

2415

GRUMMAN AMERICAN SINGLE ENGINE AIRCRAFT SERVICE KIT NO. 125A
SUPERSEDES SERVICE KIT NO. 125

WEIGHT AND BALANCE: The installation of U-Channels on the Trailing Edge of the Aircraft's Control Surfaces requires that Mass Balance weights of particular Control Surfaces be increased. This Service Kit provides the additional Mass Balance weights, installation hardware and installation procedures required. The effect of all other repair procedures contained in this Service Kit on the Aircraft's Basic Weight and Balance is negligible.

NOTE

To arrest future trailing edge bondline delamination and to maintain consistent control surface balance it is mandatory to install U-Channels on all control surfaces of any aircraft that may require installation of U-Channels on any control surface. For example, if a flap on a particular aircraft is the only control surface trailing edge bondline exhibiting major bondline delamination, to install a U-Channel on this control surface it is mandatory to install U-Channels on all control surfaces of this aircraft.

THIS SERVICE KIT IS CONSIDERED BY GRUMMAN AMERICAN AVIATION CORPORATION TO BE A DESIGN IMPROVEMENT.

PRICE:

Prices are subject to change without notice:

List Price (E)

SK125A-1	\$ 71.78
SK125A-2	\$ 169.49
SK125A-3	\$ 135.15
SK125A-4	\$ 76.38

CAUTION

Drilling in the area of fuel, fuel leaks or fuel vapors constitutes a very serious fire and/or explosion hazard. Contact the Grumman American Aviation Corporation Customer Service Department before proceeding with the repair of bondline delamination in the area of the Integral Fuel Tanks of the wings of all AA5 Series Aircraft.

CAUTION

Exercise extreme care drilling in the wing. Drilling is prohibited in an area of 3.0 inches on either side of the centerline of the wing spar. See Figure 2 for dimensions necessary for locating wing spar centerline.

WARNING

Damage to the wing spar will seriously affect the structural integrity of the aircraft.

SAFETY PRECAUTIONS

Sealants - Handling and safety instructions.

1. Sealants have been proven to be safe materials when reasonable care is observed but the following precautions must be observed.

3415

GRUMMAN AMERICAN SINGLE ENGINE AIRCRAFT SERVICE KIT NO. 125A
SUPERSEDES SERVICE KIT NO. 125

WARNING

Some Sealants contain Flammable and Volatile Solvents.

2. Keep sealants away from heat, sparks and flame. Proper precautions used with flammable material must be taken when applying sealants. Comply with all local safety regulations.
3. Use and handle only in a well ventilated area. Air supplied respirators should be used during application. Avoid repeated or prolonged exposure. Remove affected personnel to fresh air immediately and obtain medical attention.
4. Avoid all contact with the body, especially contact with open breaks in the skin and ingestion. If skin contact is made, flush area with warm water. Obtain medical attention in case of extreme exposure or ingestion.
5. Polyethylene mitts and chemical type goggles must be used when handling or mixing materials.

MODIFICATION INSTRUCTIONS

- A. Prepare the aircraft for safe maintenance as follows:
 - A-1 Insure Master Switch OFF.
 - A-2 Aircraft grounded.
 - A-3 Observe all safety precautions.
- B. Bondline Inspection Procedures.
 - B-1 Carefully inspect the edges of all bondlines in a well lighted hangar or outside in the daylight to determine the existence of hairline cracks between two layers of bonded metal. Identify the location of any cracks with a grease pencil as shown in Figure 1.
 - B-2 Gently tap the bondline with a coin or similar metal object to verify the existence of a bondline separation. Slowly move along the bondline, while tapping and listen for a change in tone as the suspect area is traversed. A bondline separation will produce a flat or hollow sound when tapped directly in the delaminated area.
 - B-3 To verify that a bondline separation exists attempt to insert a spatula (supplied in kit) or a similar tool into the bondline.
 - B-4 If the hairline cracks are found not to be bondline separations then the area should be cleaned with MEK, Isopropyl Alcohol or Acetone and sealed with paint.
 - B-5 If the hairline cracks are found to be bondline separations then determine the extent of the delamination. Should the bondline delamination be less than 30% of the area of the entire bondline, refer to section C and proceed with the repair for minor bondline delamination. Should the bondline delamination be greater than 30% of the area of the entire bondline, refer to section D and proceed with the repair for major bondline delamination. Should the control surface trailing edge bondline exhibit delamination greater than 30%, refer to section E and proceed with the installation of U-Channels.

NOTE

The Aileron bondlines on AA-5 Series Aircraft are located on the leading edge of the Aileron. Inspection of these bondlines will require removal of the aileron from the aircraft.

4/15

GRUMMAN AMERICAN SINGLE ENGINE AIRCRAFT SERVICE KIT NO. 125A
SUPERSEDES SERVICE KIT NO. 125

C. Repair Procedures for Minor Bondline Delamination.

- C-1 For repair of minor bondline delamination in all airframe areas, except control surface trailing edge, establish the following hole pattern. Drill .097-.102 diameter holes (drill No. 40) and countersink 100° x .148 diameter for use of NAS1097AD3 rivets. Holes are to be located on 1.0 inch centers, staggered .25 on either side of the centerline of the bondline, maintaining minimum edge distance of .19. See Figure 3. This hole pattern must extend 1.5 inches beyond the delaminated area. In areas where a blind rivet may be required or desirable the same hole pattern may be established with the following variations: Drill .143-.146 diameter holes (drill No. 27), countersink 100° x .225 diameter and maintain a minimum edge distance .29 for use of CR3242-4-2 rivets.

NOTE

Standard minimum edge distance is twice the diameter (2 x diameter) of the fastener to be installed. Where absolutely necessary minimum edge distance of one and a half times the diameter (1.5 x diameter) of the fastener to be installed may be used.

- C-2 For repair of minor bondline delamination of control surface trailing edge bondline, establish the following hole pattern: Drill .097-.102 diameter holes (drill No. 40) and countersink 100° x .148 diameter, upper surface skin only, for use of NAS1097AD3 rivets. Holes are to be located on 1.0 inch centers on the centerline of the trailing edge bondline. This hole pattern must extend 1.5 inches beyond the delaminated area.
- C-3 After hole pattern has been drilled, remove all chips and burrs. Clean exterior surfaces around the repair area using MEK, Isopropyl Alcohol or Acetone to remove all dirt, oil, etc.

NOTE

Exercise care to prevent contamination of bondlines. Clean all tools with MEK, Isopropyl Alcohol or Acetone and wear gloves.

- C-4 Remove any rivets in the area to be repaired.
- C-5 Carefully open the delaminated bondline using a clean thin knife or similar tool. Open the bondline approximately 1.0 inch beyond the delaminated area to allow the surfaces to be wedged open .125 to .25 for working space.

NOTE

Exercise care to prevent stretching or deforming of the skin.

- C-6 Carefully wedge open the delaminated bondline with a clean screwdriver or similar tool.
- C-7 Using the stainless steel tube brush (supplied in kit) in a high speed drill motor, brush the inside surfaces of the opened bondline to remove the old adhesive and/or aluminum corrosion that might be present. If the working space of the opened bondline is restricted, sand the inside surfaces using the 3M Elektrocut Paper (supplied in kit) wrapped around a clean putty knife or similar tool.

NOTE

Do not use any sandpaper or emery cloth containing silicon. Do not use any carbon steel brushes. Use only stainless steel brushes (supplied in kit) or equivalent.

- C-8 Using MEK, Isopropyl Alcohol or Acetone, solvent clean the interior surfaces of the opened bondline.

5/15

GRUMMAN AMERICAN SINGLE ENGINE AIRCRAFT SERVICE KIT NO. 125A
SUPERSEDES SERVICE KIT NO. 125

- C-9 Mix the Polysulfide Sealant per the instructions on the can. The sealant has a pot-life of approximately 2 hours, prepare only the amount required to seal the bondlines that were opened and prepared in steps C-4 thru C-8.

NOTE

Use the class B2 Polysulfide Sealant in all airframe areas except the control surface trailing edge. Use the class A2 Polysulfide Sealant to seal delaminated control surface trailing edge bondline and to install the U-Channels on the control surface trailing edge.

- C-10 Apply a smooth consistent layer of Polysulfide Sealant to all mating surfaces of the delaminated bondline.
- C-11 Install rivets in the repair area while the sealant is wet. All rivets installed on the exterior of the aircraft must be flush. Dip all rivets to be installed beyond the repair area in sealant and install these rivets wet.
- C-12 Remove all excess sealant and allow to cure for a minimum of 8 hours prior to flying aircraft.
- C-13 Allow sealant to cure per the graph illustrated in Figure 1. Fill over exterior rivets with body filler and smooth to contour. Apply zinc chromate primer to repair area prior to repainting.

D. Repair procedures for Major Bondline Delamination:

- D-1 For repair of major bondline delamination in all airframe areas except control surface trailing edge, establish the following hole pattern. Drill .097-.102 diameter holes (drill No. 40) and countersink 100° x .148 diameter for use of NAS1097AD3 rivets. Holes are to be located on 1.0 inch centers, staggered .25 on either side of the centerline of the bondline, maintaining minimum edge distance of .19. See Figure 3. This hole pattern must cover the entire length of the bondline. In areas where a blind rivet may be required or desirable the same hole pattern may be established with the following variations: Drill .143-.146 diameter holes (drill No. 27), countersink 100° x .225 diameter and maintain a minimum edge distance of .29 for use of CR3242-4-2 rivets.

NOTE

Standard minimum edge distance is twice the diameter (2 x diameter) of the fastener to be installed. Where absolutely necessary minimum edge distance of one and a half times the diameter (1.5 x diameter) of the fastener to be installed may be used.

- D-2 Refer to Steps C-3 thru C-13 for the bondline preparation, opening, sealing and rivet installation procedures.

E. U-Channel installation: Repair procedures for major bondline delamination of the control surface trailing edge.

NOTE

To arrest future trailing edge bondline delamination and to maintain consistent control surface balance it is mandatory to install U-Channels on all control surfaces of any aircraft that may require installation of U-Channels on any control surface. For example, if a flap on a particular aircraft is the only control surface trailing edge bondline exhibiting major bondline delamination, to install a U-Channel on this control surface it is mandatory to install U-Channels on all control surfaces of this aircraft.

NOTE

Do Not install the U-Channel on the ailerons of the AA-5 Series Aircraft.

6415

GRUMMAN AMERICAN SINGLE ENGINE AIRCRAFT SERVICE KIT NO. 125A
SUPERSEDES SERVICE KIT NO. 125

- E-1 Remove peel rivets installed per Service Bulletin 155 from all Control Surfaces. (See Figure 5)
- E-2 Clean the exterior of all Control Surface Trailing Edges with MEK, Isopropyl Alcohol or Acetone.
- E-3 Measure the control surface trailing edge and cut the U-Channel the exact length measured. Remove all sharp edges from the ends of the U-Channel.
- E-4 Temporarily install the U-Channels on the trailing edge. Drill .097-.102 diameter holes (drill No. 40) thru U-Channel and control surface trailing edge, countersink 100° x .148 diameter upper and lower surface for use of NAS1097AD3 rivets. See Figure 5 for hole location.
- E-5 Remove the U-Channel from the trailing edge and remove all chips and burrs from the U-Channel and control surface trailing edge. Clean the inside of the U-Channel using cheesecloth, wrapped around a clean putty knife or similar tool, saturated with MEK, Isopropyl Alcohol or Acetone. Store the U-Channel in a safe place to prevent contamination prior to installation.
- E-6 Refer to Steps C-3 thru C-10 for the bondline preparation, opening and sealing procedures.
- E-7 Apply a .50 inch wide strip of class A2 Polysulfide Sealant on the upper and lower surface of the trailing edge.
- E-8 Install the U-Channel while sealant is wet and secure with NAS1097AD3-4 rivets (supplied in kit), flush upper and lower surfaces. The NAS1097AD3-4 rivet may be trimmed as required.
- E-9 Remove all excess sealant and allow to cure for minimum of 8 hours prior to flying aircraft.
- E-10 Allow Sealant to cure per the graph illustrated in Figure 1 prior to repainting. Apply zinc chromate primer to repair area prior to repainting.

NOTE

Paint only the U-Channel installation by masking off all surfaces of the control surface to prevent application of excess paint which would adversely affect the balance of the control surface.

If the entire control surface is to be repainted, the balance of the control surface must be checked in accordance with procedures set forth in the Maintenance Manual following installation of additional mass balance assemblies, reference Steps E-11 and E-12.

NOTE

The installation of U-Channels requires that additional mass balance weights be installed on the rudder of all models except AA-5-0406 through -0834 on which additional mass balance weights must be installed on the Left Hand and Right Hand Elevator.

- E-11 For all models except AA-5-0406 through -0834 (Aircraft AA-5-0406 through -0834 proceed with Step E-12), remove and retain the rudder tip and attaching hardware. Locate the existing rudder mass balance. With the rudder in neutral move the rudder off center to gain access to the mass balance mounting hardware. Remove and retain the existing mass balance and discard the existing mounting hardware. Refer to the following Table and determine the additional mass balance and new mounting hardware required for each particular aircraft. Place the additional mass balance (supplied in kit) on top of the existing mass balance and secure with the new mounting hardware (supplied in kit). Reinstall the rudder tip.

Pg 15

GRUMMAN AMERICAN SINGLE ENGINE AIRCRAFT SERVICE KIT NO. 125A
SUPERSEDES SERVICE KIT NO. 125

SUPERSEDED

AIRCRAFT	MASS BALANCE NO.	ACTUAL WEIGHT	PART NO.	INSTALLATION HDW.	QTY.
				NOMENCLATURE	
AA1C Without Beacon	302055-505	1.25 oz.	MS24694S65	Screw	2
			AN960-10	Washer	2
			MS20365-1032	Nut	2
AA1C With Beacon	302055-505	1.25 oz.	MS24694S55	Screw	2
			AN960-10	Washer	2
			MS20365-1032	Nut	2
AA1,AA1A,AA1B Without Beacon	302055-504	2.80 oz.	MS24694S60	Screw	2
			AN960-10	Washer	2
			MS20365-1032	Nut	2
AA1,AA1A,AA1B With Beacon	302055-504	2.80 oz.	MS24694S53	Screw	2
			AN960-10	Washer	2
			MS20365-1032	Nut	2
AA5B	302055-502	3.30 oz.	MS24694S73	Screw	2
			AN960-10	Washer	2
			MS20305-1032	Nut	2
AA5A	302055-501	1.75 oz.	MS24694S71	Screw	2
			AN960-10	Washer	2
			MS20365-1032	Nut	2
AA5 Serial No. 0001-0405	302055-501	1.75 oz.	MS24694S71	Screw	2
			AN960-10	Washer	2
			MS20365-1032	Nut	2
AA5 Serial No. 0406-0834 proceed to Step E-12					

E-12 For AA-5-0406 thru -0834 Aircraft: (The following instructions are typical left hand and right hand). With the Elevator in neutral raise the Leading Edge of the Elevator above the Stabilizer Assembly. Locate the existing Elevator Mass Balance. Remove and retain the existing Mass Balance and discard the existing mounting hardware. Install the 302055-503 additional Mass Balance (supplied in kit), the existing Mass Balance and secure with the MS24694S68 Screws (supplied in kit). NOTE: The 302055-503 Mass Balance is to be installed between the existing Mass Balance and the Elevator Assembly.

F. Repair of Control Surface Inboard/Outboard Honeycomb Rib to skin bondline delamination.

NOTE

If Control Surface Honeycomb Rib to skin bondline delamination is evident at any Rib other than the Inboard or Outboard Honeycomb Rib of the Control Surface, contact the Grumman American Aviation Corporation Customer Service Department.

NOTE

Due to the Honeycomb Rib construction of the Control Surfaces it is not possible to rivet the skin to the delaminated rib.

F-1 If a delamination does exist carefully wedge open the delaminated area and lightly sand the control surface skin bondline using the 3M Elektrocut paper (supplied in kit).

8715

GRUMMAN AMERICAN SINGLE ENGINE AIRCRAFT SERVICE KIT NO. 125A
SUPERSEDES SERVICE KIT NO. 125

NOTE

Do not sand the bonding surface of the honeycomb rib core.

- F-2 Solvent clean the sanded area using MEK, Isopropyl Alcohol or Acetone.
- F-3 Apply a generous amount of class B2 Polysulfide Sealant to the delaminated area.
- F-4 Clamp the control surface skin in place (See Figure 4) until the sealant is cured per the graph illustrated in Figure 1. Exercise care to prevent damage to the exterior finish of the control surface.

G. Repair procedures for all AA-5 Series, Aileron Leading Edge Bondline Delamination.

- G-1 Determine the extent of the delamination. For minor bondline delamination (30% or less) the following rivet pattern must extend 1.5 inches beyond the delaminated area. For major bondline delamination (greater than 30%) the following rivet pattern must extend the entire length of the bondline.
- G-2 Drill .143-.146 diameter holes (drill No. 27) for use of CR3243-4-1 rivets. Locate holes on 1.0 inch centers as shown in Figure 6.
- G-3 Refer to Steps C-3 thru C-12 for the bondline preparation, opening, sealing and rivet installation procedures.
- G-4 Allow sealant to cure per the graph illustrated in Figure 1. Apply zinc chromate primer to the repair area prior to repainting.

H. Inspection and repair procedures for Upper Cowl Assembly Honeycomb Delamination.
Effective for AA-5-0641 thru -0834, all AA-5A and all AA-5B aircraft.

- H-1 Remove the upper cowl assembly from the aircraft and exercise care to prevent damage of the exterior finish.
- H-2 Visually inspect honeycomb bonding surfaces for a possible separation. To verify a separation, using finger tip pressure gently attempt to pull honeycomb away from upper cowl assembly.

NOTE

Do not remove the honeycomb from the upper cowl assembly unless absolutely necessary. Exercise care not to stretch or deform the skin of the upper cowl assembly.

- H-3 If a separation does exist carefully wedge open the delaminated area and lightly sand the bonding surface of the cowl assembly skin using the 3M Elektrocut paper (supplied in kit).

NOTE

Do not sand the bonding surface of the honeycomb core.

- H-4 Solvent clean the sanded area using MEK, Isopropyl Alcohol or Acetone.
- H-5 Apply a generous amount of polysulfide sealant to the delaminated area.

9/15

GRUMMAN AMERICAN SINGLE ENGINE AIRCRAFT SERVICE KIT NO. 125A
SUPERSEDES SERVICE KIT NO. 125

- H-6 Apply contact pressure until Sealant is cured per the graph as illustrated in Figure 1.
- H-7 Reinstall the upper cowl assembly.
- I. Return aircraft to flight status.
- J. Record compliance in the aircraft's log book.

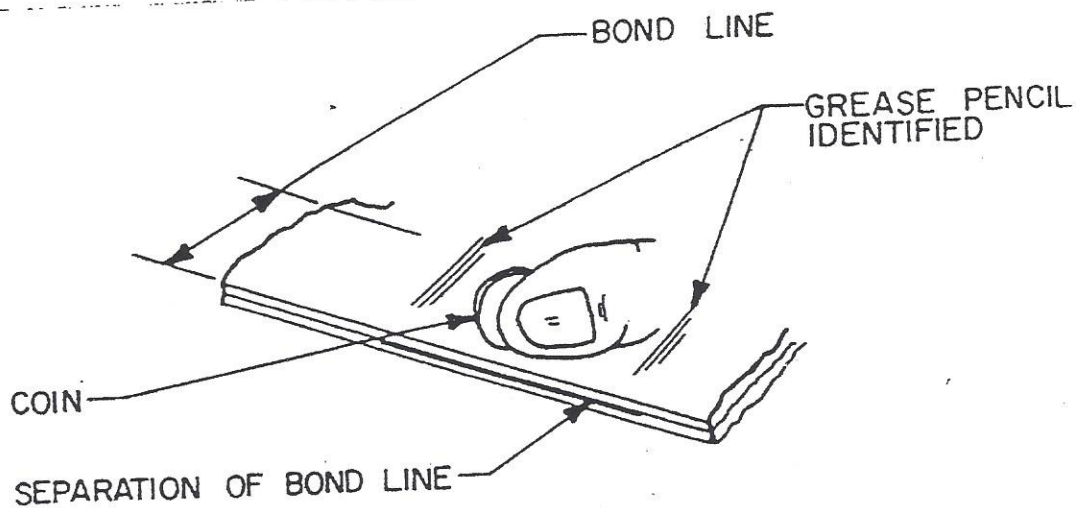
PARTS REQUIRED PER AIRCRAFT

Part Number	Nomenclature	Quantity			
		Kit 1	Kit 2	Kit 3	Kit 4
	MEK, Isopropyl Alcohol or Acetone (not supplied in Kit)	A/R	A/R	A/R	A/R
02408(120Grit)	Three-M-ite Elektrocut	4	6	4	4
02402(320Grit)	Three-M-ite Elektrocut	4	6	4	4
	Acid Brush	2	4	2	2
100-1-2	Stainless Steel Tube Brush	2	3	2	-
14-370	Spatula	1	1	1	1
NAS1097AD3-4	Rivet	100	500	30	-
CR3242-4-2	Rivet	20	100	-	-
CR3243-4-1	Rivet	10	50	-	-
GAES302-1-72	U-Channel	-	-	6	-
302055-501	Mass Balance Assembly	-	-	1	-
302055-502	Mass Balance Assembly	-	-	1	-
302055-503	Mass Balance Assembly	-	-	2	-
302055-504	Mass Balance Assembly	-	-	1	-
302055-505	Mass Balance Assembly	-	-	1	-
MS24694S53	Screw	-	-	2	-
MS24694S55	Screw	-	-	2	-
MS24694S60	Screw	-	-	2	-
MS24694S65	Screw	-	-	2	-
MS24694S68	Screw	-	-	4	-
MS24694S71	Screw	-	-	2	-
MS24694S73	Screw	-	-	2	-
AN960-10	Washer	-	-	2	-
MS20365-1032	Nut	-	-	2	-
CS3204A2	Polysulfide Sealant	3/4 Pt. Kit	-	3/4 Pt. Kit	-
CS3204B2	Polysulfide Sealant	3/4 Pt. Kit	1 Gal. Kit	-	1 Gal. Kit

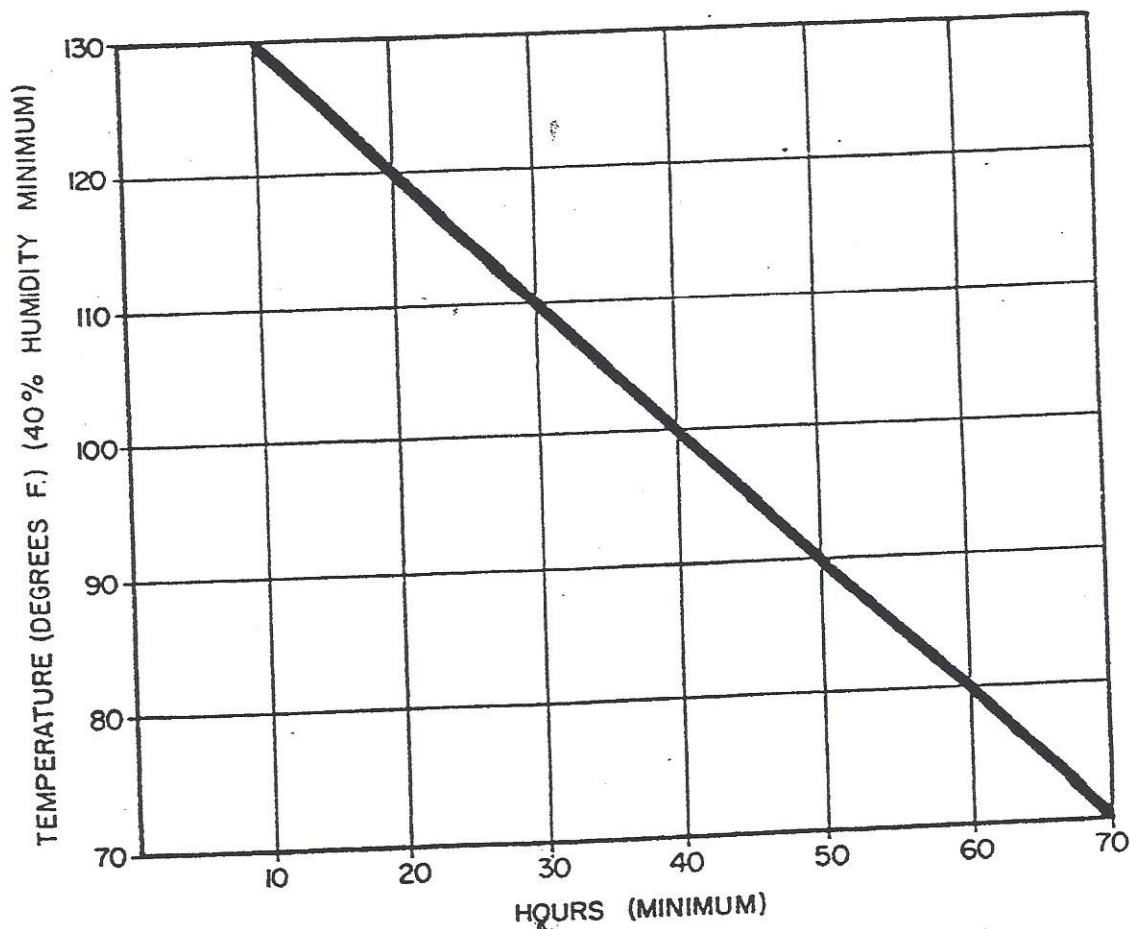
NOTE: The Polysulfide Sealant supplied in this Kit meets MIL-S-8802D and GAPS1163 Specifications.

NOTE: The CR3242-4 and CR3243-4 Blind Rivets supplied in this kit can be installed with Standard Pop Rivet Installation Equipment.

Service Kit prepared by Grumman American Aviation Corporation,
P.O. Box 2206, Travis Field, Savannah, Georgia 31402.



BOND LINE SEPARATION DETECTION METHOD



MINIMUM RECOMMENDED CURE RATES
FOR CLASS A2 OR B2 POLYSULFIDE SEALANT

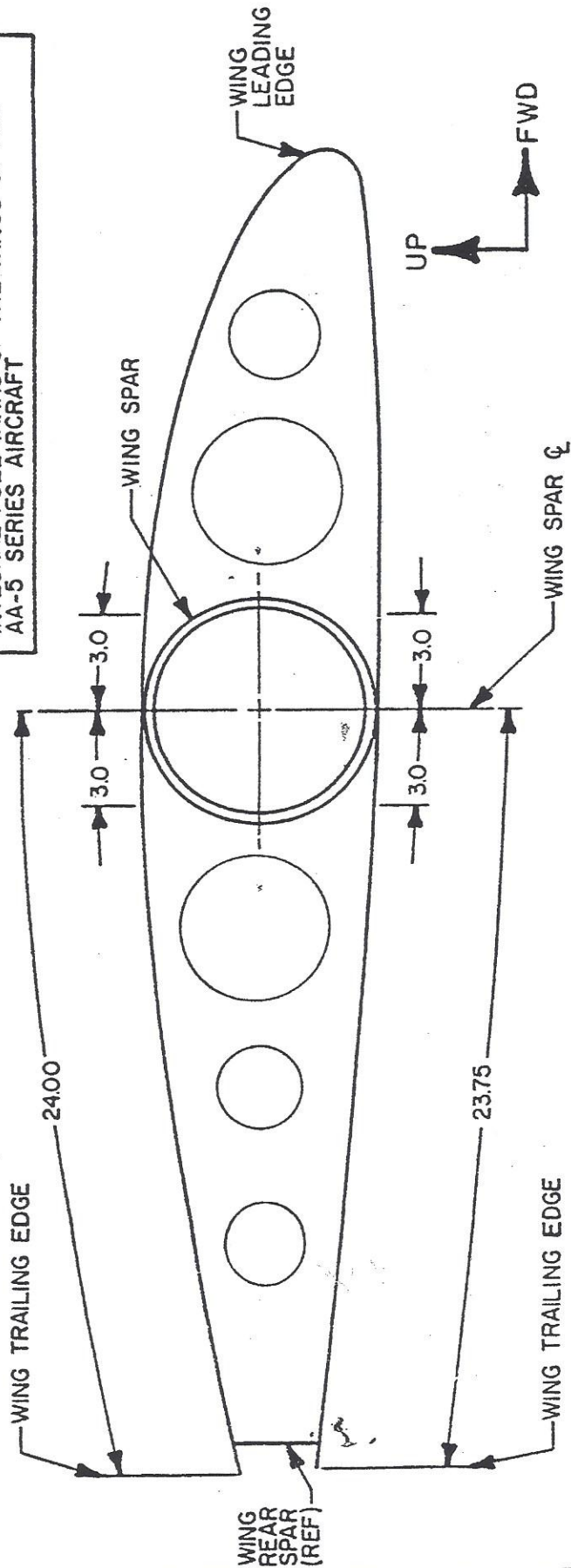
FIGURE 1

15

CAUTION

DRILLING IN THE AREA OF FUEL, FUEL LEAKS OR FUEL VAPORS CONSTITUTES A VERY SERIOUS FIRE AND/OR EXPLOSION HAZARD. CONTACT GAAC CUSTOMER SERVICE DEPT. PRIOR TO REPAIRING BONDLINE DELAMINATION IN THE AREA OF THE INTEGRAL FUEL TANKS OF THE WINGS OF ALL AA-5 SERIES AIRCRAFT

TO LOCATE WING SPAR ϕ MEASURE ON WING SKIN SURFACE AS SHOWN USING A FLEXIBLE SCALE OR TAPE MEASURE

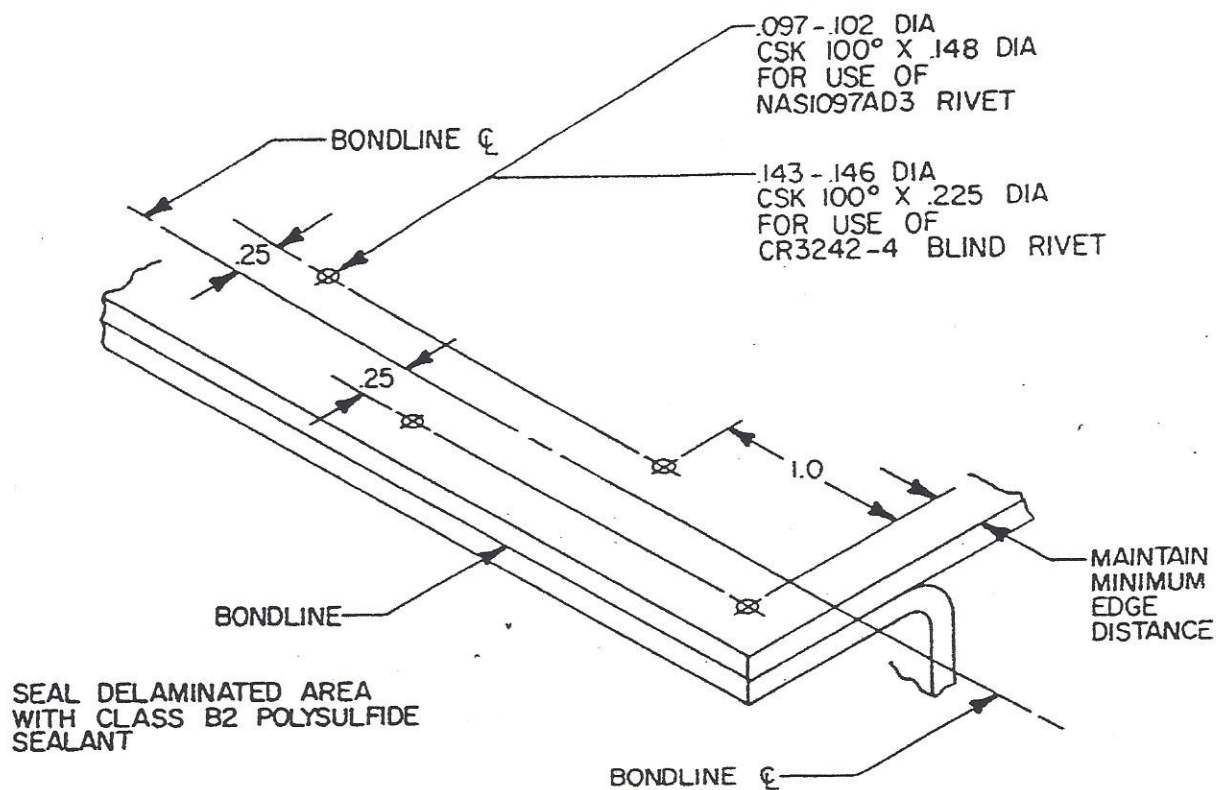


WARNING

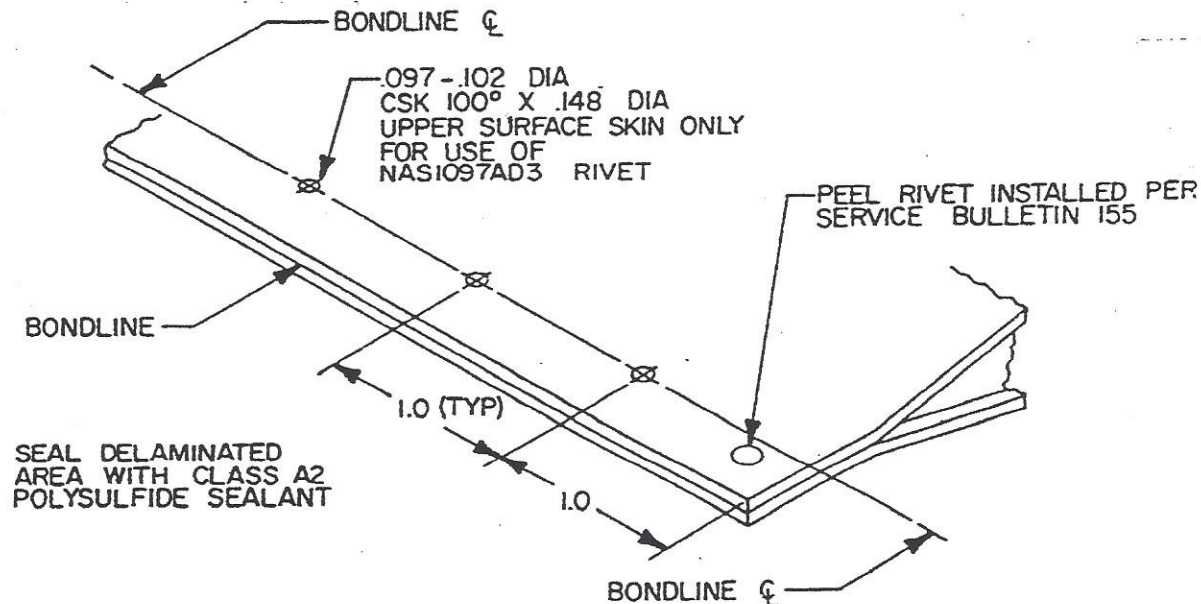
DRILLING IS PROHIBITED IN AN AREA OF 3.0 INCHES FORWARD & AFT OF THE WING SPAR ϕ . DAMAGE TO THE WING SPAR WILL SERIOUSLY AFFECT THE STRUCTURAL INTEGRITY OF THE AIRCRAFT.

LOCATION OF THE WING SPAR ϕ FOR ALL AIRCRAFT

FIGURE 2



TYPICAL BONDLINE RIVET PATTERN



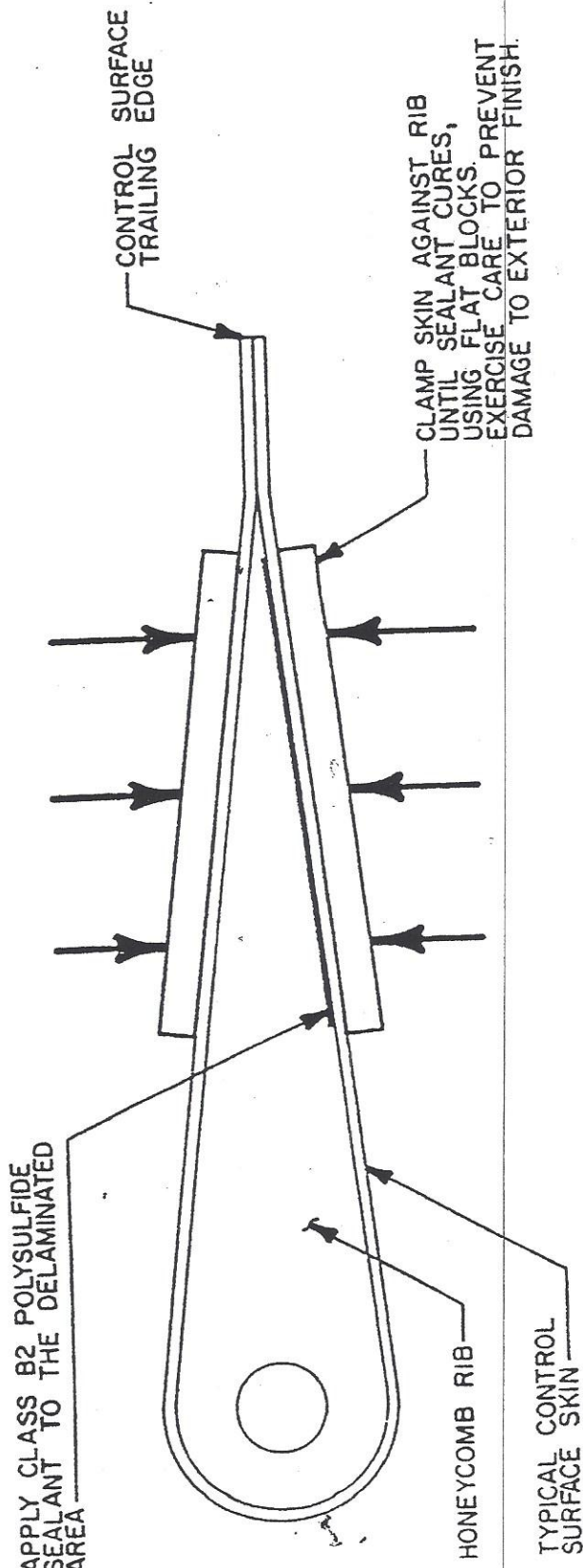
TYPICAL CONTROL SURFACE TRAILING EDGE RIVET PATTERN (EXCEPT AA-5 SERIES AILERONS)

NOTE: DO NOT INSTALL ANY RIVETS UNTIL THE DELAMINATED AREA HAS BEEN OPENED, CLEANED & SEALED PER STEPS C-3 THRU C-13

NOTE: ALL RIVETS INSTALLED ON THE EXTERIOR OF THE A/C MUST BE FLUSH EXCEPT AS NOTED

FIGURE 3

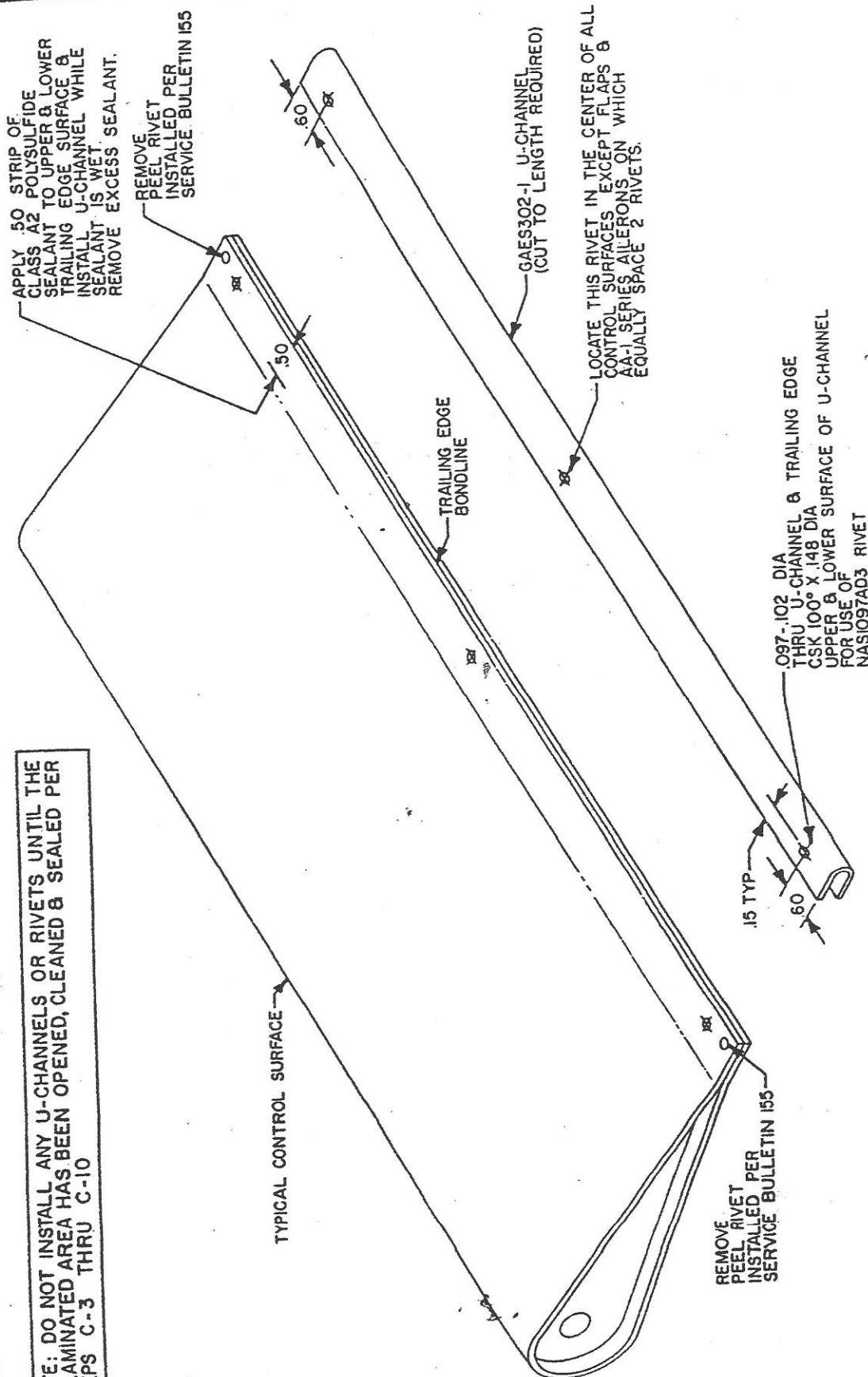
NOTE: IF CONTROL SURFACE HONEYCOMB RIB TO SKIN BONDLINE DELAMINATION IS EVIDENT AT ANY RIB OTHER THAN THE INBD OR OUTBD HONEYCOMB RIB OF THE CONTROL SURFACE CONTACT THE GAAC CUSTOMER SERVICE DEPARTMENT



NOTE: DUE TO THE HONEYCOMB RIB CONSTRUCTION OF THE CONTROL SURFACES IT IS NOT POSSIBLE TO RIVET THE SKIN TO THE DELAMINATED RIB

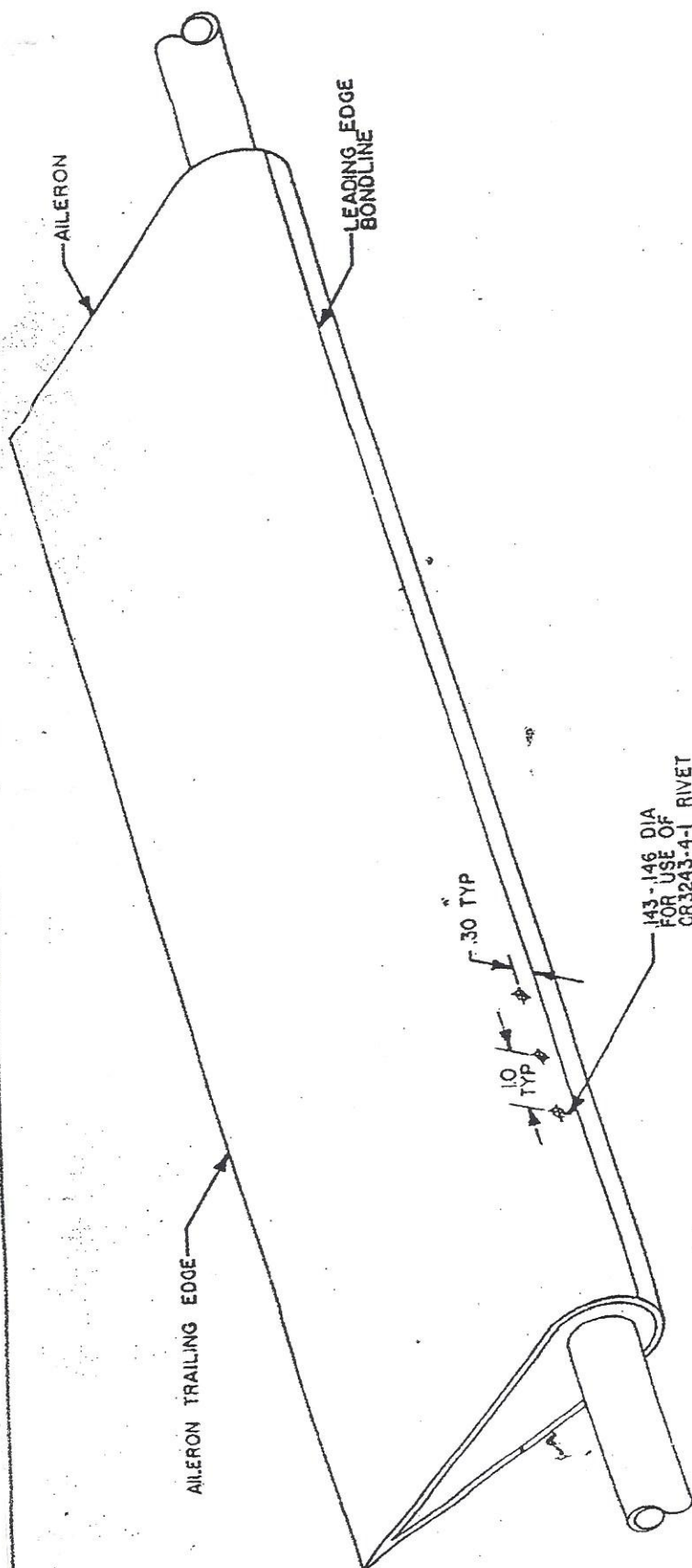
REPAIR OF INBOARD/OUTBOARD HONEYCOMB RIB TO SKIN BONDLINE DELAMINATION

FIGURE 4



TYPICAL U-CHANNEL INSTALLATION
REPAIR OF CONTROL SURFACE TRAILING EDGE MAJOR BONDLINE DELAMINATION

FIGURE 5



NOTE: DO NOT INSTALL ANY RIVETS UNTIL THE DELAMINATED AREA HAS BEEN OPENED, CLEANED & SEALED PER STEPS C-3 THRU C-12

REPAIR OF AA-5 SERIES AILERON LEADING EDGE BONDLINE DELAMINATION

FIGURE 6