* TM 1-1520-238-23-5

ENGINE INSTRUMENTS MAINTENANCE

FLIGHT INSTRUMENTS MAINTENANCE

NAVIGATION INSTRUMENTS MAINTENANCE

MISCELLANEOUS INSTRUMENTS MAINTENANCE

POWER GENERATION AND DISTRIBUTION MAINTENANCE

LIGHTING PROVISIONS MAINTENANCE

CAUTION AND WARNING MAINTENANCE

MISCELLANEOUS ELECTRICAL MAINTENANCE

TECHNICAL MANUAL

AVIATION UNIT AND INTERMEDIATE MAINTENANCE MANUAL

VOLUME 5 OF 9

HELICOPTER, ATTACK, AH-64A APACHE (NSN 1520-01-106-9519) (EIC: RHA)

CHAPTER 8
INSTRUMENTS

CHAPTER 9
ELECTRICAL SYSTEM

*** This manual together with TM 1-1520-238-23-1, 16 May 1994, TM 1-1520-238-23-2, 16 May 1994, TM 1-1520-238-23-3, 16 May 1994, TM 1-1520-238-23-4, 16 May 1994, TM 1-1520-238-23-6, 16 May 1994, TM 1-1520-238-23-7-1, 16 May 1994, TM 1-1520-238-23-7-2, 16 May 1994, TM 1-1520-238-23-8, 16 May 1994, TM 1-1520-238-23-9, 16 May 1994, supersedes TM 55-1520-238-23-1, 7 June 1988, TM 55-1520- 238-23-2, 7 June 1988, TM 55-1520-238-23-3, 7 June 1988, TM 55-1520-238-23-4, 7 June 1988, TM 55-1520-238-23-5, 7 June 1988, TM 55 -1520-238-23-6, 7 June 1988, TM 55-1520-238-23-7, 7 June 1988, TM 55-1520-238-23-8, 7 June 1988, TM 55-1520-238-23-9, 7 June 1988, TM 55-1520-238-23-10, 7 June 1988, including all changes.**

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16 MAY 1994

CHANGE NO. 7

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 15 SEPTEMBER 2003

Aviation Unit and Intermediate Maintenance Manual

HELICOPTER, ATTACK,
AH-64A APACHE
(NSN 1520–01–106–9519)
(EIC:RHA)

OZONE DEPLETING CHEMICAL INFORMATION

This document has been reviewed for the presence of Class I Ozone Depleting Chemicals. As of change 04, dated 19 December 1997, all references to Class I Ozone Depleting Chemicals have been removed from this document by substitution with chemicals that do not cause atmospheric ozone depletion.

TM 1–1520–238–23–5, 16 May 1994, is changed as follows:

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A and B	A and B
9-3 through 9-8	9-3 through 9-8
9-13 and 9-14	9-13 and 9-14
– – – – –	9-14.1/(9-14.2 blank)
9-15 and 9-16	9-15 and 9-16
– – – – –	9-16.1 /9-16.2 blank)
– – – – –	9-146.1 and 9-146.2
9-469 and 9-470	9-469 and 9-470
– – – – –	9-470.1 and 9-470.2
9-473 through 9-476	9-473 through 9-476
– – – – –	9-476.1 and 9-476.2

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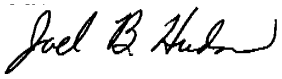

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9-91 through 9-96	9-91 through 9-96
9-96.1 and 9-96.2	9-96.1 and 9-96.2
- - - - -	9-96.3 and 9-96.4
9-97 through 9-102	(9-97 blank)/9-98 through 9-102
9-102.1 and 9-102.2	9-102.1 and 9-102.2
- - - - -	9-102.3 and 9-102.4
9-103 and 9-104	(9-103 blank)/9-104

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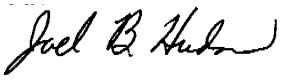

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9–499 and 9–500	9–499 and 9–500
9–527 and 9–528	9–527 and 9–528
9–579 and 9–580	9–579 and 9–580

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– – – – –	9–581 through 9–596
– – – – –	E–mail instruction page

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9–209 and 9–210	9–209 and 9–210
9–217 and 9–218	9–217 and 9–218
9–339 and 9–340	9–339 and 9–340
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9–483 and 9–484	9–483 and 9–484

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9–15 and 9–16	9–15 and 9–16
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9–295 through 9–298	9–295 through 9–298
9–335 through 9–344	9–335 through 9–344
———	9–344.1/(9–344.2 blank)

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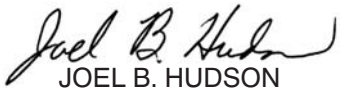

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Change . . . . . 2 . . . . . 16 February 1996
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Change . . . . . 4 . . . . 19 December 1997
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8-99 – 8-100	3
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9-6 – 9-7	7
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9-11 – 9-13	0
9-14	7
9-14.1 Added	7
9-14.2 Blank Added	7
9-15	1
9-16	7
9-16.1 Added	7
9-16.2 Blank Added	7
9-17 – 9-20	0
9-21	3
9-22 – 9-24	0
9-25	3
9-26 – 9-28	0
9-29	3
9-30 – 9-42	0
9-43	3
9-44	0
9-45	3
9-46 – 9-47	0
9-48	4
9-49	0
9-50	4
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9-105 – 9-137	0
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9-142 Blank	3
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9-146.1	7
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LIST OF EFFECTIVE PAGES

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9-210 – 9-217	0
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9-261 – 9-262	0
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9-335 – 9-337	1
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9-339 – 9-340	2
9-341 – 9-344	1
9-344.1 Added	2
9-344.2 Blank Added	2
9-345 – 9-468	0
9-469 – 9-470	7
9-470.1 – 9-470.2 Added	7
9-471 – 9-472	0
9-473 – 9-476	7
9-476.1 – 9-476.2 Added	7
9-477 – 9-482	0
9-483	2
9-484 – 9-489	0
9-490	3
9-491 – 9-498	0
9-499	3
9-500	4
9-501 – 9-526	0
9-527	4
9-528 – 9-578	0
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9-581 – 9-596 Added	3

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CHAPTER 8
INSTRUMENTS

CHAPTER OVERVIEW

Chapter 8 contains the maintenance instructions for the instruments system. Instruments system description, operation, and troubleshooting information is contained in TM 1-1520-238-T.

CHAPTER INDEX

CHAPTER INDEX – continued

CHAPTER INDEX – continued

SECTION I. ENGINE INSTRUMENTS MAINTENANCE

8.1. ENGINE INSTRUMENTS INSPECTION

8.1.1. Descriptio

This task covers: Inspection.

8.1.2. Initial Setup

Personnel Required:

68X Armament/Electrical System Repairer

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access doors opened and covers, panels, and fairings removed as necessary

8.1.3. Inspection

a. **Check engine instruments and instrument panel mounting areas for dents, nicks, and cracks.** None allowed.

b. **Check front panels of instruments for dents, nicks, and cracks.** None allowed.

c. **Check instruments and their front panels, covers, switches, pointers, and knobs for loose installation.** None allowed.

d. **Check instruments for loose or missing hardware.** None allowed.

e. **Check indicator case for stripped or damaged threads.** Acceptable thread damage cannot exceed 50 percent of one thread.

f. **Check pointers on instrument faces for wear and damage.** None allowed.

g. **Check instrument scales for wear, illegibility, distortion, and discoloration.** None allowed.

h. **Check electrical connectors for loose installation.** Inspect for loose or broken lockwiring (QA). None allowed.

i. **Check instruments for fogging and moisture.** None allowed.

j. **Check lamp boards for cracks, loose or broken pins, and broken lamp filaments.** None allowed.

k. **Secure opened doors; install removed covers, panels, and fairings** (para 2.2)**.**

END OF TASK

8.2. TYPICAL ENGINE INSTRUMENT INDICATOR DISASSEMBLY/ASSEMBLY (AVIM)

8.2.1. Description

This task covers: Disassembly. Cleaning. Inspection. Assembly.

8.2.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
3/16-inch flat tip screwdriver bit (item 31, App H)
#1 phillips screwdriver bit (item 35, App H)
Circuit extractor (item 127, App H)
Chemical protective gloves (item 154, App H)
PC shunt bar (item 223, App H)
Adjustable air filtering respirator (item 262, App H)
Large wrist grounding strap (item 346, App H)
1 - 100 inch-ounce 1/4-inch hexagon drive click type torque wrench (item 437, App H)

Materials/Parts:

Cloth (item 52, App F)
Coating compound (item 59, App F)
Lubricant (item 115, App F)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

NOTE

This procedure is generalized. Refer to tasks in this section to perform maintenance on a particular engine instrument.

GO TO NEXT PAGE

8.2. TYPICAL ENGINE INSTRUMENT INDICATOR DISASSEMBLY/ASSEMBLY (AVIM) – continued

CAUTION

Static electrical discharge can damage semiconductors in the circuit card. To prevent damage, repairer must wear grounding strap when panel is removed, and when handling circuit cards.

8.2.3. Disassembly

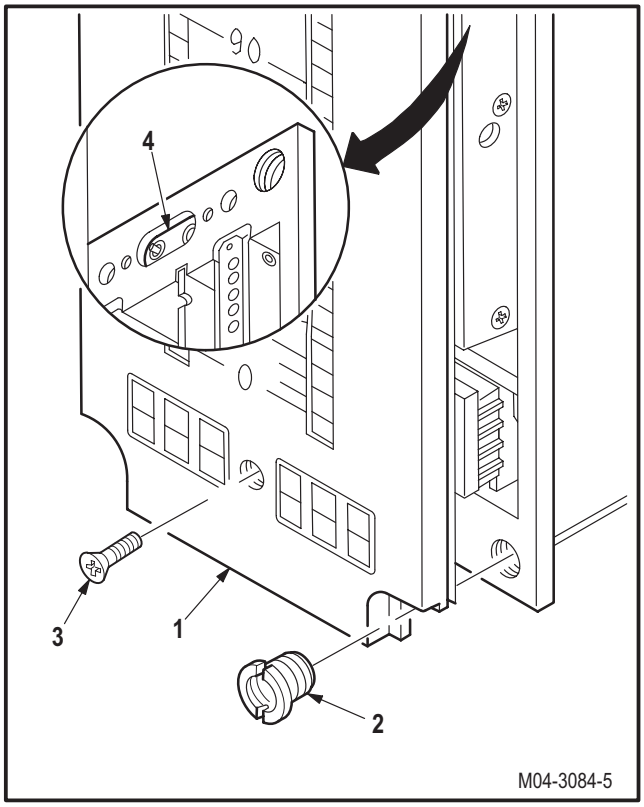
NOTE

Steps a, b, and c are typical for fuel quantity, N_G, TGT, and torque indicators.

a. **Remove front panel (1).** Wear grounding strap.

(1) Remove four bushings (2) and one screw (3).

(2) Carefully pull front panel (1) outward until light connector (4) detaches.



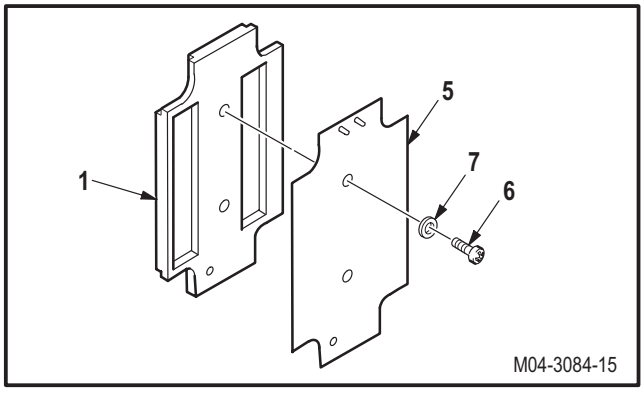
NOTE

The torque indicator does not contain a separate lighting panel.

b. **Remove lighting panel (5) from front panel (1).**

(1) Remove two screws (6) and washers (7).

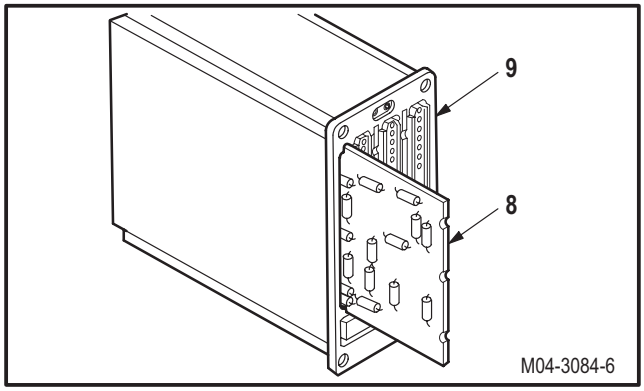
(2) Remove panel (5).



GO TO NEXT PAGE

8.2. TYPICAL ENGINE INSTRUMENT INDICATOR DISASSEMBLY/ASSEMBLY (AVIM) – continued

c. **Remove circuit cards (8) from indicator case (9).** Wear grounding strap. Use circuit extractor and grounding strap.



NOTE

Step d is necessary for removal of rpm interface/interface voltmeter/oil pressure excitation circuit card.

d. **Install shunt bar (10) on card (8).** Use shunt bar.

e. **Remove top cover (11).**

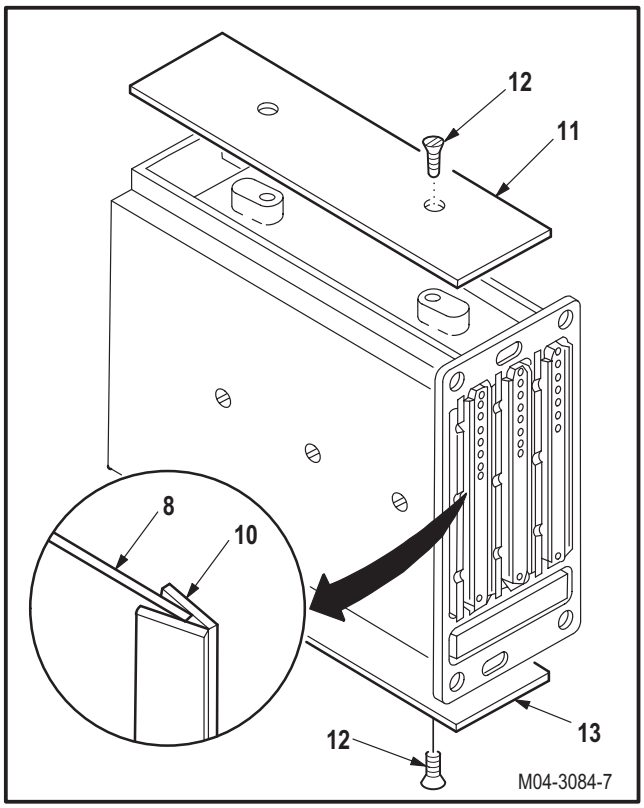
(1) Remove two screws (12).

(2) Remove cover (11).

f. **Remove bottom cover (13).**

(1) Remove two screws (12).

(2) Remove cover (13).



GO TO NEXT PAGE

8.2. TYPICAL ENGINE INSTRUMENT INDICATOR DISASSEMBLY/ASSEMBLY (AVIM) – continued

g. **Remove motherboard wiring subassembly (14).**

(1) Remove four screws (15) that hold connector (16) and plate (17).

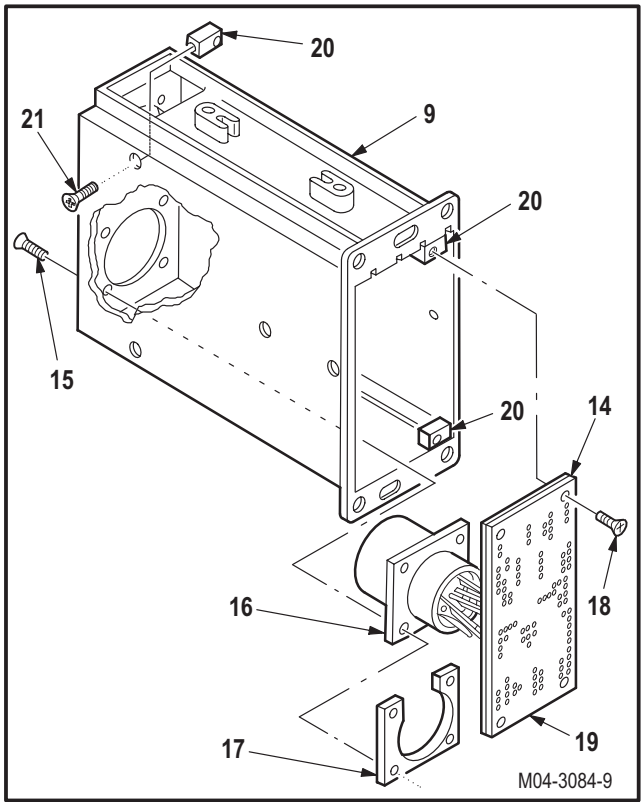
(2) Remove four screws (18) that hold motherboard (19) and subassembly (14) to four mounting blocks (20).

(3) Slide subassembly (14) and motherboard (19) out through front of indicator case (9).

h. **Remove four blocks (20).**

(1) Remove four screws (21).

(2) Remove four blocks (20).



8.2.4. Cleaning

a. **Wipe front panel, front panel mounting area, circuit cards, and circuit card guide.** Use cloth (item 52, App F).

8.2.5. Inspection

a. **Check engine indicator for cracks** (para 8.1)**.**

b. **Inspect engine indictor for nicks and dents** (para 8.1)**.**

c. **Check indicator case for stripped or damaged threads** (para 8.1)**.**

GO TO NEXT PAGE

8.2. TYPICAL ENGINE INSTRUMENT INDICATOR DISASSEMBLY/ASSEMBLY (AVIM) – continued

CAUTION

Static electrical discharge can damage semiconductors in the circuit card. To prevent damage, repairer must wear grounding strap when panel is off, and when handling circuit cards.

8.2.6. Assembly

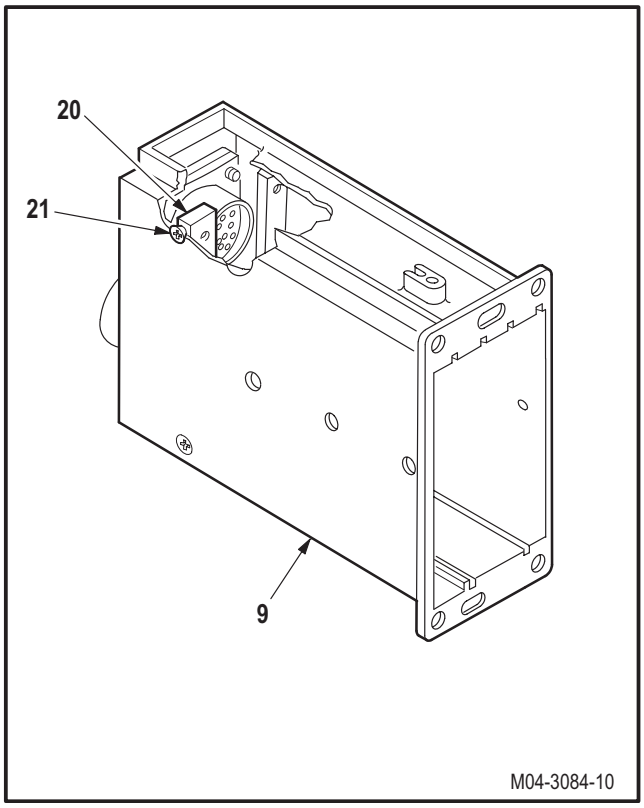
a. **Install four blocks (20).** Torque four screws (21) to **37 INCH-OUNCES**.

(1) Coat threads of four screws (21). Use coating compound (item 59, App F).

(2) Aline four blocks (20) with four screw holes inside case (9).

(3) Install four screws (21) to secure four blocks (20).

(4) Torque four screws (21) to **37 INCH-OUNCES**. Use torque wrench and screwdriver bit.



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8.2. TYPICAL ENGINE INSTRUMENT INDICATOR DISASSEMBLY/ASSEMBLY (AVIM) – continued

b. **Install subassembly (14).** Torque four screws (18) and four screws (15) to **37 INCH-OUNCES**.

(1) Place nutplate (17) over wiring near connector (16).

(2) Slide subassembly (14) and motherboard (19) into case (9). Position against four blocks (20).

(3) Aline connector (16) and nutplate (17) with screw holes in case (9).

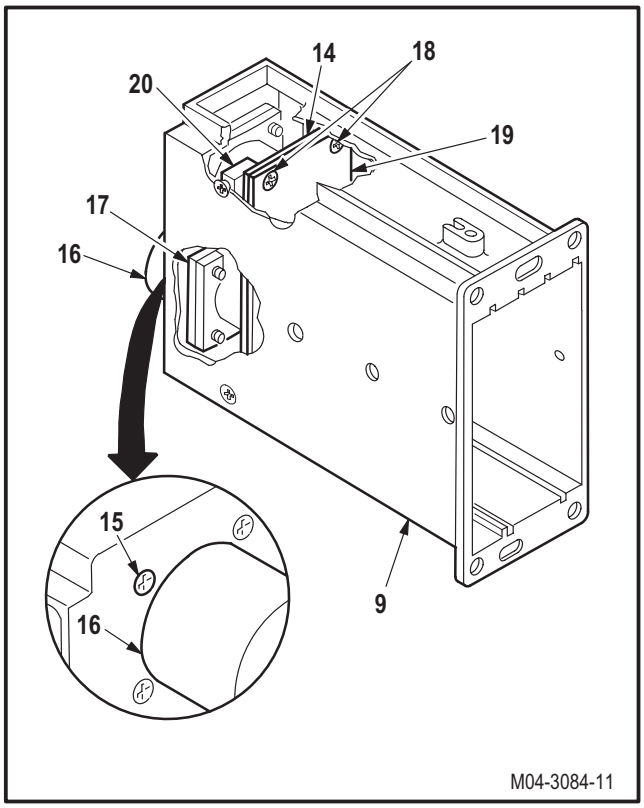
(4) Coat threads of four screws (15) and (18). Use coating compound (item 59, App F).

(5) Install four screws (15).

(6) Torque four screws (15) to **37 INCH-OUNCES**. Use torque wrench and screwdriver bit.

(7) Install four screws (18) to secure subassembly (14) and motherboard (19) to four blocks (20).

(8) Torque four screws (18) to **37 INCH-OUNCES**. Use torque wrench and screwdriver bit.



c. **Inspect (QA).**

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8.2. TYPICAL ENGINE INSTRUMENT INDICATOR DISASSEMBLY/ASSEMBLY (AVIM) – continued

d. **Install top cover (11) on case (9).**

(1) Position cover (11).

(2) Install two screws (12).

e. **Install bottom cover (13) on case (9).**

(1) Position cover (13).

(2) Install two screws (12).

f. **Install cards (8) in case (9).**

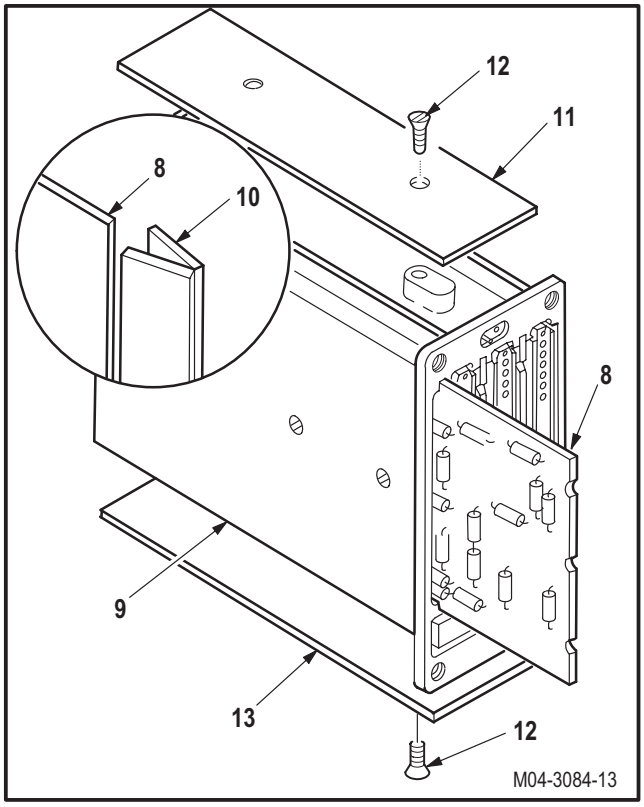
(1) Remove bar (10) from card (8).

(2) Insert cards (8) into case (9).

(3) Press cards (8) until fully seated.

NOTE

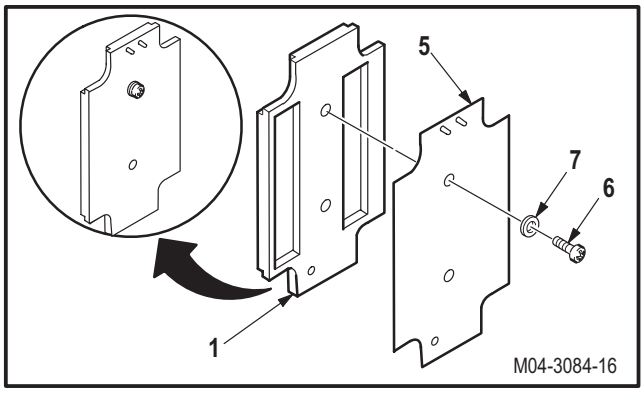
The torque indicator does not contain a separate lighting panel.



g. **Install panel (5) on panel (1).**

(1) Position panel (5) on panel (1).

(2) Install two screws (6) and washers (7).



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8.2. TYPICAL ENGINE INSTRUMENT INDICATOR DISASSEMBLY/ASSEMBLY (AVIM) – continued

CAUTION

Do not exceed **24 INCH-OUNCES** torque on bushings.

NOTE

Step h is typical for fuel quantity, $N_{G,}$ TGT, and torque indicators.

h. **Install panel (1).** Torque four bushings (2) to **24 INCH-OUNCES**. Torque screw (3) to **37 INCH-OUNCES**.

(1) Lubricate four bushings (2). Use lubricant (item 115, App F).

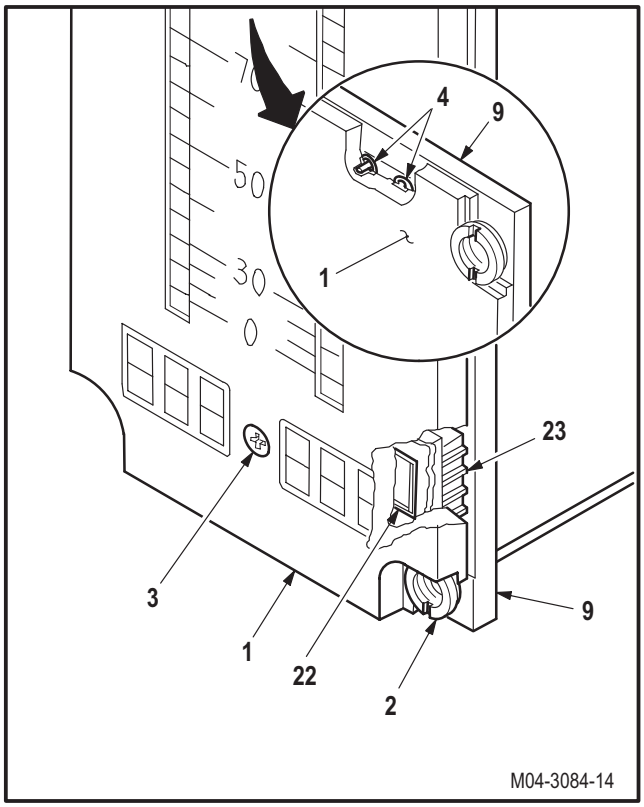
(2) Ensure filter (22) is seated in recess of driver (23).

(3) Aline connector (4) and position panel (1) on case (9). Press to engage connector (4).

(4) Install four bushings (2). Torque four bushings to **24 INCH-OUNCES**. Use torque wrench and screwdriver bit.

(5) Install screw (3). Torque screw to **37 INCH-OUNCES**. Use torque wrench and screwdriver bit.

i. **Inspect (QA).**



END OF TASK

8.3. PILOT/CPG ENGINE TORQUE INDICATOR REMOVAL/INSTALLATION

8.3.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

8.3.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

References:

TM 1-1520-238-T

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

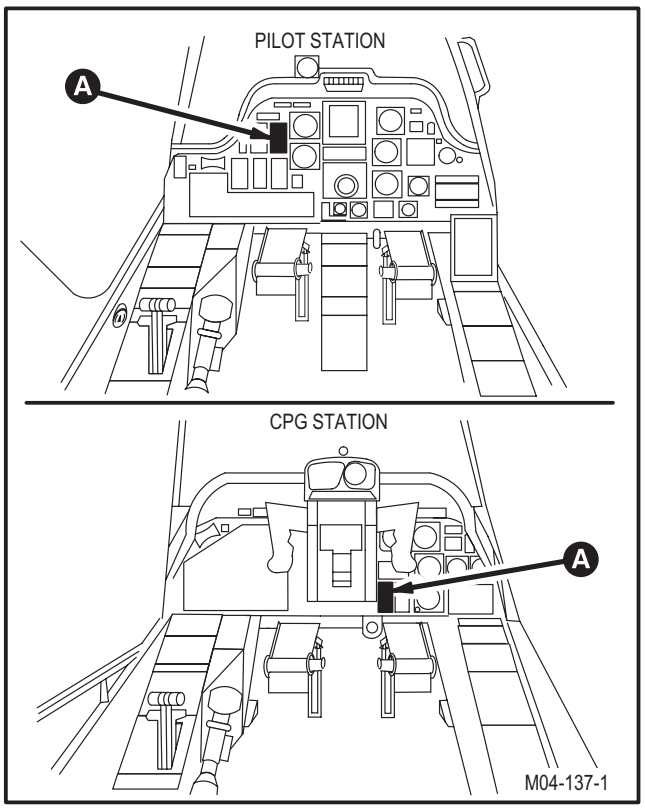
Ref	Condition
1.57	Helicopter safed

8.3.3. Removal

a. **Enter pilot/CPG station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot center circuit breaker panel and CPG left console circuit breaker panel No. 1, open ENG INST circuit breakers.**

c. **On pilot/CPG INTR LT panel, rotate INST control to OFF.**



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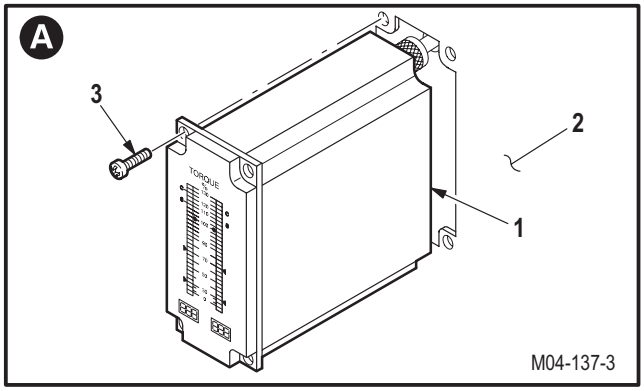
8.3. PILOT/CPG ENGINE TORQUE INDICATOR REMOVAL/INSTALLATION – continued

d. **Remove engine torque indicator (1) from instrument panel (2).**

(1) Remove four screws (3).

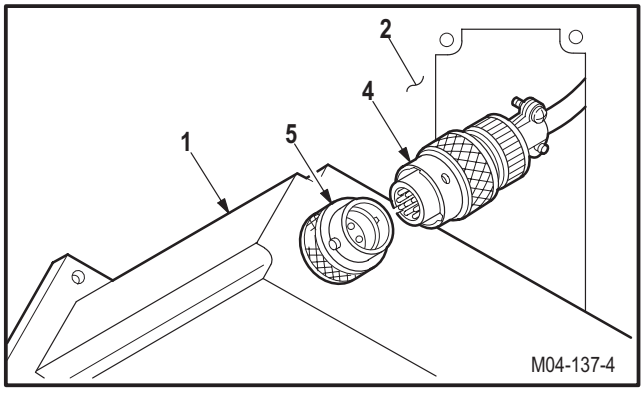
(2) Pull indicator (1) from panel (2).

(3) Detach connector P66 (pilot) or P74 (CPG) (4) from receptacle (M2)J1 (pilot) or (M8)J1 (CPG) (5).



8.3.4. Cleaning

a. **Wipe mounting area and indicator with a clean rag.**



8.3.5. Inspection

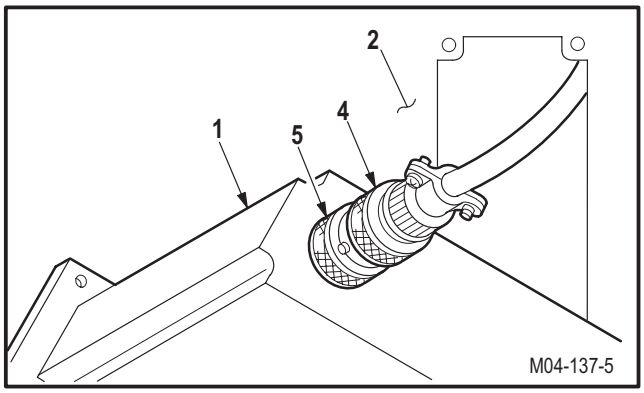
a. **Check indicator and instrument panel mounting area for dents, nicks, and cracks** (para 8.1)**.**

b. **Check indicator and instrument panel screw holes for stripped or damaged threads** (para 8.1)**.**

8.3.6. Installation

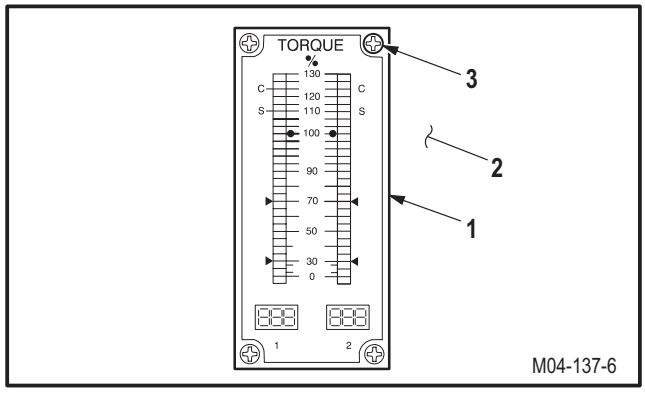
a. **Install indicator (1) in panel (2).**

(1) Attach connector P66 (pilot) or P74 (CPG) (4) to receptacle (M2)J1 (pilot) or (M8)J1 (CPG) (5) on indicator (1).



(2) Aline indicator (1) with screw holes in panel (2).

(3) Install four screws (3).



b. **Inspect (QA).**

c. **Perform engine instrument maintenance operational check** (TM 1-1520-238-T)**.**

END OF TASK

8.4. PILOT/CPG ENGINE/ROTOR RPM INDICATOR REMOVAL/INSTALLATION

8.4.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

8.4.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

References:

TM 1-1520-238-T

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

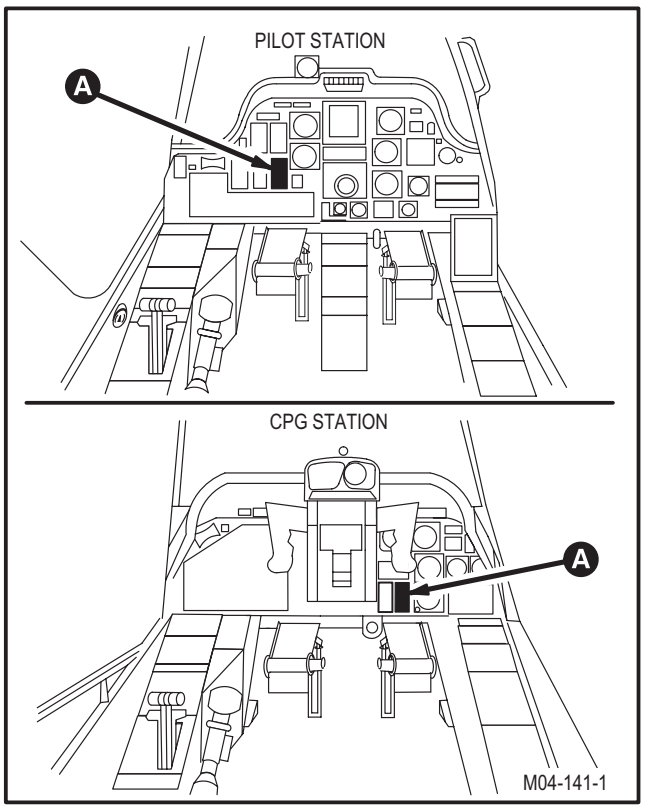
Ref	Condition
1.57	Helicopter safed

8.4.3. Removal

a. **Enter pilot/CPG station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot center circuit breaker panel and CPG left console circuit breaker panel No. 1, open ENG INST circuit breakers.**

c. **On pilot/CPG INTR LT panel, rotate INST control to OFF.**



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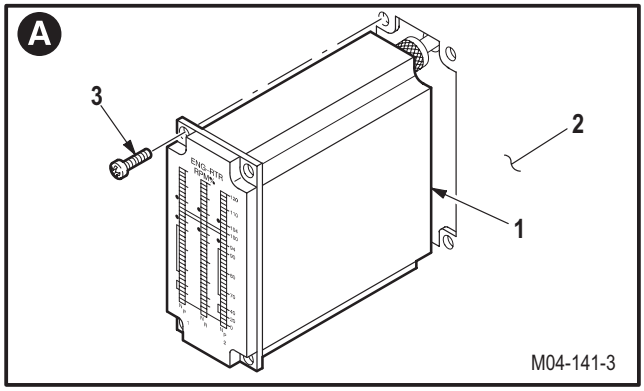
8.4. PILOT/CPG ENGINE/ROTOR RPM INDICATOR REMOVAL/INSTALLATION – continued

d. **Remove engine/rotor rpm indicator (1) from instrument panel (2).**

(1) Remove four screws (3).

(2) Pull indicator (1) from panel (2).

(3) Detach connector P65 (pilot) or P73 (CPG) (4) from receptacle (M1)J2 (pilot) or (M7)J1 (CPG) (5).



8.4.4. Cleaning

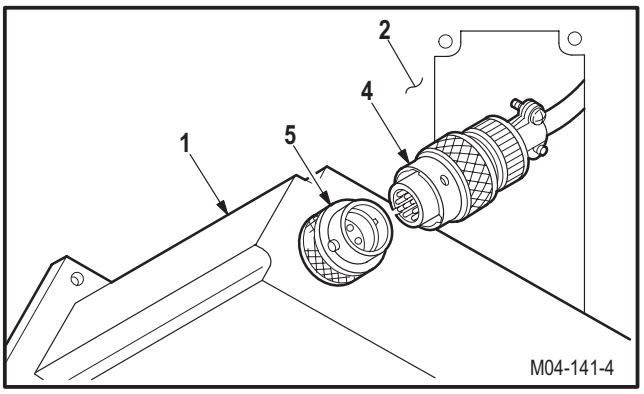
a. **Wipe mounting area and indicator with a clean rag.**

8.4.5. Inspection

a. **Check indicator and panel mounting area for cracks** (para 8.1)**.**

b. **Check indicator and panel mounting area for nicks and dents** (para 8.1)**.**

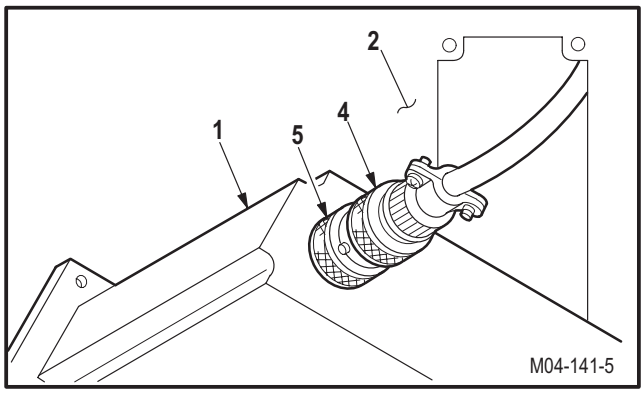
c. **Check indicator and panel screw holes for stripped or damaged threads** (para 8.1)**.**



8.4.6. Installation

a. **Install indicator (1) in panel (2).**

(1) Attach connector P65 (pilot) or P73 (CPG) (4) to receptacle (M1)J2 (pilot) or (M7)J1 (CPG) (5).

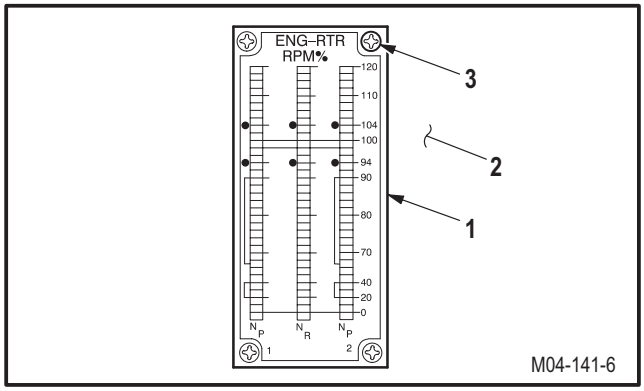


(2) Aline indicator (1) with screw holes in panel (2).

(3) Install four screws (3).

b. **Inspect (QA).**

c. **Perform engine instrument maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

8.5. ENGINE/ROTOR RPM INDICATOR FRONT PANEL REMOVAL/INSTALLATION (AVIM)

8.5.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

8.5.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
3/16-inch flat tip screwdriver bit (item 31, App H)
Industrial faceshield (item 129, App H)
Chemical protective gloves (item 154, App H)
Large wrist grounding strap (item 346, App H)
1 - 100 inch-ounce 1/4-inch hexagon drive click type torque wrench (item 437, App H)

Materials/Parts:

Cloth (item 52, App F)
Lubricant (item 115, App F)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

CAUTION

Static electrical discharge can damage semiconductors in circuit card. To prevent damage, repairer must wear grounding strap when panel is off, and when handling circuit card.

8.5.3. Removal

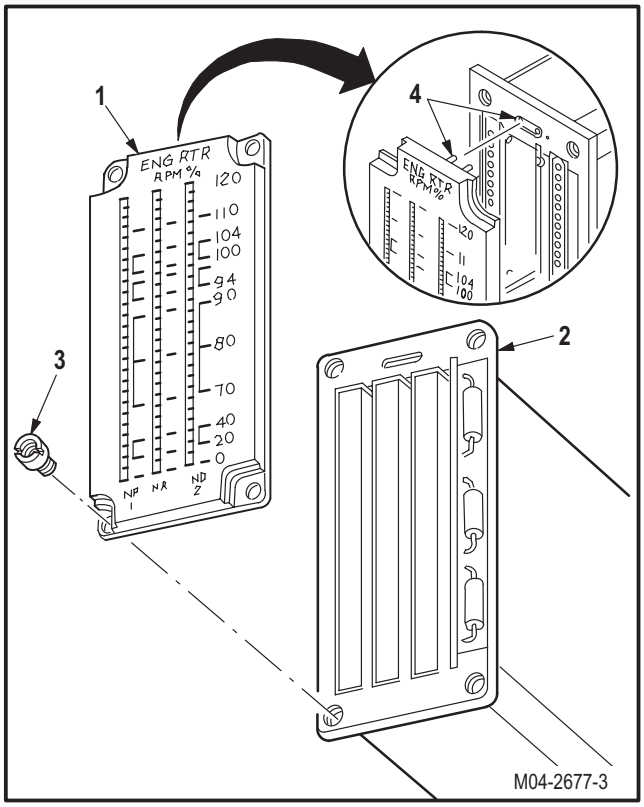
a. **Remove front panel (1) from indicator case (2).** Wear grounding strap.

(1) Remove four bushings (3).

(2) Carefully pull panel (1) away from case (2) until connector (4) detaches.

8.5.4. Cleaning

a. **Wipe panel and indicator case.** Use cloth (item 52, App F).



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8.5. ENGINE/ROTOR RPM INDICATOR FRONT PANEL REMOVAL/INSTALLATION (AVIM) – continued

8.5.5. Inspection

a. **Check panel for dents, nicks, and cracks** (para 8.1)**.**

b. **Check indicator for cracks** (para 8.1)**.**

8.5.6. Installation

CAUTION

Do not exceed **24 INCH-OUNCES** torque on bushings.

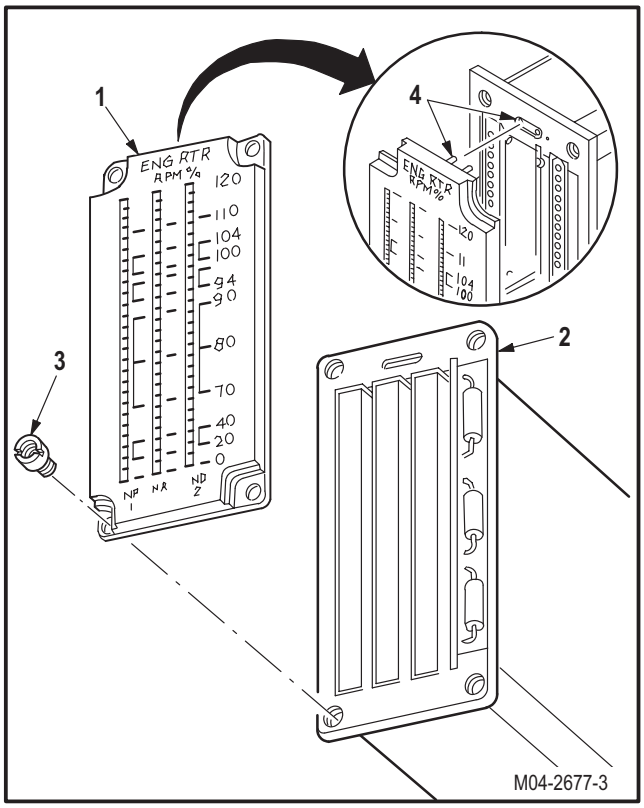
a. **Install panel (1) on case (2).** Torque four bushings (3) to **24 INCH-OUNCES**.

(1) Lubricate four bushings (3). Use lubricant (item 115, App F).

(2) Aline connector (4) and position panel (1) on case (2). Press to engage connector (4).

(3) Install four bushings (3). Torque four bushings (3) to **24 INCH-OUNCES**. Use torque wrench and screwdriver bit.

b. **Inspect (QA).**



END OF TASK

8.6. PILOT ENGINE OIL PRESSURE INDICATOR REMOVAL/INSTALLATION

8.6.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

8.6.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

References:

TM 1-1520-238-T

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

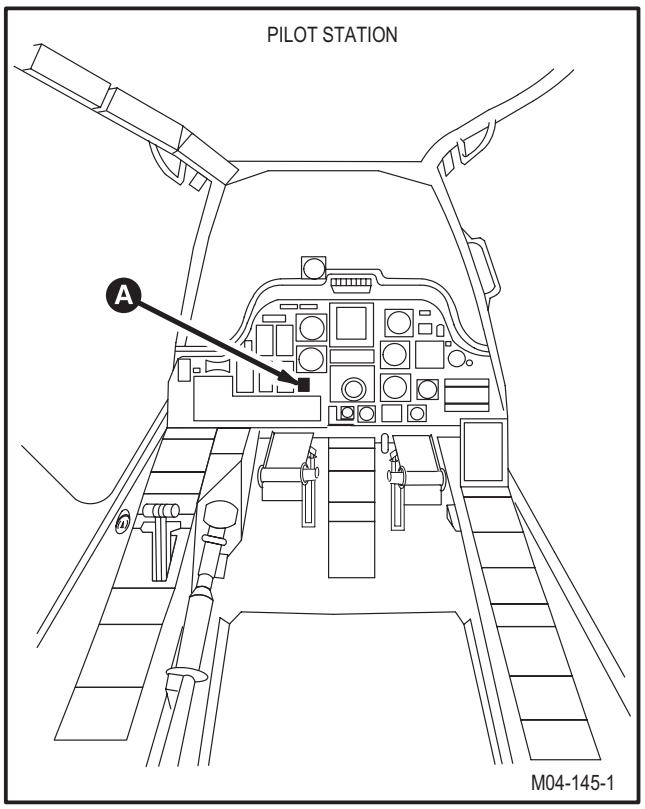
Ref	Condition
1.57	Helicopter safed

8.6.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot center circuit breaker panel, open ENG INST circuit breaker.**

c. **On pilot INTR LT panel, rotate INST control to OFF.**



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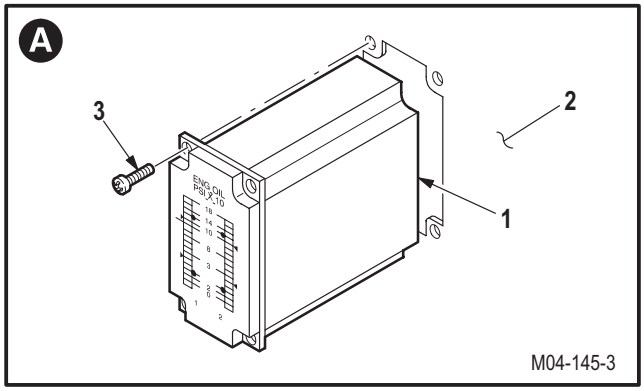
8.6. PILOT ENGINE OIL PRESSURE INDICATOR REMOVAL/INSTALLATION – continued

d. **Remove engine oil pressure indicator (1) from instrument panel (2).**

(1) Remove four screws (3).

(2) Pull indicator (1) from panel (2).

(3) Detach connector P70 (4) from receptacle (M6)J1 (5).



8.6.4. Cleaning

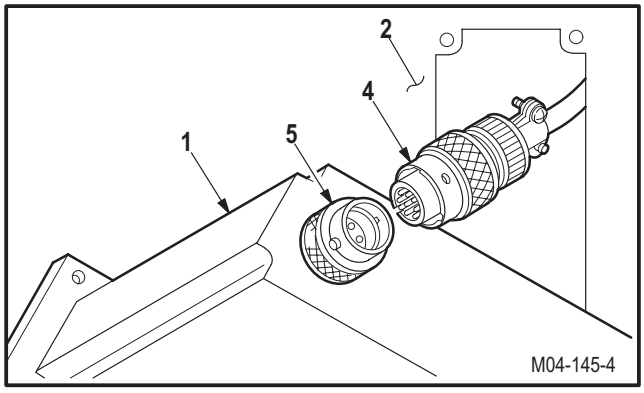
a. **Wipe mounting area and indicator with a clean rag.**

8.6.5. Inspection

a. **Check indicator and panel mounting area for cracks** (para 8.1)**.**

b. **Check indicator and panel mounting area for nicks and dents** (para 8.1)**.**

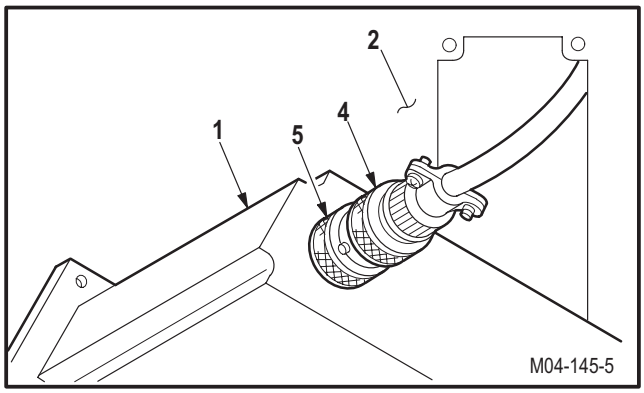
c. **Check panel screw holes for stripped or damaged threads** (para 8.1)**.**



8.6.6. Installation

a. **Install indicator (1) in panel (2).**

(1) Attach connector P70 (4) to receptacle (M6)J1 (5).

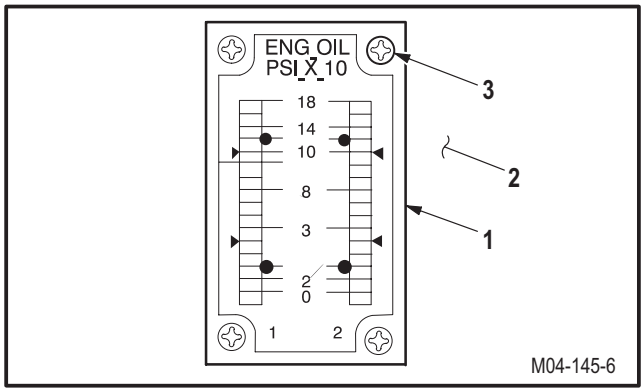


(2) Aline indicator (1) with screw holes in panel (2).

(3) Install four screws (3).

b. **Inspect (QA).**

c. **Perform engine instrument maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

8.7. ENGINE OIL PRESSURE INDICATOR FRONT PANEL REMOVAL/INSTALLATION (AVIM)

8.7.1. Description

This task covers: Removal. Cleaning. Repair. Installation.

8.7.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
3/16-inch flat tip screwdriver bit (item 31, App H)
Industrial faceshield (item 129, App H)
Chemical protective gloves (item 154, App H)
Large wrist grounding strap (item 346, App H)
1 - 100 inch-ounce 1/4-inch hexagon drive click type torque wrench (item 437, App H)

Materials/Parts:

Cloth (item 52, App F)
Lubricant (item 115, App F)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

CAUTION

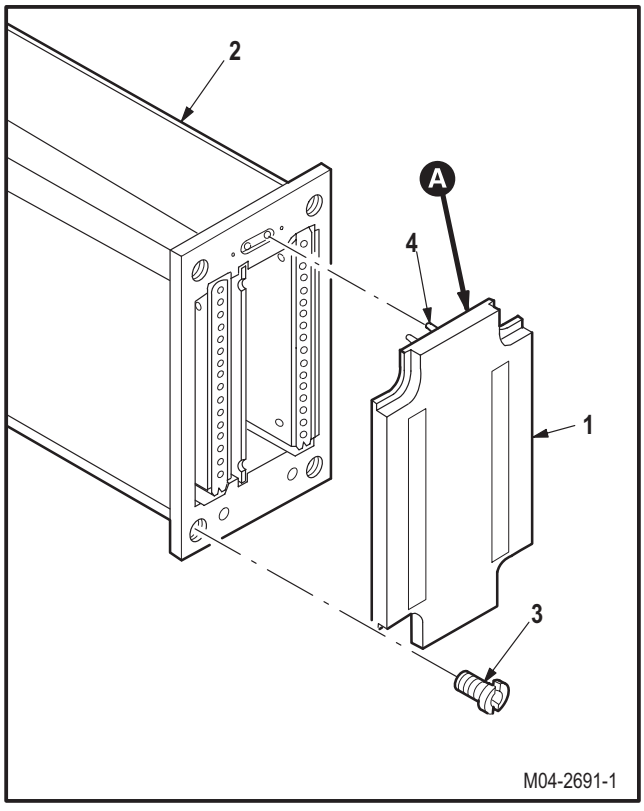
Static electrical discharge can damage semiconductors in circuit card. To prevent damage, repairer must wear grounding strap when panel is off, and when handling circuit card.

8.7.3. Removal

a. **Remove engine oil pressure indicator front panel (1) from indicator case (2).** Wear grounding strap.

(1) Remove four bushings (3).

(2) Carefully pull panel (1) away from case (2) until electrical connector (4) detaches.



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8.7. ENGINE OIL PRESSURE INDICATOR FRONT PANEL REMOVAL/INSTALLATION (AVIM) – continued

8.7.4. Cleaning

a. **Wipe front panel and mounting area.** Use cloth (item 52, App F).

8.7.5. Repair

a. **Repair panel (1) by replacing lighting panel (5).**

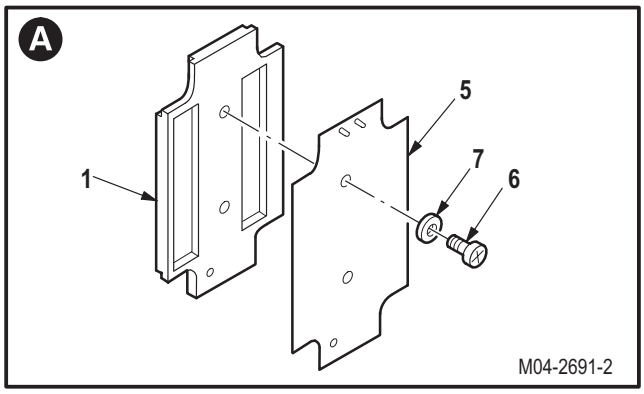
(1) Remove two screws (6) and washers (7).

(2) Remove panel (5).

b. **Install new panel (5) on front panel (1).**

(1) Position panel (5) on panel (1).

(2) Install two washers (7) and screws (6).



8.7.6. Installation

CAUTION

Do not exceed **24 INCH-OUNCES** torque on bushings.

a. **Install panel (1) on case (2).** Torque four bushings (3) to **24 INCH-OUNCES**.

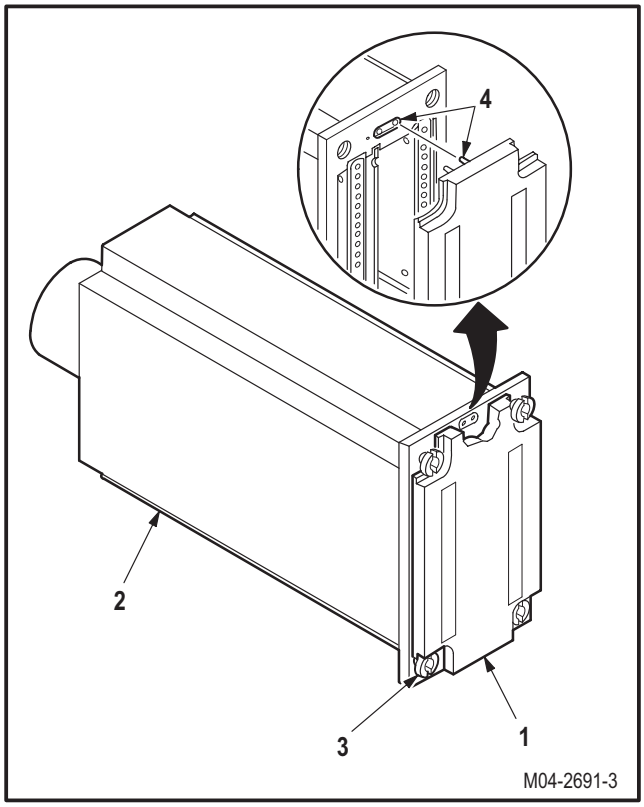
(1) Lubricate four bushings (3). Use lubricant (item 115, App F).

(2) Aline connector (4) and position panel (1) on case (2). Press to engage connector (4).

(3) Install four bushings (3).

(4) Torque four bushings (3) to **24 INCH-OUNCES**. Use torque wrench and screwdriver bit.

b. **Inspect (QA).**



END OF TASK

8.8. PILOT FUEL QUANTITY INDICATOR REMOVAL/INSTALLATION

8.8.1. Description

This task covers: Removal. Cleaning. Inspection. Installation

8.8.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T

Equipment Conditions:

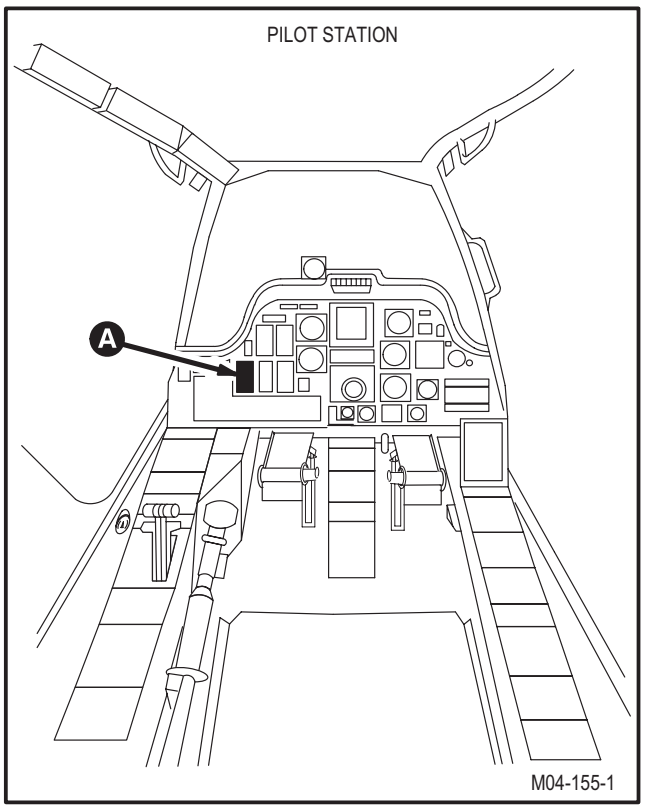
Ref	Condition
1.57	Helicopter safed

8.8.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot center circuit breaker panel, open ENG INST circuit breaker.**

c. **On pilot INTR LT panel, rotate INST control to OFF.**



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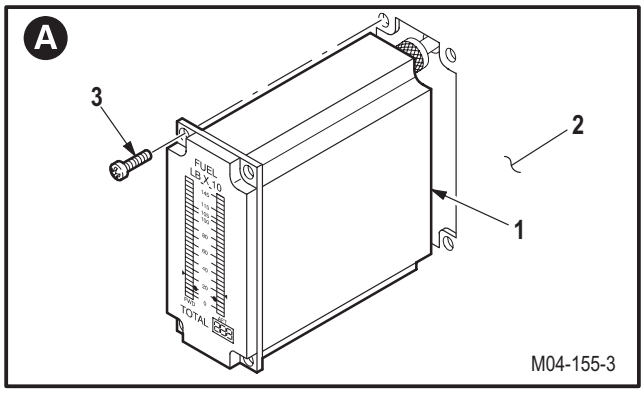
8.8. PILOT FUEL QUANTITY INDICATOR REMOVAL/INSTALLATION – continued

d. **Remove fuel quantity indicator (1) from instrument panel (2).**

(1) Remove four screws (3).

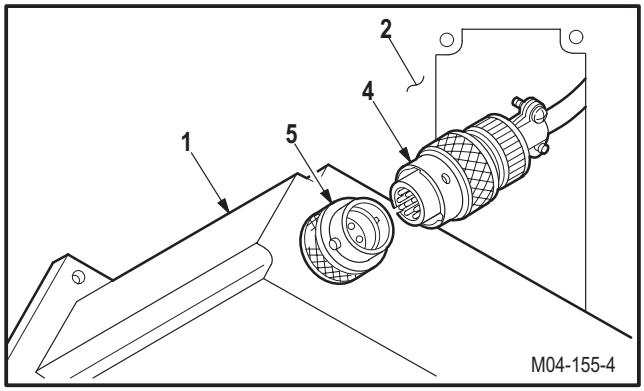
(2) Pull indicator (1) from panel (2).

(3) Detach connector P253 (4) from receptacle (M17)J1 (5).



8.8.4. Cleaning

a. **Wipe mounting area and indicator with a clean rag.**



8.8.5. Inspection

a. **Check indicator and panel mounting area for cracks** (para 8.1)**.**

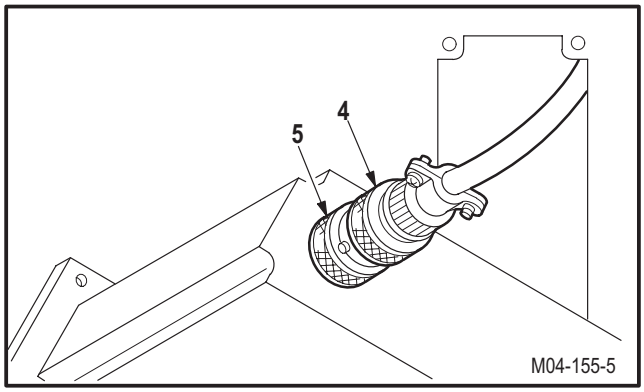
b. **Check indicator and panel mounting area for nicks and dents** (para 8.1)**.**

c. **Check panel screw holes for stripped or damaged threads** (para 8.1)**.**

8.8.6. Installation

a. **Install indicator (1) in panel (2).**

(1) Attach connector P253 (4) to receptacle (M17)J1 (5).

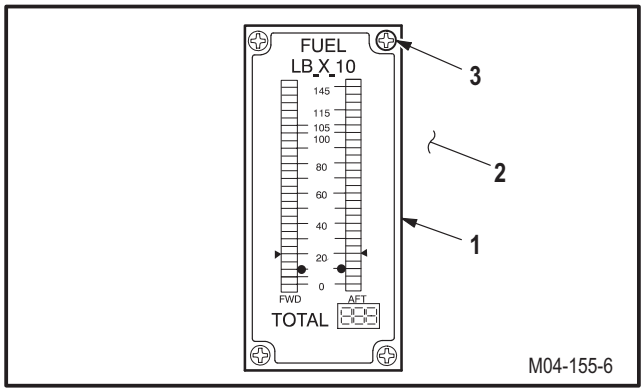


(2) Aline indicator (1) with screw holes in panel (2).

(3) Install four screws (3).

b. **Inspect (QA).**

c. **Perform engine instruments maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

8.9. PILOT ENGINE TURBINE GAS TEMPERATURE (TGT) INDICATOR AND ENGINE GAS GENERATOR N_G RPM INDICATOR REMOVAL/INSTALLATION

8.9.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

8.9.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T

Equipment Conditions:

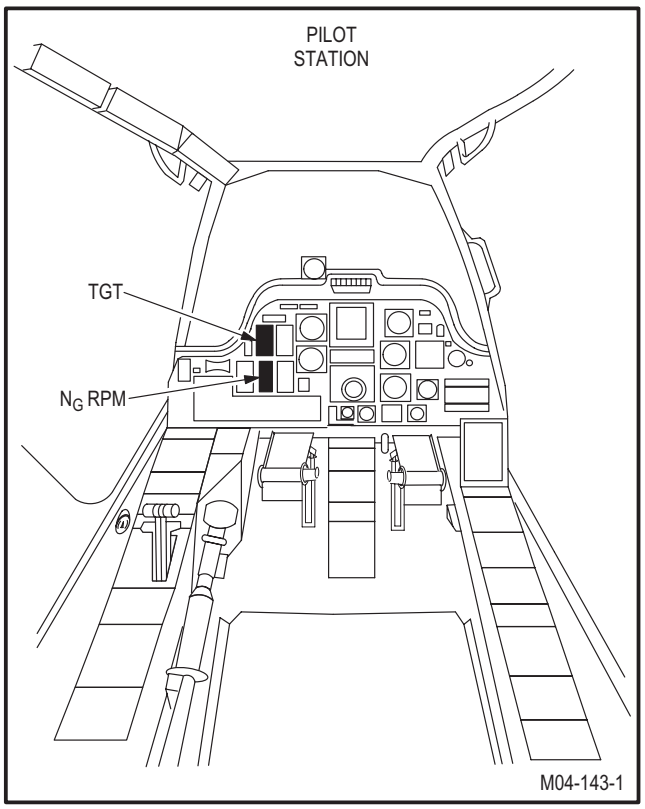
Ref	Condition
1.57	Helicopter safed

8.9.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot center circuit breaker panel, open ENG INST circuit breaker.**

c. **On pilot INTR LT panel, rotate INST control to OFF.**



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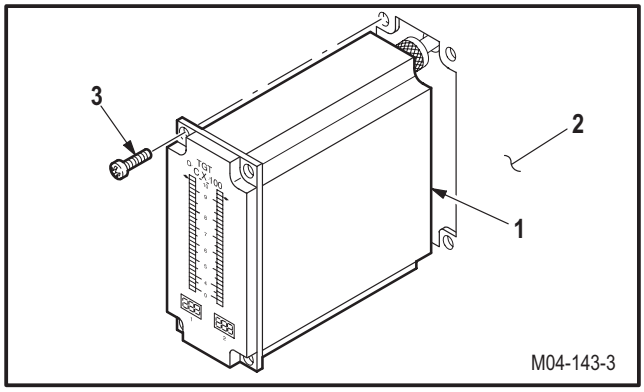
8.9. PILOT ENGINE TURBINE GAS TEMPERATURE (TGT) INDICATOR AND ENGINE GAS GENERATOR N_G RPM INDICATOR REMOVAL/INSTALLATION – continued

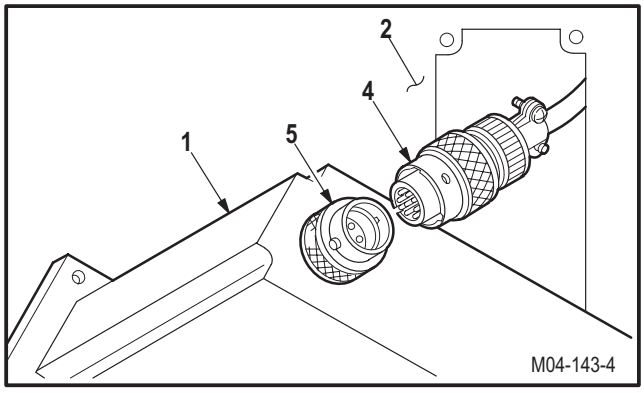
d. **Remove engine turbine gas temperature (TGT) or engine gas generator (N_G rpm) indicator (1) from instrument panel (2).**

(1) Remove four screws (3).

(2) Pull indicator (1) from panel (2).



(3) Detach connector P68 (TGT indicator)/P67 (N_G rpm indicator) (4) from receptacle (M4)J1 (TGT indicator)/(M3)J1 (N_G rpm indicator) (5).



8.9.4. Cleaning

a. **Wipe mounting area and indicator with a clean rag.**

8.9.5. Inspection

a. **Check indicator and panel mounting area for cracks** (para 8.1)**.**

b. **Check indicator and panel mounting area for dents and nicks** (para 8.1)**.**

c. **Check panel screw holes for stripped or damaged threads** (para 8.1)**.**

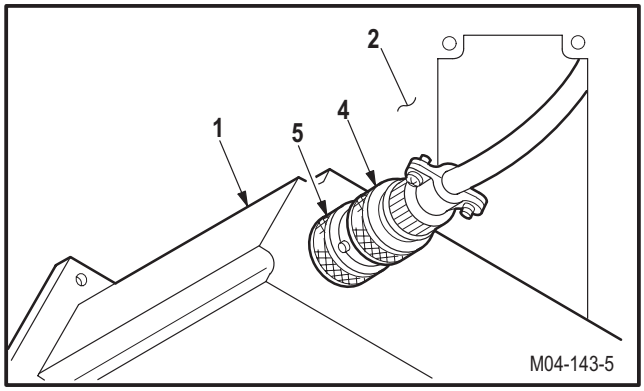
GO TO NEXT PAGE

8.9. PILOT ENGINE TURBINE GAS TEMPERATURE (TGT) INDICATOR AND ENGINE GAS GENERATOR N_G RPM INDICATOR REMOVAL/INSTALLATION – continued

8.9.6. Installation

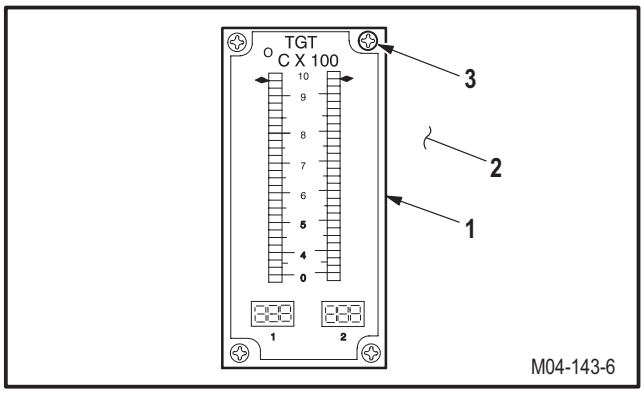
a. **Install indicator (1) in panel (2).**

(1) Attach connector P68 (TGT indicator)/P67 (N_G rpm indicator) (4) to receptacle (M4)J1 (TGT indicator)/(M3)J1 (N_G rpm indicator) (5).



(2) Aline indicator (1) with screw holes in panel (2).

(3) Install four screws (3).



b. **Inspect (QA).**

c. **Perform engine instrument maintenance operational check** (TM 1-1520-238-T)**.**

END OF TASK

8.10. TORQUE, TGT, FUEL, AND N_G INDICATORS LIGHT PANEL, DIGITAL DISPLAY DRIVER CIRCUIT CARD REPLACEMENT (AVIM)

8.10.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

8.10.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
3/16-inch flat tip screwdriver bit (item 31, App H)
#1 phillips screwdriver bit (item 35, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
Large wrist grounding strap (item 346, App H)
1 - 100 inch-ounce 1/4-inch hexagon drive click type torque wrench (item 437, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Materials/Parts:

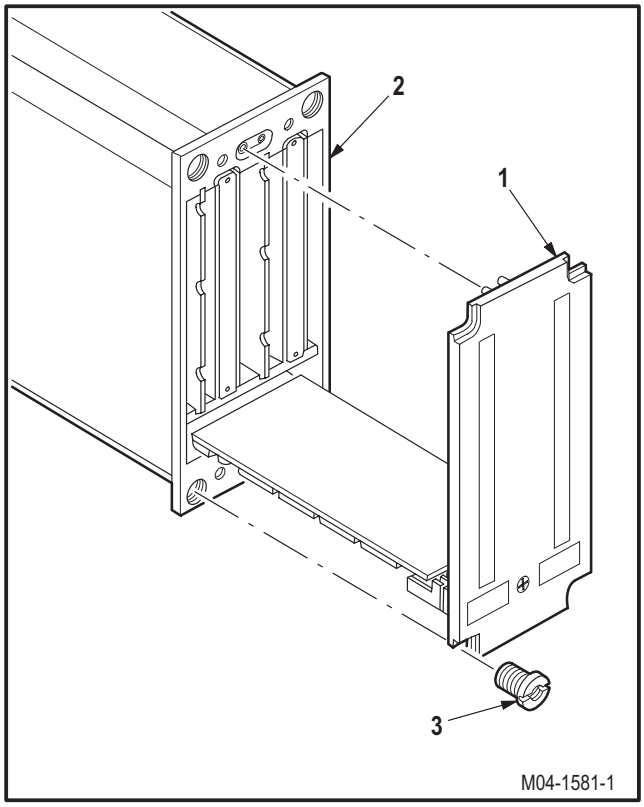
Cloth (item 52, App F)
Lubricant (item 115, App F)

References:

TM 11-6625-3085-30

CAUTION

Static electrical discharge can damage semiconductors in circuit card. To prevent damage, repairer must wear grounding strap when cover is off, and when handling circuit cards.



8.10.3. Removal

a. **Remove light panel (1) from indicator (2).**

(1) Remove four bushings (3).

(2) Pull panel (1) from indicator (2).

GO TO NEXT PAGE

8.10. TORQUE, TGT, FUEL, AND N_G INDICATORS LIGHT PANEL, DIGITAL DISPLAY DRIVER CIRCUIT CARD REPLACEMENT (AVIM) – continued

b. **Remove digital display driver circuit card (4) from panel (1).** Wear grounding strap.

(1) Remove screw (5).

8.10.4. Cleaning

a. **Wipe panel and indicator guides.** Use cloth (item 52, App F).

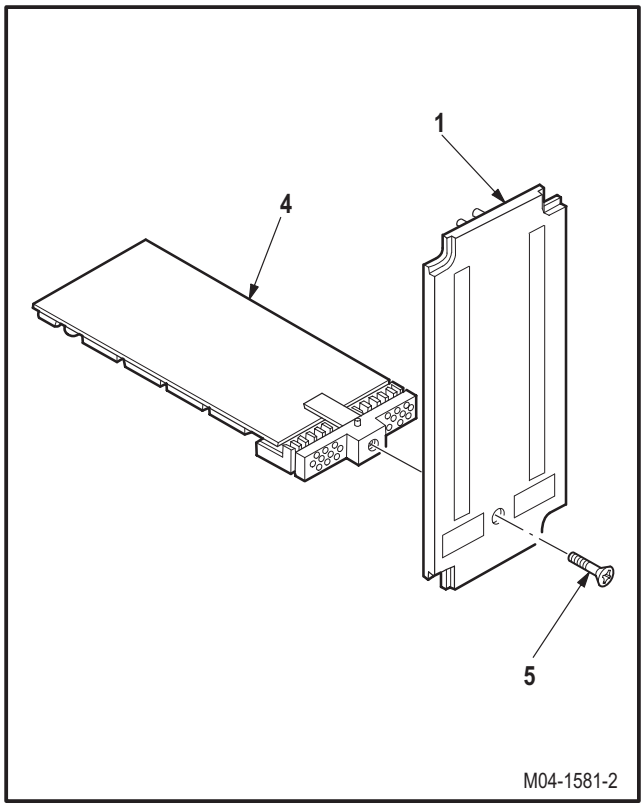
8.10.5. Inspection

a. **Check panel for cracks, nicks, and dents** (para 8.1)**.**

8.10.6. Installation

a. **Install card (4) on panel (1).** Torque screw (5) to **37 INCH-OUNCES**.

(1) Install screw (5). Torque screw (5) to **37 INCH-OUNCES**. Use torque wrench and screwdriver bit.



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8.10. TORQUE, TGT, FUEL, AND N_G INDICATORS LIGHT PANEL, DIGITAL DISPLAY DRIVER CIRCUIT CARD REPLACEMENT (AVIM) – continued

CAUTION

Do not exceed **24 INCH-OUNCES** torque on bushings.

b. **Install panel (1) on indicator (2).** Torque four bushings (3) to **24 INCH-OUNCES**.

(1) Position card (4) in guides (6).

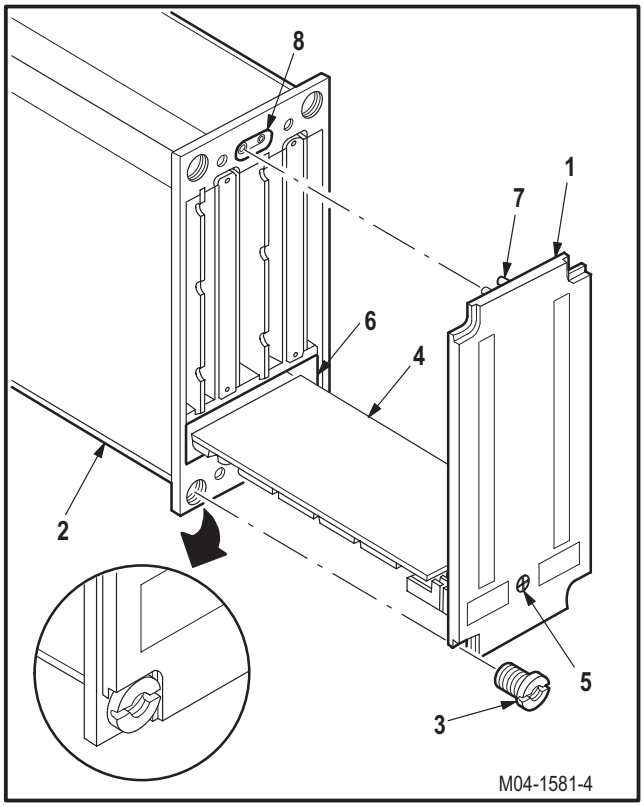
(2) Aline two pins (7) with receptacles (8). Press to engage pins (7).

(3) Lubricate four bushings (3). Use lubricant (item 115, App F).

(4) Install four bushings (3). Torque bushings to **24 INCH-OUNCES**. Use torque wrench and screwdriver bit.

c. **Inspect (QA).**

d. **Perform appropriate test.** Use Electronic Equipment Test Facility (EETF) (TM 11-6625-3085-30).



END OF TASK

8.11. ANALOG OR INTERFACE CIRCUIT CARD ON TORQUE, TGT, FUEL, AND N_G INDICATORS REPLACEMENT (AVIM)

8.11.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

8.11.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Large wrist grounding strap (item 346, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
8.10	Light panel or digital display driver removed

Materials/Parts:

Cloth (item 52, App F)

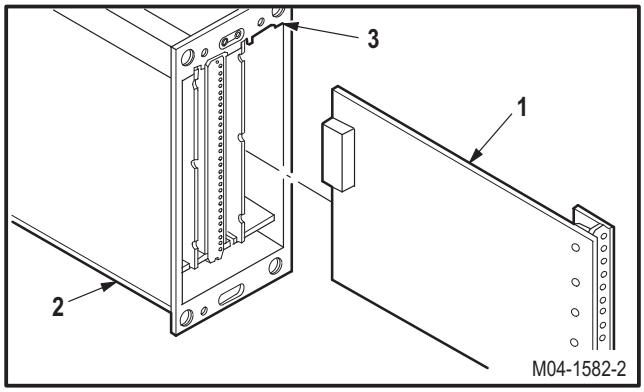
CAUTION

Static electrical discharge can damage semiconductors in circuit card. To prevent damage, repairer must wear grounding strap when cover is off, and when handling circuit cards.

8.11.3. Removal

a. **Remove circuit card (1) from indicator (2).** Wear grounding strap.

(1) Pull card (1) from guide (3).



8.11.4. Cleaning

a. **Wipe indicator guide.** Use cloth (item 52, App F).

8.11.5. Inspection

a. **Check indicator for cracks, nicks, and dents** (para 8.1)**.**

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8.11. ANALOG OR INTERFACE CIRCUIT CARD ON TORQUE, TGT, FUEL, AND N_G INDICATORS REPLACEMENT (AVIM) – continued

8.11.6. Installation

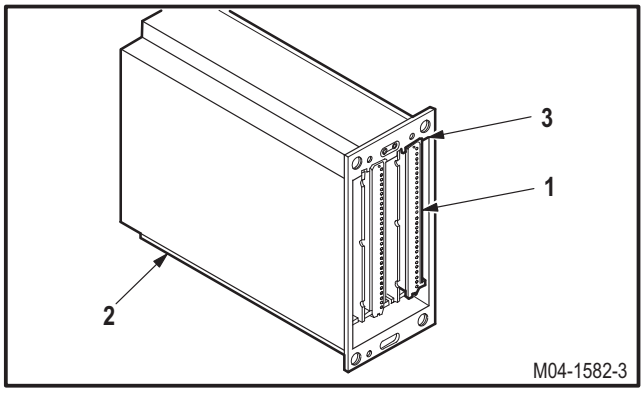
a. **Install card (1) in indicator (2).**

(1) Insert card (1) into guides (3).

(2) Press card (1) down to seat.

b. **Inspect (QA).**

c. **Install light panel or digital display driver** (para 8.10)**.**



END OF TASK

8.12. VERTICAL DISPLAY LAMP BOARD REPLACEMENT (AVIM)

8.12.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

8.12.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Industrial faceshield (item 129, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Cloth (item 52, App F)
Sealing compound (item 168, App F)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
8.11	Analog or interface circuit card removed

NOTE

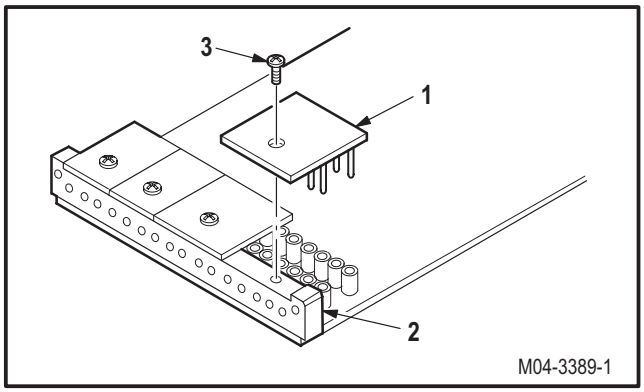
This task is typical for torque, TGT, fuel, oil pressure, engine/rotor RPM, and N_G lamp board.

8.12.3. Removal

a. **Remove lamp board (1) from light bar (2).**

(1) Remove retaining screw (3) from board (1).

(2) Carefully pull board (1) from bar (2).



8.12.4. Cleaning

a. **Wipe board.** Use cloth (item 52, App F).

8.12.5. Inspection

a. **Check board for cracks, lose or broken pins, and broken lamp filaments** (para 8.1)**.**

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8.12. VERTICAL DISPLAY LAMP BOARD REPLACEMENT (AVIM) – continued

8.12.6. Installation

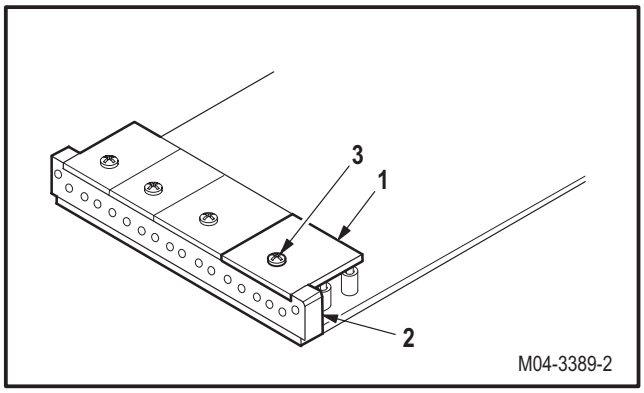
a. **Install board (1) on bar (2).**

(1) Aline board (1) on bar (2).

(2) Press down on board (1) to seat on bar (2).

(3) Apply sealing compound to screw (3). Use sealing compound (item 168, App F).

(4) Install screw (3).



b. **Inspect (QA).**

c. **Install circuit card** (para 8.11)**.**

END OF TASK

8.13. CPG SELECTABLE DIGITAL DISPLAY (SDD) PANEL REMOVAL/INSTALLATION

8.13.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

8.13.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T

Equipment Conditions:

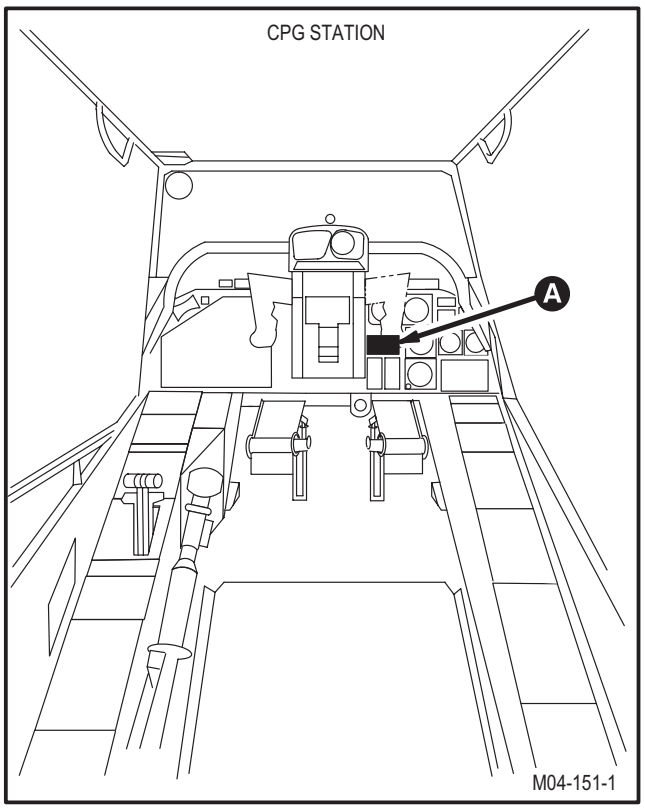
Ref	Condition
1.57	Helicopter safed

8.13.3. Removal

a. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**

b. **On CPG left console circuit breaker panel No. 1, open ENG INST circuit breaker.**

c. **On CPG INTR LT panel, rotate INST control to OFF.**



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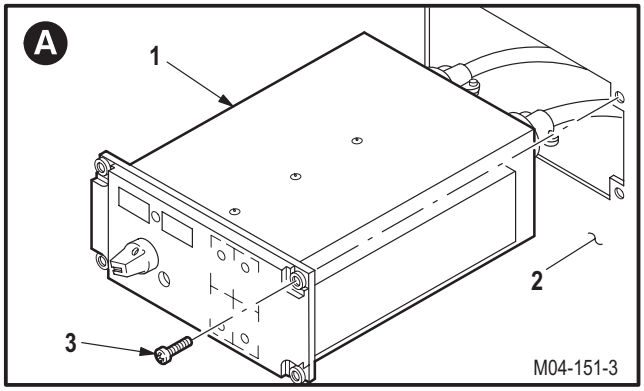
8.13. CPG SELECTABLE DIGITAL DISPLAY (SDD) PANEL REMOVAL/INSTALLATION – continued

d. **Remove selectable digital display (SDD) panel (1) from instrument panel (2).**

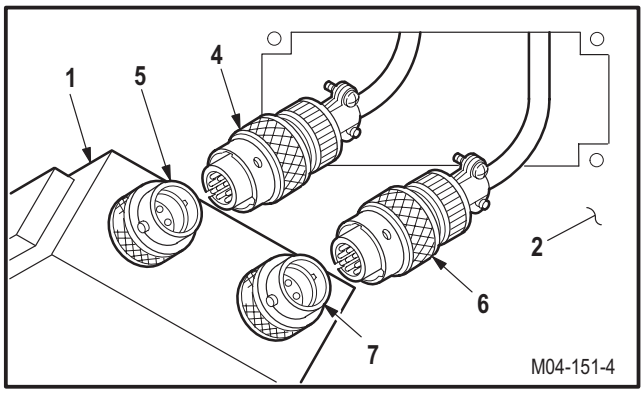
(1) Remove four screws (3).



(2) Pull panel (1) clear of panel (2).

(3) Detach connector P279 (4) from receptacle (A156)J1 (5).

(4) Detach connector P280 (6) from receptacle (A156)J2 (7).



8.13.4. Cleaning

a. **Wipe mounting area and SDD panel with a clean rag.**

8.13.5. Inspection

a. **Check SDD panel and instrument panel mounting area for cracks** (para 8.1)**.**

b. **Check SDD panel and instrument panel mounting area for nicks and dents** (para 8.1)**.**

c. **Check instrument panel screw holes for stripped or damaged threads** (para 8.1)**.**

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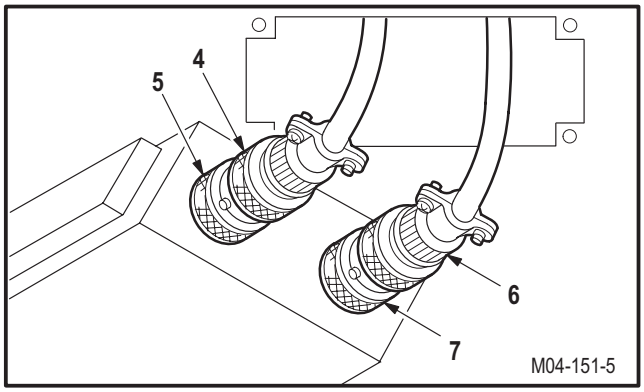
8.13. CPG SELECTABLE DIGITAL DISPLAY (SDD) PANEL REMOVAL/INSTALLATION – continued

8.13.6. Installation

a. **Install panel (1) in panel (2).**

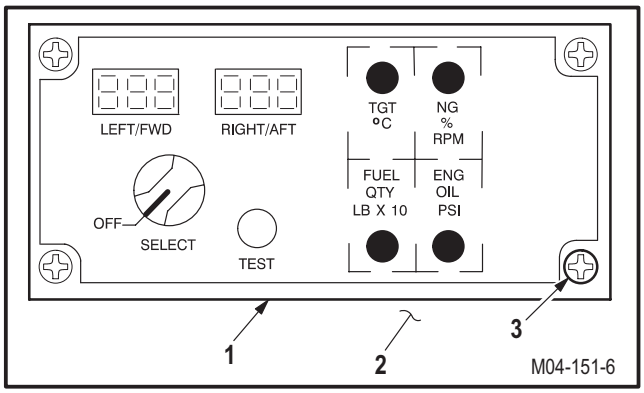
(1) Attach connector P279 (4) to receptacle (A156)J1 (5).

(2) Attach connector P280 (6) to receptacle (A156)J2 (7).



(3) Aline panel (1) with screw holes in panel (2).

(4) Install four screws (3).



b. **Inspect (QA).**

c. **Perform engine instrument maintenance operational check** (TM 1-1520-238-T)**.**

END OF TASK

8.14. SELECTABLE DIGITAL DISPLAY (SDD) PANEL FRONT PANEL REMOVAL/INSTALLATION (AVIM)

8.14.1. Description

This task covers: Removal. Repair. Installation.

8.14.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
3/16-inch flat tip screwdriver bit (item 31, App H)
#1 phillips screwdriver bit (item 35, App H)
Industrial faceshield (item 129, App H)
Chemical protective gloves (item 154, App H)
Large wrist grounding strap (item 346, App H)
1 - 100 inch-ounce 1/4-inch hexagon drive click type torque wrench (item 437, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Materials/Parts:

Lubricant (item 115, App F)

References:

TM 11-6625-3085-30

CAUTION

Static electrical discharge can damage semiconductors in circuit card. To prevent damage, repairer must wear grounding strap when panel is off, and when handling circuit cards.

8.14.3. Removal

a. **Remove function select knob (1) from select switch shaft (2).**

(1) Remove two setscrews (3).

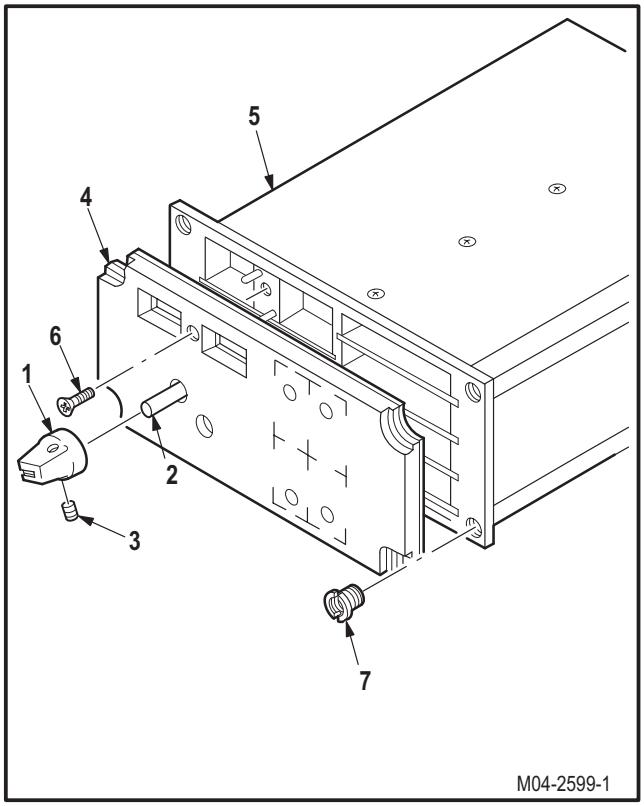
(2) Remove knob (1).

b. **Remove selectable digital display (SDD) front panel (4) from indicator case (5).** Wear grounding strap.

(1) Remove screw (6) from panel (4).

(2) Remove four bushings (7).

(3) Carefully pull panel (4) away from case (5).



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8.14. SELECTABLE DIGITAL DISPLAY (SDD) PANEL FRONT PANEL REMOVAL/INSTALLATION (AVIM) – continued

8.14.4. Repair

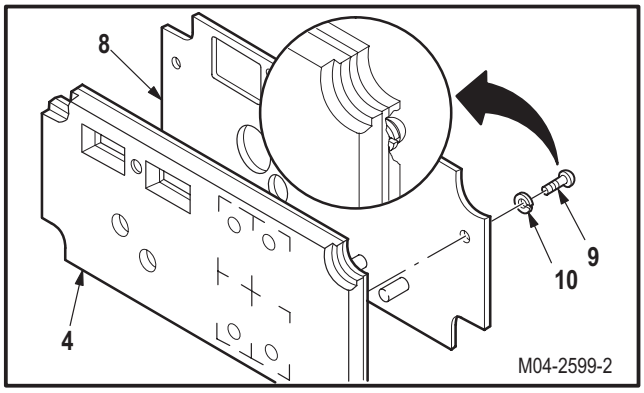
a. **Repair panel (4) by replacing illuminated panel (8).**

(1) Remove two screws (9) and lockwashers (10).

(2) Remove panel (8) from panel (4).

(3) Install serviceable panel (8) on panel (4).

(4) Install two screws (9) and lockwashers (10).



b. **Inspect (QA).**

8.14.5. Installation

CAUTION

Do not exceed **24 INCH-OUNCES** torque on bushings.

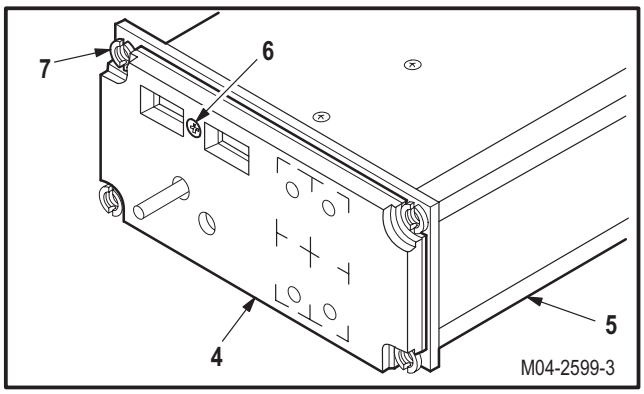
a. **Install panel (4) on case (5).** Torque four bushings (7) to **24 INCH-OUNCES**. Torque screw (6) to **37 INCH-OUNCES**.

(1) Lubricate four bushings (7). Use lubricant (item 115, App F).

(2) Aline panel (4) on case (5). Install four bushings (7).

(3) Torque bushings (7) to **24 INCH-OUNCES**. Use torque wrench and screwdriver bit.

(4) Install screw (6). Torque screw (6) to **37 INCH-OUNCES**. Use torque wrench and screwdriver bit.



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8.14. SELECTABLE DIGITAL DISPLAY (SDD) PANEL FRONT PANEL REMOVAL/INSTALLATION (AVIM) – continued

b. **Install knob (1).**

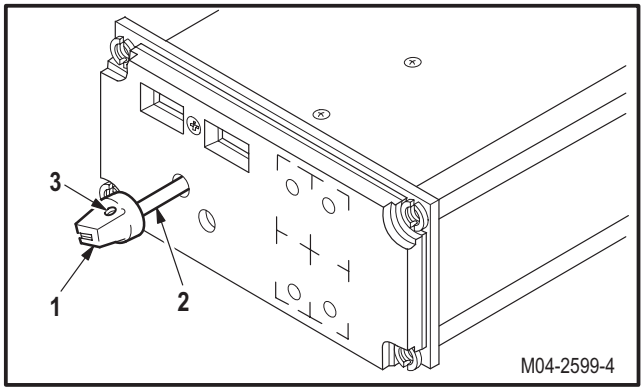
(1) Position knob (1) on shaft (2).

(2) Set knob (1) to **OFF**.

(3) Install two setscrews (3).

c. **Inspect (QA).**

d. **Perform appropriate test.** Use Electronic Equipment Test Facility (EETF) (TM 11-6625-3085-30).



END OF TASK

8.15. SELECTABLE DIGITAL DISPLAY (SDD) PANEL SWITCH MODULE REPLACEMENT (AVIM)

8.15.1. Description

This task covers: Removal. Installation.

8.15.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Large wrist grounding strap (item 346, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
8.14	SDD panel front panel removed

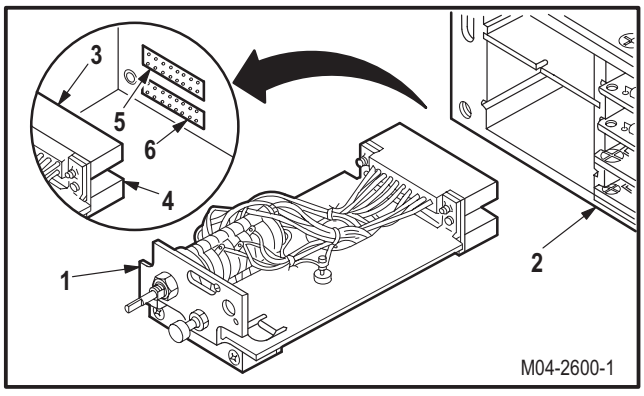
CAUTION

Static electrical discharge can damage semiconductors in circuit card. To prevent damage, repairer must wear grounding strap when panel is off, and when handling circuit cards.

8.15.3. Removal

a. **Remove SDD switch module (1) from indicator case (2).**

(1) Pull module (1) from case (2) to detach connectors P1 (3) and P2 (4) from receptacles J6 (5) and J7 (6). Wear grounding strap.



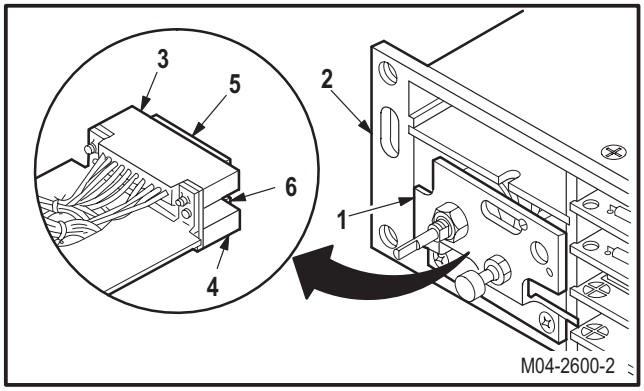
8.15.4. Installation

a. **Install module (1) in case (2).**

(1) Slide module (1) into case (2) and attach connectors P1 (3) and P2 (4) to receptacles J6 (5) and J7 (6).

b. **Inspect (QA).**

c. **Install SDD panel front panel** (para 8.14)**.**



END OF TASK

8.16. SELECTABLE DIGITAL DISPLAY (SDD) PANEL CIRCUIT CARD REPLACEMENT (AVIM)

8.16.1. Description

This task covers: Removal. Installation.

8.16.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
PC shunt bar (item 223, App H)
Large wrist grounding strap (item 346, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Materials/Parts:

Shipping and storage bag (item 182, App F)

Equipment Conditions:

Ref	Condition
8.14	SDD panel front panel removed

CAUTION

Static electrical discharge can damage semiconductors in circuit card. To prevent damage, repairer must wear grounding strap when panel is off, and when handling circuit cards.

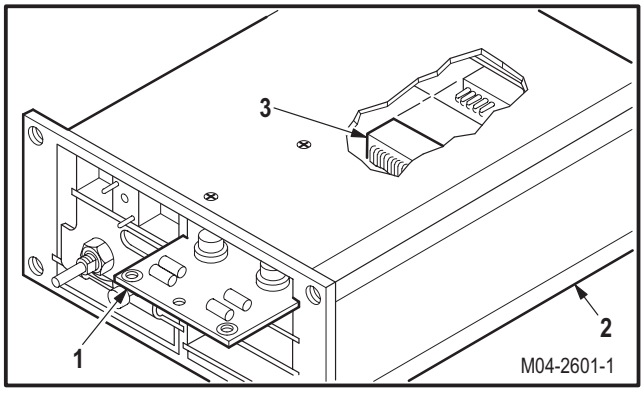
NOTE

This task is typical for all circuit cards in the SDD.

8.16.3. Removal

a. **Remove SDD circuit card (1) from SDD case (2).**

(1) Pull card (1) forward to release mating connector (3). Wear grounding strap.



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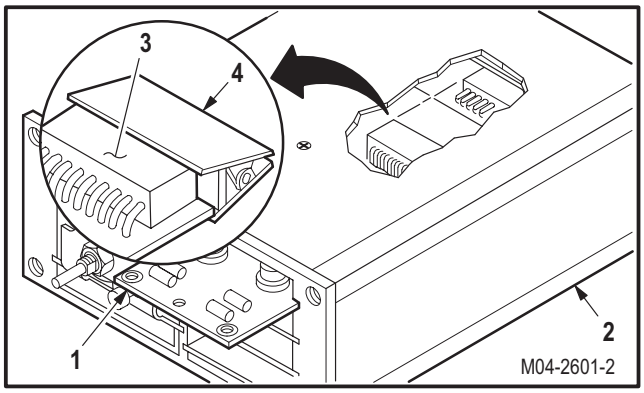
8.16. SELECTABLE DIGITAL DISPLAY (SDD) PANEL CIRCUIT CARD REPLACEMENT (AVIM) – continued

NOTE

Step b applies only to removal of digital voltmeter circuit card.

b. **Install shunt bar (4) on connector (3).** Use shunt bar.

c. **Place card (1) in bag.** Use shipping and storage bag (item 182, App F).



8.16.4. Installation

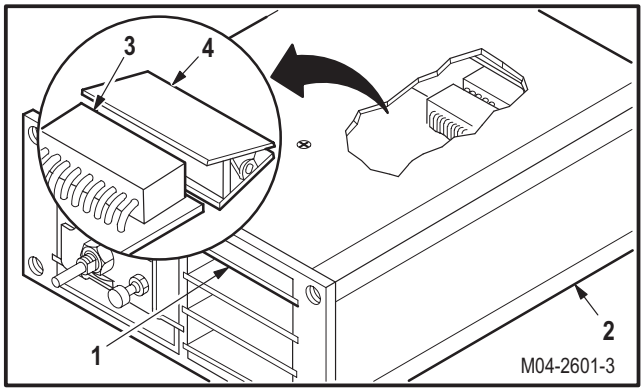
a. **Install card (1) in case (2).**

(1) Remove bar (4), if installed.

(2) Insert card (1) to mate with connector (3).

b. **Inspect (QA).**

c. **Install SDD panel front panel** (para 8.14)**.**



END OF TASK

8.17. SELECTABLE DIGITAL DISPLAY (SDD) PANEL CASE REPLACEMENT (AVIM)

8.17.1. Description

This task covers: Removal. Installation.

8.17.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
#1 phillips screwdriver bit (item 35, App H)
Industrial faceshield (item 129, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
Large wrist grounding strap (item 346, App H)
1 - 100 inch-ounce 1/4-inch hexagon drive click type torque wrench (item 437, App H)

Materials/Parts:

Coating compound (item 59, App F)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
8.14	SDD panel front panel removed
8.15	SDD panel switch module removed
8.16	SDD panel circuit cards removed

CAUTION

Static electrical discharge can damage semiconductors in circuit card. To prevent damage, repairer must wear grounding strap when panel is off, and when handling circuit cards.

8.17.3. Removal

a. **Remove side covers (1) and (2).**

(1) Remove two screws (3) and cover (1).

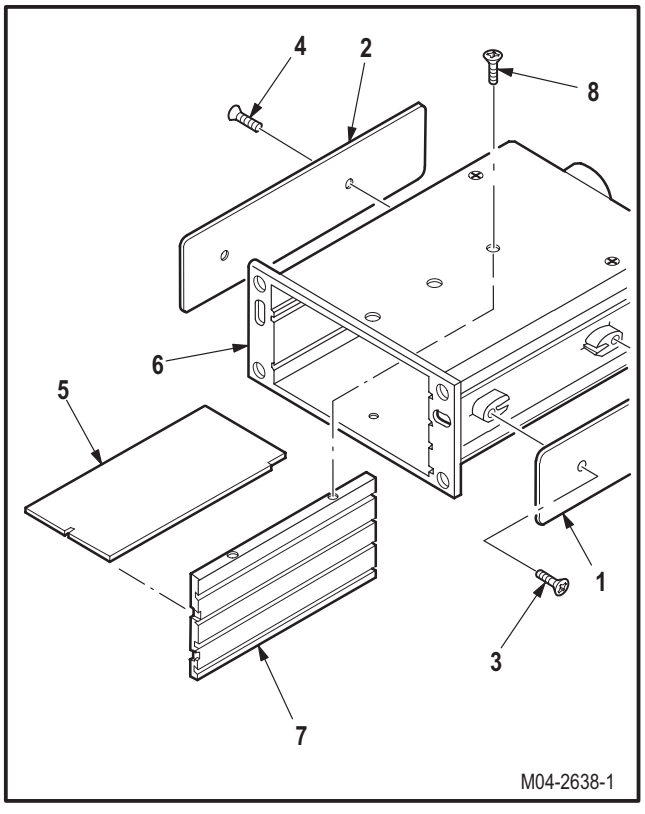
(2) Remove two screws (4) and cover (2).

b. **Remove partition (5) from SDD case (6).**

c. **Remove circuit card guide (7) from case (6).**

(1) Remove six screws (6).

(2) Remove guide (7).



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8.17. SELECTABLE DIGITAL DISPLAY (SDD) PANEL CASE REPLACEMENT (AVIM) – continued

d. **Remove eight screws (9) that release connectors (10) and (11) and two nut plates (12).**

e. **Remove motherboard wiring subassembly (13).**

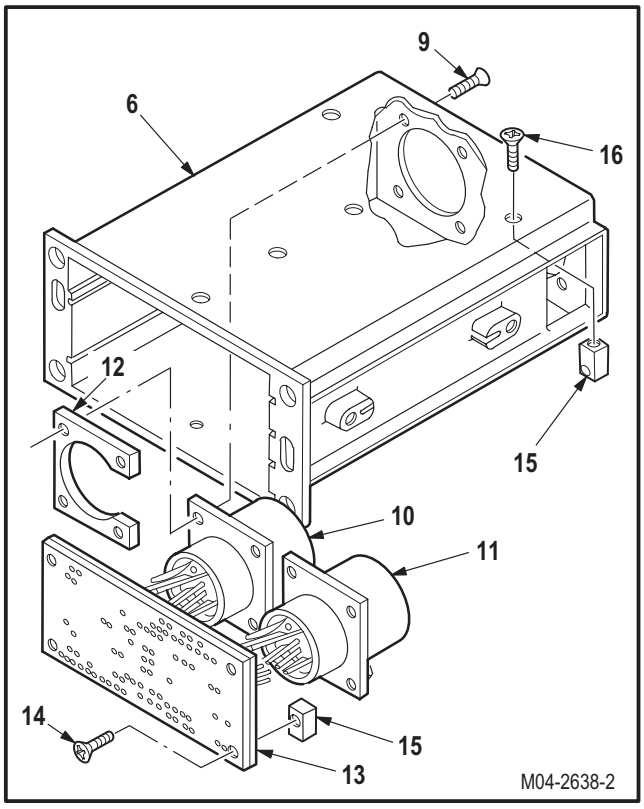
(1) Remove four screws (14) that secure subassembly (13) to motherboard mounting blocks (15).

(2) Slide subassembly (13) out through front of case (6).

f. **Remove front blocks (15).**

(1) Remove four screws (16) that secure blocks (15) to case (6).

(2) Lift four blocks (15) out through rear of case (6).



8.17.4. Installation

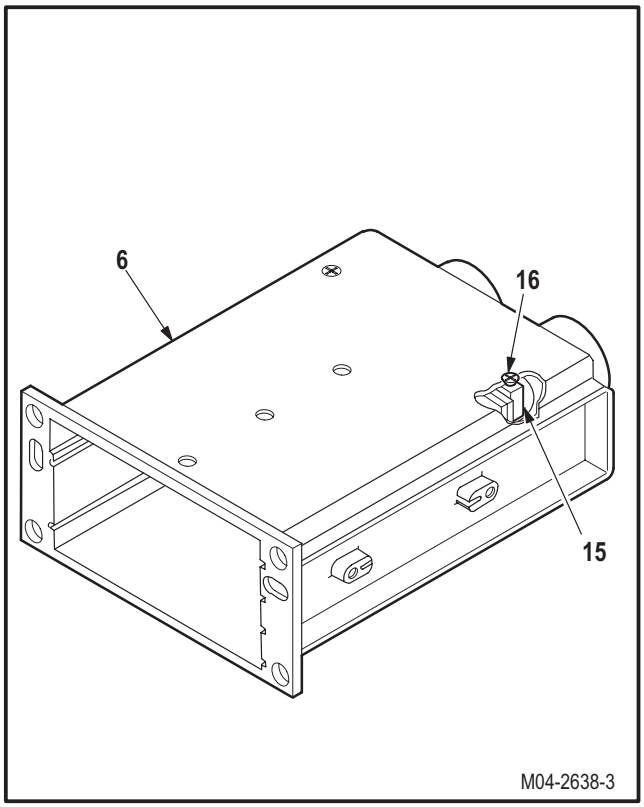
a. **Install four blocks (15).** Torque four screws (16) to **37 INCH-OUNCES**.

(1) Aline four blocks (15) with screw holes inside rear of case (6).

(2) Coat threads of four screws (16). Use coating compound (item 59, App F).

(3) Install four screws (16) to secure four blocks (15).

(4) Torque four screws (16) to **37 INCH-OUNCES**. Use torque wrench and screwdriver bit.



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8.17. SELECTABLE DIGITAL DISPLAY (SDD) PANEL CASE REPLACEMENT (AVIM) – continued

b. **Install subassembly (13) and motherboard (17).** Torque eight screws (9) to **37 INCH-OUNCES**.

(1) Place two nutplates (12) over wiring near connectors (10) and (11).

(2) Slide motherboard (17) into case (6) and position against four blocks (15).

(3) Aline connectors (10) and (11) and two nutplates (12) with screw holes in case (6).

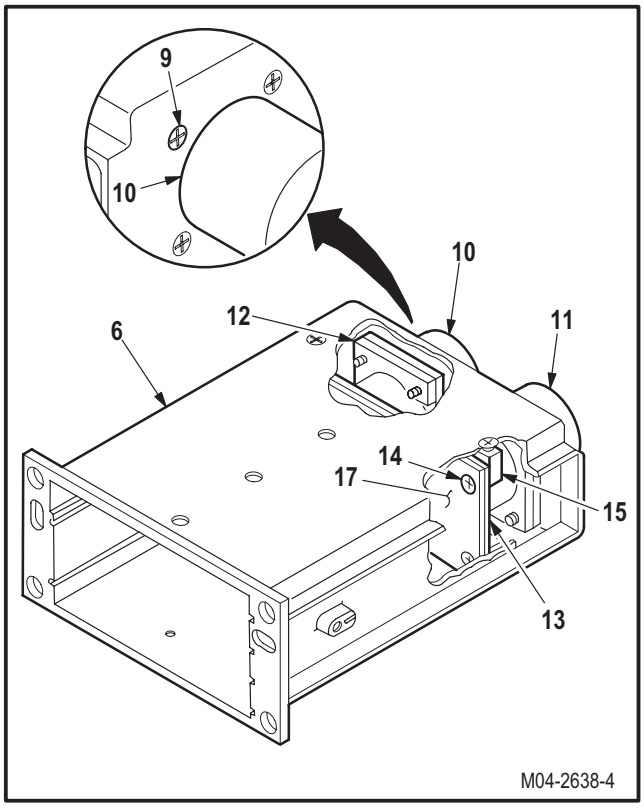
(4) Coat threads of eight screws (9) and four screws (14). Use coating compound (item 59, App F).

(5) Install eight screws (9) to secure connectors (10) and (11).

(6) Torque eight screws (9) to **37 INCH-OUNCES**. Use torque wrench and screwdriver bit.

(7) Install four screws (14) to secure motherboard (17) and subassembly (13) to blocks (15).

(8) Torque four screws (14) to **37 INCH-OUNCES**. Use torque wrench and screwdriver bit.



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8.17. SELECTABLE DIGITAL DISPLAY (SDD) PANEL CASE REPLACEMENT (AVIM) – continued

c. **Install guide (7).** Torque six screws (8) to **37 INCH-OUNCES**.

(1) Install guide (7) in case (6).

(2) Coat threads of six screws (8). Use coating compound (item 59, App F).

(3) Install six screws (8). Torque six screws (8) to **37 INCH-OUNCES**. Use torque wrench and screwdriver bit.

d. **Install partition (5) in case (6).**

e. **Install covers (1) and (2).** Torque two screws (4) and two screws (3) to **37 INCH-OUNCES**.

(1) Coat threads of two screws (3) and (4). Use coating compound (item 59, App F).

(2) Install two screws (4) in cover (2). Torque two screws (4) to **37 INCH-OUNCES**. Use torque wrench and screwdriver bit.

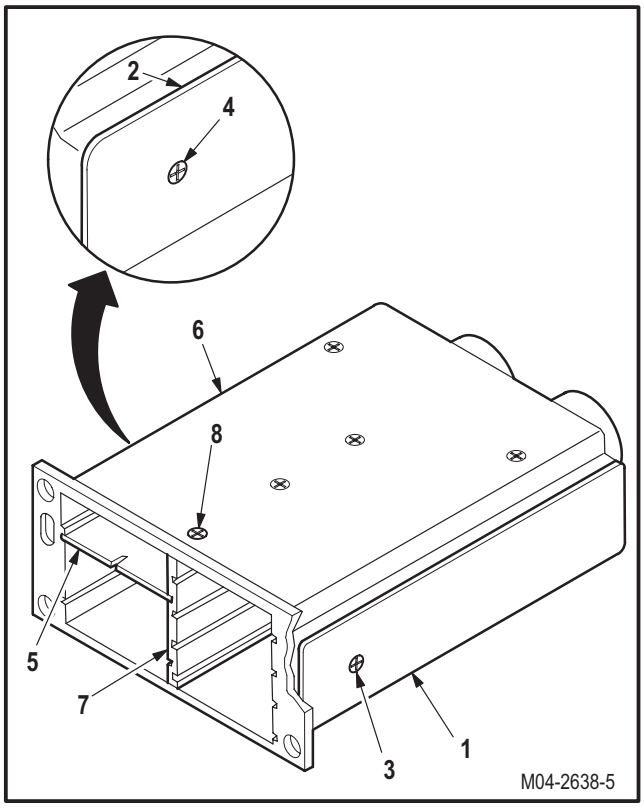
(3) Install two screws (3) in cover (1). Torque two screws (3) to **37 INCH-OUNCES**. Use torque wrench and screwdriver bit.

f. **Inspect (QA).**

g. **Install SDD panel circuit cards** (para 8.16)**.**

h. **Install SDD panel switch** (para 8.15)**.**

i. **Install SDD panel front panel** (para 8.14)**.**



END OF TASK

8.18. SIGNAL DATA CONVERTER REMOVAL/INSTALLATION

8.18.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

8.18.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

Personnel Required:

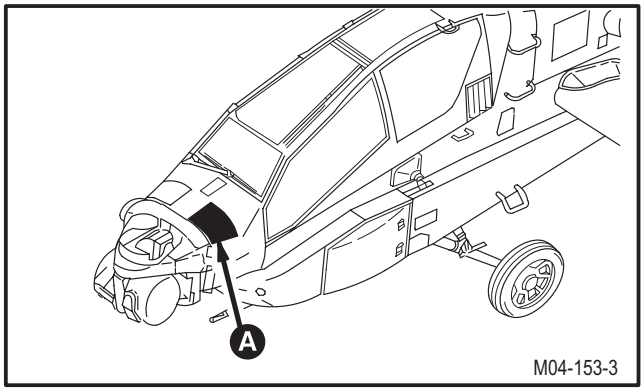
68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access cover L40 removed



8.18.3. Removal

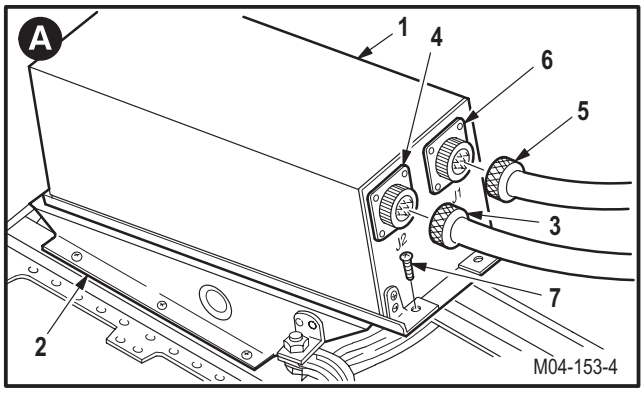
a. **Remove signal data converter (1) from mounting tray (2).**

(1) Detach connector P401 (3) from receptacle (A82)J2 (4).

(2) Detach connector P400 (5) from receptacle (A82)J1 (6).

(3) Remove two screws (7).

(4) Lift converter (1) up and out of tray (2).



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8.18. SIGNAL DATA CONVERTER REMOVAL/INSTALLATION – continued

8.18.4. Cleaning

a. **Wipe tray and converter with a clean rag.**

8.18.5. Inspection

a. **Check tray and converter mounting areas for dents, nicks, and cracks.** None allowed.

8.18.6. Installation

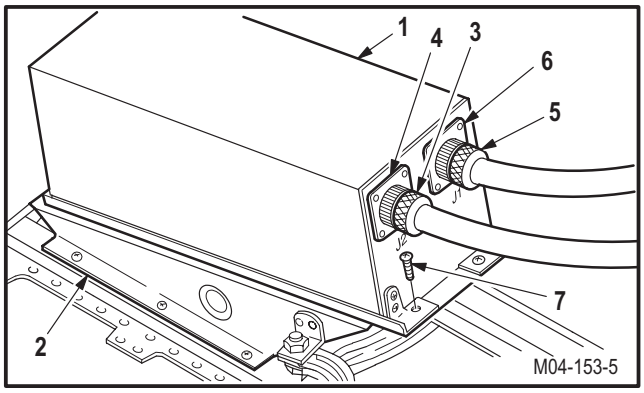
a. **Install converter (1) on tray (2).**

(1) Slide converter (1) to rear of tray (2).

(2) Install two screws (7).

(3) Attach connector P400 (5) to receptacle (A82)J1 (6).

(4) Attach connector P401 (3) to receptacle (A82)J2 (4).



b. **Inspect (QA).**

c. **Perform engine instrument maintenance operational check** (TM 1-1520-238-T)**.**

d. **Install access cover L40** (para 2.2)**.**

END OF TASK

8.19. SIGNAL DATA CONVERTER CIRCUIT CARD REPLACEMENT (AVIM)

8.19.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

8.19.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
#1 phillips screwdriver bit (item 35, App H)
PC shunt bar (item 223, App H)
Large wrist grounding strap (item 346, App H)
1 - 100 inch-ounce 1/4-inch hexagon drive click type torque wrench (item 437, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Materials/Parts:

Cloth (item 52, App F)

References:

TM 11-6625-3085-30

CAUTION

Static electrical discharge can damage semiconductors in circuit card. To prevent damage, repairer must wear grounding strap when panel is off, and when handling circuit cards.

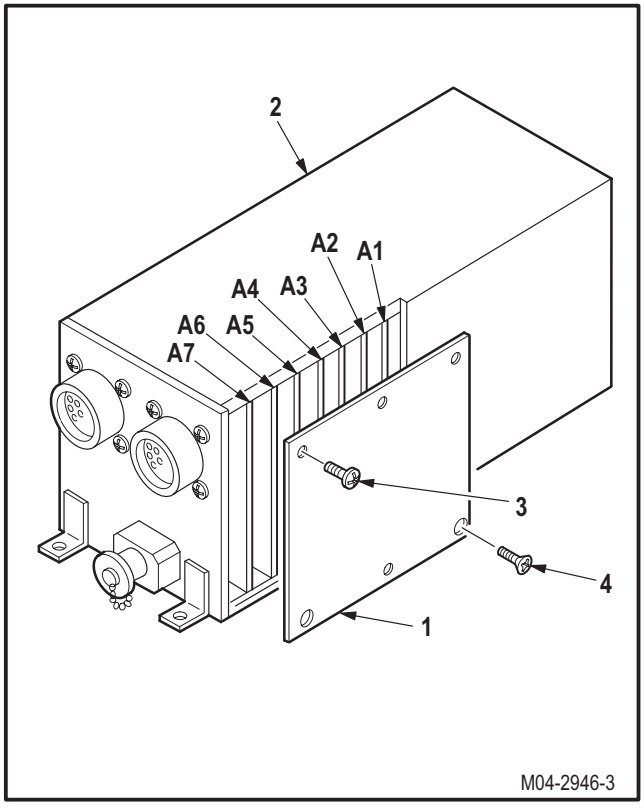
NOTE

The following task is typical for all circuit cards in the signal data converter.

8.19.3. Removal

a. **Remove right side cover (1) from signal data converter (2).**

(1) Remove four screws (3) and two countersunk screws (4).



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8.19. SIGNAL DATA CONVERTER CIRCUIT CARD REPLACEMENT (AVIM) – continued

b. **Remove circuit card (5) from converter (2).** Wear grounding strap.

NOTE

Step c. is typical only for removal of oil pressure excitation card A4.

c. **Install shunt bar (6) on card (5).** Use shunt bar.

8.19.4. Cleaning

a. **Wipe guide slots.** Use cloth (item 52, App F).

8.19.5. Inspection

a. **Check signal data converter for cracks, nicks, and dents.** None allowed.

8.19.6. Installation

a. **Install card (5) in converter (2).**

(1) Remove bar (6), if installed.

(2) Insert card (5) in guide slots (7).

(3) Push card (5) until fully seated.

b. **Inspect (QA).**

c. **Install cover (1).** Torque four screws (3) and two screws (4) to **37 INCH-OUNCES**.

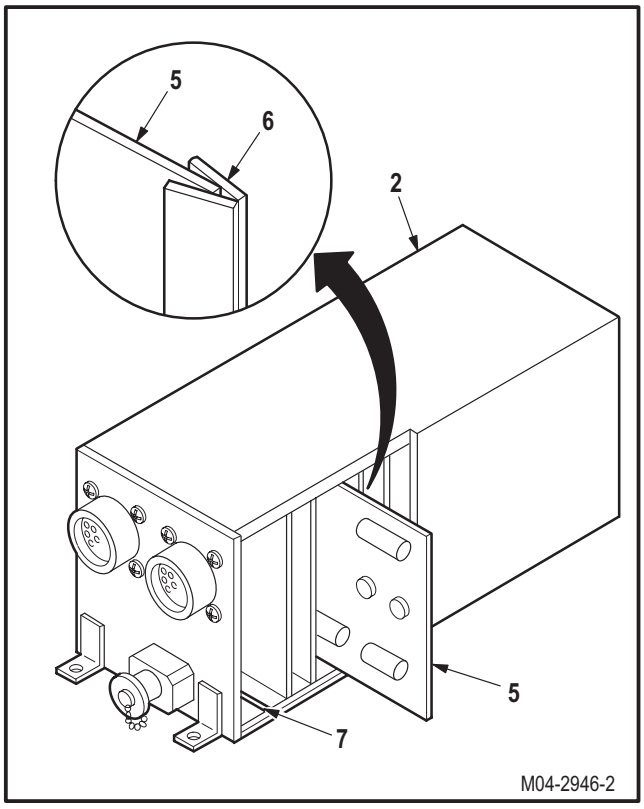
(1) Install four screws (3) and two countersunk screws (4).

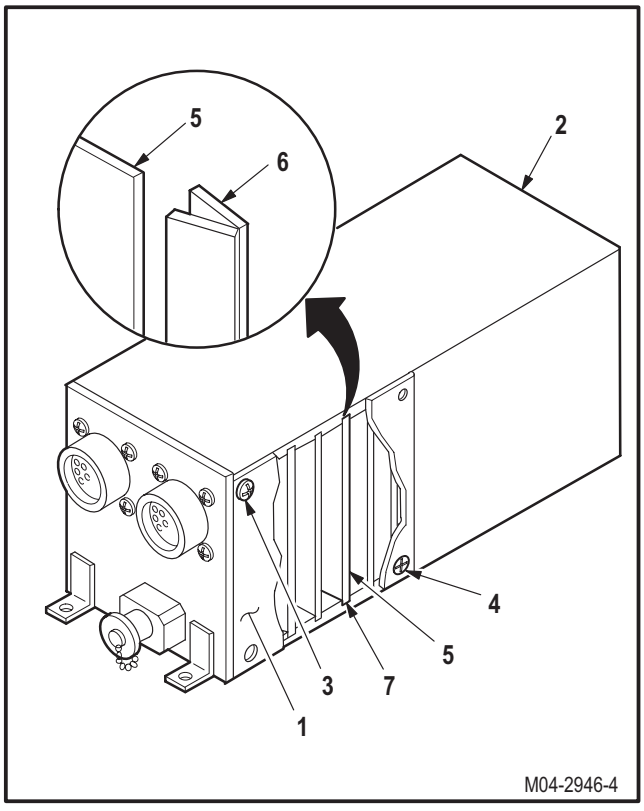
(2) Torque four screws (3) and two screws (4) to **37 INCH-OUNCES**. Use torque wrench and screwdriver bit.

d. **Inspect (QA).**

e. **Perform appropriate test.** Use Electronic Equipment Test Facility (EETF) (TM 11-6625-3085-30).

END OF TASK





8.20. SIGNAL DATA CONVERTER POWER SUPPLY REPLACEMENT (AVIM)

8.20.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

8.20.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
#1 phillips screwdriver bit (item 35, App H)
Chemical protective gloves (item 154, App H)
PC shunt bar (item 223, App H)
Adjustable air filtering respirator (item 262, App H)
Large wrist grounding strap (item 346, App H)
1 - 100 inch-ounce 1/4-inch hexagon drive click type torque wrench (item 437, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Materials/Parts:

Cloth (item 52, App F)
Sealing compound primer (item 146, App F)
Sealing compound (item 168, App F)
Shipping and storage bag (item 182, App F)

References:

TM 11-6625-3085-30

CAUTION

- The power supply contains a circuit card which has a complementary metal oxide semiconductor (CMOS) that can be damaged by static electrical discharge.
- The power supply shall be housed in a conductive container during storage or spares shipment. To prevent damage to the power supply, a shunt bar shall be attached to the connector when not in use.
- The repairer shall wear a properly grounded grounding strap when handling power supply.

NOTE

This task is typical for either power supply.

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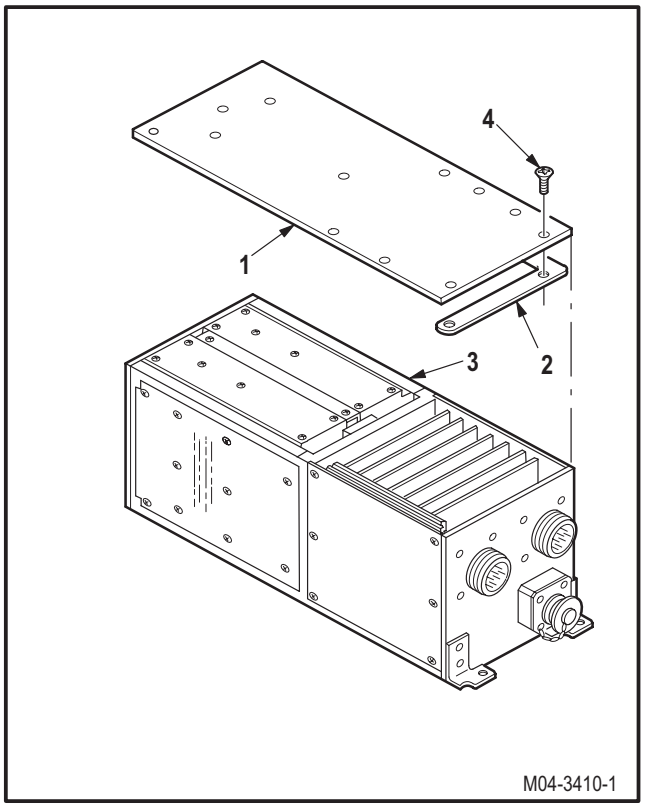
8.20. SIGNAL DATA CONVERTER POWER SUPPLY REPLACEMENT (AVIM) – continued

8.20.3. Removal

a. **Remove top cover (1) and shims (2) from chassis (3).**

(1) Remove 13 screws (4) from chassis (3).

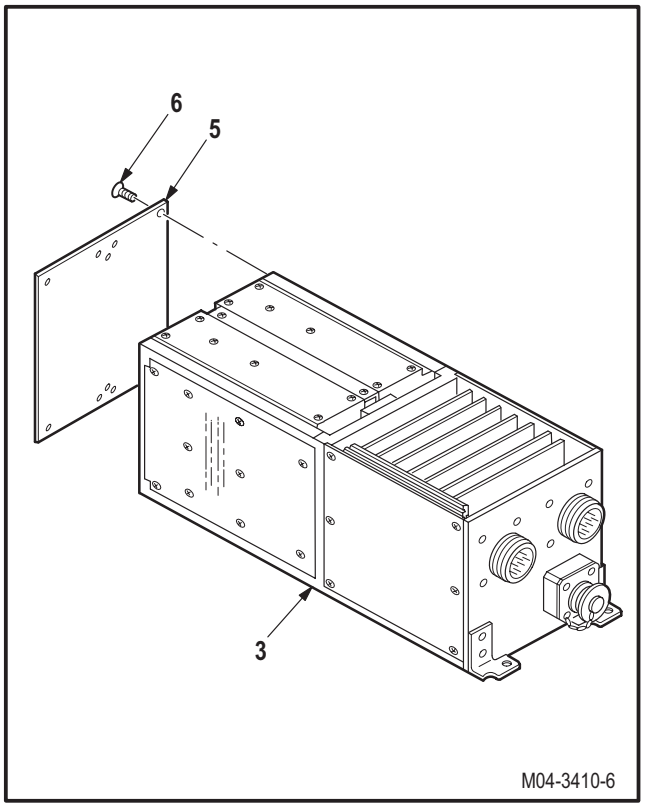
(2) Remove cover (1). Remove shims (2) if installed.



b. **Remove front cover (5) from chassis (3).**

(1) Remove 10 screws (6).

(2) Remove cover (2).



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8.20. SIGNAL DATA CONVERTER POWER SUPPLY REPLACEMENT (AVIM) – continued

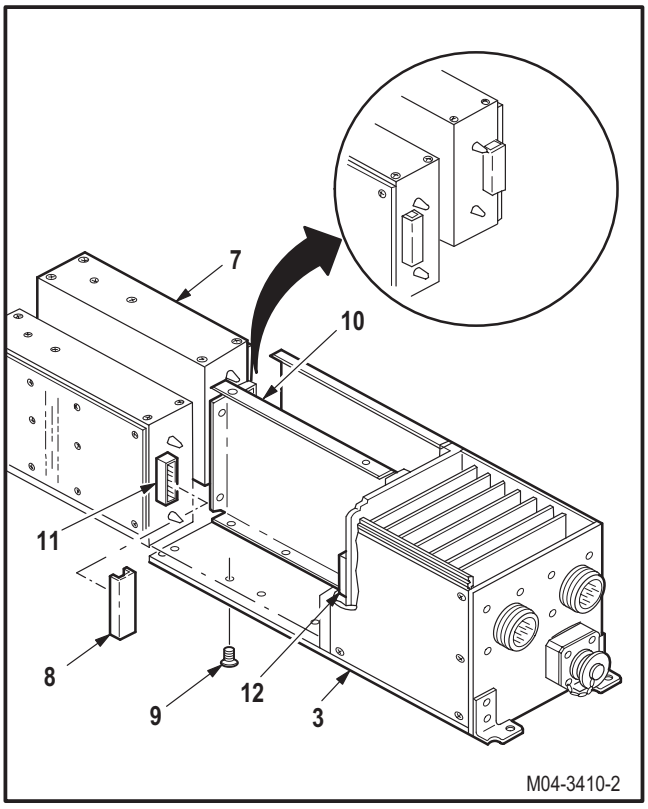
c. **Remove power supply (7) from chassis (3).** Use grounding strap and shunt bar (8).

(1) Remove six screws (9) from bottom of chassis (3).

(2) Grasp power supply (7) and pull toward front of frame (10) to detach connector P1 (11) from receptacle (A14)J1/(A15)J1 (12).

(3) Remove power supply (7) from chassis (3). Install bar (8) on connector (11).

(4) Store removed power supply (7), with bar (8) installed, in a storage bag. Use shipping and storage bag (item 182, App F).



8.20.4. Cleaning

a. **Clean removed and attaching parts.** Use cloth (item 52, App F).

8.20.5. Inspection

a. **Check chassis and covers for cracks, nicks, and dents.** None allowed.

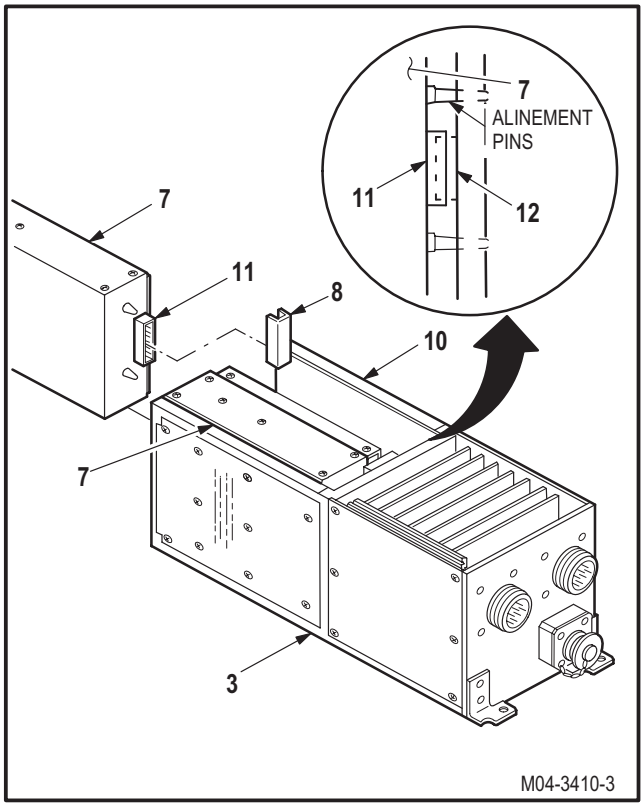
8.20.6. Installation

a. **Install power supply (7) in chassis (3).** Use grounding strap. Torque six screws (9) to **80 INCH-OUNCES**.

(1) Remove power supply (7) from plastic bag. Remove bar (8).

(2) Position power supply (7) inside chassis (3).

(3) Slide power supply (7) toward front of frame (10) to attach connector P1 (11) to receptacle (A14)J1/(A15)J1 (12) and aline screw holes.



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8.20. SIGNAL DATA CONVERTER POWER SUPPLY REPLACEMENT (AVIM) – continued

(4) Install six screws (9) through chassis (3) into power supply (7).

(5) Torque six screws (9) to **80 INCH-OUNCES**. Use torque wrench and screwdriver bit.

b. **Install cover (5) on chassis (3).** Torque 10 screws (6) to **37 INCH-OUNCES**.

(1) Aline cover (5) with screw holes on chassis (3).

(2) Install 10 screws (6) through cover (5) into chassis (3).

(3) Torque 10 screws (6) to **37 INCH-OUNCES**. Use torque wrench and screwdriver bit.

c. **Install cover (1) on chassis (3).** Torque 13 screws (4) to **37 INCH-OUNCES**.

(1) Position shims (2), as required, on chassis (3).

(2) Aline cover (1) with screw holes on chassis (3).

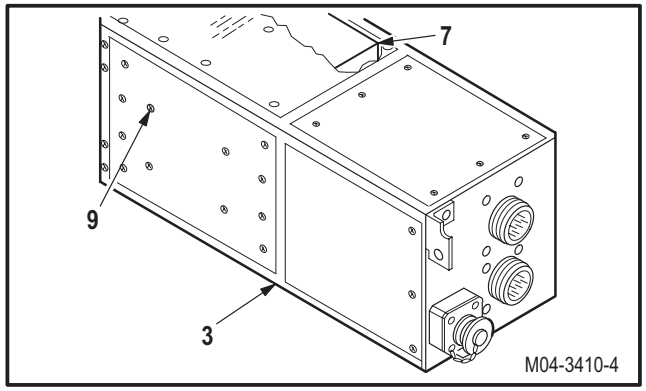
(3) Apply primer and sealing compound on threads of 13 screws (14). Use sealing compound primer (item 146, App F) and sealing compound (item 168, App F).

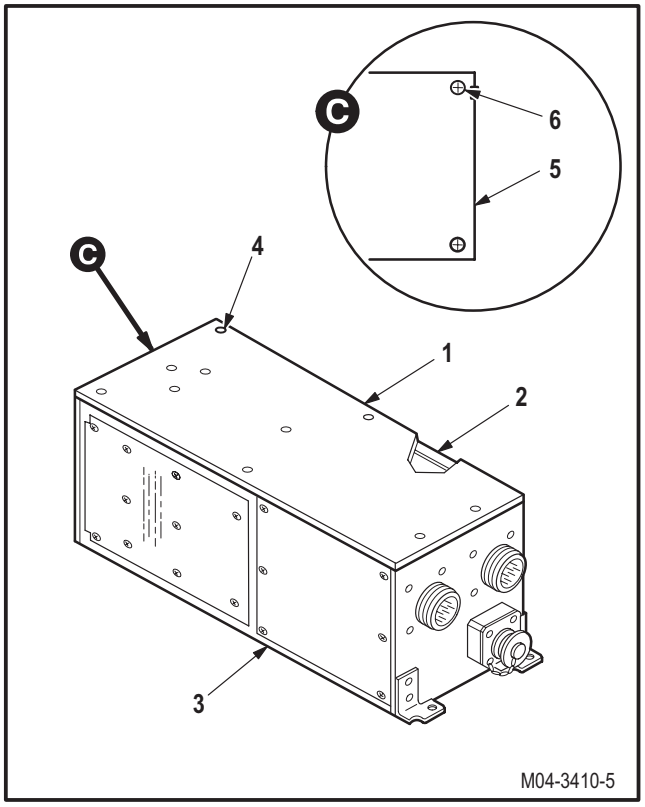
(4) Install 13 screws (4) through cover (1) into chassis (3).

(5) Torque 13 screws (4) to **37 INCH-OUNCES**. Use torque wrench and screwdriver bit.

d. **Inspect (QA).**

e. **Perform appropriate test.** Use Electronic Equipment Test Facility (EETF) (TM 11-6625-3085-30).





END OF TASK

8.21. SIGNAL DATA CONVERTER TRAY REMOVAL/INSTALLATION

8.21.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

8.21.2. Initial Setup

Tools:

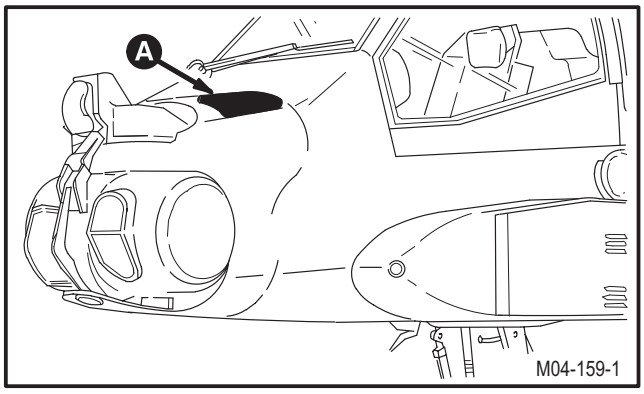
Electrical tool kit (item 378, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access cover L40 removed
8.18	Signal data converter removed



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8.21. SIGNAL DATA CONVERTER TRAY REMOVAL/INSTALLATION – continued

8.21.3. Removal

a. **Remove signal data converter tray (1) from mounting shelf (2).**

(1) Remove bolt (3), washer (4), and spacer (5) securing clamp (6) to tray (1).

(2) Remove six screws (7) and washers (8).

(3) Lift tray (1) clear of shelf (2).

8.21.4. Cleaning

a. **Wipe tray and shelf with a clean rag.**

8.21.5. Inspection

a. **Check tray and shelf for dents, nicks, and cracks.** None allowed.

b. **Check shelf nutplates for stripped or damaged threads.** None allowed.

8.21.6. Installation

a. **Install tray (1) on shelf (2).**

(1) Position tray (1) on shelf (2). Aline tray base with screw holes on shelf (2).

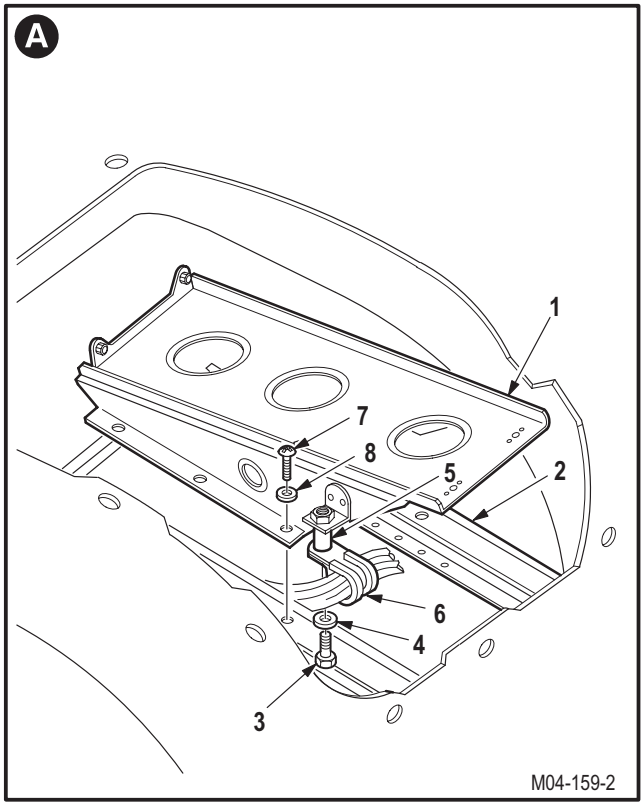
(2) Install six screws (7) and washers (8).

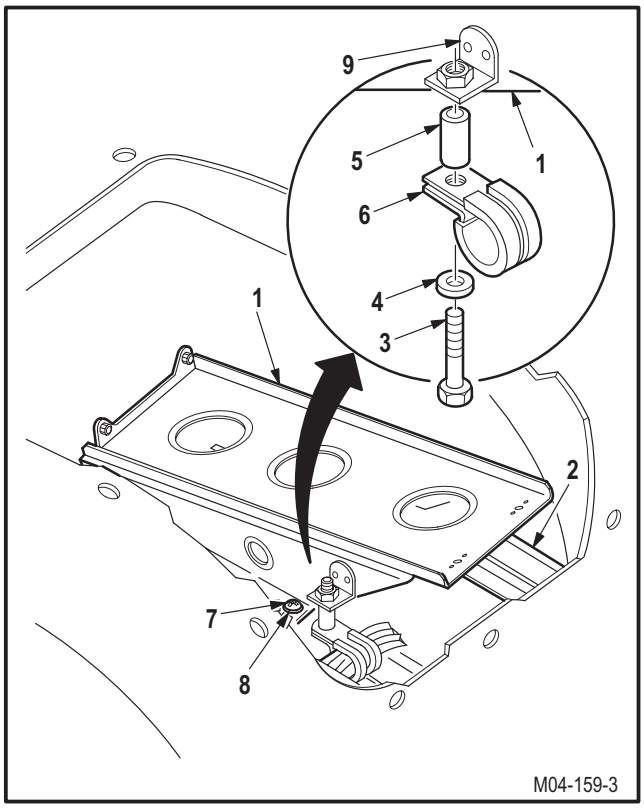
(3) Install bolt (3) through washer (4), clamp (6), and spacer (5) into tray (1) bracket (9).

b. **Inspect (QA).**

c. **Install signal data converter** (para 8.18)**.**

d. **Install access cover L40** (para 2.2)**.**





END OF TASK

8.22. PILOT/CPG ENGINE INSTRUMENT DIM/TEST CONTROL PANEL REMOVAL/INSTALLATION

8.22.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

8.22.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T

Equipment Conditions:

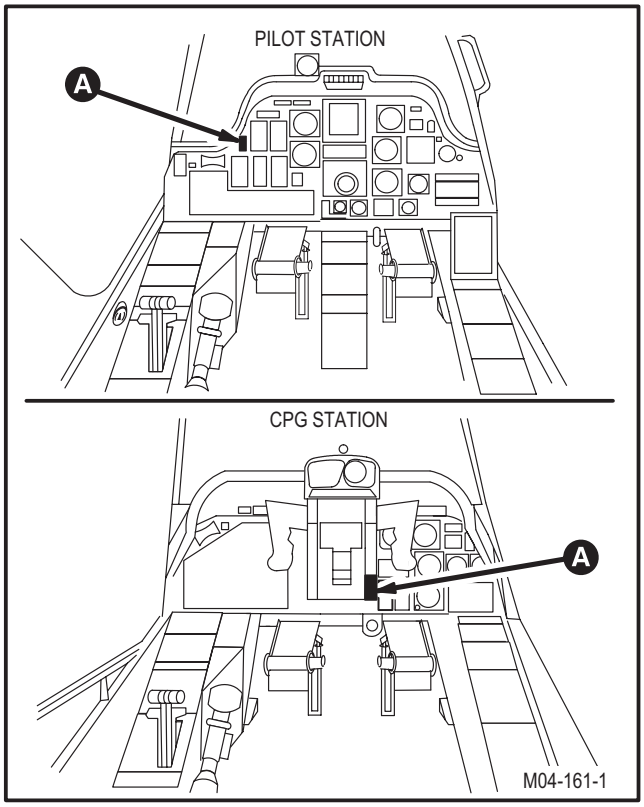
Ref	Condition
1.57	Helicopter safed

8.22.3. Removal

a. **Enter pilot/CPG station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot center circuit breaker panel, open ENG INST circuit breaker.**

c. **On pilot/CPG INTR LT panel, rotate INST control to OFF.**



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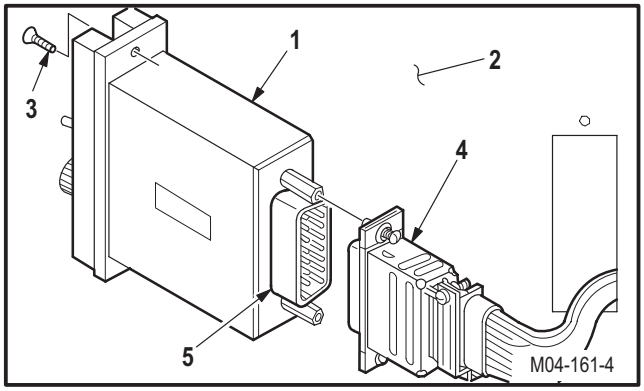
8.22. PILOT/CPG ENGINE INSTRUMENT DIM/TEST CONTROL PANEL REMOVAL/INSTALLATION – continued

d. **Remove DIM/TEST control panel (1) from instrument panel (2).**

(1) Remove two screws (3).

(2) Pull panel (1) from panel (2).

(3) Detach connector P787 (pilot)/P1092 (CPG) (4) from receptacle (A114)J1 (pilot)/(A517)J1 (CPG) (5).



8.22.4. Cleaning

a. **Wipe mounting areas and control panel with a clean rag.**

8.22.5. Inspection

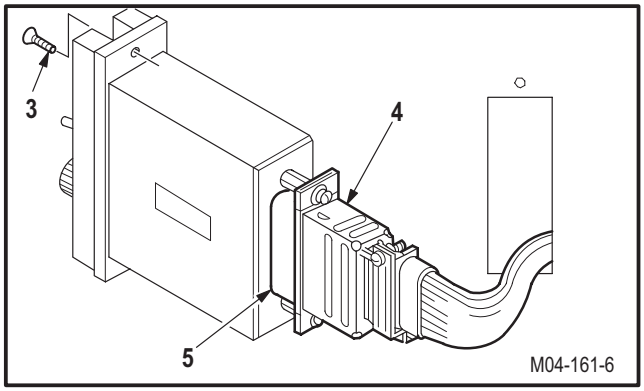
a. **Check DIM/TEST control panel and instrument panel mounting areas for cracks, nicks, and dents.** None allowed.

b. **Check instrument panel nutplates for stripped or damaged threads.** Acceptable thread damage cannot exceed 50 percent of one thread.

8.22.6. Installation

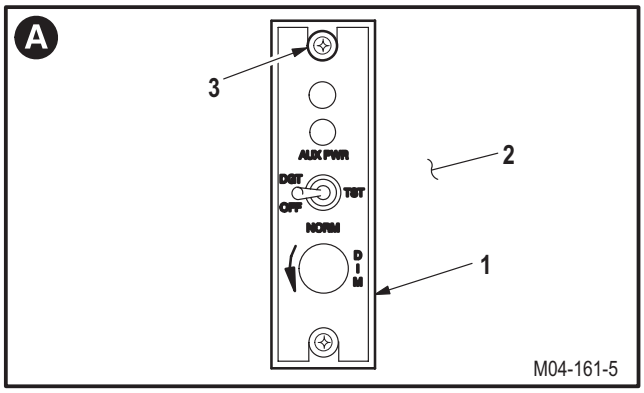
a. **Install panel (1) in panel (2).**

(1) Attach connector P787 (pilot)/P1092 (CPG) (4) to receptacle (A114)J1 (pilot)/(A517)J1 (CPG) (5).



(2) Aline panel (1) and panel (2) screw holes.

(3) Install two screws (3).



b. **Inspect (QA).**

c. **Perform engine instruments maintenance operational check** (TM 1-1520-238-T)**.**

END OF TASK

8.23. PILOT/CPG ENGINE INSTRUMENT DIM/TEST CONTROL PANEL DISASSEMBLY/ASSEMBLY (AVIM)

8.23.1. Description

This task covers: Disassembly. Cleaning. Inspection. Assembly.

8.23.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
#1 phillips screwdriver bit (item 35, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
5-watt electric soldering iron (item 333, App H)
1 - 100 inch-ounce 1/4-inch hexagon drive click type torque wrench (item 437, App H)

Materials/Parts:

Adhesive (item 14, App F)
Alcohol (item 25, App F)
Brush (item 34, App F)
Cloth (item 52, App F)
Coating compound (item 59, App F)
Solder (item 189, App F)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
8.24	Engine instrument dim/test control panel front panel removed

GO TO NEXT PAGE

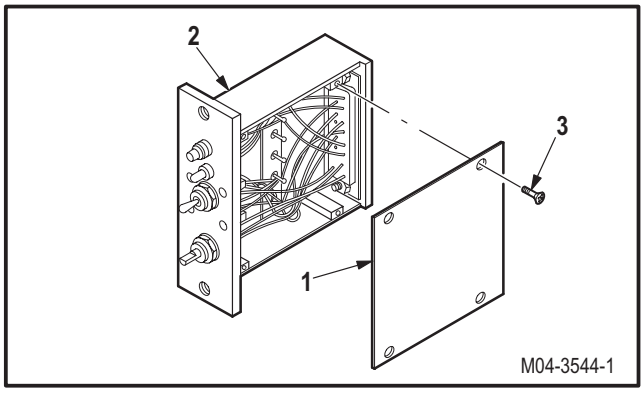
8.23. PILOT/CPG ENGINE INSTRUMENT DIM/TEST CONTROL PANEL DISASSEMBLY/ASSEMBLY (AVIM) – continued

8.23.3. Disassembly

a. **Remove cover (1) from case (2).**

(1) Remove four screws (3).

(2) Remove cover (1).



WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

NOTE

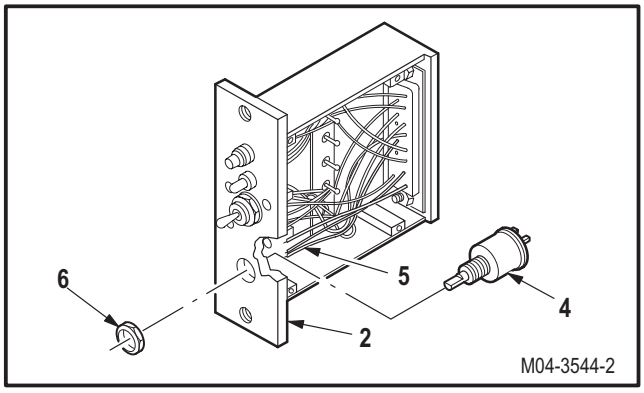
During disassembly of control panel, identify wires and terminations for proper placement during installation.

b. **Remove resistor (4) from case (2).**

(1) Identify and desolder three wires (5) from resistor (4). Use soldering iron (TM 55-1500-323-24).

(2) Remove nut (6) from resistor (4).

(3) Remove resistor (4).

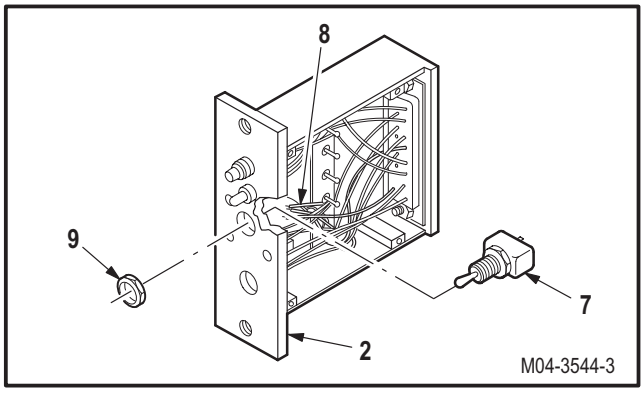


c. **Remove switch (7) from case (2).**

(1) Identify and desolder three wires (8) from switch (7). Use soldering iron (TM 55-1500-323-24).

(2) Remove nut (9) from switch (7).

(3) Remove switch (7).



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8.23. PILOT/CPG ENGINE INSTRUMENT DIM/TEST CONTROL PANEL DISASSEMBLY/ASSEMBLY (AVIM) – continued

NOTE

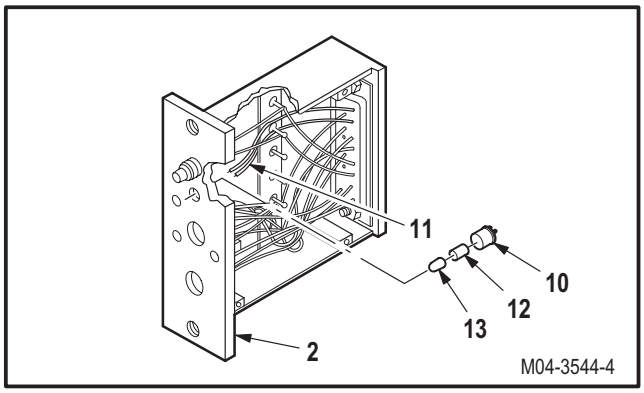
This step is typical for removal of all five lampholders installed in case.

d. **Remove lampholder (10) from case (2).**

(1) Identify and desolder two wires (11) from lampholder (10). Use soldering iron (TM 55-1500-323-24).

(2) Remove lampholder (10).

(3) Remove lamp (12) and filter (13) from lampholder (10).

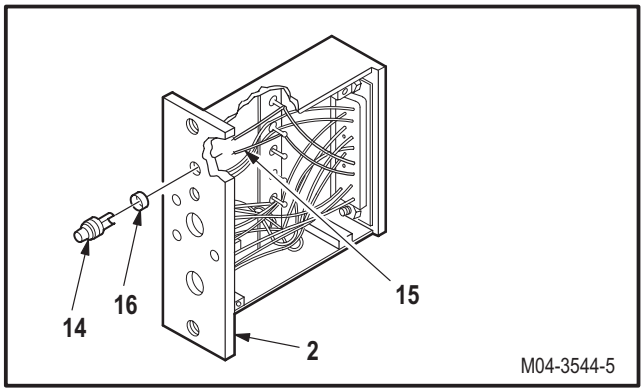


e. **Remove photoelectric cell (14) from case (2).**

(1) Identify and desolder two wires (15) from photoelectric cell (14). Use soldering iron (TM 55-1500-323-24).

(2) Remove photoelectric cell (14) through front of case (2).

(3) Remove spacer (16) from photoelectric cell (14).



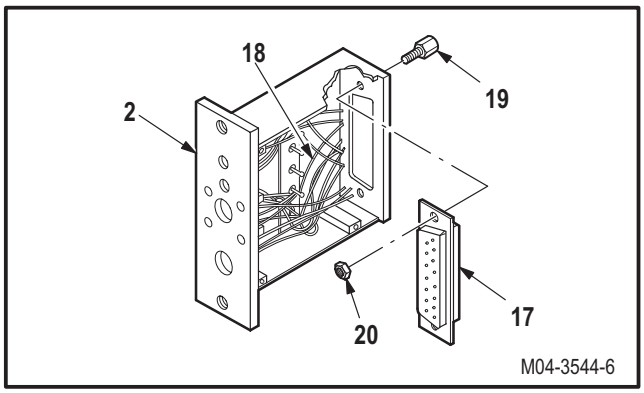
f. **Remove connector (17) from case (2).**

(1) Identify and desolder 10 wires (18) from connector (17). Use soldering iron (TM 55-1500-323-24).

(2) Hold screwlock (19).

(3) Remove nut (20) from screwlock (19).

(4) Remove screwlock (19) and connector (17) from case (2).



8.23.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

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8.23. PILOT/CPG ENGINE INSTRUMENT DIM/TEST CONTROL PANEL DISASSEMBLY/ASSEMBLY (AVIM) – continued

b. **Clean desoldered contacts and terminals.** Use alcohol (item 25, App F) and brush (item 34, App F) (TM 55-1500-323-24).

8.23.5. Inspection

a. **Check wires for wear, cuts, breaks, and damaged connections** (TM 55-1500-323-24)**.**

b. **Check connector for bent or damaged pins** (TM 55-1500-323-24)**.**

8.23.6. Assembly

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

a. **Install connector (17) in case (2).**

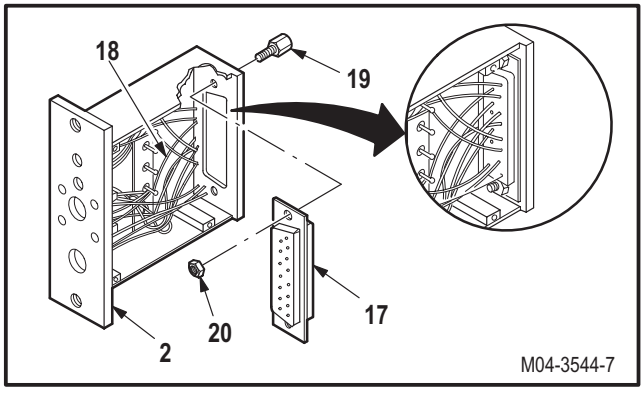
(1) Position connector (17) in case (2).

(2) Install screwlock (19) through case (2) and connector (17).

(3) Hold screwlock (19).

(4) Install nut (20) on screwlock (19).

(5) Attach 10 identified wires (18) to connector (17). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).



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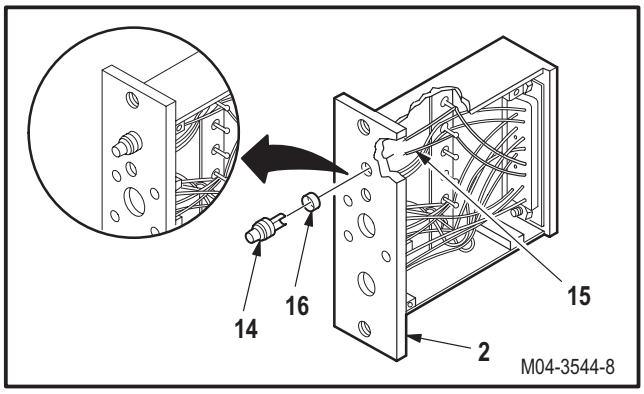
8.23. PILOT/CPG ENGINE INSTRUMENT DIM/TEST CONTROL PANEL DISASSEMBLY/ASSEMBLY (AVIM) – continued

b. **Install cell (14) in case (2).**



(1) Install spacer (16) on cell (14).

(2) Apply a small amount of adhesive on outer rim of spacer (16). Use adhesive (item 14, App F).

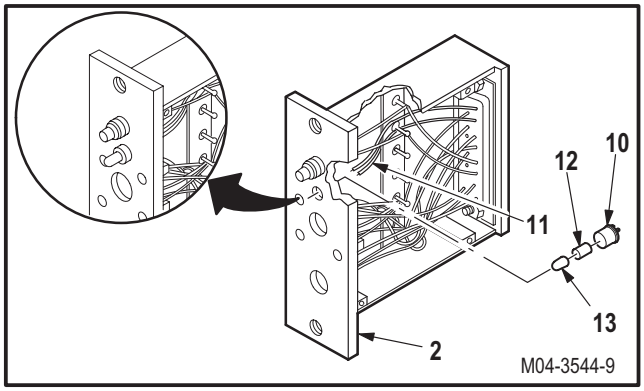
(3) Press cell (14) through front side of case (2). Clean excess sealant. Use cloth (item 52, App F).

(4) Attach two identified wires (15) to cell (14). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).

NOTE

This step is typical for installation of all lampholders.

c. **Install lampholder (10) in case (2).**



(1) Attach two identified wires (11) to lampholder (10). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).

(2) Install lamp (12) and filter (13) on lampholder (10).

(3) Press lampholder (10) in case (2).

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8.23. PILOT/CPG ENGINE INSTRUMENT DIM/TEST CONTROL PANEL DISASSEMBLY/ASSEMBLY (AVIM) – continued

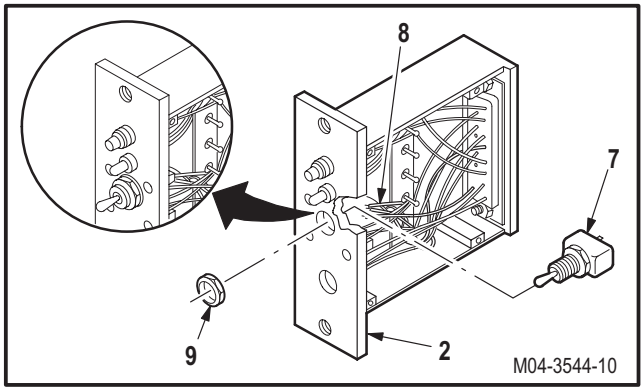
d. **Install switch (7) in case (2).**

(1) Attach three identified wires (8) to switch (7). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).

(2) Insert switch (7) through case (2).

(3) Coat threads of switch (7). Use coating compound (item 59, App F).

(4) Install nut (9) on switch (7).



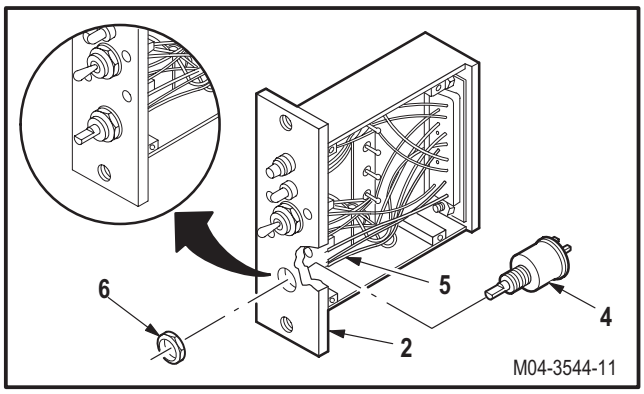
e. **Install resistor (4) in case (2).**

(1) Attach three identified wires (5) to resistor (4). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).

(2) Install resistor (4).

(3) Coat threads of resistor (4). Use coating compound (item 59, App F).

(4) Install nut (6) on resistor (4).



f. **Inspect (QA).**

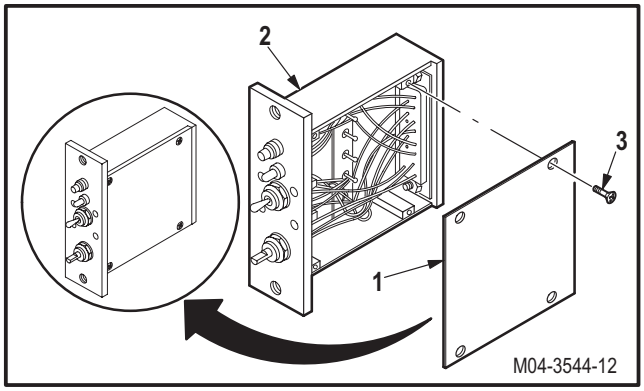
g. **Install cover (1) on case (2).** Torque four screws (3) to **37 INCH-OUNCES**.

(1) Position cover (1) on case (2).

(2) Coat threads of four screws (3). Use coating compound (item 59, App F).

(3) Install four screws (3) through cover (1) into case (2).

(4) Torque four screws (3) to **37 INCH-OUNCES**. Use torque wrench and screwdriver bit.



h. **Install engine instrument dim/test control panel front panel** (para 8.24)**.**

END OF TASK

8.24. PILOT/CPG ENGINE INSTRUMENT DIM/TEST CONTROL PANEL FRONT PANEL REMOVAL/INSTALLATION (AVIM)

8.24.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

8.24.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
3/16-inch flat tip screwdriver bit (item 31, App H)
Chemical protective gloves (item 154, App H)
L-style socket head key set (item 187, App H)
Adjustable air filtering respirator (item 262, App H)
1 - 100 inch-ounce 1/4-inch hexagon drive click type torque wrench (item 437, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Materials/Parts:

Cloth (item 52, App F)
Lubricant (item 115, App F)

References:

TM 11-6625-3085-30

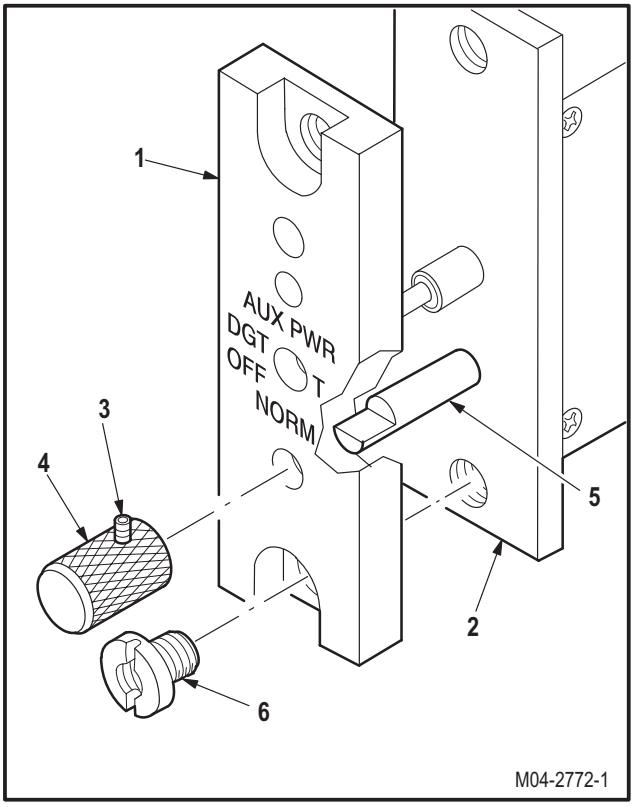
8.24.3. Removal

a. **Remove front panel (1) from panel case (2).**

(1) Loosen setscrew (3). Use socket head key set.

(2) Remove dimmer control knob (4) from control shaft (5).

(3) Remove two bushings (6). Remove panel (1) from case (2).



8.24.4. Cleaning

a. **Wipe mounting surface of front panel and case.** Use cloth (item 52, App F).

8.24.5. Inspection

a. **Check front panel for cracks, nicks, and dents.** None allowed.

b. **Check case for stripped or damaged threads.** Acceptable thread damage cannot exceed 50 percent of one thread.

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8.24. PILOT/CPG ENGINE INSTRUMENT DIM/TEST CONTROL PANEL FRONT PANEL REMOVAL/INSTALLATION (AVIM) – continued

8.24.6. Installation

a. **Install panel (1) on case (2).** Torque two bushings (6) to **24 INCH-OUNCES**.

(1) Lubricate two bushings (6). Use lubricant (item 115, App F).

(2) Position panel (1) mounting holes on case (2) threaded holes.

(3) Install two bushings (6).

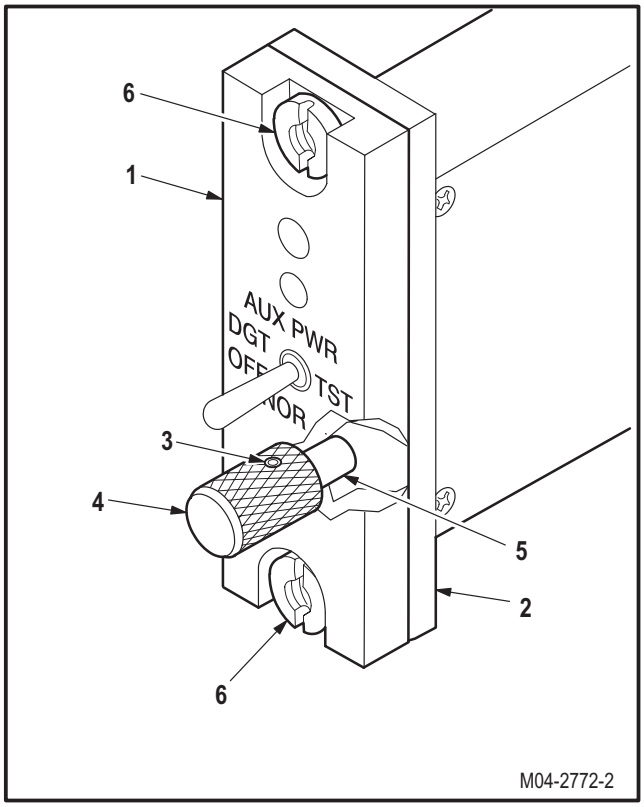
(4) Torque bushings to **24 INCH-OUNCES**. Use screwdriver bit and torque wrench.

b. **Install knob (4) on shaft (5).**

(1) Tighten setscrew (3). Use socket head key set.

c. **Inspect (QA).**

d. **Perform appropriate test.** Use Electronic Equipment Test Facility (EETF) (TM 11-6625-3085-30).



END OF TASK

8.25. CPG ENGINE INSTRUMENTS DIMMER POWER SUPPLY REMOVAL/INSTALLATION

8.25.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

8.25.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Ohmmeter (item 218, App H)

References:

TM 1-1500-204-23
TM 1-1520-238-T
TM 55-1500-323-24

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

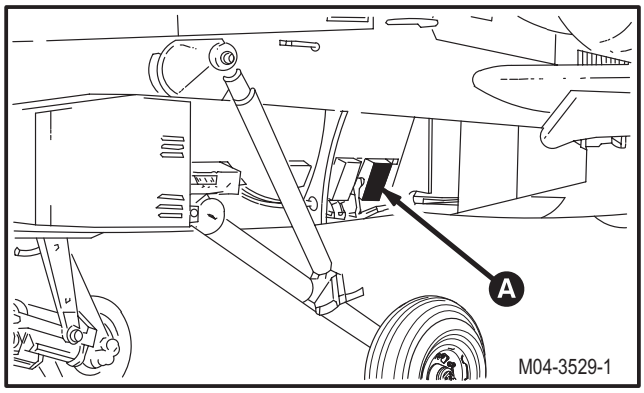
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Fairing L140 removed

8.25.3. Removal

a. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**

b. **On CPG left console circuit breaker panel, open ENG INST circuit breaker.**

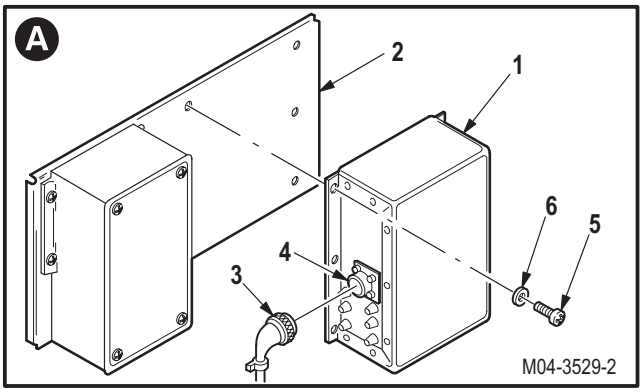


c. **Remove power supply (1) from mount (2).**

(1) Detach connector P1093 (3) from receptacle (A518)J1(4).

(2) Remove six screws (5) and washers (6).

(3) Remove power supply (1).



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8.25. CPG ENGINE INSTRUMENTS DIMMER POWER SUPPLY REMOVAL/INSTALLATION – continued

8.25.4. Cleaning

a. **Wipe power supply and mounting area with a clean rag.**

8.25.5. Inspection

a. **Check mount for cracks, loose or missing rivets, and stripped nutplates** (TM 1-1500-204-23)**.** None allowed.

8.25.6. Installation

a. **Install power supply (1) on mount (2).**

(1) Aline power supply (1) with mount (2) mounting holes.

(2) Install six screws (5) through washers (6) and power supply (1) into mount (2).

b. **Perform electrical bonding check on screws (5)** (TM 55-1500-323-24)**.**

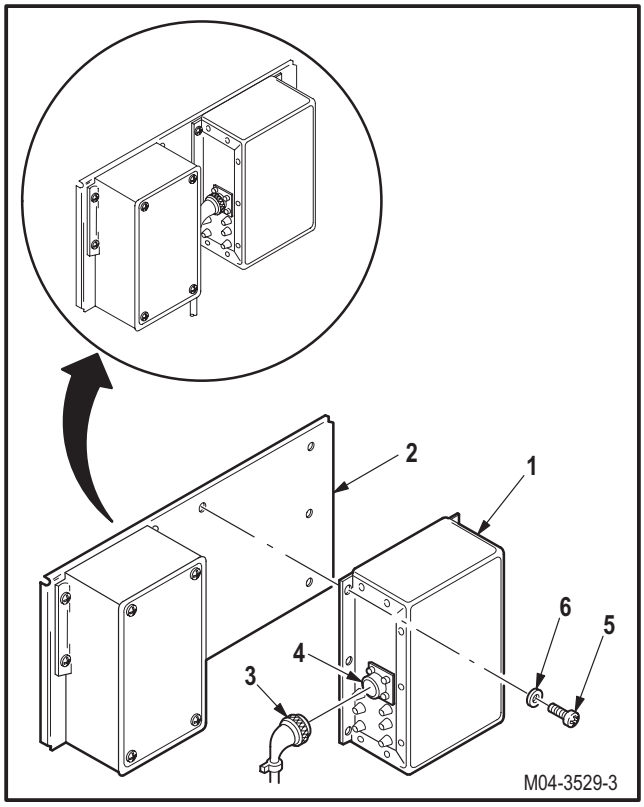
(1) Bond shall be **0.1 OHM** or less. Use ohmmeter.

c. **Attach connector P1093 (3) to receptacle (A518)J1 (4).**

d. **Inspect (QA).**

e. **Install access fairing L140** (para 2.2)**.**

f. **Perform engine instruments maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

8.26. CPG ENGINE INSTRUMENTS DIMMER POWER SUPPLY CONNECTOR REPLACEMENT

8.26.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

8.26.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Multimeter (item 215, App H)

Materials/Parts:

Strap (item 193, App F)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
8.25	CPG engine instruments dimmer power supply removed

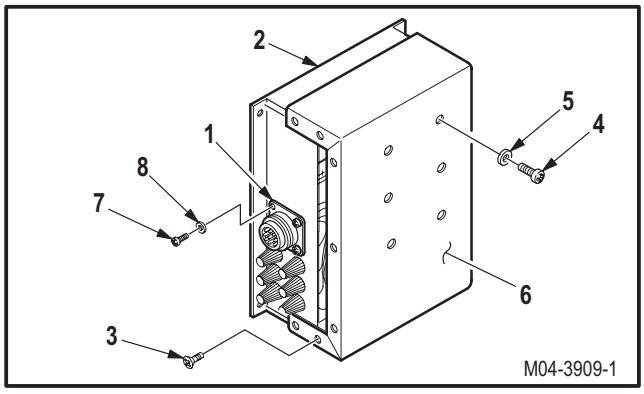
8.26.3. Removal

a. **Remove receptacle connector (1) from power supply (2).**

(1) Remove seven screws (3) from front of power supply (2).

(2) Remove six screws (4) and washers (5) from top of power supply (2). Remove cover (6).

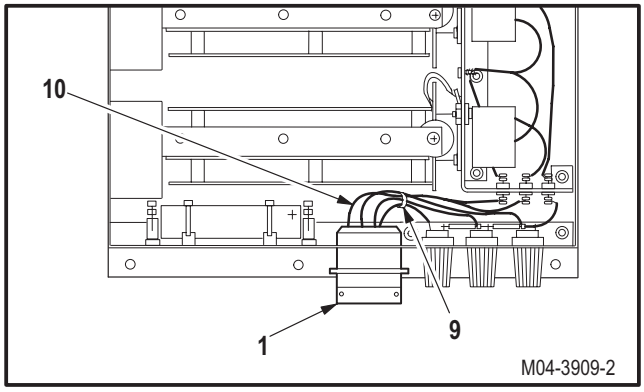
(3) Remove four screws (7) and washers (8) from connector (1).



(4) Cut and remove tiedown strap (9) from wires (10) leading to connector (1).

(5) Identify six wires (10) on connector (1).

(6) Depin six wires (10) from connector (1). Remove connector (1) (TM 55-1500-323-24).



8.26.4. Cleaning

a. **Wipe receptacle mounting area with a clean rag.**

GO TO NEXT PAGE

8.26. CPG ENGINE INSTRUMENTS DIMMER POWER SUPPLY CONNECTOR REPLACEMENT – continued

8.26.5. Inspection

a. **Check receptacle mounting area for cracks; check internal wiring and components for damage.** None allowed.

b. **Check receptacle mounting area for corrosion** (para 1.49)**.**

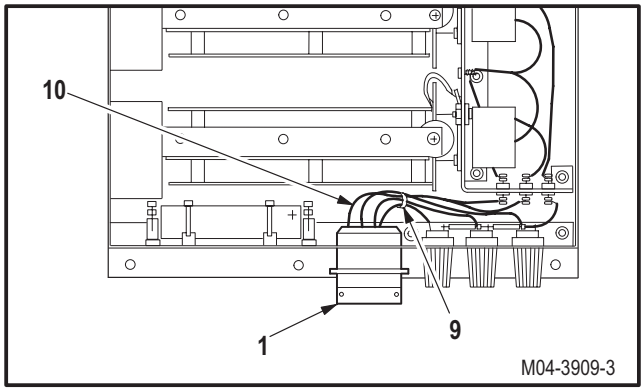
8.26.6. Installation

a. **Install connector (1) in power supply (2).**

(1) Pin six wires (10) on connector (1) (TM 55-1500-323-24).

(2) Position connector (1) with keyway at 12 o'clock on power supply (2). Install four screws (7) and washers (8).

(3) Install tiedown strap (9) on wires (10) leading to connector (1). Use strap (item 193, App F).



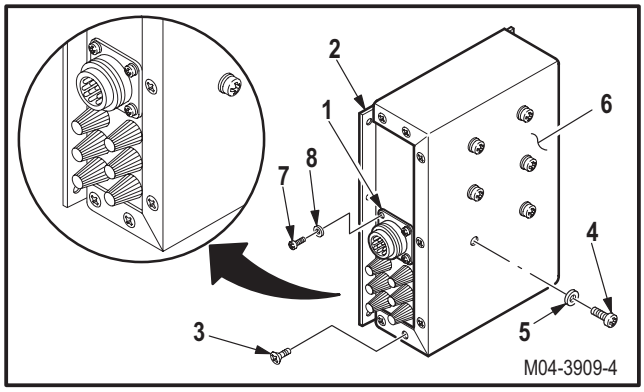
b. **Perform continuity test.** Use multimeter (TM 55-1500-323-24).

c. **Install cover (6) on power supply (2).**

(1) Position cover (6) on power supply (2).

(2) Install six screws (4) and washers (5) on top side of power supply (2).

(3) Install seven screws (3) on front of power supply (2).



d. **Inspect (QA).**

e. **Install CPG engine instruments dimmer power supply** (para 8.25)**.**

END OF TASK

8.27. FUEL SIGNAL CONDITIONER REMOVAL/INSTALLATION

8.27.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

8.27.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

References:

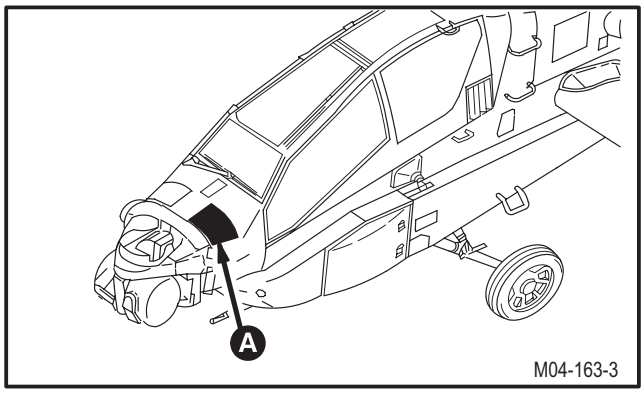
TM 1-1520-238-T

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access cover L40 removed



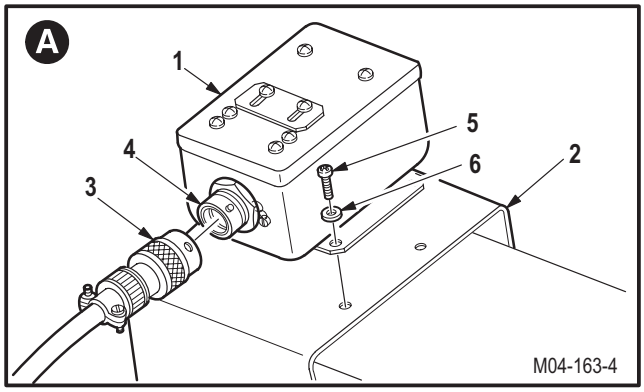
8.27.3. Removal

a. **Remove fuel signal conditioner (1) from mounting shelf (2).**

(1) Detach connector P937 (3) from receptacle (A308)J1 (4).

(2) Remove four screws (5) and washers (6).

(3) Remove conditioner (1) from shelf (2).



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8.27. FUEL SIGNAL CONDITIONER REMOVAL/INSTALLATION – continued

8.27.4. Cleaning

a. **Wipe shelf and conditioner with a clean rag.**

8.27.5. Inspection

a. **Check conditioner and shelf for dents, nicks, and cracks.** None allowed.

b. **Check shelf screw holes for stripped or damaged threads.** Acceptable thread damage cannot exceed 50 percent of one thread.

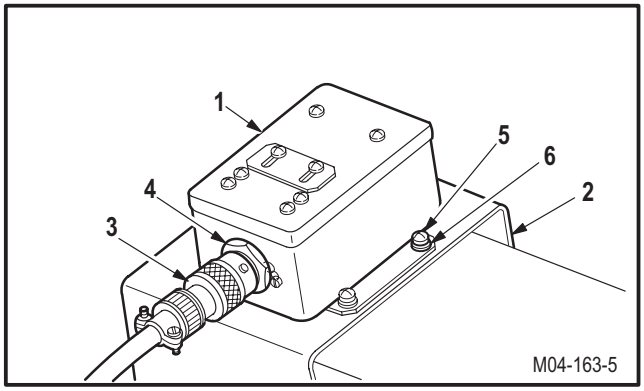
8.27.6. Installation

a. **Install conditioner (1) on shelf (2).**

(1) Aline conditioner base with shelf (2) screw holes. Receptacle (4) must face outboard.

(2) Install four screws (5) and washers (6).

(3) Attach connector P937 (3) to receptacle (A308)J1 (4).



b. **Inspect (QA).**

c. **Install access cover L40** (para 2.2)**.**

d. **Perform fuel quantity system-capacitance and indicating test** (TM 1-1520-238-T)**.**

e. **Perform engine instruments maintenance operational check** (TM 1-1520-238-T)**.**

END OF TASK

8.28. ENGINE OUT WARNING CONTROL REMOVAL/INSTALLATION

8.28.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

8.28.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Ohmmeter (item 218, App H)

Personnel Required:

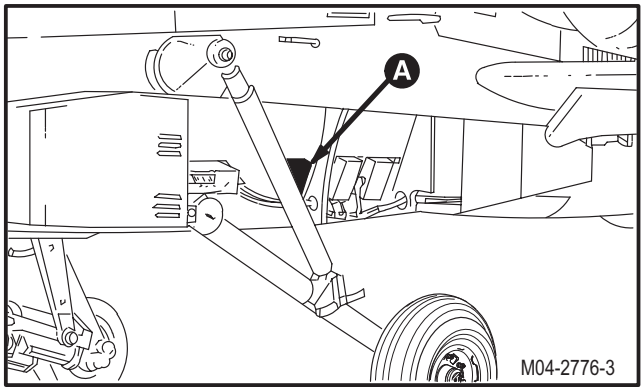
68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Fairing L140 removed



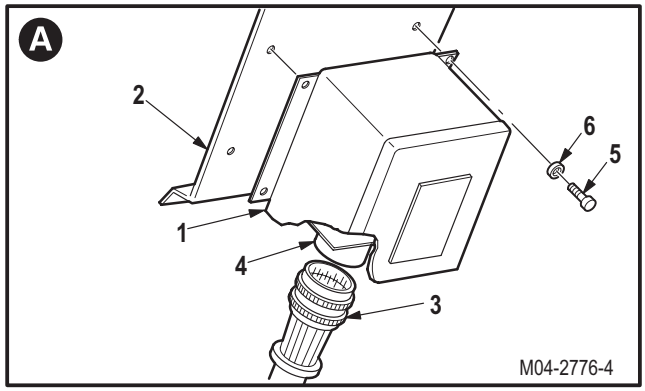
8.28.3. Removal

a. **Remove engine out warning control (1) from mount (2).**

(1) Detach connector P49 (3) from receptacle J1 (4).

(2) Remove four screws (5) and washers (6).

(3) Remove control (1) from mount (2).



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8.28. ENGINE OUT WARNING CONTROL REMOVAL/INSTALLATION – continued

8.28.4. Cleaning

a. **Wipe control mounting area with a clean rag.**

8.28.5. Inspection

a. **Check control for cracks, nicks, and dents.** None allowed.

b. **Check control mounting area for stripped or damaged nutplates.** None allowed.

8.28.6. Installation

a. **Install engine out warning control (1) on mount (2).**

(1) Aline control (1) on mount (2).

(2) Install four screws (5) and washers (6).

b. **Perform electrical bonding check** (TM 55-1500-323-24)**.**

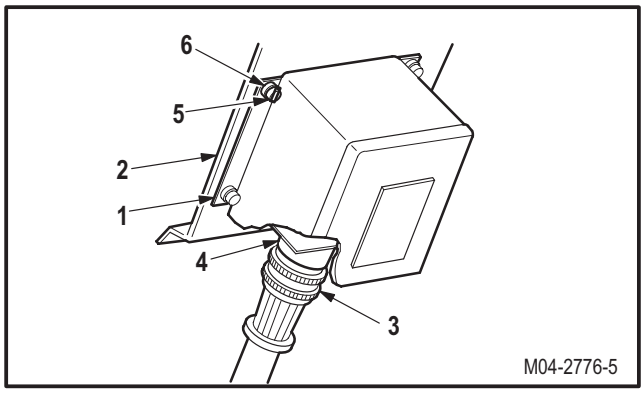
(1) Bond shall be **0.1 OHM** or less. Use ohmmeter.

c. **Attach connector P49 (3) to receptacle J1 (4).**

d. **Inspect (QA).**

e. **Install fairing L140** (para 2.2)**.**

f. **Perform audio warning system maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

SECTION II. FLIGHT INSTRUMENTS MAINTENANCE

8.29. FLIGHT INSTRUMENTS INSPECTION

8.29.1. Description

This task covers: Inspection.

8.29.2. Initial Setup

Personnel Required:

68X Armament/Electrical System Repairer

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access doors opened and covers, panels, and fairings removed as necessary

8.29.3. Inspection

a. **Check flight instruments and instrument panel mounting areas for dents, nicks, and cracks.** None allowed.

b. **Check instrument panel screw holes for stripped or damaged threads.** Acceptable thread damage cannot exceed 50 percent of one thread.

c. **Check front panels of instruments for dents, nicks, and cracks.** None allowed.

d. **Check instruments and their front panels, covers, switches, pointers, and knobs for loose installation.** None allowed.

e. **Check instruments for loose or missing hardware.** None allowed.

f. **Check pointers on instrument faces for wear and damage.** None allowed.

g. **Check instrument scales for wear, illegibility, distortion, and discoloration.** None allowed.

h. **Check electrical connectors for loose installation.** Inspect lockwire for loose or broken wires. None allowed.

i. **Check instruments for fogging and moisture.** None allowed.

j. **Secure opened access doors; install removed access covers, panels, and fairings** (para 2.2)**.**

END OF TASK

8.30. PILOT/CPG AIRSPEED INDICATOR REMOVAL/INSTALLATION

8.30.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

8.30.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
11/16-inch box and open wrench (item 408, App H)
15/16-inch box and open wrench (item 409, App H)

References:

TM 1-1520-238-T

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

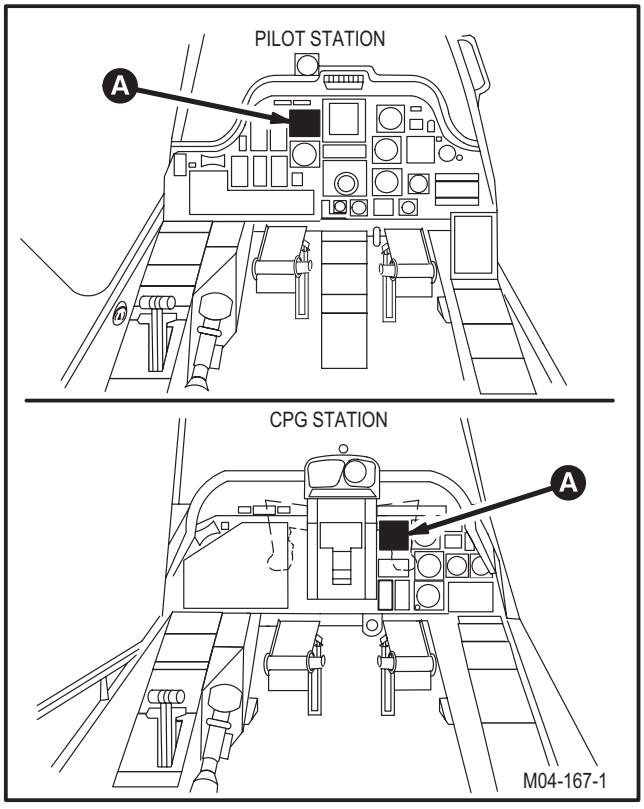
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

8.30.3. Removal

a. **Enter pilot/CPG station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot/CPG INTR LT panel, rotate INST control to OFF.**



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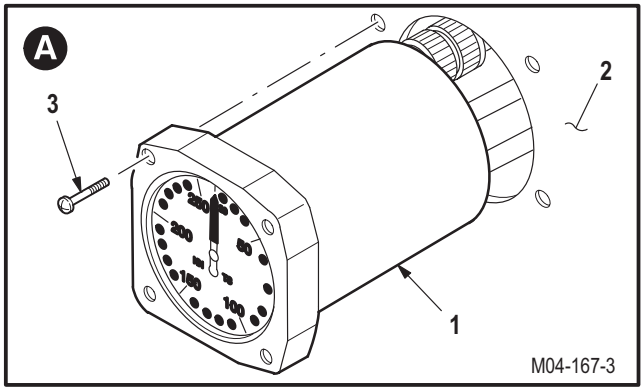
8.30. PILOT/CPG AIRSPEED INDICATOR REMOVAL/INSTALLATION – continued

c. **Remove airspeed indicator (1) from instrument panel (2).**

(1) Remove four screws (3) from indicator (1).

(2) Pull indicator (1) from panel (2).



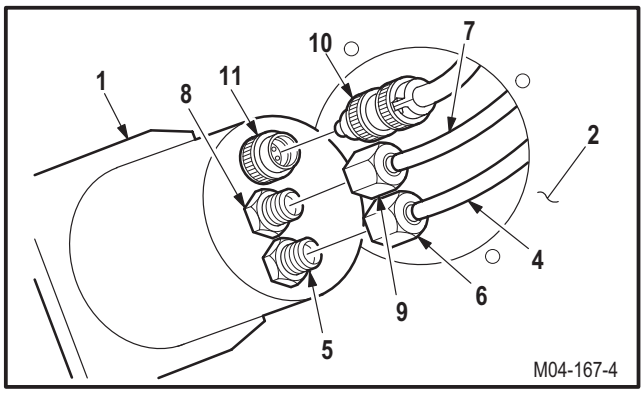
(3) Remove static air line (4) from indicator (1).

(a) Hold fitting (5). Use box and open wrench. Remove nut (6). Use box and open wrench.

(4) Remove pitot air line (7) from indicator (1).

(a) Hold pitot fittings (8). Use box and open wrench. Remove nut (9). Use box and open wrench.

(5) Detach connector P119 (pilot)/P125 (CPG) (10) from receptacle (M19)J1 (pilot)/(M24)J1 (CPG) (11).



8.30.4. Cleaning

a. **Wipe indicator and mounting area with a clean rag.**

8.30.5. Inspection

a. **Check indicator and panel mounting area for dents, nicks, and cracks** (para 8.29)**.**

b. **Check panel screw holes for stripped or damaged threads** (para 8.29)**.**

GO TO NEXT PAGE

8.30. PILOT/CPG AIRSPEED INDICATOR REMOVAL/INSTALLATION – continued

8.30.6. Installation

a. **Install indicator (1) in panel (2).**

(1) Attach connector P119 (pilot)/P125 (CPG) (10) to receptacle (M19)J1 (pilot)/(M24)J1 (CPG) (11).

(2) Install line (7).

(a) Hold fitting (8). Use box and open wrench. Install nut (9). Use box and open wrench.

(3) Install line (4).

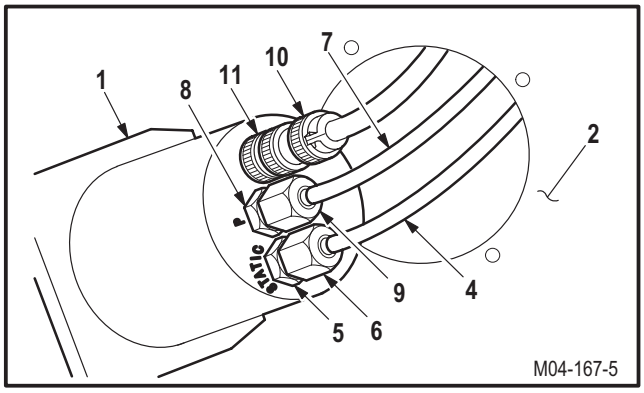
(a) Hold fitting (5). Use box and open wrench. Install nut (6). Use box and open wrench.

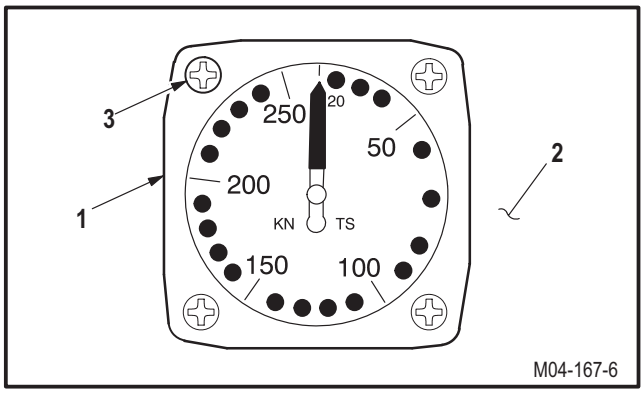
(4) Aline indicator (1) with screw holes in panel (2).

(5) Install four screws (3).

b. **Inspect (QA).**

c. **Perform flight instruments maintenance operational check** (TM 1-1520-238-T)**.**





END OF TASK

8.31. PILOT/CPG BAROMETRIC ALTIMETER REMOVAL/INSTALLATION

8.31.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

8.31.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
11/16-inch box and open wrench (item 408, App H)
15/16-inch box and open wrench (item 409, App H)

References:

TM 1-1520-238-T

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

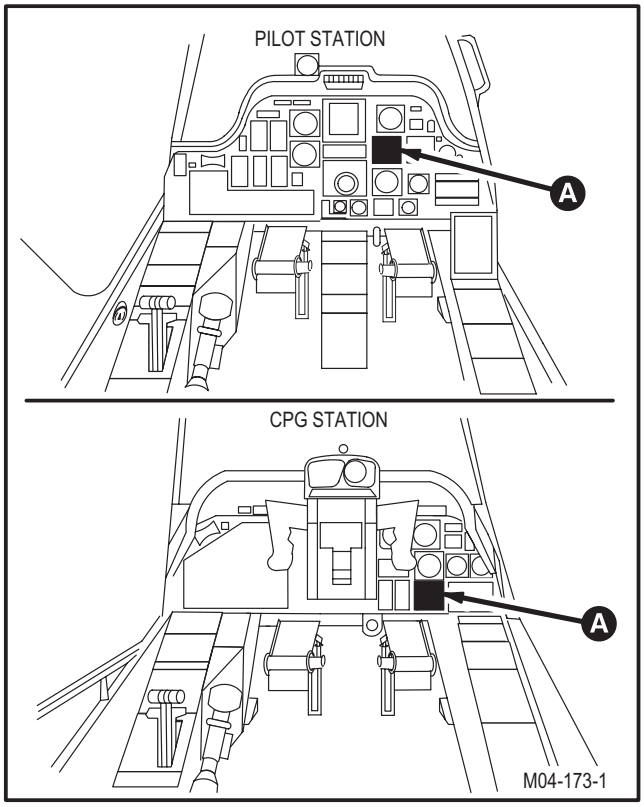
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

8.31.3. Removal

a. **Enter pilot/CPG station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot/CPG INTR LT panel, rotate INST control to OFF.**



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8.31. PILOT/CPG BAROMETRIC ALTIMETER REMOVAL/INSTALLATION – continued

c. **Remove barometric altimeter (1) from instrument panel (2).**

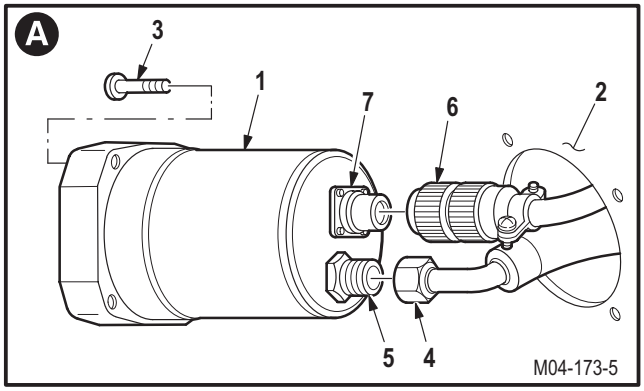
(1) Remove three screws (3)

(2) Pull altimeter (1) from panel (2).

(3) Remove nut (4) from fitting (5).

(a) Hold fitting (5). Use box and open wrench. Remove nut (4). Use box and open wrench.

(4) Detach connector P382 (pilot)/P385 (CPG) (6) from receptacle (M301)J1 (pilot)/(M305)J1 (CPG) (7).



8.31.4. Cleaning

a. **Wipe mounting area and altimeter with a clean rag.**

8.31.5. Inspection

a. **Check altimeter and panel mounting area for cracks, nicks, and dents** (para 8.29)**.**

b. **Check screw holes of panel for stripped or damaged threads** (para 8.29)**.**

GO TO NEXT PAGE

8.31. PILOT/CPG BAROMETRIC ALTIMETER REMOVAL/INSTALLATION – continued

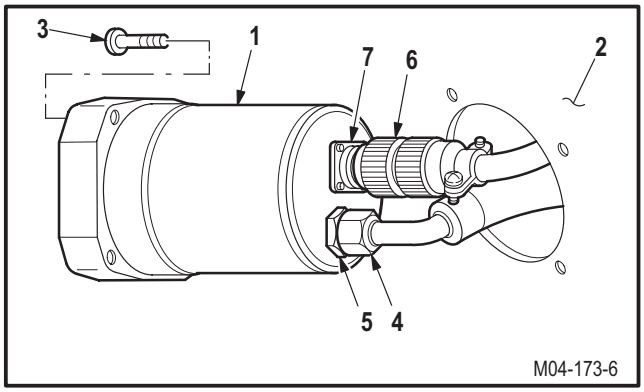
8.31.6. Installation

a. **Install altimeter (1) in panel (2).**

(1) Attach connector P382 (pilot)/P385 (CPG) (6) to receptacle (M301)J1 (pilot)/(M305)J1 (CPG) (7).

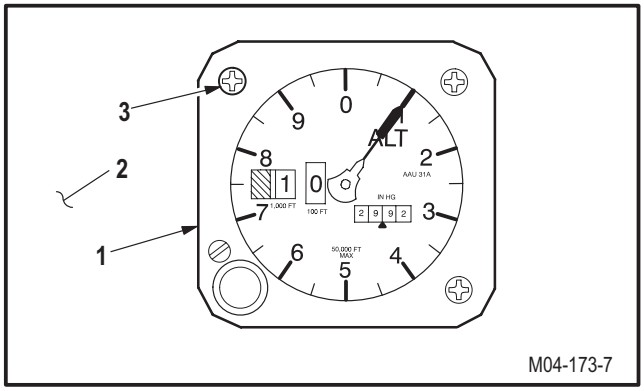
(2) Install nut (4) on fitting (5).

(a) Hold fitting (5). Use box and open wrench. Install nut (4) on fitting (5). Use box and open wrench.



(3) Aline altimeter (1) with screw holes in panel (2).

(4) Install three screws (3).



b. **Inspect (QA).**

c. **Perform flight instrument maintenance operational check** (TM 1-1520-238-T)**.**

END OF TASK

8.32. PILOT/CPG VERTICAL SPEED INDICATOR REMOVAL/INSTALLATION

8.32.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

8.32.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
11/16-inch box and open wrench (item 408, App H)
15/16-inch box and open wrench (item 409, App H)

References:

TM 1-1520-238-T

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

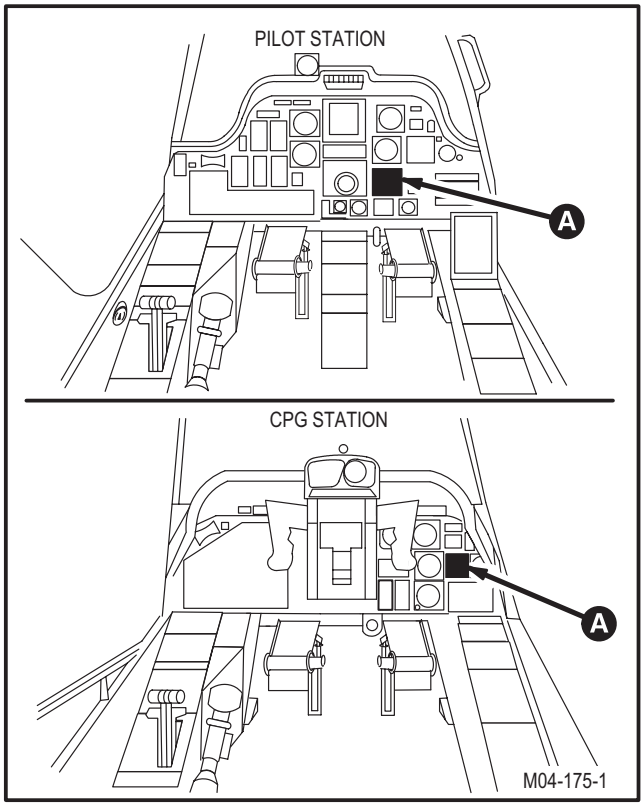
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

8.32.3. Removal

a. **Enter pilot/CPG station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot/CPG INTR LT panel, rotate INST control to OFF.**



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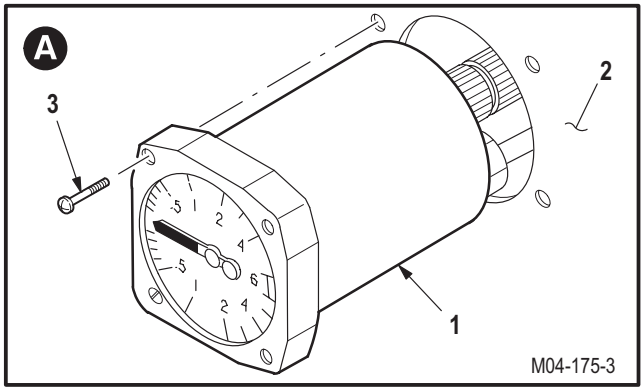
8.32. PILOT/CPG VERTICAL SPEED INDICATOR REMOVAL/INSTALLATION – continued

c. **Remove vertical speed indicator (1) from instrument panel (2).**

(1) Remove three screws (3).

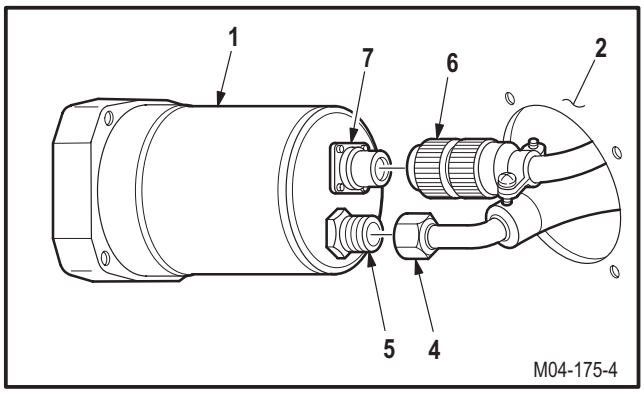
(2) Pull indicator (1) from panel (2).



(3) Remove nut (4) from fitting (5).

(a) Hold fitting (5). Use box and open wrench. Remove nut (4). Use box and open wrench.

(4) Detach connector P126 (pilot)/P120 (CPG) (6) from receptacle (M25)J1 (pilot)/(M20)J1 (CPG) (7).



8.32.4. Cleaning

a. **Wipe mounting area and indicator with a clean rag.**

8.32.5. Inspection

a. **Check indicator and panel mounting area for cracks, nicks, and dents** (para 8.29)**.**

b. **Check screw holes on panel for stripped or damaged threads** (para 8.29)**.**

GO TO NEXT PAGE

8.32. PILOT/CPG VERTICAL SPEED INDICATOR REMOVAL/INSTALLATION – continued

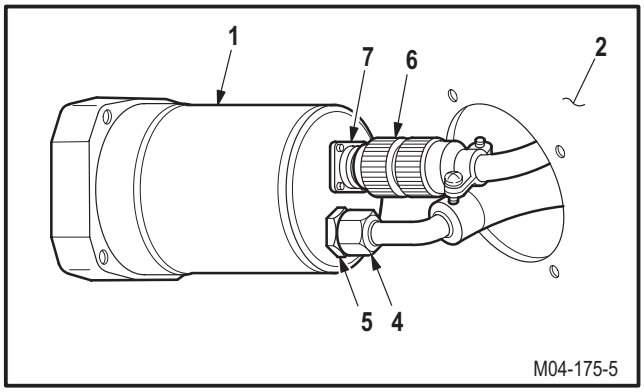
8.32.6. Installation

a. **Install indicator (1) in panel (2).**

(1) Attach connector P126 (pilot)/P120 (CPG) (6) to receptacle (M25)J1 (pilot)/(M20)J1 (CPG) (7).

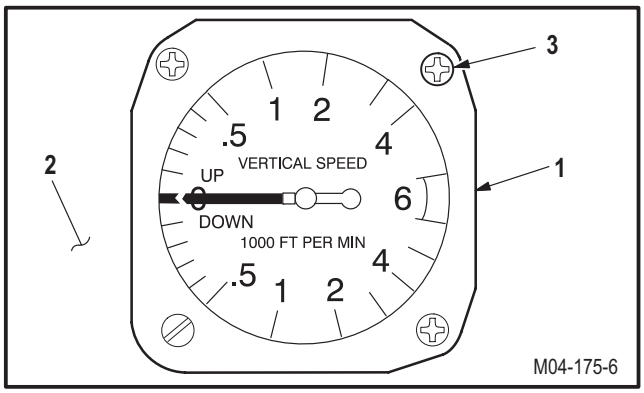
(2) Install nut (4) on fitting (5).

(a) Hold fitting (5). Use box and open wrench. Install nut (4) on fitting (5). Use box and open wrench.



(3) Aline indicator (1) with screw holes in panel (2).

(4) Install three screws (3).



b. **Inspect (QA).**

c. **Perform flight instruments maintenance operational check** (TM 1-1520-238-T)**.**

END OF TASK

8.33. PILOT ACCELEROMETER REMOVAL/INSTALLATION

8.33.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

8.33.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T

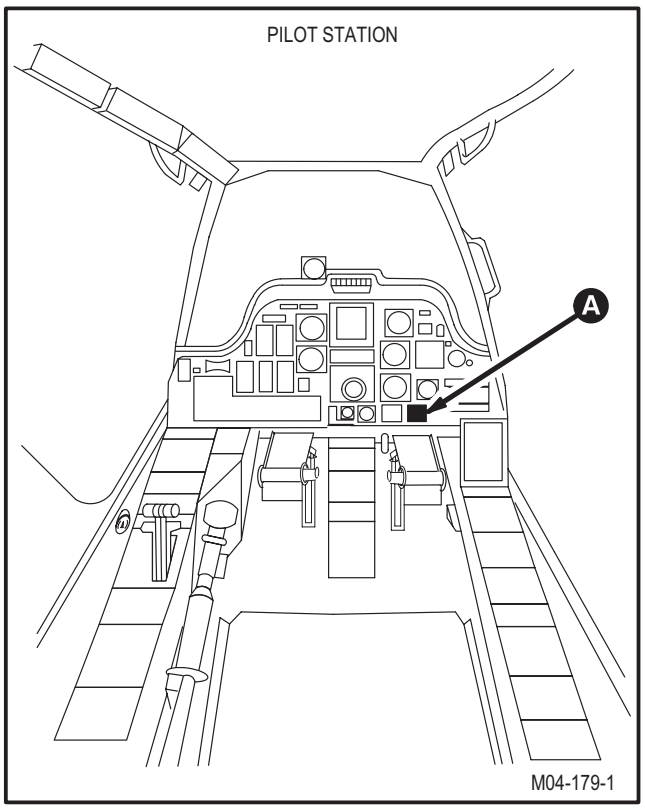
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

8.33.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot INTR LT panel, rotate INST control to OFF.**



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8.33. PILOT ACCELEROMETER REMOVAL/INSTALLATION – continued

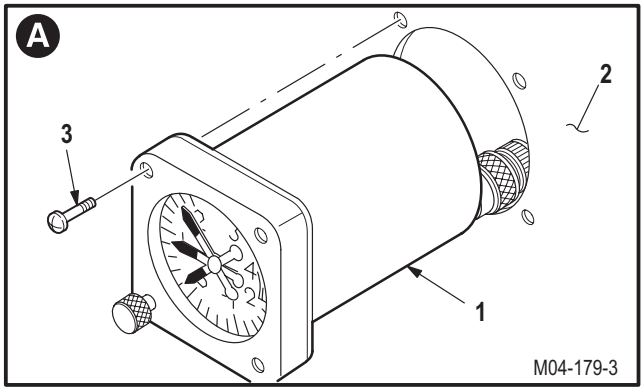
c. **Remove accelerometer (1) from instrument panel (2).**

(1) Remove three screws (3).

(2) Pull accelerometer (1) from instrument panel (2).

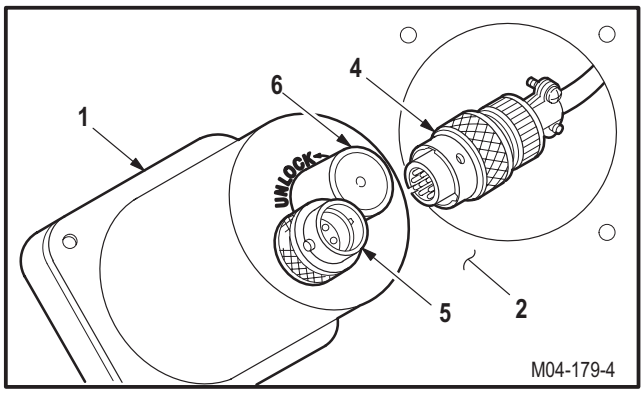
(3) Detach connector P123 (4) from receptacle (M22)J1 (5).

(4) Rotate locking knob (6) to the **LOCK** position.



8.33.4. Cleaning

a. **Wipe mounting area and accelerometer with a clean rag.**



8.33.5. Inspection

a. **Check accelerometer and instrument panel mounting area for cracks, nicks, and dents** (para 8.29)**.**

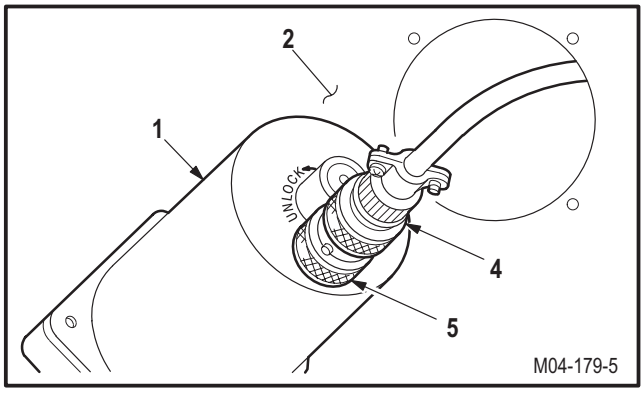
b. **Check instrument panel screw holes for stripped or damaged threads** (para 8.29)**.**

8.33.6. Installation

a. **Install accelerometer (1) in panel (2).**

(1) Rotate knob (6) to the **UNLOCK** position.

(2) Attach connector P123 (4) to receptacle (M22)J1 (5).

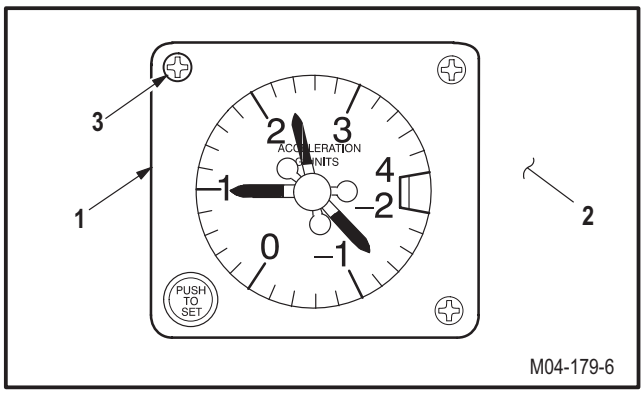


(3) Aline accelerometer (1) with screw holes in panel (2).

(4) Install three screws (3).

b. **Inspect (QA).**

c. **Perform flight instruments maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

8.34. PILOT STANDBY ATTITUDE INDICATOR REMOVAL/INSTALLATION

8.34.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

8.34.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T

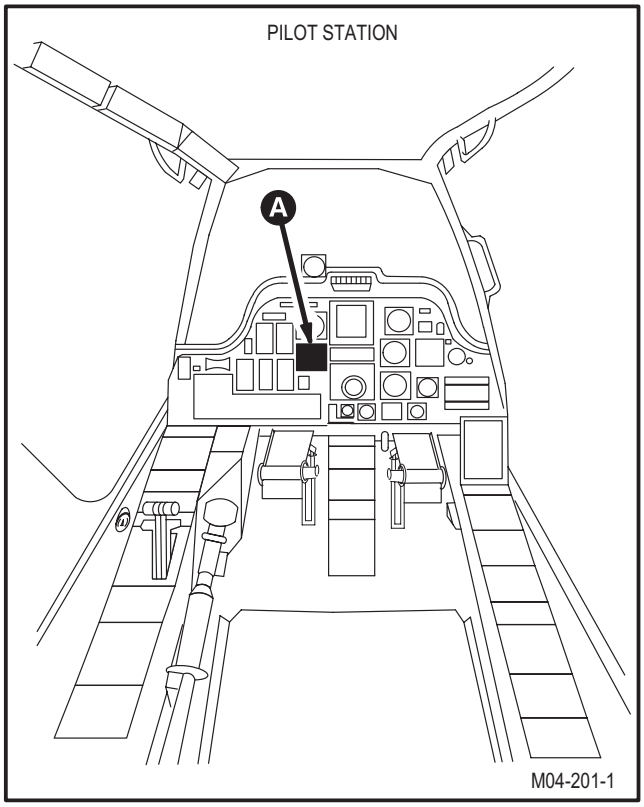
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

8.34.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot INTR LT panel, rotate INST control to OFF.**



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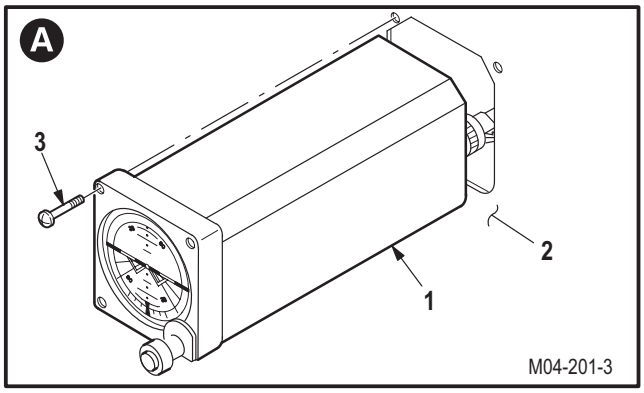
8.34. PILOT STANDBY ATTITUDE INDICATOR REMOVAL/INSTALLATION – continued

c. **Remove standby attitude indicator (1) from instrument panel (2).**

(1) Remove three screws (3).

(2) Pull indicator (1) from panel (2).

(3) Detach connector P383 (4) from receptacle (M302)J1 (5).



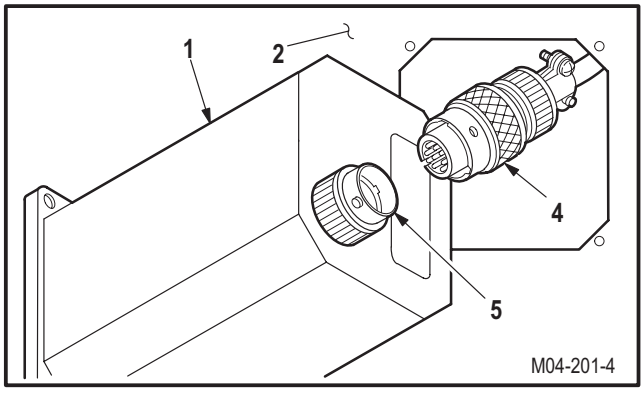
8.34.4. Cleaning

a. **Wipe mounting area and indicator with a clean rag.**

8.34.5. Inspection

a. **Check indicator and panel mounting area for cracks, nicks, and dents** (para 8.29)**.**

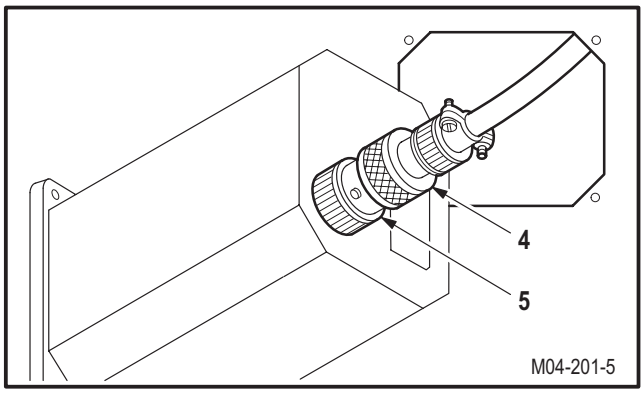
b. **Check panel screw holes for stripped or damaged threads** (para 8.29)**.**



8.34.6. Installation

a. **Install indicator (1) in panel (2).**

(1) Attach connector P383 (4) to receptacle (M302)J1 (5).

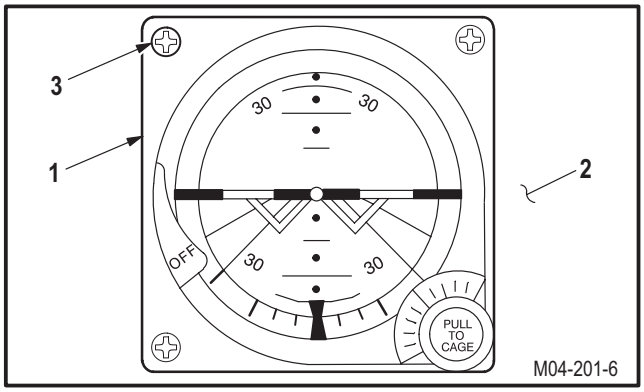


(2) Aline indicator (1) with screw holes in panel (2).

(3) Install three screws (3).

b. **Inspect (QA).**

c. **Perform flight instruments maintenance operational check** (TM 1-1520-238-T).



END OF TASK

8.35. CPG REMOTE ATTITUDE INDICATOR REMOVAL/INSTALLATION

8.35.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

8.35.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T

Equipment Conditions:

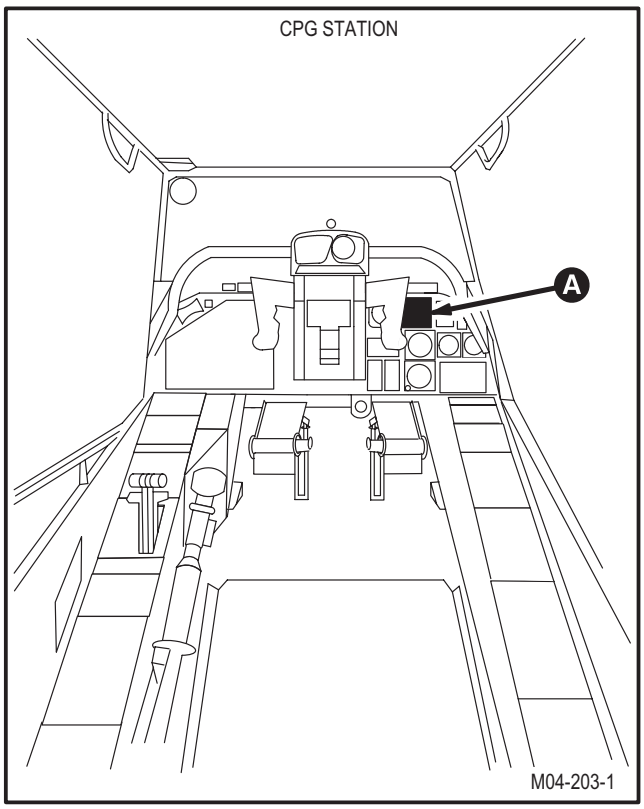
Ref	Condition
1.57	Helicopter safed

8.35.3. Removal

a. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**

b. **On CPG left console circuit breaker panel No. 1, open ATTD IND circuit breakers.**

c. **On pilot INTR LT panel, rotate INST control to OFF.**



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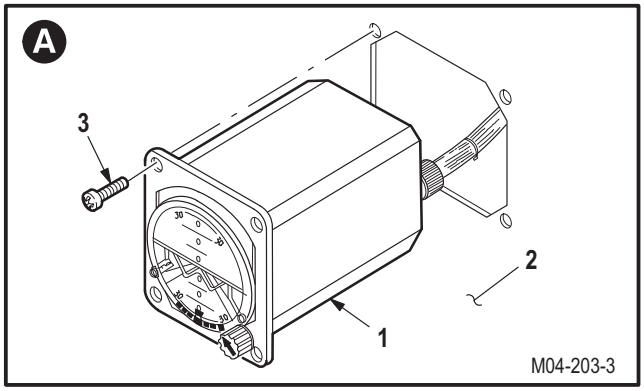
8.35. CPG REMOTE ATTITUDE INDICATOR REMOVAL/INSTALLATION – continued

d. **Remove remote attitude indicator (1) from instrument panel (2).**

(1) Remove four screws (3).

(2) Pull indicator (1) from panel (2).

(3) Detach connector P275 (4) from receptacle (M30)J1 (5).



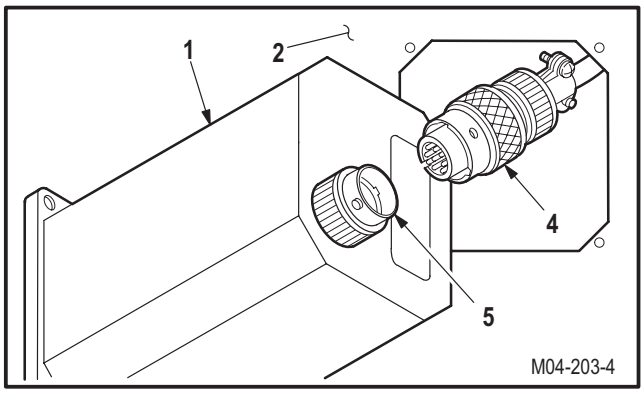
8.35.4. Cleaning

a. **Wipe mounting area and indicator with a clean rag.**

8.35.5. Inspection

a. **Check indicator for cracks, nicks, and dents** (para 8.29)**.**

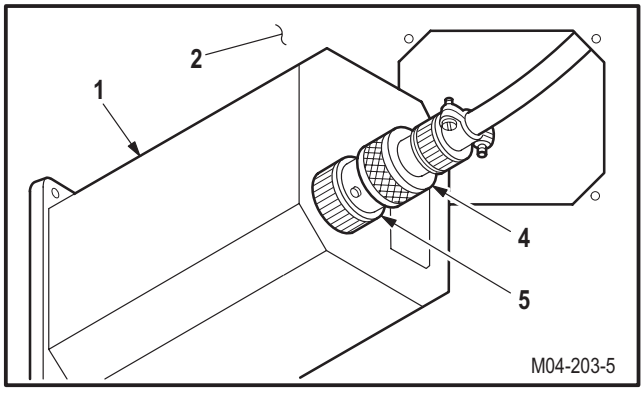
b. **Check screw holes of instrument panel for stripped or damaged threads** (para 8.29)**.**



8.35.6. Installation

a. **Install indicator (1) in panel (2).**

(1) Attach connector P275 (4) to receptacle (M30)J1 (5).

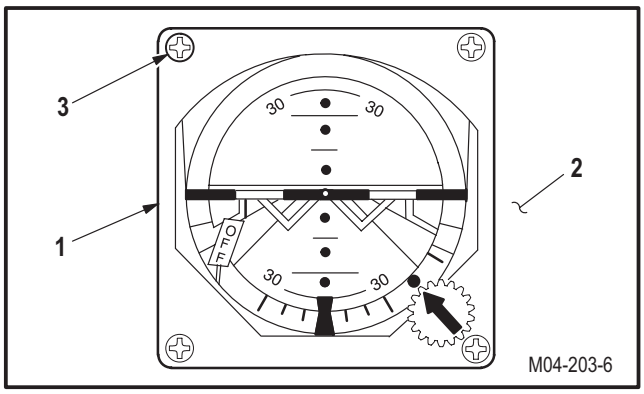


(2) Aline indicator (1) with screw holes in panel (2).

(3) Install four screws (3).

b. **Inspect (QA).**

c. **Perform navigation instruments maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

8.36. PITOT STATIC TESTER INSTALLATION/REMOVAL

8.36.1. Description

This task covers: Installation. Testing. Removal.

8.36.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Static port adapter (item 8, App H)
Screws (item 277, App H)
Pitot and static systems tester (item 350, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1500-204-23

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

Materials/Parts:

Packing

NOTE

This task is typical for the right and left pitot static system

8.36.3. Installation

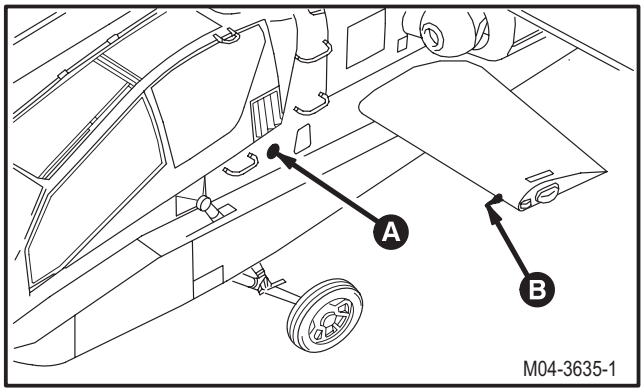
a. **Attach static port adapter (1) to helicopter static port (2).**

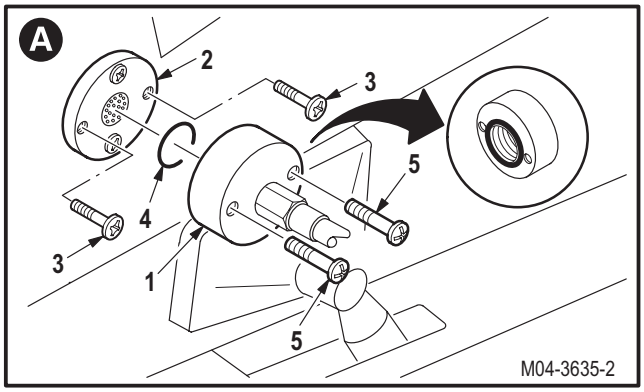
(1) Remove two screws (3) from port (2) at the 3 and 9 o'clock position.

(2) Ensure packing (4) is in groove on matching surface of adapter (1). Use static port adapter.

(3) Aline adapter (1) with port (2).

(4) Install two screws (5). Use screws.





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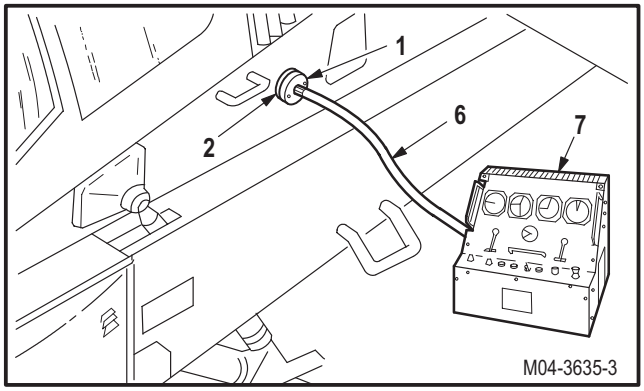
8.36. PITOT STATIC TESTER INSTALLATION/REMOVAL – continued

(5) Connect vacuum line (6) from pitot and static systems tester (7) to adapter (1). Use pitot and static systems tester.



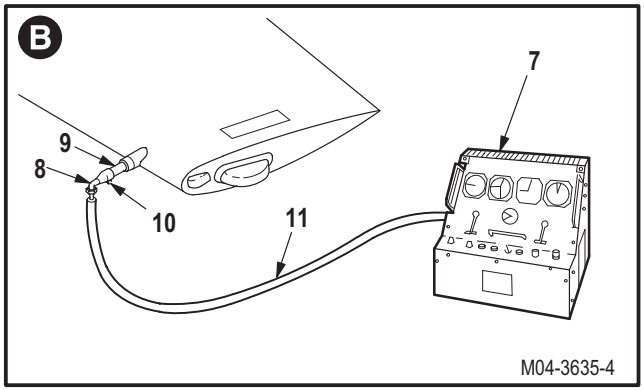
WARNING

Do not touch pitot tube when pitot tube heater is on. Touching a hot pitot tube will cause serious burns. In case of burns get medical help.

b. **Install pitot fixture (8) on helicopter pitot tube (9).**

(1) Install fixture (8) and tighten thumb screw (10).

(2) Connect pressure line (11) from tester (7) to fixture (8).



8.36.4. Testing

a. **Perform pitot static test** (TM 1-1500-204-23)**.** If leaks are found, repair transitions, splices, or swagelok fittings as necessary.

(1) Repair pitot static system transitions (para 8.38).

(2) Repair pitot static system tubing splices (para 8.39).

(3) Repair pitot static system swagelok fittings (para 8.40).

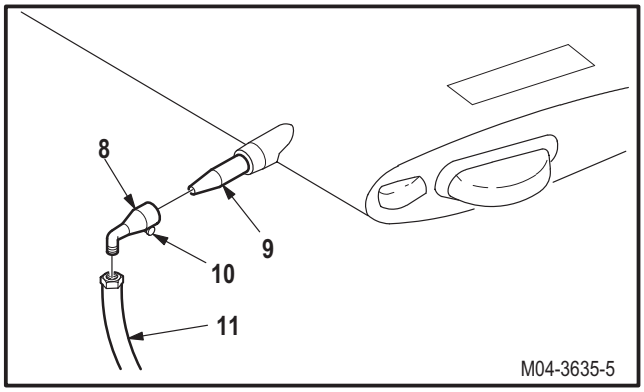
8.36.5. Removal

a. **Remove fixture (8) from pitot tube (9).**

(1) Disconnect pressure line (11) from fixture (8).

(2) Remove fixture (8) from pitot tube (9).

(a) Loosen thumb screw (10).



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8.36. PITOT STATIC TESTER INSTALLATION/REMOVAL – continued

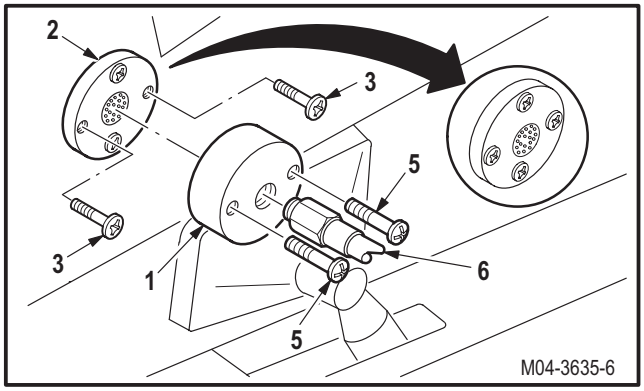
b. **Remove adapter (1) from port (2).**

(1) Remove vacuum line (6) from adapter (1).

(2) Remove two screws (5) and adapter (1) from port (2).

(3) Install two screws (3) in port (2).

c. **Inspect (QA).**



END OF TASK

8.37. RIGHT OR LEFT WING PITOT TUBE REMOVAL/INSTALLATION

8.37.1. Description

This task covers: Removal. Installation.

8.37.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

References:

TM 1-1520-238-T

Personnel Required:

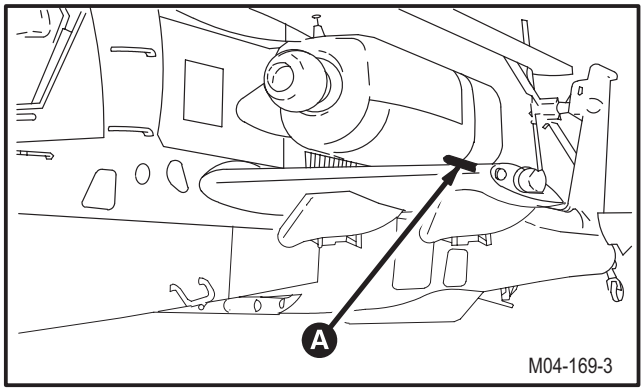
68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
1.60	Pitot head protective cover removed

WARNING

Do not touch pitot tube when pitot heater is on. Touching a hot pitot tube will cause serious burns. In case of burns get medical help.

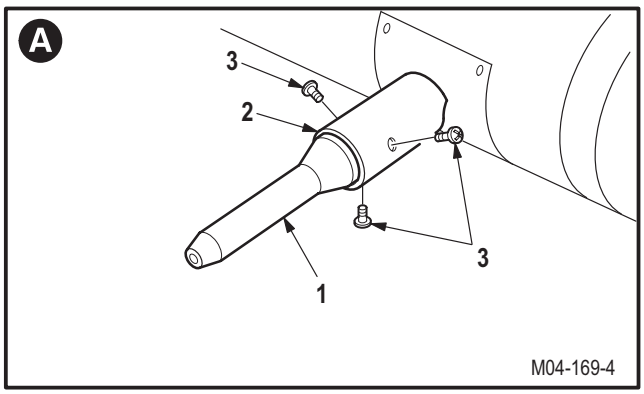


8.37.3. Removal

a. **Remove pitot tube (1) from housing (2).**

(1) Remove three screws (3).

(2) Remove tube (1).



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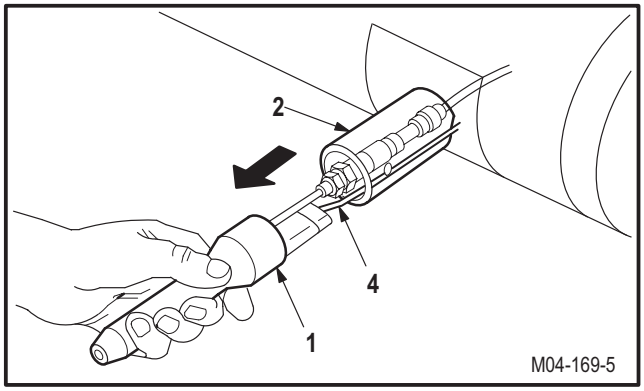
8.37. RIGHT OR LEFT WING PITOT TUBE REMOVAL/INSTALLATION – continued

(3) Pull pitot tube (1) from housing (2) until pitot line fitting (4) is clear of housing (2).

(4) Detach connector P1010 (right wing)/P208 (left wing) (5) from receptacle HR8 (right wing)/HR6 (left wing) (6).

(5) Remove pitot line fitting (7) from pitot tube fitting (8).



8.37.4. Installation

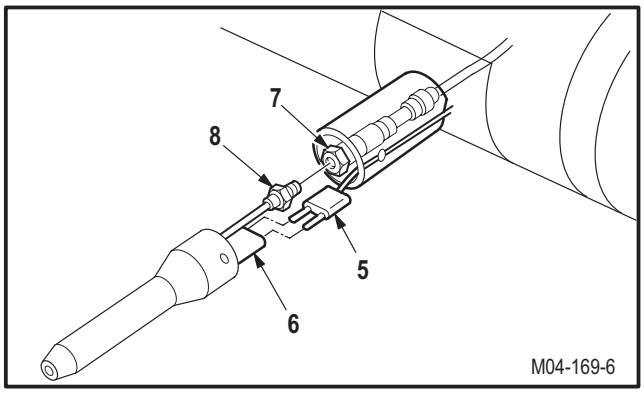
a. **Install tube (1) in housing (2).**

(1) Connect fitting (7) to fitting (8).

(2) Attach connector P1010 (right wing)/P208 (left wing) (5) to receptacle HR8 (right wing)/HR6 (left wing) (6).

(3) Gently push tube (1) into housing (2).

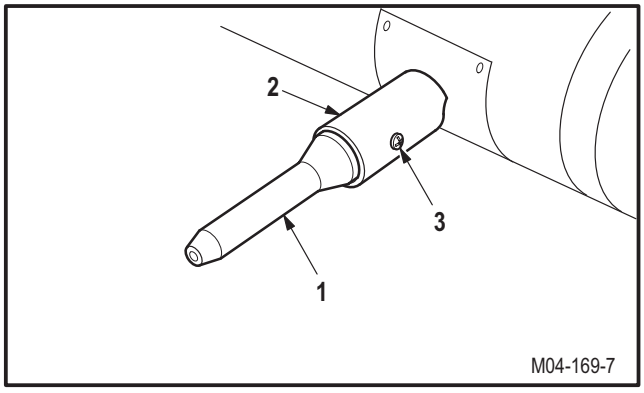
(4) Install three screws (3).



b. **Inspect (QA).**

c. **Perform flight instruments maintenance operational check** (TM 1-1520-238-T)**.**

d. **Install pitot head protective cover** (para 1.59)**.**



END OF TASK

8.38. PITOT STATIC SYSTEM TUBING TRANSITION REPLACEMENT

8.38.1. Description

This task covers: Removal. Inspection. Installation.

8.38.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Heat protective gloves (item 155, App H)
Electric gun type heater (item 163, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Adhesive (item 9, App F)
Cloth (item 48, App F)
Cloth (item 52, App F)
Marker (item 123, App F)
Methyl ethyl ketone (item 124, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1500-204-23

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

GO TO NEXT PAGE

8.38. PITOT STATIC SYSTEM TUBING TRANSITION REPLACEMENT – continued

NOTE

This task is typical for all transitions in the pitot static system.

8.38.3. Removal

WARNING

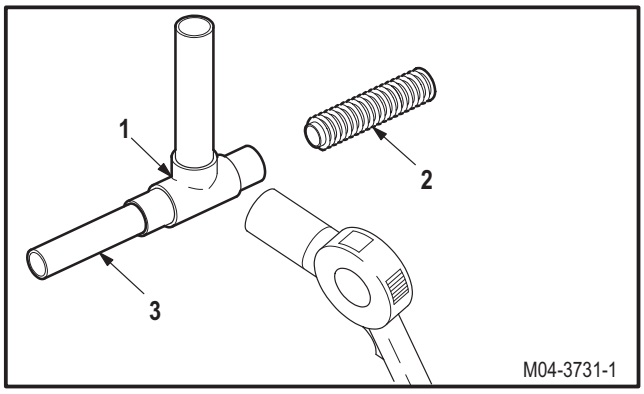
Do not place heater near flammable material or allow heater to contact skin: severe burns can result. Wear protective equipment. If injury occurs, seek medical aid.

a. **Remove transition (1) from convoluted tubing (2).**

(1) Heat transition (1). Use protective gloves and heater.

(2) While transition (1) is hot, hold smooth tube (3).

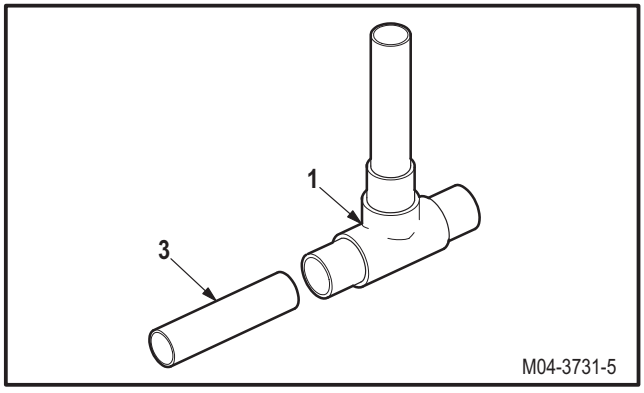
(3) Remove convoluted tubing (2).



b. **Remove transition (1) from smooth tubing (3).**

(1) Heat transition (1). Use protective gloves and heater.

(2) While transition (1) is hot, hold smooth tubing (3) and remove transition (1).



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8.38. PITOT STATIC SYSTEM TUBING TRANSITION REPLACEMENT – continued

8.38.4. Inspection

a. **Transition tubing shall be free of holes, cracks, or nicks.** Ends shall be cut smooth and shall be free of ragged edges.

8.38.5. Installation

WARNING

Do not place heater near flammable material or allow heater to contact skin: severe burns can result. Wear protective equipment. If injury occurs, seek medical aid.

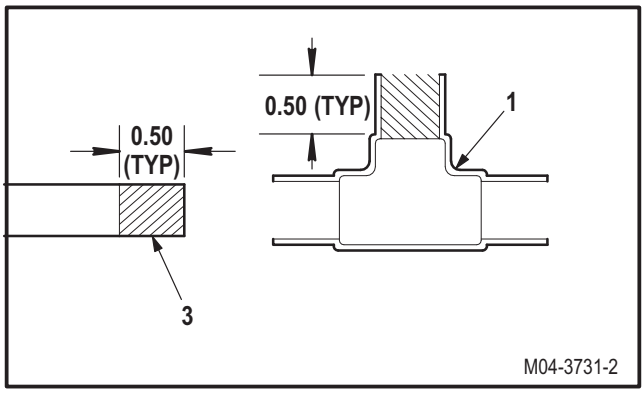
a. **Installation of transition (1) to convoluted tubing (2) and smooth tubing (3).**

NOTE

Do not abrade the convoluted tubing.

(1) Abrade the interior end of each transition (1) **0.50 INCH**. Abrade smooth tubing (3) exterior end **0.50 INCH**. Use cloth (item 48, App F).

(2) Clean all abraded surfaces. Use methyl ethyl ketone (item 124, App F) and cloth (item 52, App F).



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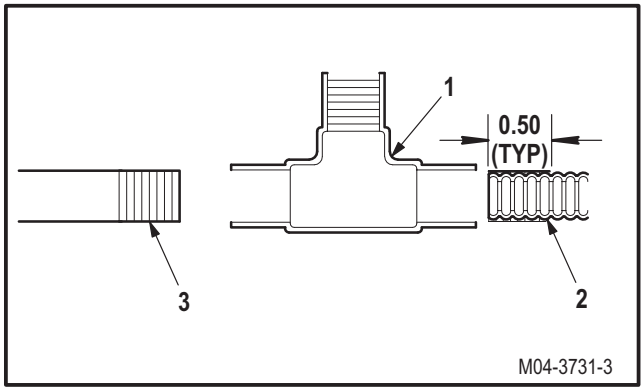
8.38. PITOT STATIC SYSTEM TUBING TRANSITION REPLACEMENT – continued

(3) Apply adhesive to abraded surfaces on smooth tubing (3) and inside each leg of transition (1). Use adhesive (item 9, App F).

(4) Apply adhesive to convoluted tubing (2).

(a) Fill in valleys of convoluted tubing being installed in transition (1) **0.50 INCH**. Use adhesive (item 9, App F).

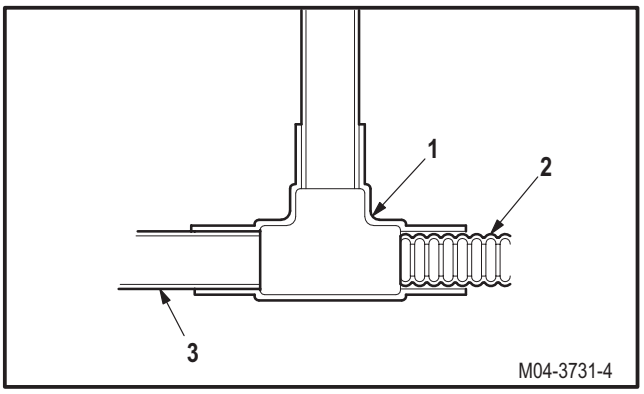


(5) Install smooth tubing (3) and convoluted tubing (2) into transition (1).

(6) Apply heat to transition (1). Use protective gloves and heater.

(7) Remove excess adhesive. Use methyl ethyl ketone (item 124, App F) and cloth (item 52, App F).

(8) Allow **24 HOUR** cure time.



b. **Inspect (QA).**

c. **Perform pitot static system test** (TM 1-1500-204-23)**.**

d. **Reapply system identification tape if removed** (TM 1-1500-204-23)**.** Use marker (item 123, App F).

END OF TASK

8.39. PITOT STATIC SYSTEM TUBING SPLICE REPLACEMENT

8.39.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

8.39.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Heat protective gloves (item 155, App H)
Electric gun type heater (item 163, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Adhesive (item 9, App F)
Cloth (item 48, App F)
Cloth (item 52, App F)
Insulation sleeving (item 104, App F)
Marker (item 123, App F)
Methyl ethyl ketone (item 124, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1500-204-23

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

NOTE

This task is typical for all splices in pitot static system.

GO TO NEXT PAGE

8.39. PITOT STATIC SYSTEM TUBING SPLICE REPLACEMENT – continued

8.39.3. Removal

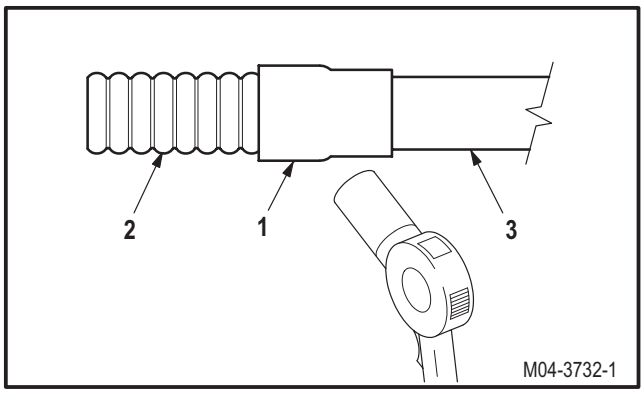
WARNING

Do not place heater near flammable material or allow heater to contact skin: severe burns can result. Wear protective equipment. If injury occurs, seek medical aid.

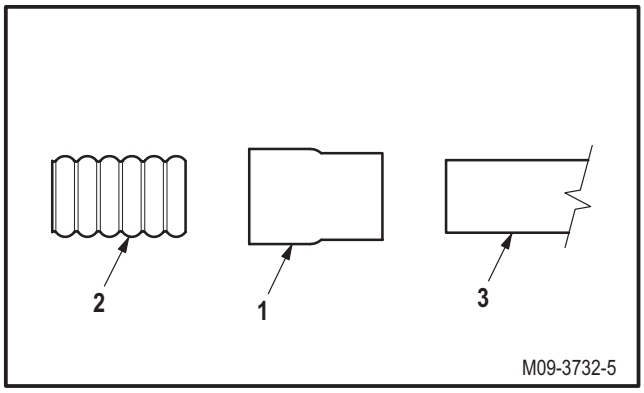
a. **Remove splice (1) from convoluted tubing (2) and smooth tubing (3).**

(1) Heat splice (1). Use protective gloves and heater.

(2) While splice (1) is hot, hold tubing (2) and tubing (3).



(3) Remove splice (1) from tubing (2) and tubing (3).



8.39.4. Cleaning

a. **Clean all parts to be covered with sleeving.** Use methyl ethyl ketone (item 124, App F) and cloth (item 52, App F).

8.39.5. Inspection

a. **Tubing and sleeving shall be free from holes, cracks, or nicks.** Ends shall be cut smooth and shall be free of ragged edges.

GO TO NEXT PAGE

8.39. PITOT STATIC SYSTEM TUBING SPLICE REPLACEMENT – continued

8.39.6. Installation

WARNING

Do not place heater near flammable material or allow heater to contact skin: severe burns can result. Wear protective equipment. If injury occurs, seek medical aid.

NOTE

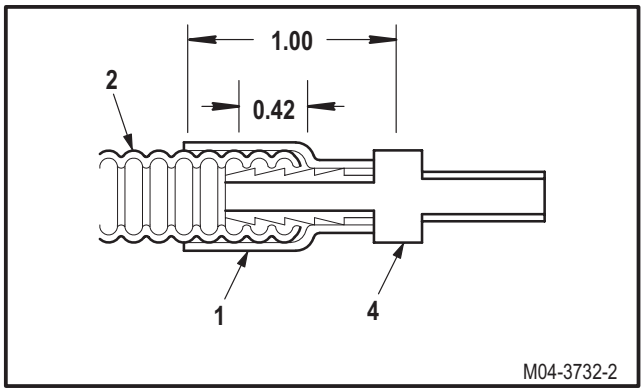
- If installing splice over convoluted tubing and adapter, go to step a.
- If installing splice over pitot tubing and convoluted tubing, go to step b.
- If installing splice over static tubing and convoluted tubing, go to step c.
- If installing splice in middle of tubing to cover crack or break, go to step d.

a. **Install splice (1) over convoluted tubing (2) and adapter (4).**

(1) Cut one **1.0 INCH** splice from sleeving installation. Use insulation sleeving (item 104, App F).

(2) Apply adhesive to splice area. Fill in all valleys on convoluted tubing (2). Use adhesive (item 9, App F).

(3) Slide splice (1) over tubing (2).



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8.39. PITOT STATIC SYSTEM TUBING SPLICE REPLACEMENT – continued

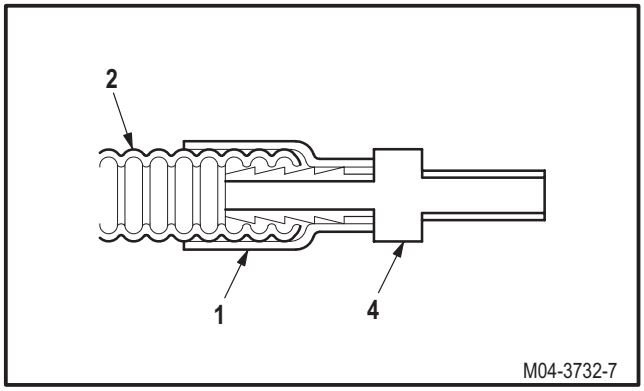
(4) Crimp **0.50 INCH** end of tubing (2) for installation of adapter (4).

(5) Slide adapter (4) **0.42 INCH** in tubing (2).

(6) Shrink splice (1) down over tubing (2) and adapter (4). Move heater or tubing slowly to ensure proper shrinkage of sleeving. Use heater.

(7) Remove all excess adhesive. Use methyl ethyl ketone (item 124, App F) and cloth (item 52, App F).

(8) Allow **24 HOUR** cure time.



b. **Install splice (1) over convoluted tubing (2) and pitot tubing (5).**

(1) Cut one **1.0 INCH** splice from sleeving installation. Use insulation sleeving (item 104, App F).

(2) Abrade end of tube (5) **0.50 INCH**. Use cloth (item 48, App F).

(3) Apply adhesive to each end of tubing (2) and (5) **0.50 INCH**. Fill in all valleys of tubing (2). Use adhesive (item 9, App F).

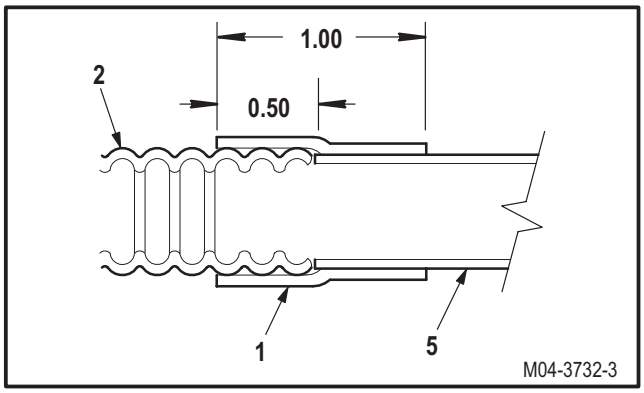
(4) Slide splice (1) over tubing (2).

(5) Hold tubing (2) and tubing (5) together.

(6) Slide splice (1) over both ends of tubing so that there is **0.50 INCH** of splice over each tube.

(7) Shrink splice (1) down over tubing (2) and tubing (5). Move heater or tubing slowly to ensure proper shrinkage of sleeving. Use protective gloves and heater.

(8) Remove all excess adhesive. Use methyl ethyl ketone (item 124, App F) and cloth (item 52, App F).



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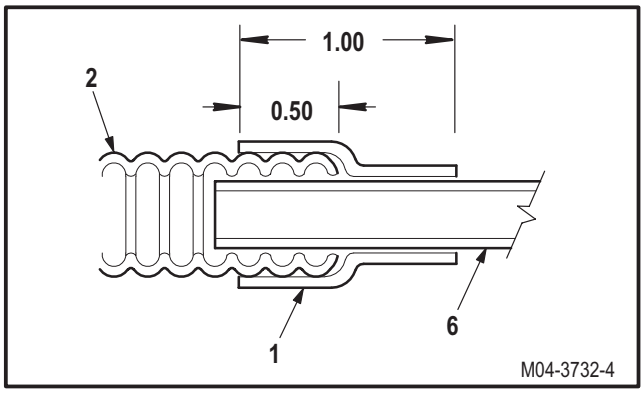
8.39. PITOT STATIC SYSTEM TUBING SPLICE REPLACEMENT – continued

(9) Allow **24 HOUR** cure time.

c. **Install splice (1) over tubing (2) and tubing (6).**



(1) Cut one **1.0 INCH** splice from sleeving installation. Use insulation sleeving (item 104, App F).

(2) Slide splice (1) over tubing (2).

(3) Abrade end of tubing (6) **1.0 INCH**. Use cloth (item 48, App F).

(4) Install tubing (6) into tubing (2) **0.50 INCH**.

(5) Apply adhesive to splice area. Fill in all valleys of tubing (2). Use adhesive (item 9, App F).

(6) Slide splice (1) over tubing (6) and tubing (2) **0.50 INCH** over each tube.

(7) Shrink splice (1) down over tubing (2) and tubing (6). Move heater tubing slowly to ensure proper shrinkage of sleeving. Use protective gloves and heater.

(8) Remove all excess adhesive. Use methyl ethyl ketone (item 124, App F) and cloth (item 52, App F).

(9) Allow **24 HOUR** cure time.

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8.39. PITOT STATIC SYSTEM TUBING SPLICE REPLACEMENT – continued

d. **Install splice (1) in middle of tubing (2) or tubing (3) to cover crack or break.**

(1) Cut one **4.0 INCH** splice from sleeving installation. Use insulation sleeving (item 104, App F).

NOTE

Do not abrade convoluted tubing.

(2) Abrade area of tubing (3) to be spliced. Use cloth (item 48, App F).

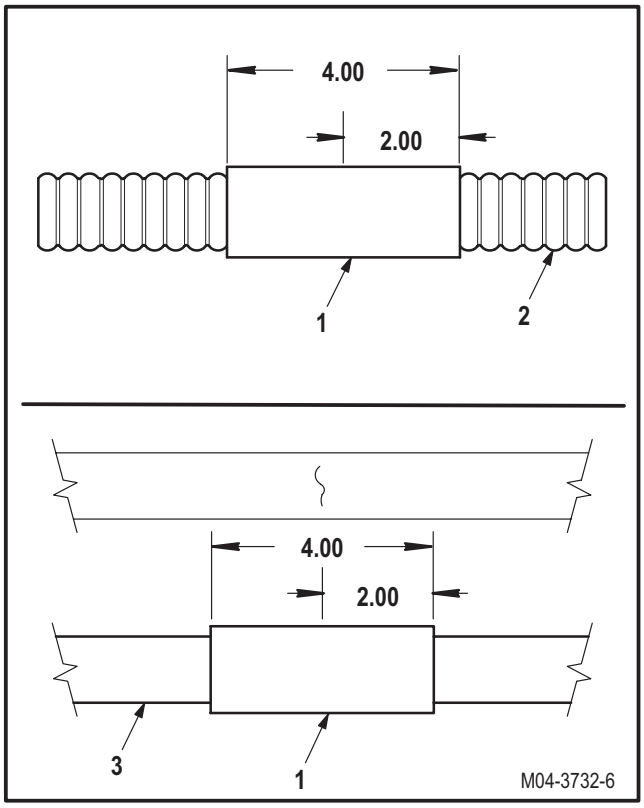
(3) Apply adhesive to abraded area. If splicing tubing (2), fill in all valleys. Use adhesive (item 9, App F).

(4) Slide splice (1) over damaged area with **2.0 INCHES** on each side.

(5) Shrink splice (1) down over tubing (2) or (3). Move heater over tubing slowly to ensure proper shrinkage of sleeving. Use protective gloves and heater.

(6) Remove all excess adhesive. Use methyl ethyl ketone (item 124, App F) and cloth (item 52, App F).

(7) Allow **24 HOUR** cure time.



e. **Inspect (QA).**

f. **Perform pitot static system test** (TM 1-1500-204-23).

g. **Reapply system identification tape if removed** (TM 1-1500-204-23). Use marker (item 123, App F).

END OF TASK

8.40. PITOT STATIC SYSTEM TUBING SWAGELOK FITTING REPLACEMENT

8.40.1. Description

This task covers: Removal. Cleaning. Installation.

8.40.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1500-204-23

Materials/Parts:

Cloth (item 52, App F)
Marker (item 123, App F)

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

NOTE

This task is typical for all elbow and tee swagelok fittings on all pitot static systems.

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8.40. PITOT STATIC SYSTEM TUBING SWAGELOK FITTING REPLACEMENT – continued

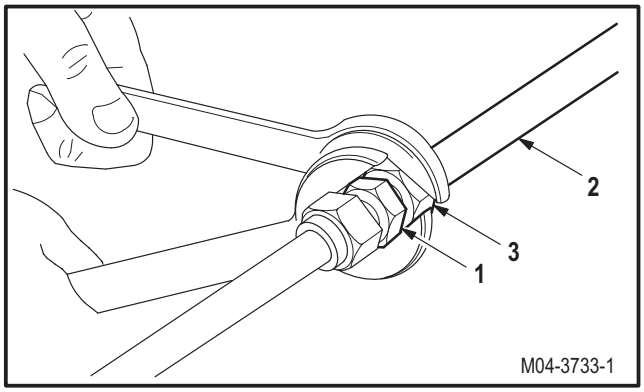
8.40.3. Removal

a. **Remove swagelok fitting (1) from smooth tubing (2).**

(1) Hold fitting (1).

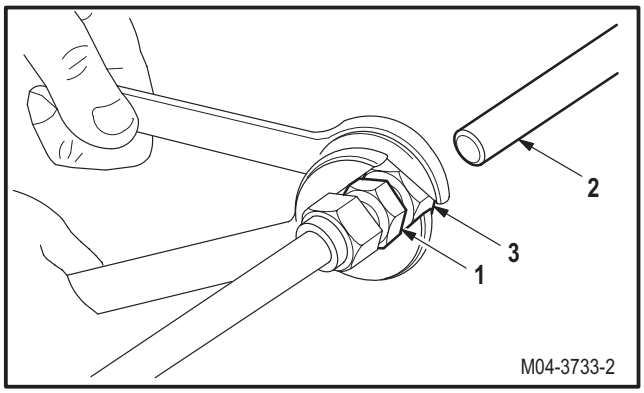
(2) Loosen fitting (1) B-nut (3).

(3) Remove tubing (2) from fitting (1).



8.40.4. Cleaning

a. **Wipe all removed and attaching parts.** Use cloth (item 52, App F).



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8.40. PITOT STATIC SYSTEM TUBING SWAGELOK FITTING REPLACEMENT – continued

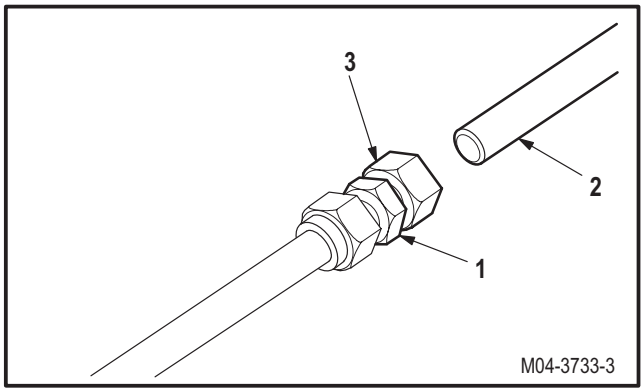
8.40.5. Installation

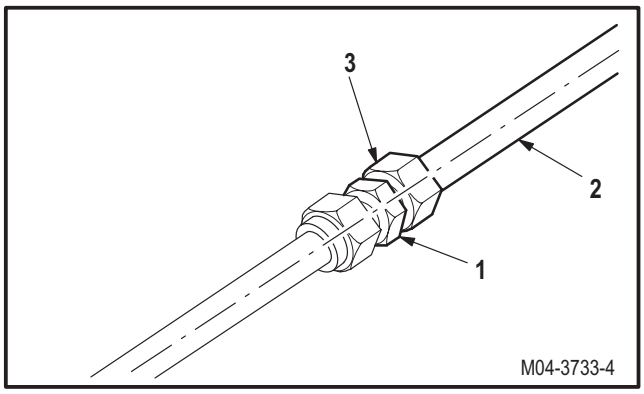
a. **Install fitting (1) on tubing (2).**

(1) Hold fitting (1).

(2) Insert tubing (2) into fitting (1).

(3) Ensure tubing (2) rests firmly against shoulder of fitting assembly (1).





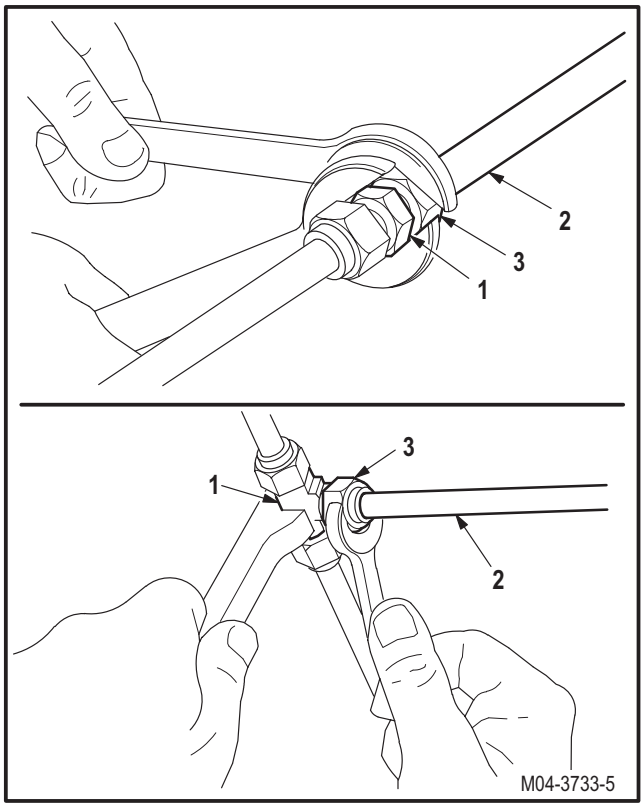
(4) Hold tubing and turn nut (3) clockwise ensuring tubing cannot be rotated or moved axially.

(5) Mark nut (3) and the tubing (2) on center line of tubing (2). From marked position, rotate nut (3) in clockwise direction. 1 1/4 turns for pitot system tube and 3/4 turn for static system tube.

b. **Inspect (QA).**

c. **Perform pitot static system test** (TM 1-1500-204-23)**.**

d. **Reapply system identification tape if removed** (TM 1-1500-204-23)**.** Use marker (item 123, App F).



END OF TASK

SECTION III. NAVIGATION INSTRUMENTS MAINTENANCE

8.41. NAVIGATION INSTRUMENTS INSPECTION

8.41.1. Description

This task covers: Inspection.

8.41.2. Initial Setup

Personnel Required:

68X Armament/Electrical System Repairer

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access doors opened and covers, panels, and fairings removed as necessary

8.41.3. Inspection

a. **Check navigation instruments and instrument panel mounting areas for dents, nicks, and cracks.** None allowed.

b. **Check front panels of instruments for dents, nicks, and cracks.** None allowed.

c. **Check instruments and their front panels, covers, indicators, switches, and knobs for loose installation.** None allowed.

d. **Check instruments for loose or missing hardware.** None allowed.

e. **Check screw holes of instruments and mounting brackets for stripped or damaged threads.** Acceptable thread damage cannot exceed 50 percent of one thread.

f. **Check indicators on instrument faces for wear and damage.** None allowed.

g. **Check instrument scales for wear, readability, distortion, and discoloration.** None allowed.

h. **Check electrical connectors for loose installation.** None allowed.

i. **Check lockwire for loose or broken wires.** None allowed.

j. **Check instruments for fogging and moisture.** None allowed.

k. **Secure opened access doors; install removed access panels, covers, and fairings** (para 2.2)**.**

END OF TASK

8.42. PILOT MAGNETIC COMPASS REMOVAL/INSTALLATION

8.42.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

8.42.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1500-204-23
TM 1-1520-238-T

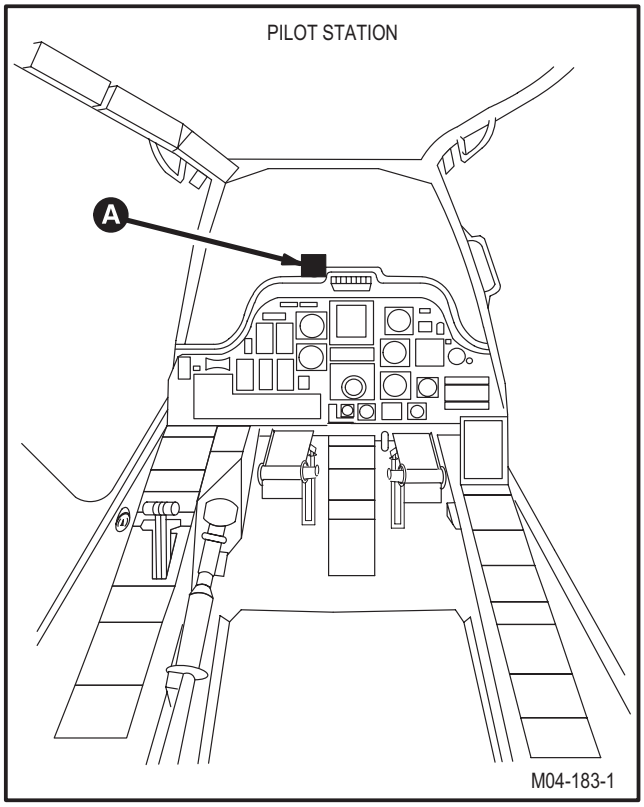
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

8.42.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot INTR LT panel, rotate INST control to OFF.**



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8.42. PILOT MAGNETIC COMPASS REMOVAL/INSTALLATION – continued

c. **Remove magnetic compass (1) from mounting bracket (2).**

(1) Remove four screws (3) and nuts (4).

(2) Pull compass (1) from bracket (2).

(3) Detach connector P122 (5) from receptacle (M23)J1 (6).

8.42.4. Cleaning

a. **Wipe bracket and compass with a clean rag.**

8.42.5. Inspection

a. **Check compass and bracket for cracks, nicks, and dents** (para 8.41)**.**

b. **Check screw holes of compass and bracket for stripped or damaged threads** (para 8.41)**.**

8.42.6. Installation

a. **Install compass (1) in bracket (2).**

(1) Attach connector P122 (5) to receptacle (M23)J1 (6).

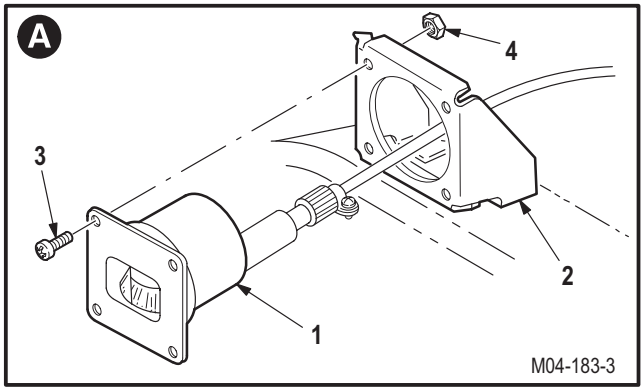
(2) Aline face of compass (1) with screw holes of bracket (2).

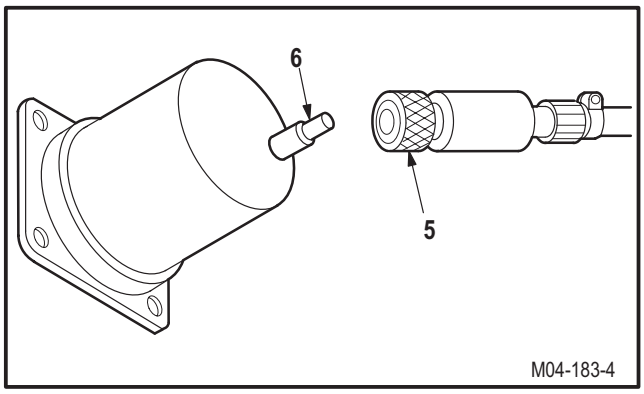
(3) Install four screws (3) and nuts (4).

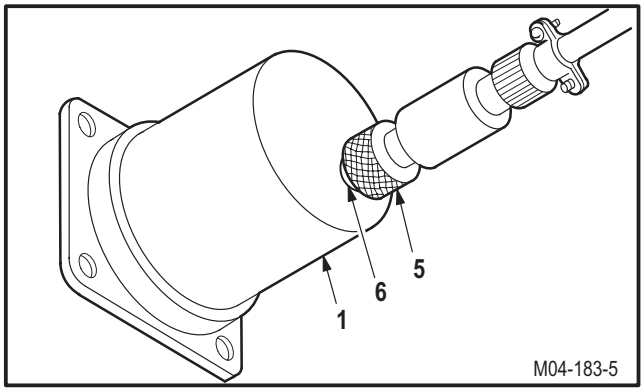
b. **Inspect (QA).**

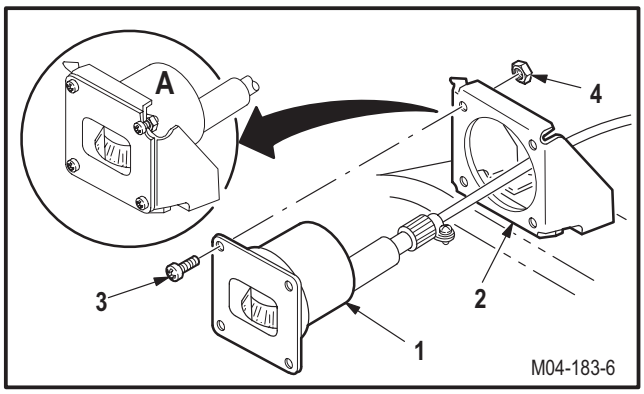
c. **Perform flight instruments maintenance operational check** (TM 1-1520-238-T)**.**

d. **Perform magnetic compass compensation if necessary** (TM 1-1500-204-23)**.**









END OF TASK

SECTION IV. MISCELLANEOUS INSTRUMENTS MAINTENANCE

8.43. MISCELLANEOUS INSTRUMENTS INSPECTION

8.43.1. Description

This task covers: Inspection.

8.43.2. Initial Setup

Personnel Required:

68X Armament/Electrical System Repairer

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access doors opened and covers, panels, and fairings removed as necessary

8.43.3. Inspection

a. **Check miscellaneous instruments and instrument panel mounting areas for dents, nicks, and cracks.** None allowed.

b. **Check front panels of instruments for dents, nicks, and cracks.** None allowed.

c. **Check instruments and their front panels, covers, indicators, switches, and knobs for loose installation.** None allowed.

d. **Check instruments for loose or missing hardware.** None allowed.

e. **Check indicator and instrument panel screw holes for stripped or damaged threads.** Acceptable thread damage cannot exceed 50 percent of one thread.

f. **Check indicators on instrument faces for wear and damage.** None allowed.

g. **Check instrument scales for wear, readability, distortion, and discoloration.** None allowed.

h. **Check electrical connectors for loose installation.** Inspect lockwiring for loose or broken wires. None allowed.

i. **Check instruments for fogging and moisture.** None allowed.

j. **Secure opened doors; install removed covers, panels and fairings** (para 2.2)**.**

END OF TASK

8.44. HYDRAULIC PRESSURE INDICATOR REMOVAL/INSTALLATION

8.44.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

8.44.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T

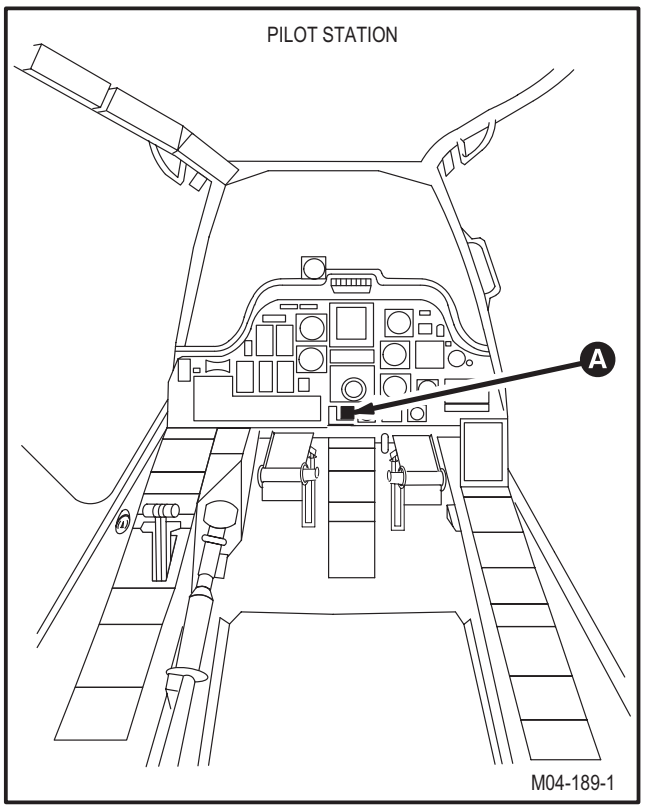
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

8.44.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot INTR LT panel, rotate INST control to OFF.**



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8.44. HYDRAULIC PRESSURE INDICATOR REMOVAL/INSTALLATION – continued

c. **Remove hydraulic pressure indicator (1) from instrument panel (2).**

(1) Remove four screws (3).

(2) Pull indicator (1) from panel (2).

(3) Detach connector P746 (4) from receptacle (M29)J1 (5).

8.44.4. Cleaning

a. **Wipe mounting area and indicator with a clean rag.**

8.44.5. Inspection

a. **Check indicator and instrument panel mounting area for cracks, nicks, and dents** (para 8.43)**.**

b. **Check indicator and instrument panel screw holes for stripped or damaged threads** (para 8.43)**.**

8.44.6. Installation

a. **Install indicator (1) in panel (2).**

(1) Attach connector P746 (4) to receptacle (M29)J1 (5).

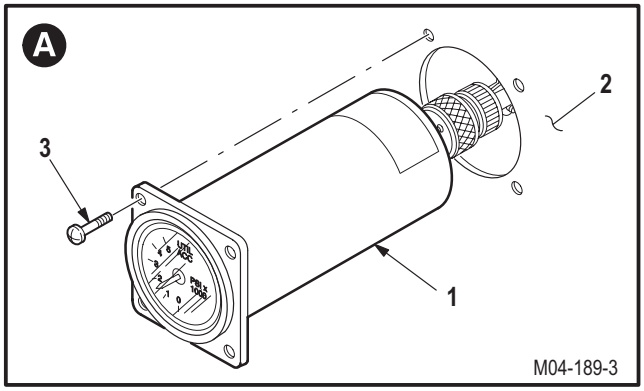
(2) Aline indicator (1) with screw holes in panel (2).

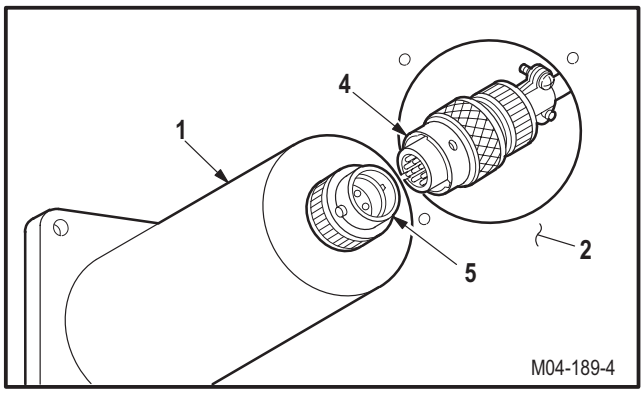
(3) Install four screws (3).

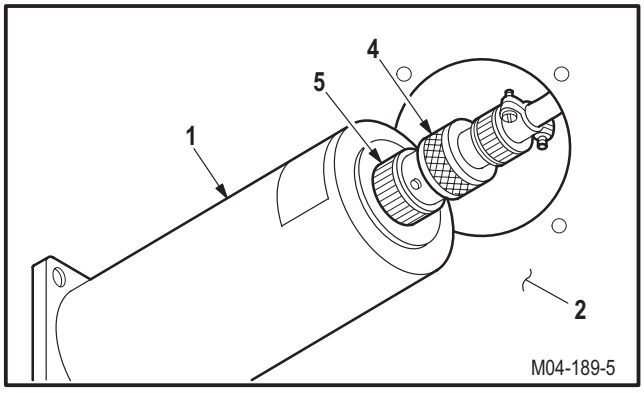
b. **Inspect (QA).**

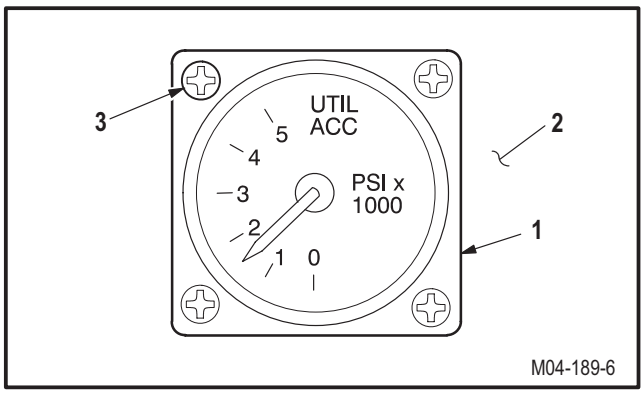
c. **Perform utility hydraulic maintenance operational check** (TM 1-1520-238-T)**.**

END OF TASK









8.45. DUAL HYDRAULIC PRESSURE INDICATOR REMOVAL/INSTALLATION

8.45.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

8.45.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T

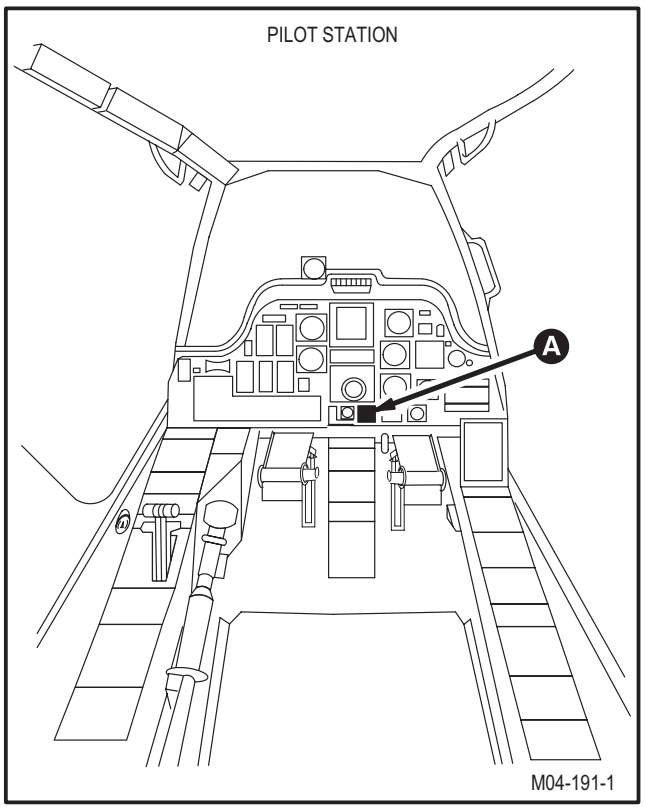
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

8.45.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot INTR LT panel, rotate INST control to OFF.**



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8.45. DUAL HYDRAULIC PRESSURE INDICATOR REMOVAL/INSTALLATION – continued

c. **Remove dual hydraulic pressure indicator (1) from instrument panel (2).**

(1) Remove four screws (3).

(2) Pull indicator (1) from panel (2).

(3) Detach connector P265 (4) from receptacle (M28)J1 (5).

8.45.4. Cleaning

a. **Wipe mounting area and indicator with a clean rag.**

8.45.5. Inspection

a. **Check indicator and panel mounting area for cracks, nicks, and dents** (para 8.43)**.**

b. **Check panel screw holes for stripped or damaged threads** (para 8.43)**.**

8.45.6. Installation

a. **Install indicator (1) in panel (2).**

(1) Attach connector P265 (4) to receptacle (M28)J1 (5).

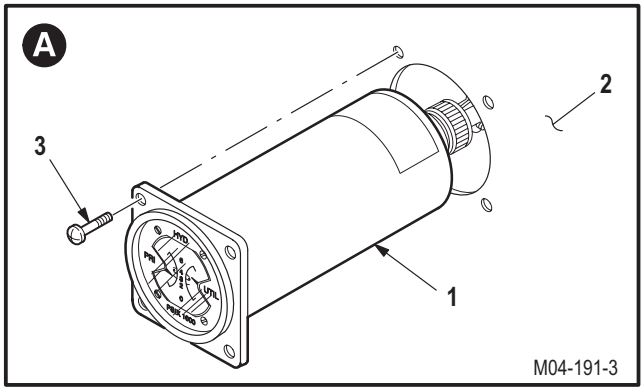
(2) Aline indicator (1) with screw holes in panel (2).

(3) Install four screws (3).

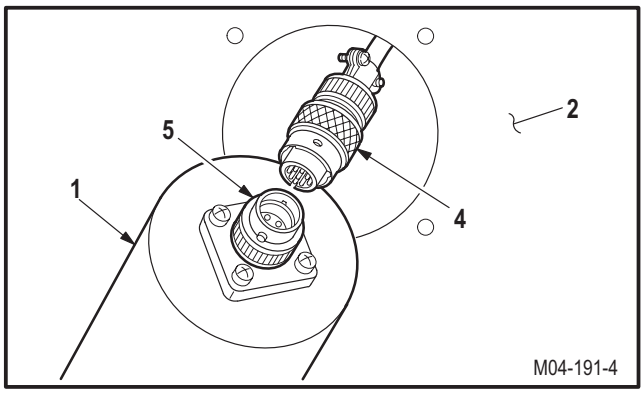
b. **Inspect (QA).**

c. **Perform primary or utility hydraulic maintenance operational check** (TM 1-1520-238-T)**.**

END OF TASK



M04-191-3



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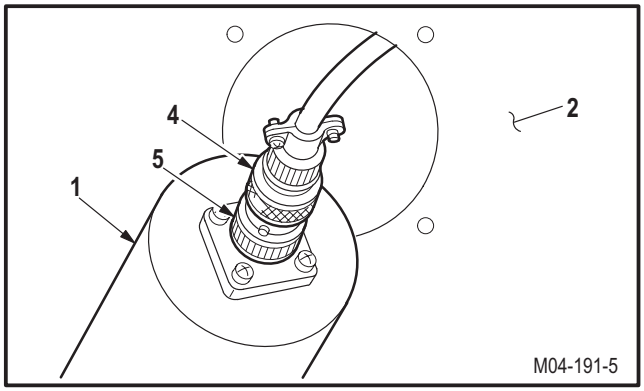
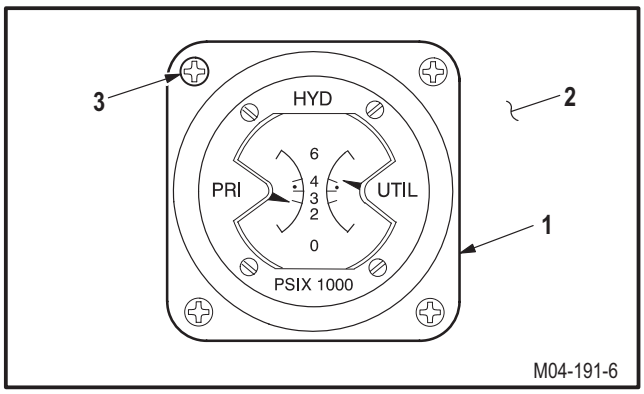


M04-191-5



M04-191-6

8.46. PILOT/CPG CLOCK REMOVAL/INSTALLATION

8.46.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

8.46.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T

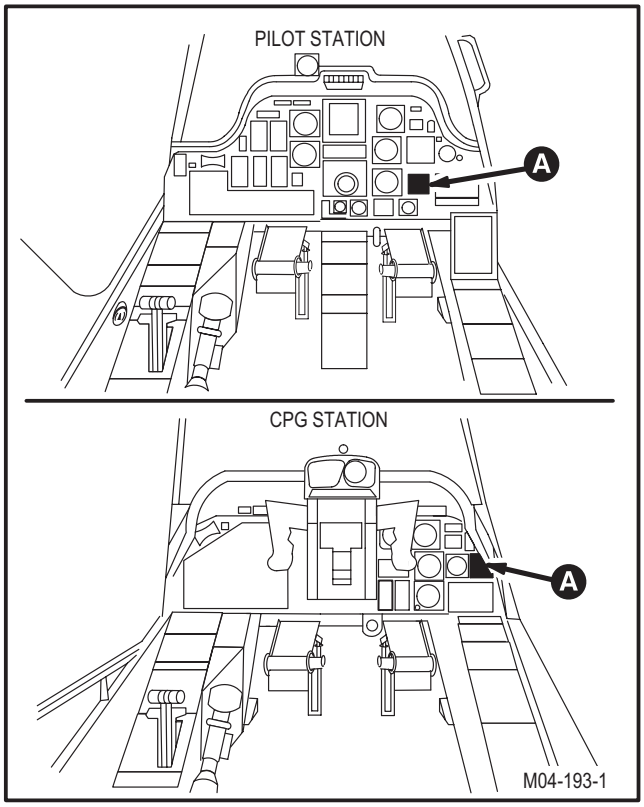
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

8.46.3. Removal

a. **Enter pilot/CPG station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot/CPG INTR LT panel, rotate INST control to OFF.**



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8.46. PILOT/CPG CLOCK REMOVAL/INSTALLATION – continued

c. **Remove clock (1) from instrument panel (2).**

(1) Remove two screws (3).

(2) Pull clock (1) from panel (2).

(3) Detach connector P121 (pilot)/P127 (CPG) (4) from receptacle (M21)J1 (pilot)/(M49)J1 (CPG) (5).

8.46.4. Cleaning

a. **Wipe mounting area and clock with a clean rag.**

8.46.5. Inspection

a. **Check clock and panel mounting area for cracks, nicks, and dents** (para 8.43)**.**

b. **Check panel screw holes for stripped or damaged threads** (para 8.43)**.**

8.46.6. Installation

a. **Install clock (1) in panel (2).**

(1) Attach connector P121 (pilot)/P127 (CPG) (4) to receptacle (M21)J1 (pilot)/(M49)J1 (CPG) (5).

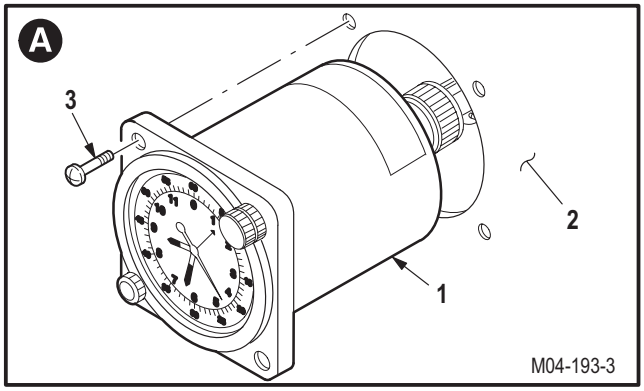
(2) Aline clock (1) with screw holes in panel (2).

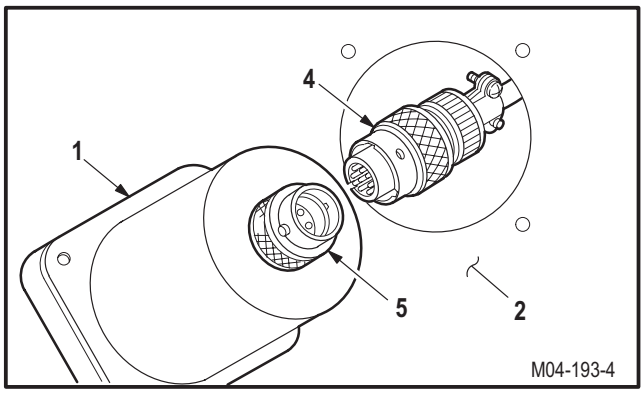
(3) Install two screws (3).

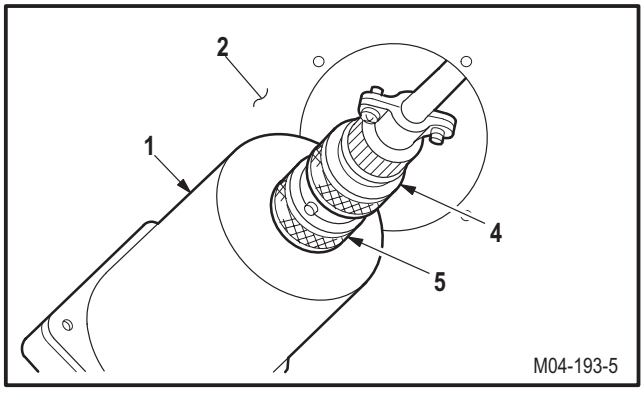
b. **Inspect (QA).**

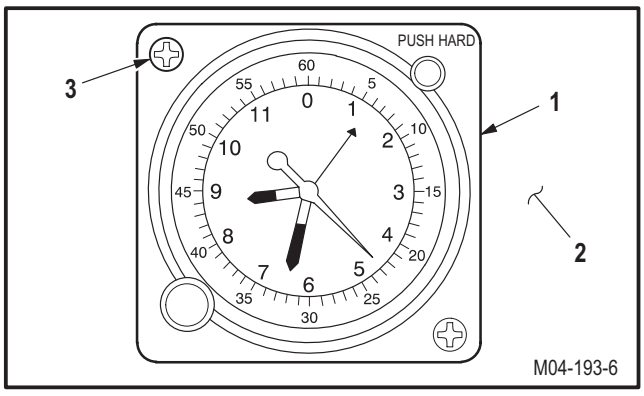
c. **Perform miscellaneous instruments maintenance operational check** (TM 1-1520-238-T)**.**

END OF TASK









8.47. OUTSIDE AIR TEMPERATURE INDICATOR REMOVAL/INSTALLATION

8.47.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

8.47.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

References:

TM 1-1500-204-23

Personnel Required:

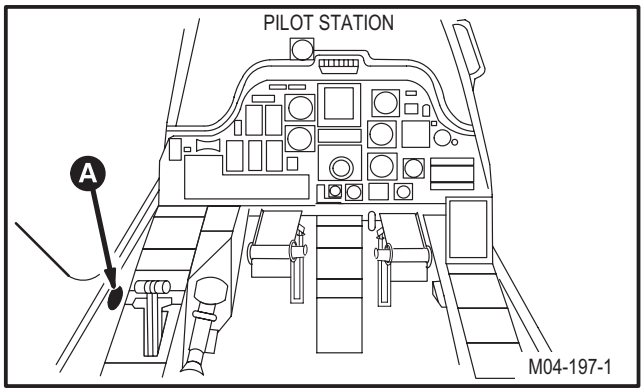
68X Armament/Electrical System Repairer
One person to assist
68X3F Armament/Electrical System Repairer/
Technical Inspector

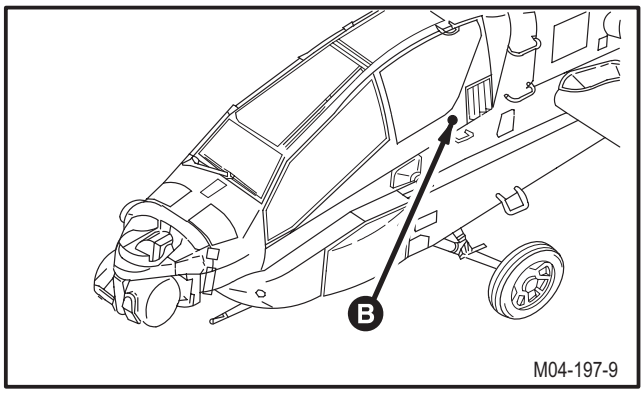
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

8.47.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**





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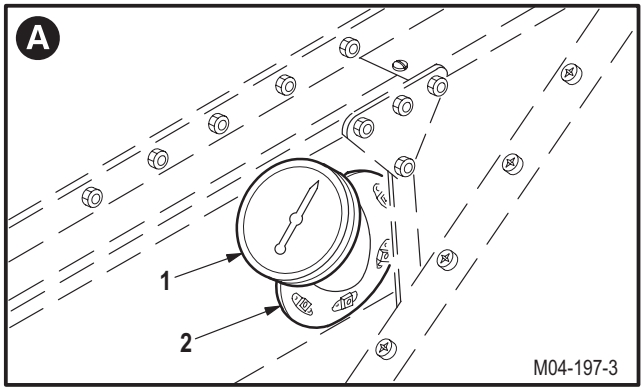
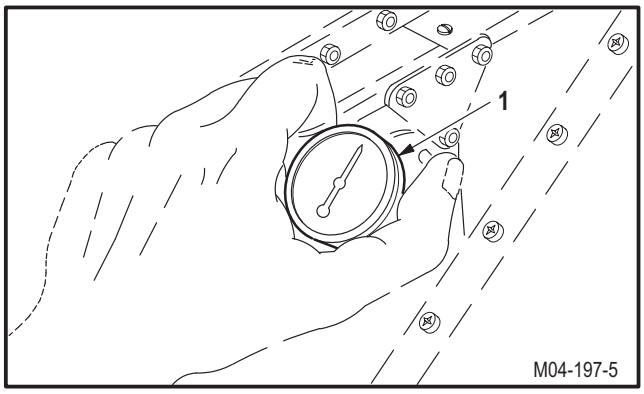
8.47. OUTSIDE AIR TEMPERATURE INDICATOR REMOVAL/INSTALLATION – continued

b. **Remove outside air temperature indicator (1) from support (2).**

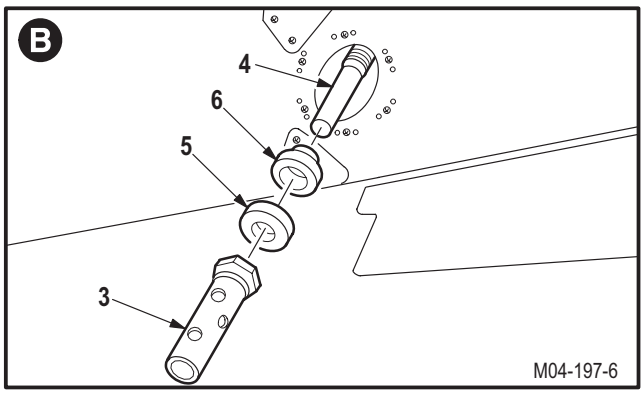


(1) Hold indicator (1) in place.



(2) Second person remove sunshield (3) from probe (4).

(3) Remove washers (5) and (6) from probe (4).



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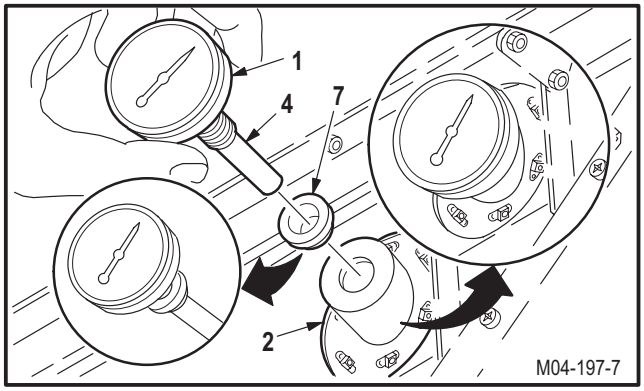
8.47. OUTSIDE AIR TEMPERATURE INDICATOR REMOVAL/INSTALLATION – continued

(4) First person pull indicator (1) from support (2).

(5) Remove washer (7) from probe (4).



8.47.4. Cleaning

a. **Wipe removed parts with a clean rag.**

8.47.5. Inspection

a. **Check indicator for cracks, nicks, and dents** (para 8.43)**.**

8.47.6. Installation

a. **Perform outside air temperature indicator functional test** (TM 1-1500-204-23)**.**

b. **Install indicator (1) in support (2).**

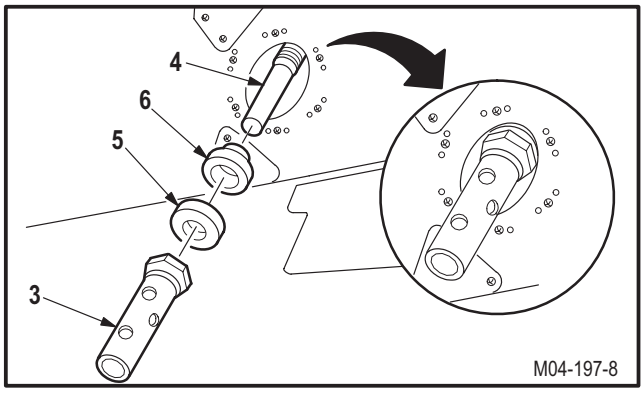
(1) First person install washer (7) on probe (4) of indicator (1).

(2) Position indicator (1) in support (2) so that indicator dial is readable.

(3) Hold indicator (1) in place.

(4) Second person install washers (5) and (6) on probe (4).

(5) Install sunshield (3).



c. **Inspect (QA).**

END OF TASK

8.48. PILOT/CPG STABILATOR POSITION INDICATOR REMOVAL/INSTALLATION

8.48.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

8.48.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T

Equipment Conditions:

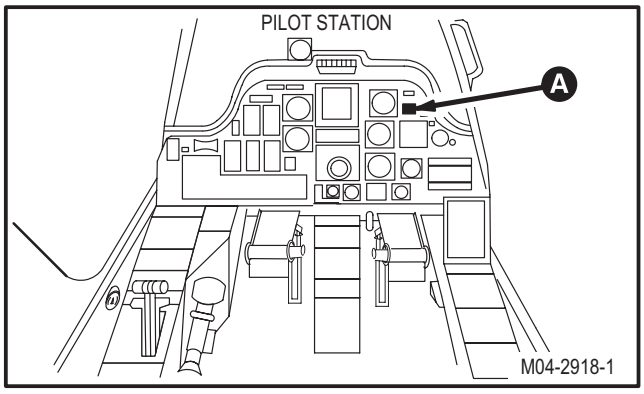
Ref	Condition
1.57	Helicopter safed

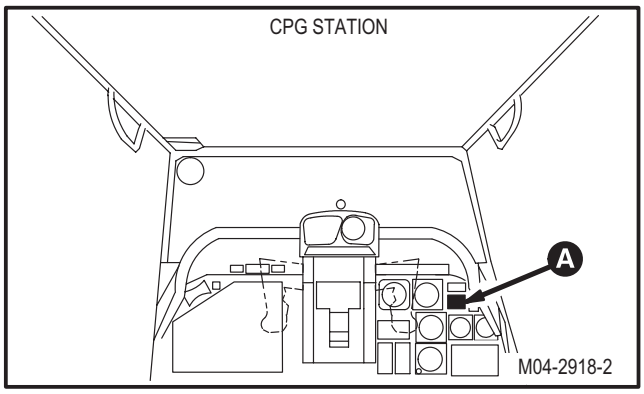
8.48.3. Removal

a. **Enter pilot/CPG station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot aft circuit breaker panel, open STAB circuit breakers AUTO AC, AUTO DC, MAN DC, and MAN AC.**

c. **On pilot/CPG INTR LT panel, rotate INST control to OFF.**





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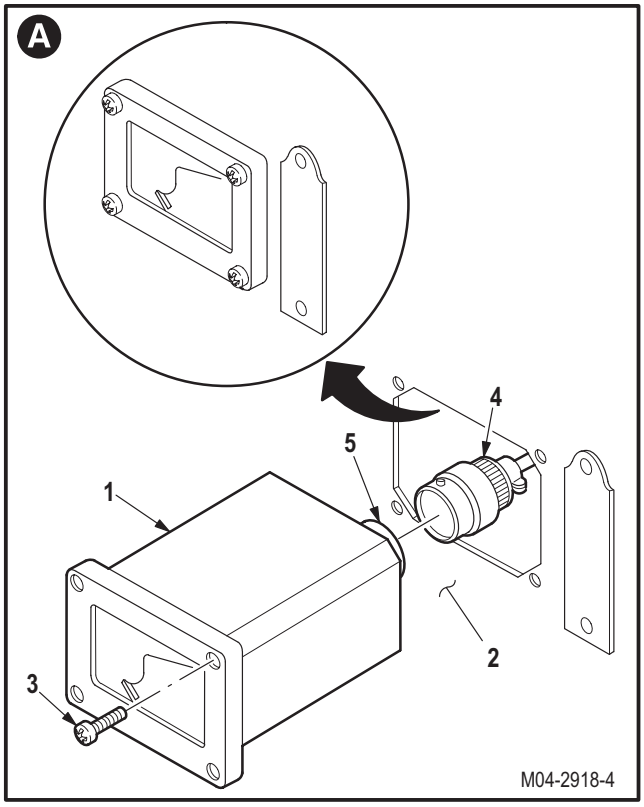
8.48. PILOT/CPG STABILATOR POSITION INDICATOR REMOVAL/INSTALLATION – continued

d. **Remove stabilator position indicator (1) from instrument panel (2).**

(1) Remove four screws (3).

(2) Pull indicator (1) clear of panel (2).

(3) Detach connector P981 (pilot)/P982 (CPG) (4) from receptacle (M51)J1 (pilot)/(M52)J1 (CPG) (5).



8.48.4. Cleaning

a. **Wipe mounting area and indicator with a clean rag.**

8.48.5. Inspection

a. **Check indicator and panel mounting area for cracks, nicks, and dents** (para 8.43)**.**

b. **Check indicator and panel screw holes for stripped or damaged threads** (para 8.43)**.**

8.48.6. Installation

a. **Install indicator (1) in panel (2).**

(1) Attach connector P981 (pilot)/P982 (CPG) (4) to receptacle (M51)J1 (pilot)/(M52)J1 (CPG) (5).

(2) Aline indicator (1) with screw holes in panel (2).

(3) Install four screws (3).

b. **Inspect (QA).**

c. **Perform stabilator operational maintenance check** (TM 1-1520-238-T)**.**

END OF TASK

8.49. PILOT/CPG STABILATOR POSITION PLACARD ILT PANEL REMOVAL/INSTALLATION

8.49.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

8.49.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

References:

TM 1-1520-238-T

Personnel Required:

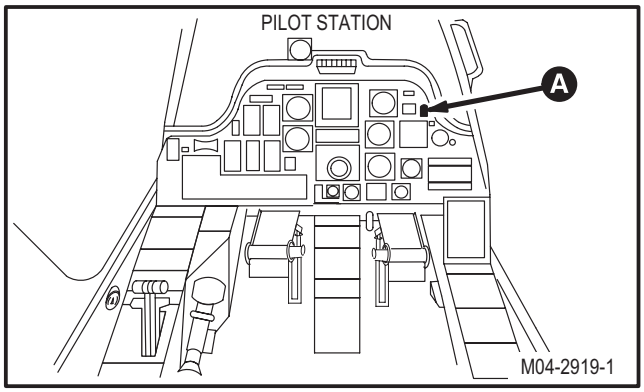
68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

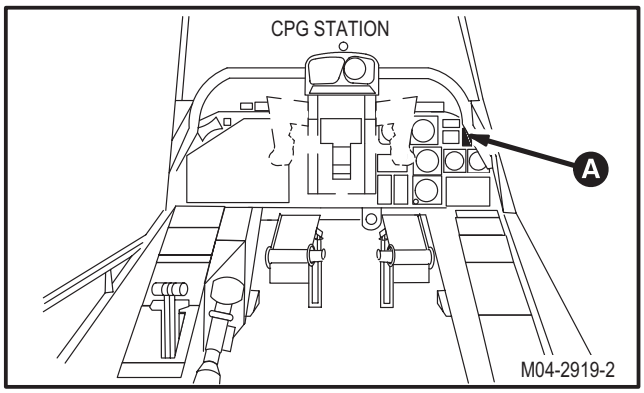
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

8.49.3. Removal

a. **Enter pilot/CPG station** (para 1.56)**. Observe all safety precautions.**





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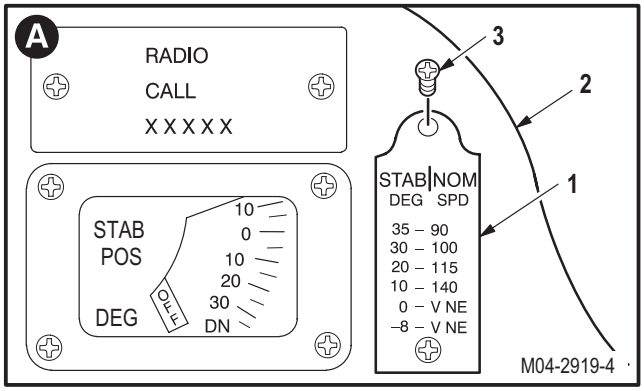
8.49. PILOT/CPG STABILATOR POSITION PLACARD ILT PANEL REMOVAL/INSTALLATION – continued

b. **Remove stabilator position placard ILT panel (1) from right instrument panel (2).**

(1) Remove two screws (3).

(2) Pull panel (1) from panel (2).



8.49.4. Cleaning

a. **Wipe mounting area and panel with a clean rag.**

8.49.5. Inspection

a. **Check instrument panel for loose or missing hardware.** None allowed.

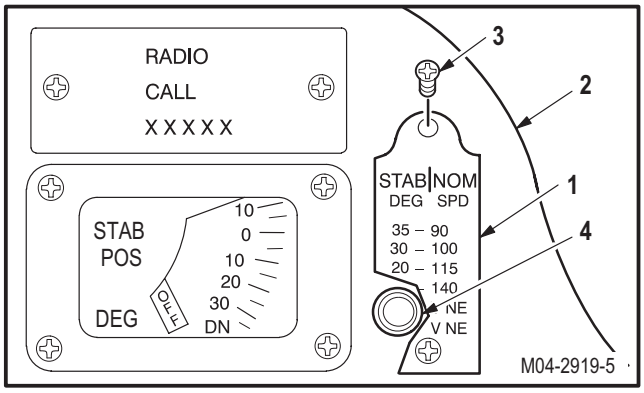
8.49.6. Installation

a. **Install panel (1) on panel (2).**

(1) Position panel (1) so receptacle J691 (pilot)/J692 (CPG) (4) will be alined.

(2) Press on panel (1) to attach receptacle J691 (pilot)/J692 (CPG) (4) to panel (1) and aline holes.

(3) Install two screws (3).



b. **Inspect (QA).**

c. **Perform stabilator maintenance operational check** (TM 1-1520-238-T)**.**

END OF TASK

8.50. PILOT ICING SEVERITY METER REMOVAL/INSTALLATION

8.50.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

8.50.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

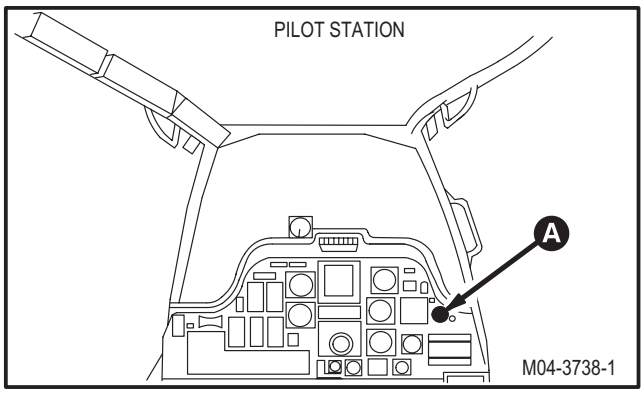
Ref	Condition
1.57	Helicopter safed

8.50.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot center circuit breaker panel, open PRI LT circuit breaker.**

c. **On pilot INTR LT panel, rotate INST control to OFF.**



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8.50. PILOT ICING SEVERITY METER REMOVAL/INSTALLATION – continued

d. **Remove icing severity meter (1) from instrument panel (2).**

(1) Loosen screw (3).

(2) Pull meter (1) from panel (2).

(3) Identify and detach four wires (4) from meter (1) (TM 55-1500-323-24).

8.50.4. Cleaning

a. **Wipe mounting areas and indicator with clean rag.**

8.50.5. Inspection

a. **Check meter for nicks, dents, and cracks** (para 8.43)**.**

b. **Check wiring, connectors, and harnesses for chafed or broken insulation** (TM 55-1500-323-24)**.**

8.50.6. Installation

a. **Install severity meter (1) in panel (2).**

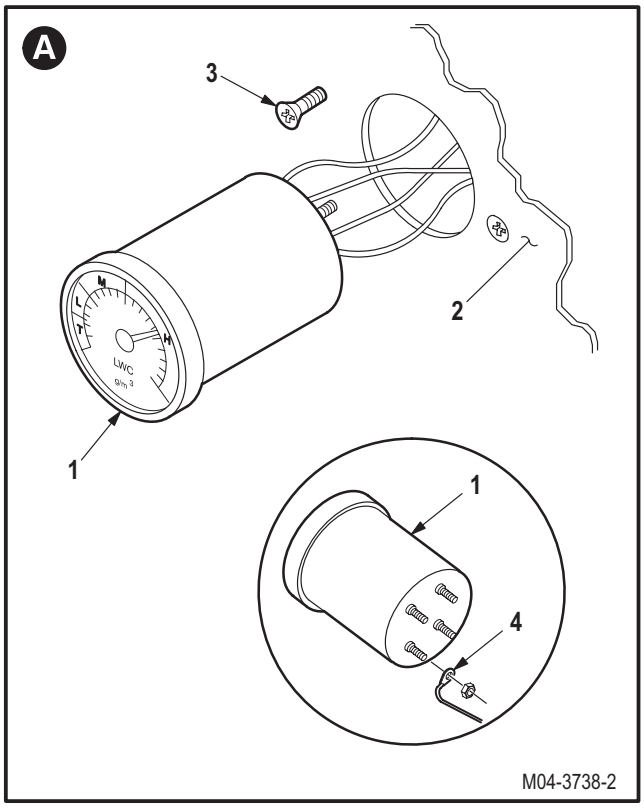
(1) Attach identified wires (4) to meter (1) (TM 55-1500-323-24).

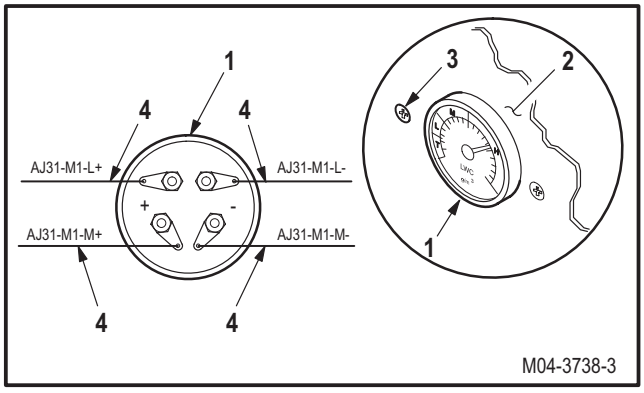
(2) Install meter (1) in panel (2).

(3) Tighten screw (3).

b. **Inspect (QA).**

c. **Perform rotor blades de-ice maintenance operational check** (TM 1-1520-238-T)**.**





END OF TASK

CHAPTER 9
ELECTRICAL SYSTEM

CHAPTER OVERVIEW

Chapter 9 contains the maintenance instructions for the electrical system. Electrical systems description, operation, and troubleshooting information is contained in TM 1-1520-238-T.

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SECTION I. POWER GENERATION AND DISTRIBUTION COMPONENTS MAINTENANCE

9.1. POWER GENERATION AND DISTRIBUTION COMPONENTS INSPECTION

9.1.1. Description

This task covers: Inspection.

9.1.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
0.0 - 10.0-pound weighing scale (item 272, App H)
Inspection insert gauge (figure D-452, App D)

Materials/Parts:

Wire (item 222, App F)

References:

TM 1-1500-204-23
TM 55-1500-323-24

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

9.1.3. Inspection

a. **Check components for damage and loose mounting.**

b. **Check panel mounting area for cracks, nicks, and damaged threads.** None allowed.

c. **Check for loose, missing, or damaged mounting hardware** (TM 1-1500-204-23)**.** Replace as necessary.

d. **Check nutplates for loose rivets and stripped or damaged threads** (TM 1-1500-204-23)**.**

e. **Check wire bundles for chafing, loose mounting, and broken or missing wire ties** (TM 55-1500-323-24)**.**

f. **Check wiring for wear, cuts, breaks, and cracked, broken, or burned insulation** (TM 55-1500-323-24)**.**

g. **Check wiring and electronic components for cracked, loose, or cold solder joints** (TM 55-1500-323-24)**.**

h. **Check wire terminals for deformation and loose mounting hardware** (TM 55-1500-323-24)**.**

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9.1. POWER GENERATION AND DISTRIBUTION COMPONENTS INSPECTION – continued

i. **Check connectors for loose mounting** (TM 55-1500-323-24)**.**

j. **Check connectors and receptacles for cracks, broken connections, and bent or damaged pins** (TM 55-1500-323-24)**.** No cracks allowed. Thread damage not to exceed 50 percent of one thread.

(1) Repair mass termination connectors without shield bus (para 9.135) or mass termination connectors with shield bus (para 9.136).

k. **Check connector operation for smooth positive locking action** (TM 55-1500-323-24)**.**

l. **Check electrical terminals for damaged threads and loose mounting** (TM 55-1500-323-24)**.** Thread damage not to exceed 50 percent of one thread.

m. **Check terminals, shields, and covers for damage and loose mounting** (TM 55-1500-323-24)**.**

n. **Check buses and conductors for arcing burns** (TM 55-1500-323-24)**.**

o. **Check components for scratches, nicks, and gouges.**

(1) Minor scratches without burrs or raised material that do not penetrate through finish are acceptable.

(2) Nicks and gouges that exceed maximum depth of **0.040 INCH** or 10 percent of material thickness not allowed.

p. **Check for damaged or missing nutplates** (TM 1-1500-204-23)**.** Replace as necessary.

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9.1. POWER GENERATION AND DISTRIBUTION COMPONENTS INSPECTION – continued

CAUTION

To avoid damage to battery connector, inspection insert gauge must be inserted and withdrawn in a straight line.

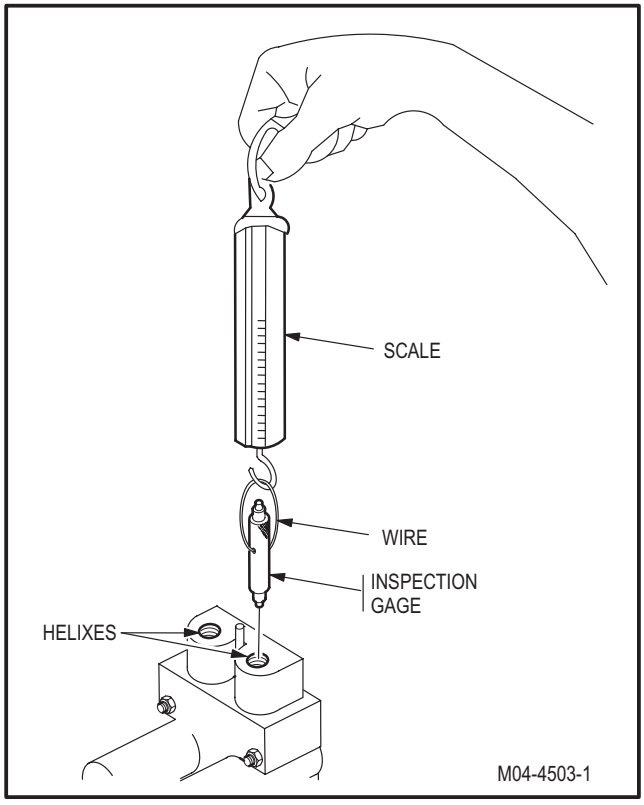
q. **Check battery connector helixes for minimum withdrawal force.**

(1) Insert inspection insert gauge in each helix to a depth of **0.437 INCH** using **0.385 INCH** diameter end of inspection gauge. Use inspection insert gauge (figure D-452, App D), scale, and wire (item 222, App F).

(2) Fit shall be snug with required force to remove greater than **ONE POUND**. If less than **ONE POUND**, replace connector.

(3) Insert inspection insert gauge in each helix to a depth of **0.437 INCH** using **0.370 INCH** diameter end of inspection gauge. Use inspection insert gauge (figure D-452, App D), scale, and wire (item 222, App F).

(4) Fit shall be snug with required force to remove greater than **ONE POUND**. If less than **ONE POUND**, replace connector.



END OF TASK

9.2. PILOT CIRCUIT BREAKER PANEL REMOVAL

9.2.1. Description

This task covers: Removal. Cleaning. Inspection.

9.2.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
L-style socket head key set (item 187, App H)
3-piece spatula set (item 337, App H)

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

Personnel Required:

68X Armament/Electrical System Repairer

9.2.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot aft circuit breaker panel, open six POWER circuit breakers.**

c. **Detach five connectors from power distribution box (1).**

(1) Detach connector P1 (2) from receptacle (A402)J1 (3).

(2) Detach connector P2 (4) from receptacle (A402)J2 (5).

(3) Detach connector P3 (6) from receptacle (A402)J3 (7).

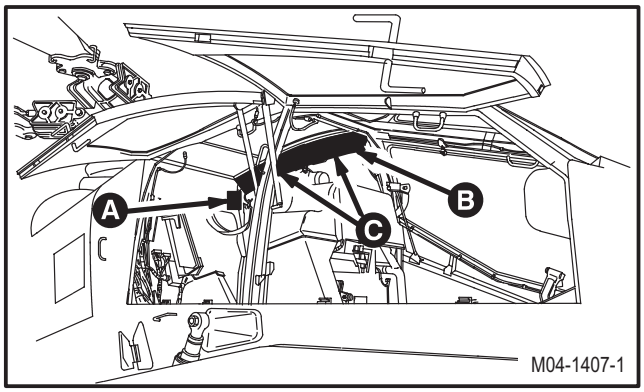
(4) Detach connector P4 (8) from receptacle (A402)J4 (9).

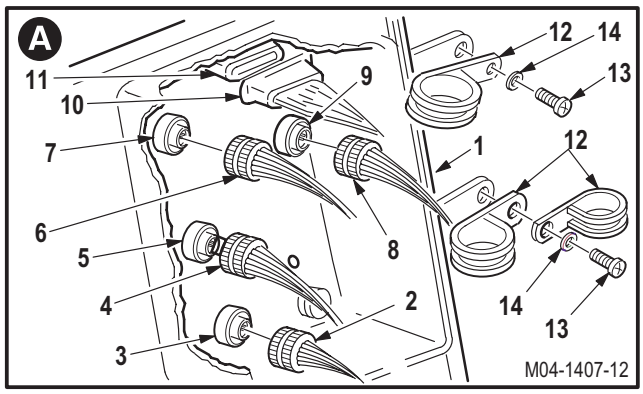
(5) Detach connector P5 (10) from receptacle (A402)J29 (11). Use socket head key set.

d. **Remove three harness clamps (12).**

(1) Remove two screws (13) and washers (14) from three clamps (12).

(2) Remove three clamps (12).





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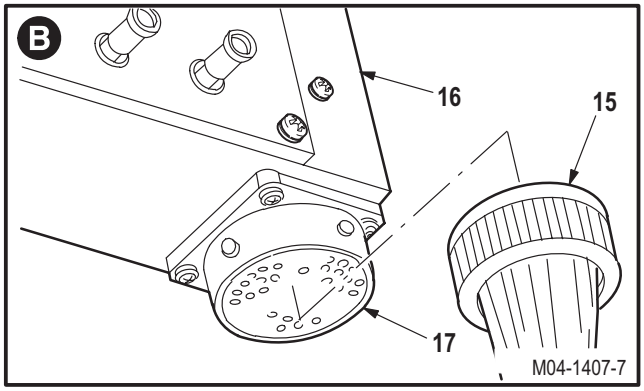
9.2. PILOT CIRCUIT BREAKER PANEL REMOVAL – continued

e. **Detach connector P463 (15) from circuit breaker panel (16).**

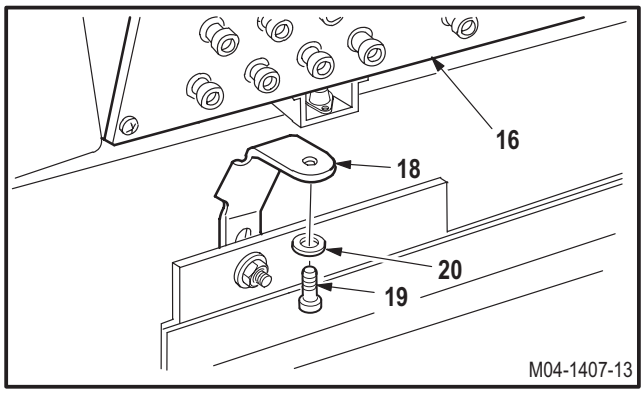
(1) Detach connector P463 (15) from receptacle (A76)J1 (17).



f. **Remove pilot left vertical glareshield mount bracket (18) from panel (16).**

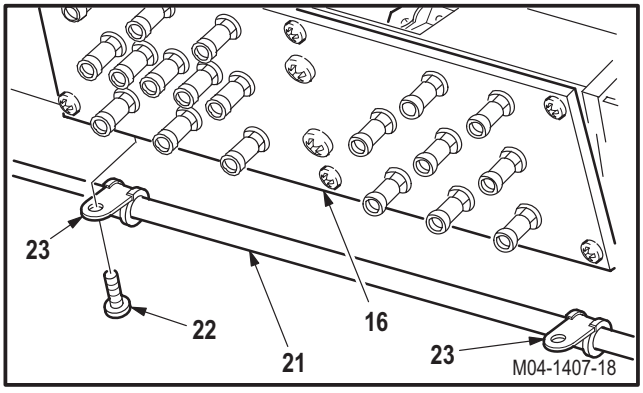
(1) Remove screw (19) and washer (20) from bracket (18).0

(2) Remove bracket (18).



g. **Remove defog hose (21) from panel (16).**

(1) Remove two screws (22) and clamps (23) from panel (16).

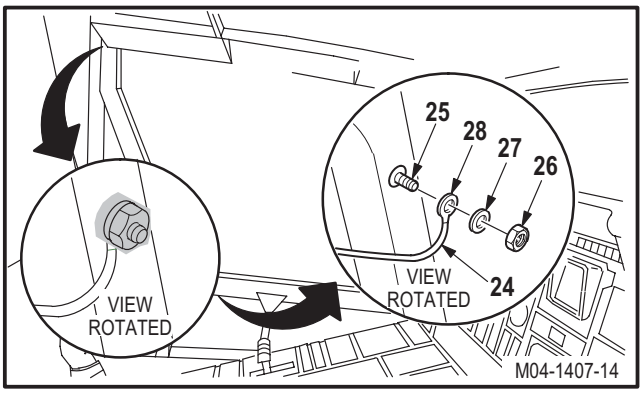


h. **Remove circuit breaker panel bonding strap (24) from stud (25).**

(1) Remove sealing compound. Use spatula set.

(2) Remove nut (26), washer (27), and lug (28).

(3) Remove bonding strap (24).



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9.2. PILOT CIRCUIT BREAKER PANEL REMOVAL – continued

i. **Remove aft right hinge strap (29) from structure (30).**

(1) Remove screw (31), washer (32), strap (29), spacer (33), and washer (32) from structure (30).

j. **Remove forward left hinge strap (34) from structure (35).**

(1) Remove screw (36), washer (37), strap (34), spacer (38), washer (37), and spacer (39), from structure (35).

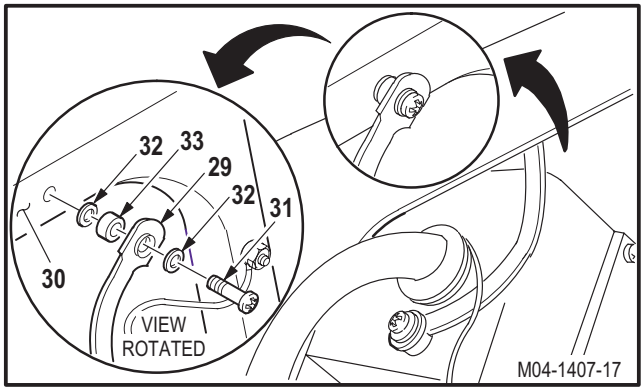
CAUTION

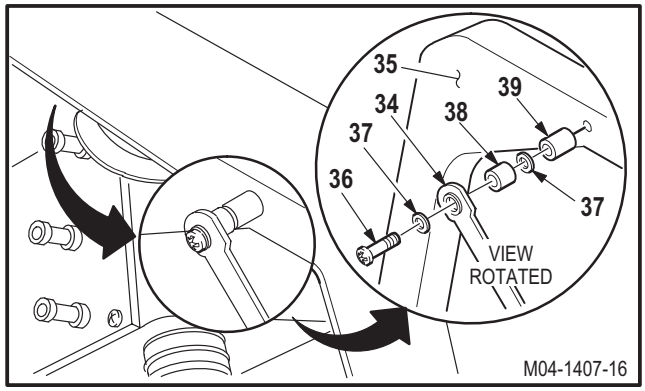
To prevent damage to transparent barrier or pilot glareshield, remove two screws from aft end first, then support forward end of panel while removing remaining two screws.

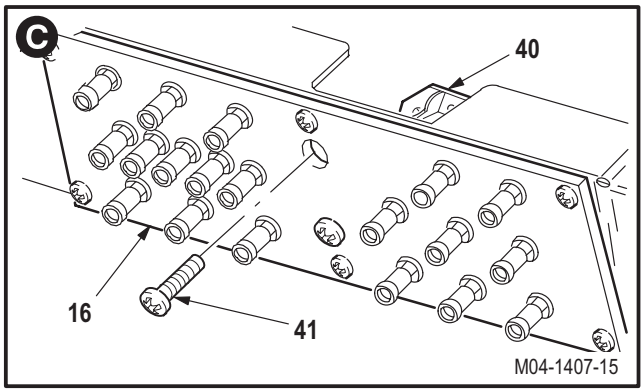
k. **Remove panel (16) from mounting brackets (40).**

(1) Remove two screws (41) from aft end of panel (16).

(2) Remove two screws (41) from forward end of panel (16).







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9.2. PILOT CIRCUIT BREAKER PANEL REMOVAL – continued

l. **Detach connector P2735 (42) from electrical power distribution box (43).**

(1) Detach connector P2735 (42) from receptacle J2735 (44).

9.2.4. Cleaning

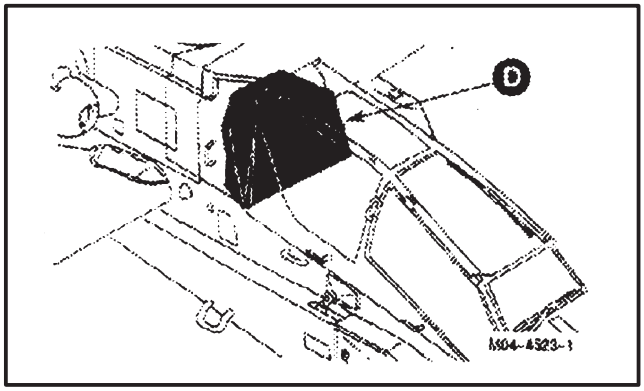
a. **Clean removed and attaching parts and surfaces** (para 1.47)**.**

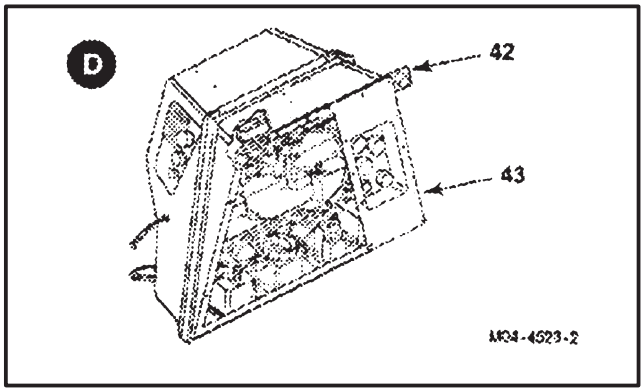
9.2.5. Inspection

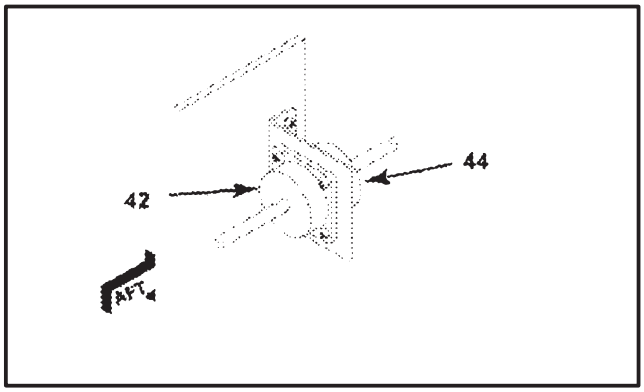
a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check connectors and receptacles for cracks, broken connections, and bent or damaged pins** (para 1.49)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**







END OF TASK

9.3. PILOT CIRCUIT BREAKER PANEL INSTALLATION

9.3.1. Description

This task covers: Installation.

9.3.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
L-style socket head key set (item 187, App H)
Ohmmeter (item 218, App H)

References:

TM 1-1520-238-T
TM 55-1500-323-24

Materials/Parts:

Sealing compound (item 163, App F)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

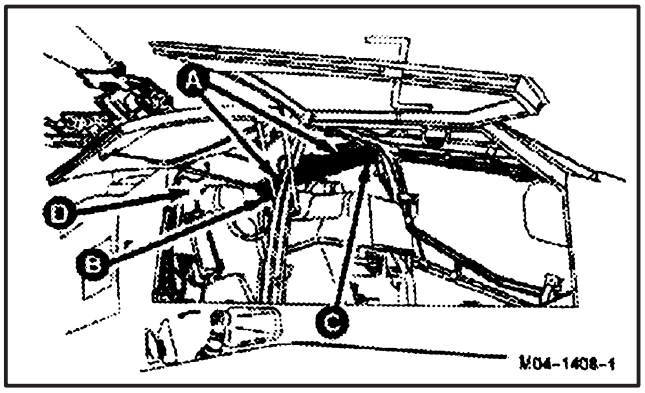
Ref	Condition
1.57	Helicopter safed

9.3.3. Installation

a. **Enter pilot station** (para 1.56). **Observe all safety precautions.**

CAUTION

To prevent damage to transparent barrier or pilot glareshield, install two screws in forward end of panel first, then support aft end of panel while installing remaining two screws.

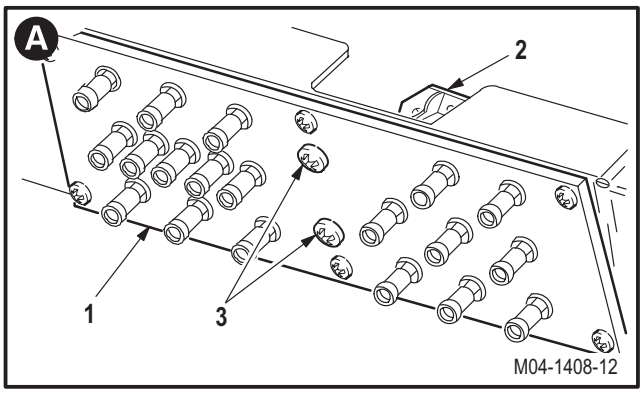


b. **Install pilot circuit breaker panel (1) on mounting brackets (2).**

(1) Position panel (1) on mounts (2).

(2) Install two screws (3) in forward end of panel (1).

(3) Install two screws (3) in aft end of panel (1).



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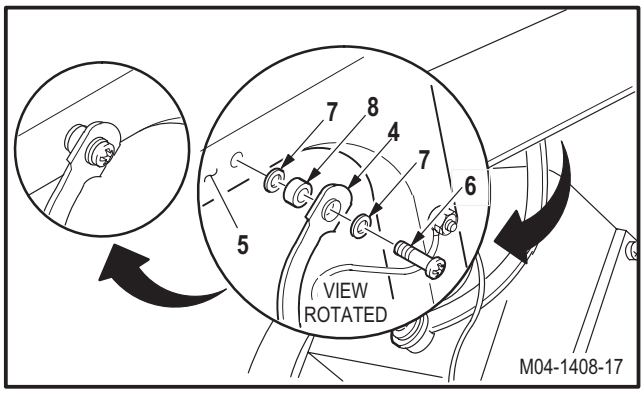
9.3. PILOT CIRCUIT BREAKER PANEL INSTALLATION

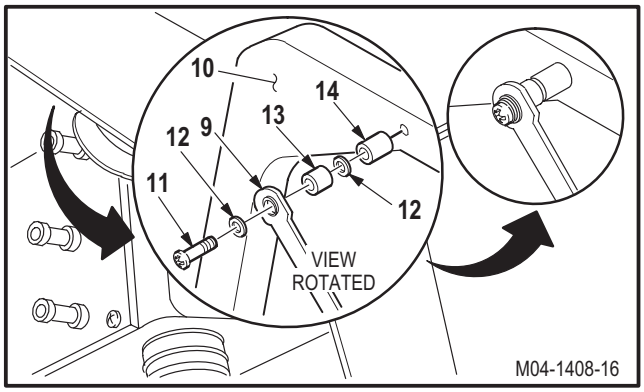
c. **Install aft hinge strap (4) on pilot station structure (5).**

(1) Install screw (6) through washer (7), strap (4), spacer (8), and washer (7) in structure (5).



d. **Install forward hinge strap (9) on pilot station structure (10).**

(1) Install screw (11) through washer (12), strap (9), spacer (13), washer (12), and spacer (14) in structure (10).



e. **Install circuit breaker panel bonding strap (15) on stud (16).**

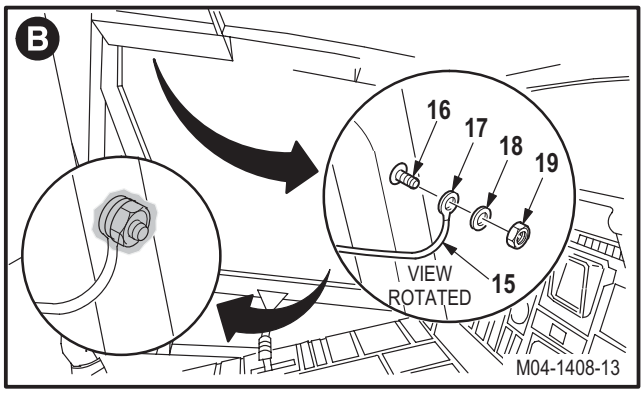
(1) Position terminal lug (17) on stud (16).

(2) Install washer (18) and nut (19) on stud (16).

(3) Perform electrical bond check (TM 55-1500-323-24).

(a) Bond shall be **0.1 OHM** or less. Use ohmmeter.

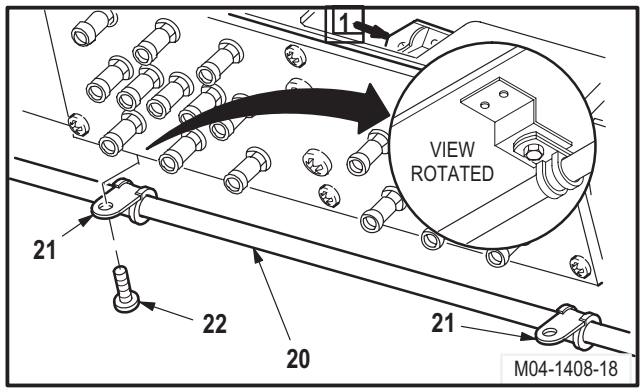
(4) Apply sealing compound. Use sealing compound (item 163, App F).



f. **Install defog hose (20) on panel (1).**

(1) Position two clamps (21) on panel (1).

(2) Install two screws (22) through clamps (21) in panel (1).



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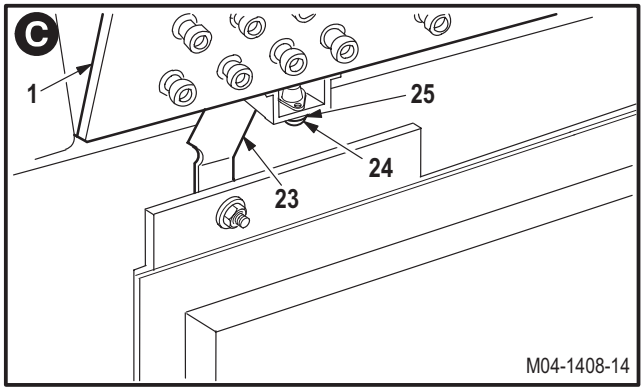
9.3. PILOT CIRCUIT BREAKER PANEL INSTALLATION – continued

g. **Install left vertical glareshield mount bracket (23) on panel (1).**

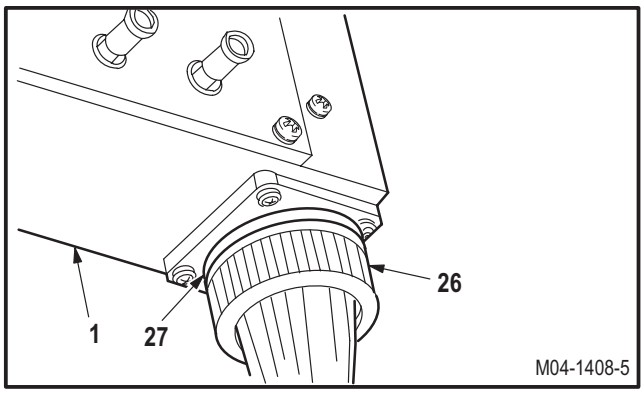
(1) Position bracket (23) on panel (1).

(2) Install screw (24) through washer (25) and bracket (23) in panel (1).



h. **Attach connector P463 (26) to panel (1).**

(1) Attach connector P463 (26) to receptacle (A76)J1 (27).



i. **Install three harness clamps (28) on power distribution box (29).**

(1) Install two screws (30) through washers (31) and clamps (28) in box (29).

j. **Attach five connectors on box (29).**

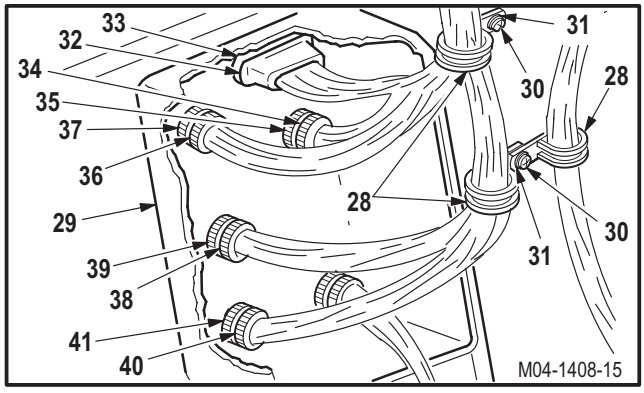
(1) Attach connector P5 (32) to receptacle (A402)J29 (33). Use socket head key set.

(2) Attach connector P4 (34) to receptacle (A402)J4 (35).

(3) Attach connector P3 (36) to receptacle (A402)J3 (37).

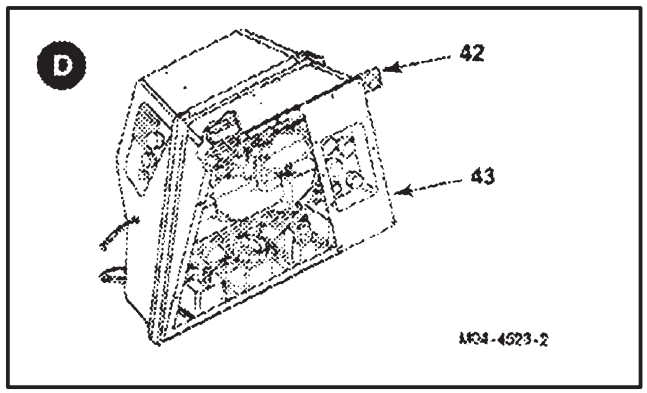
(4) Attach connector P2 (38) to receptacle (A402)J2 (39).

(5) Attach connector P1 (40) to receptacle (A402)J1 (41).



k. **Attach connector P2735 (42) to electrical power distribution box (43).**

(1) Attach connector P2735 (42) to receptacle J2735 (44).



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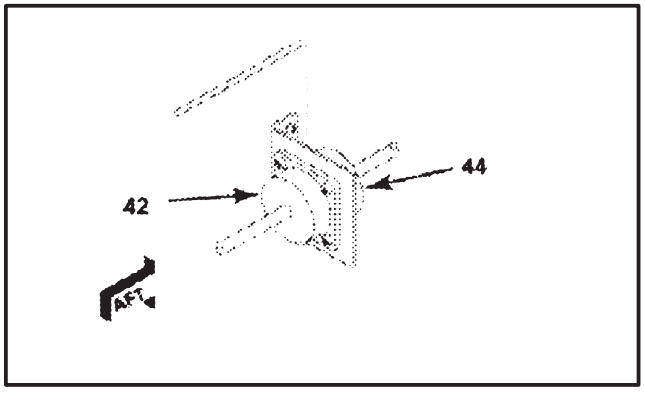
9.3. PILOT CIRCUIT BREAKER PANEL INSTALLATION – continued

l. **Inspect (QA).**

m. **Perform AC power generation maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

9.4. PILOT CIRCUIT BREAKER LIGHT INDICATING PANEL REMOVAL/INSTALLATION

9.4.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.4.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

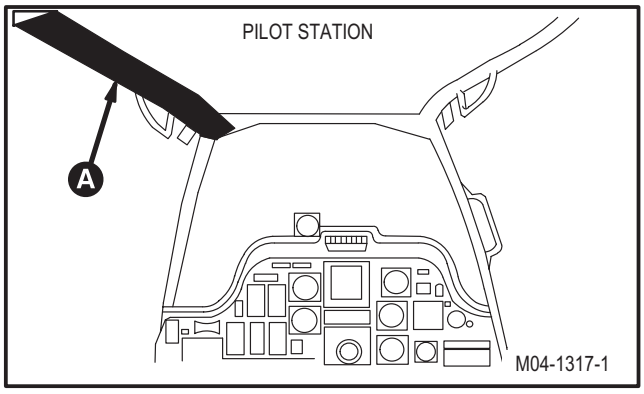
TM 1-1520-238-T

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

NOTE

This task is typical for each pilot circuit breaker panel.



9.4.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot center circuit breaker panel, open LT PRI circuit breaker.**

NOTE

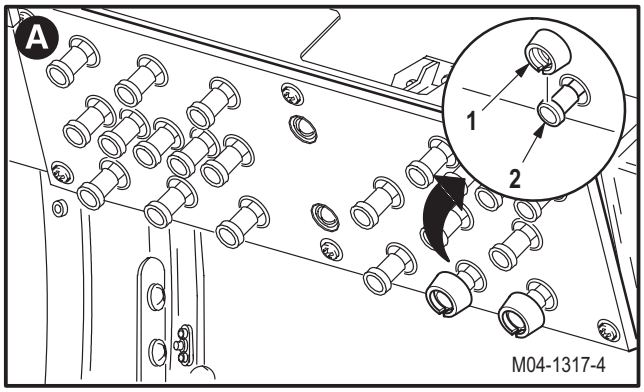
The following step refers to circuit breakers with a plastic knob. The aft panel has 2 knobs; the center panel has 12 knobs.

c. **Remove plastic knob (1) from circuit breaker (2).**

(1) Open circuit breaker (2).

(2) Remove knob (1) at slotted opening.

(3) Close circuit breaker (2).



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9.4. PILOT CIRCUIT BREAKER LIGHT INDICATING PANEL REMOVAL/INSTALLATION – continued

d. **Identify forward, center, or aft light indicating panel to be removed.**

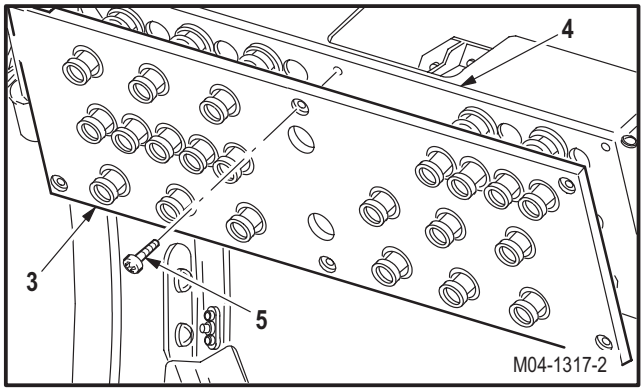
NOTE

Forward and aft panels have six screws each. The center panel has five screws.

e. **Remove light indicating panel (3) on pilot circuit breaker panel (4).**

(1) Remove screws (5).

(2) Remove panel (3).



9.4.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

9.4.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.4.6. Installation

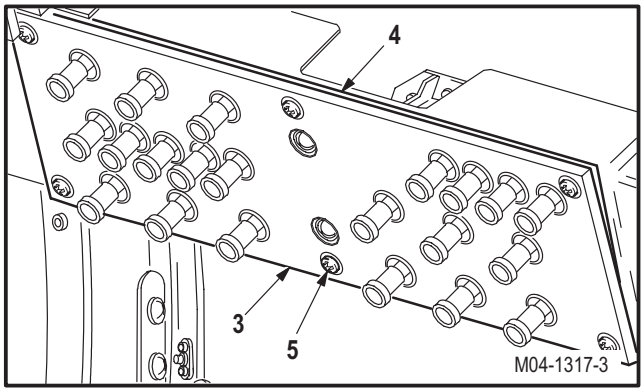
NOTE

Forward and aft panels have six screws each. The center panel has five screws.

a. **Install panel (3) on panel (4).**

(1) Position panel (3) on panel (4).

(2) Install screws (5).



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9.4. PILOT CIRCUIT BREAKER LIGHT INDICATING PANEL REMOVAL/INSTALLATION – continued

NOTE

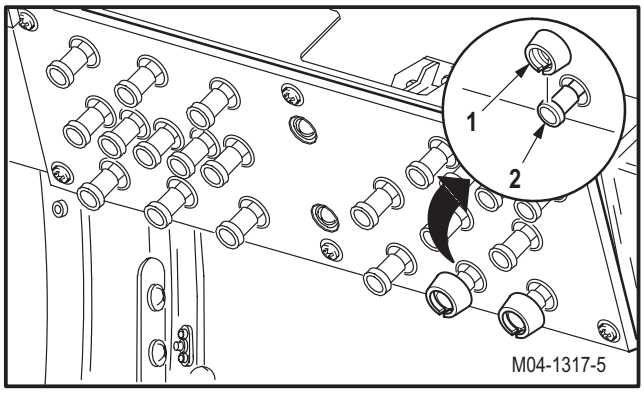
The following step refers to circuit breakers with a plastic knob. The aft panel has 2 knobs; the center panel has 12 knobs.

b. **Install knob (1) on circuit breaker (2).**

(1) Open circuit breaker (2).

(2) Install knob (1) at slotted opening.

(3) Close circuit breaker (2).



c. **Inspect (QA).**

d. **Perform circuit breaker edge-lights panel maintenance operational check** (TM 1-1520-238-T)**.**

END OF TASK

9.5. PILOT CIRCUIT BREAKER PANEL HINGE STRAP REMOVAL/INSTALLATION

9.5.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.5.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

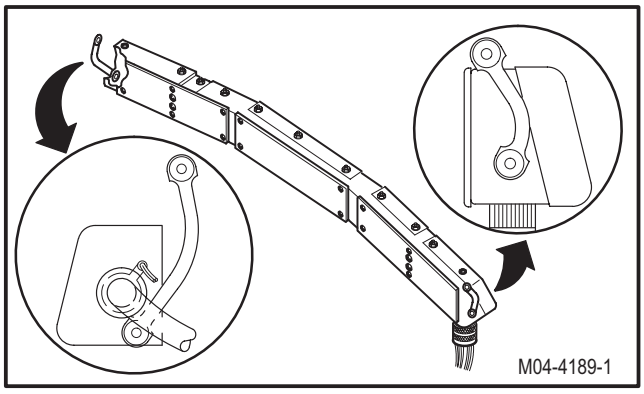
TM 1-1500-204-23

Equipment Conditions:

Ref	Condition
NO TAG	Pilot circuit breaker panel removed

NOTE

This task is typical for the both pilot circuit breaker panel hinge straps.

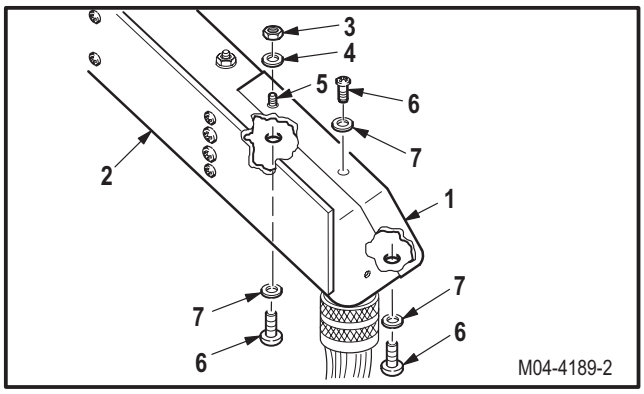


9.5.3. Removal

a. **Remove back cover (1) from pilot circuit breaker panel (2).**

(1) Remove self-locking nut (3) and washer (4) from stud (5) on top of back cover (1).

(2) Remove three screws (6) and washers (7) from cover (1).



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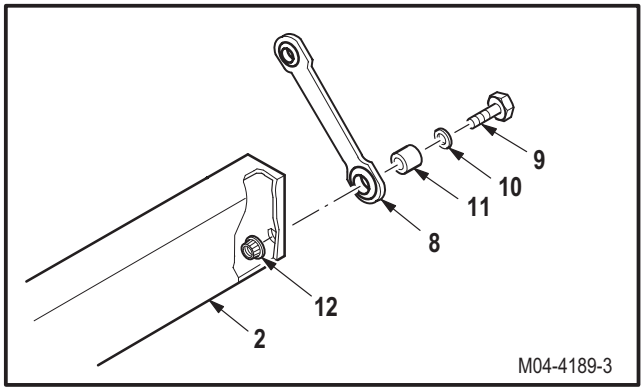
9.5. PILOT CIRCUIT BREAKER PANEL HINGE STRAP REMOVAL/INSTALLATION – continued

b. **Remove hinge strap (8) from panel (2).**

(1) Remove screw (9), washer (10), spacer (11), strap (8), and self-locking nut (12) from panel (2).



9.5.4. Cleaning

a. **Wipe pilot circuit breaker panel mounting area with a clean rag.**

9.5.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check metallic grommet security** (TM 1-1500-204-23)**.** Replace if loose.

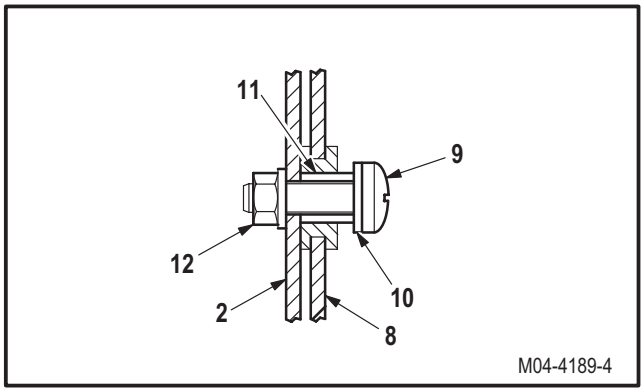
c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.5.6. Installation

a. **Attach strap (8) to panel (2).**

(1) Install screw (9) through washer (10), spacer (11), strap (8), and panel (2).

(2) Install nut (12) on screw (9).

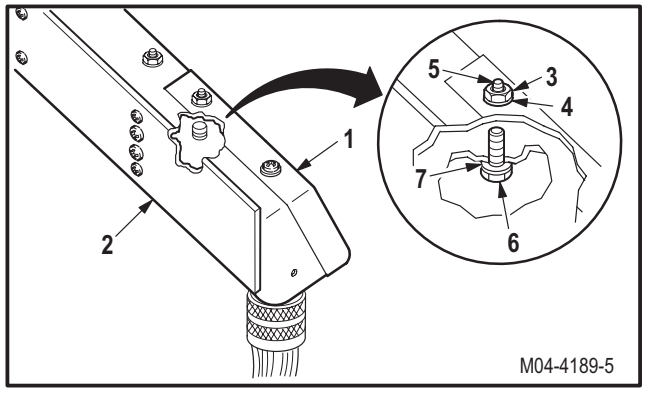


b. **Attach back cover (1) to panel (2).**

(1) Position back cover (1) over stud (5).

(2) Install washer (4) and nut (3) on stud (5) on top of back cover (1).

(3) Install three screws (6) through washers (7) into bottom of back cover (1).



c. **Inspect (QA).**

d. **Install pilot circuit breaker panel** (para 9.3)**.**

END OF TASK

9.6. PILOT CIRCUIT BREAKER PANEL EDGE LT PNL ON/OFF SWITCH REPLACEMENT

9.6.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.6.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

Personnel Required:

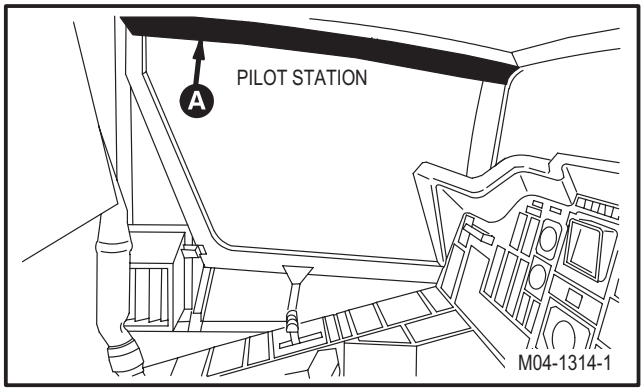
68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
NO TAG	Pilot circuit breaker panel removed



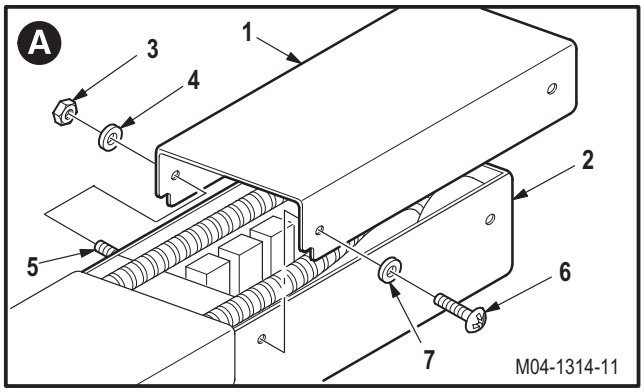
9.6.3. Removal

a. **Remove back cover (1) from circuit breaker panel (2).**

(1) Remove nut (3) and washer (4) from stud (5).

(2) Remove three screws (6) and washers (7).

(3) Remove cover (1).



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9.6. PILOT CIRCUIT BREAKER PANEL EDGE LT PNL ON/OFF SWITCH REPLACEMENT – continued

b. **Detach wires (8) from switch S1 (9).**

(1) Identify wires (8).

(2) Remove two screws (10), washers (11), and four terminal lugs (12).

c. **Remove switch (9) from panel (2).**

(1) Remove nut (13) and washer (14).

(2) Remove switch (9) and lockring (15).

(3) Discard switch (9).

9.6.4. Cleaning

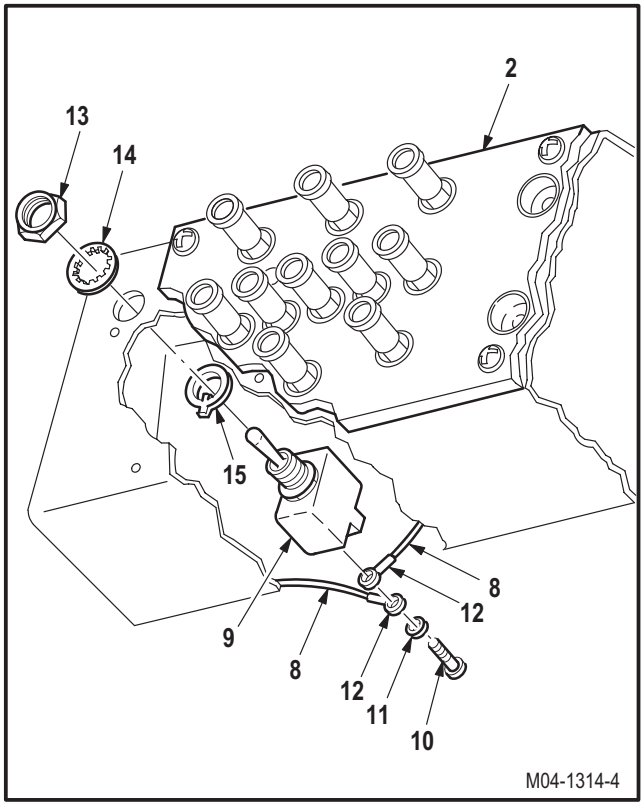
a. **Wipe removed and attaching parts with a clean rag.**

9.6.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (para 9.1)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**



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9.6. PILOT CIRCUIT BREAKER PANEL EDGE LT PNL ON/OFF SWITCH REPLACEMENT – continued

9.6.6. Installation

a. **Install new switch (9) on panel (2).**

(1) Install lockring (15) on switch (9).

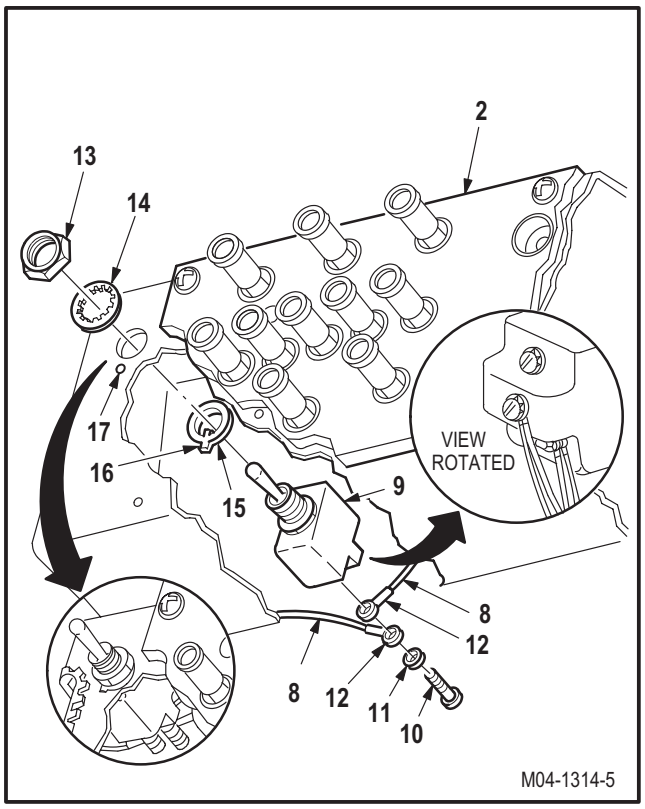
(2) Position switch (9) so that tab (16) on lockring (15) seats in locator hole (17).

(3) Install nut (13) and washer (14).

b. **Attach identified wires (8) to switch S1 (9).**

(1) Install two screws (10) through washers (11) and four lugs (12) in circuit breaker (9).

c. **Inspect (QA).**



d. **Install cover (1) on panel (2).**

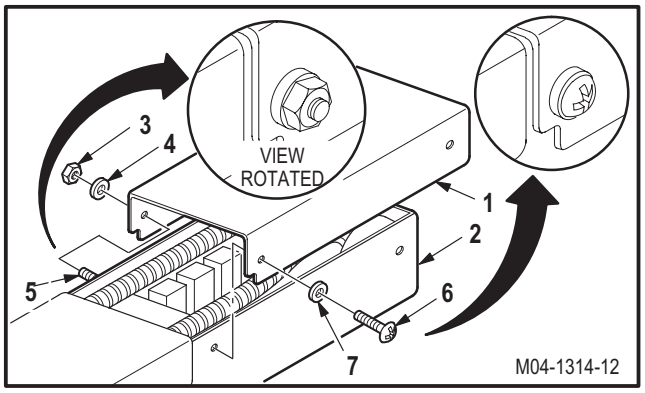
(1) Position cover (1) over stud (5).

(2) Install washer (4) and nut (3) on stud (5).

(3) Install three screws (6) and washers (7).

e. **Install pilot circuit breaker panel** (para 9.3)**.**

f. **Perform circuit breaker panel edge-lights maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

9.7. PILOT CIRCUIT BREAKERS (NOT ATTACHED TO BUS BARS) REPLACEMENT

9.7.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.7.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

References:

TM 1-1520-238-T

Personnel Required:

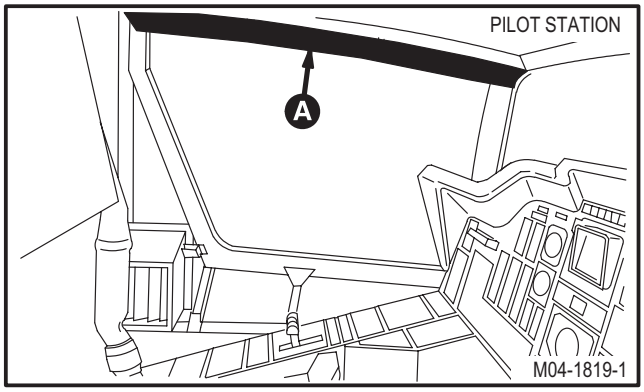
68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
NO TAG	Pilot circuit breaker panel removed

NOTE

- This task is typical for all circuit breakers not attached to bus bars. The number of wires and screws may differ on each panel.
- The following step refers to circuit breakers with a plastic knob. The aft panel has 2 knobs; the center panel has 12 knobs.



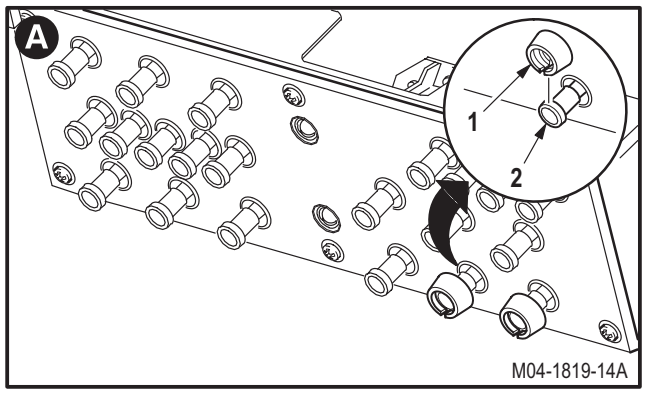
9.7.3. Removal

a. **Remove plastic knob (1) from circuit breaker (2).**

(1) Open circuit breaker (2).

(2) Remove knob (1) at slotted opening.

(3) Close circuit breaker (2).



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9.7. PILOT CIRCUIT BREAKERS (NOT ATTACHED TO BUS BARS) REPLACEMENT – continued

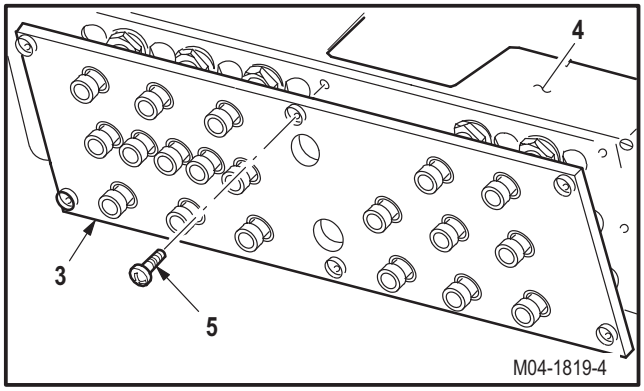
NOTE

Forward and aft panels have six screws each. The center panel has five screws.

b. **Remove light indicating panel (3) from pilot circuit breaker panel (4).**

(1) Remove screws (5).

(2) Remove panel (3).

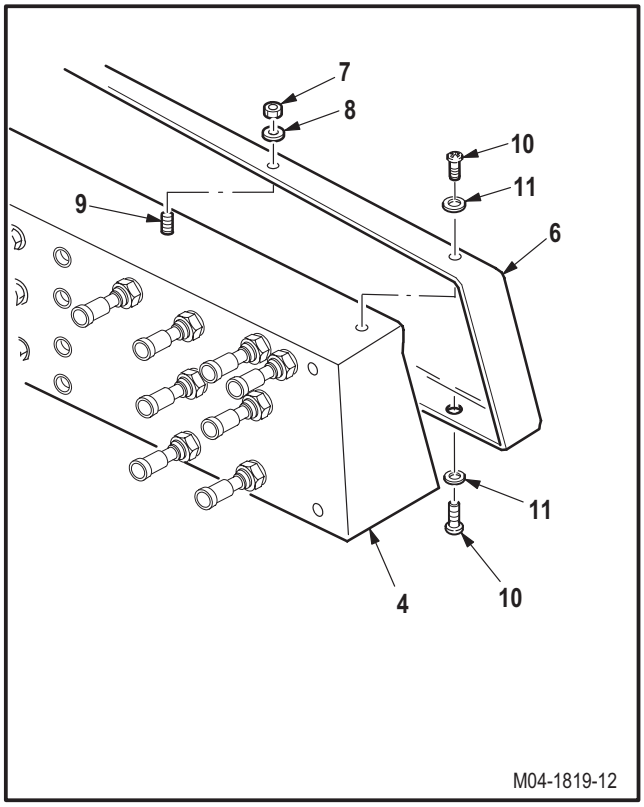


c. **Remove back cover (6) from panel (4).**

(1) Remove nuts (7) and washers (8) from studs (9).

(2) Remove screws (10) and washers (11) as required.

(3) Remove cover (6).



d. **Detach wires (12) from circuit breaker (2).**

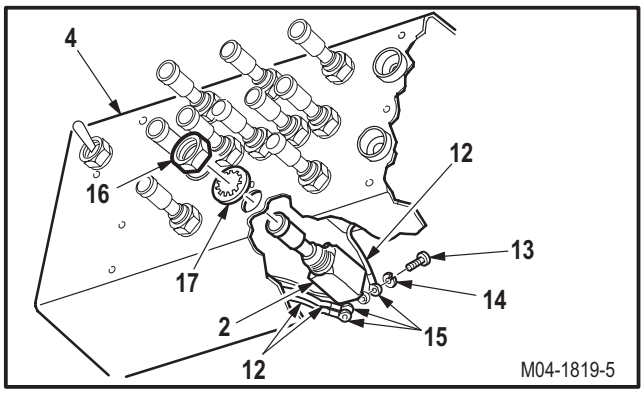
(1) Identify wires (12) attached to circuit breaker (2).

(2) Remove screws (13), washers (14), and terminal lugs (15).

e. **Remove circuit breaker (2) from panel (4).**

(1) Remove nut (16) and washer (17).

(2) Remove and discard circuit breaker (2).



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9.7. PILOT CIRCUIT BREAKERS (NOT ATTACHED TO BUS BARS) REPLACEMENT – continued

9.7.4. Cleaning

a. **Wipe circuit breaker mounting surface with a clean rag.**

9.7.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (para 9.1)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

d. **Check knob for cracks or tears.** None allowed.

9.7.6. Installation

a. **Install new circuit breaker (2).**

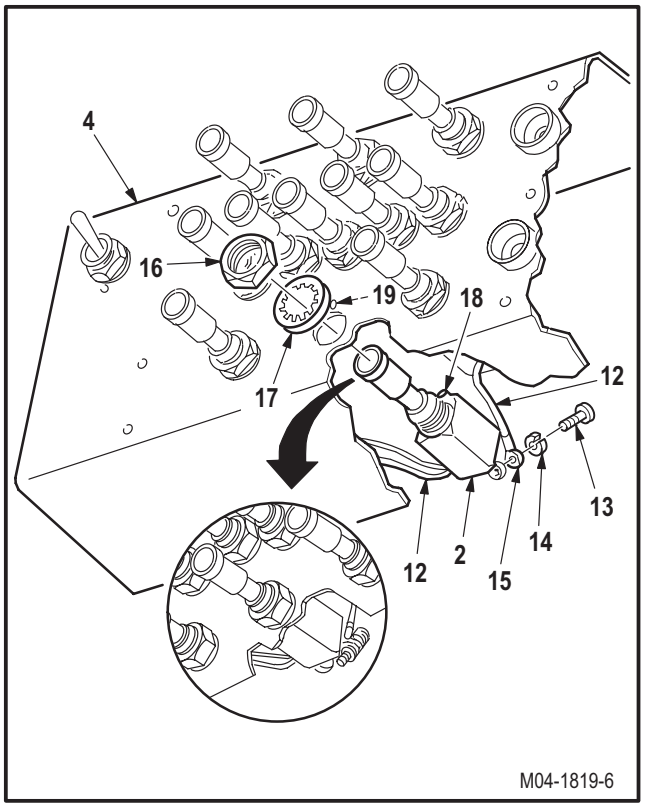
(1) Insert circuit breaker (2) in panel (4) to seat tab (18) in locator hole (19).

(2) Install washer (17) and nut (16) on circuit breaker (2).

b. **Attach identified wires (12) to circuit breaker (2).**

(1) Install screws (13) through washers (14) and terminal lugs (15) in circuit breaker (2).

c. **Inspect (QA).**



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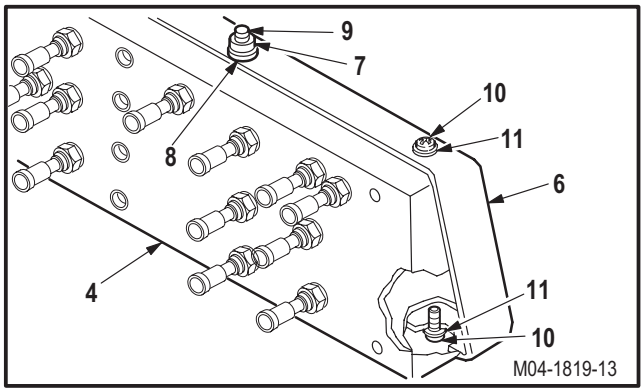
9.7. PILOT CIRCUIT BREAKERS (NOT ATTACHED TO BUS BARS) REPLACEMENT – continued

d. **Install cover (6) on panel (4).**

(1) Position cover (6) over studs (9).

(2) Install washers (8) and nuts (7) on studs (9).

(3) Install screws (10) and washers (11) as required.



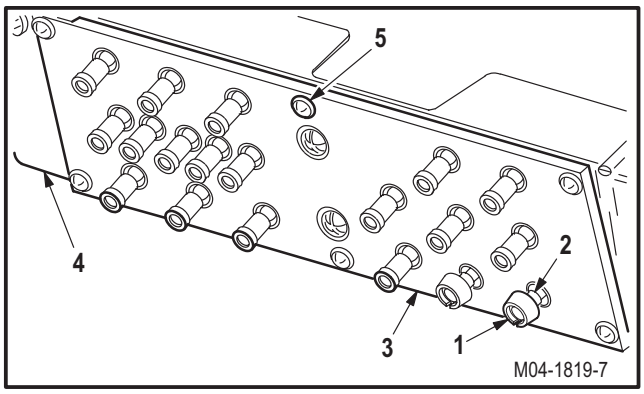
e. **Install light indicating panel (3) on panel (4).**

(1) Position panel (3) on panel (4).

(2) Install screws (5).

NOTE

The following step refers to circuit breakers with a plastic knob. The aft panel has 2 knobs; the center panel has 12 knobs.



f. **Install knob (1) on circuit breaker (2).**

(1) Open circuit breaker (2).

(2) Install knob (1) at slotted opening.

(3) Close circuit breaker (2).

g. **Install pilot circuit breaker panel** (para 9.3)**.**

h. **Refer to circuit breaker reference list to perform appropriate maintenance operational check** (TM 1-1520-238-T)**.**

END OF TASK

9.8. PILOT CIRCUIT BREAKERS (ATTACHED TO BUS BARS) REPLACEMENT

9.8.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.8.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

References:

TM 1-1520-238-T

Personnel Required:

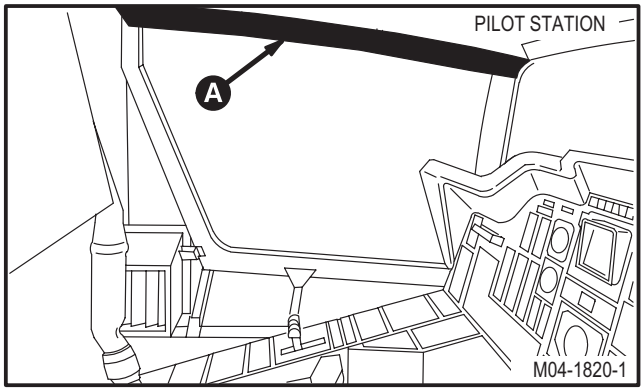
68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
NO TAG	Pilot circuit breaker panel removed

NOTE

- This task is typical for all circuit breakers attached to bus bars. The bus bar must be removed to remove any circuit breaker attached to it. The number of wires and screws may differ on each panel.
- The following step refers to circuit breakers with a plastic knob. The aft panel has 2 knobs; the center panel has 12 knobs.



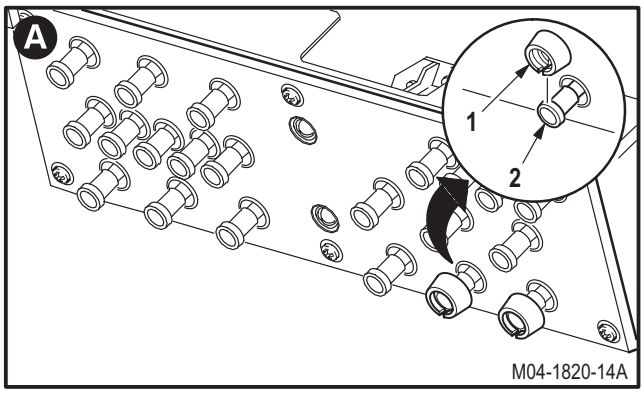
9.8.3. Removal

a. **Remove plastic knob (1) from circuit breaker (2).**

(1) Open circuit breaker (2).

(2) Remove knob (1) at slotted opening.

(3) Close circuit breaker (2).



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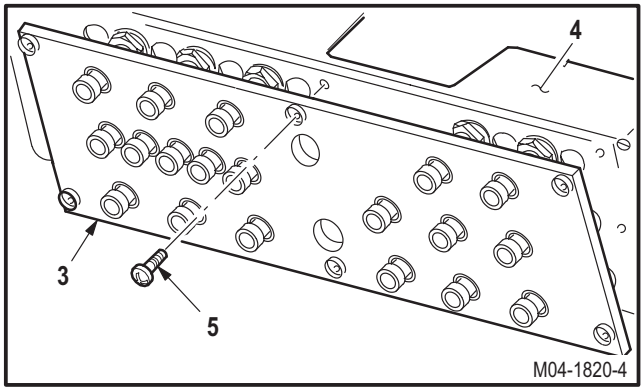
9.8. PILOT CIRCUIT BREAKERS (ATTACHED TO BUS BARS) REPLACEMENT – continued

b. **Remove light indicating panel (3) from circuit breaker panel (4).**

(1) Remove screws (5).

(2) Remove panel (3).

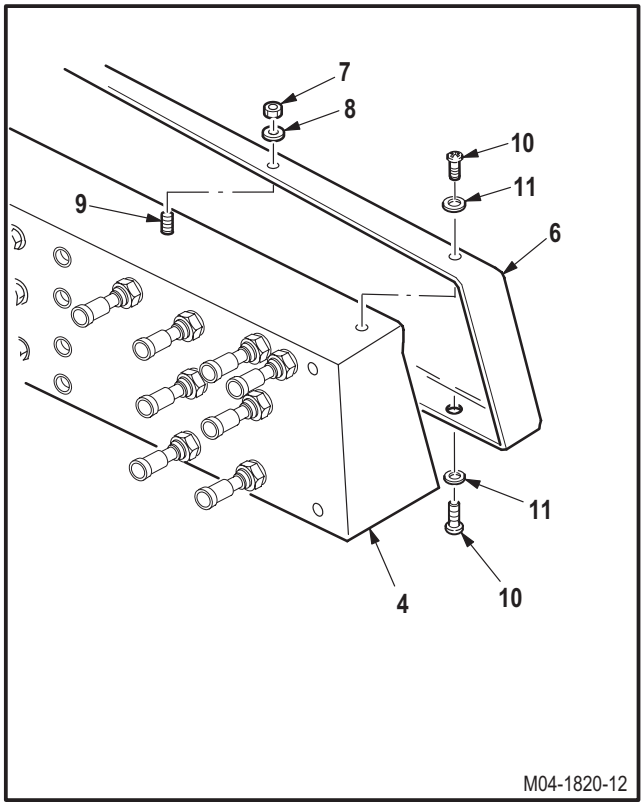


c. **Remove back cover (6) from panel (4).**

(1) Remove nuts (7) and washers (8) from studs (9).

(2) Remove screws (10) and washers (11) as required.

(3) Remove cover (6).



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9.8. PILOT CIRCUIT BREAKERS (ATTACHED TO BUS BARS) REPLACEMENT – continued

d. **Detach wires (12) from circuit breaker (2).**

(1) Identify wires (12).

(2) Remove screws (13), washers (14), and terminal lugs (15).

e. **Remove bus bar (16).**

(1) Identify wire (12).

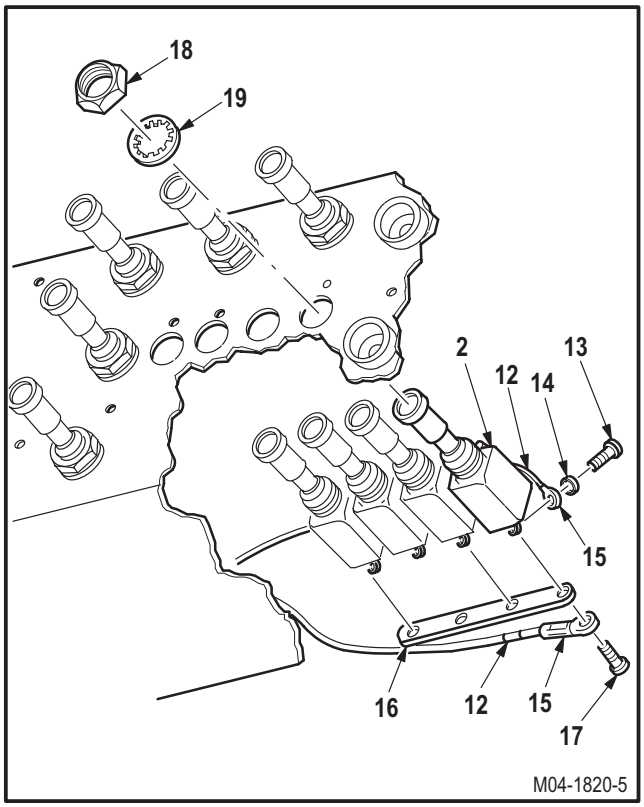
(2) Hold bus bar (16). Remove screws (17) and terminal lug (15).

(3) Remove bus bar (16).

f. **Remove circuit breaker (2).**

(1) Remove nut (18) and washer (19).

(2) Remove and discard circuit breaker (2).



9.8.4. Cleaning

a. **Wipe circuit breaker mounting surface with a clean rag.**

9.8.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (para 9.1)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

d. **Check bus bar for arcing burns.** None allowed.

e. **Check knob for cracks or tears.** None allowed.

GO TO NEXT PAGE

9.8. PILOT CIRCUIT BREAKERS (ATTACHED TO BUS BARS) REPLACEMENT – continued

9.8.6. Installation

a. **Install new circuit breaker (2).**

(1) Insert circuit breaker (2) in panel (4) to seat tab (20) in locator hole (21).

(2) Install washer (19) and nut (18) on circuit breaker (2).

b. **Install bus bar (16).**

(1) Position bus bar (16) and identified wire (12) on circuit breaker (2).

(2) Install screws (17) through terminal lug (15) and bus bar (16) into circuit breaker (2).

c. **Attach identified wires (12) to circuit breaker (2).**

(1) Install screws (13) through washers (14) and terminal lugs (15) in circuit breaker (2).

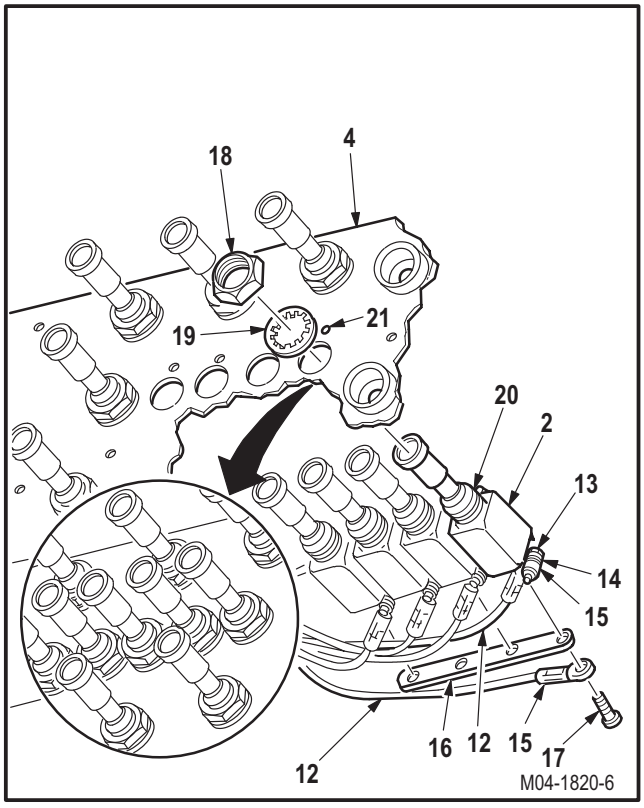
d. **Inspect (QA).**

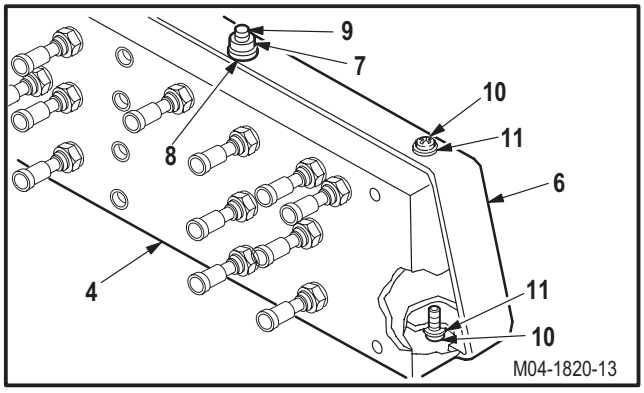
e. **Install back cover (6) on panel (4).**

(1) Position back cover (6) on studs (9).

(2) Install washers (8) and nuts (7) on studs (9).

(3) Install screws (10) and washers (11) as required.





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9.8. PILOT CIRCUIT BREAKERS (ATTACHED TO BUS BARS) REPLACEMENT – continued

f. **Install panel (3) on panel (4).**

(1) Position panel (3) on panel (4).

(2) Install screws (5).

g. **Install knob (1) on circuit breaker (2).**

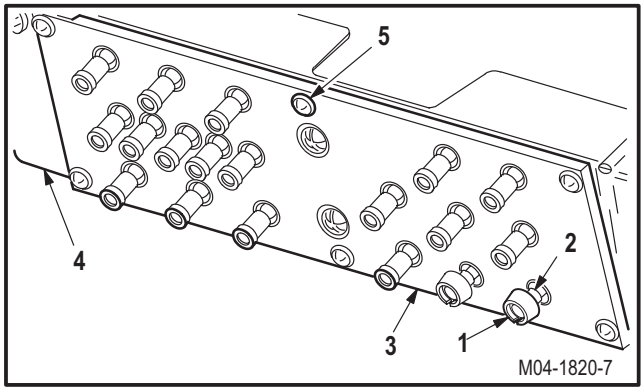
(1) Open circuit breaker (2).

(2) Install knob (1) at slotted opening.

(3) Close circuit breaker (2).

h. **Install pilot circuit breaker panel** (para 9.3)**.**

i. **Refer to circuit breaker reference list to perform appropriate maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

9.9. ELECTRICAL POWER DISTRIBUTION BOX COVER REMOVAL/INSTALLATION

9.9.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.9.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Electrical tool kit (item 378, App H)
L-style socket head key set (item 187, App H)

Equipment Conditions:

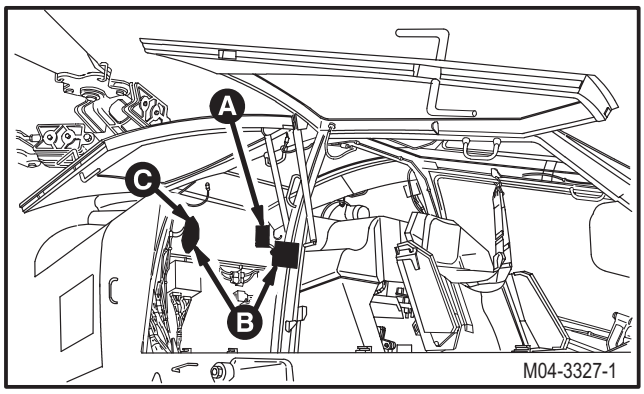
Ref	Condition
1.57	Helicopter safed
2.161	Pilot seat tilted forward

Personnel Required:

67R Attack Helicopter Repairer
68X Armament/Electrical System Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

9.9.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**



b. **Detach six connectors from power distribution panel (1).**

(1) Detach connector P1 (2) from receptacle (A402)J1 (3).

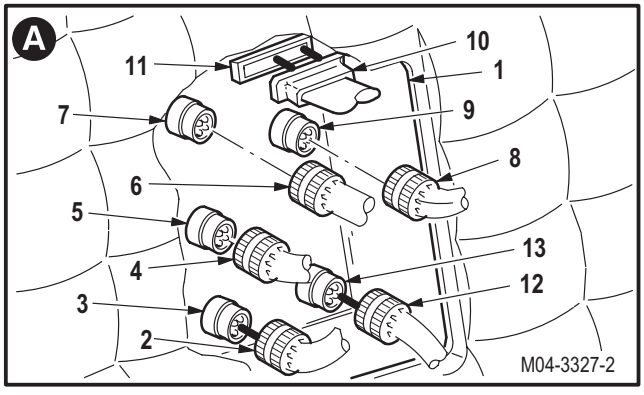
(2) Detach connector P2 (4) from receptacle (A402)J2 (5).

(3) Detach connector P3 (6) from receptacle (A402)J3 (7).

(4) Detach connector P4 (8) from receptacle (A402)J4 (9).

(5) Detach connector P5 (10) from receptacle (A402)J29 (11). Use socket head key set.

(6) Detach connector P461 (12) from receptacle (A402)J32 (13).



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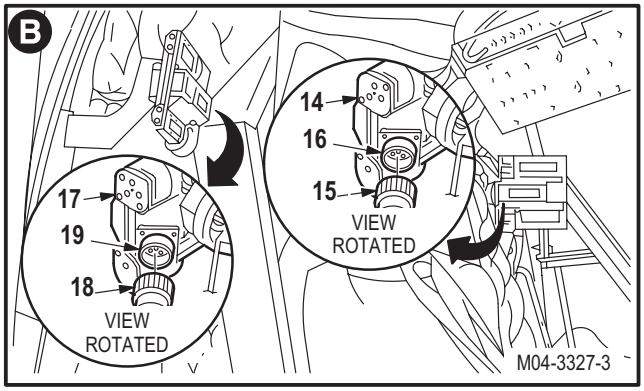
9.9. ELECTRICAL POWER DISTRIBUTION BOX COVER REMOVAL/INSTALLATION – continued

c. **On pilot left sensor surveyor unit (14), detach connector P929 (15) from receptacle (A608)J1 (16).**

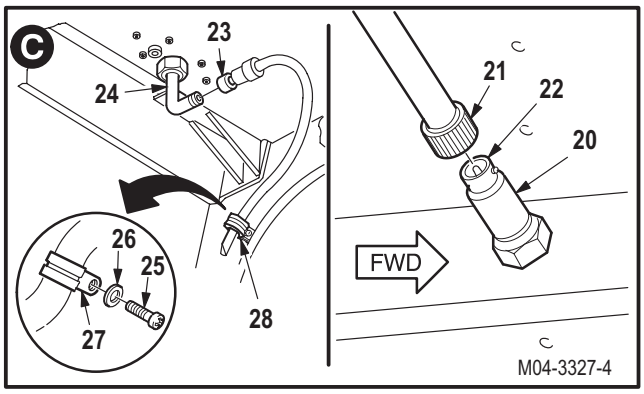
d. **On pilot right sensor surveyor unit (17), detach connector P927 (18) from receptacle (A606)J1 (19).**

e. **On horizontal accelerometer (20), detach connector P56 (21) from connector MT31 (22).**

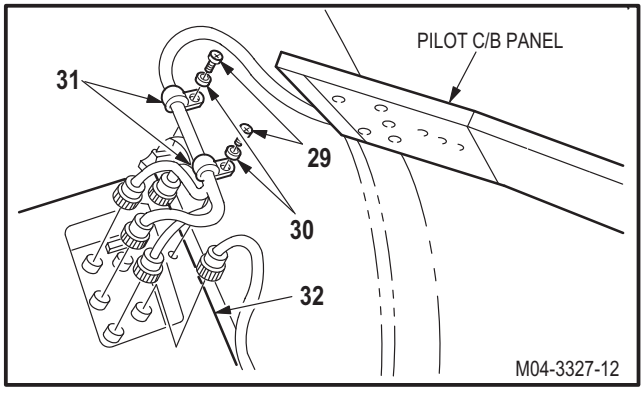


f. **Detach connector P388 (23) from antenna receptacle (E310)J388 (24).**

g. **Remove screw (25), washer (26), and clamp (27) from bracket (28).**



h. **Remove two screws (29), washers (30), and clamps (31) from pilot bulkhead (32).**

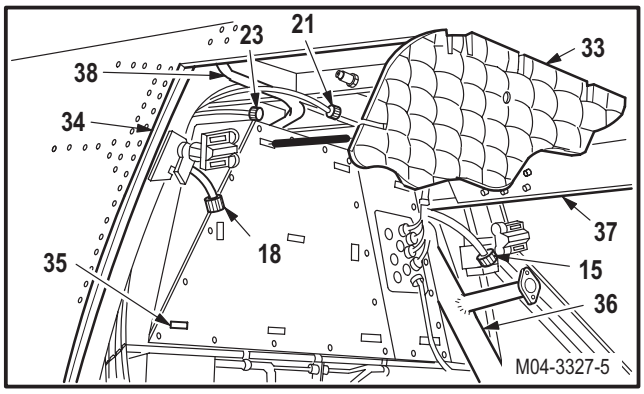


i. **Remove thermal insulation (33) from airframe (34).**

(1) Unlock hook-and-pile fasteners (35).

(2) Remove insulation (33) from around environmental control system duct (36), defog tube (37), and defog tube (38).

(3) Slide insulation (33) off connectors P929 (15), P927 (18), P56 (21), and P388 (23).



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9.9. ELECTRICAL POWER DISTRIBUTION BOX COVER REMOVAL/INSTALLATION – continued

CAUTION

Do not lean or pull on connector panel after it is removed from electrical power distribution box. Damage to connector panel wiring could result if excessive stress is applied.

j. **Remove cover (39) from panel (40) and electrical power distribution box (41).**

(1) Unlock 22 turnlock fasteners (42).

9.9.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

9.9.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check removed and attaching parts for corrosion** (para 1.49)**.**

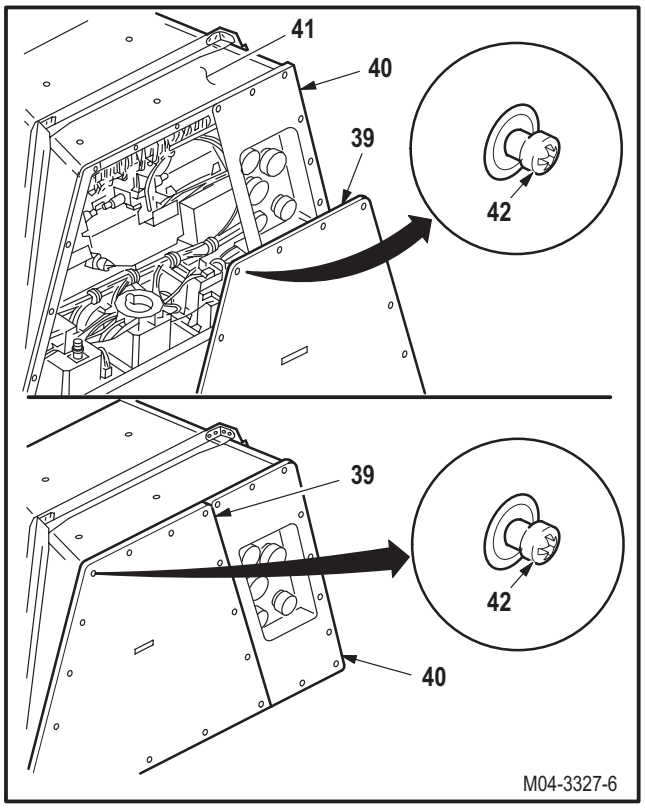
c. **Check hook-and-pile fasteners for tears, cracks, and loose attachment** (para 9.1)**.** Replace if torn, cracked, or not attached.

9.9.6. Installation

a. **Install panel (40) and cover (39) on box (41).**

(1) Position panel (40) and cover (39) on box (41).

(2) Lock 22 turnlock fasteners (42).



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9.9. ELECTRICAL POWER DISTRIBUTION BOX COVER REMOVAL/INSTALLATION – continued

b. **Install thermal insulation (33) on airframe (34).**

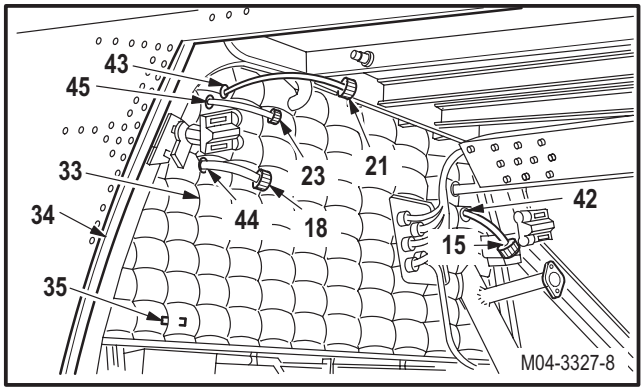
(1) Insert connector P929 (15) through cutout (42) in insulation (33).

(2) Insert connector P56 (21) through cutout (43) in insulation (33).

(3) Insert connector P927 (18) through cutout (44) in insulation (33).

(4) Insert connector P388 (23) through cutout (45) in insulation (33).

(5) Aline insulation (33) with airframe (34) and lock hook-and-pile fasteners (35).



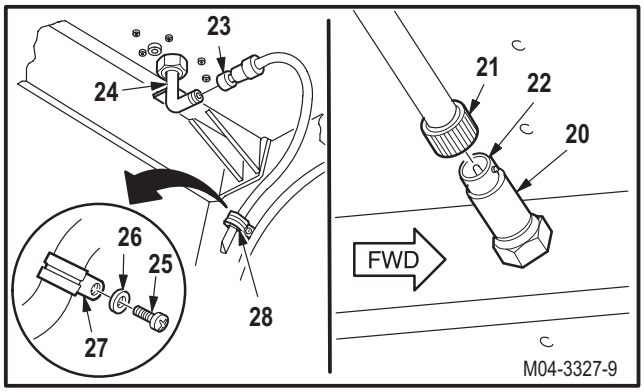
c. **Attach connector P56 (21) to connector MT31 (22) on horizontal accelerometer (20).**

d. **Attach connector P388 (23) to antenna receptacle (E310)J388 (24).**

e. **Install clamp (27) on bracket (28).**

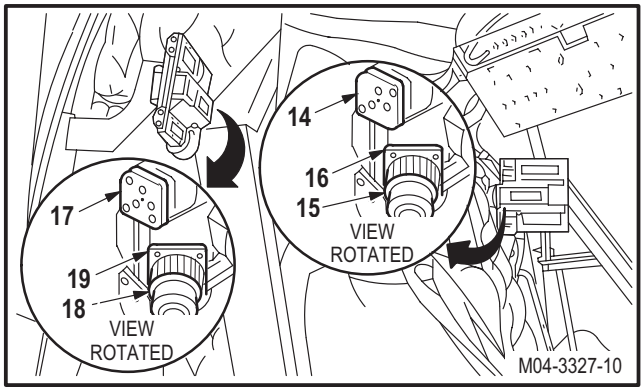
(1) Aline clamp (27) with bracket (28).

(2) Install screw (25) through washer (26) and clamp (27) in bracket (28).



f. **Attach connector P927 (18) to receptacle (A606)J1 (19) on pilot right sensor surveyor unit (17).**

g. **Attach connector P929 (15) to receptacle (A608)J1 (16) on pilot left sensor surveyor unit (14).**



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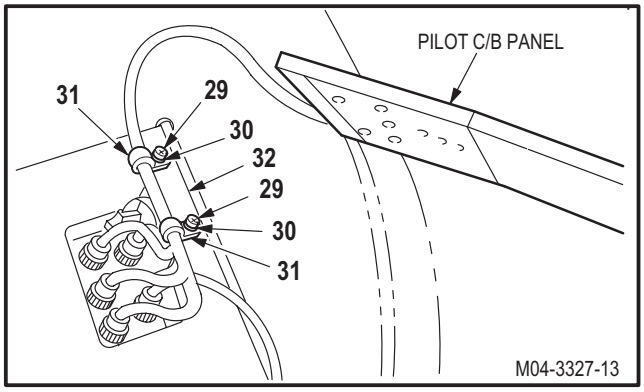
9.9. ELECTRICAL POWER DISTRIBUTION BOX COVER REMOVAL/INSTALLATION – continued

h. **Install two clamps (31) on pilot bulkhead (32).**

(1) Aline two clamps (31) with pilot bulkhead (32).

(2) Install two screws (29) and washers (30) through clamps (31).



i. **Attach six connectors to power distribution panel (1).**

(1) Attach connector P461 (12) to receptacle (A402)J32 (13).

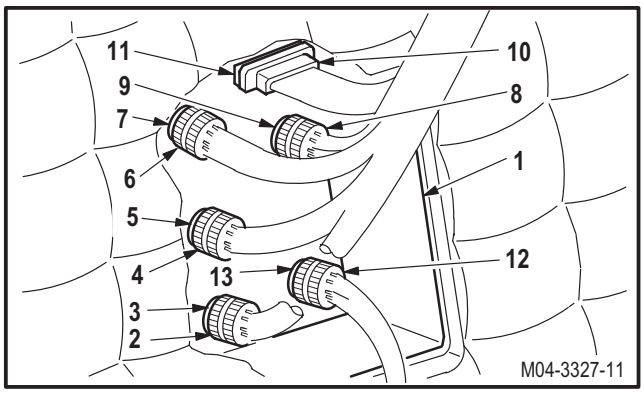
(2) Attach connector P5 (10) to receptacle (A402)J29 (11).

(3) Attach connector P4 (8) to receptacle (A402)J4 (9).

(4) Attach connector P3 (6) to receptacle (A402)J3 (7).

(5) Attach connector P2 (4) to receptacle (A402)J2 (5).

(6) Attach connector P1 to (2) receptacle (A402)J1 (3).



j. **Inspect (QA).**

k. **Return seat to upright position** (para 2.161)**.**

END OF TASK

9.10. ELECTRICAL POWER DISTRIBUTION BOX RELAY COVER REMOVAL/INSTALLATION

9.10.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.10.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Industrial goggles (item 156, App H)
1 1/4-inch blade putty knife (item 199, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Gasket (table D-73 or figure D-52, App D)
Adhesive (item 18, App F)
Brush (item 34, App F)
Strap (item 191, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1520-238-T
TM 55-1500-323-24

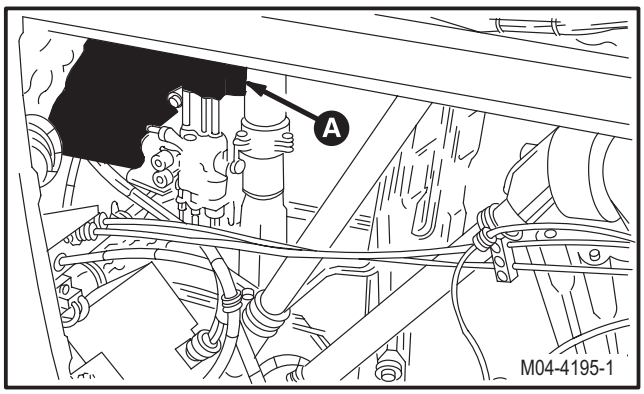
Equipment Conditions:

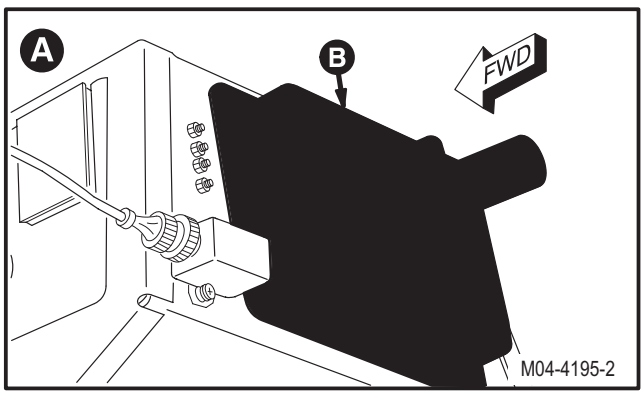
Ref	Condition
1.57	Helicopter safed

9.10.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot aft circuit breaker panel, open AFT FAN circuit breaker.**





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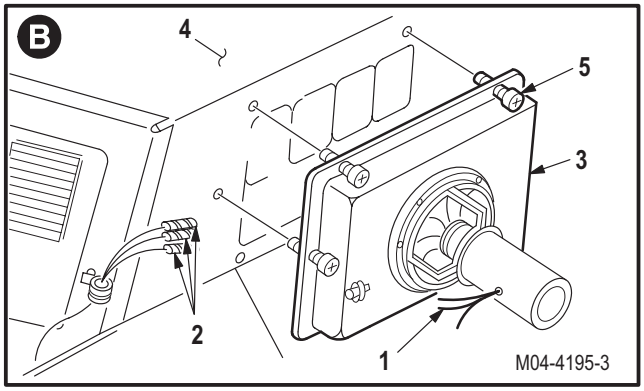
9.10. ELECTRICAL POWER DISTRIBUTION BOX RELAY COVER REMOVAL/INSTALLATION – continued

c. **Identify and depin three wires (1) from splices (2)** (TM 55-1500-323-24)**.**

(1) Remove tiedown straps as required.

d. **Remove relay cover (3) from electrical power distribution box (4).**

(1) Loosen six captive screws (5) from box (4).



9.10.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.10.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check wires for wear, cuts, breaks, and damaged splices** (para 9.1)**.**

c. **Check gasket for rips, cracks, or tears.** None allowed.

d. **Check removed and attaching parts for corrosion** (para 1.49)**.**

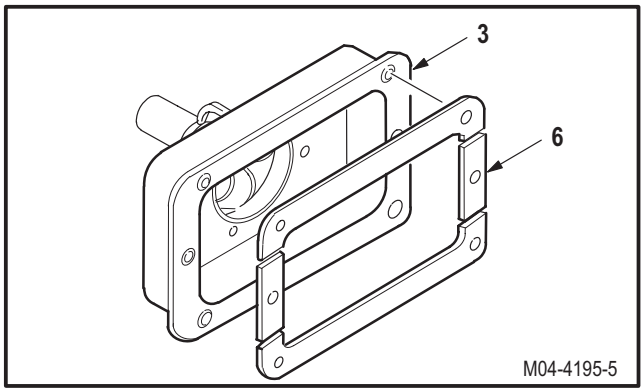
e. **Check tie anchor for damage** (para 9.1)**.**

9.10.6. Repair

a. **Remove gasket (6) from cover (3).** Use putty knife.

b. **Remove excess adhesive and clean gasket mounting area of relay cover** (para 1.47)**.**

c. **Check gasket mounting area for corrosion** (para 1.49)**.**



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9.10. ELECTRICAL POWER DISTRIBUTION BOX RELAY COVER REMOVAL/INSTALLATION – continued

NOTE

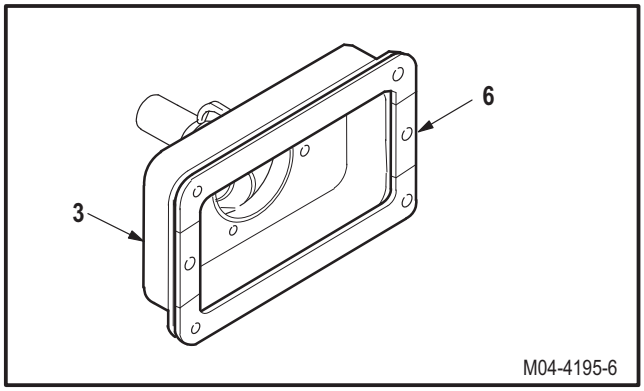
The surface of the relay cover may require additional coats of adhesive.

d. **Install new gasket (6) on cover (3).**

(1) Apply one coat of adhesive to mating surfaces. Air dry **15 to 20 MINUTES**. Use gasket (table D-73 or figure D-52, App D), adhesive (item 18, App F), and brush (item 34, App F).

(2) Apply a second coat of adhesive to mating surfaces. Air dry approximately **3 MINUTES**.

(3) Test tack with knuckle. When adhesive no longer transfers to the knuckle when touched, install gasket (6) on relay cover (3). Allow assembly to dry for a minimum of **4 HOURS** before installation.



e. **Inspect (QA).**

9.10.7. Installation

a. **Install cover (3) on box (4).**

(1) Position cover (3) on box (4).

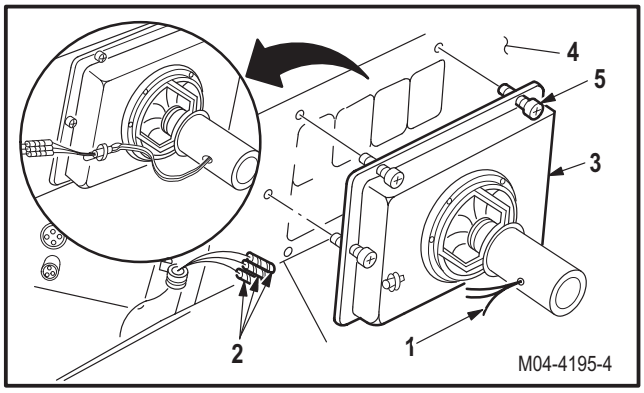
(2) Tighten six captive screws (5).

b. **Pin three identified wires (1) to splices (2)** (TM 55-1500-323-24)**.**

(1) Install strap (item 191, App F) as required.

c. **Inspect (QA).**

d. **Perform environmental control system maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

9.11. ELECTRICAL POWER DISTRIBUTION BOX ENCLOSED LINK FUSE/HOLDER BLOCK F1/XF1 OR F2/XF2 REPLACEMENT

9.11.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.11.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

References:

TM 9-1427-475-20

Equipment Conditions:

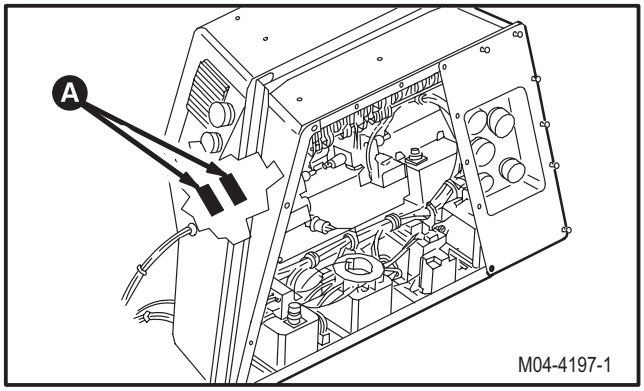
Ref	Condition
1.57	Helicopter safed
9.9	Electrical power distribution box cover removed

Personnel Required:

68X	Armament/Electrical System Repairer
68X3F	Armament/Electrical System Repairer/ Technical Inspector

NOTE

This task is typical for enclosed link fuse F1 or F2 and holder block XF1 or XF2.



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9.11. ELECTRICAL POWER DISTRIBUTION BOX ENCLOSED LINK FUSE/HOLDER BLOCK F1/XF1 OR F2/XF2 REPLACEMENT – continued

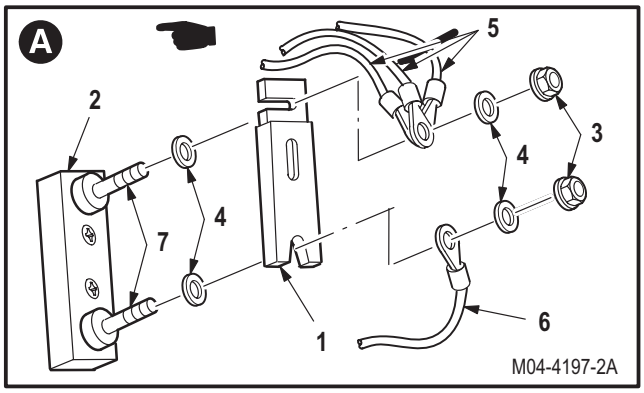
9.11.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **Remove link fuse (1) from fuse holder block (2).**

(1) Remove two nuts (3) and washers (4).

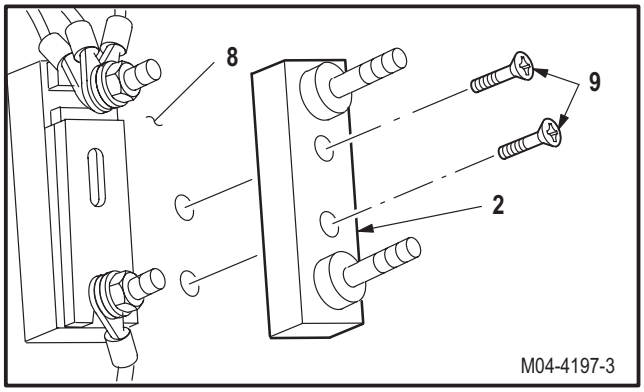
(2) Identify and remove three wires (5), one wire (6), link fuse (1), and two washers (4) from terminal studs (7).



c. **Remove holder block (2) from distribution box (8).**

(1) Remove two screws (9).

(2) Remove and discard holder block (2).



9.11.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

9.11.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check wires for chafing, cuts, and damaged connections** (para 9.1)**.**

c. **Check holder block mounting area for arcing burns** (para 9.1)**.**

d. **Check holder block mounting area for dust, and contamination.** Remove contamination and dust.

e. **Check removed and attaching parts for corrosion** (para 1.49)**.**

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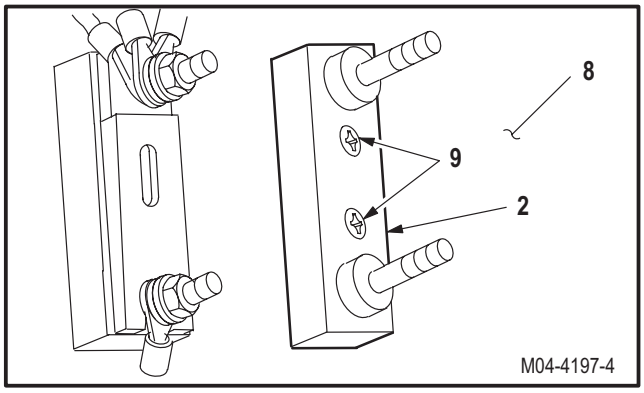
9.11. ELECTRICAL POWER DISTRIBUTION BOX ENCLOSED LINK FUSE/HOLDER BLOCK F1/XF1 OR F2/XF2 REPLACEMENT – continued

9.11.6. Installation

a. **Install new holder block (2) in distribution box (8).**

(1) Position holder block (2) on distribution box (8).

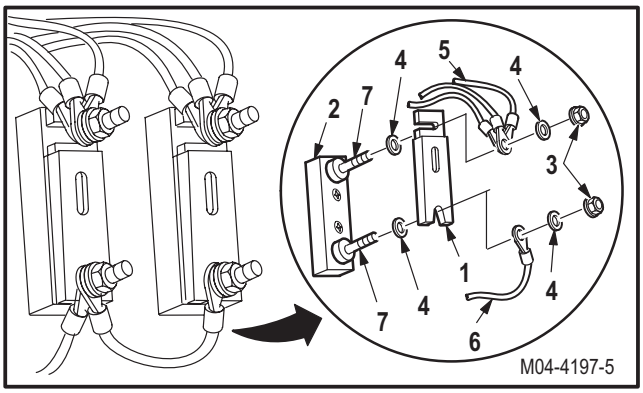
(2) Install two screws (9).



b. **Install link fuse (1) on holder block (2).**

(1) Install two washers (4), link fuse (1), three identified wires (5), and one wire (6) on studs (7).

(2) Install two washers (4) and nuts (3) on studs (7).



c. **Inspect (QA).**

d. **Install electrical power distribution box cover** (para 9.9)**.**

e. **Perform Hellfire missile system maintenance operational check** (TM 9-1427-475-20)**.**

END OF TASK

9.12. BLADE DE-ICE REMOTE CONTROL CIRCUIT BREAKER RELAY REMOVAL/INSTALLATION

9.12.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.12.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Ohmmeter (item 218, App H)

References:

TM 1-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

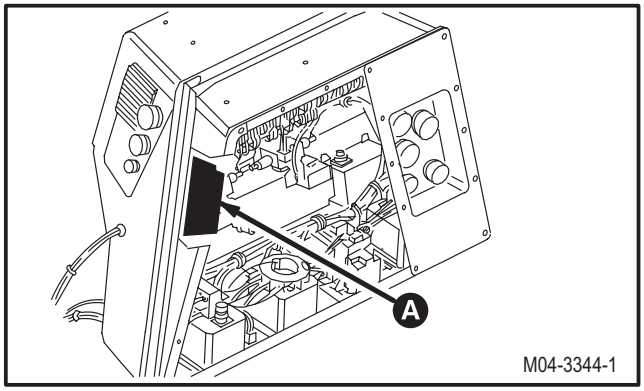
Ref	Condition
1.57	Helicopter safed
9.9	Electrical power distribution box cover removed

Personnel Required:

68X	Armament/Electrical System Repairer
68X3F	Armament/Electrical System Repairer/ Technical Inspector

9.12.3. Removal

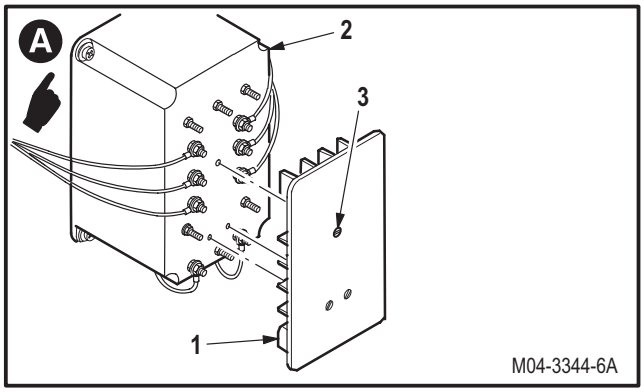
a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**



b. **Remove terminal shield (1) from remote control circuit breaker relay (A402)K3 (2).**

(1) Loosen three captive screws (3).

(2) Remove terminal shield (1).



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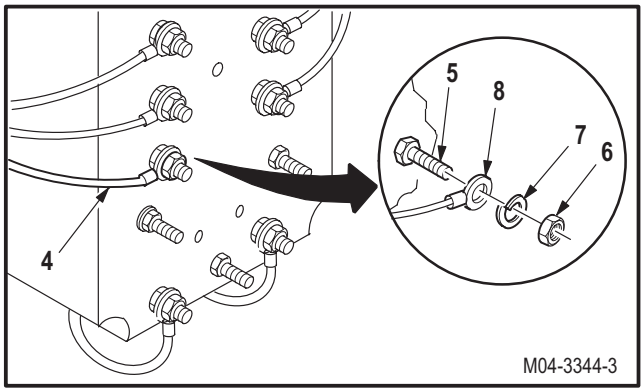
9.12. BLADE DE-ICE REMOTE CONTROL CIRCUIT BREAKER RELAY REMOVAL/INSTALLATION – continued

c. **Detach wires (4) from relay studs (5).**

(1) Identify wires (4).

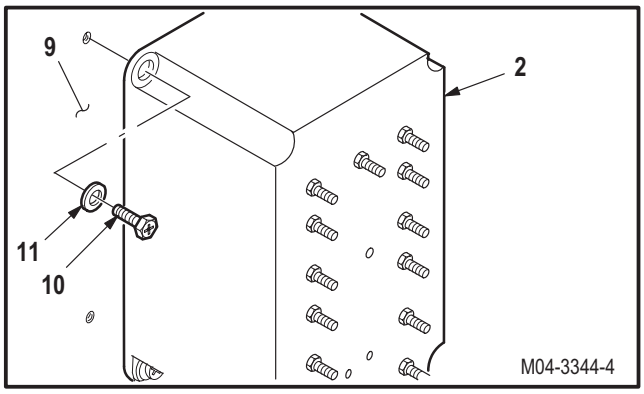
(2) Remove nut (6), lockwasher (7), and terminal lug (8) from stud (5).



d. **Remove relay (2) from power distribution box (9).**

(1) Remove four screws (10) and washers (11).

(2) Remove relay (2).



9.12.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.12.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check mounting area for stripped or damaged threads.** Damage not to exceed 50 percent of one thread.

c. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (para 9.1)**.**

d. **Check removed and attaching parts for corrosion** (para 1.49)**.**

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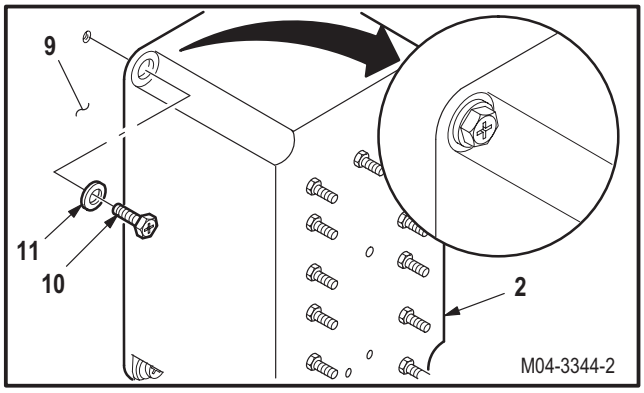
9.12. BLADE DE-ICE REMOTE CONTROL CIRCUIT BREAKER RELAY REMOVAL/INSTALLATION – continued

9.12.6. Installation

a. **Install relay (2) in box (9).**

(1) Position relay (2) in box (9).

(2) Install four screws (10) and washers (11).



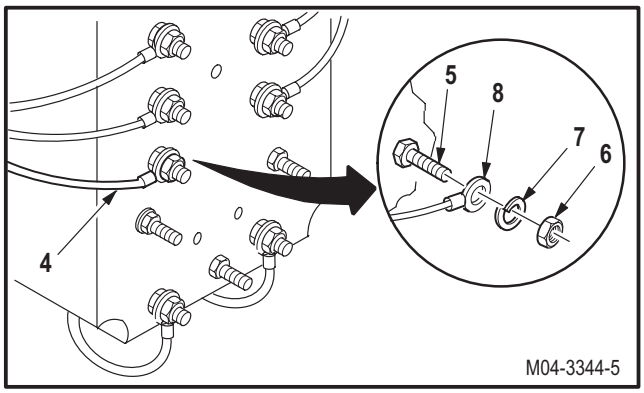
b. **Perform electrical bond check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

c. **Attach wires (4) to studs (5).**

(1) Install identified wires (4) on studs (5).

(2) Install terminal lug (8), lockwasher (7), and nut (6).

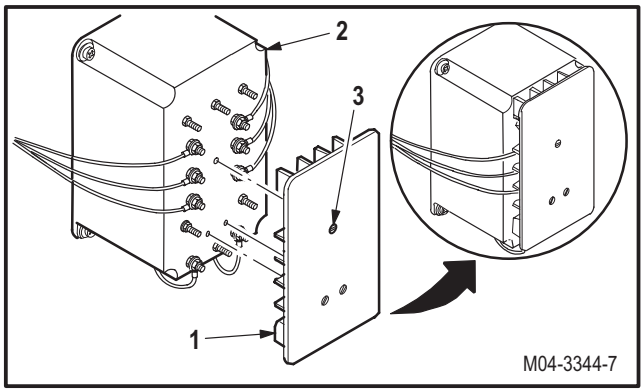


d. **Inspect (QA).**

e. **Install shield (1) on relay (2).**

(1) Position shield (1) on relay (2).

(2) Tighten three captive screws (3).



f. **Install electrical power distribution box cover** (para 9.9)**.**

g. **Perform rotor blades de-ice maintenance operational check** (TM 1-1520-238-T)**.**

END OF TASK

9.13. CB3, CB201, CB202, CB203, OR CB204 REMOTE CONTROL CIRCUIT BREAKER REPLACEMENT

9.13.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.13.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Materials/Parts:

Brush (item 34, App F)
Gloves (item 83, App F)
Insulating compound kit (item 97, App F)

References:

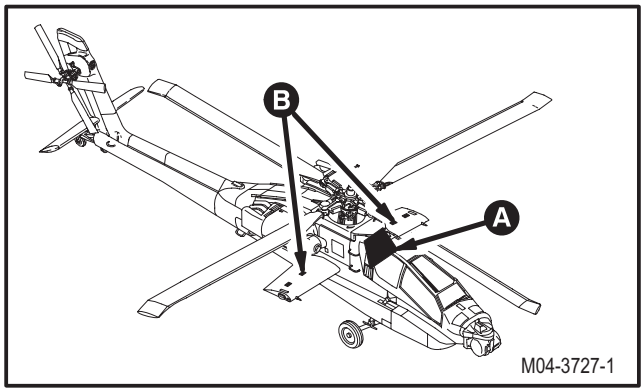
TM 9-1427-475-20
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
1.70	Helicopter external electrical power removed
2.2	Access covers LW7 or LW8 or RW7 or RW8 removed or
9.9	Electrical power distribution box cover removed

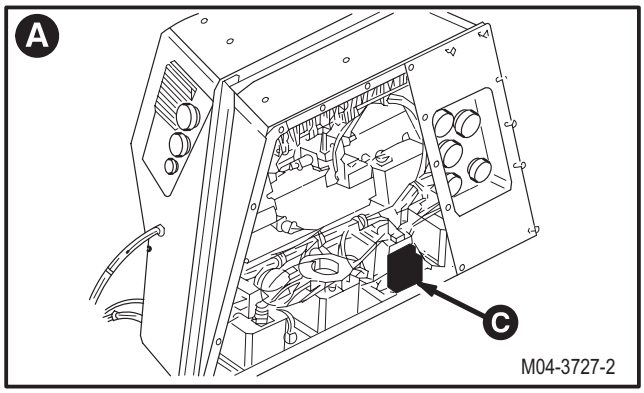
NOTE

- This is typical for CB3 remote control circuit breaker in the power distribution box and CB201, CB202, CB203, and CB204 located in the wings.
- CB201, CB202, CB203, and CB204 have electrical cable nipples that protect terminal studs. CB3 does not.



9.13.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**



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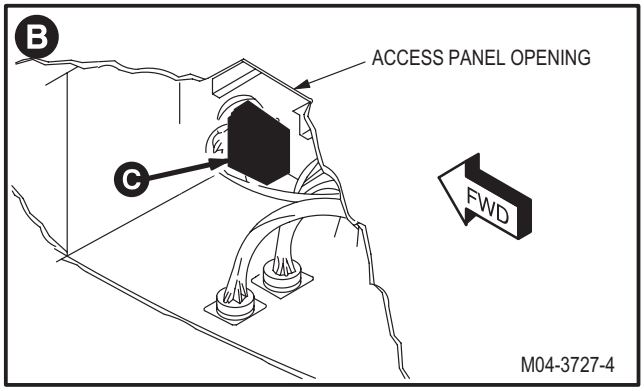
9.13. CB3, CB201, CB202, CB203, OR CB204 REMOTE CONTROL CIRCUIT BREAKER REPLACEMENT – continued



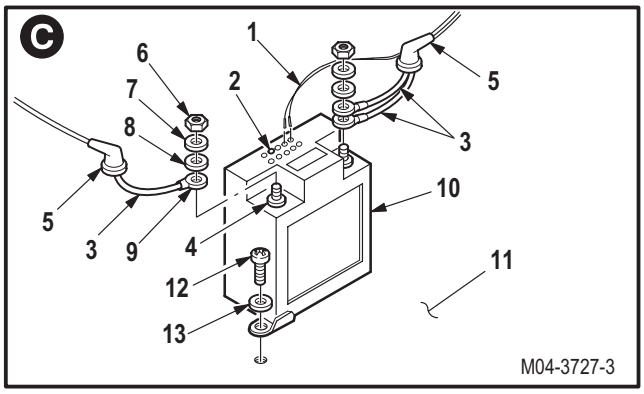
b. **Identify and depin wires (1) from connector (2)** (TM 55-1500-323-24)**.**

c. **Detach wires (3) from terminal studs (4).**

(1) Pull back electrical cable nipples (5).

(2) Identify wires (3).

(3) Remove two nuts (6), lockwashers (7), washers (8), and terminal lugs (9) from terminal studs (4).



d. **Remove remote control circuit breaker (10) from mount (11).**

(1) Remove two screws (12) and washers (13).

(2) Remove and discard circuit breaker (10).

9.13.4. Cleaning

a. **Wipe mounting surfaces with a clean rag.**

9.13.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check mounting area for stripped or damaged threads** (para 9.1)**.**

c. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (para 9.1)**.**

d. **Check removed and attaching parts for corrosion** (para 1.49)**.**

GO TO NEXT PAGE

9.13. CB3, CB201, CB202, CB203, OR CB204 REMOTE CONTROL CIRCUIT BREAKER REPLACEMENT – continued

9.13.6. Installation

NOTE

If replacing CB3 remote control circuit breaker, go to step b.

a. **Apply insulating compound on base of new circuit breaker (10).** Use brush (item 34, App F) and insulating compound kit (item 97, App F).

b. **Install circuit breaker (10) on mount (11).**

(1) Position circuit breaker (10) on mount (11).

(2) Install two screws (12) and washers (13).

c. **Attach identified wires (3) to terminal studs (4).**

(1) Install terminal lugs (9), two washers (8), lockwashers (7), and nuts (6) on terminal studs (4).

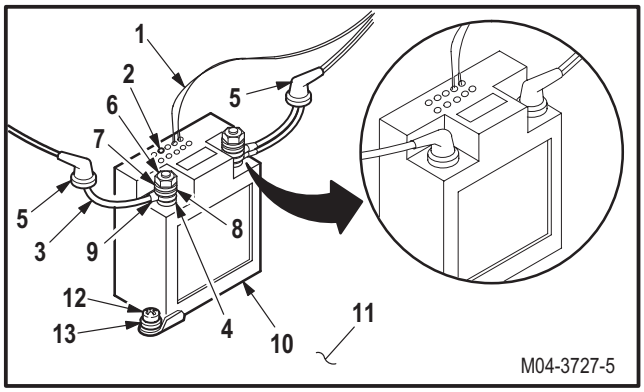
(2) Slide electrical cable nipples (5) over terminal studs (4).

d. **Pin identified wires (1) to connector (2)** (TM 55-1500-323-24)**.**

e. **Inspect (QA).**

f. **Install electrical power distribution box cover** (para 9.9)**, or access covers LW7, LW8, RW7, and RW8** (para 2.2)**.**

g. **Perform HME system FD/LS maintenance operational check** (TM 9-1427-475-20)**.**



END OF TASK

9.14. GENERATOR CONTROL UNIT (GCU) NO. 1 OR NO. 2 REMOVAL/INSTALLATION

9.14.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.14.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Ohmmeter (item 218, App H)

References:

TM 1-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

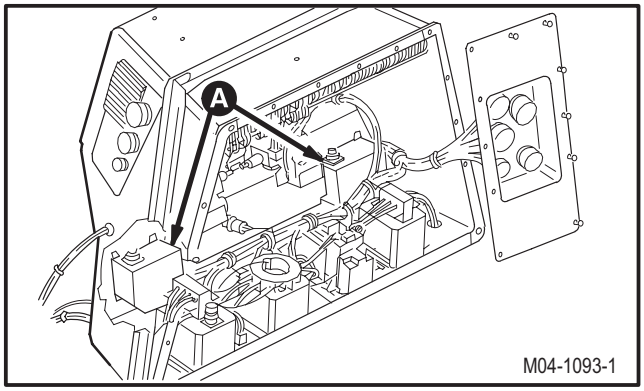
Ref	Condition
1.57	Helicopter safed
9.9	Electrical power distribution box cover removed

Personnel Required:

68X	Armament/Electrical System Repairer
68X3F	Armament/Electrical System Repairer/ Technical Inspector

NOTE

This task is typical for either generator control unit. The A1 generator control unit is on the left side of the electrical power distribution box. The A2 generator control unit is on the right.



9.14.3. Removal

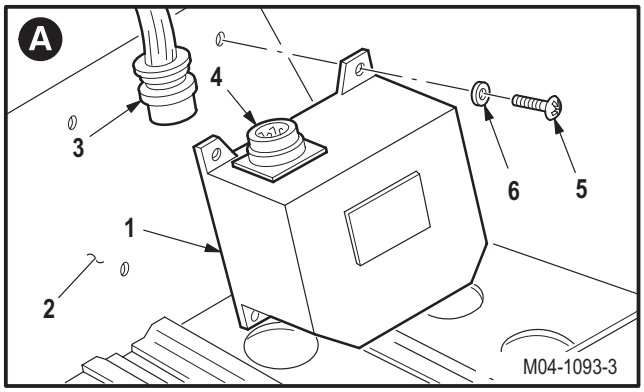
a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **Remove generator control unit (1) from electrical power distribution box (2).**

(1) Detach connector P1 or P7 (3) from receptacle J1 (4).

(2) Remove four screws (5) and washers (6) from control unit (1).

(3) Remove control unit (1).



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9.14. GENERATOR CONTROL UNIT (GCU) NO. 1 OR NO. 2 REMOVAL/INSTALLATION – continued

9.14.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47).

9.14.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1).

b. **Check connectors and receptacles for cracks, broken connections, and bent or damaged pins** (para 9.1).

c. **Check wiring for wear, cuts, and breaks** (para 9.1).

d. **Check removed and attaching parts for corrosion** (para 1.49).

9.14.6. Installation

a. **Install control unit (1) on box (2).**

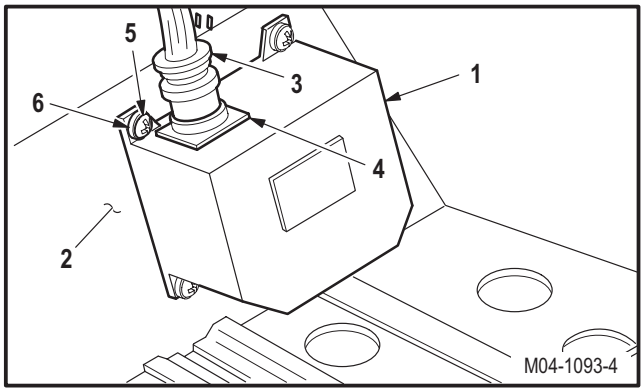
(1) Position control unit (1) on box (2).

(2) Install four screws (5) and washers (6).

(3) Perform electrical bond check (TM 55-1500-323-24).

(a) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

(4) Attach connector P1 or P7 (3) to receptacle J1 (4) on control unit (1).



b. **Inspect (QA).**

c. **Install electrical power distribution box cover** (para 9.9).

d. **Perform AC power generation maintenance operational check** (TM 1-1520-238-T).

END OF TASK

9.15. GENERATOR CONTROL UNIT (GCU) CIRCUIT CARD REMOVAL (AVIM)

9.15.1. Description

This task covers: Removal. Cleaning. Inspection.

9.15.2. Initial Setup

Tools:

Electronic tool kit (item 379, App H)

Personnel Required:

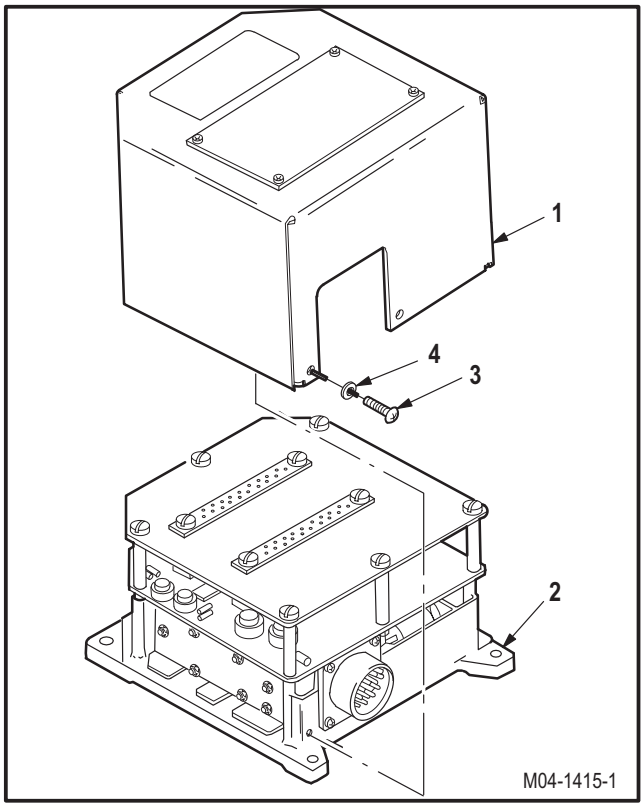
68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

9.15.3. Removal

a. **Remove cover (1) from generator control unit (2).**

(1) Remove three screws (3) and lockwashers (4).

(2) Remove cover (1).



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9.15. GENERATOR CONTROL UNIT (GCU) CIRCUIT CARD REMOVAL (AVIM) – continued

b. **Remove circuit cards A1 (5) and A2 (6).**

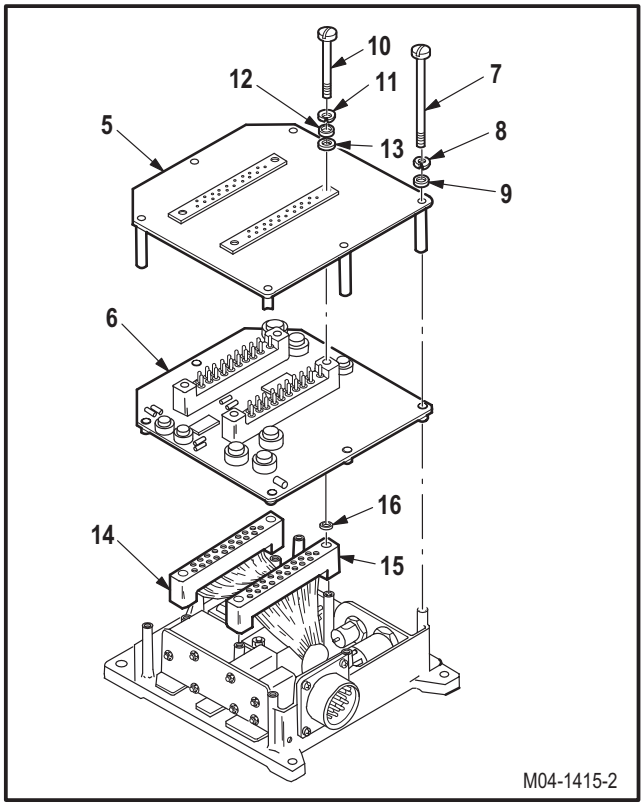
(1) Remove six screws (7), lockwashers (8), and flat washers (9).

(2) Remove four screws (10), lockwashers (11), flat washers (12), and insulators (13).

(3) Detach circuit card A1 (5) from circuit card A2 (6).

(4) Detach circuit card A2 (6) from receptacles J2 (14) and J3 (15).

(5) Remove four insulators (16).



9.15.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.15.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check mounting area for stripped threads** (para 9.1)**.**

c. **Check connectors for cracks, broken connections, and bent or damaged pins** (para 9.1)**.**

d. **Check removed and attaching parts for corrosion** (para 1.49)**.**

END OF TASK

9.16. GENERATOR CONTROL UNIT (GCU) CIRCUIT CARD INSTALLATION (AVIM)

9.16.1. Description

This task covers: Installation.

9.16.2. Initial Setup

Tools:

Electronic tool kit (item 379, App H)

References:

TM 11-6625-3085-30

Personnel Required:

39B ATE Operator/Maintainer
68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

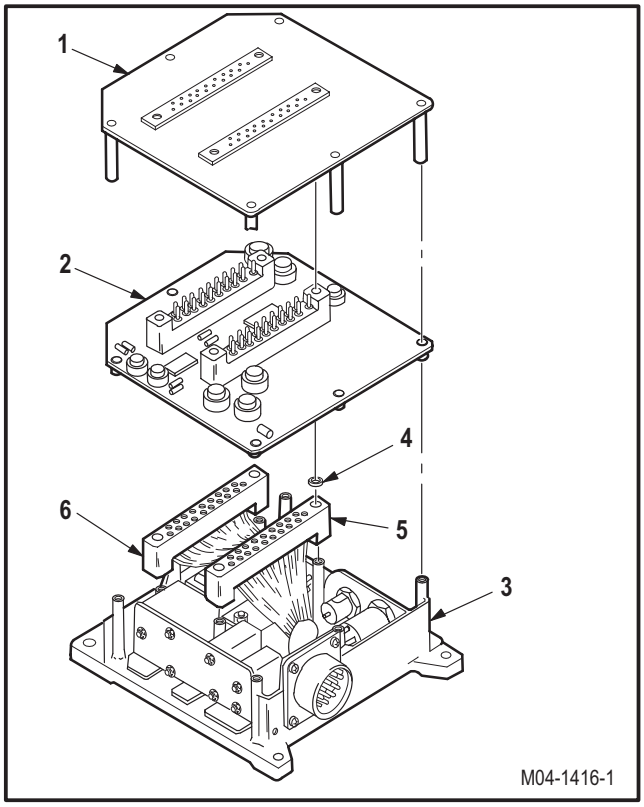
9.16.3. Installation

a. **Install circuit cards A1 (1) and A2 (2) on generator control unit (3).**

(1) Position four insulators (4) on two receptacles J2 (5) and J3 (6).

(2) Attach circuit card A2 (2) to receptacles J2 (5) and J3 (6).

(3) Attach circuit card A1 (1) to circuit card A2 (2).



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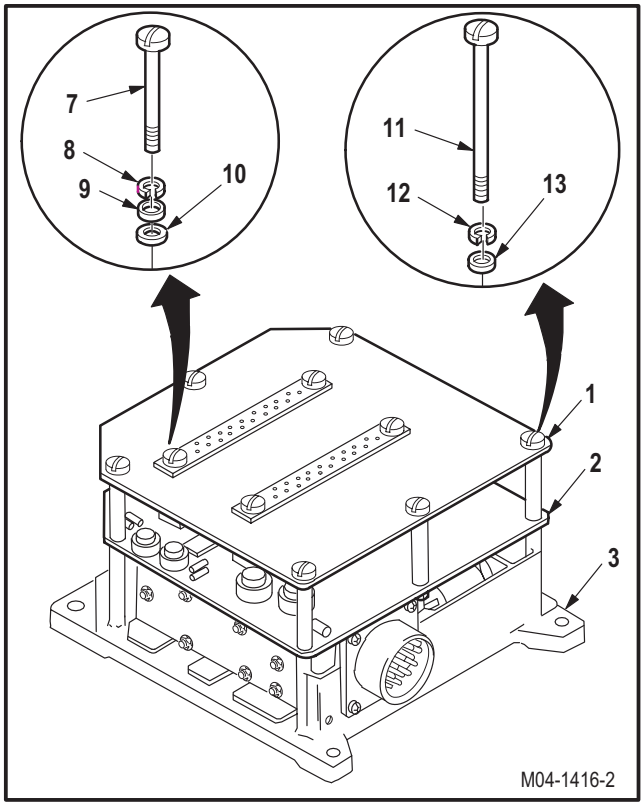
9.16. GENERATOR CONTROL UNIT (GCU) CIRCUIT CARD INSTALLATION (AVIM) – continued

(4) Install four screws (7) through lockwashers (8), flat washers (9), and insulators (10) in circuit card (1).

(5) Install six screws (11) through lockwashers (12), flat washers (13), circuit card (1), and circuit card (2) in control unit (3).

b. **Inspect (QA).**

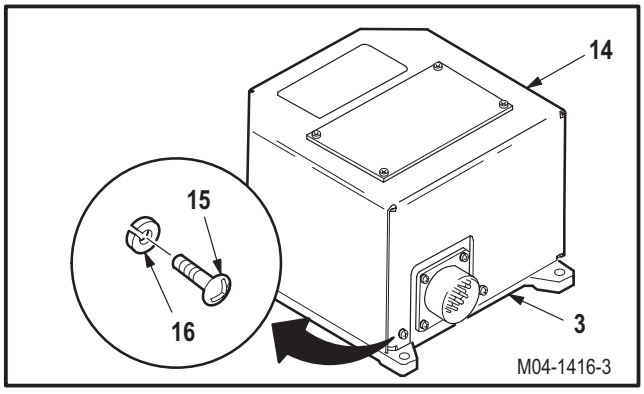


c. **Install cover (14) on control unit (3).**

(1) Position cover (14) on control unit (3).

(2) Install three screws (15) and lockwashers (16) on cover (14).

d. **Perform appropriate test.** Electronic Equipment Test Facility (E.E.T.F.) (TM 11-6625-3085-30).



END OF TASK

9.17. GENERATOR CONTROL UNIT (GCU) FIXED CAPACITOR REPLACEMENT (AVIM)

9.17.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.17.2. Initial Setup

Tools:

Electronic equipment maintenance kit (item 208, App H)
Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Heat protective gloves (item 155, App H)
Electric gun type heater (item 163, App H)
Precision oven (item 221, App H)
Adjustable air filtering respirator (item 262, App H)
25-watt electric soldering iron (item 332, App H)

Materials/Parts:

Adhesive (item 8, App F)
Alcohol (item 25, App F)
Brush (item 35, App F)
Cloth (item 52, App F)
Gloves (item 83, App F)
Insulating compound kit (item 97, App F)
Insulation sleeving (item 102, App F)
Solder (item 189, App F)
Tape (item 202, App F)

Personnel Required:

39B	ATE Operator/Maintainer
68X	Armament/Electrical System Repairer
68X3F	Armament/Electrical System Repairer/ Technical Inspector

References:

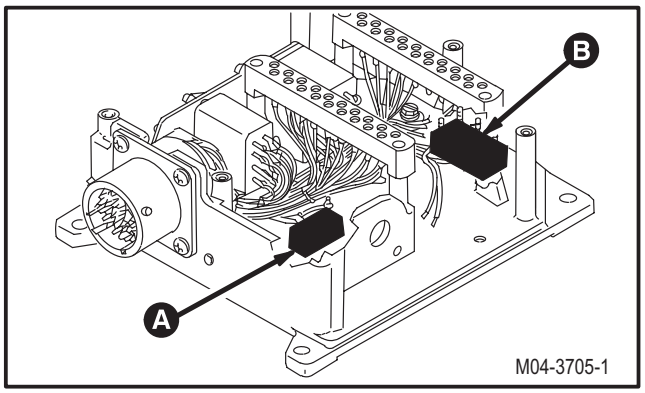
TM 11-6625-3085-30
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
9.15	Generator control unit (GCU) circuit card removed

NOTE

This task is typical for capacitors C20, C21, C22, and C23.



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9.17. GENERATOR CONTROL UNIT (GCU) FIXED CAPACITOR REPLACEMENT (AVIM) – continued

9.17.3. Removal

WARNING

- **Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.**
- **Discharge all capacitors by grounding prior to removal. Capacitors can hold an electrical charge and create a dangerous potential for electrical shock. If injury occurs, seek medical aid.**

CAUTION

Identify each capacitor lead during removal to ensure correct polarity during installation. Accidental polarity reversal will damage capacitor and/or other internal components of GCU.

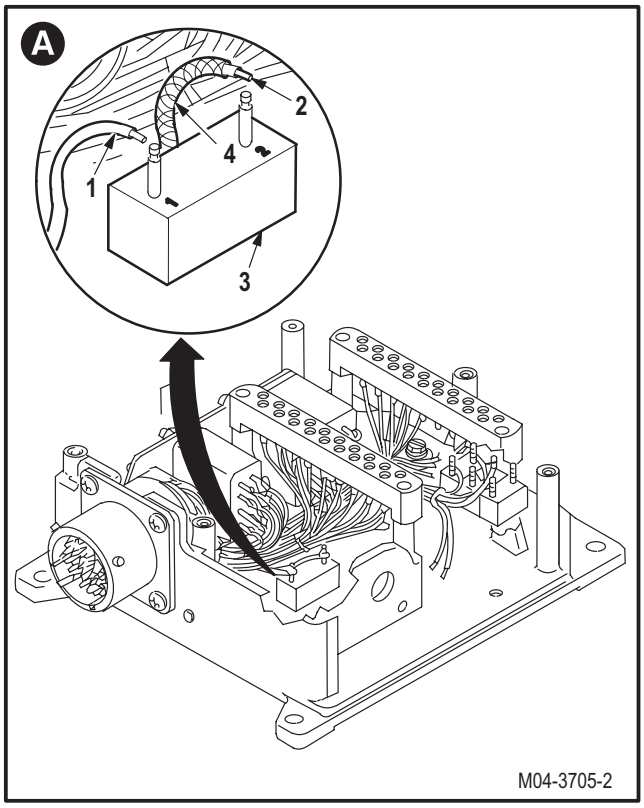
NOTE

If removing capacitor C23, perform step a.
If removing capacitors C20, C21, or C22, proceed to step b.

a. **Desolder lead (1) from terminal one and lead (2) from terminal two of capacitor C23 (3).**

(1) Slide sleeving (4) back from solder termination and remove coating from leads (1) and (2). Use brush (item 35, App F).

(2) Identify and desolder leads (1) and (2) from capacitor C23 (3). Use soldering iron (TM 55-1500-323-24).



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9.17. GENERATOR CONTROL UNIT (GCU) FIXED CAPACITOR REPLACEMENT (AVIM) – continued

b. **Remove coating from leads (5).** Use brush (item 35, App F).

c. **Desolder leads (5) from capacitor (6).**

(1) Identify and desolder leads (5) from capacitor C20, C21, or C22 (6). Use soldering iron (TM 55-1500-323-24).

d. **Remove conformal coating from generator control unit (7).**

(1) Reduce coating around capacitor C23 (3), C20, C21, or C22 (6). Use appropriate ball mills from electrical maintenance kit.

(2) Remove existing coating around capacitor C23 (3), C20, C21, or C22 (6). Use fine abrasive bullet wheel from electronic equipment maintenance kit.

WARNING

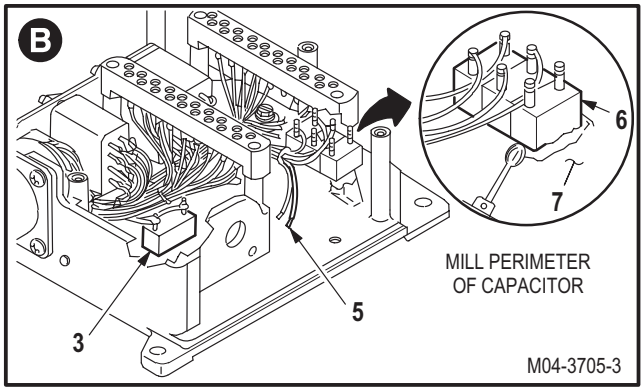
Do not place heater near flammable material or allow heater to contact skin: severe burns can result. Wear protective equipment. If injury occurs, seek medical aid.

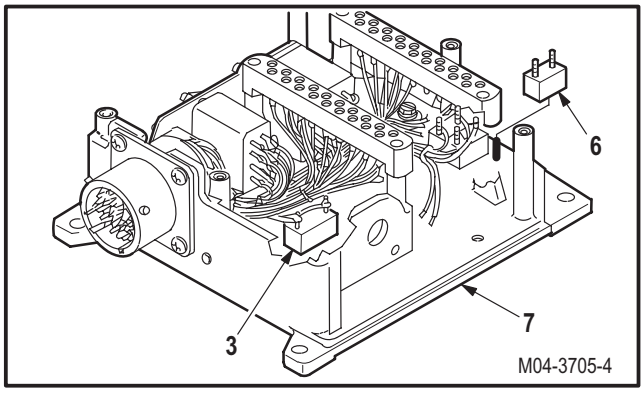
e. **Remove capacitor (3) or (6) from generator control unit (7).**

(1) Weaken bond between capacitor C23 (3), C20, C21, or C22 (6), and control unit (7). Use heater.

(2) Pry between capacitor (3) or (6) and control unit (7). Use non-metallic tool from electronic equipment maintenance kit.

(3) Gently lift capacitor (3) or (6) from control unit (7).





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9.17. GENERATOR CONTROL UNIT (GCU) FIXED CAPACITOR REPLACEMENT (AVIM) – continued

9.17.4. Cleaning

a. **Remove residual adhesive from capacitor mounting area.** Use alcohol (item 25, App F) and cloth (item 52, App F).

9.17.5. Inspection

a. **Check for removal of conformal coating and adhesive.** Use 10X stereo microscope from electronic equipment maintenance kit.

b. **Check capacitor mounting surface for damage.**

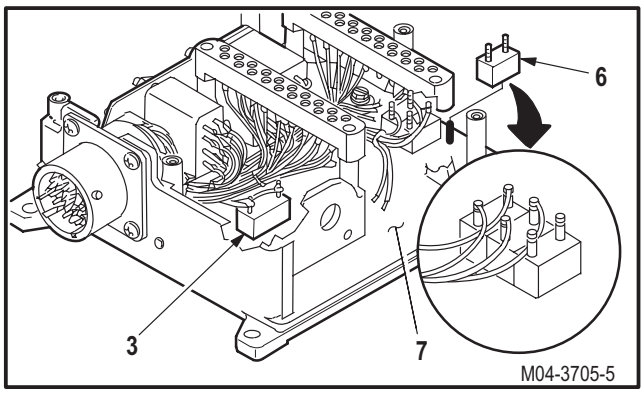
c. **Check capacitor mounting surface for corrosion** (para 1.49)**.**

9.17.6. Installation

a. **Bond capacitor (3) or (6) to control unit (7).**

(1) Apply adhesive to capacitor (3) or (6). Use adhesive (item 8, App F).

(2) Bond capacitor (3) or (6) to mounting surface of control unit (7).



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9.17. GENERATOR CONTROL UNIT (GCU) FIXED CAPACITOR REPLACEMENT (AVIM) – continued

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

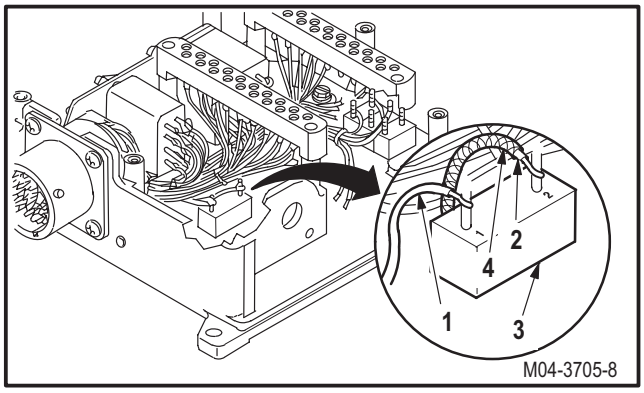
NOTE

If installing capacitor C23, perform step b.
If installing capacitors C20, C21, or C22, proceed to step c.

b. **Solder identified leads (1) and (2) to capacitor C23 (3).**

(1) Install sleeving (4) on identified lead (2). Use insulation sleeving (item 102, App F)

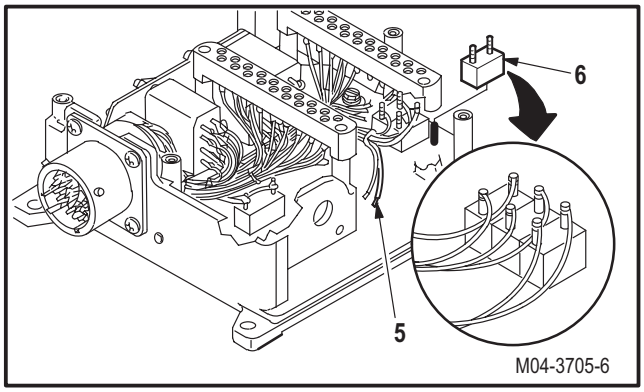
(2) Solder identified leads (1) and (2) to capacitor (3). Use solder (item 189, App F) and soldering iron (TM 55-1500-323-24).



c. **Solder identified leads (5) to capacitor (6).**

(1) Solder identified leads (5) to capacitor C20, C21, or C22 (6). Use solder (item 189, App F) and soldering iron (TM 55-1500-323-24).

d. **Perform appropriate test.** Electronic Equipment Test Facility (E.E.T.F) (TM 11-6625-3085-30).



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9.17. GENERATOR CONTROL UNIT (GCU) FIXED CAPACITOR REPLACEMENT (AVIM) – continued

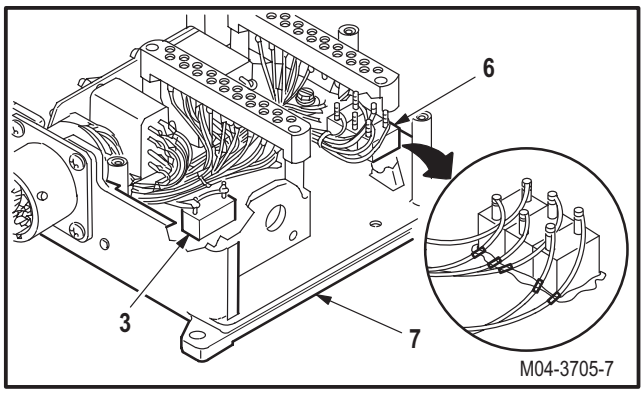
NOTE

- The container volume used for mixing should be at least five times larger than the volume of contents.
- Application of primer coat should overlap surroundings coatings.

e. **Apply conformal coating to capacitor (3) or (6) and control unit (7).**

(1) Mix insulation compound following manufacturer's instructions on container.

(2) Apply a thin, even primer coat of insulation compound over capacitor C23 (3), C20, C21, or C22 (6), and control unit (7). Use insulating compound kit (item 97, App F), brush (item 35, App F), and gloves (item 83, App F).



CAUTION

Any attempt to reduce air dry time will cause bubbles and micro voids to form in coating.

(3) Air dry coating at room temperature **30 MINUTES**.

(4) Apply a second coat of insulation compound to capacitor (3) or (6) and control unit (7). Use insulating compound kit (item 97, App F), brush (item 35, App F), and gloves (item 83, App F).

(5) Air dry coating at room temperature **30 MINUTES**.

GO TO NEXT PAGE

9.17. GENERATOR CONTROL UNIT (GCU) FIXED CAPACITOR REPLACEMENT (AVIM) – continued

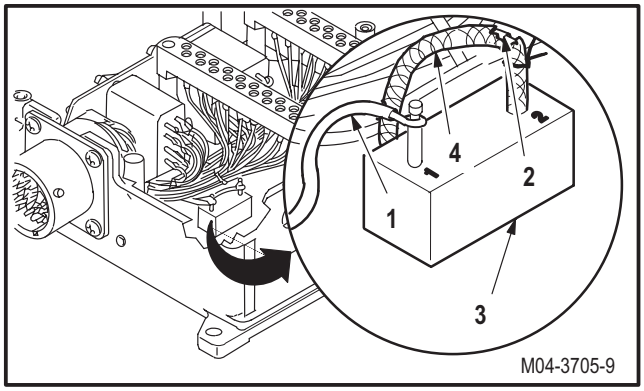
f. **Secure sleeving on lead (2) of capacitor C23 (3).**

(1) Slide sleeving (4) over solder termination and secure with lacing tape. Use insulation sleeving (item 102, App F) and tape (item 202, App F).

g. **Oven cure 1 HOUR at 167 °F (75 °C).** Use oven.

h. **Inspect (QA).**

i. **Install generator control unit (GCU) circuit card** (para 9.16)**.**



END OF TASK

9.18. GENERATOR CONTACTOR RELAY NO. 1 OR NO. 2 REMOVAL/INSTALLATION

9.18.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.18.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Ohmmeter (item 218, App H)

References:

TM 1-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

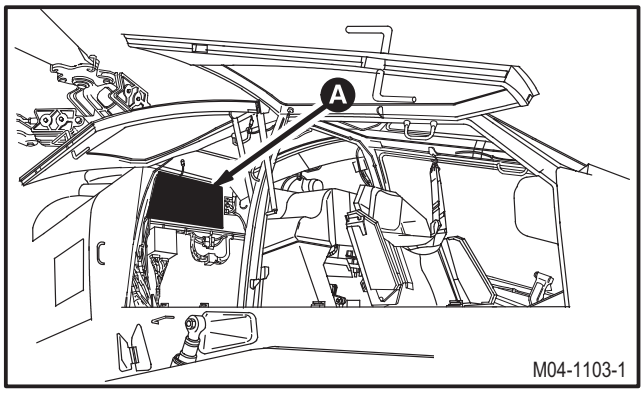
Ref	Condition
1.57	Helicopter safed
9.9	Electrical power distribution box cover removed

Personnel Required:

68X	Armament/Electrical System Repairer
68X3F	Armament/Electrical System Repairer/ Technical Inspector

NOTE

This task is typical for No. 1 or No. 2 generator contactor relays.



9.18.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

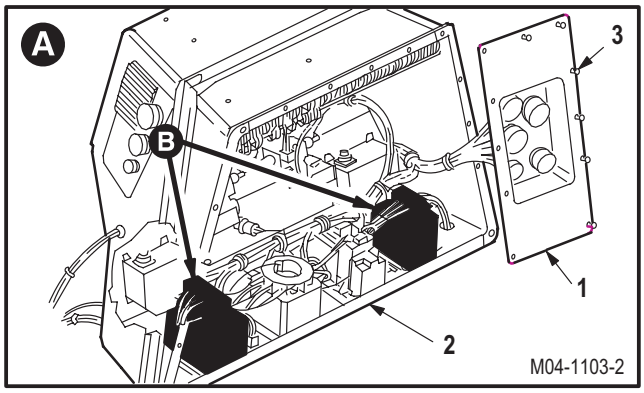
CAUTION

Do not lean or pull on connector panel once removed from electrical power distribution box. Damage to connector panel wiring could result if excessive stress is applied.

b. **Remove electrical power distribution box connector panel (1) from electrical power distribution box (2).**

(1) Unlock seven turnlock fasteners (3).

(2) Move panel (1) gently to one side.



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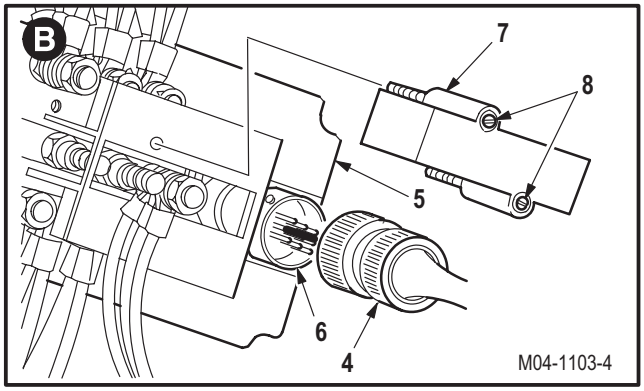
9.18. GENERATOR CONTACTOR RELAY NO. 1 OR NO. 2 REMOVAL/INSTALLATION – continued

c. **Detach connector P5 (4) from No. 1 contactor relay (5) or connector P11 (4) from No. 2 contactor relay (5).**

(1) Detach connector P5 (4) from receptacle (K1)J1 (6) or connector P11 (4) from receptacle (K2)J1 (6).



d. **Remove upper terminal shield (7) from relay (5).**

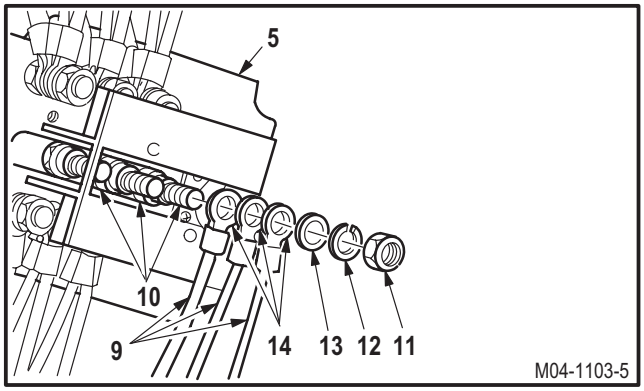
(1) Loosen two captive screws (8).

(2) Remove shield (7).

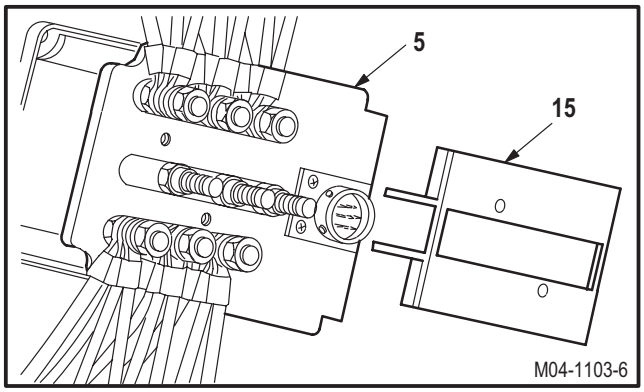
e. **Detach wires (9) from terminal studs A2, B2, and C2 (10).**

(1) Identify wires (9).

(2) Remove three nuts (11), lockwashers (12), flat washers (13), and seven terminal lugs (14) from terminal studs (10).



f. **Remove lower terminal shield (15) from relay (5).**



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9.18. GENERATOR CONTACTOR RELAY NO. 1 OR NO. 2 REMOVAL/INSTALLATION – continued

g. **Detach wires (16) from terminal studs A1, B1, and C1 (17).**

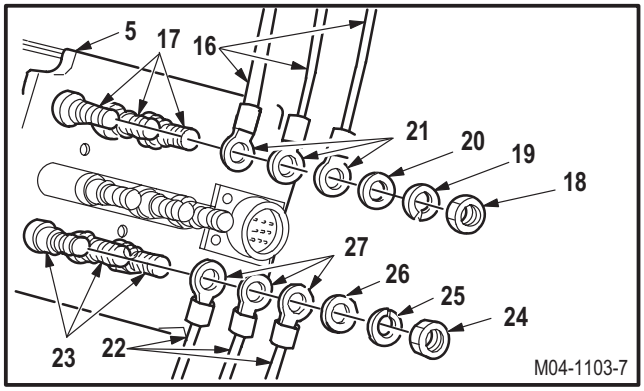
(1) Identify wires (16).

(2) Remove three nuts (18), lockwashers (19), flat washers (20), and nine terminal lugs (21) from three terminal studs (17).

h. **Detach wires (22) from terminal studs A3, B3, and C3 (23).**

(1) Identify wires (22).

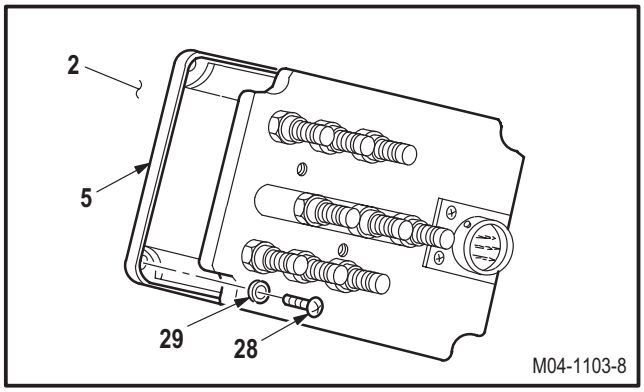
(2) Remove three nuts (24), lockwashers (25), flat washers (26), and nine terminal lugs (27) from three terminal studs (23).



i. **Remove relay (5) from box (2).**

(1) Remove four screws (28) and washers (29).

(2) Remove relay (5).



9.18.4. Cleaning

a. **Clean removed and attaching parts or surfaces** (para 1.47)**.**

9.18.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check mounting area of relay for stripped or damaged threads.** Damage not to exceed 50 percent of one thread.

c. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (para 9.1)**.**

d. **Check connector for cracks, broken connections, bent pins, or damaged threads** (para 9.1)**.**

e. **Check removed and attaching parts for corrosion** (para 1.49)**.**

GO TO NEXT PAGE

9.18. GENERATOR CONTACTOR RELAY NO. 1 OR NO. 2 REMOVAL/INSTALLATION – continued

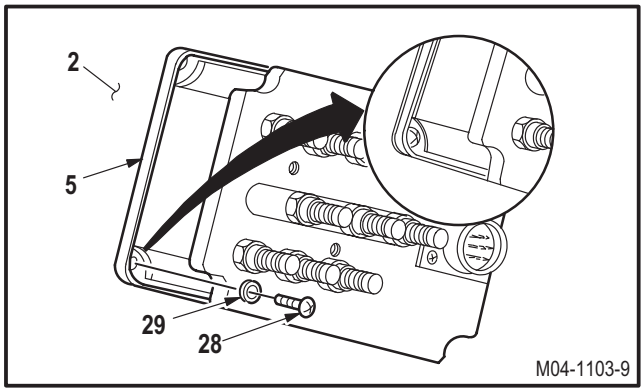
9.18.6. Installation

a. **Install relay (5) in box (2).**

(1) Install four screws (28) through washers (29) and relay (5) in box (2).

b. **Perform electrical bond check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

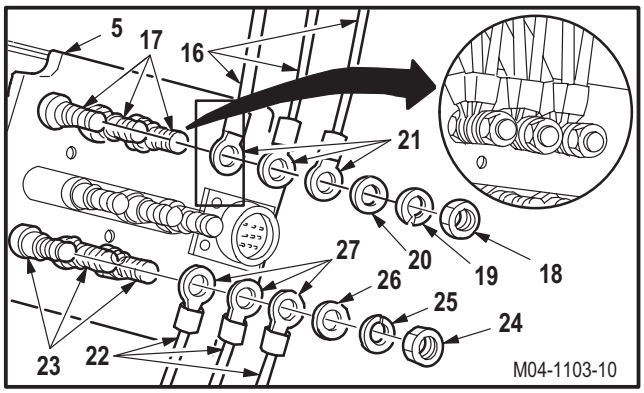


c. **Attach wires (22) to terminal studs A3, B3, and C3 (23).**

(1) Install identified terminal lugs (27), three flat washers (26), lockwashers (25), and nuts (24) on terminal studs (23).

d. **Attach wires (16) to terminal studs A1, B1, and C1 (17).**

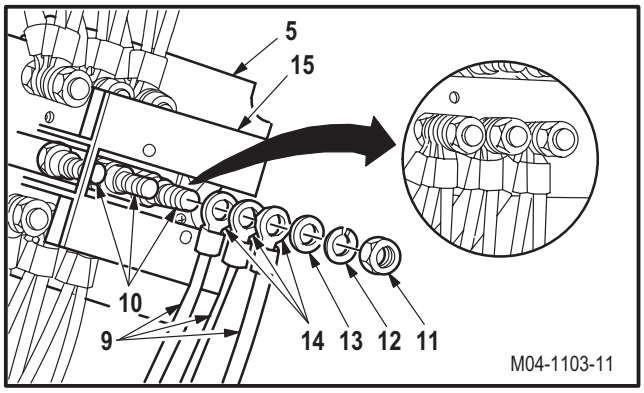
(1) Install identified terminal lugs (21), three flat washers (20), lockwashers (19), and nuts (18) on terminal studs (17).



e. **Install shield (15) in relay (5).**

f. **Attach wires (9) to terminal studs A2, B2, and C2 (10).**

(1) Install identified terminal lugs (14), three flat washers (13), lockwashers (12), and nuts (11) on terminal studs (10).



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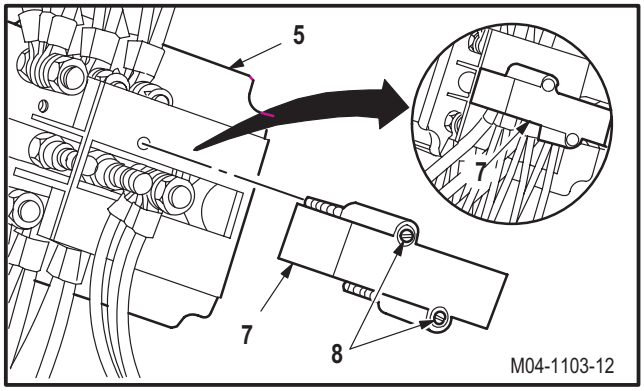
9.18. GENERATOR CONTACTOR RELAY NO. 1 OR NO. 2 REMOVAL/INSTALLATION – continued

g. **Install upper terminal shield (7) on relay (5).**

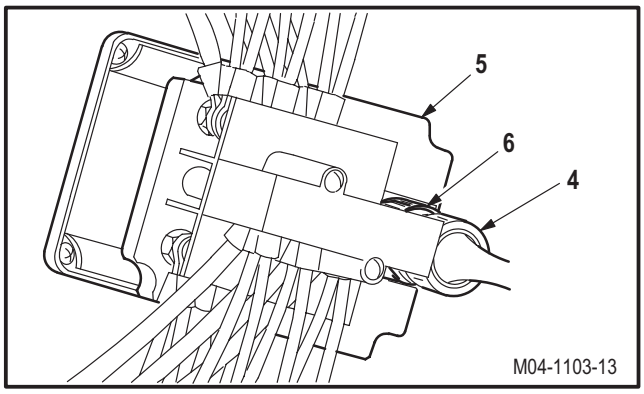
(1) Tighten two captive screws (8).



h. **Attach connector P5 (4) to No. 1 relay (5) or connector P11 (4) to No. 2 relay (5).**

(1) Attach connector P5 (4) to receptacle (K1)J1 (6) or connector P11 (4) to receptacle (K2)J1 (6).

i. **Inspect (QA).**



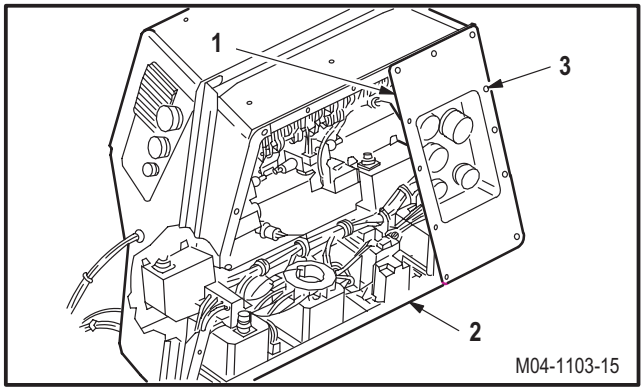
j. **Install panel (1) on box (2).**

(1) Position panel (1) on box (2).

(2) Lock seven quarter turn fasteners (3).

k. **Install electrical power distribution box cover** (para 9.9)**.**

l. **Perform AC power generation maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

9.19. EMERGENCY BUS TERMINAL BOARD REPLACEMENT

9.19.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.19.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Ohmmeter (item 218, App H)

References:

TM 1-1520-238-T
TM 55-1500-323-24

Personnel Required:

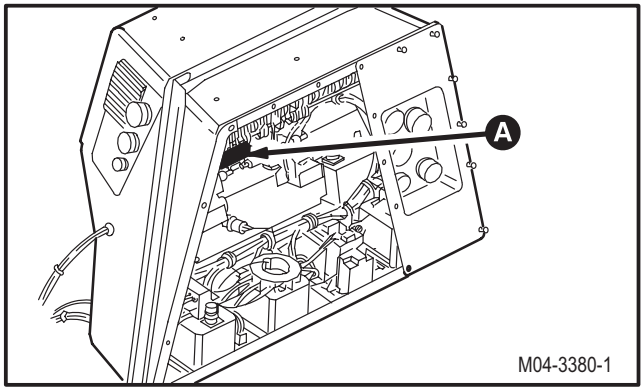
68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
9.9	Electrical power distribution box cover removed

9.19.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**



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9.19. EMERGENCY BUS TERMINAL BOARD REPLACEMENT – continued

b. **Remove terminal board cover (1) from emergency bus terminal board (2).**

(1) Loosen two nuts (3).

(2) Remove cover (1).

c. **Remove wires (4) from board (2).**

(1) Identify wires (4).

(2) Remove four nuts (5) and washers (6) from studs (7).

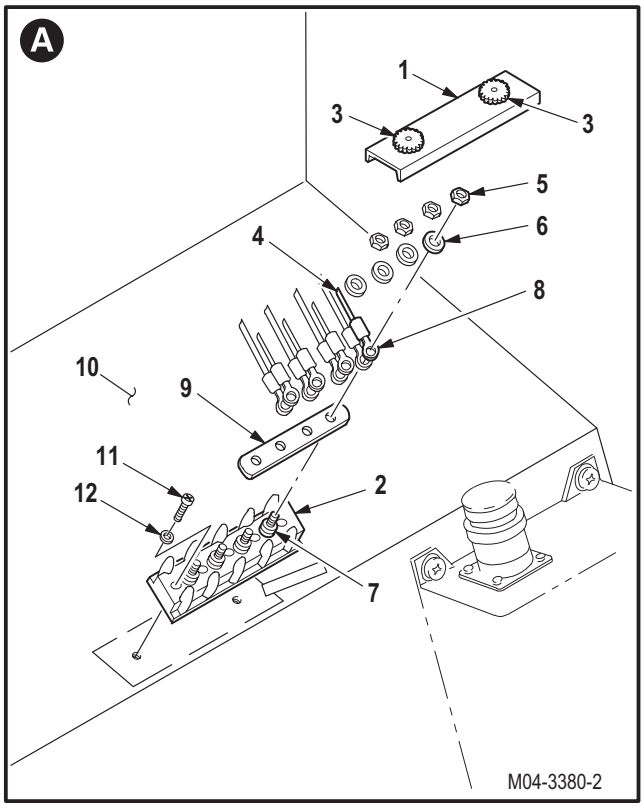
(3) Remove wire lugs (8) from four studs (7).

d. **Remove bus bar (9) from board (2).**

e. **Remove board (2) from electrical power distribution box (10).**

(1) Remove two screws (11) and washers (12).

(2) Remove and discard board (2).



9.19.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.19.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check for damaged wires and terminal lugs** (para 9.1)**.**

c. **Check nutplates on power distribution box for stripped or damaged threads** (para 9.1)**.**

d. **Check removed and attaching parts for corrosion** (para 1.49)**.**

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9.19. EMERGENCY BUS TERMINAL BOARD REPLACEMENT – continued

9.19.6. Installation

a. **Install new board (2) on box (10).**

(1) Position board (2) on box (10).

(2) Install two screws (11) through washers (12) and board (2) in box (10).

b. **Attach wires (4) to board (2).**

(1) Position bus bar (9) on studs (7).

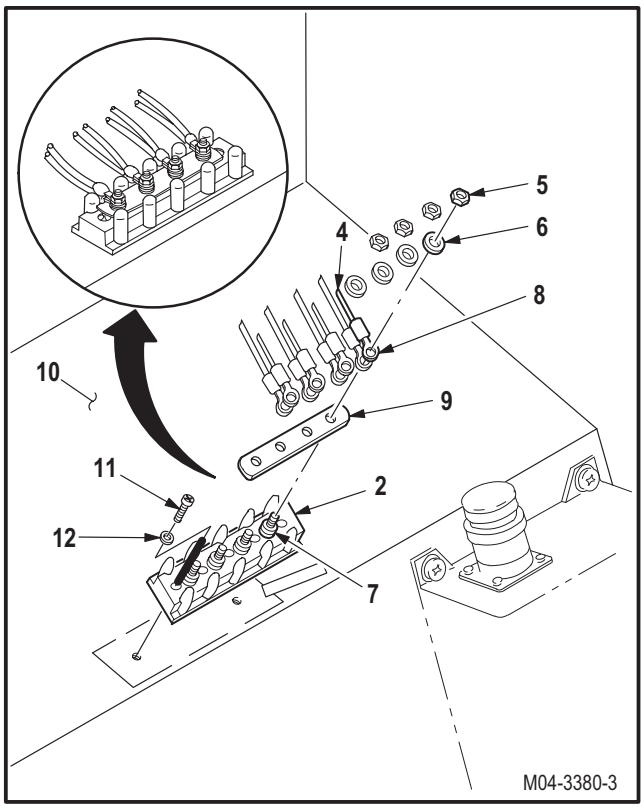
(2) Install lugs (8) on four studs (7).

(3) Install four washers (6) and nuts (5) on studs (7).

c. **Perform electrical bond check** (TM 55-1500-323-24).

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

d. **Inspect (QA).**

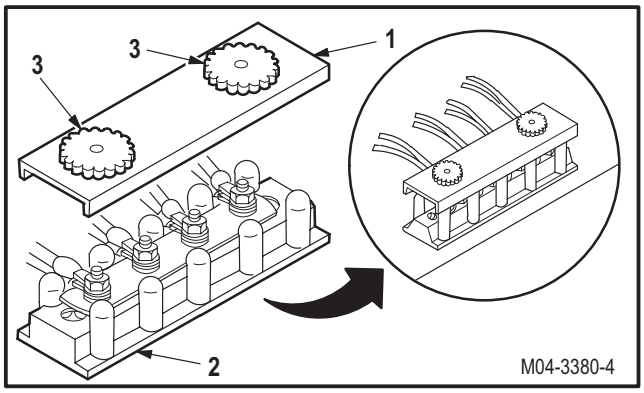


e. **Install cover (1) on board (2).**

(1) Position cover (1) on board (2).

(2) Tighten two nuts (3).

f. **Perform DC power generation maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

9.20. DC BUS ISOLATION DIODE REMOVAL/INSTALLATION

9.20.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.20.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
9/16 x 1/4-inch drive open end box socket wrench crowfoot attachment (item 85, App H)
Ohmmeter (item 218, App H)
30 - 150 inch-pound 1/4-inch drive click type torque wrench (item 435, App H)

References:

TM 1-1520-238-T
TM 55-1500-323-24

Materials/Parts:

Silicone compound (item 185, App F)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
9.9	Electrical power distribution box cover removed

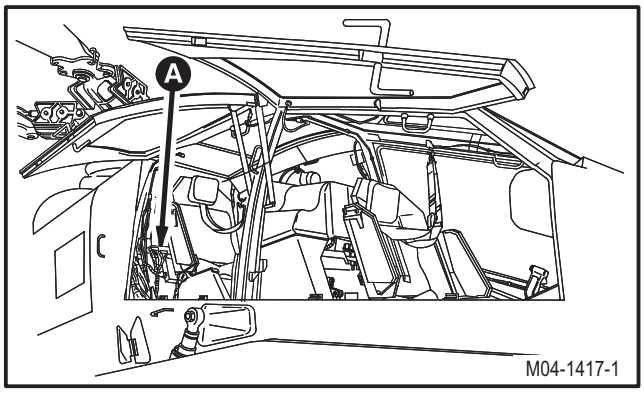
9.20.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b On pilot aft circuit breaker panel, open six POWER circuit breakers.

NOTE

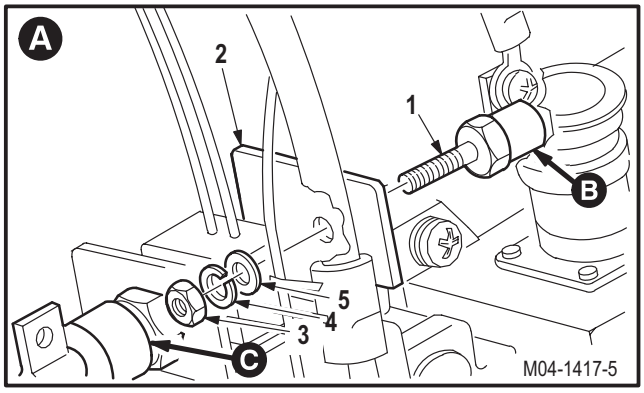
The following step is typical for bus isolation diodes CR1, CR2, CR3, and CR4.



c. **Remove bus isolation diode (1) from bus conductor (2).**

(1) Remove nut (3), lockwasher (4), and flat washer (5) from diode (1).

(2) Remove diode (1).



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9.20. DC BUS ISOLATION DIODE REMOVAL/INSTALLATION – continued

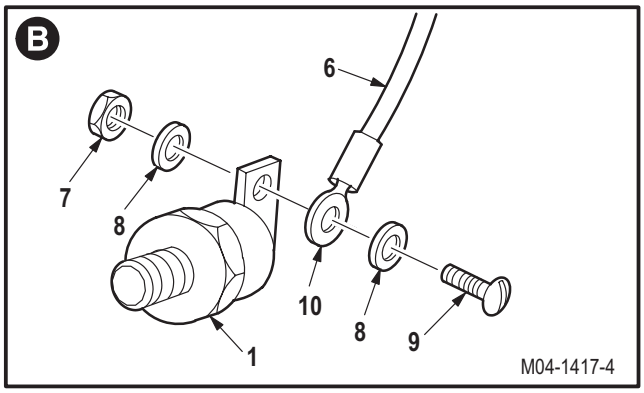
NOTE

The following step is typical for bus isolation diodes CR1 and CR2.

d. **Detach wire (6) from diode (1).**

(1) Remove nut (7) and washer (8) from screw (9).

(2) Remove screw (9), washer (8), and terminal lug (10) from diode (1).



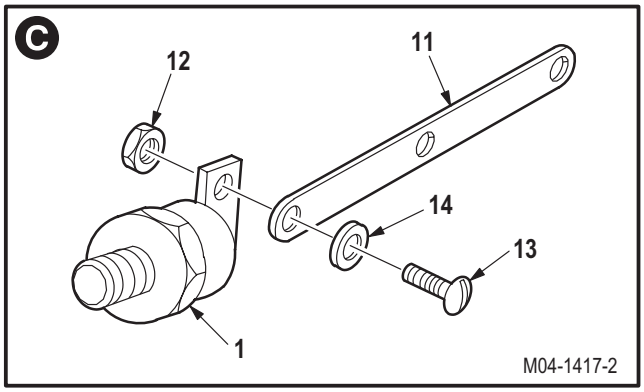
NOTE

The following step is typical for bus isolation diodes CR3 and CR4.

e. **Remove bus bar W3 (11) from diode (1).**

(1) Remove nut (12) from screw (13).

(2) Remove screw (13), washer (14), and bus bar (11) from diode (1).



9.20.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.20.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (para 9.1)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

GO TO NEXT PAGE

9.20. DC BUS ISOLATION DIODE REMOVAL/INSTALLATION – continued

9.20.6. Installation

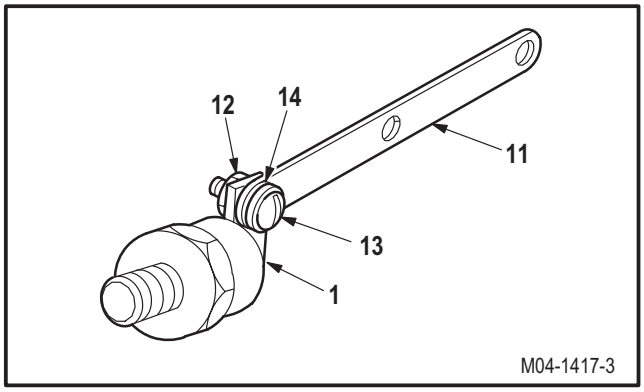
NOTE

The following step is typical for bus isolation diodes CR3 and CR4.

a. **Attach bus bar W3 (11) to diode (1).**

(1) Install screw (13) through washer (14), bus bar (11), and diode (1).

(2) Install nut (12) on screw (13).



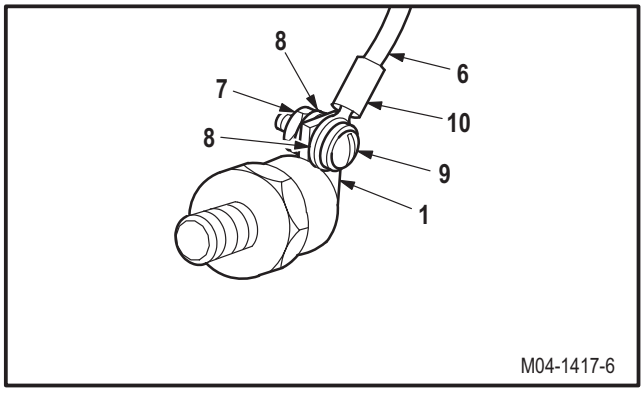
NOTE

The following step is typical for bus isolation diodes CR1 and CR2.

b. **Attach wire (6) to diode (1).**

(1) Install screw (9) through washer (8), terminal lug (10), and diode (1).

(2) Install washer (8) and nut (7) on screw (9).



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9.20. DC BUS ISOLATION DIODE REMOVAL/INSTALLATION – continued

NOTE

The following step is typical for bus isolation diodes CR1, CR2, CR3, and CR4.

c. **Install diode (1) on conductor (2).** Torque nut (3) to **92 INCH-POUNDS**.

(1) Apply a thin coat of silicone compound to diode mounting surface. Use silicone compound (item 185, App F).

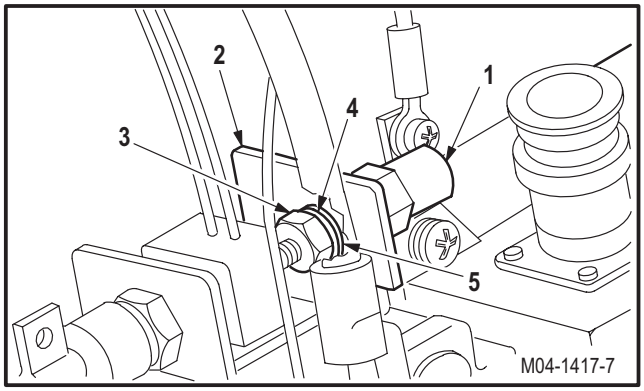
(2) Position diode (1) on conductor (2).

(3) Install flat washer (5), lockwasher (4), and nut (3).

(4) Torque nut (3) to **92 INCH-POUNDS**. Use crowfoot and torque wrench.

(5) Wait **20 to 30 MINUTES**.

(6) Retorque nut (3) to **92 INCH-POUNDS**. Use crowfoot and torque wrench.



d. **Perform electrical bond check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

e. **Inspect (QA).**

f. **Install electrical power distribution box cover** (para 9.9)**.**

g. **Perform DC power generation maintenance operational check** (TM 1-1520-238-T)**.**

END OF TASK

9.21. DC BUS TIE CONTACTOR REMOVAL/INSTALLATION

9.21.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.21.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Ohmmeter (item 218, App H)

References:

TM 1-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

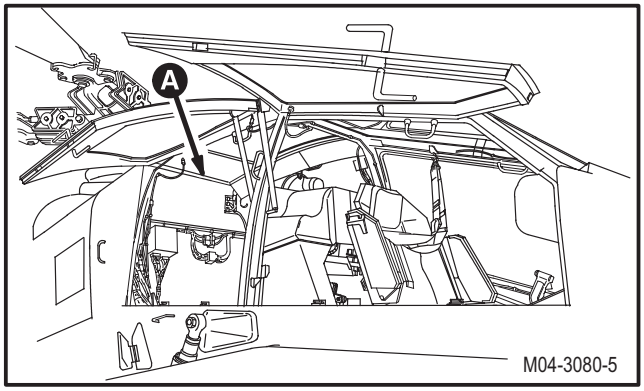
Ref	Condition
1.57	Helicopter safed
9.9	Electrical power distribution box cover removed

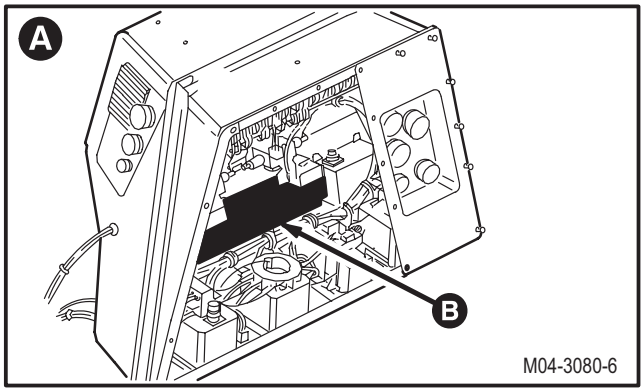
Personnel Required:

68X	Armament/Electrical System Repairer
68X3F	Armament/Electrical System Repairer/ Technical Inspector

9.21.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**





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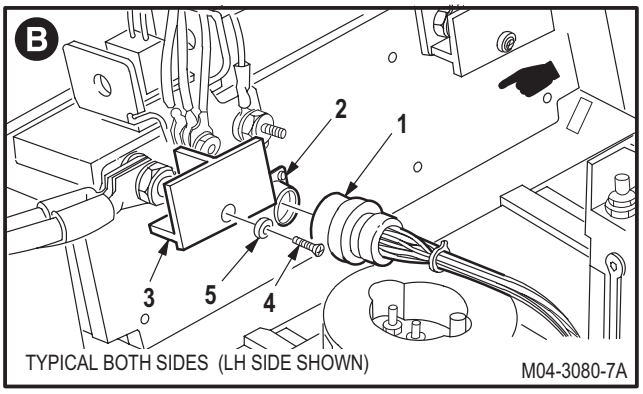
9.21. DC BUS TIE CONTACTOR REMOVAL/INSTALLATION – continued

b. **Detach connector (A402)P14 (1) from receptacle (A4)J1 (2).**

c. **Remove two terminal shields (3).**

(1) Remove two screws (4), washers (5), and shields (3).



d. **Remove two bus conductors (6).**

(1) Remove two nuts (7) and washers (8).

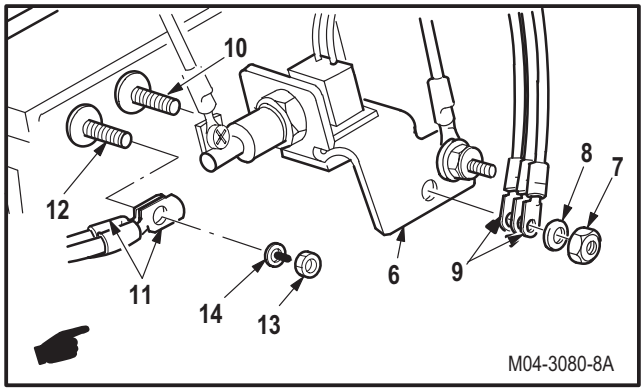
(2) Identify and detach wires (9) from studs (10).

(3) Remove conductors (6) from studs (10).

e. **Detach wires (11) from studs (12).**

(1) Remove two nuts (13) and washers (14) from studs (12).

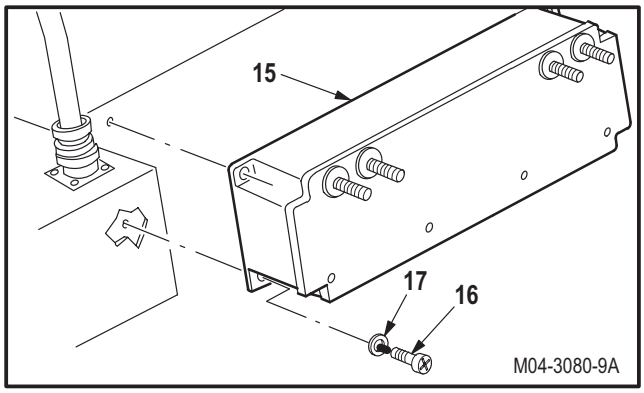
(2) Identify and detach wires (11) from studs (12).



f. **Remove DC bus tie contactor (15).**

(1) Remove four screws (16) and washers (17).

(2) Remove contactor (15).



9.21.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.21.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check removed and attaching parts for corrosion** (para 1.49)**.**

GO TO NEXT PAGE

9.21. DC BUS TIE CONTACTOR REMOVAL/INSTALLATION – continued

9.21.6. Installation

a. **Install contactor (15).**

(1) Aline contactor (15) with mounting holes.

(2) Install four screws (16) and washers (17).

b. **Perform electrical bond check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

c. **Attach wires (11) to two studs (12).**

(1) Install wires (11), washers (14), and nuts (13) on studs (12).

d. **Install two conductors (6).**

(1) Install two conductors (6) on studs (10).

(2) Install wires (9), washers (8), and nuts (7) on studs (10).

e. **Install two shields (3).**

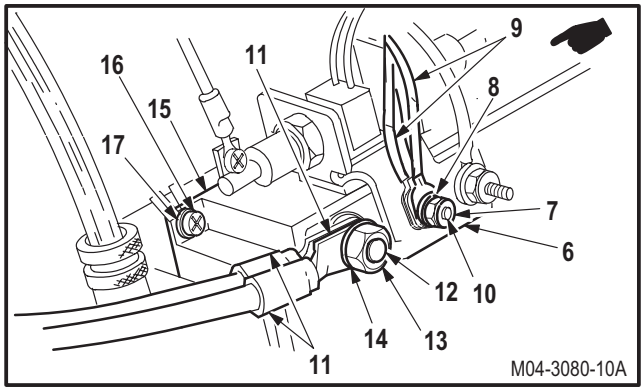
(1) Install screws (4) and washers (5) on shields (3).

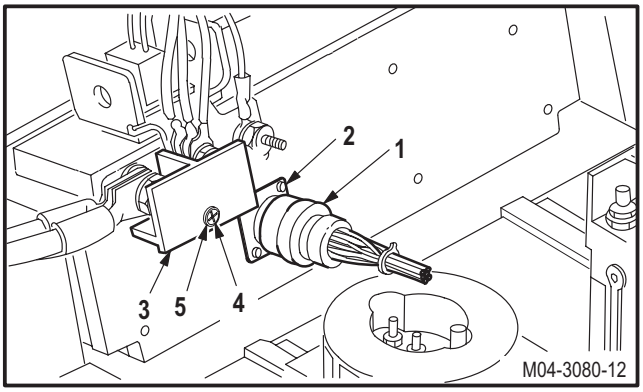
f. **Attach connector (A402)P14 (1) to receptacle (A4)J1 (2).**

g. **Inspect (QA).**

h. **Install electrical power distribution box cover** (para 9.9)**.**

i. **Perform DC electrical power generation maintenance operational check** (TM 1-1520-238-T)**.**





END OF TASK

9.22. DC BUS TIE TERMINAL JUNCTION BOX REPLACEMENT

9.22.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.22.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Ohmmeter (item 218, App H)
0 - 30 inch-pound 1/4-inch drive dial indicator torque wrench (item 445, App H)

References:

TM 1-1520-238-T
TM 55-1500-323-24

Materials/Parts:

Silicone compound (item 185, App F)

Personnel Required:

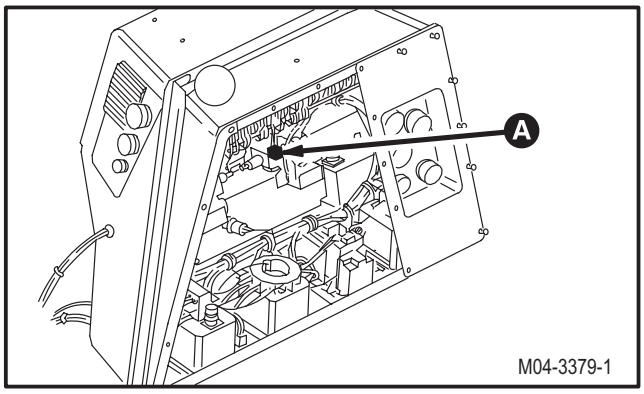
68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
9.9	Electrical power distribution box cover removed
9.21	DC bus tie conductor removed

NOTE

This task is typical for left (TB1-3) or right (TB1-2) terminal junction boxes.



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9.22. DC BUS TIE TERMINAL JUNCTION BOX REPLACEMENT – continued

9.22.3. Removal

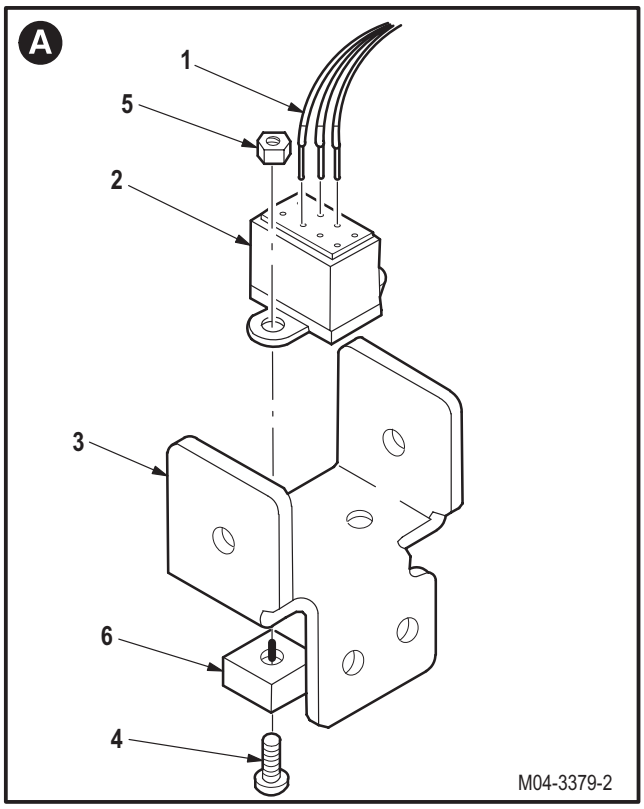
a. **Identify and depin wires (1) from terminal junction box (2)** (TM 55-1500-323-24)**.**

b. **Remove box (2) from bus conductor (3).**

(1) Hold two screws (4). Remove two nuts (5).

(2) Remove and discard box (2).

(3) Remove two screws (4) and insulators (6).



9.22.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.22.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (para 9.1)**.**

c. **Check conductor for cracks** (para 9.1)**.**

d. **Check conductor for arcing** (para 9.1)**.**

e. **Check removed and attaching parts for corrosion** (para 1.49)**.**

GO TO NEXT PAGE

9.22. DC BUS TIE TERMINAL JUNCTION BOX REPLACEMENT – continued

9.22.6. Installation

a. **Install new box (2) on conductor (3).** Torque two nuts (5) to **22 INCH-POUNDS**.

(1) Apply silicone compound between junction box (2) and conductor assembly (3). Use silicone compound (item 185, App F).

(2) Aline holes of box (2) and conductor (3).

(3) Install two screws (4) through two insulators (6), conductor (3), and box (2).

(4) Install two nuts (5). Torque two nuts (5) to **22 INCH-POUNDS**. Use torque wrench.

(5) Wait **20 to 30 MINUTES**.

(6) Retorque two nuts (5) to **22 INCH-POUNDS**. Use torque wrench.

b. **Pin identified wires (1) in junction box (2)** (TM 55-1500-323-24)**.**

c. **Perform electrical bond check** (TM 55-1500-323-24)**.**

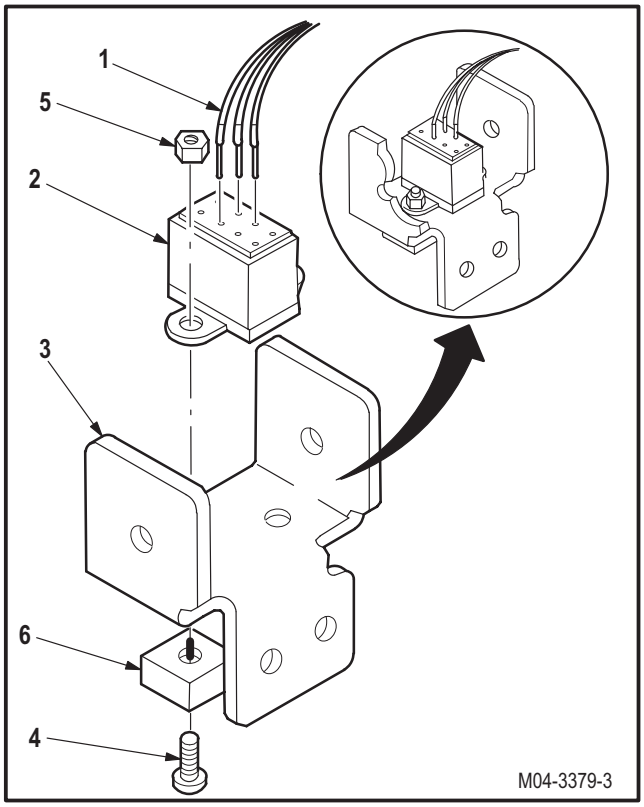
(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

d. **Inspect (QA).**

e. **Install DC bus tie conductor** (para 9.21)**.**

f. **Install electrical power distribution box cover** (para 9.9)**.**

g. **Perform DC power generation maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

9.23. EXTERNAL POWER CONTACTOR RELAY REMOVAL/INSTALLATION

9.23.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.23.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Ohmmeter (item 218, App H)

References:

TM 1-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

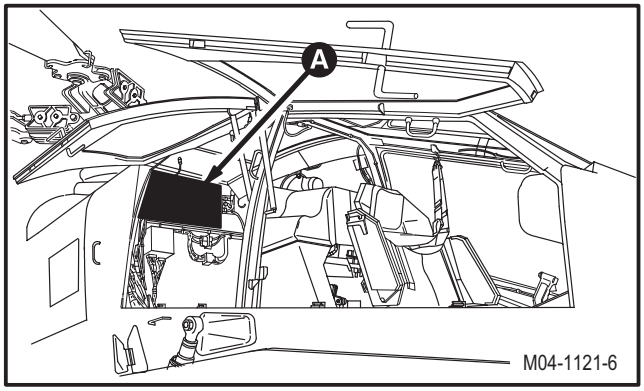
Ref	Condition
1.57	Helicopter safed
9.9	Electrical power distribution box cover removed

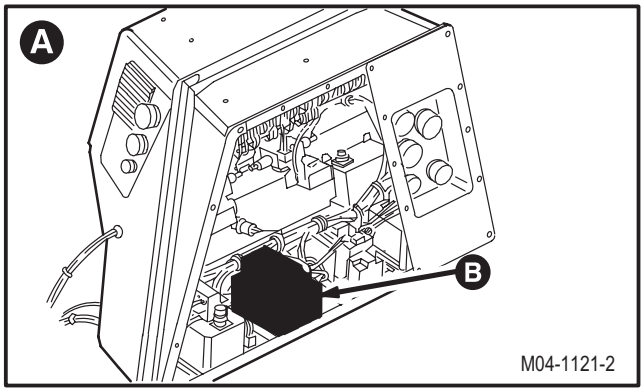
Personnel Required:

68X	Armament/Electrical System Repairer
68X3F	Armament/Electrical System Repairer/ Technical Inspector

9.23.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**





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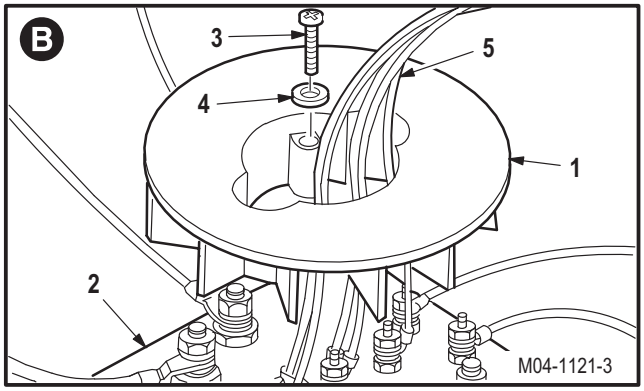
9.23. EXTERNAL POWER CONTACTOR RELAY REMOVAL/INSTALLATION – continued

b. **Remove terminal shield (1) from external power relay (2).**

(1) Remove two screws (3) and lockwashers (4) from shield (1).

(2) Slide shield (1) away from relay (2).

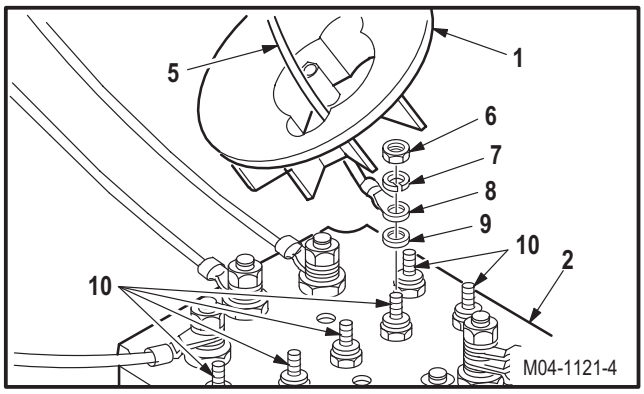


c. **Detach wires (5) from relay (2).**

(1) Identify wires (5).

(2) Remove seven nuts (6), lockwashers (7), terminal lugs (8), and flat washers (9) from terminal studs A1, A2, A3, B2, B3, X1, and X2 (10).

(3) Remove shield (1) from wires (5).



d. **Detach wires (11) from relay (2).**

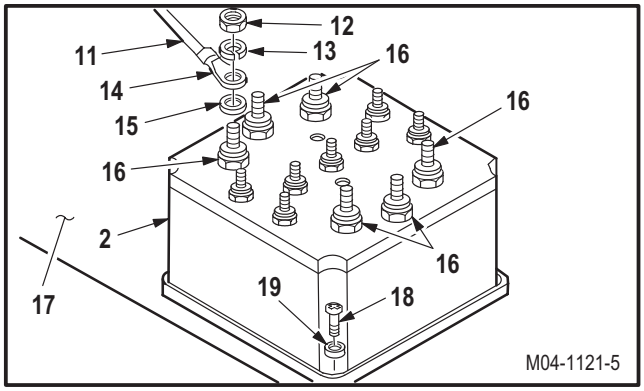
(1) Identify wires (11).

(2) Remove six nuts (12), lockwashers (13), terminal lugs (14), and flat washers (15) from terminal studs L1, L2, L3, T1, T2, and T3 (16).

e. **Remove relay (2) from power distribution box (17).**

(1) Remove four screws (17) and washers (18).

(2) Remove relay (2).



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9.23. EXTERNAL POWER CONTACTOR RELAY REMOVAL/INSTALLATION – continued

9.23.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47).

9.23.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1).

b. **Check mounting area of relay for stripped or damaged threads** (para 9.1).

c. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (para 9.1).

d. **Check removed and attaching parts for corrosion** (para 1.49).

9.23.6. Installation

a. **Install new relay (2).**

(1) Position relay (2) on mating surface (17).

(2) Install four screws (18) and washers (19).

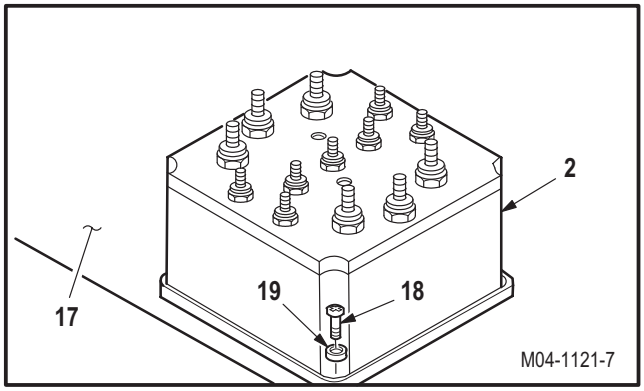
b. **Perform electrical bond check** (TM 55-1500-323-24).

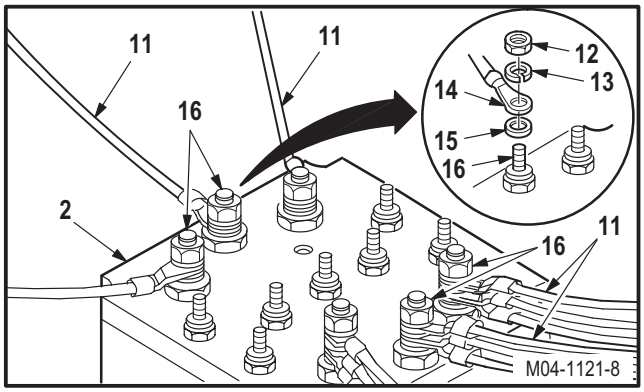
(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

c. **Attach wires (11) to relay (2).**

(1) Position identified terminal lugs (14) and flat washers (15) on studs L1, L2, L3, T1, T2, and T3 (16).

(2) Install six lockwashers (13) and nuts (12) on studs (16).





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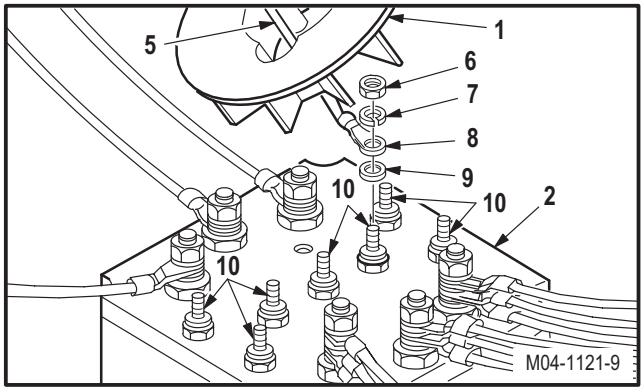
9.23. EXTERNAL POWER CONTACTOR RELAY REMOVAL/INSTALLATION – continued

d. **Attach wires (5) to relay (2).**

(1) Pass identified wires (5) through center of shield (1).

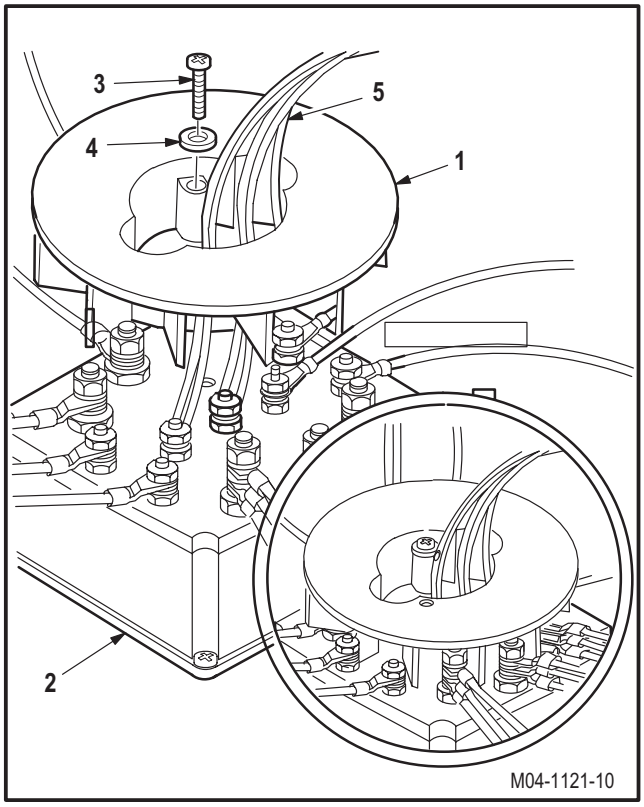
(2) Install seven flat washers (9), identified terminal lugs (8), lockwashers (7), and nuts (6) on studs A1, A2, A3, B2, B3, X1, and X2 (10).



e. **Install shield (1) on relay (2).**

(1) Position shield (1) on relay (2).

(2) Install two screws (3) and lockwashers (4).



f. **Inspect (QA).**

g. **Install electrical power distribution box cover** (para 9.9)**.**

h. **Perform external power and ground service utility receptacle maintenance operational check** (TM 1-1520-238-T)**.**

END OF TASK

9.24. ELECTRICAL POWER DISTRIBUTION BOX POWER TRANSFORMER T1 OR T2 REPLACEMENT (T701-GE-701)

9.24.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.24.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Ohmmeter (item 218, App H)

References:

TM 1-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

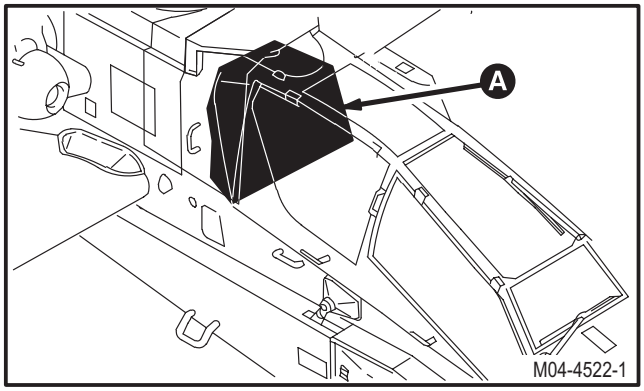
Ref	Condition
1.57	Helicopter safed
9.9	Electrical power distribution box cover removed

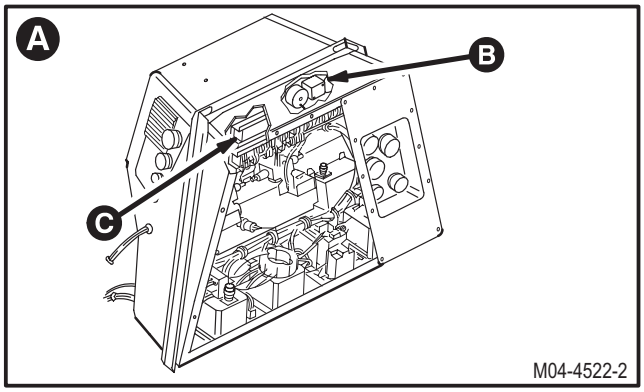
Personnel Required:

68X	Armament/Electrical System Repairer
68X3F	Armament/Electrical System Repairer/ Technical Inspector

NOTE

- This task is typical for replacement of transformer T1 or T2.
- This task applies to helicopters equipped with T700-GE-701 engines.





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9.24. ELECTRICAL POWER DISTRIBUTION BOX POWER TRANSFORMER T1 OR T2 REPLACEMENT (T701-GE-701) – continued

9.24.3. Removal

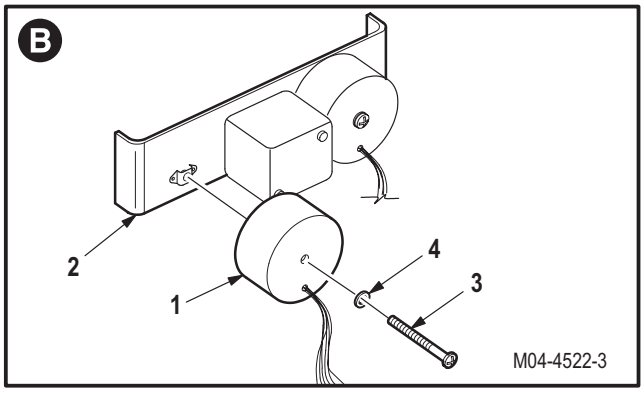
a. **Remove transformer (1) from support (2).**

(1) Remove screw (3) and washer (4).

(2) Remove transformer (1).

NOTE

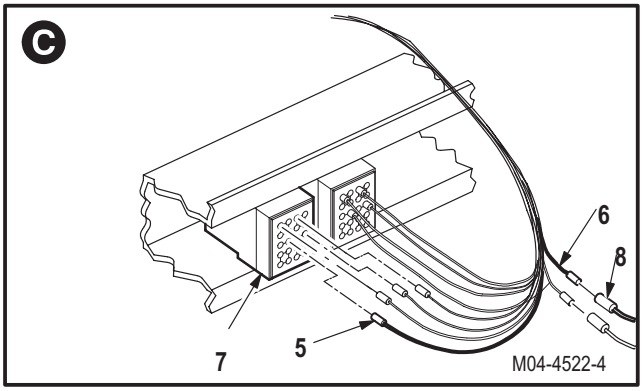
Wires for transformer T1 are attached to A402TB3-14 and wires for transformer T2 are attached to A402TB3-15.



b. **Identify and depin wires (5) and (6).**

(1) Identify and depin four wires (5) from terminal block (7) (TM 55-1500-323-24).

(2) Identify and depin two wires (6) from splices (8) (TM 55-1500-323-24).



c. **Remove and discard transformer (1).**

9.24.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

9.24.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check electrical terminals for damaged threads and loose mounting** (para 9.1)**.**

c. **Check wiring for wear, cuts, breaks, cracked, broken, or burned insulation** (para 9.1)**.**

d. **Check removed and attaching parts for corrosion** (para 1.49)**.**

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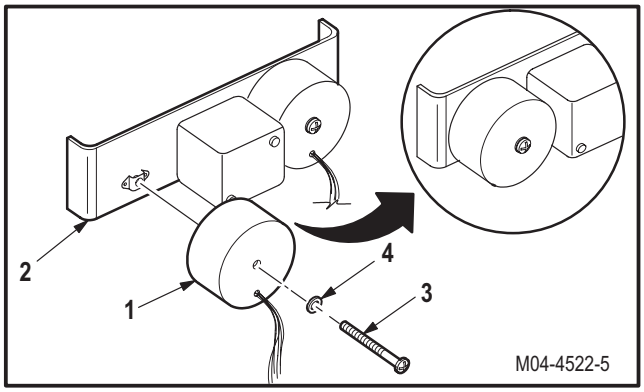
9.24. ELECTRICAL POWER DISTRIBUTION BOX POWER TRANSFORMER T1 OR T2 REPLACEMENT (T701-GE-701) – continued

9.24.6. Installation

a. **Install new transformer (1) on support (2).**

(1) Position transformer (1) on support (2).

(2) Install screw (3) and washer (4).



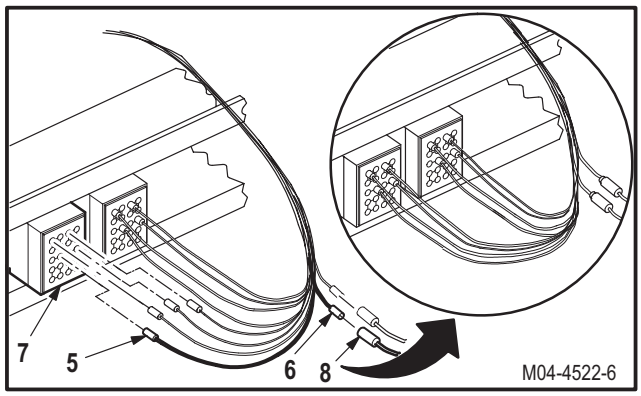
NOTE

Wires for transformer T1 are attached to A402TB3-14 and wires for transformer T2 are attached to A402TB3-15.

b. **Pin identified wires (6) and (5).**

(1) Pin two identified wires (6) in splices (8) (TM 55-1500-323-24).

(2) Pin four identified wires (5) in terminal block (7) (TM 55-1500-323-24).



c. **Perform electrical bond check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

d. **Inspect (QA).**

e. **Perform power plants maintenance operational check (engine 1 and engine 2)** (TM 1-1520-238-T)**.**

f. **Install electrical power distribution box cover** (para 9.9)**.**

END OF TASK

9.25. ELECTRICAL POWER DISTRIBUTION BOX POWER TRANSFORMER T3 REPLACEMENT

9.25.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.25.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Heat protective gloves (item 155, App H)
Adjustable air filtering respirator (item 262, App H)
5-watt electric soldering iron (item 333, App H)

References:

TM 55-1500-323-24

Materials/Parts:

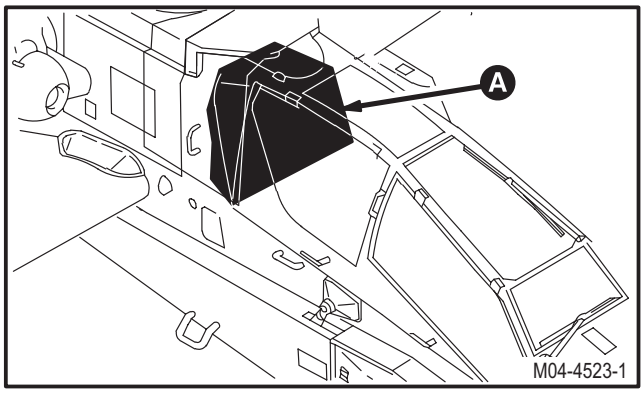
Solder (item 189, App F)

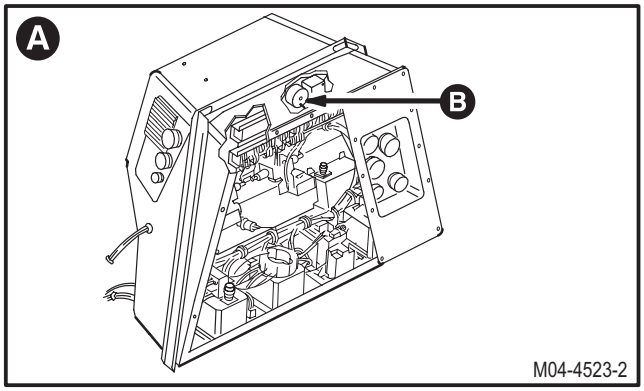
Personnel Required:

68X	Armament/Electrical System Repairer
68X3F	Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
9.9	Electrical power distribution box cover removed





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9.25. ELECTRICAL POWER DISTRIBUTION BOX POWER TRANSFORMER T3 REPLACEMENT – continued

9.25.3. Removal

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

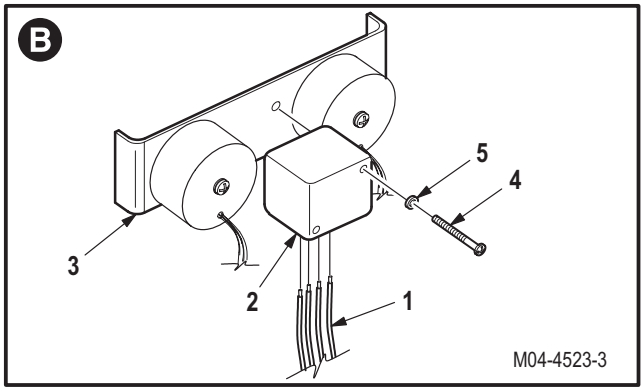
a. **Desolder wires (1) from transformer (2).**

(1) Identify and desolder wires (1) (TM 55-1500-323-24). Use soldering iron.

b. **Remove transformer (2) from support (3).**

(1) Remove two screws (4) and washers (5).

(2) Remove and discard transformer (2).



9.25.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.25.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check electrical terminals for damaged threads and loose mounting** (para 9.1)**.**

c. **Check wiring for wear, cuts, breaks, cracked, broken, or burned insulation** (para 9.1)**.**

d. **Check removed and attaching parts for corrosion** (para 1.49)**.**

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9.25. ELECTRICAL POWER DISTRIBUTION BOX POWER TRANSFORMER T3 REPLACEMENT – continued

9.25.6. Installation

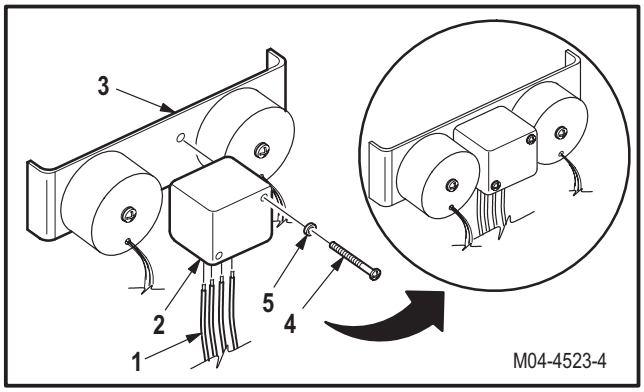
a. **Install new transformer (2) on support (3).**

(1) Position transformer (2) on support (3).

(2) Install two screws (4) and washers (5).

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.



b. **Solder wires (1) to transformer (2).**

(1) Solder identified wires (1) (TM 55-1500-323-24). Use soldering iron and solder (item 189, App F).

c. **Inspect (QA).**

d. **Install electrical power distribution box cover** (para 9.9)**.**

END OF TASK

9.26. AC GENERATOR NO. 1 REMOVAL/INSTALLATION

9.26.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.26.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Generator removal/installation tool (item 153A, App H)
Chemical protective gloves (item 154, App H)
1 3/4 & 2 3/4-inch rubber mallet (item 213, App H)
Adjustable air filtering respirator (item 262, App H)
30 - 150 inch-pound 1/4-inch drive click type torque wrench (item 435, App H)
0 - 75 inch-pound 1/4-inch drive dial indicator torque wrench (item 446, App H)

Materials/Parts:

Corrosion preventive compound (item 62, App F)
Primer coating (item 147, App F)
Wire (item 226, App F)

Personnel Required:

68X Armament/Electrical System Repairer
One person to assist
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T

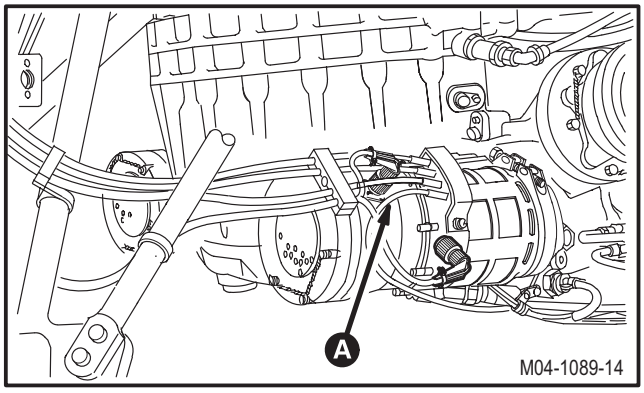
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access panel L200 removed

9.26.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

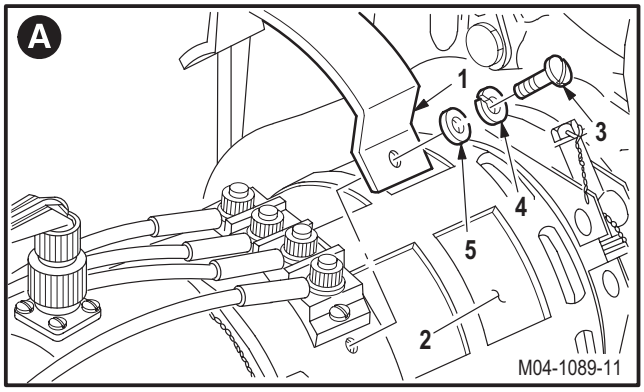
b. **On pilot aft circuit breaker panel, open six POWER circuit breakers.**



c. **Remove terminal cover (1) from generator (2).**

(1) Remove two screws (3), lockwashers (4), and flat washers (5).

(2) Remove cover (1).



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9.26. AC GENERATOR NO. 1 REMOVAL/INSTALLATION – continued

d. **Remove four wires (6) from generator (2).**

(1) Identify wires (6).

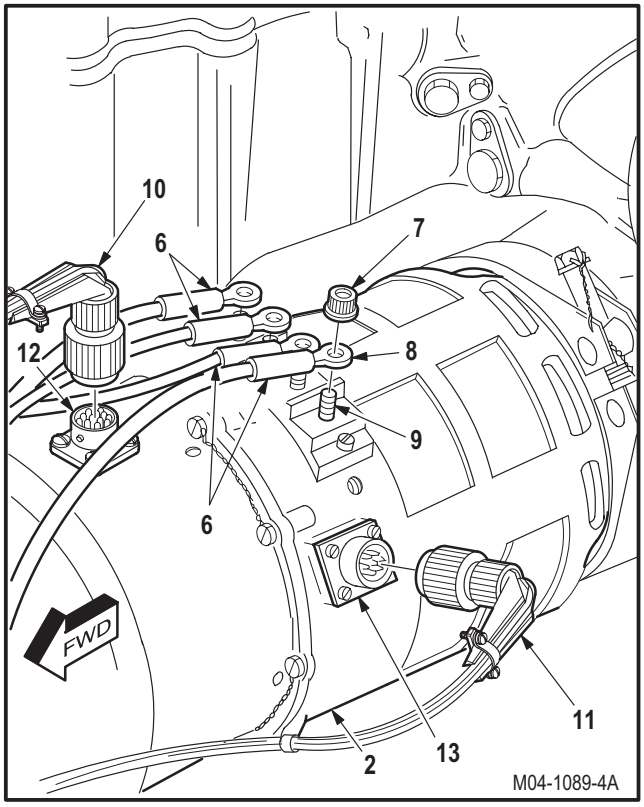
(2) Remove four locknuts (7) and terminal lugs (8) from studs (9).

(3) Remove wires (6).

e. **Detach connectors P3 (10) and P2 (11) from generator (2).**

(1) Detach connector P3 (10) from receptacle J1 (12).

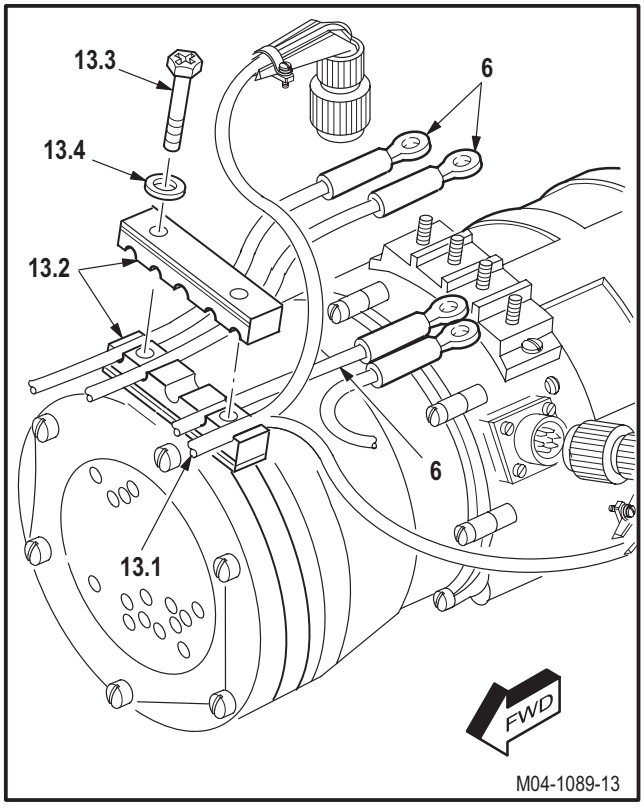
(2) Detach connector P2 (11) from receptacle J2 (13).



f. **Remove three wires (6), wire harness (13.1), and clamp block (13.2).**

(1) Remove two screws (13.3), two washers (13.4), and top half of clamp block (13.2).

(2) Remove three wires (6), wire harness (13.1), and bottom half of clamp block (13.2).



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9.26. AC GENERATOR NO. 1 REMOVAL/INSTALLATION – continued

NOTE

Perform step g only if the generator is being replaced.

g. **Remove clamp block bracket (13.5) from generator (2).**

(1) Remove lockwire.

(2) Remove screw (13.6).

(3) Remove clamp (13.7).

(a) Loosen clamp retaining nut (13.8).

(b) Remove clamp (13.7).

(4) Remove clamp block bracket (13.5).

NOTE

- It may be necessary to reposition or loosen wire harness clamp under generator to obtain proper clearance for use of generator tool.
- Ensure generator tool flip shim is in FWD position for AH64A aircraft generator.

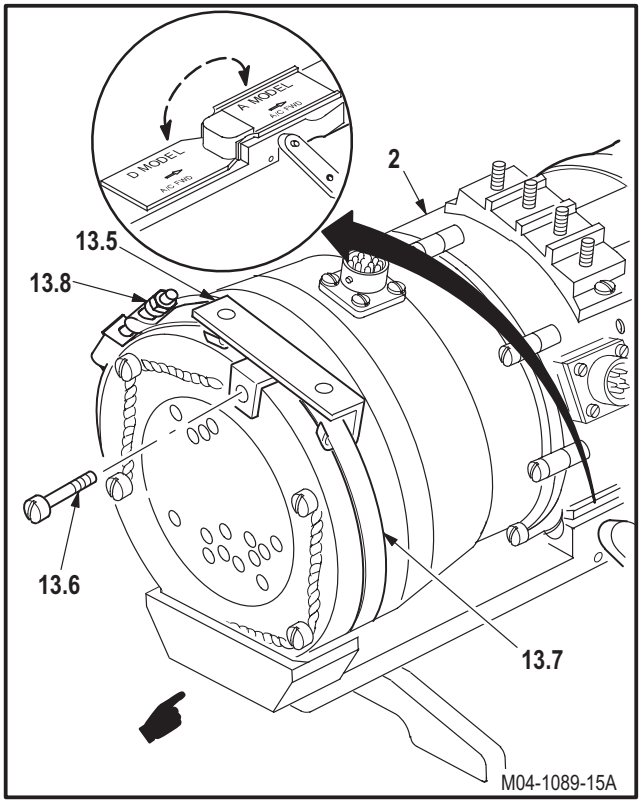
h. **Place tool flip shim in FWD position.**

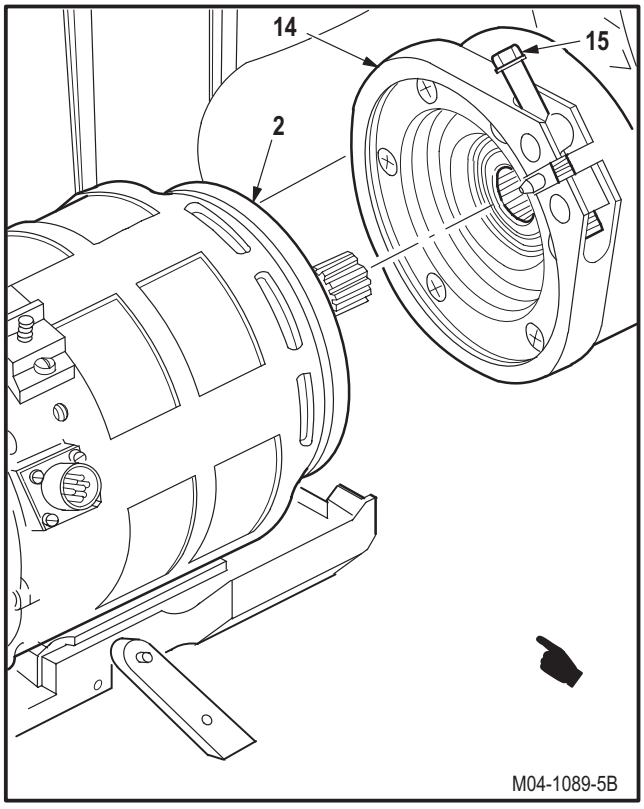
i. **Place removal tool under generator (2).** Use generator removal/installation tool.

j. **Loosen quick attach assembly (QAA) (14).**

(1) Remove lockwire.

(2) Loosen QAA bolt (15).





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9.26. AC GENERATOR NO. 1 REMOVAL/INSTALLATION – continued

CAUTION

- Hold generator while it is on the removal/installation tool to prevent it from sliding back against the drive spline adaptor.
- Use extreme care when removing generator to avoid damage to directional control rod and power cables.
- Dropping generator or striking generator spline will cause internal bearing damage resulting in premature failure.

NOTE

When removing generator, ensure that drive spline adapter stays in transmission. If adapter comes out replace with new adapter.

k. **Remove generator (2) from drive spline adapter (16) in transmission (17).**

9.26.4. Cleaning

a. **Wipe QAA and generator mounting area with a clean rag.**

9.26.5. Inspection

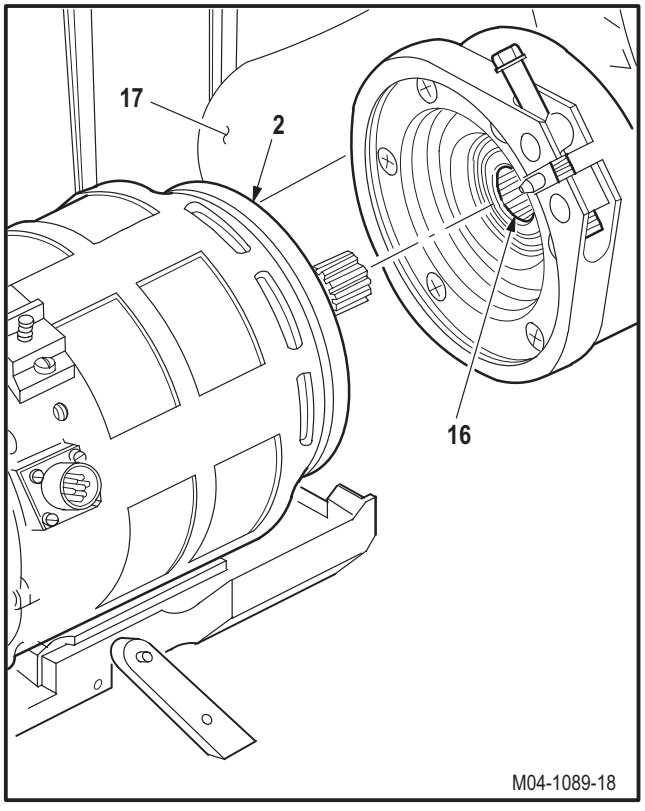
a. **Check for loose or missing hardware.** None allowed.

b. **Check removed and attaching parts for damage** (para 9.1)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

d. **Check generator and QAA for damage, cracks, distortion, or discoloration.** None allowed.

e. **Check generator for corrosion** (para 1.49)**.**



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9.26. AC GENERATOR NO. 1 REMOVAL/INSTALLATION – continued

f. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (para 9.1)**.**

g. **Check phenolic terminal stud mounting block for cracks, damaged threads, and arcing burns.** None allowed.

h. **Check connectors for cracks, broken connections, bent pins, or damaged threads** (para 9.1)**.**

i. **Check wiring harness for frayed insulation or other damage.** None allowed.

j. **Check power feeder wires for any chafing damage between the No. 1 generator and the electrical power distribution box** (para 9.1)**.**

k. **Check generator drive spline gear and spline adapter for damage and wear.** None allowed.

l. **Check generator seal on spline adapter for seepage.** None allowed.

m. **Check inner teeth on spline adapter for deformations and/or loss of material.** None allowed.

n. **Check cork stopper for oil seepage.** None allowed.

(1) If seepage is present replace cork stopper. (para 6.72A).

o. **Check identification plate for legibility, deformation, and security of attachment to housing.**

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9.26. AC GENERATOR NO. 1 REMOVAL/INSTALLATION – continued

9.26.6. Installation

CAUTION

- If alinement pin on transmission is not properly alined with the hole in generator, generator and/or transmission may be damaged. Ensure alinement pin is in hole and generator is flush against transmission before torquing quick attach assembly (QAA).
- Dropping generator or striking generator spline will cause internal bearing damage resulting in premature failure.
- Ensure generator tool flip shim is in FWD position for AH64A aircraft generator.

a. **Place tool flip shim in FWD position.**

b. **Place generator (2) on tool** Use generator removal/installation tool.

c. **Install generator (2) on transmission (17).**

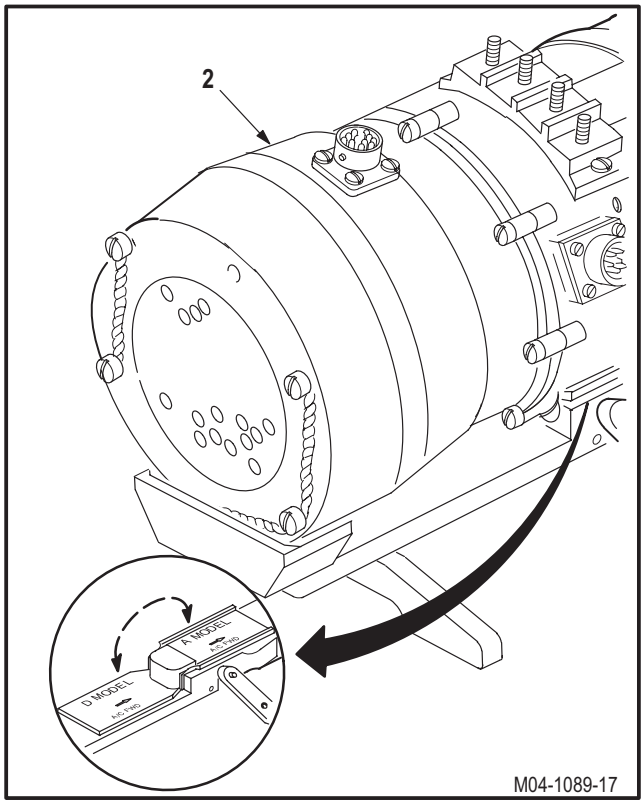
(1) Position QAA (14) so that gap in QAA is centered with alinement pin (18).

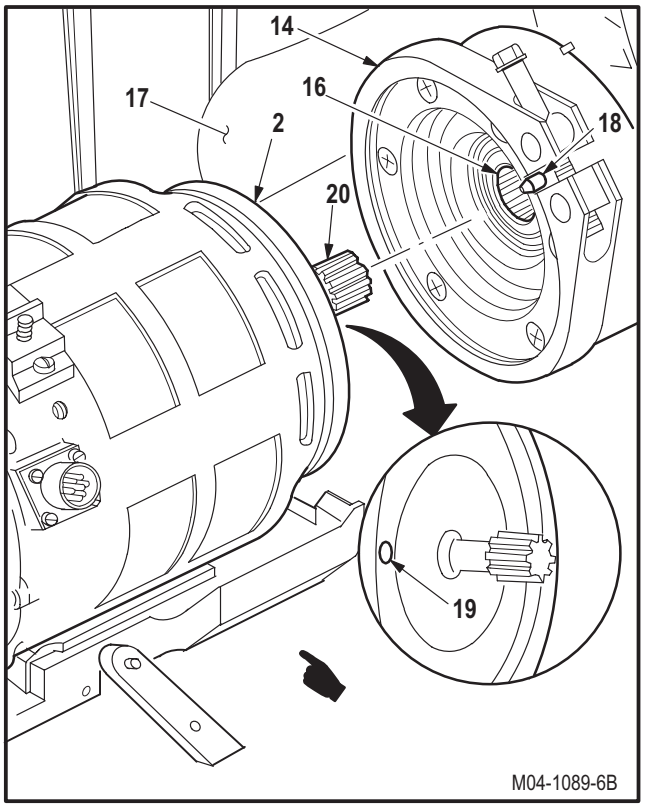
NOTE

Ensure that drive spline adapter is installed in main transmission before installing generator.

(2) Position generator (2) so that hole (19) is alined with alinement pin (18).

(3) Insert generator spline (20) in transmission drive spline adapter (16).





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9.26. AC GENERATOR NO. 1 REMOVAL/INSTALLATION – continued

CAUTION

To prevent damage to generator, spline, spline adapter, or transmission, hold the generator flush and in alinement during installation. **DO NOT USE QAA TO PULL UP GENERATOR.**

NOTE

If generator spline alinement prevents installation, aline spline to center by hand.

d. **Torque QAA bolt (15) to 125 INCH-POUNDS.**

(1) Seat QAA (14) evenly around generator (2).

(2) Tap in place. Use mallet.

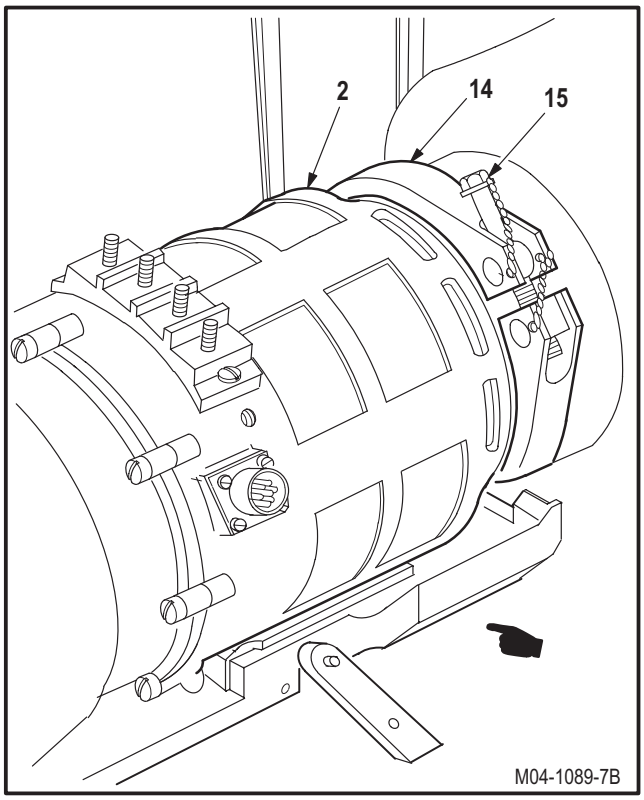
(3) Torque QAA bolt (15) to **125 INCH-POUNDS**. Use torque wrench.

e. **Remove generator removal/installation tool from under generator.**

f. **Lockwire halves of QAA (14) together.** Use wire (item 226, App F).

g. **Lockwire QAA bolt (15) to QAA (14).** Use wire (item 226, App F).

h. **Inspect (QA).**



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9.26. AC GENERATOR NO. 1 REMOVAL/INSTALLATION – continued

i. **Install clamp block bracket (13.5) on generator (2).** Torque clamp retaining nut (13.8) to **45 INCH-POUNDS**.

(1) Position clamp block bracket (13.5) on generator (2).

(2) Coat threads of screw (13.6). Use corrosion preventive compound (item 62, App F).

(3) Install screw (13.6) through bracket (13.5) into generator (2).

(4) Lockwire screw (13.6). Use wire (item 226, App F).

(5) Position clamp (13.7) on bracket (13.5) and around generator (2).

(6) Torque clamp retaining nut (13.8) to **45 INCH-POUNDS**.

CAUTION

- To prevent possible equipment damage, terminal wires must be reconnected at exact stud positions identified during generator removal.
- Over tightening of terminal studs during terminal lug installation can cause cracking and shorting of the phenolic insulator.

j. **Install three wires (6) and wire harness (13.1) on bottom half of clamp block (13.2).**

(1) Install three wires (6) and wire harness (13.1) on bottom half of clamp block (13.2).

(2) Aline top half of clamp block (13.2) with bottom half of clamp block (13.2).

(3) Install two screws (13.3) and two washers (13.4).

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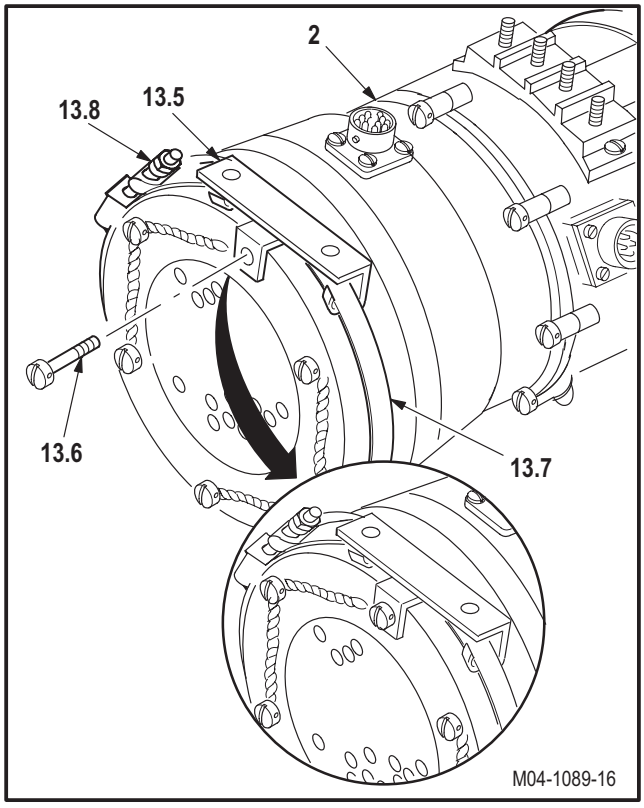
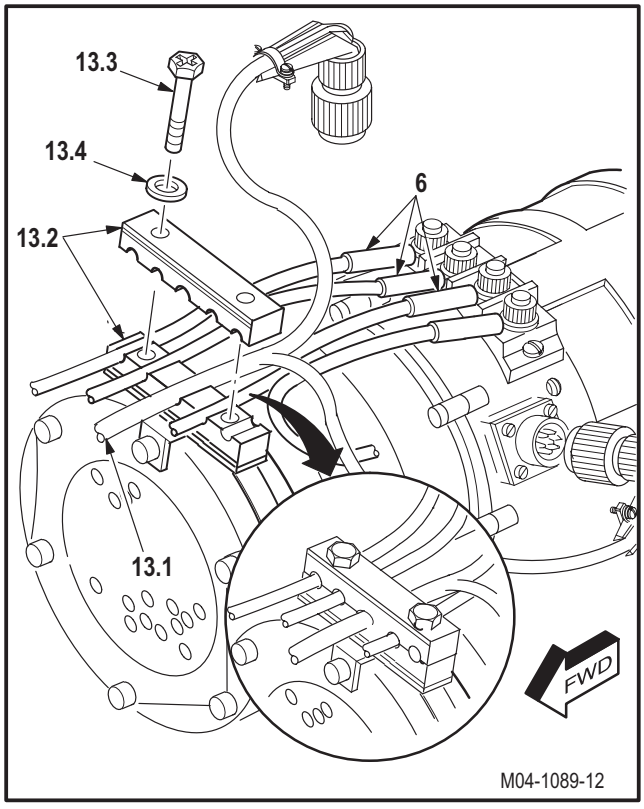
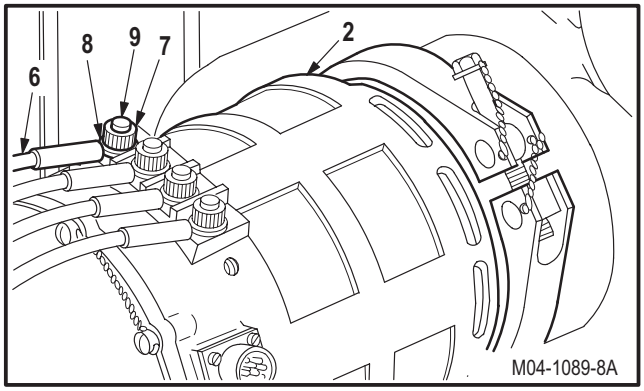




9.26. AC GENERATOR NO. 1 REMOVAL/INSTALLATION – continued

k. **Install four wires (6) on generator (2).**

(1) Install four identified wires (6), terminal lugs (8), and locknuts (7) on terminal studs (9).

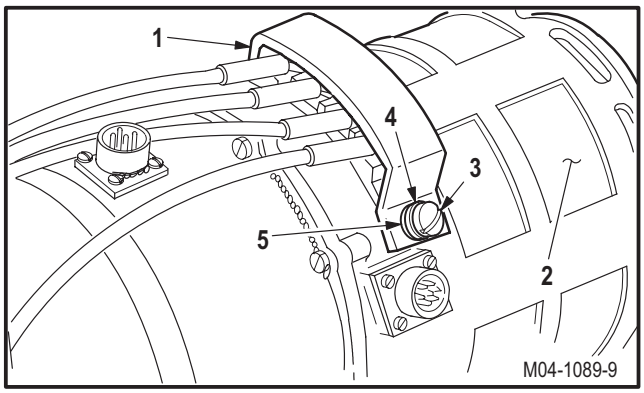


l. **Install terminal cover (1) on generator (2).**

(1) Position cover (1) on generator (2).

(2) Apply primer to threads of two screws (3). Use primer coating (item 147, App F).

(3) Install two flat washers (5), lockwashers (4), and screws (3).



m. **Attach connectors P3 (10) and P2 (11) to generator (2).**

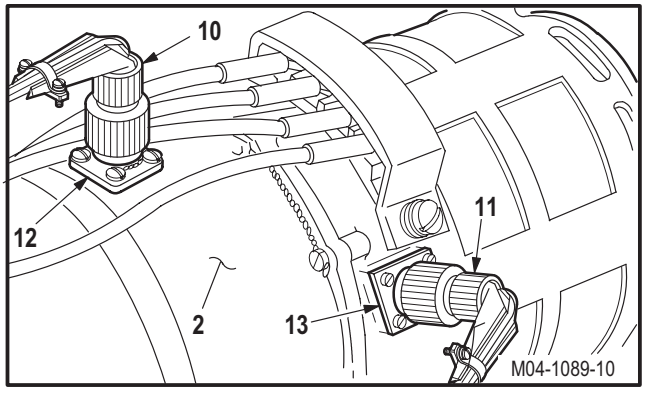
(1) Attach connector P3 (10) to receptacle J1 (12).

(2) Attach connector P2 (11) to receptacle J2 (13).

n. **Inspect (QA).**

o. **Perform AC electrical power generation maintenance operational check** (TM 1-1520-238-T)**.**

p. **Install access panel L200** (para 2.2)**.**



END OF TASK

9.27. AC GENERATOR NO. 2 REMOVAL/INSTALLATION

9.27.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.27.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Generator removal/installation tool (item 153A, App H)
Chemical protective gloves (item 154, App H)
1 3/4 & 2 3/4-inch rubber mallet (item 213, App H)
Adjustable air filtering respirator (item 262, App H)
30 - 150 inch-pound 1/4-inch drive click type torque wrench (item 435, App H)
0 - 75 inch-pound 1/4-inch drive dial indicator torque wrench (item 446, App H)

Materials/Parts:

Corrosion preventive compound (item 62, App F)
Primer coating (item 147, App F)
Wire (item 226, App F)

Personnel Required:

68X Armament/Electrical System Repairer
One person to assist
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T

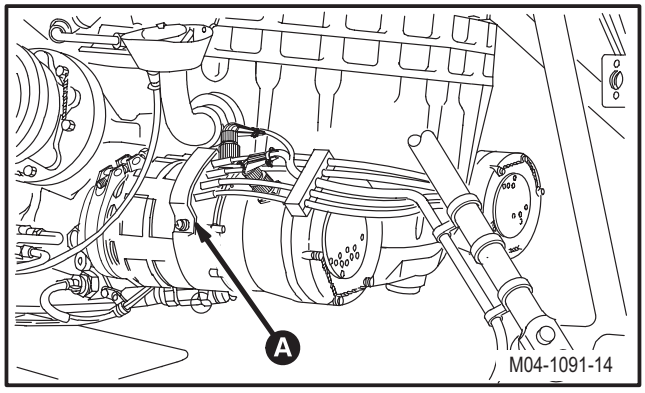
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access panel R200 removed

9.27.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

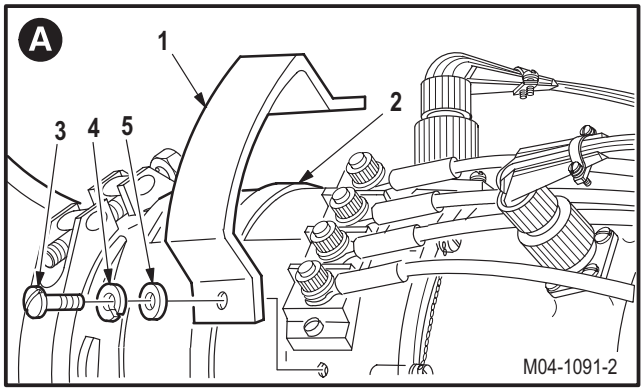
b. **On pilot aft circuit breaker panel, open six POWER circuit breakers.**



c. **Remove terminal cover (1) from generator (2).**

(1) Remove two screws (3), lockwashers (4), and flat washers (5).

(2) Remove cover (1).



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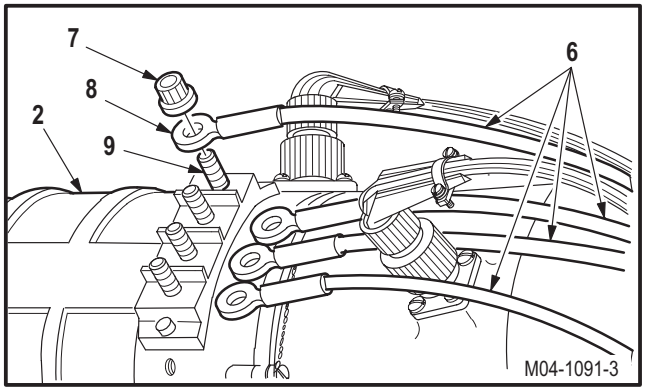
9.27. AC GENERATOR NO. 2 REMOVAL/INSTALLATION – continued

d. **Remove four wires (6) from generator (2).**

(1) Identify wires (6).

(2) Remove four locknuts (7) and terminal lugs (8) from studs (9).

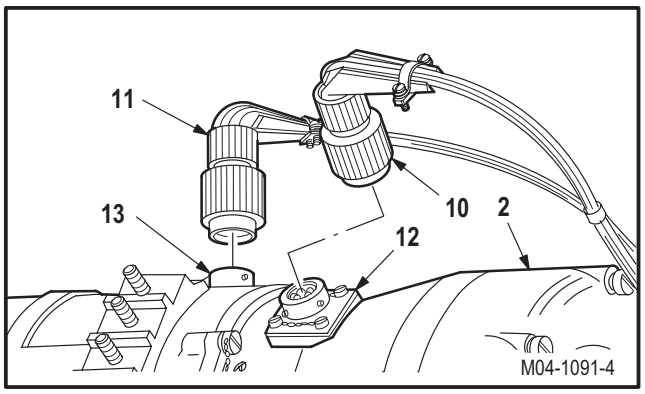
(3) Remove wires (6).



e. **Detach connectors P9 (10) and P8 (11) from generator (2).**

(1) Detach connector P9 (10) from receptacle J1 (12).

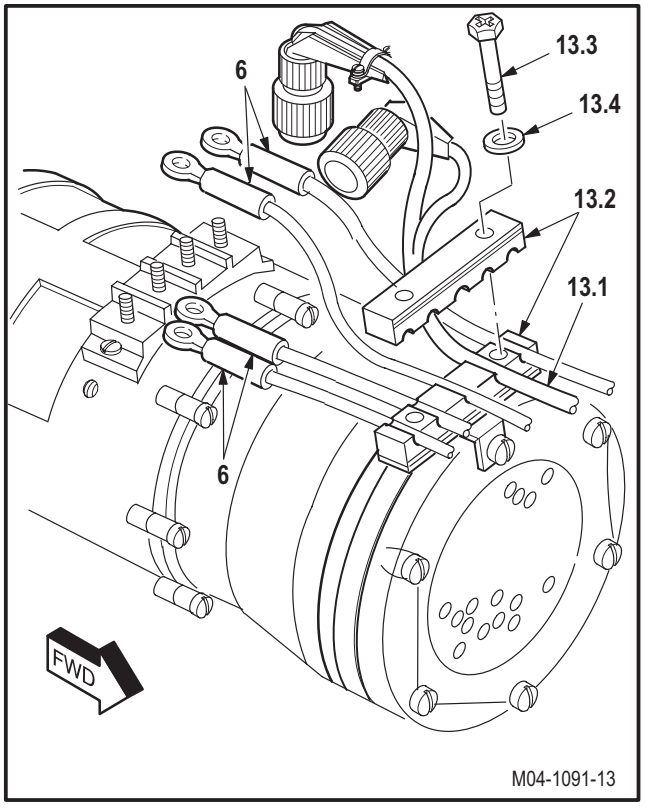
(2) Detach connector P8 (11) from receptacle J2 (13).



f. **Remove four wires (6), wire harness (13.1), and clamp block (13.2).**

(1) Remove two screws (13.3), two washers (13.4), and top half of clamp block (13.2).

(2) Remove four wires (6), wire harness (13.1), and bottom half of clamp block (13.2).



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9.27. AC GENERATOR NO. 2 REMOVAL/INSTALLATION – continued

NOTE

Perform step g only if the generator is being replaced.

g. **Remove clamp block bracket (13.5) from generator (2).**

(1) Remove lockwire.

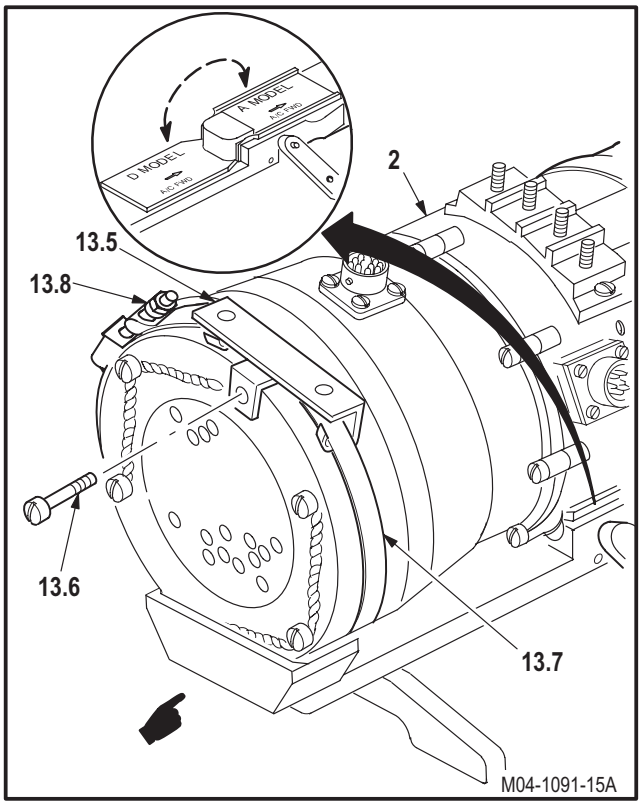
(2) Remove screw (13.6).

(3) Remove clamp (13.7).

(a) Loosen clamp retaining nut (13.8).

(b) Remove clamp (13.7).

(4) Remove clamp block bracket (13.5).



NOTE

- It may be necessary to reposition or loosen wire harness clamp under generator to obtain proper clearance for use of generator tool.
- Ensure generator tool flip shim is in FWD position for AH64A aircraft generator.

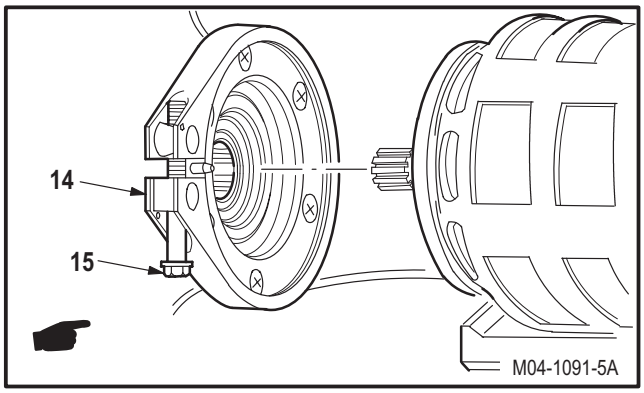
h. **Place tool flip shim in FWD position.**

i. **Place removal tool under generator (2)** Use generator removal/installation tool.

j. **Loosen quick attach assembly (QAA) (14).**

(1) Remove lockwire.

(2) Loosen QAA bolt (15).



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9.27. AC GENERATOR NO. 2 REMOVAL/INSTALLATION – continued

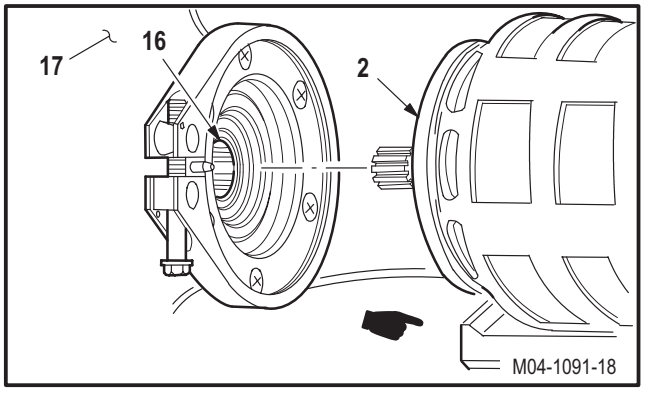
CAUTION

- Hold generator while it is on the removal/installation tool to prevent it from sliding back against the drive spline adaptor.
- Use extreme care when removing generator to avoid damage to directional control rod and power cables.
- Dropping generator or striking generator spline will cause internal bearing damage resulting in premature failure.

NOTE

When removing generator, ensure that drive spline adapter stays in transmission. If adapter comes out, replace with new adapter.

k. **Remove generator (2) from drive spline adapter (16) in transmission (17).**



9.27.4. Cleaning

a. **Wipe QAA and generator mounting area with a clean rag.**

9.27.5. Inspection

a. **Check for loose or missing hardware.** None allowed.

b. **Check removed and attaching parts for damage** (para 9.1)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

d. **Check generator and QAA for damage, cracks, distortion, or discoloration.** None allowed.

e. **Check generator for corrosion** (para 1.49)**.**

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9.27. AC GENERATOR NO. 2 REMOVAL/INSTALLATION – continued

f. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (para 9.1)**.**

g. **Check phenolic terminal stud mounting block for cracks, damaged threads, and arcing burns.** None allowed.

h. **Check connectors for cracks, broken connections, bent pins, or damaged threads** (para 9.1)**.**

i. **Check wiring harness for frayed insulation or other damage.** None allowed.

j. **Check power feeder wires for any chafing damage between the No. 1 generator and the electrical power distribution box** (para 9.1)**.**

k. **Check generator drive spline gear and spline adapter for damage and wear.** None allowed.

l. **Check generator seal on spline adapter for seepage.** None allowed.

m. **Check inner teeth on spline adapter for deformations and/or loss of material.** None allowed.

n. **Check cork stopper for oil seepage.** None allowed.

(1) If seepage is present replace cork stopper. (para 6.72A).

o. **Check identification plate for legibility, deformation, and security of attachment to housing.**

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9.27. AC GENERATOR NO. 2 REMOVAL/INSTALLATION – continued

9.27.6. Installation

CAUTION

- If alinement pin on transmission is not properly alined with the hole in generator, generator and/or transmission may be damaged. Ensure alinement pin is in hole and generator is flush against transmission before torquing quick attach assembly (QAA).
- Dropping generator or striking generator spline will cause internal bearing damage resulting in premature failure.
- Ensure generator tool flip shim is in FWD position for AH64A aircraft generator.

a. **Place tool flip shim in FWD position.**

b. **Place generator (2) on tool** Use generator removal/installation tool.

c. **Install generator (2) on transmission (17).**

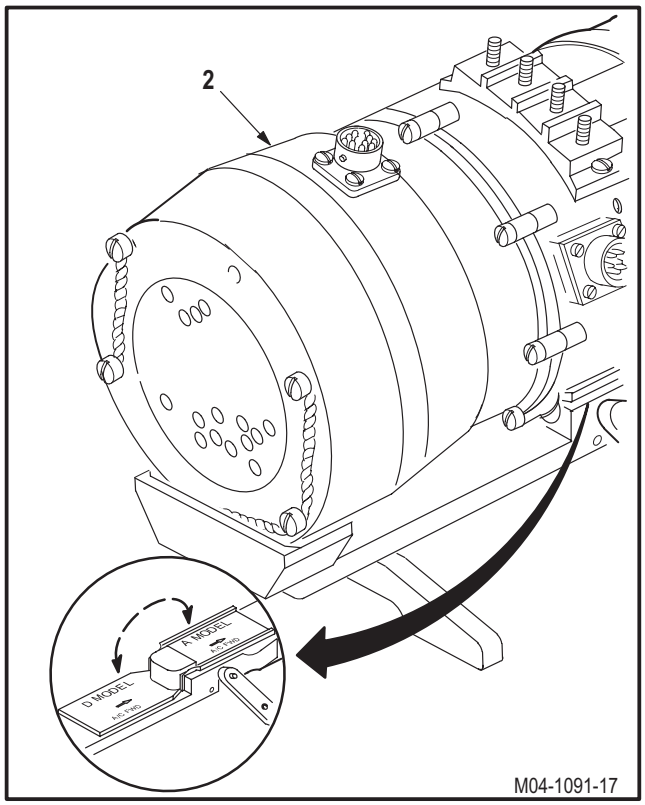
(1) Position QAA (14) so that gap in QAA is centered with alinement pin (18).

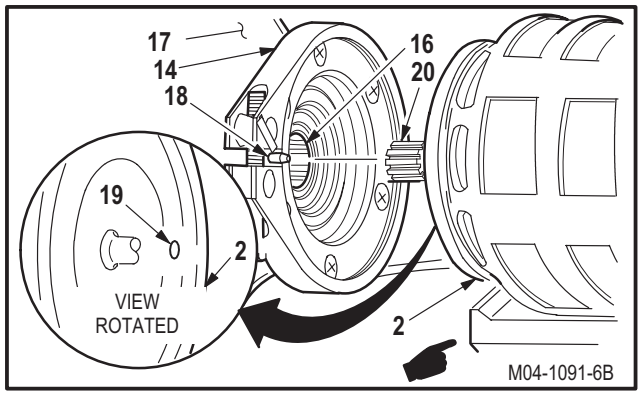
NOTE

Ensure that drive spline adapter is installed in main transmission before installing generator.

(2) Position generator (2) so that hole (19) is alined with alinement pin (18).

(3) Insert generator spline (20) in transmission drive spline adapter (16).





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9.27. AC GENERATOR NO. 2 REMOVAL/INSTALLATION – continued

CAUTION

To prevent damage to generator, spline, spline adapter, or transmission, hold the generator flush and in alinement during installation. **DO NOT USE QAA TO PULL UP GENERATOR.**

NOTE

If generator spline alinement prevents installation, aline spline to center by hand.

d. **Torque QAA bolt (15) to 125 INCH-POUNDS.**

(1) Seat QAA (14) evenly around generator (2).

(2) Tap in place. Use mallet.

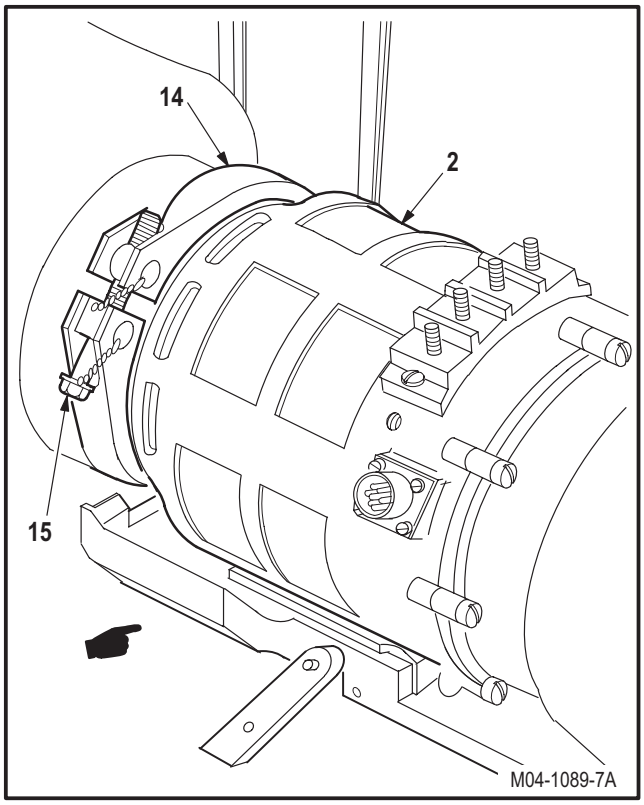
(3) Torque QAA bolt (15) to **125 INCH-POUNDS**. Use torque wrench.

e. **Remove generator removal/installation tool from under generator.**

f. **Lockwire halves of QAA (14) together.** Use wire (item 226, App F).

g. **Lockwire QAA bolt (15) to QAA (14).** Use wire (item 226, App F).

h. **Inspect (QA).**



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9.27. AC GENERATOR NO. 2 REMOVAL/INSTALLATION – continued

i. **Install clamp block bracket (13.5) on generator (2).** Torque clamp retaining nut (13.8) to **45 INCH-POUNDS**.

(1) Position clamp block bracket (13.5) on generator (2).

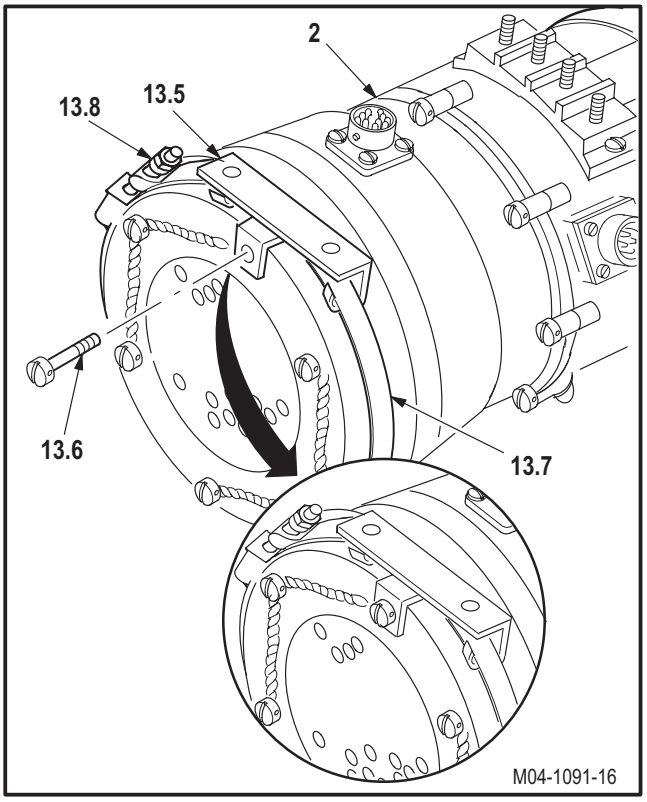
(2) Coat threads of screw (13.6). Use corrosion preventive compound (item 62, App F).

(3) Install screw (13.6) through bracket (13.5) into generator (2).

(4) Lockwire screw (13.6). Use wire (item 226, App F).

(5) Position clamp (13.7) on bracket (13.5) and around generator (2).

(6) Torque clamp retaining nut (13.8) to **45 INCH-POUNDS**.



CAUTION

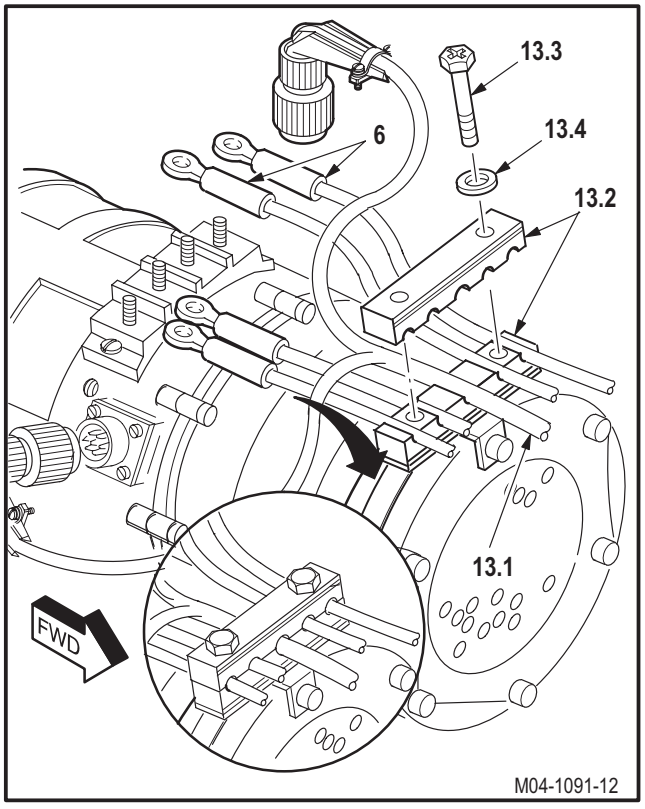
- To prevent possible equipment damage, terminal wires must be reconnected at exact stud positions identified during generator removal.
- Over tightening of terminal studs during terminal lug installation can cause cracking and shorting of the phenolic insulator.

j. **Install four wires (6) and wire harness (13.1) on clamp block (13.2).**

(1) Install four wires (6) and wire harness (13.1) on clamp block (13.2).

(2) Aline top half of clamp block (13.2) with bottom half of clamp block (13.2).

(3) Install two screws (13.3) and two washers (13.4).



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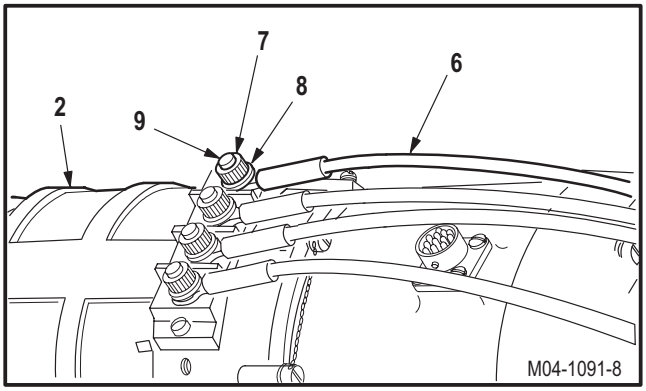
9.27. AC GENERATOR NO. 2 REMOVAL/INSTALLATION – continued

k. **Install four wires (6) to generator (2).**

(1) Install four identified wires (6), terminal lugs (8), and locknuts (7) on terminal studs (9).

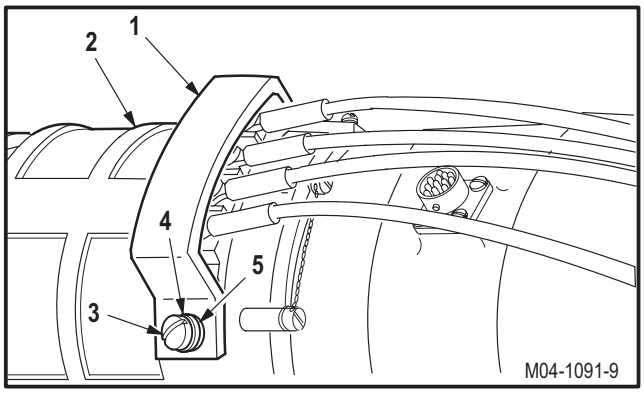


l. **Install terminal cover (1) on generator (2).**

(1) Position cover (1) on generator (2).

(2) Apply primer to threads of two screws (3). Use primer coating (item 147, App F).

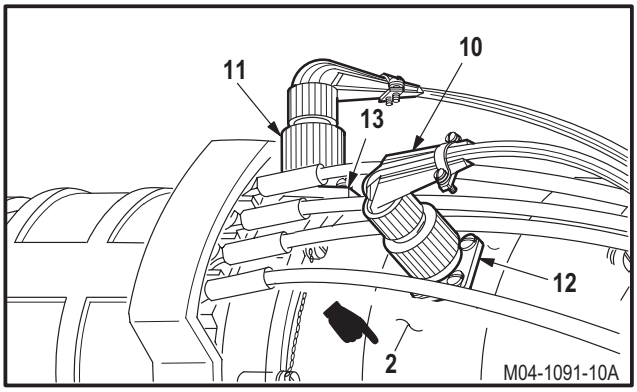
(3) Install two flat washers (5), lockwashers (4), and screws (3).



m. **Attach connectors P9 (10) and P8 (11) to generator (2).**

(1) Attach connector P9 (10) to receptacle J1 (12).

(2) Attach connector P8 (11) to receptacle J2 (13).



n. **Inspect (QA).**

o. **Perform AC electrical power generation maintenance operational check** (TM 1-1520-238-T)**.**

p. **Install access panel R200** (para 2.2)**.**

END OF TASK

9.28. ELECTRICAL TEST PANEL CIRCUIT BREAKER REPLACEMENT

9.28.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.28.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access panel R200 removed

NOTE

This task is typical for all three circuit breakers.

9.28.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

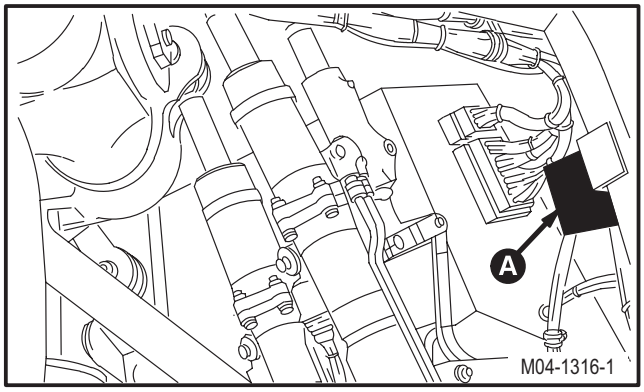
b. **On pilot aft circuit breaker panel, open six POWER circuit breaker.**

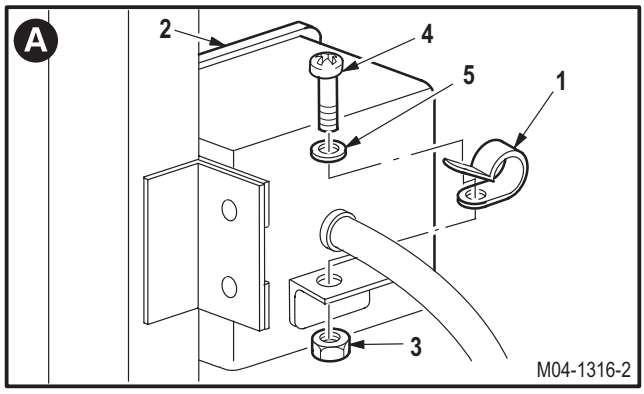
c. **Remove wire clamp (1) from rear of electrical test panel (2).**

(1) Remove nut (3).

(2) Remove screw (4) and washer (5) from clamp (1).

(3) Remove clamp (1).





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9.28. ELECTRICAL TEST PANEL CIRCUIT BREAKER REPLACEMENT – continued

d. **Remove electrical test panel cover (6).**

(1) Loosen four captive screws (7) and washers (8).

e. **Identify circuit breaker to be removed.**

NOTE

The **AC ELEC UTIL PWR** circuit breaker has seven wires attached. The **DC ELEC UTIL PWR** circuit breaker and the **NITROGEN INERT** circuit breaker have two wires attached.

f. **Detach wires (9) from circuit breaker (10).**

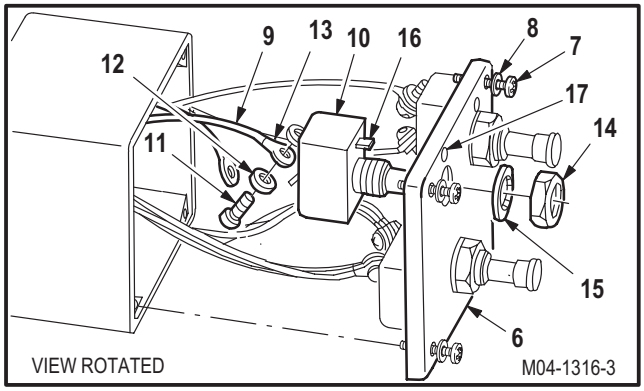
(1) Identify wires (9).

(2) Remove screws (11), washers (12), and terminal lugs (13).

g. **Remove circuit breaker (10) from cover (6).**

(1) Remove nut (14) and lockwasher (15).

(2) Remove circuit breaker (10).



9.28.4. Cleaning

a. **Wipe circuit breaker mounting area with a clean rag.**

9.28.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check wires for wear, breaks, cracks, and damaged terminal lugs** (para 9.1)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

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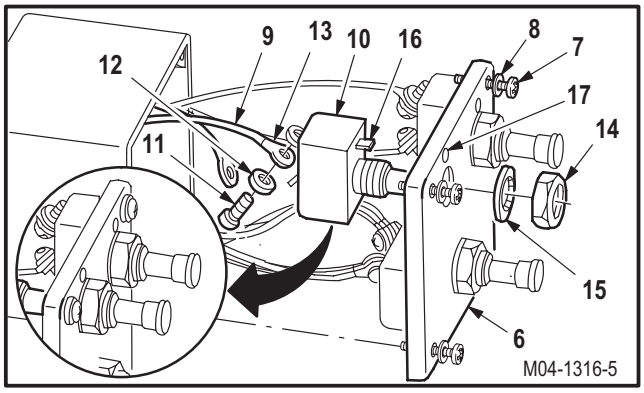
9.28. ELECTRICAL TEST PANEL CIRCUIT BREAKER REPLACEMENT – continued

9.28.6. Installation

a. **Install circuit breaker (10) on cover (6).**

(1) Position circuit breaker so that tab (16) seats in locator hole (17).

(2) Install lockwasher (15) and nut (14).



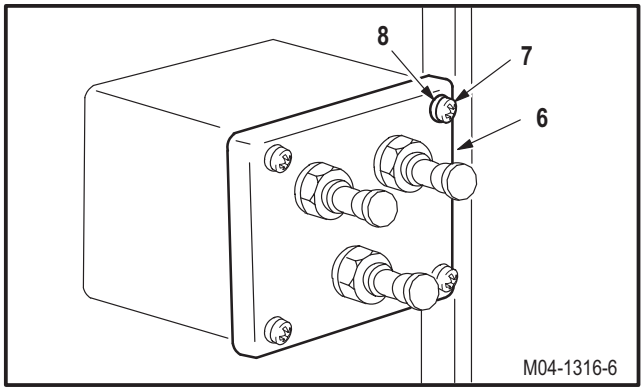
b. **Attach wires (9).**

(1) Install identified terminal lugs (13), washers (12), and screws (11).

c. **Inspect (QA).**

d. **Install cover (6).**

(1) Tighten four captive screws (7) and washers (8).



e. **Install wire clamp (1) on rear of panel (2).**

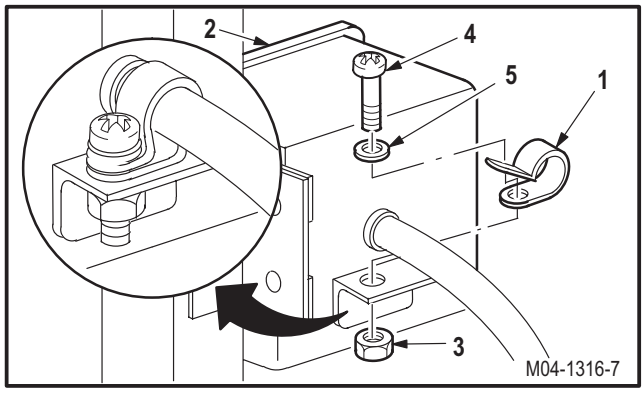
(1) Position clamp (1) on panel (2).

(2) Install screw (4), washer (5), and nut (3).

f. **Inspect (QA).**

g. **Install access panel R200** (para 2.2)**.**

h. **Refer to circuit breaker reference list to perform appropriate maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

9.29. ELECTRICAL TEST PANEL BOX REMOVAL/INSTALLATION

9.29.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.29.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Electrical tool kit (item 378, App H)
Ohmmeter (item 218, App H)

Personnel Required:

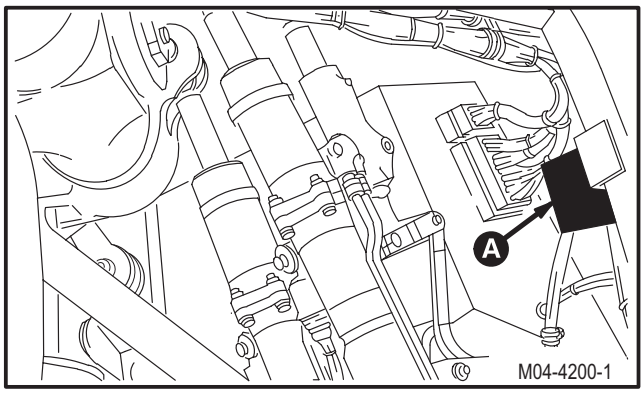
67R Attack Helicopter Repairer
68X Armament/Electrical System Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
9.28	Electrical test panel circuit breaker wires detached

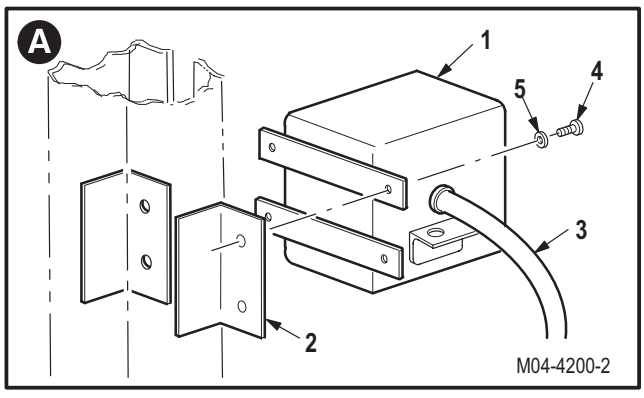


9.29.3. Removal

a. **Remove electrical test panel (1) from support (2).**

(1) Remove wire harness (3) from test panel (1).

(2) Remove four screws (4) and washers (5).



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9.29. ELECTRICAL TEST PANEL BOX REMOVAL/INSTALLATION – continued

9.29.4. Cleaning

a. **Wipe test panel mounting area with a clean rag.**

9.29.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check wiring for wear, breaks, cracks, and damaged terminal lugs** (para 9.1)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.29.6. Installation

a. **Install test panel (1) on support (2).**

(1) Position test panel (1) on support (2).

(2) Install four screws (4) and washers (5).

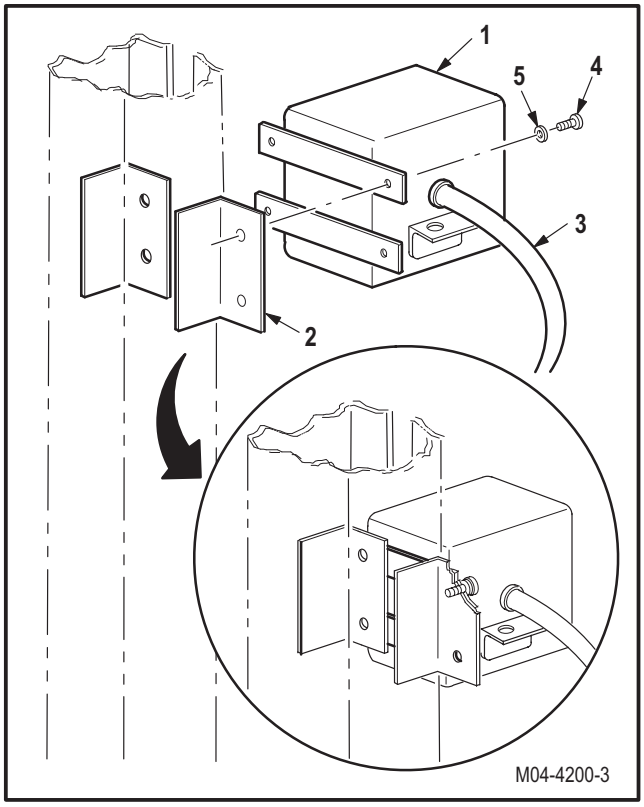
(3) Install wire harness (3) in test panel (1).

b. **Perform electrical bond check on attaching hardware** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.1 OHM** or less. Use ohmmeter.

c. **Inspect (QA).**

d. **Attach electrical test panel circuit breaker wires** (para 9.28)**.**



END OF TASK

9.30. TRANSFORMER-RECTIFIER NO. 1 REMOVAL/INSTALLATION

9.30.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.30.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Multimeter (item 215, App H)
Ohmmeter (item 218, App H)

Materials/Parts:

Wire (item 222, App F)

References:

TM 1-1520-238-T

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

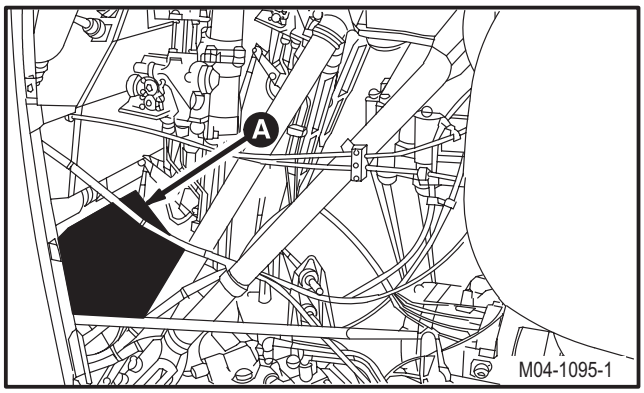
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access panels L200 and L165 removed

9.30.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

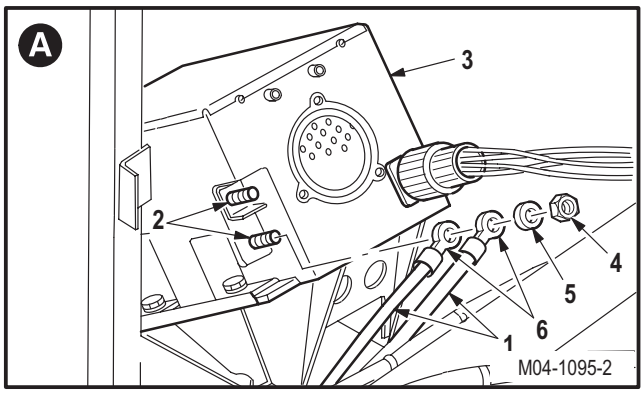
b. **On pilot aft circuit breaker panel, open six POWER circuit breakers.**



c. **Detach wires (1) from positive and negative terminals (2) of transformer-rectifier (3).**

(1) Identify wires (1).

(2) Remove two nuts (4), washers (5), and terminal lugs (6).



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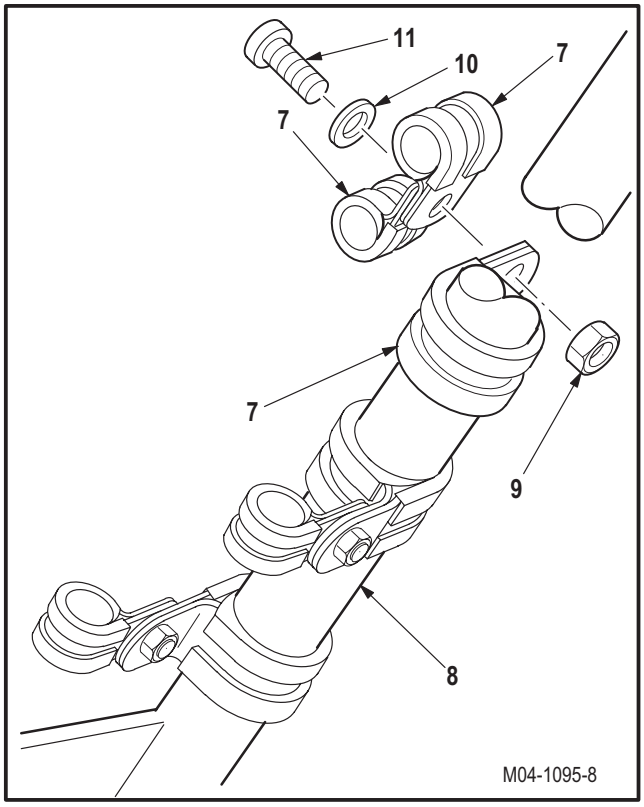
9.30. TRANSFORMER-RECTIFIER NO. 1 REMOVAL/INSTALLATION – continued

d. **Remove three clamps (7) from main transmission left forward support strut (8).**

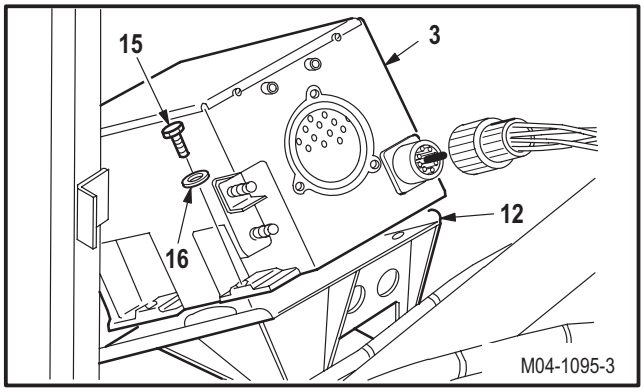
(1) Remove nut (9), washer (10), and screw (11) from clamps (7).



e. **Remove transformer-rectifier (3) from bracket (12).**

(1) Detach connector P6 (13) from receptacle (PS1)J1 (14).

(2) Remove four bolts (15) and washers (16).



9.30.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.30.5. Inspection

a. **Check for missing or damaged nutplates** (para 9.1)**.**

b. **Check removed and attaching parts for damage** (para 9.1)**.**

c. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (para 9.1)**.**

d. **Check connector for cracks, broken connections, bent pins, or damaged threads** (para 9.1)**.**

e. **Check removed and attaching parts for corrosion** (para 1.49)**.**

GO TO NEXT PAGE

9.30. TRANSFORMER-RECTIFIER NO. 1 REMOVAL/INSTALLATION – continued

9.30.6. Installation

a. **Install transformer-rectifier (3) on support (12).**

(1) Install four bolts (15) and washers (16).

b. **Perform electrical bonding check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

c. **Check for ground at connector P6 (13) pin D and negative terminal lugs (6).** Use multimeter.

d. **Attach wires (1) to positive and negative terminals (2) of transformer-rectifier (3).**

(1) Install identified terminal lugs (6), two washers (5), and nuts (4).

(2) Attach connector P6 (13) to connector (PS1)J1 (14).

(3) Lockwire connector (13) to bolt (15). Use wire (item 222, App F).

e. **Install three clamps (7) on main transmission left forward strut (8).**

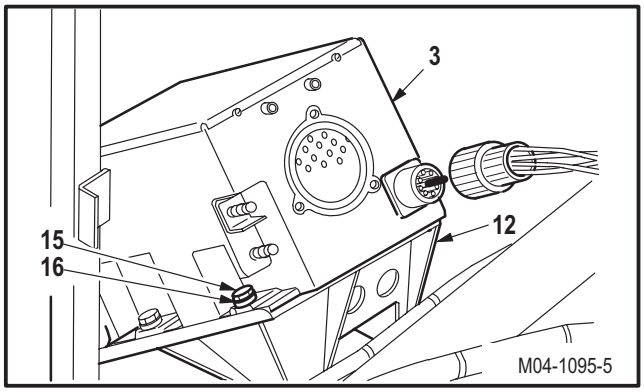
(1) Install screw (11) through washer (10) and clamps (7).

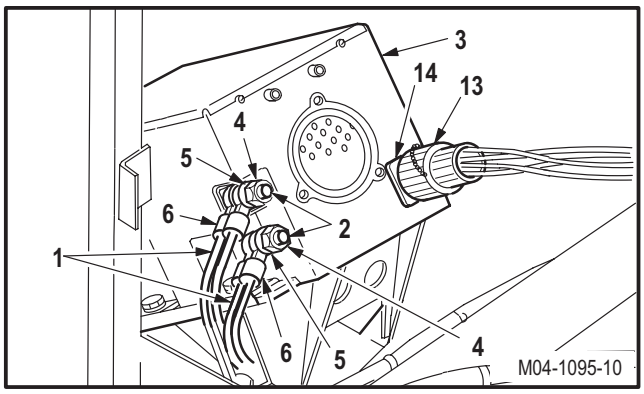
(2) Install nut (9).

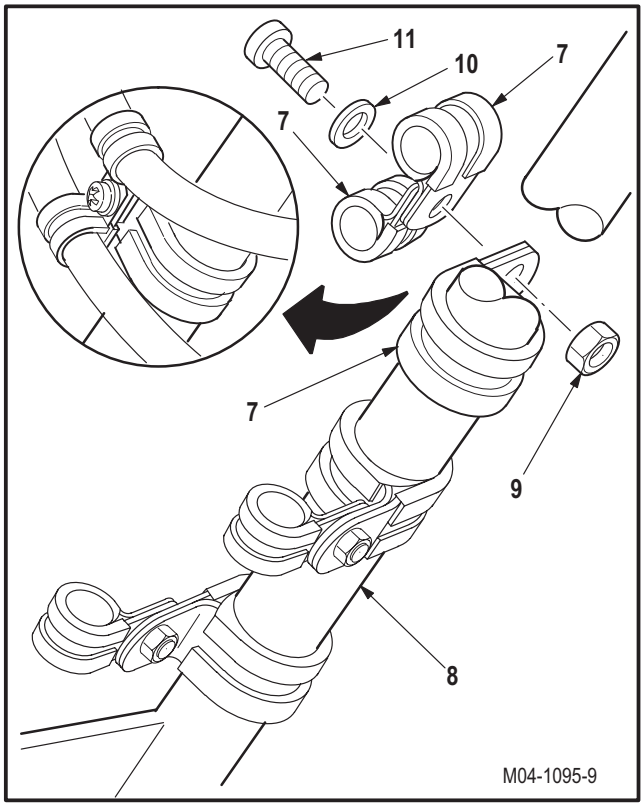
f. **Inspect (QA).**

g. **Perform DC power generation maintenance operational check** (TM 1-1520-238-T)**.**

h. **Install access panels L200 and L165** (para 2.2)**.**







END OF TASK

9.31. TRANSFORMER-RECTIFIER NO. 1 SUPPORT STRUCTURE REMOVAL/INSTALLATION

9.31.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.31.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

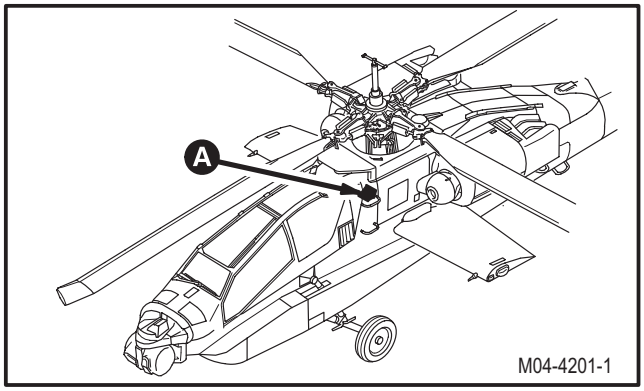
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1500-204-23

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
9.30	Transformer-rectifier No. 1 removed
10.10	Disconnect forward upper vent tube from mounting bracket

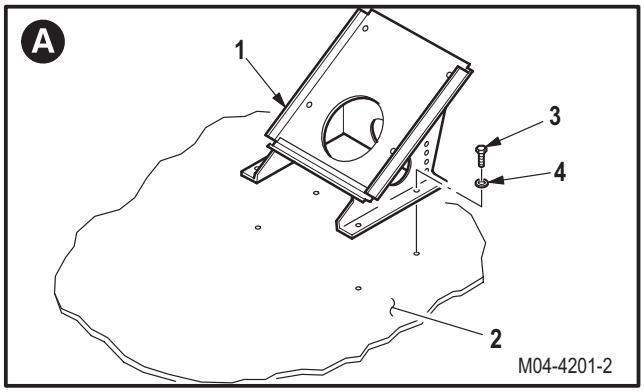


9.31.3. Removal

a. **Remove transformer-rectifier No. 1 support structure (1) from deck (2).**

(1) Remove four bolts (3) and washers (4).

(2) Remove support structure (1).



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9.31. TRANSFORMER-RECTIFIER NO. 1 SUPPORT STRUCTURE REMOVAL/INSTALLATION – continued

9.31.4. Cleaning

a. **Clean support structure mounting surfaces** (para 1.47)**.**

9.31.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check support structure for cracks** (TM 1-1500-204-23)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

d. **Check seal for looseness or tears** (TM 1-1500-204-23)**.**

9.31.6. Installation

a. **Install support structure (1) on deck (2).**

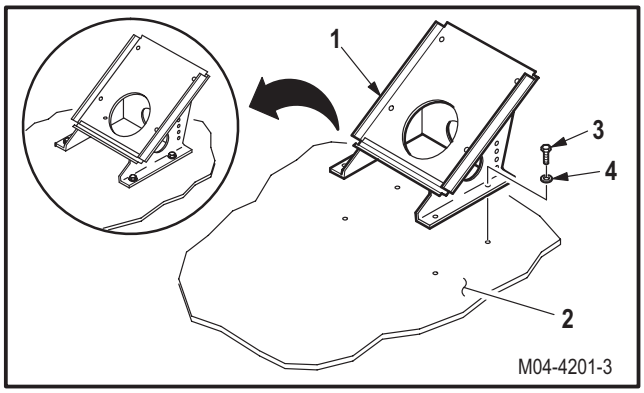
(1) Position support structure (1) on deck (2).

(2) Install four bolts (3) and washers (4).

b. **Inspect (QA).**

c. **Connect forward upper vent tube to mounting bracket** (para 10.10)**.**

d. **Install transformer-rectifier No. 1** (para 9.30)**.**



END OF TASK

9.32. TRANSFORMER-RECTIFIER NO. 2 REMOVAL/INSTALLATION

9.32.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.32.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Multimeter (item 215, App H)
Ohmmeter (item 218, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Materials/Parts:

Wire (item 222, App F)

References:

TM 1-1520-238-T
TM 55-1500-323-24

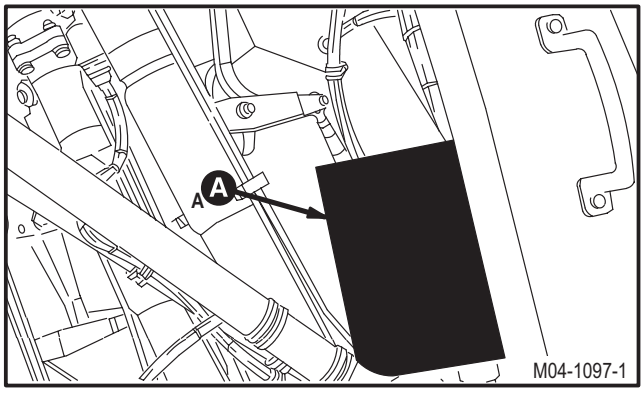
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access panel R200 removed

9.32.3. Removal

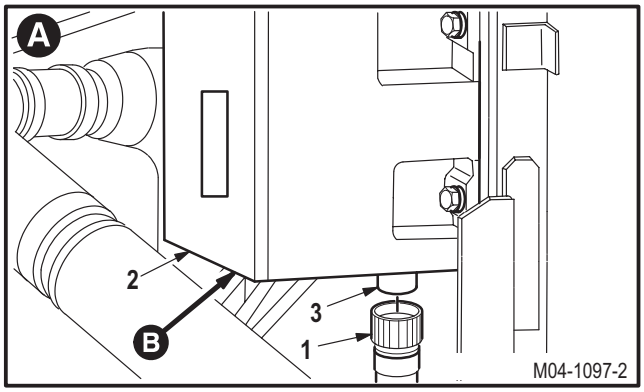
a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot aft circuit breaker panel, open six POWER circuit breakers.**



c. **Detach connector P12 (1) from transformer-rectifier (2).**

(1) Detach connector P12 (1) from receptacle (P52)J1 (3).



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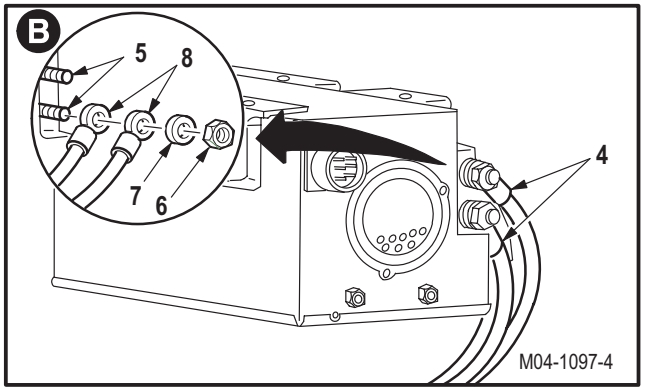
9.32. TRANSFORMER-RECTIFIER NO. 2 REMOVAL/INSTALLATION – continued

d. **Detach four wires (4) from positive and negative terminals (5).**

(1) Identify four wires (4).

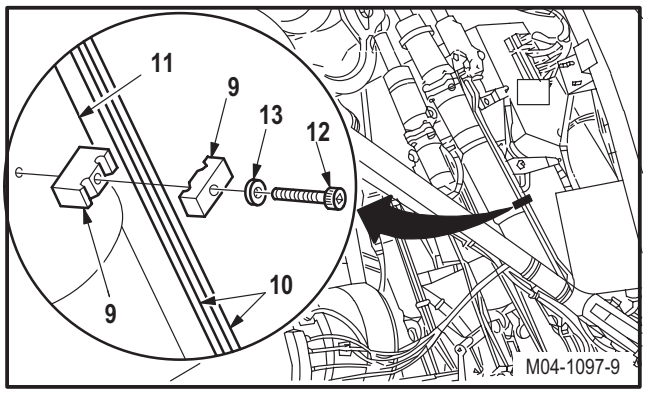
(2) Remove two nuts (6), lockwashers (7), and four terminal lugs (8).



e. **Remove clamp block (9) from hydraulic lines (10) and longitudinal servoactuator (11).**

(1) Remove hex screw (12) and washer (13).

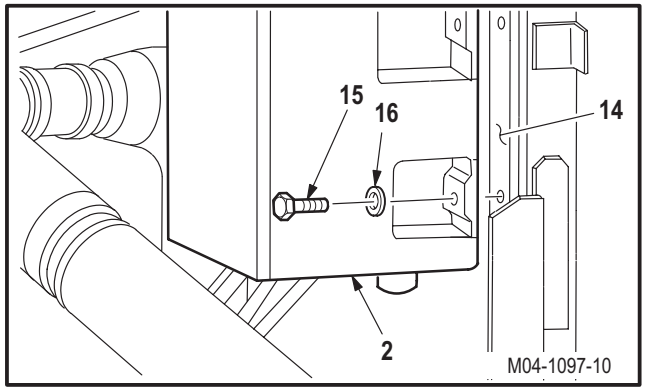
(2) Remove clamp block (9).



f. **Remove transformer-rectifier No. 2 (2) from mount (14).**

(1) Remove four bolts (15) and washers (16).

(2) Remove transformer-rectifier No. 2 (2).



9.32.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

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9.32. TRANSFORMER-RECTIFIER NO. 2 REMOVAL/INSTALLATION – continued

9.32.5. Inspection

a. **Check for missing or damaged nutplates** (para 9.1)**.**

b. **Check removed and attaching parts for damage** (para 9.1)**.**

c. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (para 9.1)**.**

d. **Check connector for cracks, broken connections, bent pins, or damaged threads** (para 9.1)**.**

e. **Check removed and attaching parts for corrosion** (para 1.49)**.**

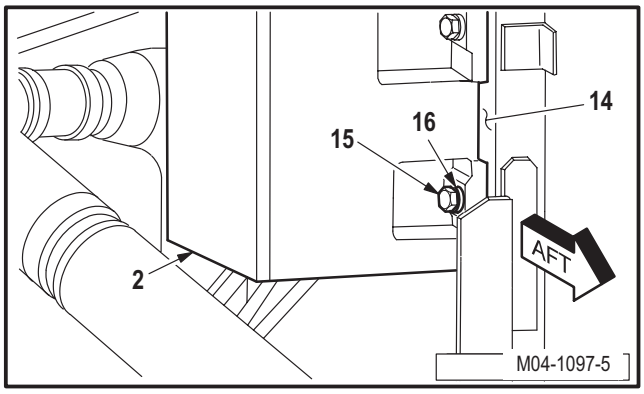
9.32.6. Installation

a. **Install transformer-rectifier (2) on mount (14).**

(1) Position transformer-rectifier (2) on mount (14).

(2) Install two aft bolts (15) and washers (16).

(3) Install two forward bolts (15) and washers (16).



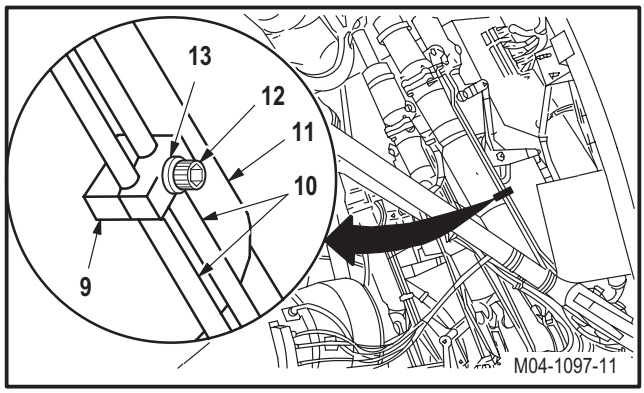
b. **Perform electrical bonding check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

c. **Install clamp block (9) on hydraulic lines (10) and servoactuator (11).**

(1) Position clamp block (9) on lines (10).

(2) Install hex screw (12) through washer (13), and clamp block (9), into servoactuator (11).



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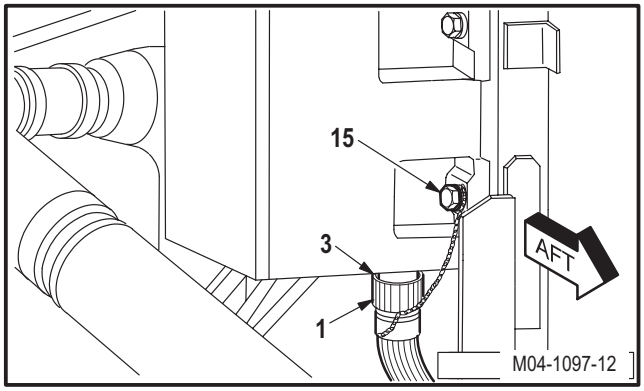
9.32. TRANSFORMER-RECTIFIER NO. 2 REMOVAL/INSTALLATION – continued

d. **Check for ground at connector P12 (1) pin D and negative terminal lugs (8).** Use multimeter.

e. **Attach connector P12 (1) on transformer-rectifier (3).**

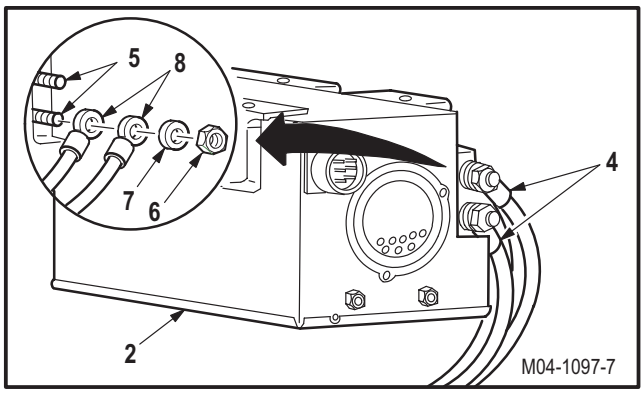
(1) Attach connector P12 (1) to receptacle (P52)J1 (3).

(2) Lockwire connector P12 (1) to bolt (15). Use wire (item 222, App F).



f. **Attach four wires (4) to positive and negative terminals (5) of transformer-rectifier (2).**

(1) Install identified terminal lugs (8), two lockwashers (7), and nuts (6) on terminals (5).



g. **Inspect (QA).**

h. **Perform DC power generation maintenance operational check** (TM 1-1520-238-T)**.**

i. **Install access panel R200** (para 2.2)**.**

END OF TASK

9.33. PILOT ELEC PWR PANEL REMOVAL/INSTALLATION

9.33.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.33.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
L-style socket head key set (item 187, App H)
Ohmmeter (item 218, App H)

References:

TM 1-1520-238-T
TM 55-1500-323-24

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

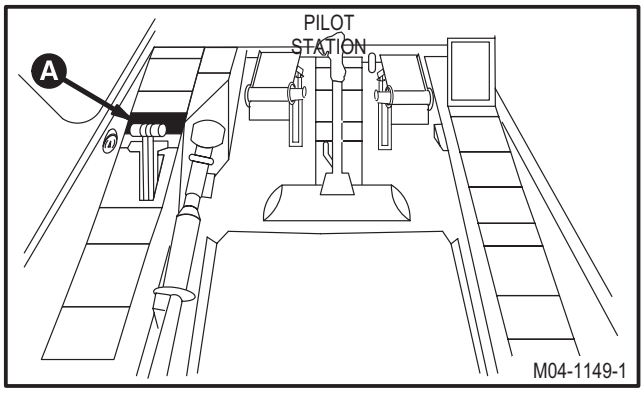
9.33.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot aft circuit breaker panel, open six POWER circuit breakers.**

NOTE

If unable to lift panel clear of console, remove **STORES JETT** and **EMERG PWR OVSP TEST** panels to gain access to connector P172.



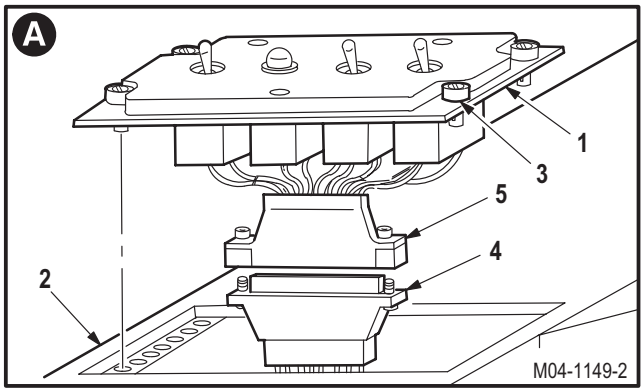
c. **Remove pilot ELEC PWR panel (1) from pilot left console (2).**

(1) Unlock four turnlock fasteners (3).

(2) Lift panel (1) from console (2).

d. **Detach connector (4) from panel (1).**

(1) Detach connector P172 (4) from receptacle (A125)J1 (5). Use socket head key set.



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9.33. PILOT ELEC PWR PANEL REMOVAL/INSTALLATION – continued

9.33.4. Cleaning

a. **Clean removed and attaching parts or surfaces** (para 1.47)**.**

9.33.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check mounting surface for stripped or damaged threads** (para 9.1)**.**

c. **Check connector for bent pins or damaged threads** (para 9.1)**.**

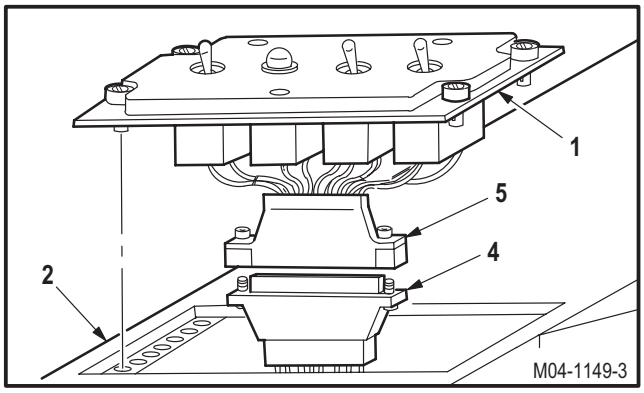
d. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.33.6. Installation

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **Attach connector (4) to panel (1).**

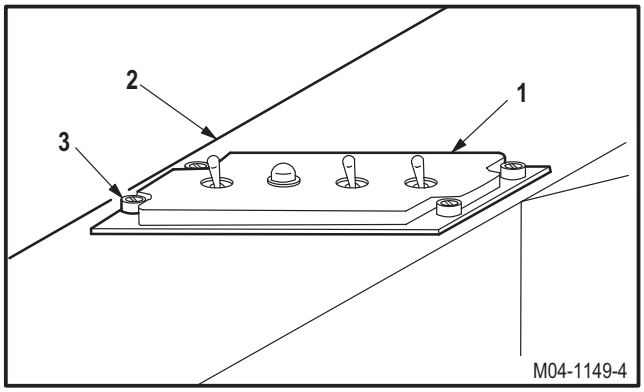
(1) Attach connector P172 (4) to receptacle (A125)J1 (5). Use socket head key set.



c. **Install panel (1) on console (2).**

(1) Position panel (1) on console (2).

(2) Lock four turnlock fasteners (3).



d. **Perform electrical bonding check on panel** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

e. **Inspect (QA).**

f. **Perform external power and ground service utility receptacle maintenance operational check** (TM 1-1520-238-T)**.**

END OF TASK

9.34. PILOT ELEC PWR LIGHT INDICATING PANEL REMOVAL/INSTALLATION

9.34.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.34.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T

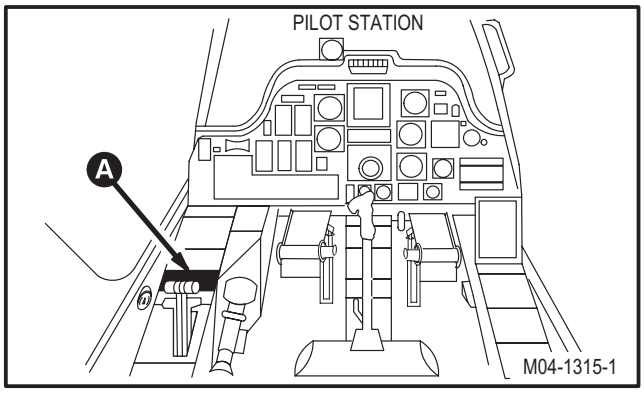
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

9.34.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

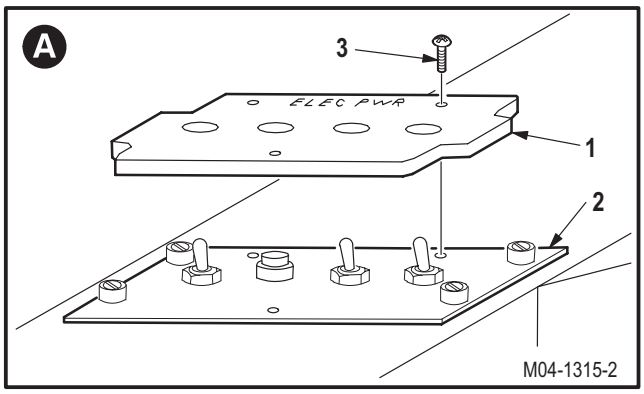
b. **On pilot center circuit breaker panel, open LT PRI circuit breaker.**



c. **Remove light indicating panel (1) from pilot ELEC PWR panel (2).**

(1) Remove three screws (3).

(2) Remove panel (1).



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9.34. PILOT ELEC PWR LIGHT INDICATING PANEL REMOVAL/INSTALLATION – continued

9.34.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

9.34.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check mounting surface for nicks, dents, and damaged or stripped threads.** Thread damage not to exceed 50 percent of one thread.

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.34.6. Installation

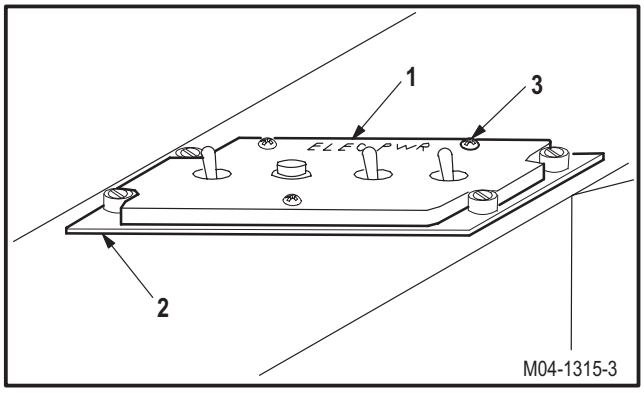
a. **Install panel (1) on pilot panel (2).**

(1) Position panel (1) on panel (2).

(2) Install three screws (3).

b. **Inspect (QA).**

c. **Perform AC power generation maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

9.35. PILOT ELEC PWR PANEL EXT PWR/RESET SWITCH REPLACEMENT

9.35.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.35.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

Personnel Required:

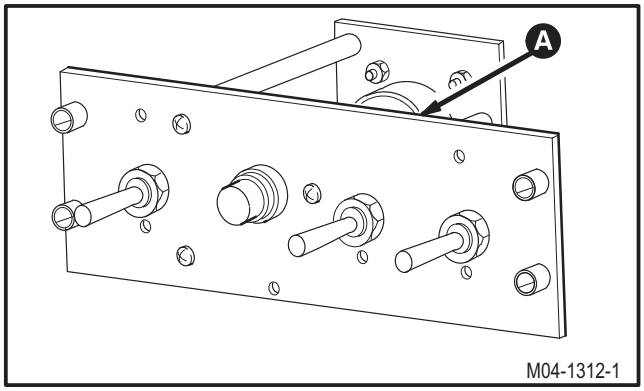
68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T

Equipment Conditions:

Ref	Condition
9.33	Pilot ELEC PWR panel removed
9.34	Pilot ELEC PWR light indicating panel removed



9.35.3. Removal

a. **Remove connector (1) from pilot ELEC PWR panel (2).**

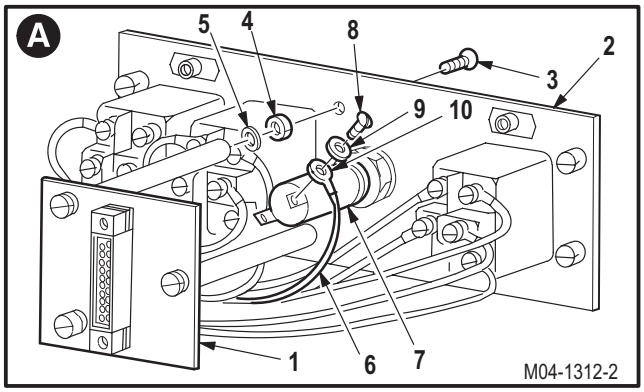
(1) Remove three screws (3), lockwashers (4) and flat washers (5).

(2) Remove connector (1).

b. **Detach two wires (6) from switch (7).**

(1) Identify wires (6).

(2) Remove two screws (8), lockwashers (9), and terminal lugs (10).



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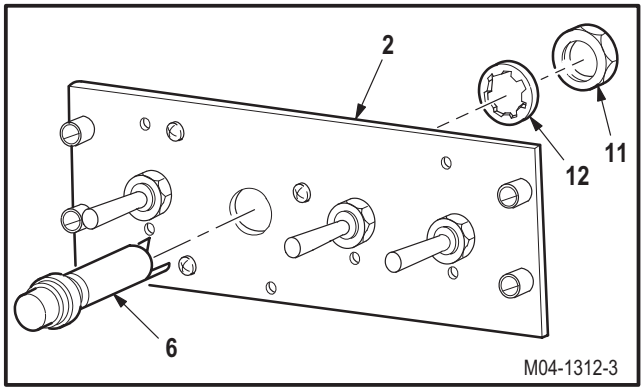
9.35. PILOT ELEC PWR PANEL EXT PWR/RESET SWITCH REPLACEMENT – continued

c. **Remove switch (7) from panel (2).**

(1) Remove nut (11) and lockwasher (12).

(2) Remove and discard switch (7).



9.35.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.35.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (para 9.1)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.35.6. Installation

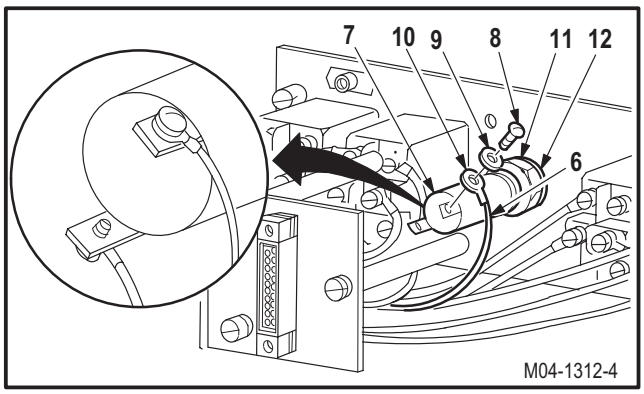
a. **Install new switch (7) on panel (2).**

(1) Install switch (7) on panel (2).

(2) Install lockwasher (12) and nut (11).

b. **Attach two identified wires (6) to switch (7).**

(1) Install two screws (8) through lockwashers (9) into terminal lugs (10).



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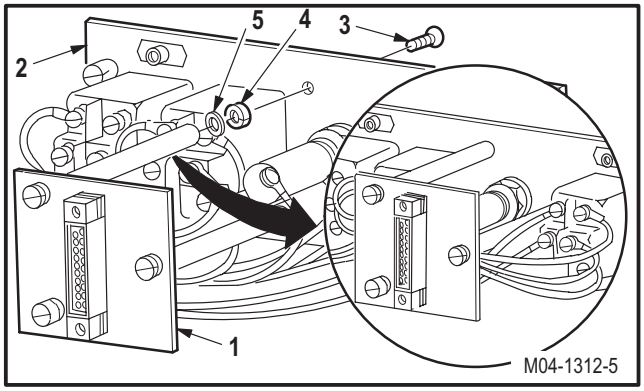
9.35. PILOT ELEC PWR PANEL EXT PWR/RESET SWITCH REPLACEMENT – continued

c. **Install connector (1) on panel (2).**

(1) Position connector (1) on panel (2).

(2) Install three screws (3) through panel (2), lockwashers (4), flat washers (5), into connector (1).



d. **Inspect (QA).**

e. **Install pilot ELEC PWR light indicating panel** (para 9.34)**.**

f. **Install ELEC PWR panel** (para 9.33)**.**

g. **Perform external power and ground service utility receptacle maintenance operational check** (TM 1-1520-238-T)**.**

END OF TASK

9.36. PILOT ELEC PWR PANEL GEN 1, GEN 2, OR BATT/EXT PWR SWITCHES REPLACEMENT

9.36.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.36.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

References:

TM 1-1520-238-T

Equipment Conditions:

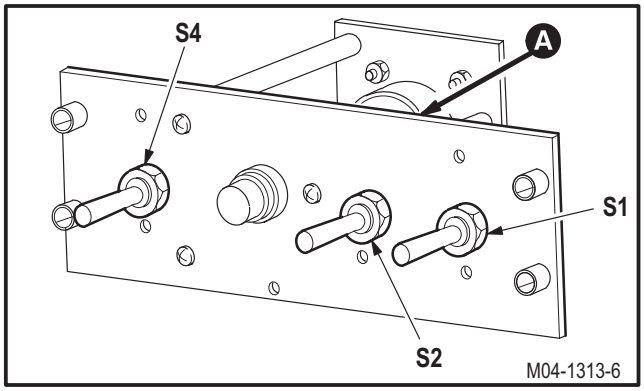
Ref	Condition
1.57	Helicopter safed
9.33	Pilot ELEC PWR panel removed
9.34	Pilot ELEC PWR light indicating panel removed

Personnel Required:

68X	Armament/Electrical System Repairer
68X3F	Armament/Electrical System Repairer/ Technical Inspector

NOTE

This task is typical for switches S1, S2, and S4.



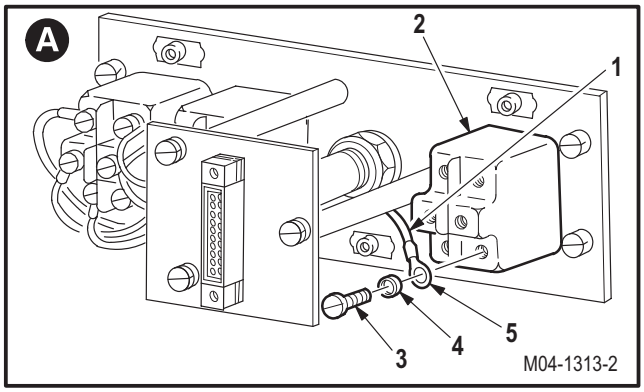
9.36.3. Removal

a. **Detach wires (1) from switch (2).**

(1) Identify wires (1).

(2) Remove screws (3), lockwashers (4), and terminal lugs (5).

(3) Detach wires (1).



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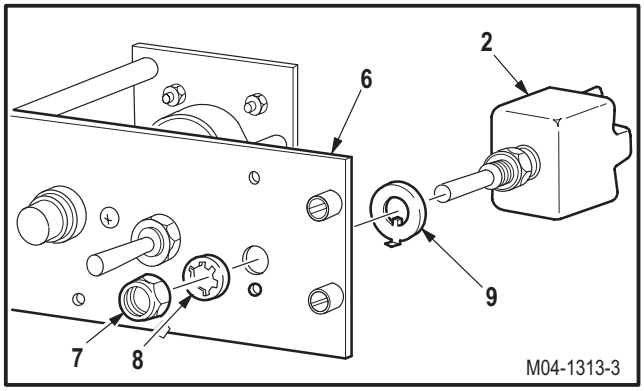
9.36. PILOT ELEC PWR PANEL GEN 1, GEN 2, OR BATT/EXT PWR SWITCHES REPLACEMENT – continued

b. **Detach switch (2) from ELEC PWR panel (6).**

(1) Remove nut (7) and lockwasher (8) from switch (2).

(2) Remove switch (2) and lockring (9) from panel (6).

(3) Remove lockring (9) from switch (2).



9.36.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.36.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (para 9.1)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

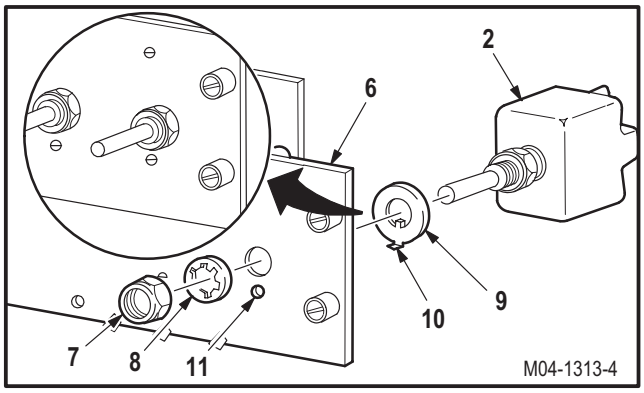
9.36.6. Installation

a. **Install switch (2) on panel (6).**

(1) Install lockring (9) on switch (2).

(2) Insert switch (2) in panel (6) so that tab (10) on lockring (9) seats in locator hole (11).

(3) Install lockwasher (8) and nut (7).



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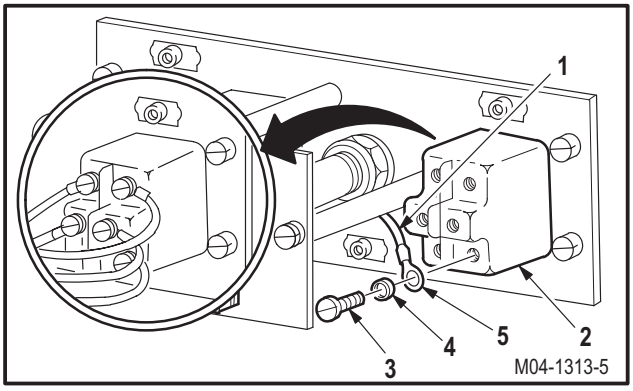
9.36. PILOT ELEC PWR PANEL GEN 1, GEN 2, OR BATT/EXT PWR SWITCHES REPLACEMENT – continued

b. **Attach wires (1) to switch (2).**

(1) Install screws (3) through lockwashers (4), lugs (5), into switch (2).



c. **Inspect (QA).**

d. **Install pilot ELEC PWR light indicating panel** (para 9.34)**.**

e. **Install pilot ELEC PWR panel** (para 9.33)**.**

f. **If GEN 1 or GEN 2 switches were replaced, perform AC electrical power generation maintenance operational check; if BATT/EXT PWR switch was replaced, perform DC electrical power generation maintenance operational check** (TM 1-1520-238-T)**.**

END OF TASK

9.37. EXTERNAL POWER MONITOR REMOVAL/INSTALLATION

9.37.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.37.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Ohmmeter (item 218, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T
TM 9-1230-476-20-1
TM 11-1520-238-23-1
TM 55-1500-323-24

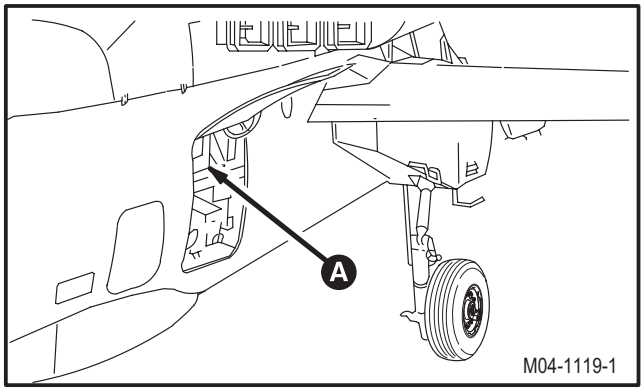
Equipment Conditions:

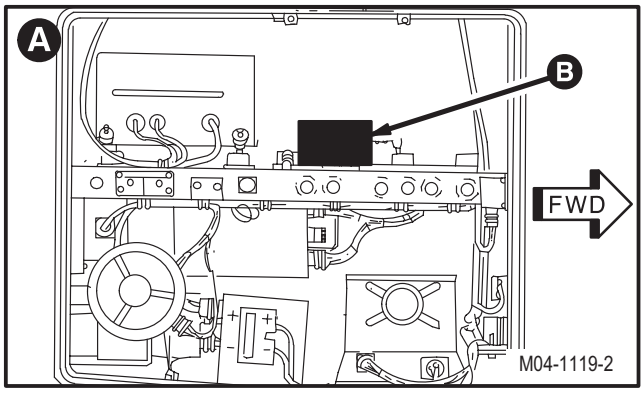
Ref	Condition
1.57	Helicopter safed
2.2	Access door R295 opened
TM 9-1230-476-20-1	Air data processor (ADP) removed
TM 11-1520-238-23-1	IFF computer removed
TM 11-1520-238-23-1	TSEC/KY 28 communication security removed
TM 11-1520-238-23-1	Video recorder removed

9.37.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot aft circuit breaker panel, open six POWER circuit breakers.**





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9.37. EXTERNAL POWER MONITOR REMOVAL/INSTALLATION – continued

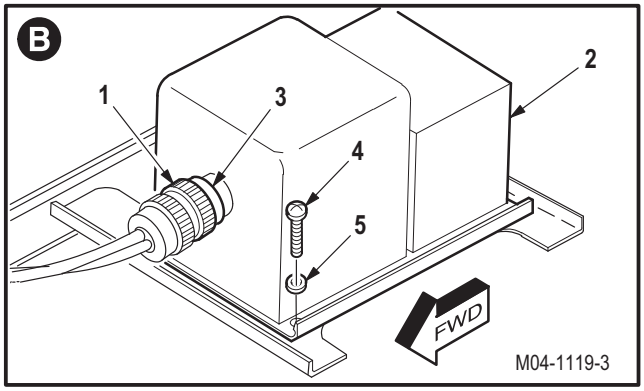
c. **Detach connector P13 (1) from external power monitor (2).**

(1) Detach connector P13 (1) from receptacle (PM1)J1 (3).

d. **Remove power monitor (2).**

(1) Remove four screws (4) and washers (5).

(2) Remove power monitor (2).



9.37.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.37.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check mounting surface for stripped or damaged threads.** Damage not to exceed 50 percent of one thread.

c. **Check connector for cracks, broken connections, bent pins, or damaged threads** (para 9.1)**.**

d. **Check removed and attaching parts for corrosion** (para 1.49)**.**

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9.37. EXTERNAL POWER MONITOR REMOVAL/INSTALLATION – continued

9.37.6. Installation

a. **Install power monitor (2).**

(1) Position power monitor (2).

(2) Install four screws (4) and washers (5).

b. **Attach connector P13 (1) to power monitor (2).**

(1) Attach connector P13 (1) to receptacle (PM1)J1 (3).

c. **Perform electrical bond check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

d. **Install video recorder** (TM 11-1520-238-23-1)**.**

e. **Install TSEC/KY 28 communication security** (TM 11-1520-238-23-1)**.**

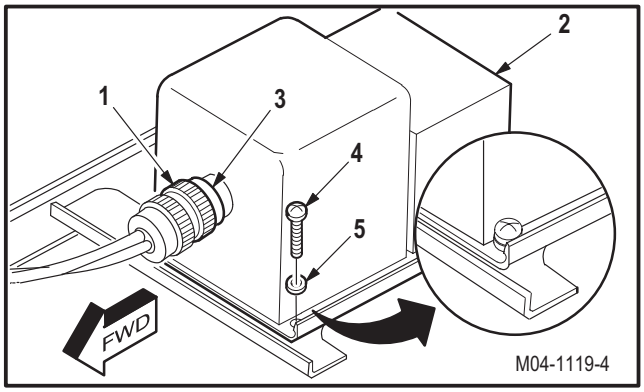
f. **Install IFF computer** (TM 11-1520-238-23-1)**.**

g. **Install ADP** (TM 9-1230-476-20-1)**.**

h. **Inspect (QA).**

i. **Secure access door R295** (para 2.2)**.**

j. **Perform electrical power and ground service utility receptacle maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

9.38. EXTERNAL POWER RECEPTACLE REMOVAL/INSTALLATION

9.38.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.38.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

References:

TM 1-1520-238-T

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

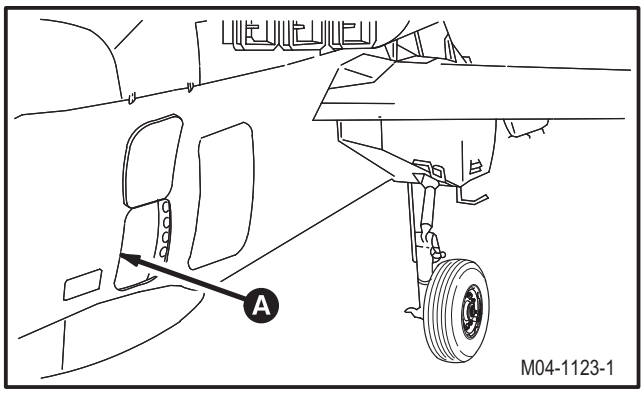
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access doors R330 and R345 opened

9.38.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

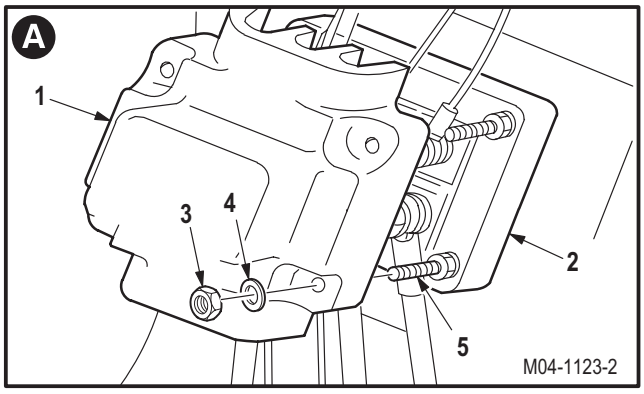
b. **On pilot aft circuit breaker panel, open six POWER circuit breakers.**



c. **Remove terminal cover (1) from receptacle J14 (2).**

(1) Remove four nuts (3) and washers (4) from screws (5).

(2) Remove cover (1).



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9.38. EXTERNAL POWER RECEPTACLE REMOVAL/INSTALLATION – continued

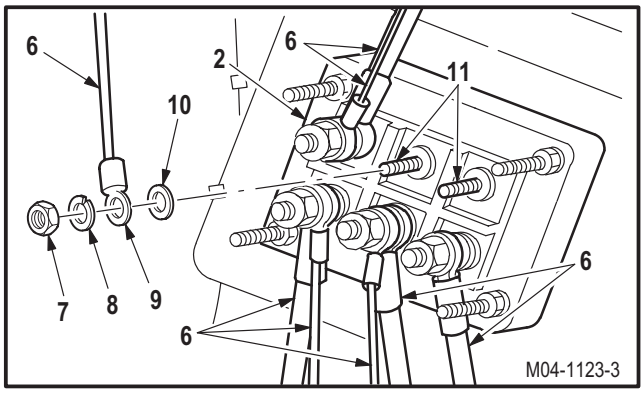
NOTE

Access to back of receptacle J14 is through R330 access door.

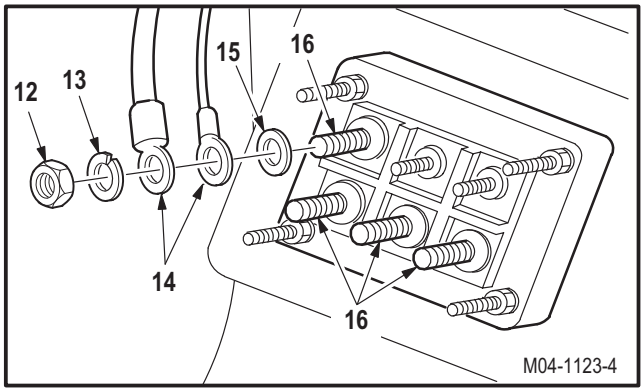
d. **Detach wires (6) from receptacle (2).**

(1) Identify wires (6).

(2) Remove two nuts (7), lockwashers (8), terminal lugs (9), and flat washers (10) from small terminals (11).



(3) Remove four nuts (12), lockwashers (13), terminal lugs (14), and flat washers (15) from large terminals (16).

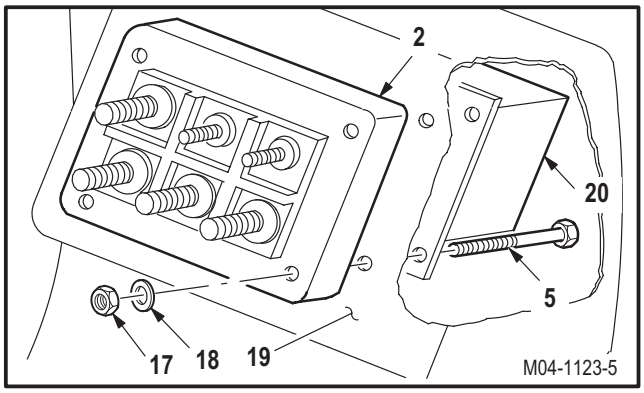


e. **Remove receptacle (2).**

(1) Remove four nuts (17) and washers (18) from screws (5).

(2) Remove four screws (5) from receptacle (2), airframe (19), and shield (20).

(3) Remove receptacle (2) and shield (20).



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9.38. EXTERNAL POWER RECEPTACLE REMOVAL/INSTALLATION – continued

9.38.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.38.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (para 9.1)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

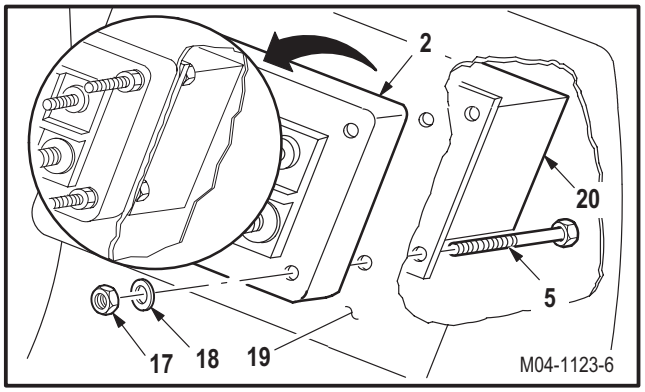
9.38.6. Installation

a. **Install receptacle (2).**

(1) Position shield (20) and receptacle (2) on airframe (19).

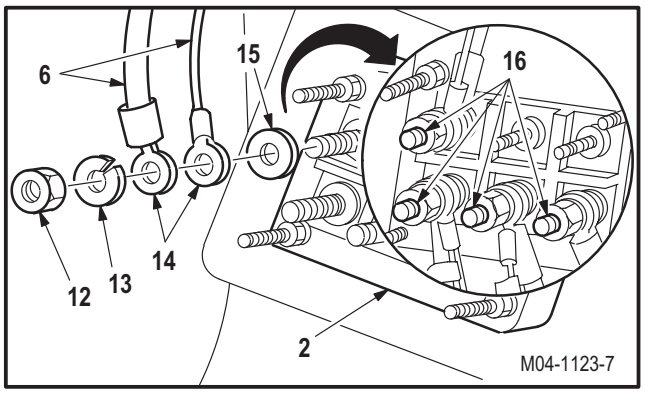
(2) Install four screws (5) through shield (20), airframe (19), and receptacle (2).

(3) Install four washers (18) and nuts (17) on screws (5).



b. **Attach wires (6) to receptacle (2).**

(1) Install four flat washers (15), identified terminal lugs (14), lockwashers (13), and nuts (12) on large terminals (16).



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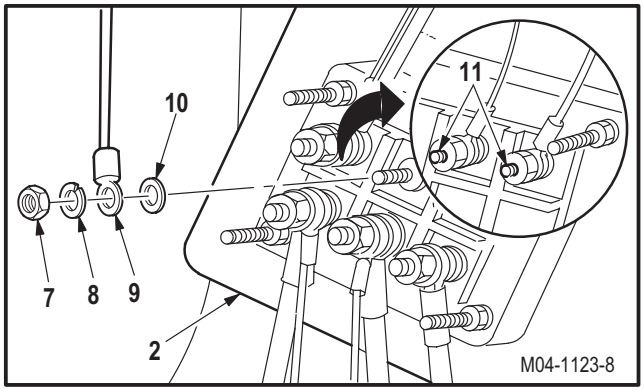
9.38. EXTERNAL POWER RECEPTACLE REMOVAL/INSTALLATION – continued

(2) Install two flat washers (10), identified terminal lugs (9), lockwashers (8), and nuts (7) on small terminals (11).

c. **Inspect (QA).**



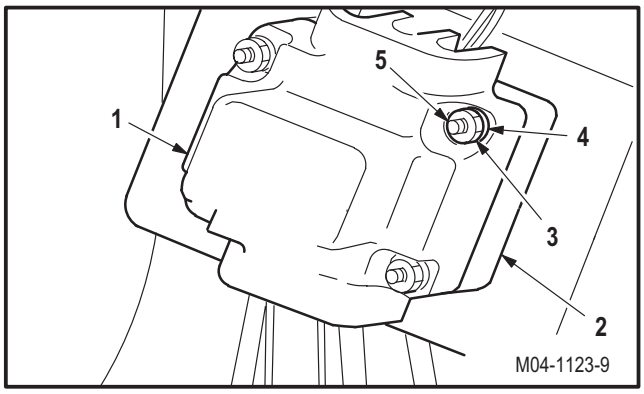
d. **Install cover (1) on receptacle (2).**

(1) Position cover (1) on receptacle (2).

(2) Install four washers (4) and nuts (3) on screws (5).

e. **Perform external power and ground service utility receptacle maintenance operational check** (TM 1-1520-238-T)**.**

f. **Secure access doors R330 and R345** (para 2.2)**.**



END OF TASK

9.39. EXTERNAL POWER ACCESS DOOR SWITCH REMOVAL/INSTALLATION

9.39.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.39.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
5-watt electric soldering iron (item 333, App H)

References:

TM 1-1520-238-T
TM 55-1500-323-24

Materials/Parts:

Solder (item 189, App F)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

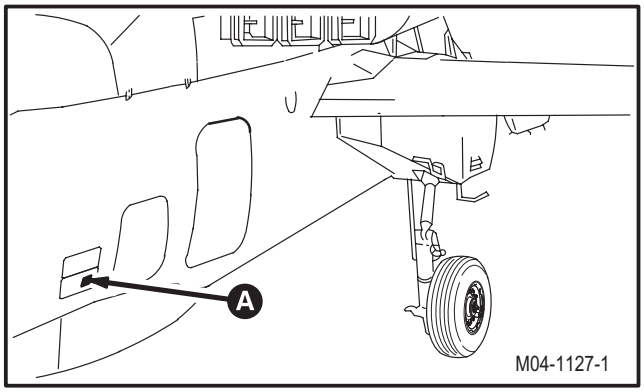
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access door R345 open

9.39.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot aft circuit breaker panel, open six POWER circuit breakers.**

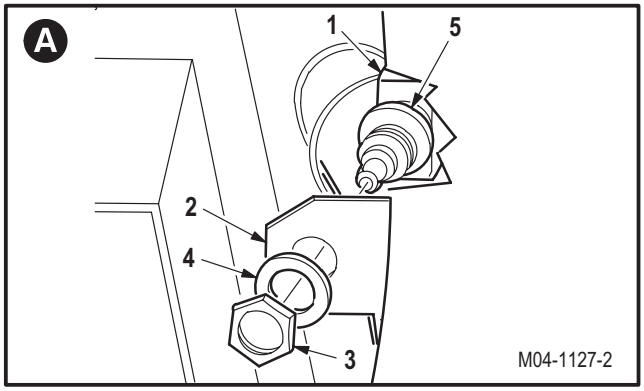


c. **Remove microswitch S13 (1) from mounting bracket (2).**

(1) Remove nut (3) and washer (4).

(2) Remove microswitch (1).

(3) Remove washer (5) from microswitch (1).



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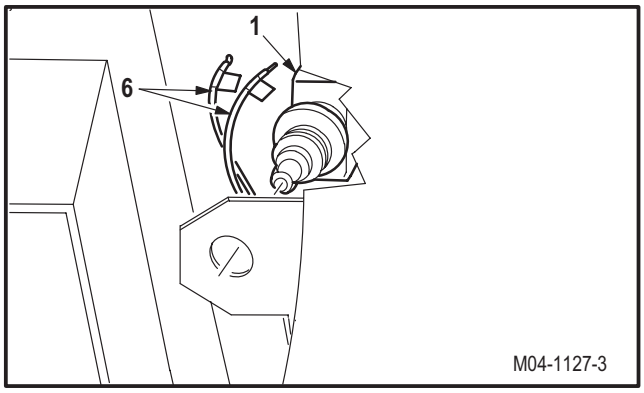
9.39. EXTERNAL POWER ACCESS DOOR SWITCH REMOVAL/INSTALLATION – continued

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

d. **Desolder wires (6) from microswitch (1).**

(1) Identify and desolder wires (6) (TM 55-1500-323-24). Use soldering iron.



9.39.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.39.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check wires for wear, cuts, and breaks** (para 9.1)**.**

c. **Check access door R345 for damage** (para 2.2)**.**

d. **Check removed and attaching parts for corrosion** (para 1.49)**.**

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9.39. EXTERNAL POWER ACCESS DOOR SWITCH REMOVAL/INSTALLATION – continued

9.39.6. Installation

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

a. **Solder wires (6) to microswitch (1).**

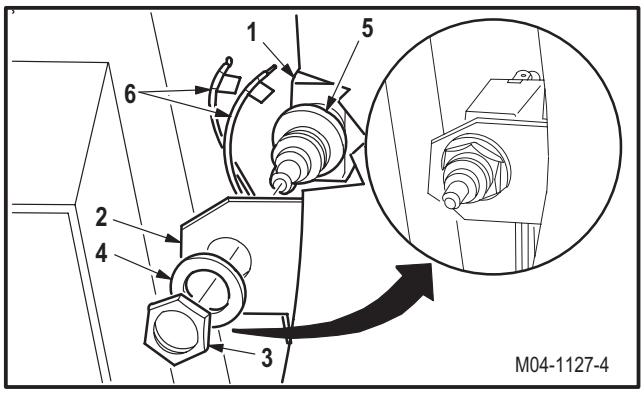
(1) Solder identified wires (6) (TM 55-1500-323-24). Use soldering iron and solder (item 189, App F).

b. **Install microswitch (1) on bracket (2).**

(1) Install washer (5) on microswitch (1).

(2) Install microswitch (1).

(3) Install washer (4) and nut (3).



c. **Inspect (QA).**

d. **Perform external power and ground service utility connector maintenance operational check** (TM 1-1520-238-T)**.**

e. **Secure access door R345** (para 2.2)**.**

END OF TASK

9.40. HELICOPTER BATTERY REMOVAL/INSTALLATION

9.40.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.40.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
0 - 75 inch-pound 1/4-inch drive dial indicator torque wrench (item 446, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T
TM 11-6140-203-23

Materials/Parts:

Brush (item 34, App F)
Corrosion preventive compound (item 62, App F)
Corrosion preventive compound (item 64, App F)
Sodium phosphate (item 188, App F)

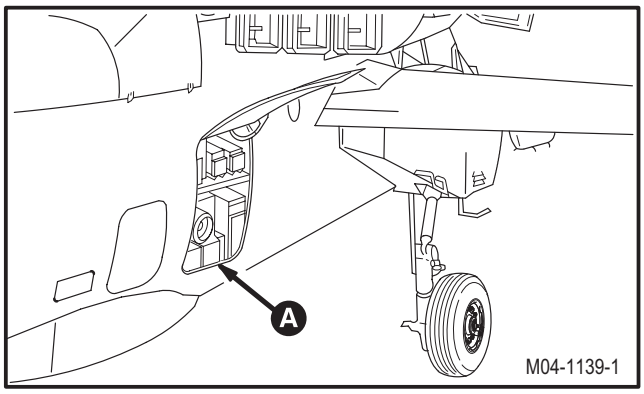
Equipment Conditions:

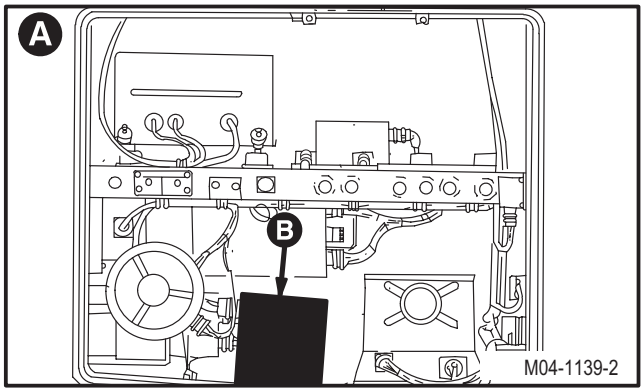
Ref	Condition
1.57	Helicopter safed
2.2	Access door R295 opened

9.40.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot aft circuit breaker panel, open six POWER circuit breakers.**





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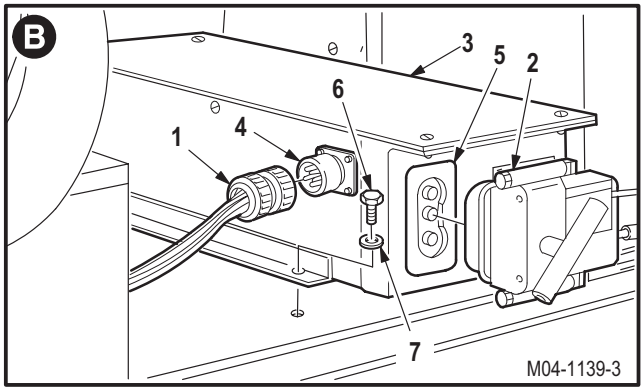
9.40. HELICOPTER BATTERY REMOVAL/INSTALLATION – continued

c. **Detach connectors P81 (1) and P87 (2) from battery (BT1) (3).**

(1) Detach connector (1) from battery receptacle (BT1)J2 (4).

(2) Detach connector (2) from battery receptacle (BT1)J3 (5).



d. **Remove battery (3).**

(1) Remove four bolts (6) and washers (7).

(2) Remove battery (3).

9.40.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

b. **Clean terminals and attaching leads.** Use sodium phosphate (item 188, App F) and brush (item 34, App F).

c. **Spray corrosion preventive film on connector assembly.** Use corrosion preventive compound (item 64, App F).

d. **Apply corrosion preventive compound to connector assembly.** Use corrosion preventive compound (item 62, App F).

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9.40. HELICOPTER BATTERY REMOVAL/INSTALLATION

9.40.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check for excessive free-play in hand wheel-worm assembly.** Replace if necessary.

c. **Check connector helixes for corrosion** (para 1.49)**.**

d. **Check connector helixes for pitting and arcing burns** (para 9.1)**.**

e. **Check mounting surface and nutplates for stripped or damaged threads** (para 9.1)**.**

f. **Check connector for bent pins or damaged threads** (para 9.1)**.**

g. **Check removed and attaching parts for corrosion** (para 1.49)**.**

h. **Check connector helixes for minimum withdrawal force** (para 9.1)**.**

i. **Inspect battery** (TM 11-6140-203-23)**.**

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9.40. HELICOPTER BATTERY REMOVAL/INSTALLATION – continued

9.40.6. Installation

WARNING

When battery is connected and APU start switch is set to START, APU will start and run with battery switch in off position. If APU were to start, death or serious injury could result. If injury occurs, seek medical aid.

CAUTION

To prevent damage to battery floor threaded inserts, do not exceed **25 INCH-POUNDS** of torque.

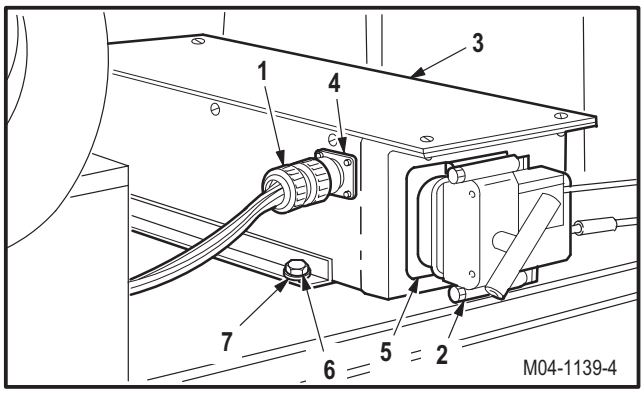
a. **Install battery (3).** Torque four bolts (6) to **25 INCH-POUNDS**.

(1) Install four bolts (6) and washers (7).

(2) Torque four bolts (6) to **25 INCH-POUNDS**. Use torque wrench.

NOTE

Ensure cables do not chafe battery baffle assembly on floor.



b. **Attach connectors P87 (2) and P81 (1) to battery (3).**

(1) Attach connector (2) to battery receptacle (BT1)J3 (5).

(2) Attach connector (1) to battery receptacle (BT1)J2 (4).

c. **Inspect (QA).**

d. **Perform battery maintenance operational check** (TM 1-1520-238-T)**.**

e. **Secure access door R295** (para 2.2)**.**

END OF TASK

9.41. BATTERY RELAY REMOVAL/INSTALLATION

9.41.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.41.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Ohmmeter (item 218, App H)
Adjustable air filtering respirator (item 262, App H)

References:

TM 1-1520-238-T
TM 55-1500-323-24

Materials/Parts:

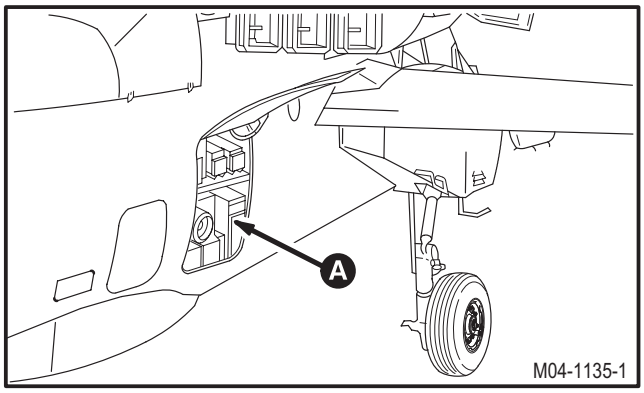
Corrosion preventive compound (item 62, App F)
Corrosion preventive compound (item 64, App F)

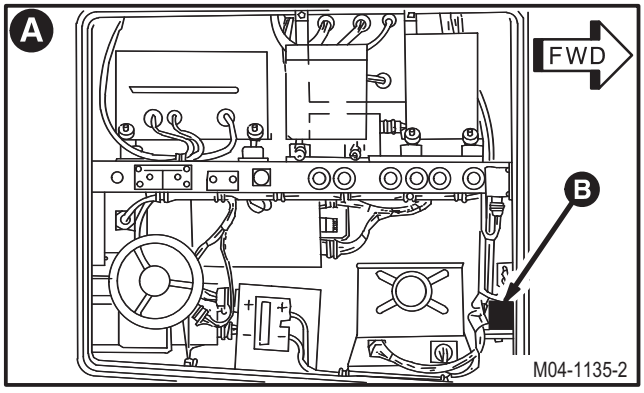
Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
9.40	Helicopter battery removed





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9.41. BATTERY RELAY REMOVAL/INSTALLATION – continued

9.41.3. Removal

WARNING

High current 28 VDC is present. Disconnect battery before performing maintenance to the battery relay. Failure to do so could result in death or serious injury. If injury occurs, seek medical aid.

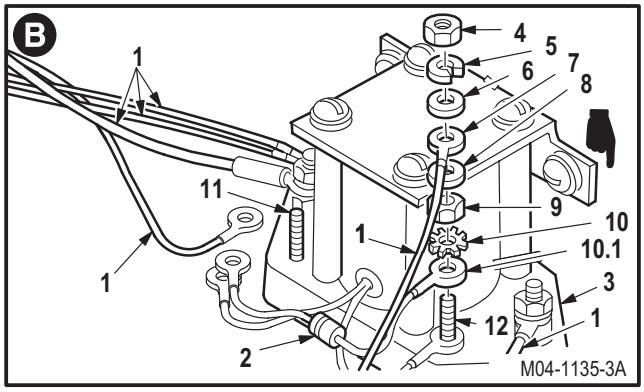
CAUTION

Identify diode direction during removal for proper polarity during installation. Accidental polarity reversal will damage diode and/or other components.

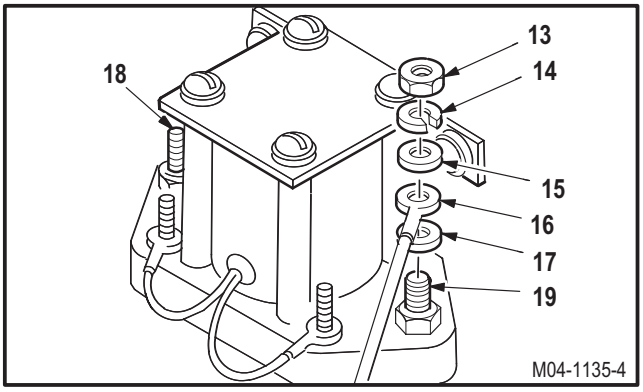
a. **Detach wires (1) and diode (2) from battery relay (3).**

(1) Identify wires (1) and diode (2) attached to relay (3).

(2) Remove two nuts (4), lockwashers (5), flat washers (6), terminal lugs (7), flat washers (8), nuts (9), lockwashers (10), terminal lug (10.1), and diode (2) from two terminal studs (11) and (12).



(3) Remove two nuts (13), lockwashers (14), flat washers (15), terminal lugs (16), and flat washers (17) from two terminal studs (18) and (19).



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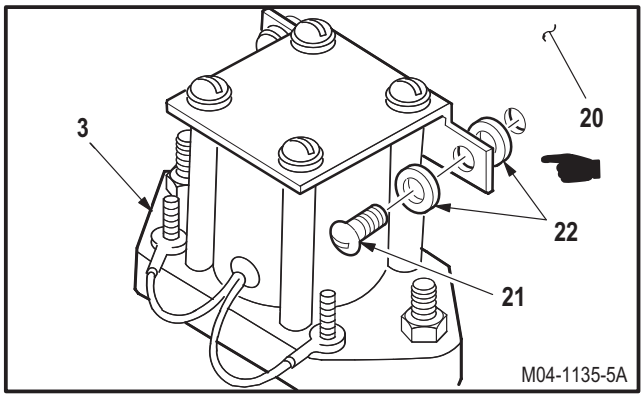
9.41. BATTERY RELAY REMOVAL/INSTALLATION – continued

b. **Remove relay (3) from aft avionics bay bulkhead (20).**

(1) Remove two screws (21) and four washers (22).

(2) Remove relay (3).



9.41.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.41.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (para 9.1)**.**

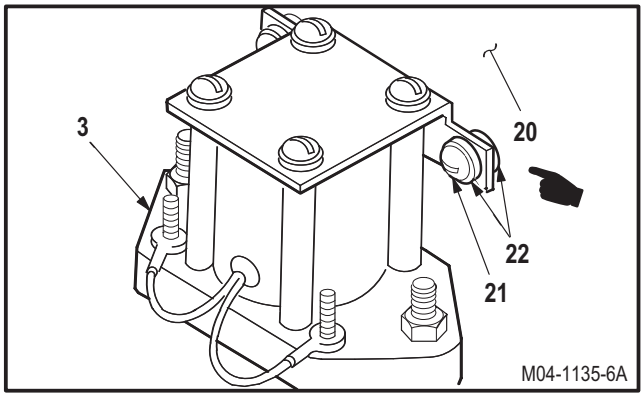
c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.41.6. Installation

a. **Install relay (3) on bulkhead (20).**

(1) Position relay (3) on bulkhead (20).

(2) Install two screws (21) and four washers (22).



b. **Perform electrical bond check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.1 OHM** or less. Use ohmmeter.

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9.41. BATTERY RELAY REMOVAL/INSTALLATION – continued

CAUTION

Ensure diode band (gate) is alined to X1 for proper polarity during installation. Accidental polarity reversal will damage diode and/or other components.

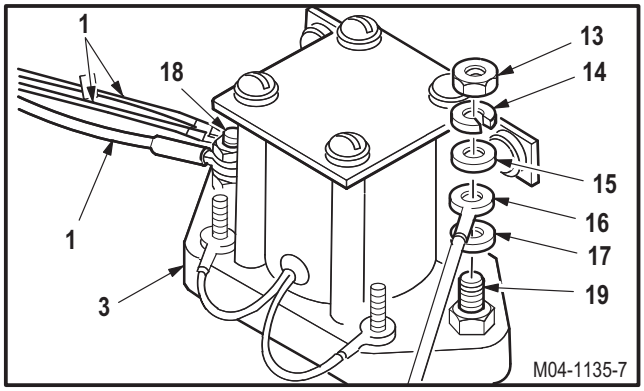
c. **Attach identified wires (1) and diode (2) to relay (3).**

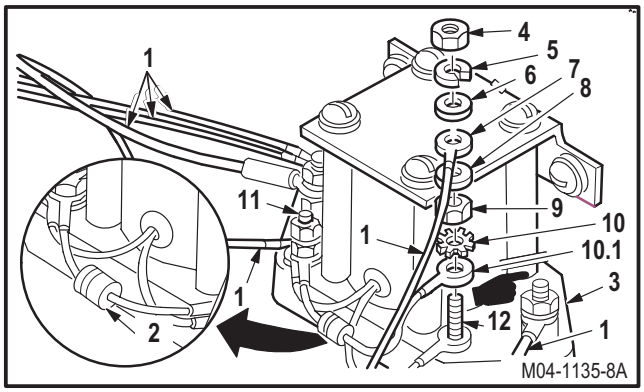
(1) Install two flat washers (17), terminal lugs (16), flat washers (15), lockwashers (14), and nuts (13) on terminal studs (18) and (19).

(2) Install identified diode (2), two terminal lugs (10.1), lockwashers (10), nuts (9), flat washers (8), terminal lugs (7), flat washers (6), lockwashers (5), and nuts (4) on terminal studs (11) and (12).

(3) Spray corrosion preventive film on terminal stack-ups on studs (11), (12), (18), and (19). Use corrosion preventive compound (item 64, App F).

(4) Apply corrosion preventive compound to terminal stack-ups on studs (11), (12), (18), and (19). Use corrosion preventive compound (item 62, App F).





d. **Install helicopter battery** (para 9.40**).**

e. **Inspect (QA).**

f. **Perform battery maintenance operational check** (TM 1–1520–238–T)**.**

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9.41A. BATTERY CHARGER FILTER REMOVAL/INSTALLATION

9.41A.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.41A.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T

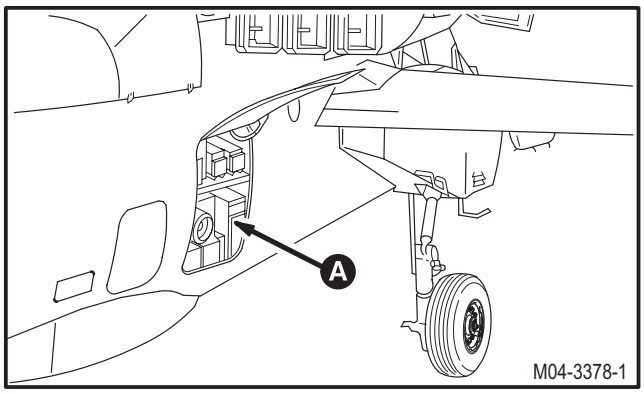
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access Door R295 opened

9.41A.3. Removal

WARNING

High current 28 VDC is present. Disconnect battery before performing maintenance to the battery charger filter. Failure to do so could result in death or serious injury. If injury occurs, seek medical aid.



a. **Detach wires (1) and (2) from P80 pins H and W on Battery Charger.**

b. **Disconnect P2732 (3) from J1 (4) of the battery charger filter assembly (10).**

c. **Remove four screws (5), washers (6), standoffs (7), lockwashers (8), and nuts (9) from battery charger filter assembly (10).**

d. **Remove battery charger filter assembly (10).**

9.41A.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47).

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9.41A. BATTERY CHARGER FILTER REMOVAL/INSTALLATION – continued

9.41A.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1).

b. **Check wires for wear, cuts, and breaks** (para 9.1).

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.41A.6. Installation

a. **Install battery charger filter assembly (10)**.

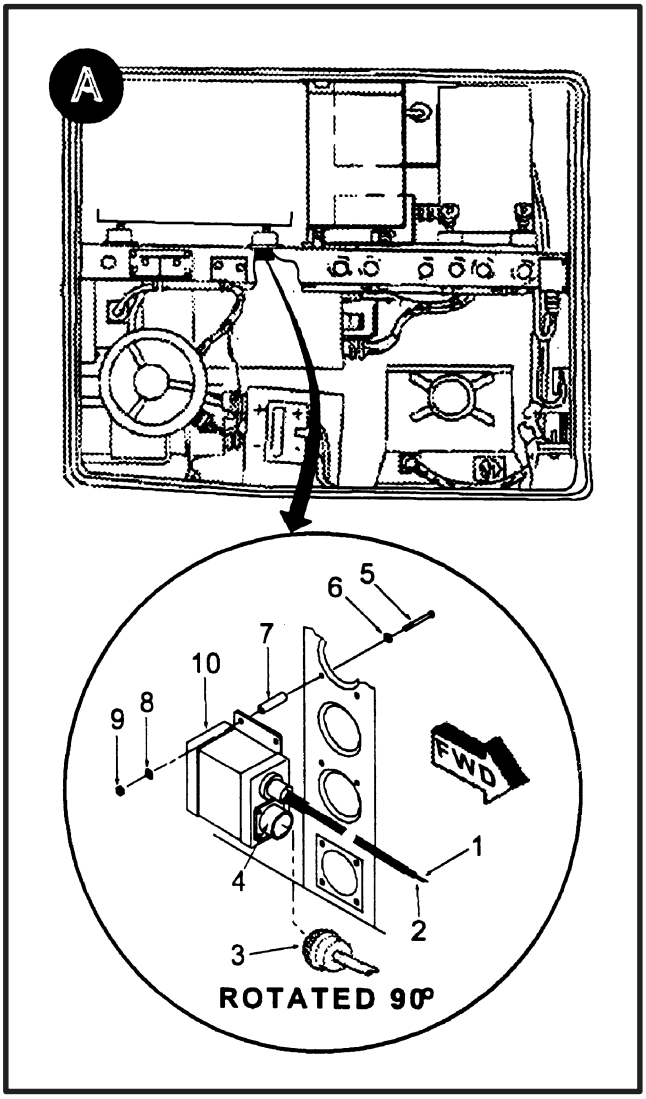
(1) Position battery charger filter assembly (10).

(2) Install four screws (5), washers (6), standoffs (7), lockwashers (8), and nuts (9) to battery charger filter assembly (10).

(3) Connect P2732 (3) to J1 (4) of the battery charger filter assembly (10).

(4) Connect wire (1) to P80 pin H and wire (2) to P80 pin W on Battery Charger.

b. **Inspect (QA)**.



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9.42. MAINT LT OR APU CIRCUIT BREAKER REMOVAL/INSTALLATION

9.42.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.42.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

References:

TM 1-1520-238-T

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access door R295 opened

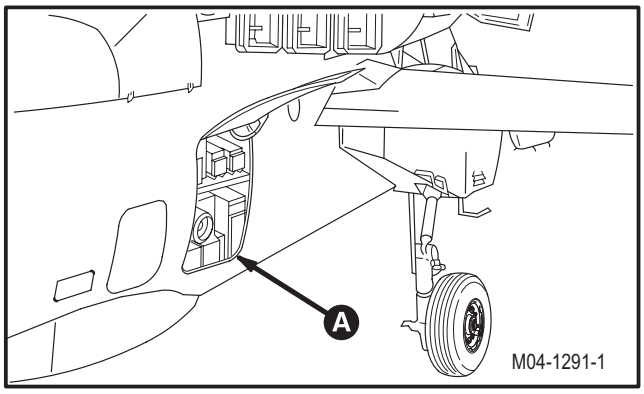
NOTE

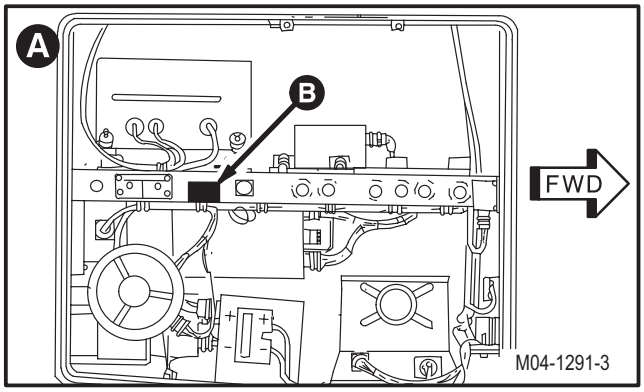
This task is typical for both circuit breakers.

9.42.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot aft circuit breaker panel, open six POWER circuit breakers.**





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9.42. MAINT LT OR APU CIRCUIT BREAKER REMOVAL/INSTALLATION – continued

c. **Remove MAINT LT (CB8) or APU (CB148) circuit breaker (1).**

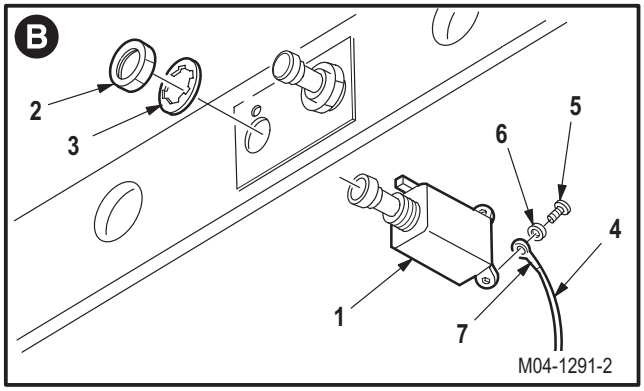
(1) Remove nut (2) and washer (3) from circuit breaker (1).

(2) Remove circuit breaker (1).

d. **Detach two wires (4) from circuit breaker (1).**

(1) Identify two wires (4).

(2) Remove two screws (5), washers (6), and terminal lugs (7).



9.42.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.42.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (para 9.1)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

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9.42. MAINT LT OR APU CIRCUIT BREAKER REMOVAL/INSTALLATION – continued

9.42.6. Installation

a. **Attach two identified wires (4) to circuit breaker (1).**

(1) Install two screws (5) through washers (6) and terminal lugs (7) into circuit breaker (1).

b. **Install circuit breaker (1).**

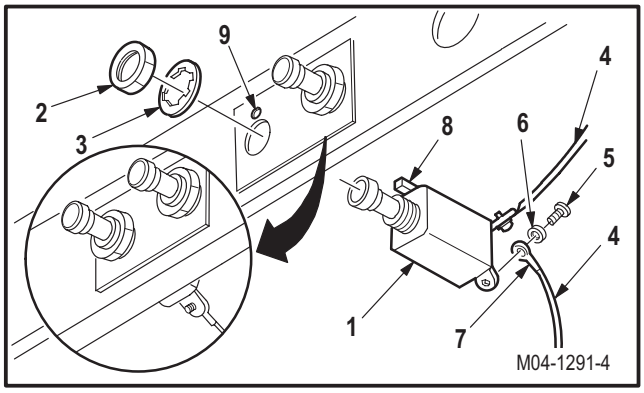
(1) Install circuit breaker (1) so that tab (8) seats in locator hole (9).

(2) Install washer (3) and nut (2).

c. **Inspect (QA).**

d. **Perform maintenance lights or auxiliary power unit maintenance operational check** (TM 1-1520-238-T)**.**

e. **Secure access door R295** (para 2.2)**.**



END OF TASK

9.43. CPG CIRCUIT BREAKER PANEL NO. 1 REMOVAL/INSTALLATION

9.43.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.43.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Ohmmeter (item 218, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

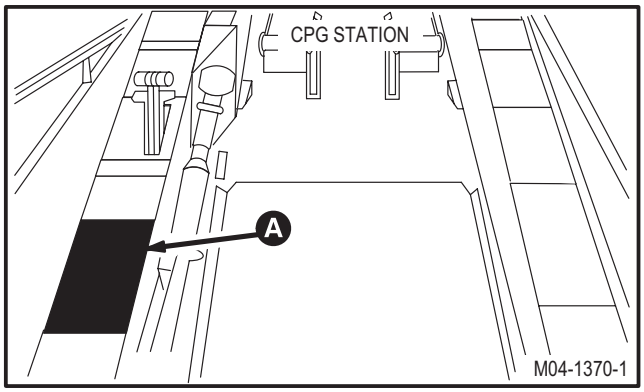
Ref	Condition
1.57	Helicopter safed

9.43.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot aft circuit breaker panel, open six POWER circuit breakers.**

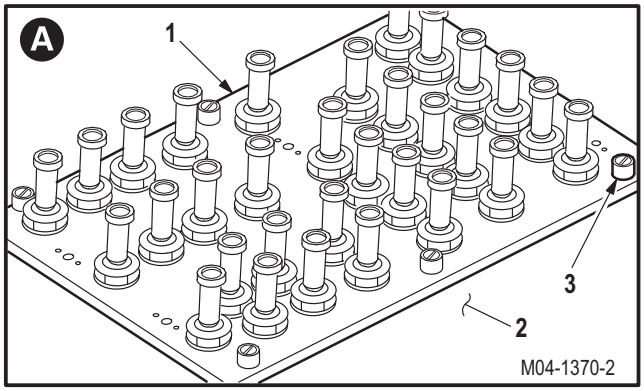
c. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**



d. **Remove CPG circuit breaker panel No. 1 (1) from console (2).**

(1) Unlock six turn fasteners (3).

(2) Remove panel (1).



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9.43. CPG CIRCUIT BREAKER PANEL NO. 1 REMOVAL/INSTALLATION – continued

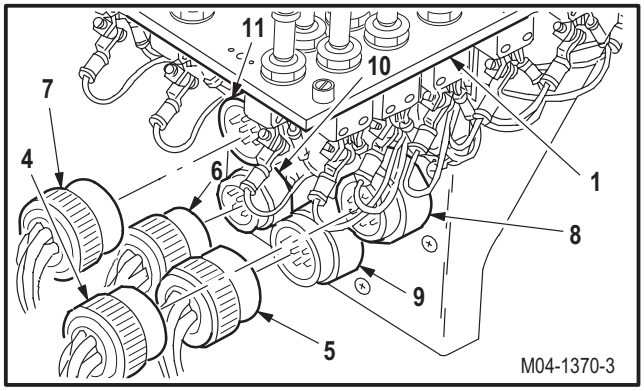
e. **Detach connectors P767 (4), P768 (5), P766 (6), and P769 (7) from panel (1).**

(1) Detach connector P767 (4) from receptacle (A77)J2 (8).

(2) Detach connector P768 (5) from receptacle (A77)J3 (9).

(3) Detach connector P766 (6) from receptacle (A77)J1 (10).

(4) Detach connector P769 (7) from receptacle (A77)J4 (11).



9.43.4. Cleaning

a. **Wipe panel mounting area with a clean rag** (para 1.47)**.**

9.43.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (para 9.1)**.**

c. **Check connectors for bent pins or damaged threads** (para 9.1)**.**

d. **Check circuit breaker panel for dust and other contamination.** Remove contamination and dust.

e. **Check removed and attaching parts for corrosion** (para 1.49)**.**

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9.43. CPG CIRCUIT BREAKER PANEL NO. 1 REMOVAL/INSTALLATION – continued

9.43.6. Installation

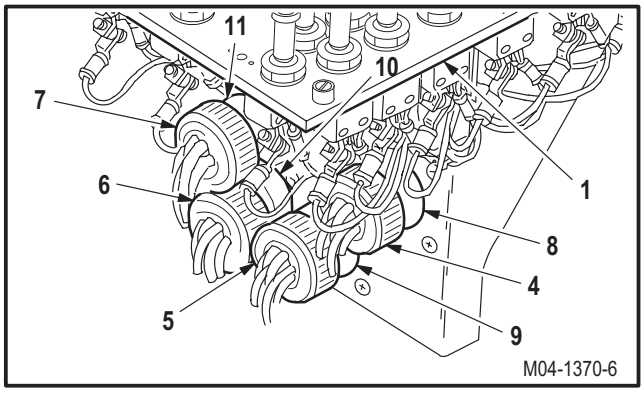
a. **Attach connectors P769 (7), P766 (6), P768 (5), and P767 (4) to panel (1).**

(1) Attach connector P769 (7) to receptacle (A77)J4 (11).

(2) Attach connector P766 (6) to receptacle (A77)J1 (10).

(3) Attach connector P768 (5) to receptacle (A77)J3 (9).

(4) Attach connector P767 (4) to receptacle (A77)J2 (8).

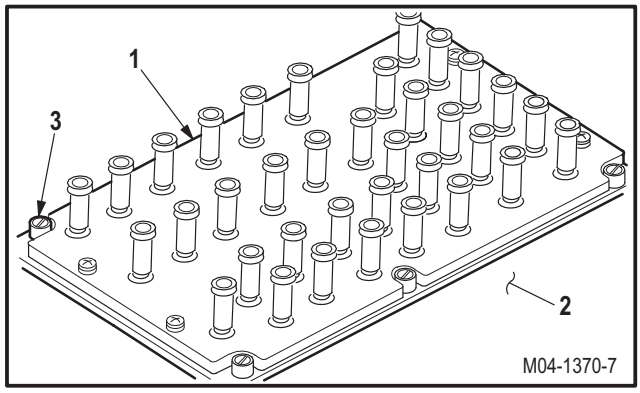


b. **Inspect (QA).**

c. **Install panel (1) on console (2).**

(1) Position panel (1) on console (2).

(2) Lock six turn fasteners (3).



d. **Perform electrical bond check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

e. **Inspect (QA).**

f. **Refer to circuit breaker reference list to perform appropriate maintenance operational check** (TM 1-1520-238-T)**.**

END OF TASK

9.44. CPG CIRCUIT BREAKER PANEL NO. 1 LIGHT INDICATING PANEL REMOVAL/INSTALLATION

9.44.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.44.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

References:

TM 1-1520-238-T

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

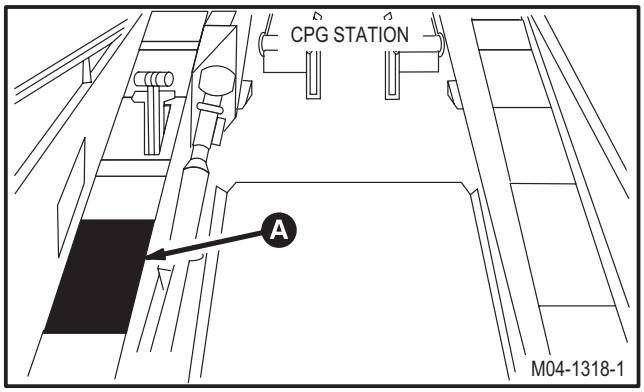
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

9.44.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

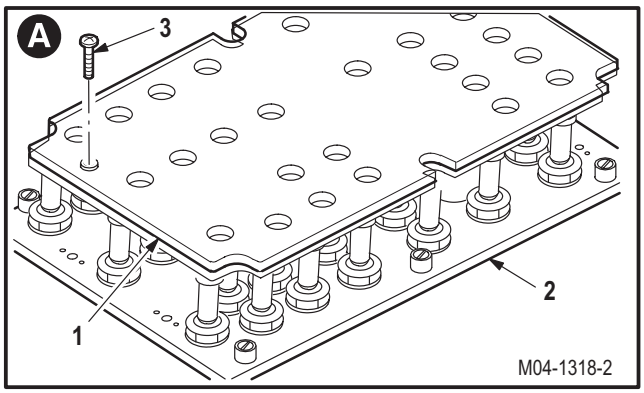
b. **On CPG circuit breaker panel No. 1, open LT PRI circuit breaker.**



c. **Remove light indicating panel (1) from CPG circuit breaker panel No. 1 (2).**

(1) Remove five screws (3).

(2) Remove panel (1).



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9.44. CPG CIRCUIT BREAKER PANEL NO. 1 LIGHT INDICATING PANEL REMOVAL/INSTALLATION – continued

9.44.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

9.44.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check indicating panel connector and receptacle on circuit breaker panel for damage.** None allowed.

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

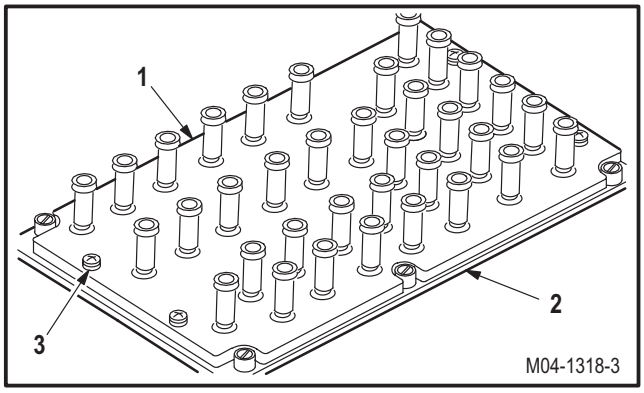
9.44.6. Installation

a. **Install panel (1) on panel (2).**

(1) Position panel (1) on panel (2).

(2) Install five screws (3).

b. **Perform circuit breaker edge-lights panel maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

9.45. CPG CIRCUIT BREAKER PANEL NO. 1 CIRCUIT BREAKERS (ATTACHED TO BUS BARS) REPLACEMENT

9.45.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.45.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

References:

TM 1-1520-238-T

Equipment Conditions:

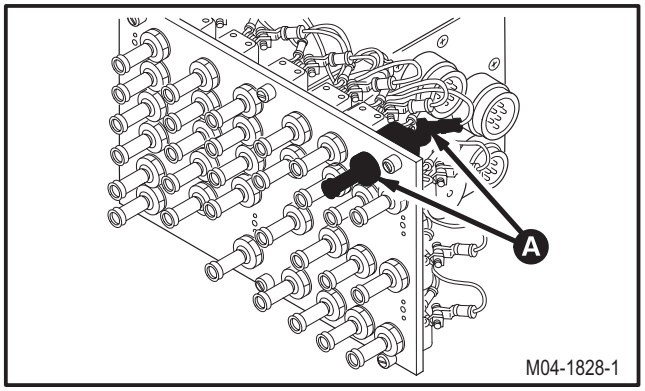
Ref	Condition
9.43	CPG circuit breaker panel No. 1 removed
9.44	CPG circuit breaker panel No. 1 light indicating panel removed

Personnel Required:

68X	Armament/Electrical System Repairer
68X3F	Armament/Electrical System Repairer/ Technical Inspector

NOTE

This task is typical for all CPG circuit breaker No. 1 circuit breakers attached to bus bar. The number of wires attached to individual circuit breakers will differ.



9.45.3. Removal

a. **Remove bus bar (1).**

(1) Identify wires (2).

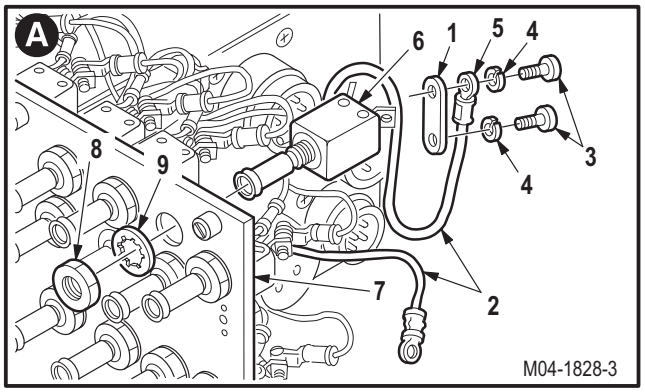
(2) Remove screws (3), lockwashers (4), and terminal lugs (5).

(3) Remove bus bar (1).

b. **Remove circuit breaker (6) from CPG circuit breaker panel No. 1 (7).**

(1) Remove nut (8) and washer (9).

(2) Remove and discard circuit breaker (6).



9.45.4. Cleaning

a. **Wipe circuit breaker mounting area with a clean rag.**

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9.45. CPG CIRCUIT BREAKER PANEL NO. 1 CIRCUIT BREAKERS (ATTACHED TO BUS BARS) REPLACEMENT – continued

9.45.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (para 9.1)**.**

c. **Check bus bar for arcing burns and other damage** (para 9.1)**.**

d. **Check circuit breaker panel for dust and other contamination.** Remove contamination and dust.

e. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.45.6. Installation

a. **Install new circuit breaker (6) on panel (7).**

(1) Position circuit breaker (6) so that tab (10) seats in locator hole (11).

(2) Install washer (9) and nut (8).

b. **Install bus bar (1).**

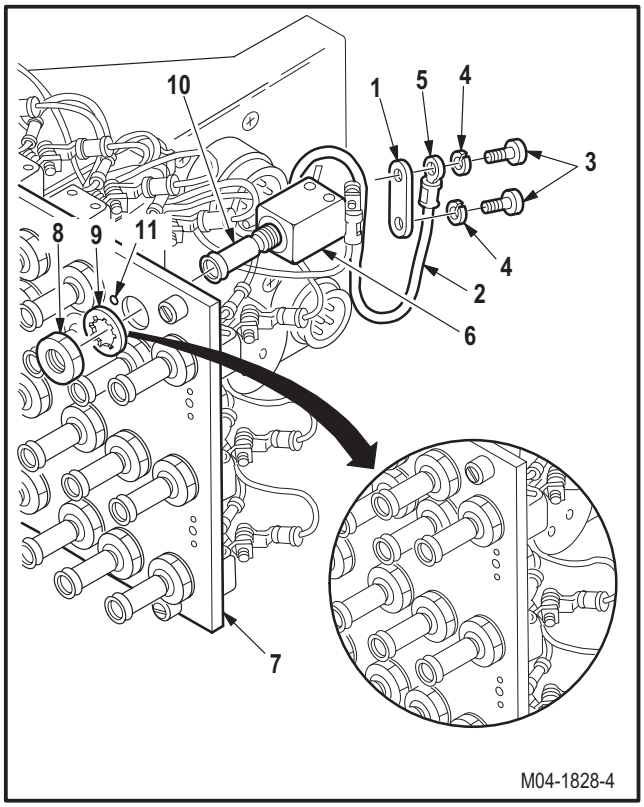
(1) Install screws (3) through lockwashers (4), terminal lugs (5), and bus bar (1) into circuit breaker (6).

c. **Inspect (QA).**

d. **Install CPG circuit breaker panel No. 1 light indicating panel** (para 9.44)**.**

e. **Install CPG circuit breaker panel No. 1** (para 9.43)**.**

f. **Refer to circuit breaker reference list to perform appropriate maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

9.46. CPG CIRCUIT BREAKER PANEL NO. 1 CIRCUIT BREAKERS (NOT ATTACHED TO BUS BARS) REPLACEMENT

9.46.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.46.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

References:

TM 1-1520-238-T

Equipment Conditions:

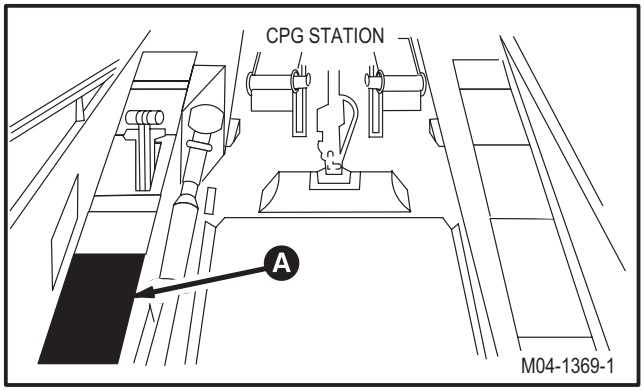
Ref	Condition
1.57	Helicopter safed
9.43	CPG circuit breaker panel No. 1 removed
9.44	CPG circuit breaker panel No. 1 light indicating panel removed

Personnel Required:

68X	Armament/Electrical System Repairer
68X3F	Armament/Electrical System Repairer/ Technical Inspector

NOTE

This task is typical for all circuit breakers on CPG circuit breaker panel not attached to bus bars. The number of wires attached to the circuit breakers will differ.



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9.46. CPG CIRCUIT BREAKER PANEL NO. 1 CIRCUIT BREAKERS (NOT ATTACHED TO BUS BARS) REPLACEMENT – continued

9.46.3. Removal

a. **Identify circuit breaker to be replaced.**

b. **Detach wires (1) from circuit breaker (2).**

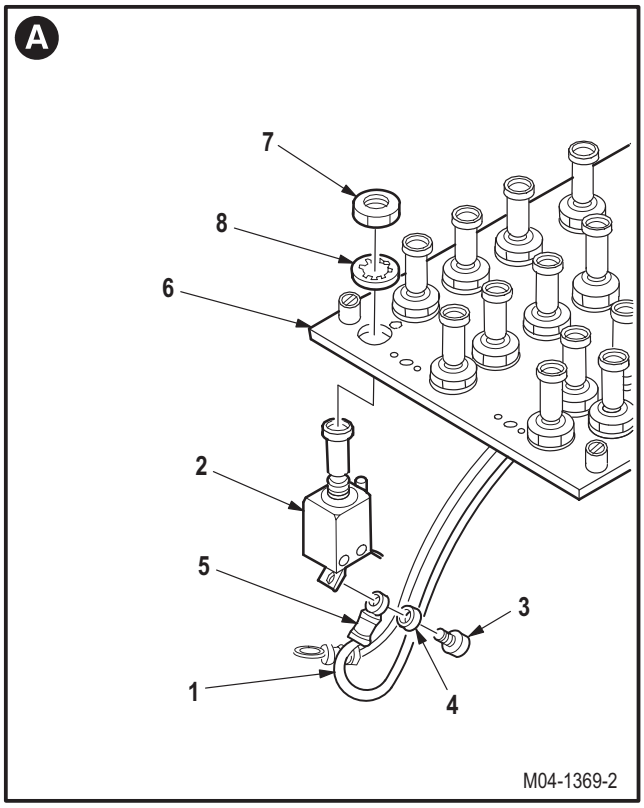
(1) Identify wires (1).

(2) Remove screws (3), washers (4), and terminal lugs (5).

c. **Remove circuit breaker (2) from CPG circuit breaker panel No. 1 (6).**

(1) Remove nut (7) and washer (8).

(2) Remove and discard circuit breaker (2).



9.46.4. Cleaning

a. **Wipe circuit breaker mounting area with a clean rag.**

9.46.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (para 9.1)**.**

c. **Check circuit breaker panel for dust and other contamination.** Remove contamination and dust.

d. **Check removed and attaching parts for corrosion** (para 1.49)**.**

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9.46. CPG CIRCUIT BREAKER PANEL NO. 1 CIRCUIT BREAKERS (NOT ATTACHED TO BUS BARS) REPLACEMENT – continued

9.46.6. Installation

a. **Install new circuit breaker (2) on panel (6).**

(1) Install circuit breaker (2) so that tab (9) seats in locator hole (10).

(2) Install washer (8) and nut (7).

b. **Attach identified wires (1) to circuit breaker (2).**

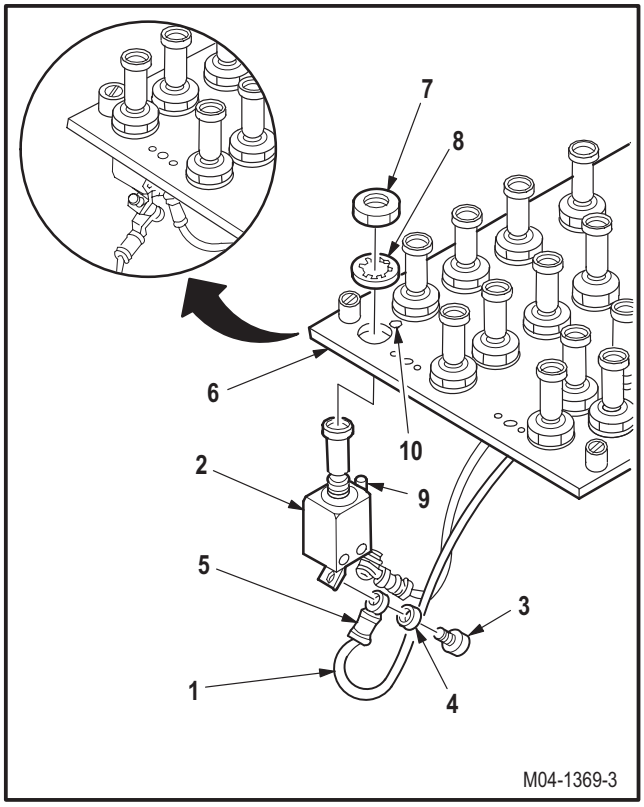
(1) Install screws (3) through washers (4) and terminal lugs (5).

c. **Inspect (QA).**

d. **Install CPG circuit breaker panel No. 1 light indicating panel** (para 9.44)**.**

e. **Install CPG circuit breaker panel No. 1** (para 9.43)**.**

f. **Refer to circuit breaker reference list to perform appropriate maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

9.47. CPG CIRCUIT BREAKER PANEL NO. 2 REMOVAL/INSTALLATION

9.47.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.47.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Ohmmeter (item 218, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

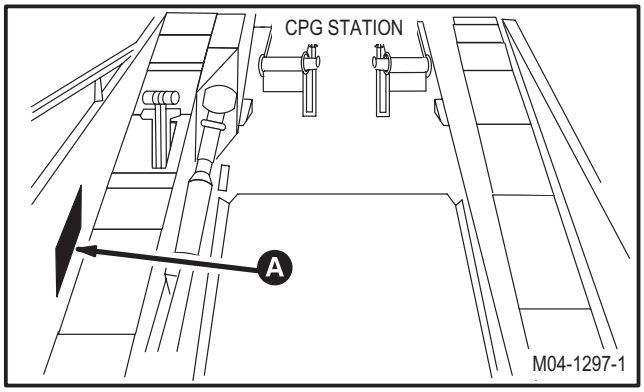
Ref	Condition
1.57	Helicopter safed
9.43	CPG circuit breaker panel No. 1 removed

9.47.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot aft center circuit breaker panel, open six POWER circuit breaker.**

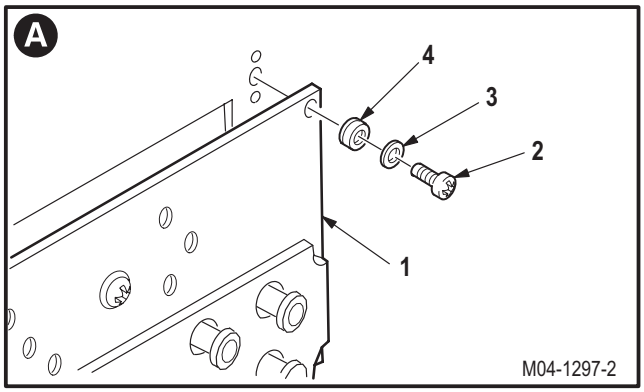
c. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**



d. **Remove CPG circuit breaker panel No. 2 (1).**

(1) Remove six screws (2), washers (3), and grommets (4) from panel (1).

(2) Remove panel (1).



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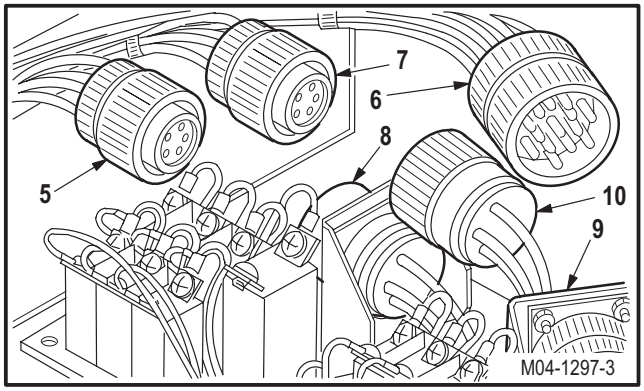
9.47. CPG CIRCUIT BREAKER PANEL NO. 2 REMOVAL/INSTALLATION – continued

e. **Detach connectors P763 (5), P761 (6), and (A97)P1 (7) from panel (1).**

(1) Detach connector P763 (5) from receptacle (A97)J2 (8).

(2) Detach connector P761 (6) from receptacle (A97)J1 (9).

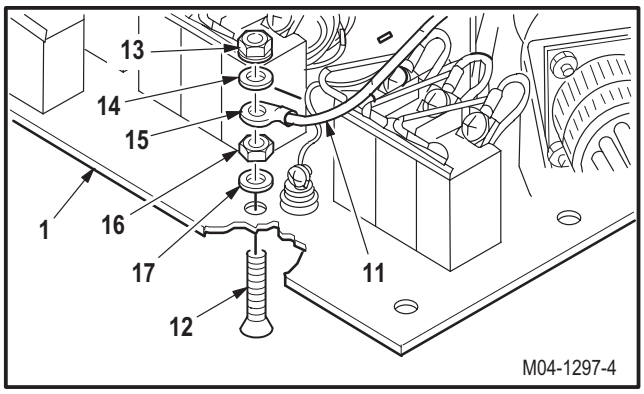
(3) Detach connector (A97)P1 (7) from receptacle J764 (10).



f. **Remove jumper (11) from panel (1).**

(1) Hold screw (12). Remove nut (13), washer (14), and terminal lug (15).

(2) Remove nut (16), washer (17), and screw (12) from panel (1).



9.47.4. Cleaning

a. **Wipe panel mounting area with a clean rag.**

9.47.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (para 9.1)**.**

c. **Check connector for bent pins or damaged threads** (para 9.1)**.**

d. **Check circuit breaker panel for dust and other contamination.** Remove contamination and dust if found.

e. **Check removed and attaching parts for corrosion** (para 1.49)**.**

GO TO NEXT PAGE

9.47. CPG CIRCUIT BREAKER PANEL NO. 2 REMOVAL/INSTALLATION – continued

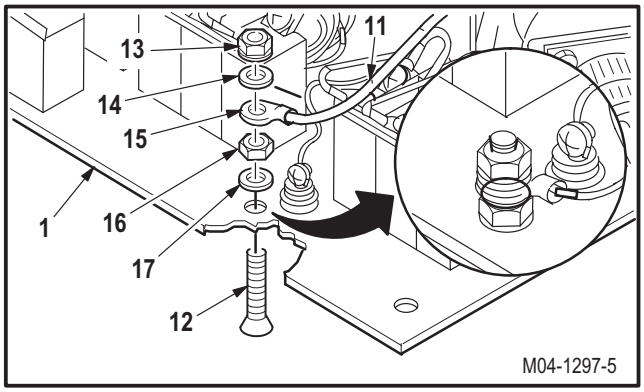
9.47.6. Installation

a. **Install jumper (11) on panel (1).**

(1) Install screw (12) through panel (1).

(2) Install washer (17) and nut (16) on screw (12).

(3) Install terminal lug (15), washer (14), and nut (13) on screw (12).

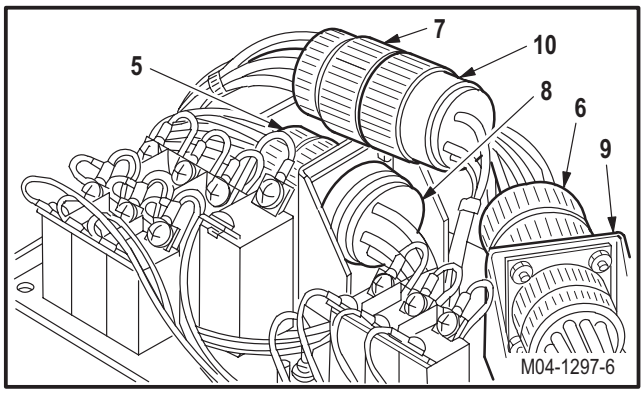


b. **Attach connectors (A97)P1 (7), P761 (6), and P763 (5) to panel (1).**

(1) Attach connector (A97)P1 (7) to receptacle J764 (10).

(2) Attach connector P761 (6) to receptacle (A97)J1 (9).

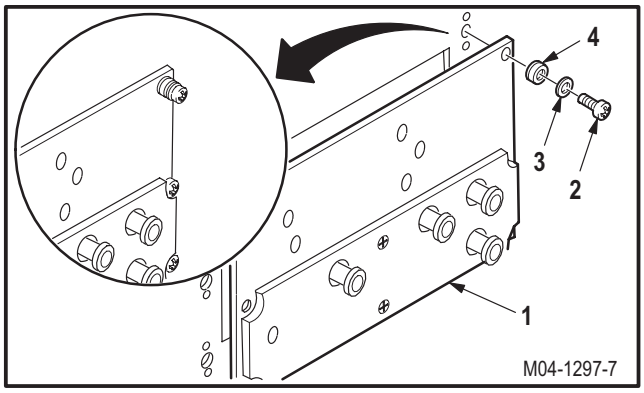
(3) Attach connector P763 (5) to receptacle (A97)J2 (8).



c. **Inspect (QA).**

d. **Install panel (1).**

(1) Install six screws (2) through washers (3) and grommets (4) in panel (1).



e. **Perform electrical bond check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

f. **Inspect (QA).**

g. **Install CPG circuit breaker panel No. 1** (para 9.43)**.**

h. **Refer to circuit breaker reference list to perform appropriate maintenance operational check** (TM 1-1520-238-T)**.**

END OF TASK

9.48. CPG CIRCUIT BREAKER PANEL NO. 2 LIGHT INDICATING PANEL REMOVAL/INSTALLATION

9.48.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.48.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

References:

TM 1-1520-238-T

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

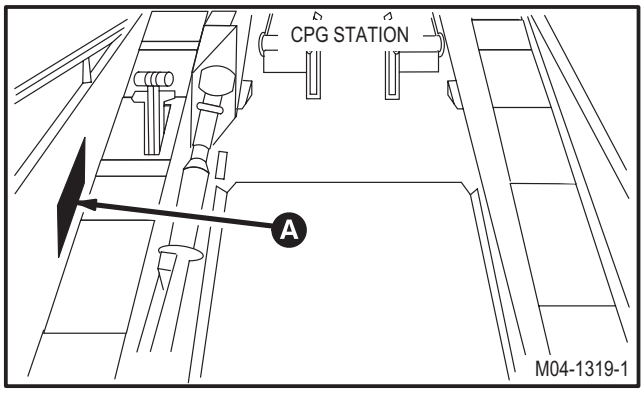
Personnel Required:

68X Armament/Electrical System Repairer

9.48.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

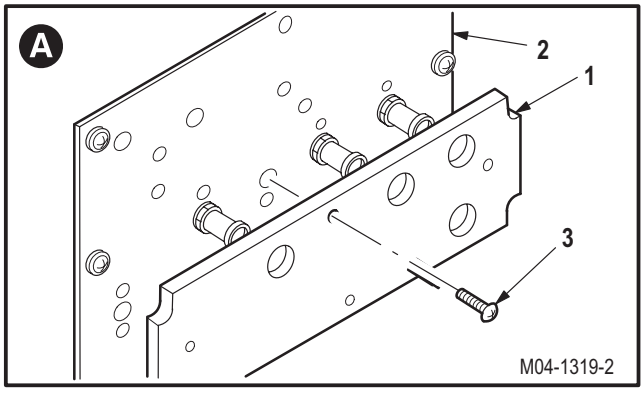
b. **On CPG circuit breaker panel No. 1, open PRI LT circuit breaker.**



c. **Remove light indicating panel (1) from CPG circuit breaker panel No. 2 (2).**

(1) Remove four screws (3).

(2) Remove panel (1).



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9.48. CPG CIRCUIT BREAKER PANEL NO. 2 LIGHT INDICATING PANEL REMOVAL/INSTALLATION – continued

9.48.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

9.48.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check removed and attaching parts for corrosion** (para 1.49)**.**

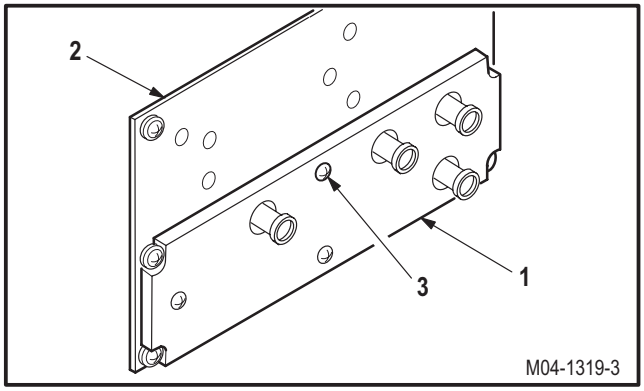
9.48.6. Installation

a. **Install panel (1) on panel (2).**

(1) Position panel (1) on panel (2).

(2) Install four screws (3).

b. **Perform circuit breaker edge-lights panel maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

9.49. CPG CIRCUIT BREAKER PANEL NO. 2 CIRCUIT BREAKER REPLACEMENT

9.49.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.49.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

References:

TM 1-1520-238-T

Equipment Conditions:

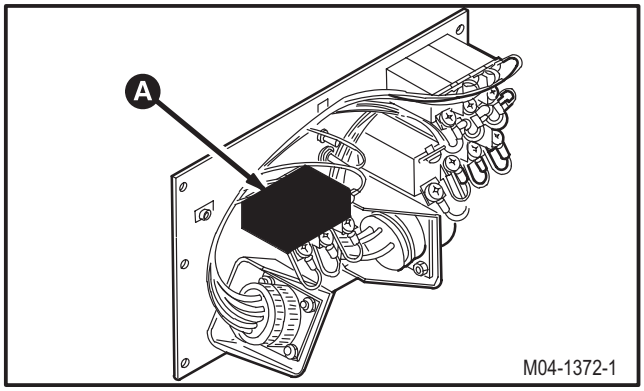
Ref	Condition
9.47	CPG circuit breaker panel No. 2 removed
9.48	CPG circuit breaker panel No. 2 light indicating panel removed

Personnel Required:

68X	Armament/Electrical System Repairer
68X3F	Armament/Electrical System Repairer/ Technical Inspector

NOTE

This task is typical for all circuit breakers on CPG circuit breaker panel No. 2. The number of wires attached to the circuit breakers will differ.

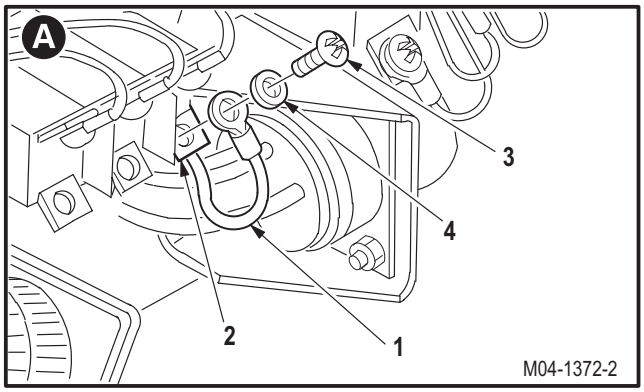


9.49.3. Removal

a. **Detach wires (1) from circuit breaker (2).**

(1) Identify wires (1).

(2) Remove screws (3) and washers (4).



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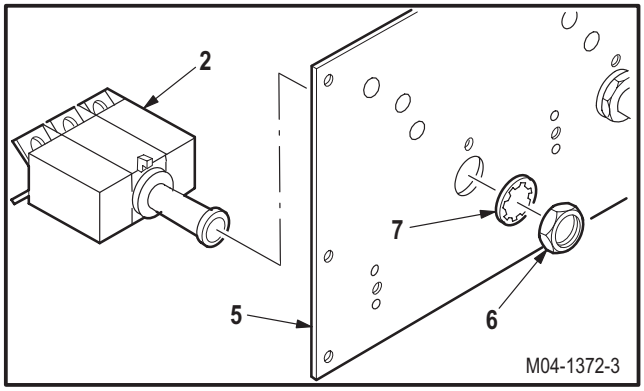
9.49. CPG CIRCUIT BREAKER PANEL NO. 2 CIRCUIT BREAKER REPLACEMENT – continued

b. **Remove circuit breaker (2) from CPG circuit breaker panel No. 2 (5).**

(1) Remove nut (6) and washer (7).

(2) Remove circuit breaker (2).



9.49.4. Cleaning

a. **Wipe circuit breaker mounting area with a clean rag.**

9.49.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (para 9.1)**.**

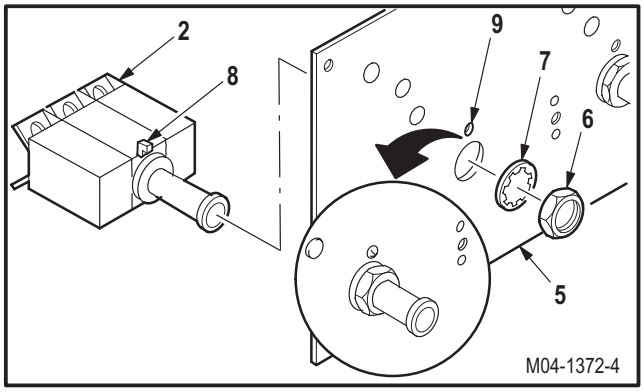
c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.49.6. Installation

a. **Install circuit breaker (2) on panel (5).**

(1) Install circuit breaker (2) so that tab (8) seats in locator hole (9).

(2) Install washer (7) and nut (6).



b. **Attach identified wires (1) to circuit breaker (2).**

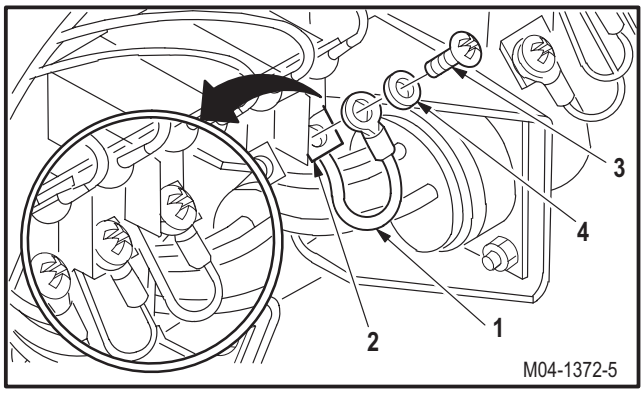
(1) Install screws (3) through washers (4) and wires (1).

c. **Inspect (QA).**

d. **Install CPG circuit breaker panel No. 2 light indicating panel** (para 9.48)**.**

e. **Install CPG circuit breaker panel No. 2** (para 9.47)**.**

f. **Refer to circuit breaker reference list to perform appropriate maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

9.50. GROUND SERVICE UTILITY RECEPTACLE REMOVAL/INSTALLATION

9.50.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.50.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Ohmmeter (item 218, App H)
Adjustable air filtering respirator (item 262, App H)
25-watt electric soldering iron (item 332, App H)

Materials/Parts:

Solder (item 189, App F)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T
TM 55-1500-323-24

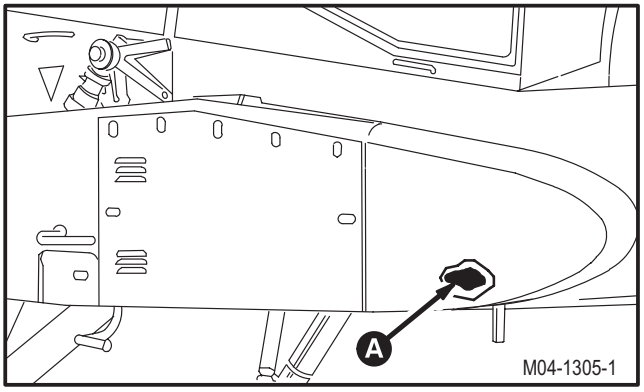
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access fairing R60 removed

9.50.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot aft circuit breaker panel, open six POWER circuit breakers.**



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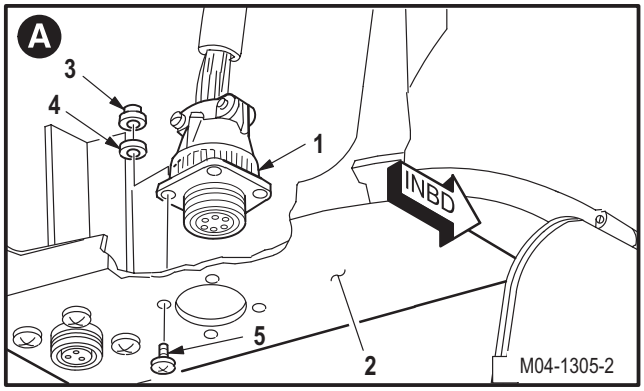
9.50. GROUND SERVICE UTILITY RECEPTACLE REMOVAL/INSTALLATION – continued

c. **Remove receptacle J16 (1) from mounting plate (2).**

(1) Remove four nuts (3) and washers (4) from screws (5).

(2) Remove four screws (5).

(3) Push receptacle (1) up and inboard to remove from plate (2).



d. **Remove backshell (6) from receptacle (1).**

(1) Remove two screws (7) and retaining clamps (8) from backshell (6).

(2) Loosen backshell (6).

(3) Slide backshell (6) over wires (9).

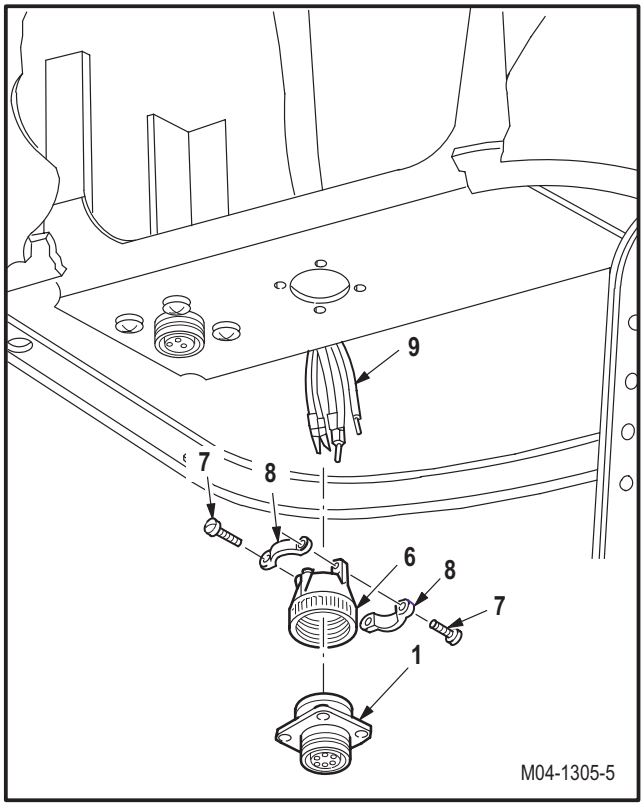
WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

e. **Desolder wires (9) from receptacle (1).**

(1) Identify wires (9).

(2) Desolder wires (9) (TM 55-1500-323-24). Use soldering iron.



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9.50. GROUND SERVICE UTILITY RECEPTACLE REMOVAL/INSTALLATION – continued

9.50.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.50.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check wires for wear, cuts, breaks, and damaged connections** (para 9.1)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.50.6. Installation

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

a. **Solder wires (9) to receptacle (1).**

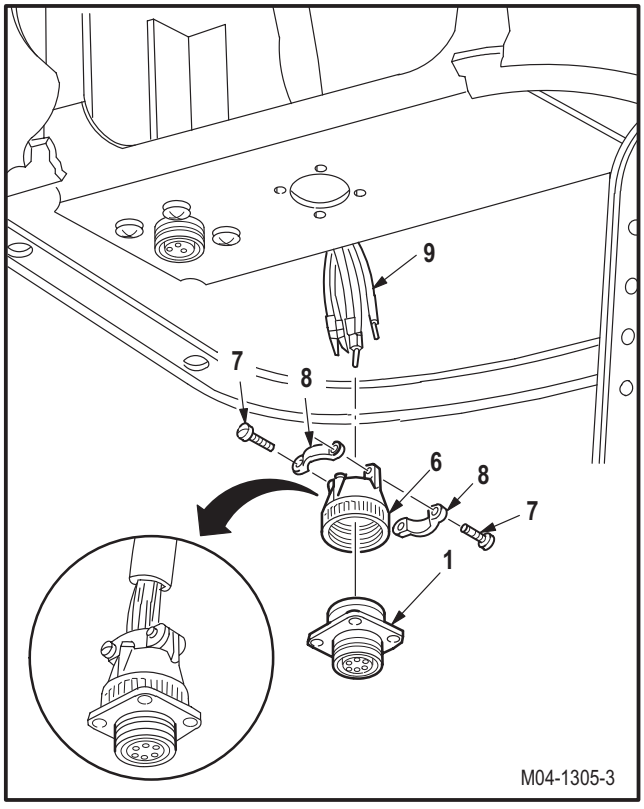
(1) Route wires (9) through backshell (6).

(2) Solder identified wires (9) in receptacle (1). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).

b. **Install backshell (6) on receptacle J16 (1).**

(1) Tighten backshell (6) on receptacle (1).

(2) Install two screws (7) through clamps (8) and backshell (6).



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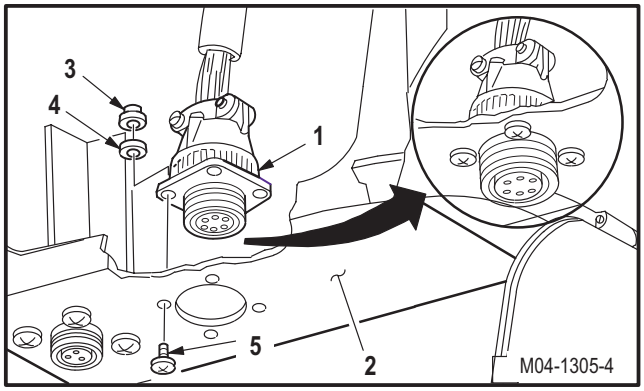
9.50. GROUND SERVICE UTILITY RECEPTACLE REMOVAL/INSTALLATION – continued

c. **Install receptacle (1) on plate (2).**

(1) Position receptacle (1) on plate (2).

(2) Install four screws (5) through plate (2) and receptacle (1).

(3) Install four washers (4) and nuts (3) on screws (5).



d. **Inspect (QA).**

e. **Perform electrical bond check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

f. **Perform external power and ground service utility receptacle maintenance operational check** (TM 1-1520-238-T)**.**

g. **Install access fairing R60** (para 2.2)**.**

END OF TASK

9.51. PILOT INSTRUMENT PANEL MATRIX REMOVAL/INSTALLATION

9.51.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.51.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
L-style socket head key set (item 187, App H)

Personnel Required:

68X	Armament/Electrical System Repairer
68X3F	Armament/Electrical System Repairer/ Technical Inspector

References:

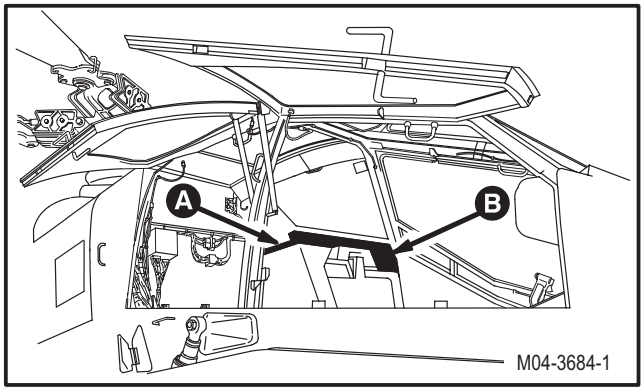
TM 1-1520-238-T

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.161	CPG seat tilted forward
2.178	Nontransparent barrier removed

9.51.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**



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9.51. PILOT INSTRUMENT PANEL MATRIX REMOVAL/INSTALLATION – continued

b. **Detach six connectors from right side of pilot instrument panel matrix assembly (1).**

(1) Detach connector P466 (2) from receptacle J14 (3). Use socket head key set.

(2) Detach connector P472 (4) from receptacle J15 (5). Use socket head key set.

(3) Detach connector P480 (6) from receptacle J16 (7). Use socket head key set.

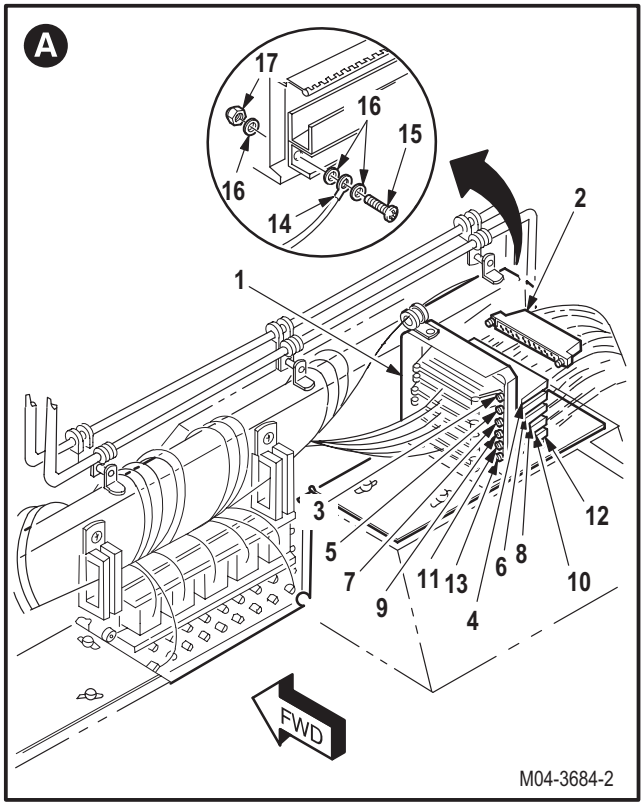
(4) Detach connector P468 (8) from receptacle J17 (9). Use socket head key set.

(5) Detach connector P482 (10) from receptacle J18 (11). Use socket head key set.

(6) Detach connector P470 (12) from receptacle J19 (13). Use socket head key set.

c. **Detach jumper (14) from matrix (1).**

(1) Remove screw (15), three washers (16), jumper lug (14), and nut (17) from matrix (1).



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9.51. PILOT INSTRUMENT PANEL MATRIX REMOVAL/INSTALLATION – continued

d. **Detach 13 connectors from left end of matrix (1).**

(1) Detach connector P477 (18) from receptacle J8 (19).

(2) Detach connector P471 (20) from receptacle J1 (21). Use socket head key set.

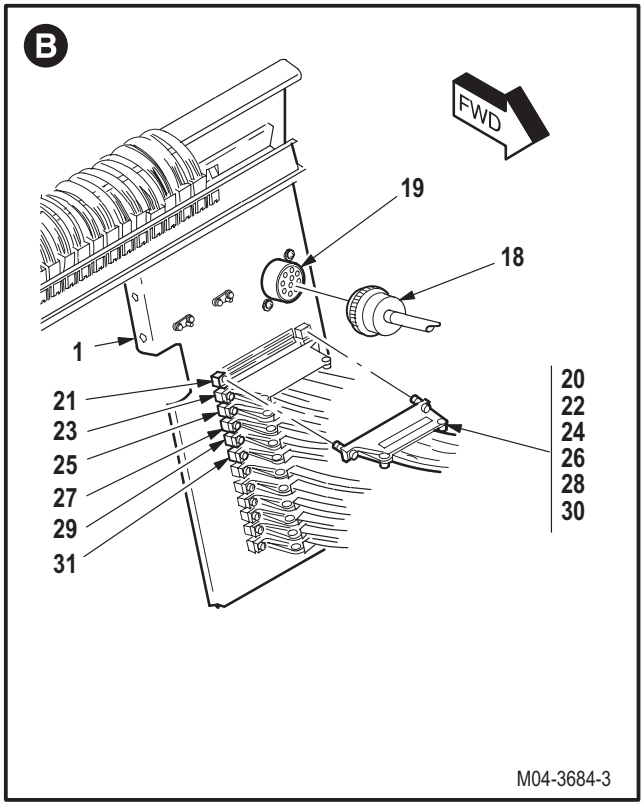
(3) Detach connector P473 (22) from receptacle J6 (23). Use socket head key set.

(4) Detach connector P413 (24) from receptacle J10 (25). Use socket head key set.

(5) Detach connector P481 (26) from receptacle J13 (27). Use socket head key set.

(6) Detach connector P487 (28) from receptacle J9 (29). Use socket head key set.

(7) Detach connector P465 (30) from receptacle J12 (31). Use socket head key set.



(8) Detach connector P469 (32) from receptacle J2 (33). Use socket head key set.

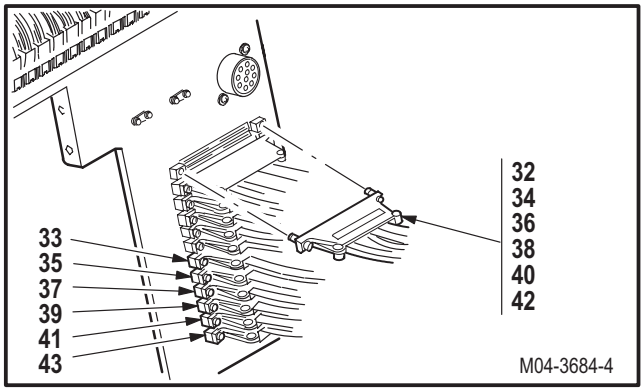
(9) Detach connector P479 (34) from receptacle J11 (35). Use socket head key set.

(10) Detach connector P405 (36) from receptacle J3 (37). Use socket head key set.

(11) Detach connector P409 (38) from receptacle J4 (39). Use socket head key set.

(12) Detach connector P467 (40) from receptacle J5 (41). Use socket head key set.

(13) Detach connector P435 (42) from receptacle J7 (43). Use socket head key set.



e. **Disconnect pilot airspeed indicator** (para 8.30) **and pilot altimeter** (para 8.31)**.**

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9.51. PILOT INSTRUMENT PANEL MATRIX REMOVAL/INSTALLATION – continued

f. **Detach three brackets (44) from matrix (1).**

(1) Loosen three nuts (45).

(2) Remove three screws (46) and washers (47).

NOTE

For aircraft serial numbers 82-23355 thru 84-24230, go to step g. For aircraft serial numbers 84-24231 and subsequent, perform step h.

g. **Remove matrix (1) from pilot instrument panel (48).**

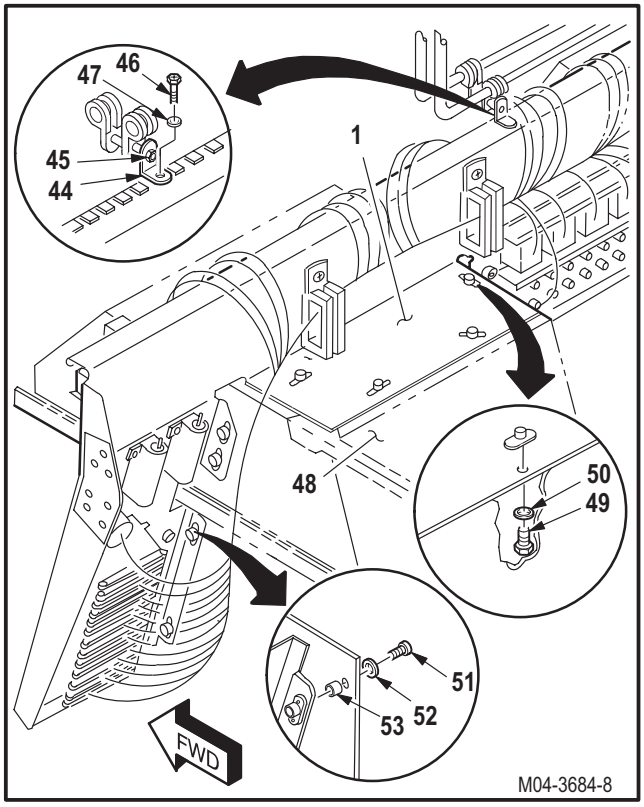
(1) Remove eight screws (49) and washers (50).

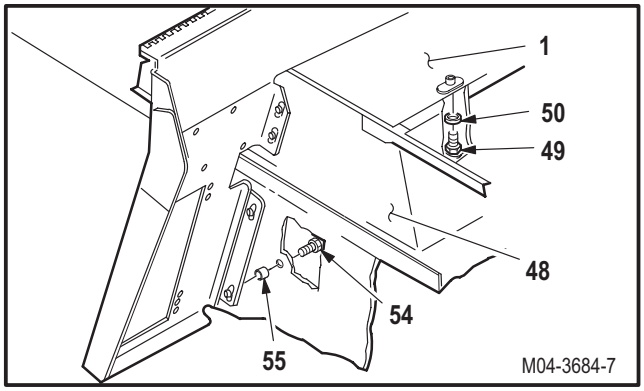
(2) Remove four screws (51), washers (52), and spacers (53).

h. **Remove matrix (1) from pilot instrument panel (48).**

(1) Remove eight screws (49) and washers (50).

(2) Remove two screws (54) and spacers (55).





9.51.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

9.51.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check wires for chafing, cuts, breaks, and damaged terminal lugs** (para 9.1)**.**

c. **Check connectors and receptacles for cracks, broken connections, and bent or damaged pins** (para 9.1)**.**

d. **Check removed and attaching parts for corrosion** (para 1.49)**.**

GO TO NEXT PAGE

9.51. PILOT INSTRUMENT PANEL MATRIX REMOVAL/INSTALLATION – continued

9.51.6. Installation

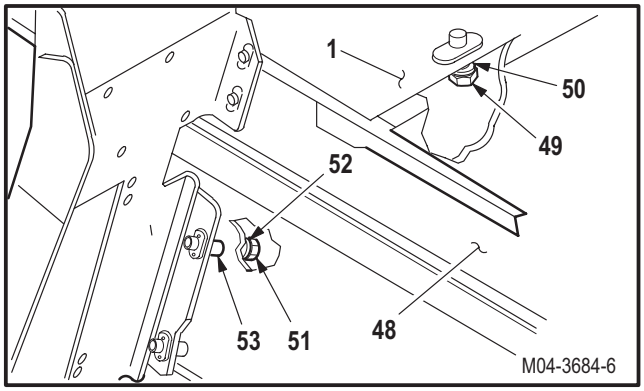
NOTE

For aircraft serial numbers 82-23355 thru 84-24230, go to step a. For aircraft serial numbers 84-24231 and subsequent, perform step b.

a. **Install matrix (1) in pilot instrument panel (48).**

(1) Install four spacers (53), screws (51), and washers (52).

(2) Install eight screws (49) and washers (50).



b. **Install matrix (1) in pilot instrument panel (48).**

(1) Install two spacers (55) and screws (54).

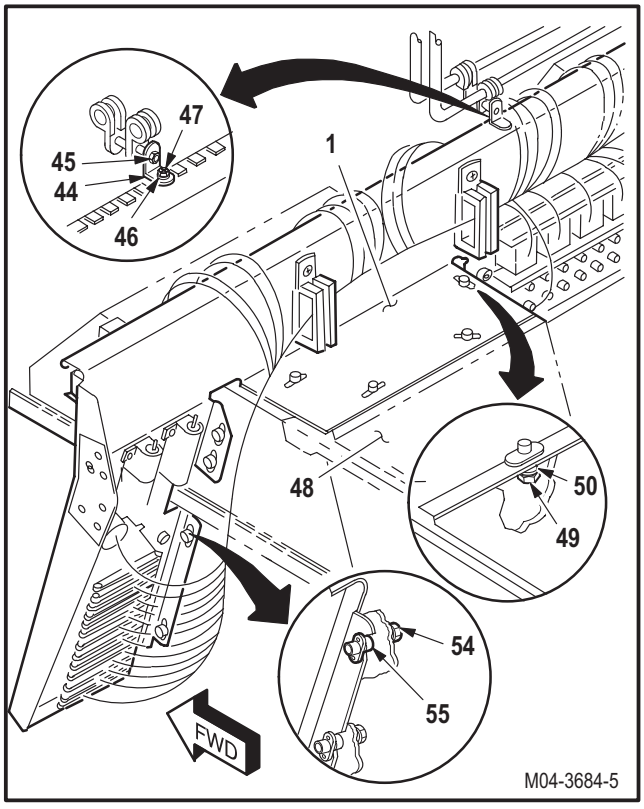
(2) Install eight screws (49) and washers (50).

c. **Install three brackets (44) on matrix (1).**

(1) Install three screws (46) and washers (47).

(2) Tighten three nuts (45).

d. **Connect pilot airspeed indicator** (para 8.30) **and pilot altimeter** (para 8.31)**.**



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9.51. PILOT INSTRUMENT PANEL MATRIX REMOVAL/INSTALLATION – continued

e. **Attach 13 connectors to left end of matrix (1).**

(1) Attach connector P435 (42) to receptacle J7 (43). Use socket head key set.

(2) Attach connector P467 (40) to receptacle J5 (41). Use socket head key set.

(3) Attach connector P409 (38) to receptacle J4 (39). Use socket head key set.

(4) Attach connector P405 (36) to receptacle J3 (37). Use socket head key set.

(5) Attach connector P479 (34) to receptacle J11 (35). Use socket head key set.

(6) Attach connector P469 (32) to receptacle J2 (33). Use socket head key set.

(7) Attach connector P465 (30) to receptacle J12 (31). Use socket head key set.

(8) Attach connector P487 (28) to receptacle J9 (29). Use socket head key set.

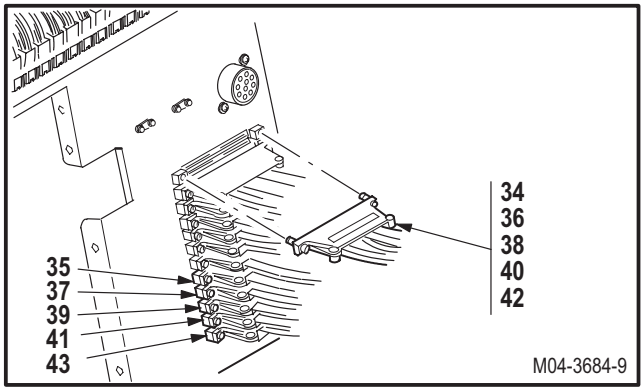
(9) Attach connector P481 (26) to receptacle J13 (27). Use socket head key set.

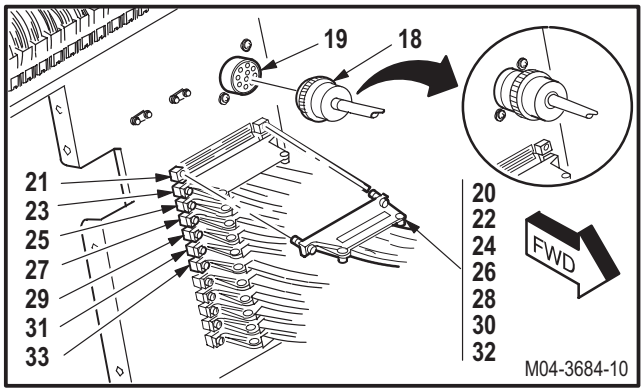
(10) Attach connector P413 (24) to receptacle J10 (25). Use socket head key set.

(11) Attach connector P473 (22) to receptacle J6 (23). Use socket head key set.

(12) Attach connector P471 (20) to receptacle J1 (21). Use socket head key set.

(13) Attach connector P477 (18) to receptacle J8 (19).





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9.51. PILOT INSTRUMENT PANEL MATRIX REMOVAL/INSTALLATION – continued

f. **Attach jumper (14) to matrix (1).**

(1) Install screw (15), three washers (16) jumper lug (14), and nut (17).

g. **Attach six connectors to right side of matrix (1).**

(1) Attach connector P470 (12) to receptacle J19 (13). Use socket head key set.

(2) Attach connector P482 (10) to receptacle J18 (11). Use socket head key set.

(3) Attach connector P468 (8) to receptacle J17 (9). Use socket head key set.

(4) Attach connector P480 (6) to receptacle J16 (7). Use socket head key set.

(5) Attach connector P472 (4) to receptacle J15 (5). Use socket head key set.

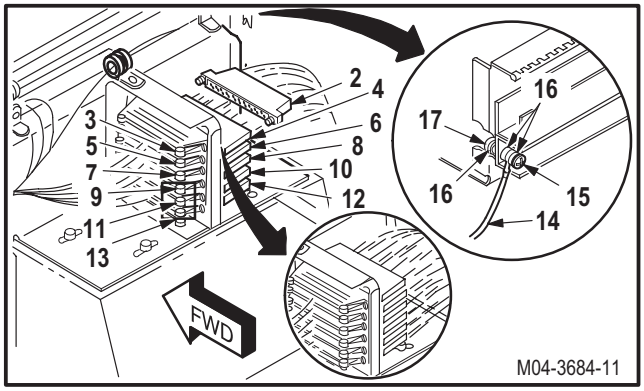
(6) Attach connector P466 (2) to receptacle J14 (3). Use socket head key set.

h. **Inspect (QA).**

i. **Perform appropriate system maintenance operational check** (TM 1-1520-238-T)**.**

j. **Install nontransparent barrier** (para 2.178)**.**

k. **Return CPG seat to upright position** (para 2.161)**.**



END OF TASK

9.52. PILOT INSTRUMENT PANEL MATRIX VARIABLE RESISTOR REPLACEMENT

9.52.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.52.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
1 1/4-inch blade putty knife (item 199, App H)
Ohmmeter (item 218, App H)
Adjustable air filtering respirator (item 262, App H)
25-watt electric soldering iron (item 332, App H)

Materials/Parts:

Brush (item 34, App F)
Insulating compound kit (item 97, App F)
Solder (item 189, App F)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

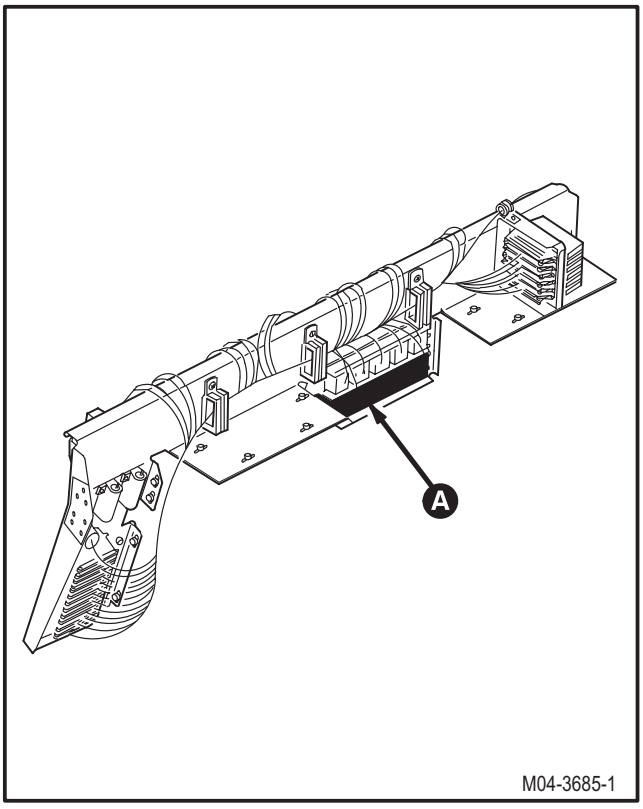
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
9.51	Pilot instrument panel matrix assembly removed

NOTE

This task is typical for all matrix assembly variable resistors.



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9.52. PILOT INSTRUMENT PANEL MATRIX VARIABLE RESISTOR REPLACEMENT – continued

9.52.3. Removal

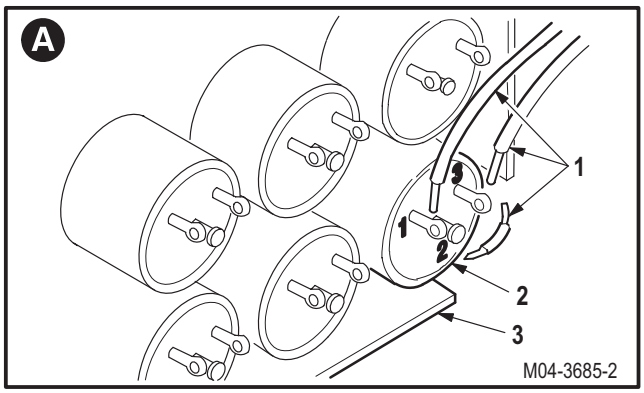
WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

a. **Detach wires (1) from variable resistor (2).**

(1) Identify wires (1).

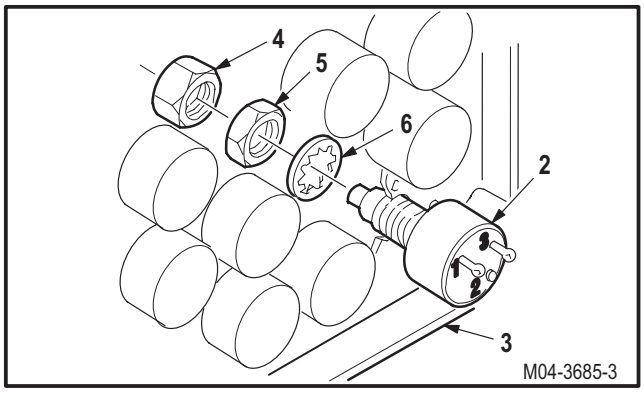
(2) Desolder wires (1). Use soldering iron (TM 55-1500-323-24).



b. **Remove resistor (2) from pilot matrix panel (3).**

(1) Remove locknut (4), nut (5), and lockwader (6).

(2) Remove and discard resistor (2).



9.52.4. Cleaning

a. **Remove sealant and clean mounting surfaces** (para 1.47)**.**

9.52.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check wires for chafing, cuts, and damaged connections** (para 9.1)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

GO TO NEXT PAGE

9.52. PILOT INSTRUMENT PANEL MATRIX VARIABLE RESISTOR REPLACEMENT – continued

9.52.6. Installation

NOTE

Reference designation (**REF. DES.**) identification locators are stenciled above each variable resistor.

a. **Jumper terminals 2 and 3, take readings between terminals 1 and 3 of new resistor (2).** Use ohmmeter and adjust applicable resistor to within **0.05 OHM** as shown in Table 1 below.

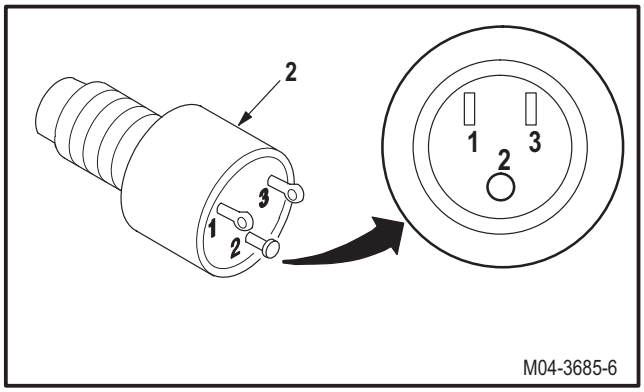


Table 1

Ref. Des.	Resistance
R-1	Set to full counterclockwise position
R-2	Set to 0.8 Ohms
R-3	Set to full counterclockwise position
R-4	Set to 0.8 Ohms
R-5	Set to 0.3 Ohms
R-6	Set to full counterclockwise position
R-7	Set to full counterclockwise position
R-8	Set to full counterclockwise position
R-9	Set to 1.0 Ohms
R-10	Set to 2.0 Ohms
R-11	Set to 1.0 Ohms
R-12	Set to 2.0 Ohms
R-13	Set to 1.0 Ohms
R-14	Set to 0.2 Ohms
R-15	Set to full counterclockwise position
R-16	Set to full counterclockwise position
R-17	Set to full counterclockwise position
R-18	Set to full counterclockwise position
R-19	Set to full counterclockwise position
R-20	Set to 2.0 Ohms
R-21	Set to full counterclockwise position
R-22	Set to full counterclockwise position
R-23	Set to full counterclockwise position
R-24	Set to full counterclockwise position
R-25	Set to full counterclockwise position

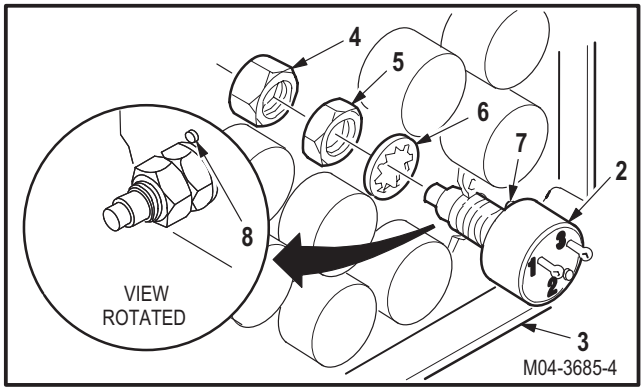
GO TO NEXT PAGE

9.52. PILOT INSTRUMENT PANEL MATRIX VARIABLE RESISTOR REPLACEMENT – continued

b. **Install resistor (2) in panel (3).**

(1) Install resistor (2) so that tab (7) seats in locator hole (8).

(2) Install lockwasher (6), nut (5), and locknut (4).



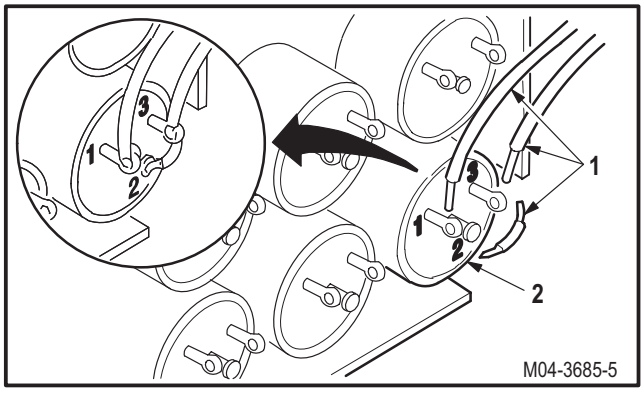
c. **Apply insulation compound around base of resistor (2).** Use insulating compound kit (item 97, App F) and brush (item 34, App F).

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

d. **Solder wires (1) to resistor (2).**

(1) Solder three identified wires (1). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).



e. **Inspect (QA).**

f. **Install pilot instrument panel matrix assembly** (para 9.51)**.**

END OF TASK

9.53. PILOT INSTRUMENT PANEL MATRIX FIXED RESISTOR REPLACEMENT

9.53.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.53.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
25-watt electric soldering iron (item 332, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 55-1500-323-24

Materials/Parts:

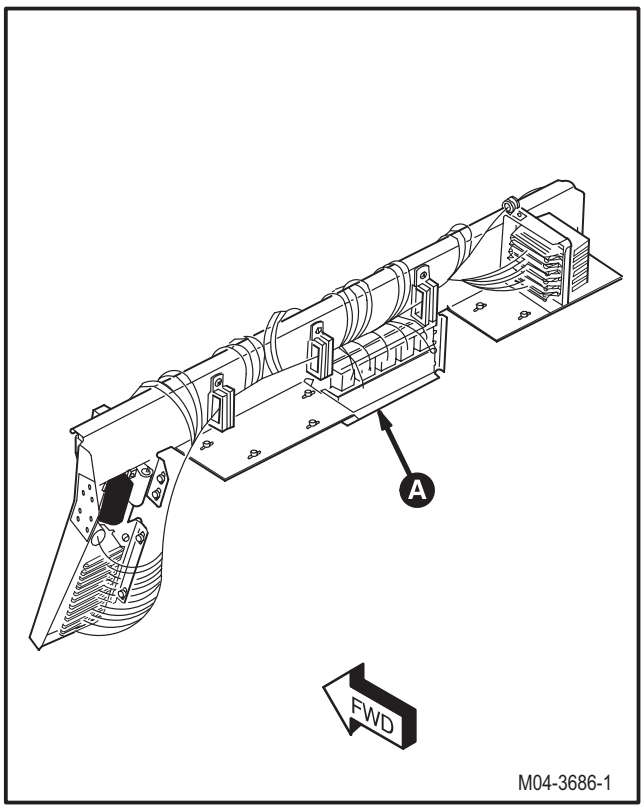
Insulation sleeving (item 103, App F)
Solder (item 189, App F)
Tape (item 202, App F)

Equipment Conditions:

Ref	Condition
9.51	Pilot instrument panel matrix assembly removed

NOTE

This task is typical for all matrix fixed resistors.



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9.53. PILOT INSTRUMENT PANEL MATRIX FIXED RESISTOR REPLACEMENT – continued

9.53.3. Removal

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

a. **Desolder wires (1) from fixed resistor (2).**

b. Identify and desolder wires (1) from resistor (2). Use soldering iron (TM 55-1500-323-24).

c. **Remove resistor (2) from pilot matrix panel (3).**

(1) Remove two screws (4) and washers (5).

(2) Remove and discard resistor (2).

9.53.4. Cleaning

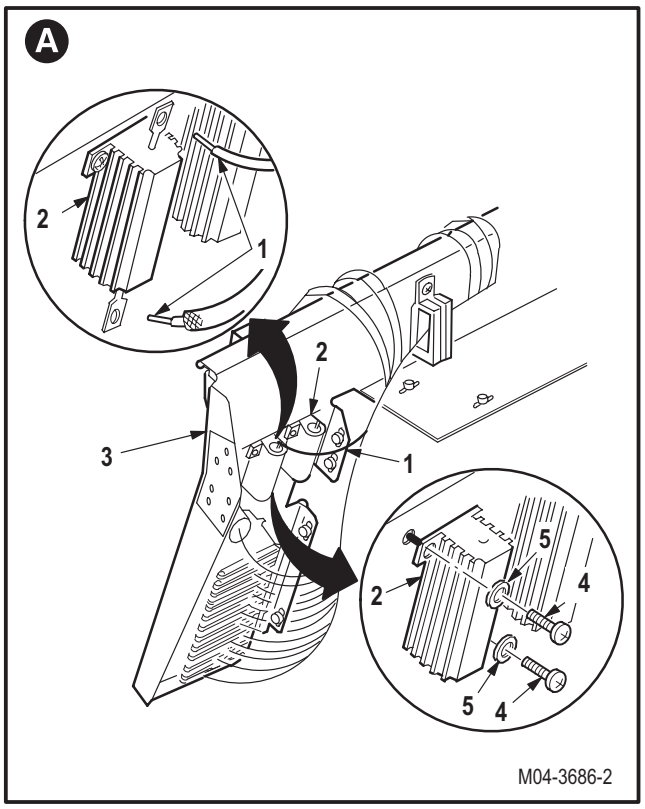
a. **Clean removed and attaching parts** (para 1.47)**.**

9.53.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check wires for chafing, cuts, and damaged connections** (para 9.1)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**



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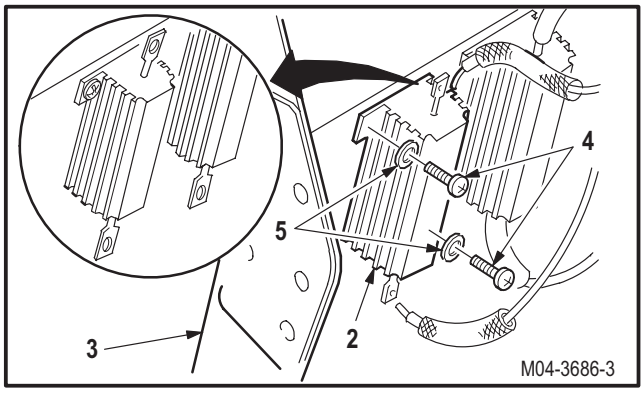
9.53. PILOT INSTRUMENT PANEL MATRIX FIXED RESISTOR REPLACEMENT – continued

9.53.6. Installation

a. **Install resistor (2) on matrix panel (3).**

(1) Position resistor (2) on panel (3).

(2) Install two screws (4) and washers (5).



WARNING

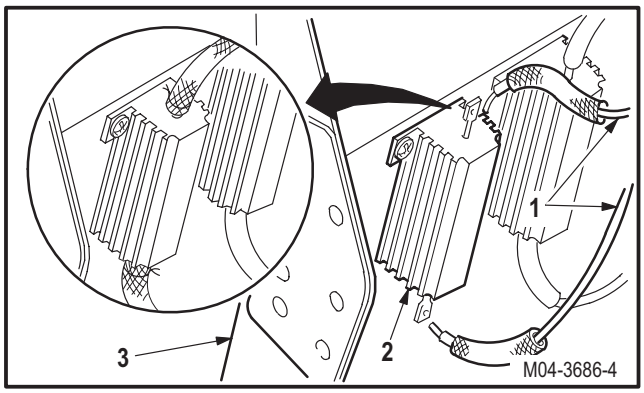
Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

b. **Solder identified wires (1) to new resistor (2).**

(1) Install sleeving over two identified wires (1). Use insulation sleeving (item 103, App F)

(2) Solder wires (1) to resistor (2). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).

(3) Secure sleeving to wires (1). Use tape (item 202, App F) (TM 55-1500-323-24).



c. **Inspect (QA).**

d. **Install pilot instrument panel matrix assembly** (para 9.51)**.**

END OF TASK

9.54. PILOT INSTRUMENT PANEL MATRIX TERMINAL JUNCTION BOX AND RELAY TRACK ASSEMBLY REPLACEMENT

9.54.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.54.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

Personnel Required:

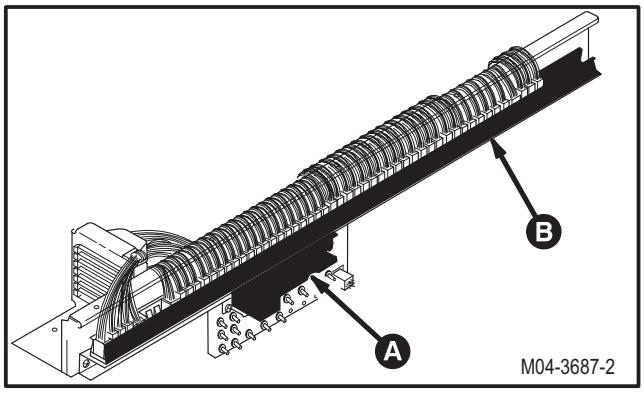
68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
9.51	Pilot instrument panel matrix assembly removed

NOTE

This task is typical for all relay and terminal junction box track assemblies. Quantity of hardware may vary.



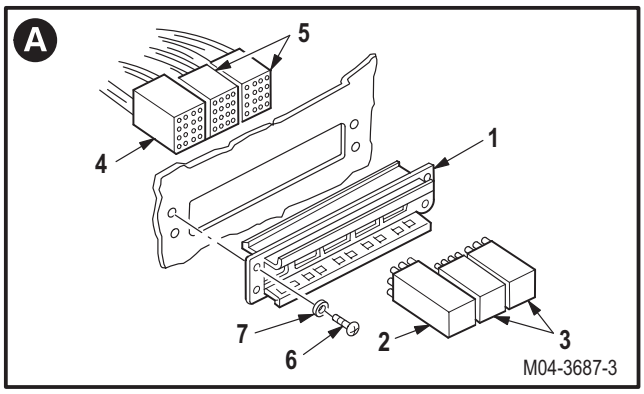
9.54.3. Removal

a. **Remove XK1 track assembly (1).**

(1) Remove relay modules (2) and (3) (para 9.139).

(2) Remove relay modules sockets (4) and (5) (para 9.139).

(3) Remove four screws (6) and washers (7).



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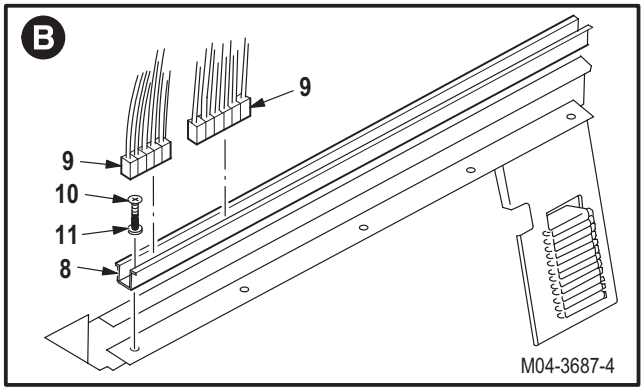
9.54. PILOT INSTRUMENT PANEL MATRIX TERMINAL JUNCTION BOX AND RELAY TRACK ASSEMBLY REPLACEMENT – continued

b. **Remove TB1 track assembly (8).**

(1) Remove terminal junction modules (9) from track assembly (8) (para 9.139).

(2) Remove five screws (10) and washers (11).



9.54.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.54.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check wires for chafing, cuts, and damaged connections** (para 9.1)**.**

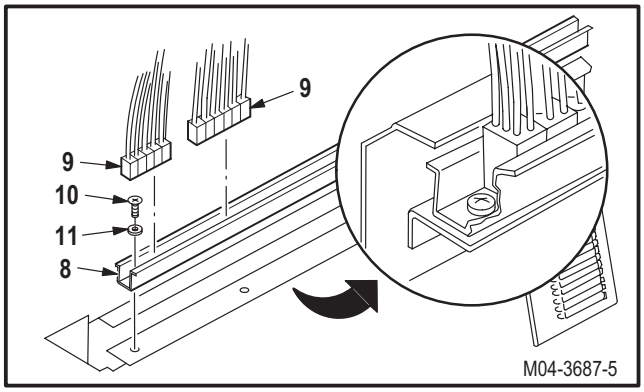
c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.54.6. Installation

a. **Install TB1 track assembly (8).**

(1) Install five screws (10) and washers (11).

(2) Install terminal junction modules (9) in track assembly (8) (para 9.139).

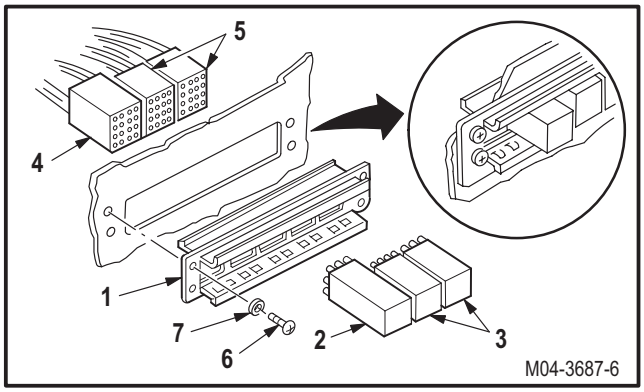


b. **Install XK1 track assembly (1).**

(1) Install four screws (6) and washers (7).

(2) Install relay module sockets (2) and (3) in track (1) (para 9.139).

(3) Install relays (4) and (5) in track assembly (1) (para 9.139).



c. **Inspect (QA).**

d. **Install pilot instrument panel matrix assembly** (para 9.51)**.**

END OF TASK

9.55. AFT AVIONICS BAY DISTRIBUTION BOX REMOVAL/INSTALLATION

9.55.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.55.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
L-style socket head key set (item 187, App H)
Ohmmeter (item 218, App H)

References:

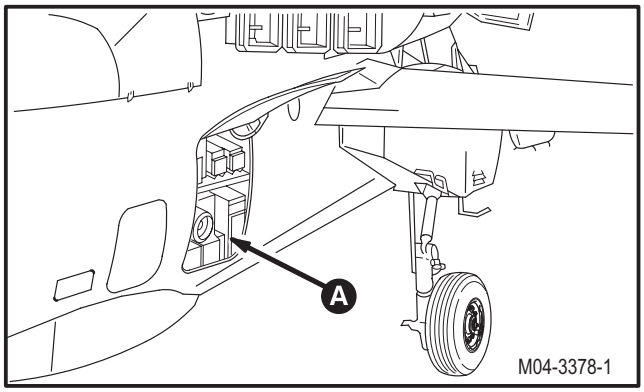
TM 1-1520-238-T
TM 11-1520-238-23-2
TM 55-1500-323-24

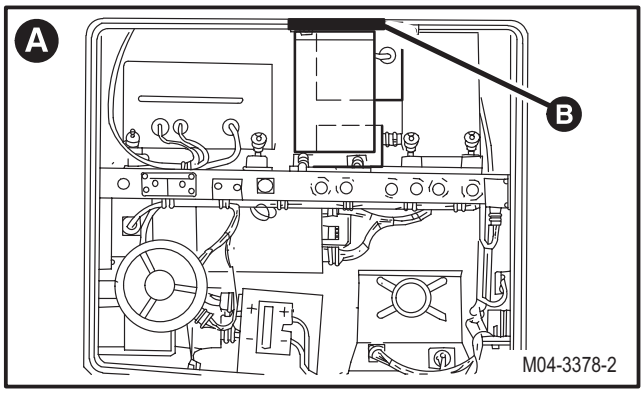
Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
TM 9-1230-476-20-1	Air data processor removed





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9.55. AFT AVIONICS BAY DISTRIBUTION BOX REMOVAL/INSTALLATION – continued

9.55.3. Removal

a. **Detach eight connectors from distribution box (17).**

(1) Detach connector P485 (1) from receptacle (A323)J7 (2).

(2) Detach connector P496 (3) from receptacle (A323)J8 (4). Use socket head key set.

(3) Detach connector P491 (5) from receptacle (A323)J6 (6). Use socket head key set.

(4) Detach connector P499 (7) from receptacle (A323)J5 (8). Use socket head key set.

(5) Detach connector P493 (9) from receptacle (A323)J4 (10). Use socket head key set.

(6) Detach connector P497 (11) from receptacle (A323)J3 (12). Use socket head key set.

(7) Detach connector P494 (13) from receptacle (A323)J2 (14). Use socket head key set.

(8) Detach connector P498 (15) from receptacle (A323)J1 (16). Use socket head key set.

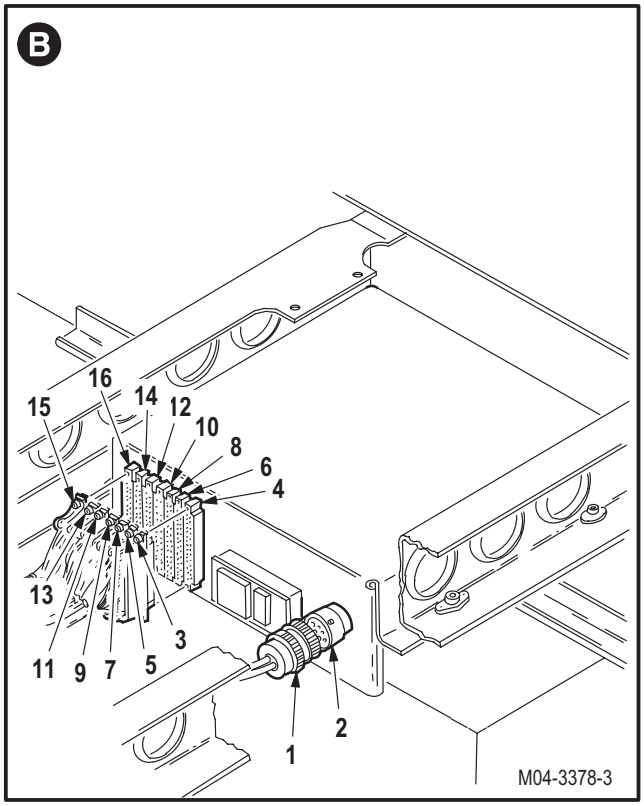
b. **Remove distribution box (17) from airframe (18).**

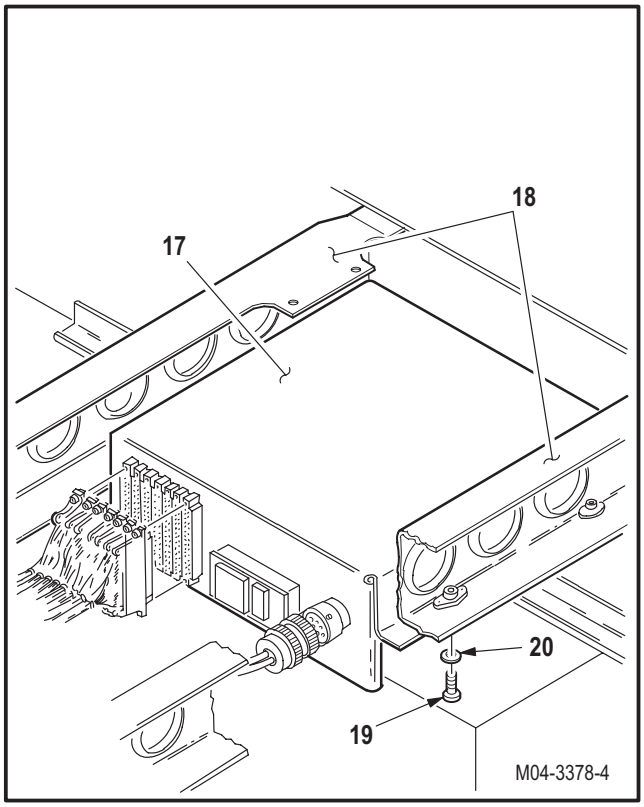
(1) Remove four screws (19) and washers (20).

(2) Remove box (17).

9.55.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**





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9.55. AFT AVIONICS BAY DISTRIBUTION BOX REMOVAL/INSTALLATION – continued

9.55.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check wires for cuts and damaged connections** (para 9.1)**.**

c. **Check nutplates for stripped threads** (para 9.1)**.**

d. **Check distribution box for cracks** (para 9.1)**.**

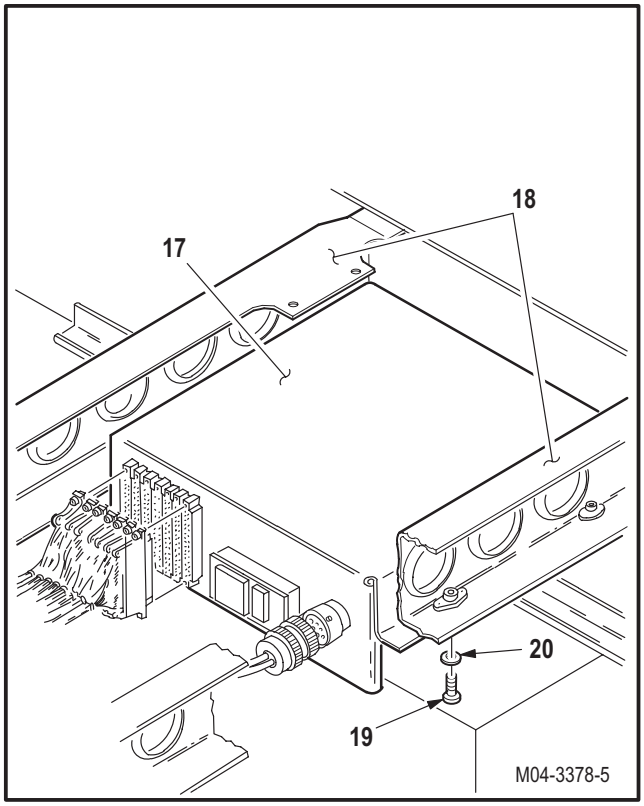
e. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.55.6. Installation

a. **Install box (17) on airframe (18).**

(1) Position box (17) on airframe (18).

(2) Install four screws (19) and washers (20).



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9.55. AFT AVIONICS BAY DISTRIBUTION BOX REMOVAL/INSTALLATION – continued

b. **Attach eight connectors from distribution box (17).**

(1) Attach connector P498 (15) to receptacle (A323)J1 (16). Use socket head key set.

(2) Attach connector P494 (13) to receptacle (A323)J2 (14). Use socket head key set.

(3) Attach connector P497 (11) to receptacle (A323)J3 (12). Use socket head key set.

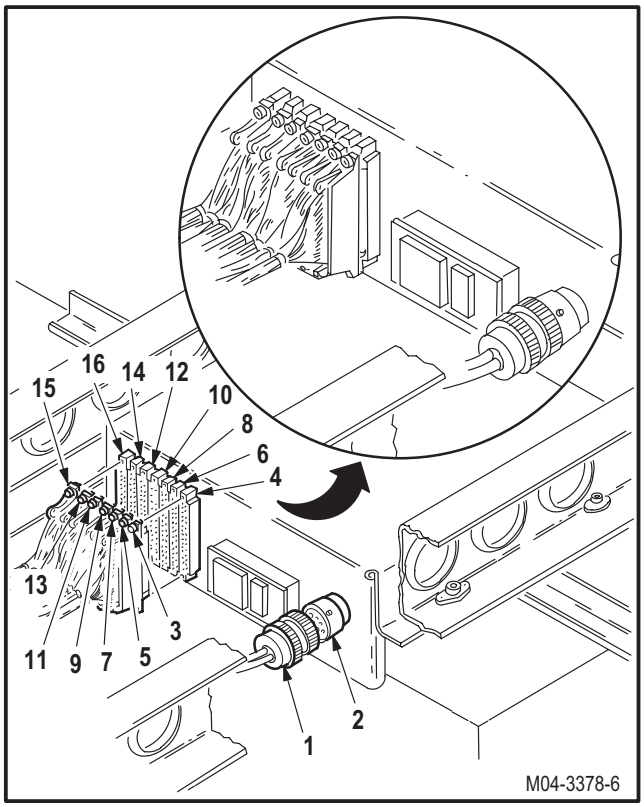
(4) Attach connector P493 (9) to receptacle (A323)J4 (10). Use socket head key set.

(5) Attach connector P499 (7) to receptacle (A323)J5 (8). Use socket head key set.

(6) Attach connector P491 (5) to receptacle (A323)J6 (6). Use socket head key set.

(7) Attach connector P496 (3) to receptacle (A323)J8 (4). Use socket head key set.

(8) Attach connector P485 (1) to receptacle (A323)J7 (2).



c. **Inspect (QA).**

d. **Perform electrical bond check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

e. **Install air data processor** (TM 9-1230-476-20-1)**.**

f. **Perform DASE and stabilator maintenance operational checks** (TM 1-1520-238-T)**.**

g. **Perform doppler navigation system (DNS) and HARS operational checks** (TM 11-1520-238-23-2)**.**

h. **Secure access door R295** (para 2.2)**.**

END OF TASK

9.56. AFT AVIONICS BAY DISTRIBUTION BOX TRANSFORMER T1 OR T2 REPLACEMENT (T700-GE-701)

9.56.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.56.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Ohmmeter (item 218, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T
TM 55-1500-323-24

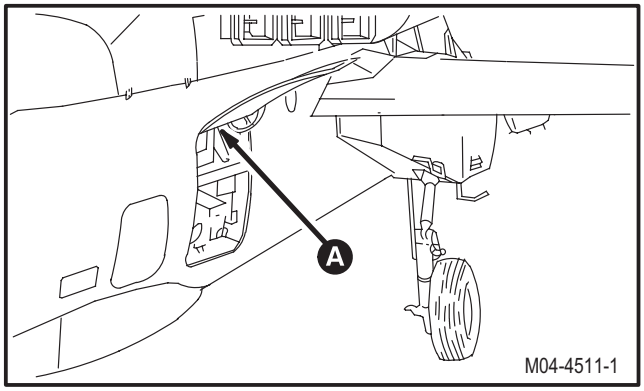
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access door R295 opened

9.56.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot center circuit breaker panel, open ASE AC circuit breaker.**



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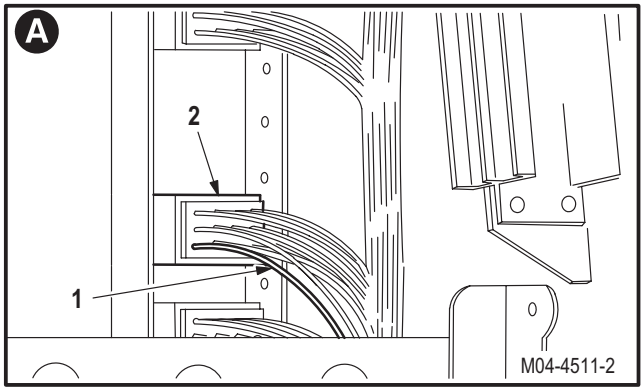
9.56. AFT AVIONICS BAY DISTRIBUTION BOX TRANSFORMER T1 OR T2 REPLACEMENT (T700-GE-701) – continued

c. **Depin orange wire (1) from ground stud (2)** (TM 55-1500-323-24)**.**

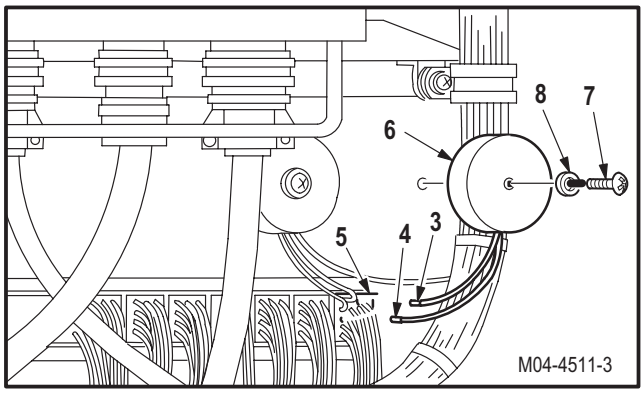


d. **Depin red wire (3) and brown wire (4) from terminal board (5)** (TM 55-1500-323-24)**.**

e. **Remove ASE transformer (6).**

(1) Remove screw (7) and washer (8).

(2) Remove and discard transformer (6).



9.56.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

9.56.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check wires for chafing, cuts, and damaged connections** (para 9.1)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

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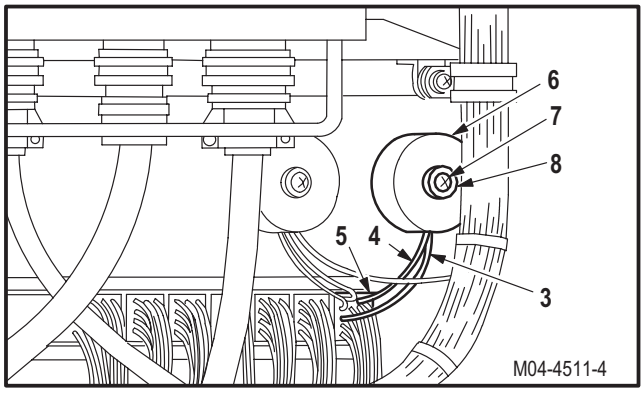
9.56. AFT AVIONICS BAY DISTRIBUTION BOX TRANSFORMER T1 OR T2 REPLACEMENT (T700-GE-701) – continued

9.56.6. Installation

a. **Install new ASE transformer (6).**

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

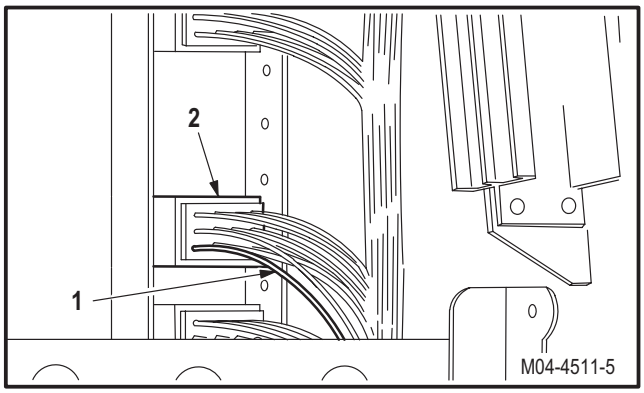
b. **Pin red wire (3) and brown wire (4) to terminal board (5)** (TM 55-1500-323-24)**.**



c. **Pin orange wire (1) to ground stud (2)** (TM 55-1500-323-24)**.**

d. **Perform electrical bond check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.



e. **Inspect (QA).**

f. **Perform DASE maintenance operational check** (TM 1-1520-238-T)**.**

g. **Secure access door R295** (para 2.2)**.**

END OF TASK

9.57. AFT AVIONICS BAY DISTRIBUTION BOX DISASSEMBLY/ASSEMBLY

9.57.1. Description

This task covers: Disassembly. Cleaning. Inspection. Assembly.

9.57.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
L-style socket head key set (item 187, App H)
Ohmmeter (item 218, App H)
Adjustable air filtering respirator (item 262, App H)
3-piece spatula set (item 337, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T
TM 55-1500-323-24

Materials/Parts:

Isopropyl alcohol (item 106, App F)
Sealing compound (item 175, App F)
Strap (item 191, App F)

Equipment Conditions:

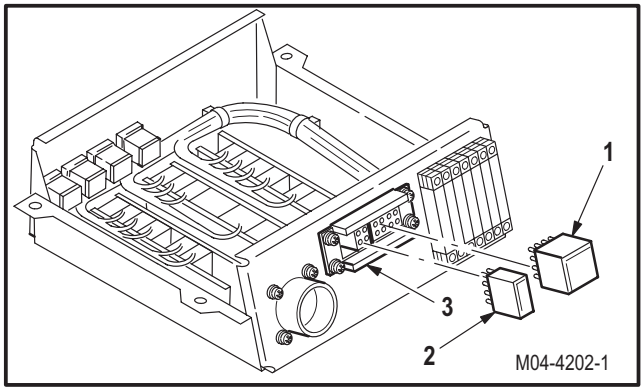
Ref	Condition
9.55	Aft avionics bay distribution box removed
9.56	Aft avionics bay distribution box transformers T1 and T2 removed, if installed

9.57.3. Disassembly

NOTE

Quantity of hardware may vary.

a. **Identify and remove relay modules (A323)K1-1/2 (1) and (A323)K1-3 (2) from relay track (3)** (para 9.139)**.**



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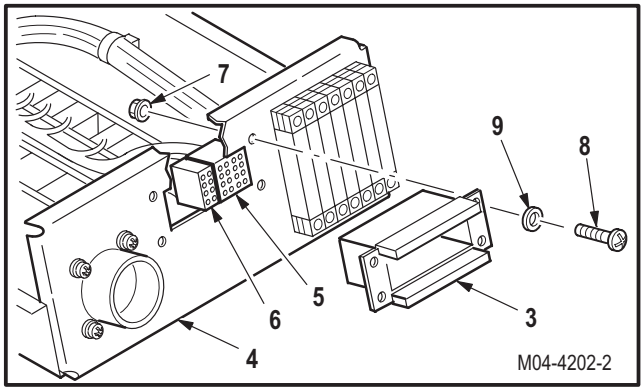
9.57. AFT AVIONICS BAY DISTRIBUTION BOX DISASSEMBLY/ASSEMBLY – continued

b. **Remove relay track (3) from distribution box (4).**

(1) Identify and remove relay module sockets (A323)XK1-1/2 (5) and (A323)XK1-3 (6) (para 9.139).

(2) Hold four nuts (7). Remove four screws (8) and washers (9).

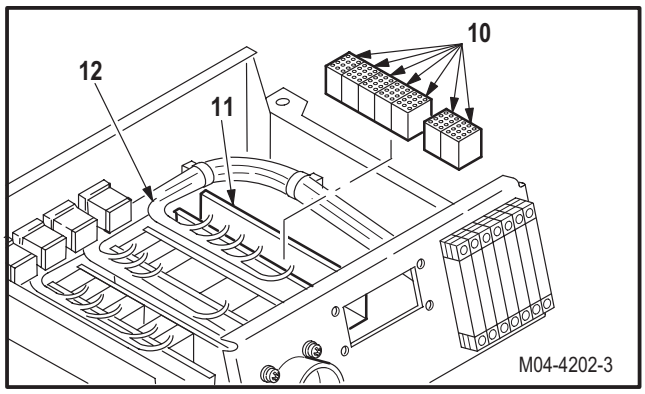
(3) Remove four nuts (7) and track (3).



c. **Remove terminal junction modules (10) from terminal track (11).**

(1) Identify and depin wires (12) from modules (10) (TM 55-1500-323-24).

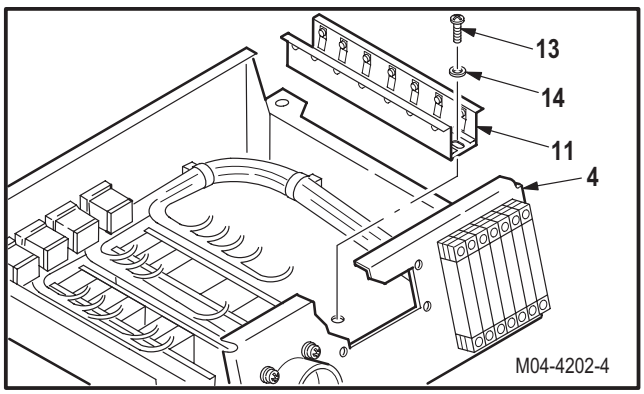
(2) Remove modules (10) (para 9.139).



d. **Remove terminal track (11) from box (4).**

(1) Remove two screws (13) and washers (14).

(2) Remove terminal track (11).



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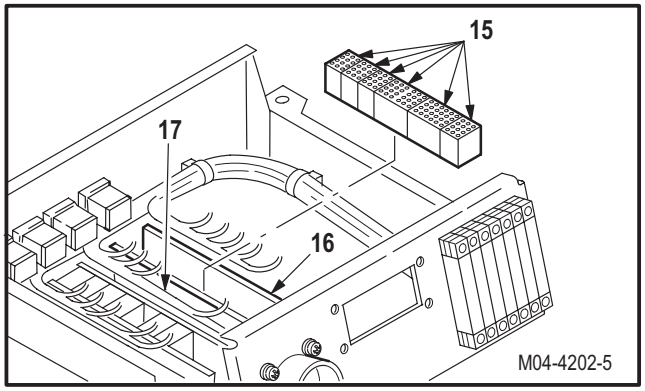
9.57. AFT AVIONICS BAY DISTRIBUTION BOX DISASSEMBLY/ASSEMBLY – continued

e. **Remove terminal junction modules (15) from terminal track (16).**

(1) Identify and depin wires (17) from modules (15) (TM 55-1500-323-24).

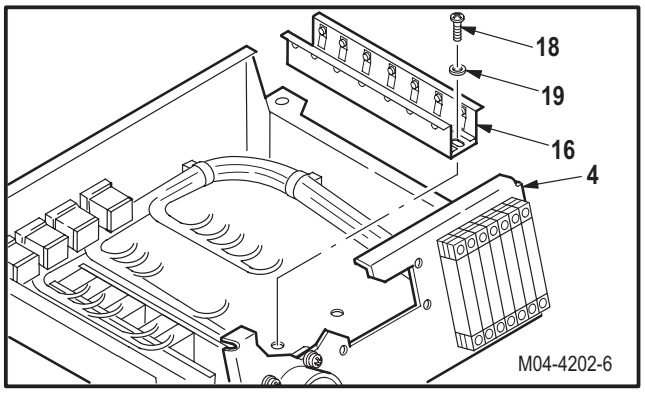
(2) Remove modules (15) (para 9.139).



f. **Remove terminal track (16) from box (4).**

(1) Remove two screws (18) and washers (19).

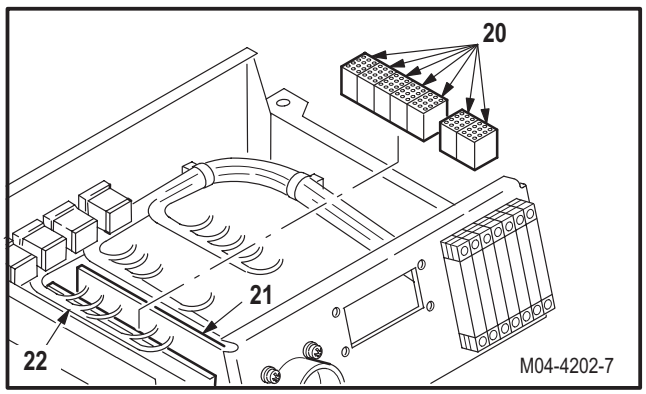
(2) Remove terminal track (16).



g. **Remove terminal junction modules (20) from terminal track (21).**

(1) Identify and depin wires (22) from modules (20) (TM 55-1500-323-24).

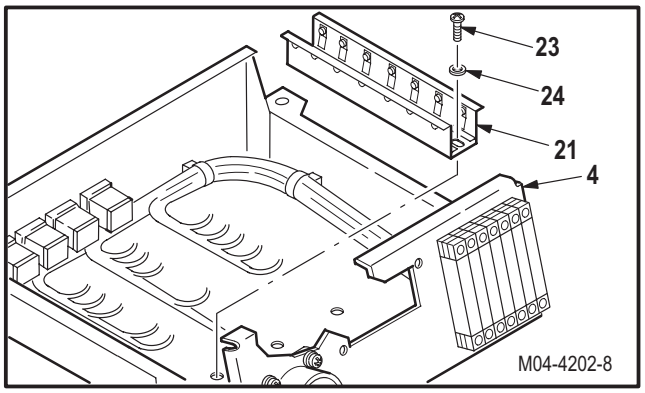
(2) Remove modules (20) (para 9.139).



h. **Remove terminal track (21) from box (4).**

(1) Remove two screws (23) and washers (24).

(2) Remove terminal track (21).



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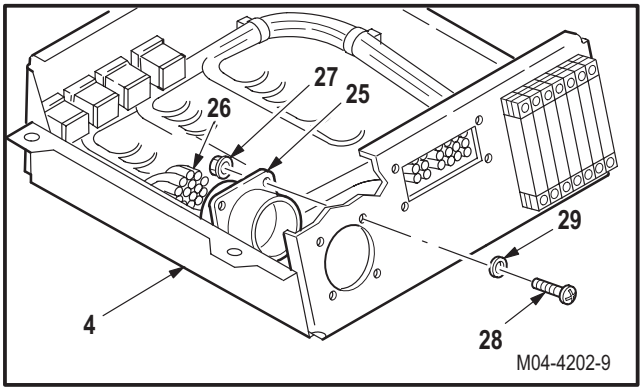
9.57. AFT AVIONICS BAY DISTRIBUTION BOX DISASSEMBLY/ASSEMBLY – continued

i. **Remove receptacle (A323)J7 (25) from box (4).**

(1) Identify and depin wires (26) from receptacle (25) (TM 55-1500-323-24).

(2) Hold four nuts (27). Remove four screws (28) and washers (29).

(3) Remove four nuts (27) and receptacle (25).



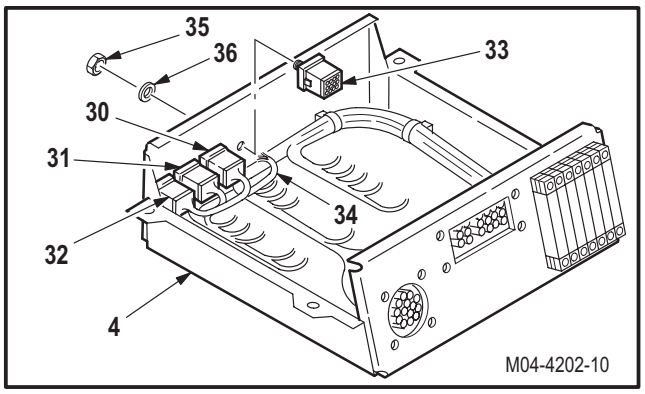
j. **Remove terminal junction modules (A323)GS1 (30), (A323)GS2 (31), (A323)GS3 (32), and (A323)GS4 (33) from box (4).**

(1) Identify and depin wires (34) from modules (30), (31), (32), and (33) (TM 55-1500-323-24).

(2) Remove sealant. Use spatula set.

(3) Remove nut (35) and washer (36).

(4) Remove modules (30), (31), (32), and (33).

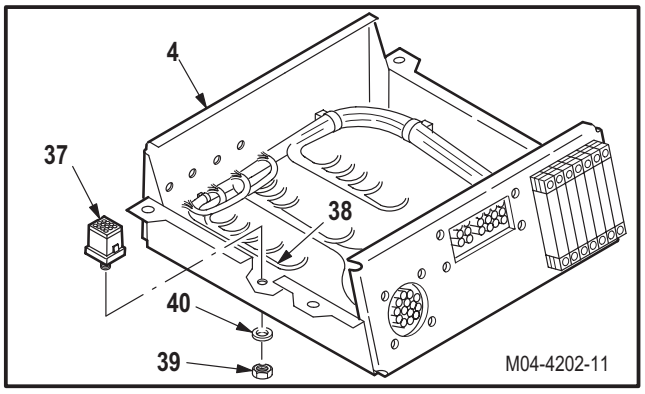


k. **Remove terminal junction module (A323)GS5 (37) from box (4), if installed.**

(1) Identify and depin wires (38) from module (37) (TM 55-1500-323-24).

(2) Remove nut (39) and washer (40).

(3) Remove module (37).



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9.57. AFT AVIONICS BAY DISTRIBUTION BOX DISASSEMBLY/ASSEMBLY – continued

l. **Remove wire harness W642 (41) from box (4).**

(1) Remove receptacle (A323)J1 (42).

(a) Remove two screws (43), adapter nuts (44), and four washers (45). Use socket head key set.

(b) Remove receptacle (42) from box (4).

(2) Remove receptacle (A323)J2 (46).

(a) Remove two screws (43), adapter nuts (44), and four washers (45). Use socket head key set.

(b) Remove receptacle (46) from box (4).

(3) Remove receptacle (A323)J3 (47).

(a) Remove two screws (43), adapter nuts (44), and four washers (45). Use socket head key set.

(b) Remove receptacle (47) from box (4).

(4) Remove receptacle (A323)J4 (48).

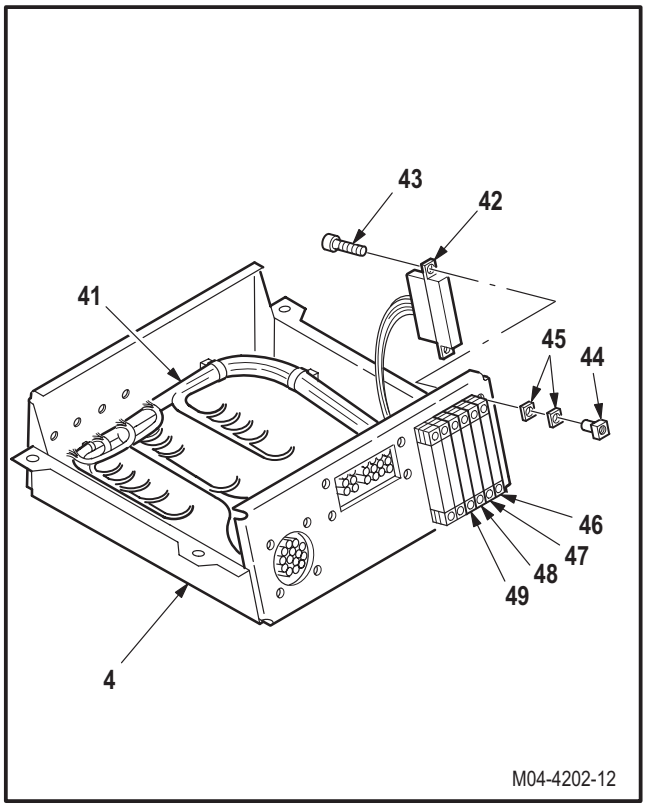
(a) Remove two screws (43), adapter nuts (44), and four washers (45). Use socket head key set.

(b) Remove receptacle (48) from box (4).

(5) Remove receptacle (A323)J5 (49).

(a) Remove two screws (43), adapter nuts (44), and four washers (45). Use socket head key set.

(b) Remove receptacle (49) from box (4).



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9.57. AFT AVIONICS BAY DISTRIBUTION BOX DISASSEMBLY/ASSEMBLY – continued

(6) Remove receptacle (A323)J6 (50).

(a) Remove two screws (43), adapter nuts (44), and four washers (45). Use socket head key set.

(b) Remove receptacle (50) from box (4).

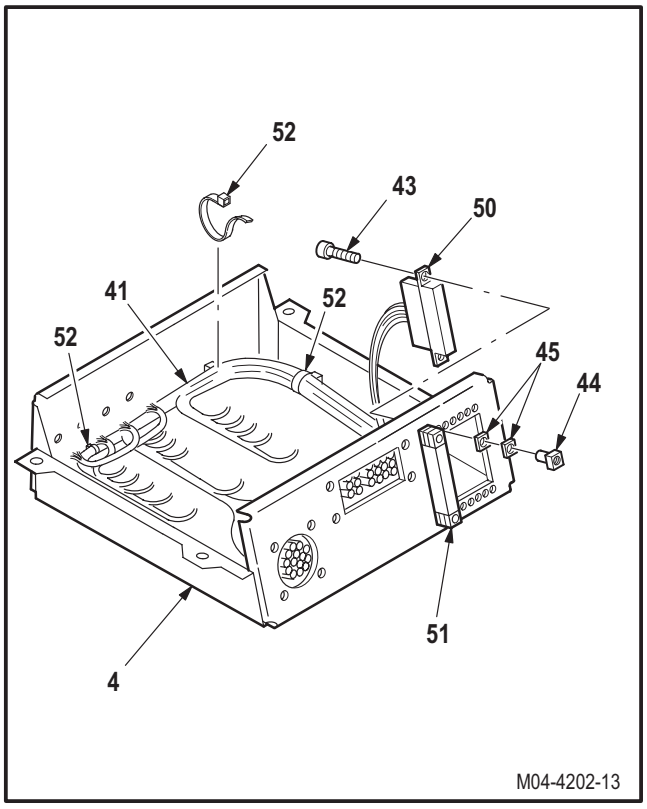
(7) Remove receptacle (A323)J8 (51).

(a) Remove two screws (43), adapter nuts (44), and four washers (45). Use socket head key set.

(b) Remove receptacle (51) from box (4).

(8) Remove and discard three tiedown straps (52) from wire harness (41).

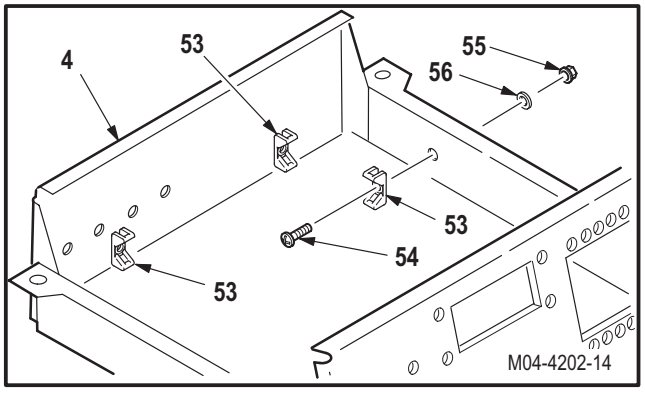
(9) Remove wire harness (41).



m. **Remove three tiedown strap mounts (53) from box (4).**

(1) Hold screw (54). Remove nut (55) and washer (56).

(2) Remove mount (53) and screw (54) from box (4).



9.57.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

b. **Clean ground stud mounting area.** Use clean rag and isopropyl alcohol (item 106, App F).

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9.57. AFT AVIONICS BAY DISTRIBUTION BOX DISASSEMBLY/ASSEMBLY – continued

9.57.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check receptacle and terminals for damage** (para 9.1)**.**

c. **Check wires for wear, cuts, breaks, and burned insulation** (para 9.1)**.**

d. **Check nutplates for damage** (para 9.1)**.**

e. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.57.6. Assembly

NOTE

Quantity of hardware may vary.

a. **Install three mounts (53) on box (4).**

(1) Install screw (54) through mount (53) and box (4).

(2) Hold screw (54). Install washer (56) and nut (55).

b. **Install wire harness W642 (41) in box (4).**

(1) Install receptacle (A323)J8 (51).

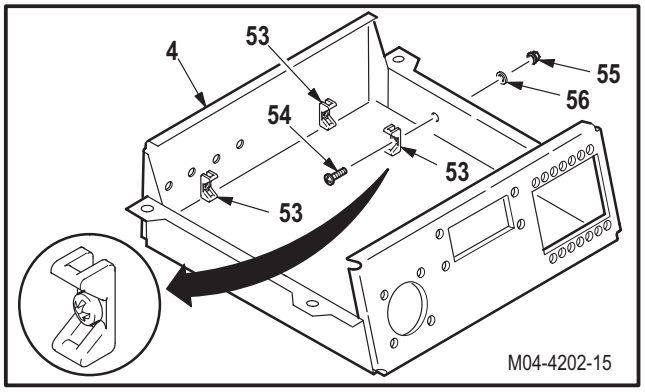
(a) Install receptacle (51) on box (4).

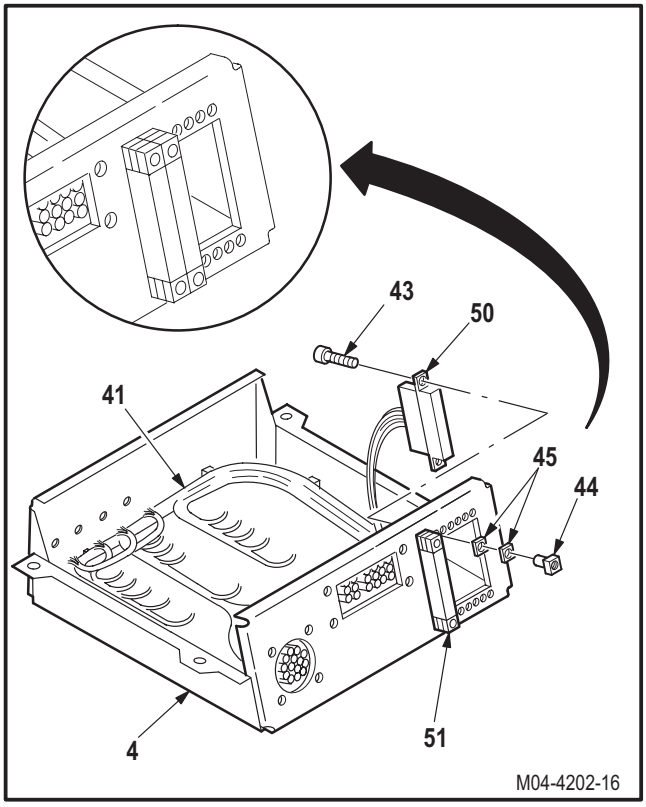
(b) Install two screws (43) through receptacle (51), four washers (45), and two adapter nuts (44). Use socket head key set.

(2) Install receptacle (A323)J6 (50).

(a) Install receptacle (50) on box (4).

(b) Install two screws (43) through receptacle (50), four washers (45), and two adapter nuts (44). Use socket head key set.





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9.57. AFT AVIONICS BAY DISTRIBUTION BOX DISASSEMBLY/ASSEMBLY – continued

(3) Install receptacle (A323)J5 (49).

(a) Install receptacle (49) on box (4).

(b) Install two screws (43) through receptacle (49), four washers (45), and two adapter nuts (44). Use socket head key set.

(4) Install receptacle (A323)J4 (48).

(a) Install receptacle (48) on box (4).

(b) Install two screws (43) through receptacle (48), four washers (45), and two adapter nuts (44). Use socket head key set.

(5) Install receptacle (A323)J3 (47).

(a) Install receptacle (47) on box (4).

(b) Install two screws (43) through receptacle (47), four washers (45), and two adapter nuts (44). Use socket head key set.

(6) Install receptacle (A323)J2 (46).

(a) Install receptacle (46) on box (4).

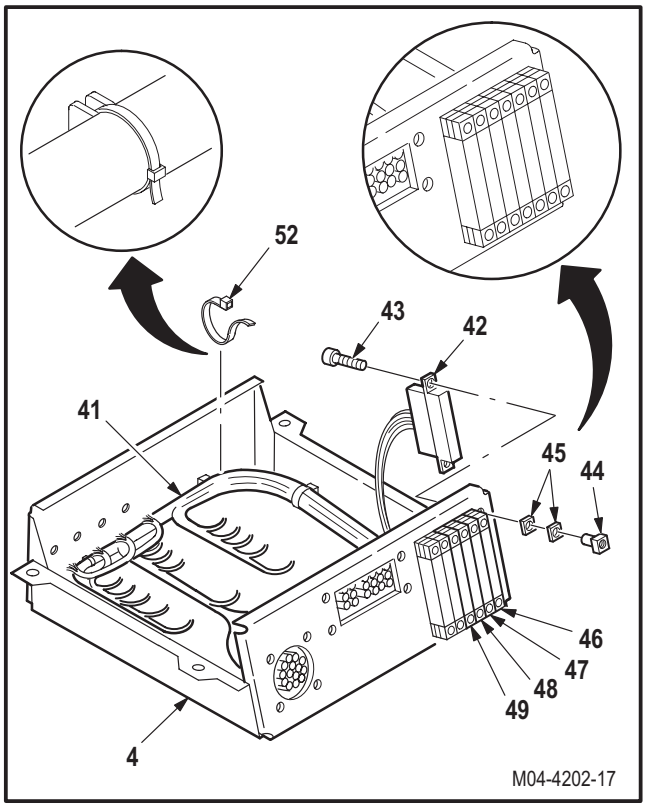
(b) Install two screws (43) through receptacle (46), four washers (45), and two adapter nuts (44). Use socket head key set.

(7) Install receptacle (A323)J1 (42).

(a) Install receptacle (42) on box (4).

(b) Install two screws (43) through receptacle (42), four washers (45), and two adapter nuts (44). Use socket head key set.

(8) Install three tiedown straps (52) on wire harness (41). Use strap (item 191, App F).



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9.57. AFT AVIONICS BAY DISTRIBUTION BOX DISASSEMBLY/ASSEMBLY – continued

c. **Install terminal junction module (A323)GS5 (37) on box (4), if removed.**

(1) Install module (37) through box (4).

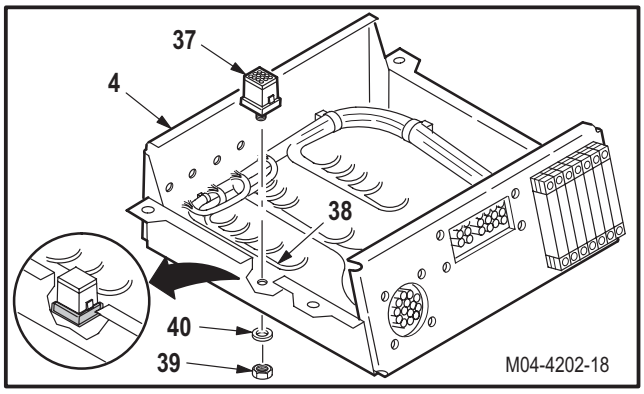
(2) Install washer (40) and nut (39).

(3) Perform electrical bond check on attaching hardware (TM 55-1500-323-24).

(a) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

(4) Edge seal module (37). Use sealing compound (item 175, App F).

(5) Pin identified wires (38) in module (37) (TM 55-1500-323-24).



d. **Install terminal junction modules (A323)GS1 (30), (A323)GS2 (31), (A323)GS3 (32), and (A323)GS4 (33) on box (4).**

(1) Install modules (30), (31), (32), and (33) through box (4).

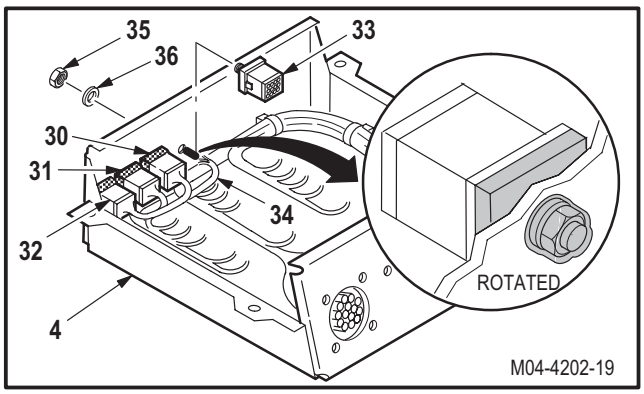
(2) Install washers (36) and nuts (35).

(3) Perform electrical bond check on attaching hardware (TM 55-1500-323-24).

(a) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

(4) Edge seal modules (30), (31), (32), and (33) and nuts (35). Use sealing compound (item 175, App F).

(5) Pin identified wires (34) in modules (30), (31), (32), and (33) (TM 55-1500-323-24).



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9.57. AFT AVIONICS BAY DISTRIBUTION BOX DISASSEMBLY/ASSEMBLY – continued

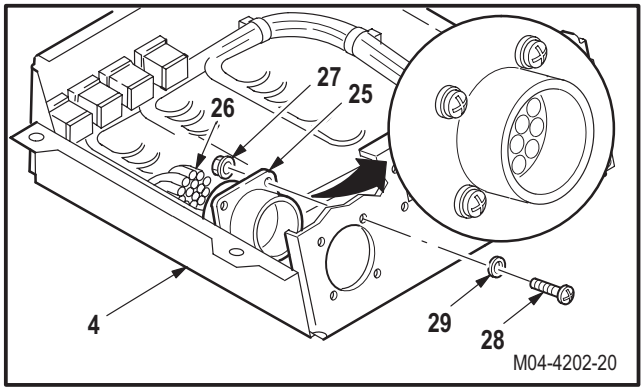
e. **Install receptacle (A323)J7 (25) on box (4).**

(1) Position receptacle (25) on box (4).

(2) Install four screws (28) through washers (29), box (4), and receptacle (25).

(3) Hold four screws (28). Install nuts (27).

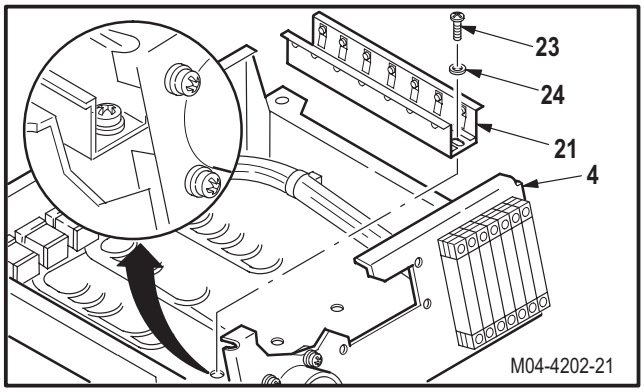
(4) Pin identified wires (26) in receptacle (25) (TM 55-1500-323-24).



f. **Install terminal track (21) on box (4).**

(1) Position track (21) on box (4).

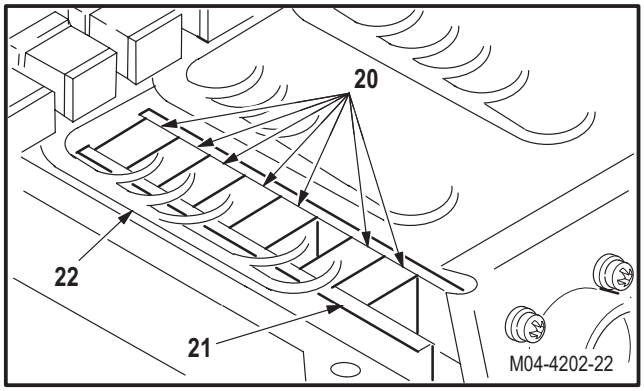
(2) Install two screws (23) and washers (24).



g. **Install terminal junction modules (20) on terminal track (21).**

(1) Position and press modules (20) until seated (para 9.139).

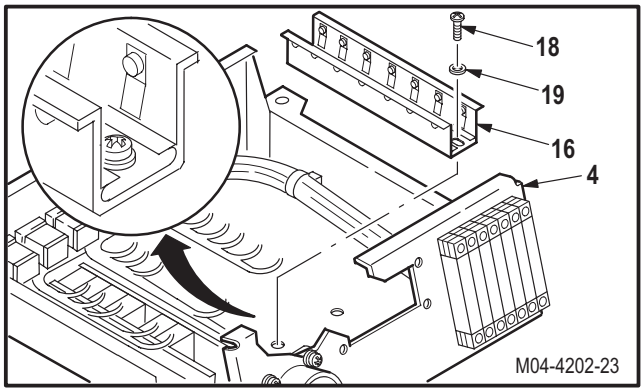
(2) Pin identified wires (22) in modules (20) (TM 55-1500-323-24).



h. **Install terminal track (16) on box (4).**

(1) Position track (16) on box (4).

(2) Install two screws (18) and washers (19).



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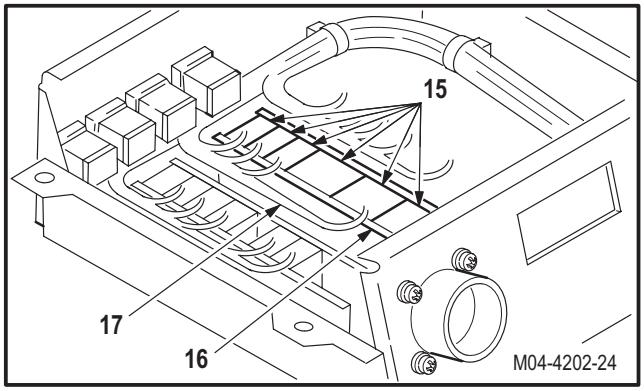
9.57. AFT AVIONICS BAY DISTRIBUTION BOX DISASSEMBLY/ASSEMBLY – continued

i. **Install terminal junction modules (15) on terminal track (16).**

(1) Position and press modules (15) until seated (para 9.139).

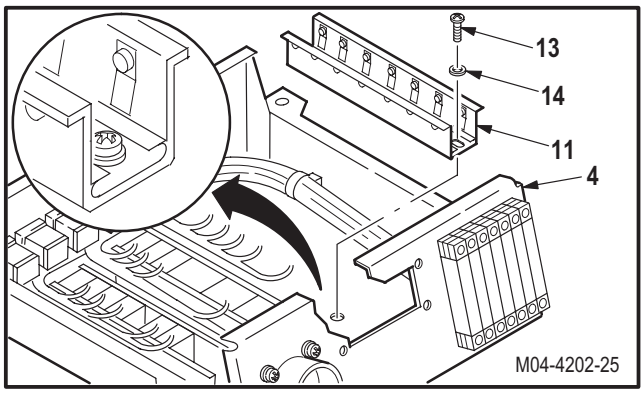
(2) Pin identified wires (17) in modules (15) (TM 55-1500-323-24).



j. **Install terminal track (11) on box (4).**

(1) Position track (11) on box (4).

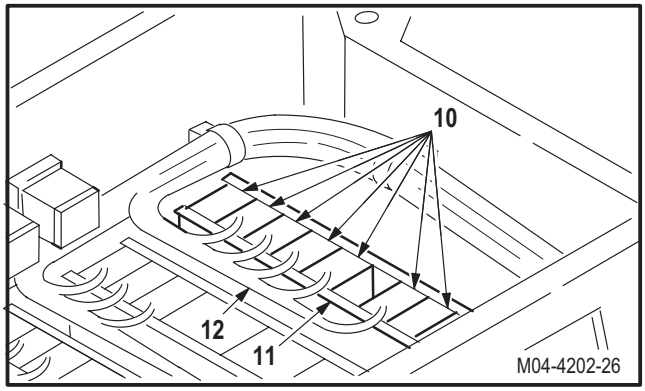
(2) Install two screws (13) and washers (14).



k. **Install terminal junction modules (10) on terminal track (11).**

(1) Position and press modules (10) until seated (para 9.139).

(2) Pin identified wires (12) in modules (10) (TM 55-1500-323-24).



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9.57. AFT AVIONICS BAY DISTRIBUTION BOX DISASSEMBLY/ASSEMBLY – continued

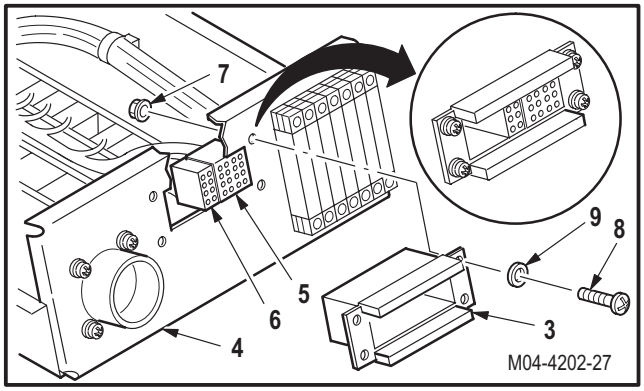
l. **Install relay track (3) on box (4).**

(1) Install relay module sockets (A323)XK1-1/2 (5) and (A323)XK1-3 (6).

(a) Position and press sockets (5) and (6) until seated (para 9.139).

(2) Install four screws (8) through washers (9), track (3), and box (4).

(3) Hold four screws (8). Install nuts (7).



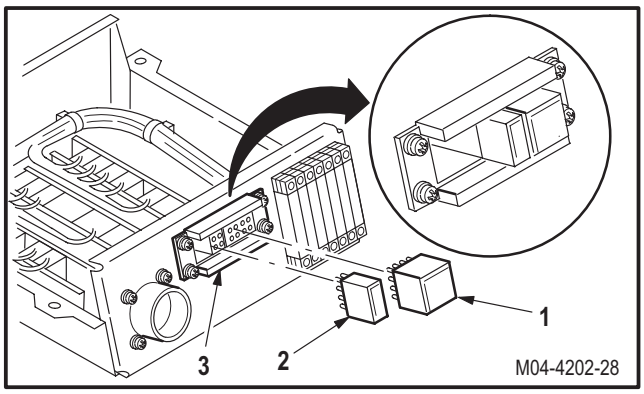
m. **Install relays (A323)K1-1/2 (1) and (A323)K1-3 (2) on relay track** (para 9.139)**.**

n. **Inspect (QA).**

o. **Install aft avionics bay distribution box transformers T1 and T2, if removed** (para 9.56)**.**

p. **Install aft avionics bay distribution box** (para 9.55)**.**

q. **Perform DASE maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

9.58. AFT AVIONICS BAY ISOLATION TRANSFORMER FILTER BOX REMOVAL/INSTALLATION

9.58.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.58.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

References:

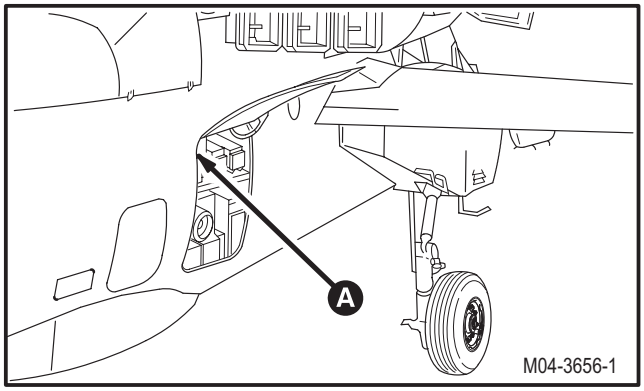
TM 1-1520-238-T
TM 11-1520-238-23-1

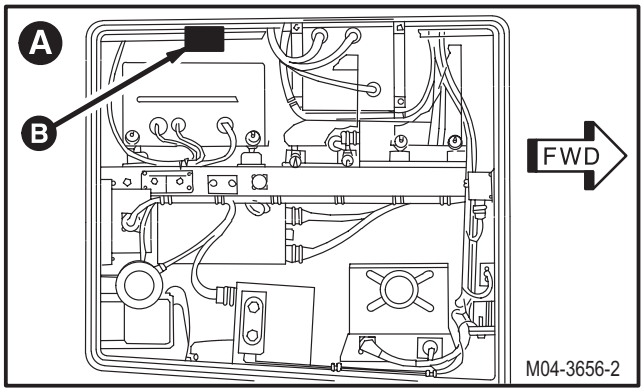
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access door R295 opened
TM 11-1520-238-23-1	Video recorder removed

Personnel Required:

68X	Armament/Electrical System Repairer
68X3F	Armament/Electrical System Repairer/ Technical Inspector





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9.58. AFT AVIONICS BAY ISOLATION TRANSFORMER FILTER BOX REMOVAL/INSTALLATION – continued

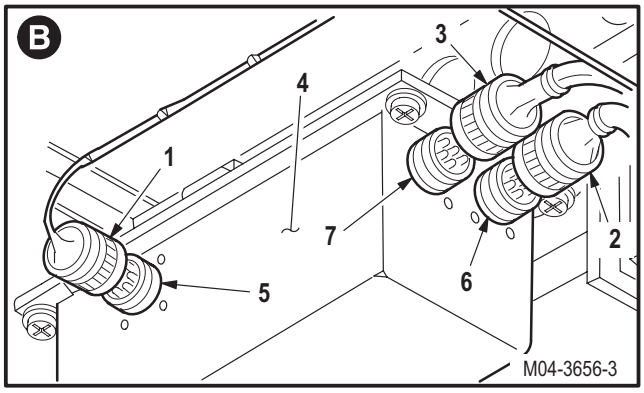
9.58.3. Removal

a. **Detach connectors P692 (1), P693 (2), and P694 (3) from isolation transformer/filter assembly box (4).**

(1) Detach connector P692 (1) from receptacle (A342)J1 (5).

(2) Detach connector P693 (2) from receptacle (A342)J2 (6).

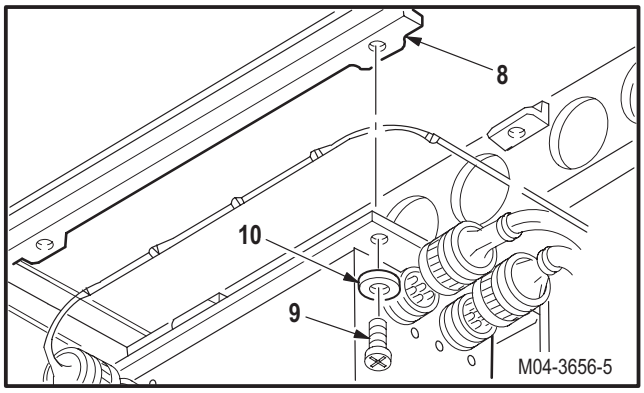
(3) Detach connector P694 (3) from receptacle (A342)J3 (7).



b. **Remove isolation transformer/filter assembly box (4) from bracket (8).**

(1) Remove four screws (9) and washers (10).

(2) Remove box (4).



9.58.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

9.58.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

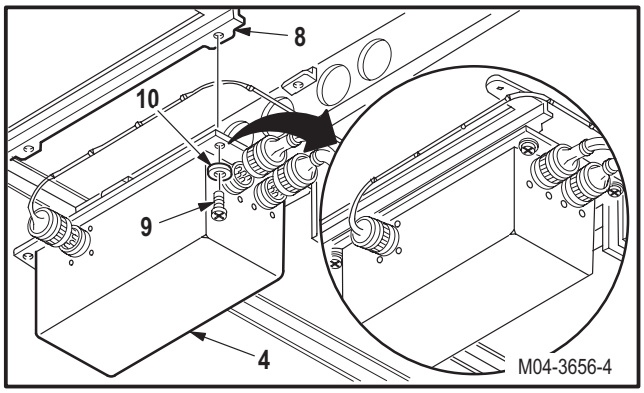
b. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.58.6. Installation

a. **Install isolation transformer/filter assembly box (4) on bracket (8).**

(1) Position box (4) on bracket (8).

(2) Install four screws (9) and washers (10).



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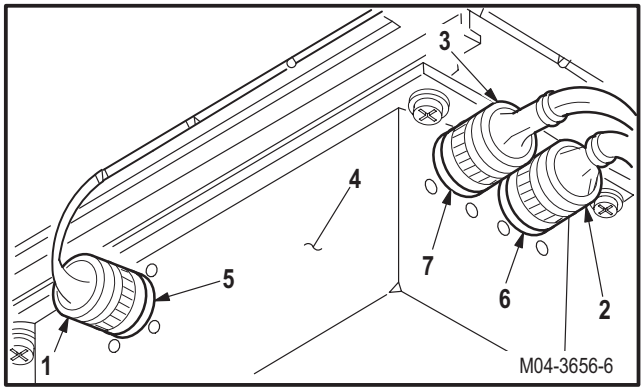
9.58. AFT AVIONICS BAY ISOLATION TRANSFORMER FILTER BOX REMOVAL/INSTALLATION – continued

b. **Attach connectors P692 (1), P693 (2), and P694 (3) to isolation transformer/filter assembly box (4).**

(1) Attach connector P692 (1) to receptacle (A342)J1 (5).

(2) Attach connector P693 (2) to receptacle (A342)J2 (6).

(3) Attach connector P694 (3) to receptacle (A342)J3 (7).



c. **Inspect (QA).**

d. **Install video recorder** (TM 11-1520-238-23-1)**.**

e. **Perform DASE maintenance operational check** (TM 1-1520-238-T)**.**

f. **Secure access door R295** (para 2.2)**.**

END OF TASK

9.59. AFT AVIONICS BAY ISOLATION TRANSFORMER FILTER BOX DISASSEMBLY/ASSEMBLY (AVIM)

9.59.1. Description

This task covers: Disassembly. Cleaning. Inspection. Assembly.

9.59.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Ohmmeter (item 218, App H)
Socket removal tool (item 258, App H)
Adjustable air filtering respirator (item 262, App H)
25-watt electric soldering iron (item 332, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Materials/Parts:

Electrical shielding gasket (table D-13A, App D)
Silicone adhesive (item 23, App F)
Isopropyl alcohol (item 106, App F)
Sealing compound (item 169, App F)
Sealing compound (item 174, App F)
Solder (item 189, App F)

References:

TM 1-1520-238-T
TM 55-1500-323-24

9.59.3. Disassembly

a. **Remove cover (1) from isolation transformer filter box (2).**

(1) Remove eight screws (3) and washers (4).

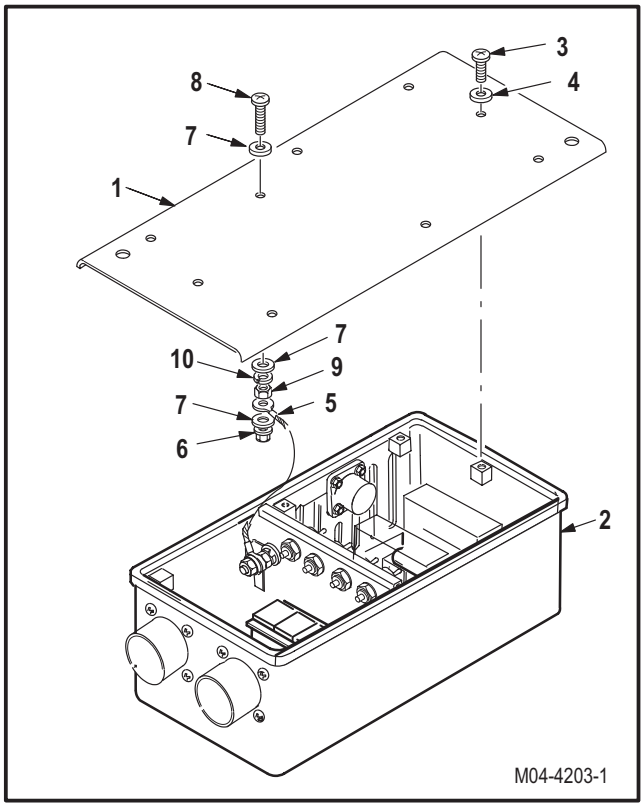
(2) Remove cover (1).

b. **Remove electrical lead (5) from cover (1).**

(1) Remove locknut (6), washer (7), and electrical lead (5).

c. **Remove bonding screw (8) from cover (1).**

(1) Remove nut (9), lockwasher (10), two washers (7), and screw (8).



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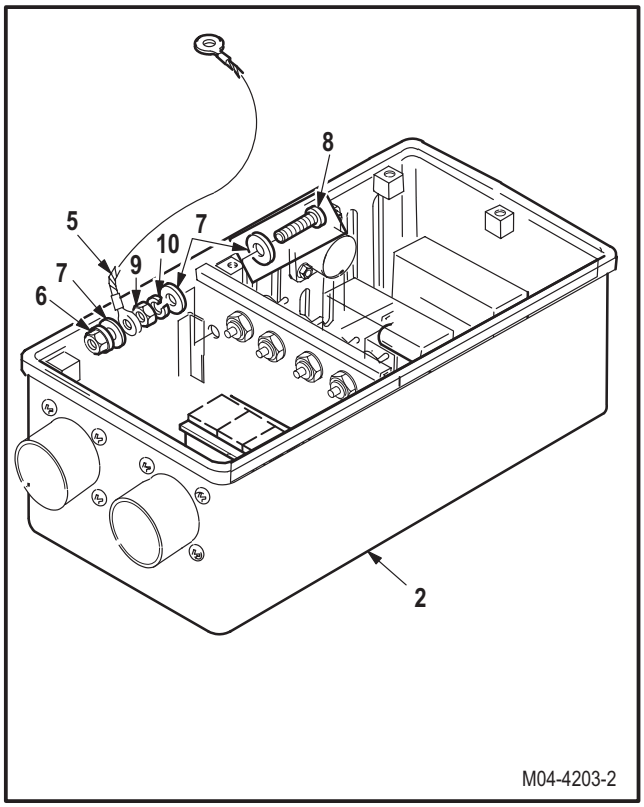
9.59. AFT AVIONICS BAY ISOLATION TRANSFORMER FILTER BOX DISASSEMBLY/ASSEMBLY (AVIM) – continued

d. **Remove electrical lead (5) from box (2).**

(1) Remove locknut (6), washer (7), and electrical lead (5).

e. **Remove bonding screw (8) from box (2).**

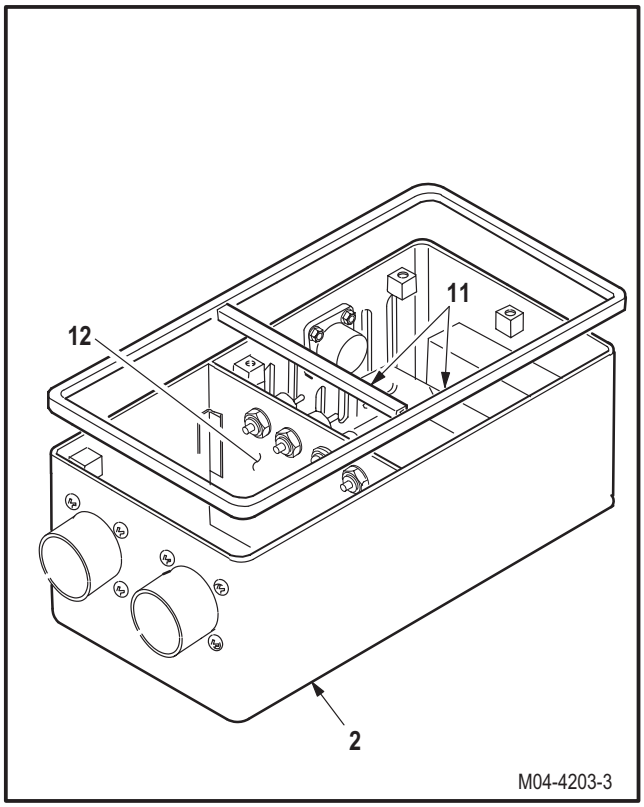
(1) Remove nut (9), lockwasher (10), two washers (7), and screw (8).



f. **Remove gasket (11) from box (2).**

(1) Remove gasket (11) from perimeter of box (2).

(2) Remove gasket (11) from partition (12).



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9.59. AFT AVIONICS BAY ISOLATION TRANSFORMER FILTER BOX DISASSEMBLY/ASSEMBLY (AVIM) – continued

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

g. **Remove filters (A342)F1 (13), (A342)F2 (14), (A342)F3 (15), and (A342)F4 (16) from partition (12).**

(1) Identify and desolder wires from (A342)F1 (13). Use soldering iron (TM 55-1500-323-24).

(2) Remove nut (17), washer (18), and (A342)F1 (13) from partition (12).

(3) Identify and desolder wires from (A342)F2 (14). Use soldering iron (TM 55-1500-323-24).

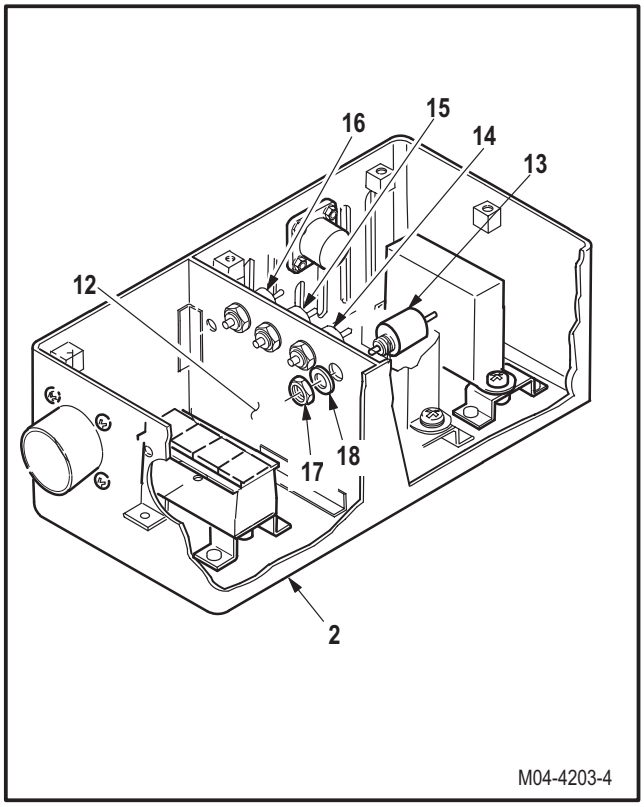
(4) Remove nut (17), washer (18), and (A342)F2 (14) from partition (12).

(5) Identify and desolder wires from (A342)F3 (15). Use soldering iron (TM 55-1500-323-24).

(6) Remove nut (17), washer (18), and (A342)F3 (15) from partition (12).

(7) Identify and desolder wires from (A342)F4 (16). Use soldering iron (TM 55-1500-323-24).

(8) Remove nut (17), washer (18), and (A342)F4 (16) from partition (12).



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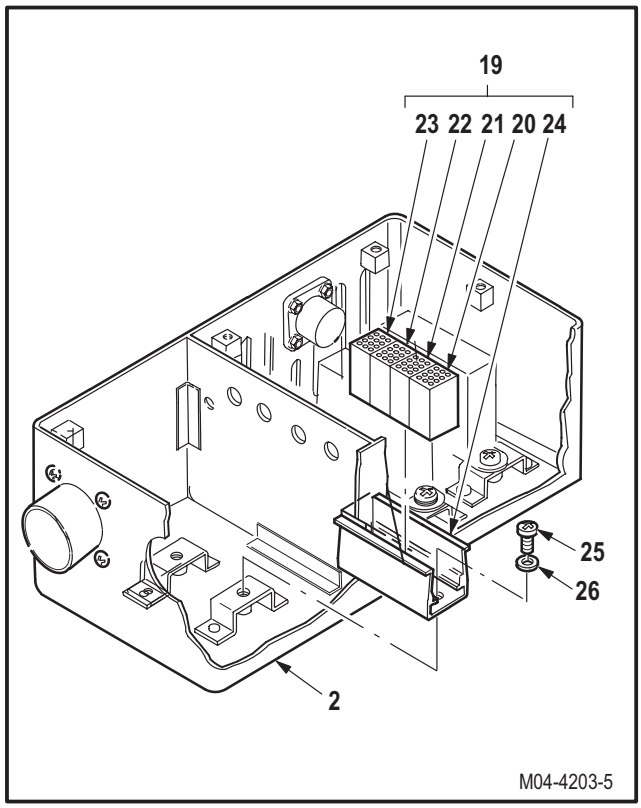
9.59. AFT AVIONICS BAY ISOLATION TRANSFORMER FILTER BOX DISASSEMBLY/ASSEMBLY (AVIM) – continued

h. **Remove terminal junction module assembly (A342)TB1 (19) from box (2).**

(1) Identify and depin four terminal junction modules (20), (21), (22), and (23) on electronic rack (24) (TM 55-1500-323-24).

(2) Remove modules (20), (21), (22), and (23) from electronic rack (24). Use socket removal tool.

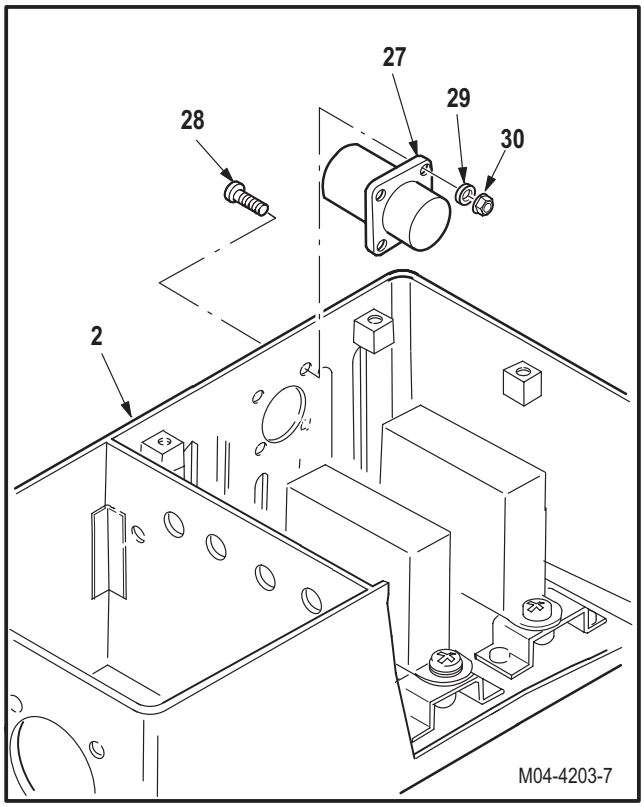
(3) Remove two screws (25), washers (26), and electronic rack (24) from box (2).



i. **Remove receptacle (A342)J1 (27) from box (2).**

(1) Identify and desolder wires from receptacle (27). Use soldering iron (TM 55-1500-323-24).

(2) Remove four screws (28), washers (29), nuts (30), and receptacle (27) from box (2).



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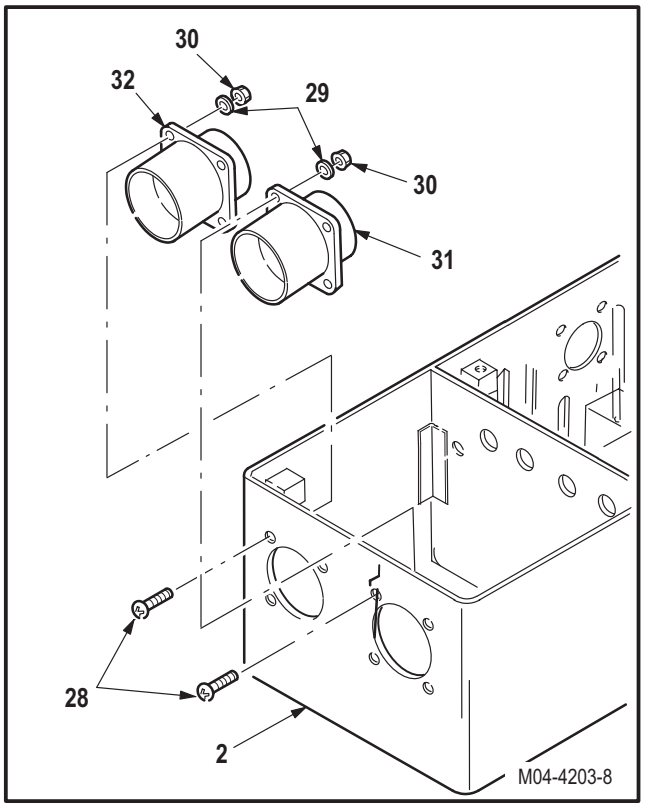
9.59. AFT AVIONICS BAY ISOLATION TRANSFORMER FILTER BOX DISASSEMBLY/ASSEMBLY (AVIM) – continued

j. **Remove receptacle (A342)J2 (31) from box (2).**

(1) Remove four screws (28), washers (29), nuts (30), and receptacle (31) from box (2).

k. **Remove receptacle (A342)J3 (32) from box (2).**

(1) Remove four screws (28), washers (29), nuts (30), and receptacle (32) from box (2).

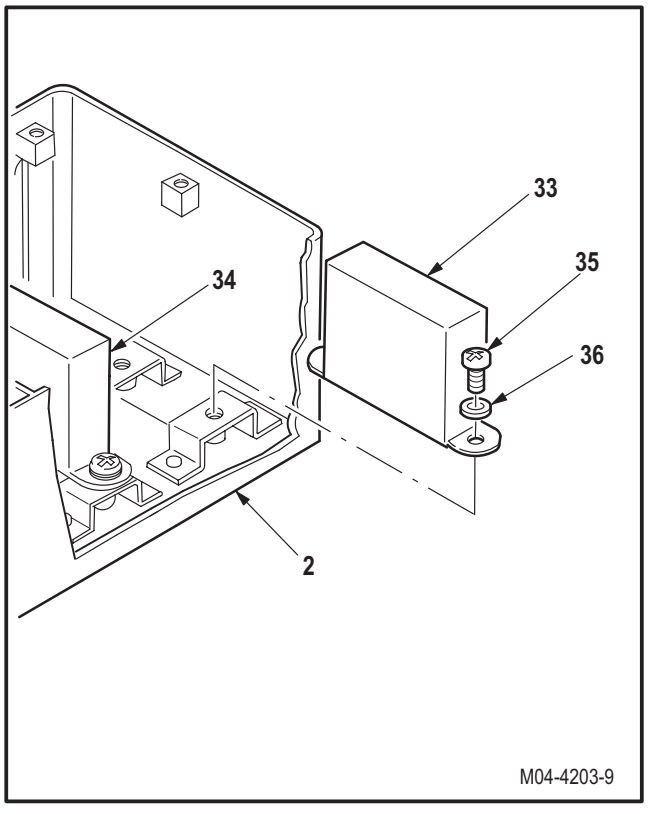


l. **Remove transformers (A342)T1 (33) and (A342)T2 (34) from box (2).**

(1) Identify and desolder wires from transformer (33). Use soldering iron (TM 55-1500-323-24).

(2) Remove two screws (35), washers (36), and transformer (33) from box (2).

(3) Remove two screws (35), washers (36), and transformer (34) from box (2).



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9.59. AFT AVIONICS BAY ISOLATION TRANSFORMER FILTER BOX DISASSEMBLY/ASSEMBLY (AVIM)

9.59.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

b. **Clean jumper assembly mounting areas.** Use clean rag and isopropyl alcohol (item 106, App F).

c. **Clean gasket mounting and mating areas.** Use clean rag and isopropyl alcohol (item 106, App F).

9.59.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check wires for chafing, cuts, and damaged connections** (para 9.1)**.**

c. **Check mounting brackets for cracks, damage, and loose nutplates** (para 9.1)**.**

d. **Check removed and attaching parts for corrosion** (para 1.49)**.**

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9.59. AFT AVIONICS BAY ISOLATION TRANSFORMER FILTER BOX DISASSEMBLY/ASSEMBLY (AVIM) – continued

9.59.6. Assembly

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

a. **Install transformers (A342)T1 (33) and (A342)T2 (34) in box (2).**

(1) Install two screws (35) through washers (36) and transformer (34) in box (2).

(2) Install two screws (35) through washers (36) and transformer (33) in box (2).

(3) Solder identified wires on (A342)T1 transformer (33). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).

b. **Install receptacle (A342)J3 (32) on box (2).**

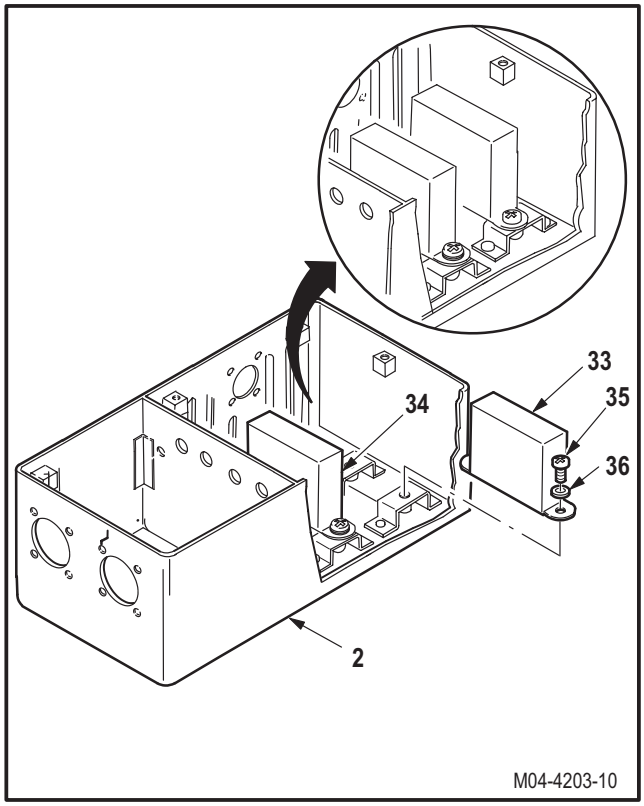
(1) Install four screws (28) through box (2), receptacle (32), and washers (29).

(2) Hold screws (28). Install nuts (30).

c. **Install receptacle (A342)J2 (31) on box (2).**

(1) Install four screws (28) through box (2), receptacle (31), and washers (29).

(2) Hold screws (28). Install nuts (30).



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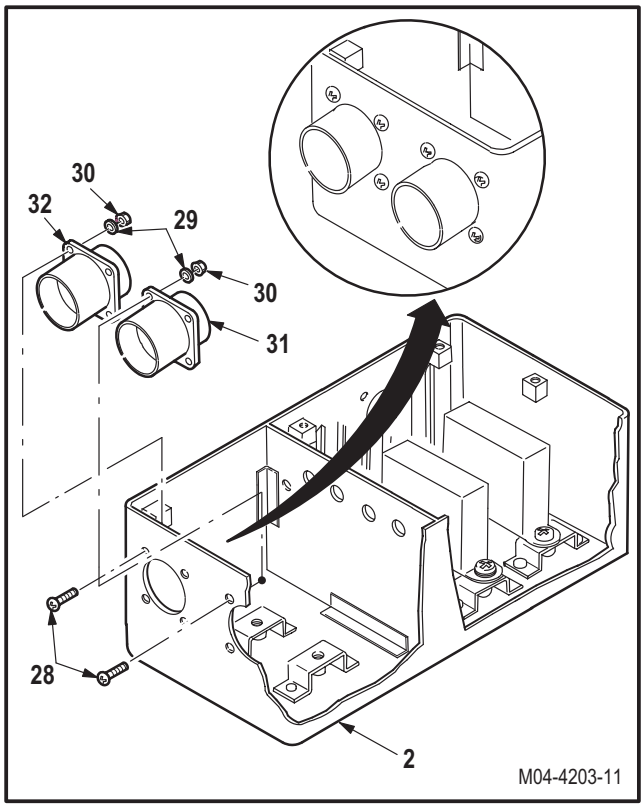

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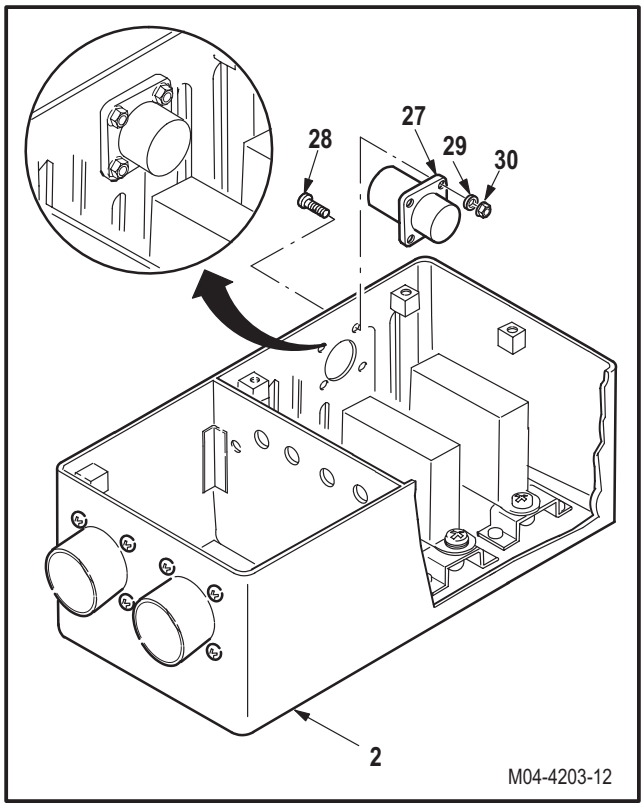
9.59. AFT AVIONICS BAY ISOLATION TRANSFORMER FILTER BOX DISASSEMBLY/ASSEMBLY (AVIM) – continued

d. **Install receptacle (A342)J1 (27) on box (2).**

(1) Install four screws (28) through box (2), receptacle (27), and washers (29).

(2) Hold screws (28). Install nuts (30).

(3) Solder identified wires on receptacle (27). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).



e. **Install terminal junction module assembly (A342)TB1 (19) in box (2).**

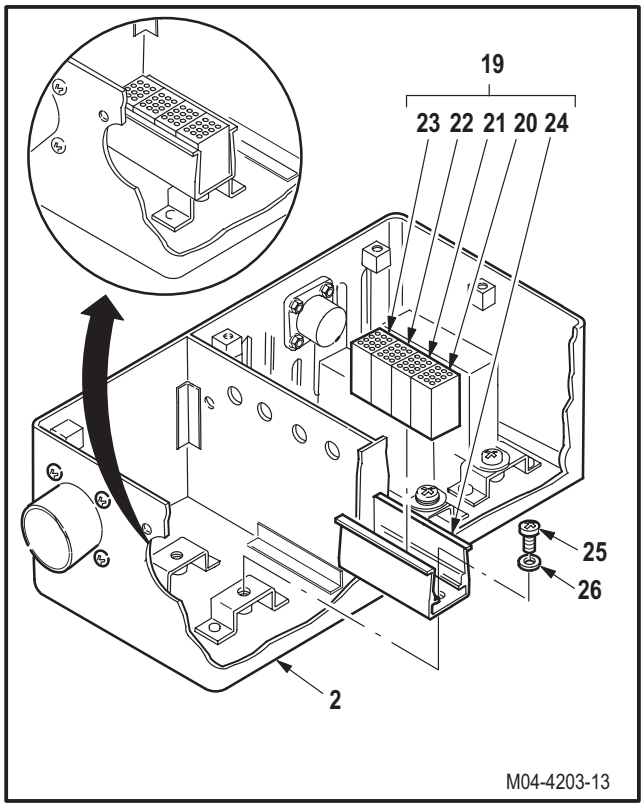
(1) Install electronic rack (24) in box (2).

(a) Install two screws (25) through washers (26) and rack (24) into box (2).

(2) Install modules (20), (21), (22), and (23) on rack (24).

(a) Position and press modules until seated.

(3) Pin identified wires in modules (20), (21), (22), and (23) (TM 55-1500-323-24).



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9.59. AFT AVIONICS BAY ISOLATION TRANSFORMER FILTER BOX DISASSEMBLY/ASSEMBLY (AVIM) – continued

f. **Install filters (A342)F1 (13), (A342)F2 (14), (A342)F3 (15), and (A342)F4 (16) in box (2).**

(1) Install (A342)F4 (16), washer (18), and nut (17) on partition (12).

(2) Solder identified wires on (A342)F4 (16). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).

(3) Install (A342)F3 (15), washer (18), and nut (17) on partition (12).

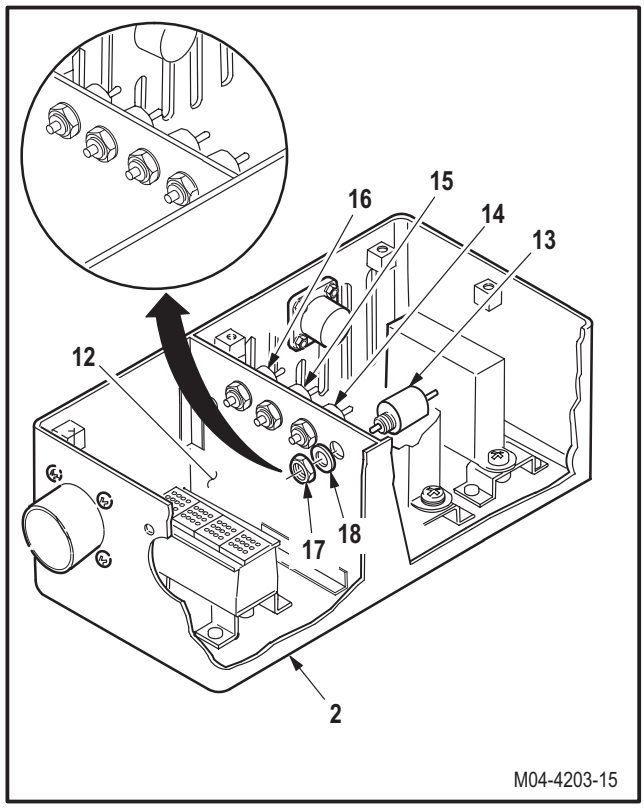
(4) Solder identified wires on (A342)F3 (15). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).

(5) Install (A342)F2 (14), washer (18), and nut (17) on partition (12).

(6) Solder identified wires on (A342)F2 (14). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).

(7) Install (A342)F1 (13), washer (18), and nut (17) on partition (12).

(8) Solder identified wires on (A342)F1 (13). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).



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9.59. AFT AVIONICS BAY ISOLATION TRANSFORMER FILTER BOX DISASSEMBLY/ASSEMBLY (AVIM) – continued

g. **Install bonding screw (8) on box (2).**

(1) Install screw (8) through box (2), two washers (7), and lockwasher (10).

(2) Hold screw (8). Install nut (9).

h. **Install electrical lead (5) on box (2).**

(1) Install electrical lead (5), washer (7), and locknut (6) on screw (8).

(2) Perform electrical bond check on attaching hardware (TM 55-1500-323-24).

(a) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

(3) Seal attaching hardware. Use sealing compound (item 169, App F).

i. **Install gasket (11) on box (2).**

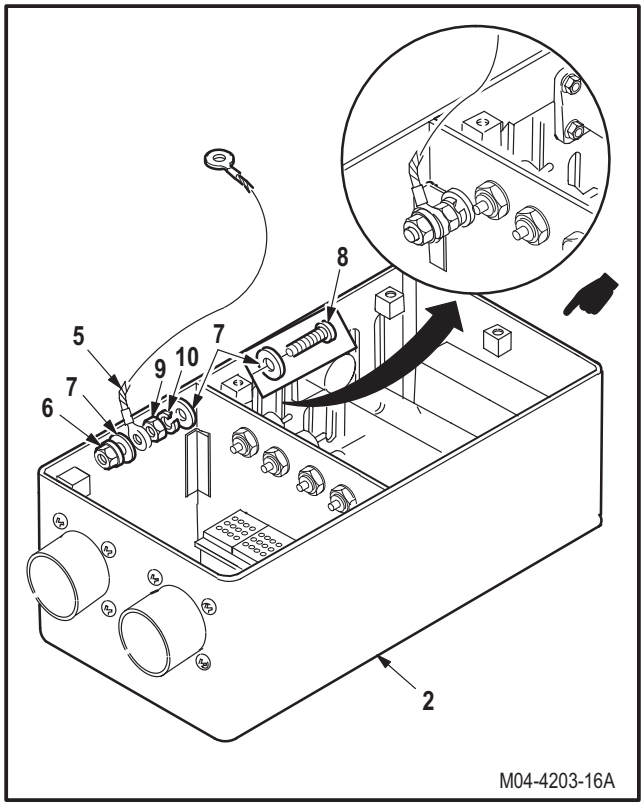
(1) Trim gasket (11) to fit perimeter of box (2).

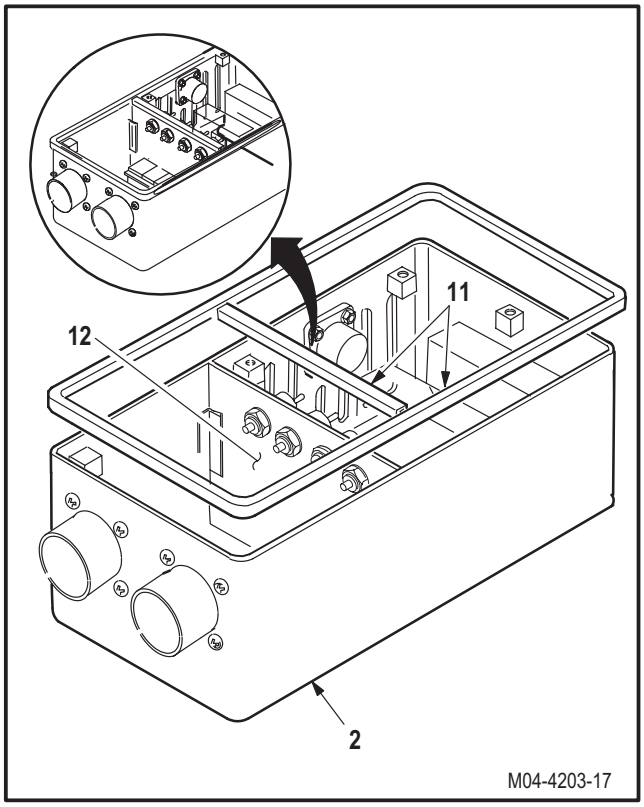
(2) Trim gasket (11) to fit partition (12).

(3) Apply adhesive to mating surfaces. Use adhesive (item 23, App F).

(4) Install gasket (11) on perimeter of box (2). Use gasket (table D-13A, App D).

(5) Install gasket (11) on partition (12). Use gasket (table D-13A, App D).





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9.59. AFT AVIONICS BAY ISOLATION TRANSFORMER FILTER BOX DISASSEMBLY/ASSEMBLY (AVIM) – continued

j. **Install bonding screw (8) on cover (1).**

(1) Install screw (8) through washer (7), cover (1), washer (7), and lockwasher (10).

(2) Hold screw (8). Install nut (9).

k. **Install cover (1) on filter box (2).**

(1) Install electrical lead (5), washer (7), and locknut (6).

(2) Perform electrical bond check on attaching hardware (TM 55-1500-323-24).

(a) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

(3) Seal attaching hardware. Use sealing compound (item 169, App F).

(4) Install eight screws (3) and washers (4).

(a) Tighten screws (3) evenly until cover meets gasket.

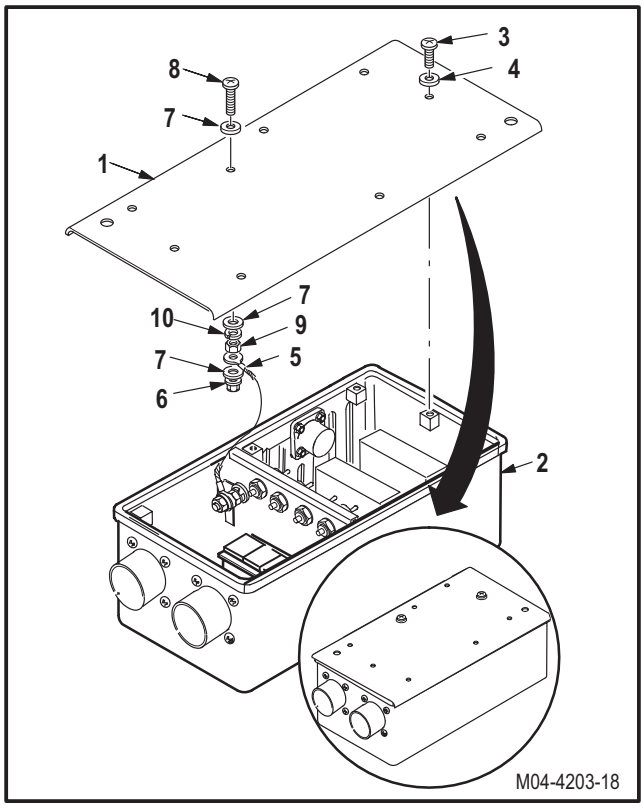
(b) Tighten screws (3) one half turn.

(5) Apply locking compound to head of screws (3). Use sealing compound (item 174, App F).

l. **Edge seal cover (1) and box (2).** Use adhesive (item 23, App F).

m. **Inspect (QA).**

n. **Perform DASE maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

9.60. START MODE RELAY PANEL REMOVAL/INSTALLATION

9.60.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.60.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
L-style socket head key set (item 187, App H)
Adjustable air filtering respirator (item 262, App H)

References:

TM 1-1500-204-23
TM 1-1520-238-T

Materials/Parts:

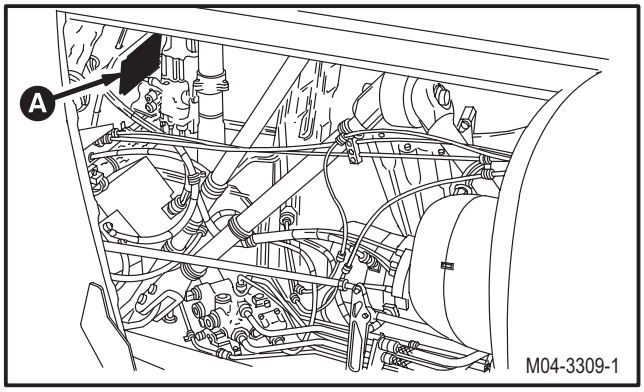
Dry cleaning solvent (item 74, App F)
Isopropyl alcohol (item 106, App F)
Syringe (item 196, App F)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access panel L200 removed



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9.60. START MODE RELAY PANEL REMOVAL/INSTALLATION – continued

9.60.3. Removal

a. **Detach ground wire (1) from start mode relay panel (2).**

(1) Remove screw (3), washer (4), and wire (1).

b. **Detach connectors P978 (5) and P977 (6) from panel (2).**

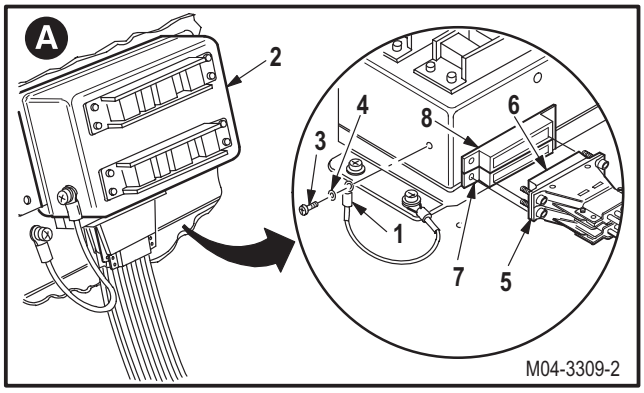
(1) Detach connector P978 (5) from receptacle (A330)J2 (7). Use socket head key set.

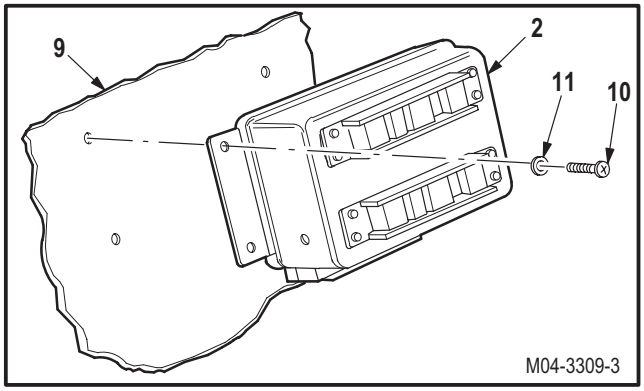
(2) Detach connector P977 (6) from receptacle (A330)J1 (8). Use socket head key set.

c. **Remove relay panel (2) from power distribution box (9).**

(1) Remove four screws (10) and washers (11).

(2) Remove panel (2).





9.60.4. Cleaning

a. **Clean start mode relay panel exterior and mounting area.** Use dry cleaning solvent (item 74, App F) and clean rag.

b. **Clean interior of start mode relay panel and wiring.** Spray isopropyl alcohol into panel through unused relay position 4. Allow isopropyl alcohol to drain and dry completely before proceeding. Use isopropyl alcohol (item 106, App F) and syringe (item 196, App F).

9.60.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.1)**.**

b. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (para 9.1)**.**

c. **Check connectors for bent pins or damaged threads** (para 9.1)**.**

GO TO NEXT PAGE

9.60. START MODE RELAY PANEL REMOVAL/INSTALLATION – continued

d. **Check mounting area for loose, damaged, or missing nutplates** (para 9.1)**.**

e. **Check attaching hardware for stripped or damaged threads** (TM 1-1500-204-23)**.**

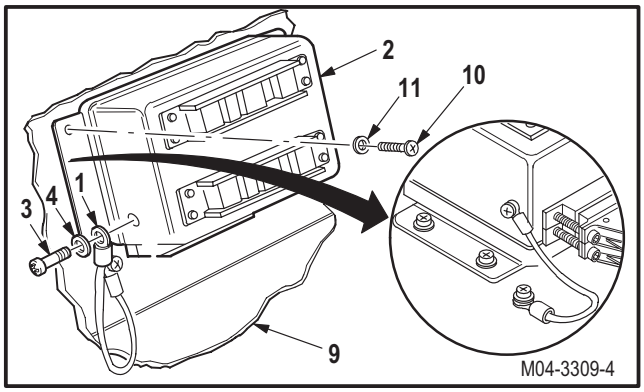
f. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.60.6. Installation

a. **Install panel (2) on box (9).**

(1) Position panel (2) on box (9).

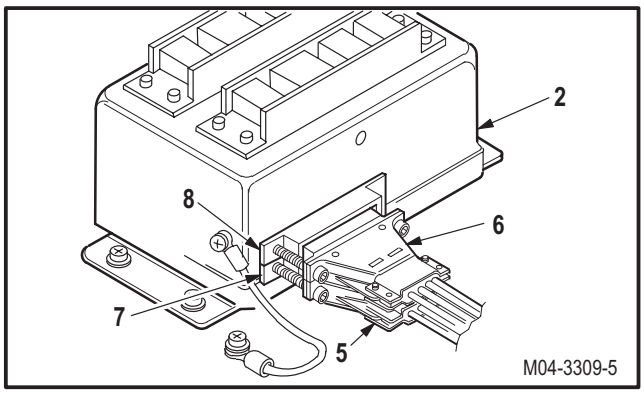
(2) Install four screws (10) and washers (11).



b. **Attach connectors P977 (6) and P978 (5) to panel (2).**

(1) Attach connector P977 (6) to receptacle (A330)J1 (8). Use socket head key set.

(2) Attach connector P978 (5) to receptacle (A330)J2 (7). Use socket head key set.



c. **Attach wire (1) to relay panel (2).**

(1) Install screw (3) through washer (4) and wire (1) into panel (2).

d. **Inspect (QA).**

e. **Perform power plant maintenance operational check (engine 1 or engine 2)** (TM 1-1520-238-T)**.**

f. **Install access panel L200** (para 2.2)**.**

END OF TASK

SECTION II. LIGHTING PROVISIONS COMPONENTS MAINTENANCE

9.61. LIGHTING PROVISIONS COMPONENTS INSPECTION

9.61.1. Description

This task covers: Inspection.

9.61.2. Initial setup

Tools:

Electrical tool kit (item 378, App H)

References:

TM 1-1500-204-23
TM 55-1500-323-24

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

9.61.3. Inspection

a. **Check components for damage and loose mounting.**

b. **Check for loose, missing, or damaged mounting hardware** (TM 55-1500-323-24). Replace as necessary.

c. **Check nutplates for loose rivets, stripped, or damaged threads** (TM 1-1500-204-23).

d. **Check wiring bundles for chaffing, loose mounting, and broken or missing wire ties** (TM 55-1500-323-24).

e. **Check wiring for wear, cracks, breaks, and cracked, broken or burned insulation** (TM 55-1500-323-24).

f. **Check wiring and electronic components for cracked, loose, or cold solder joints** (TM 55-1500-323-24).

g. **Check wire terminals for deformation and loose mounting hardware** (TM 55-1500-323-24).

h. **Check connectors for loose mounting** (TM 55-1500-323-24).

i. **Check connectors and receptacles for cracks, broken connections, and bent or damaged pins** (TM 55-1500-323-24). No cracks allowed. Thread damage not to exceed 50 percent of one thread.

(1) Repair mass termination connectors without shield bus (para 9.135) or mass termination connectors with shield bus (para 9.136).

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9.61. LIGHTING PROVISIONS COMPONENTS INSPECTION – continued

j. **Check connector operation for smooth positive locking action** (TM 55-1500-323-24)**.**

k. **Check electrical terminals for damaged threads and loose mounting** (TM 55-1500-323-24)**.** Thread damage not to exceed 50 percent of one thread.

l. **Check terminals, shields, and covers for damage and loose mounting** (TM 55-1500-323-24)**.**

m. **Check navigation, anti-collision, and formation lights for loose mounting and loose or missing hardware.**

n. **Check navigation, anti-collision, and formation lights for cracked or discolored lenses.** Check for evidence of moisture.

(1) Minor scratches without burrs or raised material that do not penetrate through finish are acceptable.

(2) Nicks and gouges that exceed maximum depth of **0.040 INCH** or 10 percent of material thickness not allowed.

o. **Check interior and exterior lights for defective lamps** (TM 55-1500-323-24)**.**

p. **Check pilot and CPG lighting control panels for loose mounting and cracked or broken light indicating panels.** None allowed.

q. **Inspect pilot and CPG lighting switches for loose mounting and loose or broken knobs.**

r. **Inspect cockpit interior lighting for loose mounting, chafed or broken wires, and loose connections.**

s. **Check pilot and CPG lighting control panel knobs for cracks.** None allowed.

t. **Check pilot and CPG lighting control panel knobs for looseness and excessive free play.**

u. **Check for damaged or missing nutplates** (TM 1-1500-204-23)**.** Replace as necessary.

END OF TASK

9.62. PILOT EXT LT/INTR LT PANEL REMOVAL/INSTALLATION

9.62.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.62.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
L-style socket head key set (item 187, App H)

References:

TM 1-1520-238-T

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

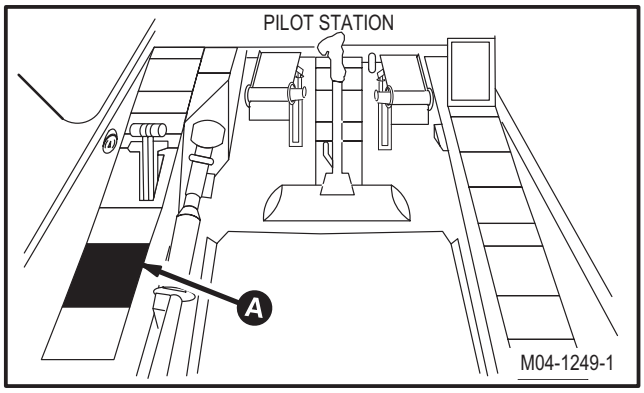
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

9.62.3. Removal

a. **Enter pilot station** (para 9.62)**. Observe all safety precautions.**

b. **On pilot center circuit breaker panel, open eight LT circuit breakers.**

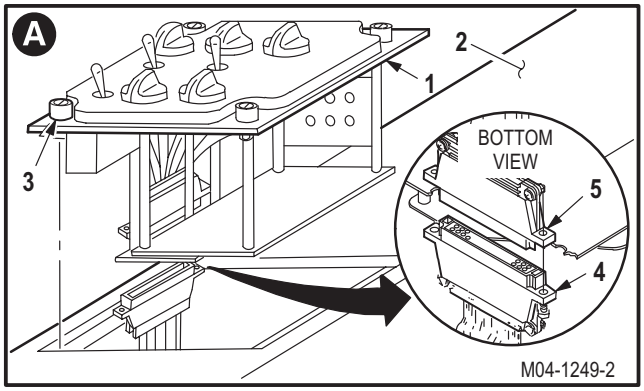


c. **Remove pilot EXT LT/INTR LT panel (1) from pilot left console (2).**

(1) Unlock four turnlock fasteners (3).

(2) Remove panel (1).

d. **Detach connector P100 (4) from receptacle (A133)J1 (5).** Use socket head key set.



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9.62. PILOT EXT LT/INTR LT PANEL REMOVAL/INSTALLATION – continued

9.62.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47).

9.62.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.61).

b. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (para 9.61).

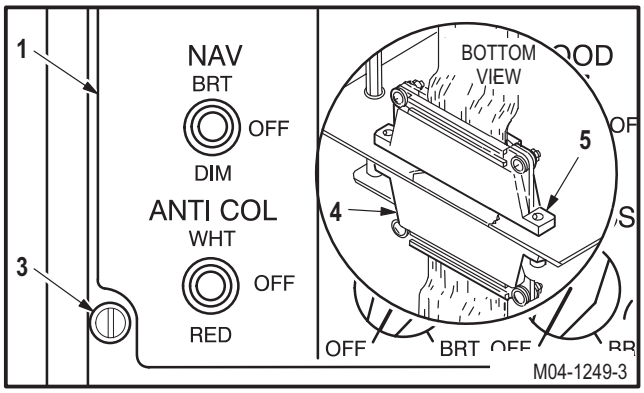
c. **Check connectors for bent pins or damaged threads** (para 9.61).

d. **Check removed and attaching parts for corrosion** (para 1.49).

9.62.6. Installation

a. **Attach connector P100 (4) to receptacle (A133)J1 (5).** Use socket head key set.

b. **Inspect (QA).**



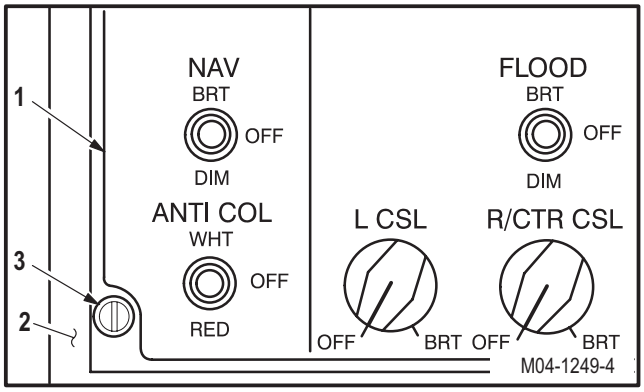
c. **Install panel (1) on console (2).**

(1) Position panel (1) on console (2).

(2) Lock four turnlock fasteners (3).

d. **Inspect (QA).**

e. **Perform pilot edge-lights maintenance operational check** (TM 1-1520-238-T).



END OF TASK

9.63. PILOT EXT LT/INTR LT PANEL CONTROL KNOB REMOVAL/INSTALLATION

9.63.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.63.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
L-style socket head key set (item 187, App H)

References:

TM 1-1520-238-T

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

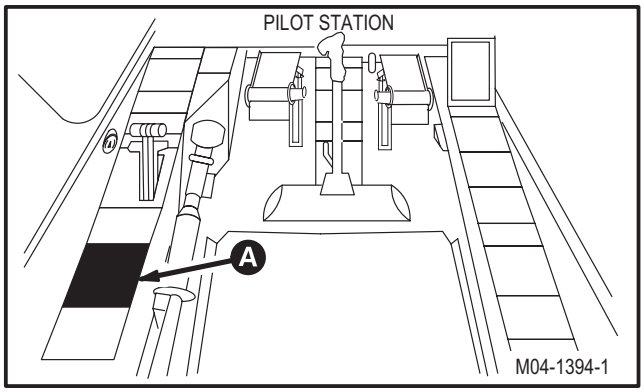
9.63.3. Removal

NOTE

This task is typical for all pilot **EXT LT**/ **INTR LT** panel control knobs.

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot EXT LT/INTR LT panel, set all switches and controls to OFF.**



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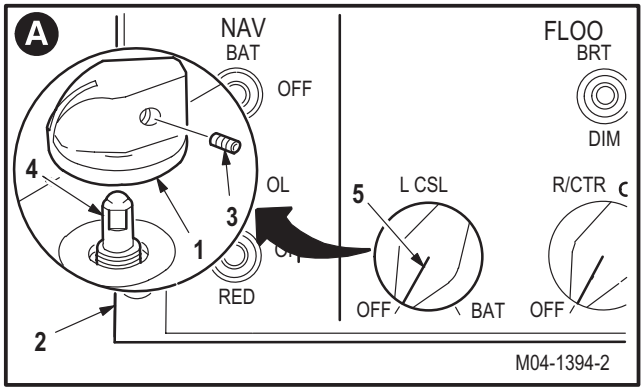
9.63. PILOT EXT LT/INTR LT PANEL CONTROL KNOB REMOVAL/INSTALLATION – continued

c. **Remove control knob (1) from EXT LT/INTR LT panel (2).**

(1) Loosen two setscrews (3). Use socket head key set.

(2) Remove knob (1) from shaft (4).



9.63.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.63.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.61)**.**

b. **Check knobs for cracks and damaged threads** (para 9.61)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.63.6. Installation

a. **Install knob (1) on panel (2).**

(1) Position knob (1) on shaft (4).

(2) Set knob pointer (5) to **OFF**.

(3) Tighten two setscrews (3). Use socket head key set.

b. **Inspect (QA).**

c. **Perform pilot edge-lights maintenance operational check** (TM 1-1520-238-T)**.**

END OF TASK

9.64. PILOT EXT LT/INTR LT PANEL LIGHT INDICATING PANEL REMOVAL/INSTALLATION

9.64.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.64.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

References:

TM 1-1520-238-T

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
9.63	Pilot EXT LT/INTR LT panel control knobs removed

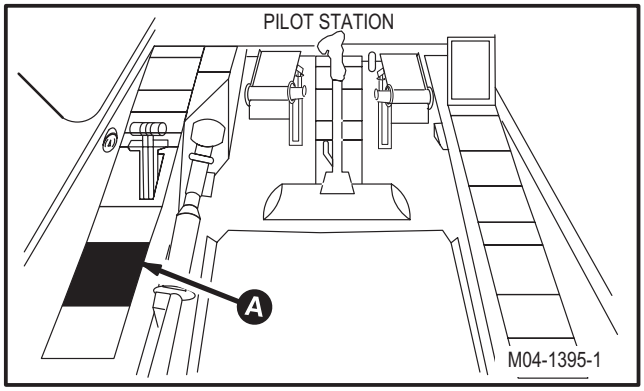
Personnel Required:

68X	Armament/Electrical System Repairer
68X3F	Armament/Electrical System Repairer/ Technical Inspector

9.64.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot center circuit breaker panel, open LT PRI circuit breaker.**



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9.64. PILOT EXT LT/INTR LT PANEL LIGHT INDICATING PANEL REMOVAL/INSTALLATION – continued

c. **Remove light indicating panel (1) from EXT LT/INTR LT panel (2).**

(1) Remove five screws (3).

(2) Remove panel (2).

9.64.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.64.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.61)**.**

b. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.64.6. Installation

a. **Install panel (1) on panel (2).**

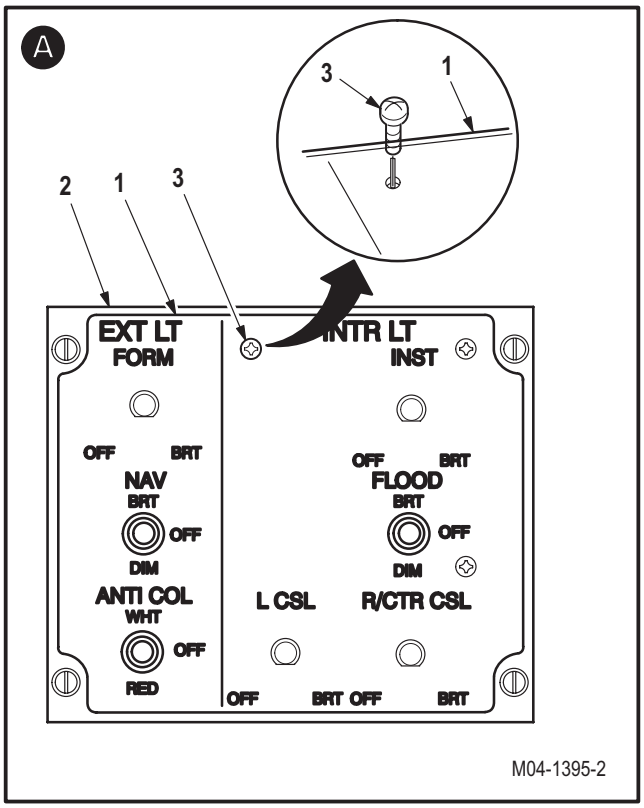
(1) Position panel (1) on panel (2).

(2) Install five screws (3).

b. **Inspect (QA).**

c. **Install pilot EXT LT/INTR LT panel control knobs** (para 9.63)**.**

d. **Perform pilot edge-lights maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

9.65. PILOT EXT LT/INTR LT PANEL SEMICONDUCTOR DEVICE CR1, CR2, CR3, CR5, CR7, CR8, OR CR9 REPLACEMENT (AVIM)

9.65.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.65.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
25-watt electric soldering iron (item 332, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Materials/Parts:

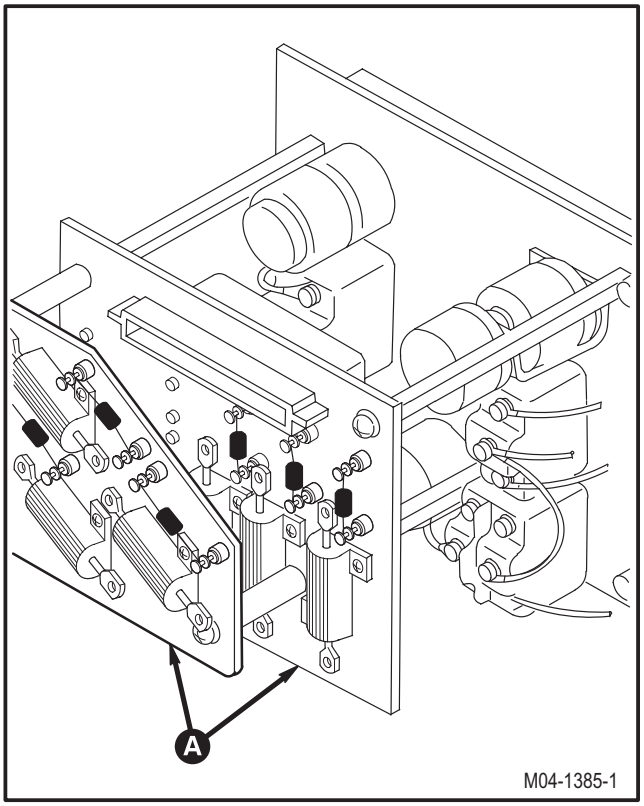
Solder (item 189, App F)

References:

TM 55-1500-323-24

NOTE

This task is typical for semiconductor devices CR1, CR2, CR3, CR5, CR7, CR8, or CR9.



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9.65. PILOT EXT LT/INTR LT PANEL SEMICONDUCTOR DEVICE CR1, CR2, CR3, CR5, CR7, CR8, OR CR9 REPLACEMENT (AVIM) – continued

9.65.3. Removal

a. **Remove component board A2 (1) from pilot EXT LT/INTR LT panel (2).**

(1) Remove three screws (3), lockwashers (4), and washers (5).

(2) Remove board (1) and three spacers (6).

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

CAUTION

Identify diode direction during removal for proper polarity during installation. Accidental polarity reversal will damage semiconductor device and/or other components.

b. **Remove semiconductor device (7) from component board A2 (1) or A1 (8).**

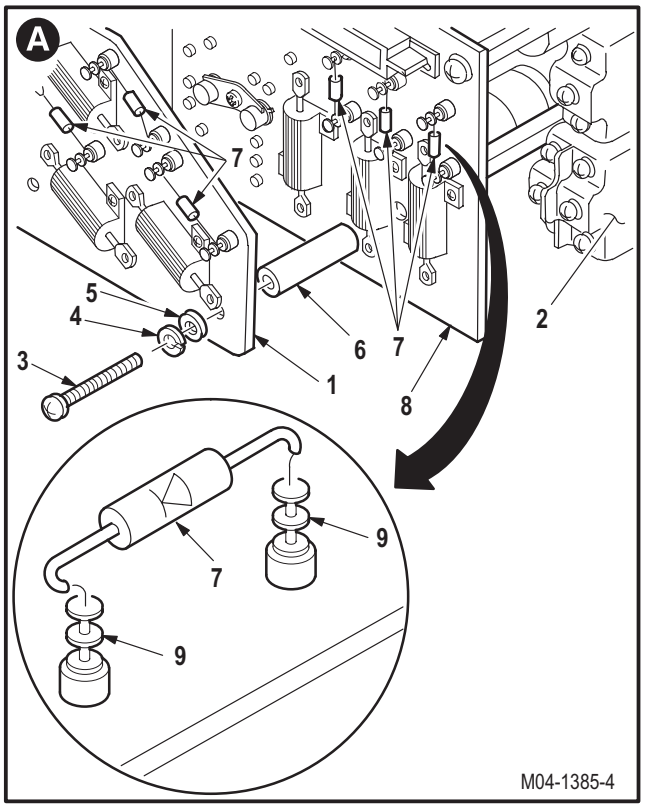
(1) Identify direction of semiconductor (7).

(2) Desolder semiconductor (7) from two terminals (9). Use soldering iron (TM 55-1500-323-24).

(3) Remove and discard semiconductor (7).

9.65.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**



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9.65. PILOT EXT LT/INTR LT PANEL SEMICONDUCTOR DEVICE CR1, CR2, CR3, CR5, CR7, CR8, OR CR9 REPLACEMENT (AVIM) – continued

9.65.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.61)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.61)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.65.6. Installation

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

a. **Install new semiconductor (7) on board A2 (1) or A1 (8).**

(1) Install semiconductor (7) in direction previously identified.

(2) Solder semiconductor (7) to two terminals (9). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).

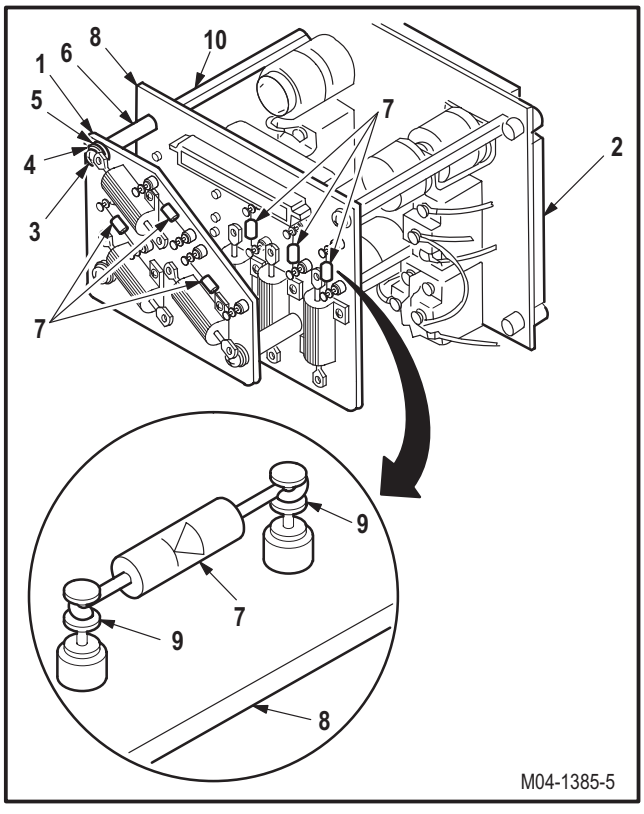
b. **Install board A2 (1) on panel (2).**

(1) Position spacers (6) on board A1 (8).

(2) Position board A2 (1) on spacers (6).

(3) Install three screws (3) through lockwashers (4), washers (5), board (1), spacers (6), board (8), and into tube assemblies (10).

c. **Inspect (QA).**



END OF TASK

9.66. PILOT EXT LT/INTR LT PANEL RESISTOR R1, R2, R3, R7, R8, OR R9 REPLACEMENT (AVIM)

9.66.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.66.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
5-watt electric soldering iron (item 333, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Materials/Parts:

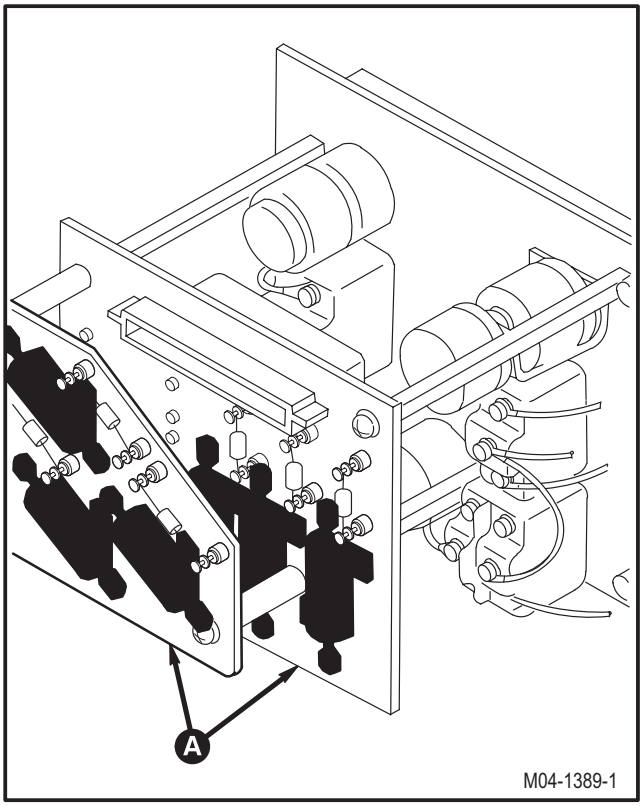
Solder (item 189, App F)

References:

TM 55-1500-323-24

NOTE

This task is typical for resistors R1, R2, R3, R7, R8, or R9.



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9.66. PILOT EXT LT/INTR LT PANEL RESISTOR R1, R2, R3, R7, R8, OR R9 REPLACEMENT (AVIM) – continued

9.66.3. Removal

a. **Remove component board A2 (1) from pilot EXT LT/INTR LT panel (2).**

(1) Remove three screws (3), lockwashers (4), and washers (5).

(2) Remove board (1) and three spacers (6).

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

b. **Remove resistor (7) from component board A2 (1).**

(1) Identify and desolder wires (8) from resistor (7). Use soldering iron (TM 55-1500-323-24).

(2) Remove two screws (9), washers (10), and nuts (11).

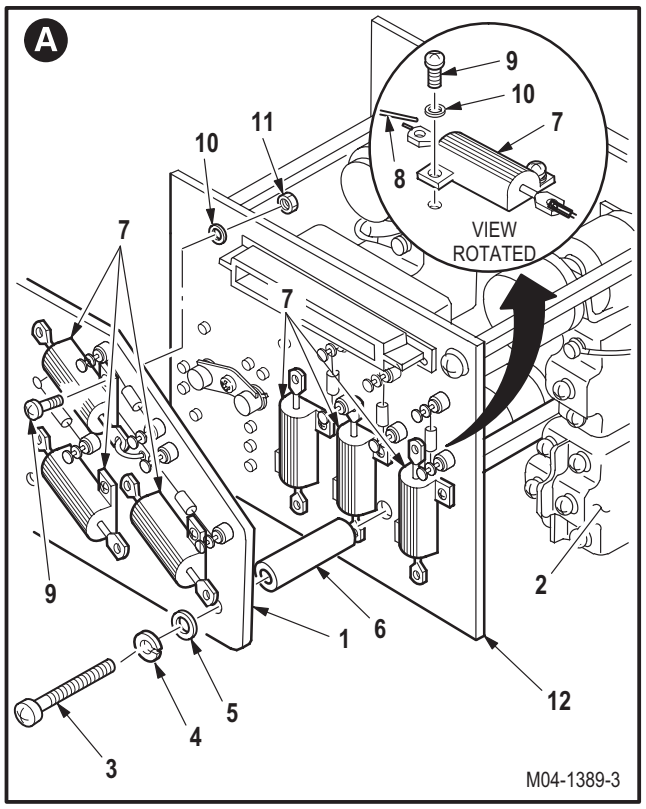
(3) Remove and discard resistor (7).

c. **Remove resistor (7) from component board A1 (11).**

(1) Identify and desolder wires (8) from resistor (7). Use soldering iron (TM 55-1500-323-24).

(2) Remove two screws (9) and washers (10).

(3) Remove and discard resistor (7).



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9.66. PILOT EXT LT/INTR LT PANEL RESISTOR R1, R2, R3, R7, R8, OR R9 REPLACEMENT (AVIM) – continued

9.66.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.66.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.61)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.61)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.66.6. Installation

WARNING

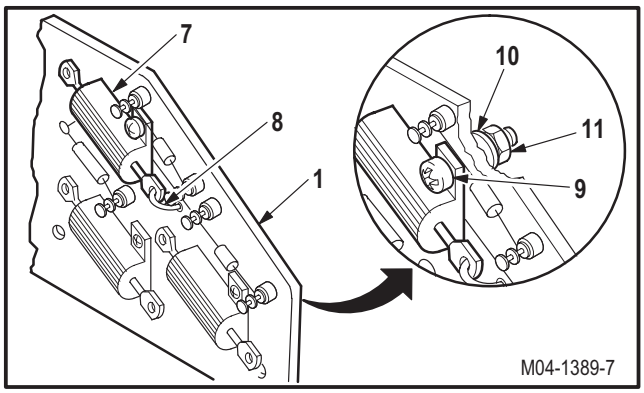
Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

a. **Install new resistor (7) on board A2 (1).**

(1) Position resistor (7) on board (1).

(2) Install two screws (9) through resistor (7), board (1), washers (10), and nuts (11).

(3) Solder identified wires (8) on resistor (7). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).



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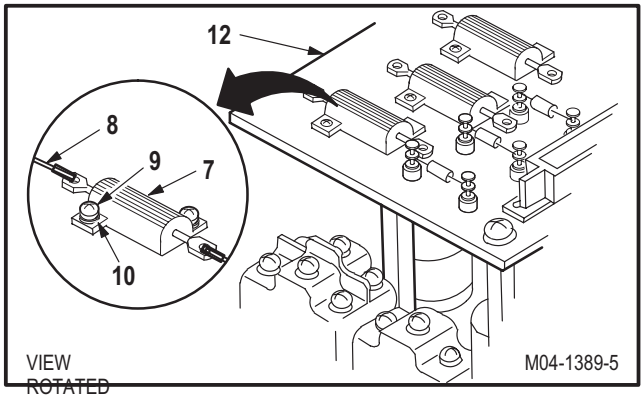
9.66. PILOT EXT LT/INTR LT PANEL RESISTOR R1, R2, R3, R7, R8, OR R9 REPLACEMENT (AVIM) – continued

b. **Install new resistor (7) on board A1 (12).**

(1) Position resistor (7) on board (12).

(2) Install two screws (9) through washers (10) and resistor (7) into board (12).

(3) Solder identified wires (8) on resistor (7). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).



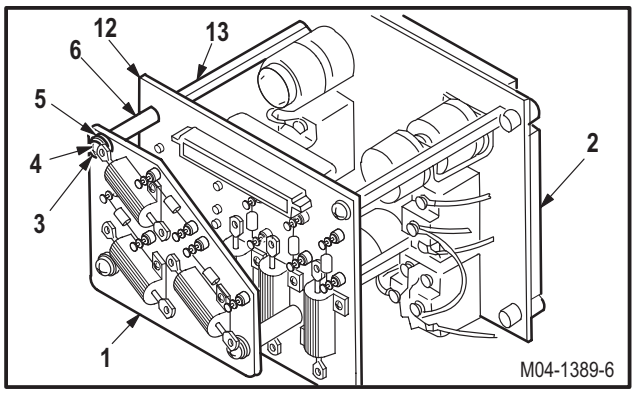
c. **Install board A2 (1) on panel (2).**

(1) Position spacers (6) on board A1 (12).

(2) Position A2 (1) on spacers (6).

(3) Install three screws (3) through lockwashers (4), washers (5), board (1), spacers (6), board (12), and into tube assemblies (13).

d. **Inspect (QA).**



END OF TASK

9.67. PILOT EXT LT/INTR LT PANEL RESISTOR R4 OR R6 REPLACEMENT (AVIM)

9.67.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.67.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
5-watt electric soldering iron (item 333, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Materials/Parts:

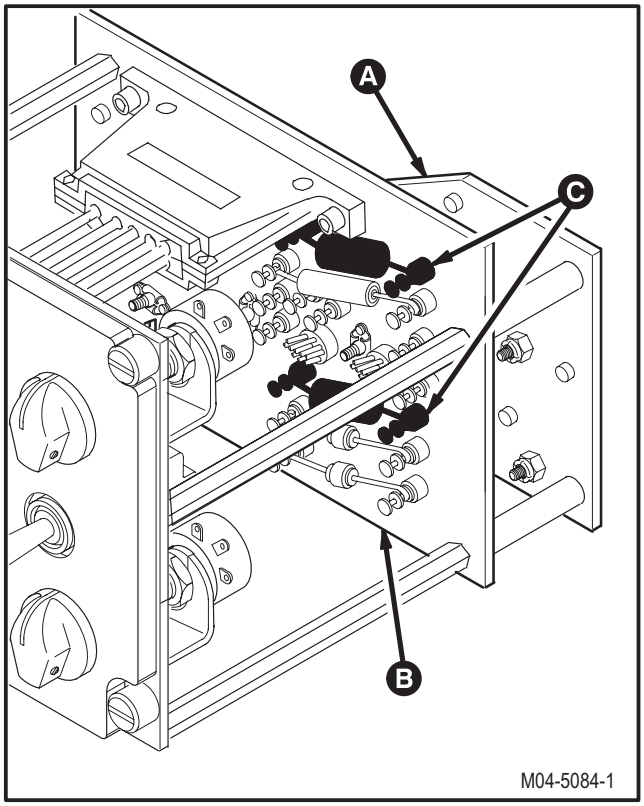
Solder (item 189, App F)

References:

TM 55-1500-323-24

NOTE

This task is typical for resistors R4 or R6.



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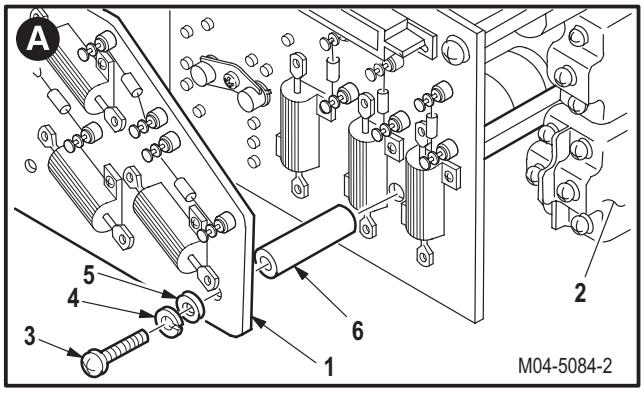
9.67. PILOT EXT LT/INTR LT PANEL RESISTOR R4 OR R6 REPLACEMENT (AVIM) – continued

9.67.3. Removal

a. **Remove component board A2 (1) from pilot EXT LT/INTR LT panel (2).**

(1) Remove three screws (3), lockwashers (4), and washers (5).

(2) Remove board (1) and three spacers (6).



b. **Remove component board A1 (7) from four tube assemblies (8).**

(1) Remove screw (9), lockwasher (10), and washer (11) from tube assemblies (8).

(2) Position board A1 (7) to gain access to resistor (12).

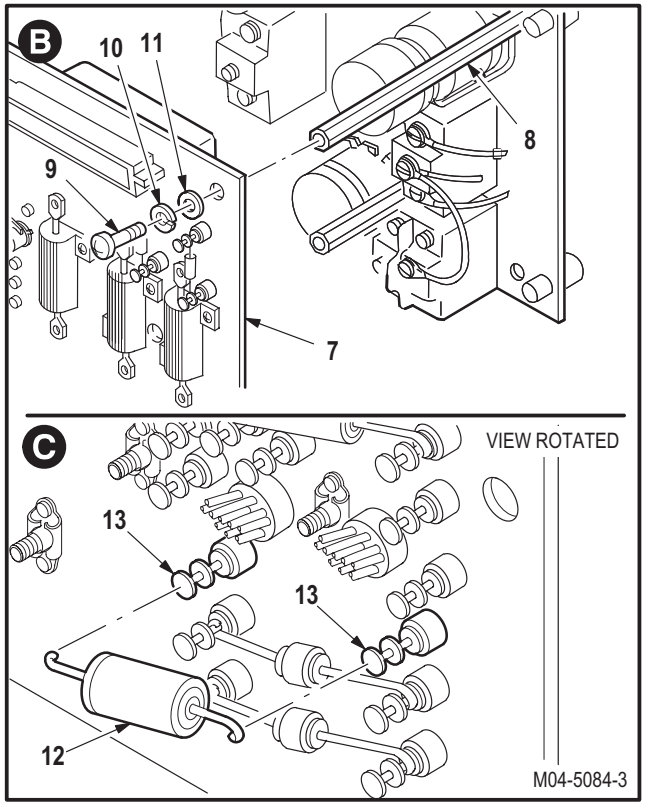
WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

c. **Remove resistor (12) from two terminals (13).**

(1) Desolder resistor (12) from terminals (13). Use soldering iron (TM 55-1500-323-24).

(2) Remove and discard resistor (12).



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9.67. PILOT EXT LT/INTR LT PANEL RESISTOR R4 OR R6 REPLACEMENT (AVIM) – continued

9.67.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.67.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.61)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.61)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

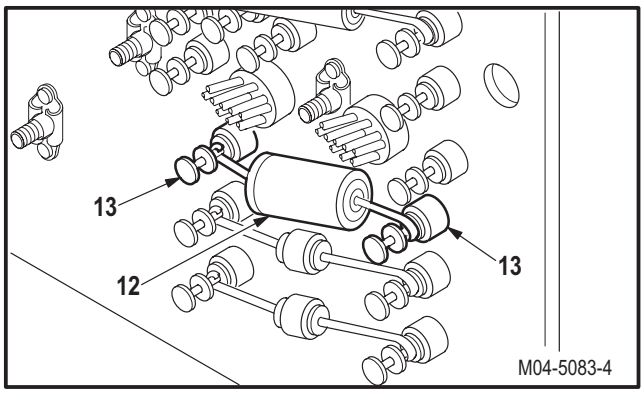
9.67.6. Installation

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

a. **Install new resistor (12) on two terminals (13).**

(1) Solder resistor (12) on terminals (13). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).



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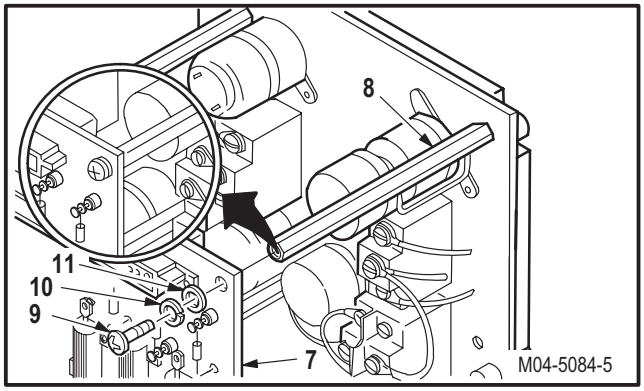
9.67. PILOT EXT LT/INTR LT PANEL RESISTOR R4 OR R6 REPLACEMENT (AVIM) – continued

b. **Install component board A1 (7) on tube assemblies (8).**

(1) Install screw (9) through lockwasher (10), washer (11), board A1 (7), and into tube assembly (8).



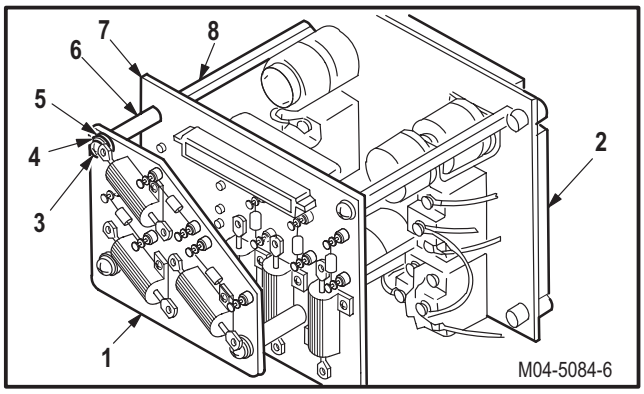
c. **Install board A2 (1) on panel (2).**

(1) Position three spacers (6) on board A1 (7).

(2) Position board A2 (1) on spacers (6).

(3) Install three screws (3) through lockwashers (4), washers (5), board (1), spacers (6), board (7), and into tube assemblies (8).

d. **Inspect (QA).**



END OF TASK

9.68. PILOT EXT LT/INTR LT PANEL SWITCH REPLACEMENT (AVIM)

9.68.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.68.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

Personnel Required:

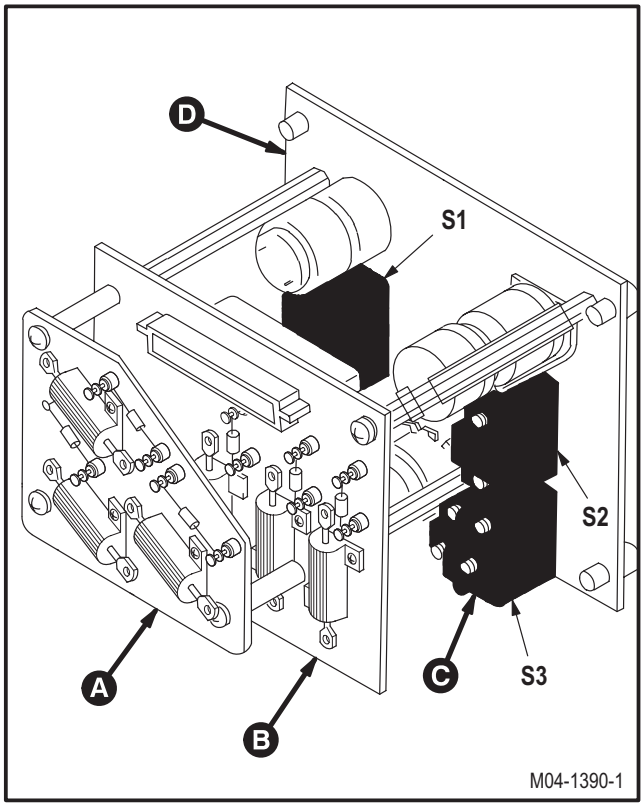
68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
9.64	Pilot EXT LT/INTR LT panel light indicating panel removed

NOTE

This task is typical for all pilot **EXT LT**/ **INTR LT** panel switches. The hardware and number of wires attached the switches will differ.



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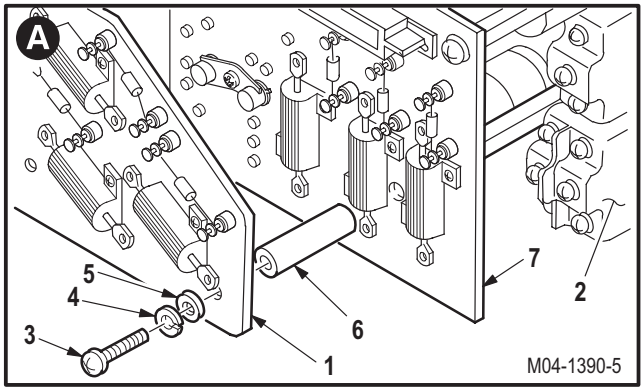
9.68. PILOT EXT LT/INTR LT PANEL SWITCH REPLACEMENT (AVIM) – continued

9.68.3. Removal

a. **Remove component board A2 (1) from pilot EXT LT/INTR LT panel (2).**

(1) Remove three screws (3), lockwashers (4), and washers (5).

(2) Remove board (1) and three spacers (6).



b. **Remove component board A1 (7) from four tube assemblies (8).**

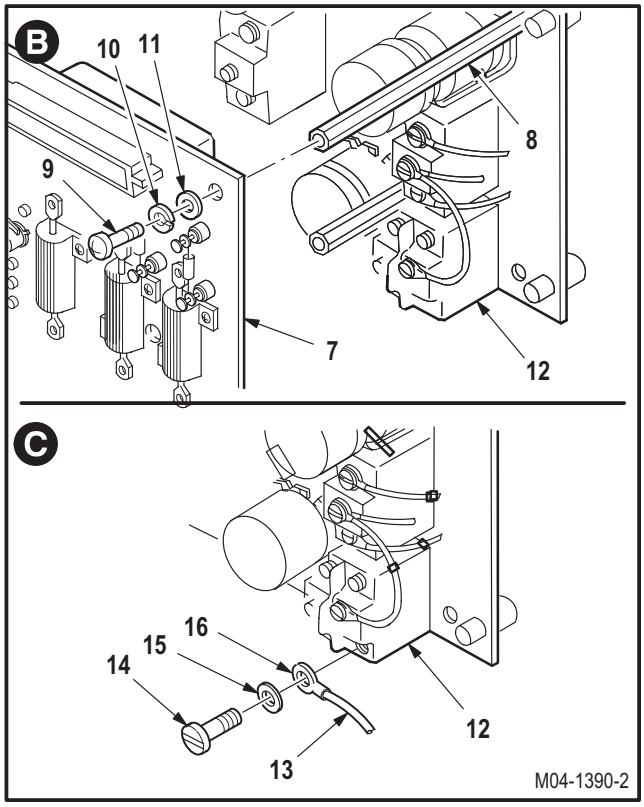
(1) Remove screw (9), lockwasher (10), and washer (11) from tube assemblies (8).

(2) Position board A1 (7) to gain access to switch (12).

c. **Detach wires (13) from switch (12).**

(1) Identify wires (13).

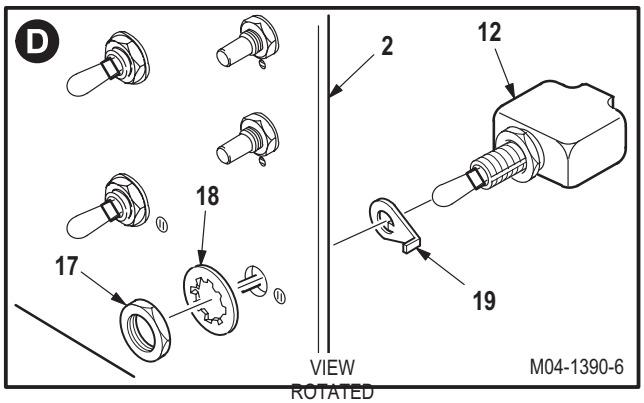
(2) Remove screws (14), lockwashers (15), and terminal lugs (16).



d. **Remove switch (12) from panel (2).**

(1) Remove nut (17) and lockwasher (18).

(2) Remove switch (12) and lockring (19) from panel (2).



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9.68. PILOT EXT LT/INTR LT PANEL SWITCH REPLACEMENT (AVIM) – continued

9.68.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47).

9.68.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.61).

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.61).

c. **Check removed and attaching parts for corrosion** (para 1.49).

9.68.6. Installation

a. **Install switch (12) on panel (2).**

(1) Install jamnut (20) and lockring (19) on switch (12).

(2) Position lockring (19) so that tab (21) seats in locator hole (22).

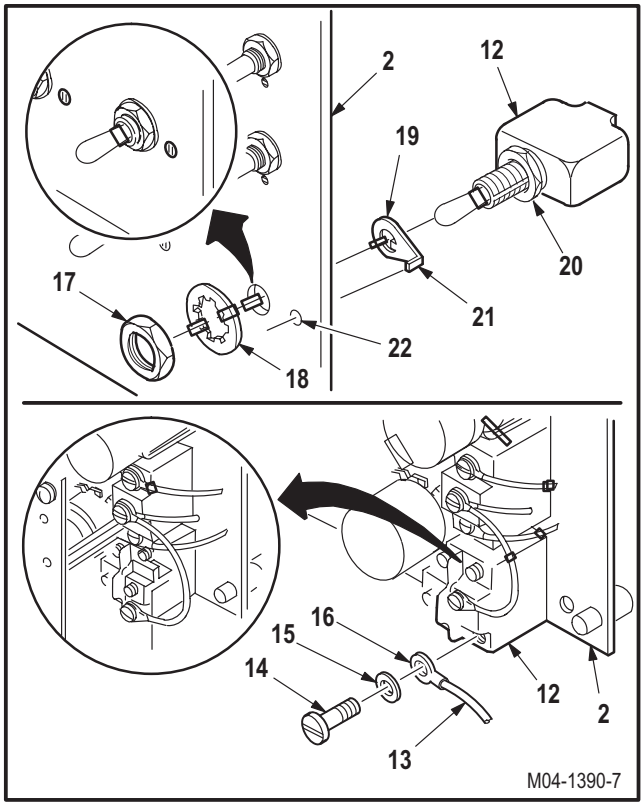
(3) Loosely install lockwasher (18) and nut (17) on switch (12).

(4) Adjust jamnut (20) until 1.5 to 2.0 threads are exposed through nut (17).

(5) Tighten nut (17).

b. **Attach identified wires (13) on switch (12).**

(1) Install screws (14) through lockwashers (15) and terminal lugs (16) to switch (12).



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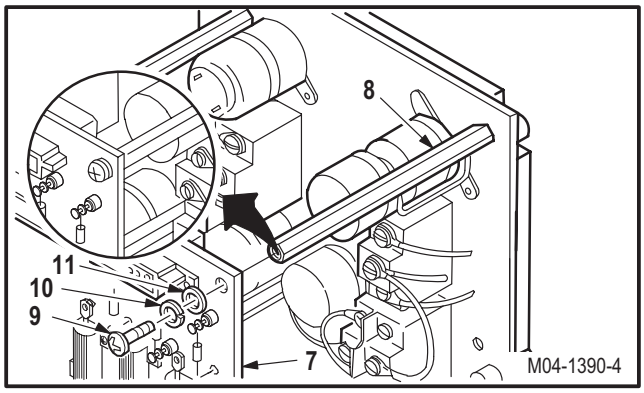
9.68. PILOT EXT LT/INTR LT PANEL SWITCH REPLACEMENT (AVIM) – continued

c. **Install component board A1 (7) on tube assemblies (8).**

(1) Install screw (9) through lockwasher (10), washer (11), board A1 (7), and into tube assembly (8).

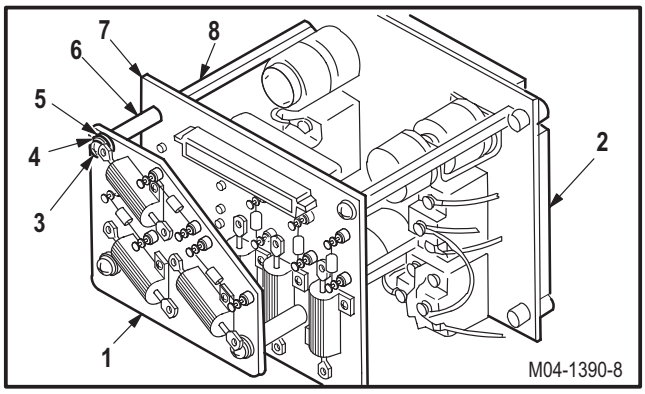


d. **Install board A2 (1) on panel (2).**

(1) Position three spacers (6) on board A1 (7).

(2) Position board A2 (1) on spacers (6).

(3) Install three screws (3) through lockwashers (4), washers (5), board (1), spacers (6), board (7), and into tube assemblies (8).



e. **Install pilot EXT LT/INTR LT panel light indicating panel** (para 9.64)**.**

f. **Inspect (QA).**

END OF TASK

9.69. PILOT EXT LT/INTR LT PANEL RELAY K1/K2 AND SOCKET XK1/XK2 REPLACEMENT (AVIM)

9.69.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.69.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
5-watt electric soldering iron (item 333, App H)

Personnel Required:

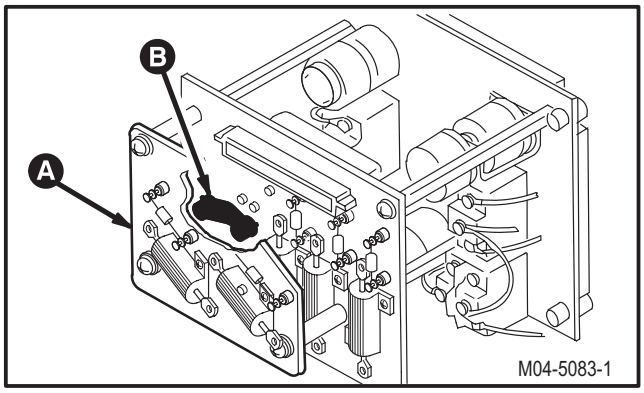
68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Materials/Parts:

Solder (item 189, App F)

References:

TM 55-1500-323-24

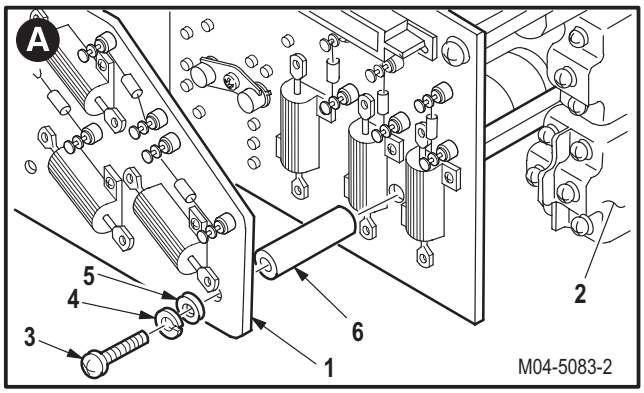


9.69.3. Removal

a. **Remove component board A2 (1) from pilot EXT LT/INTR LT panel (2).**

(1) Remove three screws (3), lockwashers (4), and washers (5).

(2) Remove board (1) and three spacers (6).



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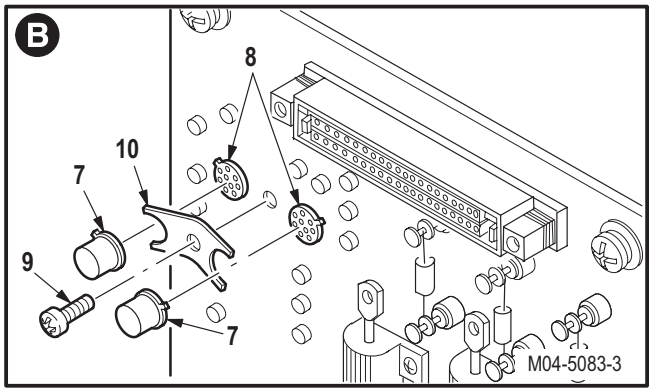
9.69. PILOT EXT LT/INTR LT PANEL RELAY K1/K2 AND SOCKET XK1/XK2 REPLACEMENT (AVIM) – continued

b. **Remove relay K1 or K2 (7) from socket XK1 or XK2 (8).**

(1) Remove screw (9) and ground strap (10).

(2) Remove and discard relay (7).



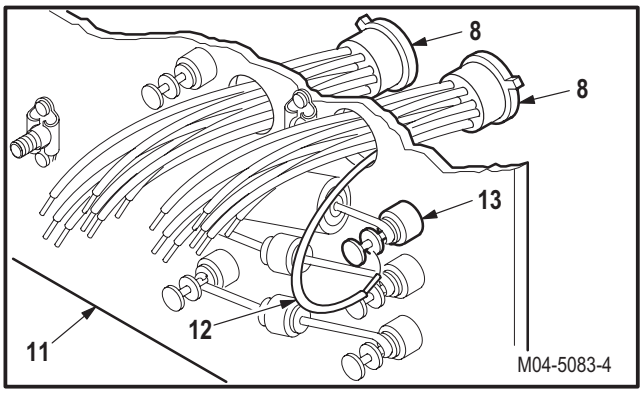
WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

c. **Remove socket (8) from component board A1 (11), if necessary.**

(1) Identify and desolder wires (12) from terminals (13). Use soldering iron (TM 55-1500-323-24).

(2) Remove and discard socket (8).



9.69.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.69.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.61)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.61)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

GO TO NEXT PAGE

9.69. PILOT EXT LT/INTR LT PANEL RELAY K1/K2 AND SOCKET XK1/XK2 REPLACEMENT (AVIM) – continued

9.69.6. Installation

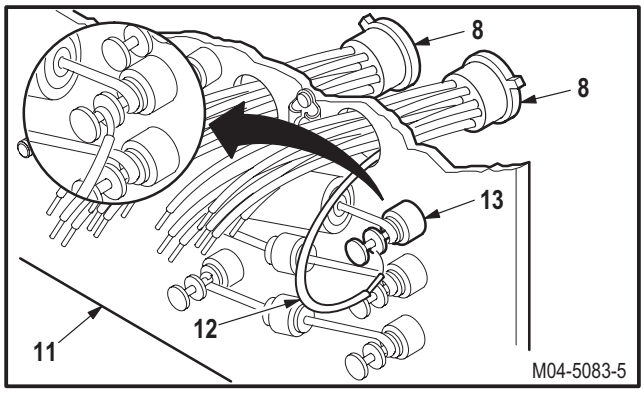
WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

a. **Install new socket (8) on board A1 (11), if removed.**

(1) Install socket (8) on board (11).

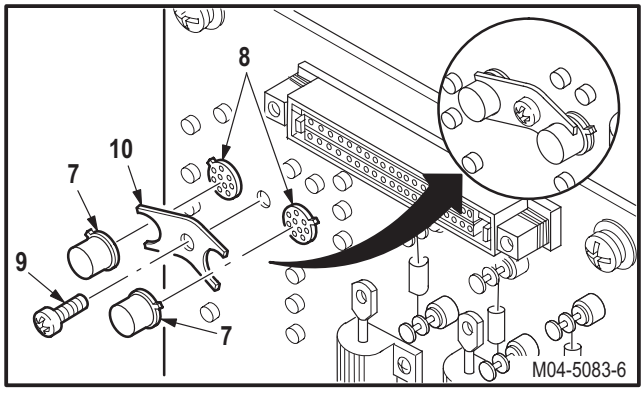
(2) Solder identified wires (12) on terminals (13). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).



b. **Install new relay (7) on socket (8).**

(1) Install relay (7) on socket (8) so that tab on relay alines with tab on socket.

(2) Install grounding strap (10) and screw (9).

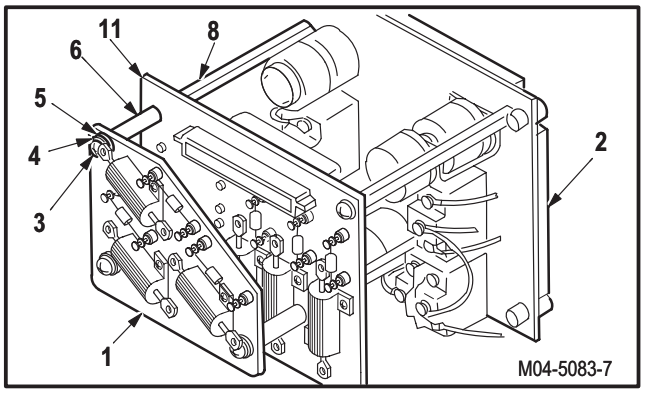


c. **Install board A2 (1) on panel (2).**

(1) Position three spacers (6) on board A1 (11).

(2) Position board A2 (1) on spacers (6).

(3) Install three screws (3) through lockwashers (4), washers (5), board (1), spacers (6), board (7), and into tube assemblies (8).



d. **Inspect (QA).**

END OF TASK

9.70. PILOT EXT LT/INTR LT PANEL FORM VARIABLE RESISTOR REPLACEMENT (AVIM)

9.70.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.70.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
25-watt electric soldering iron (item 332, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 55-1500-323-24

Equipment Conditions:

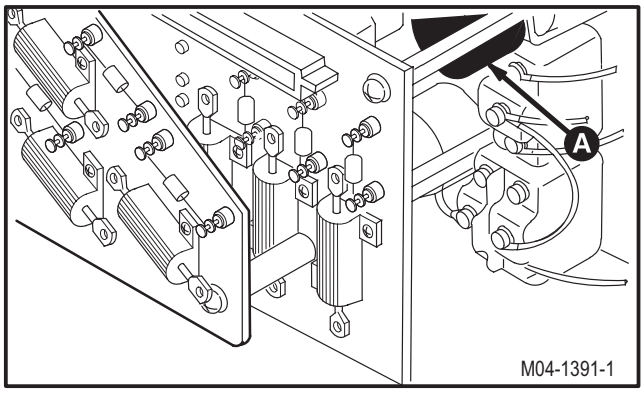
Ref	Condition
9.64	Pilot EXT LT/INTR LT panel light indicating panel removed

Materials/Parts:

Solder (item 189, App F)

WARNING

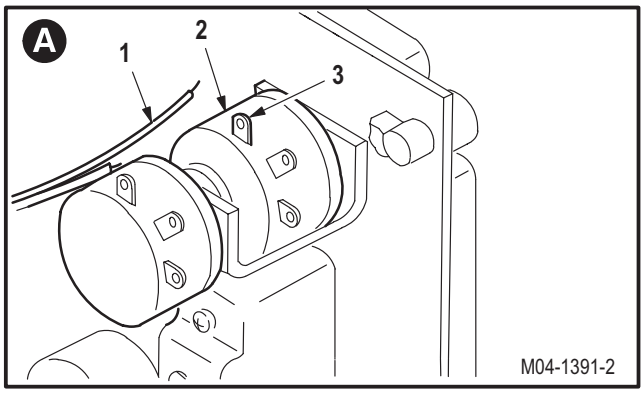
Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.



9.70.3. Removal

a. **Desolder wires (1) from variable resistor (2).**

(1) Identify and desolder wires (1) from terminals (3). Use soldering iron (TM 55-1500-323-24).



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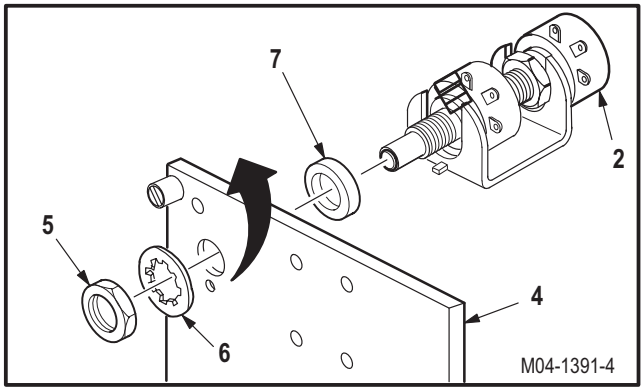
9.70. PILOT EXT LT/INTR LT PANEL FORM VARIABLE RESISTOR REPLACEMENT (AVIM) – continued

b. **Remove resistor (2) from pilot EXT LT/INTR LT panel (4).**

(1) Remove nut (5) and lockwasher (6).

(2) Remove resistor (2) and washer (7) from panel (4).

(3) Discard resistor (2).



9.70.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.70.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.61)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.61)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

GO TO NEXT PAGE

9.70. PILOT EXT LT/INTR LT PANEL FORM VARIABLE RESISTOR REPLACEMENT (AVIM) – continued

9.70.6. Installation

a. **Install new resistor (2) on panel (4).**

(1) Install washer (7) on resistor (2).

(2) Position resistor (2) so that tab (8) seats in locator hole (9).

(3) Install lockwasher (6) and nut (5).

WARNING

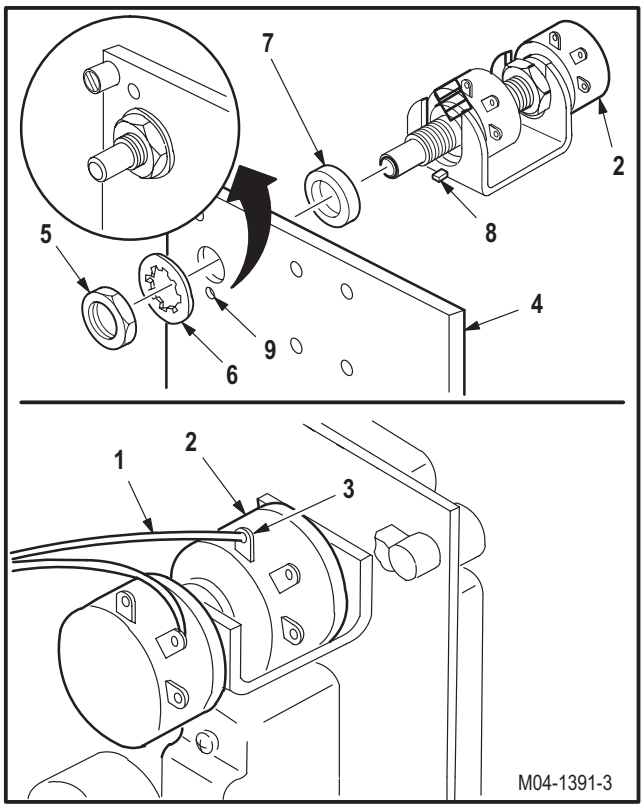
Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

b. **Solder wires (1) to resistor (2).**

c. Solder identified wires (1) to terminals (3). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).

d. **Install pilot EXT LT/INTR LT panel light indicating panel** (para 9.64)**.**

e. **Inspect (QA).**



END OF TASK

9.71. PILOT EXT LT/INTR LT PANEL R/CTR CSL ATTENUATOR REPLACEMENT (AVIM)

9.71.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.71.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
25-watt electric soldering iron (item 332, App H)

Materials/Parts:

Cloth (item 52, App F)
Methyl ethyl ketone (item 124, App F)
Sealing compound (item 167, App F)
Solder (item 189, App F)

Personnel Required:

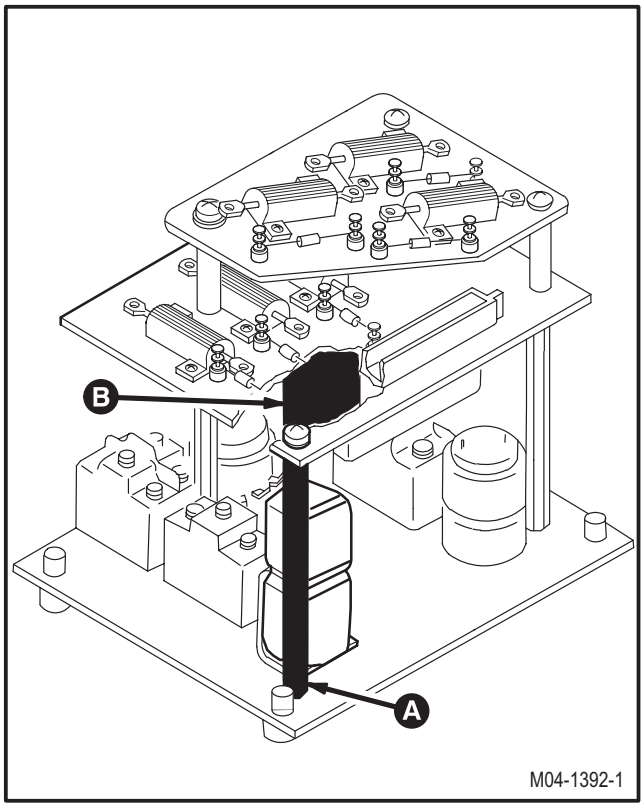
68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
9.64	Pilot EXT LT/INTR LT panel light indicating panel removed



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9.71. PILOT EXT LT/INTR LT PANEL R/CTR CSL ATTENUATOR REPLACEMENT (AVIM) – continued

9.71.3. Removal

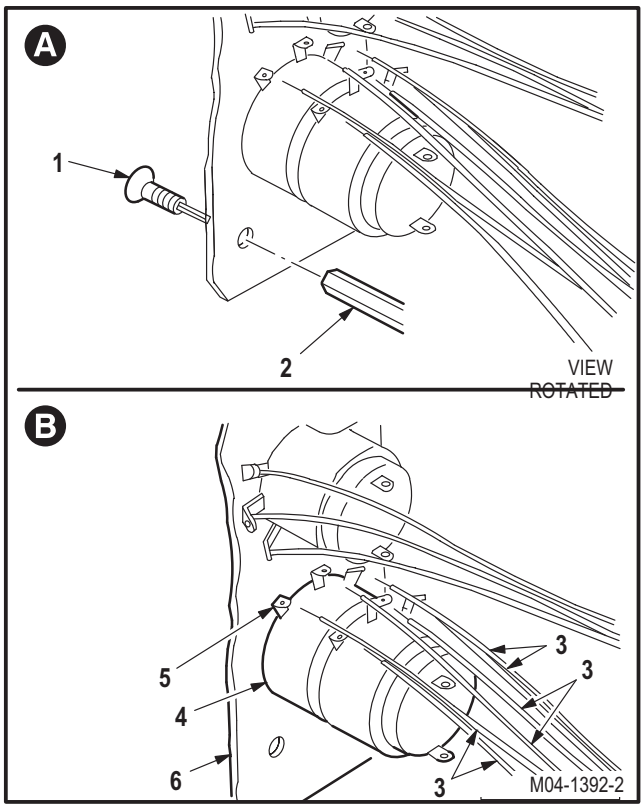
a. **Remove four screws (1) from tube assemblies (2).**

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

b. **Desolder wires (3) from attenuator (4).**

(1) Identify and desolder wires (3) from terminals (5). Use soldering iron (TM 55-1500-323-24).

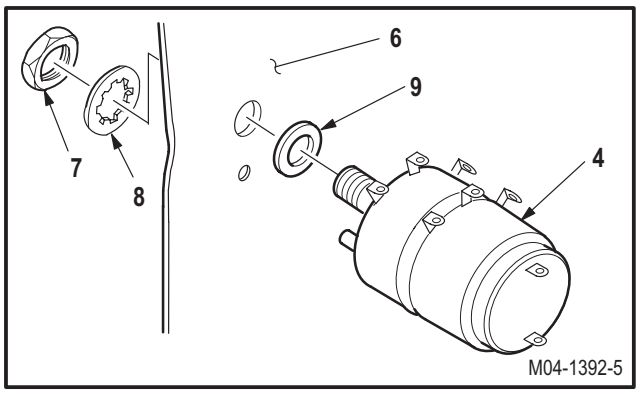


c. **Remove attenuator (4) from EXT LT/INTR LT panel (6).**

(1) Remove nut (7) and lockwasher (8).

(2) Remove attenuator (4) and washer (9) from panel (6).

(3) Discard attenuator (4).



9.71.4. Cleaning

a. **Clean sealant from removed and attaching parts.** Use methyl ethyl ketone (item 124, App F) and cloth (item 52, App F).

GO TO NEXT PAGE

9.71. PILOT EXT LT/INTR LT PANEL R/CTR CSL ATTENUATOR REPLACEMENT (AVIM) – continued

9.71.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.61)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.61)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

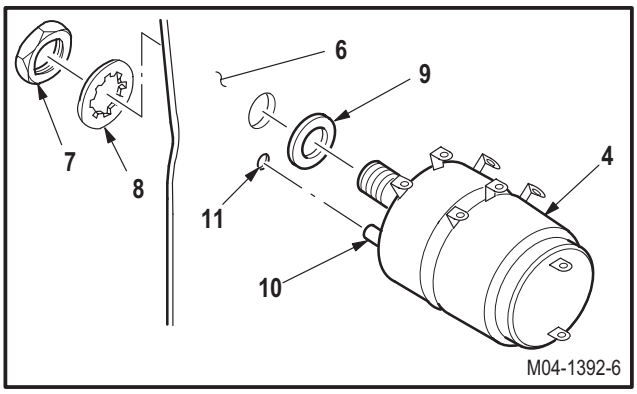
9.71.6. Installation

a. **Install new attenuator (4) on panel (6).**

(1) Install attenuator (4) through washer (9) and panel (6).

(2) Position attenuator (4) so that tab (10) seats in locator hole (11).

(3) Install lockwasher (8) and nut (7).



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9.71. PILOT EXT LT/INTR LT PANEL R/CTR CSL ATTENUATOR REPLACEMENT (AVIM) – continued

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

b. **Solder wires (3) to attenuator (4).**

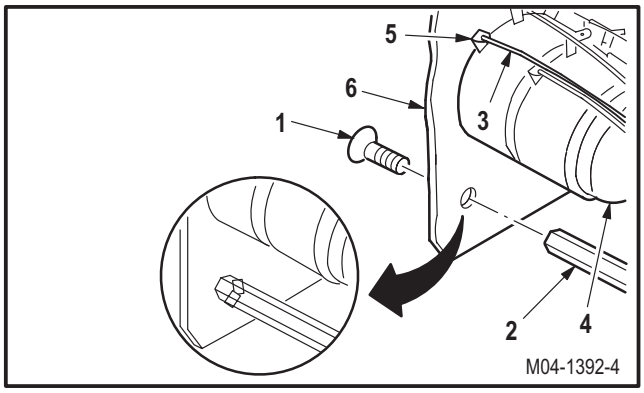
c. Solder identified wires (3) on terminals (5). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).

d. **Apply sealant to screws (1).** Use sealing compound (item 167, App F).

e. **Install four screws (1) through panel (6) and into tube assemblies (2).**

f. **Inspect (QA).**

g. **Install pilot EXT LT/INTR LT panel light indicating panel** (para 9.64)**.**



END OF TASK

9.72. PILOT EXT LT/INTR LT PANEL L CSL VARIABLE RESISTOR REPLACEMENT (AVIM)

9.72.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.72.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
25-watt electric soldering iron (item 332, App H)

Materials/Parts:

Cloth (item 52, App F)
Methyl ethyl ketone (item 124, App F)
Sealing compound (item 167, App F)
Solder (item 189, App F)

Personnel Required:

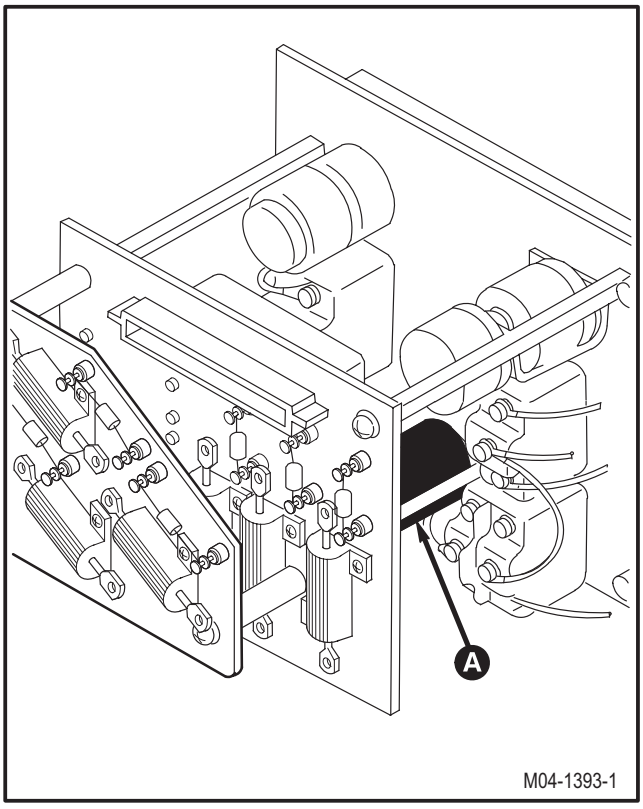
68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
9.64	Pilot EXT LT/INTR LT panel light indicating panel removed



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9.72. PILOT EXT LT/INTR LT PANEL L CSL VARIABLE RESISTOR REPLACEMENT (AVIM) – continued

9.72.3. Removal

a. **Remove four screws (1) from tube assemblies (2).**

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

b. **Desolder wires (3) from resistor (4).**

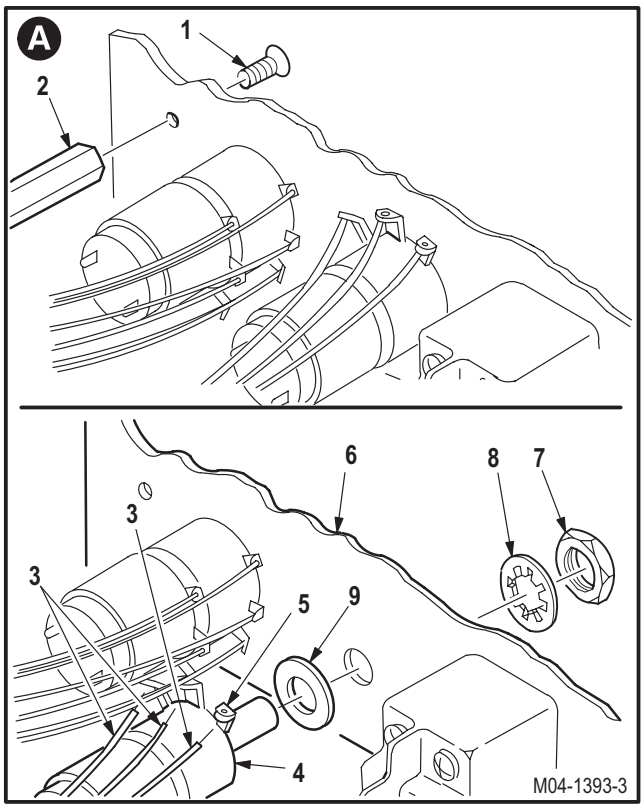
(1) Identify and desolder wires (3) from terminals (5). Use soldering iron (TM 55-1500-323-24).

c. **Remove resistor (4) from EXT LT/INTR LT panel (6).**

(1) Remove nut (7) and lockwasher (8).

(2) Remove resistor (4) and washer (9) from panel (6).

(3) Discard resistor (4).



9.72.4. Cleaning

a. **Clean sealant from removed and attaching parts** (para 1.47)**.**

9.72.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.61)**.**

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9.72. PILOT EXT LT/INTR LT PANEL L CSL VARIABLE RESISTOR REPLACEMENT (AVIM) – continued

b. **Check removed and attaching parts for corrosion** (para 1.49)**.**

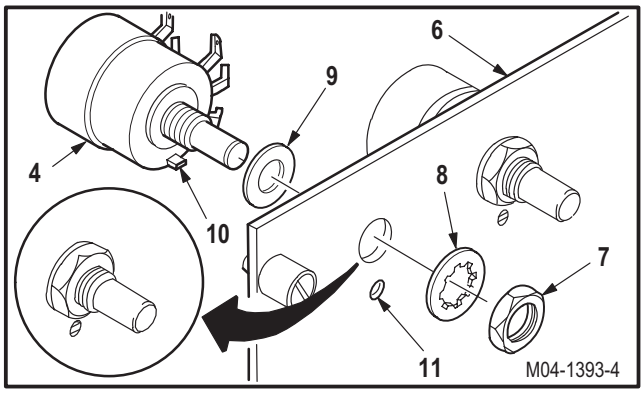
9.72.6. Installation

a. **Install new resistor (4) on panel (6).**

(1) Install resistor (4) through washer (9) and panel (6).

(2) Position resistor (4) so that tab (10) seats in locator hole (11).

(3) Install lockwasher (8) and nut (7).

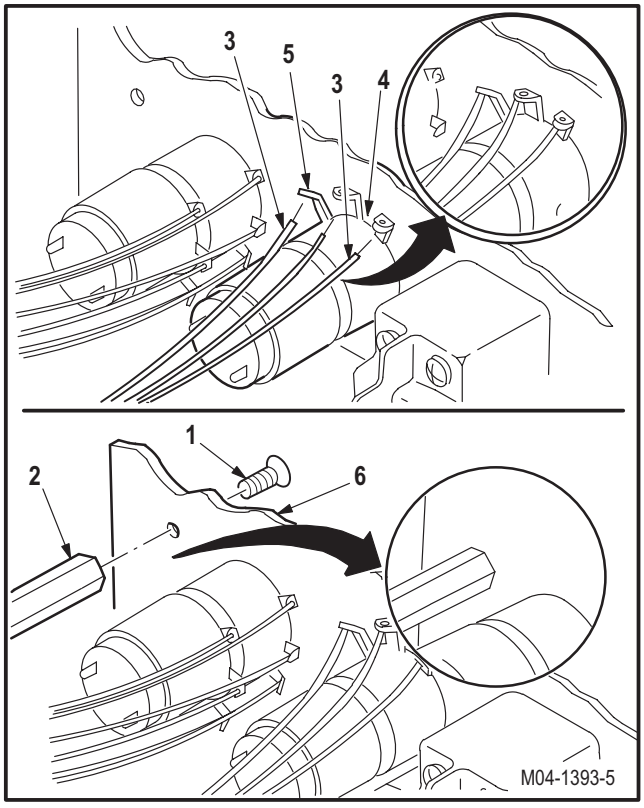


WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

b. **Solder wires (3) to resistor (4).**

(1) Solder identified wires (3) to terminals (5). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).



c. **Apply sealant to screws (1).** Use sealing compound (item 167, App F).

d. **Install four screws (1) through panel (6) and into tube assemblies (2).**

e. **Inspect (QA).**

f. **Install pilot EXT LT/INTR LT panel light indicating panel** (para 9.64)**.**

END OF TASK

9.73. PILOT EXT LT/INTR LT PANEL INST ATTENUATOR REPLACEMENT (AVIM)

9.73.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.73.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
25-watt electric soldering iron (item 332, App H)

Materials/Parts:

Cloth (item 52, App F)
Methyl ethyl ketone (item 124, App F)
Sealing compound (item 167, App F)
Solder (item 189, App F)

Personnel Required:

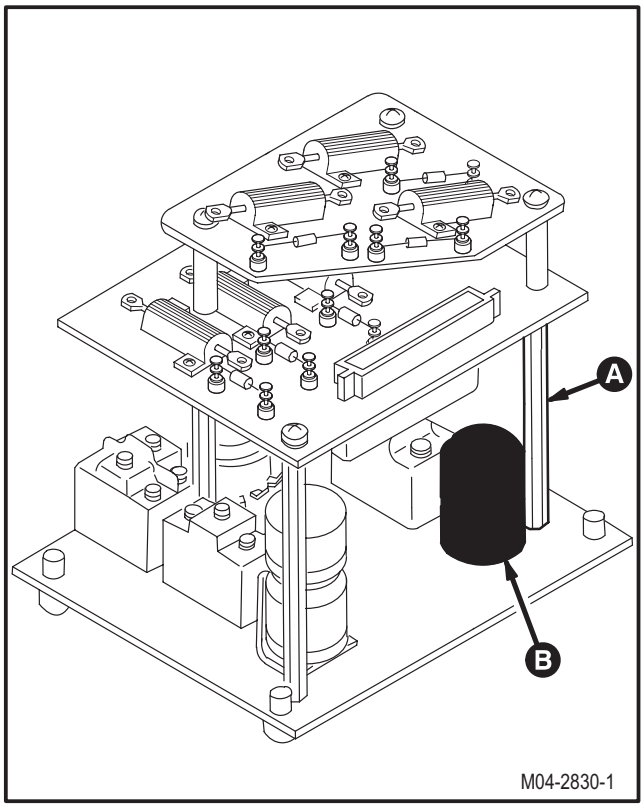
68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
9.64	Pilot EXT LT/INTR LT panel light indicating panel removed



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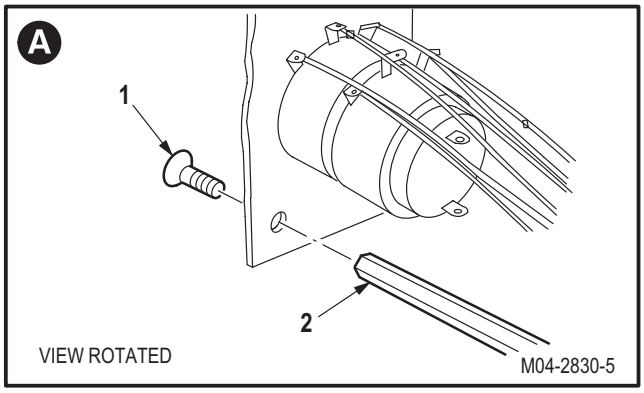
9.73. PILOT EXT LT/INTR LT PANEL INST ATTENUATOR REPLACEMENT (AVIM) – continued

9.73.3. Removal

a. **Remove four screws (1) from tube assemblies (2).**



WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

b. **Desolder wires (3) from attenuator (4).**

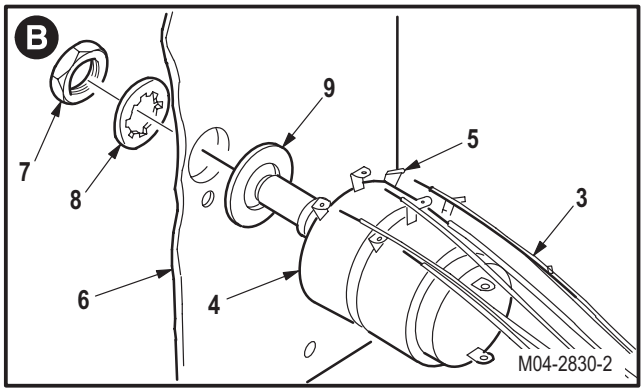
(1) Identify and desolder wires (3) from terminals (5). Use soldering iron (TM 55-1500-323-24).

c. **Remove attenuator (4) from EXT LT/INTR LT panel (6).**

(1) Remove nut (7) and lockwasher (8).

(2) Remove attenuator (4) and washer (9) from panel (6).

(3) Discard attenuator (4).



9.73.4. Cleaning

a. **Clean sealant from removed and attaching parts** (para 1.47)**.**

GO TO NEXT PAGE

9.73. PILOT EXT LT/INTR LT PANEL INST ATTENUATOR REPLACEMENT (AVIM) – continued

9.73.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.61)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.61)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.73.6. Installation

a. **Install new attenuator (4) in panel (6).**

(1) Install attenuator (4) through washer (9) and panel (6).

(2) Position attenuator (4) so that tab (10) seats in locator hole (11).

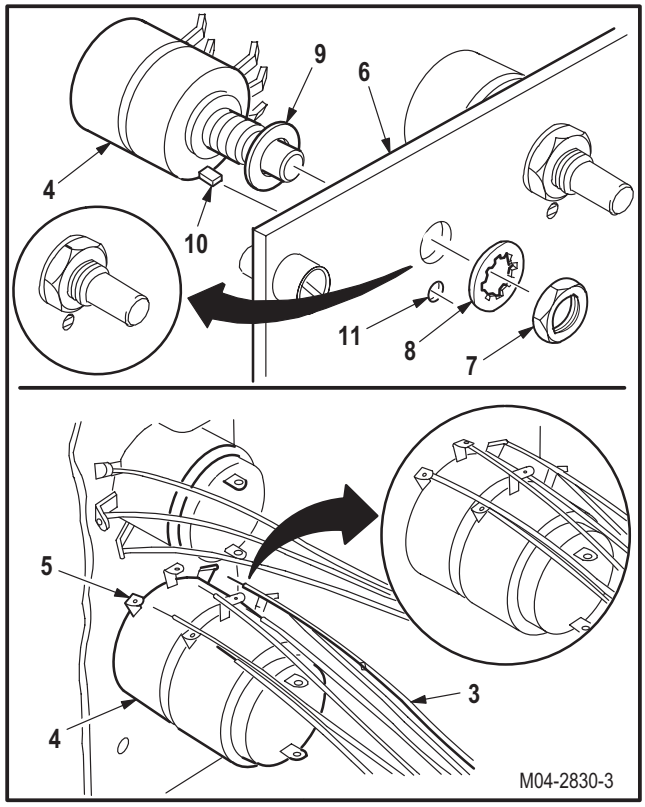
(3) Install lockwasher (8) and nut (7).

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

b. **Solder wires (3) to attenuator (4).**

c. Solder identified wires (3) to terminals (5). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).



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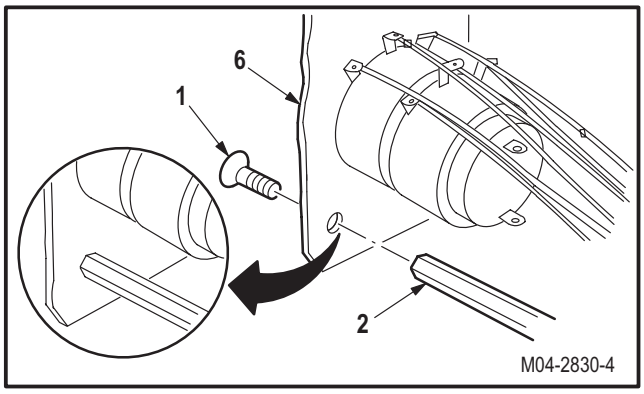
9.73. PILOT EXT LT/INTR LT PANEL INST ATTENUATOR REPLACEMENT (AVIM) – continued

d. **Apply sealant to screws (1).** Use sealing compound (item 167, App F).

e. **Install four screws (1) through panel (6) and into tube assemblies (2).**

f. **Inspect (QA).**

g. **Install pilot EXT LT/INTR LT panel light indicating panel** (para 9.64)**.**



END OF TASK

9.74. MULTICHANNEL DIMMING CONTROLLER UNIT REMOVAL/INSTALLATION

9.74.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.74.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Ohmmeter (item 218, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Corrosion preventive compound (item 63, App F)

References:

TM 1-1520-238-T
TM 11-1520-238-23-2
TM 55-1500-323-24

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access door L90 opened

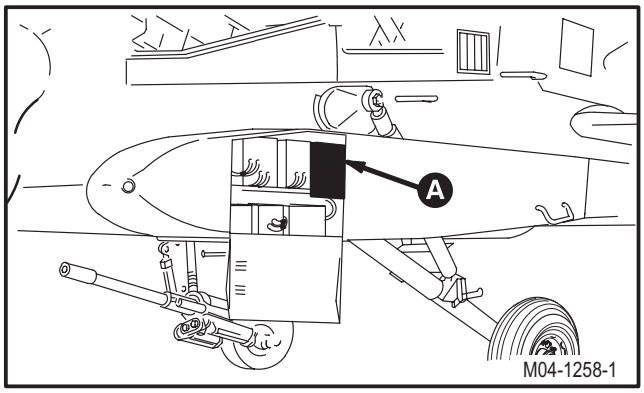
9.74.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot center circuit breaker panel, open LT PRI circuit breaker.**

c. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**

d. **On CPG circuit breaker panel No. 1, open PRI LT circuit breaker.**



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9.74. MULTICHANNEL DIMMING CONTROLLER UNIT REMOVAL/INSTALLATION – continued

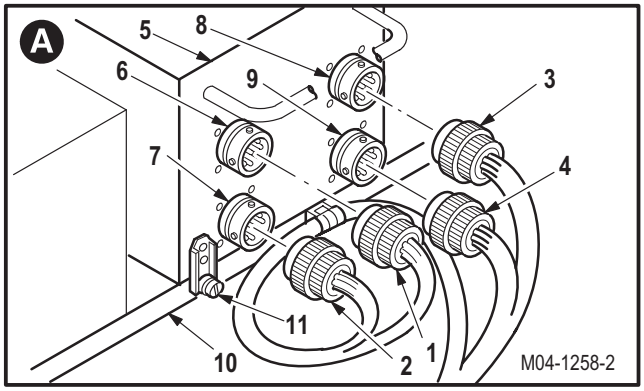
e. **Detach four connectors P748 (1), P109 (2), P747 (3), and P110 (4) from multichannel dimming controller unit (5).**

(1) Detach connector P748 (1) from receptacle (A403)J2 (6).

(2) Detach connector P109 (2) from receptacle (A403)J3 (7).

(3) Detach connector P747 (3) from receptacle (A403)J1 (8).

(4) Detach connector P110 (4) from receptacle (A403)J4 (9).



f. **Remove controller unit (5) from mounting tray (10).**

(1) Loosen two captive fasteners (11).

(2) Remove controller unit (5).

9.74.4. Cleaning

a. **Clean removed and attaching parts and surfaces** (para 1.47)**.**

9.74.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.61)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.61)**.**

c. **Check connectors for cracks, broken connections, or bent or damaged pins** (para 9.61)**.**

d. **Check removed and attaching parts for corrosion** (para 1.49)**.**

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9.74. MULTICHANNEL DIMMING CONTROLLER UNIT REMOVAL/INSTALLATION – continued

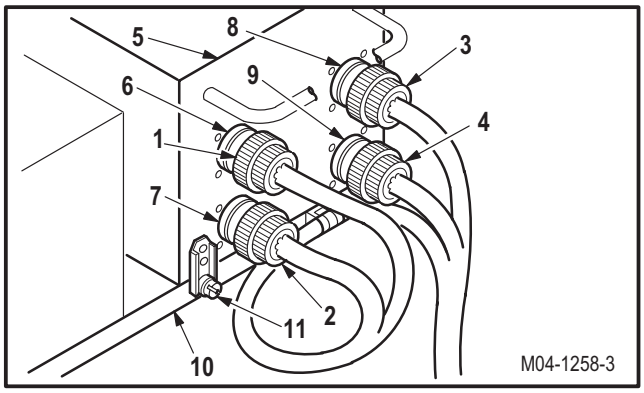
9.74.6. Installation

a. **Install controller unit (5) on tray (10).**

(1) Apply a coat of corrosion preventive compound to mounting brackets of controller unit (5). Use corrosion preventive compound (item 63, App F).

(2) Position controller unit (5) on tray (10).

(3) Tighten two fasteners (11).



b. **Perform electrical bond check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

c. **Attach four connectors (4), (3), (2), and (1) to controller unit (5).**

(1) Attach connector P110 (4) to receptacle (A403)J4 (9).

(2) Attach connector P747 (3) to receptacle (A403)J1 (8).

(3) Attach connector P109 (2) to receptacle (A403)J3 (7).

(4) Attach connector P748 (1) to receptacle (A403)J2 (6).

d. **Inspect (QA).**

e. **Perform pilot and CPG edge-lights operational check** (TM 1-1520-238-T)**.**

f. **Perform video recorder maintenance operational check** (TM 11-1520-238-23-2)**.**

g. **Secure access door L90** (para 2.2)**.**

END OF TASK

9.75. MULTICHANNEL DIMMING CONTROLLER MODULE REMOVAL/INSTALLATION (AVIM)

9.75.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.75.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
#2 phillips screwdriver bit (item 33, App H)
1/4-inch drive screwdriver bit holder (item 175, App H)
0 - 10 inch-pound 1/4-inch drive dial indicator torque wrench (item 444A, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1500-204-23
TM 11-6625-3085-30

CAUTION

To prevent electrostatic damage to controller module, ensure that controller modules are removed only on a static–free work station.

NOTE

- Except for the advisory module, controller modules are identified by their operating channels. The first number designates the pilot channel. The alphanumeric identifier immediately following the pilot's channel designates the CPG channel.
- This task is applicable to controller modules 1,1A; 2,2A; 3,3A; 4,4A and controller advisory module.

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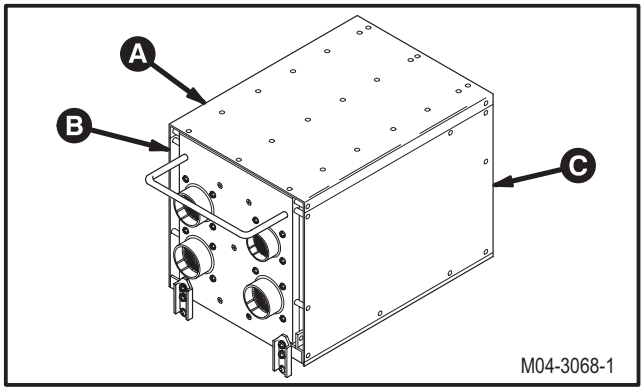
9.75. MULTICHANNEL DIMMING CONTROLLER MODULE REMOVAL/INSTALLATION (AVIM) – continued



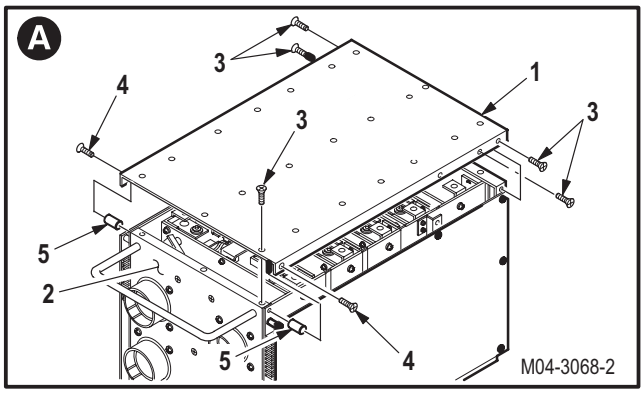
9.75.3. Removal

a. **Remove top cover (1) from multichannel dimming controller chassis (2).**

(1) Remove 25 screws (3) from cover (1).

(2) Remove two screws (4) and spacers (5) from cover (1).

(3) Remove cover (1).

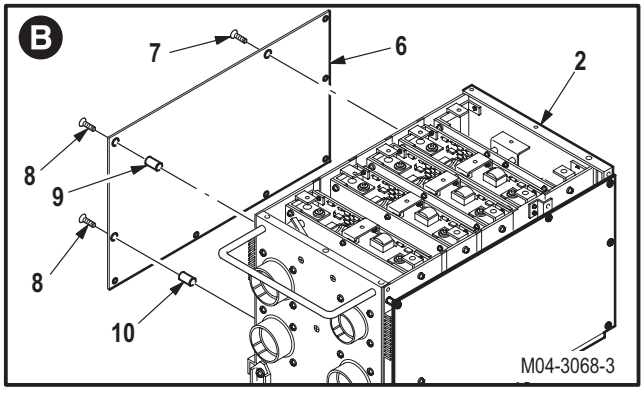


b. **Remove left heat sink cover (6) from chassis (2).**

(1) Remove seven screws (7) from cover (6).

(2) Remove two screws (8) and spacers (9) and (10) from cover (6).

(3) Remove cover (6).

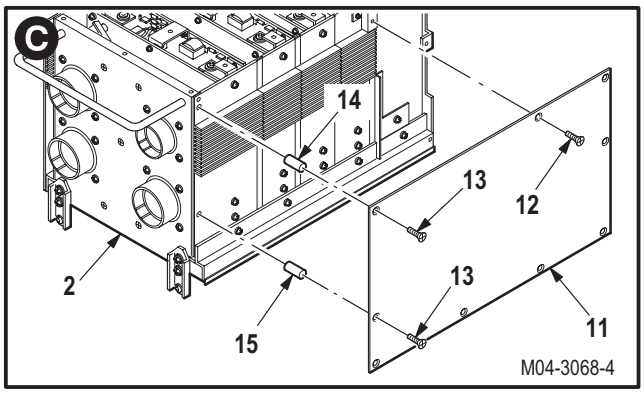


c. **Remove right heat sink cover (11) from chassis (2).**

(1) Remove seven screws (12) from cover (11).

(2) Remove two screws (13) and spacers (14) and (15) from cover (11).

(3) Remove cover (11).



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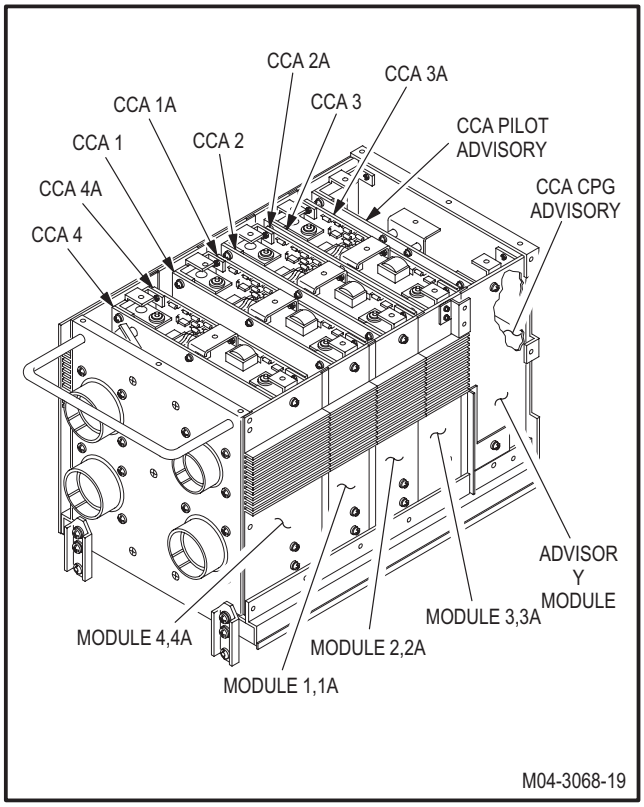
9.75. MULTICHANNEL DIMMING CONTROLLER MODULE REMOVAL/INSTALLATION (AVIM) – continued

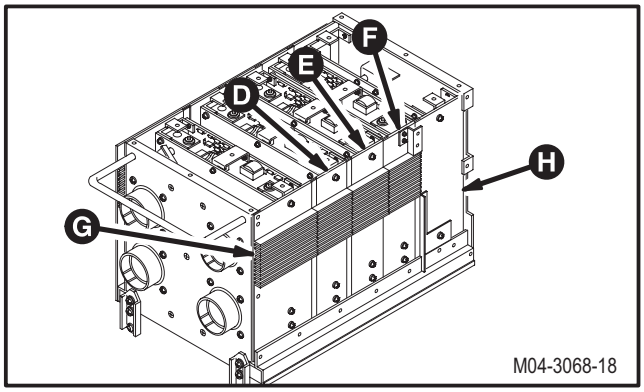


CAUTION

To prevent mixing of modules, identify module prior to removal for proper placement during installation.

NOTE

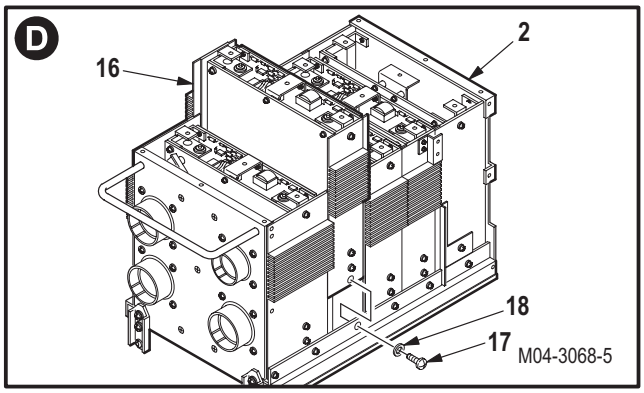
- Unless all modules from the multichannel dimming controller chassis are being removed and replaced, go to and perform removal step applicable to module being replaced.
- If sponge vibration dampeners are present between modules during removal, save dampeners for module installation.



d. **Identify and remove module 1,1A (16) from chassis (2).**

(1) Remove two screws (17) and washers (18) from chassis (2).

(2) Remove module (16).



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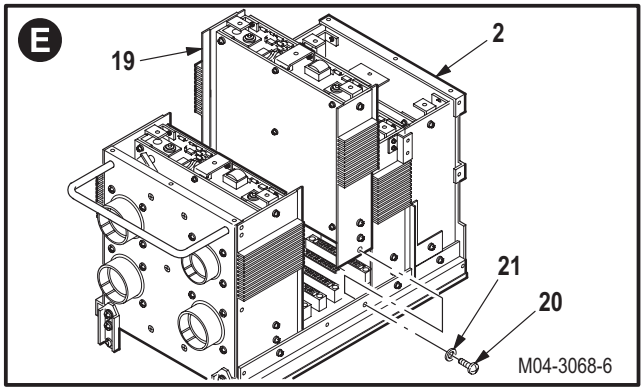
9.75. MULTICHANNEL DIMMING CONTROLLER MODULE REMOVAL/INSTALLATION (AVIM) – continued

e. **Remove module 2,2A (19) from chassis (2).**

(1) Remove two screws (20) and washers (21) from chassis (2).

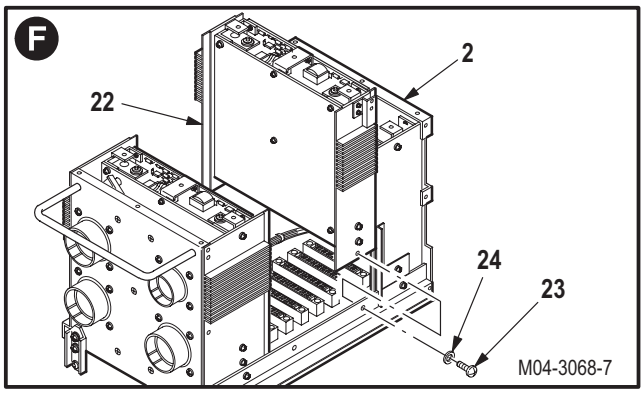
(2) Remove module (19).



f. **Remove module 3,3A (22) from chassis (2).**

(1) Remove two screws (23) and washers (24) from chassis (2).

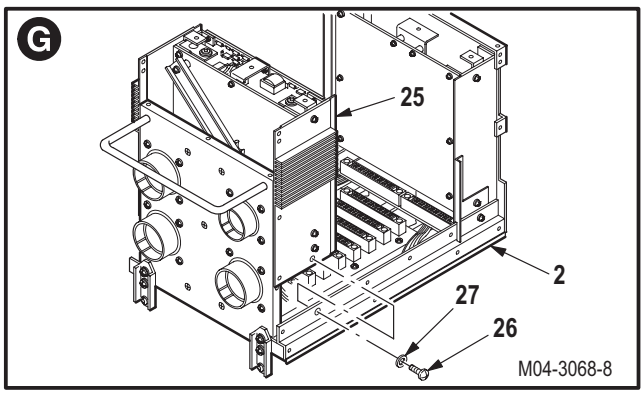
(2) Remove module (22).



g. **Remove module 4,4A (25) from chassis (2).**

(1) Remove two screws (26) and washers (27) from chassis (2).

(2) Remove module (25).

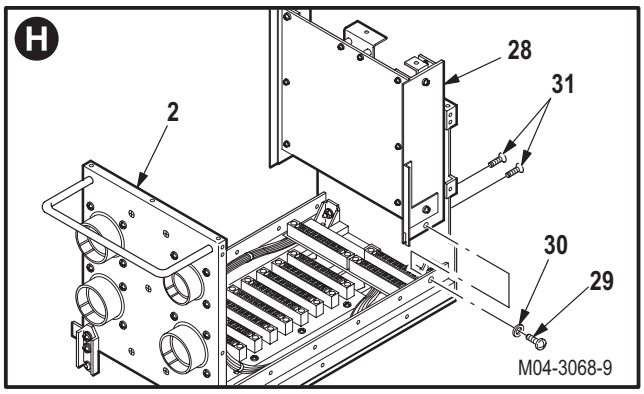


h. **Remove advisory module (28) from chassis (2).**

(1) Remove two screws (29) and washers (30) from chassis (2).

(2) Remove two screws (31) from chassis (2).

(3) Remove module (28).



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9.75. MULTICHANNEL DIMMING CONTROLLER MODULE REMOVAL/INSTALLATION (AVIM)

9.75.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.75.5. Inspection

a. **Check for cracks.** None allowed.

b. **Check removed and attaching parts for damage** (para 9.61)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

d. **Check for nicks, dents, scratches, and gouges** (para 9.61)**.**

e. **Check for elongated bolt or screw holes.** None allowed.

f. **Check for sharp bends, distortion or deformation** (para 9.61)**.**

g. **Check threaded holes for crossed, stripped, or flattened threads** (TM 1-1500-204-23)**.**

h. **Check wiring and wire bundles for chafing, wear, cuts, breaks, and for cracked, broken, or burned insulation** (para 9.61)**.**

i. **Check nutplates and clinch nuts (where applicable) for loose mounting and damaged threads** (TM 1-1500-204-23)**.**

j. **Check connectors and receptacles for cracks, broken connections, bent pins, loose mounting, or damaged threads** (para 9.61)**.**

k. **Check attached parts and components for mounting security and for loose, missing, or damaged hardware** (para 9.61)**.**

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9.75. MULTICHANNEL DIMMING CONTROLLER MODULE REMOVAL/INSTALLATION (AVIM) – continued

9.75.6. Installation

NOTE

Unless all modules from the multichannel dimming controller chassis were removed, go to and perform the installation step applicable to the module(s) that were removed.

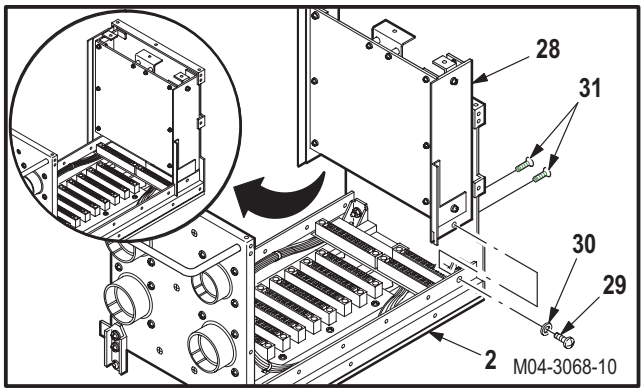
a. **Install advisory module (28) on chassis (2).** Torque screws (29) and (31) to **6.5 INCH-POUNDS**.

(1) Position module (28) in chassis (2).

(2) Install two screws (29) and washers (30) through both sides of chassis (2) and in module (28).

(3) Install two screws (31) through chassis (2) and in module (28).

(4) Torque two screws (29) and two screws (31) to **6.5 INCH-POUNDS**. Use torque wrench, screwdriver bit holder, and screwdriver bit.



NOTE

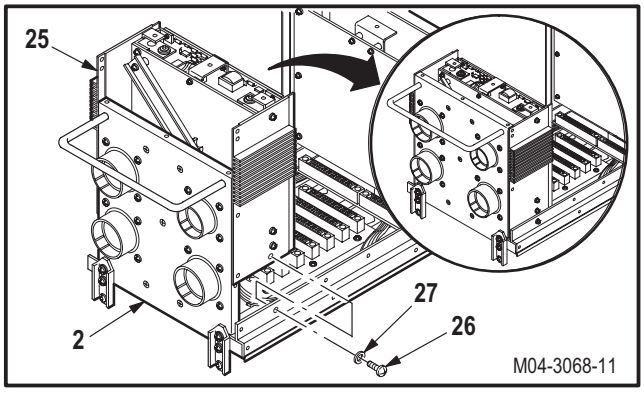
If removed, ensure that sponge vibration dampeners are installed between module circuit cards.

b. **Install module 4,4A (25) in chassis (2).** Torque screws (26) to **6.5 INCH-POUNDS**.

(1) Position module (25) in chassis (2).

(2) Install two screws (26) and washers (27) through both sides of chassis (2) and in module (25).

(3) Torque two screws (26) to **6.5 INCH-POUNDS**. Use torque wrench, screwdriver bit holder, and screwdriver bit.



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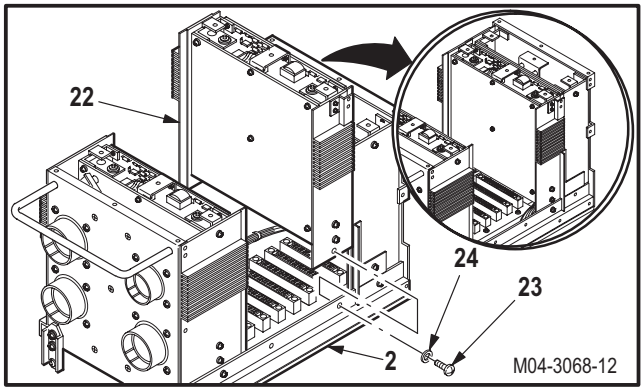
9.75. MULTICHANNEL DIMMING CONTROLLER MODULE REMOVAL/INSTALLATION (AVIM) – continued

c. **Install module 3,3A (22) in chassis (2).** Torque screws (23) to **6.5 INCH-POUNDS**.

(1) Position module (22) in chassis (2).

(2) Install two screws (23) and washers (24) through both sides of chassis (2) and in module (22).

(3) Torque two screws (23) to **6.5 INCH-POUNDS**. Use torque wrench, screwdriver bit holder, and screwdriver bit.

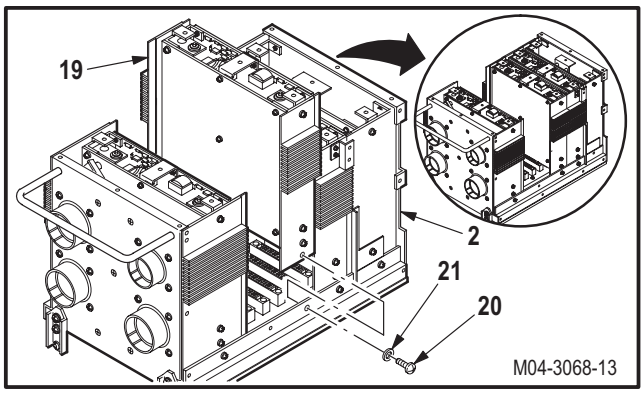


d. **Install module 2,2A (19) in chassis (2).** Torque screws (20) to **6.5 INCH-POUNDS**.

(1) Position module (19) in chassis (2).

(2) Install two screws (20) and washers (21) through both sides of chassis (2) and in module (19).

(3) Torque two screws (20) to **6.5 INCH-POUNDS**. Use torque wrench, screwdriver bit holder, and screwdriver bit.

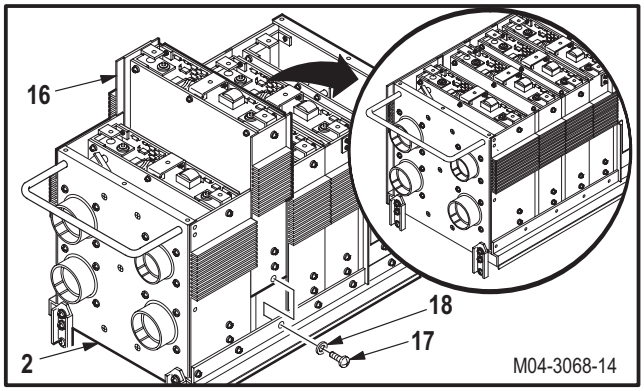


e. **Install module 1,1A (16) in chassis (2).** Torque screws (17) to **6.5 INCH-POUNDS**.

(1) Position module (16) in chassis (2).

(2) Install two screws (17) and washers (18) through both sides of chassis (2) and in module (16).

(3) Torque two screws (17) to **6.5 INCH-POUNDS**. Use torque wrench, screwdriver bit holder, and screwdriver bit.



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9.75. MULTICHANNEL DIMMING CONTROLLER MODULE REMOVAL/INSTALLATION (AVIM) – continued

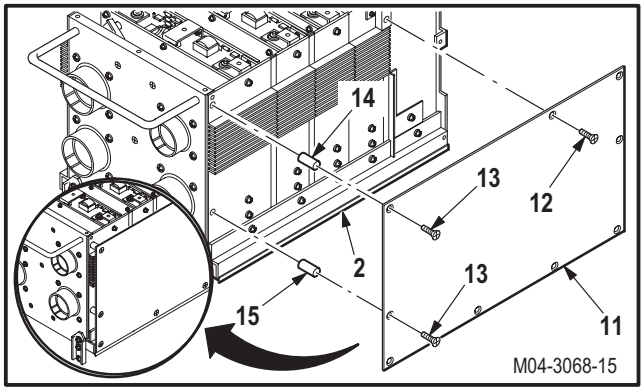
f. **Install right heat sink cover (11) on chassis (2).** Torque screws (12) and (13) to **6.5 INCH-POUNDS**.

(1) Position cover (11) on chassis (2). Aline screw holes and hold.

(2) Install two screws (13) and spacers (14) and (15) through cover (11) and in chassis (2).

(3) Install seven screws (12) through cover (11) and in chassis (2).

(4) Torque seven screws (12) and two screws (13) to **6.5 INCH-POUNDS**. Use torque wrench, screwdriver bit holder, and screwdriver bit.



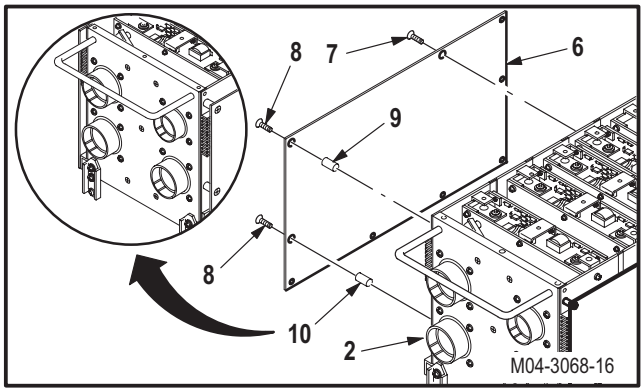
g. **Install left heat sink cover (6) on chassis (2).** Torque screws (7) and (8) to **6.5 INCH-POUNDS**.

(1) Position cover (6) on chassis (2). Aline screw holes and hold.

(2) Install two screws (8) and spacers (9) and (10) through cover (6) and in chassis (2).

(3) Install seven screws (7) through cover (6) and in chassis (2).

(4) Torque seven screws (7) and two screws (8) to **6.5 INCH-POUNDS**. Use torque wrench, screwdriver bit holder, and screwdriver bit.



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9.75. MULTICHANNEL DIMMING CONTROLLER MODULE REMOVAL/INSTALLATION (AVIM) – continued

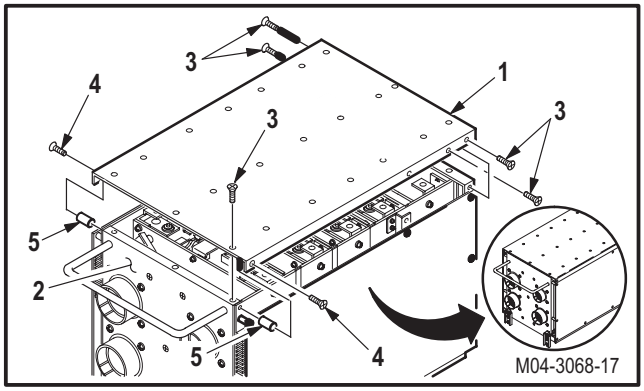
h. **Install top cover (1) on chassis (2).** Torque screws (3) and (4) to **6.5 INCH-POUNDS**.

(1) Position cover (1) on chassis (2). Aline screw holes and hold.

(2) Install two screws (4) and spacers (5) through cover (1) and in chassis (2).

(3) Install 25 screws (3) through cover (1) and in chassis (2).

(4) Torque 25 screws (3) and two screws (4) to **6.5 INCH-POUNDS**. Use torque wrench, screwdriver bit holder, and screwdriver bit.



i. **Inspect (QA).**

j. **Perform appropriate test.** Use Electronic Equipment Test Facility (EETF) (TM 11-6625-3085-30).

END OF TASK

9.76. MULTICHANNEL DIMMING CONTROLLER MODULE DISASSEMBLY/ASSEMBLY (AVIM)

9.76.1. Description

This task covers: Disassembly. Cleaning. Inspection. Assembly.

9.76.2. Initial Setup

Tools:

Electronic equipment maintenance kit (item 208, App H)

Personnel Required:

39B	ATE Operator/Maintainer
68X	Armament/Electrical System Repairer
68X3F	Armament/Electrical System Repairer/ Technical Inspector

References:

TM 11-6625-3085-30

Equipment Conditions:

Ref	Condition
9.75	Multichannel dimming controller module 1,1A; 2,2A; 3,3A; 4,4A and controller advisory module removed

CAUTION

To prevent electrostatic damage to controller module, ensure that circuit card assemblies are removed only on a static-free work station.

NOTE

- This task is applicable to controller modules 1,1A; 2,2A; 3,3A; 4,4A; and controller advisory module.
- Each controller module consists of two circuit card assemblies fastened to each other.

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9.76. MULTICHANNEL DIMMING CONTROLLER MODULE DISASSEMBLY/ASSEMBLY (AVIM)

9.76.3. Disassembly

NOTE

Step a is applicable to and typical for controller modules 1,1A and 2,2A.

a. **Remove circuit card assembly (CCA) (1) from circuit card assembly (CCA) (2).**

(1) Remove two screws (3) and washers (4) from bracket (5).

(2) Remove two screws (6) and washers (7) from standoff (8).

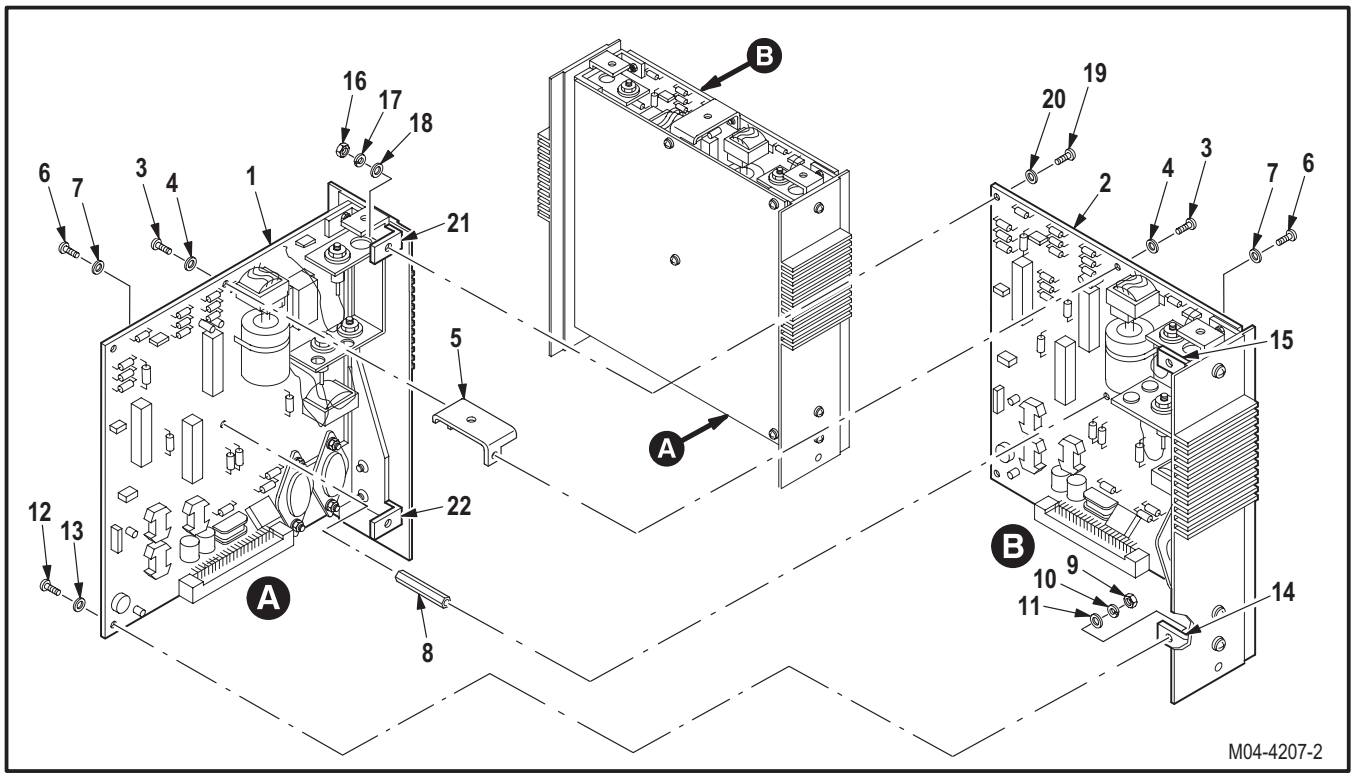
(3) Remove two nuts (9), lockwashers (10), and washers (11) from screws (12).

(4) Remove two screws (12) and washers (13) from CCA (1) and brackets (14) and (15).

(5) Remove two nuts (16), lockwashers (17), and washers (18) from screws (19).

(6) Remove two screws (19) and washers (20) from CCA (2) and brackets (21) and (22).

(7) Remove CCA (1).



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9.76. MULTICHANNEL DIMMING CONTROLLER MODULE DISASSEMBLY/ASSEMBLY (AVIM) – continued

NOTE

Step b is applicable only to controller module 3,3A.

b. **Remove circuit card assembly (CCA) (23) from circuit card assembly (CCA) (24).**

(1) Remove two screws (25) and washers (26) from bracket (27).

(2) Remove two screws (28) and washers (29) from standoff (30).

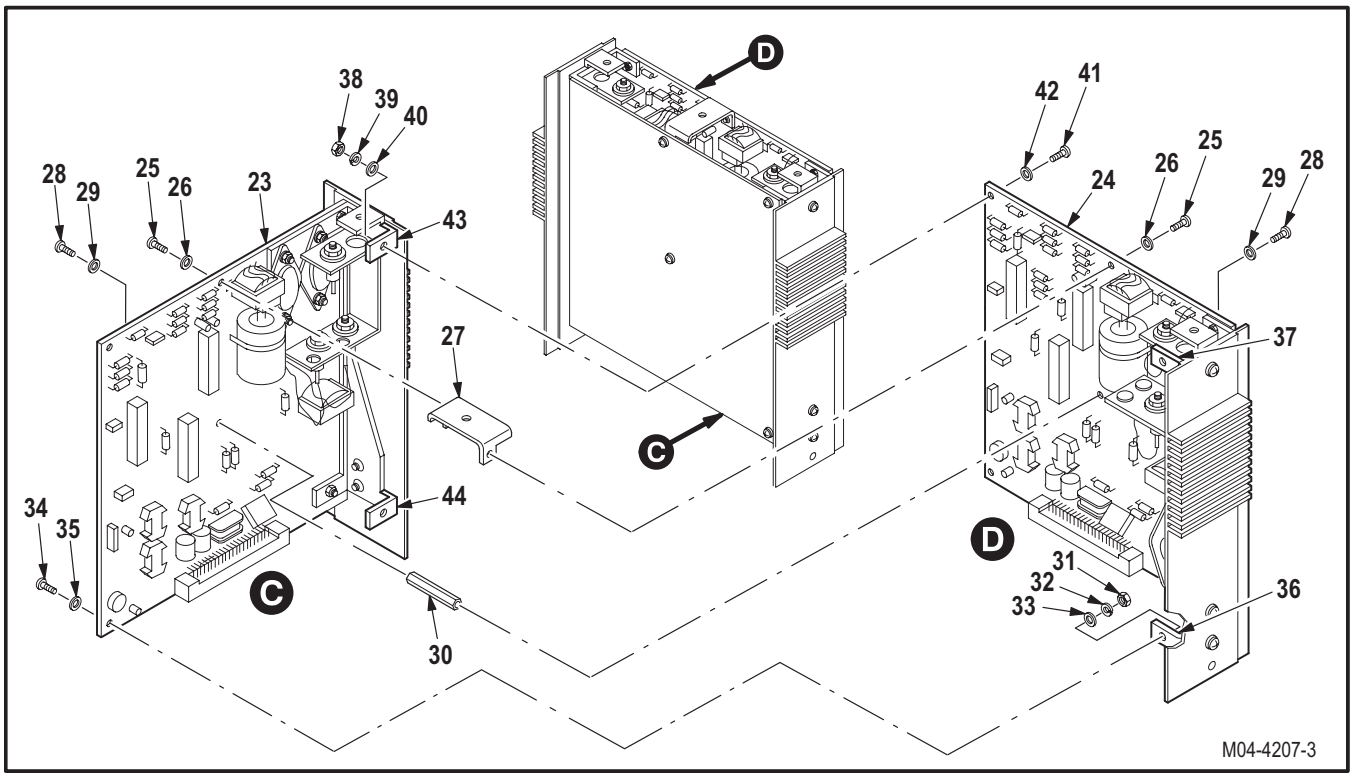
(3) Remove two nuts (31), lockwashers (32), and washers (33) from screws (34).

(4) Remove two screws (34) and washers (35) from CCA (23) and brackets (36) and (37).

(5) Remove two nuts (38), lockwashers (39), and washers (40) from screws (41).

(6) Remove two screws (41) and washers (42) from CCA (24) and brackets (43) and (44).

(7) Remove CCA (23).



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9.76. MULTICHANNEL DIMMING CONTROLLER MODULE DISASSEMBLY/ASSEMBLY (AVIM) – continued

NOTE

Step c is applicable only to controller module 4,4A.

c. **Remove circuit card assembly (CCA) (45) from circuit card assembly (CCA) (46).**

(1) Remove nut (47), lockwasher (48), and washer (49) from screw (50).

(2) Remove screw (50) and washer (51) from support bracket (52), standoff (53), CCA (45), and bracket (54).

(3) Remove standoff (53).

(4) Remove nut (55), lockwasher (56), and washer (57) from screw (58).

(5) Remove screw (58) and washer (59) from CCA (45) and bracket (60).

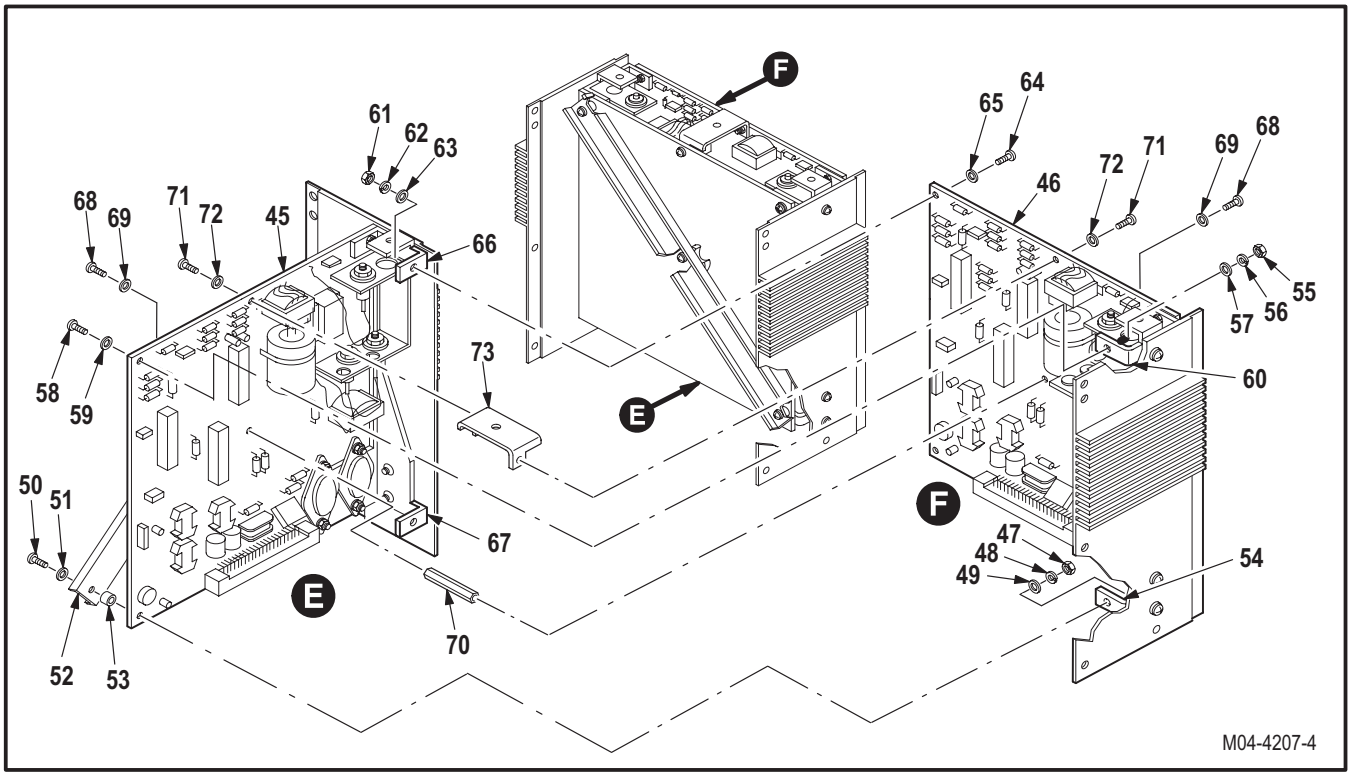
(6) Remove two nuts (61), lockwashers (62), and washers (63) from screws (64).

(7) Remove two screws (64) and washers (65) from CCA (46) and brackets (66) and (67).

(8) Shift bracket (52) end up or down until clear of screw (68).

(9) Remove two screws (68) and washers (69) from standoff (70).

(10) Remove two screws (71) and washers (72) from bracket (73) and remove CCA (45).



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9.76. MULTICHANNEL DIMMING CONTROLLER MODULE DISASSEMBLY/ASSEMBLY (AVIM) – continued

NOTE

Steps d. and e. are applicable only to controller advisory module.

d. **Remove circuit card assembly (CCA) (74) from mounting brackets (75).**

(1) Remove six nuts (76) and lockwashers (77) from screws (78).

(2) Remove six screws (78) and washers (79) from CCA (74) and brackets (75).

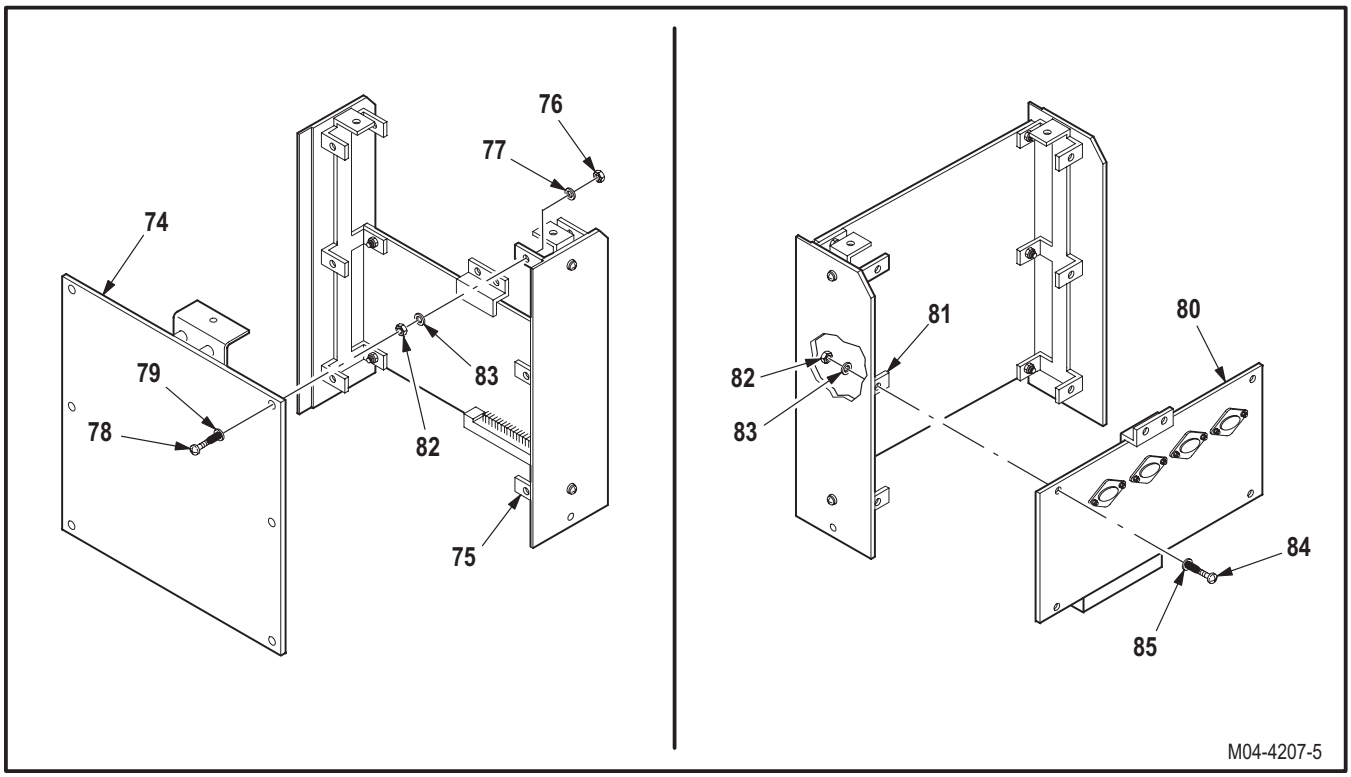
(3) Remove CCA (74).

e. **Remove circuit card assembly (CCA) (80) from brackets (81).**

(1) Remove four nuts (82) and lockwashers (83) from screws (84).

(2) Remove four screws (84) and washers (85) from CCA (80) and brackets (81).

(3) Remove CCA (80).



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9.76. MULTICHANNEL DIMMING CONTROLLER MODULE DISASSEMBLY/ASSEMBLY (AVIM) – continued

9.76.4. Cleaning

a. **Clean removed and attaching parts and surfaces** (para 1.47)**.**

9.76.5. Inspection

NOTE

Unless otherwise specified, the following inspection procedures apply to all circuit card mounting plates, brackets (removed and attached) and standoffs.

a. **Check for cracks.** None allowed.

b. **Check removed and attaching parts for damage** (para 9.61)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

d. **Check for nicks, scratches, and gouges** (para 9.61)**.**

e. **Check for distortion or deformation** (para 9.61)**.**

f. **Check standoffs for stripped, crossed, or flattened threads** (para 9.61)**.**

g. **Check attached brackets for elongated screw holes** (para 9.61)**.**

h. **Check removed brackets for loose or damaged clinch nuts** (para 9.61)**.**

i. **Check wires and wire bundles for cracked, broken, or burned insulation** (para 9.61)**.**

j. **Check wires and wire bundles for missing or broken tie wraps, chafing, wear, cuts and breaks** (para 9.61)**.**

k. **Check wiring and electronic components for cracked, loose, or cold solder joints** (para 9.61)**.**

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9.76. MULTICHANNEL DIMMING CONTROLLER MODULE DISASSEMBLY/ASSEMBLY (AVIM) – continued

9.76.6. Assembly

NOTE

Steps a. and b. are applicable only to controller advisory module.

a. **Install CCA (80) on brackets (81).**

(1) Position CCA (80) on brackets (81).

(2) Install four screws (84) through washers (85) and CCA (80) into brackets (81).

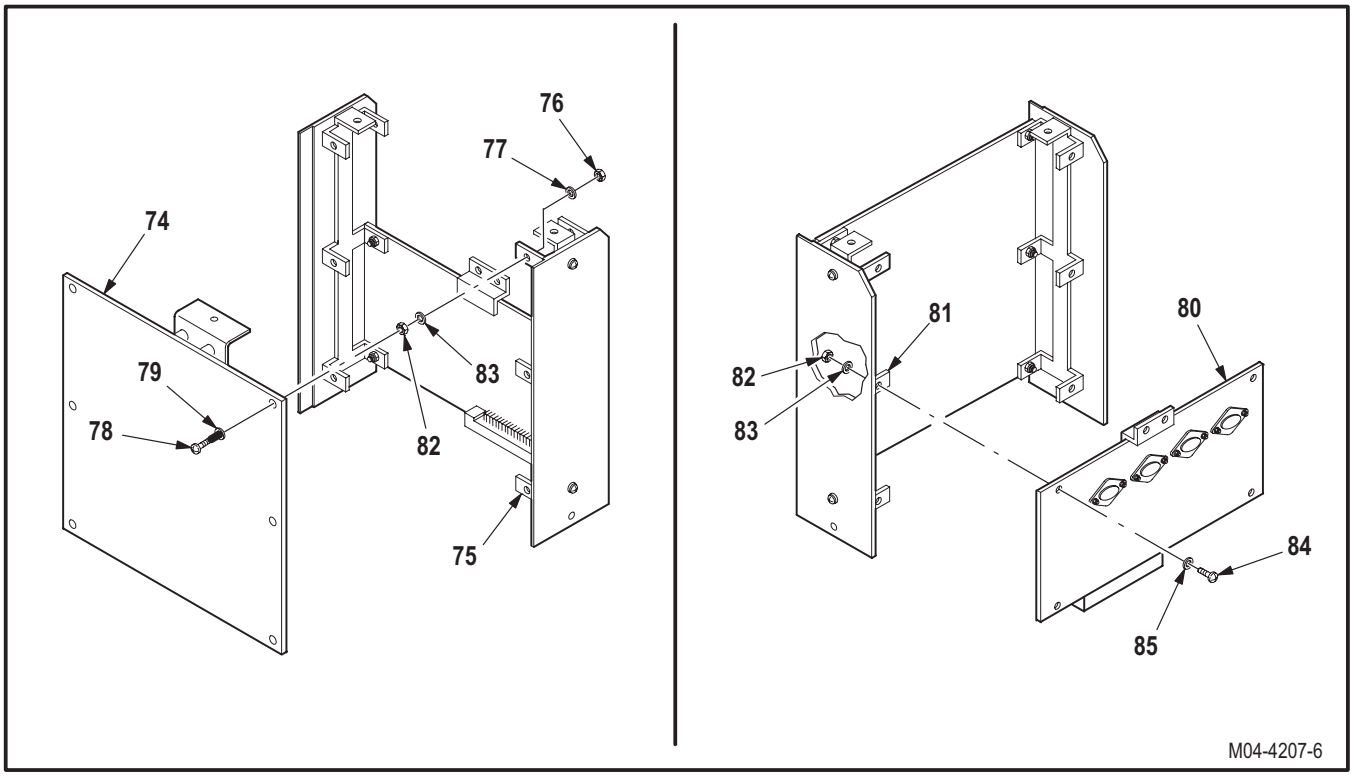
(3) Install four nuts (82) and lockwashers (83) on screws (84).

b. **Install CCA (74) on mounting brackets (75).**

(1) Position CCA (74) on brackets (75).

(2) Install six screws (78) through washers (79) and CCA (74) into brackets (75).

(3) Install six nuts (76) and lockwashers (77) on screws (78).



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9.76. MULTICHANNEL DIMMING CONTROLLER MODULE DISASSEMBLY/ASSEMBLY (AVIM) – continued

NOTE

Step c is applicable only to controller module 4,4A.

c. **Install CCA (45) on CCA (46).**

(1) Position standoff (70) between CCA (45) and (46) and install two screws (68) through washers (69) and CCA (45) and (46) into standoff (70).

(2) Position bracket (73) between CCA (45) and (46) and install two screws (71) through washers (72) and CCA (45) and (46) into bracket (73).

(3) Install two screws (64) through washers (65) and CCA (46) into brackets (66) and (67).

(4) Install two nuts (61), lockwashers (62), and washers (63) on screws (64).

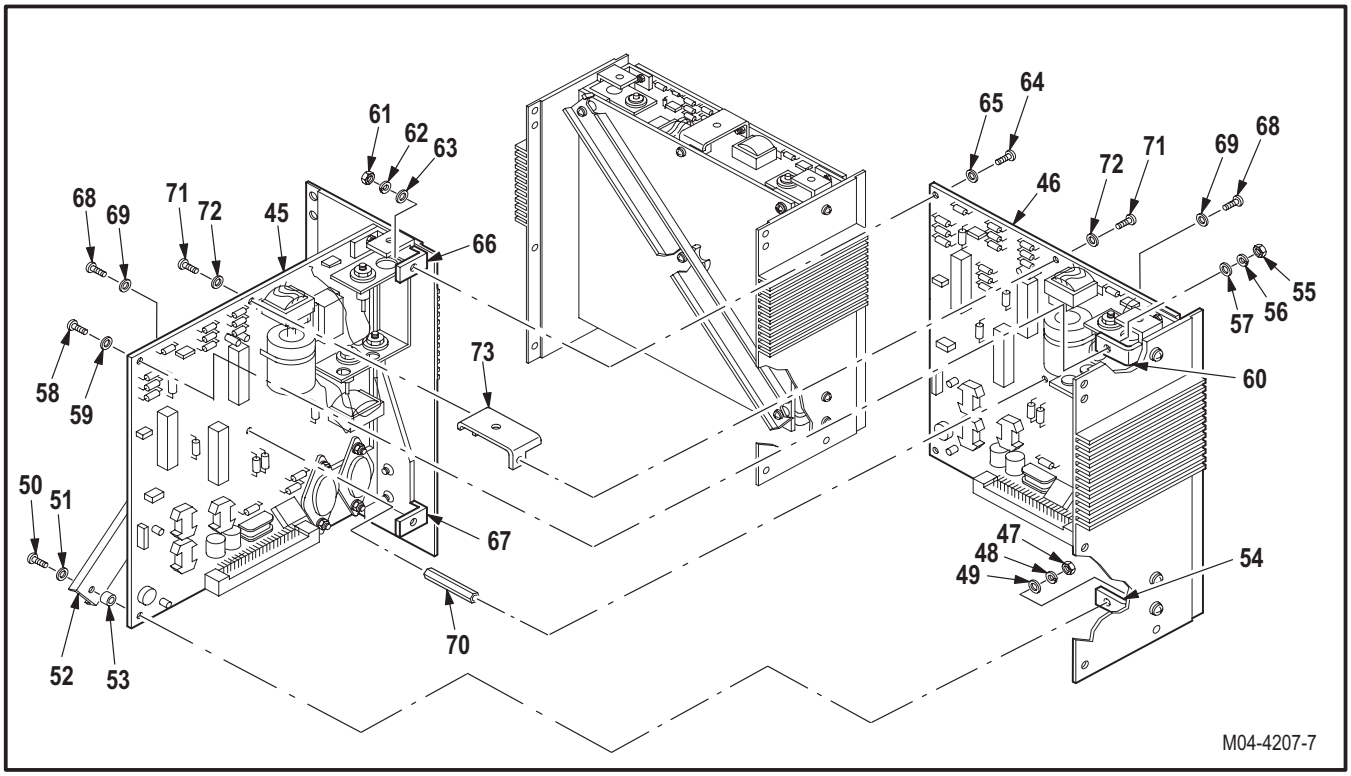
(5) Install screw (58) through washer (59) and CCA (45) into bracket (60).

(6) Install nut (55), lockwasher (56), and washer (57) on screw (58).

(7) Install standoff (53) between bracket (52) and CCA (45).

(8) Install screw (50) through washer (51), bracket (52), standoff (53) and CCA (45) into bracket (54).

(9) Install nut (47), lockwasher (48), and washer (49) on screw (50).



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9.76. MULTICHANNEL DIMMING CONTROLLER MODULE DISASSEMBLY/ASSEMBLY (AVIM) – continued

NOTE

Step d is applicable only to controller module 3,3A.

d. **Install CCA (23) on CCA (24).**

(1) Position standoff (30) between CCA (23) and (24).

(2) Install two screws (28) through washers (99) and CCA (23) and (24) into standoff (30).

(3) Install two screws (41) through washers (42) and CCA (24) into brackets (43) and (44).

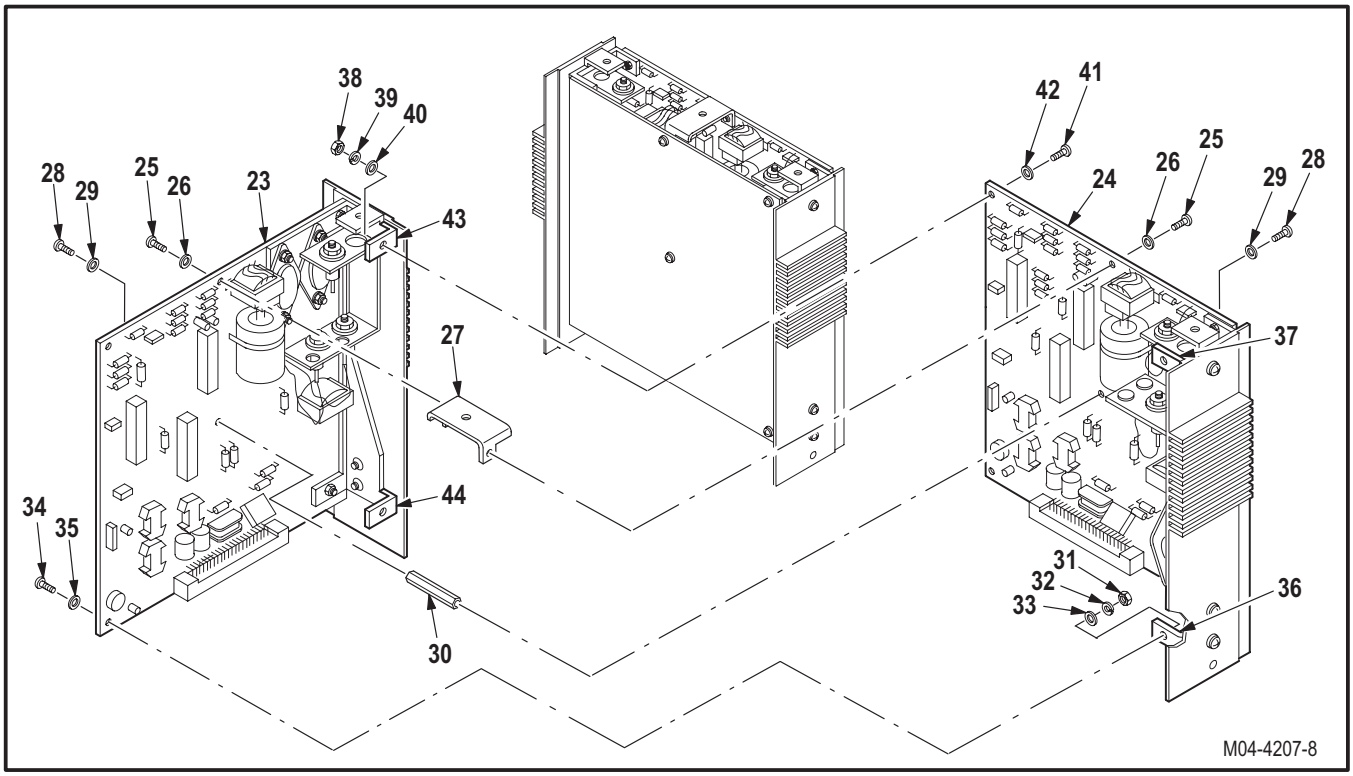
(4) Install two nuts (38), lockwashers (39), and washers (40) on screws (41).

(5) Install two screws (34) through washers (35) and CCA (23) into brackets (36) and (37).

(6) Install two nuts (31), lockwashers (32), and washers (33) on screws (34).

(7) Position bracket (27) between CCA (23) and (24).

(8) Install two screws (25) through washers (26) into bracket (27).



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9.76. MULTICHANNEL DIMMING CONTROLLER MODULE DISASSEMBLY/ASSEMBLY (AVIM) – continued

NOTE

Step e is applicable to and typical for controller module 1,1A and 2,2A.

e. **Install CCA (1) on CCA (2).**

(1) Position standoff (8) between CCA (1) and (2).

(2) Install two screws (6) through washers (7) and CCA (1) and (2) into standoff (8).

(3) Install two screws (19) through washers (20) and CCA (2) into brackets (21) and (22).

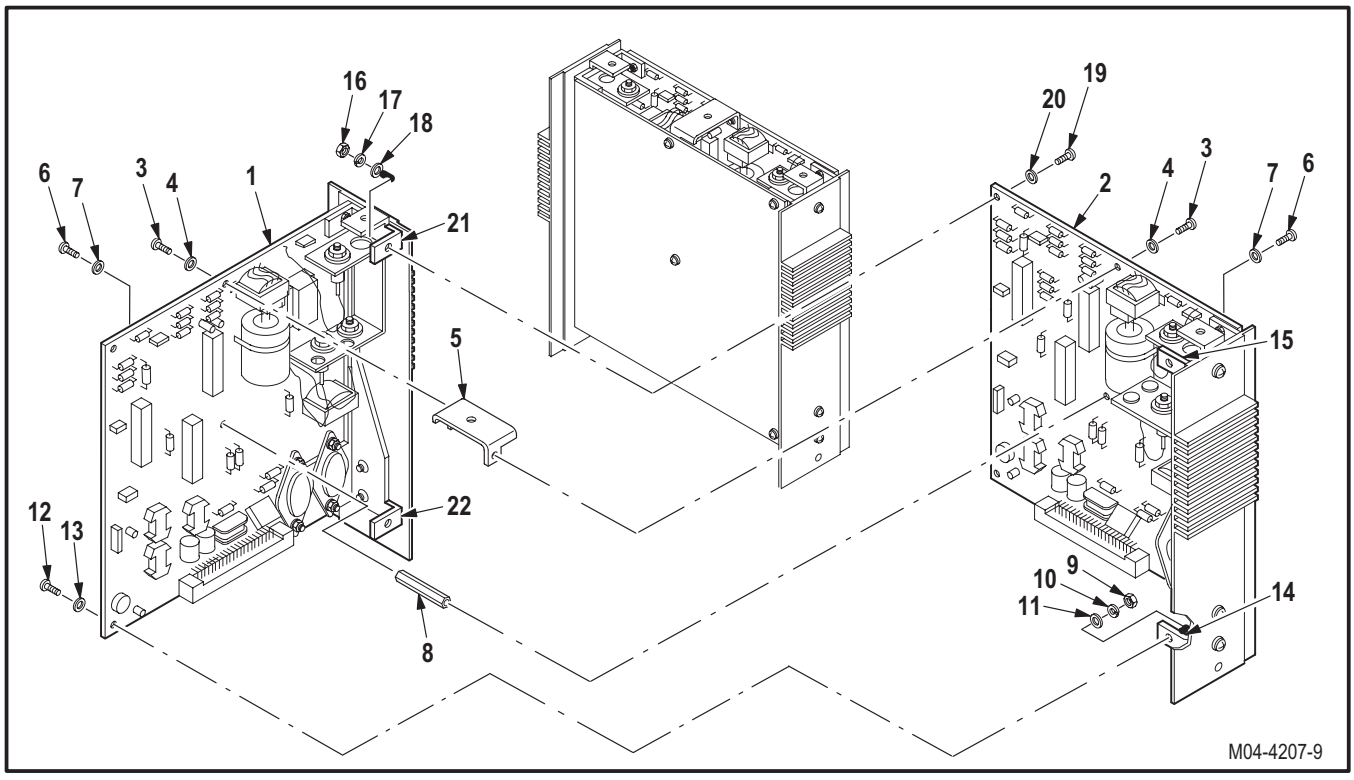
(4) Install two nuts (16), lockwashers (17), and washers (18) on screws (19).

(5) Install two screws (12) through washers (13) and CCA (1) into brackets (14) and (15).

(6) Install two nuts (9), lockwashers (10), and washers (11) on screws (12).

(7) Position bracket (5) between CCA (1) and (2).

(8) Install two screws (3) through washers (4) into bracket (5).



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9.76. MULTICHANNEL DIMMING CONTROLLER MODULE DISASSEMBLY/ASSEMBLY (AVIM) – continued

f. **Inspect (QA).**

g. **Perform appropriate test.** Electronic Equipment Test Facility (E.E.T.F.) (TM 11-6625-3085-30).

h. **Install multichannel dimming controller modules 1,1A; 2,2A; 3,3A; 4,4A and controller advisory module** (para 9.75)**.**

END OF TASK

9.77. MULTICHANNEL DIMMING CONTROLLER CHASSIS DISASSEMBLY/ASSEMBLY (AVIM)

9.77.1. Description

This task covers: Disassembly. Cleaning. Inspection. Assembly.

9.77.2. Initial Setup

Tools:

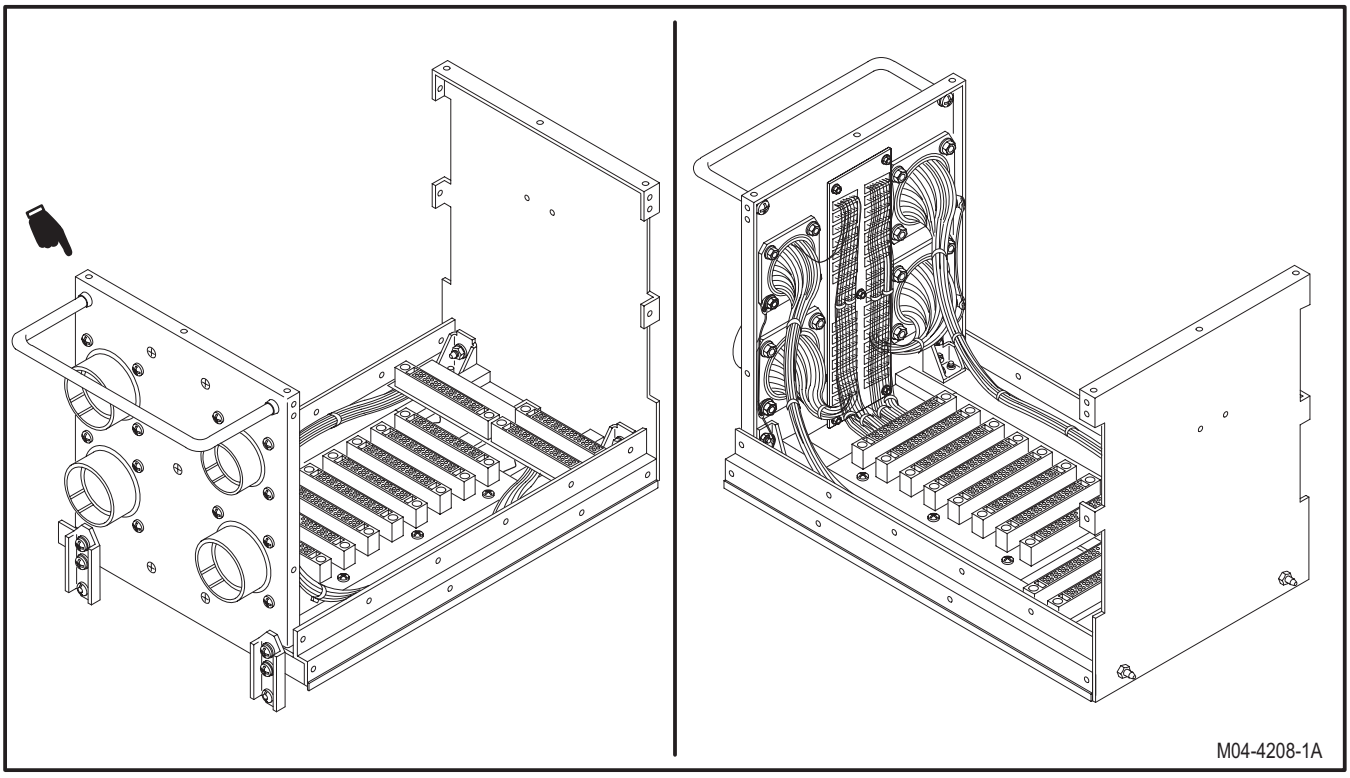
Electrical tool kit (item 378, App H)
#2 phillips screwdriver bit (item 33, App H)
1/4-inch drive screwdriver bit holder (item 175, App H)
0 - 30 inch-pound 1/4-inch drive dial indicator torque wrench (item 445, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
9.75	Multichannel dimming controller module 1,1A; 2,2A; 3,3A; 4,4A and controller advisory module removed



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9.77. MULTICHANNEL DIMMING CONTROLLER CHASSIS DISASSEMBLY/ASSEMBLY (AVIM) – continued

CAUTION

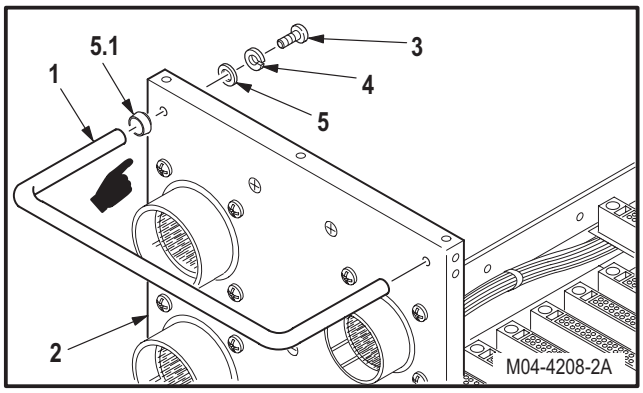
To prevent damage to multichannel dimming controller, exercise care when handling controller chassis and internal components. Ensure that work area is clean and that parts are placed on a soft and adequately protected working surface.

9.77.3. Disassembly

a. **Remove handle (1) from chassis front panel (2).**

(1) Remove two screws (3), lockwashers (4), washers (5), and ferrules (5.1) from handle (1).

(2) Remove handle (1) from panel (2).

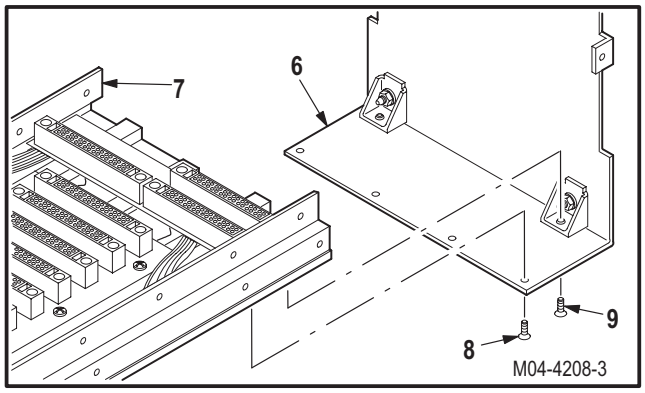


b. **Remove rear panel (6) from chassis base (7).**

(1) Remove four screws (8) from bottom of base (7).

(2) Remove two screws (9) from bottom of base (7).

(3) Slide panel (6) off base (7).

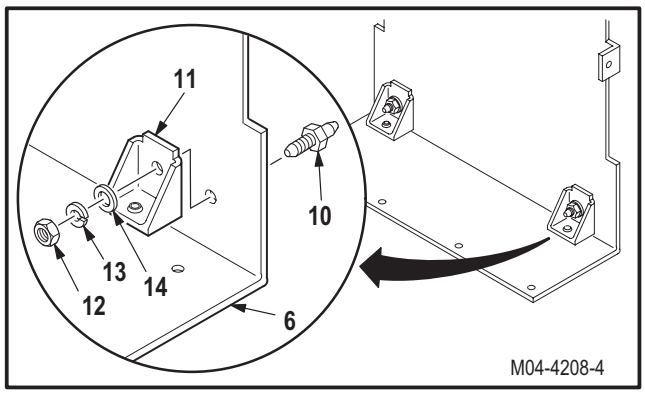


c. **Remove two alinement pins (10) and brackets (11) from panel (6).**

(1) Remove nut (12), lockwasher (13), and washer (14) from pins (10).

(2) Remove bracket (11) from panel (6).

(3) Remove pins (10) from panel (6).



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9.77. MULTICHANNEL DIMMING CONTROLLER CHASSIS DISASSEMBLY/ASSEMBLY (AVIM) – continued

NOTE

- Multichannel dimming controller harness is an electrical assembly consisting of two connector mounting plates, an interconnect printed wiring board (PWB), and four receptacles.
- Do not cut, detach, or depin wires that connect controller harness components to each other. All harness components are to be removed and replaced as a whole assembly.

d. **Remove controller harness (15) from base (7) and panel (2).**

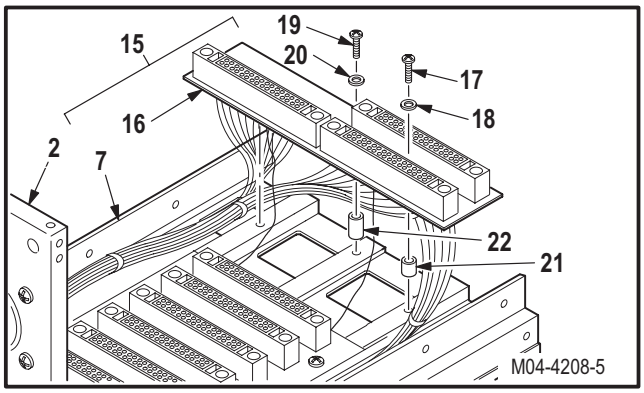
(1) Remove aft connector mounting plate (16) from base (7).

(a) Remove two screws (17) and washers (18) from both ends of plate (16).

(b) Remove screw (19) and washer (20) from center of plate (16).

(c) Lift plate (16) off base (7) and remove two spacers (21) and spacer (22).

(d) Position plate (16) on base (7) until all other harness components are removed.

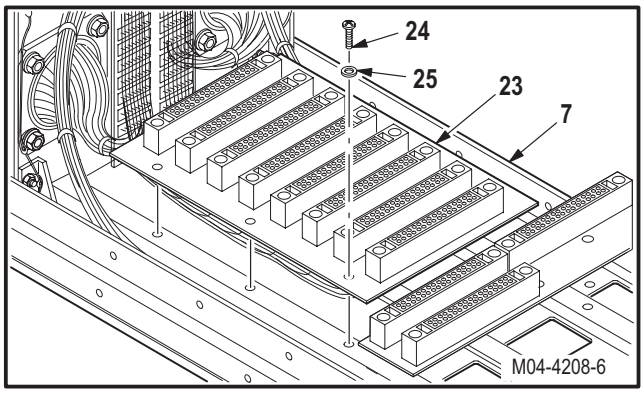


(2) Remove forward connector mounting plate (23) from base (7).

(a) Remove six screws (24) and washers (25) from plate (23).

(b) Ensure that plate (23) is free of base (7) by slightly lifting plate (23) off base (7).

(c) Position plate (23) on base (7) until all other harness components are removed.



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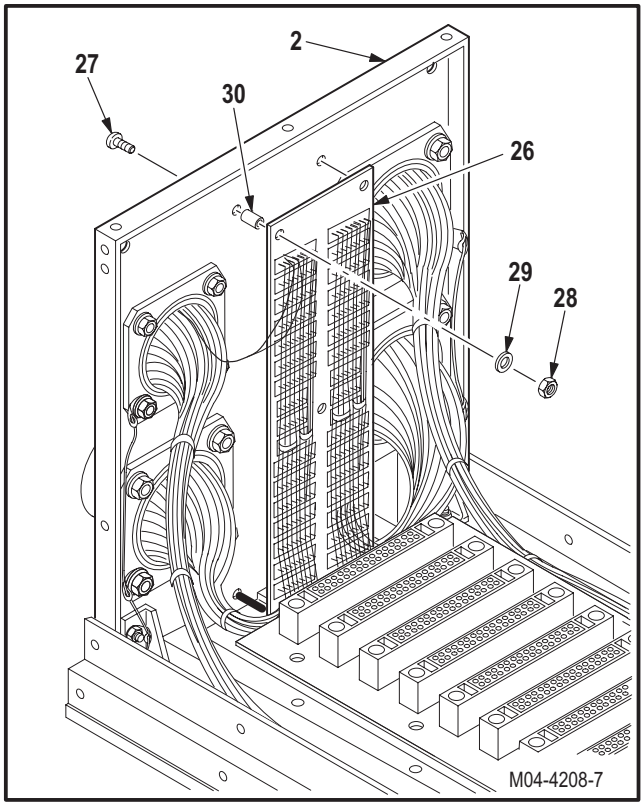
9.77. MULTICHANNEL DIMMING CONTROLLER CHASSIS DISASSEMBLY/ASSEMBLY (AVIM) – continued

(3) Remove interconnect printed wiring board (26) from panel (2).

(a) Remove five screws (27), nuts (28), washers (29), and spacers (30) from panel (2).

(b) Remove board (26) from panel (2).



(4) Remove receptacle (A403)J1 (31) from panel (2).

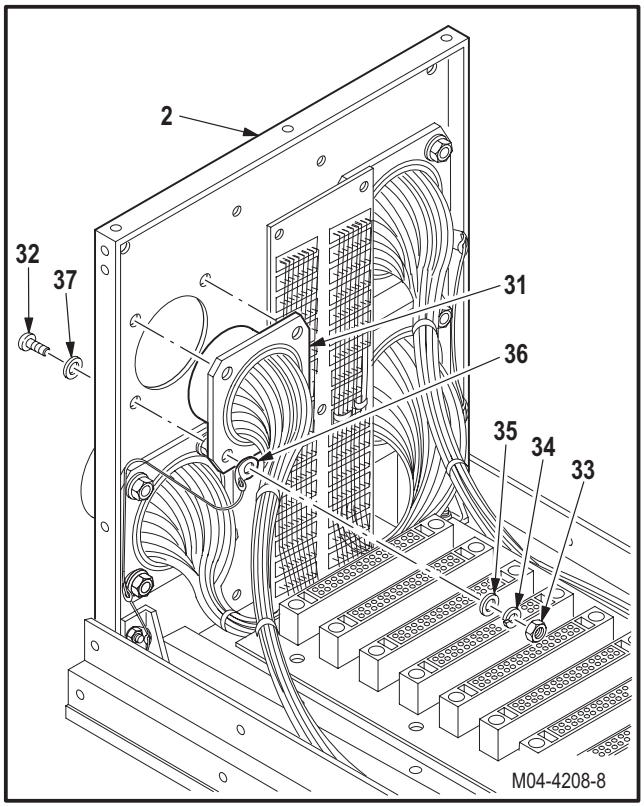
NOTE

- On receptacle (A403)J1, only the mounting hardware on the lower left–hand corner (looking from rear) has a grounding terminal lug installed.
- After removing mounting hardware from receptacle (A403)J1, allow receptacle to remain inside front panel until all other receptacles are removed.

(a) Hold four screws (32). Remove nuts (33), lockwashers (34), washers (35), and terminal lug (36) from receptacle (31).

(b) Remove four screws (32) and washers (39) from panel (2).

(c) Ensure that receptacle (31) is free of panel (2) by slightly sliding receptacle (31) off panel (2).



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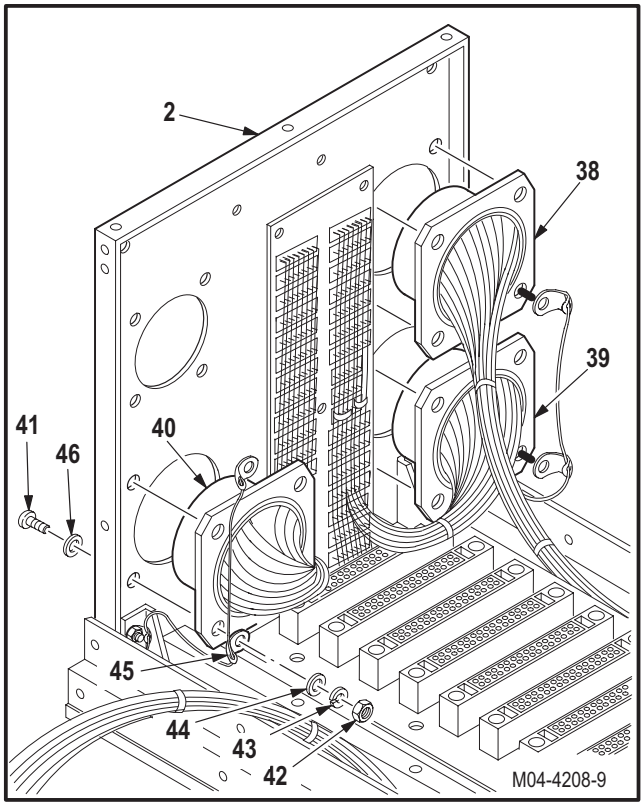
9.77. MULTICHANNEL DIMMING CONTROLLER CHASSIS DISASSEMBLY/ASSEMBLY (AVIM) – continued

(5) Remove receptacles (A403)J2 (38), (A403)J3 (39), and (A403)J4 (40) from panel (2).

NOTE

- On receptacle (A403)J4, only the mounting hardware on the lower left–hand corner (looking from rear) has a grounding terminal lug installed.
- On receptacle (A403)J2 and (A403)J3, only the mounting hardware on the lower right–hand corner (looking from rear) has a grounding terminal lug installed.
- After removing mounting hardware from receptacles (A403)J2, (A403)J3, and (A403)J4, allow receptacles to remain inside front panel until ready to remove the entire harness assembly from controller chassis.



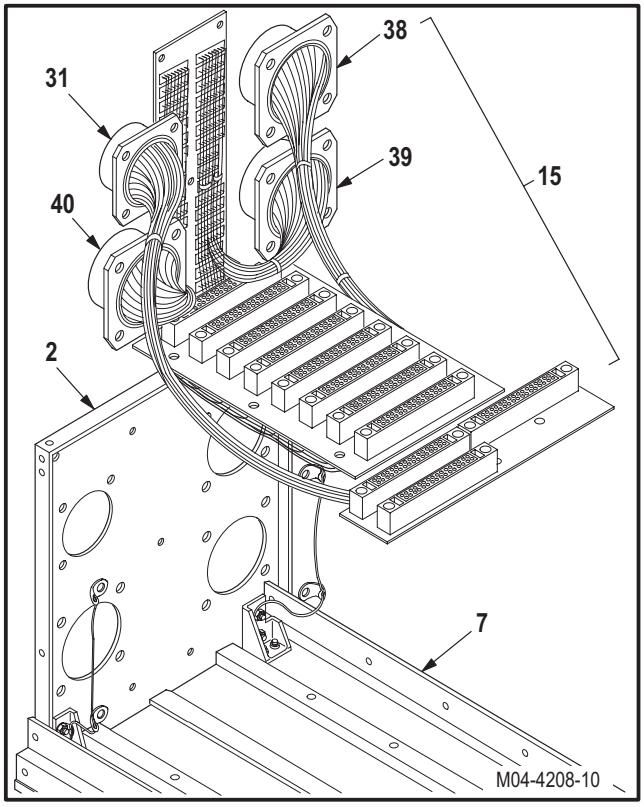
(a) Hold 12 screws (41). Remove nuts (42), lockwashers (43), washers (44), and terminal lugs (45) from rear of receptacles (38), (39), and (40).

(b) Remove 12 screws (41) and washers (46) from front of panel (2).

(6) Remove harness (15) from base (7) and panel (2).

(a) Slide receptacles (A403)J1 (31), (A403)J2 (38), (A403)J3 (39), and (A403)J4 (40) out from panel (2).

(b) Support harness (15) components with both hands. Remove harness (15) from base (7) and panel (2).



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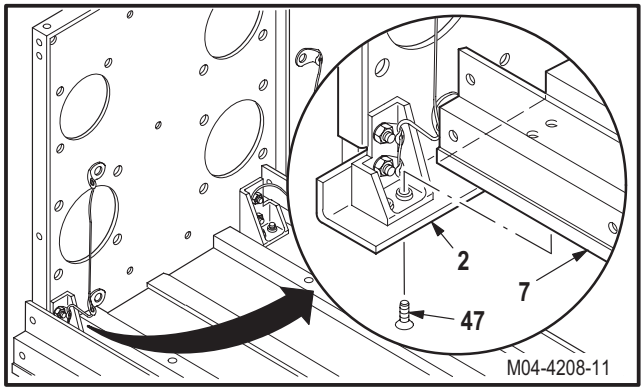
9.77. MULTICHANNEL DIMMING CONTROLLER CHASSIS DISASSEMBLY/ASSEMBLY (AVIM) – continued

e. **Remove front panel (2) from base (7).**

(1) Remove four screws (47) from bottom of panel (2).

(2) Remove panel (2) from base (7).



CAUTION

Exercise care when removing and handling case grounding harness. Ground wire and/or terminal lug solder joints may break if wire or terminal lugs are bent or twisted abruptly or frequently.

NOTE

Case grounding harness is an electrical assembly consisting of four terminal lugs soldered together with bare solid wire. The upper two terminal lugs of grounding harness are installed on rear of receptacles and lower two terminal lugs are installed on rear of channel bracket.

f. **Remove two channel brackets (48), left case ground harness (49), right case ground harness (50), and two mounting brackets (51) from panel (2).**

(1) Hold four screws (52). Remove nuts (53) from rear of panel (2).

(2) Remove left case ground harness (49) from screws (52).

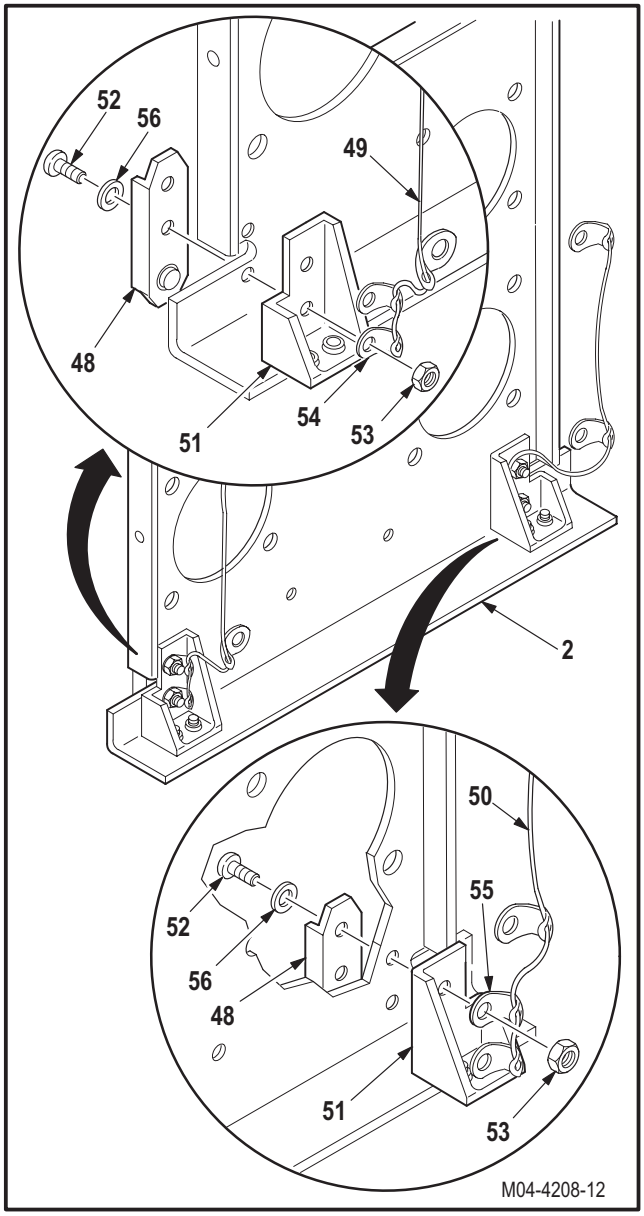
(a) Remove two terminal lugs (54).

(3) Remove right case ground harness (50) from screws (52).

(a) Remove two terminal lugs (55).

(4) Remove four screws (52) and washers (56) from panel (2).

(5) Remove brackets (48) and (51) from panel (2).



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9.77. MULTICHANNEL DIMMING CONTROLLER CHASSIS DISASSEMBLY/ASSEMBLY (AVIM) – continued

9.77.4. Cleaning

a. **Clean removed and attaching parts and surfaces** (para 1.47)**.**

9.77.5. Inspection

NOTE

Unless otherwise specified, the following inspection procedures apply to the controller chassis base, front and rear panels, channel and mounting brackets, and handle.

a. **Check for cracks.** None allowed.

b. **Check removed and attaching parts for damage** (para 9.61)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

d. **Check for elongated screw holes.** None allowed.

e. **Check for erosion of surface finish** (para 9.61)**.**

f. **Check for loose or damaged clinch nuts** (para 9.61)**.**

g. **Check for nicks, dents, scratches, and gouges** (para 9.61)**.**

h. **Check for loose, missing, or damaged hardware** (para 9.61)**.**

i. **Check for sharp bends, distortion, or deformation** (para 9.61)**.**

j. **Check threaded holes for crossed, stripped, or flattened threads.** None allowed.

k. **Check alinement pins for cracks, damaged threads, and distortion.** None allowed.

l. **Check alinement pins for corrosion, nicks, scratches, and gouges** (para 9.61)**.**

NOTE

The following inspection procedures apply to the controller harness.

m. **Check receptacles for cracks, bent or corroded pins, damaged threads, and loose or broken wire connections** (para 9.61)**.**

n. **Check wiring and wire bundles for missing or broken tie wraps, chafing, wear, cuts, and breaks** (para 9.61)**.**

o. **Check wiring and wire bundles for cracked, broken, or burned insulation** (para 9.61)**.**

p. **Check connector plates for cracks, elongated screw holes, distortion, or deformation** (para 9.61)**.**

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9.77. MULTICHANNEL DIMMING CONTROLLER CHASSIS DISASSEMBLY/ASSEMBLY (AVIM) – continued

9.77.6. Assembly

a. **Install brackets (48), left case ground harness (49), right case ground harness (50), and two brackets (51) on panel (2).** Torque screws (52) to **24 INCH-POUNDS**.

(1) Position brackets (48) and (51) on panel (2).

(2) Install four screws (52) through washers (56), brackets (48), panel (2), and brackets (51).

(3) Install right case ground harness (50) on screws (52).

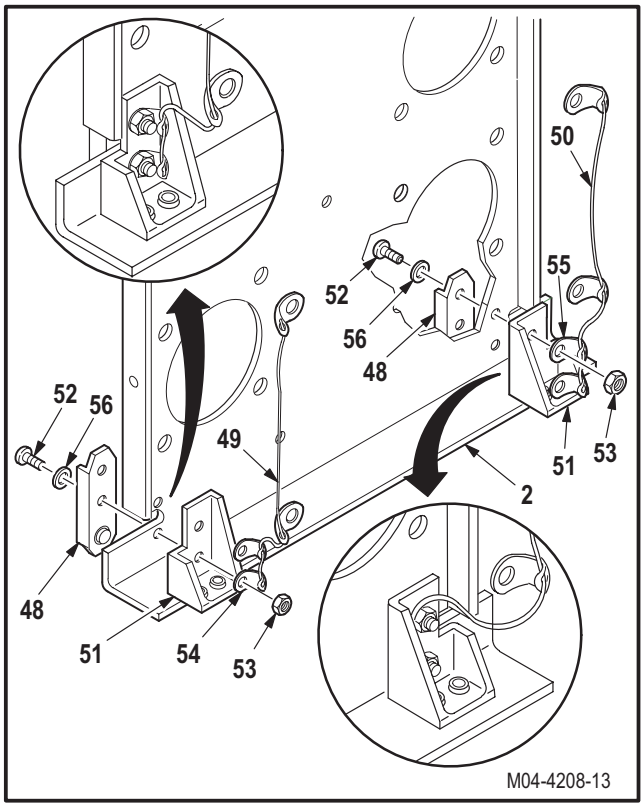
(a) Install two terminal lugs (55).

(4) Install left case ground harness (49) on screws (52).

(a) Install two terminal lugs (54).

(5) Install four nuts (53) on screws (52).

(6) Hold nuts (53). Torque four screws (52) to **24 INCH-POUNDS**. Use torque wrench, screwdriver bit holder, and screwdriver bit.

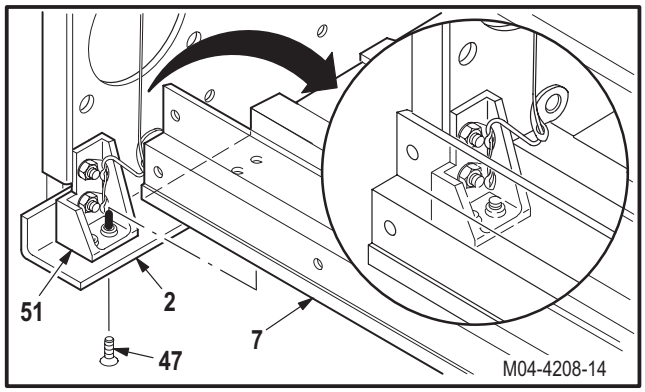


b. **Install front panel (2) on base (7).** Torque four screws (47) to **6.5 INCH-POUNDS**.

(1) Position panel (2) on base (7).

(2) Install four screws (47) through panel (2) and base (7) into brackets (51).

(3) Torque four screws (47) to **6.5 INCH-POUNDS**. Use torque wrench, screwdriver bit holder, and screwdriver bit.



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9.77. MULTICHANNEL DIMMING CONTROLLER CHASSIS DISASSEMBLY/ASSEMBLY (AVIM) – continued

c. **Install controller harness (15) on base (7) and panel (2).** Torque screws (41) to **11 INCH-POUNDS**. Torque screws (32) to **7 INCH-POUNDS**. Torque screws (27), (24), (19), and (17) to **6.5 INCH-POUNDS**.

(1) Position harness (15) on base (7) and panel (2).

(a) Position plate (23) on base (7).

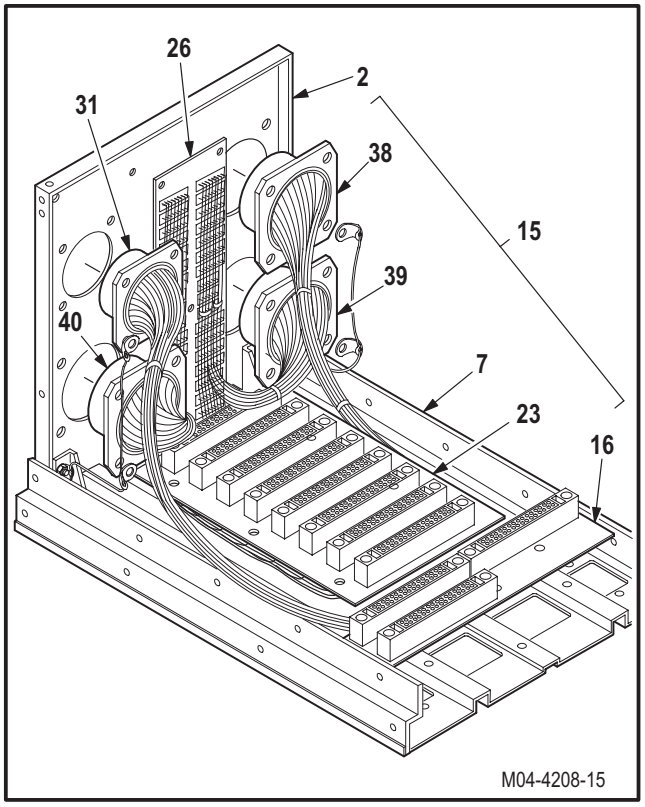
(b) Position plate (16) on base (7).

(c) Position board (26) on panel (2).

(d) Slide receptacles (A403)J1 (31), (A403)J2 (38), (A403)J3 (39), and (A403)J4 (40) in panel (2).

(2) Install receptacles (A403)J2 (38), (A403)J3 (39), and (A403)J4 (40) on panel (2).

(a) Install 12 screws (41) and washers (46) through panel (2) into receptacles (A403)J2 (38), (A403)J3 (39), and (A403)J4 (40).



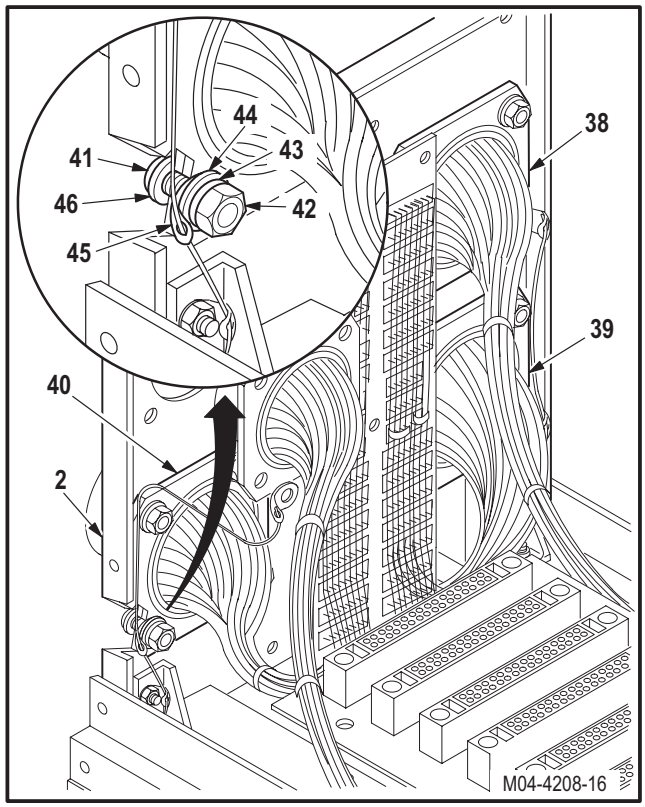
NOTE

- On receptacles (A403)J2 and (A403)J3, install grounding terminal lug on lower right-hand corner of receptacle flange.
- On receptacle (A403)J4, install grounding terminal lug on lower left–hand corner of receptacle flange.

(b) Install three terminal lugs (45) on screws (41).

(c) Install 12 nuts (41), lockwashers (43), and washers (44) on screws (41).

(d) Hold nuts (41). Torque 12 screws (41) to **11 INCH-POUNDS**. Use torque wrench, screwdriver bit holder, and screwdriver bit.



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9.77. MULTICHANNEL DIMMING CONTROLLER CHASSIS DISASSEMBLY/ASSEMBLY (AVIM) – continued

(3) Install receptacle (A403)J1 (31) on panel (2).

(a) Install four screws (32) through washers (38), panel (2), and receptacle (A403)J1 (31).

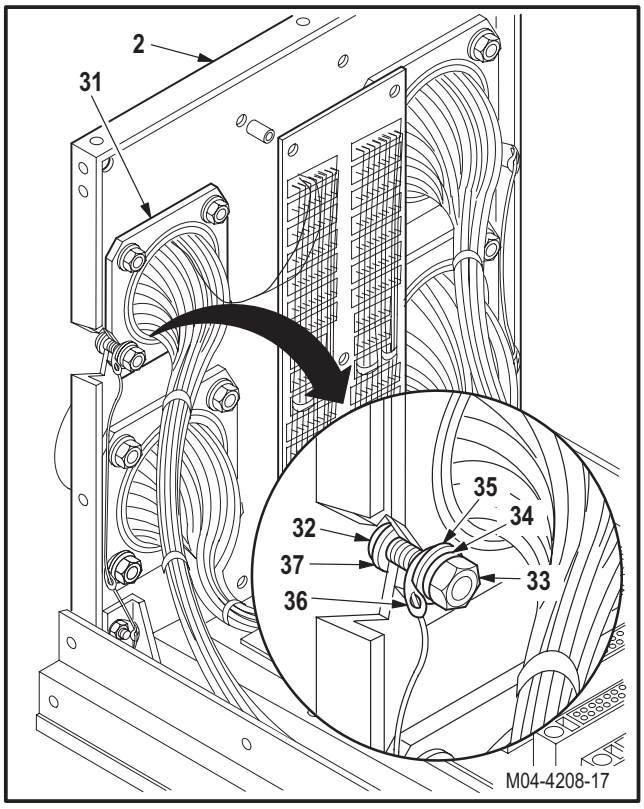
NOTE

On receptacle (A403)J1 install grounding terminal lug on lower left-hand corner of receptacle flange.

(b) Install terminal lug (36) on screw (32).

(c) Install four nuts (33), lockwashers (34), and washers (35) on screws (32).

(d) Hold nuts (33). Torque four screws (32) to **7 INCH-POUNDS**. Use torque wrench, screwdriver bit holder, and screwdriver bit.



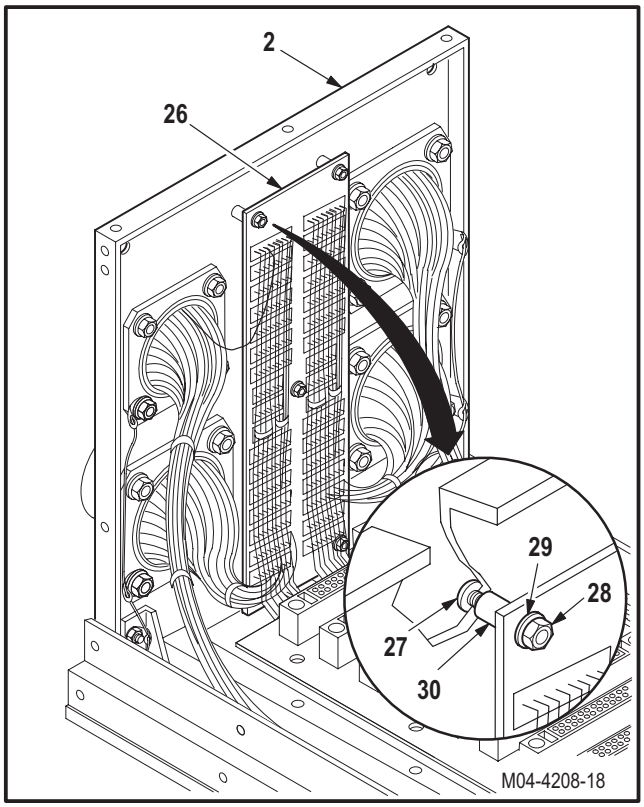
(4) Install board (26) on panel (2).

(a) Install five screws (27) through front of panel (2).

(b) Install board (26), with spacers (30) attached, on five screws (27).

(c) Install five nuts (28) and washers (29) on screws (27).

(d) Torque five screws (27) to **6.5 INCH-POUNDS**. Use torque wrench, screwdriver bit holder, and screwdriver bit.



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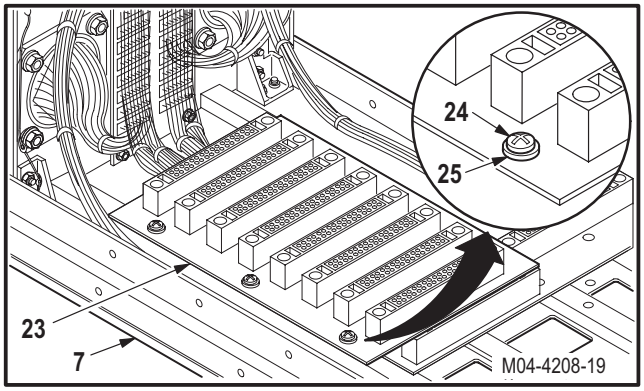
9.77. MULTICHANNEL DIMMING CONTROLLER CHASSIS DISASSEMBLY/ASSEMBLY (AVIM) – continued

(5) Install plate (23) on base (7).

(a) Install six screws (24) through washers (25) and plate (23) into base (7).

(b) Torque six screws (24) to **6.5 INCH-POUNDS**. Use torque wrench, screwdriver bit holder, and screwdriver bit.



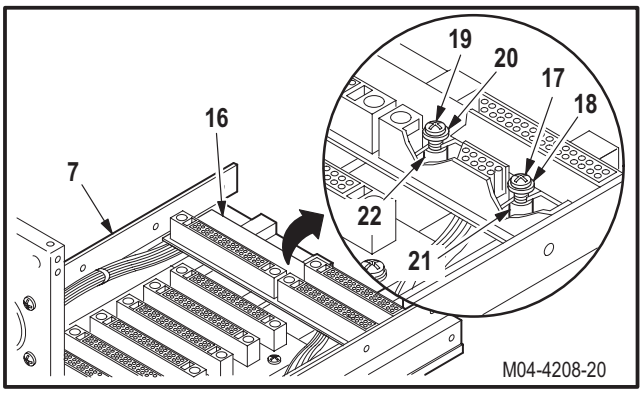
(6) Install plate (16) on base (7).

(a) Position plate (16) with spacers (21) and (22) attached, on base (7).

(b) Install screw (19) and washer (20) through plate (16) and spacer (22) into base (7).

(c) Install two screws (17) through washers (18), plate (16), and spacers (21) into base (7).

(d) Torque two screws (17) and screw (19) to **6.5 INCH-POUNDS**. Use torque wrench, screwdriver bit holder, and screwdriver bit.



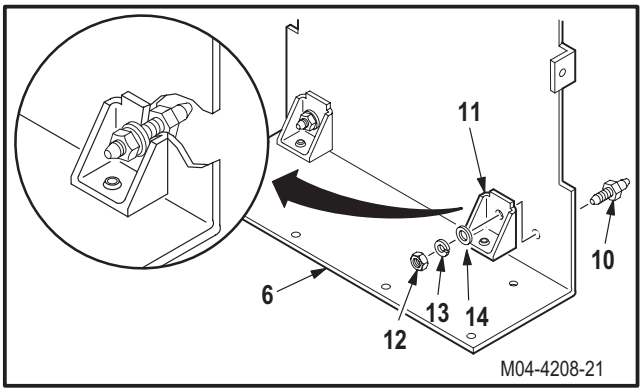
d. **Install alinement pins (10) and brackets (11) on panel (6).**

(1) Install two alinement pins (10) in panel (6).

(2) Install two brackets (11) on alinement pins (10).

(3) Install two nuts (12), lockwashers (13), and washers (14) on alinement pins (10).

(4) Torque two nuts (12) to **24 INCH-POUNDS**. Use torque wrench.



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9.77. MULTICHANNEL DIMMING CONTROLLER CHASSIS DISASSEMBLY/ASSEMBLY (AVIM) – continued

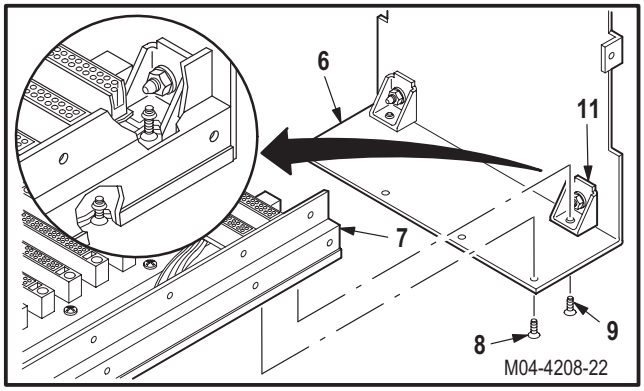
e. **Install panel (6) on base (7).**

(1) Position panel (6) on base (7).

(2) Install two screws (9) through panel (6) and and base (7) into brackets (11).

(3) Install four screws (8) through panel (6) into base (7).

(4) Torque four screws (8) and two screws (9) to **6.5 INCH-POUNDS**. Use torque wrench, screwdriver bit holder, and screwdriver bit.

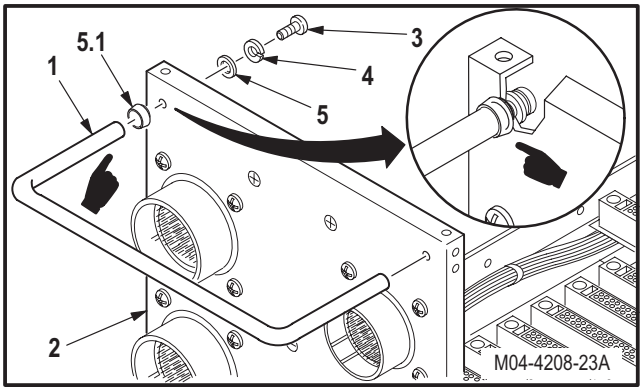


f. **Install handle (1) on panel (2).**

(1) Position handle (1) and ferrules (5.1) on panel (2).

(2) Install two screws (3) through lockwashers (4), washers (5), panel (2) and ferrules (5.1) into handle (1).

(3) Torque two screws (3) to **24 INCH-POUNDS**. Use torque wrench, screwdriver bit holder, and screwdriver bit.



g. **Inspect (QA).**

h. **Install multichannel dimming controller modules 1,1A; 2,2A; 3,3A; 4,4A and controller advisory module** (para 9.75)**.**

END OF TASK

9.78. PILOT OR CPG UTILITY LIGHT AND MOUNTING BASE REMOVAL/INSTALLATION

9.78.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.78.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

9.78.3. Removal

NOTE

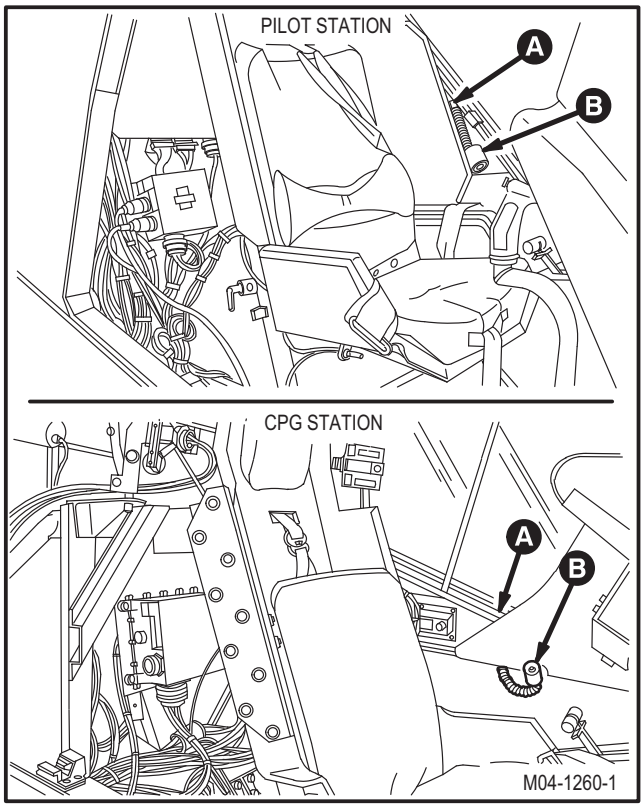
This task is typical for pilot and CPG lights.

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot center circuit breaker panel, open LT UTIL SEC circuit breaker.**

c. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**

d. **On CPG circuit breaker panel No. 1, open EMERG BATT UTIL SEC LT circuit breaker.**



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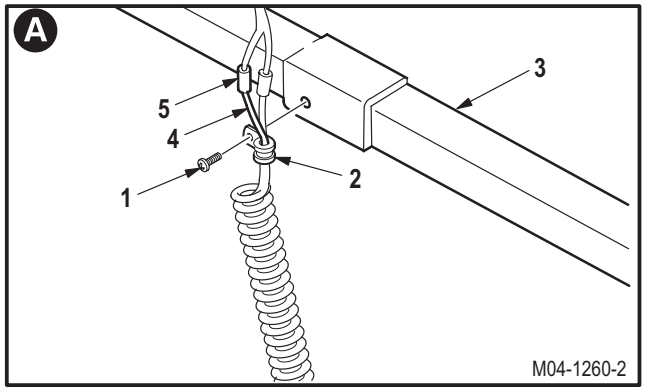
9.78. PILOT OR CPG UTILITY LIGHT AND MOUNTING BASE REMOVAL/INSTALLATION – continued

e. **Remove screw (1) from clamp (2) and airframe (3).**

f. **Identify and depin wires (4) from splices (5)** (TM 55-1500-323-24)**.**



g. **Remove utility light (6) from mounting base (7).**

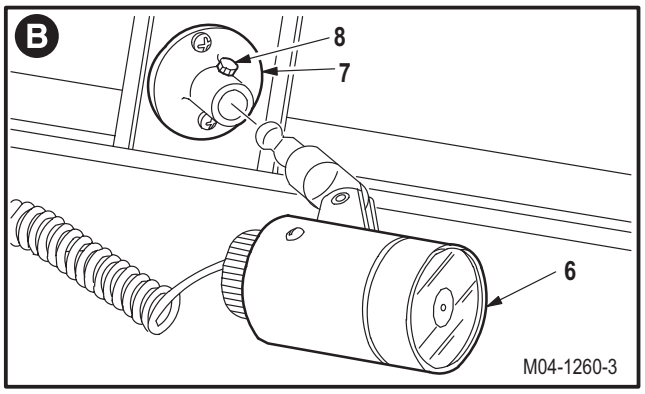
(1) Loosen thumbscrew (8).

(2) Remove utility light (6).

h. **Remove base (7) from airframe (9).**

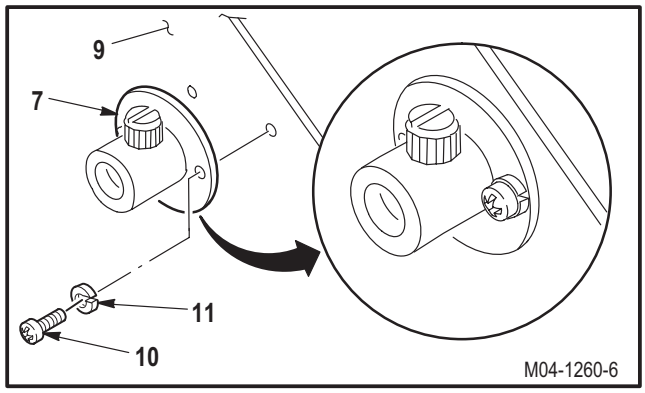
(1) Remove two screws (10) and washers (11) from airframe (9).

(2) Remove base (7).



9.78.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**



9.78.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.61)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.61)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.78.6. Installation

a. **Install base (7) on airframe (9).**

(1) Position base (7) on airframe (9).

(2) Install two screws (10) and washers (11).

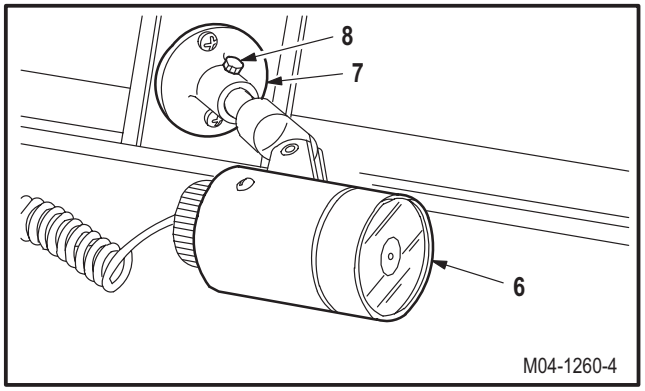
GO TO NEXT PAGE

9.78. PILOT OR CPG UTILITY LIGHT AND MOUNTING BASE REMOVAL/INSTALLATION – continued

b. **Install utility light (6) in base (7).**

(1) Insert utility light (6) into base (7).

(2) Tighten thumbscrew (8).

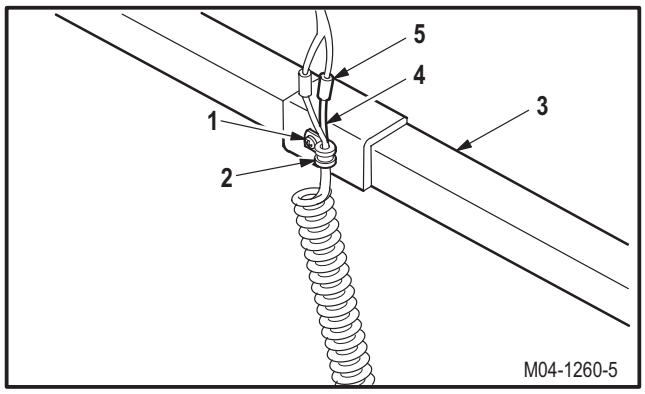


c. **Pin identified wires (4) in splices (5)** (TM 55-1500-323-24)**.**

d. **Install screw (1) through clamp (2) into airframe (3).**

e. **Inspect (QA).**

f. **Perform pilot or CPG utility and secondary lights maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

9.79. PILOT OR CPG INSTRUMENT GLARESHIELD LIGHT REMOVAL/INSTALLATION

9.79.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.79.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Multimeter (item 215, App H)

References:

TM 1-1520-238-T
TM 55-1500-323-24

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
9.80	Lamp removed

NOTE

This task is typical for all instrument glareshield lights.

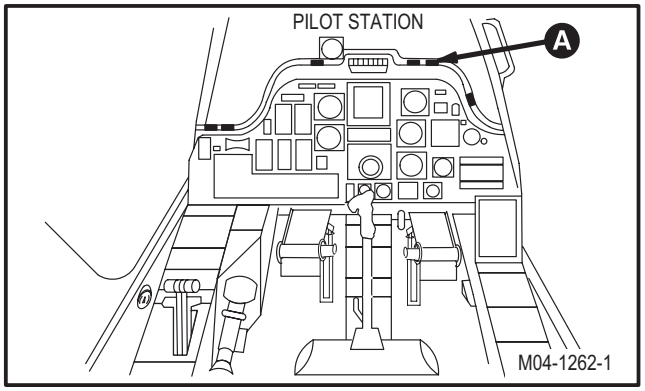
9.79.3. Removal

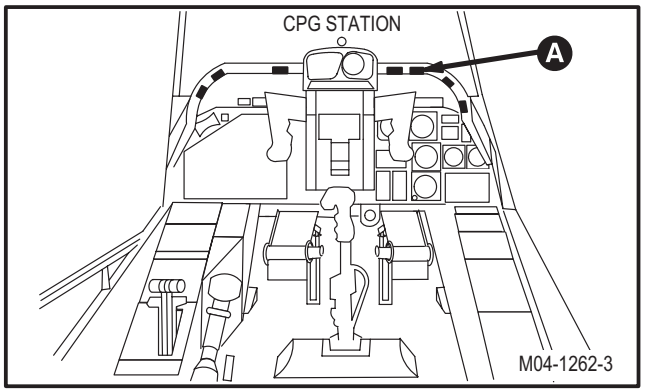
a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot center circuit breaker panel, open LT UTIL SEC circuit breaker.**

c. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**

d. **On CPG circuit breaker panel No. 1, open EMERG BATT UTIL SEC LT circuit breaker.**





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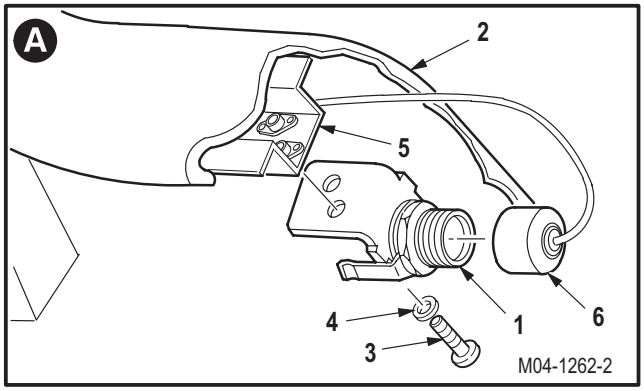
9.79. PILOT OR CPG INSTRUMENT GLARESHIELD LIGHT REMOVAL/INSTALLATION – continued

e. **Remove light (1) from glareshield (2).**

(1) Remove two screws (3) and washers (4) from bracket (5).

(2) Remove end cap (6) from light (1).

(3) Remove light (1).



9.79.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.79.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.61)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.61)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

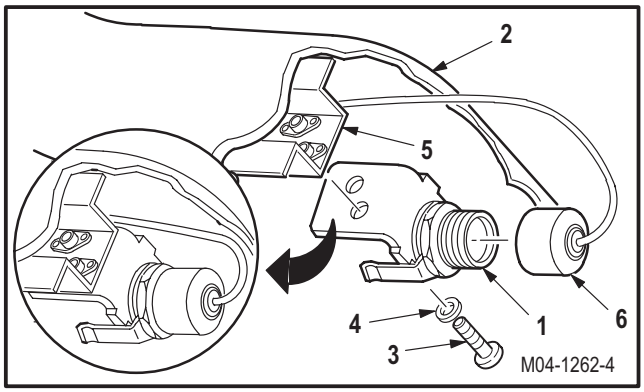
9.79.6. Installation

a. **Install light (1) on glareshield (2).**

(1) Install end cap (6) on light (1).

(2) Position light (1) on glareshield bracket (5).

(3) Install two screws (3) through washers (4) and light (1) into glareshield bracket (5).



b. **Perform electrical bond check** (TM 55-1500-323-24)**.**

(1) Bond shall be **1.0 OHM** or less. Use multimeter.

c. **Inspect (QA).**

d. **Perform pilot or CPG utility and secondary lights maintenance operational check** (TM 1-1520-238-T)**.**

END OF TASK

9.80. PILOT OR CPG INSTRUMENT GLARESHIELD LAMP REPLACEMENT

9.80.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.80.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

References:

TM 1-1520-238-T

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

NOTE

This task is typical for all lamps in the pilot and CPG glareshield lights.

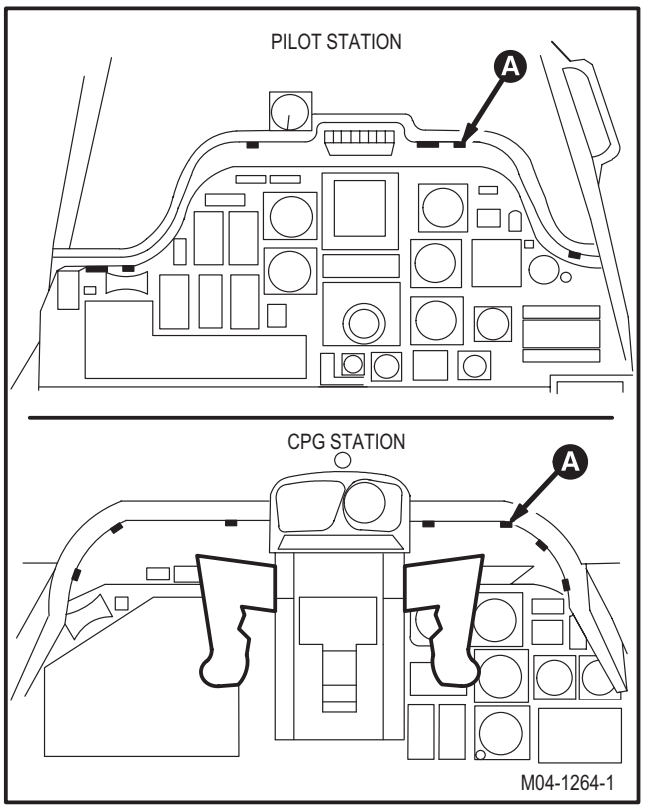
9.80.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot center circuit breaker panel, open LT UTIL SEC circuit breaker.**

c. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**

d. **On CPG circuit breaker panel No. 1, open EMERG BATT UTIL SEC LT circuit breaker.**



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9.80. PILOT OR CPG INSTRUMENT GLARESHIELD LAMP REPLACEMENT – continued

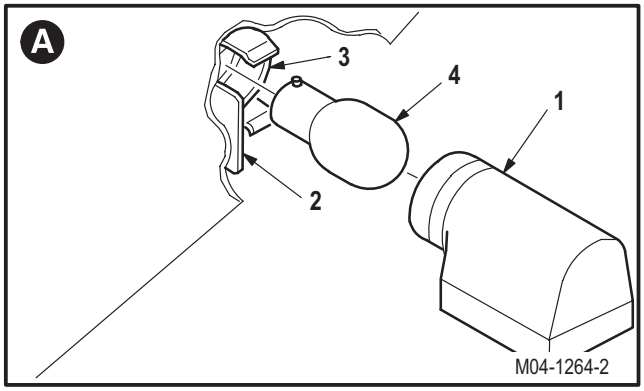
e. **Remove lens cap housing (1) from lamp base (2).**

(1) Slide housing (1) away from socket (3).

f. **Remove lamp (4) from socket (3).**

(1) Push lamp (4) and turn one-quarter turn counterclockwise to unlock.

(2) Remove and discard lamp (4).



9.80.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

9.80.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.61)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.61)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.80.6. Installation

a. **Install new lamp (4) in socket (3).**

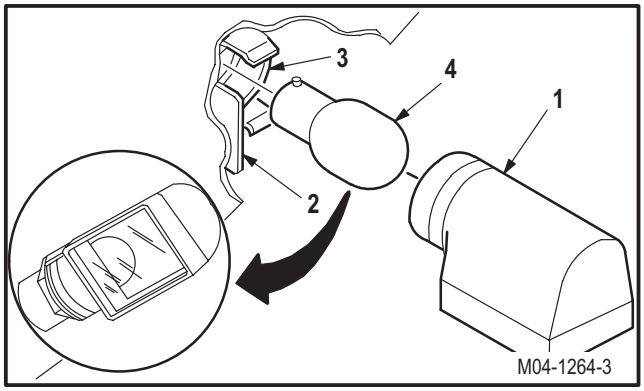
(1) Push lamp (4) and turn one-quarter turn clockwise to lock.

b. **Install lens cap housing (1) on base (2).**

(1) Slide housing (1) toward base (2).

c. **Inspect (QA).**

d. **Perform pilot or CPG utility and secondary lights maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

9.81. CPG INTR LT PANEL REMOVAL/INSTALLATION

9.81.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.81.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
L-style socket head key set (item 187, App H)

References:

TM 1-1520-238-T

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

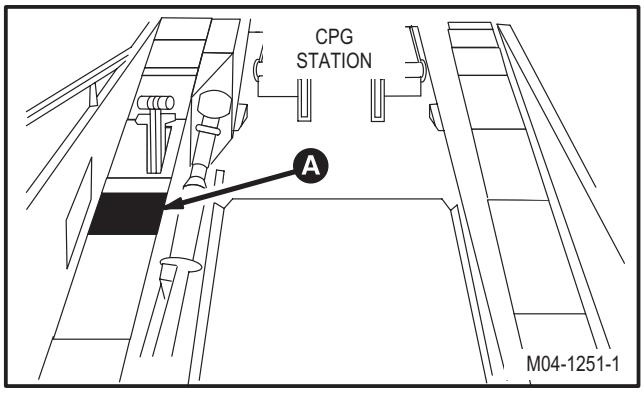
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

9.81.3. Removal

a. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**

b. **On CPG circuit breaker panel No. 1, open PRI LT circuit breaker.**

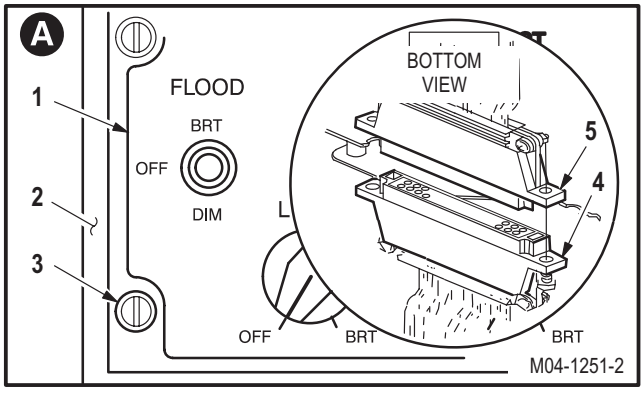


c. **Remove CPG INTR LT panel (1) from CPG left console (2).**

(1) Unlock four turnlock fasteners (3).

(2) Remove panel (1).

d. **Detach connector P101 (4) from receptacle (A181)J1 (5).** Use socket head key set.



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9.81. CPG INTR LT PANEL REMOVAL/INSTALLATION – continued

9.81.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47).

9.81.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.61).

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.61).

c. **Check removed and attaching parts for corrosion** (para 1.49).

9.81.6. Installation

a. **Attach connector P101 (4) to receptacle (A181)J1 (5).** Use socket head key set.

b. **Inspect (QA).**

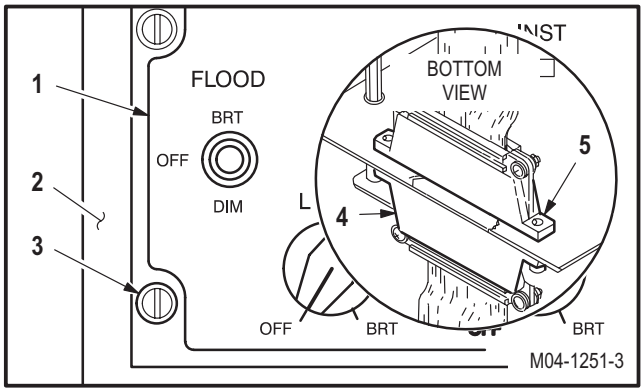
c. **Install panel (1) on console (2).**

(1) Position panel (1) on console (2).

(2) Lock four turnlock fasteners (3).

d. **Inspect (QA).**

e. **Perform CPG edge-lights maintenance operational check** (TM 1-1520-238-T).



END OF TASK

9.82. CPG INTR LT PANEL CONTROL KNOB REMOVAL/INSTALLATION

9.82.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.82.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
L-style socket head key set (item 187, App H)

References:

TM 1-1520-238-T

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

NOTE

This task is typical for CPG **INTR LT** panel control knobs.

9.82.3. Removal

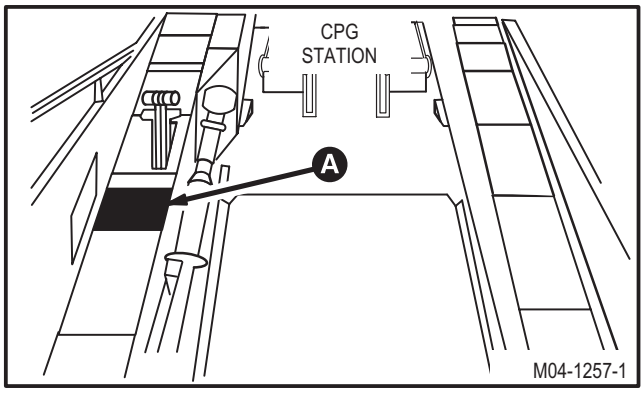
a. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**

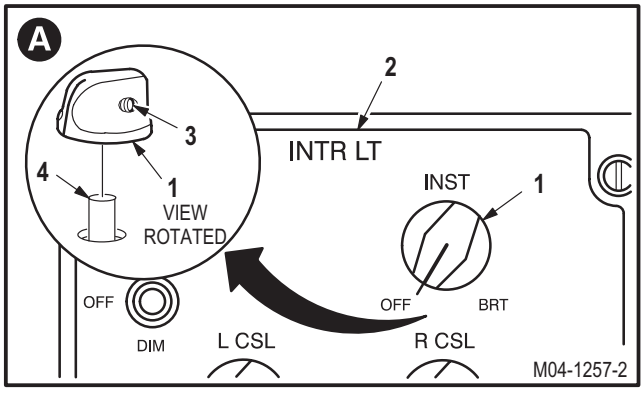
b. **On CPG INTR LT panel, set all switches and controls to OFF.**

c. **Remove control knob (1) from INTR LT panel (2).**

(1) Loosen two setscrews (3). Use socket head key set.

(2) Remove knob from shaft (4).





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9.82. CPG INTR LT PANEL CONTROL KNOB REMOVAL/INSTALLATION – continued

9.82.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47).

9.82.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.61).

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.61).

c. **Check removed and attaching parts for corrosion** (para 1.49).

d. **Check knobs for damaged threads, cracks, or wear** (para 9.61).

9.82.6. Installation

a. **Install knob (1) on panel (2).**

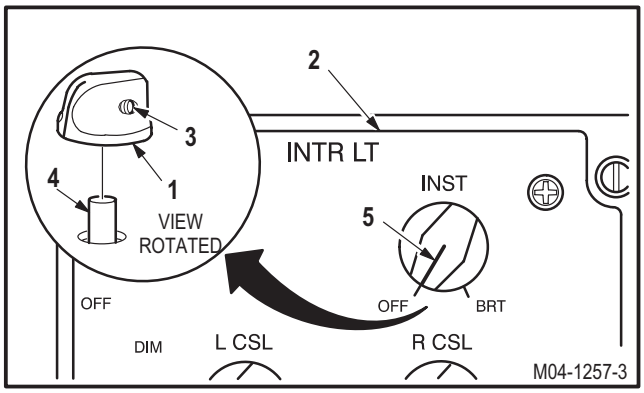
(1) Position knob (1) on shaft (4).

(2) Set knob pointer (5) to **OFF**.

(3) Tighten two setscrews (3). Use socket head key set.

b. **Inspect (QA).**

c. **Perform CPG edge-lights maintenance operational check** (TM 1-1520-238-T).



END OF TASK

9.83. CPG INTR LT PANEL LIGHT INDICATING PANEL REMOVAL/INSTALLATION

9.83.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.83.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T

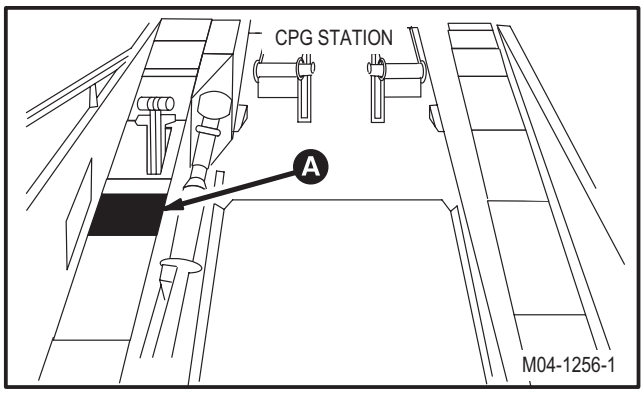
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
9.82	CPG INTR LT panel control knobs removed

9.83.3. Removal

a. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**

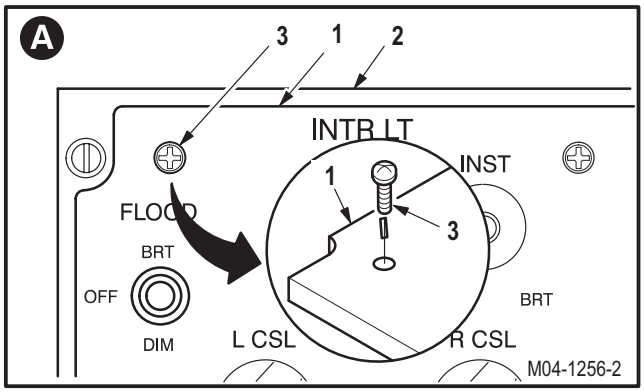
b. **On CPG circuit breaker panel No. 1, open PRI LT circuit breaker.**



c. **Remove light indicating panel (1) from CPG INTR LT panel (2).**

(1) Remove four screws (3).

(2) Remove panel (2).



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9.83. CPG INTR LT PANEL LIGHT INDICATING PANEL REMOVAL/INSTALLATION – continued

9.83.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47).

9.83.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.61).

b. **Check removed and attaching parts for corrosion** (para 1.49).

9.83.6. Installation

a. **Install panel (1) on panel (2).**

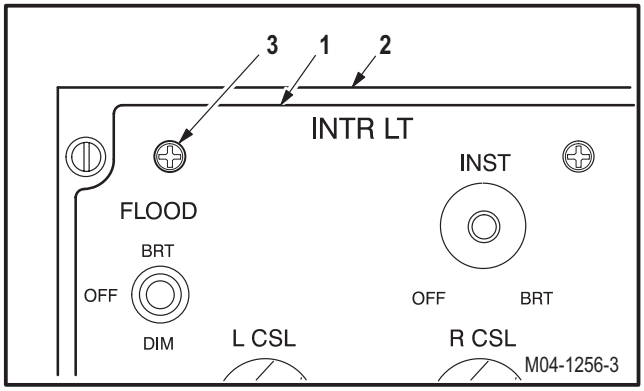
(1) Position panel (1) on panel (2).

(2) Install four screws (3).

b. **Inspect (QA).**

c. **Install CPG INTR LT panel control knobs** (para 9.82).

d. **Perform CPG edge-lights maintenance operational check** (TM 1-1520-238-T).



END OF TASK

9.84. CPG INTR LT PANEL SEMICONDUCTOR DEVICE CR1 OR CR2 REPLACEMENT (AVIM)

9.84.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.84.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
25-watt electric soldering iron (item 332, App H)

References:

TM 55-1500-323-24

Materials/Parts:

Solder (item 189, App F)

Personnel Required:

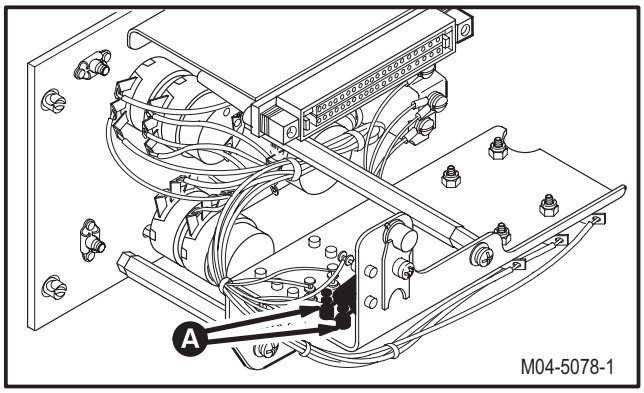
68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
9.89	CPG INTR LT panel relay R1 and socket XK1 removed

NOTE

This task is typical for semiconductor device CR1 or CR2.



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9.84. CPG INTR LT PANEL SEMICONDUCTOR DEVICE CR1 OR CR2 REPLACEMENT (AVIM) – continued

9.84.3. Removal

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

CAUTION

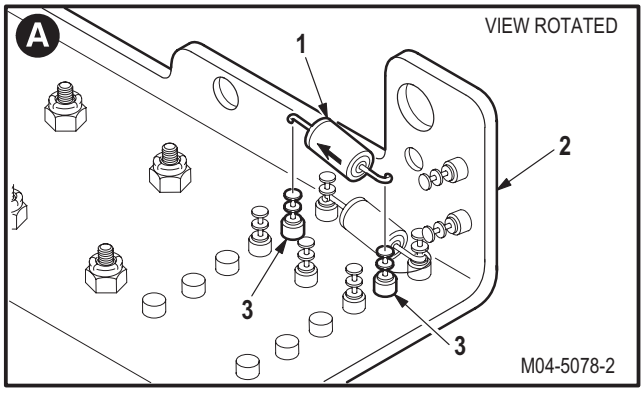
Identify semiconductor device direction during removal for proper polarity during installation. Accidental polarity reversal will damage semiconductor device and/or other components.

a. **Remove semiconductor device (1) from circuit card assembly A1 (2).**

(1) Identify direction of semiconductor (1).

(2) Desolder semiconductor (1) from two terminals (3). Use soldering iron (TM 55-1500-323-24).

(3) Remove and discard semiconductor (1).



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9.84. CPG INTR LT PANEL SEMICONDUCTOR DEVICE CR1 OR CR2 REPLACEMENT (AVIM) – continued

9.84.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47).

9.84.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.61).

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.61).

c. **Check removed and attaching parts for corrosion** (para 1.49).

9.84.6. Installation

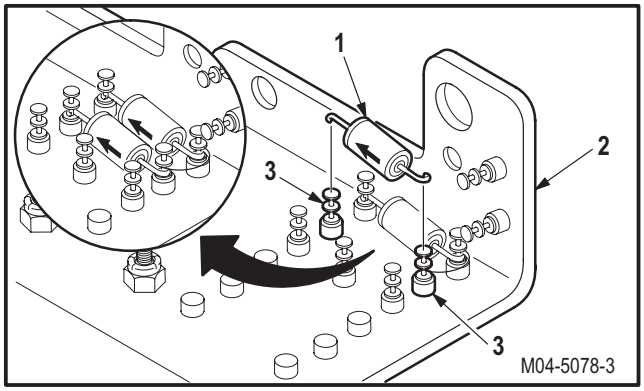
WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

a. **Install new semiconductor (1) on circuit card assembly A1 (2).**

(1) Install semiconductor (1) in direction previously identified.

(2) Solder semiconductor (1) to two terminals (3). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).



b. **Inspect (QA).**

c. **Install CPG INTR LT panel relay R1 and socket XK1 removed** (para 9.89).

END OF TASK

9.85. CPG INTR LT PANEL SEMICONDUCTOR DEVICE CR3, CR4, OR CR5 REPLACEMENT (AVIM)

9.85.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.85.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
25-watt electric soldering iron (item 332, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Materials/Parts:

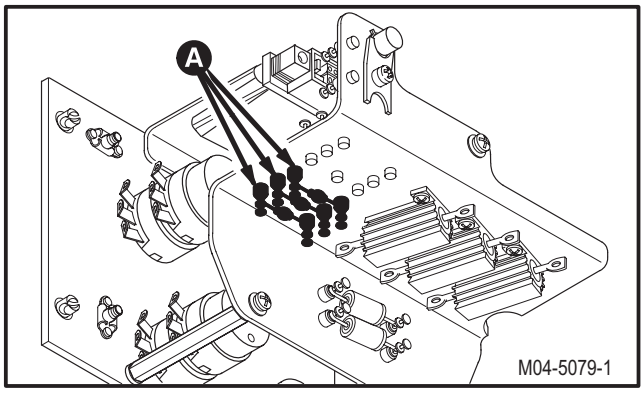
Solder (item 189, App F)

References:

TM 55-1500-323-24

NOTE

This task is typical for semiconductor device CR3, CR4, or CR5.



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9.85. CPG INTR LT PANEL SEMICONDUCTOR DEVICE CR3, CR4, OR CR5 REPLACEMENT (AVIM) – continued

9.85.3. Removal

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

CAUTION

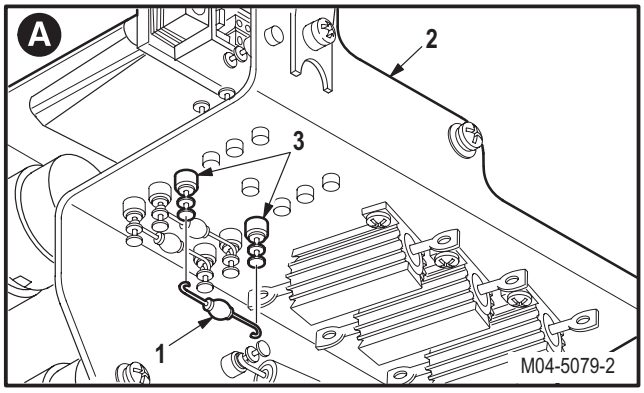
Identify semiconductor device direction during removal for proper polarity during installation. Accidental polarity reversal will damage semiconductor device and/or other components.

a. **Remove semiconductor device (1) from circuit card assembly A1 (2).**

(1) Identify direction of semiconductor (1).

(2) Desolder semiconductor (1) from two terminals (3). Use soldering iron (TM 55-1500-323-24).

(3) Remove and discard semiconductor (1).



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9.85. CPG INTR LT PANEL SEMICONDUCTOR DEVICE CR3, CR4, OR CR5 REPLACEMENT (AVIM) – continued

9.85.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.85.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.61)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.61)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.85.6. Installation

WARNING

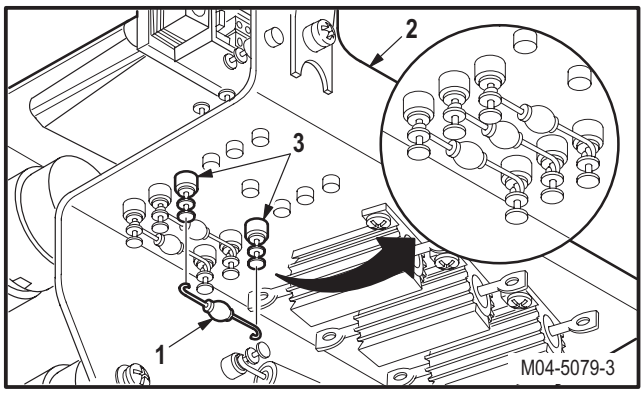
Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

a. **Install new semiconductor (1) on circuit card assembly A1 (2).**

(1) Install semiconductor (1) in direction previously identified.

(2) Solder semiconductor (1) to two terminals (3). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).

b. **Inspect (QA).**



END OF TASK

9.86. CPG INTR LT PANEL RESISTOR R1 OR R2 REPLACEMENT (AVIM)

9.86.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.86.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
25-watt electric soldering iron (item 332, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Materials/Parts:

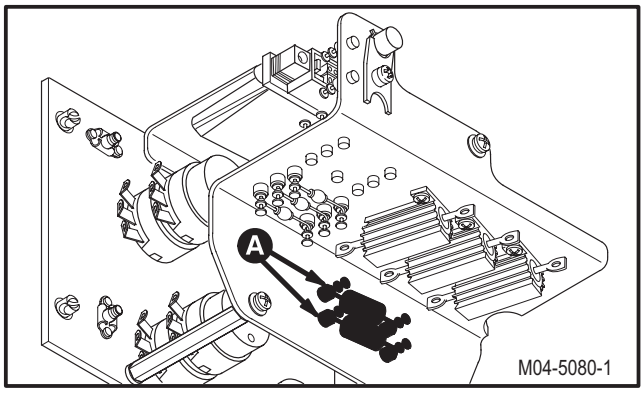
Solder (item 189, App F)

References:

TM 55-1500-323-24

NOTE

This task is typical for resistor R1 or R2.



9.86.3. Removal

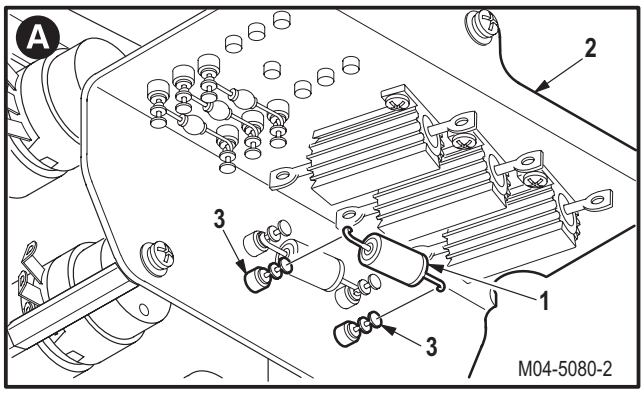
WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

a. **Remove resistor (1) from circuit card assembly A1 (2).**

(1) Desolder resistor (1) from two terminals (3). Use soldering iron (TM 55-1500-323-24).

(2) Remove and discard resistor (1).



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9.86. CPG INTR LT PANEL RESISTOR R1 OR R2 REPLACEMENT (AVIM) – continued

9.86.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.86.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.61)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.61)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.86.6. Installation

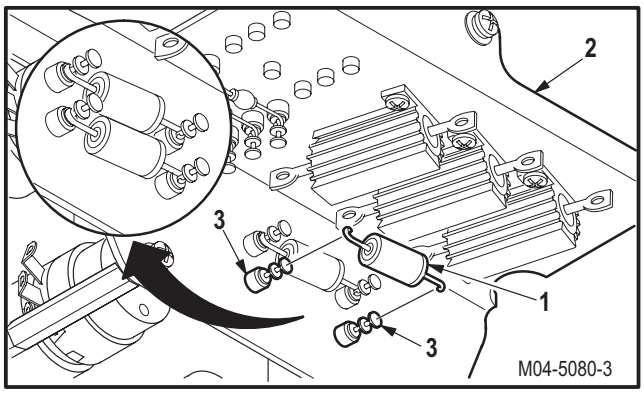
WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

a. **Install new resistor (1) on circuit card assembly A1 (2).**

(1) Solder resistor (1) to two terminals (3). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).

b. **Inspect (QA).**



END OF TASK

9.87. CPG INTR LT PANEL RESISTOR R3, R4, OR R5 REPLACEMENT (AVIM)

9.87.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.87.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
5-watt electric soldering iron (item 333, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Materials/Parts:

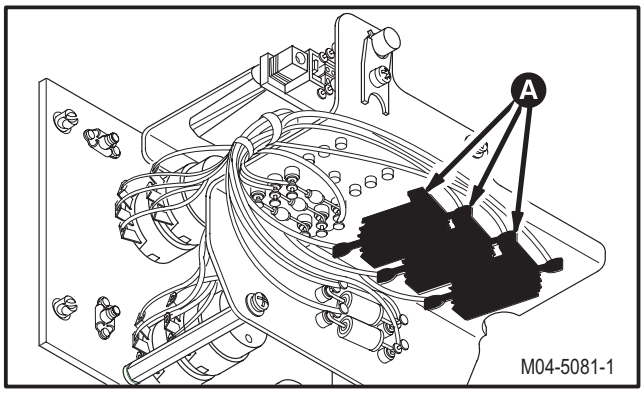
Solder (item 189, App F)

References:

TM 55-1500-323-24

NOTE

This task is typical for resistors R3, R4, or R5.



GO TO NEXT PAGE

9.87. CPG INTR LT PANEL RESISTOR R3, R4, OR R5 REPLACEMENT (AVIM) – continued

9.87.3. Removal

WARNING

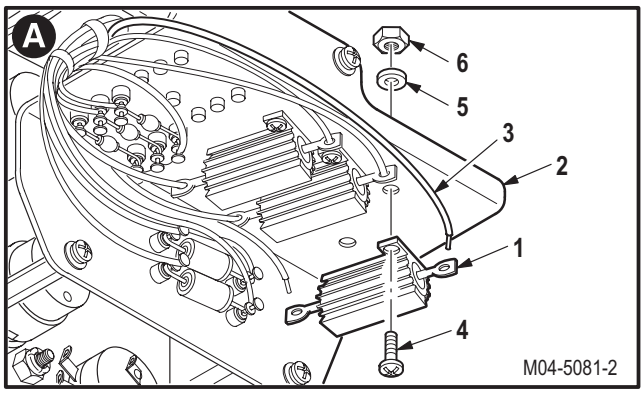
Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

a. **Remove resistor (1) from circuit card assembly A1 (2).**

(1) Identify and desolder wires (3) from resistor (1). Use soldering iron (TM 55-1500-323-24).

(2) Remove two screws (4), washers (5), and nuts (6).

(3) Remove and discard resistor (1).



9.87.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.87.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.61)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.61)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

GO TO NEXT PAGE

9.87. CPG INTR LT PANEL RESISTOR R3, R4, OR R5 REPLACEMENT (AVIM) – continued

9.87.6. Installation

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

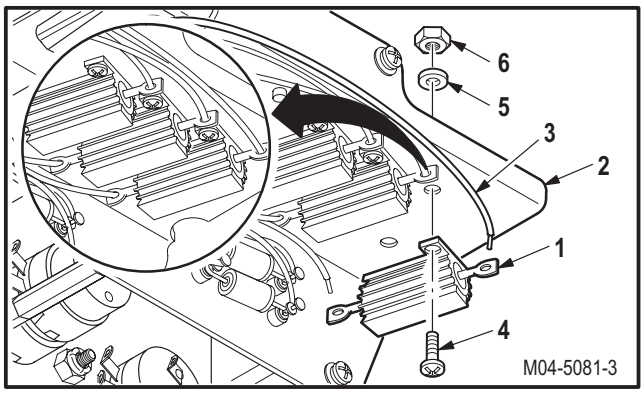
a. **Install new resistor (1) on circuit card assembly A1 (2).**

(1) Position resistor (1) on card (2).

(2) Install two screws (4) through resistor (1), board (2), washers (5), and nuts (6).

(3) Solder identified wires (3) on resistor (1). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).

b. **Inspect (QA).**



END OF TASK

9.88. CPG INTR LT PANEL FLOOD SWITCH REPLACEMENT (AVIM)

9.88.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.88.2. Initial Setup

Tools:

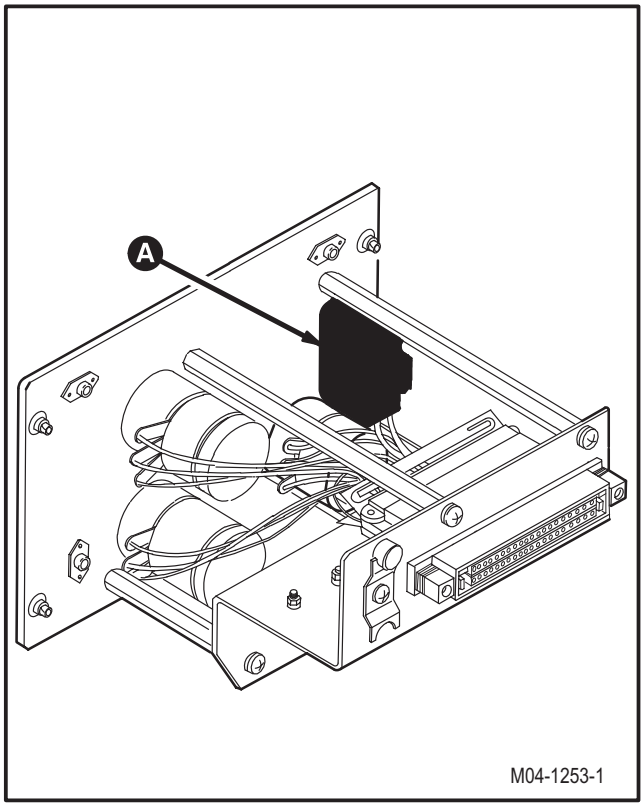
Electrical tool kit (item 378, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
9.83	CPG INTR LT panel light indicating panel removed



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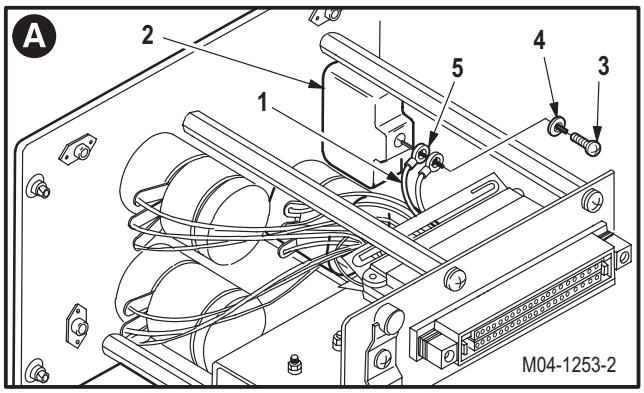
9.88. CPG INTR LT PANEL FLOOD SWITCH REPLACEMENT (AVIM) – continued

9.88.3. Removal

a. **Detach wires (1) from switch S1 (2).**

(1) Identify wires (1).

(2) Removal three screws (3), lockwashers (4), and terminal lugs (5).

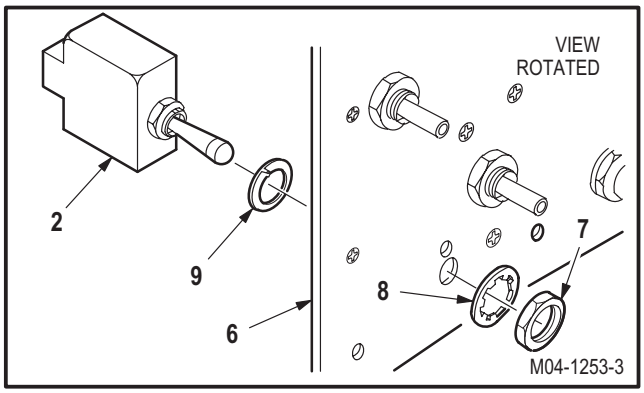


b. **Remove switch (2) from CPG INTR LT panel (6).**

(1) Remove nut (7) and lockwasher (8).

(2) Remove switch (2) and lockring (9) from panel (6).

(3) Discard switch (2).



9.88.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.88.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.61)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.61)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

GO TO NEXT PAGE

9.88. CPG INTR LT PANEL FLOOD SWITCH REPLACEMENT (AVIM) – continued

9.88.6. Installation

a. **Install switch (2) on panel (6).**

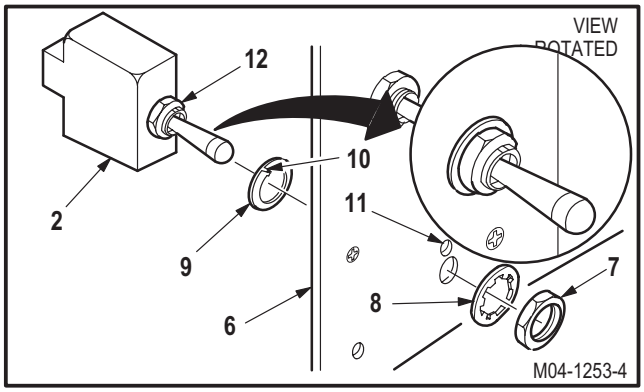
(1) Install lockring (9) on switch (2).

(2) Install switch (2) in panel (6) so that tab (10) seats in locator hole (11).

(3) Loosely install lockwasher (8) and nut (7).

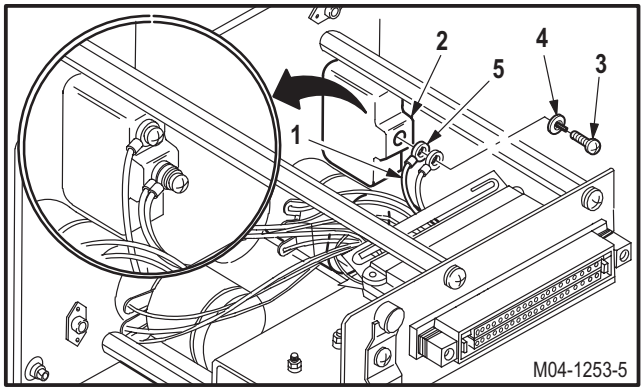
(4) Adjust jamnut (12) until 1.5 to 2.0 threads are exposed through nut (7).

(5) Tighten nut (7).



b. **Attach identified wires (1) to switch (2).**

(1) Install three screws (3) through lockwashers (4), and terminal lugs (5) into switch (2).



c. **Inspect (QA).**

d. **Install CPG INTR LT panel light indicating panel** (para 9.83)**.**

END OF TASK

9.89. CPG INTR LT PANEL RELAY K1 AND SOCKET XK1 REPLACEMENT (AVIM)

9.89.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.89.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
5-watt electric soldering iron (item 333, App H)

Personnel Required:

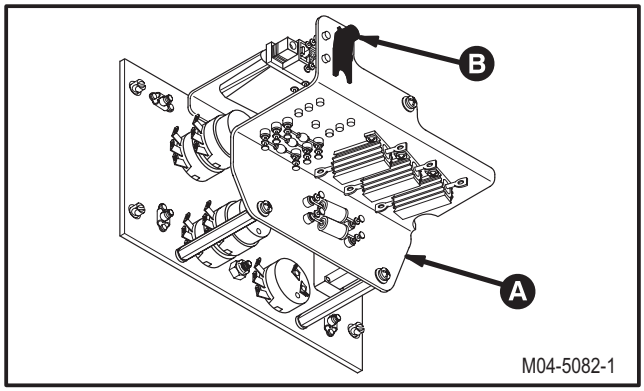
68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Materials/Parts:

Solder (item 189, App F)

References:

TM 55-1500-323-24

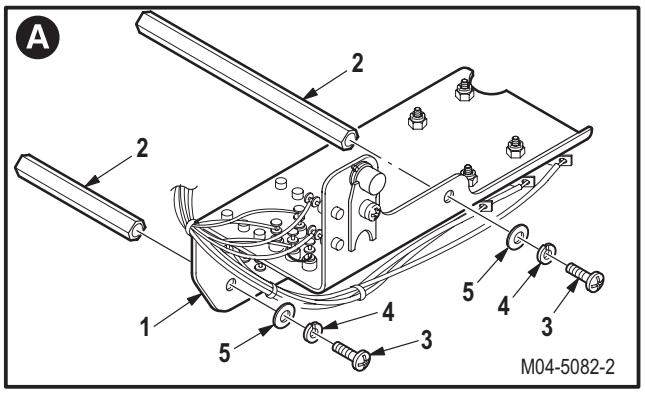


9.89.3. Removal

a. **Remove circuit card assembly A1 (1) from three tube assemblies (2).**

(1) Remove three screws (3), lockwashers (4), and washers (5).

(2) Remove card (1).



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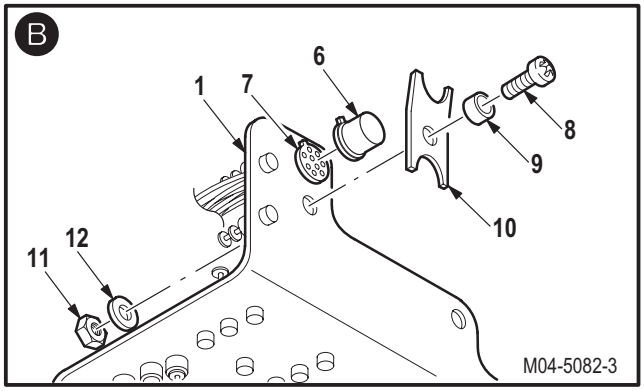
9.89. CPG INTR LT PANEL RELAY K1 AND SOCKET XK1 REPLACEMENT (AVIM) – continued

b. **Remove relay K1 (6) from socket XK1 (7).**

(1) Remove screw (8), spacer (9), grounding strap (10), nut (11), and washer (12).

(2) Remove and discard relay (6).



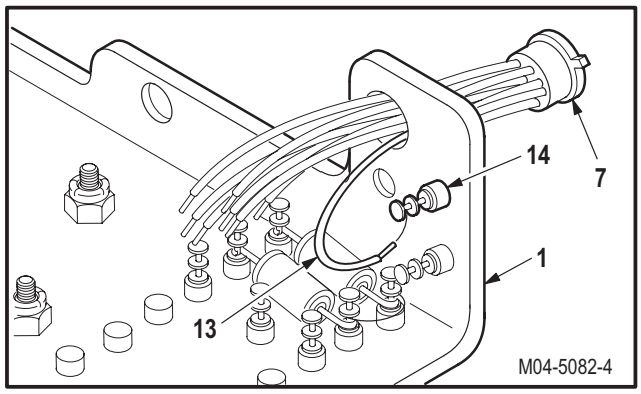
WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

c. **Remove socket (7) from card A1 (1), if necessary.**

(1) Identify and desolder wires (13) from terminals (14). Use soldering iron (TM 55-1500-323-24).

(2) Remove and discard socket (7).



9.89.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.89.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.61)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.61)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

GO TO NEXT PAGE

9.89. CPG INTR LT PANEL RELAY K1 AND SOCKET XK1 REPLACEMENT (AVIM) – continued

9.89.6. Installation

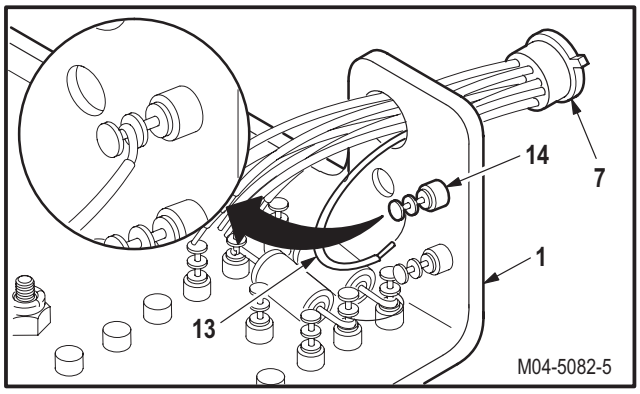
WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

a. **Install new socket (7) on card A1 (1), if removed.**

(1) Install socket (7) on card (1).

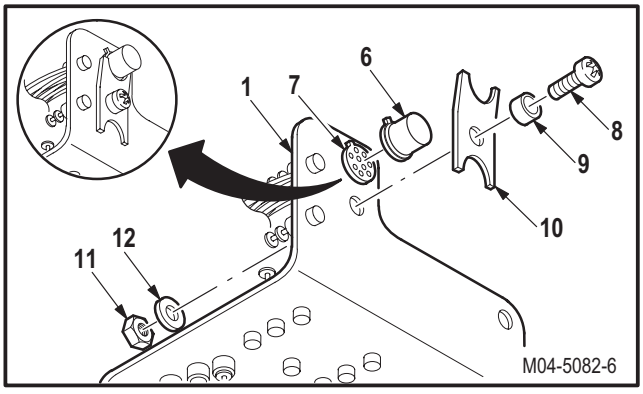
(2) Solder identified wires (13) on terminals (14). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).



b. **Install new relay (6) on socket (7).**

(1) Install relay (6) on socket (7) so that tab on relay alines with tab on socket.

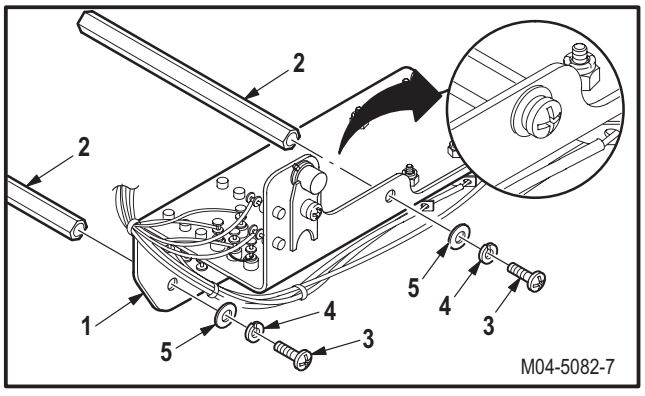
(2) Install screw (8) through spacer (9), grounding strap (10), card (1), washer (12), and nut (11).



c. **Install card (1) on three tube assemblies (2).**

(1) Position card (1) on tube assemblies (2).

(2) Install three screws (3) through lockwashers (4), washers (5), card (1), and into tube assemblies (2).



d. **Inspect (QA).**

END OF TASK

9.90. CPG INTR LT PANEL INST, R CSL, OR L CSL ATTENUATOR REPLACEMENT (AVIM)

9.90.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.90.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
25-watt electric soldering iron (item 332, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 55-1500-323-24

Equipment Conditions:

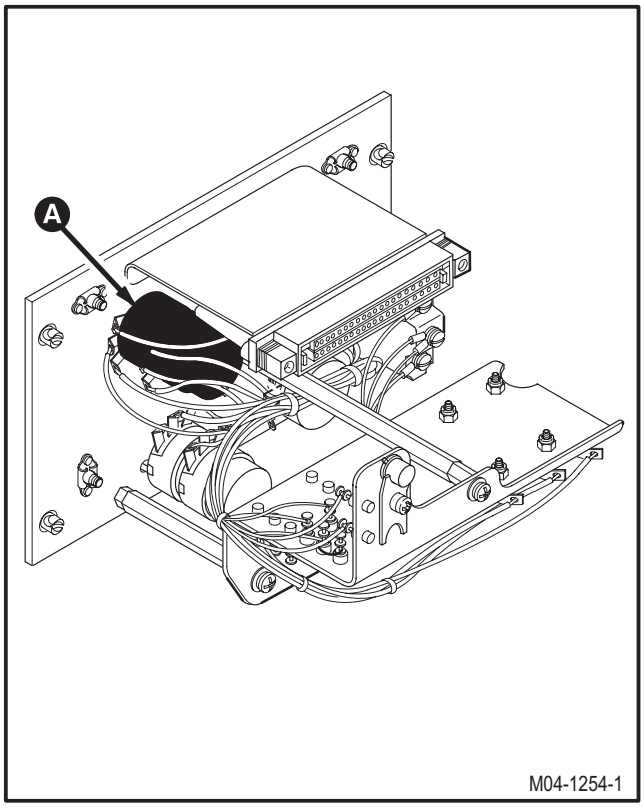
Ref	Condition
9.83	CPG INTR LT panel light indicating panel removed

Materials/Parts:

Solder (item 189, App F)

NOTE

This task is typical for CPG INTR LT panel INST, R CSL, or L CSL attenuators.



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9.90. CPG INTR LT PANEL INST, R CSL, OR L CSL ATTENUATOR REPLACEMENT (AVIM) – continued

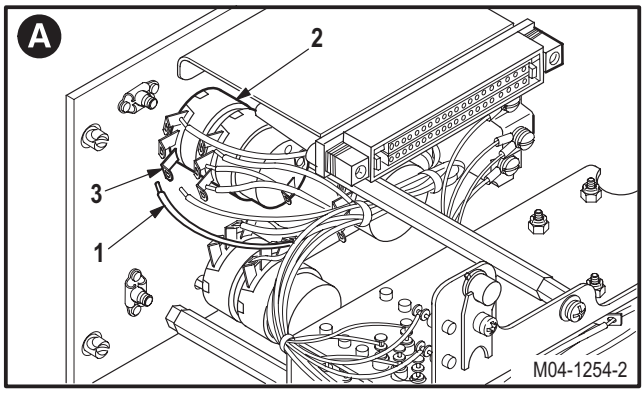
9.90.3. Removal

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

a. **Desolder wires (1) from attenuator (2).**

(1) Identify and desolder wires (1) from terminals (3). Use soldering iron (TM 55-1500-323-24).

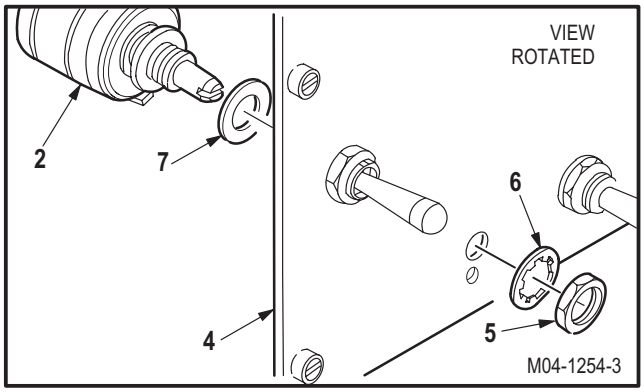


b. **Remove attenuator (2) from CPG INTR LT panel (4).**

(1) Remove nut (5) and lockwasher (6).

(2) Remove attenuator (2) and washer (7) from panel (4).

(3) Discard attenuator (2).



9.90.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

GO TO NEXT PAGE

9.90. CPG INTR LT PANEL INST, R CSL, OR L CSL ATTENUATOR REPLACEMENT (AVIM) – continued

9.90.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.61)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.61)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

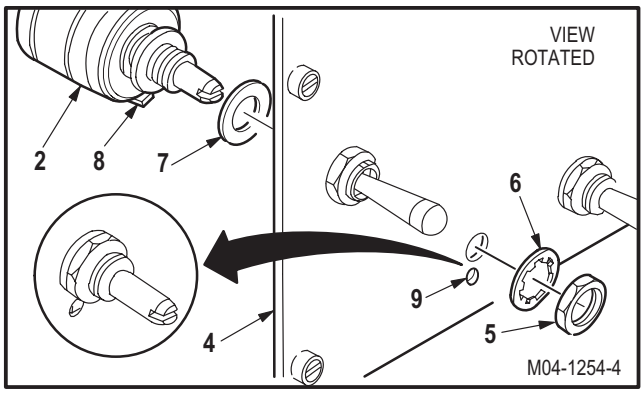
9.90.6. Installation

a. **Install new attenuator (2) on panel (4).**

(1) Install washer (7) on attenuator (2).

(2) Install attenuator (2) on panel (4) so that tab (8) seats in locator hole (9).

(3) Install lockwasher (6) and nut (5).



WARNING

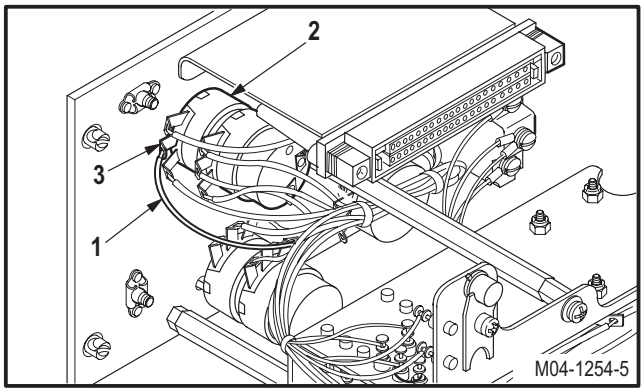
Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

b. **Solder wires (1) to attenuator (2).**

(1) Solder identified wires (1) to terminals (3). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).

c. **Inspect (QA).**

d. **Install CPG INTR LT panel light indicating panel** (para 9.83)**.**



END OF TASK

9.91. UTILITY MAINTENANCE LIGHT DISASSEMBLY/ASSEMBLY

9.91.1. Description

This task covers: Disassembly. Cleaning. Inspection. Assembly.

9.91.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
25-watt electric soldering iron (item 332, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Materials/Parts:

Solder (item 189, App F)

References:

TM 1-1520-238-T
TM 55-1500-323-24

9.91.3. Disassembly

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

a. **Remove connector (1) from wires (2).**

(1) Remove two screws (3) from backshell (4).

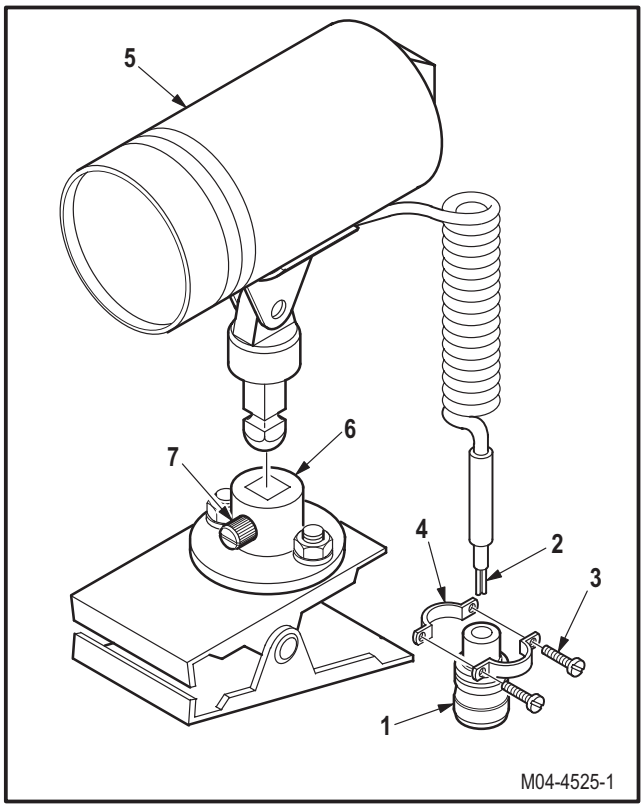
(2) Remove backshell (4).

(3) Identify and desolder wires (2). Use soldering iron (TM 55-1500-323-24).

b. **Remove light (5) from base (6).**

(1) Loosen thumbscrew (7).

(2) Remove light (5) from base (6).



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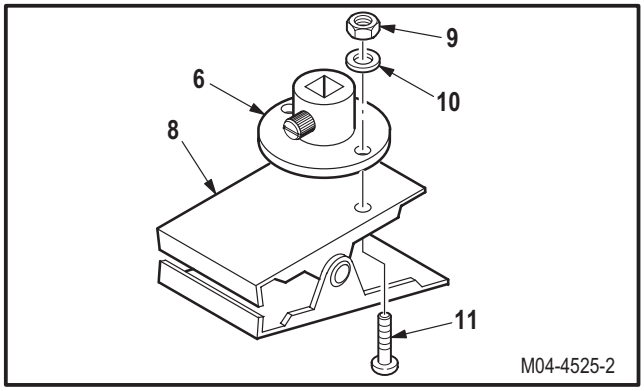
9.91. UTILITY MAINTENANCE LIGHT DISASSEMBLY/ASSEMBLY – continued

c. **Remove clamp (8) from base (6).**

(1) Remove two nuts (9), washers (10), and screws (11).

(2) Remove clamp (8) from base (6).



9.91.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

9.91.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.61)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.61)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

d. **Check connector for cracks, bent pins, or damaged threads** (para 9.61)**.**

GO TO NEXT PAGE

9.91. UTILITY MAINTENANCE LIGHT DISASSEMBLY/ASSEMBLY – continued

9.91.6. Assembly

a. **Install clamp (8) on base (6).**

(1) Position clamp (8) on base (6).

(2) Install two screws (11) through clamp (8), base (6), washers (10), and nuts (9).

b. **Install light (5) on base (6).**

(1) Insert light (5) in base (6). Tighten thumbscrew (7).

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

c. **Install connector (1) on wires (2).**

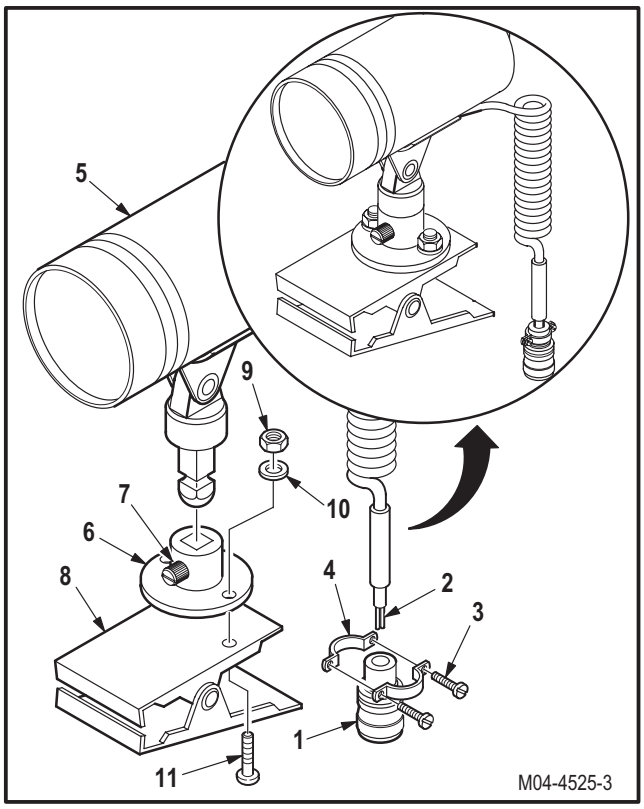
(1) Install backshell (4) loosely on wires (2).

(2) Solder identified wires (2) to connector (1). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).

(3) Position backshell (4) on connector (1). Install two screws (3).

d. **Inspect (QA).**

e. **Perform maintenance light maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

9.92. FORMATION LIGHT REMOVAL/INSTALLATION

9.92.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.92.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

Materials/Parts:

Nonmetallic special shaped section (item 129, App F)
Strap (item 192, App F)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T
TM 55-1500-323-24

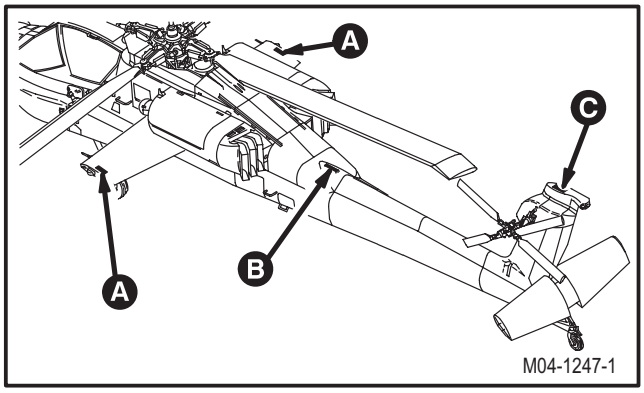
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

9.92.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot center circuit breaker panel, open LT FORM circuit breaker.**



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9.92. FORMATION LIGHT REMOVAL/INSTALLATION – continued

NOTE

Step c is typical for left and/or right wing formation light.

c. **Remove wing tip formation light (1).**

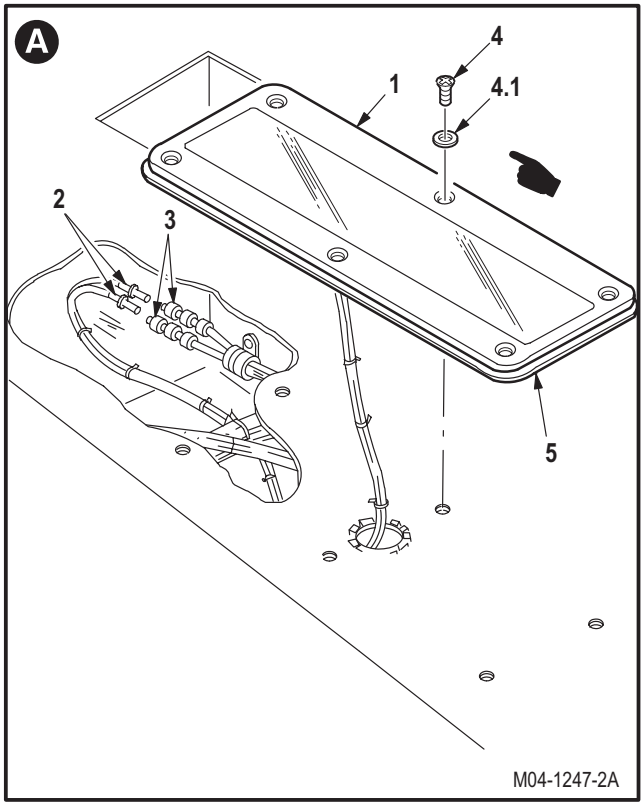
(1) Open access door LW8 or RW8 (para 2.2).

(2) Identify and depin two wires (2) from splices (3) (TM 55-1500-323-24).

(3) Remove six screws (4) and washers (4.1).

(4) Remove light (1).

(5) Remove gasket (5).



d. **Remove fuselage formation light (6).**

(1) Removc fairing T355 (para 2.2).

(2) Identify and depin two wires (7) from splices (8) (TM 55-1500-323-24).

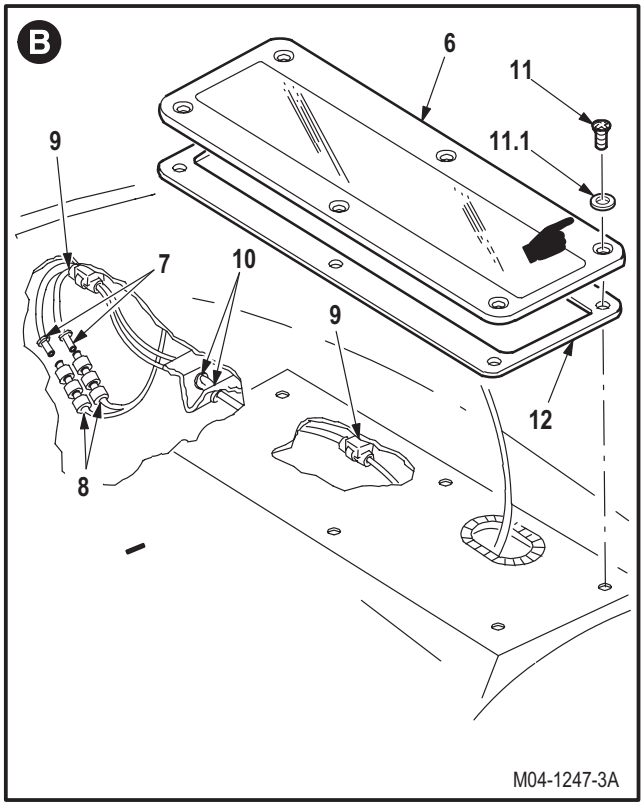
(3) Remove two wires (7) from tie mount blocks (9).

(4) Pull wires (7) through two grommets (10).

(5) Remove six screws (11) and washers (11.1).

(6) Remove light (6).

(7) Remove gasket (12).



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9.92. FORMATION LIGHT REMOVAL/INSTALLATION – continued

e. **Remove vertical stabilizer formation light (13).**

(1) Open access panel R578 (para 2.2).

(2) Identify and depin two wires (14) from splices (15) (TM 55-1500-323-24).

(3) Remove wires (14) from tie mount block (16).

(4) Remove six screws (17) and washers (17.1).

(5) Remove light (13).

(6) Remove gasket (18).

9.92.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.92.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.61)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.61)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.92.6. Installation

a. **Install wing tip formation light (1).**

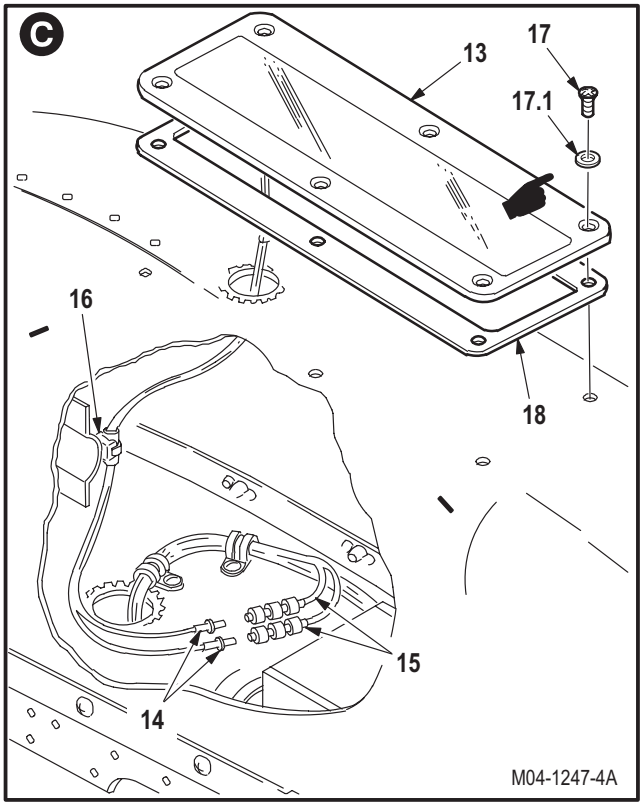
(1) Position gasket (5) and light (1) on wing (19).

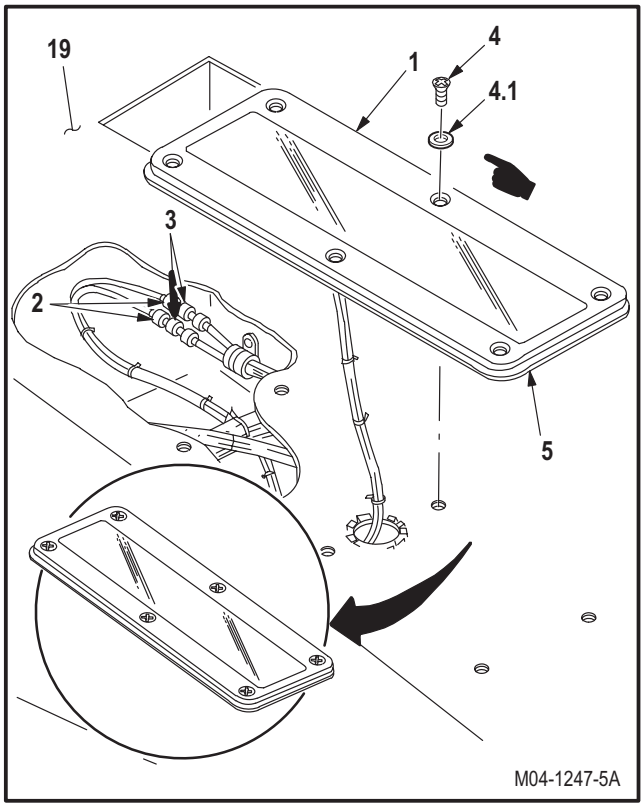
(2) Install six screws (4) through washers (4.1), light (1), and gasket (5) into wing (19).

(3) Pin two identified wires (2) to splices (3) (TM 55-1500-323-24).

b. **Inspect (QA).**

c. **Secure access doors LW8 or RW8** (para 2.2)**.**





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9.92. FORMATION LIGHT REMOVAL/INSTALLATION – continued

d. **Install fuselage formation light (6).**

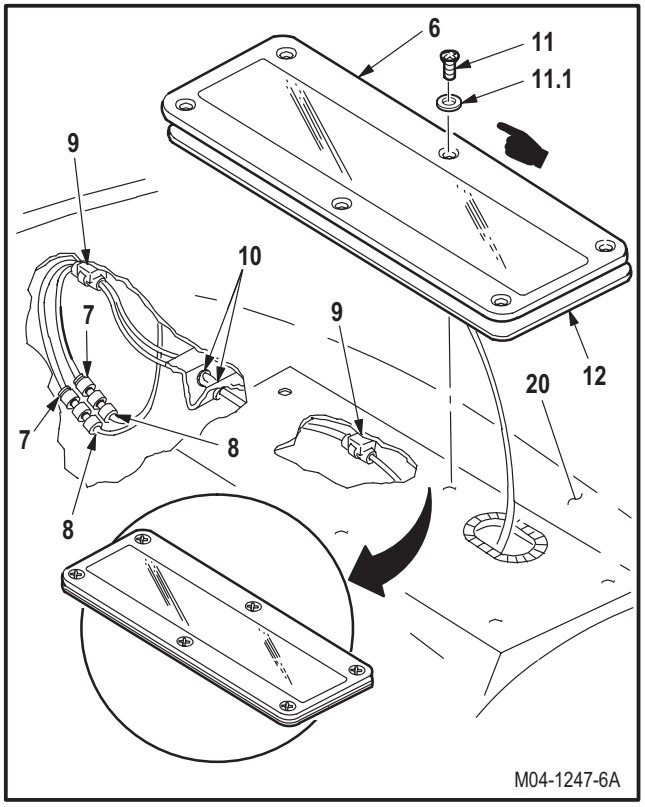
(1) Position gasket (12) and light (6) on fuselage (20).

(2) Install six screws (11) through washers (11.1), light (6), and gasket (12) into fuselage (20).

(3) Route wires (7) through two grommets (10).

(4) Secure wires (7) to two tie mount blocks (9). Use strap (item 192, App F) and nonmetallic special shaped section (item 129, App F).

(5) Pin two identified wires (7) to splices (8) (TM 55-1500-323-24).



e. **Inspect (QA).**

f. **Install fairing T355** (para 2.2)**.**

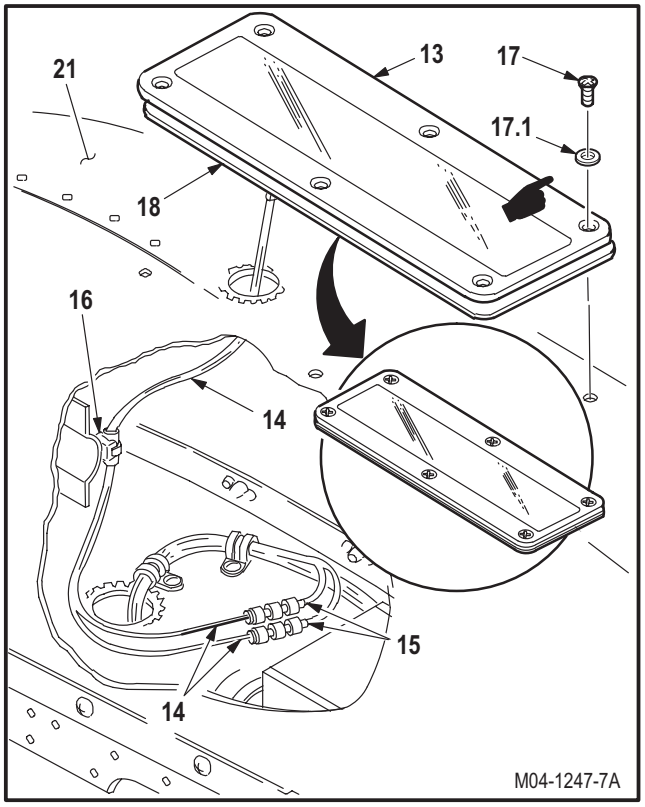
g. **Install vertical stabilator formation light (13).**

(1) Position gasket (18) and light (13) on vertical stabilator (21).

(2) Install six screws (17) through washers (17.1), light (13), and gasket (18) into vertical stabilator (21).

(3) Secure wires (14) to tie mount block (16). Use strap (item 192, App F) and nonmetallic special shaped section (item 129, App F).

(4) Pin two identified wires (14) to splices (15) (TM 55-1500-323-24).



h. **Inspect (QA).**

i. **Install access panel R578** (para 2.2)**.**

j. **Perform formation lights maintenance operational check** (TM 1-1520-238-T)**.**

END OF TASK

9.93. TAIL OR WING NAVIGATION LIGHT REMOVAL

9.93.1. Description

This task covers: Removal. Cleaning. Inspection.

9.93.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Maintenance platform (item 209, App H)

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

Personnel Required:

68X Armament/Electrical System Repairer

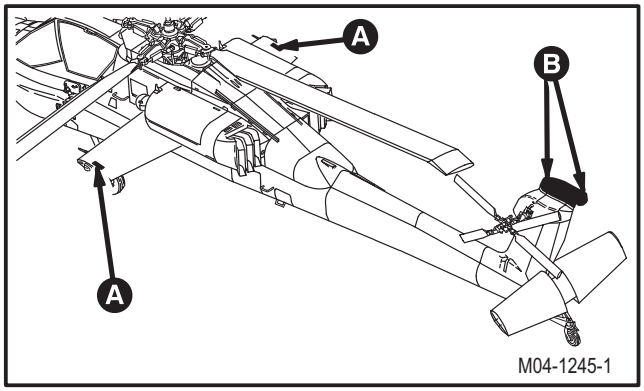
9.93.3. Removal

NOTE

- Steps a. thru f. are typical for left and/or right wing navigation light.
- If removing wing navigation lamp, go to step a. If removing tail navigation lamp, go to step g.

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot center circuit breaker panel, open LT NAV circuit breaker.**



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9.93. TAIL OR WING NAVIGATION LIGHT REMOVAL – continued

c. **Remove lens (1) and gasket (2) from navigation light base (3).**

(1) Remove screw (4) and two washers (5).

(2) Remove lens (1) and gasket (2).

d. **Remove light base (3) from wing tip (6).**

(1) Remove three screws (7) and washers (8).

(2) Remove light base (3).

e. **Remove nut (9) from light base (3).**

(1) Remove nut (9) with spring (10) from base (3).

f. **Remove plate (11) and clinch nut (12) from base (3).**

NOTE

Steps g. thru j. are for tail navigation light.

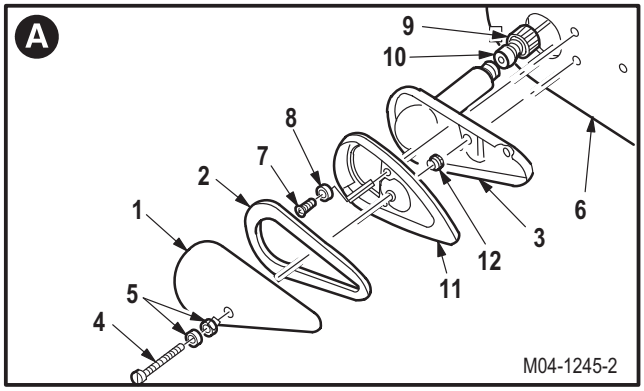
g. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

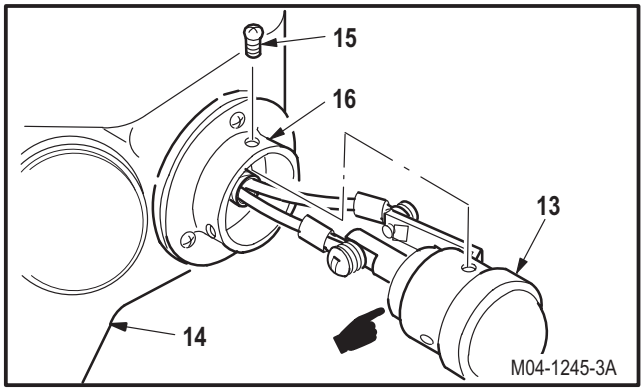
h. **On pilot center circuit breaker panel, open LT NAV circuit breaker.**

i. **Remove tail navigation light adapter (13) from vertical stabilizer (14).**

(1) Remove three screws (15) from adapter mount (16) and adapter (13).

(2) Pull adapter (13) clear of mount (16).





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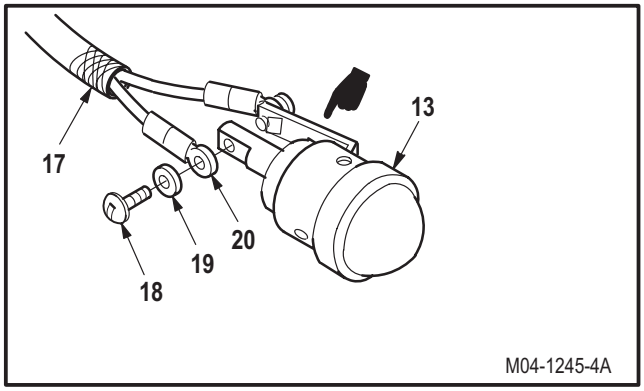
9.93. TAIL OR WING NAVIGATION LIGHT REMOVAL – continued

j. **Detach wires (17) from adapter (13).**

(1) Identify wires (17).

(2) Remove two screws (18), lockwashers (19), and terminal lugs (20).



9.93.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.93.5. Inspection

a. **Check clinch nut, mounting area, and connector for stripped threads** (para 9.61)**.**

b. **Check removed and attaching parts for damage** (para 9.61)**.**

c. **Check wires and terminals for wear, cracks, and cuts** (para 9.61)**.**

d. **Check removed and attaching parts for corrosion** (para 1.49)**.**

END OF TASK

9.94. TAIL OR WING NAVIGATION LIGHT INSTALLATION

9.94.1. Description

This task covers: Installation.

9.94.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
3/16-inch flat tip screwdriver bit (item 31, App H)
Electric gun type heater (item 163, App H)
Maintenance platform (item 209, App H)
Ohmmeter (item 218, App H)
1 - 100 inch-ounce 1/4-inch hexagon drive click type torque wrench (item 437, App H)

Materials/Parts:

Insulating sleeving (item 98, App F)
Insulation sleeving (item 105, App F)
Expandable sleeving (item 187, App F)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T
TM 55-1500-323-24

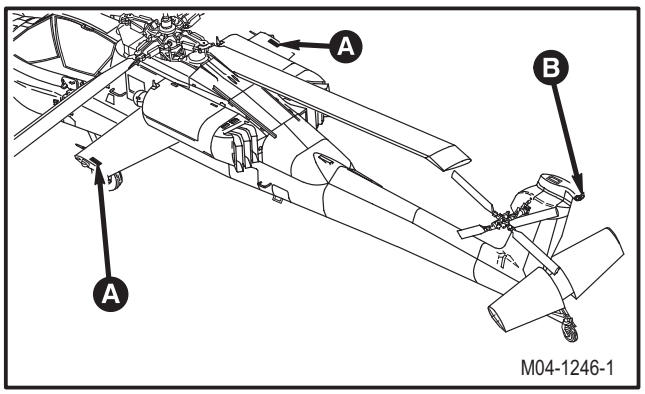
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

9.94.3. Installation

NOTE

- Steps a. through e. are typical for left and/or right wing navigation light.
- If installing tail navigation lamp go to step f.



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9.94. TAIL OR WING NAVIGATION LIGHT INSTALLATION – continued

a. **Install clinch nut (1) between plate (2) and light base (3).**

b. **Install nut (4) on base (3).**

(1) Install nut (4) with spring (5) on base (3).

c. **Install base (3) in wing tip (6).** Torque screw (7) to **64 INCH-OUNCES**.

(1) Position base (3) on wing tip (6).

(2) Install three screws (8) through washers (9), plate (2), and wing tip (6).

(3) Place gasket (10) and lens (11) in base (3).

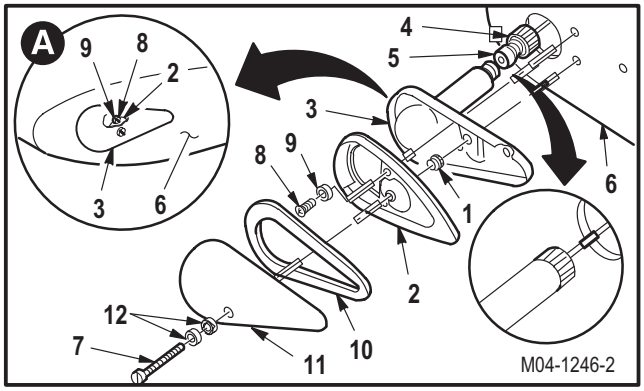
(4) Install screw (7) through two washers (12), lens (11), plate (2), base (3) in wing tip (6).

(5) Torque screw (7) to **64 INCH-OUNCES**. Use screwdriver bit and torque wrench.

d. **Perform electrical bond check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.1 OHM** or less. Use ohmmeter.

e. **Inspect (QA).**



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9.94. TAIL OR WING NAVIGATION LIGHT INSTALLATION – continued

WARNING

Do not place heater near flammable material or allow heater to contact skin: severe burns can result. Wear protective equipment. If injury occurs, seek medical aid.

NOTE

- The following steps are for installation of the tail navigation light.
- If heat shrink is installed on tail navigation light wire terminals, go to step j.

f. **On each wire (13), install 1.50 INCH length of heat shrink tubing (14) on terminal lug (15).** Use insulation sleeving (item 105, App F) (TM 55-1500-323-24) and heater.

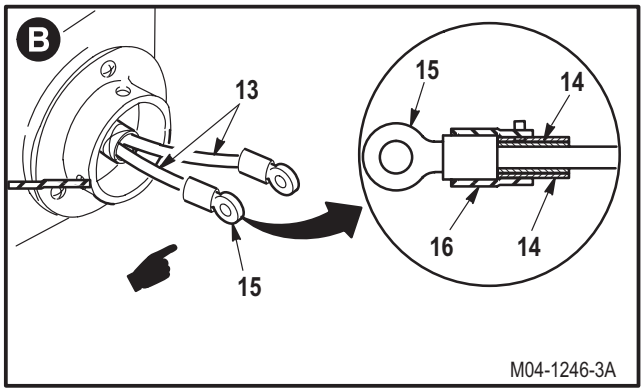
g. **Install second 1.50 INCH length of tubing (14) on tubing installed in step f.** Use insulating sleeving (item 98, App F) (TM 55-1500-323-24) and heater.

h. **Install 1.00 INCH length of heat shrink tubing (16) around lug (15) and over tubing installed in step g.** Use insulating sleeving (item 98, App F) (TM 55-1500-323-24) and heater.

NOTE

If expandable sleeving is installed on navigational light wires, go to step q.

i. **Remove access panel R578** (para 2.2)**.**



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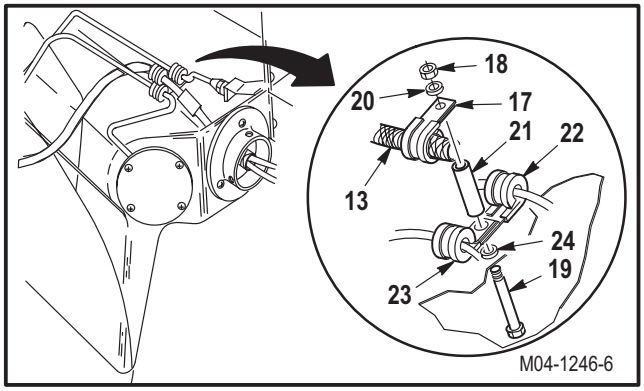
9.94. TAIL OR WING NAVIGATION LIGHT INSTALLATION – continued

j. **Remove clamp (17) from wire (13).**

(1) Hold nut (18).

(2) Remove screw (19) from washer (20), clamp (17), spacer (21), clamps (22) and (23), and stabilizer (24).

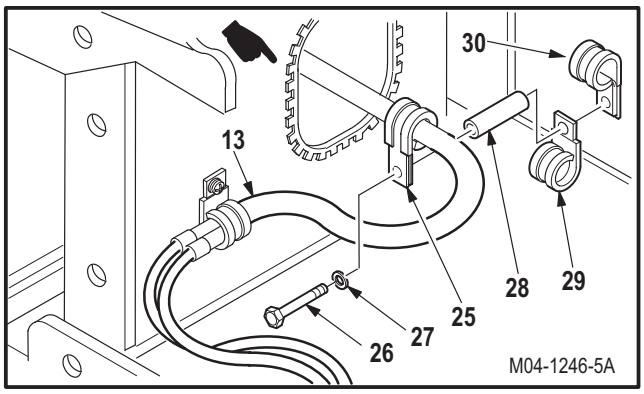
(3) Remove clamp (17) from wire (13).



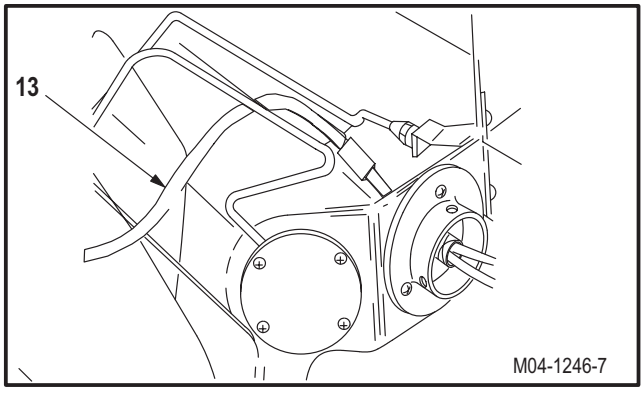
k. **Remove clamp (25) from wire (13).**

(1) Remove screw (26), washer (27), clamp (25), spacer (28), clamp (29), and clamp (30).

(2) Remove clamp (25) from wire (13).



l. **Install 30 INCH length of expandable sleeving on wire (13).** Use expandable sleeving (item 187, App F) (TM 55-1500-323-24).

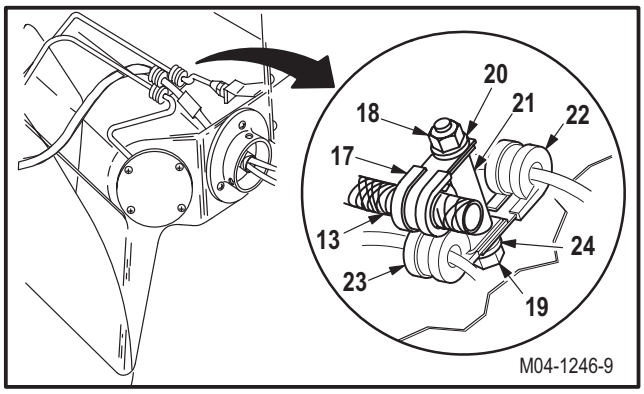


m. **Install clamp (17) on wire (13).**

(1) Install clamp (17) on wire (13).

(2) Install screw (19) through stabilizer (24), clamps (23) and (22), spacer (21), clamp (17), and washer (20).

(3) Install nut (18).



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9.94. TAIL OR WING NAVIGATION LIGHT INSTALLATION – continued

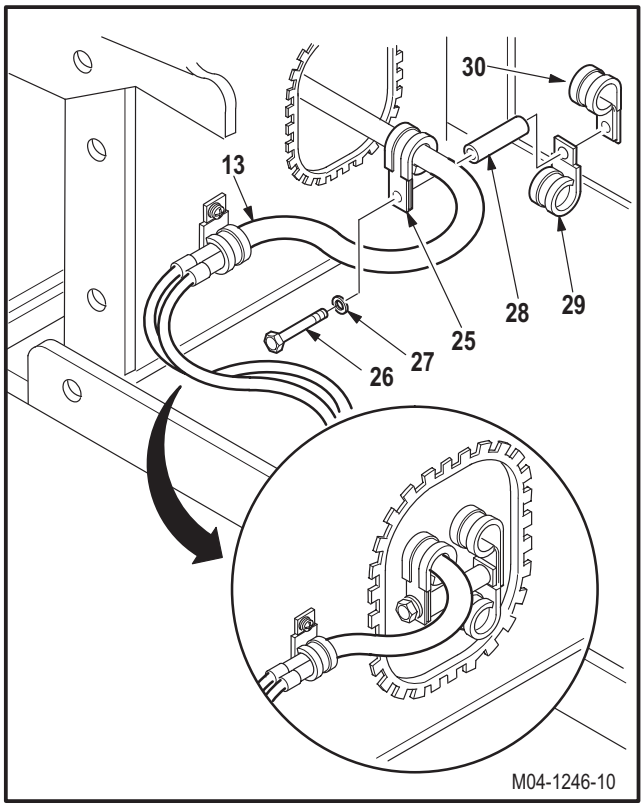
n. **Install clamp (25) on wire (13).**

(1) Install clamp (25) on wire (13).

(2) Install screw (26) through washer (27), clamp (25), spacer (28), clamp (29), and clamp (30).

o. **Inspect (QA).**

p. **Install access panel R578** (para 2.2)**.**



CAUTION

Grommet must be installed around the light bulb socket between socket and housing. Ensure half of grommet is under the edge of the housing. Improperly installed grommet may result in broken blubs.

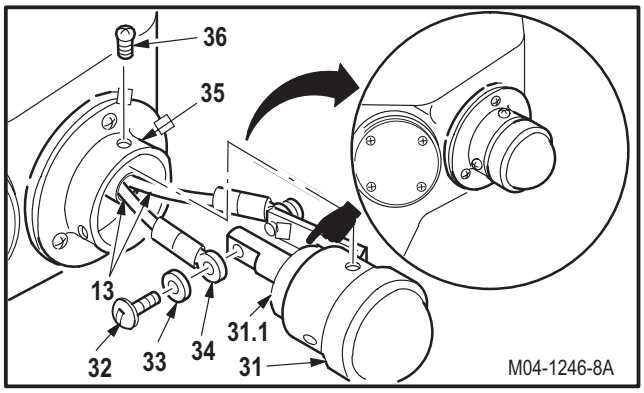
q. **Attach two identified lugs (34) on wire (13) to navigation light adapter (31).**

(1) Ensure grommet (31.1) is properly installed in adapter (31).

(2) Install two screws (32), lockwashers (33), and lugs (34).

r. **Install adapter (31) in mount (35).**

(1) Install three screws (36).



s. **Perform electrical bond check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.1 OHM** or less. Use ohmmeter.

t. **Perform navigation light maintenance operational check** (TM 1-1520-238-T)**.**

END OF TASK

9.95. TAIL OR WING NAVIGATION LAMP REPLACEMENT

9.95.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.95.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Maintenance platform (item 209, App H)

References:

TM 1-1520-238-T

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

NOTE

This task is typical for tail, left, and/or right wing navigation lights.

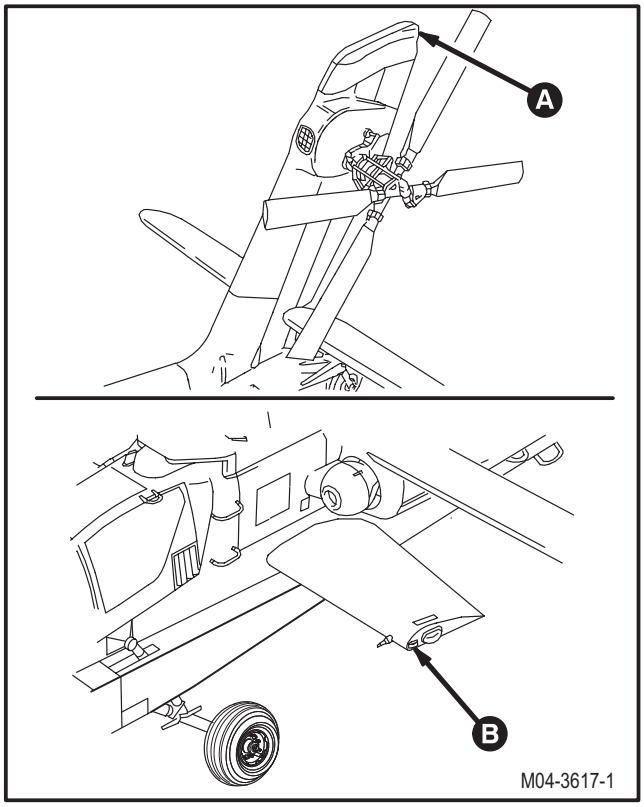
9.95.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot circuit breaker panel, open LT NAV circuit breaker.**

NOTE

If removing tail navigation lamp, go to step c. If removing wing navigation lamp, go to step d.



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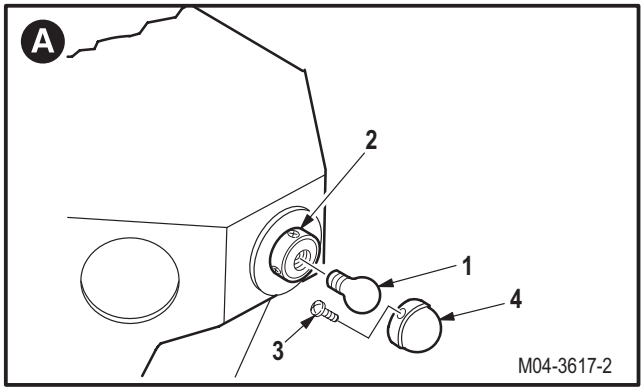
9.95. TAIL OR WING NAVIGATION LAMP REPLACEMENT – continued

c. **Remove tail navigation lamp (1) from light adapter (2).** Use maintenance platform.

(1) Remove three screws (3) from lens (4).

(2) Remove lens (4) from adapter (2).

(3) Remove lamp (1) from adapter (2).

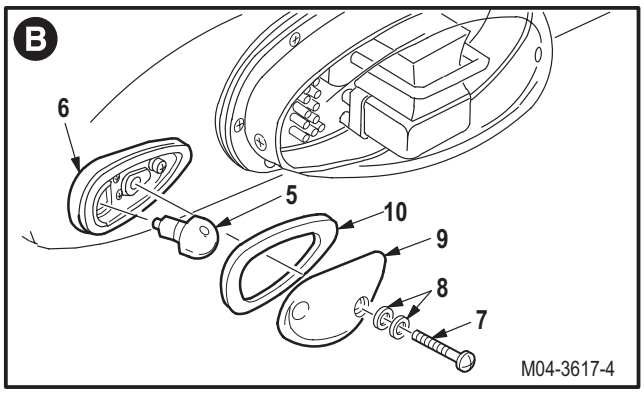


d. **Remove wing navigation lamp (5) from light base (6).**

(1) Remove screw (7) and two washers (8) from base (6).

(2) Remove lens (9) and gasket (10) from base (6).

(3) Remove lamp (5) from base (6).



9.95.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.95.5. Inspection

a. **Check mounting area and connector for stripped threads.** Damage not to exceed 50 percent on one thread.

b. **Check removed and attaching parts for damage** (para 9.61)**.**

c. **Check wires and terminals for wear, cracks, and cuts** (para 9.61)**.**

d. **Check removed and attaching parts for corrosion** (para 1.49)**.**

GO TO NEXT PAGE

9.95. TAIL OR WING NAVIGATION LAMP REPLACEMENT – continued

9.95.6. Installation

NOTE

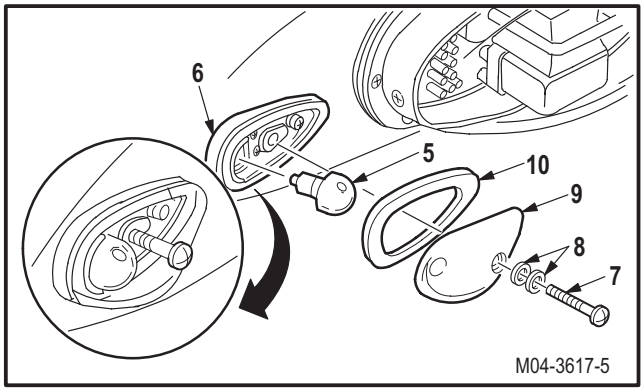
If installing wing navigation lamp, go to step a. If installing tail navigation lamp, go to step b.

a. **Install wing navigation lamp (5) in light base (6).**

(1) Install lamp (5) in base (6).

(2) Position gasket (10) and lens (9) on base (6).

(3) Install screw (7) through two washers (8) and lens (9) into base (6).

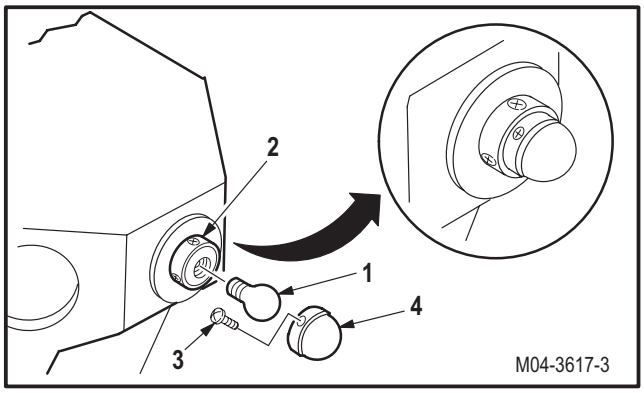


b. **Install tail navigation lamp (1) in light adapter (2).** Use maintenance platform.

(1) Install lamp (1) in adapter (2).

(2) Position lens (4) on adapter (2).

(3) Install three screws (3) through lens (4) into adapter (2).



c. **Inspect (QA).**

d. **Perform navigation light maintenance operational check** (TM 1-1520-238-T)**.**

END OF TASK

9.96. ANTI-COLLISION LIGHT UNIT REMOVAL/INSTALLATION

9.96.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.96.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Ohmmeter (item 218, App H)

References:

TM 1-1520-238-T
TM 55-1500-323-24

Materials/Parts:

Gasket

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

NOTE

This task is typical for left and right anti-collision lights DS8 or DS9.

9.96.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

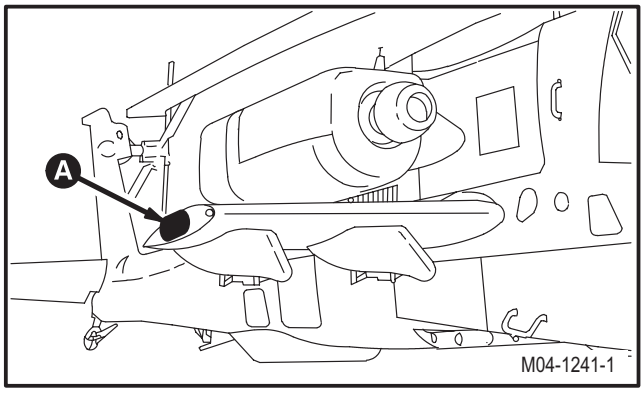
b. **On pilot center circuit breaker panel, open LT ANTI COL circuit breaker.**

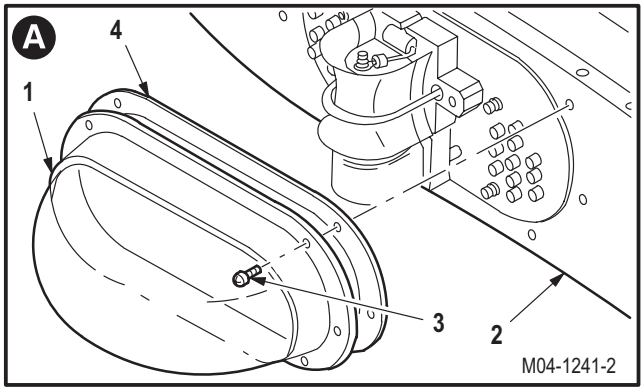
c. **Remove anti-collision light lens assembly (1) from wing tip (2).**

(1) Remove six screws (3).

(2) Remove lens assembly (1) from wing tip (2).

(3) Remove and discard gasket (4).





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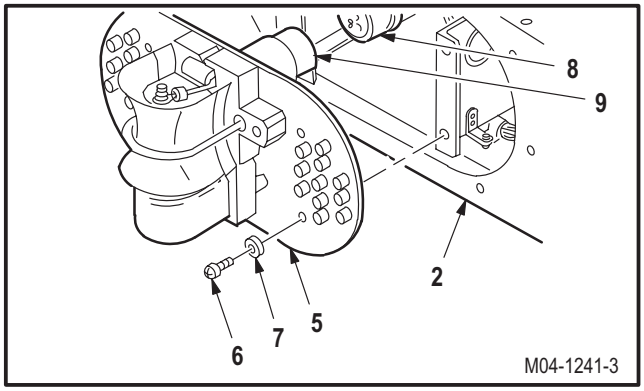
9.96. ANTI-COLLISION LIGHT UNIT REMOVAL/INSTALLATION – continued

d. **Remove anti-collision light assembly (5) from wing tip (2).**

(1) Remove four screws (6) and washers (7).

(2) Detach connector P105 (left) or P106 (right) (8) from receptacle (DS8)J1 (left) or (DS9)J1 (right) (9).



9.96.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.96.5. Inspection

a. **Check connector for bent pins or damaged threads** (para 9.61)**.**

b. **Check removed and attaching parts for damage** (para 9.61)**.**

c. **Check wires and terminals for wear, cracks, and cuts** (para 9.61)**.**

d. **Check removed and attaching parts for corrosion** (para 1.49)**.**

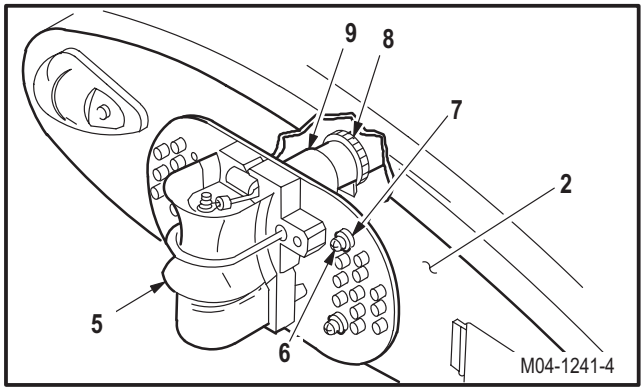
9.96.6. Installation

a. **Install light assembly (5) on wing tip (2).**

(1) Attach connector P105 (left) or P106 (right) (8) to receptacle (DS8)J1 (left) or (DS9)J1 (right) (9).

(2) Position light assembly (5) on wing tip (2).

(3) Install four screws (6) and washers (7).



b. **Perform electrical bond check on attaching parts** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

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9.96. ANTI-COLLISION LIGHT UNIT REMOVAL/INSTALLATION – continued

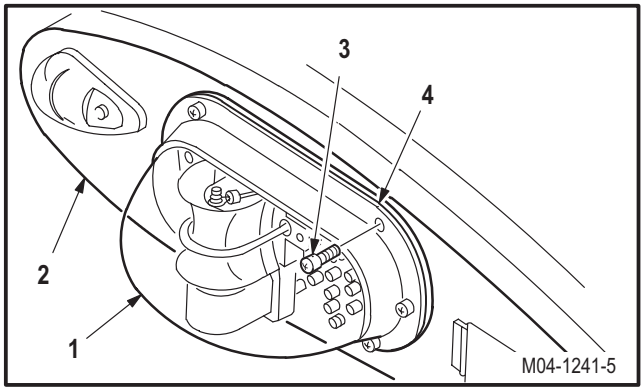
c. **Install lens assembly (1) on wing tip (2).**

(1) Install new gasket (4) on lens (1).

(2) Install six screws (3) through lens (1) and gasket (4) into wing tip (2).

d. **Inspect (QA).**

e. **Perform anti-collision light maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

9.97. ANTI-COLLISION LIGHT LENS REPLACEMENT

9.97.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.97.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
3/8-inch portable pneumatic drill (item 116, App H)
#40 twist drill (item 117, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
1 - 100 inch-ounce 1/4-inch hexagon drive click type torque wrench (item 437, App H)

Materials/Parts:

Adhesive (item 14, App F)

Personnel Required:

68X Armament/Electrical System Repairer
67R Attack Helicopter Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
9.96	Anti-collision light DS8 or DS9 lens assembly removed

NOTE

This task is typical for anti-collision light lens for anti-collision light DS8 or DS9.

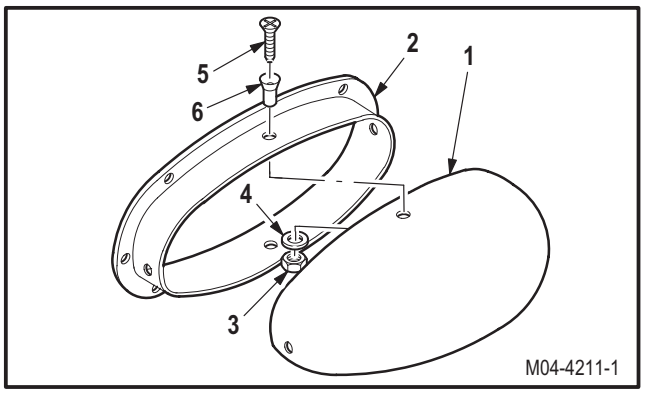
9.97.3. Removal

a. **Remove light lens (1) from flash tube housing (2).**

(1) Remove four nuts (3), washers (4), screws (5), and inserts (6) from lens (1) and housing (2).

(2) Remove adhesive between lens (1) and housing (2).

(3) Remove lens (1).



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9.97. ANTI-COLLISION LIGHT LENS REPLACEMENT – continued

9.97.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.97.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.61)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.61)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.97.6. Installation

a. **Install new lens (1) on housing (2).**

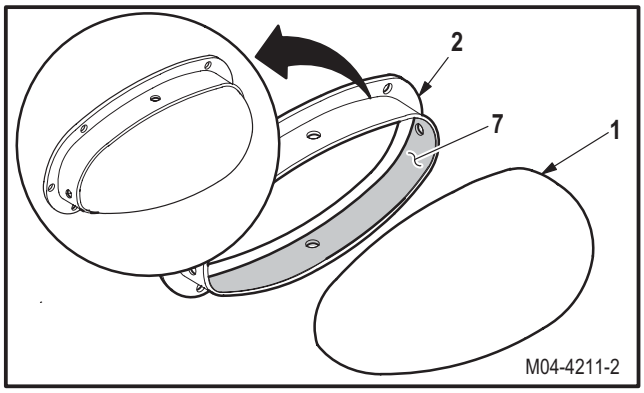
(1) Apply adhesive to inner surface (7) on housing (2). Use adhesive (item 14, App F).

(2) Position lens (1) on housing (2).

NOTE

Ensure adhesive fills gaps between lens and housing.

(3) Wipe off excess adhesive and allow to cure.



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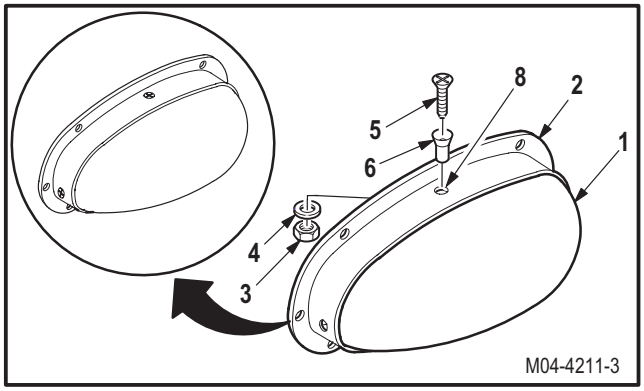
9.97. ANTI-COLLISION LIGHT LENS REPLACEMENT – continued

b. **Install four screws (5) through inserts (6), housing (2), lens (1), washers (4), and nuts (3).** Torque nuts (3) to **40 INCH-OUNCES**.

(1) Drill four holes (8) in lens (1) to aline with holes in housing (2). Use pneumatic drill and twist drill.

(2) Install four screws (5) through inserts (6), housing (2), lens (1), washers (4), and nuts (3).

(3) Torque four nuts (3) to **40 INCH-OUNCES**. Use torque wrench.



c. **Inspect (QA).**

d. **Install anti-collision light DS8 or DS9 lens assembly** (para 9.96)**.**

END OF TASK

9.98. ANTI-COLLISION LIGHT RED FLASHTUBE LAMP REPLACEMENT

9.98.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.98.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Electric gun type heater (item 163, App H)
Ohmmeter (item 218, App H)

References:

TM 55-1500-323-24

Materials/Parts:

Insulating sleeving (item 98, App F)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
9.96	Anti-collision light DS8 or DS9 removed

CAUTION

Care must be taken when removing and installing assembly with flashtube. Flashtube should not be handled and should be protected when removing and installing assembly.

NOTE

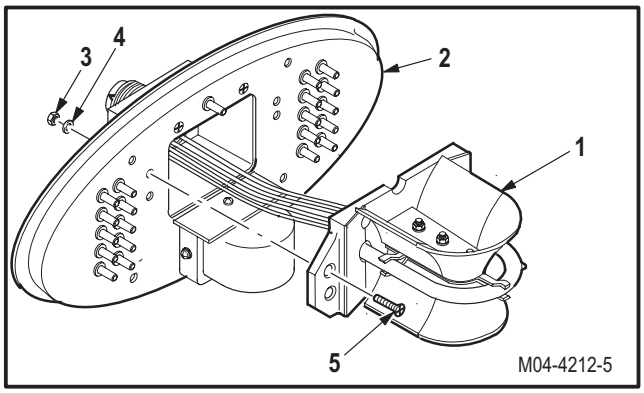
This task is typical for left and right anti-collision light flashtubes DS8 or DS9.

9.98.3. Removal

a. **Remove light subassembly (1) from mounting plate (2).**

(1) Remove four nuts (3) and lockwashers (4).

(2) Remove four screws (5).



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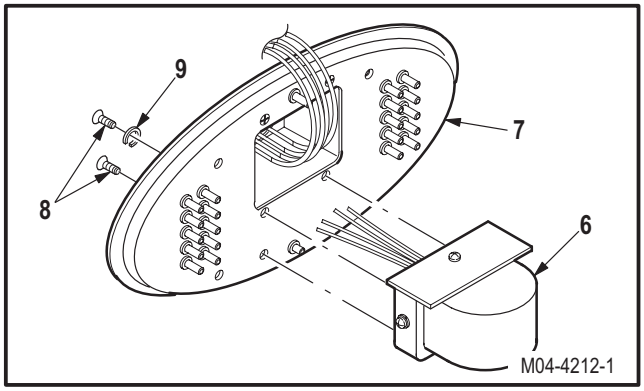
9.98. ANTI-COLLISION LIGHT RED FLASHTUBE LAMP REPLACEMENT – continued

b. **Remove red light assembly (6) from anti-collision light mounting plate (7).**

(1) Remove three screws (8) and one lockwasher (9) from plate (7).

(2) Remove light (6).



c. **Detach four terminals (10).**

(1) Remove insulating sleeving (item 98, App F) from four terminals (10).

(2) Identify and detach four terminals (10).

d. **Remove flashtube lamp (11) from light (6).**

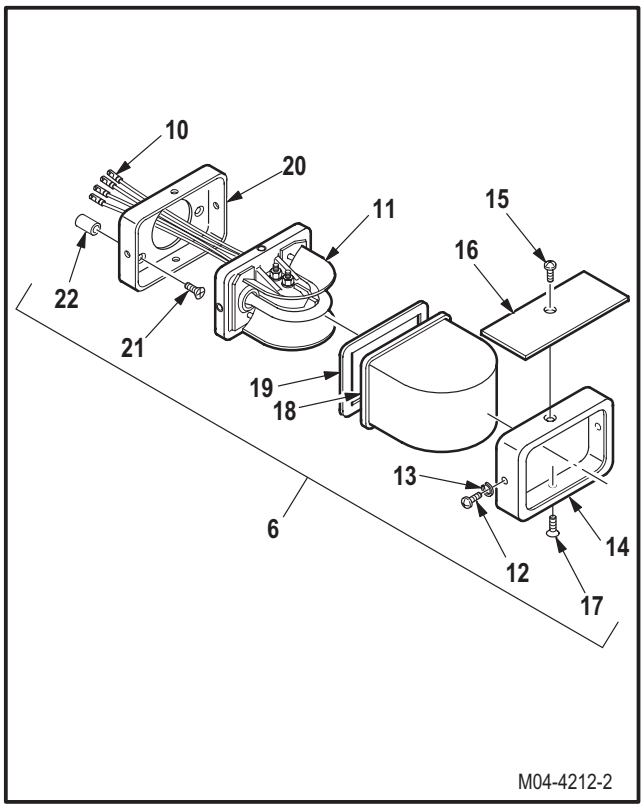
(1) Remove two screws (12) and lockwashers (13) from lens retainer (14).

(2) Remove screw (15) from insulator plate (16) and retainer (14).

(3) Remove screw (17) from retainer (14).

(4) Remove plate (16), retainer (14), light lens (18), gasket (19), and lamp (11) from lamp mounting plate (20).

(5) Remove three screws (21) and standoffs (22) from plate (20).



9.98.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.98.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.61)**.**

b. **Check wiring for cracked, broken, or burned insulation** (para 9.61)**.**

GO TO NEXT PAGE

9.98. ANTI-COLLISION LIGHT RED FLASHTUBE LAMP REPLACEMENT – continued

c. **Check wire terminals for deformation and loose attachment** (para 9.61)**.**

d. **Check for cracked or discolored lens** (para 9.61)**.**

e. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.98.6. Installation

a. **Install lamp (11) in light (6).**

(1) Install three screws (21) and standoffs (22) on plate (20).

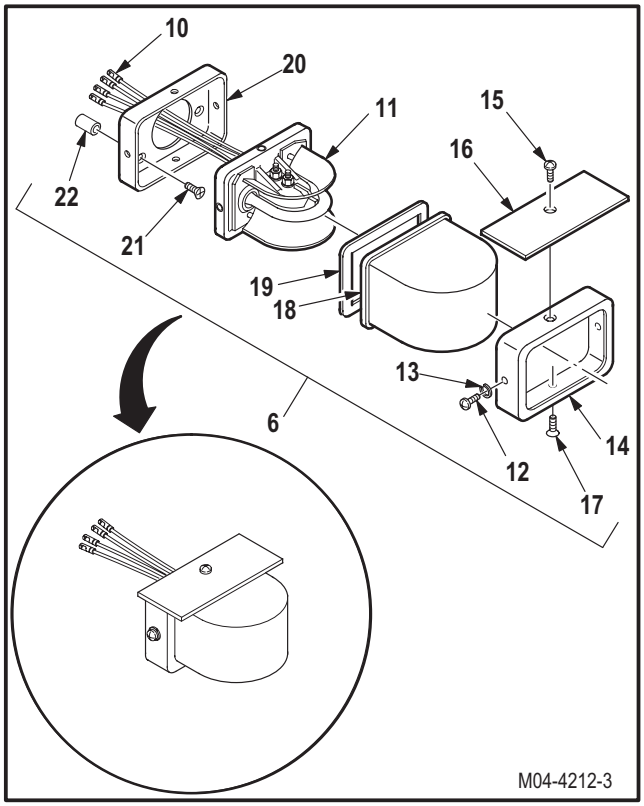
(2) Route four terminals (10) through plate (20). Position new lamp (11) on plate (20).

(3) Install gasket (19), lens (18), and retainer (14) on plate (20).

(4) Install screw (17) in retainer (14).

(5) Install screw (15) through plate (16) and retainer (14).

(6) Install two screws (12) through lockwashers (13) and retainer (14).



WARNING

Do not place heater near flammable material or allow heater to contact skin: severe burns can result. Wear protective equipment. If injury occurs, seek medical aid.

b. **Attach four terminals (10).**

(1) Install insulating sleeving (item 98, App F) on wires before connecting.

(2) Attach four identified terminals (10).

(3) Position insulating sleeving (item 98, App F) on terminals (10) and shrink. Use heater.

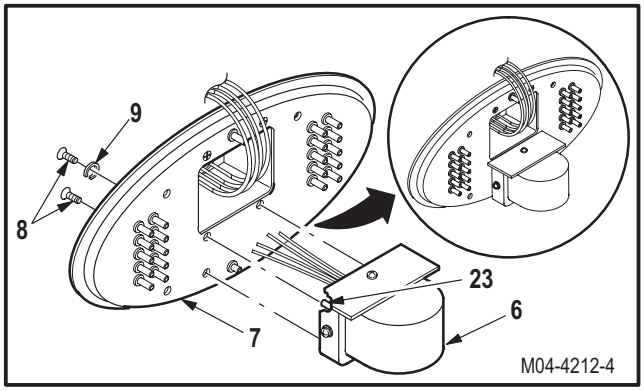
GO TO NEXT PAGE

9.98. ANTI-COLLISION LIGHT RED FLASHTUBE LAMP REPLACEMENT – continued

c. **Install light (6) on plate (7).**

(1) Position light (6) on plate (7).

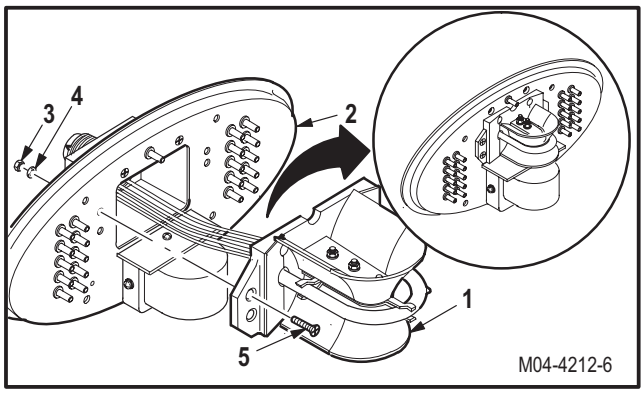
(2) Install three screws (8) and one lockwasher (9) through plate (7) into standoffs (23).



d. **Install light (1) on plate (2).**

(1) Install four screws (5) through light (1) and plate (2).

(2) Install four lockwashers (4) and nuts (3) on screws (5).



e. **Inspect (QA).**

f. **Perform electrical bond check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

g. **Inspect (QA).**

h. **Install anti-collision light DS8 or DS9** (para 9.96)**.**

END OF TASK

9.99. ANTI-COLLISION LIGHT SUBASSEMBLY REPLACEMENT

9.99.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.99.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
9.96	Anti-collision light DS8 or DS9 removed

Materials/Parts:

Insulating sleeving (item 98, App F)

CAUTION

Care must be taken when removing and installing assembly with flashtube. Flashtube should not be handled and should be protected when removing and installing assembly.

NOTE

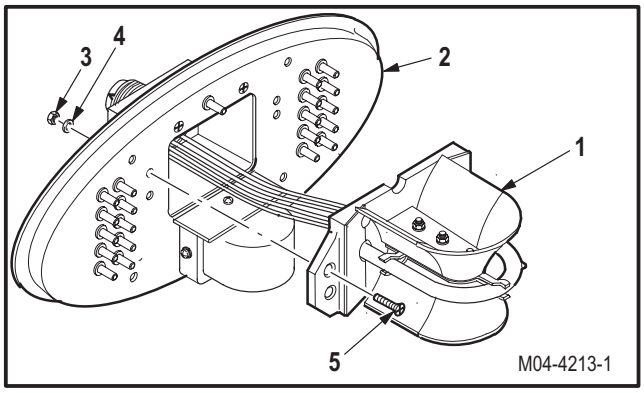
This task is typical for anti-collision light subassemblies for DS8 or DS9.

9.99.3. Removal

a. **Remove light subassembly (1) from mounting plate (2).**

(1) Remove four nuts (3) and lockwashers (4).

(2) Remove four screws (5).



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9.99. ANTI-COLLISION LIGHT SUBASSEMBLY REPLACEMENT – continued

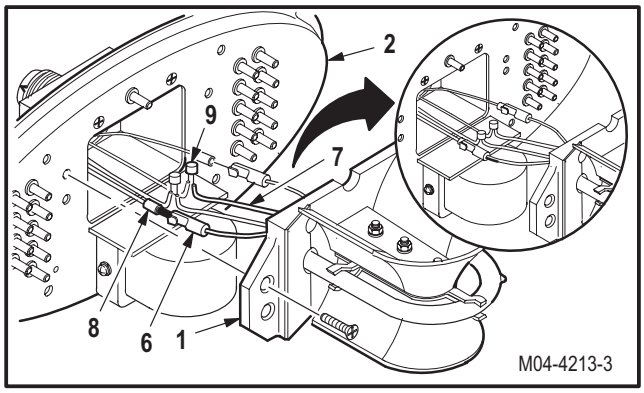
b. **Detach two wires (6) and (7) from splices (8) and (9) on frame (2).**

(1) Remove insulating sleeving (item 98, App F) from wires (6) and (7).

(2) Identify and detach two wires (6) from quick disconnect terminals (8).

(3) Identify and detach two wires (7) from end caps (9).

(4) Remove light (1).



9.99.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.99.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.61)**.**

b. **Check wiring for cracked, broken, or burned insulation** (para 9.61)**.**

c. **Check wire terminals for deformation and loose attachment** (para 9.61)**.**

d. **Check removed and attaching parts for corrosion** (para 1.47)**.**

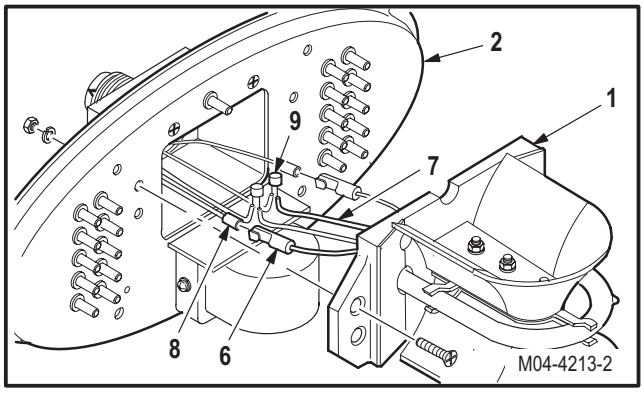
9.99.6. Installation

a. **Attach two wires (7) and (6) to splices (9) and (8) on frame (2).**

(1) Position light (1) on plate (2).

(2) Attach two identified wires (7) to end caps (9). Use insulating sleeving (item 98, App F).

(3) Attach two identified wires (6) to terminals (8). Use insulating sleeving (item 98, App F).



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9.99. ANTI-COLLISION LIGHT SUBASSEMBLY REPLACEMENT – continued

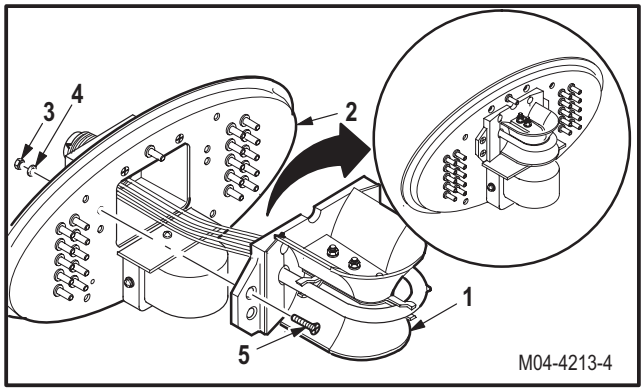
b. **Install light (1) on plate (2).**

(1) Install four screws (5) through light (1) and plate (2).

(2) Install four lockwashers (4) and nuts (3) on screws (5).

c. **Inspect (QA).**

d. **Install anti-collision light DS8 or DS9** (para 9.96)**.**



END OF TASK

9.100. ANTI-COLLISION LIGHT POWER SUPPLY REMOVAL/INSTALLATION

9.100.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.100.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Ohmmeter (item 218, App H)

References:

TM 1-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access panel L200 removed
13.22	Air duct No. 6 removed

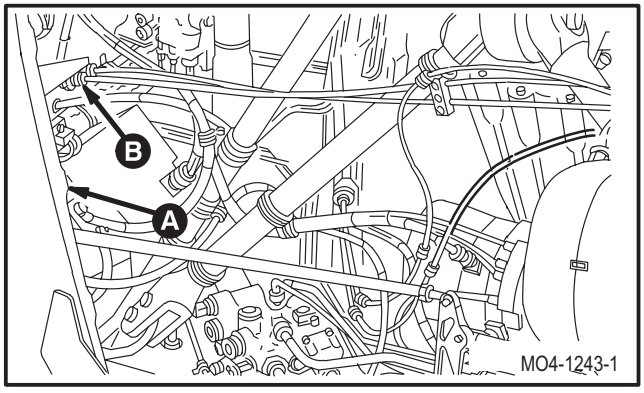
Personnel Required:

68X	Armament/Electrical System Repairer
68X3F	Armament/Electrical System Repairer/ Technical Inspector

9.100.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot center circuit breaker panel, open LT ANTI COL circuit breaker.**



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9.100. ANTI-COLLISION LIGHT POWER SUPPLY REMOVAL/INSTALLATION – continued

WARNING

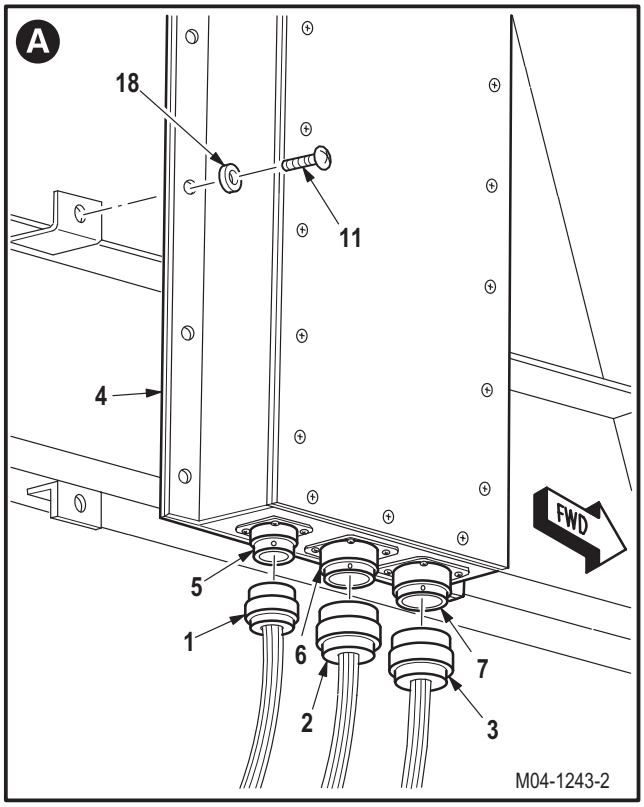
The anti-collision light power supply is high voltage. Wait 10 minutes after power has been removed before maintenance, so that high voltage can discharge. Failure to observe this warning may result in death or injury to personnel. If injury occurs, seek medical aid.

c. **Detach three connectors P102 (1), P103 (2), and P104 (3) from power supply (4).**

(1) Detach connector P102 (1) from receptacle (PS5)J1 (5).

(2) Detach connector P103 (2) from receptacle (PS5)J2 (6).

(3) Detach connector P104 (3) from receptacle (PS5)J3 (7).



d. **Remove cables (8) and (9) from bracket (10).**

(1) Hold screw (11). Remove nut (12) and washer (13).

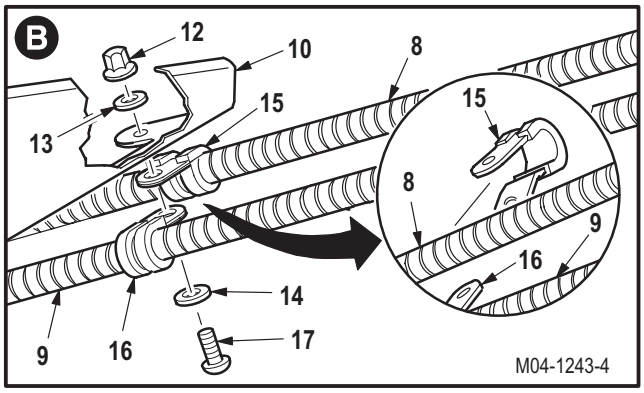
(2) Remove screw (11), washer (14), and clamps (15) and (16) from bracket (10).

(3) Push cables (8) and (9) inboard to access power supply (4).

e. **Remove power supply (4).**

(1) Remove four screws (17) and washers (18).

(2) Remove power supply (4).



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9.100. ANTI-COLLISION LIGHT POWER SUPPLY REMOVAL/INSTALLATION – continued

9.100.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.100.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.61)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.61)**.**

c. **Check connector for bent pins or damaged threads** (para 9.61)**.**

d. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.100.6. Installation

a. **Install power supply (4) on mounting bracket (19).**

(1) Position power supply (4) on bracket (19).

(2) Install four screws (17) and washers (18).

b. **Perform electrical bond check on power supply (4)** (TM 55-1500-323-24)**.**

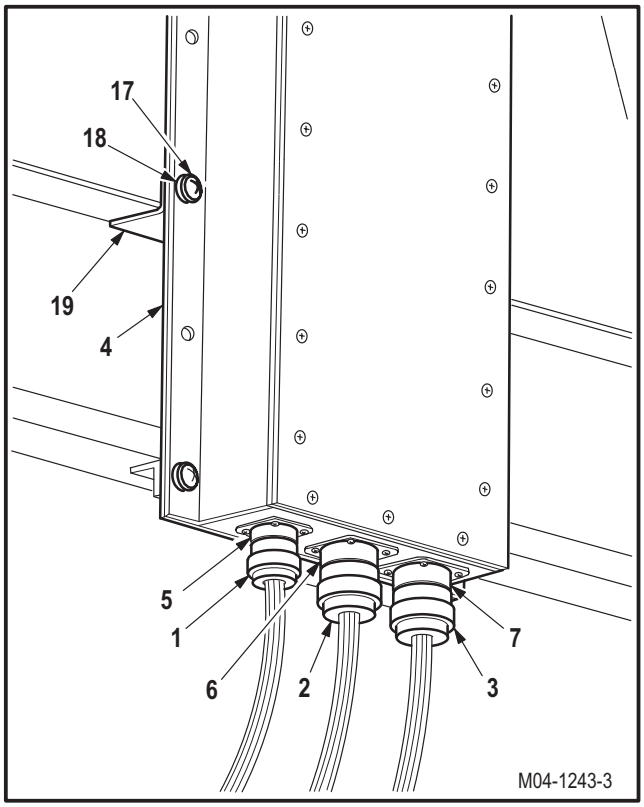
(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

c. **Attach three connectors P102 (1), P103 (2), and P104 (3) to power supply (4).**

(1) Attach connector P102 (1) to receptacle (PS5)J1 (5).

(2) Attach connector P103 (2) to receptacle (PS5)J2 (6).

(3) Attach connector P104 (3) to receptacle (PS5)J3 (7).



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9.100. ANTI-COLLISION LIGHT POWER SUPPLY REMOVAL/INSTALLATION – continued

d. **Install cables (8) and (9) on bracket (10).**

(1) Install screw (11) through washer (14), clamps (16) and (15), and bracket (10).

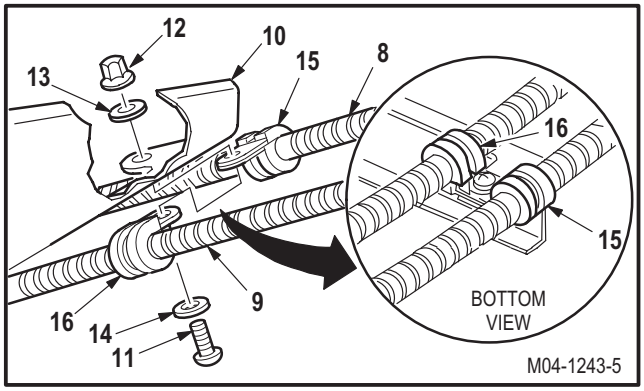
(2) Hold screw (11). Install washer (13) and nut (12).

e. **Inspect (QA).**

f. **Perform anti-collision light maintenance operational check** (TM 1-1520-238-T)**.**

g. **Install air duct No. 6** (para 13.22)**.**

h. **Install access panel L200** (para 2.2)**.**



END OF TASK

9.101. LANDING/SEARCHLIGHT REMOVAL/INSTALLATION

9.101.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.101.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Ohmmeter (item 218, App H)

References:

TM 55-1500-323-24
TM 1-1520-238-T

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

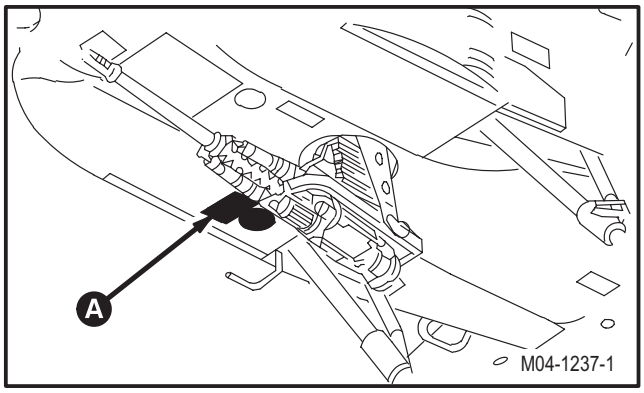
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

9.101.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot center circuit breaker panel, open LT SRCH/LDG and LT SRCH/LDG CONTR circuit breakers.**



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9.101. LANDING/SEARCHLIGHT REMOVAL/INSTALLATION – continued

c. **Remove searchlight (1) from helicopter (2).**

(1) Remove 12 screws (3) and washers (4).

(2) Lower searchlight (1) from helicopter (2).

d. **Remove terminal cover (5).**

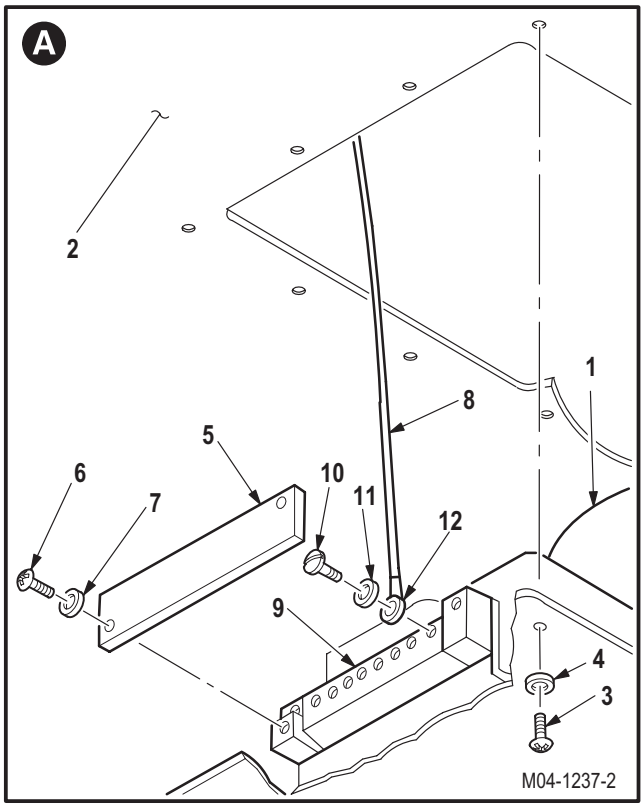
(1) Remove two screws (6) and washers (7).

e. **Detach wires (8) from terminal board (9).**

(1) Identify wires (8).

(2) Remove screws (10), washers (11), and terminal lugs (12).

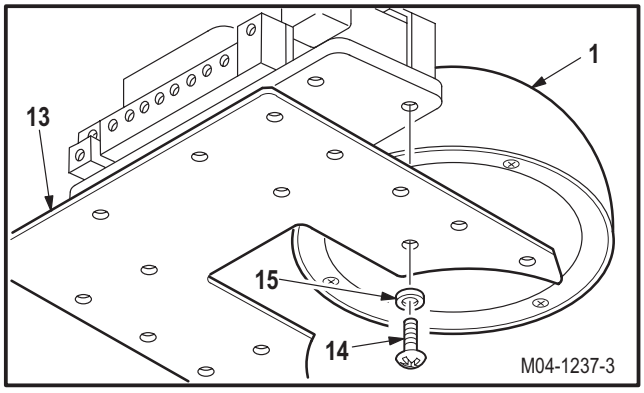
(3) Remove searchlight (1).



f. **Remove mounting plate (13) from searchlight (1).**

(1) Remove four screws (14) and washers (15).

(2) Remove plate (13).



9.101.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.101.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.61)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.61)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

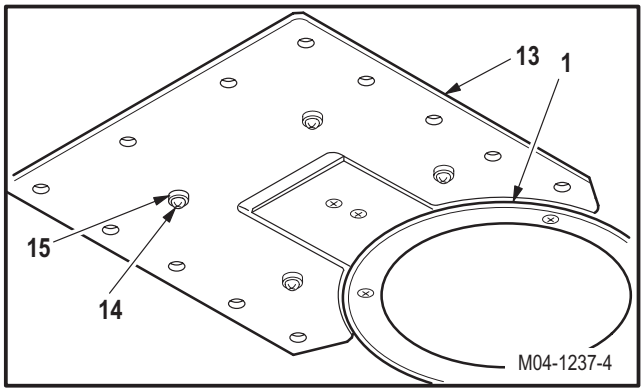
GO TO NEXT PAGE

9.101. LANDING/SEARCHLIGHT REMOVAL/INSTALLATION – continued

9.101.6. Installation

a. **Install plate (13) on searchlight (1).**

(1) Install four screws (14) through washers (15) and plate (13) into searchlight (1).

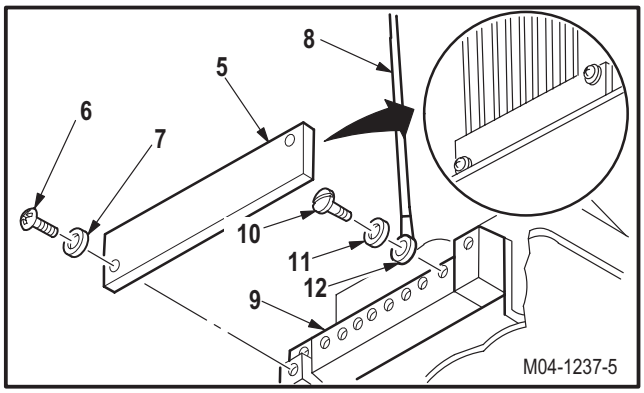


b. **Attach wires (8) to board (9).**

(1) Install screws (10) through washers (11) and lugs (12) in board (9).

c. **Install cover (5).**

(1) Install two screws (6) through washers (7) and cover (5) in board (9).



d. **Install searchlight (1).**

(1) Position searchlight (1) on aircraft (2).

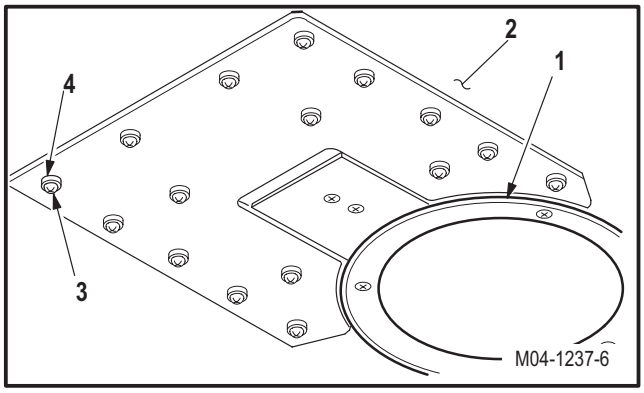
(2) Install 12 screws (3) and washers (4).

e. **Perform electrical bond check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

f. **Inspect (QA).**

g. **Perform landing/searchlight maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

9.102. LANDING/SEARCHLIGHT LAMP REPLACEMENT

9.102.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.102.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T

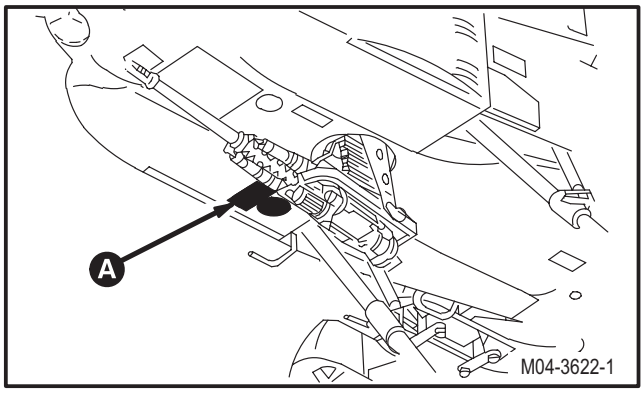
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

9.102.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot center circuit breaker panel, open LT SRCH/LDG and LT SRCH/LDG CONTR circuit breakers.**



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9.102. LANDING/SEARCHLIGHT LAMP REPLACEMENT – continued

c. **Remove lamp (1) from searchlight (2).**

(1) Loosen three captive screws (3).

(2) Remove retaining ring (4). Lower lamp (1).

d. **Detach two wires (5) from lamp (1).**

(1) Identify two wires (5).

(2) Remove two screws (6).

9.102.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

9.102.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.61)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.61)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.102.6. Installation

a. **Attach two wires (5) to lamp (1).**

(1) Install screws (6) through wires (5) into lamp (1).

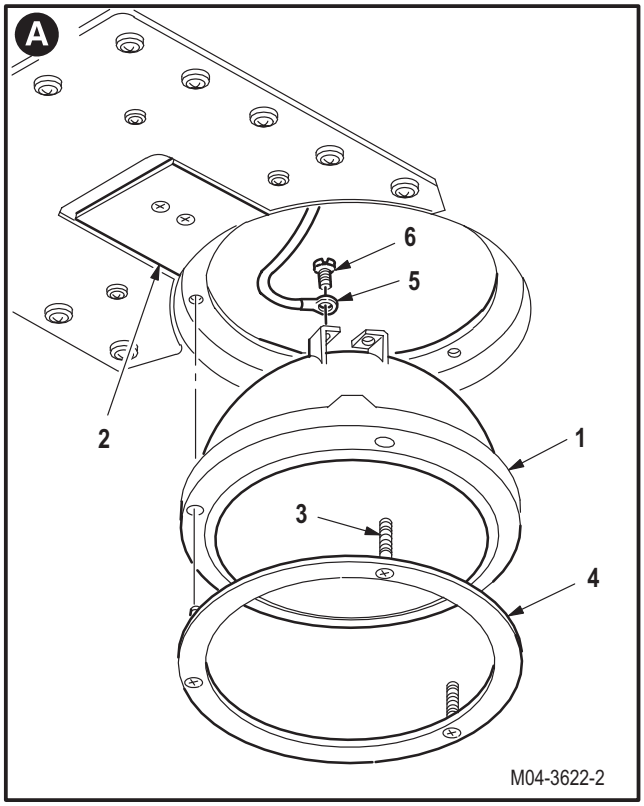
b. **Install lamp (1) in searchlight (2).**

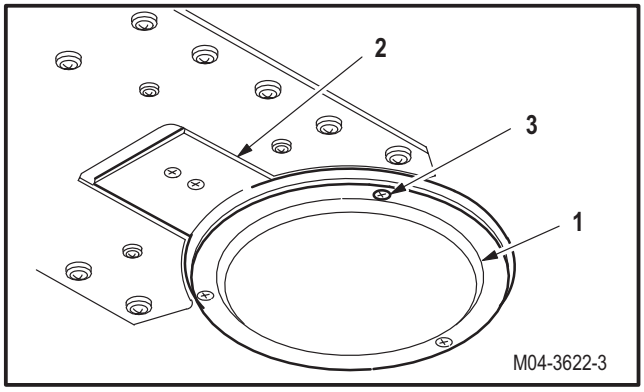
(1) Position lamp (1) in searchlight (2). Install retaining ring (4).

(2) Tighten three captive screws (3).

c. **Inspect (QA).**

d. **Perform landing/searchlight maintenance operational check** (TM 1-1520-238-T)**.**





END OF TASK

9.103. LANDING/SEARCHLIGHT RELAY REPLACEMENT

9.103.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.103.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Ohmmeter (item 218, App H)
Adjustable air filtering respirator (item 262, App H)
5-watt electric soldering iron (item 333, App H)

Materials/Parts:

Solder (item 189, App F)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T
TM 55-1500-323-24

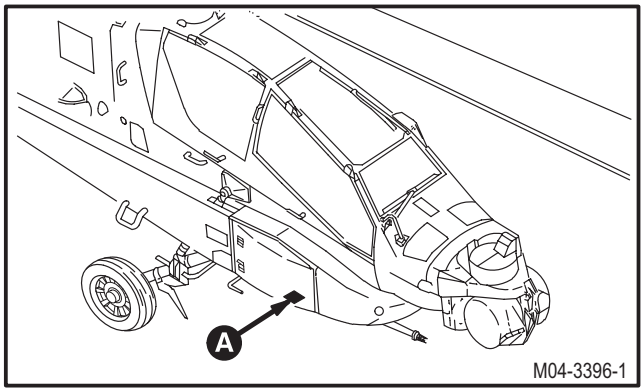
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access door R90 opened

9.103.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot center circuit breaker panel, open LT SRCH/LDG and LT SRCH/LDG CONTR circuit breakers.**

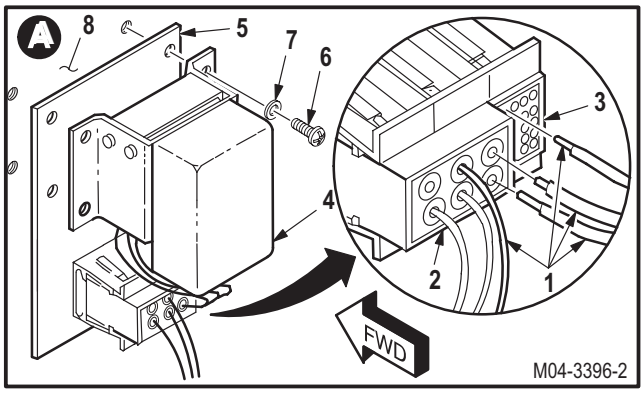


c. **Identify and depin wires (1) from terminal blocks TB1–1/2 (2) and TB1–3 (3)** (TM 55-1500-323-24)**.**

d. **Remove landing/searchlight relay (4) from mounting bracket (5).**

(1) Remove four screws (6) and washers (7).

(2) Remove relay (4) from bracket (5) and structure (8).



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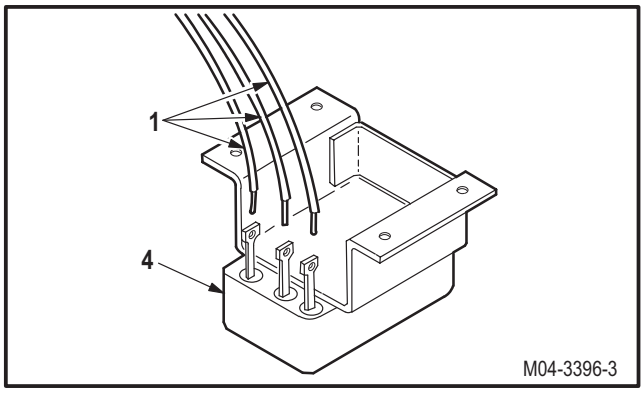
9.103. LANDING/SEARCHLIGHT RELAY REPLACEMENT – continued

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

e. **Identify and desolder wires (1) from relay (4).** Use soldering iron (TM 55-1500-323-24).



9.103.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.103.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.61)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.61)**.**

c. **Check bracket for cracks, nicks, and dents.** None allowed.

d. **Check bracket for stripped or damaged nutplates** (para 9.61)**.**

e. **Check removed and attaching parts for corrosion** (para 1.49)**.**

GO TO NEXT PAGE

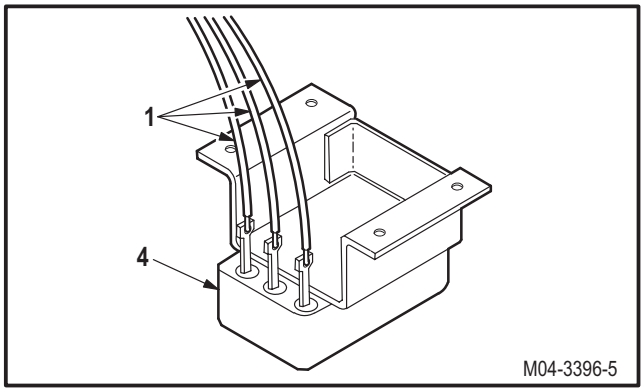
9.103. LANDING/SEARCHLIGHT RELAY REPLACEMENT – continued

9.103.6. Installation

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

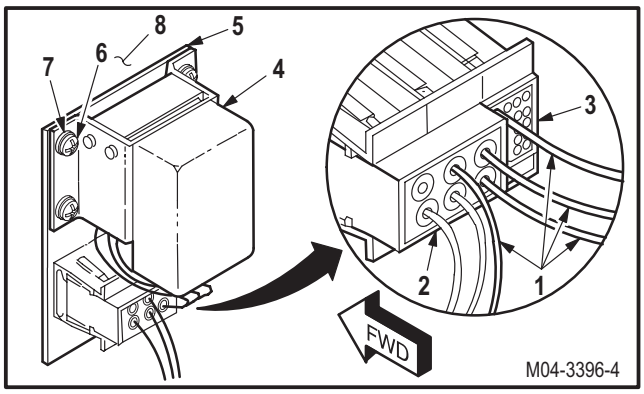
a. **Solder identified wires (1) to relay (4).** Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).



b. **Install relay (4) on bracket (5).**

(1) Position relay (4) on bracket (5) and structure (8).

(2) Install four screws (6) through washers (7), relay (4), and bracket (5) and structure (8).



c. **Pin identified wires (1) to terminal blocks (2) and (3)** (TM 55-1500-323-24)**.**

d. **Perform electrical bond check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

e. **Inspect (QA).**

f. **Secure access door R90** (para 2.2)**.**

g. **Perform landing/searchlight maintenance operational check** (TM 1-1520-238-T)**.**

END OF TASK

SECTION III. CAUTION AND WARNING COMPONENTS MAINTENANCE

9.104. CAUTION AND WARNING COMPONENTS INSPECTION

9.104.1. Description

This task covers: Inspection.

9.104.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

References:

TM 1-1500-204-23
TM 55-1500-323-24

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

9.104.3. Inspection

a. **Check for loose, missing, or damaged mounting hardware** (TM 55-1500-323-24). Replace as necessary.

b. **Check nutplates for loose rivets, stripped, or damaged threads** (TM 1-1500-204-23).

c. **Check wiring bundles for chaffing, loose mounting, and broken or missing wire ties** (TM 55-1500-323-24).

d. **Check wiring for wear, cracks, breaks, and cracked, broken or burned insulation** (TM 55-1500-323-24).

e. **Check wiring and electronic components for cracked, loose, or cold solder joints** (TM 55-1500-323-24).

f. **Check wire terminals for deformation and loose mounting hardware** (TM 55-1500-323-24).

g. **Check connectors for loose mounting** (TM 55-1500-323-24).

h. **Check connectors and receptacles for cracks, broken connections, and bent or damaged pins** (TM 55-1500-323-24). No cracks allowed. Thread damage not to exceed 50 percent of one thread.

(1) Repair mass termination connectors without shield bus (para 9.135) or mass termination connectors with shield bus (para 9.136).

i. **Check connector operation for smooth positive locking action** (TM 55-1500-323-24).

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9.104. CAUTION AND WARNING COMPONENTS INSPECTION – continued

j. **Check electrical terminals for damaged threads and loose mounting** (TM 55-1500-323-24)**.** Thread damage not to exceed 50 percent of one thread.

k. **Check terminals, shields, and covers for damage and loose mounting** (TM 55-1500-323-24)**.**

l. **Check pilot and CPG caution/warning panels for loose mounting and loose or missing hardware.**

m. **Check pilot and CPG caution/warning panel indicators for loose, missing, cracked, or broken lenses.**

n. **Check pilot and CPG master caution/warning panel wire harness for loose or broken wires.** Check connector for loose mounting.

o. **Check components for damage and loose mounting.**

p. **Check for damaged or missing nutplates** (TM 1-1500-204-23)**.** Replace as necessary.

END OF TASK

9.105. PILOT CAUTION/WARNING PANEL REMOVAL/INSTALLATION

9.105.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.105.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Ohmmeter (item 218, App H)

References:

TM 1-1520-238-T
TM 55-1500-323-24

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

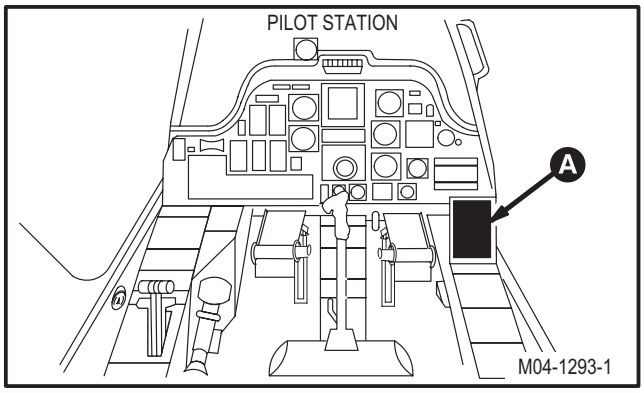
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

9.105.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot center circuit breaker panel, open LT CAUT circuit breaker.**



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9.105. PILOT CAUTION/WARNING PANEL REMOVAL/INSTALLATION – continued

c. **Remove pilot caution/warning panel (1) from instrument panel (2).**

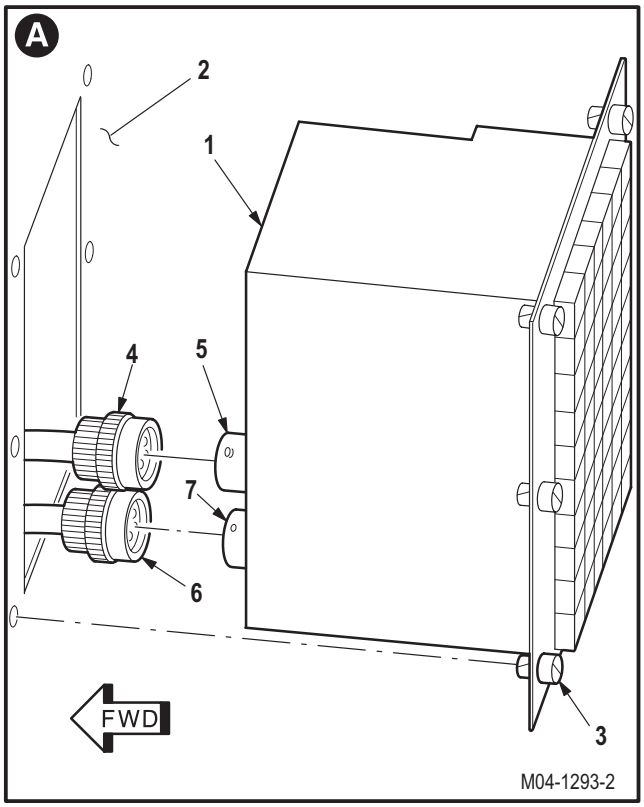
(1) Unlock six turn fasteners (3).

(2) Remove panel (1).

d. **Detach two connectors from panel (1).**

(1) Detach connector P18 (4) from receptacle J1 (5).

(2) Detach connector P20 (6) from receptacle J2 (7).



9.105.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

9.105.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.104)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.104)**.**

c. **Check connectors and receptacles for cracks, broken connections, and bent or damaged pins** (para 9.104)**.**

d. **Check removed and attaching parts for corrosion** (para 1.49)**.**

GO TO NEXT PAGE

9.105. PILOT CAUTION/WARNING PANEL REMOVAL/INSTALLATION – continued

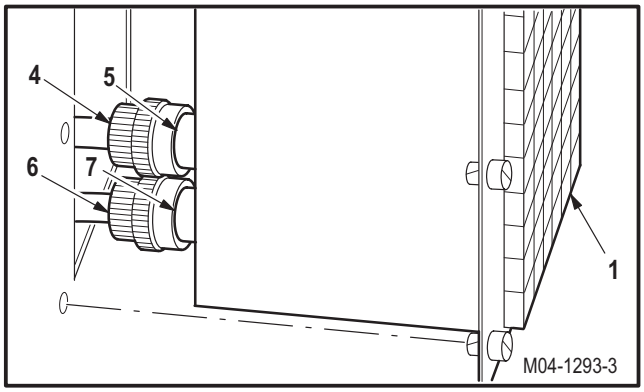
9.105.6. Installation

a. **Attach two connectors on pilot caution/warning panel (1).**

(1) Attach connector P20 (6) to receptacle J2 (7).

(2) Attach connector P18 (4) to receptacle J1 (5).

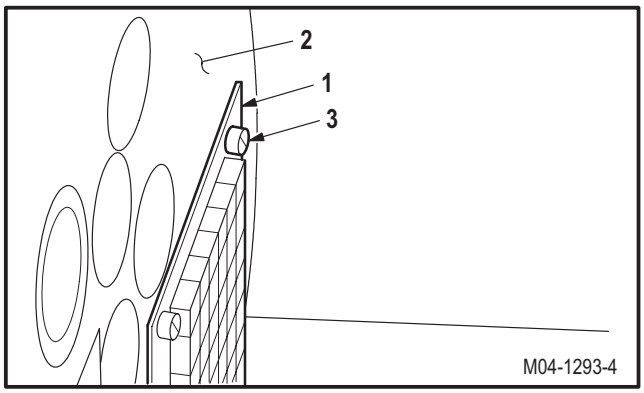
b. **Inspect (QA).**



c. **Install panel (1) on instrument panel (2).**

(1) Position panel (1) on panel (2).

(2) Lock six turn fasteners (3).



d. **Perform electrical bond check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

e. **Perform pilot caution and warning system maintenance operational check** (TM 1-1520-238-T)**.**

END OF TASK

9.106. PILOT OR CPG CAUTION/WARNING AND MASTER CAUTION/WARNING PANEL PUSH-BUTTON CAP REMOVAL/INSTALLATION

9.106.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.106.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

References:

TM 1-1520-238-T

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

NOTE

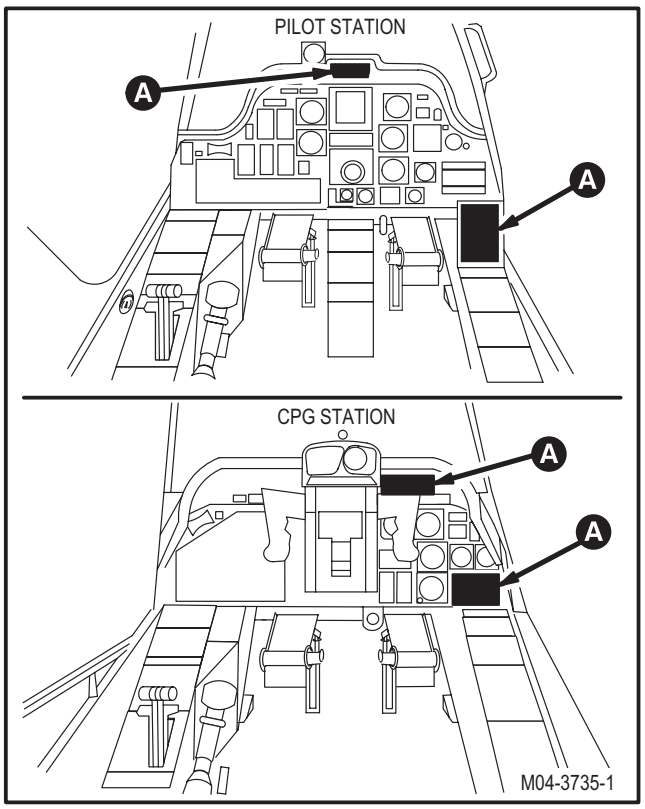
This task is typical for pilot or CPG caution/warning and master caution/warning panel.

9.106.3. Removal

a. **Enter pilot or CPG station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot center circuit breaker panel, open LT CAUT circuit breaker.**

c. **On CPG circuit breaker panel No.1, open EMERG BATT CAUT circuit breaker.**



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9.106. PILOT OR CPG CAUTION/WARNING AND MASTER CAUTION/WARNING PANEL PUSH-BUTTON CAP REMOVAL/INSTALLATION – continued

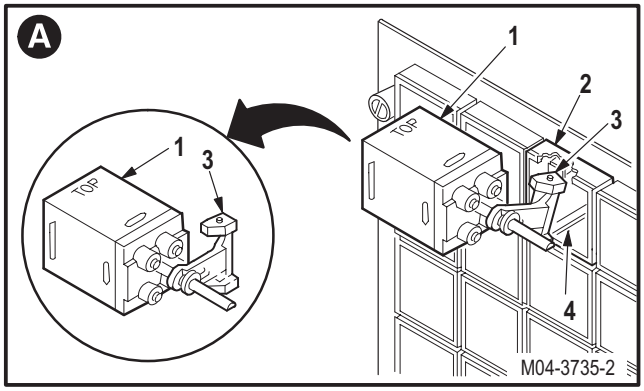
d. **Remove push button cap (1) from either caution warning or master caution/warning panels (2) from pilot or CPG station.**

(1) Press cap (1) to release detent.

(2) Pull cap (1) from panel (2) until retainer (3) restricts cap from complete removal. Move cap to one side.

(3) Pivot top of retainer (3) forward to disengage from track (4) inside panel (2).

(4) Remove cap (1) from panel (2).



9.106.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.106.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.104)**.**

b. **Check removed and attaching parts for corrosion** (para 1.49)**.**

GO TO NEXT PAGE

9.106. PILOT OR CPG CAUTION/WARNING AND MASTER CAUTION/WARNING PANEL PUSH-BUTTON CAP REMOVAL/INSTALLATION – continued

9.106.6. Installation

CAUTION

- To prevent damage to legends, lens caps must be installed with **TOP**-to-top and **BOTTOM**-to-bottom as shown.
- Caps installed incorrectly are unusable.

a. **Install push button cap (1) in panel (2).**

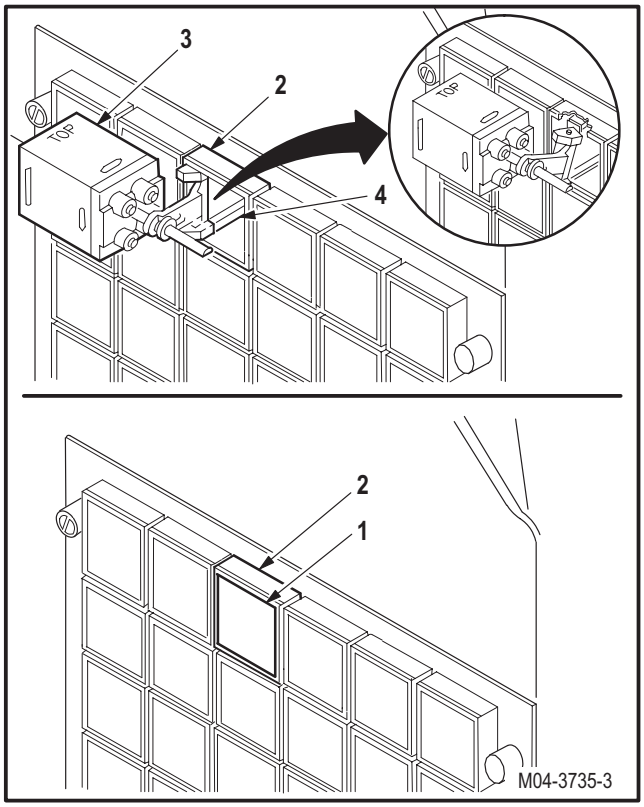
(1) Pivot top of retainer (3) forward and position in track (4).

(2) Pivot retainer (3) to upright position within track (4).

(3) Aline cap (1) with caution/warning panel (2) and push in to seat.

b. **Inspect (QA).**

c. **Perform pilot or CPG caution/warning system maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

9.107. PILOT OR CPG CAUTION/WARNING AND MASTER CAUTION/WARNING PANEL LIGHT SWITCH REPLACEMENT (AVIM)

9.107.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.107.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
25-watt electric soldering iron (item 332, App H)

Materials/Parts:

Cloth (item 52, App F)
Isopropyl alcohol (item 106, App F)
Solder (item 189, App F)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
9.106	Pilot or CPG push button cap removed

NOTE

- This task is typical for pilot or CPG caution/warning and master caution/warning panel light switches.
- If replacing pilot or CPG caution/warning panel light switches, go to step b.

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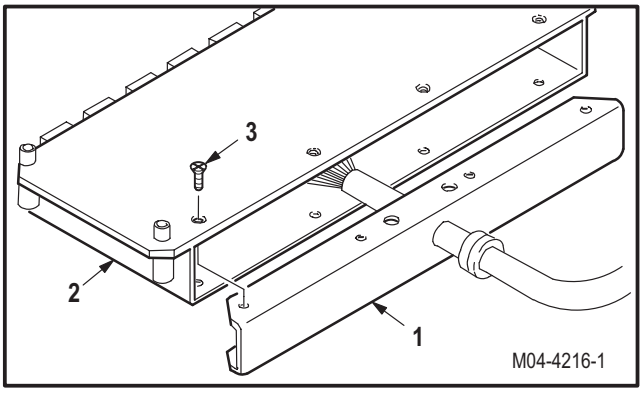
9.107. PILOT OR CPG CAUTION/WARNING AND MASTER CAUTION/WARNING PANEL LIGHT SWITCH REPLACEMENT (AVIM) – continued

9.107.3. Removal

a. **Remove rear plate assembly (1) from housing (2).**

(1) Remove eight screws (3) and plate (1) from housing (2).

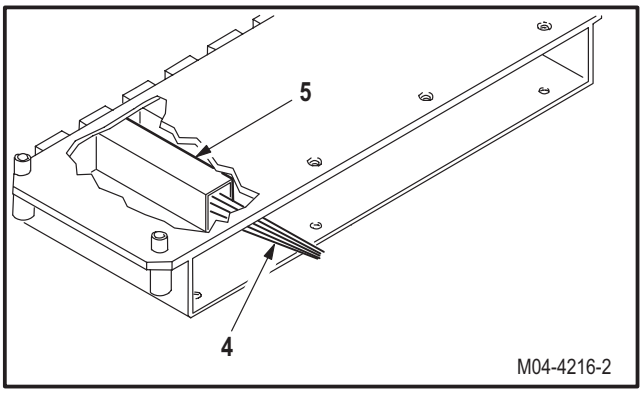


WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

b. **Remove wiring (4) from light switch (5).**

(1) Identify and desolder wiring (4) from light switch (5). Use soldering iron (TM 55-1500-323-24).



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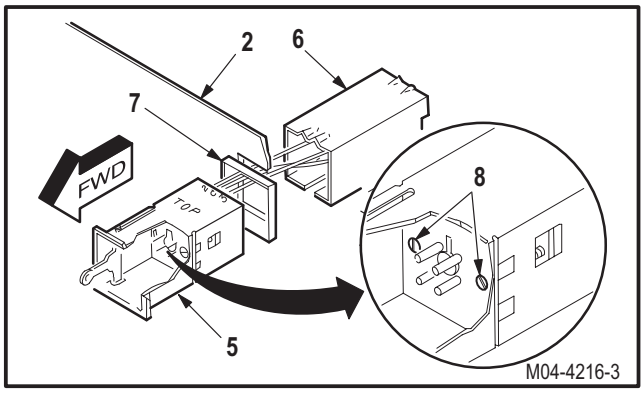
9.107. PILOT OR CPG CAUTION/WARNING AND MASTER CAUTION/WARNING PANEL LIGHT SWITCH REPLACEMENT (AVIM) – continued

CAUTION

Advisory light switch is secured to mounting sleeve by two integral screws. To prevent damage to light assembly, do not back screws out too far.



c. **Remove light switch (5) from housing (2).**

(1) Remove light switch (5) from mounting sleeve (6), housing (2), and mounting spacer (7).

(a) Hold sleeve (6). Loosen two screws (8).

(b) Remove light switch (5) and spacer (7) through front of housing (2).

(c) Remove sleeve (6) from rear of housing (2).

9.107.4. Cleaning

a. **Clean mounting area.** Use cloth (item 52, App F) and isopropyl alcohol (item 106, App F).

9.107.5. Inspection

a. **Check connectors for damaged pins, cracks, cuts, or broken wires** (para 9.104)**.**

b. **Check removed and attaching parts for damage** (para 9.104)**.**

c. **Check wires and terminals for wear, cracks, and cuts** (para 9.104)**.**

d. **Check removed and attaching parts for corrosion** (para 1.49)**.**

GO TO NEXT PAGE

9.107. PILOT OR CPG CAUTION/WARNING AND MASTER CAUTION/WARNING PANEL LIGHT SWITCH REPLACEMENT (AVIM) – continued

9.107.6. Installation

CAUTION

- Advisory light body is secured to mounting sleeve by two integral mounting screws. To prevent damage to light assembly, do not over tighten.
- To prevent damage to legends, lens caps must be installed with top-to-top and bottom-to-bottom as shown.

a. **Install light switch (5) in housing (2).**

(1) Position sleeve (6) over identified wires.

NOTE

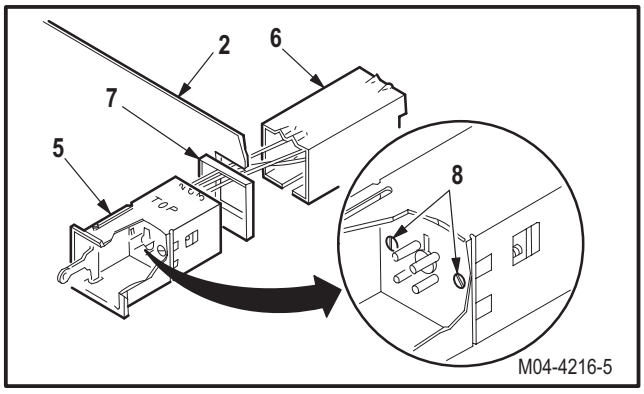
Sleeve must be positioned with long slot down and side slots toward front of helicopter.

(2) Position and hold sleeve (6) behind panel (2).

(3) Position light switch (5) with **TOP** placard up.

(4) Install light switch (5) through spacer (7) and panel (2) into sleeve (6).

(5) Tighten two screws (8).



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9.107. PILOT OR CPG CAUTION/WARNING AND MASTER CAUTION/WARNING PANEL LIGHT SWITCH REPLACEMENT (AVIM) – continued

WARNING

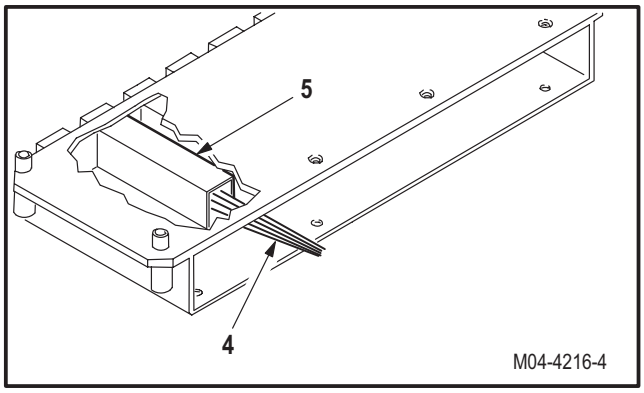
Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

b. **Install wiring (4) on light switch (5).**

(1) Solder identified wiring (4) on light switch (5). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).

c. **Install push button** (para 9.106)**.**

d. **Inspect (QA).**

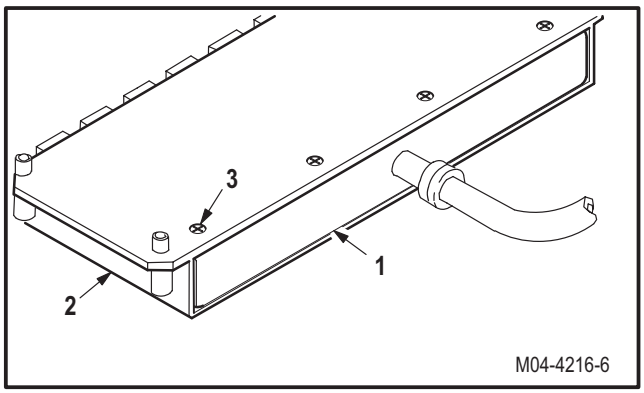


e. **Install plate (1) in housing (2).**

(1) Install plate (1) and eight screws (3) into housing (2).

f. **Inspect (QA).**

g. **Install pilot front panel housing** (para 9.110) **or CPG front panel housing** (para 9.116)**.**



END OF TASK

9.108. PILOT OR CPG CAUTION/WARNING AND MASTER CAUTION/WARNING PANEL LAMP REPLACEMENT

9.108.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.108.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

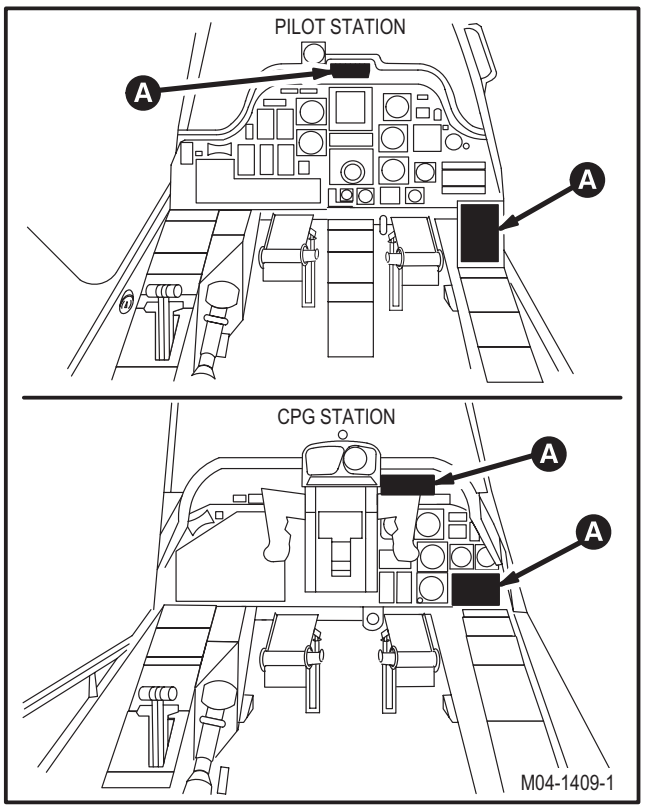
TM 1-1520-238-T

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

NOTE

This task is typical for pilot or CPG master caution/warning and caution/warning panels.



9.108.3. Removal

a. **Enter pilot or CPG station** (para 1.56)**. Observe all safety precautions.**

b. **Identify panel lamp to be replaced (pilot or CPG).**

c. **On pilot center circuit breaker panel, open LT CAUT circuit breaker.**

d. **On CPG circuit breaker panel No. 1, open EMERG BATT CAUT circuit breaker.**

9.108.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.108.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.104)**.**

b. **Check removed and attaching parts for corrosion** (para 1.49)**.**

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9.108. PILOT OR CPG CAUTION/WARNING AND MASTER CAUTION/WARNING PANEL LAMP REPLACEMENT – continued

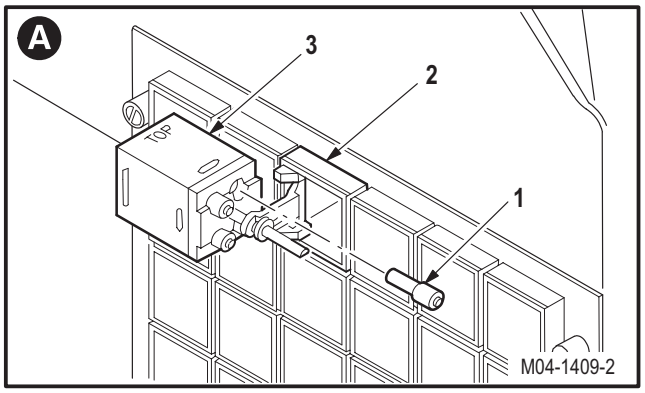
CAUTION

- To prevent damage to legends, lens caps must be installed with **TOP**-to-top and **BOTTOM**-to-bottom as shown.
- Caps are unusable if installed incorrectly.

c. **Remove lamp (1) from either caution/warning or master caution warning panels (2) from pilot or CPG station.**

(1) Pull lens cap (3) from panel (2) and move to one side.

(2) Remove lamp (1) from cap (3).



9.108.6. Installation

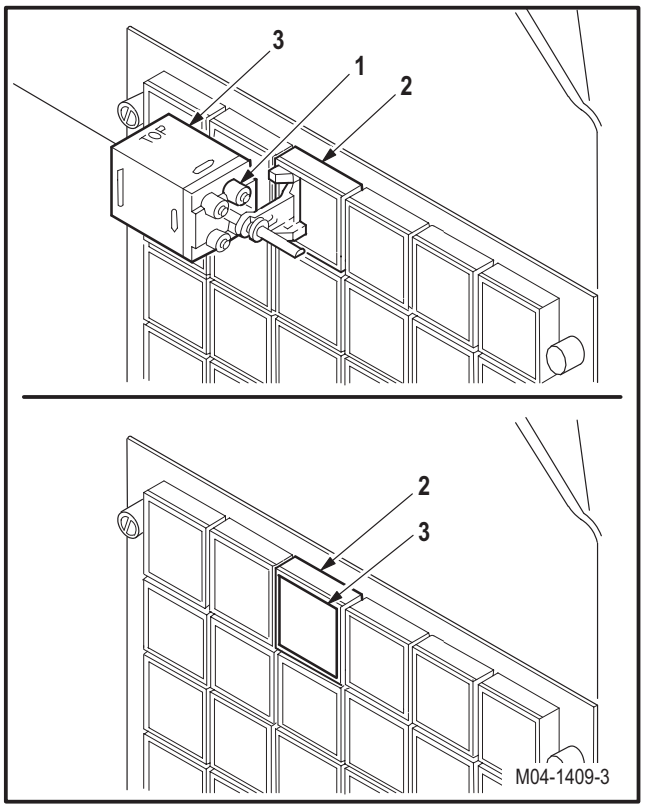
a. **Install lamp (1) in panel (2).**

(1) Insert lamp (1) in cap (3).

(2) Aline cap (3) with caution/warning panel (2) and push in to seat.

b. **Inspect (QA).**

c. **Perform pilot or CPG caution and warning system maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

9.109. PILOT CAUTION/WARNING PANEL CIRCUIT CARD REMOVAL/INSTALLATION (AVIM)

9.109.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.109.2. Initial Setup

Tools:

Electronic equipment maintenance kit (item 208, App H)

References:

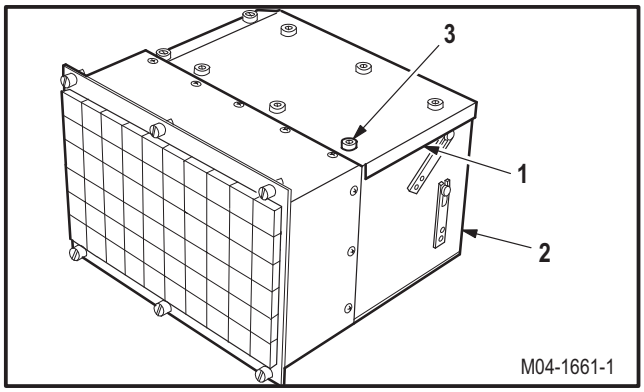
TM 11-6625-3085-30

Personnel Required:

39B ATE Operator/Maintainer
68X3F Armament/Electrical System Repairer/ Technical Inspector

NOTE

This task is typical for circuit cards A1, A2, A3, or A4 except where noted.



9.109.3. Removal

a. **Remove cover (1) from pilot caution/warning panel (2).**

(1) Unlock eight quarter turn fasteners (3).

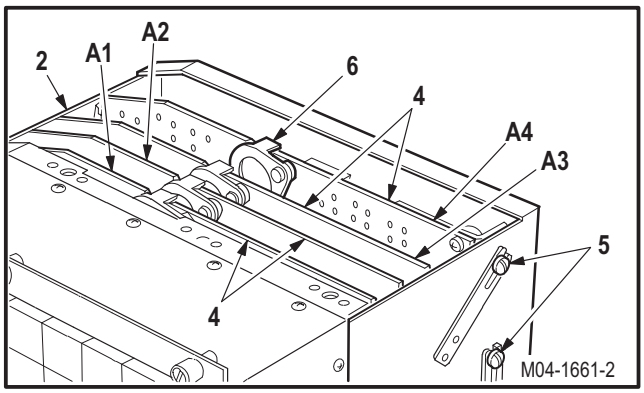
(2) Remove cover (1).

b. **Remove circuit card (4) from panel (2).**

(1) For circuit card assembly A4, unlock two quarter turn fasteners (5).

(2) Raise plastic ring (6) on card (4).

(3) Use plastic ring (6) to pull card (4) from panel (2).



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9.109. PILOT CAUTION/WARNING PANEL CIRCUIT CARD REMOVAL/INSTALLATION (AVIM) – continued

9.109.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.109.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.104)**.**

b. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.109.6. Installation

a. **Install circuit card (4) in panel (2).**

(1) Aline card (4) with guides (7).

(2) Press down on card (4) to seat.

(3) Secure plastic ring (6) on card (4).

(4) For card A4, lock two quarter turn fasteners (5).

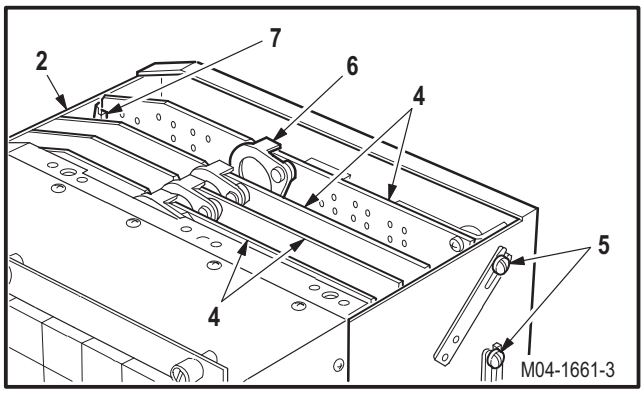
b. **Inspect (QA).**

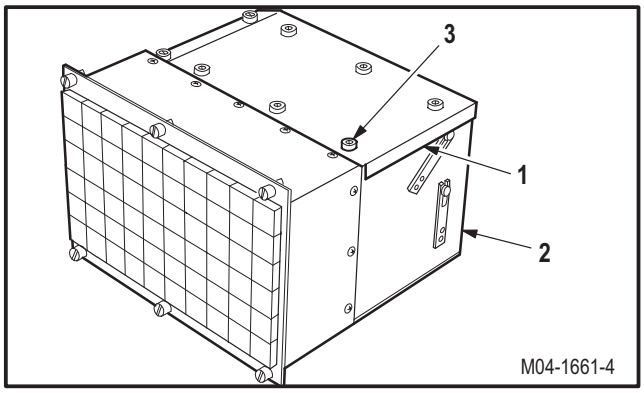
c. **Install cover (1) on panel (2).**

(1) Position cover (1) on panel (2).

(2) Lock eight quarter turn fasteners (3).

d. **Perform appropriate test.** Electronic Equipment Test Facility (E.E.T.F.) (TM 11-6625-3085-30).





END OF TASK

9.110. PILOT CAUTION/WARNING PANEL HOUSING DISASSEMBLY/ASSEMBLY (AVIM)

9.110.1. Description

This task covers: Disassembly. Cleaning. Inspection. Assembly.

9.110.2. Initial Setup

Tools:

Electronic equipment maintenance kit (item 208, App H)

Materials/Parts:

Grommet (table D-19, App D)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
9.109	Pilot caution/warning panel circuit cards A1, A2, A3, and A4 removed
9.112	Pilot caution/warning panel fixed wire resistor removed

CAUTION

To prevent damage to pilot caution/warning panel, exercise care when handling housing and internal components. Ensure that work area is clean and that parts are placed on a soft and adequately protected working surface.

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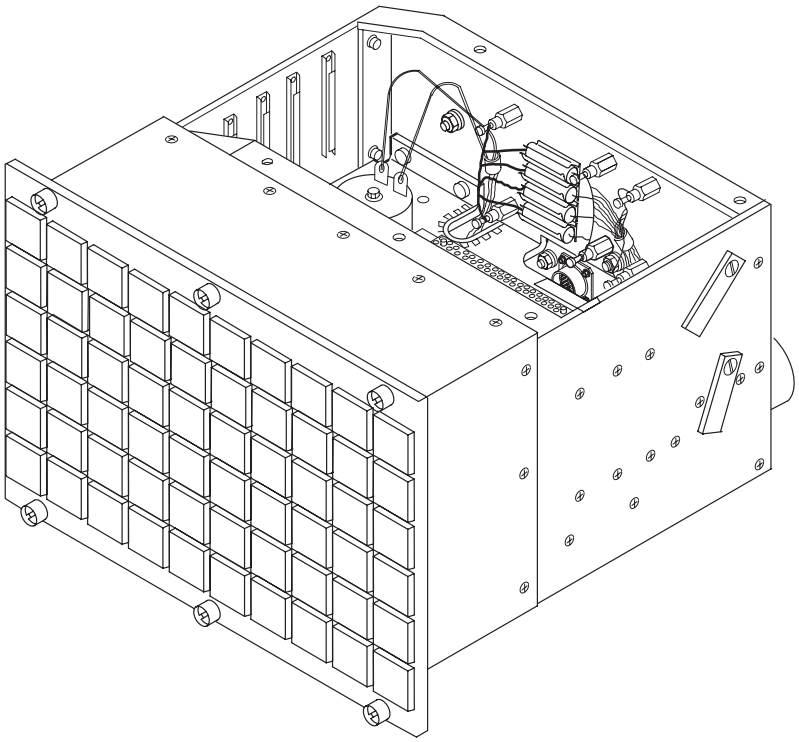
9.110. PILOT CAUTION/WARNING PANEL HOUSING DISASSEMBLY/ASSEMBLY (AVIM) – continued



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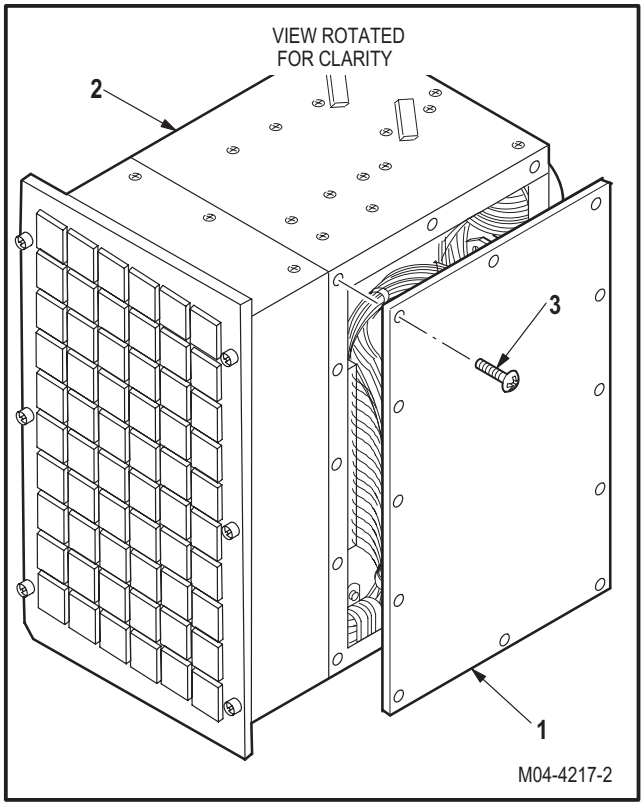
9.110. PILOT CAUTION/WARNING PANEL HOUSING DISASSEMBLY/ASSEMBLY (AVIM) – continued

9.110.3. Disassembly

a. **Remove bottom access cover (1) from rear housing (2).**

(1) Remove 12 screws (3) from cover (1).

(2) Remove cover (1).



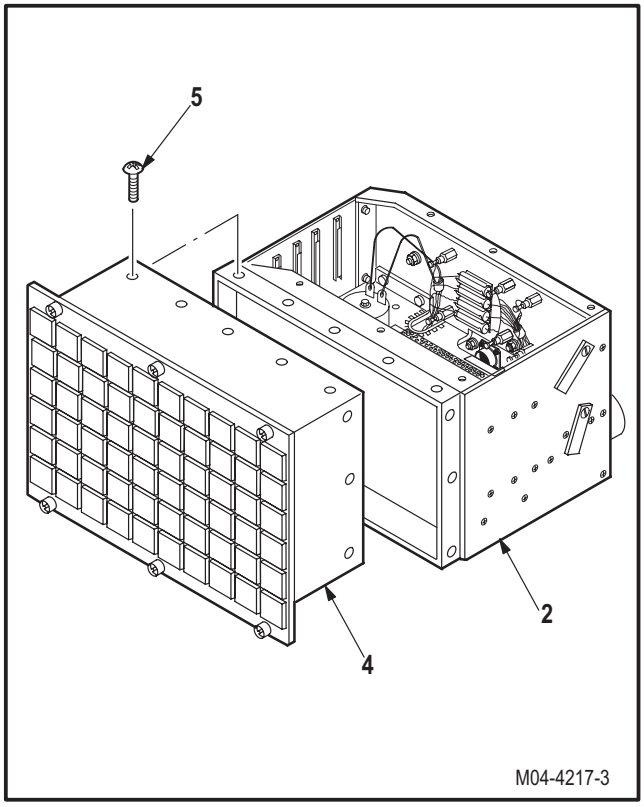
NOTE

Front panel is electrically interconnected to rear housing and cannot be completely removed until all connectors, receptacles, and electronic components have been removed. Do not cut, depin or detach interconnecting wires.

b. **Remove front panel (4) from housing (2).**

(1) Remove 16 screws (5) from panel (4).

(2) Remove panel (4).



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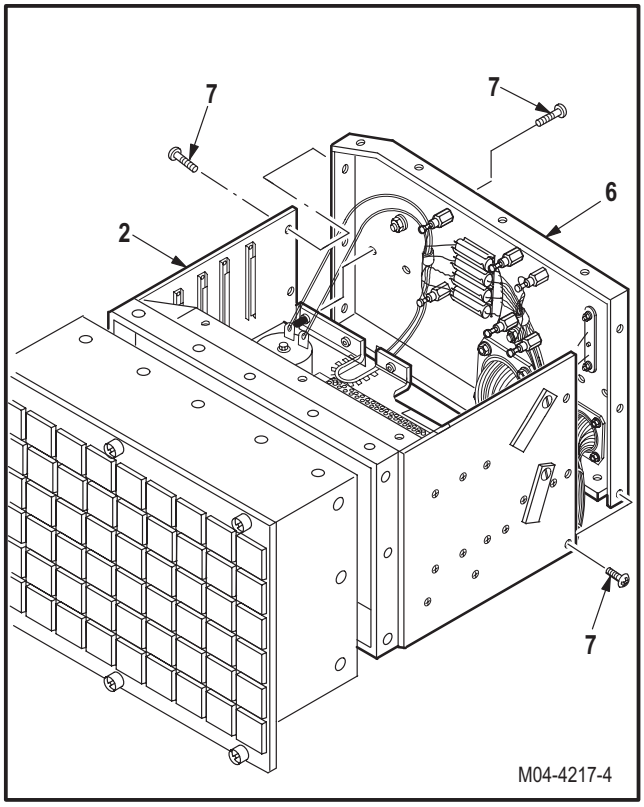
9.110. PILOT CAUTION/WARNING PANEL HOUSING DISASSEMBLY/ASSEMBLY (AVIM) – continued

c. **Remove rear panel (6) from housing (2).**

(1) Remove 12 screws (7) from panel (6).

(2) Remove panel (6) from housing (2).



WARNING

Discharge all capacitors by grounding prior to removal. Capacitors can hold an electrical charge and create a dangerous potential for electrical shock. If injury occurs, seek medical aid.

NOTE

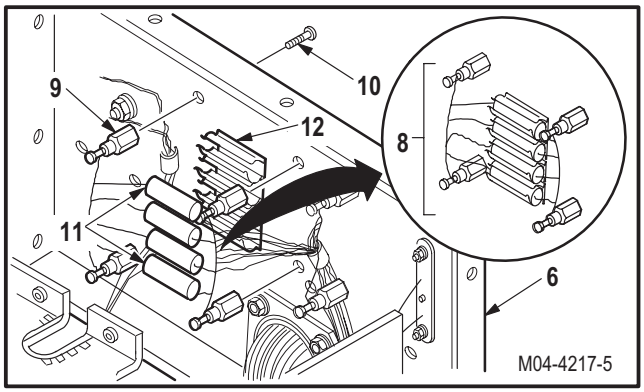
Do not desolder capacitors from harness unless replacing capacitors.

(3) Remove capacitor harness (8) from panel (6).

(a) Hold terminal posts (9). Remove four screws (10) from panel (6) and posts (9).

(b) Remove capacitors (11) from mounting clips (12).

(c) Remove harness (8).



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9.110. PILOT CAUTION/WARNING PANEL HOUSING DISASSEMBLY/ASSEMBLY (AVIM) – continued

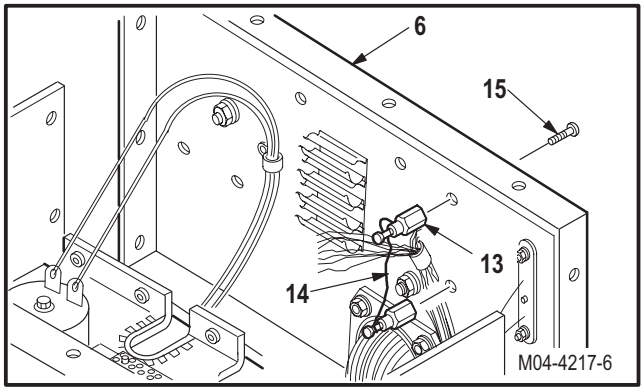
NOTE

Do not desolder wires from terminal posts unless replacing terminal posts.

(4) Remove two terminal posts (13) and wire (14) from panel (6).

(a) Hold posts (13). Remove two screws (15) from panel (6) and posts (13).

(b) Remove posts (13) and wire (14).

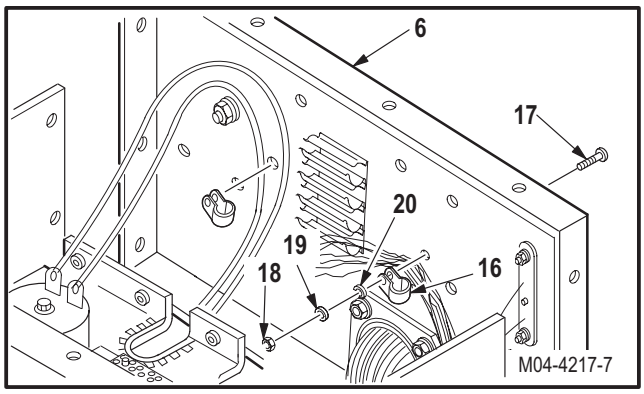


(5) Remove two clamps (16) from panel (6).

(a) Hold screws (17). Remove two nuts (18), lockwashers (19) and washers (20).

(b) Remove two screws (17) from panel (6) and clamps (16).

(c) Remove clamps (16).



NOTE

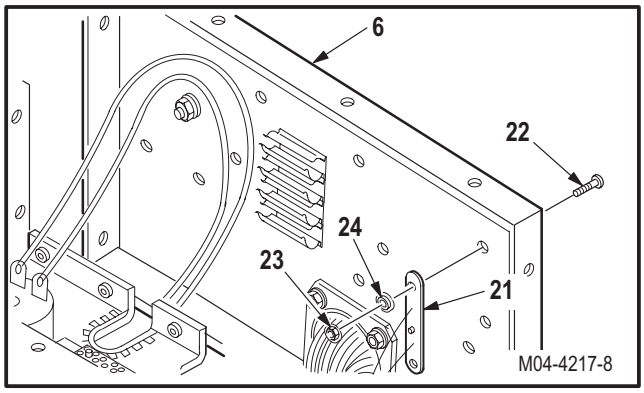
Do not desolder wires from hour meter unless replacing hour meter.

(6) Remove hour meter (21) from panel (6).

(a) Hold screws (22). Remove two nuts (23) and washers (24).

(b) Remove two screws (22) from panel (6) and meter (21).

(c) Remove meter (21).



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9.110. PILOT CAUTION/WARNING PANEL HOUSING DISASSEMBLY/ASSEMBLY (AVIM) – continued

NOTE

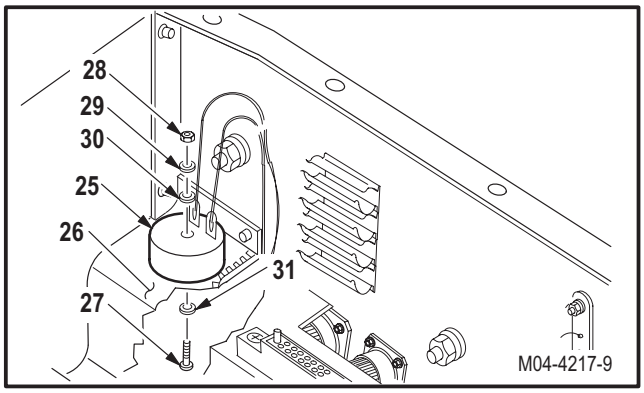
Do not desolder wires from coil (A106)L1 or (A106)L2 unless replacing coil(s).

(7) Remove coil (A602)L1 (25) from connector plate (26).

(a) Hold screw (27). Remove nut (28) and washers (29) and (30).

(b) Remove screw (27) and washer (31) from plate (26) and coil (25).

(c) Remove coil (25).

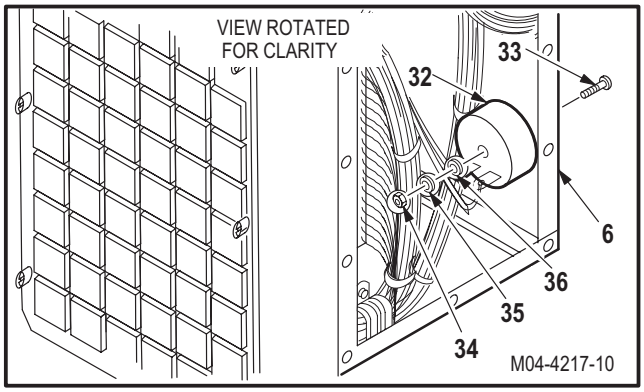


(8) Remove coil (A602)L2 (32) from panel (6).

(a) Hold screw (33). Remove nut (34), washers (35) and (36).

(b) Remove screw (33) from panel (6) and coil (32).

(c) Remove coil (32).



NOTE

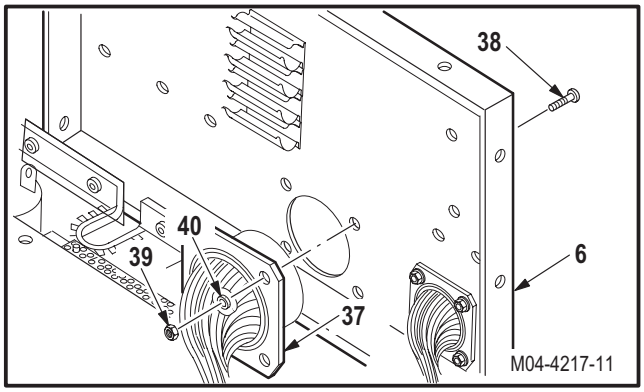
Do not depin wires from receptacle (A106)J1 or (A106)J2 unless replacing receptacle(s).

(9) Remove receptacle (A106)J1 (37) from panel (6).

(a) Hold screws (38). Remove four nuts (39) and washers (40).

(b) Remove four screws (38) from panel (6) and receptacle (37).

(c) Remove receptacle (37).



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9.110. PILOT CAUTION/WARNING PANEL HOUSING DISASSEMBLY/ASSEMBLY (AVIM) – continued

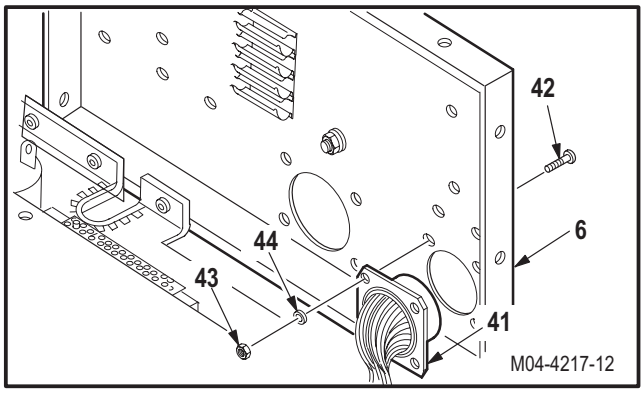
(10) Remove receptacle (A106)J2 (41) from panel (6).

(a) Hold screws (42). Remove four nuts (43) and washers (44).

(b) Remove four screws (42) from panel (6) and receptacle (41).

(c) Remove receptacle (41).

(d) Remove panel (6).



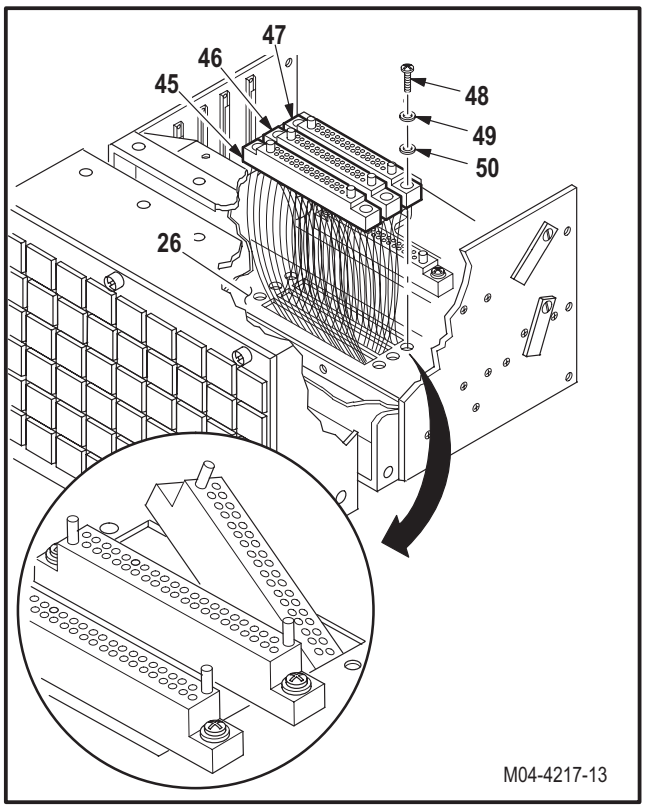
NOTE

Do not depin wires from receptacles (A106)J3, (A106)J4, or (A106)J5 unless replacing receptacles.

d. **Remove receptacles (A106)J3 (45), (A106)J4 (46), and (A106)J5 (47) from plate (26).**

(1) Remove two screws (48) and washers (49) and (50) from receptacles (45), (46), and (47).

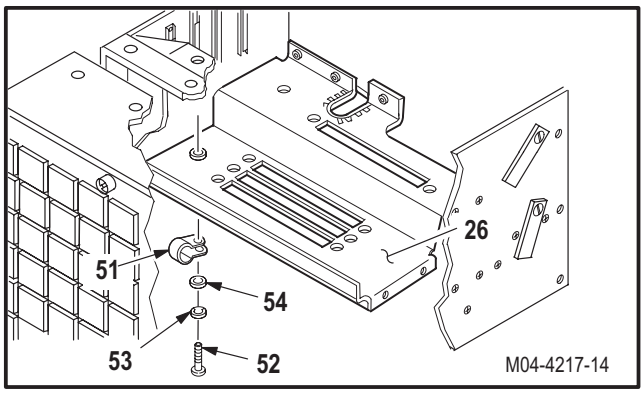
(2) Remove receptacles (45), (46), and (47) by sliding each receptacle through plate (26) receptacle slots.



e. **Remove clamp (51) from plate (26).**

(1) Remove screw (52) and washers (53) and (54) from plate (26) and clamp (51).

(2) Remove clamp (51).



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9.110. PILOT CAUTION/WARNING PANEL HOUSING DISASSEMBLY/ASSEMBLY (AVIM) – continued

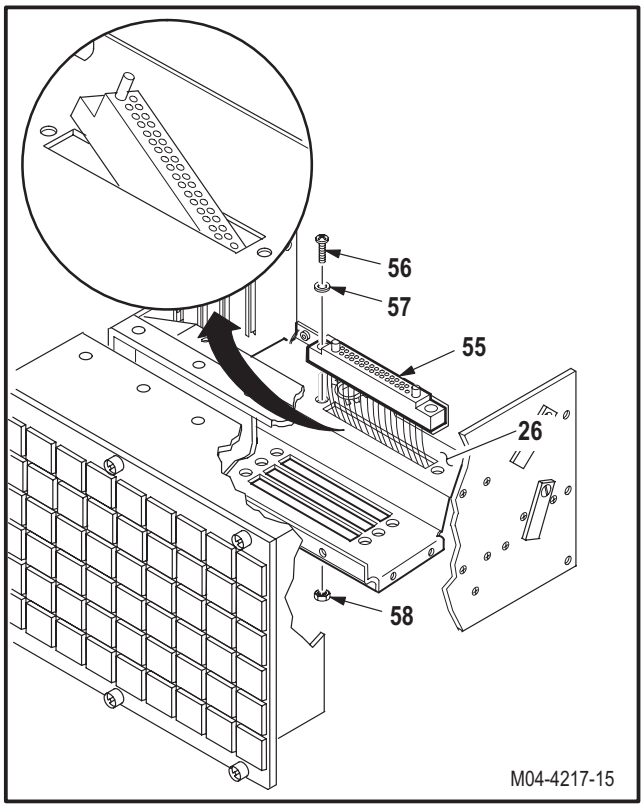
NOTE

Do not depin wires from receptacle (A106)J6 unless replacing receptacles.

f. **Remove receptacle (55) from plate (26).**

(1) Remove two screws (56), washers (57), and nuts (58) from receptacle (55) and plate (26).

(2) Remove receptacle (55) by sliding receptacle through plate (26) receptacle slot.



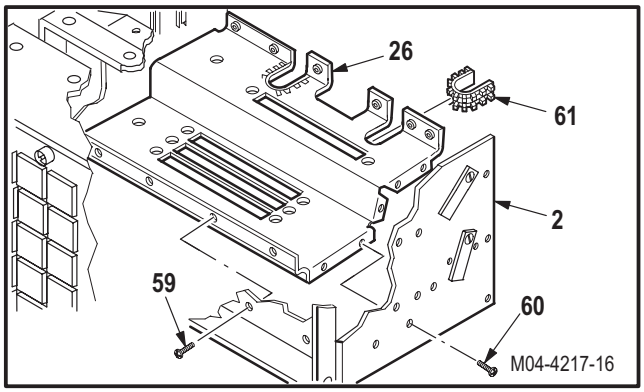
g. **Remove plate (26) from housing (2).**

(1) Remove four screws (59) from housing (2) and plate (26).

(2) Remove 10 screws (60) from housing (2) and plate (26).

(3) Remove plate (26).

(4) Remove two grommets (61) from plate (26).



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9.110. PILOT CAUTION/WARNING PANEL HOUSING DISASSEMBLY/ASSEMBLY (AVIM) – continued

9.110.4. Cleaning

a. **Clean removed and attaching parts and surfaces** (para 1.47)**.**

9.110.5. Inspection

a. **Check for cracks.** None allowed.

b. **Check removed and attaching parts for damage** (para 9.104)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

d. **Check for elongated screw holes.** None allowed.

e. **Check for erosion of surface finish** (para 9.104)**.**

f. **Check for loose or damaged clinch nuts** (para 9.104)**.**

g. **Check for nicks, dents, scratches, and gouges** (para 9.104)**.**

h. **Check for loose, missing, or damaged hardware** (para 9.104)**.**

i. **Check for sharp bends, distortion, or deformation** (para 9.104)**.**

j. **Check threaded holes for crossed, stripped, or flattened threads.** None allowed.

k. **Check electronic components for damage** (para 9.104)**.**

l. **Check receptacles for cracks, bent or corroded pins, damaged threads, and loose or broken wire connections** (para 9.104)**.**

m. **Check connectors for cracks, deterioration, bent or corroded pins, and loose or broken wire connections** (para 9.104)**.**

n. **Check wires and wire bundles for cracked, broken, or burned insulation** (para 9.104)**.**

o. **Check wires and wire bundles for missing or broken tie wraps, chafing, wear, cuts, and breaks** (para 9.104)**.**

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9.110. PILOT CAUTION/WARNING PANEL HOUSING DISASSEMBLY/ASSEMBLY (AVIM) – continued

9.110.6. Assembly

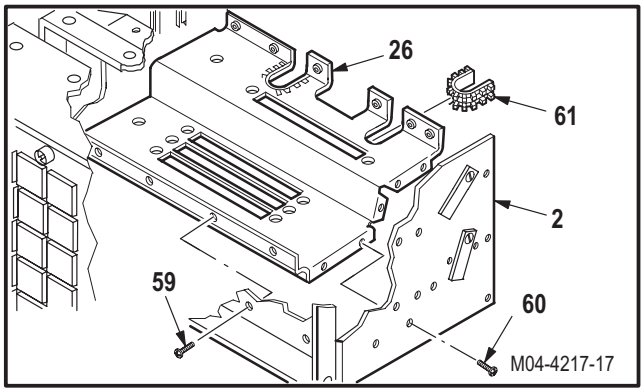
a. **Install plate (26) on housing (2).**

(1) Install two grommets (61) on plate (26).

(2) Position plate (26) on housing (2).

(3) Install 10 screws (60) through housing (2) in plate (26).

(4) Install four screws (59) through housing (2) in plate (26).

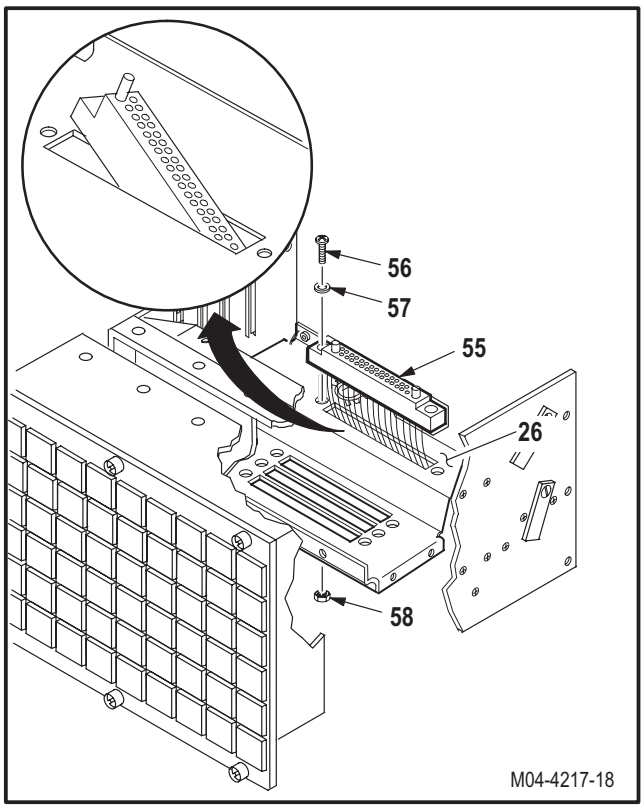


b. **Install receptacle (A106)J6 (55) on plate (26).**

(1) Position receptacle (55) on plate (26) by sliding receptacle through plate (26) receptacle slot.

(2) Install two screws (56) and washers (57) through receptacle (55) in plate (26).

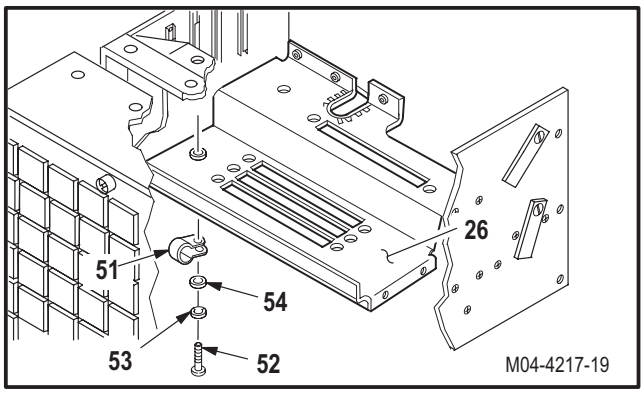
(3) Install two nuts (58) on screws (56).



c. **Install clamp (51) on plate (26).**

(1) Position clamp (51) on plate (26).

(2) Install screw (52) and washers (53) and (54) through clamp (51) in plate (26).



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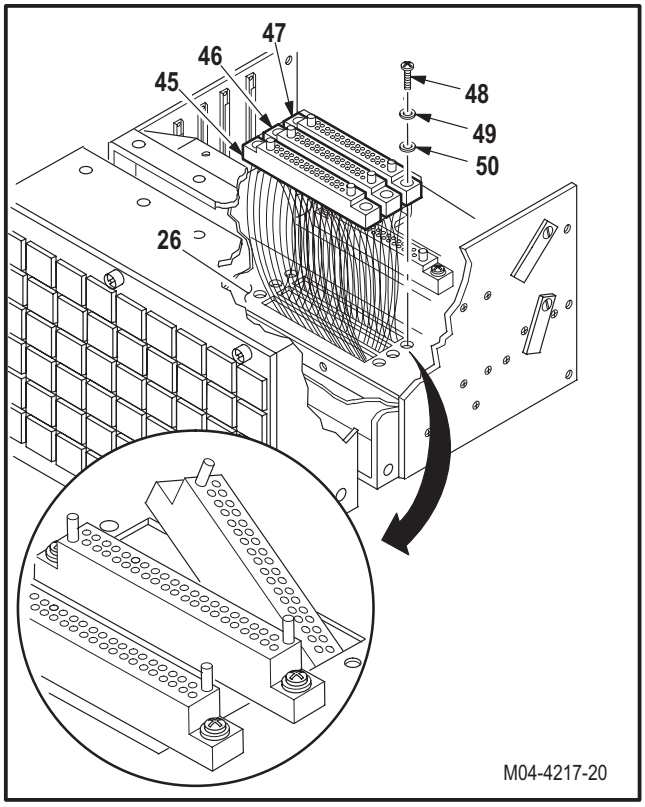
9.110. PILOT CAUTION/WARNING PANEL HOUSING DISASSEMBLY/ASSEMBLY (AVIM) – continued

d. **Install receptacles (A106)J3 (45), (A106)J4 (46), and (A106)J5 (47) on plate (26).**

(1) Position receptacles (45), (46), and (47) on plate (26) by sliding each receptacle through plate (26) receptacle slots.

(2) Install two screws (48) and washers (49) and (50) through receptacles (45), (46), and (47) in plate (26).



e. **Install panel (6) on housing (2).**

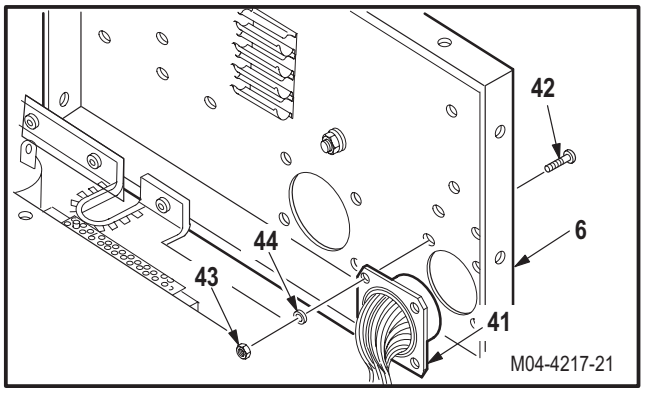
(1) Position panel (6) against housing (2).

(2) Install receptacle (A106)J2 (41) on panel (6).

(a) Slide receptacle (41) in panel (6).

(b) Install four screws (42) through panel (6) in receptacle (41).

(c) Install four nuts (43) and washers (44) on screws (42).

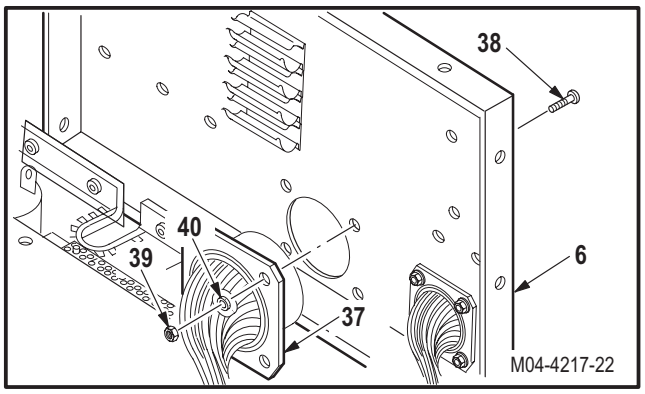


(3) Install receptacle (A106)J1 (37) on panel (6).

(a) Slide receptacle (37) in panel (6).

(b) Install four screws (38) through panel (6) in receptacle (37).

(c) Install four nuts (39) and washers (40) on screws (38).



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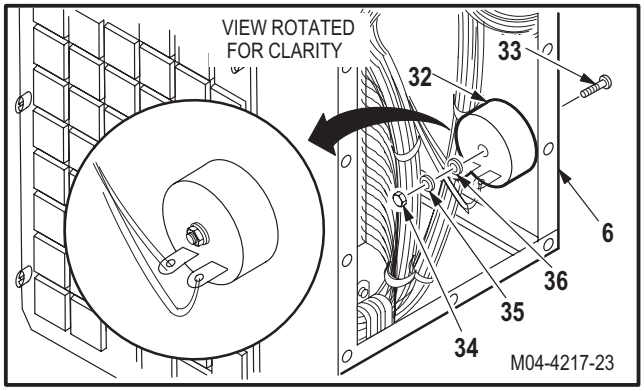
9.110. PILOT CAUTION/WARNING PANEL HOUSING DISASSEMBLY/ASSEMBLY (AVIM) – continued

(4) Install coil (A106)L1 (32) on panel (6).

(a) Position coil (32) on panel (6).

(b) Install screw (33) through panel (6) and coil (32).

(c) Install nut (34) and washers (35) and (36) on screw (33).

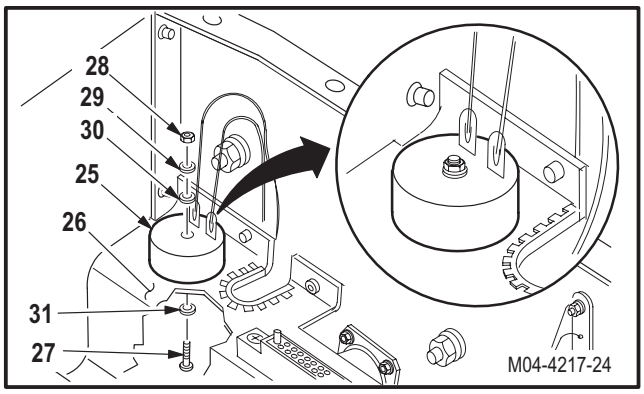


(5) Install coil (A106)L2 (25) on connector plate (26).

(a) Position coil (25) on plate (26).

(b) Install screw (27) through washer (31), plate (26), and coil (25).

(c) Install nut (28) and washers (29) and (30) on screw (27).

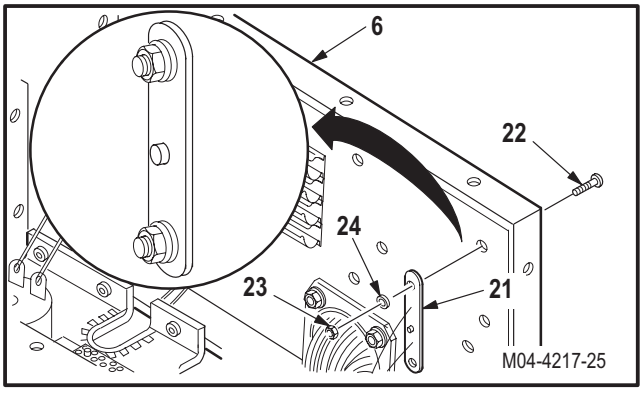


(6) Install meter (21) on panel (6).

(a) Position meter (21) on panel (6).

(b) Install two screws (22) through panel (6) and meter (21) flange.

(c) Install two nuts (23) and washers (24) on screws (22).

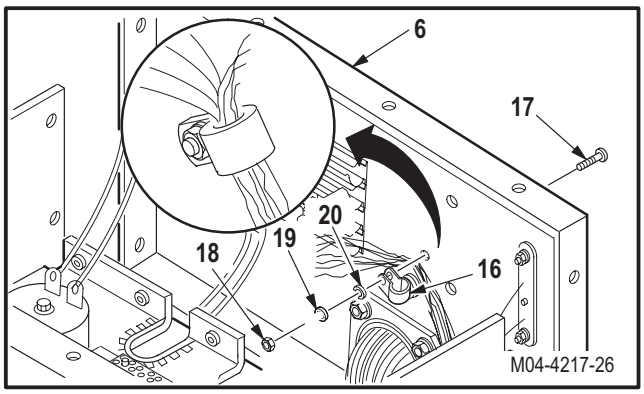


(7) Install two clamps (16) on panel (6).

(a) Position clamps (16) on panel (6).

(b) Install two screws (17) through panel (6) and clamps (16).

(c) Install two nuts (18), lockwashers (19), and washers (20) on screws (17).



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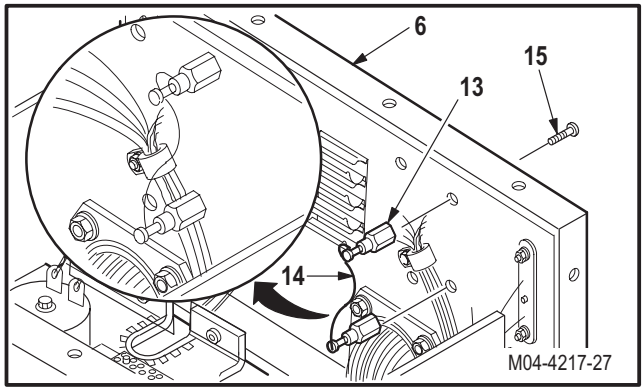
9.110. PILOT CAUTION/WARNING PANEL HOUSING DISASSEMBLY/ASSEMBLY (AVIM) – continued

(8) Install two terminal posts (13) with wire (14) on panel (6).

(a) Position posts (13) with wire (14) on panel (6).

(b) Install two screws (15) through panel (6) in posts (13).

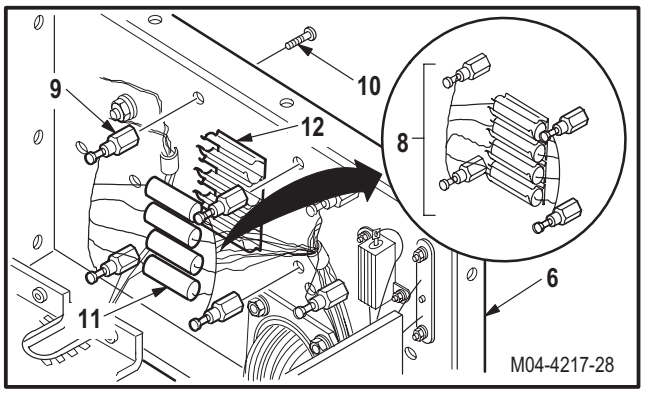


(9) Install capacitor harness (8) on panel (6).

(a) Position harness (8) on panel (6).

(b) Install capacitors (11) in mounting clips (12).

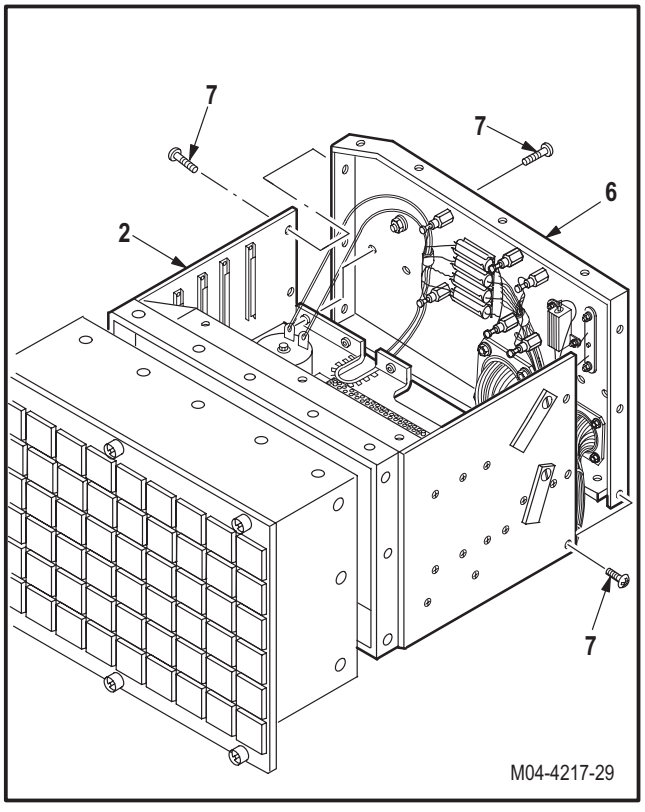
(c) Install four screws (10) through panel (6) in posts (9).



(10) Install panel (6) on housing (2).

(a) Position panel (6) on housing (2).

(b) Install 12 screws (7) through panel (6) in housing (2).



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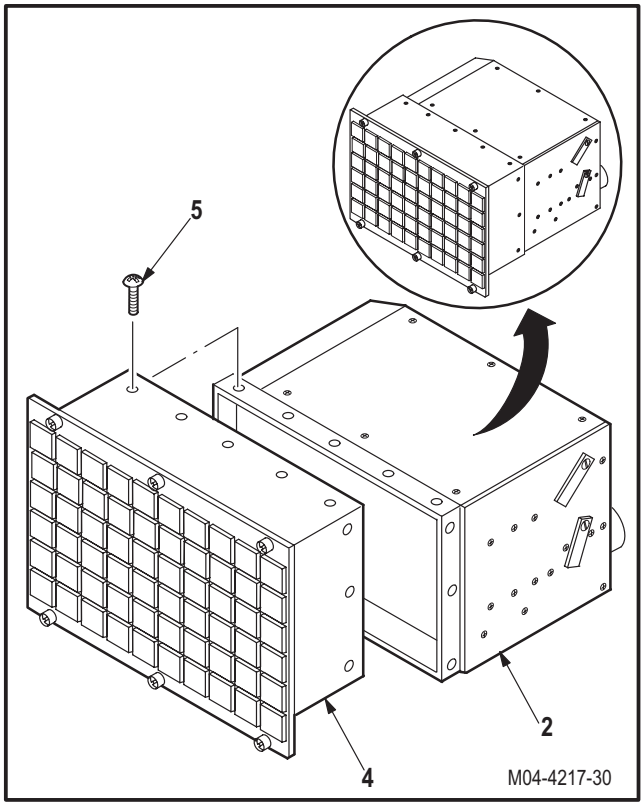
9.110. PILOT CAUTION/WARNING PANEL HOUSING DISASSEMBLY/ASSEMBLY (AVIM) – continued

f. **Install panel (4) on housing (2).**

(1) Position panel (4) on housing (2).

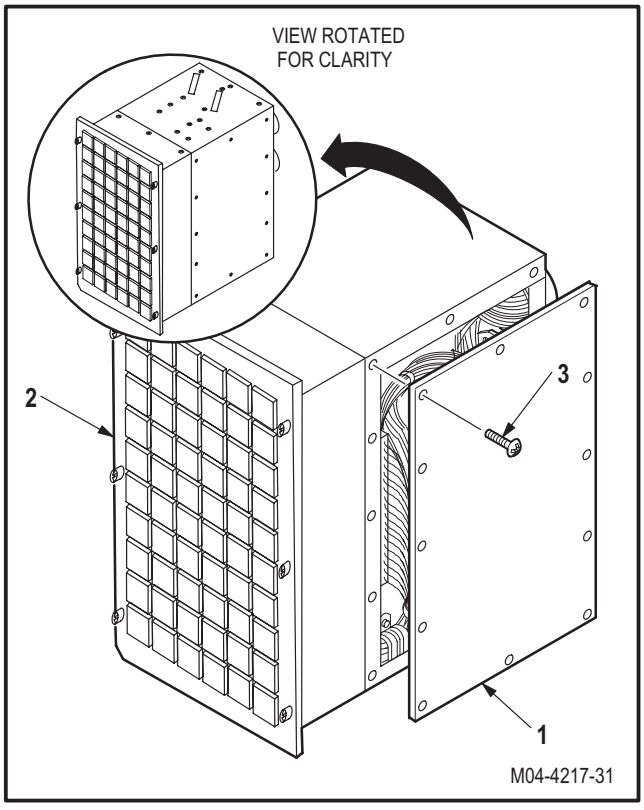
(2) Install 16 screws (5) through panel (4) in housing (2).



g. **Install cover (1) on housing (2).**

(1) Position cover (1) on housing (2).

(2) Install 12 screws (3) through cover (1) in housing (2).



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9.110. PILOT CAUTION/WARNING PANEL HOUSING DISASSEMBLY/ASSEMBLY (AVIM) – continued

h. **Inspect (QA).**

i. **Install pilot caution/warning panel fixed wire resistor** (para 9.112)**.**

j. **Install pilot caution/warning panel circuit cards A1, A2, A3, and A4** (para 9.109)**.**

END OF TASK

9.111. PILOT CAUTION/WARNING PANEL FIXED CAPACITOR C1, C2, C3, OR C4 REPLACEMENT (AVIM)

9.111.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.111.2. Initial Setup

Tools:

Electronic equipment maintenance kit (item 208, App H)
Light duty laboratory apron (item 27, App H)
Adjustable air filtering respirator (item 262, App H)
25-watt electric soldering iron (item 332, App H)

Materials/Parts:

Brush (item 34, App F)
Cloth (item 52, App F)
Insulating sleeving (item 98, App F)
Isopropyl alcohol (item 106, App F)
Solder (item 189, App F)

Personnel Required:

39B ATE Operator/Maintainer
68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 11-6625-3085-30
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
9.109	Pilot caution/warning panel circuit card A1, A2, A3, and A4 removed

CAUTION

- To prevent damage to pilot caution/warning panel, handle unit with care and ensure that work area is clean and that parts are placed on a soft and adequately protected working surface.
- To prevent electrostatic damage to other internal components of pilot caution/warning panel, ensure that fixed capacitors are removed only on a static-free work station.

NOTE

This task is applicable to and typical for capacitors (A106)C1 thru (A106)C4 installed on rear panel of the pilot caution/warning panel housing.

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9.111. PILOT CAUTION/WARNING PANEL FIXED CAPACITOR C1, C2, C3, OR C4 REPLACEMENT (AVIM) – continued

9.111.3. Removal

WARNING

- **Discharge all capacitors by grounding prior to removal. Capacitors can hold an electrical charge and create a dangerous potential for electrical shock. If injury occurs, seek medical aid.**
- **Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.**

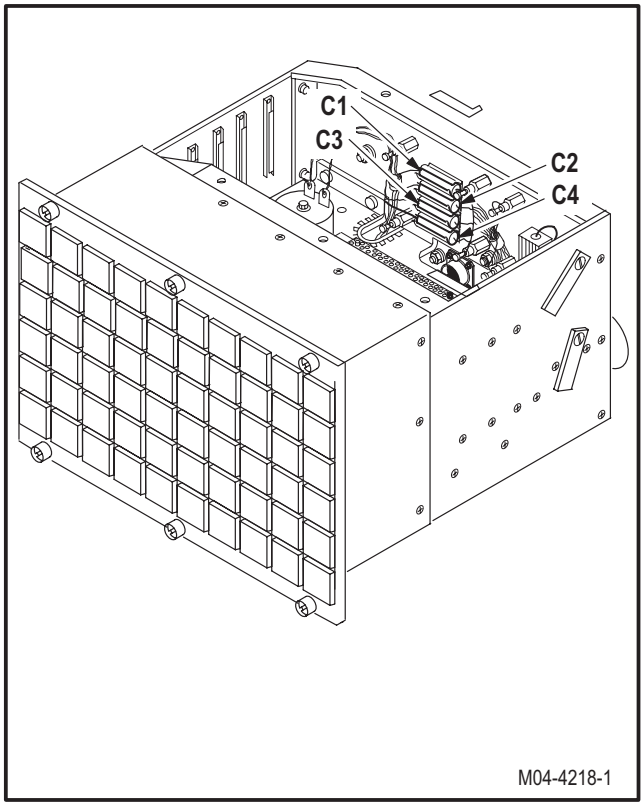
CAUTION

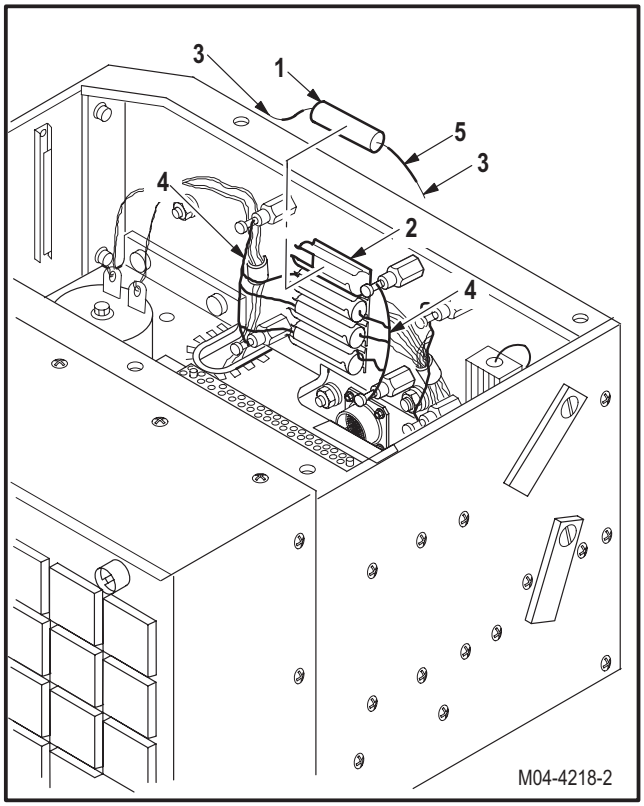
Capacitors (A106)C1, (A106)C2, (A106)C3, and (A106)C4 are polarized electrolytic capacitors. Prior to removal, identify each capacitor lead to ensure correct polarity during installation. Accidental polarity reversal will damage capacitor and/or other internal components of pilot caution/warning panel.

a. **Remove capacitor (1) from capacitor mounting clip (2).**

(1) Identify and desolder capacitor leads (3) from harness wires (4). Use soldering iron (TM 55-1500-323-24).

(2) Remove and discard capacitor (1) and attached sleeves (5).





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9.111. PILOT CAUTION/WARNING PANEL FIXED CAPACITOR C1, C2, C3, OR C4 REPLACEMENT (AVIM) – continued

9.111.4. Cleaning

a. **Clean capacitor mounting clip and harness wires.** Use isopropyl alcohol (item 106, App F), brush (item 34, App F), and cloth (item 52, App F).

9.111.5. Inspection

a. **Check for cracks.** None allowed.

b. **Check removed and attaching parts for damage** (para 9.104)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

d. **Check for sharp bends, distortion, and deformation** (para 9.104)**.**

e. **Check for security of attachment and loose mounting** (para 9.104)**.**

f. **Check adjacent wiring and wire bundles for cracked, broken, or burned insulation** (para 9.104)**.**

g. **Check adjacent wiring and wire bundles for missing or broken tie wraps, chafing, wear, cuts, and breaks** (para 9.104)**.**

h. **Check adjacent capacitors and other electronic components for visible damage due to overheating and/or short circuit** (para 9.104)**.**

i. **Check for excessive deposits of dust or foreign matter anywhere inside pilot caution/warning panel housing.** None allowed.

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9.111. PILOT CAUTION/WARNING PANEL FIXED CAPACITOR C1, C2, C3, OR C4 REPLACEMENT (AVIM) – continued

9.111.6. Installation

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

CAUTION

Ensure that capacitor polarity is not reversed during installation. Accidental polarity reversal will damage capacitor and/or other internal components of pilot caution/ warning panel.

a. **Install capacitor (1) in clip (2).**

(1) Install new sleeves (5) on leads (3). Use insulating sleeving (item 98, App F),

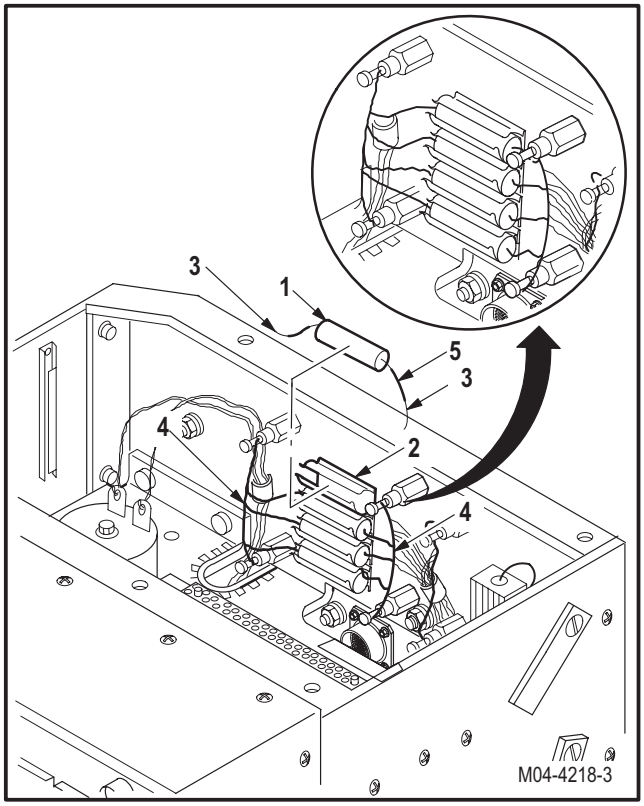
(2) Position capacitor (1) in clip (2) and secure leads (3) to wires (4) (TM 55-1500-323-24).

(3) Solder leads (3) to wires (4). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).

b. **Inspect (QA).**

c. **Install pilot caution/warning panel circuit cards A1, A2, A3, and A4** (para 9.109)**.**

d. **Perform appropriate test.** Electronic Equipment Test Facility (E.E.T.F.) (TM 11-6625-3085-30).



END OF TASK

9.112. PILOT CAUTION/WARNING PANEL FIXED WIRE RESISTOR R1 REPLACEMENT (AVIM)

9.112.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.112.2. Initial Setup

Tools:

Electronic equipment maintenance kit (item 208, App H)
Light duty laboratory apron (item 27, App H)
Adjustable air filtering respirator (item 262, App H)
25-watt electric soldering iron (item 332, App H)

Personnel Required:

39B ATE Operator/Maintainer
68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 11-6625-3085-30
TM 55-1500-323-24

Materials/Parts:

Brush (item 34, App F)
Cloth (item 52, App F)
Isopropyl alcohol (item 106, App F)
Solder (item 189, App F)

Equipment Conditions:

Ref	Condition
9.109	Pilot caution/warning panel circuit cards A1, A2, A3, and A4 removed

CAUTION

- To prevent damage to pilot caution/warning panel, handle unit with care and ensure that work area is clean and that parts are placed on a soft and adequately protected working surface.
- To prevent electrostatic damage to other internal components of pilot caution/warning panel, ensure that resistor is removed only on a static-free work station.

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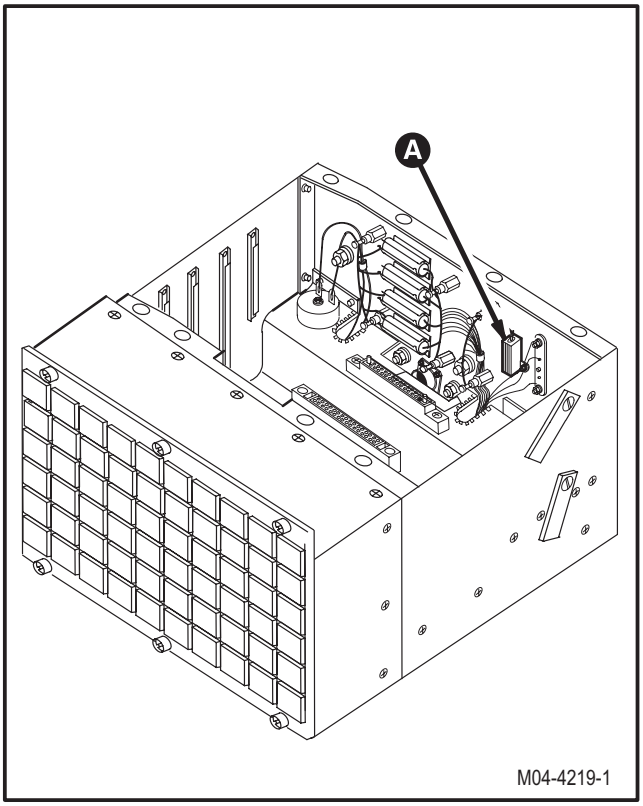
9.112. PILOT CAUTION/WARNING PANEL FIXED WIRE RESISTOR R1 REPLACEMENT (AVIM) – continued



9.112.3. Removal

WARNING

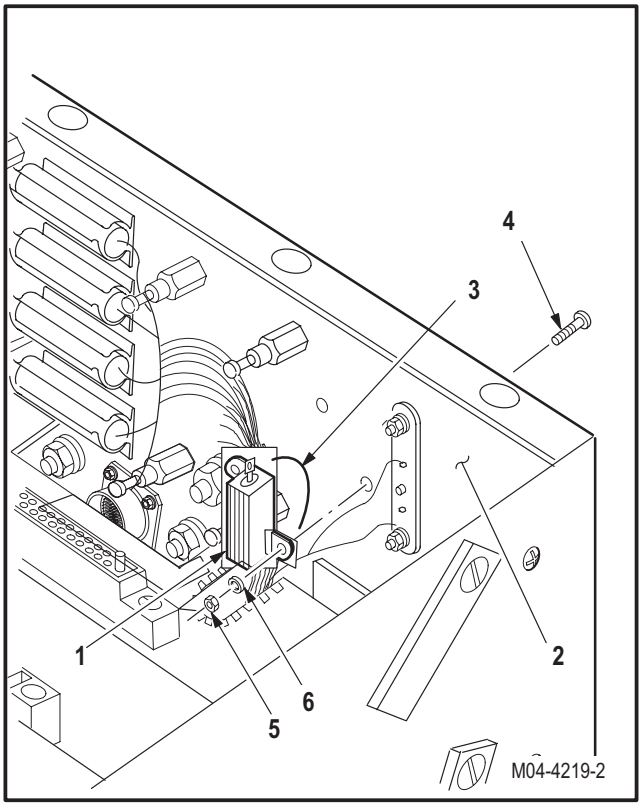
Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

a. **Remove fixed wire resistor (A106)R1 (1) from pilot caution/warning panel housing (2).**

(1) Identify and desolder wires (3) from resistor (1). Use soldering iron (TM 55-1500-323-24).

(2) Remove two screws (4), nuts (5), and lockwashers (6) from resistor (1) and housing (2).

(3) Remove resistor (1).



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9.112. PILOT CAUTION/WARNING PANEL FIXED WIRE RESISTOR R1 REPLACEMENT (AVIM) – continued

9.112.4. Cleaning

a. **Clean fixed wire resistor mounting area on pilot caution/warning panel housing.** Use isopropyl alcohol (item 106, App F), brush (item 34, App F), and cloth (item 52, App F).

9.112.5. Inspection

NOTE

Unless otherwise specified, the following inspection procedures apply to the fixed wire resistor mounting area on pilot caution warning panel housing.

a. **Check for cracks.** None allowed.

b. **Check removed and attaching parts for damage** (para 9.104)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

d. **Check adjacent components for security of attachment and loose mounting** (para 9.104)**.**

e. **Check adjacent wiring and wire bundles for cracked, broken, or burned insulation** (para 9.104)**.**

f. **Check adjacent wiring and wire bundles for missing or broken tie wraps, chafing, wear, cuts, and breaks** (para 9.104)**.**

g. **Check for deposits of dust or foreign matter anywhere inside pilot caution/warning panel housing.** None allowed.

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9.112. PILOT CAUTION/WARNING PANEL FIXED WIRE RESISTOR R1 REPLACEMENT (AVIM) – continued

9.112.6. Installation

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

a. **Install (A106)R1 resistor (1) on housing (2).**

(1) Position new resistor (1) on housing (2) (TM 55-1500-323-24).

(2) Install two screws (4) through housing (2) and resistor (1) flanges.

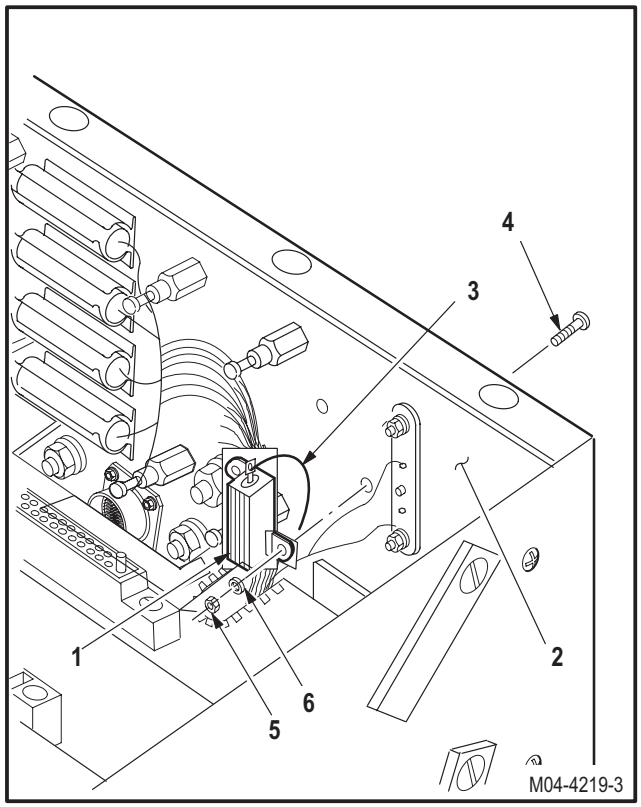
(3) Install two nuts (5) and lockwashers (6) on screws (4).

(4) Solder identified wires (3) to resistor (4). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).

b. **Inspect (QA).**

c. **Install pilot caution/warning panel circuit cards A1, A2, A3, and A4** (para 9.109)**.**

d. **Perform appropriate test.** Electronic Equipment Test Facility (E.E.T.F.) (TM 11-6625-3085-30).



END OF TASK

9.113. PILOT CAUTION/WARNING PANEL COIL L1 OR L2 REPLACEMENT (AVIM)

9.113.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.113.2. Initial Setup

Tools:

Electronic equipment maintenance kit (item 208, App H)
Light duty laboratory apron (item 27, App H)
Adjustable air filtering respirator (item 262, App H)
25-watt electric soldering iron (item 332, App H)

Personnel Required:

39B ATE Operator/Maintainer
68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 11-6625-3085-30
TM 55-1500-323-24

Materials/Parts:

Brush (item 34, App F)
Cloth (item 52, App F)
Isopropyl alcohol (item 106, App F)
Solder (item 189, App F)

Equipment Conditions:

Ref	Condition
9.109	Pilot caution/warning panel circuit cards A1, A2, A3, and A4 removed
9.110	Pilot caution/warning panel bottom access cover removed

CAUTION

- To prevent damage to pilot caution/warning panel, handle unit with care and ensure that work area is clean and that parts are placed on a soft and adequately protected working surface.
- To prevent electrostatic damage to other internal components of pilot caution/warning panel, ensure that coils are removed only on a static-free work station.

NOTE

This task is applicable to coils (A106)L1 and (A106)L2 installed in pilot caution/warning panel housing.

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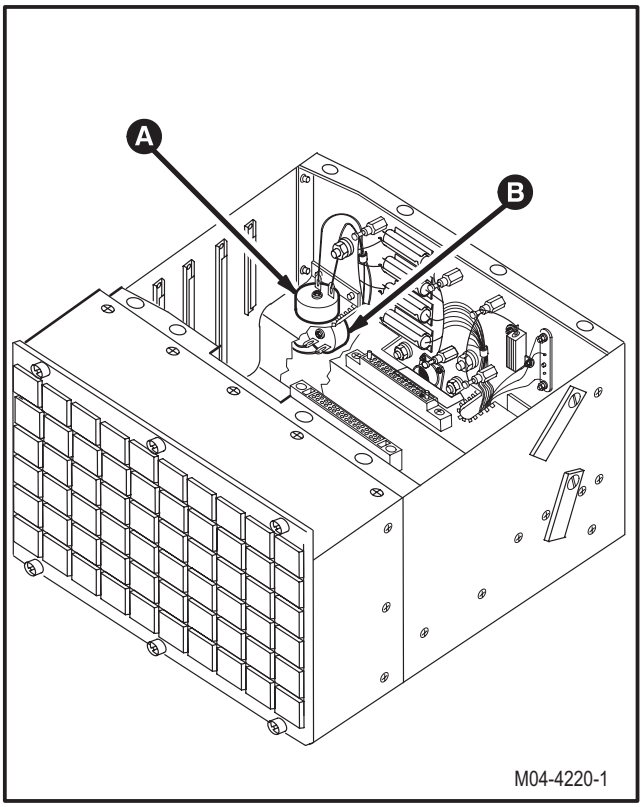
9.113. PILOT CAUTION/WARNING PANEL COIL L1 OR L2 REPLACEMENT (AVIM) – continued

9.113.3. Removal



WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

NOTE

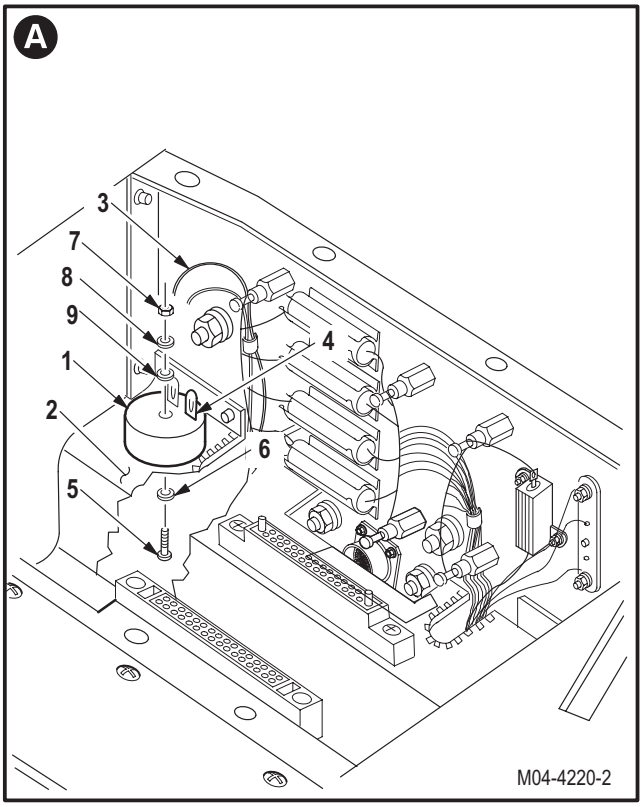
- If replacing coil (A106)L2, perform step a.
- If replacing coil (A106)L1, perform step b.

a. **Remove coil (A106)L2 (1) from pilot caution/warning panel housing (2).**

(1) Identify and desolder wires (3) from coil terminals (4). Use soldering iron (TM 55-1500-323-24).

(2) Remove screw (5), washer (6), nut (7), and washer (8) and (9) from housing (2).

(3) Remove coil (1).



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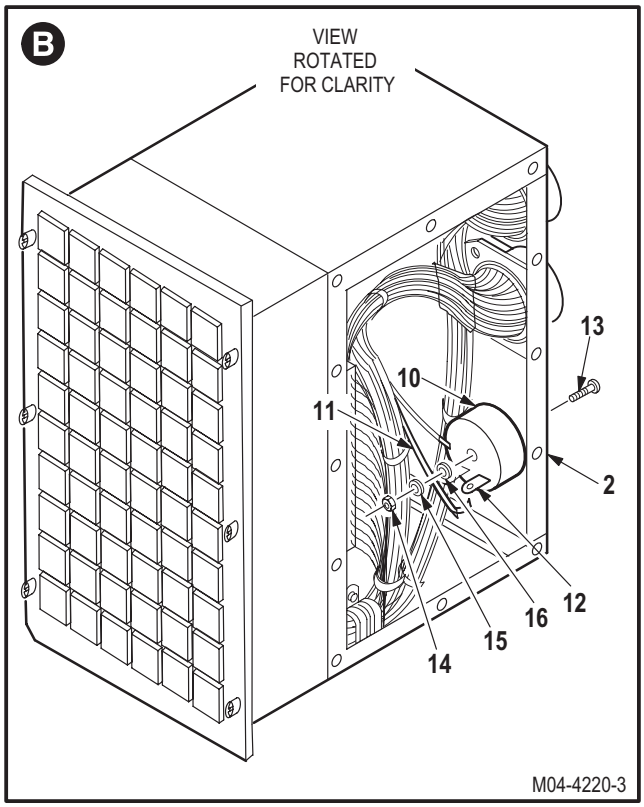
9.113. PILOT CAUTION/WARNING PANEL COIL L1 OR L2 REPLACEMENT (AVIM) – continued

b. **Remove coil (A106)L1 (10) from housing (2).**

(1) Identify and desolder wires (11) from coil terminals (12). Use soldering iron (TM 55-1500-323-24).

(2) Remove screw (13), nut (14), and washers (15) and (16) from housing (2).

(3) Remove coil (10) from housing (2).



9.113.4. Cleaning

a. **Clean coil mounting area on pilot caution/warning panel housing.** Use isopropyl alcohol (item 106, App F), brush (item 34, App F), and cloth (item 52, App F).

9.113.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.104)**.**

b. **Check removed and attaching parts for corrosion** (para 1.49)**.**

c. **Check for cracks.** None allowed.

d. **Check adjacent components for security of attachment and loose mounting** (para 9.104)**.**

e. **Check adjacent wiring and wire bundles for cracked, broken, or burned insulation** (para 9.104)**.**

f. **Check adjacent wiring and wire bundles for missing or broken tie wraps, chafing, wear, cuts, and breaks** (para 9.104)**.**

g. **Check for deposits of dust or foreign matter anywhere inside pilot caution/warning panel housing.** None allowed.

GO TO NEXT PAGE

9.113. PILOT CAUTION/WARNING PANEL COIL L1 OR L2 REPLACEMENT (AVIM) – continued

9.113.6. Installation

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

NOTE

- Perform step a if coil (A106)L1 was removed.
- Perform step b if coil (A106)L2 was removed.

a. **Install coil (10) on housing (2).**

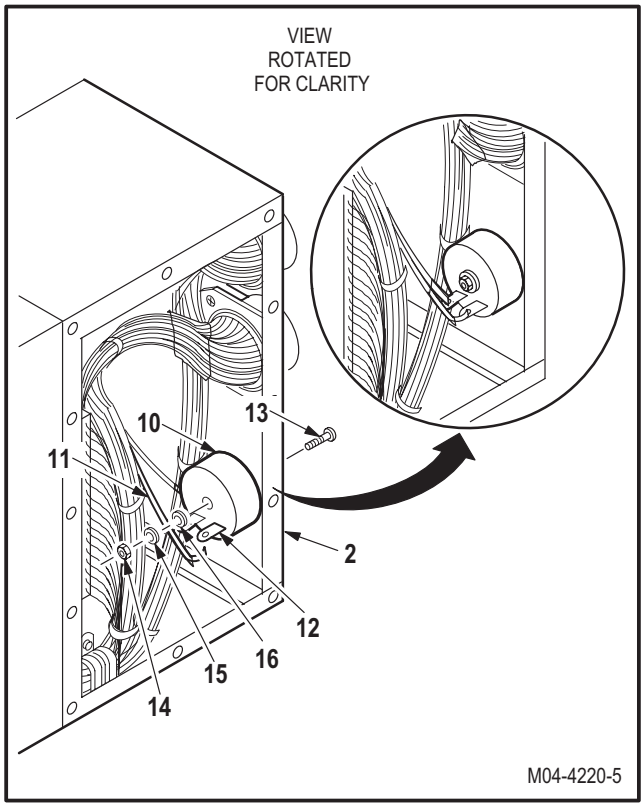
(1) Position new coil (10) on housing (2) (TM 55-1500-323-24).

(2) Install screw (13) through housing (2) and coil (10).

(3) Install nut (14) and washers (15) and (16) on screw (13).

(4) Solder identified wires (11) to terminals (12). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).

(5) Go to step c.



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9.113. PILOT CAUTION/WARNING PANEL COIL L1 OR L2 REPLACEMENT (AVIM) – continued

b. **Install coil (1) on housing (2).**

(1) Position new coil (1) on housing (2) (TM 55-1500-323-24).

(2) Install screw (5) and washer (6) through housing (2) and coil (1).

(3) Install nut (7) and washers (8) and (9) on screw (5).

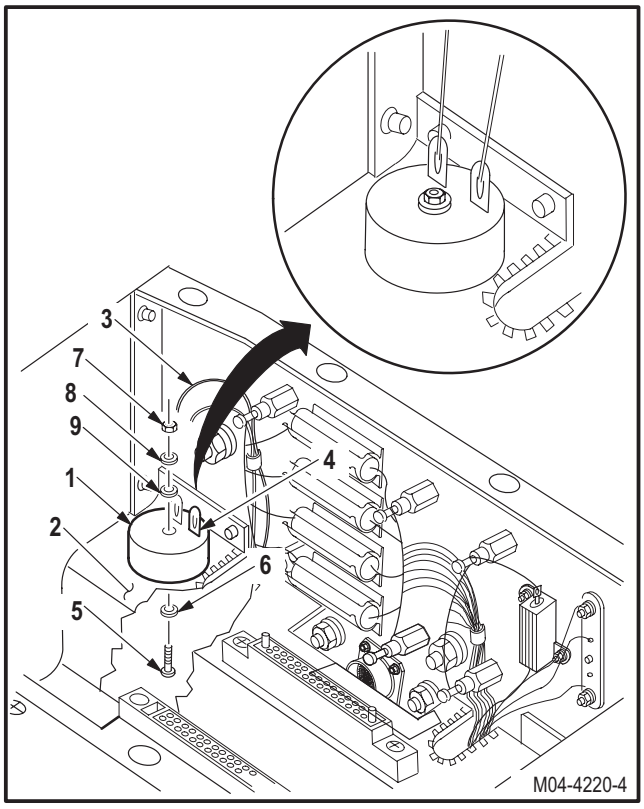
(4) Solder identified wires (3) to terminals (4). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).

c. **Inspect (QA).**

d. **Install pilot caution/warning panel bottom access cover** (para 9.110)**.**

e. **Install pilot caution/warning panel circuit cards A1, A2, A3, and A4** (para 9.109)**.**

f. **Perform appropriate test.** Electronic Equipment Test Facility (E.E.T.F.) (TM 11-6625-3085-30).



END OF TASK

9.114. CPG CAUTION/WARNING PANEL REMOVAL/INSTALLATION

9.114.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.114.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Ohmmeter (item 218, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T
TM 55-1500-323-24

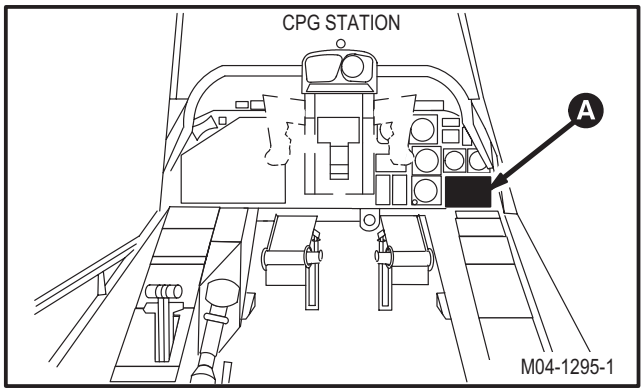
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

9.114.3. Removal

a. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**

b. **On CPG circuit breaker panel No. 1, open EMERG BATT CAUT circuit breaker.**



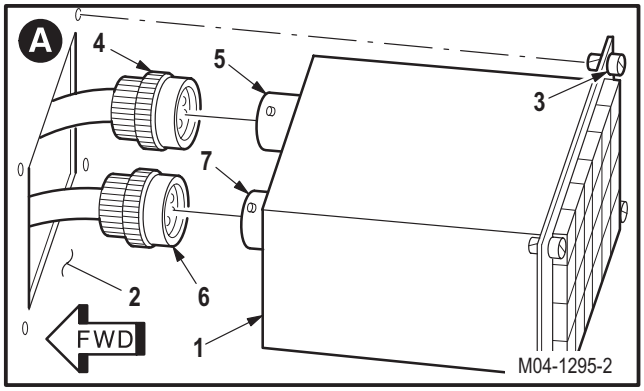
c. **Remove CPG caution/warning panel (1) from instrument panel (2).**

(1) Open four turn fasteners (3).

d. **Detach two connectors from panel (1).**

(1) Detach connector P19 (4) from receptacle (A157)J1 (5).

(2) Detach connector P31 (6) from receptacle (A157)J2 (7).



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9.114. CPG CAUTION/WARNING PANEL REMOVAL/INSTALLATION – continued

9.114.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

9.114.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.104)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.104)**.**

c. **Check connectors and receptacles for cracks, broken connections, and bent or damaged pins** (para 9.104)**.**

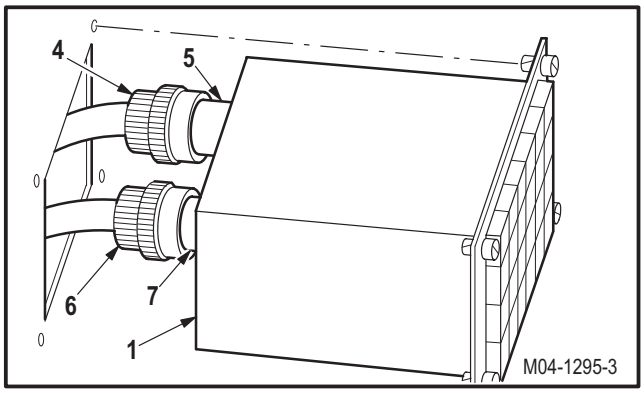
d. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.114.6. Installation

a. **Attach two connectors to CPG caution/warning panel (1).**

(1) Attach connector P19 (4) to receptacle (A157)J1 (5).

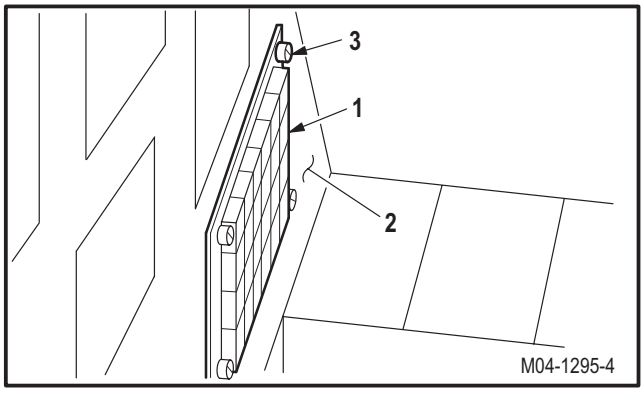
(2) Attach connector P31 (6) to receptacle (A157)J2 (7).



b. **Inspect (QA).**

c. **Install panel (1) in instrument panel (2).**

(1) Lock four turn fasteners (3).



d. **Perform electrical bond check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

e. **Perform CPG caution and warning system maintenance operational check** (TM 1-1520-238-T)**.**

END OF TASK

9.115. CPG CAUTION/WARNING PANEL CIRCUIT CARD REPLACEMENT (AVIM)

9.115.1. Description

This task covers: Removal. Installation.

9.115.2. Initial Setup

Tools:

Electronic equipment maintenance kit (item 208, App H)

Personnel Required:

39B ATE Operator/Maintainer
68X3F Armament/Electrical System Repairer/ Technical Inspector

9.115.3. Removal

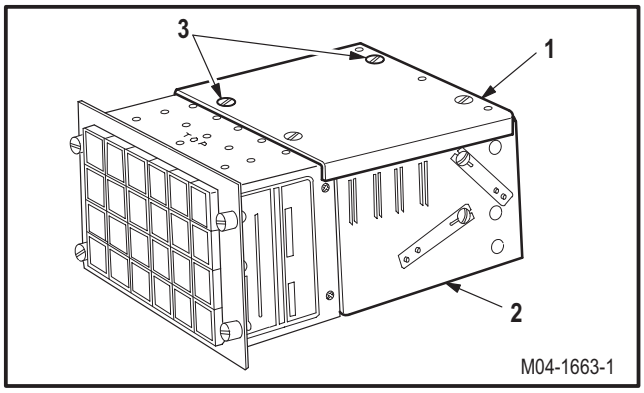
NOTE

This task is typical for circuit cards (A157)A1, (A157)A2, (A157)A3, (A157)A4, or (A157)A5 except where noted.

a. **Remove cover (1) on CPG caution/warning panel (2).**

(1) Unlock eight turn fasteners (3).

(2) Remove cover (1).

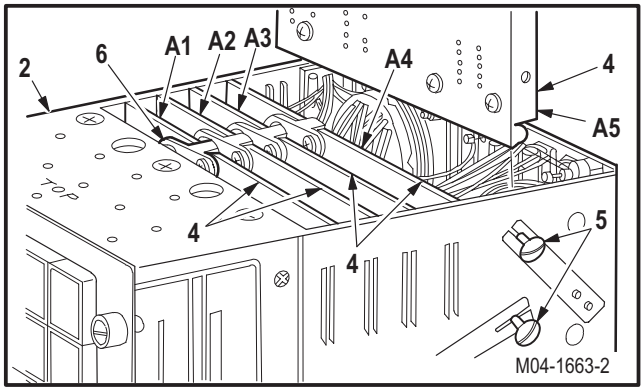


b. **Remove card (4) from panel (2).**

(1) For card (A157)A5, unlock two quarter turn fasteners (5).

(2) Raise plastic ring (6) on card (4).

(3) Use plastic ring (6) to pull card (4) from panel (2).



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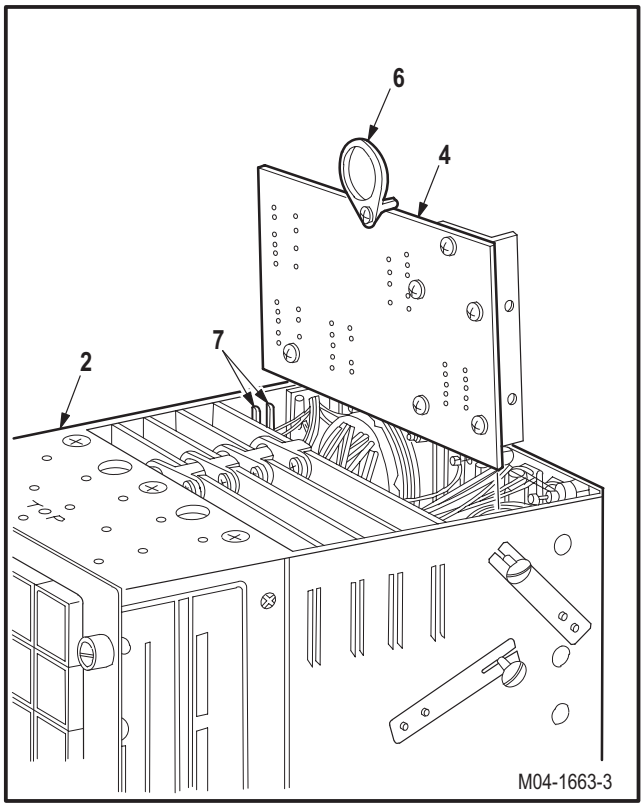
9.115. CPG CAUTION/WARNING PANEL CIRCUIT CARD REPLACEMENT (AVIM) – continued

9.115.4. Installation

a. **Install circuit card (4) in panel (2).**

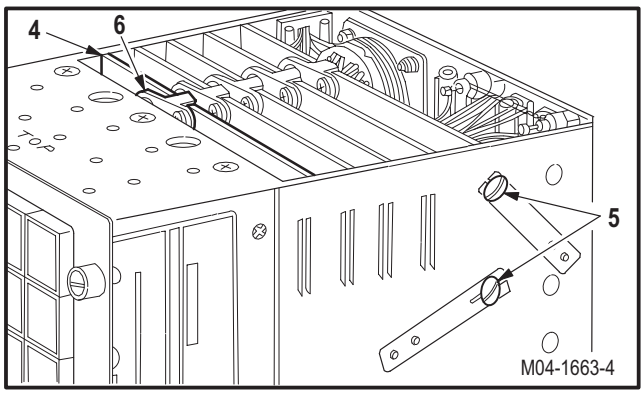
(1) Aline card (4) with guides (7).



(2) Press down on card (4) to seat.

(3) Secure ring (6) on card (4).

(4) For card (A157)A5, lock two turn fasteners (5).

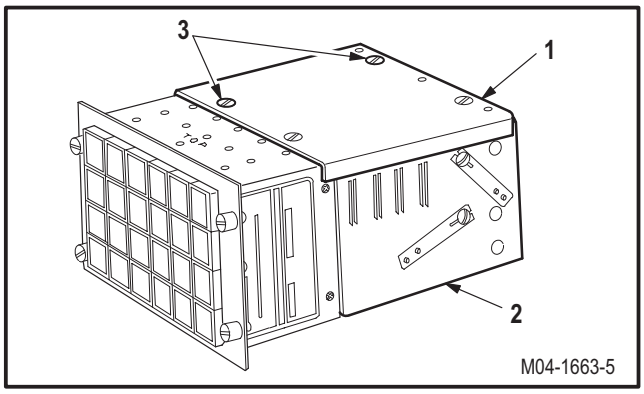


b. **Inspect (QA).**

c. **Install cover (1) on panel (2).**

(1) Position cover (1) on panel (2).

(2) Lock eight turn fasteners (3).



END OF TASK

9.116. CPG CAUTION/WARNING PANEL HOUSING DISASSEMBLY/ASSEMBLY (AVIM)

9.116.1. Description

This task covers: Disassembly. Cleaning. Inspection. Assembly.

9.116.2. Initial Setup

Tools:

Electronic equipment maintenance kit (item 208, App H)

Personnel Required:

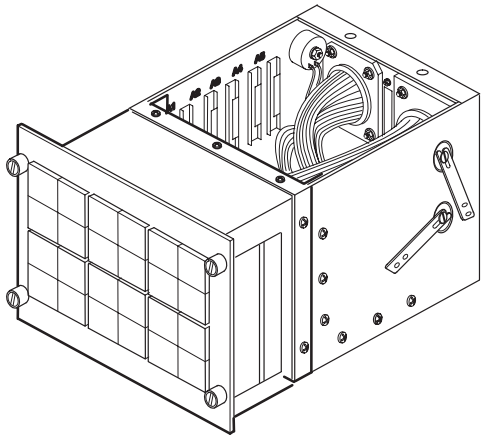
68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
9.115	CPG caution/warning panel circuit cards A1, A2, A3, A4, and A5 removed

CAUTION

To prevent damage to CPG caution/warning panel, exercise care when handling housing and internal components. Ensure that work area is clean and that parts are placed on a soft and adequately protected working surface.



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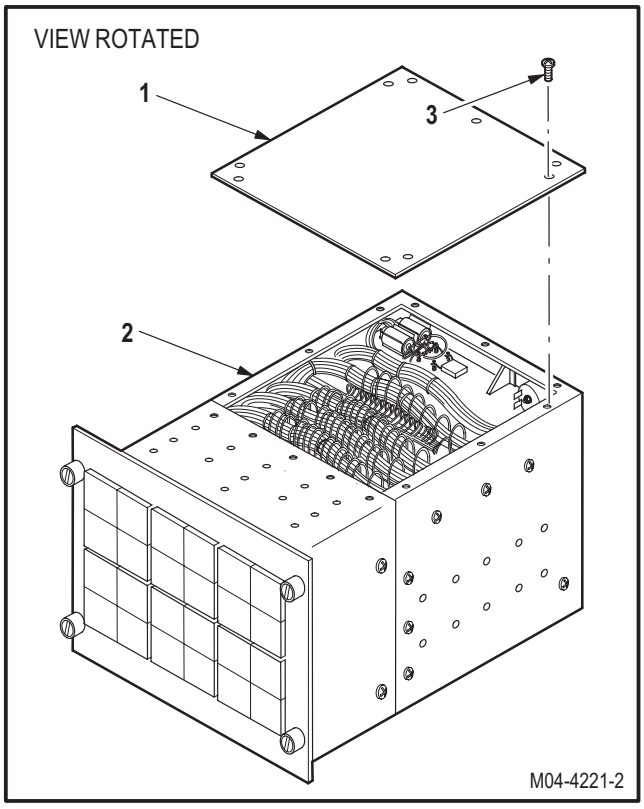
9.116. CPG CAUTION/WARNING PANEL HOUSING DISASSEMBLY/ASSEMBLY (AVIM) – continued

9.116.3. Disassembly

a. **Remove bottom cover panel (1) from rear housing (2).**

(1) Remove nine screws (3) from cover (1).

(2) Remove cover (1).



NOTE

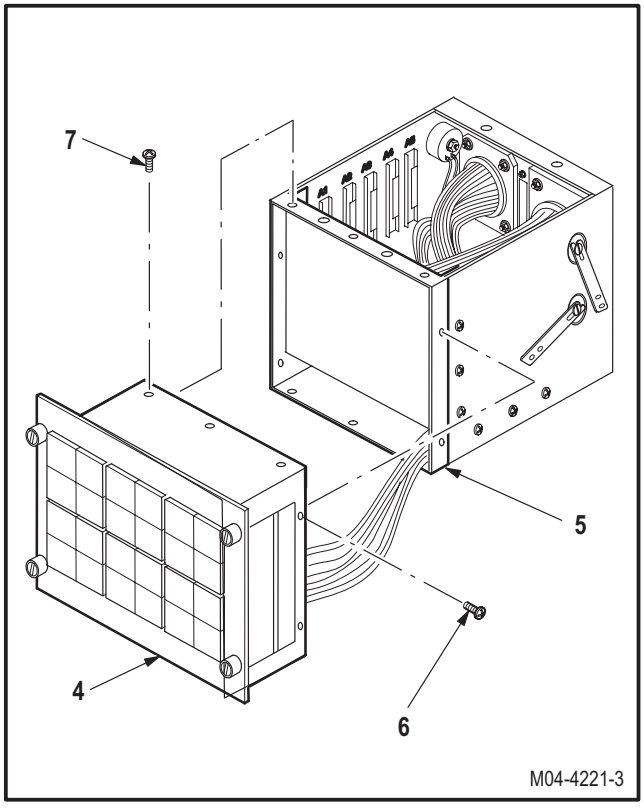
Front panel housing is interconnected to connector plate and several electronic components mounted on rear housing. Front panel housing cannot be completely removed until all connectors, receptacles, and electronic components have been removed. Do not cut, depin or detach interconnecting wires.

b. **Remove front panel housing (4) from connector plate (5).**

(1) Remove four screws (6) from housing (4) sides.

(2) Remove six screws (7) from housing (4) top and bottom.

(3) Remove housing (4).



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9.116. CPG CAUTION/WARNING PANEL HOUSING DISASSEMBLY/ASSEMBLY (AVIM) – continued

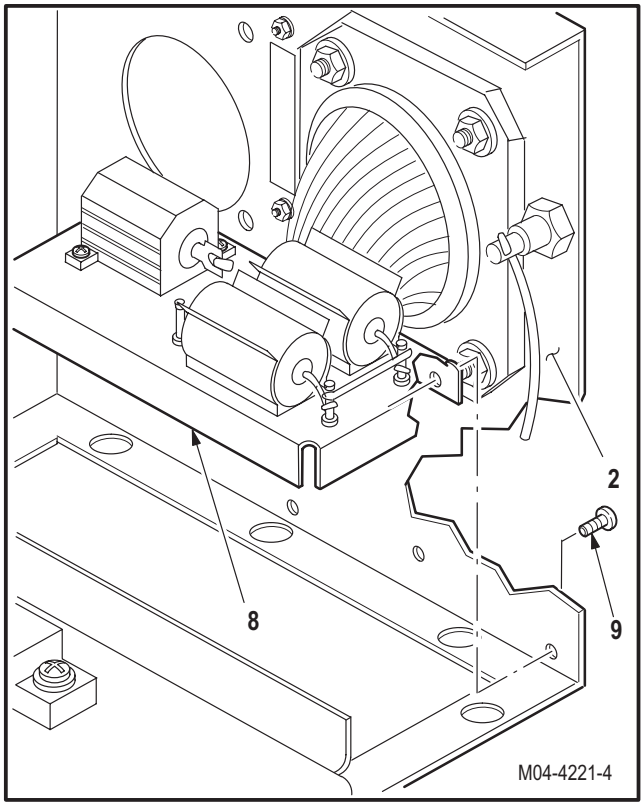
NOTE

Do not remove electronic components from component bracket unless replacing components.

c. **Remove component bracket (8) from housing (2).**

(1) Remove three screws (9) from housing (2).

(2) Remove bracket (8) from housing (2).



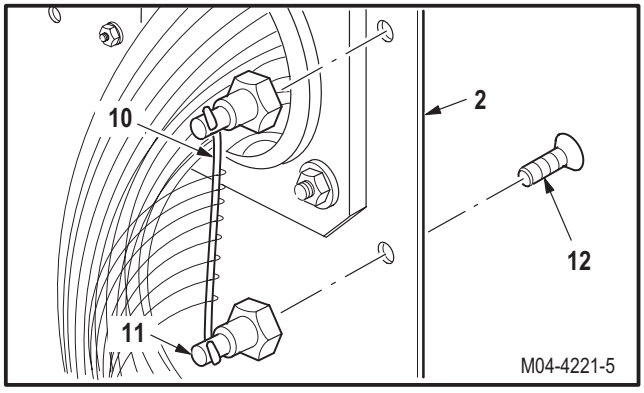
NOTE

Do not desolder wires from ground harness unless replacing wires or terminal posts.

d. **Remove ground harness (10) from housing (2).**

(1) Hold terminal posts (11). Remove two screws (12) from housing (2).

(2) Remove harness (10).



NOTE

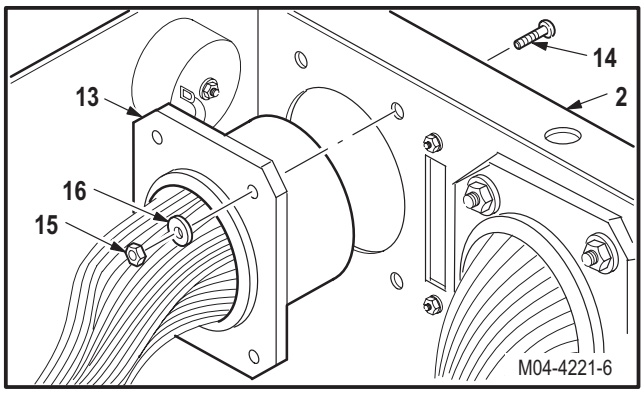
Do not depin wires from receptacle (A157)J2 unless replacing receptacle.

e. **Remove receptacle (A157)J2 (13) from housing (2).**

(1) Hold screws (14). Remove four nuts (15) and washers (16).

(2) Remove four screws (14) from housing (2).

(3) Remove receptacle (13).



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9.116. CPG CAUTION/WARNING PANEL HOUSING DISASSEMBLY/ASSEMBLY (AVIM) – continued

NOTE

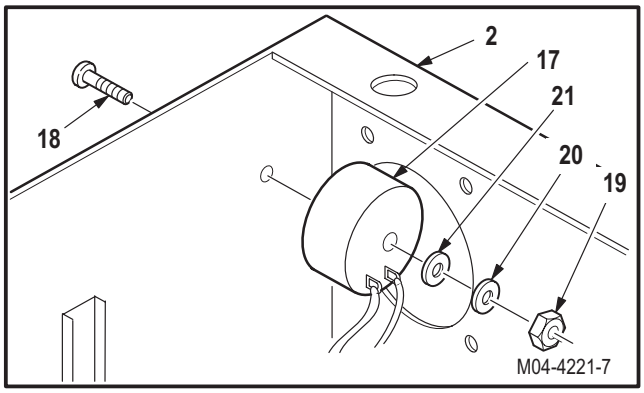
Do not desolder wires from coil (A157)L2 unless replacing coil.

f. **Remove coil (A157)L2 (17) from housing (2).**

(1) Hold screw (18). Remove nut (19) and washers (20) and (21).

(2) Remove screw (18) from housing (2).

(3) Remove coil (17).



NOTE

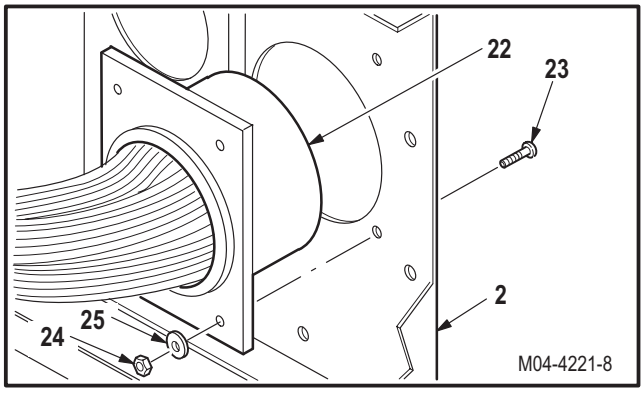
Do not depin wires from receptacle (A157)J1 unless replacing receptacle.

g. **Remove receptacle J1 (22) from housing (2).**

(1) Hold screws (23). Remove four nuts (24) and washers (25).

(2) Remove four screws (23) from housing (2).

(3) Remove receptacle (22).

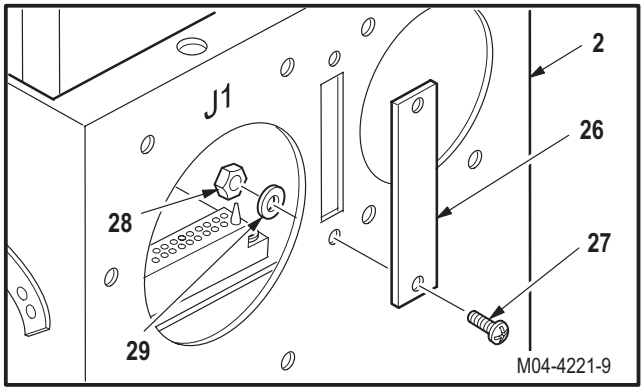


h. **Remove plate (26) from housing (2).**

(1) Hold screws (27). Remove two nuts (28) and washers (29).

(2) Remove two screws (27) from housing (2).

(3) Remove plate (26).



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9.116. CPG CAUTION/WARNING PANEL HOUSING DISASSEMBLY/ASSEMBLY (AVIM) – continued

NOTE

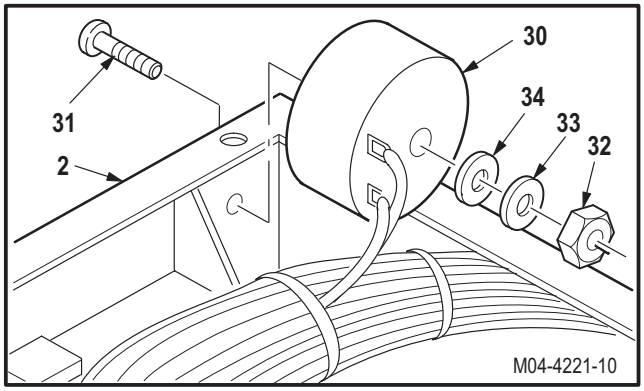
Do not desolder wires from coil (A157)L1 unless replacing coil.

i. **Remove coil (A157)L1 (30) from housing (2).**

(1) Hold screw (31). Remove nut (32) and washers (33) and (34).

(2) Remove screw (31) from housing (2).

(3) Remove coil (30).

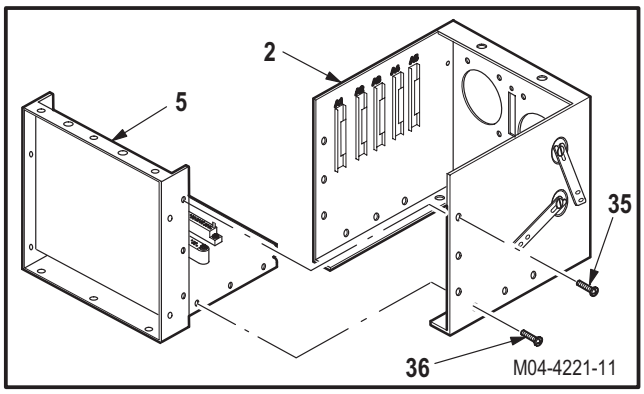


j. **Remove plate (5) from housing (2).**

(1) Remove six screws (35) from housing (2).

(2) Remove six screws (36) from housing (2).

(3) Remove plate (5).



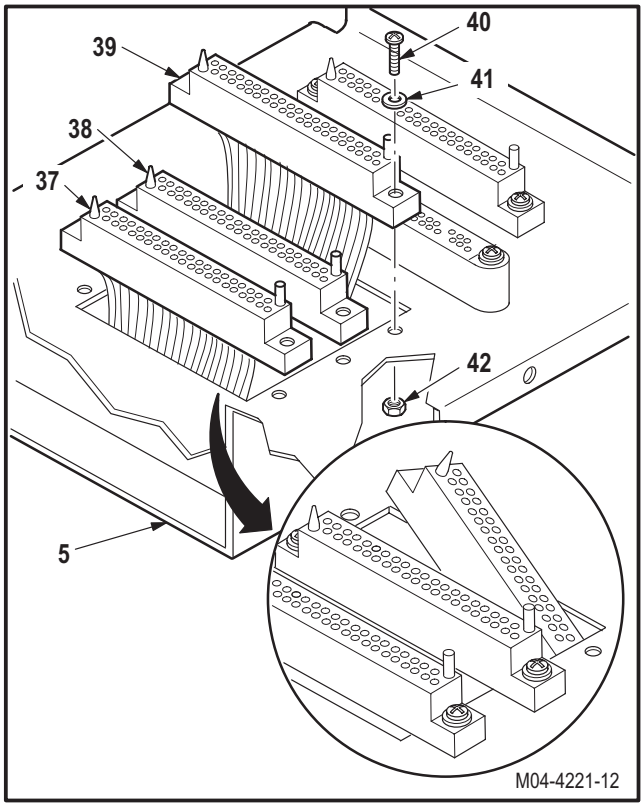
NOTE

Do not depin wires from connectors (A157)J3, (A157)J4, or (A157)J5 unless replacing connectors.

k. **Remove connectors (A157)J3 (37), (A157)J4 (38), and (A157)J5 (39) from plate (5).**

(1) Remove six screws (40), washers (41), and nuts (42) from connectors (A157)J3 (37), (A157)J4 (38), and (A157)J5 (39).

(2) Remove connectors (A157)J3 (37), (A157)J4 (38), and (A157)J5 (39) by sliding each connector through plate (5) connector slot.



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9.116. CPG CAUTION/WARNING PANEL HOUSING DISASSEMBLY/ASSEMBLY (AVIM) – continued

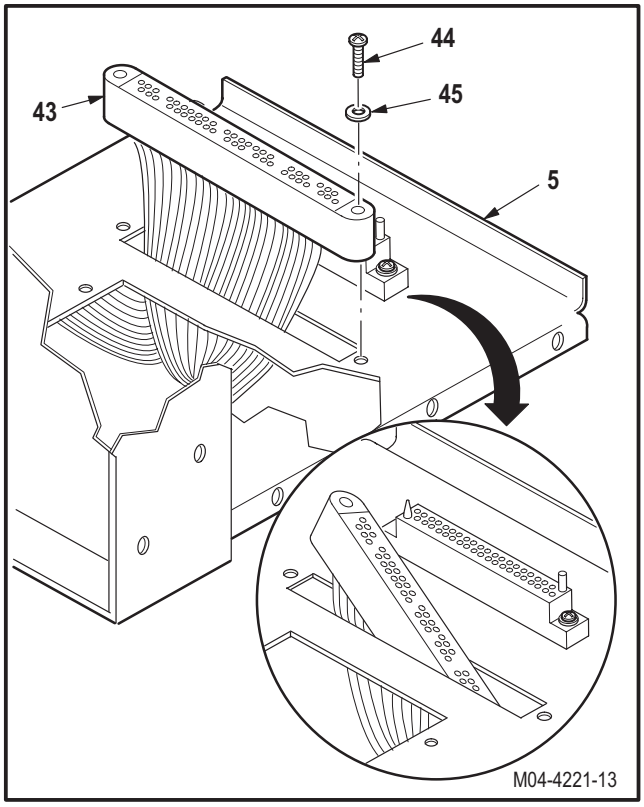
NOTE

Do not depin wires from connector (A157)J6 unless replacing connector.

l. **Remove connector (A157)J6 (43) from plate (5).**

(1) Remove two screws (44) and washers (45) from connector (43).

(2) Remove connector (43) by sliding connector (43) down through plate (5) connector slot.



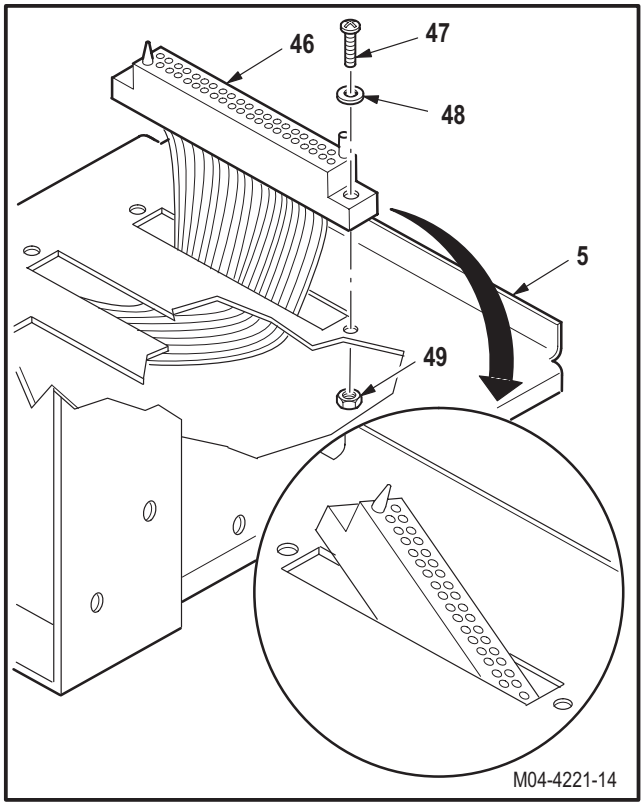
NOTE

Do not depin wires from connector (A157)J7 unless replacing connector.

m. **Remove connector (A157)J7 (46) from plate (5).**

(1) Remove two screws (47), washers (48), and nuts (49) from connector (46).

(2) Remove connector (46) by sliding connector (46) down through plate (5) connector slot.



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9.116. CPG CAUTION/WARNING PANEL HOUSING DISASSEMBLY/ASSEMBLY (AVIM) – continued

9.116.4. Cleaning

a. **Clean removed and attaching parts and surfaces** (para 1.47)**.**

9.116.5. Inspection

a. **Check for cracks.** None allowed.

b. **Check removed and attaching parts for damage** (para 9.104)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

d. **Check for elongated screw holes.** None allowed.

e. **Check for erosion of surface finish** (para 9.104)**.**

f. **Check for loose or damaged clinch nuts** (para 9.104)**.**

g. **Check for nicks, dents, scratches, and gouges** (para 9.104)**.**

h. **Check for loose, missing, or damaged hardware** (para 9.104)**.**

i. **Check for sharp bends, distortion, or deformation** (para 9.104)**.**

j. **Check threaded holes for crossed, stripped, or flattened threads.** None allowed.

k. **Check electronic components for damage** (para 9.104)**.**

l. **Check receptacles for cracks, bent or corroded pins, damaged threads, and loose or broken wire connections** (para 9.104)**.**

m. **Check connectors for cracks, deterioration, bent or corroded pins, and loose or broken wire connections** (para 9.104)**.**

n. **Check wires and wire bundles for cracked, broken, or burned insulation** (para 9.104)**.**

o. **Check wires and wire bundles for missing or broken tie wraps, chafing, wear, cuts, and breaks** (para 9.104)**.**

p. **Check wiring and electronic components for cracked, loose, or cold solder joints.** None allowed.

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9.116. CPG CAUTION/WARNING PANEL HOUSING DISASSEMBLY/ASSEMBLY (AVIM) – continued

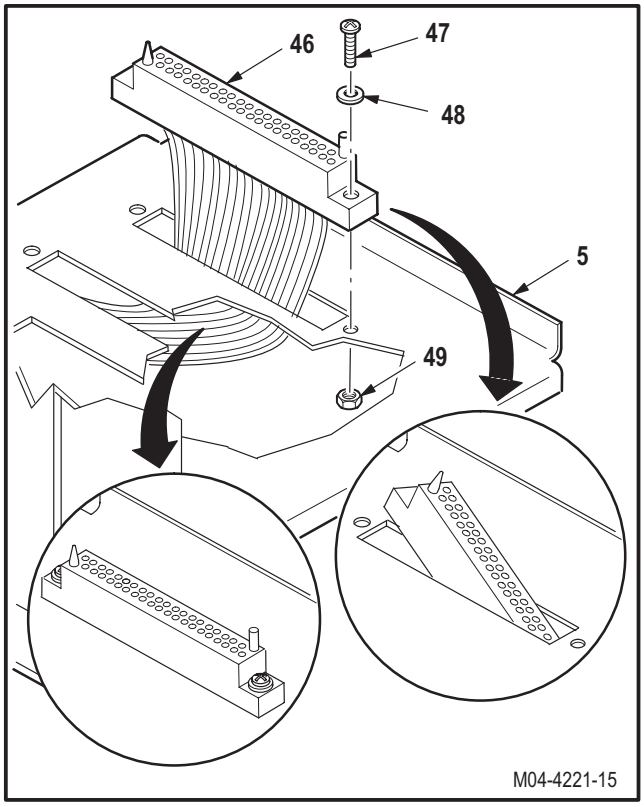
9.116.6. Assembly

a. **Install connector (A157)J7 (46) on plate (5).**

(1) Position connector (46) on top of plate (5) by sliding up through plate (5) connector slot.

(2) Install two screws (47) through washers (48), connector (46), and plate (5).

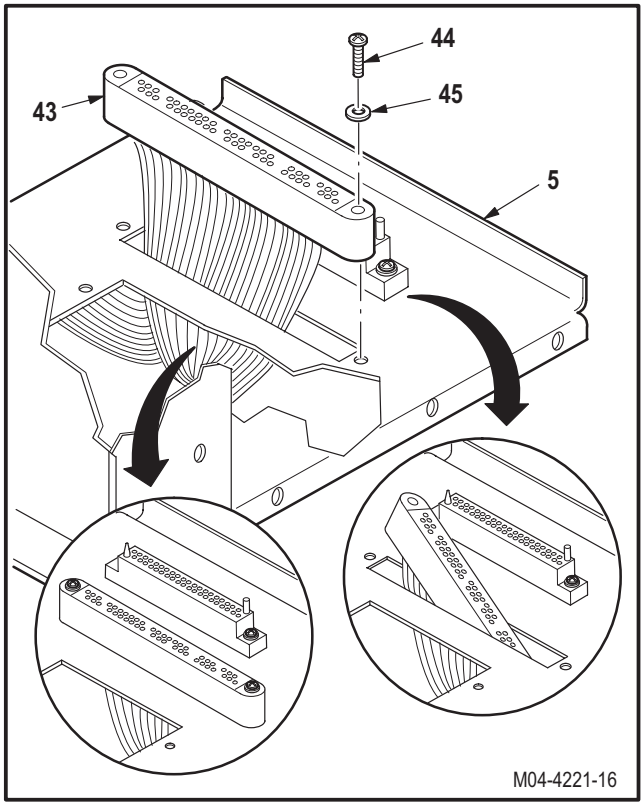
(3) Install two nuts (49) on screws (47).



b. **Install connector (A157)J6 (43) on plate (5).**

(1) Position connector (43) on top of plate (5) by sliding connector (43) up through plate (5) connector slot.

(2) Install two screws (44) through washers (45) and plate (5) in connector (43).



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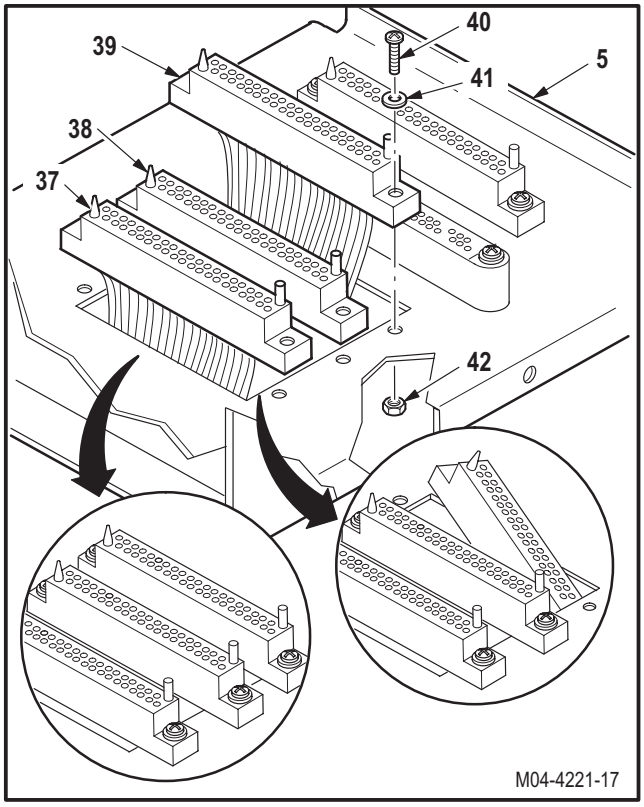
9.116. CPG CAUTION/WARNING PANEL HOUSING DISASSEMBLY/ASSEMBLY (AVIM) – continued

c. **Install connectors (A157)J3 (37), (A157)J4 (38), and (A157)J5 (39) on plate (5).**

(1) Position connectors (37), (38), and (39) on top of plate (5) by sliding connectors (37), (38), and (39) up through plate (5) connector slot.

(2) Install six screws (40) through washers (41), connectors (37), (38), and (39) and plate (5).

(3) Install six nuts (42) on screws (40).

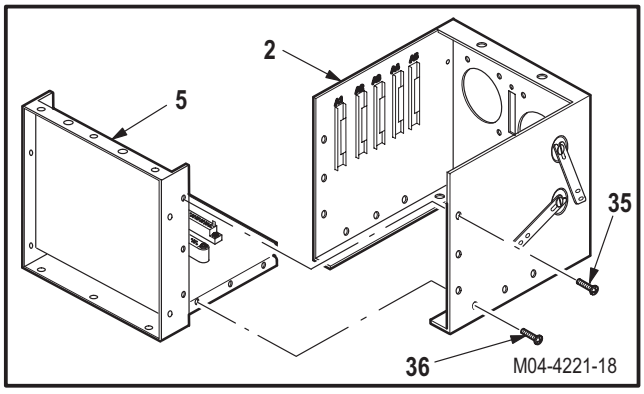


d. **Install plate (5) on housing (2).**

(1) Position plate (5) on housing (2).

(2) Install six screws (36) through housing (2) in plate (5).

(3) Install six screws (35) through housing (2) in plate (5).

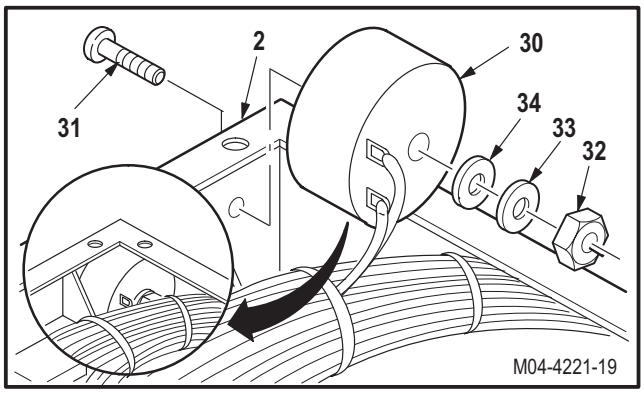


e. **Install coil (A157)L1 (30) on housing (2).**

(1) Position coil (30) on housing (2).

(2) Install screw (31) through housing (2) and coil (30).

(3) Install nut (32) and washers (33) and (34) on screw (31).



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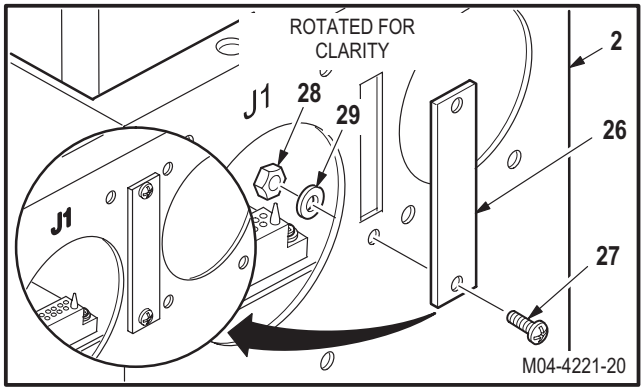
9.116. CPG CAUTION/WARNING PANEL HOUSING DISASSEMBLY/ASSEMBLY (AVIM) – continued

f. **Install plate (26) on housing (2).**

(1) Position plate (26) on housing (2).

(2) Install two screws (27) through housing (2) and plate (26).

(3) Install two nuts (28) and washers (29) on screws (27).

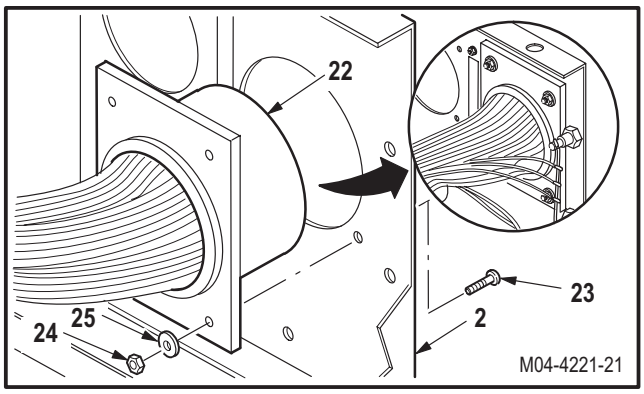


g. **Install receptacle (A157)J1 (22) on housing (2).**

(1) Slide receptacle (22) in housing (2).

(2) Install four screws (23) through housing (2) and receptacle (22).

(3) Install four nuts (24) and washers (25) on screws (23).

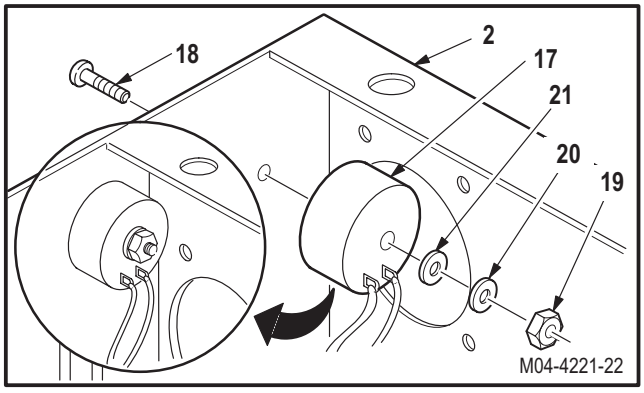


h. **Install coil (A157)L2 (17) on housing (2).**

(1) Position coil (17) on housing (2).

(2) Install screw (18) through housing (2) and coil (17).

(3) Install nut (19) and washers (20) and (21) on screw (18).

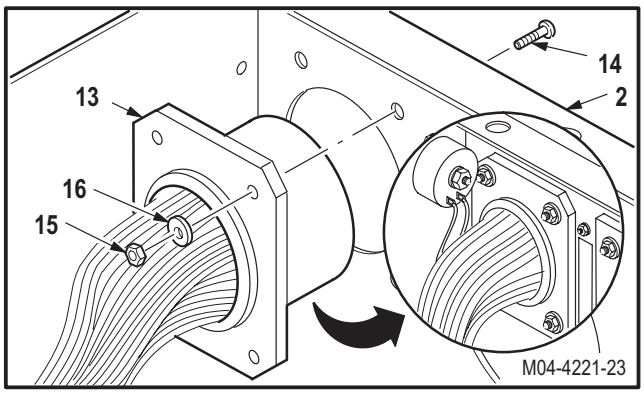


i. **Install receptacle (A157)J2 (13) on housing (2).**

(1) Slide receptacle (13) in housing (2).

(2) Install four screws (14) through housing (2) and receptacle (13).

(3) Install four nuts (15) and washers (16) on screws (14).



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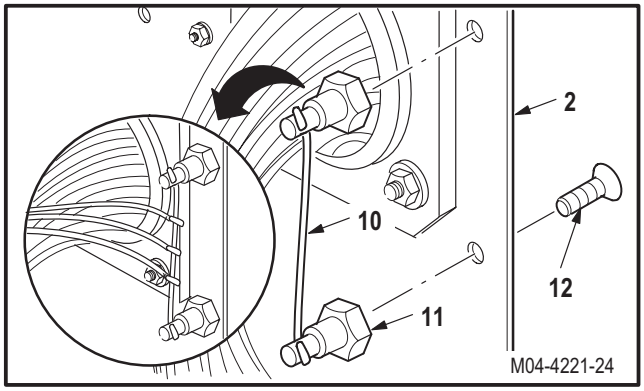
9.116. CPG CAUTION/WARNING PANEL HOUSING DISASSEMBLY/ASSEMBLY (AVIM) – continued

j. **Install harness (10) on housing (2).**

(1) Position harness (10) on housing (2).

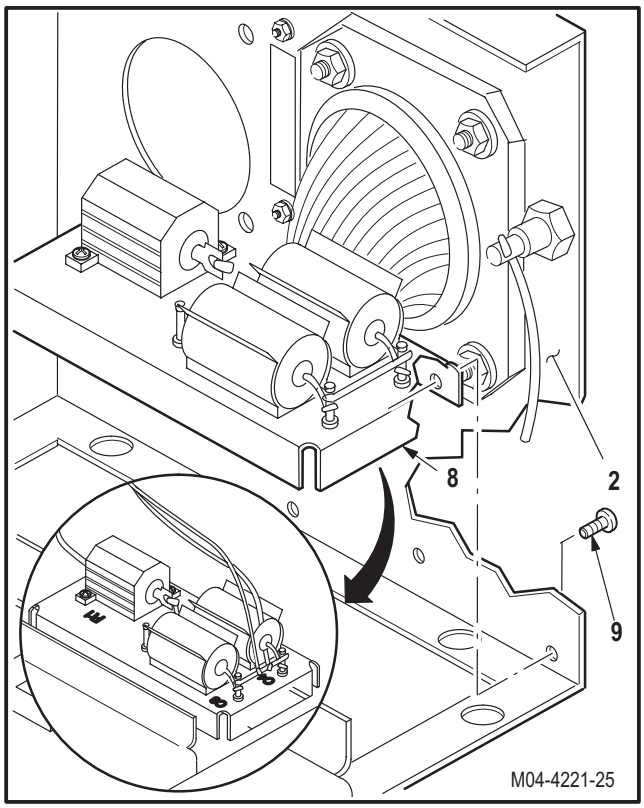
(2) Install two screws (12) through housing (2) in posts (11).



k. **Install bracket (8) on housing (2).**

(1) Position bracket (8) on housing (2).

(2) Install three screws (9) through housing (2) in bracket (8).



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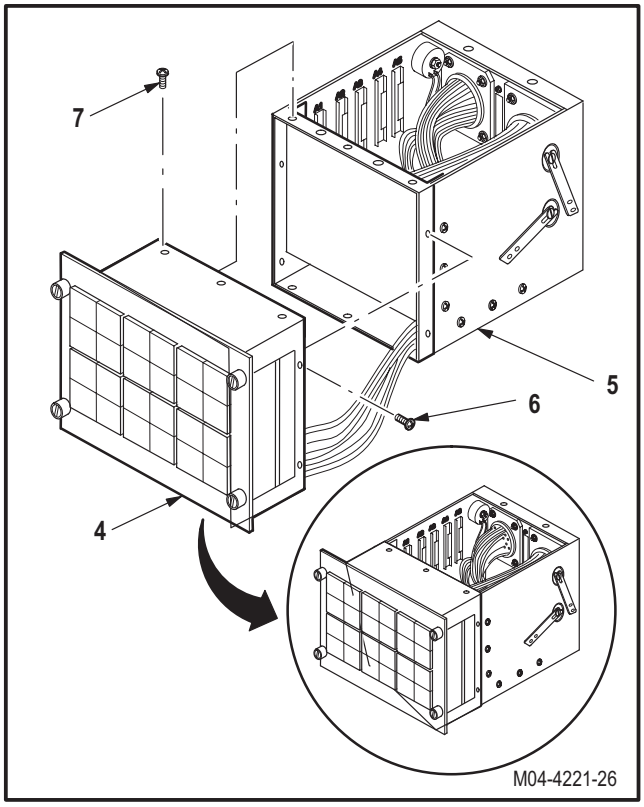
9.116. CPG CAUTION/WARNING PANEL HOUSING DISASSEMBLY/ASSEMBLY (AVIM) – continued

l. **Install housing (4) on plate (5).**

(1) Position housing (4) on plate (5).

(2) Install six screws (7) through top and bottom of housing (4) in plate (5).

(3) Install four screws (6) through sides of housing (4) in plate (5).



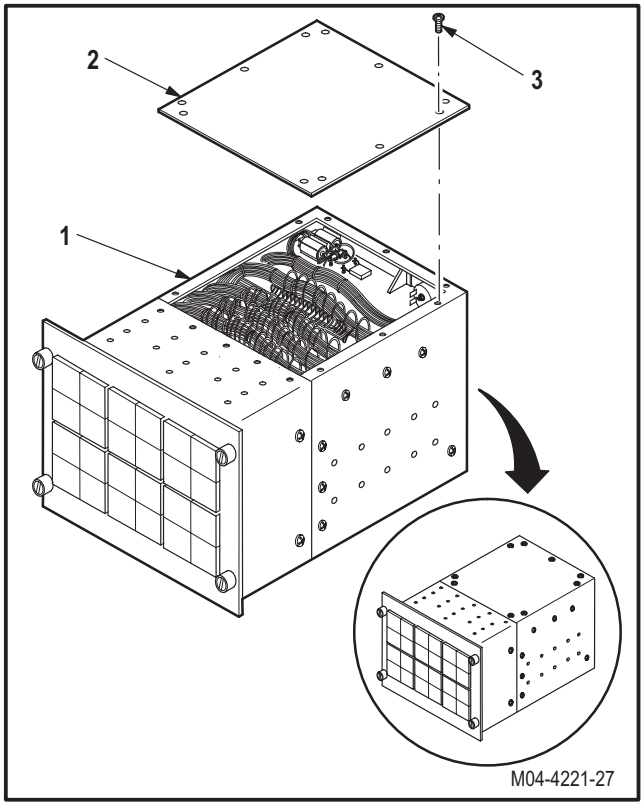
m. **Install panel (2) on housing (1).**

(1) Position panel (2) on housing (1).

(2) Install nine screws (3) through panel (2) in housing (1).

n. **Inspect (QA).**

o. **Install CPG caution/warning panel circuit cards (A157)A1, (A157)A2, (A157)A3, (A157)A4 and (A157)A5** (para 9.115)**.**



END OF TASK

9.117. CPG CAUTION/WARNING PANEL COIL L1 OR L2 REPLACEMENT (AVIM)

9.117.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.117.2. Initial Setup

Tools:

Electronic equipment maintenance kit (item 208, App H)
Light duty laboratory apron (item 27, App H)
Adjustable air filtering respirator (item 262, App H)
25-watt electric soldering iron (item 332, App H)

References:

TM 11-6625-3085-30
TM 55-1500-323-24

Materials/Parts:

Brush (item 34, App F)
Cloth (item 52, App F)
Isopropyl alcohol (item 106, App F)
Solder (item 189, App F)

Personnel Required:

39B	ATE Operator/Maintainer
68X	Armament/Electrical System Repairer
68X3F	Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
9.115	CPG caution/warning panel circuit cards A1, A2, A3, A4, and A5 removed
9.116	CPG caution/warning panel bottom access cover removed [required for removal of coil (A157)L1]
9.116	CPG caution/warning panel connector J2 removed [required for removal of coil (A157)L2]

CAUTION

- To prevent damage to CPG caution/warning panel, handle unit with care and ensure that work area is clean and that parts are placed on a soft and adequately protected working surface.
- To prevent electrostatic damage to other internal components of CPG caution/warning panel, ensure that coils are removed only on a static-free work station.

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9.117. CPG CAUTION/WARNING PANEL COIL L1 OR L2 REPLACEMENT (AVIM) – continued

9.117.3. Removal

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

NOTE

- If replacing coil (A157)L2, perform step a.
- If replacing coil (A157)L1, perform step b.

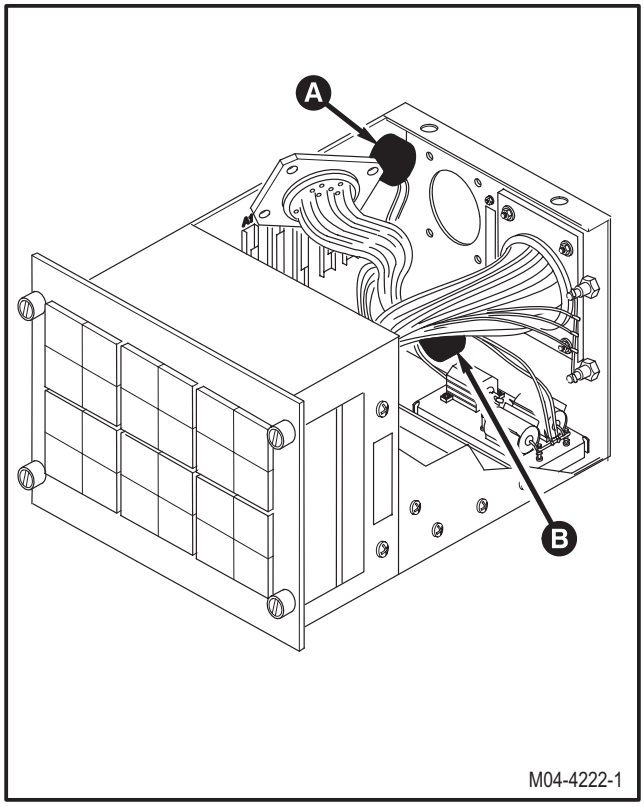
a. **Remove coil (A157)L2 (1) from CPG caution/warning panel housing (2).**

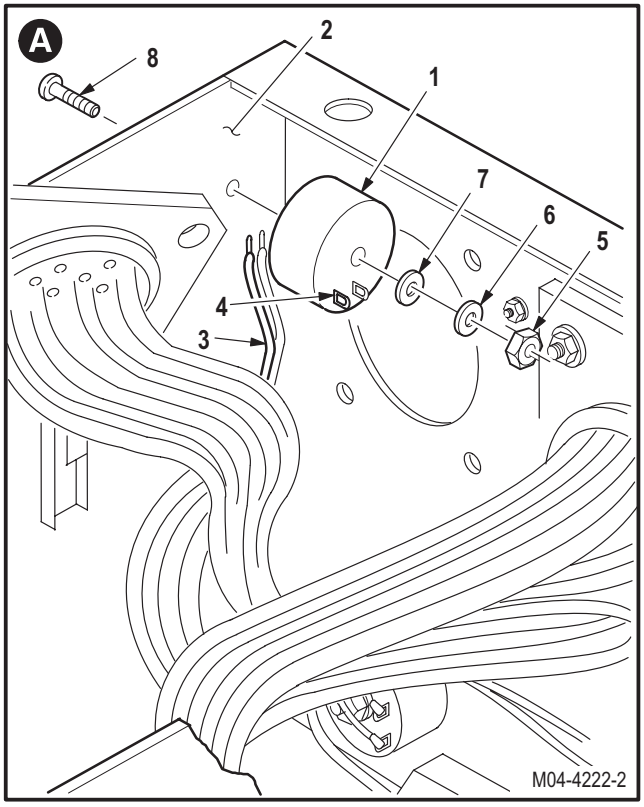
(1) Identify and desolder wires (3) from coil terminals (4). Use soldering iron (TM 55-1500-323-24).

(2) Remove nut (5), and washers (6) and (7) from screw (8).

(3) Remove screw (8) from coil (1) and housing (2).

(4) Remove and discard coil (1).





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9.117. CPG CAUTION/WARNING PANEL COIL L1 OR L2 REPLACEMENT (AVIM) – continued

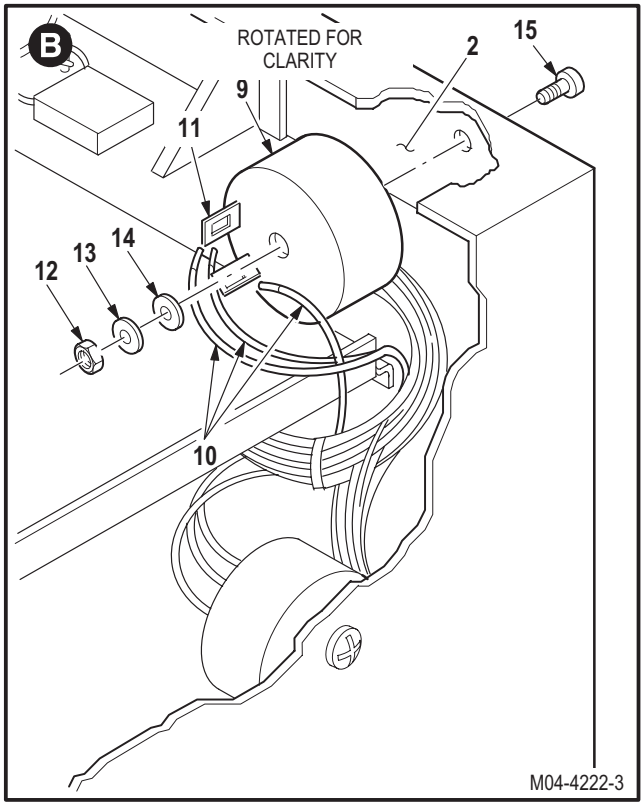
b. **Remove coil (A157)L1 (9) from housing (2).**

(1) Identify and desolder wires (10) from coil terminals (11). Use soldering iron (TM 55-1500-323-24).

(2) Remove nut (12) and washers (13) and (14) from screw (15).

(3) Remove screw (15) from coil (9) and housing (2).

(4) Remove and discard coil (9).



9.117.4. Cleaning

a. **Clean coil mounting area on CPG caution/warning panel housing.** Use isopropyl alcohol (item 106, App F), brush (item 34, App F), and cloth (item 52, App F).

9.117.5. Inspection

a. **Check for cracks.** None allowed.

b. **Check removed and attaching parts for damage** (para 9.104)**.**

c. **Check wires and terminals for wear, cracks, and cuts** (para 9.104)**.**

d. **Check removed and attaching parts for corrosion** (para 1.49)**.**

e. **Check connectors and receptacles for cracks, broken connections, and bent or damaged pins** (para 9.104)**.**

f. **Check adjacent components for security of attachment and loose mounting** (para 9.104)**.**

g. **Check adjacent wiring and wire bundles for cracked, broken, or burned insulation** (para 9.104)**.**

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9.117. CPG CAUTION/WARNING PANEL COIL L1 OR L2 REPLACEMENT (AVIM) – continued

h. **Check adjacent wiring and wire bundles for missing or broken tie wraps, chafing, wear, cuts, and breaks** (para 9.104)**.**

i. **Check for deposits of dust or foreign matter anywhere inside pilot caution/warning panel housing.** None allowed.

9.117.6. Installation

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

NOTE

- Perform step a if coil (A157)L1 was removed.
- Perform step b if coil (A157)L2 was removed.

a. **Install coil (A157)L1 (9) on housing (2).**

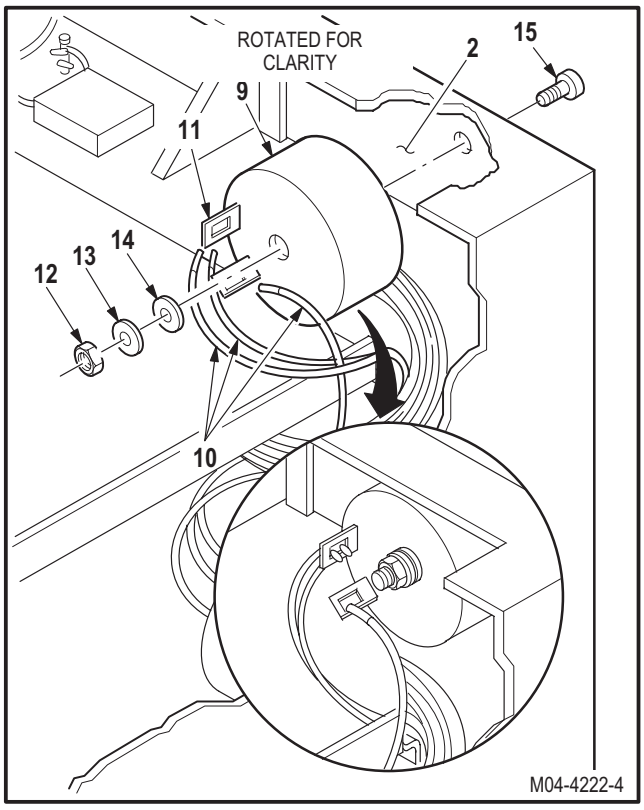
(1) Position new coil (9) on housing (2) (TM 55-1500-323-24).

(2) Install screw (15) through housing (2) and coil (9).

(3) Install nut (12) and washers (13) and (14) on screw (15).

(4) Solder identified wires (10) to coil terminals (11). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).

(5) Go to step c.



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9.117. CPG CAUTION/WARNING PANEL COIL L1 OR L2 REPLACEMENT (AVIM) – continued

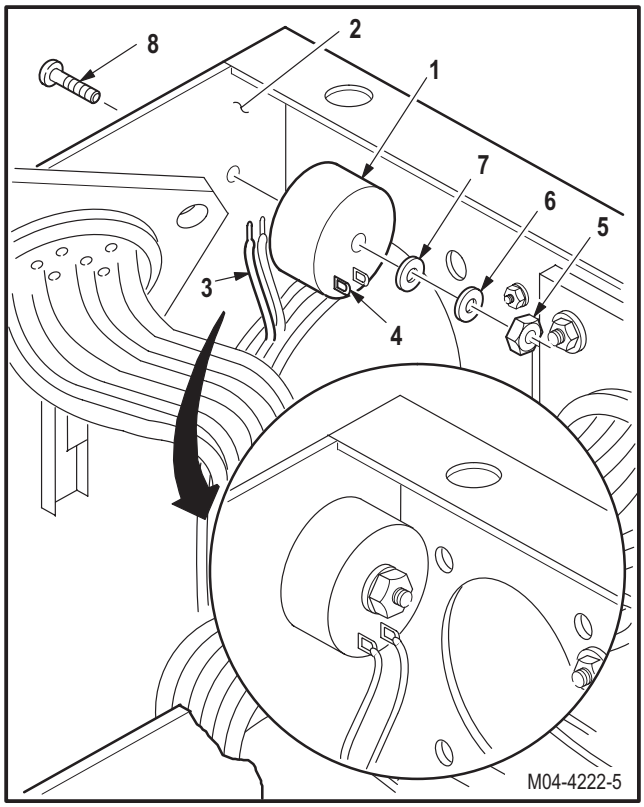
b. **Install coil (A157)L2 (1) on housing (2).**

(1) Position new coil (1) on housing (2) (TM 55-1500-323-24).

(2) Install screw (8) through housing (2) and coil (1).

(3) Install nut (5) and washers (6) and (7) on screw (8).

(4) Solder identified wires (3) to coil terminals (4). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).



c. **Inspect (QA).**

d. **Install CPG caution/warning connector (A157)J2 (if removed)** (para 9.116)**.**

e. **Install CPG caution/warning panel bottom access cover (if removed)** (para 9.116)**.**

f. **Install CPG caution/warning panel circuit cards (A157)A1, (A157)A2, (A157)A3, (A157)A4 and (A157)A5** (para 9.115)**.**

g. **Perform appropriate test.** Electronic Equipment Test Facility (E.E.T.F.) (TM 11-6625-3085-30).

END OF TASK

9.118. CPG CAUTION/WARNING PANEL FIXED CAPACITOR C1 OR C2 REPLACEMENT (AVIM)

9.118.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.118.2. Initial Setup

Tools:

Electronic equipment maintenance kit (item 208, App H)
Light duty laboratory apron (item 27, App H)
Adjustable air filtering respirator (item 262, App H)
25-watt electric soldering iron (item 332, App H)

Materials/Parts:

Brush (item 34, App F)
Cloth (item 52, App F)
Insulating sleeving (item 98, App F)
Isopropyl alcohol (item 106, App F)
Solder (item 189, App F)

Personnel Required:

39B	ATE Operator/Maintainer
68X	Armament/Electrical System Repairer
68X3F	Armament/Electrical System Repairer/ Technical Inspector

References:

TM 11-6625-3085-30
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
9.116	CPG caution/warning panel bottom access cover removed

CAUTION

- To prevent damage to pilot caution/warning panel, handle unit with care and ensure that work area is clean and that parts are placed on a soft and adequately protected working surface.
- To prevent electrostatic damage to other internal components of CPG caution/warning panel, ensure that fixed capacitors are removed only on a static-free work station.

NOTE

This task is typical for capacitors (A157)C1 and (A157)C2 installed on bottom of pilot caution/warning component bracket.

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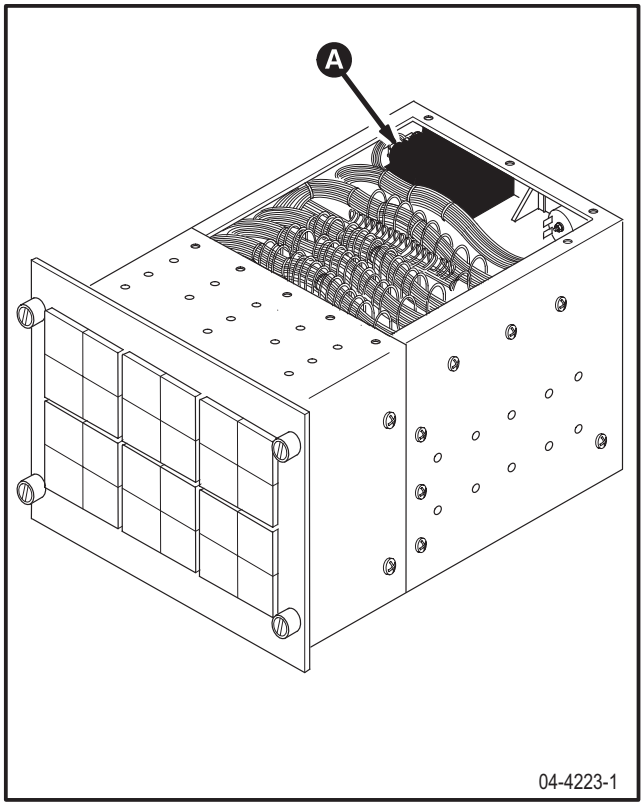
9.118. CPG CAUTION/WARNING PANEL FIXED CAPACITOR C1 OR C2 REPLACEMENT (AVIM) – continued

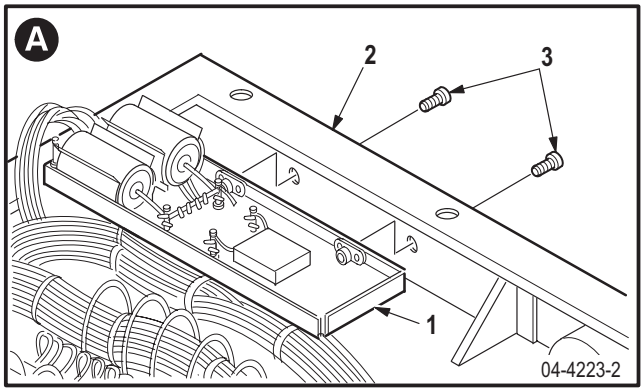


9.118.3. Removal

a. **Remove component bracket (1) from CPG caution/warning panel rear housing (2).**

(1) Remove two screws (3) from housing (2).

(2) Remove bracket (1).



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9.118. CPG CAUTION/WARNING PANEL FIXED CAPACITOR C1 OR C2 REPLACEMENT (AVIM) – continued

WARNING

- **Discharge all capacitors by grounding prior to removal. Capacitors can hold an electrical charge and create a dangerous potential for electrical shock. If injury occurs, seek medical aid.**
- **Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.**

CAUTION

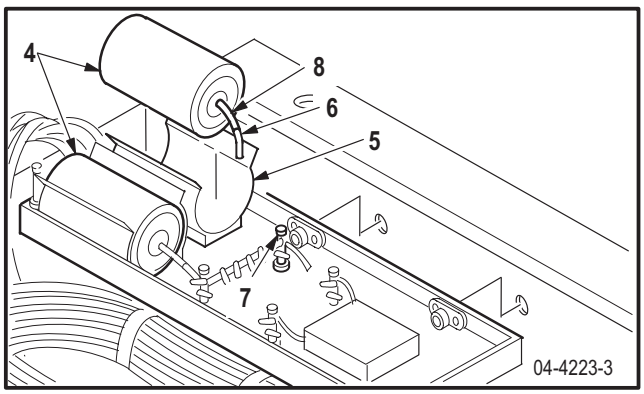
Capacitors (A157)C1 and (A157)C2 are polarized electrolytic capacitors. Prior to removal, identify capacitor leads to ensure correct polarity during installation. Accidental polarity reversal will damage capacitor and/or other internal components of CPG caution/warning panel.

b. **Remove capacitor (A157)C1 or (A157)C2 (4) from component bracket clip (5).**

(1) Identify capacitor leads (6).

(2) Desolder leads (6) from posts (7). Use soldering iron (TM 55-1500-323-24).

(3) Remove and discard capacitor (4) and attached sleeves (8).



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9.118. CPG CAUTION/WARNING PANEL FIXED CAPACITOR C1 OR C2 REPLACEMENT (AVIM) – continued

9.118.4. Cleaning

a. **Clean bracket clip and soldering posts on component bracket.** Use isopropyl alcohol (item 106, App F), brush (item 34, App F), and cloth (item 52, App F).

9.118.5. Inspection

a. **Check for cracks.** None allowed.

b. **Check removed and attaching parts for damage** (para 9.104)**.**

c. **Check wires and terminals for wear, cracks, and cuts** (para 9.104)**.**

d. **Check removed and attaching parts for corrosion** (para 1.49)**.**

e. **Check for sharp bends, distortion, and deformation** (para 9.104)**.**

f. **Check for security of attachment and loose mounting** (para 9.104)**.**

g. **Check adjacent capacitors for visible damage** (para 9.104)**.**

h. **Check adjacent wiring and wire bundles for cracked, broken, or burned insulation** (para 9.104)**.**

i. **Check adjacent wiring and wire bundles for missing or broken tie wraps, chafing, wear, cuts, and breaks** (para 9.104)**.**

j. **Check for excessive deposits of dust or foreign matter anywhere inside CPG caution/warning panel housing.** None allowed.

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9.118. CPG CAUTION/WARNING PANEL FIXED CAPACITOR C1 OR C2 REPLACEMENT (AVIM) – continued

9.118.6. Installation

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

CAUTION

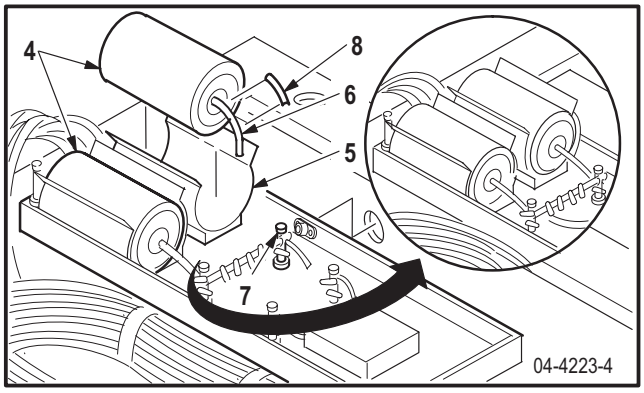
Ensure that capacitor polarity is not reversed during installation. Accidental polarity reversal will damage capacitor and/or other internal components of pilot caution/ warning panel.

a. **Install capacitor (C1) or (C2) (4) in clip (5).**

(1) Install new sleeves (8) on leads (6). Use insulating sleeving (item 98, App F) (TM 55-1500-323-24).

(2) Position capacitor (4) in clip (5) and secure leads (6) to posts (7) (TM 55-1500-323-24).

(3) Solder leads (6) to posts (7). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).



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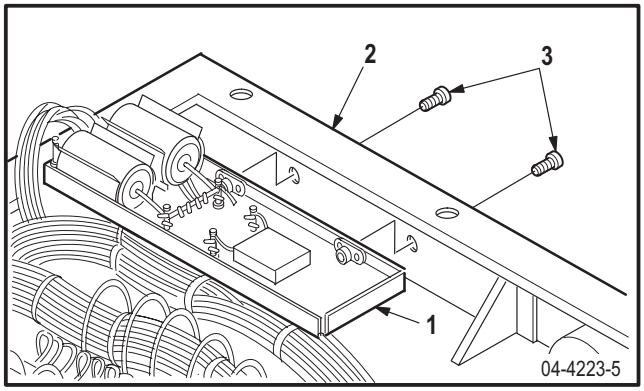
9.118. CPG CAUTION/WARNING PANEL FIXED CAPACITOR C1 OR C2 REPLACEMENT (AVIM) – continued

b. **Install bracket (1) on housing (2).**

(1) Position bracket (1) against housing (2).

(2) Install two screws (3) through housing (2) in bracket (1).



c. **Inspect (QA).**

d. **Install CPG caution/warning panel bottom access cover** (para 9.116)**.**

e. **Perform appropriate test.** Electronic Equipment Test Facility (E.E.T.F) (TM 11-6625-3085-30).

END OF TASK

9.119. CPG CAUTION/WARNING PANEL FIXED CAPACITOR C3 OR C4 REPLACEMENT (AVIM)

9.119.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.119.2. Initial Setup

Tools:

Electronic equipment maintenance kit (item 208, App H)
Light duty laboratory apron (item 27, App H)
Adjustable air filtering respirator (item 262, App H)
25-watt electric soldering iron (item 332, App H)

Materials/Parts:

Brush (item 34, App F)
Cloth (item 52, App F)
Insulating sleeving (item 98, App F)
Isopropyl alcohol (item 106, App F)
Solder (item 189, App F)

Personnel Required:

39B	ATE Operator/Maintainer
68X	Armament/Electrical System Repairer
68X3F	Armament/Electrical System Repairer/ Technical Inspector

References:

TM 11-6625-3085-30
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
9.115	CPG caution/warning panel circuit cards A1, A2, A3, A4, and A5 removed

CAUTION

- To prevent damage to pilot caution/warning panel, handle unit with care and ensure that work area is clean and that parts are placed on a soft and adequately protected working surface.
- To prevent electrostatic damage to other internal components of CPG caution/warning panel, ensure that fixed capacitors are removed only on a static-free work station.

NOTE

This task is typical for capacitors (A157)C3 and (A157)C4 installed on top of pilot caution/warning component bracket.

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9.119. CPG CAUTION/WARNING PANEL FIXED CAPACITOR C3 OR C4 REPLACEMENT (AVIM) – continued

9.119.3. Removal

WARNING

- **Discharge all capacitors by grounding prior to removal. Capacitors can hold an electrical charge and create a dangerous potential for electrical shock. If injury occurs, seek medical aid.**
- **Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.**

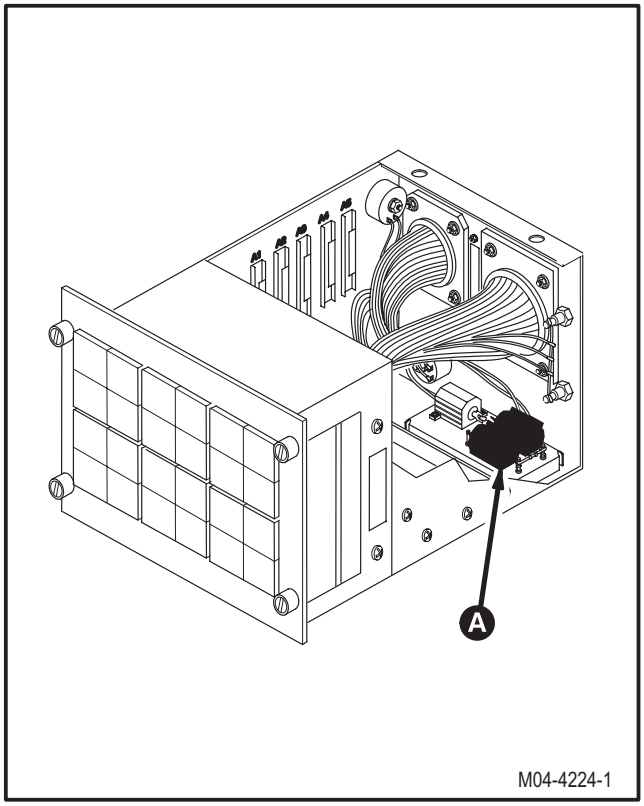
CAUTION

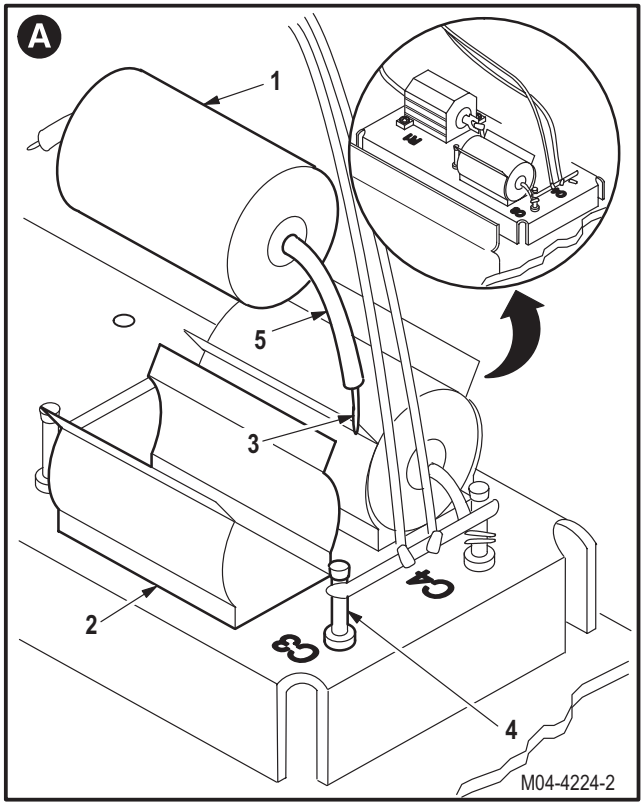
Capacitors (A157)C3 and (A157)C4 are polarized electrolytic capacitors. Prior to removal, identify capacitor leads to ensure correct polarity during installation. Accidental polarity reversal will damage capacitor and/or other internal components of CPG caution/warning panel.

a. **Remove capacitors (C3) or (C4) (1) from component bracket clip (2).**

(1) Identify and desolder capacitor leads (3) from posts (4). Use soldering iron (TM 55-1500-323-24).

(2) Remove and discard capacitor (1) and attached sleeves (5).





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9.119. CPG CAUTION/WARNING PANEL FIXED CAPACITOR C3 OR C4 REPLACEMENT (AVIM) – continued

9.119.4. Cleaning

a. **Clean bracket clip and soldering posts on component bracket.** Use isopropyl alcohol (item 106, App F), brush (item 34, App F), and cloth (item 52, App F).

9.119.5. Inspection

a. **Check for cracks.** None allowed.

b. **Check removed and attaching parts for damage** (para 9.104)**.**

c. **Check wires and terminals for wear, cracks, and cuts** (para 9.104)**.**

d. **Check removed and attaching parts for corrosion** (para 1.49)**.**

e. **Check for sharp bends, distortion, and deformation** (para 9.104)**.**

f. **Check for security of attachment and loose mounting** (para 9.104)**.**

g. **Check adjacent capacitors for visible damage** (para 9.104)**.**

h. **Check adjacent wiring and wire bundles for cracked, broken, or burned insulation** (para 9.104)**.**

i. **Check adjacent wiring and wire bundles for missing or broken tie wraps, chafing, wear, cuts, and breaks** (para 9.104)**.**

j. **Check for deposits of dust or foreign matter anywhere inside pilot caution/warning panel housing.** None allowed.

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9.119. CPG CAUTION/WARNING PANEL FIXED CAPACITOR C3 OR C4 REPLACEMENT (AVIM) – continued

9.119.6. Installation

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

CAUTION

Ensure that capacitor polarity is not reversed during installation. Accidental polarity reversal will damage capacitor and/or other internal components of pilot caution/ warning panel.

a. **Install capacitor (1) in clip (2).**

(1) Install new sleeves (5) on leads (3). Use insulating sleeving (item 98, App F) (TM 55-1500-323-24).

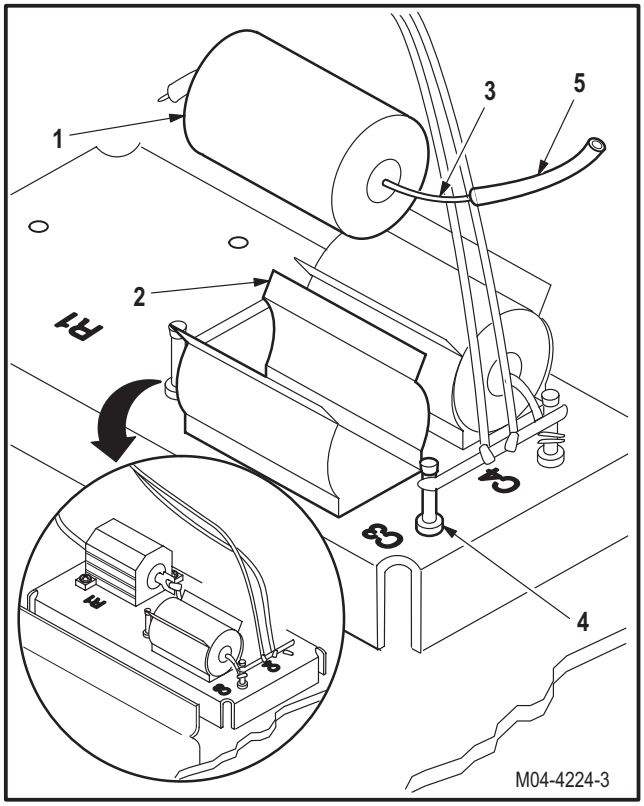
(2) Position capacitor (1) in clip (2) and secure leads (3) to posts (4) (TM 55-1500-323-24).

(3) Solder identified leads (3) to posts (4). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).

b. **Inspect (QA).**

c. **Install CPG caution/warning panel circuit cards (A157)A1, (A157)A2, (A157)A3, (A157)A4, and (A157)A5** (para 9.115)**.**

d. **Perform appropriate test.** Electronic Equipment Test Facility (E.E.T.F.) (TM 11-6625-3085-30).



END OF TASK

9.120. CPG CAUTION/WARNING PANEL CERAMIC FIXED CAPACITOR C5 REPLACEMENT (AVIM)

9.120.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.120.2. Initial Setup

Tools:

Electronic equipment maintenance kit (item 208, App H)
Light duty laboratory apron (item 27, App H)
Electric gun type heater (item 163, App H)
1 1/4-inch blade putty knife (item 199, App H)
Adjustable air filtering respirator (item 262, App H)
25-watt electric soldering iron (item 332, App H)

Materials/Parts:

Adhesive (item 8, App F)
Brush (item 34, App F)
Cloth (item 52, App F)
Isopropyl alcohol (item 106, App F)
Solder (item 189, App F)

Personnel Required:

39B ATE Operator/Maintainer
68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

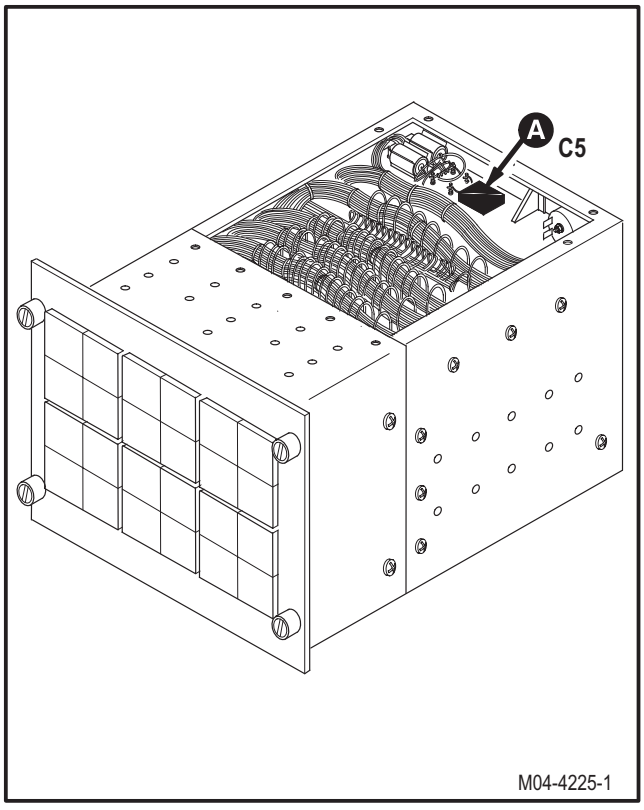
TM 11-6625-3085-30
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
9.116	CPG caution/warning panel bottom access cover removed

CAUTION

- To prevent damage to pilot caution/warning panel, handle unit with care and ensure that work area is clean and that parts are placed on a soft and adequately protected working surface.
- To prevent electrostatic damage to other internal components of CPG caution/warning panel, ensure ceramic fixed capacitor is removed only on a static–free work station.



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9.120. CPG CAUTION/WARNING PANEL CERAMIC FIXED CAPACITOR C5 REPLACEMENT (AVIM) – continued

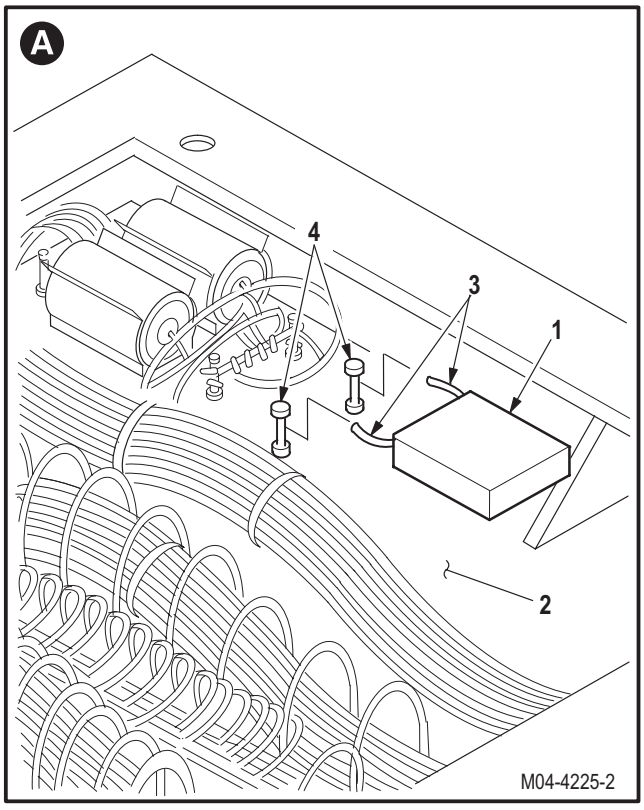
WARNING

- **Discharge all capacitors by grounding prior to removal. Capacitors can hold an electrical charge and create a dangerous potential for electrical shock. If injury occurs, seek medical aid.**
- **Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.**
- **Do not place heater near flammable material or allow heater to contact skin: severe burns can result. Wear protective equipment. If injury occurs, seek medical aid.**

a. **Remove capacitor C5 (1) from component bracket (2).**

(1) Identify and desolder capacitor leads (3) from posts (4). Use soldering iron (TM 55-1500-323-24).

(2) Remove and discard capacitor (1). Use putty knife and heater to loosen adhesive.



9.120.3. Cleaning

a. **Remove old adhesive from capacitor mounting area.** Use isopropyl alcohol (item 106, App F) and cloth (item 52, App F).

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9.120. CPG CAUTION/WARNING PANEL CERAMIC FIXED CAPACITOR C5 REPLACEMENT (AVIM) – continued

9.120.4. Inspection

a. **Check for cracks.** None allowed.

b. **Check removed and attaching parts for damage** (para 9.104)**.**

c. **Check wires and terminals for wear, cracks, and cuts** (para 9.104)**.**

d. **Check removed and attaching parts for corrosion** (para 1.49)**.**

e. **Check for distortion and deformation** (para 9.104)**.**

f. **Check for security of attachment and loose mounting** (para 9.104)**.**

g. **Check adjacent capacitors for visible damage** (para 9.104)**.**

h. **Check adjacent wiring and wire bundles for cracked, broken, or burned insulation** (para 9.104)**.**

i. **Check adjacent wiring and wire bundles for missing or broken tie wraps, chafing, wear, cuts, and breaks** (para 9.104)**.**

j. **Check for deposits of dust or foreign matter anywhere inside CPG caution/warning panel housing.** None allowed.

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9.120. CPG CAUTION/WARNING PANEL CERAMIC FIXED CAPACITOR C5 REPLACEMENT (AVIM) – continued

9.120.5. Installation

a. **Bond capacitor (1) to bracket (2).**

NOTE

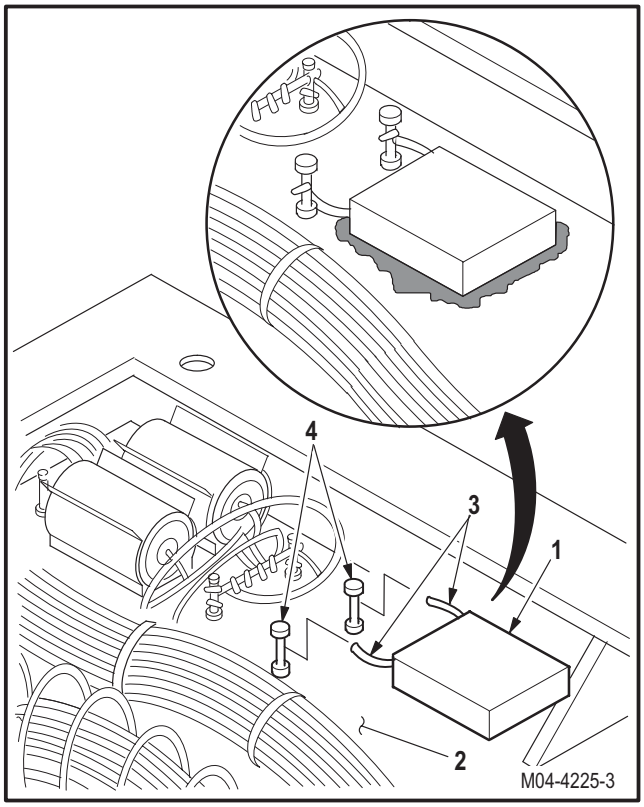
Capacitor markings must be visible. Install capacitor with unmarked surface on adhesive.

(1) Apply adhesive to capacitor (1). Use adhesive (item 8, App F) and brush (item 34, App F).

(2) Bond capacitor (1) to mounting surface of bracket (2).

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.



b. **Solder identified leads (3) to posts (4).**

(1) Solder leads (3) to posts (4). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).

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9.120. CPG CAUTION/WARNING PANEL CERAMIC FIXED CAPACITOR C5 REPLACEMENT (AVIM) – continued

c. **Inspect (QA).**

d. **Install CPG caution/warning panel bottom access cover** (para 9.116)**.**

e. **Perform appropriate test.** Electronic Equipment Test Facility (E.E.T.F.) (TM 11-6625-3085-30).

END OF TASK

9.121. CPG CAUTION/WARNING PANEL FIXED WIRE RESISTOR REPLACEMENT (AVIM)

9.121.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.121.2. Initial Setup

Tools:

Electronic equipment maintenance kit (item 208, App H)
Light duty laboratory apron (item 27, App H)
Adjustable air filtering respirator (item 262, App H)
25-watt electric soldering iron (item 332, App H)

Personnel Required:

39B ATE Operator/Maintainer
68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 11-6625-3085-30
TM 55-1500-323-24

Materials/Parts:

Brush (item 34, App F)
Cloth (item 52, App F)
Isopropyl alcohol (item 106, App F)
Solder (item 189, App F)

Equipment Conditions:

Ref	Condition
9.115	CPG caution/warning panel circuit cards A1, A2, A3, A4, and A5 removed
9.116	CPG caution/warning panel bottom cover removed

CAUTION

- To prevent damage to CPG caution/warning panel, handle unit with care and ensure that work area is clean and that parts are placed on a soft and adequately protected working surface.
- To prevent electrostatic damage to other internal components of CPG caution/warning panel, ensure that resistor is removed only on a static-free work station.

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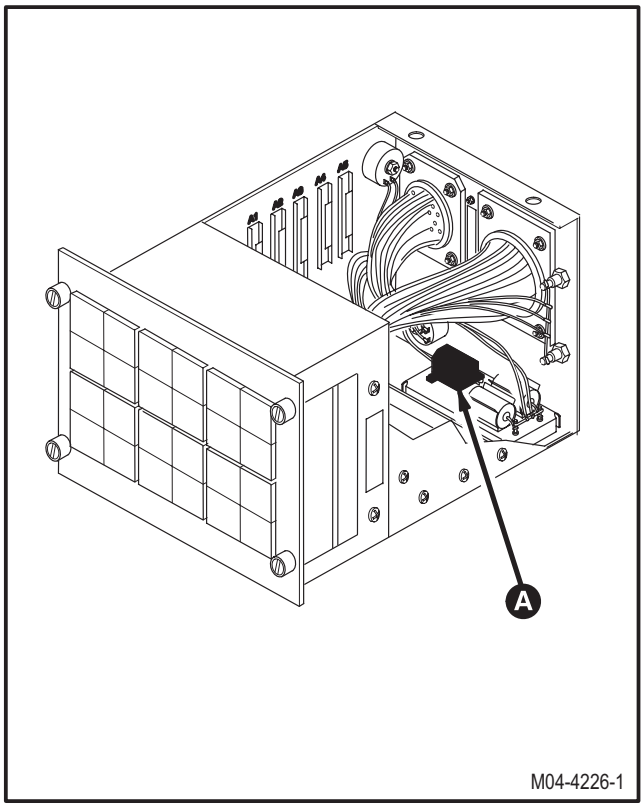
9.121. CPG CAUTION/WARNING PANEL FIXED WIRE RESISTOR REPLACEMENT (AVIM) – continued



9.121.3. Removal

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

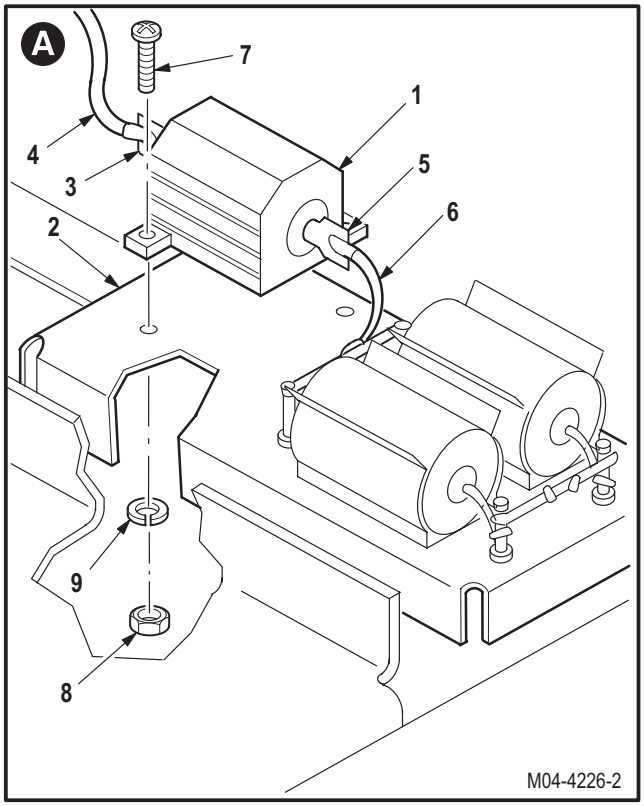
a. **Remove fixed wire resistor (1) from component bracket (2).**

(1) Desolder left resistor lead (3) from wire (4). Use soldering iron (TM 55-1500-323-24).

(2) Desolder right resistor lead (5) from jumper (6). Use soldering iron (TM 55-1500-323-24).

(3) Remove two screws (7), nuts (8), and lockwashers (9) from component bracket (2).

(4) Remove and discard resistor (1).



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9.121. CPG CAUTION/WARNING PANEL FIXED WIRE RESISTOR REPLACEMENT (AVIM) – continued

9.121.4. Cleaning

a. **Clean fixed wire resistor mounting area on CPG caution/warning panel housing.** Use isopropyl alcohol (item 106, App F), brush (item 34, App F), and cloth (item 52, App F).

9.121.5. Inspection

a. **Check for cracks.** None allowed.

b. **Check removed and attaching parts for damage** (para 9.104)**.**

c. **Check wires and terminals for wear, cracks, and cuts** (para 9.104)**.**

d. **Check removed and attaching parts for corrosion** (para 1.49)**.**

e. **Check adjacent components for security of attachment and loose mounting** (para 9.104)**.**

f. **Check adjacent wiring and wire bundles for cracked, broken, or burned insulation** (para 9.104)**.**

g. **Check adjacent wiring and wire bundles for missing or broken tie wraps, chafing, wear, cuts, and breaks** (para 9.104)**.**

h. **Check for deposits of dust or foreign matter anywhere inside CPG caution/warning panel housing.** None allowed.

GO TO NEXT PAGE

9.121. CPG CAUTION/WARNING PANEL FIXED WIRE RESISTOR REPLACEMENT (AVIM) – continued

9.121.6. Installation

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

a. **Install resistor (1) on bracket (2).**

(1) Position new resistor (1) on bracket (2) (TM 55-1500-323-24).

(2) Install two screws (7) through resistor (1) flanges and bracket (2).

(3) Install two nuts (8) and lockwashers (9) on screws (7).

(4) Solder right lead (5) to jumper (6). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).

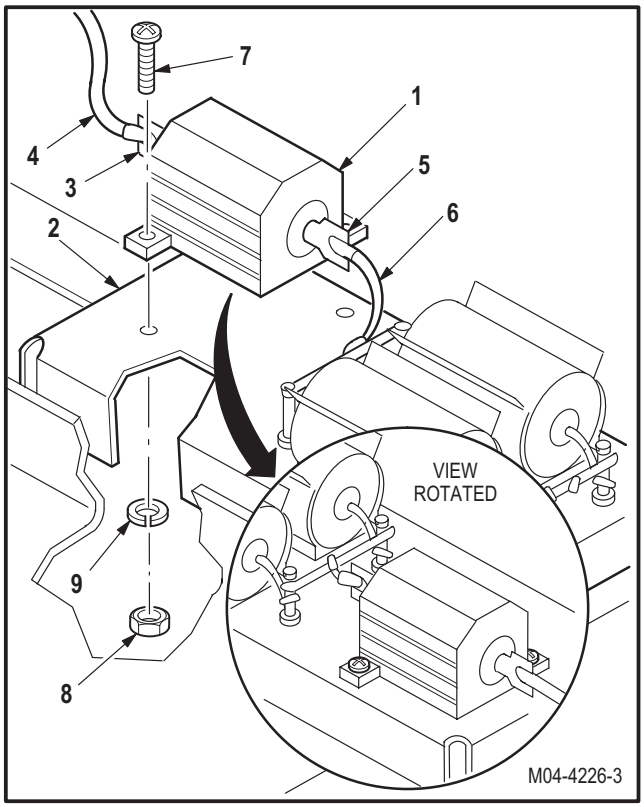
(5) Solder left lead (3) to wire (4). Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).

b. **Inspect (QA).**

c. **Install CPG caution/warning panel bottom cover** (para 9.116)**.**

d. **Install pilot CPG caution/warning panel circuit cards (A157)A1, (A157)A2, (A157)A3, (A157)A4, and (A157)A5** (para 9.115)**.**

e. **Perform appropriate test.** Electronic Equipment Test Facility (E.E.T.F.) (TM 11-6625-3085-30).



END OF TASK

9.122. PILOT OR CPG MASTER CAUTION/WARNING PANEL REMOVAL/INSTALLATION

9.122.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.122.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Ohmmeter (item 218, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

NOTE

This task is typical for pilot or CPG master caution/warning panel.

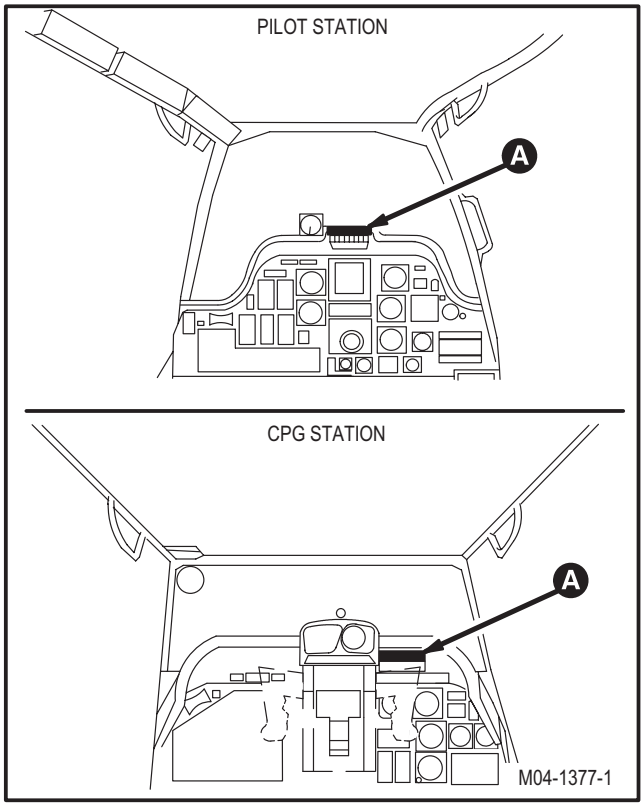
9.122.3. Removal

a. **Enter pilot or CPG station** (para 1.56)**. Observe all safety precautions.**

b. **Identify master caution panel (pilot or CPG) to be removed.**

c. **On pilot center circuit breaker panel, open LT CAUT circuit breaker.**

d. **On CPG circuit breaker panel No. 1, open EMERG BATT CAUT circuit breaker.**



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9.122. PILOT OR CPG MASTER CAUTION/WARNING PANEL REMOVAL/INSTALLATION – continued

e. **Detach connector J164 (pilot) or J166 (CPG) (1) from receptacle P1 (2).**

(1) Loosen two captive screws (3).

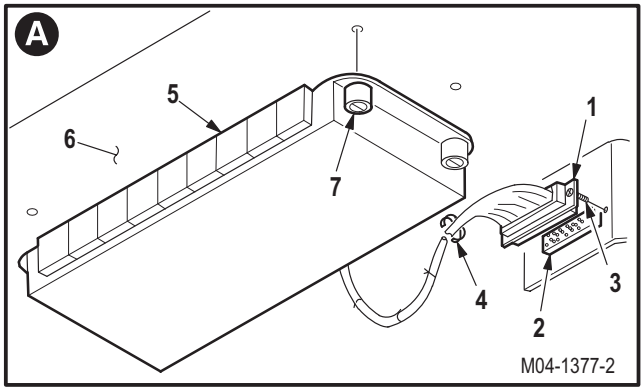
(2) Detach connector J164 or J166 (1).

f. **Remove tiewrap (4).**

g. **Remove master caution panel (5) from glareshield (6).**

(1) Unlock four quarter turn fasteners (7).

(2) Remove panel (5).



9.122.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.122.5. Inspection

a. **Check connectors for damaged pins, cracks, cuts, or broken wires** (para 9.104)**.**

b. **Check removed and attaching parts for damage** (para 9.104)**.**

c. **Check wires and terminals for wear, cracks, and cuts** (para 9.104)**.**

d. **Check removed and attaching parts for corrosion** (para 1.49)**.**

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9.122. PILOT OR CPG MASTER CAUTION/WARNING PANEL REMOVAL/INSTALLATION – continued

9.122.6. Installation

a. **Install panel (5) on glareshield (6).**

(1) Position panel (5) on glareshield (6).

(2) Lock four quarter turn fasteners (7).

b. **Attach to connector J164 (pilot) or J166 (CPG) (1) to receptacle P1 (2).**

(1) Tighten two captive screws (3).

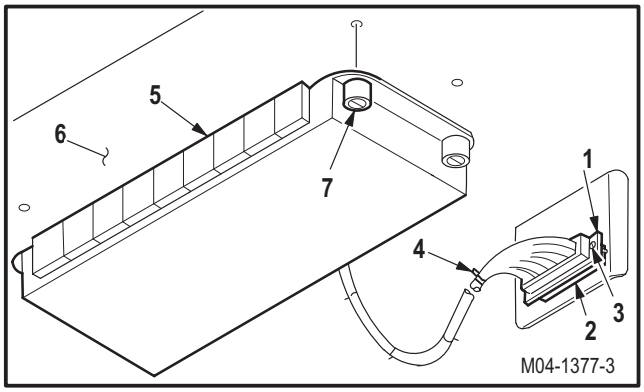
c. **Perform electrical bond check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

d. **Install tiewrap (4).**

e. **Inspect (QA).**

f. **Perform pilot or CPG caution and warning system maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

9.123. CPG FUEL XFER ADVISORY LIGHT REPLACEMENT

9.123.1. Description

This task covers: Removal. Installation.

9.123.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

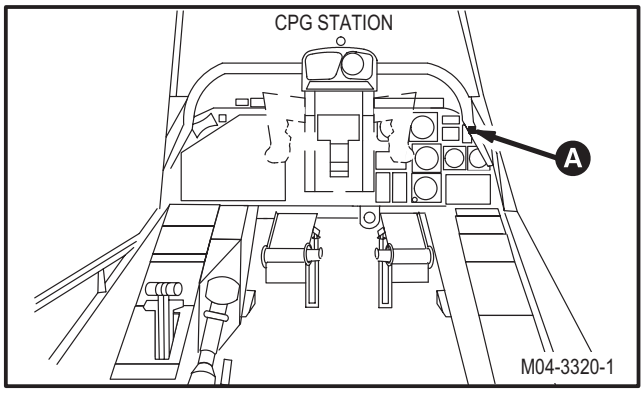
Ref	Condition
1.57	Helicopter safed
9.114	CPG caution/warning panel removed

9.123.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot center circuit breaker panel, open FUEL TRANS circuit breaker.**

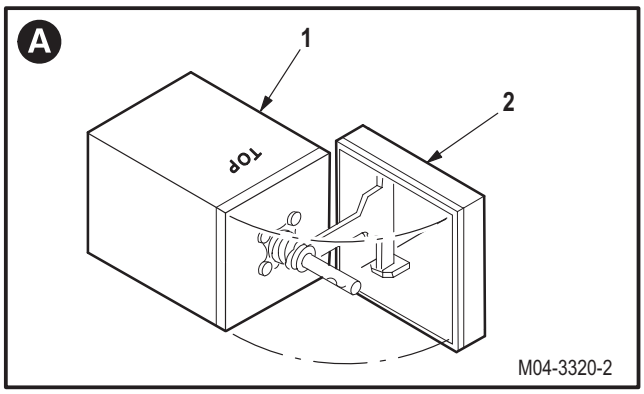
c. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**



d. **Pull lamp segment (1) from body (2).**

(1) Press segment (1) to release detent.

(2) Pull segment (1) from body (2) and move to one side.



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9.123. CPG FUEL XFER ADVISORY LIGHT REPLACEMENT – continued

CAUTION

Advisory light body is secured to mounting sleeve by two integral mounting screws. To prevent damage to light, do not back screws out too far.

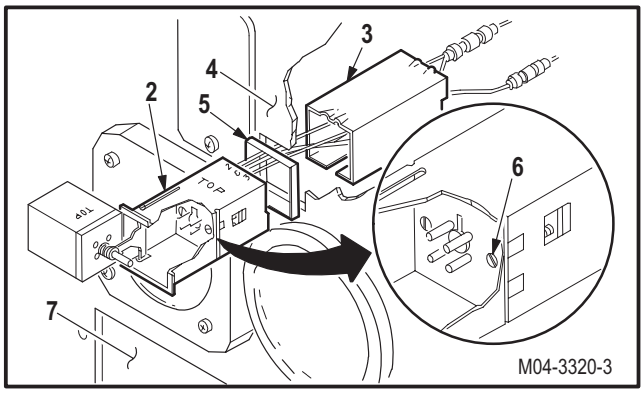
e. **Remove body (2) from mounting sleeve (3), instrument panel (4), and mounting spacer (5).**

(1) Hold sleeve (3).

(2) Loosen two screws (6).

(3) Pull body (2) and spacer (5) aft out of panel (4).

(4) Remove sleeve (3) from behind panel (4) through CPG caution/warning panel mounting hole (7).



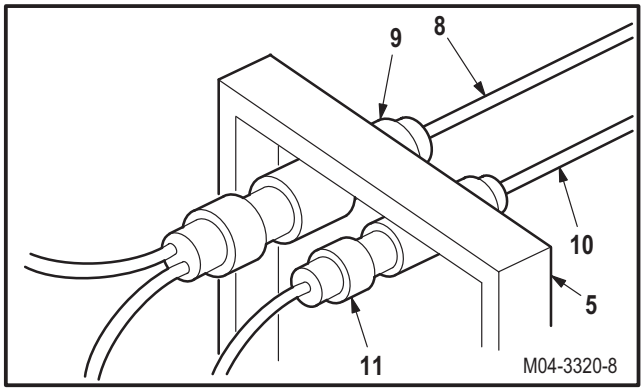
NOTE

Ensure that wires do not retract through advisory light mounting hole.

f. **Identify and detach wire (8) from double splice (9).**

g. **Identify and detach ground wire (10) from single splice (11).**

h. **Slide spacer (5) from splices (9) and (11).**



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9.123. CPG FUEL XFER ADVISORY LIGHT REPLACEMENT – continued

9.123.4. Installation

a. **Slide spacer (5) over two splices (9) and (11).**

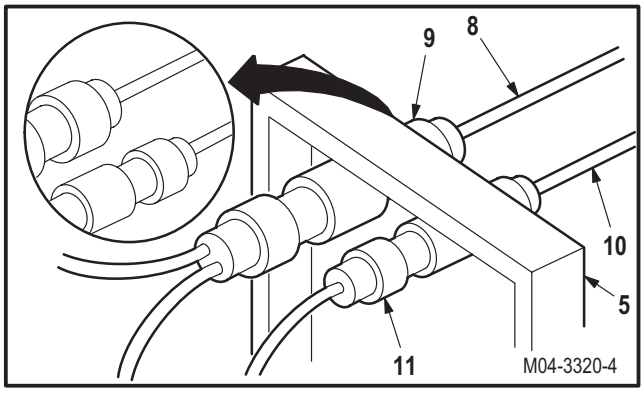
b. **Attach identified wire (10) to single splice (11).**

c. **Attach identified wire (8) to double splice (9).**

d. **Inspect (QA).**

NOTE

Sleeve must be positioned with long slot down and side slots toward front of helicopter.



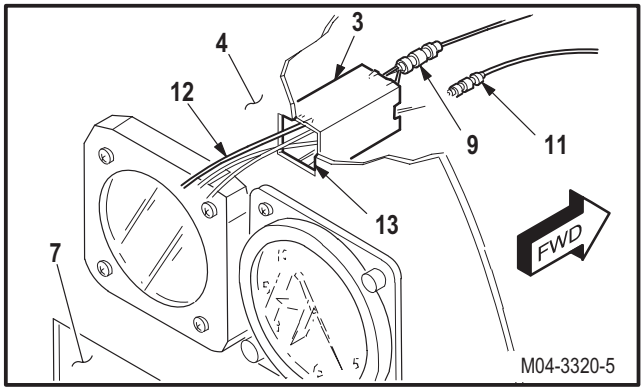
e. **Position and hold sleeve (3) behind panel (4).**

(1) Insert sleeve (3) through hole (7).

(2) Hold splices (9) and (11).

(3) Position mounting sleeve (3) around wires (12).

(4) Aline sleeve (3) with advisory light mounting hole (13) so that long slot on sleeve (3) is down and side slots are toward front of helicopter.



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9.123. CPG FUEL XFER ADVISORY LIGHT REPLACEMENT – continued

CAUTION

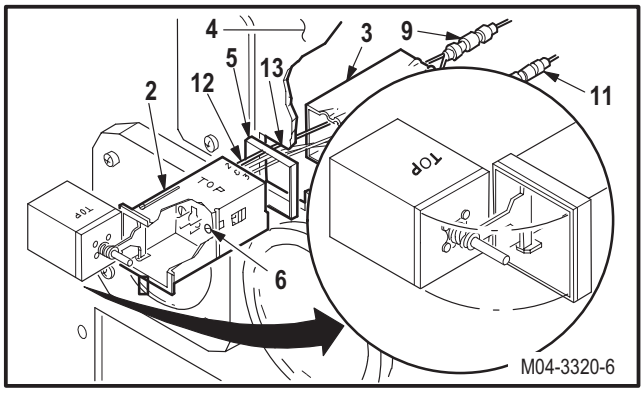
- Advisory light body is secured to mounting sleeve by two integral mounting screws. To prevent damage to light assembly, do not over tighten.
- To prevent damage to legends, lens caps must be installed with **TOP** -to-top and **BOTTOM** to-bottom-as shown.
- Caps installed incorrectly are unusable.

f. **Install body (2) through panel (4) into sleeve (3).**

(1) Position body (2) with **TOP** placard up.

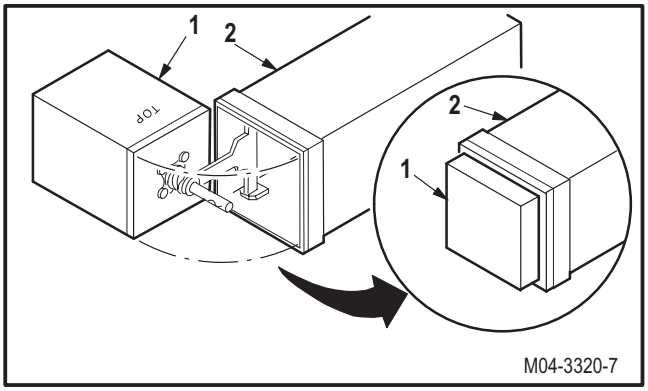
(2) Insert wires (12), splices (9) and (11), and body (2) through spacer (5) and hole (13) in panel (4), then into sleeve (3).

(3) Tighten two screws (6).



g. **Install segment (1) into body (2).**

(1) Aline segment (1) with body (2) and push to seat.



h. **Inspect (QA).**

i. **Install CPG caution/warning panel** (para 9.114).

END OF TASK

9.124. PILOT FUEL XFER ADVISORY LIGHT REPLACEMENT

9.124.1. Description

This task covers: Removal. Installation.

9.124.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

References:

TM 9-1230-476-20-1

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
TM 9-1230-476-20-1	Pilot fire control panel removed

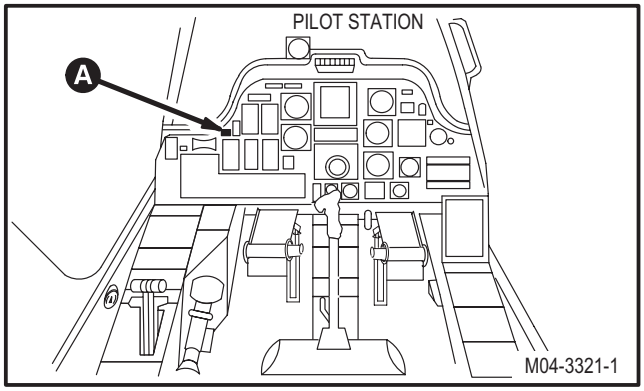
Personnel Required:

68X	Armament/Electrical System Repairer
68X3F	Armament/Electrical System Repairer/ Technical Inspector

9.124.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

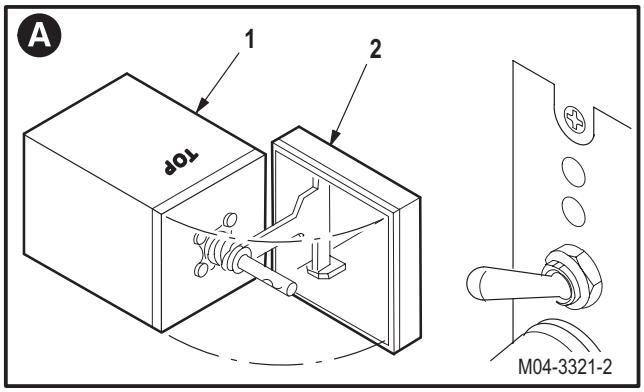
b. **On pilot center circuit breaker panel, open FUEL TRANS circuit breaker.**



c. **Pull lamp segment (1) from body (2).**

(1) Press segment (1) to release detent.

(2) Pull segment (1) from body (2) and move to one side.



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9.124. PILOT FUEL XFER ADVISORY LIGHT REPLACEMENT – continued

CAUTION

Advisory light body is secured to mounting sleeve by two integral mounting screws. To prevent damage to light assembly, do not back screws out too far.

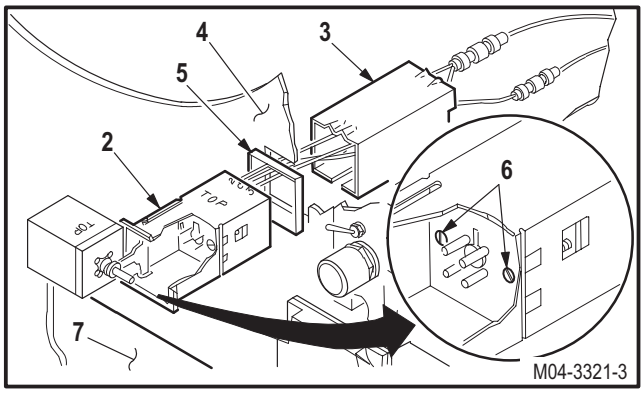
d. **Remove body (2) from mounting sleeve (3), instrument panel (4), and mounting spacer (5).**

(1) Hold sleeve (3).

(2) Loosen two screws (6).

(3) Pull body (2) and spacer (5) aft out of panel (4).

(4) Remove sleeve (3) from behind panel (4) through pilot fire control panel mounting hole (7).



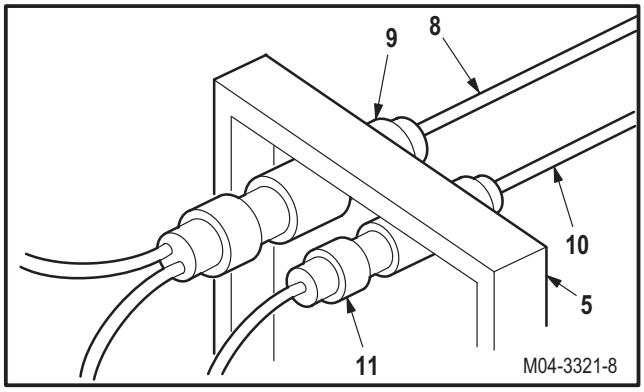
NOTE

Ensure that wires do not retract through advisory light mounting hole.

e. **Identify and detach wire (8) from double splice (9).**

f. **Identify and detach ground wire (10) from single splice (11).**

g. **Slide spacer (5) from splices (9) and (11).**



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9.124. PILOT FUEL XFER ADVISORY LIGHT REPLACEMENT – continued

9.124.4. Installation

a. **Slide spacer (5) over two splices (9) and (11).**

b. **Attach identified wire (10) to single splice (11).**

c. **Attach identified remaining wire (8) to double splice (9).**

d. **Inspect (QA).**

NOTE

Sleeve must be positioned with long slot down and side slots toward front of helicopter.

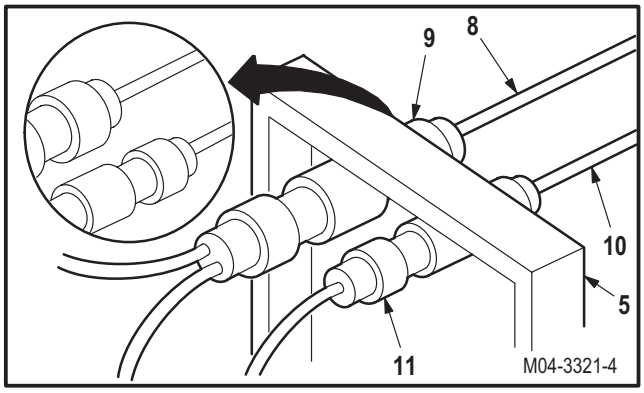
e. **Position and hold mounting sleeve (3) behind panel (4).**

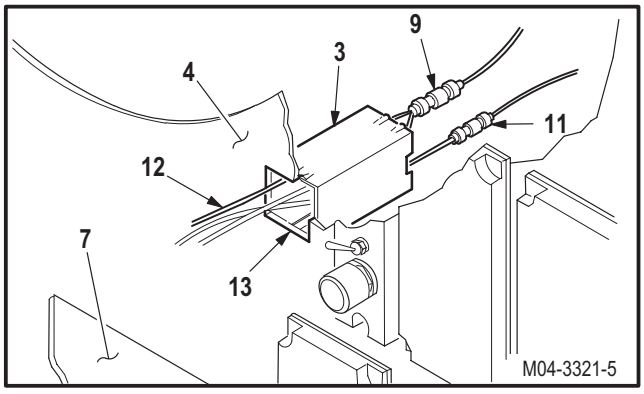
(1) Insert sleeve (3) through hole (7).

(2) Hold splices (9) and (11).

(3) Position sleeve (3) around wires (12).

(4) Aline sleeve (3) with advisory light mounting hole (13) so that long slot on sleeve (3) is down and side slots are toward front of helicopter.





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9.124. PILOT FUEL XFER ADVISORY LIGHT REPLACEMENT – continued

CAUTION

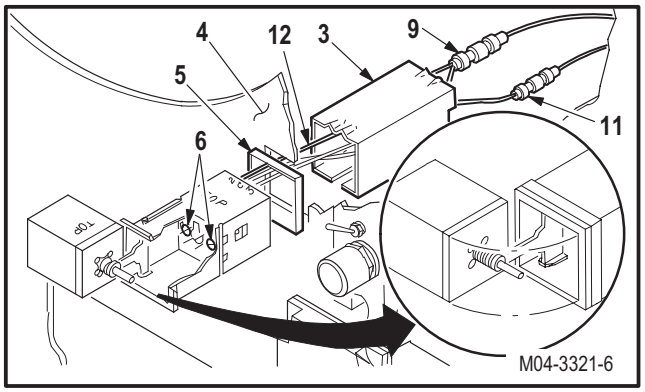
- Advisory light body is secured to mounting sleeve by two integral mounting screws. To prevent damage to light assembly, do not over tighten.
- To prevent damage to legends, lens caps must be installed with **TOP**-to-top and **BOTTOM**-to-bottom as shown.
- Caps installed incorrectly are unusable.

f. **Install body (2) through panel (4) into sleeve (3).**

(1) Position body (2) with **TOP** placard up.

(2) Insert wires (12), splices (9) and (11), and body (2) through spacer (5) and hole (13) in panel (4), then into sleeve (3).

(3) Tighten two screws (6).

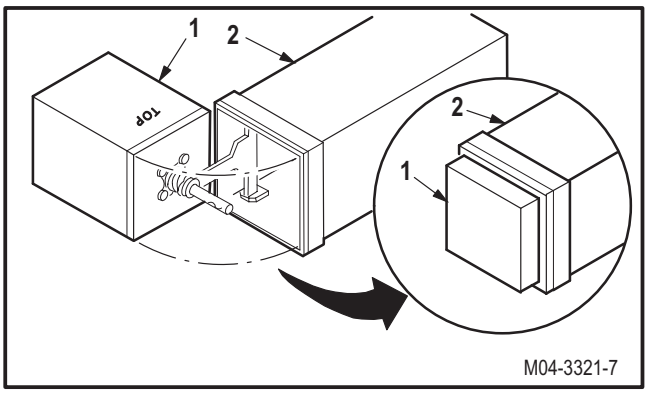


g. **Install segment (1) into body (2).**

(1) Aline lamp segment (1) with body (2) and push to seat.

h. **Inspect (QA).**

i. **Install pilot fire control panel** (TM 9-1230-476-20-1)**.**



END OF TASK

9.125. TEMPERATURE ALARM CONTROL UNIT REPLACEMENT

9.125.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.125.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Ohmmeter (item 218, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

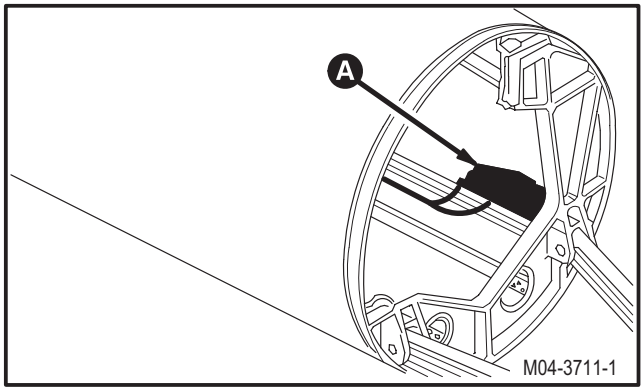
References:

TM 1-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access covers L545 and R545 removed

9.125.3. Removal



NOTE

- This task is typical for both tail rotor and intermediate gearbox temperature alarm control units.
- Removal of intermediate gearbox temperature alarm control unit requires detaching P200A from (A419)J1 and removal of tail rotor temperature alarm control unit requires detaching P201A from (A418)J1.

a. **Remove temperature alarm control unit (1).**

(1) Detach connector (2) from receptacle J1 (3).

(2) Remove four screws (4) and washers (5).

(3) Remove control unit (1) from mount (6).

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9.125. TEMPERATURE ALARM CONTROL UNIT REPLACEMENT – continued

9.125.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47).

9.125.5. Inspection

a. **Check connectors for damaged pins, cracks, cuts, or broken wires** (para 9.104).

b. **Check removed and attaching parts for damage** (para 9.104).

c. **Check wires for wear, cuts, and breaks** (para 9.104).

d. **Check removed and attaching parts for corrosion** (para 1.49).

9.125.6. Installation

a. **Install temperature alarm control unit (1).**

(1) Position control unit (1) on mount (6).

(2) Install four washers (5) and screws (4).

(3) Attach connector (2) to receptacle J1 (3).

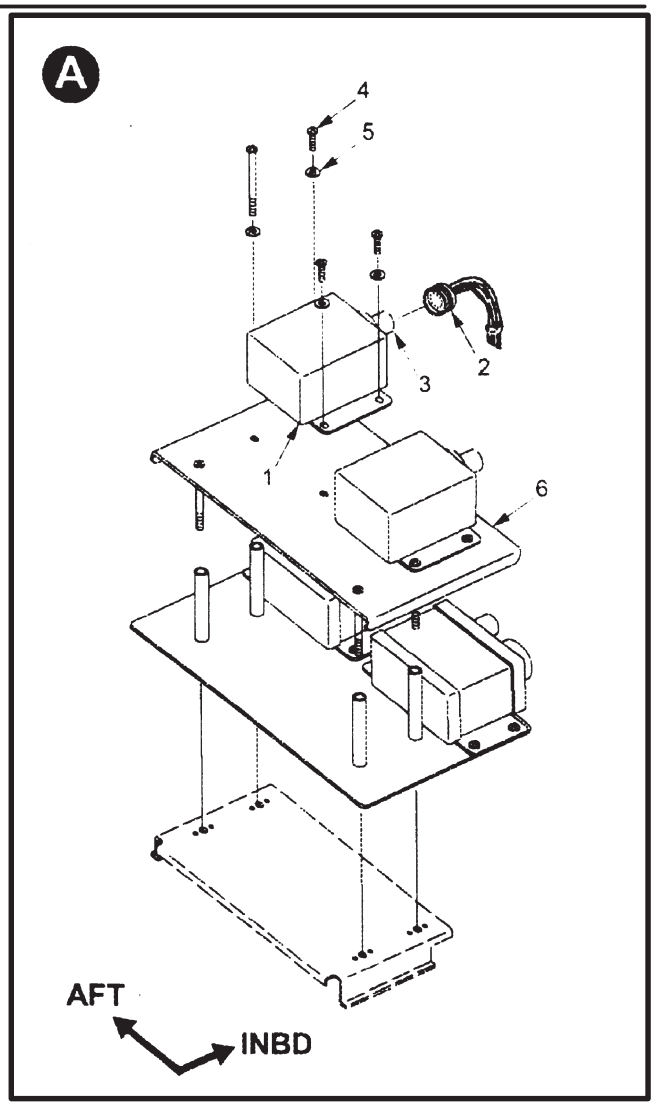
b. **Perform electrical bond check** (TM 55-1500-323-24).

(1) Bond shall be **0.1 OHM** or less. Use ohmmeter.

c. **Inspect (QA).**

d. **Install access covers L545 and R545** (para 2.2).

e. **Perform drive system maintenance operational check** (TM 1-1520-238-T).



END OF TASK

9.125A. TEMPERATURE ALARM CONTROL UNIT FILTER REPLACEMENT

9.125A.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.125A.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Ohmmeter (item 218, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T
TM 55-1500-323-24

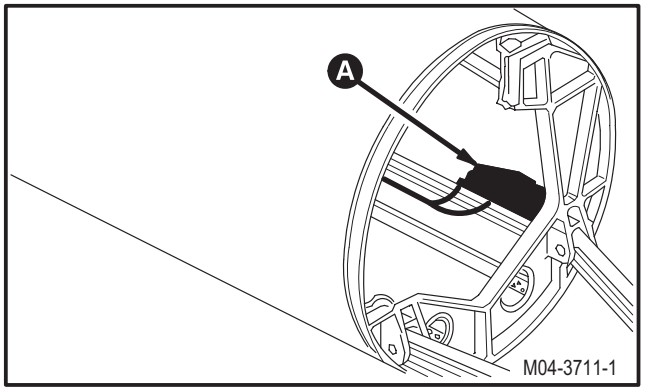
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access covers L545 and R545 removed

9.125A.3. Removal

NOTE

- This task is typical for both tail rotor and intermediate gearbox temperature alarm control unit filters.
- Removal of tail rotor gearbox temperature alarm control unit filter box requires detaching P201 from J1 of filter box and removal of intermediate gearbox temperature alarm control unit filter box requires detaching P200 from J1 of filter box.



a. **Remove temperature alarm control unit filter box (1).**

(1) Detach connector P201A(1) from receptacle J1 (2) of tail rotor gearbox temperature alarm control unit.

(2) Detach connector P200A (3) from receptacle J1 (4) of intermediate gearbox temperature alarm control unit.

(3) Remove four screws (5), washers (6) and standoffs (7).

(4) Remove control unit mount (8).

(5) Detach connector (9) from J1 (10) of filter box (11).

GO TO NEXT PAGE

9.125A. TEMPERATURE ALARM CONTROL UNIT FILTER REPLACEMENT – continued

(6) Remove four screws (12), washers (13) and locknuts (14) and remove filter box (11).

9.125A.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47).

9.125A.5. Inspection

a. **Check connectors for damaged pins, cracks, cuts, or broken wires** (para 9.104).

b. **Check removed and attaching parts for damage** (para 9.104).

c. **Check wires for wear, cuts, and breaks** (para 9.104).

d. **Check removed and attaching parts for corrosion** (para 1.49).

9.125A.6. Installation

a. **Install temperature alarm control unit filter box (11).**

(1) Position control unit filter box (11) on mount and secure with four screws (12), washers (13) and locknuts (14).

(2) Attach connector (9) to receptacle J1 (10).

(3) Position control unit mount (8) and secure with four screws (5), washers (6) and standoffs (7).

(4) Attach connector P201A (1) to receptacle (A418)J1 (2) and connector P200A (3) to receptacle (A419)J1 (4).

b. **Perform electrical bond check** (TM 55-1500-323-24).

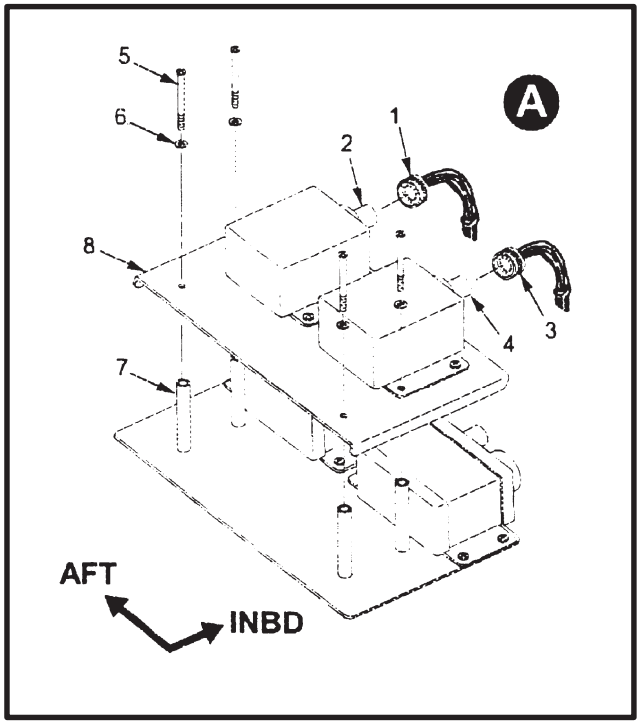
(1) Bond shall be **0.1 OHM** or less. Use ohmmeter.

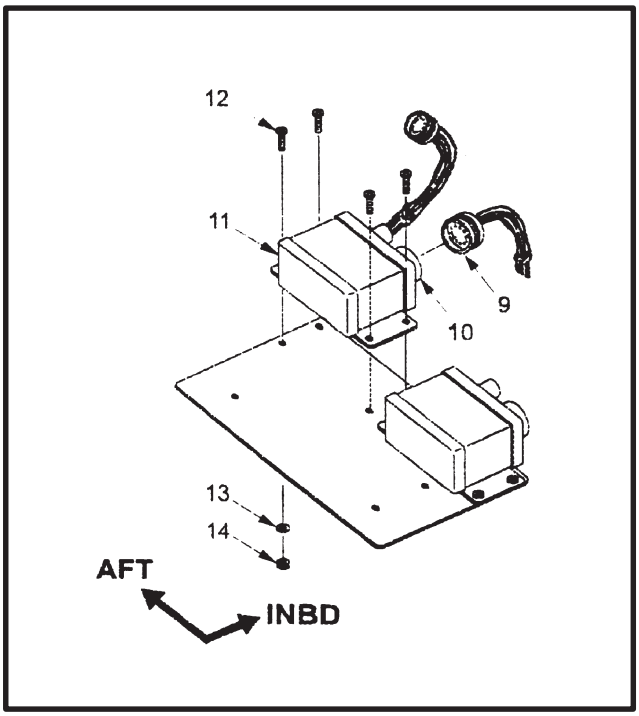
c. **Inspect (QA).**

d. **Install access covers L545 and R545** (para 2.2).

e. **Perform drive system maintenance operational check** (TM 1-1520-238-T).

END OF TASK





SECTION IV. MISCELLANEOUS ELECTRICAL COMPONENTS AND WIRING HARNESS MAINTENANCE

9.126. MISCELLANEOUS ELECTRICAL COMPONENTS AND WIRING HARNESS INSPECTION

9.126.1. Description

This task covers: Inspection.

9.126.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

References:

TM 1-1500-204-23
TM 55-1500-323-24

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

9.126.3. Inspection

a. **Check for loose, missing, or damaged mounting hardware** (TM 55-1500-323-24). Replace as necessary.

b. **Check nutplates for loose rivets, stripped, or damaged threads** (TM 1-1500-204-23).

c. **Check wiring bundles for chaffing, loose mounting, and broken or missing wire ties** (TM 55-1500-323-24).

d. **Check wiring for wear, cracks, breaks, and cracked, broken or burned insulation** (TM 55-1500-323-24).

e. **Check wire terminals for deformation and loose mounting hardware** (TM 55-1500-323-24).

f. **Check connectors for loose mounting** (TM 55-1500-323-24).

g. **Check connectors and receptacles for cracks, broken connections, and bent or damaged pins** (TM 55-1500-323-24). No cracks allowed. Thread damage not to exceed 50 percent of one thread.

(1) Repair mass termination connectors without shield bus (para 9.135) or mass termination connectors with shield bus (para 9.136).

h. **Check connector operation for smooth positive locking action** (TM 55-1500-323-24).

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9.126. MISCELLANEOUS ELECTRICAL COMPONENTS AND WIRING HARNESS INSPECTION – continued

i. **Check electrical terminals for damaged threads and loose mounting** (TM 55-1500-323-24)**.** Thread damage not to exceed 50 percent of one thread.

j. **Check terminals, shields, and covers for damage and loose mounting** (TM 55-1500-323-24)**.**

k. **Check components for damage and loose mounting.**

l. **Check circuit breakers for condition and loose mounting.**

m. **Check circuit breaker light indicating panels for cracks, legibility, and loose mounting.**

n. **Check for damaged or missing nutplates** (TM 1-1500-204-23)**.** Replace as necessary.

END OF TASK

9.127. ROTOR BALANCE SIGNAL PROCESSOR UNIT REMOVAL/INSTALLATION

9.127.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.127.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
1 1/4-inch blade putty knife (item 199, App H)
Ohmmeter (item 218, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Brush (item 34, App F)
Cloth (item 52, App F)
Methyl ethyl ketone (item 124, App F)
Sealing compound (item 177, App F)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T

Equipment Conditions:

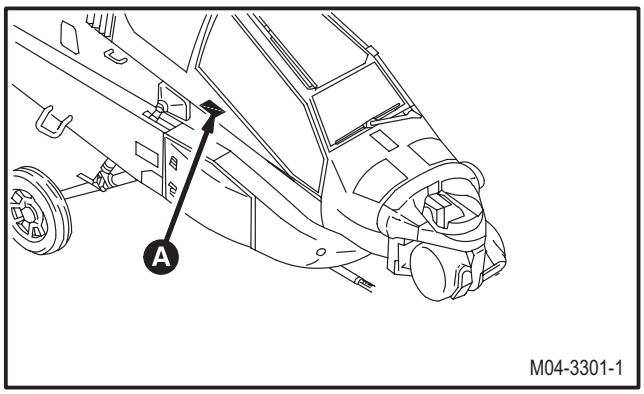
Ref	Condition
1.57	Helicopter safed
2.161	CPG seat tilted forward

9.127.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot center circuit breaker panel, open VIB MON circuit breaker.**

c. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**



d. **Detach connector P128 (1) from receptacle J1 (2) of filter box (3).**

e. **Detach connector P129 (4) from receptacle (A141)J1 (5).**

f. **Detach connector P128A (6) from receptacle (A141)J2 (7).**

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9.127. ROTOR BALANCE SIGNAL PROCESSOR UNIT REMOVAL/INSTALLATION – continued

CAUTION

Signal processor unit may be sealed to floor. Do not pry unit free or cut seal. Damage to equipment may result.

g. **Remove signal processor unit (11).**

(1) Remove four bolts (8) washers (9), and spacers (10) securing processor to floor.

9.127.4. Cleaning

a. **Remove old sealant from signal processor unit and floor.** Use putty knife.

b. **Clean mounting surface, removed and attaching parts** (para 1.47)**.**

9.127.5. Inspection

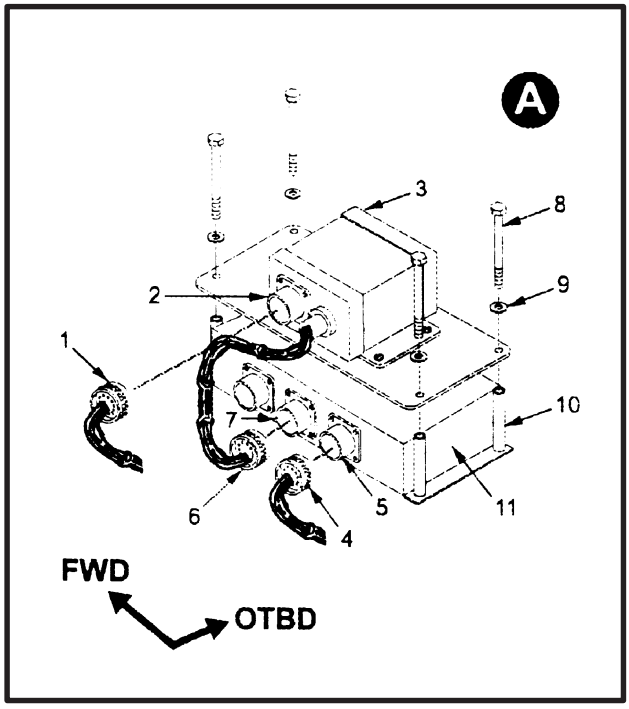
a. **Check connectors for damaged pins, cracks, cuts, or broken wires** (para 9.126)**.**

b. **Check removed and attaching parts for damage** (para 9.126)**.**

c. **Check wires and terminals for wear, cracks, and cuts** (para 9.126)**.**

d. **Check removed and attaching parts for corrosion** (para 1.49)**.**

e. **Check floor nutplates for damage** (para 9.126)**.**



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9.127. ROTOR BALANCE SIGNAL PROCESSOR UNIT REMOVAL/INSTALLATION – continued

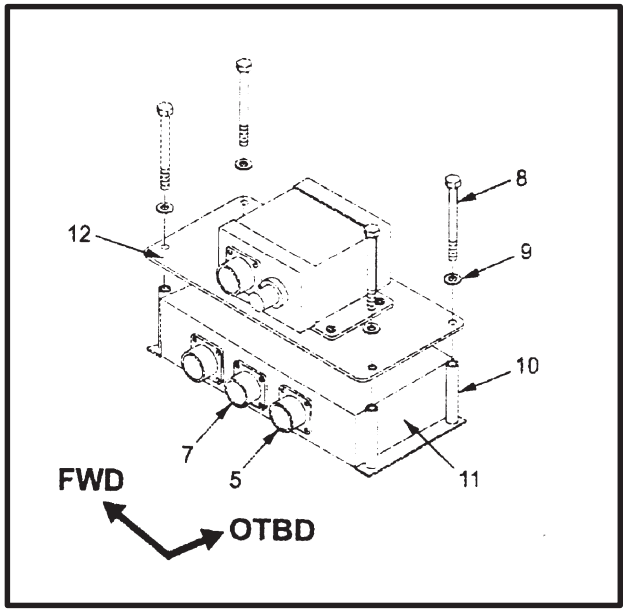
9.127.6. Installation

a. **Install signal processor unit (11).**

(1) Position signal processor (11) with connectors (A141)J1 (5) and (A141)J2 (7) facing inboard.

(2) Position filter box mounting plate (12) as shown.

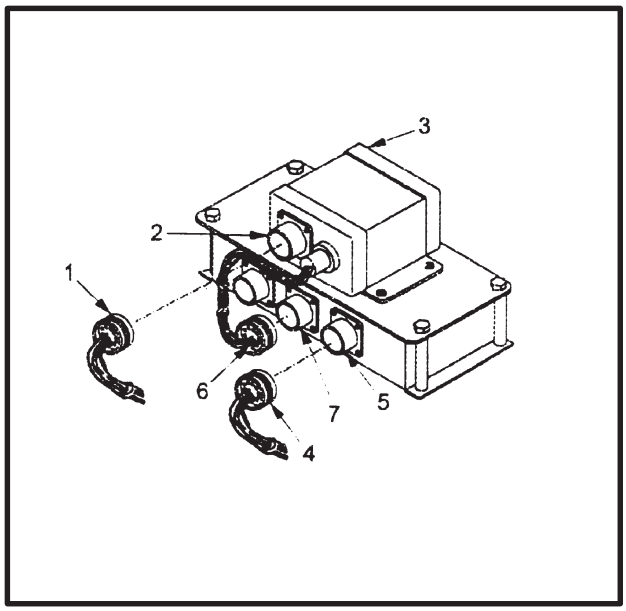
(3) Secure filter box mounting plate (12) and signal processor unit (11) to floor using four bolts (8), washers (9), and spacers (10).



b. **Perform electrical bond check between signal processor unit (11) and floor.** (TM 1-1520-238-T)**.**

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

c. **Apply sealing compound around base of signal processor unit (5).** Use sealing compound (item 177, App F) and brush (item 34, App F).



d. **Attach connector P128 (6) to receptacle (A141)J2 (7).**

e. **Attach connector P129 (4) to receptacle (A141)J1 (5).**

f. **Attach connector P128 (1) to receptacle J1 (2) of filter box (3).**

g. **Inspect (QA).**

h. **Tilt and lock CPG seat in normal position** (para 2.161)**.**

i. **Perform drive system vibration maintenance operational check** (TM 1-1520-238-T)**.**

END OF TASK

9.127A. ROTOR BALANCE SIGNAL PROCESSOR FILTER BOX REMOVAL/INSTALLATION

9.127A.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.127A.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
1 1/4-inch blade putty knife (item 199, App H)
Ohmmeter (item 218, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Brush (item 34, App F)
Cloth (item 52, App F)
Methyl ethyl ketone (item 124, App F)
Sealing compound (item 177, App F)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.161	CPG seat tilted forward

9.127A.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot center circuit breaker panel, open VIB MON circuit breaker.**

c. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**

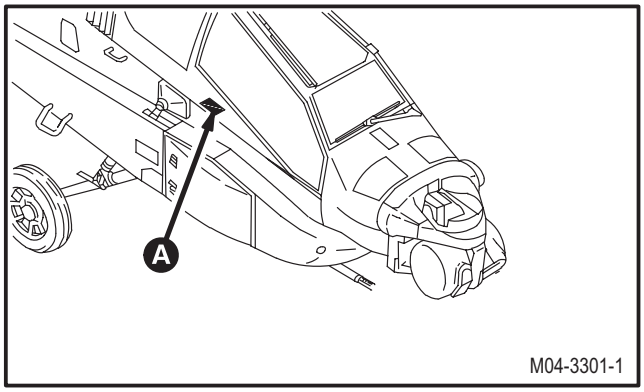
d. **Detach connector P128 (1) from receptacle J1 (2) of filter box (3).**

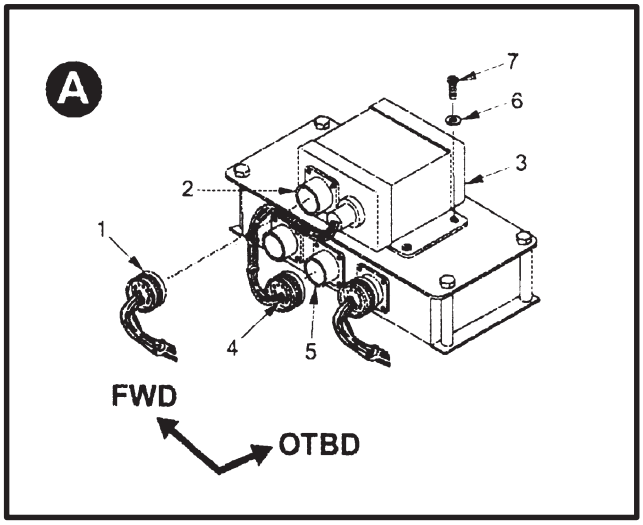
e. **Detach connector P128A (4) from receptacle (A141)J1 (5).**

f. **Remove signal processor filter box (3).**

(1) Remove four screws (7) and washers (6).

(2) Remove filter box (3).





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9.127A. ROTOR BALANCE SIGNAL PROCESSOR FILTER BOX REMOVAL/INSTALLATION – continued

9.127A.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47).

9.127A.5. Inspection

a. **Check connectors for damaged pins, cracks, cuts, or broken wires** (para 9.104).

b. **Check removed and attaching parts for damage** (para 9.104).

c. **Check wires for wear, cuts, and breaks** (para 9.104).

d. **Check removed and attaching parts for corrosion** (para 1.49).

9.127A.6. Installation

a. **Install signal processor filter box (3).**

(1) Position filter box (3) on mounting plate (8) with connectors facing inboard.

(2) Install four screws (7) and washers (6).

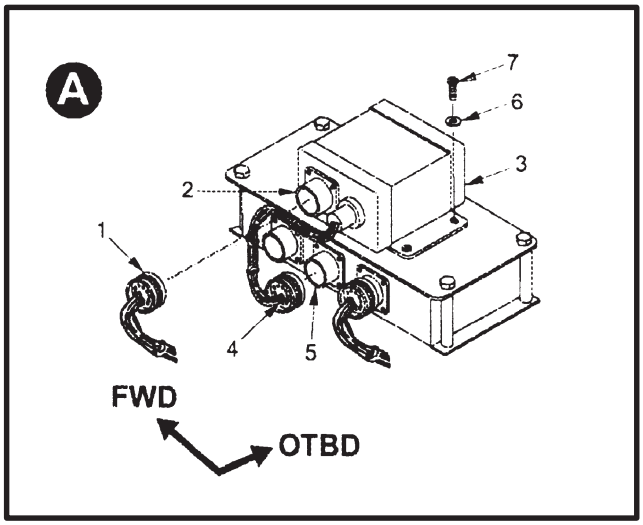
b. **Attach connector P128A (4) to receptacle (A141)J2 (5).**

c. **Attach connector P128 (1) to receptacle J1 (2) of filter box (3).**

d. **Inspect (QA).**

e. **Tilt and lock CPG seat in normal position** (para 2.161).

f. **Perform drive system vibration maintenance operational check** (TM 1-1520-238-T).



END OF TASK

9.128. CPG TRACK/BALANCE ACCELEROMETER REPLACEMENT

9.128.1. Description

This task covers: Removal. Installation.

9.128.2. Initial Setup

Tools:

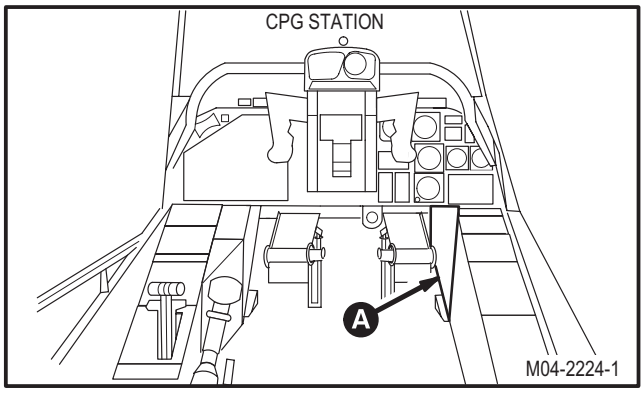
Electronic tool kit (item 379, App H)
0 - 30 inch-pound 1/4-inch drive dial indicator torque wrench (item 445, App H)

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Panel CR6 removed

Personnel Required:

68N Avionics Mechanic
68N3F Avionics Mechanic Technical Inspector



9.128.3. Removal

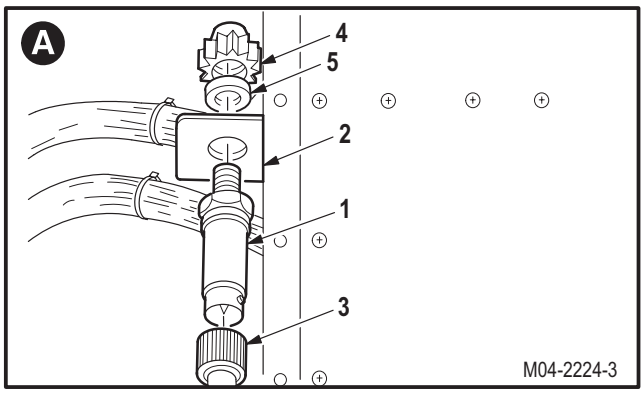
a. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**

b. **Remove accelerometer (MT30) (1) from bracket (2).**

(1) Detach connector P55 (3) from accelerometer (1).

(2) Remove nut (4) and washer (5) from accelerometer (1).

(3) Remove accelerometer (1).



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9.128. CPG TRACK/BALANCE ACCELEROMETER REPLACEMENT – continued

9.128.4. Installation

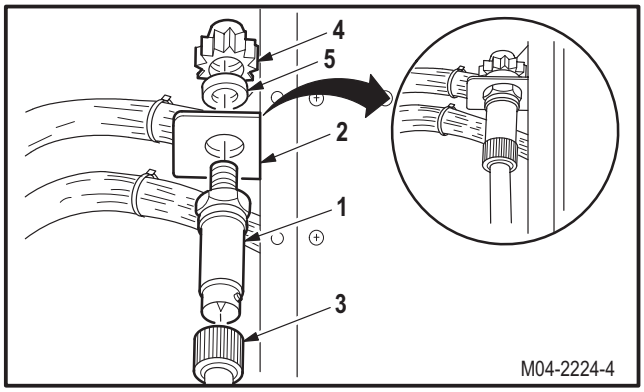
a. **Install accelerometer (1) on bracket (2).** Torque nut (4) to **22 INCH-POUNDS**.

(1) Install accelerometer (1) through bracket (2).

(2) Install washer (5) and nut (4) on accelerometer (1).

(3) Hold accelerometer (1). Torque nut (4) to **22 INCH-POUNDS**. Use torque wrench.

(4) Attach connector P55 (3) to accelerometer (1).



b. **Inspect (QA).**

c. **Install panel CR6** (para 2.2)**.**

END OF TASK

9.129. PILOT TRACK/BALANCE ACCELEROMETER REPLACEMENT

9.129.1. Description

This task covers: Removal. Installation.

9.129.2. Initial Setup

Tools:

Electronic tool kit (item 379, App H)
0 - 30 inch-pound 1/4-inch drive dial indicator torque wrench (item 445, App H)

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

Personnel Required:

68N Avionics Mechanic
68N3F Avionics Mechanic Technical Inspector

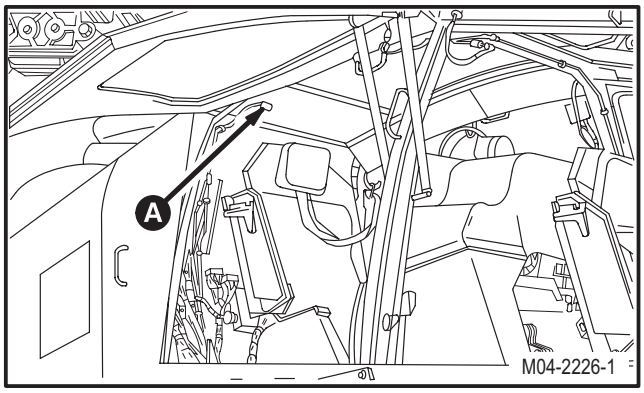
9.129.3. Removal

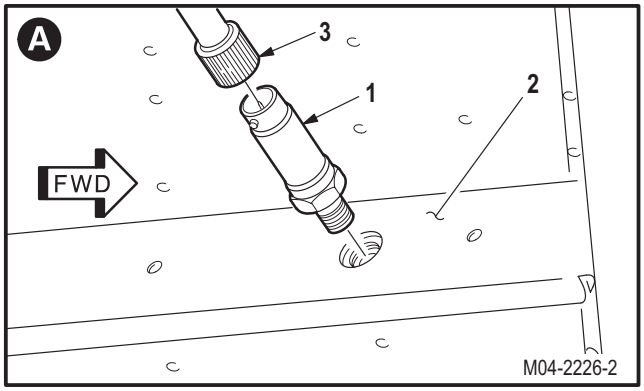
a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **Remove accelerometer (MT31) (1) from bracket (2).**

(1) Detach connector P56 (3) from accelerometer (1).

(2) Remove accelerometer (1).





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9.129. PILOT TRACK/BALANCE ACCELEROMETER REPLACEMENT – continued

9.129.4. Installation

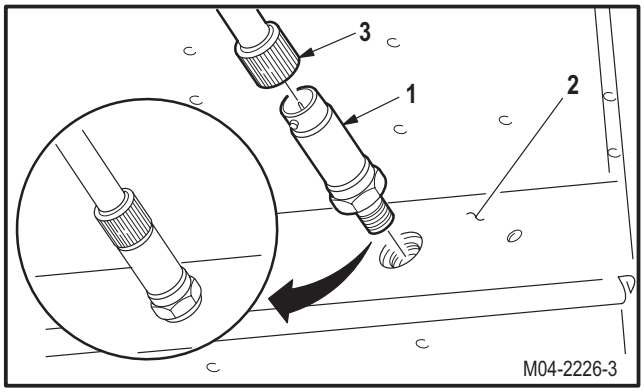
a. **Install accelerometer (1) on bracket (2).** Torque accelerometer (1) to **22 INCH-POUNDS**.

(1) Install accelerometer (1) on bracket (2).

(2) Torque accelerometer (1) to **22 INCH-POUNDS**. Use torque wrench.

(3) Attach connector P56 (3) to accelerometer (1).

b. **Inspect (QA).**



END OF TASK

9.130. PILOT W220 MICROPHONE WIRE HARNESS REMOVAL/INSTALLATION

9.130.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.130.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

Materials/Parts:

Nonmetallic special shaped section (item 129, App F)
Strap (item 192, App F)

Personnel Required:

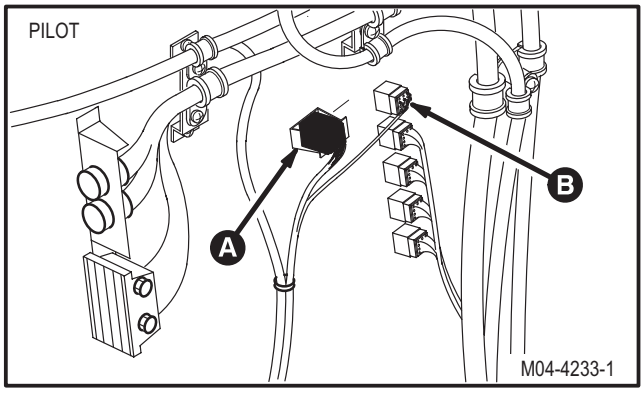
68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 11-1520-238-23-2
TM 55-1500-323-24

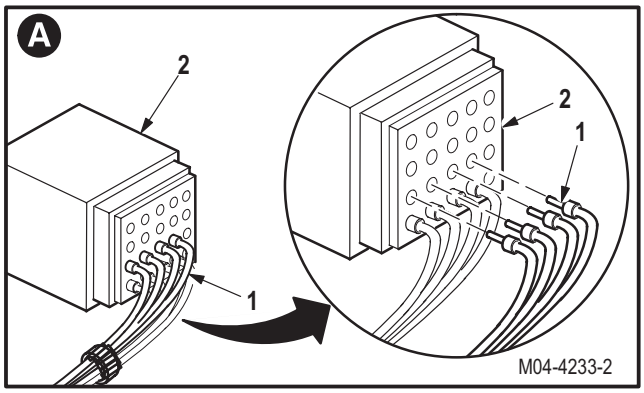
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.161	Pilot seat tilted forward



9.130.3. Removal

a. **Identify and depin four wires (1) from terminal junction box (2)** (TM 55-1500-323-24)**.**



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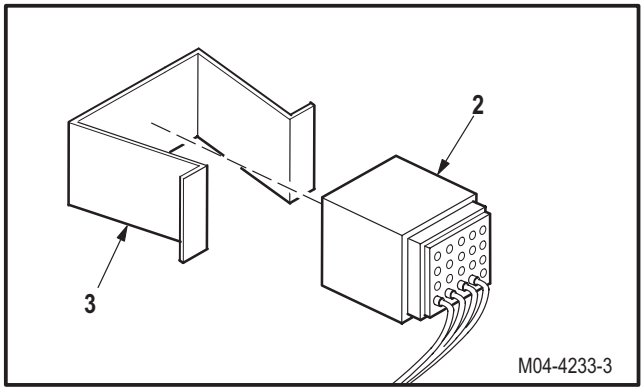
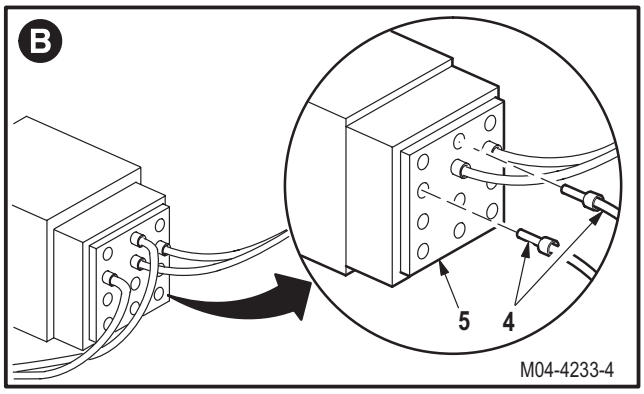
9.130. PILOT W220 MICROPHONE WIRE HARNESS REMOVAL/INSTALLATION – continued

b. **Remove terminal junction box (2) from track assembly (3)** (para 9.139)**.**



c. **Depin two wires (4) from terminal junction box (5)** (TM 55-1500-323-24)**.**



d. **Remove tie strap (6) and rubber strip (7) from harnesses W220 (8), W266 (9), and W262 (10).**

e. **Remove harness (8) from aircraft.**

9.130.4. Cleaning

a. **Clean removed and attaching parts or surfaces** (para 1.47)**.**

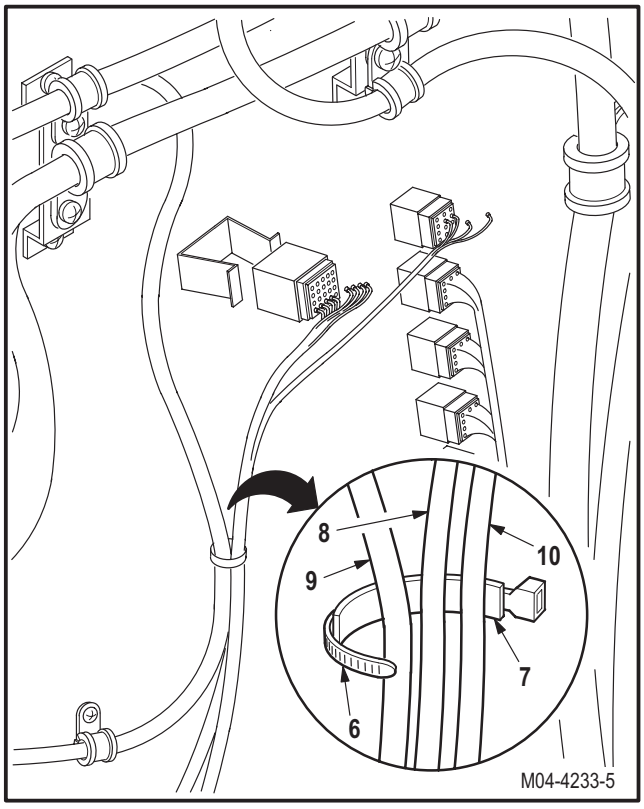
9.130.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.126)**.**

b. **Check wires and terminal lugs for wear, cracks, and cuts** (para 9.126)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

d. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (TM 55-1500-323-24)**.**



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9.130. PILOT W220 MICROPHONE WIRE HARNESS REMOVAL/INSTALLATION – continued

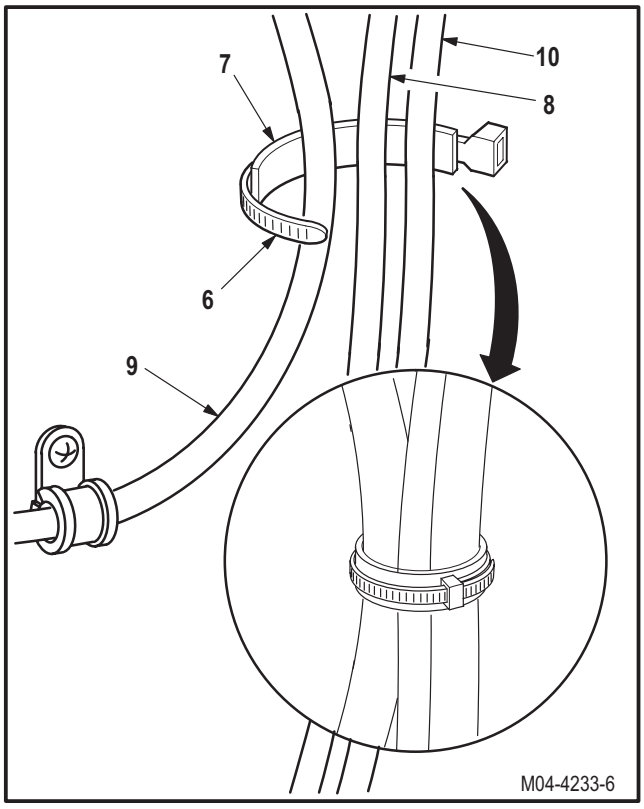
9.130.6. Installation

a. **Route pilot harness W220 (8) with harness W266 (9) and W262 (10).**

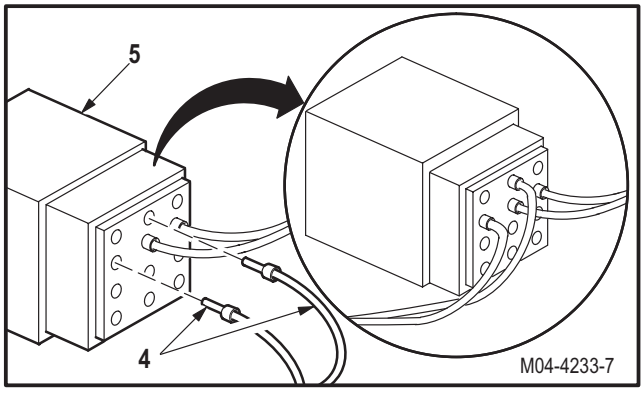
b. **Tie three harnesses (8), (9), and (10) together with tie strap.**

(1) Wrap rubber strip (7) around three harnesses (8), (9), and (10). Use nonmetallic special shaped section (item 129, App F).

(2) Fasten tie strap (6) around rubber strip (7). Use strap (item 192, App F).



c. **Pin two identified wires (4) in terminal junction box (5)** (TM 55-1500-323-24)**.**



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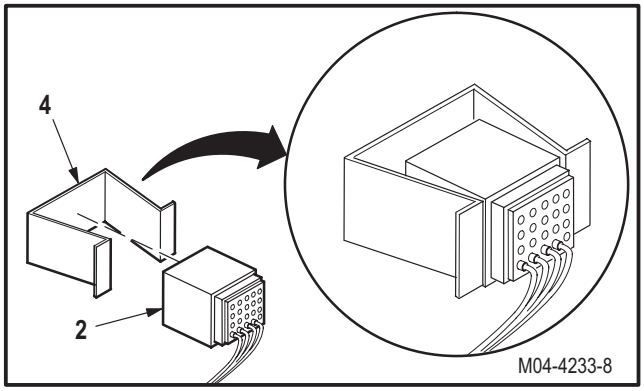
9.130. PILOT W220 MICROPHONE WIRE HARNESS REMOVAL/INSTALLATION – continued

d. **Install terminal junction box (2) in track assembly (4)** (para 9.139).

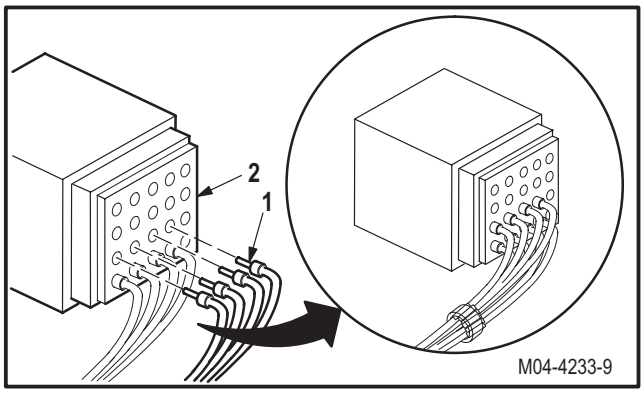


e. **Pin four identified wires (1) in box (2)** (TM 55-1500-323-24).

f. **Inspect (QA).**

g. **Tilt and lock pilot seat in normal position** (para 2.161).

h. **Perform intercommunication system maintenance operational check** (TM 11-1520-238-23-2).



END OF TASK

9.131. CPG W219 MICROPHONE WIRE HARNESS REMOVAL/INSTALLATION

9.131.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.131.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

References:

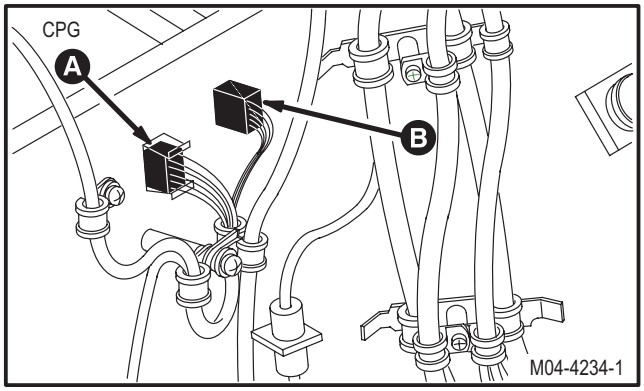
TM 11-1520-238-23-2
TM 55-1500-323-24

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

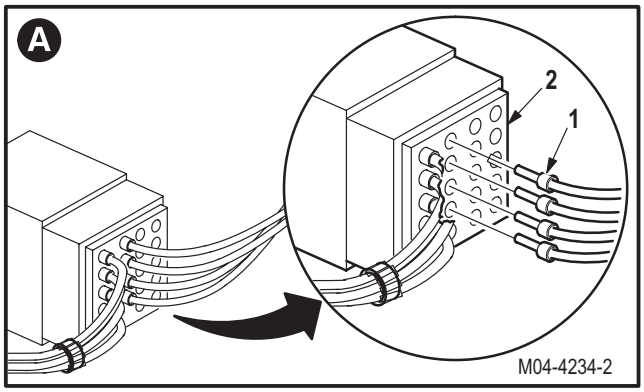
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.161	CPG seat tilted forward



9.131.3. Removal

a. **Identify and depin four wires (1) from terminal junction box (2)** (TM 55-1500-323-24)**.**



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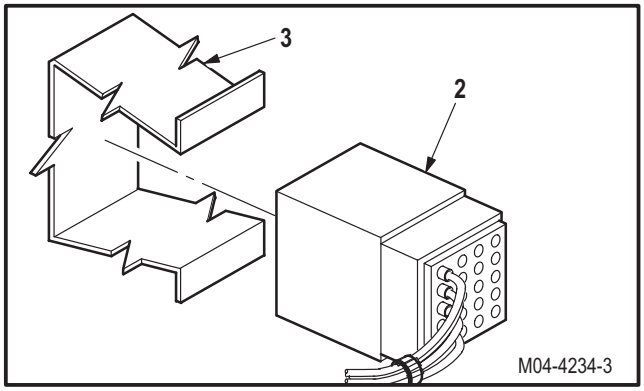
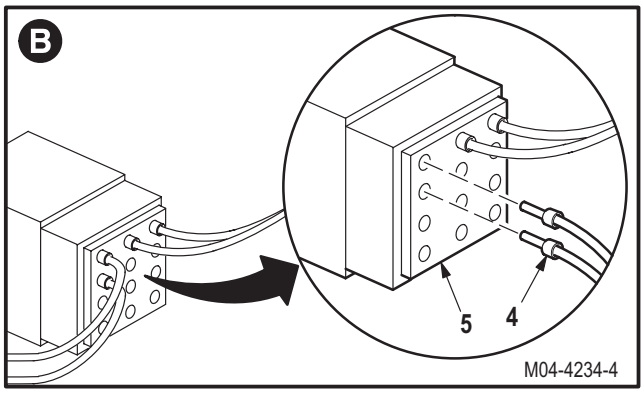
9.131. CPG W219 MICROPHONE WIRE HARNESS REMOVAL/INSTALLATION – continued

b. **Remove terminal junction (2) from track assembly (3)** (para 9.139)**.**



c. **Identify and depin two wires (4) from terminal junction box (5)** (TM 55-1500-323-24)**.**



d. **Remove three harness clamps (6) from CPG station wall (7).**

(1) Remove screw (8), washer (9), and spacer (10) from three clamps (6).

e. **Remove harness W219 (11) from two clamps (6).**

f. **Remove harness (11) from helicopter.**

9.131.4. Cleaning

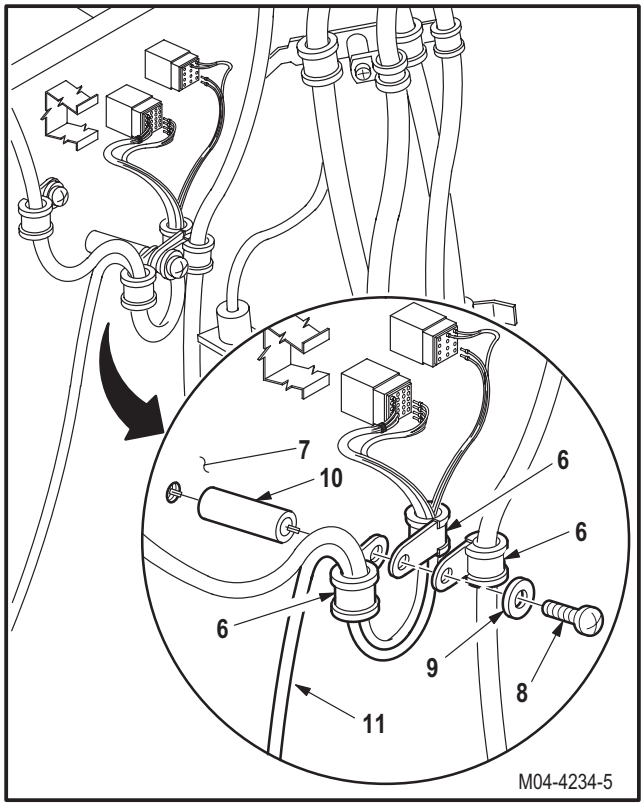
a. **Clean removed and attaching parts** (para 1.47)**.**

9.131.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.126)**.**

b. **Check wires and terminal lugs for wear, cracks, and cuts** (para 9.126)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**



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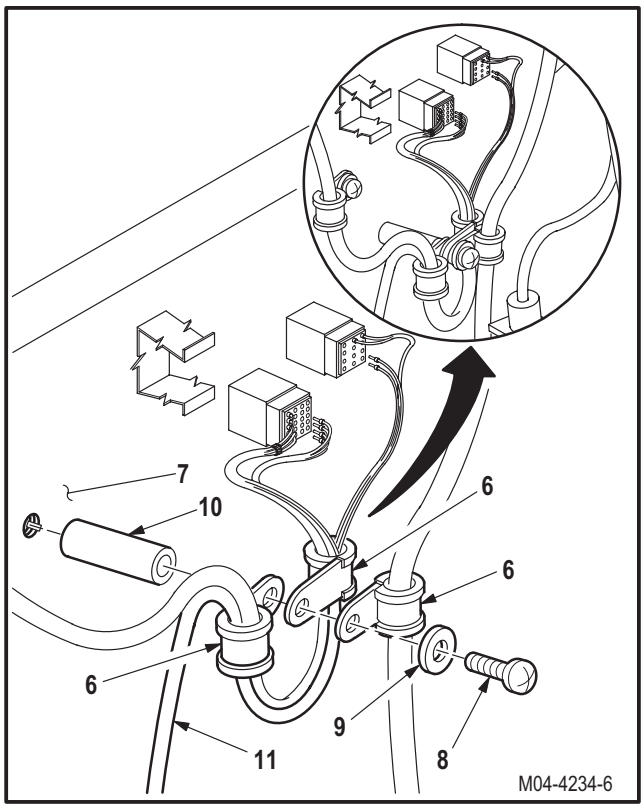
9.131. CPG W219 MICROPHONE WIRE HARNESS REMOVAL/INSTALLATION – continued

9.131.6. Installation

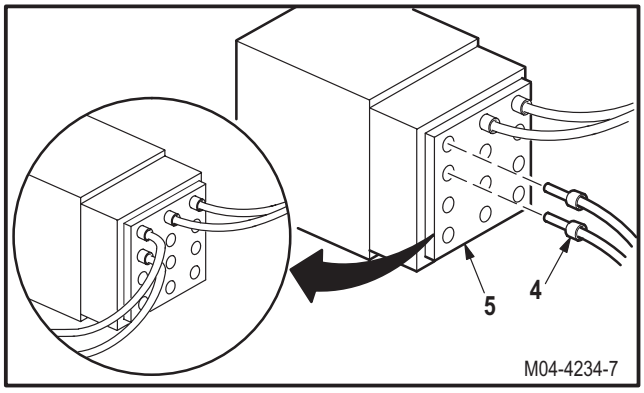
a. **Route CPG harness W219 (11) through two harness clamps (6).**

b. **Install three harness clamps (6) on CPG station wall (7).**

(1) Install screw (8) through washer (9), three clamps (6), spacer (10), and wall (7).



c. **Pin two identified wires (4) in box (5)** (TM 55-1500-323-24)**.**



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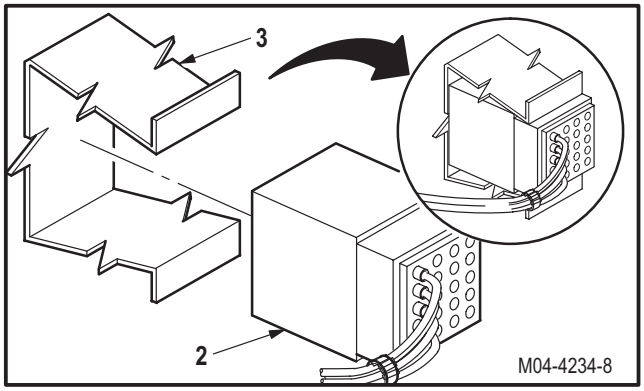
9.131. CPG W219 MICROPHONE WIRE HARNESS REMOVAL/INSTALLATION – continued

d. **Install box (2) in track assembly (3)** (para 9.139).

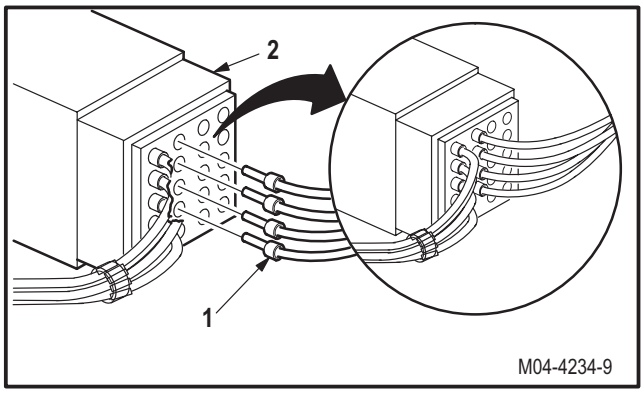


e. **Pin four identified wires (1) in box (2)** (TM 55-1500-323-24).

f. **Tilt and lock CPG seat in normal position** (para 2.161).

g. **Inspect (QA).**

h. **Perform intercommunication system maintenance operational check** (TM 11-1520-238-23-2).



END OF TASK

9.132. PILOT W220 OR CPG W219 MICROPHONE WIRE HARNESS DISASSEMBLY/ASSEMBLY

9.132.1. Description

This task covers: Disassembly. Cleaning. Inspection. Assembly.

9.132.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Electric gun type heater (item 163, App H)
Craftsman's knife (item 197, App H)
Electronic equipment maintenance kit (item 208, App H)
Adjustable air filtering respirator (item 262, App H)
25-watt electric soldering iron (item 332, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 55-1500-323-24

Materials/Parts:

Adhesive (item 13, App F)
Alcohol (item 25, App F)
Cloth (item 52, App F)
Insulation sleeving (item 102, App F)
Insulation sleeving (item 105, App F)
Solder (item 189, App F)

Equipment Conditions:

Ref	Condition
9.130	Pilot W220 microphone harness removed or
9.131	CPG W219 microphone harness removed

NOTE

This task is typical for both pilot and CPG microphone harnesses.

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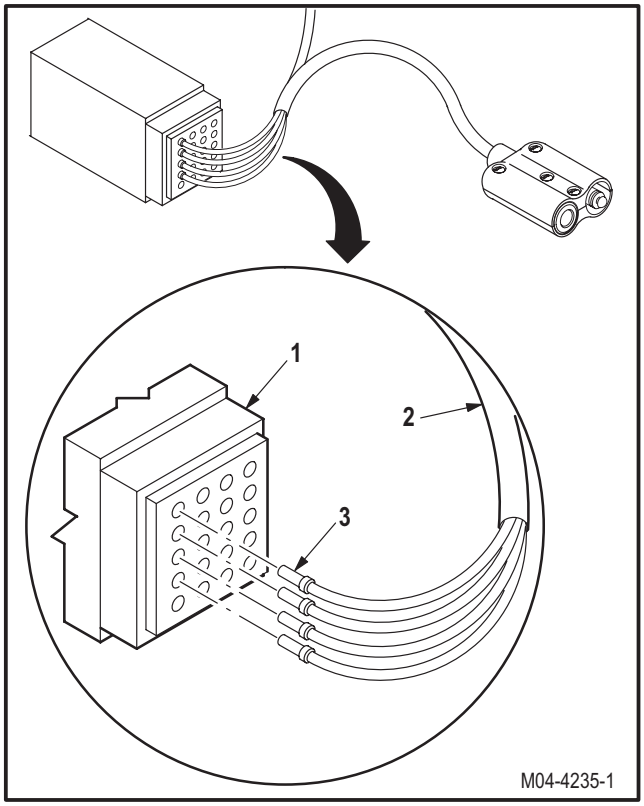
9.132. PILOT W220 OR CPG W219 MICROPHONE WIRE HARNESS DISASSEMBLY/ASSEMBLY – continued

9.132.3. Disassembly

a. **Remove terminal junction box (1) from harness (2).**

(1) Identify four wires (3).

(2) Depin wires (3) from box (1) (TM 55-1500-323-24).



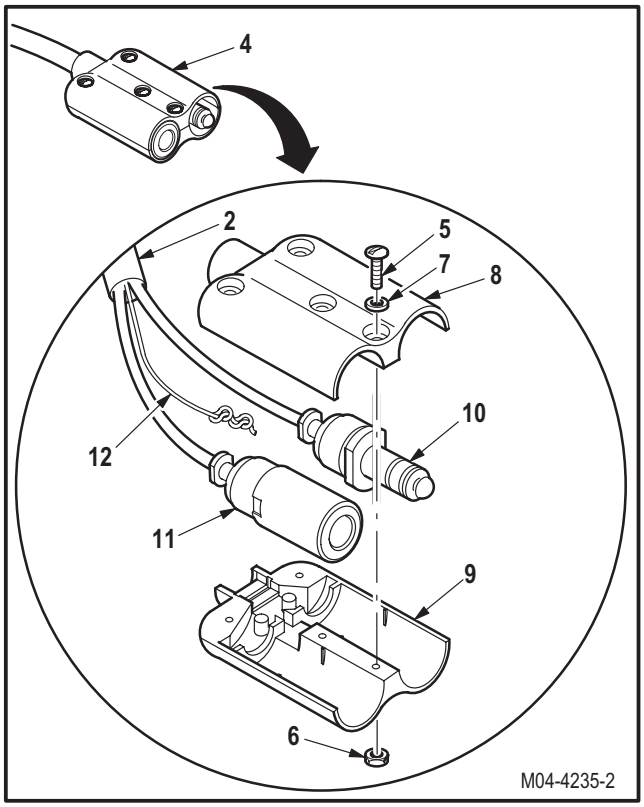
b. **Remove telephone connector (4) from harness cable (2).**

(1) Remove four screws (5), nuts (6), and washers (7).

(2) Separate two connector halves (8) and (9).

(3) Remove plug assembly (10) and jack (11).

(4) Remove stay cord (12) from connector half (9).



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9.132. PILOT W220 OR CPG W219 MICROPHONE WIRE HARNESS DISASSEMBLY/ASSEMBLY – continued

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

c. **Remove plug assembly (10) from cable pair (13).**

(1) Remove backshell (14) from plug end (15).

(2) Remove heat shrink tubing (16) from two wires (17) and drain wire (18).

(3) Identify and desolder two wires (17) and drain wire (18) from plug end (15). Use soldering iron (TM 55-1500-323-24).

(4) Remove plug end (15) and backshell (14) from cable pair (13).

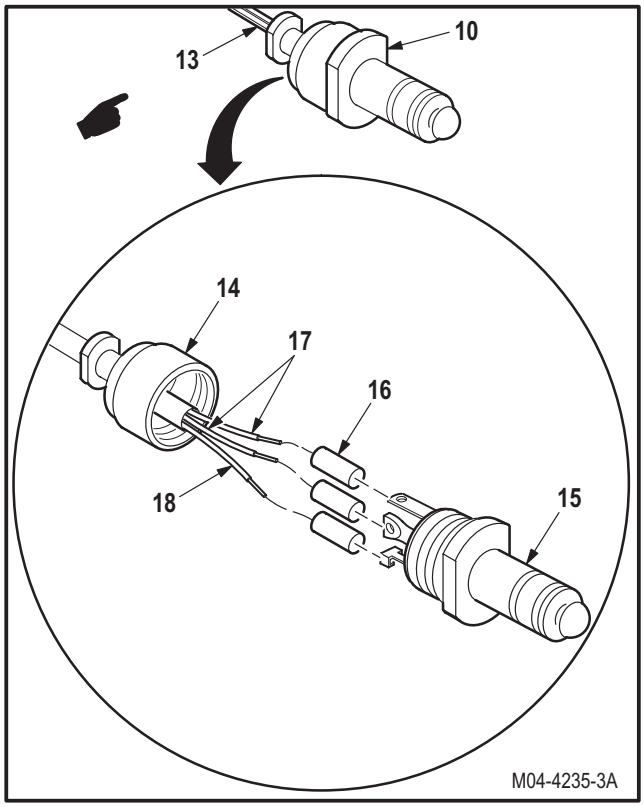
d. **Remove jack assembly (11) from cable pair (19).**

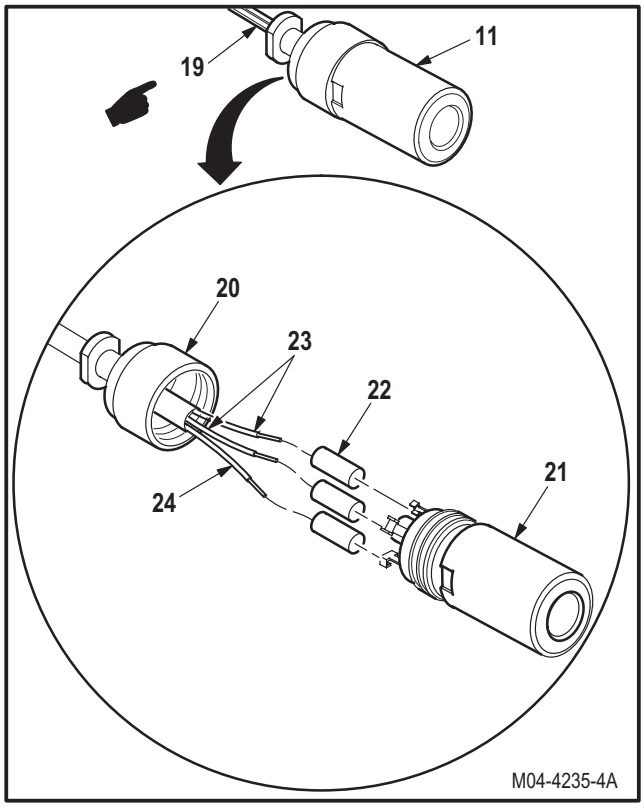
(1) Remove backshell (20) from jack end (21).

(2) Remove heat shrink tubing (22) from two wires (23) and drain wire (24).

(3) Identify and desolder two wires (23) and drain wire (24) from jack end (21). Use soldering iron (TM 55-1500-323-24).

(4) Remove jack (21) and backshell (20) from cable pair (19).





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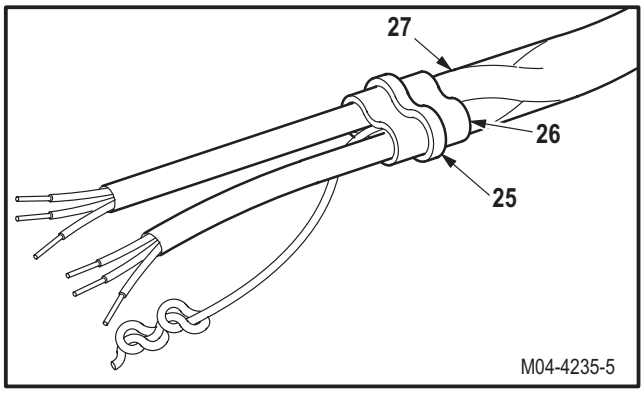
9.132. PILOT W220 OR CPG W219 MICROPHONE WIRE HARNESS DISASSEMBLY/ASSEMBLY – continued

NOTE

Remove hog ring and heat shrink tubing only if replacing harness cable.

e. **Remove hog ring (25) and 1.0 INCH length of heat shrink tubing (26) from outer cable insulation (27).**



9.132.4. Cleaning

a. **Clean desoldered wires and plugs.** Use cloth (item 52, App F) and alcohol (item 25, App F).

b. **Clean terminal junction box and contacts** (para 1.47)**.**

9.132.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.126)**.**

b. **Check wires and terminal lugs for wear, cracks, and cuts** (para 9.126)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

d. **Check telephone connector case, plug, and jack for damage.** None allowed.

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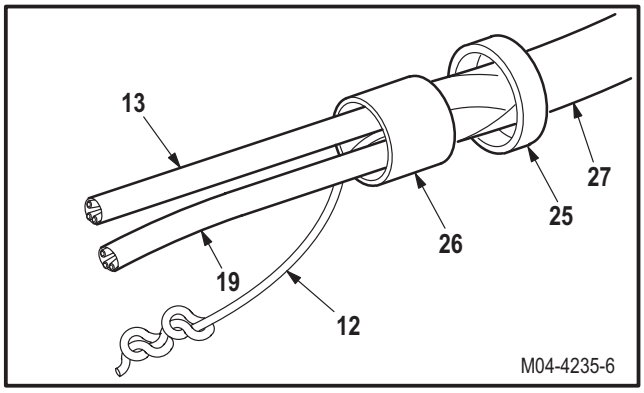
9.132. PILOT W220 OR CPG W219 MICROPHONE WIRE HARNESS DISASSEMBLY/ASSEMBLY – continued

9.132.6. Assembly

a. **Remove 2.0 INCH length of outer nylon jacket (27) and cut twisted pairs (13) and (19) to1.5 INCH.**

(1) Slide hog ring (25) and **1.0 INCH** length of heat shrink tubing insulation (26) over outer nylon jacket (27). Use insulation sleeving (item 102, App F).



CAUTION

Do not cut stay cord (12) when removing outer nylon jacket.

(2) Remove **2.0 INCH** of outer nylon jacket (27).

(3) Cut twisted pairs (13) and (19) to **1.5 INCH**.

GO TO NEXT PAGE

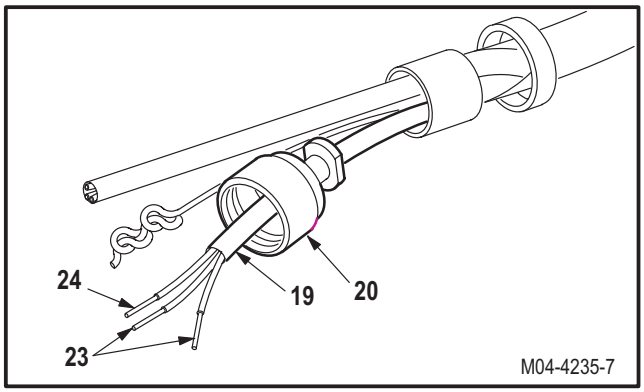
9.132. PILOT W220 OR CPG W219 MICROPHONE WIRE HARNESS DISASSEMBLY/ASSEMBLY – continued

WARNING

- **Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.**
- **Do not place heater near flammable material or allow heater to contact skin: severe burns can result. Wear protective equipment. If injury occurs, seek medical aid.**

b. **Install jack (21) on cable pair (19).**

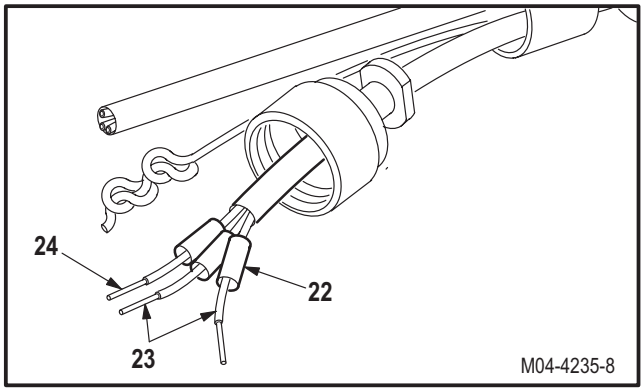
(1) Remove **0.40 INCH** of insulation from twisted pair (19). Slide backshell (20) over twisted pair (19). Separate inner twisted pair wires (23) and drain wire (24).



(2) Twist strands of drain wire (24) together and trim shield back **0.40 INCH** from end of twisted pair (19).

(3) Cut three **0.40 INCH** lengths of heat shrink tubing (22). Use insulation sleeving (item 105, App F).

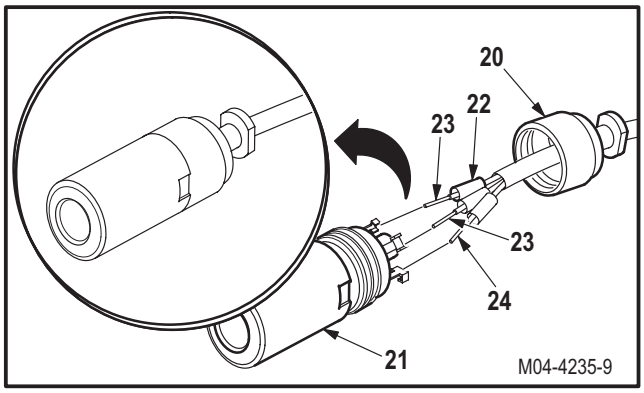
(4) Slide **0.40 INCH** length of heat shrink tubing (22) over two wires (23) and shield (24).



(5) Solder two identified wires (23) and drain wire (24) to jack end (21). Use soldering iron and solder (item 189, App F).

(6) Cover three soldered contacts with heat shrink tubing (22) and shrink per (TM 55-1500-323-24). Use heater.

(7) Install backshell (20) on jack end (21).



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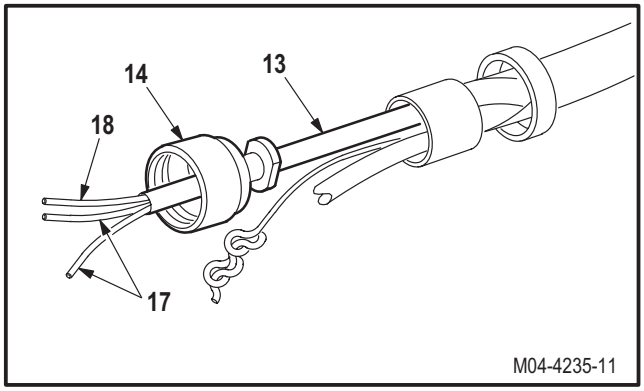
9.132. PILOT W220 OR CPG W219 MICROPHONE WIRE HARNESS DISASSEMBLY/ASSEMBLY – continued

c. **Install plug (15) on cable pair (13).**

(1) Remove **0.40 INCH** of insulation from twisted pair (13).

(2) Slide backshell (14) over twisted pair (13).

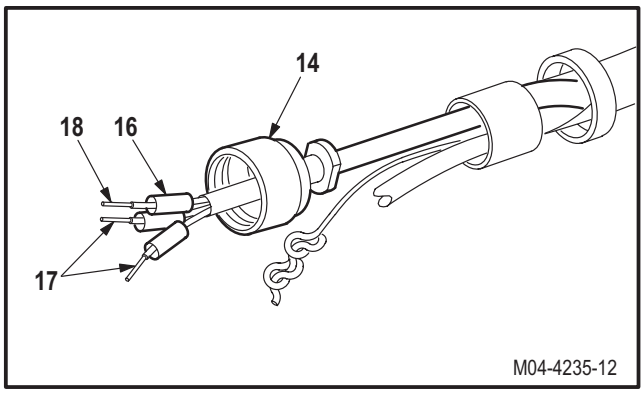
(3) Separate inner twisted pair wires (17) and drain wire (18).



(4) Twist strands of drain wire (18) together and trim shield back **0.40 INCH** from end of twisted pair (13).

(5) Cut three **0.40 INCH** lengths of heat shrink tubing (16). Use insulation sleeving (item 105, App F).

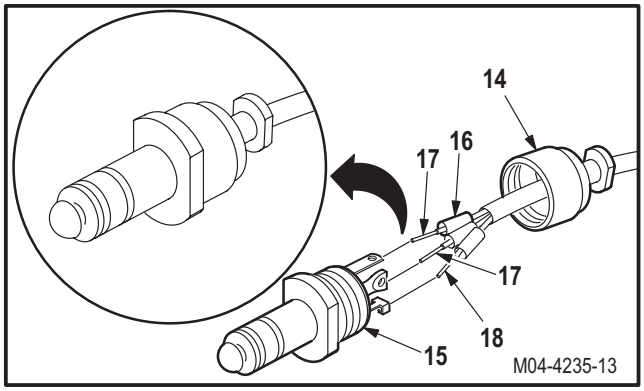
(6) Slide **0.40 INCH** length of heat shrink tubing (16) over two wires (17) and drain wire (18).



(7) Solder two identified wires (17) and drain wire (18) to plug (15). Use soldering iron and solder (item 189, App F).

(8) Cover three soldered contacts with heat shrink tubing (16) and shrink per (TM 55-1500-323-24). Use heater.

(9) Install backshell (14) on plug (15).



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9.132. PILOT W220 OR CPG W219 MICROPHONE WIRE HARNESS DISASSEMBLY/ASSEMBLY – continued

d. **Install connector (4) on harness cable (2).**

(1) Position heat shrink tubing (26) **0.50 INCH** behind backshell of plug (10) and jack (11). Shrink tubing (26) (TM 55-1500-323-24). Use heater.

(2) Install plug (10) and jack (11) in connector half (9).

(a) Position hog ring (25) in slot (28).

(b) Insert stay cord (12) in slot (29) to determine length.

(c) Remove plug (10) and jack (11) from connector half (9) and crimp hog ring (25) (TM 55-1500-323-24).

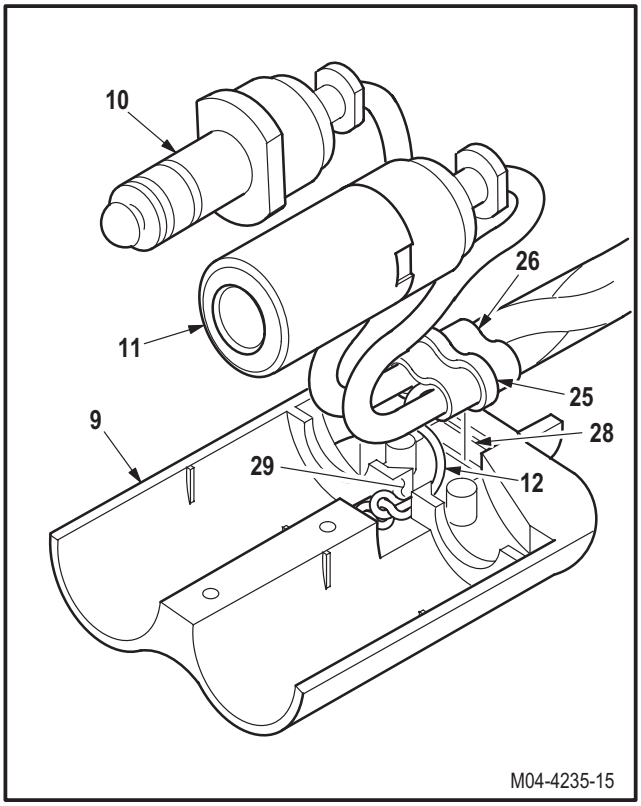
(d) Double knot stay cord (12) at length determined in previous step (b) and cut off excess cord.

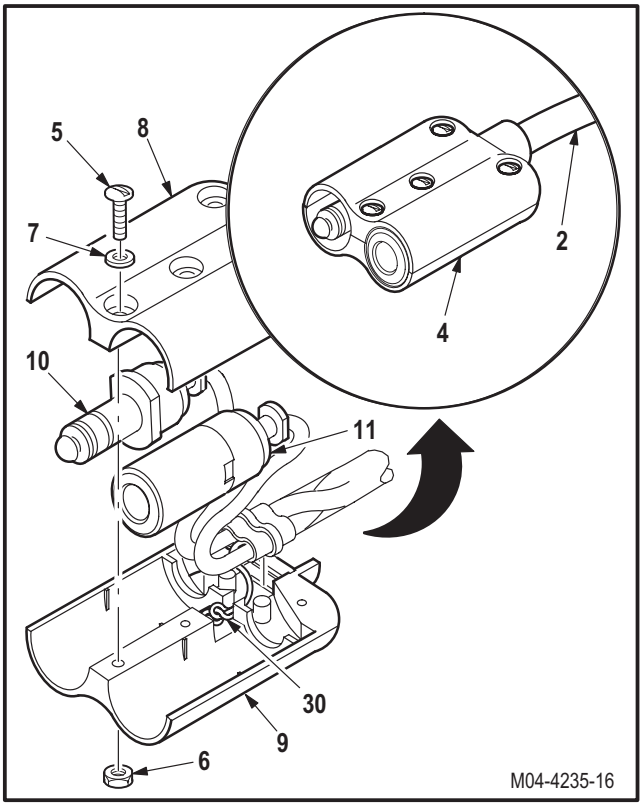
(e) Reinstall plug (10) and jack (11) in connector half (9).

(f) Insert stay cord (12) in slot (29) and apply adhesive on knots (30) and allow to cure. Use adhesive (item 13, App F).

(3) Assemble two halves (8) and (9).

(4) Install four screws (5), washers (7), and nuts (6).





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9.132. PILOT W220 OR CPG W219 MICROPHONE WIRE HARNESS DISASSEMBLY/ASSEMBLY – continued

WARNING

Do not place heater near flammable material or allow heater to contact skin: severe burns can result. Wear protective equipment. If injury occurs, seek medical aid.

NOTE

If installing new harness cable, go to step e. If using removed harness cable, go to step g.

e. **Install one 2.0 INCH piece (31) and two 1.0 INCH pieces (32) of heat shrink tubing over outer nylon jacket of harness cable (2).**

(1) Cut harness cable (2) to **24 INCHES** for pilot W220 or **26 INCHES** for CPG W219.

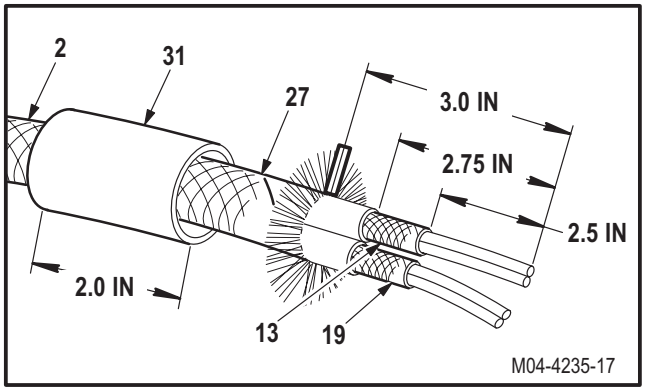
(2) Cut one **2.0 INCHES** piece of heat shrink tubing (31). Use insulation sleeving (item 102, App F) and slide it over outer nylon jacket of harness cable (2).

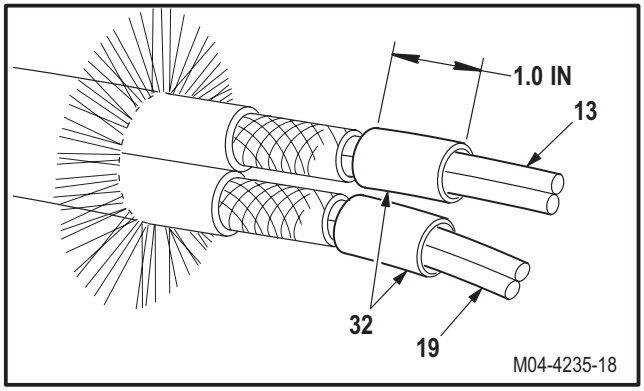
(3) Remove **3.0 INCHES** of outer nylon jacket (27) and cut off excess stay cord.

(4) Remove **2.75 INCHES** of insulation from twisted pairs (13) and (19).

(5) Remove **2.5 INCHES** of braided shield from twisted pairs (13) and (19).

(6) Cut two **1.0 INCH** pieces of heat shrink tubing (32) and slide over twisted pairs (13) and (19). Use insulation sleeving (item 102, App F).





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9.132. PILOT W220 OR CPG W219 MICROPHONE WIRE HARNESS DISASSEMBLY/ASSEMBLY – continued

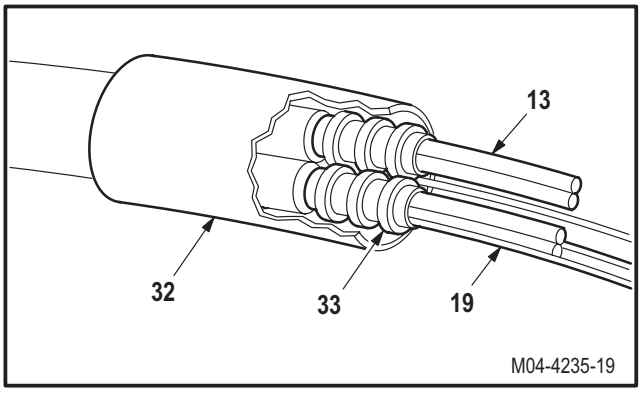
CAUTION

Do not allow heat shrink to slide over braided shield when installing solder sleeves.

f. **Install two solder sleeves (33) on twisted pairs (13) and (19).**

(1) Slide two solder sleeves (33) over twisted pairs (13) and (19).

(2) Shrink solder sleeves (33) and insulation sleeving (item 102, App F) (32) on twisted pairs (13) and (19) (TM 55-1500-323-24).



NOTE

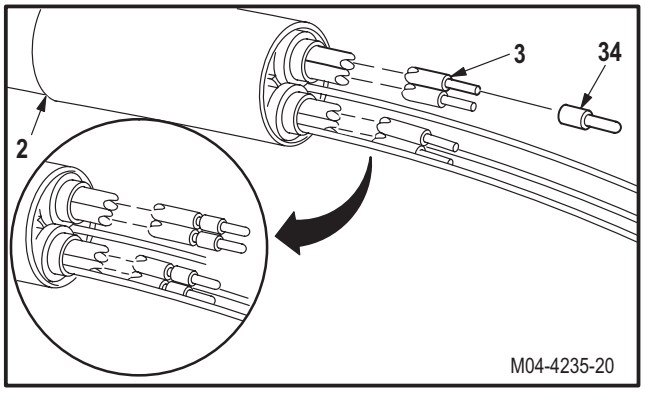
The following steps are typical for all six electrical contacts.

g. **Install electrical contacts (34) on harness (2).**

(1) Cut wire (3) at base of damaged contact (34).

(2) Strip **0.09 INCH** of insulation off wire (3).

(3) Install contact (34) on wire (3) and crimp (TM 55-1500-323-24).



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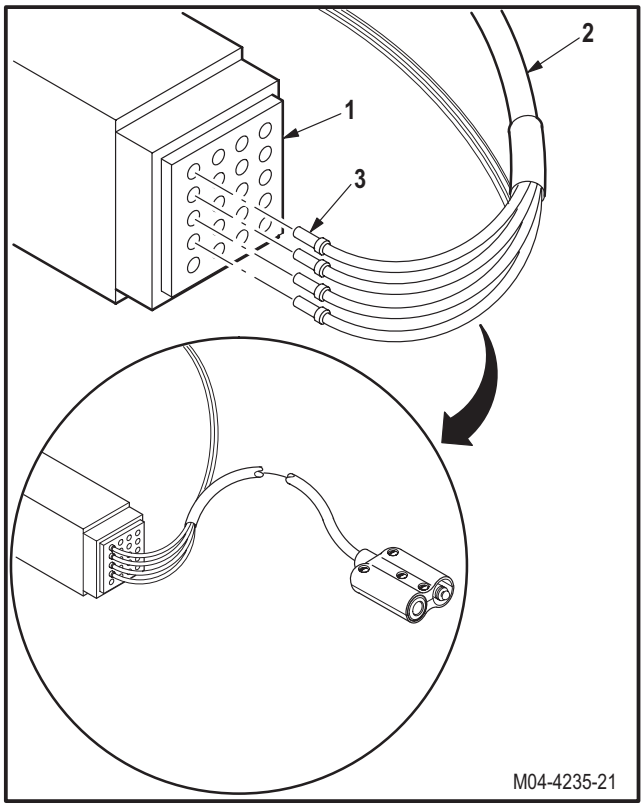
9.132. PILOT W220 OR CPG W219 MICROPHONE WIRE HARNESS DISASSEMBLY/ASSEMBLY – continued

h. **Install terminal junction box (1) to harness (2).**

(1) Pin four identified wires (3) in box (1) (TM 55-1500-323-24).

i. **Inspect (QA).**

j. **Install pilot W220 microphone harness** (para 9.130) **or CPG W219 microphone harness** (para 9.131)**.**



END OF TASK

9.133. STABILATOR RELAY BOX REMOVAL/INSTALLATION

9.133.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.133.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Ohmmeter (item 218, App H)
Adjustable air filtering respirator (item 262, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

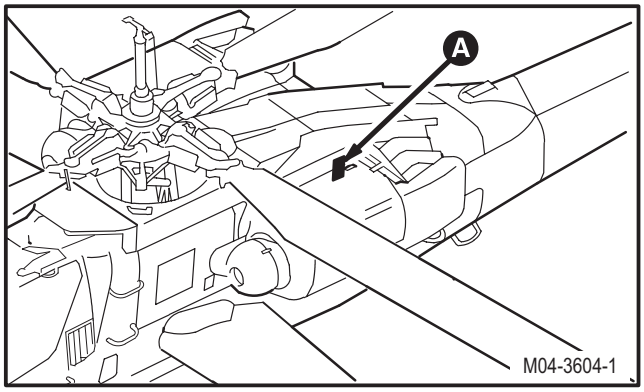
TM 1-1520-238-T
TM 55-1500-323-24

Materials/Parts:

Brush (item 34, App F)
Cloth (item 52, App F)
Methyl ethyl ketone (item 124, App F)
Sealing compound (item 175, App F)

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access doors T250L, T250R, T290L, T290R, and L325 opened



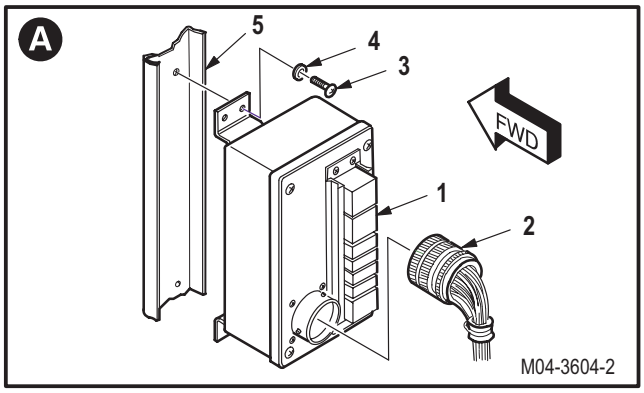
9.133.3. Removal

a. **Remove stabilator relay box (1).**

(1) Detach connector P1077 (2) from relay box (1).

(2) Remove four screws (3) and washers (4).

(3) Remove relay box (1) from airframe (5).



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9.133. STABILATOR RELAY BOX REMOVAL/INSTALLATION – continued

9.133.4. Cleaning

a. **Clean mounting surface** (para 1.47)**.**

b. **Remove sealant from faying surface of mount bracket and airframe** (para 1.47)**.**

9.133.5. Inspection

a. **Check stabilator relay box and mounting points for cracks.** None allowed.

b. **Check removed and attaching parts for damage** (para 9.126)**.**

c. **Check wires and terminals for wear, cracks, and cuts** (para 9.126)**.**

d. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.133.6. Installation

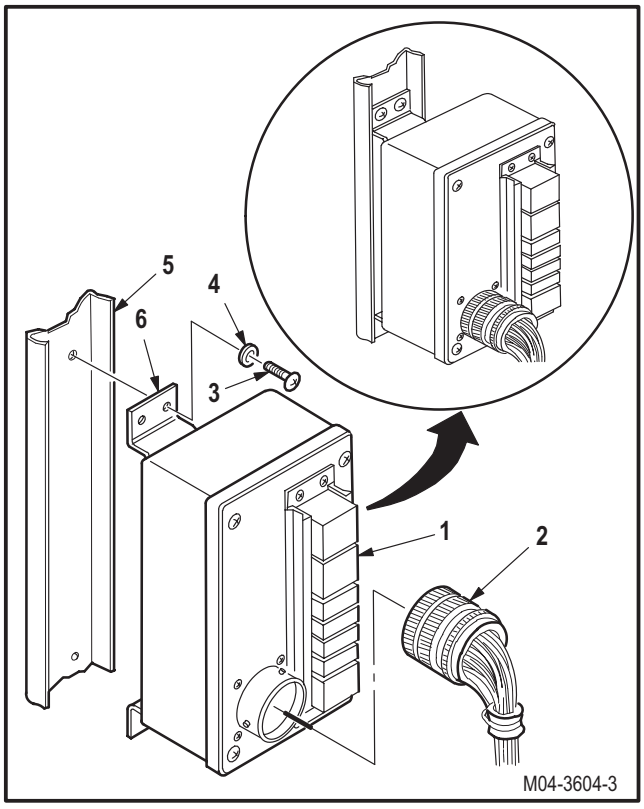
a. **Install stabilator relay box (1).**

(1) Position stabilator relay box (1).

(2) Install four screws (3) through washers (4) and relay box (1) in airframe (5).

(3) Apply sealant to faying surface of mount bracket (6). Use sealing compound (item 175, App F) and brush (item 34, App F).

b. **Attach connector P1077 (2) to relay box (1).**



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9.133. STABILATOR RELAY BOX REMOVAL/INSTALLATION – continued

c. **Perform electrical bond check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

d. **Inspect (QA).**

e. **Perform stabilator maintenance operational check** (TM 1-1520-238-T)**.**

f. **Secure access doors T250L, T250R, T290L, T290R, and L325** (para 2.2)**.**

END OF TASK

9.134. STABILATOR RELAY BOX DISASSEMBLY/ASSEMBLY

9.134.1. Description

This task covers: Disassembly. Cleaning. Inspection. Assembly.

9.134.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

Personnel Required:

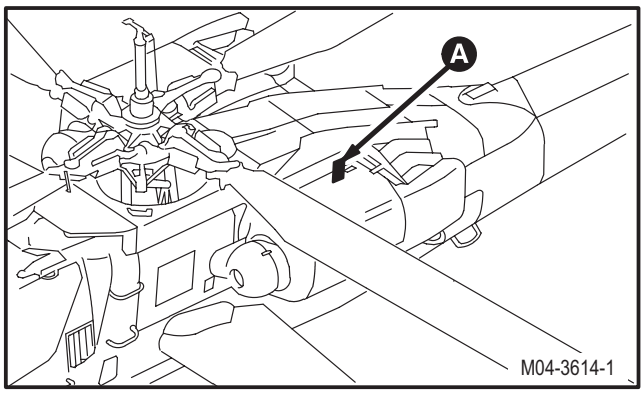
68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
9.133	Stabilator relay box removed



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9.134. STABILATOR RELAY BOX DISASSEMBLY/ASSEMBLY – continued

9.134.3. Disassembly

a. **Remove relay modules (1) and/or (2)** (para 9.139).

b. **Remove cover (3) from relay box (4).**

(1) Remove four screws (5).

c. **Remove relay sockets (6) and/or (7) from track (8).**

(1) Identify and depin wires (9) (TM 55-1500-323-24).

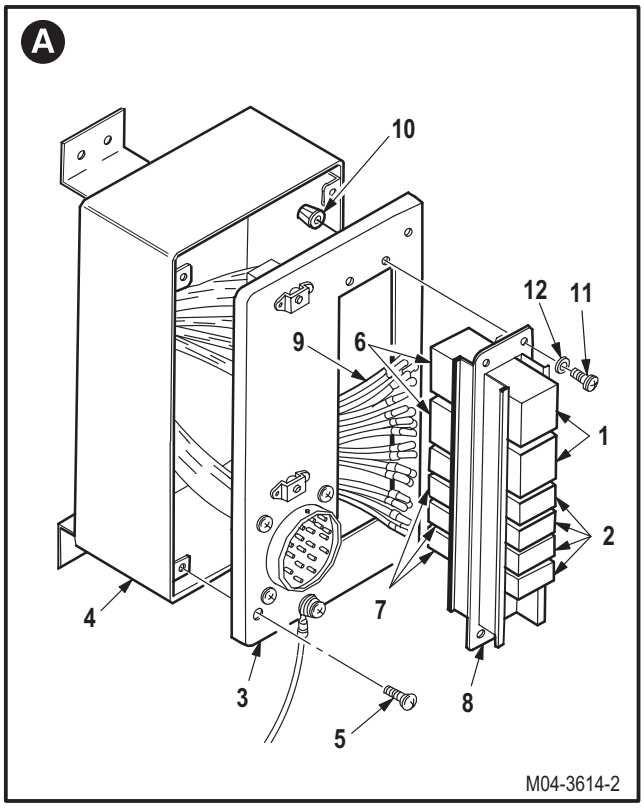
(2) Remove sockets (6) and/or (7) (para 9.139).

d. **Remove relay track (8) from cover (3).**

(1) Hold four nuts (10).

(2) Remove four screws (11) and washers (12).

(3) Remove four nuts (10) and track (8).



e. **Remove diode terminal (13) from terminal track (14).**

(1) Identify and depin wires (15) (TM 55-1500-323-24).

(2) Remove terminal (13) (para 9.139).

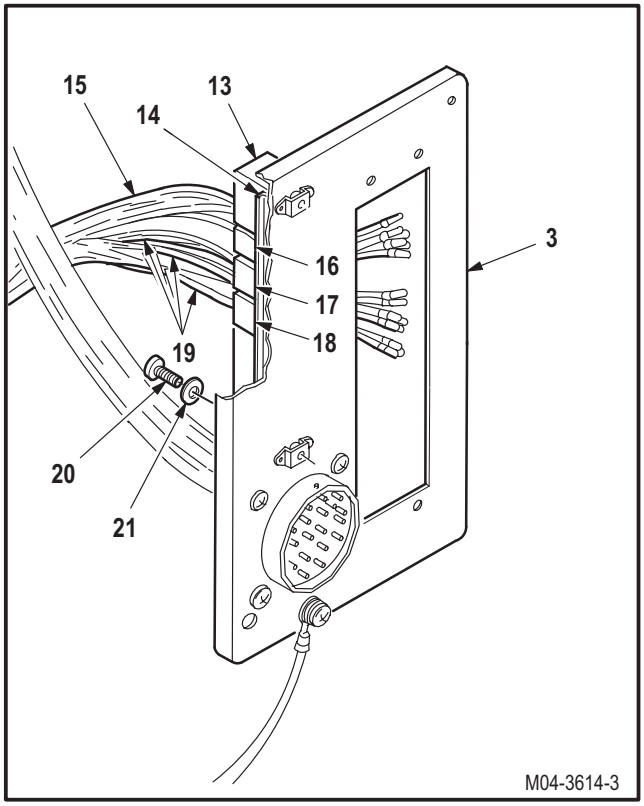
f. **Remove terminal junction module (16), (17), and/or (18) from terminal track (14).**

(1) Identify and depin wires (19) (TM 55-1500-323-24).

(2) Remove modules (16), (17), and/or (18) (para 9.139).

g. **Remove terminal track (14).**

(1) Remove two screws (20) and washers (21).



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9.134. STABILATOR RELAY BOX DISASSEMBLY/ASSEMBLY – continued

h. **Remove connector J1 (22) from cover (3).**

(1) Identify and depin wires (23) (TM 55-1500-323-24).

(2) Hold four nuts (24).

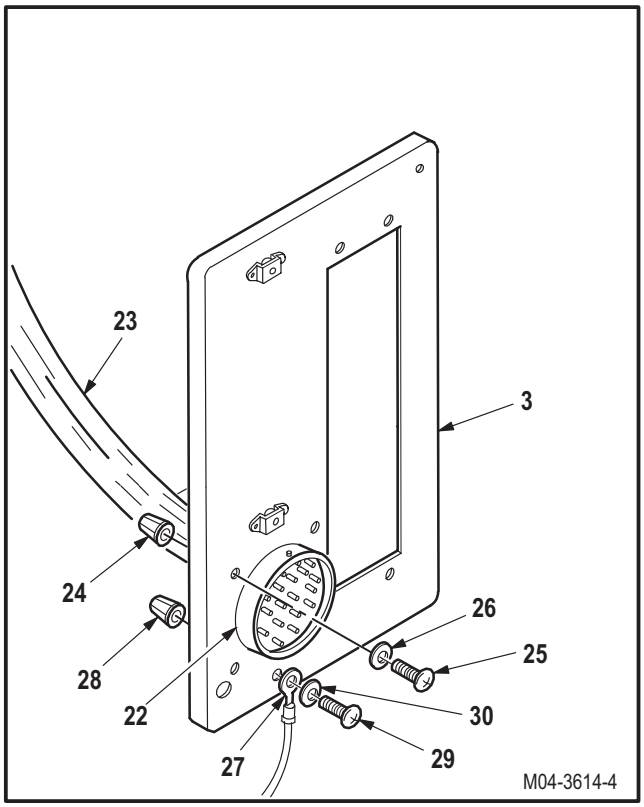
(3) Remove four screws (25) and washers (26).

(4) Remove four nuts (24) and connector (22).

i. **Remove jumper (27) from cover (3).**

(1) Hold nut (28).

(2) Remove screw (29), jumper (27), washer (30), and nut (28).



9.134.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.134.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.126)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.126)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

d. **Check connector and terminals for damage** (para 9.126)**.**

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9.134. STABILATOR RELAY BOX DISASSEMBLY/ASSEMBLY – continued

9.134.6. Assembly

a. **Install jumper (27) on cover (3).**

(1) Install screw (29) through washer (30), jumper (27), and cover (3).

(2) Hold screw (29). Install nut (28).

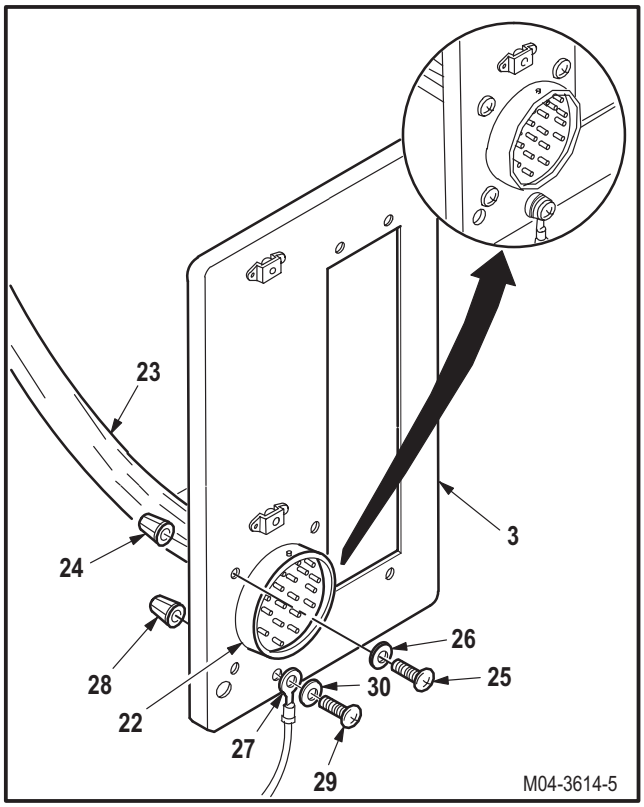
b. **Install connector J1 (22) on cover (3).**

(1) Position connector (22) on cover (3).

(2) Install four screws (25) through washers (26) and cover (3).

(3) Hold four screws (25). Install four nuts (24).

(4) Pin identified wires (23) (TM 55-1500-323-24).



c. **Install terminal track (14) on cover (3).**

(1) Position track (14) on cover (3).

(2) Install two washers (21) and screws (20).

d. **Install terminal junction modules (16), (17), and/or (18) on terminal track (14).**

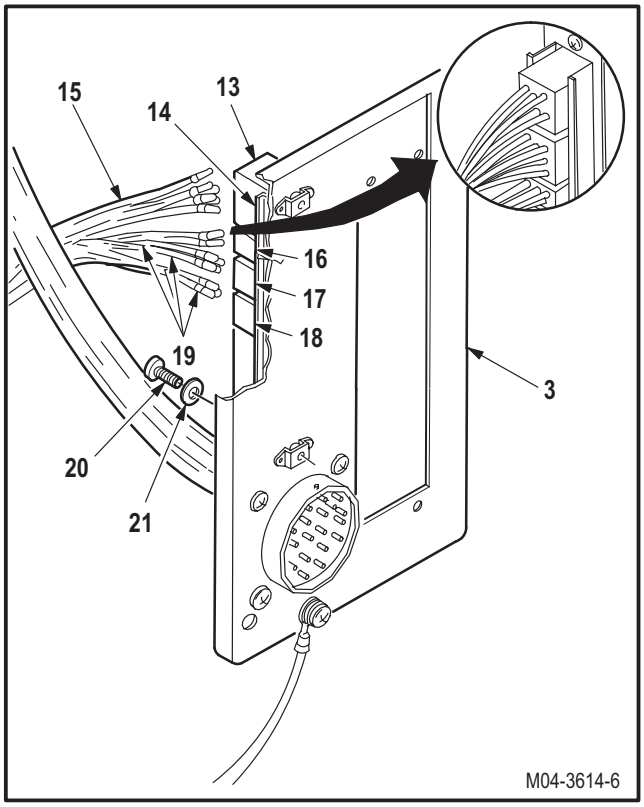
(1) Install modules (16), (17), and/or (18) (para 9.139).

(2) Pin identified wires (19) (TM 55-1500-323-24).

e. **Install diode terminal (13) on terminal track (14).**

(1) Install terminal (13) (para 9.139).

(2) Pin identified wires (15) (TM 55-1500-323-24).



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9.134. STABILATOR RELAY BOX DISASSEMBLY/ASSEMBLY – continued

f. **Install track (8) on cover (3).**

(1) Position track (8) on cover (3).

(2) Install four screws (11) through washers (12), track (8), and cover (3).

(3) Hold screws (11). Install nuts (10).

g. **Install sockets (6) and/or (7).**

(1) Install sockets (6) and/or (7) (para 9.139).

(2) Pin identified wires (9) (TM 55-1500-323-24).

h. **Inspect (QA).**

i. **Install cover (3) on relay box (4).**

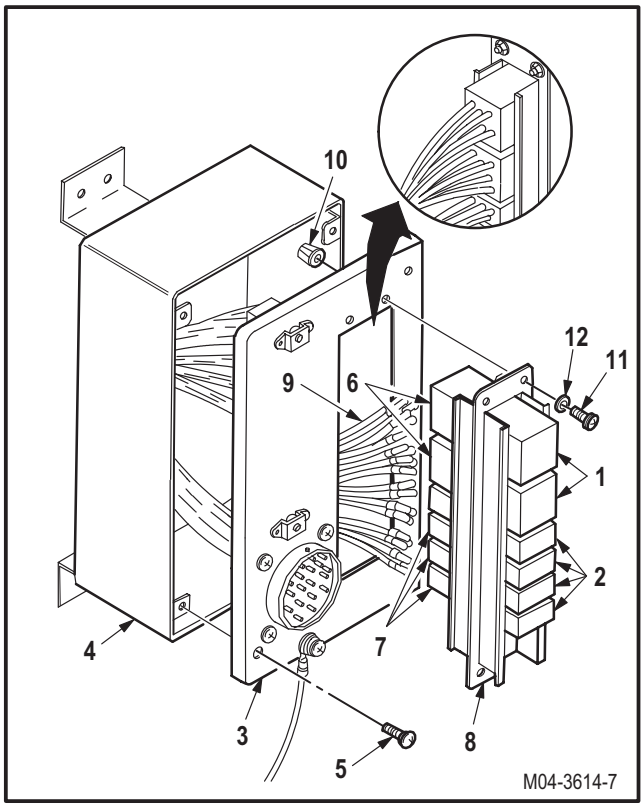
(1) Install four screws (5).

j. **Install relay modules (1) and/or (2)** (para 9.139)**.**

k. **Inspect (QA).**

l. **Install stabilator relay box** (para 9.133)**.**

m. **Perform stabilator maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

9.135. MASS TERMINATION CONNECTOR (MTC) (1 OR 2 INCH) REPAIR

9.135.1. Description

This task covers: Removal. Cleaning. Inspection. Repair. Installation.

9.135.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Electrical power cable assembly (item 48, App H)
Gasoline engine generator set (item 153, App H)
Chemical protective gloves (item 154, App H)
Compressed air/nitrogen heating tool kit (item 164, App H)
Raychem repair kit (item 193, App H)
Multimeter (item 215, App H)
Ohmmeter (item 218, App H)
Aircraft power unit (item 232, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Nitrogen (item 128, App F)
Solder (item 189, App F)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
9.137	Mass termination connector (MTC) keyed (if replacing connector)

WARNING

- **To prevent electrical shock or damage to sensitive electrical equipment, turn off and disconnect external and battery electrical power. Tag external battery power switch: "Do not apply electrical power".**
- **This task is for repair of mass termination connectors (MTC) either on or off aircraft. Heating tool kit requires 110 volt AC power and supply of regulated air. When working on aircraft, nitrogen must be substituted for air to prevent danger of fire. Use generator set, power cable, aircraft power unit, or nitrogen as necessary.**

NOTE

This task is typical for cable or panel connector with pin or socket connections.

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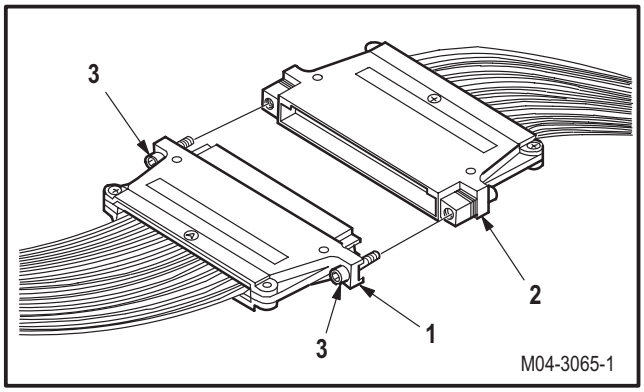
9.135. MASS TERMINATION CONNECTOR (MTC) (1 OR 2 INCH) REPAIR – continued

9.135.3. Removal

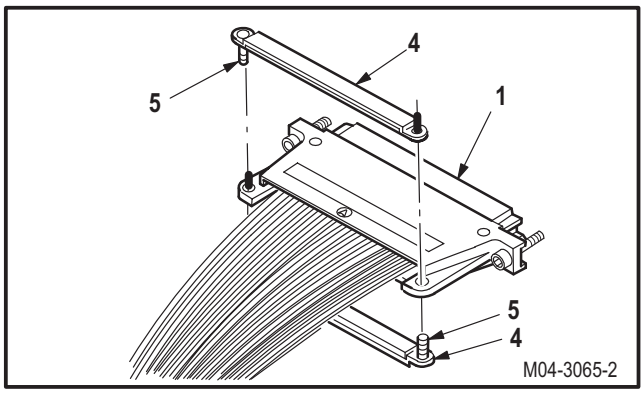
a. **Detach connector (1) from connector (2).**

(1) Loosen two captive jackscrews (3).



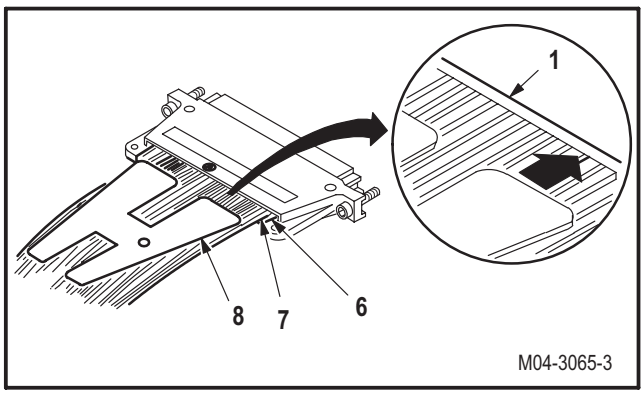
b. **Remove two cable clamps (4) from connector (1).**

(1) Loosen two captive screws (5).



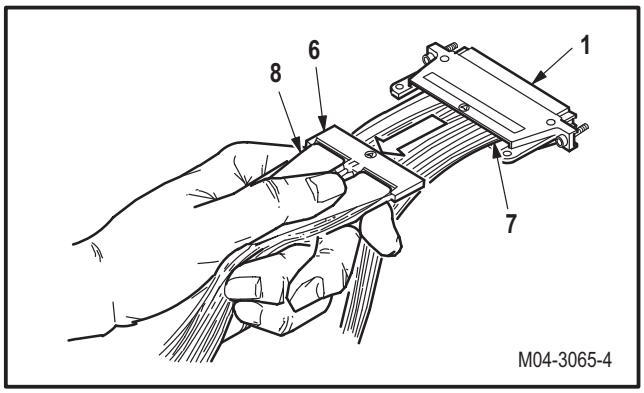
c. **Remove two wafers (6) and (7) from connector (1).**

(1) Insert wafer removal tool (8) into rear of connector (1) between connector (1) and wafer (6) until tool (8) locks in place. Use Raychem repair kit.



(2) Pull on tool (8) and wires connected to wafer (6) until wafer (6) is free.

(3) Pull wafer (7) out of connector (1).



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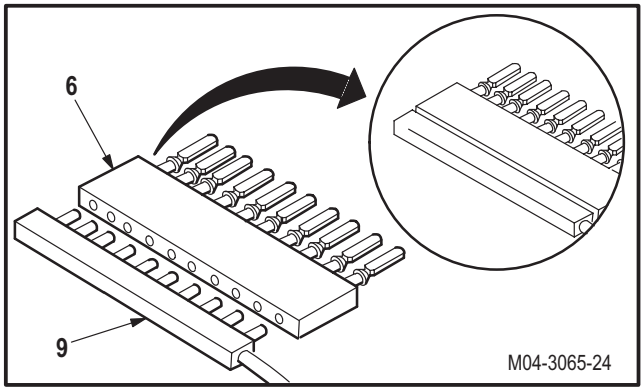
9.135. MASS TERMINATION CONNECTOR (MTC) (1 OR 2 INCH) REPAIR – continued

d. **When working on harness installed in aircraft, attach static ground bus (9) to wafer (6).** Very gentle insertion is sufficient for static grounding.

NOTE

Wafers are identified as A or B to correspond to A or B side of connector. Contacts are 1 thru 10 (**1.0 INCH**) or 1 thru 20 (**2.0 INCH**).



e. **Identify wires (10) to be removed from wafer (6).**

f. **Make a shallow cut along length of wafer sleeve (11).** It is not necessary to cut through sleeve (11).

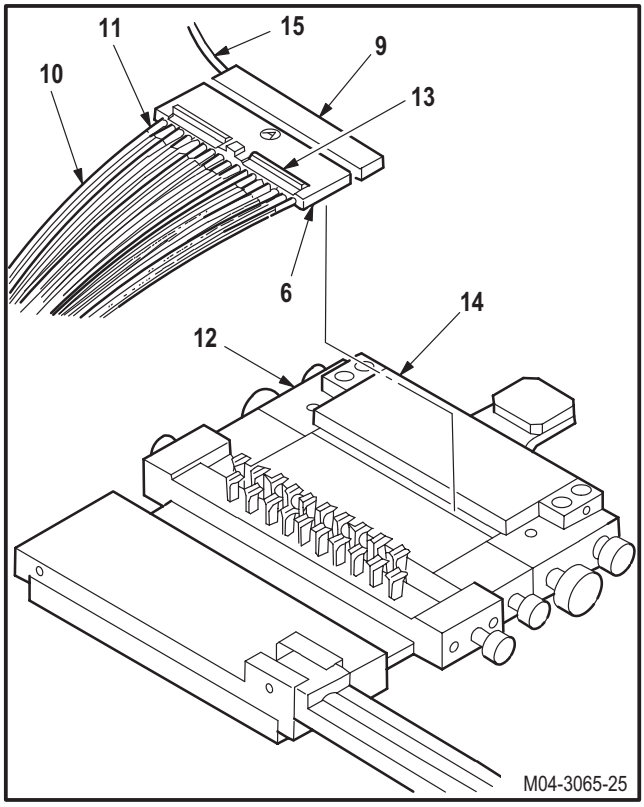
g. **Install wafer (6) in repair fixture (12).**

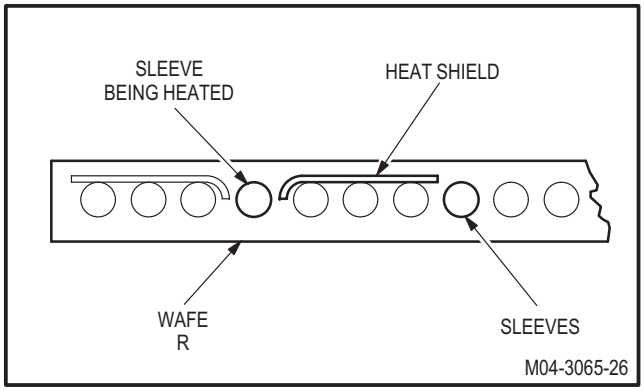
(1) Install wafer key (13) facing up under clamping cover (14).

h. **Attach ground lead (15) to a reliable ground.**

CAUTION

When heating single sleeve, use shields to isolate sleeve and prevent damage to other sleeves. If more than one sleeve or a row of sleeves is being heated, begin heating at one end of sleeves. Direct heat so next sleeve will be preheated.





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9.135. MASS TERMINATION CONNECTOR (MTC) (1 OR 2 INCH) REPAIR – continued

WARNING

Do not place heater near flammable material or allow heater to contact skin: severe burns can result. Wear protective equipment. If injury occurs, seek medical aid.

i. **Remove wire (10) from wafer (6).** Use heating tool kit, nitrogen (item 128, App F) (if on helicopter), foil shield, and tweezers.

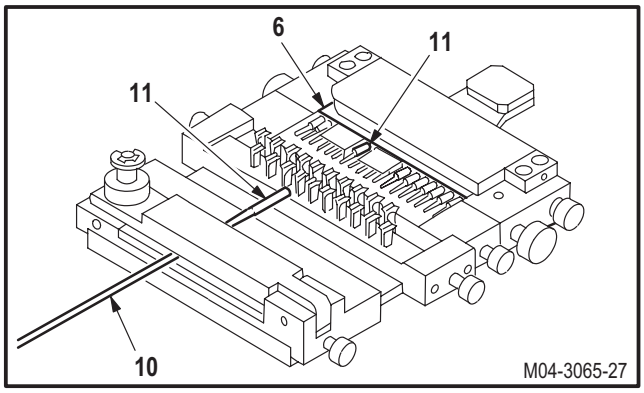
(1) Heat sleeve (11) until solder (16) melts.

(2) While solder (16) is melting, pull wire (10) free of sleeve (11) with tweezers.

(3) Remove sleeve (11) and excess solder (16) from wafer terminal (17).

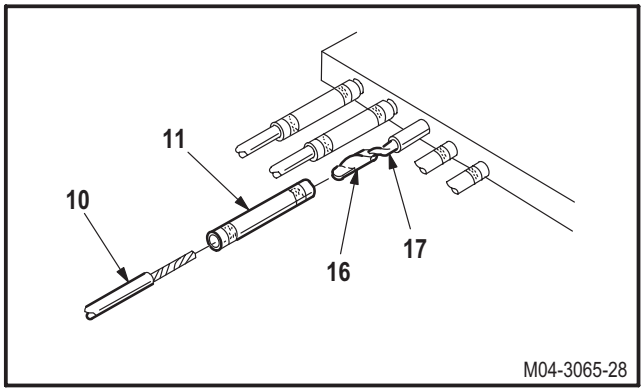
(4) Repeat steps i.(1) thru i.(3) for all wires (10) marked for removal.

j. **Repeat steps d. thru i. for wafer (7).**



9.135.4. Cleaning

a. **Wipe connector and wires with a clean rag.**



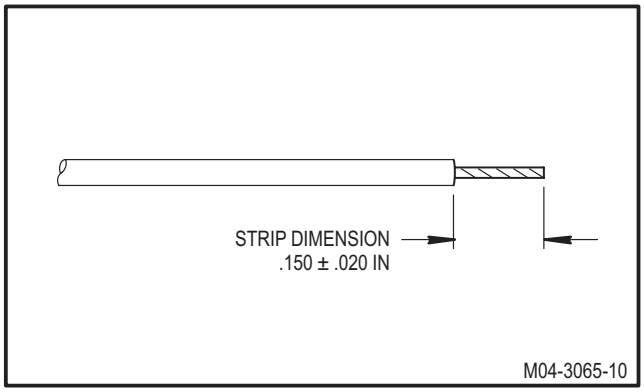
9.135.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.126)**.**

b. **Check wires and terminals for wear, cracks, cuts, broken strands and proper strip sizes.**(para 9.126)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

d. **Check wires are free of residue and excess solder.**



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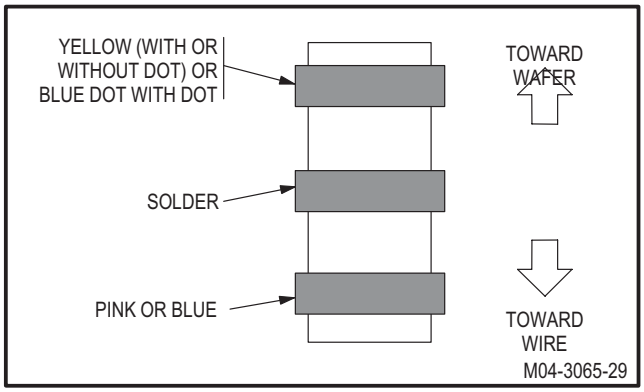
9.135. MASS TERMINATION CONNECTOR (MTC) (1 OR 2 INCH) REPAIR – continued

9.135.6. Repair

NOTE

Failure to observe correct orientation of sleeve on wire will cause improper solder flow or incorrect sleeve position.



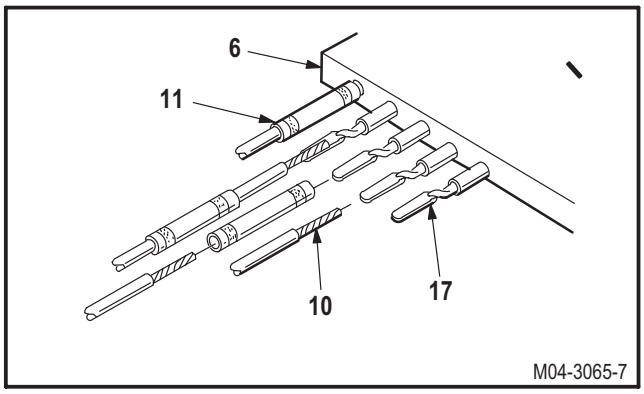
a. **Install sleeve (11) on wafer terminal (17).**

(1) Slide blue end of sleeve (11) back over wire (10).

(2) Position stripped end of wire (10) on wafer terminal (17).

(3) Hold wire (10).

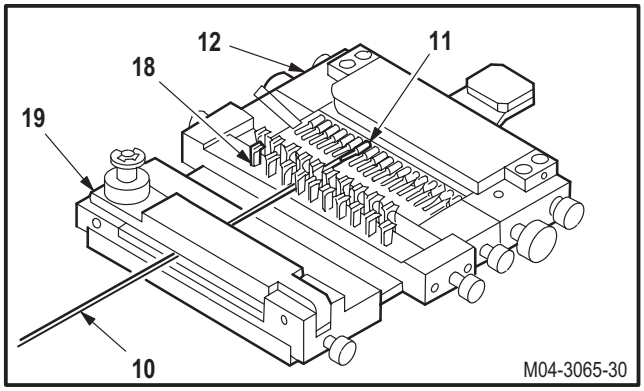
(4) Slide sleeve (11) over wire (10), terminal (17) and against wafer (6).



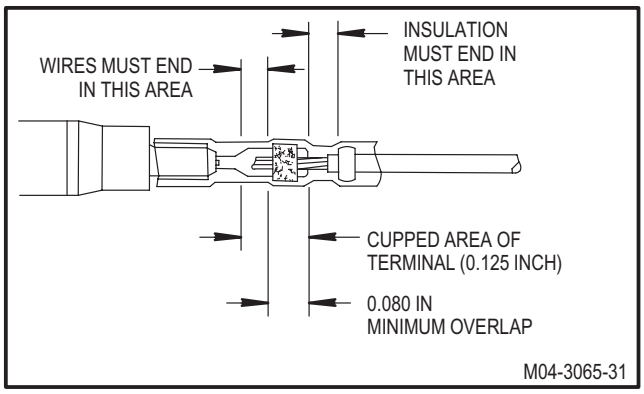
b. **Secure wire (10) in fixture (12).**

(1) Press wire (10) into wire clip (18).

(2) Close and latch wire clamp (19) to secure wires (10).



c. **Check sleeve (11) and wire (10) for proper position.**



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9.135. MASS TERMINATION CONNECTOR (MTC) (1 OR 2 INCH) REPAIR – continued

d. **Heat sleeve (11).** Use heating tool, nitrogen (item 128, App F) (if on helicopter), and foil shield.

(1) Direct hot air at sleeve (11).

(2) Hold heat gun (20) **0.125 to 0.250 INCH** from sleeve (11). Use solder (item 189, App F).

(3) Heat sleeve (11) until solder (21) melts, flows, and wets wire (10).

e. **Check for proper heating of sleeve (11) and proper position of wires (10) on wafer terminals (17).**

f. **Remove static ground bus (9), if installed.**

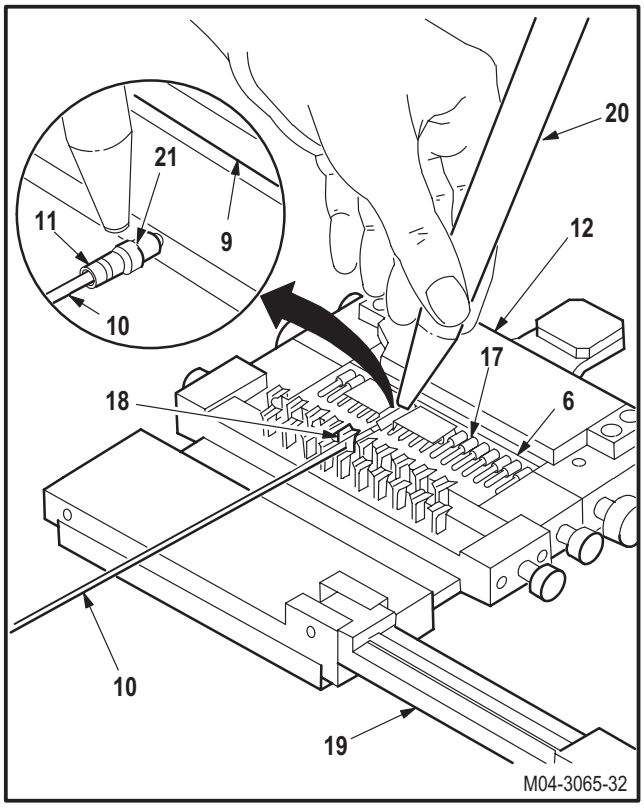
g. **Remove wafer (6) from fixture (12).**

(1) Unlatch clamp (19).

(2) Carefully remove wire (10) from clip (18).

(3) Remove wafer (6) with wire (10) from fixture (12).

h. **Check continuity.** Use multimeter (TM 55-1500-323-24).



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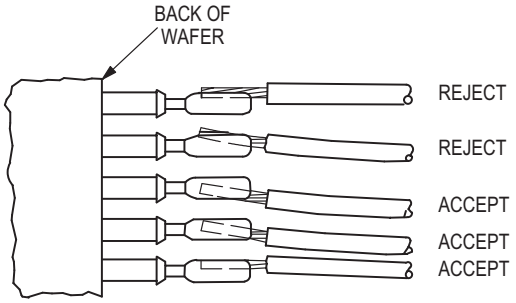
9.135. MASS TERMINATION CONNECTOR (MTC) (1 OR 2 INCH) REPAIR – continued

PROPER POSITION OF WIRE ON WAFER TERMINAL

WIRE POSITION

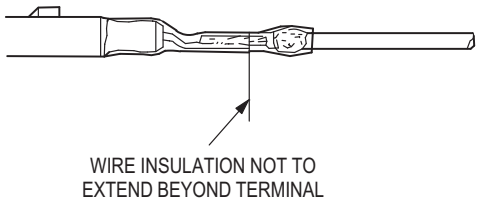
WIRE MUST BE POSITIONED IN TERMINAL AS SHOWN.



NOTE: INSULATION SLEEVE NOT SHOWN FOR CLARITY

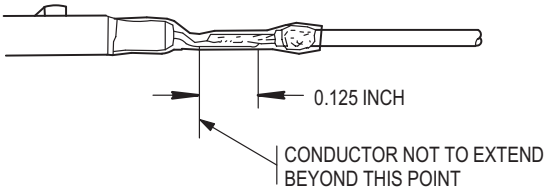
WIRE INSULATION OVERLAP

WIRE INSULATION MUST NOT OVERLAP WAFER TERMINAL.



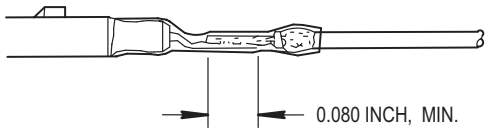
SOLDER TERMINAL OVERLAP (MAXIMUM)

STRIPPED END OF WIRE MUST BE IN CUPPED AREA OF WAFER TERMINAL, AND MUST NOT EXTEND BEYOND CUPPED AREA.



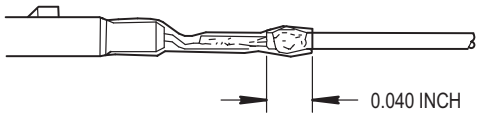
SOLDER TERMINAL OVERLAP (MINIMUM)

STRIPPED END OF WIRE MUST OVERLAP TERMINAL AT LEAST 0.080 INCH.



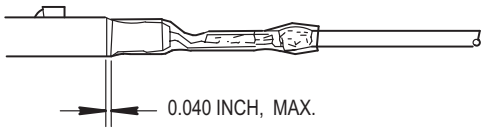
WIRE END SLEEVE OVERLAP

SHRINKABLE SLEEVE MUST OVERLAP WIRE INSULATION AT LEAST 0.040 INCH.



WAFER END SLEEVE OVERLAP

WAFER END OF SHRINKABLE SLEEVE MUST BE WITHIN 0.040 INCH OF WAFER BODY.



M04-3065-23

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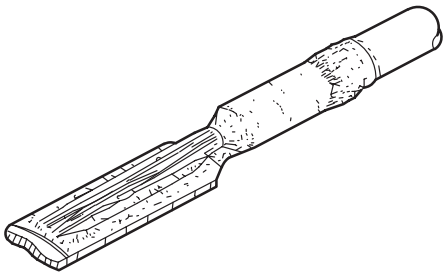
9.135. MASS TERMINATION CONNECTOR (MTC) (1 OR 2 INCH) REPAIR – continued

PROPER HEATING (SOLDERING) OF SLEEVE
ACCEPT IF THE FOLLOWING CONDITIONS EXIST:

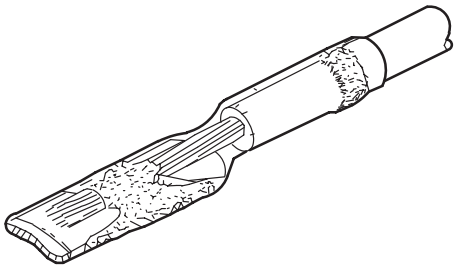
MAXIMUM SOLDER FLOW

A. SOLDER FILLET BETWEEN TERMINAL AND WIRE IS VISIBLE.
B. JOINT AREA IS VISIBLE DESPITE BROWNING OF SLEEVE.



MINIMUM SOLDER FLOW

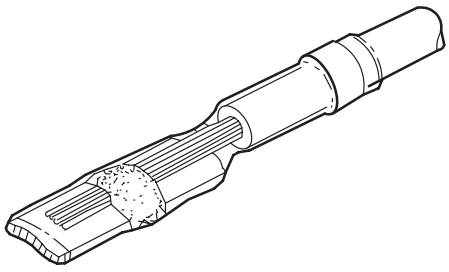
A. SOLDER PREFORM HAS LOST ORIGINAL RING SHAPE.
B. DEFINITE SOLDER FILLET BETWEEN TERMINAL AND WIRE IS VISIBLE AT BOTH ENDS.
C. MELTABLE SEALS HAVE MELTED.
D. SHRINKABLE SLEEVE HAS SQUEEZED TIGHTLY AROUND WIRE AND TERMINAL.



REJECT IF THE FOLLOWING CONDITIONS EXIST:

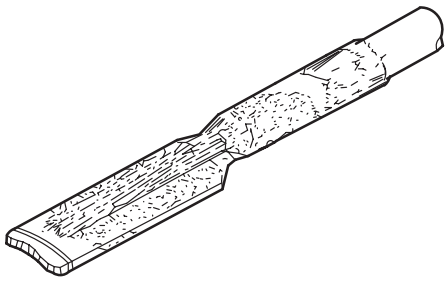
INSUFFICIENT HEAT - MAY BE REHEATED

A. RING SHAPE OF SOLDER PREFORM IS VISIBLE.
B. SLEEVE IS NOT FULLY SHRUNK.
C. SEALS ARE NOT TIGHT AROUND WIRE AND TERMINAL.



OVERHEATED

A. JOINT AREA IS NOT VISIBLE BECAUSE OF SEVERE DARKENING OF SLEEVE.
B. SOLDER FILLET IS NOT VISIBLE BETWEEN TERMINAL AND WIRE.



M04-3065-22

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9.135. MASS TERMINATION CONNECTOR (MTC) (1 OR 2 INCH) REPAIR – continued

9.135.7. Installation

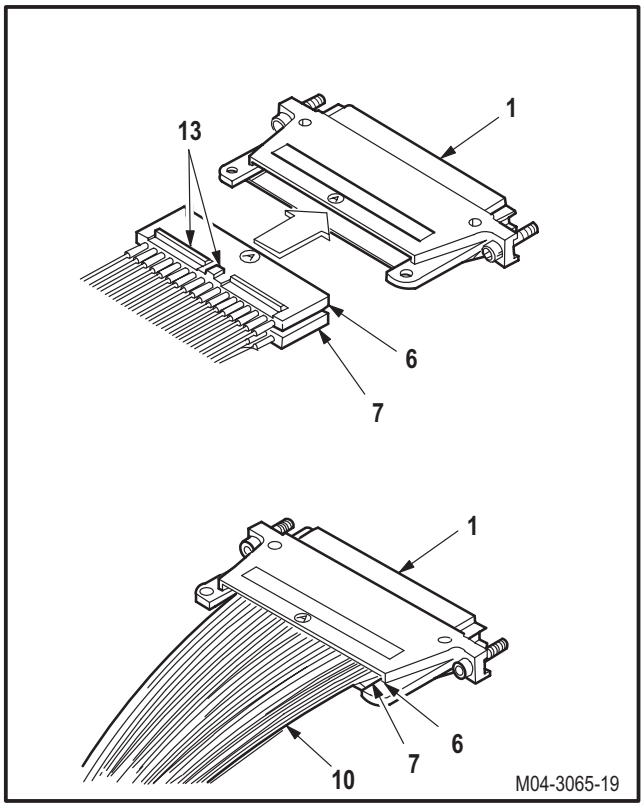
a. **Install wafers (6) and (7) in connector (1).**

(1) Place wafers (6) and (7) together with wafer keys (13) facing out.

(2) Aline A and B sides of wafers (6) and (7) with A and B sides of connector (1).

(3) Insert wafers into connector until keys (13) lock.

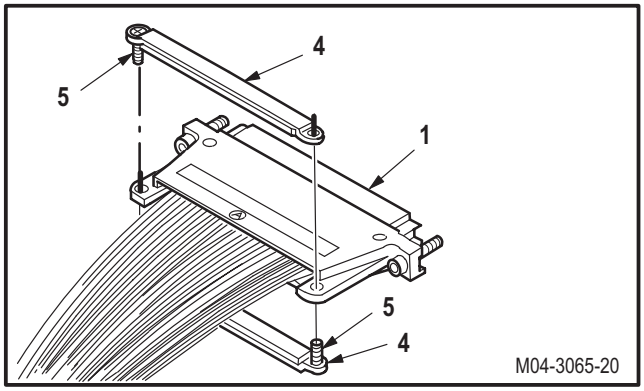
(4) Gently pull on wires (10) to ensure wafers (6) and (7) are secure in connector (1).



b. **Install two cable clamps (4) on connector (1).**

(1) Tighten two captive screws (5).

c. **Inspect (QA).**



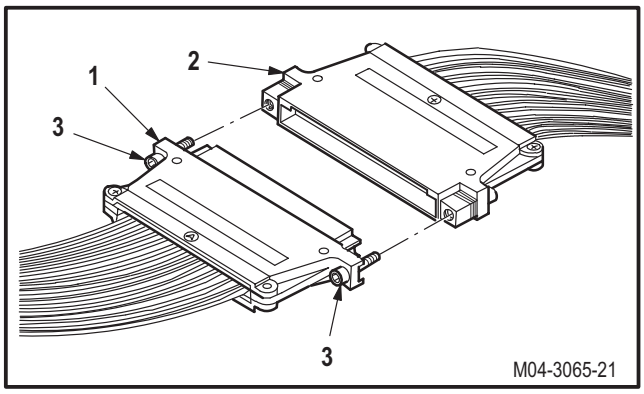
d. **Attach connector (1) to connector (2).**

(1) Tighten two captive jackscrews (3).

e. **Perform electrical bond check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

f. **Perform appropriate system maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

9.136. MASS TERMINATION CONNECTOR (MTC) WITH SHIELD BUS (1 OR 2 INCH) REPAIR

9.136.1. Description

This task covers: Removal. Cleaning. Inspection. Repair. Installation.

9.136.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Electrical power cable assembly (item 48, App H)
Gasoline engine generator set (item 153, App H)
Chemical protective gloves (item 154, App H)
Compressed air/nitrogen heating tool kit (item 164, App H)
Raychem repair kit (item 193, App H)
Multimeter (item 215, App H)
Ohmmeter (item 218, App H)
Aircraft power unit (item 232, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Nitrogen (item 128, App F)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
9.137	Mass termination connector (MTC) keyed (if replacing connector)

WARNING

- **To prevent electrical shock or damage to sensitive electrical equipment, turn off and disconnect external and battery electrical power. Tag external battery power switch: "Do not apply electrical power".**
- **This task is for repair of mass termination connectors (MTC) either on or off aircraft. Heating tool kit requires 110 volt AC power and supply of regulated air. When working on aircraft, nitrogen must be substituted for air to prevent danger of fire. Use generator set, power cable, aircraft power unit, or nitrogen as necessary.**

NOTE

This task is typical for cable or panel connector with pin or socket connections.

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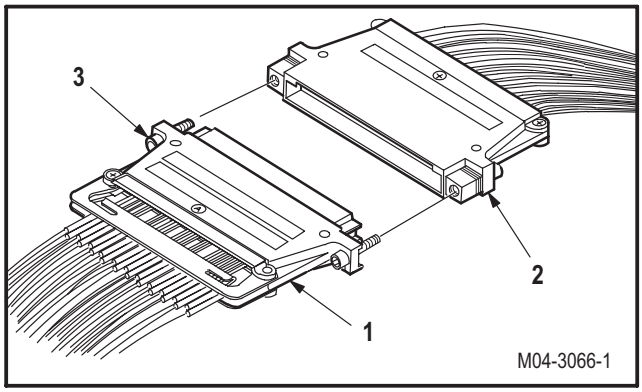
9.136. MASS TERMINATION CONNECTOR (MTC) WITH SHIELD BUS (1 OR 2 INCH) REPAIR – continued

9.136.3. Removal

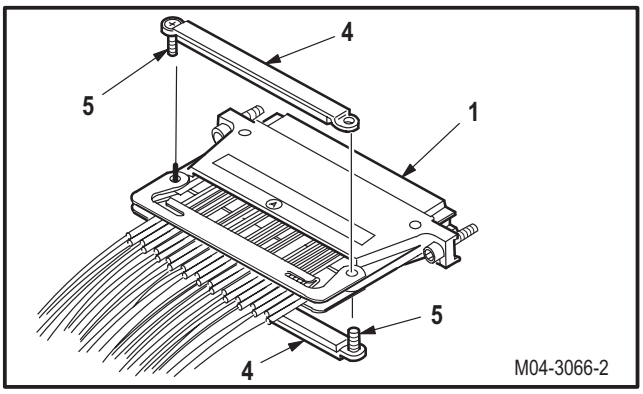
a. **Detach connector (1) from connector (2).**

(1) Loosen two captive jackscrews (3).



b. **Remove two cable clamps (4) from connector (1).**

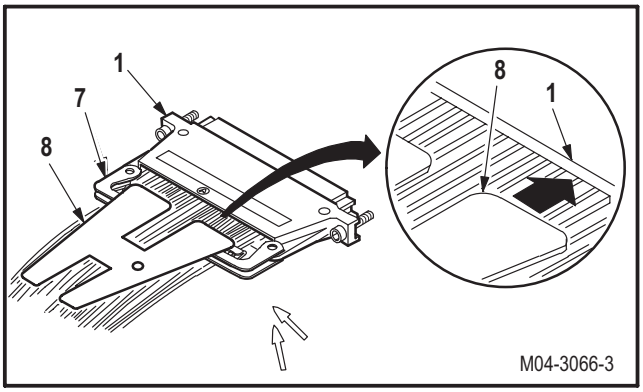
(1) Loosen two captive screws (5).



c. **Remove wafer (6) with shield bus (7) from connector (1).**

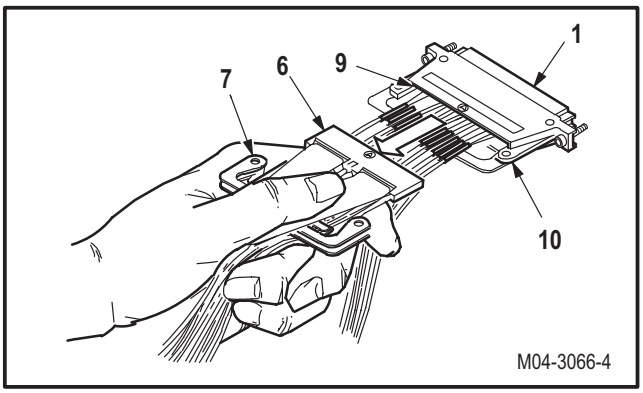
(1) Insert wafer removal tool (8) into rear of connector (1) and on top of wafer (6) and shield bus (7). Use Raychem repair kit.

(2) Push tool (8) until tool locks in place.



(3) Pull tool (8) and wafer (6) with bus (7) out of connector (1).

(4) Pull wafer (9) with bus (10) out of connector (1).



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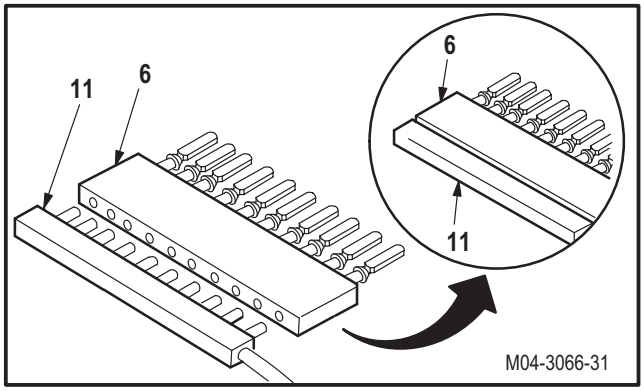
9.136. MASS TERMINATION CONNECTOR (MTC) WITH SHIELD BUS (1 OR 2 INCH) REPAIR – continued

d. **When working on harness installed in aircraft, attach static ground bus (11) to wafer (6).** Very gentle insertion is sufficient for static grounding.

NOTE

Wafers are identified as A or B to correspond to A or B side of connector. Contacts are 1 thru 10 (**1.0 INCH**) or 1 thru 20 (**2.0 INCH**).



e. **Identify wire (12) to be removed from wafer (6).**

f. **Make a shallow cut along length of wafer sleeve (13) and bus sleeve (14) marked for removal.** Do not cut through sleeves (13) and (14).

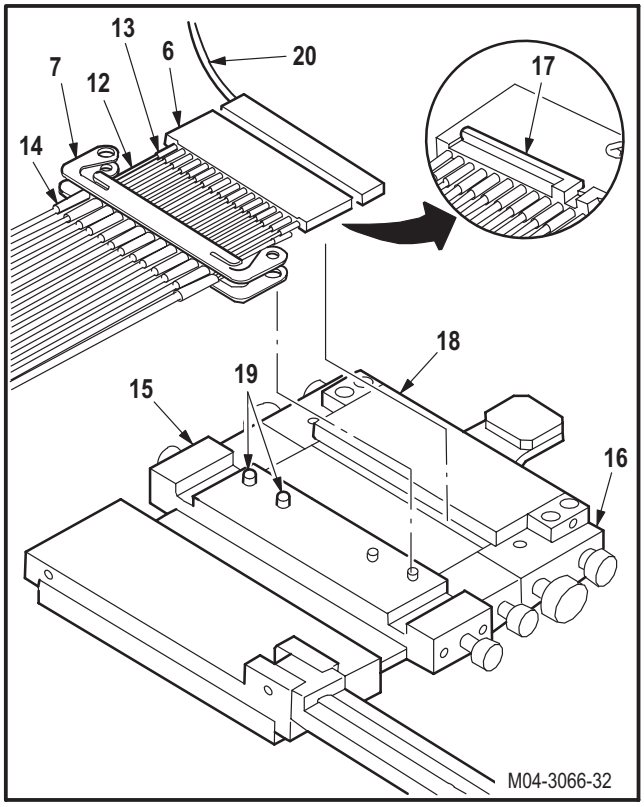
g. **Install bus module (15) in repair fixture (16).**

h. **Install wafer (6) in repair fixture (16).**

(1) Install wafer (6) with wafer key (17) face down under clamping cover (18).

(2) Bus (7) fits on alinement pins (19).

i. **Attach ground lead (20) to a reliable ground.**



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9.136. MASS TERMINATION CONNECTOR (MTC) WITH SHIELD BUS (1 OR 2 INCH) REPAIR – continued

WARNING

Do not place heater near flammable material or allow heater to contact skin: severe burns can result. Wear protective equipment. If injury occurs, seek medical aid.

j. **Remove cable shield (21) from bus (7).** Use heating tool kit, nitrogen (item 128, App F) (if on helicopter), and tweezers.

(1) Heat bus sleeve (14) with heat gun tool. Remove sleeve (14) with tweezers.

(2) While solder is melting, pull cable shield (21) from bus (7).

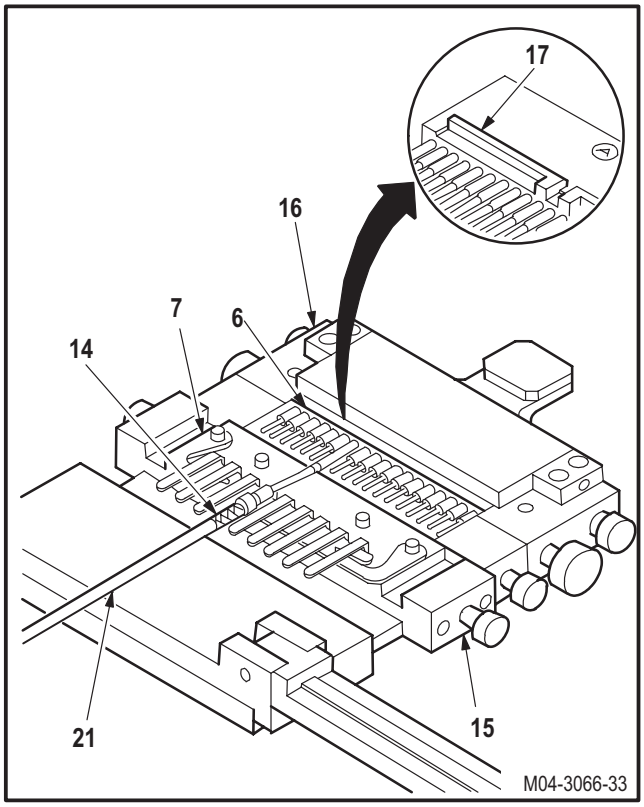
k. **Remove wafer (6) with bus (7) from fixture (16).**

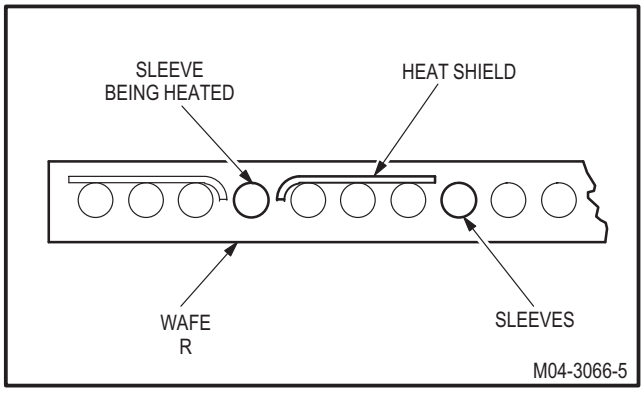
l. **Remove bus bar module (15) from repair fixture (16).**

m. **Turn wafer (6) over and clamp in fixture (16) with wafer keys (17) facing up.**

CAUTION

When heating single wafer sleeve, use heat shields to isolate sleeve and prevent damage to other sleeves. If more than one sleeve or a row of sleeves is being heated, begin heating at one end of sleeves. Direct heat so that next sleeve will be preheated.





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9.136. MASS TERMINATION CONNECTOR (MTC) WITH SHIELD BUS (1 OR 2 INCH) REPAIR – continued

n. **Isolate wafer sleeves (13) to be removed with heat shields (22) with one shield (22) on each side of sleeve (13).**

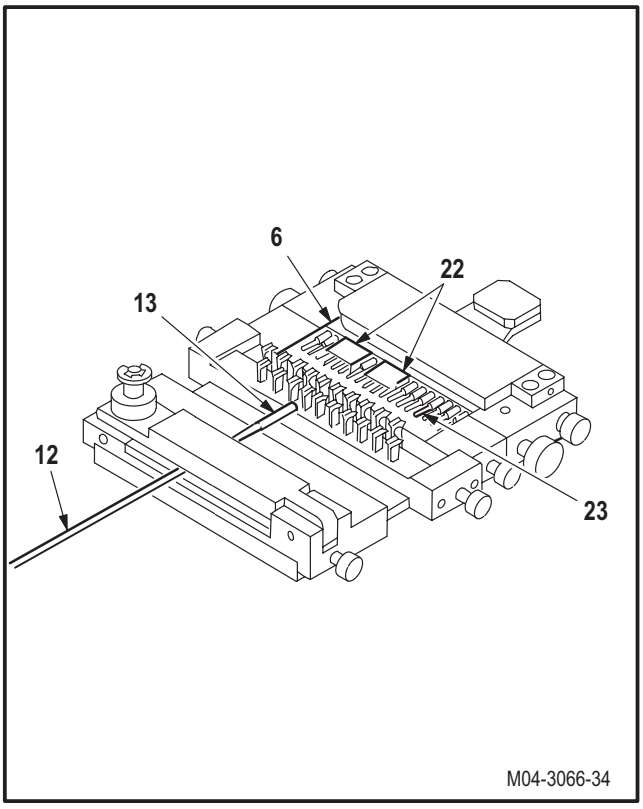
o. **Remove wire (12) from wafer (6).** Use heat, nitrogen (item 128, App F) (if on helicopter), gun kit and tweezers.

(1) Heat sleeve (13) until solder melts.

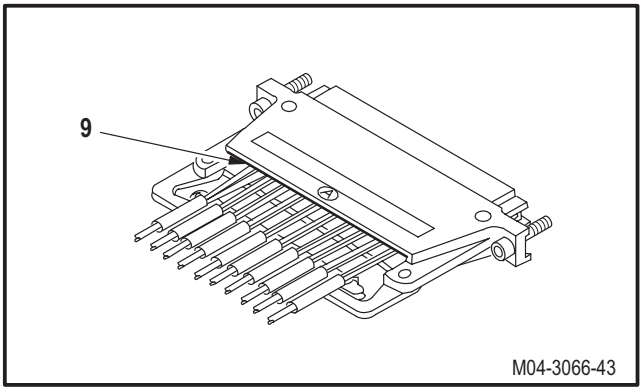
(2) While solder is melting, pull wire (12) free of sleeve (13). Use tweezers.

(3) Remove sleeve (13) and excess solder from wafer terminal (23).

(4) Repeat steps (1) thru (3) for all wires (12) marked for removal.



p. **Repeat steps c. thru o. for wafer (9).**



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9.136. MASS TERMINATION CONNECTOR (MTC) WITH SHIELD BUS (1 OR 2 INCH) REPAIR – continued

9.136.4. Cleaning

a. **Wipe connector and wires with a clean rag.**

9.136.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.126)**.**

b. **Check wires and terminals for wear, cracks, cuts, broken strands and proper strip sizes** (para 9.126)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.136.6. Repair

a. **Install bus sleeve (14) over wire (12).** Slide sleeve (14) back at least **3.0 INCHES** to avoid interface with wafer sleeve (12) installation.

NOTE

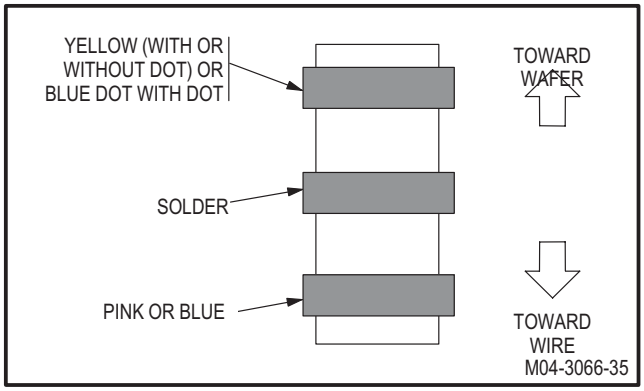
Failure to observe correct orientation of sleeve on wire will result in incorrect sleeve position or improper solder flow.

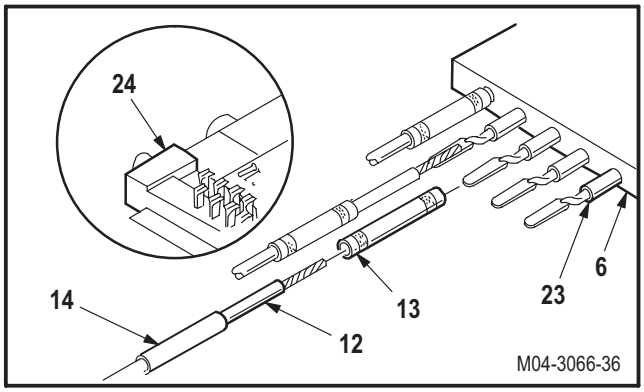
b. **Install wafer sleeve (13) on wafer terminal (23).** Install wire clip module (24) if not installed.

(1) Slide pink or blue end of sleeve (13) over wire (12).

(2) Position stripped end of wire (12) on terminal (23).

(3) Hold wire (12) and slide sleeve (13) over wire (12) and terminal (23) against wafer (6).





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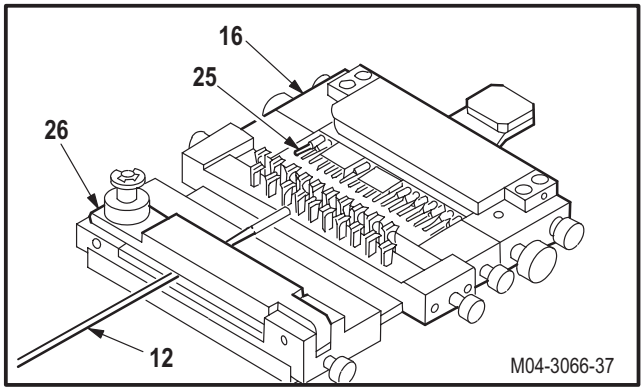
9.136. MASS TERMINATION CONNECTOR (MTC) WITH SHIELD BUS (1 OR 2 INCH) REPAIR – continued

c. **Secure wire (12) in fixture (16).**

(1) Press wire (12) into wire clip (25).

(2) Close and latch wire clamp (26) to secure wires (12).



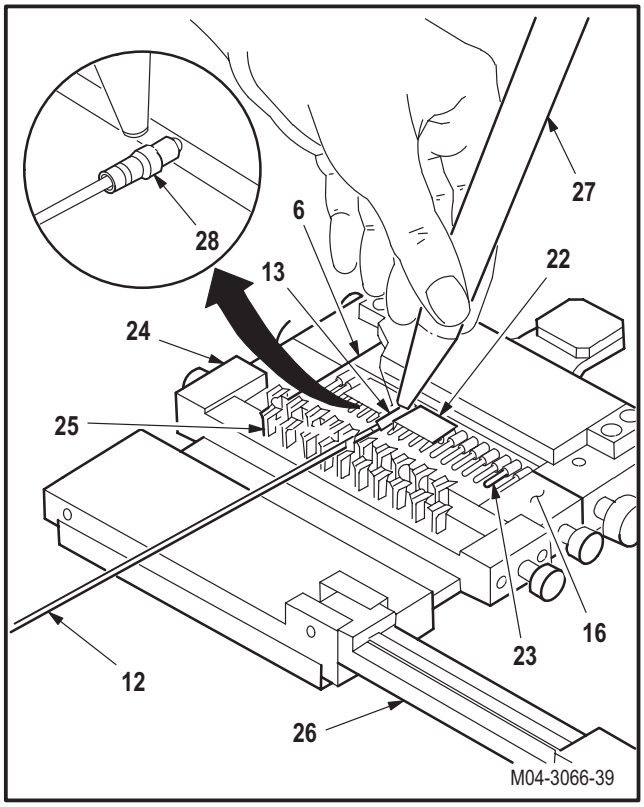
d. **Check sleeve (13) and wire (12) for proper position.**

e. **Isolate sleeve (13) to be heated, using movable heat shields (22).**

f. **Heat sleeve (13).** Use heat gun (27) and nitrogen (item 128, App F) (if on helicopter).

(1) Hold heat gun (27) **0.125 to 0.250 INCH** from sleeve (13).

(2) Direct hot air at sleeve (13) until solder (28) melts, flows, and wets wire (12).



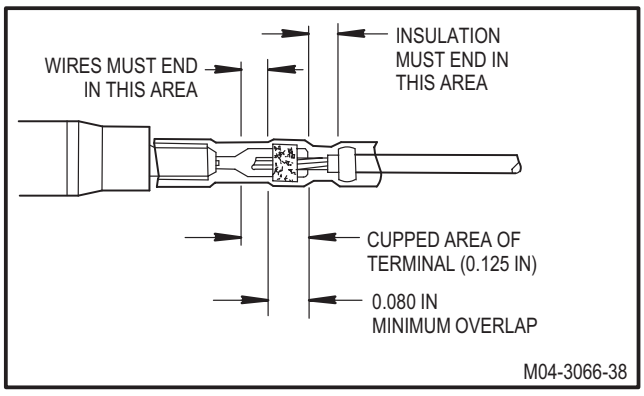
g. **Check for proper heating of wafer sleeve (13) and proper wire position on wafer terminal (23).**

h. **Remove wafer (6) from fixture (16).**

(1) Unlatch clamp (26) and remove wire (12) from clip (25).

(2) Remove wafer (6) with wire (12) from fixture (16).

i. **Remove wire clip module (24).**



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9.136. MASS TERMINATION CONNECTOR (MTC) WITH SHIELD BUS (1 OR 2 INCH) REPAIR – continued

j. **Install bus bar module (15).**

k. **Install wafer (6) under clamp cover (18) with wafer keys (17) facing down.**

l. **Position bus (7) on alinement pins (19) and slide sleeve (14) over bus terminal (30).**

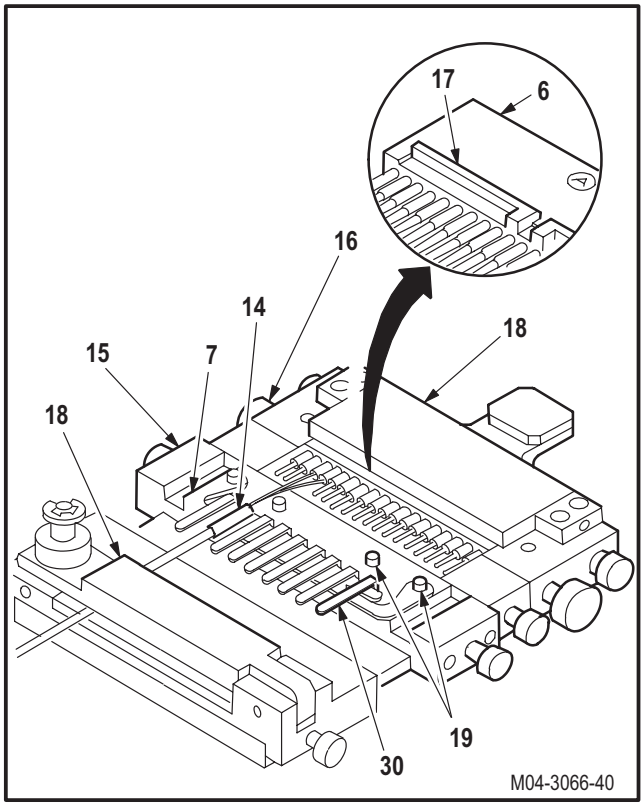
m. **Check that solder preform (28) lines up with bus terminal (30) and shield braid (31).**

n. **Heat bus sleeve (14).** Use heat gun (27) and nitrogen (item 128, App F) (if on helicopter).

(1) Hold heat gun (27) **0.125 to 0.250 INCH** from sleeve (14).

(2) Direct hot air at sleeve (14).

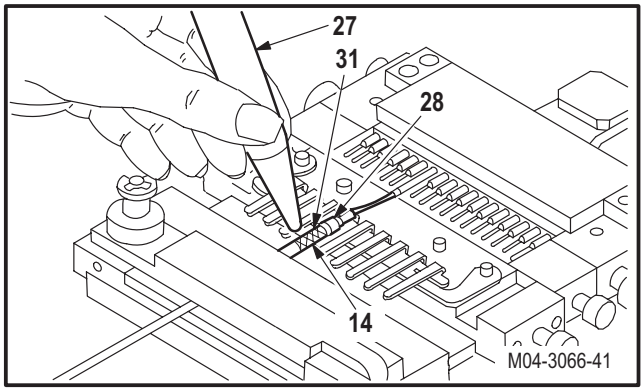
(3) Heat sleeve (14) until solder (28) melts, flows, and wets shield braid (31).



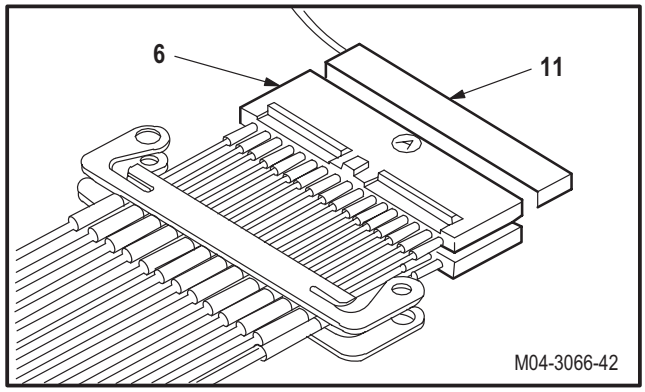
o. **Remove bus (7) and wafer (6) from fixture (16).**

p. **Check for proper shield overlap and heating of bus sleeve (14).**

q. **Check continuity.** Use multimeter (TM 55-1500-323-24).



r. **Remove static ground bus (11), if installed.**



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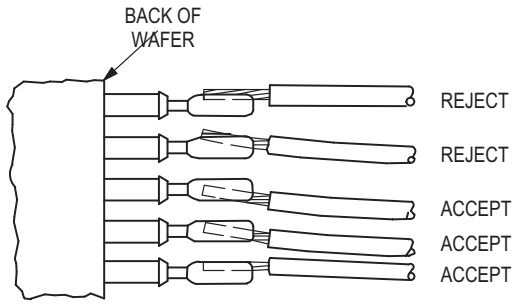
9.136. MASS TERMINATION CONNECTOR (MTC) WITH SHIELD BUS (1 OR 2 INCH) REPAIR – continued

PROPER POSITION OF WIRE ON WAFER AND BUSBAR TERMINAL

WIRE POSITION

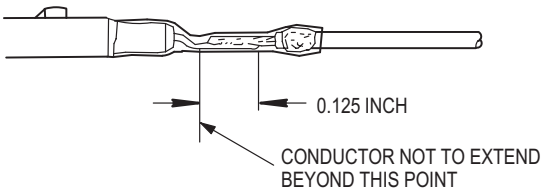
WIRE END MUST BE POSITIONED IN TERMINAL AS SHOWN.



NOTE: INSULATION SLEEVE NOT SHOWN FOR CLARITY

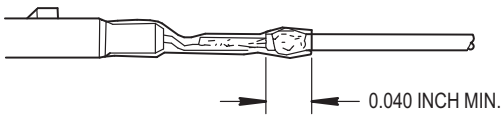
SOLDER TERMINAL OVERLAP (MAXIMUM)

STRIPPED END OF WIRE MUST BE IN CUPPED AREA OF WAFER TERMINAL, AND MUST NOT EXTEND BEYOND CUPPED AREA.



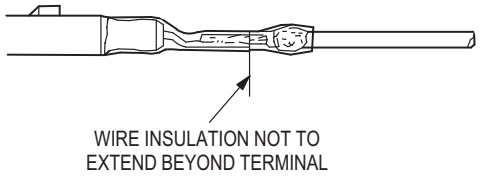
WIRE END SLEEVE OVERLAP

SHRINKABLE SLEEVE MUST OVERLAP WIRE INSULATION AT LEAST 0.040 INCH.



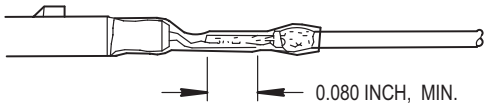
WIRE INSULATION OVERLAP

WIRE INSULATION MUST NOT OVERLAP WAFER TERMINAL.



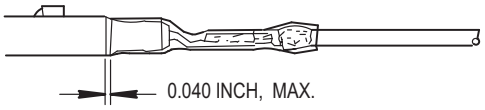
SOLDER TERMINAL OVERLAP (MINIMUM)

STRIPPED END OF WIRE MUST OVERLAP TERMINAL AT LEAST 0.080 INCH.



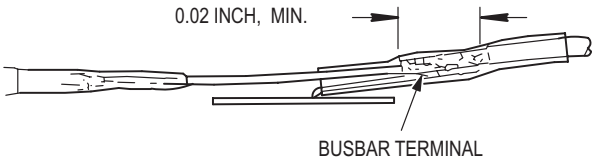
WAFER END SLEEVE OVERLAP

WAFER END OF SHRINKABLE SLEEVE MUST BE WITHIN 0.040 INCH OF WAFER BODY.



BUSBAR SHIELD OVERLAP

EACH CABLE SHIELD MUST OVERLAP ONE BUSBAR TERMINAL BY AT LEAST 0.20 INCH.



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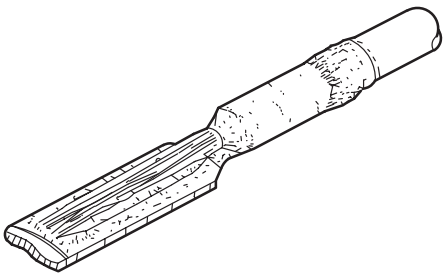
9.136. MASS TERMINATION CONNECTOR (MTC) WITH SHIELD BUS (1 OR 2 INCH) REPAIR – continued

PROPER HEATING (SOLDERING) OF SLEEVE
ACCEPT IF THE FOLLOWING CONDITIONS EXIST:

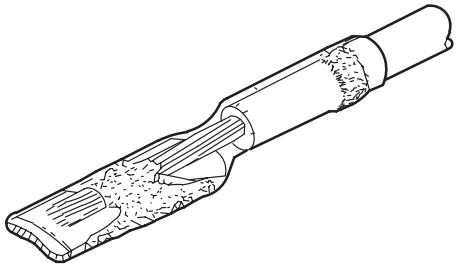
MAXIMUM SOLDER FLOW

A. SOLDER FILLET BETWEEN TERMINAL AND WIRE IS VISIBLE.
B. JOINT AREA IS VISIBLE DESPITE BROWNING OF SLEEVE.



MINIMUM SOLDER FLOW

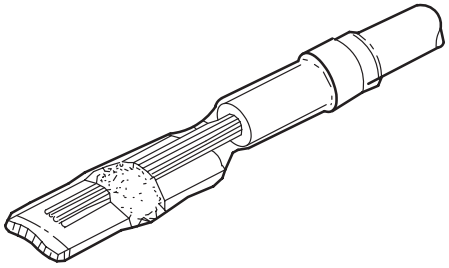
A. SOLDER PREFORM HAS LOST ORIGINAL RING SHAPE.
B. DEFINITE SOLDER FILLET BETWEEN TERMINAL AND WIRE IS VISIBLE AT BOTH ENDS.
C. MELTABLE SEALS HAVE MELTED.
D. SHRINKABLE SLEEVE HAS SQUEEZED TIGHTLY AROUND WIRE AND TERMINAL.



REJECT IF THE FOLLOWING CONDITIONS EXIST:

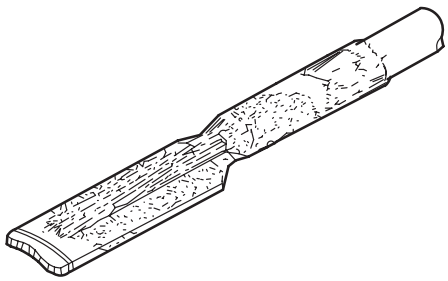
INSUFFICIENT HEAT - MAY BE REHEATED

A. RING SHAPE OF SOLDER PREFORM IS VISIBLE.
B. SLEEVE IS NOT FULLY SHRUNK.
C. SEALS ARE NOT TIGHT AROUND WIRE AND TERMINAL.



OVERHEATED

A. JOINT AREA IS NOT VISIBLE BECAUSE OF SEVERE DARKENING OF SLEEVE.
B. SOLDER FILLET IS NOT VISIBLE BETWEEN TERMINAL AND WIRE.



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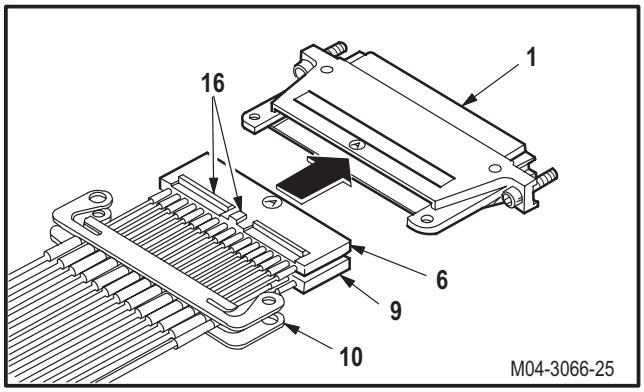
9.136. MASS TERMINATION CONNECTOR (MTC) WITH SHIELD BUS (1 OR 2 INCH) REPAIR – continued

9.136.7. Installation

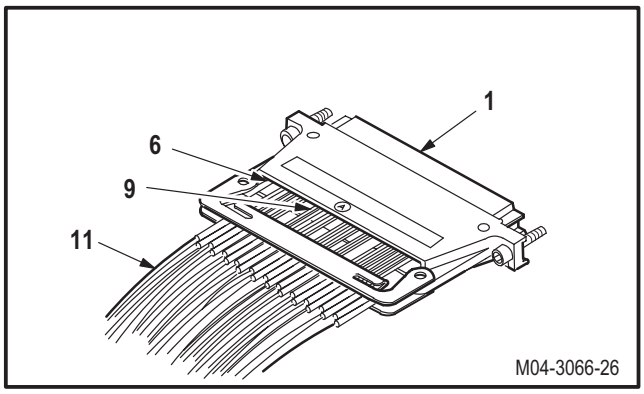
a. **Position wafers (6) and (9) together with wafer keys (16) facing out.**

(1) Insert wafer (6) in A side and wafer (9) in B side of connector (1).

(2) Push wafers (6) and (9) into connector (1) until a click is heard.



(3) Gently pull on wires (11) to ensure wafers (6) and (9) are secured in connector (1).



b. **Install two cable clamps (4) on connector (1).**

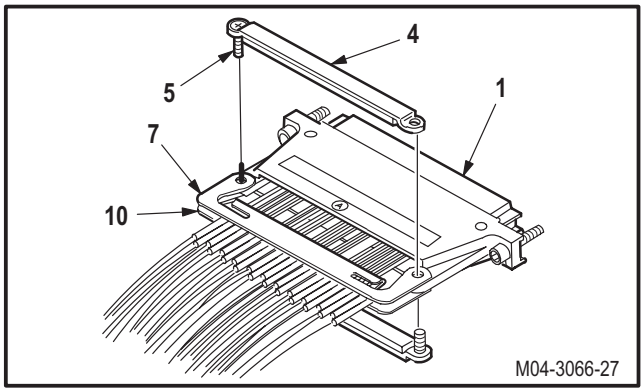
(1) Position buses (7) and (10) between connector (1) and cable clamps (4).

(2) Tighten two captive screws (5).

c. **Inspect (QA).**

d. **Attach connector (1) to connector (2).**

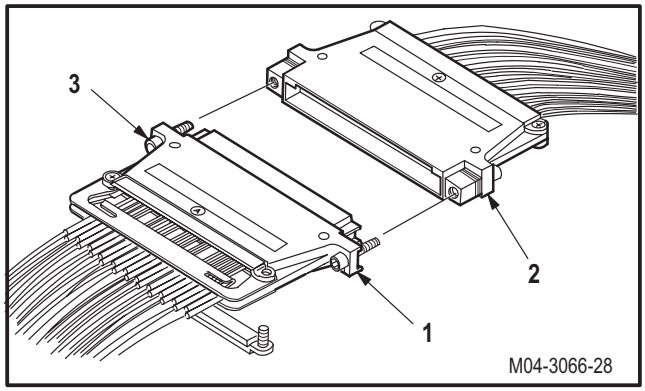
(1) Tighten two captive jackscrews (3).



e. **Perform electrical bond check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

f. **Perform appropriate system maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

9.137. MASS TERMINATION CONNECTOR (MTC) KEYING

9.137.1. Description

This task covers: Installation.

9.137.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-23P

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

Materials/Parts:

Adhesive (item 13, App F)

9.137.3. Installation

NOTE

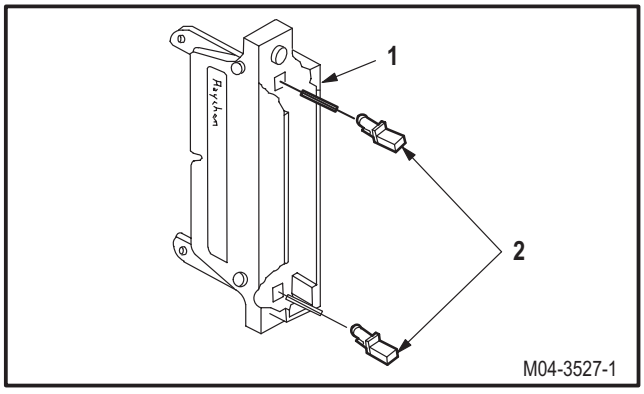
- New keys are provided with MTC assembly, when issued from supply.
- Keying task is the same for both plug and receptacle end of MTC.

a. **Identify and record part number of MTC (1) being replaced** (TM 1-1520-238-23P)**.**

NOTE

Table 9-1 is used to key MTC. The seventh character in the part number determines the position of keying pins. Match the letter character from the part number with corresponding letter on Table 9-1.

b. **Determine correct position of two keying pins (2).**



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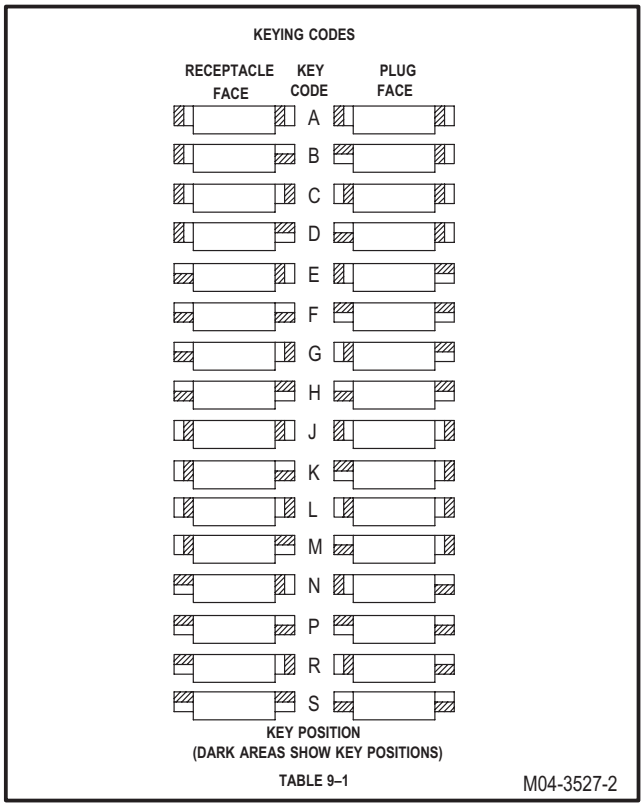
9.137. MASS TERMINATION CONNECTOR (MTC) KEYING – continued

CAUTION

To prevent damage to keying pins, only smooth gripping needle nose pliers will be used to position keying pins in MTC.



c. **Install two keying pins (2) in MTC (1).**

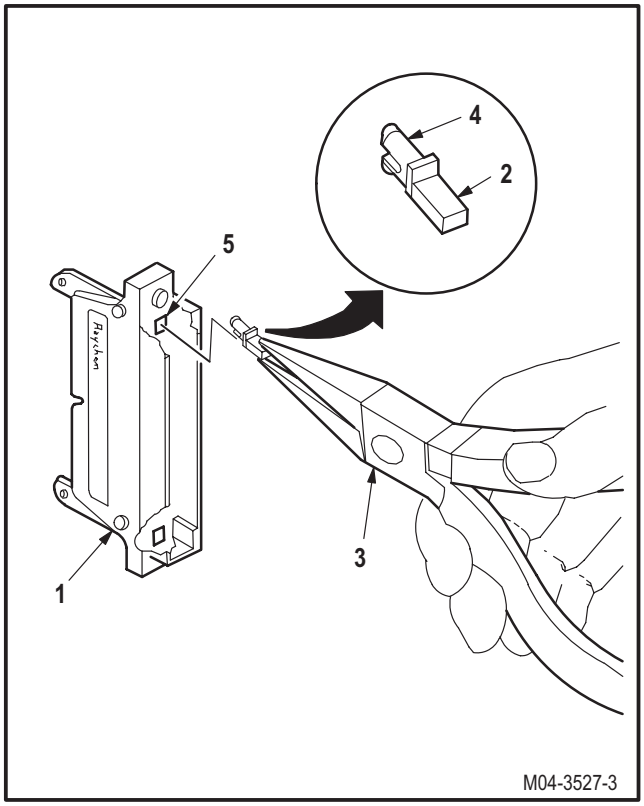
(1) Place keying pin (2) in grip of needle nose pliers (3).

(2) Apply adhesive to slotted end (4) of keying pin (2).Use adhesive (item 13, App F).

(3) Insert slotted end (4) of keying pin (2) in square recess hole (5) on MTC (1). Ensure correct position is maintained in accordance with Table 9-1.

d. **Inspect (QA).**

e. **Complete repair task for applicable MTC (1)** (para 9.135, 9.136, and 9.138)**.**



END OF TASK

9.138. COAXIAL MASS TERMINATION CONNECTOR (MTC) REPAIR

9.138.1. Description

This task covers: Removal. Cleaning. Inspection. Repair. Installation.

9.138.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Electrical power cable assembly (item 48, App H)
Gasoline engine generator set (item 153, App H)
Chemical protective gloves (item 154, App H)
Compressed air/nitrogen heating tool kit (item 164, App H)
Raychem repair kit (item 193, App H)
Multimeter (item 215, App H)
Ohmmeter (item 218, App H)
Aircraft power unit (item 232, App H)
Adjustable air filtering respirator (item 262, App H)
Electric soldering iron (item 331, App H)
Special purpose tool (item 370, App H)

Materials/Parts:

Nitrogen (item 128, App F)
Solder (item 189, App F)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
9.137	Mass termination connector (MTC) keyed (if replacing connector)

WARNING

- **To prevent electrical shock or damage to sensitive electrical equipment, turn off and disconnect external and battery electrical power. Tag external battery power switch: "Do not apply electrical power".**
- **This task is for repair of mass termination connectors (MTC) either on or off aircraft. Heating tool kit requires 110 volt AC power and supply of regulated air. When working on aircraft, nitrogen must be substituted for air to prevent danger of fire. Use generator set, power cable, aircraft power unit, or nitrogen as necessary.**

NOTE

This task is typical for cable or panel connectors with pin or socket connections. Two sizes of contacts are used. Tasks for each size of coaxial cable are identical except for cable strips sizes given for both sizes of cable.

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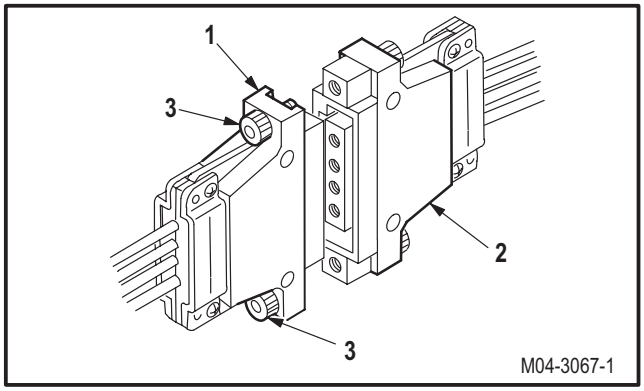
9.138. COAXIAL MASS TERMINATION CONNECTOR (MTC) REPAIR – continued

9.138.3. Removal

a. **Detach connector (1) from receptacle (2).**

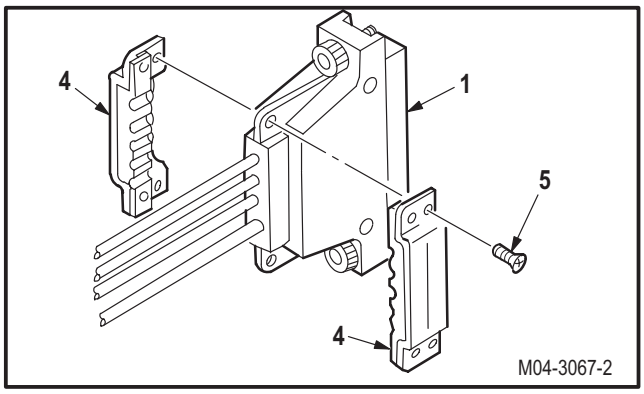
(1) Loosen two captive jackscrews (3).



b. **Remove two cable clamps (4) from connector (1).**

(1) Remove two screws (5).

(2) Remove clamps (4) from connector (1).

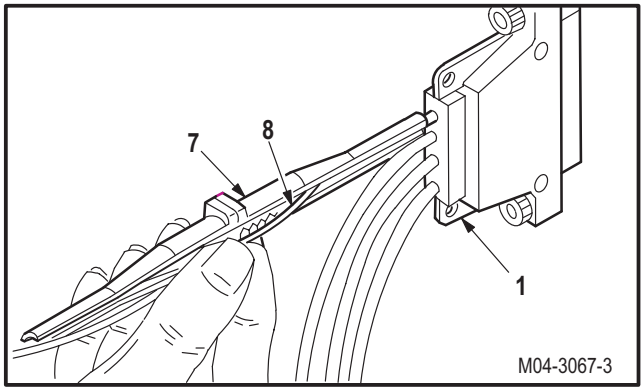


c. **Remove coaxial contact (6) from connector (1).**

(1) Use removal end of tool (7) and slide cable (8) into slot. Use Raychem repair kit.

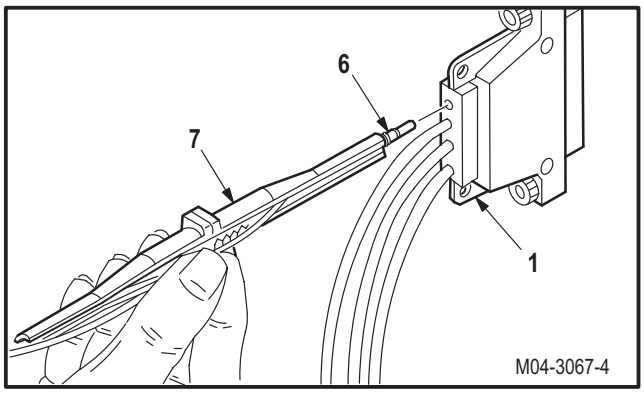
(2) Slide tool (7) into rear of connector (1) until tool (7) seats on contact (6).

(3) Pull tool (7) and contact (6) free of connector (1).



9.138.4. Cleaning

a. **Wipe contacts and connector with a clean rag.**



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9.138. COAXIAL MASS TERMINATION CONNECTOR (MTC) REPAIR – continued

9.138.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.126)**.**

b. **Check wires and terminals for wear, cracks, cuts, broken strands and proper strip sizes** (para 9.126)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

d. **Check for damaged contacts.** If contacts are damaged, go to paragraph 9.138.6.

9.138.6. Repair

WARNING

Do not place heater near flammable material or allow heater to contact skin: severe burns can result. Wear protective equipment. If injury occurs, seek medical aid.

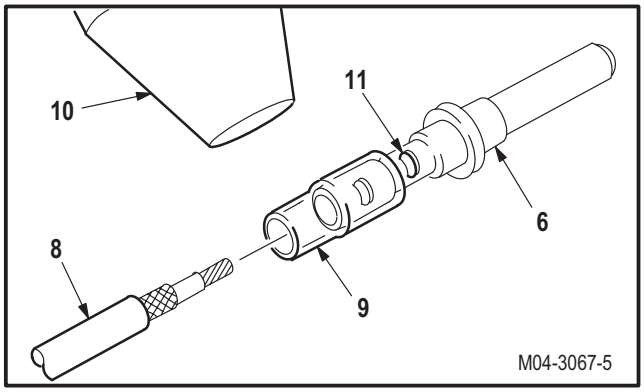
NOTE

Illustrations are provided in Table 1 as a guide for proper contact installation.

a. **Remove contact (6) from cable (8).** Use heating tool kit and nitrogen (item 128, App F) if on helicopter.

(1) Use a sharp knife to score sleeve (9) lengthwise on opposite sides of contact (6). Do not cut cable (8).

(2) Hold contact (6) with pliers. Heat contact (6) with heat gun (10) until solder (11) melts. Quickly pull contact (6) off cable (8).



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9.138. COAXIAL MASS TERMINATION CONNECTOR (MTC) REPAIR – continued

b. **If end of cable (8) is unserviceable, or if installing new cable, strip cable (8) to size illustrated.**

(1) Strip outer jacket (12).

(2) Strip shield braid (13) from front of cable (8).

(3) Strip primary insulator (14).

(4) Ensure conductor (15) is straight and twisted to original shape.

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

c. **Pre-tin conductor (15).** Use soldering iron and solder (item 189, App F) (TM 55-1500-323-24).

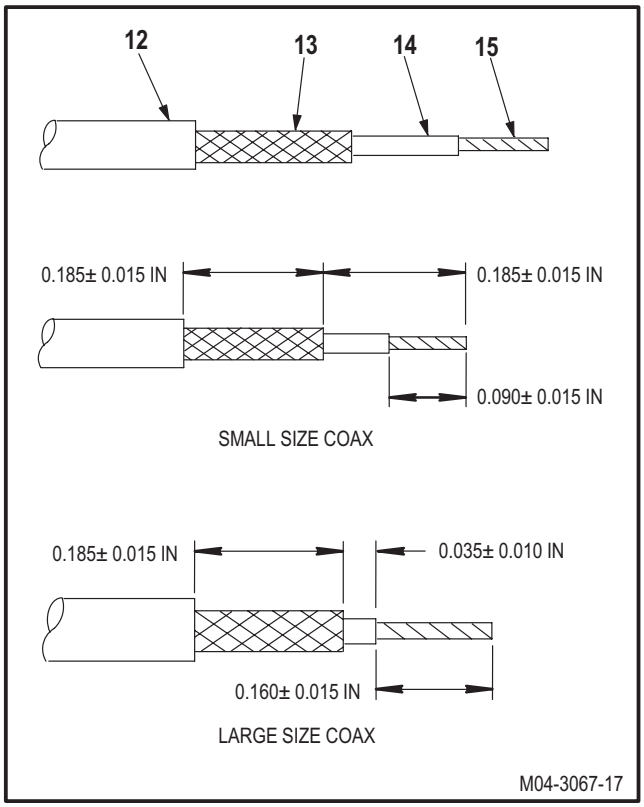
d. **Ensure shield braid (13) is trimmed evenly and no loose strands are exposed.**

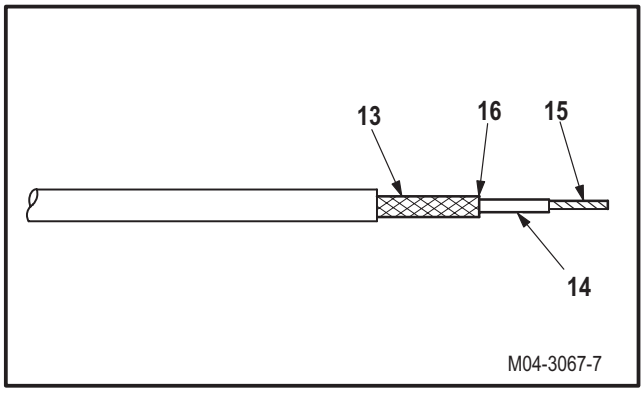
e. **Smooth braid ends (16) against primary insulation (14).**

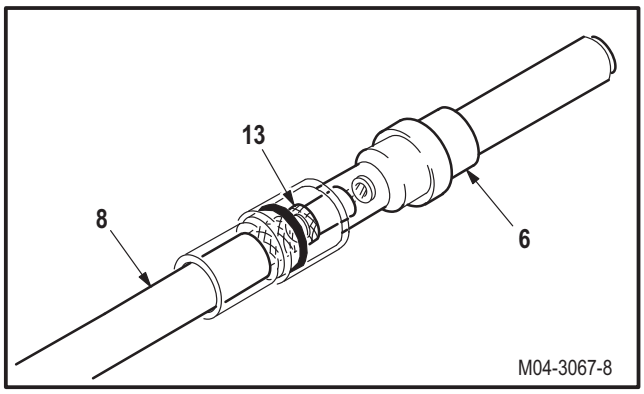
f. **Insert cable (8) into contact (6).**

(1) Gently slide contact (6) on cable (8).

(2) Rotate contact (6) slightly to prevent braid (13) from catching.







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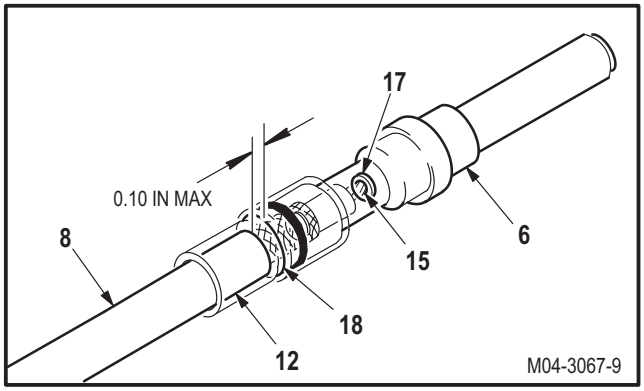
9.138. COAXIAL MASS TERMINATION CONNECTOR (MTC) REPAIR – continued

g. **Check cable (8) and contact (6) for proper insertion.**

(1) Center conductor (15) must be visible through forward inspection window (17).

(2) Distance from rear of contact body (18) to outer jacket (12) must not exceed **0.10 INCH**.

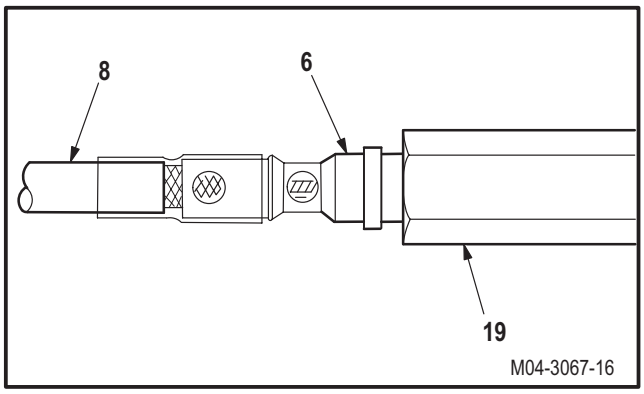


h. **Insert contact (6) with cable (8) into repair holding fixture (19).**

(1) Cable (8) must be fully inserted into contact (6).

(2) Contact (6) must be fully inserted into fixture (19).

(3) Secure cable (8) and fixture (19) to prevent movement during heating.



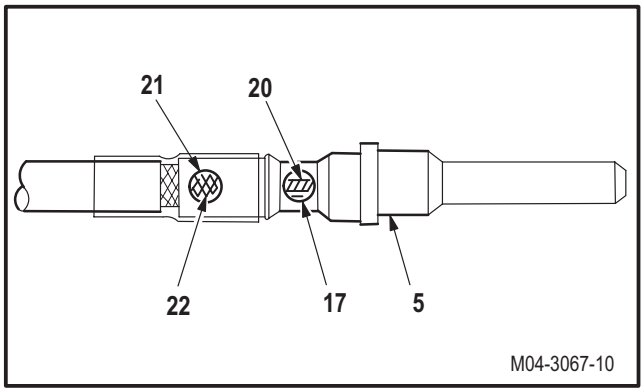
CAUTION

Secure cable during heating to prevent "cold" solder joints. Be sure to allow solder to solidify at least 15 seconds before removing contact from holding fixture.

i. **Heat contact (6).** Use heating tool kit and nitrogen (item 128, App F) if on helicopter.

(1) Direct heat at forward inspection window (17) until solder (20) melts and flows. Use solder (item 189, App F).

(2) Direct heat at rear inspection window (21) until solder (22) melts and flows.



j. **After cooling, check contact (6) for proper position and good solder joints.**

k. **Perform continuity check.** Use multimeter (TM 55-1500-323-24).

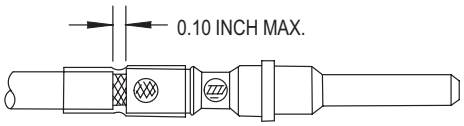
GO TO NEXT PAGE

9.138. COAXIAL MASS TERMINATION CONNECTOR (MTC) REPAIR – continued

TABLE 1

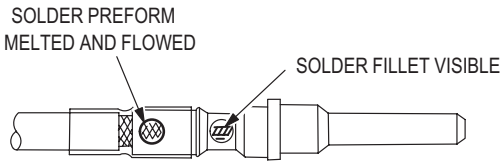
CABLE POSITION

REAR OF CONTACT BODY TO CABLE INSULATION
0.10 INCH MAXIMUM



SOLDER JOINTS

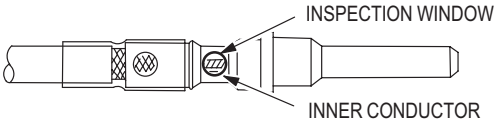
YOU MUST NOT SEE EITHER RING SHAPED
SOLDER PREFORM



MUST SEE SOLDER FILLET BETWEEN
CONDUCTOR AND INNER TERMINAL

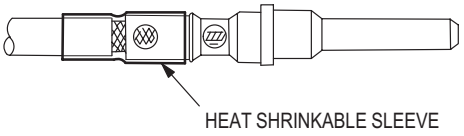
INNER CONDUCTOR

MUST SEE CONDUCTOR THROUGH AT LEAST
ONE OF TWO INSPECTION WINDOWS



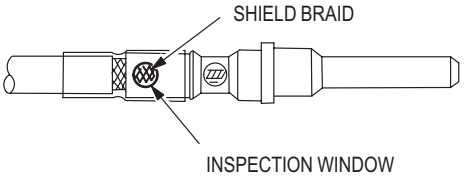
SLEEVE

SLEEVE MUST HAVE SHRUNK OVER CONDUCTOR
BETWEEN CABLE INSULATION AND CONTACT BODY

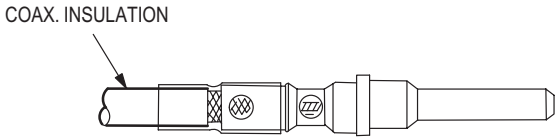


SHIELD BRAID

BRAID MUST BE VISIBLE THROUGH
REAR INSPECTION WINDOW



SLEEVE MUST NOT BE DARKENED TO
OBSCURE INSPECTION



COAX. INSULATION MUST NOT SHOW SIGNS
OF DAMAGE OR OVERHEATING OUTSIDE OF SLEEVE

M04-3067-11

GO TO NEXT PAGE

9.138. COAXIAL MASS TERMINATION CONNECTOR (MTC) REPAIR – continued

9.138.7. Installation

a. **Insert contact (6) into connector (1).**

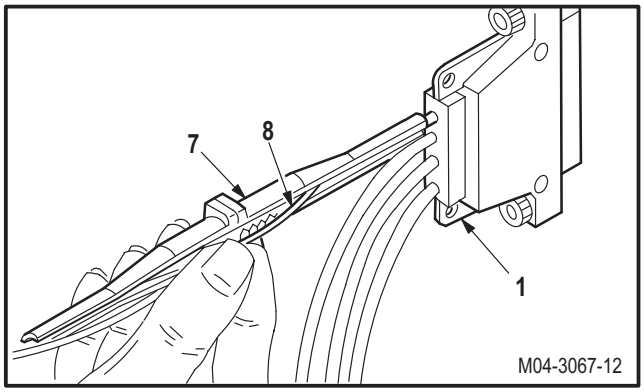
(1) Slide cable (8) into insertion end of tool (7).

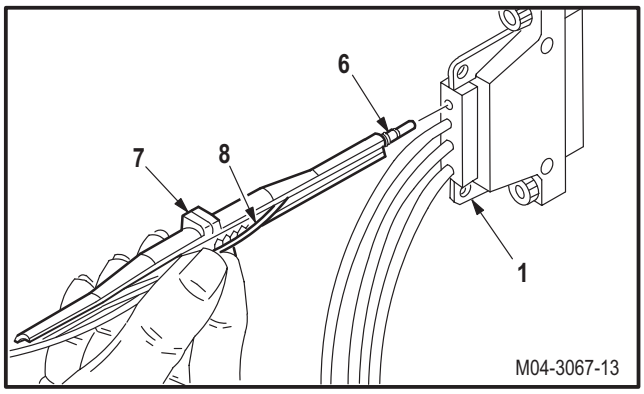
(2) Pull cable (8) until rear of contact (6) is flush with tool (7).

(3) Push contact (6) and tool (7) into rear of connector (1) until contact (6) clicks in place.

(4) Remove tool (7) from connector (1).

(5) Pull gently on cable (8) to ensure contact (6) is fully seated.





b. **Install two cable clamps (4) on connector (1).**

(1) Position cable clamps (4) on connector (1).

(2) Install two screws (5).

c. **Inspect (QA).**

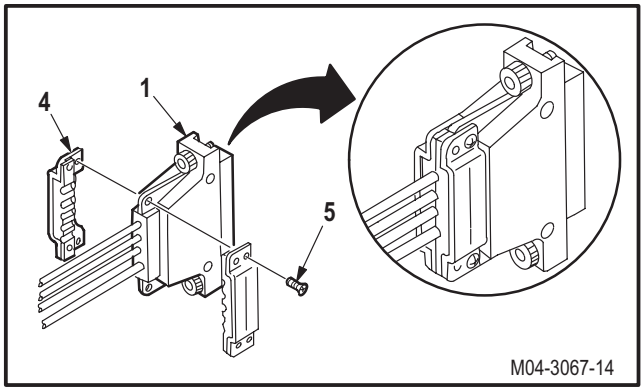
d. **Attach connector (1) to receptacle (2).**

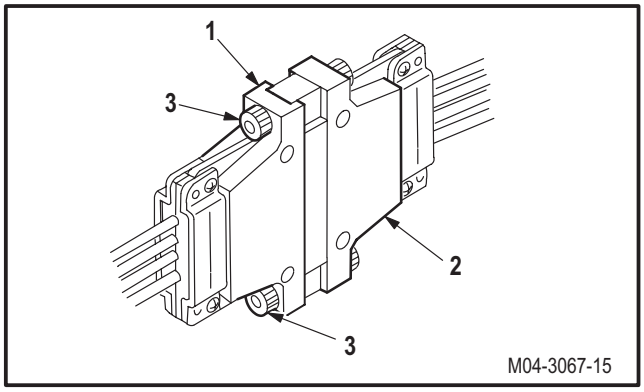
(1) Tighten two captive screws (3).

e. **Perform electrical bond check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

f. **Perform appropriate system operational check** (TM 1-1520-238-T)**.**





END OF TASK

9.139. ELECTRONIC RELAY AND MODULE REPLACEMENT

9.139.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.139.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Socket removal tool (item 258, App H)

References:

TM 1-1520-238-T

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

NOTE

This task is typical for electronic modules, electromagnet relays, microcircuits, electrical contacts, and terminal junction boxes in:

- Aft avionics bay distribution box
- Electronic power distribution box
- Engine anti-ice relay panel
- Pilot matrix module
- Stabilator relay panel
- Start mode relay panel

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9.139. ELECTRONIC RELAY AND MODULE REPLACEMENT – continued

9.139.3. Removal

NOTE

The following three steps are typical for removal of all single space relays. Use relay removal tool.

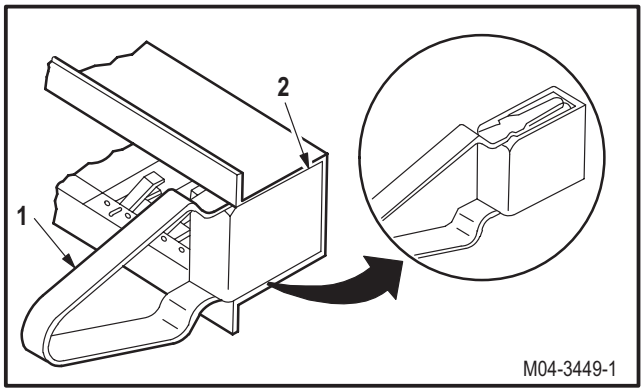
a. **Gain access to area of relay removal.**

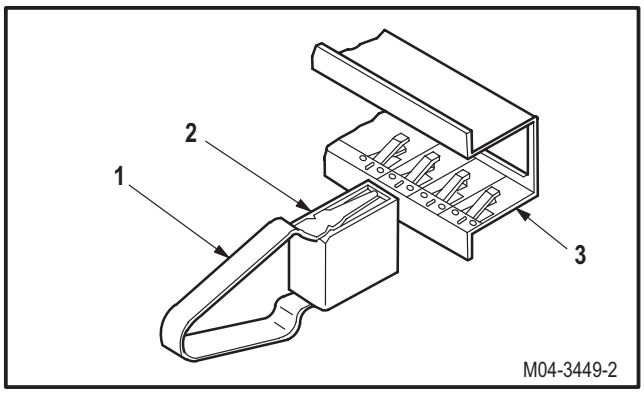
b. **Identify relay to be removed.**

c. **Remove relay.** Use socket removal tool.

(1) Insert relay removal tool (1) over relay (2).

(2) Press firmly on tool (1). Pull tool (1) and relay (2) clear of relay mount (3).





NOTE

The following three steps are typical for removal of all double space relays. Use two relay removal tools.

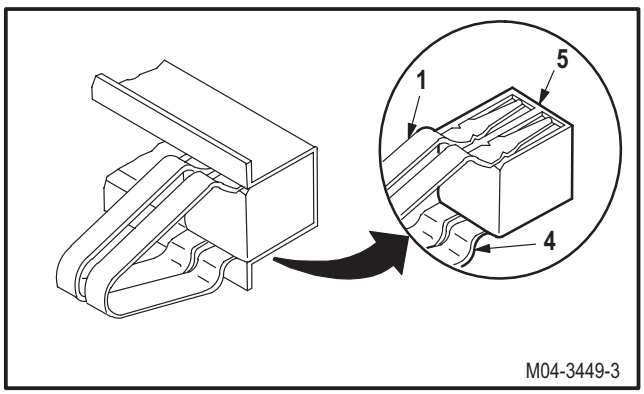
d. **Gain access to area of relay removal.**

e. **Identify relay to be removed.**

f. **Remove relay.**

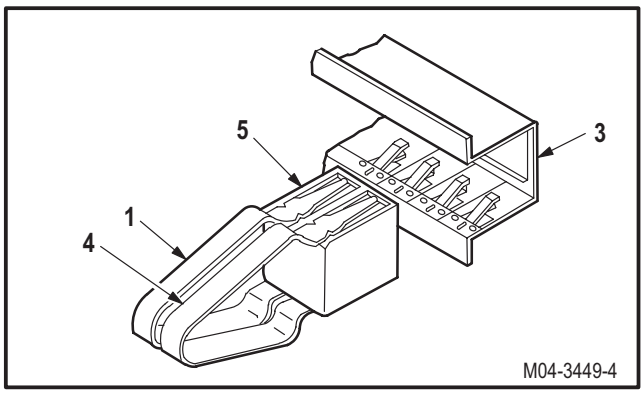
(1) Insert both relay removal tools (1) and (4) over relay (5).

(2) Press firmly on both tools (1) and (4). Pull tools (1) and (4) and relay (5) clear of relay mount (3).



9.139.4. Cleaning

a. **Wipe relay mount with a clean rag.**



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9.139. ELECTRONIC RELAY AND MODULE REPLACEMENT – continued

9.139.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.126)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.126)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

d. **Check relay mount for cracks, nicks, or damaged connections.** None allowed.

9.139.6. Installation

NOTE

The following steps are typical for all single and double space relays.

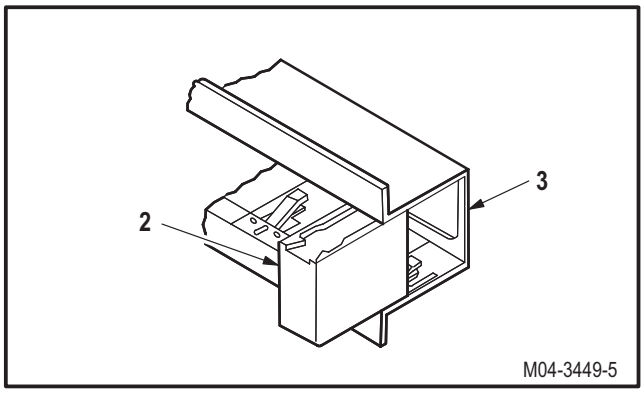
a. **Install relay (2) or (5).**

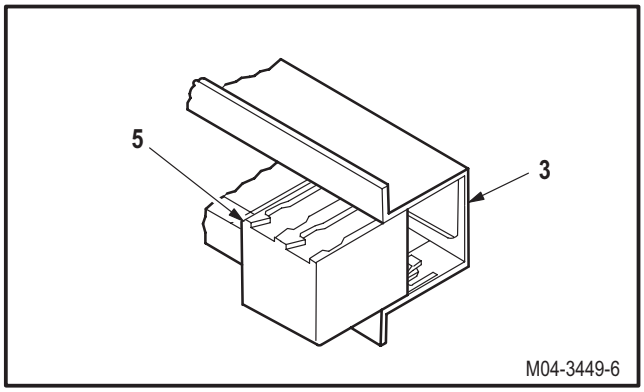
(1) Insert relay (2) or (5) into relay mount (3).

(2) Push firmly on relay (2) or (5) until it seats.

b. **Inspect (QA).**

c. **Perform maintenance operational check for relay being replaced** (TM 1-1520-238-T)**.**





END OF TASK

9.140. DATA LINK TERMINATION UNIT (DLTU) (CPG STATION) REPLACEMENT

9.140.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.140.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
1 1/4-inch blade putty knife (item 199, App H)
Ohmmeter (item 218, App H)
Adjustable air filtering respirator (item 262, App H)

Personnel Required:

67R Attack Helicopter Repairer
68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 9-1230-476-20-2
TM 55-1500-323-24

Materials/Parts:

Brush (item 34, App F)
Insulating compound kit (item 97, App F)

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

9.140.3. Removal

a. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**

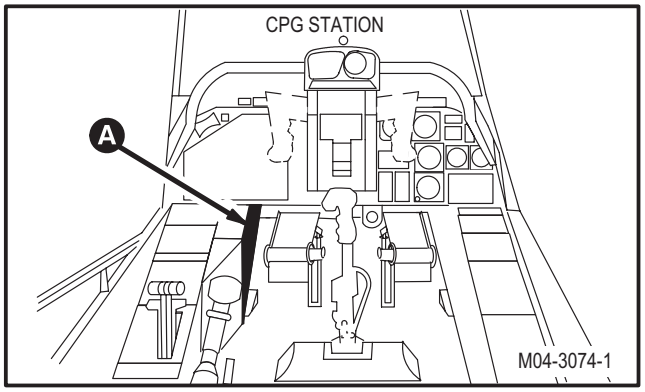
b. **On CPG circuit breaker panel No. 1, open seven MUX circuit breakers.**

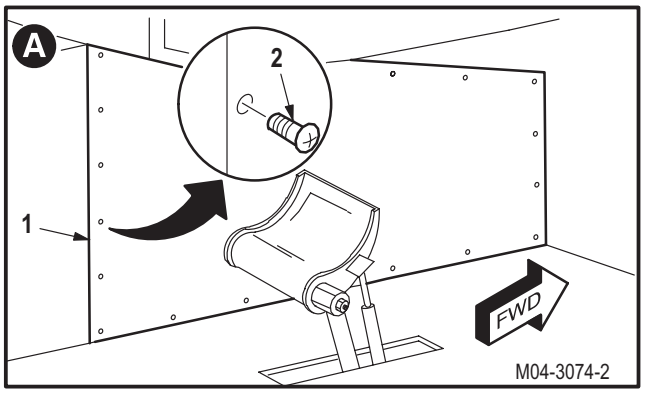
NOTE

This task is typical for DLTUs T11, T13, T15, T17, T19, and T21.

c. **Remove left forward console access panel (1).**

(1) Remove 20 screws (2).





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9.140. DATA LINK TERMINATION UNIT (DLTU) (CPG STATION) REPLACEMENT – continued

d. **Detach P639 (3) connector from receptacle (T11)J1 (4).**

e. **Detach P641 (5) connector from receptacle (T13)J1 (6).**

f. **Detach P643 (7) connector from receptacle (T15)J1 (8).**

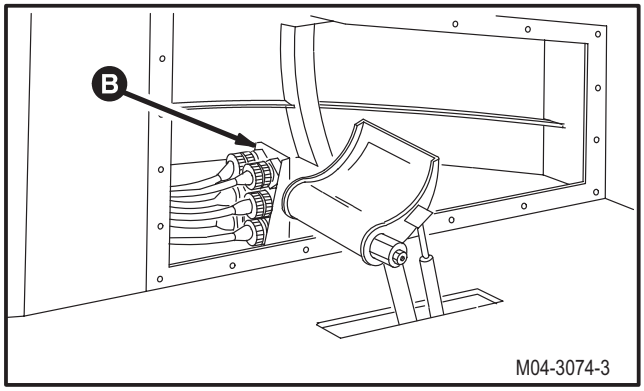
g. **Detach P645 (9) connector from receptacle (T17)J1 (10).**

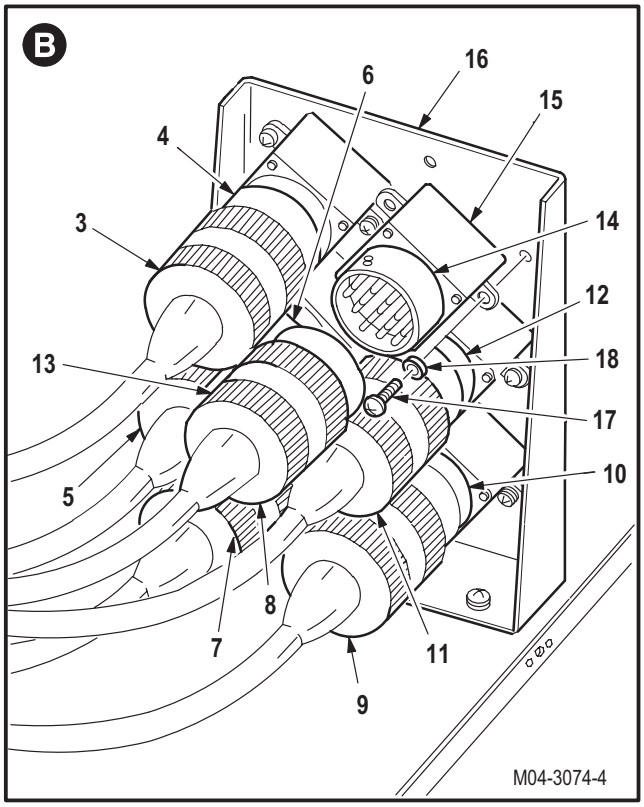
h. **Detach P647 (11) connector from receptacle (T19)J1 (12).**

i. **Detach P649 (13) connector from receptacle (T21)J1 (14).**

j. **Remove DLTU (15) from support bracket (16).**

(1) Remove two screws (17) and washers (18).





9.140.4. Cleaning

a. **Remove old sealant from DLTU mounting surface and support bracket.** Use putty knife.

b. **Clean removed and attaching parts** (para 1.47)**.**

c. **Clean mounting surfaces** (para 1.47)**.**

9.140.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.126)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.126)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

d. **Check support bracket nutplates for stripped or damaged threads and support bracket for cracks** (para 9.126)**.** Thread damage not to exceed 50 percent of one thread.

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9.140. DATA LINK TERMINATION UNIT (DLTU) (CPG STATION) REPLACEMENT – continued

9.140.6. Installation

a. **Install DLTU (15) on support bracket (16).**

(1) Install two screws (17) through washers (18) and DLTU (15) into bracket (16).

b. **Perform electrical bond check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

c. **Apply insulation compound around base of DLTU (5).** Use brush (item 34, App F) and insulating compound kit (item 97, App F). Discard brush in suitable container.

d. **Attach connector P639 (3) to receptacle (T11)J1 (4).**

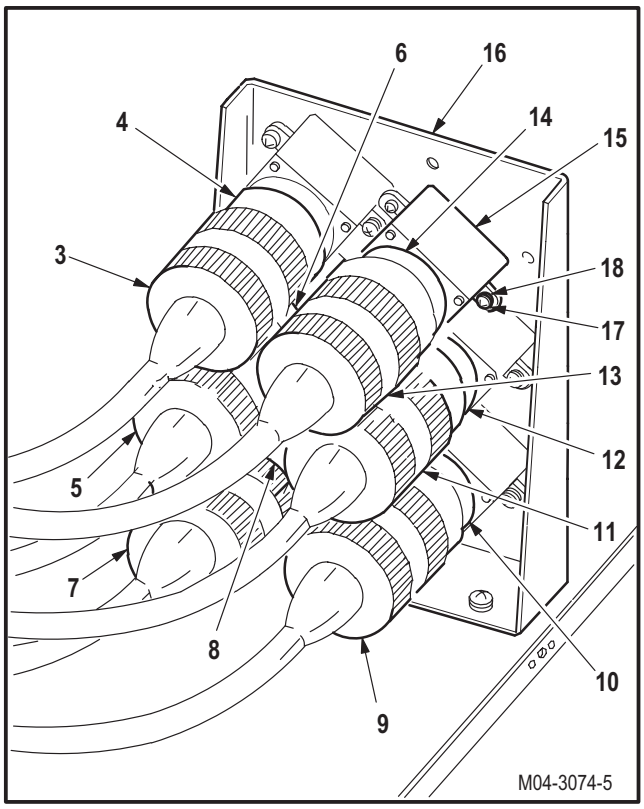
e. **Attach P641 (5) connector to receptacle (T13)J1 (6).**

f. **Attach P643 (7) connector to receptacle (T15)J1 (8).**

g. **Attach P645 (9) connector to receptacle (T17)J1 (10).**

h. **Attach P647 (11) connector to receptacle (T19)J1 (12).**

i. **Attach P649 (13) connector to receptacle (T21)J1 (14).**



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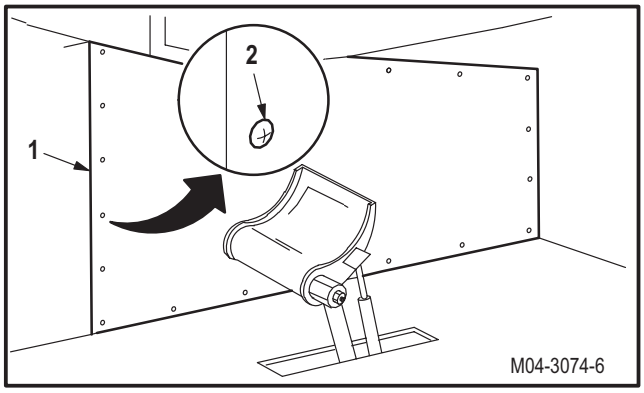
9.140. DATA LINK TERMINATION UNIT (DLTU) (CPG STATION) REPLACEMENT – continued

j. **Inspect (QA).**

k. **Install left forward console access panel (1).**

(1) Install 20 screws (2).

l. **Perform multiplex subsystem maintenance operational check** (TM 9-1230-476-20-2)**.**



END OF TASK

9.141. DATA LINK TERMINATION UNIT (DLTU) (NOSE SECTION) REPLACEMENT

9.141.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.141.2. Initial Setup

Tools:

Aircraft maintenance tool kit (item 373, App H)
Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
1 1/4-inch blade putty knife (item 199, App H)
Ohmmeter (item 218, App H)
Adjustable air filtering respirator (item 262, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 9-1230-476-20-2
TM 55-1500-323-24

Materials/Parts:

Brush (item 34, App F)
Insulating compound kit (item 97, App F)

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access cover R40 removed

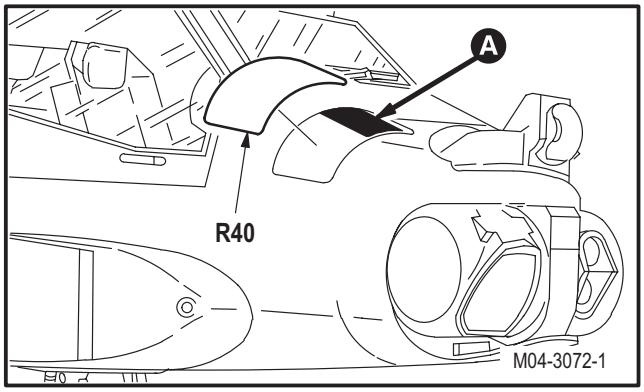
NOTE

This task is typical for DLTUs T12, T14, T16, T18, T20, and T22.

9.141.3. Removal

a. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**

b. **On CPG circuit breaker panel No. 1, open seven MUX circuit breaker.**



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9.141. DATA LINK TERMINATION UNIT (DLTU) (NOSE SECTION) REPLACEMENT – continued

c. **Detach P640 (1) connector from receptacle (T12)J1 (2).**

d. **Detach P642 (3) connector from receptacle (T14)J1 (4).**

e. **Detach P644 (5) connector from receptacle (T16)J1 (6).**

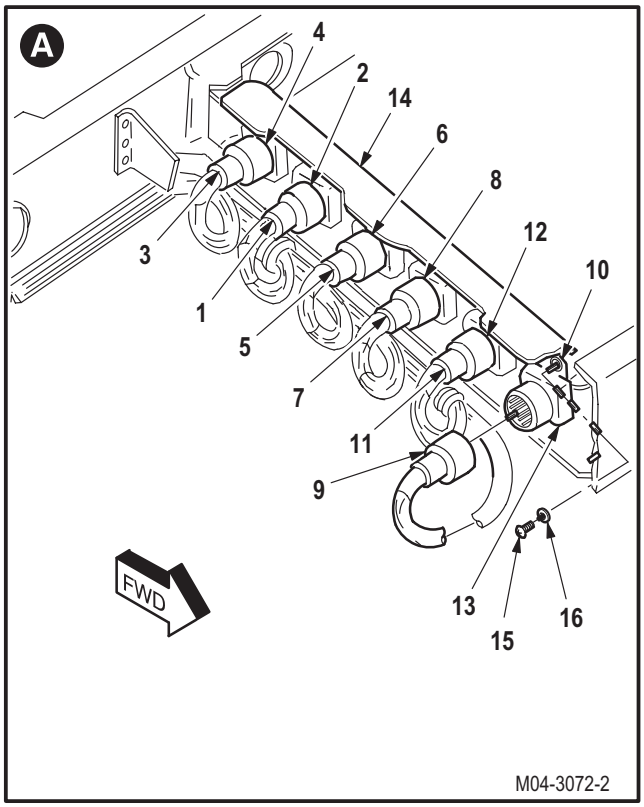
f. **Detach P646 (7) connector from receptacle (T18)J1 (8).**

g. **Detach P648 (9) connector from receptacle (T20)J1 (10).**

h. **Detach P650 (11) connector from receptacle (T22)J1 (12).**

i. **Remove DLTU (13) from support bracket (14).**

(1) Remove two screws (15) and washers (16).



9.141.4. Cleaning

a. **Remove old sealant from DLTU mounting surface and support.** Use putty knife.

b. **Clean removed and attaching parts** (para 1.47)**.**

c. **Clean mounting surfaces** (para 1.47)**.**

9.141.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.126)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.126)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

d. **Check support bracket nutplates for stripped or damaged threads and support bracket for cracks** (para 9.126)**.** Thread damage not to exceed 50 percent of one thread.

GO TO NEXT PAGE

9.141. DATA LINK TERMINATION UNIT (DLTU) (NOSE SECTION) REPLACEMENT – continued

9.141.6. Installation

a. **Install DLTU (13) on support (14).**

(1) Install two screws (15) through washers (16) and DLTU into support (14).

b. **Perform electrical bond check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

c. **Apply insulation compound around base of DLTU (13).** Use brush (item 34, App F) and insulating compound kit (item 97, App F). Discard brush in suitable container.

d. **Attach P640 (1) connector to receptacle (T12)J1 (2).**

e. **Attach P642 (3) connector to receptacle (T14)J1 (4).**

f. **Attach P644 (5) connector to receptacle (T16)J1 (6).**

g. **Attach P646 (7) connector to receptacle (T18)J1 (8).**

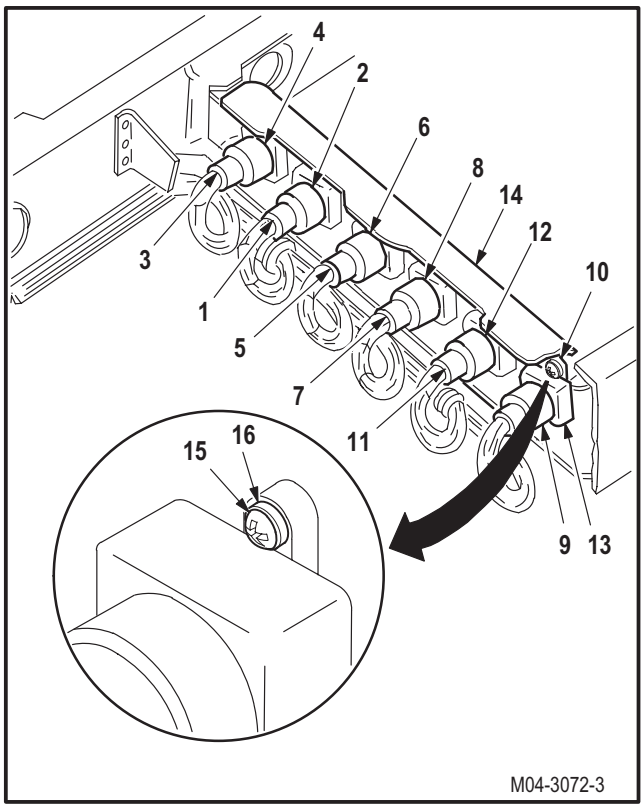
h. **Attach P648 (9) connector to receptacle (T20)J1 (10).**

i. **Attach P650 (11) connector to receptacle (T22)J1 (12).**

j. **Inspect (QA).**

k. **Install access cover R40** (para 2.2)**.**

l. **Perform multiplex subsystem maintenance operational check** (TM 9-1230-476-20-2)**.**



END OF TASK

9.142. DATA LINK TERMINATION UNIT (DLTU) (LEFT FORWARD CATWALK AREA) REPLACEMENT

9.142.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.142.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
1 1/4-inch blade putty knife (item 199, App H)
Ohmmeter (item 218, App H)
Adjustable air filtering respirator (item 262, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 9-1230-476-20-2
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access doors T250L, T250R, T290L, T290R, and L325 opened

Materials/Parts:

Brush (item 34, App F)
Insulating compound kit (item 97, App F)

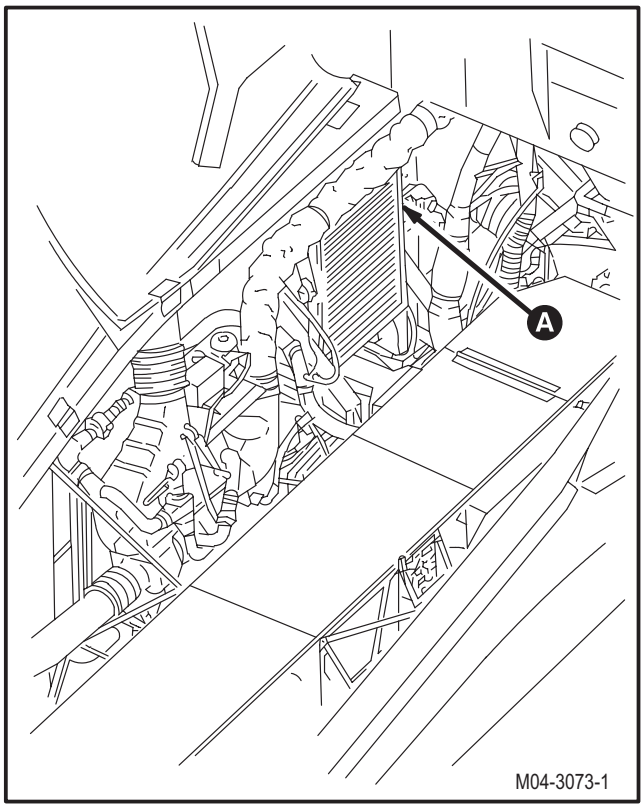
NOTE

This task is typical for DLTUs T25, T27, T29, and T31.

9.142.3. Removal

a. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**

b. **On CPG circuit breaker panel No. 1, open seven MUX circuit breakers.**



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9.142. DATA LINK TERMINATION UNIT (DLTU) (LEFT FORWARD CATWALK AREA) REPLACEMENT – continued

c. **Detach P653 (1) connector from receptacle (T25)J1 (2).**

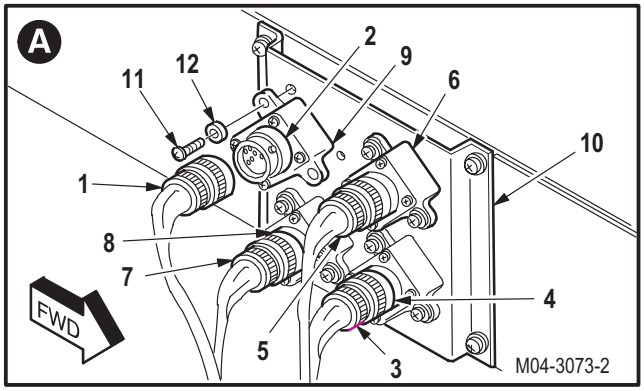
d. **Detach P655 (3) connector from receptacle (T27)J1 (4).**

e. **Detach P659 (5) connector from receptacle (T29)J1 (6).**

f. **Detach P657 (7) connector from receptacle (T31)J1 (8).**

g. **Remove DLTU (9) from support bracket (10).**

(1) Remove two screws (11) and washers (12).



9.142.4. Cleaning

a. **Remove old sealant from DLTU mounting surface and support bracket.** Use putty knife.

b. **Clean removed and attaching parts** (para 1.47)**.**

c. **Clean mounting surfaces** (para 1.47)**.**

9.142.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.126)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.126)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

d. **Check support bracket nutplates for stripped or damaged threads and support bracket for cracks** (para 9.126)**.** Thread damage not to exceed 50 percent of one thread.

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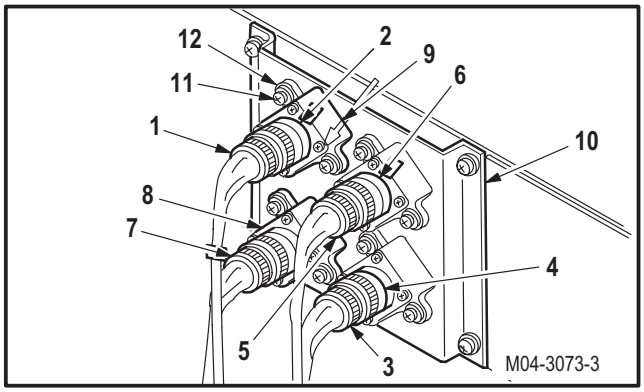
9.142. DATA LINK TERMINATION UNIT (DLTU) (LEFT FORWARD CATWALK AREA) REPLACEMENT – continued

9.142.6. Installation



a. **Install DLTU (9) on support bracket (10).**

(1) Install two screws (11) through washers (12) and DLTU (9) into bracket (10).

b. **Perform electrical bond check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

c. **Apply insulation compound around base of DLTU (9).** Use brush (item 34, App F) and insulating compound kit (item 97, App F). Discard brush in suitable container.

d. **Attach P653 (1) connector to receptacle (T25)J1 (2).**

e. **Attach P655 (3) connector to receptacle (T27)J1 (4).**

f. **Attach P659 (5) connector to receptacle (T29)J1 (6).**

g. **Attach P657 (7) connector to receptacle (T31)J1 (8).**

h. **Inspect (QA).**

i. **Secure access doors T250L, T250R, T290L, T290R, and L325** (para 2.2)**.**

j. **Perform multiplex subsystem maintenance operational check** (TM 9-1230-476-20-2)**.**

END OF TASK

9.143. DATA LINK TERMINATION UNIT (DLTU) (RIGHT FORWARD CATWALK AREA) REPLACEMENT

9.143.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.143.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
1 1/4-inch blade putty knife (item 199, App H)
Ohmmeter (item 218, App H)
Adjustable air filtering respirator (item 262, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 9-1230-476-20-2
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access doors T250L, T250R, T290L, T290R, and L325 opened

Materials/Parts:

Brush (item 34, App F)
Insulating compound kit (item 97, App F)

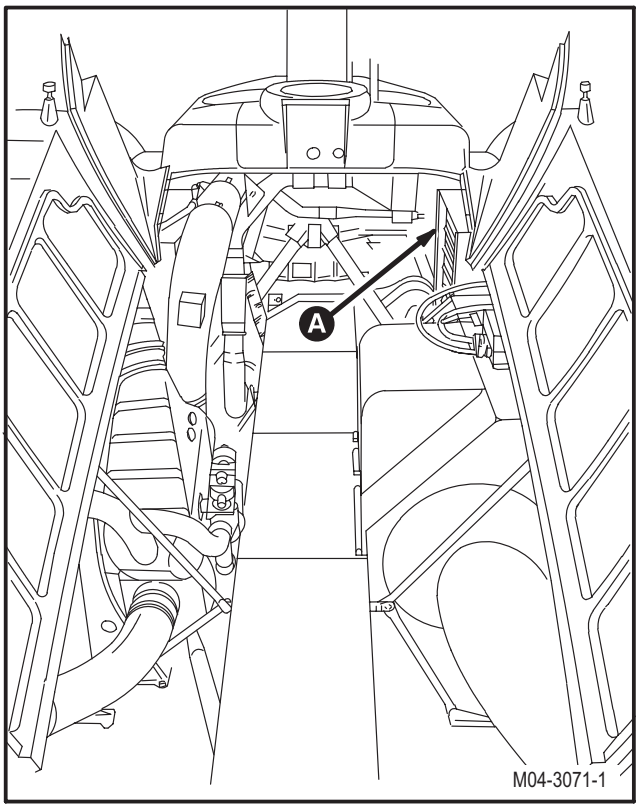
NOTE

This task is typical for DLTUs T26, T28, T30, and T32.

9.143.3. Removal

a. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**

b. **On CPG circuit breaker panel No. 1, open seven MUX circuit breakers.**



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9.143. DATA LINK TERMINATION UNIT (DLTU) (RIGHT FORWARD CATWALK AREA) REPLACEMENT – continued

c. **Detach P654 (1) connector from receptacle (T26)J1 (2).**

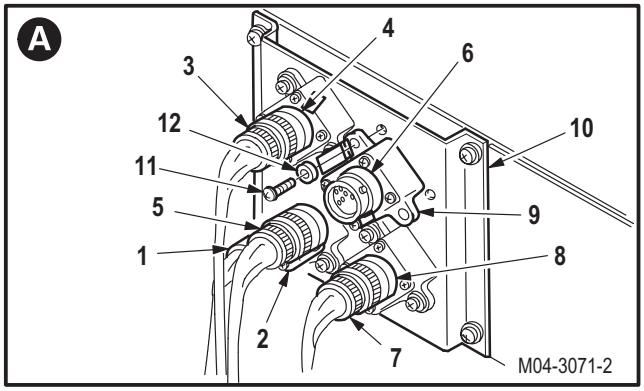
d. **Detach P656 (3) connector from receptacle (T28)J1 (4).**

e. **Detach P658 (5) connector from receptacle (T30)J1 (6).**

f. **Detach P660 (7) connector from receptacle (T32)J1 (8).**

g. **Remove DLTU (9) from support bracket (10).**

(1) Remove two screws (11) and washers (12).



9.143.4. Cleaning

a. **Remove old sealant from DLTU mounting surface and support bracket.** Use putty knife.

b. **Check support bracket for corrosion** (para 1.49)**.**

c. **Clean removed and attaching parts** (para 1.47)**.**

d. **Clean mounting surfaces** (para 1.47)**.**

9.143.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.126)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.126)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

d. **Check support bracket nutplates for stripped or damaged threads and support bracket for cracks** (para 9.126)**.** Thread damage not to exceed 50 percent of one thread.

GO TO NEXT PAGE

9.143. DATA LINK TERMINATION UNIT (DLTU) (RIGHT FORWARD CATWALK AREA) REPLACEMENT – continued

9.143.6. Installation

a. **Install DLTU (9) on support bracket (10).**

(1) Install two screws (11) through washers (12) and DLTU (9) into bracket (10).

b. **Perform electrical bond check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

c. **Apply insulation compound around base of DLTU (9).** Use brush (item 34, App F) and insulating compound kit (item 97, App F). Discard brush in suitable container.

d. **Attach P654 (1) connector to receptacle (T26)J1 (2).**

e. **Attach P656 (3) connector to receptacle (T28)J1 (4).**

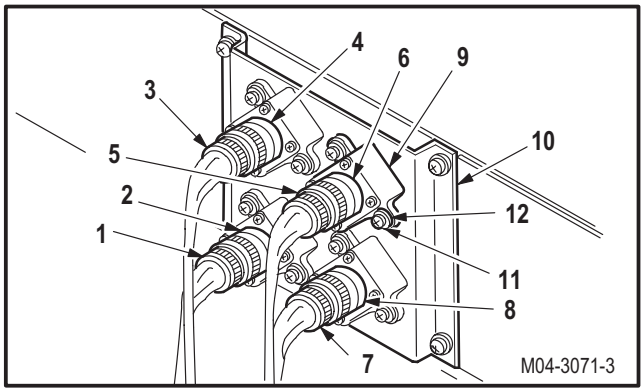
f. **Attach P658 (5) connector to receptacle (T30)J1 (6).**

g. **Attach P660 (7) connector to receptacle (T32)J1 (8).**

h. **Inspect (QA).**

i. **Secure access doors T250L, T250R, T290L, T290R, and L325** (para 2.2)**.**

j. **Perform multiplex subsystem maintenance operational check** (TM 9-1230-476-20-2)**.**



END OF TASK

9.144. DATA LINK TERMINATION UNIT (DLTU) (LEFT AFT CATWALK AREA) REPLACEMENT

9.144.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.144.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
1 1/4-inch blade putty knife (item 199, App H)
Ohmmeter (item 218, App H)
Adjustable air filtering respirator (item 262, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 9-1230-476-20-2
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access fairing T325 removed

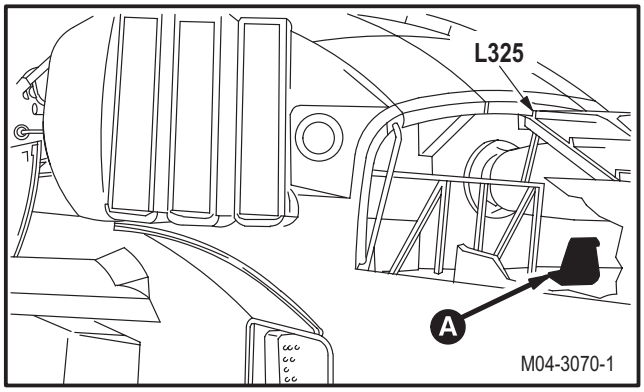
Materials/Parts:

Brush (item 34, App F)
Insulating compound kit (item 97, App F)

9.144.3. Removal

a. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**

b. **On CPG circuit breaker panel No. 1, open seven MUX circuit breakers.**



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9.144. DATA LINK TERMINATION UNIT (DLTU) (LEFT AFT CATWALK AREA) REPLACEMENT – continued

c. **Detach connector P663 (1) from receptacle (T35)J1 (2) on DLTU (3).**

d. **Remove DLTU (3) from bracket (4).**

(1) Remove two screws (5) and washers (6).

9.144.4. Cleaning

a. **Remove old sealant from DLTU mounting surface and support bracket.** Use putty knife.

b. **Clean removed and attaching parts** (para 1.47)**.**

c. **Clean mounting surfaces** (para 1.47)**.**

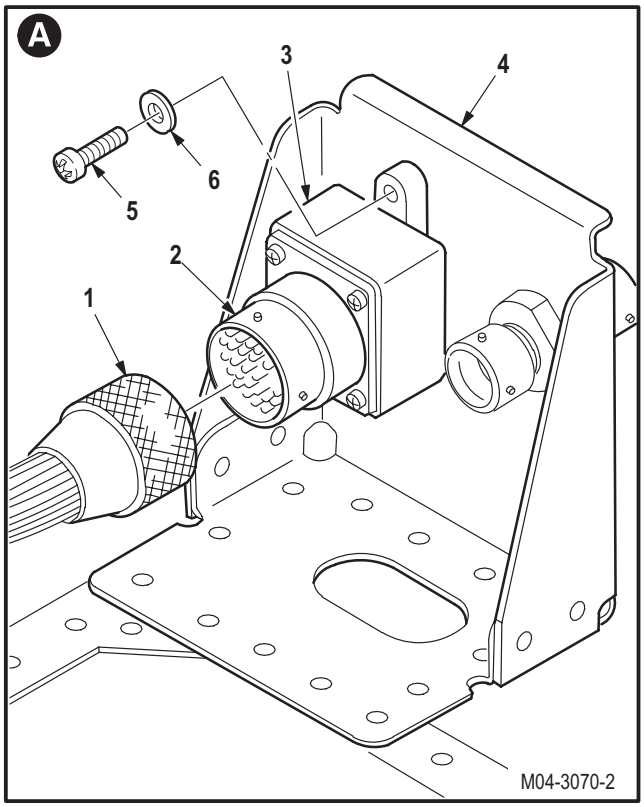
9.144.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.126)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.126)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

d. **Check support bracket nutplates for stripped or damaged threads and support bracket for cracks** (para 9.126)**.** Thread damage not to exceed 50 percent of one thread.



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9.144. DATA LINK TERMINATION UNIT (DLTU) (LEFT AFT CATWALK AREA) REPLACEMENT – continued

9.144.6. Installation

a. **Install DLTU (3) on support bracket (4).**

(1) Install two screws (5) through washers (6) and DLTU (3) into bracket (4).

b. **Perform electrical bond check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

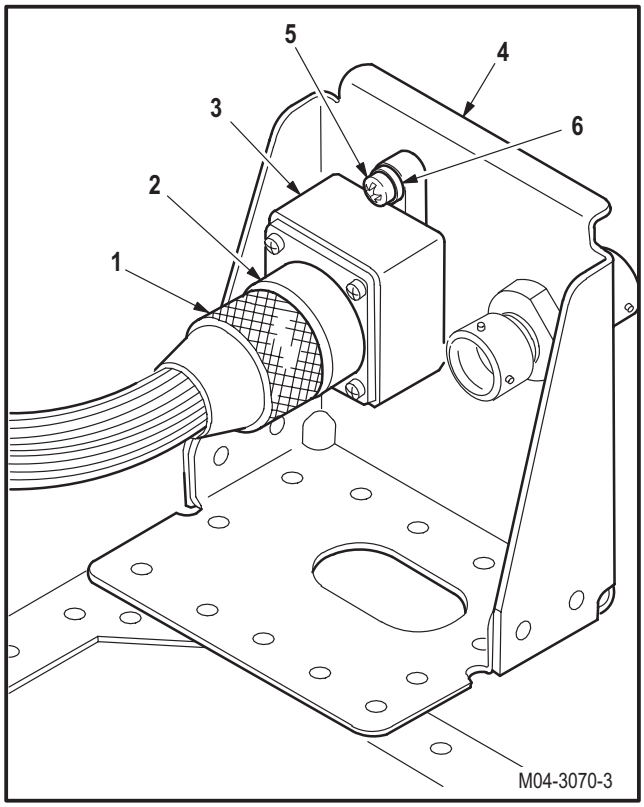
c. **Apply insulation compound around base of DLTU (3).** Use brush (item 34, App F) and insulating compound kit (item 97, App F). Discard brush in suitable container.

d. **Attach connector P663 (1) to receptacle (T35)J1 (2) on DLTU (3).**

e. **Inspect (QA).**

f. **Install access fairing T325** (para 2.2)**.**

g. **Perform multiplex subsystem maintenance operational check** (TM 9-1230-476-20-2)**.**



END OF TASK

9.145. DATA LINK TERMINATION UNIT (DLTU) (AFT AVIONICS BAY) REPLACEMENT

9.145.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.145.2. Initial Setup

Tools:

Aircraft maintenance tool kit (item 373, App H)
Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
1 1/4-inch blade putty knife (item 199, App H)
Ohmmeter (item 218, App H)
Adjustable air filtering respirator (item 262, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 9-1230-476-20-2
TM 55-1500-323-24

Materials/Parts:

Brush (item 34, App F)
Insulating compound kit (item 97, App F)

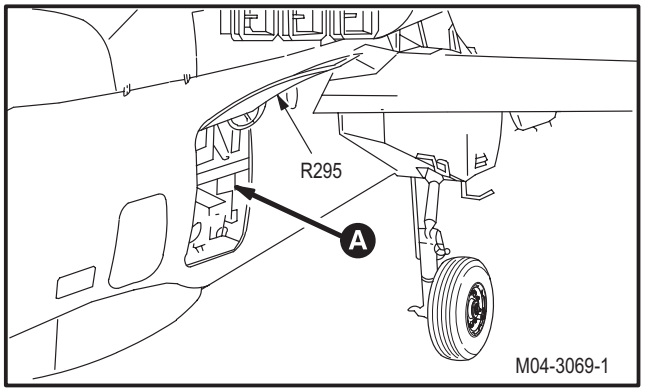
Equipment Conditions:

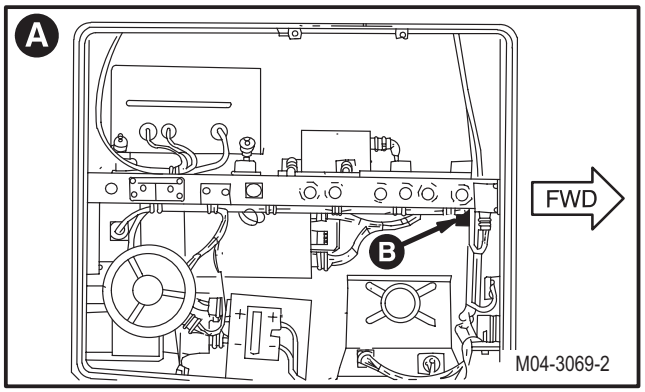
Ref	Condition
1.57	Helicopter safed
2.2	Access door R295 opened

9.145.3. Removal

a. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**

b. **On CPG circuit breaker panel No. 1, open seven MUX circuit breakers.**





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9.145. DATA LINK TERMINATION UNIT (DLTU) (AFT AVIONICS BAY) REPLACEMENT – continued

c. **Detach connector P664 (1) from receptacle (T36)J1 (2) on DLTU (3).**

d. **Remove DLTU (3) from bulkhead (4).**

(1) Remove two screws (5) and washers (6).

9.145.4. Cleaning

a. **Remove old sealant from DLTU mounting surface and support bracket.** Use putty knife.

b. **Clean removed and attaching parts** (para 1.47)**.**

c. **Clean mounting surfaces** (para 1.47)**.**

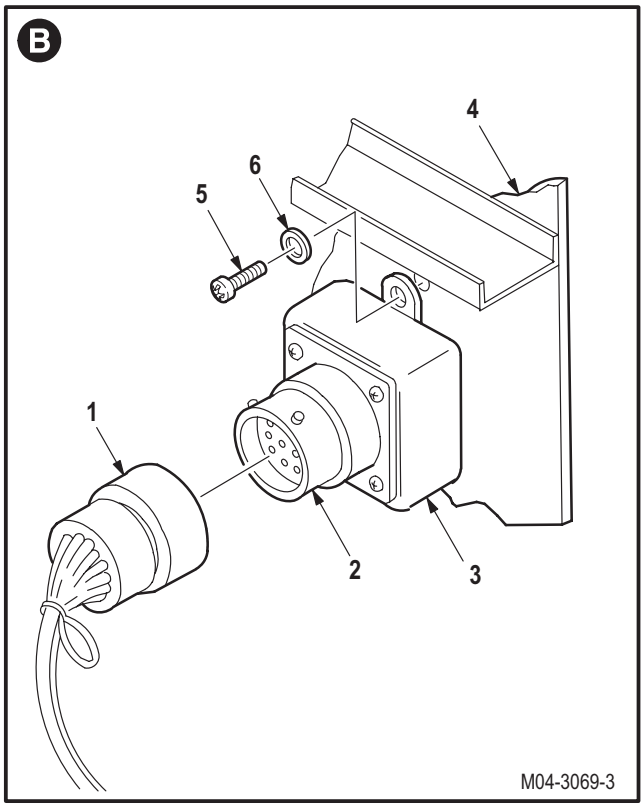
9.145.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.126)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.126)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

d. **Check support bracket nutplates for stripped or damaged threads and support bracket for cracks** (para 9.126)**.** Thread damage not to exceed 50 percent of one thread.



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9.145. DATA LINK TERMINATION UNIT (DLTU) (AFT AVIONICS BAY) REPLACEMENT – continued

9.145.6. Installation

a. **Install DLTU (3) on bulkhead (4).**

(1) Install two screws (5) through washers (6) and DLTU (3) into bulkhead (4).

b. **Perform electrical bond check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

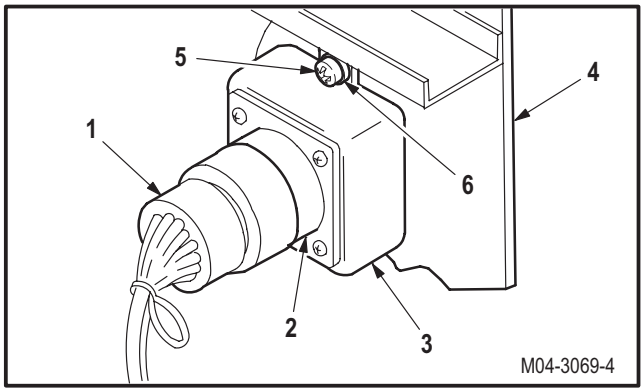
c. **Apply insulation compound around base of DLTU (3).** Use brush (item 34, App F) and insulating compound kit (item 97, App F). Discard brush in suitable container.

d. **Attach connector P664 (1) to receptacle (T36)J1 (2) on DLTU (3).**

e. **Inspect (QA).**

f. **Secure access door R295** (para 2.2)**.**

g. **Perform multiplex subsystem maintenance operational check** (TM 9-1230-476-20-2)**.**



END OF TASK

9.146. PILOT TAIL WHEEL LOCK SWITCH REMOVAL/INSTALLATION

9.146.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.146.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

References:

TM 1-1520-238-T
TM 9-1230-476-20-1

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
TM 9-1230-476-20-1	Pilot fire control panel removed

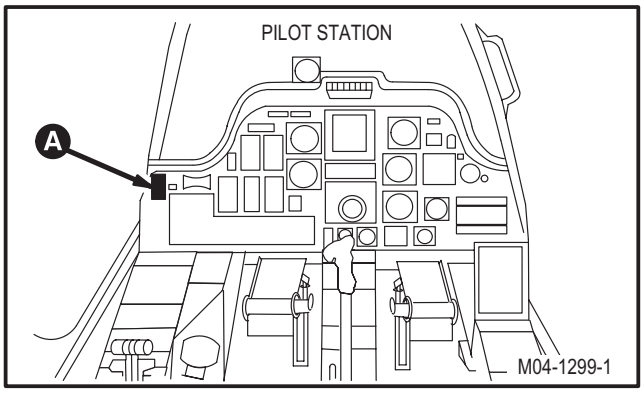
Personnel Required:

68X	Armament/Electrical System Repairer
68X3F	Armament/Electrical System Repairer/ Technical Inspector

9.146.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

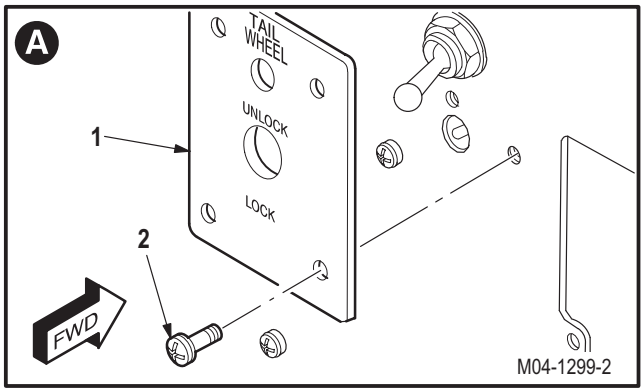
b. **On pilot aft circuit breaker panel, open six POWER circuit breakers.**



c. **Remove light indicating panel (1).**

(1) Remove four screws (2).

(2) Remove panel (1).



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9.146. PILOT TAIL WHEEL LOCK SWITCH REMOVAL/INSTALLATION – continued

d. **Remove tail wheel lock switch (A331)S1 (3) from pilot instrument panel (4).**

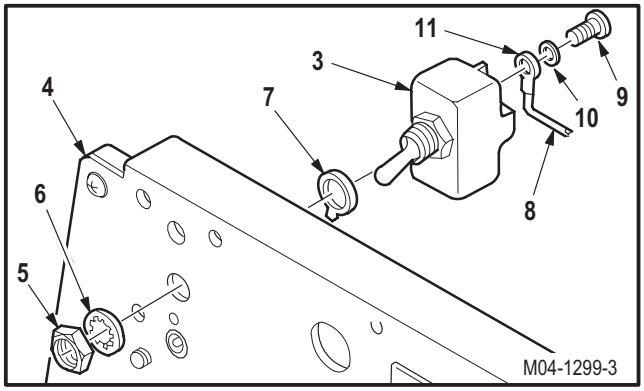
(1) Remove nut (5) and lockwasher (6).

(2) Remove switch (3) and lockring (7) from panel (4).

e. **Detach wires (8) from switch (A331)S1 (3).**

(1) Identify wires (8).

(2) Remove three screws (9), lockwashers (10), and terminal lugs (11).



9.146.4. Cleaning

a. **Clean indicating panel and switch mounting surface** (para 1.47)**.**

9.146.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.126)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.126)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

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9.146. PILOT TAIL WHEEL LOCK SWITCH REMOVAL/INSTALLATION – continued

9.146.6. Installation

a. **Attach identified wires (8) to switch (A331)S1 (3).**

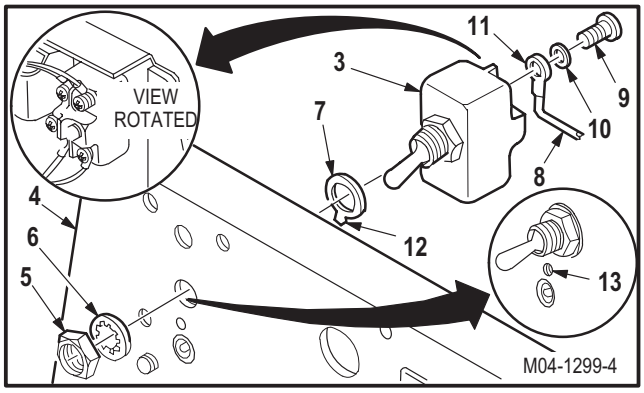
(1) Install three screws (9) through lockwashers (10) and lugs (11).

b. **Install switch (3) in panel (4).**

(1) Install lockring (7) on switch (3).

(2) Insert switch (3) so that tab (12) on lockring (7) seats in hole (13).

(3) Install lockwasher (6) and nut (5).



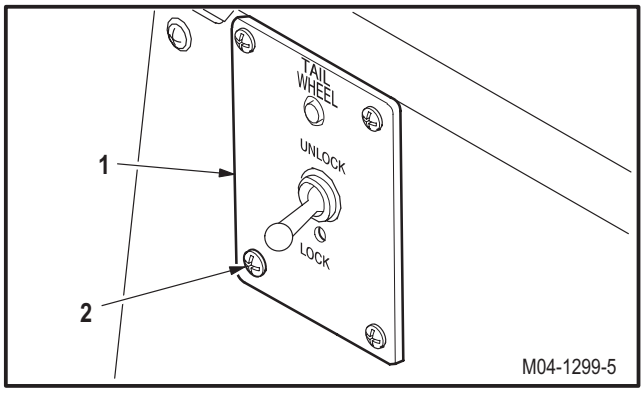
c. **Inspect (QA).**

d. **Install light indicating panel (1).**

(1) Install four screws (2).

e. **Install pilot fire control panel** (TM 9-1230-476-20-1)**.**

f. **Perform utility hydraulic system maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

9.147. PILOT EMERGENCY HYDRAULIC SWITCH REMOVAL/INSTALLATION

9.147.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.147.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

References:

TM 1-1520-238-T
TM 11-1520-238-23-1

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
TM 11-1520-238-23-1	Horizontal situation indicator removed

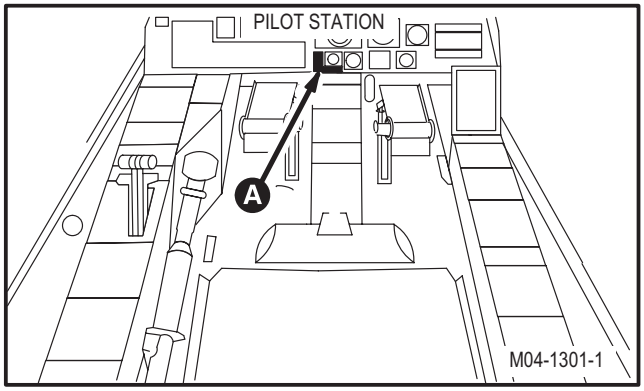
Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

9.147.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

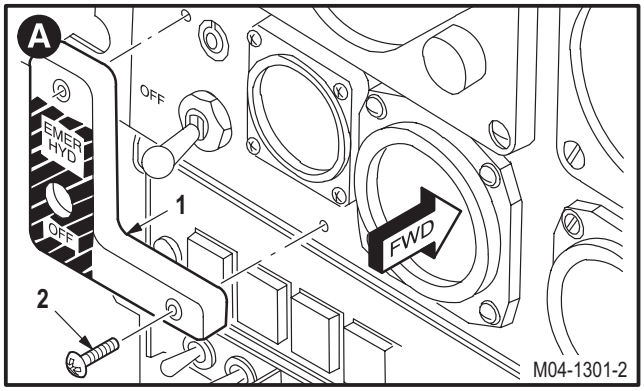
b. **On pilot center circuit breaker panel, open EMERG HYD and LT PRI circuit breakers.**



c. **Remove EMER HYD light indicating panel (1).**

(1) Remove two screws (2).

(2) Remove panel (1).



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9.147. PILOT EMERGENCY HYDRAULIC SWITCH REMOVAL/INSTALLATION – continued

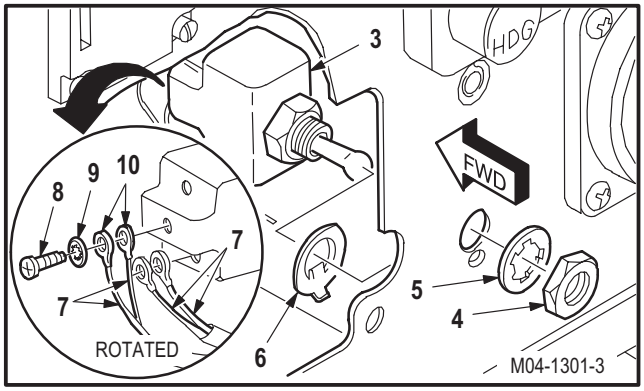
d. **Remove pilot EMER HYD switch (3).**

(1) Remove nut (4), lockwasher (5), and lockring (6).

e. **Detach wires (7) from switch (3).**

(1) Identify wires (7).

(2) Remove two screws (8), lockwashers (9), and terminal lugs (10).



9.147.4. Cleaning

a. **Clean switch mounting surface** (para 1.47)**.**

9.147.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.126)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.126)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.147.6. Installation

a. **Attach identified wires (7) to switch (3).**

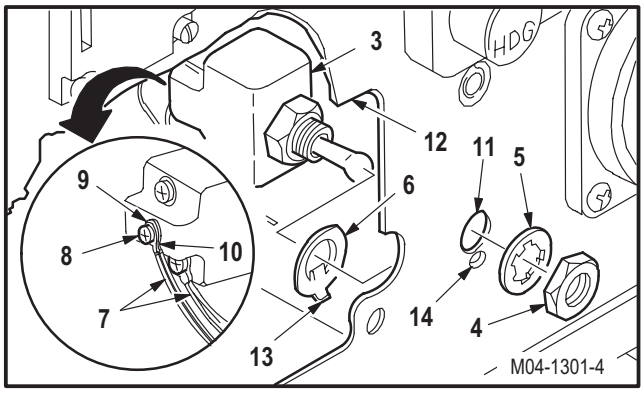
(1) Install two terminal lugs (10), lockwashers (9), and screws (8).

b. **Install pilot EMER HYD switch (3) in panel (12).**

(1) Position switch (3) in hole (11) so that tab (13) on lockring (6) seats in locator hole (14).

(2) Install lockwasher (5) and nut (4).

c. **Inspect (QA).**



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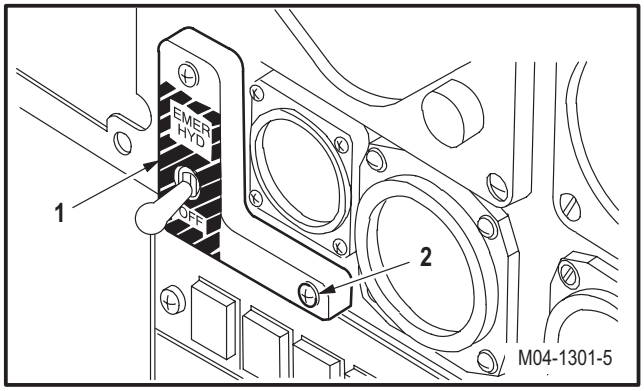
9.147. PILOT EMERGENCY HYDRAULIC SWITCH REMOVAL/INSTALLATION – continued

d. **Install EMER HYD light indicating panel (1).**

(1) Install two screws (2).

e. **Install horizontal situation indicator** (TM 11-1520-238-23-1)**.**

f. **Perform utility hydraulic system maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

9.148. STABILATOR AIRSPEED TRANSDUCER REMOVAL/INSTALLATION

9.148.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.148.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Ohmmeter (item 218, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Brush (item 34, App F)
Sealing compound (item 177, App F)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

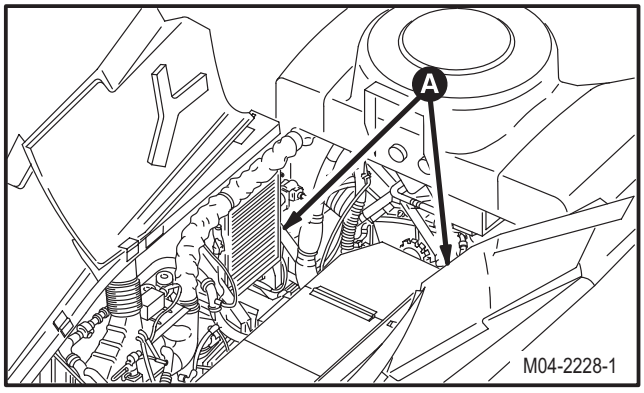
TM 1-1500-204-23
TM 1-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access doors T250L, T250R, T290L, T290R, and L325 opened

NOTE

This task is typical for No. 1 and/or No. 2 airspeed transducers.



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9.148. STABILATOR AIRSPEED TRANSDUCER REMOVAL/INSTALLATION – continued

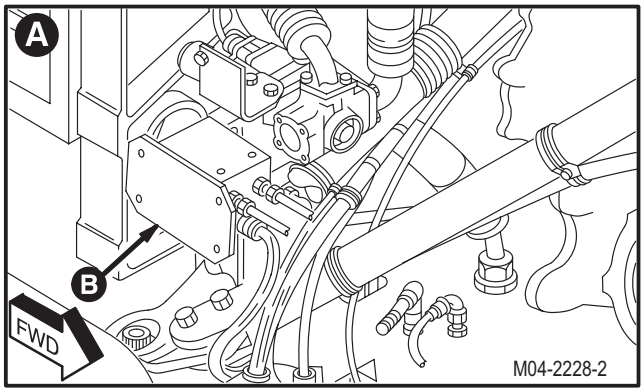
9.148.3. Removal

a. **Remove static line (1) from transducer (2).**

(1) Hold union (3). Remove nut (4).

b. **Disconnect pressure line (5) from transducer (2).**

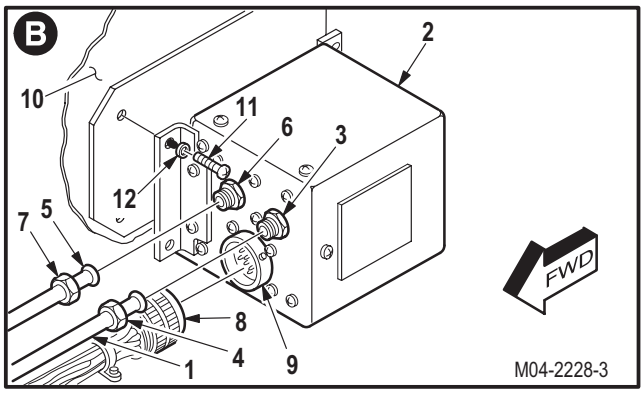
(1) Hold union (6). Remove nut (7).



c. **Detach connector P983 or P984 (8) from receptacle (MT17)J1 or (MT18)J1 (9).**

d. **Remove airspeed transducer (2) from airframe (10).**

(1) Remove four screws (11) and washers (12).



9.148.4. Cleaning

a. **Clean airspeed transducer and airframe** (para 1.47)**.**

9.148.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.126)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.126)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

d. **Check connector for cracks, broken connections, bent pins, or damaged threads** (para 9.126)**.**

GO TO NEXT PAGE

9.148. STABILATOR AIRSPEED TRANSDUCER REMOVAL/INSTALLATION – continued

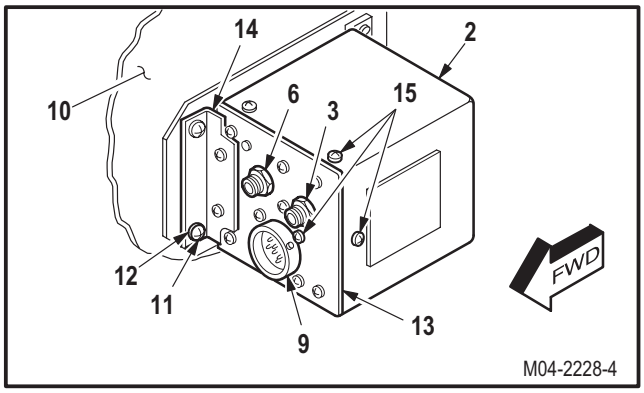
9.148.6. Installation

a. **Install transducer (2) on airframe (10).**

(1) Position transducer (2) on airframe (10).

(2) Install four screws (11) and washers (12) through transducer (2) into airframe (10).

(3) Apply a bead of sealing compound to airspeed transducer cover (13), union (6), union (3), two brackets (14), connector (9), and all screws (15). Use sealing compound (item 177, App F) and brush (item 34, App F).



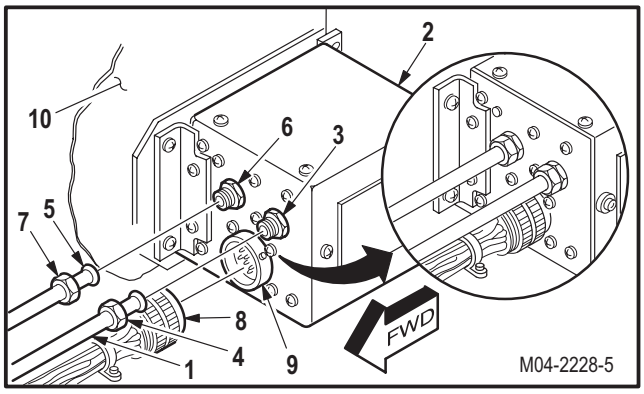
b. **Attach connector P983 or P984 (8) to receptacle (MT17)J1 or (MT18)J1 (9).**

c. **Install pressure line (5) to transducer (2).**

(1) Hold union (6). Install nut (7).

d. **Install static line (1) to transducer (2).**

(1) Hold union (3). Install nut (4).



e. **Perform electrical bond check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

f. **Leak test pitot static tube** (TM 1-1500-204-23)**.**

g. **Inspect (QA).**

h. **Perform stabilator maintenance operational check** (TM 1-1520-238-T)**.**

i. **Secure access doors T250L, T250R, T290L, T290R, and L325** (para 2.2)**.**

END OF TASK

9.149. SQUAT SWITCH TARGET PLATE ADJUSTMENT

9.149.1. Description

This task covers: Removal. Adjustment. Installation.

9.149.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
0.0015 - 0.0250-inch thickness gage (item 152, App H)

Materials/Parts:

Wire (item 226, App F)

Personnel Required:

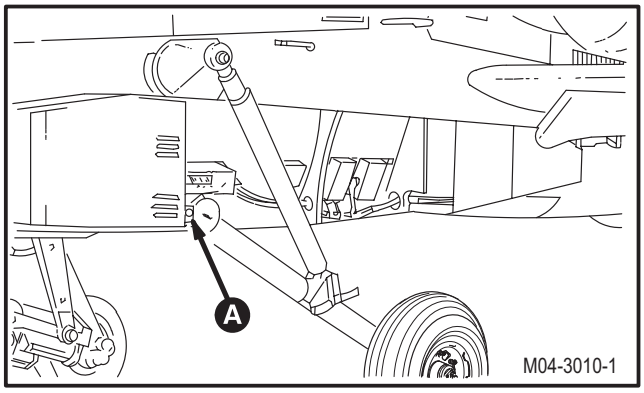
68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 11-1520-238-23-2

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Fairing L140 removed
1.66	Helicopter on jacks

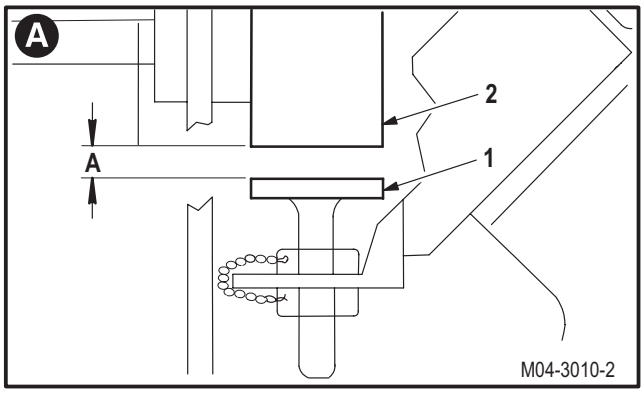


9.149.3. Removal

a. **Measure clearance A between top of target plate (1) and bottom of squat switch (2).**

(1) Clearance must be **0.150 to 0.190 INCH**. Use thickness gage.

b. **Lower helicopter to ground** (para 1.66)**.**



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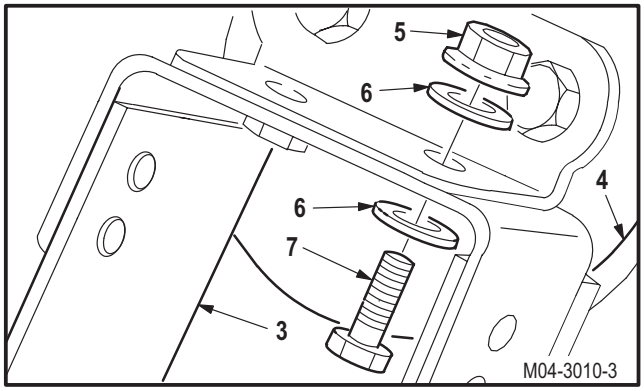
9.149. SQUAT SWITCH TARGET PLATE ADJUSTMENT – continued

c. **Remove target bracket (3) from main landing gear (4).**

(1) Remove two nuts (5) and washers (6).

(2) Remove two bolts (7) and washers (6).



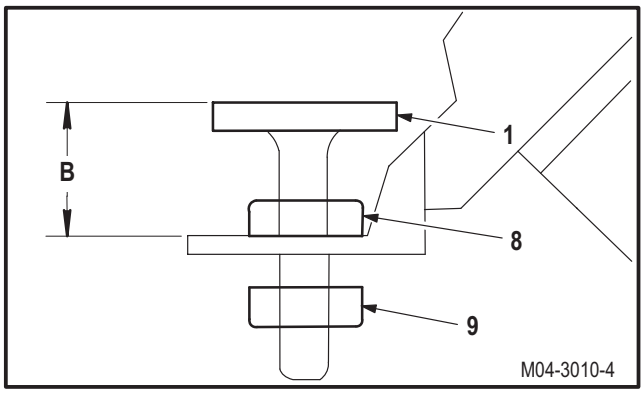
9.149.4. Adjustment

a. **Adjust target plate (1).**

(1) Remove lockwire from top nut (8) and bottom nut (9).

(2) Loosen bottom nut (9).

(3) Adjust target plate height B to achieve correct clearance A. Use thickness gage.



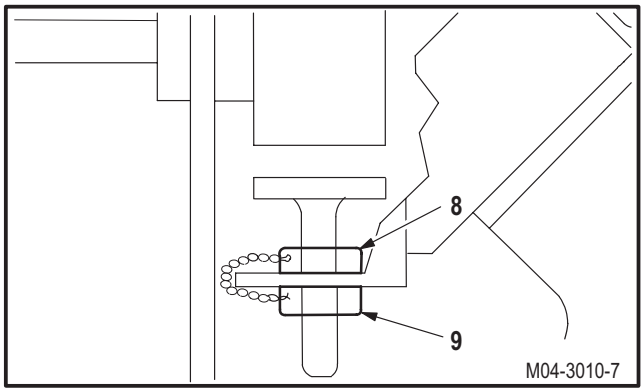
Example:

Clearance A (from step a).	**0.200 INCH**
Required clearance.	**0.170 INCH**
Height B adjustment.	**0.030 INCH**

Adjustment. Increase height B **0.030 INCH**.

(4) Tighten bottom nut (9).

(5) Lockwire top nut (8) to bottom nut (9). Use wire (item 226, App F).



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9.149. SQUAT SWITCH TARGET PLATE ADJUSTMENT – continued

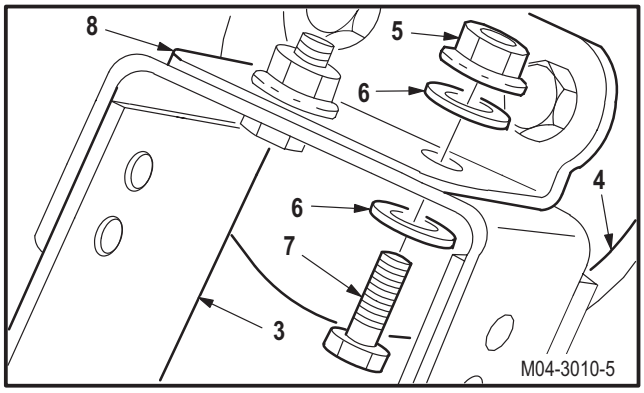
9.149.5. Installation

a. **Install target bracket (3) on main landing gear (4).**

(1) Install two bolts (7) through washers (6) and brackets (3) and (8).

(2) Install two washers (6) and nuts (5) on bolts (7).

b. **Raise helicopter** (para 1.66)**.**



c. **Measure clearance A between top of target plate (1) and bottom of switch (2).**

(1) Clearance must be **0.150 to 0.190 INCH**. Use thickness gage.

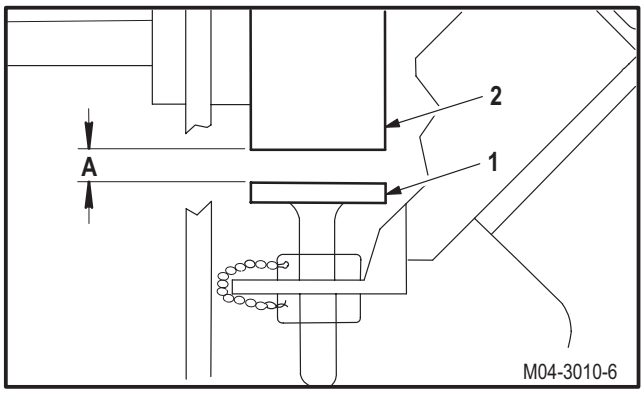
d. **If clearance A is not within limits, repeat steps 9.149.3b thru 9.149.4c until proper clearance is obtained.**

e. **Lower helicopter.** Remove jacks (para 1.66).

f. **Inspect (QA).**

g. **Install fairing L140** (para 2.2)**.**

h. **Perform intercommunication system (ICS) maintenance operational check** (TM 11-1520-238-23-2)**.**



END OF TASK

9.150. AFT DECK RIGHT SIDE CONNECTOR BRACKET AND WIRE HARNESS SUPPORT BRACKET REMOVAL/INSTALLATION

9.150.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.150.2. Initial Setup

Tools:

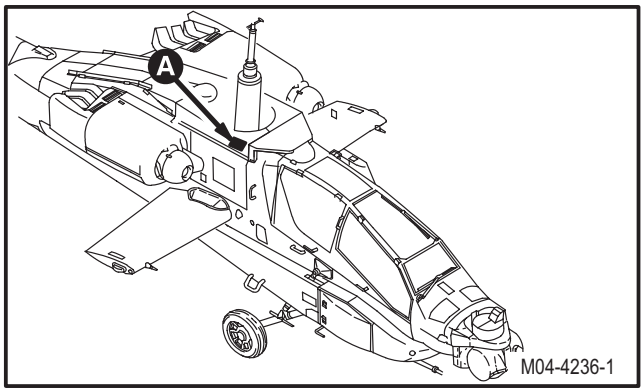
Electrical tool kit (item 378, App H)
Ohmmeter (item 218, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Remove fairing T205R



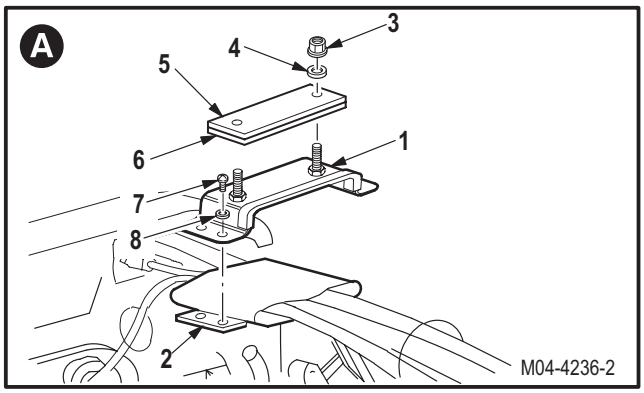
9.150.3. Removal

a. **Remove connector bracket (1) from support bracket (2).**

(1) Remove two nuts (3) and washers (4).

(2) Remove connectors on W118 (5) and W102 (6) from bracket (1).

(3) Remove four screws (7) and washers (8) from support bracket (2).



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9.150. AFT DECK RIGHT SIDE CONNECTOR BRACKET AND WIRE HARNESS SUPPORT BRACKET REMOVAL/INSTALLATION – continued

9.150.4. Cleaning

a. **Clean mounting area** (para 1.47)**.**

9.150.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.126)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.126)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.150.6. Installation

a. **Install bracket (1) on support bracket (2).**

(1) Install four screws (7) and washers (8) through bracket (1) in support bracket (2).

(2) Install connectors on W118 (5) and W102 (6) on bracket (1).

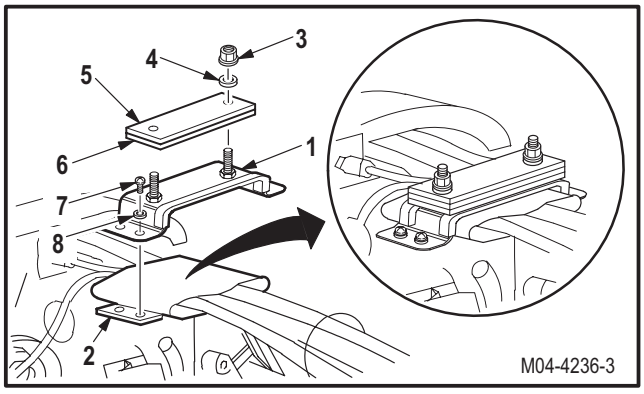
(3) Install two washers (4) and nuts (3).

b. **Perform electrical bond check on attaching hardware.**

(1) Bond shall be **0.0025 OHMS** or less. Use ohmmeter.

c. **Inspect (QA).**

d. **Install fairing T205R** (para 2.2)**.**



END OF TASK

9.151. AFT DECK LEFT SIDE CONNECTOR BRACKET AND WIRE HARNESS SUPPORT BRACKET REMOVAL/INSTALLATION

9.151.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.151.2. Initial Setup

Tools:

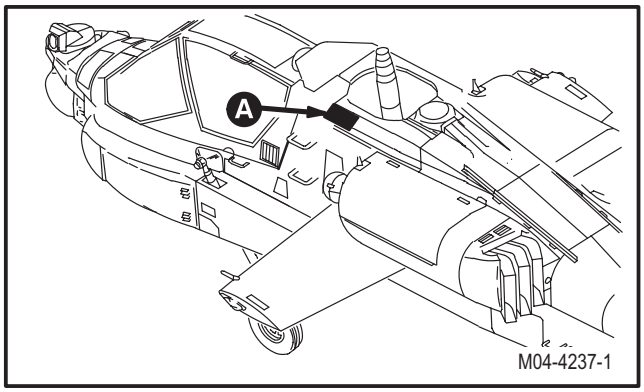
Electrical tool kit (item 378, App H)
Ohmmeter (item 218, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Remove fairing T205L



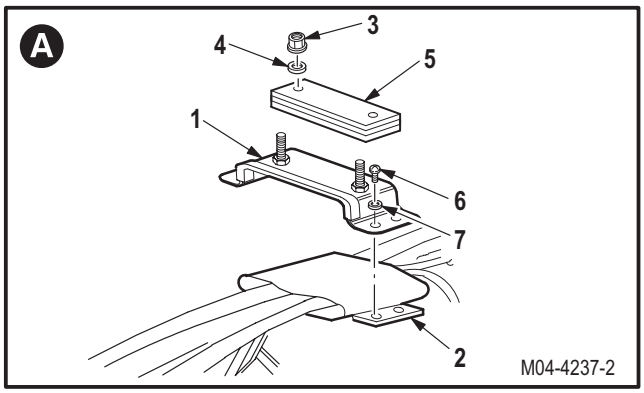
9.151.3. Removal

a. **Remove connector bracket (1) from support bracket (2).**

(1) Remove two nuts (3) and washers (4).

(2) Remove connectors on W211 (5) from bracket (1).

(3) Remove four screws (6) and washers (7) from support bracket (2).



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9.151. AFT DECK LEFT SIDE CONNECTOR BRACKET AND WIRE HARNESS SUPPORT BRACKET REMOVAL/INSTALLATION – continued

9.151.4. Cleaning

a. **Clean mounting area** (para 1.47)**.**

9.151.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.126)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.126)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

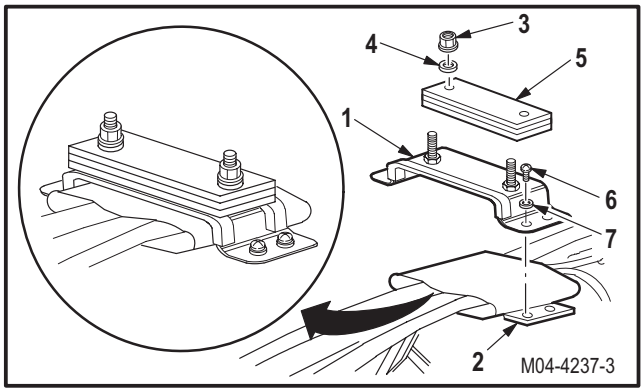
9.151.6. Installation

a. **Install bracket (1) on support bracket (2)**

(1) Install four screws (6) and washers (7) through bracket (1) in support bracket (2).

(2) Install connectors on W211 (5) on bracket (1).

(3) Install two nuts (3) and washers (4).



b. **Perform electrical bond check on attaching hardware.**

(1) Bond shall be **0.0025 OHMS** or less. Use ohmmeter.

c. **Inspect (QA).**

d. **Install fairing T205L** (para 2.2)**.**

END OF TASK

9.152. AIR TURBINE STARTER FLOW SWITCH AND TURBINE SPEED CUTOUT FLOW SWITCH REPLACEMENT

9.152.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.152.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Multimeter (item 215, App H)

References:

TM 1-1520-238-T
TM 55-1500-323-24

Personnel Required:

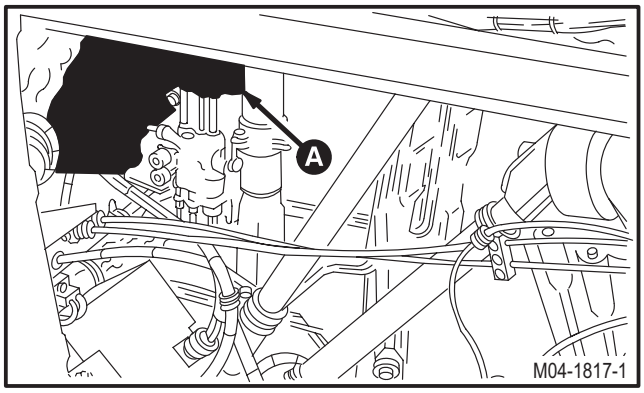
68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

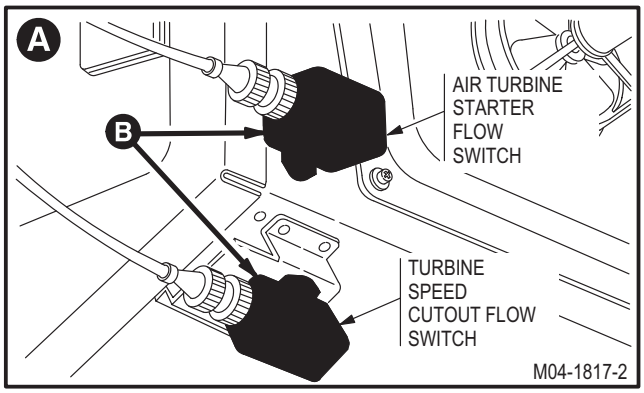
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access panel L200 removed

NOTE

This task is typical for the air turbine starter flow switch and the turbine speed cutout flow switch.





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9.152. AIR TURBINE STARTER FLOW SWITCH AND TURBINE SPEED CUTOUT FLOW SWITCH REPLACEMENT – continued

9.152.3. Removal

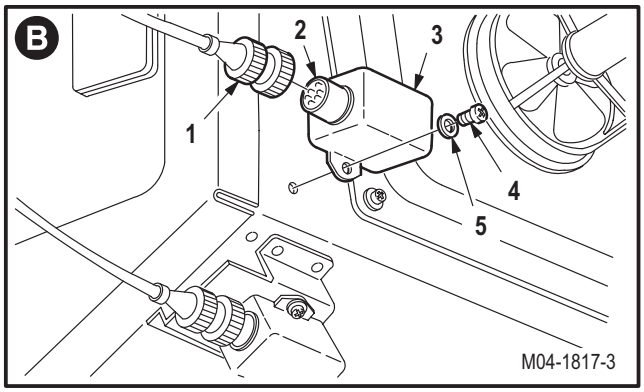
NOTE

Removal of air turbine starter flow switch requires detaching connector P64 from (A5)J1 and/or removal of the turbine speed cutout flow switch requires detaching connector P1370 from (A709)J1.

a. **Detach connector P64 (1) from receptacle (A5)J1 (2) or connector P1370 (1) from receptacle (A709)J1 (2).**

b. **Remove switch (3).**

(1) Remove two screws (4) and washers (5).



9.152.4. Cleaning

a. **Wipe removed and attaching parts** (para 1.47)**.**

9.152.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.126)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.126)**.**

c. **Check connectors and receptacles for cracks, broken connections, and bent or damaged pins** (para 9.126)**.**

d. **Check removed and attaching parts for corrosion** (para 1.49)**.**

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9.152. AIR TURBINE STARTER FLOW SWITCH AND TURBINE SPEED CUTOUT FLOW SWITCH REPLACEMENT – continued

9.152.6. Installation

NOTE

Installation of air turbine starter flow switch requires attaching connector P64 to connector (A5)J1 and/or installation of the turbine speed cutout flow switch requires attaching connector P1370 to (A709)J1.

a. **Install switch (3).**

(1) Install two washers (5) and screws (4).

b. **Attach connector P64 (1) to receptacle (A5)J1 (2) or connector P1370 (1) to receptacle (A709)J1 (2).**

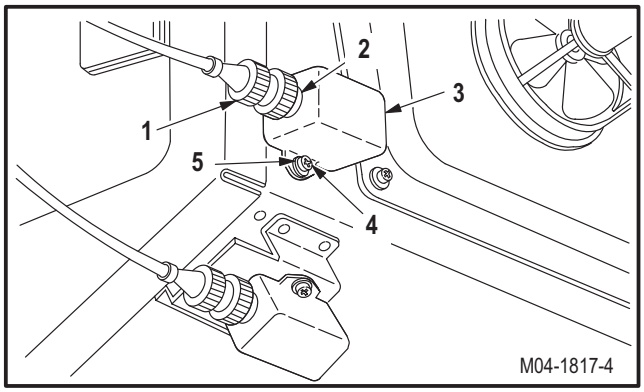
c. **Perform electrical bond check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

d. **Inspect (QA).**

e. **Install access panel L200** (para 2.2)**.**

f. **Perform power plants maintenance operational check (engine 1 or engine 2)** (TM 1-1520-238-T)**.**



END OF TASK

9.153. ELECTRICAL POWER DISTRIBUTION BOX VENTILATING FAN REMOVAL/INSTALLATION

9.153.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.153.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

Materials/Parts:

Strap (item 194, App F)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 1-1520-238-T
TM 55-1500-323-24

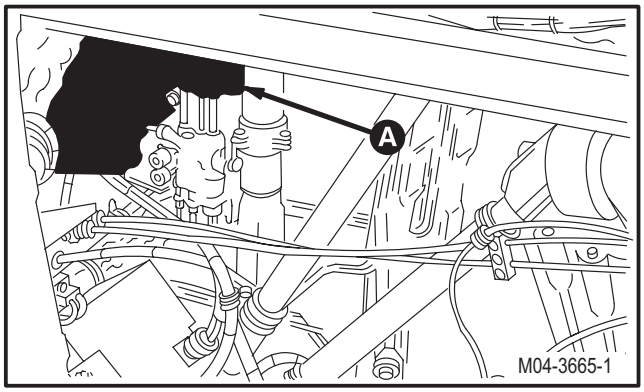
Equipment Conditions:

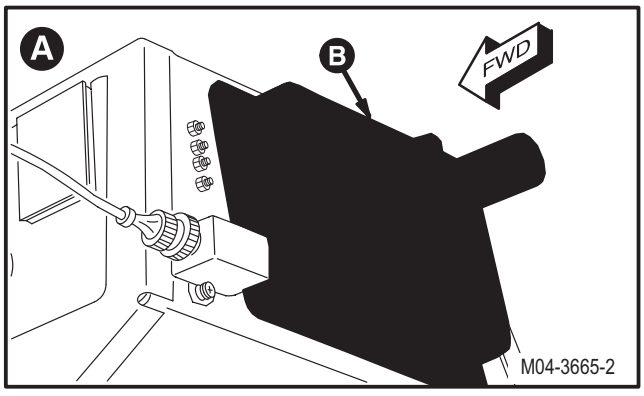
Ref	Condition
1.57	Helicopter safed
2.2	Access panel L190 and T205L removed

9.153.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot aft circuit breaker panel, open AFT FAN circuit breaker.**





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9.153. ELECTRICAL POWER DISTRIBUTION BOX VENTILATING FAN REMOVAL/INSTALLATION – continued

c. **Identify and depin three wires (1) from three splices (2)** (TM 55-1500-323-24)**.**

(1) Remove tiedown straps as required.

d. **Remove relay cover (3) from electrical power distribution box (4).**

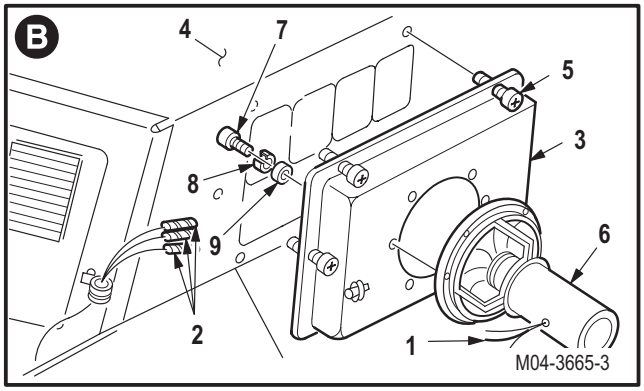
(1) Loosen six captive screws (5) from electrical power distribution box (4).

(2) Remove cover (3).

e. **Remove ventilating fan (6) from relay cover (3).**

(1) Remove six screws (7), lockwashers (8), and flat washers (9).

(2) Remove fan (6).



9.153.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

9.153.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.126)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.126)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

d. **Check gasket for damage** (para 9.10)**.**

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9.153. ELECTRICAL POWER DISTRIBUTION BOX VENTILATING FAN REMOVAL/INSTALLATION – continued

9.153.6. Installation

a. **Install fan (6) on relay cover (3).**

(1) Position fan (6) on cover (3).

(2) Install six flat washers (9), lockwashers (8) and screws (7).

b. **Install relay cover (3) on electrical power distribution box (4).**

(1) Position cover (3) on distribution box (4). Tighten six captive screws (5).

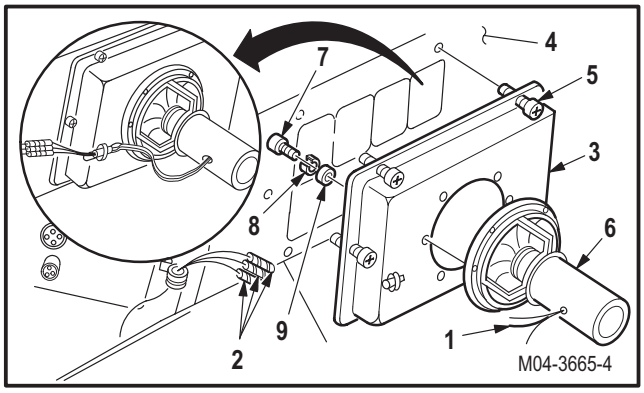
c. **Pin three identified wires (1) to three splices (2)** (TM 55-1500-323-24)**.**

d. **Install tiedown straps as required.** Use strap (item 194, App F).

e. **Inspect (QA).**

f. **Perform ECS maintenance operational check** (TM 1-1520-238-T)**.**

g. **Install access panels L190 and T205L** (para 2.2)**.**



END OF TASK

9.154. DATA LINK TERMINATION UNIT (DLTU) T37, T38, T39, OR T40 REPLACEMENT

9.154.1. Description

This task covers: Removal. Installation.

9.154.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)
Heat protective gloves (item 155, App H)
Electric gun type heater (item 163, App H)

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Materials/Parts:

Shield splicing kit (item 190A, App F)

References:

TM 9-1230-476-20-2
TM 11-1520-238-23-2

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access doors T250L, T250R, T290L, T290R, and L325 opened (DLTUs T39 and T40 only)
2.161	CPG armored crew seat removed (DLTU T37 only)
2.84	Aft catwalk panel removed (DLTU T39 only)
13.13	ENCU overboard exhaust duct removed (DLTU T39 only)

NOTE

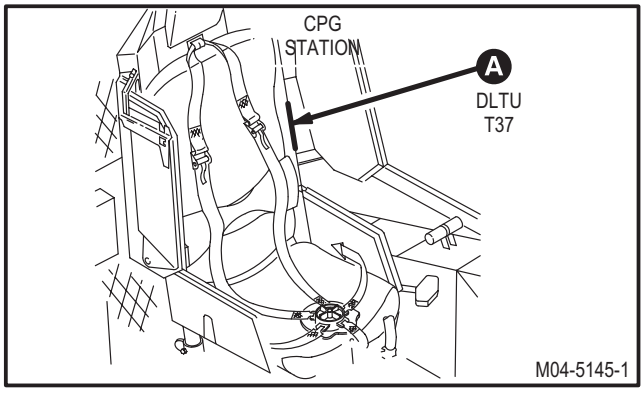
This task is typical for DLTUs T37, T38, T39, and T40, except as noted.

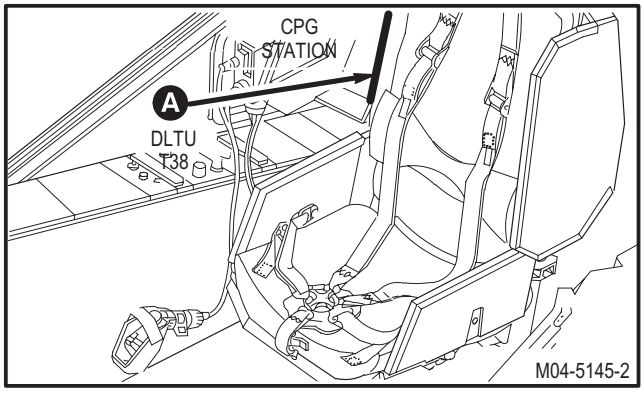
9.154.3. Removal

NOTE

Perform step a. for DLTU T37 and T38 replacement only. Perform step b. for all DLTU replacements.

a. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**





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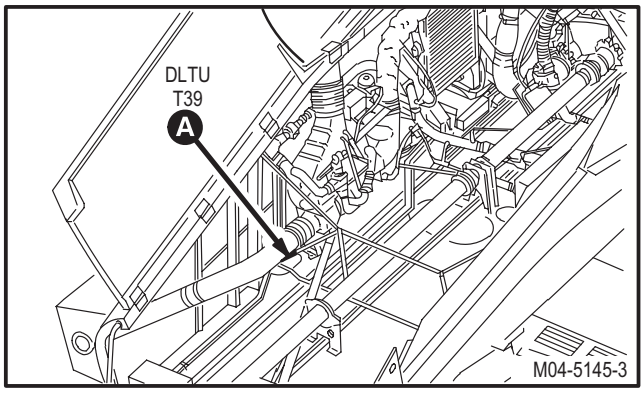
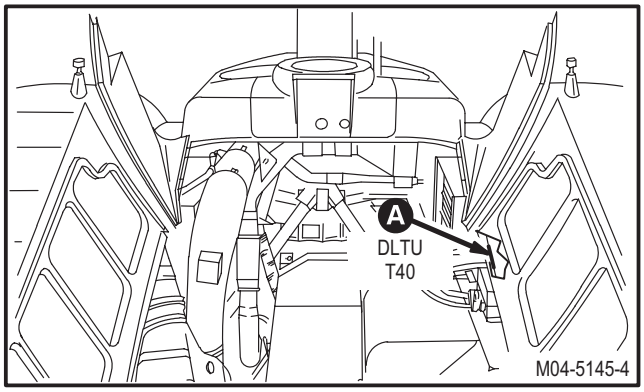
9.154. DATA LINK TERMINATION UNIT (DLTU) T37, T38, T39, OR T40 REPLACEMENT – continued





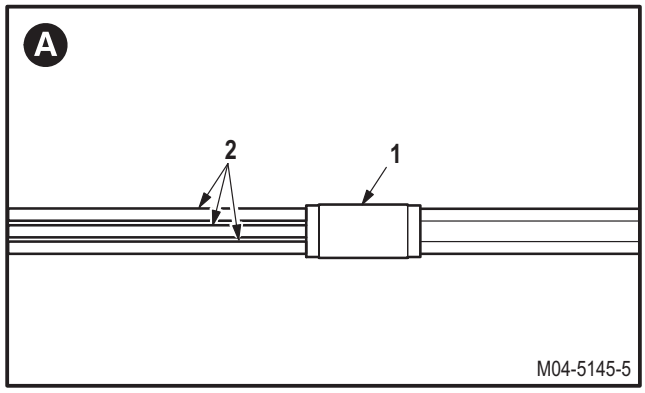
b. **Remove clamps as required.**

c. **Remove DLTU (1) from wire harness leads (2).**

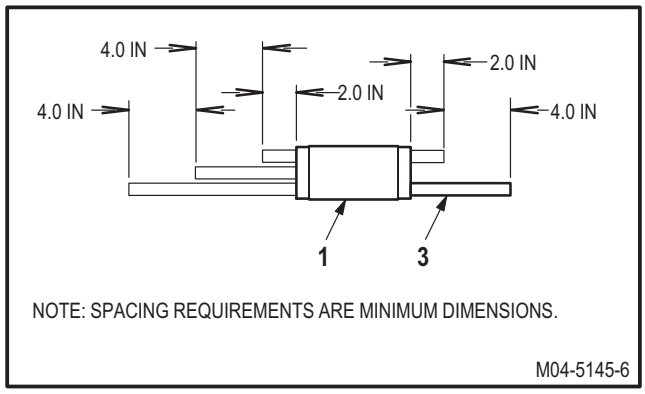
(1) Tag and identify leads (2).

CAUTION

Be sure cut is clean and square or damage to triaxial cable may occur.



(2) Starting a minimum of **2.0 INCHES** from DLTU (1), stagger and cut wire harness leads (2) every **4.0 INCHES**. Remove DLTU (1) from wire harness leads (2).



9.154.4. Installation

a. **Prepare DLTU leads (3) for installation.**

(1) Cut DLTU leads (3) to same length as wire harness leads (2).

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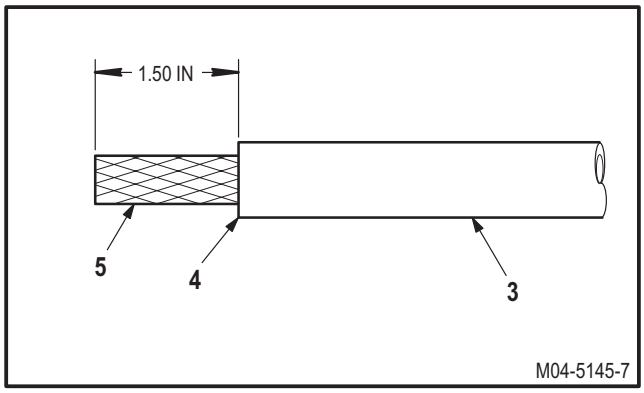
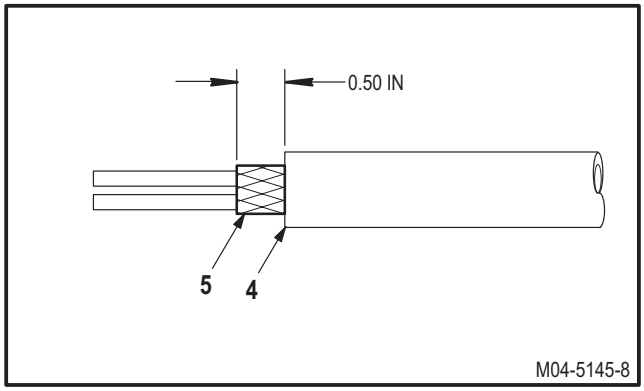
9.154. DATA LINK TERMINATION UNIT (DLTU) T37, T38, T39, OR T40 REPLACEMENT – continued

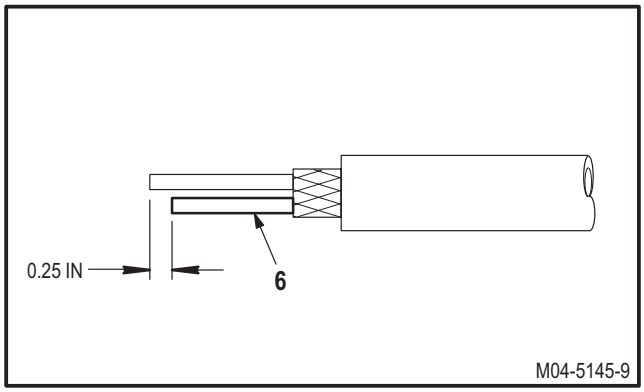
(2) On DLTU lead (3), trim cable insulation (4) and wire braid (5) back **1.50 INCH**.



(3) Trim cable insulation (4) back **0.50 INCH** from previous cut to expose wire braid (5).



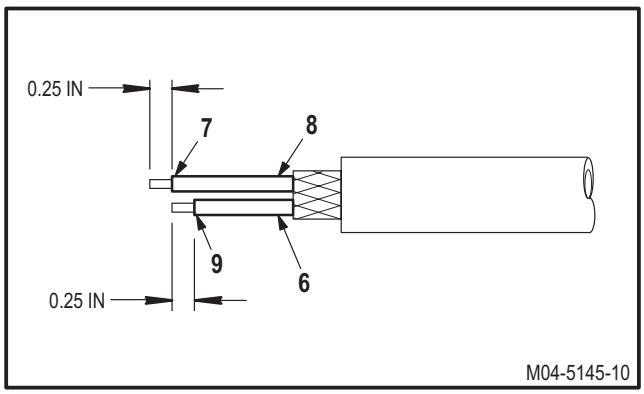
(4) Cut white conductor (6) back **0.25 INCH**.



(5) Trim dielectric (7) back **0.25 INCH** from end of blue conductor (8).

(6) Trim dielectric (9) back **0.25 INCH** from end of white conductor (6).

b. **Repeat steps (2) thru (6) for remaining four DLTU leads (3).**



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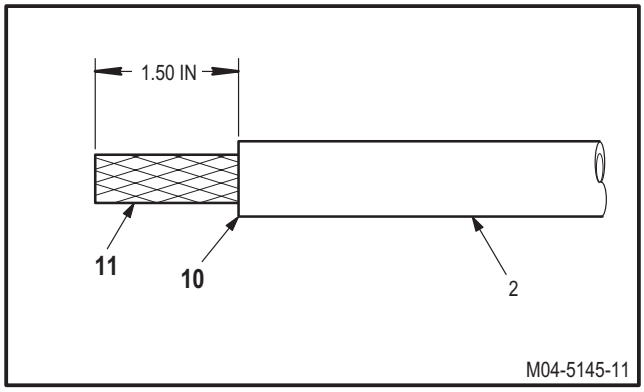
9.154. DATA LINK TERMINATION UNIT (DLTU) T37, T38, T39, OR T40 REPLACEMENT – continued

NOTE

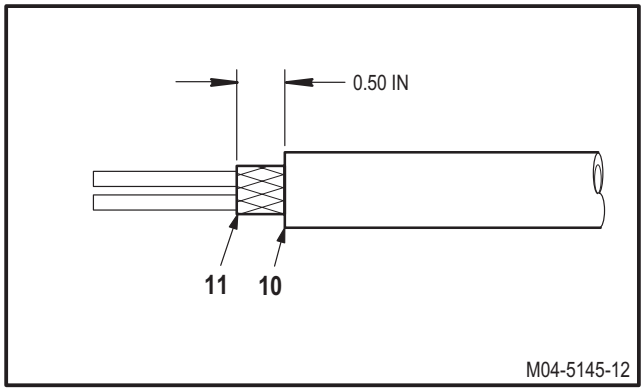
Prepare wire harness so that leads will have one short conductor the same color as the long conductor on the DLTU leads, and one long conductor the same color as the short conductor on the DLTU leads.

c. **Prepare wire harness leads (2).**

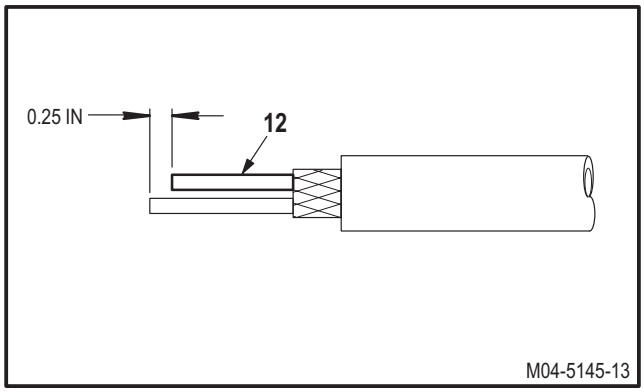
(1) On wire harness lead (2), trim cable insulation (10) and wire braid (11) back **1.50 INCH**.



(2) Trim cable insulation (10) back **0.50 INCH** from previous cut to expose wire braid (11).

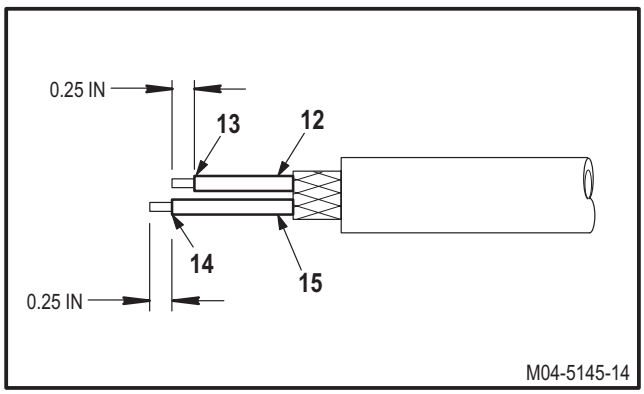


(3) Cut blue conductor (12) back **0.25 INCH**.



(4) Trim dielectric (13) back **0.25 INCH** from end of blue conductor (12).

(5) Trim dielectric (14) back **0.25 INCH** from end of white conductor (15).



d. **Repeat steps (1) thru (5) for remaining four wire harness leads (2).**

GO TO NEXT PAGE

9.154. DATA LINK TERMINATION UNIT (DLTU) T37, T38, T39, OR T40 REPLACEMENT – continued

WARNING

Do not place heater near flammable material or allow heater to contact skin: severe burns can result. Wear protective equipment. If injury occurs, seek medical aid.

NOTE

All expendables are from shield splicing kit (item 190A, App F).

e. **Splice DLTU lead (3) to wire harness lead (2).**

(1) Position sleeve/marker (16) on end of lead (3).

(2) Position insulating sleeve (17) on lead (2).

(3) Position one solder sleeve (18) on lead (2). Position one shield splice (19) and another solder sleeve (18) on end of lead (3).

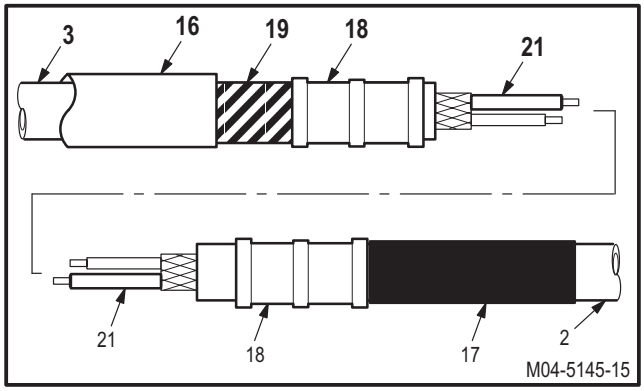
(4) Position conductor splice (20) and insulating sleeve (21) on longer conductor of leads (3) or (2) for each splice connection.

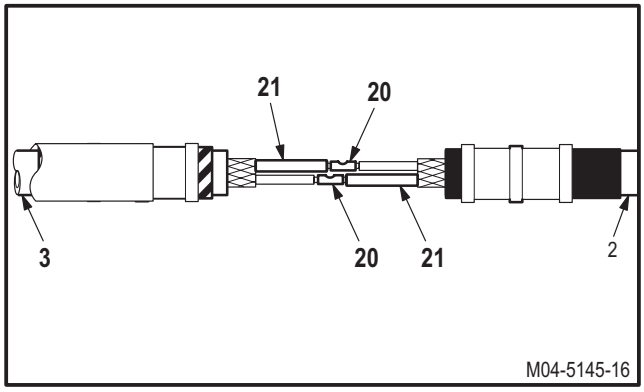
(5) Place leads (3) and (2) opposite each other.

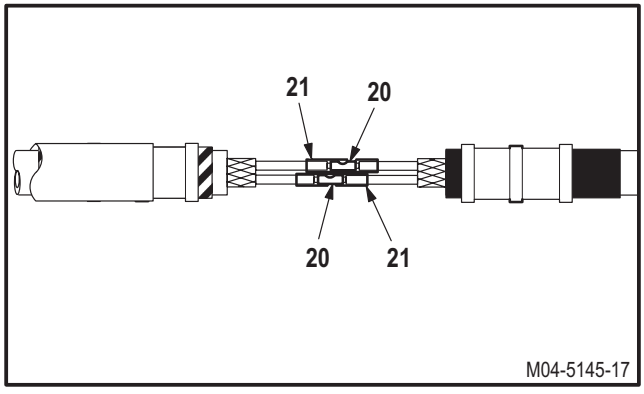
(6) Ensure insulating sleeve (21) is installed on conductor. Crimp each conductor splice (20).

(7) Position insulating sleeve (21) over each conductor splice (20).

(8) Apply heat until insulating sleeve (21) fully shrinks on each conductor splice (20). Use heater.







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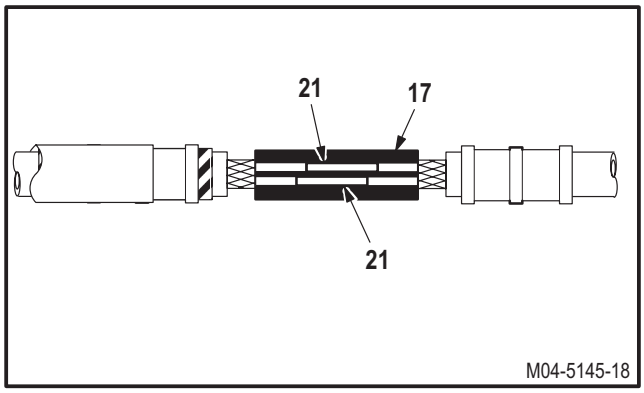
9.154. DATA LINK TERMINATION UNIT (DLTU) T37, T38, T39, OR T40 REPLACEMENT – continued

(9) Position insulating sleeve (17) over both insulating sleeves (21).

NOTE

Ensure wire braid areas are not covered.

(10) Apply heat until insulating sleeve (17) fully shrinks. Use heater.



f. **Install shield splice (19) and solder sleeves (18).**

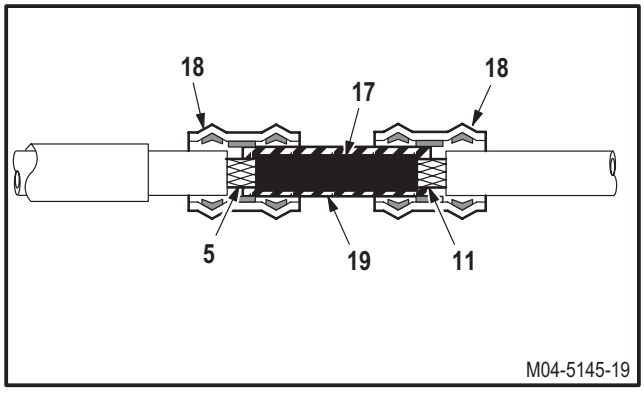
(1) Position shield splice (19) over exposed wire braids (5) and (11).

NOTE

Ensure solder ring is centered over wire braid and shield splice.

(2) Position two solder sleeves (18) over shield splice (19).

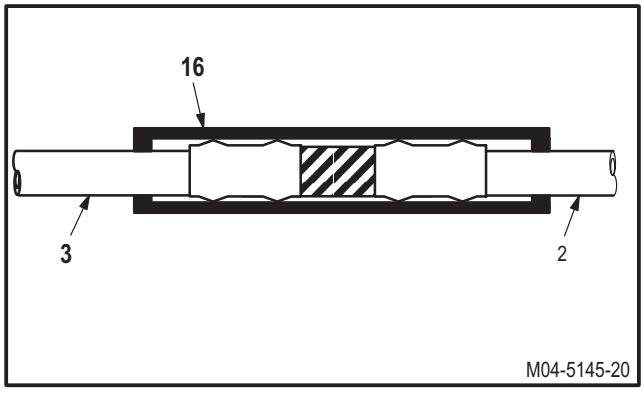
(3) Apply heat to solder sleeves (18) until full ring flow has occurred. Use heater.



g. **Install sleeve/marker (16).**

(1) Center sleeve/marker (16) over finished splice on leads (3) and (2).

(2) Apply heat until sleeve/marker (16) fully shrinks over splice. Use heater.



h. **Repeat steps e. through g. for remaining four leads.**

i. **Install clamps as required.**

j. **Inspect (QA).**

k. **If necessary, install ENCU overboard exhaust duct** (para 13.13)**.**

l. **If necessary, install aft catwalk panel** (para 2.84)**.**

GO TO NEXT PAGE

9.154. DATA LINK TERMINATION UNIT (DLTU) T37, T38, T39, OR T40 REPLACEMENT – continued

m. **If necessary, secure access doors T250L, T250R, T290L, T290R, and L325** (para 2.2).

n. **If necessary, install CPG armored crew seat** (para 2.161).

NOTE

Perform steps o. and p. for all DLTU replacements. Perform step q. for DLTU T39 and T40 replacement only.

o. **Perform multiplex system maintenance operational check (ADD)** (TM 9-1230-476-20-2).

p. **Perform Doppler system maintenance operational check (ADD)** (TM 11-1520-238-23-2).

q. **Perform embedded GPS – inertial maintenance operational check** (TM 11-1520-238-23-2).

END OF TASK

9.155. CDU DATA BUS RELAY K8 REPLACEMENT

9.155.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.155.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

References:

TM 11-1520-238-23-2

Personnel Required:

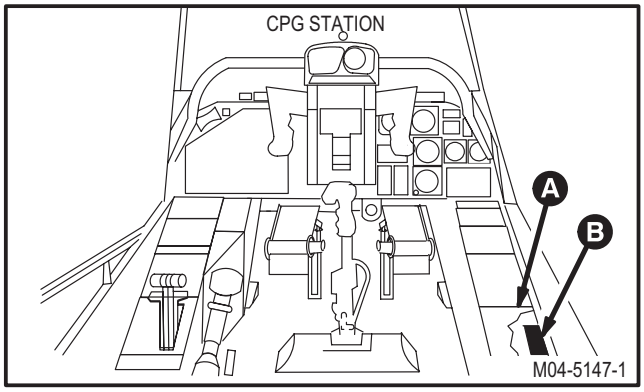
68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

9.155.3. Removal

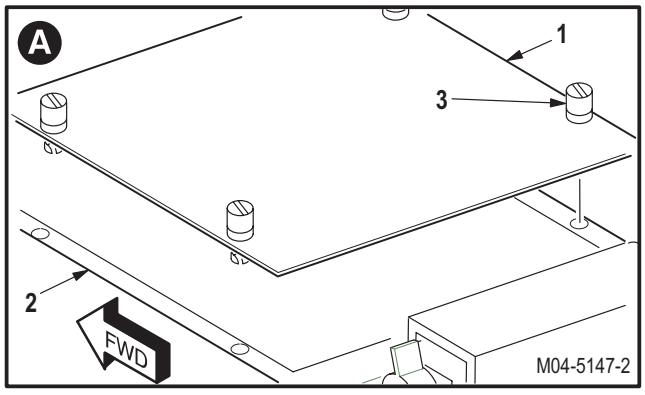
a. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**



b. **Remove blank panel (1) from console (2).**

(1) Unlock four turnlock fasteners (3).

(2) Remove panel (1).



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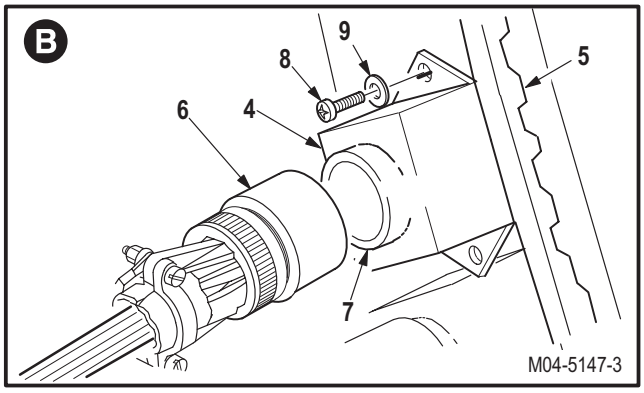
9.155. CDU DATA BUS RELAY K8 REPLACEMENT – continued

c. **Remove CDU data bus relay K8 (4) from relay bracket (5).**

(1) Detach connector P883 (6) from receptacle (K8)J1 (7).

(2) Remove two screws (8) and washers (9).

(3) Remove relay (4).



9.155.4. Cleaning

a. **Wipe removed and attaching parts with clean rag.**

9.155.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.126)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.126)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

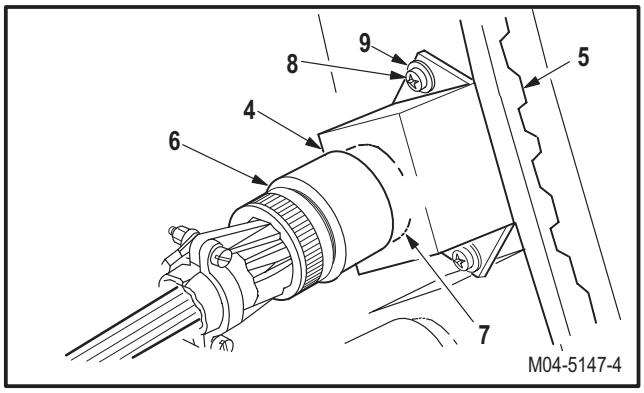
9.155.6. Installation

a. **Install CDU data bus relay K8 (4) on relay bracket (5).**

(1) Position relay (4) on bracket (5).

(2) Install two screws (8) and washers (9).

(3) Attach connector P883 (6) to receptacle (K8)J1 (7).



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9.155. CDU DATA BUS RELAY K8 REPLACEMENT – continued

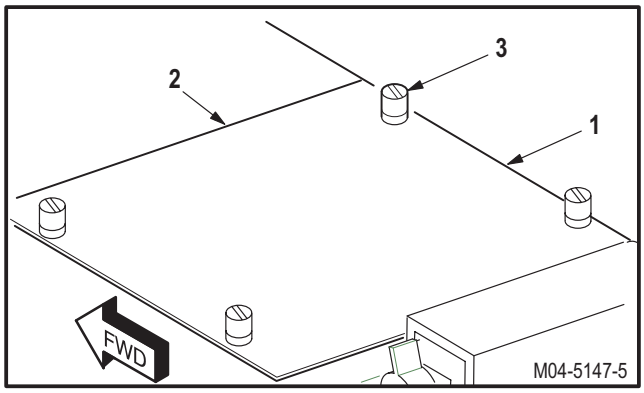
b. **Install blank panel (1) on console (2).**

(1) Position panel (1) on console (2).

(2) Lock four turnlock fasteners (3).

c. **Perform embedded GPS – inertial maintenance operational check** (TM 11-1520-238-23-2)**.**

d. **Perform Doppler system maintenance operational check (ADD)** (TM 11-1520-238-23-2)**.**



END OF TASK

9.156. KYK INTERFACE CONNECTOR ADAPTER REPLACEMENT

9.156.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.156.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

Personnel Required:

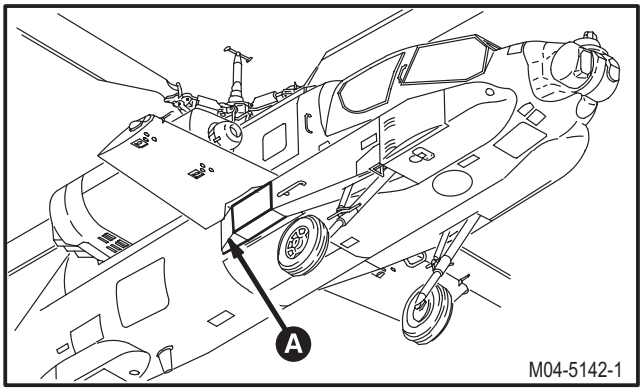
68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/ Technical Inspector

References:

TM 11-1520-238-23-2

Equipment Conditions:

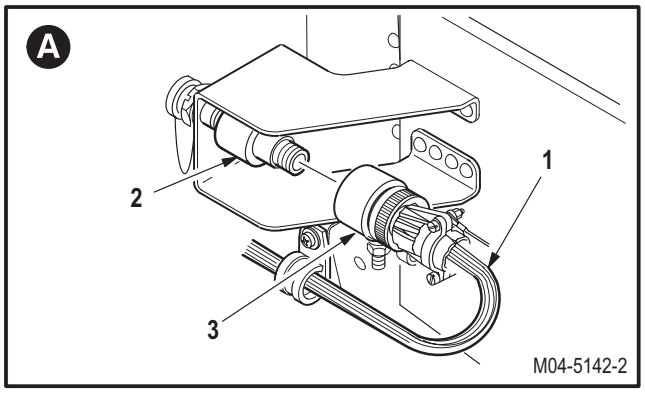
Ref	Condition
1.57	Helicopter safed
2.2	Access panel R194 removed



9.156.3. Removal

a. **Remove W266 wire harness (1) from KYK interface connector adapter (2).**

(1) Detach J894 (3) from adapter (2).



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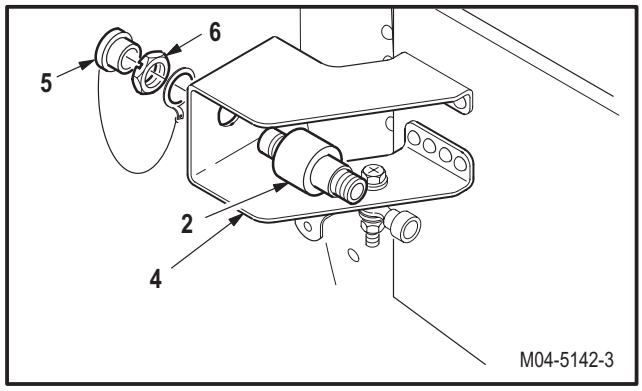
9.156. KYK INTERFACE CONNECTOR ADAPTER REPLACEMENT – continued

b. **Remove adapter (2) from bracket (4).**

(1) Remove dust cap (5) and nut (6) from adapter (2).

(2) Remove adapter (2).



9.156.4. Cleaning

a. **Wipe removed and attaching parts with clean rag.**

9.156.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.126)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.126)**.**

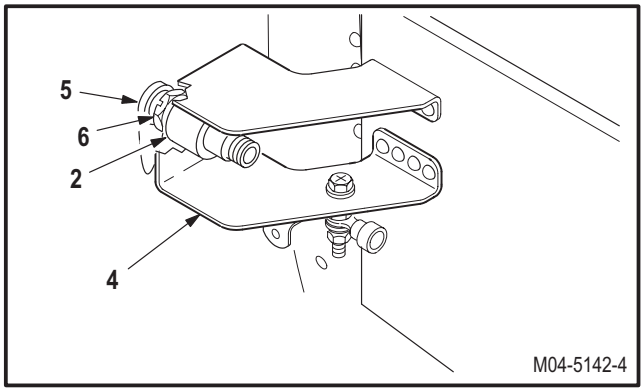
c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.156.6. Installation

a. **Install adapter (2) on bracket (4).**

(1) Position adapter (2) on bracket (4).

(2) Install nut (6) and dust cap (5) on adapter (2).



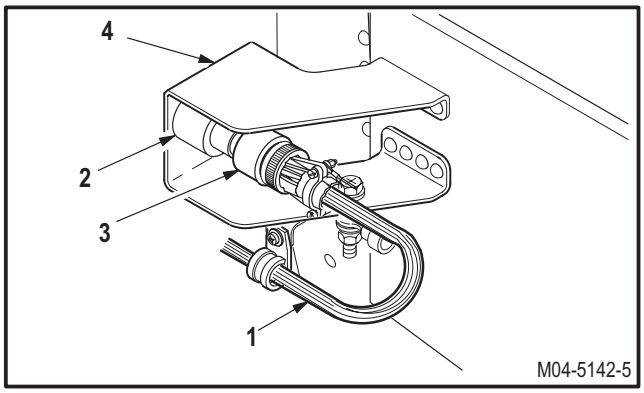
b. **Attach wire harness (1) to adapter (2).**

(1) Attach J894 (3) to adapter (2).

c. **Inspect (QA).**

d. **Secure access panel R194** (para 2.2)**.**

e. **Perform embedded GPS – inertial maintenance operational check** (TM 11-1520-238-23-2)**.**



END OF TASK

9.157. SDCC DATA BUS RELAY K9 REPLACEMENT

9.157.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.157.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

References:

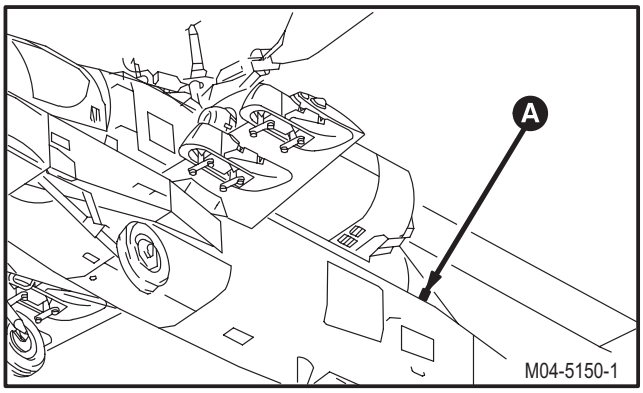
TM 11-1520-238-23-2

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access doors T290L, T290R, and L325 opened

Personnel Required:

68X	Armament/Electrical System Repairer
68X3F	Armament/Electrical System Repairer/ Technical Inspector



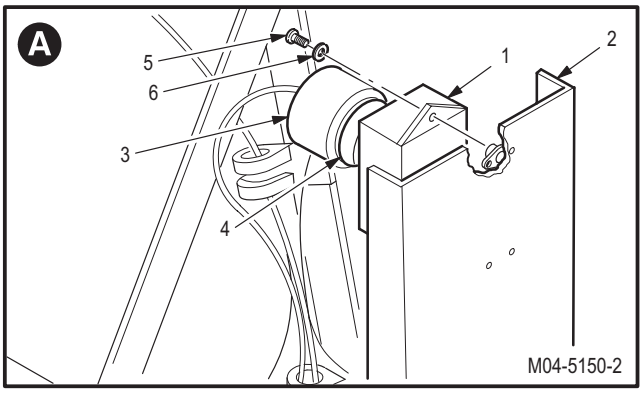
9.157.3. Removal

a. **Remove relay (1) from bracket (2).**

(1) Detach connector P884 (3) from receptacle (K9)J1 (4).

(2) Remove two screws (5) and washers (6).

(3) Remove relay (1).



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9.157. SDCC DATA BUS RELAY K9 REPLACEMENT – continued

9.157.4. Cleaning

a. **Wipe removed and attaching parts with clean rag.**

9.157.5. Inspection

a. **Check removed and attaching parts for damage** (para 9.126)**.**

b. **Check wires and terminals for wear, cracks, and cuts** (para 9.126)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

9.157.6. Installation

a. **Install relay (1) on bracket (2).**

(1) Position relay (1) on bracket (2).

(2) Install two screws (5) and washers (6).

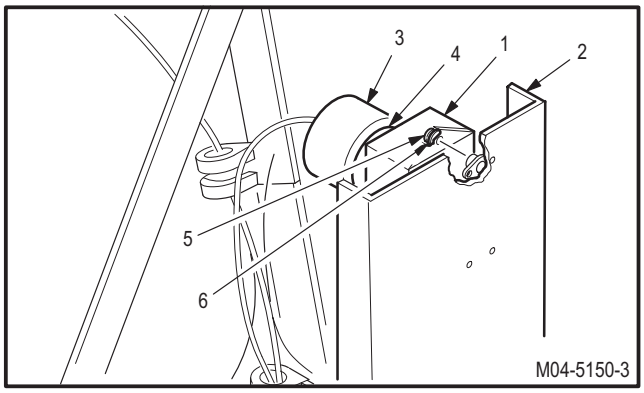
(3) Attach connector P884 (3) to receptacle (K9)J1 (4).

b. **Inspect (QA).**

c. **Secure access doors T290L, T290R, and L325** (para 2.2)**.**

d. **Perform embedded GPS – inertial maintenance operational check** (TM 11-1520-238-23-2)**.**

e. **Perform communications system maintenance operational check** (TM 11-1520-238-23-2)**.**



END OF TASK

9.158. SQUAT SWITCH REPLACEMENT

9.158.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

9.158.2. Initial Setup

Tools:

Electrical tool kit (item 378, App H)

References:

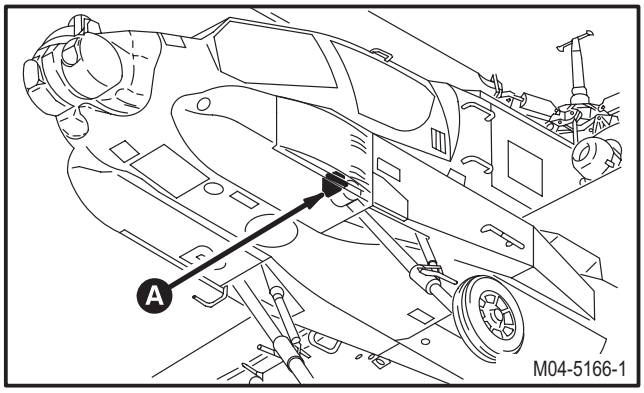
TM 1-1520-238-T
TM 9-1090-208-23-1
TM 11-1520-238-23-1
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
TM 11-1520-238-23-1	Radar jammer receiver/transmitter removed
TM 11-1520-238-23-1	Radar jammer blower assembly removed
TM 9-1090-208-23-1	Rounds counter mounting bracket and rounds counter removed

Personnel Required:

68X Armament/Electrical System Repairer
68X3F Armament/Electrical System Repairer/Technical Inspector



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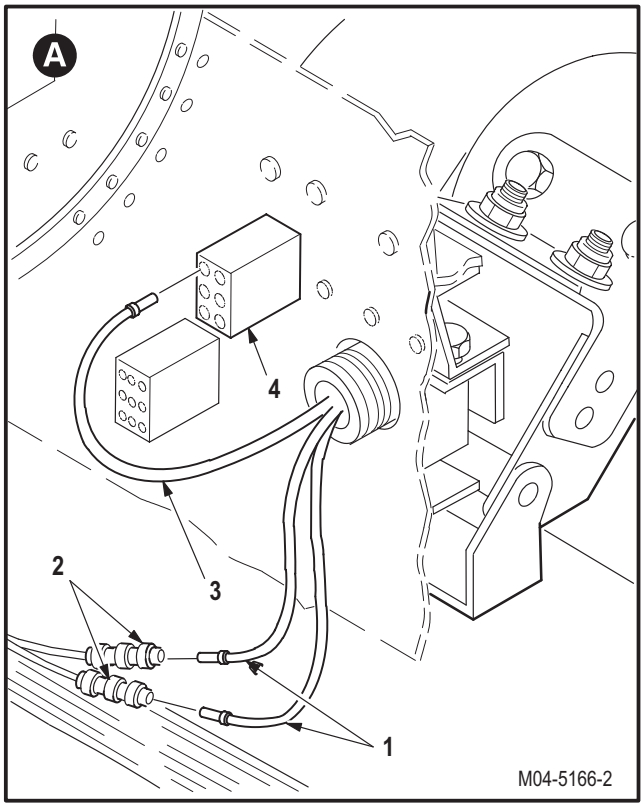
9.158. SQUAT SWITCH REPLACEMENT – continued

9.158.3. Removal

a. **Identify and depin two wires (1) from soft splices (2)** (TM 55-1500-323-24)**.**

b. **Identify and depin wire (3) from ground stud (GS580) (4)** (TM 55-1500-323-24)**.**

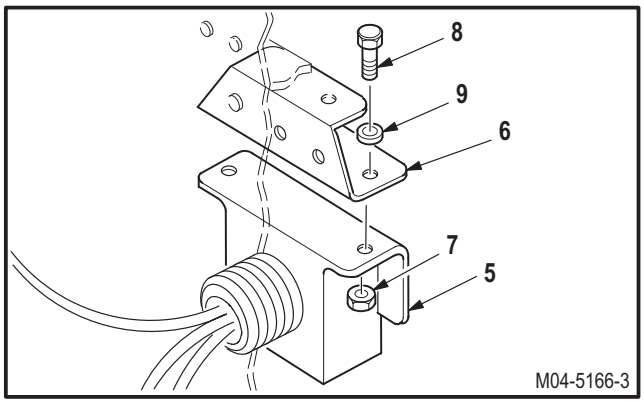


c. **Remove squat switch (5) from bracket (6).**

(1) Remove two nuts (7) from bolts (8).

(2) Remove two bolts (8) and washers (9) from switch (5) and bracket (6).

(3) Remove and discard switch (5).



9.158.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

9.158.5. Inspection

a. **Check mounting area for cracks.** None allowed.

b. **Check mounting area for corrosion** (para 1.49)**.**

GO TO NEXT PAGE

9.158. SQUAT SWITCH REPLACEMENT – continued

9.158.6. Installation

CAUTION

Use care during installation as wire harness can be damaged by chafing on bulkhead.

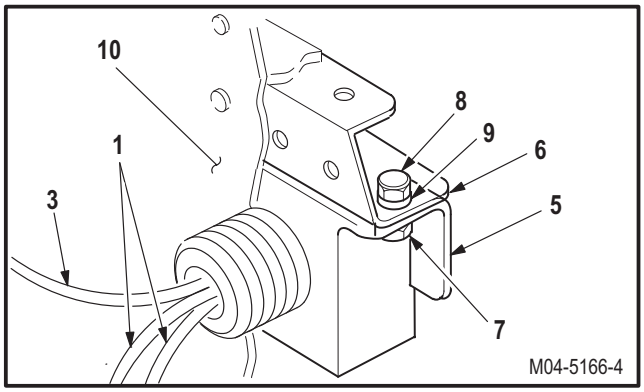
a. **Install switch (5) on bracket (6).**

(1) Guide wires (1) and (3) through bulkhead (10).

(2) Position switch (5) on bracket (6).

(3) Install two bolts (8) through washers (9), bracket (6), and switch (5).

(4) Hold bolts (8). Install two nuts (7).



b. **Pin identified wire (3) in ground stud (GS580) (4)** (TM 55-1500-323-24)**.**

c. **Pin two identified wires (1) in soft splices (2)** (TM 55-1500-323-24)**.**

d. **Check squat switch target plate adjustment** (para 9.149)**.**

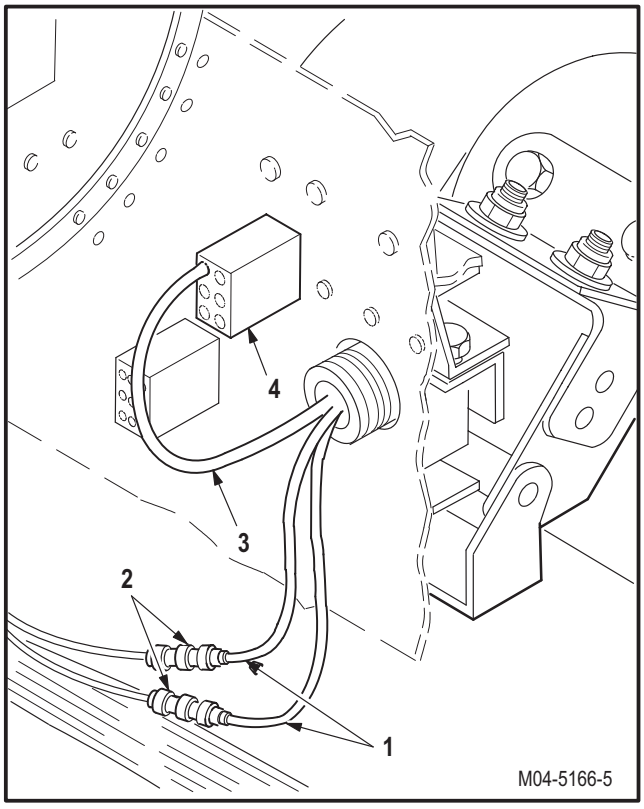
e. **Inspect (QA).**

f. **Install rounds counter mounting bracket and rounds counter** (TM 9-1090-208-23-1)**.**

g. **Install radar jammer receiver/transmitter** (TM 11-1520-238-23-1)**.**

h. **Install radar jammer blower assembly** (TM 11-1520-238-23-1)**.**

i. **Perform squat switch system maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

By Order of the Secretary of the Army:

GORDON R. SULLIVAN
General, United States Army
Chief of Staff

Official:

MILTON H. HAMILTON
Administrative Assistant to the
Secretary of the Army
06945

DISTRIBUTION :
To be distributed in accordance with DA Form 12-31-E, block no. 3448, requirements for TM 1-1520-238-23-5.

* U.S. GOVERNMENT PRINTING OFFICE: 1994-550-121/80112

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@wherever.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 PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25–30; the proponent agency is ODISC4.	Use Part II (*reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/ Supply Manuals (SC/SM)	DATE 8/30/02
TO: (*Forward to proponent of publication or form)(Include ZIP Code)* Commander, U.S. Army Aviation and Missile Command ATTN: AMSAM–MMC–MA–NP Redstone Arsenal, AL 35898	FROM: (*Activity and location)(Include ZIP Code)* MSG, Jane Q. Doe 1234 Any Street Nowhere Town, AL 34565	

PART 1 – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 9–1005–433–24	16 Sep 2002	Organizational, Direct Support, And General Support Maintenance Manual for Machine Gun, .50 Caliber M3P and M3P Machine Gun Electrical Test Set Used On Avenger Air Defense Weapon System

ITEM NO.	PAGE NO.	PARA–GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON
1	WP0005 PG 3		2			Test or Corrective Action column should identify a different WP number.

** Reference to line numbers within the paragraph or subparagraph.*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/ AUTOVON, PLUS EXTENSION	SIGNATURE
MSG, Jane Q. Doe, SFC	788–1234	

TO: (*Forward direct to addressee listed in publication)*	**FROM:** (*Activity and location) (Include ZIP Code)*	**DATE**
Commander, U.S. Army Aviation and Missile Command ATTN: AMSAM–MMC–MA–NP Redstone Arsenal, AL 35898	MSG, Jane Q. Doe 1234 Any Street Nowhere Town, AL 34565	8/30/02

PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER	DATE	TITLE

PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III – REMARKS (*Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE
MSG, Jane Q. Doe, SFC	788–1234	

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25–30; the proponent agency is ODISC4.	Use Part II (*reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/ Supply Manuals (SC/SM)	DATE
TO: (*Forward to proponent of publication or form)(Include ZIP Code)* Commander, U.S. Army Aviation and Missile Command ATTN: AMSAM-MMC-MA-NP Redstone Arsenal, AL 35898	FROM: (*Activity and location)(Include ZIP Code)*	

PART 1 – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER	DATE	TITLE

ITEM NO.	PAGE NO.	PARA–GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON

** Reference to line numbers within the paragraph or subparagraph.*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/ AUTOVON, PLUS EXTENSION	SIGNATURE

TO: (*Forward direct to addressee listed in publication)* Commander, U.S. Army Aviation and Missile Command ATTN: AMSAM-MMC-MA-NP Redstone Arsenal, AL 35898	**FROM:** (*Activity and location) (Include ZIP Code)*	**DATE**

PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER	DATE	TITLE

PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III – REMARKS (*Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .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 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigrams = .035 ounce
1 dekagram = 10 grams = .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

Liquid Measure

1 centiliter = 10 milliliters = .34 fl. ounces
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 = .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 = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .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*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce–inches	newton–meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.452	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29.573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound–feet	newton–meters	1.356	metric tons	short tons	1.102
pound–inches	newton–meters	.11296			

Temperature (Exact)

° F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	° C

PIN: 072830-000