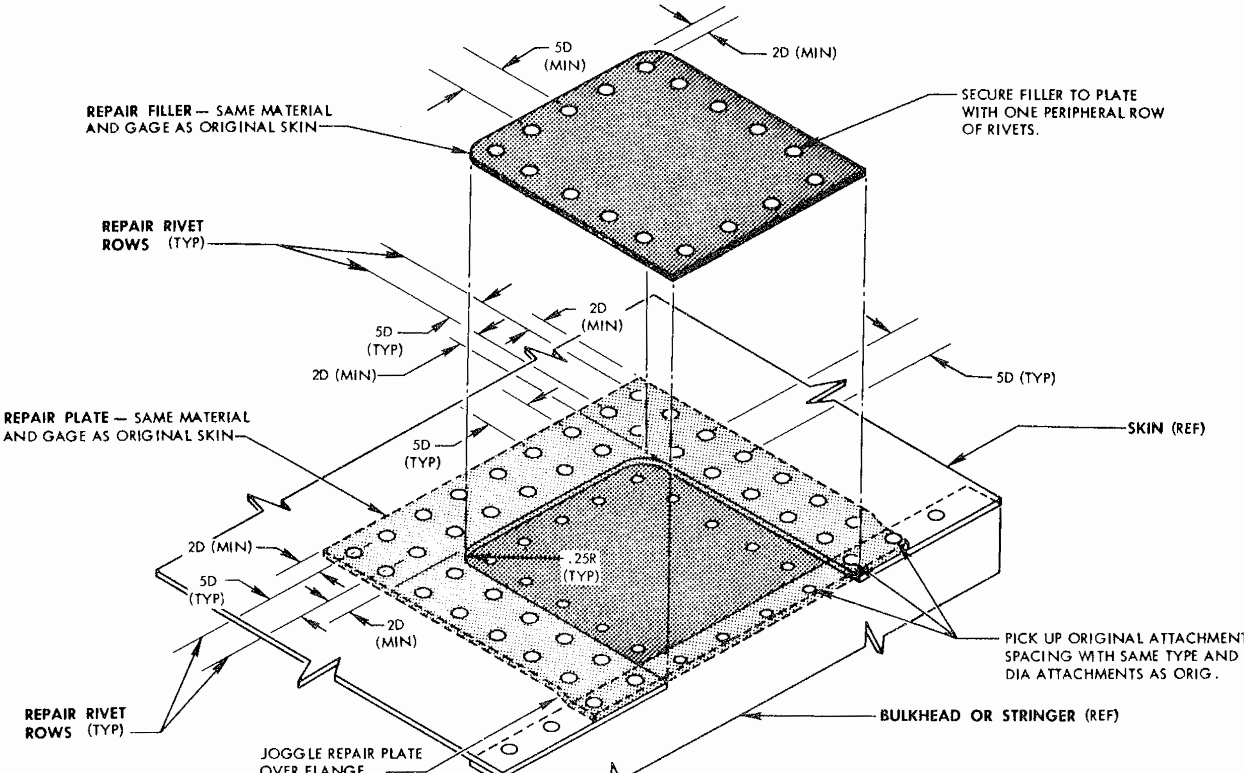
Figure 135 — Skin Patch, Small — In Open Areas



NOTE:

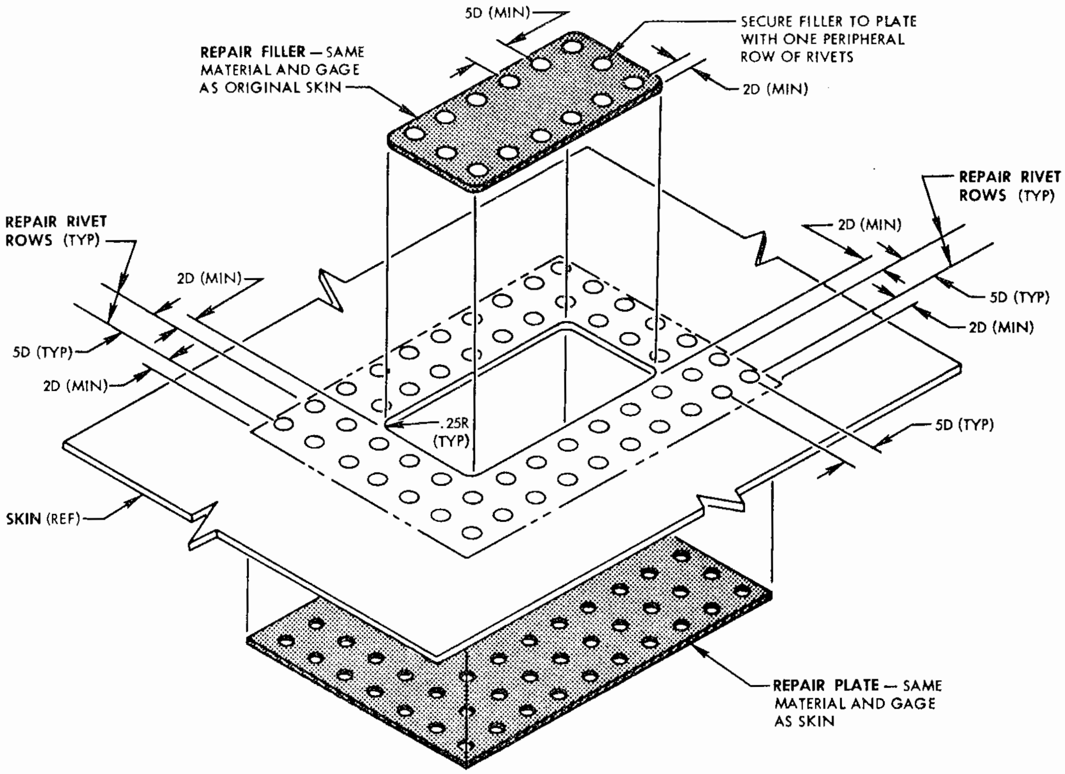
1. REPAIR AS SHOWN ILLUSTRATES A FLUSH INSTALLATION WHICH IS RECOMMENDED FOR ALL EXTERNAL SURFACE AREAS. WHERE FLUSH INSTALLATION IS NOT PRACTICAL PLACE REPAIR PLATE ON OPPOSITE SIDE TO THAT SHOWN, INSERT FILLER STRIP BETWEEN REPAIR PLATE AND FLANGE; OMIT REPAIR FILLER SHOWN.
2. FOR FLUSH INSTALLATIONS DIMPLE GAGES UNDER .051 AND MACHINE COUNTERSINK FOR GAGES OVER .051. USE AN426, MS20601, AN427, CR562, OR CT205 TYPE ATTACHMENTS AS APPLICABLE.
3. FOR NON-FLUSH INSTALLATIONS USE AN470, MS20600, NAS508, CR563, OR NAS221 TYPE ATTACHMENTS AS APPLICABLE.
4. RIVET SUBSTITUTIONS MAY BE PERFORMED AS FOLLOWS:
   a. FOR AL ALLOY OR MONEL SOLID RIVETS SUBSTITUTE APPLICABLE MONEL BLIND RIVETS OF SAME DIAMETER AS SPECIFIED IN TABLE.
   b. FOR AL ALLOY SOLID RIVETS ONLY, SUBSTITUTE NEXT LARGER DIAMETER APPLICABLE AL ALLOY BLIND RIVETS.
   c. NAS221 OR CT205 SCREWS, AS APPLICABLE, MAY BE SUBSTITUTED FOR DD6 RIVETS ON THE BASIS OF 0.55 ROW FOR EACH ROW SPECIFIED IN TABLE. USE NEXT WHOLE NUMBER OF ROWS FOR FRACTIONAL RESULTS.
   d. NAS221 OR CT205 SCREWS, AS APPLICABLE, MAY BE SUBSTITUTED FOR M6 RIVETS ON THE BASIS OF 0.6 ROW FOR EACH ROW SPECIFIED IN TABLE. USE NEXT WHOLE NUMBER OF ROWS FOR FRACTIONAL RESULTS.
5. FOR SCREW ATTACHMENTS PROVIDE LIGHT DRIVE FIT HOLES AND USE AN364-1032 NUTS AND AN960D10 WASHERS UNDER NUTS. FOR HIGH TEMPERATURE LOCATIONS USE AN363-1032 NUTS AND AN960C10 WASHERS UNDER NUTS.

REPAIR RIVET REQUIREMENTS

ORIG MATL GAGE	24S- T3, T4, OR T6		24S- T36, T81, T84, OR T86		75S-T6		CRES ANNEALED		CRES 1/4 HARD		CRES 1/2 HARD	
	RIVET	ROWS	RIVET	ROWS	RIVET	ROWS	RIVET	ROWS	RIVET	ROWS	RIVET	ROWS
.016	AD3	2	AD3	2	AD3	2	M3	2	M3	2	M3	3
.020	AD3	3	AD3	3	AD3	3	M3	3	M3	3	M3	3
.025	AD3	3	AD3	4	AD3	4	M3	4	M3	4	M3	4
.032	AD4	3	AD4	3	AD4	4	M3	4	M3	4	M4	5
.040	AD4	4	AD4	4	AD4	4	M3	4	M4	5	M4	5
.051	AD5	4	AD5	4	AD5	4	M4	4	M4	6	M5	6
.064	AD5	5	AD5	5	DD6	3	M4	4	M5	6	M5	7
.072	DD6	3	DD6	4	DD6	4	M5	4	M6	6	M6	7
.081	DD6	4	DD6	4	DD6	4	M5	5	M6	6	M6	7
.091	DD6	4	DD6	4	DD6	5	M5	5	M6	7	M6	8
.102	DD6	5	DD6	5	DD6	5	M6	5	M6	8	M6	9
.125	DD6	5	DD6	6	DD6	6	M6	6	M6	9	M6	11

CB 6627
R-63-3-B-214

Figure 136 — Skin Patch, Skin Edge



NOTE:

1. THIS REPAIR FOR DAMAGE EXCEEDING 2 INCHES IN EXTENT.

2. REPAIR AS SHOWN ILLUSTRATES A FLUSH INSTALLATION WHICH IS RECOMMENDED FOR ALL EXTERNAL SURFACE AREAS. WHERE FLUSH INSTALLATION IS NOT PRACTICAL REPAIR FILLER MAY BE OMITTED.

3. FOR FLUSH INSTALLATIONS DIMPLE GAGES UNDER .051 AND MACHINE COUNTERSINK FOR GAGES OVER .051. USE AN426, MS20601, AN427, CR562, OR CT205 TYPE ATTACHMENTS AS APPLICABLE.

4. FOR NON-FLUSH INSTALLATIONS USE AN470, MS20600, NAS508, CR 563, OR NAS 221 TYPE ATTACHMENTS AS APPLICABLE.

5. RIVET SUBSTITUTIONS MAY BE PERFORMED AS FOLLOWS:
   a. FOR AL ALLOY OR MONEL SOLID RIVETS SUBSTITUTE APPLICABLE MONEL BLIND RIVETS OF SAME DIAMETER AS SPECIFIED IN TABLE.
   b. FOR AL ALLOY SOLID RIVETS ONLY, SUBSTITUTE NEXT LARGER DIAMETER APPLICABLE AL ALLOY BLIND RIVETS.
   c. NAS221 OR CT205 SCREWS, AS APPLICABLE, MAY BE SUBSTITUTED FOR DD6 RIVETS ON THE BASIS OF 0.55 ROW FOR EACH ROW SPECIFIED IN TABLE. USE NEXT WHOLE NUMBER OF ROWS FOR FRACTIONAL RESULTS.
   d. NAS221 OR CT205 SCREWS, AS APPLICABLE, MAY BE SUBSTITUTED FOR M6 RIVETS ON THE BASIS OF 0.6 ROW FOR EACH ROW SPECIFIED IN TABLE. USE NEXT WHOLE NUMBER OF ROWS FOR FRACTIONAL RESULTS.

6. FOR SCREW ATTACHMENTS PROVIDE LIGHT DRIVE FIT HOLES AND USE AN364-1032 NUTS AND AN960D10 WASHERS UNDER NUTS. FOR HIGH TEMPERATURE LOCATIONS USE AN363-1032 NUTS AND AN960C10 WASHERS UNDER NUTS.

REPAIR RIVET REQUIREMENTS

ORIG MATL GAGE	24S- T3, T4, OR T6		24S- T36, T81, T84, OR T86		75S-T6		CRES ANNEALED		CRES 1/4 HARD		CRES 1/2 HARD	
	RIVET	ROWS	RIVET	ROWS	RIVET	ROWS	RIVET	ROWS	RIVET	ROWS	RIVET	ROWS
.016	AD3	2	AD3	2	AD3	2	M3	2	M3	2	M3	3
.020	AD3	3	AD3	3	AD3	3	M3	3	M3	3	M3	3
.025	AD3	3	AD3	4	AD3	4	M3	4	M3	4	M3	4
.032	AD4	3	AD4	3	AD4	4	M3	4	M3	4	M4	5
.040	AD4	4	AD4	4	AD4	4	M3	4	M4	5	M4	5
.051	AD5	4	AD5	4	AD5	4	M4	4	M4	6	M5	6
.064	AD5	5	AD5	5	DD6	3	M4	4	M5	6	M5	7
.072	DD6	3	DD6	4	DD6	4	M5	4	M6	6	M6	7
.081	DD6	4	DD6	4	DD6	4	M5	5	M6	6	M6	7
.091	DD6	4	DD6	4	DD6	5	M5	5	M6	7	M6	8
.102	DD6	5	DD6	5	DD6	5	M6	5	M6	8	M6	9
.125	DD6	5	DD6	6	DD6	6	M6	6	M6	9	M6	11

R-63-3-B-216

CB 6629

Figure 137 — Skin Patch, Flush

LAP TYPE

Maximum dimensions of hole shown in figure 138.
This type may be installed in the following locations only:

Stabilizer, only in areas not exposed to airstream
Wing, only in areas not exposed to airstream
Fuselage bulkhead webs.

Note

There must be a minimum of 4 inches between the edge of the access hole and any other access or inspection hole. Whenever possible, tie reinforcing plate to adjacent structure.

FLUSH TYPE

This type may be installed in the following locations:

Wing
Wing leading edge
*Ailerons
Flaps
Stabilizer and fin
*Elevator and rudder
Dive Flaps

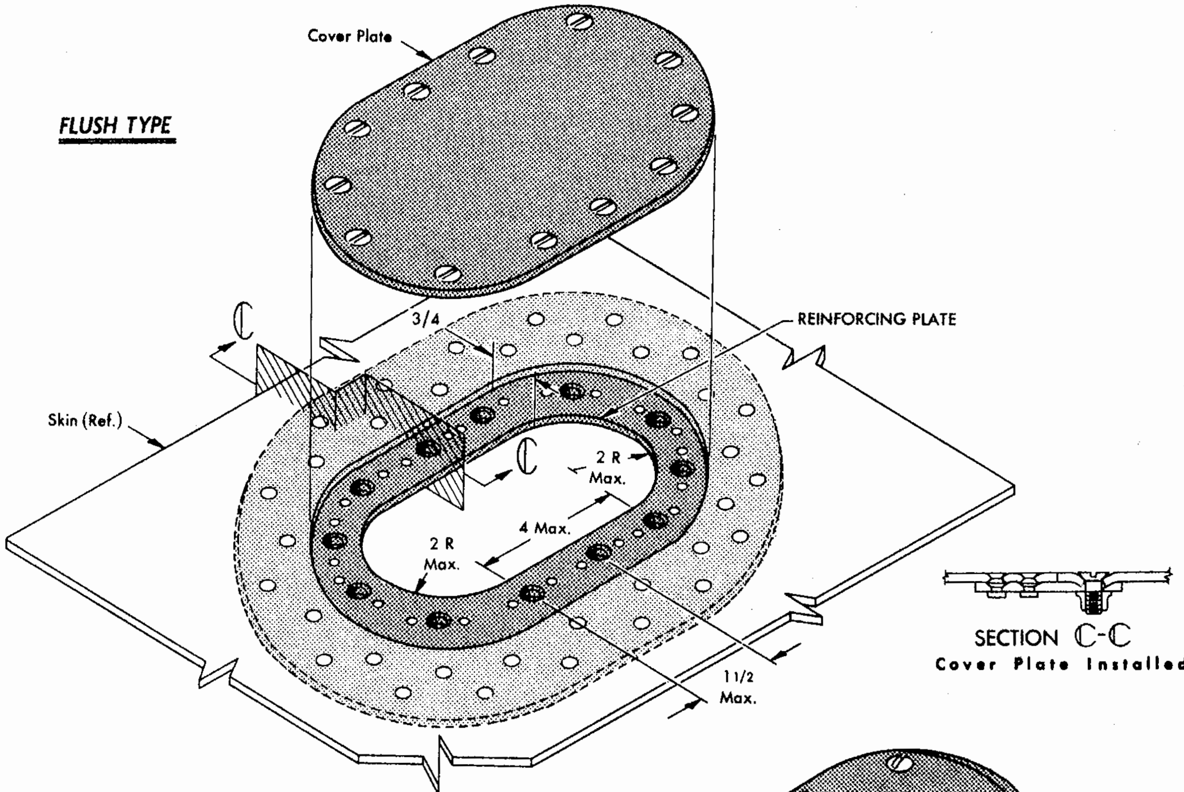
Note

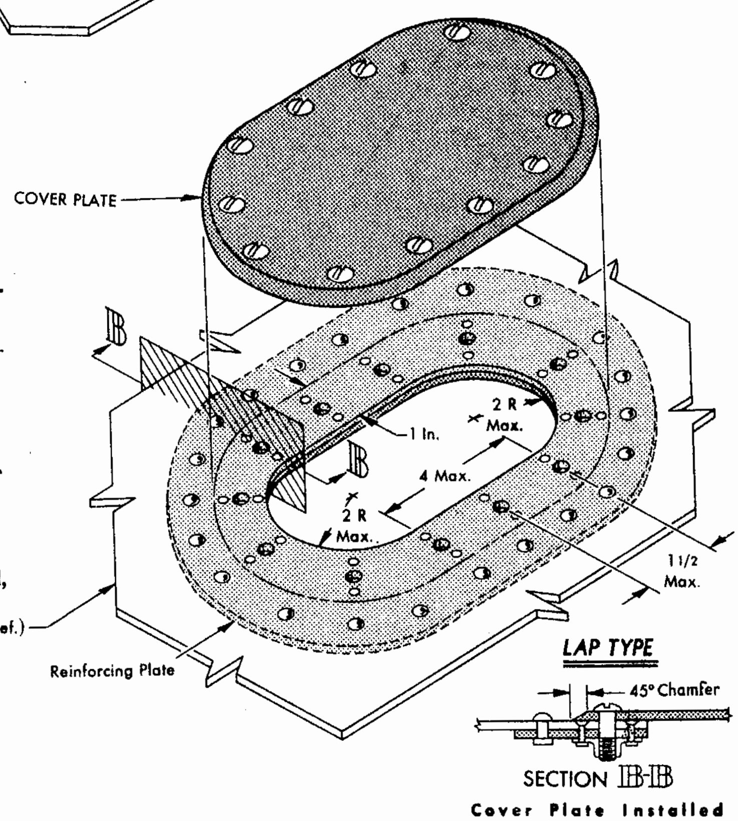
There must be a minimum of 4 inches between the edge of the access hole and any other access or inspection hole. Whenever possible, tie reinforcing plate to adjacent structure.

*Use one row of rivets instead of two rows as shown.
Space rivets at 4d.

Use NAS205 or NAS221 screws or equivalent. (See section IX).
Attach with NA336-1032 anchor nuts.

Key to Figure 138





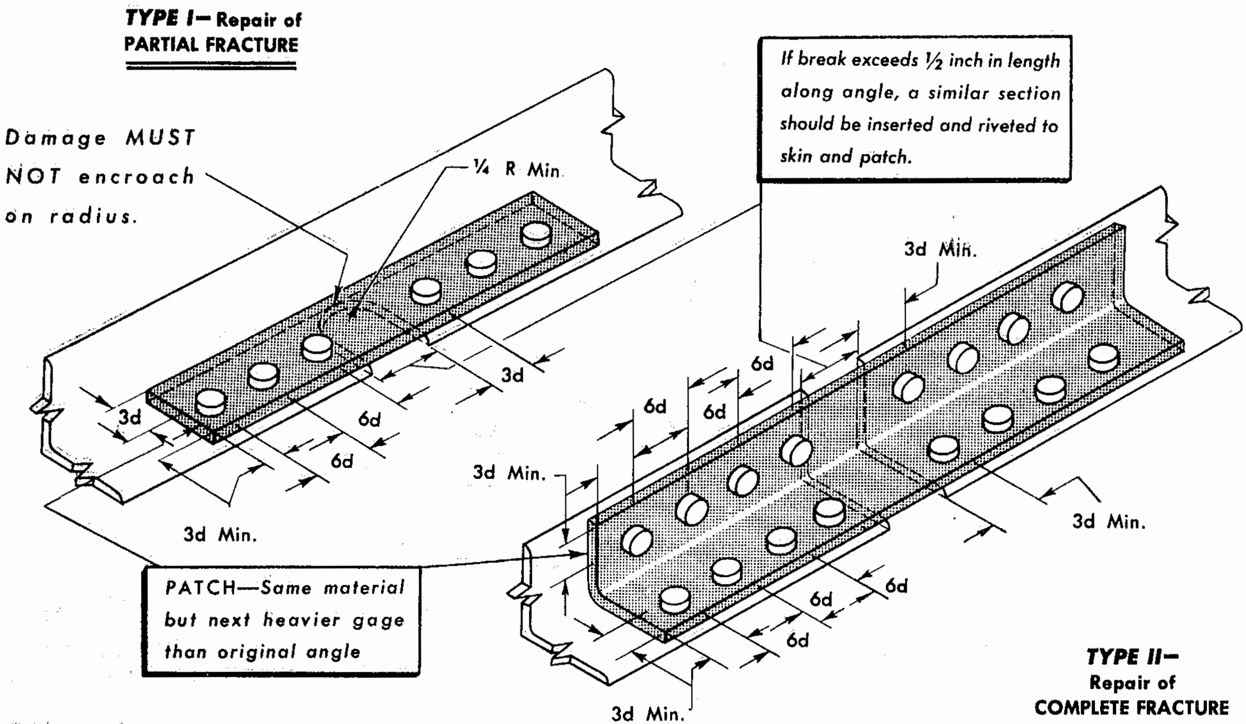
Rivet Dimensions

Material Gage	Rivet Dia. (d)	(3d) Edge Distance	(6d) Rivet Spacing
.025	1/8	3/8	3/4
.032	1/8	3/8	3/4
.040	5/32	15/32	15/16
.051	5/32	15/32	15/16
.064	3/16	9/16	1 1/8

Material Note:

All reinforcing plates and cover plates to be 24ST Alclad, next heavier gage than skin.

Figure 138 — Access Holes



FINISH SPEC: See AN 01-1A-1 SECT. 14

RIVETS

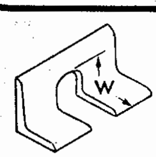
ROUND HEAD (AN 430 AD) FOR FREE-LEG ATTACHMENT. COUNTERSUNK HEAD (AN 426 AD) FOR SKIN ATTACHMENT. SEE RIVET REQUIREMENT TABLE FOR NUMBER REQUIRED ON EACH SIDE OF BREAK.

Rivet Requirement Chart

The following chart shows the number and the diameter of rivets required on each side of the break. Figures shown are for the width of damage across stringer in increments of ¼ inch. Interpolate for values of intermediate widths.

Material Gage of Angle	Use Rivet Diameter (d)	EXTENT OF DAMAGE ACROSS ANGLE (W) ¼	½	¾	1	1 ¼	1 ½	1 ¾	2	2 ½	3	3 ½	4
.025	1/8	2	3	4	5	6	7	9	10	12	14	17	19
.032	1/8	2	3	4	5	7	8	9	11	13	15	18	20
.040	5/32	1	2	3	4	5	6	7	8	10	12	14	16
.051	5/32	2	3	4	6	7	8	9	11	13	16	18	21
.064	3/16	2	3	4	5	6	7	8	9	12	14	16	18
.081	3/16	2	3	5	6	8	9	10	12	15	17	20	23
.091	1/4	1	2	3	4	5	6	7	8	10	11	13	15
.102	1/4	1	2	3	4	5	6	7	8	10	12	14	16
.125	1/4	2	3	4	5	7	8	9	10	13	15	18	20

EXAMPLE



Assume a damage extending 1 ⅜ inch across an .040 24ST Alclad angle. Apply Type II repair. Determine amount of rivets required from above table by interpolating between .040—1 ¼ inch and .040—1 ½ inch, or 5 ½ rivets. Use 6 rivets on each end of break. ALWAYS INTERPOLATE TO HIGHEST VALUE.

If DD rivets are substituted for same diameter AD rivets, reduce the number required in above chart at a ratio of 5-7.

Cherry rivets may be substituted for same diameter AD rivets up to and including 3/16 diameter. Substitute 3/16 diameter cherry rivets for 1/4 diameter AD rivets by increasing the number required in above chart at a ratio of 9-5.

Figure 139 — Angle Repair

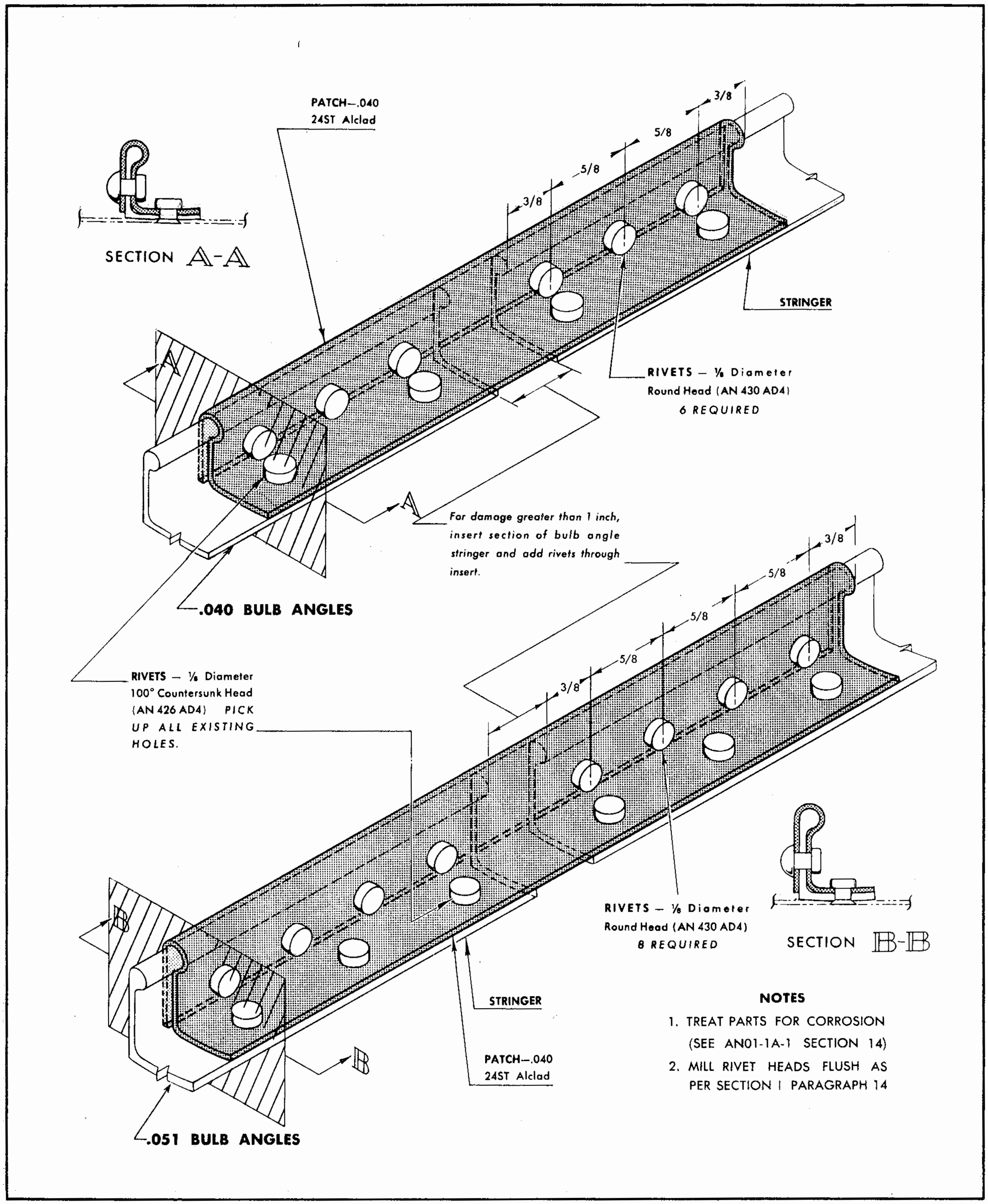
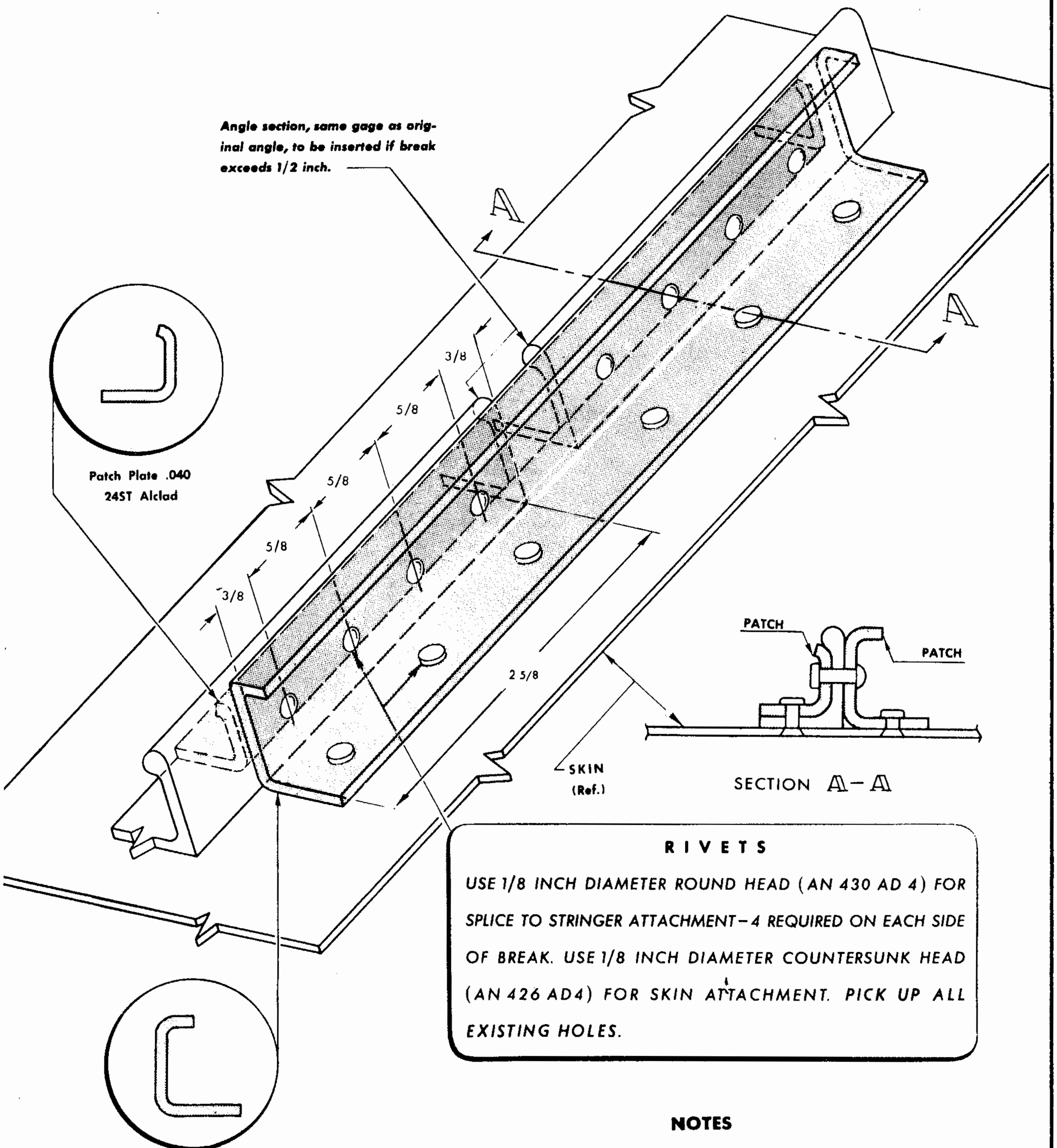


Figure 140 — Bulb Angle Repair, Sheet Metal



RIVETS

USE 1/8 INCH DIAMETER ROUND HEAD (AN 430 AD 4) FOR SPLICE TO STRINGER ATTACHMENT—4 REQUIRED ON EACH SIDE OF BREAK. USE 1/8 INCH DIAMETER COUNTERSUNK HEAD (AN 426 AD4) FOR SKIN ATTACHMENT. PICK UP ALL EXISTING HOLES.

NOTES

1. TREAT EXPOSED SURFACES FOR CORROSION (SEE AN 01-1A-1 SECTION 14)
2. MILL RIVET HEADS FLUSH AS PER SECTION I PARAGRAPH 14

Figure 141 — Bulb Angle Repair, Sheet Metal Alternate

NOTES:

1. Use ⅛-inch diameter countersunk head rivet (AN426AD4) for skin attachments.
2. Pick up all existing rivet holes.

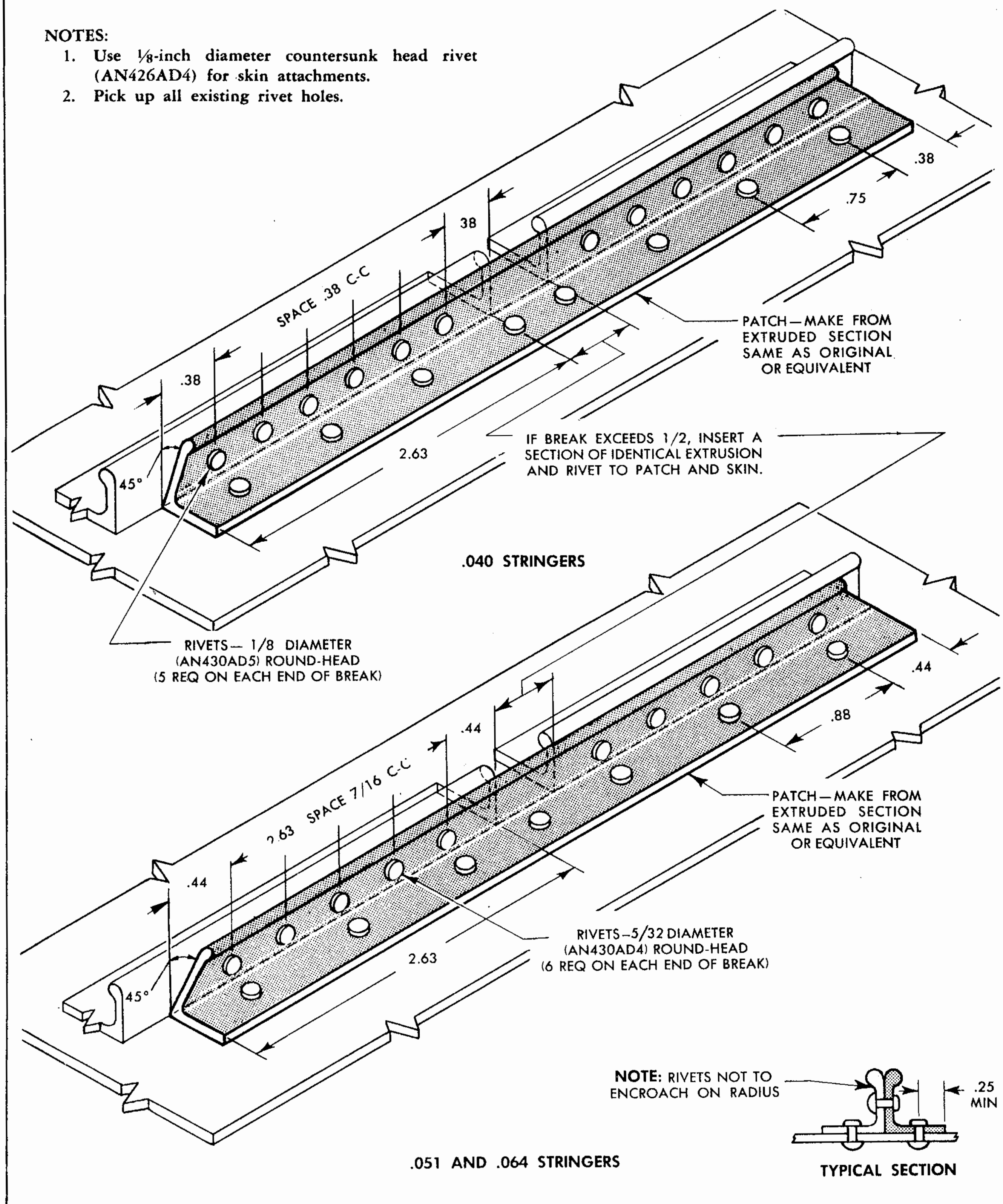
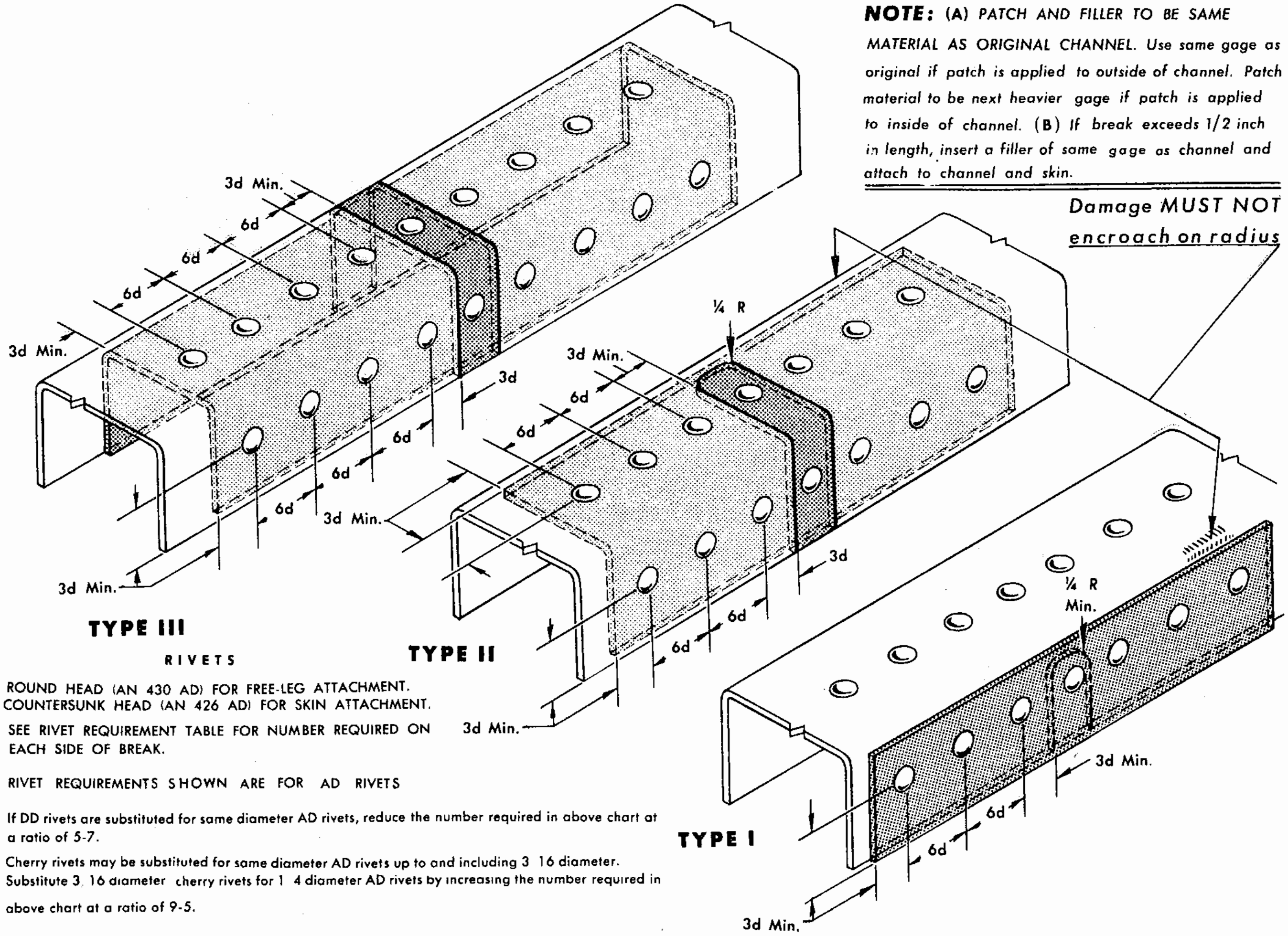


Figure 142 — Bulb Angle Repair, Extrusion

NOTE: *(A) PATCH AND FILLER TO BE SAME MATERIAL AS ORIGINAL CHANNEL. Use same gage as original if patch is applied to outside of channel. Patch material to be next heavier gage if patch is applied to inside of channel. (B) If break exceeds 1/2 inch in length, insert a filler of same gage as channel and attach to channel and skin.*



RIVETS

ROUND HEAD (AN 430 AD) FOR FREE-LEG ATTACHMENT.
COUNTERSUNK HEAD (AN 426 AD) FOR SKIN ATTACHMENT.

SEE RIVET REQUIREMENT TABLE FOR NUMBER REQUIRED ON EACH SIDE OF BREAK.

RIVET REQUIREMENTS SHOWN ARE FOR AD RIVETS

If DD rivets are substituted for same diameter AD rivets, reduce the number required in above chart at a ratio of 5-7.

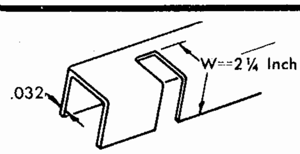
Cherry rivets may be substituted for same diameter AD rivets up to and including 3 16 diameter. Substitute 3 16 diameter cherry rivets for 1 4 diameter AD rivets by increasing the number required in above chart at a ratio of 9-5.

Rivet Requirement Chart

The following chart shows the number of rivets required for each gage of channel, per inch of damage across channel, Interpolate for intermediate values. (RIVETS REQUIRED ON EACH SIDE OF BREAK.)

Material Gage of Channel	Use Rivet Diameter (d)	Extent of Damage Across Channel ½	1	1½	2	2½	3	4	5	6	7	8
.025	1/8	3	5	7	10	12	14	19	24	28	33	37
.032	1/8	3	5	8	11	13	15	20	25	30	35	40
.040	5/32	2	4	6	8	10	12	16	20	24	28	32
.051	5/32	3	6	8	11	13	16	21	26	31	36	41
.064	3/16	3	5	7	9	12	14	18	23	27	32	36
.081	3/16	3	6	9	12	15	17	23	29	34	40	45
.091	1/4	2	4	6	8	10	11	15	18	22	25	29
.102	1/4	2	4	6	8	10	12	16	20	24	28	32
.125	1/4	3	5	8	10	13	15	20	25	30	35	40

EXAMPLE



Assume a damage extending 2¼ inches across an .032 24ST Alclad channel. Apply Type II repair. Determine number of rivets required from above table by interpolating between .032—2 inches and .032—2½ inches, or 12 rivets required on each end of break. *ALWAYS INTERPOLATE TO HIGHEST VALUE.*

Figure 143 — Sheet Metal Channel Repair

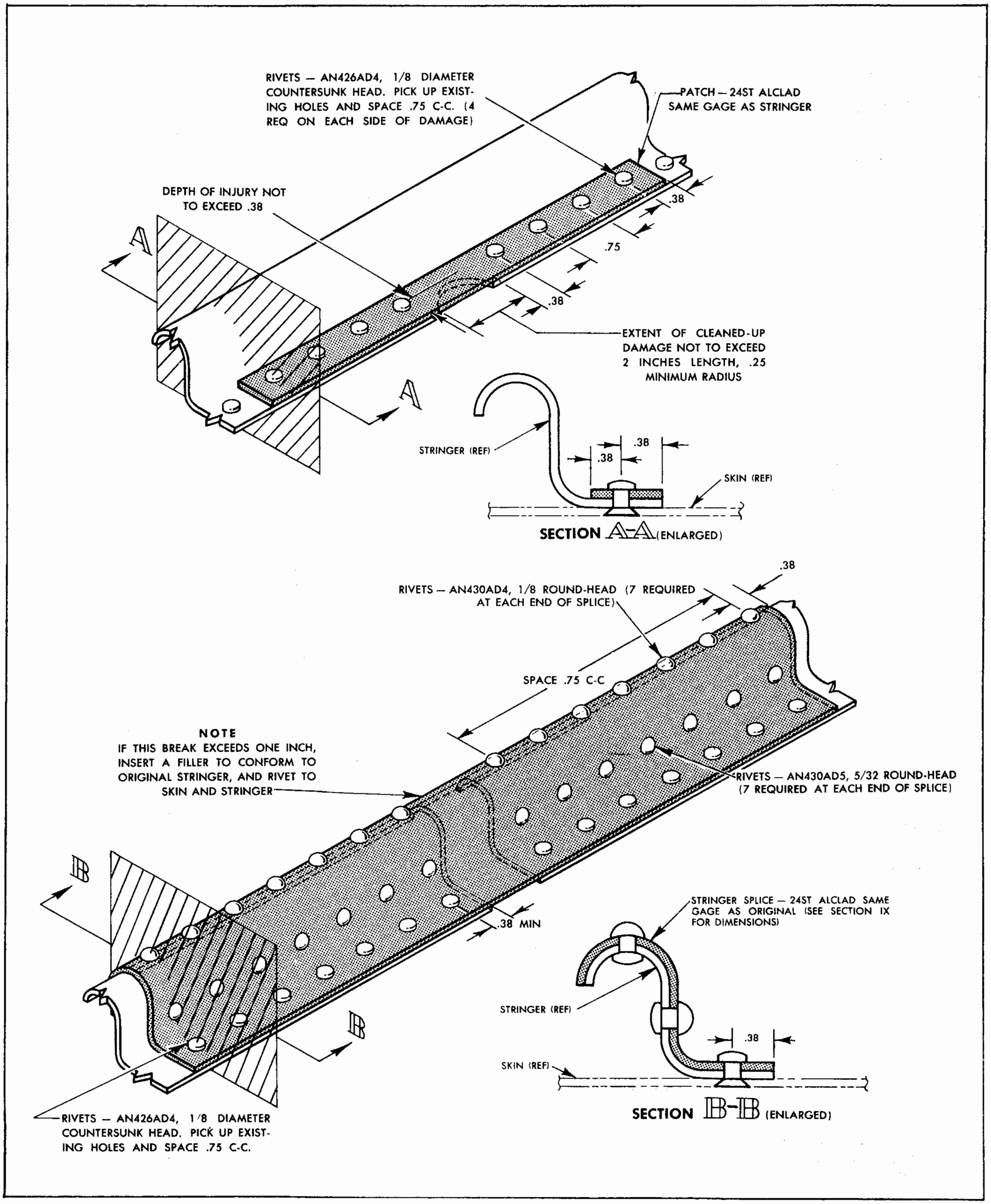
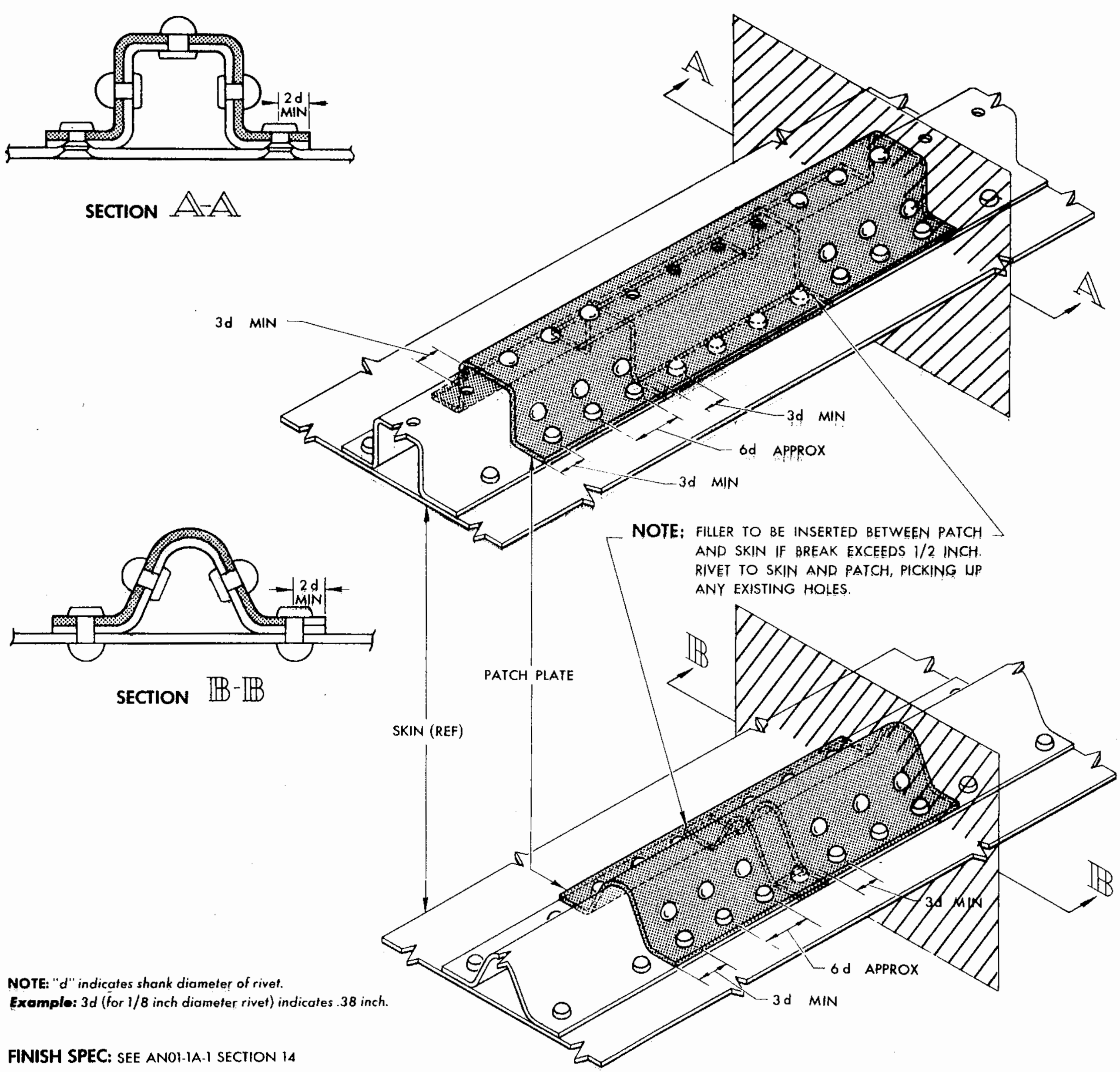


Figure 144 — "J" Section Repair



NOTE: *"d" indicates shank diameter of rivet.*
Example: *3d (for 1/8 inch diameter rivet) indicates .38 inch.*

FINISH SPEC: SEE AN01-1A-1 SECTION 14

RIVET REQUIREMENTS

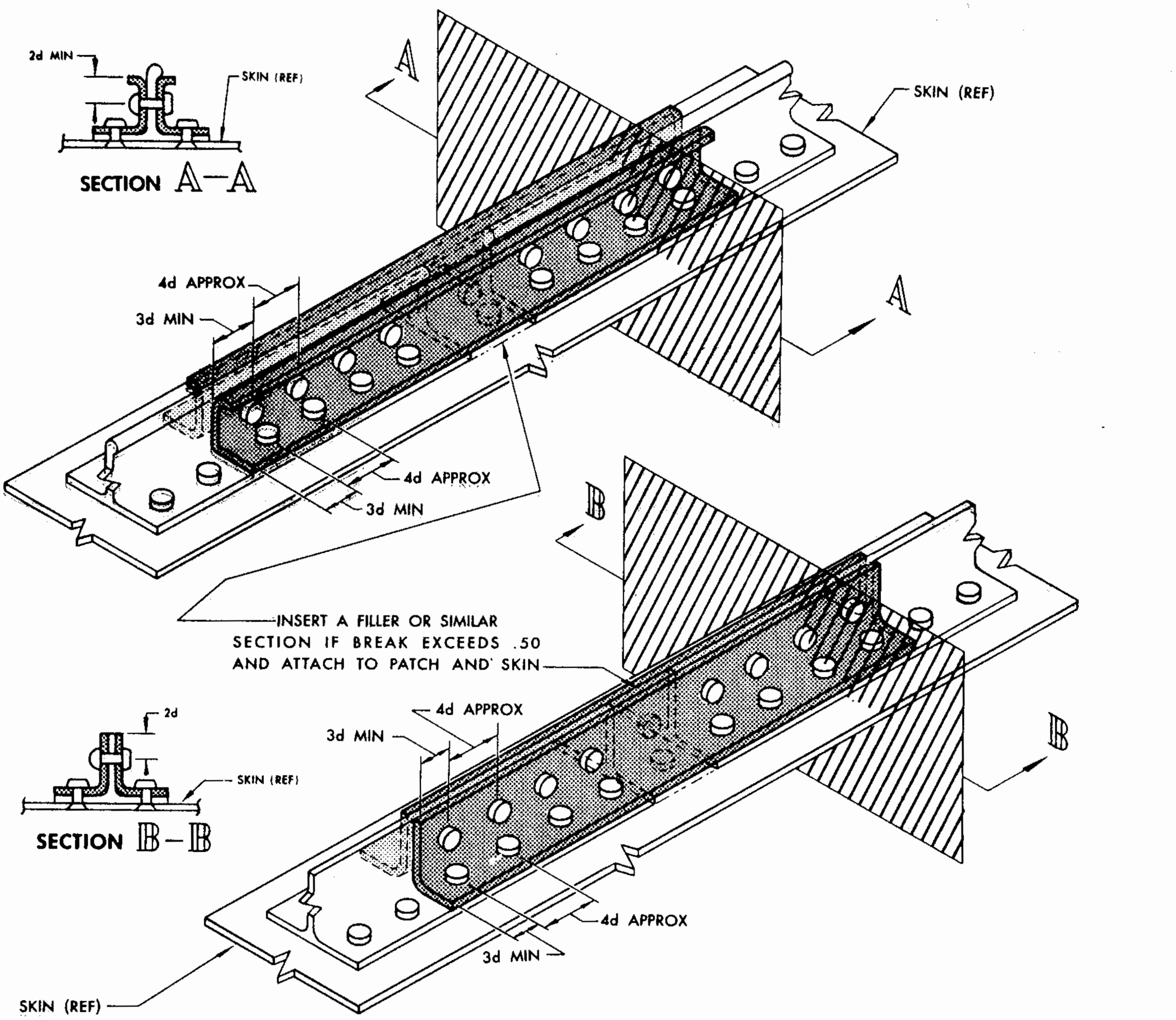
MATERIAL GAGE	RIVET DIAMETER AD	RIVET DIAMETER DD	RIVET DIAMETER CHERRY	3d EDGE DISTANCE AD	3d EDGE DISTANCE DD	3d EDGE DISTANCE CHERRY	6d RIVET SPACING AD	6d RIVET SPACING DD	6d RIVET SPACING CHERRY
.025	1/8		1/8	.375		.375	.750		.750
.032	1/8		1/8	.375		.375	.750		.750
.040	5/32		5/32	.469		.469	.938		.938
.051	3/16	5/32	3/16	.563	.469	.563	1.125	.938	1.125
.064	1/4	3/16	*3/16	.750	.563	.563	1.50	1.125	1.125

**Add additional cherry rivets at the ratio of 7-5*

NOTES:

1. Pick up all existing rivet holes.
2. Use round head (AN430) or blind, self-plugging Cherry (LS1127) rivets for patch-to-stringer or patch-to-bulkhead attachment.
3. Use countersunk head (AN326) or blind, self-plugging, countersunk head Cherry rivets (LS1126) for outer skin attachment.
4. All patch plates and fillers to be same material and gage as original stringer or skin.
5. Rivet heads must not encroach on any radii.

Figure 145 — Hat and "V" Section Repairs



NOTES:

1. MAKE PATCH PLATES FROM 24S-T ALUMINUM, SAME GAGE AS ORIGINAL TEE. IF THE THREE LEGS OF THE TEE ARE OF VARYING THICKNESS USE 24S-T SHEET OF SUFFICIENT GAGE TO ADD TO 120° OF THE CROSS SECTIONAL AREA OF THE ORIGINAL TEE.
2. PICK UP ALL EXISTING RIVET HOLES THROUGH SKIN ATTACHING FLANGES
3. USE ROUND HEAD (AN430AD) RIVETS FOR PATCH-TO-"T" ATTACHMENT
4. USE COUNTERSUNK HEAD (AN426AD) RIVETS FOR FLANGE-TO-SKIN ATTACHMENT
5. MAINTAIN 2D MINIMUM EDGE DISTANCE FROM CENTER OF RIVET TO EDGE OF SHEET UNLESS OTHERWISE SPECIFIED

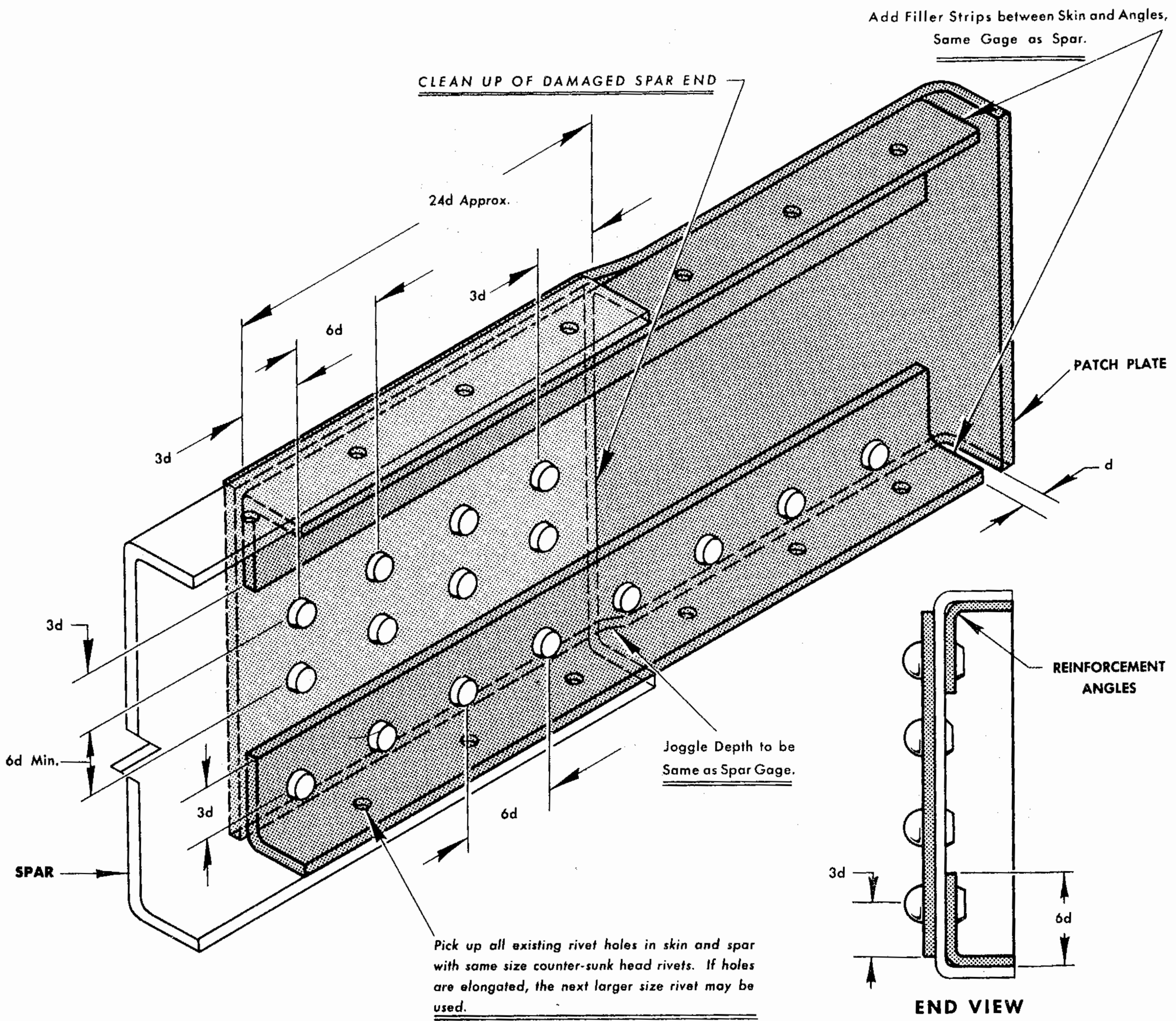
RIVET REQUIREMENTS

MATERIAL GAGE	*RIVET DIAMETER*		*3d EDGE DISTANCE*		*4d RIVET SPACING*	
	AD	DD	AD	DD	AD	DD
.032	1/8		.38		.50	
.040	1/8		.38		.50	
.051	5/32		.47		.63	
.064	5/32		.47		.63	
.072	3/16		.56	.47	.75	.63
.081	3/16		.56	.47	.75	.63
.091	3/16		.56	.56	.75	.75
.102	1/4		.75	.56	1.00	.75
.125	1/4		.75	.56	1.00	.75
.156	1/4		.75	.75	1.00	1.00
.188	1/4		.75	.75	1.00	1.00

AB 2475

NOTE: *"d" indicates shank diameter of rivet.* ***Example:*** *3d (for 1/8 inch diameter rivet) indicates 3/8 inch.*

Figure 146 — Extruded "T" Repairs



NOTES

Patch plate and fillers 24ST Alclad, same gage as original part.

Use Brazier head rivet (AN 430) or cherry self-plugging Brazier head rivets (LS 1127).

All rivets to be spaced 6d, center to center, unless otherwise noted.

3d edge distance to be maintained from center of rivet to edge of sheet in all instances.

Rivet heads must not encroach on any radii.

RIVET REQUIREMENTS

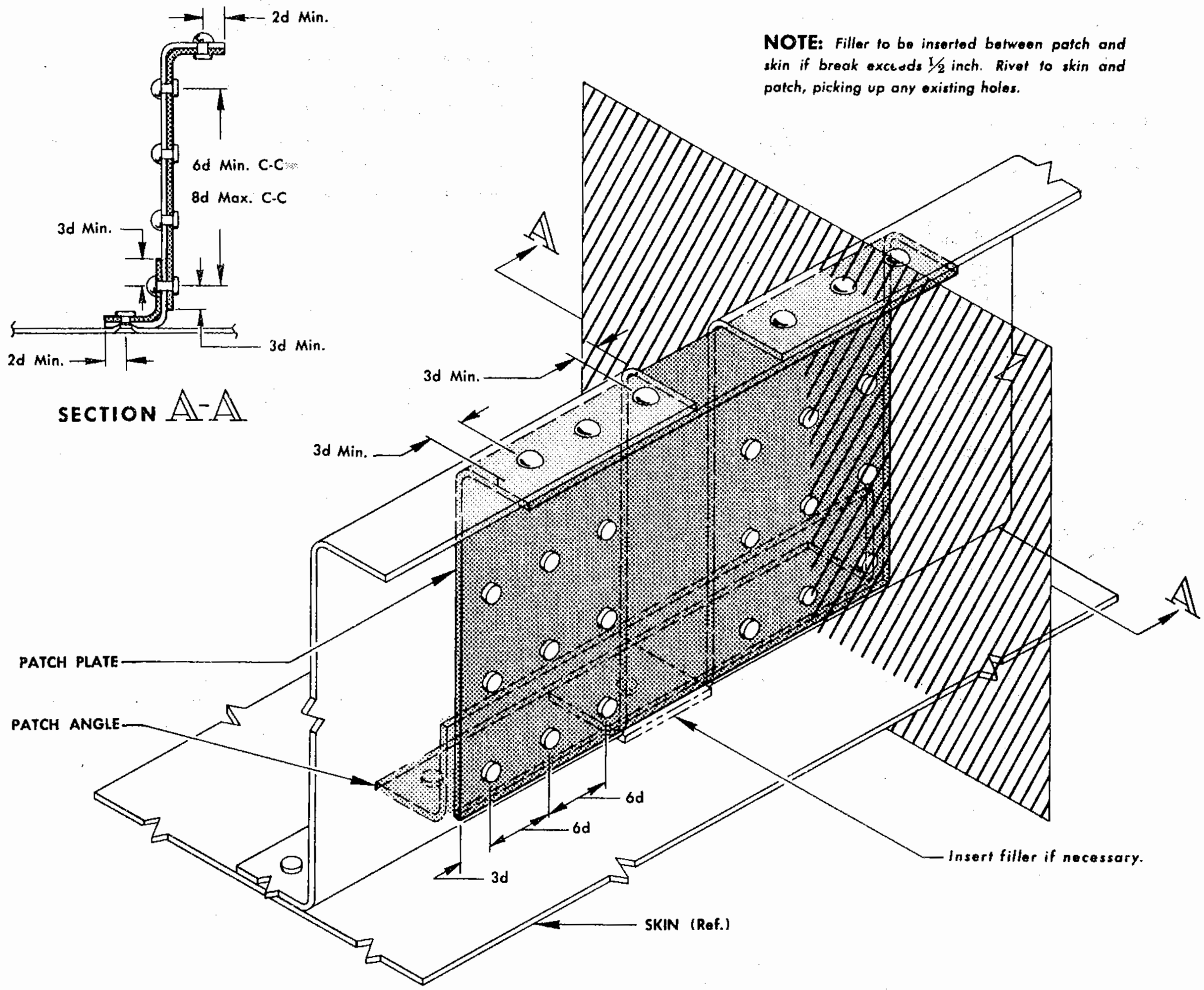
MATERIAL GAGE	RIVET DIAMETER AD	DD	CHERRY	3d EDGE DISTANCE AD	DD	CHERRY	6d RIVET SPACING AD	DD	CHERRY
.025	1/8		1/8	.375		.375	.750		.750
.032	1/8		1/8	.375		.375	.750		.750
.040	5/32		5/32	.469		.469	.938		.938
.051	3/16	5/32	3/16	.563	.469	.563	1.125	.938	1.125
.064	1/4	3/16	*3/16	.750	.563	.563	1.500	1.125	1.125

*Add additional cherry rivets at the ratio of 7-5.

NOTE: "d" indicates shank diameter of rivet. *Example:* 3d (for 1/8-inch diameter rivet) indicates 3/8 inch.

Figure 147 — Channel Repair, Spar Ends

NOTE: *Filler to be inserted between patch and skin if break exceeds ½ inch. Rivet to skin and patch, picking up any existing holes.*



NOTES

Patch plate and fillers same material and gage as original part.

Use round head rivet (AN 430) or cherry self-plugging Brazier head rivets (AAF463) for patch to stringer or bulkhead attachment.

Use countersunk head rivets (AN 426) or countersunk head Cherry self-plugging rivets (AAF462) for skin attachment.

Pick up all existing rivet holes.

Rivet heads must not encroach on any radii.

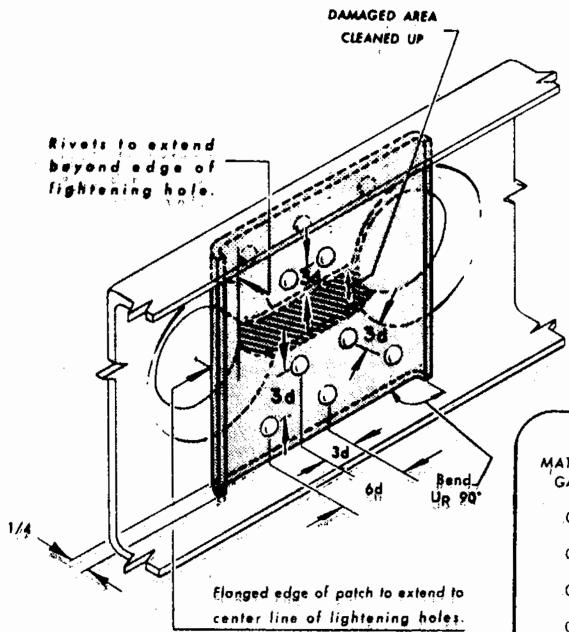
RIVET REQUIREMENTS

MATERIAL GAGE	RIVET DIAMETER AD	DD	CHERRY	3d EDGE DISTANCE AD	DD	CHERRY	6d RIVET SPACING AD	DD	CHERRY
.025	1/8		1/8	.375		.375	.750		.750
.032	1/8		1/8	.375		.375	.750		.750
.040	5/32		5/32	.469		.463	.938		.938
.051	3/16	5/32	3/16	.563	.469	.563	1.125	.469	1.125
.064	1/4	3/16	*3/16	.750	.563	.563	1.500	.563	1.125

*Add additional cherry rivets at the ratio of 7-5.

NOTE: "d" indicates shank diameter of rivet. **Exemple:** 3d (for 1/8-inch diameter rivet) indicates 3/8 inch.

Figure 148 — "Z" Section Repair



Damage Between Lightening Holes

NOTES

Patch plate and fillers 24ST Alclad, same gage as original part.

Pick up all existing rivet holes.

For all web attachments use round head (AN 430) or cherry self-plugging Brazier head rivets (LS 1127).

For all skin attachments use countersunk head (AN 426) or Cherry self-plugging countersunk head rivets (LS 1126)

Space all rivets 6d, center to center, unless otherwise noted.

Maintain 3d edge distance from center of rivet to edge of sheet in all instances.

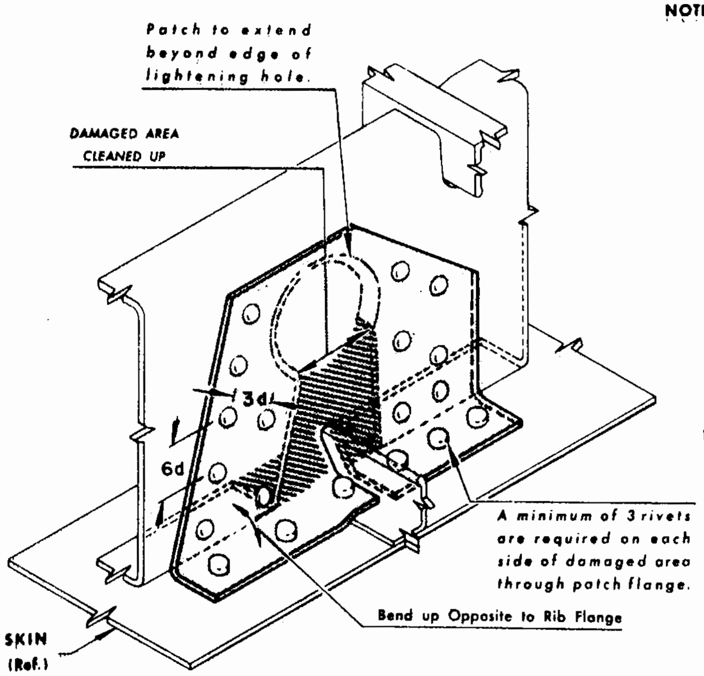
Rivet heads must not encroach on any radii.

RIVET REQUIREMENTS

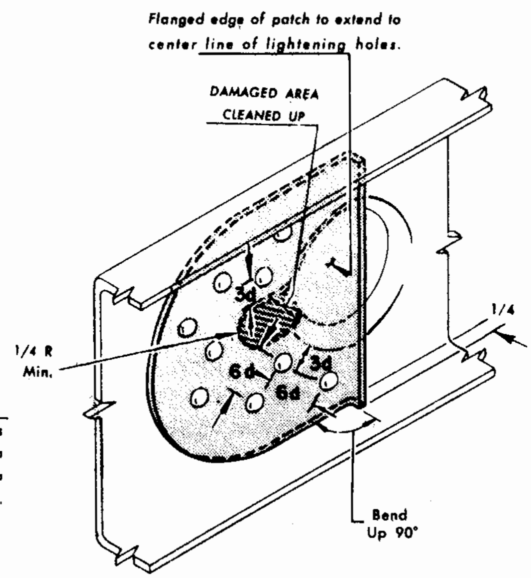
MATERIAL GAGE	RIVET DIAMETER AD	RIVET DIAMETER DD	RIVET DIAMETER CHERRY	3d EDGE DISTANCE AD	3d EDGE DISTANCE DD	3d EDGE DISTANCE CHERRY	6d RIVET SPACING AD	6d RIVET SPACING DD	6d RIVET SPACING CHERRY
.025	1/8		1/8	.375		.375	.750		.750
032	1/8		1/8	.375		.375	.750		.750
04C	5/32		5/32	.469		.463	.938		.938
051	3/16	5/32	3/16	.563	.469	.563	1.125	.938	1.125
064	1/4	3/16	*3/16	.750	.563	.563	1.500		1.125

*Add additional cherry rivets at the ratio of 7-5.

NOTE: "d" indicates shank diameter of rivet. Exemple: 3d (for 1/8-inch diameter rivet) indicates 3/8 inch.

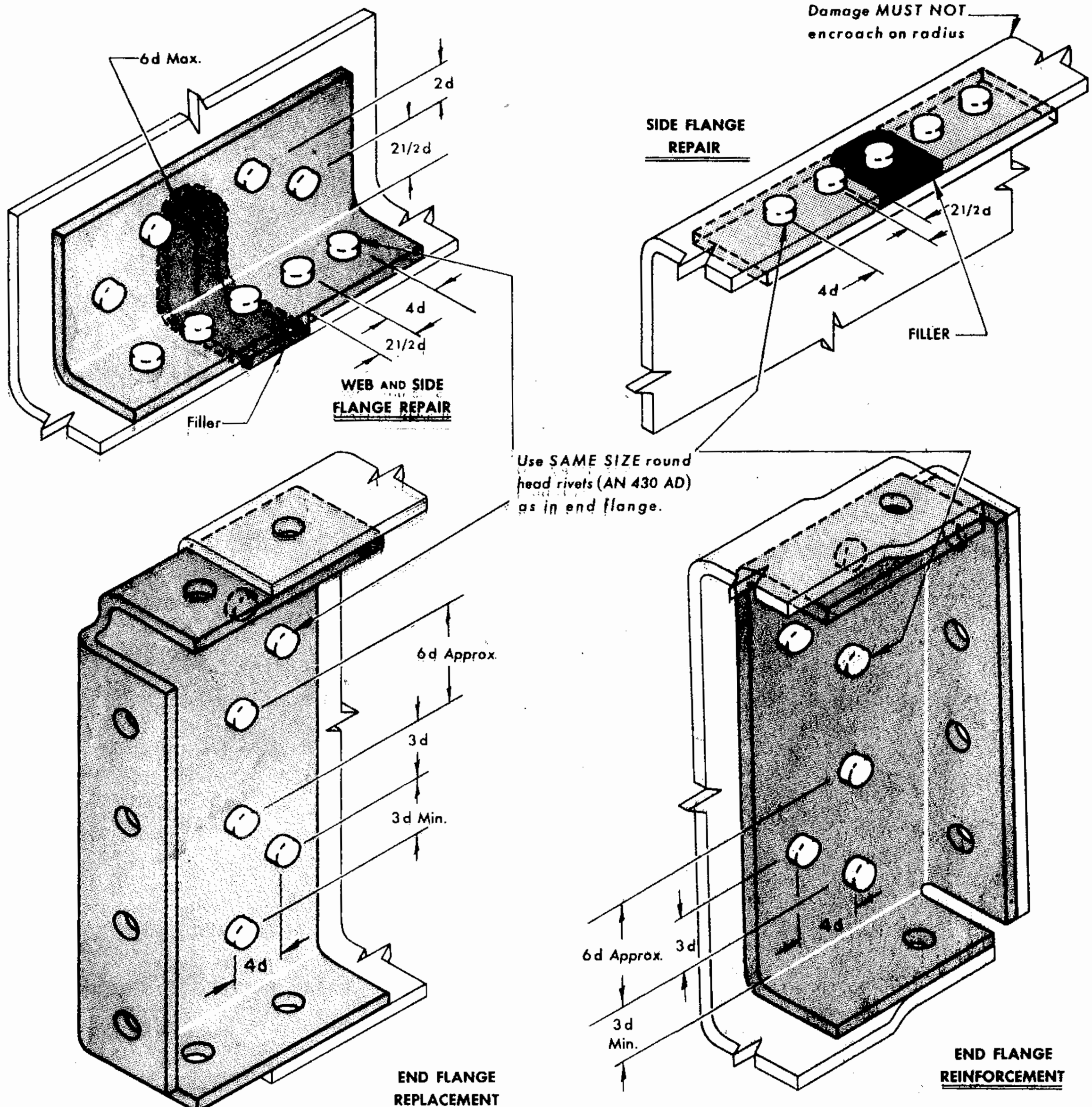


Damage Through Flange and Lightening Hole



Damage at Edge of Lightening Hole

Figure 149 — Rib Repairs, Lightening Holes



NOTES

Use countersunk head rivets (AN 426) or countersunk head cherry self-plugging rivets (LS 1126) when picking up existing rivet holes.

Pick up all existing rivet holes.

3d edge distance to be maintained from center of rivet to edge of sheet in all instances.

Patch plates and fillers to be same material and gage as original part

RIVET REQUIREMENTS

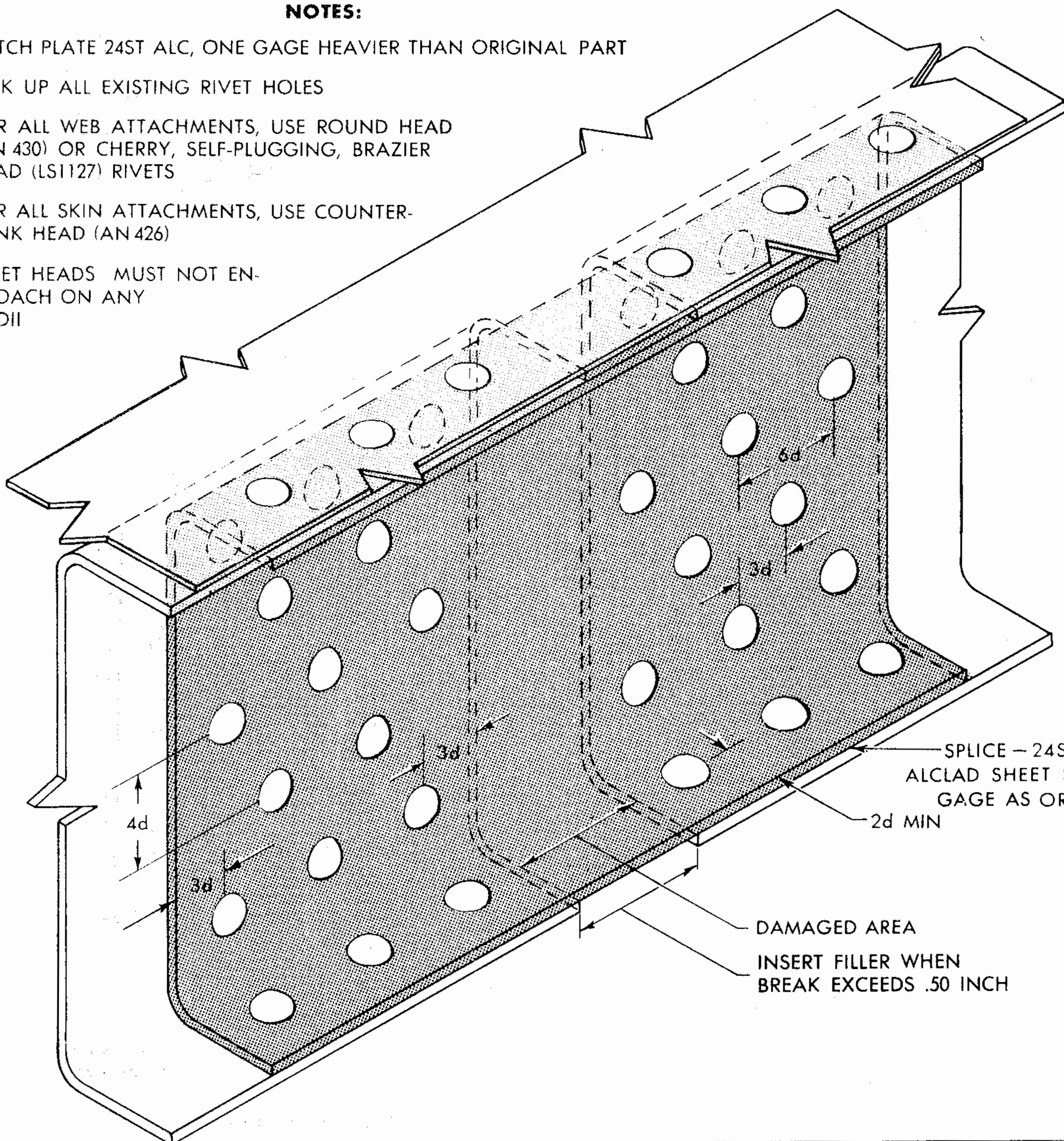
MATERIAL GAGE	RIVET DIAMETER AD	DD	CHERRY	3d EDGE DISTANCE AD	DD	CHERRY	6d RIVET SPACING AD	DD	CHERRY
.025	1/8		1/8	.375		.375	.750		.750
.032	1/8		1/8	.375		.375	.750		.750
.040	5/32		5/32	.469		.469	.938		.938
.051	3/16	5/32	3/16	.563	.469	.563	1.125	.938	1.125
.064	1/4	3/16	*3/16	.750	.563	.563	1.500	1.125	1.125

NOTE: "d" indicates shank diameter of rivet. *Example:* 3d (for 1/8-inch diameter rivet) indicates 3/8 inch. *Add additional cherry rivets at the ratio of 7-5.

Figure 150 — Rib Repair, Side and End Flanges

NOTES:

1. PATCH PLATE 24ST ALC, ONE GAGE HEAVIER THAN ORIGINAL PART
2. PICK UP ALL EXISTING RIVET HOLES
3. FOR ALL WEB ATTACHMENTS, USE ROUND HEAD (AN 430) OR CHERRY, SELF-PLUGGING, BRAZIER HEAD (LS1127) RIVETS
4. FOR ALL SKIN ATTACHMENTS, USE COUNTER-SUNK HEAD (AN 426)
5. RIVET HEADS MUST NOT ENCROACH ON ANY RADII



RIVET REQUIREMENTS

MATERIAL GAGE	*RIVET DIAMETER* AD	CHERRY	DD	*3d EDGE DISTANCE* AD	CHERRY	DD	*6d RIVET SPACING* AD	CHERRY	DD
.025	1/8	1/8		.375	.375		.750	.750	
.032	1/8	1/8		.375	.375		.750	.750	
.040	5/32	5/32		.469	.469		.938	.938	
.051	3/16	3/16	5/32	.563	.563	.469	1.125	1.125	.938
.064	1/4	*3/16	3/16	.750	.563	.563	1.50	1.125	1.125

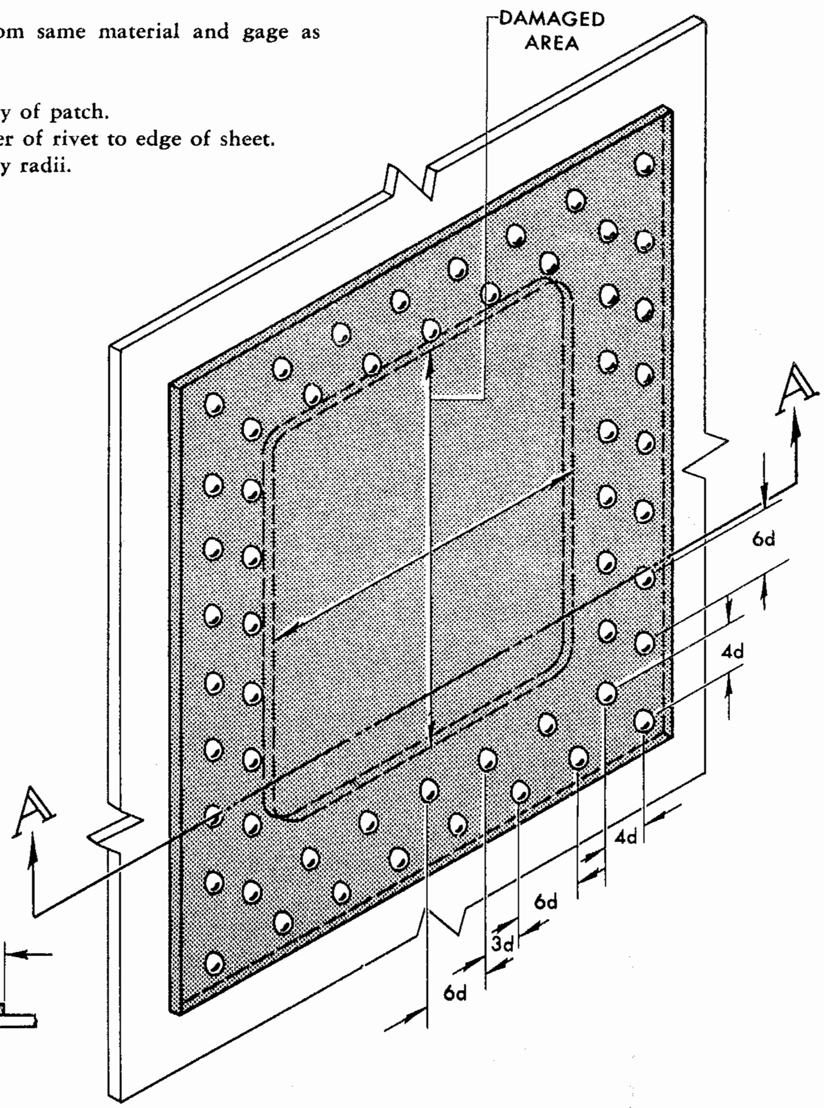
**Add cherry rivets at the ratio of 7-5.*

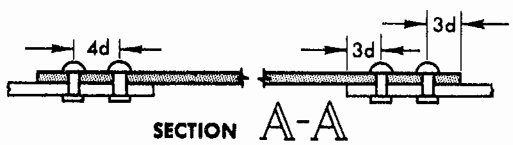
NOTE: *"d" indicates shank diameter of rivet.* ***Example:*** *3d (for 1/8 inch diameter rivet) indicates 3/8 inch.*

Figure 151 — Rib Splice

NOTES:

1. Make splice plates and insertion from same material and gage as original web.
2. Use AN430 rivets.
3. Pick up all existing rivet holes in way of patch.
4. Maintain 3d edge distance from center of rivet to edge of sheet.
5. Rivet heads must not encroach on any radii.





RIVET REQUIREMENTS

MATERIAL GAGE	RIVET DIAMETER AD	RIVET DIAMETER CHERRY	RIVET DIAMETER DD	3d EDGE DISTANCE AD	3d EDGE DISTANCE CHERRY	3d EDGE DISTANCE DD	6d RIVET SPACING AD	6d RIVET SPACING CHERRY	6d RIVET SPACING DD
.025	1/8	1/8		.375	.375		.750	.750	
.032	1/8	1/8		.375	.375		.750	.750	
.040	5/32	5/32		.469	.469		.938	.938	
.051	3/16	3/16	5/32	.563	.563	.469	1.125	1.125	.938
.064	1/4	*3/16	3/16	.750	.563	.563	1.50	1.125	1.125

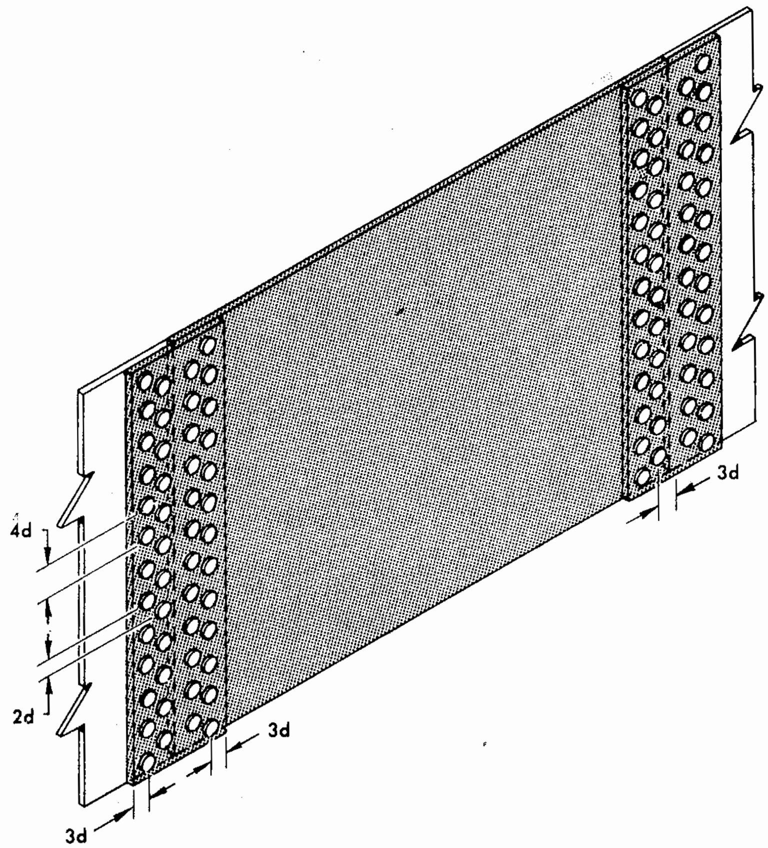
*Add cherry rivets at the ratio of 7-5.

NOTE: "d" indicates shank diameter of rivet. **Example:** 3d (for 1/8 inch diameter rivet) indicates 3/8 inch.

Figure 152 — Web Repair, Solid Areas

NOTES:

1. MAKE SPLICE PLATES AND INSERTION FROM ORIGINAL MATERIAL AND GAGE AS ORIGINAL PART IF ORIGINAL PART IS 24ST ALCLAD.
2. MAKE SPLICE PLATES FROM NEXT HEAVIER GAGE 24ST ALCLAD IF ORIGINAL WEB IS 24ST-80 24ST-81 OR 24ST-86.
3. USE AN 430 RIVETS.
4. PICK UP ALL EXISTING HOLES IN WAY OF PATCH.
5. MAINTAIN 3d EDGE DISTANCE FROM CENTER OF RIVET TO EDGE OF SHEET.
6. RIVET HOLES MUST NOT ENCROACH ON ANY RADII.



RIVET REQUIREMENTS

WEB GAGE	RIVET DIAMETER AD	RIVET DIAMETER DD	RIVET DIAMETER CHERRY	3d EDGE DISTANCE AD	3d EDGE DISTANCE DD	3d EDGE DISTANCE CHERRY	6d RIVET SPACING AD	6d RIVET SPACING DD	6d RIVET SPACING CHERRY
.025	1/8		1/8	.375		.375	.750		.750
.032	1/8		1/8	.375		.375	.750		.750
.040	5/32		5/32	.466		.469	.938		.938
.051	3/16	5/32	3/16	.563	.466	.563	1.125	.938	1.125
.064	1/4	3/16	*3/16	.750	.563	.563	1.50	1.125	1.125

**Add additional cherry rivets at the ratio of 7-5.*

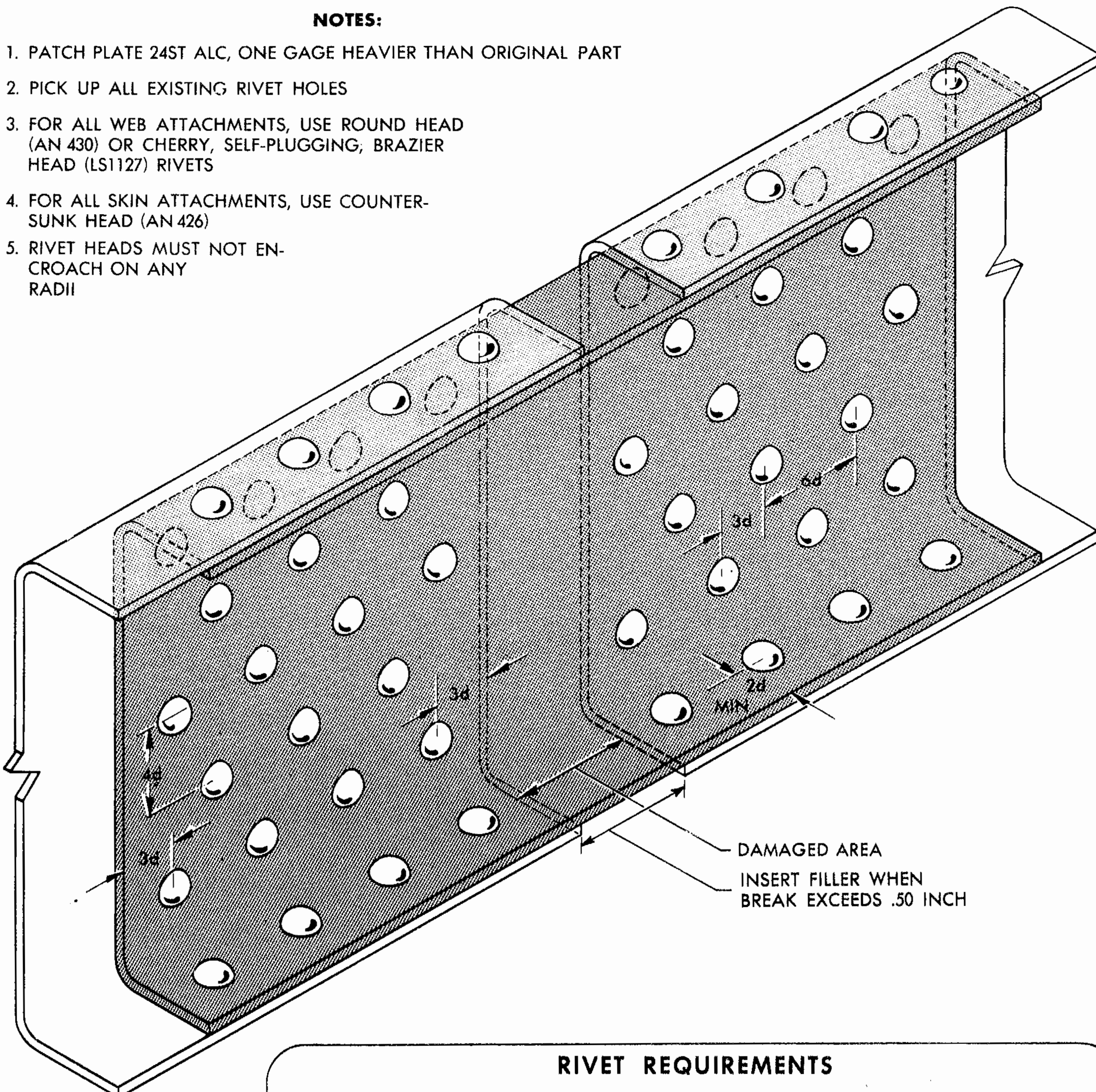
NOTE: *"d" indicates shank diameter of rivet.* ***Example:*** *3d (for 1/8-inch diameter rivet) indicates .38 inch.*

Figure 153 — Web Repair, Insertion of New Section

FIGURE 154 DELETED

NOTES:

1. PATCH PLATE 24ST ALC, ONE GAGE HEAVIER THAN ORIGINAL PART
2. PICK UP ALL EXISTING RIVET HOLES
3. FOR ALL WEB ATTACHMENTS, USE ROUND HEAD (AN 430) OR CHERRY, SELF-PLUGGING, BRAZIER HEAD (LS1127) RIVETS
4. FOR ALL SKIN ATTACHMENTS, USE COUNTER-SUNK HEAD (AN 426)
5. RIVET HEADS MUST NOT ENCROACH ON ANY RADII



RIVET REQUIREMENTS

MATERIAL GAGE	RIVET DIAMETER AD	CHERRY	DD	3d EDGE DISTANCE AD	CHERRY	DD	6d RIVET SPACING AD	CHERRY	DD
.025	1/8	1/8		.375	.375		.750	.750	
.032	1/8	1/8		.375	.375		.750	.750	
.040	5/32	5/32		.469	.469		.938	.938	
.051	3/16	3/16	5/32	.563	.563	.469	1.125	1.125	.938
.064	1/4	*3/16	3/16	.750	.563	.563	1.50	1.125	1.125

**Add cherry rivets at the ratio of 7-5.*

NOTE: *"d" indicates shank diameter of rivet.* ***Example:*** *3d (for 1/8 inch diameter rivet) indicates 3/8 inch.*

Figure 155 — Formed Channel Splice

APPENDIX I

AMERICAN-BRITISH GLOSSARY OF NOMENCLATURE

U. S. A.	*British*
Accumulator (hydraulic)	Should not be confused with electrical accumulator or battery
Anti-friction bearings	Ball and roller bearings
Battery (electrical)	Electrical accumulator
Blade connecting rod	Plain connecting rod
Block test	Bench test under engine's own power
Bombardier or bomber	Bomb-aimer
Box-end wrench	Circular-ended wrench (for hexagon)
Cap screw	Setscrew or screw
Check valve (hydraulic)	Non-return valve
Clevis	Fork joint or knuckle joint
Closed spanner-wrench with internal lugs or surface lugs	Ring spanner
Co-Pilot	Second Pilot
Cotter pin	Split pin
Crock (used in heat-treatment)	Earthenware jar
Cylinder (hydraulic)	Jack
Droppable tank	Slip tank
Dump valve	Jettison valve
Fillister head crew	Cheese head screw
Flat head screw	Countersunk head screw
Flight indicator	Artificial horizon
Gall	To fret or score
Gasoline (gas)	Petrol
Gross Weight	All up weight
Ground (electrical)	Earth
Green run	Endurance test
Gyro horizon	Artificial horizon
Gyro pilot	Automatic pilot
Kerosene	Paraffin Oil
Knuckle pin (used on radial engines)	Wrist pin or anchor pin
Landing Gear	Alighting Gear
Lean	Weak
Lock washer	Spring Washer
Manifold pressure	Boost
Manometer pressure	Superpressure
Monkey wrench	Screw spanner
Mooring line	Mooring guy
Oil pan	Sump
Pad	Sometimes used for raised machined surface for mounting accessories, etc.
Palnut	Type of locknut
Panel, wing—Center of inboard panel	Center section
Outboard panel	Outer plane
Pilot	Spigot
Piston pin	Gudgeon pin
Reticule (gun sight, etc.)	Graticule
Round head screw	Cup head screw
Screen	Filter
Setscrew	Grub screw
Ship	Aircraft
Shock strut	Compression leg
Slushing compound	Corrosion inhibiter
Socket wrench	Box spanner
Spanner	C-spanner
Spanner wrench	Ring spanner
Spark plug	Sparking plug
Stabilizer—	
Horizontal	Tail plane
Vertical	Fin
Stack	Manifold (inlet or exhaust)
Sylphon	Aneroid
Tachometer	Engine speed indicator
Tag	Label
Test club	Test fan
Tube (radio)	Valve
Turn indicator	Direction indicator
Valve (fuel or oil)	Cock
Weight empty	Tare
Windshield	Windscreen

APPENDIX II

EMERGENCY REPAIRS

Emergency repairs will be added when need is indicated by actual operating conditions.

ALPHABETICAL INDEX