



**GILES G-200 AEROBATIC
AIRCRAFT**

I-VYCK SERVICE BULLETINS

Akrotech Aviation, Inc.
Service Bulletin Summary

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AkroTech Aviation, Inc.			
Service Bulletin Summary			
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14	G-202/G-200	Engine Mount Bolt	
15	G-202	Rudder Jig	
16	All	elevator pushrod rivets	
17	All	VERT. STAB SKIN CUTTING	
18			
19	All	SEALING/REINFORCING Holes & CUTOUTS	11/4/00
20			

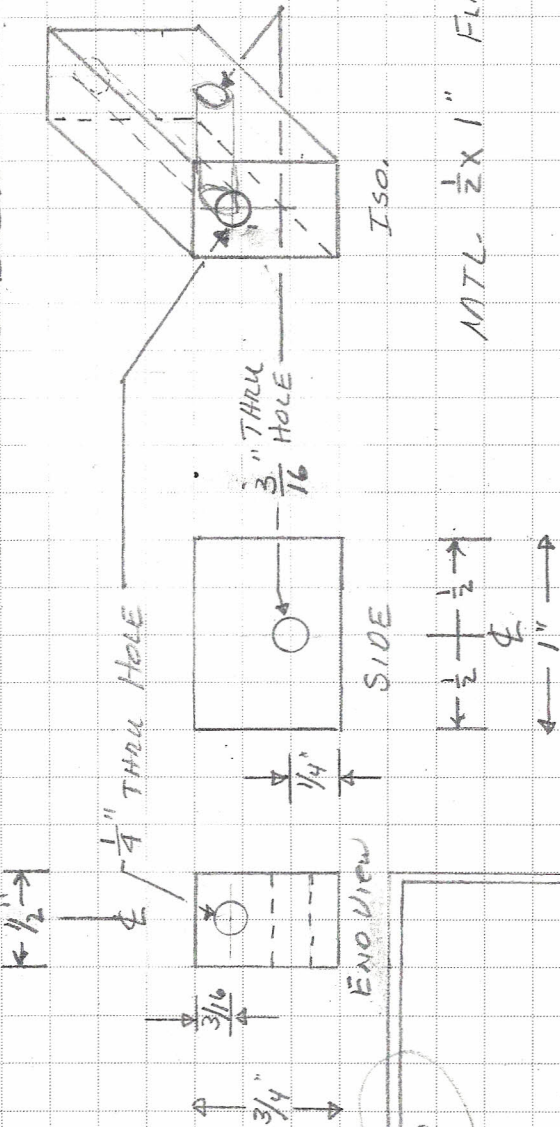
[illegible]

(2) REQ.

ITEM "A"

REF:
DWG ⑤

STOP BLOCK FOR ELEVATOR TUBE BKT



MTL. 1/2 X 1" FLAT BAR.

ITEM "B"



(3) REQ PER ELEVATOR TUBE BKT DWG ⑤ REF.

MTL. .065 WALL BUSHING STOCK 1015/1020 STEEL
SEAMLESS MECH. TUBING PN 03-16700
PAGE 50 SPRUCE CATALOG

ITEM "C"



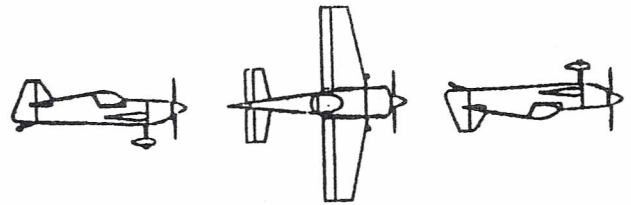
(2) REQ PER RUDDER

(1) 2 W.L. 0.00

(1) 2 W.L. 32.00

1/25

AkroTech Aviation, Inc.



Fax

Date: 3-18-96

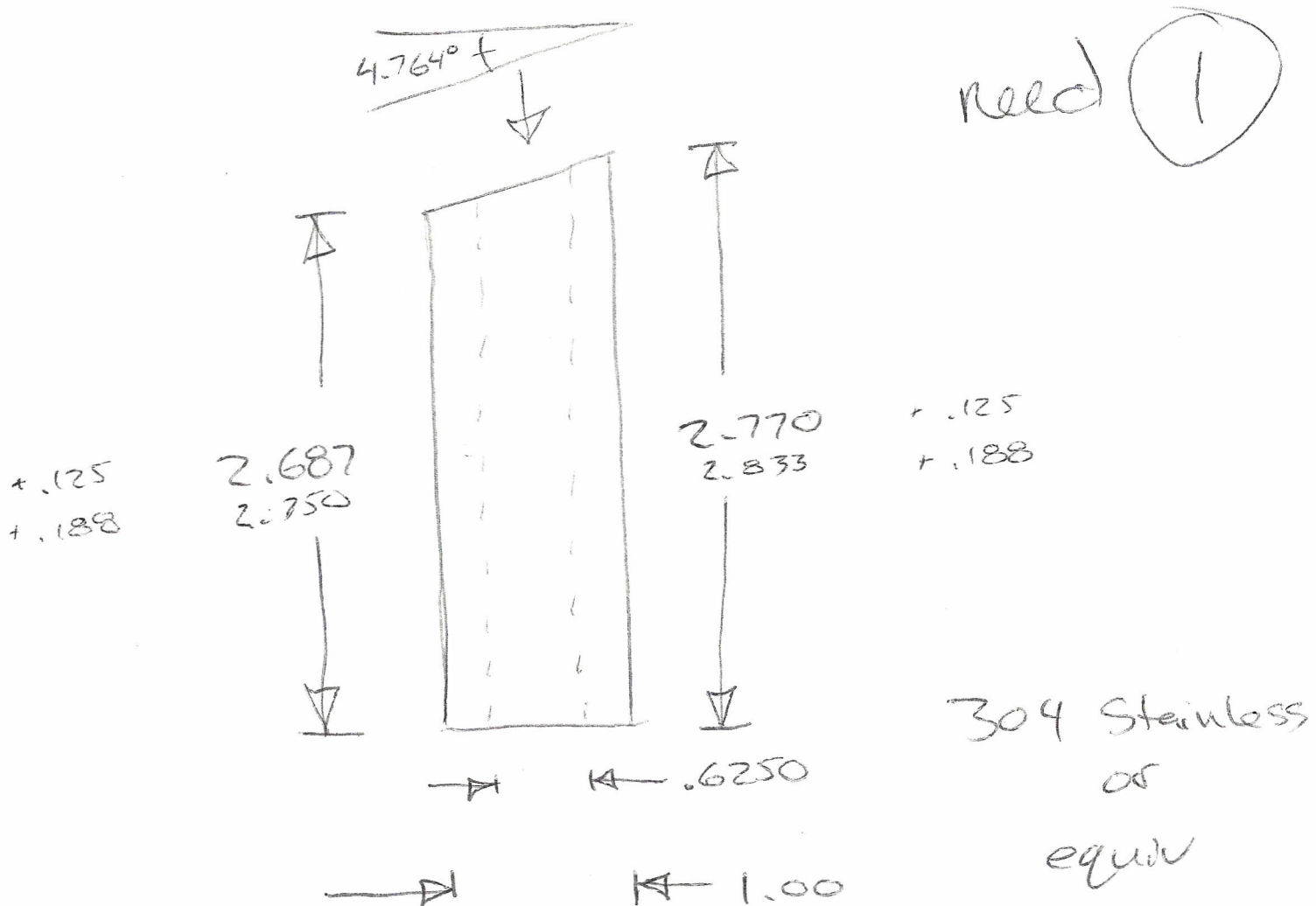
Pages: 1

To: Moby

From: ERIC

Phone: (970) 490-2124

Fax: Same



Jade

682-0449

↑
TOP OF
FUSE

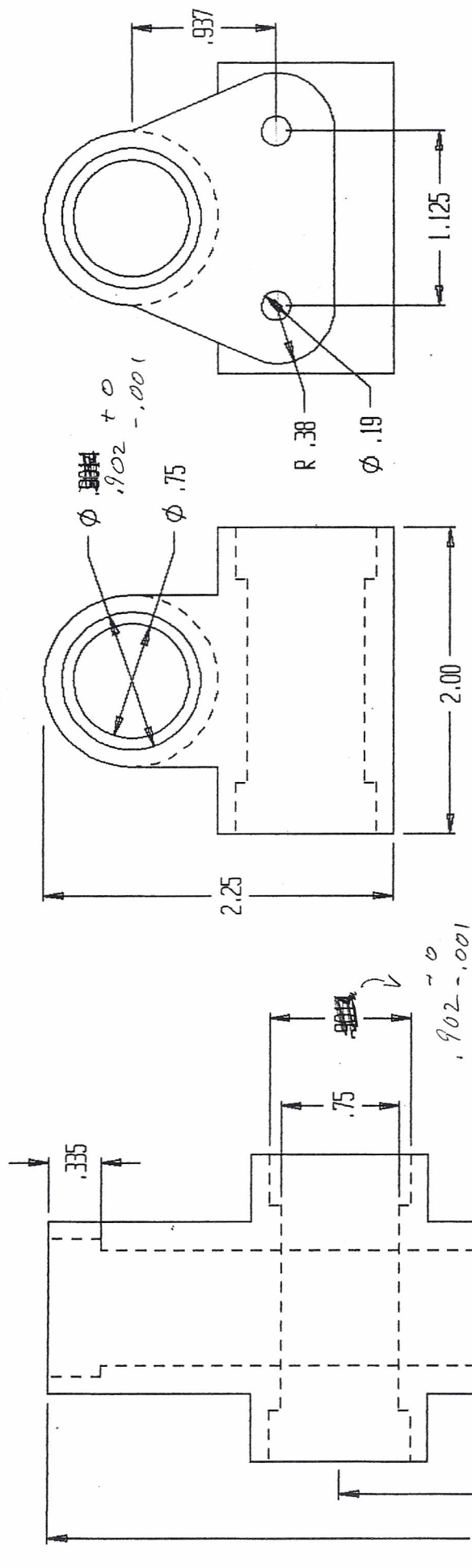
BUILD THIS
ANGLE INTO
FUEL CAP
JIG

→
FIRE WALL

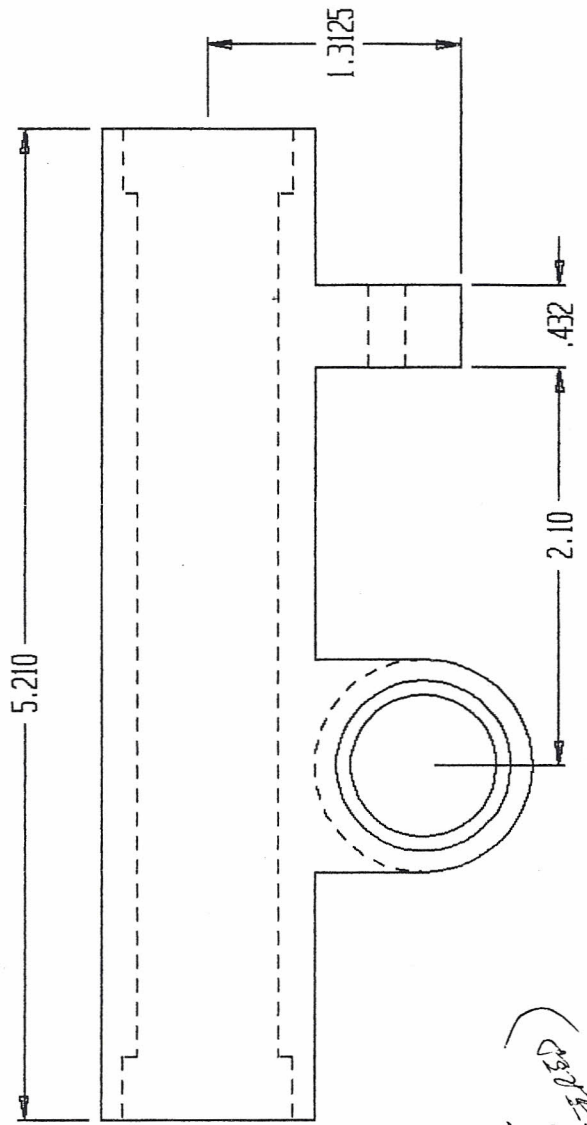


angle exaggerated

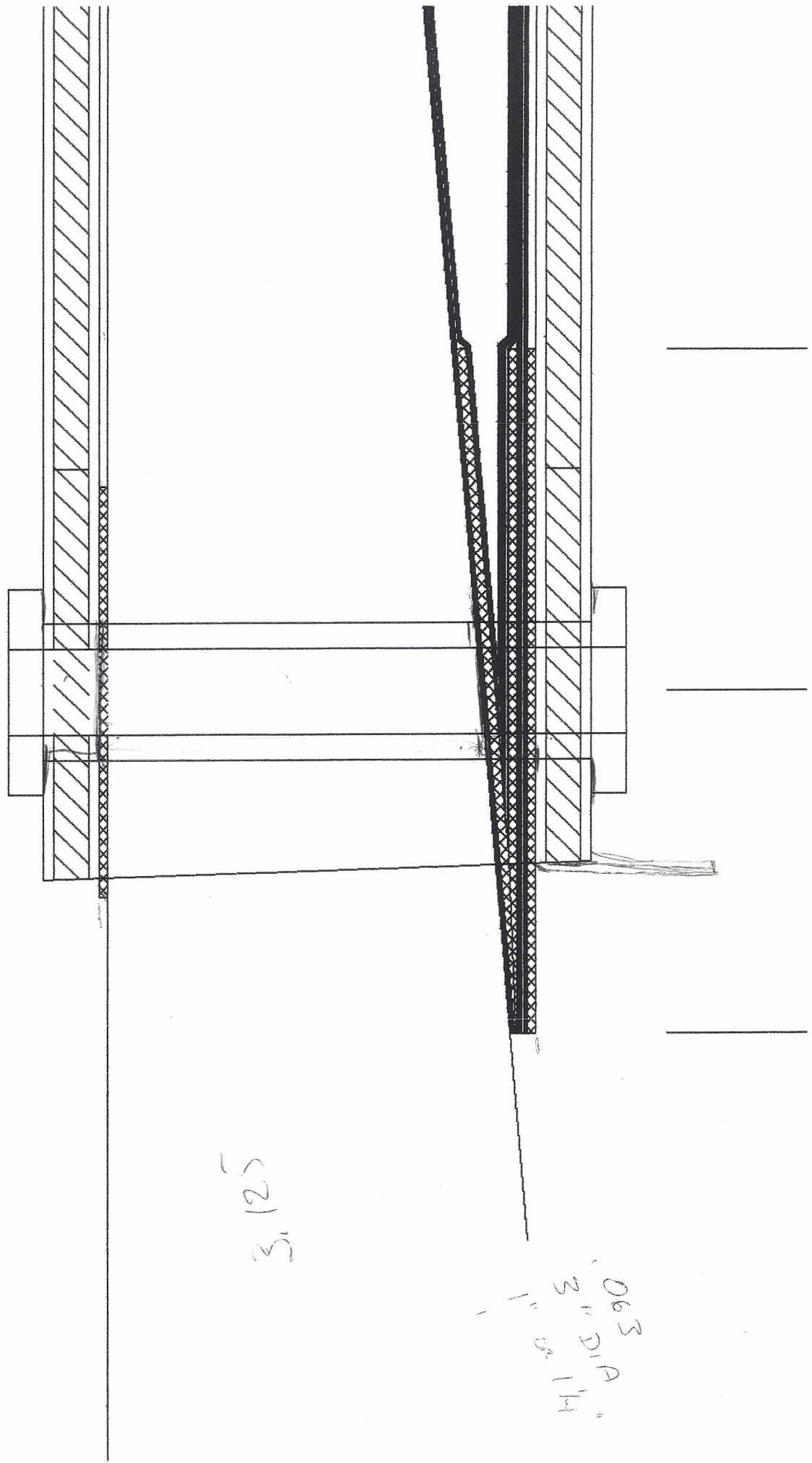
weld ring in 1/2 way



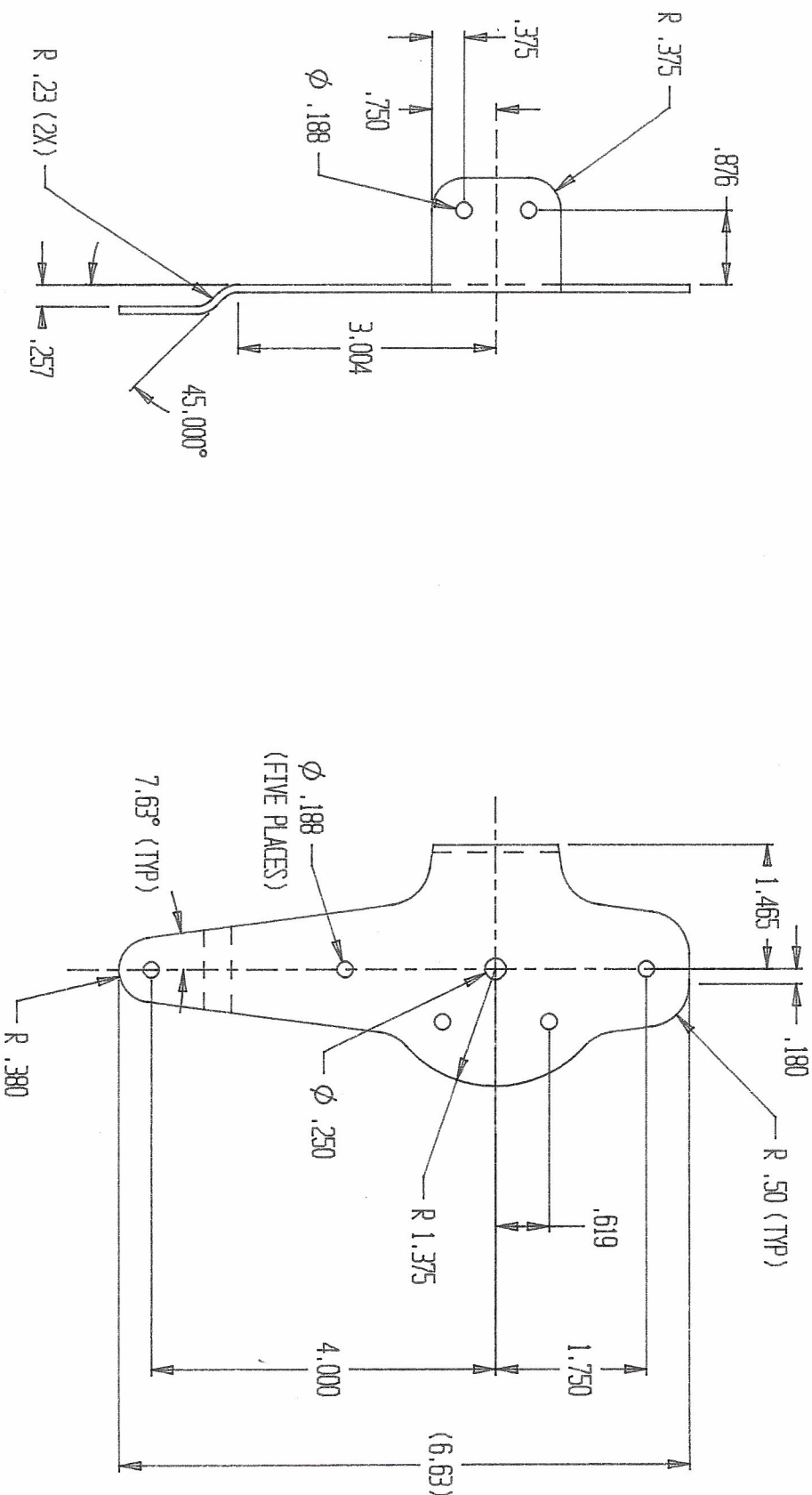
ALL DIMENSIONS ± 0 $-.005$ EXCEPT WHERE NOTED



2-13-84
OPT. ONAL
ROUND
C 2753-250



IRI 16.5 IRI 14.0 IRI 11.5

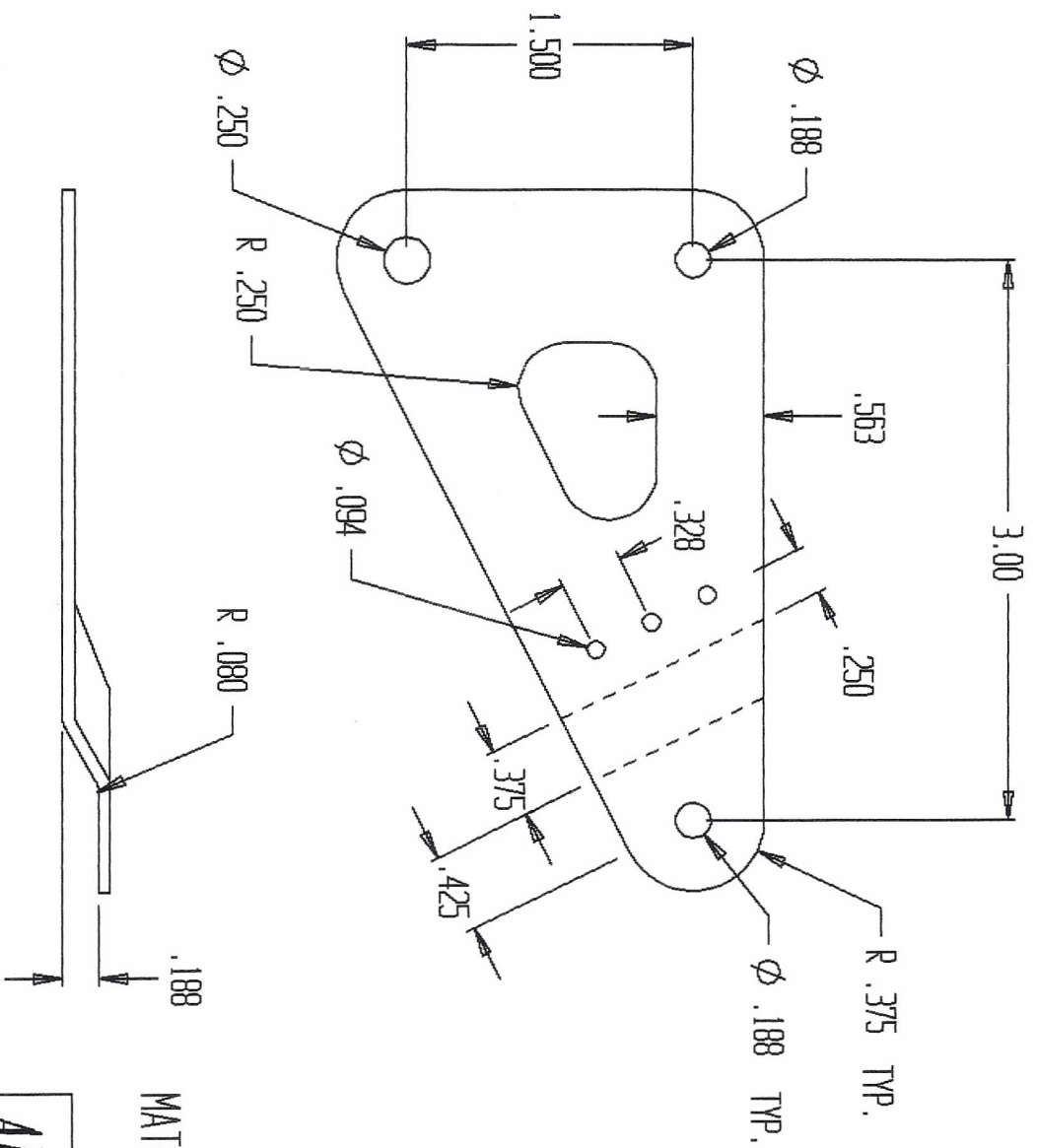


MATERIAL: .090 4130 STEEL

AkroTech Aviation, Inc.

LEFT ELEVATOR ACTUATOR


DATE: 06/13/96	SCALE: 1:2	DRAWING SIZE: 8.5X11
REVISION NO.	DRAWING NO. 10-025	DRAWN BY: C. BAILEY
REV. DATE:	PAGE 1 OF 1	APPROVED:



MATERIAL: .063 4130 STEEL

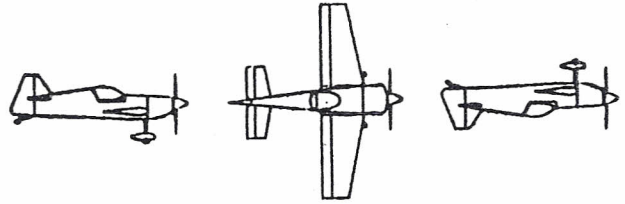
AkroTech Aviation, Inc.

G-200 AILERON HORN (RIGHT)

DATE: 05/27/96	SCALE: 1:1	DRAWING SIZE: 8.5X11
REVISION NO. 1	DRAWING NO.	DRAWN BY: C. BAILEY
REV. DATE: 06-21-96	PAGE 1 OF 1	APPROVED: 

10-020

AkroTech Aviation, Inc.



AkroTech Service Bulletin #1

Models effected: G-200

Serial numbers: 001 - 020

Part numbers: ABP-2 (NEW) / ABP-1 (OLD)

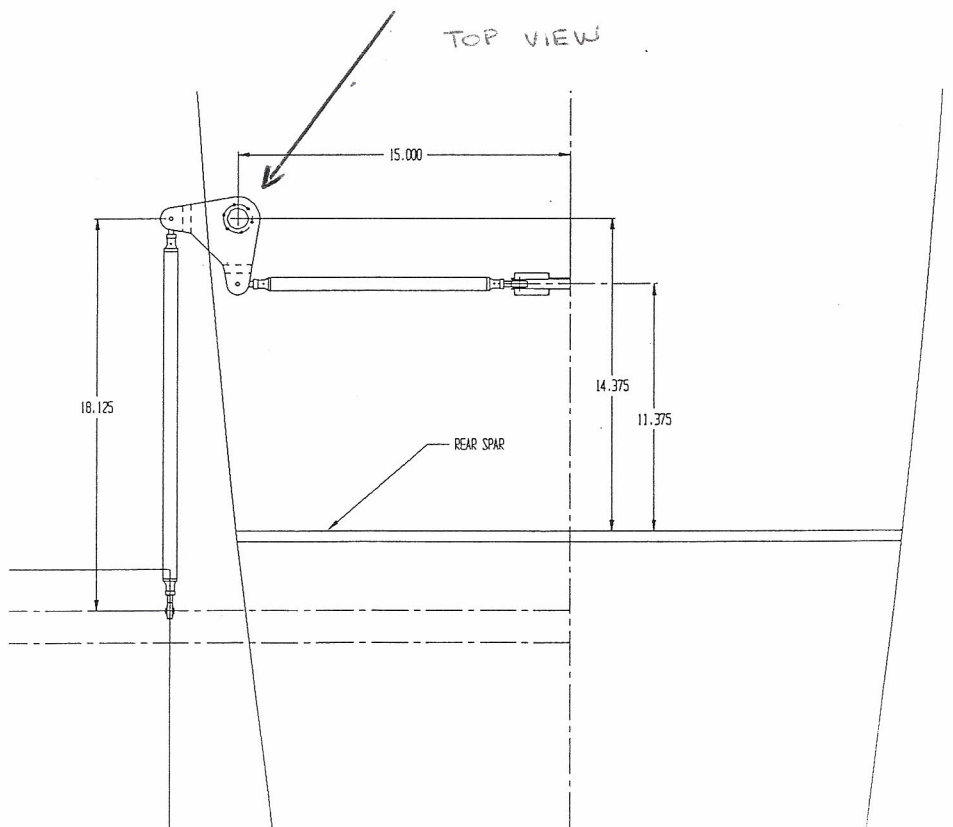
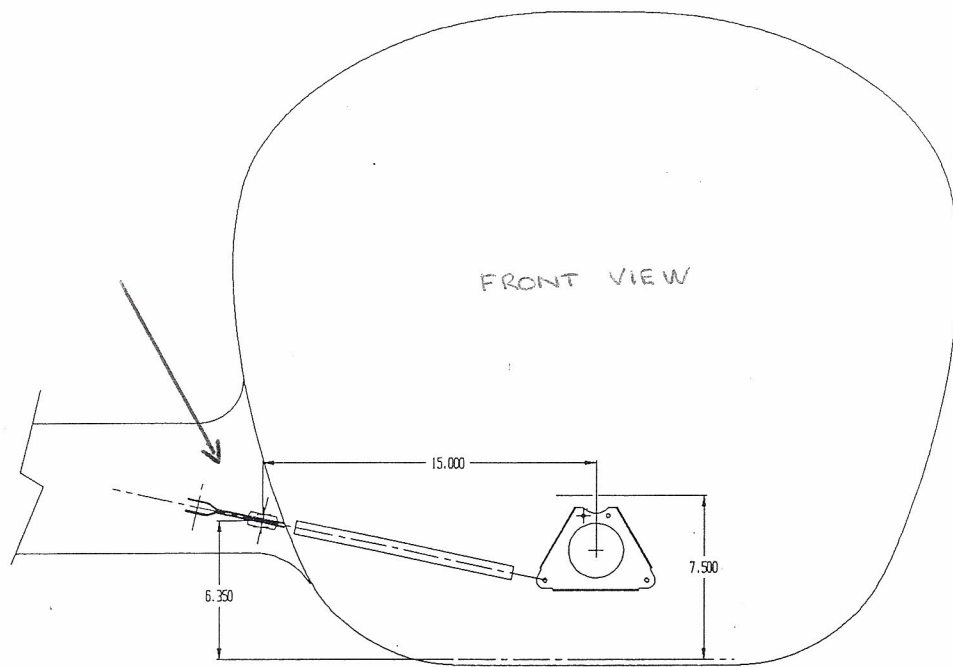
Bulletin: Owners of G-200 kits originally supplied with left and right aileron bellcranks with a part number of ABP-1 have been issued left and right aileron bellcranks with a part number of ABP-2 as a replacement. The positions of these parts in the aircraft are indicated in enclosure 1. The actual sizes and dimensions of the new and old parts are indicated on enclosure 2. The material used in ABP-1 was stainless steel with an improper temper treatment. The material used in ABP-2 is 4130 chromoly steel. Please ensure that ABP-2 bellcranks are used in the construction of G-200 aircraft. Please return or discard all ABP-1 bellcranks.

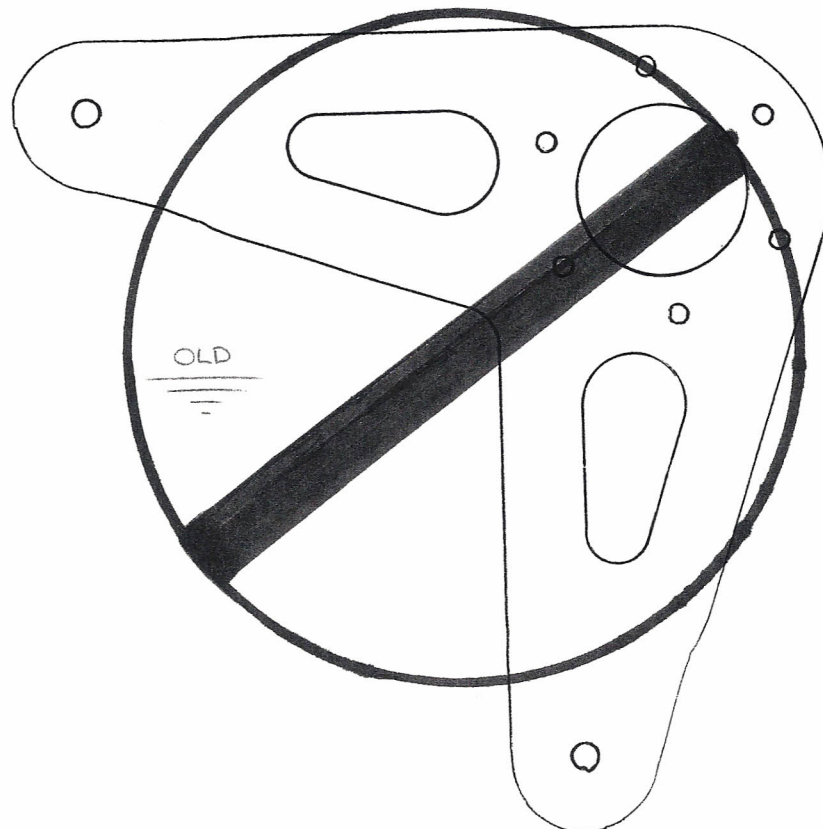
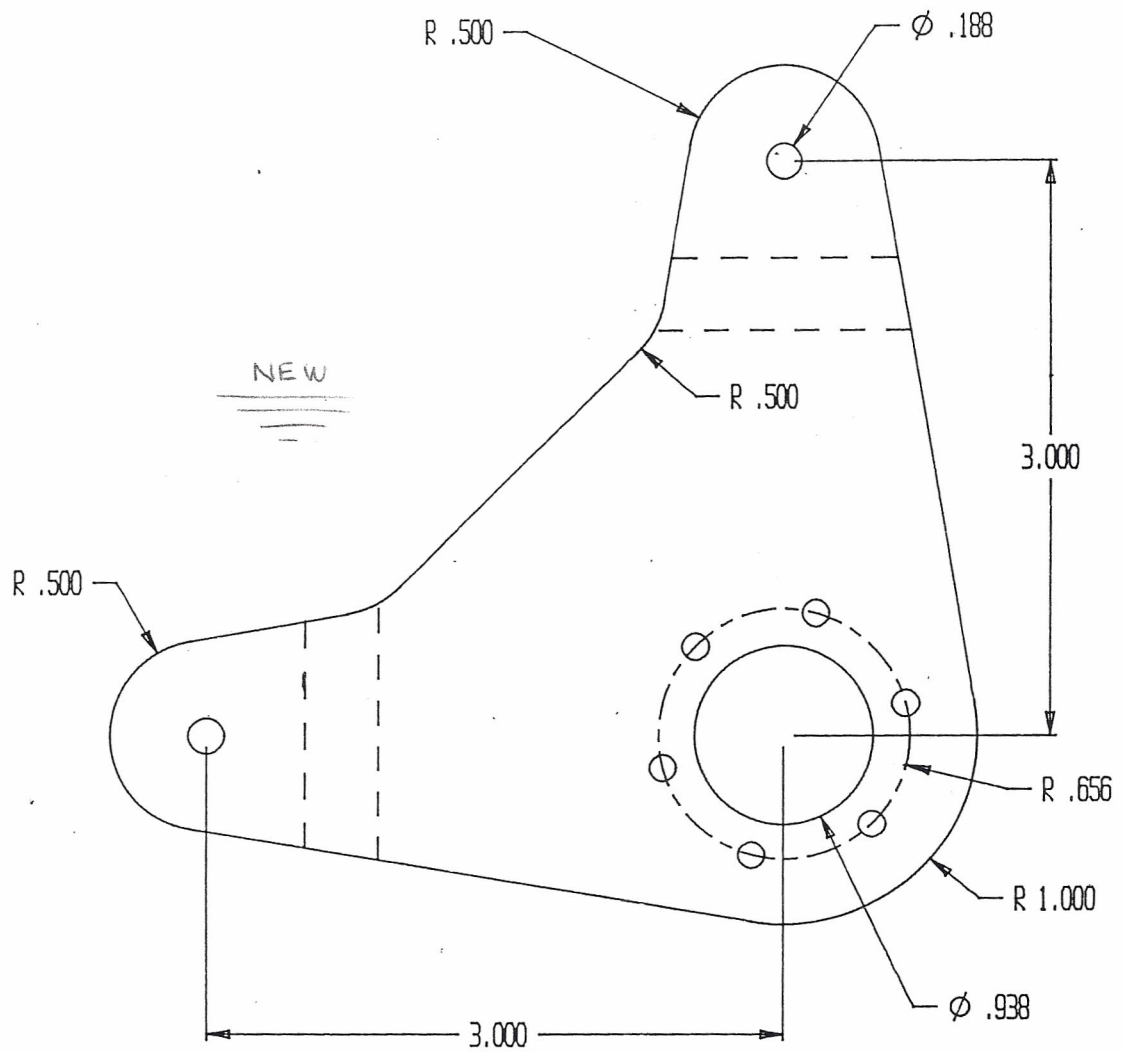
If you have any questions concerning this bulletin, do not hesitate to contact AkroTech Aviation at 503-543-7960.

Thank you,

L.A. Fox

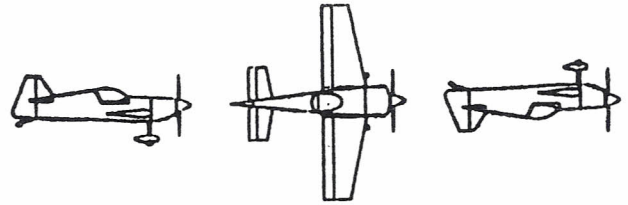
L.A. Fox
Vice President of Operations





ENCLOSURE 2

AkroTech Aviation, Inc.



AkroTech Service Bulletin #2

Models effected: G-202

Serial numbers: 003 - 006

Part: Rear Spar Carry-Through Bulkhead

Bulletin: Owners of G-202 kits with serial numbers between 003 and 006 are asked to verify the dimension between the rear face of the spar box to the forward face of the rear spar carry through. The straight line distance between the box and bulkhead should be 26 7/8 inches with an allowable tolerance of plus or minus 1/8 inch. Both of these components are installed in the lower fuselage in the production of E-Z build kits. A review of jigging techniques used in assembly has revealed that installation may not be within tolerances.

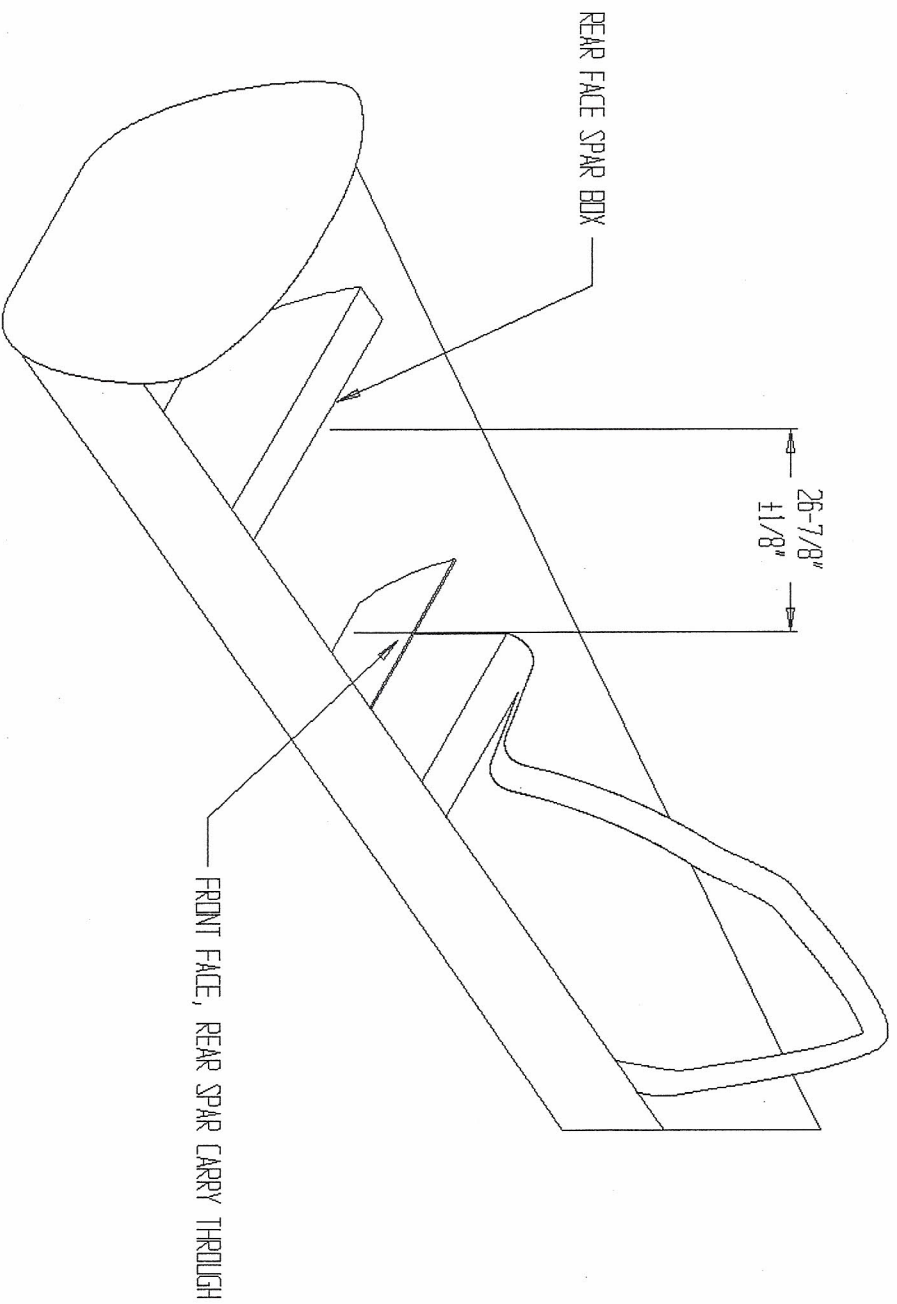
If installation is not within tolerances, please contact AkroTech Aviation. Removal and replacement of the rear spar carry through will be conducted by AkroTech at the owner's site for all cases involving misinstallation.

If you have any questions concerning this bulletin, do not hesitate to contact AkroTech Aviation at 503-543-7960.

Thank you,

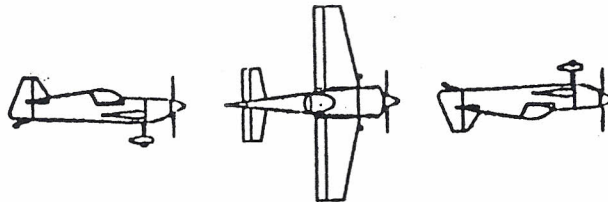
A handwritten signature in cursive script, appearing to read 'L.A. Fox'.

L.A. Fox
Vice President of Operations



SERVICE BULLETIN NO.	SB002	TASK NO.	STEP NO.		AkroTech
MODEL	G - 202	SECTION	SERVICE BULLETIN		PAGE

AkroTech Aviation, Inc.



AkroTech Service Bulletin #3

Models effected: G-202

Serial numbers: 002 - 007

Part: Elevator Nose Rib

Bulletin: Owners of G-202 kits with serial numbers between 002 and 007 are in receipt of elevators assembled using nose ribs with a radius oversized by 1/8 inch. This can cause difficulty in joining the top elevator skin to the bottom skin at the leading edge. The oversized ribs should be removed and replaced with nose ribs of the proper radius.

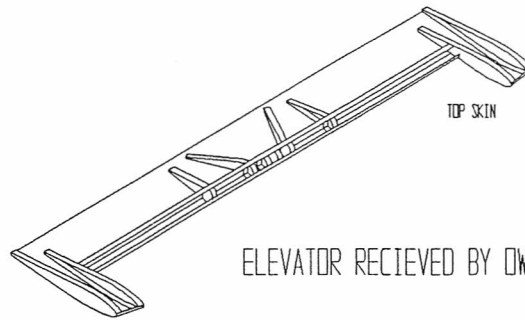
AkroTech Aviation will remove the oversized nose ribs and install the proper radius nose ribs at our facility in Scappoose, Oregon. Owners are asked to ship the elevator skin that has the spar and ribs attached to AkroTech. Arrangements for covering the cost of shipping can be made by contacting Alisha Hamel at AkroTech.

For ease of shipping, owners are asked to cut the elevator at the midpoint. The attached drawings depict the rudder as received by the owner, the diagram for cutting the elevator, the severed elevator to be returned to AkroTech and the shape the elevator will take before final assembly by the builder.

If you have any questions concerning this bulletin, do not hesitate to contact AkroTech Aviation at 503-543-7960.

Thank you,

L.A. Fox
L.A. Fox
Vice President of Operations



ELEVATOR RECIEVED BY OWNER

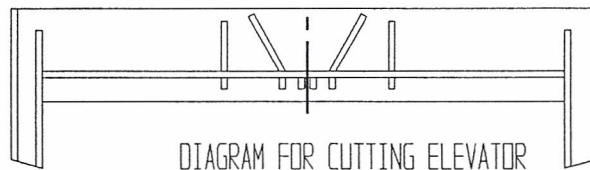
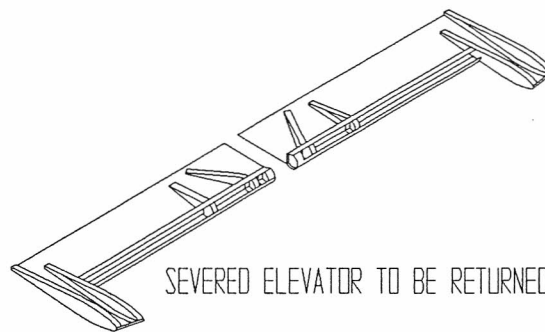
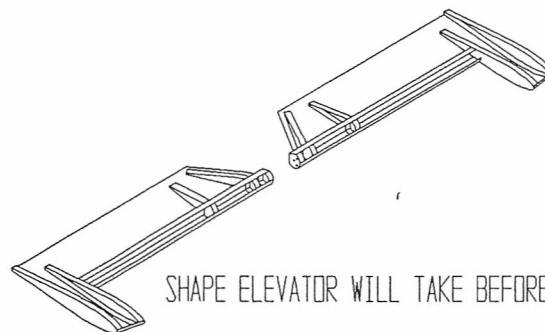


DIAGRAM FOR CUTTING ELEVATOR



SEVERED ELEVATOR TO BE RETURNED TO AKROTECH



SHAPE ELEVATOR WILL TAKE BEFORE FINAL ASSEMBLY BY THE BUILDER

ELEVATOR NOSE RIBS

SERVICE BULLETIN NO.	SB003	TASK NO.	STEP NO.	AkroTech	
MODEL	G - 202	SECTION	SERVICE BULLETIN		PAGE

AkroTech Aviation, Inc.

Service Bulletin #4

Models Affected: G-200

Part: Main Landing Gear Mounting Structure

Serial Numbers: 002 - 028

All parts required for this service bulletin will be provided by AkroTech Aviation, Inc. as follows:

2 ea.	AN5C27A Bolt
4 ea	AN4C13A Bolt
2 ea.	AN5C25A Bolt
4 ea	AN 970-4 Washer
4 ea	AN 960-4 Washer
4 ea	AN365-428A Nut
2 ea.	32-10-1-3-0096 Rubber Pad
3 yds.	7725 Bidirectional Fiberglass
2 ea	53-10-1-2-0115 Landing Gear Brace
2 ea	53-10-1-2-0134 Phenolic Reinforcement
2 ea.	32-10-1-3-0102 Landing Gear Reinforcement

Bulletin

G-200 aircraft with the serial numbers listed above need to have the main landing gear mounting structure modified as specified in this service bulletin.

Procedure

Revision to Task F-34 Step C of the G-200 Builders Manual Version 1.6 and earlier.

Place the landing gear attach blocks over the gear and adjust the gear fore or aft until the attach blocks are as far aft as possible in the gear step.

If Task F-34 has already been completed no change in position of the landing gear or attach blocks will be required.

With the landing gear installed, locate the two landing gear braces (P/N 53-10-1-2-0115) ¼" inboard of the landing gear backing plates (P/N 32-10-1-1-0101). Mark these locations. Locate the phenolic blocks (P/N 53-10-1-2-0134) on the firewall directly ahead of the backing plates. Position the landing gear reinforcement angles (P/N 32-10-1-3-0102) as shown. Determine the location of the hole through the bottom of the gear reinforcement angle. The hole must be sufficiently far from the corner of the reinforcement angle to allow the head of the bolt to rest entirely on the flat surface of the angle as on Section A-A. If necessary, reduce the thickness of the phenolic reinforcement by sanding to a minimum of 3/16" for bolt head clearance.

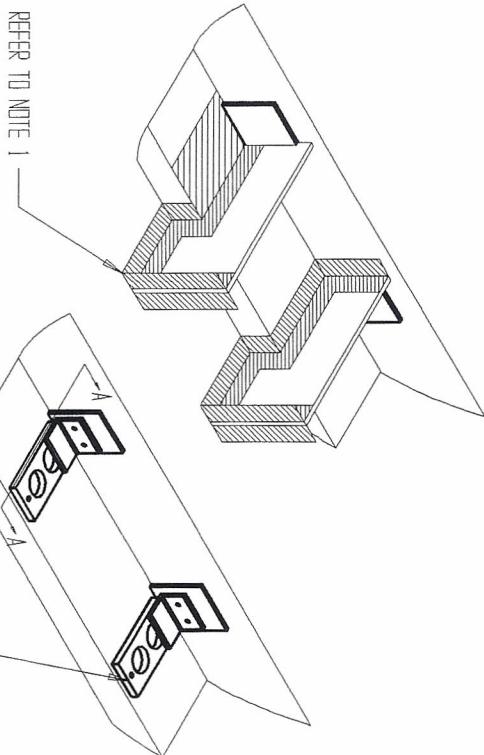
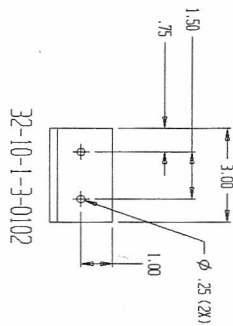
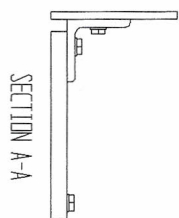
Hold the phenolic reinforcement and gear reinforcement angle firmly in place. Using the attach block, existing hole, and backing plate for alignment, drill a 5/16" hole up through the gear reinforcement angle. Mark the location of the phenolic reinforcements on the firewall. Remove the bulkheads, backing plates, gear reinforcements, and phenolic reinforcements.

Prepare the fuselage, firewall, landing gear braces, and phenolic reinforcements for bonding by sanding thoroughly with 80 grit sandpaper then cleaning thoroughly with acetone. Bond the braces and phenolic reinforcements in place using Hysol. Allow the Hysol to cure.

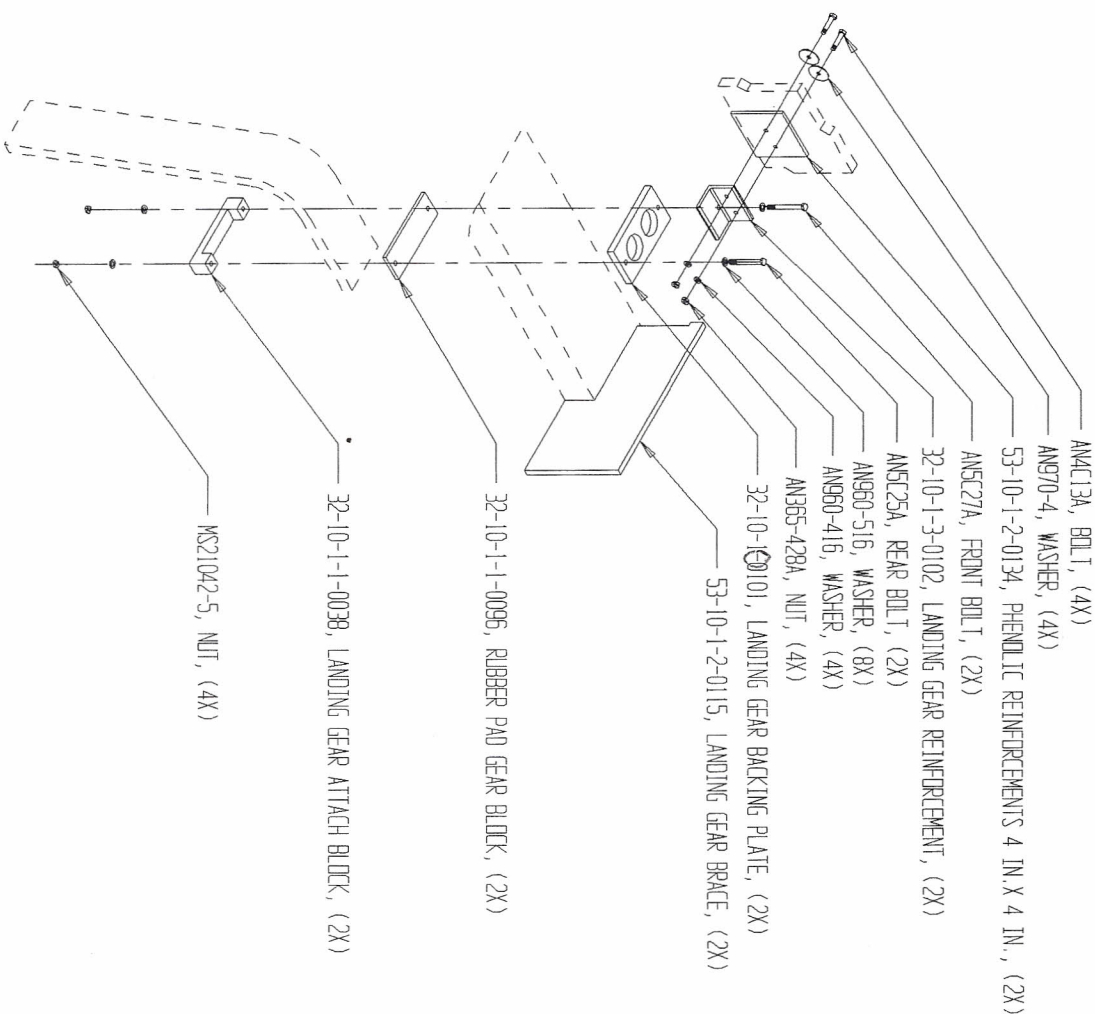
Add a four layer wet layup fiberglass flange at the indicated areas. This flange should extend 1.5" onto the braces and 1.5" onto the fuselage and should completely cover the landing gear backing plate area. Allow to cure completely.

Drill the upper mounting holes in the landing gear reinforcement angles as shown. Reinstall the landing gear, gear attach blocks, backing plates, and gear reinforcement angles, including the 32-10-1-1-096 rubber pads. Drill two 1/4" holes through the firewall at each gear reinforcement angle using the previously drilled holes as drill guides. Install the bolts through the firewall as shown.

Any questions regarding this service bulletin should be directed to Eric Molstead at AkroTech Aviation, Inc at (503) 543 7960.



- NOTES:
- 1 - 4 PLY FIBERGLASS (7725) WET LAY-UP $\pm 45^\circ$ EXTENDING 1 1/2" ONTO BOTH LANDING GEAR BRACE AND AIRCRAFT STRUCTURE (FIREWALL, LANDING GEAR STEP AND SPAR BOX). BOTH SIDES
 - 2 - LANDING GEAR BRACE OMITTED FOR CLARITY



MAIN LANDING GEAR MOUNTING STRUCTURE

DRAWING NO.	SB004	TASK NO.		STEP NO.		AkreTech
MODEL	G - 200	SECTION	SERVICE BULLETIN #4	PAGE	3/3	

AkroTech Aviation, Inc.
Service Bulletin #5A

Models Affected: G-202

Part: Main Landing Gear Mounting Structure

Serial Numbers: 001 - 024

All parts required for this service bulletin will be provided by AkroTech Aviation, Inc. as follows:

4 ea.	AN5C30A Bolt
2 ea.	32-10-1-1-0119 Rubber Pad
3 yds.	7725 Bidirectional Fiberglass

Bulletin

G-202 aircraft with the serial numbers listed above need to have the main landing gear mounting structure modified as specified in this service bulletin.

Procedure

Revision to TASK F-21 Step E, Install the Landing Gear Step Reinforcements, of the G-202 Builders Manual, Version 1.6 and earlier.

The correct layup schedule for the fiberglass pads is 20 plies of fiberglass with $\pm 45^\circ$ fiber orientation. Additionally, the layup template was not included in the manual. Correct size for this layup is specified in the attached drawing.

If TASK F-21 has not been accomplished replace Steps D and E with the following:

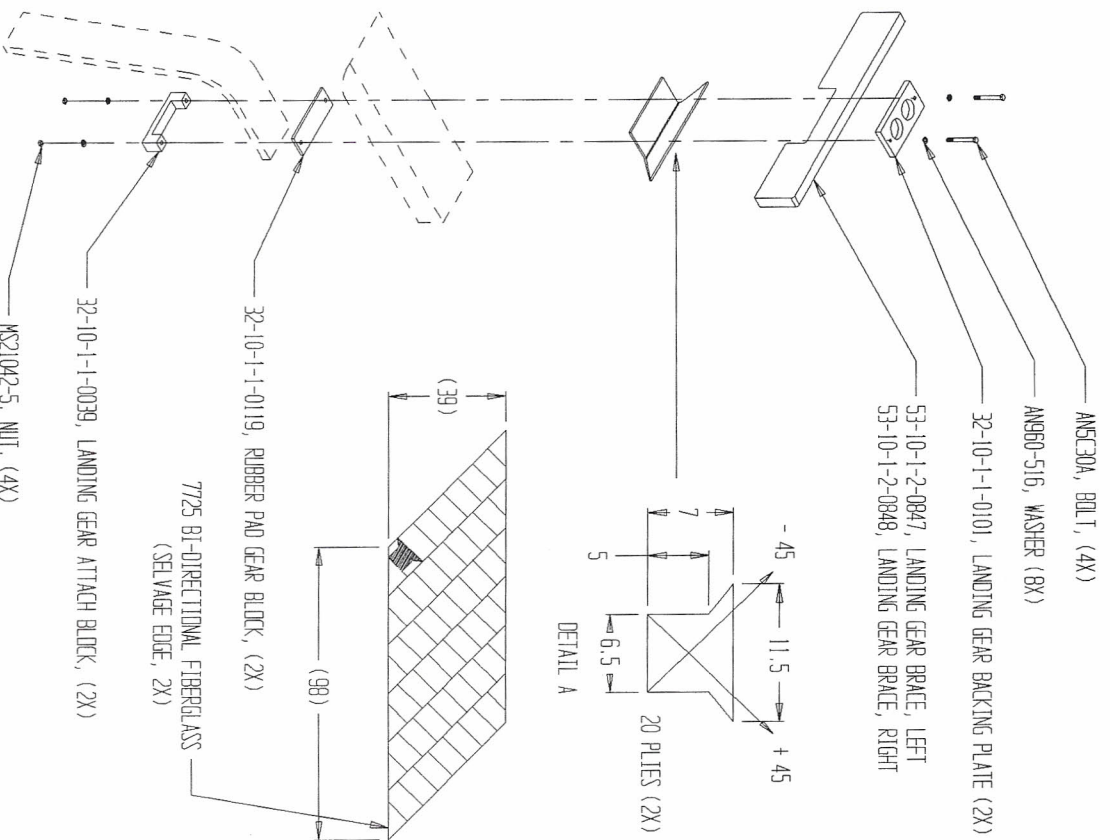
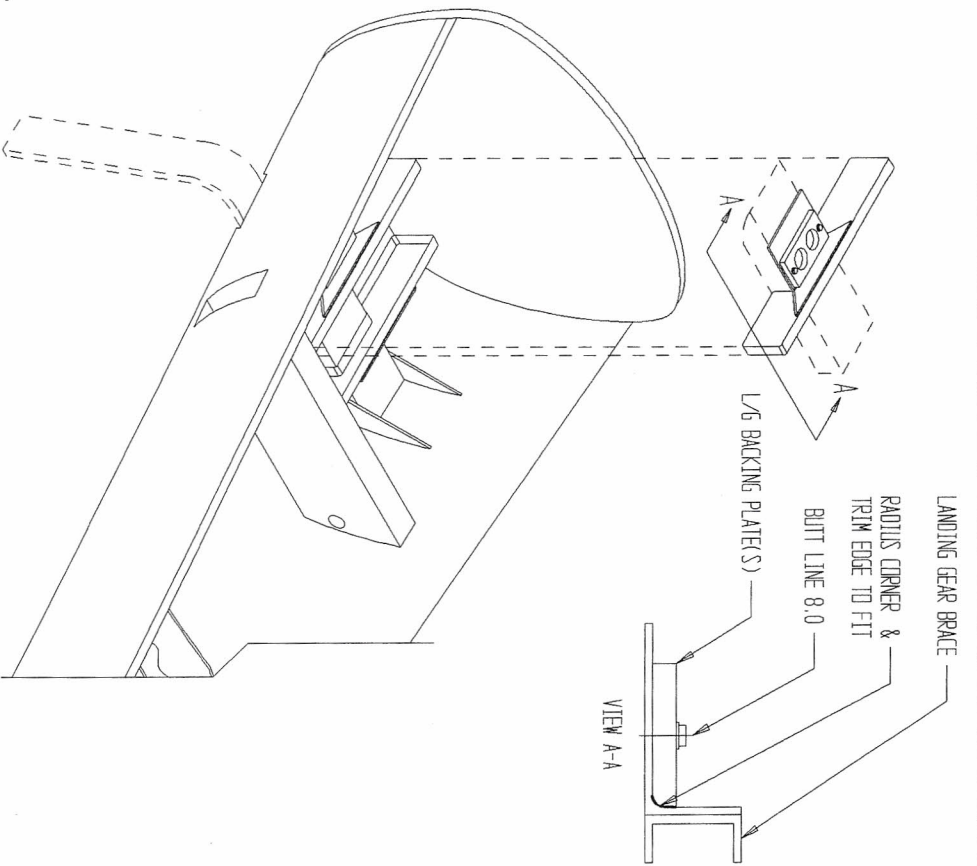
Step D Prepare bond areas by sanding thoroughly with 80 grit sandpaper then cleaning with acetone.

Step E Layup 2 fiberglass reinforcements as shown in Detail A on plastic. Paint the prepared areas with resin. Place each reinforcement on its designated area, remove the plastic and carefully work out all air from under the layup. Allow to cure completely.

If the landing gear braces, P/N 53-10-1-2-0847/0848, and fiberglass pad have been installed as per Task F-21 an additional 10 layers will need to be added at this time. Remove the main landing gear if installed. Prepare the indicated areas for bonding by sanding thoroughly with 80 grit sandpaper then cleaning with acetone. Layup 2 fiberglass reinforcements 10 plies thick, with the same dimensions as shown in Detail A on plastic. Paint the prepared area with resin. Place each reinforcement on its designated area, remove the plastic and carefully work out all air from under the layup. Allow to cure completely.

Trim the landing gear backing plates as shown, minimum as required. Two rubber pads, P/N 32-10-1-1-0119, will be installed between the landing gear and gear step as shown on the attached drawing. Longer landing gear mounting bolts have been provided to accommodate the thickness of these pads. Reinstall the main landing gear.

Any questions regarding this service bulletin should be directed to Eric Molstead at AkroTech Aviation, Inc at (503) 543 7960.



NOTES:

- 1 - SERIAL NO. AFFECTED 001 THRU 025
- 2 - LANDING GEAR ATTACH BLOCKS 8" FROM L/L.
- 3 - INSTALL LANDING GEAR & BACKING PLATES
- 4 - INSTALL LANDING GEAR BRACES. APPROX. 1/8" CLEARANCE BETWEEN BACKING PLATE & LANDING GEAR BRACES
- 5 - REMOVE BACKING PLATES. PREP LANDING GEAR BRACES & LANDING GEAR BOX. 20 PLY 45° LAYUP ON PLASTIC, WITH 20 PLY LAYUP STILL WET, BOND IN PLACE. (2X)
- 6 - REINSTALL BACKING PLATES AND LANDING GEAR (TRIM TO FIT).

LANDING GEAR REINFORCEMENT

DRAWING NO.	SB005A	TASK NO.	STEP NO.	AkroTech
MODEL	G - 202	SECTION	SERVICE BULLETIN #5A	PAGE 2/2

AkroTech Aviation, Inc.
Service Bulletin #5B

Models Affected: G-202

Part: Main Landing Gear Mounting Structure

Serial Numbers: 025 - and higher

All parts required for this service bulletin are provided by AkroTech Aviation, Inc. as follows:

4 ea.	AN5C30A Bolt
2 ea.	32-10-1-1-0119 Rubber Gear Block
2 ea.	32-10-1-3-0101 Landing Gear Reinforcement
8 ea.	AN4C11A Bolt
16 ea.	AN960-416 Washer
8 ea.	AN365-428A Nut

Bulletin

G-202 aircraft with the serial numbers listed above need to have the main landing gear mounting structure modified as specified in this service bulletin.

Procedure

Revision to TASK F-21 Install the Landing Gear Step Reinforcements and TASK F-37 Install the Main Landing Gear, of the G-202 Builders Manual.

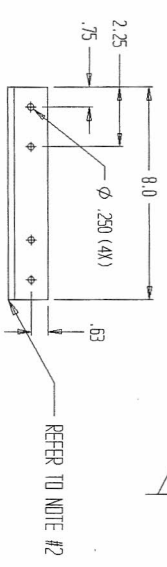
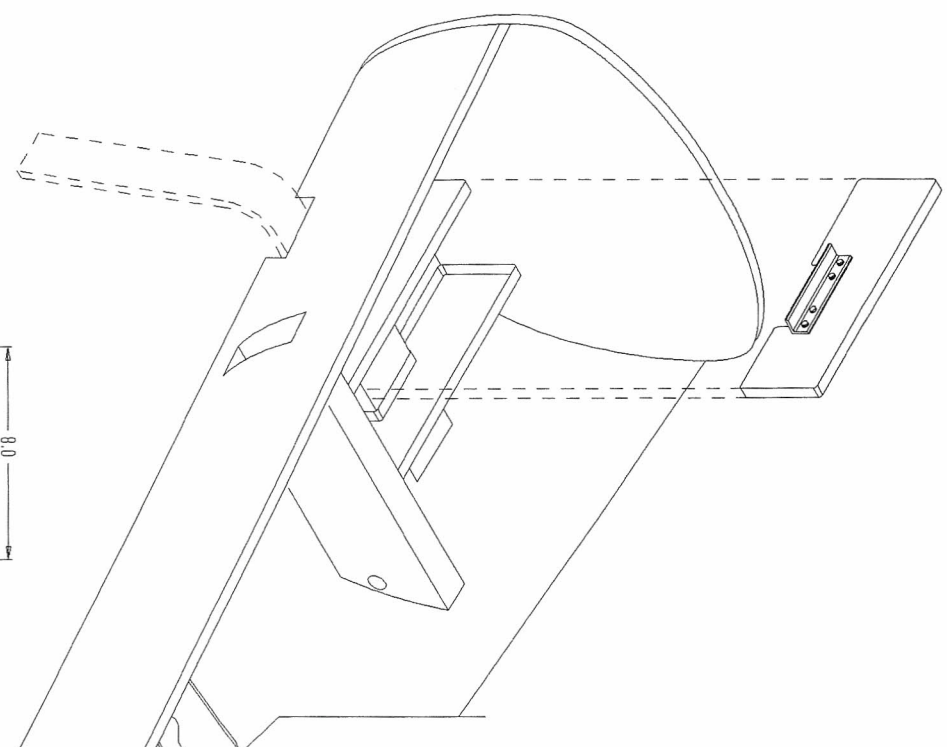
Complete TASK F-37 with the following changes before completing TASK F-21.

TASK F-37; Step E; Install the Bolts and Backing Plates

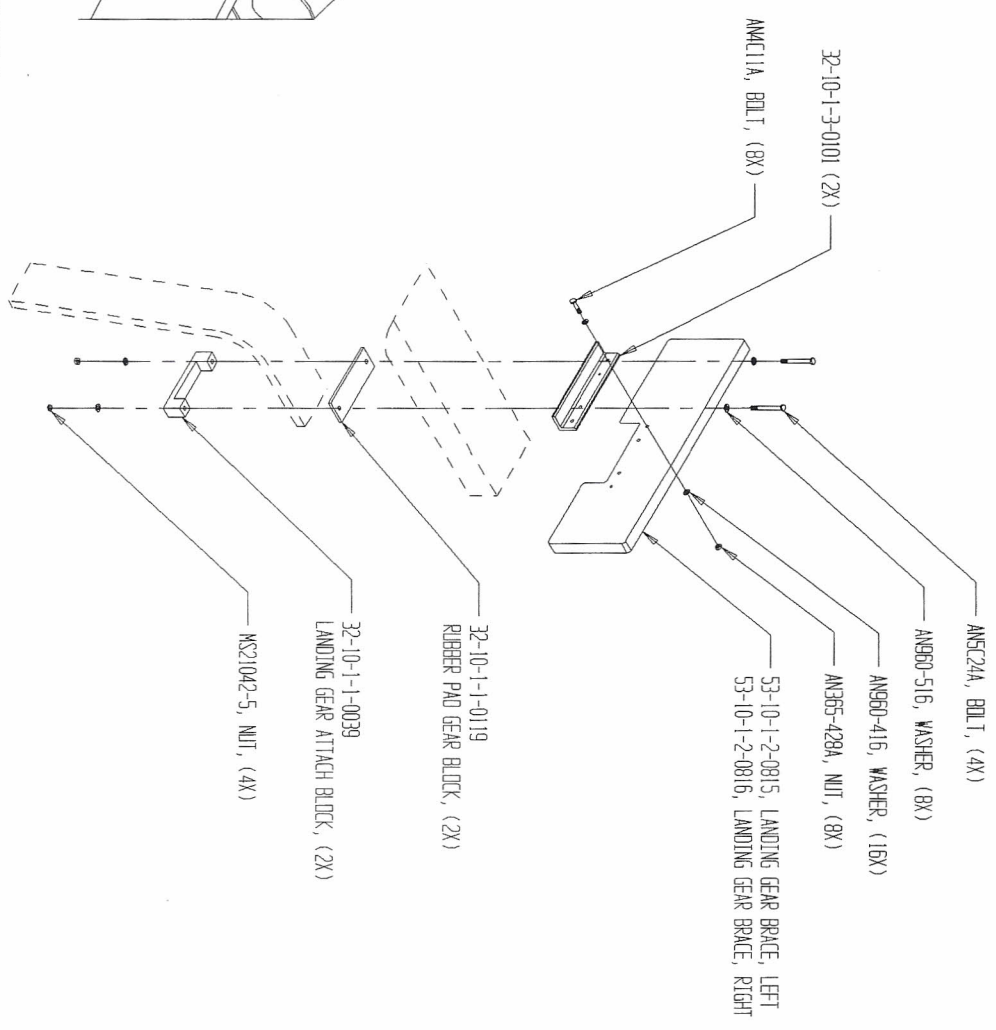
Fabricate two P/N 32-10-1-3-0101 as shown in Note #2. Use the landing gear attach blocks, P/N 32-10-1-1-0039, as a drill guide to drill the two landing gear mounting bolt holes through each landing gear reinforcement. Install the landing gear attach blocks, landing gear, rubber pads, and landing gear reinforcements as shown. Omit Step F. Complete Step G.

Complete TASK F-21 through Step C using the installed reinforcements to locate the landing gear braces. Do not bond these braces to the reinforcements. After the bulkhead is bonded in place match drill the four holes through the bulkheads and install the specified hardware

Any questions regarding this bulletin should be directed to Eric Molstead at AkroTech Aviation, Inc. at 503- 543 7960.



32-10-1-3-0101
LANDING GEAR REINFORCEMENT



LANDING GEAR REINFORCEMENT

NOTES:

- 1 - SERIAL NO. 025 THRU XXX
- 2 - 1-1/2 X 1-1/2 X 1/4 6061T6, USE L/G ATTACH BLOCKS AS GUIDE FOR DRILLING 5/16 DIA. HOLES APPROX. 8" FROM CL

DRAWING NO.	TASK NO.	STEP NO.	AKROTECH
SBO05B			
MODEL	SECTION	PAGE	
G - 202	SERVICE BULLETIN #5B	2/2	

AkroTech Aviation, Inc.
Service Bulletin #6

Models Affected: G-200

Part: Rear Wing Spar Carrythrough

Serial Numbers: 002, 004-028

All parts required for this service bulletin are provided by AkroTech Aviation, Inc. as follows:

- 1 ea. 53-20-1-2-0830 Rear Spar Bracket, Right Front
- 1 ea. 53-20-1-2-0831 Rear Spar Bracket, Left Front
- 1 ea. 53-20-1-2-0832 Rear Spar Bracket, Right Rear
- 1 ea. 53-20-1-2-0833 Rear Spar Bracket, Left Rear

Bulletin

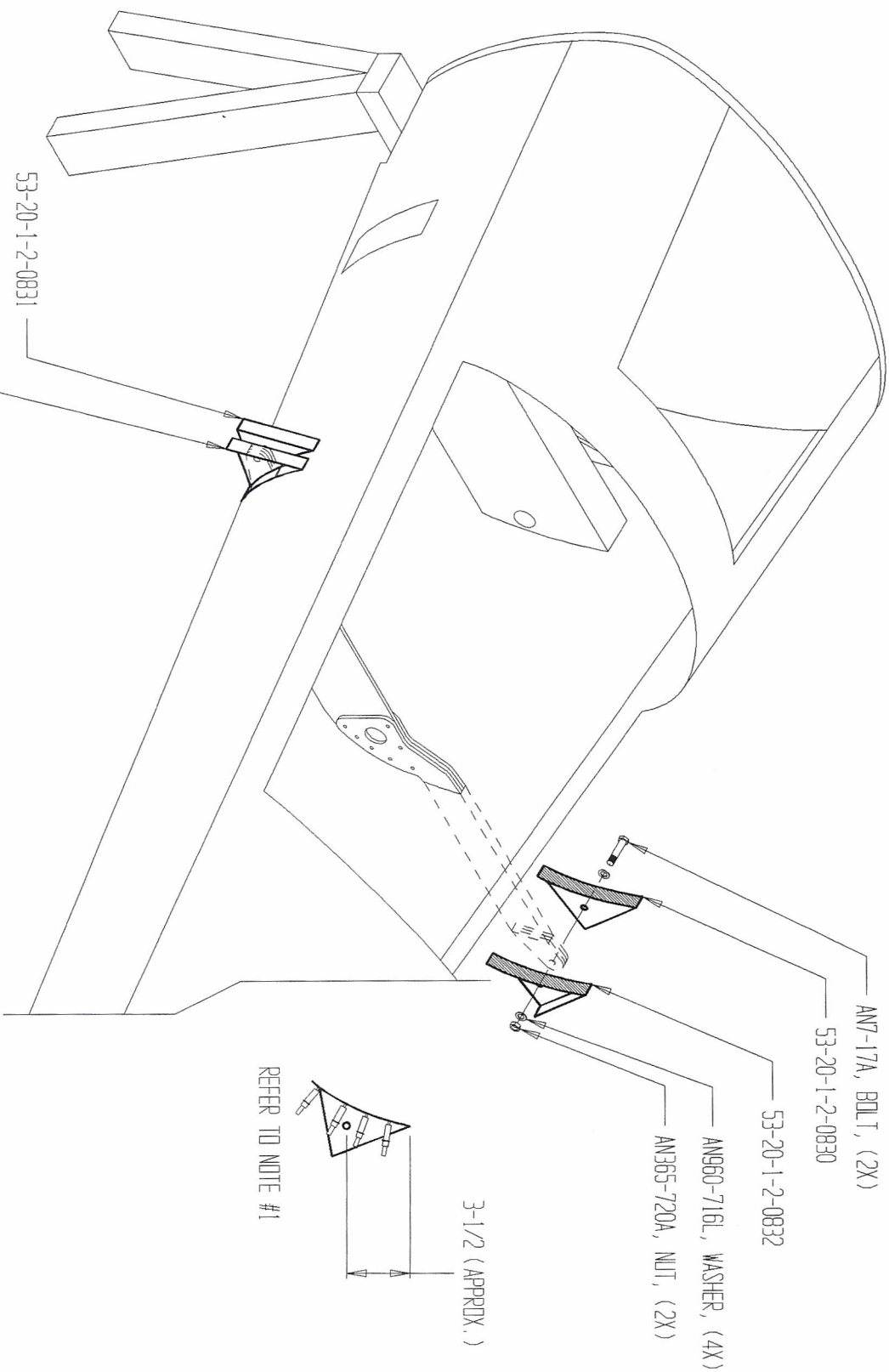
G-200 aircraft with the serial numbers listed above need to have the rear wing spar carrythrough structure modified as specified in this service bulletin. Compliance with this service bulletin should be accomplished before further flight.

Procedure

The aircraft will need to have the rear spar attach plates already attached, as per assembly manual task F-17. Remove the wings from the aircraft, if installed. Test fit the brackets as shown in the attached drawing. Each of the four brackets is different - make sure they are fit in the correct position. Mark each bracket's location on the fuselage. While holding the brackets in position drill several cleco holes through the fuselage and brackets. Cleco in place. Use a transfer punch to locate the center of the rear spar bolt hole in each bracket, one at a time. Remove the bracket and drill a 1/8" pilot hole at this position. Use a step drill or drill bits in 1/8" increments to carefully size the hole up to 7/16". Repeat for each of the four brackets.

Prepare the areas marked on the fuselage and four brackets for bonding by sanding thoroughly with 80 grit sandpaper then cleaning with acetone. Bond the brackets to the fuselage using Hysol. Hold in position during cure by inserting the rear spar attach bolt through the brackets and the rear spar plates. Finger tighten a nut onto the bolt to clamp the brackets against the backing plates. **DO NOT BOND THE BRACKETS TO THE ALUMINUM REAR SPAR PLATES ONLY TO THE FUSELAGE!** Allow to cure then remove clecoes and bolt.

Any questions regarding this bulletin should be directed to Eric Molstead at AkroTech Aviation, Inc. at 503- 543 7960.



NOTES:

- 1 - PREP SURFACES, APPLY HYSDL,
ALIGN W/REAR SPAR BOLTS,
HOLD IN POSITION W/CLECO'S

REAR SPAR CARRY-THROUGH BRACKETS

DRAWING NO.	TASK NO.	STEP NO.	AKROTECH
SB006	.	.	
MODEL	SECTION	PAGE	
G - 200	SERVICE BULLETIN #6	2/2	

AkroTech Aviation, Inc.

Service Bulletin #7

Models Affected: G-202

Part: Rear Wing Spar Carrythrough

Serial Numbers: 001-035

All parts required for this service bulletin are provided by AkroTech Aviation, Inc. as follows:

- 1 ea. 53-20-1-2-0830 Rear Spar Bracket, Right Front
- 1 ea. 53-20-1-2-0831 Rear Spar Bracket, Left Front
- 1 ea. 53-20-1-2-0832 Rear Spar Bracket, Right Rear
- 1 ea. 53-20-1-2-0833 Rear Spar Bracket, Left Rear

Bulletin

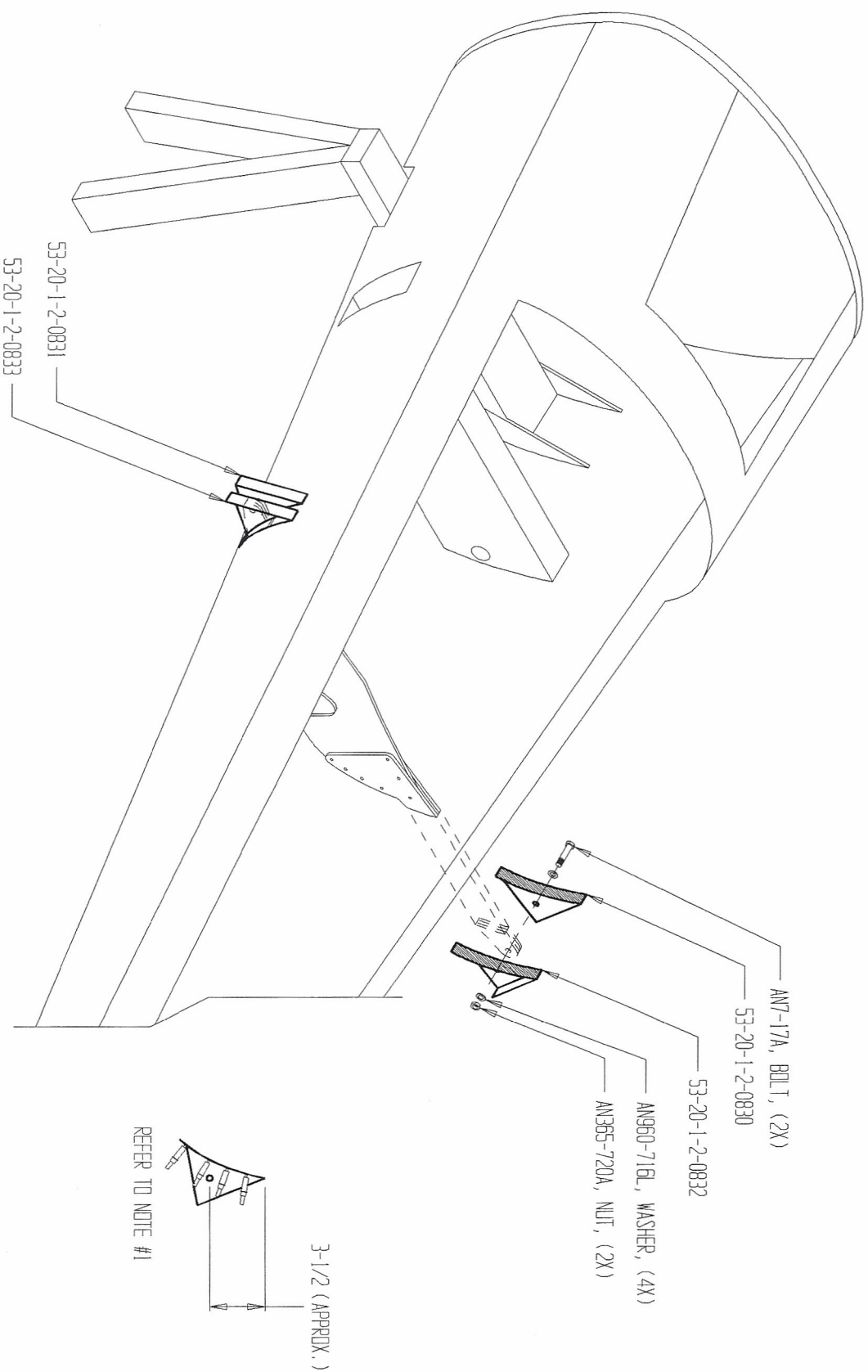
G-202 aircraft with the serial numbers listed above need to have the rear wing spar carrythrough structure modified as specified in this service bulletin. Compliance with this service bulletin should be accomplished before further flight.

Procedure

The aircraft will need to have the rear spar attach plates already attached, as per assembly manual task F-19. Remove the wings from the aircraft, if installed. Test fit the brackets as shown in the attached drawing. Each of the brackets is different - make sure they are fit in the correct position. Mark each bracket's location on the fuselage. While holding the brackets in position drill several cleco holes through the fuselage and brackets. Cleco in place. Use a transfer punch to locate the center of the rear spar bolt hole in each bracket, one at a time. Remove the bracket and drill a 1/8" pilot hole at this position. Use a step drill or drill bits in 1/8" increments to carefully size the hole up to 7/16". Repeat for each of the four brackets.

Prepare the areas marked on the fuselage and four brackets for bonding by sanding thoroughly with 80 grit sandpaper then cleaning with acetone. Bond the brackets to the fuselage using Hysol. Hold in position during cure by inserting the rear spar attach bolt through the brackets and the rear spar plates. Finger tighten a nut onto the bolt to clamp the brackets against the backing plates. **DO NOT BOND THE BRACKETS TO THE ALUMINUM REAR SPAR PLATES ONLY TO THE FUSELAGE!** Allow to cure then remove clecoes and bolt.

Any questions regarding this bulletin should be directed to Eric Molstead at AkroTech Aviation, Inc. at 503- 543 7960.



NOTES:

- 1 - PREP SURFACES, APPLY HXSOL,
ALIGN W/REAR SPAR BOLTS,
HOLD IN POSITION W/CLECO'S

REAR SPAR CARRY-THROUGH BRACKETS

DRAWING NO.	TASK NO.	STEP NO.	AKROTECH
SB007	.	.	
MODEL	SECTION	PAGE	
G - 202	SERVICE BULLETIN #7	2/2	

AkroTech Aviation, Inc.
Service Bulletin #8A

Models Affected: G-200

Part: Rear Wing Spar

Serial Numbers: 002 - 012

All parts required for this service bulletin are provided by AkroTech Aviation, Inc. as follows:

1.5 yards	7725 bi-directional fiberglass
	2024 T3 .020" shim stock

Bulletin

G-200 aircraft with the serial numbers listed above need to have the rear wing spars reinforced as specified in this service bulletin. Compliance with this service bulletin should be accomplished before further flight. Compliance with this service bulletin can be accomplished before or after the wings have been closed.

Procedure

Remove aileron hinges from the wings. Prepare the rear spars for bonding at the areas indicated in the attached drawing by cleaning with acetone, sanding thoroughly with 80 grit sandpaper, and recleaning with acetone. Carefully fill the aileron hinge mounting holes with a bright color of modeling clay.

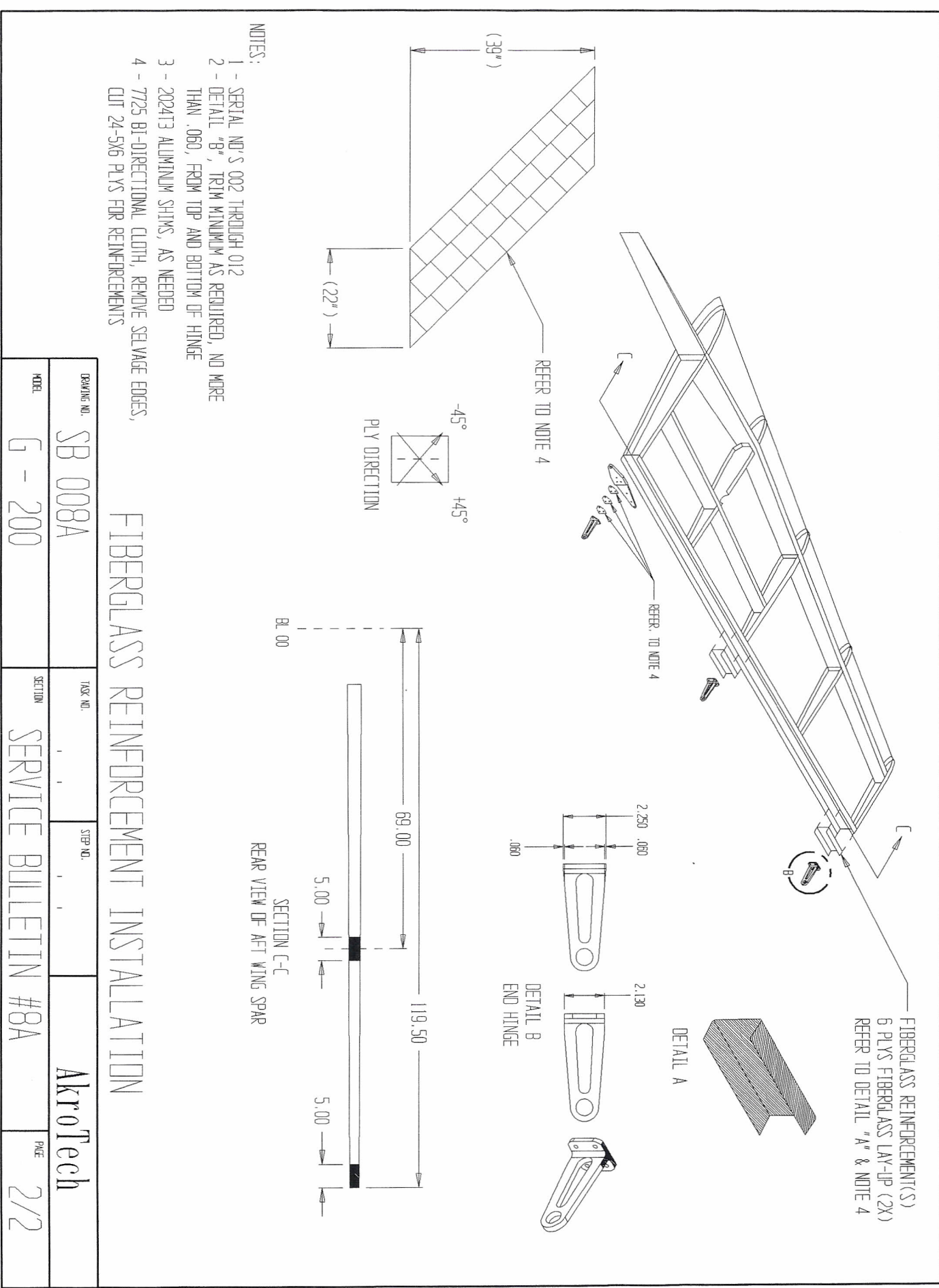
Layup six plies of fiberglass with a ± 45 degree fiber orientation on plastic. This layup should be large enough to make four reinforcements, totaling approximately 15" x 15". Cut out the four reinforcements, approximately 5" x 6" each, from this piece. Paint the prepared areas on the rear spar with laminating resin.

Place a reinforcement on the rear spar in its designated area, carefully working out all air from under the layup and maintaining the fiber orientation at ± 45 degrees to the spar. Use a fine point pick to push the fibers aside around each aileron hinge mounting hole. Again remove any air from under the layup. Clear tape several paint sticks and use spring clamps to hold the layups against the top and bottom rear spar flanges. This will help hold the lay-ups tight against the rear spar face. Repeat the process for each of the indicated areas. Inspect the reinforcements to assure that they are wrinkle free and there is no air under the layup.

After the layups have cured, trim them flush with the trailing edge of the wing. Clear any remaining fibers from the aileron hinge mounting holes using a 1/4 inch drill bit. *Use caution that the drill bit does not go so far into the hole as to damage the nutplate!!*

Measure the thickness of the reinforcements at the trailing edge of the wing. Fabricate shims to go under the inboard hinge equal to the reinforcement thickness. Measure the distance between the rear spar flanges at the outboard hinge location. Use a belt sander to trim the outboard hinge as necessary as per the attached drawing. Reinstall the aileron hinges and recheck alignment as per assembly manual task W-12.

Any questions regarding this bulletin should be directed to Eric Molstead at AkroTech Aviation, Inc. at (503) 543 7960.



AkroTech Aviation, Inc.
Service Bulletin #8B

Models Affected: G-200

Part: Rear Wing Spar

Serial Numbers: 014 - 028

All parts required for this service bulletin are provided by AkroTech Aviation, Inc. as follows:

2 yards 7725 bi-directional fiberglass

Bulletin

G-200 aircraft with the serial numbers listed above need to have the rear wing spars modified as specified in this service bulletin. Compliance with this service bulletin should be accomplished before further flight. . Compliance with this service bulletin can be accomplished before or after the wings have been closed.

Procedure

Remove aileron hinges from the wings. Prepare the rear spars for bonding at the areas indicated in the attached drawing by cleaning with acetone, sanding thoroughly with 80 grit sandpaper, and recleaning with acetone. Carefully fill the aileron hinge mounting holes with a bright color of modeling clay.

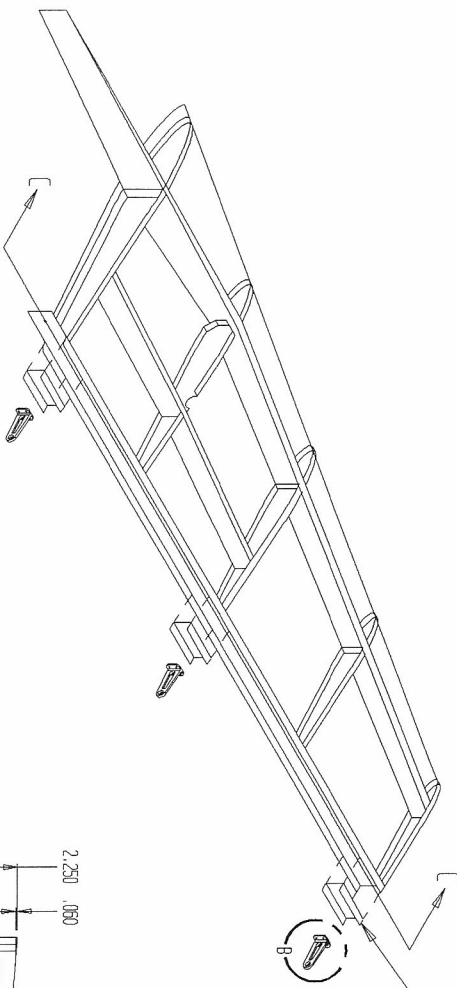
Layup six plies of fiberglass with a ± 45 degree fiber orientation on plastic. This layup should be large enough to make six reinforcements, totaling approximately 24" x 24". Cut out the six reinforcements, approximately 5" x 6" each, from this piece. Paint the prepared areas on the rear spar with laminating resin.

Place a reinforcement on the rear spar at its designated areas, carefully working out all air from under the layup and maintaining the fiber orientation at ± 45 degrees to the spar. Use a fine point pick to push the fibers aside around each aileron hinge mounting hole. Again remove any air from under the layup. Clear tape several paint sticks and use spring clamps to hold the layups against the top and bottom rear spar flanges. This will help hold the lay-ups tight against the rear spar face. Repeat the process for each of the indicated areas. Inspect the reinforcements to assure that they are wrinkle free and there is no air under the layup.

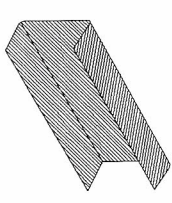
After the layups have cured, trim them flush with the trailing edge of the wing. Clear any remaining fibers from the aileron hinge mounting holes using a 1/4 inch drill bit. *Use caution that the drill bit does not go so far into the hole as to damage the nutplate!!*

Measure the distance between the rear spar flanges at the outboard hinge location. Use a belt sander to trim the outboard hinge as necessary as per the attached drawing. Reinstall the aileron hinges and recheck alignment as per assembly manual task W-12.

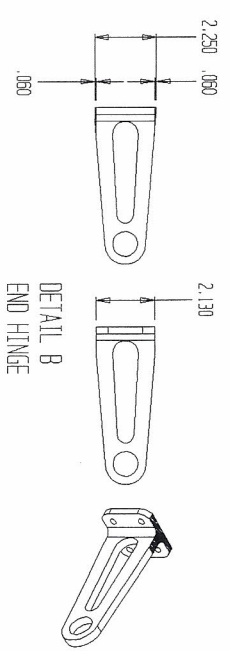
Any questions regarding this bulletin should be directed to Eric Molstead at AkroTech Aviation at (503) 543 7960.



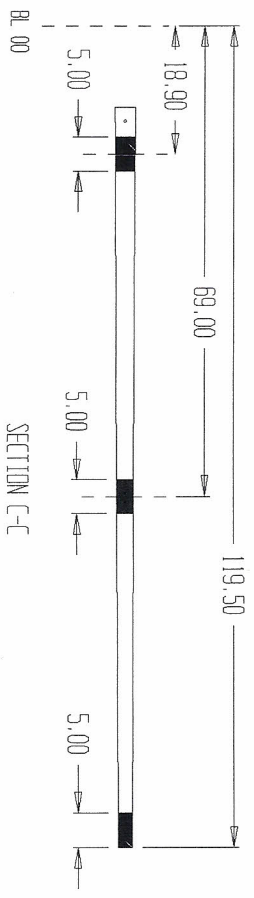
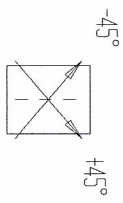
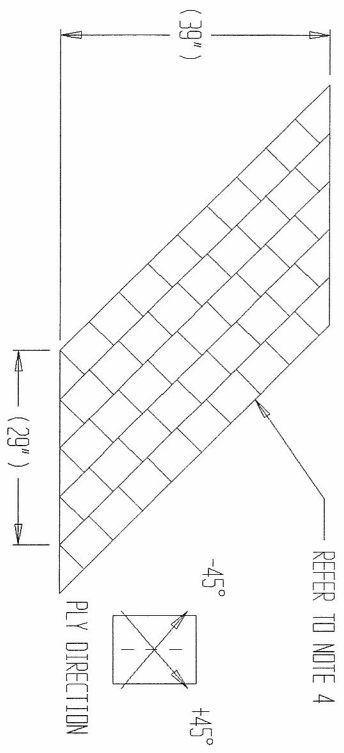
FIBERGLASS REINFORCEMENT(S)
6 PLYS FIBERGLASS LAY-UP (3X)
REFER TO DETAIL "A" & NOTE 4



DETAIL A



DETAIL B
END HINGE



SECTION C-C
REAR VIEW OF AFT WING SPAR

- NOTES:
- 1 - SERIAL NO.'S 002 THROUGH 012
 - 2 - DETAIL "B", TRIM MINIMUM AS REQUIRED, NO MORE THAN .060, FROM TOP AND BOTTOM OF HINGE
 - 3 - 202413 ALUMINUM SHIMS, AS NEEDED
 - 4 - 7725 BI-DIRECTIONAL CLOTH, REMOVE SELVAGE EDGES, CUT 36-5X6 PLYS FOR REINFORCEMENTS

FIBERGLASS REINFORCEMENT INSTALLATION

DRAWING NO.	TASK NO.	STEP NO.	AKROTECH
SB 008B	.	.	
MODEL	SECTION	PAGE	
G - 200	SERVICE BULLETIN #8B	2/2	

AkroTech Aviation, Inc.
Service Bulletin #9

Models Affected: G-202

Part: Rear Wing Spar

Serial Numbers: 001 - 024

Bulletin

G-202 aircraft with the serial numbers listed above need to have the rear wing spars reinforced as specified in this service bulletin. Compliance with this service bulletin should be accomplished before further flight.

Procedure

WINGS OPEN.

All parts required for this service bulletin are provided by AkroTech Aviation, Inc. as follows:

2ea.	20-236 Middle Hinge Reinforcement
2ea.	20-237 Tip Hinge Reinforcement
1ea.	20-234 Left Center Hinge Brace Rib
1 ea.	20-235 Right Center Hinge Brace Rib

Remove the aileron hinges from the wings. Remove the aileron hinge backing plates by carefully heating the adhesive with a heat gun, then prying loose with a putty knife. If the backing plate does not come off easily, continue heating until the putty knife slides easily between the backing plate and rear wing spar.

Mark the location of the reinforcing rib and spar reinforcements on the inside of the wing as shown in the attached drawing. Trim the outboard end of the middle hinge reinforcement at approximately a 45 degree angle so the brace rib will fit properly. This rib is positioned from the rear fuel tank closeout to just outboard of the center hinge. Prepare all of the marked areas for bonding by sanding with 80 grit sandpaper then cleaning with acetone. Bond the inboard and outboard hinge reinforcements and the brace rib in place using Hysol. After cure re-drill the aileron hinge mounting holes and mount the backing plates as per assembly manual task W-13.

Continue with wing assembly tasks as specified in the assembly manual.

WINGS CLOSED.

All parts required for this service bulletin are provided by AkroTech Aviation, Inc. as follows:

Wings Closed:

3 yards	7725 bi-directional fiberglass
4ea	20-238 Wing Skin Reinforcement
2ea	10-100 Center Aileron Hinge
2ea	10-101 Outboard Aileron Hinge

Remove aileron hinges from the wings. Prepare the rear spars for bonding at the areas indicated in the attached drawing by cleaning with acetone, sanding thoroughly with 80 grit sandpaper, and recleaning with acetone. Carefully fill the aileron hinge mounting holes with a bright color of modeling clay.

Layup 8 plies of fiberglass with a ± 45 degree fiber orientation on plastic. This layup should be large enough to make 6 reinforcements, totaling approximately 24" x 24". Cut out the six reinforcements, approximately 5" x 6" each, from this piece. Paint the prepared areas on the rear spar with laminating resin.

Place a reinforcement on the rear spar at its designated areas, carefully working out all air from under the layup and maintaining the fiber orientation at ± 45 degrees to the spar. Use a fine point pick to push the fibers aside around each aileron hinge mounting hole. Again remove any air from under the layup. Clear tape several paint sticks and use spring clamps to hold the layups against the top and bottom rear spar flanges. This will help hold the lay-ups tight against the rear spar face. Repeat the process for each of the indicated areas. Inspect the reinforcements to assure that they are wrinkle-free and there is no air under the layup.

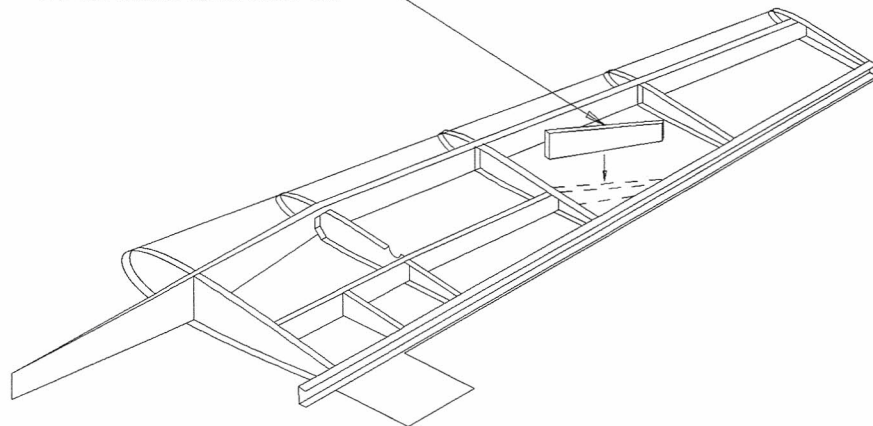
After the layups have cured, trim them flush with the trailing edge of the wing. Clear any remaining fibers from the aileron hinge mounting holes using a 1/4 inch drill bit. *Use caution that the drill bit does not go so far into the hole as to damage the nutplate!!*

Replace center and outboard hinges P/N's 10-001, 10-002 with new hinges P/N's 10-100, 10-101 respectively. Reinstall the aileron hinges and recheck alignment as per assembly manual task W-12.

Mark the upper and lower wing skin surfaces at the center hinge location for skin reinforcements. Prepare the marked areas for bonding by sanding with 80 grit sandpaper and cleaning with acetone. Prepare skin reinforcements P/N 20-238 in a similar manner. Bond upper and lower skin reinforcements in place with Hysol.

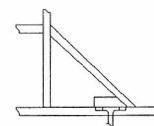
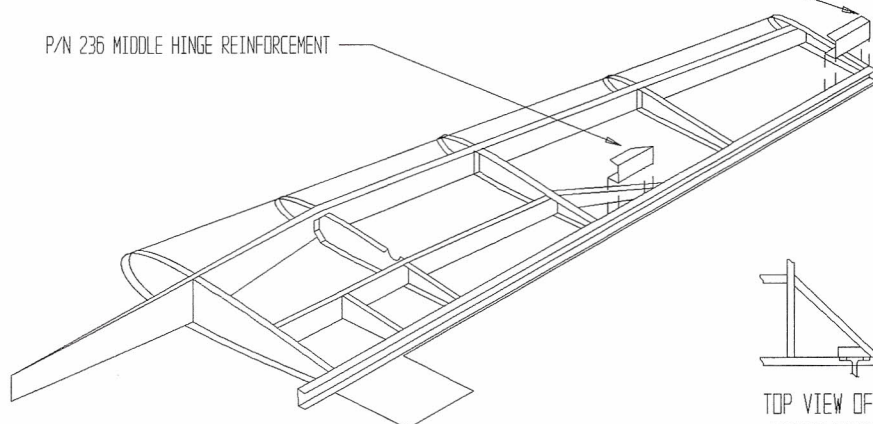
Any questions regarding this bulletin should be directed to Eric Molstead at AkroTech Aviation at (503) 543 7960.

P/N 234 CENTER HINGE BRACE RIB

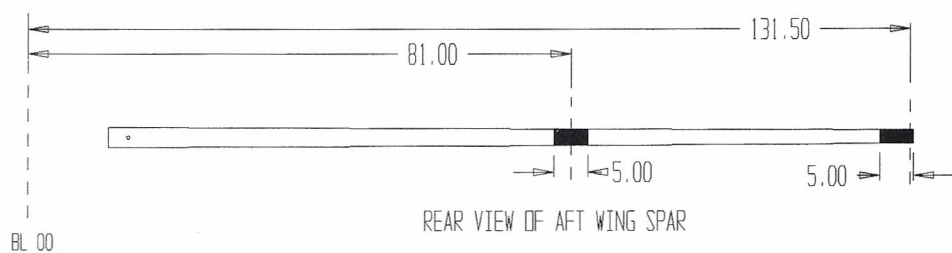


P/N 237 TIP HINGE REINFORCEMENT

P/N 236 MIDDLE HINGE REINFORCEMENT



TOP VIEW OF CENTER
HINGE BRACE RIB

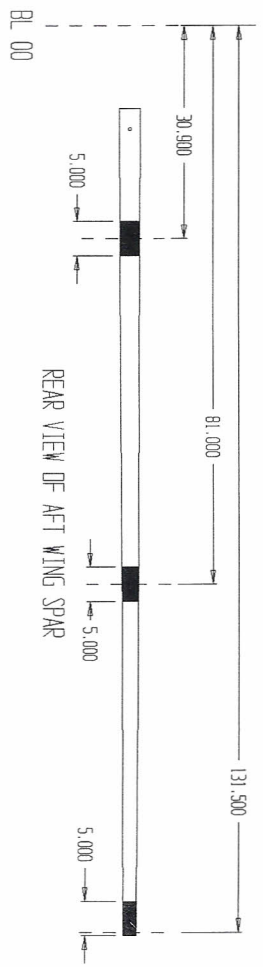
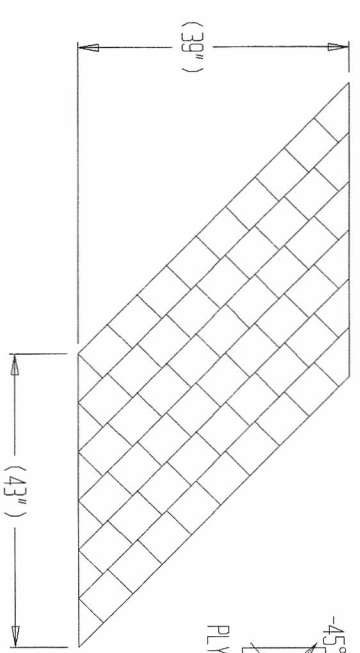
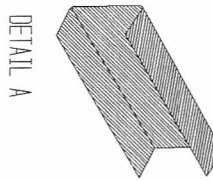
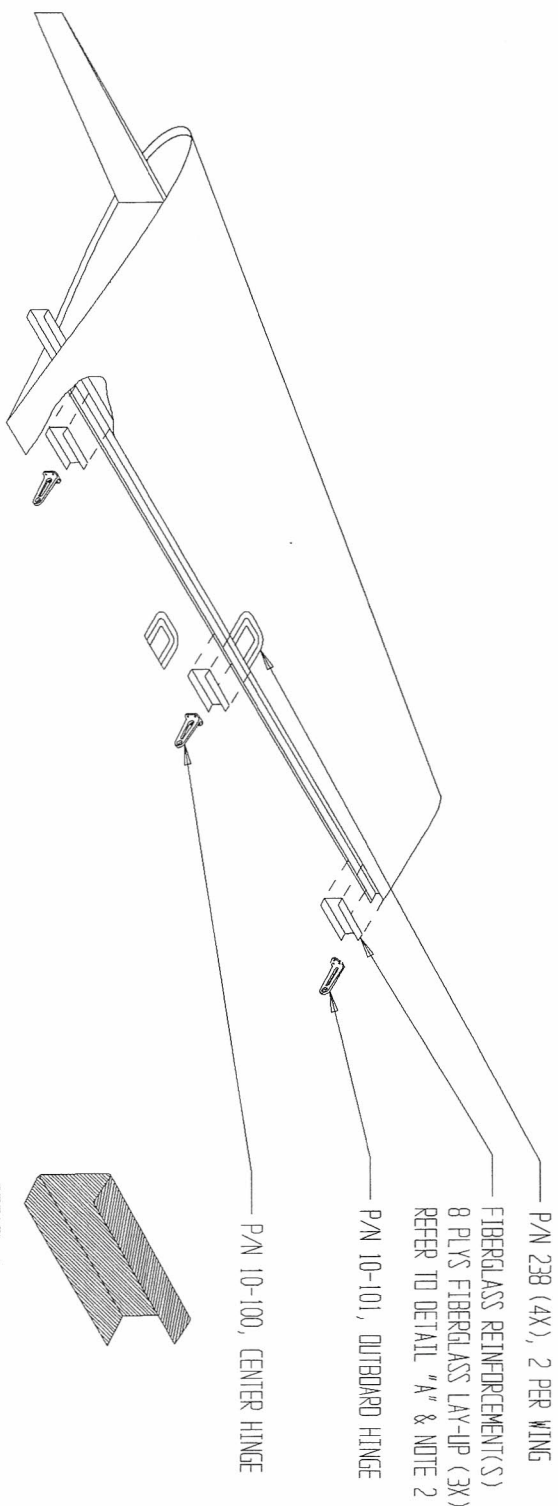


NOTES:

1 - SERIAL NO'S 001 THROUGH 024 WING OPEN

FIBERGLASS REINFORCEMENT INSTALLATION WINGS OPEN

DRAWING NO.	SB009	TASK NO.	STEP NO.	AkroTech
MODEL	G - 202	SECTION	SERVICE BULLETIN #9	PAGE 3/4



NOTES:

1 - SERIAL NO'S 001 THROUGH 024 WING CLOSED

2 - 7725 BI-DIRECTIONAL CLOTH,
REMOVE SELVAGE EDGE,
CUT 48-5X6 PLYS FOR REINFORCEMENTS

FIBERGLASS REINFORCEMENT INSTALLATION WINGS CLOSED			
DRAWING NO.	TASK NO.	STEP NO.	AkroTech
SB009	.	.	
MODEL	SECTION	PAGE	
G - 202	SERVICE BULLETIN #9	4/4	

AkroTech Aviation, Inc.

Service Bulletin #14

Models Affected: G-200, G-202

Part: Engine Mount Attach Bolts

Serial Numbers: 002 - 028 {G-200}; 001 - 030 {G-202}

All parts required for this service bulletin are provided by AkroTech Aviation, Inc. as follows:

4 ea. NAS1006-15A Bolts

Bulletin

G-200 and G-202 aircraft with the serial numbers listed above need to have engine mount attach bolts replaced as specified in this service bulletin. Compliance with this service bulletin should be accomplished before further flight.

Procedure

Remove existing AN 6C-15A engine mount attach bolts. Replace with supplied NAS1006 bolts. Reuse existing AN960-616 washers and AN 365-624 nuts if serviceable.

Any questions regarding this bulletin should be directed to Eric Molstead at AkroTech Aviation, Inc. at 503- 543 7960.

AkroTech Aviation Inc.
Service Bulletin 15

Models Affected: G-202

Part: Rudder

Serial Numbers: 001 - 035

All parts required for this service bulletin will be provided by AkroTech Aviation, Inc. as follows:

1 ea	55-40-5-1-05011	Rudder Jig Templates
------	-----------------	----------------------

Bulletin

G-202 aircraft with the serial numbers listed above need to have the builders manual revised with new rudder closure instructions.

Procedure

Revision to Task F-11 of the G-202 Builders Manual Version 1.6 and earlier.

Perform these steps between Task F-10 and Task F-11

Step A Cut Out Rudder Jig Formers

Glue the rudder jig templates to 3/4" particle board. Cut out templates staying on the waste side of the line. Trim to final shape using a belt sander.

Step B Bed the Formers

Locate the lower rudder rib, top surface. This is waterline 0. Apply clear tape on the outer surface of the rudder at waterline 0 and waterline 32. Apply a narrow bead of bondo on the clear tape and hold each former in place until the bondo cures. The bondo buildup shouldn't exceed 1/4" in any location.

Step B Position the Jig Formers

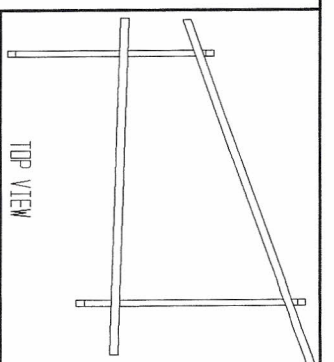
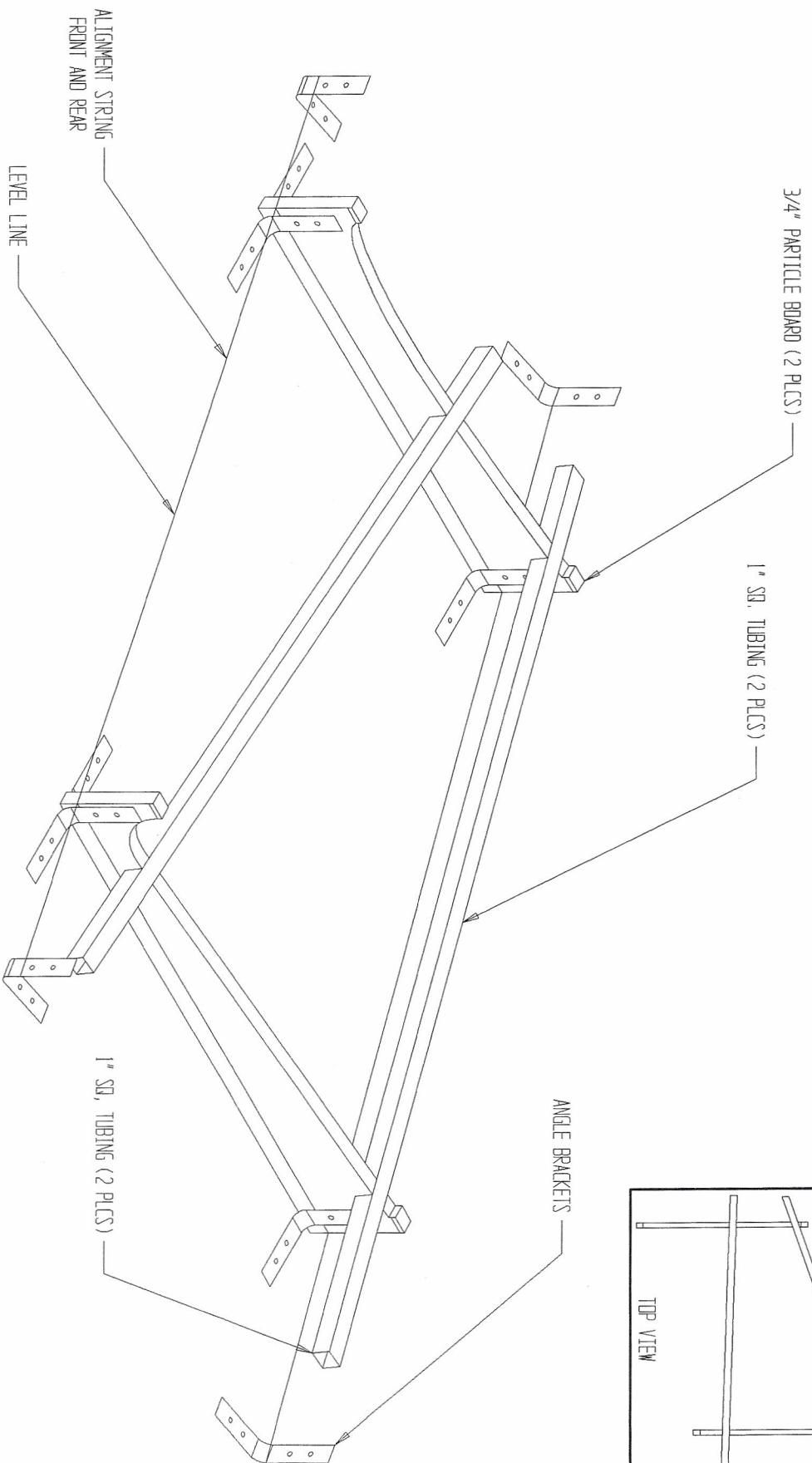
Temporarily set up the formers parallel to each other 32 inches apart as shown in the top view of the rudder jig. Note: neither piece of 1" square tubing will not be perpendicular to the formers. Place the rudder in the formers to set the geometry of the jig.

Step D Level the Formers

Using the level reference waterlines on each former, level the formers fore and aft, then level the formers with each other. Double check that the formers are level fore and aft and level with each other. Screw the angle brackets into the formers. Check one more time that the formers are level.

Step E Cut and Fit the Spar and Trailing Edge Supports

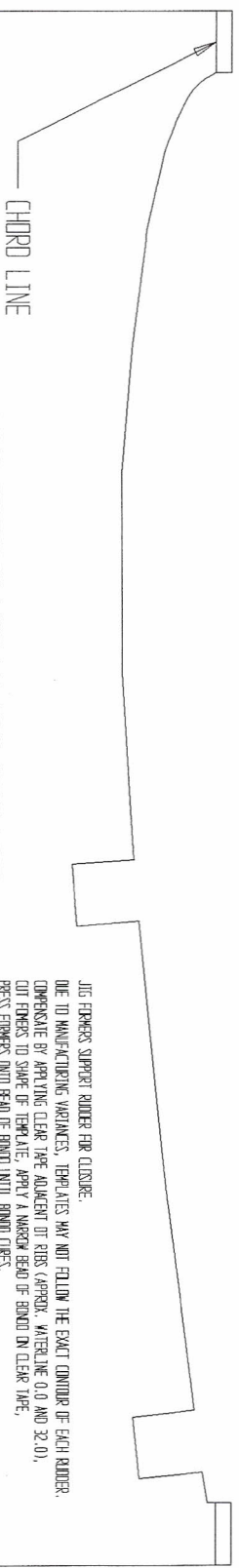
Cut two 1 inch square tubes to support the spar and trailing edge of the rudder during closing. The support tubes should be long enough to support the entire length of the rudder. Shim the tubes to be level with the support surface of the formers and bondo in place.



TOP VIEW

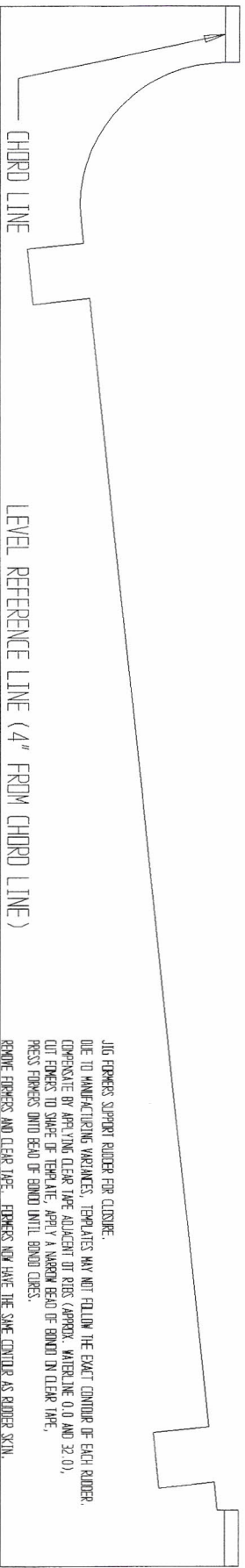
RUDDER JIG

DRAWING NO.	SB015	TASK NO.	1	STEP NO.	1	Akrotech
MODEL	G - 202	SECTION	SERVICE BULLETIN #15	PAGE	2/2	



DRAWING NO. 55-40-5-1-0501 G-202 RUDDER JIG TEMPLATE, REFERENCE WATERLINE 32.0

JIG FORMERS SUPPORT RUDDER FOR CLASURE.
DUE TO MANUFACTURING VARIANCES, TEMPLATES MAY NOT FOLLOW THE EXACT CONTOUR OF EACH RUDDER.
COMPENSATE BY APPLYING CLEAR TAPE ADJACENT TO RIBS (APPROX. WATERLINE 0.0 AND 32.0).
CUT FORMERS TO SHAPE OF TEMPLATE, APPLY A NARROW BEAD OF BOND ON CLEAR TAPE.
PRESS FORMERS ONTO BEAD OF BOND UNTIL BOND CURES.
REMOVE FORMERS AND CLEAR TAPE. FORMERS NOW HAVE THE SAME CONTOUR AS RUDDER SKIN.
PLACE 1" SQ. TUBING (2 PCS. APPROX 48 IN LONG) UNDER TRAILING EDGE AND SPAR.
CONTINUE TO BUILD RUDDER JIG USING THE SAME PROCESS AS ALBERN AND VIN.



DRAWING NO. 55-40-5-1-0501 G-202 RUDDER JIG TEMPLATE, REFERENCE WATERLINE 0.0

JIG FORMERS SUPPORT RUDDER FOR CLASURE.
DUE TO MANUFACTURING VARIANCES, TEMPLATES MAY NOT FOLLOW THE EXACT CONTOUR OF EACH RUDDER.
COMPENSATE BY APPLYING CLEAR TAPE ADJACENT TO RIBS (APPROX. WATERLINE 0.0 AND 32.0).
CUT FORMERS TO SHAPE OF TEMPLATE, APPLY A NARROW BEAD OF BOND ON CLEAR TAPE.
PRESS FORMERS ONTO BEAD OF BOND UNTIL BOND CURES.
REMOVE FORMERS AND CLEAR TAPE. FORMERS NOW HAVE THE SAME CONTOUR AS RUDDER SKIN.
PLACE 1" SQ. TUBING (2 PCS. APPROX 48 IN LONG) UNDER TRAILING EDGE AND SPAR.
CONTINUE TO BUILD RUDDER JIG USING THE SAME PROCESS AS ALBERN AND VIN.

G-202 RUDDER JIG TEMPLATES

DRAWING NO.	55-40-5-1-0501	TASK NO.		STEP NO.		AKROTECH
MODEL	G - 202	SECTION	FUSELAGE	REVISION	B	PAGE

AkroTech Aviation, Inc.
Service Bulletin #16

Models affected: all

Parts Required: 8ea CR3243-4-3 rivet (supplied by AkroTech)

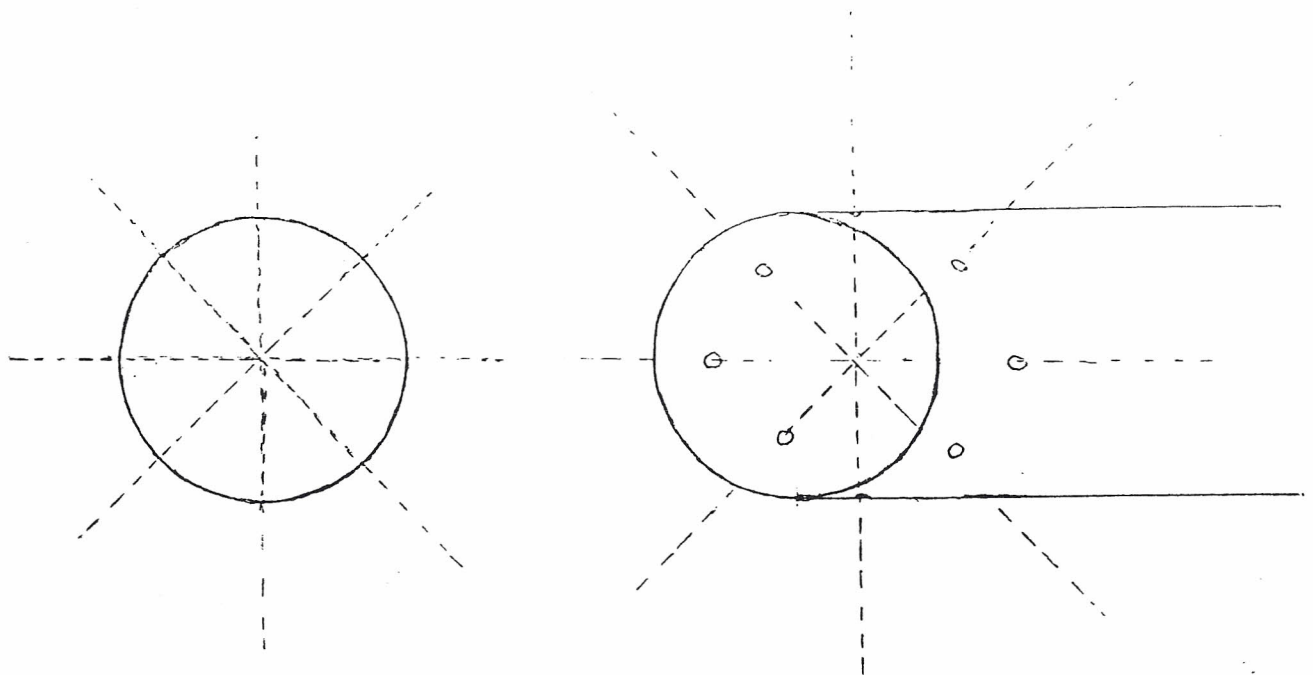
Bulletin

During inspection of G-202 S/N 002, the rear elevator pushtube was found to be worn in the area of the rivets that secure the fittings to the tubing. This allowed the fittings to move relative to the tubing. All Giles aircraft using a 1.5 inch diameter elevator pushtube that has the pushtube end fittings secured with 4 or 6 rivets per fitting need to have the amount of rivets securing the end fittings increased to 8 per fitting.

Procedure

Make sure there are at least 8 structural rivets securing each pushtube fitting to the pushtube, instead of 4 as originally specified. If the fittings have not been installed, use Hysol to bond the fittings into the tubing (in addition to installing the rivets). See drawing below.

Any questions regarding this bulletin should be directed to Eric Molstead at AkroTech Aviation, Inc. at 503 543-7960.



USE 8 CR3242-4-3 RIVETS PER END

MEMORANDUM

TO: CHRIS BAILEY/ ERIC MOLSTEAD
FROM: SEAN DOYLE
SUBJECT: G-202 SERVICE NOTE
DATE: DECEMBER 10, 1997
CC:

Inspection of G-202 S/N 002 revealed an abnormal service condition. Reference drawing number 27-30-2-1-0102. Rivets (Item 18) holding the 1.5" push tube fitting (Item 2) to the aft elevator tube (Item 5) were found worn during inspection. Wear allowed the push tube fitting to move relative to the push tube. This installation had six (6) rivets each end instead of the four (4) called out. Recommend increasing number of rivets in installation to 6 and increasing rivet size to 5/32" (CR3243-5-3).

AkroTech Aviation, Inc.
Service Bulletin #17

Model Affected: G-202

Bulletin:

Tasks F-8 and F-34, Step A, contain instructions for cutting the vertical stabilizer skin by referencing a molded-in scribe line. Newer skins have the core material removed in the shape of the vertical stabilizer cross section. On some of these skins with the molded-in joggle the scribe line was omitted.

Procedure:

The initial cut should be 2 inches in from the edge of the joggle, or indentation. DO NOT CUT AT THE EDGE OF THE JOGGLE. After the initial cut you may proceed with Task Step B. The subsequent trial fittings and trimming require exacting attention to detail and should be approached with a great deal of patience.

AkroTech Aviation, Inc.

Service Bulletin #19

- Models Affected:** All G-200 and G-202 aircraft kits. This bulletin emphasizes reinforcement of the cutout in the rear vertical spar. However, owners of kits with the molded-in hole should comply with this bulletin as it relates to any other holes and cutouts through composite core material.
- Purpose:** This bulletin alerts builders and pilots to the possibility of a **structural failure** resulting from improper assembly of your aircraft. This could be due to failure to comply with AkroTech Aviation, Inc. construction procedures, use of improper materials, or departure from fundamentals in the preparation, care, handling and assembly of composite parts.
- Background:** All G-200 kits and early G-202 kits required the builder to cut a hole in the rear vertical spar for the elevator control tube. This cutout must be reinforced with fiberglass to preserve the integrity of the spar. Fundamental to construction of composite structures, any and every time core material is exposed through cutting or drilling it must be sealed and/or reinforced. At least one G-202 has experienced structural cracking due primarily to improper finishing of the hole cut through the rear vertical spar. Also a contributing factor was an insufficient number of plies of the appropriate cloth and proper surface preparation for the stabilizer seam fillets. The initial indication of this situation was cracking in the horizontal stabilizer fillet. Rudder removal revealed a crack in the vertical spar adjacent to the hole cut for the elevator control tube. In load bearing surfaces, cutting through the core material eliminates the load path in the area of the hole and significantly weakens the structure. Properly sealing the core material and reinforcing the edges of the hole is necessary to ensure the integrity of the structure and its ability to carry its design loads.
- Definitions:**
- Sealing:** This is the non-structural procedure of filling exposed core material with an epoxy mixture to prevent contamination by fuel, lubricants, moisture, etc.
- Reinforcing:** This is an important structural procedure where the edges of a cutout are first sealed and then built up with a three ply wrap of fiberglass.
- Compliance:** **IMMEDIATELY. Inspection must be accomplished before your next flight.** Holes found to be improperly finished must be sealed and/or reinforced in compliance with this service bulletin before the next flight. The proper reinforcing plies must be found where necessary. **Do not wait to be grounded by weather. Do not wait until the next annual inspection. Do not fly your aircraft before complying with this bulletin.**

Instructions:

1. Inventory of Materials:

- a) 80 grit sandpaper
- b) fiberglass cloth
- c) epoxy laminating resin and hardener
- d) acetone
- e) microballoons
- f) 404 filler
- g) Hysol structural adhesive

2. Overview

Early kits that did not have the hole in the vertical spar molded in are particularly vulnerable to failure if the cutout was not reinforced. **All** other holes cut or drilled through honeycomb or foam core material, including those for fuel and electrical lines, bolts, etc., must be sealed and/or reinforced as well. Holes in load bearing structures such as the rear spar carrythrough must be reinforced.

3. Inspection

Inspect the horizontal stabilizer fillet areas, both upper and lower surfaces. Any visible cracking, even if it appears only in the clearcoat, may indicate a problem. Remove the rudder and inspect the vertical spar for cracking or any evidence of stress. On models that did not have the cutout for the elevator push-pull tube molded in, cutouts should have evidence of closeout plies extending at least one inch back from the edges of the opening. Visual inspection should be extended to the entire airframe. Small holes will be more difficult to inspect, but unless you built your own airplane, you must assure yourself that all holes were properly sealed by the builder. **As part of your inspection of the empennage, you must also assure yourself that the required four plies of 7725 fiberglass were applied at the juncture of the vertical and horizontal stabilizers.**

4. Procedure.

Exposed core material that results from the drilling or cutting of a hole must be sealed according to the procedure in the General Information section of the builder's manual. For small holes, such as for a bolt or where a piece of tubing passes through a structural member, place a piece of clear 3M tape over one side of the hole, press it firmly into place, and from the opposite side, fill the exposed core recess with a mixture of structural adhesive and 404 filler. For larger holes and cutouts, cut three times the number of 2 ½ inch wide

strips of fiberglass to length needed to span every edge or the circumference of the hole, on the bias (fibers running at a 45 degree angle to the length of the strip). Remove approximately $\frac{1}{4}$ " of core material away from the edge of the cutout. Clean the surfaces surrounding the hole with acetone. Then thoroughly roughen the surfaces with 80 grit sandpaper and clean once again with acetone. Prepare a wet lay-up three layers thick according to the procedure for wet lay-ups outlined in the manual. Prepare a mixture of laminating resin and micro balloons to achieve a thick "peanut butter" consistency. Use this mixture to fill the exposed core material surrounding the hole. Round the edges of the hole with the filler material so that the fiberglass can wrap smoothly around the edge. Remove the plastic from one side of the fiberglass strips. Place the strips along each side of the hole so they wrap around from the inside of the hole to the outside of the hole, overlapping both surfaces by about one inch. The strips should also overlap one another at their edges. Use a brush to smooth out the lay-up and remove any air bubbles. Allow a cure time of at least 24 hours at 70 deg.

Record your inspection and any repairs in the Aircraft Logbook.

For additional information, refer to the Builder's Manual General Information Section under Bonding Procedures, Wet Layups, and Preparing Carbon Fiber Pieces for the Attachment of Fittings.

AkroTech Aviation, Inc.
Builders Alert

Date: March 25, 1997

Models Affected: All AkroTech Aviation Products

Subject: Structural Testing

Bulletin:

Numerous builders of G-200 and G-202 aircraft have completed or are nearing completion of their airplanes. Several builders have inquired about performing static tests to verify the structural integrity of their aircraft, particularly the wings.

It is possible to cause severe, possibly unseen, structural damage by improperly applying loads to the airplane or improperly supporting the airplane during testing. For this reason AkroTech Aviation, Inc. does not support builders doing structural testing and AkroTech will not provide loads or other static test information.

We cannot state strongly enough that builders should not perform static tests on their airplanes and may in fact make their aircraft unairworthy by performing this testing.

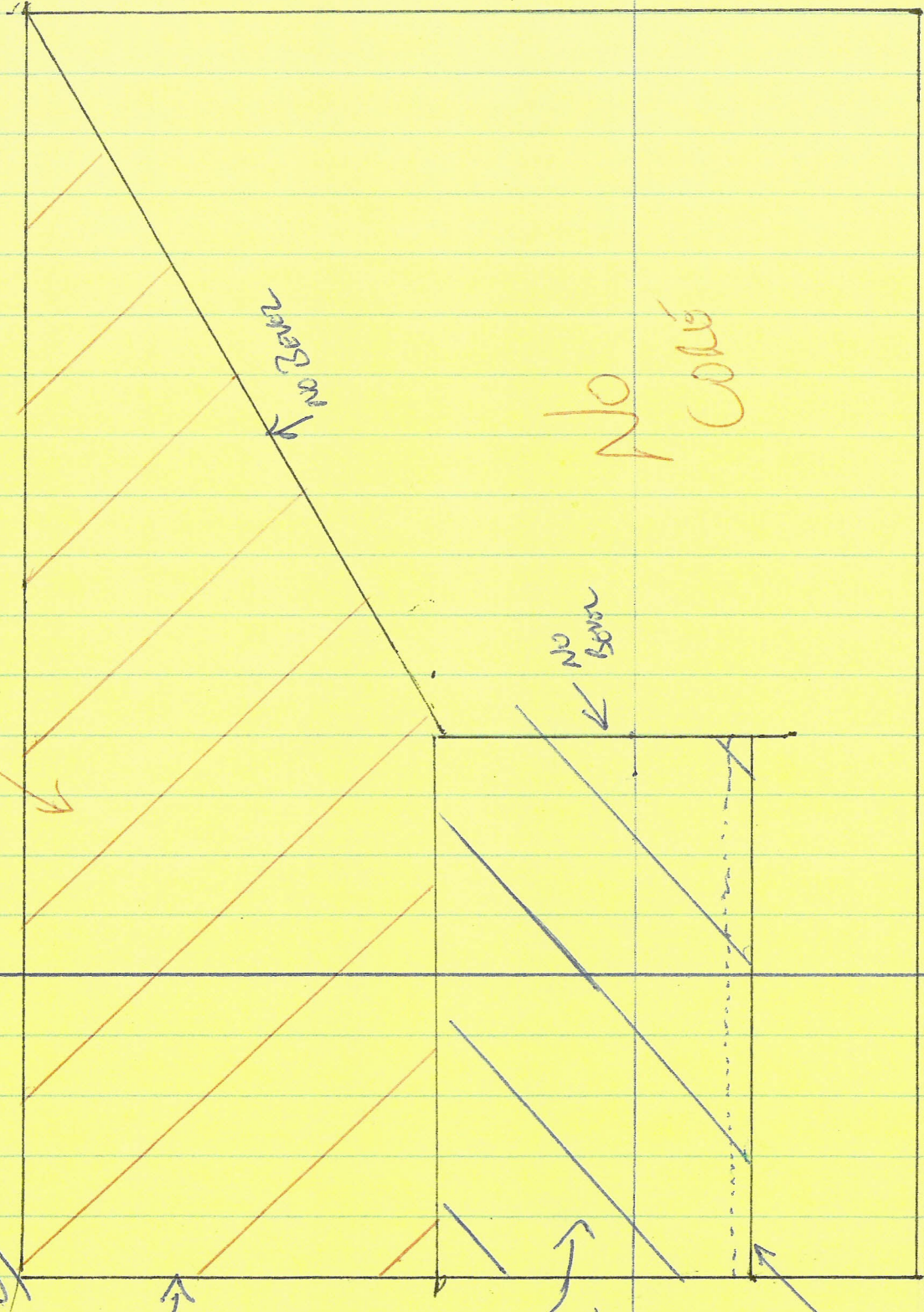
Questions concerning this alert should be directed to Eric Molstead at AkroTech Aviation, Inc. at (503) 543-7960.

3/13
CARBON

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~~MAKING~~
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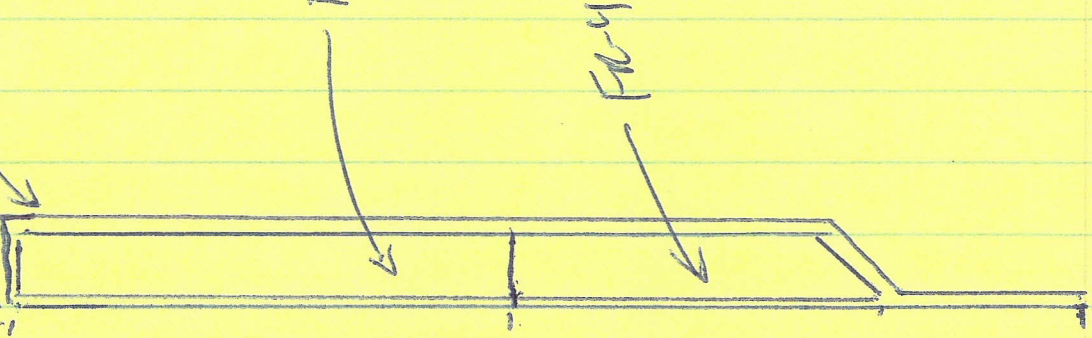
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Foam Core

FR-4

SECTION A-A

1' X 1'

CARBON FIBRE 3 PLY Thick

± 45

G-202 STABILIZER REINFORCEMENT INSTALLATION

REVISION LIST					
N°	Rév.	Date	Subject	Author	Verified by
1000908	1A	18/03/02	Moved attach fittings to aft side of banjo bulkhead	Chris Bailey	D. Roland
Signatures, for revision n° 1A					



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1 INTRODUCTION

This document will outline the procedure for installing the stabilizer attach reinforcement on the G-202 aircraft as defined in document 1000906 – Definition – G-202 Stabilizer Reinforcement. This modification is recommended on all G-202 aircraft and will serve to reinforce the connection between the stabilizer and the fuselage (see figures 1 and 2).

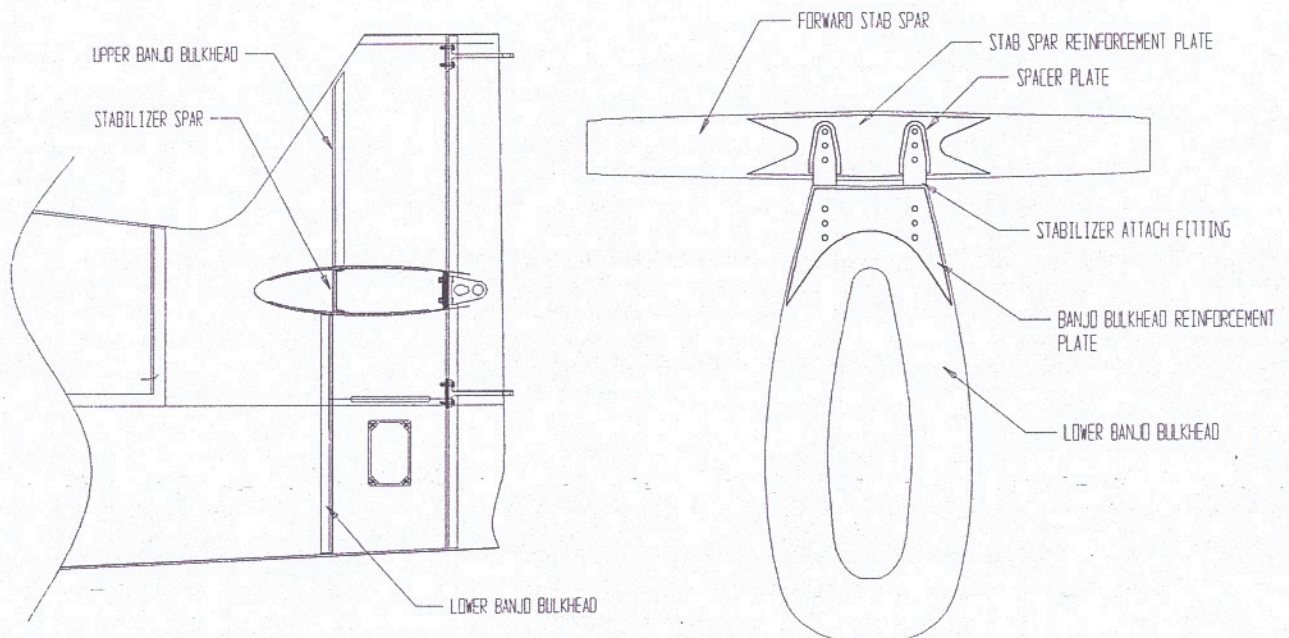


Figure 1 – Fuselage side view showing position of affected components, left, and front view showing installation after carrying out this modification, right.

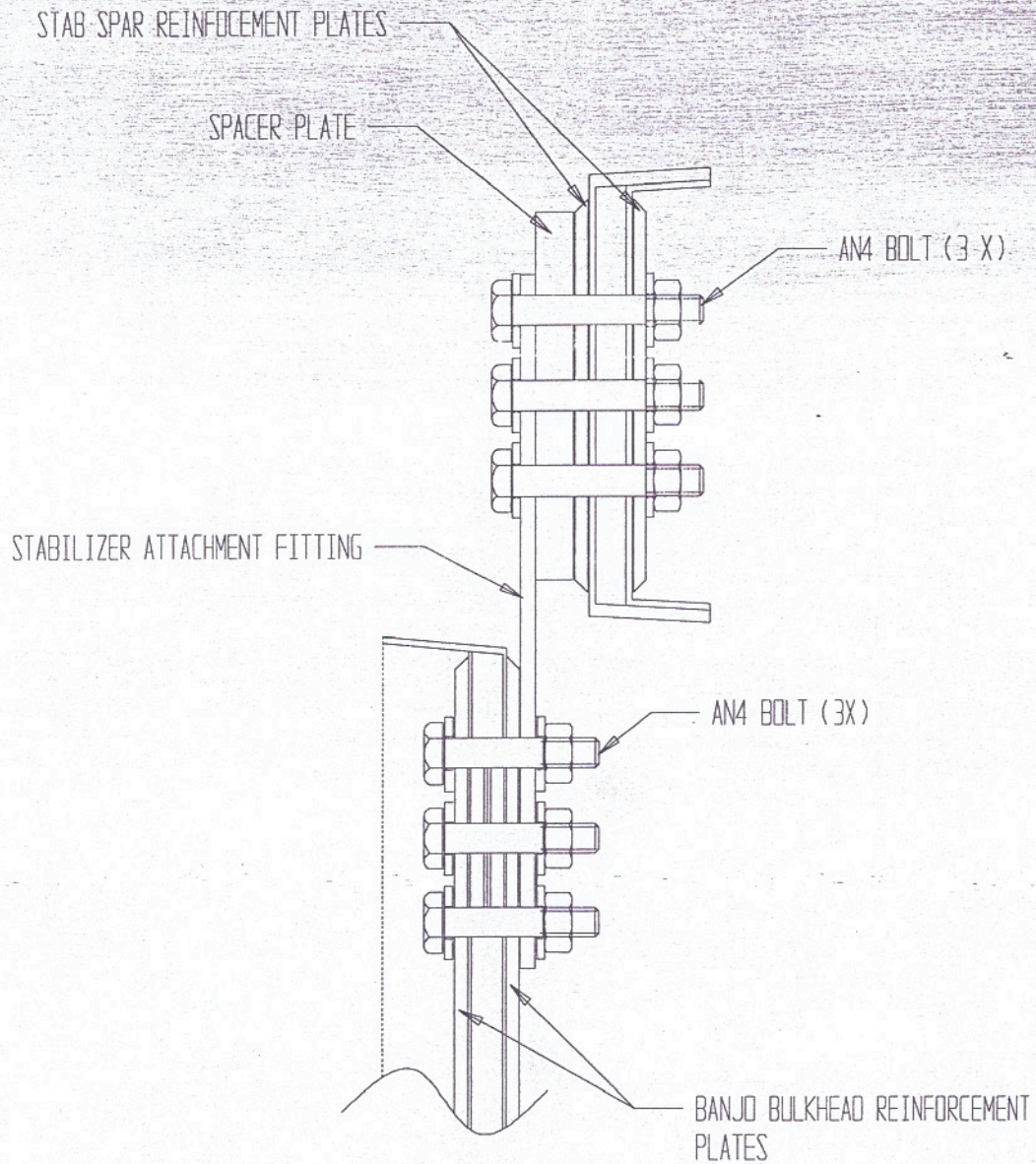


Figure 2 – Cross section of stabilizer spar and lower banjo bulkhead showing installed components



2 MATERIALS AND EQUIPMENT

2 MATERIALS AND EQUIPMENT

The following materials will be required for effecting the installation of the stabilizer reinforcement on the G-202:

Item	Qty.	Specification
Stabilizer Skin Patch	1	5515-0202011-00
Left Fin Skin	1	5535-9911083B00
Upper Banjo Bulkhead	1	5315-9909025-00
Stabilizer Attach Fitting	2	5514-9908096D00
Stabilizer Spar Reinforcement Plate	2	5515-0202006-00
Lower Banjo Reinforcement Plate	2	5535-0202007-00
Spacer Plate	2	5515-0202008-00
Bolt	6	AN4C-10A
Bolt	6	AN4C-13A*
Washer	24	AN960C-416
Nut	12	AN365-416
Structural Adhesive	1 pint	9430 or EA 9395 Hysol
7781 Fiberglass cloth		7781
Laminating Resin	1 pint	PTM&W PR 2520 Resin, PH 3652 Hardener
Microballoons	1 pint	N/A

*The length of this bolt may have to be adjusted for different aircraft

The following tools will be needed to affect the stabilizer reinforcement:

- Dremel tool or die grinder with disc cutter
- Sandpaper 80 – 240 grit
- Drill with 90 degree fitting and .25 inch bit
- Mill (for adjusting spacer plate)
- Scissors
- Squeegee
- Brush (for resin application)
- Polyethylene plastic sheet



3 PROCEDURE

3.1 Remove left fin skin

The first step is to remove the left fin skin along the outline shown in figure 3. Be very careful to damage neither the top fuselage, the upper stabilizer skin nor the vertical fin spar while performing this operation. Cutting into the upper banjo bulkhead is permitted as this part will be replaced. The simplest way to remove the skin is to cut a certain distance away from the bonded areas first. Then carefully grind away excess material to the border of the surrounding components. This procedure will leave strips of material bonded to the upper fuselage, the upper banjo, the fin tip rib and the vertical fin spar.

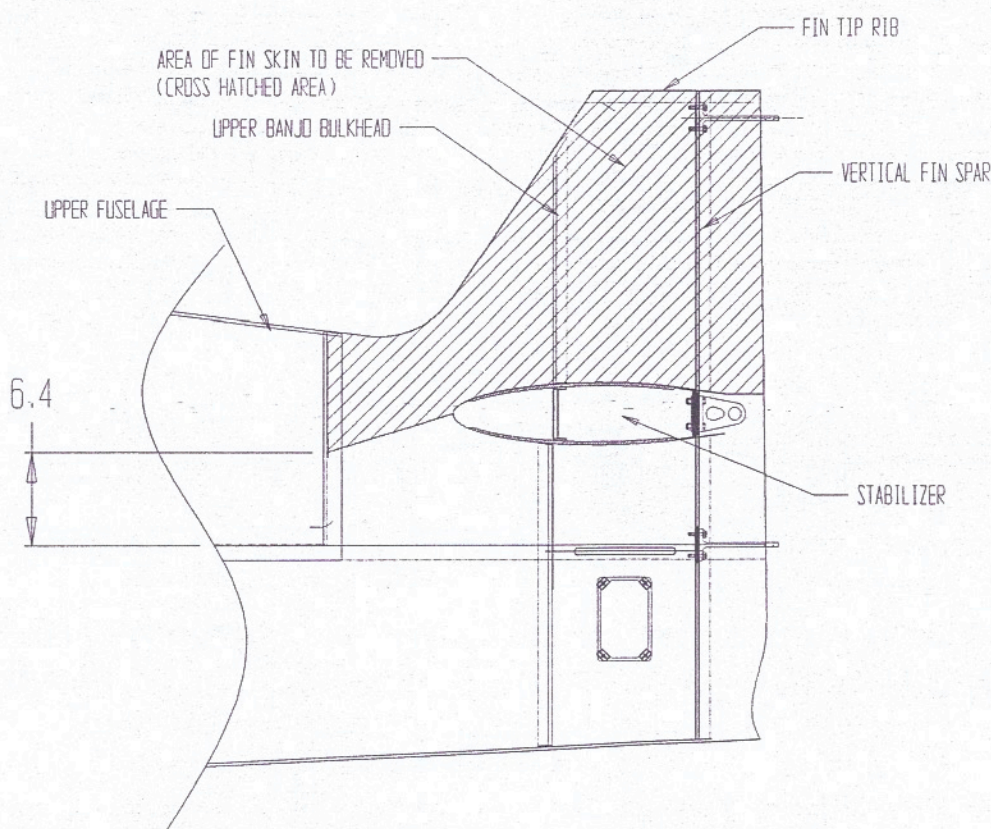


Figure 3 – Side view of vertical fin showing internal components and area of fin skin to be removed

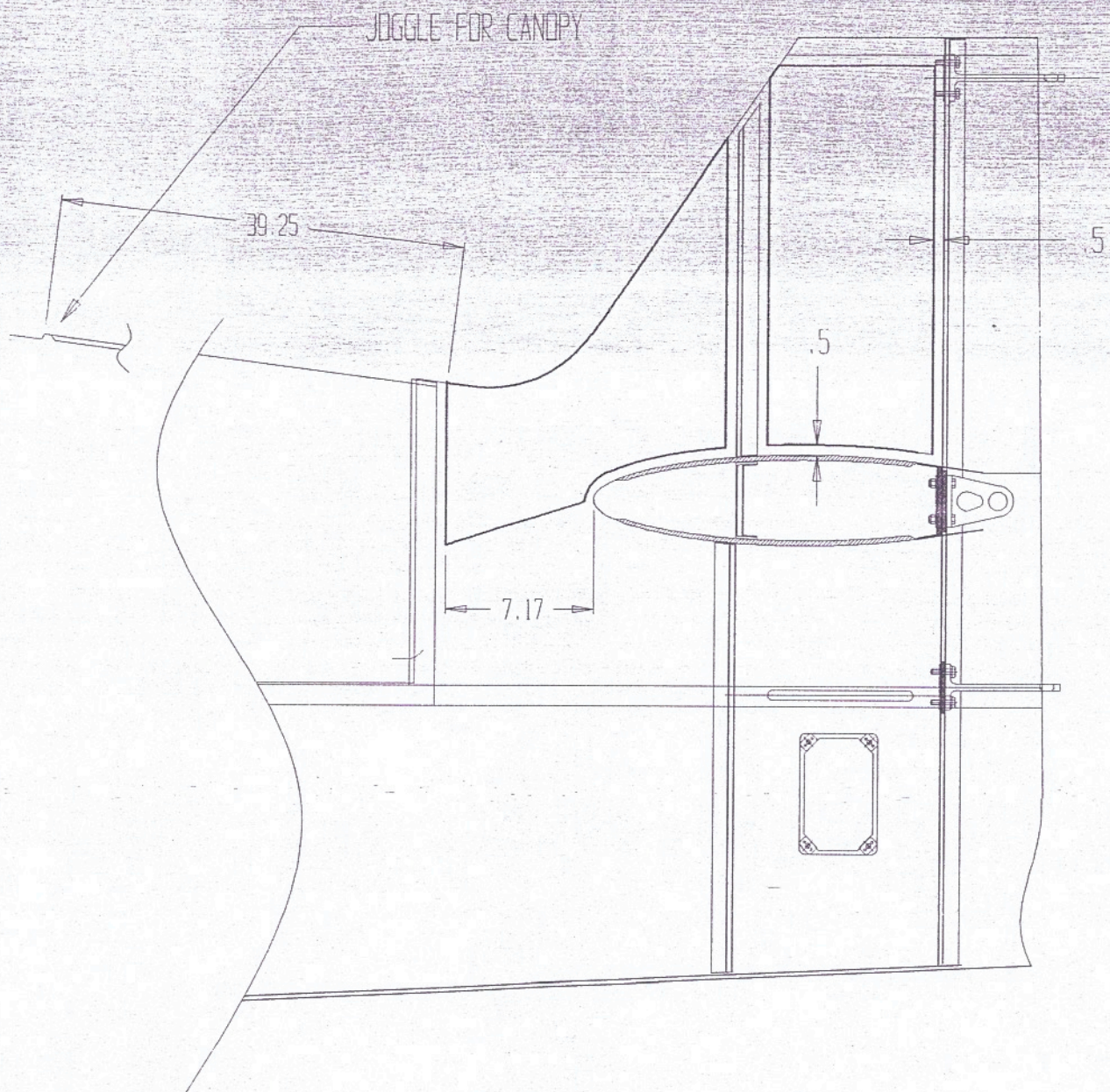
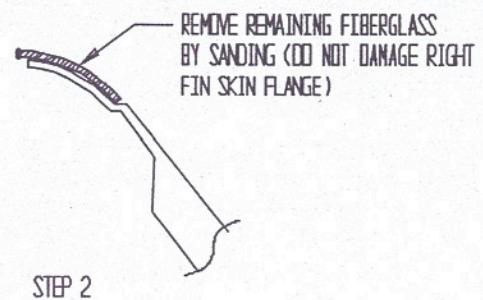
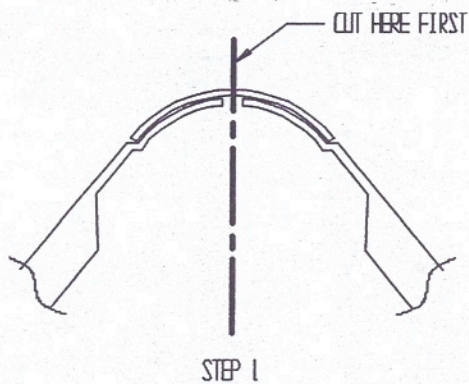
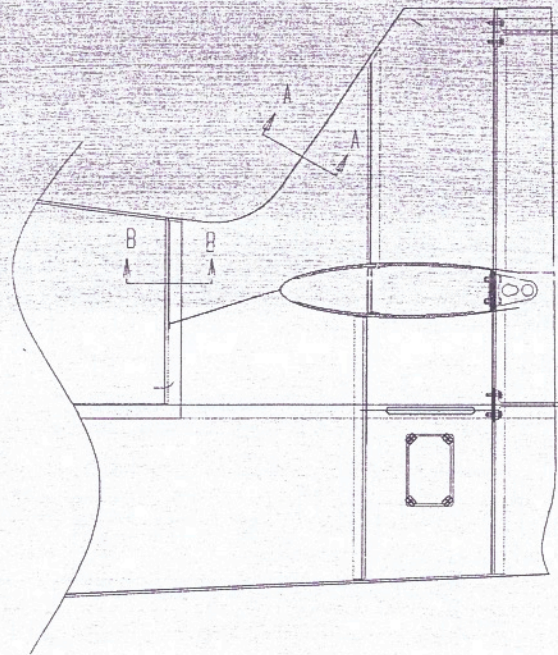


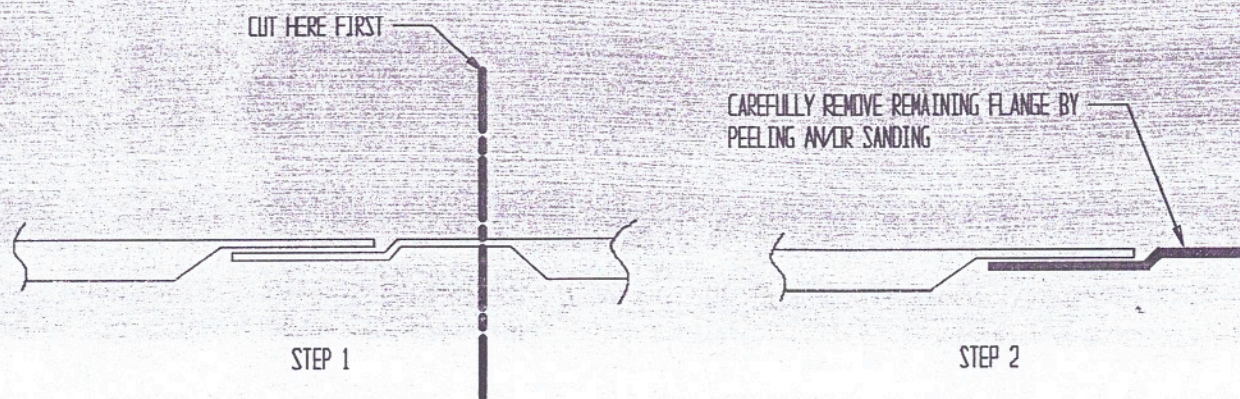
Figure 4 – Initial cut lines for cutting away the fin skin. Note that all cuts are made at least .5 inch away from critical components



SECTION A-A

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Figure 5 – Cross Section view of fin skin leading edge showing the two – step approach to removal of the fiberglass joining strip.



SECTION B-B

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Figure 6 – Cross section of the forward bond for the fin skin showing proper removal procedure

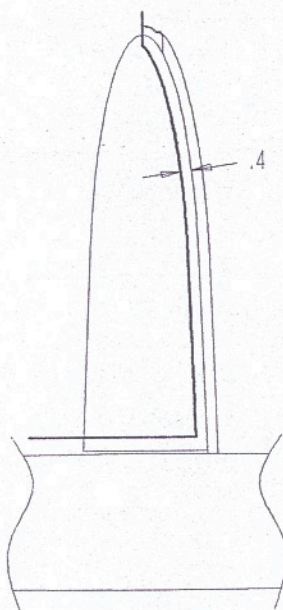
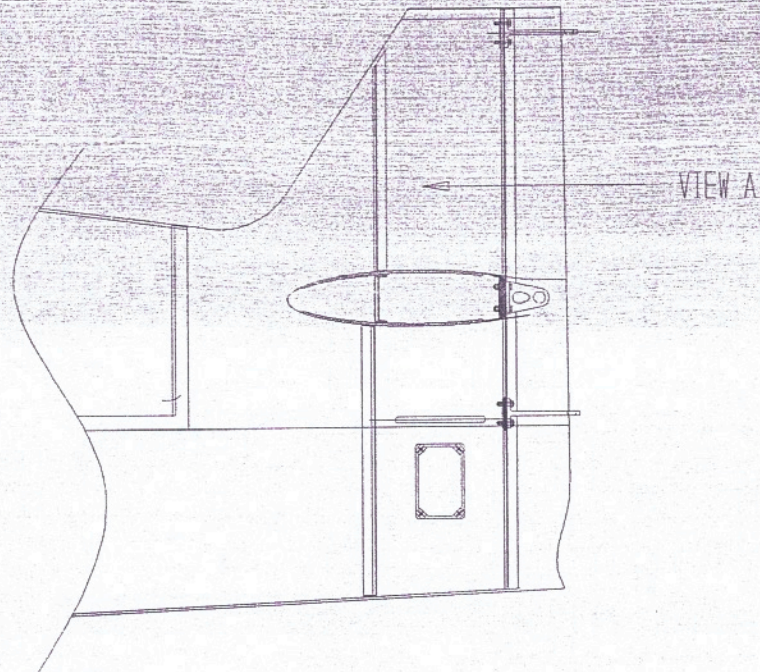
Remove the remaining material from the surfaces of the vertical fin spar, the upper horizontal stab skin, the right fin skin and the top fuselage (see figures 5 and 6). The remaining material should be carefully ground down until there is only the bonded flange remaining. This flange can then be peeled away by pulling the material up and away from the surface. Mild heat can be applied which may help separate the flanges with a hair dryer (do not use a heat gun). Alternatively, the remaining flanges can be sanded down to the base material. While sanding, be careful not to damage the underlying structure. The remaining material on the upper banjo bulkhead can be left in place as this part will be discarded.

3.2 Remove the upper banjo bulkhead

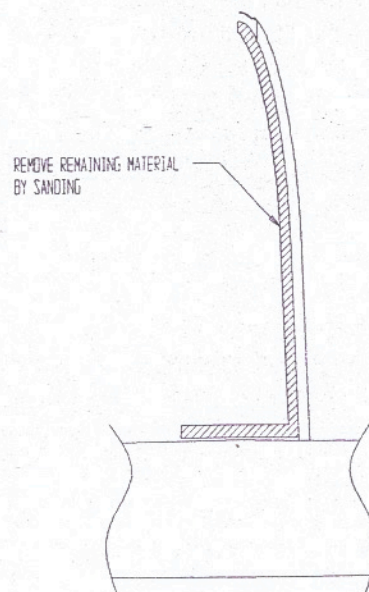
The upper banjo bulkhead will now be removed by cutting away the bulkhead near the flanges which mate to the right fin skin and top horizontal stabilizer skin (see figure 7). As with the fin skin, the first cut should be made far enough from the edge of the part to avoid the possibility of damaging the upper stab skin or the right fin skin. The remaining material can then be ground off down to the flange. The final step is to remove the flange by peeling. The removal of the flange may be facilitated with the use of heat from a hair dryer (do not use a heat gun).

3.3 Cut access hole in upper stabilizer skin

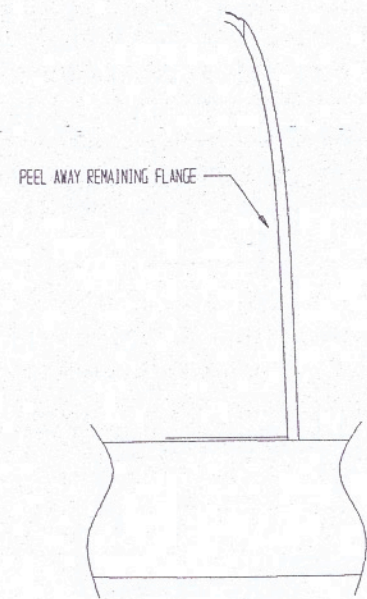
To gain access to the center section of the stabilizer spar, a hole will be cut in the top skin of the stabilizer. This hole is sized to allow installation of a structural patch. Follow the drawing shown in figure 8 to cut the hole in the stabilizer skin. The hole must be cut in two steps. First, two holes are cut forward and aft of the spar. The remaining strip of material on top of the spar is then removed using the procedure outlined previously for the left fin skin. Note that the hole is not centered on the stabilizer but rather is offset by .5 inch.



STEP 1



STEP 2



STEP 3

VIEW A



Figure 7 – View of upper banjo bulkhead showing procedure for removal of part

3.4 Cut holes in the lower stabilizer skin

Mark the position of the holes for the attach fittings on the lower surface of the stabilizer skin as shown in figure 8. Cut the holes through the skin working from the top of the stabilizer. Note that the aft edge of the holes must align with the forward face of the lower banjo bulkhead. To accomplish this, begin by cutting a slot at the forward edge of the hole and work the hole back using a file until it is flush with the face of the lower banjo bulkhead.

3.5 Drill holes in the stabilizer spar

Find the center of the stabilizer spar and make a reference mark. Trial fit the stab spar reinforcement plates (part number 5515-0202006-00) against the fore and aft surfaces of the stab spar. Sand the borders of the spar plates as necessary for a proper fit. Install the forward spar plate and center it carefully on the stab spar using the mark made earlier as a guide. Once centered, clamp the forward spar plate in place using c-clamps. Use a 90 degree drill to drill the six .25 inch holes through the stab spar using the holes in the reinforcement plate as a guide. Use one of the spacer plates (part number 5515-0202008-00) pressed up against the spar to keep the drill perpendicular to the surface of the spar while drilling. Trial fit the forward and aft reinforcement plates with the attachment bolts. If the holes in the aft spar reinforcement plate do not line up properly with those in on the aft face of the stab spar, the holes on the aft face of the stab spar may be enlarged slightly (Enlarge only the holes on the aft side of the stab spar).

3.6 Install the spar reinforcement plates

Prepare the bond surfaces of the stab spar and the spar reinforcement plates for bonding. Check for proper orientation of the reinforcement plates (see figure 9). The bond surfaces should be cleaned with acetone, sanded with 80 grit sandpaper, and cleaned once more with acetone. Mix and apply adhesive to both the surfaces of the reinforcement plates and the stab spar. Slide each into position and place waxed bolts into the holes to properly align the plates. Use blocks and c-clamps or the bolts themselves to apply clamping pressure to the plates remove excess adhesive and allow to cure.



3 PROCEDURE

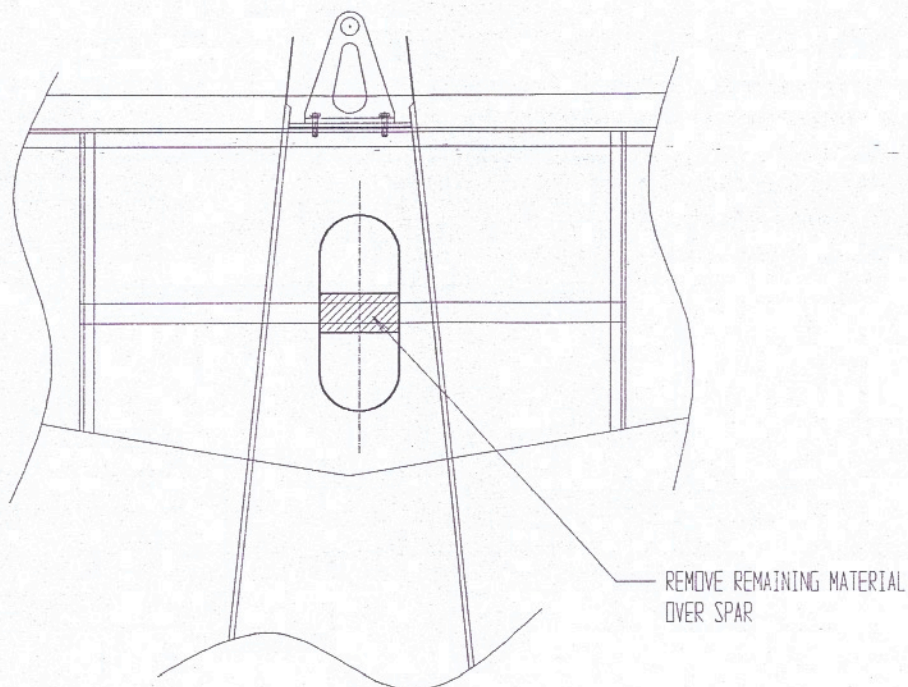
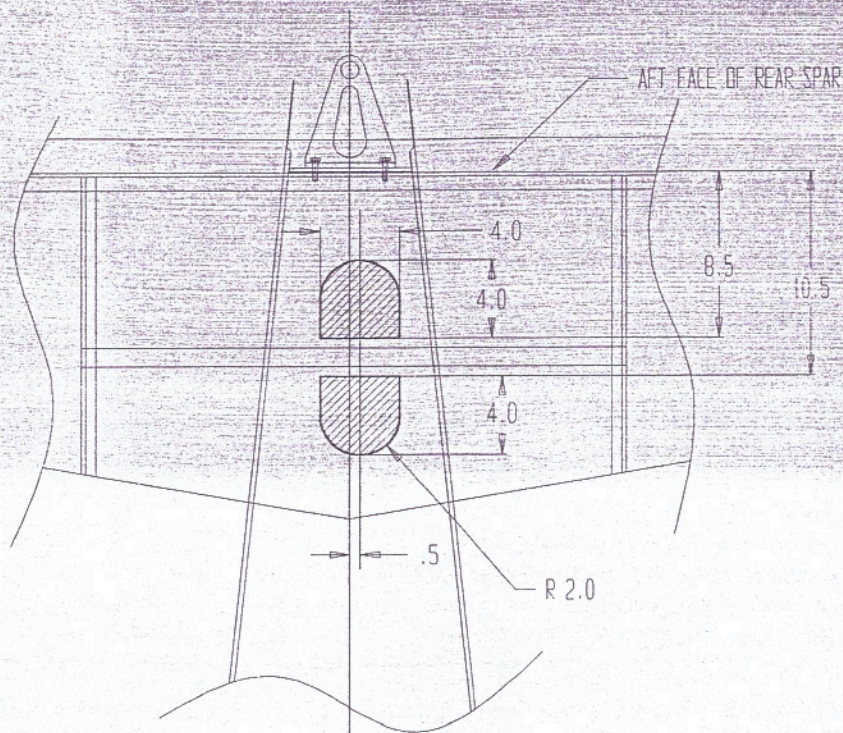


Figure 8 – View of the initial cut-out in the upper stab skin, top and the final cut-out after removal of remaining material over the stab spar.



3.7 Install the lower banjo bulkhead reinforcement plates

Trial fit the lower banjo reinforcement plates (part number 5535-0202007-00) against the aft and forward faces of the lower banjo bulkhead. Adjust the parts as necessary for a perfect fit. Prepare the plates and the surfaces of the lower banjo for bonding. Mix and apply adhesive to all mating surfaces. Clamp the plates against the lower banjo using clamps and wood blocks. Clean up all excess adhesive and allow to cure.

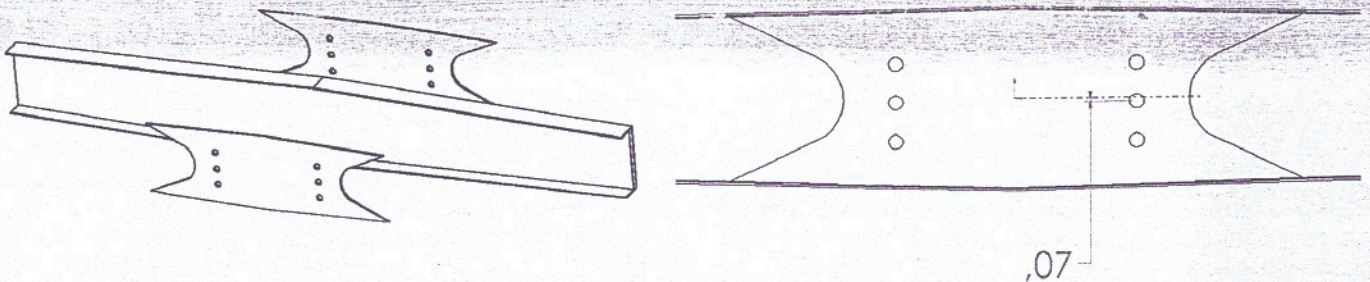


Figure 9 – Rear view of stabilizer spar showing installation of spar plates, left, and front view of plate showing proper offset for holes

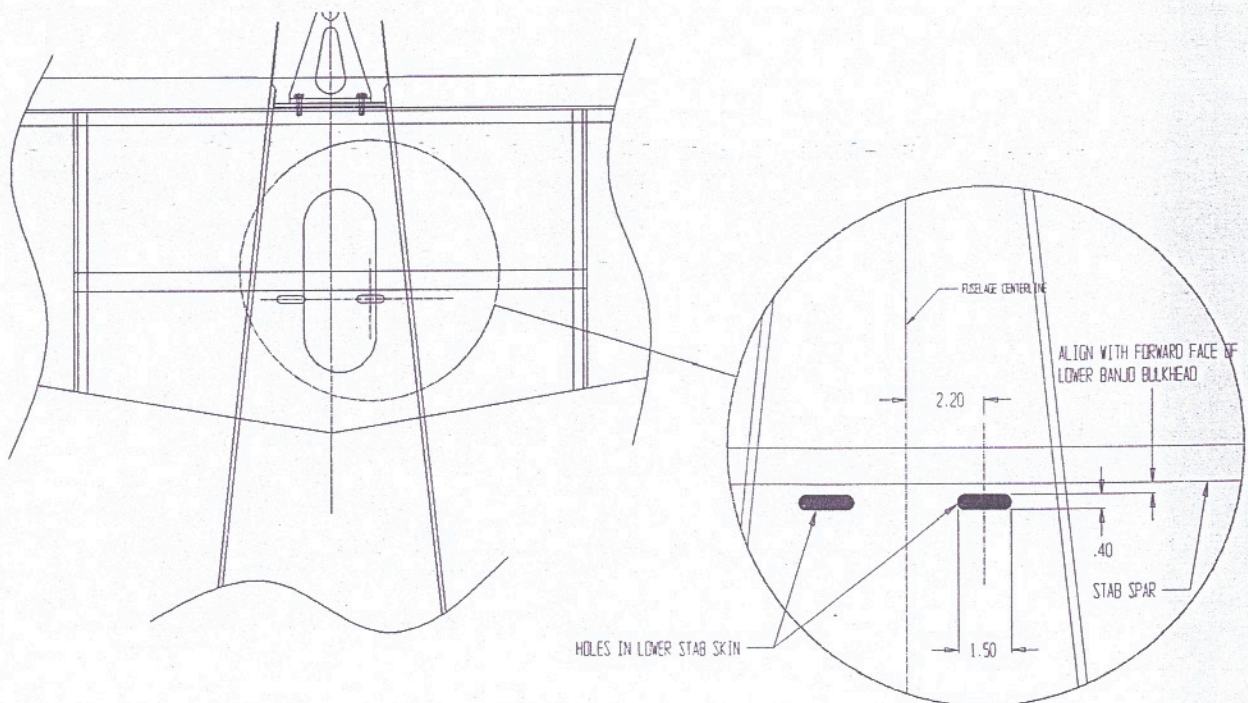


Figure 10 – Top view of stabilizer showing position of holes in lower stabilizer skin for the attachment fittings.



3 PROCEDURE

3.8 Modify the spacer plates

The spacer plates (part number 5515-0202008-00, see figure 11 below) must now be custom adjusted to span the distance between the forward face of the stab spar and the aft face of the attachment fitting when mounted to the lower banjo bulkhead. To accomplish this, mount the two attach fittings (part number 5514-9908096D00) with clamps to the aft face of the lower banjo bulkhead (the surface of the reinforcement plates) so that they pass through the holes in the lower stab skin. Machine the surface of each spacer plate so that it can be slid into the space between the forward face of the stab spar and the aft face of the attach fittings. This is best accomplished with the use of a mill but small adjustments can be made by sanding. The left and right spacer plates may not be the same thickness. Make certain each is marked so that they will not be confused while bonding later.

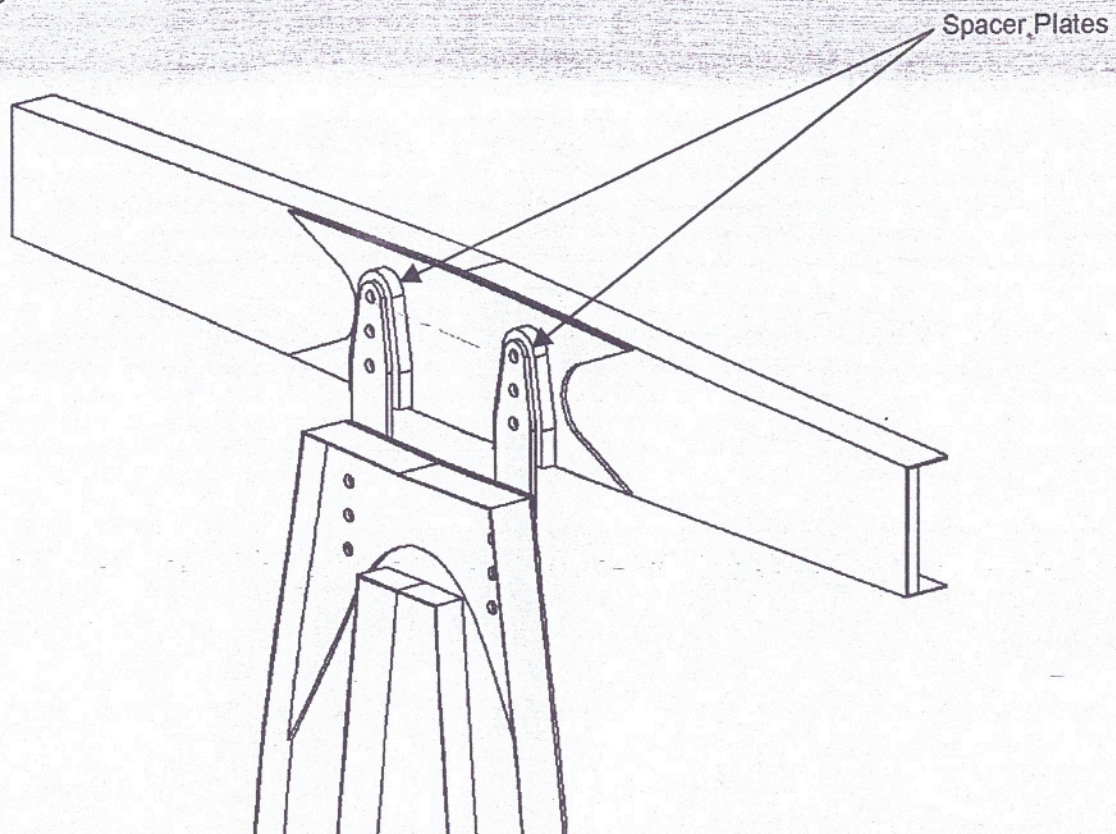


Figure 11 – Adjust the spacer plates to allow alignment of attach fittings with the aft face of the lower banjo bulkhead

3.9 Install the spacer plates

Prepare the forward face of the spar reinforcement plate and the spacer plates for bonding. Mix and apply adhesive to the surfaces of all parts and bond in place. Clamp the spacer plates in position using waxed .25 inch bolts.



3 PROCEDURE

3.10 Drill holes the lower banjo bulkhead

The lower banjo bulkhead will now be drilled to accept the bolts from the attach fitting. Mount the attach fittings to the stabilizer spar using $\frac{1}{4}$ inch bolts. Working from the opening in front of the stabilizer, drill .25 inch holes in the lower banjo using the holes in the stabilizer attach fittings as a guide. Be careful to keep the drill bit perpendicular to the surface of the banjo while drilling. Do not use excessive pressure while drilling as the aft banjo reinforcement plate may be de-bonded.

3.11 Install the mounting hardware

Mount the attach fittings with the AN4 stainless bolts, washers and nuts as specified on the materials list. Torque the nuts to no more than 50 lb in to prevent damage to the core material.

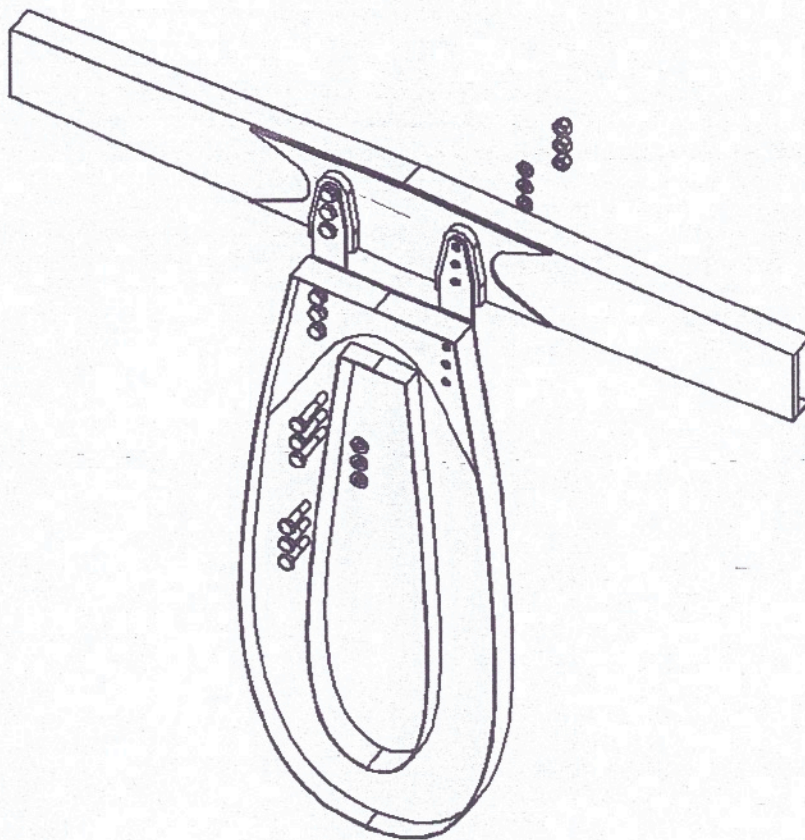


Figure 12 – Installation of attach fittings and hardware



3 PROCEDURE

3.12 Install the upper stabilizer skin patch

3.12.1 Prepare the edges of the stabilizer skin hole.

Remove the outer skin and core material to a distance of .5 inch surrounding the cutout in the upper stabilizer skin (see figure 13). Be careful not to damage the inside skin while performing this operation. One method for accomplishing this is to cut through just the outer skin using a small disk cutter (dremel tool). Then peel away the carbon strip from the core material and carefully sand the core material down to the inside plies.

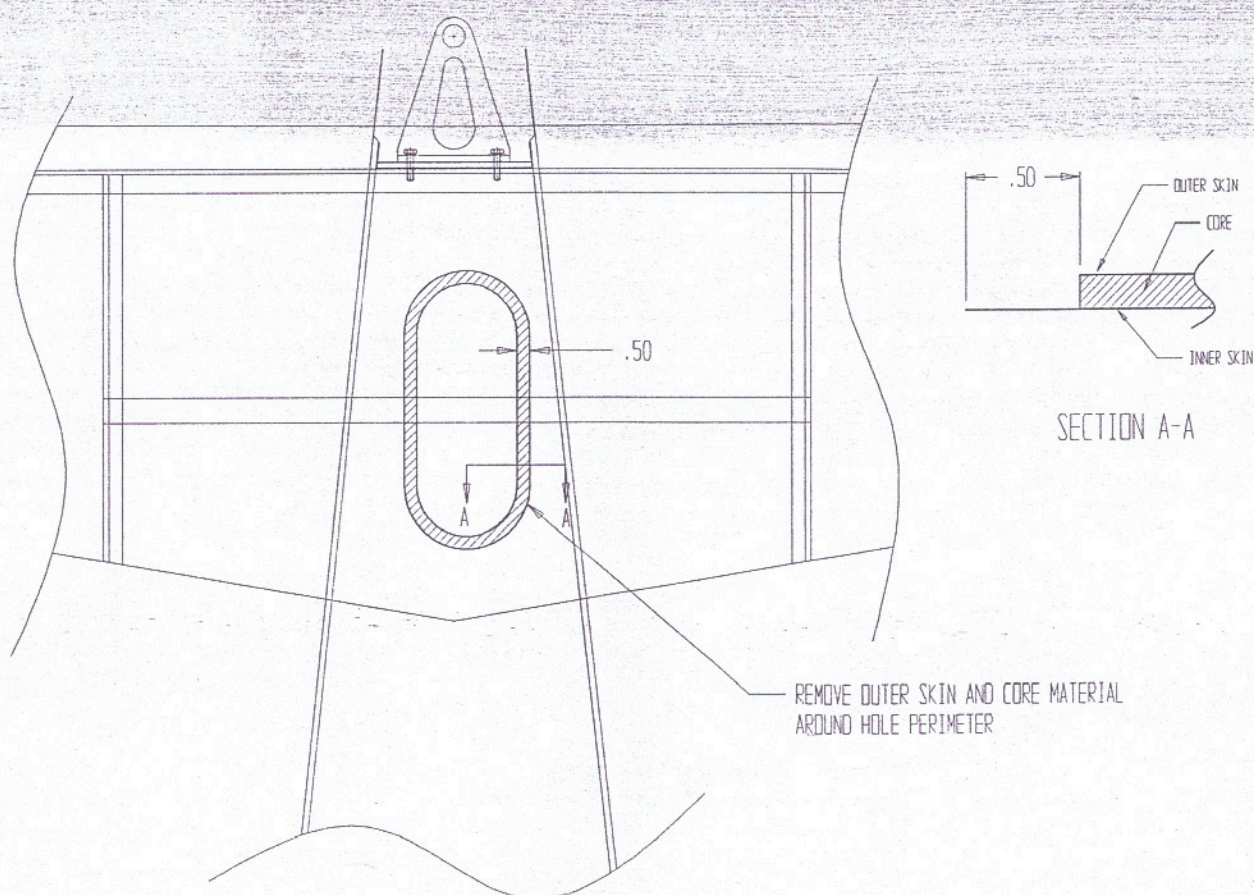


Figure 13 – Area to cut out for stab skin patch, left, and patch edge preparation, right.



3 PROCEDURE

3.12.2 Prepare the skin patch

Cut the stabilizer skin patch to the dimensions shown in figure 14. Remove the core material and inner skin to .5 inch around the perimeter of the patch. This procedure is the same as that used for the hole in the stab skin with the exception that the inner skin is removed instead of the outer skin.

3.13 Install the stabilizer skin patch

Trial fit the stab skin patch over the cutout in the stabilizer skin. The fit should match that shown in figure 15. Once the proper fit is obtained, prepare the bond surfaces of both parts for bonding. Mix and apply the Hysol structural adhesive to all mating surfaces including the top of the stabilizer spar. Fill the exposed core material with adhesive. Press the parts together and use weights to apply clamping pressure to the patch. Allow to cure completely.

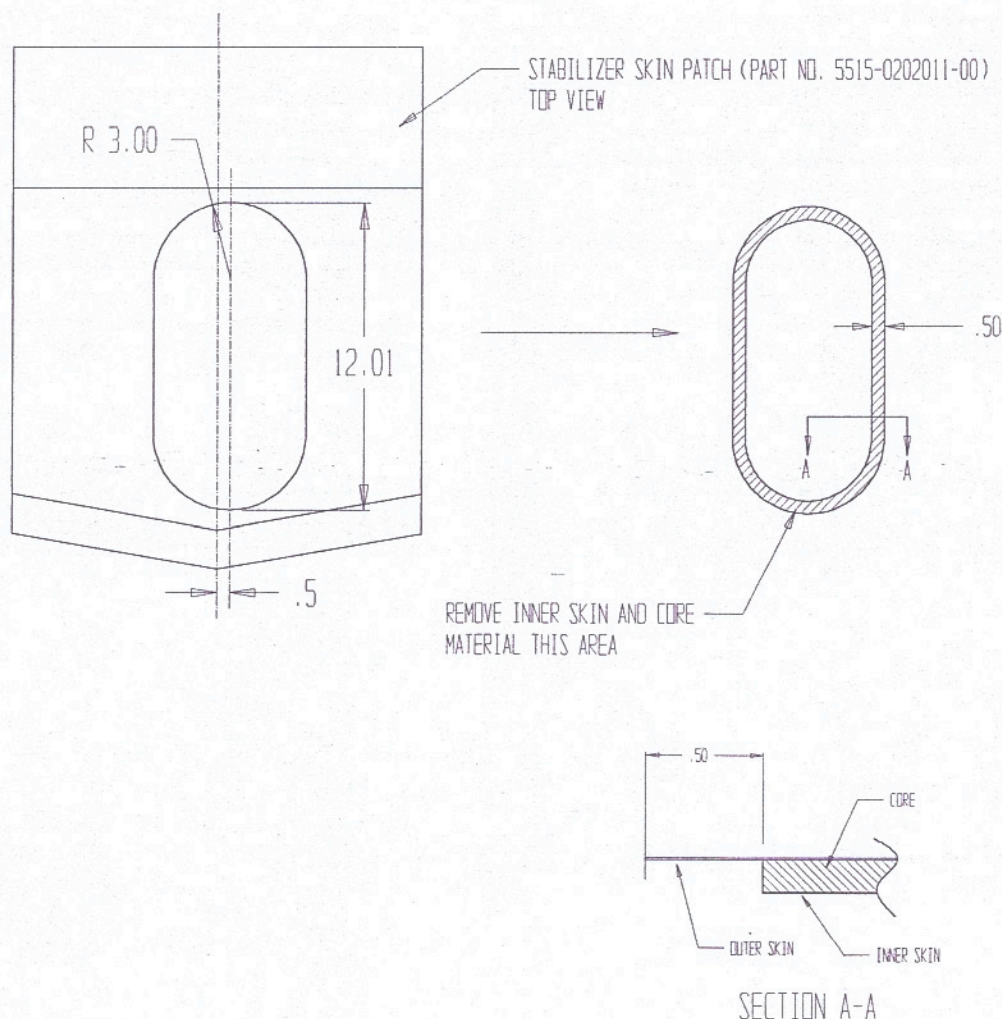


Figure 14 – Detail of stabilizer skin patch preparation



3 PROCEDURE

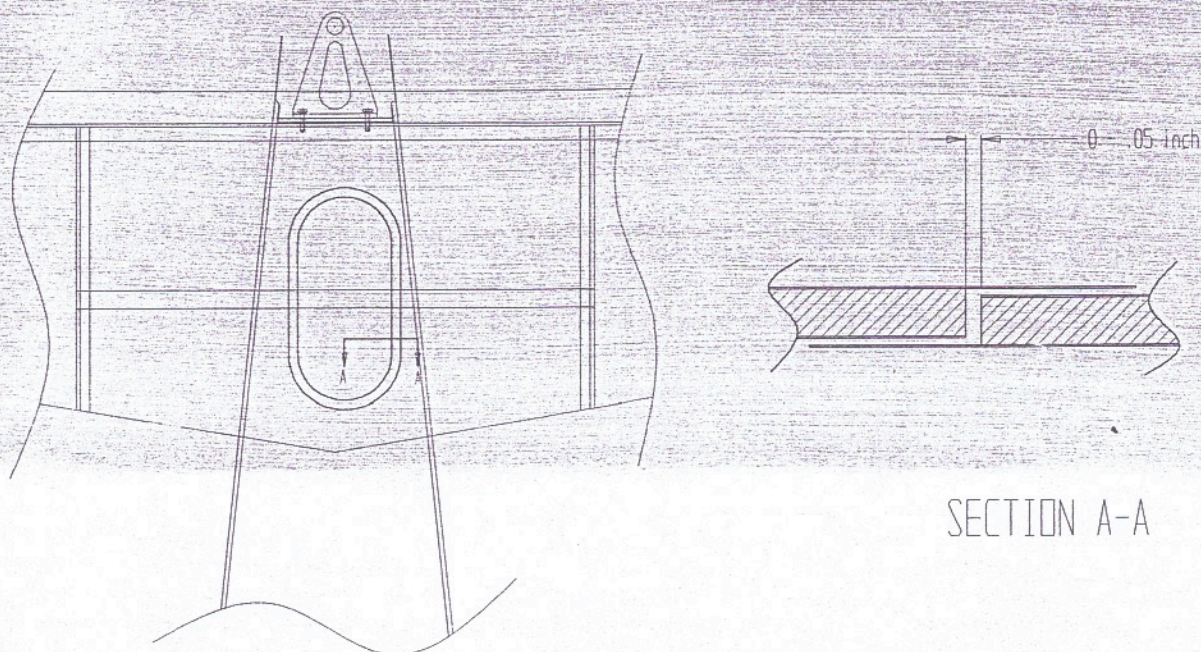


Figure 15 – Stabilizer skin patch installed in stabilizer skin cutout

3.14 Prepare the left fin skin for installation

Cut the lower edge of the fin skin so that it fits around the upper surface of the stabilizer skin. Make an approximate cut and then sand the edge precisely to shape. The lower edge of the fin skin which mates with the cut line of the previous fin skin will receive a staggered joint similar to what was done for the upper stabilizer skin patch. Refer to figure 16 to cut the staggered joint into mating edges of both the new and the existing fin skins.

3.15 Replace upper banjo bulkhead

Trial fit the replacement upper banjo bulkhead (part No. 5315-9909025-00) in position against the top of the stabilizer and the right fin skin. Find its approximate position above the forward stabilizer spar and secure with some tape. Mount the replacement left fin skin and check for proper fit of the upper banjo bulkhead. The bulkhead should be kept vertical and be mounted as far forward as possible without preventing closure of the left fin skin. Once the optimal position is found mark the outline of the upper banjo on the right fin skin using a felt tip marker. Prepare the mating surfaces of the bulkhead, the upper stabilizer skin and the right fin skin for bonding. Mix and apply the Hysol structural adhesive to all mating surfaces. Install the bulkhead and clamp it tightly against the right fin skin. Trial fit the replacement left fin skin one more time before the adhesive cures. Allow the adhesive to cure completely before continuing.



3 PROCEDURE

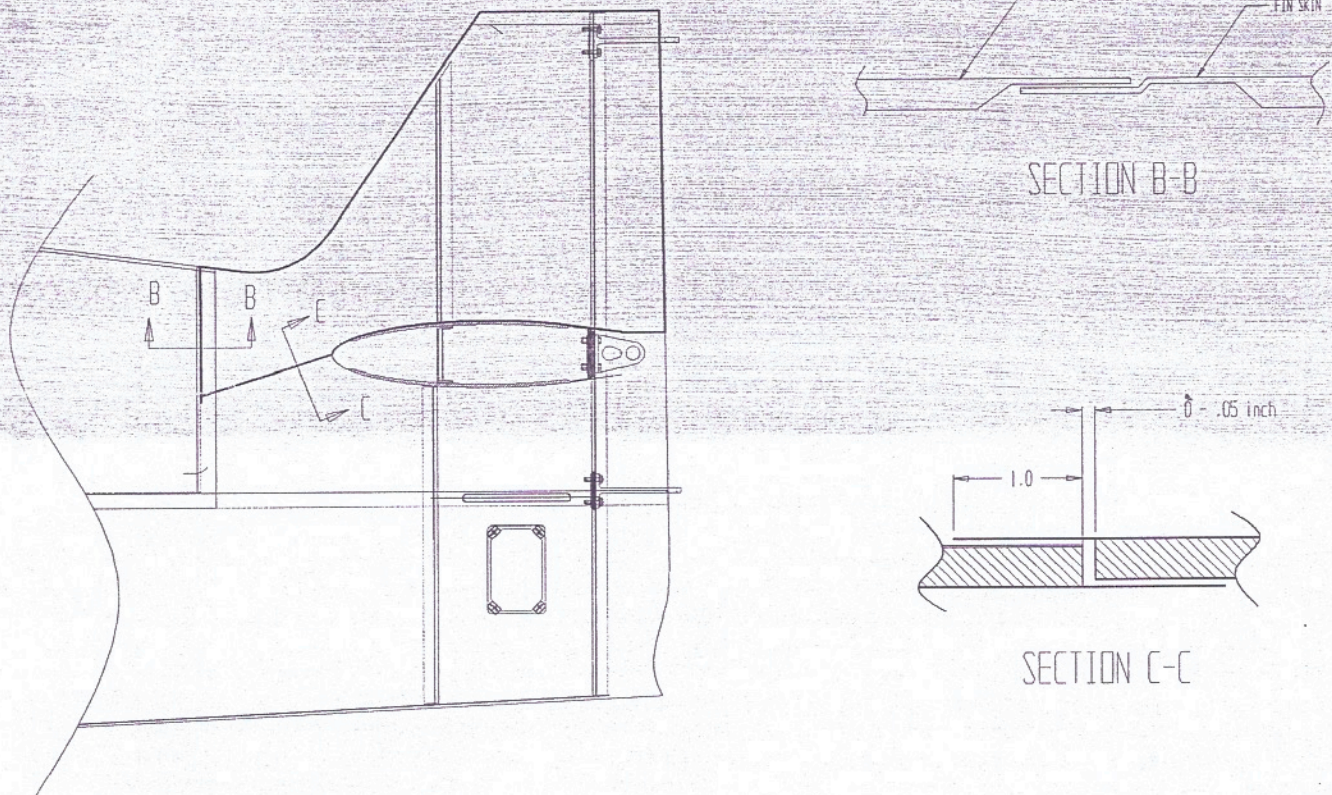


Figure 16 – Detail of joints for left fin skin

3.16 Install the left fin skin

Prepare edges of the fin skin where it mates with the upper fuselage, upper banjo bulkhead, fin tip rib, vertical fin rib and lower portion of the old fin skin for bonding. All surfaces should be thoroughly sanded and cleaned with acetone. Apply adhesive to all mating surfaces of the components and press the fin skin in place. Use tape to secure the leading edge and clamps along the vertical fin post and fin tip rib. Clean up any excess adhesive and allow the assembly to cure.

3.17 Install the fiberglass along the fin leading edge and stabilizer root joint

3.17.1 Prepare bond surfaces

Thoroughly prepare the joint areas of the leading edge of the fin skin and the junction of the fin skin and upper stabilizer skin for bonding (see figure 17)

3.17.2 Prepare the fiberglass strips

Cut out four rectangles 7781 fiberglass fabric to the dimensions shown in figure 16. Be certain to cut the fiberglass at 45 degrees to the direction of the fibers. Wet out these fiberglass layers one by one on a polyethylene plastic sheet. Place a second sheet of plastic over the wet fiberglass lay up



3 PROCEDURE

and trace out the two strips as required for the leading edge of the fin and the stabilizer root joint (see figure 17). Use a pair of scissors to cut out the strips precisely along the marked lines.

3.17.3 Install the fiberglass strip along the fin leading edge

Remove one layer of plastic from the fiberglass strip for the fin leading edge and carefully press it into position along the joint. The strip should fall into the joggle along the leading edge. Once in position, remove the second layer of plastic from the top of the strip and finish installing the strip, conforming it to the shape of the joggle. Cut the strip to the proper length after installation. Remove all air bubbles and excess resin from the lay up and let cure.

3.17.4 Install the fiberglass strip along the stabilizer root joint

Mix some microballoons and resin and use this mixture to create a small radius in the joint between the vertical fin skin and the stabilizer (see section B-B in figure 18). Remove one layer of plastic from the second fiberglass strip. Carefully press the strip into position along the junction of the stabilizer and the left fin skin. Once in position, remove the second (outer) plastic sheet and finish installing the strip, conforming it to the shape of the junction. Cut the strip to the proper length after installation. Remove all air bubbles and excess resin from the lay up and let cure.

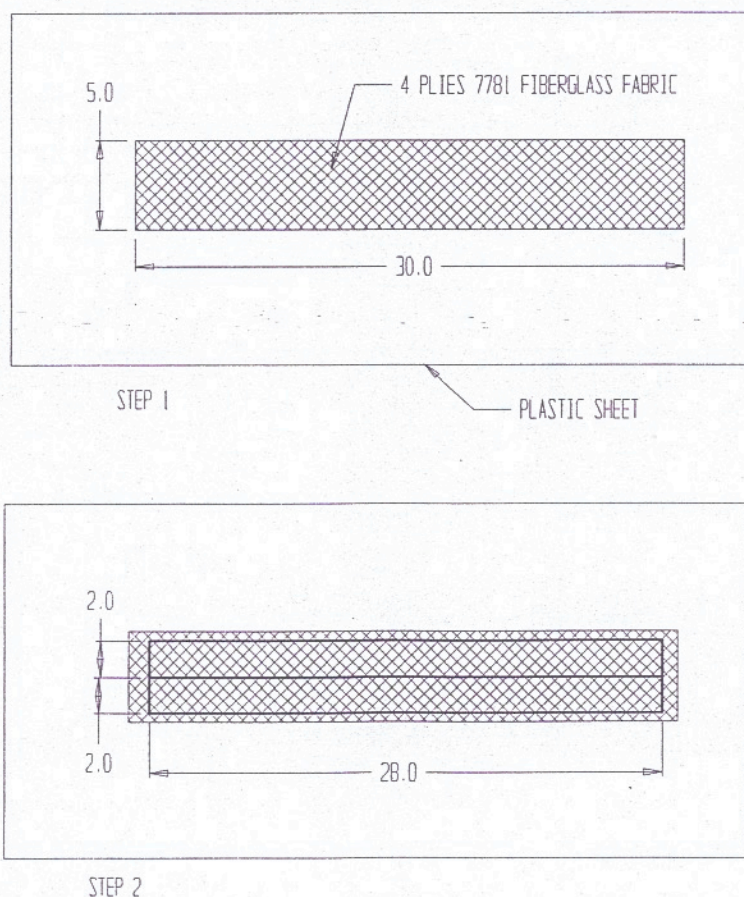


Figure 17 – Preparation of the fiberglass strips includes wetting out four plies of fabric on plastic sheet, top, and then covering the lay-up with a second plastic sheet and cutting out the two strips, bottom.



3 PROCEDURE

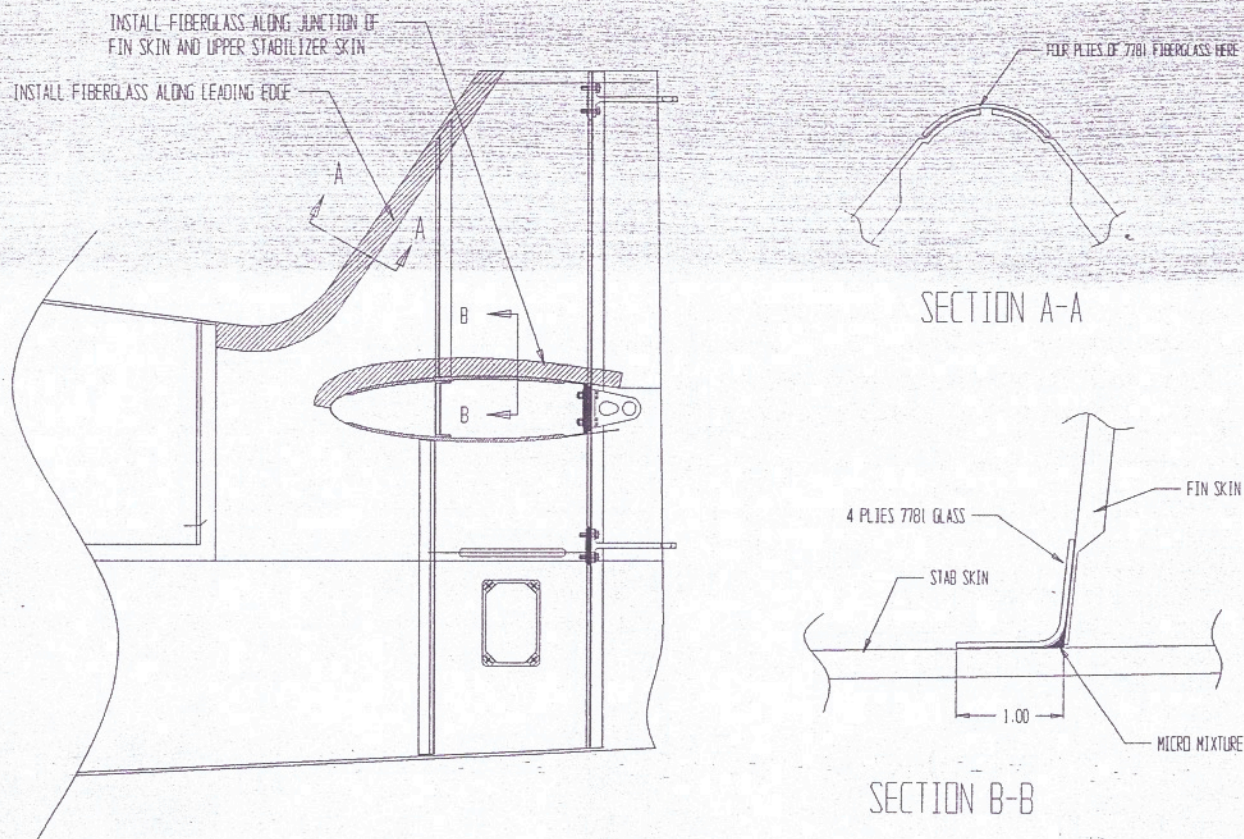


Figure 18 – View of areas receiving fiberglass strips

3.18 Finish all joints with microballoons

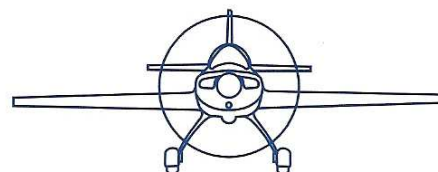
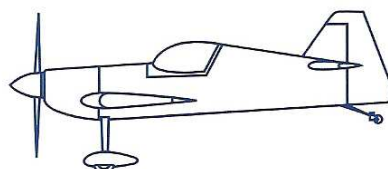
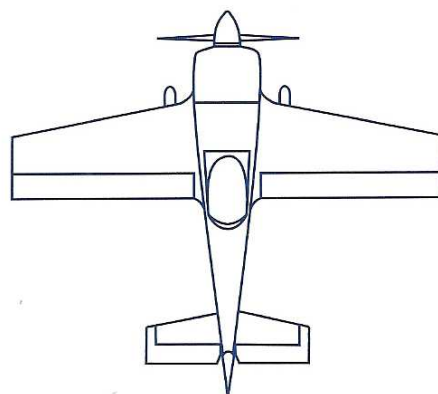
Use a mixture of microballoons and laminating resin to fill the joints of the new fin skin to match the surrounding contour. Apply slightly more than is necessary and sand down to the surrounding contour after cure. Repeat this process as necessary to get a smooth finish.

GILES G-200 AEROBATIC AIRCRAFT

SPECIFICATIONS

Wingspan (ft)	20
Length (ft)	18
Height (in)	64
Empty weight (lb)	750
Gross weight (lb)	1300
Wing chord at tip (in)	33
Wing chord at root (in)	57
Elevator deflection (degrees)	+/-30
Rudder deflection (degrees)	+/-30
Aileron deflection (degrees)	+/-22
Power (hp)	150 to 230
Wing area (sq ft)	75
Wing loading (lb/sq ft) <i>See note #1</i>	17.3
Span loading (lb/ft) <i>See note #1</i>	65
Stall speed (kts) <i>See note #1</i>	57
Max speed (kts)	220
Max to Min speed ratio	3.86
Vertical penetration, (ft), Vne, <i>See note #1</i>	2950
Cockpit width (in)	23 at shoulders
Pilot size range	5'2" to 6'4"
Pilot weight range (lb)	100 to 245
Seat layback angle (degrees)	45
Rudder pedal adjustment (in)	6
Wheel track (in)	60
Wheelbase (in)	151
Wheels, main	5.00 x 5
Tailwheel (in)	4
Fuel capacity (US gal)	18
with optional wing tanks (US gal)	48

Note # 1: At gross weight of 1300 lbs.



GILES G-200 S.N.11 Vittorio Primultini
Mauro Di Biaggio