URGENT

***TB 1-1520-238-30-20**

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

IGB DIFFUSER REPAIR PROCEDURES FOR ALL AH-64 SERIES AIRCRAFT

Headquarters, Department of the Army, Washington, D.C.

10 SEPTEMBER 2004

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this publication. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to: Commander, US Army Aviation and Missile Command, ATTN: AMSAM-MMC-MA-NP, Redstone Arsenal, AL 35898-5230. You may also submit your recommended changes by E-Mail directly to 2028@redstone.army.mil or by fax (256) 842-6546/DSN 788-6546. A reply will be furnished directly to you. Instruction for sending an electronic 2028 may be found at the back of this publication.

NOTE

THIS PUBLICATION IS EFFECTIVE UNTIL RESCINDED OR SUPERSEDED.

1. PRIORITY CLASSIFICATION. ROUTINE.

1.1. Aircraft in Use. Normal. Upon receipt of this Technical Bulletin (TB), make the following entry on the DA Form 2408−13−1. Enter a Red Horizontal Dash //−−// with the following statement: “Inspection of all AH−64 aircraft for deficiencies of the IGB Diffuser and/or Tailboom Area underneath the diffuser IAW paragraph 13 due on or before the next 125−hour inspection.” The red dash may be cleared when inspections in paragraph 13 are complete. Commanders unable to comply with the requirements of this TB within the time frame specified will upgrade the affected aircraft status symbol to a red “X“.

1.2. Aircraft in Depot or Contractor Facilities. Inspect DD 250 aircraft prior to those aircraft departing for ferry to final destination.

1.3. Aircraft Undergoing Maintenance. Same as paragraph 1.1.

1.4. Aircraft in Transit. Same as paragraph 1.1.

1.5. Maintenance Trainers (Category A, B, and Others). Same as paragraph 1.1.

1.6. Spares. Not applicable.

1.7. Components in Stock. N/A.

2. TASK INSPECTION SUSPENSE DATE. Not Applicable.

3. REPORTING COMPLIANCE SUSPENSE DATE. Not Applicable.

*This TB supersedes TB 1-1520-238-30-20 datad 28 June 2004.

4. SUMMARY.

4.1. There are reports of chafing/contact between the Intermediate Gear Box (IGB) Diffuser P/N 7-511332020-1 and the upper surface of the tailboom skin. This condition may exist on all AH-64 D-Model and ECP 1315 A-Model helicopters. Additionally, there have been reports of cracking developing common to the upper leg or around the cutout for the control rod. Failures of the IGB fairing rubber strips have also been reported from fielded D-Model or ECP 1315 A-Models.

5. PURPOSE.

5.1. This Technical Bulletin (TB) provides procedures for modifying the P/N 7-511332020-1 IGB Diffuser, adding additional clearance and fabrication of a gusset that will attach to the upper support leg. It also contains repair procedures for the tailboom if a chafing condition is present. Instructions are provided for modifying the IGB Fairing from an A-model (basic) configuration to a D-model, or ECP 1315 A-model configuration if necessary. It also provides procedures to modify an IGB Fairing (either D-model or ECP 1315 configuration) to improve the life of the fairing.

6. END ITEMS AFFECTED. All Army AH-64 A/D Apache aircraft.

7. ASSEMBLIES COMPONENTS AFFECTED:

Nomenclature	Part Number	National Stock Number
Tailboom Assembly A-model	7-311114000	NSN unavailable
Tailboom Assembly A-model (ECP 1315)	7-311114000-601	NSN unavailable
Tailboom Assembly D-model	7-311114000-601	NSN unavailable
Tailboom Assembly D-model	7-311114000-605	NSN unavailable

8. PARTS AFFECTED: This listing encompasses US Army AH-64A/D components.

Nomenclature	Part Number	National Stock Number
IGB Diffuser A-model	7-311332020	1560-01-171-0329
IGB Diffuser A-model (ECP 1315)	7-511332020-1	1560-01-475-9831
IGB Diffuser D-model	7-511332020-1	1560-01-475-9831
IGB Fairing LHS	7-311122620-3	NSN unavailable
IGB Fairing RHS	7-311122620-5	NSN unavailable
IGB Fairing, LHS, A-model	7-311122620-47	NSN not applicable
IGB Fairing, RHS, A-model	7-311122620-48	NSN not applicable

9. APPLICATION:

9.1. Category of maintenance: TBD.

9.2. Time required to inspect and rework.

9.2.1 Approximately: 0.5 hours using 1 person to inspect.

9.2.2 Approximately: Time to rework dependent on discrepancy noted.

10. PUBLICATIONS WHICH REQUIRE CHANGE AS A RESULT OF THIS TECHNICAL BULLETIN:

10.1. TM 1-1520-238-23 Aviation Unit and Intermediate Maintenance Manual for the AH-64A.

10.2. ETM 1-1520-238-23 Electronic Aviation Unit and Intermediate Maintenance Manual for the AH-64A.

10.3. IETM 1-1520-251-Longbow/Apache Interactive Electronic Aviation Unit and Intermediate Maintenance Manual for the AH-64D.

10.4. TM 1-1520-238-23P

11. SUPPLY/PARTS:

Nomenclature	Part Number	National Stock Number
Rubber Sheet	3M 8641 Tape (blk.)	9390-01-382-8344
Primer	3M Primer #86	6850-01-326-1607
Sealant	AMS-S-8802 CLB-2	8030-00-152-0013
Corrosion Resistant Coating	MIL-C-5541 CL 1A	8030-00-142-9272
Talcum Powder	Johnson &Johnson 3022	8510-00-817-0295
Ink, Permanent Marking	30001 BLACK	7520-00-312-6124
Rivets	NAS1097 (Size/dash# TBD during rework)	
Rivets	NAS 1738 Bx (Size TBD during rework)	
IGB Fairing Stiffener, LHS	7-511122620-7	NSN unavailable
IGB Fairing Stiffener, RHS	7-511122620-9	NSN unavailable
Satin Cloth	SAE-AMS-C-9084	8305-01-007-2672
Adhesive	EA9313	8040-01-107-4000
Adhesive	EA9309.3NA	8040-01-163-3481
Primer, Top Coat, Exterior Green	MIL-C-46168	8010-01-141-2420
Aluminum Alloy Sheet	6061-T4 Sheet, 0.080-0.090	9535-00-232-7554
Aluminum Alloy Tube	0.438“ QQ–A–225/8, 6061–T6	NSN unavailable
Seal, Rubber Ext.	HS4028-2724	NSN unavailable
Trichloroethane	O-T-620	7510-00-527-1458
Abrasive Mat (Scotchbrite)	A-A-58065	5305-00-967-5092
Coating, Chemical	MIL-C-81706	8030-01-341-8609
Primer	MIL-PRF-23377	8010-01-416-6556
Adhesive	EC1300L (SG1300L)	8040-00-165-8614
Lint Free Cloth		
Anti-Chafe Tape		

12. SPECIAL TOOLS, JIGS, AND FIXTURES REQUIRED FOR INSPECTION: N/A

13. INSPECTION PROCEDURE:

13.1. Safe helicopter IAW applicable maintenance manual: see reference item 18.1, 18.2 or 18.3.

13.2. Inspect the diffuser and the tailboom area directly underneath the diffuser. If tailboom chaffing is identified then proceed with paragraph 13 and replace diffuser with diffuser modified IAW paragraph 14. If no tailboom chaffing is identified and no diffuser cracking is found then inspection is complete. If diffuser cracking is found then repair/modify current diffuser IAW paragraph 14 or replace diffuser. If unable to replace cracked diffuser due to extenuating circumstance, contact technical POC listed in paragraph 20.

13.3. Remove IGB Diffuser per applicable maintenance manual: see reference item 18.1, 18.2 or 18.3.

13.4. Radius two (2) areas as indicated on figure 9 if required. Touch-up all reworked areas using MIL-C-5541, Class 1A (corrosion resistant coating) and MIL-PRF-85582, Type 1, Class 2 (paint primer).

13.5. Inspect depth of damage to skin. See Figure 1 for possible chafe areas. If damage is greater than 10% (.006 inch) of fuselage skin thickness, contact AMCOM Engineering or Boeing Engineering. If damage is less than 10% (.006 inch) of skin thickness, blend to assure smooth transitions without deepening damaged area.

13.6. Remove and replace any rivets common to the fuselage skin beneath diffuser that show signs of damage using an NAS1097 rivet of appropriate size and length.

13.7. Touch-up all reworked areas using MIL-C-5541, Class 1A (corrosion resistant coating) and MIL-PRF-23377.

14. MODIFICATION OF DIFFUSER INTO A/D COMMON DIFFUSER:

CAUTION

Observe edge clearance/distance from bracket when drilling rivet pattern.

14.1. Fabricate Doubler per Figure 3. Break corners. Install per Figure 1.

14.2. Fabricate Leg per Figure 4. NDI after fabrication TM 1-1500-335-23. Install per Figure 1. (Weld per step 14.7.).

14.3. Strip paint from area to be welded.

14.4. Test fit and drill Doubler for NAS1738BX fasteners.

14.5. Cleco Doubler in place. Test fit Leg and tack weld to Doubler.

14.6. Remove Leg/Doubler from Diffuser.

14.7. Complete Doubler weld to Leg with TIG welding procedure using 4043 welding rod, HW 20 torch and 20 CFM argon flow.

14.8. NDI IAW reference TM 1-1500-335-23, treat, use same materials as listed in paragraph 13.5 prime and paint as required faying surface of Doubler.

14.9. Weld Leg to Support assembly with TIG welding procedure using 4043 welding rod, HW 20 torch and 20 CFM argon flow.

14.10. NDI IAW reference TM 1-1500-335-23.

14.11. Drill out existing rivets and remove right hand bottom plate (P/N 7-311332020-5).

14.12. Layout and trim pattern per Figure 3.

14.13. Trim diffuser, and break sharp edges.

14.14. Reinstall right bottom plate (P/N 7-311332020-5). Use existing holes in bracket to locate rivets per Figure 2.

14.15. Remove gasket material from the “Ten to Two o’clock” area per Figures 1 and 2.

14.16. Touch-up all reworked areas using MIL-C-5541 Class 1A, (Corrosion resistant coating) and MIL-PRF-85582, Type 1, Class 2 (paint primer).

14.17. Re-identify part as [7-511332020-3, Mod per this TB], per MIL-STD-130, and HP8-5, Ink Permanent Marking, 30001 Black.

15. UPGRADE OF CURRENT MODIFIED INTERMEDIATE GEAR BOX FAIRING.

CAUTION

Do not cut into fairing.

15.1. While fairing is still installed on the aircraft, remove the two existing rubber strips from both halves of the fairing by pulling strips away from the fairing. A knife may aid in the separation.

15.2. Cut piece of 3M 8641 Tape to dimensionally match each of the two rubber strips removed from the fairing.

15.3. Prepare fairing surface (ensure all residual adhesive has been removed) and apply 3M #86 primer per manufacturer’s instructions.

15.4. Apply rubber strips in the same location as previous rubber strips.

15.5. Remove right and left fairings, taking care to maintain tape gap between two halves of each side.

15.6. Powder exposed sticky tape surface between both fairing halves with Talcum Powder to prevent surface from retaining FOD.

15.7. Carefully reinstall right and left fairings.

15.8. Apply a fillet of AMS-S-8802 CLB-2, sealant to the forward and aft edges of the rubber strips.

16. MODIFICATION OF A-MODEL INTERMEDIATE GEAR BOX FAIRING INTO D-MODEL OR ECP 1315 FAIRING:

16.1. Remove the IGB Fairings 7-311122620-47 and -48 per applicable maintenance manual: see reference item 18.1, 18.2 or 18.3.

16.2. Mark trim-line of fairing per dimensions in Figure 6. Split the -47 and -48 fairings using Die Grinder with a cutting wheel. Allow a .20 gap when re-aligned.

16.3. Trim internal baffle of -47 fairing as shown in Figure 8.

16.4. Remove grommets, studs, washers, and ejector springs in areas indicated for holes to be filled (4 places) per Figure 6.

16.5. Fill holes with EA9313 per Figure 6.

16.6. Lay up a 1.6" X 1.6" sheet of Kevlar cloth using same EA9313.

16.7. Position stiffeners, P/N 7-311122620-7 and -9, per dimensions in Figures 6 and 7. Bond using EA9309.3NA.

16.8. Reinstall -47 and -48 fairing onto aircraft.

16.9. Install 3M 8641 Tape to the outsides of the -47 and -48 fairings maintaining a 0.20 inch gap as shown in Figure 7. Prime fairing surface before installation using 3M #86 primer per manufacturer's instructions.

16.10. Remove right and left fairings, taking care to maintain tape gap between two halves of each side.

16.11. Powder exposed sticky tape surface between both fairing halves with Talcum Powder to prevent surface from retaining FOD.

16.12. Apply a fillet of AMS-S-8802 CLB-2, sealant to the forward and aft edges of the rubber strips.

16.13. Apply Anti-Chafe tape per Figure 6 to both fairing halves.

16.14. Touch-up all rework areas using MIL-PRF-23377 and MIL-C-46168 exterior paint.

16.15. Re-identify the -47 fairing to 7-511122620-3 and the -48 to 7-511122620-5 per MIL-STD-130, and HP8-5 Ink Permenent Marking, 30001 Black.

17. MODIFICATION: ADD GUSSET TO UPPER SUPPORT LEG OF DIFFUSER:

17.1. Remove paint from repair area, shown in Figure 5.

17.2. Remove rubber extrusion seal (bulb seal) HS4028-2724 from Diffuser, as required.

17.3. Remove Naugahyde seals, 7-311332020-37 & -39, as required.

17.4. Fabricate two gussets from 0.090 inch 6061-T6 aluminum, 1.0 X 1.5 inch, triangular shape IAW Figure 5, trim to fit.

17.5. Clean all surfaces to be welded with alcohol soaked, lint free cloth.

17.6. Inspect leg for signs of crack. If crack is not present, proceed to step 17.10.

17.7. If leg is cracked, cut "V" groove in crack location completely around support leg.

17.8. Clean "V" groove and welding rod, with alcohol soaked cloth.

17.9. Weld around "V" groove with TIG welding procedure using 4043 welding rod, HW 20 torch and 20 CFM Argon flow.

17.10. Position gussets IAW Figures 1 and 5.

17.11. Weld gussets per above procedure.

17.12. Inspect repaired area IAW reference TM 1-1500-335-23 Nondestructive Inspection Methods.

17.13. Prepare repaired area for coating.

17.13.1. Clean surface with Trichloroethane.

17.13.2. Abrade surface with Abrasive Mat Scotchbrite.

17.13.3. Clean surface again with Trichloroethane and wipe dry with clean oil free paper or cloth wipers.

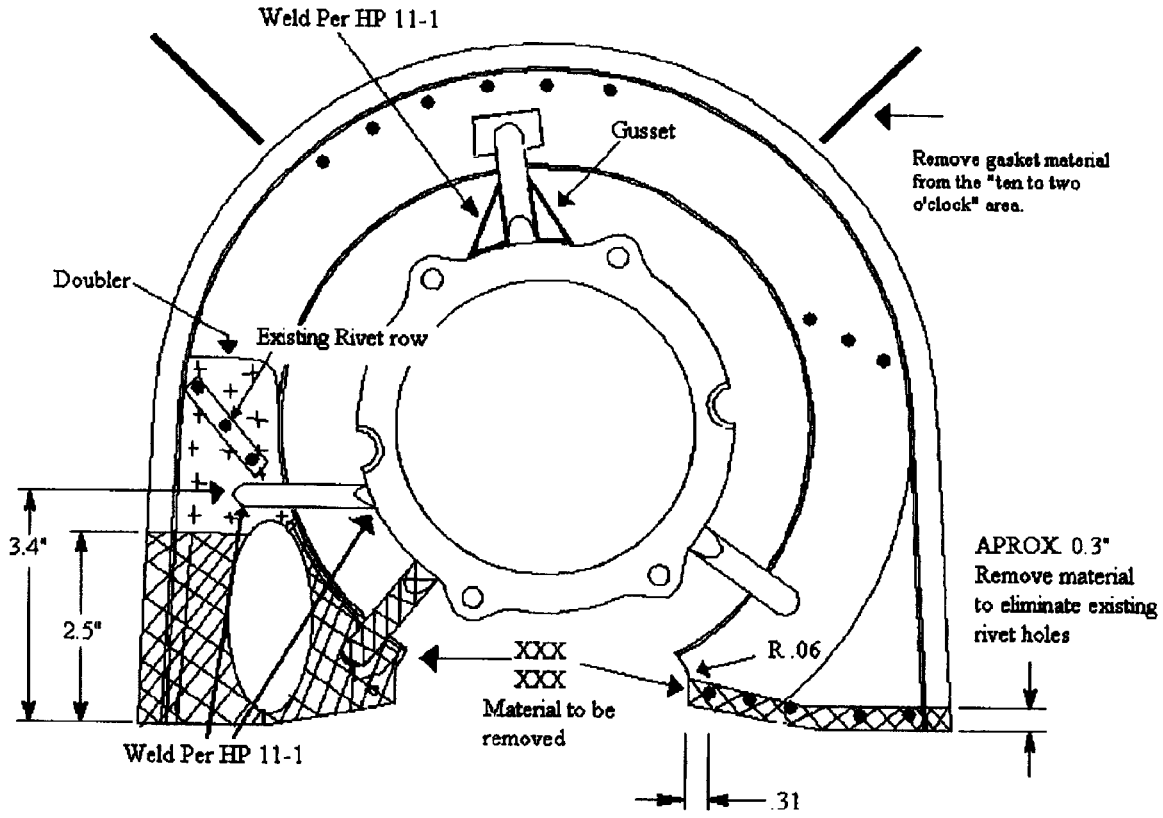
17.14. Coat repaired area.

17.14.1. Apply MIL-C-81706, Class 1A, Coating, Chemical.

17.14.2. Apply paint touch up as required using primer, MIL-PRF-23377.

17.15. Install seal, HS4028-2724, IAW listed references in 18.1, 18.2, or 18.3.

17.15.1. Bond in place using adhesive, EC1300L.



Drawing not to scale

Figure 1. Trim of Diffuser, View Looking Forward

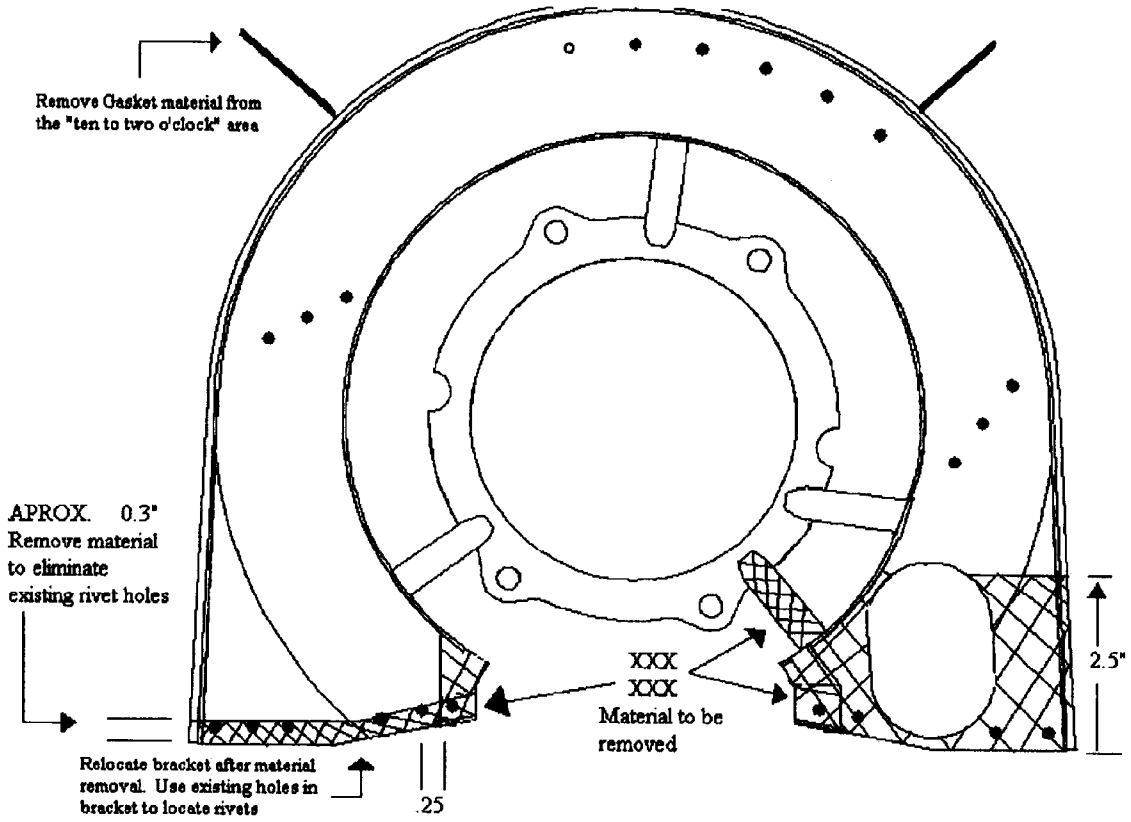
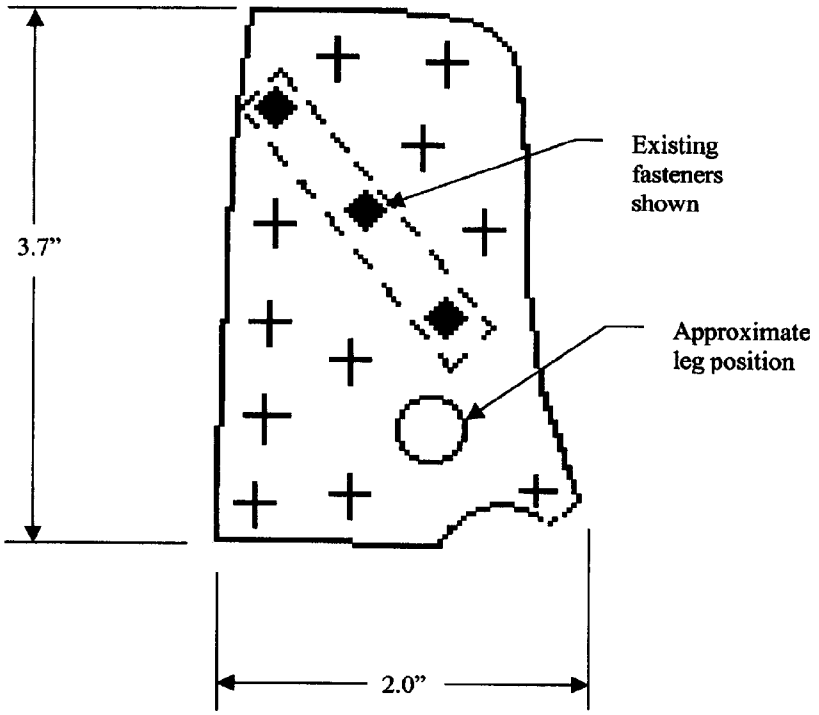


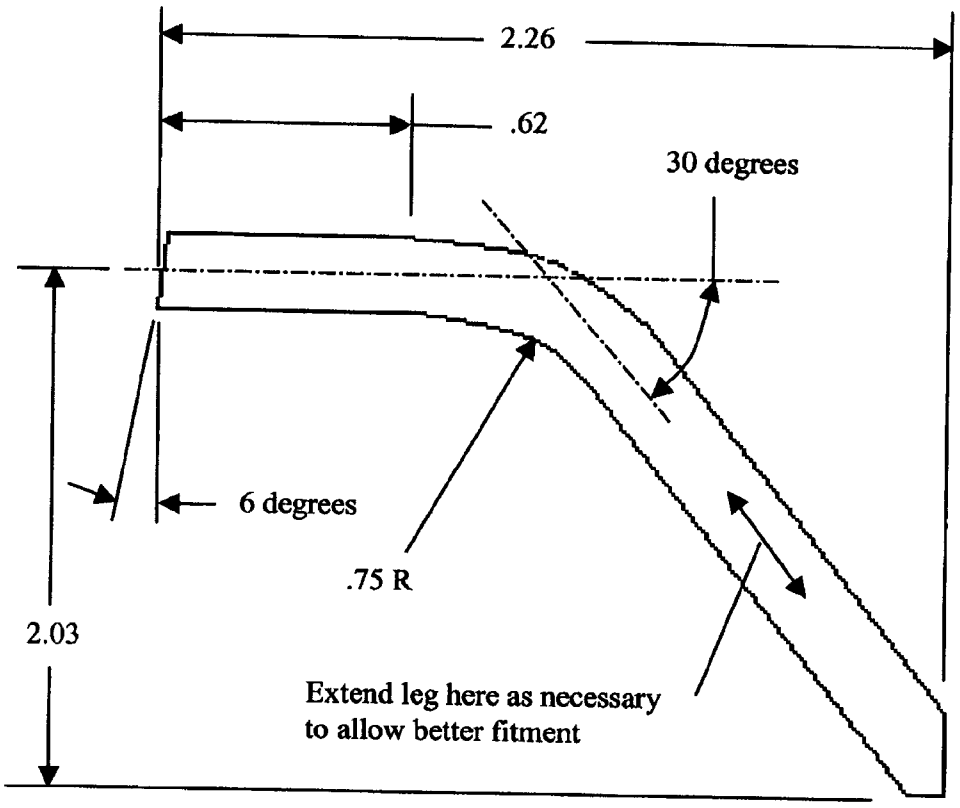
Figure 2. Trim of Diffuser, View Looking Aft

Fabricate doubler from .080 - .090 thick
6061T4 or T651 AL ALY sheet



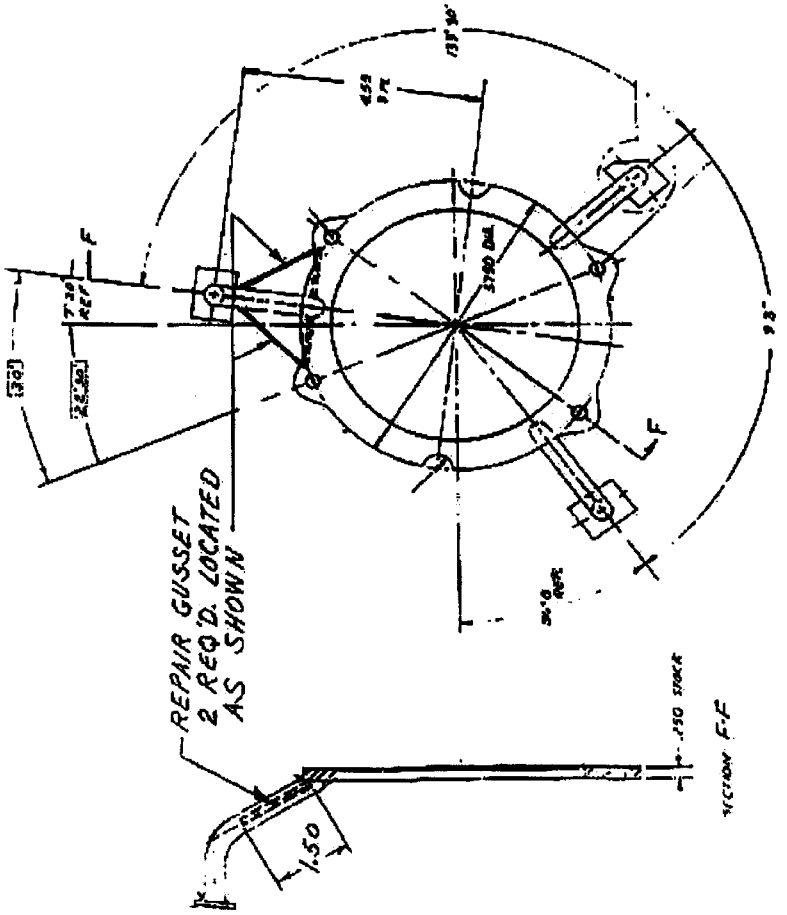
Shape doubler as required to match contour of diffuser.
Round all corners of doubler.
Dimensions given are of the approximate size.
Fastener pattern approximately as shown.

Figure 3. Doubler Layout



Fabricate new leg from .43 - .50 diameter 6061T4 or T6 AL ALY rod
Adjust angle of bend or extend leg as shown to allow better fitment upon assembly

Figure 4. Fabricate Leg



GUSSET LOCATION
SK-1-GUS

Figure 5. Gusset Location

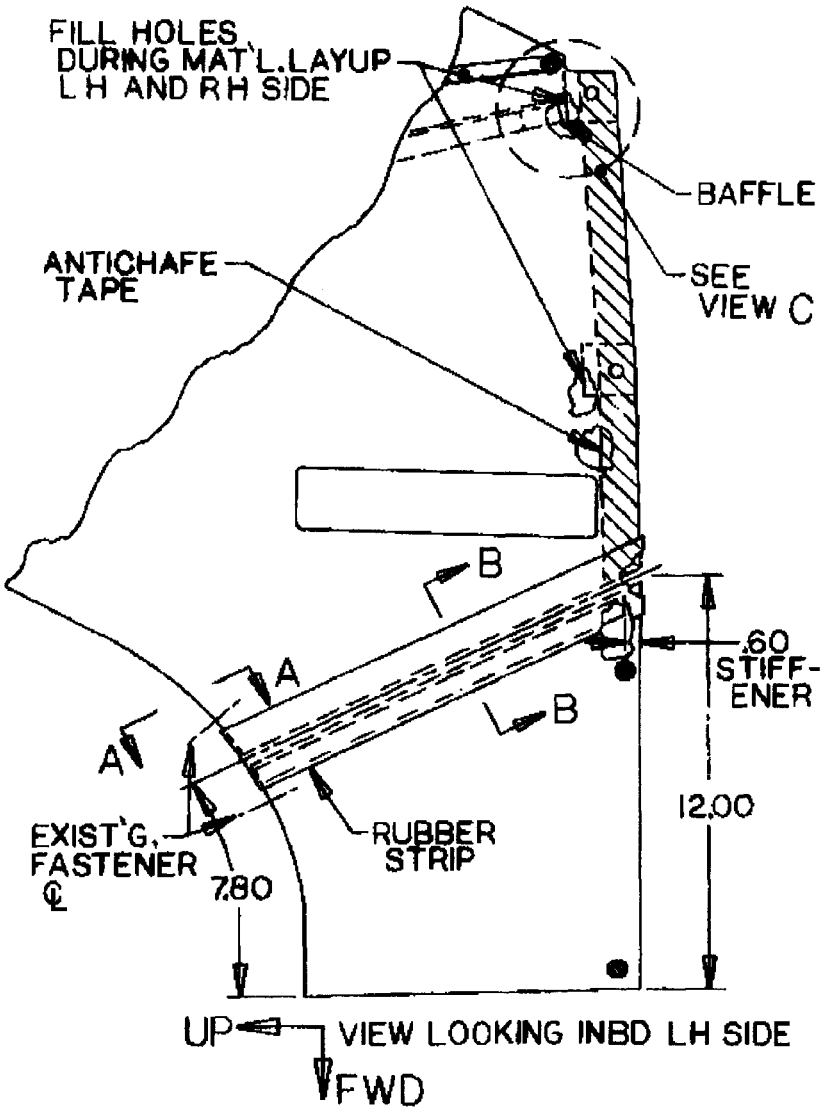


Figure 6. Modification of IGB Fairing

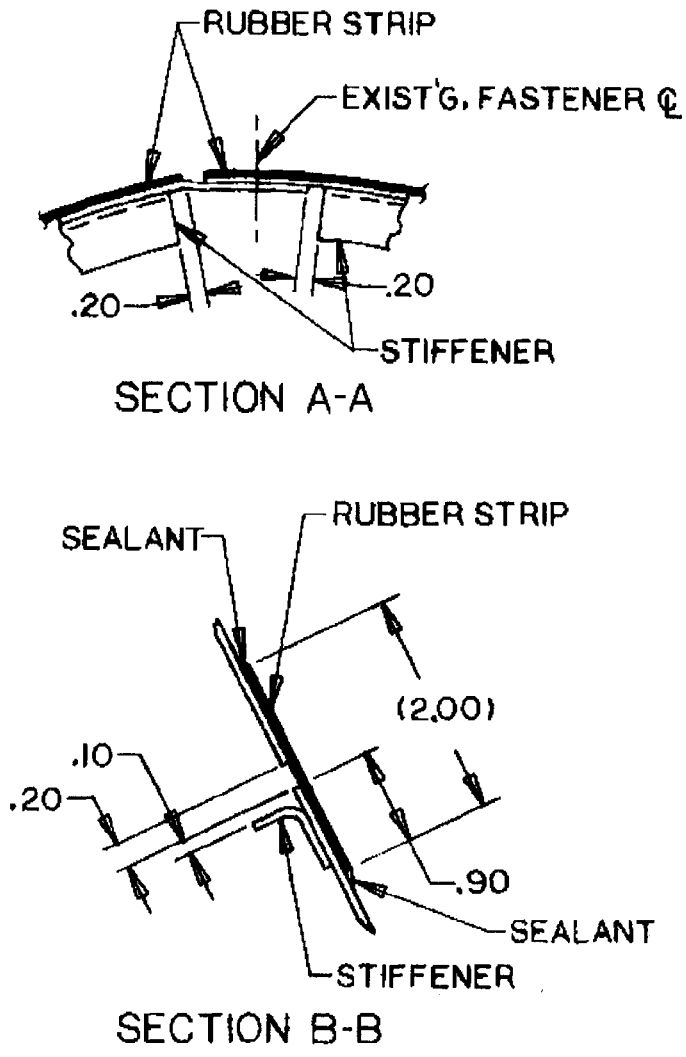
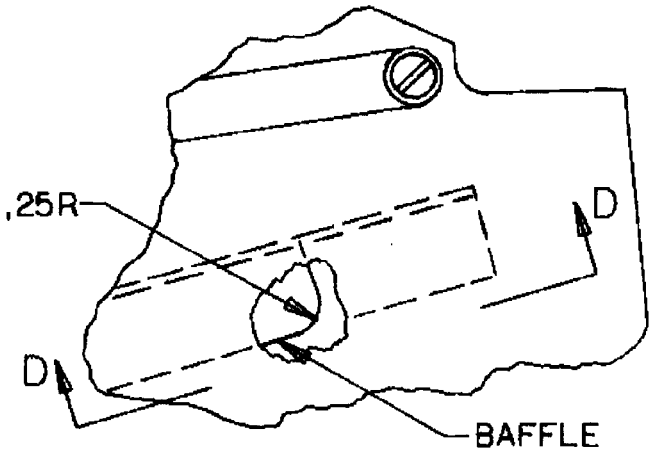
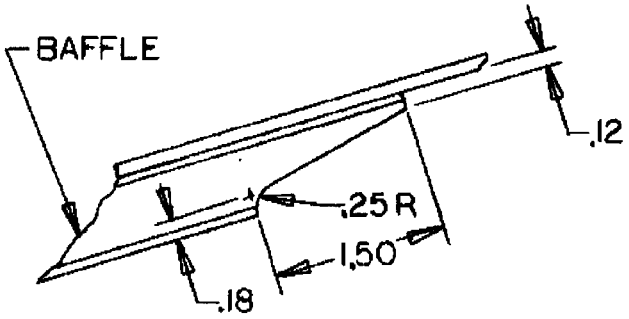


Figure 7. Modification of IGB Fairing



VIEW C
LH SIDE ONLY



SECTION D-D

Figure 8. Modification of IGB Fairing

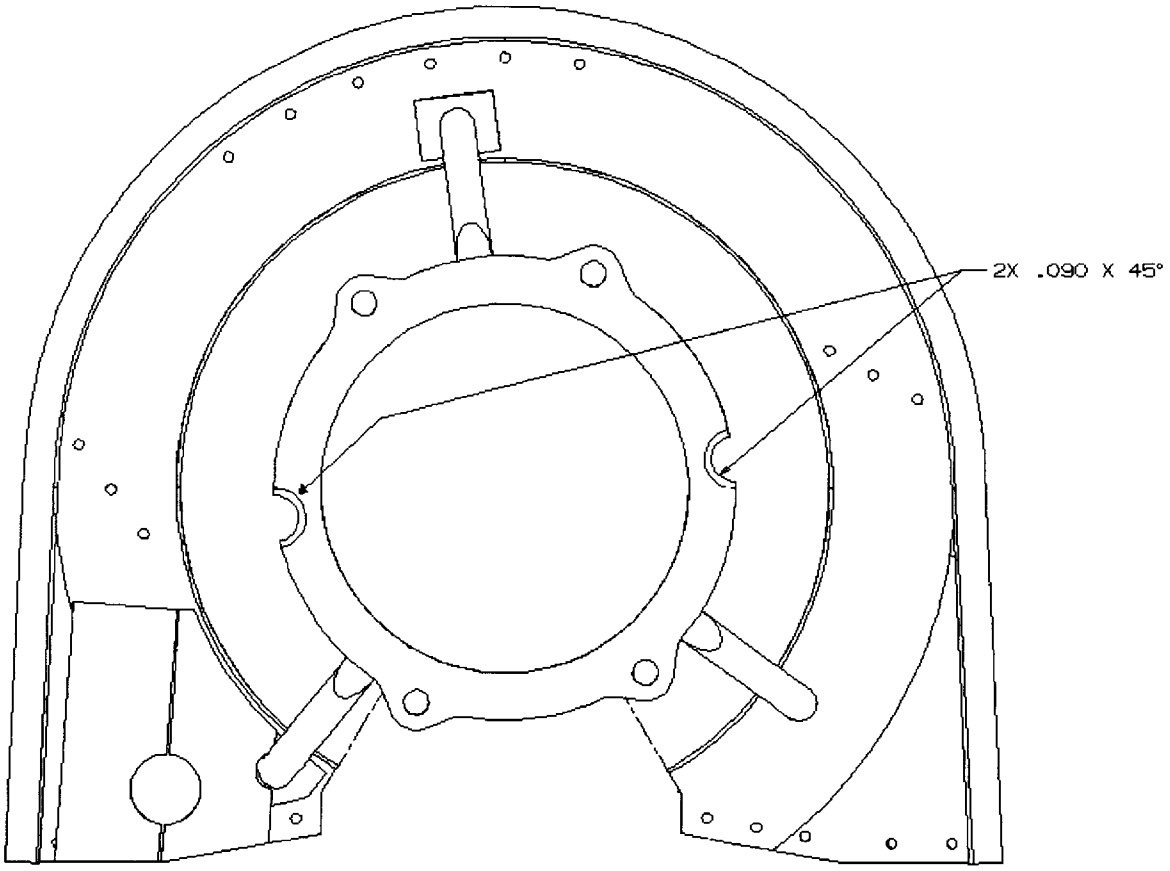


Figure 9. Radius Requirement

18. REFERENCES:

18.1. TM 1-1520-238-23, Aviation Unit and Intermediate Maintenance Manual for the AH-64A.

18.2. ETM 1-1520-238-23 Electronic Aviation Unit and Intermediate Maintenance Manual for the AH-64A.

18.3. IETM 1-1520-251-Longbow/Apache Interactive Electronic Aviation Unit and Intermediate Maintenance Manual for the AH-64D.

19. WEIGHT AND BALANCE. Not Applicable.

20. POINTS OF CONTACT:

20.1. Maintenance Point of Contact is Mr. Malcolm Fuller, Commercial (256) 705-9783, DSN 897-2350, Datafax is (256) 705-9918. E-mail is malcolm.fuller@rdec.redstone.army.mil.

20.2. Primary Technical Point of Contact is Mr. Lee Bumbicka, Commercial (256) 705-9820, DSN 897-2350, Datafax is (256) 705-9918. E-mail is lee.bumbicka@rdec.redstone.army.mil.

20.3. Alternate Technical Point of Contact is Mr. Bill Green, Commercial (256) 705-9832, Datafax is (256) 705-9918. E-mail is bill.green@rdec.redstone.army.mil.

20.4. Forms and Records Point of Contact is Ms. Ann Waldeck, AMSAM-MMC-MA-NM, DSN 746-5564 or Commercial (256) 876-5564, Datafax is DSN 746-4904. E-mail is ann.waldech@redstone.army.mil.

20.5. Logistical Point of Contact is Mr. Thomas Gadomski, PEOAVN, DSN 897-4228, or Commercial (256) 313-4228, Datafax is DSN 897-4343. E-mail is thomas.gadomski@us.army.mil.

20.6. Foreign Military Sales, Mr. Ronnie Sammons, AMSAM-SA-SM-AV, DSN 897-0875, Commercial (256) 313-0875, E-mail is ronnie.sammons@redstone.army.mil, Datafax is DSN 897-6630 (Primary Contact) or Mr. Paul Tarr, AMSAM-SA-SD-AS, DSN 897-6861, commercial (256) 313-6861, E-mail is paul.tarr@redstone.army.mil, Datafax is DSN 897-6630 (Alternate Contact).

By Order of the Secretary of the Army:

PETER J. SCHOOMAKER
General, United States Army
Chief of Staff

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JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army
0425302

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2. *Unit:* home
3. ***Address:*** 4300 Park
4. ***City:*** Hometown
5. ***St:*** MO
6. ***Zip:*** 77777
7. ***Date Sent:*** 19-OCT-93
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11. *Change Number:* 7
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14. *Submitter MName:* T
15. ***Submitter LName:*** Smith
16. ***Submitter Phone:*** 123-123-1234
17. ***Problem:*** **1**
18. *Page:* 2
19. *Paragraph:* 3
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21. *NSN:* 5
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23. *Figure:* 7
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