

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

REWORK OF AIRBORNE LASER TRACKER
 INSTALLATION
 AH-1F HELICOPTERS

Headquarters, Department of the Army, Washington, D.C.
 31 December 1991

NOTE

This publication is effective indefinitely unless rescinded or superseded.

1. **Summary.** Provides instructions for Forward Pylon Fairing to increase amount of clearance between Fairing and Optical Dome and installation of an electrical bonding strip and connector strain relief backshells on two Airborne Laser Tracker electrical airframe harnesses.
2. **Purpose.** Provide adequate clearance for Airborne Laser Tracker.
3. **Priority Classification.** Routine.
4. **Applicable End Item(s) or System(s).** AH-1F Helicopters.
5. **Assembly Components to be Reworked.** Fairing Assembly P/N 209-061-803-101.
6. **Parts to be Installed.**
 - a. Kits/parts required. Not applicable.
 - b. Bulk and consumables.

<u>NOMENCLATURE</u>	<u>NSN</u>	<u>P/N</u>	<u>QTY</u>
Fiberglass	8205-01-066-8289	MIL-C-9084	A/R
Fiberglass	8205-00-503-6960	MIL-C-9084 Class 2 Type 3	A/R
Adhesive	8040-00-463-7042	EA 956 N	A/R

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<u>NOMENCLATURE</u>	<u>NSN</u>	<u>P/N</u>	<u>QTY.</u>
Adhesive	8030-00-144-9658	EPON 826	A/R
Filler	8030-00-142-9738	1310	A/R
Hardener	8040-00-159-5093	9223	A/R
Yellow Primer	8010-00-142-9279	MIL-P-23377C	A/R
Sealant (Proseal 890)	8030-00-723-2746	MIL-S-8802 Type 2, Class B-2	A/R
Bolt	5306-01-058-5366	NAS6203-11	4 ea.
Shim	5365-01-081-6461	120-037E24-7	AIR
Washer	5310-01-129-0607	AN960JD616	2 ea.
Backshell	5935-01-233-0778	M85049/48-2-4F	1 ea.
Backshell	5935-01-244-0549	M85049/48-2-5F	1 ea.
Washer	5310-00-637-9541	MS35338-46	1 ea.
Bolt	5306-01-157-5627	NAS6206-4	1 ea.
Bonding Strip		*120-175-EE08	1 ea.
Brush, Paint	8020-00-245-4509	H-B-391	A R
Alcohol, Isopropyl	6810-00-855-6160	T-T-I-735	A R
Paper, Abrasive	5305-00-721-8115	P-P-101,120grit	A R
Insulation Sleeve Electrical	5970-00-812-1360	M23053/5-109-9	2 ea.
Insulation Sleeve Electrical	5970-00-990-9911	M23053/5-210-C	2 ea.

* Or local manufacture from 6061-T4AL alloy per QQ-A-250/11 with Chem Film per MIL-C-5541 Class3.

7. Application.

a. Category of Maintenance: Aircraft downtime will be charged to AVIM.

b. Time required for accomplishment of this Technical Bulletin is as follows:

<u>Work Force/Skills</u>	<u>Man-Hours</u>
1 Aircraft Electrician (MOS 68J or equivalent)	4
1 Attack Helicopter Repairer (MOS 67Y or equivalent),	4
1 Armament System Repairer (MOS 68J or equivalent).	6
1 Aircraft Structural Repairer (MOS 68G or equivalent)	12

Total man hours required for this Technical Bulletin is: 26

c. TB/MWO(s) to be applied prior to or concurrently with this Technical Bulletin: None.

8. Publications Which Require Change as a Result of this Technical Bulletin:

- TM 55-1520-236-23
- TM 55-1520-236-23P
- TM 55-1520-236-T
- TM 9-4931-583-30P
- TM 9-1090-206-30

9. Supply/Parts and Disposition. Not applicable.

10. Special Tools, Jigs, and Fixtures Required:

<u>NONMENCLATURE</u>	<u>NSN</u>	<u>P/N</u>	<u>QTY.</u>
File, Rotary	3455-00-007-9628	A-A-51151	A R
Knife, Pocket	5110-00-383-3455	1550-5	A R

11. Rework Procedures.

NOTE

Disconnect battery and prepare aircraft for safe ground maintenance. Items removed to gain access to work area shall be tagged for identification and protected from damage until reinstalled. Retain all attaching hardware of removed parts for reinstallation.

Refer to TM 55-1520-236-23P for aircraft parts.

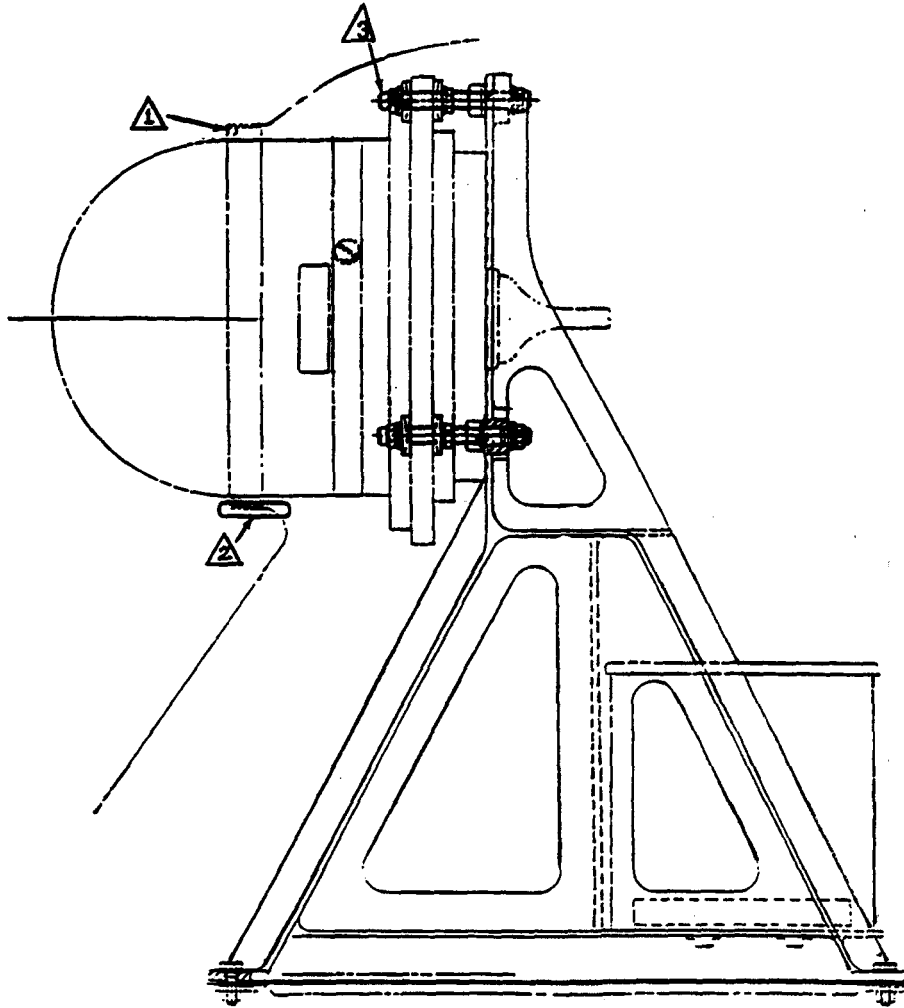
The following procedures assume that the Airborne Laser Tracker has not yet been installed on the aircraft.

NOTE

Tag and bag all hardware for reinstallation.

This procedure is to obtain clearance between the Airborne Laser Tracker and the cowling. It may not be necessary to perform all or any of the steps listed in this TB if clearance is obtained and the cowling does not chaff or rub in flight. The Airborne Laser Tracker must be installed and foresighted prior to determining the clearance between the cowling and the Airborne Laser Tracker.

- a. Prepare aircraft for maintenance.
- b. Remove ADF sense antenna located behind pilots overhead canopy.
- c. Remove Forward Pylon Fairing P/N 209-061-803-101.
- d. Remove seal P/N 110-004-13-0269 from the I.D. of Airborne Laser Tracker opening in Forward Pylon Fairing to allow for additional clearance. See Figure 1. Removal of the seal allows for additional clearance between the Fairing and Optical Dome without any degradation to the installation. If clearance is obtained go to page 8, para 11.e.(2)(d), if not continue with next step.
- e. Perform rework/modification on Forward Pylon Fairing in accordance with Figures 2 and 3.
 - (1) Remove core material from inside of fairing in accordance with Figures 2 and 3.
 - (a) Mark areas that core will be removed from on top layer of inner skin surface of fairing.
 - (b) Use rotary files and utility knife as required to remove top layer of skin and core material. Caution should be used when removing core material to not penetrate thru the outer skin of the fairing. Reduce neck opening in accordance with Figure 3.
 - (c) Remove debris from area and clean with alcohol.
 - (d) Mix an adequate amount of 1310 filler material to form a 45 degree chamfer around the exposed core material. See Figure 2. Allow to dry.
 - (e) Cut 2 pieces of fiberglass material to cover reworked area so that fiberglass will extend beyond the core removal area by 1 inch.
 - (f) Thoroughly coat fiberglass with one coat of adhesive (EA '956 or EPON 826) before laying upon fairing. Center fiberglass over worked area and use a paint brush to work out trapped air bubbles. Apply an additional heavier coat of adhesive to lay up. Allow to dry. Seal neck edge after removal with adhesive (EA 956 or EPON 826).
 - (g) Sanding may be required to remove any rough surfaces, then apply one coat of primer to reworked areas.

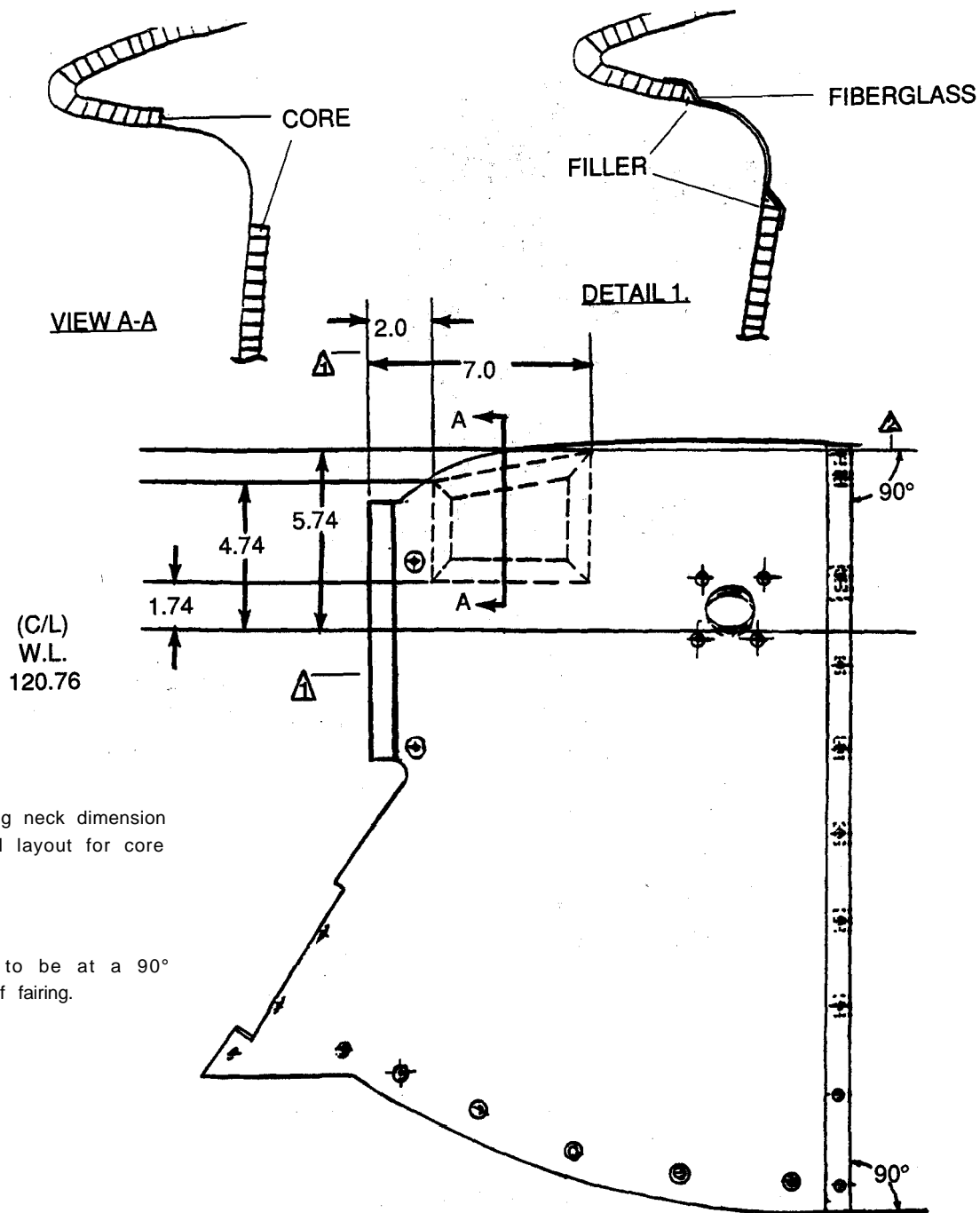


NOTE 1:
Remove seal P/N 110-004-13-0269 from Fairing to allow for additional clearance.

NOTE 2:
Inspect for contact between Airborne Laser Tracker Dome and Fairing in this area. No contact is allowed.

NOTE 3:
After modification check for contact between receiver mount bolts and fairing

Figure 1. Side View of Airborne Laser Tracker Installation.



NOTE 1:

Do not reduce opening neck dimension from .78 to .25 until layout for core material is complete.

NOTE 2:

All dimensions are to be at a 90° angle from aft edge of fairing.

Figure 2. Rework/Modification of Forward Fairing.

NOTE 1:
Do not reduce opening neck dimension from .78 to .25 until layout for core material is complete.

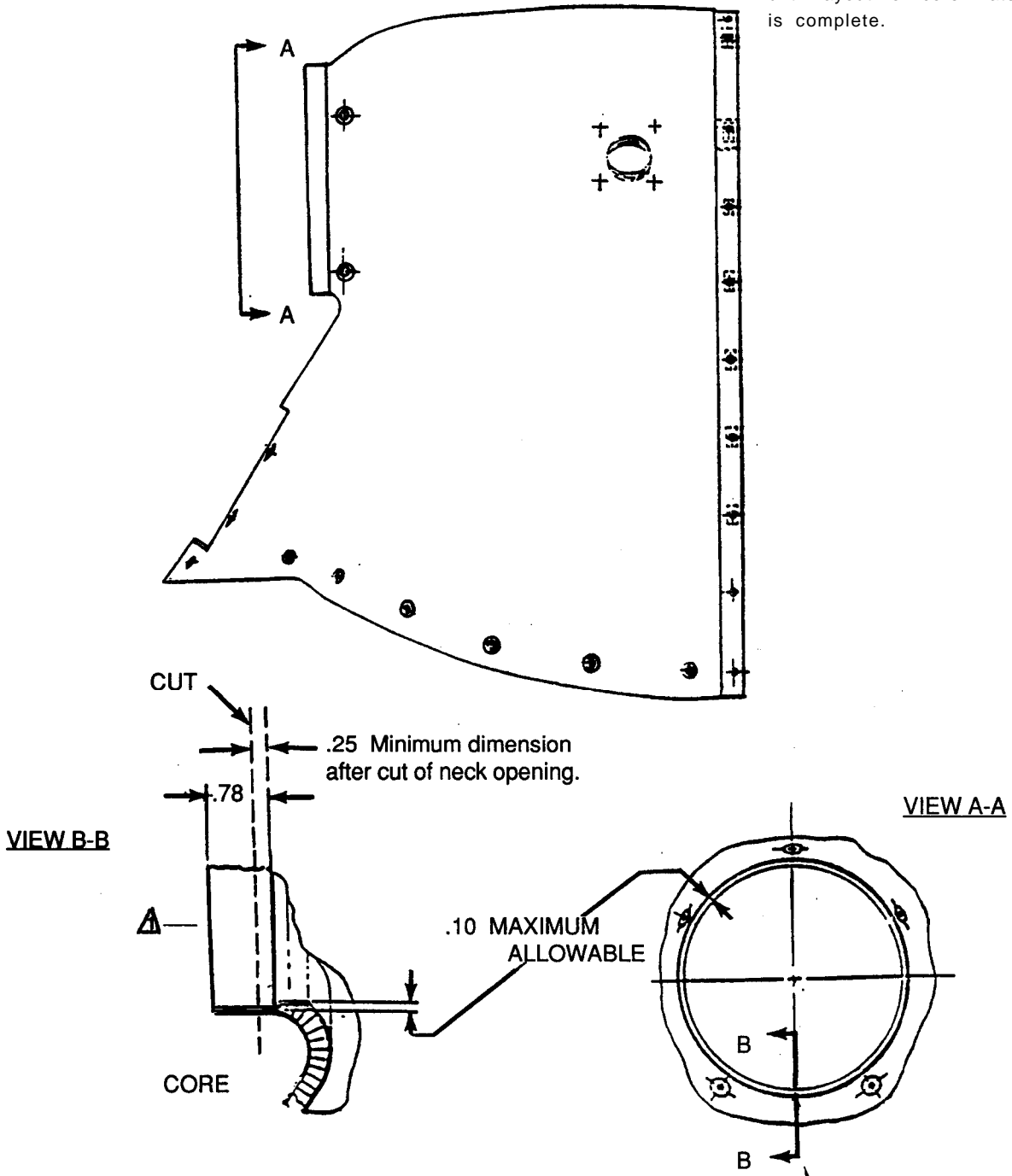


Figure 3. Rework/Modification of Forward Fairing.

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(a) Using rotary file, remove enough material to allow for 1 layer of fiberglass to be applied on the reworked area and still be within the requirements in Figure 3.

(b) Trim a piece of fiberglass large enough to cover the reworked area with an adequate edge distance overlap and apply with adhesive (EA 956 or EPON 826).

(c) Sand to remove any rough areas and apply one coat of primer to reworked areas.

(d) Install and Boresight Airborne Laser Tracker Receiver on aircraft (Reference TM 11-5860-200-12 for Airborne Laser Tracker Installation and TM 9-1090-206-30 for Airborne Laser Tracker Boresight and Alignment). It should be noted that the nominal dimension for boresighting the Airborne Laser Tracker Receiver can and may need to be reduced to achieve maximum clearance between the Forward Pylon Fairing and the Airborne Laser Tracker Receiver Optical Dome to prevent rubbing or chaffing in flight. The reduction of this nominal setting will not have an impact on boresighting of the Airborne Laser Tracker or its operation. Additionally, if the aircraft is equipped with Wire Strike Protection, it will be necessary to remove the upper wire strike cutter to perform Boresighting procedures.

(e) Once the Airborne Laser Tracker has been Installed and Boresighted, install the Forward Pylon Fairing on the aircraft. Make sure that the Fairing does not rub against or contact the Airborne Laser Tracker Optical Dome when installing. Once the fairing is in place, check to be sure that the fairing does not contact the Airborne Laser Tracker Receiver, if contact is evident then make a note of the area that is obstructing the fit. At this point there are 3 areas that should be addressed that can affect the installation, (1) the nominal mounting dimension of the Airborne Laser Tracker prior to Boresighting may be too far forward, (2) the internal contours of the Pylon Fairing are still contacting the Airborne Laser Tracker and may need to be reworked in the same manner as discussed earlier in paragraph e., and (3) the height of the Receiver Support Assembly may need to be shimmed to adjust for additional clearances. If it is determined that the Receiver Support Assembly requires shimming proceed to paragraph f., with rework.

(f) If the Fairing does slide into position, secure with attaching hardware and inspect the areas between Fairing and Airborne Laser Tracker Receiver Optical Dome to be sure there is no contact. Pay particular attention to the areas shown in Figure 1. If contact still exists utilize procedures as outlined in paragraph e., to obtain adequate clearances.

(g) Once it has been determined that the Forward Pylon Fairing is not contacting the Airborne Laser Tracker then proceed to paragraph g., of this bulletin and accomplish if not previously done prior to Fairing installation.

(h) Install ADF sense antenna.

NOTE

Paragraph f. should be performed only if the rework procedures in paragraph e. has not provided enough clearance between the Forward Pylon Fairing and the Airborne Laser Tracker Optical Dome. Additionally, this procedure only allows for the raising of the Receiver Support Assembly to a maximum of 0.188 inch.

f. If it was determined, in paragraph e., that raising of the Receiver Support Assembly will provide adequate clearance between the Forward Pylon Fairing and the Airborne Laser Tracker Optical Dome, then perform the following procedures.

(1) Remove Forward Pylon Fairing, Airborne Laser Tracker Receiver and Receiver Support Assembly from the aircraft.

(2) Install Receiver Support Assembly with the approximate amount of shims required in equal amounts under each of the four mounting points. Maximum allowable shim under mounting points is 0.188 inch or 2 ea. 120-037E24-7 shims. Retain Receiver Support Assembly with bolts, P/N NAS 6203-11. See Figure 4.

(3) Reinstall Airborne Laser Tracker Receiver and Forward Pylon Fairing and check for adequate clearances.

(4) If shims require adjusting, repeat paragraphs f.(2) and f.(3).

(5) If adequate clearance exists then proceed to paragraph g., if it has not already been accomplished.

NOTE

Paragraph g. of this Technical Bulletin may be performed simultaneously with paragraph e. to preclude the excessive removal and installation of the Forward Pylon Fairing.

g. The following procedures outline the manufacturing and installation of the bonding strip that is required to ground the Airborne Laser Tracker Receiver to the Receiver Support Assembly if not provided with Airborne Laser Tracker installation kit.

(1) If BHTI Bonding Strip, P/N 120-175-EE08 is not available, then locally manufacture a bonding strip from 6061-T4 Aluminum Alloy per QQ-A-250/11 with Chem Film per MIL-C-5541 Class 3 in accordance with Figure 5.

(2) Install Bonding Strip in accordance with Figure 5.

h. The following procedures call out for the installation of strain relief backshells on two electrical harnesses.

(1) Gain access to the top of the aircraft and locate the wiring harnesses leading to the Airborne Laser Tracker electronics assembly located behind the Receiver Support Assembly.

(2) Locate harness assembly P/N209-075-089-111 and install strain relief backshell P/NM85049/48-2-4F.

(3) Locate harness assembly P/N209-075-089-111 and install strain relief backshell P/NM85049/48-2-5F.

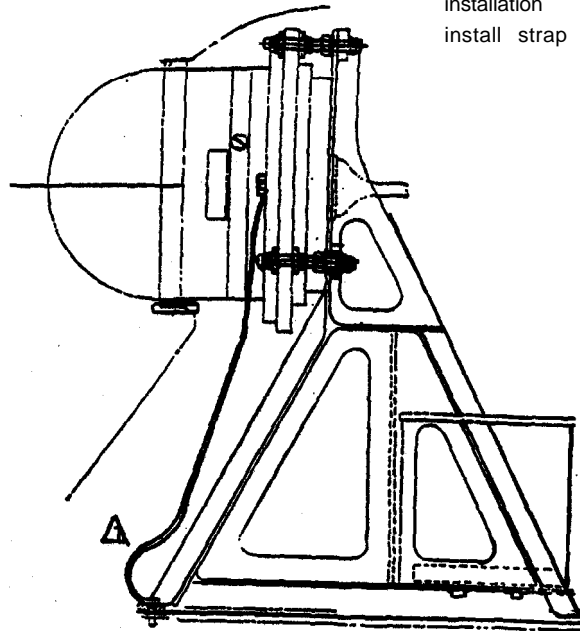
NOTE

Insulation sleeve electrical (P/NM23053/5-210-C) needs to be used with backshells.

12. Calibration Requirements. Airborne Laser Tracker Boresight Alignment required after completion of modification.

NOTE 1:

If braided strap (P/NSM-D-968532-2) is used from Airborne Laser Tracker installation kit (P/NSM-A-96853) then install strap as shown in Figure 4.



Shim Equally at Four Mounting Points.

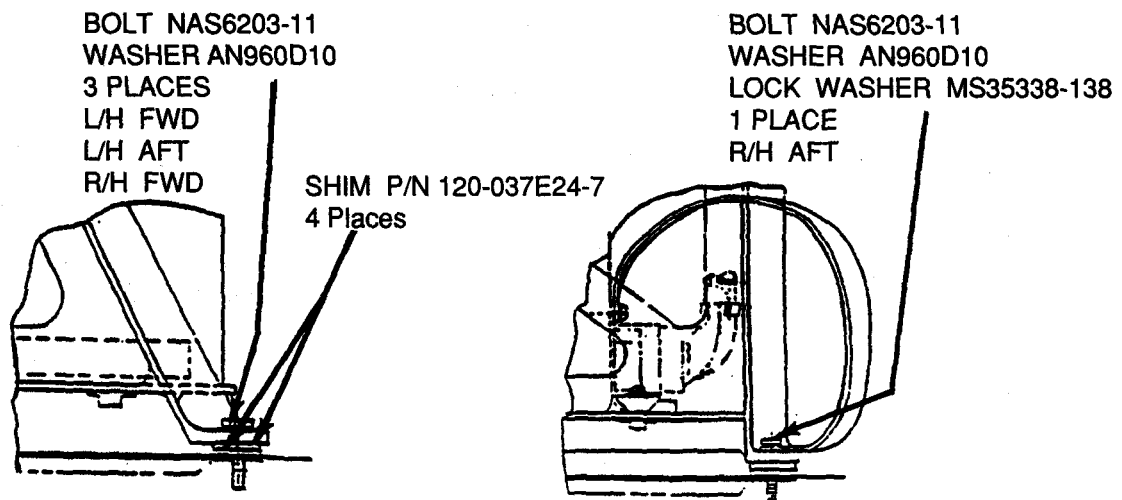


Figure 4. Shimming of Airborne Laser Tracker Support.

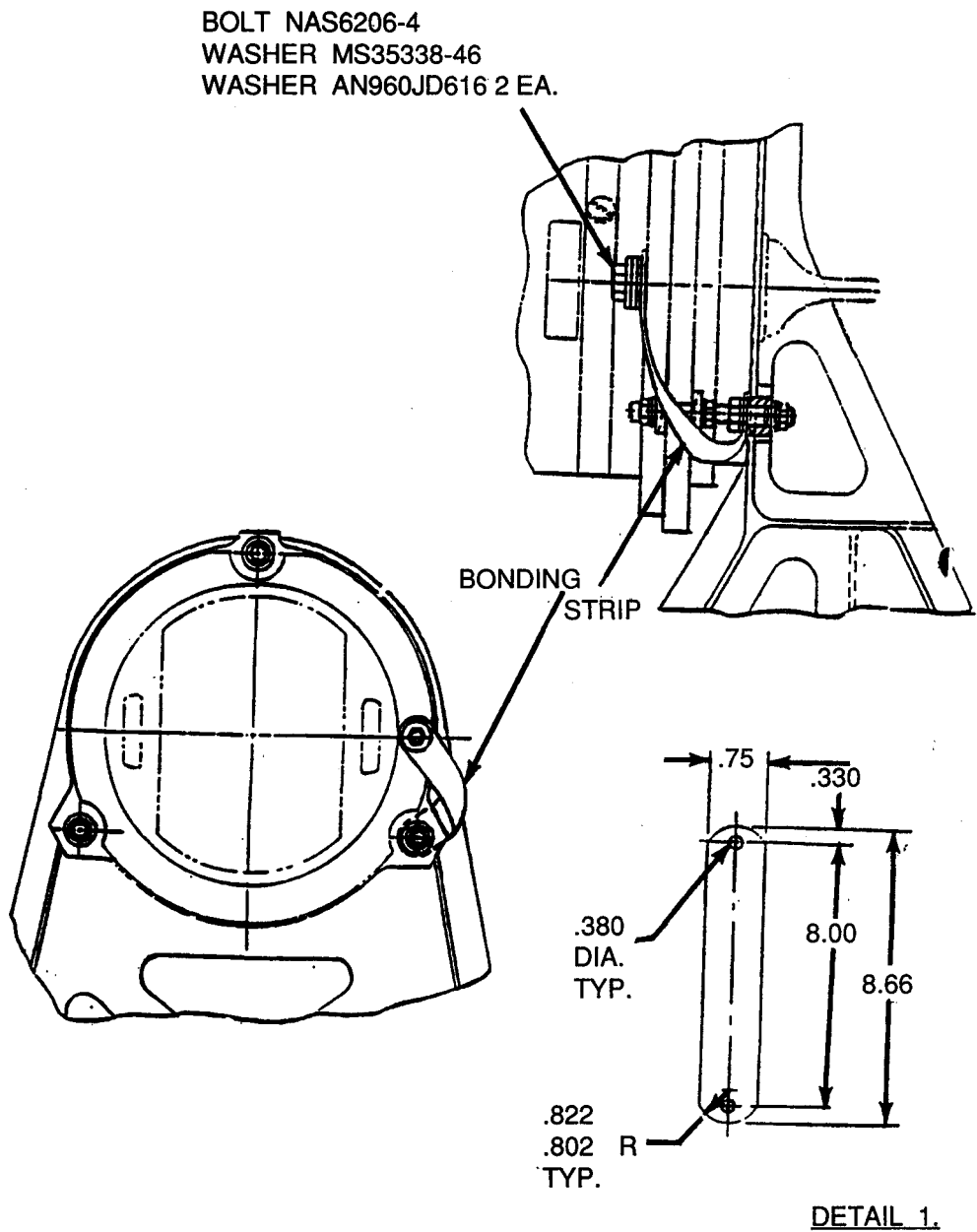


Figure 5. Electrical Bonding.

13. Weight and Balance Data. Weight and Balance are not significantly affected.

14. Recording and Reporting Requirements. Record accomplishment of this Technical Bulletin in accordance with procedures in DA PAM 738-751. The following forms are applicable.

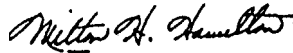
- a. DA Form 2407 (Maintenance Request).
- b. DA Form 2408-5 (Equipment Modification Record).
- c. DA Form 2408-13 (Aircraft Inspection and Maintenance Record).

15. Points of Contact for this Technical Bulletin.

- a. Technical point of contact is AMCPM-CO-T, DSN 693-1575 or commercial 314-263-1575.
- b. Logistical point of contact is AMCPM-CO-L, DSN 693-1550 or commercial 314-263-1550.

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