*TM 1-5855-265-30

TECHNICAL MANUAL

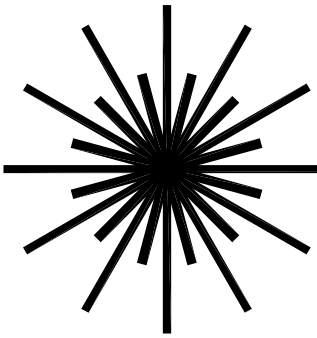
AVIATION INTERMEDIATE
MAINTENANCE MANUAL

PILOT NIGHT VISION SENSOR (PNVS) ASSEMBLY AN/AAQ-11 (NSN 5855-01-120-7831)

***** This manual supersedes TM 11-5855-265-30 dated 1 February 1986;including all changes.

AH-64A ATTACK HELICOPTER

HEADQUARTERS, DEPARTMENT OF THE ARMY
30 August 2001



INVISIBLE LASER RADIATION
AVOID EYE EXPOSURE TO DIRECT RADIATION

NEODYMIUM LASER
WAVELENGTH - 1064 NANOMETERS
CLASS IV LASER

02712

WARNING

LASER RADIATION

The PNVS system does not in itself employ a laser, but the PNVS turret is mounted on the Target Acquisition Designation Sight (TADS) interface structure. The TADS system does employ a very hazardous laser. The TADS laser beam can cause blindness or serious eye injury. See warning page TM 1-1270-476-20 for further information. It is very important that the TADS power is always off when any maintenance is performed on the PNVS equipment.

WARNING

RADIATION HAZARD

The anti-reflective coating on all infrared optics contains thorium fluoride which is slightly radioactive. The only potential hazard involves ingestion (swallowing or inhaling) of this coating material. Dispose of broken lenses, etc., in accordance with AR 385-11.

WARNING

BURN HAZARD

The azimuth drive gimbal assembly drive motor gets very hot (approximately 250°F) during operation. The hot motor can cause serious burns. Use care when working near the hot motor

WARNING

HAZARDOUS SOLVENTS

When you use solvents, be sure that the place you work in is well ventilated. WEAR GLOVES AND EYE PROTECTION. If you don't have good ventilation, read TB MED 223 and use the recommended respiratory (breathing) protection.

DON'T USE FLAMMABLE SOLVENTS AROUND HEAT, OPEN FLAME, OR SPARKS.

IF YOU GET SOLVENT IN YOUR EYES OR ON YOUR SKIN, FLUSH THE SOLVENT AWAY WITH WATER FOR 15 MINUTES; THEN GET MEDICAL HELP.

Freon reacts with highly active free metals such as sodium, barium, or potassium, and may produce toxic byproducts, fires, or explosions. Do not use Freon near highly active free metals.

TOXIC AND FLAMMABLE CHEMICALS

Use the same care for toxic and flammable chemicals as you would for hazardous solvents.

CHEMICAL, BIOLOGICAL, AND RADIOLOGICAL CONTAMINATION

Notify your supervisor if you think you have been exposed to chemical, biological, or radiological contamination. TM 9-1300-275/2 gives procedures for decontamination.

WARNING

HIGH VOLTAGE

is used in the operation of this equipment

DEATH ON CONTACT

May result if personnel fail to observe safety precautions. Learn the areas containing high voltage in each piece of equipment. Be careful not to contact high voltage connections when installing or operating this equipment. Before working inside the equipment, turn power off and ground points of high potential before touching them.
For artificial respiration, refer to FM 21-11.

WARNING

NOISE

Sound of running engines (helicopter main engines, APU, and GPU) can exceed U.S. Surgeon General's Noise Limits (TB MED 251). Ear plugs or aviation helmet must be worn when working on helicopter at these times.

LIST OF EFFECTIVE PAGES

INSERT LATEST CHANGE PAGES. DESTROY SUPERSEDED PAGES.

NOTE: The portion of the text affected by the changes is indicated by a vertical line in the outer margins of the page. Changes to illustrations are indicated by miniature pointing hands. Changes to wiring diagrams are indicated by shaded areas.

Dates of issue for original and change pages are:

Original . . . . . 0 . . . . . 30 August 2001

TOTAL NUMBER OF PAGES IN THIS PUBLICATION IS 226, CONSISTING OF THE FOLLOWING:

Page No.	*Change No.	Page No.	*Change No.
Title	0		
a - b	0		
A	0		
B Blank	0		
i - iv	0		
1-1 - 1-10	0		
2-1 - 2-30	0		
3-1 - 3-3	0		
3-4 Blank	0		
4-1 - 4-150	0		
5-1	0		
5-2 Blank	0		
A-1- A-2	0		
B-1	0		
B-2 Blank	0		
C-1 - C-4	0		
D-1 - D-3	0		
D-4 Blank	0		
E-1	0		
E-2 Blank	0		
F-1	0		
F-2 Blank	0		
Glossary-1 - Glossary-3	0		
Glossary -4 Blank	0		
Index-1 - Index -6	0		

*Zero in this column indicates an original page.

TECHNICAL MANUAL

No. 1-5855-265-30

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 30 AUGUST 2001

AVIATION INTERMEDIATE MAINTENANCE MANUAL
PILOT NIGHT VISION SENSOR (PNVS) ASSEMBLY
AN/AAQ-11
(NSN 5855-01-120-7831)
(AH-64A ATTACK HELICOPTER)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any errors or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms) or DA 2028-2 located in the back of this manual directly to: Commander, U.S. Army Aviation and Missile Command, ATTN: AMSAM-MMC-MA-NP, Redstone Arsenal, AL 35898-5000. A reply will be furnished to you. You may also send in your comments electronically to our e-mail address: 2028@redstone.army.mil or FAX us at (256) 842-6546/DSN 788-6546. Instructions for sending an electronic 2028 may be found at the end of this TM immediately preceding the hard copy 2028.

*This manual supersedes TM 11-5855-265-30, 1 February 1986, including all changes.

Distribution Statement A: Approved for public release; distribution is unlimited.

HOW TO USE THIS MANUAL

If you cannot find the information you are looking for, you cannot properly do your job. Take a few minutes to look through this manual. You will find it easier to use once you have become familiar with it.

Each chapter and section is set up to lead you through it step by step. For example:

1. On the chapter page, you will see a listing of the sections in that chapter. Listed under the section titles is a listing of the tasks for that section. Find the task (by title) that you have been assigned. Now, look across from the task title and you will find the paragraph and page number for the task. Notice that the chapter number forms part of the page number.

2. Now that you have located the page number, turn to that page and review the task requirements before starting the procedures.

3. Did you notice that each task or job begins with an initial setup?

    a. INITIAL SETUP lists the configuration, test equipment, tools and special tools, materials/parts, military occupational specialty (MOS), references, safety instructions, condition equipment should be in, and general instructions for you to complete the task. FOLLOWUP lists the procedures to be performed after you have completed the basic task.

    b. Now, what exactly does INITIAL SETUP mean to you? The term “INITIAL SETUP” means, “DO THIS FIRST BEFORE STARTING THE TASK.” Review one of the initial setup tables and become familiar with the requirements.

4. An explanation of the initial setup headings is presented below.

    a. Tools and Special Tools. Special tools needed to perform the task. Be sure to acquire all the tools before you start the task.

    b. Materials/Parts. Materials and parts needed to perform the task. Materials can be found in Appendix C. Next to the name of the material listed in the initial setup you will find an item number. This number matches the item number in column (1) of Appendix C. Be sure to acquire all the materials and parts before you start the task.

    c. Personnel Required. MOS required to do the task. This will also tell you the number of persons needed to perform the task.

5. You can also use the table of contents on page i of this manual to locate page number for chapters, sections, and the appendixes.

6. Let’s see if you understand how to find a specific task. Suppose your supervisor wants you to replace a part or assembly.

Here’s how you would find it:

    a. Obtain the correct TM for the task and look up the procedure in the chapter covering the type of task you are to perform.

    b. For example: Replacement is a maintenance task you can find located in the maintenance chapter.

HOW TO USE THIS MANUAL (cont)

c. Looking at the section titles listed in the maintenance chapter index, you should have located the page number for the maintenance procedures. Going to that page you found the section index and located the paragraph and page number of the replacement task.

7. Another approach would be to look in the alphabetical index in the rear of the manual.

CHAPTER 1

INTRODUCTION

Section I. GENERAL INFORMATION

1-1. SCOPE

a. Type of Manual

Aviation Intermediate Maintenance (AVIM)

b. Model Number and Equipment Name

Pilot Night Vision Sensor (PNVS) Assembly AN/AAQ-11

c. Purpose of Equipment

Provides a sighting system for night navigation, night takeoff and landing, and searching for targets during night operations.

1-2. CONSOLIDATED INDEX OF ARMY PUBLICATIONS AND BLANK FORMS

Refer to the latest issue of DA Pam 25-30 to determine whether there are new editions, changes, or additional publications pertaining to the equipment.

1-3. MAINTENANCE FORMS, RECORDS, AND REPORTS

a. Reports of Maintenence and Unsatisfactory Equipment.

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA Pam 738-751, The Army Maintenance Management System-Aviation (TAMMS).

1-3. MAINTENANCE FORMS, RECORDS, AND REPORTS (cont)

b. Reporting of Item and Packaging Discrepancies.

Fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2/DLAR 4140.55/SECNAVINST 4355.18/AFR 400-54/MCO 4430.3J.

c. Transportation Discrepancy Report (TDR) (SF 361).

Fill out and forward Transportation and Discrepancy Report (TDR) (SF 361) as prescribed in AR 55-38/NAVSUPINST 4610.33C/AFR 75-18/MCO P4610.19D/DLAR 4500.15.

1-4. DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2.

1-5. PREPARATION FOR STORAGE OR SHIPMENT

Refer to chapter 5 for applicable information.

1-6. OFFICIAL NOMENCLATURE, NAMES, AND DESIGNATIONS

a. This listing includes nomenclature cross-references used in this manual.

Official Nomenclature	Common Name	Reference Designation
PNVS Turret Assembly		1
Night Sensor Assembly	NSA	1A1
Video IR Preamplifier CCA		1A1A1
Video IR Preamplifier CCA		1A1A2
Video IR Preamplifier CCA		1A1A3
Video IR Preamplifier CCA		1A1A4
Video IR Preamplifier CCA		1A1A5
Video IR Preamplifier CCA		1A1A6
Video IR Preamplifier CCA		1A1A7
Video IR Preamplifier CCA		1A1A8
Video IR Preamplifier CCA		1A1A9
Bias Voltage Regulator CCA		1A1A10
Postamplifier Control Driver CCA		1A1A12
Postamplifier Control Driver CCA		1A1A13
Postamplifier Control Driver CCA		1A1A14
Postamplifier Control Driver CCA		1A1A15
Postamplifier Control Driver CCA		1A1A16

Official Nomenclature	Common Name	Reference Designation
Postamplifier Control Driver CCA		1A1A17
Postamplifier Control Driver CCA		1A1A18
Postamplifier Control Driver CCA		1A1A19
Postamplifier Control Driver CCA		1A1A20
ACM CCA		1A1A21
Power Regulator CCA		1A1A22
Postamplifier Motherboard CCA		1A1A23
Focus Control CCA		1A1A26
Cooler/Dewar Assembly		1A1A29/A30
Focusing Assembly		1A1A31
Visual Relay/Multiplexer Assembly		1A1A33
Power Supply Assembly		1A1A33A2
Controller CCA		1A1A33A4
Connector		1A1A33A4J1
Fan		1A1A33A42
Elevation Mirror and Afocal Lens Assembly		1A1A35
Azimuth Gyroscope Assembly		1A1A36
Capacitor		1A1A36C1-C2
Gyroscope		1A1A36MP1
Connector		1A1A36P1
Transistor Assembly		1A1A38
Transistor		1A1A38Q1-Q4
Connector		1A1A38P1
Capacitor/Relay Assembly		1A1A39
Capacitor		1A1A39C1-C2
Connector		1A1A39J1
Relay		1A1A39K1
Capacitor Assembly or Electronic Component Assembly		1A1A40

Official Nomenclature	Common Name	Reference Designation
Capacitor		1A1A40C1-C3
Semiconductor		1A1A40CR1
Connector		1A1A40J1-J2
Relay		1A1A40K1
Power Reactor		1A1A40L1
Semiconductor		1A1A40VR1
Capacitor Assembly		1A1A41
Capacitor		1A1A41C1-C2
Connector		1A1A41J1-J2
Boresight Assembly		1A1A43
Vaneaxial Fan		1A1B1
Pickoff Choke		1A1L1
Flexible Printed Cable Assembly		1A1W1
Flexible Printed Cable Assembly		1A1W2
Flexible Printed Cable Assembly		1A1W3
Flexible Printed Cable Assembly		1A1W4
Flexible Printed Cable Assembly		1A1W5
Flexible Printed Cable Assembly		1A1W6
Flexible Printed Cable Assembly		1A1W7
Flexible Printed Cable Assembly		1A1W8
Flexible Printed Cable Assembly		1A1W9
Branched Wiring Harness Assembly		1A1W10
Connector		1A1W10J2/J4
Connector		1A1W10P3
Connector		1A1W10P9-P14
Connector		1A1W10P16
Resistor		1A1W10R1-R2
Azimuth Gimbal Assembly		1A2
Azimuth Drive Assembly		1A2A1

Official Nomenclature	Common Name	Reference Designation
PNVS Shroud Assembly		1A3
Anti-ice CCA		1A3A1
Thermostat		1A3S1
Branched Wiring Harness Assembly		1A3W1
Connector		1A3W1P1-P2
Diode		1A3W1CR1
Electronic Control Amplifier Assembly	Torque Amplifier	1A4
PNVS Electronic Unit Assembly	PEU	2
Series/FLIR Regulator CCA		2A1
Interface CCA		2A2
BITE/Control CCA		2A3
Video Processor CCA		2A4
Chassis Assembly		2A5
Power Frame Assembly		2A5A1
Power Interconnect CCA		2A5A1A1
Voltage Regulator CCA		2A5A1A2
Capacitor		2A5A1C1-C2
Rectifier		2A5A1CR1-CR9
Semiconductor		2A5A1CR10-CR14
Relay		2A5A1K1-K4
Connector		2A5A1P7-P8
Semiconductor		2A5A1Q1-Q2
Transformer		2A5A1T1-T4
Microcircuit		2A5A1U1-U9
Semiconductor		2A5A1VR1

1-6. OFFICIAL NOMENCLATURE, NAMES, AND DESIGNATIONS (cont)

b. Refer to the glossary in the back of the manual for abbreviations used as common names, but not having official nomenclature.

1-7. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If your PNVS needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on an SF 368 (Quality Deficiency Report).

Mail it to us at:

Commander
U.S. Army Aviation and Missile Command
ATTN: AMSAM-MMC-MA-NM
Redstone Arsenal, AL 35898-5230

We'll send you a reply.

1-8. WARRANTY INFORMATION

Certain assemblies may be warranted. Refer to Appendix G. Check the DA Form 2408-15 overprint 2 and proceed as prescribed in DA PAM 738-751.

Section II. EQUIPMENT DESCRIPTION AND DATA

1-9. SYSTEM DESCRIPTION AND DATA

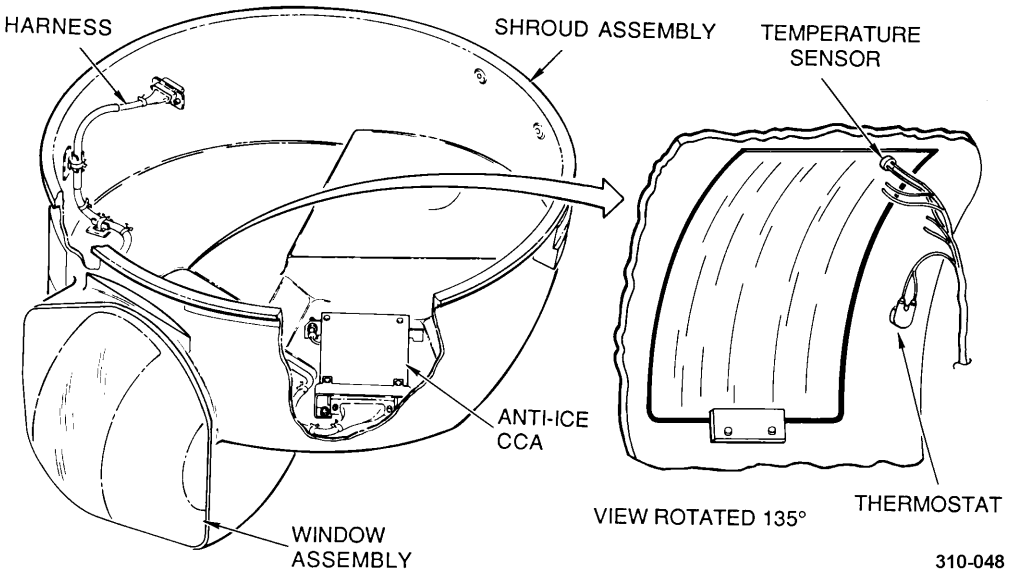
The following paragraphs give a description of some of the assemblies and their major subassemblies maintained at the AVIM level. For an overall description of PNVS, a listing of equipment data, and location of major maintained components refer to TM 1-5855-265-20.

1-10. DESCRIPTION OF PNVS TURRET ASSEMBLY

The PNVS turret assembly consists of the PNVS shroud assembly and the night sensor assembly.

a. Description of PNVS Shroud Assembly.

The PNVS shroud assembly contains a window assembly, anti-ice circuit card assembly (CCA), and interconnecting harness. The window assembly consists of a window made of germanium mounted in a fiberglass housing. Heater wires are imbedded in the fiberglass housing. A temperature sensor and thermostat are bonded to the window assembly. The anti-ice CCA contains an electrostatic discharge sensitive (ESDS) device and requires special preparation for storage or shipment when removed from the PNVS shroud assembly.



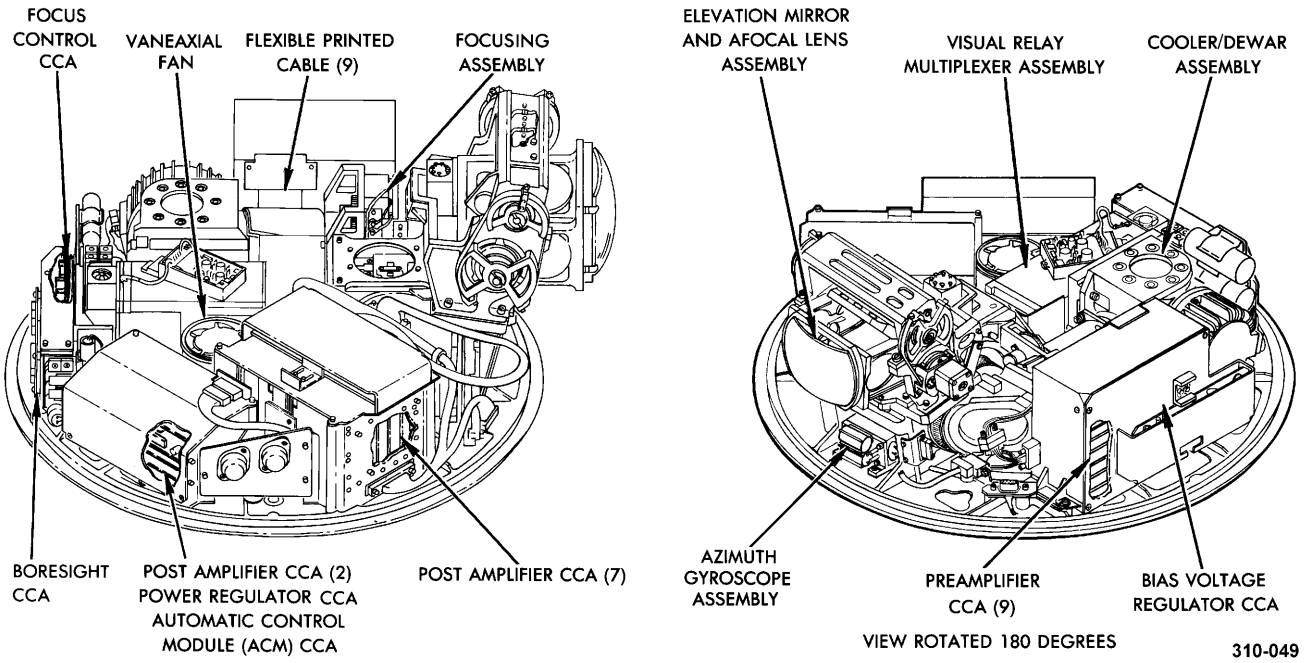
1-10. DESCRIPTION OF PNVS TURRET ASSEMBLY (cont)

b. Description of Night Sensor Assembly (NSA).

The NSA is a forward-looking infrared (FLIR) imaging device. It contains the following shop repairable or replaceable units:

- Boresight CCA
- Elevation mirror and afocal lens assembly
- Focus control CCA
- Focusing assembly
- Cooler/Dewar assembly
- Nine preamplifier CCAs, postamplifier CCAs, and innerconnecting flexible printed cables
- Automatic control module (ACM), power regulator, and bias voltage regulator CCAs
- Visual relay/multiplexer assembly or solid state camera assembly
- Vaneaxial fan
- Azimuth gyroscope assembly
- Miscellaneous electronic component assemblies (two capacitor assemblies, capacitor relay assembly, transistor assembly, choke, and two switch actuators)

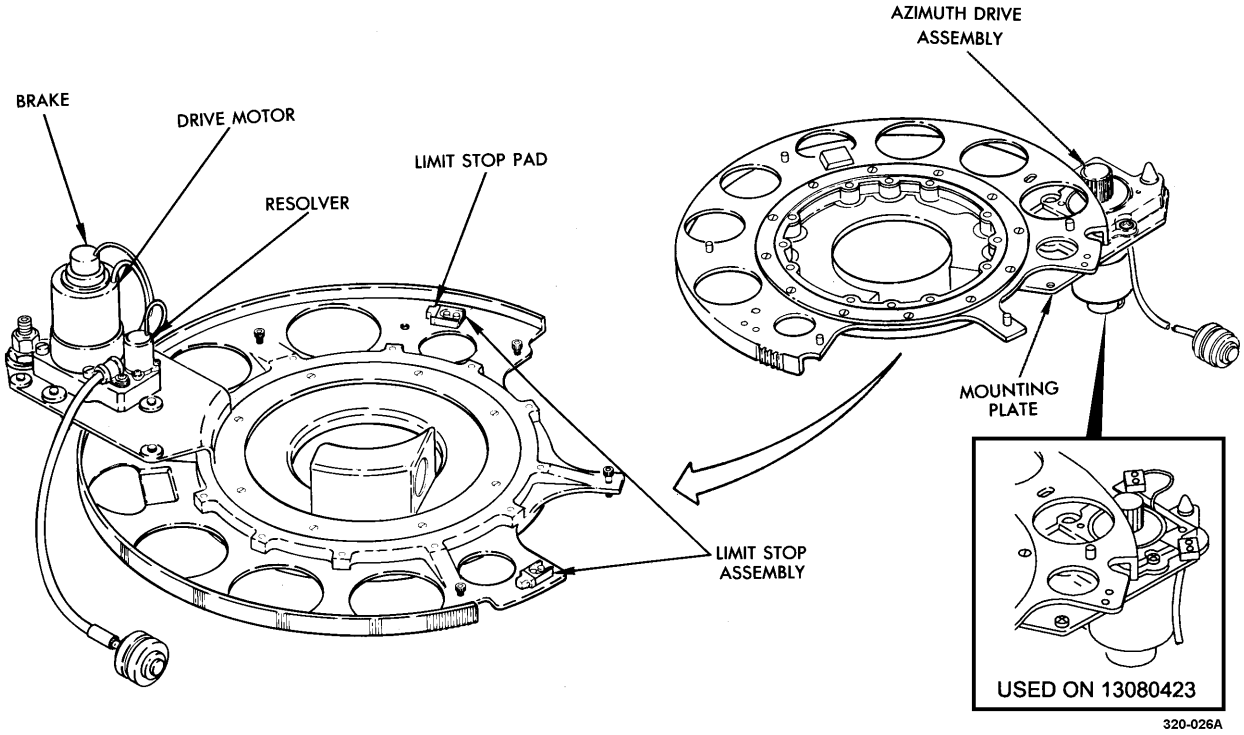
The ACM, focus control, power regulator CCAs and solid state camera assembly contain ESDS devices and require special preparation for storage or shipment when removed from the NSA.



1-11. DESCRIPTION OF AZIMUTH DRIVE GIMBAL ASSEMBLY

The azimuth drive gimbal assembly contains the azimuth drive assembly and two limit stop assemblies. The azimuth drive assembly is an SRU which contains the drive motor, brake and resolver.

An azimuth drive assembly affects gear backlash and resolver null. The limit stop switches contain replaceable pads.



1-12. DESCRIPTION OF PNVS ELECTRONIC UNIT (PEU) ASSEMBLY

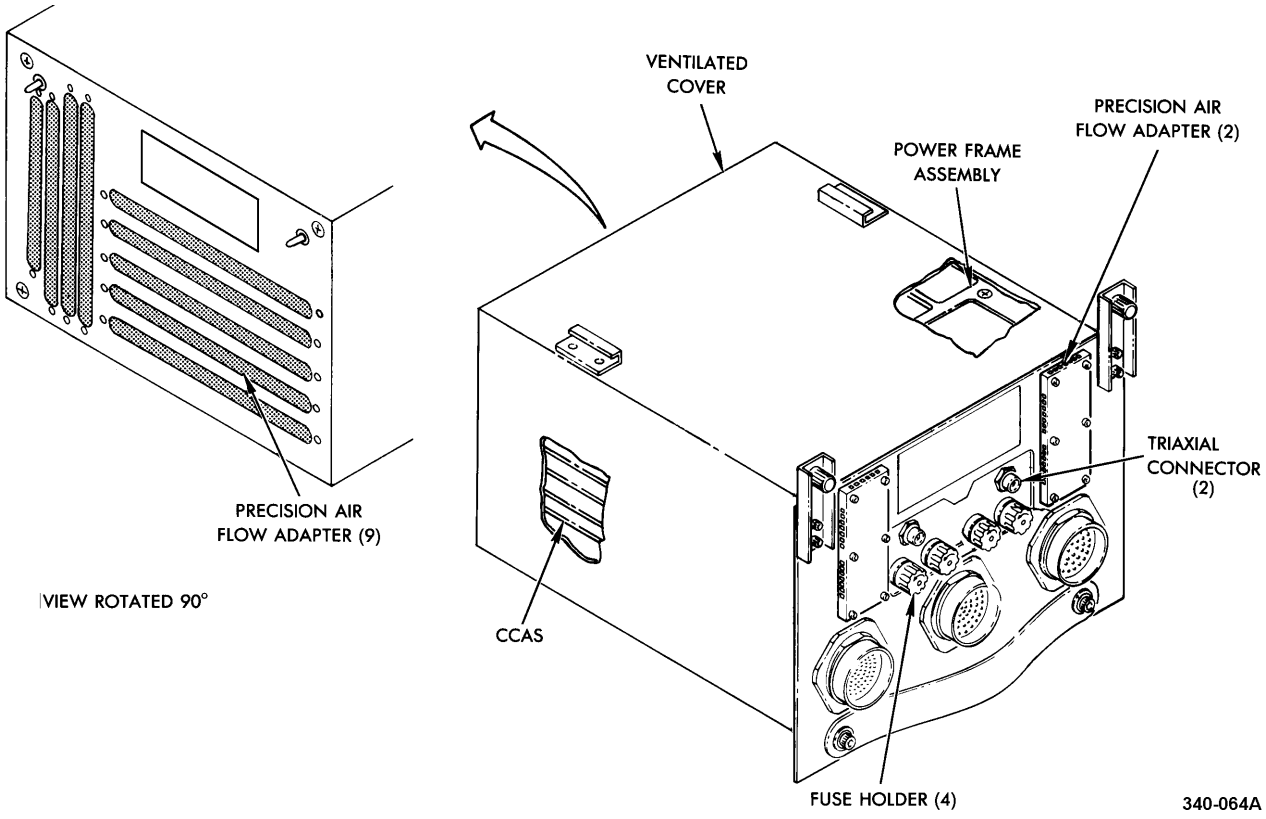
The PEU consists of a ventilated cover, four CCAs, and chassis assembly. The CCAs are the series regulator, interface, BITE/control, and video processor. The CCAs contain ESS devices and require special preparation for storage or shipment when removed from the PEU. The cover contains nine precision air flow adapters. The chassis houses the power frame assembly, four fuseholders, two triaxial connectors, and two precision air flow adapters. The power frame assembly contains the following replaceable electronic components:

- Nine rectifiers
- Eight semiconductors
- Four relays
- Four transformers
- Nine microcircuits
- Two capacitors
- Two CCAs

The power frame assembly contains ESS devices and require special preparation for storage or shipment when removed from the PEU. The nine microcircuits are the ESS devices that require special handling when they are removed.

1-12. DESCRIPTION OF PNVS ELECTRONIC UNIT (PEU) ASSEMBLY (cont)

Some older models of the PEU have Elapsed Time Indicators (ETI). These ETI units are being eliminated and replaced by a cover. If you have a unit with an ETI, see para 4-20, step 8 for instructions for its removal.



1-13. DIFFERENCES BETWEEN MODELS

There is only one model (AN/AAQ-11) of PNVS. Some differences exist between part numbers that may preclude direct replacement of assemblies. Refer to Repair Parts and Special Tools List (RPSTL) TM 1-5855-265-23P for interchangeable assemblies. If no interchangeable assembly exists, contact your supervisor and/or refer the PNVS system to the next higher level of maintenance.

CHAPTER 2

GENERAL MAINTENANCE INSTRUCTIONS

Section I. REPAIR PARTS; SPECIAL TOOLS; TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE); AND SUPPORT EQUIPMENT

2-1. COMMON TOOLS AND EQUIPMENT

For authorized common tools and equipment refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

2-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

For authorized special tools, TMDE, and support equipment pertaining to aviation intermediate maintenance, refer to TM 1-5855-265-23P Repair Parts and Special Tools List (RPSTL). For some work on the PNVS, special tools and TMDE are needed. The following is a listing of these items. Each item is listed with a T-number in the Item No. column. The nomenclature and T-number are used in the maintenance procedure.

Item No.	Name	Model/Type/Part No.	Use
T1	9/64-inch hex key with short arm	Fabricate per Appendix D	Elevation mirror and afocal lens assembly replacement
T2	PNVS Turret Holding Fixture	13083230	NSA repair
T3	Digital Multimeter	AN/PSM-45	Cable and wire harness repair

2-3. REPAIR PARTS

Repair parts are listed and illustrated in the repair parts and special tools list (TM 1-5855-265-23P) covering aviation intermediate maintenance for this equipment.

Section II. GENERAL MAINTENANCE PROCEDURES

2-4. STANDARD MAINTENANCE PRACTICES

This paragraph contains general information on certain practices that apply, as required, during maintenance.

a. Tagging and Untagging Wires During Soldering Procedures.

When a maintenance procedure requires soldering, tag the wires as they are removed. The tags must state the exact place the wires belong. After the wires are installed, remove the tags and have the solder connections inspected.

b. Shorting Capacitors.

Before working on a unit where charged capacitors may exist, short each lead of the capacitor to ground. Refer to TB 385-4 for proper shorting instructions.

c. Cleaning of Optics Exposed During Maintenance.

If optics are exposed during maintenance, refer to TM 1-5855-265-20.

d. Touchup Painting.

Refer to TM 55-1500-345-23 for touchup painting instructions.

e. Disconnecting and Connecting Screwlock-Type Connectors.

Turn screwlocks alternately one to two turns when disconnecting and connecting screwlock-type connectors. Failure to follow this procedure can result in bending connector contacts when loosening or tightening screwlocks.

f. General Inspection.

During assembly and installation of the PNVS, a 66J30 Aircraft Armament Technical Inspector will inspect all components and attaching hardware for security. Inspect all components for cracks and damage - none allowed. Damaged, loose, or broken wires must be repaired.

2-4. STANDARD MAINTENANCE PRACTICES (cont)

g. Elapsed Time Indicators.

If the elapsed time indicator on the visual relay/multiplexer assembly, capacitor/relay assembly, PNVS electronic unit assembly, and electronic control amplifier assembly has reached its run time limit, replacement is not required as it does not effect LRU operational criteria. If physical damage is evident, removal is necessary. Refer to Chapter 4 for elapsed time indicators removed at field level.

h. PNVS Shroud Assembly.

The PNVS shroud assembly window and housing are fragile and easily broken or damaged beyond AVIM repair capabilities. Use extreme care when handling the PNVS shroud assembly to prevent dropping or jarring the assembly. Put the PNVS shroud assembly on clean; soft material for temporary storage or during maintenance.

i. Access to Replacement Items.

During intermediate maintenance, some items with a depot third position source, maintenance, and recoverability (SMR) code must be removed to gain access to items coded for intermediate maintenance removal/replacement. Items coded for depot removal/replacement can be removed and reinstalled by intermediate maintenance when directed in the intermediate maintenance procedures. Items coded for depot removal/ replacement require special alinement or fault location procedures that are not available at intermediate maintenance. If these items are found to be damaged, refer to TM 1-5855-265-23P for disposition of the item and/or next highest assembly.

2-5. CABLE AND HARNESS ASSEMBLY REPAIR

This task covers:

Para	Item	Para	Item
1.	Unpotted connector replacement	2.	Unshielded contact replacement

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INITIAL SETUP

Test Equipment
Multimeter AN/PSM-45 T3
Tools and Special Tools
Aircraft armament repairman tool set and supplemental
Aircraft armament technical inspector tool set
Acid-type safety goggles
Hand crimping tool, M22520/2-01
Crimping tool positioner, M22520/2-06
Crimping tool positioner, M22520/2-08
Installation/removal tool, M81962/14-01
Installation/removal tool, M81962/14-10
Materials (appendix C)
Artist brush (Item 7)
Dispensing syringe (Item 48)
Electrical insulating compound (Item 11)
Heat shrinkable electrical insulation sleeving (Item 25)
Heat shrinkable electrical insulation sleeving (Item 26)
Heat shrinkable electrical insulation sleeving (Item 27)
Heat shrinkable electrical insulation sleeving (Item 29)
Heat shrinkable electrical insulation sleeving (Item 30)
Heat shrinkable electrical insulation sleeving (Item 31)
Heat shrinkable electrical insulation sleeving (Item 32)
Heat shrinkable electrical insulation sleeving (Item 33)
Heat shrinkable electrical insulation sleeving (Item 34)
Hot air shrinkable splice (Item 43)
Hot air shrinkable splice (Item 44)
Hot air shrinkable splice (Item 45)
Insulating tubing (Item 55)
Insulating tubing (Item 56)
Insulating tubing (Item 57)
Isopropyl alcohol (Item 4)
Lacing and tying tape (Item 49)
Rubber gloves
Rubber apron
Teflon tape (Item 51)
Tiedown strap (Item 46)
Personnel Required
68J Aircraft Fire Control Repairer
66J30 Aircraft Armament Technical Inspector
References
TM 1-5855-265-T

2-5. CABLE AND HARNESS ASSEMBLY REPAIR (cont)

CONNECTOR DATA TABLE

			CONTACT				CRIMPING TOOL		INSTALL/REMOVE TOOL	
ITEM NO.	CONN. REF. DES.	PERFORM STEP(S)	TYPE	NO. CONN.	SIZE	P/N	BASIC	PSNR	INSTALL	REMOVE
1	A3W1P1	2	P	9	20	3	A	C	b	b
2	1A3W1P2	2	S	36	22	2	A	B	a	a
3	1A1A40J1	1	P/S	2	26	4	S		c	c
4	1A1A40J2	1	P/S	2	26	4	S		c	c
5	1A1A38P1	1	S	14	22	2	A	B	a	a
6	1A1A39J1	1	P/S	2	26	4	S		c	c
7	1A1A41J1	1	P/S	4	22	4	S		c	c
8	1A1A41J2	1	P/S	4	22	4	S		c	c
9	1A1A33A4J1	1	P/S	2	26	4	S		c	c
10	1A1W10P3	1	S	20	22	4	S		c	c
11	1A1W10P9	1	S	10	22	4	S		c	c
12	1A1W10P10	1	P/S	4	22	4	S		c	c
13	1A1W10P11	1	P/S	2	26	4	S		c	c
14	1A1W10P12	1	P/S	4	22	4	S		c	c
15	1A1W10P13	1	P/S	2	26	4	S		c	c
16	1A1W10P14	1	P/S	2	26	4	S		c	c
17	1A1W10P16	1	P/S	2	26	4	S		c	c
18	1A1W10J2	2	S	24	22	2	A	B	a	a
19	1A1W10J4	2	S	9	20	1	A	C	b	b
20	2A5P6	1	S	24	22	4	S		c	c
21	2A5A1P7	2	S	34	16	4	S	S	c	c
22	2A5A1P8	2	S	64	22	2	A	B	a	a

1- Contact Type
P - Pin
S - Socket

2 - Contact P/N
1 - M39029/63-368
2 - M55302/65-01
3 - M39029/64-369
4 - SOLDER

3 - Crimping Tool
A - M22520/2-01
B - M22520/2-06
C - M22520/2-08
S - SOLDER

4 - Installation/Removal Tool
a - M81969/12-01
b - M81969/14-02
c - SOLDER

2-5. CABLE AND HARNESS ASSEMBLY REPAIR (cont)

1. UNPOTTED CONNECTOR REPLACEMENT

REMOVAL

CAUTION

Failure to note routing of wires and location of spot ties can result in damage to equipment.

a. Remove tiedown straps and/or clamps and cut spot ties as necessary to access wires to connector being replaced. Note routing of wires and location of each spot tie that was cut.

b. Tag wires attached to faulty connector.

c. Cut wires from faulty connector as close as possible to potting. Discard faulty connector.

d. Remove old heat shrinkable electrical insulation sleeving from individual wires.

INSTALLATION

e. Strip wires to proper length for insertion in contact wire barrel.

NOTE

Stripped portion of conductor must be long enough to bottom in the contact wire barrel, but bare wire must be less than 0.032 inch above the barrel.

f. Install heat shrinkable electrical insulation sleeving on wires to be soldered away from the end to make room for soldering. Do not apply heat. This will be done in a later step.

g. Solder or crimp wires as applicable to identified contacts or if applicable, attach crimp contacts (2 below).

h. Install crimp contacts into connector inserts using installation tool specified in the tabular listing.

i. Lightly tug on each wire to check that wire contact holds.

j. Remove tags.

k. Slide heat shrinkable electrical insulation sleeving over soldered contacts and apply heat. Insulation sleeving will form a snug fit after shrinking.

CAUTION

Wires must be routed, bundled, and spot tied exactly as they were before spot ties were removed. Failure to do this may result in binding of movable mechanical components.

l. Form and route wires into neat bundles and spot tie with lacing and tying tape at locations noted in step a above. Secure harness assembly with tiedown straps and/or clamps as necessary.

m. Perform electrical tests.

(1) With multimeter T3 set on lowest resistance scale, make a point-to-point continuity measurement of wire. Verify meter indicates less than 1 ohm for each wire.

2-5. CABLE AND HARNESS ASSEMBLY REPAIR (cont)

(2) With multimeter T3 set on highest resistance scale, test each conductor to all other conductors, conductor shields, and connector shells. Verify resistance is not less than 100 megohms.

n. Have connector installation inspected.

END OF TASK

2. UNSHIELDED CONTACT REPLACEMENT

REMOVAL

CAUTION

Failure to note routing of wires and location of spot ties can result in damage to equipment.

a. Remove tiedown straps and/or clamps and cut spot ties as necessary to access wires to contact being replaced. Note routing of wires and location of each spot tie that was cut.

b. Remove faulty contact from connector using removal tool specified in the tabular listing.

NOTE

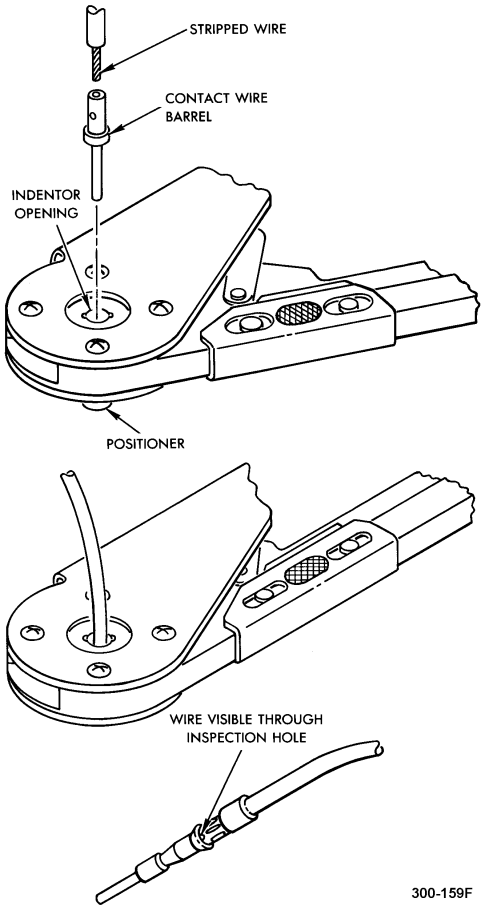
Cut wire as close to contact as possible.

c. Cut wire from faulty contact.

INSTALLATION

d. Strip wire to proper length for insertion in contact wire barrel.

e. Insert stripped end of wire into contact wire barrel. Hold wire in position and check that wire is visible through inspection hole.



f. Select crimping tool with positioner as specified in the tabular listing. Insert contact into crimping tool until contact is fully seated in positioner.

g. Squeeze crimping tool handles until ratchet releases finished contact.

2-5. CABLE AND WIRING HARNESS ASSEMBLY REPAIR (cont)

h. Remove contact from tool. Holding contact in one hand and wire in the other, lightly tug on wire to check that wire contact holds.

i. Insert contact into connector using installation tool specified in the tabular listing.

j. Lightly tug on wire to check that wire contact holds.

CAUTION

Wires must be routed, bundled, and spot tied exactly as they were before spot ties were removed. Failure to do this may result in binding of movable mechanical components.

k. Form and route wires into neat bundles and spot tie with lacing and tying tape at locations noted in step a above. Secure harness assembly with tiedown straps and/or clamps as necessary.

l. Perform electrical tests.

(1) With multimeter T3 set on lowest resistance scale, make a point-to-point continuity measurement of wire. Verify meter indicates less than 1 ohm for each wire.

(2) With multimeter T3 set on highest resistance scale, test each conductor to all other conductors, conductor shields, and connector shells. Verify resistance is not less than 100 megohms.

END OF TASK

2-6. SEALING COMPOUNDS AND ADHESIVES REMOVAL, APPLICATION, AND CURING

INITIAL SETUP

Tools

Aircraft armament repairman tool set and supplemental
Acid-type safety goggles
Black light, 663500X789511
Gun type heater, Raychem Co. No. 991609
Knife, thermal, SP-23-HK
Rubber apron
Rubber gloves

Materials (appendix C)

Abrasive paper (Item 37)
Abrasive paper (Item 38)
Acetone (Item1)
Artist brush (Item 8)
Cotton swabs (Item 5)
Cotton wiping cloth (Item 9)
Dichloromethane (Item 16)
Finger cots (Item 19)
Freon TMS (Item 20)
Isopropyl alcohol (Item 4)
Nitrogen, technical (Item 35)
Paper cup (Item 14)
Toluene (Item 52)
Tongue depressor (Item 15)
Trichloroethane (Item 53)

Personnel Required

68J Aircraft Fire Control Repairer

General Safety Instructions

Hazardous materials are used in this procedure
Be sure that you read and follow all applicable warnings

TASK DESCRIPTION

This paragraph contains procedures for removing, applying, and curing various compounds and adhesives used throughout this manual. The following listing provides quick-reference general data for each compound and adhesive. A detailed procedure for each compound and adhesive follows the listing. The first column of the listing specifies which step covers that compound or adhesive. Be sure that you read the entire applicable detailed step before beginning the procedure.

2-6. SEALING COMPOUNDS AND ADHESIVES REMOVAL, APPLICATION, AND CURING (cont)

COMPOUND/ADHESIVE TABLE

Detailed Step No.	Appendix C Item No.	Compound Name	Mix Ratio Base to Hardener	Max Work Life	Cure Time at 67 - 87°F in Hours	Removal Methods*
1	10	Corrosion inhibitive sealing and coating compound	10:1	1 hr.	30	1,2,6,7,9
		OR				
		Corrosion inhibitive sealing and coating compound	100:15	1 hr.	30	1,2,6,7,9
		OR				
2	40	Sealing, locking, and retaining compound primer		N/A	N- 0.5 T- 0.1	3,7,8
3	12	Sealing, locking, and retaining compound		N-10 min. T-5 min.	N-5.0 T-1.0	3,7,8
4	39	Noncorrosive RTV silicone adhesive sealant primer		15 min	6	2,9
5	3	Noncorrosive RTV silicone adhesive sealant		14 min	168	2,5,6
6	33	Epoxy adhesive kit	3:1	35-50 min	24	4,9,10
7	11	Insulating compound (conformal coating)	7 parts A: 3 parts B, by weight	1.25 hr	120	11
8	2	Epoxy adhesive 13085103	10 parts A: 8.5 parts B, by weight	30-60 min	72	4,9,10

*Removal Methods

Uncured Compound

1 - Cloth moistened with acetone
2 - Cloth moistened with toluene
3 - Cloth moistened with trichloroethane
4 - Cloth moistened w/ isopropyl alcohol
5 - Cut away, scrape surface, wipe surface with toluene

Cured Compounds

6 - Immerse in dichloromethane
7 - Wire brush
8 - Trichloroethane
9 - Sand or scrape surface and wash surface with isopropyl alcohol
10 - Gun-type heater
11 - Cut away with thermal knife
N - Grade N primer
T - Grade T primer

2-6. SEALING COMPOUNDS AND ADHESIVES REMOVAL, APPLICATION, AND CURING (cont)

1. CORROSION INHIBITIVE SEALING AND COATING COMPOUND

WARNING

CORROSION INHIBITIVE SEALING AND COATING COMPOUND, ACETONE, OR TOLUENE

- Flammable, toxic, irritating. Can cause breathing problems, eye damage.
- Don't: Use near flames or sparks, let it get on skin, or breathe vapors.
- Do: Use in well-ventilated area, close containers when not using. Wear acid-type safety goggles, rubber gloves, and rubber apron.
- If it contacts skin or eyes, wash affected areas with running water. Get medical help at once.
- If you experience any breathing problems, get to fresh air at once.

WARNING

DICHLOROMETHANE

- Can cause breathing problems, eye damage.
- Fire containing dichloromethane gives off phosgene gas, which can cause death or serious injury.
- Don't: Let it get on skin, or breathe vapors.
- Do: Use in well-ventilated area, close containers when not using. Wear acid-type safety goggles, rubber gloves, and rubber apron.
- If you experience any breathing problems, get to fresh air at once.

WARNING

ISOPROPYL ALCOHOL

- Flammable, toxic, irritating. Can cause breathing problems, eye damage.
- Don't: Use near flames or sparks, let it get in eyes, or breathe vapors.
- Do: Use in well-ventilated area, close containers when not using. Wear acid-type safety goggles, rubber gloves, and rubber apron.
- If it contacts eyes, wash eyes with running water. Get medical help at once.
- If you experience any breathing problems, get to fresh air at once.

WARNING

FREON TMS

- Toxic, irritating. Can cause breathing problems, eye damage.
- Don't: Let it get on skin, or breathe vapors.
- Do: Use in well-ventilated area, close containers when not using. Wear acid-type safety goggles, rubber gloves, and rubber apron.
- If it contacts skin or eyes, wash affected areas with running water. Get medical help at once.
- If you experience any breathing problems, get to fresh air at once.

2-6. SEALING COMPOUNDS AND ADHESIVES REMOVAL, APPLICATION, AND CURING (cont)

REMOVAL

a. Remove uncured compound with cloth with acetone or toluene.

b. Remove cured compound by one or more of the methods listed below.

(1) For attaching hardware, scrape away with knife or wire brush. For mating surfaces, scrape away with wood tongue depressor. Wipe all surfaces with a cloth and toluene.

(2) Soak in dichloromethane until bond line swells (about 2 hours), then remove as in (1) above.

(3) Brush or swab with dichloromethane. Keep compound wet until bond line swells, then remove as in (1) above.

APPLICATION

NOTE

Work life is 1 hour at 67 - 87°F.

c. Let base and hardener containers stand for at least 24 hours at 67 - 87°F.

d. Wipe surfaces with cloth and Freon TMS.

e. Mix curing agent in its container until it becomes a uniform paste.

NOTE

Two different types of corrosion inhibitive sealing and coating compounds are used. If using Pro-Seal 870, go to step f. If using PR-1436-G, go to step g.

f. Pro-seal 870: Mix 100 parts base to 15 parts hardener until color is uniform. Go to step h.

g. PR-1436-G: Mix 10 parts base to 1 part hardener until color is uniform.

h. Fold mixture and blend for 5 minutes minimum. Do not allow air bubbles to form.

i. Use brush or small putty knife to apply compound as follows:

(1) Class 1A application (screws tightened immediately upon Installation) -apply compound to threads.

(2) Class 1B application (screws tightened after alinement) - apply compound to heads of tightened screws.

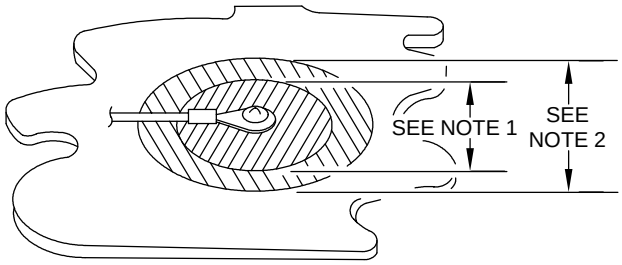
(3) Class 1C application (mating surfaces) - apply compound to entire mating surface of one of the two parts.

2-6. SEALING COMPOUNDS AND ADHESIVES REMOVAL, APPLICATION, AND CURING (cont)

(4) Class 2 application- apply compound over all bonding hardware. Extend coating to cover an area 1-1/2 times diameter of sanded area.

NOTE

Remove excess uncured compound using a cloth and acetone or toluene.



NOTES:
1. SANDED AREA
2. HARDWARE AND AREA COATED WITH COMPOUND (1-1/2 TIMES DIAMETER OF SANDED AREA.)

300-164

CURING

NOTE

Assemblies using class 1 application may be handled Immediately after completion of assembly. Assembles using class 2 may be handled when compound becomes tack-free to touch.

j. Cure compound for 30 hours at 67 to 87°F.

END OF TASK

2-6. SEALING COMPOUNDS AND ADHESIVES REMOVAL, APPLICATION, AND CURING (cont)

2. SEALING, LOCKING, AND RETAINING COMPOUND PRIMER

WARNING

TRICHLOROETHANE

- Flammable, toxic, irritating, can cause breathing problems, eye damage.
- At 325°F (162.7°C), gives off phosgene gas, which can cause death or serious injury.
- Don't: Use near flames or sparks, let it get on skin, or breathe vapors.
- Do: Use in well-ventilated area, close containers when not using. Wear acid-type safety goggles, rubber gloves, and rubber apron.
- If it contacts skin or eyes, wash affected areas with running water. Get medical help at once.
- If you experience any breathing problems, get to fresh air at once.

WARNING

ISOPROPYL ALCOHOL

- Flammable, toxic, irritating. Can cause breathing problems, eye damage.
- Don't: Use near flames or sparks, let it get on skin, or breathe vapors.
- Do: Use in well-ventilated area, close containers when not using. Wear acid-type safety goggles, rubber gloves, and rubber apron.
- If it contacts eyes, wash eyes with running water. Get medical help at once.
- If you experience any breathing problems, get to fresh air at once.

REMOVAL

a. Remove uncured primer with cloth and trichloroethane.

b. Remove cured primer by one of the methods listed below:

(1) Sand surface with 400 grit abrasive paper.

(2) Apply trichloroethane to surface and scrub with wire brush.

2-6. SEALING COMPOUNDS AND ADHESIVES REMOVAL, APPLICATION, AND CURING (cont)

APPLICATION

CAUTION

Do not use primers on titanium, copper or its alloys, plastics, vinyl, or lacquer type finishes. Primers and chlorinated cleaning solvents attack surfaces of titanium, copper and its alloys, plastics, vinyl, and lacquer type finishes.

c. Clean surface with cloth and trichloroethane.

d. Wipe surface with cloth and isopropyl alcohol.

NOTE

There are two grades of primer. Use grade T for fast set time at low temperatures. Use grade N where installation or adjustment of hardware must be made.

e. Apply primer using a soft brush or applicator nozzle supplied with primer.

f. Apply locking compound within 8 hours after priming.

g. Cure primer as follows:

(1) Grade T primer for 3 to 5 minutes.

(2) Grade N primer for 15 to 30 minutes.

END OF TASK

2-6. SEALING COMPOUNDS AND ADHESIVES REMOVAL, APPLICATION, AND CURING (cont)

3. SEALING, LOCKING, AND RETAINING COMPOUND

WARNING

TOLUENE

- Flammable, toxic, irritating. Can cause breathing problems, eye damage.
- Don't: Use near flames or sparks, let it get on skin, or breathe vapors.
- Do: Use in well-ventilated area, close containers when not using. Wear acid-type safety goggles, rubber gloves, and rubber apron.
- If it contacts skin or eyes, wash affected areas with running water. Get medical help at once.

WARNING

TRICHLOROTRIFLUOROETHANE

- Flammable, toxic, irritating. Can cause breathing problems, eye damage.
- At 325°F gives off phosgene gas, which can cause death or serious injury.
- Don't use near flames or sparks, let it get on skin or breathe vapors.
- Don't: Let it get on skin, or breathe vapors.
- Do: Use in well-ventilated area, close containers when not using. Wear acid-type safety goggles, rubber gloves and rubber apron.
- If it contacts skin or eyes, wash affected areas with running water. Get medical help at once.
- If you experience any breathing problems, get to fresh air at once.

WARNING

SEALING, LOCKING AND RETAINING COMPOUND

- Flammable, toxic, irritating. Can cause eye damage.
- Don't: Use near flames or sparks, let it get on skin.
- Do: Use in well-ventilated area, close containers when not using. Wear acid-type safety goggles, rubber gloves.
- If it contacts skin or eyes, wash affected areas with running water. Get medical help at once.

REMOVAL

a. Remove uncured locking compound with cloth and toluene or trichlorotrifluoroethane.

b. Remove cured locking compound by one or both of the methods listed below:

(1) Scrub with wire brush and trichlorotrifluoroethane.

(2) Run screw or bolt in and out of threaded insert until threads are clean.

APPLICATION

CAUTION

Do not use locking compounds on plastics or lacquer type finishes. Locking compounds soften or pit surfaces of plastics and lacquer type finishes.

NOTE

Work life is 5 minutes when applied over grade T primer and 10 minutes when applied over grade N primer.

2-6. SEALING COMPOUNDS AND ADHESIVES REMOVAL, APPLICATION, AND CURING (cont)

c. Prime all parts (2 above).

d. Apply locking compound within 8 hours after priming.

NOTE

There are two ways to apply sealing, locking, and retaining compound.

- Type I application - the locking compound is applied to mounting hardware before installation.
- Type II application - the locking compound is applied to mounting hardware after installation and final adjustments are made.

e. Apply locking compound using a soft brush or applicator nozzle supplied with locking compound.

CURING

f. Cure locking compound applied over grade T primer for 1 hour at 45°F or above.

g. Cure locking compound applied over grade N primer for 5 hours at 45°F or above.

END OF TASK

4. NONCORROSIVE RTV SILICONE ADHESIVE SEALANT PRIMER

WARNING

ISOPROPYL ALCOHOL

- Flammable, toxic, irritating. Can cause breathing problems, eye damage.
- Don't: Use near flames or sparks, let it get on skin, or breathe vapors.
- Do: Use in well-ventilated area, close containers when not using. Wear acid-type safety goggles, rubber gloves, and rubber apron.
- If it contacts eyes, wash eyes with running water. Get medical help at once.
- If you experience any breathing problems, get to fresh air at once.

WARNING

TRICHLOROTRIFLUOROETHANE

- Flammable, toxic, irritating. Can cause breathing problems, eye damage.
- At 325°F gives off phosgene gas, which can cause death or serious injury.
- Don't: Use near flames or sparks, let it get on skin or breathe vapors.
- Do: Use in well-ventilated area, close containers when not using. Wear acid-type safety goggles, rubber gloves and rubber apron.
- If it contacts skin or eyes, wash affected areas with running water. Get medical help at once.
- If you experience any breathing problems, get to fresh air at once.

2-6. SEALING COMPOUNDS AND ADHESIVES REMOVAL, APPLICATION, AND CURING (cont)

WARNING

TOLUENE OR ACETONE

- Flammable, toxic, irritating. Can cause breathing problems, eye damage.
- Don't: Use near flames or sparks, let it get on skin, or breathe vapors.
- Do: Use in well-ventilated area, close containers when not using. Wear acid-type safety goggles, rubber gloves, and rubber apron.
- If it contacts eyes, wash eyes with running water. Get medical help at once.
- If you experience any breathing problems, get to fresh air at once.

WARNING

SILICONE PRIMER

- Flammable, can cause breathing problems
- Don't: Use near flames or sparks, or breathe vapors.
- Do: Use in well-ventilated area, close containers when not using.
- If you experience shortness of breath, or other breathing problems, get to fresh air at once.

REMOVAL

a. Remove uncured primer with cloth and toluene.

b. Remove cured primer as follows:

(1) Sand surface with 400 grit abrasive paper.

(2) Scrape surface clean.

(3) Clean surface with cloth and isopropyl alcohol.

APPLICATION

NOTE

Work life is 15 minutes.

c. Roughen surface with 180 grit abrasive paper.

d. Clean surface with cloth and trichlorotrlfluoroethane or acetone.

e. Wipe surface with cloth and isopropyl alcohol.

f. Apply primer within 4 hours of final cleaning step.

g. Apply primer in a thin coat to mating surfaces using a soft brush.

NOTE

Do not contaminate primed parts with fingerprints. Wear finger cots.

h. Cure primer as follows:

NOTE

If humidity is below 20%, primer will not cure.

(1) If humidity is 40% or above, cure for 2 hours.

(2) If humidity is 20% to 39%, cure for 6 hours.

END OF TASK

2-6. SEALING COMPOUNDS AND ADHESIVES REMOVAL, APPLICATION, AND CURING (cont)

5. NONCORROSIVE RTV SILICONE ADHESIVE-SEALANT

WARNING

TOLUENE

- Flammable, toxic, irritating. Can cause breathing problems, eye damage.
- Don't: Use near flames or sparks, let it get on skin, or breathe vapors.
- Do: Use in well-ventilated area, close containers when not using. Wear acid-type safety goggles, rubber gloves, and rubber apron.
- If it contacts skin or eyes, wash affected areas with running water. Get medical help at once.

WARNING

SILICONE ADHESIVE

- Flammable, toxic, can cause breathing problems.
- Don't: Use near flames or sparks, or breathe vapors.
- Do: Use in well-ventilated area, close containers when not using.
- If you experience shortness of breath, or other breathing problems, get to fresh air at once.

WARNING

DICHLOROMETHANE

- Toxic, irritating. Can cause breathing problems, eye damage.
- Fire containing dichloromethane gives off phosgene gas, which can cause death or serious injury.
- Don't: Let it get on skin or breathe vapors.
- Do: Use in well-ventilated area, close containers when not using. Wear acid-type safety goggles, rubber gloves, and rubber apron.
- If it contacts skin or eyes, wash affected areas with running water. Get medical help at once.
- If you experience any breathing problems, get to fresh air at once.

REMOVAL

a. Remove uncured adhesive-sealant with cloth and toluene.

b. Remove cured adhesive-sealant by one or more of the methods listed below:

(1) Cut or scrape away with knife, then wipe with cloth and toluene.

(2) Soak in dichloromethane until bond line swells (about 2 hours), then remove as in step (1) above.

(3) Brush or swab with dichloromethane. Keep compound wet until bond line swells, then remove as in step (1) above.

APPLICATION

NOTE

Work life is 14 minutes after start of application.

c. Prime surfaces (4 above).

d. Apply adhesive-sealant within 24 hours after priming.

e. Apply adhesive-sealant with knife or small putty knife.

2-6. SEALING COMPOUNDS AND ADHESIVES REMOVAL, APPLICATION, AND CURING (cont)

CURING

NOTE

- Adhesive-sealant will not cure below 20% humidity.
- When adhesive is used as a sealant between, or adjacent to, mechanically joined surfaces, further assembly may proceed immediately.

f. Cure adhesive-sealant for 168 hours at 67 to 87°F.

END OF TASK

6. EPOXY ADHESIVE KIT

WARNING

ISOPROPYL ALCOHOL

- Flammable, toxic, irritating. Can cause breathing problems, eye damage.
- Don't: Use near flames or sparks, let it get on skin, or breathe vapors.
- Do: Use in well-ventilated area, close containers when not using. Wear acid-type safety goggles, rubber gloves, and rubber apron.
- If it contacts eyes, wash eyes with running water. Get medical help at once.
- If you experience any breathing problems, get to fresh air at once.

WARNING

EPOXY ADHESIVE OR TRICHLOROTRIFLUOROETHANE

- Toxic, irritating. Can cause breathing problems, eye damage.
- Don't: Let it get on skin, or breathe vapors.
- Do: Use in well-ventilated area, close containers when not using. Wear acid-type safety goggles, rubber gloves, and rubber apron.
- If it contacts skin or eyes, wash affected areas with running water. Get medical help at once.
- If you experience any breathing problems, get to fresh air at once.

REMOVAL

a. Remove uncured adhesive with cloth and isopropyl alcohol.

b. Remove cured adhesive from surfaces as follows:

(1) Sand surface with 180 grit abrasive paper.

(2) Scrape surface clean.

(3) Clean surface with cloth and isopropyl alcohol.

CAUTION

Use care not to damage wires when removing adhesive spot bonds.

c. Remove cured adhesive spot bonds securing wiring as follows:

2-6. SEALING COMPOUNDS AND ADHESIVES REMOVAL, APPLICATION, AND CURING (cont)

(1) Using gun type heater, heat adhesive spot bond and pry or pull up on wire(s) until adhesive spot releases at bonded surface.

NOTE

If single wires need to be separated from a group of wires bonded together by the released spot of adhesive, do step (2) below.

(2) Apply heat to released spot of adhesive and pull wire(s) out of adhesive spot.

APPLICATION

NOTE

- Work life is 35 to 50 minutes after mixing at 67 to 87°F.
- It is permissible to rebond an old adhesive spot at the location from which it was removed.

d. Clean surfaces with cloth and isopropyl alcohol.

e. Wipe surfaces with cloth and trichlorotrifluoroethane.

f. Mix 3 parts base and one part hardener.

g. Apply adhesive with knife or putty knife.

CURING

h. Cure adhesive for 24 hours at 67 to 87°F.

END OF TASK

2-6. SEALING COMPOUNDS AND ADHESIVES REMOVAL, APPLICATION, AND CURING (cont)

7. INSULATING COMPOUND (CONFORMAL COATING)

WARNING

TRICHLOROETHANE

- Flammable, toxic, irritating. Can cause breathing problems, eye damage.
- At 325°F (162.7°C), gives off phosgene gas, which can cause death or serious injury.
- Don't: Use near flames or sparks, let it get on skin, or breathe vapors.
- Do: Use in well-ventilated area, close containers when not using. Wear acid-type safety goggles, rubber gloves, and rubber apron.
- If it contacts skin or eyes, wash affected areas with running water. Get medical help at once.
- If you experience any breathing problems, get to fresh air at once.

WARNING

ISOPROPYL ALCOHOL

- Flammable, toxic, irritating. Can cause breathing problems, eye damage.
- Don't: Use near flames or sparks, let it get on skin, or breathe vapors.
- Do: Use in well-ventilated area, close containers when not using. Wear acid-type safety goggles, rubber gloves, and rubber apron.
- If it contacts eyes, wash eyes with running water. Get medical help at once.
- If you experience any breathing problems, get to fresh air at once.

WARNING

INSULATING COMPOUND

- Flammable, toxic, irritating. Can cause breathing problems, eye damage.
- Don't: Use near flames or sparks, let it get on skin, in eyes, or breathe vapors.
- Do: Use in well-ventilated area, close containers when not using. Wear acid-type safety goggles, rubber gloves, and rubber apron.
- If it contacts skin or eyes, wash affected areas with running water. Get medical help at once.
- If you experience any breathing problems, get to fresh air at once.

WARNING

NITROGEN

- Asphyxiant: Nitrogen displaces oxygen. In a confined area, it can cause death by suffocation or serious injury.
- Use only in a well-ventilated area.
- If you experience shortness of breath or an increase in heart rate, get to fresh air at once.

2-6. SEALING COMPOUNDS AND ADHESIVES REMOVAL, APPLICATION, AND CURING (cont)

REMOVAL

CAUTION

Use care when removing compound not to damage mounting pads or other components or leads.

a. Remove cured compound carefully around the leads to be unsoldered

b. Tag and unsolder leads

c. Clean area with small brush and trichloroethane.

d. Clean area by flushing with isopropyl alcohol.

e. Blow dry with clean, dry oil-free air or nitrogen.

APPLICATION

NOTE

Work life is 1.25 hours after mixing at 67 to 87°F.

f. Clean area with small brush and trichloroethane.

g. Clean area by flushing with isopropyl alcohol.

h. Mix 7 parts A to 3 parts B by weight. Mix for 2 minutes.

i. Let compound stand 30 minutes before using.

j. Solder leads and remove tags.

k. Clean area with small brush and trichloroethane.

l. Clean area by flushing with isopropyl alcohol.

m. Blow dry with clean dry oil-free air or nitrogen.

NOTE

Apply compound within 4 hours after cleaning.

n. Apply compound to uncoated area with small brush.

NOTE

Remove excess uncured compound with trichloroethane, followed by isopropyl alcohol, then air dry.

o. Have installation inspected with black light.

CURING

NOTE

A second coat may be applied after 3 hours drying time if needed.

p. Cure compound for 120 hours at 67 to 87°F.

END OF TASK

2-6. SEALING COMPOUNDS AND ADHESIVES REMOVAL, APPLICATION, AND CURING (cont)

8. EPOXY ADHESIVE, 13085103

WARNING

ACETONE OR ISOPROPYL ALCOHOL

- Flammable, toxic, irritating. Can cause breathing problems, eye damage.
- Don't: Use near flames or sparks, let it get on skin, in eyes, or breathe vapors.
- Do: Use in well-ventilated area, close containers when not using. Wear acid-type safety goggles, rubber gloves, and rubber apron.
- If it contacts eyes, wash eyes with running water. Get medical help at once.
- If you experience any breathing problems, get to fresh air at once.

WARNING

NITROGEN

- Asphyxiant: Nitrogen displaces oxygen. In a confined area, it can cause death by suffocation or serious injury.
- Use only in a well-ventilated area.
- If you experience shortness of breath or an increase in heart rate, get to fresh air at once.

WARNING

EPOXY ADHESIVE

- Flammable, toxic, irritating. Can cause eye damage.
- Don't: Mix in quantities greater than 2 pounds. Toxic fumes can occur, resulting in personal injury.
- Don't: Use near flames or sparks, let it get on skin, or in eyes.
- Do: Use in well-ventilated area, close containers when not using. Wear acid-type safety goggles, rubber gloves, and rubber apron.
- If it contacts eyes, wash affected areas with running water for not less than 15 minutes. If it contacts skin, wash affected area with soap and water. Get medical help at once.
- If you experience any breathing problems, get to fresh air at once.

REMOVAL

CAUTION

Use care when removing compound not to damage mounting pads or other components or leads.

a. Remove cured compound carefully around leads to be unsoldered.

b. Tag and unsolder leads.

c. Clean area with small brush and acetone.

d. Clean area by flushing with isopropyl alcohol.

e. Blow dry with clean, dry oil-free compressed air or nitrogen.

2-6. SEALING COMPOUNDS AND ADHESIVES REMOVAL, APPLICATION, AND CURING (cont)

APPLICATION

NOTE

Work life is 30 to 60 minutes after mixing at 67 to 87°F.

f. Clean area with small brush and acetone.

g. Clean area by flushing with isopropyl alcohol.

h. Mix 10 parts A (white color) to 8.5 parts B (dark amber color) by weight. Mix until uniform beige color. Mix ratio by volume is one to one.

i. Solder leads and remove tags.

j. Clean area with small brush and acetone.

k. Clean area by flushing with isopropyl alcohol.

l. Blow dry with clean, dry oil-free compressed air or nitrogen.

m. Apply compound to uncoated area with small brush.

NOTE

Remove excess uncured compound with isopropyl alcohol, then air dry.

CURING

n. Cure compound for 72 hours at 67 to 87°F or for not less than 90 minutes at 135 to 165°F or for not less than 60 minutes at 162 to 198°F.

END OF TASK

2-7. ELECTRICAL BONDING SURFACE PREPARATION

INITIAL SETUP

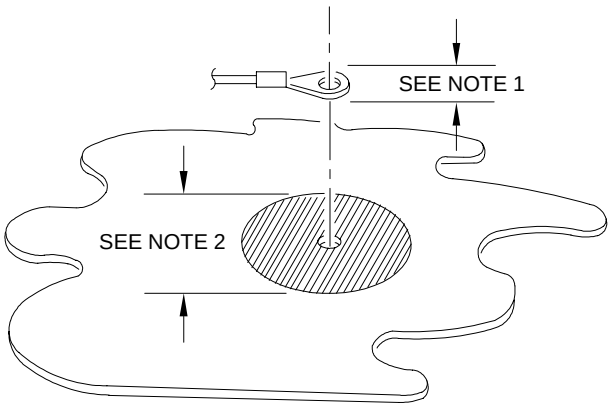
Tools
Aircraft armament repairman tool set
Aircraft armament technical inspector tool set
Rubber apron
Acid-type safety goggles
Rubber gloves
Materials (appendix C)
Artist brush (Item 8)
Corrosion inhibitive sealing and coating compound (Item 10)
Chemical film (Item 18)
Cheesecloth pad (Item 36)
Emery paper, 400 grit (Item 38)
Trichlorotrifluoroethane (Item 54)
Personnel Required
68J Aircraft Fire Control Repairer
66J30 Aircraft Armament Technical Inspector
Equipment Conditions
Maintenance task in progress

1. Sand bonding surface to bare metal for an area 1-1/2 times diameter of grounding terminal.

WARNING

TRICHLOROTRIFLUOROETHANE

- Flammable, toxic, irritating. Can cause breathing problems, eye damage.
- At 325°F gives off phosgene gas, which can cause death or serious injury.
- Don't: Use near flames or sparks, let it get on skin or breathe vapors.
- Don't: Let it get on skin, or breathe vapors.
- Do: Use in well-ventilated area, close containers when not using. Wear acid-type safety goggles, rubber gloves and rubber apron.
- If it contacts skin or eyes, wash affected areas with running water. Get medical help at once.
- If you experience any breathing problems, get to fresh air at once.



NOTES:
1. DIAMETER OF GROUNDING TERMINAL
2. SANDED AREA (1-1/2 TIMES DIAMETER OF GROUNDING TERMINAL.)

300-163

2-7. ELECTRICAL BONDNG SURFACE PREPARATION (cont)

2. Clean sanded surface with a cheesecloth pad and trichlorotrifluoroethane.

3. Let surface air dry.

WARNING

CHEMICAL FILM

- Toxic, irritating, caustic. Can cause eye damage.
- Don't: Let it get on your skin.
- Do: Use in well-ventilated area. Close containers when not using. Wear acid-type safety goggles, rubber gloves, and rubber apron.
- If it contacts skin or eyes, wash affected areas with running water. Get medical help at once.

4. Apply chemical film to sanded area.

5. Let surface air dry for 5 minutes.

6. Lightly wipe surface with a cheese cloth pad and water. If the surface shows streaks, continue wiping until streaks are gone.

7. Let surface air dry.

8. Proceed with maintenance task and install grounding strap assembly. Be sure that all mounting hardware is tight.

END OF TASK

2-8. ELECTROSTATIC DISCHARGE SENSITIVE (ESDS) DEVICE HANDLING REQUIREMENTS

This paragraph covers special handling procedures required for electrostatic discharge sensitive (ESDS) devices. Failure to follow these procedures can result in equipment damage.

INITIAL SETUP

Tools
Mat, anti-electrostatic
Wrist strap, anti-ESD
Materials (appendix C)
Electrostatic shielded bag (Item 6)

Personnel Required
68J Aircraft Fire Control Repairer
References
DOD-HDBK-263
DOD-STD-1686

CAUTION

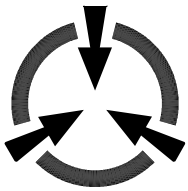
This equipment contains parts and assemblies sensitive to damage by electrostatic discharge (ESD). Use ESDS precautionary procedures when touching, removing, or installing assemblies.

NOTE

Refer to DOD-STD-1686 and DOD-HDBK-263 for information and instructions for handling ESDS devices.

a. ESDS Devices.

An ESDS device is an electronic component which can be damaged by an electrostatic charge or discharge through its conductors. assemblies are identified by the sensitive electronic symbol.



2-8. ELECTROSTATIC DISCHARGE SENSITIVE (ESDS) DEVICE HANDLING REQUIREMENTS (cont)

b. ESDS Device Work Station Requirements.

The ESDS device work station should be located in a controlled, low traffic area with humidity maintained at 50 percent or above. The work station should be posted with the following signs:

ESDS PROTECTED AREA

USE PRECAUTIONS WHEN HANDLING ESDS ITEMS
OUTSIDE OF THEIR PROTECTIVE WRAPS.

The work station must contain the following equipment:

(1) Conductive workbench mat

(2) Conductive wrist strap

(3) Conductive floormat or boot covers

(4) Conductive gauntlets (optional)

(5) Static meter (optional)

c. ESDS Device and Assembly Handling Requirements.

CAUTION

- Do not remove or install CCAs or assemblies until you are properly grounded.
- Do not touch CCA or assembly contacts or connectors.
- Components can be damaged by electrostatic charge or discharge through its conductors.

All ESDS devices and assemblies are provided with shorting devices. The shorting device may be a metal ring or a block of conductive material in which the conductors are imbedded. Follow the requirements listed below whenever removing or replacing these shorting devices:

(1) Wear conductive wrist strap.

(2) Wear conductive boot covers or stand on conductive floor mat.

(3) Handle components only by the case, never by the leads.

(4) Use only electrical equipment that has the three-prong (grounded) plug installed.

2-8. ELECTROSTATIC DISCHARGE SENSITIVE (ESDS) DEVICE HANDLING REQUIREMENTS (cont)

(5) Remove shorting device and place ESDS device with leads down on conductive workbench mat. The ESDS device stays on the mat until the operator is ready to install it.

(6) Keep ESDS devices in protective bags when not in use.

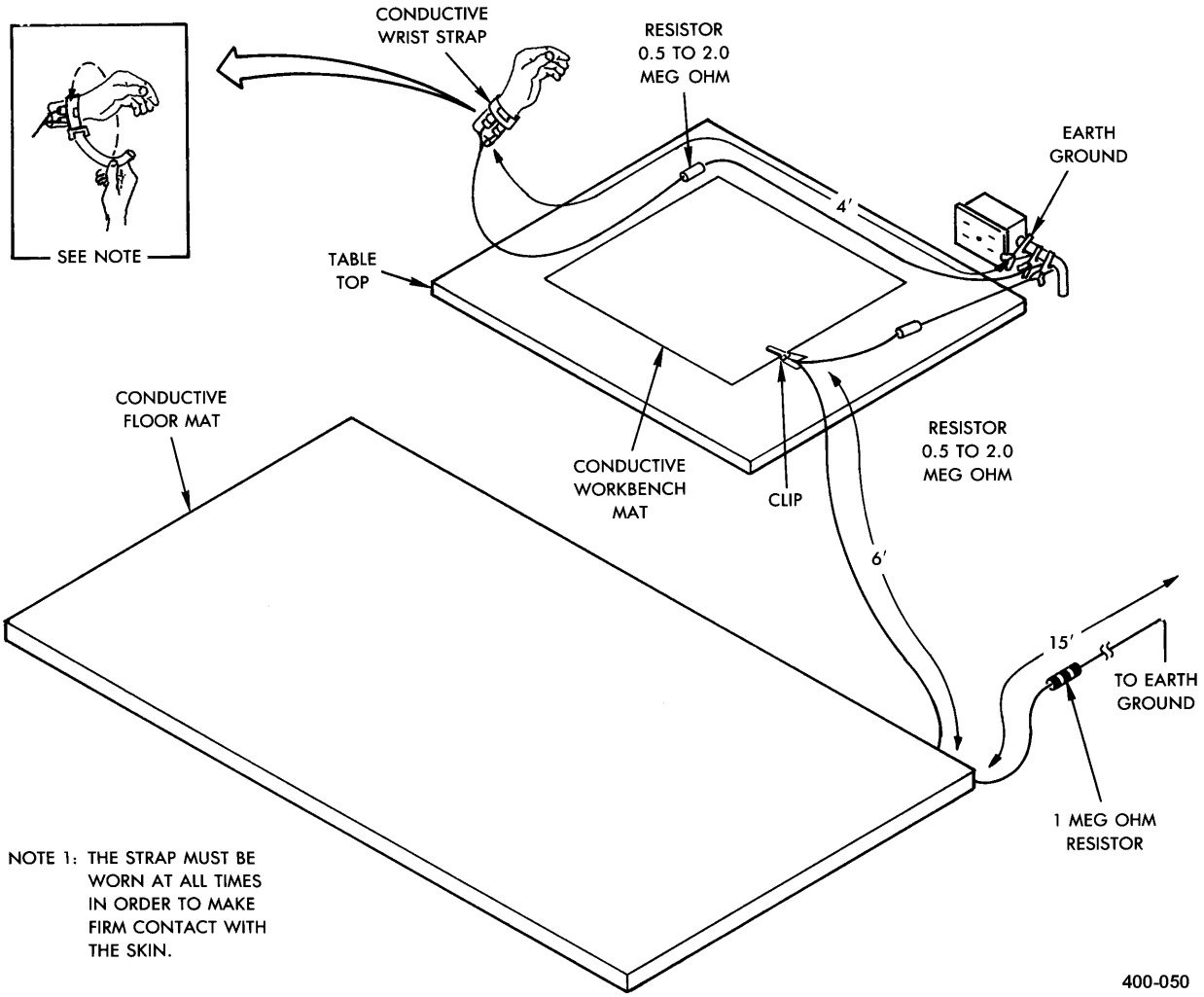
(7) Ground all electrical tools and test equipment.

(8) Touch ground prior to removing, touching, or installing ESDS devices.

(9) Touch packages of replacement ESDS items to ground before opening them.

(10) Check continuity and resistance of ground system daily before using.

(11) Follow ESDS packing procedures (para 5-2).



CHAPTER 3

TROUBLESHOOTING

OVERVIEW

This chapter describes aviation intermediate maintenance (AVIM) troubleshooting procedures using the helicopter fault detection/location system (FD/LS) and rear area automatic test equipment. A detailed description of the overall troubleshooting methodology is contained in TM 1-5855-265-T.

3-1. FAULT DETECTION/LOCATION SYSTEM (FD/LS)

The PNVS subsystem FD/LS general description, malfunction symptom index, and FD/LS functional check procedures are contained in TM 1-5855-265-T.

3-2. PNVS SUBSYSTEM AVIM TROUBLESHOOTING

This paragraph provides AVIM troubleshooting information for malfunctions referred to AVIM after all aviation unit maintenance (AVUM) corrective actions have been exhausted.

The AVIM technician performs the FD/LS functional check to verify the malfunction. The technician should verify that all AVUM corrective actions have been exhausted.

Upon verification of the malfunction, check the aircraft cabling associated with all indicated faulty line replaceable units (LRUs) (TM 1-5855-265-T). If the aircraft cabling is good, test all previously indicated faulty PNVS LRUs by computer test programs at the Electronic Equipment Test Facility (EETF). If all the LRUs test good, test all remaining PNVS LRUs by computer test programs at the EETF. If the remaining LRUs test good, request higher level maintenance assistance.

3-3. LINE REPLACEABLE UNIT (LRU) TROUBLESHOOTING

An LRU is tested at AVIM by a computer test program run on automatic test equipment (ATE). The LRU fault is located to a shop replaceable unit (SRU), or to a single or group of components. A test program and all necessary adapters are referred to as a test program set (TPS).

3-3. LINE REPLACEABLE UNIT (LRU) TROUBLESHOOTING (cont)

The test program is run on the EETF TADS/PNVS Augmentation Equipment. This equipment is used with, and under computer control of the AN/USM-410. For initial operation of the Electronic Equipment Test Facility refer to TM 11-6625-3085-12. The complete LRU test procedure is contained in the test program and displayed on the EETF cathode ray tube (CRT) screen. Upon completion of the tests, a computer printout provides corrective action information for the malfunctioning LRU.

3-4. SHOP REPLACEABLE UNIT (SRU) TROUBLESHOOTING

An SRU is tested at AVIM by a computer test program run on automatic test equipment. The SRU is fault located to a shop replaceable subassembly, or to a single or group of components.

The test program is run on the EETF TADS/PNVS Augmentation Equipment. This equipment is used with, and under computer control of the AN/USM-410. For initial operation of the Electronic Equipment Test Facility refer to TM 11-6625-3085-12. The complete SRU test procedure is contained in the test program and displayed on the EETF CRT screen. Upon completion of the tests, a computer printout provides corrective action information for the malfunctioning SRU.

3-5. CORRECTIVE ACTION INFORMATION

Corrective action includes replacing a faulty SRU, subassembly, or component(s); repairing a faulty continuity path, and/or alining and adjusting the failed LRU or SRU. After corrective action is performed, the repaired LRU or SRU is returned to the EETF for acceptance testing.

3-6. MALFUNCTION CORRECTIVE ACTION PRINTOUT CROSS-REFERENCE

In many instances the EETF malfunction corrective action printout provides instructions to replace a failed component that is beyond the capability of AVIM. In those cases, corrective action consists of replacing the next higher assembly. To provide easy access to replacement tasks, the table below lists the corrective action as it appears in the EETF printout. Opposite each entry is the corrective action task as it appears in the technical manual.

If Malfunction Corrective Action Printout Reads	Perform the Following
Replace anti-ice CCA A1	Replace anti-ice CCA A1 (para 4-3)
Replace power regulator CCA A22	Replace power regulator CCA A22 (para 4-4)
Replace visual relay multiplexer CCA A33	Replace visual relay/multiplexer CCA A33 (para 4-4)
Replace focus control CCA A26	Replace focus control CCA A26 (para 4-4)
Replace boresight CCA A43	Replace boresight CCA A43 (para 4-4)
Replace ACM CCA A21	Replace ACM CCA A21 (para 4-4)
Replace Cooler/Dewar assembly A29/A30	Replace Cooler/Dewar assembly A29/A30 (para 4-4)

3-6. MALFUNCTION CORRECTIVE ACTION PRINTOUT CROSS-REFERENCE (cont)

If Malfunction Corrective Action Printout Reads	Perform the Following
Replace bias voltage regulator A10	Replace bias voltage regulator CCA A10 (para 4-4)
Replace elevation mirror and afocal lens A35	Replace elevation mirror and afocal lens assembly A35 (para 4-4)
Replace focusing assembly A31	Replace focusing assembly A31 (para 4-4)
Replace azimuth gyro assembly A36	Replace azimuth gyroscope assembly A36 (para 4-4)
Replace pickoff choke L1	Replace pickoff choke L1 (para 4-4)
Replace power reactor L1	Replace power reactor L1 (para 4-5)
Replace capacitors C2 and C3	Replace capacitor C2 and C3 (para 4-5)
Replace Q1 thru Q4 on transistor assembly A38	Replace transistor Q1 thru Q4 (para 4-6)
Replace fan housing assembly A42	Replace vaneaxial fan assembly A42 (para 4-10)
Replace P/S assembly A2	Replace power supply assembly A2 (para 4-10)
Replace CCA A4	Replace controller CCA A4 (para 4-10)
Replace resolver B2, Replace motor B1, Replace brake MP1 or Replace resolver B2 and resistor R1	Replace azimuth drive assembly (para 4-15)
Replace 92° limit stop or Replace -122° limit stop	Replace 92° and 122° limit stops (para 4-15)
Replace A2 (interface) CCA or A1 (series regulator) CCA or A3 (bite/control) CCA or A4 (video processor) CCA	Replace PEU CCA A1 thru A4 (para 4-19)
Replace A5A1 (PWR frame assembly)	Replace power frame assembly A1 (para 4-20)

CHAPTER 4

MAINTENANCE PROCEDURES

OVERVIEW

This chapter provides instructions for maintenance of the following PNVS assemblies and their subassemblies: PNVS turret assembly; azimuth drive gimbal assembly; PEU. The indexes at the beginning of each section provide paragraph references to the material contained within the section. After each maintenance procedure, a 66J30 Aircraft Armament Technical Inspector will perform a general inspection (para 2-4).

Section I. PNVS TURRET ASSEMBLY 1 MAINTENANCE PROCEDURES

4-1. GENERAL

This section covers the PNVS turret assembly maintenance procedures. The initial setup table in each paragraph contains a listing of the items covered and the maintenance tasks to be performed. References are provided to allow fast access to the maintenance information within each major task.

4-2. PREPARE PNVS TURRET ASSEMBLY 1 FOR MAINTENANCE

This task covers:

Para	Item
1.	PNVS turret assembly installation on PNVS turret holding fixture
2.	PNVS shroud assembly removal
3.	PNVS shroud assembly installation
4.	PNVS turret assembly removal from PNVS turret holding fixture

---

INITIAL SETUP

Tools

Aircraft armament repairman tool set
PNVS turret holding fixture T2

Personnel Required

68J Aircraft Fire Control Repairer
- One assistant required to lift and carry turret assembly

References

TM 1-5855-265-20

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1. PNVS TURRET ASSEMBLY INSTALLATION ON PNVS TURRET HOLDING FIXTURE

WARNING

HEAVY OBJECT

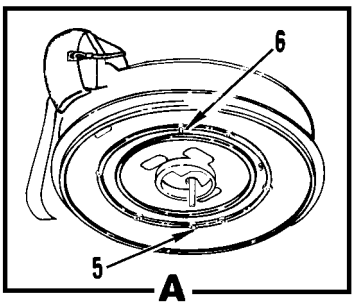
- Excessive strain can cause serious injury.
- Don't: Attempt to lift or carry heavy objects alone.
- Do: Get help for lifting or carrying objects weighing more than 35 pounds.
- If you experience a sudden pain while lifting or discomfort after lifting, get medical help at once.

4-2. PREPARE PNVS TURRET ASSEMBLY 1 FOR MAINTENANCE (cont)

NOTE

Steps a thru d below require two persons.

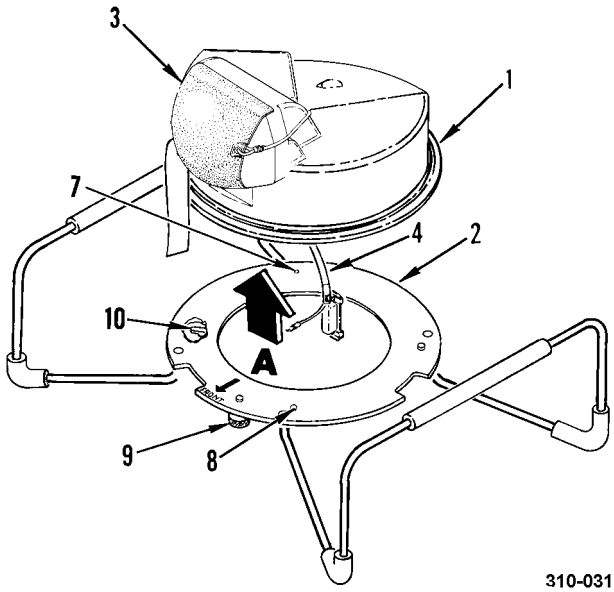
a. Both persons position PNVS turret assembly (1) over PNVS turret holding fixture T2 (2) so that shroud window cover (3) is located over word FRONT stenciled on holding fixture.



b. Both persons lower PNVS turret assembly (1) while one person feeds connector end of cable assembly (4) through center of PNVS turret holding fixture (2).

CAUTION

Do not let small guide pin go into slot first. If that happens, the large guide pin will not go all the way into hole and pin can be damaged or pushed up into base. A pushed up pin can damage internal wiring.



c. Both persons continue to lower PNVS turret assembly (1) until large guide pin (5) goes all the way into hole (7) and small guide pin (6) goes into slot (8).

d. If needed, slowly move PNVS turret assembly (1) around until large guide pin (5) goes into hole (7). After large guide pin (5) goes into hole (7), move PNVS turret assembly (1) again until small guide pin (6) goes into slot (8).

e. Hand tighten three captive screws (9).

f. Secure cable assembly (4) by pressing connector end of cable into cable clip (10).

END OF TASK

4-2. PREPARE PNVS TURRET ASSEMBLY 1 FOR MAINTENANCE (cont)

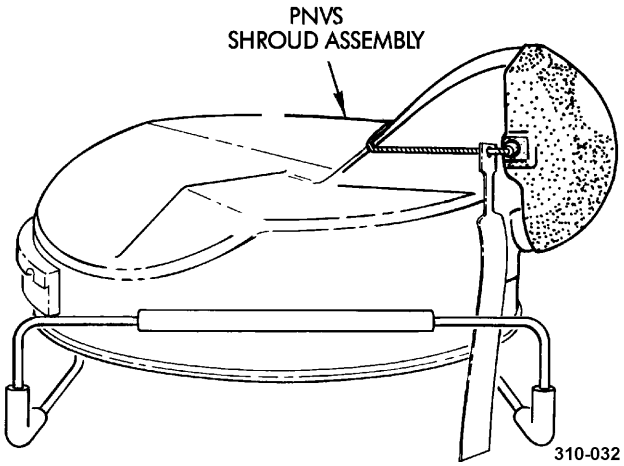
2. PNVS SHROUD ASSEMBLY REMOVAL

a. Position PNVS turret assembly and PNVS turret holding fixture so that shroud window is on your right.

b. Remove PNVS shroud assembly (TM 1-5855-265-20).

c. Check EMI preformed packing for damage. Refer PNVS turret assembly to next higher level of maintenance if preformed packing is damaged.

d. Proceed with maintenance task.

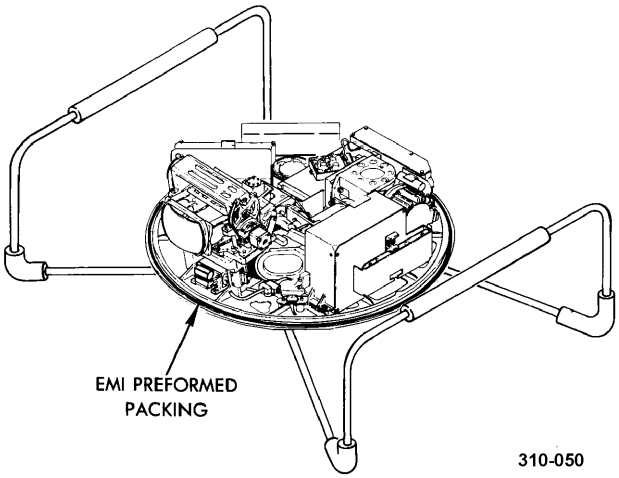


END OF TASK

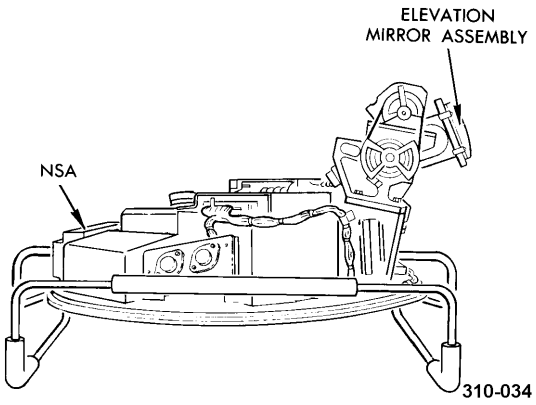
3. PNVS SHROUD ASSEMBLY INSTALLATION

a. Position NSA and PNVS turret holding fixture so that elevation mirror assembly is on your right.

b. Install PNVS shroud assembly (TM 1-5855-265-20).



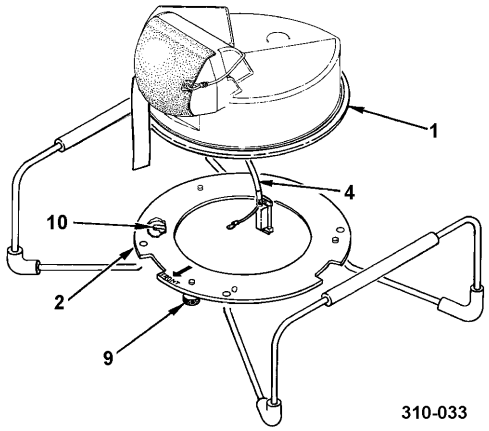
END OF TASK



4-2. PREPARE PNVS TURRET ASSEMBLY 1 FOR MAINTENANCE (cont)

4. PNVS TURRET ASSEMBLY REMOVAL FROM PNVS TURRET HOLDING FIXTURE

a. Remove connector end of cable assembly (4) from cable clip (10).



NOTE

Captive screws must hang freely after they are loosened. Jiggle the screws to make sure they hang freely.

b. Loosen three captive screws (9).

WARNING

HEAVY OBJECT

- Excessive strain can cause serious injury.
- Don't: Attempt to lift or carry heavy objects alone.
- Do: Get help for lifting or carrying objects weighing more than 35 pounds.
- If you experience a sudden pain while lifting or discomfort after lifting, get medical help at once.

NOTE

Steps c and d below require two persons.

c. Both persons lift and remove PNVS turret assembly (1) from PNVS turret holding fixture (2).

d. Both persons set PNVS turret assembly (1) on proper support at least 2 inches high to protect cable assembly (4).

END OF TASK

4-3. PNVS TURRET ASSEMBLY PNVS SHROUD ASSEMBLY A3 REPAIR

This task covers replacement of:

Para	Item
1.	Anti-ice CCA A1
2.	Branched wiring harness W1 connector P1 or P2 contact
3.	Branched wiring harness W1 diode CR1

INITIAL SETUP

Tools

Aircraft armament repairman tool set

Aircraft armament technical inspector tool set

Materials (appendix C)

Corrosion inhibitive sealing and coating compound (Item 10)

Heat shrinkable insulation sleeving (Item 22)

Lacing and tying tape (Item 49)

Personnel Required

68J Aircraft Fire Control Repairer

66J30 Aircraft Armament Technical Inspector

CAUTION

The PNVS shroud assembly window and housing are fragile and easily broken or damaged beyond AVIM repair capabilities. Use extreme care when handling the PNVS shroud assembly to prevent dropping or jarring the assembly.

---

1. ANTI-ICE CCA A1 REPLACEMENT

REMOVAL

CAUTION

Do not touch exposed surface of shroud inner window. Dirt on your fingers (sweat and body oil) will get on window surface causing an unnecessary cleaning task. Cleaning too often will wear away optical coating on window surface.

4-3. PNVS TURRET ASSEMBLY PNVS SHROUD ASSEMBLY A3 REPAIR (cont)

a. Remove anti-ice CCA A1.

CAUTION

This CCA contains electrostatic discharge sensitive (ESDS) devices. Refer to paragraph 2-8 for handling requirements before starting this task to prevent damage to the devices.

NOTE

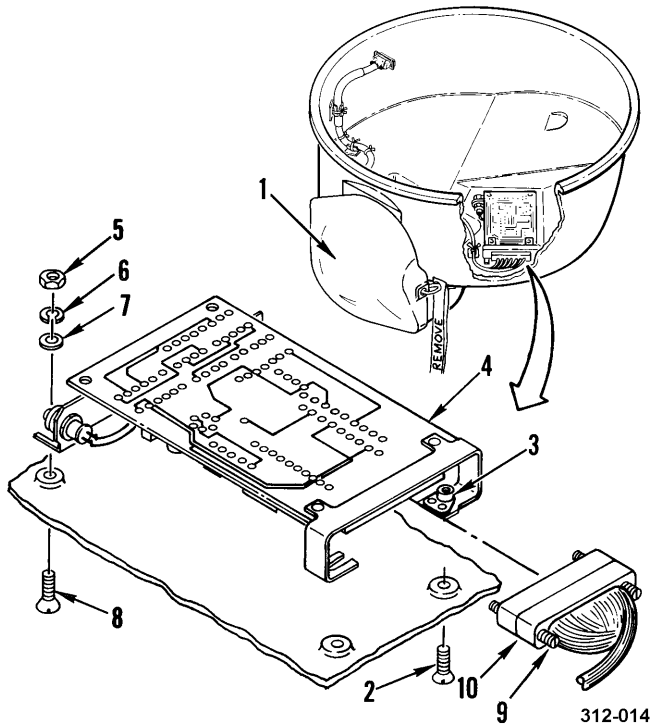
During steps (1) and (2) below, tilt PNVS shroud assembly (1) so that bottom screws (2 and 8) are accessible.

(1) Remove screw (2) from captive locknut (3) on anti-ice CCA A1 (4) mounting bracket.

(2) Remove three nuts (5), lockwashers (6), washers (7), and screws (8).

(3) Lift up CCA A1 (4), loosen two screwlocks (9), and disconnect connector P2 (10).

(4) Remove anti-ice CCA A1 from PNVS shroud assembly (1).



INSTALLATION

b. Remove corrosion inhibitive sealing and coating compound from screws (2 and 8) (para 2-6).

c. Install CCA A1.

(1) Connect connector P2 (10) to mating connector on anti-ice CCA A1 (4) and tighten two screwlocks (9).

(2) Apply corrosion inhibitive sealing and coating compound to screws (2 and 8). Use class 1A application (para 2-6).

(3) Tilt PNVS shroud assembly (1) and position anti-ice CCA A1 for mounting. Install screw (2) in captive locknut (3).

(4) Install three screws (8), washers (7), lockwashers (6), and nuts (5).

d. Perform general inspection (para 2-4).

e. Pack faulty anti-ice CCA (para 5-2).

END OF TASK

4-3. PNVS TURRET ASSEMBLY PNVS SHROUD ASSEMBLY A3 REPAIR (cont)

2. BRANCHED WIRING HARNESS W1 CONNECTOR P1 OR P2 CONTACT REPLACEMENT

REMOVAL

NOTE

When replacing contacts of connector P2, omit steps a, b, and g below.

a. Remove screwlocks (1), loosen clamp on strain relief (2), and slide strain relief away from connector P1 (3).

NOTE

Normally, only contacts are replaced. If connector has to be replaced, retain two screwlocks (1) and strain relief (2) from damaged connector for installation on replacement connector.

b. Remove faulty contacts from connector P1 (3) (para 2-5, item 1).

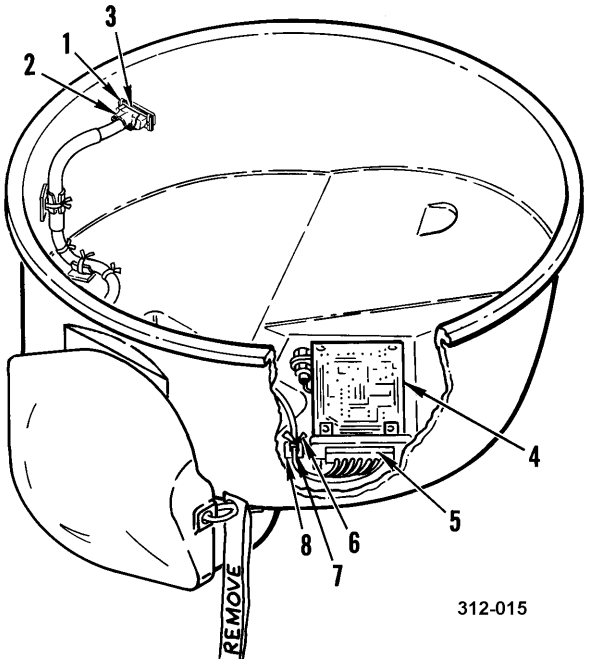
CAUTION

- Do not disconnect connector P2 without removing anti-ice CCA A1 or damage may result.
- Do not touch exposed surface of shroud inner window. Dirt on your fingers (sweat and body oil) will get on window surface causing an unnecessary cleaning task. Cleaning too often will wear away optical coating on window surface.

NOTE

When replacing contacts of connector P1, omit steps c thru e, h, and i below.

c. Remove anti-ice CCA A1 (4) and disconnect connector P2 (5) (1 above).



CAUTION

Failure to note routing of harness and location of lacing and tying tape spot tie with respect to harness can result in damage to equipment.

d. Cut lacing and tying tape (6) spot tie. Note routing of harness, location of spot tie, and cushion (7) installation.

e. Remove faulty contacts from connector P2 (5) (para 2-5, item 2).

INSTALLATION

f. Install replacement contacts in connector P1 (3) or P2 (5) (para 2-5, item 1 or 2).

g. Slide strain relief (2) against connector P1 (3), tighten clamp on strain relief, and install screwlocks (1).

h. Install anti-ice CCA A1 (1 above).

4-3. PNVS TURRET ASSEMBLY PNVS SHROUD ASSEMBLY A3 REPAIR

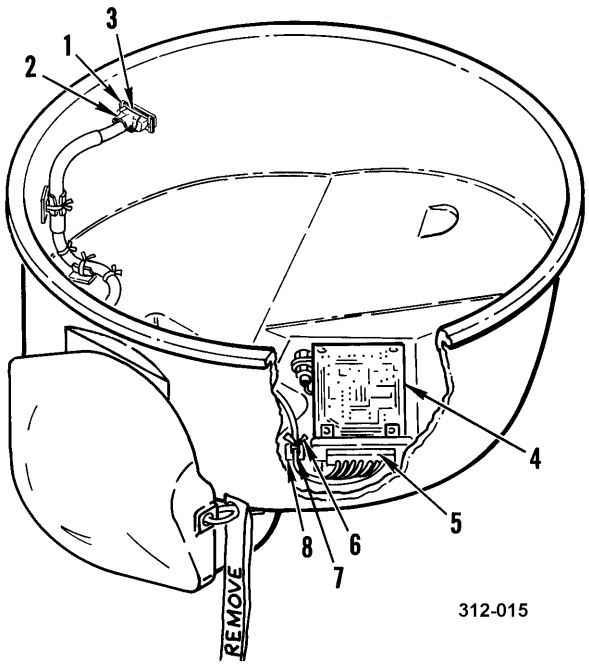
CAUTION

Harness must be routed and spot-tied exactly as it was before spot ties were removed. Failure to do this may result in binding of movable mechanical components.

i. Spot tie wiring harness to mounting plate (8) using lacing and tying tape (6) and cushion (7). Route harness and locate spot tie as noted in step d above.

j. Perform general inspection (para 2-4).

END OF TASK



3. BRANCHED WIRING HARNESS W1 DIODE CR1 REPLACEMENT

REMOVAL

CAUTION

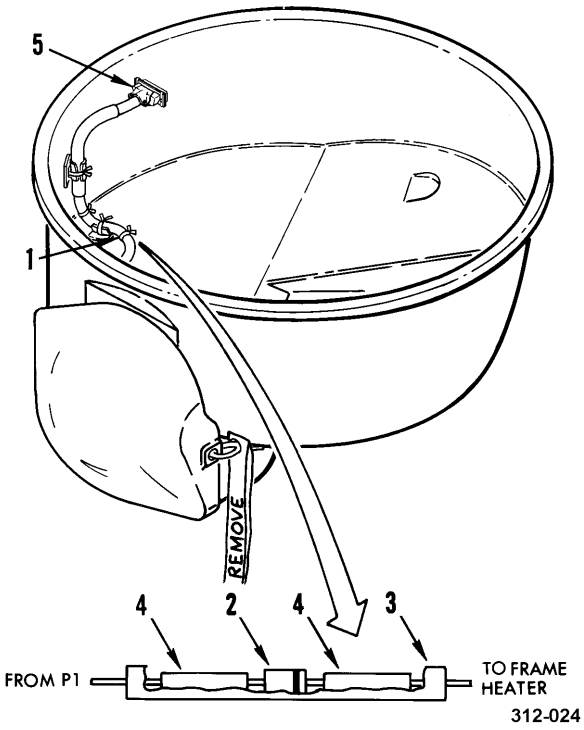
Failure to note routing of harness, location of lacing and tying tape spot ties, and cushion installation can result in damage to equipment.

a. Cut lacing and tying tape spot ties and remove cushions to provide access to splice area (1) of harness W1. Note routing of harness, cushion installation, and location of each spot tie that was cut.

CAUTION

Use care when splitting insulation sleeving to avoid damaging wires inside.

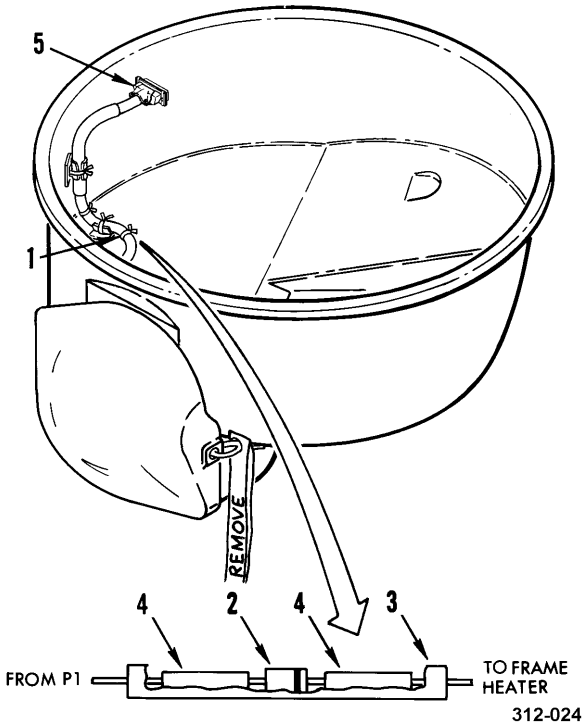
b. Carefully split outer insulation sleeving at splice area (1) to gain access to diode CR1 (2).



c. Remove old heat shrinkable insulation sleeving (3) covering diode (2) and two splices (4).

4-3. PNVS TURRET ASSEMBLY PNVS SHROUD ASSEMBLY A3 REPAIR

d. Tag and cut wires close to both splices (4) and remove CR1 (2).



INSTALLATION

e. Slide heat shrinkable insulation sleeving (3) over one of the wires cut in step d above. Make sleeving long enough to completely cover diode CR1 (2) and both splices (4) after installation.

NOTE

Banded end of diode is the cathode.

f. Position diode CR1 (2) with cathode end away from connector P1 (5).

g. Splice diode leads to tagged wires, using two hot air shrinkable splices (4). Remove tags.

h. Have diode CR1 installation inspected.

i. Slide heat shrinkable insulation sleeving (3) over diode CR1 (2) and splices (4) and apply heat.

CAUTION

Harness must be routed, cushions installed, and spot tied exactly as they were before spot ties were removed. Failure to do this may result in binding of movable mechanical components.

j. Route harness, install cushion, and spot tie with lacing and tying tape at locations noted in step a above.

k. Perform general inspection (para 2-4).

END OF TASK

4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR

This task covers replacement of:

Para	Item
1.	Electronic component assembly A40
2.	Transistor assembly A38
3.	Capacitor/relay assembly A39
4.	Vaneaxial fan assembly B1
5.	Azimuth gyroscope assembly A36
6.	Pickoff choke L1
7.	Capacitor assembly A41
8	Visual relay/multiplexer assembly A33
9.	PNVS solid state camera assembly A33
10.	Elevation mirror and afocal lens assembly A35
11.	Cooler/Dewar assembly A29/A30
12.	Focusing assembly A31
13.	Focus control CCA A26
14.	Post amplifier control driver CCA A12 thru A18
15.	Post amplifier control driver CCA A19 or A20
16.	ACM CCA A21 or power regulator CCA A22
17.	Bias voltage regulator CCA A10
18.	Video IR preamplifier CCA A1 thru A9
19.	Flexible printed cable assemblies (flex cables) W1 thru W9
20.	Boresight CCA A43

INITIAL SETUP

Tools and Special Tools

Aircraft armament repairman tool set and supplemental
Aircraft armament technical inspector tool set
Gun type heater, Master Model HG-201A, (200 to 300 degrees F)
9/64-inch hex key with short arm T1
10-inch shank, No. 1 cross-tip screwdriver
9/64 x 6-inch shank hex balldriver

Materials (appendix C)

Corrosion inhibitive sealing and coating compound (Item 10)
Noncorrosive RTV silicone adhesive, sealant (Item 3)
Noncorrosive RTV silicone adhesive-sealant primer (Item 39)
Lacing and tying tape (Item 49)
Solder (Item 42)

Personnel Required

68J Aircraft Fire Control Repairer
- One assistant required for replacement of cooler/Dewar assembly (11 below)

66J30 Aircraft Armament Technical Inspector

References

TM 1-5855-265-23P
TM 11-5855-294-12&P

Equipment Condition

PNVS turret assembly installed on PNVS turret holding fixture with PNVS shroud assembly removed (para 4-2).

NOTE

Do not remove PNVS shroud assembly when replacing cable plug assembly (20 below).

FOLLOWUP

Perform general inspection (para 2-4).
Install PNVS shroud assembly and remove PNVS turret assembly from PNVS turret holding fixture (para 4-2).

4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

1. ELECTRONIC COMPONENT ASSEMBLY A40 REPLACEMENT

WARNING

Before performing maintenance/repair, discharge all high-voltage capacitors (para 2-4).

REMOVAL

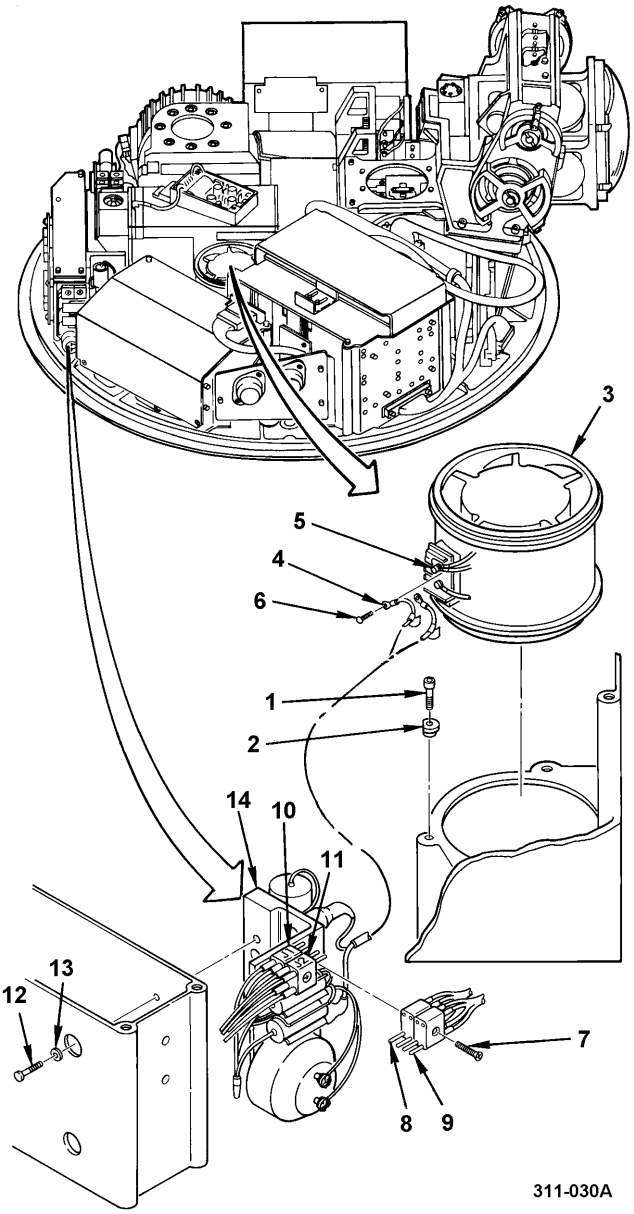
a. Remove focus control CCA A26 (13 below).

b. Remove three screws (1) and spacers (2).

c. Lift vaneaxial fan assembly B1 (3). Tag and remove two wires (4) from top and center terminals of terminal strip (5) by removing two screws (6).

d. Remove screw (7) and disconnect connectors W10P14 (8) and W10P16 (9) from connectors J1 (10) and J2 (11).

e. Remove A40 assembly (14) from NSA by removing two screws (12) and washers (13).



4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

INSTALLATION

f. Remove old corrosion inhibitive sealing and coating compound from screws (1, 7, and 12) (para 2-6).

g. Apply corrosion inhibitive sealing and coating compound to screws (1, 7, and 12). Use class 1A application (para 2-6).

h. Install A40 assembly (14) using two screws (12) and washers (13).

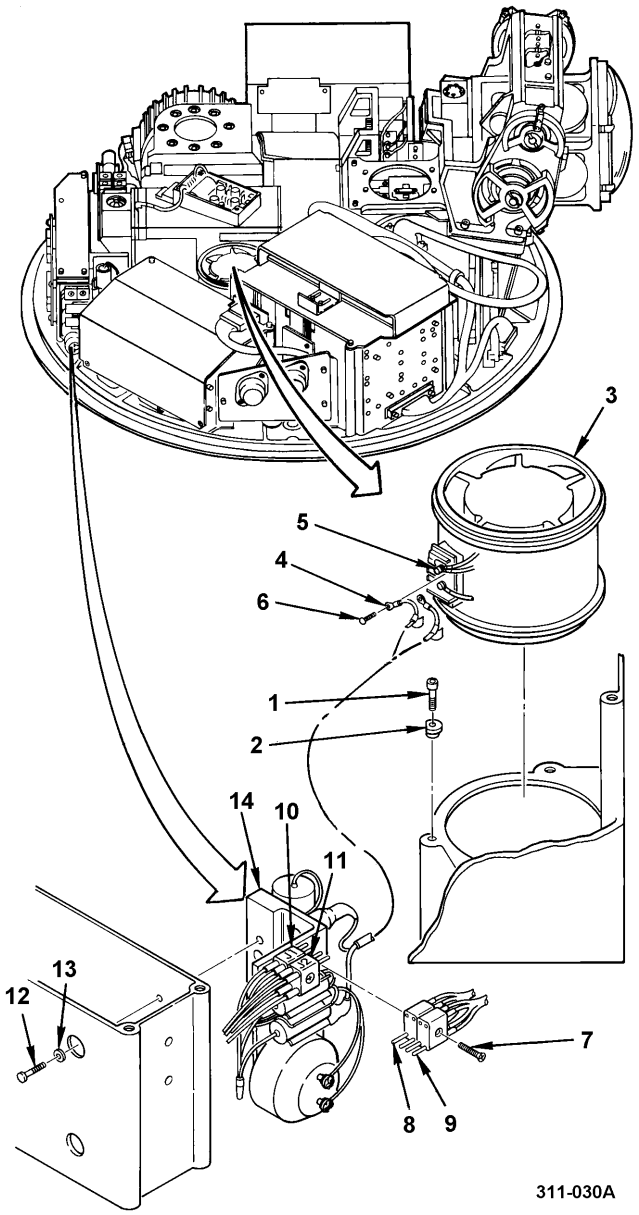
i. Connect connectors W10P14 (8) and W10P16 (9) to connectors J1 (10) and J2 (11) using screw (7).

j. Lift B1 assembly (3), connect tagged wires (4) to terminal strip (5), and install two screws (6). Remove tags.

k. Install vaneaxial fan assembly B1 (3) using three spacers (2) and screws (1).

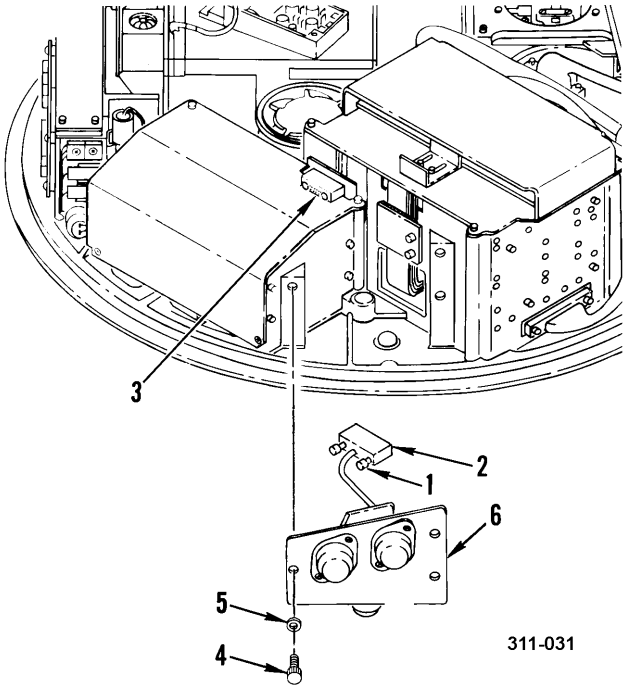
l. Install focus control CCA A26 (13 below).

END OF TASK



4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

2. TRANSISTOR ASSEMBLY A38 REPLACEMENT



REMOVAL

a. Disconnect connector P1 (2) from connector A23J2 (3) by loosening two screwlocks (1).

b. Remove transistor assembly A38 (6) from NSA by removing three screws (4) and washers (5).

INSTALLATION

c. Remove old corrosion inhibitive sealing and coating compound from screws (4) (para 2-6).

d. Apply corrosion inhibitive sealing and coating compound to screws (4). Use class 1A application (para 2-6).

e. Install transistor assembly A38 (6) using three screws (4) and washers (5).

f. Connect connector P1 (2) to connector A23J2 (3) and tighten two screwlocks (1).

g. Perform followup procedures.

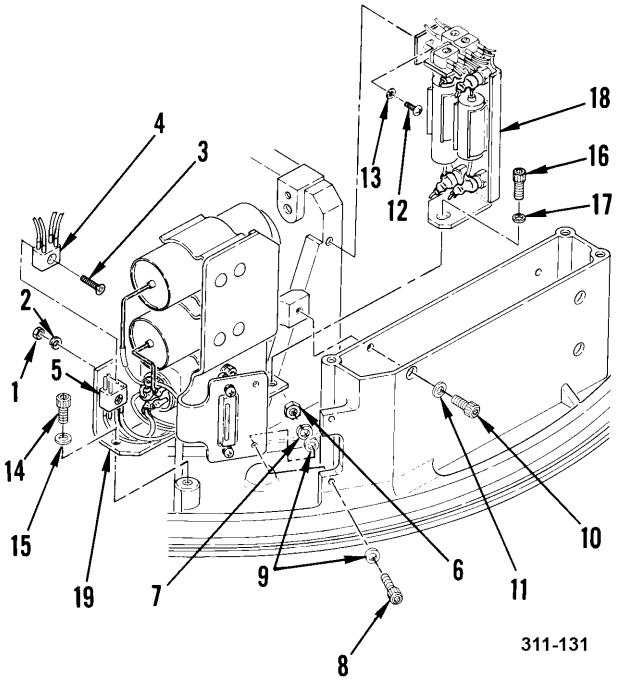
END OF TASK

4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

3. CAPACITOR/RELAY ASSEMBLY A39 REPLACEMENT

WARNING

Before performing maintenance/repair, discharge all high-voltage capacitors (para 2-4).



REMOVAL

a. Remove focus control CCA A26 (13 below).

NOTE

Capacitor/relay assembly A39 and capacitor assembly A41 share an attaching screw. The A41 assembly must be unfastened and lifted to permit removal of the A39 assembly.

b. Remove locknut (1), washer (2), screw (3), and disconnect connector W10P11 (4) from connector J1 (5).

c. Remove two nuts (6), lockwashers (7), screws (8), and four washers (9).

d. Remove screw (10) and washer (11).

e. Remove screw (12) and washer (13).

f. Remove screws (14 and 16) and washers (15 and 17).

4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

g. Lift assembly A41 (18) and remove assembly A39 (19) from NSA.

INSTALLATION

h. Remove old corrosion inhibitive sealing and coating compound from screws (para 2-6).

i. Apply corrosion inhibitive sealing and coating compound to screws. Use class 1A application (para 2-6).

j. Lift A41 assembly (18) and slip foot of A39 assembly (19) under foot of A41 assembly.

k. Loosely install screw (16) and washer (17) through both assemblies.

l. Install and tighten screws (14 and 16) and washers (15 and 17).

m. Tighten screw (16).

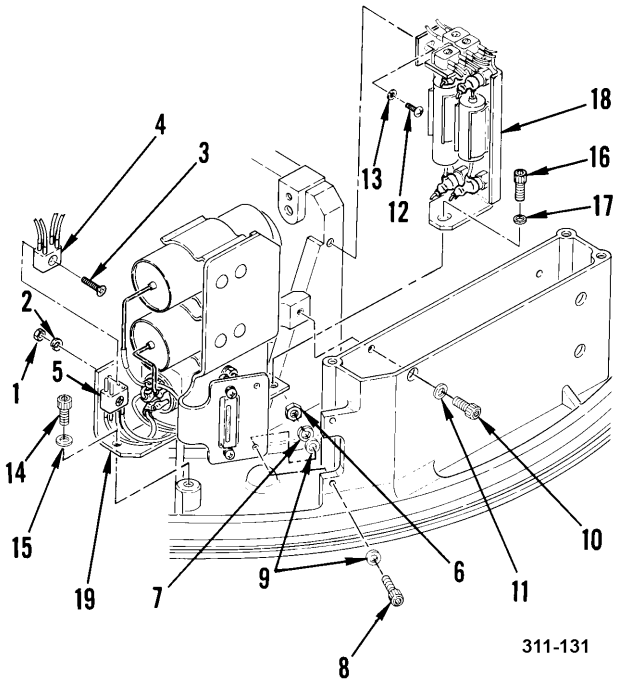
n. Install two screws (8), four washers (9), two lockwashers (7), and nuts (6).

o. Install screw (10) and washer (11).

p. Install focus control CCA A26 (12 below).

q. Connect connector W10P11 (4) to connector J1 (5) and install screw (3), washer (2), and locknut (1).

r. Perform followup procedures.



END OF TASK

4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

4. VANEAXIAL FAN ASSEMBLY B1 REPLACEMENT

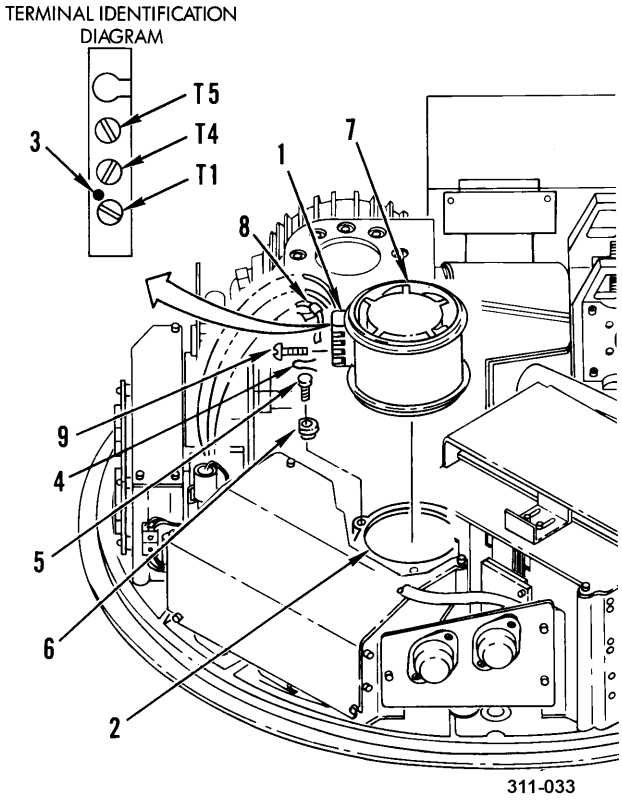
REMOVAL

a. Note position of terminal strip (1) relative to mounting boss (2). Note also that colored dot (3) on terminal strip is toward the mounting boss.

b. Remove three screws (4) and spacers (5).

c. Lift vaneaxial fan assembly B1 (6). Tag and remove wires (7) by removing three screws (8). Refer to terminal identification diagram when tagging wires.

d. Remove vaneaxial fan assembly B1 (6).



INSTALLATION

e. Remove old corrosion inhibitive sealing and coating compound from screws (4) (para 2-6).

NOTE

Discard the three terminal lugs sup-plied with new vaneaxial fan assembly B1.

f. Hold vaneaxial fan assembly B1 (6) above mounting boss (2) with terminal strip (1) and colored dot (3) positioned as noted in step a above.

g. Install tagged wires (7) on terminal strip (1) by installing three screws (8). Remove tags.

h. Apply corrosion inhibitive sealing and coating compound to screws (4). Use class 1A application (para 2-6).

i. Place vaneaxial fan assembly B1 (6) on mounting boss (2) and install three spacers (5) and screws (4).

j. Perform followup procedures.

END OF TASK

4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

5. AZIMUTH GYROSCOPE ASSEMBLY A36 REPLACEMENT

REMOVAL

a. Disconnect connector P1 (2) from connector W10J6 (3) by loosening two screwlocks (1).

b. Cut lacing and tying tape (4) securing wire bundle (5) and NSA wiring harness (6) to NSA base.

c. Remove azimuth gyroscope assembly (8) from NSA by removing three screws (7).

INSTALLATION

d. Remove old corrosion inhibitive sealing and coating compound from screws (7) (para 2-6).

e. Apply corrosion inhibitive sealing and coating compound to screws (7). Use class 1A application (para 2-6).

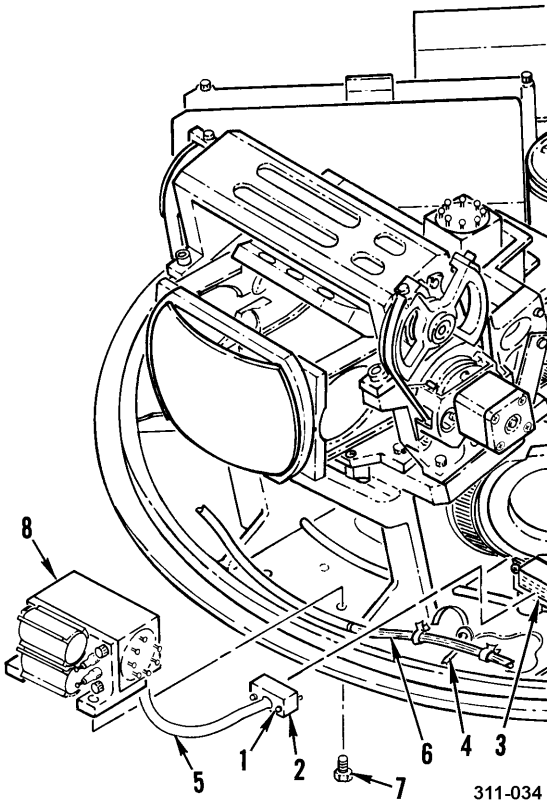
f. Install azimuth gyroscope assembly A36 (8) using three screws (7).

g. Connect connector P1 (2) to connector W10J6 (3) and tighten two screwlocks (1).

h. Secure wire bundle (5) and NSA wiring harness (6) to NSA base using lacing and tying tape.

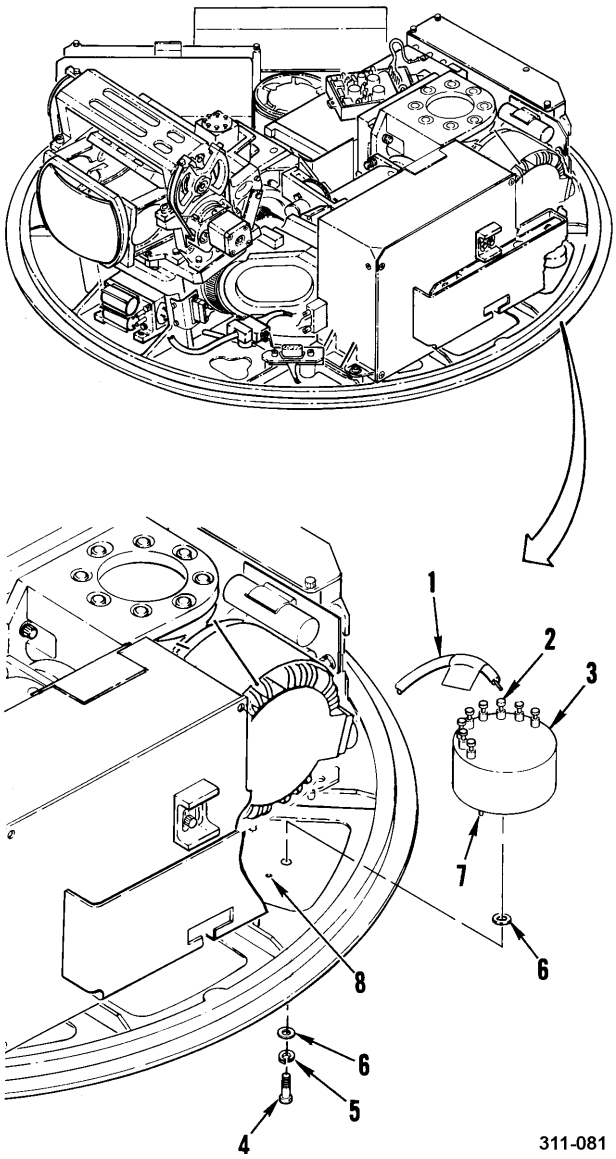
i. Perform followup procedures.

END OF TASK



4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

6. PICKOFF CHOKE L1 REPLACEMENT



REMOVAL

a. Tag and cut wires (1) close to terminals (2) of choke L1 (3).

b. Remove choke L1 (3) by removing screw (4), lockwasher (5), and two washers (6).

INSTALLATION

c. Remove old corrosion inhibitive sealing and coating compound from screw (4) (para 2-6).

d. Apply corrosion inhibitive sealing and coating compound to screw (4). Use class 1A application (para 2-6).

NOTE

Be sure that antirotation pin (7) goes into positioning hole (8).

e. Install choke L1 (3) using one screw (4), lockwasher (5), and two washers (6).

f. Solder tagged wires (1) to terminals (2) of choke L1 (3). Remove tags.

g. Have choke installation inspected.

h. Apply noncorrosive RTV silicone adhesive, sealant to soldered terminals (2). Cover terminals completely (para 2-6).

i. Perform followup procedures.

END OF TASK

4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

7. CAPACITOR ASSEMBLY A41 REPLACEMENT

WARNING

Before performing maintenance/repair, discharge all high-voltage capacitors (para 2-4).

REMOVAL

a. Remove two screws (1) and disconnect connectors W10P12 (2) from J2 (3) and A33A42P1 (4) from J1 (5).

b. Remove capacitor assembly A41 (6) by removing two screws (7 and 9) and washers (8 and 10).

INSTALLATION

c. Remove old corrosion inhibitive sealing and coating compound from screws (7 and 9) (para 2-6).

NOTE

Capacitor assembly A41 and capacitor/relay assembly A39 share an attaching screw. The foot of A41 assembly must be on top of foot of A39 assembly so that top mounting screw can be installed.

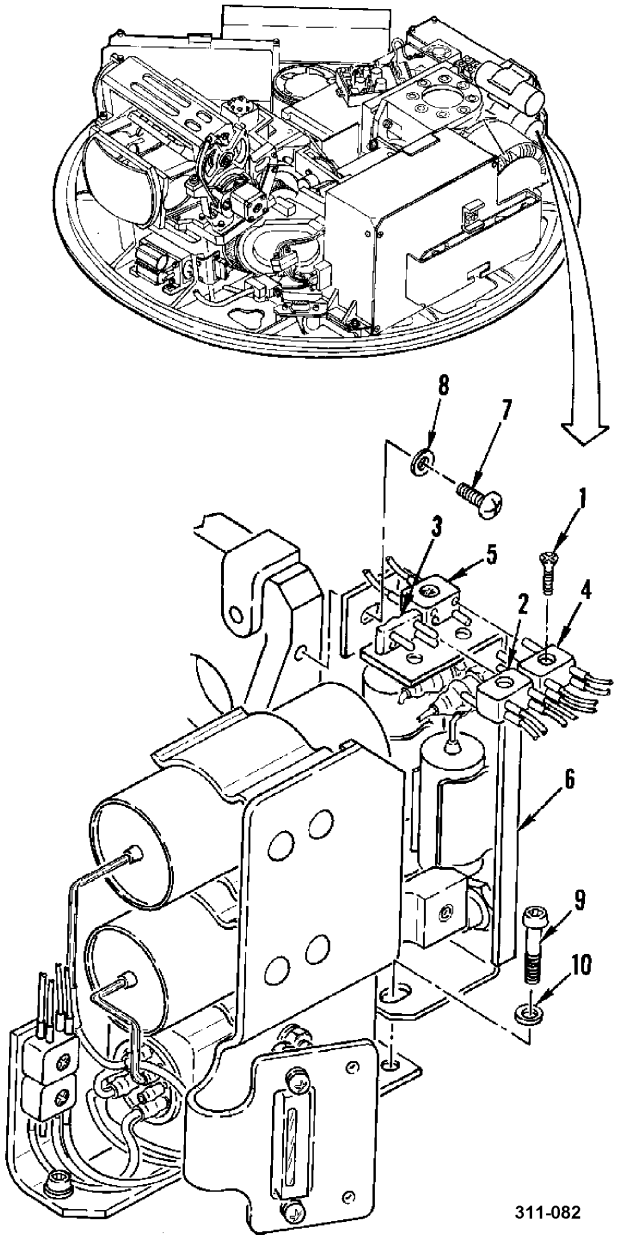
d. Place foot of A41 assembly (6) on top of foot of A39 assembly.

e. Apply corrosion inhibitive sealing and coating compound to screws (7 and 9). Use class 1A application (para 2-6).

f. Loosely install screw (9) and washer (10) through both assemblies.

g. Install screw (7) and washer (8).

h. Tighten screw (9).



i. Connect connectors W10P12 (2) to J2 (3) and A33A42P1 (4) to J1 (5) and install two screws (1).

j. Perform followup procedures.

END OF TASK

4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

8. VISUAL RELAY/MULTIPLEXER ASSEMBLY A33 REPLACEMENT

REMOVAL

NOTE

Step a below applies to units without noise reduction improvement.

a. Remove capacitor assembly A41(7 above).

b. Remove screw (1) and washers (2) and disconnect connector W10P13 (3) from connector A4J1 (4).

c. Loosen four captive screws (5).

CAUTION

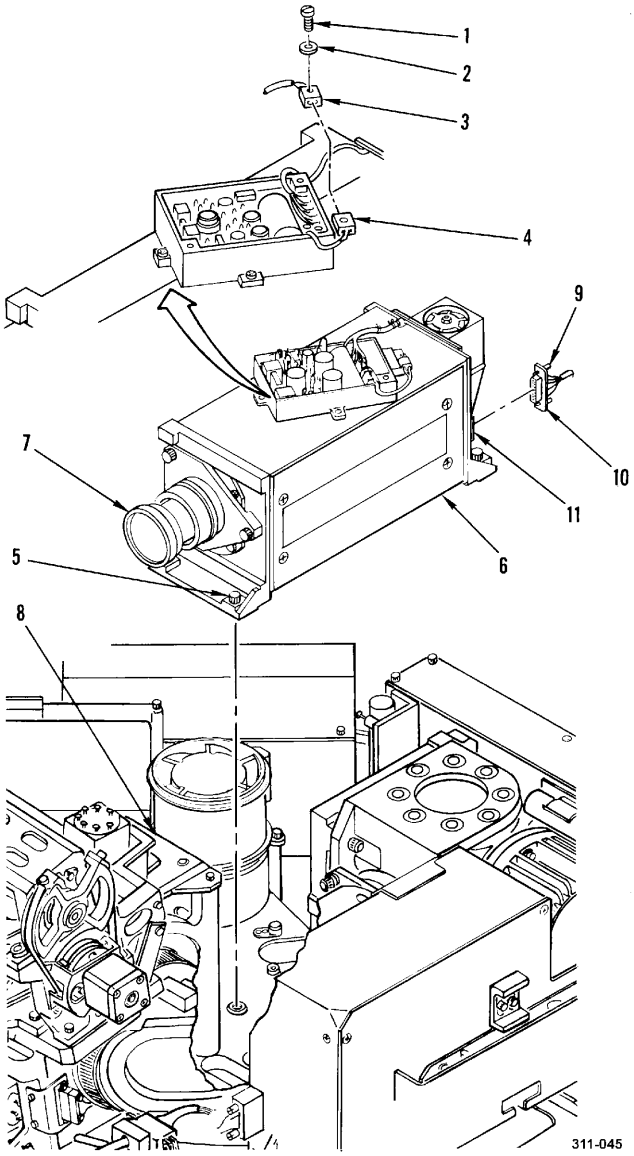
Use care when removing and installing visual relay/multiplexer assembly A33. The optical parts can be damaged or misalined if the assembly is handled roughly.

d. Carefully lift fan end of visual relay/ multiplexer assembly A33 (6) in a curving motion that moves lens (7) out of scanner module (8). Lift fan end high enough to get screwdriver on screwlocks (9) of connector W10P6 (10). Note position of A33 assembly at this point.

e. Disconnect connector W10P6 (10) from connector J1 (11) by loosening two screwlocks (9).

f. Remove visual relay/multiplexer assembly A33 (6) from NSA.

g. Install protective cap on lens (7).



INSTALLATION

h. Remove old corrosion inhibitive sealing and coating compound from screw (1) (para 2-6).

4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

i. Be sure harness that goes under visual relay/multiplexer assembly A33 (6) sets in notches in NSA casting.

j. Remove protective cap from lens (7).

k. Carefully position visual relay/ multiplexer assembly A33 (6) as noted in step d above.

l. Connect connector W10P6 (10) to connector J1 (11) and tighten two screwlocks (9).

m. Carefully guide lens (7) into scanner module (8) while lowering fan end in a curving motion. Engage alinement pins on bottom of visual relay/ multiplexer assembly A33 (6) with alinement hole and slot in NSA casting.

n. Tighten four captive screws (5).

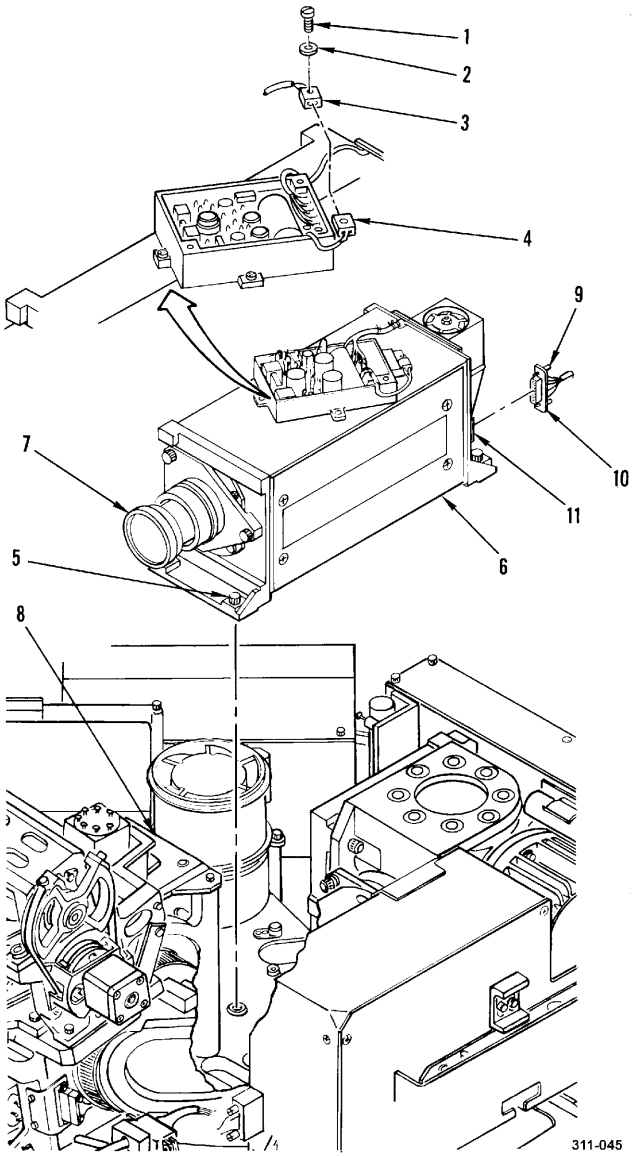
o. Apply corrosion inhibitive sealing and coating compound to screw (1). Use class 1A application (para 2-6).

p. Connect connector W10P13 (3) to connector A4J1 (4) and install screw (1) and washers (2).

NOTE

Step q applies to units without noise reduction improvements.

q. Install capacitor assembly A41 (7 above).

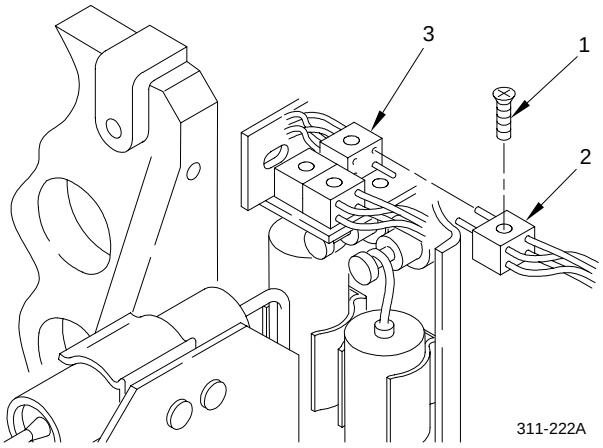


END OF TASK

4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

9. PNVS SOLID STATE CAMERA ASSEMBLY A33 REPLACEMENT

REMOVAL



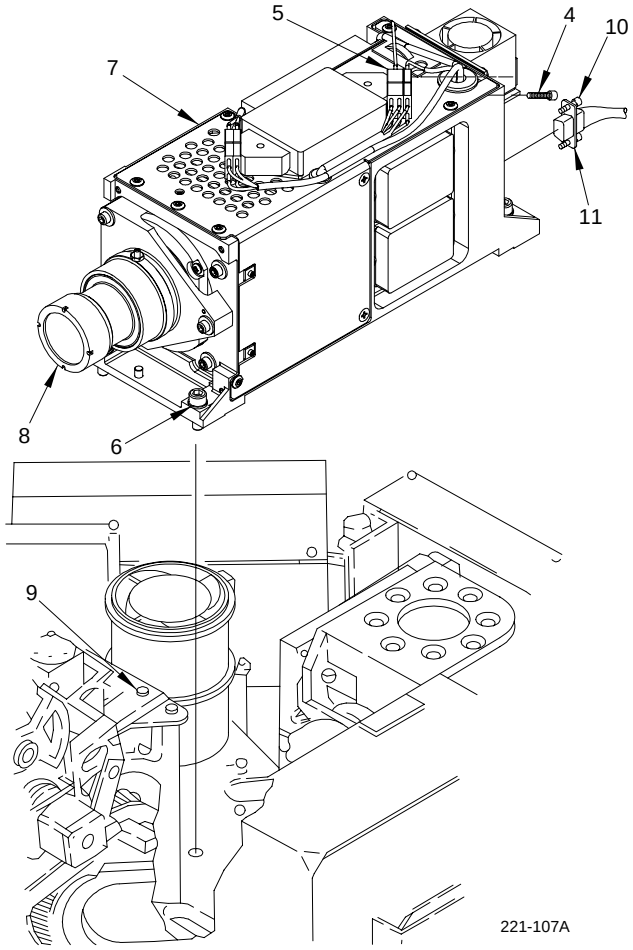
a. Remove screw (1) and disconnect fan assembly connector A42P1 (2) from connector A41J1 (3).

b. Remove screw (4) and disconnect connector W10P13 (5) from connector A4J1.

c. Loosen four captive screws (6).

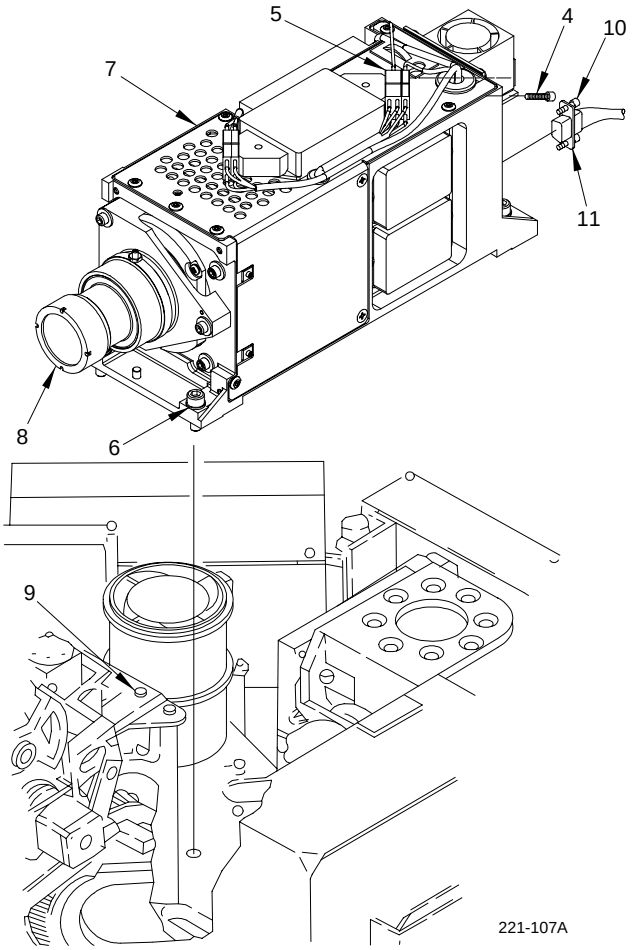
CAUTION

- Use care when removing PNVS solid state camera assembly A33. Optical parts can be damaged or misalined if assembly is handled roughly.
- During removal and installation of the PNVS solid state camera assembly A33, ensure the connectors on the solid state camera assembly are mated properly to avoid severe damage to the camera assembly, the PTUR, the PNVS electronic unit (PEU), and/or the wiring to the camera and TADS power supply. It is possible to inadvertently reverse the connection due to a lack of keying.



d. Carefully lift fan end of PNVS solid state camera assembly A33 (7) in a curving motion that moves relay optics assembly (8) out of scanner module (9). Lift fan end high enough to access screwlocks (10) of connector W10P6 (11). Note position of A33 assembly at this point.

4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)



e. Loosen two screwlocks (10) and disconnect connector W10P6 (11) from connector A33J1.

f. Remove PNVS solid state camera assembly A33 (7) from NSA.

g. Install protective cap or lens paper on relay optics assembly (8).

INSTALLATION

h. Remove old corrosion inhibitive sealing and coating compound from mounting hardware (para 2-6).

i. Apply corrosion inhibitive sealing and coating compound to mounting hardware (para 2-6). Use class 1A application.

j. Be sure harness that goes under PNVS solid state camera assembly A33 (7) sets in notches in NSA casting.

k. Remove protective cap or lens paper from relay optics assembly (8).

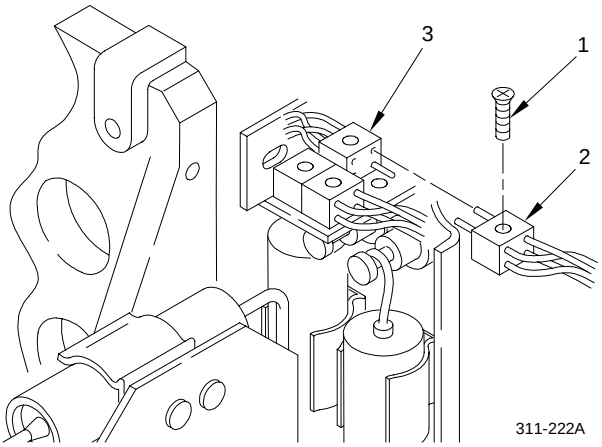
l. Carefully position PNVS solid state camera assembly A33 (7) as noted in step d above.

m. Connect connector W10P6 (11) to connector A33J1 and tighten two screwlocks (10).

n. Carefully guide relay optics assembly (8) into scanner module (9) while lowering fan end in a curving motion. Engage alinement pins on bottom of PNVS solid state camera assembly A33 (7) with alinement hole and slot in NSA casting.

o. Tighten four captive screws (6).

p. Connect connector W10P13 (5) to connector A4J1 and install screw (4).



q. Connect fan assembly connector A42P1 (2) to connector A41J1 (3) and secure using screw (1).

END OF TASK

4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

10. ELEVATION MIRROR AND AFOCAL LENS ASSEMBLY A35 REPLACEMENT

REMOVAL

a. Loosen two screwlocks (1) and disconnect connector J1 (2) from connector W10P7 (3).

CAUTION

Do not touch any of the steel bands on elevation mirror. The bands might bend or stretch and cause poor operation.

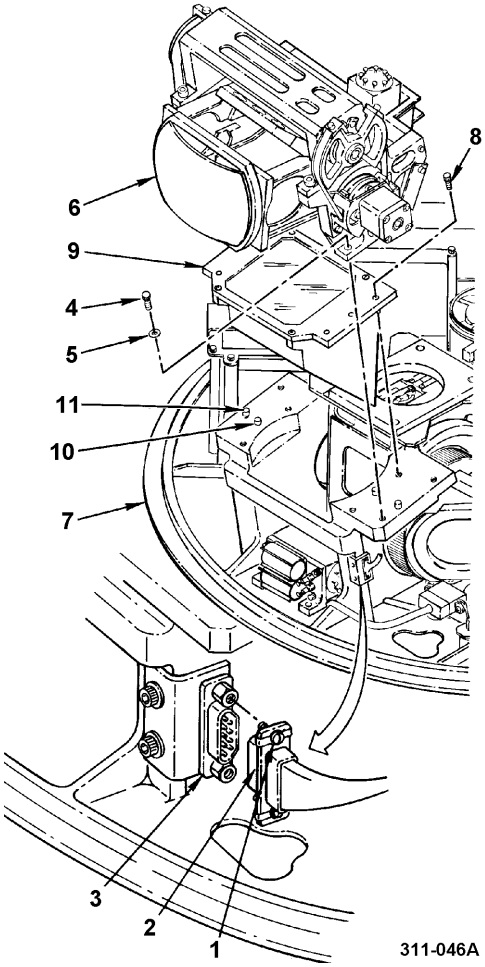
b. Remove four screws (4) and washers (5). Use 9/64-inch hex key with short arm T1 for two front screws.

CAUTION

Equipment failure could result if the elevation mirror and afocal lens assembly A35 are not replaced as a matched set. Replace the elevation mirror and afocal lens assembly A35 as a matched set and return defective unit to supply for disposition.

c. Carefully remove elevation mirror (6) from NSA (7).

d. Remove four screws (8) and remove afocal lens (9) from NSA (7).



INSTALLATION

e. Remove old corrosion inhibitive sealing and coating compound from screws (4 and 8) (para 2-6).

f. Apply corrosion inhibitive sealing and coating compound to screws (4 and 8). Use class 1A application (para 2-6).

g. Install afocal lens (9) on alinement pins (10). Secure afocal lens using four screws (8).

h. Carefully install elevation mirror (6) on alinement pins (11). Secure elevation mirror using four screws (4) and washers (5). Use 9/64-inch hex key with short arm T1 for two front screws.

i. Connect connector J1 (2) to connector W10P7 (3) and tighten two screwlocks (1).

j. Perform followup procedures.

END OF TASK

4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

11. COOLER/DEWAR ASSEMBLY A29/A30 REPLACEMENT

REMOVAL

a. Remove preamplifier cover (1) by removing four screws (2). Set cover aside as far as wiring harness will allow.

NOTE

A cross tip screwdriver is needed to remove right-rear mounting screw for the preamplifier.

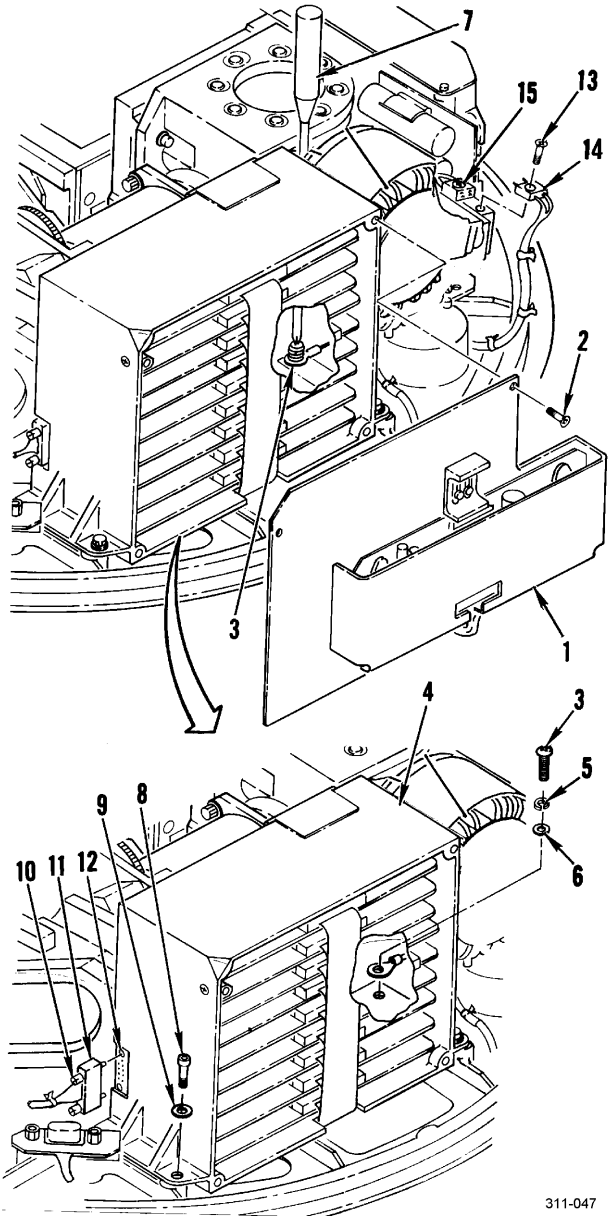
b. Remove corrosion inhibitive sealing and coating compound from right-rear mounting screw (3) for preamplifier (4).

c. Remove screw (3), lockwasher (5), and washer (6). Use 10-inch shank, No. 1, cross-tip screwdriver (7).

d. Remove three screws (8) and washers (9).

e. Disconnect connector W10P4 (11) from connector A11J1 (12) by loosening two screwlocks (10). Preamplifier (4) can now be moved as required.

f. Remove screw (13) and disconnect connector W10P2 (14) from connector A29J1 (15).



4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

g. Loosen bottom captive screw (16). Use flashlight and 9/64 x 6-inch shank hex balldriver (17).

h. Support cooler/Dewar assembly A29/A30 (18) and loosen two top captive screws (19).

CAUTION

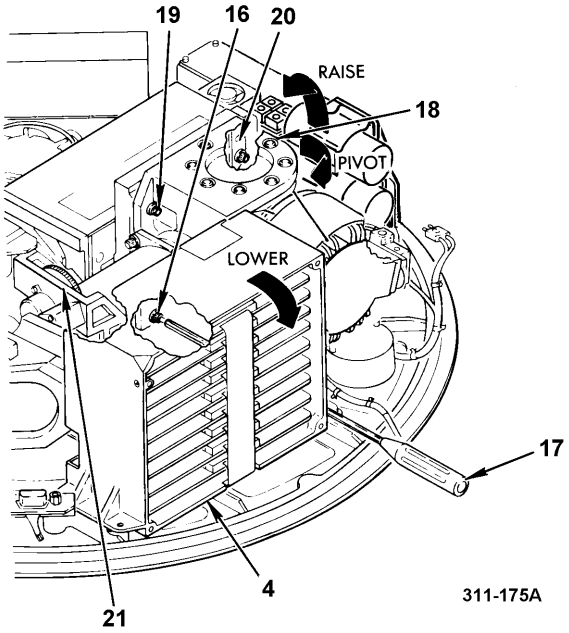
Dewar detector is very fragile and can be easily damaged by bumping. Do not bump detector lens or connectors when raising or lowering the cooler/Dewar assembly.

NOTE

Steps i thru m and r thru x require two persons.

i. Have assistant lower preamplifier (4) as shown by arrow. At the same time, carefully pivot cooler end of cooler/Dewar assembly A29/A30 (18) as shown by arrow. Stop when cooler end clears alinement pins (20) in NSA casting.

j. Have assistant continue to lower preamplifier (4). At the same time, carefully raise cooler end of A29/A30 assembly in a curving motion as shown by arrow. Carefully guide Dewar detector end of A29/A30 assembly out of focusing assembly (21).



4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

k. When detector lens is clear of focusing assembly, raise lens until detector connector screwlocks can be reached. At the same time, the assistant continues to lower preamplifier until it is lying face down.

l. Have assistant install protective cap on lens (22).

m. Have assistant disconnect four detector connectors (23) by loosening eight screwlocks (24).

n. Remove cooler/Dewar assembly A29/A30 (18) to safe storage.

o. If cooler/Dewar assembly was removed for not cooled malfunction, purge and recharge cooler/Dewar assembly (TM 11-5855-294-12&P).

INSTALLATION

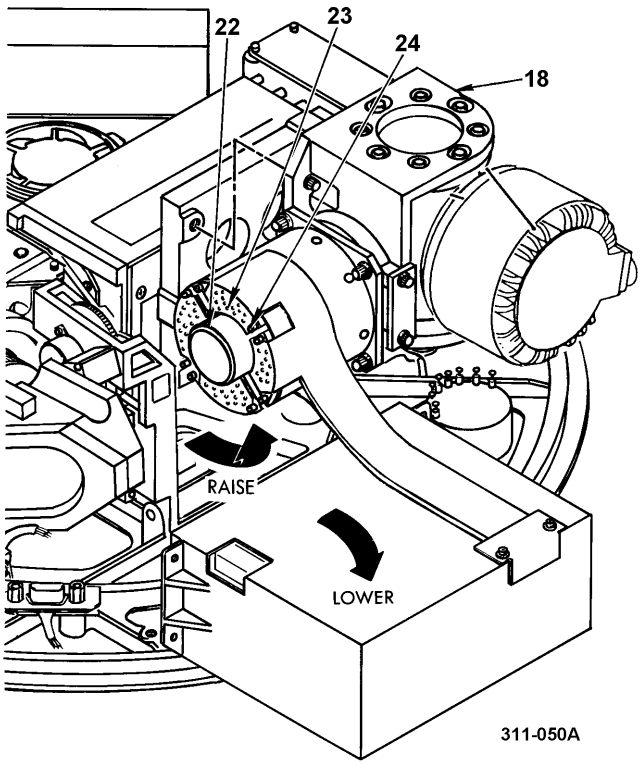
p. Remove old corrosion inhibitive sealing and coating compound from all mounting screws except screwlocks and captive screws (para 2-6).

q. Prepare the following surfaces for electrical bonding (para 2-7).

(1) Both sides of mounting hole at right-rear corner of preamplifier.

(2) Mounting surface of NSA casting for right-rear corner of preamplifier.

r. Position A29/A30 assembly (18) so assistant can connect detector connectors (23).



s. Have assistant connect four detector connectors (23) as follows:

A11P1 to A30J1
A11P2 to A30J2
A11P3 to A30J3
A11P4 to A30J4

t. Have assistant tighten eight screwlocks (24).

u. Have assistant remove protective cap from lens (22).

4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

CAUTION

Dewar detector is very fragile and can be easily damaged by bumping. Do not bump detector lens or connectors when raising or lowering the cooler/Dewar assembly.

v. While assistant raises preamplifier (4) in direction of arrow, carefully insert detector lens (22) into focusing assembly (21). Follow a curving motion as A29/A30 assembly (18) is lowered into position to insert lens into focusing assembly.

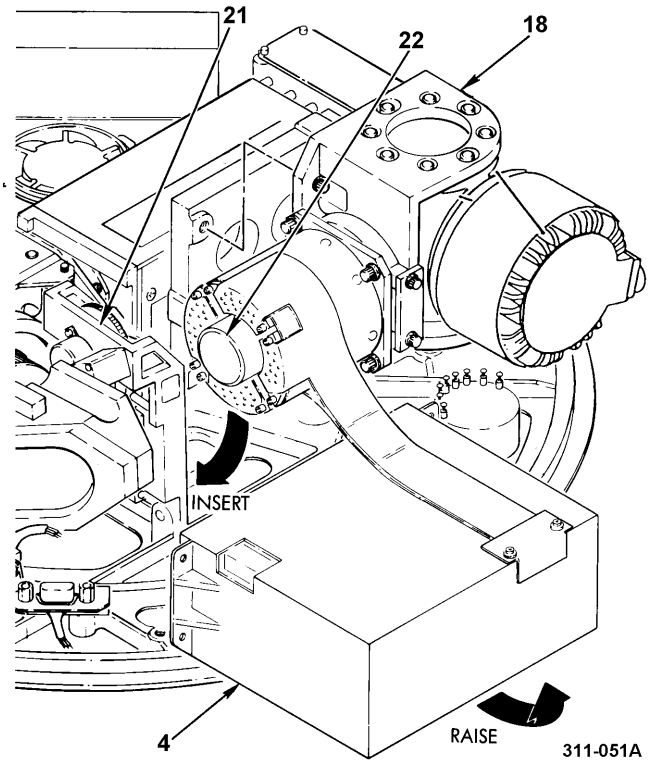
w. While assistant continues to raise preamplifier (4) to a vertical position, install A29/A30 assembly (18) onto alinement pins (20).

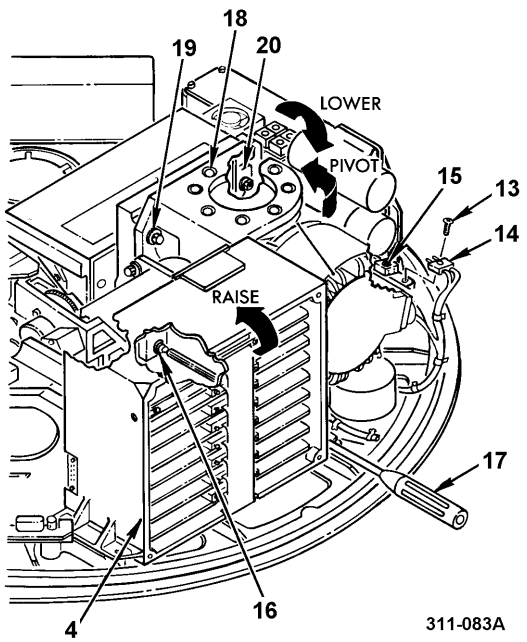
x. Support A29/A30 assembly (18) and tighten two top captive screws (19).

y. Tighten bottom captive screw (16). Use flashlight and 9/64 x 6-inch shank hex balldriver (17).

z. Connect connector W10P2 (14) to connector A29J1 (15) and install screw (13).

aa. Apply corrosion inhibitive sealing and coating compound. Use class 1A application for all screws except right-rear mounting screw for the preamplifier.





4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

ab. Position preamplifier (4) and loosely install three screws (8) and washers (9).

ac. Connect connector W10P4 (11) to connector A11J1 (12) and tighten two screwlocks (10).

ad. Install screw (3), lockwasher (5), and washer (6) through bonding strap terminal lug (25) into right-rear mounting hole of preamplifier (4). Use 10-inch shank, No. 1, cross-tip screwdriver (7).

ae. Tighten three screws (8).

af. Have bonding strap installation inspected.

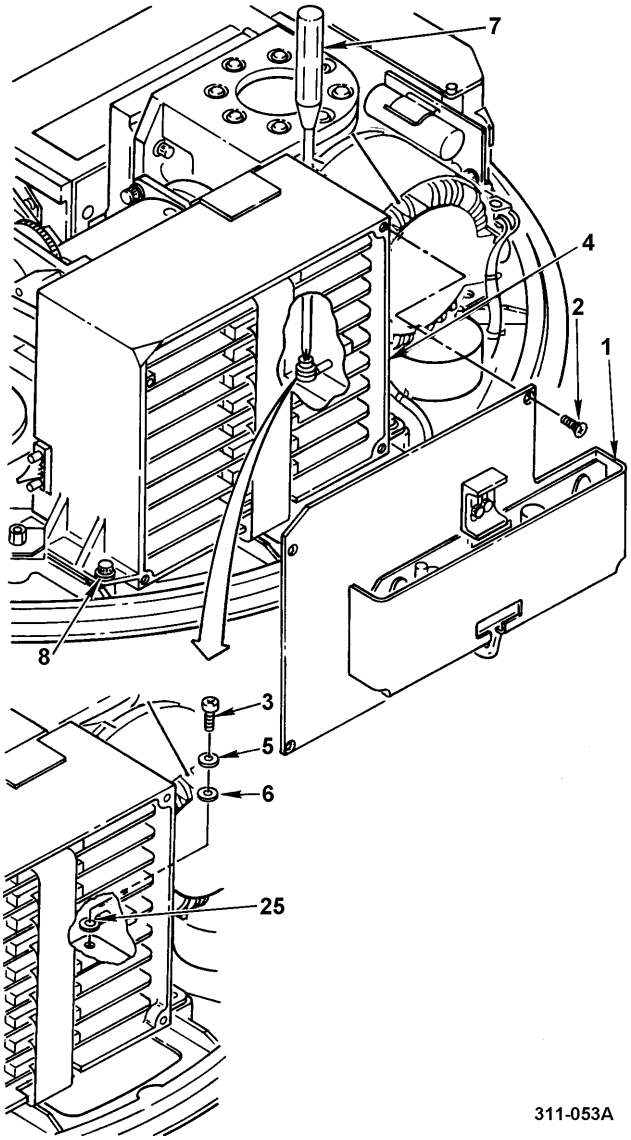
ag. Check preamplifier cover (1) for damaged rubber pads. Replace preamplifier cover (1) if pads are damaged.

ah. Apply corrosion inhibitive seating and coating compound to screw (3). Use class 2 application (para 2-6).

ai. Install preamplifier cover (1) using four screws (2).

aj. Perform followup procedures.

END OF TASK



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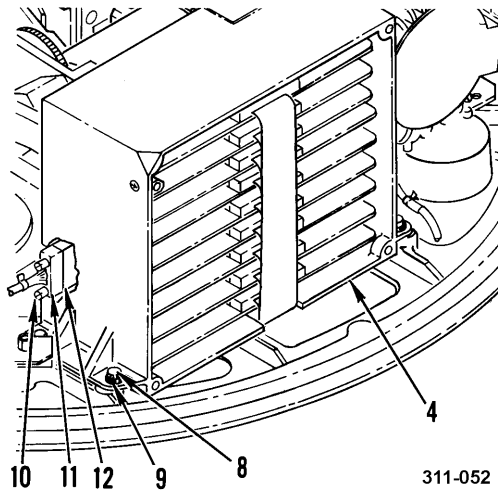


311-052

4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

12. FOCUSING ASSEMBLY A31 REPLACEMENT

REMOVAL

a. Remove cooler/Dewar assembly A29/A30 (11 above).

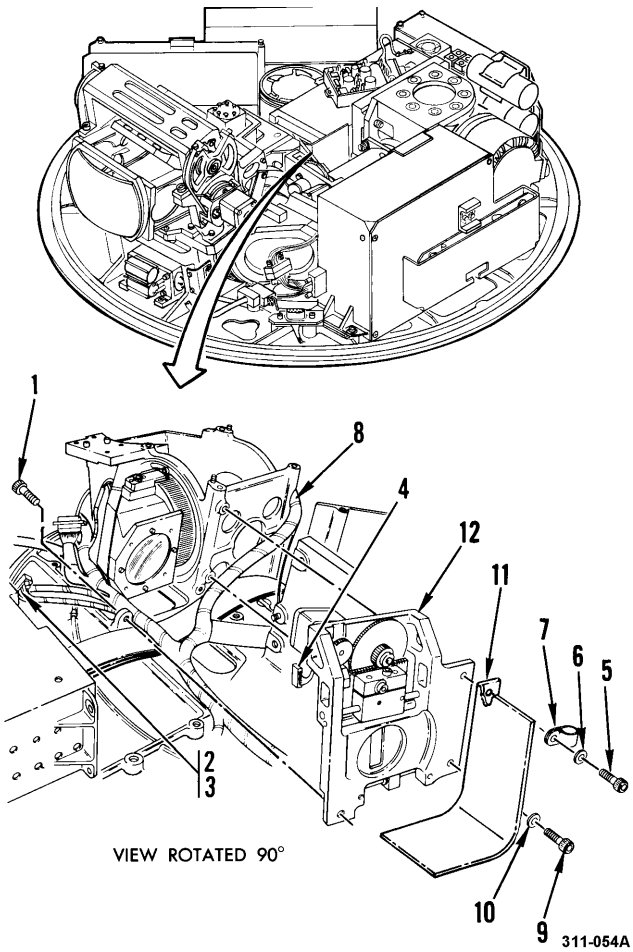
b. Remove screw (1).

c. Disconnect connector W10P9 (3) from connector J1 (4) by loosening two screwlocks (2).

d. Remove visual relay/multiplexer assembly A33 (8 above).

e. Remove screw (5) and washer (6), and move clamp (7) and wire harness (8) out of the way.

f. Remove electrical shield (11) and focusing assembly A31 (12) by removing screw (9) and washer (10).



4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

INSTALLATION

g. Remove old corrosion inhibitive sealing and coating compound from screws 1, 5, and 9 (para 2-6).

h. Apply corrosion inhibitive sealing and coating compound to screws 1, 5, and 9. Use class 1A application (para 2-6).

NOTE

The focusing assembly mounts on rear of the IR imager. The rear of the IR imager has four alinement pins. These pins are not functional for this procedure. Do not try to engage these pins when installing the focusing assembly.

i. Position focusing assembly A31 (12) for mounting.

j. Loosely install screw (1).

k. Check electrical shield (11) for damaged rubber pad. Replace electrical shield (11) if pad is damaged.

l. Position electrical shield (11) for mounting.

m. Loosely install screw (9) and washer (6).

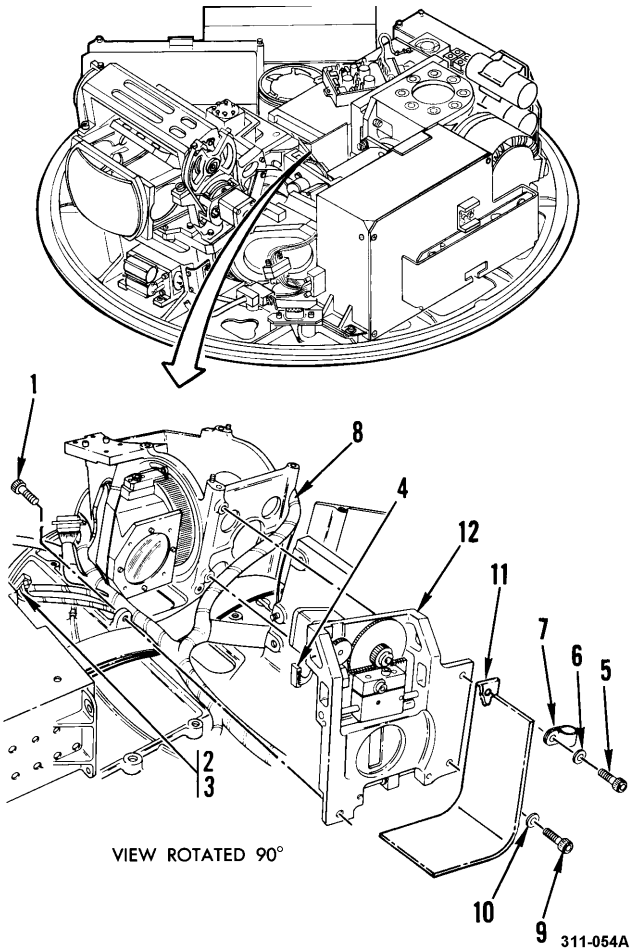
n. Position wire harness (8) and clamp (7) and install screw (5) and washer (6).

o. Tighten screws (1 and 9).

p. Install visual relay/multiplexer assembly A33 (8 above).

q. Connect connector W10P9 (3) to connector J1 (4) and tighten two screwlocks (2).

r. Install cooler/Dewar assembly A29/A30 (11 above).



END OF TASK

4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

13. FOCUS CONTROL CCA A26 REPLACEMENT

REMOVAL

CAUTION

This CCA contains electrostatic discharge sensitive (ESDS) devices. Refer to paragraph 2-8 for handling requirements before starting this task to prevent damage to the devices.

a. Remove cover (3) by removing three screws (1) and washers (2).

b. Install PWB extractor and remove CCA A26 (4).

INSTALLATION

c. Remove old corrosion inhibitive sealing and coating compound from screws (1) (para 2-6).

d. Install CCA A26 (4).

e. Check cover (3) for damaged rubber pads. Replace cover (3) if pads are damaged.

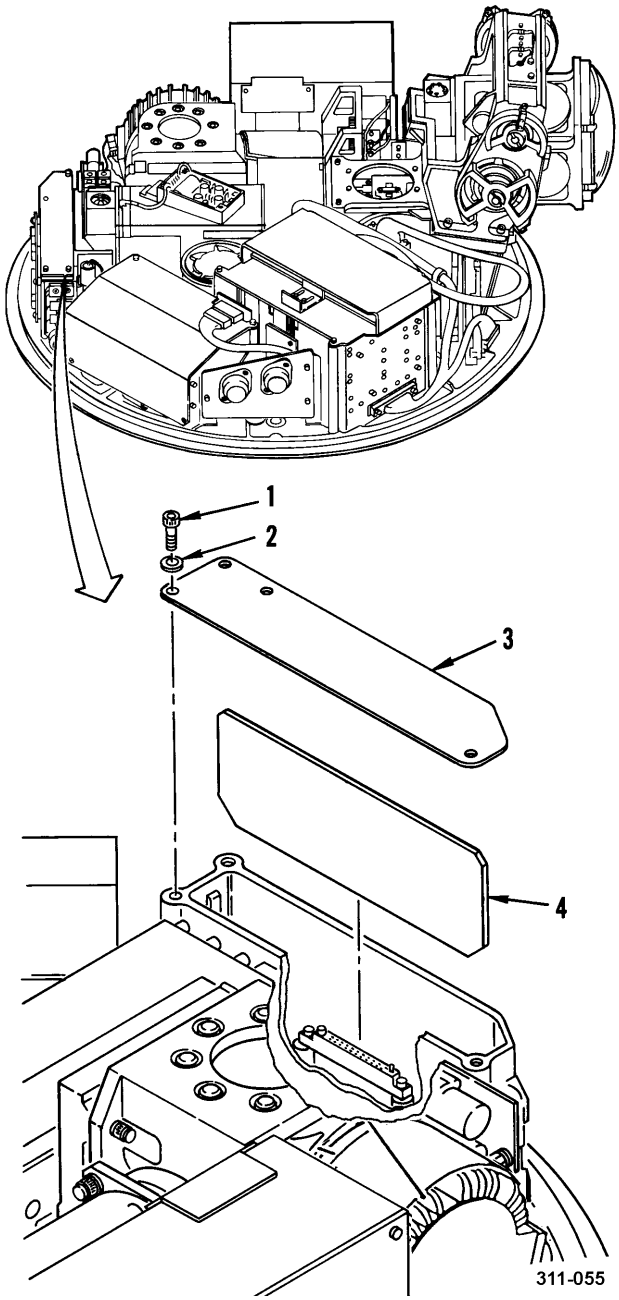
f. Apply corrosion inhibitive sealing and coating compound to screws (1). Use class 1A application (para 2-6).

g. Install cover (3) using three screws (1) and washers (2).

h. Perform followup procedures.

i. Pack faulty focus control CCA (para 5-2).

END OF TASK



4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

14. POST AMPLIFIER CONTROL DRIVER CCA A12 THRU A18 REPLACEMENT

NOTE

This procedure is for replacement of post amplifier control driver CCA A15. The same procedure is used for CCAs A12 thru A14 and A16 thru A18.

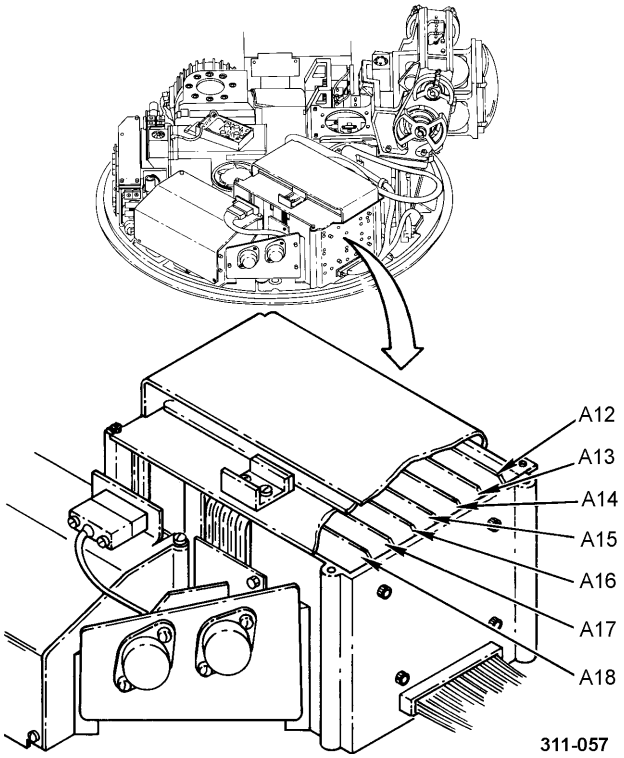
REMOVAL

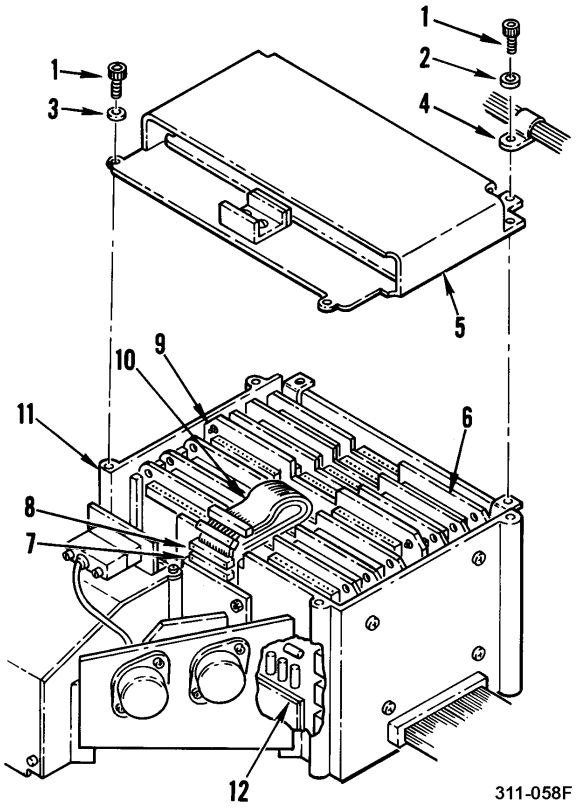
a. Remove six screws (1), two large washers (2), and four washers (3). Hold clamp (4) and wire harness aside and move cover (5) out of the way.

CAUTION

Flexible printed cable assemblies (flex cables) are easily damaged if handled roughly. Use care when disconnecting connectors and moving flex cables out of the way.

b. Starting with CCA A12 (6), loosen two screwlocks (7) and disconnect each connector (8) up to and including connector for CCA A15 (9). Carefully move each flex cable (10) out of the way.





4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

c. Install PWB extractor on CCA A15 (9) and remove CCA A15. Note position of CCA components relative to post amplifier housing (11).

INSTALLATION

d. Remove old corrosion inhibitive sealing and coating compound from screws (1) (para 2-6).

CAUTION

Be careful when installing CCA A18. Components on the CCA can catch and bend vertical corners (12) of motherboard flexible printed cables.

e. Install CCA A15 (9) with components positioned as noted in step c above.

CAUTION

Flex cables are easily damaged if handled roughly. Use care when moving flex cables and connecting connectors.

f. Starting with CCA A15 (9), do the following for each CCA up to and including CCA A12 (6).

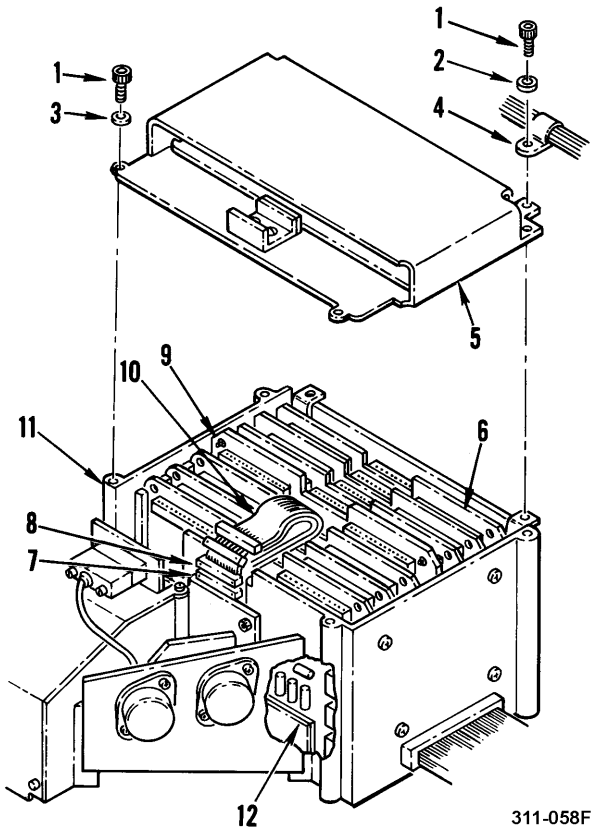
(1) Carefully return flex cable (10) to original position.

(2) Connect connector (8).

(3) Tighten two screwlocks (7).

g. Apply corrosion inhibitive sealing and coating compound to screws (1). Use class 1A application (para 2-6).

h. Install cover (5) and wire harness clamp (4) using six screws (1), two large washers (2), and four washers (3).



i. Perform followup procedures.

END OF TASK

4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

15. POST AMPLIFIER CONTROL DRIVER CCA A19 OR A20 REPLACEMENT

REMOVAL

a. Remove cover (4) by removing four screws (1 and 2) and two washers (3).

CAUTION

Flexible printed cable assemblies (flex cables) are easily damaged if handled roughly. Use care when disconnecting/connecting connectors and moving flex cables in any way.

b. Disconnect connector (6) from post amplifier control driver CCA A20 (7) by loosening two screwlocks (5). Carefully move flex cable (8) out of the way.

NOTE

If removing CCA A20, do not do step c and d below.

c. Disconnect connector (10) from post amplifier control driver CCA A19 (11) by loosening two screwlocks (9).

NOTE

The flex cables in step d below have 2 inches of length folded under CCA A19. This extra length permits removing and installing CCA A19.

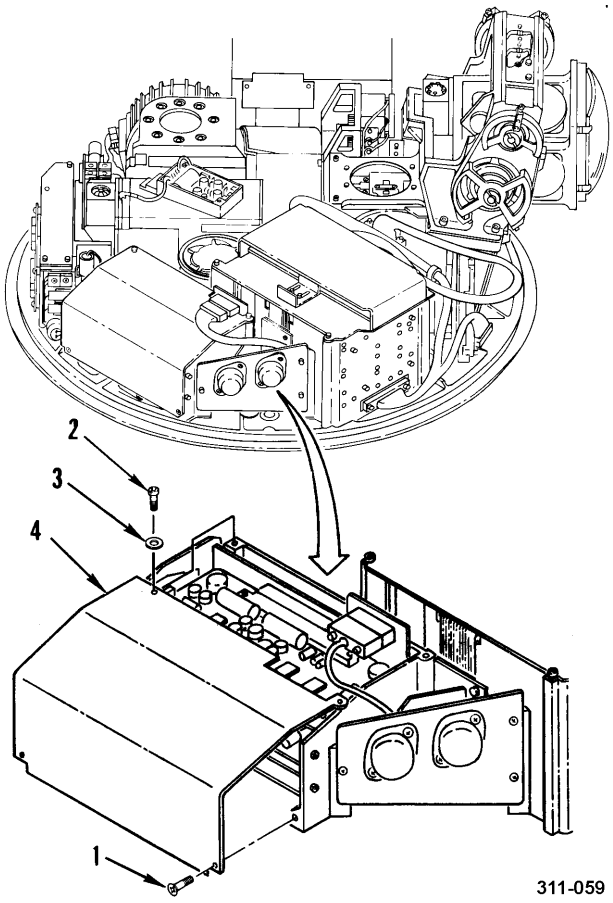
d. Carefully pull on connector (6) and pull flex cable (8) out to its full length. Carefully pull on connector (10) and pull flex cable (12) out to its full length. Let both connectors hang over edge of NSA base.

e. Install PWB extractor on CCA A20 (7) or A19 (11), as applicable, and remove CCA.

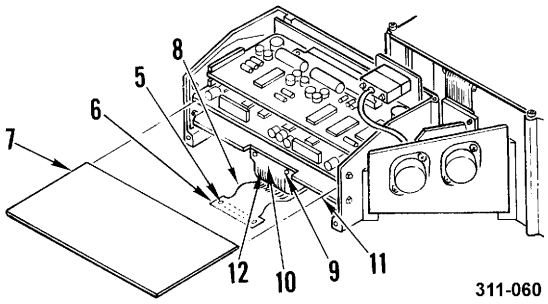
INSTALLATION

f. Remove old corrosion inhibitive sealing and coating compound from screws (1 and 2) (para 2-6).

g. With component side down, install CCA A19 (11) or CCA A20 (7) as applicable.



311-059



311-060

4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

NOTE

If installing CCA A20, do not do steps h thru k below.

h. Aline flex cables so that both flex cables start their top bends at the same place as shown.

CAUTION

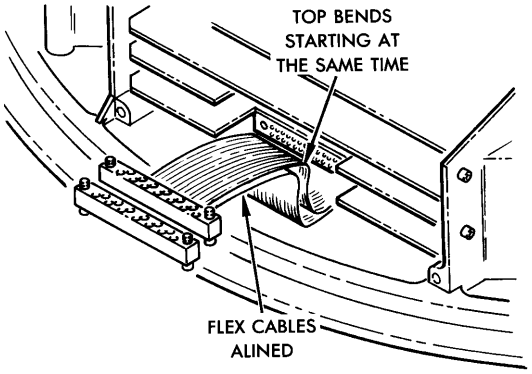
Flex cables are easily damaged if handled roughly. Use care when disconnecting/ connecting connectors and moving flex cables in any way.

i. Carefully push the top bends down and toward CCA A19 connector. Carefully insert top bends under CCA A19 connector and feed flex cables toward connector.

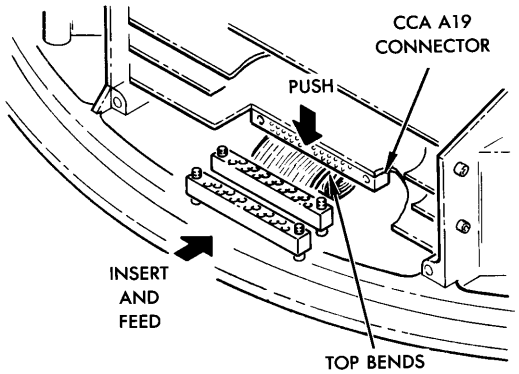
j. Stop feeding flex cables when flex cable connectors meet CCA connectors.

k. Connect flex cable connector to CCA A19 and tighten two screwlocks.

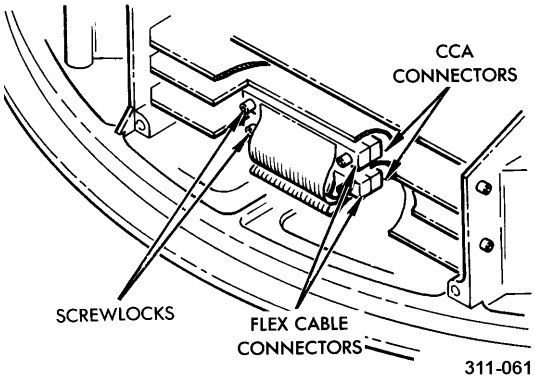
l. Connect flex cable connector to CCA A20 and tighten two screwlocks.



SEQUENCE 1



SEQUENCE 2



4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

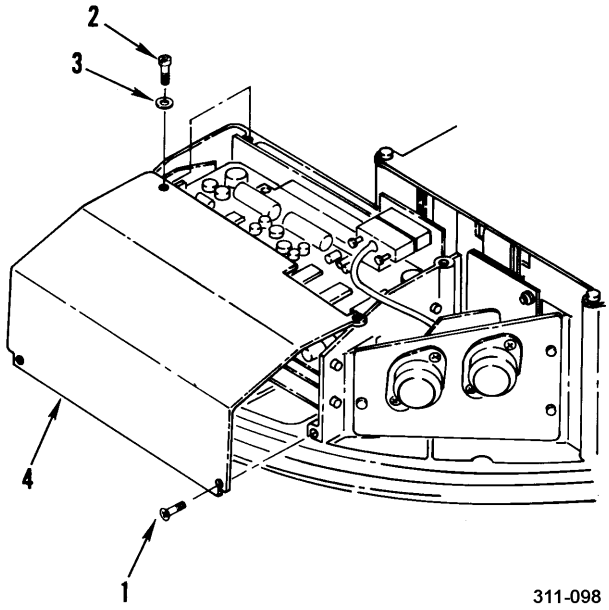
m. Check cover (4) for damaged rubber pads. Replace cover (4) if pads are damaged.

n. Apply corrosion inhibitive sealing and coating compound to screws (1 and 2). Use class 1A application (para 2-6).

o. Install cover (4) using four screws (1 and 2) and two washers (3).

p. Perform followup procedures.

END OF TASK



311-098

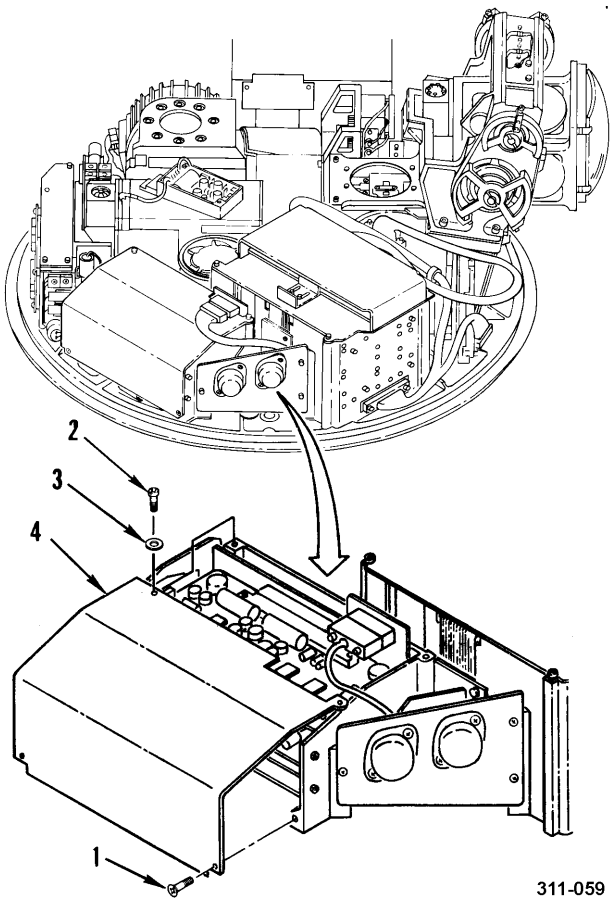
16. ACM CCA A21 OR POWER REGULATOR CCA A22 REPLACEMENT

REMOVAL

CAUTION

These CCAs contain electrostatic discharge sensitive (ESDS) devices. Refer to paragraph 2-8 for handling requirements before starting this task to prevent damage to the devices.

a. Remove four screws (1 and 2) and two washers (3), and remove cover (4).

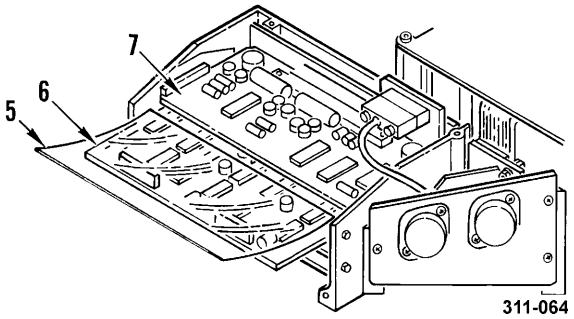


311-059

4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

b. Remove insulator plate (5) lying on top of CCA A21 (6).

c. Install PWB extractor on CCA A21 (6) or CCA A22 (7), as applicable, and remove CCA.



INSTALLATION

d. Remove old corrosion inhibitive sealing and coating compound from screws (1 and 2) para 2-6).

e. With component side up, install CCA A21 (6) or CCA A22 (7), as applicable. Be sure that connector on CCA mates with motherboard connector.

f. Install insulator plate (5) by sliding it in on top of CCA A21 (6).

g. Check cover (4) for damaged rubber pads. Replace cover (4) if pads are damaged.

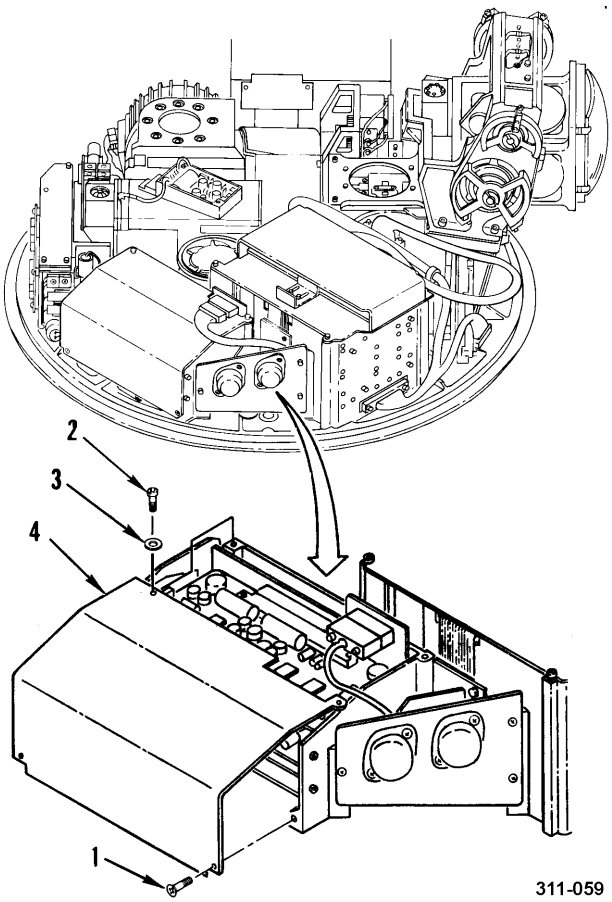
h. Apply corrosion inhibitive sealing and coating compound to screws (1 and 2). Use class 1A application (para 2-6).

i. Install cover (4) using four screws (1 and 2) and two washers (3).

j. Pack faulty CCA (para 5-2).

k. Perform followup procedures.

END OF TASK



4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

17. BIAS VOLTAGE REGULATOR CCA A10 REPLACEMENT

REMOVAL

a. Remove card retainer (1) by removing two screws (2) and washers (3).

b. Install PWB extractor on bias voltage regulator CCA A10 (4) and remove CCA.

INSTALLATION

c. Remove old corrosion inhibitive sealing and coating compound from screws (2) (para 2-6).

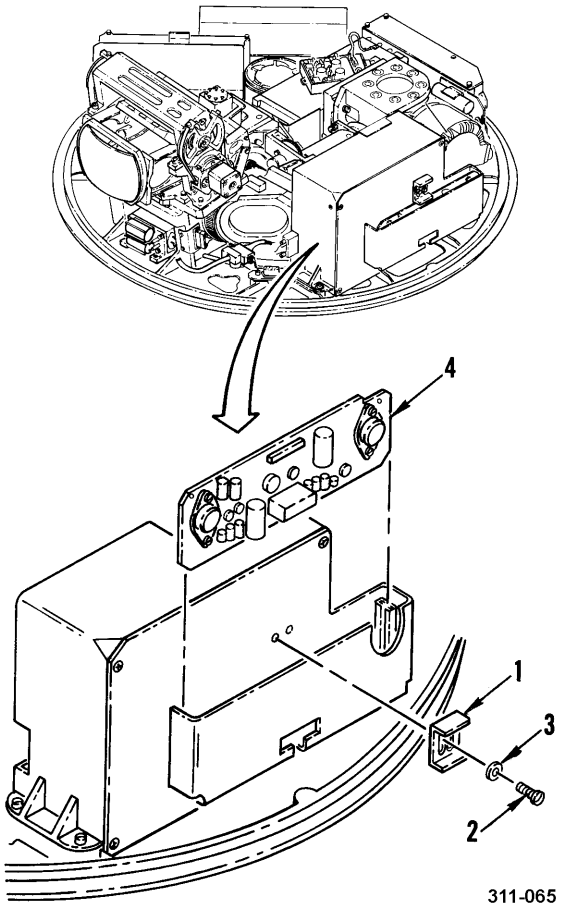
d. Install CCA A10 (4).

e. Apply corrosion inhibitive sealing and coating compound to screws (2). Use class 1A application (para 2-6).

f. Install card retainer (1) using two screws (2) and washers (3).

g. Perform followup procedures.

END OF TASK



4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

18. VIDEO IR PREAMPLIFIER CCA A1 THRU A9 REPLACEMENT

NOTE

This procedure is for replacement of video IR preamplifier CCA A4 (6). The same procedure is used for CCAs A1 thru A3, and A5 thru A9.

REMOVAL

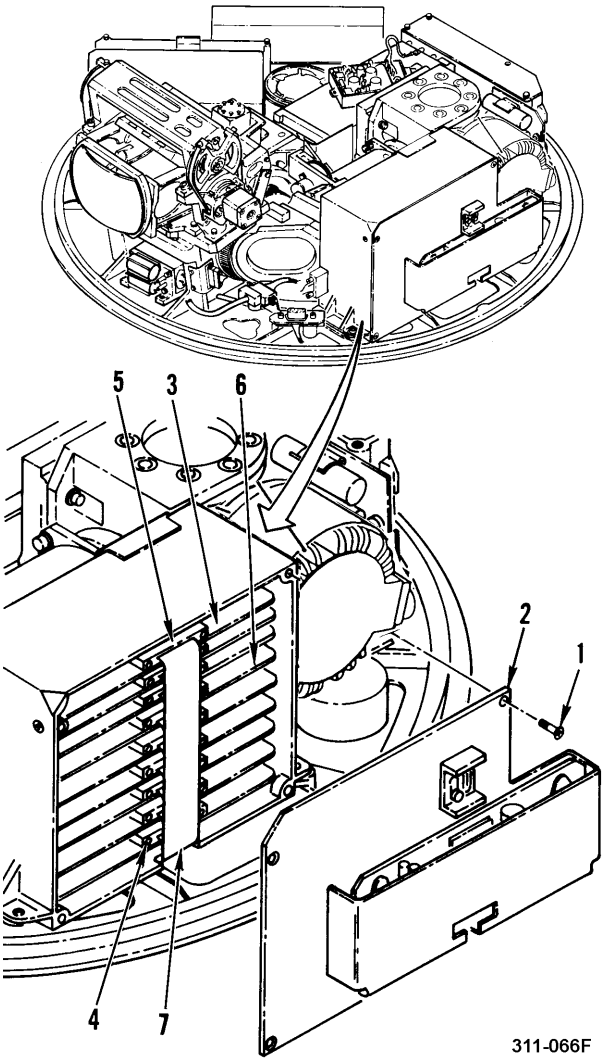
a. Remove four screws (1) and remove cover (2).

CAUTION

Flexible printed cable assemblies (flex cables) are easily damaged if handled roughly. Use care when disconnecting connectors and moving flex cables out of the way.

b. Starting with CCA A1 (3), loosen two screwlocks (4) and disconnect each connector (5) down to and including connector for CCA A4 (6). Carefully lay each flex cable (7) out of the way.

c. Install PWB extractor on CCA A4 (6) and remove CCA.



4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

INSTALLATION

d. With component side up, install CCA A4 (6).

e. Starting with CCA A4 (6), do the following for each CCA up to and including CCA A1 (3).

(1) Carefully return flex cable (7) to its original position.

(2) Connect connector (5).

(3) Tighten two screwlocks (4).

f. Check cover (2) for damaged rubber pads. Replace cover (2) if pads are damaged.

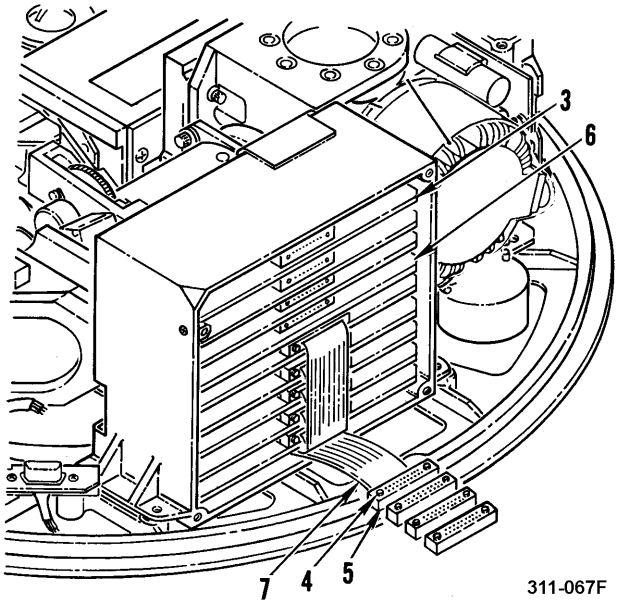
g. Remove old corrosion inhibitive sealing and coating compound from screws (1) (para 2-6).

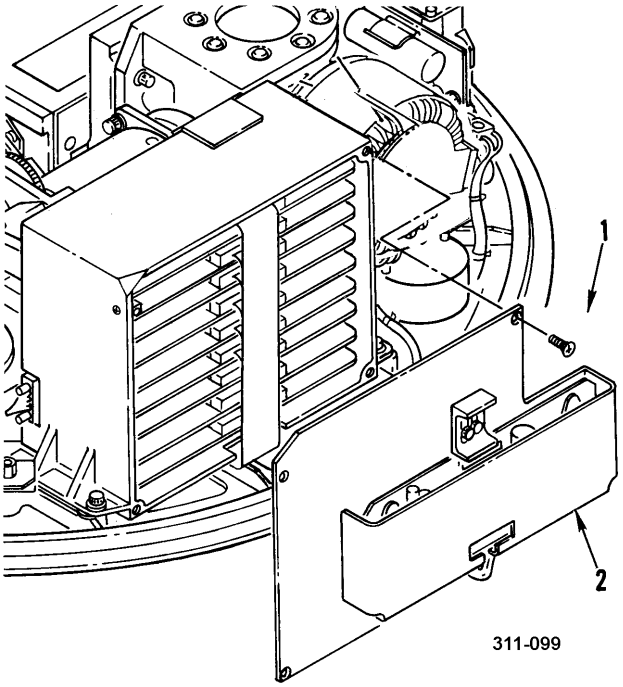
h. Apply corrosion inhibitive sealing and coating compound to screws (1). Use class 1A application (para 2-6).

i. Install cover (2) using four screws (1).

j. Perform followup procedures.

END OF TASK





4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

19. FLEXIBLE PRINTED CABLE ASSEMBLIES (FLEX CABLES) W1 THRU W9 REPLACEMENT

REMOVAL

a. Remove visual relay/multiplexer assembly A33 (8 above).

NOTE

The post amplifier circuit card assemblies (CCAs) are electronically balanced to other assemblies in the NSA. To avoid a lengthy balancing procedure, it is necessary to return each post amplifier CCA to the same slot from which it was removed.

b. Remove post amplifier CCAs A12 thru A18 (14 above). Label each CCA with its reference designation after it has been removed.

c. Remove post amplifier CCAs A19 and A20 (15 above). Label each CCA with its reference designation after it has been removed.

d. Remove power regulator CCA A22 and ACM CCA A21 (16 above).

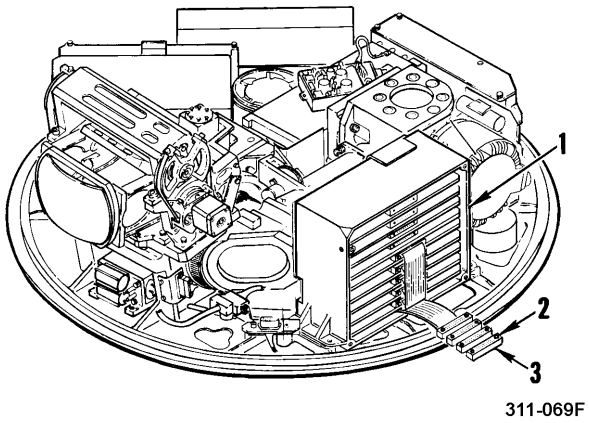
e. Remove transistor assembly A38 (2 above).

f. Remove cooler/Dewar assembly A29/A30 (11 above).

CAUTION

Flex cables are easily damaged if handled roughly. Use care when disconnecting connectors and moving flex cables in any way.

g. Carefully raise preamplifier (1) to upright position.



311-069F

h. Working from top down, loosen two screwlocks (2) and disconnect each connector (3) of flex cables W1 thru W9 from preamplifier CCAs A1 thru A9. Carefully lay flat each flex cable.

i. Carefully move preamplifier (1) aside to permit removal of flex cables.

4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

j. Remove fairlead (4) by removing two nuts (5), lockwashers (6), and washers (7). Carefully lay flat the flex cables that were secured by the fairlead.

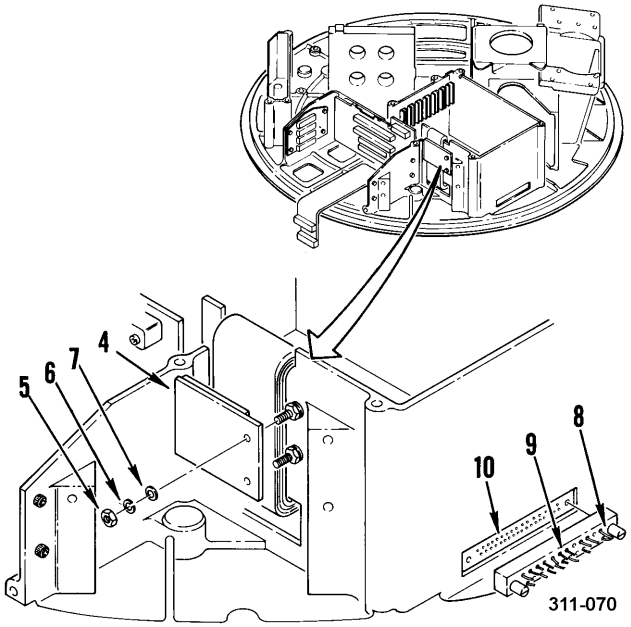
k. Disconnect connector W10P5 (9) from connector A23J1 (10) by loosening two screwlocks (8).

NOTE

If screws removed in steps l and m below are socket head capscrews, discard them and replace them with pan head screws (refer to TM 1-5855-265-23P for part number).

l. Remove four screws (11) and washers (12) from power regulator ACM motherboard (13).

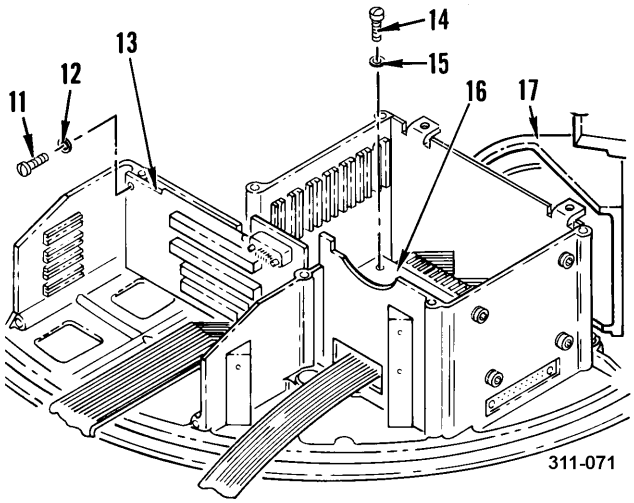
m. Remove four screws (14) and washers (15) from post amplifier motherboard (16).



NOTE

The two motherboards are interconnected by three flex cables. The right end of post amplifier motherboard is attached to a flex cable which is connected to the LED assembly (17).

n. Note folding and routing of the three flex cables between the two motherboards.



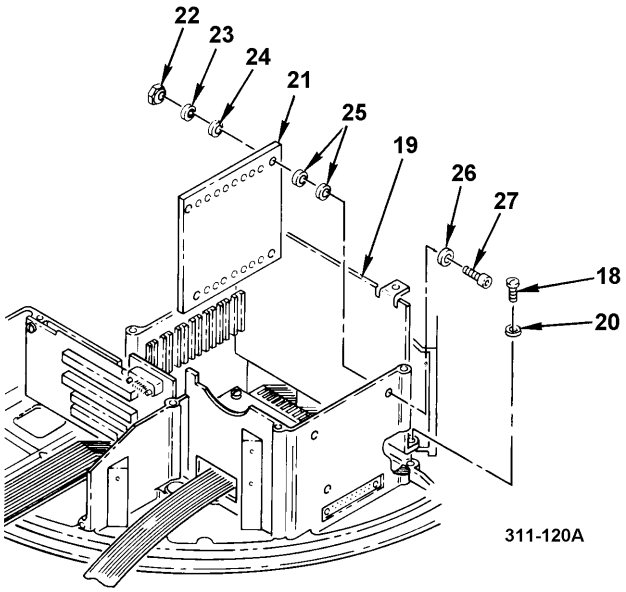
4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

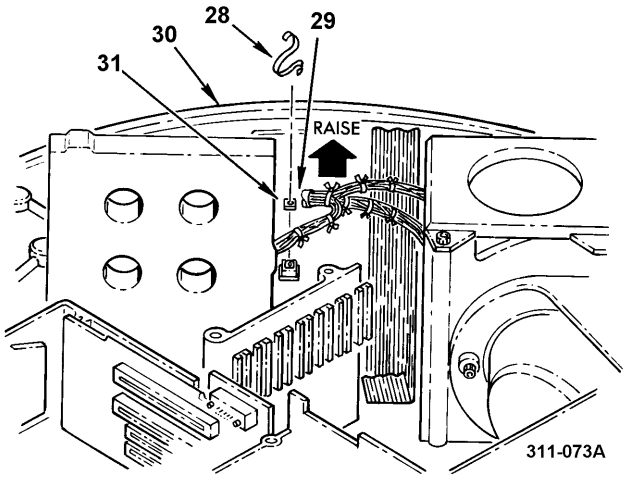
o. Remove post amplifier side cover (19) by removing screw (18), and washer (20).

p. Remove card guide assembly (21) by removing four nuts (22), lockwashers (23), and washers (24) from the guide side, and eight washers (25), four washers (26), and four screws (27) from the housing side.

q. Cut lacing and tying tape (28) holding W10 harness (29) to NSA base (30).

r. Raise W10 harness (29) and remove rubber cushion (31). Retain cushion for installation. Replace a damaged cushion.





4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

CAUTION

Flex cables are easily damaged if handled roughly. Do not unfold flex cable between motherboards while raising or lowering the motherboards. Use care when moving flex cables in any way.

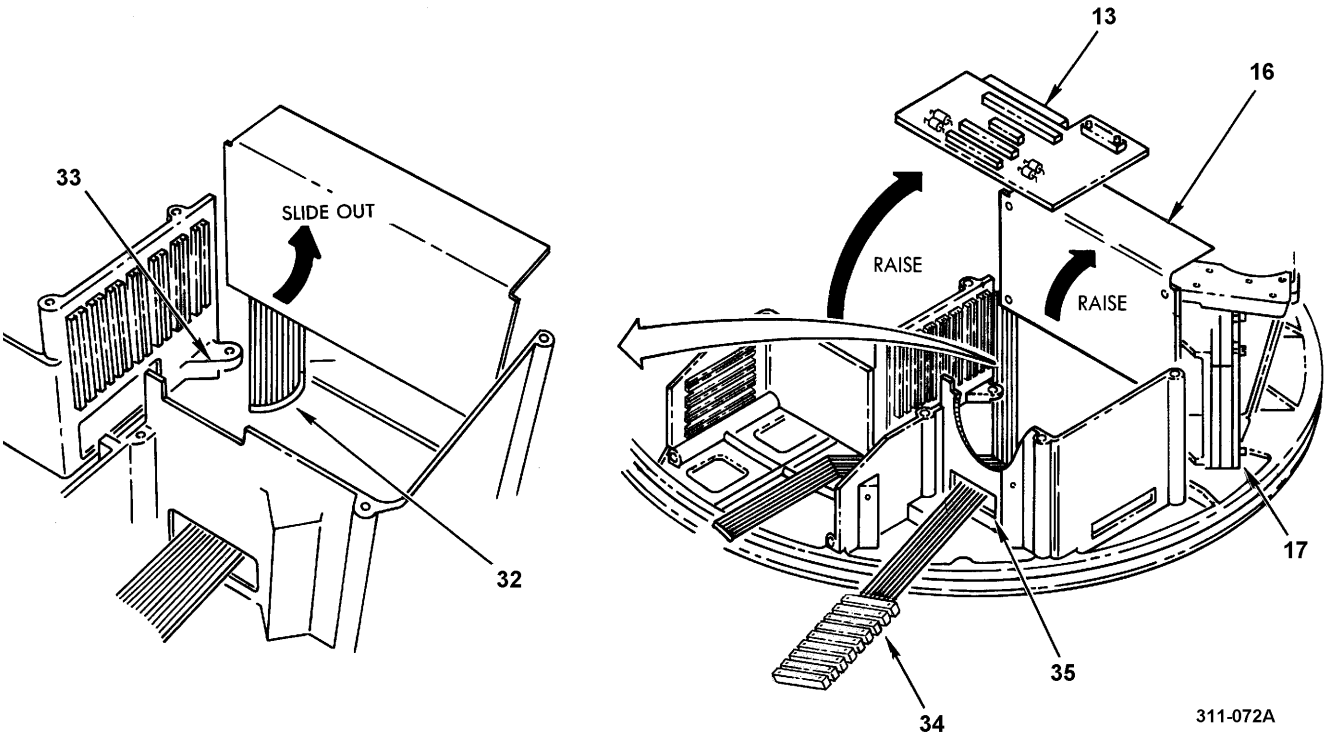
s. Carefully raise power regulator ACM (13) motherboard and post amplifier motherboard (16) up and to the right in a curving motion. Raise post amplifier motherboard (16) until vertical.

NOTE

Support motherboards in the raised position while doing the next three steps.

t. Carefully slide flex cable bundle (32) out from slot under ledge (33). Slightly curve bundle lengthwise as you slide it out and up. After bundle clears slot, let bundle rest on ledge.

u. Carefully feed seven flex cable connectors (34) through opening (35).



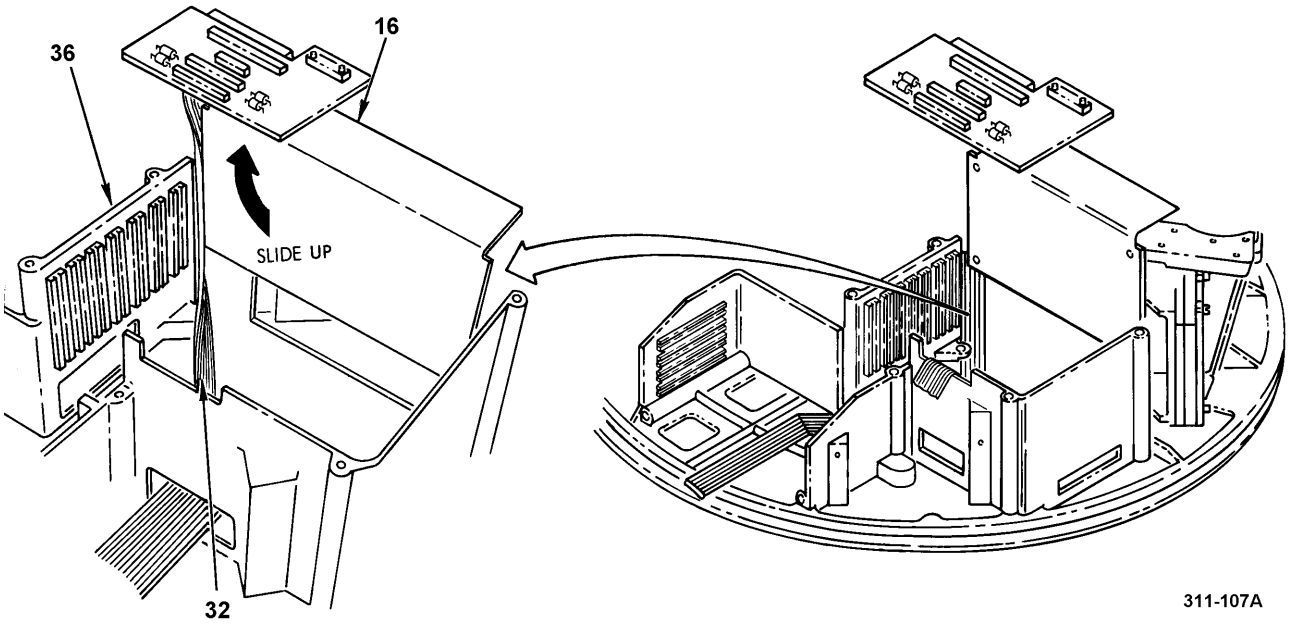
4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

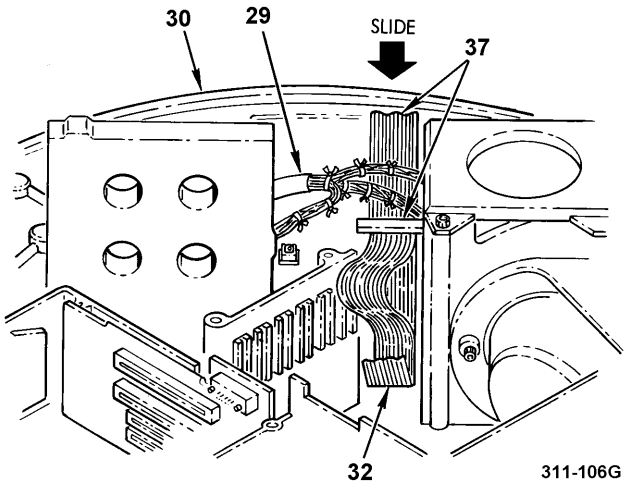
v. Carefully twist flex cable bundle (32) until edges are vertical, and slide bundle up through slot between post amplifier motherboard (16) and housing (36).

w. Carefully lower motherboards to their original positions.

x. Carefully slide each of the nine flex cables (37) out from under raised W10 harness (29). Slide cables out one at a time.

y. Remove flex cable bundle (32) from NSA base (30).





4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

z. Replace defective flex cable(s) as required. Maintain proper order of flex cables within the bundle.

INSTALLATION

aa. Remove old corrosion inhibitive sealing and coating compound from mounting hardware (para 2-6).

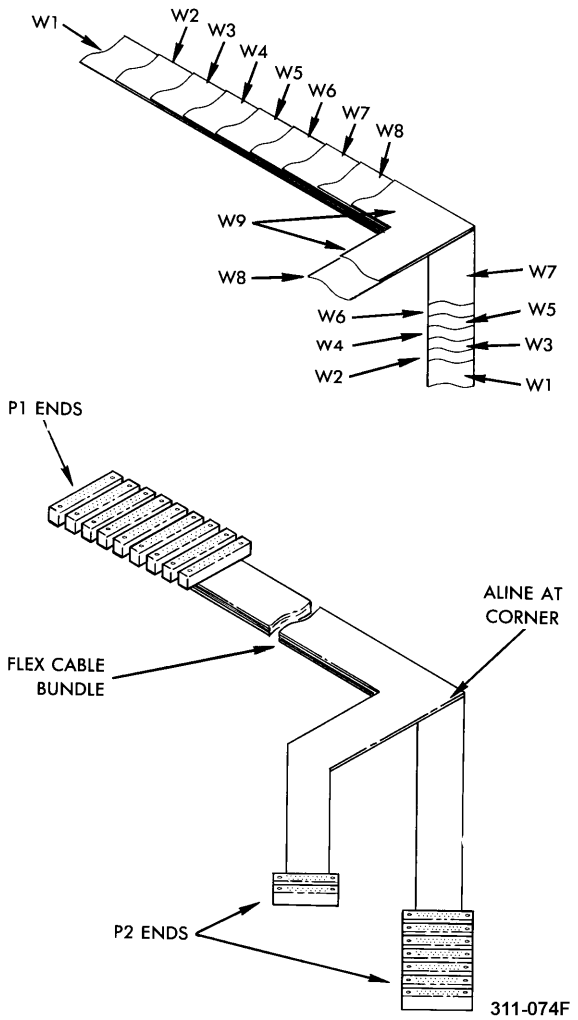
ab. Maintain alinement of flex cables in bundle as shown.

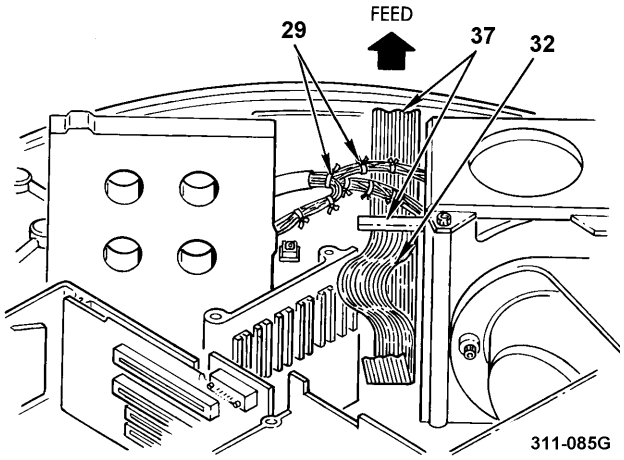
ac. Position flex cable bundle (32) with P1 ends towards raised W10 harness (29).

CAUTION

Flex cables are easily damaged if handled roughly. Do not unfold flex cable between motherboards while raising or lowering the mother-boards. Use care when moving flex cables in any way.

ad. Carefully feed the nine flex cables (37) under raised W10 harness (29). Feed cables one at a time.

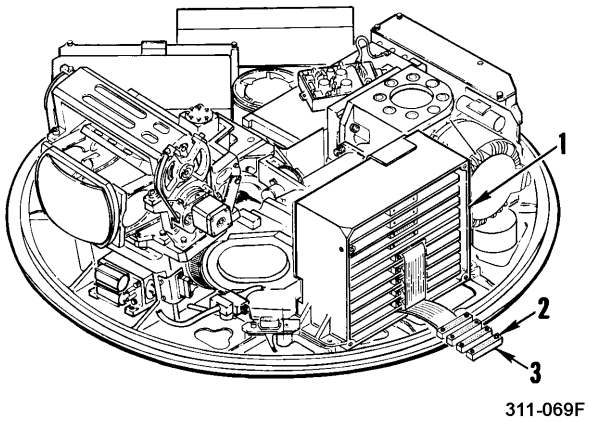




4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

ae. Carefully raise preamplifier (1) to its upright position.

af. Working from bottom up, care-fully connect each connector (3) of flex cables W9 thru W1 to preamplifier CCAs A9 thru A1. Tighten two screwlocks (2) for each connector.



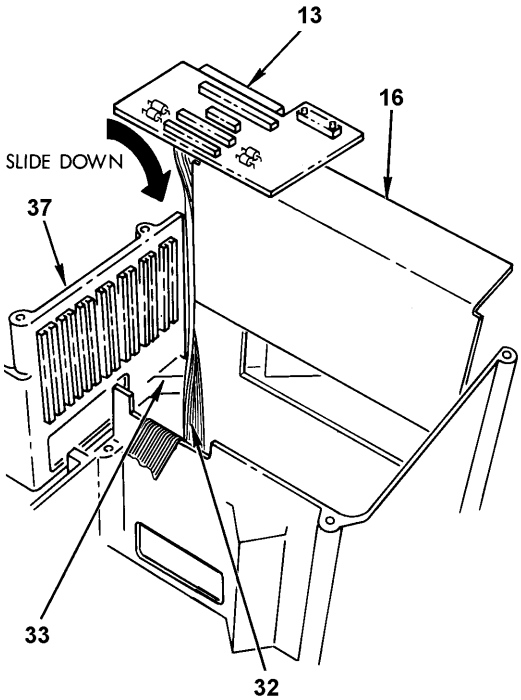
311-069F

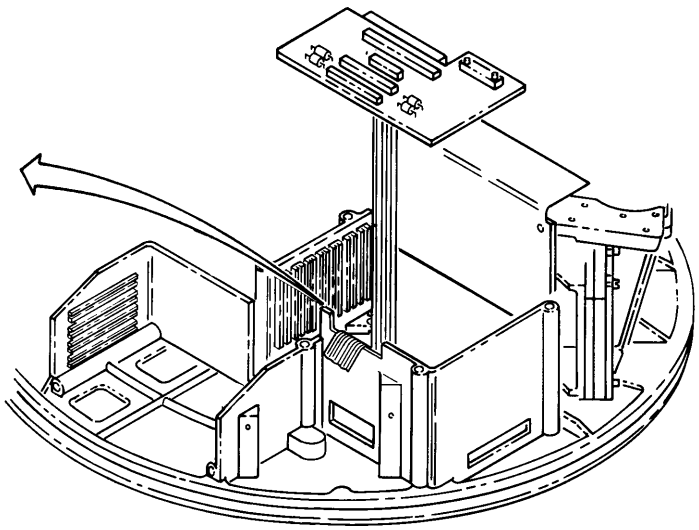
ag. Carefully raise motherboards (13 and 16) up and to the right in a curving motion. Raise until motherboard (16) is vertical.

NOTE

Support motherboards in the raised position while doing steps ah, ai, and aj.

ah. Carefully twist flex cable bundle (32) until edges are vertical and slide bundle down through slot between motherboard (16) and housing (37). When clear of slot, let bundle rest on ledge (33).




311-108A

4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

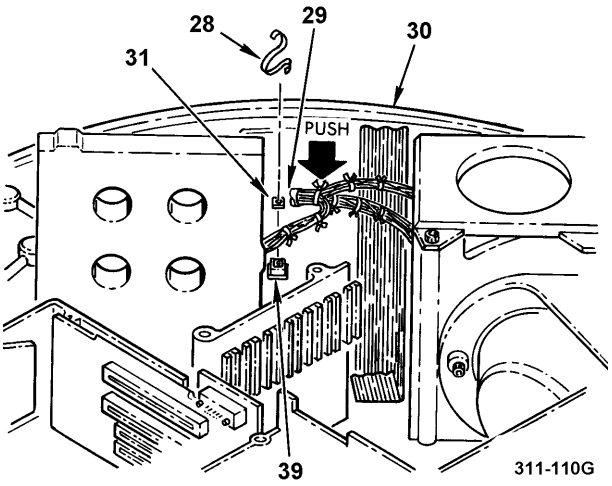
ai. Carefully feed seven flex cable connectors (34) through opening (35) and lay 2-connector leg (38) on NSA base (30).

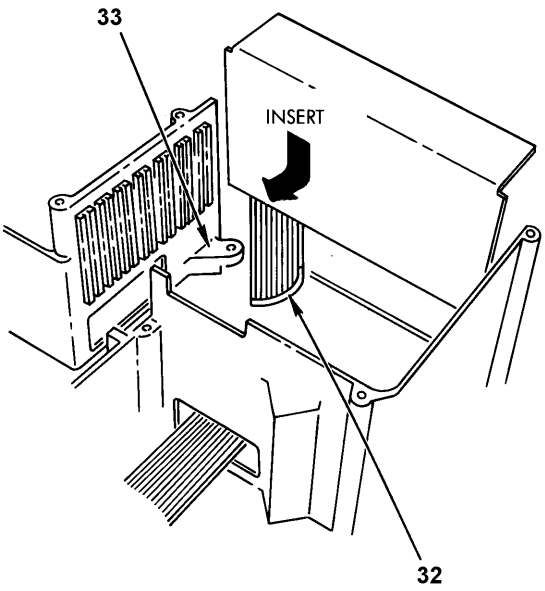
aj. Carefully insert flex cable bundle (32) into slot under ledge (33). Slightly curvebundle lengthwise while sliding it down and in.

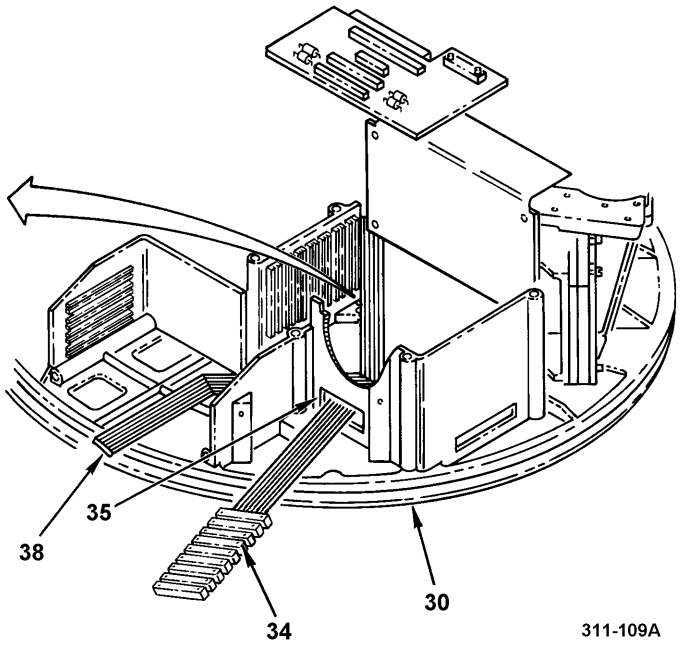
ak. Carefully lower motherboards to their original positions.

al. Put rubber cushion (31) on mounting plate (39).

am. Push W10 harness (29) back down on NSA base (30) and secure with lacing and tying tape (28).







4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

an. Loosely install eight pan head screws (11 and 14) and washers (12 and 15). These screws will be tightened after the motherboards have been alined.

CAUTION

Do not sharply unbend or bend flex cable W8 or W9 without applying heat to the bend area. Heat increases the flexibility of the flex cable material. Sharp bending or unbending without heat will damage printed wiring. Do not overheat flex cable material. Too much heat will damage the material.

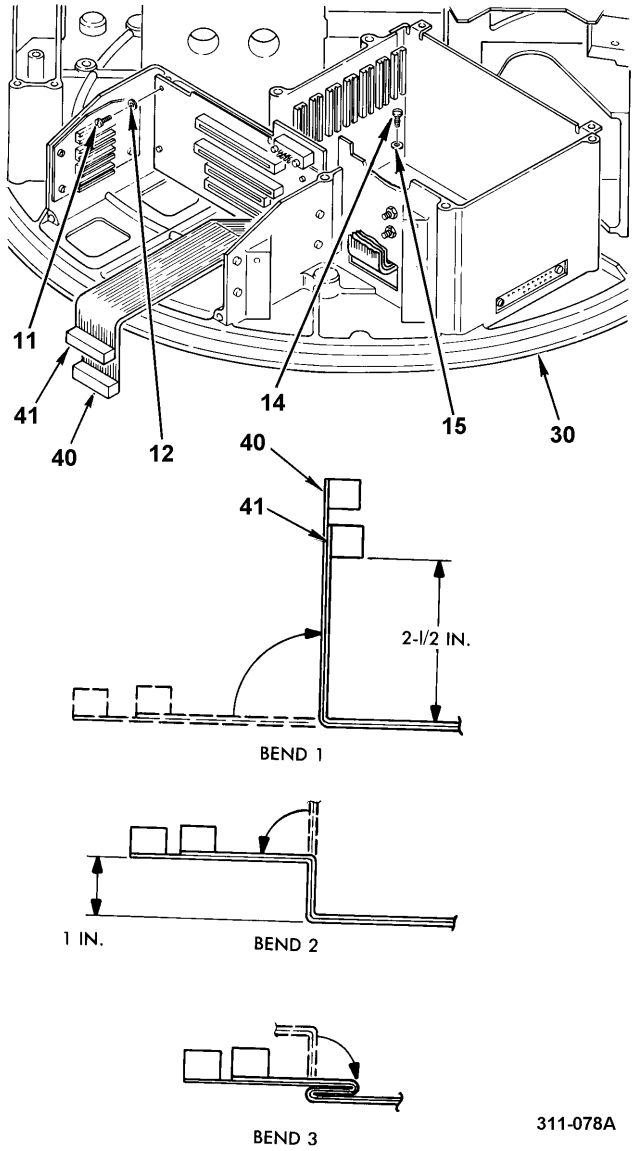
NOTE

If flex cable W8 or W9 was replaced, do steps ao and ap. If flex cables W8 and W9 were replaced, omit step aq.

ao. Carefully unbend and flatten the flex cable that was not replaced. Use gun type heater (200 to 300°F) to apply heat to the bend area. Do not overheat the flex cable material.

ap. Carefully bend flex cables W8 (40) and W9 (41) as shown. Use gun type heater to apply heat to the bend area. Do not overheat the flex cable material.

aq. Carefully unfold both flex cables (40) and (41) so that connector ends hang over edge of NSA base (30). Do not use heat this time. This action is needed to allow installation of CCA A19.



4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

ar. Install four screws (27) and washers (26) through housing.

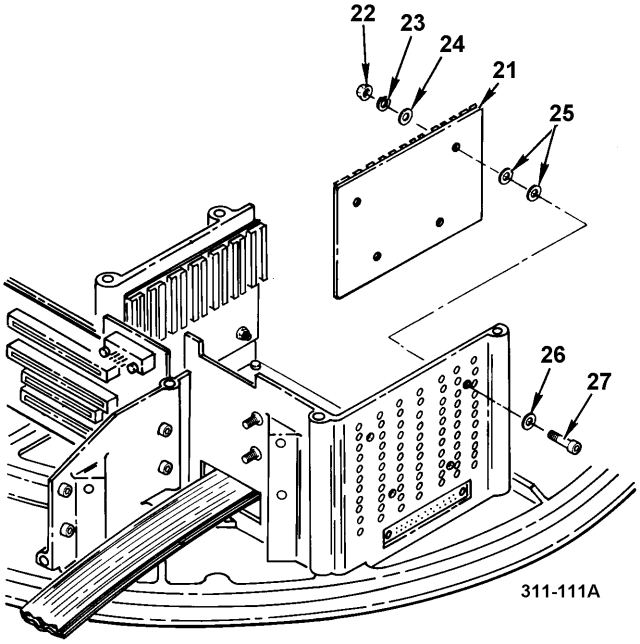
NOTE

Be sure each post amplifier CCA installed in step as below is the same one removed from its associated slot. When partly installing a CCA in step as below, slide the CCA along the card guide until CCA connector is ready to mate with corresponding motherboard connector.

as. Install two washers (25) on each screw (27).

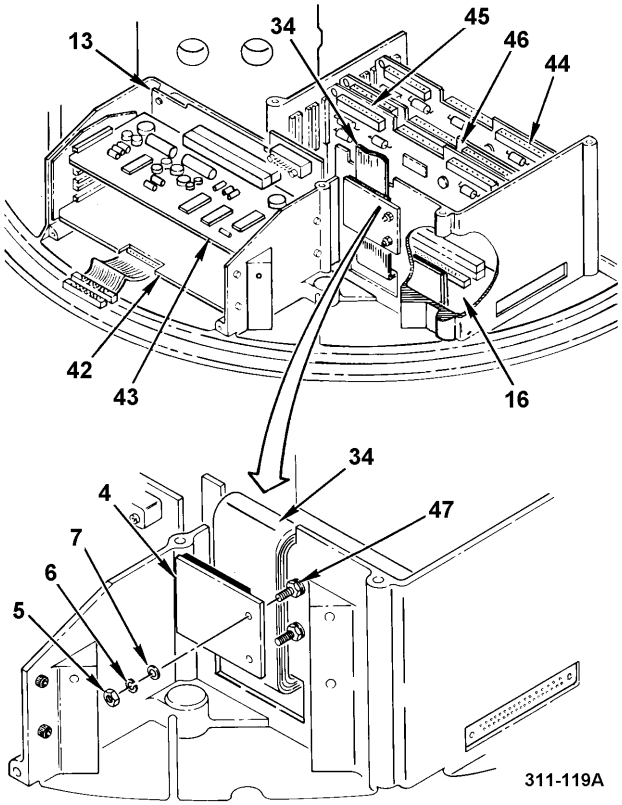
at. Install card guide assembly (21) on screws (27).

au. Loosely install four washers (24), lockwashers (23), and nuts (22) on screws (27).



av. Partly install four CCAs as indicated below.

Index No.	CCA No.	Component Side
42	A19	Facing down
43	A22	Facing up
44	A13	Facing 7-connector end (34) of flex cable bundle
45	A16	Facing 7-connector end (34) of flex cable bundle.



aw. Slightly move motherboards (13 and 16) to aline CCA and motherboard connectors and finish installing the four CCAs.

4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

ax. Remove the eight screws and washers loosely installed in step ap above. Apply corrosion inhibitive sealing and coating compound to the screws. Use class 1A application (para 2-6). Install and tighten screws.

ay. Install CCA A15 (46) with component side facing same direction as CCA A16 (45).

az. Remove CCAs A13 (44) and A16 (45).

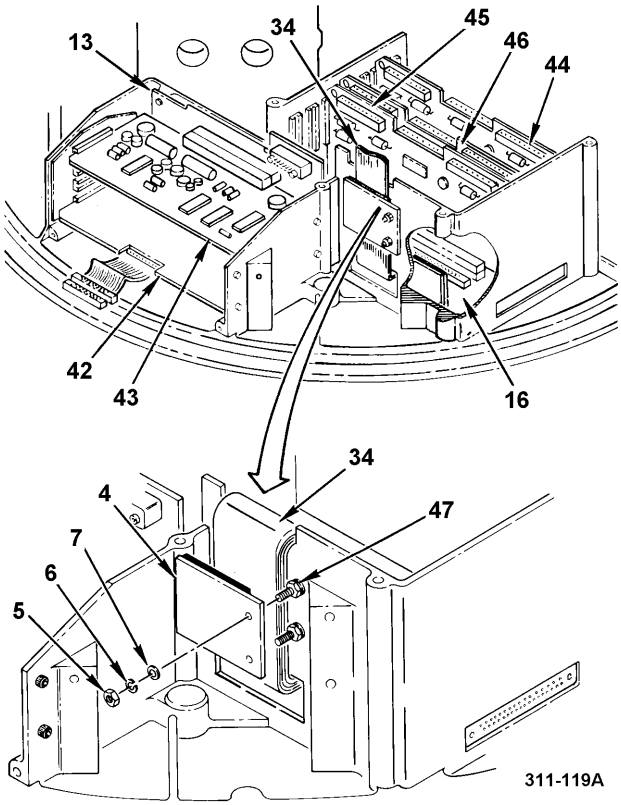
ba. Remove four nuts loosely installed in step au above. Apply corrosion inhibitive sealing and coating compound to the nuts. Use class 1A application (para 2-6). Install and tighten four nuts.

CAUTION

Flex cables are easily damaged if handled roughly. Use care when moving flex cables in any way.

bb. Check fairlead (4) for damaged or worn rubber pad. Replace fairlead if pad is damaged or worn.

bc. Carefully pull 7-connector end (34) of flex cable bundle upward. With rubber pad of fairlead (4) towards cable bundle, install fairlead on screws (47). Apply corrosion inhibitive sealing and coating compound to nuts (5). Use class 1A application (para 2-6). Install two washers (7), lockwashers (6), and nuts (5).



4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

bd. Install post amplifier side cover (19) by installing screw (18), and washer (20).

be. Connect connector W10P5 (9) to connector A23J1 (10) and tighten two screwlocks (8).

bf. Carefully lower preamplifier housing (1) to a horizontal position.

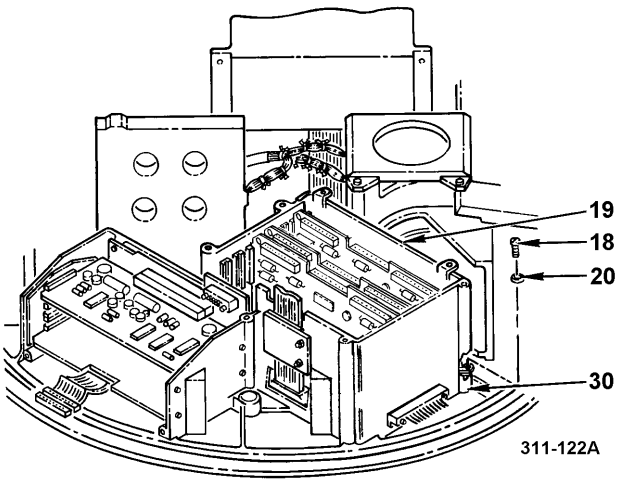
NOTE

Omit any followup procedures specified in the referenced tasks in steps bm below.

bg. Install cooler/Dewar assembly A29/A30 (11 above).

bh. Install transistor assembly A38 (2 above).

bi. Install ACM CCA A21 (16 above) but do not install cover.



NOTE

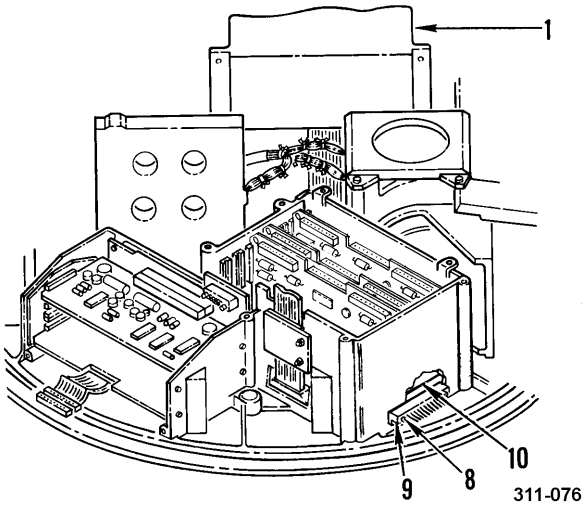
Be sure the post amplifier CCAs installed in steps bj and bk below are the same ones removed from their respective slots.

bj. Finish installation of post amplifier CCA A19 (fold flex cables and connect connector) and install CCA A20 (15 above).

bk. Install remaining post amplifier CCAs (14 above).

bl. Install visual relay/multiplexer assembly A33 (9 above).

bm. Perform followup procedures.



END OF TASK

4-4. PNVS TURRET ASSEMBLY NSA A1 REPAIR (cont)

20. BORESIGHT CCA A43 REPLACEMENT

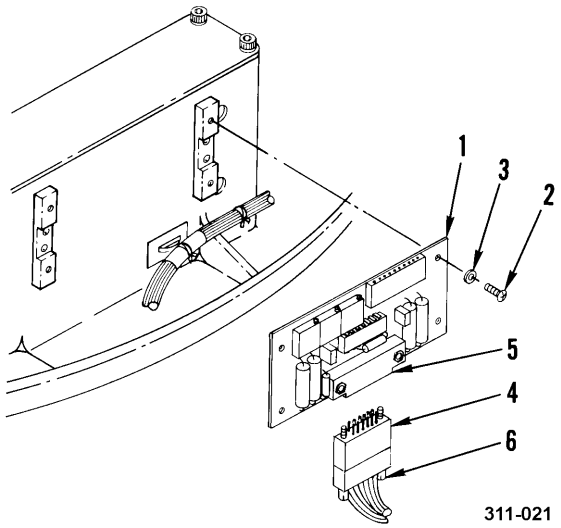
REMOVAL

CAUTION

This CCA contains electrostatic discharge sensitive (ESDS) devices. Refer to paragraph 2-8 for handling requirements before starting this task to prevent damage to the devices.

a. Remove boresight CCA A43 (1) by removing four screws (2) and washers (3).

b. Disconnect connector W10P15 (4) from A43J1 (5) by loosening two screwlocks (6).



INSTALLATION

c. Remove old corrosion inhibitive sealing and coating compound from screws (2) (para 2-6).

d. Apply corrosion inhibitive sealing and coating compound to screws (2). Use class 1A application (para 2-6).

e. Connect connector W10P15 (4) to A43J1 (5), and tighten two screwlocks (6).

f. Install boresight CCA A43 (1) using four screws (2) and washers (3).

g. Perform followup procedures.

END OF TASK

4-5. PNVS TURRET ASSEMBLY NSA ELECTRONIC COMPONENT ASSEMBLY A40 REPAIR

This task covers replacement of:

Para	Item
1.	Capacitor C1
2.	Capacitor C2 and C3
3.	Connector J1 or J2
4.	Power reactor L1
5.	Relay K1
6.	Semiconductor CR1
7.	Semiconductor VR1

INITIAL SETUP

Tools

Aircraft armament repairman tool set and supplemental

Aircraft armament technical inspector tool set

Materials (appendix C)

Corrosion inhibitive sealing and coating compound (Item 10)

Heat shrinkable insulation sleeving (Item 22)

Hot air shrinkable splice (2) (Item 43)

Insulation tubing, 18 AWG (Item 56)

Insulation tubing, 22 AWG (Item 57)

Noncorrosive RTV silicone adhesive, sealant (Item 3)

Noncorrosive RTV silicone adhesive, sealant primer (Item 39)

Semiconductor (used on K1)

Solder (Item 42)

Synthetic resin enamel (Item 17)

Personnel Required

68J Aircraft Fire Control Repairer

66J30 Aircraft Armament Technical Inspector

Equipment Condition

Capacitor assembly or electronic component assembly A40 removed

FOLLOWUP

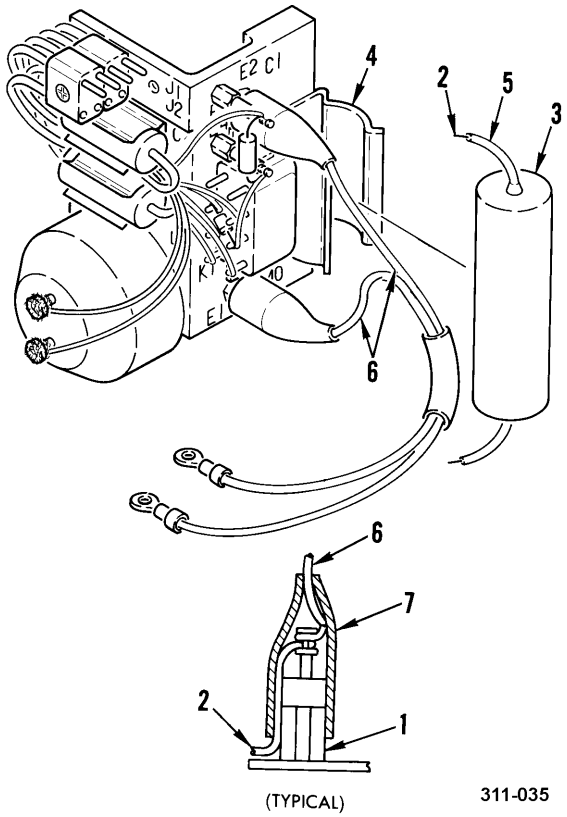
Install capacitor assembly or electronic component assembly A40 (para 4-4)

4-5. PNVS TURRET ASSEMBLY NSA ELECTRONIC COMPONENT ASSEMBLY A40 REPAIR (cont)

1. CAPACITOR C1 REPLACEMENT

WARNING

Before performing maintenance/repair, discharge all high-voltage capacitors (para 2-4).



REMOVAL

a. Remove noncorrosive RTV silicone adhesive, sealant (para 2-6) or heat shrinkable electrical insulation sleeving from terminals (1).

b. Tag and unsolder all wires from terminals (1).

c. Unsolder two leads (2) from terminals (1).

d. Remove capacitor C1 (3) from clip (4) and discard.

INSTALLATION

e. Install capacitor C1 (3) in clip (4).

f. Install 18 AWG insulation tubing (5) on leads (2) of capacitor.

g. Install heat shrinkable electrical insulation sleeving (7) on wires (6).

h. Solder two capacitor leads (2) and tagged wires (6) to terminals (1) as shown. Remove tags.

i. Have capacitor installation inspected.

j. Slide heat shrinkable electrical insulation sleeving (7) over terminals (1) and exposed wiring and apply heat.

k. Perform followup procedures.

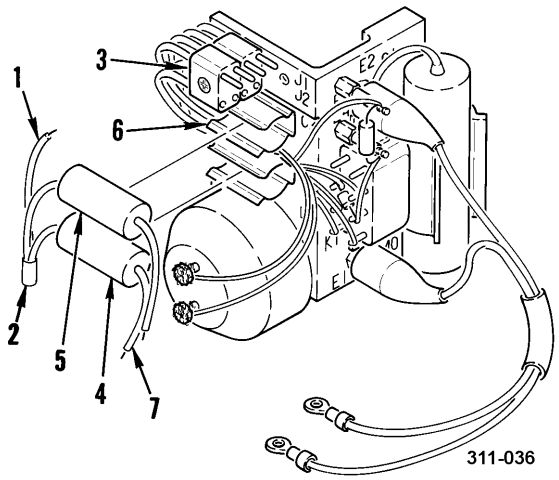
END OF TASK

4-5. PNVS TURRET ASSEMBLY NSA ELECTRONIC COMPONENT ASSEMBLY A40 REPAIR (cont)

2. CAPACITOR C2 AND C3 REPLACEMENT

WARNING

Before performing maintenance/repair, discharge all high-voltage capacitors (para 2-4).



REMOVAL

a. Tag and cut two wires (1) close to splices (2).

b. Note position of polarity markings on capacitors relative to connector J1 (3).

c. Remove capacitors C2 (4) and C3 (5) from clips (6).

INSTALLATION

d. Install capacitors C2 (4) and (5) in clips (6). Be sure polarity markings are positioned as noted in step b above.

e. Install 22 AWG insulation tubing (7) on all four leads of capacitors C2 (4) and C3 (5).

f. Pair up and splice capacitor leads to tagged wires (1), using two hot air shrinkable splices (2). Remove tags.

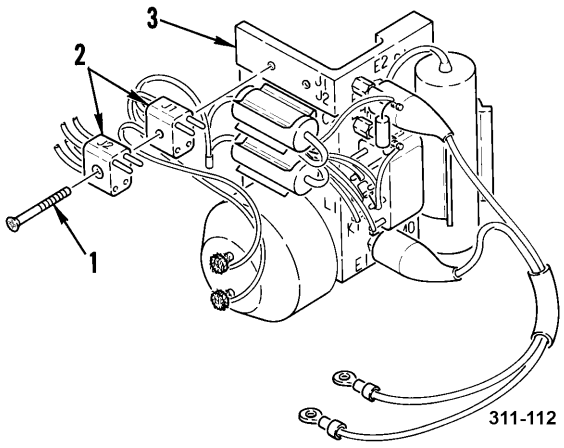
g. Have capacitor installation inspected.

h. Perform followup procedures.

END OF TASK

4-5. PNVS TURRET ASSEMBLY NSA ELECTRONIC COMPONENT ASSEMBLY A40 REPAIR (cont)

3. CONNECTOR J1 OR J2 REPLACEMENT



REMOVAL

a. Remove screw (1) and remove connectors J1 and J2 (2) from bracket (3).

b. Remove connector J1 or J2 (2) from wiring harness (para 2-5, item 3 or 4) as applicable.

INSTALLATION

c. Install replacement connector J1 or J2 (2) on wiring harness (para 2-5, item 3 or 4 as applicable).

d. Remove old corrosion inhibitive sealing and coating compound from screw (1) (para 2-6).

e. Apply corrosion inhibitive sealing and coating compound to screw (1). Use class 1A application (para 2-6).

f. Install connectors J1 and J2 (2) on bracket (3) using screw (1).

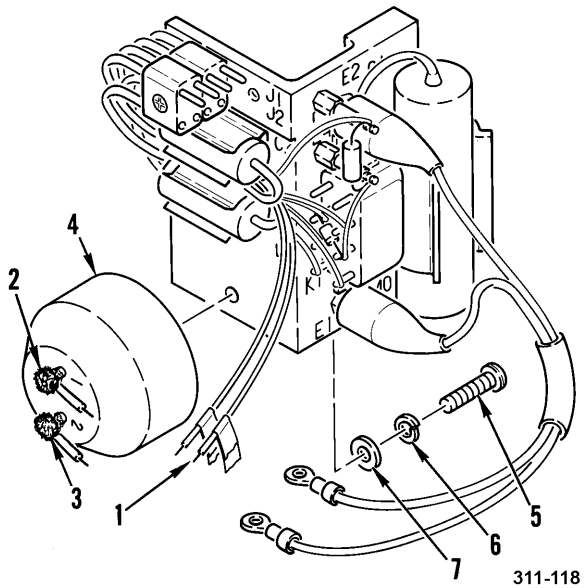
g. Mark J1 and J2 on connectors (2) as shown using synthetic resin enamel.

h. Perform followup procedures.

END OF TASK

4-5. PNVS TURRET ASSEMBLY NSA ELECTRONIC COMPONENT ASSEMBLY A40 REPAIR (cont)

4. POWER REACTOR L1 REPLACEMENT



REMOVAL

a. Tag and cut two wires (1) close to terminals No. 1 (2) and No. 2 (3) of power reactor L1 (4). Note that terminal No. 1 (2) is toward capacitors.

b. Remove power reactor L1 (4) by removing screw (5), lockwasher (6), and washer (7).

INSTALLATION

c. Remove corrosion inhibitive sealing and coating compound from screw (5) (para 2-6).

d. Apply corrosion inhibitive sealing and coating compound to screw (5). Use class 1A application (para 2-6).

e. Position power reactor L1 (4), with terminal No. 1 (2) toward capacitors, and install screw (5), lockwasher (6), and washer (7).

f. Solder tagged wires (1) to terminals (2 and 3) of power reactor (4). Remove tags.

g. Have power reactor installation inspected.

h. Apply noncorrosive RTV silicone adhesive primer and sealant to terminals (2 and 3) of power reactor L1 (4). Cover terminals and exposed wires completely (para 2-6).

i. Perform followup procedures.

END OF TASK

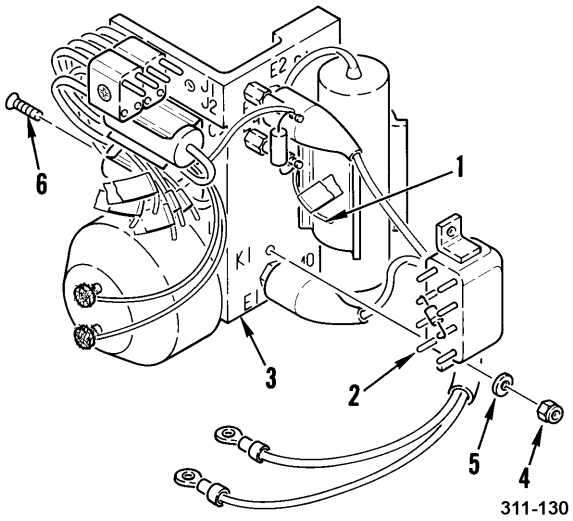
4-5. PNVS TURRET ASSEMBLY NSA ELECTRONIC COMPONENT ASSEMBLY A40 REPAIR (cont)

5. RELAY K1 REPLACEMENT

REMOVAL

a. Tag and unsolder all wires (1) connected to terminal of relay K1 (2).

b. Remove relay K1 (2) from bracket (3) by removing two locknuts (4), washers (5), and screws (6).



INSTALLATION

c. Remove old corrosion inhibitive sealing and coating compound from screws (6) (para 2-6).

d. Apply corrosion inhibitive sealing and coating compound to screws (6). Use class 1A application (para 2-6).

e. Insert two screws (6) through holes in bracket (3).

f. Install relay K1 (2) on screws (6) using two washers (5) and locknuts (4).

g. Install semiconductor CR1 on relay (6 below).

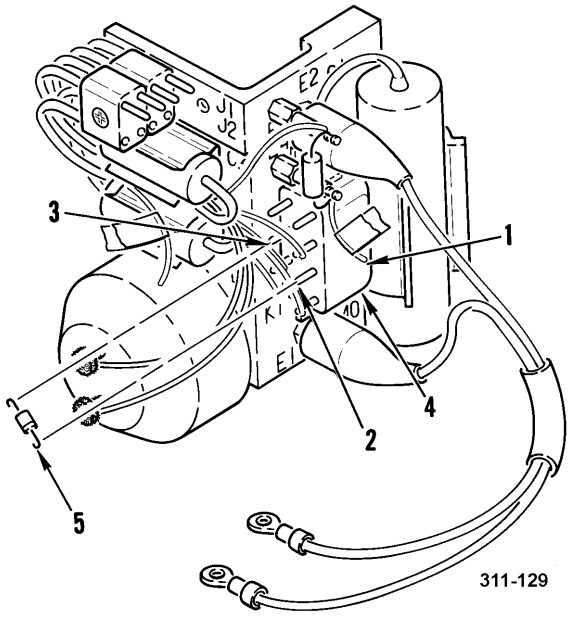
h. Solder tagged wires (1) to terminals of relay (2). Remove tags.

i. Have relay K1 (2) installation inspected.

END OF TASK

4-5. PNVS TURRET ASSEMBLY NSA ELECTRONIC COMPONENT ASSEMBLY A40 REPAIR (cont)

6. SEMICONDUCTOR CR1 REPLACEMENT



REMOVAL

a. Tag and unsolder all wires (1) from terminals X1 (2) and X2 (3) of relay K1 (4).

b. Unsolder leads of semiconductor CR1 (5) from terminals X1 (2) and X2 (3) of relay K1 (4).

INSTALLATION

NOTE

Banded end of semiconductor is the cathode.

c. Connect cathode lead of semiconductor CR1 (5) to terminal X1 (2) of relay K1 (4).

d. Connect anode lead of semiconductor CR1 (5) to terminal X2 (3) of relay K1 (4).

e. Solder tagged wires (1) and leads of semiconductor CR1 (5) to terminals X1 (2) and X2 (3) of relay K1 (4). Remove tags.

f. Have semiconductor installation inspected.

END OF TASK

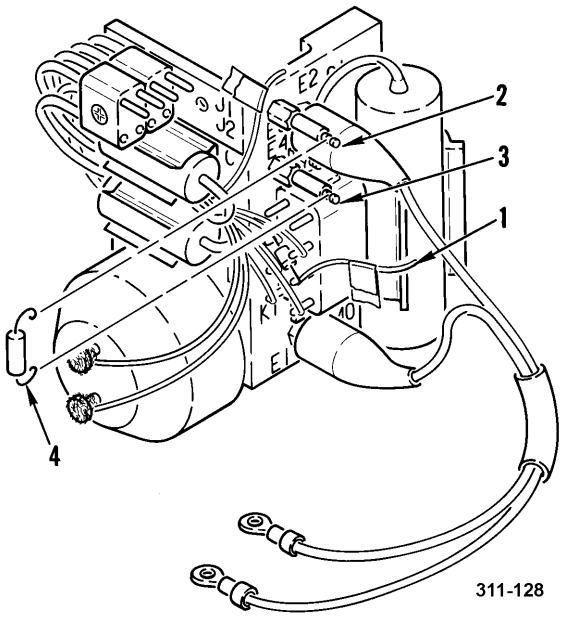
4-5. PNVS TURRET ASSEMBLY NSA ELECTRONIC COMPONENT ASSEMBLY A40 REPAIR (cont)

7. SEMICONDUCTOR VR1 REPLACEMENT

REMOVAL

a. Tag and unsolder all wires (1) from terminals E3 (2) and E4 (3).

b. Remove semiconductor VR1 (4) by unsoldering two leads from terminals E3 (2) and E4 (3).



INSTALLATION

c. Install semiconductor VR1 (4) by connecting cathode lead to terminal E3 (2) and anode lead to terminal E4 (3).

d. Solder tagged wires (1) and semiconductor VR1 (4) leads to terminals E3 (2) and E4 (3). Remove tags.

e. Have semiconductor VR1 (4) installation inspected.

END OF TASK

4-6. PNVS TURRET ASSEMBLY NSA TRANSISTOR ASSEMBLY A38 REPAIR

This task covers replacement of:

Para	Item	Para	Item
1.	Transistor Q1 thru Q4	2.	Connector P1

INITIAL SETUP

Tools

Aircraft armament repairman tool set and supplemental

Aircraft armament technical inspector tool set

Materials (appendix C)

Solder (Item 42)

Synthetic resin enamel (Item 17)

Personnel Required

68J Aircraft Fire Control Repairer

66J30 Aircraft Armament Technical Inspector

Equipment Condition

Transistor assembly A38 removed (para 4-4)

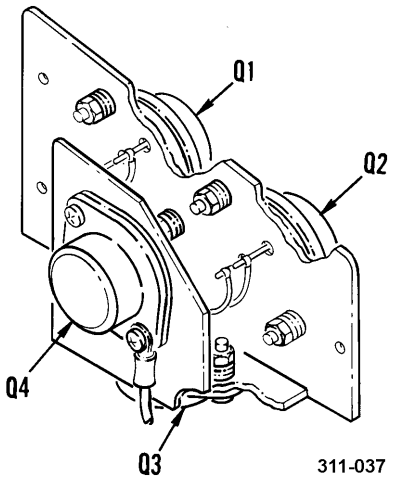
FOLLOWUP

Install transistor assembly A38 (para 4-4)

1. TRANSISTOR Q1 THRU Q4 REPLACEMENT

NOTE

This procedure is for transistor Q1. The same procedure is used for transistors Q2 thru Q4.

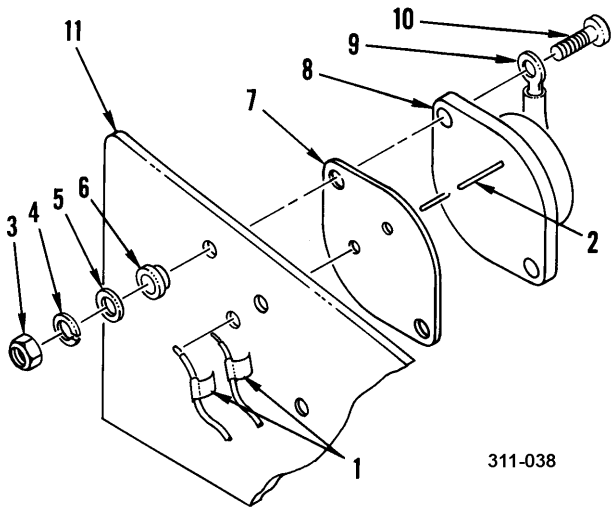


4-6. PNVS TURRET ASSEMBLY NSA TRANSISTOR ASSEMBLY A38 REPAIR (cont)

REMOVAL

a. Tag and unsolder wires (1) from transistor terminals (2).

b. Remove two nuts (3), lockwashers (4), washers (5), insulator washers (6), one insulator plate (7), transistor Q1 (8), one terminal lug (9), and two screws (10). Note which screw secures the terminal lug.



INSTALLATION

c. Install one insulator plate (7), transistor Q1 (8), one terminal lug (9), two screws (10), insulator washers (6), washers (5), lockwashers (4), and nuts (3) on bracket (11). Be sure the terminal lug is secured by the screw noted in step b above.

d. Torque screws (10) to 6 in-lb.

e. Solder tagged wires (1) to transistor terminals (2). Remove tags.

f. Have transistor installation inspected.

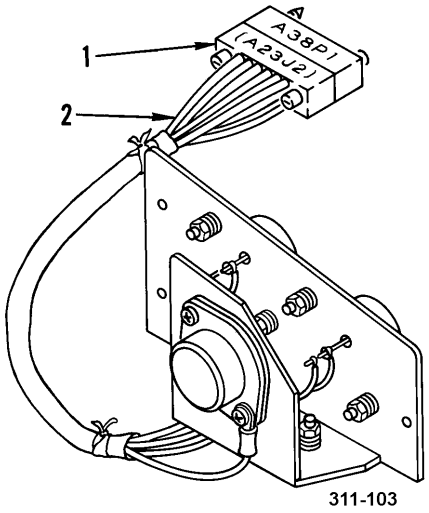
g. Perform followup procedures.

END OF TASK

2. CONNECTOR P1 REPLACEMENT

REMOVAL

a. Remove connector P1 (1) from wiring harness (2) (para 2-5, item 5).



INSTALLATION

b. Install connector P1 (1) on wiring harness (2) (para 2-5, item 5).

c. Mark A38P1/(A23J2) on connector (1) as shown using synthetic resin enamel.

d. Perform followup procedures.

END OF TASK

4-7. PNVS TURRET ASSEMBLY NSA CAPACITOR/RELAY ASSEMBLY A39 REPAIR

This task covers replacement of:

Para	Item
1.	Capacitor C1
2.	Capacitor C2
3.	Relay K1
4.	Connector J1
5.	Elapsed Time Indicator M1

INITIAL SETUP

Tools

Aircraft armament repairman tool set and supplemental

Aircraft armament technical inspector tool set

Materials (appendix C)

Corrosion inhibitive sealing and coating compound (Item 10)

Heat shrinkable electrical insulation sleeving (Item 23)

Heat shrinkable electrical insulation sleeving (Item 24)

Heat shrinkable electrical insulation sleeving (Item 25)

Hot air shrinkable splice (Item 43)

Hot air shrinkable splice (Item 44)

Insulation tubing, 18 AWG (Item 56)

Noncorrosive RTV silicone adhesive, sealant (Item 3)

Noncorrosive RTV silicone adhesive, sealant primer (Item 39)

Solder (Item 42)

Synthetic resin enamel (Item 17)

Personnel Required

68J Aircraft Fire Control Repairer

66J30 Aircraft Armament Technical Inspector

Equipment Condition

Capacitor/relay assembly A39 removed (para 4-4)

FOLLOWUP

Install capacitor/relay assembly A39 on NSA (para 4-4)

4-7. PNVS TURRET ASSEMBLY NSA CAPACITOR/RELAY ASSEMBLY A39 REPAIR (cont)

1. CAPACITOR C1 REPLACEMENT

WARNING

Before performing maintenance/repair, discharge all high-voltage capacitors (para 2-4).

REMOVAL

a. Tag and cut wire (1) close to splice (2).

b. Tag and cut wire (3) close to splice (4).

c. Cut capacitor leads (5) close to splice (4).

d. Remove capacitor C1 (6) from clip (7).

INSTALLATION

e. Install capacitor C1 (6) in clip (7).

f. Install insulation tubing (8) on capacitor C1 leads (5 and 9).

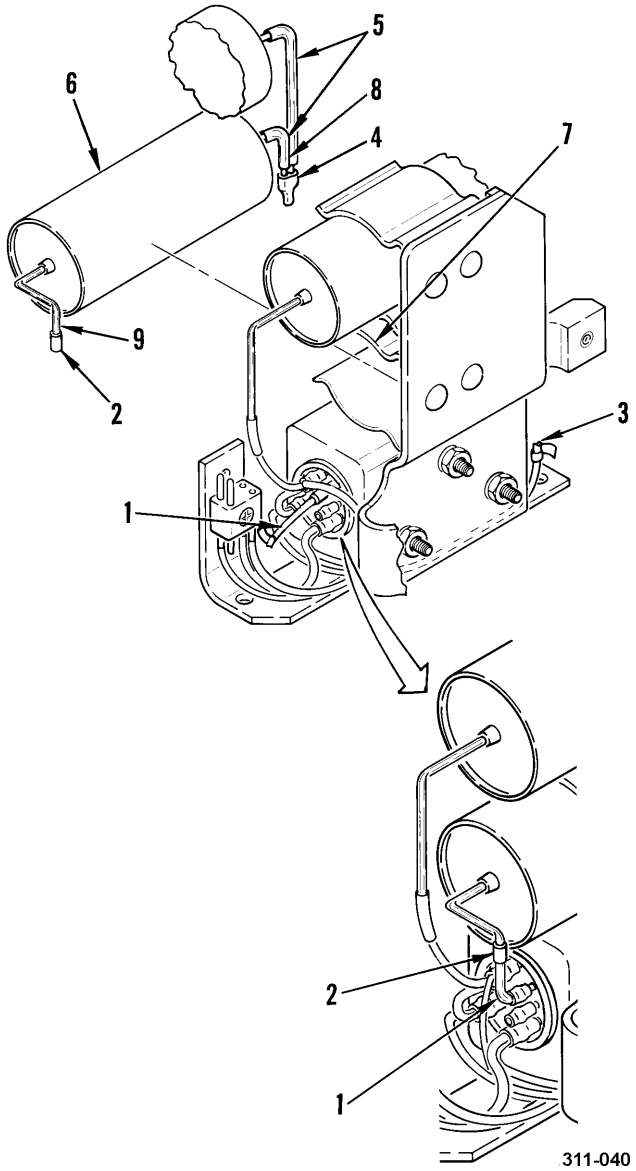
g. Splice capacitor leads (5) to tagged wire (3) using hot air shrinkable splice (4). Remove tag.

h. Splice lead (9) of capacitor C1 (6) to tagged wire (1) using hot air shrinkable splice (2). Remove tags.

i. Have capacitor installation inspected.

j. Perform followup procedures.

END OF TASK



4-7. PNVS TURRET ASSEMBLY NSA CAPACITOR/RELAY ASSEMBLY A39 REPAIR (cont)

2. CAPACITOR C2 REPLACEMENT

WARNING

Before performing maintenance/repair, discharge all high-voltage capacitors (para 2-4).

REMOVAL

a. Tag and cut wire (1) close to splice (2).

b. Tag and cut wire (3) close to splice (4).

c. Cut capacitor leads (5) close to splice (4).

d. Remove capacitor C2 (6) from clip (7).

INSTALLATION

e. Install capacitor C2 (6) in clip (7).

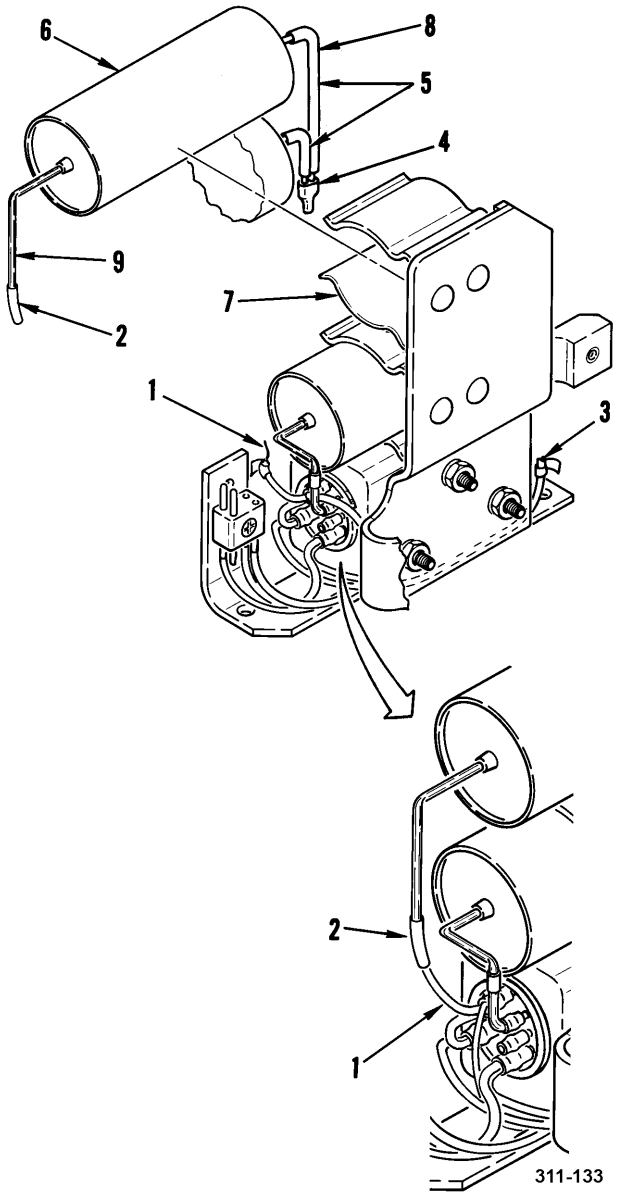
f. Install insulation tubing (8) on capacitor C2 leads (5 and 9).

g. Splice capacitor leads (5) to tagged wire (3) using hot air shrinkable splice (4). Remove tag.

h. Splice lead (9) of capacitor C2 (6) to tagged wire (1) using hot air shrinkable splice (2). Remove tags.

i. Have capacitor installation inspected.

j. Perform followup procedures.



END OF TASK

4-7. PNVS TURRET ASSEMBLY NSA CAPACITOR/RELAY ASSEMBLY A39 REPAIR (cont)

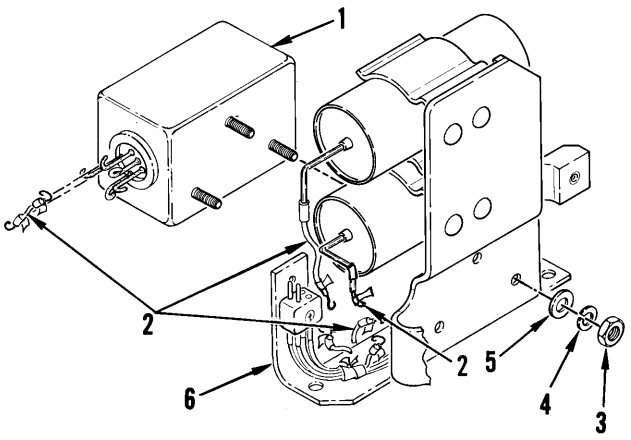
3. RELAY K1 REPLACEMENT

REMOVAL

a. Remove heat shrinkable electrical insulation sleeving from all terminals of relay K1 (1).

b. Tag and unsolder all wires (2) from relay K1 (1).

c. Remove three nuts (3), lockwashers (4), washers (5), and remove relay K1 (1) from bracket (6).

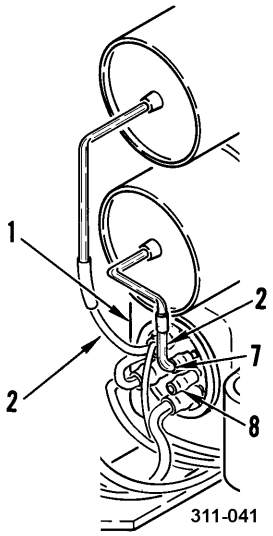


INSTALLATION

d. Remove old corrosion inhibitive sealing and coating compound from mounting hardware (para 2-6).

e. Apply corrosion inhibitive sealing and coating compound to nuts (3). Use class 1A application (para 2-6).

f. Install relay K1 (1) on bracket (6) using three washers (5), lockwashers (4), and nuts (3).



4-7. PNVS TURRET ASSEMBLY NSA CAPACITOR/RELAY ASSEMBLY A39 REPAIR (cont)

NOTE

Repeat steps g and h for each relay K1 terminal.

g. Slide heat shrinkable electrical insulation sleeving (7) over tagged wires (2) for each terminal of relay K1 (1).

h. Solder tagged wires (2) to terminals of relay K1 (1). Remove tags.

i. Have relay K1 installation inspected.

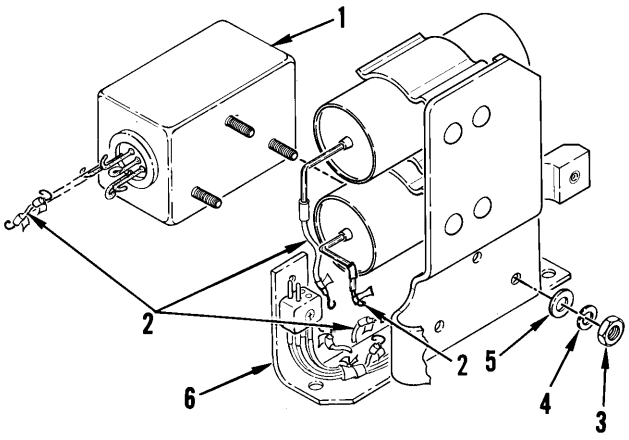
j. Slide heat shrinkable electrical insulation sleeving (9) over terminals of relay K1 (1).

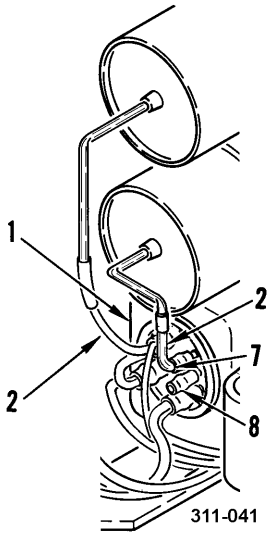
k. Install heat shrinkable electrical insulation sleeving (9) on terminal 3 (8) of relay K1 (1).

l. Apply heat to heat shrinkable sleeving. Sleeving will form a snug fit after shrinking.

m. Perform followup procedures.

END OF TASK





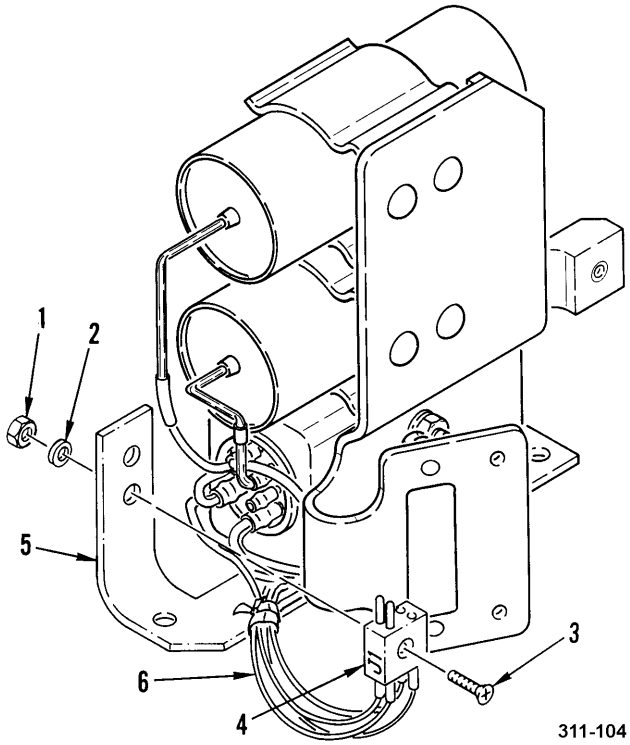
4-7. PNVS TURRET ASSEMBLY NSA CAPACITOR/RELAY ASSEMBLY A39 REPAIR (cont)

4. CONNECTOR J1 REPLACEMENT

REMOVAL

a. Remove locknut (1), washer (2), and screw (3), and remove connector J1 (4) from bracket (5).

b. Remove connector J1 (4) from wiring harness (6) (para 2-5, item 6).



INSTALLATION

c. Install connector (4) on wiring harness (6) (para 2-5, item 6).

d. Remove old corrosion inhibitive sealing and coating compound from screw (3) (para 2-6).

e. Apply corrosion inhibitive sealing and coating compound to screw (3). Use class 1A application (para 2-6).

f. Install connector J1 (4) on bracket (5) using screw (3), washer (2), and locknut (1).

g. Mark J1 on connector (4) as shown using synthetic resin enamel.

h. Perform followup procedures.

END OF TASK

4-7. PNVS TURRET ASSEMBLY NSA CAPACITOR/RELAY ASSEMBLY A39 REPAIR (cont)

5. ELAPSED TIME INDICATOR M1 REPLACEMENT

REMOVAL

NOTE

Elapsed time indicator M1 is being eliminated. This procedure applies only to a NSA capacitor/relay assembly built with M1 installed.

a. Remove two nuts (1), washers (2), screws (3), washers (4), and lockwashers (5).

b. Remove elapsed time indicator M1 (6) from bracket (7).

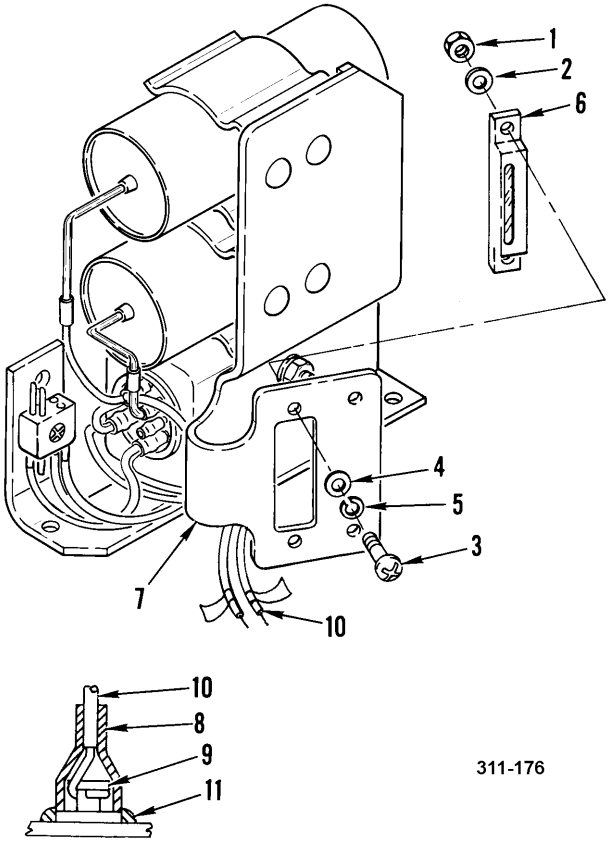
c. Remove insulation sleeving (8) from terminals of elapsed time indicator M1 (6).

d. Unsolder wires (10) from elapsed time indicator M1 (6).

e. Insulate unsoldered wires (10) using insulation sleeving. Ensure that sleeving extends a minimum of 0.25 inch beyond ends of wires.

f. Secure insulated wires (10) to adjacent wiring or chassis using lacing and tying tape.

g. Discard ETI M1 (6), two nuts (1), washers (2), screws (3), washers (4), and lockwashers (5) in accordance with TM 1-5855-265-23P.



END OF TASK

4-8. PNVS TURRET ASSEMBLY NSA AZIMUTH GYROSCOPE ASSEMBLY A36 REPAIR

This task covers replacement of:

Para	Item
1.	Capacitor C1 or C2
2.	Gyroscope MP1

INITIAL SETUP

Tools

Aircraft armament repairman tool set and supplemental

Aircraft armament technical inspector tool set

Materials (appendix C)

Corrosion inhibitive sealing and coating compound (Item 10)

Insulation tubing, 18 AWG (Item 56)

Noncorrosive RTV silicone adhesive, sealant (Item 3)

Noncorrosive RTV silicone adhesive-sealant primer (Item 39)

Solder (Item 42)

Personnel Required

68J Aircraft Fire Control Repairer

66J30 Aircraft Armament Technical Inspector

Equipment Condition

Azimuth gyroscope assembly A36 removed (para 4-4)

FOLLOWUP

Install azimuth gyroscope assembly A36 (para 4-4)

4-8. PNVS TURRET ASSEMBLY NSA AZIMUTH GYROSCOPE ASSEMBLY A36 REPAIR (cont)

1. CAPACITOR C1 OR C2 REPLACEMENT

WARNING

Before performing maintenance/repair, discharge all high-voltage capacitors (para 2-4).

REMOVAL

a. Unsolder leads (1) of capacitors C1 (2) and C2 (3) from terminal E3 (4).

NOTE

- If capacitor C1 is being replaced, omit steps c and g.
- If capacitor C2 is being replaced, omit steps b and f.

b. Unsolder lead (5) of capacitor C1 (2) from terminal E1 (6) and remove capacitor C1 (2) from clip (7).

c. Unsolder lead (8) of capacitor C2 (3) from terminal E2 (9) and remove capacitor C2 (3) from clip (10).

INSTALLATION

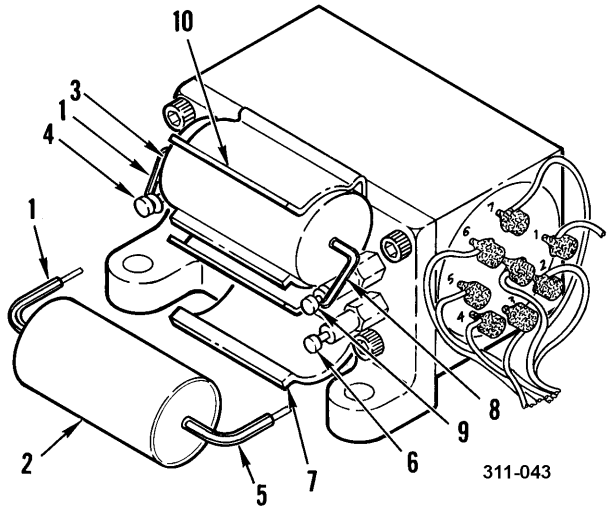
d. Install capacitor C1 (2) or C2 (3) in appropriate clip (7 or 10).

e. Install 18 AWG insulation tubing on capacitor leads.

f. Solder lead (5) of capacitor C1 (2) to terminal E1 (6).

g. Solder lead (8) of capacitor C2 (3) to terminal E2 (9).

h. Solder leads (1) of capacitors C1 (2) and C2 (3) to terminal E3 (4).



i. Have capacitor installation inspected.

j. Perform followup procedures.

END OF TASK

4-8. PNVS TURRET ASSEMBLY NSA AZIMUTH GYROSCOPE ASSEMBLY A36 REPAIR (cont)

2. GYROSCOPE MP1 REPLACEMENT

REMOVAL

a. Tag and cut wires (1) close to terminals (2) of gyroscope MP1 (3).

b. Remove four screws (4) and remove gyroscope from bracket (5).

INSTALLATION

c. Remove old corrosion inhibitive sealing and coating compound from screws (4) (para 2-6).

d. Apply corrosion inhibitive sealing and coating compound to screws (4). Use class 1A application (para 2-6).

e. Install gyroscope MP1 (3) on bracket (5) using four screws (4).

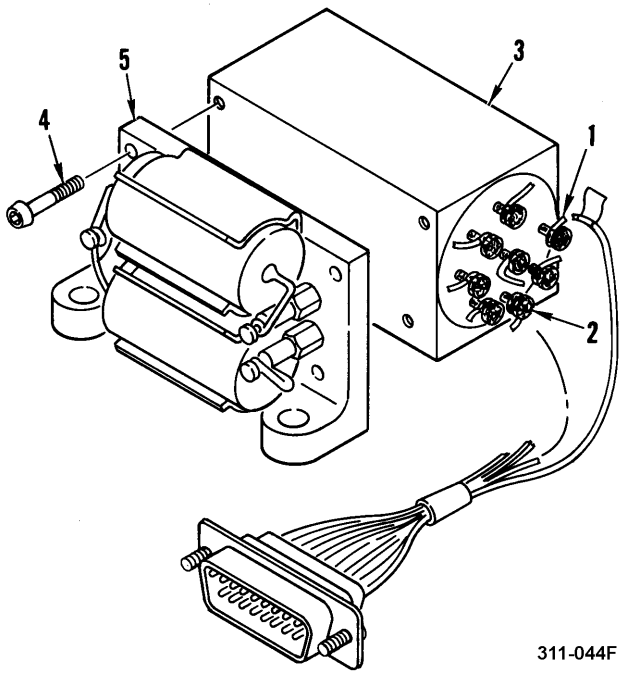
f. Solder tagged wires (1) to terminals (2) of gyroscope MP1 (3). Remove tags.

g. Have gyroscope installation inspected.

h. Apply noncorrosive RTV silicone adhesive, sealant to terminals (2) of gyroscope (3). Cover terminals completely (para 2-6).

i. Perform followup procedures.

END OF TASK



4-9. PNVS TURRET ASSEMBLY NSA CAPACITOR ASSEMBLY A41 REPAIR

This task covers replacement of:

Para	Item
1.	Capacitor C1 or C2
2.	Connector J1 or J2

INITIAL SETUP

Tools

Aircraft armament repairman tool set and supplemental

Aircraft armament technical inspector tool set

Materials (appendix C)

Corrosion inhibitive sealing and coating compound (Item 10)

Heat shrinkable electrical insulation sleeving (Item 22)

Insulation tubing, 18 AWG (Item 56)

Solder (Item 42)

Personnel Required

68J Aircraft Fire Control repairer

66J30 Aircraft Armament Technical Inspector

Equipment Condition

Capacitor assembly A41 removed (para 4-4)

FOLLOWUP

Install capacitor assembly A41 (para 4-4)

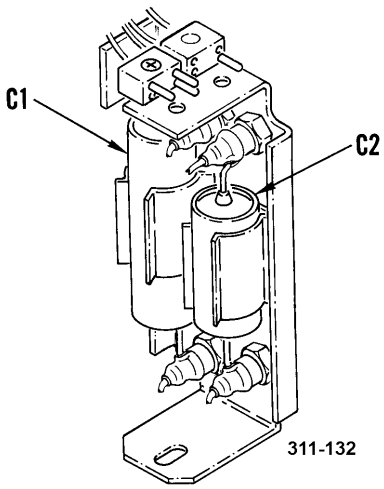
1. CAPACITOR C1 OR C2 REPLACEMENT

WARNING

Before performing maintenance/repair, discharge all high-voltage capacitors (para 2-4).

NOTE

- This procedure is used for replacing capacitor C1. The same procedure is used for replacing capacitor C2.
- Ignore markings C3 and C4 on back of bracket.



4-9. PNVS TURRET ASSEMBLY NSA CAPACITOR ASSEMBLY A41 REPAIR (cont)

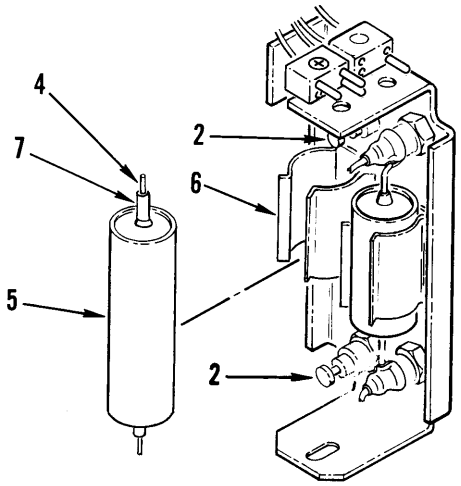
REMOVAL

a. Remove noncorrosive RTV silicone adhesive, sealant (para 2-6) or heat shrinkable electrical insulation sleeving (1) from terminals (2).

b. Tag and unsolder all wires (3) from terminals (2).

c. Unsolder two leads (4) from terminals (2).

d. Remove capacitor C1 (5) from clip (6).



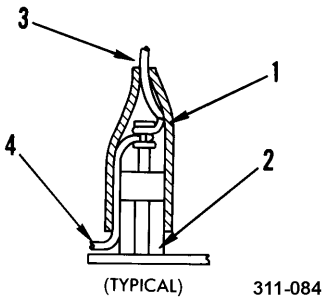
INSTALLATION

e. Install capacitor C1 (5) in clip (6).

f. Install 18 AWG insulation tubing (7) on leads (4) of capacitor.

g. Install heat shrinkable electrical insulation sleeving (1) on wires (3).

h. Solder two capacitor leads (4) and tagged wires (3) to terminals (2) as shown. Remove tags.



i. Have capacitor installation inspected.

j. Slide heat shrinkable electrical insulation sleeving (1) over terminals (2) and exposed wiring and apply heat.

k. Perform followup procedures.

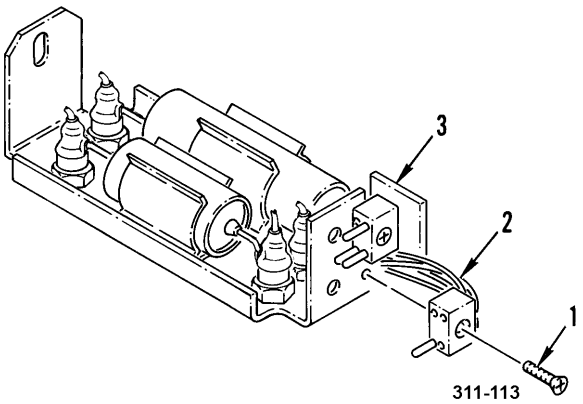
END OF TASK

4-9. PNVS TURRET ASSEMBLY NSA CAPACITOR ASSEMBLY A41 REPAIR (cont)

2. CONNECTOR J1 OR J2 REPLACEMENT

NOTE

This procedure is for connector J1. The same procedure is used for connector J2.



REMOVAL

a. Remove screw (1) and remove connector J1 (2) from bracket (3).

b. Remove connector from wiring harness (para 2-5, item 7 or 8).

INSTALLATION

c. Install connector on wiring harness (para 2-5, item 7 or 8).

d. Remove old corrosion inhibitive sealing and coating compound from screw (1) (para 2-6).

e. Apply corrosion inhibitive sealing and coating compound to screw (1). Use class 1A application (para 2-6).

f. Install connector J1 (2) on bracket (3) using screw (1).

g. Perform followup procedures.

END OF TASK

4-10. PNVS TURRET ASSEMBLY NSA VISUAL RELAY/MULTIPLEXER ASSEMBLY A33 REPAIR

This task covers replacement of:

Para	Item	Para	Item
1.	Vaneaxial fan assembly A42	3.	Controller CCA A4
2.	Power supply assembly A2	4.	Connector A4J1

INITIAL SETUP

Tools

Aircraft armament repairman tool set and supplemental

Aircraft armament technical inspector tool set

Materials (appendix C)

Corrosion inhibitive sealing and coating compound (Item 10)

Insulating compound (Item 11)

Solder (Item 42)

Personnel Required

68J Aircraft Fire Control Repairer

66J30 Aircraft Armament Technical Inspector

Equipment Condition

Visual relay/multiplexer assembly A33 removed (para 4-4)

FOLLOWUP

Have EETF maintenance personnel perform functional test of CCA A4

Install visual relay/multiplexer assembly A33 (para 4-4)

CAUTION

- While performing this procedure keep all exposed lens covered with lens paper to prevent damage to coated optical surfaces.
- This assembly contains electrostatic discharge sensitive devices (ESDS). Refer to paragraph 2-8 for handling requirements before starting this task, to prevent damage to the devices.

4-10. PNVS TURRET ASSEMBLY NSA VISUAL RELAY/MULTIPLEXER ASSEMBLY A33 REPAIR (cont)

1. VANEAXIAL FAN ASSEMBLY A42 REPLACEMENT

REMOVAL

a. Remove vaneaxial fan assembly A42 (1) by removing four screws (2) and washers (3).

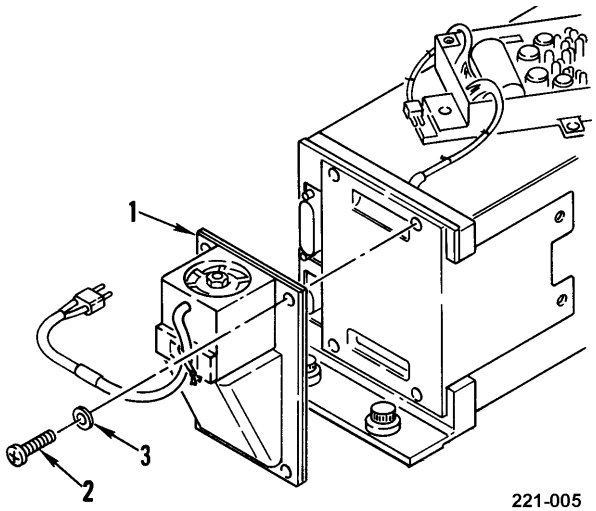
INSTALLATION

b. Remove old corrosion inhibitive sealing and coating compound from mounting hardware (para 2-6).

c. Apply corrosion inhibitive sealing and coating compound to screws (2). Use class 1A application (para 2-6).

d. Install vaneaxial fan assembly A42 (1) using four screws (2) and washers (3).

e. Perform followup procedures.



END OF TASK

4-10. PNVS TURRET ASSEMBLY NSA VISUAL RELAY/MULTIPLEXER4-10 ASSEMBLY A33 REPAIR (cont)

2. POWER SUPPLY ASSEMBLY A2 REPLACEMENT

REMOVAL

a. Remove vaneaxial fan assembly A42 (1 above).

b. Remove two screws (1).

CAUTION

Use care when prying and lifting power supply assembly straight up from visual relay/ multiplexer assembly. Careless prying and lifting can damage guide pins and connectors.

c. Alternately pry top and bottom edges of power supply assembly A2 (2) until connectors (3) separate.

d. Lift power supply assembly A2 (2) straight up until assembly is clear of guide pins (4).

e. Remove power supply assembly A2 (2) from visual relay/multiplexer assembly A33 (5).

INSTALLATION

f. Remove old corrosion inhibitive sealing and coating compound from screws (1), (para 2-6).

g. Install power supply assembly A2 (2) on guide pins (4) in visual relay/multiplexer assembly A33 (5). Be sure that connectors (3) mate properly.

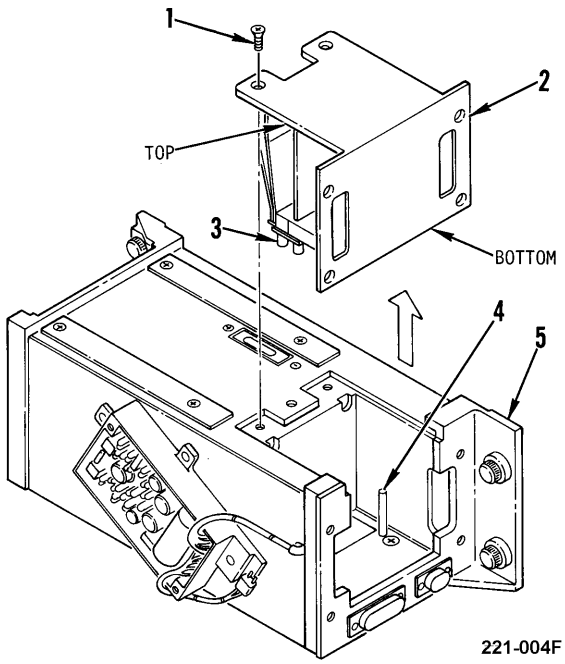
h. Apply corrosion inhibitive sealing and coating compound to screws (1). Use class 1A application (para 2-6).

i. Install two screws (1).

j. Install vaneaxial fan assembly A42 (1 above).

k. Perform followup procedures.

END OF TASK



4-10. PNVS TURRET ASSEMBLY NSA VISUAL RELAY/MULTIPLEXER ASSEMBLY A33 REPAIR (cont)

3. CONTROLLER CCA A4 REPLACEMENT

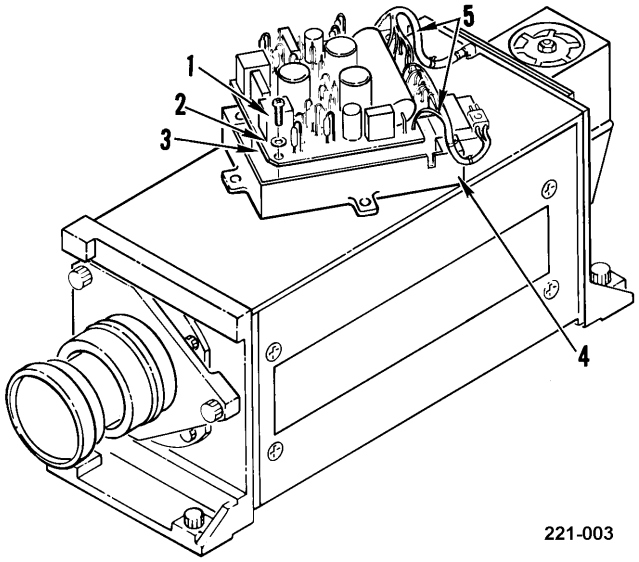
REMOVAL

CAUTION

This CCA contains electrostatic discharge sensitive (ESDS) devices. Refer to paragraph 2-8 for handling requirements before starting this task to prevent damage to the devices.

a. Remove two screws (1) and washers (2), and lift CCA A4 (3) free of holder (4).

b. Remove old insulating compound from leads (para 2-6).



INSTALLATION

c. Remove old corrosion inhibitive sealing and coating compound from screws (1) (para 2-6).

d. Solder tagged wires (5) to CCA A4 (3) and remove tags.

e. Have installation inspected.

f. Apply insulating compound (para 2-6).

g. Apply corrosion inhibitive sealing and coating compound to screws (1). Use class 1A application (para 2-6).

h. Install CCA A4 (3) using two screws (1) and washers (2).

i. Pack faulty CCA A4 (para 5-2).

j. Perform followup procedures.

END OF TASK

4-10. PNVS TURRET ASSEMBLY NSA VISUAL RELAY/MULTIPLEXER ASSEMBLY A33 REPAIR (cont)

4. CONNECTOR A4J1 REPLACEMENT

REMOVAL

a. Remove screw (1) and two washers (2).

b. Remove connector A4J1 (3) from wiring (para 2-5, item 10).

INSTALLATION

c. Install connector A4J1 (3) on wiring (para 2-5, item 10).

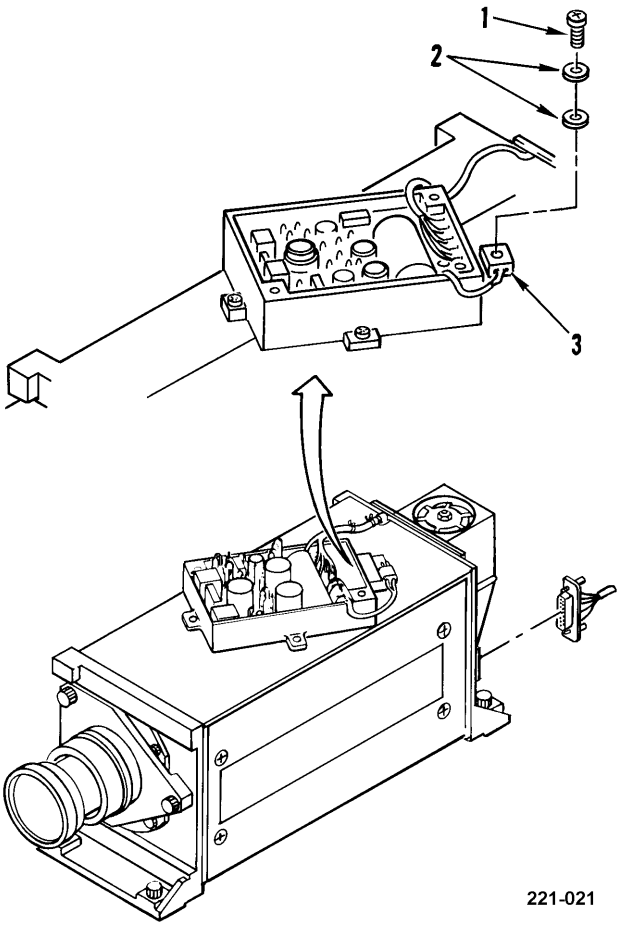
d. Remove old corrosion inhibitive sealing and coating compound from screw (1) (para 2-6).

e. Apply corrosion inhibitive sealing and coating compound to screw (1). Use class 1A application (para 2-6).

f. Install connector A4J1 (3) on mounting surface using screw (1) and two washers (2).

g. Perform followup procedures.

END OF TASK



4-11. PNVS SOLID STATE CAMERA ASSEMBLY A33 REPAIR

This task covers replacement of:

Para	Item
1.	Relay Optics Assembly
2.	Light Shield
3.	Electro-Optical Sensor, A1
4.	Adjustment Bracket and flat spring
5.	Video Processor Unit A33

INITIAL SETUP

Tools

Aircraft armament repairman tool set

Aircraft armament technical inspector tool set

Materials (appendix C)

Corrosion inhibitive sealing and coating compound (Item 10)

Sealing, locking and retaining compound, (Item 12)

Sealing, locking, and retaining compound primer (Item 40)

Personnel Required

68J Aircraft Fire Control Repairer

66J30 Aircraft Armament Technical Inspector

FOLLOWUP

Have EETF maintenance personnel perform functional test.

CAUTION

- While performing these procedures, keep all exposed lens covered with lens paper to prevent damage coated optical surfaces.
- This assembly contains electrostatic discharge sensitive (ESDS) parts. Refer to paragraph 2-8 for handling requirements before starting this task to prevent damage to the ESDS parts.

1. RELAY OPTICS ASSEMBLY REPLACEMENT

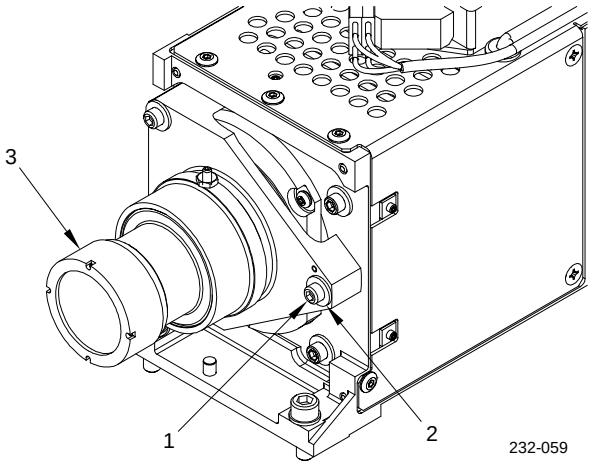
REMOVAL

a. Remove three screws (1) and three flat washers (2).

b. Remove relay optics assembly (3).

INSTALLATION

c. Remove old corrosion inhibitive sealing and coating compound from mounting hardware (para 2-6).

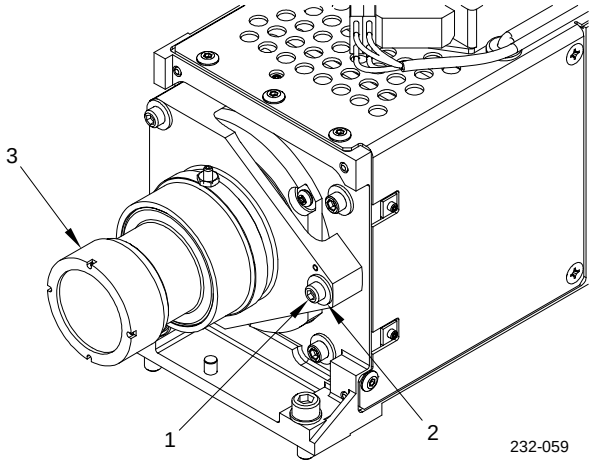


4-11. PNVS SOLID STATE CAMERA ASSEMBLY A33 REPAIR (cont)

d. Apply corrosion inhibitive sealing and coating compound to mounting hardware (para 2-6). Use class 1A application.

e. Install relay optics assembly (3) using three screws (1) with flat washers (2).

END OF TASK



2. LIGHT SHIELD REPLACEMENT

REMOVAL

a. Remove light shield (1) by removing three screws (2) and three flat washers (3).

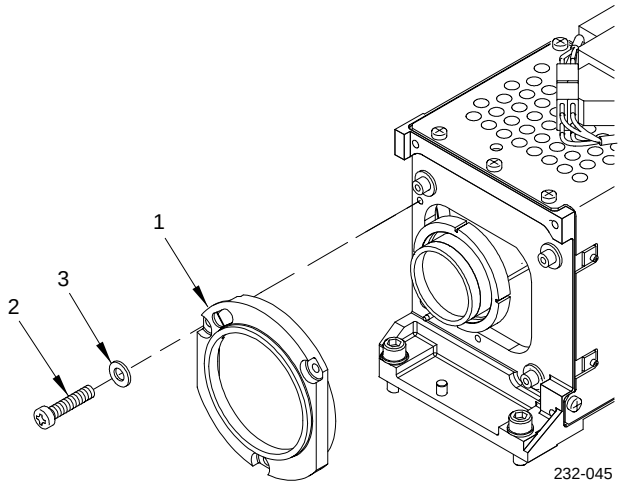
INSTALLATION

b. Remove old corrosion inhibitive sealing and coating compound from mounting hardware (para 2-6).

c. Apply corrosion inhibitive sealing and coating compound to mounting hardware (para 2-6). Use class 1A application.

d. Install light shield (1) and secure with three screws (2) and flat washers (3).

END OF TASK



4-11. PNVS SOLID STATE CAMERA ASSEMBLY A33 REPAIR (cont)

3. ELECTRO-OPTICAL SENSOR ASSEMBLY REPLACEMENT

REMOVAL

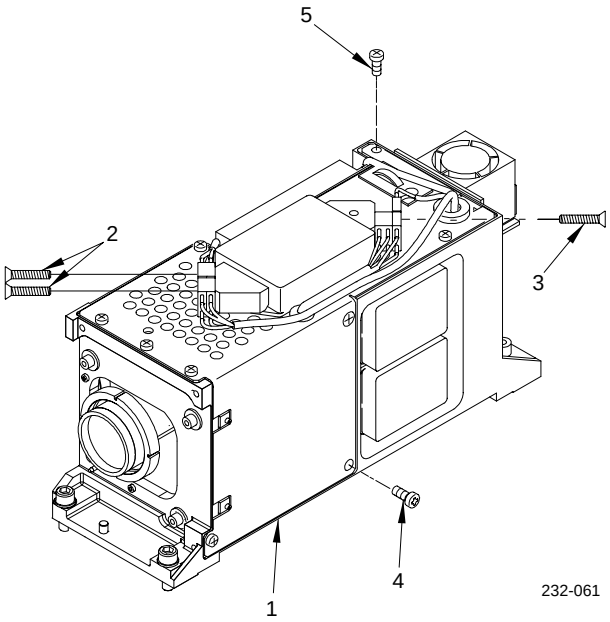
a. Remove light shield (2 above).

b. Remove camera cover assembly A4 (1).

(1) Remove two screws (2) and disconnect power supply connector A6P1 from connector A7J1.

(2) Remove screw (3) and disconnect connector A7P1 from connector A4J2.

(3) Remove eight screws (4) and two screws (5).



NOTE

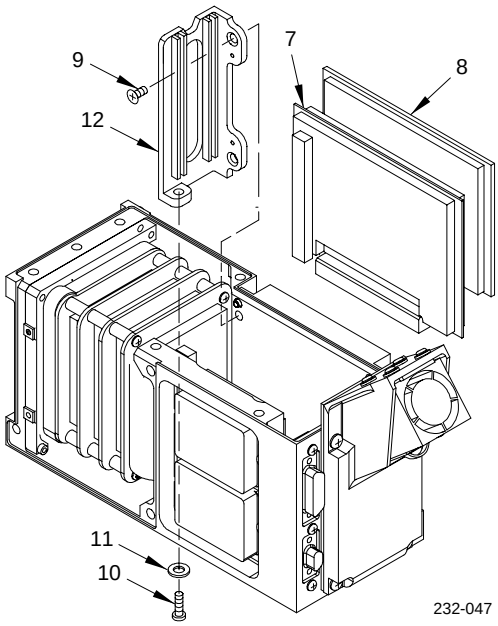
Separate A7 wiring harness grommet from cover assembly before removing cover assembly.

(4) Remove camera cover assembly A4 (1).

c. Remove digital CCA A2 (7) by pulling straight up.

d. Remove analog CCA A3 (8) by pulling straight up.

e. Remove CCA bracket (12) by removing two screws (9) and screw (10) with flat washer (11).



4-11. PNVS SOLID STATE CAMERA ASSEMBLY A33 REPAIR (cont)

f. Remove three screws (13) and flat washers (14).

g. Loosen two screwlocks (15) and disconnect connector A1P1 (16).

NOTE

Tilting the top of the of the electro-optical sensor assembly out before the bottom will ease removal.

h. Remove electro-optical sensor assembly A1 (17) through side of video processor housing.

INSTALLATION

i. Remove old corrosion inhibitive sealing and coating compound from mounting hardware (para 2-6).

j. Apply corrosion inhibitive sealing and coating compound to mounting hardware (para 2-6). Use class 1A application.

NOTE

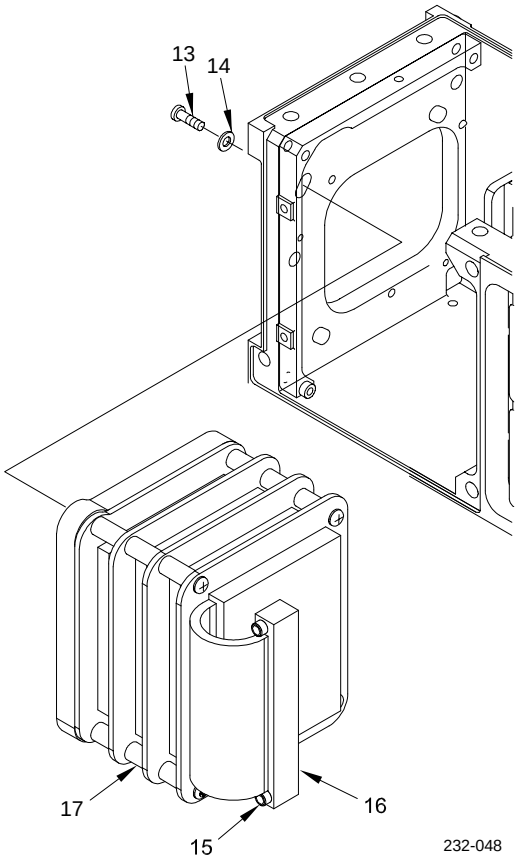
Positioning the bottom of the electro-optical assembly before the top will ease installation.

k. Install electro-optical sensor assembly A1 (17) in video processor housing and secure using three screws (13) with flat washers (14). Do not tighten screws at this time.

l. Connect connector A1P1 (16) and tighten two screwlocks (15).

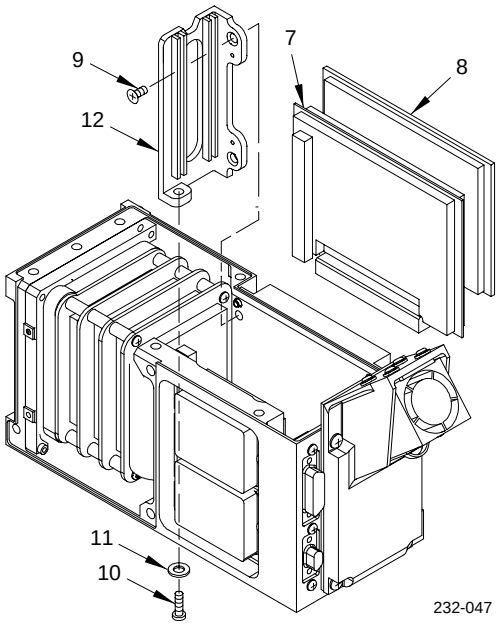
m. Perform boresight alinement of electro-optical sensor assembly A1.

n. Tighten three screws (13) after electro-optical sensor boresight.



4-11. PNVS SOLID STATE CAMERA ASSEMBLY A33 REPAIR (cont)

o. Install CCA bracket (12) and secure using two screws (9) and screw (10) with flat washer (11).



CAUTION

Prevent damage to CCAs and mating connectors by using care when installing CCAs. Ensure that CCA connectors are alined properly, then press firmly into place.

p. Install analog CCA A3 (8) and digital CCA A2 (7).

q. Inspect electro-optical sensor assembly installation completeness and physical integrity.

r. Install camera cover assembly A4 (1).

(1) Position A7 wiring harness grommet (6) in cover assembly slot.

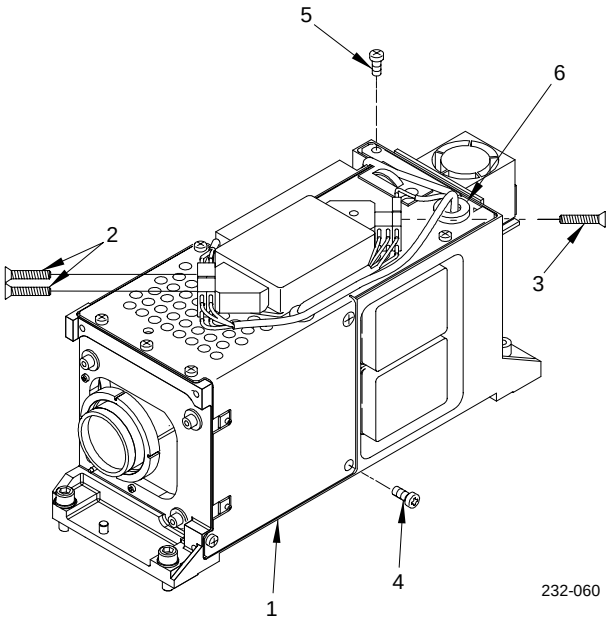
(2) Apply corrosion inhibitive sealing and coating compound to mounting hardware (para 2-6). Use class 1A application.

(3) Position camera cover and install eight screws (4) and two screws (5).

(4) Connect connector A7J1 to connector A6P1 from power supply and secure using two screws (2).

(5) Connect connector A7P1 to connector A4J2 and secure using screw (3).

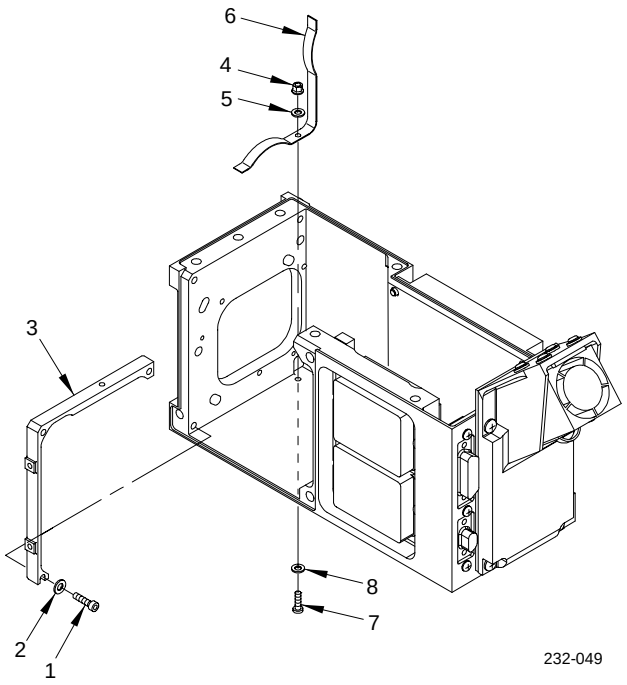
s. Install light shield (2 above).



END OF TASK

4-11. PNVS SOLID STATE CAMERA ASSEMBLY A33 REPAIR (cont)

4. ADJUSTMENT BRACKET AND FLAT SPRING REPLACEMENT



REMOVAL

a. Remove electro-optical sensor (3 above).

b. Remove three screws (1) and flat washers (2).

c. Remove adjustment bracket (3).

d. Remove self-locking nut (4) and flat washer (5).

e. Remove flat spring (6), screw (7), and flat washer (8).

INSTALLATION

f. Remove old corrosion inhibitive sealing and coating compound from mounting hardware (para 2-6).

g. Apply corrosion inhibitive sealing and coating compound to mounting hardware (para 2-6). Use class 1A application.

h. Install screw (7) with flat washer (8) from outside camera housing.

i. Install flat spring (6) inside camera housing. Secure flat spring using flat washer (5) and self-locking nut (4).

j. Install adjustment bracket (3). Secure adjustment bracket using three flat washers (2) and screws (1).

k. Install electro-optical sensor and camera cover (3 above).

END OF TASK

4-11. PNVS SOLID STATE CAMERA ASSEMBLY A33 REPAIR (cont)

5. VIDEO PROCESSOR UNIT REPLACEMENT

REMOVAL

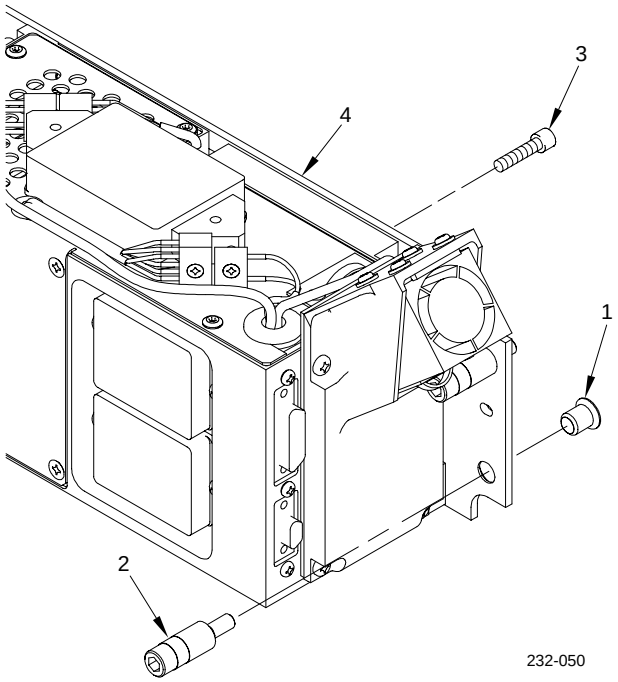
a. Remove relay optics assembly (1 above).

b. Remove light shield (2 above).

c. Remove electro-optical sensor (3 above).

d. Remove adjustment bracket and flat spring (4 above).

e. Remove four retainer nuts (1) and four captive screws (2).



INSTALLATION

f. Remove old sealing, locking, and retaining compound from captive screws and retainer nuts (para 2-6).

g. Apply sealing, locking, and retaining compound primer and sealing, locking, and retaining compound to mating threads of captive screws and retainer nuts (para 2-6).

h. Install four captive screws (2) and retainer nuts (1).

i. Install adjustment bracket and flat spring (4 above).

j. Install electro-optical sensor (3 above).

k. Install light shield (2 above).

l. Install relay optics assembly (1 above).

END OF TASK

4-12. PNVS SOLID STATE CAMERA VIDEO PROCESSOR UNIT REPAIR

This task covers replacement of:

Para	Item	Para	Item
1.	Camera Cover Assembly A4	2.	Fan Assembly A42

INITIAL SETUP

Tools

Aircraft armament repairman tool set

Aircraft armament technical inspector tool set

Materials (appendix C)

Corrosion inhibitive sealing and coating compound (Item 10)

Personnel Required

68J Aircraft Fire Control Repairer

66J30 Aircraft Armament Technical Inspector

FOLLOWUP

Have EETF maintenance personnel perform functional test.

CAUTION

- While performing these procedures, keep all exposed lens covered with lens paper to prevent damage coated optical surfaces.
- This assembly contains electrostatic discharge sensitive (ESDS) parts. Refer to paragraph 2-8 for handling requirements before starting this task, to prevent damage to the parts.

1. CAMERA COVER ASSEMBLY A4 REPLACEMENT

REMOVAL

a. Remove two screws (2) and disconnect power supply connector A6P1 from connector A7J1.

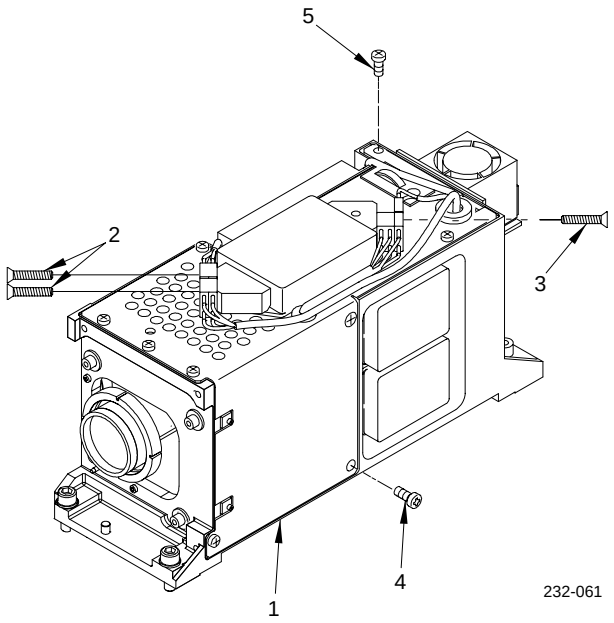
b. Remove screw (3) and disconnect connector A7P1 from connector A4J2.

c. Remove eight screws (4) and two screws (5).

NOTE

Separate A7 wiring harness grommet from cover assembly before removing cover assembly.

d. Remove camera cover assembly A4 (1).



4-12. PNVS SOLID STATE CAMERA VIDEO PROCESSOR UNIT REPAIR

INSTALLATION

e. Remove old corrosion inhibitive sealing and coating compound from mounting hardware (para 2-6).

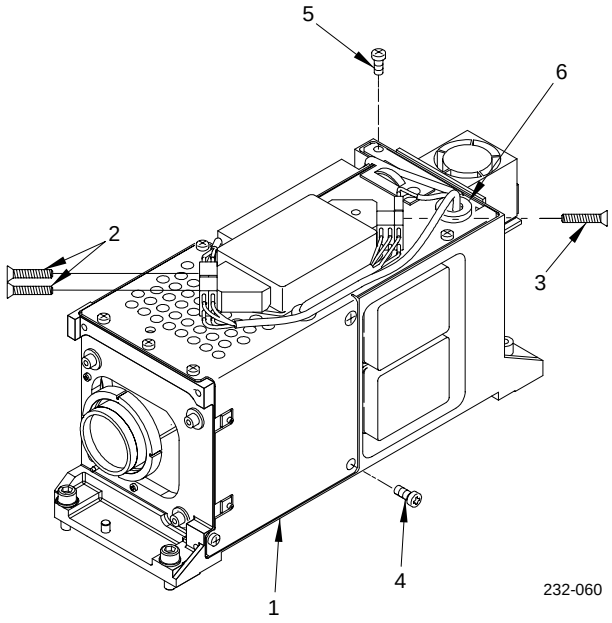
f. Apply corrosion inhibitive sealing and coating compound to mounting hardware (para 2-6). Use class 1A application.

g. Position A7 wiring harness grommet (6) in cover assembly slot.

h. Install camera cover assembly A4 using eight screws (4) and two screws (5).

i. Connect connector A7J1 to connector A6P1 from power supply and secure using two screws (2).

j. Connect connector A7P1 to connector A4J2 and secure using screw (3).



END OF TASK

2. FAN ASSEMBLY A42 REPLACEMENT

REMOVAL

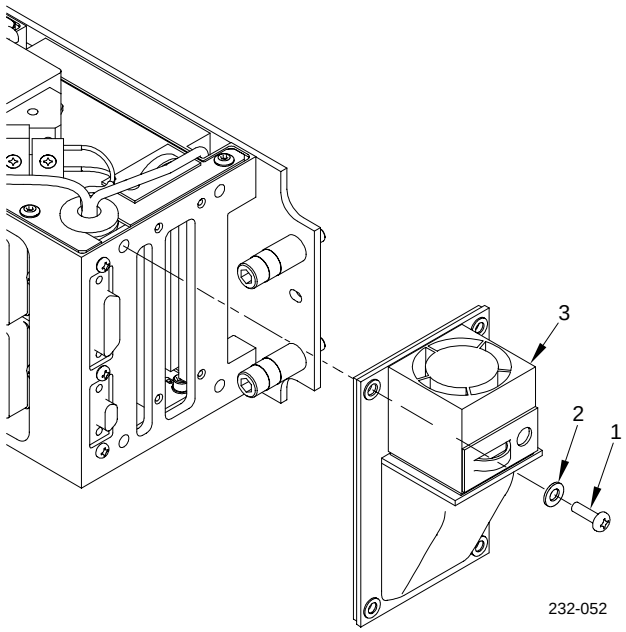
a. Remove fan assembly (3) by removing four screws (1) and four flat washers (2).

INSTALLATION

b. Remove old corrosion inhibitive sealing and coating compound from mounting hardware (para 2-6).

c. Apply corrosion inhibitive sealing and coating compound to mounting hardware (para 2-6). Use class 1A application.

d. Install fan assembly (3) and secure using four screws (1) and flat washers (2).



END OF TASK

4-13. PNVS SOLID STATE CAMERA COVER ASSEMBLY A33A4 REPAIR

This task covers replacement of:

Para	Item	Para	Item
1.	RF Filter A1	3.	Retaining pad
2.	Electrical Connector J1 or J2	4.	Mounting plate

INITIAL SETUP

Tools

Aircraft armament repairman tool set

Aircraft armament technical inspector tool set

Materials (appendix C)

Corrosion inhibitive sealing and coating compound (Item 10)

Electrical insulating compound (Item 11)

Epoxy adhesive (Item 2)

Lacing tape (Item 50)

RTV silicone sealing compound - red (Item 3)

Silicone adhesive primer (Item 39)

Personnel Required

68J Aircraft Fire Control Repairer

66J30 Aircraft Armament Technical Inspector

FOLLOWUP

Have EETF maintenance personnel perform functional test.

CAUTION

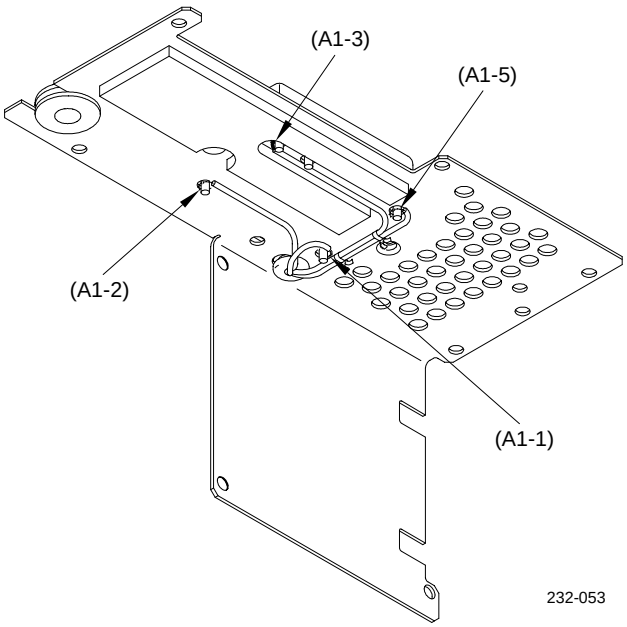
- While performing these procedures, keep all exposed lens covered with lens paper to prevent damage coated optical surfaces.
- This assembly contains electrostatic discharge sensitive (ESDS) parts. Refer to paragraph 2-8 for handling requirements before starting this task, to prevent damage to the parts.

1. RF FILTER REPLACEMENT

REMOVAL

a. Remove lacing tape securing RF filter wiring.

b. Tag and unsolder filter wiring at A1-1, A1-2, A1-3 and A1-5.



4-13. PNVS SOLID STATE CAMERA COVER ASSEMBLY A33A4 REPAIR (cont)

c. Remove screw (1) securing connectors J1 and J2 to filter retainer (2).

d. Remove two filter retainers (2) and RF filter (4) by removing two screws (3).

INSTALLATION

e. Remove old corrosion inhibitive sealing and coating compound from mounting hardware and filter retainers (para 2-6).

f. Apply corrosion inhibitive sealing and coating compound to filter retainer faying surfaces (para 2-6).

g. Install RF filter (4) using two filter retainers (2) and screws (3).

NOTE

Connectors J1 and J2 shall be free to rotate slightly on filter retainer. Do not completely tighten screws.

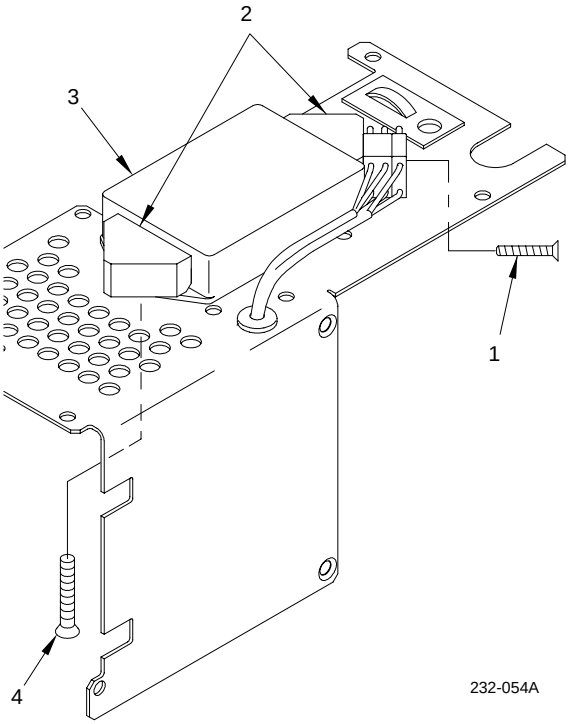
h. Secure connectors J1 and J2 to filter retainer using screw (1).

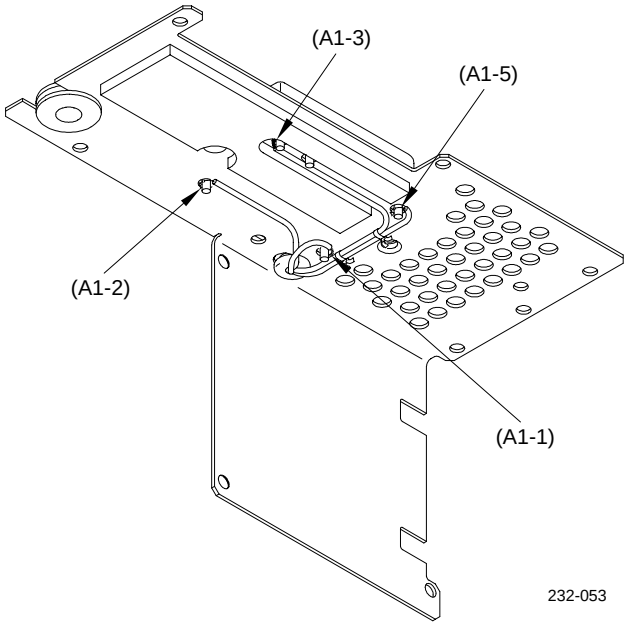
i. Solder filter wiring to A1-1, A1-2, A1-3 and A1-5. Remove tags.

j. Apply electrical insulating compound over soldered connections (para 2-6).

k. Dress wiring and secure using lacing tape.

END OF TASK





4-13. PNVS SOLID STATE CAMERA COVER ASSEMBLY A33A4 REPAIR (cont)

2. ELECTRICAL CONNECTOR J1 OR J2 REPLACEMENT

REMOVAL

a. Remove screw (1) securing connector to filter retainer (2).

b. Tag and cut wires as close as possible to connector contacts. Discard connector.

INSTALLATION

c. Strip and tin wires.

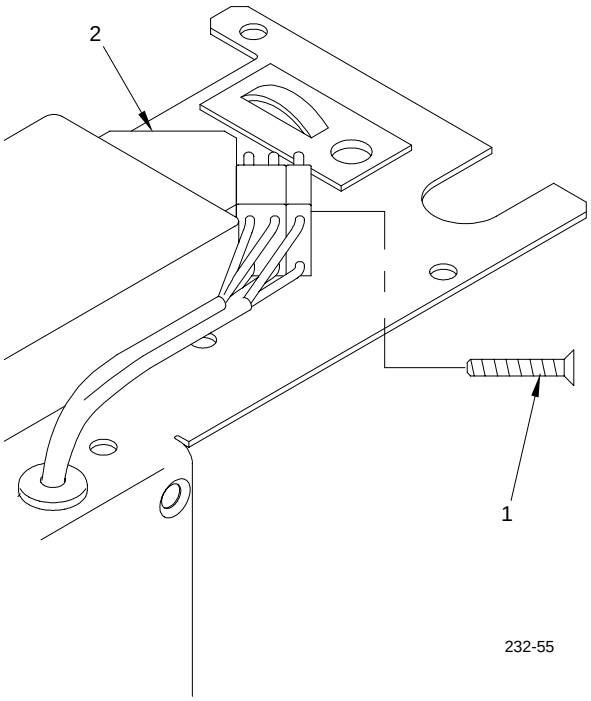
d. Solder wires to connector contacts. Remove tags.

NOTE

Connectors J1 and J2 shall be free to rotate slightly on filter retainer. Do not completely tighten screws.

e. Secure connector to filter retainer (2) using screw (1).

END OF TASK



3. RETAINING PAD REPLACEMENT

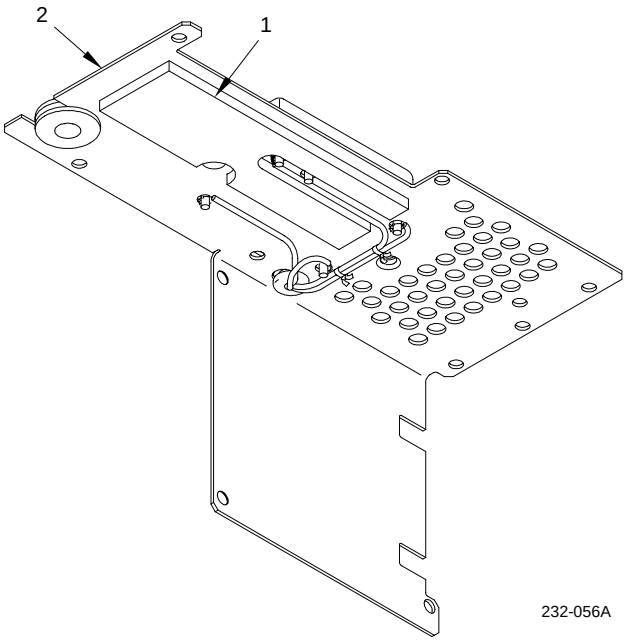
REMOVAL

a. Remove retaining pad (1) by carefully scraping and peeling.

b. Remove adhesive residue from camera cover (2) where retaining pad was removed.

INSTALLATION

c. Clean and prepare camera cover surface for retaining pad bonding and apply silicone adhesive primer to area where retaining pad is to be installed (para 2-6).



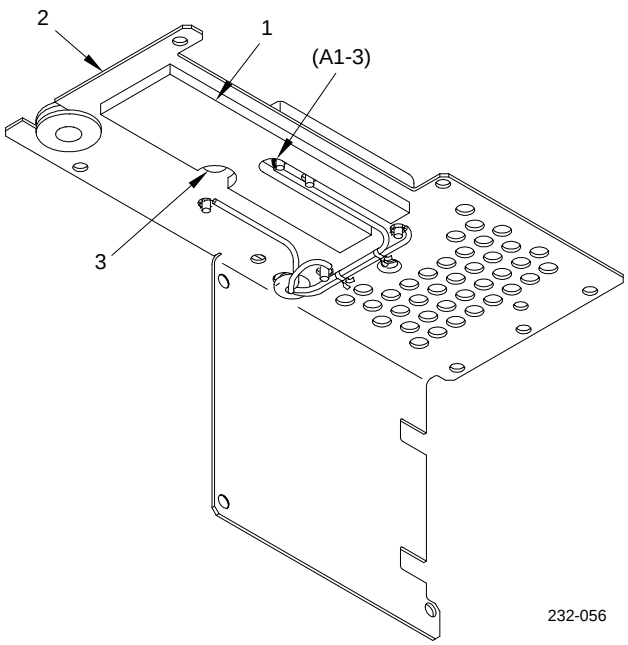
4-13. PNVS SOLID STATE CAMERA COVER ASSEMBLY A33A4 REPAIR (cont)

d. Apply RTV silicone sealing compound evenly to retaining pad as required to maintain bondline thickness of 0.010 to 0.030 inches (para 2-6).

e. Install retaining pad (1) on camera cover (2) allowing even clearance around RF filter mounting screw (3) and filter terminal A1-3.

f. Ensure that retaining pad edge is located approximately 0.30 inches from end of camera cover.

g. Remove trapped air using roller or squeegee while maintaining bondline thickness.



END OF TASK

4. MOUNTING PLATE REPLACEMENT

REMOVAL

a. Remove mounting plate (1) by carefully scraping and peeling.

b. Remove adhesive residue from camera cover (2) where mounting plate was removed.

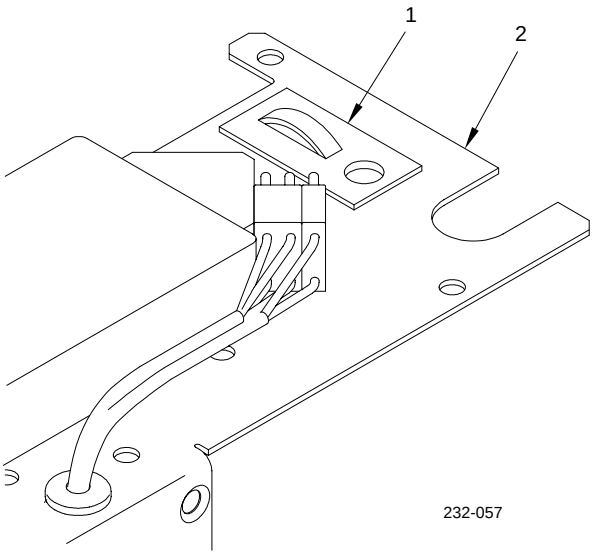
INSTALLATION

c. Clean and prepare camera cover surface where mounting plate is to be bonded (para 2-6).

d. Apply epoxy adhesive evenly to mounting plate as required to maintain bondline thickness of 0.005 to 0.020 inches (para 2-6).

e. Install mounting plate (1) within 0.12 inches of camera cover edge and approximately 0.25 inches from camera cover (2) end.

f. Remove trapped air while maintaining bondline thickness by applying even pressure to mounting plate.



END OF TASK

Section II. AZIMUTH DRIVE GIMBAL ASSEMBLY A2 MAINTENANCE PROCEDURES

4-14. GENERAL

This section covers azimuth drive gimbal assembly A2 maintenance procedures. Preceding the initial setup table is a listing of the items covered and the maintenance tasks to be performed. References are provided to allow fast access to the maintenance information within each major task.

4-15. AZIMUTH DRIVE GIMBAL ASSEMBLY A2 REPAIR

This task covers replacement of:

Para	Item	Para	Item
1.	Azimuth drive assembly	2.	92 degree and 122 degree limit stop pads

INITIAL SETUP

Tools

Aircraft armament repairmen tool set

Aircraft armament technical inspector tool set

Materials (appendix C)

Corrosion inhibitive sealing and coating compound (Item 10)

Lacing and tying tape (Item 49)

Synthetic resin enamel (Item 17)

Tiedown strap (Item 46)

Personnel Required

68J Aircraft Fire Control Repairer

68J30 Aircraft Armament Technical Inspector

References

TM 1-5855-265-20

Equipment Conditions

PNVS turret assembly removed (TM 1-5855-265-20)

FOLLOWUP

Have EETF maintenance personnel perform adjustments

Install PNVS turret assembly (TM 1-5855-265-20)

4-15. AZIMUTH DRIVE GIMBAL ASSEMBLY A2 REPAIR (cont)

1. AZIMUTH DRIVE ASSEMBLY REPLACEMENT

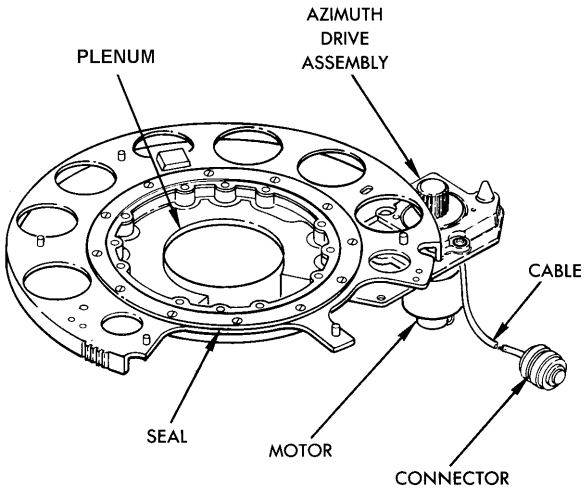
WARNING

BURN HAZARD

- The azimuth drive gimbal assembly motor gets very hot (about 250°F) during test.
- The hot motor can cause serious burns.
- If motor is hot, let motor cool down before you replace azimuth drive assembly.
- Do not use motor as a hand hold.

CAUTION

Do not put pressure or weight on plenum. The plenum is plastic and could break. Do not let azimuth drive gimbal assembly rest on cable or connector. Cable or connector could be damaged. Handle azimuth drive gimbal assembly with care so seal is not damaged.



AZIMUTH DRIVE GIMBAL ASSEMBLY

320-013A

a. Put azimuth drive gimbal assembly on proper support when performing replacement procedures in steps b thru f below. Leave room around azimuth drive assembly to provide access to all attaching hardware.

4-15. AZIMUTH DRIVE GIMBAL ASSEMBLY A2 REPAIR (cont)

CAUTION

Support azimuth drive assembly when last captive screw is being loosened to prevent the unit from dropping. Be careful not to damage wiring when handling azimuth drive assembly.

b. Remove azimuth drive assembly (4).

(1) Support azimuth drive assembly (4) and loosen four captive screws (5).

(2) Remove azimuth drive assembly (4) from mounting plate (6).

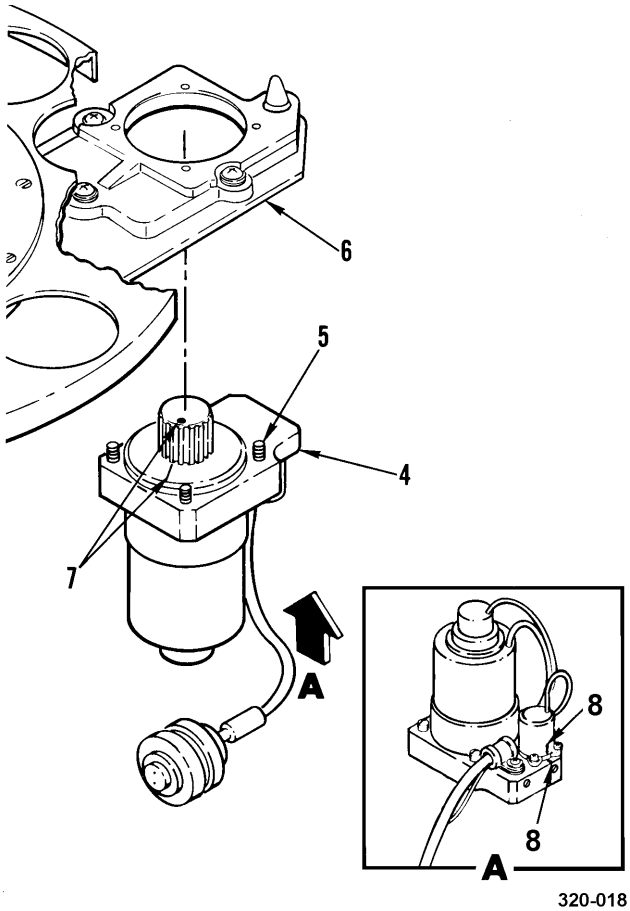
INSTALLATION

c. Remove corrosion inhibitive sealing and coating compound from attaching hardware (para 2-6).

d. Remove lacing and tying tape securing cables to motor on replacement azimuth drive assembly.

NOTE

Azimuth drive assemblies are alined and marked during manufacture. Check alinement marks (7) and (8). If either set of marks are misalined, get another replacement assembly.



320-018

4-15. AZIMUTH DRIVE GIMBAL ASSEMBLY A2 REPAIR (cont)

e. Install azimuth drive assembly (4).

CAUTION

The azimuth drive assembly gets very hot during test. Ensure wires are routed so not to touch the motor casing.

NOTE

When the azimuth drive assembly was removed, the gear backlash setting was lost. Installing the azimuth drive assembly requires that a new backlash adjustment be done. Follow procedures below to install the azimuth drive assembly and prepare it for final adjustments.

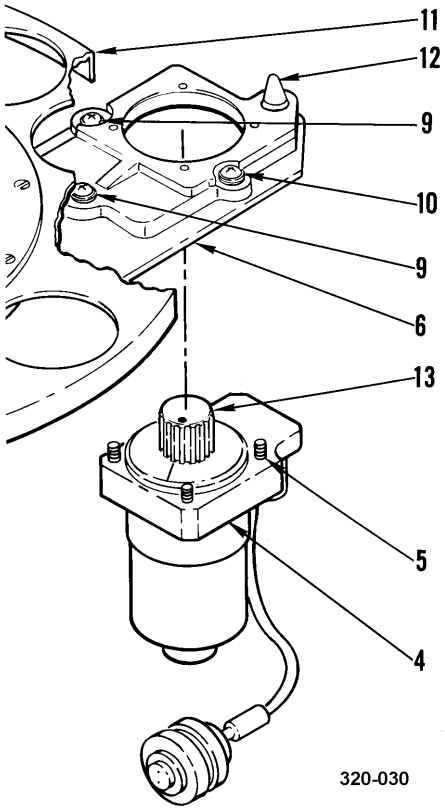
(1) Loosen screws (9 and 10) on mounting plate (6) just enough to permit movement of mounting plate. It may be necessary to move large gear (11) to gain access to one of the screws (9).

(2) Loosen nut at bottom of eccentric pin (12).

(3) Install azimuth drive assembly (4) on mounting plate (6) and tighten four captive screws (5).

(4) Adjust eccentric pin (12) until azimuth drive gear (13) meshes with large gear (11) on azimuth drive gimbal assembly.

(5) Temporarily tighten screws (9 and 10) on mounting plate (6) and nut on eccentric pin (12). The screws will be torqued to 24 in-lb during adjustment (h below).



4-15. AZIMUTH DRIVE GIMBAL ASSEMBLY A2 REPAIR (cont)

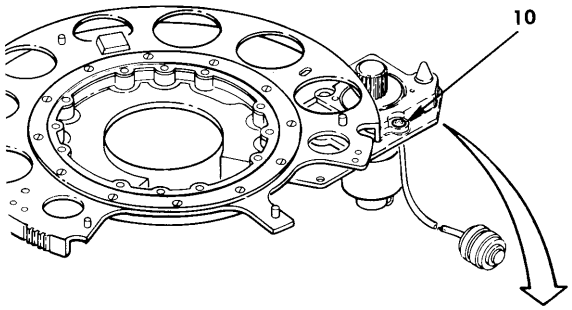
NOTE

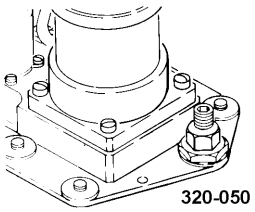
Corrosion inhibitive sealing and coating compound will be applied to screw (10) and attaching screws for limit switches after adjustment (step h below), using class 1B application (para 2-6).

f. Perform followup.

g. Perform general inspection (para 2-4).

END OF TASK





4-15. AZIMUTH DRIVE GIMBAL ASSEMBLY A2 REPAIR (cont)

2. 92 DEGREE AND 122 DEGREE LIMIT STOP PADS REPLACEMENT

NOTE

This task provides procedures for replacing the 122° limit stop pad. Procedures for replacing the 92° limit stop pad are the same.

REMOVAL

WARNING

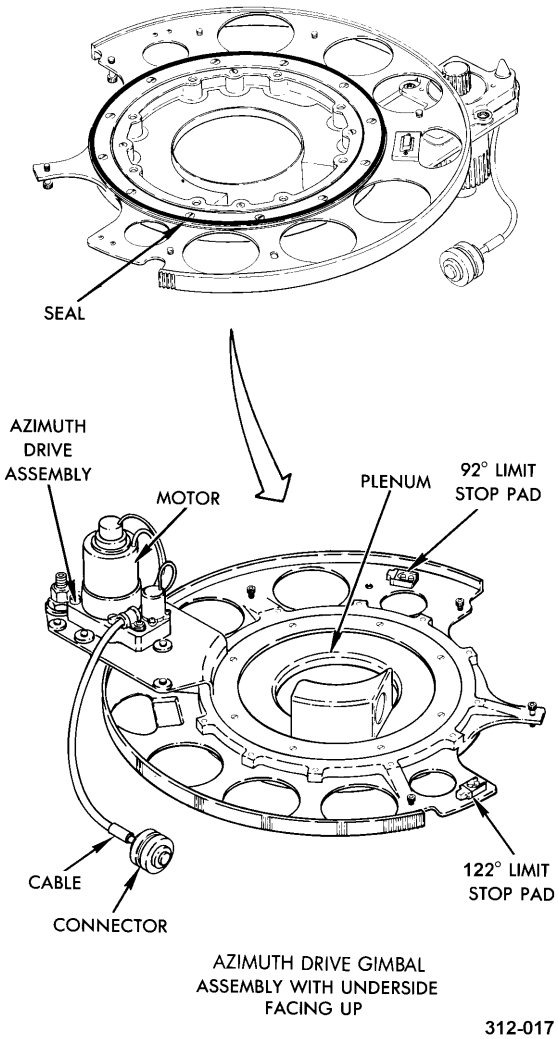
BURN HAZARD

- The azimuth drive gimbal assembly motor gets very hot (about 250°F) during test.
- The hot motor can cause serious burns.
- If motor is hot, let motor cool down before replacing limit stop pad.
- Do not use motor as a hand hold.

CAUTION

Do not put pressure or weight on plenum. The plenum is plastic and could break. Do not let azimuth drive gimbal assembly rest on cable or connector. Cable or connector could be damaged. Handle azimuth drive gimbal assembly with care so seal is not damaged.

a. Put azimuth drive gimbal assembly on proper support with underside facing up when performing replacement procedures.



AZIMUTH DRIVE GIMBAL ASSEMBLY WITH UNDERSIDE FACING UP

312-017

4-15. AZIMUTH DRIVE GIMBAL ASSEMBLY A2 REPAIR (cont)

b. Remove two screws (1), washers (2), and limit stop pad (3) from bracket assembly (4).

c. Check bracket assembly (4) for damage. If damaged, remove bracket assembly (4) by removing two screws (5), washers (6), and locknuts (7).

INSTALLATION

d. If bracket assembly (4) was removed, do the following:

(1) Remove old corrosion inhibitive sealing and coating compound from mounting hardware (para 2-6).

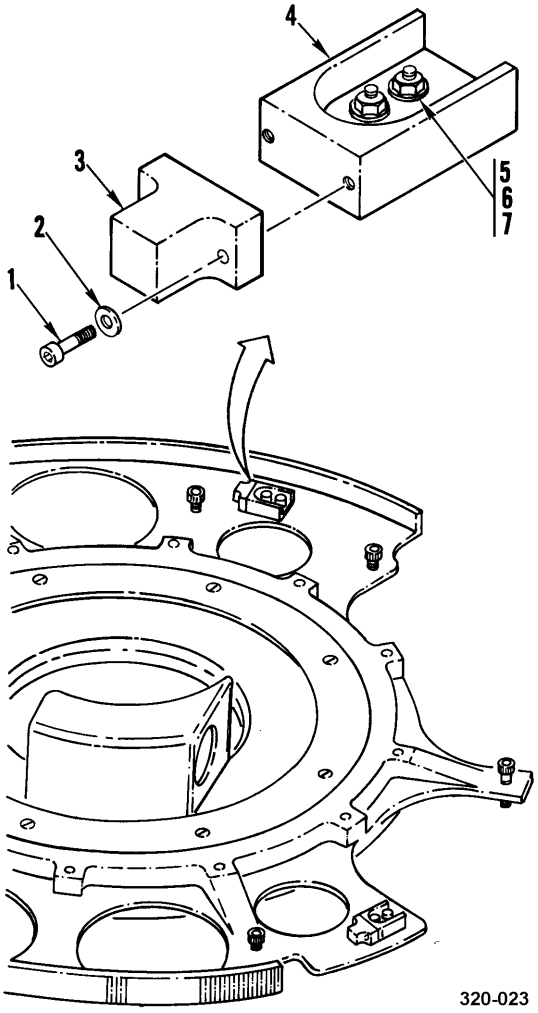
(2) Apply corrosion inhibitive sealing and coating compound to screws (5). Use class 1A application (para 2-6).

(3) Install bracket assembly (4) using two screws (5), washers (6), and locknuts (7).

e. Remove corrosion inhibitive sealing and coating compound from screws (1) (para 2-6).

f. Apply corrosion inhibitive sealing and coating compound to two screws (1). Use class 1A application (para 2-6).

g. Install limit stop pad (3) on bracket assembly (4), using two screws (1) and washers (2).



4-15. AZIMUTH DRIVE GIMBAL ASSEMBLY A2 REPAIR (cont)

ADJUSTMENTS

NOTE

This procedure provides for the adjustment of the limit stop pads in the event they are replaced or become loose. TPS C/N 24 must be run to release the brake and provide a test fixture to hold the azimuth gimbal assembly during these adjustment procedures.

h. Loosen the two holding screws securing the limit stop pads to the disk/gear enough so they move freely.

i. Run TPS C/N 24. After the video display terminal displays instructions to install the test fixture, the following message will be displayed at test step 100,000:

NOTE

Perform step 1 only, of the following displayed message then proceed to step j.

1. REMOVE BOTH 'T' PINS.

2. ROTATE THE DISK/GEAR COUNTER-CLOCKWISE TO THE LIMIT STOP.

3. INSERT THE SMALL 'T' PIN THRU THE TOP PLATE HOLE MARKED 92 DEGREES, THRU THE UUT, AND INTO THE FIXTURE BASE.

4. PRESS <YES> IF THE GEAR FREELY ROTATED TO THE SPECIFIED COUNTERCLOCKWISE STOP POSITION AND THE 'T' PIN FIT PROPERLY.

5. PRESS <NO> IF THE GEAR ROTATION WAS LIMITED ('T' PIN WOULD NOT FIT) OR THE GEAR DID NOT TURN FREELY TO THE STOP.

j. At this point the brake is released and the disk/gear can be turned manually.

k. Manually rotate the disk/gear both clockwise and counter-clockwise bringing the limit stop pads toward the drive motor. Each limit stop pad will strike a post, preventing further movement of the disk/gear.

l. If the face of the limit stop pads is not flush against the post, rotate the disk/gear away from the post and adjust the limit stop pads, as required.

m. Repeat steps k and l until the limit stop pads are flush against the post.

n. Carefully remove the cover plate and disk/gear from the test fixture and tighten the two limit stop pad mounting screws.

o. Reinstall the disk/gear and cover plate. Perform step k to verify that the limit stop pads did not move during tightening of the limit stop screws.

END OF TASK

Section III. PNVS ELECTRONIC UNIT (PEU) ASSEMBLY 2 MAINTENANCE PROCEDURES

4-16. GENERAL

This section covers PEU maintenance procedures. The initial setup table in each paragraph contains a listing of the items covered and the maintenance tasks to be performed. References are provided to allow fast access to the maintenance information within each major task.

CAUTION

This assembly contains electrostatic discharge sensitive (ESDS) devices. Refer to paragraph 2-8 for handling requirements before starting this task, to prevent damage to the devices.

4-17. PEU COVER ASSEMBLY REMOVAL AND INSTALLATION

INITIAL SETUP

Tools

Aircraft armament repairman tool set and supplemental

Aircraft armament technical inspector tool set

Personnel Required

68J Aircraft Fire Control Repairer

66J30 Aircraft Armament Technical Inspector

REMOVAL

1. Remove cover assembly (4).

NOTE

- Step a below applies to cover assemblies secured by socket head capscrews.
- Step b below applies to cover assemblies secured by cross-recessed captive screws.

a. Remove four socket head capscrews (1) and washers (2).

b. Loosen four cross-recessed captive screws (3).

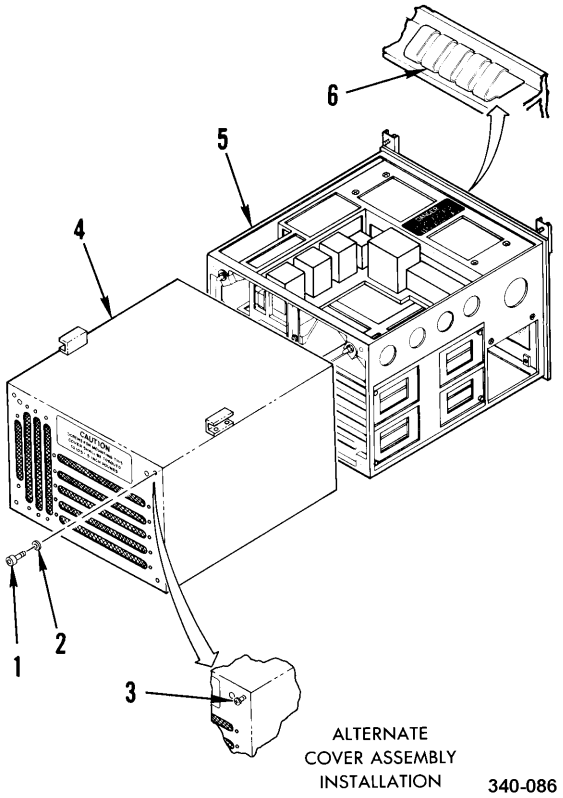
CAUTION

Use care when separating cover assembly from chassis. Careless handling may damage EMI contact strips along outer edges of chassis behind front panel.

NOTE

- Steps c and d apply to chassis with EMI contact strips installed.
- Step e applies to chassis without EMI contact strips.

c. Carefully slide cover assembly (4) off of chassis (5) to avoid damage to EMI contact strips (6).



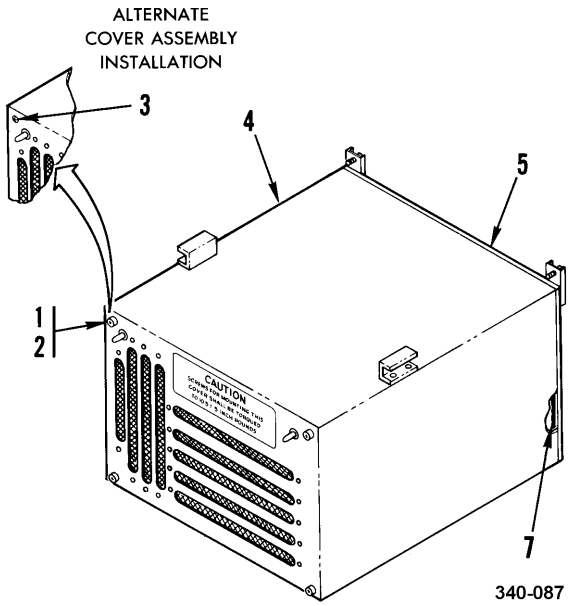
d. Check EMI contact strips (6) for bent, cracked, or missing contacts. If EMI contact strips are damaged, replace PEU.

e. Slide cover assembly (4) off of chassis (5).

4-17. PEU COVER ASSEMBLY REMOVAL AND INSTALLATION (cont)

INSTALLATION

2. Install cover assembly (4).



CAUTION

- EMI contact strips are installed on chassis, use care when installing cover assembly. Careless handling may damage EMI contact strips.
- When installing cover assembly, alternately torque the four screws. Improper torquing may cause the cover to crack.

a. Carefully slide cover assembly (4) on chassis (5).

b. Install four capscrews (1) and washers (2) or engage four captive screws (3). Alternately tighten screws until torqued to 10.5 in-lb.

3. After cover screws have been torqued, the following condition is acceptable:

- A maximum gap of 0.010 inch between gasket (7) and inner surface of chassis front panel.

or

- Gasket (7) may be compressed to the point of being exposed.

4. Perform general inspection (para 2-4).

END OF TASK

4-18. PEU AIR FLOW ADAPTER CLEANING

INITIAL SETUP

Tools
Acid-type safety goggles
Aircraft armament repairman tool set

Materials (appendix C)
Brush (Item 7)
Isopropyl alcohol (Item 4)
Wiping cloth (Item 9)

Personnel Required
68J Aircraft Fire Control Repairer

1. Remove cover assembly (1) from PEU chassis (2) (para 4-17).

WARNING

ISOPROPYL ALCOHOL

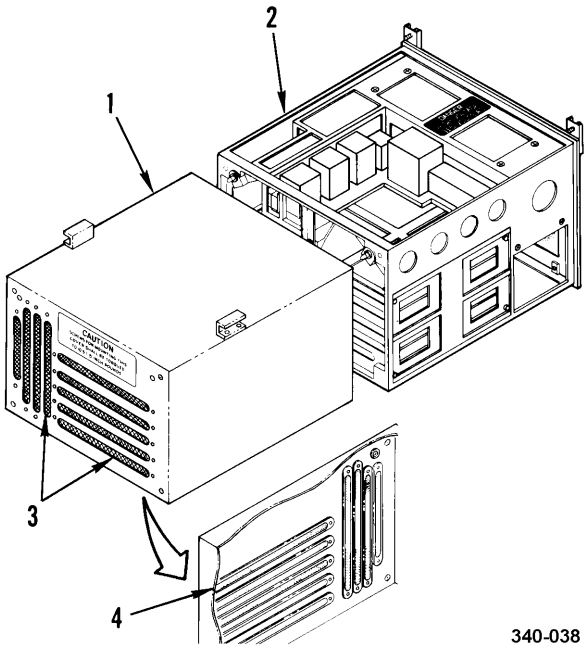
- Flammable, toxic, irritating. Can cause breathing problems, eye damage.
- Don't: Use near flames or sparks, let it get on skin, or breathe vapors.
- Do: Use in well-ventilated area, close containers when not using. Wear acid-type safety goggles, rubber gloves, and rubber apron.
- If it contacts eyes, wash eyes with running water. Get medical help at once.
- If you experience any breathing problems, get to fresh air at once.

2. Clean air flow adapters (4) in cover (1).

   a. Use brush to remove dust or dirt at the nine air flow cutouts (3).

   b. Dip brush in isopropyl alcohol and scrub front and rear surfaces of each air flow adapter (4).

   c. Check that holes in all nine air flow adapters (4) are free of dust and dirt. If necessary, repeat step b above.



   d. Use a clean wiping cloth moistened with isopropyl alcohol and wipe both surfaces of each air flow adapter and surrounding areas.

   e. Repeat step d above, until cloth remains clean.

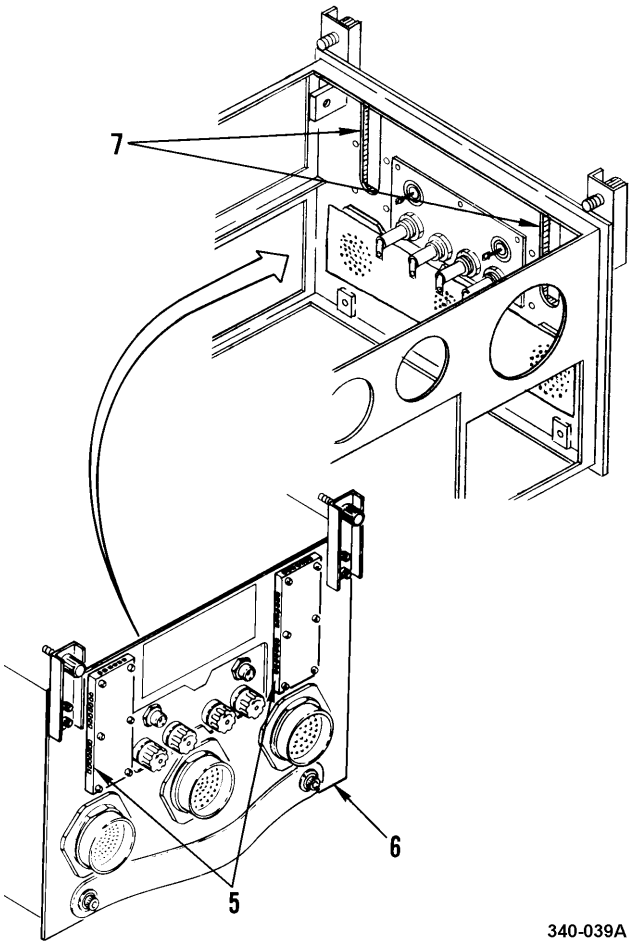
4-18. PEU AIR FLOW ADAPTER CLEANING (cont)

3. Remove power frame assembly A1 (para 4-20).

WARNING

ISOPROPYL ALCOHOL

- Flammable, toxic, irritating. Can cause breathing problems, eye damage.
- Don't: Use near flames or sparks, let it get on skin, or breathe vapors.
- Do: Use in well-ventilated area, close containers when not using. Wear acid-type safety goggles, rubber gloves, and rubber apron.
- If it contacts eyes, wash eyes with running water. Get medical help at once.
- If you experience any breathing problems, get to fresh air at once.



4. Clean air flow adapters (5) on front panel (6).

   a. Use a brush to remove dust or dirt at inner surface (7) of both air flow adapters (5).

   b. Dip brush in isopropyl alcohol and scrub inner and outer surfaces at each air flow adapter (5).

   c. Check that holes in each air flow adapter (5) are free of dust and dirt. If necessary, repeat step b above.

   d. Use a clean wiping cloth moistened with isopropyl alcohol to clean and wipe both surfaces of each air flow adapter and surrounding area.

   e. Repeat step d above, until cloth remains clean.

5. Install power frame assembly A1 (para 4-20).

END OF TASK

4-19. PEU CCA A1 THRU A4 REPLACEMENT

INITIAL SETUP

Tools
Aircraft armament repairman tool set

Materials (appendix C)
Corrosion inhibitive sealing and coating compound (item 10)

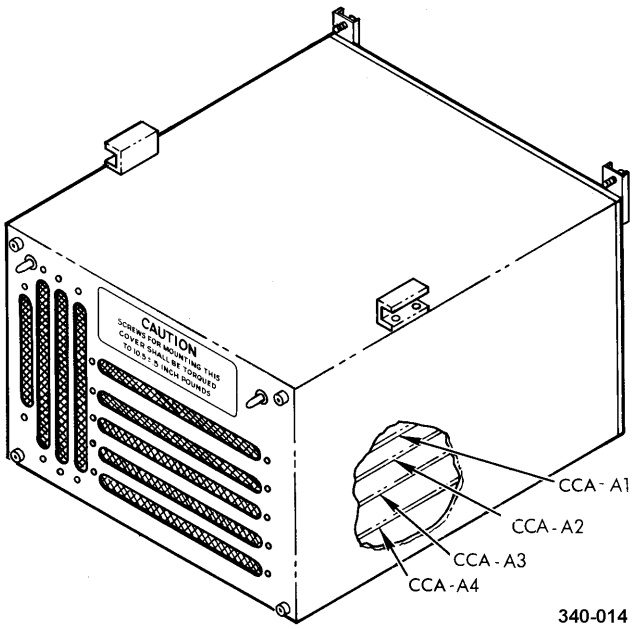
Personnel Required
68X Aircraft Armament/Electrical Repairer

CAUTION

CCAs A1 and A4 contain electrostatic discharge sensitive (ESDS) devices. Refer to paragraph 2-8 for handling requirements before starting these tasks to prevent damage to the devices.

NOTE

This procedure is for replacement of series regulator CCA A1. The same procedure is used for interface CCA A2, BITE/control CCA A3, and video processor CCA A4.



4-19. PEU CCA A1 THRU A4 REPLACEMENT (cont)

REMOVAL

1. Remove cover assembly from PEU chassis A5 (1) (para 4-17).

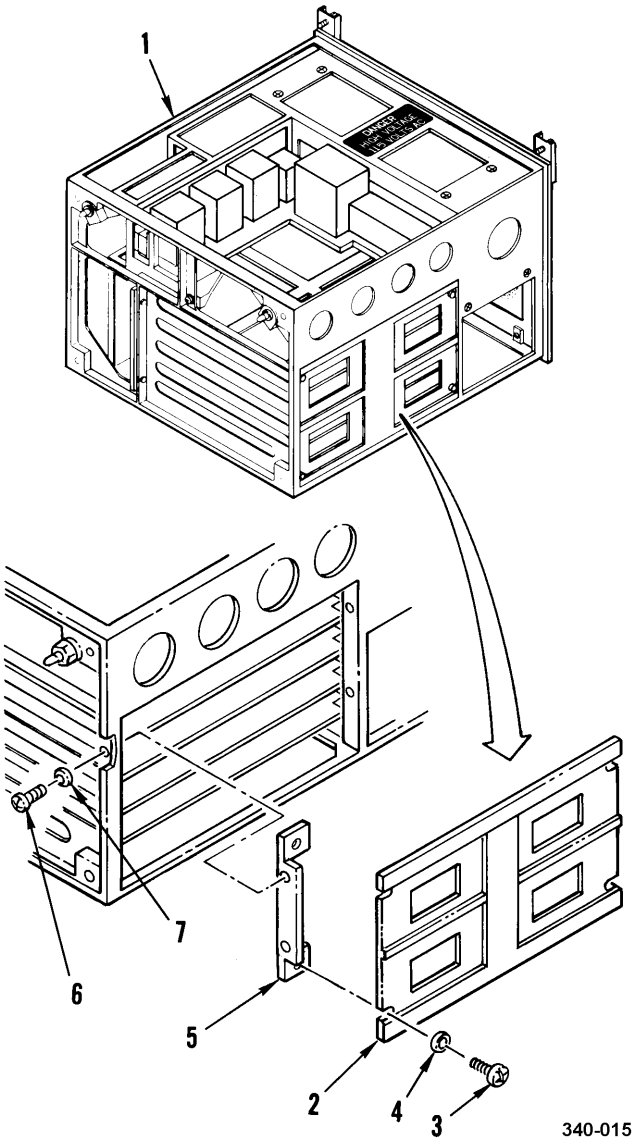
2. Remove support plate (2) by removing four screws (3) and washers (4).

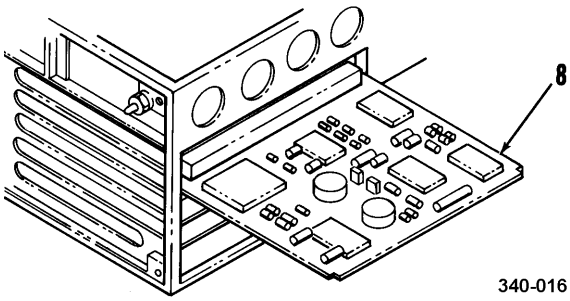
3. Note which side each card support (5) is attached. Remove card supports by removing four screws (6) and washers (7).

4. Remove series regulator CCA A1 (8) using a PWB extractor.

INSTALLATION

5. Install CCA A1 (8) with component side up.





4-19. PEU CCA A1 THRU A4 REPLACEMENT (cont)

6. Remove old corrosion inhibitive sealing and coating compound from screws (3 and 6) (para 2-6).

7. Apply corrosion inhibitive sealing and coating compound to screws (3 and 6). Use class 1A application (para 2-6).

8. Install card supports (5) in positions noted in step 3 above using four washers (7) and screws (6).

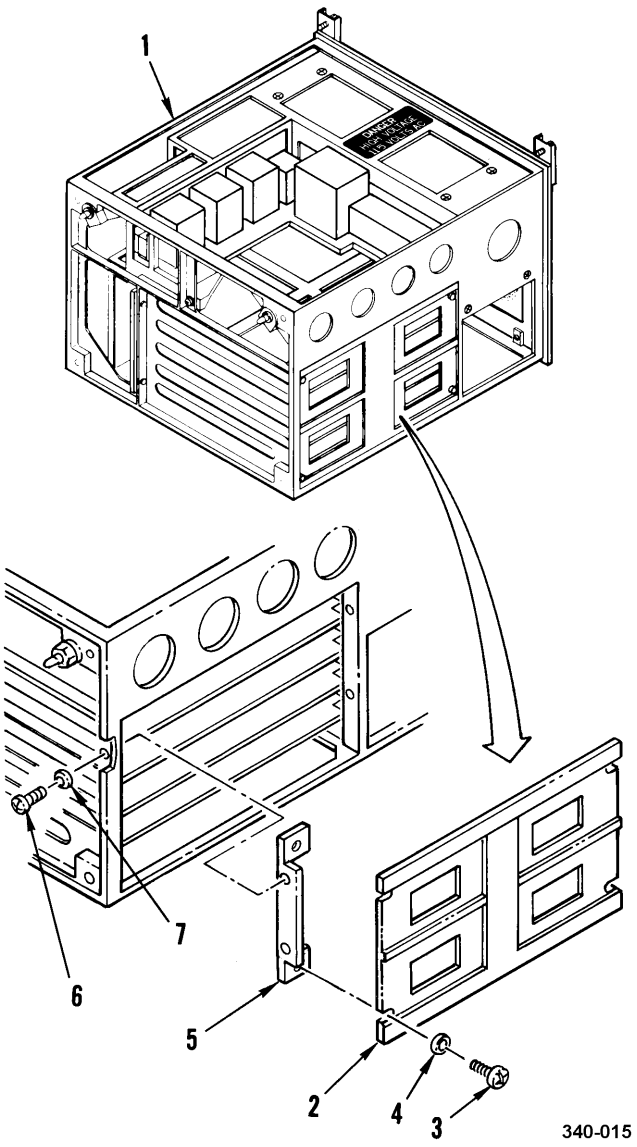
9. Install support plate (2) using four washers (4) and screws (3).

10. Perform general inspection (para 2-4).

11. Install cover assembly (para 4-17).

12. Pack faulty CCA (para 5-2).

END OF TASK



4-20. PEU CHASSIS A5 REPAIR

This task covers replacement of:

Para	Item	Para	Item
	1. Power frame assembly A1		5. Handle
	2. Fuseholder XF1 thru XF4		6. Alinement pin
	3. Connector P6		7. Air flow adapter
	4. Connector J4 or J5		8. Elapsed time indicator (ETI) M1 or cover

INITIAL SETUP

Tools

Aircraft armament repairman tool set and supplemental

Aircraft armament technical inspector tool set

PEU holding fixture (appendix D)

Torque wrench, 10-50 in-lb.

Materials (appendix C)

Corrosion inhibitive sealing and coating compound (Item 10)

Heat shrinkable insulation sleeving (Item 22)

Heat shrinkable insulation sleeving (Item 23)

Solder (Item 42)

Personnel Required

68X Aircraft Armament/Electrical Repairer

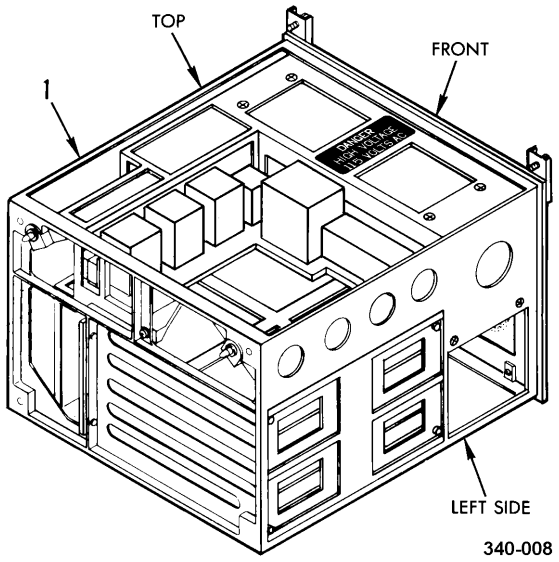
1. POWER FRAME ASSEMBLY A1 REPLACEMENT

REMOVAL

CAUTION

This CCA contains electrostatic discharge sensitive (ESDS) devices. Refer to paragraph 2-8 for handling requirements before starting this task to prevent damage to the devices.

a. Remove cover assembly from PEU chassis A5 (1) (para 4-17).



4-20. PEU CHASSIS A5 REPAIR (cont)

b. Remove terminal lug TL1 (5).

(1) Turn PEU chassis A5 (1) upside down.

(2) Remove old corrosion inhibitive sealing and coating compound from mounting hardware (2 thru 8) (para 2-6).

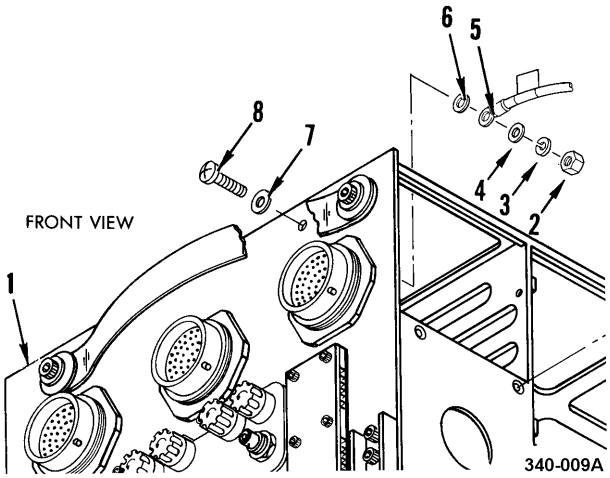
(3) Remove locknut (2), lockwasher (3), steel washer (4), terminal lug TL1 (5), aluminum washers (6 and 7), and screw (8).

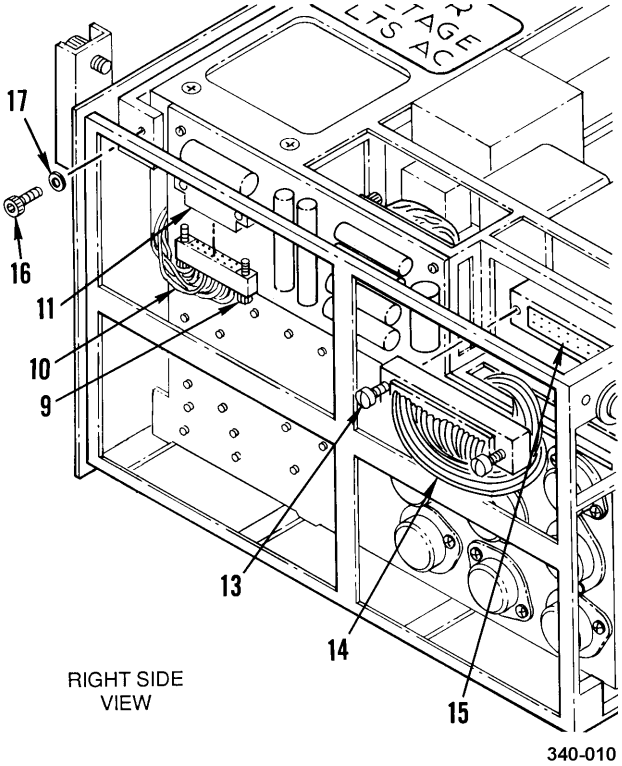
c. Turn PEU chassis A5 (1) right side up.

d. Disconnect connector P6 (10) from connector J6 (11) by loosening two screwlocks (9).

e. Disconnect connector P8 (14) from connector J8 (15) by loosening two screwlocks (13).

f. Remove screw (16) and washer (17).





4-20. PEU CHASSIS A5 REPAIR (cont)

g. Remove two screws (18).

h. Remove two screws (19) and washers (20).

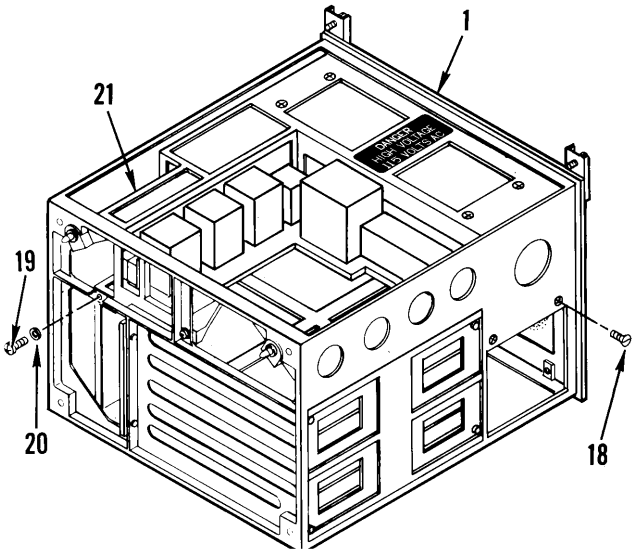
i. Support power frame assembly A1 (21) and turn PEU chassis A5 (1) upside down on holding fixture (24).

j. Remove three screws (22) and washers (23).

CAUTION

Use care when separating power frame assembly A1 from PEU chassis A5. Careless handling may entangle power frame assembly A1 on connector P6 or connector P8.

k. Remove power frame assembly A1 (21) from PEU chassis A5 (1).



LEFT REAR VIEW 340-011

INSTALLATION

l. Remove old corrosion inhibitive sealing and coating compound from power frame assembly A1 mounting screws (para 2-6).

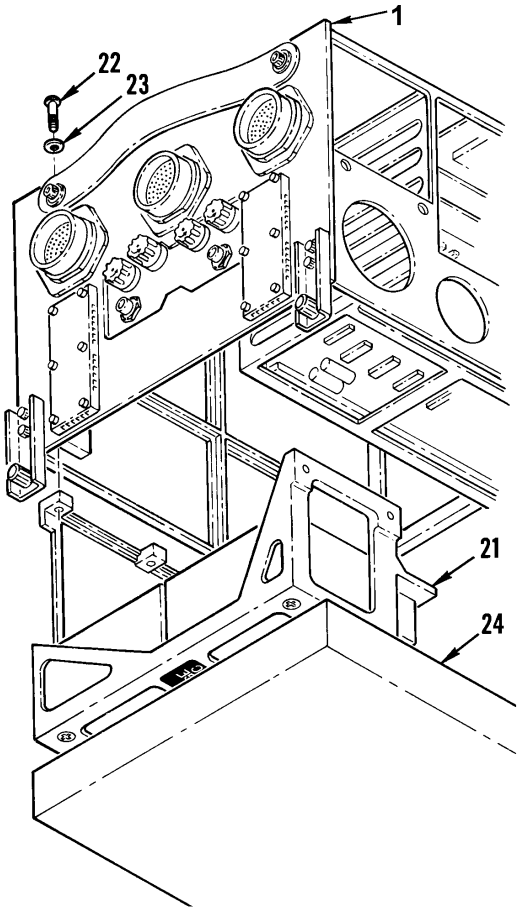
m. Apply corrosion inhibitive seating and coating compound to three screws (22). Use class 1A application (para 2-6).

n. Support power frame assembly A1 (21) on holding fixture (24), and install PEU chassis (1), using three washers (23) and screws (22).

o. Torque screws (22) to 12 in-lb.

p. Turn PEU chassis A5 (1) right side up.

q. Apply corrosion inhibitive seating and coating compound to two screws (19). Use class 1A application (para 2-6).



UPSIDE-DOWN FRONT VIEW 340-013A

4-20. PEU CHASSIS A5 REPAIR (cont)

r. Install two washers (20) and screws (19).

s. Torque screws (19) to 12 in-lb.

t. Install two screws (18).

u. Torque screws (18) to 12 in-lb.

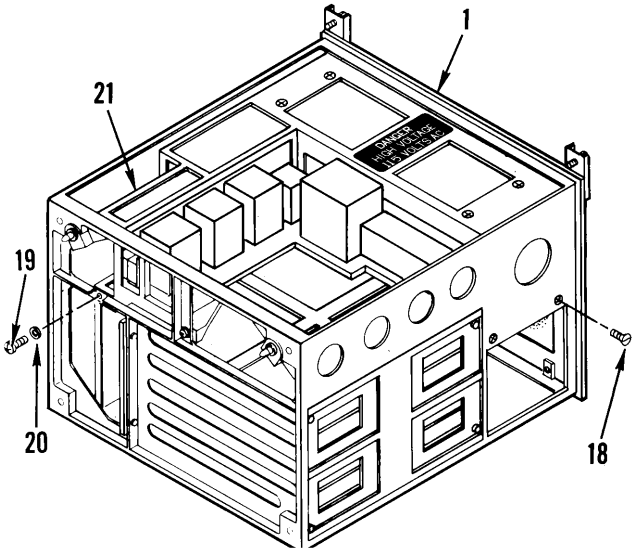
v. Apply corrosion inhibitive sealing and coating compound to screw (16). Use class 1A application (para 2-6).

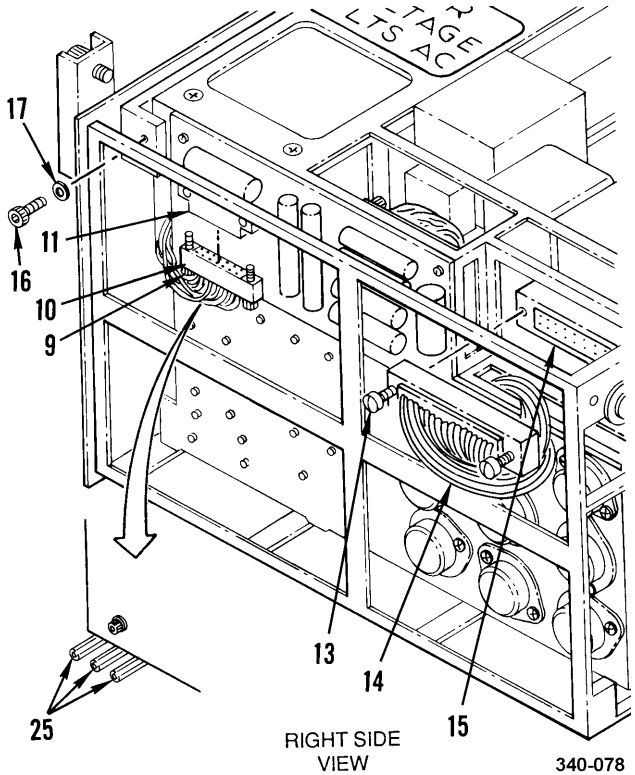
w. Install washer (17) and screw (16).

x. Torque screw (16) to 12 in-lb.

y. Connect connector P8 (14) to connector J8 (15) and tighten two screwlocks (13).

z. Install heat shrinkable insulation sleeving on three heat sink pins (25). Extend sleeving 1/16 inch above top surface of pins and apply heat.



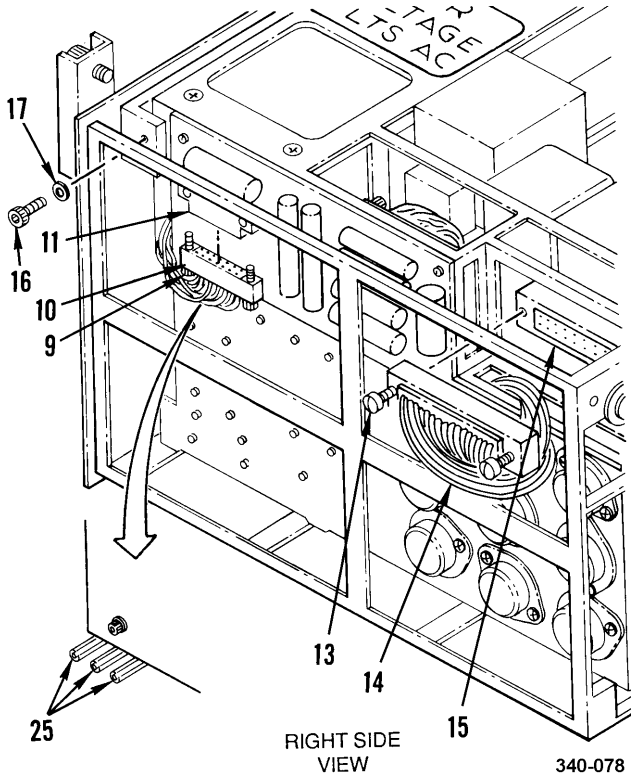


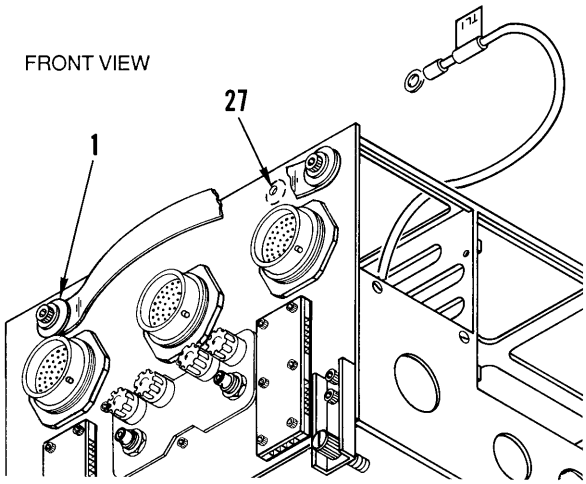
4-20. PEU CHASSIS A5 REPAIR (cont)

aa. Connect connector P6 (10) to connector J6 (11) and tighten screwlocks (9).

ab. Turn PEU chassis A5 (1) upside down.

ac. Prepare E1 mounting surface (27) for electrical bonding (para 2-7).





4-20. PEU CHASSIS A5 REPAIR (cont)

ad. Install terminal lug TL1 (5).

ae. Install aluminum washer (7) on screw (8) and insert screw through hole.

af. Install aluminum washer (6), TL1 (5), steel washer (4), lockwasher (3), and locknut (2) on screw (8).

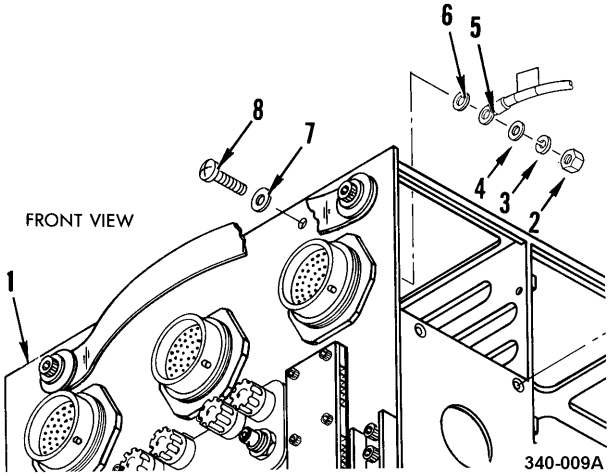
ag. Perform general inspection (para 2-4).

ah. Apply corrosion inhibitive sealing and coating compound over all items installed in step ai, above. Use class 2 application (para 2-6).

ai. Turn PEU chassis A5 (1) right side up.

aj. Install cover assembly (para 4-17)

ak. Pack faulty power frame assembly A1 (para 5-2).

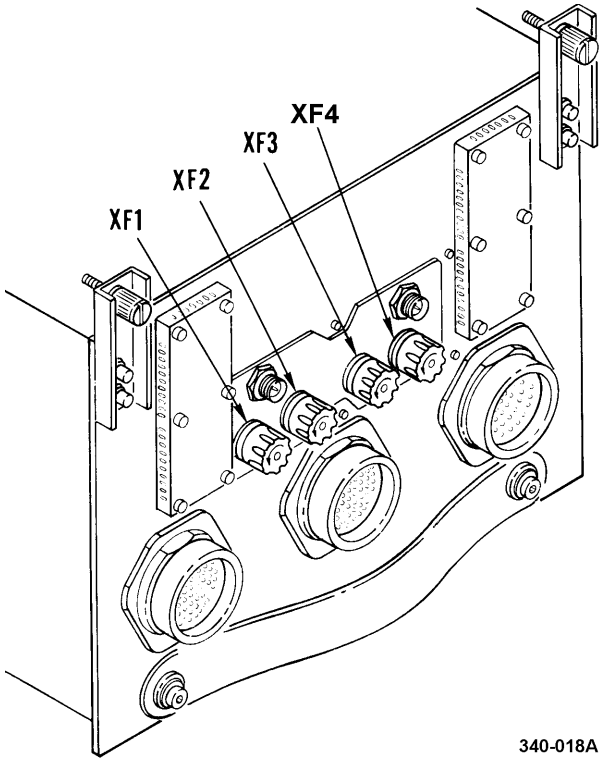


END OF TASK

2. FUSEHOLDER XF1 THRU XF4 REPLACEMENT

NOTE

This procedure is used for replacing officeholder XF1. The same procedure is used for replacing fuseholder XF2 thru XF4.



4-20. PEU CHASSIS A5 REPAIR (cont)

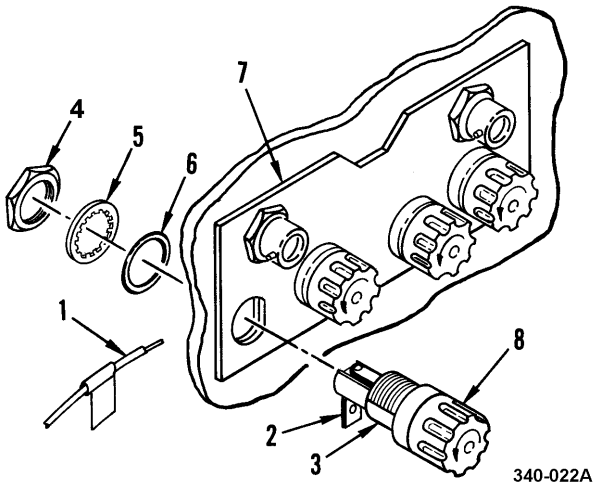
REMOVAL

a. Remove power frame assembly A1 (1 above).

b. Tag and unsolder wires (1) from terminals (2) of fuseholder XF1 (3).

c. Remove fuseholder XF1 (3) from panel (7) by removing nut (4), lockwasher (5), and washer (6).

d. Remove fuse from fuseholder XF1 (3) by turning cap (8) counterclockwise and pulling cap out.



INSTALLATION

e. Check condition of fuse. See listing below for correct style and rating of fuse. Discard blown or incorrect fuse. Retain good fuse for installation in replacement fuseholder.

Fuse	Style	Rating
F1, F2	FO2	2a 250v slow blow
F3, F4	FO2	5a 250v fast blow

f. Remove nut (4), lockwasher (5), and washer (6) from replacement fuseholder XF1 (3).

g. Install fuseholder XF1 (3) by using washer (6), lockwasher (5), and nut (4).

h. Solder tagged wires (1) to terminals (2) of fuseholder XF1 (3). Remove tags.

i. Remove cap (8) and install correct fuse in fuseholder XF1 (3). See step e above.

j. Have fuseholder XF1 (3) installation inspected.

k. Install power frame assembly A1 (1 above).

END OF TASK

4-20. PEU CHASSIS A5 REPAIR (cont)

3. CONNECTOR P6 REPLACEMENT

REMOVAL

a. Remove cover assembly (para 4-17).

b. Disconnect connector P6 (1) from connector J6 (2) by loosening two screwlocks (3).

c. Remove connector P6 (1) from wiring harness (4) (para 2-5, item 22).

INSTALLATION

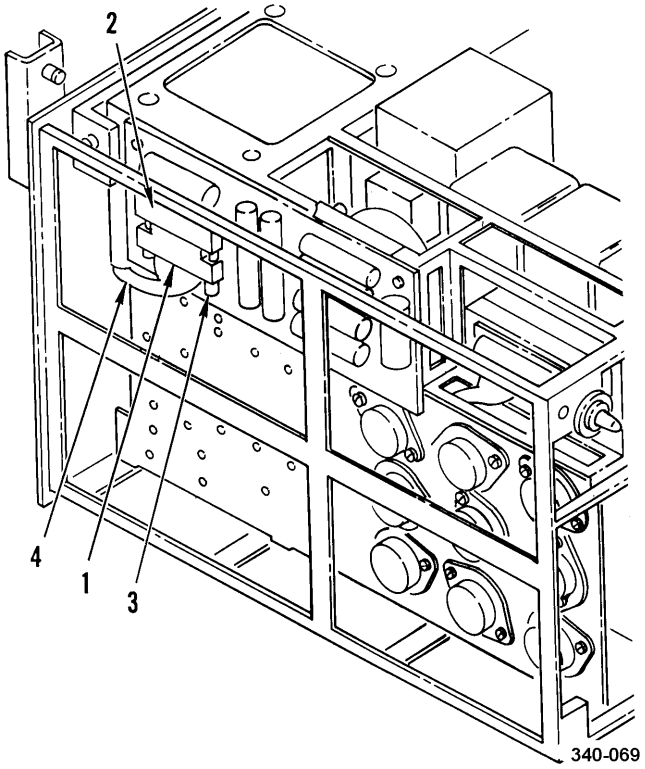
d. Install connector P6 (1) on wiring harness (4) (para 2-5, item 22).

e. Connect connector P6 (1) with connector J6 (2) and tighten two screwlocks (3).

f. Perform general inspection (para 2-4).

g. Install cover assembly (para 4-17).

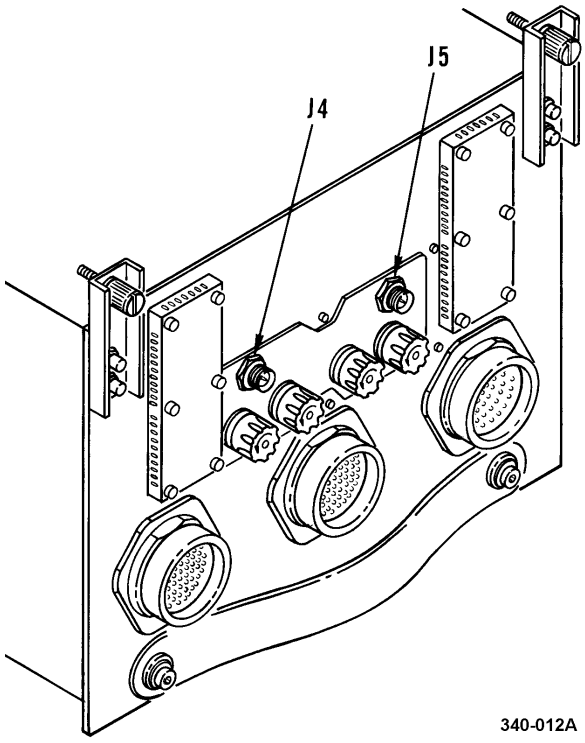
END OF TASK



4. CONNECTOR J4 OR J5 REPLACEMENT

NOTE

- This procedure is used for replacing connector J4. The same procedure is used for replacing connector J5.
- Connectors J4 and J5 are keyed differently. Make sure replacement connector is keyed to same as the faulty connector.



4-20. PEU CHASSIS A5 REPAIR (cont)

REMOVAL

a. Remove power frame assembly A1 (1 above).

b. Unsolder triaxial cable (1) from connector J4 (2). Note that lead (3) of solder sleeve (4) goes to center terminal (5) and lead (6) goes to shield terminal (7).

c. Remove connector J4 (2) from panel (8) by removing nut (9) and lockwasher (10).

INSTALLATION

CAUTION

Use care when bending center terminal; avoid sharp bends. Carelessness can cause damage to terminal or its insulating material.

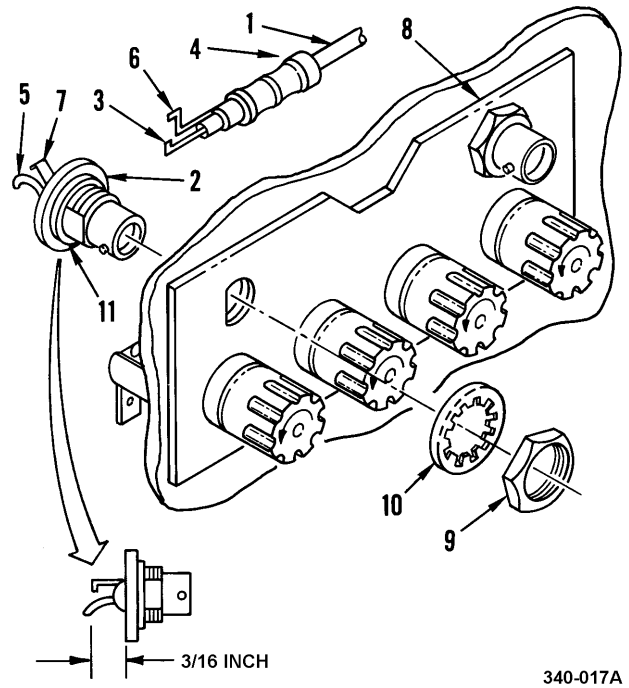
d. Bend center terminal (5) to same curved configuration as terminal of removed connector.

(1) Hold center terminal (5) at base with needle-nose pliers.

(2) Use second needle-nose pliers to bend center terminal (5) so that its tip is 3/16-inch from rear of connector J4 (2).

e. Remove nut (9) and lockwasher (10) from replacement connector J4 (2). Do not remove gasket (11).

f. Install replacement connector J4 (2) on panel (8) using lockwasher (10) and nuts (9).



g. Solder lead (3) to center terminal (5) and lead (6) to shield terminal (7).

h. Have connector J4 (2) installation inspected.

i. Install power frame assembly A1 (1 above).

END OF TASK

4-20. PEU CHASSIS A5 REPAIR (cont)

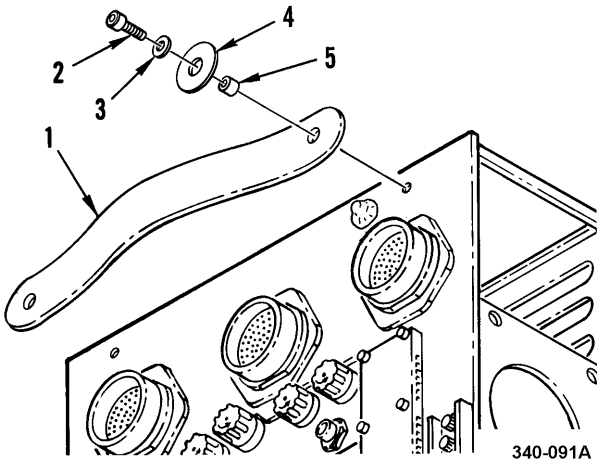
5. HANDLE REPLACEMENT

REMOVAL

a. Remove cover assembly (para 4-17).

b. Turn PEU chassis A5 upside down.

c. Remove handle (1) by removing two screws (2), small washers (3), large washers (4), and spacers (5).



INSTALLATION

d. Remove old corrosion inhibitive sealing and coating compound from screws (2) (para 2-6).

e. Apply corrosion inhibitive sealing and coating compound to screws (2). Use class 1A application (para 2-6).

f. Install handle (1) using two spacers (5), large washers (4), small washers (3), and screws (2). Be sure spacers go into mounting holes of handle.

g. Perform general inspection (para 2-4).

h. Turn PEU chassis A5 right side up.

i. Install cover assembly (para 4-17).

END OF TASK

4-20. PEU CHASSIS A5 REPAIR (cont)

6. ALINEMENT PIN REPLACEMENT

REMOVAL

a. Remove cover assembly (para 4-17).

b. Unscrew and remove alinement pin (1) and washer (2).

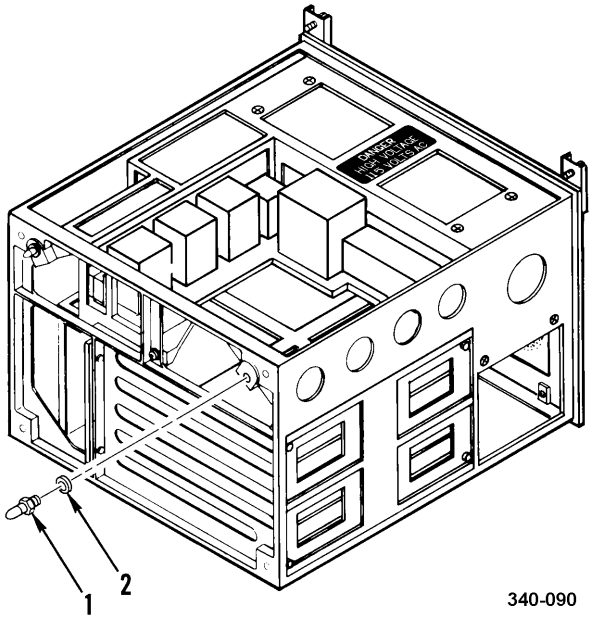
INSTALLATION

c. Install washer (2) and alinement pin (1).

d. Perform general inspection (para 2-4).

e. Install cover assembly (para 4-17).

END OF TASK



7. AIR FLOW ADAPTER REPLACEMENT

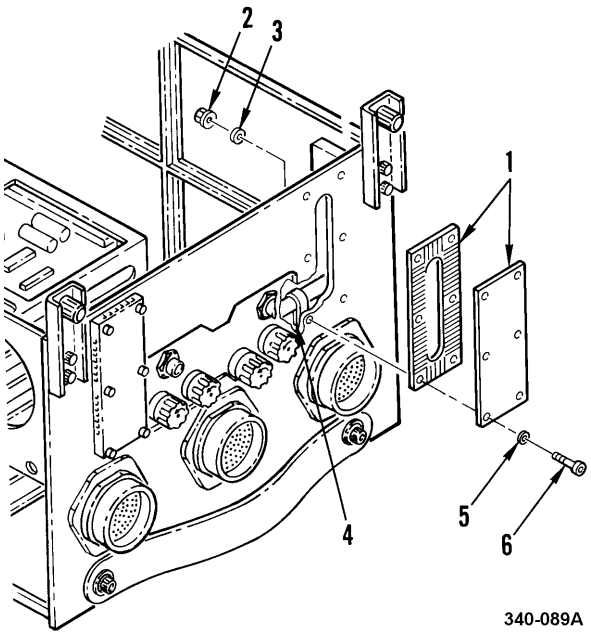
REMOVAL

a. Remove power frame assembly A1 (1 above).

NOTE

A loop clamp is located behind the air flow adapter installed above connector J3. Do not remove loop clamp from harness when performing step b below.

b. Remove air flow adapter (1) by removing six locknuts (2), one large washer (3), one loop clamp (4), six small washers (5), and six screws (6). Note which screw secures the loop clamp.



4-20. PEU CHASSIS A5 REPAIR (cont)

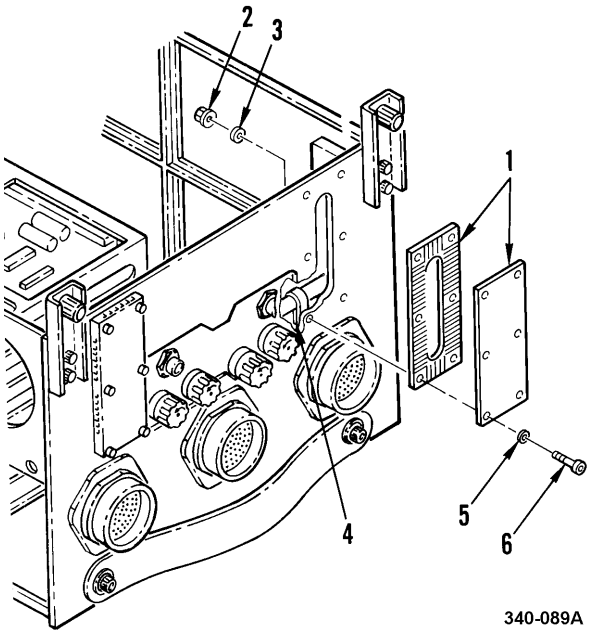
INSTALLATION

c. Install air flow adapter (1) using six screws (6), six small washers (5), one loop clamp (4), one large washer (3), and six locknuts (2). Be sure loop clamp is secured by screw noted in step b above.

d. Perform general inspection (para 2-4).

e. Install power frame assembly A1 (1 above).

END OF TASK



340-089A

8. ELAPSED TIME INDICATOR (ETI) M1 OR COVER REPLACEMENT

REMOVAL

NOTE

Elapsed time indicator M1 is being eliminated and replaced by a cover. This procedure applies only to a PEU chassis built with M1 or cover installed.

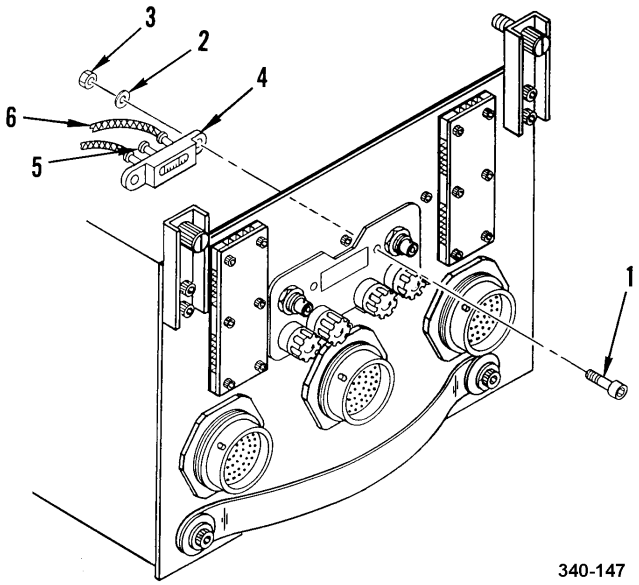
a. Remove power frame assembly A1 (1 above).

b. Remove two capscrews (1), washers (2), and nuts (3).

c. Remove elapsed time indicator M1(4) or cover (step i below).

d. Remove insulation sleeving (5) from terminals of elapsed time indicator M1 (4).

e. Unsolder wires (6) from elapsed time indicator M1 (4).



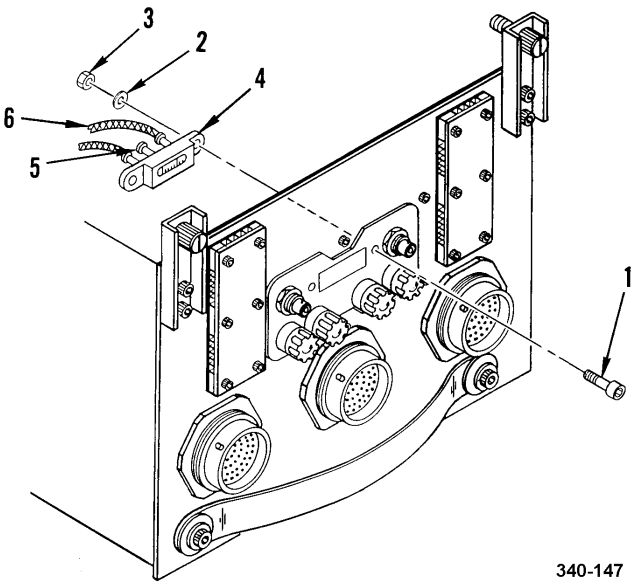
340-147

4-20. PEU CHASSIS A5 REPAIR (cont)

f. Insulate unsoldered wires (6) using insulation sleeving. Ensure that sleeving extends a minimum of 0.25 inch beyond ends of wires.

g. Secure insulated wires (6) to adjacent wiring or chassis using lacing and tying tape.

h. Discard ETI M1 (4) in accordance with TM 1-1270-476-23P. Retain two capscrews (1), washers (2), and nuts (3) for cover installation below.



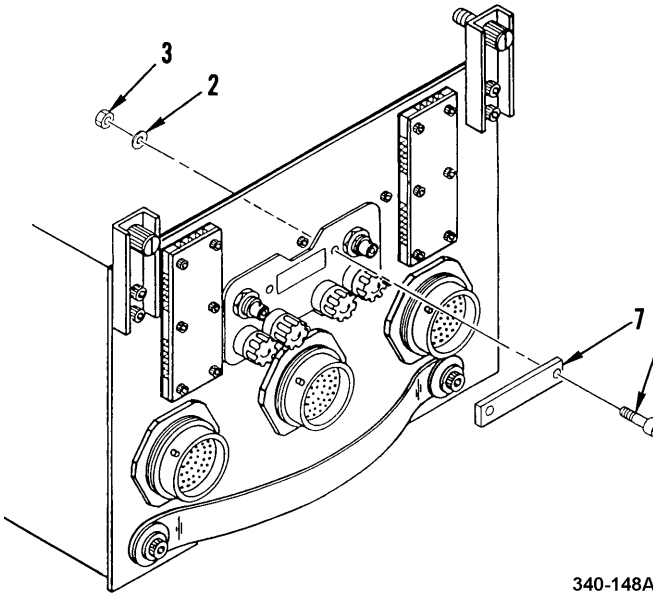
INSTALLATION

i. Install cover (7) using two capscrews (1), washers (2), and nuts (3).

j. Have installation inspected.

k. Install power frame assembly A1 (1 above).

END OF TASK



4-21. PEU CHASSIS POWER FRAME ASSEMBLY A1 REPAIR

This task covers replacement of:

Para	Item
1.	Rectifier CR1 thru CR6
2.	Rectifier CR7 thru CR9
3.	Semiconductor VR1
4.	Semiconductor Q1 or Q2
5.	Relay K1 thru K3
6.	Relay K4
7.	Transformer T2
8.	Transformer T1
9.	Transformer T3
10.	Transformer T4
11.	Microcircuit U1 thru U9
12.	Voltage regulator CCA A2
13.	Power interconnect CCA A1
14.	Semiconductor CR14
15.	Semiconductor CR10 thru CR13
16.	Connector P7
17.	Connector P8
18.	Capacitor C1 or C2

INITIAL SETUP

Tools

Aircraft armament repairman tool set and supplemental

Aircraft armament technical inspector tool set

Acid-type safety goggles

Materials/Parts (appendix C)

Capacitor (used on Q1 and Q2)

Capscrew (4 required when replacing and alternate power interconnect CCA)

Epoxy adhesive kit (Item 33)

Heat shrinkable insulation sleeving (Item 22)

Insulator washer (8 required when replacing an alternate power interconnect CCA)

Insulating tubing, 20 AWG (Item 55)

Isopropyl alcohol (Item 4)

Lacing and tying tape (Item 49)

Sealing, locking, and retaining compound (Item 12)

Sealing, locking, and retaining compound primer (Item 39)

Semiconductor (used on K1 thru K4)

Solder (Item 42)

Wiping cloth (Item 9)

Personnel Required

68J Aircraft Fire Control Repairer

66J30 Aircraft Armament Technical Inspector

NOTE

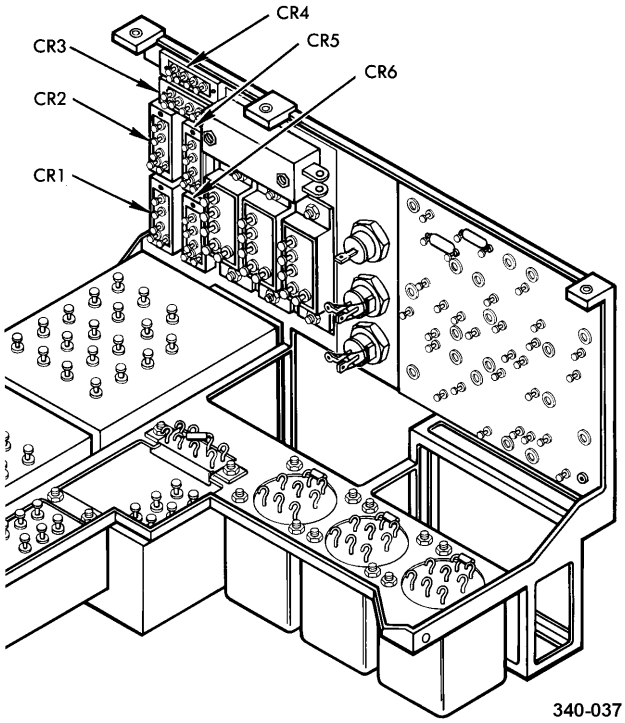
- Some wires are spot bonded with epoxy adhesive (Item 2), appendix C) to the frame and components for mechanical support. Before removing epoxy adhesive to perform maintenance tasks, note where wires are spot bonded. Refer to paragraph 2-6 for removal and application of epoxy adhesive spot bonds securing wiring.
- Pack repaired power frame assembly A1 (para 5-2).

4-21. PEU CHASSIS POWER FRAME ASSEMBLY A1 REPAIR (cont)

1. RECTIFIER CR1 THRU CR6 REPLACEMENT

NOTE

This procedure is for replacement of rectifier CR3. The same procedure is used for rectifiers CR1, CR2, and CR4 thru CR6.



REMOVAL

a. Tag and unsolder wires (1) from terminals (2) of rectifier CR3 (3). Refer to terminal identification diagram when tagging wires. Note position of terminals relative to frame (4).

b. Remove rectifier CR3 (3) by removing two screws (5), lockwashers (6), and washers (7).

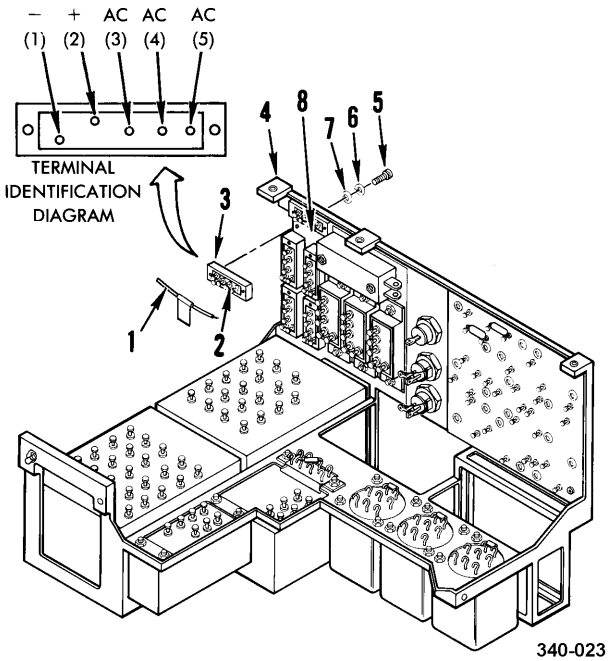
c. Check insulator pad (8) for scorching or other damage.

NOTE

Do not unsolder wires from items removed in step d below.

d. If damaged, remove insulator pad (8) as follows:

(1) Remove rectifiers CR1, CR2, and CR4 thru CR6 (steps a and b above).



4-21. PEU CHASSIS POWER FRAME ASSEMBLY A1 REPAIR (cont)

(2) Remove rectifiers CR7 thru CR9 (2 below).

(3) Remove semiconductor VR1 (3 below).

INSTALLATION

e. If insulator pad (8) was removed, install a replacement insulator pad.

(1) Install semiconductor VR1 (3 below).

(2) Install rectifiers CR7 thru CR9 (2 below).

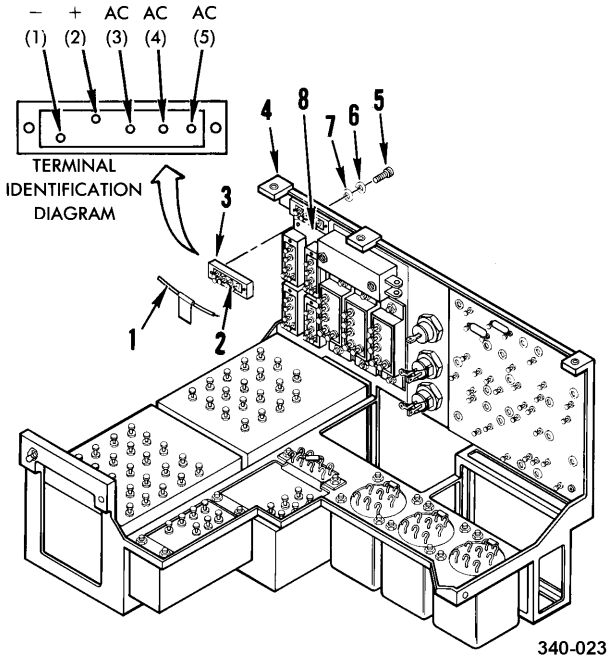
(3) Install rectifiers CR1, CR2, and CR4 thru CR6 (steps f and g below).

f. Install rectifier CR3 (3) on frame (4) as noted in step a above using two lockwashers (6), washers (7), and screws (5).

g. Solder tagged wires (1) to terminals (2) on rectifier CR3 (3). Remove tags.

h. Have rectifier CR3 installation inspected.

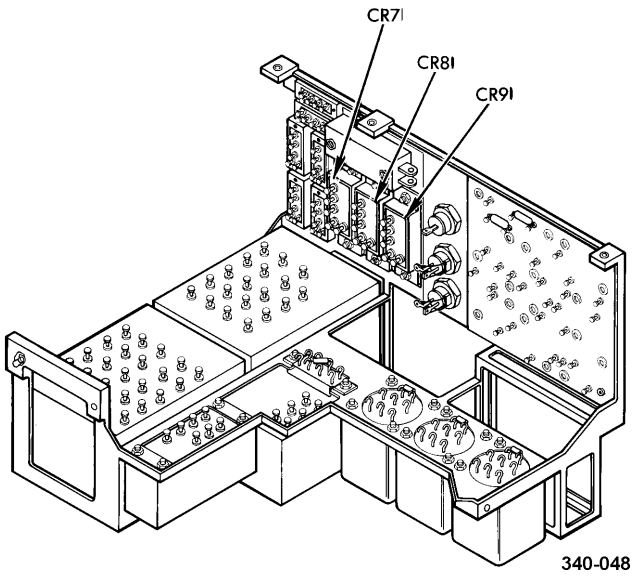
END OF TASK



2. RECTIFIER CR7 THRU CR9 REPLACEMENT

NOTE

This procedure is for replacement of rectifier CR7. The same procedure is used for rectifiers CR8 and CR9.



4-21. PEU CHASSIS POWER FRAME ASSEMBLY A1 REPAIR (cont)

REMOVAL

a. Tag and unsolder wires (1) from terminals (2) on rectifier CR7 (3). Refer to terminal identification diagram when tagging wires. Note position of terminals relative to frame (4).

b. Remove rectifier CR7 (3) by removing two locknuts (5), washers (6), and screws (7).

c. Check insulator pad (8) for scorching or other damage.

NOTE

Do not unsolder wires from items removed in step d below.

d. If damaged, remove insulator pad (8) as follows:

(1) Remove remaining rectifiers (repeat steps a and b above).

(2) Remove rectifiers CR1 thru CR6 (1 above).

(3) Remove semiconductor VR1 (3 below).

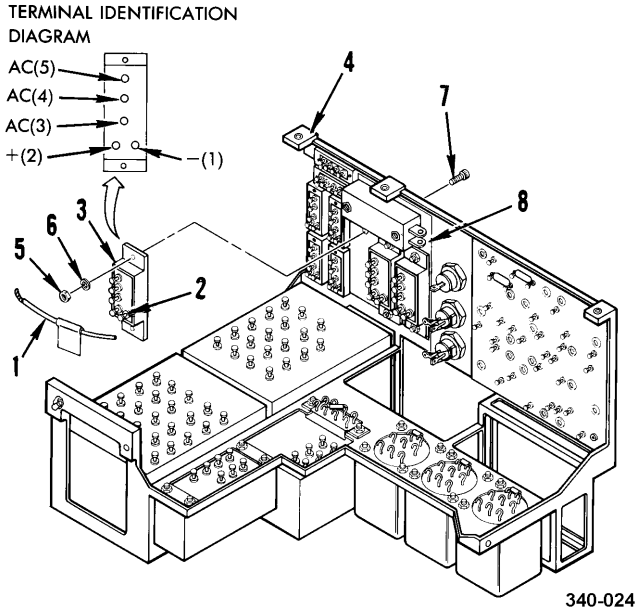
INSTALLATION

e. If insulator pad (8) was removed, install a replacement insulator pad.

(1) Install semiconductor VR1 (3 below).

(2) Install rectifiers CR1 thru CR6 (1 above).

(3) Install remaining rectifiers (repeat steps f and g below).



f. Install rectifier CR7 (3) on frame (4) as noted in step a above, using two screws (7), washers (6), and locknuts (5).

g. Solder tagged wires (1) to terminals (2) on rectifier CR7 (3). Remove tags.

h. Have rectifier CR7 (3) installation inspected.

END OF TASK

4-21. PEU CHASSIS POWER FRAME ASSEMBLY A1 REPAIR (cont)

3. SEMICONDUCTOR VR1 REPLACEMENT

REMOVAL

a. Tag and unsolder wires (1) from terminals (2) of semiconductor VR1 (3). Note position of white dot (5) on semiconductor VR1 (3) relative to frame (4).

b. Remove semiconductor VR1 (3) by removing two screws (6), washers (7), and lockwashers (8).

NOTE

Step c below applies to alternate semiconductor VR1 installation.

c. Remove semiconductor VR1 (3) by removing two screws (6), washers (7), and locknuts (9).

d. Check insulator pad (10) for scorching or other damage.

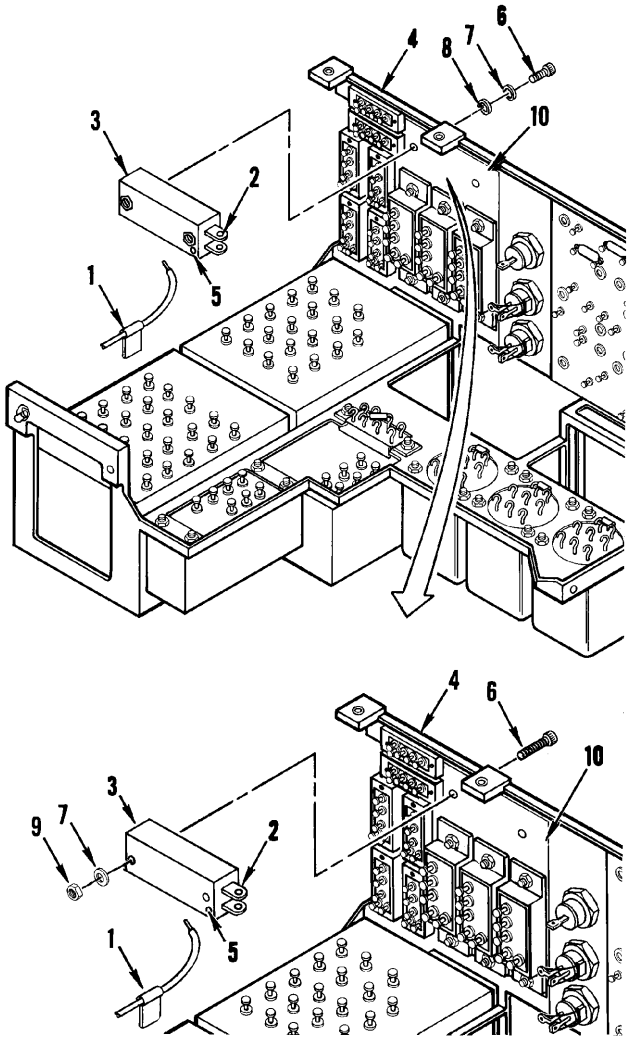
NOTE

Do not unsolder wires from items removed in step e below.

e. If damaged, remove insulator pad (10) as follows:

(1) Remove rectifiers CR1 thru CR6 (1 above).

(2) Remove rectifiers CR7 thru CR9 (2 above).



SEMICONDUCTOR VR1 ALTERNATE INSTALLATION 340-025

4-21. PEU CHASSIS POWER FRAME ASSEMBLY A1 REPAIR (cont)

INSTALLATION

f. If insulator pad (10) was removed, install a replacement insulator pad.

(1) Install rectifiers CR1 thru CR6 (1 above).

(2) Install rectifiers CR7 thru CR9 (2 above).

g. Install semiconductor VR1 (3) on frame (4) as noted in step a above, using two lockwashers (8), washers (7), and screws (6).

NOTE

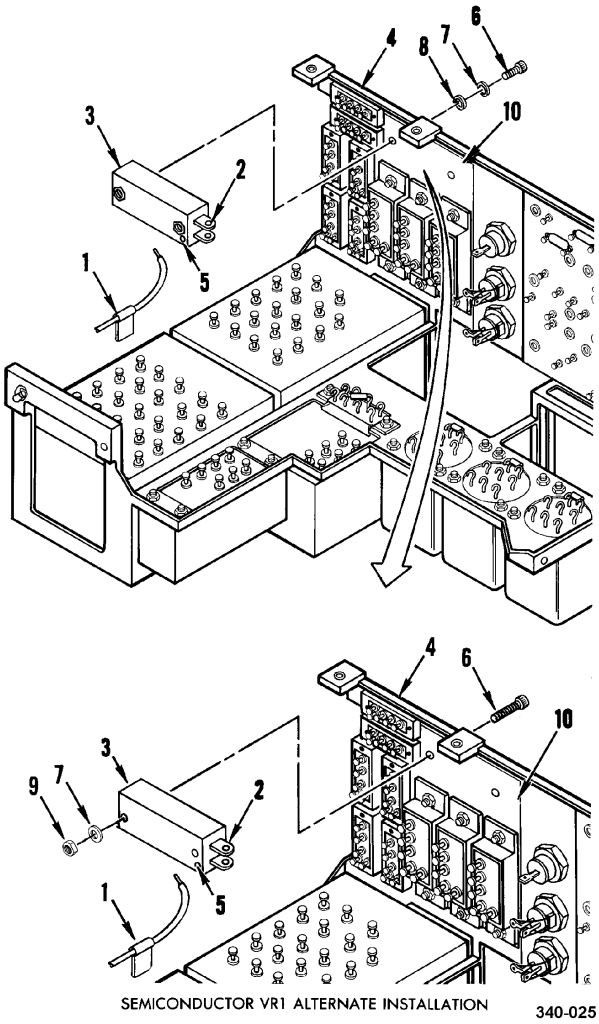
Step h below applies to alternate semiconductor VR1 installation.

h. Install semiconductor VR1 (3) as noted in step a above, using two locknuts (9), washers (7), and screws (6).

i. Solder tagged wires (1) to terminals (2) on semiconductor VR1. Remove tags.

j. Have semiconductor VR1 (3) installation inspected.

END OF TASK

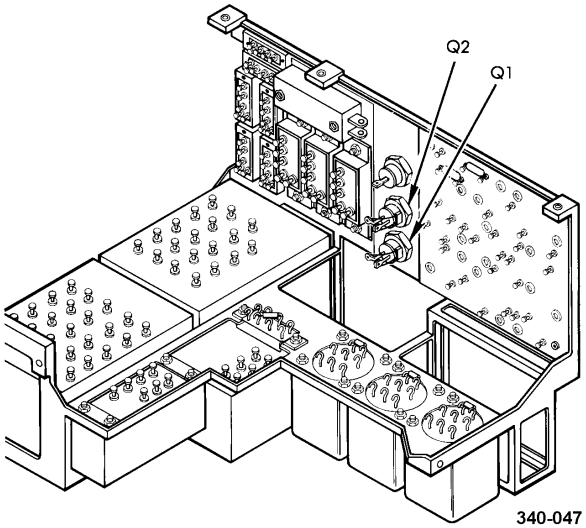


SEMICONDUCTOR VR1 ALTERNATE INSTALLATION 340-025

4. SEMICONDUCTOR Q1 OR Q2 REPLACEMENT

NOTE

This procedure is used for replacing semiconductor Q2. The same procedure is used for replacing semiconductor Q1.



340-047

4-21. PEU CHASSIS POWER FRAME ASSEMBLY A1 REPAIR (cont)

REMOVAL

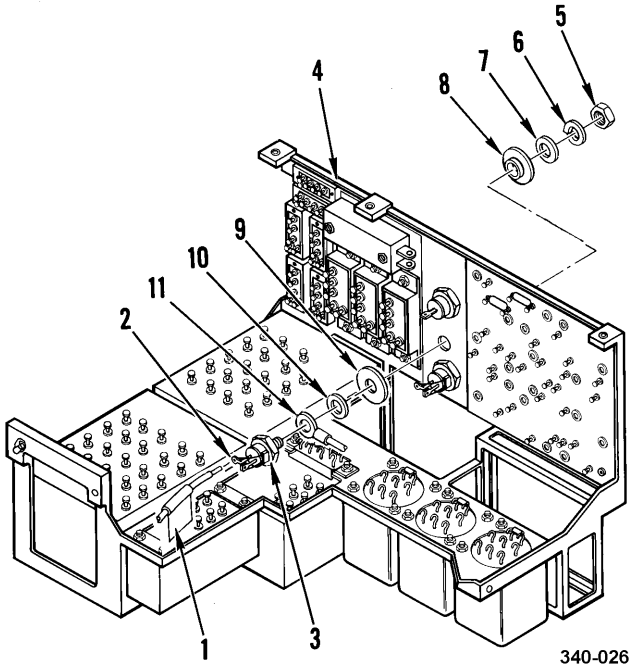
a. Tag and unsolder wires (1) from terminals (2) of semiconductor Q2 (3). Note position of terminals relative to frame (4).

b. Remove semiconductor Q2 (3).

(1) Remove nut (5), lockwasher (6), washer (7), and shoulder insulator washer (8).

(2) Remove semiconductor Q2 (3) from frame (4).

(3) Remove insulator washer (9), washer (10), and terminal lug (11) from semiconductor Q2 (3).



INSTALLATION

c. Install capacitor C2 on semiconductor Q2 (3) (18 below).

d. Install semiconductor Q2 (3).

(1) Install terminal lug (11), washer (10), and insulator washer (9) on semiconductor Q2 (3).

(2) Install semiconductor Q2 (3) in frame (4) as noted in step a above.

(3) On semiconductor Q2 (3), install shoulder insulator washer (8), washer (7), lockwasher (6), and nut (5).

e. Solder tagged wires (1) and capacitor leads to terminals (2) of semiconductor Q2 (3).

f. Have semiconductor Q2 (3) installation inspected.

END OF TASK

4-21. PEU CHASSIS POWER FRAME ASSEMBLY A1 REPAIR (cont)

5. RELAY K1 THRU K3 REPLACEMENT

NOTE

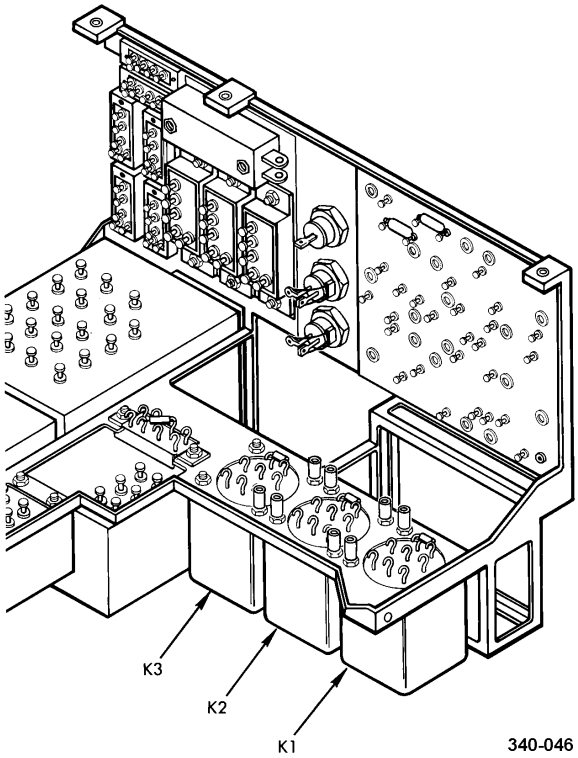
This procedure is used for replacing relay K1. The same procedure is used for replacing relay K2 or K3.

REMOVAL

a. Tag and unsolder wires (1) from terminals (2) on relay K1 (3). Note position of terminals relative to frame (4).

b. Remove heat shrinkable insulation sleeving (5) from screw threads of relay mounting studs.

c. Remove relay K1 (3) by removing four nuts (6), lockwashers (7), and washers (8).



340-046

INSTALLATION

d. Install semiconductor CR13 on relay K1 (3) (15 below).

e. Install relay K1 (3) as noted in step a above using four washers (8), lockwashers (7), and nuts (6).

NOTE

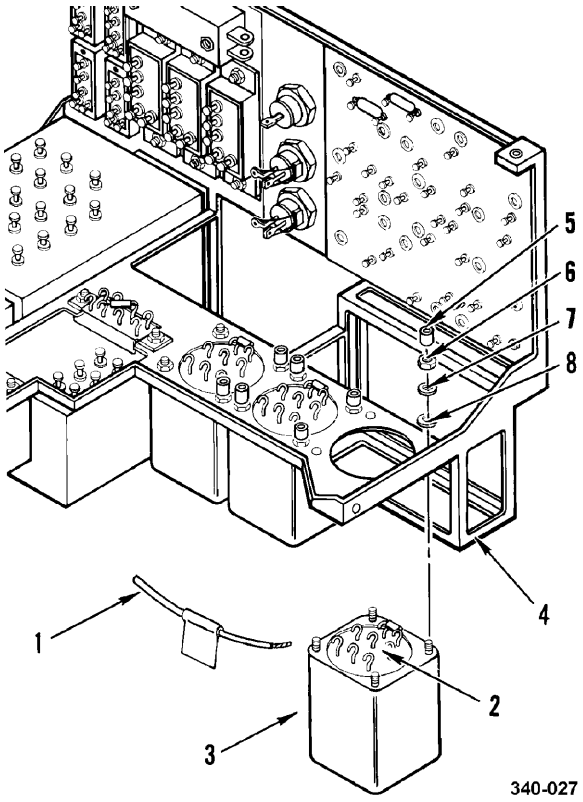
When replacing relay K3, sleeving is installed on the two mounting studs next to relay K2.

f. Install heat shrinkable insulation sleeving (5) on screw threads of four relay mounting studs and apply heat.

g. Solder tagged wires (1) to terminals (2) of relay K1 (3). Remove tags.

h. Have relay K1 (3) installation inspected.

END OF TASK



340-027

4-21. PEU CHASSIS POWER FRAME ASSEMBLY A1 REPAIR (cont)

6. RELAY K4 REPLACEMENT

REMOVAL

a. Tag and unsolder wires (1) from terminals (2) of relay K4 (3). Note position of terminals relative to frame (4).

b. Remove relay K4 (3) by removing two locknuts (5), washers (6 and 7), and screws (8).

INSTALLATION

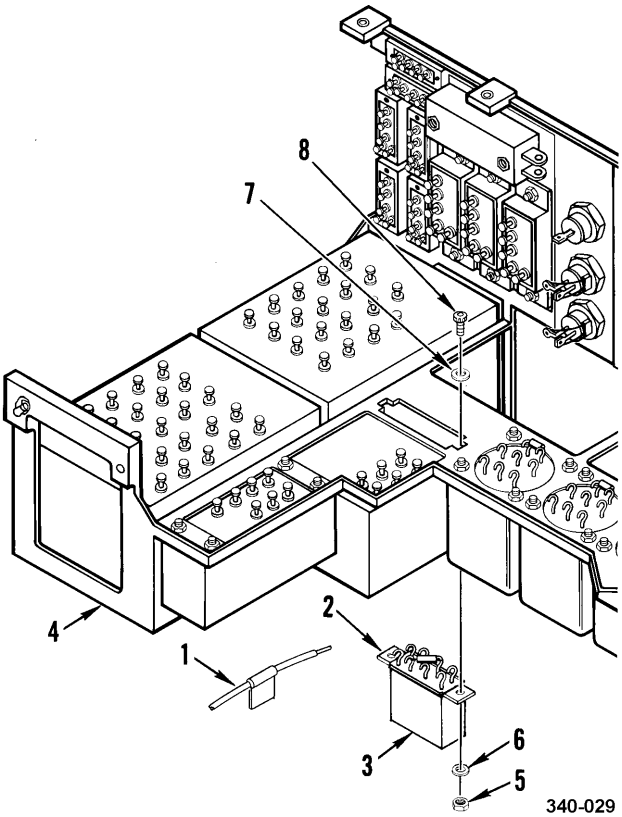
c. Install semiconductor CR10 on relay K4 (3) (15 below).

d. Install relay K4 (3) as noted in step a above, using two screws (8), washers (6 and 7), and locknuts (5).

e. Solder tagged wires (1) to terminals (2) of relay K4 (3). Remove tags.

f. Have relay K4 (3) installation inspected.

END OF TASK



4-21. PEU CHASSIS POWER FRAME ASSEMBLY A1 REPAIR (cont)

7. TRANSFORMER T2 REPLACEMENT

REMOVAL

NOTE

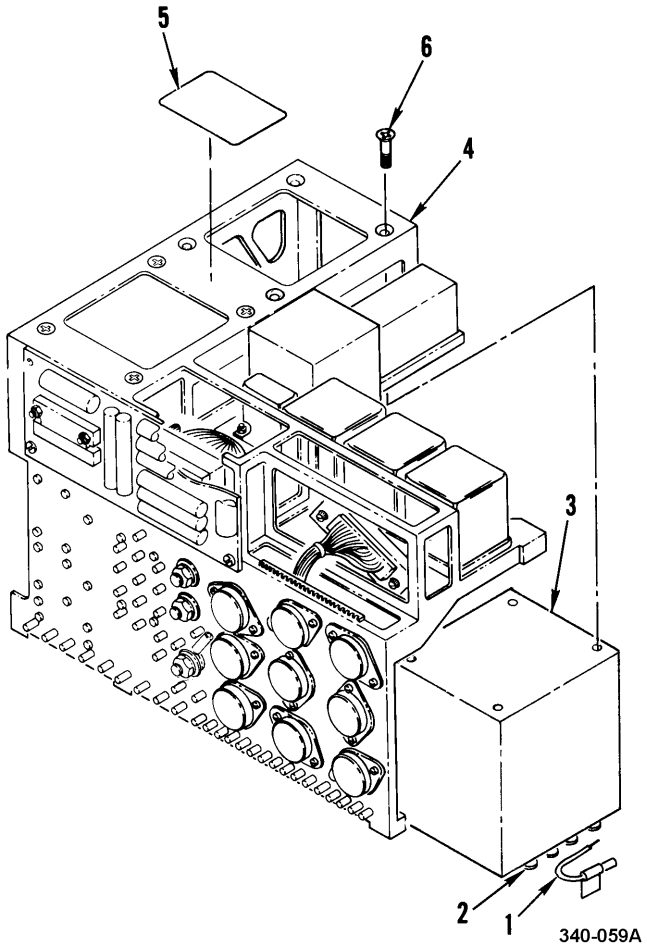
If necessary, cut lacing and tying tape and move wires aside to gain access to faulty transformer.

a. Tag and unsolder wires (1) from terminals (2) of transformer T2 (3).

b. Remove transformer T2 (3).

(1) Note position of terminals (2) relative to frame (4).

(2) Remove transformer T2 (3) by carefully peeling off decal (5) and removing four screws (6). The decal is needed for installation.



INSTALLATION

c. Remove old sealing, locking, and retaining compound from four screws (6) (para 2-6).

d. Apply sealing, locking, and retaining compound to four screws (6). Use type I application (para 2-6).

e. Install transformer T2 (3) on frame (4) so that terminals (2) are positioned as noted in step b above, using four screws (6).

f. Solder tagged wires (1) to terminals (2). Remove tags.

NOTE

If lacing and tying tape was not cut to do this task, go to step h below.

g. Form and lace wires into a neat bundle using lacing and tying tape.

h. Have transformer T2 (3) installation inspected.

4-21. PEU CHASSIS POWER FRAME ASSEMBLY A1 REPAIR (cont)

WARNING

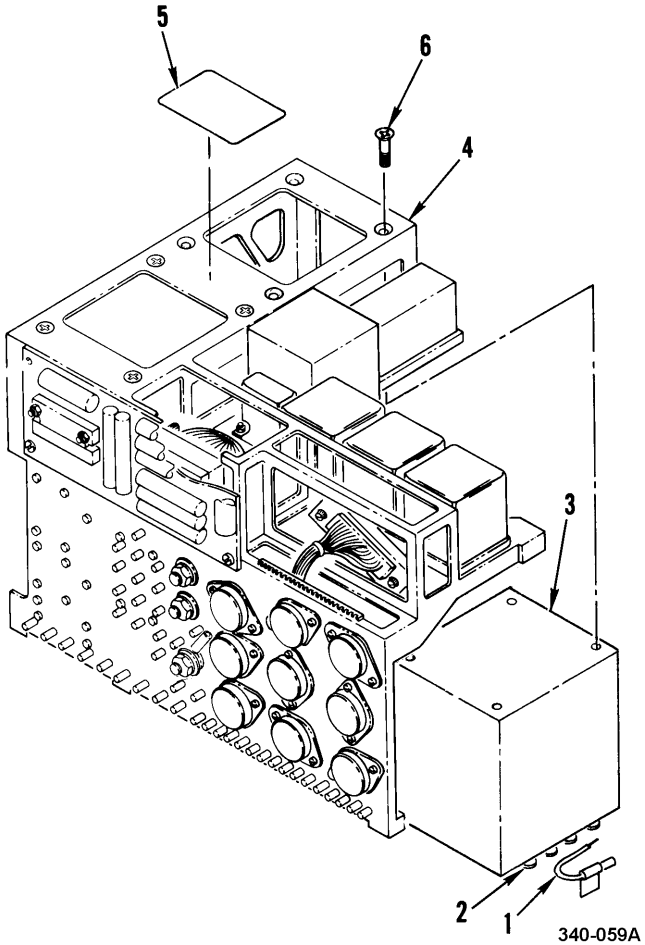
ISOPROPYL ALCOHOL

- Flammable, toxic, irritating. Can cause breathing problems, eye damage.
- Don't: Use near flames or sparks, let it get on skin, or breathe vapors.
- Do: Use in well-ventilated area, close containers when not using. Wear acid-type safety goggles, rubber gloves, and rubber apron.
- If it contacts eyes, wash eyes with running water. Get medical help at once.
- If you experience any breathing problems, get to fresh air at once.

i. Moisten cloth with isopropyl alcohol and wipe mounting surface for decal (5).

j. Install decal (5).

END OF TASK



8. TRANSFORMER T1 REPLACEMENT

REMOVAL

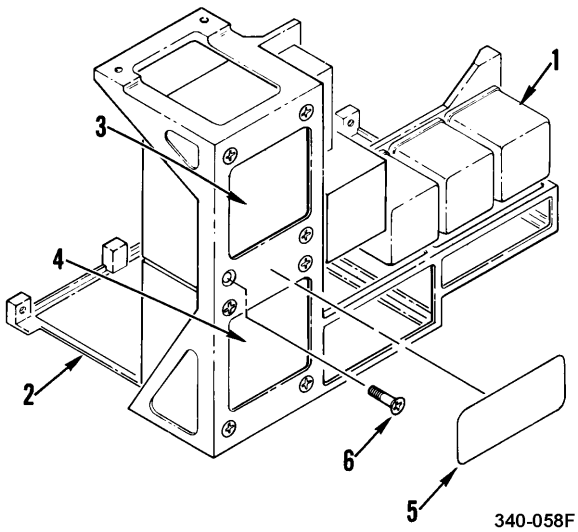
a. Position power frame assembly A1 (1) on heat sink side (2).

NOTE

If necessary, cut lacing and tying tape and move wires aside to gain access to faulty transformer.

b. Move transformer T2 (3) aside to permit removal of transformer T1 (4).

(1) Carefully peel off decal (5) and remove four screws (6). The decal is needed for installation.



4-21. PEU CHASSIS POWER FRAME ASSEMBLY A1 REPAIR (cont)

CAUTION

Use care when rotating transformer T2 not to pull wires loose from terminals or damage other hardware in power frame assembly A1.

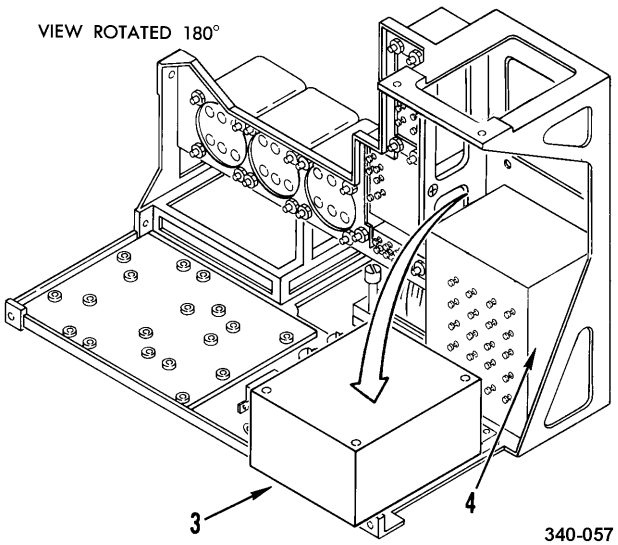
(2) Rotate transformer T2 (3) to access transformer T1 (4).

c. Tag and unsolder wires (7) from terminals (8) of transformer T1 (4).

d. Remove transformer T1 (4).

(1) Note position of terminals (8) relative to frame (9).

(2) Remove transformer T1 (4) by removing four screws (10).

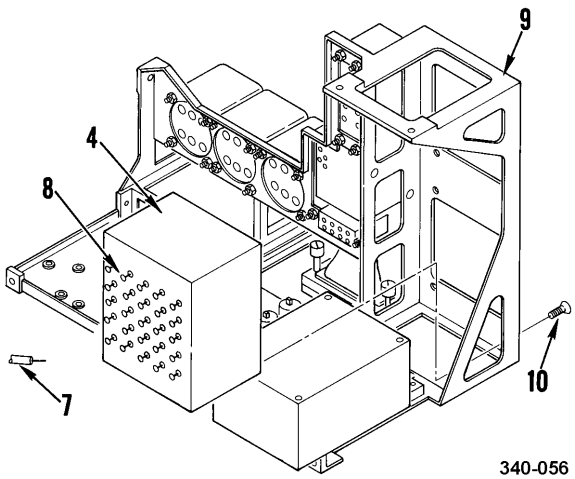


INSTALLATION

e. Remove old sealing, locking, and retaining compound from eight transformer mounting screws (para 2-6).

f. Apply sealing, locking, and retaining compound to four screws (10). Use type I application (para 2-6).

g. Install transformer T1 (4) on frame (9) so that terminals (8) are positioned as noted in step d above using four screws (10).



h. Solder tagged wires (7) to terminals (8). Remove tags.

4-21. PEU CHASSIS POWER FRAME ASSEMBLY A1 REPAIR (cont)

i. Apply sealing, locking, and retaining compound to four screws (6). Use type I application (para 2-6).

j. Return transformer T2 (3) to original position.

(1) Rotate transformer T2 (3) so holes in transformer are alined with holes in frame (9).

(2) Install four screws (6).

NOTE

If lacing and tying tape was not cut to do this task, go to step l below.

k. Form and lace wires into a neat bundle, using lacing and tying tape.

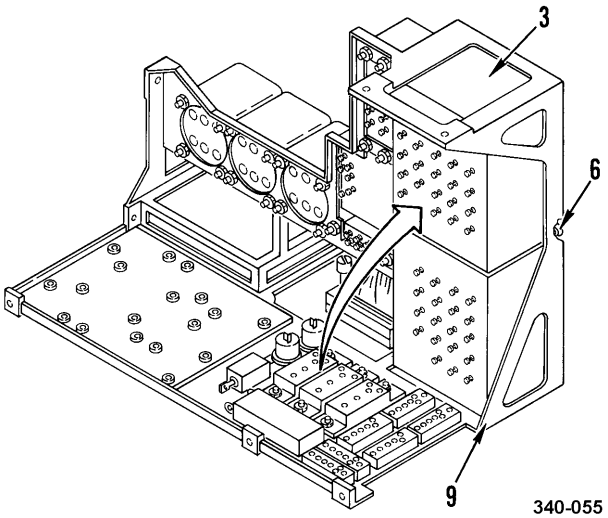
l. Have transformer T1 installation inspected.

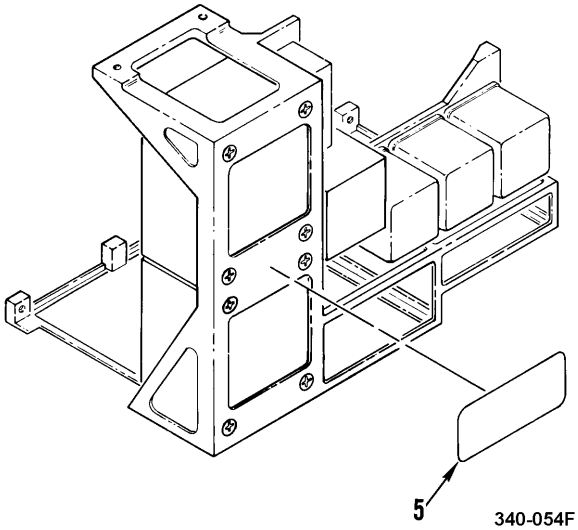
WARNING

ISOPROPYL ALCOHOL

- Flammable, toxic, irritating. Can cause breathing problems, eye damage.
- Don't: Use near flames or sparks, let it get on skin, or breathe vapors.
- Do: Use in well-ventilated area, close containers when not using. Wear acid-type safety goggles, rubber gloves, and rubber apron.
- If it contacts eyes, wash eyes with running water. Get medical help at once.
- If you experience any breathing problems, get to fresh air at once.

m. Moisten cloth with isopropyl alcohol and wipe mounting surface for decal (5).





n. Install decal (5).

END OF TASK

4-21. PEU CHASSIS POWER FRAME ASSEMBLY A1 REPAIR (cont)

9. TRANSFORMER T3 REPLACEMENT

REMOVAL

a. Tag and unsolder wires (1) from terminals (2) of transformer T3 (3). Note position of terminals relative to frame (4).

b. Remove transformer T3 (3) by removing four nuts (5), lockwashers (6), and washers (7).

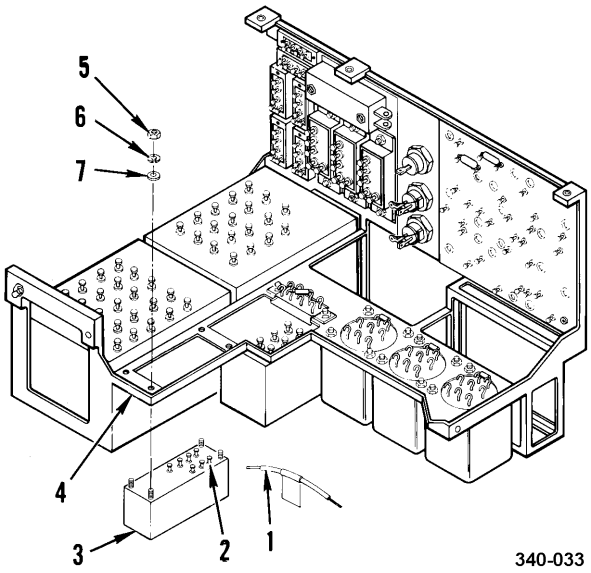
INSTALLATION

c. Install transformer T3 (3) as noted in step a above using four washers (7), lockwashers (6), and nuts (5).

d. Solder tagged wires (1) to terminals (2) of transformer T3 (3). Remove tags.

e. Have transformer T3 (3) installation inspected.

END OF TASK



10. TRANSFORMER T4 REPLACEMENT

REMOVAL

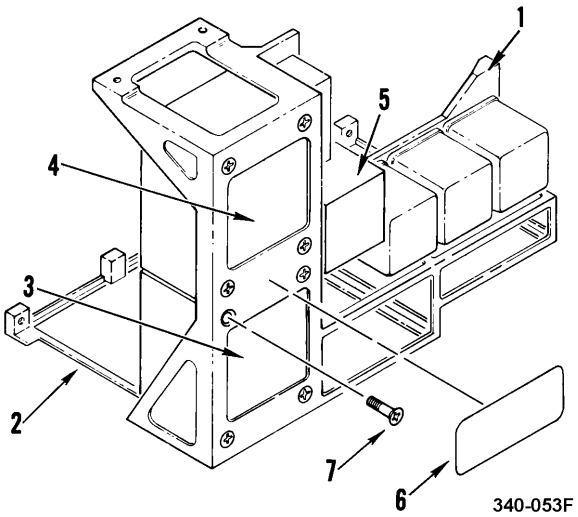
a. Position power frame assembly A1 (1) on heat sink side (2).

NOTE

If necessary, cut lacing and tying tape and move wires aside to gain access to faulty transformer.

b. Move transformers T1 (3) and T2 (4) aside to access transformer T4 (5).

(1) Carefully peel off decal (6) and remove eight screws (7). Support transformers T1 (3) and T2 (4) as screws are removed. The decal is needed for installation.



4-21. PEU CHASSIS POWER FRAME ASSEMBLY A1 REPAIR (cont)

CAUTION

Use care when rotating transformers T1 and T2 not to pull wires loose from terminals or damage other hardware in power frame assembly A1.

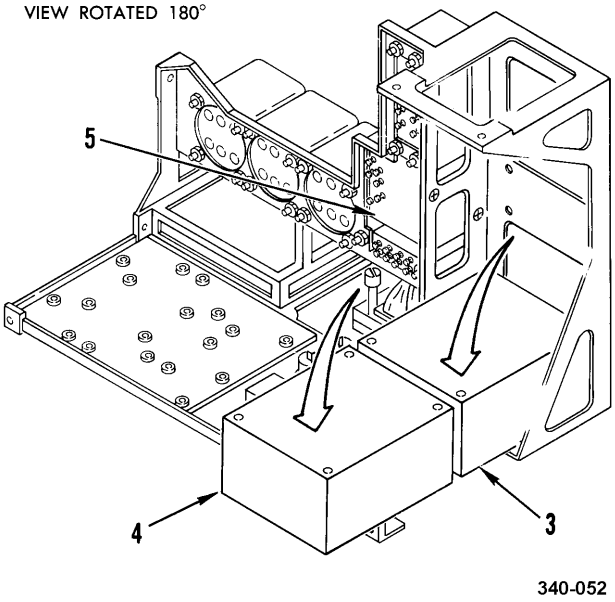
(2) Rotate transformers T1 (3) and T2 (4) to access transformer T4 (5).

c. Tag and unsolder wires (8) connected to terminals (9) of transformer T4 (5).

d. Remove transformer T4 (5).

(1) Note position of terminals (9) relative to frame (10).

(2) Remove transformer T4 (5) by removing two screws (11).



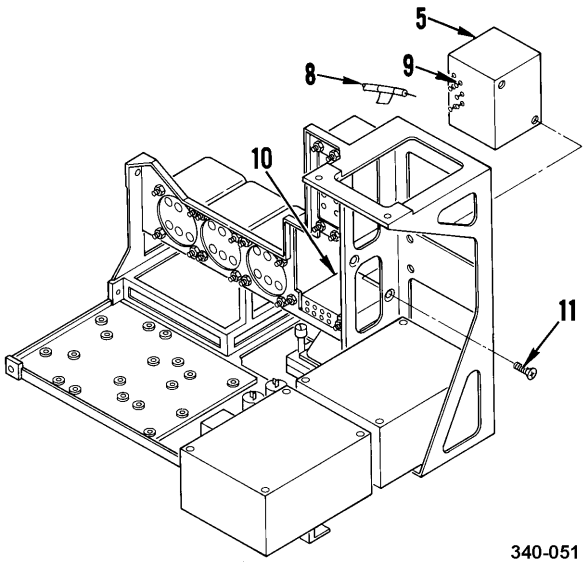
340-052

INSTALLATION

e. Remove old sealing, locking, and retaining compound from 10 transformer mounting screws (para 2-6).

f. Apply sealing, locking, and retaining compound to two screws (11). Use type 1 application (para 2-6).

g. Install transformer T4 (5) so that terminals (9) are positioned as noted in step d above, using two screws (11).



340-051

h. Solder tagged wires (8) to terminals (9). Remove tags.

i. Have transformer T4 (5) installation inspected.

4-21. PEU CHASSIS POWER FRAME ASSEMBLY A1 REPAIR (cont)

j. Apply sealing, locking, and retaining compound to eight screws (7). Use type I application (para 2-6).

k. Return transformers T1 (3) and T2 (4) to original positions.

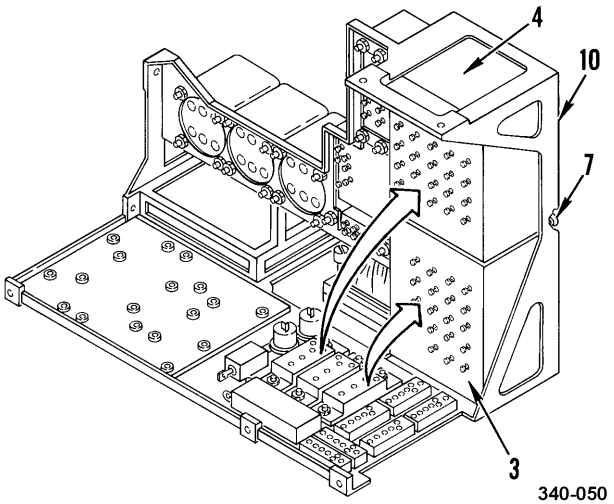
(1) Rotate transformers T1 (3) and T2 (4) so holes in transformers are alined with holes in frame (10).

(2) Install eight screws (7).

NOTE

If lacing and tying tape was not cut to do this task, go to step m below.

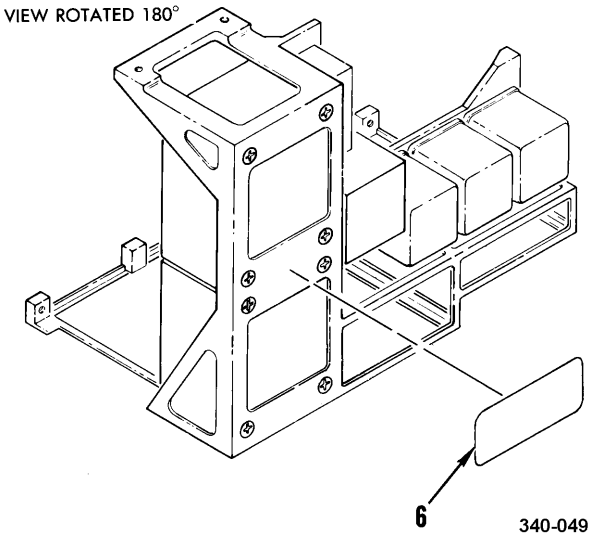
l. Form and lace wires into a neat bundle, using lacing and tying tape.



WARNING

ISOPROPYL ALCOHOL

- Flammable, toxic, irritating. Can cause breathing problems, eye damage.
- Don't: Use near flames or sparks, let it get on skin, or breathe vapors.
- Do: Use in well-ventilated area, close containers when not using. Wear acid-type safety goggles, rubber gloves, and rubber apron.
- If it contacts eyes, wash eyes with running water. Get medical help at once.
- If you experience any breathing problems, get to fresh air at once.



m. Moisten cloth with isopropyl alcohol and wipe mounting surface for decal (6).

n. Install decal (6).

END OF TASK

4-21. PEU CHASSIS POWER FRAME ASSEMBLY A1 REPAIR (cont)

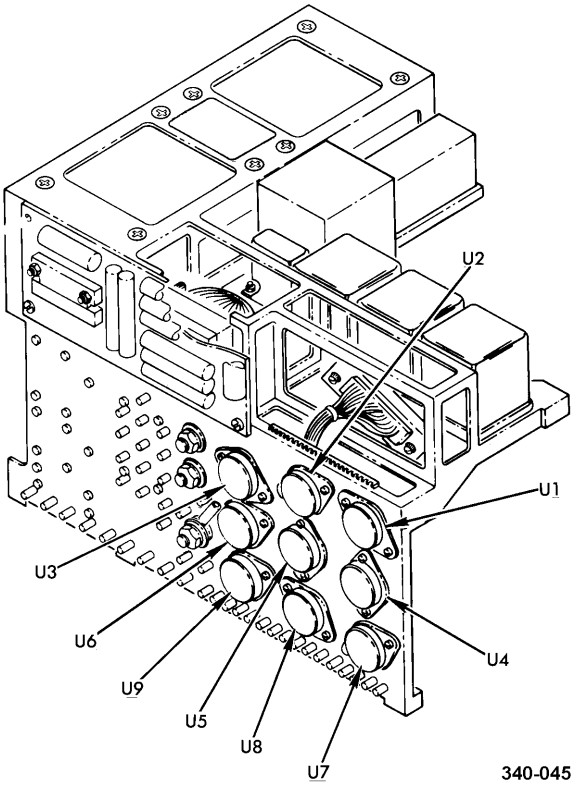
11. MICROCIRCUIT U1 THRU U9 REPLACEMENT

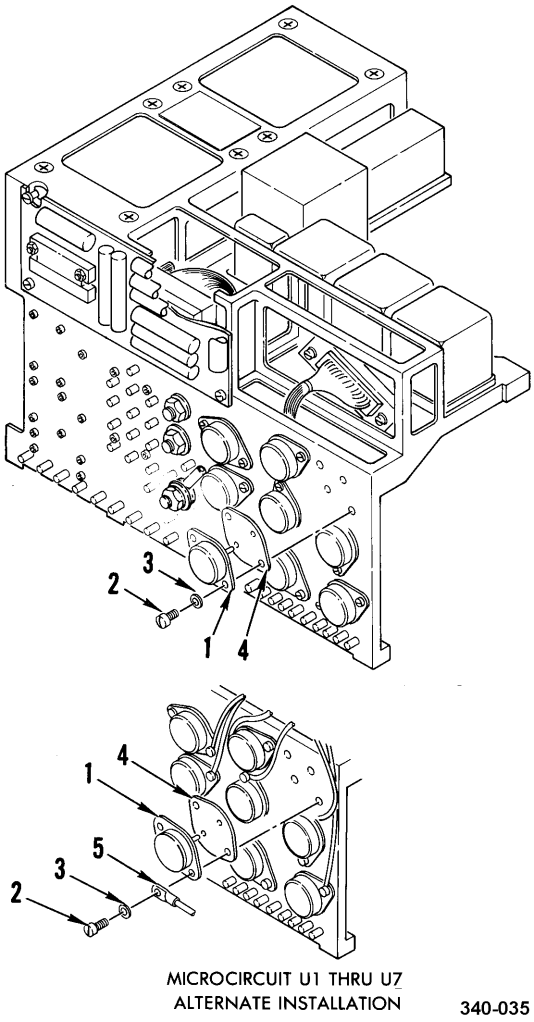
CAUTION

Microcircuits are electrostatic discharge sensitive (ESDS) devices. Refer to paragraph 2-8 for handling requirements before starting this task to prevent damage to the devices.

NOTE

This procedure is used for replacing microcircuit U1. The same procedure is used for replacing microcircuits U2 thru U9.





REMOVAL

a. Remove microcircuit U1 (1) by removing two screws (2), two lockwashers (3), and insulator (4).

NOTE

Step b below applies to alternate microcircuit (U1 thru U7) installation.

b. Remove microcircuit U1 (1) by removing two screws (2), lockwashers (3), terminal lug (5), and insulator (4). Note which screw secures the terminal lug.

4-21. PEU CHASSIS POWER FRAME ASSEMBLY A1 REPAIR (cont)

INSTALLATION

CAUTION

Two types of microcircuits are installed on power frame assembly A1. When replacing more than one microcircuit, install the right type in the proper location or the equipment can be damaged. Refer to the list below when installing each microcircuit.

Microcircuit Location	Type
U1 thru U3	13084047
U7 thru U9	13084047
U4 thru U6	M38510/11704BYC or 7703401YX

c. Install insulator (4) on microcircuit U1 (1).

d. Install microcircuit U1 (1) using two lockwashers (3), and screws (2).

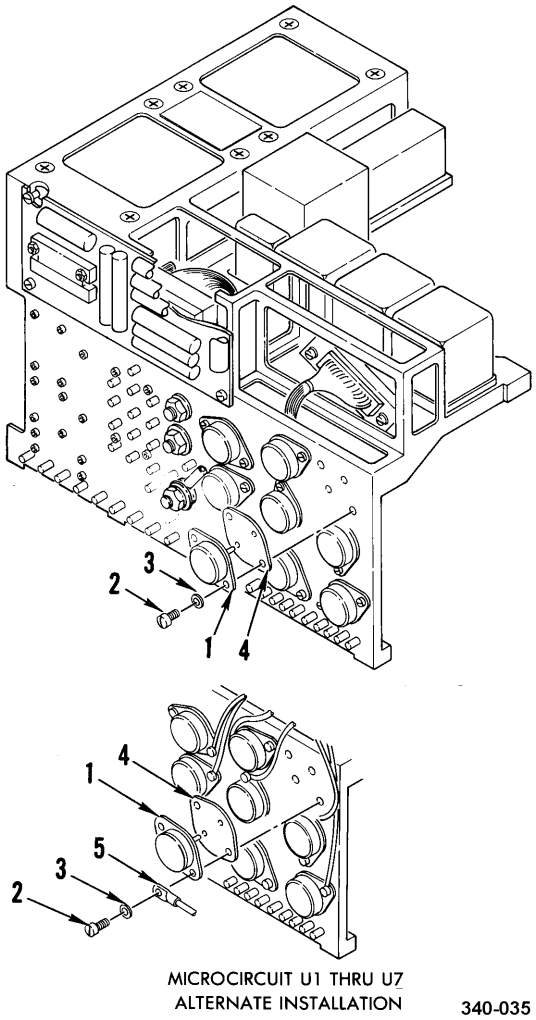
NOTE

Step e below applies to alternate microcircuit (U1 thru U7) installation.

e. Install microcircuit U1 (1) using terminal lug (5), two lockwashers (3), and screws (2). Be sure terminal lug is secured by screw noted in step b above.

f. Torque two screws (2) to 7 in-lb.

END OF TASK



MICROCIRCUIT U1 THRU U7
ALTERNATE INSTALLATION

340-035

4-21. PEU CHASSIS POWER FRAME ASSEMBLY A1 REPAIR (cont)

12. VOLTAGE REGULATOR CCA A2 REPLACEMENT

REMOVAL

a. Remove microcircuits U1 thru U9 (11 above). Label each microcircuit with its reference designation location before removing.

NOTE

If the power frame assembly had the alternate microcircuit installation (11 above), do step b below. If not, go to step c below.

b. Remove and discard jumper wires from connector P8 (1) that were attached by terminal lugs to microcircuits U1 thru U7 (11 above).

c. Tag and unsolder wires (2) from terminals (3) of voltage regulator CCA A2 (4).

d. Remove voltage regulator CCA A2 (4) by removing three screws (5), lockwashers (6), and washers (7).

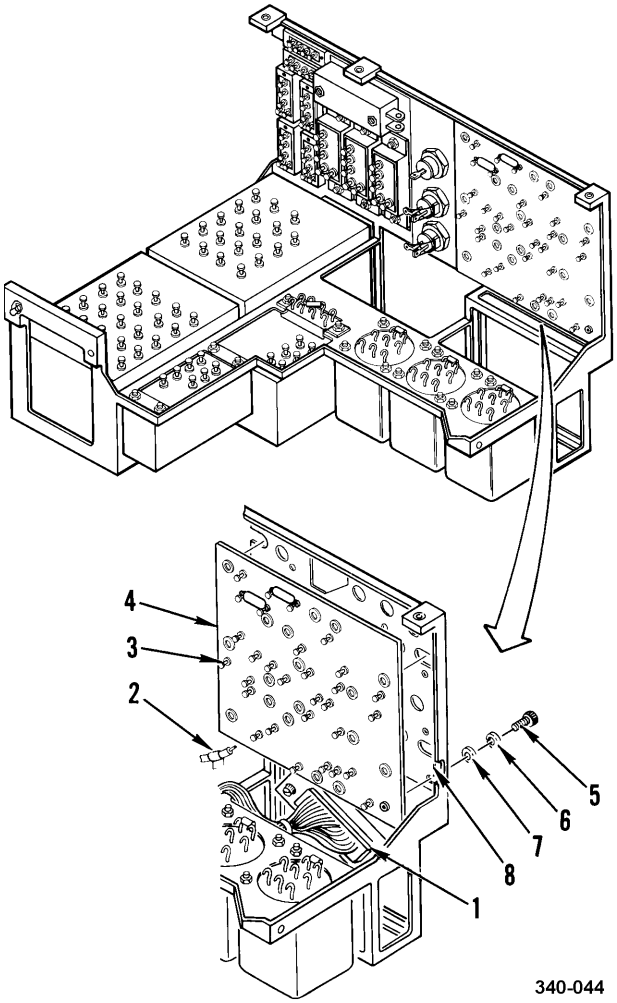
e. Check insulator (8) for nicks, cuts, or breaks. Replace if damaged.

INSTALLATION

f. Install voltage regulator CCA A2 (4) using three screws (5), lockwashers (6), and washers (7).

g. Solder tagged wires (2) to terminals (3) of voltage regulator CCA TB1 (4).

h. Have voltage regulator CCA A2 installation inspected.



i. Install microcircuits U1 thru U9 (11 above). Be sure they are at the locations labeled in step a above.

END OF TASK

4-21. PEU CHASSIS POWER FRAME ASSEMBLY A1 REPAIR (cont)

13. POWER INTERCONNECT CCA A1 REPLACEMENT

REMOVAL

NOTE

If removing power interconnect CCA A1 (1), omit step b below. If removing alternate power interconnect CCA A1 (2), omit step a below.

a. Remove power interconnect CCA A1 (1) by removing four capscrews (3) and eight insulator washers (4).

b. Remove alternate power interconnect CCA A1 (2) by removing four capscrews (5) and washers (6). Discard hardware.

c. Disconnect connector P7 (7) from connector J7 (8) by loosening two screwlocks (9).

INSTALLATION

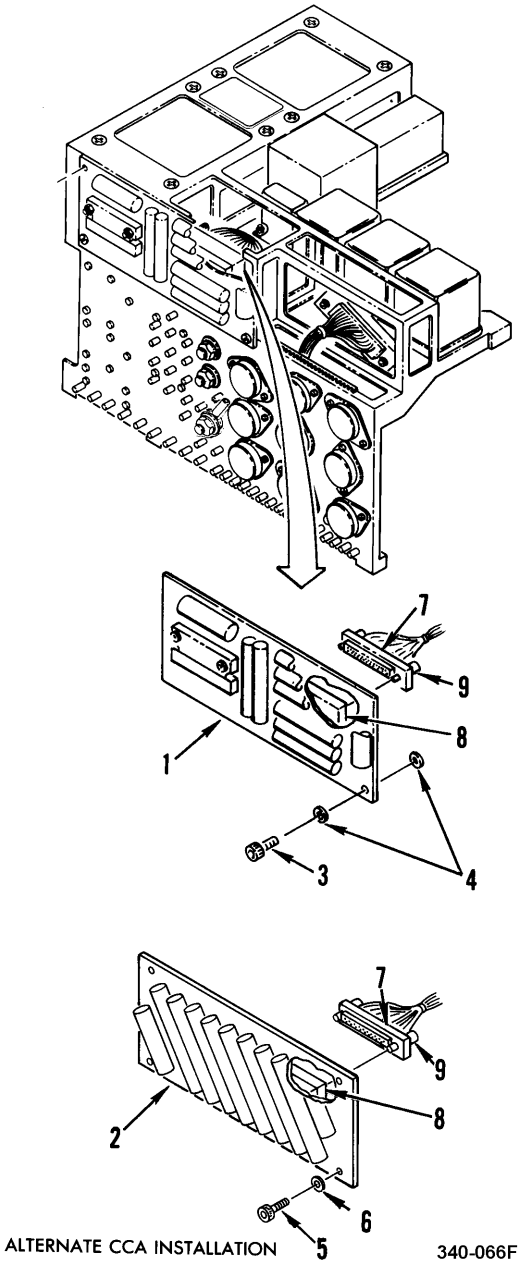
NOTE

If an alternate power interconnect CCA A1 was removed, do step d below. If not, go to step e below.

d. Obtain four new capscrews (3) and eight new insulator washers (4).

e. Mate connector P7 (7) with connector J7 (8) and tighten two screwlocks (9).

f. Install power interconnect CCA A1 (1) using eight insulator washers (4) and four capscrews (3).



ALTERNATE CCA INSTALLATION 340-066F

END OF TASK

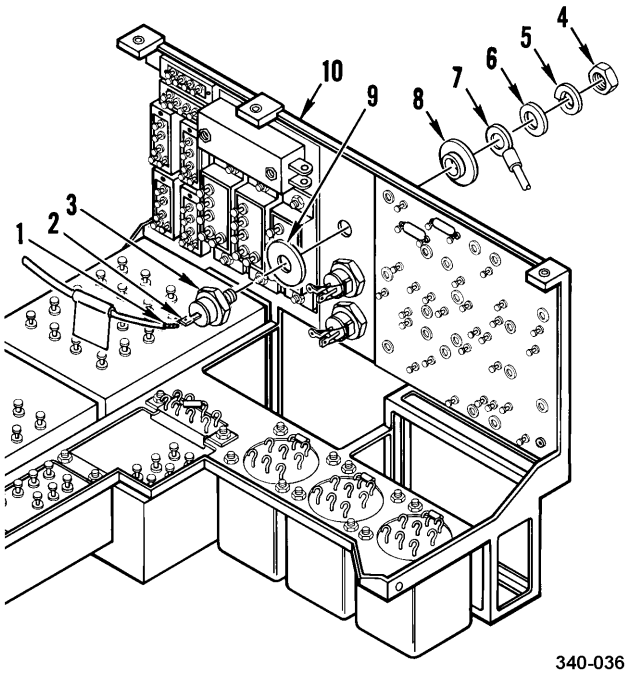
4-21. PEU CHASSIS POWER FRAME ASSEMBLY A1 REPAIR (cont)

14. SEMICONDUCTOR CR14 REPLACEMENT

REMOVAL

a. Unsolder wire (1) connected to anode (2) on semiconductor CR14 (3).

b. Remove semiconductor CR14 (3) by removing nut (4), lockwasher (5), washer (6), terminal lug (7), shoulder insulator washer (8), and insulator washer (9).



INSTALLATION

c. Install semiconductor CR14 (3).

(1) Install insulator washer (9) on semiconductor CR14 (3).

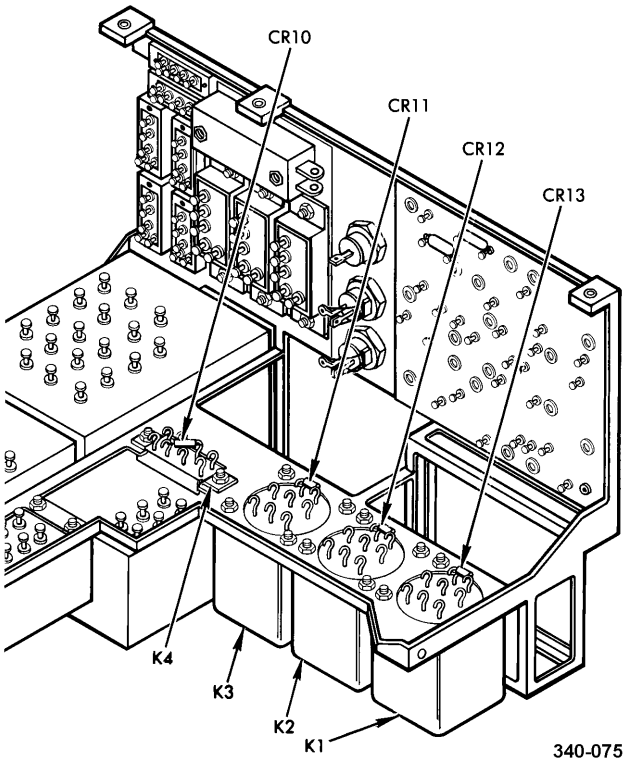
(2) Insert semiconductor CR14 (3) in frame (10).

(3) Install shoulder insulator washer (8), terminal lug (7), washer (6), lockwasher (5), and nut (4).

d. Solder wire (1) to anode (2) on semiconductor CR14 (3).

e. Have semiconductor CR14 (3) installation inspected.

END OF TASK



4-21. PEU CHASSIS POWER FRAME ASSEMBLY A1 REPAIR (cont)

15. SEMICONDUCTOR CR10 THRU CR13 REPLACEMENT

NOTE

This procedure is used for replacing semiconductor CR13. The same procedure is used for replacing semiconductors CR10 thru CR12.

REMOVAL

a. Note position of banded end of semiconductor CR13 (1) before removing semiconductor CR13 from relay K1 (2).

b. Tag and unsolder all wires from terminals X1 and X2 (3).

c. Unsolder leads of semiconductor CR13 (1) from terminals (3).

CAUTION

Use care not to damage relay K1 when prying semiconductor free of epoxy adhesive.

d. Carefully pry semiconductor CR13 (1) from epoxy adhesive.

INSTALLATION

e. Remove old epoxy adhesive from surface of relay K1 (2) (para 2-6).

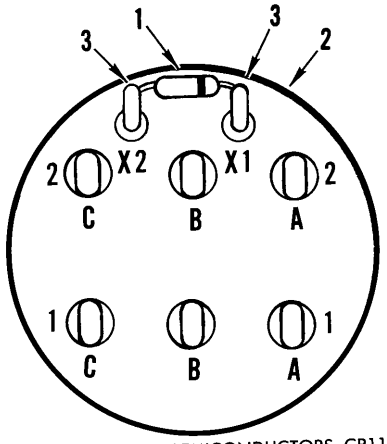
f. Install semiconductor CR13 (1) on relay K1 (2) with banded end positioned as noted in step a above.

g. Solder tagged wires and leads of semiconductor CR13 (1) to terminals X1 and X2 (3). Remove tags.

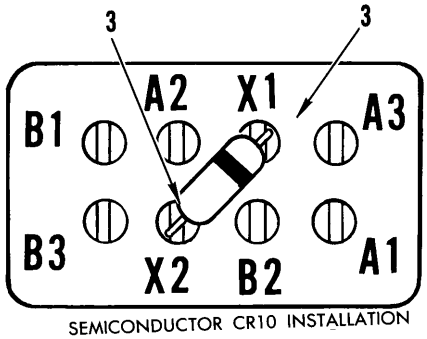
h. Have semiconductor CR13 (1) installation inspected.

i. Apply epoxy adhesive kit to surface of relay K1 (2) and body of semiconductor CR13 (1) (para 2-6).

END OF TASK



TYPICAL INSTALLATION FOR SEMICONDUCTORS CR11 THRU CR13



SEMICONDUCTOR CR10 INSTALLATION

340-028

4-21. PEU CHASSIS POWER FRAME ASSEMBLY A1 REPAIR (cont)

16. CONNECTOR P7 REPLACEMENT

REMOVAL

NOTE

If removing power interconnect CCA A1 (1), omit step b below. If removing alternate power interconnect CCA A1 (2), omit step a below.

a. Remove power interconnect CCA A1 (1) by removing four capscrews (3) and eight insulator washers (4).

b. Remove alternate power interconnect CCA A1 (2) by removing four capscrews (5) and washers (6).

c. Disconnect connector P7 (7) from connector J7 (8) by loosening two screwlocks (9).

d. Remove connector P7 (7) from wiring harness (10) (para 2-5, item 21).

INSTALLATION

e. Install connector P7 (7) on wiring harness (10) (para 2-5, item 21).

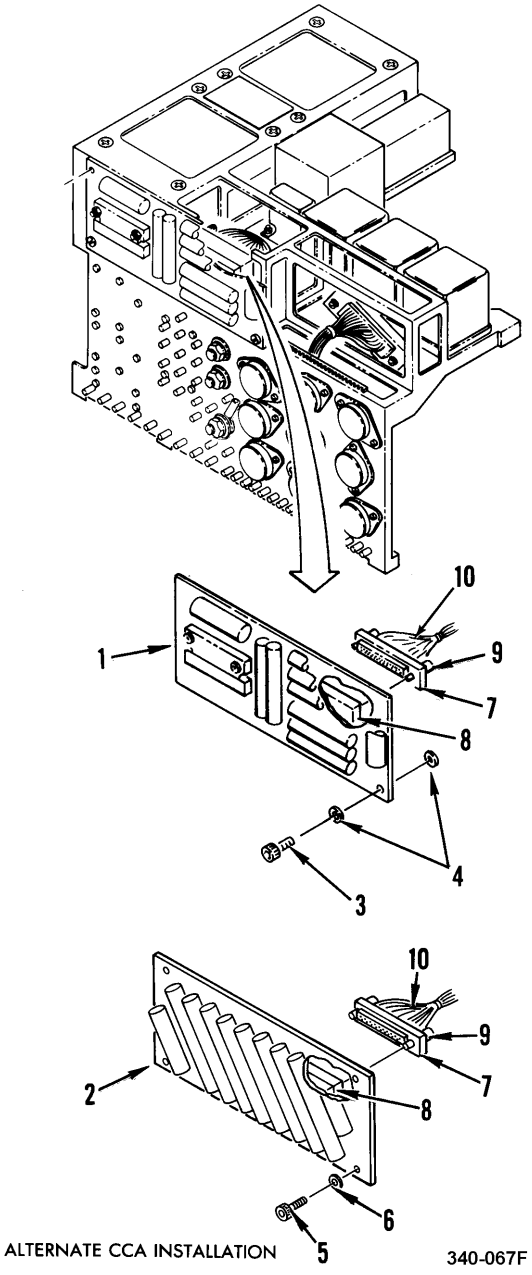
NOTE

If installing alternate power interconnect CCA A1 (2), omit step f below. If installing power interconnect CCA A1 (1), omit steps f, g, and i below.

f. Remove old corrosion inhibitive sealing and coating compound from capscrews (5) (para 2-6).

g. Apply corrosion inhibitive sealing and coating compound to capscrews (5). Use class 1A application (para 2-6).

h. Connect connector P7 (7) with connector J7 (8) and tighten two screwlocks (9).



ALTERNATE CCA INSTALLATION 340-067F

i. Install alternate power interconnect CCA A1 (2) using four washers (6) and capscrews (5).

j. Install power interconnect CCA A1 (1) using eight insulator washers (4) and four capscrews (3).

END OF TASK

4-21. PEU CHASSIS POWER FRAME ASSEMBLY A1 REPAIR (cont)

17. CONNECTOR P8 REPLACEMENT

REMOVAL

NOTE

Replacement connector (P8) will be supplied with contacts packaged unassembled. Coupling bushings, screws, and polarization keys are not supplied with the connector. Retain this hardware for use in INSTALLATION.

a. Remove two screwlocks (1) from faulty connector P8 (2).

b. Remove connector P8 (2) from wiring harness (3) (2-5, item 22).

INSTALLATION

NOTE

Reuse retained hardware (from REMOVAL) for reassembly.

c. Install connector P8 (2) on wiring harness (3) (para 2-5, item 22).

d. Install two screwlocks (1) on connector P8 (2).

END OF TASK

18. CAPACITOR C1 OR C2 REPLACEMENT

NOTE

This procedure is used for replacing capacitor C1. The same procedure is used for replacing capacitor C2.

REMOVAL

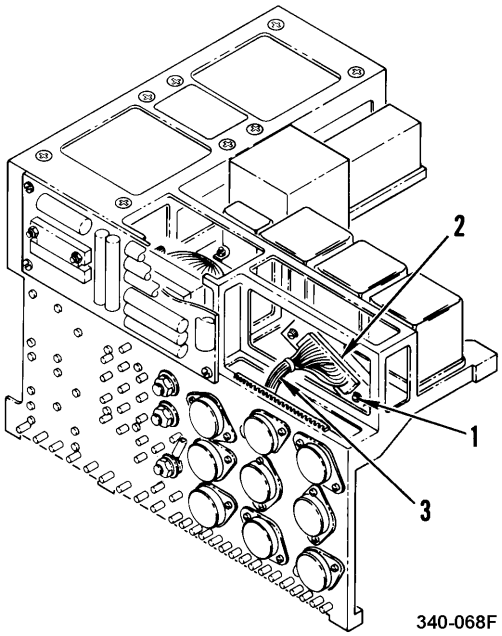
a. Remove semiconductor Q1 (1) (4 above).

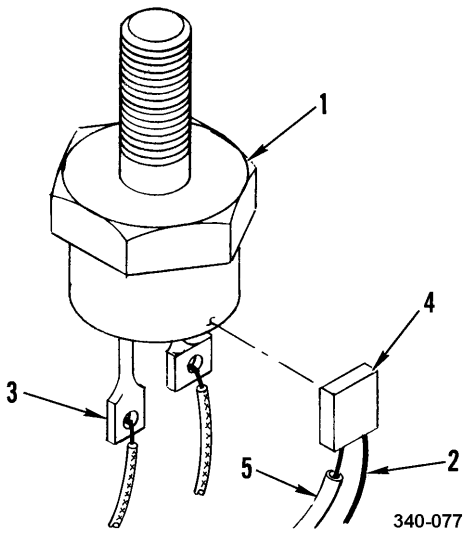
b. Unsolder capacitor leads (2) from semiconductor terminals (3).

NOTE

The capacitor is bonded to the semiconductor with epoxy adhesive kit.

c. Pull capacitor C1 (4) off semiconductor Q1 (1). Use needle-nose pliers.





4-21. PEU CHASSIS POWER FRAME ASSEMBLY A1 REPAIR (cont)

INSTALLATION

d. Remove old epoxy adhesive from semiconductor Q1 (1) (para 2-6).

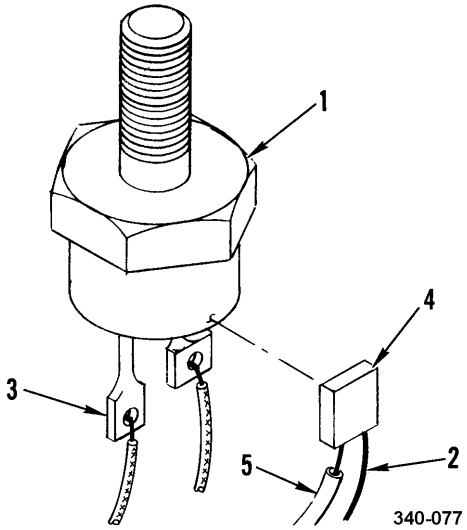
e. Install 20 AWG insulating tubing (5) on capacitor leads (2).

f. Install capacitor leads (2) on terminals (3) of semiconductor Q1 (1).

g. Bond capacitor C1 (4) to semiconductor Q1 (1) using epoxy adhesive kit on both mating surfaces (2-6).

h. Install semiconductor Q1 (1) (4 above).

i. Have capacitor installation inspected.



END OF TASK

CHAPTER 5

PREPARATION FOR STORAGE OR SHIPMENT

5-1. INTRODUCTION

This chapter contains procedures for packing, storing, and shipping of electrostatic discharge sensitive (ESDS) devices or assemblies. Refer to TM 1-8145-476-23 for information on the reusable shipping and storage containers.

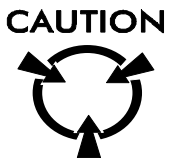
5-2. PACKING, STORING, AND SHIPPING ESDS ASSEMBLIES

CAUTION

This equipment contains parts and assemblies sensitive to damage by electrostatic discharge (ESD). Use ESD precautionary procedures when touching, removing or installing assemblies (para 2-8).

1. PACKING ESDS DEVICES OR ASSEMBLIES

Place the ESDS assembly in a conductive plastic bag. Label the plastic bag with the sensitive electronic device symbol shown below. Close the open end of the bag by folding. Do not seal the opening.



2. STORING ESDS ASSEMBLIES

Pack the ESDS assemblies before storing (1 above). Store the package in an area where the relative humidity is closely maintained at 50 percent.

3. SHIPPING ESDS ASSEMBLIES

Prepare the ESDS assemblies for shipping as follows:

a. Cut two sheets of corrugated cardboard 1/8 inch larger on all sides than the plastic bag.

b. Place the plastic bag between two sheets of corrugated cardboard.

c. Tape the cardboard in place. Do not allow tape to touch plastic package.

d. Place cardboard package in a shipping type envelope.

e. Apply the sensitive electronic device symbol to the outside of the shipping envelope.

f. Wrap the envelope in brown shipping paper and apply shipping labels.

APPENDIX A

REFERENCES

A-1. SCOPE

This appendix lists all army regulations, field manuals, forms, pamphlets, supply bulletins, technical bulletins and technical manuals referenced in this manual.

A-2. ARMY REGULATIONS

Ionizing Radiation Protection (Licensing, Control, Transportation, Disposal, and Radiation . . . . . AR 385-11

Reporting of Item and Packaging Discrepancies . . . . . AR 735-11-2

Reporting of Transportation Discrepancies in Shipments . . . . . AR 55-38

A-3. COMMON TABLE OF ALLOWANCES

Expendable/Durable Items (Except: Medical, Class V, Repair Parts, and Heraldic Items) . . . . . CTA 50-970

A-4. FIELD MANUALS

Explosives and Demolitions . . . . . FM 5-25

First Aid for Soldiers. . . . . FM 21-11

Army Aircraft Quality Control and Technical Inspection . . . . . FM 1-511

A-5. FORMS

Recommended Changes to Publications or Blank Forms . . . . . DA Form 2028

Recommended Changes to Equipment Technical Manuals . . . . . DA Form 2028-2

Quality Deficiency Report . . . . . SF 368

A-6. PAMPHLETS

Consolidated Index of Army Publications and Blank Forms . . . . . DA Pam 25-30

The Army Maintenance Management System-Aviation (TAMMS-A) . . . . . DA Pam 738-751

REFERENCES (cont)

A-7. TECHNICAL BULLETINS

Respiratory Protection Program (AFOSH STD 161-1) . . . . . TB MED 223

U.S. Surgeon General's Noise Limits . . . . . TB MED 251

Safety Precautions for Maintenance of Electrical/Electronic Equipment . . . . . TB 385-4

A-8. TECHNICAL MANUALS

Aviation Unit and Intermediate Maintenance Repair Parts and Special Tools List (RPSTL) (Including Depot Level Parts), Pilot Night Vision Sensor (PNVS) Assembly |AN/AAQ-11 AH-64A Attack Helicopter . . . . . TM 1-5855-265-23P

Aviation Unit Maintenance Manual, Target Acquisition Designation Sight (TADS) Assembly AN/ASQ-170 AH-64A Attack Helicopter . . . . . .TM 1-1270-476-20

Technical Escort Information on Chemical Agents and Decontaminating Procedures (TM 1300-30) . . . . . .TM 9-1300-275/2

Organizational and Direct Support Maintenance Manual for Target Acquisition Designation Sight Assembly and Pilot Night Vision Sensor Assembly (TADS/PNVS) Shipping and Storage Containers . . . . . .TM 1-8145-476-23

Aviation Unit Maintenance Manual, Pilot Night Vision Sensor (PNVS) Assembly AN/AAQ-11 . . . . . TM 1-5855-265-20

Aviation Unit Troubleshooting Manual, Pilot Night Vision Sensor (PNVS) Assembly AN/AAQ-11, AH-64A Attack Helicopter . . . . . TM 1-5855-265-T

Operators and Unit Maintenance Manual for Purge and Recharge Kit . . . . . TM 11-5855-294-12&P

Aviation Unit Maintenance (AVUM) Procedures Peculiar Subsystem and Interface Devices (IDs) . . . . . .TM 11-6625-3085-12

Painting and Marking of Army Aircraft . . . . . .TM 55-1500-345-23

Procedures for Destruction of Electronic to Prevent Enemy Use . . . . . TM 750-244-2

General Aircraft Maintenance Manual . . . . . TM 55-1500-204-25/1

A-9. MISCELLANEOUS PUBLICATIONS

Electrostatic Discharge Control Handbook for Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices) DOD-HDBK-263

Electrostatic Discharge Control Program for Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices). DOD-STD-1686

APPENDIX B

REPAIR PARTS AND SPECIAL TOOLS LIST

Refer to TM 1-5855-265-23P: Aviation Unit and Intermediate Maintenance Repair Parts and Special Tools List for Pilot Night Vision Sensor (PNVS) Assembly AN/AAQ-11.

APPENDIX C

EXPENDABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

C-1. SCOPE

This appendix lists expendable supplies and materials (except medical, class V, repair parts, and heraldic items) you will need to operate and maintain the PNVS. These items are authorized to you by CTA 50-970.

C-2. EXPLANATION OF COLUMNS

a. Column 1 - Item Number. This number is assigned to the entry in the listing and is referenced in the Initial Setup table to identify the material.

b. Column 2 - Level. This column identifies the lowest level of maintenance that requires the listed item.

F - Intermediate Maintenance

c. Column 3 - National Stock Number. This is the national stock number assigned to the item; use it to order a new item.

d. Column 4 - Description. Indicates the federal item name and, if required, a description to identify the item.

e. Column 5 - Unit of Measure (U/M). This column indicates the measure (amount) used in performing the actual maintenance function. The measure is expressed by a two-letter alphabetical abbreviation such as: ea for each, in for inch, kt for kit, oz for ounce, and sh for sheet. If the unit measure is different from the unit of issue, order the lowest unit of issue that will do the job for you.

Section II. EXPENDABLE SUPPLIES AND MATERIALS LIST

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
1	F	6810-00-223-2739	Acetone, technical, 0-A-51	oz
2	F	8040-00-061-8303	Adhesive, epoxy, 13085103, EPS462	kt
3	F	8040-00-145-0020	Adhesive-sealant, silicone, RTV non-corrosive, grat, MIL-A-46146, type III	oz
4	F	6810-00-753-4993	Alcohol, isopropyl, grade A, TT-I-735	oz
5	F	6515-00-303-8250	Applicator, cotton swab, TY2, GG-A-616	ea
6	F	8105-01-134-8415	Bag, electrostatic shielding 3M 2004	ea
7	F	7920-00-543-7728	Brush, acid, swabbing, H-B-643	ea
8	F	8020-00-264-3883	Brush, artist, H-B-118	ea
9	F	7920-00-044-9281	Cloth, cotton wiping, CCC-C-46C	ea
10	F	8030-00-871-8489	Compound, corrosion inhibitive sealing and coating, type III-1, PR-1436-G, MIL-S-81733 OR	kt
	F	8030-00-762-8807	Compound, corrosion inhibitive sealing and coating, type PRO-SEAL 870, MIL-S-81733	kt
11	F	5970-01-223-5727	Compound, insulating, 13085011, TY 1 class A, MIS-19896	oz
12	F	8030-00-067-6746	Compound, sealing, locking, retaining, MIL-S-22473	oz
13	F	8305-00-267-3116	Cord, elast, exerciser & shock absorber type 3, 0.187” dia, MIL-C-5651	ft
14	F	7350-00-965-1662	Cup, paper, UU-C-806, TY 5, CL2	ea
15	F	6515-00-753-4533	Depressor, tongue, GG-D-226	ea
16	F	6810-00-223-2737	Dichloromethane, technical, grade B, MIL-D-6998	oz
17	F	8010-01-203-8106	Enamel, synthetic resin, marking, form 1, type 2 (white), MIS-19916	oz
18	F	8030-00-823-8039	Film, chemical, iridite 14-2, MIL-C-81706	oz
19	F	6515-00-935-1193	Fingercot, rubber, ZZ-F-00-1299	ea
20	F	6810-01-120-6694	Freon TMS	cn
21	F	9150-00-985-7246	Grease, aircraft and instrument, MIL-G-23827	oz
22	F	5970-01-065-4320	Insulation sleeving, electrical, heat shrinkable, M23053/11-104-C	in

Section II. EXPENDABLE SUPPLIES AND MATERIALS LIST (cont)

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
23	F	5970-00-948-6659	Insulation sleeving, electrical, heat shrinkable, M23053/2-102-0	in
24	F	5970-00-196-2928	Insulation sleeving, electrical, heat shrinkable, M23053/2-104-0	in
25	F	5970-00-740-2972	Insulation sleeving, electrical, heat shrinkable, M23053/5-102-9	in
26	F	5970-00-819-9569	Insulation sleeving, electrical, heat shrinkable, M23053/5-103-9	in
27	F	5970-00-088-2975	Insulation sleeving, electrical, heat shrinkable, M23053/5-104-9	in
28	F	5970-00-082-3942	Insulation sleeving, electrical, heat shrinkable, M23053/5-105-9	in
29	F	5970-00-814-2878	Insulation sleeving, electrical, heat shrinkable, M23053/5-106-9	in
30	F	5970-00740-2971	Insulation sleeving, electrical, heat shrinkable, M23053/5-107-9	in
31	F	5970-00-812-2967	Insulation sleeving, electrical, heat shrinkable, M23053/5-108-0	in
32	F	5970-00-812-1360	Insulation sleeving, electrical, heat shrinkable, M23053/5-109-9	in
33	F	8040-00-061-8303	Kit, epoxy adhesive, MIS 22657, kit-0151	kt
34	F	5940-00-143-4771	Lug, terminal, MS25036-103	ea
35	F	6830-00-028-9402	Nitrogen, technical, type 1, grade B, class 1, BB-N-441	cn
36	F	7920-00-205-3558	Pad, cheesecloth DDD-C-301	ea
37	F	5350-00-721-8117	Paper, abrasive, 180 grit, P-P-101	sh
38	F	5350-00-224-7201	Paper, abrasive, 400 grit, P-P-101E	sh
39	F	8040-01-148-1759	Primer, noncorrosive RTV silicone adhesive-sealant, MIL-A-46146, TY 1	oz
40	F	8030-00-980-3975	Primer, sealing, locking, retaining compound, MIL-S-22473, GR N, form R	oz
41	F	8030-00-181-8372	Primer, sealing, locking, retaining compound, MIL-S-22473, GR T, form R	oz

Section II. EXPENDABLE SUPPLIES AND MATERIALS LIST (cont)

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
42	F	3439-00-153-4280	Solder, tin alloy, 0.063, SN63WRMAP2	oz
43	F	5940-01-135-7076	Splice, hot air shrinkable, M83519/1-1	ea
44	F	5940-01-136-2540	Splice, hot air shrinkable, M83519/1-2	ea
45	F	5940-00-872-0888	Splice, hot air shrinkable, NAS 1745-3	ea
46	F	5975-00-899-4606	Strap, tiedown, MS3367-2-0	ea
47	F	5975-00-727-5153	Strap, tiedown, MS3367-4-9	ea
48	F	6515-01-147-0202	Syringe, dispensing, Monojet No. 503S	ea
49	F	4020-00-956-4754	Tape, lacing and tying, MIL-T-43435, FIN C, SZ2, type 2	in
50	F	4020-01-109-0800	Tape, lacing and tying, MIL-T-43435, FIN C, SZ3, type 2	in
51	F	5970-01-124-3191	Tape, teflon, MIL-I-23594, type 1	in
52	F	6810-00-281-2002	Toluene, technical, TT-T-548	oz
53	F	6810-00-664-0387	Trichloroethane, 0-T-620, type 1	oz
54	F	6830-00-584-2957	Trichlorotrifluoroethane, technical, MIL-C-81302, type 2	oz
55	F	5970-00-005-5176	Tubing, insulating, 11176177-2	in
56	F	5970-00-543-1583	Tubing, insulating, 18 AWG, ASTM-D3295, type 1, class C, natural	in
57	F	5970-01-132-9961	Tubing, insulating, 22 AWG, ASTM-D3295, type 1, class C, natural	in

APPENDIX D

ILLUSTARTED LIST OF MANUFACTURED ITEMS

Section I. INTRODUCTION

D-1. SCOPE

This appendix includes complete instructions for making items authorized to be manufactured by AVIM personnel. A part number index in alphanumeric order is provided for cross-referencing the part number of the item to be manufactured to the figure which covers fabrication criteria. All bulk materials needed for manufacture of an item are listed by part number or specification number in a tabular list on the illustration.

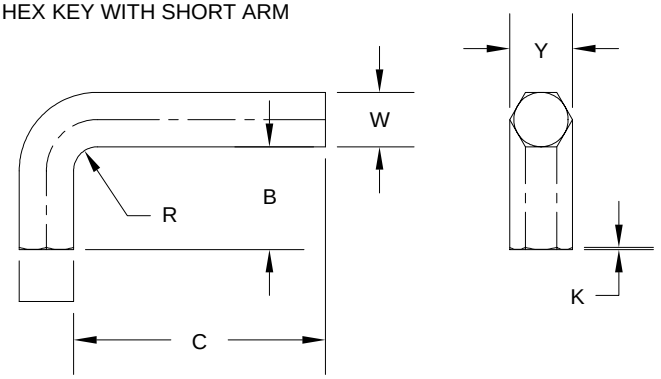
D-2. MANUFACTURED ITEMS PART NUMBER INDEX

Part Number	Nomenclature	Figure Number
Special tool T1	Hex key	311-102
T7-781795	PEU holding fixture	340-137

Section II. MANUFACTURED ITEMS ILLUSTRATIONS

SPECIAL TOOL T1

9/64 IN. HEX KEY WITH SHORT ARM



W		Y		B		C		R	K
HEXAGON WIDTH ACROSS FLATS IN.		HEXAGON WIDTH ACROSS CORNERS IN.		LENGTH OF SHORT ARM IN.		LENGTH OF LONG ARM IN.		RADIUS OF BEND IN.	CHAMFER IN.
MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MAX
0.1406	0.1391	0.1593	0.1566	0.4375	0.3125	4.031	3.844	0.141	0.016

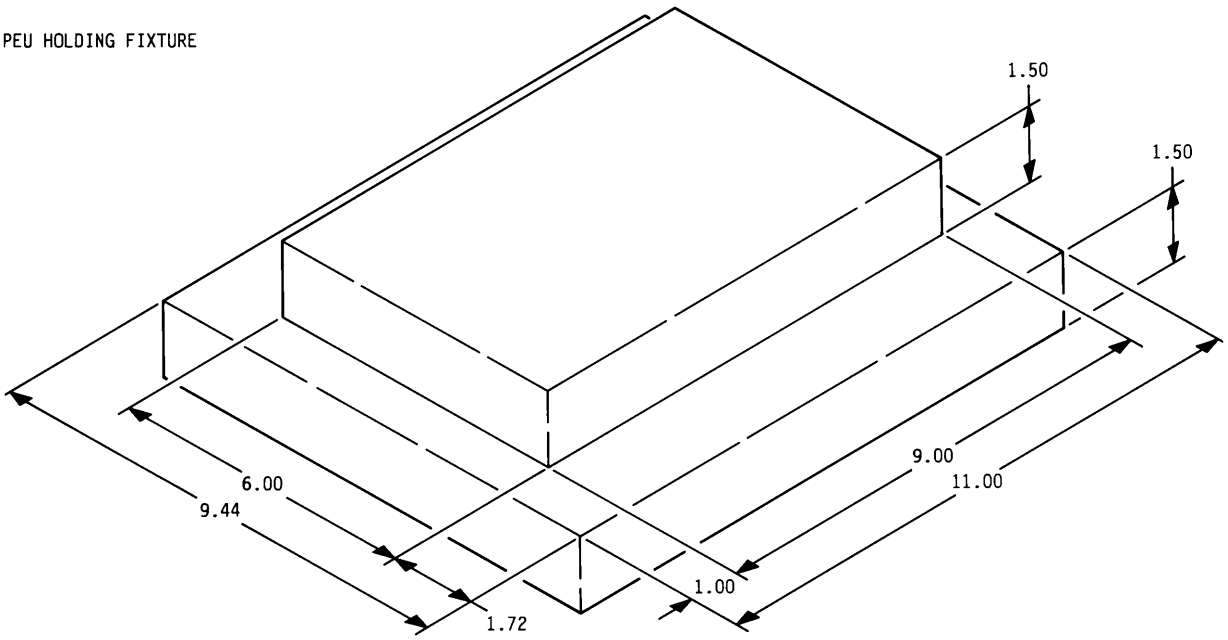
NOTES:

1. FABRICATE FROM NSN5120-00-889-2163.
2. GRIND SHORT ARM DOWN TO DIMENSIONS SPECIFIED IN B ABOVE.

311-102

Section II. MANUFACTURED ITEMS ILLUSTRATIONS (cont)

PEU HOLDING FIXTURE



NOTE: FABRICATE FROM TWO PIECES OF HARDWOOD, GLUE AND NAIL TOGETHER.

340-137

APPENDIX E

TORQUE LIMITS

E-1. GENERAL

An inspector shall be present to verify all torques specified in this manual.

There are two types of applied torques. They are: special torques and standard torques.

Each hardware fastener (except types used in sheet metal work) is assigned an applied torque.

Special torques are given, when needed, in each task. Torque wrenches and adapters to be used when a special torque is given are listed under TOOLS in the inital setup. Special torques usually differ from standard torques.

Standard torques are not in this technical manual. Refer to TM 55-1500-204-25/1 for all standard torque values.

APPENDIX F

MARKING INFORMATION

F-1. SCOPE

Not required in this publication.

APPENDIX G

WARRANTY ITEMS

G-1. SCOPE

Primary assemblies warranted by Lockheed Martin Company are listed below.

PNVS Electronic Control Amplifier (Torque Amplifier)
PNVS Electronic Unit (PEU)
PNVS Night Sensor Assembly (NSA)

GLOSSARY

Section I. ABBREVIATIONS

AC . . . . . Alternating current
ACM . . . . . Automatic control module
APPX . . . . . Appendix
APU . . . . . Auxiliary power unit
ATTN . . . . . Attention
ATS . . . . . Automatic tet station
AVIM . . . . . Aviation Intermediate maintenance
AVUM . . . . . Aviation unit maintenance
AWG . . . . . American wire gage
BITE . . . . . Built-in test equipment
C . . . . . Centigrade
CCA . . . . . Circuit card assembly
CRT . . . . . Cathode ray tube
DC . . . . . Direct current
DES . . . . . Designation
EA . . . . . Each
EIR . . . . . Equipment improvement recommendations
EETF . . . . . Electronic equipment test facility
EMI . . . . . Electromagnetic interference
EO . . . . . Electro-optical
ESDS . . . . . Electrostatic discharge sensitive
EU . . . . . Electronic unit
F . . . . . Fahrenheit
FD/LS . . . . . Fault detection/location system
FLIR . . . . . Forward looking infrared
FSCM . . . . . Federal supply code for manufacturers
FT . . . . . Foot
GPU . . . . . Ground power unit
HEX . . . . . Hexagon
HZ . . . . . Hertz

Section I. ABBREVIATIONS (cont)

IN . . . . . Inch
IR . . . . . Infrared
KT . . . . . Kit
LED . . . . . Light emitting diode
LRU . . . . . Line replaceable unit
MAX . . . . . Maximum
MIN . . . . . Minimum, minute
MOS . . . . . Military occupational specialty
MTOE . . . . . Modified table of organization and equipment
MUX . . . . . Multiplexer
NO . . . . . Number
NSA . . . . . Night sensor assembly
NSN . . . . . National stock number
OZ . . . . . Ounce
PARA . . . . . Paragraph
PEU . . . . . PNVS electronic unit
PNVS . . . . . Piolt night vision sensor
PSNR . . . . . Positioner
PWB . . . . . Printed wiring board
REF . . . . . Reference
RPSTL . . . . . Repair parts and special tools list
RTV . . . . . Room temperature vulcanized
SH . . . . . Sheet
SMR . . . . . Source maintenance and recoverability
SOP . . . . . Standard operating procedures
SRU . . . . . Shop replaceable unit
STA . . . . . Stabilized turret assembly
TADS . . . . . Target acquisition designation sight
TAMMS . . . . . The army maintenance management system
TMDE . . . . . Test, measurement, and diagnostic equipment
V . . . . . Volt

Section II. DEFINITION OF UNUSUAL TERMS

AFOCAL - An optical system focused on infinity.

AVIONICS - An acronym for aviation-related electronics

BONDLINE - The point where two surfaces are joined together by an adhesive.

BORESIGHT - The line-of-sight of a weapon sighting instrument parallel to the axis of the weapon bore.

CRYOGENIC - Super cold; of or having to do with temperatures approaching absolute zero.

COLLIMATE - To make parallel.

COLLIMATOR - An optical device (lens) used to make light rays parallel.

DEWAR DETECTOR - A cryogenically-cooled infrared detecting device.

ELECTRO-OPTICAL DEVICE - A device that responds to both light and electrical inputs.

FAULT DETECTION and LOCATION SYSTEM (FD/LS) - A computer-controlled built-in test (BIT) for the helicopter avionics.

IMAGE - A likeness of an object produced by means of light rays.

INFRARED - Pertaining to radiations of heat from a body or object.

INTERFACE - A point or device at which a transition between media, power levels, modes of operation, etc., is made.

MULTIPLEXER - A device for accomplishing simultaneous transmission of two or more signals over a common transmission medium.

OPTICS - The branch of physical science concerned with electromagnetic radiation and the phenomena of vision.

OPTICAL GLASS - Glass that is carefully controlled during manufacture to have the optical values needed for its use.

ALPHABETICAL INDEX

Subject, Para

A

B

Subject, Para

B (cont)

C

ALPHABETICAL INDEX (cont)

Subject, Para

C (cont)

Subject, Para

D

E

ALPHABETICAL INDEX (cont)

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F

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M

N

ALPHABETICAL INDEX (cont)

Subject, Para

N (cont)

Subject, Para

O

P

ALPHABETICAL INDEX (cont)

Subject, Para

P (cont)

Subject, Para

P (cont)

R

S

ALPHABETICAL INDEX (cont)

Subject, Para

S (cont)

T

V

Subject, Para

V (cont)

W

By Order of the Secretary of the Army:

Official:

ERIC K. SHINSEKI
General, United States Army
Chief of Staff

JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army
0117911

DISTRIBUTION:
To be distributed in accordance with initial distribution number (IDN) 514334 requirements for TM 1-5855-265-30.

These are the instructions for sending an electronic 2028

The following format must be used if submitting an electronic 2028. The subject line must be exactly the same and all fields must be included; however only the following fields are mandatory: 1, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 17, and 27.

From: "Whomever" <whomever@avma27.army.mil>
To: 2028@redstone.army.mil

Subject: DA Form 2028

1. ***From:*** Joe Smith
2. *Unit:* home
3. ***Address:*** 4300 Park
4. ***City:*** Hometown
5. ***St:*** MO
6. ***Zip:*** 77777
7. ***Date Sent:*** 19−OCT−93
8. ***Pub no:*** 55−2840−229−23
9. ***Pub Title:*** TM
10. ***Publication Date:*** 04−JUL−85
11. *Change Number:* 7
12. *Submitter Rank:* MSG
13. ***Submitter FName:*** Joe
14. *Submitter MName:* T
15. ***Submitter LName:*** Smith
16. ***Submitter Phone:*** 123−123−1234
17. ***Problem:*** **1**
18. *Page:* 2
19. *Paragraph:* 3
20. *Line:* 4
21. *NSN:* 5
22. *Reference:* 6
23. *Figure:* 7
24. *Table:* 8
25. *Item:* 9
26. *Total:* 123
27. ***Text:***

This is the text for the problem below line 27.

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

SOMETHING WRONG WITH THIS PUBLICATION?

THEN . . . JOT DOWN THE DOPE ABOUT IT ON THIS FORM, FOLD IT, AND DROP IT IN THE MAIL!

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)
MMC, Br. , 432 PSD
ATTN: SP5 B. VAN ALSTINE
ORLANDO, FL. 32809

DATE SENT
31 DEC 91

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 1-1270-476-20	31 AUGUST 91	AVIATION UNIT MAINTENANCE MANUAL TARGET ACQUISITION DESIGNATION SIGHT (TADS) ASSEMBLY AN/ASQ-170

BE EXACT . . . PIN-POINT WHERE IT IS

PAGE NO.	PARA-GRAPH	FIGURE NO.	TABLE NO.
2-14			Com

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

Detailed Step No. 14 indicates (Accumetric A-105 primer)
Should be changed to (Stauffer SWS-1001 Insulating primer)

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER
SP5 B. L. VAN ALSTINE 305-503-3050

SIGN HERE

DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ARE OBSOLETE

PS--IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS

REVERSE OF DA FORM 2028-2

FILL IN YOUR
UNIT'S ADDRESS

FOLD BACK

DEPARTMENT OF THE ARMY

_____

_____

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COMMANDER
U.S. Army Aviation and Missile Command
ATTN: AMSAM-MMC-MA-NP
Redstone Arsenal, AL 35898-5230

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FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 1-5855-265-30	30 June 2001	AVIM PNVS ASSEMBLY AN/ASQ-11

BE EXACT . . . PIN-POINT WHERE IT IS

PAGE NO.	PARA-GRAPH	FIGURE NO.	TABLE NO.

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

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REVERSE OF DA FORM 2028-2

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DEPARTMENT OF THE ARMY

_____

_____

_____

COMMANDER
U.S. Army Aviation and Missile Command
ATTN: AMSAM-MMC-MA-NP
Redstone Arsenal, AL 35898-5230

The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = 0.39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hect.ometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = 0.15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigram = 0.035 ounce
1 dekagram = 10 grams = 0.35 ounce
1 hectogram = 10 dekagrams 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short tons

Temperature

5/9 (°F-32) = °C
212° Fahrenheit = 100° Celsius
90° Fahrenheit = 32.2° Celsius
32° Fahrenheit = 0° Celsius
9/5 C° +32 = F°

Liquid Measure

1 centiliter = 10 milliliters = 0.34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 33.81 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = 0.155 sq. inch
1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
1 sq. kilometer = 100 sq. hectometers = 0.386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = 0.06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	To	Multiply by
inches	centimeters	2.540
feet	meters	0.305
yards	meters	0.914
miles	kilometers	1.609
square inches	square centimeters	6.451
square feet	square meters	0.093
square yards	square meters	0.836
square miles	square kilometers	2.590
acres	square hectometers	0.405
cubic feet	cubic meters	0.028
cubic yards	cubic meters	0.765
fluid ounces	milliliters	29,573
pints	liters	0.473
quarts	liters	0.946
gallons	liters	3.785
ounces	grams	28.349
pounds	kilograms	0.454
short tons	metric tons	0.907
pound-feet	newton-meters	1.356
pound-inches	newton-meters	0.11296

To change	To	Multiply by
ounce-inches	newton-meters	0.007062
centimeters	inches	0.394
meters	feet	3.280
meters	yards	1.094
kilometers	miles	0.621
square centimeters	square inches	0.155
square meters	square feet	10.764
square meters	square yards	1.196
square kilometers	square miles	0.386
square hectometers	acres	2.471
cubic meters	cubic feet	35.315
cubic meters	cubic yards	1.308
milliliters	fluid ounces	0.034
liters	pints	2.113
liters	pints	1.057
liters	quarts	0.264
grams	ounces	0.035
kilograms	pounds	2.205
metric tons	short tons	1.102
Newton-meters	pound-feet	0.738
Kilo pascals	pounds per square inch	0.145

PIN: 079110-000