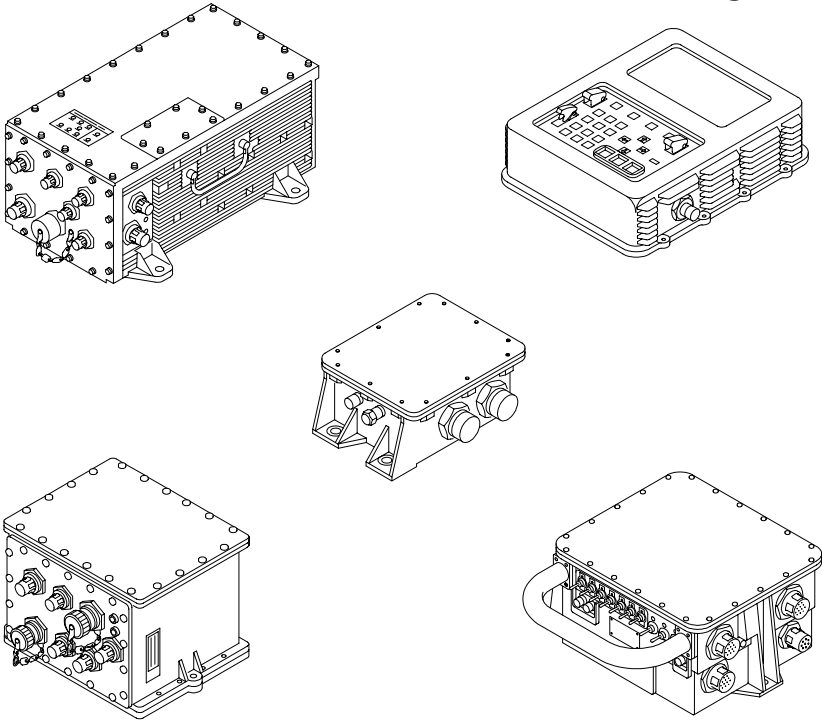


DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL (INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL) AND DEPOT MAINTENANCE REPAIR PARTS LISTS)

FOR



06pc340m

AUTOMATIC FIRE CONTROL SYSTEM (AFCS) CONSISTING OF:

**AFCS COMPUTER UNIT (ACU) WITH CONTAINER
(NSN 7021-01-451-5790)**

**DISPLAY UNIT (DU) WITH CONTAINER
(NSN 7025-01-411-1801)**

**VEHICLE MOTION SENSOR (VMS) MODEM
(NSN 5895-01-356-0205)**

**POWER CONDITIONING UNIT (PCU) WITH CONTAINER
(NSN 6130-01-412-3678)**

AND

**PROGNOSTIC/DIAGNOSTIC INTERFACE UNIT (PDIU)
WITH CONTAINER (NSN 1025-01-409-2631)**

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WARNING

- Dry cleaning solvent, mineral spirits, and paint thinners are flammable and should not be used near an open flame. Fire extinguishers should be nearby when these materials are used. Use these cleaners only in well-ventilated areas. Failure to comply may result in personnel injury.
- Cleaners evaporate quickly and thus cause drying and/or irritation of skin or eyes. Operators using cleaners must wear protective gloves. Do not allow contact with eyes. Failure to comply may result in personnel injury.
- Do not use diesel fuel oil, gasoline, or benzene for cleaning. These solvents decompose rubber. Failure to comply may result in personnel injury.
- Gas bottles are similar in size and shape and can be mistaken for one another. Use only nitrogen. Nitrogen bottles are gray with two black stripes. Performing this task with the wrong gas may result in personnel injury or damage to equipment.
- Nitrogen can cause asphyxia by depleting the local oxygen supply. Do not use in an unventilated area or with direct flow toward the face. Failure to comply may result in personnel injury.
- CARC is hazardous. Follow manufacturer's instructions for the preparation and application of this material. Failure to comply may result in personnel injury.

FIRST AID PROCEDURES

Refer to manufacturer's labels, FM 21-11, and local policies for any first aid procedures related to the use of this equipment.

**CHANGE
NO.1**

**TM 9-1200-215-34&P
C1
HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 1 APRIL 2001**

**TECHNICAL MANUAL
DIRECT SUPPORT AND GENERAL SUPPORT
MAINTENANCE MANUAL(INCLUDING REPAIR PARTS AND
SPECIAL TOOLS LIST (RPSTL) AND DEPOT MAINTENANCE
REPAIR PARTS LISTS)
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(NSN 6130-01-412-3678)
AND
PROGNOSTIC/DIAGNOSTIC INTERFACE UNIT (PDIU)
WITH CONTAINER (NSN 1025-01-409-2631)**

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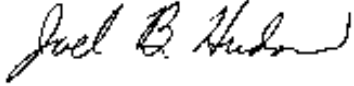
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Date of issue for original and changed pages are:

Original 0 8 February 1999
Change 1 1 April 2001

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**DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL) AND
DEPOT MAINTENANCE REPAIR PARTS LISTS)**

**FOR
AUTOMATIC FIRE CONTROL SYSTEM (AFCS)
CONSISTING OF:
AFCS COMPUTER UNIT (ACU) WITH CONTAINER
(NSN 7021-01-451-5790)
DISPLAY UNIT (DU) WITH CONTAINER (NSN 7025-01-411-1801)
VEHICLE MOTION SENSOR (VMS) MODEM (NSN 5895-01-356-0205)
POWER CONDITIONING UNIT (PCU) WITH CONTAINER
(NSN 6130-01-412-3678)
AND
PROGNOSTIC/DIAGNOSTIC INTERFACE UNIT (PDIU)
WITH CONTAINER (NSN 1025-01-409-2631)**

REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

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HOW TO USE THIS MANUAL

Indexing

Five major indexing procedures are used in this manual to help the technician locate information rapidly.

1. Cover index: Lists sections of text and page number.
2. Table of Contents: Pages i through iii.
3. Chapter indexes: Lists information covered within the chapter and section.
4. Location and description of major components.
5. Index, pages INDEX-1 through INDEX-6: Alphabetical listing of information.

Maintenance Text and Illustrations (Chapter 2 through 6)

1. Maintenance procedures are to be performed in the sequence shown in the text and illustrations. Step 1 must be performed before Step 2. Procedure **a** must be performed before Procedure **b**, and so on.
2. Equipment illustrations use numbers to identify parts of the system/components.

Example:

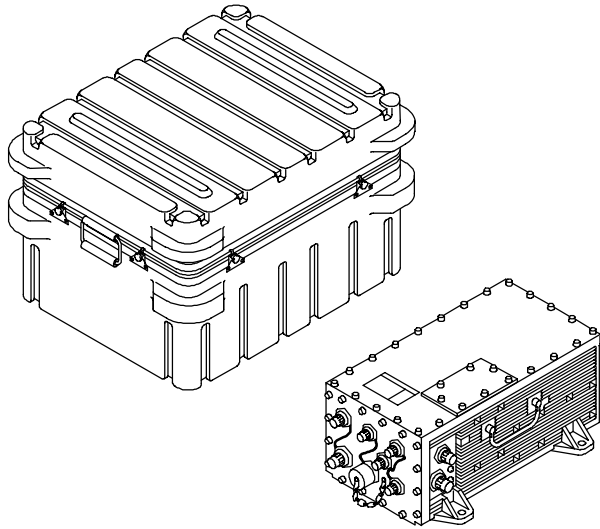
1. Remove both wiring harnesses (1) and (2).
2. Remove four screws (3), four flat washers (4), four lockwashers (5), and four nuts (6).

REPAIR PARTS LIST

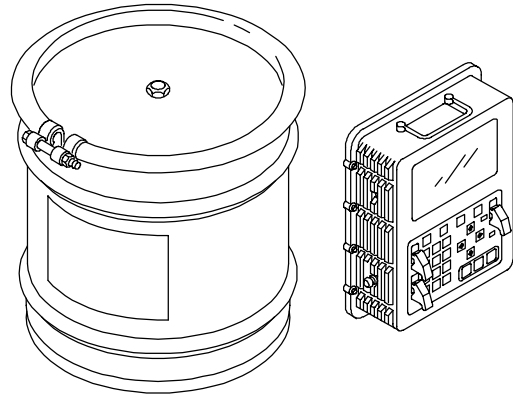
Repair Parts List is contained in Appendix C of this manual.

How to locate parts:

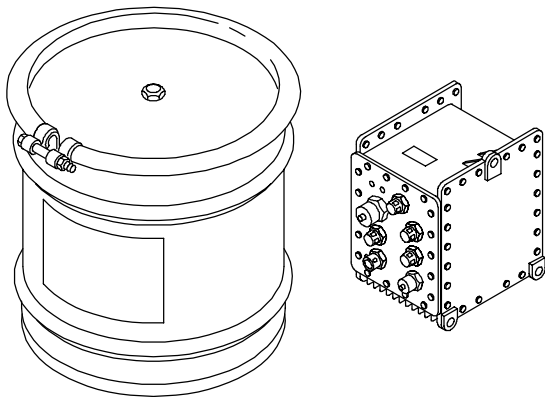
- Identify the item on the applicable figure and note the item number. Refer to the applicable parts list and use the item number as the locator.
- Determine part number of the item from the parts list. A cross reference of part numbers and figure numbers is located after the last figure in Appendix C.



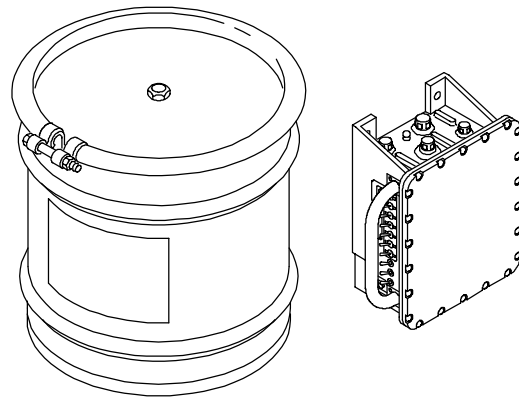
ACU with Container (12927707-7)
(NSN 7021-01-451-5790)



DU with Container (12927707-5)
(NSN 7025-01-411-1801)



PDIU with Container (12927707-6)
(NSN 1025-01-409-2631)



PCU with Container (12927707-4)
(NSN 6130-01-412-3678)

06pc410m

AFCS Components with Containers

CHAPTER 1. INTRODUCTION

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1-1. SCOPE

a. This manual provides direct support and general support maintenance information for components of the Automatic Fire Control System (AFCS), as well as the Prognostic/Diagnostic Interface Unit (PDIU). Components of AFCS include:

- AFCS Computer Unit (ACU) (NSN 7021-01-440-2127)
- Display Unit (DU) with Container (NSN 7025-01-411-1801)
- Vehicle Motion Sensor (VMS) Modem (NSN 5895-01-356-0205)
- Power Conditioning Unit (PCU) with Container (NSN 6130-01-412-3678)

b. These components interface together with an on-board vehicle positioning system and hydraulic servo valves to automatically lay gun position.

1-2. MAINTENANCE FORMS, RECORDS, AND REPORTS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 738-750, The Army Maintenance Management System.

1-3. CALIBRATION

There are no AFCS or PDIU calibration requirements at direct support or general support maintenance levels.

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

Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2, Procedures for Destruction of Electronic Materiel to Prevent Enemy Use.

1-5. PREPARATION FOR STORAGE OR SHIPMENT

a. Security procedures. There are no special physical security procedures required for the AFCS or PDIU Line Replaceable Units (LRUs).

b. Special preservation instructions. All AFCS LRUs, except the ACU and the PDIU, will be stored/shipped in its own storage/shipment container. The ACU will be stored/shipped in a recoverable container.

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- c. Circuit Card Assemblies (CCAs) removed from the LRUs must be handled and stored in a manner that will provide Electrostatic Discharge (ESD) protection of the CCAs. Place CCAs in ESD protective bag.
- d. Special corrosion instructions. Special use of corrosion-preventive compounds, moisture barriers, and desiccant materials are not required for the AFCS or PDIU components (LRUs).
- e. Special marking instructions. Not applicable to the AFCS or PDIU components (LRUs).

1-6. NOMENCLATURE CROSS-REFERENCE

The following table provides a cross-reference listing of official nomenclature to common names.

COMMON NAME	OFFICIAL NOMENCLATURE
AFCS Computer Unit (ACU)	Computer, Digital (AFCS XXI)
Communication Processing	Control, Communications System
Contact Test Set or Lightweight Computer Unit (LCU)	Electronic Systems Test Set
Display Unit	Display, Optical Electrical
Electrostatic Discharge Strap	Work Station Kit, Electronic
Power Conditioning Unit	Control, Power Supply
Power Supply	DC-DC Converter
Software Download	Install Software
TCIM	Tactical Communication Interface Module
VMS Modem	Communication Modem
Weapons Controller	Ballistic Computations

1-7. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If your AFCS or PDIU needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on an SF 368 (Product Quality Deficiency Report). Mail it to Department of the Army, U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-LC-CIP-W, Rock Island, IL 61299-7630.

1-8. SAFETY, CARE, AND HANDLING

- a. AFCS components are equipped with handles to facilitate handling. All components are within acceptable weight limits for a one person lift per MIL-STD-1472.
- b. AFCS and PDIU LRUs are protected from Electrostatic Discharge (ESD) when fully assembled; however, exposed circuit card assemblies (CCAs), connectors, and electronic components are sensitive to ESD. Whenever removing AFCS and PDIU LRU covers, or handling exposed CCAs or electronic components, ensure grounded wrist straps are worn and other ESD precautions are observed. The following documents reference the required specifications:
 - (1) MIL-STD-1686: Electrostatic Discharge Control Program for Protection of Electrical and Electronic Parts, Assemblies, and Equipment.
 - (2) MIL-HDBK-263: Electrostatic Discharge Handbook for Protection of Electrical and Electronic Parts, Assemblies, and Equipment.
 - (3) Technical Manual (TM) 9-254: General Maintenance Procedures for Fire Control Materiel.

1-9. CORROSION PREVENTION AND CONTROL (CPC)

- a. Corrosion Prevention and Control (CPC) of Army materiel is a continuing concern. It is important that any corrosion problems with the item be reported so they can be corrected and improvements can be made to prevent the problem in future items.
- b. While corrosion is typically associated with rusting of metals, it can also include deterioration of other materials, such as rubber and plastic. Unusual cracking, softening, swelling, or breaking of these materials may be a corrosion problem.
- c. If a corrosion problem is identified, it can be reported using SF 368, Product Quality Deficiency Report. Use key words such as corrosion, rust, deterioration, or cracking to ensure that the information is identified as a CPC problem.
- d. SF 368 should be submitted to: Department of the Army, U.S. Army Tank-automotive and Armaments Command, Armament Research, Development and Engineering Center, ATTN: AMSTA-AR-QAW-C, Rock Island, IL 61299-7300.

1-10. SECURITY MEASURES FOR ELECTRONIC DATA

See AR 190-11 and AR 190-13.

1-11. DEFINITIONS OF, AND EVALUATION CRITERIA FOR, BENDS, CRACKS, DENTS

- a. Cracks, dents, and bends are defined as follows:
 - Crack – an unintended fissure or break in the item being examined.
 - Dent – an unintended depression or hollow in the item being examined.
 - Bend – an unintended change in shape or direction of the item being examined.
- b. The evaluation criteria for these defects are:
 - Crack – cracks in housing greater than one inch in length, that penetrate to the interior of the housing, or propagate into fasteners or mounting holes are not acceptable. Cracks in receptacles or indicators are not acceptable.
 - Dent – dents of sufficient depth to interfere with the insertion, mating, or extraction of components are not acceptable.
 - Bend – bends that interfere with the insertion, mating, extraction, or proper operation of components are not acceptable.

1-12. CLEANING

- a. Cleaning. Clean whenever dirt or contamination is found during inspection.

WARNING

- Dry cleaning solvent, mineral spirits, and paint thinners are flammable and should not be used near an open flame. Fire extinguishers should be nearby when these materials are used. Use these cleaners only in well-ventilated areas.
- Cleaners evaporate quickly and thus cause drying and/or irritation of skin or eyes. Operators using cleaners must wear protective gloves. Do not allow contact with eyes.
- Do not use diesel fuel oil, gasoline, or benzene for cleaning. These solvents decompose rubber.

(1) Remove foreign matter from assemblies by wiping with cleaning solvent (item 12, Appendix D). Wipe cleaned surface with a lint-free cloth (item 13, Appendix D).

(2) When cleaning is complete, thoroughly dry areas with low pressure compressed air.

b. Recording. Refer to DA PAM 738-750 to select correct form and instructions for technical inspection and the corrective actions taken.

1-13. SPECIAL INSTRUCTIONS FOR ADMINISTRATIVE STORAGE

a. Instructions for placing equipment in, and for removing it from administrative storage will be provided in accordance with AR 750-1 and paragraph 1-5.

b. Placement of equipment in administrative storage should be for short periods of time when a shortage of maintenance efforts exists. Items should be in mission readiness within 24 hours or within the time factors as determined by the directing authority. During the storage period, appropriate maintenance records will be kept including all applicable PMCS requirements. AFCS and PDIU LRUs will be stored/shipped in its own storage/shipment container.

c. Before placing equipment in administrative storage, current maintenance services and Equipment Serviceable Criteria (ESC) evaluations should be completed, shortcomings and deficiencies corrected, and all Modification Work Orders (MWOs) applied.

d. Storage site selection. Inside storage is preferred for items selected for administrative storage. If inside storage is not available, trucks, vans, CONEX containers and other containers may be used.

1-14. LIST OF ACRONYMS

ACU	AFCS Computer Unit
ADC	Analog to Digital Converter
AFCS	Automatic Fire Control System
BC	Ballistic Computation
BCS	Battery Computer System
BIT	Built-In Test
BSTF	Base Shop Test Facility
CARC	Chemical Agent Resistant Coating
CCA	Circuit Card Assembly
CEE	Commercial Equivalent Equipment
COEI	Components of End Item
CP	Communication Processing
CPC	Corrosion Prevention and Control
CPU	Central Processing Unit
CTA	Common Table of Allowance
CTS	Contact Test Set
DAC	Digital to Analog Converter
DOD	Department of Defense

DRU	Dynamic Reference Unit
DS	Direct Support
DU	Display Unit
EEPROM	Electrically Erasable Programmable Read Only Memory
EIR	Equipment Improvement Recommendation
EMI	Electromagnetic Interference
EMP	Electromagnetic Pulse
EMR	Electromagnetic Radiation
ESC	Equipment Serviceable Criteria
ESD	Electrostatic Discharge
ESML	Expendable/Durable Supplies and Material List
FET	Field Effect Transistor
GS	General Support
HEX	Hexagon
I/O	Input/Output
IFTE	Integrated Family of Test Equipment
JTK-17LAL	Jensen Tool Kit
LCU	Lightweight Computer Unit
LED	Light Emitting Diode
LRU	Line Replaceable Unit
MAC	Maintenance Allocation Chart
MAPS	Modular Azimuth Positioning System
MODEM	Modulate Demodulate
MOS	Military Occupational Specialty
MOSFET	Metal Oxide Semiconductor Field Effect Transistor
MTOE	Modified Table of Organization and Equipment
MUX	Multiplexer
MWO	Modification Work Order
NED	Nuclear Event Detector
PCU	Power Conditioning Unit
PDIU	Prognostic/Diagnostic Interface Unit
PDM	Power Distribution Module
PMCS	Preventive Maintenance Checks and Services
PSM	Power Supply Module
PWM	Pulse Width Modulator
QDR	Quality Deficiency Report
RAM	Random Access Memory
RFI	Radio Frequency Interference
RPSTL	Repair Parts and Special Tools List
RTU	Remote Terminal Unit
SC	Supply Code
SCR	Silicone Controlled Rectifier
SMR	Source, Maintenance and Recoverability
SRU	Shop Replaceable Unit
TAMMS	The Army Maintenance Management System
TMDE	Test, Measurement, and Diagnostic Equipment
TPS	Test Program Set
Vdc	Volts Direct Current
VMS	Vehicle Motion Sensor
WC	Weapons Controller
WPN	Weapons Subsystem

Section II – EQUIPMENT DESCRIPTION AND DATA

	Page		Page
Equipment Characteristics, Capabilities, and Features	1-6	Differences Between Models	1-13
Location and Description of Major Components	1-8	Equipment Data	1-13
		Equipment Configuration	1-14

1-15. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

a. The Automatic Fire Control System (AFCS) components interface together with an on-board vehicle position sensing system and hydraulic servo valves to automatically lay gun position. AFCS components include:

- AFCS Computer Unit (ACU)
- Display Unit (DU)
- Vehicle Motion Sensor (VMS) Modem
- Power Conditioning Unit (PCU)

(1) The AFCS Computer Unit (ACU) receives vehicle position data from the on-board positioning system for ballistic computations, weapons control, and calculates distance and direction to the target location entered from the Display Unit (DU). Using stored ballistic data, the ACU calculates appropriate gun tube elevation to reach the target. Elevation and azimuth commands are sent to the weapon's hydraulics system to adjust gun tube direction and elevation.

The ACU automatically performs radio interface functions for the system. It controls radios, radio network interface, intercom interface, and composition/decomposition of messages. It is the digital processing device for the DU, interfaces with the on-board vehicle positioning system, and contains the embedded trainer controller for simulating navigation and gun laying missions.

(2) The Display Unit (DU) is the primary man-machine interface and displays system status, navigation data, gun tube position, ammunition inventory, and test/diagnostic messages. A menu driven display provides prompts for data entry using a numeric keypad.

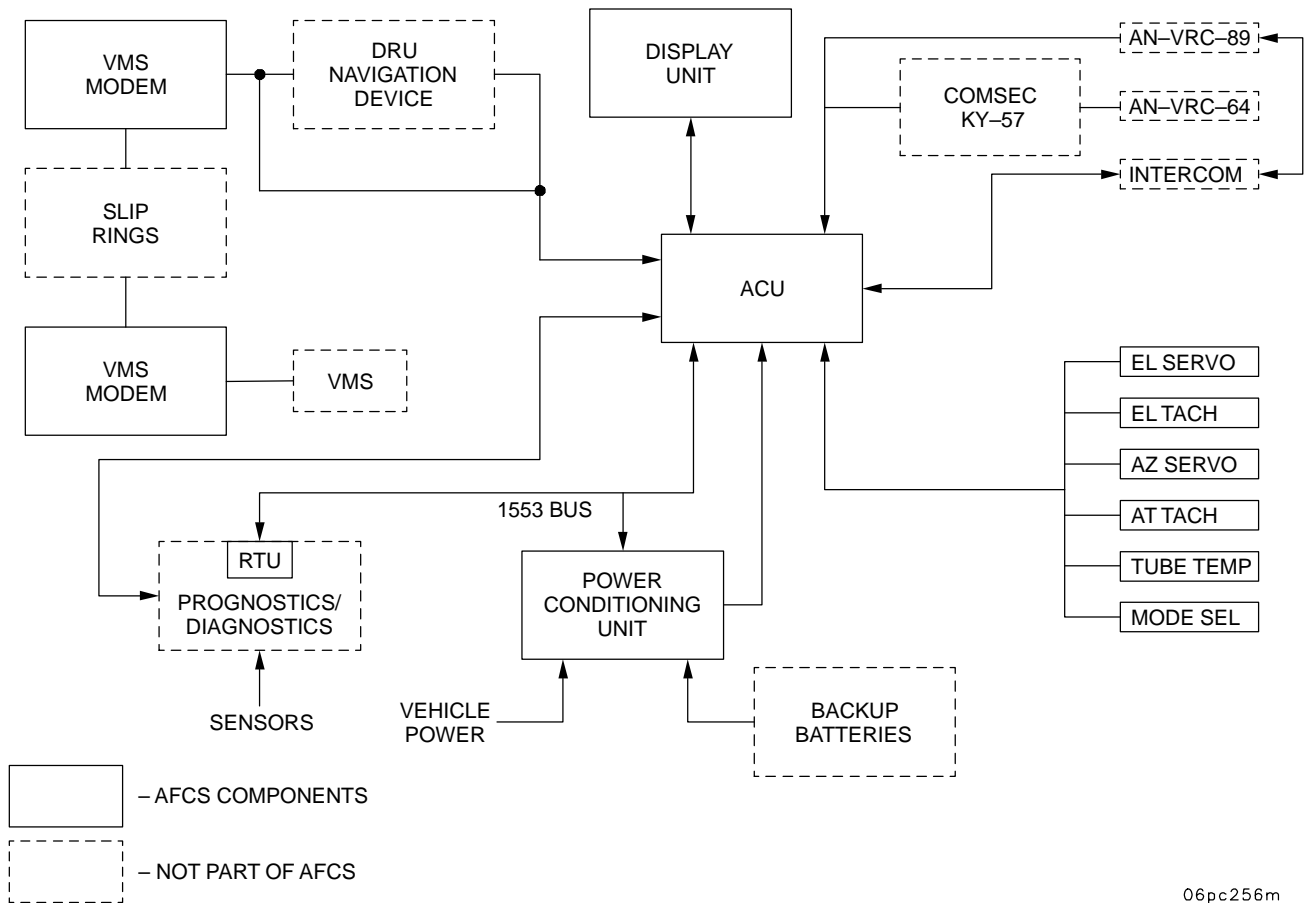
(3) The Prognostic/Diagnostic Interface Unit (PDIU) performs prognostic and diagnostic functions on the weapon system. The PDIU tests, detects faults, and fault isolates Line Replaceable Units (LRUs) in the Electrical System, Automatic Fire Control System (AFCS), Vehicle Hydraulic System, and Gun Position System.

(4) The Vehicle Motion Sensor (VMS) Modem provides a means to transmit digital vehicle motion data from the motion sensor location in the hull, through the vehicle slip rings, to the ACU location in the cab.

(5) The Power Conditioning Unit (PCU) protects all electronic digital subsystems from power transients, compensates for voltage drops and spikes, and continuously monitors system circuits for vehicle and battery status.

b. The Prognostic/Diagnostic Interface Unit (PDIU) performs prognostic and diagnostic functions on a weapon system. The PDIU tests, detects faults, and fault isolates Line Replaceable Units (LRUs) in the Electrical System, Automatic Fire Control System (AFCS), Vehicle Hydraulic System, and Gun Position System.

c. The Figure 1-1 shows the interrelationships of the AFCS components and processing flows of the major interfacing signals:

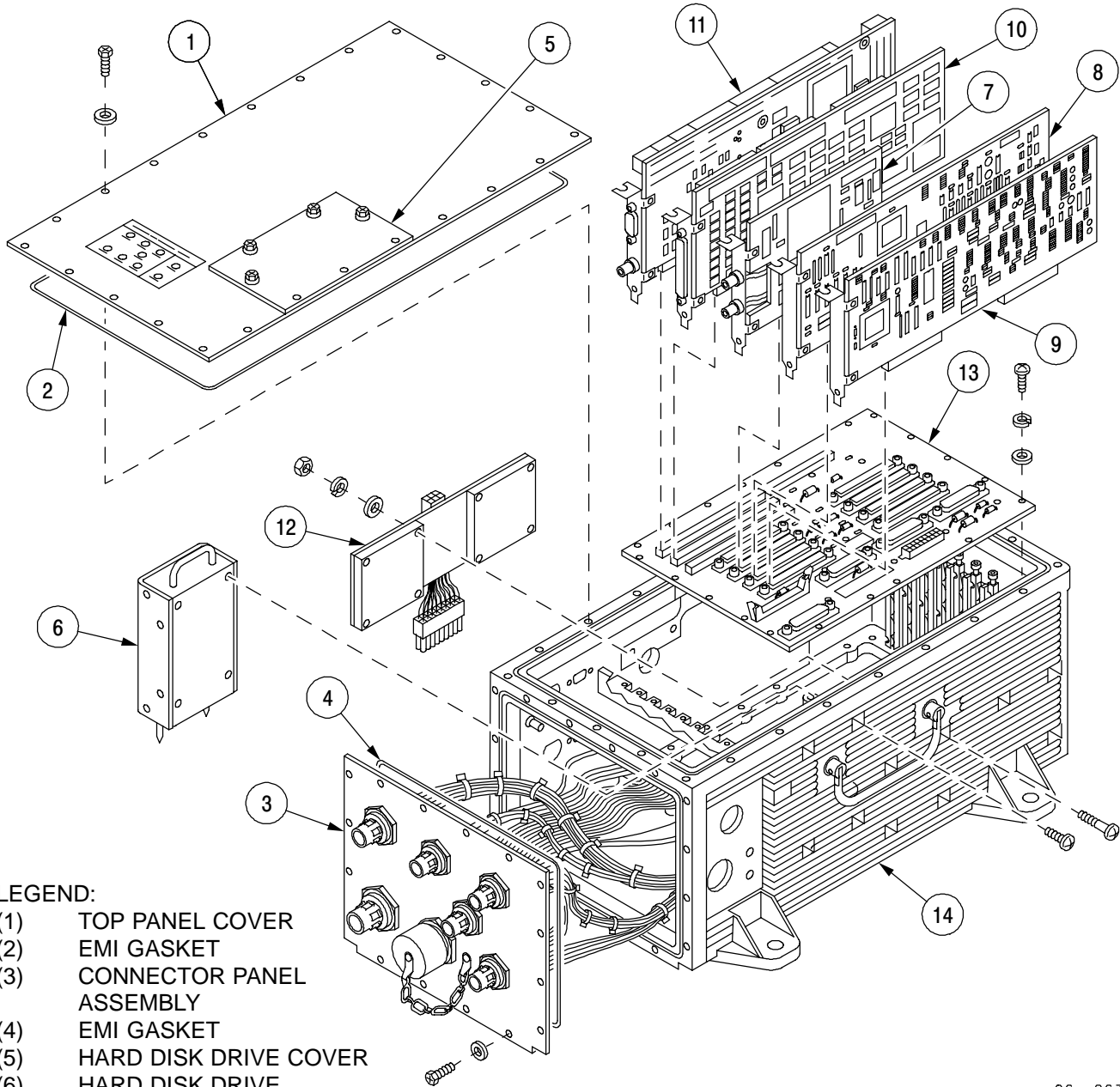


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Figure 1-1. AFCS Block Diagram

1-16. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

a. The AFCS Computer Unit (ACU) is comprised of an aluminum casting electronic housing with two handles, connector panel, hard drive, 1553 CCA, Discrete I/O CCA, Servo CCA, TCIM CCA, CPU CCA, and a Power Supply CCA. The location of these components is shown in the following illustration:



LEGEND:

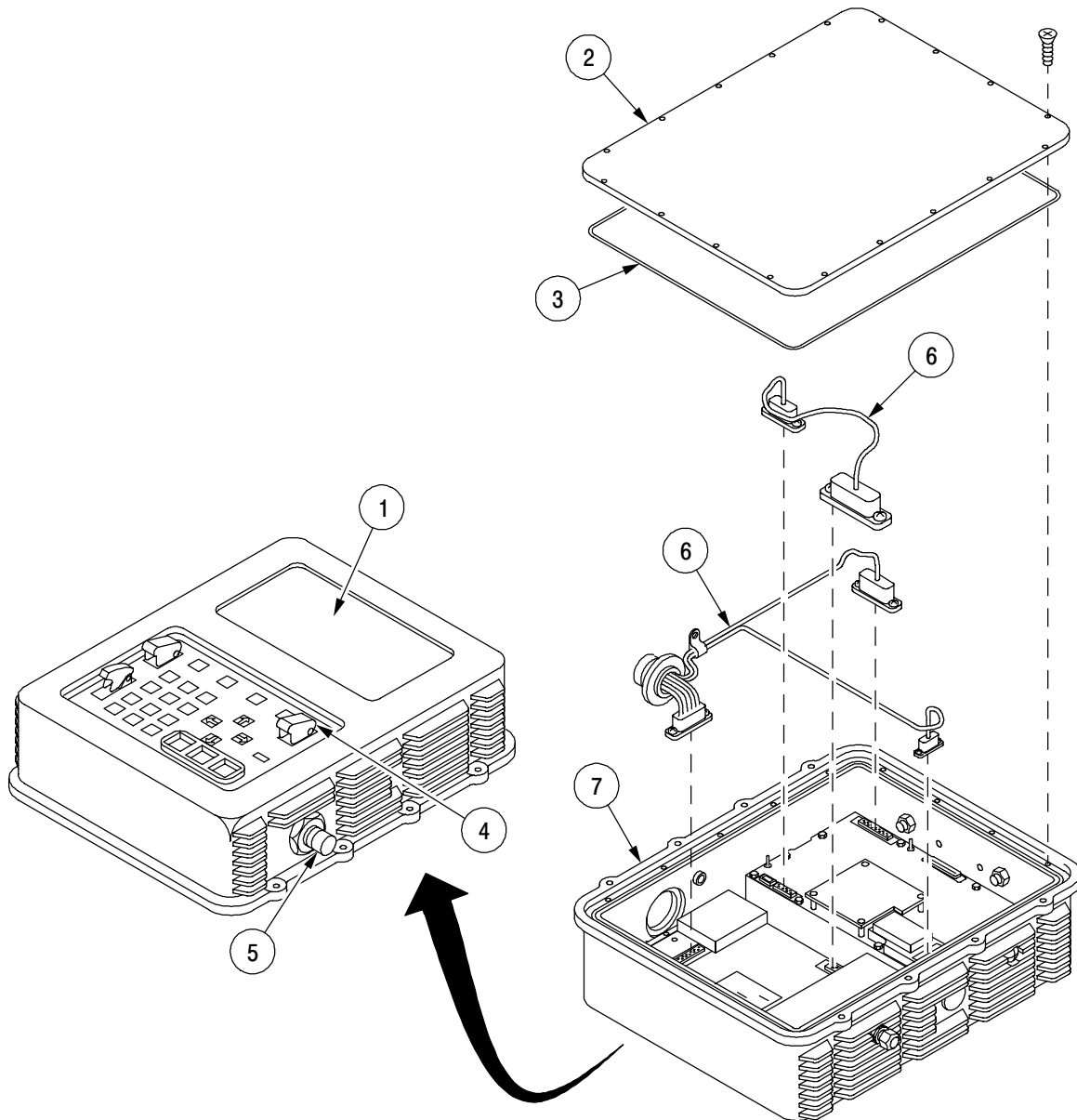
- (1) TOP PANEL COVER
- (2) EMI GASKET
- (3) CONNECTOR PANEL ASSEMBLY
- (4) EMI GASKET
- (5) HARD DISK DRIVE COVER
- (6) HARD DISK DRIVE
- (7) 1553 CCA
- (8) DISCRETE I/O CCA
- (9) SERVO CCA
- (10) TCIM CCA
- (11) CPU CCA
- (12) POWER SUPPLY CCA
- (13) BACKPLANE
- (14) ELECTRONIC HOUSING

NOTE

Cables and fasteners to CCAs are not shown to improve clarity of the illustration.

06pc263m

b. The Display Unit (DU) is comprised of an aluminum casting electronic housing enclosure with handle, electroluminescent panel, switch panel, electrical connector, and internal wiring harness. The location of these components is shown in the following illustration:



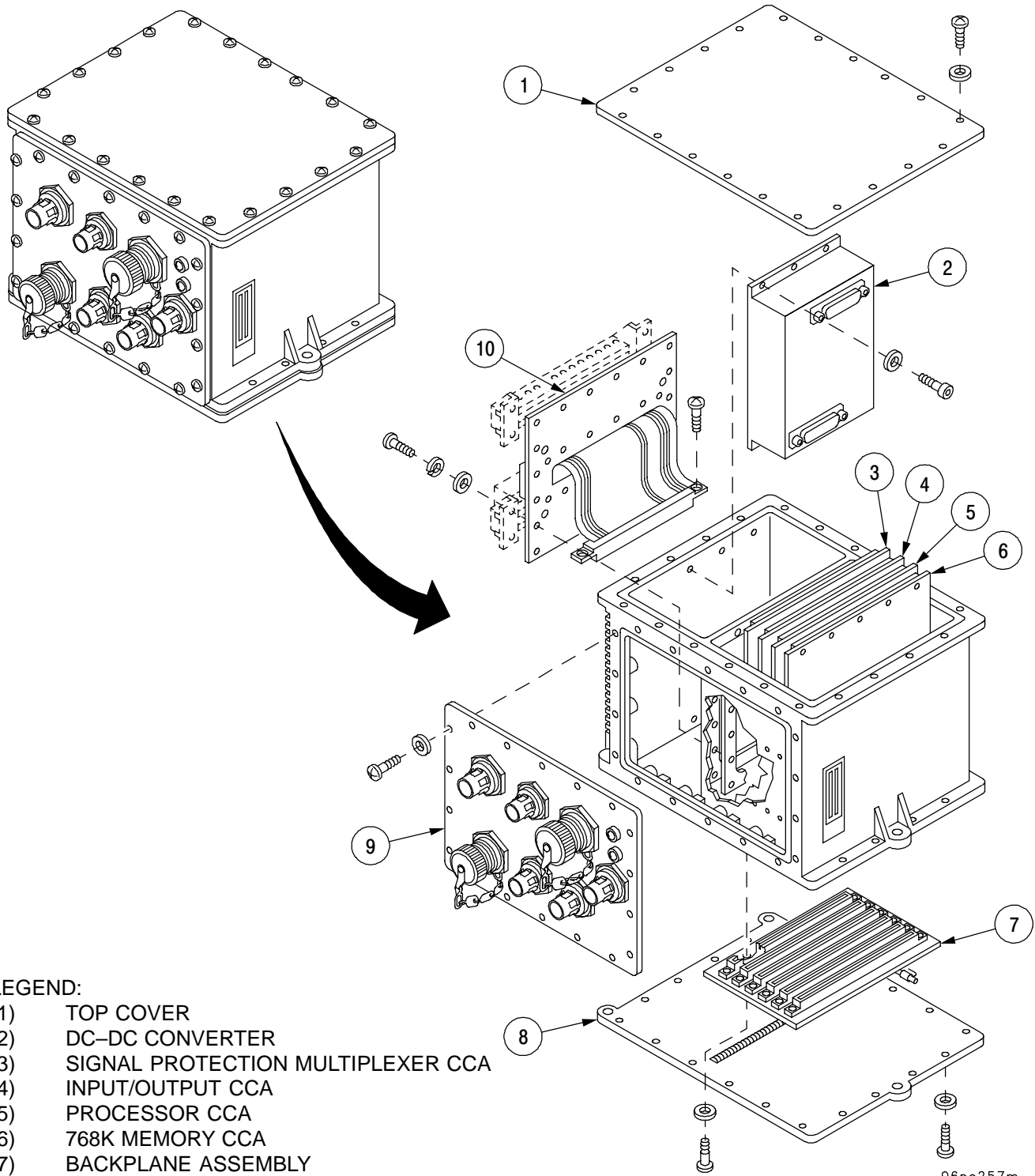
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LEGEND:

- (1) ELECTROLUMINESCENT PANEL
- (2) BOTTOM COVER
- (3) EMI GASKET
- (4) SWITCH PANEL
- (5) ELECTRICAL CONNECTOR
- (6) INTERNAL WIRING HARNESS
- (7) ELECTRONIC HOUSING

TM 9-1200-215-34&P

c. The Prognostic/Diagnostic Interface Unit (PDIU) is comprised of an aluminum casting electronic housing, electrical indicator panel, DC-DC converter, EMI filter CCA, signal protection multiplexer CCA, input/output CCA, processor CCA, and 768k memory CCA.

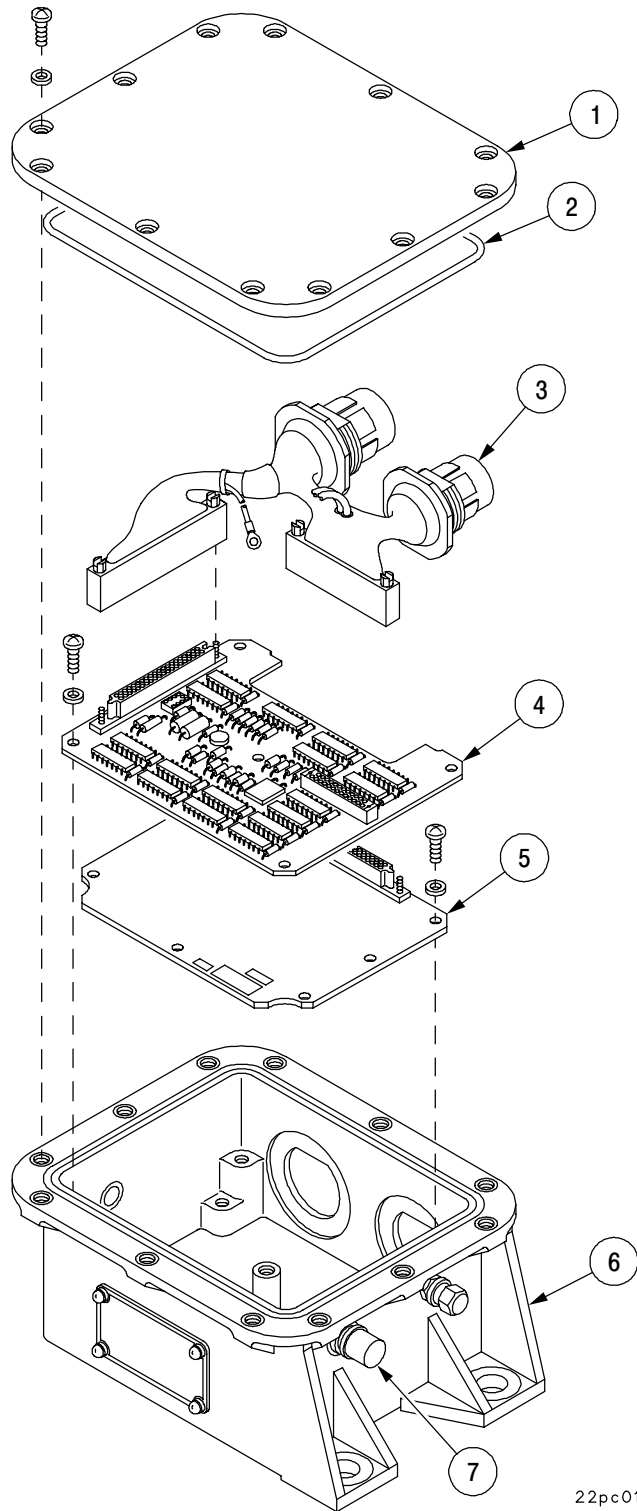


LEGEND:

- (1) TOP COVER
- (2) DC-DC CONVERTER
- (3) SIGNAL PROTECTION MULTIPLEXER CCA
- (4) INPUT/OUTPUT CCA
- (5) PROCESSOR CCA
- (6) 768K MEMORY CCA
- (7) BACKPLANE ASSEMBLY
- (8) BOTTOM COVER
- (9) ELECTRICAL INDICATOR PANEL
- (10) EMI FILTER CCA

06pc257m

d. The VMS Modem is comprised of an aluminum casting electronic housing, modem circuit card assembly, power supply, heatsink assembly, and cable assembly. The location of these components is shown in the following illustration:



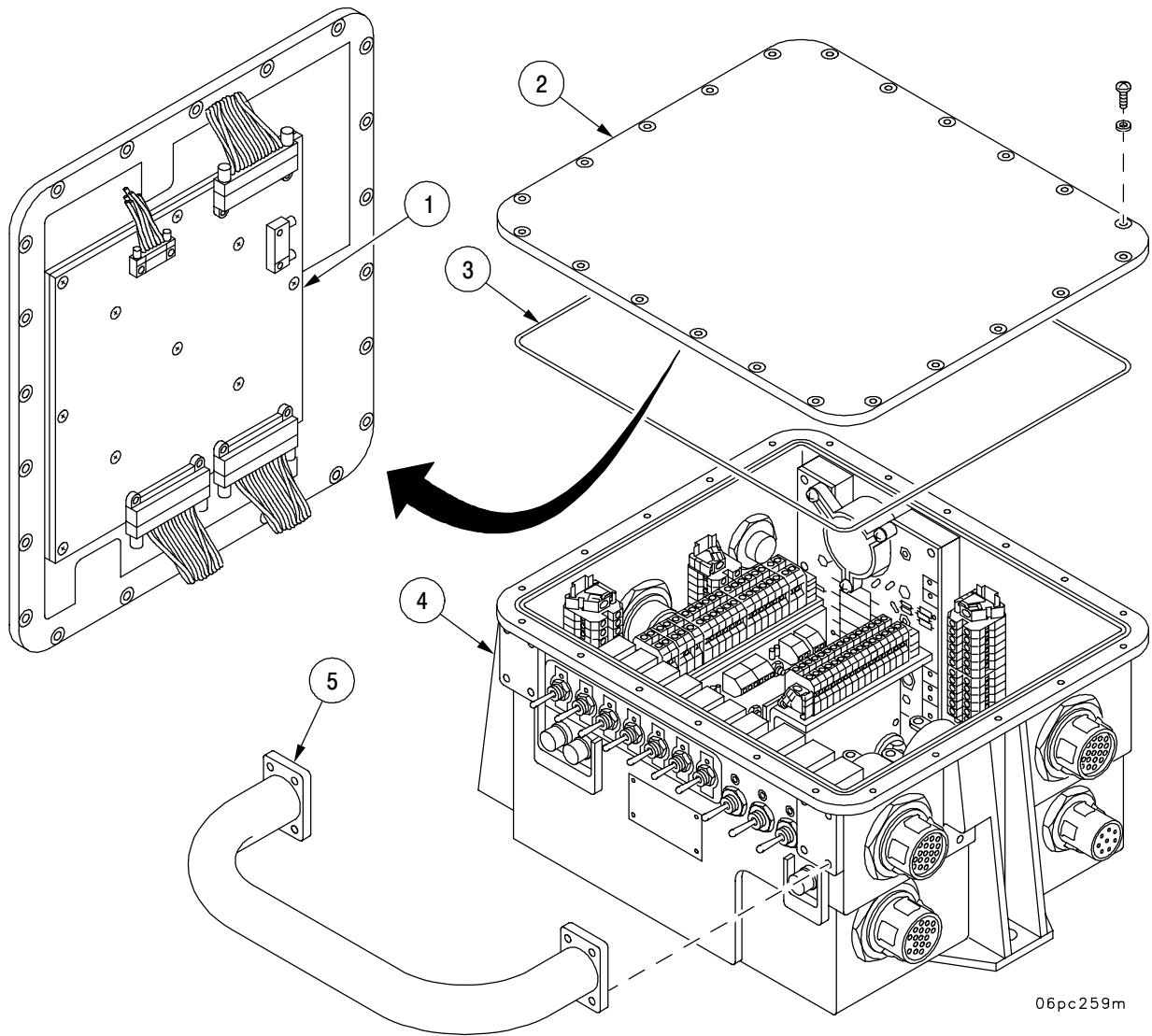
LEGEND:

- (1) COVER
- (2) EMI GASKET
- (3) CABLE ASSEMBLY
- (4) MODEM CCA
- (5) HEATSINK ASSEMBLY
- (6) ELECTRONIC HOUSING
- (7) POWER LED

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TM 9-1200-215-34&P

e. The Power Conditioning Unit (PCU) is comprised of an aluminum casting electronic housing, power supply, harness assembly, and external connectors. The location of these components is shown in the following illustration:



LEGEND:

- (1) PCU MAIN CCA
- (2) TOP COVER ASSEMBLY
- (3) EMI GASKET
- (4) ELECTRONIC HOUSING
- (5) HANDLE

1-17. DIFFERENCES BETWEEN MODELS

There is only one configuration of the AFCS equipment.

1-18. EQUIPMENT DATA

- a. Equipment performance and capabilities data for the AFCS system are summarized in the equipment data tables. Each of the AFCS units will be described within each category in the tables – General, Performance, and Electrical.
- b. Following is a list of equipment data for the AFCS:

<i>GENERAL</i>	
<u>AFCS Computer Unit</u>	
Weight	44 lb (20 kg)
Width	10.5 in. (26.7 cm)
Depth	8.5 in. (21.6 cm)
Height	20 in. (50.8 cm)
<u>Display Unit</u>	
Weight	24 lb (10.89 kg)
Width	16.2 in. (41.15 cm)
Depth	12.9 in. (32.77 cm)
Height	16.2 in. (41.15 cm)
<u>Prognostic/Diagnostic Interface Unit</u>	
Weight	24 lb (10.89 kg)
Width	10 in. (25.40 cm)
Depth	12.25 in. (31.12 cm)
Height	8.50 in. (21.59 cm)
<u>VMS Modem (each)</u>	
Weight	4 lb (1.81 kg)
Width	8.5 in. (21.59 cm)
Depth	3.0 in. (7.62 cm)
Height	6.0 in. (15.24 cm)
<u>Power Conditioning Unit</u>	
Weight	35 lb (15.88 kg)
Width	14.9 in. (37.85 cm)
Depth	12.0 in. (30.48 cm)
Height	7.0 in. (17.78 cm)

<i>ELECTRICAL</i>	
Communications interface	SINGARS (AN/VRC-89) compatible with TACFIRE FSK messages.
Remote terminal communication	MIL-STD-1553B data bus.
Input power supplied to PCU	+28 Vdc \pm 0.25 Vdc @ maximum of 50 amps, with +18.0 Vdc to +32.0 Vdc range.
Maximum PCU transient protection	\pm 250 volts for 0.1 millisecond @ maximum energy of \leq 15 millijoules.
DC grounding resistance	<2.5 milliohms at each binding joint.
Electrical harness shield bonding	5 milliohms to a mating connector.
Shielded interconnect cables	Attenuation of at least 40db to electric fields of 10Hz to 400MHz; RF backshell adapter to shield resistance of up to 5 milliohms.
Input power supplied to PDIU	+24.0 Vdc, with +18.0 Vdc to +33.0 Vdc range.

<i>AFCS PERFORMANCE</i>	
Servo gun tube response	Azimuth and elevation within 1 mil.
Servo gun tube control: traverse	Azimuth: 1422 mils in 22 sec Elevation: 1000 mils in 11 sec
<i>AFCS SURVIVABILITY</i>	
NBC decontamination/cleaning temperature	Do not exceed 180° F (82° C).
Decontamination water pressure	9 to 11 psi.

1-19. EQUIPMENT CONFIGURATION

The AFCS system equipment, the cable interconnects, and the electrical layout of the system units are designed to one configuration only.

Section III – GENERAL TROUBLESHOOTING AND MAINTENANCE

	Page		Page
General	1-15	Inlet Valve Maintenance Instructions	1-22
Initial Fault Indication	1-15	J5 Protective Cover Maintenance	
Fault Isolate LRU	1-16	Instructions	1-23
Purge LRU	1-18		

1-20. GENERAL

This section provides general troubleshooting procedures which will fault isolate the defective component(s) of the Line Replaceable Unit (LRU) down to the defective Shop Replaceable Unit (SRU) and maintenance procedures that are common to multiple LRUs.

1-21. INITIAL FAULT INDICATION

- a. An LRU failure is indicated when one of the following occurs:
 - (1) The green indicator light (POWER) did not come on when power was applied to the LRU.
 - or
 - (2) The red indicator light (BIT) came on when input power was applied to the LRU or during unit operation, when BIT runs continuously.
- b. When an LRU failure has been detected, proceed to further troubleshoot the LRU by using Electronic Shop Transportable AN/TSM-191(V)3. Results from this fault isolation will indicate SRU component(s) requiring replacement. The LRU fault isolation procedure is presented in paragraph 1-22.

1-22. FAULT ISOLATE LRU

DESCRIPTION

This task covers: a. Setup b. Test

INITIAL SETUP

Tools:

Tool Kits, JTK-17LAL, TK-101/G, or TK-105/G
(items 34, 35, & 36, Appendix E)
Electronic Shop, Transportable, AN/TSM-191(V)3
(item 11, Appendix E)
Work Station Kit, Electronic (item 38, Appendix E)
TPS for Paladin LRUs (item 37, Appendix E)

Equipment Condition:

Unenergized LRU is on workbench.

Personnel Required:

One MOS 35Y

NOTE

This is the standard procedure for fault isolating LRUs before and for verifying functioning of LRU after maintenance.

a. SETUP

CAUTION



ESD SENSITIVE

This procedure involves electrostatic discharge (ESD) sensitive parts. Operator must be properly grounded to static pad set before handling equipment.

NOTE

The appropriate LRU Assembly TPS must be loaded into the Electronic Shop, Transportable before attempting this procedure.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Locate the Optical Disk Cartridge from TPS for Paladin LRUs. Insert cartridge in Electronic Shop Transportable optical drive. Select the LRU test program.

b. TEST

1. At system video display, enter steps to begin test.
2. Follow instructions shown on video display and connect LRU assembly to Electronic Shop, Transportable.

1-22. FAULT ISOLATE LRU CONTINUED

b. TEST CONTINUED

3. Observe test results and instructions on terminal display.
4. Disconnect LRU assembly from Electronic Shop, Transportable.
5. Repair faulty LRU component in accordance with procedures in Section V of appropriate chapter for LRU being tested, and repair parts authorized in Appendix C. For repair beyond field level, forward to Depot.
6. Forward LRU assembly to spares stores.

1-23. PURGE LRU

DESCRIPTION

This task covers: a. Setup b. Purging

INITIAL SETUP

Tools:

Tool Kits, JTK-17LAL, TK-101/G, or TK-105/G
(items 34, 35, & 36, Appendix E)
Purging Kit (item 16, Appendix E)

Equipment Condition:

Unenergized LRU is on workbench.

Personnel Required:

One MOS 35Y

Material/Parts:

Nitrogen, Technical (item 20, Appendix D)

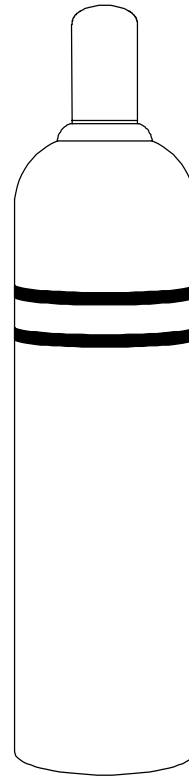
NOTE

On applicable LRUs, this procedure is performed after any maintenance action that resulted in the internal components of the AFCS LRU being exposed to the outside air.

a. SETUP

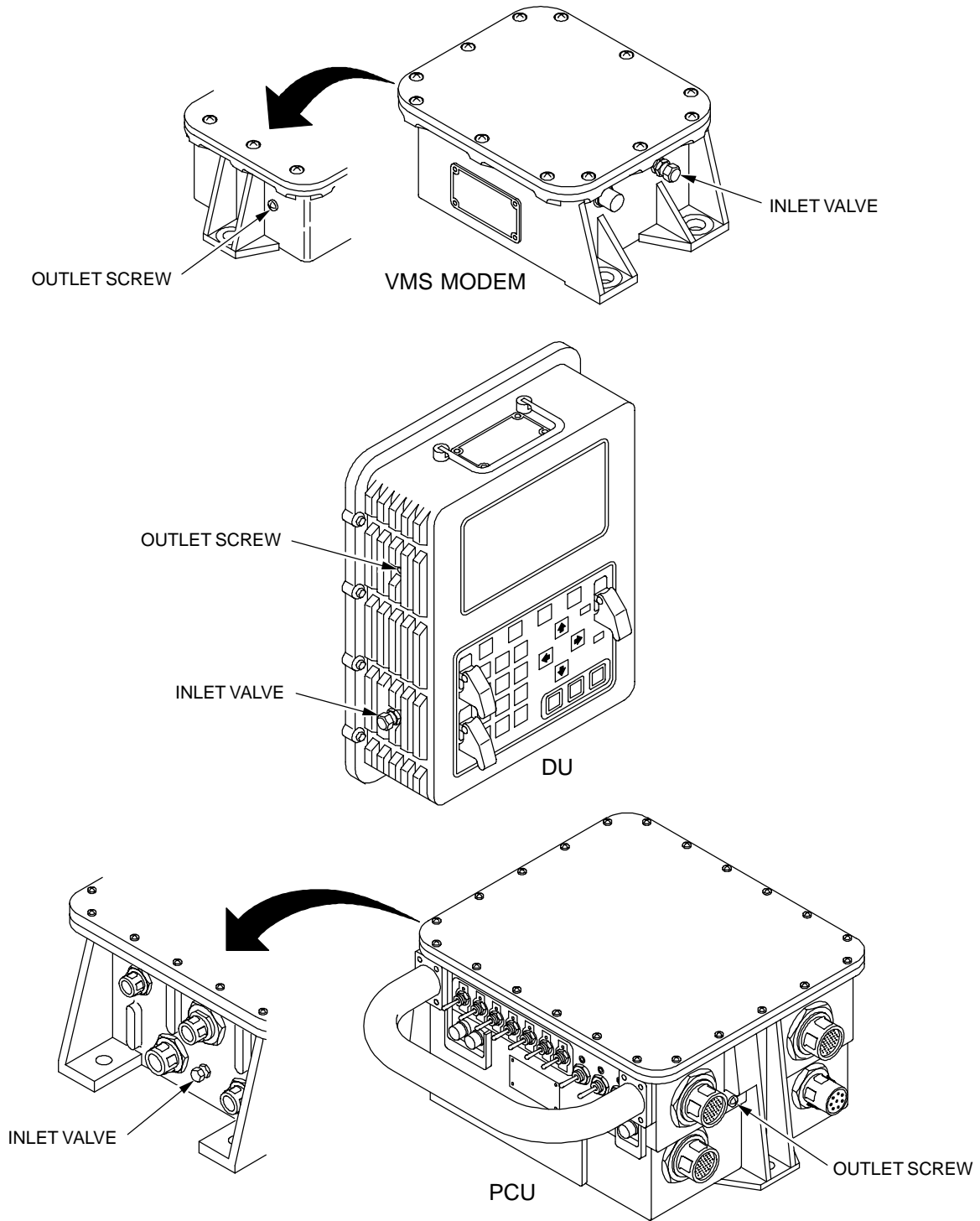
WARNING

- Gas bottles are similar in size and shape and can be mistaken for one another. Use only nitrogen. Nitrogen bottles are gray with two black stripes. Performing this task with the wrong gas may result in personnel injury or damage to equipment.
- Nitrogen can cause asphyxia by depleting the local oxygen supply. Do not use in an unventilated area or with direct flow toward the face. Failure to comply may result in personnel injury.



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1-23. PURGE LRU CONTINUED



06pc262m

Figure 1-2. Location of Inlet Valves and Outlet Screws on AFCS LRUs

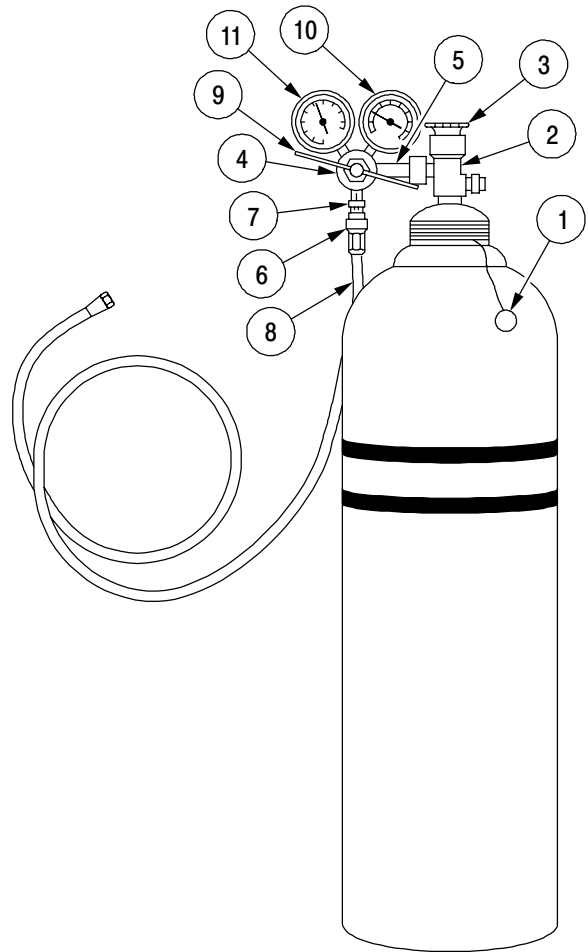
1-23. PURGE LRU CONTINUED

a. SETUP CONTINUED

NOTE

If the nitrogen tank has already been set up with the regulator and hose assembly attached, skip to step 7.

1. Remove protective cover (1) from nitrogen tank outlet valve (2).
2. Open briefly, then close nitrogen tank outlet valve (2) by turning valve handle (3) to rid outlet valve of foreign matter.
3. Install regulator (4) and nitrogen tank adapter (5) on nitrogen tank outlet valve (2).
4. Install 9/16 inch x 18 tpi threaded adapter (6) in regulator outlet port (7).
5. Attach purging hose assembly (8) to 9/16 inch x 18 tpi threaded adapter (6).
6. Rotate regulator valve (9) to closed position.
7. Open nitrogen tank outlet valve (2) by turning handle (3) slowly until maximum tank pressure registers on regulator high pressure gauge (10).



06pc271m

NOTE

If the indicated pressure is less than 100 psig, obtain a replacement tank and start this procedure over.

8. Hold purging hose (8) at free end.
9. Open regulator valve (9) slowly until low pressure gauge (11) indicates 5 psig.
10. Allow gas to flow from purging hose (8) for approximately 5 seconds to clear hose of any foreign matter.
11. Rotate regulator valve (9) to closed position.

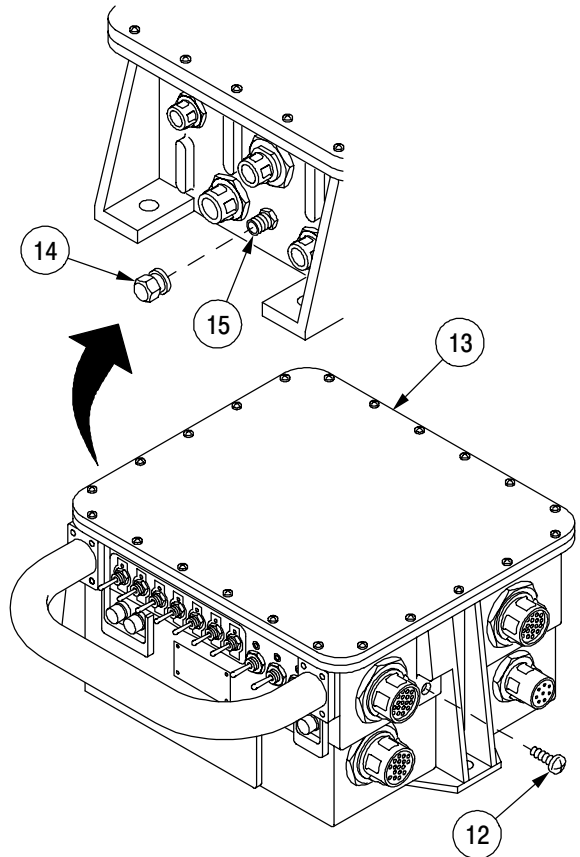
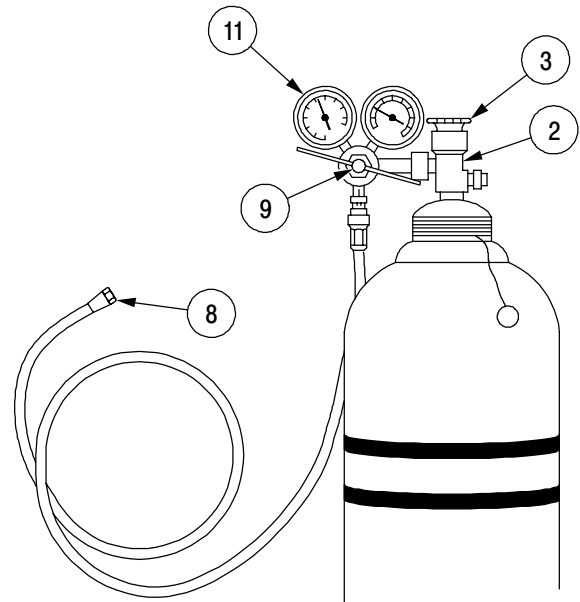
1-23. PURGE LRU CONTINUED

b. PURGING

NOTE

There are three components included in the AFCS that require purging. Purging procedures are identical for each. Locations of the outlet screw and inlet valve for each LRU are depicted in Figure 1-2.

1. Remove outlet screw (12) from AFCS component (13).
2. Remove cap (14) from inlet valve (15) on AFCS component (13) and connect free end of purging hose (8) to inlet valve.
3. Rotate regulator valve (9) slowly clockwise until low pressure gauge (11) indicates 5 psig.
4. Purge AFCS component for 5 minutes.
5. Rotate regulator valve (9) to closed position.
6. Install outlet screw (12).
7. Remove purging hose (8) from inlet valve (15) and install cap (14) on inlet valve.
8. Close nitrogen tank outlet valve (2) by turning valve handle (3) to closed position.



06pc272m

1-24. INLET VALVE MAINTENANCE INSTRUCTIONS

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

Tool Kits, JTK-17LAL, TK-101/G, or TK-105/G
 (items 34, 35, & 36, Appendix E)
 Torque Wrench, 0-15 in.-lb (item 39, Appendix E)
 7/16" x 1/4" Drive Deep Socket
 (item 20, Appendix E)
 Insertion and Extraction Valve Core Tool
 (item 13, Appendix E)

Material/Parts:

Compound, Sealing (item 25, Appendix D)

Equipment Condition:

Unenergized LRU is on workbench.

Personnel Required:

One MOS 35Y

NOTE

This is the standard procedure to remove the inlet valve on all LRUs. Check table 1-1 for approximate location of inlet valve. Figure 1-2 provides additional detail.

Table 1-1. Inlet Valve Locations

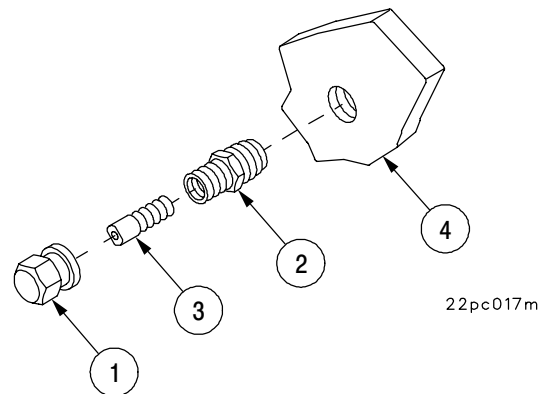
LRU	Location
DU	Electronic Housing
VMS Modem	Electronic Housing
PCU	Electronic Housing

a. REMOVAL

1. Remove cap (1) from valve stem (2).
2. Using valve core tool, remove valve core (3) from valve stem (2).
3. Remove valve stem (2) from electronic housing (4).

b. INSTALLATION

1. Apply sealing compound to valve stem (2) pipe threads. Insert valve stem (2) into electronic housing or bottom cover (4), as appropriate.
2. Torque valve stem (2) to 10 ± 1 in.-lb (1.1 ± 0.1 N•m).
3. Install valve core (3) in valve stem (2) and tighten until firmly seated.
4. Install cap (1) on valve stem (2). Torque cap to 4.5 ± 0.5 in.-lb (0.51 ± 0.06 N•m).



1-25. J5 PROTECTIVE COVER MAINTENANCE INSTRUCTIONS

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

Tool Kits, JTK-17LAL, TK-101/G, or TK-105/G
 (items 34, 35, & 36, Appendix E)
 Torque Wrench, 0-15 in.-lb (item 39, Appendix E)
 #2 Crosstip Screwdriver Socket
 (item 22, Appendix E)

Equipment Condition:

Unenergized LRU is on workbench.

Personnel Required:

One MOS 35Y

NOTE

This is the standard procedure to remove and replace the J5 protective cover on all LRUs that are so equipped. Check table 1-2 for listing of LRUs with J5 connectors.

Table 1-2. LRUs with J5 Connectors

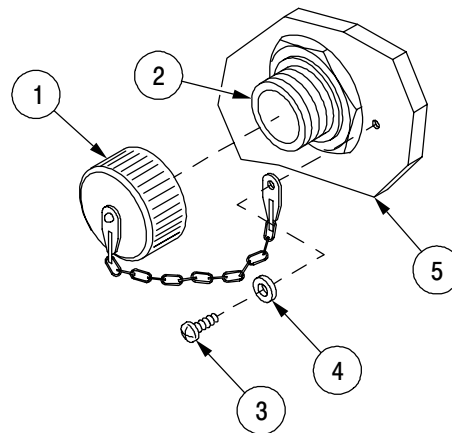
LRU	J5 Connectors
PDIU	Yes
ACU	Yes
DU	No
VMS Modem	No

a. REMOVAL

1. Remove J5 protective cover (1) from connector (2).
2. Remove screw (3) and flat washer (4) securing J5 protective cover (1) to bottom cover (5).

b. INSTALLATION

1. Install screw (3) and flat washer (4) securing J5 protective cover (1) to bottom cover (5). Torque screw to 9.5 ± 0.5 in.-lb (1.1 ± 0.1 N•m).
2. Install J5 protective cover (1) on connector (2).



06pc261m

CHAPTER 2. DIRECT SUPPORT MAINTENANCE INSTRUCTIONS FOR THE AFCS COMPUTER UNIT (ACU)

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

	Page	Page	
Common Tools and Equipment	2-1	Repair Parts	2-1
Special Tools, TMDE, and Support Equipment	2-1		

2-1. COMMON TOOLS AND EQUIPMENT

For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE), CTA 50-970, or CTA 8-100, as applicable to your unit.

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

Refer to Appendix C, Repair Parts and Special Tools List for applicable special tools, TMDE, and support equipment.

2-3. REPAIR PARTS

Refer to Appendix F of this manual for a list of Mandatory Replacement Parts. Repair parts are listed and illustrated in Appendix C of this manual.

Section II – SERVICE UPON RECEIPT

	Page	Page	
Site and Shelter Requirements	2-1	Service Upon Receipt of Materiel	2-1

2-4. SITE AND SHELTER REQUIREMENTS

AFCS Computer Unit DS maintenance will be performed using facilities contained within the Electronic Shop, Transportable, AN/TSM-191(V)3.

2-5. SERVICE UPON RECEIPT OF MATERIEL

- a. Unpacking.
 - (1) Place packed AFCS Computer Unit (ACU) on a work bench.
 - (2) Check the condition of the packaged ACU. Check the markings. Note any discrepancies.
 - (3) Do not use sharp blades or sharp cutting tools when unpacking the ACU. Remove the materiel carefully.
- b. Check unpacked equipment.
 - (1) Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on SF 364, Report of Discrepancy.

(2) Check the equipment against the packing slip to see if the shipment is complete. Report all discrepancies in accordance with the instructions of DA PAM 738-750.

c. Processing unpacked equipment. Enter unpacked and checked equipment into normal work schedule based on standard shop practice.

Section III – PRE-SHOP ANALYSIS

	Page	Page
Introduction	2-2	Pre-shop analysis 2-2

2-6. INTRODUCTION

Pre-shop analysis is a method for screening incoming equipment to determine its physical condition for maintenance tasks required to return the equipment to service. Pre-shop analysis begins with a technical inspection of the equipment and ends with a report of corrective actions taken. Other than for structural malfunctions, such as broken handles, all incoming equipment is subject to manual troubleshooting as outlined in Section IV of this chapter.

2-7. PRE-SHOP ANALYSIS

Using Table 2-1 and paragraph 1-11 as a guide, check for parts that are broken, cracked, bent, dented, or missing. Evaluate condition of assembly. Verify that all cable receptacles are securely fastened. Acceptable cracks and dents should be cleaned and missing Chemical Agent Resistant Coating (CARC) should be reapplied.

WARNING

Uncured CARC paint contains hazardous materials. Follow manufacturer's instruction in preparation and application of the CARC. Failure to comply may result in injury to personnel.

Table 2-1. Pre-shop Analysis Guide

Item	Description	Check	Action
1	Forms and Tags	Existence.	Determine reason for sending LRU to maintenance.
2	Receptacle: J1, J2, J3, J4 J5, J6, J7, J8, J9	Existence, cleanliness, corrosion, dents, cracks, bent pins, and broken or worn connector lugs. Condition of J5 protective cover.	Tighten, clean, or forward to depot as appropriate. Replace J9 protective cover per paragraph 1-25.
3	Indicator Lights	Existence, cleanliness, and cracks.	Clean or replace as required. (Reference paragraph 2-20 for replacement procedure.)
4	Handles	Existence, function, and cracks.	Replace per paragraph 2-25 as required.
5	Enclosure	Cleanliness, corrosion, dents, cracks, broken or missing vanes, and mounting feet. Condition of inlet valve.	Clean, evaluate, or forward to depot as appropriate.
6	Circuit Card Assemblies (CCAs)	All CCAs installed; none missing.	Remove top panel per paragraph 2-13 and visually inspect for existence per figure 2-3 or damage.

Section IV – MANUAL TROUBLESHOOTING

	Page		Page
General	2-3	Post-Maintenance Test	2-6
Functional Description	2-3		

2-8. GENERAL

This chapter contains information on checks and corrective actions required to isolate defects in the AFCS Computer Unit (ACU) and correct the defects by means of maintenance. The manual troubleshooting shall begin with a fault or symptom and lead to a single fault isolation of the problem. In cases where the maintenance must be performed at a higher level, the description will note "Forward ACU to Depot".

2-9. FUNCTIONAL DESCRIPTION

a. The AFCS Computer Unit (ACU) receives vehicle position data from the on-board positioning system for ballistic computation and weapons control and calculates distance and direction to the target location entered from the Display Unit (DU). Using stored ballistics data, the ACU calculates appropriate gun tube elevation to reach the target. Elevation and azimuth commands are sent to the weapon's hydraulics system to adjust gun tube direction and elevation. The ACU automatically performs radio interface functions for the system. It controls radios, radio network interface, intercom interface, and composition/decomposition of messages. It is the digital processing device for the DU, interfaces with the on-board vehicle positioning system, and contains the embedded trainer controller for simulating navigation and gun laying missions.

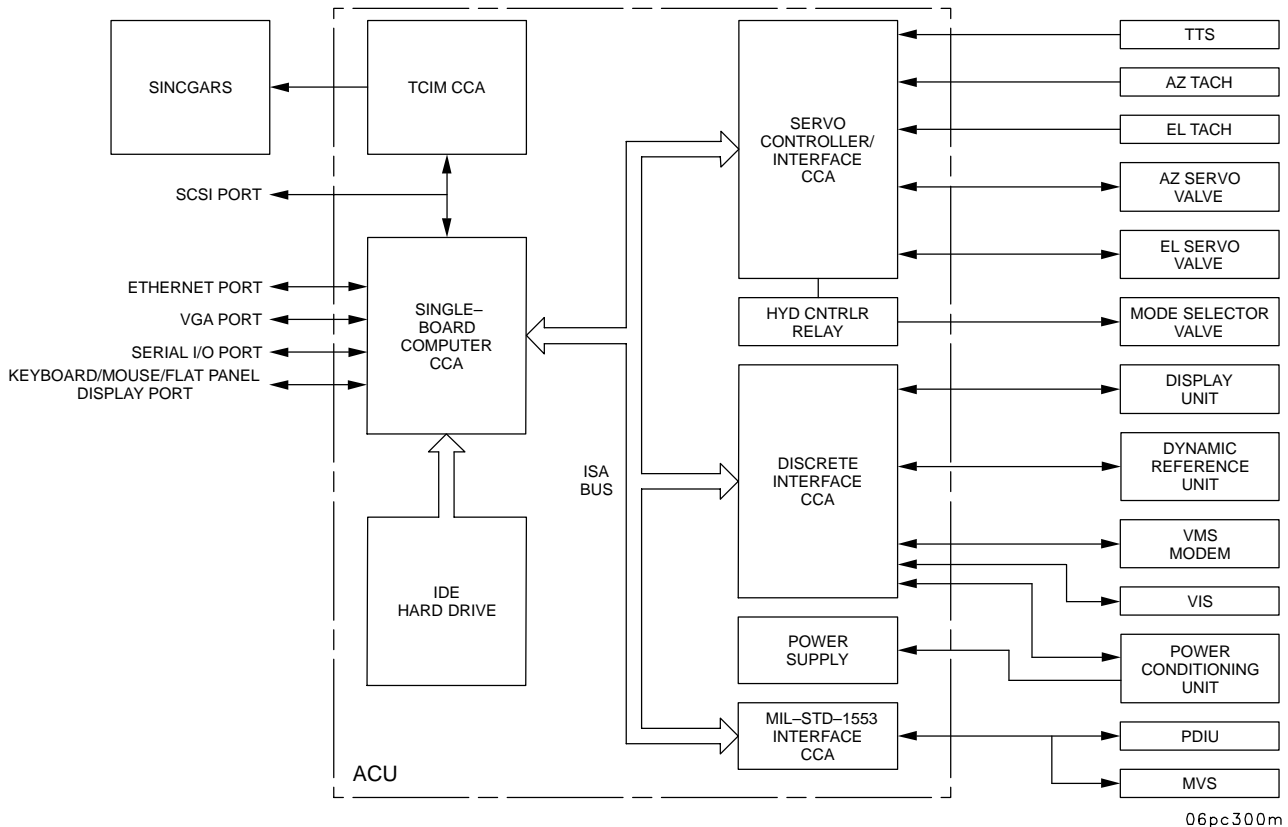


Figure 2-1. AFCS Computer Unit Block Diagram

TM 9-1200-215-34&P

b. During operation, the ACU receives projectile type, propellant charge, relative target location, and miscellaneous information from other AFCS and navigation components, via a 1553B bus. Ballistic processing is accomplished by using equations of motion. Sheaf processing algorithms, compatible with those used by the Battery Computer System (BCS), are used to compute aimpoint offsets. Computed solutions are sent to the ACU weapons controller to implement valid 155mm projectile/fuze/charge combinations. The weapons controller will automatically lay the weapon to the determined azimuth and elevation when the GUN SERVO switch on the Display Unit (DU) is activated. In addition to weapon control function, the ACU interfaces with a gun tube mounted temperature sensor. The ACU interprets temperature data and then monitors the status of the gun tube temperature. The block diagram shown in figure 2-1 illustrates the principal ACU signal flows during operation.

c. The ACU consists of a single, sealed, enclosed housing and the following components:

- Power Supply Assembly
- Central Processing Unit (CPU) Circuit Card Assembly (CCA)
- Hard Disk Drive
- Servo Controller/Interface Circuit Card Assembly (CCA)
- Discrete I/O Circuit Card Assembly (CCA)
- 1553 Circuit Card Assembly (CCA)
- Tactical Communications Interface Module (TCIM) Circuit Card Assembly (CCA)
- Backplane
- Solenoid Relay

(1) Power Supply Assembly. The ACU power supply assembly converts conditioned vehicle power to properly regulated local system voltage levels required on each ACU shop replaceable unit (SRU). The power supply provides +5.0 Vdc, +15.0 Vdc, and -15.0 Vdc. When 28 volt input power is supplied, the LRU "POWER" LED will illuminate. The power supply also assists in isolating and filtering system power to meet Electromagnetic Interference, Electromagnetic Radiation, and Electromagnetic Pulse (EMI/EMR/EMP) requirements

(2) Central Processing Unit (CPU) Circuit Card Assembly (CCA). The CPU CCA is based on a Pentium Processor. It performs all computations of projectile ballistics, relating relevant variables including target position, time on target, gun position, metrological conditions, projectile type, charge type, charge temperature, and tube temperature. The CPU CCA coordinates ACU activities on the local system bus, performs ACU power-up initialization and tests, and performs power-down preparations. Facilities are provided to support the AFCS Built-In Test (BIT) requirements. A diagnostic port allows attachment of an external computer to gain control of the CPU CCA and perform diagnostic tests, including initiating resident tests and downloading new software to be executed on the ACU hardware. There are four Single In-line Memory Module (SIMM) sockets available on the CPU CCA. RAM can be configured from 2MB to 128MB. The default configuration is 32MB of RAM in two SIMM sockets.

(3) Hard Disk Drive. The ACU hard disk drive contains 500 to 750 MB of removable internal read/write storage memory. The hard disk drive is user removable without special tools. Operating system and tactical software are resident on the hard disk drive.

(4) Servo-Controller/Interface Circuit Card Assembly (CCA). The ACU Servo Interface CCA provides a link between the CPU module and the Servo Controller module. It controls all ACU interaction with the gun hydraulic Servo Controller. The Servo Controller functions to supply operating current to Azimuth and Elevation Electrohydraulic Servo Valves. The Servo Controller is a dual channel, solid state, frequency-compensated, electronic controller. Either channel is capable of energizing the coils of an electrohydraulic servo valve. A dither circuit and linear input circuit for control signal and balancing signals are provided for both sections of the controller. A Servo Continuity Loop is used by the ACU to determine that Azimuth and Elevation Tachometers are connected to the system. These tachometers must provide feedback to the Servo Controller module so that it can properly control the motion of the weapon through the Azimuth and Elevation Servo Valves. Without this feedback, unpredictable movement of the weapon may occur. If the Servo Continuity Loop is closed, the Servo Interface module can activate the Solenoid Relay.

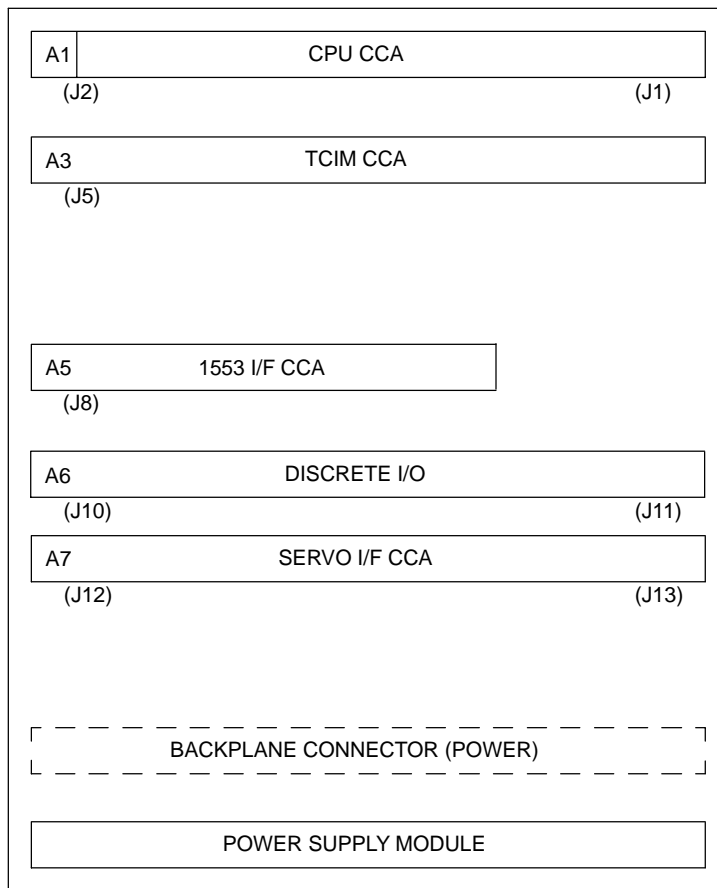
(5) Discrete I/O Circuit Card Assembly (CCA). The Discrete I/O CCA consists of analog and digital circuitry that supports key communications protocols and formats used by the ACU to communicate with other AFCS hardware. The links provided by the Discrete I/O CCA include:

- Digital and discrete signal communications with the Display Unit (DU)
- Digital signal communications with the Dynamic Reference Unit (DRU)
- Digital signal communications with the Cab-Side VMS Modem
- Discrete communications with the Power Conditioning Unit (PCU) and Vehicle Intercom System (VIS)

(6) 1553 Circuit Card Assembly (CCA). Interconnection of the ACU with the remainder of the AFCS is accomplished through the 1553 bus system. The 1553 CCA provides the interface between the ACU and the 1553 bus.

(7) Tactical Communications Interface Module (TCIM) (CCA). The Tactical Communications Interface Module CCA allows direct connection between the ACU single-board computer CCA and the SINCGARS via the SCSI port of the computer CCA.

(8) Backplane. The backplane of the ACU provides connectors for mating with the CCAs, and distributes signals and power among the CCAs. The chassis card slot allocations for the ACU component modules are depicted in Figure 2-2.



06pc301m

Figure 2-2. ACU Backplane Connectors

(9) Solenoid Relay. The Solenoid Relay provides power to the Hydraulic Solenoid Valve and the Bypass Valve. The Hydraulic Solenoid Valve applies vehicle hydraulic pressure to the Azimuth and Elevation Servo Valves when adjusting the position of the weapon. The bypass valve allows hydraulic fluid to flow around the hydraulic motor when the hydraulic system is not pressurized. This allows the weapon to be hand cranked into position in the event the AFCS is inoperative.

2-10. POST-MAINTENANCE TEST

Perform end-to-end test of the ACU in accordance with TPS 12958912 to verify the operation of the ACU.

Section V – MAINTENANCE PROCEDURES

	Page		Page
General	2-6	Power Supply Assembly Maintenance	
Hard Disk Drive and Cover		Instructions	2-29
Maintenance Instructions	2-8	LED Maintenance Instructions	2-32
Top Panel Maintenance		Serial I/O Port Cable, VGA	
Instructions	2-11	Cable, SCSI Ribbon Cable	
CCA Stabilizer Bracket		Maintenance Instructions	2-36
Maintenance Instructions	2-14	Ethernet Cable and 1553 (Channel B) Cable	
1553 CCA Maintenance		Maintenance Instructions	2-40
Instructions	2-16	Connector Panel Assembly with	
Discrete I/O and Servo CCA(s)		Main Cable Maintenance	
Maintenance Instructions	2-18	Instructions	2-44
TCIM CCA Maintenance		Backplane Maintenance	
Instructions	2-20	Instructions	2-50
CPU CCA Maintenance		ACU Handle Maintenance	
Instructions	2-24	Instructions	2-54

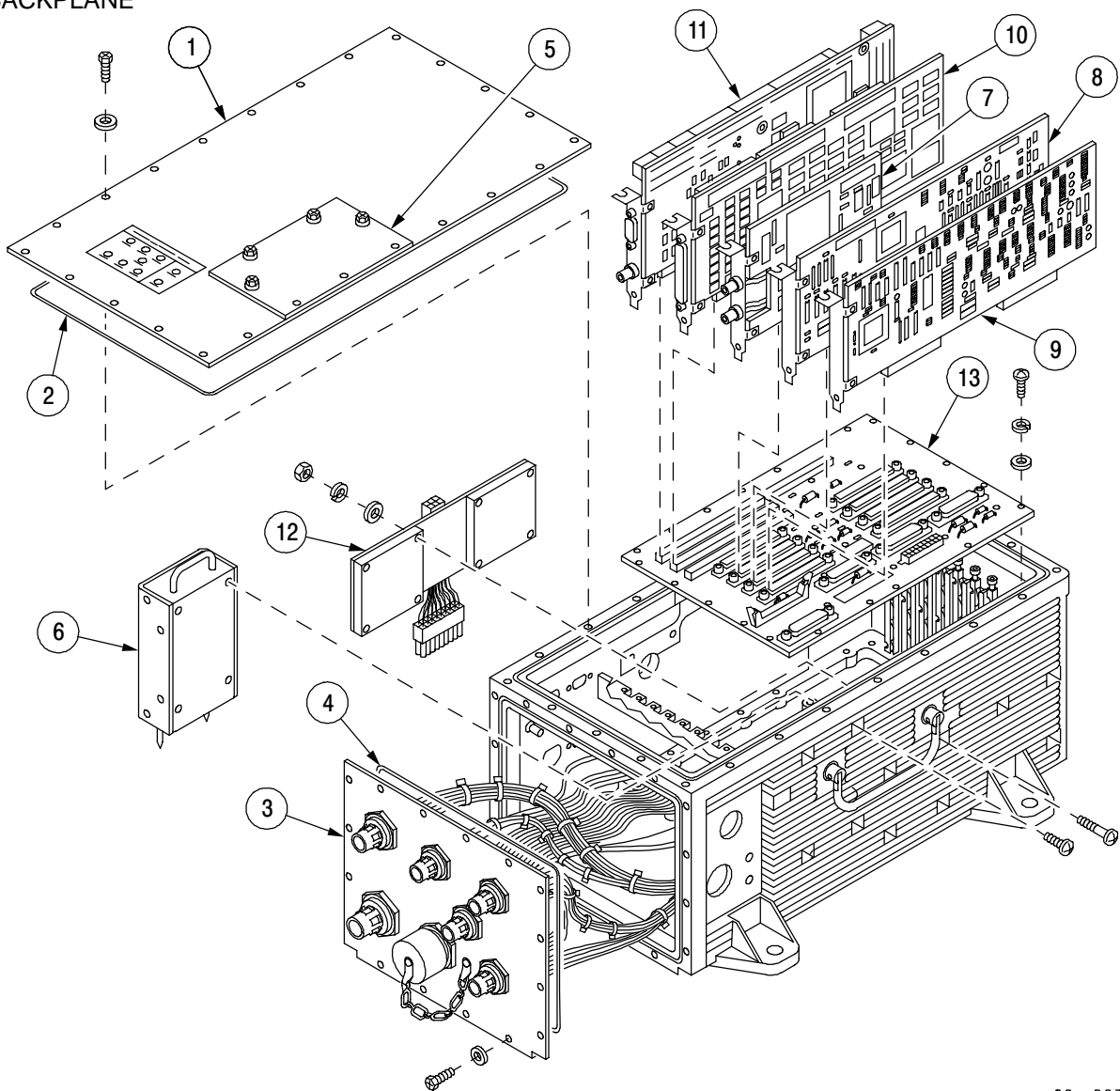
2-11 GENERAL

a. This section contains the step-by-step maintenance procedures for DS level maintenance of the ACU. These procedures are provided to access components for general maintenance. These maintenance tasks are authorized by the Source, Maintenance, and Recoverability (SMR) codes indicated in the Repair Parts and Special Tools List (RPSTL) in Appendix C. There are no GS level maintenance tasks for the ACU.

b. Figure 2-3 depicts the location of each of the major replaceable assemblies in the ACU.

LEGEND:

- (1) TOP PANEL
- (2) EMI GASKET
- (3) CONNECTOR PANEL ASSEMBLY
- (4) EMI GASKET
- (5) HARD DISK DRIVE COVER
- (6) HARD DISK DRIVE
- (7) 1553 CCA
- (8) DISCRETE I/O CCA
- (9) SERVO CONTROLLER/INTERFACE CCA
- (10) TCIM CCA
- (11) CPU CCA
- (12) POWER SUPPLY ASSEMBLY
- (13) BACKPLANE



06pc263m

Figure 2-3. AFCS Control Unit Exploded View

2-12. HARD DISK DRIVE AND COVER MAINTENANCE INSTRUCTIONS

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

Tool Kits, JTK-17LAL, TK-101/G, or TK-105/G
 (items 34, 35, & 36, Appendix E)
 Torque Wrench, 0-75 in.-lb (item 40, Appendix E)
 Torque Wrench, 0-15 (item 39, Appendix E)
 #2 Crosstip Screwdriver Socket Wrench (item 22,
 Appendix E)

Materials/Parts:

Screw, Machine (item 10, Appendix F)

Equipment Conditions:

Unenergized ACU is on workbench

Personnel Required:

One MOS 35Y

a. REMOVAL

CAUTION



ESD SENSITIVE

The ACU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.

CAUTION

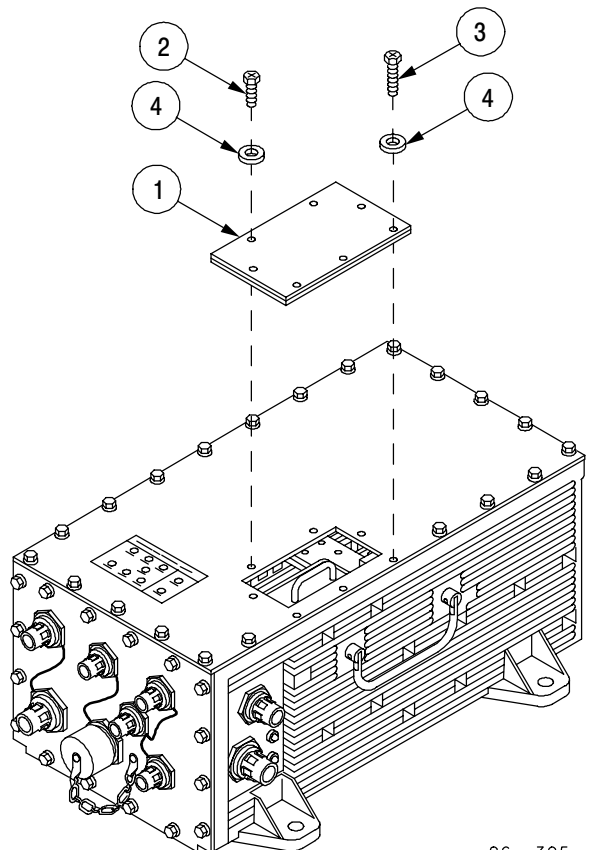
The EMI shielding gasket is vital to this piece of equipment and is easily damaged. Handle cover with care when removing or replacing it. Failure to comply may result in damage to equipment.

2. Remove hard disk drive cover (1) by removing four screws (2), three screws (3) and seven flat washers (4).

NOTE

EMI shielding gasket is bonded to cover and must be replaced as a unit.

3. Inspect EMI shielding gasket for cuts, nicks, or signs of separation from cover. Discard cover if EMI shielding gasket is unserviceable.



06pc305m

2-12. HARD DISK DRIVE AND COVER MAINTENANCE INSTRUCTIONS CONTINUED

a. REMOVAL CONTINUED

NOTE

Screw and seal are a unit. They cannot be requisitioned separately.

4. Remove hard disk drive (5) by removing four screws with seals (6) from side of ACU. Discard screw with seal.
5. Pull hard disk drive (5) out of ACU by handle.

b. INSTALLATION

CAUTION



ESD SENSITIVE

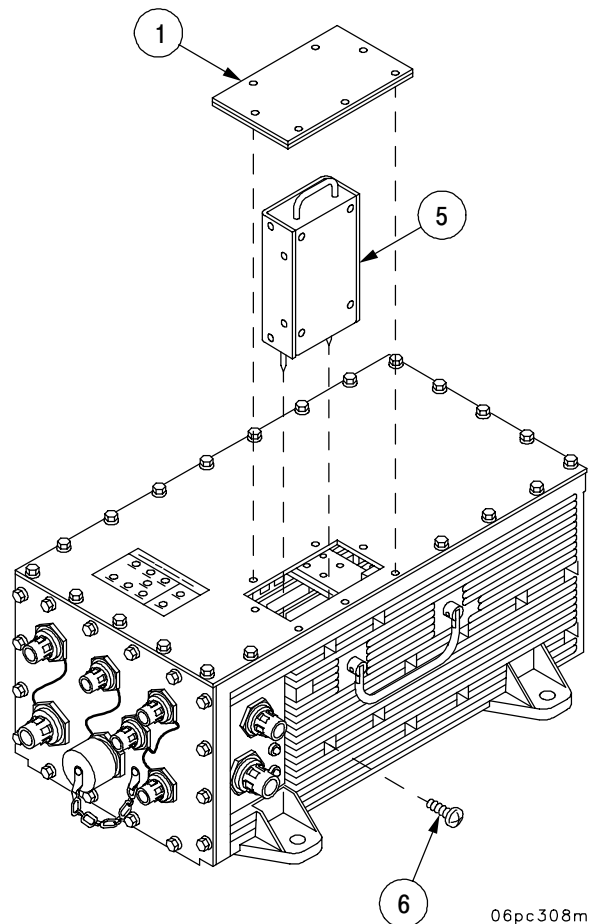
The ACU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Install hard disk drive (5) into ACU.
3. Insert four new screws with seals (6) into side of ACU, securing hard disk drive (5). Torque screws to 10 in.-lb (1.1 N•m).

CAUTION

The EMI shielding gasket is vital to this piece of equipment and is easily damaged. Handle cover with care when removing or replacing it. Failure to comply may result in damage to equipment.

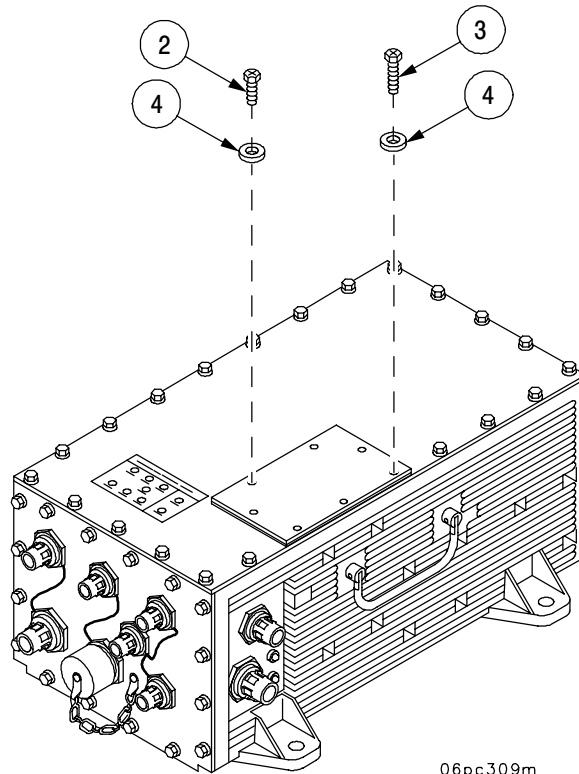
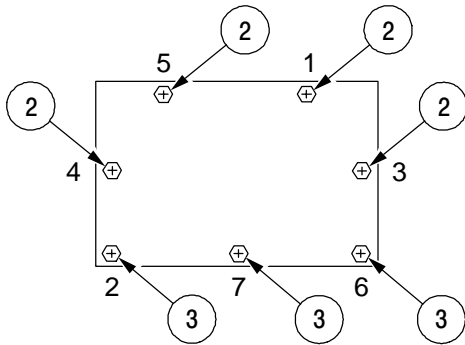
4. Place cover (1) into position and align holes.



2-12. HARD DISK DRIVE AND COVER MAINTENANCE INSTRUCTIONS CONTINUED

b. INSTALLATION CONTINUED

5. Insert four shorter screws (2), three longer screws (3), and seven flat washers (4).
Following torque sequence chart below, torque screws to 20 in.-lb (2.3 N•m).



06pc309m

2-13. TOP PANEL MAINTENANCE INSTRUCTIONS

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

Tool Kits, JTK-17LAL, TK-101/G, or TK-105/G
 (items 34, 35, & 36, Appendix E)
 Torque Wrench, 0-75 in.-lb (item 40, Appendix E)
 #2 Crosstip Screwdriver Socket Wrench
 (item 22, Appendix E)

Equipment Conditions:

Unenergized ACU is on workbench

Personnel Required:

One MOS 35Y

a. REMOVAL

CAUTION



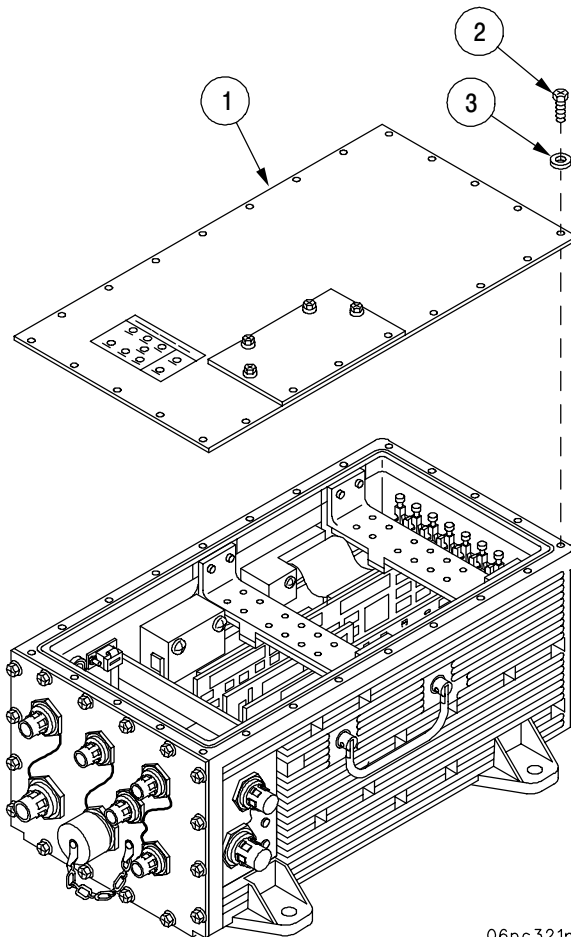
ESD SENSITIVE

The ACU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

NOTE

It is not necessary to remove the hard disk drive access cover before removing front cover.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Remove top panel (1) by removing 24 screws (2) and 24 flat washers (3). Lift top panel from housing.



06pc.321m

2-13. TOP PANEL MAINTENANCE INSTRUCTIONS CONTINUED

a. REMOVAL CONTINUED

CAUTION

The EMI shielding gasket is vital to this piece of equipment and is easily damaged. Handle with care when removing or replacing it. Failure to comply may result in damage to equipment.

3. Inspect EMI shielding gasket (4) in groove of housing (5) for cuts, nicks, or signs of stretching. Discard EMI shielding gasket if unserviceable.

b. INSTALLATION

CAUTION



ESD SENSITIVE

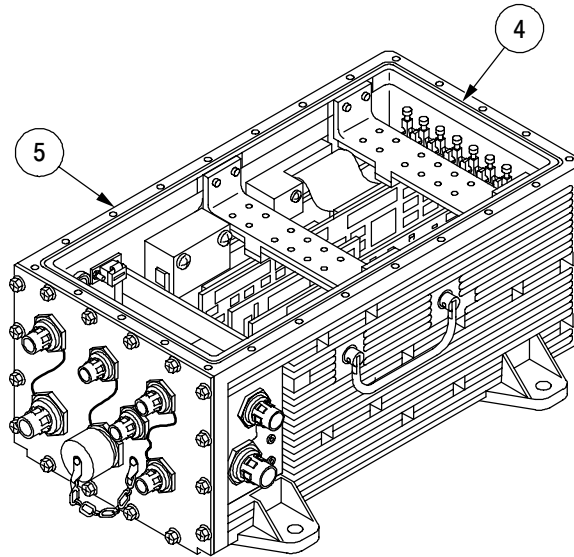
The ACU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.

CAUTION

The EMI shielding gasket is vital to this piece of equipment and is easily damaged. Handle with care when removing or replacing it. Failure to comply may result in damage to equipment.

2. If removed, install EMI shielding gasket (4) in groove in housing (5).



06pc317m

2-13. TOP PANEL MAINTENANCE INSTRUCTIONS CONTINUED

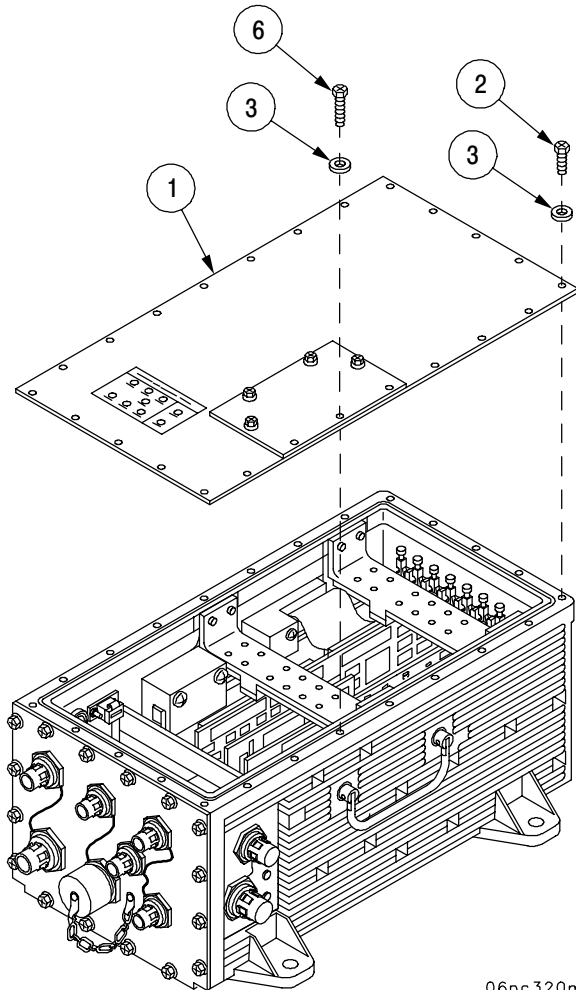
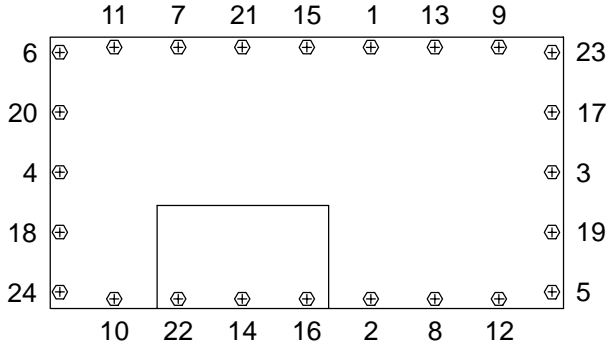
b. INSTALLATION CONTINUED

- Place top panel (1) into position and align holes.

NOTE

When torquing screws on top panel, sequence numbers 22, 14, and 16 require a 20 in.-lb (2.3 N•m) torque.

- Insert 21 shorter screws (2), 3 longer screws (6), and 24 flat washers (3). Following torque sequence chart below, torque screws to 30 in.-lb (3.4 N•m).



06pc320m

2-14. CCA STABILIZER BRACKET MAINTENANCE INSTRUCTIONS

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

Tool Kits, JTK-17LAL, TK-101/G, or TK-105/G
 (items 34, 35, & 36, Appendix E)
 Torque Wrench, 0-75 in.-lb (item 40, Appendix E)
 Socket Wrench, Sockethead Screw, 9/64" (item 67,
 Appendix E)

Materials/Parts:

Lockwasher (item 1, Appendix F)

Equipment Conditions:

Top panel removed; if not, remove top panel in accordance with procedure in paragraph 2-13

Personnel Required:

One MOS 35Y

a. REMOVAL

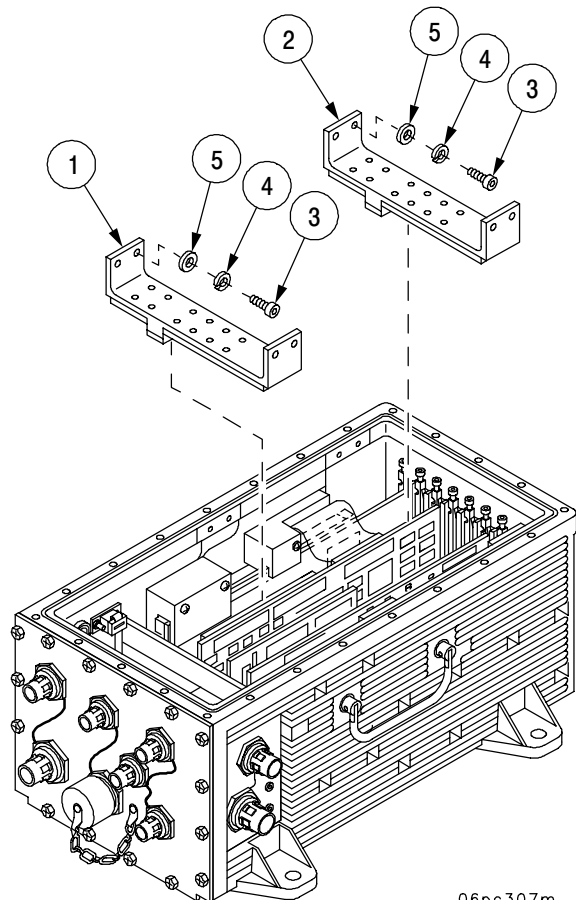
CAUTION



ESD SENSITIVE

The ACU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Remove CCA stabilizer brackets (1 and 2) by removing four screws (3), four lockwashers (4), and four flat washers (5) securing each stabilizer bracket. Lift stabilizer bracket from ACU. Discard lockwashers.



06pc307m

2-14. CCA STABILIZER BRACKET MAINTENANCE INSTRUCTIONS CONTINUED

b. INSTALLATION

CAUTION



ESD SENSITIVE

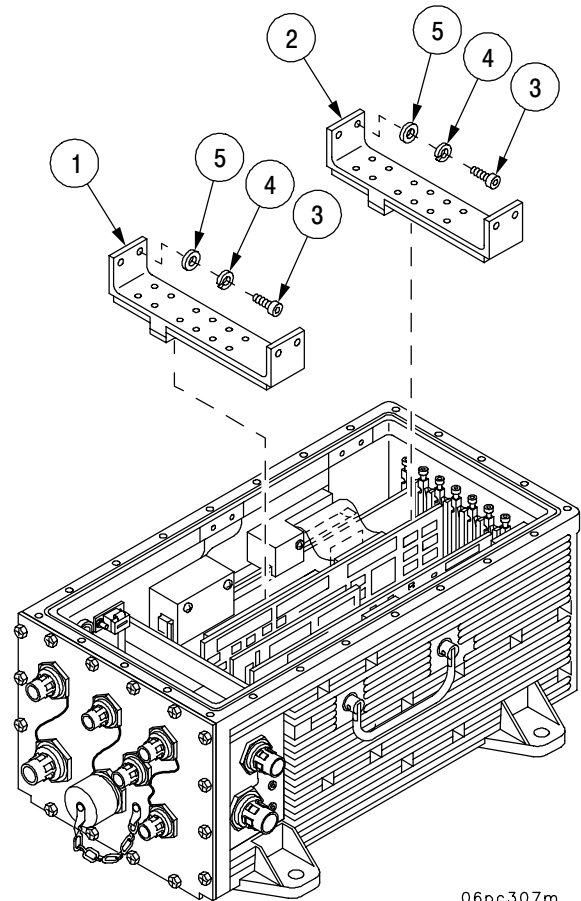
The ACU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.

NOTE

The two stabilizer brackets are different lengths. The longer bracket should be positioned at middle of ACU.

2. Place CCA stabilizer bracket (1 and 2) into position in ACU and align holes.
3. Insert four screws (3), four new lockwashers (4), and four flat washers (5) securing each stabilizer bracket into ACU. Torque screws to 20 in.-lb (2.3 N•m).
4. Install top panel in accordance with procedure outlined in paragraph 2-13.



06pc307m

2-15. 1553 CCA MAINTENANCE INSTRUCTIONS

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

- Tool Kits, JTK-17LAL, TK-101/G, or TK-105/G (items 34, 35, & 36, Appendix E)
- Torque Wrench, 0-15 in.-lb (item 39, Appendix E)
- #1 Crosstip Screwdriver Socket Wrench (item 21, Appendix E)

Materials/Parts:

- Bag, Plastic (item 6, Appendix D)
- Box, Shipping (item 10, Appendix D)

Equipment Conditions:

Stabilizer bracket removed; if not, remove stabilizer brackets in accordance with paragraph 2-14

Personnel Required:

One MOS 35Y

a. REMOVAL

CAUTION



ESD SENSITIVE

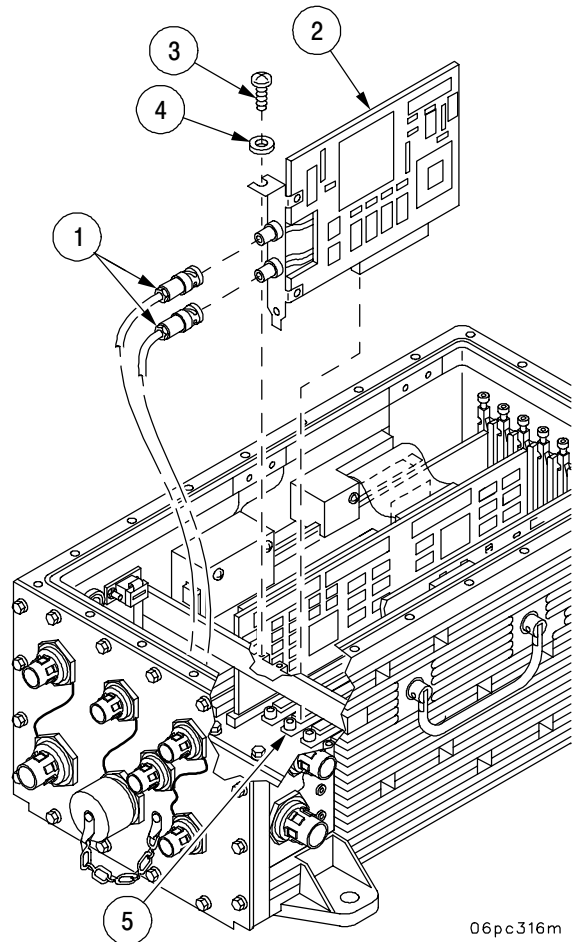
The ACU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.

NOTE

Tag wires before removing.

2. Disconnect two channel connectors (1) from J1 and J2 connectors located on end of 1553 CCA (2).
3. Remove screw (3) and flat washer (4) from holddown of 1553 CCA (2).
4. Gently remove 1553 CCA (2) from backplane connector J8 (5) in ACU housing.



06pc316m

2-15. 1553 CCA MAINTENANCE INSTRUCTIONS CONTINUED

b. INSTALLATION

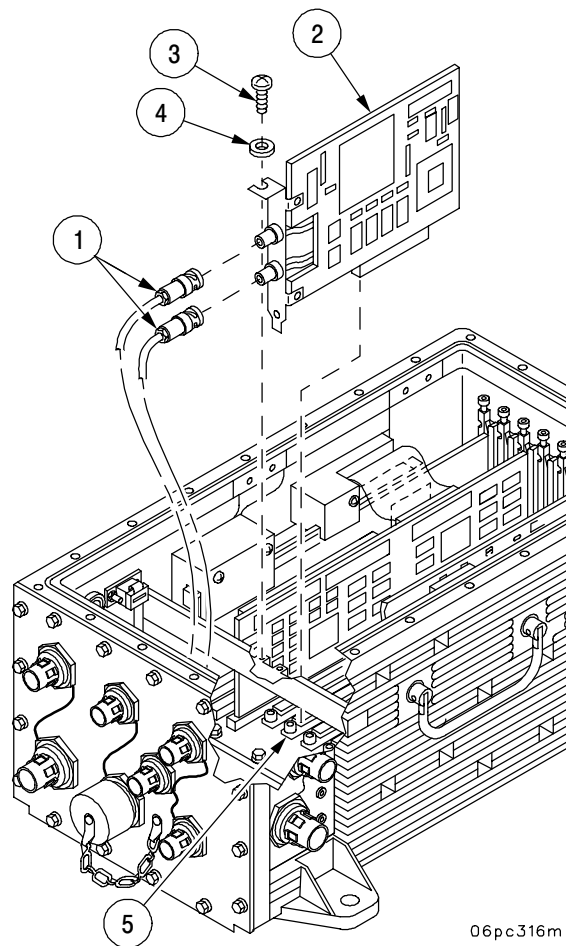
CAUTION



ESD SENSITIVE

The ACU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Install 1553 CCA (2) onto backplane at connector J8 (5) in ACU housing.
3. Insert screw (3) and flat washer (4) into hold-down of 1553 CCA (2). Torque screws to 5 in.-lb (0.6 N•m).
4. Remove tags and connect two channel connectors (1) to J1 and J2 connectors located on end of 1553 CCA.
5. Install stabilizer brackets in accordance with procedure outlined in paragraph 2-14.



2-16. DISCRETE I/O AND SERVO CCA(s) MAINTENANCE INSTRUCTIONS

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

Tool Kits, JTK-17LAL, TK-101/G, or TK-105/G
 (items 34, 35, & 36, Appendix E)
 Torque Wrench, 0-15 in.-lb (item 39, Appendix E)
 #1 Crosstip Screwdriver Socket Wrench (item 21,
 Appendix E)

Materials/Parts:

Bag, Plastic (item 6, Appendix D)
 Box, Shipping (item 8, Appendix D)

Equipment Conditions:

Stabilizer brackets removed; if not, remove stabilizer
 brackets in accordance with paragraph 2-14

Personnel Required:

One MOS 35Y

a. REMOVAL

CAUTION



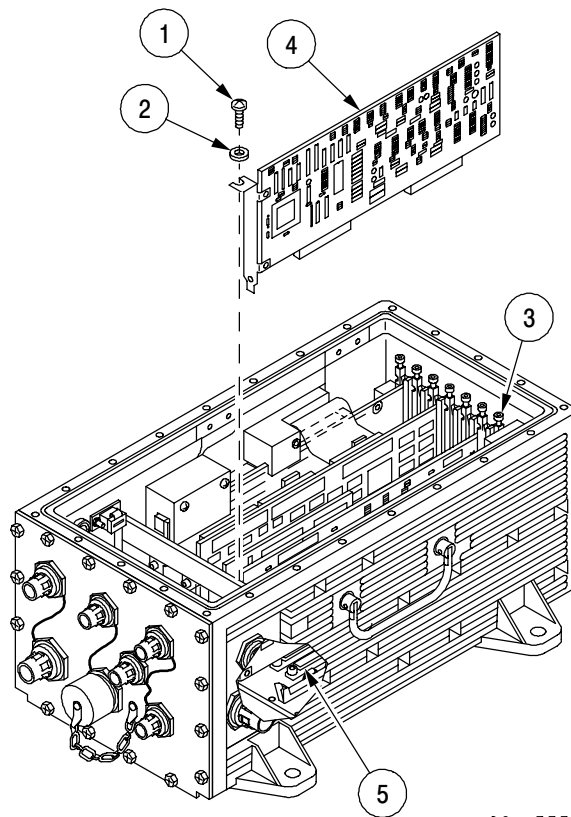
ESD SENSITIVE

The ACU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

NOTE

Both Discrete I/O and Servo CCAs are removed in the same manner. The Discrete I/O disconnects from connectors J10 and J11 on backplane and the Servo disconnects from connectors J12 and J13 on backplane.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Remove screw (1) and flat washer (2) from holddown of CCA (4).
3. Loosen screw (3) (approximately six turns) in Loktainer of CCA (4).
4. Gently remove CCA (4) from backplane (5) in ACU housing and place in ESD protective bag.



06pc333m

2-16. DISCRETE I/O AND SERVO CCA(s) MAINTENANCE INSTRUCTIONS CONTINUED

b. INSTALLATION

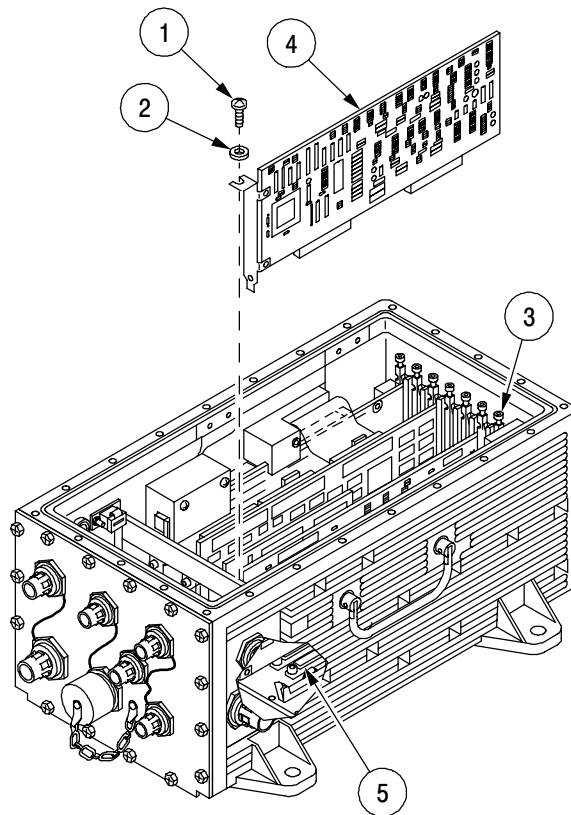
CAUTION



ESD SENSITIVE

The ACU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Install CCA (4) in proper connector on backplane (5) in ACU housing.
3. Torque screw (3) in Loktainer of CCA (4) to 25 in. oz.
4. Insert screw (1) and flat washer (2) into holddown of CCA (4). Torque screws to 5 in.-lb (0.6 N•m).
5. Install stabilizer brackets in accordance with procedures outlined in paragraph 2-14.



06pc333m

2-17. TCIM CCA MAINTENANCE INSTRUCTIONS

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

Tool Kits, JTK-17LAL, TK-101/G, or TK-105/G
 (items 34, 35, & 36, Appendix E)
 Torque Wrench, 0-75 in.-lb (item 40, Appendix E)
 Torque Wrench, 0-15 in.-lb (item 39, Appendix E)
 #1 Crosstip Screwdriver Socket Wrench (item 21,
 Appendix E)

Materials/Parts:

Bag, Plastic (item 6, Appendix D)
 Box, Shipping (item 8, Appendix D)

Equipment Conditions:

Stabilizer brackets removed; if not, remove stabilizer
 brackets in accordance with paragraph 2-14

Personnel Required:

One MOS 35Y

a. REMOVAL

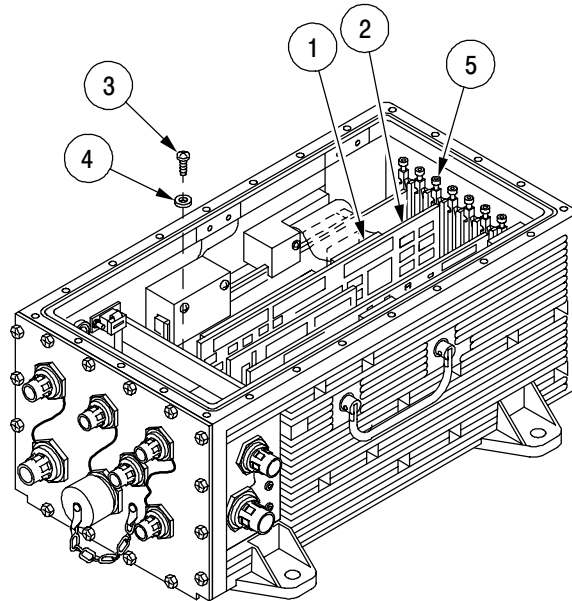
CAUTION



ESD SENSITIVE

The ACU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Disconnect SCSI cable connector (1) from TCIM CCA (2).
3. Remove screw (3) and flat washer (4) from hold-down of TCIM CCA (2).
4. Loosen screw (5) (approximately six turns) in Loktainer of TCIM CCA (2).



06pc314m

2-17. TCIM CCA MAINTENANCE INSTRUCTIONS CONTINUED

a. REMOVAL CONTINUED

CAUTION

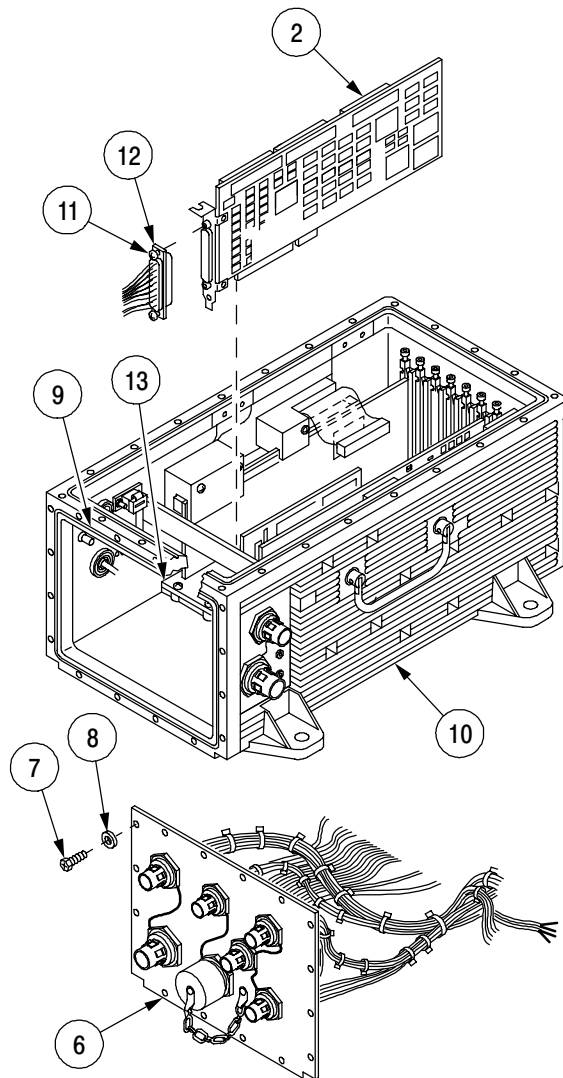
The connector panel assembly is attached by cables to internal components of ACU and cannot be moved very far from housing without putting strain on those cables. Exercise caution when removing bottom cover from ACU housing. Failure to comply may result in damage to equipment.

5. Remove ACU connector panel (6) by removing 16 screws (7) and 16 flat washers (8). Lift connector panel off housing.

CAUTION

The EMI shielding gasket is vital to this piece of equipment and is easily damaged. Handle with care when removing or replacing it. Failure to comply may result in damage to equipment.

6. Inspect EMI shielding gasket (9) in groove in housing (10) for cuts, nicks, or signs of stretching. Discard EMI shielding gasket if unserviceable.
7. Loosen two captive screws (11) securing card edge connector (12) to side of TCIM CCA.
8. Gently remove TCIM CCA (2) from backplane connector J5 (13) in ACU housing and place CCA in ESD protective bag.



06pc314 ma

2-17. TCIM CCA MAINTENANCE INSTRUCTIONS CONTINUED

b. INSTALLATION

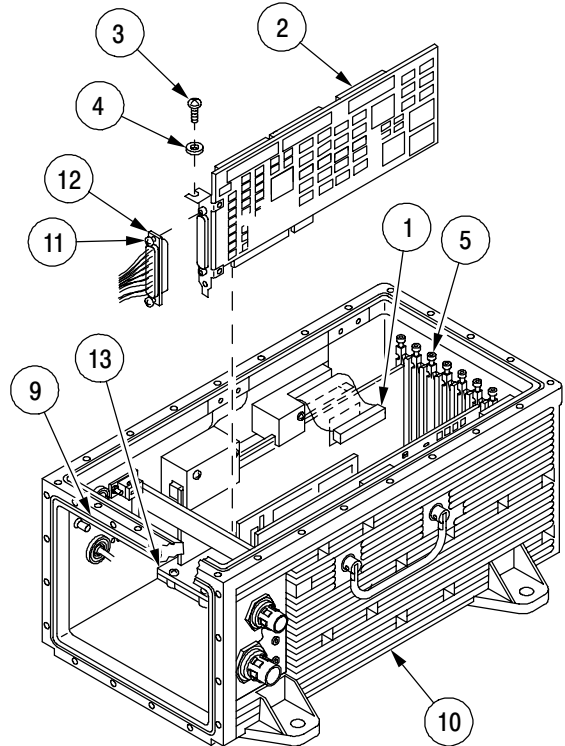
CAUTION



ESD SENSITIVE

The ACU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

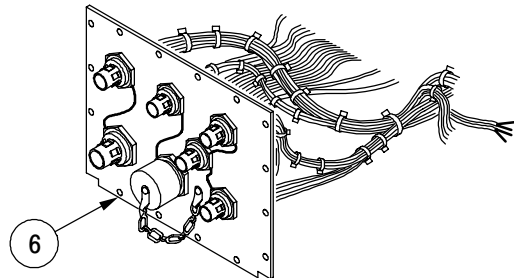
1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Install TCIM CCA (2) in connector J5 on backplane (13) in ACU housing.
3. Torque screw (5) in Loktainer of TCIM CCA (2) to 25 in. oz.
4. Connect card edge connector (12) to side of TCIM CCA (2) and tighten two captive screws (11).
5. Insert screw (3) and flat washer (4) into holddown of TCIM CCA (2). Torque screws to 5 in.-lb (0.6 N•m).
6. Connect SCSI cable connector (1) to TCIM CCA (2).



CAUTION

The EMI shielding gasket is vital to this piece of equipment and is easily damaged. Handle with care when removing or replacing it. Failure to comply may result in damage to equipment.

7. If removed, install EMI shielding gasket (9) in groove in housing (10).
8. Position connector panel (6) on housing and align holes.

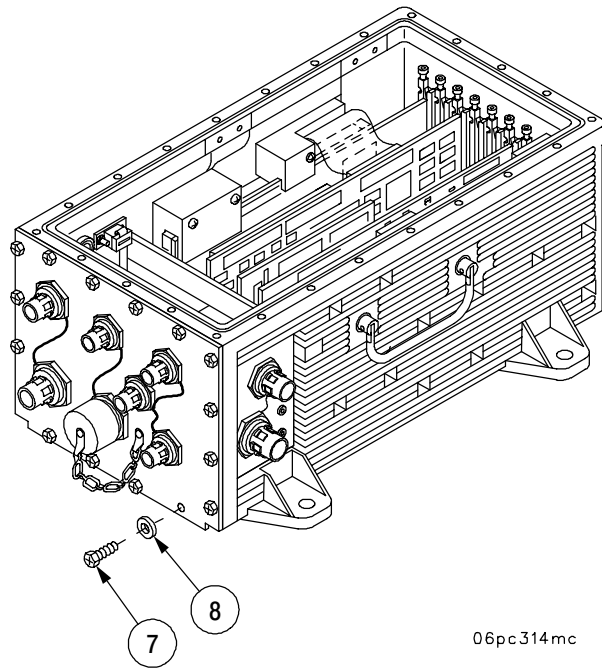
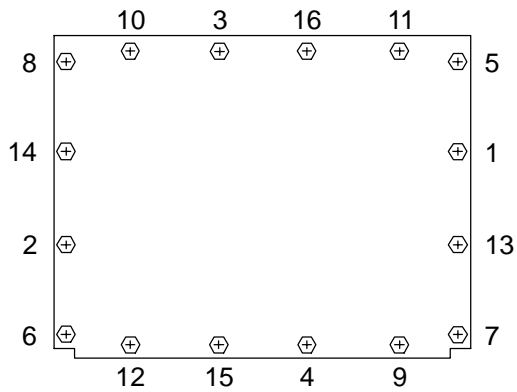


06pc314mb

2-17. TCIM CCA MAINTENANCE INSTRUCTIONS CONTINUED

b. INSTALLATION CONTINUED

9. Install 16 screws (7) and 16 flat washers (8).
Following torque sequence chart below, torque screws to 30 in.-lb (3.4 N•m).



06pc314mc

10. Install stabilizer brackets in accordance with procedure outlined in paragraph 2-14.

06pc310m

2-18. CPU CCA MAINTENANCE INSTRUCTIONS

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

Tool Kits, JTK-17LAL, TK-101/G, or TK-105/G
 (items 34, 35, & 36, Appendix E)
 Torque Wrench, 0-75 in.-lb (item 40, Appendix E)
 Torque Wrench, 0-15 in.-lb (item 39, Appendix E)
 #1 Crosstip Screwdriver Socket Wrench (item 21,
 Appendix E)

Materials/Parts:

Lockwasher (item 1, Appendix F)
 Bag, Plastic (item 6, Appendix D)
 Box, Shipping (item 8, Appendix D)

Equipment Conditions:

Stabilizer brackets removed; if not, remove stabilizer
 brackets in accordance with procedure in para-
 graph 2-14.

Personnel Required:

One MOS 35Y

a. REMOVAL

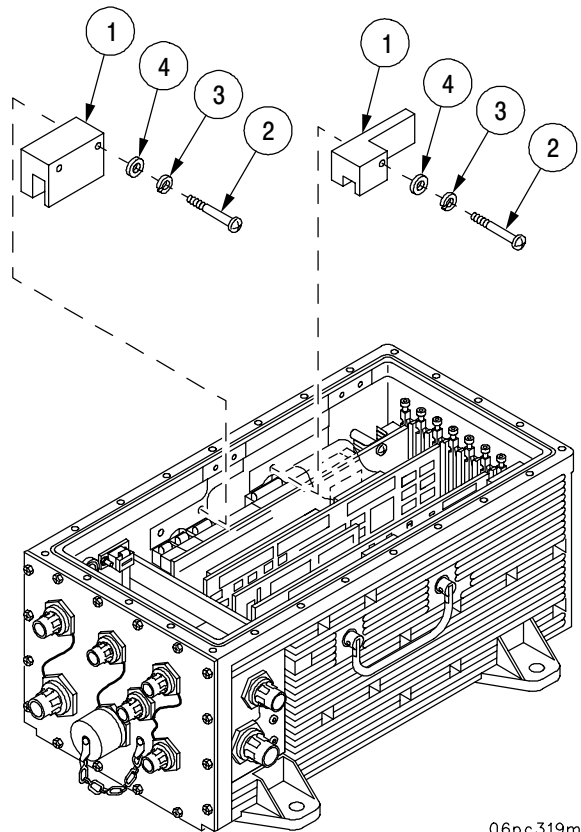
CAUTION



ESD SENSITIVE

The ACU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Remove two insulating blocks (1) by removing three screws (2), three lockwashers (3), and three flat washers (4). Discard lockwashers.



06pc319m

2-18. CPU CCA MAINTENANCE INSTRUCTIONS CONTINUED

a. REMOVAL CONTINUED

3. Disconnect SCSI cable connector (5) from CPU CCA at J2 (6).

CAUTION

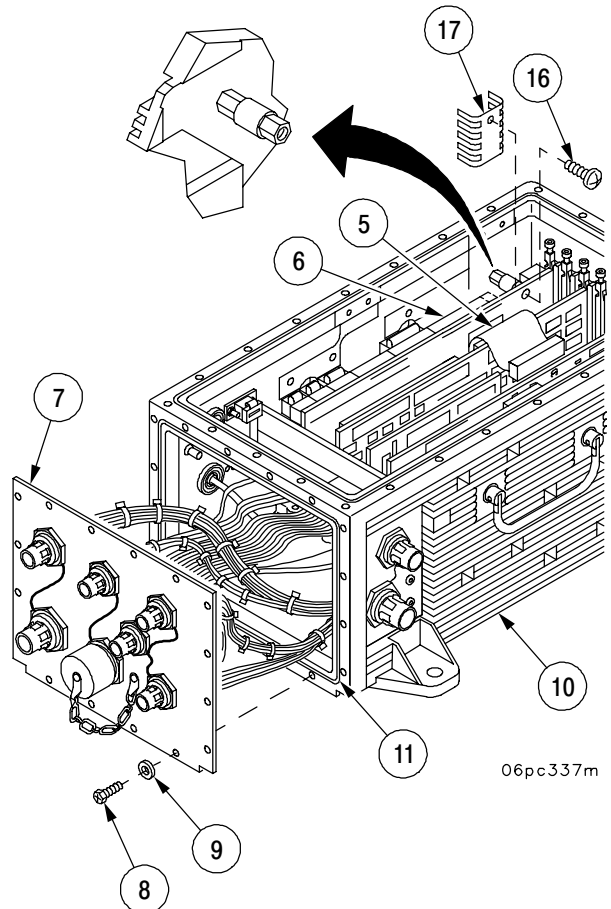
The connector panel assembly is attached by cables to internal components of ACU and cannot be moved very far from housing without putting strain on those cables. Exercise caution when removing bottom cover from ACU housing. Failure to comply may result in damage to equipment.

4. Remove ACU connector panel (7) by removing 16 screws (8) and 16 flat washers (9). Lift connector panel off housing (10).
5. Inspect EMI shielding gasket (11) in groove in housing (10) for cuts, nicks, or signs of stretching. Discard EMI shielding gasket if unserviceable.
6. Disconnect Ethernet cable connector (12) from CPU CCA (13).
7. Loosen two captive screws (14) and disconnect VGA cable connector (15) from CPU CCA.

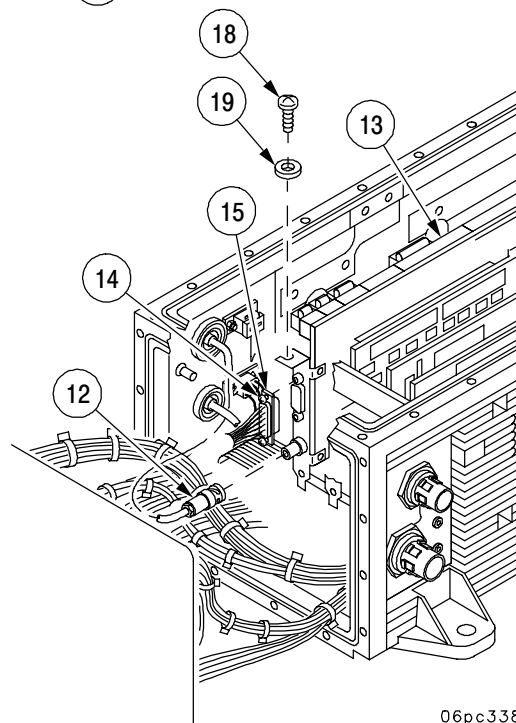
NOTE

Do not remove spacer assembly from housing. It is custom made to ensure the CPU CCA is pressed firmly against heatsink.

8. Remove screw (16) and circuit board heatsink (17) from spacer assembly in ACU.
9. Remove screw (18) and flat washer (19) from holddown of CPU CCA.



06pc337m



06pc338m

2-18. CPU CCA MAINTENANCE INSTRUCTIONS CONTINUED

a. REMOVAL CONTINUED

- Loosen screw (20) (approximately six turns) in Loktainer of CPU CCA.

NOTE

Ensure that transistor, attached to CPU CCA, does not get caught on spacer assembly when removing CCA from backplane.

- Gently loosen CPU CCA (13) from backplane connectors J1 and J2 (21). Do not remove from ACU housing.

NOTE

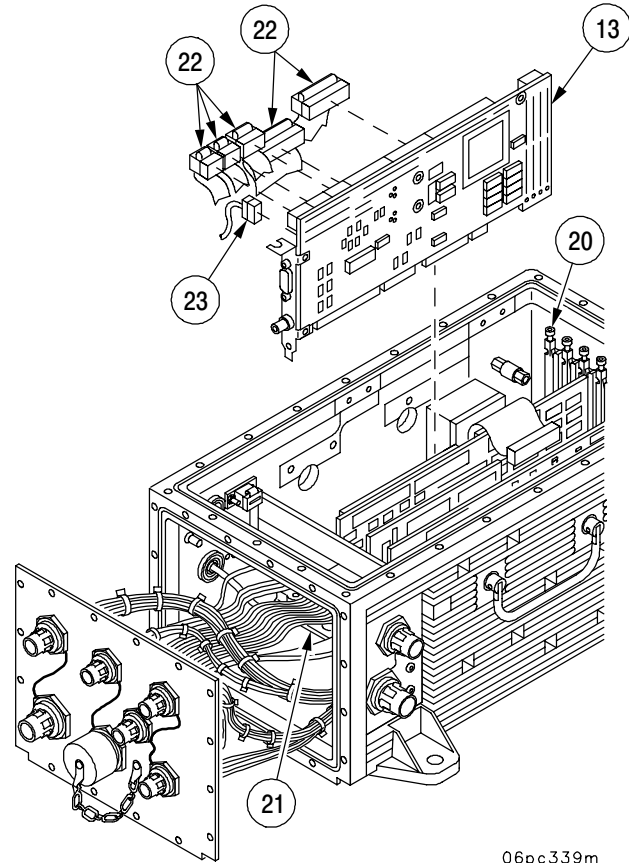
Tag five ribbon cables before removing from back of CPU CCA.

- Remove five ribbon cables (22) from back of CPU CCA at J3, J5, J6, J7, and J9.
- Remove mouse cable connector (23) from back of CPU CCA.
- Remove CPU CCA (13) from ACU housing.

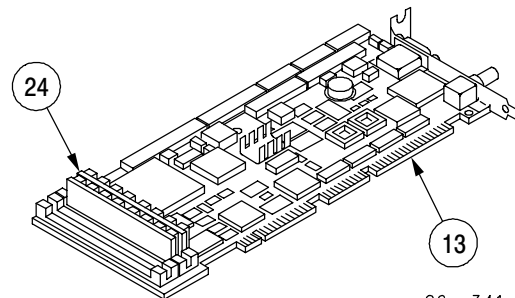
NOTE

If Single In-line Memory Module(s) (SIMM) is faulty and requires replacing, remove SIMM closest to end of CPU CCA first and follow steps 15 and 16.

- With CPU CCA (13) resting on a flat surface, spread tabs on both ends of SIMM strip (24), tilt SIMM to a 45 degree angle, and pull SIMM out of CCA.
- To replace, insert SIMM strip into position on CPU CCA (13) at a 45 degree angle, tilt up to a 90 degree angle and lock into place by ensuring that tabs on each end of SIMM snap into place.



06pc339m



06pc341m

2-18. CPU CCA MAINTENANCE INSTRUCTIONS CONTINUED

b. INSTALLATION

CAUTION



ESD SENSITIVE

The ACU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.

CAUTION

When installing CPU CCA, ensure that transistor on CCA clears spacer assembly.

NOTE

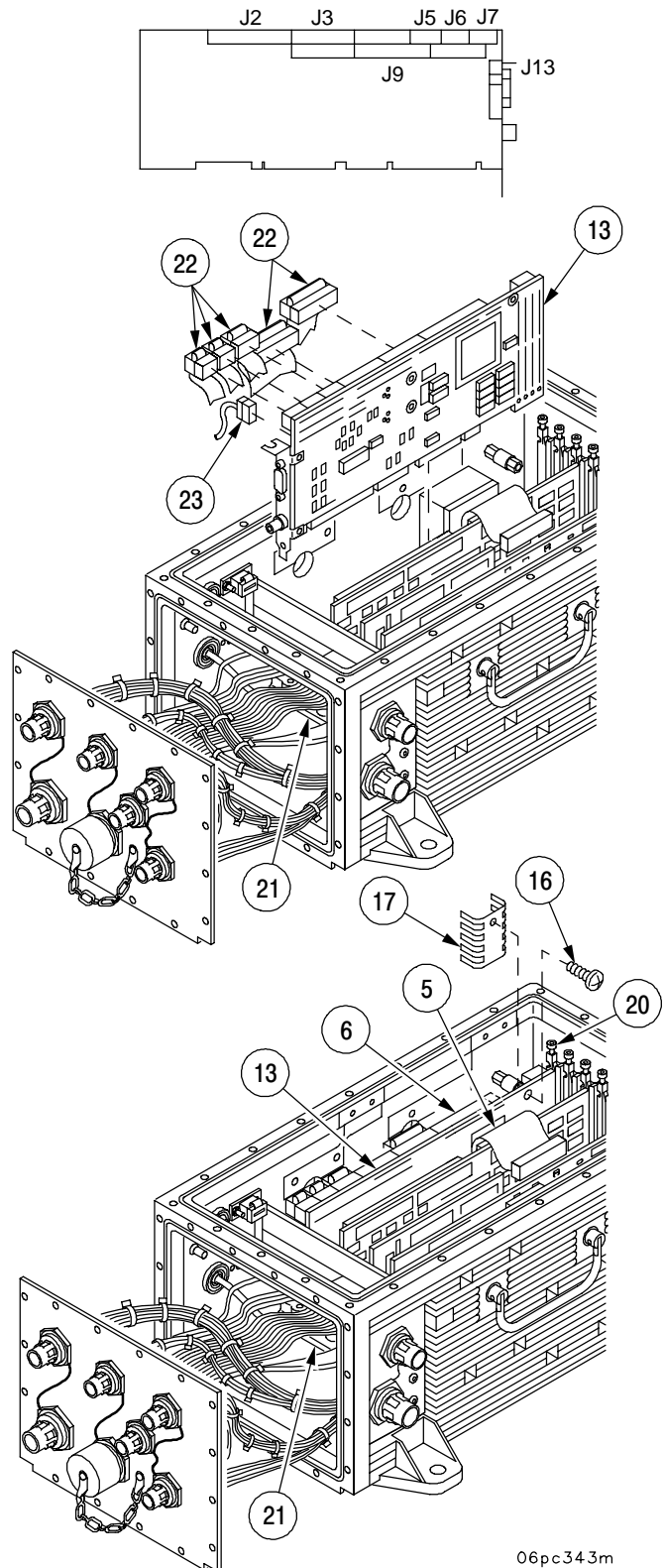
Carefully position CPU CCA onto backplane. When installing CPU CCA, connectors on card edge make it necessary to tilt CCA slightly.

2. Position CPU CCA (13) in connectors J1 and J2 on backplane (21) in ACU housing. Do not secure to backplane at this time.
3. Route five ribbon cables (22) between housing and CPU CCA in the following sequence: first the cable that connects to J3, then J5, J6, J7, and J9.
4. Connect five ribbon cables (22) and mouse cable J13 (23) to back of CPU CCA in the following sequence: J3, J9, J5, J6, J13, and J7.
5. Connect SCSI cable connector (5) to CPU CCA at J2 (6).
6. Secure CPU CCA (13) to backplane (21) by pushing down firmly on CCA.

NOTE

- Use screw, lockwasher and flat washer supplied with CPU CCA when installing heatsink. Discard other hardware.
- Ensure that hole in heatsink and transistor are aligned with spacer assembly before installing hardware.

7. Install circuit board heatsink (17) between transistor and CPU CCA and insert screw (16) into spacer assembly in ACU. Torque screw to 5 in.-lb (0.6 N•m).
8. Tighten screw (20) in Loktainer of CPU CCA.



06pc343m

2-18. CPU CCA MAINTENANCE INSTRUCTIONS CONTINUED

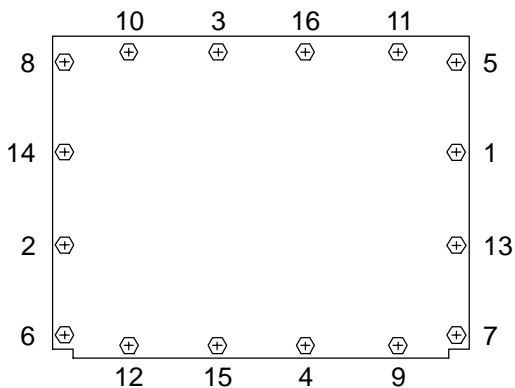
b. INSTALLATION CONTINUED

9. Insert screw (18) and flat washer (19) into holddown of CPU CCA. Torque screw to 5 in.-lb (0.6 N•m).
10. Install two insulating blocks (1) by inserting three screws (2), three new lockwashers (3), and three flat washers (4). Torque screws to 15 in.-lb (1.7 N•m).
11. Connect Ethernet cable connector (12) to CPU CCA edge.
12. Connect VGA cable connector (15) to CPU CCA edge. Tighten two captive screws (14).

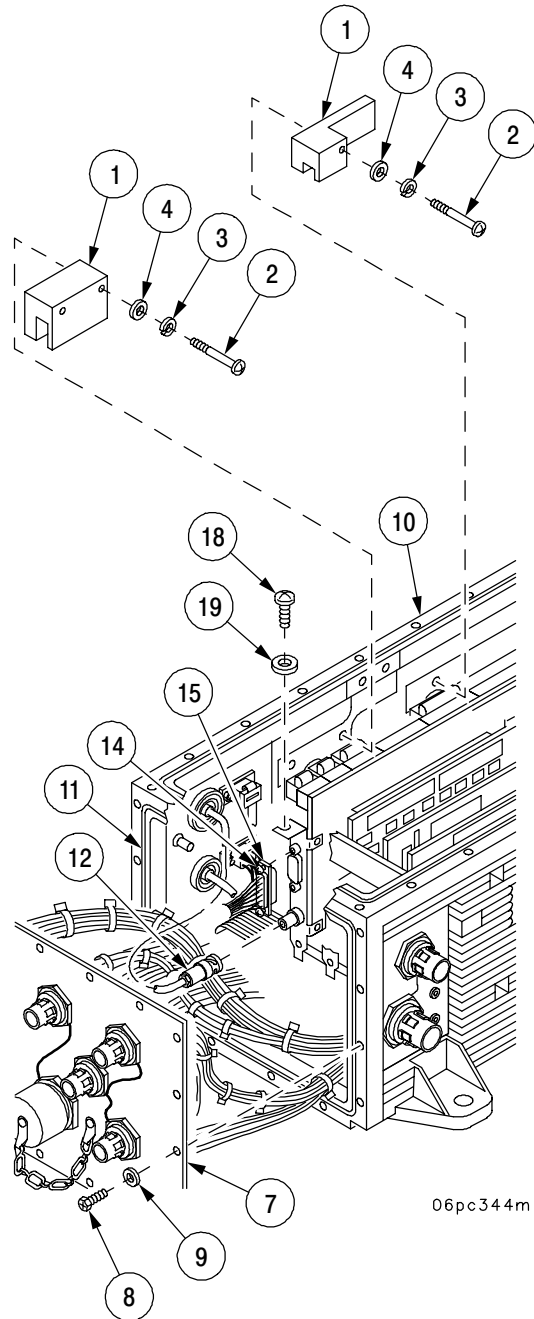
CAUTION

The EMI shielding gasket is vital to this piece of equipment and is easily damaged. Handle with care when removing or replacing it. Failure to comply may result in damage to equipment.

13. If removed, install EMI shielding gasket (11) in groove in housing (10).
14. Position connector panel (7) on housing and align holes.
15. Install 16 screws (8) and 16 flat washers (9). Following torque sequence chart below, torque screws to 30 in.-lb (3.4 N•m).



16. Install stabilizer brackets in accordance with procedure outlined in paragraph 2-14.



2-19. POWER SUPPLY ASSEMBLY MAINTENANCE INSTRUCTIONS

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

- Tool Kits, JTK-17LAL, TK-101/G, or TK-105/G (items 34, 35, & 36, Appendix E)
- Torque Wrench, 0-75 in.-lb (item 40, Appendix E)
- #1 Crosstip Screwdriver Socket Wrench (item 21, Appendix E)

Materials/Parts:

- Lockwasher (item 6, Appendix F)
- Screw, Machine (item 9, Appendix F)
- Bag, Plastic (item 6, Appendix D)
- Box, Shipping (item 9, Appendix D)

Equipment Conditions:

Stabilizer brackets removed; if not, remove stabilizer brackets in accordance with procedure in paragraph 2-14

Personnel Required:

One MOS 35Y

a. REMOVAL

CAUTION



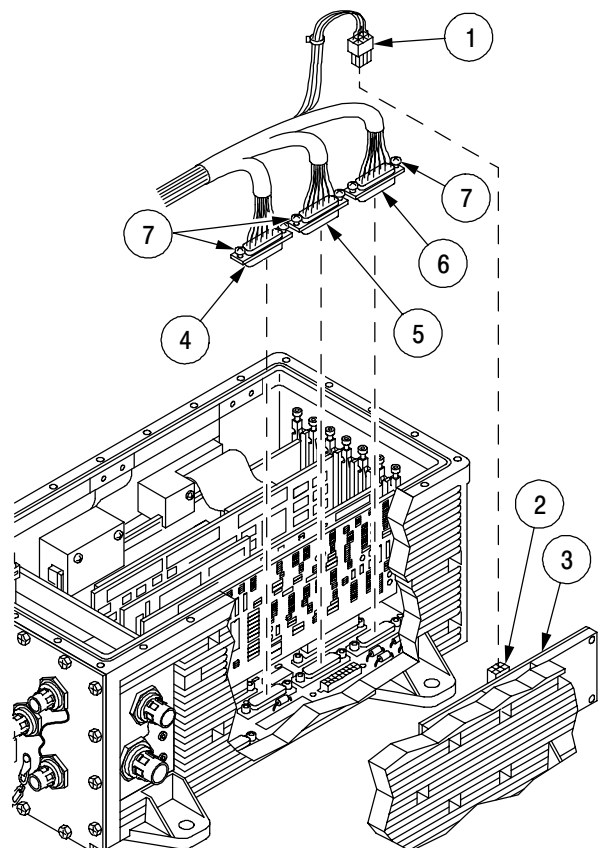
ESD SENSITIVE

The ACU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

NOTE

Tag all leads prior to removal to aid in installation.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Disconnect cable (1) from J1 connector (2) on Power Supply Assembly (3).
3. Disconnect three cable connectors (4, 5, and 6) from backplane at J15, J16 and J17 respectively, by loosening two captive screws (7) on each connector.



06pc318m

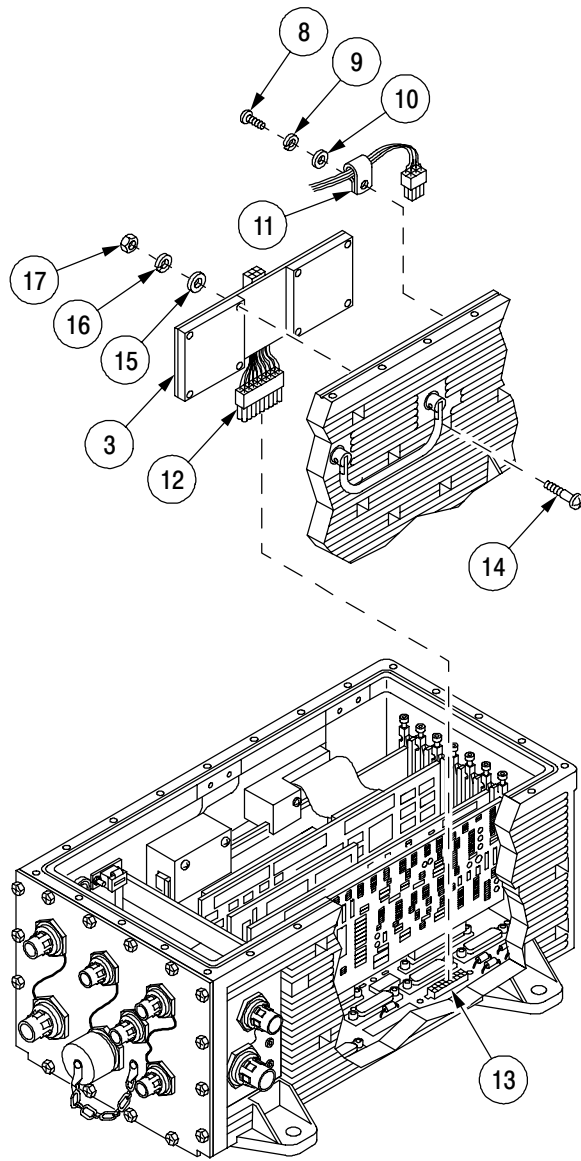
2-19. POWER SUPPLY ASSEMBLY MAINTENANCE INSTRUCTIONS CONTINUED

a. REMOVAL CONTINUED

NOTE

Inspect clamp for degradation and replace if necessary.

4. Remove screw (8), lockwasher (9) and flat washer (10) securing clamp (11) to ACU housing. Discard lockwasher.
5. Disconnect connector P1 (12) from backplane at J20 (13).
6. Remove eight screws with seals (14), eight flat washers (15), eight lockwashers (16), and eight nuts (17) securing Power Supply Assembly into housing. Discard screws with seals.
7. Remove Power Supply Assembly (3) from housing and place in ESD protective bag.



06pc331m

2-19. POWER SUPPLY ASSEMBLY MAINTENANCE INSTRUCTIONS CONTINUED

b. INSTALLATION

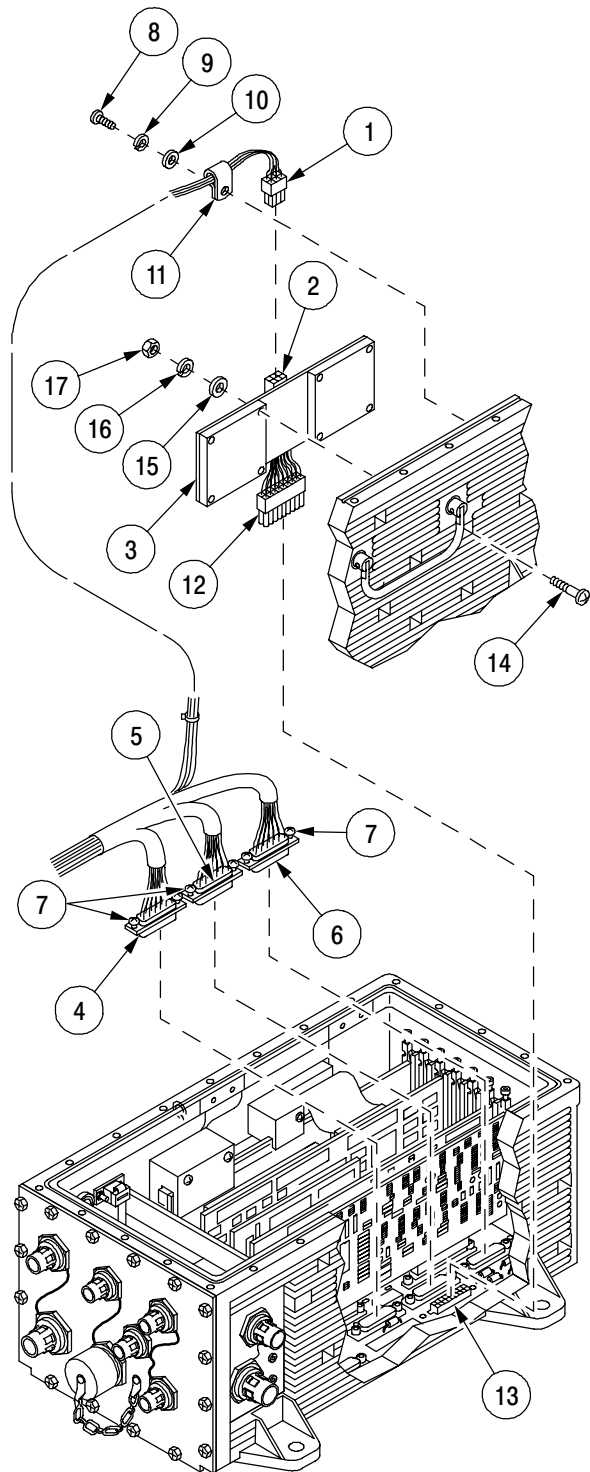
CAUTION



ESD SENSITIVE

The ACU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Position Power Supply Assembly (3) in ACU housing.
3. Insert eight new screws with seals (14), eight flat washers (15), eight new lockwashers (16) and eight nuts (17). Torque screws to 5 in-lb (0.6 N•m).
4. Connect connector P1 (12) to backplane at J20 (13).
5. Connect cable (1) at J1 connector (2) on Power Supply Assembly (3).
6. Connect three cable connectors (4, 5 and 6) to backplane at J15, J16 and J17 respectively, and secure by tightening two captive screws (7) on each connector.
7. Install clamp (11) by inserting screw (8), new lockwasher (9) and flat washer (10).
8. Install stabilizer brackets in accordance with procedure outlined in paragraph 2-14.



06pc332m

2-20. LED MAINTENANCE INSTRUCTIONS

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

Tool Kits, JTK-17LAL, TK-101/G, or TK-105/G
(items 34, 35, & 36, Appendix E)
Minigun, Hot Air (item 15, Appendix E)
Torque Wrench, 0-75 in.-lb (item 40, Appendix E)

Equipment Conditions:

Top panel removed; if not, remove top panel in
accordance with paragraph 2-13

Personnel Required:

One MOS 35Y

Materials/Parts:

Insulation Sleeving (item 26, Appendix D)
Solder (item 28, Appendix D)
Soldering Flux (item 18, Appendix D)
Alcohol (item 4, Appendix D)
Brush, Acid Swabbing (item 11, Appendix D)

a. REMOVAL

CAUTION



ESD SENSITIVE

The ACU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

NOTE

The ACU contains two LEDs, Power and Bit. Both LEDs are removed and installed in the same manner.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.

2-20. LED MAINTENANCE INSTRUCTIONS CONTINUED

a. REMOVAL CONTINUED

CAUTION

The connector panel assembly is attached by cables to internal components of ACU and cannot be moved very far from housing without putting strain on those cables. Exercise caution when removing bottom cover from ACU housing. Failure to comply may result in damage to equipment.

2. Remove ACU connector panel assembly (1) by removing 16 screws (2) and 16 flat washers (3). Lift connector panel off housing.

CAUTION

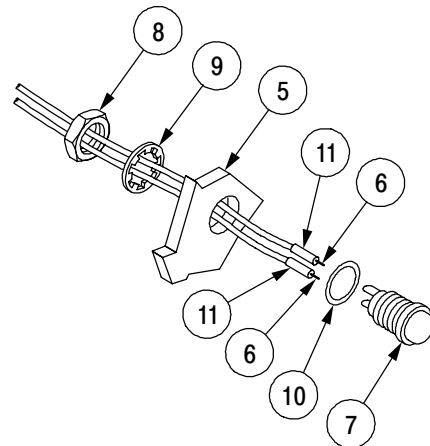
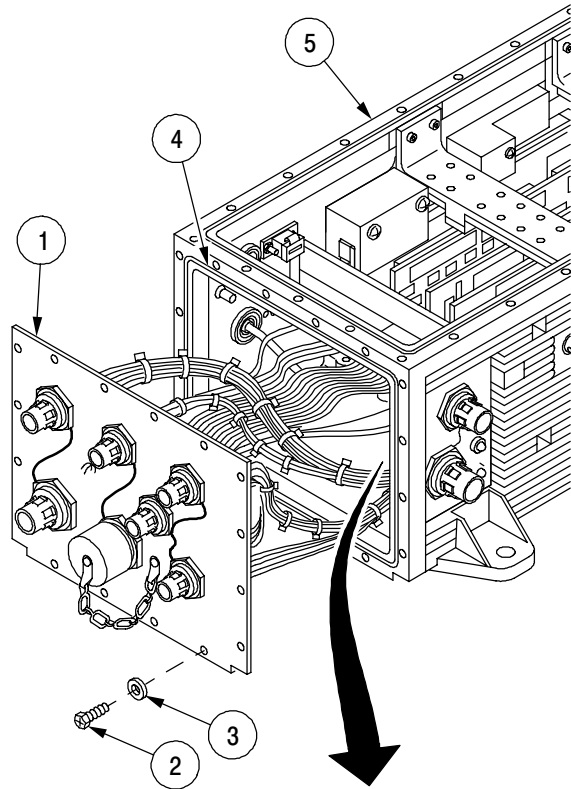
The EMI shielding gasket is vital to this piece of equipment and is easily damaged. Handle with care when removing or replacing it. Failure to comply may result in damage to equipment.

3. Inspect EMI shielding gasket (4) in groove in housing (5) for cuts, nicks, or signs of stretching. Discard EMI shielding gasket if unserviceable.

NOTE

Tag both leads before cutting.

4. Cut leads (6) from back of LED (7).
5. Remove nut (8) and star washer (9).
6. Pull body of LED (7) with gasket (10) from the front of the housing (5).
7. Remove and discard insulation sleeving (11) from leads (6).



06pc328m

2-20. LED MAINTENANCE INSTRUCTIONS CONTINUED

b. INSTALLATION

CAUTION



ESD SENSITIVE

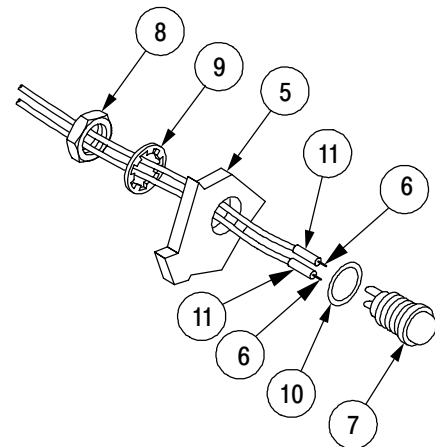
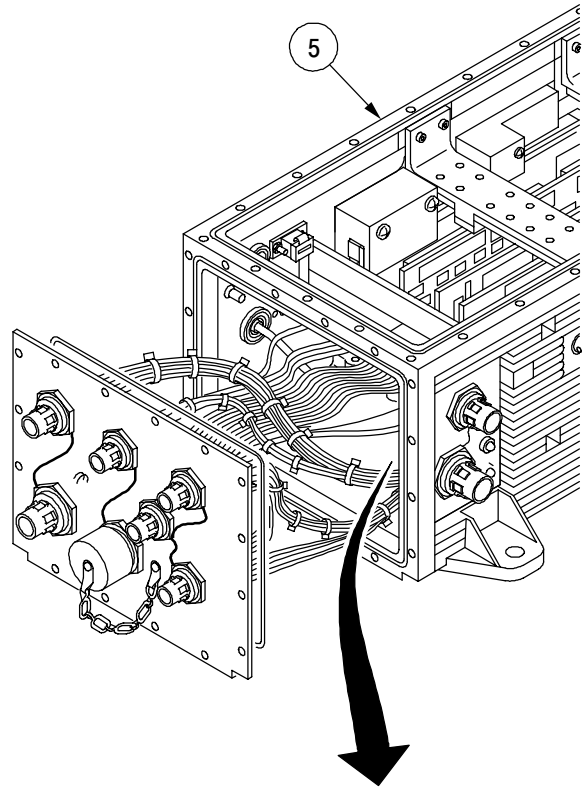
The ACU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.

NOTE

Insulation sleeving tubing should be twice the diameter of the part over which it will be shrunk.

2. Slide a 1 in. piece of insulation sleeving (11) onto end of each lead (6).
3. Position LED body (7) with gasket (10) into ACU housing (5) and install star washer (9) and nut (8).
4. Solder leads to back of LED. Remove tags.
5. Clean solder joints with acid swabbing brush and alcohol.
6. Slide insulation sleeving into position.
7. Using heat gun, apply heat until sleeving forms to shape of wire and terminal.
8. Tighten nut (8) and star washer (9).



06pc329m

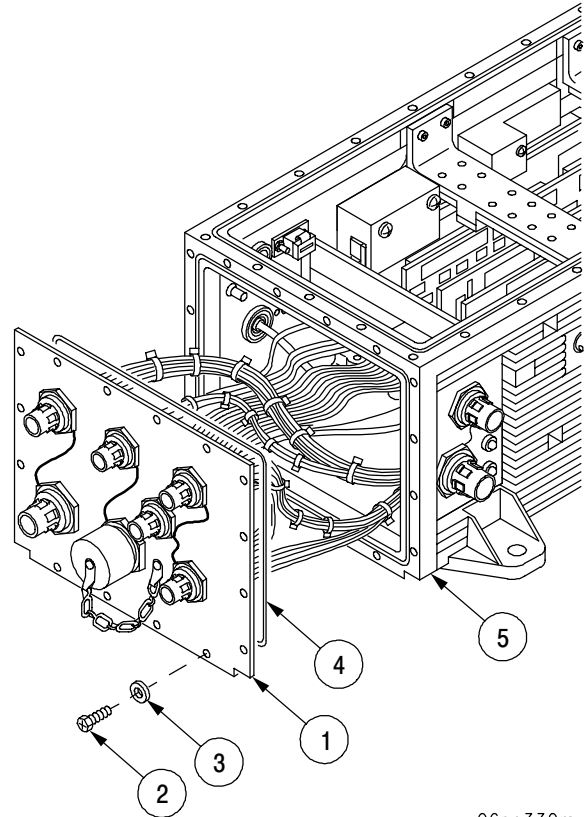
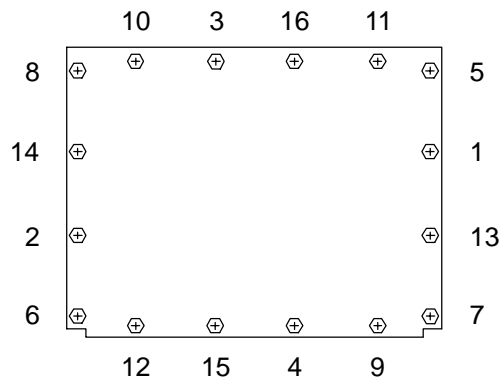
2-20. LED MAINTENANCE INSTRUCTIONS CONTINUED

b. INSTALLATION CONTINUED

CAUTION

The EMI shielding gasket is vital to this piece of equipment and is easily damaged. Handle with care when removing or replacing it. Failure to comply may result in damage to equipment.

9. If removed, install EMI shielding gasket (4) in groove in housing (5).
10. Position connector panel assembly (1) on housing and align holes.
11. Install 16 screws (2) and 16 flat washers (3). Following torque sequence chart below, torque screws to 30 in.-lb (3.4 N•m).



06pc330m

12. Install top panel in accordance with procedure outlined in paragraph 2-13.

2-21. SERIAL I/O PORT CABLE, VGA CABLE, SCSI RIBBON CABLE MAINTENANCE INSTRUCTIONS

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

Tool Kits, JTK-17LAL, TK-101/G, or TK-105/G
(items 34, 35, & 36, Appendix E)
Torque Wrench, 0-75 in.-lb (item 43, Appendix E)

Materials/Parts:

Lockwasher (item 8, Appendix F)
Lockwasher (item 1, Appendix F)
Primer, Surface (item 21, Appendix D)
Sealant, Loctite (item 24, Appendix D)

Equipment Conditions:

Top panel removed; if not, remove top panel in accordance with paragraph 2-13

Personnel Required:

One MOS 35Y

a. REMOVAL

CAUTION



ESD SENSITIVE

The ACU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.

CAUTION

The connector panel assembly is attached by cables to internal components of ACU and cannot be moved very far from housing without putting strain on those cables. Exercise caution when removing bottom cover from ACU housing. Failure to comply may result in damage to equipment.

2-21. SERIAL I/O PORT CABLE, VGA CABLE, SCSI RIBBON CABLE MAINTENANCE INSTRUCTIONS CONTINUED

a. REMOVAL CONTINUED

2. Remove ACU connector panel (1) by removing 16 screws (2) and 16 flat washers (3). Lift connector panel off housing.

CAUTION

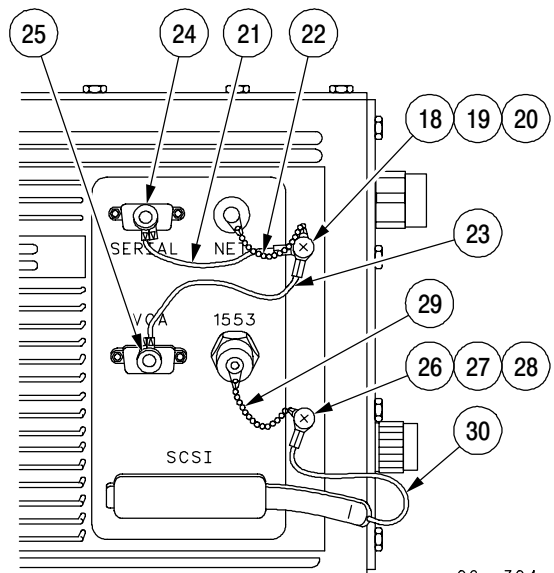
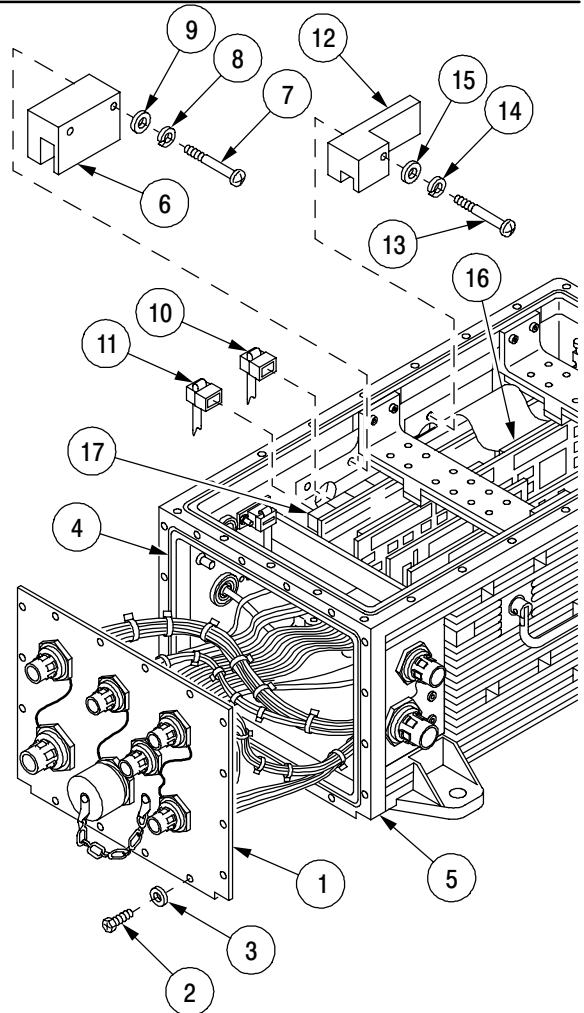
The EMI shielding gasket (4) is vital to this piece of equipment and is easily damaged. Handle with care when removing or replacing it. Failure to comply may result in damage to equipment.

3. Inspect EMI shielding gasket (4) in groove in housing (5) for cuts, nicks, or signs of stretching. Discard EMI shielding gasket if unserviceable.
4. Remove insulating block (6) by removing three screws (7), three lockwashers (8), and three flat washers (9) if the Serial I/O Port Cable (10) or VGA Cable (11) is being removed. Discard lockwashers.
5. Remove insulating block (12) by removing three screws (13), three lockwashers (14), and three flat washers (15) if the SCSI Cable (16) is being removed.

NOTE

- The removal of the Serial I/O Port, VGA and SCSI cable connectors is performed in the same manner.
- When removing the SCSI cable connector, disconnect the SCSI cable from the TCIM CCA as well as from the CPU CCA.

6. Disconnect ribbon cable (10, 11, or 16) from back of CPU CCA (17).
7. If necessary to replace Serial I/O or VGA connector cap and strap, remove screw (18), lockwasher (19), and flat washer (20) securing retaining straps (21, 22, and 23) to ACU. Discard lockwasher.
8. Remove connector cap (24 or 25).
9. If necessary to replace SCSI connector cap and strap, remove screw (26), lockwasher (27), and flat washer (28) securing straps (29 and 30) to ACU. Discard lockwasher.



06pc304m

2-21. SERIAL I/O PORT CABLE, VGA CABLE, SCSI RIBBON CABLE MAINTENANCE INSTRUCTIONS CONTINUED

a. REMOVAL CONTINUED

10. Remove connector cap (31).

NOTE

The female screwlocks are an assembly. They can be reused.

11. Remove two female screwlocks (32) securing Serial I/O, VGA, or SCSI ribbon cable connector (33, 34, or 35) respectively, to ACU.
12. From the interior of the ACU, remove ribbon cable (10, 11, or 16).
13. Inspect connector gasket (36, 37, or 38) for cuts, nicks, or signs of stretching. Discard gasket if unserviceable.

b. INSTALLATION

CAUTION



ESD SENSITIVE

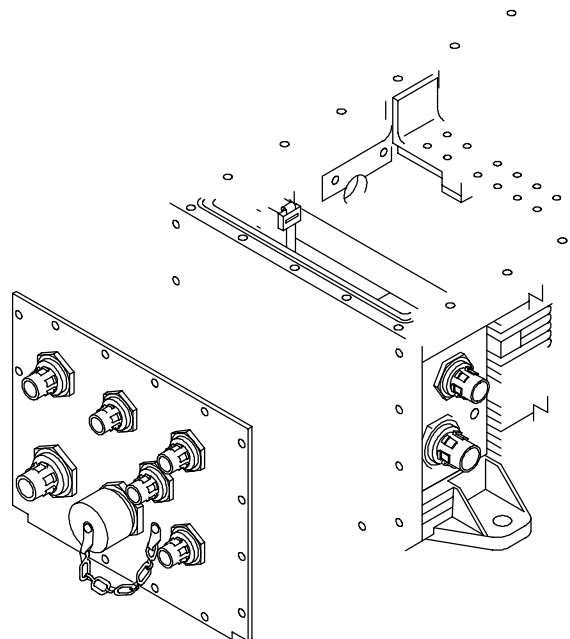
The ACU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. If removed, install connector gasket (36, 37, or 38) on ribbon cable connector (33, 34, or 35), respectively.
3. Position ribbon cable connector (33, 34, or 35) in ACU.

WARNING

- Do not breathe fumes from adhesive/sealant. Use with adequate ventilation.
- Adhesive/sealant may cause eye or skin irritation; avoid direct contact.

4. Apply surface primer and sealing compound to two female screwlocks (32) per connector.
5. Secure ribbon cable connector (33, 34, or 35) by inserting two female screwlocks (32).



Change 1

2-21. SERIAL I/O PORT CABLE, VGA CABLE, SCSI RIBBON CABLE MAINTENANCE INSTRUCTIONS CONTINUED

b. INSTALLATION CONTINUED

NOTE

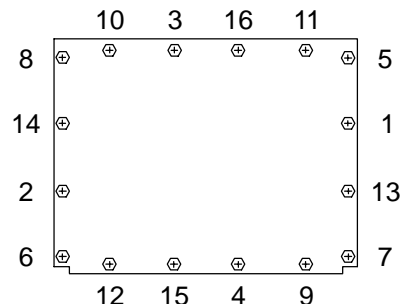
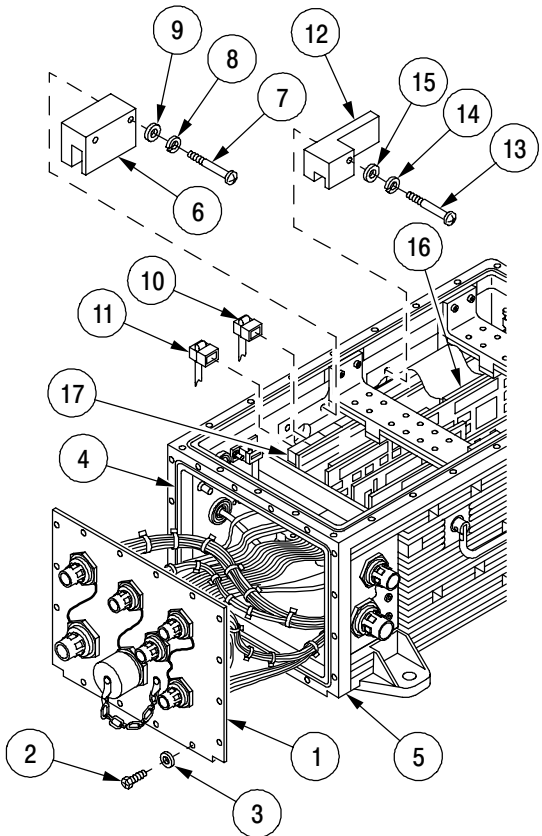
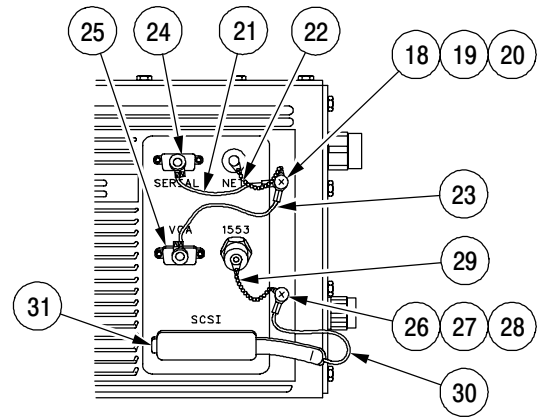
Hardware attaching retaining strap to ACU may be securing more than one retaining strap. Upon installation of applicable retaining strap, ensure that all straps secured with same hardware are installed.

6. If removed, attach retaining straps (21, 22, and 23) to ACU by inserting screw (18), new lockwasher (19), and flat washer (20) or attach retaining straps (29 and 30) by inserting screw (26), new lockwasher (27), and flat washer (28).
7. Install cap (24) onto Serial I/O Port cable connector and cap (25) onto VGA cable connector.
8. Install cap (31) onto SCSI cable connector.
9. Connect ribbon cable (10, 11, or 16) to CPU CCA (17).
10. If SCSI cable was removed, install insulating block (12) by inserting three screws (13), three new lockwashers (14), and three flat washers (15).
11. If Serial I/O or VGA cable was removed, install insulating block (6) by inserting three screws (7), three new lockwashers (8), and three flat washers (9).

CAUTION

The EMI shielding gasket is vital to this piece of equipment and is easily damaged. Handle with care when removing or replacing it. Failure to comply may result in damage to equipment.

12. If removed, install EMI shielding gasket (4) in groove in housing (5).
13. Position connector panel (1) on housing and align holes.
14. Install 16 screws (2) and 16 flat washers (3). Following torque sequence chart, torque screws to 30 in.-lb (3.4 N•m).
15. Install top panel in accordance with procedure outlined in paragraph 2-13.



06pc313m

2-22. ETHERNET CABLE AND 1553 (CHANNEL B) CABLE MAINTENANCE INSTRUCTIONS

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

Tool Kits, JTK-17LAL, TK-101/G, or TK-105/G
(items 34, 35, & 36, Appendix E)
Torque Wrench, 0-75 in.-lb (item 40, Appendix E)

Personnel Required:

One MOS 35Y

Materials/Parts:

Lockwasher (item 8, Appendix F)

a. REMOVAL

CAUTION



ESD SENSITIVE

The ACU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.

CAUTION

The connector panel assembly is attached by cables to internal components of ACU and cannot be moved very far from housing without putting strain on those cables. Exercise caution when removing bottom cover from ACU housing. Failure to comply may result in damage to equipment.

2-22. ETHERNET CABLE AND 1553 (CHANNEL B) CABLE MAINTENANCE INSTRUCTIONS CONTINUED

a. REMOVAL CONTINUED

NOTE

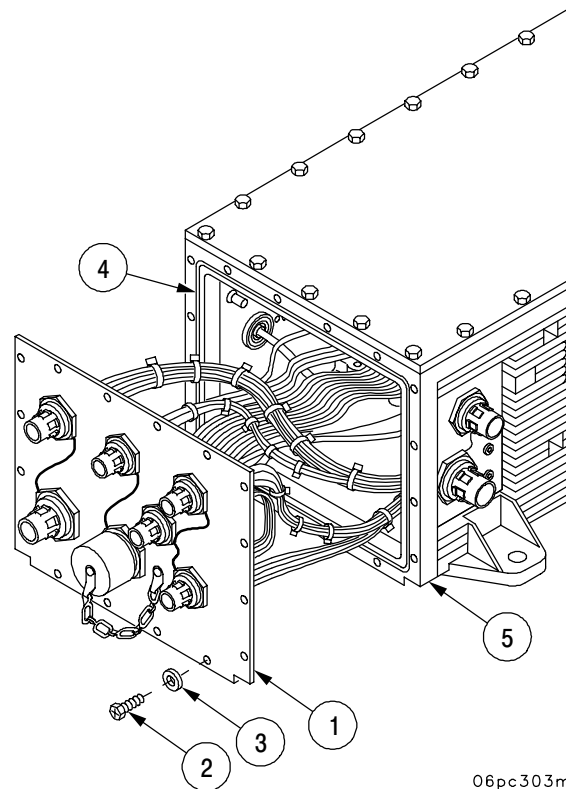
- The removal of the Ethernet and 1553 cables is performed in the same manner.
- When removing the 1553 cable connector, the 1553 cable will be disconnected from the 1553 CCA.

2. Remove ACU connector panel (1) by removing 16 screws (2) and 16 flat washers (3). Lift connector panel off housing.

CAUTION

The EMI shielding gasket is vital to this piece of equipment and is easily damaged. Handle with care when removing or replacing it. Failure to comply may result in damage to equipment.

3. Inspect EMI shielding gasket (4) in groove in housing (5) for cuts, nicks, or signs of stretching. Discard EMI shielding gasket if unserviceable.

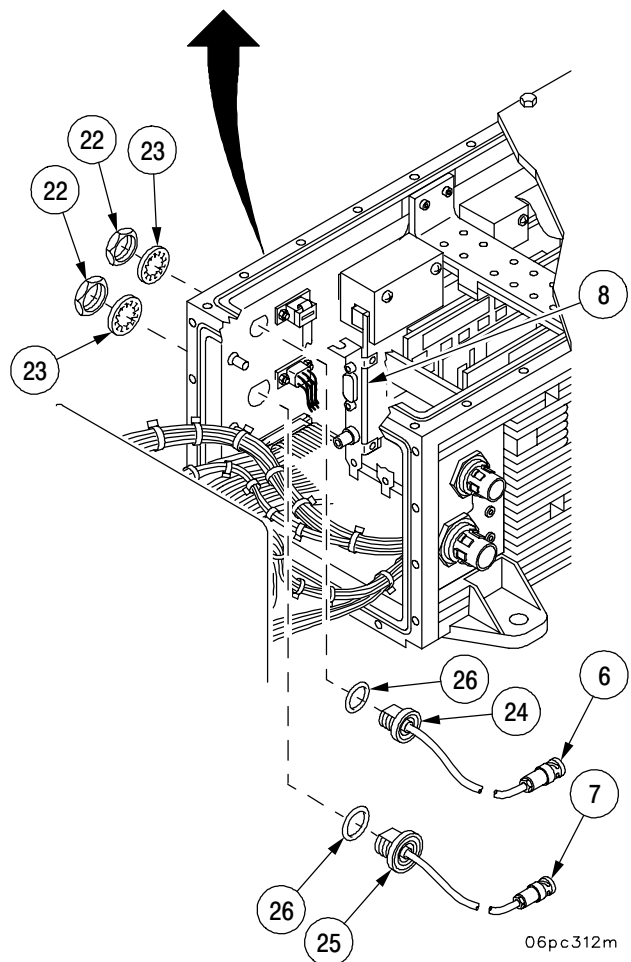
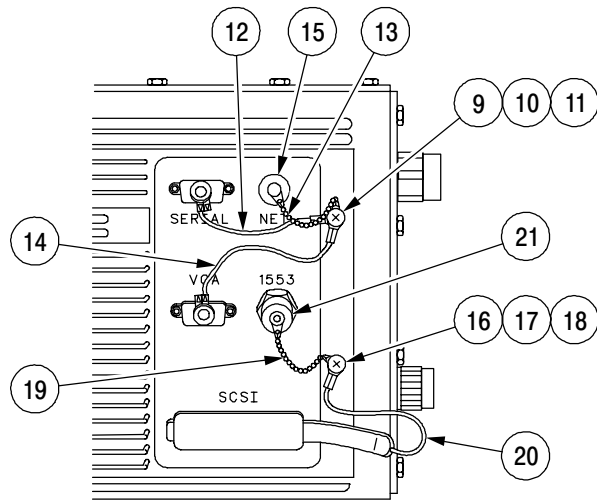


06pc303m

**2-22. ETHERNET CABLE AND 1553 (CHANNEL B) CABLE MAINTENANCE
INSTRUCTIONS CONTINUED**

a. REMOVAL CONTINUED

4. Disconnect cable (6 or 7) from edge of CPU CCA (8).
5. If necessary to replace Ethernet connector cap and strap, remove screw (9), lockwasher (10), and flat washer (11) securing retaining straps (12, 13, and 14) to ACU. Discard lockwasher.
6. Remove connector cap (15).
7. If necessary to replace 1553 connector cap and strap, remove screw (16), lockwasher (17), and flat washer (18), securing retaining straps (19 and 20) to ACU. Discard lockwasher.
8. Remove connector cap (21).
9. Remove nut (22) and star washer (23) securing cable connector (24 or 25) to ACU.
10. From the interior of the ACU, remove cable (6 or 7).
11. Inspect connector gasket (26) for cuts, nicks, or signs of stretching. Discard gasket if unserviceable.



b. INSTALLATION

CAUTION



ESD SENSITIVE

The ACU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. If removed, install connector gasket (26) on cable connector (24 or 25).
3. Position cable connector (24 or 25) in ACU.
4. Secure cable connector (24 or 25) with star washer (23) and nut (22).

06pc312m

2-22. ETHERNET CABLE AND 1553 (CHANNEL B) CABLE MAINTENANCE INSTRUCTIONS CONTINUED

b. INSTALLATION CONTINUED

NOTE

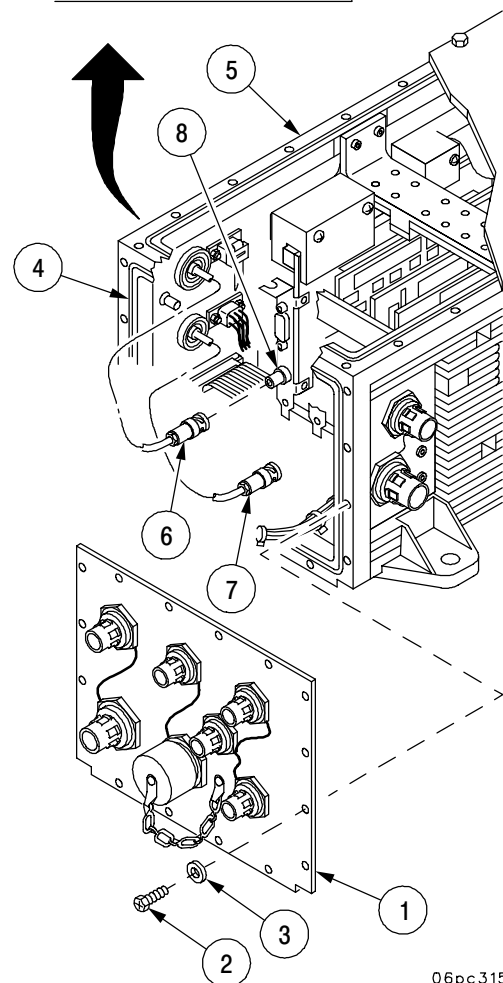
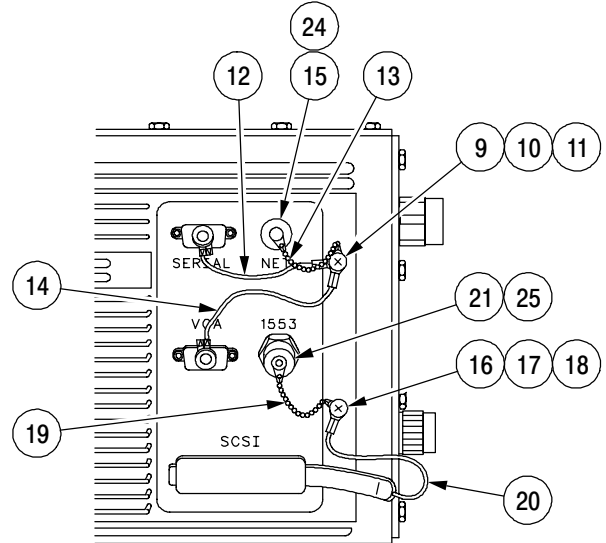
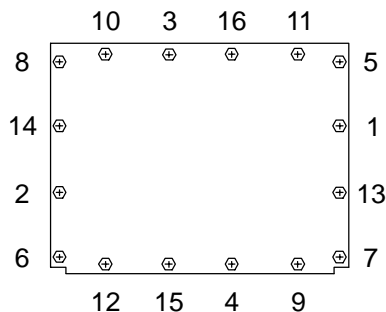
Hardware attaching retaining strap to ACU may be securing more than one retaining strap. Upon installation of applicable retaining strap, ensure that all straps secured with same hardware are installed.

5. If removed, attach retaining straps (19 and 20) to ACU by inserting screw (16), new lockwasher (17), and flat washer (18) or retaining straps (12, 13, or 14) by inserting screw (9), new lockwasher (10) and flat washer (11).
6. Install cap (21) onto 1553 cable connector (25) or cap (15) onto Ethernet cable connector (24).
7. Connect cable (6 or 7) to edge of CPU CCA (8).

CAUTION

The EMI shielding gasket is vital to this piece of equipment and is easily damaged. Handle with care when removing or replacing it. Failure to comply may result in damage to equipment.

8. If removed, install EMI shielding gasket (4) in groove in housing (5).
9. Position connector panel (1) on housing and align holes.
10. Install 16 screws (2) and 16 flat washers (3). Following torque sequence chart below, torque screws to 30 in.-lb (3.4 N•m).



06pc315m

2-23. CONNECTOR PANEL ASSEMBLY WITH MAIN CABLE MAINTENANCE INSTRUCTIONS

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

Tool Kits, JTK-17LAL, TK-101/G, or TK-105/G
(items 34, 35, & 36, Appendix E)
Torque Wrench, 0-75 in.-lb (item 40, Appendix E)
Pliers, Wire Twister (item 47, Appendix E)

Equipment Conditions:

Unenergized ACU is on workbench

Personnel Required:

One MOS 35Y

Materials/Parts:

Lockwasher (item 6, Appendix F)
Lockwire (item 30, Appendix D)
Insulation Sleeving (item 26, Appendix D)
Solder (item 28, Appendix D)
Soldering Flux (item 18, Appendix D)
Alcohol (item 4, Appendix D)
Brush, Acid Swabbing (item 11, Appendix D)
Preformed Packing (item 12, Appendix F)
Preformed Packing (item 13, Appendix F)

a. REMOVAL

CAUTION



ESD SENSITIVE

The ACU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

CAUTION

The connector panel assembly is attached by cables to internal components of ACU and cannot be moved very far from housing without putting strain on those cables. Exercise caution when removing bottom cover from ACU housing. Failure to comply may result in damage to equipment.

**2-23. CONNECTOR PANEL ASSEMBLY WITH MAIN CABLE MAINTENANCE
INSTRUCTIONS CONTINUED**

a. REMOVAL CONTINUED

NOTE

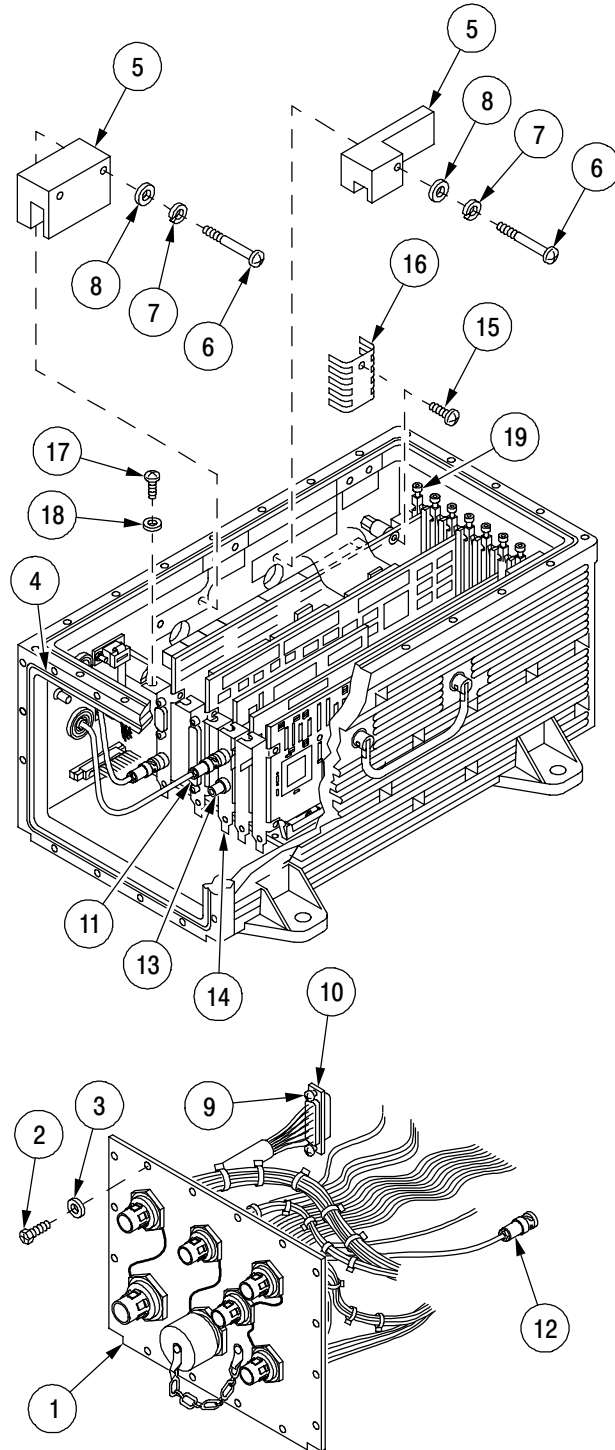
Tag all cables before removing to aid in the installation.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Remove ACU connector panel assembly (1) by removing 16 screws (2) and 16 flat washers (3). Lift connector panel assembly off housing.

CAUTION

The EMI shielding gasket is vital to this piece of equipment and is easily damaged. Handle with care when removing or replacing it. Failure to comply may result in damage to equipment.

3. Inspect EMI shielding gasket (4) for cuts, nicks, or signs of stretching. Discard EMI shielding gasket if unserviceable.
4. Remove top panel in accordance with procedure outlined in paragraph 2-13.
5. Remove stabilizer brackets in accordance with procedure outlined in paragraph 2-14.
6. Remove two insulating blocks (5) by removing three screws (6), three lockwashers (7) and three flat washers (8). Discard lockwashers.
7. Loosen two captive screws (9) securing card edge connector (10) to TCIM CCA (11).
8. Disconnect channel connector (12) from J2 connector (13) located on card edge of 1553 CCA (14).
9. Remove screw (15) and CPU CCA heatsink (16) from spacer assembly in ACU.
10. Remove screw (17) and flat washer (18) from hold-down of CPU CCA.
11. Loosen screw (19) (approximately six turns) in Loktainer of CPU CCA.

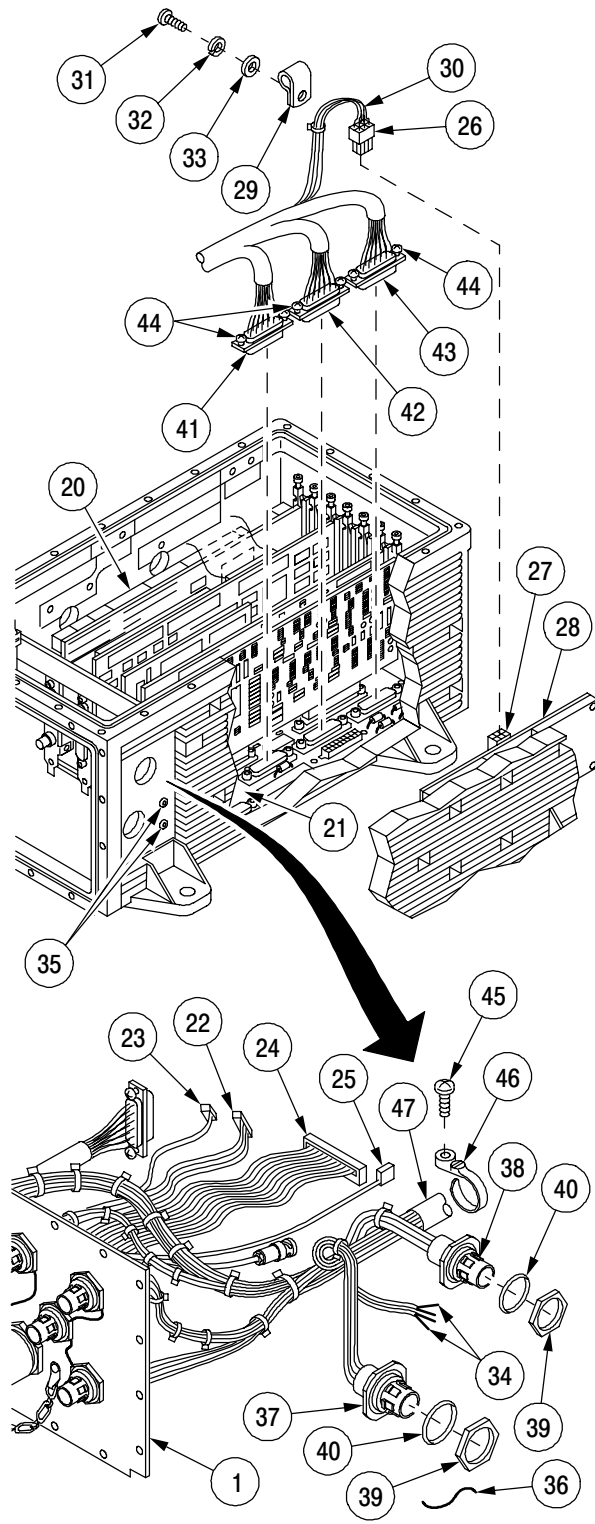


06pc327m

**2-23. CONNECTOR PANEL ASSEMBLY WITH MAIN CABLE MAINTENANCE
INSTRUCTIONS CONTINUED**

a. REMOVAL CONTINUED

12. Gently loosen CPU CCA (20) from backplane (21). Do not remove from ACU housing.
13. Disconnect three ribbon cables (22, 23, and 24), J5, J7, and J9, respectively, from back of CPU CCA (20).
14. Disconnect mouse cable (25) from back edge of CPU CCA (20).
15. Disconnect cable connector (26) from J1 connector (27) at the top of the Power Supply assembly (28).
16. Remove clamp (29) securing cable (30) to ACU housing, by removing screw (31), lockwasher (32) and flat washers (33). Discard lockwasher.
17. Cut leads (34) from rear of two LEDs (35).
18. Remove lockwire (36). Discard lockwire.
19. Remove two connectors J5 (37) and J6 (38) by removing two jam nuts (39) and two preformed packings (40) from the outside of the ACU. Discard preformed packings.
20. Pull connectors (37) and (38) out of housing.
21. Disconnect cable connectors (41, 42, and 43) from backplane (21) at J15, J16, and J17, respectively, by loosening two captive screws (44) on each connector.
22. Remove screw (45) from cable tie (46) securing main cable assembly (47) to housing.
23. Remove connector panel assembly (1) with main cable assembly (47) from ACU.



06pc334m

**2-23. CONNECTOR PANEL ASSEMBLY WITH MAIN CABLE MAINTENANCE
INSTRUCTIONS CONTINUED**

b. INSTALLATION

CAUTION



ESD SENSITIVE

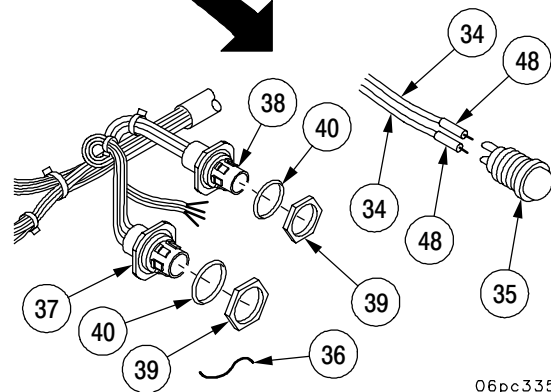
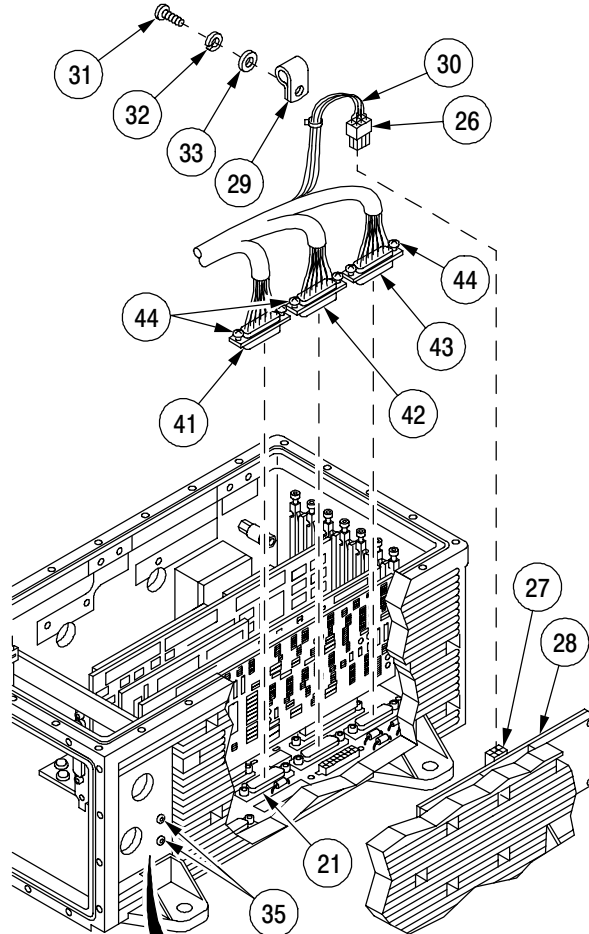
The ACU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Position cable connectors (41, 42, and 43) on backplane (21) at J15, J16 and J17, respectively, and tighten two captive screws (44) on each connector.
3. From inside ACU housing, position two connectors J5 (37) and J6 (38) and secure by installing a jam nut (39) and new preformed packing (40) on each connector.
4. Install new lockwire (36).

NOTE

Insulation sleeving tubing should be twice the diameter of the part over which it will be shrunk.

5. Slide a 1 in. piece of insulation sleeving (48) onto each lead (34) on rear of LEDs (35).
6. Solder leads to back of LEDs. Remove tags.
7. Clean solder joints with acid swabbing brush and alcohol.
8. Slide insulation sleeving into position.
9. Using heat gun, apply heat until sleeving forms to shape of wire and terminal.
10. Connect cable connector (26) to J1 connector (27) at the top of the Power Supply assembly (28).
11. Install clamp (29), securing cable (30) to ACU housing, by inserting screw (31), new lockwasher (32), and flat washers (33).



06pc335m

**2-23. CONNECTOR PANEL ASSEMBLY WITH MAIN CABLE MAINTENANCE
INSTRUCTIONS CONTINUED**

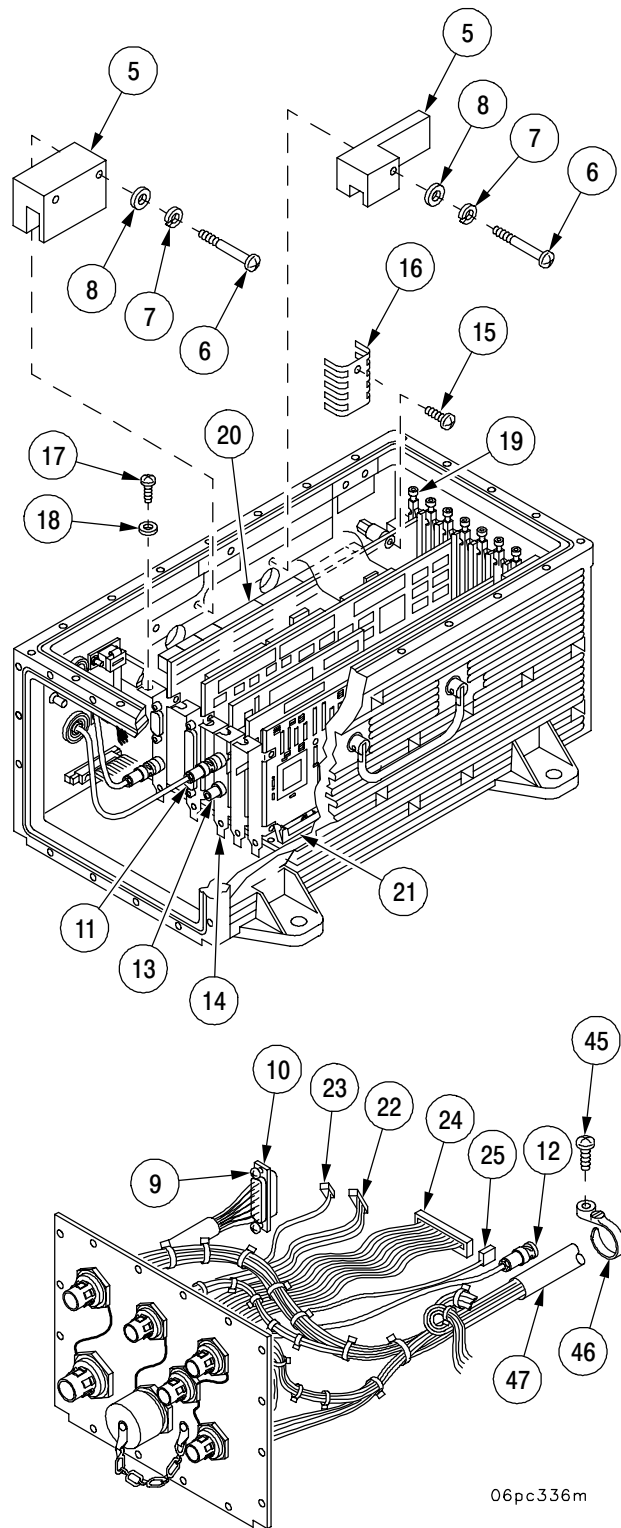
b. INSTALLATION CONTINUED

12. Connect three ribbon cables (22, 23, and 24) and mouse cable J13 (25) to back of CPU CCA in the following sequence: J9, J5, J13, and J7.
13. Position CPU CCA (20) onto backplane (21) in ACU housing and secure by pushing down firmly on CCA.

NOTE

Ensure that hole in heatsink and transistor are aligned with spacer assembly before installing hardware.

14. Install CPU CCA heatsink (16) between transistor and CPU CCA and insert screw (15) into spacer assembly in ACU. Torque screw to 5 in.-lb (0.6 N•m).
15. Tighten screw (19) in Loktainer of CPU CCA and torque to 25 in.-oz.
16. Insert screw (17) and flat washer (18) into holddown of CPU CCA. Torque screw to 5 in.-lb (0.6 N•m).
17. Connect channel connector (12) to J2 connector (13) located on card edge of 1553 CCA (14).
18. Connect connector (10) to card edge of TCIM CCA (11) and secure by tightening two captive screws (9).
19. Install two insulating blocks (5) by inserting three screws (6), three new lockwashers (7) and three flat washers (8).
20. Secure main cable assembly (47) to housing by installing cable tie (46) with screw (45).
21. Install stabilizer brackets in accordance with procedure outlined in paragraph 2-14.
22. Install top panel in accordance with procedure outlined in paragraph 2-13.



06pc336m

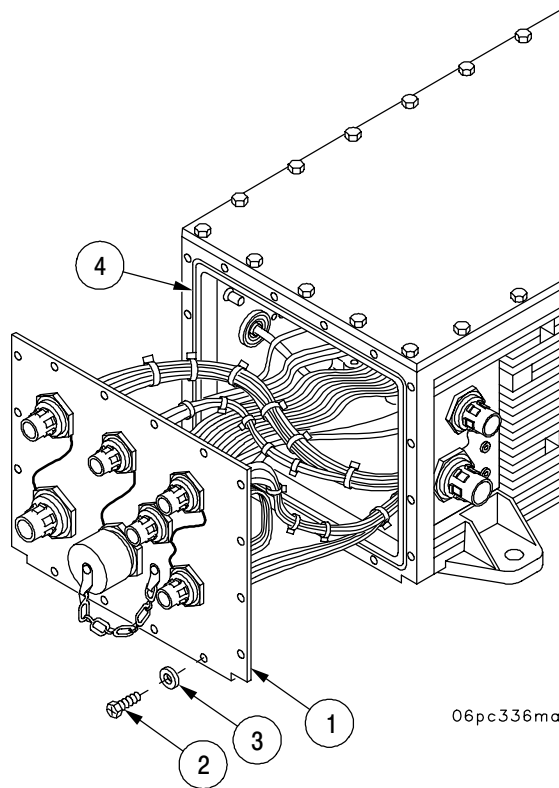
**2-23. CONNECTOR PANEL ASSEMBLY WITH MAIN CABLE MAINTENANCE
INSTRUCTIONS CONTINUED**

b. INSTALLATION CONTINUED

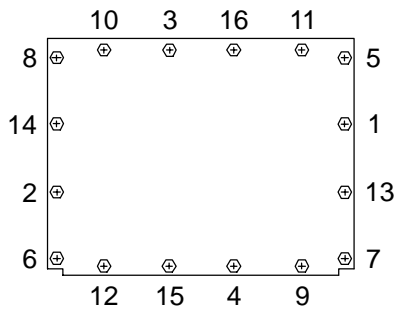
CAUTION

The EMI shielding gasket is vital to this piece of equipment and is easily damaged. Handle with care when removing or replacing it. Failure to comply may result in damage to equipment.

- 23. If removed, install EMI shielding gasket (4) in groove in housing.
- 24. Position connector panel assembly (1) on housing and align holes.
- 25. Install 16 screws (2) and 16 flat washers (3). Following torque sequence chart below, torque screws to 30 in.-lb (3.4 N•m).



06pc336ma



2-24. BACKPLANE MAINTENANCE INSTRUCTIONS

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

- Tool Kits, JTK-17LAL, TK-101/G, or TK-105/G (items 34, 35, & 36, Appendix E)
- Torque Wrench, 0-15 in.-lb (item 39, Appendix E)
- Torque Wrench, 0-75 in.-lb (item 40, Appendix E)
- #1 Crosstip Screwdriver Socket Wrench (item 21, Appendix E)
- #2 Crosstip Screwdriver Socket Wrench (item 22, Appendix E)

Equipment Conditions:

Unenergized ACU is on workbench

Personnel Required:

One MOS 35Y

Materials/Parts:

- Lockwasher (item 6, Appendix F)
- Screw, Machine (item 10, Appendix F)
- Screw, Machine (item 9, Appendix F)

a. REMOVAL

CAUTION



ESD SENSITIVE

The ACU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

NOTE

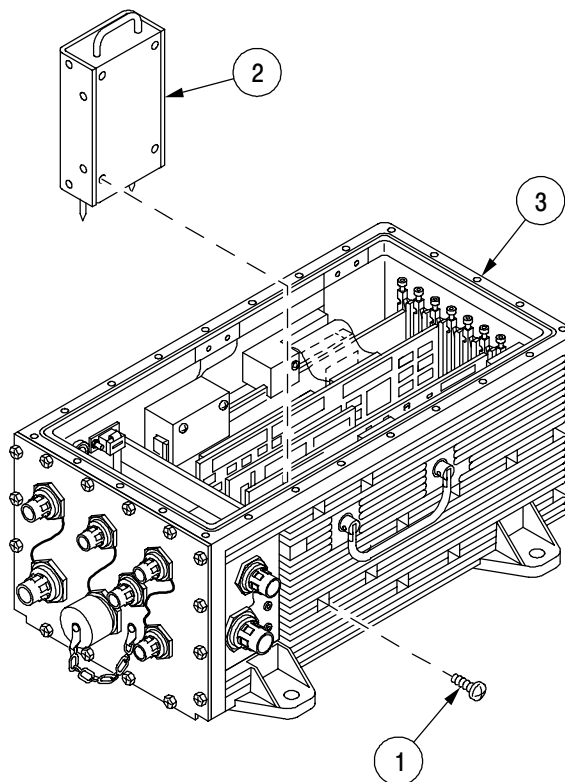
Tag all cables before disconnecting to aid in the installation.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Remove top panel in accordance with procedure outlined in paragraph 2-13.

NOTE

Screw and seal are a unit. They cannot be requisitioned separately.

3. Remove four screws with seals (1) from side of ACU and pull hard drive (2) from housing (3). Discard screw with seal.
4. Remove stabilizer brackets in accordance with procedure outlined in paragraph 2-14.



06pc.322m

2-24. BACKPLANE MAINTENANCE INSTRUCTIONS CONTINUED

a. REMOVAL CONTINUED

CAUTION

The connector panel assembly is attached by cables to internal components of ACU and cannot be moved very far from housing without putting strain on those cables. Exercise caution when removing bottom cover from ACU housing. Failure to comply may result in damage to equipment.

5. Remove ACU connector panel assembly (4) by removing 16 screws (5) and 16 flat washers (6). Lift connector panel assembly off housing (3).

CAUTION

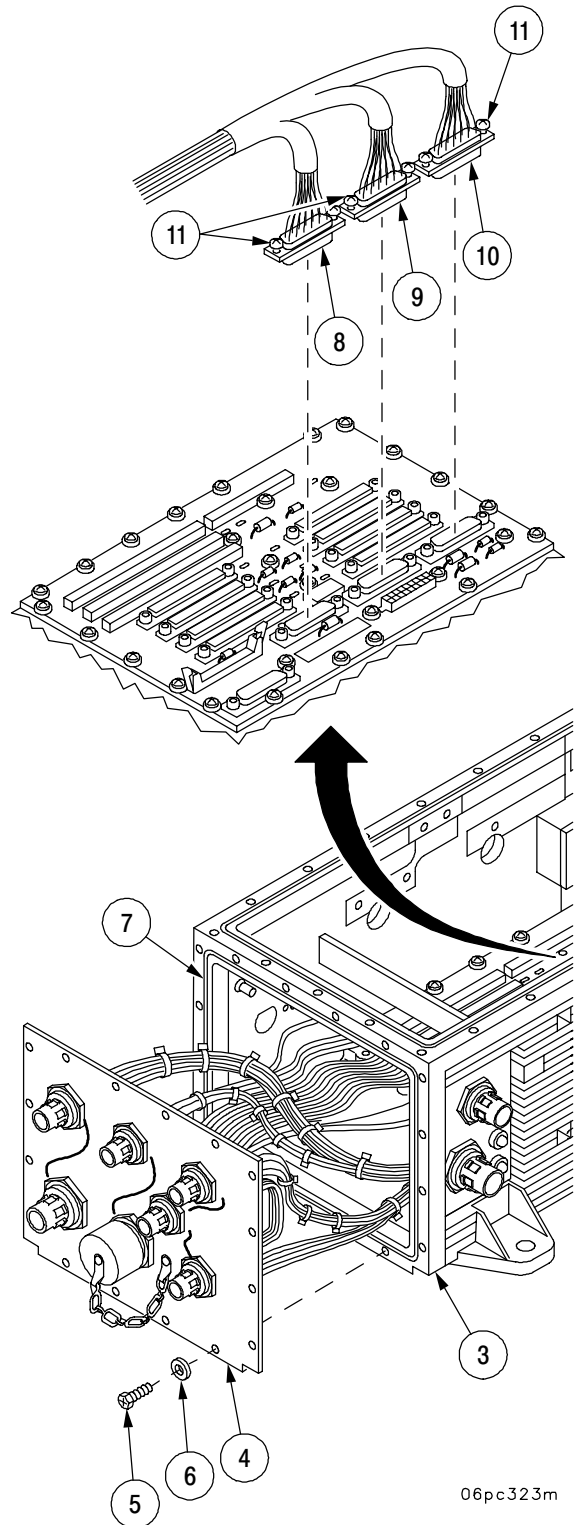
The EMI shielding gasket is vital to this piece of equipment and is easily damaged. Handle with care when removing or replacing it. Failure to comply may result in damage to equipment.

6. Inspect EMI shielding gasket (7) in groove in housing (3) for cuts, nicks, or signs of stretching. Discard EMI shielding gasket if unserviceable.
7. Remove 1553 CCA in accordance with procedure outlined in paragraph 2-15.
8. Remove Discrete I/O and Servo CCAs in accordance with procedure outlined in paragraph 2-16.
9. Remove TCIM CCA in accordance with procedure outlined in paragraph 2-17.
10. Remove CPU CCA in accordance with procedure outlined in paragraph 2-18.

NOTE

Tag all cables before removing to aid in installation.

11. Disconnect cable connectors (8, 9, and 10) from backplane at J15, J16, and J17, respectively, by loosening two captive screws (11) on each connector.
12. Remove Power Supply Assembly in accordance with procedure outlined in paragraph 2-19.



06pc323m

2-24. BACKPLANE MAINTENANCE INSTRUCTIONS CONTINUED

a. REMOVAL CONTINUED

13. Disconnect cable connector (12) at J14 by spreading blue tabs and pulling connector from backplane (13).
14. Remove backplane (13) by removing 36 screws (14), 36 lockwashers (15), and 36 flat washers (16). Discard lockwashers.

b. INSTALLATION

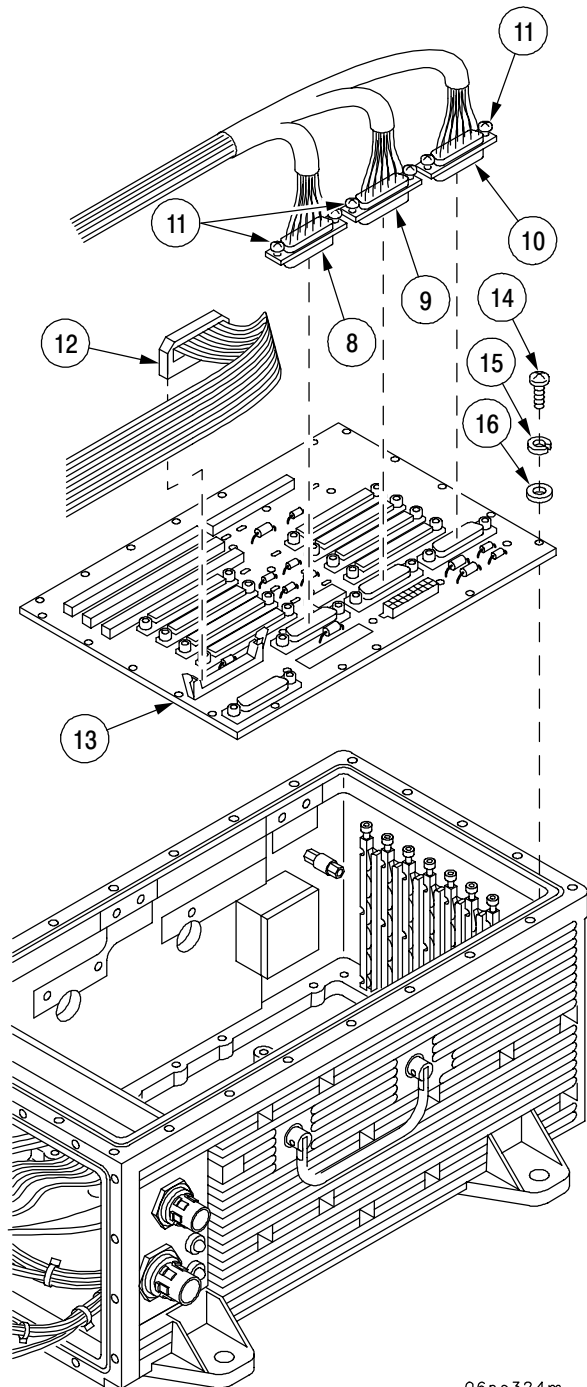
CAUTION



ESD SENSITIVE

The ACU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Install backplane (13) by inserting 36 screws (14), 36 new lockwashers (15), and 36 flat washers (16).
3. Position cable connector (12) on backplane (13) at J14 and push connector down until you hear tabs click into place.
4. Install Power Supply Assembly in accordance with procedure outlined in paragraph 2-19.
5. Position cable connectors (8, 9, and 10) on backplane at J15, J16, and J17, respectively, and tighten two captive screws (11) on each connector.
6. Install CPU CCA in accordance with procedure outlined in paragraph 2-18.
7. Install TCIM CCA in accordance with procedure outlined in paragraph 2-17.
8. Install Discrete I/O and Servo CCAs in accordance with procedure outlined in paragraph 2-16.
9. Install 1553 CCA in accordance with procedure outlined in paragraph 2-15.



06pc324m

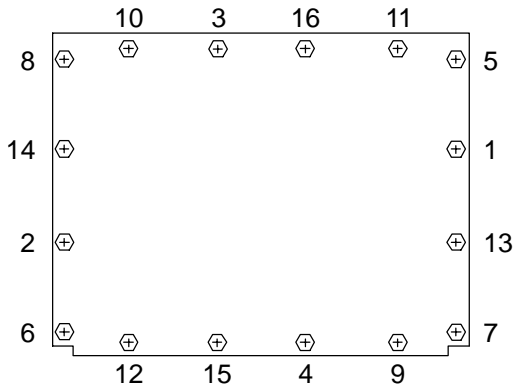
2-24. BACKPLANE MAINTENANCE INSTRUCTIONS CONTINUED

b. INSTALLATION CONTINUED

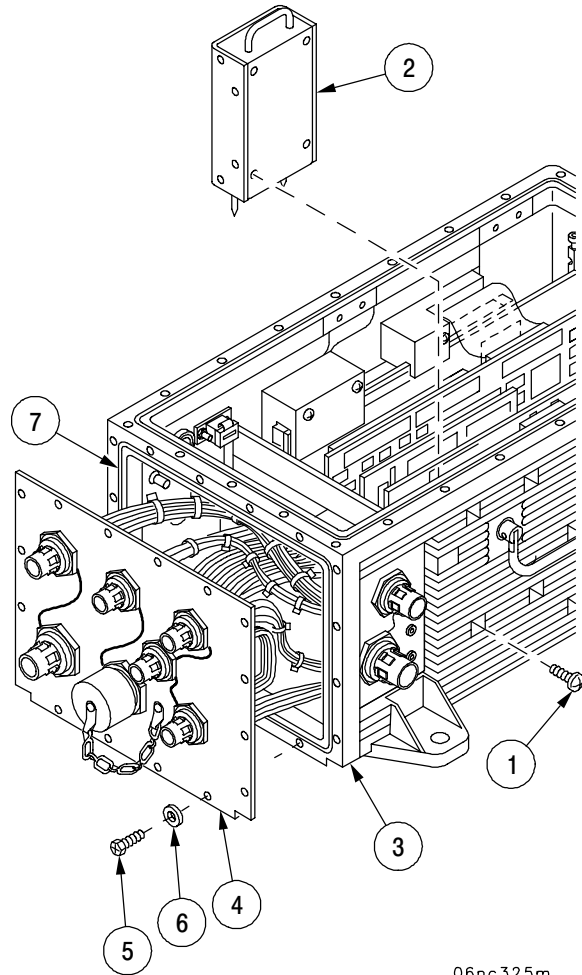
CAUTION

The EMI shielding gasket (7) is vital to this piece of equipment and is easily damaged. Handle with care when removing or replacing it. Failure to comply may result in damage to equipment.

10. If removed, install EMI shielding gasket (7) in groove in housing (3).
11. Position connector panel assembly (4) on housing and align holes.
12. Install 16 screws (5) and 16 flat washers (6). Follow torque sequence chart below, torque screws to 30 in.-lb (3.4 N•m).



13. Install hard disk drive (2) into ACU.
14. Insert four new screws with seals (1) into side of ACU, securing hard disk drive (2). Torque screws to 10 in.-lb (1.1 N•m).
15. Install stabilizer brackets in accordance with procedure outlined in paragraph 2-14.
16. Install top panel in accordance with procedure outlined in paragraph 2-13.



06pc325m

2-25. ACU HANDLE MAINTENANCE INSTRUCTIONS

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

Tool Kits, JTK-17LAL, TK-101/G, or TK-105/G
(items 34, 35, & 36, Appendix E)
Torque Wrench, 0-75 in.-lb (item 40, Appendix E)
Torque Wrench, 0-15 in.-lb (item 39, Appendix E)
Torque Wrench, 0-50 ft-lb (item 68, Appendix E)
#2 Crosstip Screwdriver Socket Wrench
(item 22, Appendix E)

Materials/Parts:

Lockwasher (item 1, Appendix F)
Screw, Machine (item 10, Appendix F)

Equipment Conditions:

Unenergized ACU is on workbench

Personnel Required:

One MOS 35Y

a. REMOVAL

CAUTION



ESD SENSITIVE

The ACU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

NOTE

- When removing handle from the left side of ACU, perform steps 1 through 10. When removing handle from the right side of ACU, perform steps 1, 2, 11, 9, and 10.
 - Handle is supplied from vendor with nuts and washers.
1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
 2. Remove top panel in accordance with procedure outlined in paragraph 2-13.

2-25. ACU HANDLE MAINTENANCE INSTRUCTIONS CONTINUED

a. REMOVAL CONTINUED

3. Remove stabilizer brackets in accordance with procedure outlined in paragraph 2-14.
4. Remove two insulating blocks (1) by removing three screws (2), three lockwashers (3), and three flat washers (4). Discard lockwashers.
5. Remove screw (5) and CPU CCA heatsink (6) from spacer assembly in ACU.
6. Remove screw (7) and flat washer (8) from holddown of CPU CCA.
7. Loosen screw (9) (approximately six turns) in Loktainer of CCA.
8. Gently loosen CPU CCA (10) from backplane (11). Do not remove from ACU housing.
9. Remove handle (12) by removing two nuts (13) and two star washers (14).
10. Inspect gaskets (15) on handle for cuts, nicks, or signs of stretching. Discard gasket if unserviceable.

NOTE

Screw and seal are a unit. They cannot be requisitioned separately.

11. Remove hard disk drive (16) from ACU by removing four screws with seals (17) on side of ACU. Discard screws with seals.

b. INSTALLATION

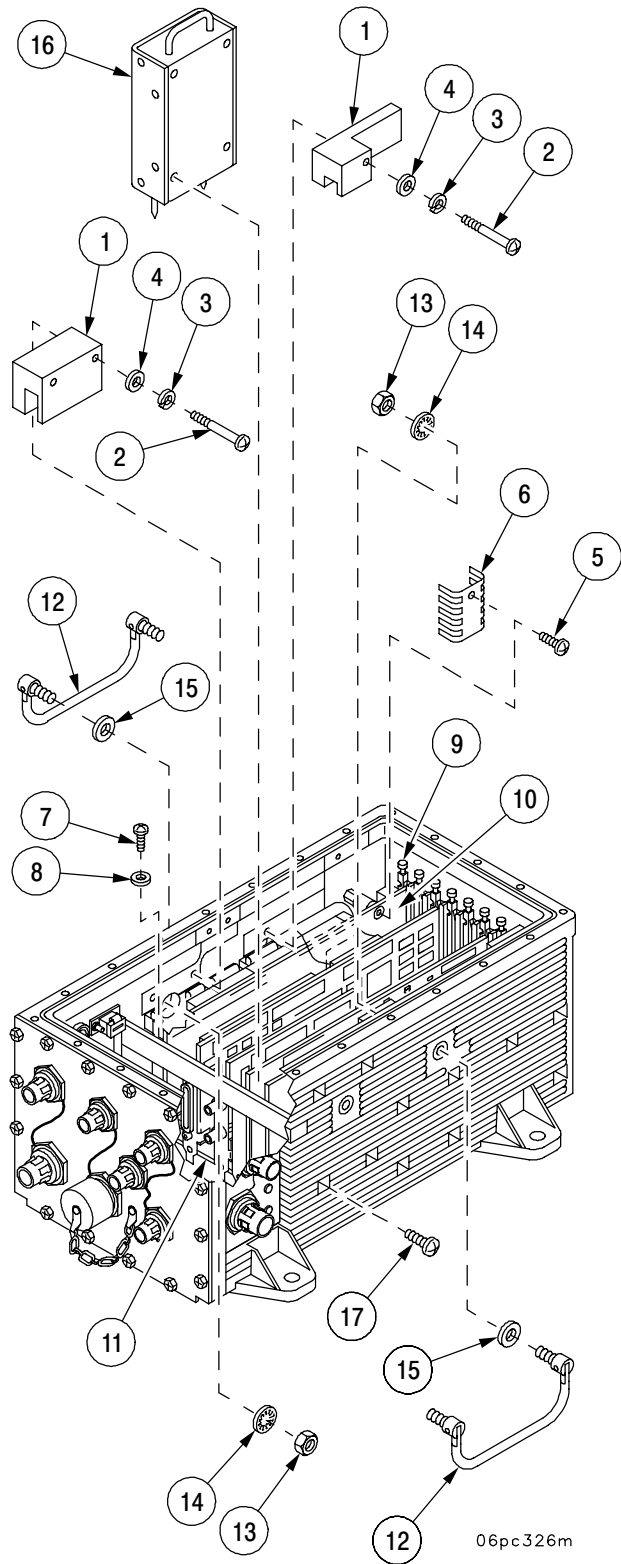


ESD SENSITIVE

The ACU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

NOTE

When installing handle to left side of ACU, perform steps 1 through 10 and 13. When installing handle to right side of ACU, perform steps 1, 2, 3, 11, 12, and 13.



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2-25. ACU HANDLE MAINTENANCE INSTRUCTIONS CONTINUED

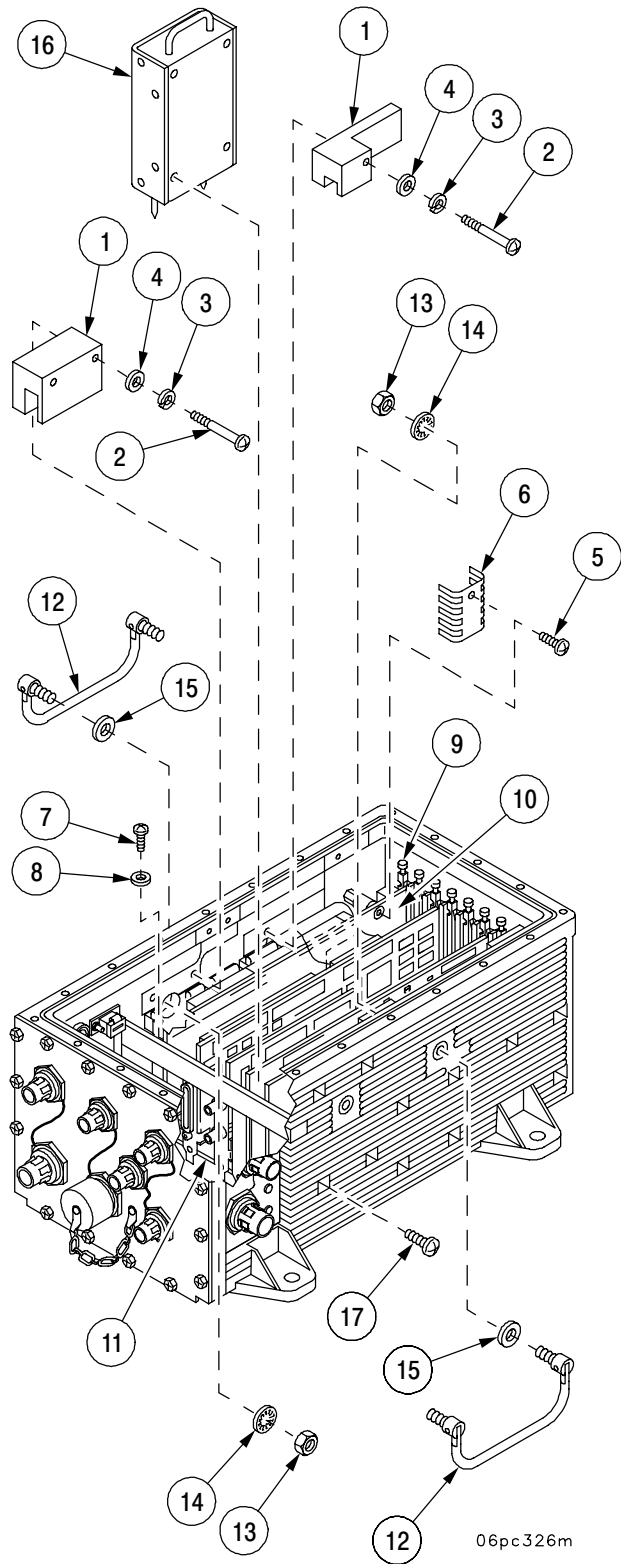
b. INSTALLATION CONTINUED

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. If removed, install gaskets (15) on handle (12).
3. Install handle (12) on ACU with two nuts (13) and two star washers (14). Torque screws to 20 ft-lb (27.1 N•m).
4. Carefully position CPU CCA (10) onto backplane (11).
5. Secure CPU CCA (10) to backplane (11) by pushing down firmly on CCA.

NOTE

Ensure that hole in heatsink and transistor are aligned with spacer assembly before installing hardware.

6. Install CPU CCA heatsink (6) between transistor and CPU CCA and insert screw (5) into spacer assembly in ACU. Torque screw to 5 in.-lb (0.6 N•m).
7. Tighten screw (9) in Loktainer of CPU CCA. Torque screw to 25 in.-oz.
8. Insert screw (7) and flat washers (8) into holddown of CPU CCA. Torque screws to 5 in.-lb (0.6 N•m).
9. Install two insulating blocks (1) by inserting three screws (2), three new lockwashers (3), and three flat washers (4).
10. Install stabilizer brackets in accordance with procedure outlined in paragraph 2-14.
11. Install hard disk drive (16) into ACU.
12. Insert four new screws with seals (17) into side of ACU, securing hard disk drive (16). Torque screws to 10 in.-lb (1.1 N•m).
13. Install top panel in accordance with procedure outlined in paragraph 2-13.



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CHAPTER 3. DIRECT SUPPORT MAINTENANCE INSTRUCTIONS FOR DISPLAY UNIT (DU)

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

	Page	Page
Common Tools and Equipment	3-1	3-1
Special Tools, TMDE, and Support Equipment	3-1	

3-1. COMMON TOOLS AND EQUIPMENT

For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE), CTA 50-970, or CTA 8-100, as applicable to your unit.

3-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

Refer to Appendix C, Repair Parts and Special Tools List (RPSTL) for applicable special tools, TMDE, and support equipment.

3-3. REPAIR PARTS

Refer to Appendix F of this manual for a list of mandatory replacement parts. Repair parts are listed and illustrated in Appendix C of this manual.

Section II – SERVICE UPON RECEIPT

	Page	Page
Site and Shelter Requirements	3-1	3-1
Service Upon Receipt of Materiel		3-1

3-4. SITE AND SHELTER REQUIREMENTS

Display Unit DS maintenance will be performed using facilities contained within the Electronic Shop, Transportable, AN/TSM-191(V)3.

3-5. SERVICE UPON RECEIPT OF MATERIEL

- a. Unpacking.
 - (1) Place packed Display Unit (DU) on a work bench
 - (2) Check the condition of the packaged DU. Check the markings. Note any discrepancies.
 - (3) Do not use sharp blades or sharp cutting tools when unpacking the DU. Remove packing material carefully.
- b. Check unpacked equipment.

TM 9-1200-215-34&P

- (1) Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on SF 364, Report of Discrepancy.
- (2) Check the equipment against the packing slip to see if the shipment is complete. Report all discrepancies in accordance with the instructions of DA PAM 738-750.
- c. Processing unpacked equipment. Enter unpacked and checked equipment into normal work schedule based on standard shop practice

Section III – PRE-SHOP ANALYSIS

	Page		Page
Introduction	3-2	Pre-shop Analysis	3-2

3-6. INTRODUCTION

Pre-shop analysis is a method for screening incoming equipment to determine its physical condition for maintenance tasks required to return the equipment to service. Pre-shop analysis begins with a technical inspection of the equipment and ends with a report of corrective actions taken. Other than for structural malfunctions, such as broken handles, all incoming equipment is subject to manual troubleshooting as outlined in Section IV of this chapter.

3-7. PRE-SHOP ANALYSIS

Using Table 3-1 and paragraph 1-11 as a guide, check for parts that are broken, cracked, bent, dented, or missing. Evaluate condition of assembly. Verify that all cable receptacles are securely fastened. Acceptable cracks and dents should be cleaned and missing Chemical Agent Resistant Coating (CARC) should be reapplied.

WARNING

Uncured CARC paint contains hazardous materials. Follow manufacturer's instruction in preparation and application of the CARC. Failure to comply may result in injury to personnel.

Table 3-1. Pre-shop Analysis Guide

Item	Description	Check	Action
1	Forms and Tags	Existence.	Determine reason for sending LRU to maintenance.
2	Receptacle: J1	Cleanliness, corrosion, bent pins, cracks, and broken or worn connector lugs.	Tighten, clean or forward to depot as appropriate.
3	Switch Panel	Cleanliness, broken toggle covers, cracks, cracked/cut environmental key covers, and burnt out LEDs.	Clean, evaluate or replace as required.
4	Electroluminescent Panel	Cleanliness, cracks, fuzzy display.	Clean, evaluate or replace as required.
5	Handle	Existence, function, and cracks.	Replace as required.
6	Enclosure	Cleanliness, corrosion, dents, cracks, broken vanes and mounting feet, and markings and paint. Condition of inlet valve.	Clean, evaluate, spot paint, or forward to depot as appropriate. Replace inlet valve per paragraph 1-24.

Change 1

Section IV – MANUAL TROUBLESHOOTING

	Page		Page
General	3-3	Manual Troubleshooting Procedures	3-5
Functional Description	3-3	Post-Maintenance Test	3-6

3-8. GENERAL

This chapter contains information on checks and corrective actions required to isolate defects in the Display Unit (DU), and correct the defects by means of maintenance. The manual troubleshooting shall begin with a fault or symptom and lead to a single fault isolation of the problem. In cases where the maintenance must be performed at a higher level, the description will note "Forward DU to Depot".

3-9. FUNCTIONAL DESCRIPTION

a. The Display Unit (DU) is the soldier-machine interface to the rest of the components of the AFCS. It provides the user the capability to control the AFCS, view its operational and inventory status, control the subsystems, and position the weapon. This interface is accomplished through the interaction of information provided to the operator from the viewable display module and visual indicators and commands entered by the operator via the keyboard and manually operated switches. The DU uses graphical prompts and user menus to enable the operator to easily control the entire AFCS. Key characteristics of the DU are:

- One-man operation of the fire control tasks
- Data entry permitted by a numeric keypad and by cursor control keys
- Menu driven display and softkeys reduce control tasks to selection from a displayed list of choices
- Error checks on data entry reduce fatigue induced errors
- Alpha-numeric and graphic capability
- Electroluminescent panel with two different character sizes to enhance readability in all levels of illumination
- Navigation displays aid navigation and emplacement of weapon systems

A block diagram of the DU is shown in Figure 3-1.

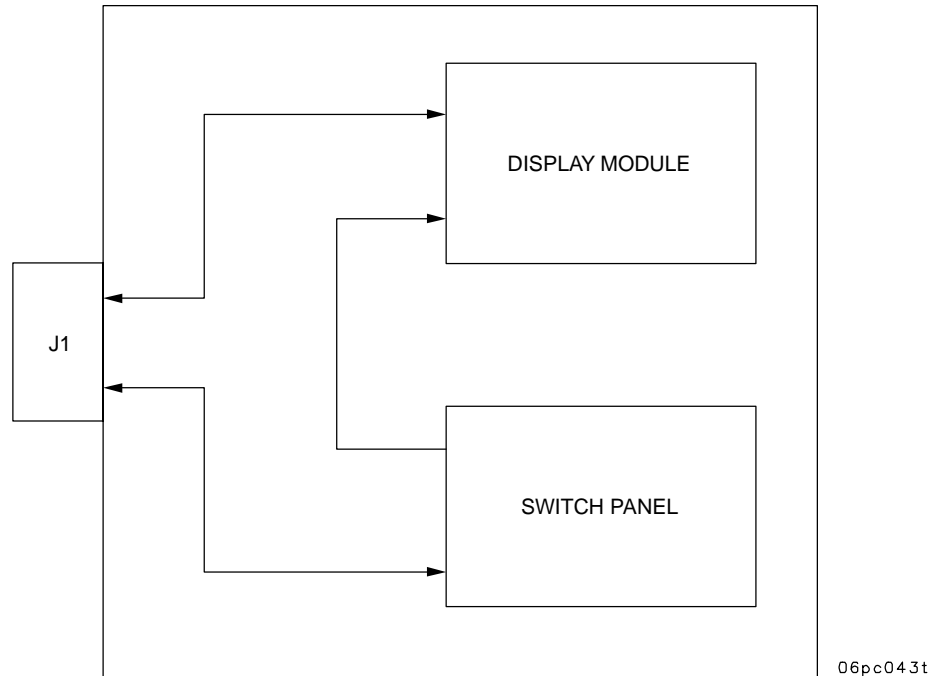


Figure 3-1. Display Unit Block Diagram

b. The DU consists of:

- Enclosure with handle (electronic housing)
- Display module
- Switch panel
- Electrical connector
- Internal wiring

(1) The enclosure is a 16.5 x 13.0 x 4.5 inch cast aluminum electronic housing with an attached folding handle. The enclosure provides environmental protection to the internal components of the DU.

(2) The display module is an electro-optical assembly which consists of a 4 x 8 inch thin-film electroluminescent panel, control circuitry, and a power supply. The display module is capable of 256 x 512 pixels resolution. It is capable of alpha-numeric and graphical display. The display is readable in all anticipated levels of illumination.

(3) The switch panel is an electromechanical assembly which contains 23 pushbutton switches, three toggle switches, and two indicator lights. The indicator lights provide critical status information to the operator outside of the display module. The operator enters commands through the switch panel either via the keypad, cursor controls, or toggle switches.

(4) The electrical connector is a standard 41 pin cylindrical connector marked J1. This connector provides the sole I/O access to the Control Unit (CU).

(5) The internal wiring consists of electrical interconnection of the display module, the switch panel, and the electrical connector. This interconnection is divided into two cable assemblies. The pinouts of the cable assemblies are diagrammed in paragraph 3-10.

3-10. MANUAL TROUBLESHOOTING PROCEDURES

DESCRIPTION

This task covers: Manual Troubleshooting

INITIAL SETUP

Tools:

- Tool Kits, JTK-17LAL, TK-101/G, or TK-105/G (items 34, 35, & 36, Appendix E)
- Pin Adapter, Test #16, #20, and #22 (items 4, 5, & 6, Appendix E)
- Socket Adapter, Test #16, #20, and #22 (items 7, 8, & 9, Appendix E)
- Electrical Lead (item 14, Appendix E)

Equipment Conditions:

Appropriate cable assembly removed; if not, remove appropriate cable assembly in accordance with procedure in paragraphs 3-17 or 3-18 as required.

Personnel Required:

One MOS 35Y

NOTE

- The following troubleshooting procedures consist of wiring diagrams locating box edge connector pins to internal harness connector terminations. Continuity checks using these diagrams are intended to be used when replacement of internal components fails to correct an Electronic Shop, Transportable, AN/TSM-191(V)3, indicated fault. All other internal troubleshooting will be performed by automated testing. Refer to TPS 12958912 for specific DU troubleshooting procedures.
- The continuity check is performed to test for the existence of a connection between two contacts on the cable. The two probes from an ohmmeter are touched to the appropriate pair of contacts and the ohmmeter is monitored. Low resistance readings (approaching 0 ohms) show a good connection; high resistance readings (approaching infinity) show degraded or broken connection. Figure 3-2 shows what contacts the probes should be placed on to check for continuity on the DU-Keyboard cable assembly. Figure 3-3 shows what contacts the probes should be placed on to check for continuity on the DU-Serial cable assembly.

MANUAL TROUBLESHOOTING

1. Check for continuity using figures 3-2 and 3-3.

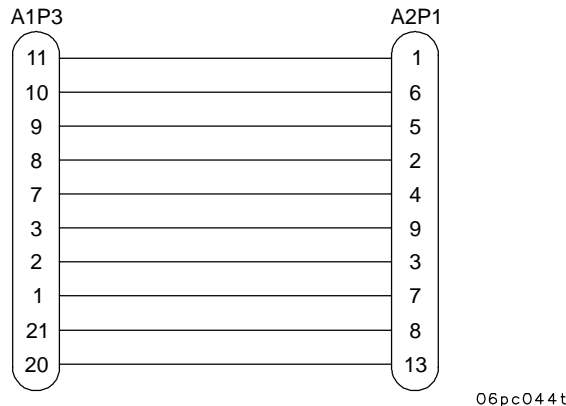


Figure 3-2. DU-Keyboard Cable Assembly

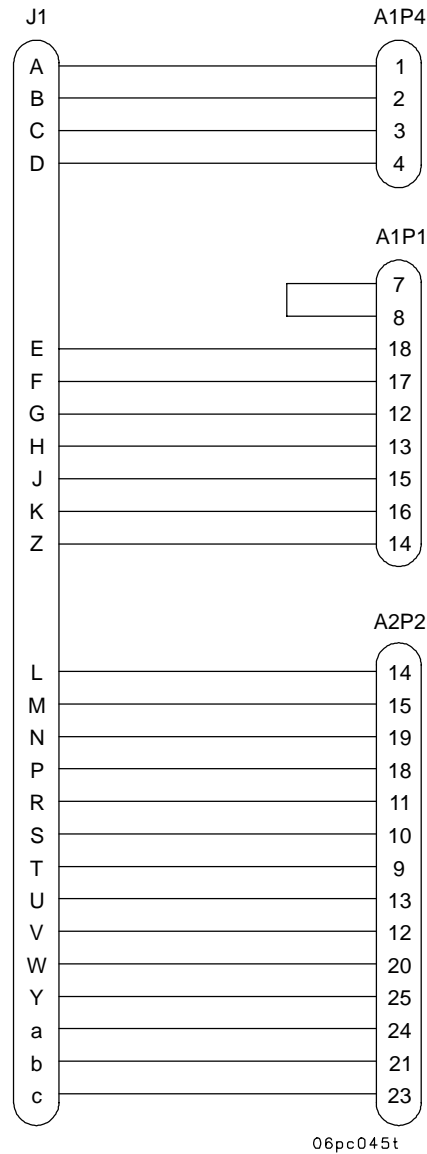


Figure 3-3. DU-Serial Cable Assembly

2. If instances of noncontinuity are found between contacts, recheck applicable wires and contacts for fraying, breakage, or corrosion.
3. If contacts were found to be broken or corroded, forward unit to depot for repair of receptacle contacts, connector contacts, or power distribution module contacts as appropriate.
4. If noncontinuity exists between two points and the contact is not visibly damaged, forward unit to depot for repair of applicable wire.
5. If at this point, no failures have been identified in this cable, perform next higher assembly fault isolation under the assumption that this cable assembly is functioning properly.

3-11. POST-MAINTENANCE TEST

Follow procedures outlined in TPS 12958912 to verify the operation of DU.

Section V – MAINTENANCE PROCEDURES

	Page	Page	
General	3-7	Handle Maintenance Instructions	3-16
Bottom Cover Maintenance Instructions	3-8	Keyboard Cable Assembly Maintenance Instructions	3-18
Electroluminescent Panel Maintenance Instructions	3-10	Serial Cable Assembly Maintenance Instructions	3-20
Switch Panel Maintenance Instructions	3-13		

3-12. GENERAL

a. This section contains the step-by-step maintenance procedures for DS level maintenance of the DU. These procedures are provided to access components for general maintenance. These maintenance tasks are authorized by the Source, Maintenance, and Recoverability (SMR) codes indicated in the Repair Parts and Special Tools List (RPSTL) in Appendix C. There are no GS level maintenance tasks for the DU.

b. Figure 3-4 below shows the location of the major replaceable assemblies in the DU.

LEGEND:

- (1) ELECTROLUMINESCENT PANEL
- (2) BOTTOM COVER
- (3) EMI GASKET
- (4) SWITCH PANEL
- (5) ELECTRICAL CONNECTOR
- (6) INTERNAL WIRING HARNESS
- (7) ELECTRONIC HOUSING

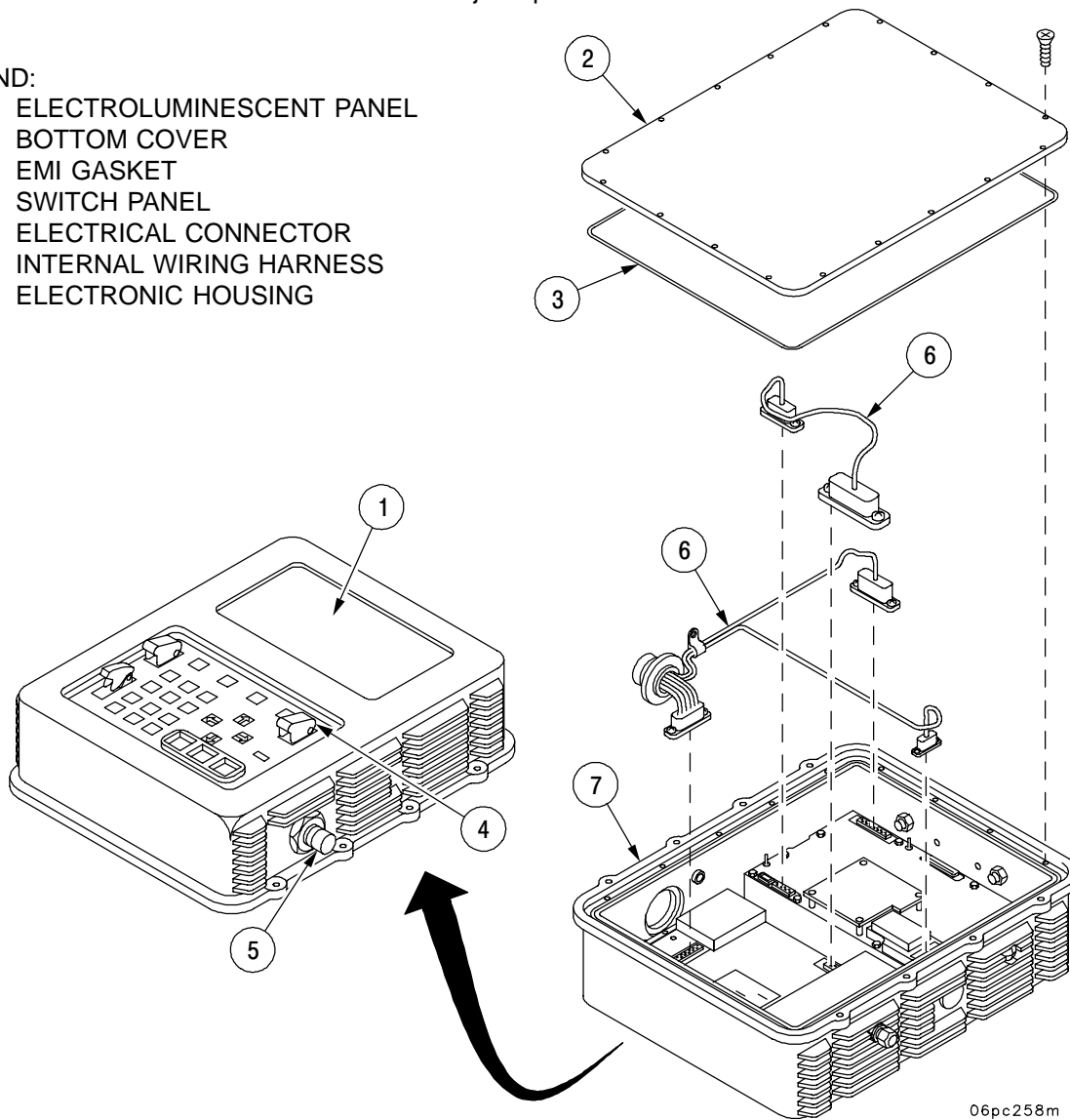


Figure 3-4. Display Unit Exploded View

3-13. BOTTOM COVER MAINTENANCE INSTRUCTIONS

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

- Tool Kits, JTK-17LAL, TK-101/G, or TK-105/G (items 34, 35, & 36, Appendix E)
- Torque Wrench, 0-15 in.-lb (item 39, Appendix E)
- #2 Crosstip Screwdriver Socketwrench (item 22, Appendix E)
- Work Station Kit, Electronic (item 38, Appendix E)

Equipment Conditions:

Unenergized DU is on workbench

Personnel Required:

One MOS 35Y

a. REMOVAL

CAUTION



ESD SENSITIVE

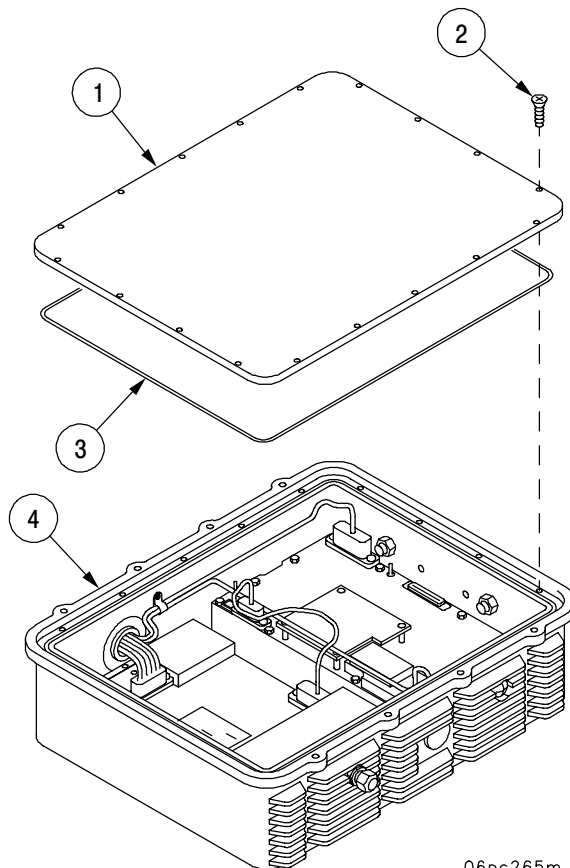
The DU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground, to ensure ESD protection.
2. Remove bottom cover (1) by removing 18 screws (2). Lift bottom cover off housing.

CAUTION

The EMI shielding gasket (3) is vital to this piece of equipment and is easily damaged. Handle with care when removing or replacing it. Failure to comply may result in damage to equipment.

3. Inspect EMI shielding gasket (3) in groove in housing (4) for cuts, nicks, or signs of stretching. Discard EMI shielding gasket if unserviceable.



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3-13. BOTTOM COVER MAINTENANCE INSTRUCTIONS CONTINUED

b. INSTALLATION

CAUTION



ESD SENSITIVE

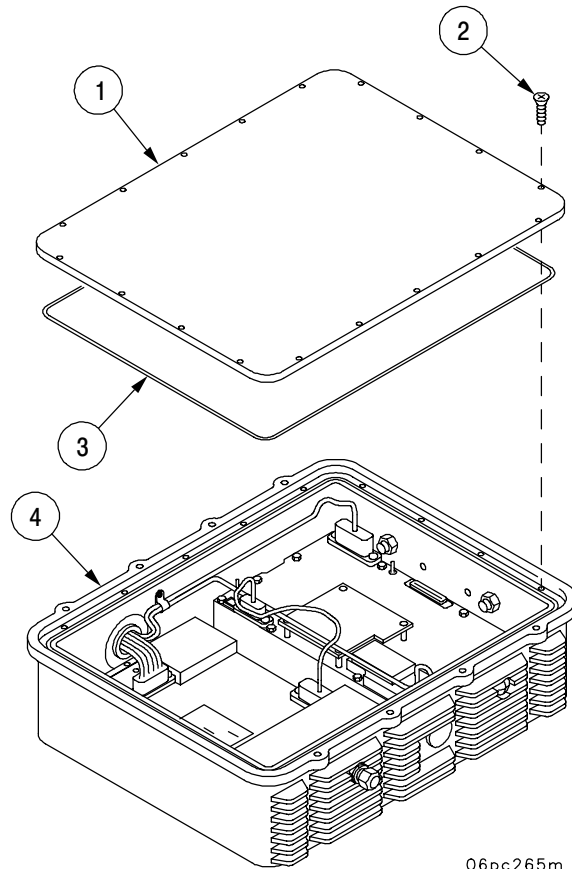
The DU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.

CAUTION

The EMI shielding gasket is vital to this piece of equipment and is easily damaged. Handle with care when removing or replacing it. Failure to comply may result in damage to equipment.

2. If removed, install EMI shielding gasket (3) in groove in housing (4).
3. Place bottom cover (1) on housing and align holes.
4. Insert 18 screws (2). Torque screws to $9.5 \pm .5$ in.-lb ($1.1 \pm .1$ N•m).
5. Purge DU with nitrogen following procedure outlined in paragraph 1-23.



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3-14. ELECTROLUMINESCENT PANEL MAINTENANCE INSTRUCTIONS

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

- Tool Kits, JTK-17LAL, TK-101/G, or TK-105/G (items 34, 35, & 36, Appendix E)
- Torque Wrench, 0-15 in.-lb (item 39, Appendix E)
- Torque Wrench, 0-150 in.-lb (item 41, Appendix E)
- Work Station Kit, Electronic (item 38, Appendix E)
- #1 Crosstip Screwdriver Socketwrench (item 21, Appendix E)
- 3/16" Flat Tip Screwdriver Socketwrench (item 23, Appendix E)

Materials/Parts:

- Nuts, Self-Locking (item 2, Appendix F)
- Cleaning Cloth (item 13, Appendix D)
- Alcohol, Denatured (item 4, Appendix D)
- Packing, Preformed (item 11, Appendix F)

Equipment Conditions:

DU bottom cover removed; if not, remove bottom cover in accordance with paragraph 3-13

Personnel Required:

One MOS 35Y

a. REMOVAL

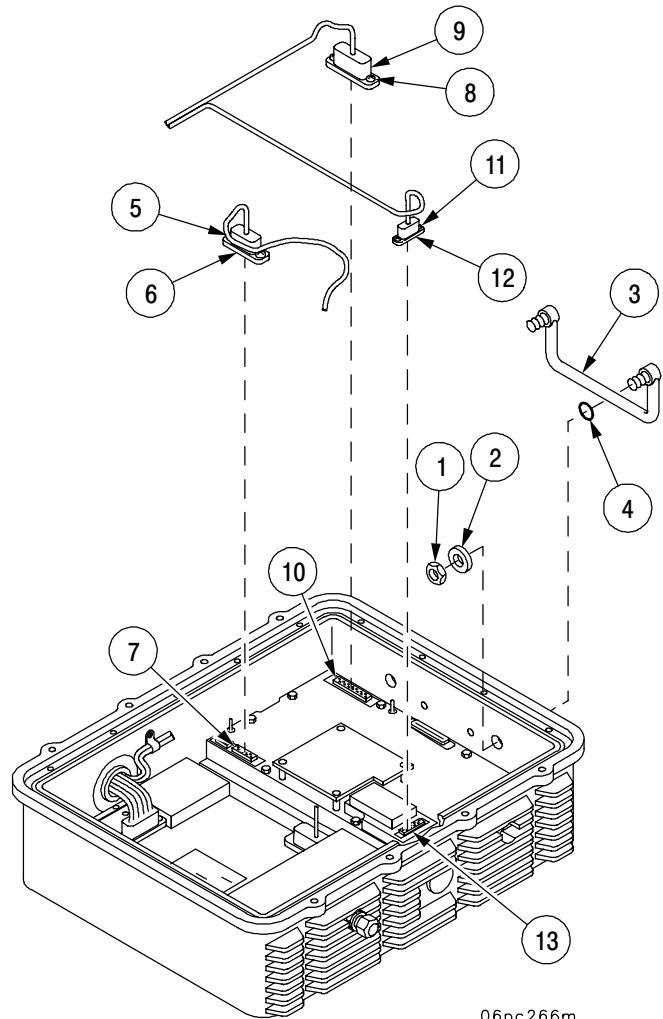
CAUTION



ESD SENSITIVE

The DU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground, to ensure ESD protection.
2. Remove two self-locking nuts (1) and two flat washers (2) securing handle (3) to DU housing. Remove handle and two preformed packings (4) from housing. Discard self-locking nuts and preformed packings.
3. Unscrew two captive screws (5) securing connector A1P3 (6) to EL panel receptacle (7). Disconnect connector from EL panel.
4. Unscrew two captive screws (8) securing connector A1P1 (9) to EL display receptacle (10). Disconnect connector from EL panel.
5. Unscrew two captive screws (11) securing connector A1P4 (12) to EL panel receptacle J4 (13). Disconnect connector from EL display.



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3-14. ELECTROLUMINESCENT PANEL MAINTENANCE INSTRUCTIONS CONTINUED

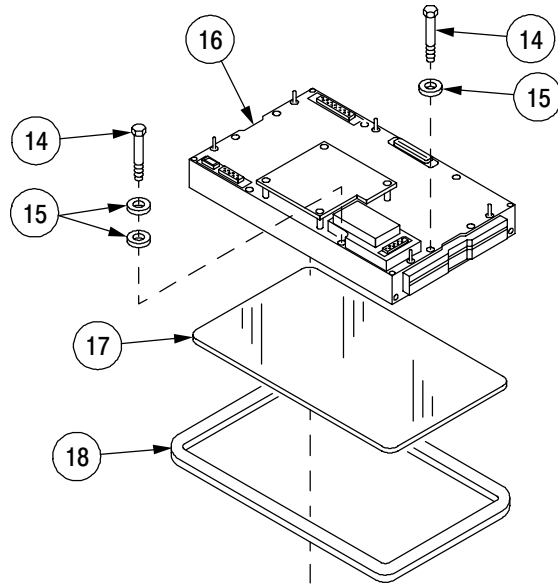
a. REMOVAL CONTINUED

6. Remove eight hex head screws (14) and 12 flat washers (15) securing EL panel (16) to DU housing. Remove EL panel from DU housing.
7. Remove filter glass (17) from EL panel (16).

CAUTION

The EMI shielding gasket is vital to this piece of equipment and is easily damaged. Handle with care when removing or replacing it. Failure to comply may result in damage to equipment.

8. Remove EMI shielding gasket (18) from filter glass (17).
9. Inspect EMI shielding gasket (18) for cuts, nicks, and signs of stretching. Discard EMI shielding gasket if unserviceable.



b. INSTALLATION

CAUTION



ESD SENSITIVE

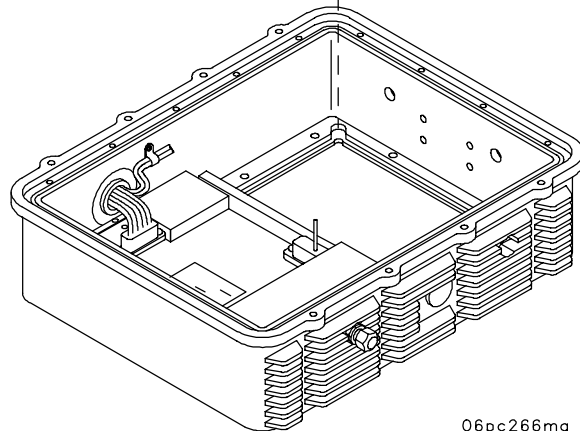
The DU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground, to ensure ESD protection.

CAUTION

The EMI shielding gasket is vital to this piece of equipment and is easily damaged. Handle with care when removing or replacing it. Failure to comply may result in damage to equipment.

2. Position EMI shielding gasket (18) on filter glass (17).



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3-14. ELECTROLUMINESCENT PANEL MAINTENANCE INSTRUCTIONS CONTINUED

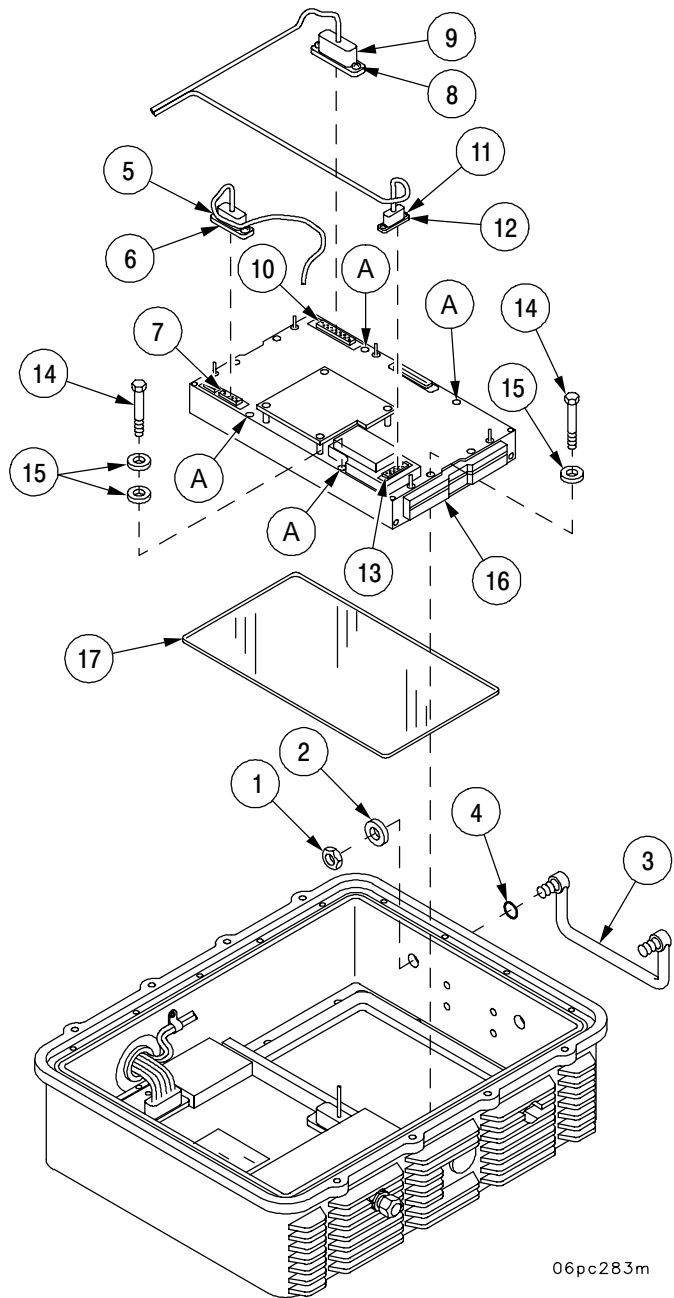
b. INSTALLATION CONTINUED

- Clean filter glass (17) using alcohol and cloth. Place filter glass into position in DU housing.

NOTE

Four hex head screws marked "A" on illustration require two washers each.

- Refer to illustration for proper placement and place EL panel (16) into position in DU housing. Align screw holes and secure to housing with eight hex head screws (14) and 12 flat washers (15). Torque eight screws (14) to 11 ± 1 in.-lb ($1.2 \pm .1$ N•m).
- Connect connector A1P4 (12) to EL panel receptacle J4 (13). Secure connector by torquing two captive screws (11) to $5.5 \pm .5$ in.-lb ($.6 \pm .1$ N•m).
- Connect connector A1P1 (9) to EL display receptacle (10). Secure connector by torquing two captive screws (8) to $5.5 \pm .5$ in.-lb ($.6 \pm .1$ N•m).
- Connect connector A1P3 (6) to EL panel receptacle (7). Secure connector by torquing two captive screws (5) to $3 \pm .2$ in.-lb ($.34 \pm .02$ N•m).
- Insert handle (3) with two new preformed packings (4) through holes in DU housing and secure with two flat washers (2) and two new self-locking nuts (1). Torque handle nuts to $140 \pm .5$ in.-lb ($15.8 \pm .1$ N•m).
- Install DU bottom cover following procedure outlined in paragraph 3-13.



06pc283m

3-15. SWITCH PANEL MAINTENANCE INSTRUCTIONS

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

- Tool Kits, JTK-17LAL, TK-101/G, or TK-105/G (items 34, 35, & 36, Appendix E)
- Torque Wrench, 0-15 in.-lb (item 39, Appendix E)
- 3/16" Flat Tip Screwdriver Socketwrench (item 23, Appendix E)
- Work Station Kit, Electronic (item 38, Appendix E)
- #2 Crosstip Screwdriver Socketwrench (item 22, Appendix E)

Materials/Parts:

- Lockwasher (item 1, Appendix F)

Personnel Required:

- One MOS 35Y

Equipment Conditions:

- DU bottom cover removed; if not, remove bottom cover in accordance with paragraph 3-13

a. REMOVAL

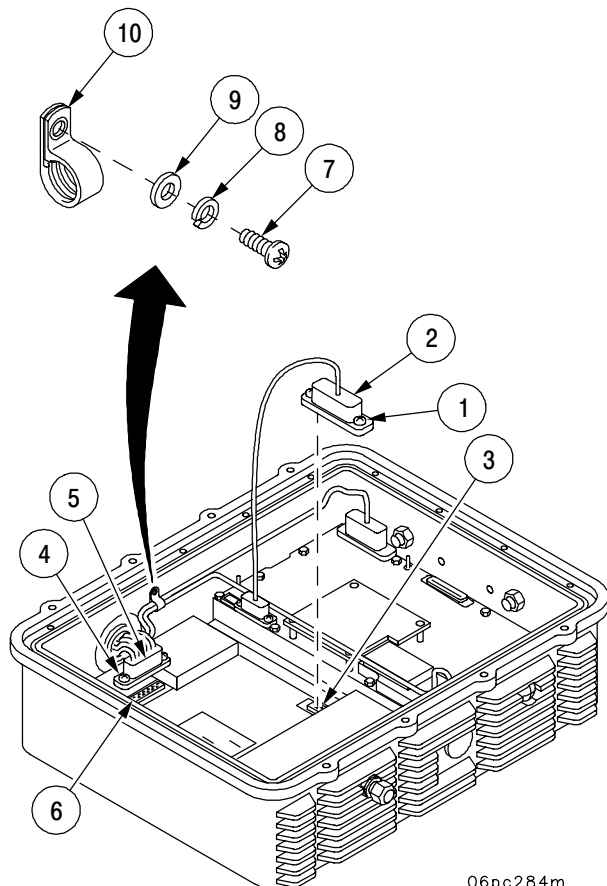
CAUTION



ESD SENSITIVE

The DU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground, to ensure ESD protection.
2. Unscrew two screws (1) securing connector A2P1 (2) to switch panel receptacle A2J1 (3) and disconnect connector from switch panel.
3. Unscrew two screws (4) securing connector A2P2 (5) to switch panel receptacle A2J2 (6) and disconnect connector from switch panel.
4. Remove screw (7), lockwasher (8), flat washer (9), and cable clamp (10) securing DU-Serial cable assembly to DU housing. Discard lockwasher.



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3-15. SWITCH PANEL MAINTENANCE INSTRUCTIONS CONTINUED

a. REMOVAL CONTINUED

5. Loosen 12 captive flat tip screws (11) securing switch panel (12) to DU housing. Remove switch panel from DU housing.
6. Remove EMI shielding gasket (13) from DU.

CAUTION

The EMI shielding gasket is vital to this piece of equipment and is easily damaged. Handle with care when removing or replacing it. Gasket will break if stretched. Failure to comply may result in damage to equipment.

7. Inspect EMI shielding gasket (13) for cuts, nicks, or signs of stretching or deterioration. Discard EMI shielding gasket if unserviceable.

b. INSTALLATION

CAUTION



ESD SENSITIVE

The DU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground, to ensure ESD protection.

CAUTION

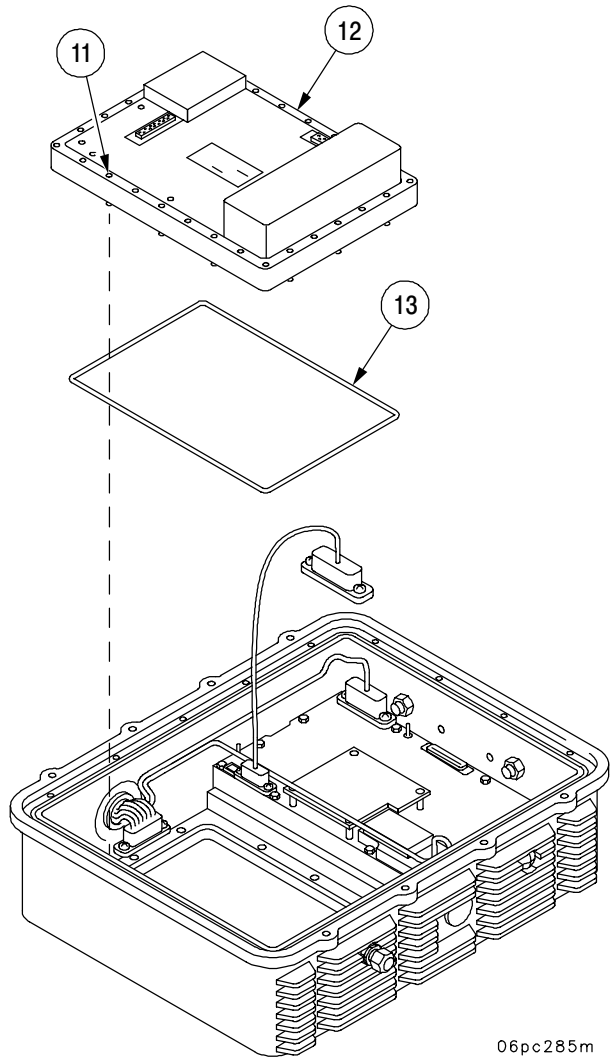
The EMI shielding gasket is vital to this piece of equipment and is easily damaged. Handle with care when removing or replacing it. Gasket will break if stretched. Failure to comply may result in damage to equipment.

2. Place EMI shielding gasket (13) into gasket groove in DU housing.

NOTE

DU housing must be elevated to insert and secure switch panel.

3. Refer to illustration for proper placement and place switch panel (12) in DU housing. Secure switch panel to DU housing by torquing 12 captive flat tip screws (11) to $9.5 \pm .5$ in.-lb ($1.1 \pm .1$ N•m).

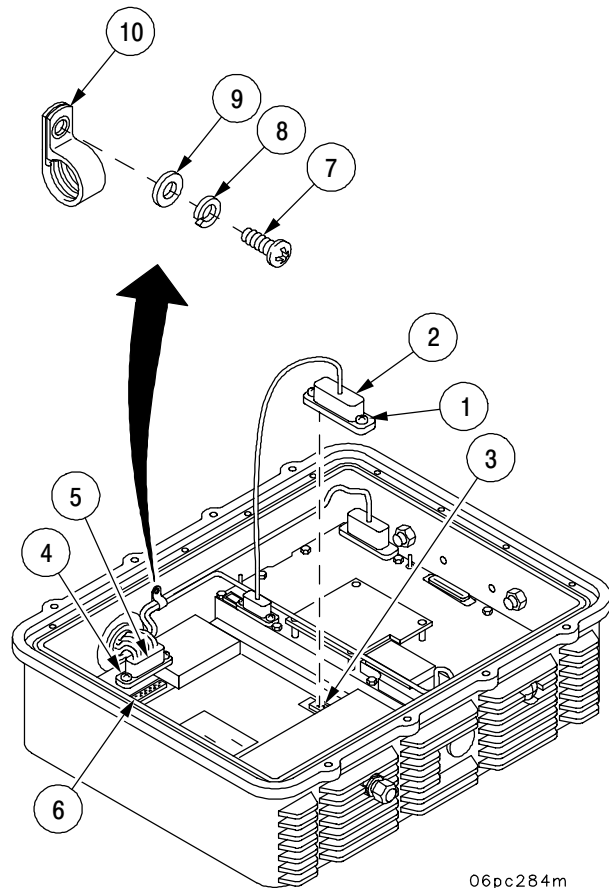


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3-15. SWITCH PANEL MAINTENANCE INSTRUCTIONS CONTINUED

b. INSTALLATION CONTINUED

4. Install cable clamp (10), flat washer (9), new lockwasher (8), and screw (7) on DU-Serial cable assembly. Torque cable clamp screw to 20 ± 4 in.-lb ($2.3 \pm .5$ N•m).
5. Connect connector A2P2 (5) to switch panel receptacle A2J2 (6). Secure connector to switch panel by torquing two screws (4) to $5.5 \pm .5$ in.-lb ($.6 \pm .1$ N•m).
6. Connect connector A2P1 (2) to switch panel receptacle A2J1 (3). Secure connector to switch panel by torquing two screws (1) to $5.5 \pm .5$ in.-lb ($.6 \pm .1$ N•m).
7. Install DU bottom cover following procedure outlined in paragraph 3-13.



06pc284m

3-16. HANDLE MAINTENANCE INSTRUCTIONS

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

Tool Kits, JTK-17LAL, TK-101/G, or TK-105/G
 (items 34, 35, & 36, Appendix E)
 Torque Wrench, 0-150 in.-lb (item 41, Appendix E)
 Work Station Kit, Electronic (item 38, Appendix E)

Materials/Parts:

Nuts, Self-Locking (item 2, Appendix F)
 Packing, Preformed (item 11, Appendix F)

Equipment Conditions:

DU bottom cover removed; if not, remove bottom cover in accordance with paragraph 3-13

Personnel Required:

One MOS 35Y

a. REMOVAL

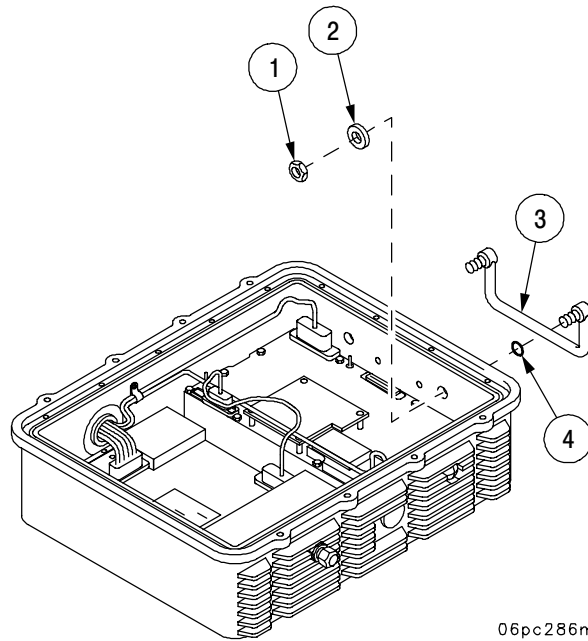
CAUTION



ESD SENSITIVE

The DU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground, to ensure ESD protection.
2. Remove two self-locking nuts (1) and two washers (2) securing handle (3) to DU housing. Discard self-locking nuts.
3. Remove handle (3) and two preformed packings (4) from DU housing. Discard preformed packings.

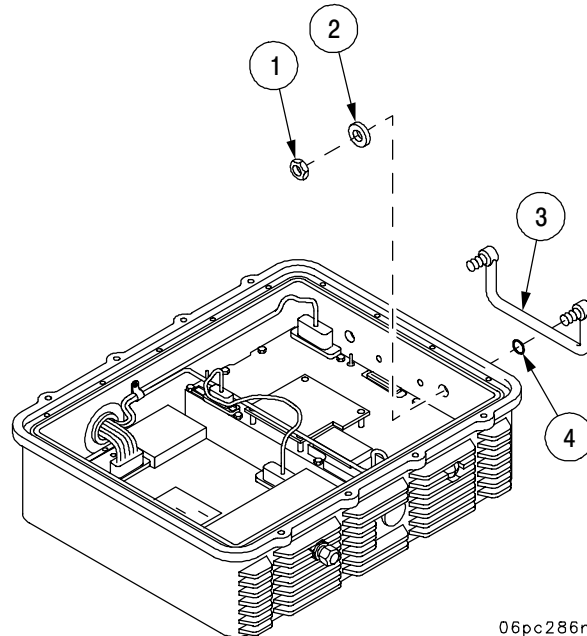


06pc286m

3-16. HANDLE MAINTENANCE INSTRUCTIONS CONTINUED**b. INSTALLATION****CAUTION****ESD SENSITIVE**

The DU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground, to ensure ESD protection.
2. Install handle (3) with two new preformed packings (4) into housing so handle rotates toward bottom of DU (toward housing mounting feet). Ensure preformed packings (4) seat evenly against housing.
3. Install two washers (2) and two new self-locking nuts (1) on handle. Torque nuts to 140 ± 5 in.-lb ($15.8 \pm .6$ N•m).
4. Install DU bottom cover following procedure outlined in paragraph 3-13.



06pc286m

3-17. KEYBOARD CABLE ASSEMBLY MAINTENANCE INSTRUCTIONS

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

Tool Kits, JTK-17LAL, TK-101/G, or TK-105/G
 (items 34, 35, & 36, Appendix E)
 Torque Wrench, 0-15 in.-lb (item 39, Appendix E)
 3/16" Flat Tip Screwdriver Socketwrench
 (item 23, Appendix E)
 Work Station Kit, Electronic (item 38, Appendix E)

Equipment Conditions:

DU bottom cover removed; if not, remove bottom cover in accordance with paragraph 3-13

Personnel Required:

One MOS 35Y

a. REMOVAL

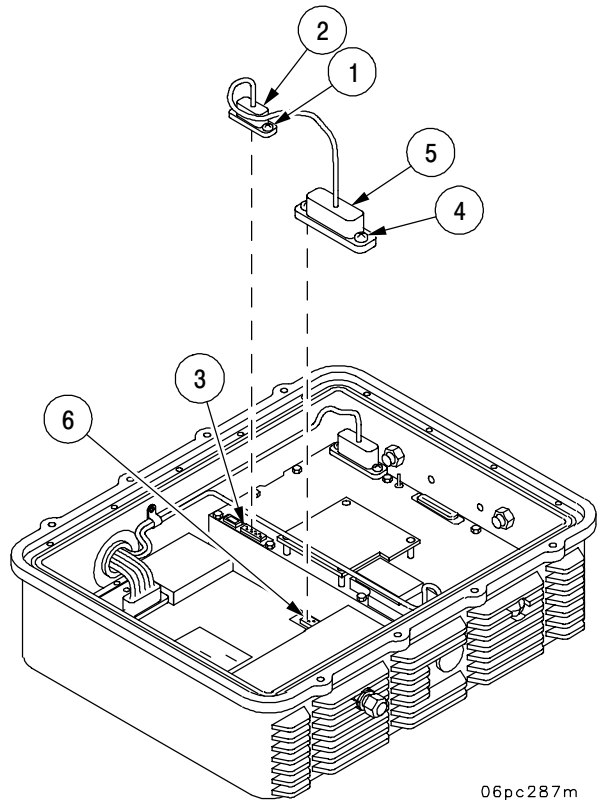
CAUTION



ESD SENSITIVE

The DU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground, to ensure ESD protection.
2. Unscrew two captive screws (1) securing connector A1P3 (2) to EL panel receptacle (3). Disconnect connector.
3. Unscrew two captive screws (4) securing connector A2P1 (5) to switch panel receptacle J1 (6). Disconnect connector, and remove cable assembly from DU housing.

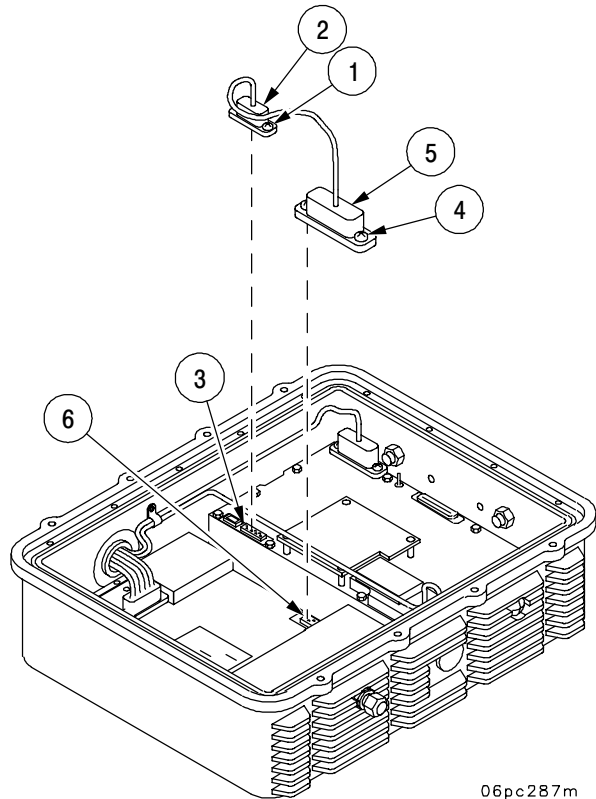


06pc287m

3-17. KEYBOARD CABLE ASSEMBLY MAINTENANCE INSTRUCTIONS CONTINUED**b. INSTALLATION****CAUTION****ESD SENSITIVE**

The DU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground, to ensure ESD protection.
2. Connect connector A2P3 (2) to display panel receptacle (3). Secure connector by torquing two captive screws (1) to $3 \pm .2$ in.-lb ($.34 \pm .02$ N•m).
3. Connect connector A2P1 (5) to switch panel receptacle A2J1 (6). Secure connector by torquing two captive screws (4) to $5.5 \pm .5$ in.-lb ($.6 \pm .1$ N•m).
4. Install DU bottom cover following procedure outlined in paragraph 3-13.



06pc287m

3-18. SERIAL CABLE ASSEMBLY MAINTENANCE INSTRUCTIONS

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

- Tool Kits, JTK-17LAL, TK-101/G, or TK-105/G (items 34, 35, & 36, Appendix E)
- Torque Wrench, 0-150 in.-lb (item 41, Appendix E)
- Torque Wrench, 0-15 in.-lb (item 39, Appendix E)
- 2" x 3/4" Drive Socket (item 19, Appendix E)
- 3/16" Flat Tip Screwdriver Socketwrench (item 23, Appendix E)
- Work Station Kit, Electronic (item 38, Appendix E)
- 1/2" x 3/4" Socket Adapter (item 1, Appendix E)
- 3/8" x 1/2" Socket Adapter (item 2, Appendix E)

Materials/Parts:

Lockwasher (item 1, Appendix F)

Equipment Conditions:

Switch panel removed; if not, remove bottom cover in accordance with paragraph 3-13

Personnel Required:

One MOS 35Y

a. REMOVAL

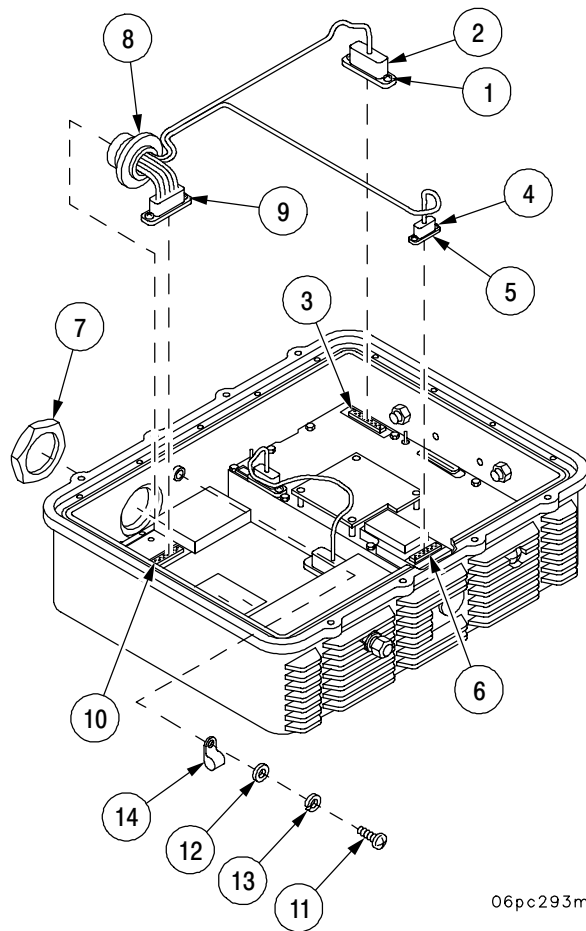
CAUTION



ESD SENSITIVE

The DU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground, to ensure ESD protection.
2. Unscrew two captive connector screws (4) securing connector A1P4 (5) to EL panel receptacle (6). Disconnect connector from EL panel.
3. Unscrew two captive connector screws (1) securing connector A1P1 (2) to display panel receptacle (3). Disconnect connector from display panel.
4. Remove jam nut (7) securing J1 connector (8) to DU housing.
5. Unscrew two captive connector screws (9) securing J1 connector (8) to switch panel receptacle (10).
6. Remove screw (11), flat washer (12), lockwasher (13), and clamp (14) securing serial cable assembly to DU. Discard lockwashers.



06p.c293m

3-18. SERIAL CABLE ASSEMBLY MAINTENANCE INSTRUCTIONS CONTINUED**b. INSTALLATION CONTINUED****CAUTION**

The EMI shielding gasket is vital to this piece of equipment and is easily damaged. Handle with care when removing or replacing it. Gasket will break if stretched. Failure to comply may result in damage to equipment.

7. Remove EMI shielding gasket (15) from J1 connector (8).
8. Inspect EMI shielding gasket (15) for cuts, nicks, and signs of stretching. Discard EMI shielding gasket if unserviceable.

b. INSTALLATION**CAUTION****ESD SENSITIVE**

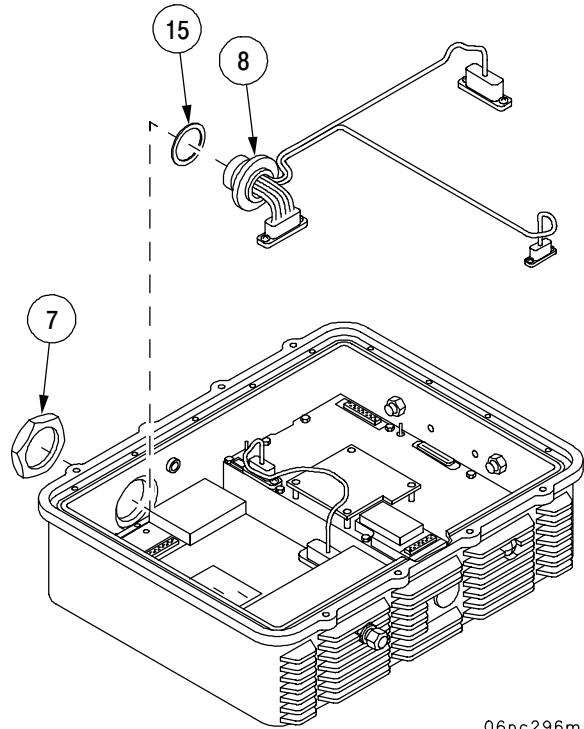
The DU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground, to ensure ESD protection.

CAUTION

The EMI shielding gasket is vital to this piece of equipment and is easily damaged. Handle with care when removing or replacing it. Gasket will break if stretched. Failure to comply may result in damage to equipment.

2. Place EMI shielding gasket (15) onto J1 connector (8).
3. Place J1 connector (8) into position in DU housing. Place jam nut (7) on J1 connector and hand tighten. Torque jam nut to 95 ± 5 in.-lb ($10.7 \pm .6$ N•m).

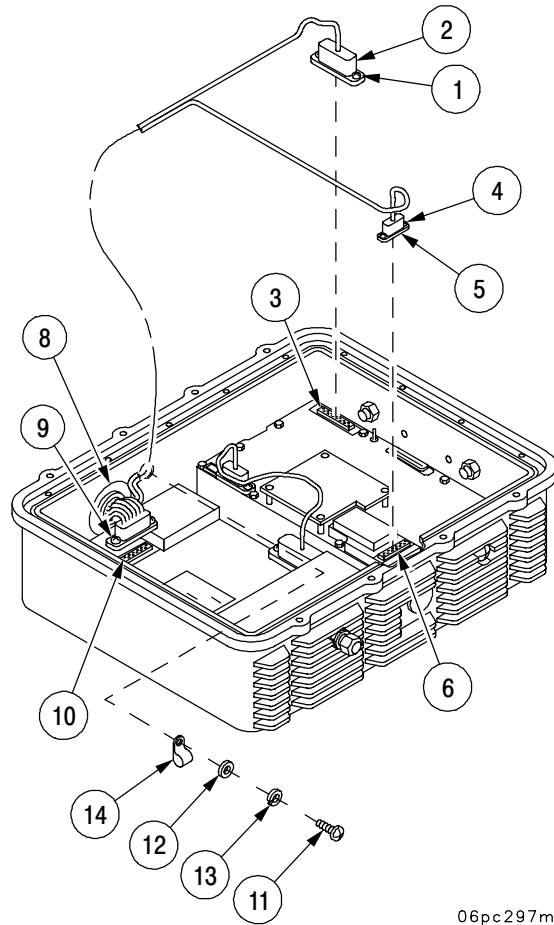


06pc296m

3-18. SERIAL CABLE ASSEMBLY MAINTENANCE INSTRUCTIONS CONTINUED

b. INSTALLATION CONTINUED

4. Connect J1 connector (8) to switch panel receptacle (10). Torque two captive connector screws (9) to $5.5 \pm .5$ in.-lb ($.6 \pm .1$ N•m).
5. Connect connector A1P4 (5) to EL panel receptacle J4 (6). Torque two captive connector screws (4) to $5.5 \pm .5$ in.-lb ($.6 \pm .1$ N•m).
6. Connect connector A1P1 (2) to display panel receptacle (3). Torque two captive connector screws (1) to $5.5 \pm .5$ in.-lb ($.6 \pm .1$ N•m).
7. Install clamp (14), screw (11), flat washer (12), and new lockwasher (13) in DU, securing serial cable assembly.
8. Install switch panel IAW procedure outlined in paragraph 3-15.



06pc297m

3-19. DU CONTROL PANEL SWITCH BOOT MAINTENANCE INSTRUCTIONS

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

Tool Kits, TK-100/G (item 48, Appendix E)

Materials/Parts:

Sealing Compound (item 25, Appendix D)

Equipment Conditions:

Unenergized DU on workbench.

Personnel Required:

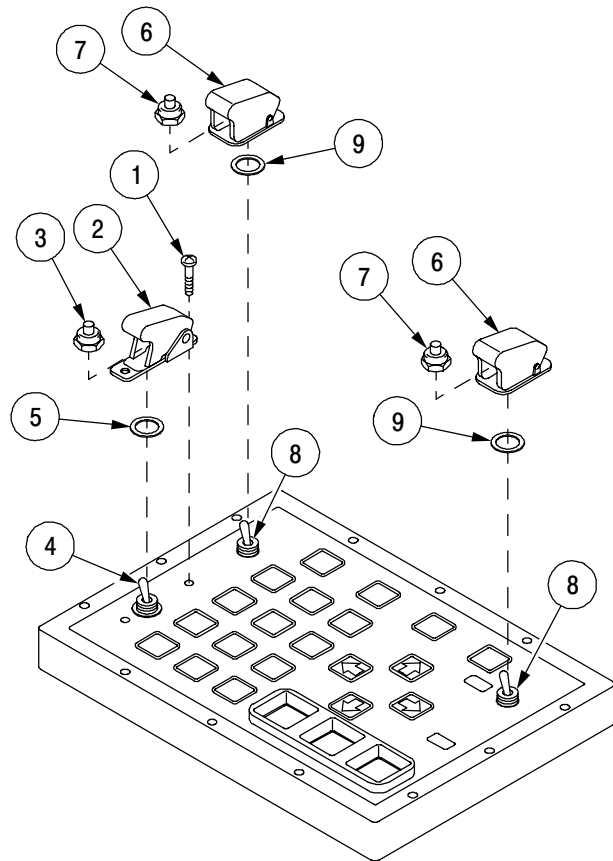
One MOS 35Y

a. REMOVAL

NOTE

Ensure that switch(es) do not drop to the inside of DU when removing boot from control panel.

1. Remove two screws (1) from switch guard (2).
2. Lift switch guard (2) and unscrew switch boot (3) from switch (4).
3. Remove switch boot (3), switch guard (2), and seal washer (5) that secure switch (4) to control panel.
4. Lift switch guard(s) (6) and unscrew switch boots(s) (7) from switch(es) (8).
5. Remove switch boot(s) (7), switch guard(s) (6), and seal washer(s) (9) that secure switch(es) (8) to control panel.



06pc294m

b. INSTALLATION

1. Install seal washer(s) (9), switch guard(s) (6), and switch boot(s) (7) securing switch(es) (8) to control panel.
2. Install seal washer (5), switch guard (2), and secure guard to control panel using two screws (1).
3. Install switch boot (3) on switch (4) securing switch to control panel.

CHAPTER 4. DIRECT SUPPORT MAINTENANCE INSTRUCTIONS FOR PROGNOSTIC/DIAGNOSTIC INTERFACE UNIT (PDIU)

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

	Page		Page
Common Tools and Equipment	4-1	Repair Parts	4-1
Special Tools, TMDE, and Support Equipment	4-1		

4-1. COMMON TOOLS AND EQUIPMENT

For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE), CTA 50-970, or CTA 8-100, as applicable to your unit.

4-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

Refer to Appendix C, Repair Parts and Special Tools List (RPSTL) for applicable special tools, TMDE, and support equipment.

4-3. REPAIR PARTS

Refer to Appendix F of this manual for a list of mandatory replacement parts. Repair parts are listed and illustrated in Appendix C of this manual.

Section II – SERVICE UPON RECEIPT.

	Page		Page
Site and Shelter Requirements	4-1	Service Upon Receipt	4-1

4-4. SITE AND SHELTER REQUIREMENTS

PDIU DS maintenance will be performed using the facilities contained within the Electronic Shop, Transportable, AN/TSM-191(V)3.

4-5. SERVICE UPON RECEIPT OF MATERIEL

- a. Unpacking.
 - (1) Place packed PDIU on a work bench.
 - (2) Check the condition of the packaged PDIU. Check the markings. Note discrepancies.
 - (3) Do not use sharp blades or sharp cutting tools when unpacking the PDIU. Remove packing material carefully.

4-5. SERVICE UPON RECEIPT OF MATERIEL CONTINUED

b. Check unpacked equipment.

(1) Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on SF 364, Report of Discrepancy.

(2) Check the equipment against the packing slip to see if the shipment is complete. Report all discrepancies in accordance with the instructions of DA PAM 738-750.

c. Processing unpacked equipment. Enter unpacked and checked equipment into normal work schedule based on standard shop practice.

Section III – PRE-SHOP ANALYSIS.

	Page		Page
Introduction	4-2	Pre-Shop Analysis	4-2

4-6. INTRODUCTION

Pre-shop analysis is a method for screening incoming equipment to determine its physical condition for maintenance tasks required to return the equipment to service. Pre-shop analysis begins with a technical inspection of the equipment and ends with a report of corrective actions taken. Other than for structural malfunctions, such as broken handles, all incoming equipment is subject to manual troubleshooting as outlined in Section IV of this chapter.

4-7. PRE-SHOP ANALYSIS

Using Table 4-1 and paragraph 1-11 as a guide, check for parts that are broken, cracked, bent, dented, or missing. Evaluate condition of assembly. Verify that all cable receptacles are securely fastened. Acceptable cracks and dents should be cleaned and missing Chemical Agent Resistant Coating (CARC) should be reapplied.

WARNING

Uncured CARC paint contains hazardous materials. Follow manufacturer’s instructions in preparation and application of the CARC. Failure to comply may result in injury to personnel.

Table 4-1. Pre-Shop Analysis Guide

Item	Description	Check	Action
1	Forms and Tags	Existence.	
2	Receptacle: J1, J2, J3, J4, J5, J6, J7	Existence, cleanliness, corrosion, dents, cracks, bent pins, broken or worn connector lugs.	
3	Indicator Lights	Existence, cleanliness, and cracks.	
4	Enclosure	Cleanliness, corrosion, dents, cracks, broken or missing vanes, and mounting feet.	
5	Circuit Card Assemblies (CCAs)	All CCAs installed; none missing.	Remove top cover per paragraph 4-13 and visually inspect for existence or damage. Replace missing or damaged card.

Section IV – MANUAL TROUBLESHOOTING

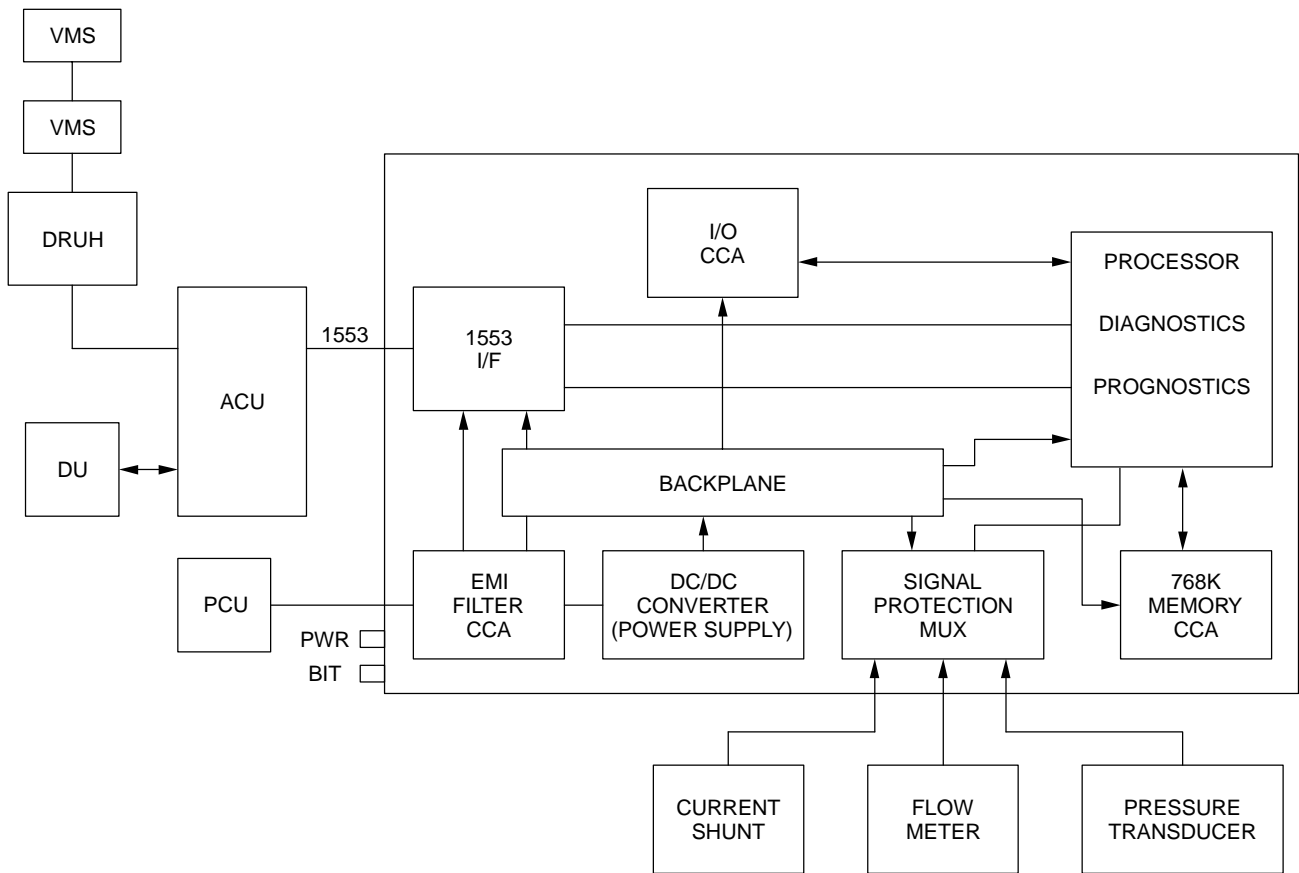
	Page		Page
General	4-3	Initial Fault Indication	4-4
Functional Description	4-3	Manual Troubleshooting Procedures	4-5

4-8. GENERAL

This chapter contains information on checks and corrective actions required to isolate defects in the PDIU, and correct the defects by means of maintenance. The manual troubleshooting shall begin with a fault or symptom and lead to a single fault isolation of the problem. In cases where the maintenance must be performed at a higher level, the description will note "Forward PDIU to Depot".

4-9. FUNCTIONAL DESCRIPTION

a. The purpose of the PDIU is to perform prognostic and diagnostic functions on a weapon system. The PDIU tests, detects faults, and fault isolates Line Replaceable Units (LRUs) in the Electrical System, Automatic Fire Control System (AFCS), Vehicle Hydraulic System, and Gun Position System. Figure 4-1 is a block diagram showing major PDIU signal flows during operation.



06pc288m

Figure 4-1. Prognostic/Diagnostic Interface Unit Block Diagram

TM 9-1200-215-34&P

b. The PDIU consists of:

- 768k Memory CCA
- Processor CCA
- Signal Protection and Multiplexer CCA
- Input/Output CCA
- DC-DC Converter (Power Supply)
- EMI Filter CCA

(1) 768k Memory CCA. Serves as an extension of the processor CCA memory; stores system software and various constants; data is accessed by the processor CCA over the PDIU station bus.

(2) Processor CCA. Provides a station bus interface for communicating with other PDIU circuit card assemblies. It also contains an interface which allows testing of the PDIU with external test equipment.

(3) Signal Protection and Multiplexer CCA. Protects the PDIU electronics from damage due to faults and transients on incoming signal lines. It provides overvoltage protection, short circuit protection, and inadvertent grounding protection. It also provides first and second level of signal input multiplexers.

(4) Input/Output CCA. Receives conditioned analog and digital signals from the signal protection/multiplexer CCA and makes them available for reading by the microprocessor. The entering signal proceeds through the final multiplexers into a differential amplifier. The output of the amplifier passes through a programmable filter into a programmable gain amplifier and finally through a 12 bit analog-to-digital converter (ADCON). The output of the ADC is available to the station bus for reading by the processor CCA.

(5) DC-DC Converter (Power Supply). Receives conditioned 24 Vdc power from the Automatic Fire Control System (AFCS) Power Conditioner Unit (PCU). It supplies three regulated direct current voltage outputs: +5 Vdc, -15 Vdc, and +15 Vdc. The maximum power output of the power supply is 40 watts.

(6) EMI Filter CCA. Protects the PDIU circuitry from damage or inaccurate readings from EMI and prevents EMI emission by the PDIU. Isolates the CCAs from EMI noise caused by the power supply.

4-10. INITIAL FAULT INDICATION

a. A status light on the PDIU electrical indicator panel indicated a PDIU failure.

(1) The green indicator light (POWER) did not come on when power was applied to the PDIU.

(2) The red indicator light (BIT) came on when input power was applied to the PDIU and did not go off after 20 seconds.

(3) The red indicator light blinks continually at powerup and resumes blinking after the powerup procedure is repeated.

(4) The red indicator light comes on during operation. BIT runs continually when the PDIU is in operation.

b. When a PDIU failure has been detected, proceed to further troubleshoot the PDIU by using the Electronic Shop, Transportable, AN/TSM-191(V)3. Results from this fault isolation will indicate PDIU component(s) requiring replacement. The LRU troubleshooting procedure is presented in paragraph 4-11.

4-11. MANUAL TROUBLESHOOTING PROCEDURE

DESCRIPTION

This task covers: Manual Troubleshooting

INITIAL SETUP

Tools:

Tool Kit, JTK-17LAL (item 34, Appendix E)
 Tool Kit, General Mechanic's (item 42, Appendix E)
 Electronic Shop, Transportable, AN/TSM-191(V)3
 (item 11, Appendix E)
 Work Station Kit ESD (item 38, Appendix E)
 Test Program Set, LRU (item 37, Appendix E)

Equipment Condition:

Unenergized PDIU on workbench

Personnel Required:

One MOS 35Y

CAUTION



ESD SENSITIVE

This procedure involves electrostatic discharge (ESD) sensitive parts. Operator must be properly grounded to static pad set before handling equipment.

NOTE

PDIU Assembly TPS-LRU must be loaded into the AN/TSM-191(V)3 before attempting this procedure.

This task covers PDIU test before and after maintenance.

MANUAL TROUBLESHOOTING

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Select and load the PDIU Test Program.
3. At system video display, enter steps to begin test.
4. Follow instructions shown on video display and connect PDIU assembly to AN/TSM-191(V)3.
5. Observe test results and instructions on terminal display.

NOTE

If PDIU passes all tests, perform steps 6 and 7. If PDIU fails tests, perform steps 8 and 9.

6. Remove PDIU assembly from AN/TSM-191(V)3.
7. Forward PDIU assembly to spares stores.
8. Forward PDIU assembly to appropriate repair activity with test results.
9. Repair faulty PDIU component in accordance with procedures in Section V and repair parts authorized in Appendix C. For repair beyond field level, forward to Depot.

Section V. MAINTENANCE PROCEDURES.

	Page		Page
General	4-6	Circuit Card Assemblies (CCAs)	
Top Cover Assembly, Bottom Cover, and Preformed Packing	4-7	A2, A3, A4, and A5	4-13
Top Cover Assembly, Neoprene Rubber Strip(s)	4-9	DC-DC Converter (Power Supply) (PS1)	4-15
Top Cover Assembly and Bottom Cover, RFI/EMI Contact Strip	4-11	Electrical Indicator Panel	4-17
		Electrical Indicator Panel, LEDs DS1 and DS2	4-20
		Spring Latch Assembly	4-22
		Cover, Electrical Connector	4-24

4-12. GENERAL

a. This section contains the step-by-step maintenance procedures for DS level maintenance of the PDIU. These procedures are provided to access components for general maintenance. These maintenance tasks are authorized by the Source, Maintenance, and Recoverability (SMR) codes indicated in the RPSTL in Appendix C. There are no GS level maintenance tasks for the PDIU.

b. Figure 4-2 below shows the location of each of the main replaceable assemblies in the PDIU:

LEGEND:

- (1) TOP COVER
- (2) BOTTOM COVER
- (3) PREFORMED PACKING
- (4) CIRCUIT CARD ASSEMBLY (CCA)
- (5) DC-DC CONVERTER (POWER SUPPLY)
- (6) ELECTRICAL INDICATOR PANEL
- (7) LED
- (8) SPRING LATCH ASSEMBLY
- (9) NEOPRENE RUBBER STRIP(S) (TOP COVER)
- (10) RFI/EMI CONTACT STRIP (TOP BOTTOM COVERS)

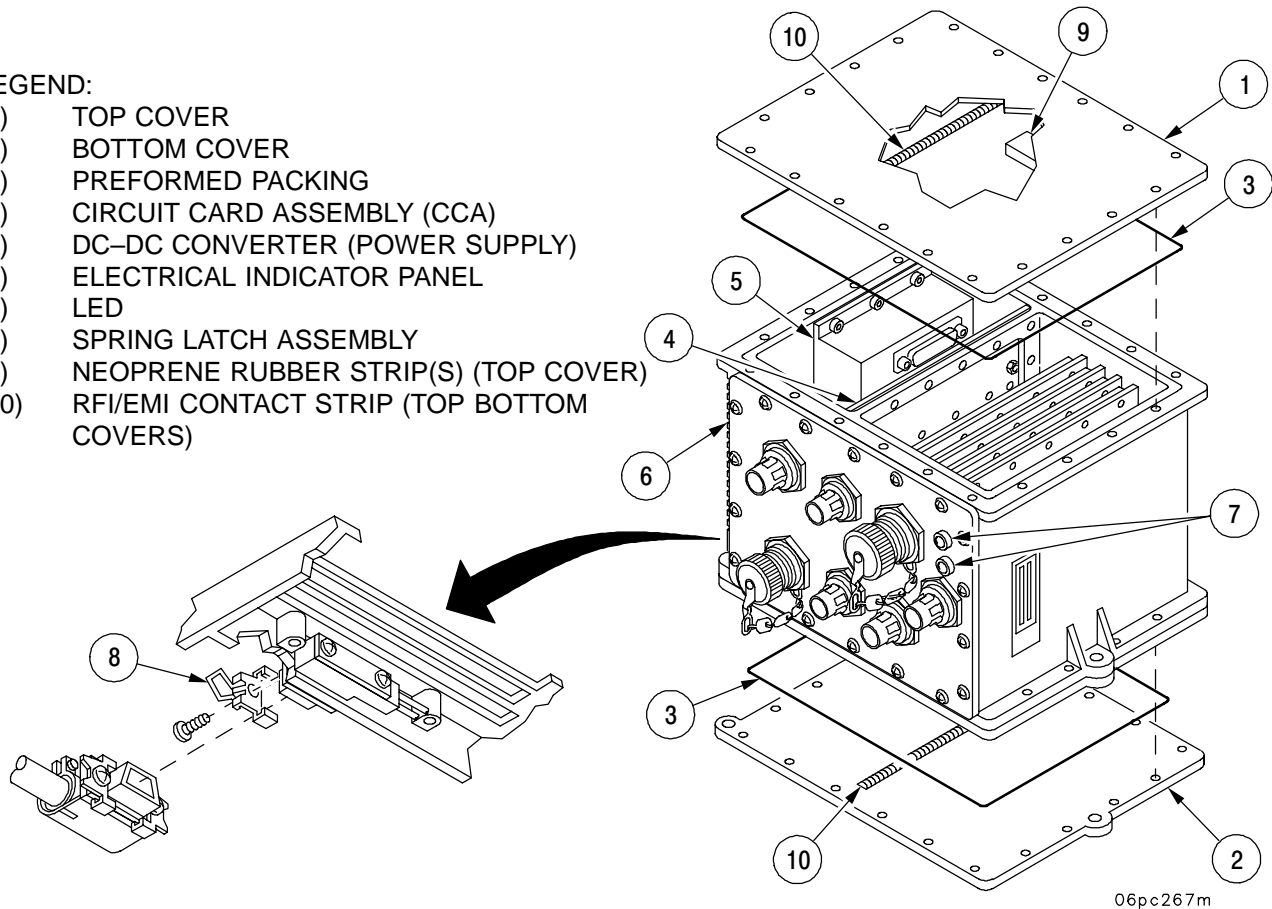


Figure 4-2. PDIU Exploded View

Change 1

4-13. TOP COVER ASSEMBLY, BOTTOM COVER, AND PREFORMED PACKING

DESCRIPTION

This task covers: a. Removal b. Inspection c. Installation d. Test

INITIAL SETUP

Tools:

- Tool Kit, JTK-17LAL (item 34, Appendix E)
- Tool Kit, General Mechanic's (item 42, Appendix E)
- Work Station Kit, ESD (item 38, Appendix E)

Equipment Condition:

Unenergized PDIU on workbench

Personnel Required:

One MOS 35Y

Materials/Parts:

- Cleaning Cloth (item 13, Appendix D)
- Thread Compound (item 14, Appendix D)
- Prefomed Packing (item 4, Appendix F)

a. REMOVAL

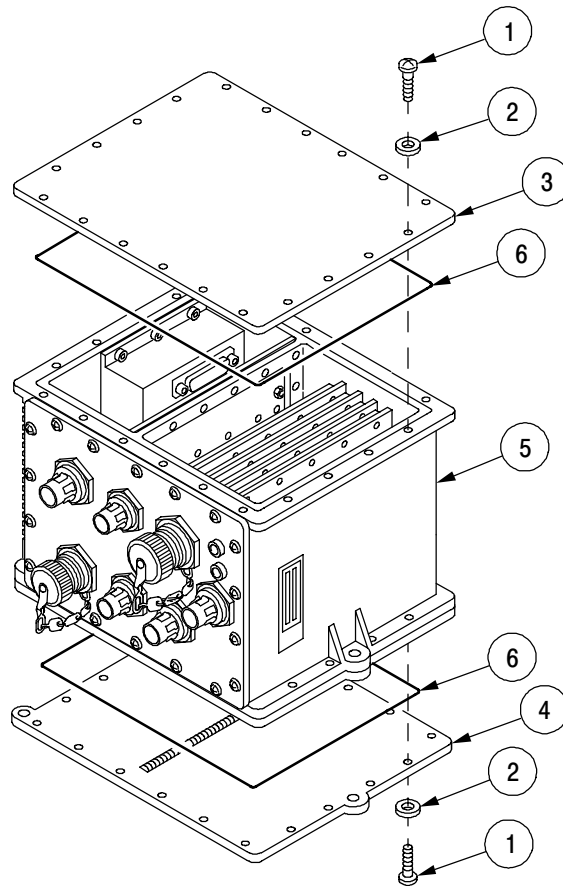
CAUTION



ESD SENSITIVE

- The PDIU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.
- Damage to RFI/EMI contact strip may occur. Do not slide cover off of housing. Pick cover straight up.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Remove 20 screws (1), 20 flat washers (2), top cover assembly (3), and/or bottom cover (4) from PDIU housing (5). There are 20 screws and flat washers on each cover.
3. Remove preformed packing (6) from groove in top and preformed packing (6) from groove in bottom of PDIU housing (5). Discard preformed packing. Clean grooves using wiping rag.



06pc269m

4-13. TOP COVER ASSEMBLY, BOTTOM COVER, AND PREFORMED PACKING CONTINUED

b. INSPECTION

1. Inspect RFI/EMI contact strips (7) for bent or broken fingers. Repair or replace if necessary (para 4-15).
2. Inspect neoprene rubber strips (8) for cuts, tears, or peeling. Repair or replace if necessary (para 4-14).

c. INSTALLATION

CAUTION



ESD SENSITIVE

The PDIU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Install preformed packing (6) in groove in top or preformed packing (6) in groove in bottom of PDIU housing (5).

CAUTION

Damage to RFI/EMI contact strip may occur. When installing cover, place cover straight down onto housing.

3. Apply thread compound to threads of 20 screws (1) for each cover to be installed.

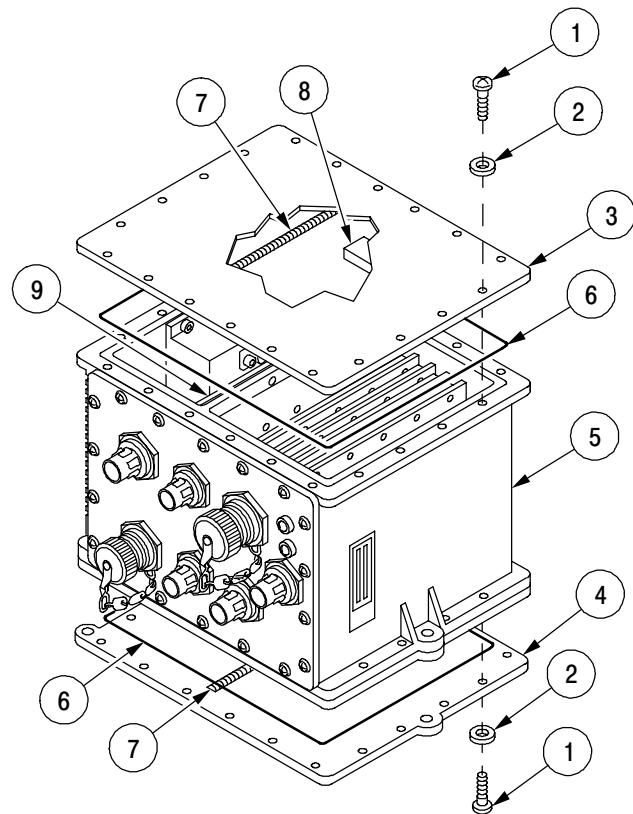
NOTE

Observe location of RFI/EMI contact strip on inside of top and bottom covers.

4. Position cover(s) so that RFI/EMI strip(s) (7) is in contact with housing partition (9).
5. Install top cover (3) and/or bottom cover (4) with 20 flat washers (2), and 20 screws (1).

d. TEST

At the completion of the repairs, test the PDIU in accordance with para 4-11.



06pc274m

4-14. TOP COVER ASSEMBLY, NEOPRENE RUBBER STRIP(S)

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

- Tool Kit, JTK-17LAL (item 34, Appendix E)
- Tool Kit, General Mechanic's (item 42, Appendix E)

Equipment Condition:

Top cover assembly removed; if not, remove top cover in accordance with paragraph 4-13

Materials/Parts:

- Cleaning Cloth (item 13, Appendix D)
- Alcohol, Denatured (item 4, Appendix D)
- Adhesive (item 1, Appendix D)
- Rubber Strip, Neoprene (item 22, Appendix D)

Personnel Required:

One MOS 35Y

a. REMOVAL

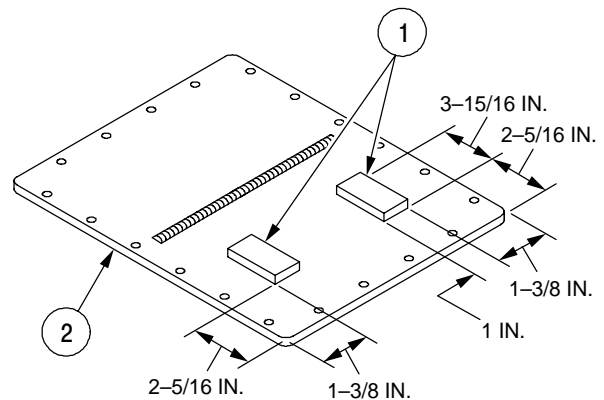
CAUTION



ESD SENSITIVE

- The PDIU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.
- Damage to RFI/EMI contact strip may occur. Do not slide cover off of housing. Pick cover straight up.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Carefully scrape damaged neoprene rubber strip(s) (1) from cover (2).



WARNING

Do not breathe fumes from alcohol.
Use with adequate ventilation.

3. Clean mounting area with alcohol and wiping rag.

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4-14. TOP COVER ASSEMBLY, NEOPRENE RUBBER STRIP(S) CONTINUED

b. INSTALLATION

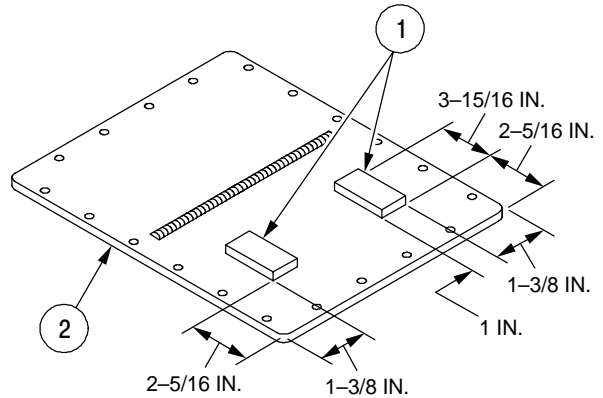
CAUTION



ESD SENSITIVE

- The PDIU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.
- Damage to RFI/EMI contact strip may occur. Do not slide cover off of housing. Pick cover straight up.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Cut strip(s) from neoprene rubber stock 3-15/16 inches long by 1 inch wide. Return any excess to supplies.
3. Apply adhesive to neoprene rubber strip(s) (1).
4. Press neoprene rubber strip(s) (1) in place on cover (2) using mounting dimensions shown. Allow to cure for 20 minutes.
5. Install top cover (2) in accordance with procedure outlined in paragraph 4-13.



06pc268m

4-15. TOP COVER ASSEMBLY AND BOTTOM COVER, RFI/EMI CONTACT STRIP

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

- Tool Kit, JTK-17LAL (item 34, Appendix E)
- Tool Kit, General Mechanic's (item 42, Appendix E)

Materials/Parts:

- Cleaning Cloth (item 13, Appendix D)
- Alcohol, Denatured (item 4, Appendix D)

Equipment Condition:

Top/bottom covers removed; if not, remove top/bottom covers in accordance with paragraph 4-13

Personnel Required:

One MOS 35Y

a. REMOVAL

CAUTION



ESD SENSITIVE

- The PDIU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.
- Damage to RFI/EMI contact strip may occur. Do not slide cover off of housing. Pick cover straight up.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Carefully scrape damaged RFI/EMI contact strip (1) from top or bottom cover (2).

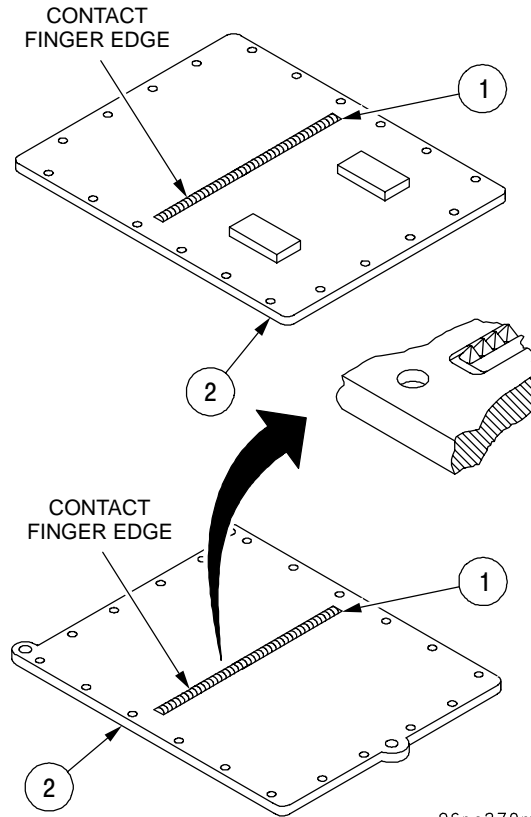
WARNING

Do not breathe fumes from alcohol. Use with adequate ventilation.

CAUTION

If teeth are missing from contact strip, check inside housing for missing pieces.

3. Clean mounting area with wiping rag and alcohol.



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4-15. TOP COVER ASSEMBLY AND BOTTOM COVER, RF/EMI CONTACT STRIP CONTINUED

b. INSTALLATION

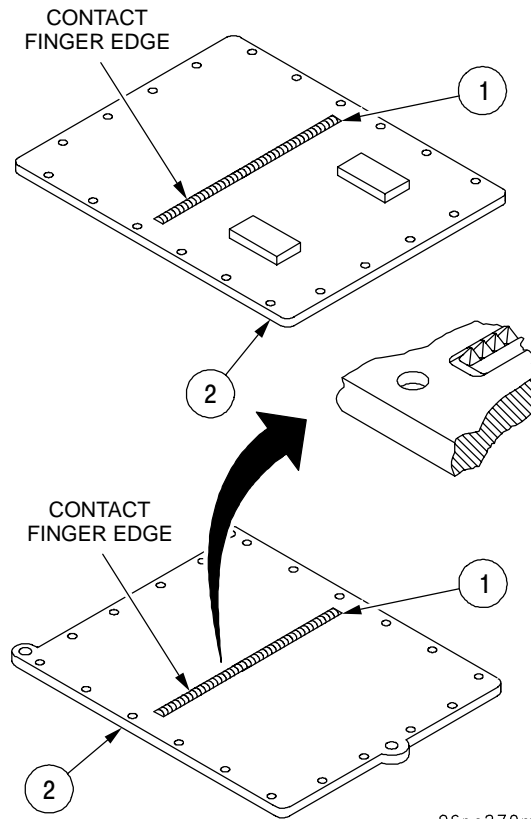
CAUTION



ESD SENSITIVE

- The PDIU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.
- Damage to RF/EMI contact strip may occur. Do not slide cover off of housing. Pick cover straight up.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Remove backing from adhesive on replacement RF/EMI contact strip (1).
3. Press strip (1) in place on top/bottom cover (2).
4. Install top/bottom cover (2) in accordance with procedure outlined in paragraph 4-13.



06pc270m

4-16. CIRCUIT CARD ASSEMBLIES (CCAs) A2, A3, A4, AND A5

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

- Tool Kit, JTK-17LAL (item 34, Appendix E)
- Tool Kit, General Mechanic's (item 42, Appendix E)
- Torque Wrench, 0-75 in.-lb (item 40, Appendix E)
- Bit, Screwdriver (item 44, Appendix E)
- Work Station Kit, ESD (item 38, Appendix E)

Materials/Parts:

- Sack, Shipping (item 23, Appendix D)

Equipment Condition:

Top cover assembly removed; if not, remove top cover in accordance with paragraph 4-13

Personnel Required:

- One MOS 35Y

a. REMOVAL

CAUTION



ESD SENSITIVE

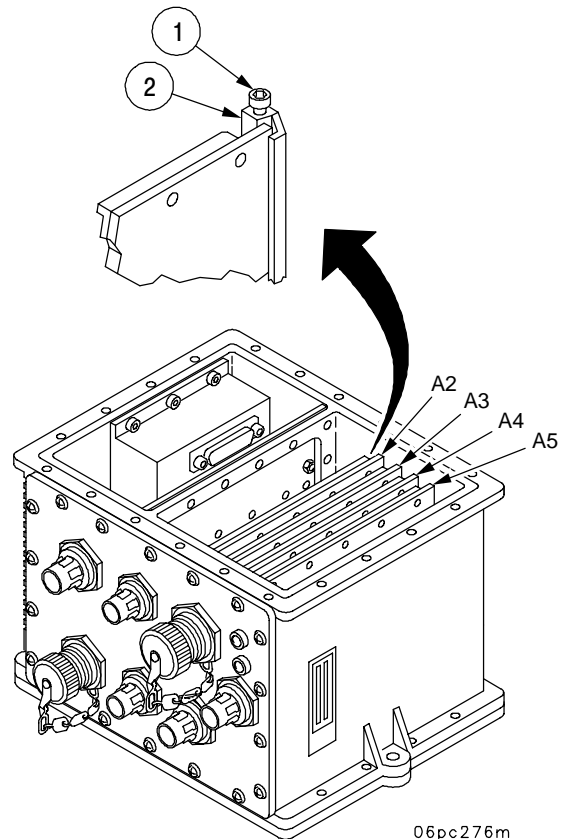
The PDIU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.

NOTE

Note position of CCAs when removing to aid in installation.

2. Loosen two screws (1) on card holder (2) of CCA to be removed.
3. Remove CCA.



06pc276m

4-16. CIRCUIT CARD ASSEMBLIES (CCAs) A2, A3, A4, AND A5 CONTINUED

b. INSTALLATION

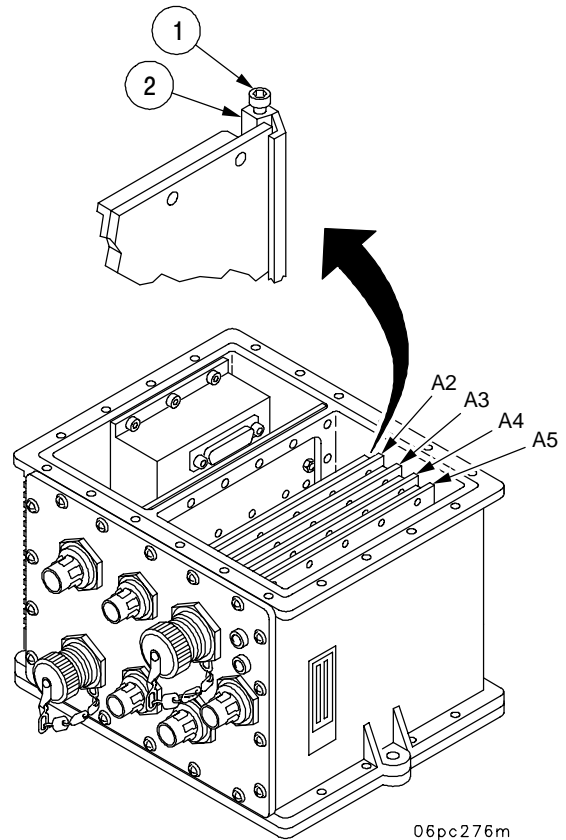
CAUTION



ESD SENSITIVE

The PDIU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Insert CCA in card holder. Be sure CCA is firmly seated.
3. Tighten two screws (1) on card holder of CCA. Torque to 25 in.-lb (2.8 N•m).
4. Install top cover assembly in accordance with procedure outlined in paragraph 4-13.



06pc276m

4-17. DC-DC CONVERTER (POWER SUPPLY) (PS1)

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

- Tool Kit, JTK-17LAL (item 34, Appendix E)
- Tool Kit, General Mechanic's (item 42, Appendix E)

Materials/Parts:

- Thread Compound (item 14, Appendix D)

Equipment Condition:

Top and bottom covers removed; if not, remove top and bottom covers in accordance with paragraph 4-13

Personnel Required:

One MOS 35Y

a. REMOVAL

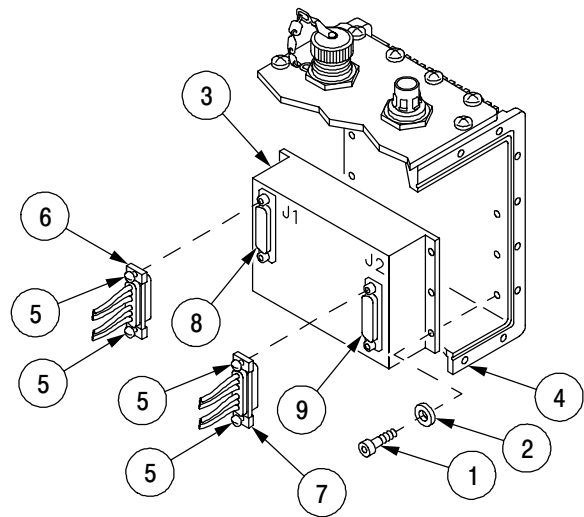
CAUTION



ESD SENSITIVE

- The PDIU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.
- Damage to RFI/EMI contact strip may occur. Do not slide cover off of housing. Pick cover straight up.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Remove six cap screws (1) and six flat washers (2) securing power supply (3) to housing (4).
3. Carefully move power supply (3), left and then right, so that two captive screws (5) on connector P1 (6) and P2 (7) are accessible. Loosen two captive screws (5) on each connector.
4. Disconnect P1 (6) from PS1-J1 (8), P2 (7) from PS1-J2 (9) and remove power supply (3) from housing (4).



06pc273m

4-17. DC-DC CONVERTER (POWER SUPPLY) (PS1) CONTINUED

b. INSTALLATION

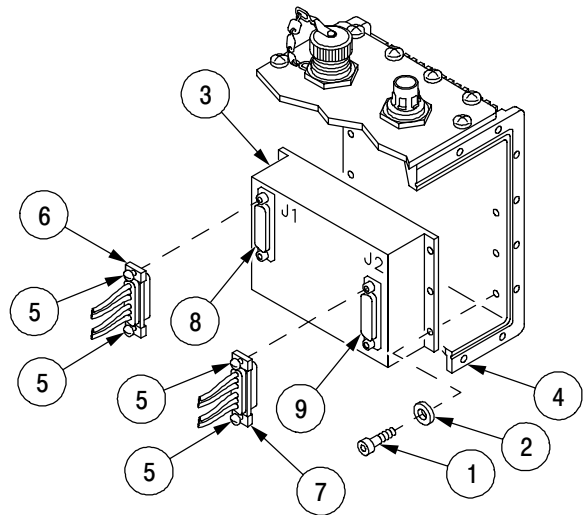
CAUTION



ESD SENSITIVE

- The PDIU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.
- Damage to RF/EMI contact strip may occur. Do not slide cover off of housing. Pick cover straight up.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Carefully position replacement power supply (3) in housing (4). Note orientation of connectors PS1-J1 (8) and PS1-J2 (9).
3. Move power supply (3), left and then right, to connector P1 (6) to PS1-J1 (8) and P2 (7) to PS1-J2 (9). Tighten connector captive screws (5) respectively.
4. Apply thread compound to threads of six cap screws (1).
5. Install six flat washers (2) and six cap screws (1).
6. Install top and bottom covers in accordance with procedure outlined in paragraph 4-13.



06pc273m

4-18. ELECTRICAL INDICATOR PANEL

DESCRIPTION

This task covers: a. Removal b. Inspection c. Installation

INITIAL SETUP

Tools:

- Tool Kit, JTK-17LAL (item 34, Appendix E)
- Tool Kit, General Mechanic's (item 42, Appendix E)
- Socket Wrench, screwdriver, crosstip #1 (item 45, Appendix E)

Materials/Parts:

- Thread Compound (item 14, Appendix D)
- Cleaning Cloth (item 13, Appendix D)
- Preformed Packing (item 5, Appendix F)
- Lockwashers (item 6, Appendix F)

Equipment Condition:

DC-DC Converter (power supply) PS1 removed; if not, remove DC-DC Converter in accordance with paragraph 4-17

Personnel Required:

One MOS 35Y

a. REMOVAL

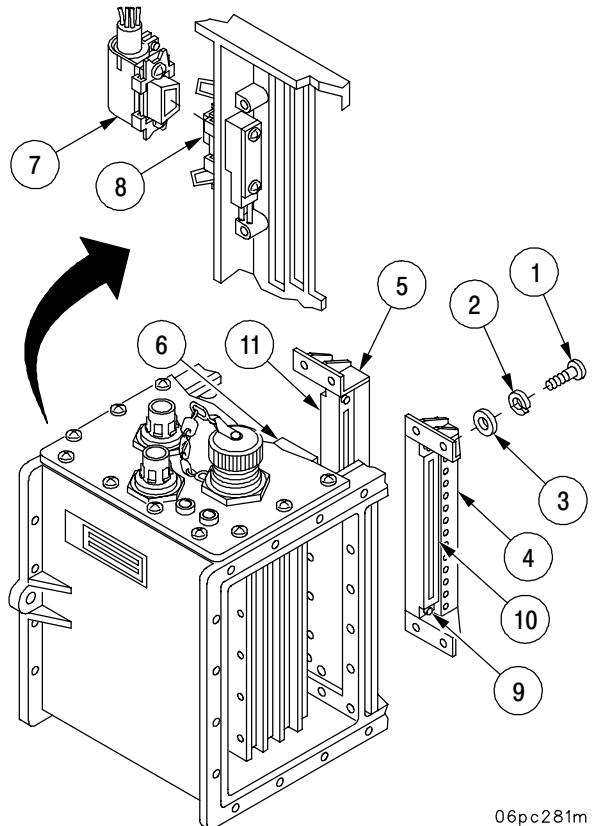
CAUTION



ESD SENSITIVE

- The PDIU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.
- Damage to RFI/EMI contact strip may occur. Do not slide cover off of housing. Pick cover straight up.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Remove eight screws (1), eight lockwashers (2), and eight flat washers (3) securing two tiebars (4 and 5) to filter assembly (6). Discard lockwashers.
3. Unlatch and disconnect connector P5 (7) from connector J8 (8).
4. Unscrew four connector retaining screws (9) and unplug connector P3 (10) and P4 (11) from filter assembly (6).



06pc281m

4-18 ELECTRICAL INDICATOR PANEL CONTINUED

a. REMOVAL CONTINUED

5. Remove 18 screws (12) and 18 flat washers (13) securing panel (14) to housing (15).
6. Remove panel (14).
7. Remove preformed packing (16) from groove in housing (15). Discard preformed packing if necessary. Clean groove using wiping rag.

b. INSPECTION

1. Inspect connectors for bent, broken, or corroded contacts. Repair, clean, or forward to depot for repair beyond DS level.
2. Inspect wiring for frayed, broken, burnt, or shorting conditions. Forward panel to depot for repair.

c. INSTALLATION

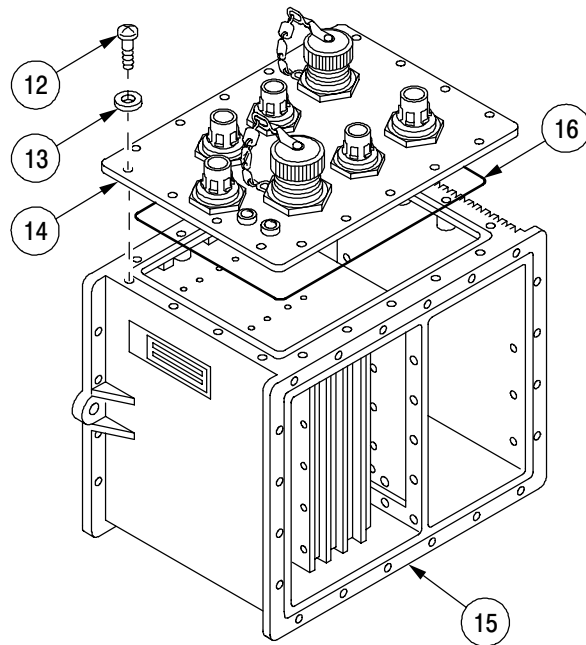
CAUTION



ESD SENSITIVE

- The PDIU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.
- Damage to RFI/EMI contact strip may occur. Do not slide cover off of housing. Pick cover straight up.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Install preformed packing (16) in groove of housing (15).
3. Position panel (14) on housing (15).
4. Apply thread compound to threads of 18 screws (12).
5. Install 18 flat washers (13) and 18 screws (12).

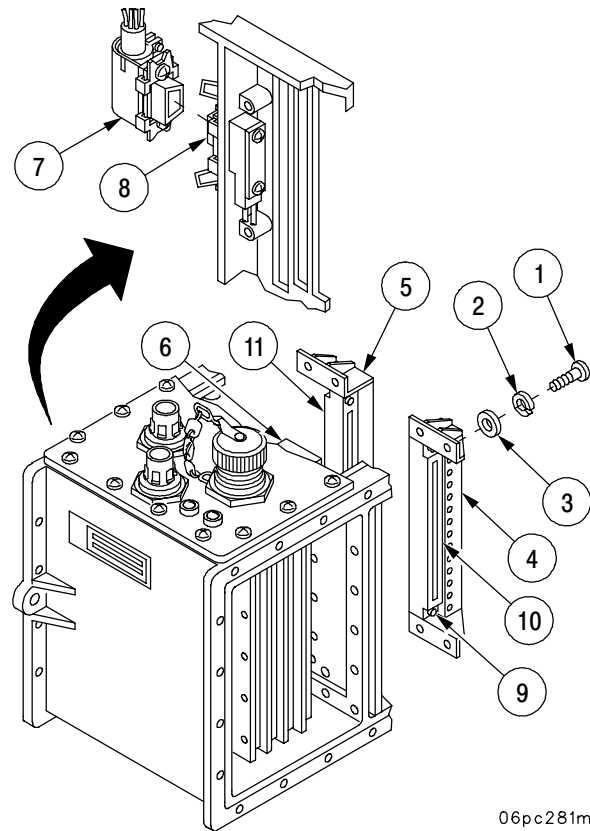


06pc282m

4-18 ELECTRICAL INDICATOR PANEL CONTINUED

c. INSTALLATION CONTINUED

6. Attach connectors P3 (10) and P4 (11) to connectors on filter assembly (6). Tighten four connector retaining screws (9).
7. Attach connector P5 (7) to connector J8 (8) and latch in place.
8. Install eight flat washers (3), eight lockwashers (2), and eight screws (1) to secure two tiebars (4 and 5) to filter assembly (6).
9. Install DC-DC converter, PS1 in accordance with paragraph 4-17.



06pc281m

4-19. ELECTRICAL INDICATOR PANEL, LEDs DS1 AND DS2

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

- Tool Kit, JTK-17LAL (item 34, Appendix E)
- Tool Kit, General Mechanic's (item 42, Appendix E)

Materials/Parts:

- Adhesive/Sealant (item 3, Appendix D)
- Cleaning Cloth (item 13, Appendix D)
- Label (item 19, Appendix D)
- Solder (item 28, Appendix D)
- Soldering Flux (item 18, Appendix D)
- Alcohol, Denatured (item 4, Appendix D)
- Brush, Acid Swabbing (item 11, Appendix D)

Equipment Condition:

Electrical Indicator Panel removed; if not, remove the Electrical Indicator Panel in accordance with paragraph 4-18

Personnel Required:

One MOS 35Y

a. REMOVAL

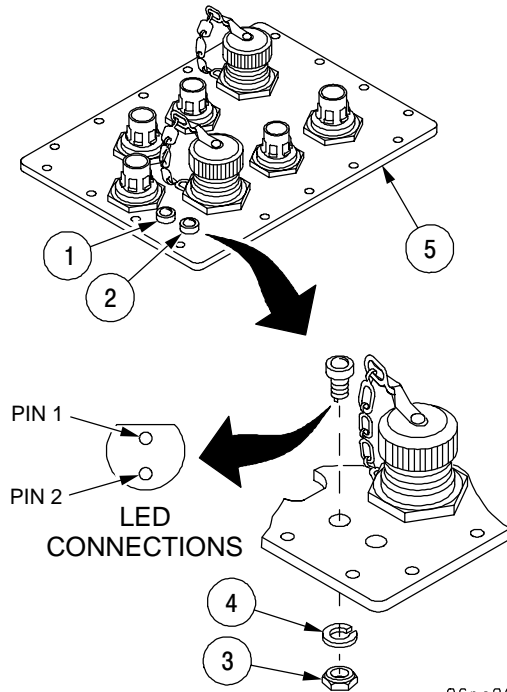
CAUTION



ESD SENSITIVE

- The PDIU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.
- Damage to RFI/EMI contact strip may occur. Do not slide cover off of housing. Pick cover straight up.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Using tag leads to DS1 (1) or DS2 (2). Note pin 1 and pin 2 location.
3. Unsolder leads to DS1 (1) or DS2 (2).
4. Remove nut (3) and lockwasher (4) from LED and remove LED.



06pc291m

4-19 ELECTRICAL INDICATOR PANEL, LEDs DS1 AND DS2 CONTINUED

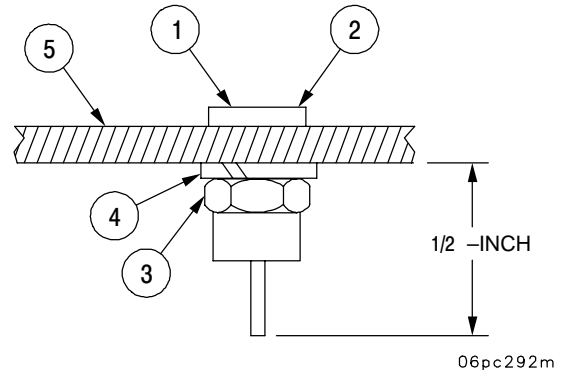
b. INSTALLATION**CAUTION****ESD SENSITIVE**

- The PDIU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.
- Damage to RFI/EMI contact strip may occur. Do not slide cover off of housing. Pick cover straight up.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.

WARNING

- Do not breathe fumes from adhesive/sealant. Use with adequate ventilation.
 - Adhesive/sealant may cause eye or skin irritation, avoid direct contact.
2. Apply a thin coating of adhesive/sealant to the panel mounting surface of DS1 (1) or DS2 (2).
 3. Insert DS1 (1) or DS2 (2) into panel (5) and install lockwasher (4) and nut (3).
 4. Cut the leads of DS1 (1) or DS2 (2) back to 1/2-inch of the panel (5).
 5. Using flux and solder, solder leads to DS1 (1) or DS2 (2). Remove tags.
 6. Clean solder joints with acid swabbing brush and alcohol.
 7. Install Electrical Indicator Panel in accordance with procedure outlined in paragraph 4-18.



4-20. SPRING LATCH ASSEMBLY

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

- Tool Kit, JTK-17LAL (item 34, Appendix E)
- Tool Kit, General Mechanic's (item 42, Appendix E)

Materials/Parts:

- Self-locking Screw (item 7, Appendix F)

Equipment Condition:

Bottom cover removed; if not, remove bottom covers in accordance with paragraph 4-13

Personnel Required:

One MOS 35Y

a. REMOVAL

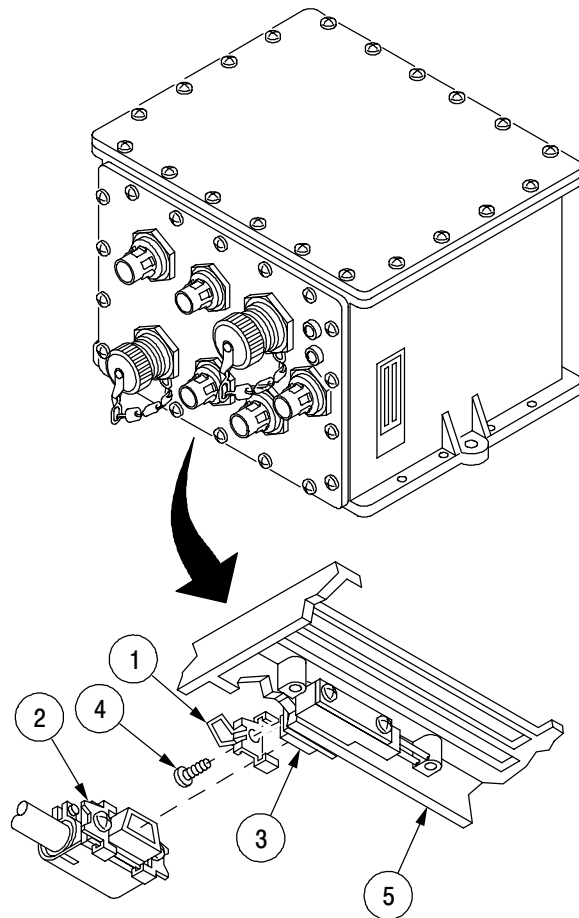
CAUTION



ESD SENSITIVE

- The PDIU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.
- Damage to RFI/EMI contact strip may occur. Do not slide cover off of housing. Pick cover straight up.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Open two spring latch assemblies (1) at connector P5 (2).
3. Unplug connector P5 (2) from connector J8 (3).
4. Remove self-locking screw (4) securing damaged spring latch assembly (1) and connector J8 (3) to PDIU housing (5). Discard self-locking screw.
5. Remove damaged spring latch assembly (1) from connector J8 (3).



06pc280m

4-20. SPRING LATCH ASSEMBLY CONTINUED

b. INSTALLATION

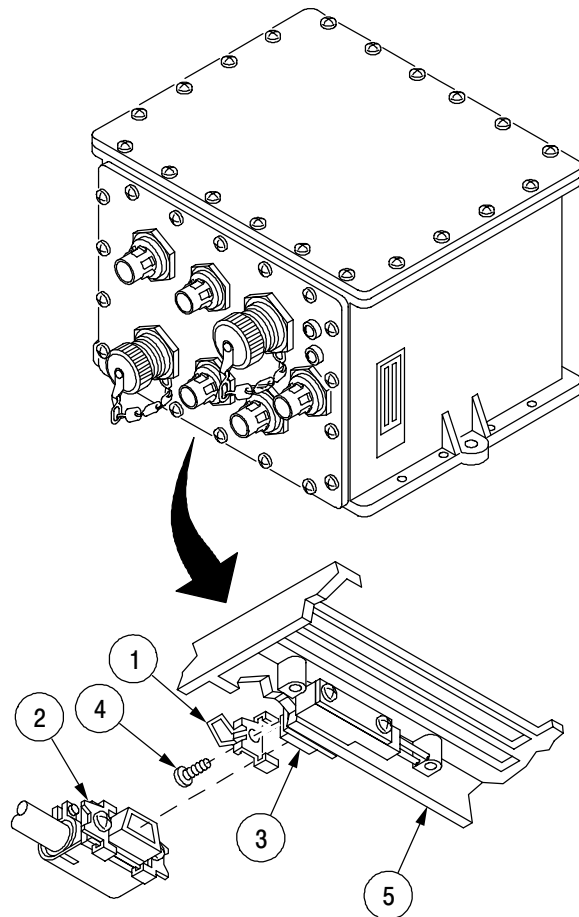
CAUTION



ESD SENSITIVE

- The PDIU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.
- Damage to RF/EMI contact strip may occur. Do not slide cover off of housing. Pick cover straight up.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Install replacement spring latch assembly (1) on connector J8 (3).
3. Secure spring latch assembly (1) and connector J8 (3) to PDIU housing (5) with self-locking screw (4).
4. Install connector P5 (2) on connector J8 (3) and close two spring latch assemblies (1).
5. Install bottom cover in accordance with procedure outlined in paragraph 4-13.



06pc280m

4-21. COVER, ELECTRICAL CONNECTOR

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

- Tool Kit, JTK-17LAL (item 34, Appendix E)
- Tool Kit, General Mechanic's (item 42, Appendix E)
- Socket, Socketwrench (1-9/16 in. hex, 3/4 in. dr) (item 46, Appendix E)
- Socket, Socketwrench (2.0 in. hex, 3/4 in. dr) (item 19, Appendix E)
- Adapter, Socketwrench (1/2 in. x 3/4 in.) (item 1, Appendix E)
- Pliers, Wire Twister (item 47, Appendix E)

Materials/Parts:

Wire, Safety (item 30, Appendix D)

Equipment Condition:

Unenergized PDIU on work bench

Personnel Required:

One MOS 35Y

a. REMOVAL

1. Unscrew cover (1) from connector (2).

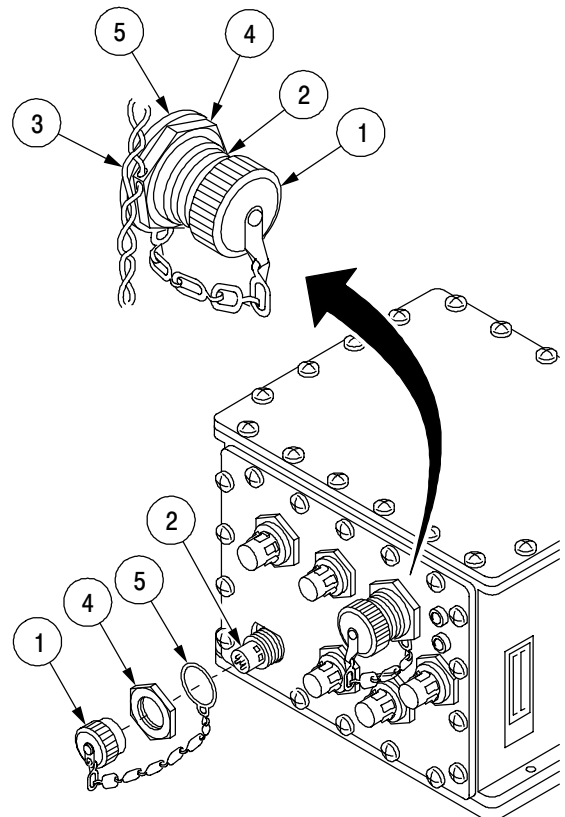
NOTE

Note the path of the safety wire.

2. Cut safety wire (3) from nut (4) and the connecting loops on adjacent nut(s). Remove wire.
3. Remove nut (4), cover (1), and collar (5) from connector (2).

b. INSTALLATION

1. Install collar (5) with nut (4) on connector (2).
2. Install cover (1) on connector (2).
3. Install safety wire (3) between nut (4) and adjacent nut(s). Wire turns must begin immediately at one nut and continue to the adjacent nut. A minimum of five turns per inch should be made to complete the loop at the end of the wire.



06pc295m

CHAPTER 5. DIRECT SUPPORT MAINTENANCE INSTRUCTIONS FOR VMS MODEM

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

	Page		Page
Common Tools and Equipment	5-1	Repair Parts	5-1
Special Tools, TMDE, and Support Equipment .	5-1		

5-1. COMMON TOOLS AND EQUIPMENT

For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE), CTA 50-970, or CTA 8-100, as applicable to your unit.

5-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

Refer to Appendix C, Repair Parts and Special Tools List (RPSTL) for applicable special tools, TMDE, and support equipment.

5-3. REPAIR PARTS

Refer to Appendix F of this manual for a list of mandatory replacement parts. Repair parts are listed and illustrated in Appendix C of this manual.

Section II – SERVICE UPON RECEIPT

	Page		Page
Site and Shelter Requirements	5-1	Service Upon Receipt of Materiel	5-1

5-4. SITE AND SHELTER REQUIREMENTS

VMS Modem DS maintenance will be performed using the facilities contained within the Electronic Shop, Transportable, AN/TSM-191(V)3.

5-5. SERVICE UPON RECEIPT OF MATERIEL

- a. Unpacking.
 - (1) Place packed VMS Modem on a work bench.
 - (2) Check the condition of the packaged VMS Modem. Check the markings. Note discrepancies.
 - (3) Do not use sharp blades or sharp cutting tools when unpacking the VMS Modem. Remove packing material carefully.
- b. Check unpacked equipment.
 - (1) Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on SF 364, Report of Discrepancy.

(2) Check the equipment against the packing slip to see if the shipment is complete. Report all discrepancies in accordance with the instructions of DA PAM 738-750.

c. Processing unpacked equipment. Enter unpacked and checked equipment into normal work schedule based on standard shop practice.

Section III – PRE-SHOP ANALYSIS

	Page		Page
Introduction	5-2	Pre-shop Analysis	5-2

5-6. INTRODUCTION

Pre-shop analysis is a method for screening incoming equipment to determine its physical condition for maintenance tasks required to return the equipment to service. Pre-shop analysis begins with a technical inspection of the equipment and ends with a report of corrective actions taken. Other than for structural malfunctions, such as broken handles, all incoming equipment is subject to manual troubleshooting as outlined in Section IV of this chapter.

5-7. PRE-SHOP ANALYSIS

Using Table 5-1 and paragraph 1-11 as a guide, check for parts that are broken, cracked, bent, dented, or missing. Evaluate condition of assembly. Verify that all cable receptacles are securely fastened. Acceptable cracks and dents should be cleaned and missing Chemical Agent Resistant Coating (CARC) should be reapplied.

WARNING

Uncured CARC paint contains hazardous materials. Follow manufacturer’s instructions in preparation and application of the CARC. Failure to comply may result in injury to personnel.

Table 5-1. Pre-shop Analysis Guide

Item	Description	Check	Action
1	Forms and Tags	Existence.	Determine reason for sending LRU to maintenance.
2	Receptacle: J1, J2	Existence, cleanliness, corrosion, dents, cracks, bent pins, broken or worn connector lugs.	Tighten, clean, or forward to depot as appropriate.
3	Indicator Lights	Existence, cleanliness, and cracks.	Clean or replace as required. (Reference paragraph 5-14 for replacement procedure.)
4	Enclosure	Cleanliness, corrosion, dents, cracks, broken or missing vanes, and mounting feet.	Clean, evaluate, or forward to depot as appropriate. Replace inlet valve per paragraph 1-24 if missing or damaged.

Section IV – MANUAL TROUBLESHOOTING

	Page	Page	
General	5-3	Manual Troubleshooting Procedures	5-4
Functional Description	5-3	Post Maintenance Test	5-5

5-8. GENERAL

This chapter contains information on checks and corrective actions required to isolate defects in the VMS Modem, and correct the defects by means of maintenance. The manual troubleshooting shall begin with a fault or symptom and lead to a single fault isolation of the problem. In cases where the maintenance must be performed at a higher level, the description will note "Forward VMS Modem to Depot".

5-9. FUNCTIONAL DESCRIPTION

a. There are two identical VMS Modem assemblies in the AFCS. The first VMS Modem encodes and modulates the odometer outputs of the VMS unit into unique frequencies. These frequencies are transmitted over the slip rings to the second VMS Modem. The second VMS Modem decodes the frequencies to their original state for use by the AFCS and vehicle navigation system components. Also, the second VMS Modem will encode and modulate the BIT commands into unique frequencies to be transmitted over the slip rings and decoded by the first VMS Modem. The second VMS Modem is additionally controlled by the BIT command and test outputs of the ACU.

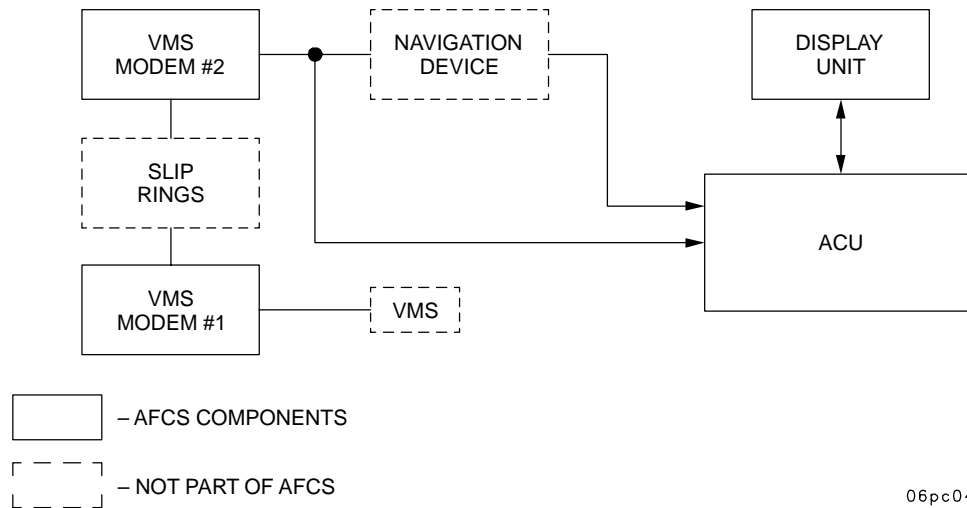


Figure 5-1. VMS Modem Block Diagram

b. The VMS consists of:

- VMS Modem Circuit Card Assembly
- VMS Modem Heatsink Assembly Circuit Card
- Cable Assembly
- J1 Connector
- J2 Connector

(1) The VMS Modem CCA receives frequency lock detect inputs from the transmitting VMS Modem and generates odometer, bit command, and loopback outputs of various pulse widths. The time conditioner circuitry shown in the figure delays the recognition of the lock detect input, filtering out false lock indications from the transmitting VMS Modem. The operational interface between the VMS Modem CCA and the AFCS is provided by the J1 connector. The J2 connector provides the test interface for the VMS Modem CCA.

TM 9-1200-215-34&P

(2) The VMS Modem Heatsink Assembly circuit card supplies conditioned +5 Vdc to the VMS Modem and the VMS from the unconditioned +24 Vdc vehicle power. The Heatsink Assembly also contains the phase locked loop circuitry used to detect the individual frequencies of the signal transmitted across the slip rings.

(3) The Cable Assembly connects the circuit card assembly receptacles to the J1 and J2 receptacles. They transmit and receive data for BIT, odometer, loopback, power, voltage, test commands, and ground, via the internal wiring.

(4) LRU interface. The J1 connector provides the operational interface with the VMS Modem CCA and the VMS Modem cable. The pin assignments, given in figure 5-2, reflect the schematic nomenclature.

(5) Test interface. The J2 connector provides the VMS Modem CCA test interface. The pin assignments, given in figure 5-2, reflect the schematic nomenclature.

5-10. MANUAL TROUBLESHOOTING PROCEDURE

DESCRIPTION

This task covers: Manual Troubleshooting

INITIAL SETUP

Tools:

Tool Kit, JTK-17LAL, TK-101/G, and TK-105/G
(items 37, 38, & 39, Appendix E)
Pin Adapters, Test #16, #20, and #22 (items 4, 5, &
6, Appendix E)
Socket Adapters, Test #16, #20, and #22 (items 7, 8,
& 9, Appendix E)
Electrical Lead (item 14, Appendix E)

Equipment Condition:

Unenergized VMS Modem is on workbench

Personnel Required:

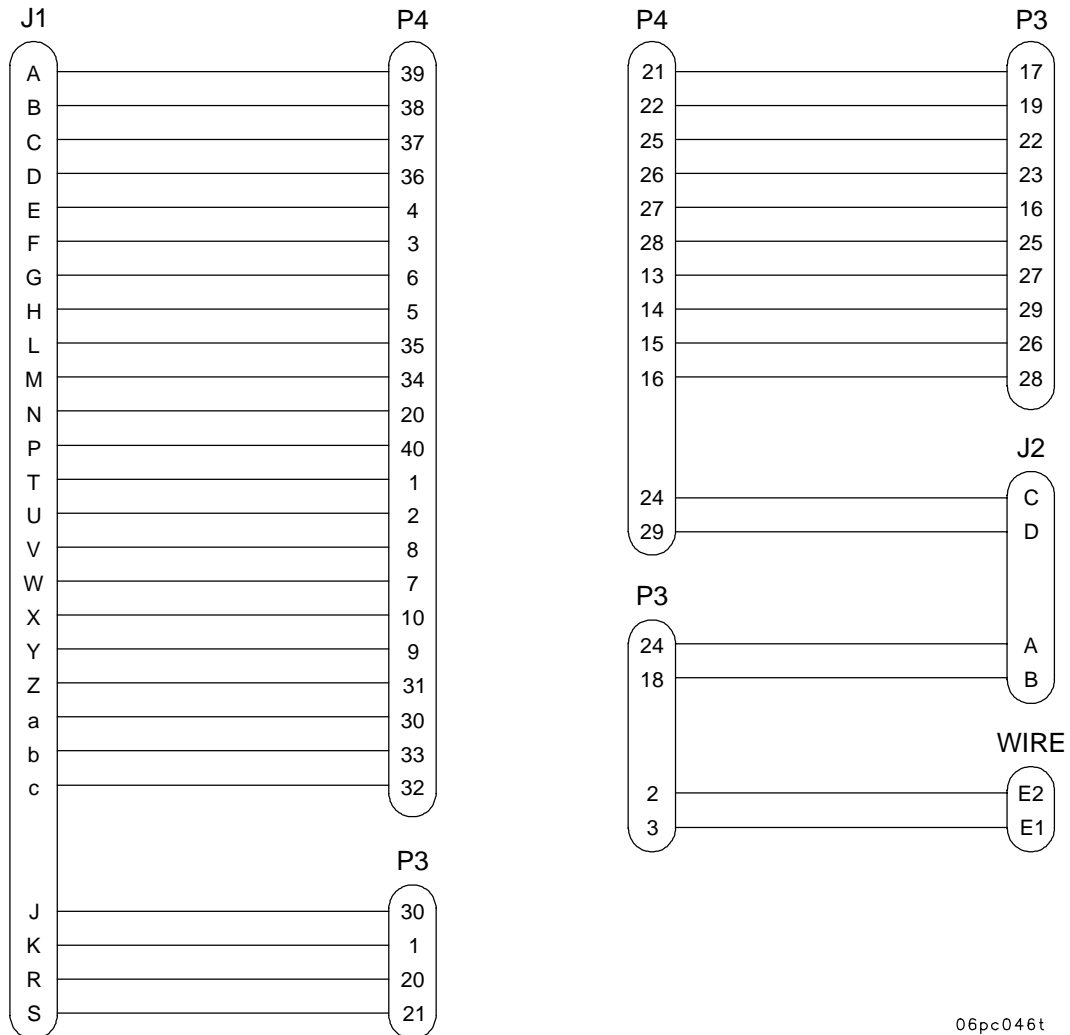
One MOS 35Y

NOTE

- The following manual troubleshooting procedures consists of wiring diagrams locating box edge connector pins to internal harness connector terminations. Continuity checks using this chart are intended to be used when replacement of internal components (i.e. CCAs) fail to correct an Electronic Shop, Transportable, AN/TSM-191(V)3 indicated fault. All other internal troubleshooting will be performed by automated testing. Refer to TPS 12958912 for specific CP troubleshooting procedures.
- The continuity check is performed to test for the existence of a connection between two contacts on the cable. The two probes from an ohmmeter are touched to the appropriate pair of contacts and the ohmmeter is monitored. Low resistance readings (approaching 0 ohms) show a good connection, high resistance readings (approaching infinity) show a degraded or broken connection. Figure 5-2 shows what contacts the probes should be placed on to check for continuity on the VMS Modem cable assembly.

MANUAL TROUBLESHOOTING

1. Check for continuity using figure 5-2.



06pc046t

Figure 5-2. VMS Cable Assembly

2. If instances of noncontinuity are found between contacts, recheck applicable wires and contacts for fraying, breakage, or corrosion.
3. If contacts were found to be broken or corroded, forward unit to depot for repair of receptacle contacts, connector contacts, or power distribution module contacts as appropriate.
4. If noncontinuity exists between two points and the contact is not visibly damaged, forward unit to depot for repair of applicable wire.
5. If at this point, no failures have been identified in this cable, perform next higher assembly fault isolation under the assumption that this cable assembly is functioning properly.

5-11. POST-MAINTENANCE TEST

Follow the procedures outlined in TPS 12958912 to verify the operation of the VMS Modem.

Section V. MAINTENANCE PROCEDURES

	Page		Page
General	5-6	Heatsink Assembly Maintenance	
Cover Maintenance Instructions	5-7	Instructions	5-13
Indicator Maintenance Instructions	5-9	Cable Assembly Maintenance	
CCA Maintenance Instructions	5-11	Instructions	5-15

5-12. GENERAL

a. This section contains the step-by-step maintenance procedures for DS level maintenance of the VMS Modem. These procedures are provided to access components for general maintenance. These maintenance tasks are authorized by the Source, Maintenance, and Recoverability (SMR) codes indicated in the RPSTL in Appendix C. There are no GS level maintenance tasks for the VMS Modem.

b. The diagram below shows the location of each of the main replaceable assemblies in the VMS Modem:

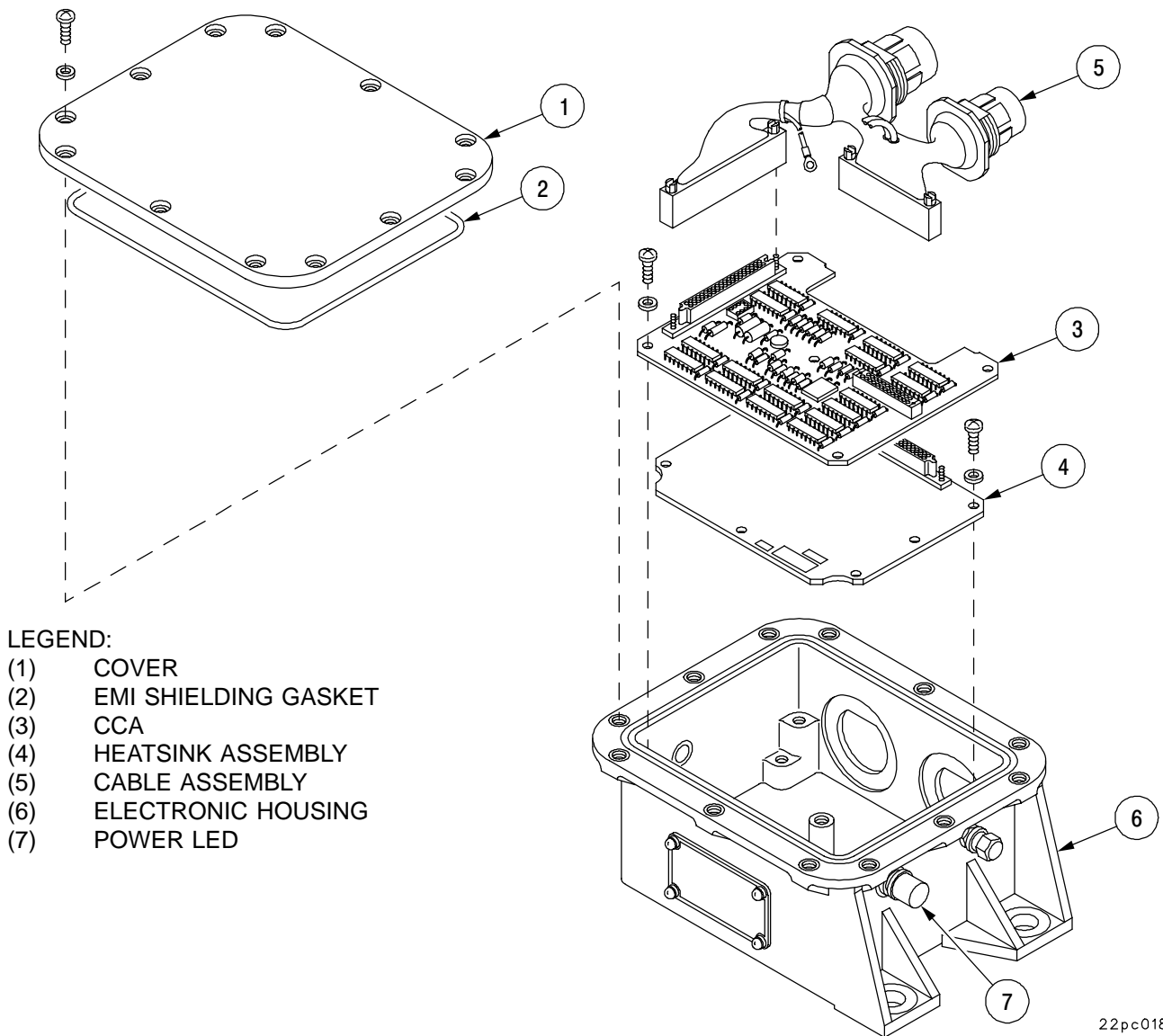


Figure 5-3. VMS Modem Exploded View

22pc018m

5-13. COVER MAINTENANCE INSTRUCTIONS

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

- Tool Kit, JTK-17LAL, TK-101/G, or TK-105/G (items 34, 35, & 36, Appendix E)
- Torque Wrench, 0-15 in.-lb (item 39, Appendix E)
- #2 Crosstip Screwdriver Socketwrench (item 22, Appendix E)
- Work Station Kit, Electronic (item 38, Appendix E)

Equipment Condition:

Unenergized VMS Modem is on workbench

Personnel Required:

One MOS 35Y

a. REMOVAL

CAUTION



ESD SENSITIVE

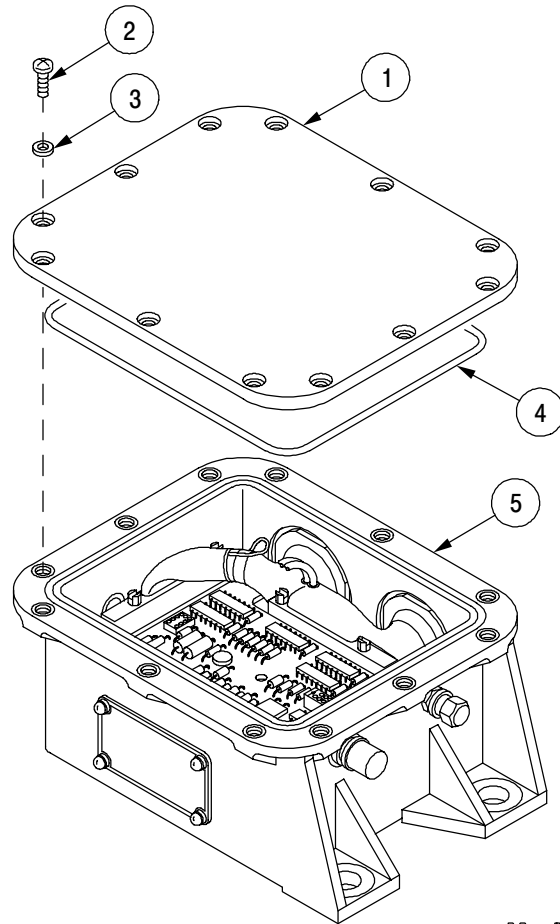
The VMS Modem contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Remove cover (1) by removing 12 screws (2) and 12 flat washers (3). Lift cover off housing.

CAUTION

The EMI shielding gasket is vital to this piece of equipment and is easily damaged. Handle with care when removing or replacing it. Failure to comply may result in damage to equipment.

3. Inspect EMI shielding gasket (4) in groove in housing (5) for cuts, nicks, or signs of stretching. Discard EMI shielding gasket if unserviceable.



22pc019m

5-13. COVER MAINTENANCE INSTRUCTIONS CONTINUED

b. INSTALLATION

CAUTION



ESD SENSITIVE

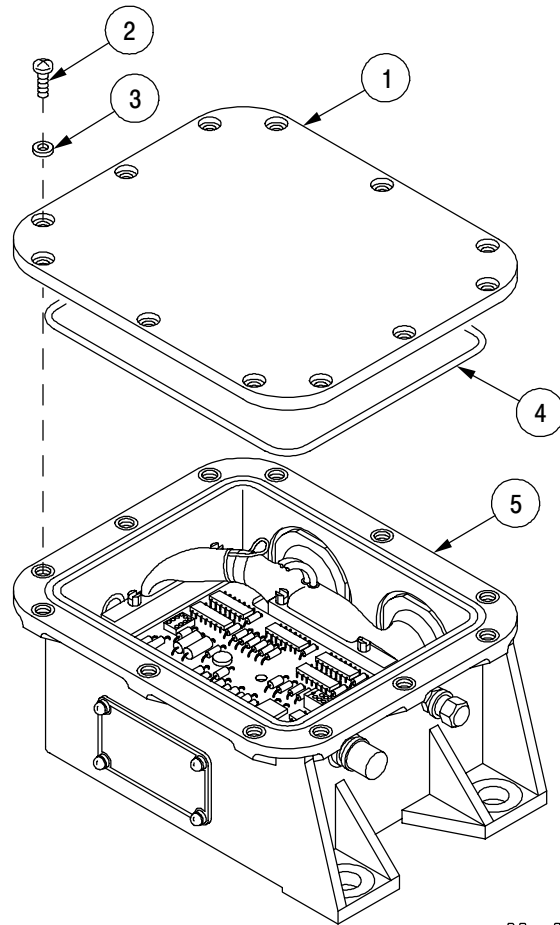
The VMS Modem contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.

CAUTION

The EMI shielding gasket is vital to this piece of equipment and is easily damaged. Handle with care when removing or replacing it. Failure to comply may result in damage to equipment.

2. If removed, install EMI shielding gasket (4) in groove in housing (5).
3. Place cover (1) on housing and align holes.
4. Insert 12 screws (2) and 12 flat washers (3). Torque screws to $9.5 \pm .5$ in.-lb (1.1 ± 1 N•m).
5. Purge VMS modem with nitrogen following procedure outlined in paragraph 1-23.



22pc019m

5-14. INDICATOR MAINTENANCE INSTRUCTIONS

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

Tool Kit, JTK-17LAL, TK-101/G, or TK-105/G
 (items 34, 35, & 36, Appendix E)
 Torque Wrench, 0-75 in.-lb (item 40, Appendix E)
 9/16" Crowfoot Attachment (item 10, Appendix E)
 Minigun, Hot Air (item 15, Appendix E)
 Work Station Kit, Electronic (item 38, Appendix E)

Equipment Condition:

Cover removed; if not, remove cover in accordance with procedure in paragraph 5-13.

Personnel Required:

One MOS 35Y

Materials/Parts:

Flux, Soldering, Liquid (item 17, Appendix D)
 Sleeving, Insulation (item 26, Appendix D)
 Solder, Wire Flux Core (item 27, Appendix D)
 Desoldering Wick (item 15, Appendix D)
 Type Cleaner (item 29, Appendix D)
 Band, Marker (item 7, Appendix D)
 Applicator, Disposable (item 5, Appendix D)

a. REMOVAL

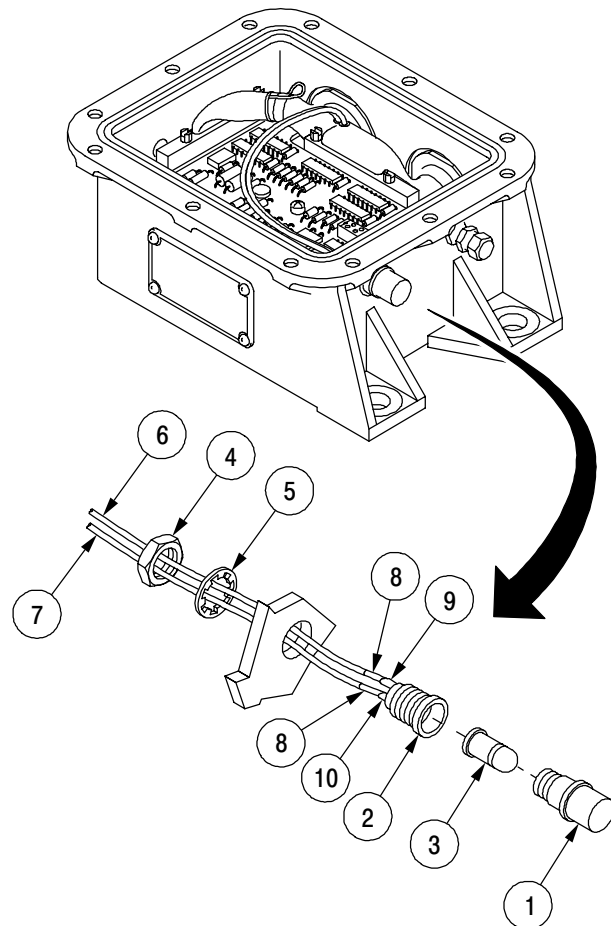
CAUTION



ESD SENSITIVE

The VMS Modem contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Remove indicator cap (1) by unscrewing cap and lifting from indicator base (2).
3. Remove LED (3) from indicator cap (1).
4. Remove jam nut (4) and lockwasher (5) securing indicator base (2) to modem housing.
5. Remove indicator base (2) from modem housing.
6. Using marker bands, label two wires (6 and 7) connected to indicator base (2). Label base.
7. Remove insulation sleeving (8) and desolder wires at solder posts (9 and 10). Discard insulation.



22pc021m

5-14. INDICATOR MAINTENANCE INSTRUCTIONS CONTINUED

b. INSTALLATION

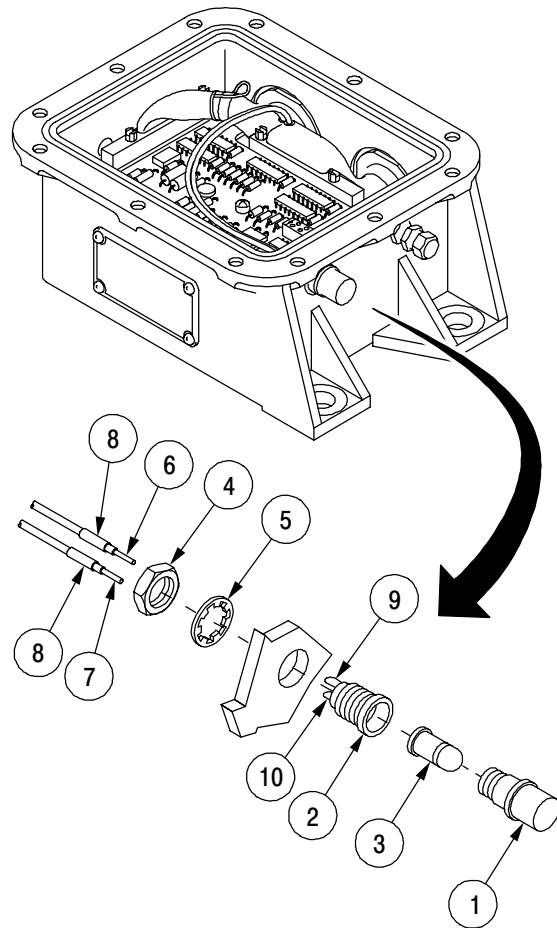
CAUTION



ESD SENSITIVE

The VMS Modem contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Clean, straighten, and retin ends of wires (6 and 7). Slide jam nut (4) and lockwasher (5) over wires. Insert wires through hole.
3. Place 1.5 ± 0.5 inch (30 ± 10 mm) of new insulation sleeving (8) on each wire (6 and 7) and push back away from bare portion of wire to allow for soldering.
4. Clean solder posts (9 and 10) using type cleaner and soldering aid tool. Coat solder posts with solder flux prior to soldering.
5. Solder wires (6 and 7) to appropriate indicator base post (9 and 10). Remove marker bands.
6. Push insulation sleeving (8) up wire to base of indicator (2). Shrink insulation sleeving around wires and indicator base solder posts.
7. Insert indicator base (2) into modem housing.
8. Place lockwasher (5) and jam nut (4) on indicator base (2) and hand tighten.
9. Torque indicator base jam nut (4) to 20 ± 1 in.-lb (2.3 ± 1 N•m).
10. Insert LED (3) into indicator cap (1) and push gently until fully seated.
11. Screw indicator cap (1) into indicator base (2) until fully seated.
12. Install cover in accordance with procedure outlined in paragraph 5-13.



22pc023m

5-15. CCA MAINTENANCE INSTRUCTIONS

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

- Tool Kit, JTK-17LAL, TK-101/G, or TK-105/G (items 34, 35, & 36, Appendix E)
- Torque Wrench, 0-15 in.-lb (item 39, Appendix E)
- #2 Crosstip Screwdriver Socketwrench (item 22, Appendix E)
- Work Station Kit, Electronic (item 38, Appendix E)

Materials/Parts:

- Sack, Shipping (ESD) (item 23, Appendix D)

Equipment Condition:

- Cover removed; if not, remove cover in accordance with procedure in paragraph 5-13.

Personnel Required:

- One MOS 35Y

a. REMOVAL

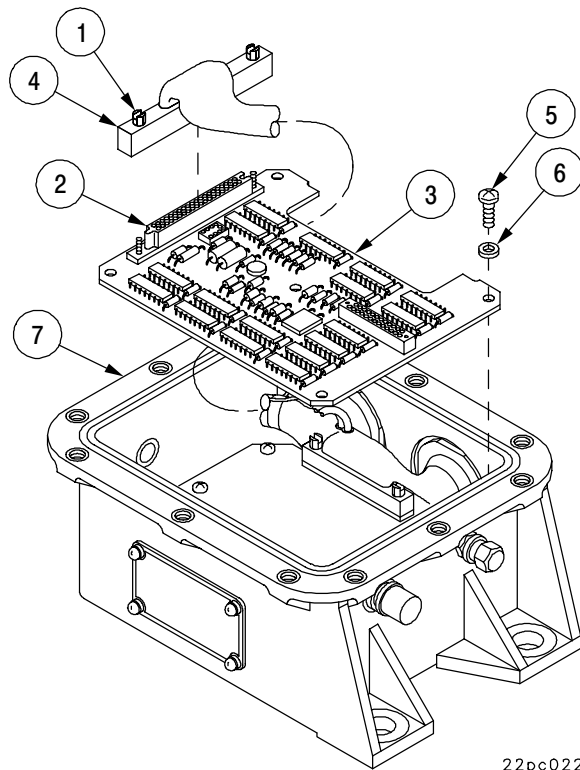
CAUTION



ESD SENSITIVE

The VMS Modem contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Unscrew two captive screws (1) from receptacle J4 (2) on modem CCA (3).
3. Remove cable connector P4 (4) from receptacle (2).
4. Remove five screws (5) and five washers (6) securing modem CCA (3) to housing (7).
5. Remove modem CCA (3) from VMS modem housing (7) and place in ESD safe container.



22pc022ma

5-15. CCA MAINTENANCE INSTRUCTIONS CONTINUED

b. INSTALLATION

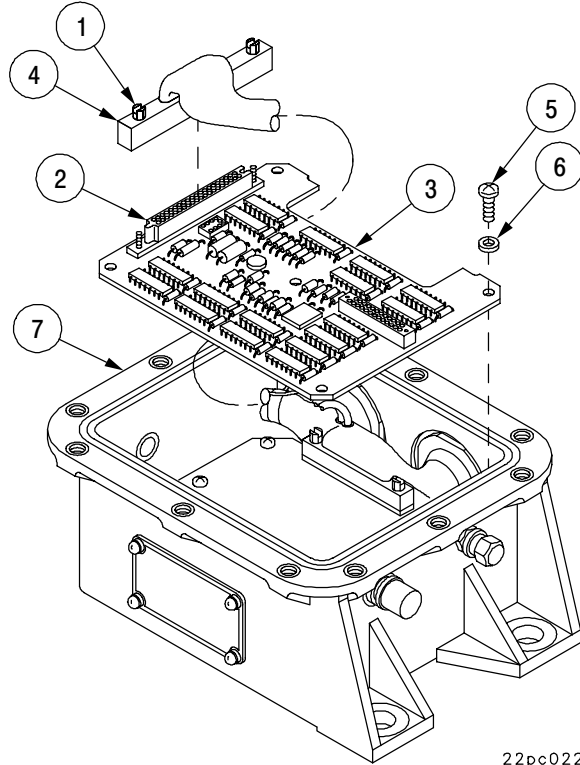
CAUTION



ESD SENSITIVE

The VMS Modem contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Position modem CCA (3) in VMS Modem housing (7).
3. Install five screws (5) and five washers (6) through modem CCA (3) to model housing (7). Torque screws to $9.5 \pm .5$ in.-lb ($1.1 \pm .1$ N•m).
4. Connect cable connector P4 (4) to receptacle J4 (2).
5. Torque two captive screws (1) on connector P4 to $3 \pm .2$ in.-lb ($.34 \pm .02$ N•m).
6. Install cover onto VMS modem housing in accordance with procedure outlined in paragraph 5-13.



22pc022ma

5-16. HEATSINK ASSEMBLY MAINTENANCE INSTRUCTIONS

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

- Tool Kit, JTK-17LAL, TK-101/G, or TK-105/G (items 34, 35, & 36, Appendix E)
- Torque Wrench, 0-15 in.-lb (item 39, Appendix E)
- #2 Crosstip Screwdriver Socketwrench (item 22, Appendix E)
- Work Station Kit, Electronic (item 38, Appendix E)

Materials/Parts:

Sack, Shipping (ESD) (item 23, Appendix D)

Equipment Condition:

CCA removed; if not, remove CCA in accordance with procedure in paragraph 5-15.

Personnel Required:

One MOS 35Y

a. REMOVAL

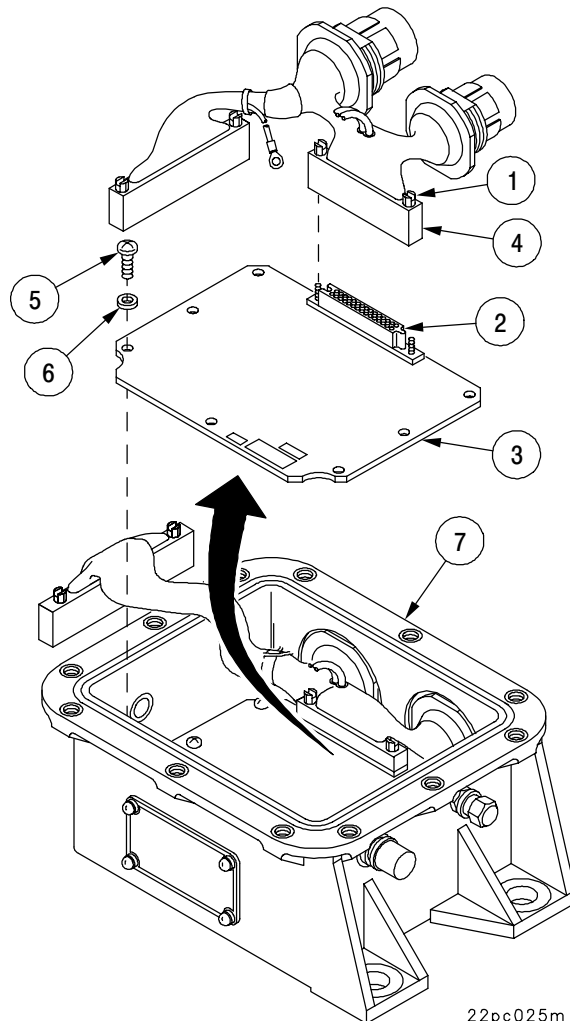
CAUTION



ESD SENSITIVE

The VMS Modem contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Loosen connector screws (1) from receptacle J3 (2) on heatsink assembly (3).
3. Remove cable connector P3 (4) from receptacle J3 (2).
4. Remove sic screws (5) and six washers (6) securing heatsink assembly (3) to housing (7).
5. Lift heatsink assembly (3) from VMS Modem housing (7) and place in ESD safe container.



22pc025m

5-16. HEATSINK ASSEMBLY MAINTENANCE INSTRUCTIONS CONTINUED

b. INSTALLATION

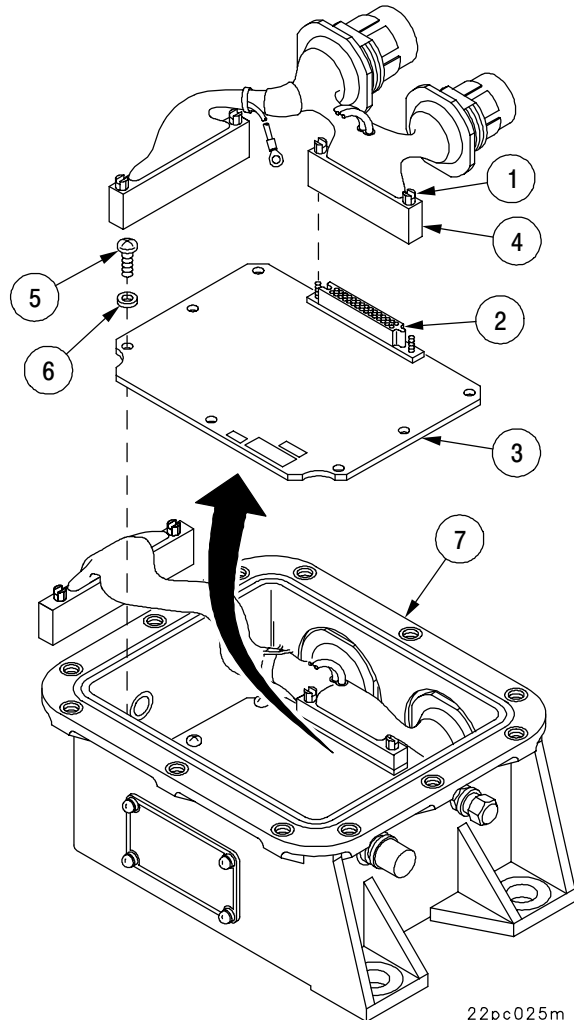
CAUTION



ESD SENSITIVE

The VMS Modem contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Position heatsink assembly (3) in VMS Modem housing (7).
3. Install six screws (5) and six washers (6) through heatsink assembly (3) to housing (7). Torque screws to $9.5 \pm .5$ in.-lb ($1.1 \pm .1$ N•m).
4. Position cable connector P3 (4) onto receptacles J3 (2) and tighten screws (1).
5. Torque connector screws (1) to $3 \pm .2$ in.-lb ($0.34 \pm .02$ N•m).
6. Install modem CCA IAW procedure outlined in paragraph 5-15.



22pc025m

5-17. CABLE ASSEMBLY MAINTENANCE INSTRUCTIONS

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

- Tool Kit, JTK-17LAL, TK-101/G, or TK-105/G (items 34, 35, & 36, Appendix E)
- Torque Wrench, 0-150 in.-lb (item 41, Appendix E)
- Work Station Kit, Electronic (item 38, Appendix E)
- 1-5/8" x 3/4" Drive Socket (item 17, Appendix E)

Equipment Condition:

- Heatsink assembly removed; if not, remove heatsink assembly in accordance with procedure outlined in paragraph 5-16.
- Indicator removed; if not, remove indicator in accordance with procedure in paragraph 5-14.

Personnel Required:

One MOS 35Y

a. REMOVAL

CAUTION



ESD SENSITIVE

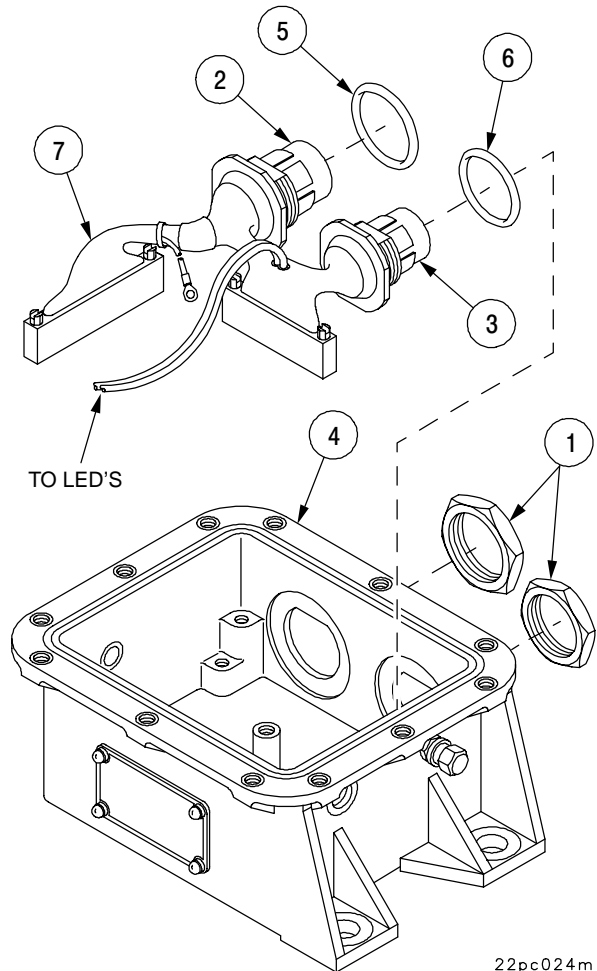
The VMS Modem contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Remove jam nuts (1) from cable assembly connectors J1 (2) and J2 (3).
3. Remove cable assembly connectors J1 (2) and J2 (3) from VMS modem housing (4).

CAUTION

The EMI shielding gasket is vital to this piece of equipment and is easily damaged. Handle with care when removing or replacing it. Gasket will break if stretched. Failure to comply may result in damage to equipment.

4. Remove EMI shielding gaskets (5 and 6) from J1 (2) and J2 (3) connectors.
5. Inspect EMI shielding gaskets (5 and 6) for cuts, nicks, and signs of stretching. Discard EMI shielding gasket if unserviceable.
6. Pull cable assembly (7) from VMS Modem housing (4).



5-17. CABLE ASSEMBLY MAINTENANCE INSTRUCTIONS CONTINUED

b. INSTALLATION

CAUTION



ESD SENSITIVE

The VMS Modem contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.

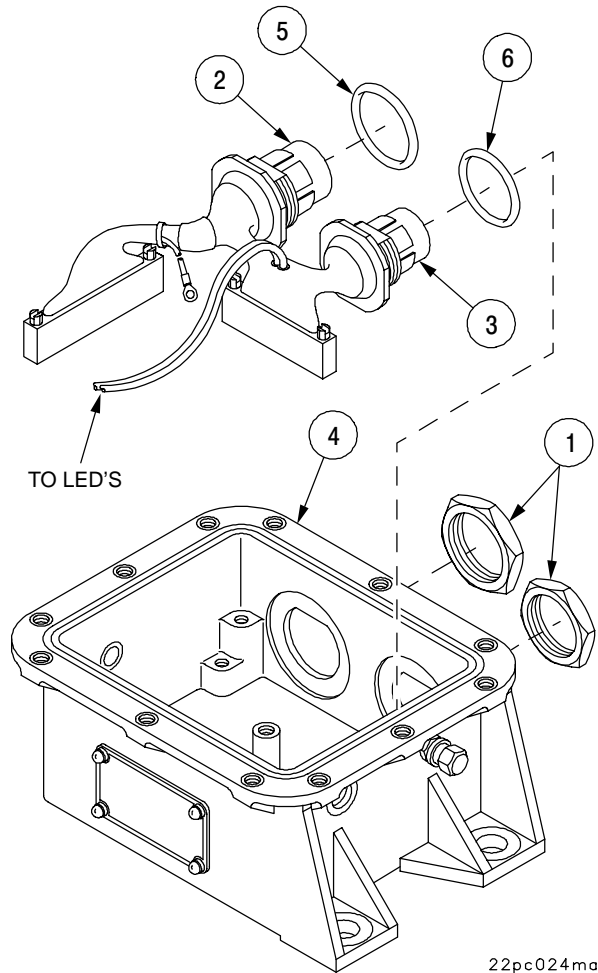
CAUTION

The EMI shielding gasket is vital to this piece of equipment and is easily damaged. Handle with care when removing or replacing it. Gasket will break if stretched. Failure to comply may result in damage to equipment.

NOTE

If a new cable is installed it may be necessary to remove jam nuts prior to next step.

2. Position EMI shielding gaskets (5 and 6) onto J1 (2) and J2 (3) connectors.
3. Place J1 connector (2) and J2 connector (3) into position in VMS Modem housing (4). Place jam nuts (1) on J1 and J2 connectors and hand tighten.
4. Torque jam nut (1) on connector J1 (2) to 70 ± 5 in.-lb ($7.9 \pm .6$ N•m) and jam nut (1) on connector J2 (3) to 60 ± 5 in.-lb ($6.8 \pm .6$ N•m).
5. Install heatsink assembly IAW procedure outlined in paragraph 5-16.
6. Install indicator IAW procedure outlined in 5-14.



22pc024ma

CHAPTER 6. DIRECT SUPPORT MAINTENANCE INSTRUCTIONS FOR POWER CONDITIONING UNIT (PCU)

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

	Page		Page
Common Tools and Equipment	6-1	Repair Parts	6-1
Special Tools, TMDE, and Support Equipment .	6-1		

6-1. COMMON TOOLS AND EQUIPMENT

For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE), CTA 50-970, or CTA 8-100, as applicable to your unit.

6-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

Refer to Appendix C, Repair Parts and Special Tools List (RPSTL) for applicable special tools, TMDE, and support equipment.

6-3. REPAIR PARTS

Refer to Appendix F of this manual for a list of mandatory replacement parts. Repair parts are listed and illustrated in Appendix C of this manual.

Section II – SERVICE UPON RECEIPT.

	Page		Page
Site and Shelter Requirements	6-1	Service Upon Receipt of Materiel	6-1

6-4. SITE AND SHELTER REQUIREMENTS

Power Conditioning Unit DS maintenance will be performed using the facilities contained within the Electronic Shop, Transportable, AN/TSM-191(V)3.

6-5. SERVICE UPON RECEIPT OF MATERIEL

- a. Unpacking.
 - (1) Place packed Power Conditioning Unit (PCU) on a work bench.
 - (2) Check the condition of the packaged PCU. Check the markings. Note discrepancies.
 - (3) Do not use sharp blades or sharp cutting tools when unpacking the PCU. Remove packing material carefully.
- b. Check unpacked equipment.
 - (1) Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on SF 364, Report of Discrepancy.

(2) Check the equipment against the packing slip to see if the shipment is complete. Report all discrepancies in accordance with the instructions of DA PAM 738-750.

c. Processing unpacked equipment. Enter unpacked and checked equipment into normal work schedule based on standard shop practice.

Section III – PRE-SHOP ANALYSIS.

	Page		Page
Introduction	6-2	Pre-shop Analysis	6-2

6-6. INTRODUCTION

Pre-shop analysis is a method for screening incoming equipment to determine its physical condition for maintenance tasks required to return the equipment to service. Pre-shop analysis begins with a technical inspection of the equipment and ends with a report of corrective actions taken. Other than for structural malfunctions, such as broken handles, all incoming equipment is subject to manual troubleshooting as outlined in Section IV of this chapter.

6-7. PRE-SHOP ANALYSIS

Using Table 6-1 and paragraph 1-11 as a guide, check for parts that are broken, cracked, bent, dented, or missing. Evaluate condition of assembly. Verify that all cable receptacles are securely fastened. Acceptable cracks and dents should be cleaned and missing Chemical Agent Resistant Coating (CARC) should be reapplied.

WARNING

Uncured CARC paint contains hazardous materials. Follow manufacturer’s instructions in preparation and application of the CARC. Failure to comply may result in injury to personnel.

Table 6-1. Pre-shop Analysis Guide

Item	Description	Check	Action
1	Forms and Tags	Existence.	Determine reason for sending LRU to maintenance.
2	Receptacle: J9, J10, J11, J12, J13	Existence, cleanliness, corrosion, dents, cracks, bent pins, broken or worn connector lugs.	Tighten, clean or forward to depot as appropriate.
3	Indicator Lights	Existence, cleanliness, and cracks.	Clean, evaluate or forward to depot as appropriate.
4	Handle	Existence, function, and cracks.	Replace per paragraph 6-15 as required
5	Enclosure	Cleanliness, corrosion, dents, cracks, broken or missing vanes and mounting feet. Condition of inlet valve.	Clean, evaluate or forward to depot as appropriate. Replace inlet valve per paragraph 1-24 if missing or damaged.

Section IV – MANUAL TROUBLESHOOTING.

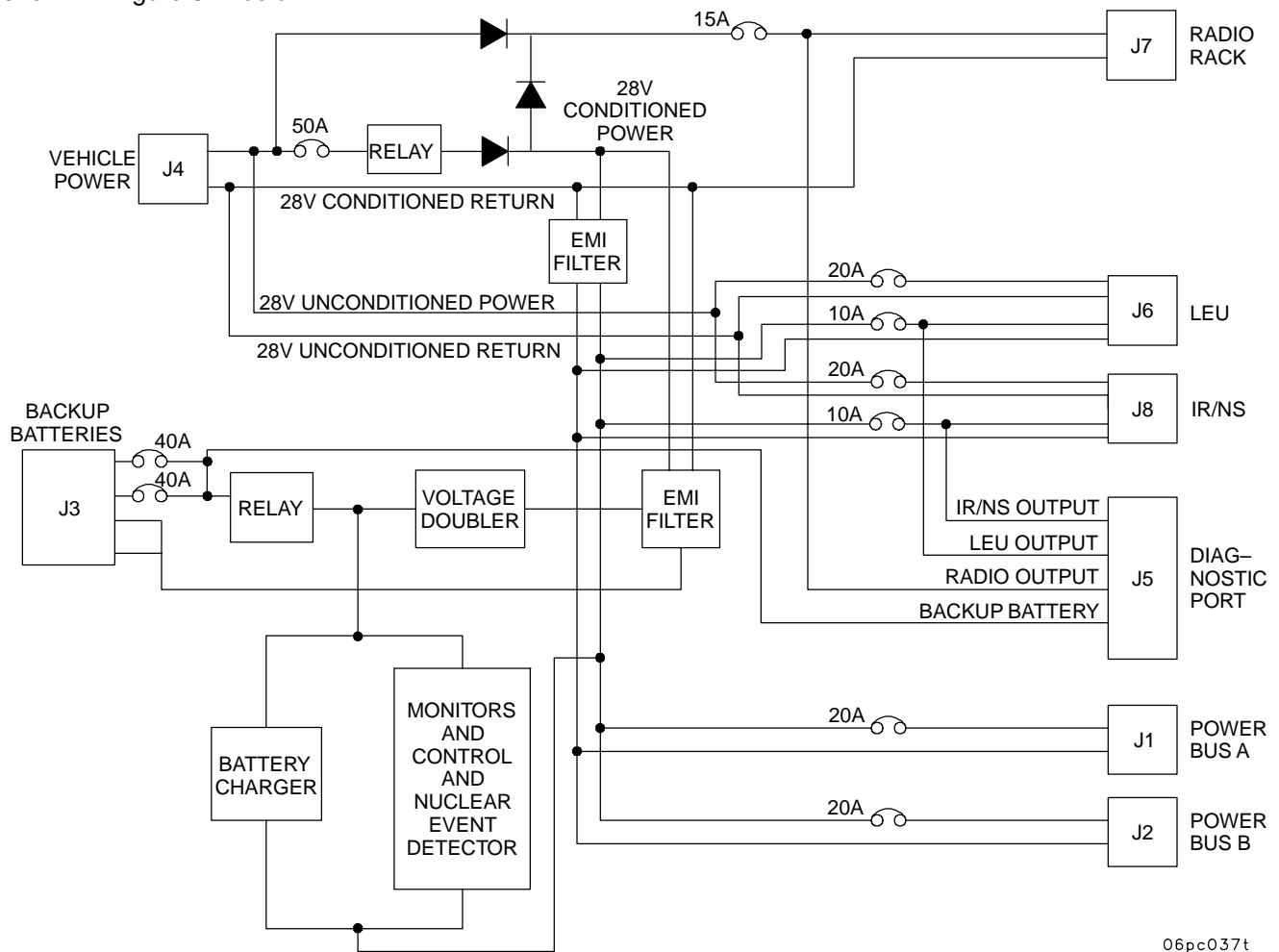
	Page		Page
General	6-3	Troubleshooting Procedures	6-8
Functional Description	6-3	Post-Maintenance Test	6-8

6-8. GENERAL

This chapter contains information on checks and corrective actions required to isolate defects in the Power Conditioning Unit (PCU), and correct the defects by means of maintenance. The troubleshooting shall begin with a fault or symptom and lead to a single fault isolation of the problem. In cases where the maintenance must be performed at a higher level, the description will note "Forward PCU to Depot".

6-9. FUNCTIONAL DESCRIPTION

a. The Power Conditioning Unit (PCU) provides conditioned (filtered and supported) power to the AFCS plus unconditioned (unfiltered and unsupported) power to components outside of the AFCS. The PCU utilizes 14 volt storage batteries (back-up batteries) to supplement host vehicle power to the AFCS. A block diagram of the PCU is shown in Figure 6-1 below.



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Figure 6-1. PCU Block Diagram

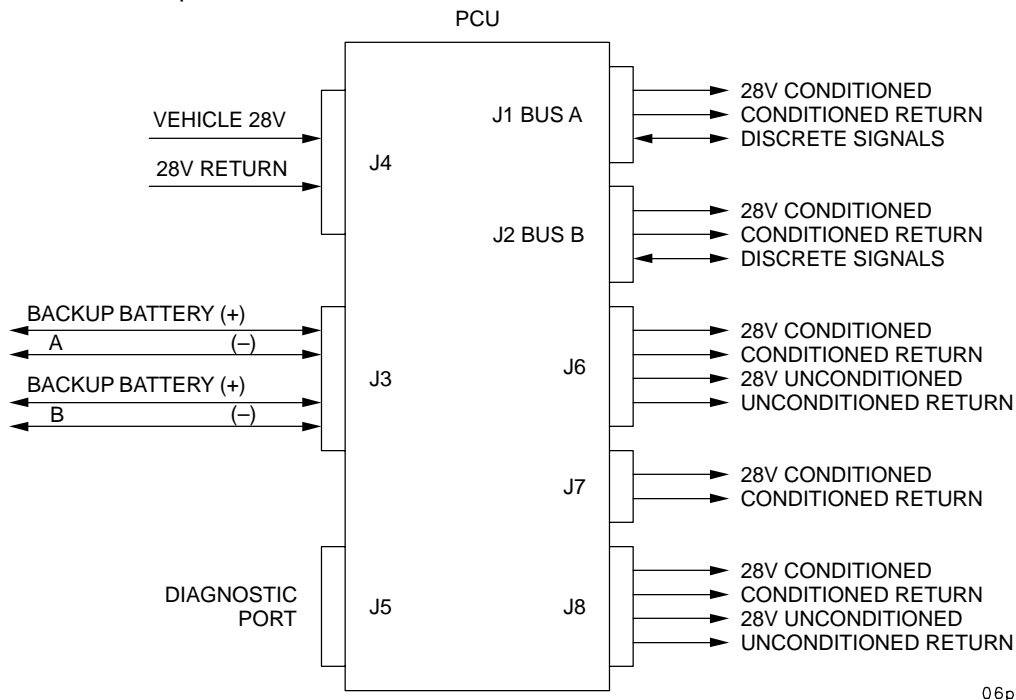
TM 9-1200-215-34&P

b. Physical description. The PCU consists of a single, sealed, enclosure which contains the following components:

- Eight (8) connectors (J1–J8)
- Circuit breakers
- Transient voltage suppressors
- EMI Filters
- Power-up relays
- Input power loss support circuit
- Back-up battery charger
- Status monitors circuit
- Nuclear event detector

(1) Eight connectors. As shown in figure 6–2, 28 Vdc vehicle power enters the PCU on connector J4. Back-up batteries are connected to the PCU on connector J3. Connector J5 is the diagnostic port connection to the PCU. Power is distributed from the following indicated connectors:

- J1, J2 – Dual power bus to the:
 - Display Unit (DU)
 - AFCS Computer Unit (ACU)
 - Prognostics/Diagnostics Interface Unit (PDIU)
- J6 – Outside Component
- J7 – Outside Component
- J8 – Outside Component



06pc038t

Figure 6–2. PCU Power Distribution

(2) Circuit breakers. Every connector, except the diagnostic connector, in the PCU has a circuit breaker that is tripped when an over-current situation occurs. The circuit breakers are sized to provide the current needed for the maximum power level of the device. The dual power buses have one breaker per bus. If one bus breaker trips, the AFCS can function on the redundant bus.

The vehicle power circuit breaker protects the internal wiring in the PCU in case of an overload condition. Each of the back-up batteries that support the PCU are connected to a circuit breaker. The breakers protect the back-up batteries, the interconnect cable, and the PCU in the event of an overload condition on the back-up batteries or a short circuit within the PCU.

The PCU provides unconditioned vehicle power to components outside the AFCS. The voltage is unconditioned but passes through a circuit breaker for each of these components.

(3) Transient voltage suppressors. The input power to the PCU may see spikes of ± 250 volts for a duration of 0.1 milliseconds. The filter assembly that shields the vehicle input connector contains transient voltage suppressors that clip the ± 250 volt spikes to less than 100 volts.

(4) EMI filters. The input power to the PCU passes through a filter assembly to keep the external EMI from entering the system and to keep noise generated in the AFCS from entering the vehicle power system. Mounted on the cover of the assembly are feed-through filters. These filters are π section low pass EMI filters that allow the DC power to pass through while filtering the high frequency noise. The radio filter assembly contains the same filtering scheme to keep noise generated by the radios from entering the PCU and the rest of the power system. The PCU contains another EMI filter on the output side of the conditioner to achieve additional filtering capabilities before it is distributed to the system.

(5) Power-up relays. The PCU is controlled by an external magnetically held toggle switch. A low current voltage line, 'SWITCH VOLTAGE', is routed from the PCU through the dual power busses to the toggle switch. This line has a potential nearly equal to the vehicle battery voltage even when the AFCS is off, except in the case of a nuclear event. When the PCU senses the closing of the toggle switch, ('ON' signal switches from low voltage to high voltage) both power relays in the PCU are activated and the PCU supplies output power. The toggle switch will not turn the system on unless there is at least 16 Vdc provided to the PCU's input connector to prevent the PCU from powering up on its back-up battery assemblies alone.

The toggle switch will be held in the "on" position until the operator turns the system off or the PCU receives a 'SHUTDOWN' signal or the Nuclear Event Detector (NED) triggers a shutdown. If one of these three conditions is met then the PCU opens a relay to interrupt power on the 'SWITCH VOLTAGE' signal and the toggle switch will return to its normally "off" position.

When the toggle switch is "off" no power will be provided to the AFCS, but the radio rack will continue to receive power. A power diode bypasses the input circuit breaker and power relay to supply power to the vehicle's radios when the AFCS is off. This power will be unsupported power from the slip-rings but it will pass through the input EMI filter assembly. The power diode protects the radios from negative voltage transients.

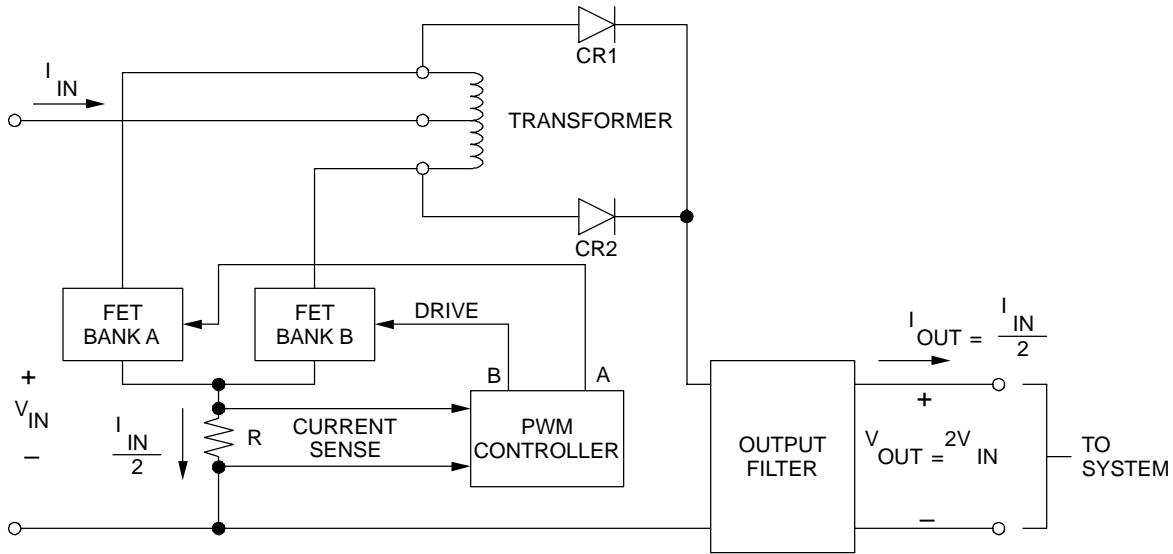
(6) Input power loss support circuit. Input vehicle power to the PCU has a steady state range of 25 to 30 volts for a fault free condition with a combined generator-vehicle battery power supply and 20 to 27 volts for a vehicle battery only condition.

The PCU supports undervoltage transients by using the back-up batteries which have a nominal 14 volts on each assembly. Two back-up battery assemblies are connected in parallel to form a 14 volt, 50 amperehour battery.

The PCU utilizes a switching transformer and two diodes to double the battery voltage to 28 volts. The controller is a Pulse Width Modulator (PWM) which drives two banks of n-channel Metal Oxide Semi-conductor Field Effect Transistors (MOSFETs) that switch the high currents in the transformer. The output of the voltage doubler is then filtered and connected to the PCU conditioned power output for system distribution. The voltage doubler block diagram is shown in figure 6-3.

The PWM is controlled by two voltage comparators. The first voltage comparator monitors the vehicle voltage level. If this level is below 20 volts the PWM is enabled and the output of the PCU is supported by the voltage doubler.

The second voltage comparator monitors the voltage drop across a current sense resistor that is connected between the source of the MOSFETs and vehicle return. If the voltage drop across the sense resistor exceeds a predetermined level the PWM will be powered down. This only occurs if the system is demanding too much power to be safely delivered from the PCU or a short has occurred in the PCU. This is a pulse by pulse current limiting technique and will only power down the PWM as long as the overcurrent situation continues.

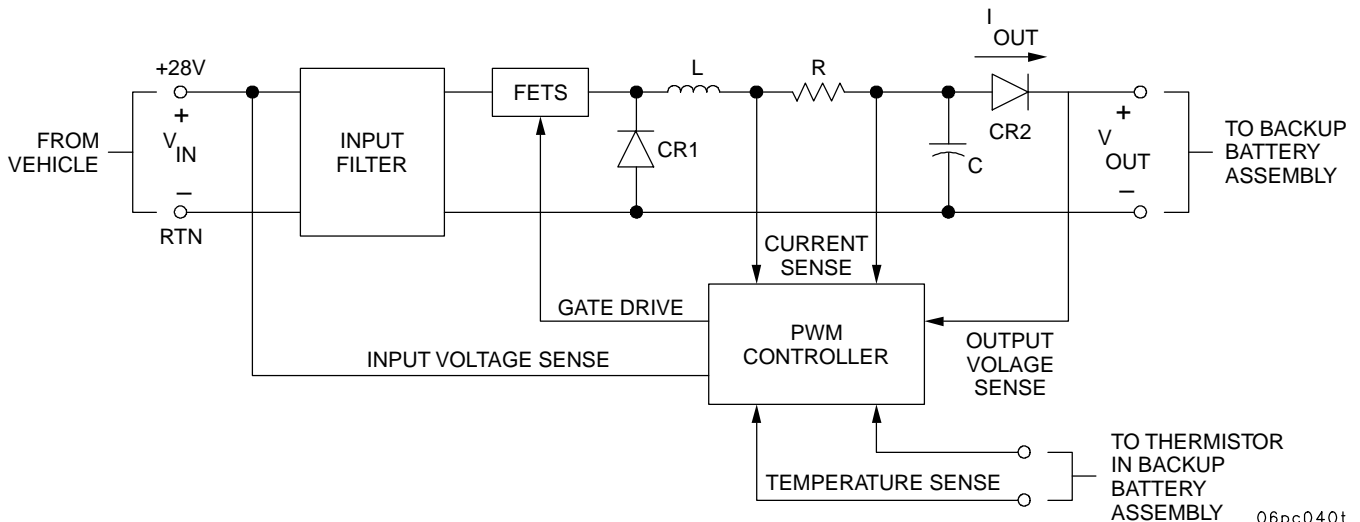


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Figure 6-3. Voltage Doubler Block Diagram

The output voltage of the doubler, due to the resistance of the interconnections and losses in the transformer and diodes will not exactly be double the input voltage but will support the AFCS.

(7) Back-up battery charger. The back-up batteries are charged by the PCU. The back-up battery charger in the PCU is a DC to DC converter. The back-up battery charger block diagram is shown in figure 6-4.



06pc040t

Figure 6-4. Back-up Battery Charger Block Diagram

When the vehicle input voltage is greater than 24 volts the PWM is enabled which pulses the MOSFET gate drives allowing current to flow through the inductor (L), resistor (R), and diode (CR2). The output voltage (V_{out}) and current (I_{out}) are continuously monitored. The output current will never exceed 11 amperes. As the battery recharges the output current will taper off to a small trickle. The applied output voltage will not be constant but will vary as a function of the temperature of the back-up batteries.

The charger output voltage adjusts with the temperature to compensate for the charging characteristics of lead-acid batteries. For low temperatures the applied charging voltage must be increased to fully charge the battery while at high temperatures the voltage needed to fully charge the back-up batteries must be decreased, otherwise the life of the back-up batteries will be reduced.

A thermistor mounted in the battery assembly is monitored by the PCU. The PCU automatically adjusts the charging voltage as the temperature of the back-up battery assemblies change by comparing the voltage that is compensated by the thermistor to a reference voltage and using this to adjust the pulse drive to the MOSFETs.

When the MOSFETs are pulsed (i.e., conducting, then not conducting current) the inductor will smooth the abrupt change in current by forcing diode CR1 to conduct current when the MOSFET is off. The result is a triangular shaped current waveform that is filtered by an output capacitor and then applied to the back-up batteries for recharging.

(8) Status monitor circuit. The PCU monitors the vehicle battery and the back-up battery voltages and generates the vehicle battery status and back-up battery status signals which are connected to power busses A and B. Figure 6-5 shows the status monitor circuit and nuclear event detector interface diagram.

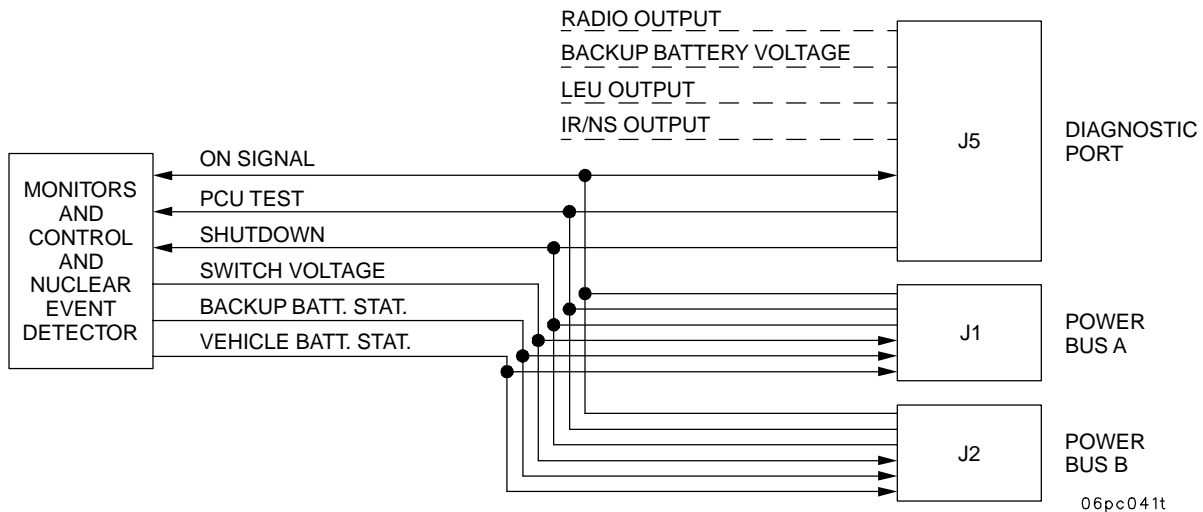


Figure 6-5. Status Monitor Circuit and Nuclear Event Detector Interface Diagram

(9) Nuclear event detector. A Silicon Controlled Rectifier (SCR) that will conduct current when it is exposed to gamma radiation is used as the nuclear event detector. The Nuclear Event Detector (NED) will latch NED to the “on” condition after exposure.

When the SCR conducts current it immediately opens both the input power relay and the back-up power relay, along with interrupting the 28 volts to the external ‘Power On’ switch. NED will continue to disable the PCU outputs after a nuclear event unless the vehicle power circuit breaker on the PCU is manually turned “off” and then back “on” or until vehicle input power is removed from and reapplied to the PCU.

6-10. TROUBLESHOOTING PROCEDURES

All internal troubleshooting for the PCU will be performed by automated testing. Refer to TPS 12958912 for specific PCU troubleshooting procedures.

6-11. POST-MAINTENANCE TEST

Follow the procedures outlined in TPS 12958912 to verify the operation of the PCU.

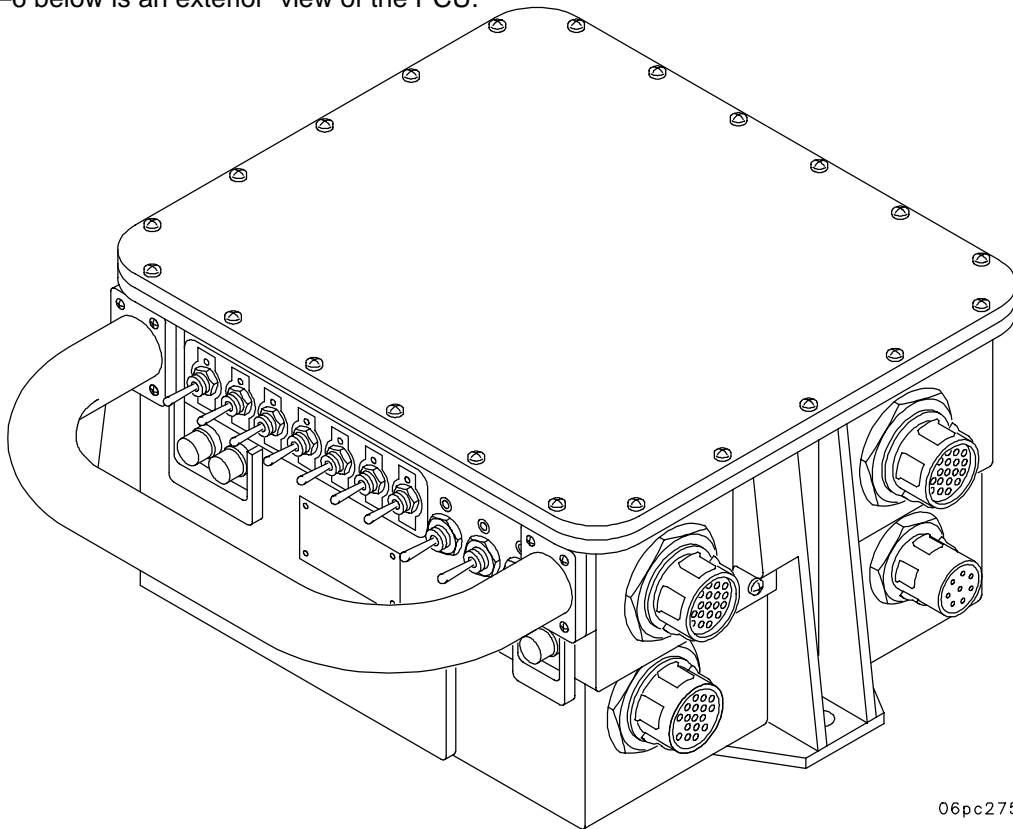
Section V – MAINTENANCE PROCEDURES

	Page		Page
General	6-8	CCA Maintenance Instructions	6-12
Top Cover Assembly Maintenance Instructions	6-9	Handle Maintenance Instructions	6-14

6-12. GENERAL

a. This section contains the step-by-step maintenance procedures for DS level maintenance of the PCU. These procedures are provided to access components for general maintenance. These maintenance tasks are authorized by the Source, Maintenance and Recoverability (SMR) codes indicated in the RPSTL in Appendix C. There are no GS level maintenance tasks for the PCU.

b. Figure 6-6 below is an exterior view of the PCU.



06pc275m

Figure 6-6. Power Conditioning Unit

6-13. TOP COVER ASSEMBLY MAINTENANCE INSTRUCTIONS

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

- Tool Kit, JTK-17LAL, TK-101/G, or TK-105/G (items 34, 35, & 36, Appendix E)
- Torque Wrench, 0-15 in.-lb (item 39, Appendix E)
- Torque wrench, 0-75 in.-lb (item 40, Appendix E)
- Work Station Kit, Electronic (item 38, Appendix E)
- #2 Crosstip Screwdriver Socketwrench (item 22, Appendix E)
- 3/16" Flat Tip Screwdriver Socketwrench (item 23, Appendix E)

Equipment Condition:

Unenergized PCU is on workbench

Personnel Required:

Two MOS 35Y

a. REMOVAL

CAUTION



ESD SENSITIVE

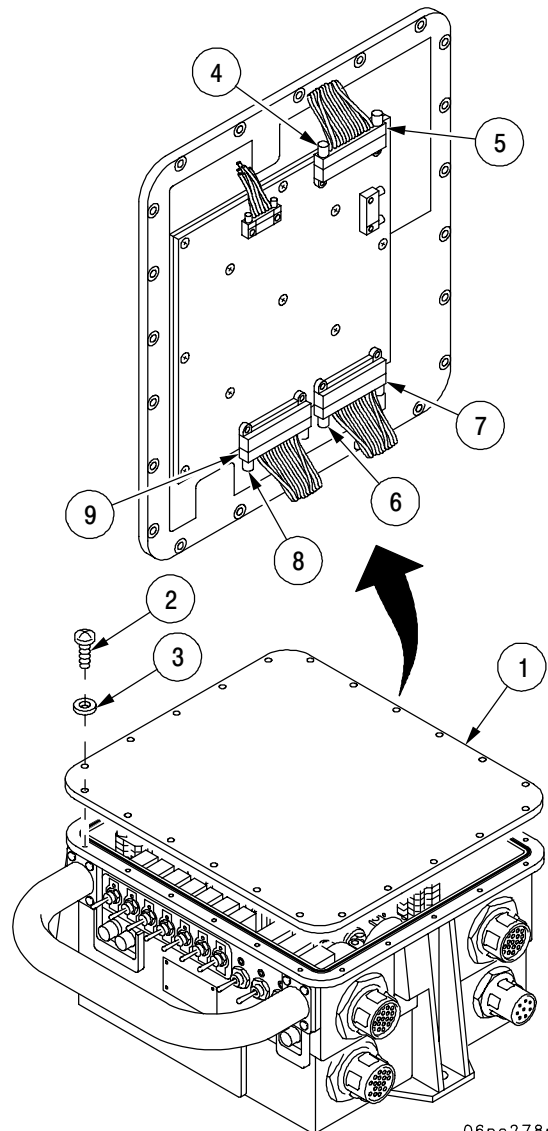
The PCU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Remove top cover assembly (1) by removing 22 screws (2) and 22 flat washers (3).

CAUTION

The top cover assembly is attached by cables to the internal components of the PCU. Exercise caution when removing top cover assembly from PCU housing. Failure to comply may result in damage to equipment.

3. Move top cover assembly (1) off housing to allow access to PCU Main CCA connectors.
4. Unscrew two captive screws (4) from connector P10 (5). Disconnect connector P10.
5. Unscrew two captive screws (6) from connector P11 (7). Disconnect connector P11.
6. Unscrew two captive screws (8) from connector P12 (9). disconnect connector P12.



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6-13. TOP COVER ASSEMBLY MAINTENANCE INSTRUCTIONS CONTINUED

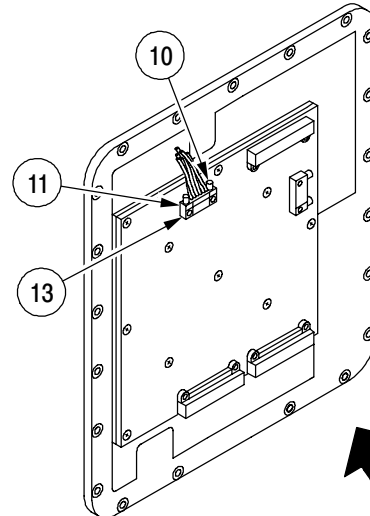
a. REMOVAL CONTINUED

7. Unscrew two captive screws (10) from connector P9 (11). Disconnect connector P9 (11).
8. Remove top cover assembly from PCU housing.

CAUTION

The EMI shielding gasket is vital to this piece of equipment and is easily damaged. Handle with care when removing or replacing it. Failure to comply may result in damage to equipment.

9. Remove EMI shielding gasket (12) from housing. Inspect EMI shielding gasket for cuts, nicks, or signs of stretching. Discard EMI shielding gasket if unserviceable.



b. INSTALLATION

CAUTION



ESD SENSITIVE

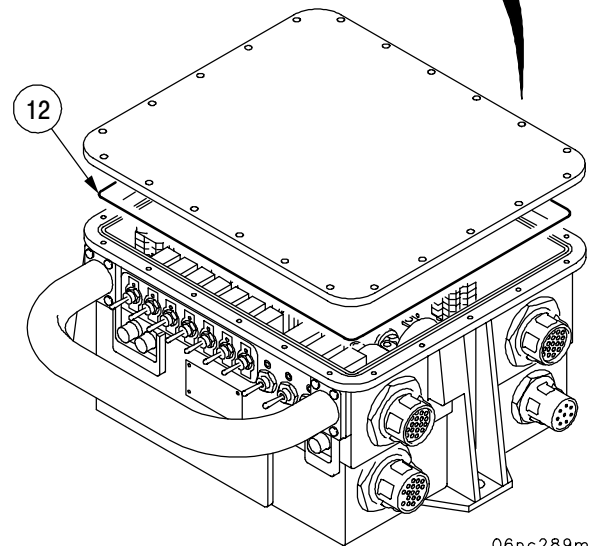
The PCU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground, to ensure ESD protection.

CAUTION

The EMI shielding gasket is vital to this piece of equipment and is easily damaged. Handle with care when removing or replacing it. Failure to comply may result in damage to equipment.

2. Position EMI shielding gasket (12) into groove located on top of housing.
3. Connect connector P9 (11) to PCU Main CCA receptacle J9 (13). Torque two captive screws (10) to $3 \pm .2$ in.-lb ($.34 \pm .02$ N•m).

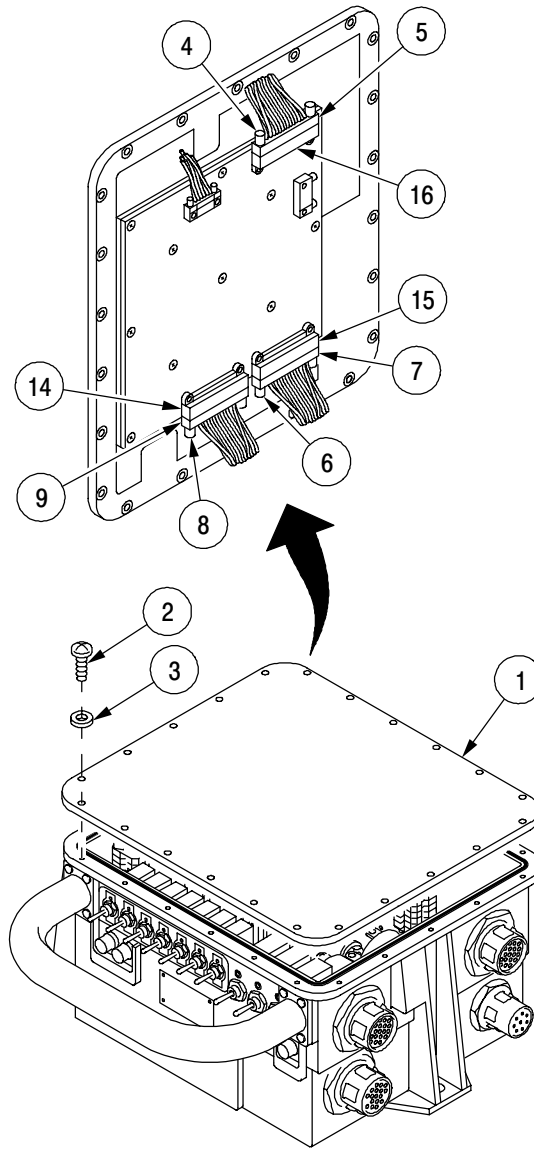


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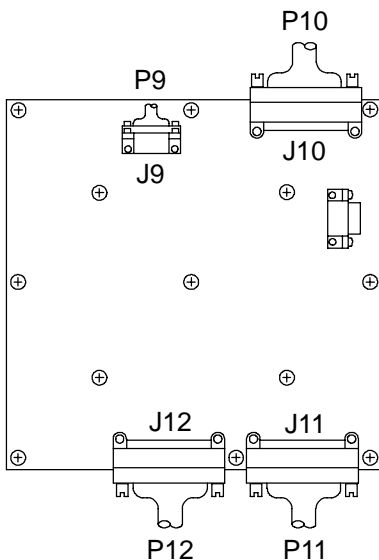
6-13. TOP COVER ASSEMBLY MAINTENANCE INSTRUCTIONS CONTINUED

b. INSTALLATION CONTINUED

4. Connect connector P12 (9) to PCU Main CCA receptacle J12 (14). Torque two captive screws (8) to $3.2 \pm .2$ in.-lb ($.34 \pm .02$ N•m).
5. Connect connector P11 (7) to PCU Main CCA receptacle J11 (15). Torque two captive screws (6) to $3.2 \pm .2$ in.-lb ($.34 \pm .02$ N•m).
6. Connect connector P10 (5) to PCU Main CCA receptacle J10 (16). Torque two captive screws (4) to $3.2 \pm .2$ in.-lb ($.34 \pm .02$ N•m).
7. Place top cover assembly (1) on PCU housing and align holes.
8. Insert 22 screws (2) and 22 flat washers (3). Torque 22 screws to 20 ± 4 in.-lbs ($2.3 \pm .5$ N•m).
9. Purge PCU with nitrogen following procedure outlined in paragraph 1-23. ■



NOTE:
LAYOUT OF CONNECTORS
AND RECEPTACLES
ON PCU MAIN CCA



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6-14. CCA MAINTENANCE INSTRUCTIONS

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

- Tool Kit, JTK-17LAL, TK-101/G, or TK-105/G (items 34, 35, & 36, Appendix E)
- Torque Wrench, 0-15 in.-lb (item 39, Appendix E)
- Work Station Kit, Electronic (item 38, Appendix E)
- #2 Crosstip Screwdriver Socketwrench (item 22, Appendix E)

Materials/Parts:

Sack, Shipping, (ESD) (item 23, Appendix D)

Equipment Condition:

Top cover assembly removed; if not, remove top cover assembly in accordance with procedure in paragraph 6-13.

Personnel Required:

One MOS 35Y

a. REMOVAL

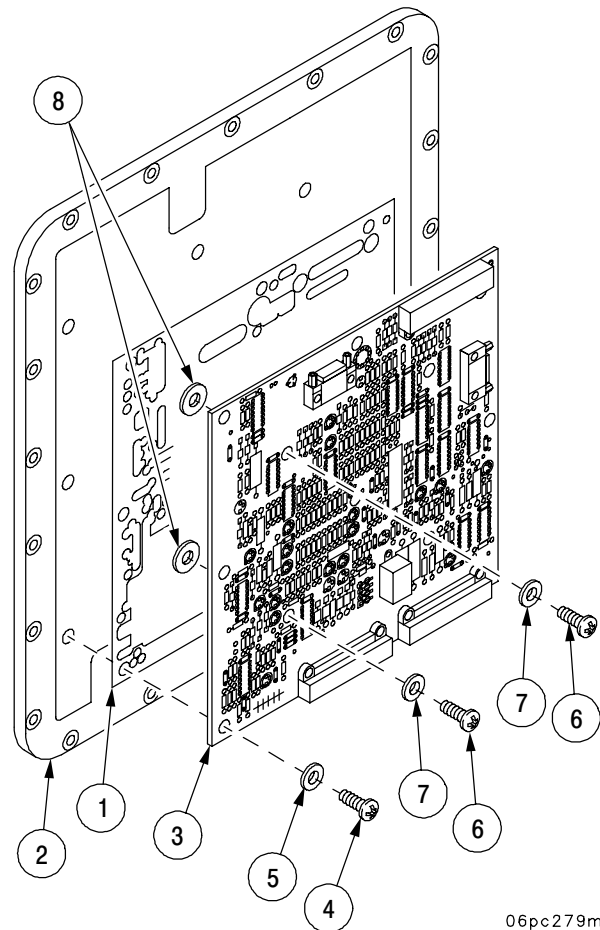
CAUTION



ESD SENSITIVE

The PCU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

1. Attach ESD grounding strap to wrist and ground to ensure ESD protection.
2. Mark spacer (1) and top cover (2) for reassembly purposes.
3. Remove PCU Main CCA (3) by removing 11 screws (4), 11 flat washers (5), two screws (6), two flat washers (7), and two spacers (8).
4. Remove PCU Main CCA (3) and spacer (1). Secure CCA in ESD safe container.



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b. INSTALLATION

CAUTION



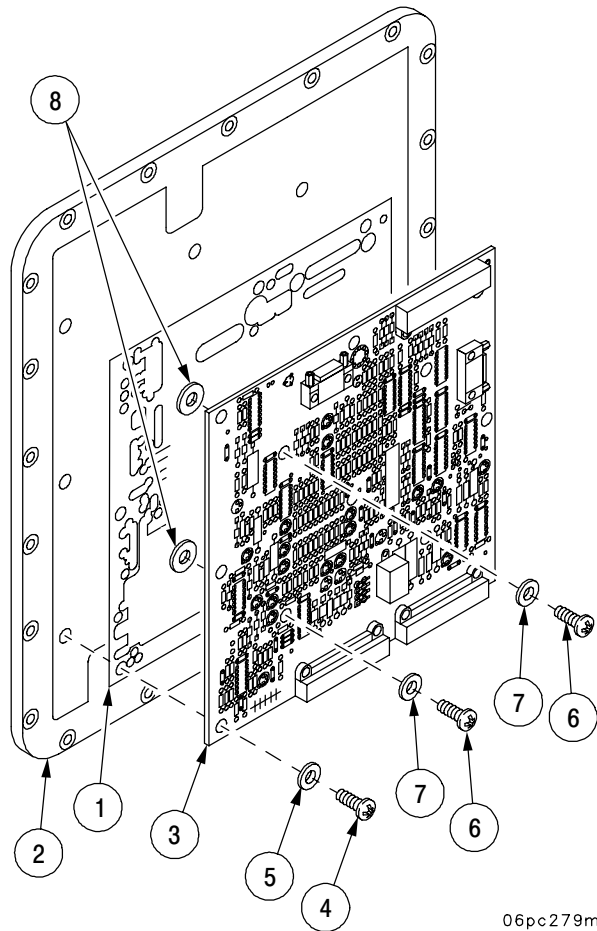
ESD SENSITIVE

The PCU contains ESD sensitive components. Wear a protective ESD wrist strap whenever handling components. Failure to comply may result in damage to equipment.

6-14. CCA MAINTENANCE INSTRUCTIONS CONTINUED

b. INSTALLATION CONTINUED

1. Attach ESD grounding strap to wrist and ground, to ensure ESD protection.
2. Place CCA plate spacer (1) so that plate spacer and top cover (2) marks align. Align screw holes.
3. Position two spacers (8) between CCA plate spacer (1) and PCU Main CCA (3) and secure to top cover with two screws (6) and two flat washers (7). Torque screws to $5.5 \pm .5$ in.-lb (0.62 ± 0.1 N•m).
4. Install 11 screws (4) and 11 flat washers (5) securing PCU Main CCA (3) and CCA plate spacer (1) to top cover (2). Torque screws to $5.5 \pm .5$ in.-lb (0.62 ± 0.1 N•m).
5. Install top cover assembly IAW procedure outlined in paragraph 6-13.



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6-15. HANDLE MAINTENANCE INSTRUCTIONS

DESCRIPTION

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:

Tool Kit, JTK-17LAL, TK-101/G, or TK-105/G
(items 34, 35, & 36, Appendix E)
Torque Wrench, 0-75 in-lb (item 40, Appendix E)
Work Station Kit, Electronic (item 38, Appendix E)
#2 Crosstip Screwdriver Socketwrench
(item 22, Appendix E)

Equipment Condition:

Unenergized PCU is on workbench

Personnel Required:

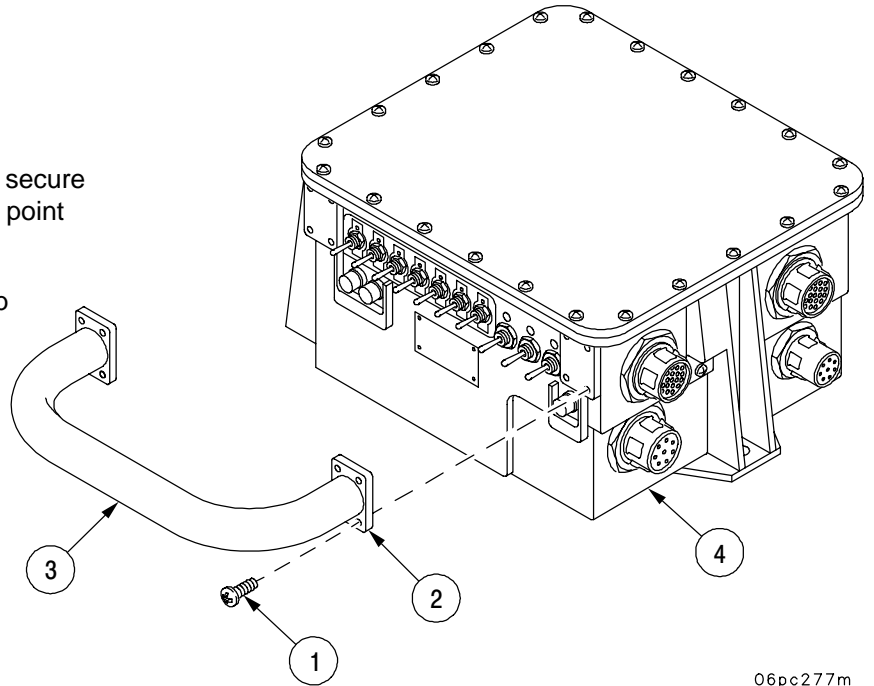
Two MOS 35Y

a. REMOVAL

1. Remove four screws (1) at each mounting point (2) of handle (3).
2. Remove handle (3) from PCU (4).

b. INSTALLATION

1. Install handle (3) to PCU housing and secure with four screws (1) at each mounting point (2).
2. Torque eight screws (2) to 30 ± 0.5 in.-lb (15.8 ± 0.1 N•m).



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APPENDIX A

REFERENCES

A-1. SCOPE

This appendix lists all forms, pamphlets, regulations, field manuals, and technical manuals referenced in this manual.

<u>DOCUMENT</u>	<u>TITLE</u>
AR 750-1	Maintenance of Supplies and Equipment
CTA 8-100	Army Medical Department Expendable/Durable Items
CTA 50-970	Expendable/Durable Items (Except Medical, Class V, Repair Parts, and Heraldic Items)
DA Form 2028	Recommended Changes to Publications and Blank Forms
DA Form 2028-2	Recommended Changes to Equipment Technical Publications
DA Pam 738-750	Maintenance Management Update
FM 21-11	First Aid for Soldiers
MIL-HDBK-263	Electrostatic Discharge Handbook for Protection of Electrical and Electronic Parts, Assemblies, and Equipment
MIL-STD-1686	Electrostatic Discharge Control Program for Protection of Electrical and Electronic Parts, Assemblies, and Equipment
MIL-STD-1472	Human Engineering Design Criteria for Military Systems, Equipment and Facilities
SC 4931-95-J54	Purging Kit, Fire Control: Organizational Direct and General Support Maintenance 4931-00-065-1110
SF 368	Product Quality Deficiency Report
TM 9-1025-214-34&P	Direct Support and General Support Maintenance Manual including Repair Parts and Special Tool List (RPSTL) for Prognostic/Diagnostic Interface Unit (PDIU)
TM 9-2350-314-20-2	Organizational Maintenance Manual for Howitzer, SP, 155 mm
TM 9-254	General Maintenance Procedures for Fire Control Materiel
TM 750-244-2	Procedures for Destruction of Electronic Materiel to Prevent Enemy Use

APPENDIX B

ACRONYMS

ACU	AFCS Computer Unit
ADC	Analog to Digital Converter
AFCS	Automatic Fire Control System
BC	Ballistic Computation
BCS	Battery Computer System
BIT	Built-In Test
BSTF	Base Shop Test Facility
CARC	Chemical Agent Resistant Coating
CCA	Circuit Card Assembly
CEE	Commercial Equivalent Equipment
COEI	Components of End Item
CP	Communication Processing
CPC	Corrosion Prevention and Control
CPU	Central Processing Unit
CTA	Common Table of Allowance
CTS	Contact Test Set
DAC	Digital to Analog Converter
DOD	Department of Defense
DRU	Dynamic Reference Unit
DS	Direct Support
DU	Display Unit
EEPROM	Electrically Erasable Programmable Read Only Memory
EIR	Equipment Improvement Recommendation
EMI	Electromagnetic Interference
EMP	Electromagnetic Pulse
EMR	Electromagnetic Radiation
ESC	Equipment Serviceable Criteria
ESD	Electrostatic Discharge
ESML	Expendable/Durable Supplies and Material List
FET	Field Effect Transistor
GS	General Support
HEX	Hegaxon
I/O	Input/Output

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IFTE	Integrated Family of Test Equipment
JTK-17	Jenson Tool Kit
LCU	Lightweight Computer Unit
LED	Light Emitting Diode
LRU	Line Replaceable Unit
MAC	Maintenance Allocation Chart
MAPS	Modular Azimuth Positioning System
MODEM	Modulate Demodulate
MOS	Military Occupational Specialty
MOSFET	Metal Oxide Semiconductor Field Effect Transistor
MTOE	Modified Table of Organization and Equipment
MUX	Multiplexer
MWO	Modification Work Order
NED	Nuclear Event Detector
PCU	Power Conditioning Unit
PDIU	Prognostic/Diagnostic Interface Unit
PDM	Power Distribution Module
PMCS	Preventive Maintenance Checks and Services
PSM	Power Supply Module
PWM	Pulse Width Modulator
QDR	Quality Deficiency Report
RAM	Random Access Memory
RFI	Radio Frequency Interference
RPSTL	Repair Parts and Special Tools List
RTU	Remote Terminal Unit
SC	Supply Code
SCR	Silicone Controlled Rectifier
SMR	Source, Maintenance and Recoverability
TAMMS	The Army Maintenance Management System
TCIM	Tactical Communications Interface Modem
TMDE	Test, Measurement, and Diagnostic Equipment
TPS	Test Program Set
Vdc	Volts Direct Current
VMS	Vehicle Motion Sensor
WC	Weapons Controller
WPN	Weapons Sub System

APPENDIX C

DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL)

Section I. INTRODUCTION

C-1. SCOPE

This RPSTL lists and authorizes spares and repair parts; special tools; special test; measurement, and diagnostic equipment (TMDE); and other special support equipment required for direct support, general support and depot maintenance of the Paladin AFCS. It authorizes the requisitioning, issue, and disposition of spares, repair parts, and special tools as indicated by the Source, Maintenance, and Recoverability (SMR) codes.

C-2. GENERAL

In addition to Section I, Introduction, this Repair Parts and Special Tools List is divided into the following sections:

a. **Section II. Repair Parts List.** A list of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. The list also includes parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups listed in ascending figure alphanumeric sequence, with parts in each group listed in ascending figure and item number sequence. Bulk materials are listed in item name sequence. Repair parts kits are listed separately in their own functional group within Section II. Repair parts for repairable special tools are listed in this section. Items listed are shown on the associated illustration(s) figure(s).

b. **Section III. Special Tools List.** A list of special tools, special TMDE, and other special support equipment authorized by this RPSTL (as indicated by Basis of Issue (BOI) information in the DESCRIPTION AND USABLE ON CODE (UOC) column) for the performance of maintenance.

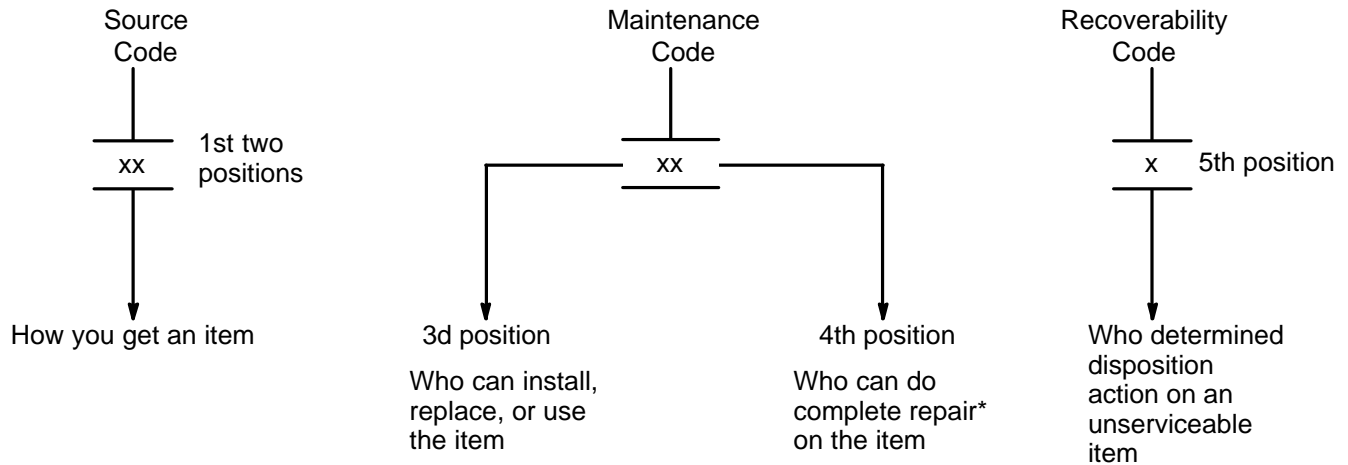
c. **Section IV. Cross-Reference Index.** A list, in National Item Identification Number (NIIN) sequence, of all National Stock Numbered items appearing in the listing, followed by a list in alphanumeric sequence of all part numbers appearing in the listings. National Stock Numbers and part numbers are cross-referenced to each illustration figure and item number appearance.

C-3. EXPLANATION OF COLUMNS (SECTIONS II AND III)

a. **ITEM NO. (Column (1)).** Indicates the number used to identify items called out in the illustration. An * in front of an item number indicates that a change was made for that item. This will only appear when a change is required to the TM. The change number will be shown on the top of the page next to the TM # for this manual, i.e. TM 9-1200-215-34&P C01, indicating that this is the first change to the manual.

b. **SMR CODE (Column (2)).** The Source, Maintenance, and Recoverability (SMR) code is a 5-position code, containing supply/requisitioning information, maintenance level authorization criteria, and disposition instructions, as shown in the following breakout:

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*Complete Repair: Maintenance capacity, capability, and authority to perform all corrective maintenance tasks of the "Repair" function in a use/user environment in order to restore serviceability to a failed item.

(1) Source Code. The source code tells you how to get an item needed for maintenance, repair, or overhaul of an end item/equipment. Source codes are always the first two positions of the SMR code.

Explanation of source codes follows:

Code

Explanation

PA
PB
PC**
PD
PE
PF
PG

Stocked items; use the applicable NSN to request/requisition items with these source codes. They are authorized to the maintenance level indicated by the code entered in the 3d position of the SMR code.

**NOTE: Items coded PC are subject to deterioration.

KD
KF
KB

Items with these codes are not to be requested/requisitioned individually. They are part of a kit which is authorized to the maintenance level indicated in the 3d position of the SMR code. The complete kit must be requisitioned and applied.

AO- (Assembled by Unit Level)
AF- (Assembled by DS Level)
AH- (Assembled by GS Level)
AL- (Assembled by SRA)
AD- (Assembled by Depot)

Items with these codes are not to be requested/requisitioned individually. They must be made from bulk material which is identified by the part number in the DESCRIPTION AND USABLE ON CODE (UOC) column and listed in the Bulk Material group of the repair parts list in this RPSTL. If the item is authorized to you by the 3rd position code of the SMR code, but the source code indicates it is made at a higher level, order the item from the higher level of maintenance.

- MO- (Made at Unit Level)
- MF- (Made at DS Level)
- MH- (Made at GS Level)
- ML- (Made at Specialized Repair Act. (SRA))
- MD- (Made at Depot)

Items with these codes are not to be requested/requisitioned individually. The parts that make up the assembled item must be requisitioned or fabricated and assembled at the level of maintenance indicated by the source code. If the 3rd position code of the SMR code authorizes you to replace the item, but the source code indicates the item is assembled at a higher level, order the item from the higher level of maintenance.

- XA – Do not requisition an “XA”-coded item. Order its next higher assembly. (Also, refer to the NOTE below.)
- XB – If an “XB” item is not available from salvage, order it using the CAGEC and part number given.
- XC – Installation drawing, diagram, instruction sheet, or field service drawing, that is identified by manufacturer’s part number.
- XD – Item is not stocked. Order an “XD”-coded item through normal supply channels using the CAGE and part number given, if no NSN is available.

NOTE

Cannibalization or controlled exchange, when authorized, may be used as a source of supply for items with the above source codes, except for those source coded “XA”.

Code Application/Explanation

- C –Crew or operator maintenance done within organizational or aviation unit maintenance.
- O –Unit or aviation unit category can remove, replace, and use the item.
- F –Intermediate direct support level can remove, replace, and use the item.
- H –Intermediate general support level can remove, replace, and use the item
- L –Specialized repair activity can remove, replace, and use the item.
- D –Depot level can remove, replace, and use the item.

(b) The maintenance code entered in the fourth position tells whether or not the item is to be repaired and identifies the lowest maintenance level with the capability to do complete repair (i.e., perform all authorized repair functions). (NOTE: Some limited repair may be done on the item at a lower level of maintenance, if authorized by the Maintenance Allocation Chart (MAC) and SMR codes.) This position will contain one of the following maintenance codes.

Code Application/Explanation

- O –Unit or (aviation unit) is the lowest level that can do complete repair of the item.
- F –Intermediate direct support is the lowest level that can do complete repair of the item.
- H –Intermediate general support is the lowest level that can do complete repair of the item.
- L –Specialized repair activity is the lowest level that can do complete repair of the item.
- D –Depot is the lowest level that can do complete repair of the item.
- Z –Nonrepairable. No repair is authorized.
- B –No repair is authorized. No parts or special tools are authorized for the maintenance of a “B” coded item. However, the item may be reconditioned by adjusting, lubricating, etc., at the user level coded item.

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(c) Recoverability Code. Recoverability codes are assigned to items to indicate the disposition action of unserviceable items. The recoverability code is entered in the fifth position of the SMR Code as follows:

Code	Definitions
Z	–Nonrepairable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in 3d position of SMR Code.
O	–Repairable item. When uneconomically repairable, condemn and dispose of the item at organizational or aviation unit level.
F	–Repairable item. When uneconomically repairable, condemn and dispose of the item at direct support level.
H	–Repairable item. When uneconomically repairable, condemn and dispose of the item at the general support level.
D	–Repairable item. When beyond lower level repair capability, return to depot. Condemnation and disposal of item not authorized below depot level.
L	–Repairable item. Condemnation and disposal not authorized below specialized repair activity (SRA).
A	–Item requires special handling or condemnation procedures because of specific reasons (e.g., precious metal content, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/directives for specific instructions.

c. **NSN (Column (3))**. The National Stock Number for the item is listed in this column.

d. **CAGE (Column (4))**. The Commercial and Government Entity (CAGE) is a 5–digit numeric code which is used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

e. **Part Number (Column (5))**. Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specification standards, and inspection requirements to identify an item or range of items.

NOTE

When you use a NSN to requisition an item, the item you receive may have a different part number from the part ordered.

f. **Description and Usable On Code (UOC) (Column (6))**. This column includes the following information:

(1) The Federal item name and, when required, a minimum description to identify the item.

(2) The physical security classification of the item is indicated by the parenthetical entry (C) for a classification of Confidential for an amplifier assembly and wave form generator.

(3) Items that are included in kits and sets are listed below the name of the kit or set.

(4) Spare/repair parts that make up an assembled item are listed immediately following the assembled item line entry.

(5) Part numbers for bulk materials are referenced in this column in the line item entry for the item to be manufactured/fabricated.

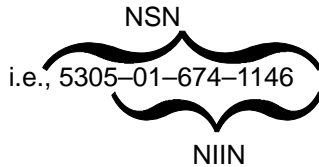
(6) The statement “END OF FIGURE” appears just below the last item description in Column 5 for a given figure in both Section II and Section III.

g. **QTY (Column (7))**. The QTY (quantity per figure) column indicates the quantity of the item used in the breakout shown on the illustration figure. A ‘V’ appearing in this column in lieu of a quantity indicates that the quantity is a variable and may vary from application to application.

C-4. EXPLANATION OF COLUMNS (SECTION IV)

a. NATIONAL STOCK NUMBER (NSN) INDEX.

(1) STOCK NUMBER column. This column lists the NSN by National item identification number (NIIN) sequence. The NIIN consists of the last 9 digits of the NSN.



When using this column to locate an item, ignore the first 4 digits of the NSN. However, the complete NSN should be used when ordering items by stock number.

(2) PART NUMBER column. Indicates the primary number used by the manufacturer (individual, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specification standards, and inspection requirements to identify an item or range of items.

(3) FIG column. This column lists the number of the figure where the item is identified/located. The figures are in numerical order in Section II.

(4) ITEM column. The item number identifies the item associated with the figure listed in the adjacent FIG column. This item is also identified by the NSN listed on the same line.

b. PART NUMBER INDEX. Part numbers in this index are listed by part number in ascending alphanumeric sequence (i.e., a vertical arrangement of letter and number combinations which places the first letter or digit of each following letter or digit in like order.

(1) PART NUMBER column. Indicates the primary number used by the manufacturer (individual, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specification standards, and inspection requirements to identify an item or range of items.

(2) STOCK NUMBER column. This column lists the NSN for the associated part number and manufacturer identified in the PART NUMBER and FSCM columns to the left.

(3) FIG. column. This column lists the number of the figure where the item is identified/located in Section II.

(4) ITEM column. The item number is assigned to the item as it appears in the figure number column.

C-5. SPECIAL INFORMATION

a. USABLE ON CODE. The usable on code appears in the lower left corner of the Description column heading. Usable on codes are shown on "UOC:....." in the Description Column (justified left) on the first line applicable item description/nomenclature. Uncoded items are applicable to all models. Identification of the usable on codes used in the RPSTL are:

<u>Code</u>	<u>Used on</u>	<u>Code</u>	<u>Used on</u>
V31	Power Conditioner Unit	V05	PDIU
V04	Display Unit		
V67	VMS Modem		
CF1	ACU		

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- b. **FABRICATION INSTRUCTIONS.** Bulk materials required to manufacture items are listed in the Bulk Material Functional Group of this RPSTL. The item number for the bulk materials are also referenced in the description column of the line item entry for the item to be manufactured/fabricated. Detailed fabrication instructions for items to be manufactured or fabricated are found in the narrative portion of this manual.
- c. **ASSEMBLY INSTRUCTIONS.** Detailed assembly instructions for items source coded to be assembled from component spare/repair parts are found in the narrative portion of this manual. Items that make up the assembly are listed immediately following the assembly item entry or reference is made to an applicable figure.
- d. **KITS.** Line item entries for repair parts kits appear in a group in Section II and III (see Table of Contents).
- e. **INDEX NUMBERS.** Items which have the word BULK in the figure column will have an index number shown in the number column. This index number is a cross-reference between the National Stock Number/Part Index and the bulk material list in Section II and III.

C-6. HOW TO LOCATE REPAIR PARTS

a. When National Stock Number or Part Number Is Not Known:

- (1) Using the Table of Contents, determine the assembly group or subassembly groups to which the item belongs. This is necessary since figures are prepared for assembly groups and subassembly groups, and listings are divided into the same groups.
- (2) Find the figure covering the assembly group or subassembly group to which the item belongs.
- (3) Identify the item on the figure and note the item number.
- (4) Refer to the Repair Parts List for the figure to find the part number for the item number noted on the figure.
- (5) Refer to the Part Number Index to find the NSN, if assigned.

b. When National Stock Number or Part Number is Known:

- (1) Using the Index of National Stock Numbers and Part Numbers, find the pertinent National Stock Number or Part Number. The NSN index is in National Item Identification Number (NIIN) sequence (see C-4.a(1)). The part numbers in the Part Number index are listed in ascending alphanumeric sequence (see C-4 b). Both indexes cross-reference you to the illustration figure and the item number of the item you are looking for.
- (2) Second. After finding the figure and item number, verify that the item is the one you're looking for, then locate the item number in the repair parts list for the figure.

Section II. REPAIR PARTS LIST

Section II, Repair Parts List begins on subsequent pages.

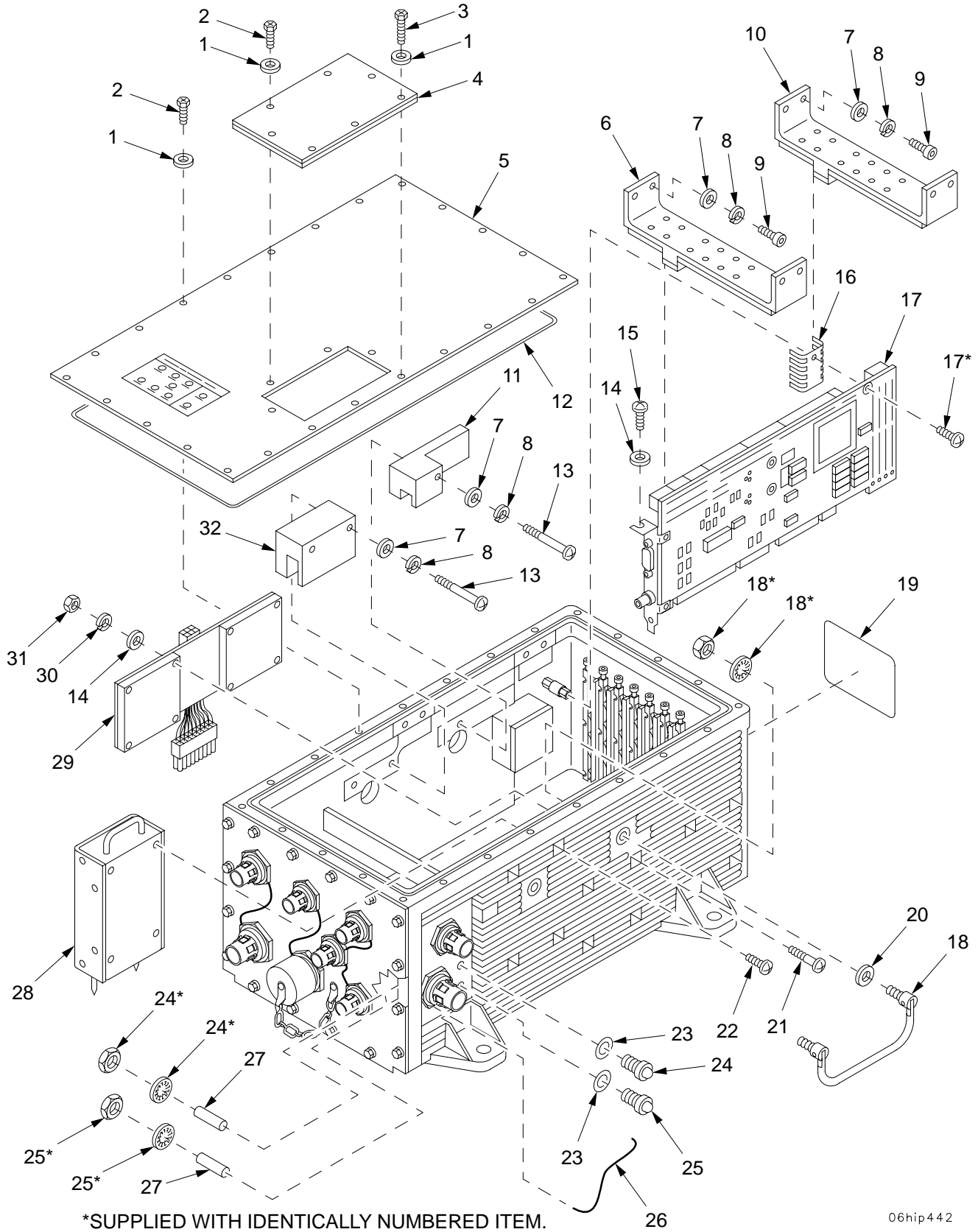
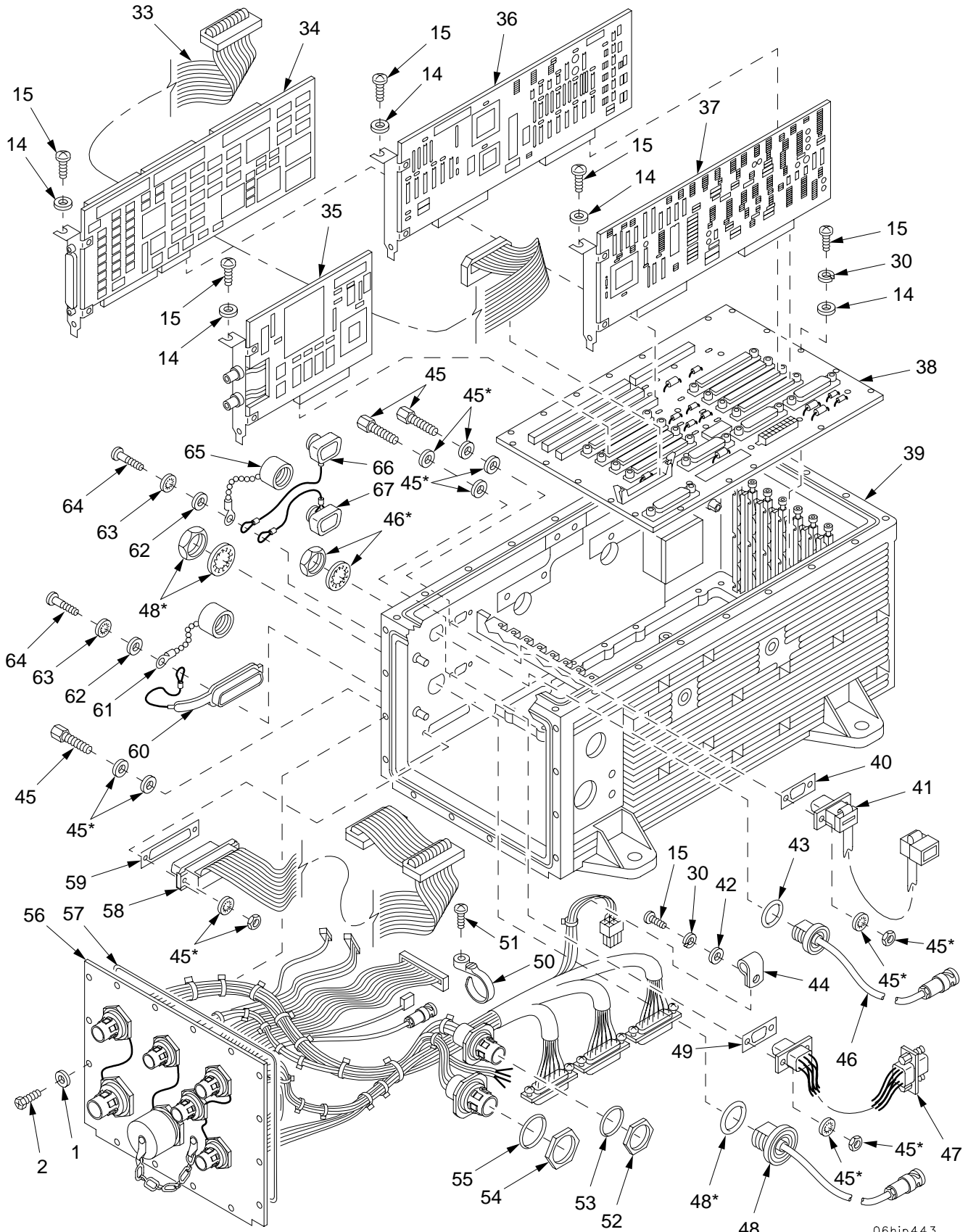


Figure C1. AFCS Computer Unit (12979825) (Sheet 1 of 2)

SECTION II

TM 9-1200-215-34&P



*SUPPLIED WITH IDENTICALLY NUMBERED ITEM.

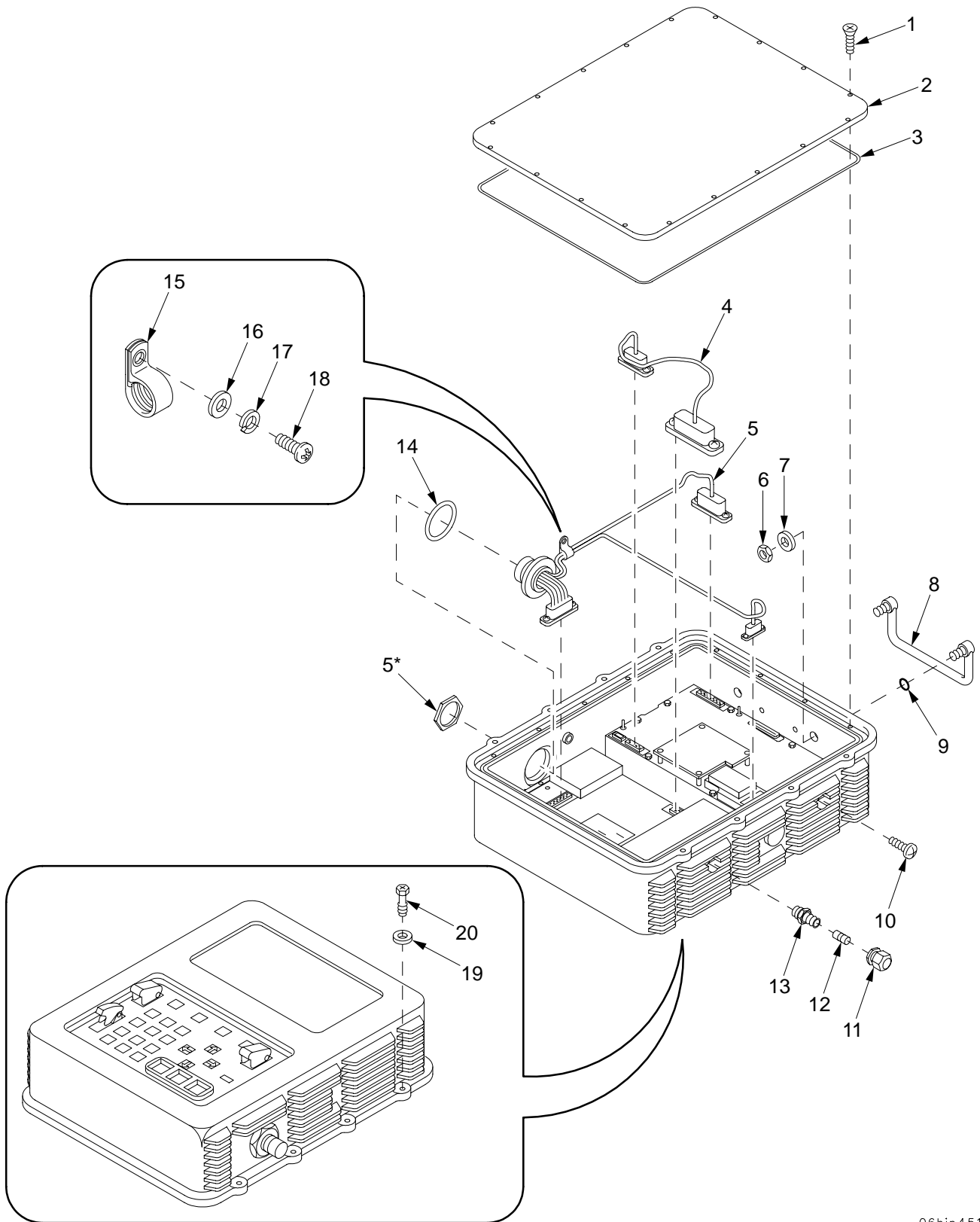
06hip443

Figure C1. AFCS Computer Unit (12979825) (Sheet 2 of 2)

SECTION II		TM9-1200-215-34&P		C01			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	
ITEM NO	SMR	NSN	CAGE	PART NUMBER	DESCRIPTION AND USABLE ON CODE (UOC)	QTY	
					GROUP 0601 AFCS COMPUTER UNIT		
					FIGURE C1 AFCS COMPUTER UNIT, 12979825		
1	PAFZZ	5310-00-781-9483	80205	NAS620C10L	WASHER, FLAT.....	44	
2	PAFZZ	5305-01-165-8608	80205	NAS1802-3-7	SCREW, MACHINE.....	41	
3	PAFZZ	5305-01-120-0274	80205	NAS1802-3-10	SCREW, MACHINE.....	3	
*	4	PAFZZ	5340-01-455-1814	7Z941	6125112	COVER, HARD DRIVE.....	1
*	5	PCFZZ	5340-01-458-4117	7Z941	6125111	PANEL, TOP.....	1
*	6	PBFZA	5340-01-456-0274	7Z941	6125905-2	BRACKET, DOUBLE ANGL.....	1
	7	PAFZZ	5310-00-480-3641	94697	092-60443-174-28 12	WASHER, FLAT.....	11
	8	PAFZZ	5310-00-933-8119	96906	MS35338-137	WASHER, LOCK.....	11
	9	PAFZZ	5305-00-988-7603	96906	MS16995-27	SCREW, CAP, SOCKET HE.....	8
*	10	PAFZZ	5340-01-458-3685	7Z941	6125905-1	BRACKET, DOUBLE ANGL.....	1
*	11	PAOZA	5310-00-615-1556	28527	2616950G001	WASHER, FLAT.....	1
*	12	PCFZZ	5999-01-457-9454	7Z941	6125121-2	SEAL, NONMETALLIC RO.....	1
	13	PAFZZ	5305-00-054-6680	96906	MS51957-53	SCREW, MACHINE.....	3
	14	PAOZZ	5310-00-933-8120	96906	MS35338-138	WASHER, LOCK.....	49
	15	PAFZZ	5305-00-054-5650	96906	MS51957-16	SCREW, MACHINE.....	42
	16	PAFZZ	5999-01-457-3061	07WA6	507302B00000	HEAT SINK, ELECTRICA.....	1
	17	PAFDD	5962-01-440-5934	7Z941	6125700	MICROCIRCUIT, MEMORY.....	1
*	18	PAFZZ	5340-01-458-3096	06540	12113-A-3724	HANDLE, BOW.....	2
	19	PAFZZ	9905-00-579-8501	10001	1487812	PLATE, IDENTIFICATIO.....	1
*	20	PAFZZ	5999-01-455-6283	7Z941	6125923-05	O-RING.....	4
	21	PAFZZ	5305-00-903-8292	96906	MS3212-10	SCREW, MACHINE.....	8
	22	PAFZZ	5305-00-798-0862	96906	MS3212-15	SCREW, MACHINE.....	4
*	23	PAFZZ	5999-01-455-6288	7Z941	6125923-04	O-RING.....	2
	24	PAFZA	5980-01-201-4483	81349	JANTXM19500/5210 2	LIGHT EMITTING DIOD.....	1
	25	PAFZA	5980-01-096-2084	81349	JTXM19500/51902	LIGHT EMITTING DIOD.....	1
	26	MFFZZ		96906	MS20995NC32	WIRE, NONELECTRICAL.....	V
	27	MFFZZ		81349	M23053/5-104-0	INSULATION SLEEVING.....	V
	28	PAFZZ	7025-01-440-3472	7Z941	6125130	DISK DRIVE UNIT.....	1
	29	PAFZD	6130-01-440-3469	7Z941	6125900	POWER SUPPLY ASSEMB.....	1
	30	PAFZZ	5310-00-933-8118	96906	MS35338-135	WASHER, LOCK.....	45
	31	PAFZZ	5310-00-934-9748	96906	MS35649-244	NUT, PLAIN, HEXAGON.....	8
*	32	PAFZZ	5340-01-454-9399	7Z941	6125128	BRACKET, DOUBLE ANGL.....	1
	33	PAFZZ	6150-01-440-3467	7Z941	6125707	CABLE ASSEMBLY, SPEC.....	1
	34	PAFDD	5998-01-422-2044	0VUH7	50785	ELECTRONIC COMPONEN.....	1
	35	PAFDD	5998-01-440-5943	7Z941	6125500	CIRCUIT CARD ASSEMB.....	1
	36	PAFZZ	5998-01-440-5944	7Z941	6125300	CIRCUIT CARD ASSEMB.....	1
	37	PAFDD	5998-01-440-5941	7Z941	6125400	CIRCUIT CARD ASSEMB.....	1
	38	PAFZZ	5998-01-440-5942	7Z941	6125200	BACKPLANE ASSEMBLY.....	1
	39	XAFZZ		7Z941	6125110	CHASSIS, MACHINED.....	1
*	40	PAFZZ	5999-01-457-5253	7Z941	6125923-03	GASKET.....	1
	41	PAFZZ	6150-01-440-3463	7Z941	6125706	CABLE ASSEMBLY, SPEC.....	1
	42	PAFZZ	5310-00-595-6211	96906	MS15795-803	WASHER, FLAT.....	1
*	43	PAFZZ	5999-01-455-6291	7Z941	6125923-06	O-RING.....	1
*	44	PAFZZ	5340-00-988-3210	96906	MS25281R4	CLAMP, LOOP.....	1
*	45	PAFZZ	5935-00-497-5738	71468	D20418-50	JACKSCREW, ELECTRICA.....	6
	46	PAFZZ	6150-01-440-3462	7Z941	6125705	CABLE ASSEMBLY, SPEC.....	1
	47	PAFZZ	6150-01-440-3464	7Z941	6125704	CABLE ASSEMBLY, SPEC.....	1
*	48	PAOZZ	5305-00-988-7846	96906	MS16995-83	SCREW, CAP, SOCKET HE.....	1
*	49	PAFZZ	5999-01-455-6294	7Z941	6125923-02	GASKET.....	1
	50	PAFZZ	5975-00-906-2414	56501	TY35M	STRAP, TIEDOWN, ELECT.....	1
	51	PAFZZ	5305-00-054-6670	96906	MS51957-45	SCREW, MACHINE.....	1
	52	PAFZZ		81349	D38999/28-9	NUT, JAM.....	1
	53	PCFZZ	5331-00-052-5267	96906	MS9068-030	O-RING.....	1
	54	PAFZZ		81349	D38999/28-11	NUT, JAM.....	1
*	55	PAFZZ	5330-00-460-8310	81343	AS3582-032	O-RING.....	1
	56	PAFDD	1290-01-441-3111	7Z941	6125600	PANEL, INDICATOR.....	1
	57	PCFZZ	5999-01-M26-5691	7Z941	6125121-1	SEAL, NONMETALLIC RO.....	1
	58	PAFZZ	6150-01-440-3466	7Z941	6125701	CABLE ASSEMBLY, POWE.....	1
*	59	PAFZZ	5999-01-455-6297	7Z941	6125923-01	GASKET.....	1
	60	PAFZZ	5340-01-456-2282	7Z941	DP-BAR-SO-WC-3	CAP, PROTECTIVE, DUST.....	1
*	61	PAFZZ	5985-01-459-2402	14949	TNG1-4-120	DUMMY LOAD, ELECTRIC.....	1

SECTION II		TM9-1200-215-34&P			C01	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR	NSN	CAGE	PART	DESCRIPTION AND	QTY
NO				NUMBER	USABLE ON CODE (UOC)	
62	PAFZZ	5310-00-722-5998	96906	MS15795-805	WASHER, FLAT.....	2
* 63	PAFZZ	5310-01-460-1538	8R709	25091-436	WASHER, LOCK.....	2
64	PAFZZ	5305-00-054-6654	96906	MS51957-30	SCREW, MACHINE.....	2
* 65	PAFZZ	5935-01-M26-7500	14949	RFI25-2	CAP, CONNECTOR.....	1
* 66	PAFZZ	5340-01-457-7584	18545	BP-DEM9P-WC-L4	CAP, PROTECTIVE, DUST.....	1
* 67	PAFZZ	5340-01-458-6820	18545	BP-DEM9S-WC-L4	CAP, PROTECTIVE, DUST.....	1

END OF FIGURE



*SUPPLIED WITH IDENTICALLY NUMBERED ITEM.

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Figure C2. Display Unit (12561802) (Sheet 1 of 2)

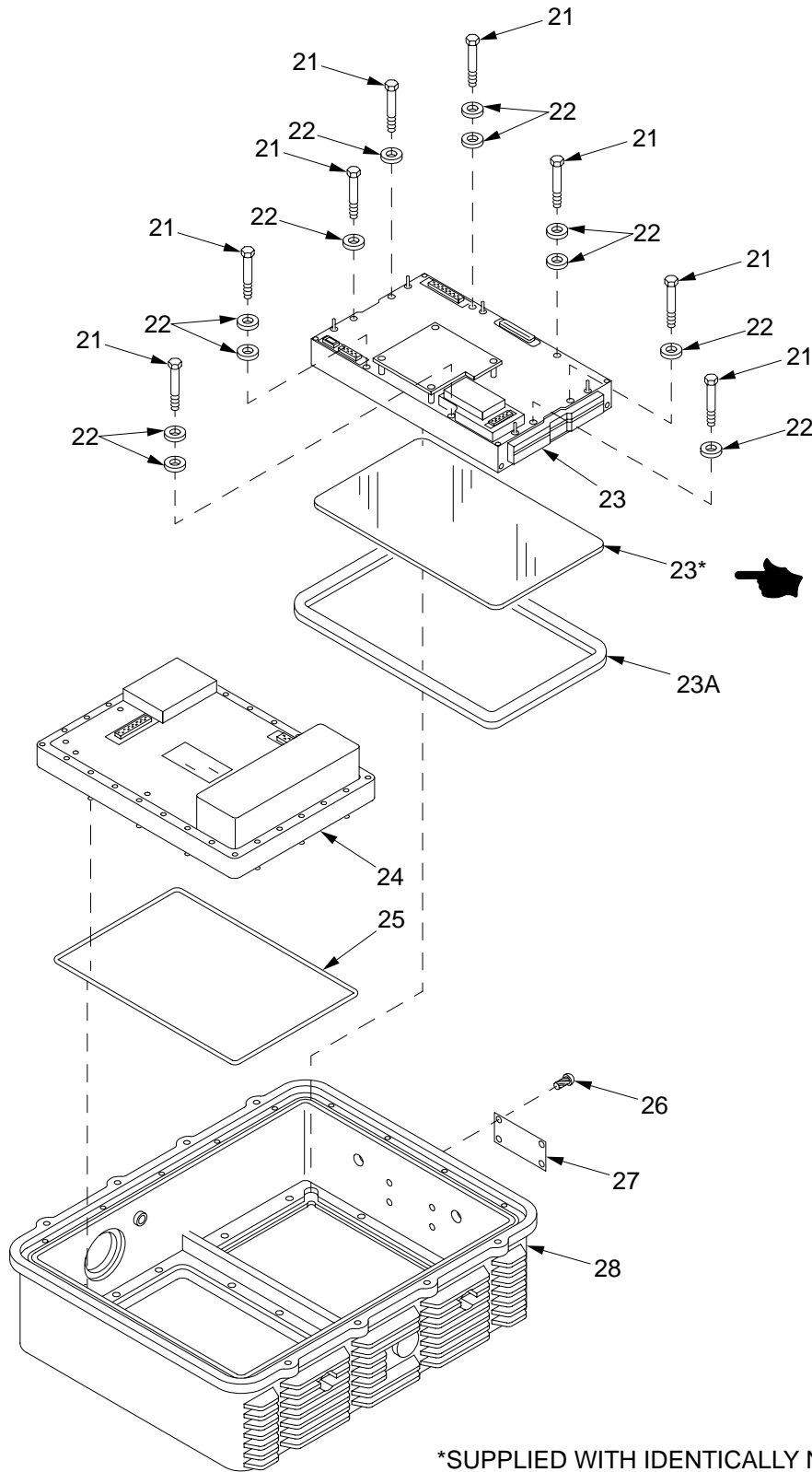
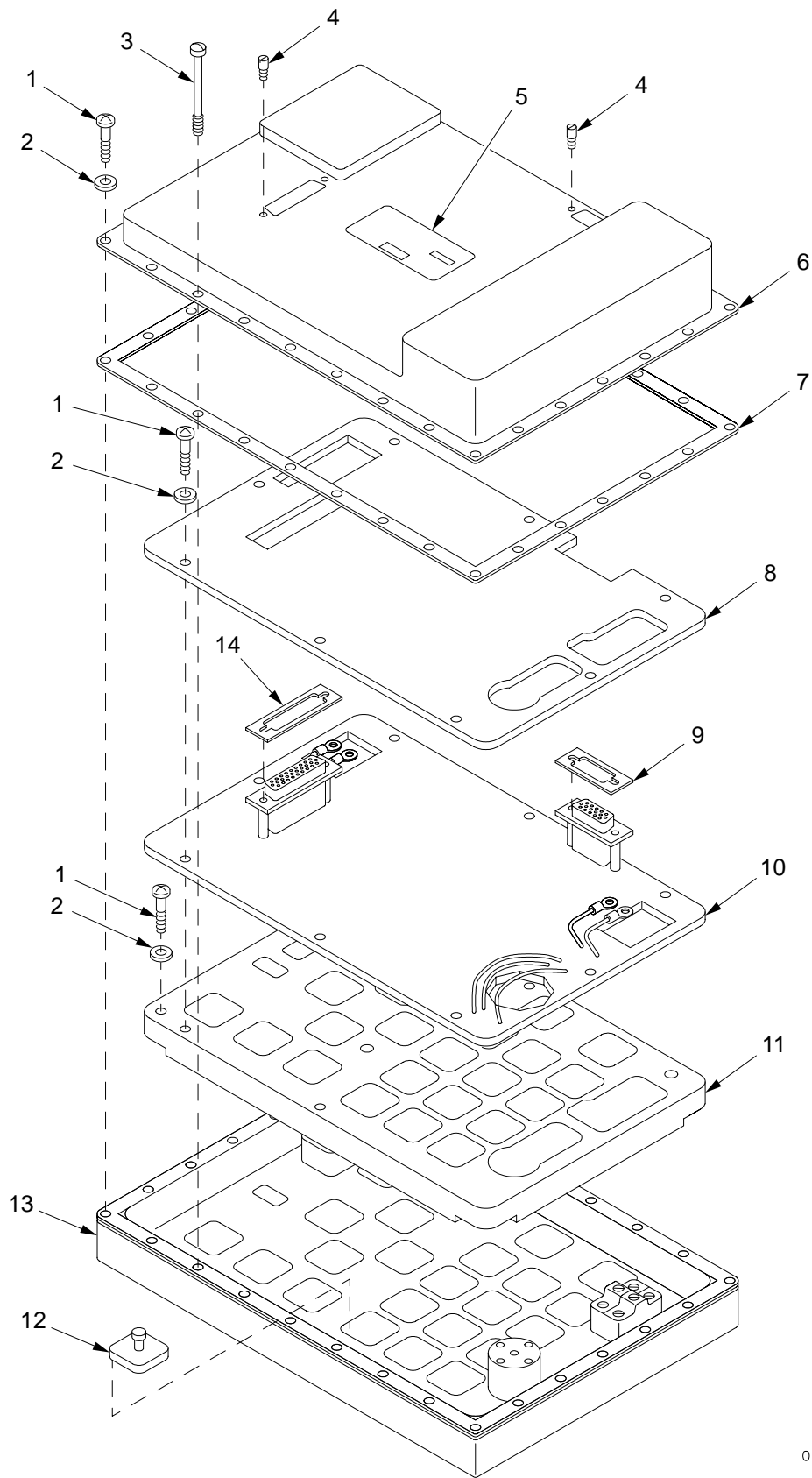


Figure C2. Display Unit (12561802) (Sheet 2 of 2)

SECTION II		TM9-1200-215-34&P		C01		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM NO	SMR	NSN	CAGE	PART NUMBER	DESCRIPTION AND USABLE ON CODE (UOC)	QTY
					GROUP 0602 DISPLAY UNIT	
					FIGURE C2 DISPLAY UNIT, 12561802	
1	PAFZZ	5305-00-066-7328	96906	MS24693-C27	SCREW,MACHINE.....	18
2	XAFZZ		19200	12561864	COVER,DISPLAY UNIT.....	1
3	PAFZA	5999-01-365-8059	19200	12561807-5	GASKET,O-RING ELECT.....	1
4	PAFZZ	6150-01-374-1885	19200	12561707	CABLE ASSEMBLY,.....	1
5	PAFZZ	6150-01-374-1903	19200	12561701	WIRING HARNESS,BRAN.....	1
6	PAFZZ	5310-00-956-4549	96906	MS21083C6	NUT,SELF-LOCKING.....	2
7	PAFZZ	5310-01-391-2795	80205	NAS1149C0663R	WASHER,FLAT.....	2
8	PAFZZ	5340-01-362-4591	19200	12561821-1	HANDLE.....	1
9	PCFZZ	5330-01-046-3300	81349	M83461/1-012	O-RING.....	2
10	PAOZZ	5305-01-139-2034	96906	MS3212-21L	SCREW,SELF-LOCKING.....	1
11	PAOZZ	1650-00-222-4525	96906	MS20813-1	CAP,VALVE.....	1
12	PAOZZ	2640-00-050-1229	81348	TYV/CL2/TR C1	VALVE CORE.....	1
13	PAFZZ	4820-00-114-1096	96906	MS51607-1	VALVE STEM,PURGING.....	1
14	PAFZZ	5999-01-364-1172	19200	12561807-9	GASKET,O-RING.....	1
15	PAFZZ	5340-00-989-9224	96906	MS25281-R6	CLAMP,LOOP.....	1
16	PAFZZ	5310-00-069-5291	80205	NAS620C8	WASHER,FLAT.....	1
17	PAFZZ	5310-00-933-8119	96906	MS35338-137	WASHER,LOCK.....	1
18	PAFZZ	5305-00-054-6669	96906	MS51957-44	SCREW,MACHINE.....	1
19	PAFZZ	5310-00-531-9515	88044	AN960C416	WASHER,FLAT.....	8
20	PAFZZ	5305-01-366-1114	19200	12562085	SCREW,CAPTIVE HEAD.....	8
21	PAFZZ	5325-01-M26-2404	19200	12973717	STUD,LOCK PIN FASTE.....	8
22	PAFZZ	5310-01-338-4121	80205	NAS1149CN432R	WASHER,FLAT.....	12
23	PAFDA	5980-01-380-7624	19200	12561708	ELECTROLUMINESCENT.....	1
* 23A	PAFZZ	5999-01-M26-2219	19200	12959208	SHIELDING GASKET EL.....	1
24	PAFDD	1290-01-361-1350	19200	12561697	SWITCH PANEL FOR COMPLETE COMPONENT LISTING SEE GROUP 060201.....	1
25	PAFZA	5999-01-365-9947	19200	12561807-13	GASKET,O-RING.....	1
26	PAFZZ	5305-00-253-5614	96906	MS21318-20	SCREW,DRIVE.....	4
27	PAFZZ	9905-01-373-0862	19200	12562063	PLATE,IDENTIFICATIO.....	1
28	PBDZZ	5999-01-366-1557	19200	12561670	HOUSING,DISPLAY.....	1

END OF FIGURE

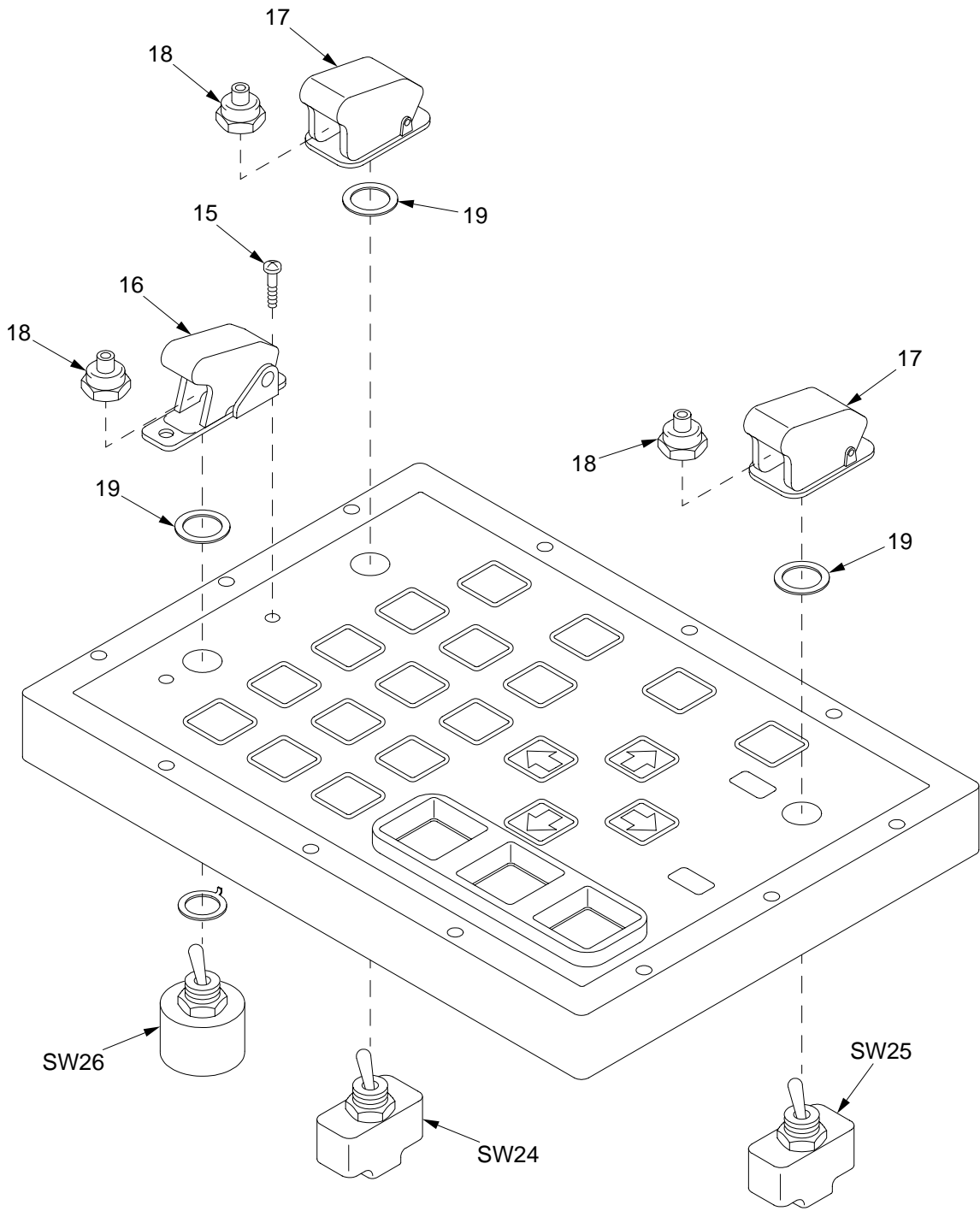


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Figure C3. Panel, Control, Electrical (12561697) (Sheet 1 of 3)

SECTION II

TM 9-1200-215-34&P



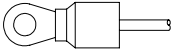

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REF DES	ITEM NO.	REF DES	ITEM NO.
SW24, SW25	20	SW26	21

Figure C3. Panel, Control, Electrical (12561697) (Sheet 2 of 3)

SECTION II

TM 9-1200-215-34&P

Wire	From:			To:		
						
Item No.	Component Ref. Des.	Terminal No.	Terminator Item No.	Terminator Item No.	Terminal No.	Component Ref. Des.
22	SW24	3	23			E3
22	SW24	2	23			E4
22	SW25	3	23			E10
22	SW25	2	23			E11



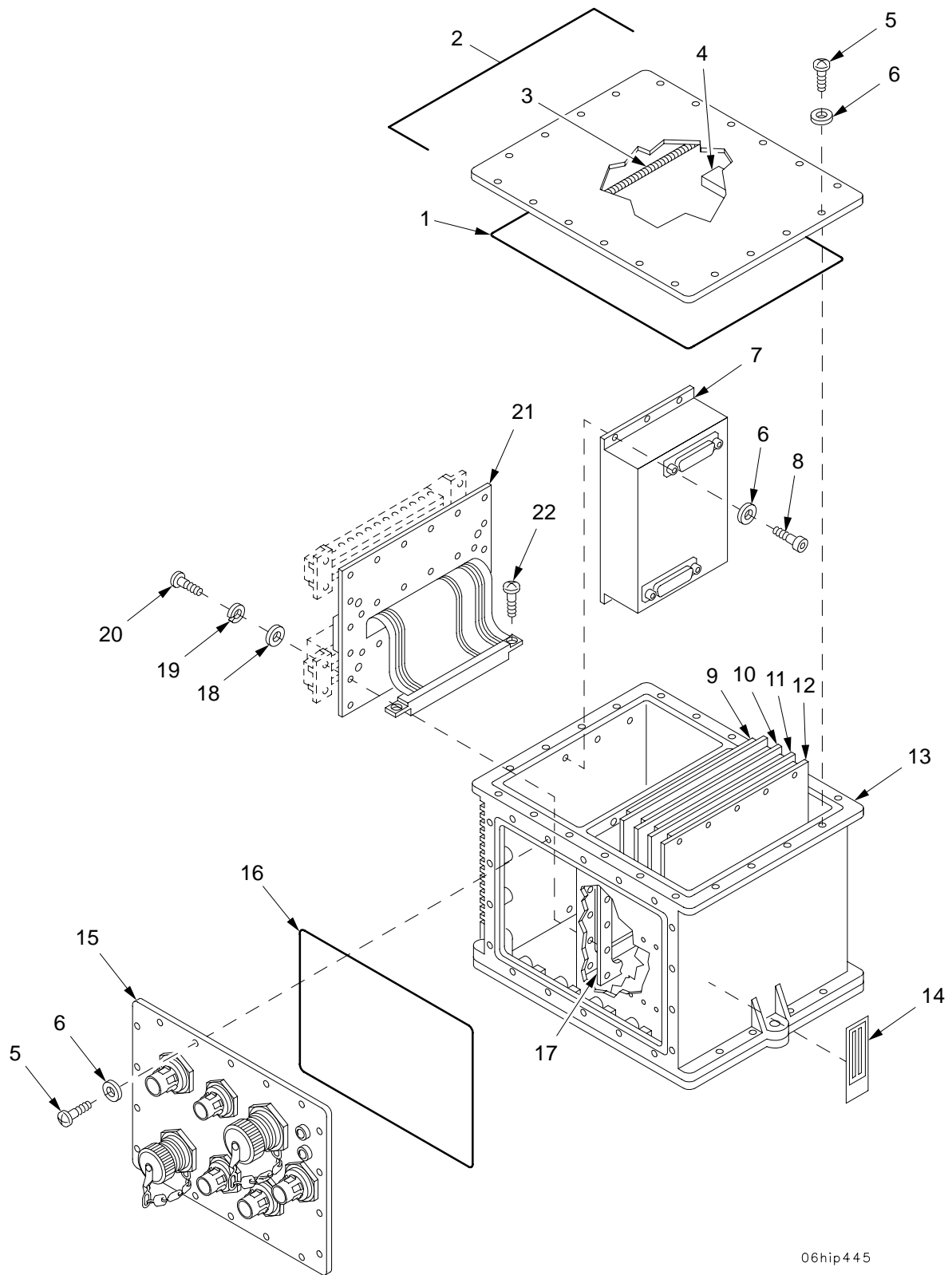
Wire	From:			To:		
						
Item No.	Component Ref. Des.	Terminal No.	Terminator Item No.	Terminator Item No.	Terminal No.	Component Ref. Des.
22	SW26	2				E5
22	SW26	1				E6
22	SW26	5				E7
22	SW26	4				E8
22	SW26	3				E9

Figure C3. Panel, Control, Electrical (12561697) (Sheet 3 of 3)

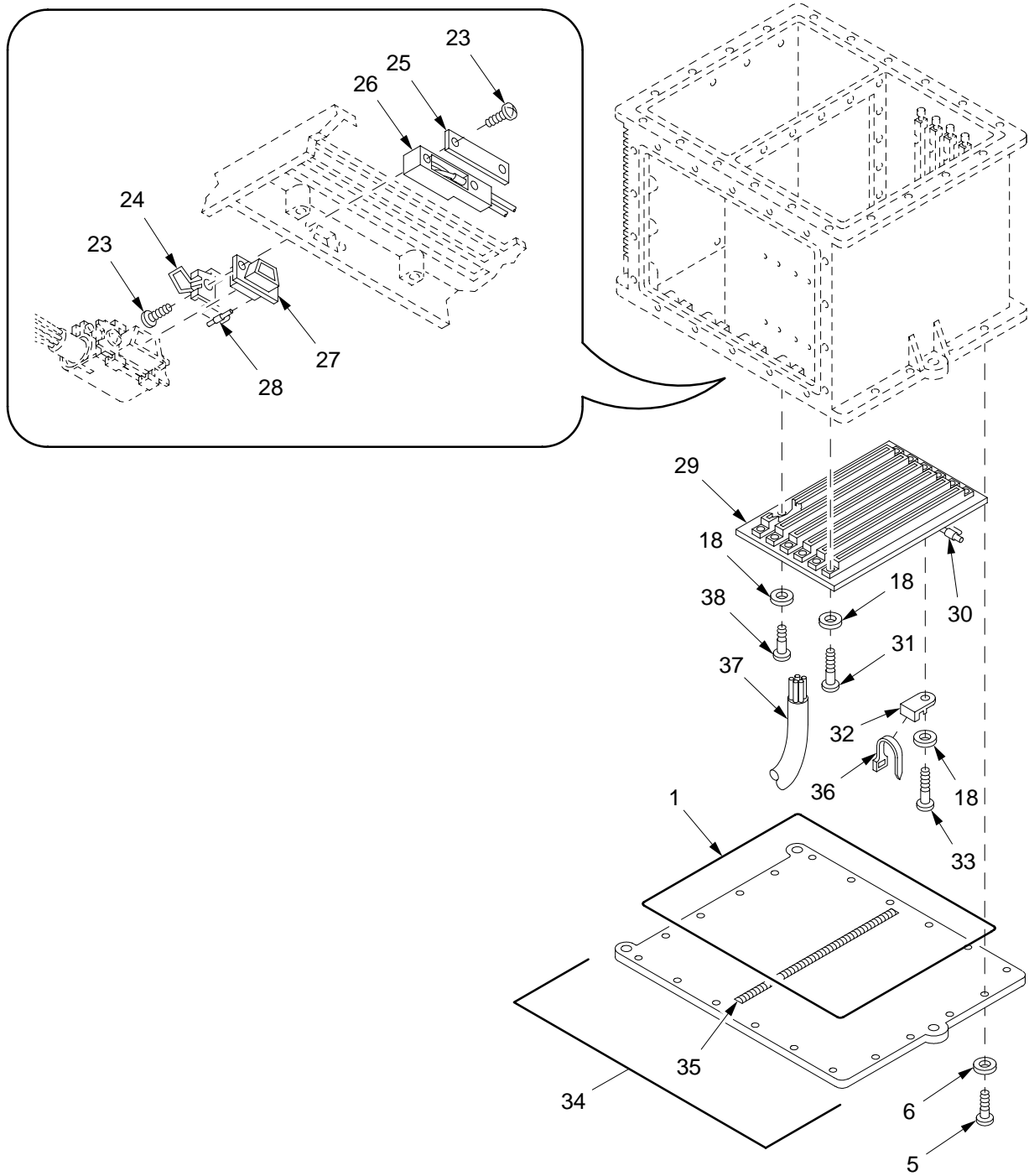
SECTION II		TM9-1200-215-34&P		C01		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM NO	SMR CODE	NSN	PART CAGEC NUMBER		DESCRIPTION AND USABLE ON CODE (UOC)	QTY
					GROUP 060201 PANEL, CONTROL, ELECTRICAL, 12561697	
					FIGURE C3 PANEL, CONTROL, ELECTRICAL, 12561697	
					*	
1	PADZZ	5305-00-054-5650	96906	MS51957-16	SCREW,MACHINE.....	30
2	PADZZ	5310-00-057-0573	80205	NAS620C4	WASHER,FLAT.....	30
3	PAFZZ	5305-01-366-1115	19200	12906818	SCREW,EXTERNAL RELI.....	12
4	PADZZ	5935-01-052-9436	81349	M24308/26-1	JACKSCREW,ELECTRICA.....	4
5	XADZZ		19200	12906834	PLATE,IDENTIFICATIO.....	1
6	XADZZ		19200	12906807	COVER,EMI.....	1
7	PADZZ		19200	12959178	SHIELDING GASKET,EL.....	1
8	XADZZ		19200	12906806	BACKPLATE.....	1
9	PADZZ	5999-01-356-2477	19200	12906817-1	SHIELDING GASKET,EL.....	1
10	PADZZ	5998-01-365-8066	19200	12906810	CIRCUIT CARD ASSEMB.....	1
11	XADZZ		19200	12906802	LIGHTPLATE ASSEMBLY.....	1
12	PBDZZ	5930-01-365-6547	19200	12906825	PUSH BUTTON ASSEMBL.....	23
13	PADZZ	1290-01-374-0196	19200	12906791	KEYBOARD,DATA ENTRY.....	1
14	PADZZ	5999-01-323-2330	19200	12906817-2	SHIELDING GASKET,EL.....	1
15	PAFZZ	5305-00-054-5635	96906	MS51957-1	SCREW,MACHINE.....	2
16	PAFZZ	5930-01-175-5992	96906	MS25224-1	GUARD,SWITCH.....	1
17	MDDZZ		19200	12906805	GUARD,SWITCH MAKE FROM GUARD,SWITCH NSN 5930-01-175-5992.....	2
18	PAFZZ	5930-00-539-7013	19200	12959177	BOOT,DUST AND MOIST.....	3
19	PAFZZ	5310-01-439-4186	19200	12959180	WASHER,SEAL.....	3
20	PADZZ	5930-00-655-4247	96906	MS24524-22	SWITCH,TOGGLE.....	2
21	PADZZ	5930-01-016-0510	81349	M5594/1-2	SWITCH,TOGGLE.....	1
*	22	MDDZZ	81349	M22759/34-20-9	WIRE,ELECTRICAL MAKE FROM WIRE, P/N M22759/34-20-9.....	V
23	PADZZ	5940-00-813-0698	96906	MS25036-101	TERMINAL,LUG.....	4

END OF FIGURE



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Figure C4. Prognostic/Diagnostic Interface Unit (12554020), Cover, Access (12554022), Cover, Access (12562726) (Sheet 1 of 2)



06hip450

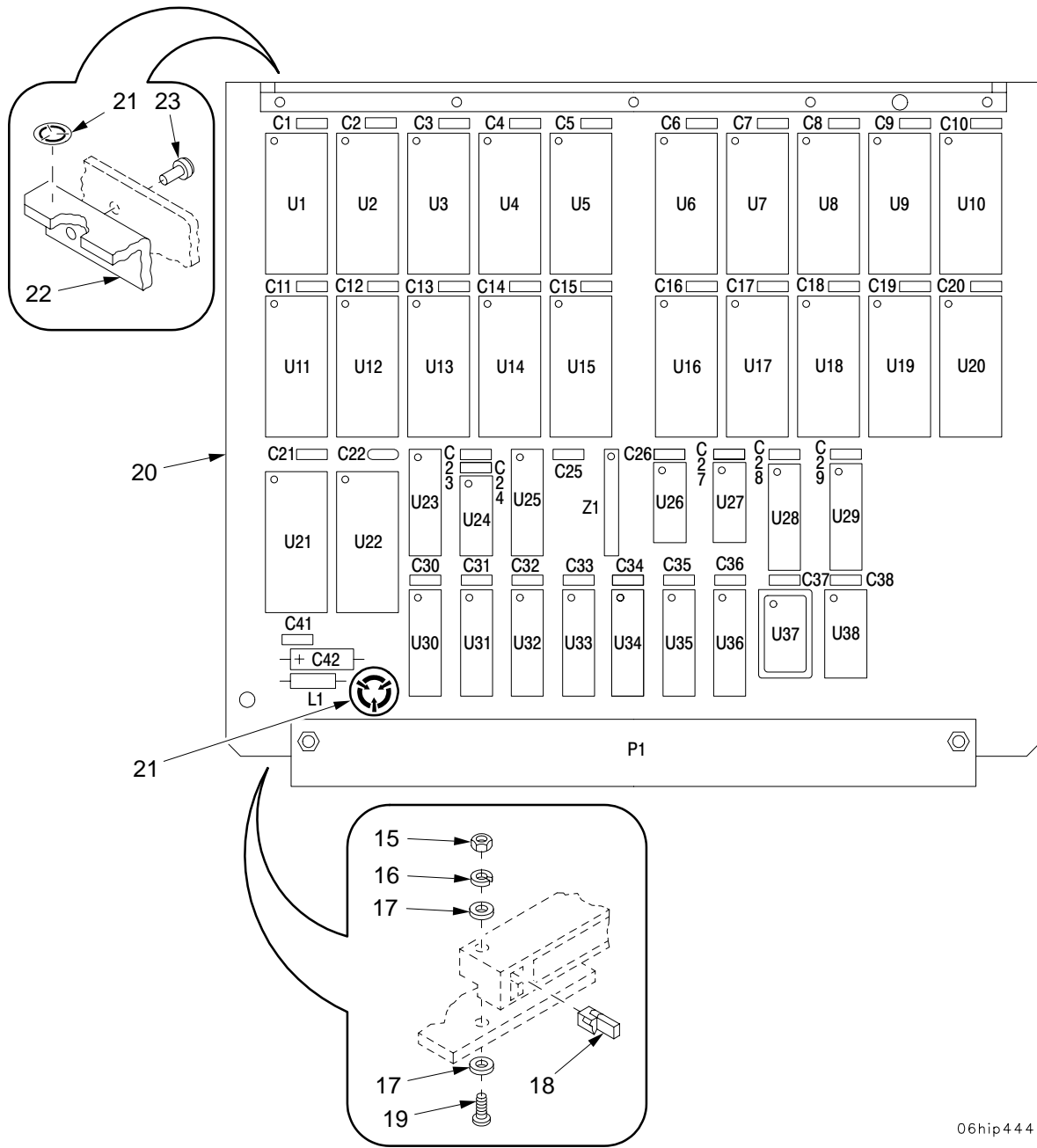
Figure C4. Prognostic/Diagnostic Interface Unit (12554020), Cover, Access (12554022), Cover, Access (12562726) (Sheet 2 of 2)

SECTION II		TM9-1200-215-34&P					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	
ITEM	SMR	NSN	CAGE	PART	DESCRIPTION AND		QTY
NO				NUMBER	USABLE ON CODE (UOC)		
					GROUP 0603 PROGNOSTIC/DIAGNOSTIC		
					INTERFACE UNIT		
					FIGURE C4 PROGNOSTIC/DIAGNOSTIC		
					INTERFACE UNIT 12554020		
					COVER ACCESS, 12554022		
					COVER ACCESS, 12562726		
1	PCFZZ	5330-01-363-2972	19200	12562734-2	SEAL, NONMETALLIC.....		2
2	PAFFF	5340-01-363-2906	19200	12554022	COVER, ACCESS.....		1
3	PAFZZ	5940-01-365-4284	19200	12562760	.CONTACT STRIP, RADIO.....		1
4	MFFZZ		81349	M6855/2-10R108	.SEAL, NONMETALLIC MAKE FROM NSN		1
					5330-01-366-3602.....		
5	PAFZZ	5305-00-059-3659	96906	MS51958-63	SCREW, MACHINE.....		58
6	PAFZZ	5310-00-615-1556	28527	2616950G001	WASHER, FLAT.....		64
7	PAFZZ	6130-01-384-2700	19200	12554010	POWER SUPPLY.....		1
8	PAFZZ	5305-00-959-1909	96906	MS16996-11	SCREW, CAP SOCKET.....		6
9	PAFDD	5998-01-294-2104	19200	12554029	CIRCUIT CARD ASSEMB (SEE GROUP		1
					060303 FOR BREAKDOWN).....		
10	PAFDZ	5998-01-294-2108	19200	12554025	CIRCUIT CARD.....		1
11	PAFDD	5998-01-294-2105	19200	12554041	CIRCUIT CARD ASSEMB (SEE GROUP		1
					060302 FOR BREAKDOWN).....		
12	PAFDD	5998-01-367-9685	19200	12562730	CIRCUIT CARD ASSEMB (SEE GROUP		1
					060301 FOR BREAKDOWN).....		
13	XADDD		19200	12562738	HOUSING, ELECTRONIC (SEE GROUP		1
					060307 FOR BREAKDOWN).....		
14	PAFZZ	9905-01-366-7621	19200	12554023	PLATE,.....		1
15	PAFDD	5935-01-372-6903	19200	12562728	CONNECTOR ASSEMBLY (SEE GROUP		1
					060304 FOR BREAKDOWN).....		
16	PCFZZ	5330-01-363-2971	19200	12562734-1	SEAL, NONMETALLIC.....		1
17	PBDZZ	5340-01-363-1594	19200	12562812	COVER, ACCESS.....		1
18	PADZZ	5310-00-595-6211	96906	MS15795-803	WASHER, FLAT.....		32
19	PADZZ	5310-00-933-8118	96906	MS35338-135	WASHER, LOCK.....		20
20	PADZZ	5305-00-068-5414	96906	MS16995-11	SCREW, CAP, SOCKET HE.....		20
21	PADZZ	5998-01-369-2814	19200	12562755	CIRCUIT CARD ASSEMB LY, EMI FILTER		1
					(A1).....		
22	PADZZ	5305-00-054-5652	96906	MS51957-18	SCREW, MACHINE.....		2
23	PAFZZ	5305-01-204-3017	80205	NAS1635-04LR5	SCREW, SELF-LOCKING.....		4
24	PAFZZ	5340-00-232-9083	19200	12562773	SPRING LATCH ASSEMB.....		2
25	XADZZ		19200	12562775	COVER, EM1.....		1
26	XADZZ		19200	12562774	BOX, EM1.....		1
27	PADZZ	5935-00-466-3394	81349	M24308/4-1	CONNECTOR, RECEPTACL.....		1
28	PADZZ	5940-01-135-7080	81349	M83519/2-2	SPLICE, CONDUCTOR.....		2
29	PADZZ	5998-01-369-2795	19200	12562731	BACKPLANE ASSEMBLY.....		1
30	PADZZ	5940-01-136-2540	81349	M83519/1-2	SPLICE, CONDUCTOR.....		2
31	PADZZ	5305-00-054-5653	96906	MS51957-19	SCREW, MACHINE.....		9
32	PADZZ	5975-00-421-5080	19200	12562811	BRACKET, MOUNTING.....		2
33	PADZZ	5305-00-054-5654	96906	MS51957-20	SCREW, MACHINE.....		1
34	PAFFF	5340-01-362-9820	19200	12562726	COVER, ACCESS BOTTOM (GROUP 060306).		1
35	PAFZZ	5940-01-365-4284	19200	12562760	.CONTACT STRIP, RADIO.....		1
36	PAFZZ	5975-00-074-2072	96906	MS3367-1-9	STRAP, TIEDOWN, ELECT.....		V
37	MDDZZ		81349	M27500-24ML2T08	CABLE, SPECIAL PURPO SE, MAKE FROM		V
					NSN 6145-00-275-4046.....		
38	PAFZZ	5305-00-054-5650	96906	MS51957-16	SCREW, MACHINE.....		2

END OF FIGURE

SECTION II

TM 9-1200-215-34&P



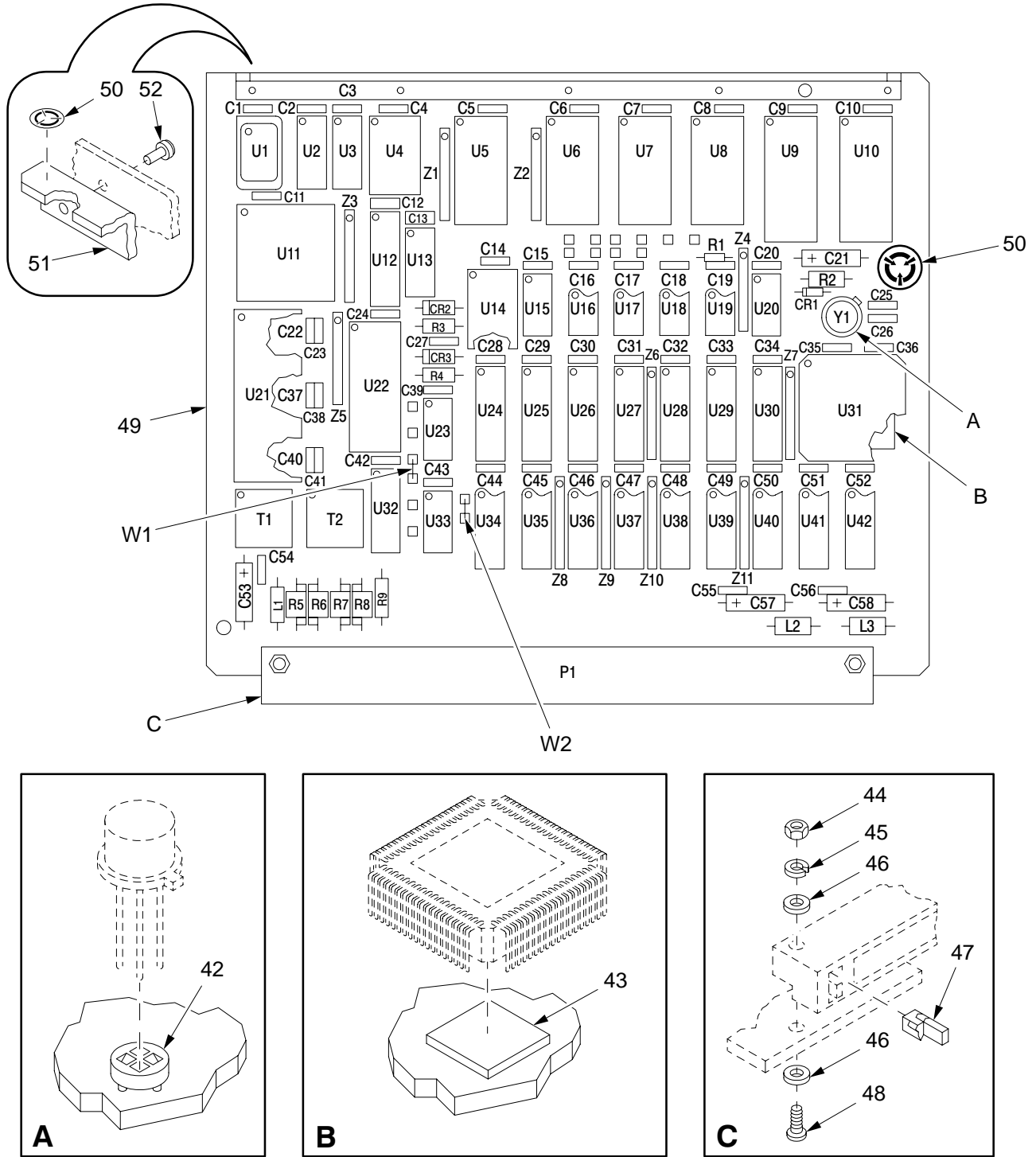
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REF DES	ITEM NO.	REF DES	ITEM NO.	REF DES	ITEM NO.
C1 THRU C38	1	U1 THRU U26	5	U27	10
C41	1	U23	6	U28 THRU U36	11
C42	2	U24	7	U37	12
L1	3	U25	8	U38	13
P1	4	U26	9	Z1	14

Figure C5. Circuit Card Assembly, 768K Memory A5 (12562730)

SECTION II		TM9-1200-215-34&P		C01		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM NO	SMR	NSN	CAGE	PART NUMBER	DESCRIPTION AND USABLE ON CODE (UOC)	QTY
					GROUP 060301 CIRCUIT CARD ASSEMBLY	
					FIGURE C5 CIRCUIT CARD ASSEMBLY	
					* 768K MEMORY, A5,	
					12562730	
1	PADZZ	5910-01-171-8693	81349	M39014/22-1094	CAPACITOR, FIXED, CER.....	39
2	PADZZ	5910-01-276-6252	81349	M39003/06-4051	CAPACITOR, FIXED, ELE.....	1
*	XADZZ		16236	90029-006	SHIELDING, BEAD L1 TRICAL (L1-L3)...	1
4	PADZZ	5935-01-371-3128	81349	M55302/170B60Y1	CONNECTOR, RECEPTACLE PLUG (P1)....	1
5	PADZZ	5962-01-349-3396	67268	5962-8852504XX	MICROCIRCUIT DIGITAL (U1-U22).....	22
6	MDDZZ		19200	12562785	PROGRAM, MICROCIRCUIT (U23) MAKE FROM P/N 5962-8871301RX.....	1
7	PADZZ	5962-01-239-9752	81349	M38510/65201BCA	MICROCIRCUIT, DIGITAL (U24).....	1
8	MDDZZ		19200	12562786	PROGRAM, MICROCIRCUIT DIGITAL (U25) (MAKE FROM P/N 5962-8871301RX.....	1
9	PADZZ	5962-01-313-9926	67268	5962-8764701CA	MICROCIRCUIT,.....	1
10	PADZZ	5962-01-173-7737	81349	M38510/33001BCA	MICROCIRCUIT,.....	1
11	PADZZ	5962-01-316-9970	14933	8550601RX	MICROCIRCUIT,.....	9
12	PADZZ	5955-01-363-6355	19200	12554005	OSCILLATOR, CRYSTAL CONTROLLED (U37)	1
13	PADZZ	5962-01-245-6812	81349	M38510/34302BEA	INTEGRATED CIRCUIT.....	1
14	PADZZ	5905-01-229-7117	81349	M8340109K4701JC	RESISTOR NETWORK, FILMED FILM (Z1-Z11).....	1
15	PADZZ	5310-00-812-4294	80205	NAS671C2	NUT, PLAIN, HEXAGON.....	2
16	PADZZ	5310-00-928-2690	96906	MS35338-134	WASHER, LOCK.....	2
17	PADZZ	5310-00-043-4708	80205	NAS620C2	WASHER, FLAT.....	4
18	PADZZ	5935-01-108-7768	81349	M55302/78-02	POLARIZING KEY.....	4
19	PADZZ	5305-00-054-5642	96906	MS51957-8	SCREW, MACHINE.....	2
20	XADZZ		19200	12554039	BOARD, PRINTED.....	1
21	PADZZ	7690-01-366-2974	19200	12554040	LABEL SENSITIVE.....	2
22	XADZZ		19200	12562761	STIFFNER, ELECTRICAL.....	1
23	XADZZ		96906	MS20470AD2-3-5	RIVET, SOLID.....	5

END OF FIGURE



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Figure C6. Circuit Card Assembly, Processor A4 (12554041) (Sheet 1 of 2)

REF DES	ITEM NO.	REF DES	ITEM NO.	REF DES	ITEM NO.	REF DES	ITEM NO.
CR1	1	L3	7	U7	19	U24 THRU	
CR2	2	P1	8	U8	20	U26	33
CR3	2	R1	9	U9	21	U27	34
C1 THRU		R2	10	U10	21	U28 THRU	
C20	3	R3	11	U11	22	U30	35
C21	4	R4	11	U12	23	U31	36
C22		R5 THRU		U13	24	U32	37
THRU C24	3	R8	12	U14	25	U33	38
C25	5	R9	13	U15	24	U34 THRU	
C26	5	T1	14	U16	26	U36	35
C27 THRU		T2	14	U17	27	U37 THRU	
C52	3	U1	15	U18	28	U42	33
C53	6	U2	16	U19	24	W1	39
C54 THRU		U3	16	U20	29	W2	39
C56	3	U4	17	U21	30	Y1	40
C57	4	U5	18	U22	31	Z1 THRU	
C58	4	U6	18	U23	32	Z11	41
L1 THRU							

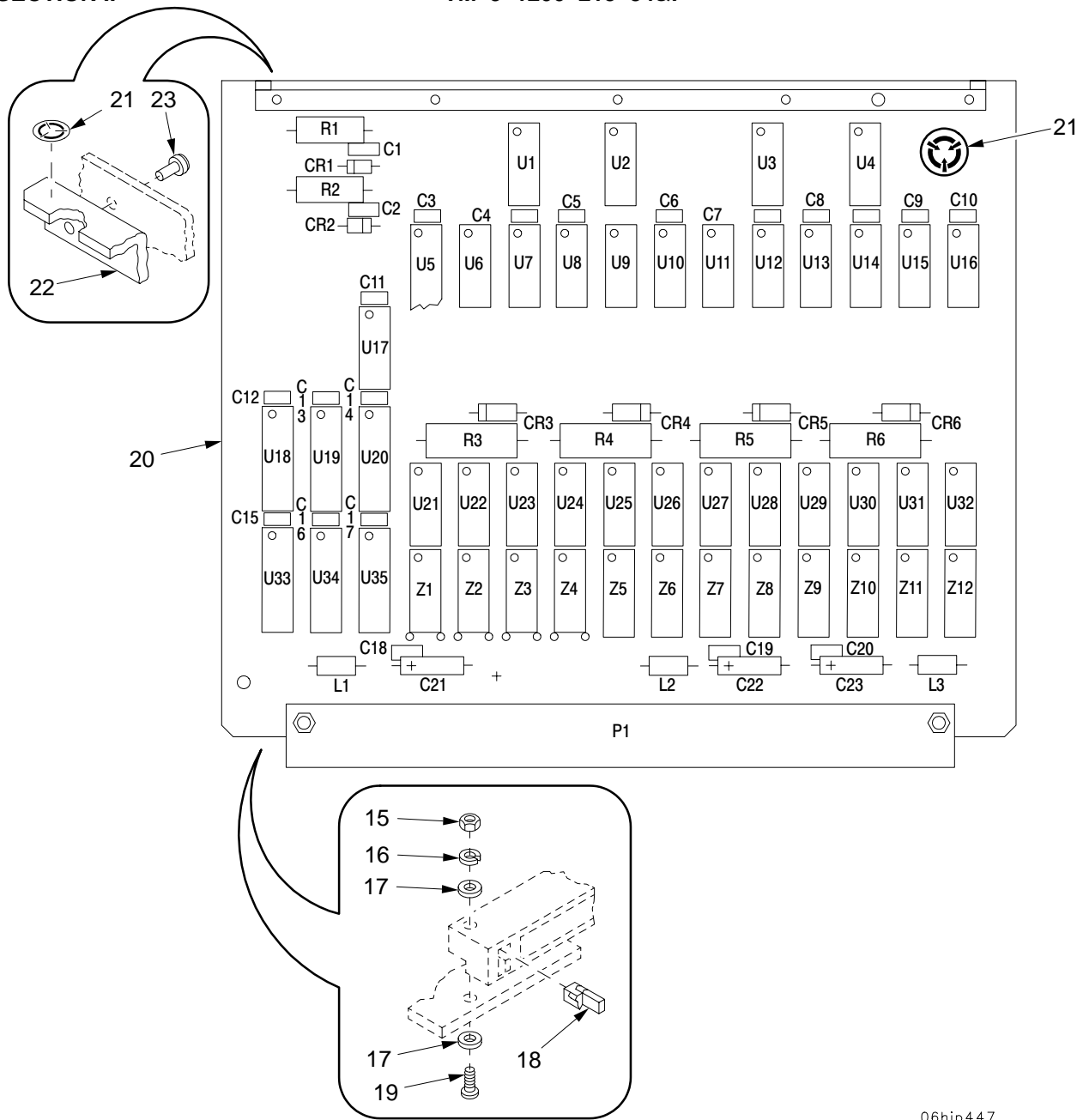
Figure C6. Circuit Card Assembly, Processor A4 (12554041) (Sheet 2 of 2)

SECTION II			TM9-1200-215-34&P	C01		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR	NSN	PART	DESCRIPTION AND	USABLE ON CODE (UOC)	QTY
NO			CAGE NUMBER			
				GROUP 060302	CIRCUIT CARD ASSEMBLY	
				FIGURE C6	CIRCUIT CARD ASSEMBLY	
					PROCESSOR, A4,	
					12554041	
1	PADZZ	5961-00-584-4527	81349 JANTX1N4148-1	SEMICONDUCTOR DEVIC E, DIODE		1
2	PADZZ	5961-01-285-6684	81349 JANTX1N4615-1	SEMICONDUCTOR DEVIC		2
3	PADZZ	5910-01-171-8693	81349 M39014/22-1094	CAPACITOR, FIXED, CER		52
4	PADZZ	5910-01-294-3056	81349 M39003/06-2080	CAPACITOR, FIXED, ELE CTROLYCTIC (21, C57, C58)		3
*	5	XADZZ	81349 M39014/22-0949	CAPACITOR, FIXED,		2
	6	PADZZ	5910-01-276-6252	81349 M39003/06-4051	CAPACITOR, FIXED, ELE	1
*	7	XADZZ	16236 90029-006	SHIELDING, BEAD L1 TRICAL (L1-L3)		3
	8	PADZZ	5935-01-371-3128	81349 M55302/170B60Y1	CONNECTOR, RECEPTACLE PLUG (P1)	1
	9	PADZZ	5905-01-150-4517	81349 RLR07C6200GS	RESISTOR, FIXED, FILM	1
10	PADZZ	5905-01-151-1187	81349 RLR07C1003GS	RESISTOR, FIXED, FILM		1
11	PADZZ	5905-01-138-6261	81349 RLR07C3301GS	RESISTOR, FIXED FILM		2
12	PADZZ	5905-01-365-2376	81349 RNC55H54R9DP	RESISTOR, FIXED		4
13	PADZZ	5905-01-058-9627	81349 RLR20C1240FS	RESISTOR, FIXED, FILM		1
14	PADZZ	5950-01-284-2876	81349 M21038/27-02	TRANSFORMER, PULSE		2
15	PADZZ	5955-01-372-4176	19200 12553994	OSCILLATOR, CRYSTAL		1
16	PADZZ	5962-01-228-8376	67268 8405601CB	MICROCIRCUIT, DIGITA		2
17	PADZZ	5999-01-373-0554	81349 M83532/01D016B	MICROCIRCUIT, DIGITA		1
18	PADZZ	5962-01-280-5488	81349 M38510/29104BJA	MICROCIRCUIT, DIGITA		2
19	MDDZZ		19200 12562789-1	MICROCIRCUIT SET MAKE FROM P/N 12553992		1
20	MDDZZ		19200 12562789-2	MICROCIRCUIT SET MAKE FROM P/N 12553992		1
21	PADZZ	5962-01-320-1678	67268 5962-8866201XA	MICROCIRCUIT, MEMORY		2
22	PADZZ	5962-01-366-0842	81349 M38510/55501BZA	MICROCIRCUIT, LINEAR		1
23	MDDZZ		19200 12562768	PROGRAM, MICROCIRCUIT DIGITAL (U12) MAKE FROM P/N5962-887-1301RX		1
24	PADZZ	5962-01-370-6125	81349 M38510/752018BCA	MICROCIRCUIT, DIGITA		3
25	PADZZ	5955-01-366-0204	81349 M55310/18-B41A15 3K6000	OSCILLATOR, CRYSTAL CONTROLLED (U14)		1
26	PADZZ	5962-01-325-4471	81349 M38510/75001BCA	MICROCIRCUIT, DIGITA		1
27	PADZZ	5962-01-319-4613	81349 M38510/65203BCX	MICROCIRCUIT, DIGITA		1
28	PADZZ	5962-01-254-1149	81349 M38510/65701BCA	MICROCIRCUIT, DIGITA		1
29	PADZZ	5962-01-309-7919	67268 8409101CX	MICROCIRCUIT, DIGITA		1
30	PADZZ	5962-01-424-8122	67268 5962-8757906XX	MICROCIRCUIT, DIGITA		1
31	PADZZ	5962-01-313-0661	67268 5962-8754802XA	MICROCIRCUIT, DIGITA		1
32	PADZZ	5962-01-358-9065	64155 LT1032MJ/883C	MICROCIRCUIT, DIGITA		1
33	PADZZ	5962-01-268-7769	81349 M38510/65503BRA	MICROCIRCUIT, DIGITA		9
34	MDDZZ		19200 12562767	PROGRAM, MICROCIRCUIT DIGITAL (U27) MAKE FROM P/N 5962-8871301		1
35	PADZZ	5962-01-235-3490	67268 8407201RB	MICROCIRCUIT, DIGITA		6
36	PADZA	5962-01-265-5985	67268 8501001ZA	MICROCIRCUIT, DIGITA		1
37	PADZZ	5962-01-253-7435	67268 5962-8672101EA	MICROCIRCUIT, DIGITA		1
38	PADZZ	5962-01-113-8584	19200 12562751	MICROCIRCUIT, DIGITA		1
39	MDDZZ	6145-01-130-1049	81349 M81822/13-B28-9	WIRE ELECTRICAL MAKE FROM NSN 6145011301049		V
40	XDDZZ		19200 12554021	CRYSTAL UNIT QUARTZ		1
41	PADZZ	5905-01-229-7117	81349 M8340109K4701JC	RESISTOR NETWORK, FI XED FILM (Z1-Z11)		11
42	PADZZ	5999-01-064-5069	81349 M38527/03-002D	MOUNTING PAD, ELECTR		1
43	PADZZ	5999-01-363-3272	19200 12562810	HEAT SINK ELECTRICA		1
44	PADZZ	5310-00-812-4294	80205 NAS671C2	NUT, PLAIN, HEXAGON		2
45	PADZZ	5310-00-928-2690	96906 MS35338-134	WASHER, LOCK		2
46	PADZZ	5310-00-043-4708	80205 NAS620C2	WASHER, FLAT		4
47	PADZZ	5935-01-108-7768	81349 M55302/78-02	POLARIZING KEY		4
48	PADZZ	5305-00-054-5642	96906 MS51957-8	SCREW, MACHINE		2
49	XADZZ		19200 12554043	BOARD, PRINTED WIRIN		1
50	PADZZ	7690-01-366-2974	19200 12554040	LABEL SENSITIVE		2
51	XADZZ		19200 12562761	STIFFNER, ELECTRICAL		1
52	XADZZ		96906 MS20470AD2-3-5	RIVET, SOLID		5

END OF FIGURE

SECTION II

TM 9-1200-215-34&P



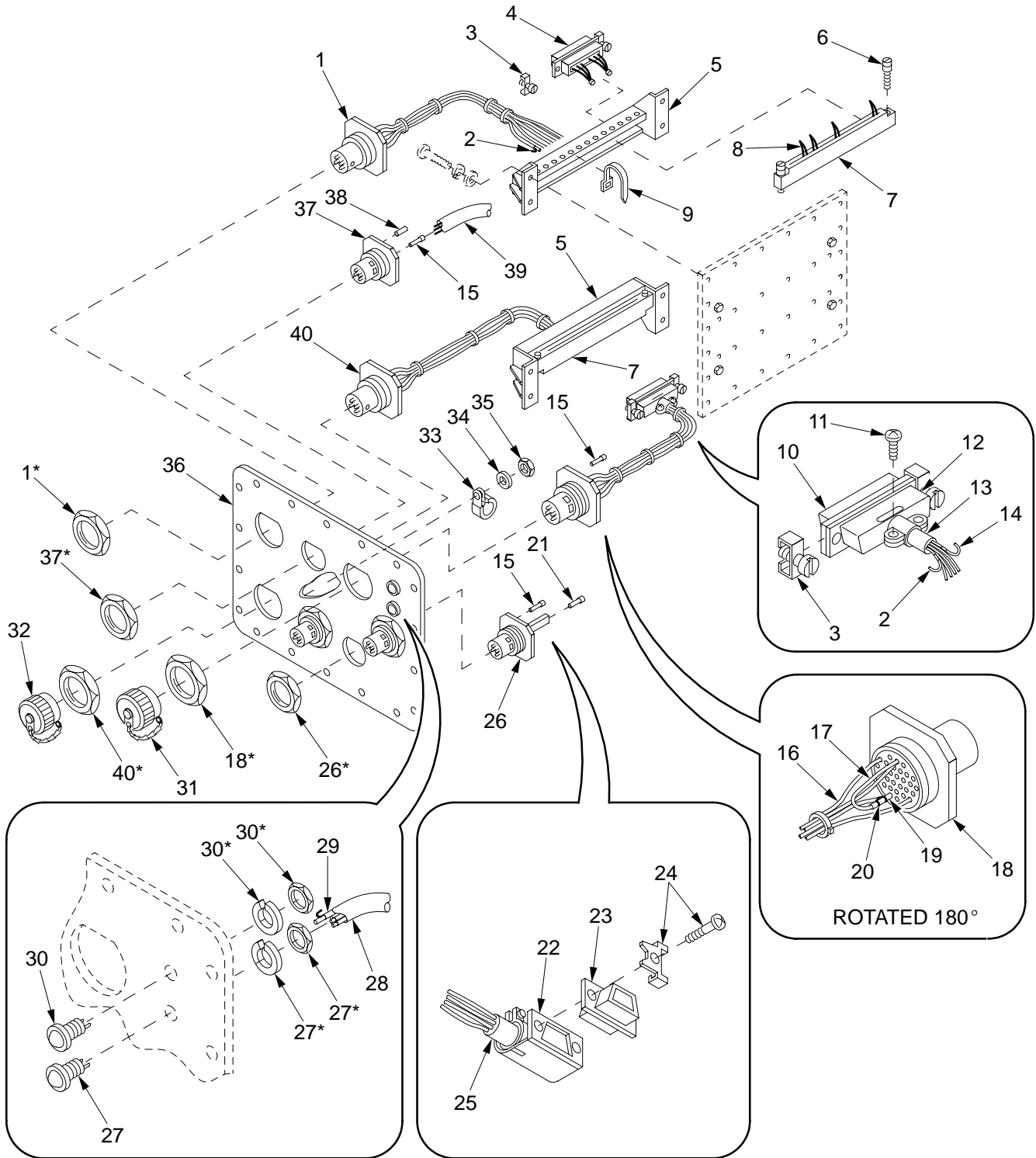
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REF DES	ITEM NO.	REF DES	ITEM NO.	REF DES	ITEM NO.	REF DES	ITEM NO.
CR1	1	C23	4	R6	8	U32	12
CR2	1	L1 THRU		U1 THRU		U33 THRU	
CR3 THRU		L3	5	U16	9	U35	11
CR6	2	P1	6	U17	10	Z1 THRU	
C1 THRU		R1	7	U18 THRU		Z4	13
C20	3	R2	7	U20	11	Z5 THRU	
C21 THRU		R3 THRU		U21 THRU		Z12	14

Figure C7. Circuit Card Assembly, Signal Protection Mux A2 (12554029)

SECTION II		TM9-1200-215-34&P		C01		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM NO	SMR	NSN	CAGE	PART NUMBER	DESCRIPTION AND USABLE ON CODE (UOC)	QTY
					GROUP 060303 CIRCUIT CARD ASSEMBLY	
					FIGURE C7 SIGNAL PROTECTION MUX	
					A2, 12554029	
1	PADZZ	5961-00-584-4527	81349	JANTX1N4148-1	SEMICONDUCTOR DEVIC E, DIODE (C1,C2).....	2
2	PADZZ	5961-00-421-2979	81349	JANTX1N4958	SEMICONDUCTOR DEVIC E,DIODE (CR3-CR6).....	4
3	PADZZ	5910-01-171-8693	81349	M39014/22-1094	CAPACITOR, FIXED, CER AMIC DIELECTRIC (C1-C20).....	20
4	PADZZ	5910-01-294-3056	81349	M39003/06-2080	CAPACITOR, FIXED, ELE CTROLYTIC (C21-C23).....	3
*	XADZZ		16236	90029-006	SHIELDING, BEAD L1 TRICAL (L1-L3)...	3
6	PADZZ	5935-01-371-3128	81349	M55302/170B60Y1	CONNECTOR, RECEPTACL E PLUG (P1)....	1
7	PADZZ	5905-00-140-6333	81349	RNC65H1821FS	RESISTOR, FIXED, FILM.....	2
8	PADZZ	5905-00-153-0254	81349	RNC70H2000FS	RESISTOR, FIXED, FILM (R3-R6).....	4
9	PADZZ	5962-01-214-9935	81349	M38510/19007BEA	MICROCIRCUIT, LINEAR (U1-U16).....	16
10	PADZZ	5962-01-239-9752	81349	M38510/65201BCA	MICROCIRCUIT, DIGITA L (U17).....	1
11	XDDZZ		81349	M38510/65601BRA	MICROCIRCUIT, DIGITA L (U18-U20, U33-U35).....	6
12	PADZZ	5961-01-363-4678	19200	12554003	SEMICONDUCTOR DEVIC ES, UNITIZED (U21-U32).....	12
13	PADZZ	5905-01-363-0692	19200	12553991	RESISTOR NETWORK, FI XED-VARIABLE (Z1-Z4).....	4
14	PADZZ	5985-01-363-6342	19200	12553985	RESISTOR NETWORK, FI XED-VARIABLE (Z5-Z12).....	8
15	PADZZ	5310-00-812-4294	80205	NAS671C2	NUT, PLAIN, HEXAGON.....	2
16	PADZZ	5310-00-928-2690	96906	MS35338-134	WASHER, LOCK.....	2
17	PADZZ	5310-00-043-4708	80205	NAS620C2	WASHER, FLAT.....	4
18	PADZZ	5935-01-108-7768	81349	M55302/78-02	POLARIZING KEY.....	4
19	PADZZ	5305-00-054-5642	96906	MS51957-8	SCREW, MACHINE.....	2
20	XADZZ		19200	12554031	PRINTED WIRING BOAR.....	1
21	PADZZ	7690-01-366-2974	19200	12554040	LABEL SENSITIVE.....	2
22	XADZZ		19200	12562761	STIFFNER, ELECTRICAL.....	1
23	XADZZ		96906	MS20470AD2-3-5	RIVET, SOLID.....	5

END OF FIGURE



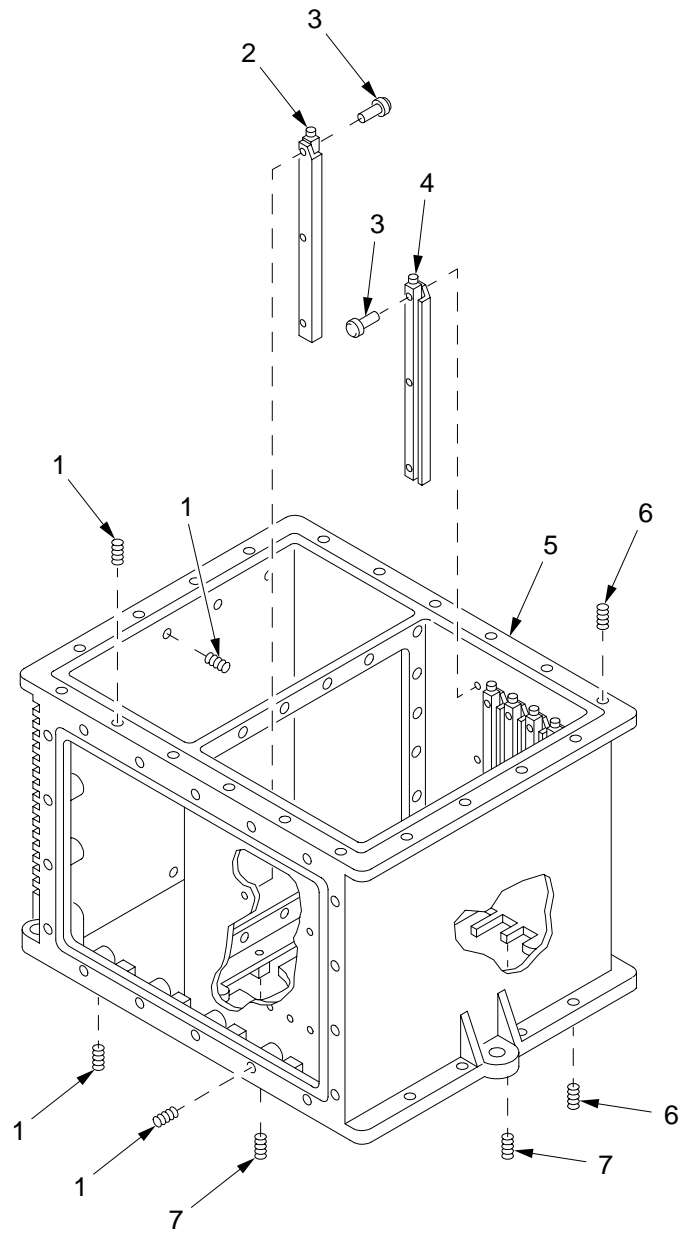
*SUPPLIED WITH IDENTICALLY NUMBERED ITEM

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Figure C8. Connector Panel Assembly (12562728)

SECTION II		TM9-1200-215-34&P					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	
ITEM	SMR	NSN	CAGE	PART	DESCRIPTION AND		QTY
NO				NUMBER	USABLE ON CODE (UOC)		
					GROUP 060304 CONNECTOR PANEL ASSEMBLY		
					FIGURE C8 CONNECTOR PANEL ASSEMBLY, 12562728		
1	PADZZ	5935-01-010-1848	96906	MS27468T19B35P	CONNECTOR,RECEPTACLE (J6).....		1
2	PADZZ	5940-01-135-7081	81349	M83519/2-3	SPLICE,CONDUCTOR.....		V
3	PADZZ	5935-01-208-6391	81349	M24308/25-10	CONNECTOR,RECEPTACLE.....		4
4	PADZZ	5935-00-490-8389	81349	M24308/4-5	CONNECTOR,RECEPTACLE,ELECTRICAL (P2).....		1
5	XADZZ		19200	12562777	TIE BAR,CABLE.....		2
6	PADZZ	5935-01-366-8165	81349	M55302/172-03	JACKSCREW,ELECTRICAL.....		4
7	PADZZ	5935-01-366-8165	81349	M55302/169A562	CONNECTOR BODY,PLUG ELECTRICAL (P3,P4).....		2
8	MDDZZ		81349	M81044/12-22-9	WIRE,ELECTRICAL MAKE FROM NSN 6145-00-144-0231.....		V
9	PAFZZ	5975-00-727-5153	96906	MS3367-4-9	STRAP,TIEDOWN,ELECT.....		1
10	PADZZ	5935-00-489-1997	81349	M24308/2-5	CONNECTOR,RECEPTACLE,ELECTRICAL (P1).....		1
11	PADZZ	5305-00-054-5647	96906	MS51957-13	SCREW,MACHINE.....		2
12	PADZZ	5935-01-344-3957	81349	M85049/48-2-5-F	SHIELD,ELECTRICAL.....		1
13	MDDZZ		81349	M46846/1-1/2-0	INSULATION SLEEVING MAKE FROM NSN 5970-01-M25-3806.....		V
14	PADZZ	5940-01-135-7086	81349	M83519/2-8	SPLICE,CONDUCTOR.....		V
15	PADZZ	5935-00-496-7171	96906	MS27488-20	PLUG,END SEAL ELECT.....		63
16	MDDZZ		81349	M27500-22ML4T08	CABLE,SPECIAL PURPOSE,ELECTRICAL MAKE FROM 6145-01-016-0757.....		1
17	MDDZZ		81349	M22759/11-26-9	WIRE,ELECTRICAL MAKE FROM NSN 6145-00-958-6007.....		1
18	PADZZ	5935-01-165-2960	81349	D38999/44WH55SB	CONNECTOR,RECEPTACLE,ELECTRICAL (J5).....		1
19	MDDZZ		81349	M23053/5-102-0	INSULATION SLEEVING MAKE FROM NSN 5970-00-812-2968.....		1
20	XDDZZ		81349	RCR05G204JS	RESISTOR,FIXED,COMP.....		2
21	PADZZ	5935-00-235-8970	96906	MS27488-16	PLUG,END SEAL ELECT.....		6
22	PADZZ	5935-01-367-1958	81349	M85049/50-1-F	SHIELD,ELECTRICAL.....		1
23	PADZZ	5935-00-490-5219	81349	M24308/2-1	CONNECTOR,RECEPTACLE,ELECTRICAL (P5).....		1
24	PADZZ	5340-00-139-7498	19200	12562772	STRIKE,CATCH CONNEC.....		2
25	MDDZZ		81349	M46846/1-1/4-0	INSULATION SLEEVING MAKE FROM NSN 5970-01-M25-3807.....		1
26	PADZZ	5935-01-361-0405	81349	D38999/44WD97PD	CONNECTOR,RECEPTACLE,ELECTRICAL (J3,J4).....		2
27	PAFZZ	5980-01-201-4483	81349	JANTXM19500/5210	LIGHT EMITTING DIODE (DS1).....		1
28	MDDZZ		81349	M27500-22ML2T08	CABLE,SPECIAL PURPOSE, MAKE FROM NSN 6145-01-090-5401.....		1
29	PADZZ	5940-01-136-2540	81349	M83519/1-2	SPLICE,CONDUCTOR.....		1
30	PAFZZ	5980-01-096-2084	81349	JTXM19500/51902	LIGHT EMITTING DIODE (DS2).....		1
31	PAFZZ	5340-01-362-9864	19200	12562762	COVER,ACCESS CONNEC.....		1
32	PAFZZ		96906	MS27502A19N	COVER,ELECTRICAL CO.....		1
33	PADZZ	5340-00-543-3934	96906	MS25281-R8	CLAMP,LOOP.....		1
34	PADZZ	5310-00-880-5978	96906	MS15795-807	WASHER,FLAT.....		1
35	PADZZ	5310-00-845-5030	80205	NAS1291C08M	NUT,SELF LOCKING,EX.....		1
36	XADZZ		19200	12554032	PANEL,BLANK.....		1
37	PADZZ	5935-01-261-7876	81349	D38999/44WD97PN	CONNECTOR,RECEPTACLE,ELECTRICAL (J1,J2).....		2
38	MDDZZ		96906	MS20995NC32	WIRE,NONELECTRICAL MAKE FROM NSN 9525-00-355-6072.....		1
39	MDDZZ		81349	M27500-20ML4T08	CABLE,SPECIAL PURPOSE, MAKE FROM NSN 6145-01-016-0757.....		1
40	PADZZ	5935-01-095-6437	96906	MS27468T19B35PA	CONNECTOR,RECEPTACLE,ELECTRICAL (J7).....		1

END OF FIGURE



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Figure C9. Chassis, Electronic (12562738)

SECTION II

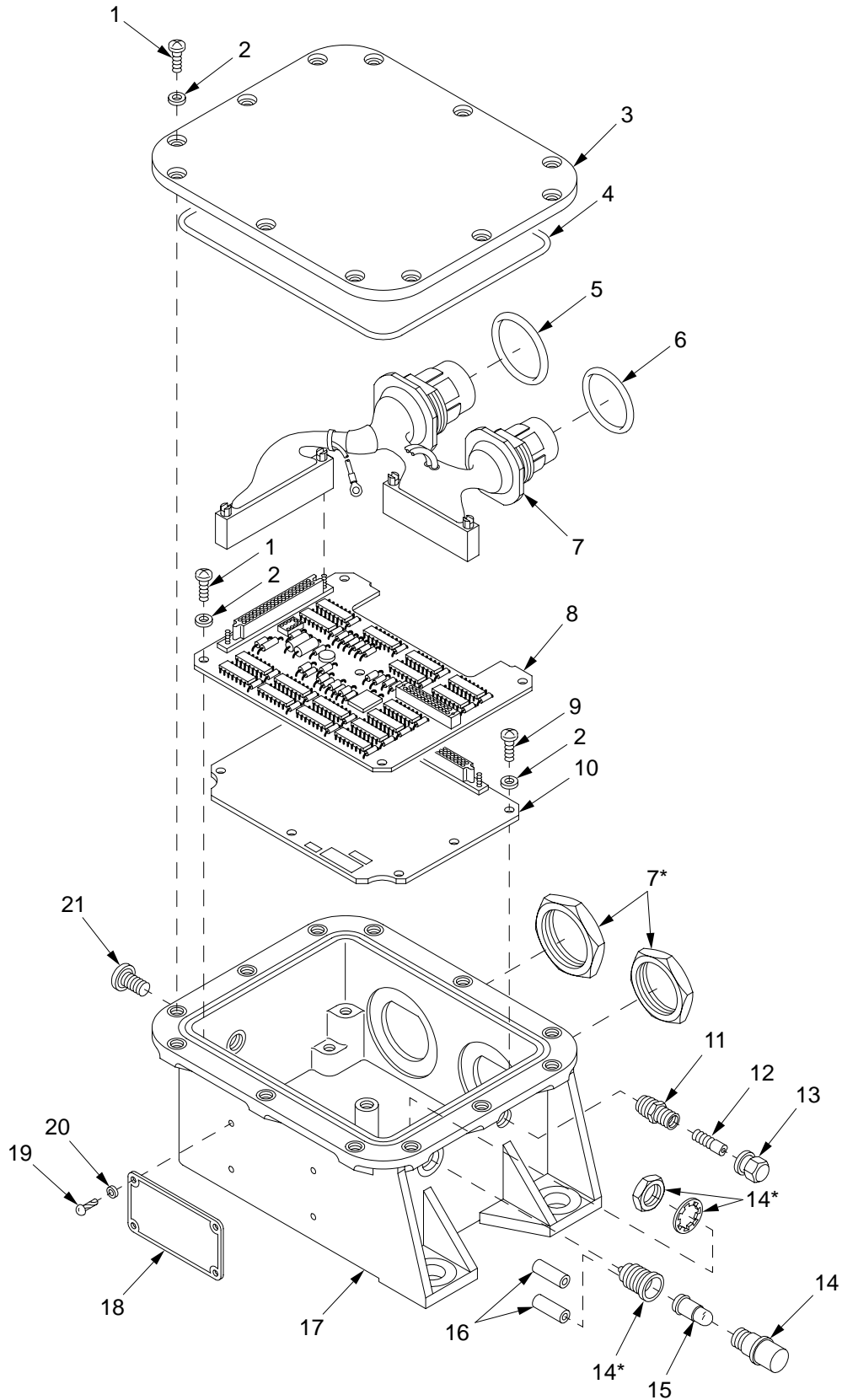
TM9-1200-215-34&P

(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR	NSN	CAGE	PART	DESCRIPTION AND	QTY
NO				NUMBER	USABLE ON CODE (UOC)	
					GROUP 060305 CHASSIS, ELECTRONIC	
					FIGURE C9 CHASSIS, ELECTRONIC	
					12562738	
1	PADZZ	5340-00-800-7874	96906	MS21209F1-15	INSERT, SCREW THREAD.....	36
2	PADZZ	5998-01-305-0426	19200	12562758-1	HOLDER, ELECTRICAL C.....	5
3	PADZZ	5320-00-243-8356	96906	MS20470AD2-4	RIVET, SOLID ALLOY.....	30
4	PADZZ	5998-01-305-0425	19200	12562758-2	HOLDER, ELECTRICAL C.....	5
5	XADZZ		19200	12562737	CHASSIS, ELECTRONIC,	1
6	PADZZ	5325-00-684-9501	96906	MS21209F1-10	INSERT, SCREW THREAD.....	280
7	PADZZ	5340-00-631-7894	96906	MS21209C0415	INSERT, SCREW THREAD.....	12

END OF FIGURE

SECTION II

TM 9-1200-215-34&P



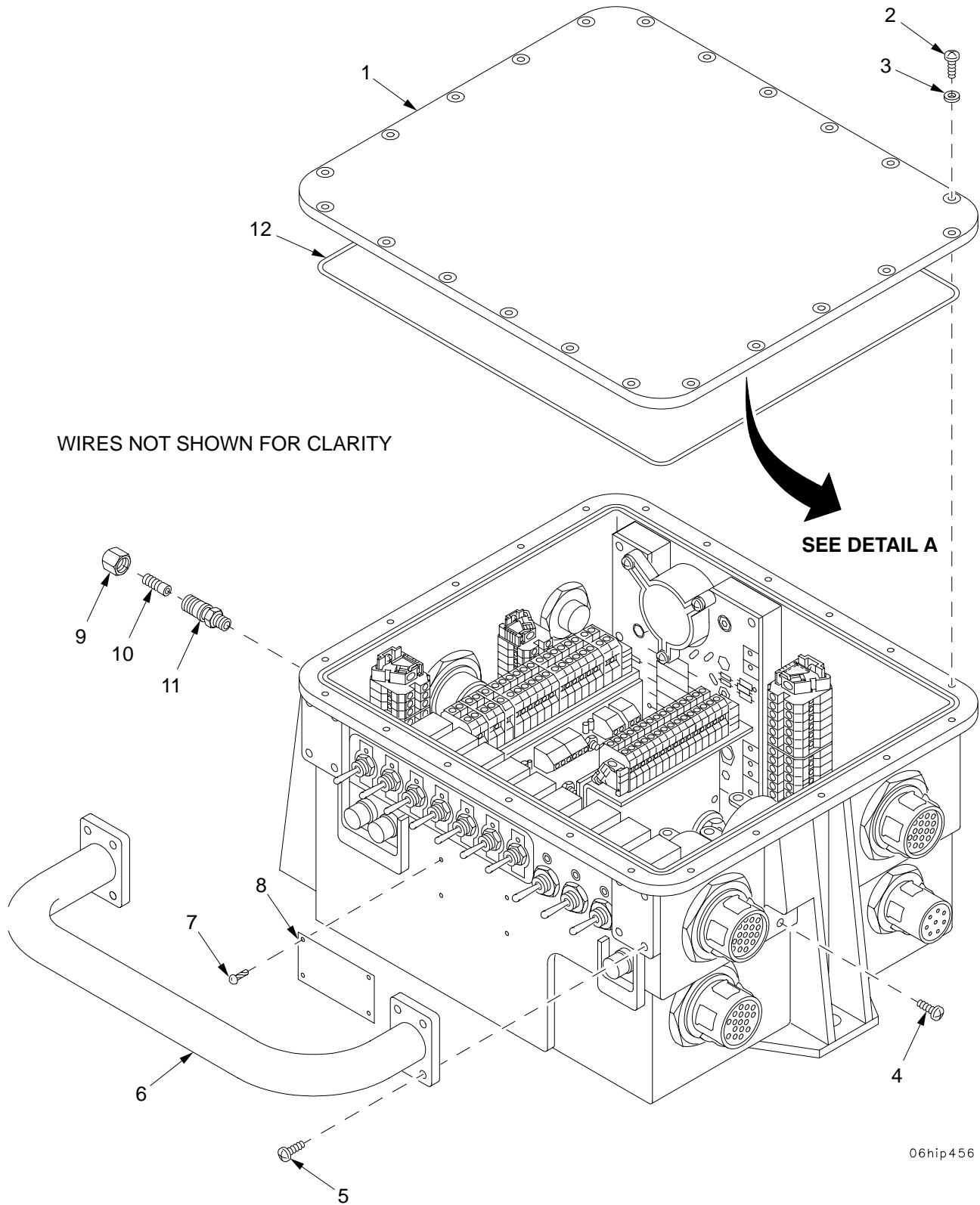
* SUPPLIED WITH IDENTICALLY NUMBERED ITEM.

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Figure C10. Modem, Digital Data (12561737)

SECTION II		TM9-1200-215-34&P				
(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM NO	SMR	NSN	CAGE	PART NUMBER	DESCRIPTION AND USABLE ON CODE (UOC)	QTY
					GROUP 0604 MODEM, DIGITAL DATA	
					FIGURE C10 MODEM, DIGITAL DATA, 12561737	
1	PAFZZ	5305-00-054-6652	96906	MS51957-28	SCREW,MACHINE.....	17
2	PAFZZ	5310-00-773-7624	80205	NAS620C6	WASHER,FLAT.....	23
3	XAFZZ		19200	12561842	COVER,ACCESS.....	1
4	PAFZZ	5999-01-367-9855	19200	12561807-4	SHIELDING GASKET,EL.....	1
5	PAFZZ	5330-01-355-5353	19200	12561807-7	PACKING,PREFORMED.....	1
6	PAFZZ		81349	M83528/002D-028	SHIELDING GASKET.....	1
7	PAFZZ	6150-01-358-2004	19200	12561845	WIRING HARNESS BRAN.....	1
8	PAFZZ	5998-01-355-7324	19200	12561843	CIRCUIT CARD ASSEMB.....	1
9	PAFZZ	5305-00-054-6654	96906	MS51957-30	SCREW,MACHINE.....	6
10	PAFZZ	5998-01-369-6872	19200	12561839	CIRCUIT CARD ASSEMB.....	1
11	PAFZZ	4820-00-114-1096	96906	MS51607-1	VALVE STEM,PURGING.....	1
12	PAOZZ	2640-00-050-1229	81348	TYV/CL2/TR C1	VALVE CORE.....	1
13	PAOZZ	1650-00-222-4525	96906	MS20813-1	CAP,VALVE.....	1
14	PAFZZ	6210-01-166-7635	19200	12562029	LIGHT,INDICATOR.....	1
15	PAOZZ	5980-01-281-5356	19207	12360905-3	LIGHT EMITTING DIOD.....	1
16	MFFZZ		81349	M23053/5-104-0	INSULATION SLEEVING ELECTRICAL, MAKE FROM NSN 5970-00-812-2969.....	1
17	PBDZZ	5999-01-373-0728	19200	12561824	HOUSING,ELECTRONIC.....	1
18	XAFZZ		19200	12561915	PLATE,IDENTIFICATIO.....	1
19	XAFZZ		96906	MS21318-20	SCREW,DRIVE.....	4
20	XAFZZ		80205	NAS620C4	WASHER,FLAT.....	4
21	PAOZZ	5305-01-139-2034	96906	MS3212-21L	SCREW,SELF-LOCKING.....	1

END OF FIGURE



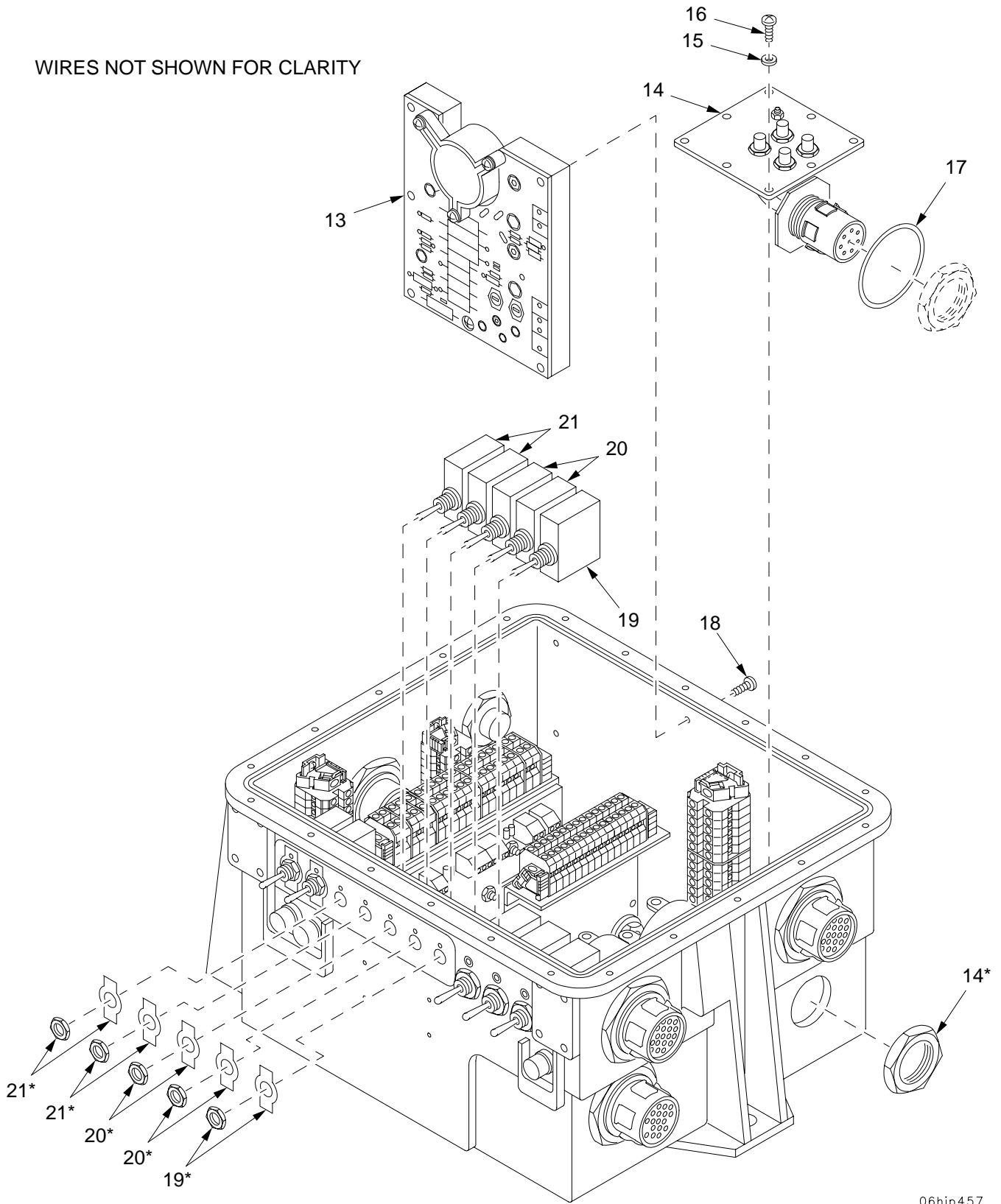
06hip456

Figure C11. Control, Power Supply (12561743) (Sheet 1 of 20)

SECTION II

TM 9-1200-215-34&P

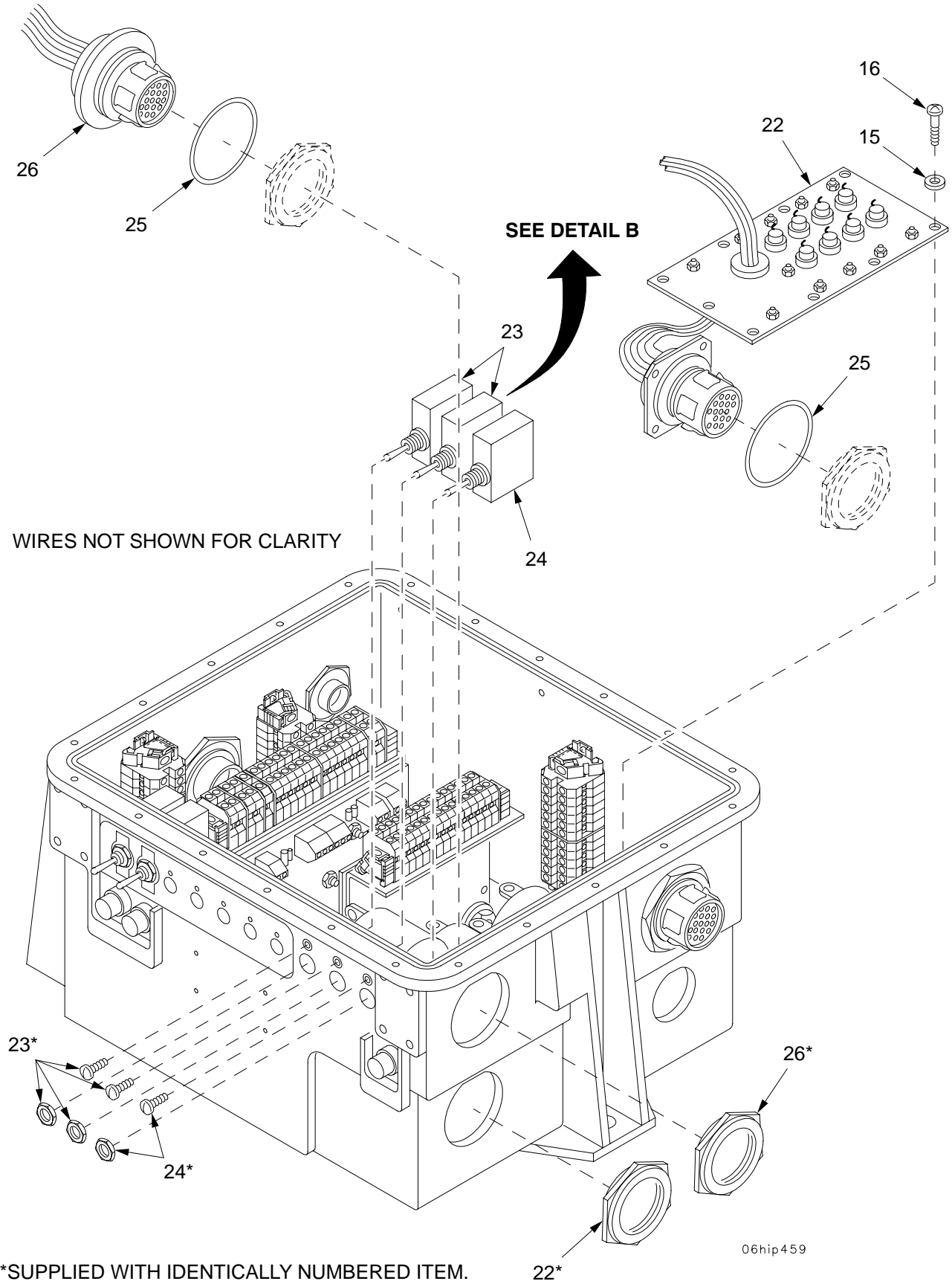
WIRES NOT SHOWN FOR CLARITY



*SUPPLIED WITH IDENTICALLY NUMBERED ITEM.

06hip457

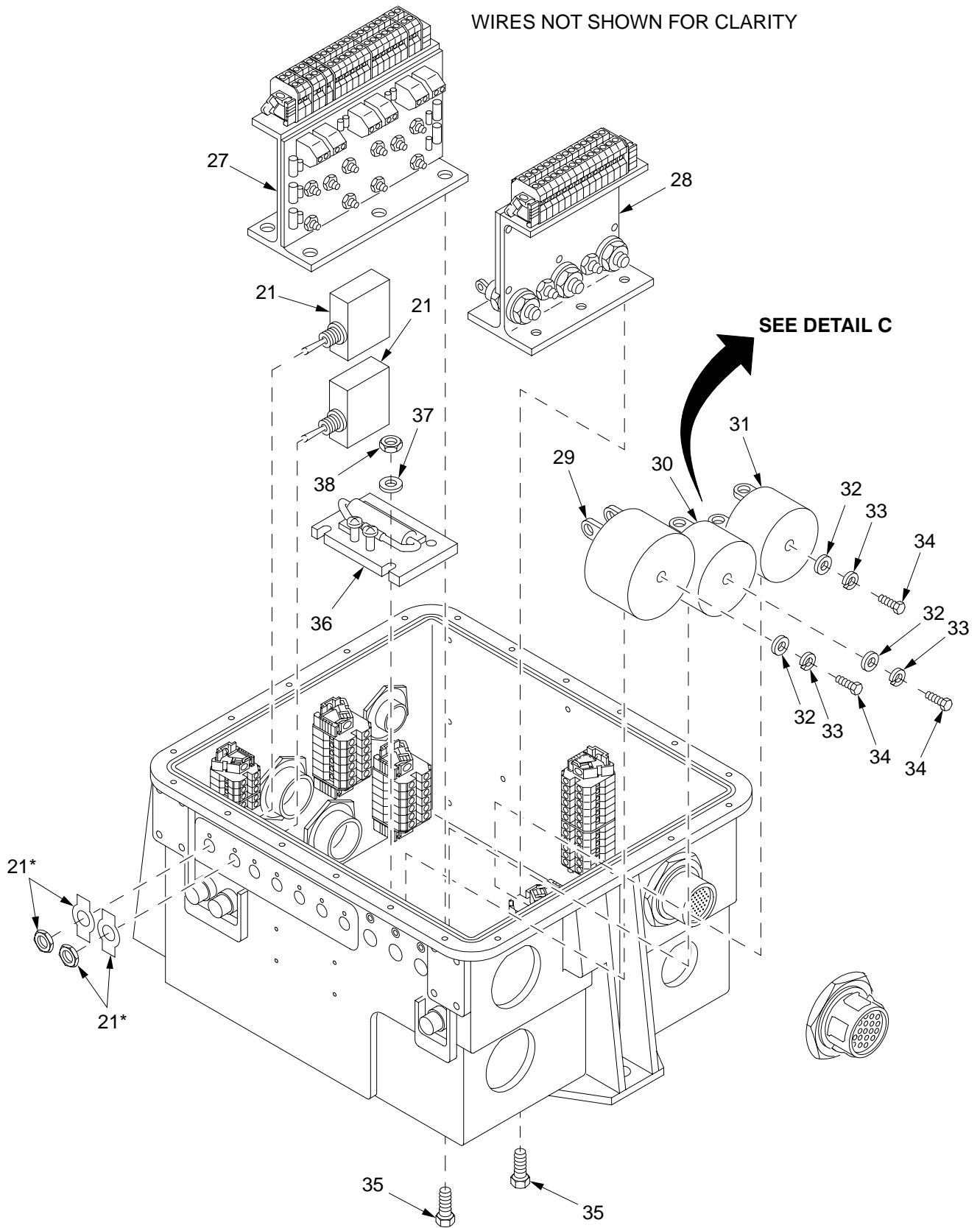
Figure C11. Control, Power Supply (12561743) (Sheet 2 of 20)



*SUPPLIED WITH IDENTICALLY NUMBERED ITEM.

Figure C11. Control, Power Supply (12561743) (Sheet 3 of 20)

WIRES NOT SHOWN FOR CLARITY



*SUPPLIED WITH IDENTICALLY NUMBERED ITEM.

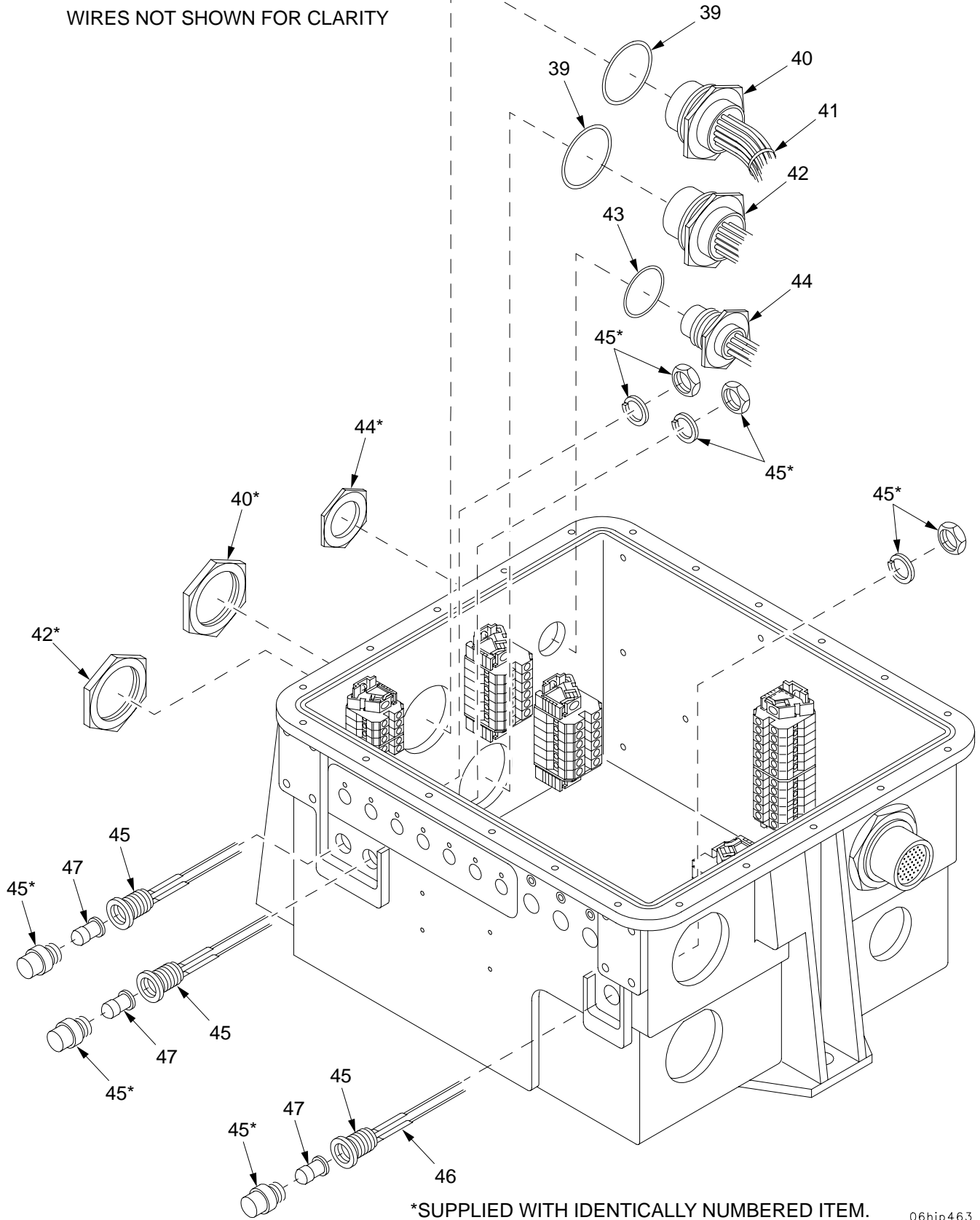
06hip462

Figure C11. Control, Power Supply (12561743) (Sheet 4 of 20)

SECTION II

TM 9-1200-215-34&P

WIRES NOT SHOWN FOR CLARITY



*SUPPLIED WITH IDENTICALLY NUMBERED ITEM.

06hip463

Figure C11. Control, Power Supply (12561743) (Sheet 5 of 20)

WIRES NOT SHOWN FOR CLARITY

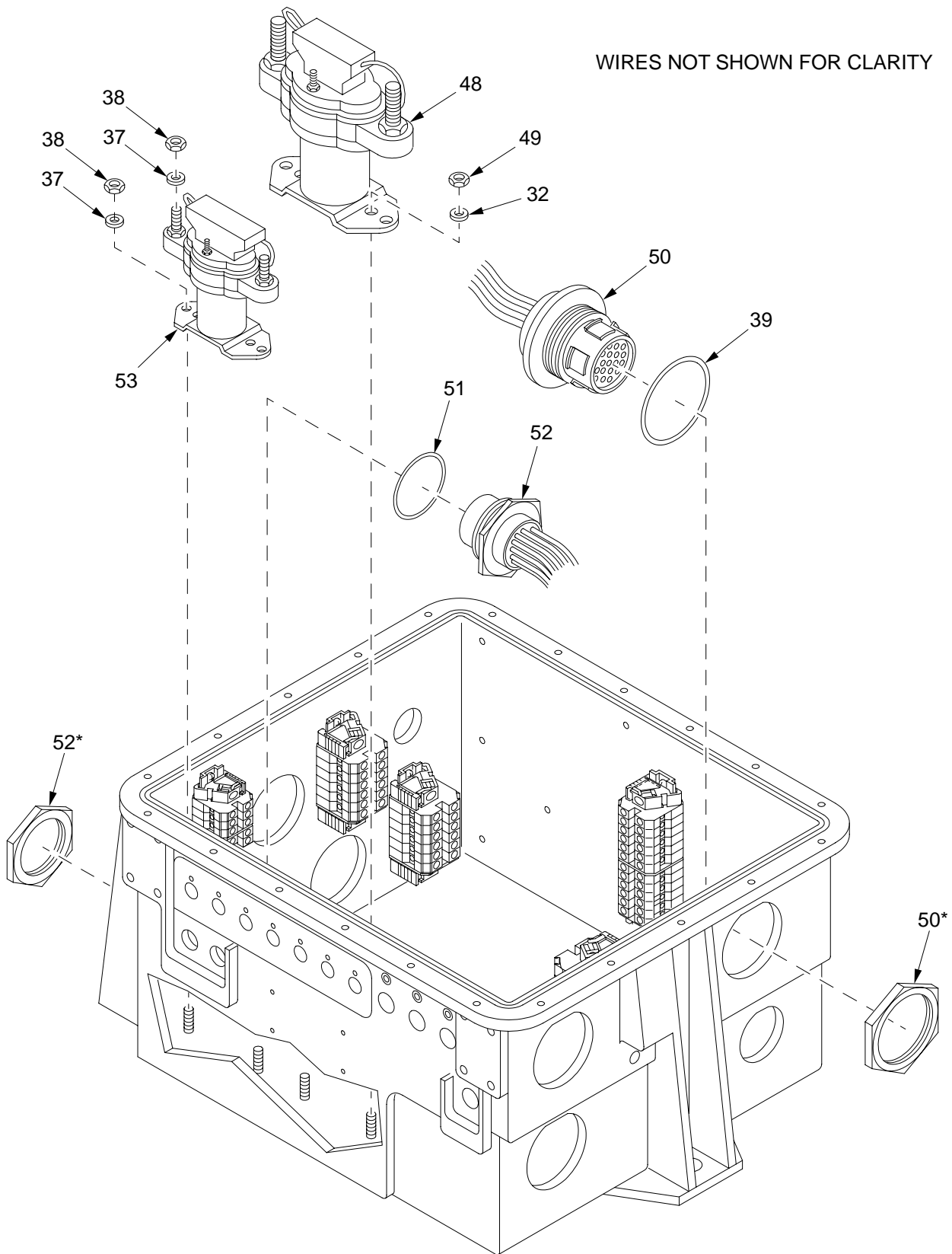
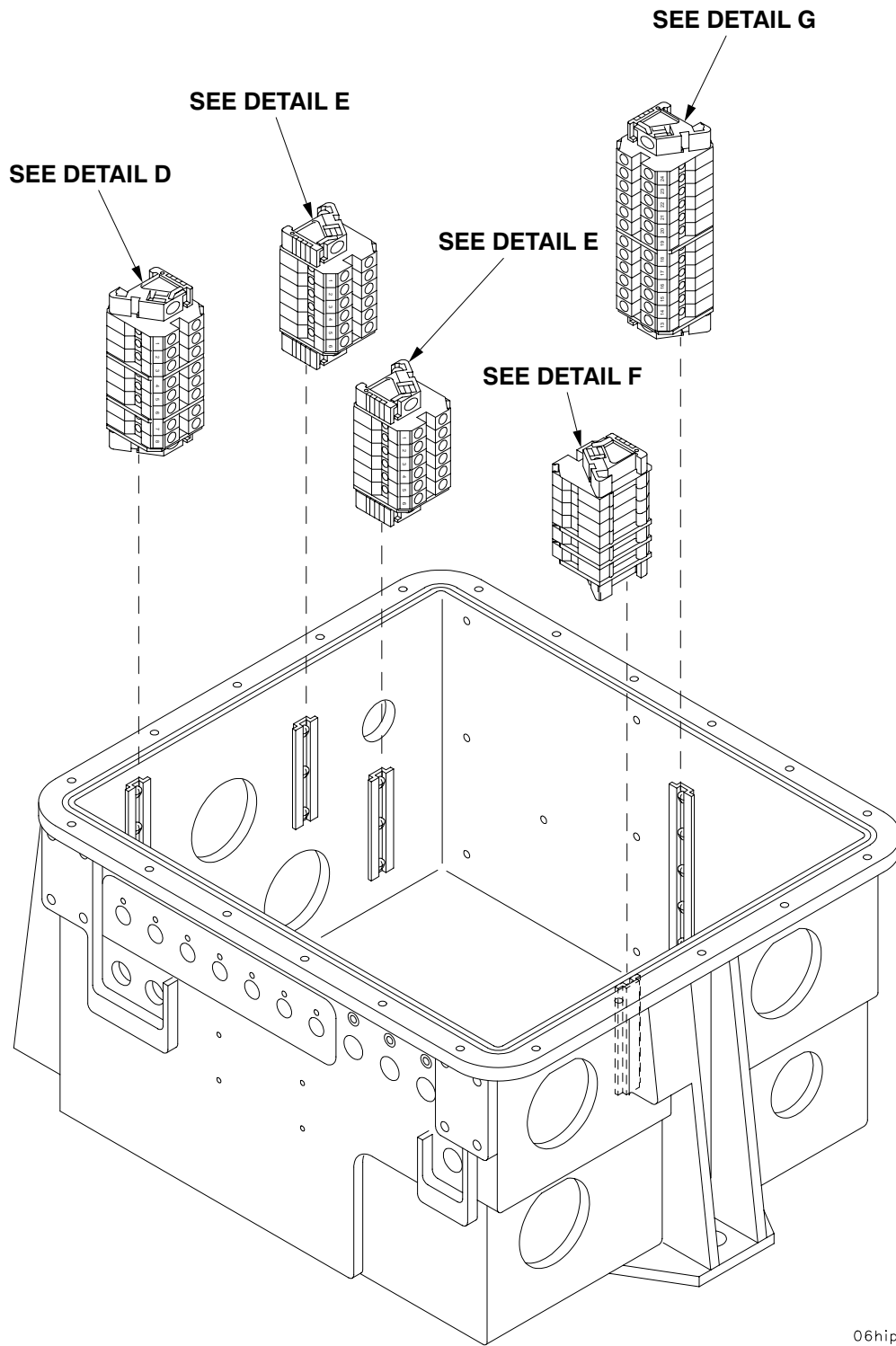
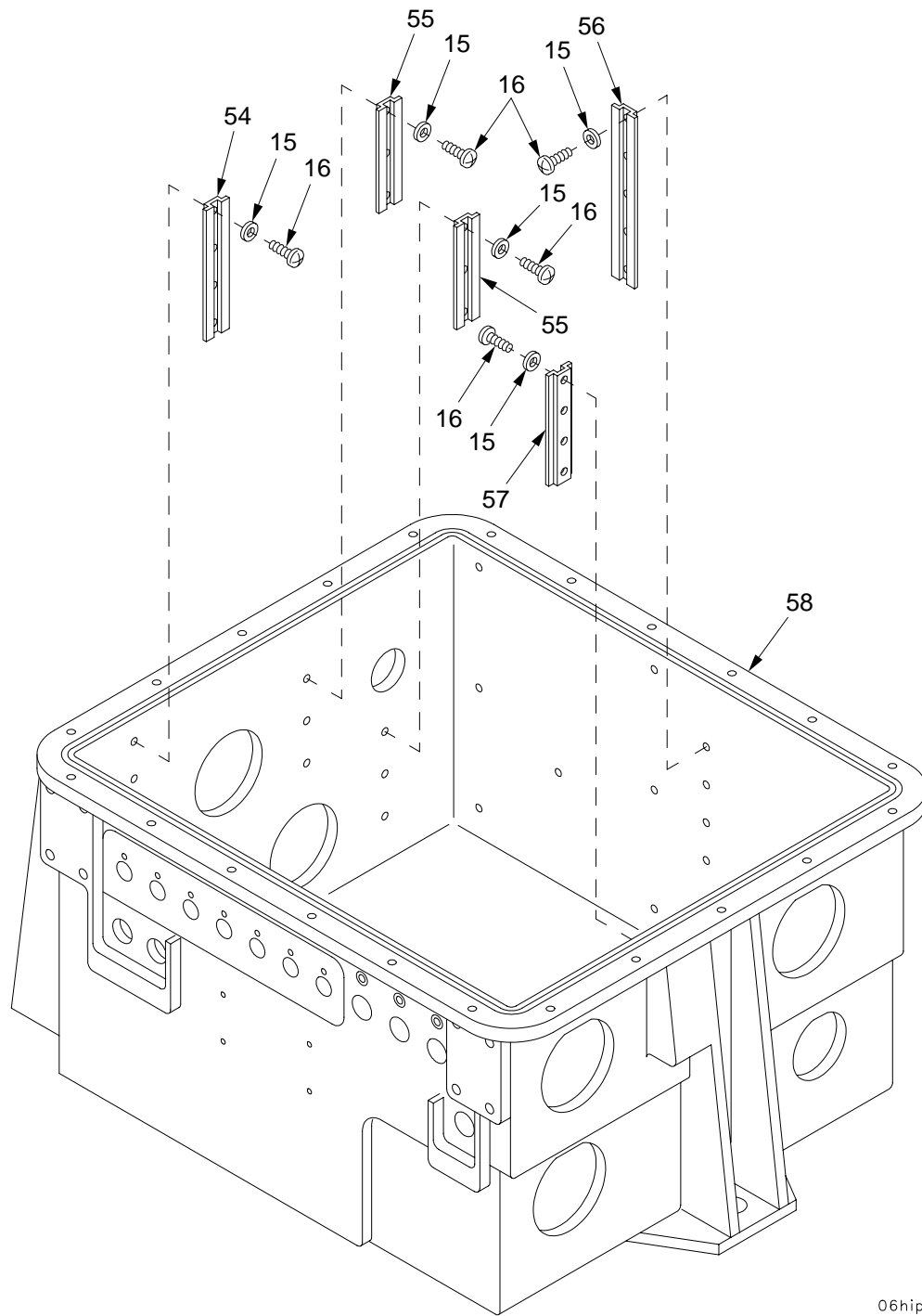


Figure C11. Control, Power Supply (12561743) (Sheet 6 of 20)



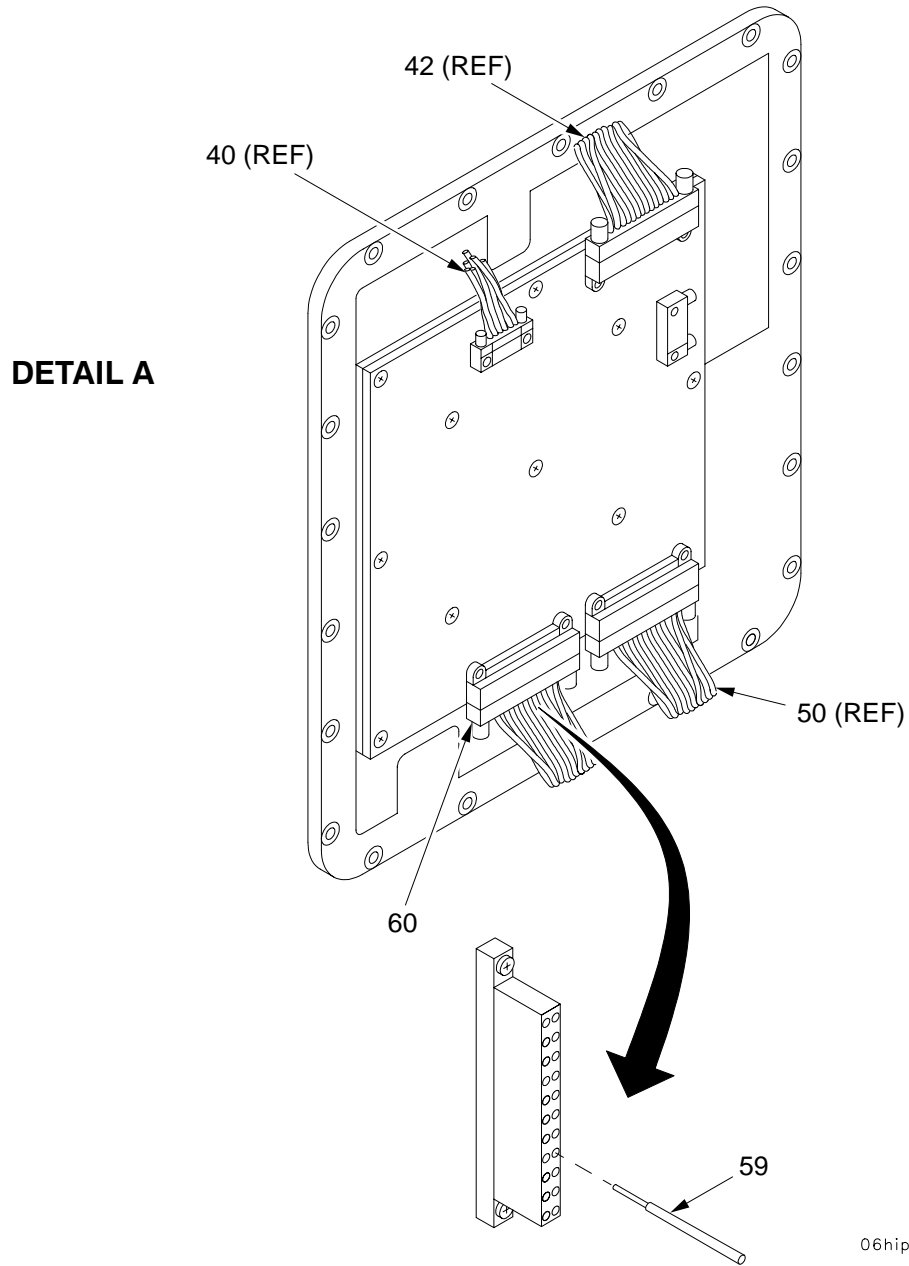
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Figure C11. Control, Power Supply (12561743) (Sheet 7 of 20)



06hip412

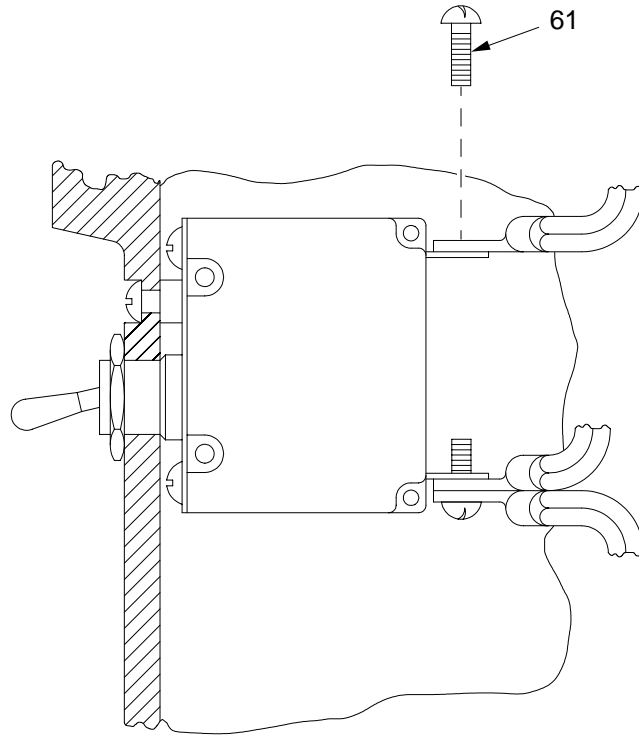
Figure C11. Control, Power Supply (12561743) (Sheet 8 of 20)



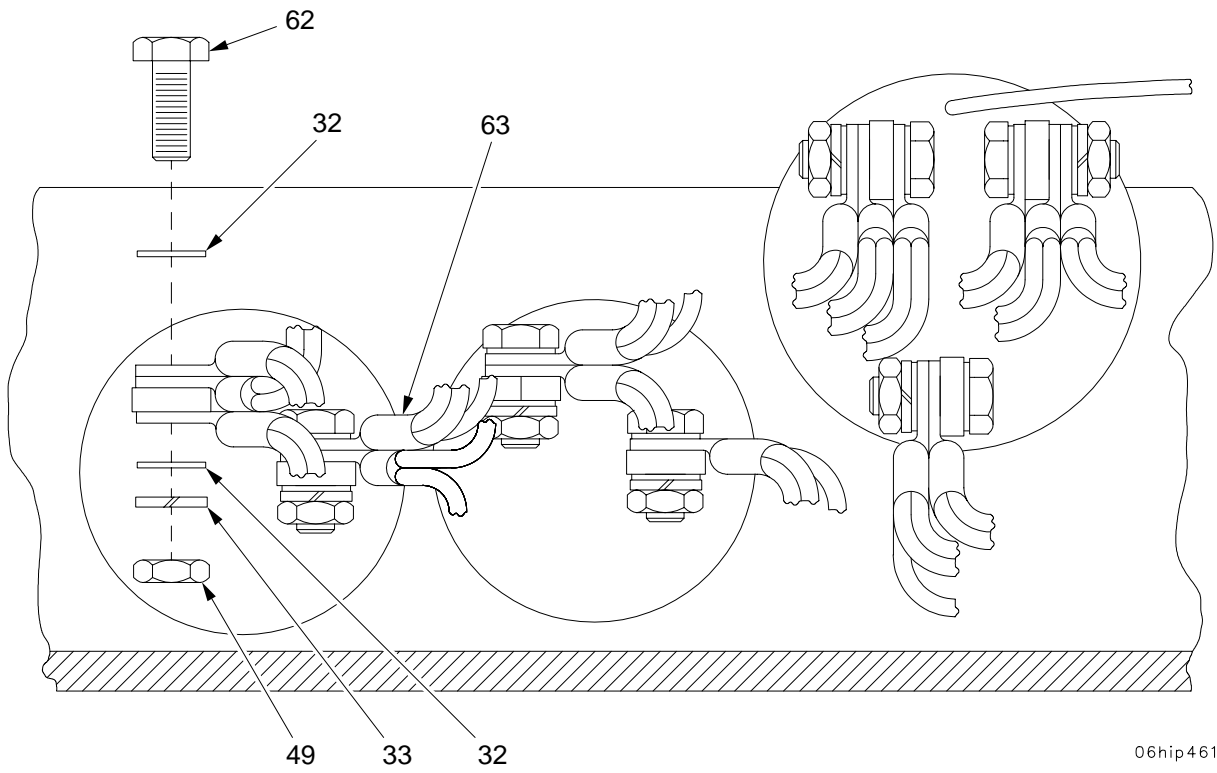
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Figure C11. Control, Power Supply (12561743) (Sheet 9 of 20)

DETAIL B

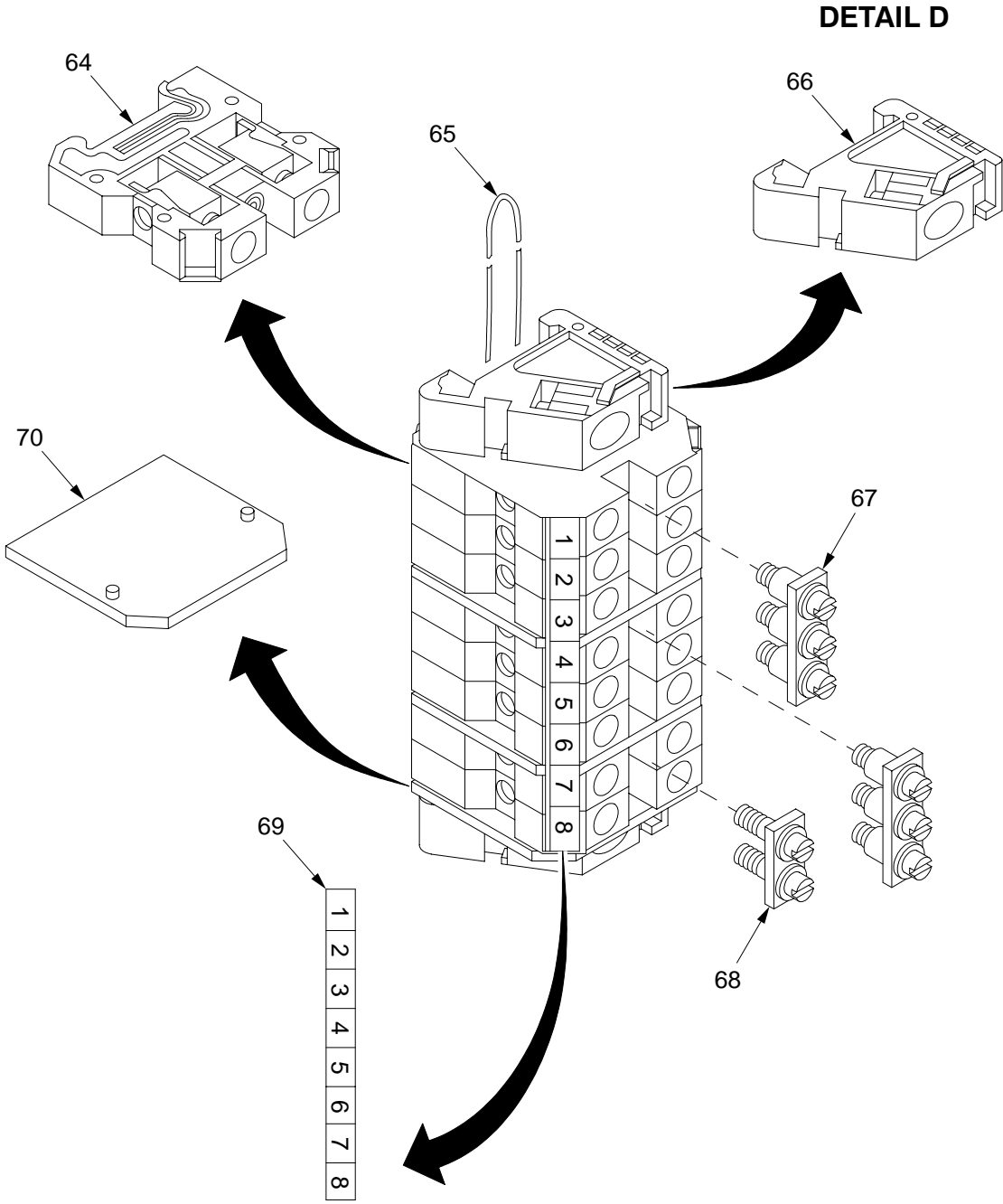


DETAIL C



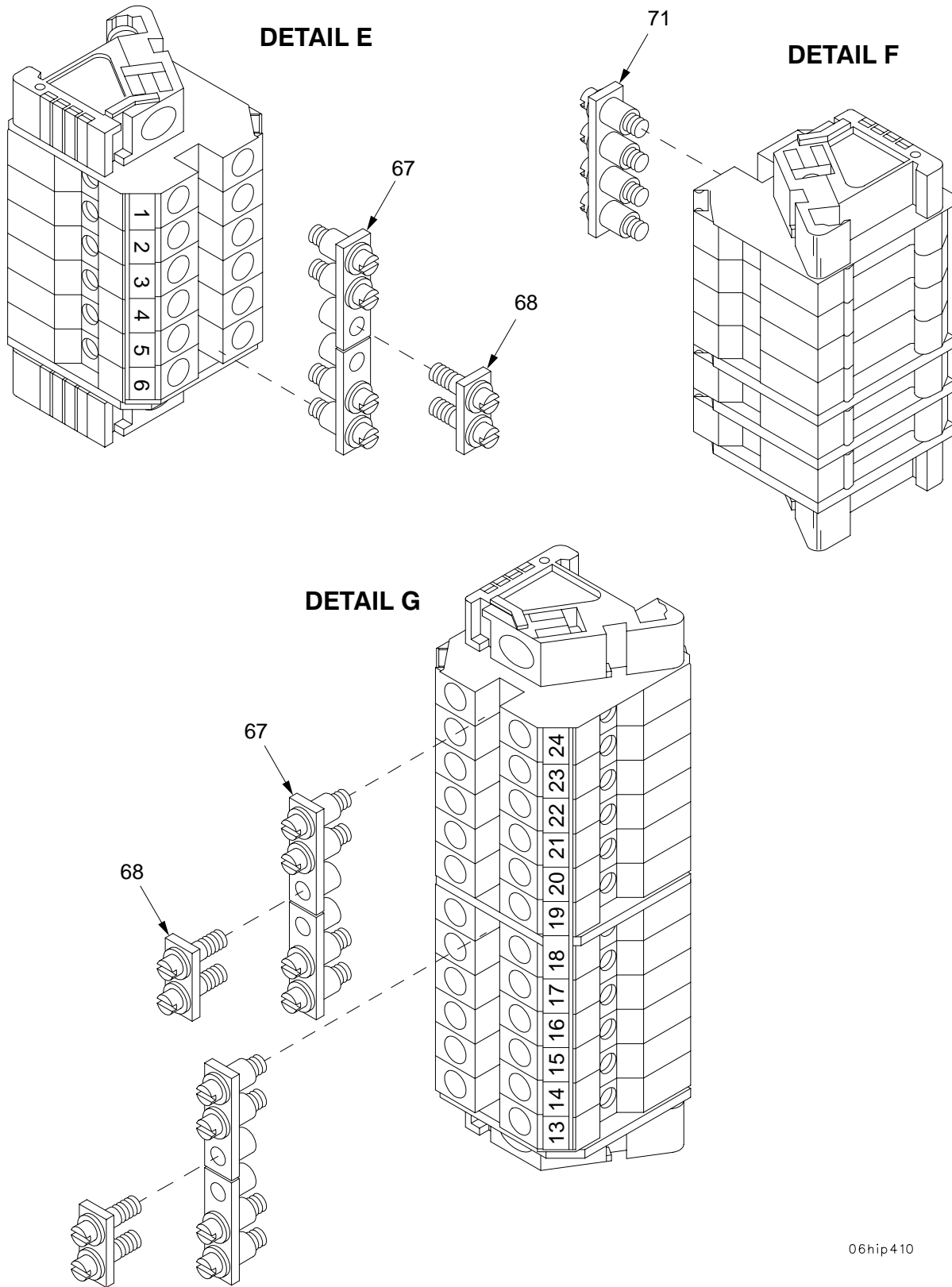
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Figure C11. Control, Power Supply (12561743) (Sheet 10 of 20)



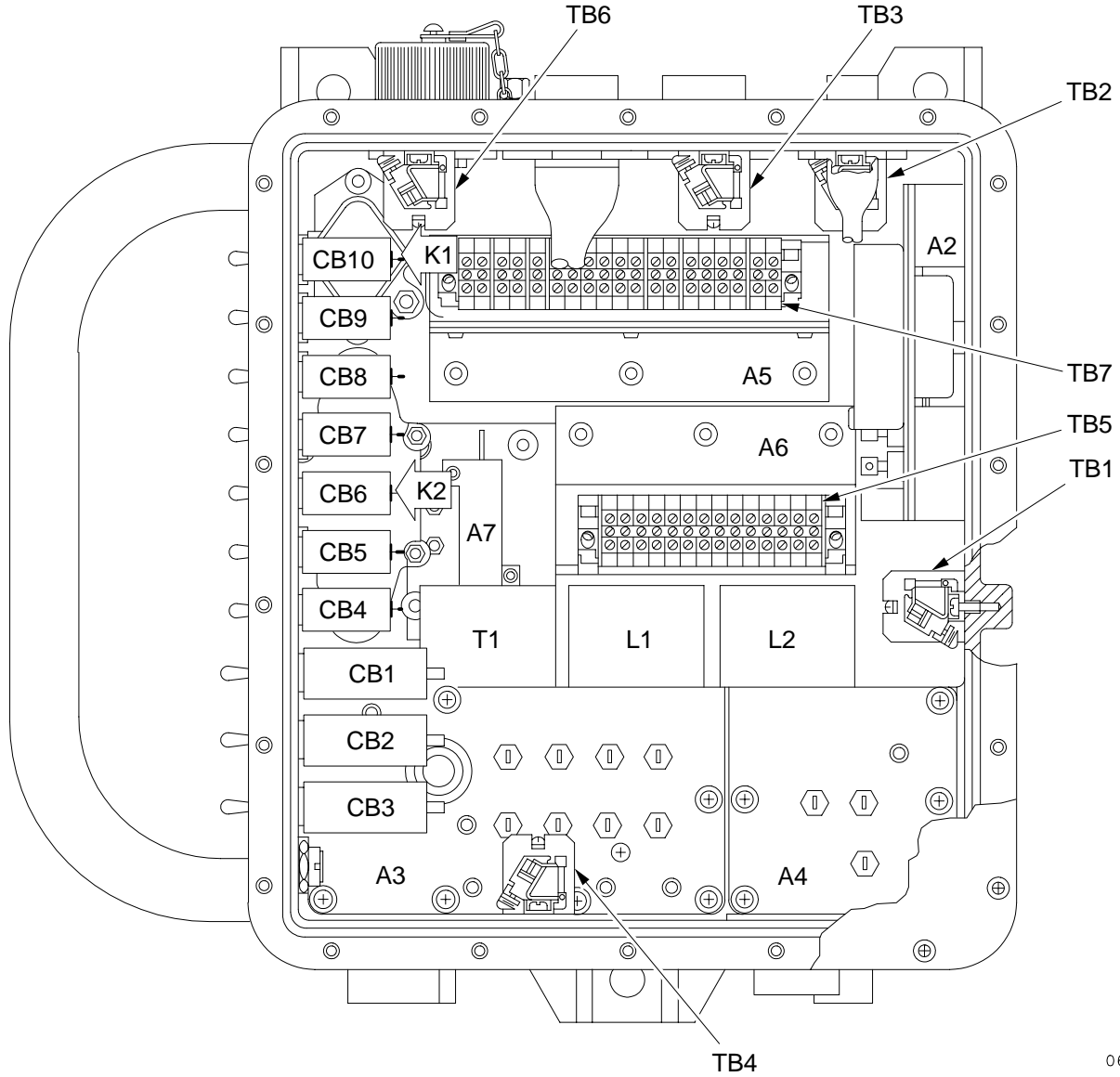
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Figure C11. Control, Power Supply (12561743) (Sheet 11 of 20)



06hip410

Figure C11. Control, Power Supply (12561743) (Sheet 12 of 20)



06hip454

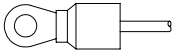

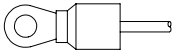
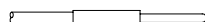
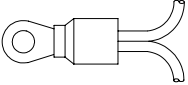
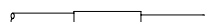
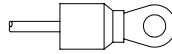
Wire	From:			To:		
						
Item No.	Component Ref. Des.	Terminal No.	Terminator Item No.	Terminator Item No.	Terminal No.	Component Ref. Des.
72	CHASSIS	GND	73		24	TB5

Figure C11. Control, Power Supply (12561743) (Sheet 13 of 20)

SECTION II

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Wire	From:			To:		
						
Item No.	Component Ref. Des.	Terminal No.	Terminator Item No.	Terminator Item No.	Terminal No.	Component Ref. Des.
74	K1	A1	73	59	11	P12
74	A7	E1	75	59	15	P12
74	A7	E2	75	59	14	P12

Wire	From:			To:		
				 		
Item No.	Component Ref. Des.	Terminal No.	Terminator Item No.	Terminator Item No.	Terminal No.	Component Ref. Des.
74	K2	X2	77	59	4	P12
76				73	X2	K1
74	K2	X1	77	59	1	P12
76				73	X1	K1

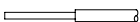
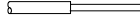


Wire	From:			To:		
						
Item No.	Component Ref. Des.	Terminal No.	Terminator Item No.	Terminator Item No.	Terminal No.	Component Ref. Des.
72	A4	F1			15	TB5
72	A4	F2			16	TB5
78	A4	F3			LOAD	CB4
78	A4	F4			LOAD	CB4
79	A3	F1			9	TB5
79	A3	F2			8	TB5
79	A3	F3			7	TB5
79	A3	F4			6	TB5
80	CR2	1			5	TB3
81	CR2	2			5	TB2
80	CR1	1			5	TB1
81	CR3	2			18	TB5

Figure C11. Control, Power Supply (12561743) (Sheet 14 of 20)

Wire	From:			To:		
						
Item No.	Component Ref. Des.	Terminal No.	Terminator Item No.	Terminator Item No.	Terminal No.	Component Ref. Des.
82	CB4	LINE			CATHODE	A6D5
78	CB5	LINE			9	TB4
78	CB5	LOAD			1	TB7
78	CB6	LINE			12	TB4
78	CB6	LOAD			16	TB6
83	CB7	LINE			20	TB7
83	CB7	LOAD			12	TB7
83	CB8	LINE			21	TB7
83	CB8	LOAD			14	TB7
83	CB9	LINE			11	TB4
83	CB9	LOAD			6	TB1
83	CB10	LINE			10	TB4
83	CB10	LOAD			6	TB3
72	A2	7			19	TB5
72	A6	1			5	TB5
84	TB1	7			20	TB5
84	TB2	6			21	TB5
72	TB6	6			23	TB5
72	TB6	7			22	TB5
82	A6D4	CATHODE			LINE	CB4
83	A6D1	ANODE			35	TB7
83	A6D1	ANODE			36	TB7





Wire	From:			To:		
						
Item No.	Component Ref. Des.	Terminal No.	Terminator Item No.	Terminator Item No.	Terminal No.	Component Ref. Des.
74	A2	2		59	10	P12
74	A2	3		59	6	P12
74	A2	4		59	5	P12
74	A2	6		59	16	P12

Figure C11. Control, Power Supply (12561743) (Sheet 15 of 20)

SECTION II

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Wire	From:			To:		
						
Item No.	Component Ref. Des.	Terminal No.	Terminator Item No.	Terminator Item No.	Terminal No.	Component Ref. Des.
74	A2	8		59	9	P12
74	A2	9		59	20	P12
74	A2	10		59	18	P12
74	A2	12		59	17	P12
74	TB4	4		59	2	P12
74	TB4	5		59	13	P12
74	TB4	6		59	12	P12
74	A5	5		59	8	P12
74	A5	10		59	7	P12

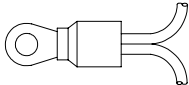

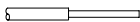
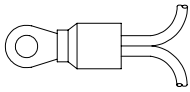
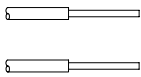
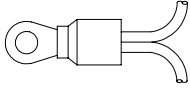
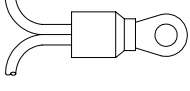
Wire	From:			To:		
				 		
Item No.	Component Ref. Des.	Terminal No.	Terminator Item No.	Terminator Item No.	Terminal No.	Component Ref. Des.
82	CB3	LINE	85		F5 F6	A3
83	K1	A1	86		3 4	TB7
82	T1	A	87		1 2	A5
82	T1	A	87		3 4	A5
79	A7	E1	88		6 7	A5
79	A7	E1	88		8 9	A5
82	T1	B	87		11 12	A5
82	T1	B	87		13 14	A5
79	A7	E2	88		25 26	TB5
79	A7	E2	88		27 28	TB5

Figure C11. Control, Power Supply (12561743) (Sheet 16 of 20)

SECTION II

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Wire	From:			To:		
						
Item No.	Component Ref. Des.	Terminal No.	Terminator Item No.	Terminator Item No.	Terminal No.	Component Ref. Des.
83	L2	1	89		CATHODE	A6D1
83	L1	1	89		CATHODE	A6D2
83	T1	A	89		ANODE	A6D2
83	T1	B	89		ANODE	A6D4
78	L2	1	87		2 4	A6

Wire	From:			To:		
						
Item No.	Component Ref. Des.	Terminal No.	Terminator Item No.	Terminator Item No.	Terminal No.	Component Ref. Des.
83	K2	A2	90	86	LOAD	CB2
83	K2	A1	90	89	CT	T1

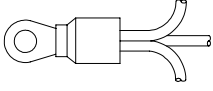
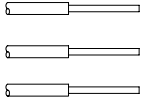
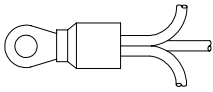
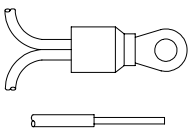
Wire	From:			To:		
						
Item No.	Component Ref. Des.	Terminal No.	Terminator Item No.	Terminator Item No.	Terminal No.	Component Ref. Des.
82	CB3	LINE	86		F7 F8 ANODE	A3 A3 A6D5
83	L1	1	89		CATHODE	A6D3
83					CATHODE	A6D3
78					6	A6
82	L2	2	87		ANODE	A6D4
78					3	A6
80					11	A2
83	L2	2	89		2	TB4
83					3	TB4
82					1	A2

Figure C11. Control, Power Supply (12561743) (Sheet 17 of 20)

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Wire	From:			To:		
						
Item No.	Component Ref. Des.	Terminal No.	Terminator Item No.	Terminator Item No.	Terminal No.	Component Ref. Des.
83 (2) 78	T1	CT	89	90	A1 5	K2 A2
83 (2) 78	L1	2	89	89	1 5	L2 A6

Wiring Chart for Item No. 42

From:		To:		From:		To:	
J1 Terminal No.	Terminal No.	Component Ref. Des.		J1 Terminal No.	Terminal No.	Component Ref. Des.	
A	1	TB3		T	8	TB3	
B	2	TB3		U	9	TB3	
C	1	TB2		V	8	TB2	
D	2	TB2		W	9	TB2	
H	3	TB3		d	10	TB3	
J	4	TB3		e	11	TB3	
K	3	TB2		f	12	TB3	
L	4	TB2		g	10	TB2	
R	7	TB3		h	11	TB2	
S	7	TB2		i	12	TB2	

Wiring Chart for Item No. 52

From:		To:		From:		To:	
J2 Terminal No.	Terminal No.	Component Ref. Des.		J2 Terminal No.	Terminal No.	Component Ref. Des.	
A	1	TB1		T	20	TB1	
B	2	TB1		U	21	TB1	
C	9	TB1		V	14	TB1	
D	10	TB1		W	15	TB1	
H	3	TB1		d	22	TB1	
J	4	TB1		e	23	TB1	
K	11	TB1		f	24	TB1	
L	12	TB1		g	16	TB1	

Figure C11. Control, Power Supply (12561743) (Sheet 18 of 20)

SECTION II

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From:		To:		From:		To:	
J2 Terminal No.	Terminal No.	Component Ref. Des.		J2 Terminal No.	Terminal No.	Component Ref. Des.	
R	19	TB1		h	17	TB1	
S	13	TB1		i	18	TB1	

Wiring Chart for Item No. 26

From:		To:		From:		To:	
J3 Terminal No.	Terminal No.	Component Ref. Des.		J3 Terminal No.	Terminal No.	Component Ref. Des.	
A, B	LINE	CB1		L, M	LINE	CB2	
C, D	LINE	CB1		N	11	TB5	
E	1	TB5		P	12	TB5	
F	2	TB5		R	13	TB5	
G	3	TB5		S	14	TB5	
H	4	TB5		T	8	TB4	
J, K	LINE	CB2		U	7	TB4	

Wiring Chart for Item No. 22

From:		To:		From:		To:	
J4 Terminal No.	Terminal No.	Component Ref. Des.		J4 Terminal No.	Terminal No.	Component Ref. Des.	
F	18	TB7		N	6	TB7	
G	19	TB7		P	11	TB7	

Wiring Chart for Item No. 40

From:		To:		From:		To:	
J5 Terminal No.	Terminal No.	Component Ref. Des.		J5 Terminal No.	Terminal No.	Component Ref. Des.	
B	1	TB4		X	LOAD	CB1	
D	17	TB5		Y	14	TB6	
U	LOAD	CB3		Z	2	CB7	
W	LOAD	CB4					

SECTION II

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Wiring Chart for Item No. 54

From:		To:		From:		To:		
J6 Terminal No.	Terminal No.	Component Ref. Des.	J6 Terminal No.	Terminal No.	Component Ref. Des.	J6 Terminal No.	Terminal No.	Component Ref. Des.
A	1	TB6	U	3	TB6			
B	4	TB6	V	11	TB6			
C	2	TB6	W	15	TB6			
D	5	TB6	X	12	TB6			
G	24	TB7	Y	17	TB7			
H	7	TB7	Z	10	TB7			
K	15	TB7	a	22	TB7			
L	8	TB7	b	28	TB7			
M	16	TB7	c	23	TB7			
N	9	TB7	d	29	TB7			

Wiring Chart for Item No. 44

From:		To:		From:		To:		
J8 Terminal No.	Terminal No.	Component Ref. Des.	J8 Terminal No.	Terminal No.	Component Ref. Des.	J8 Terminal No.	Terminal No.	Component Ref. Des.
A	37	TB7	L	27	TB7			
B	38	TB7	M	9	TB6			
G	30	TB7	N	10	TB6			
H	31	TB7	P	8	TB6			
J	13	TB7	R	32	TB7			
K	26	TB7						

Wiring Chart for Item No. 29

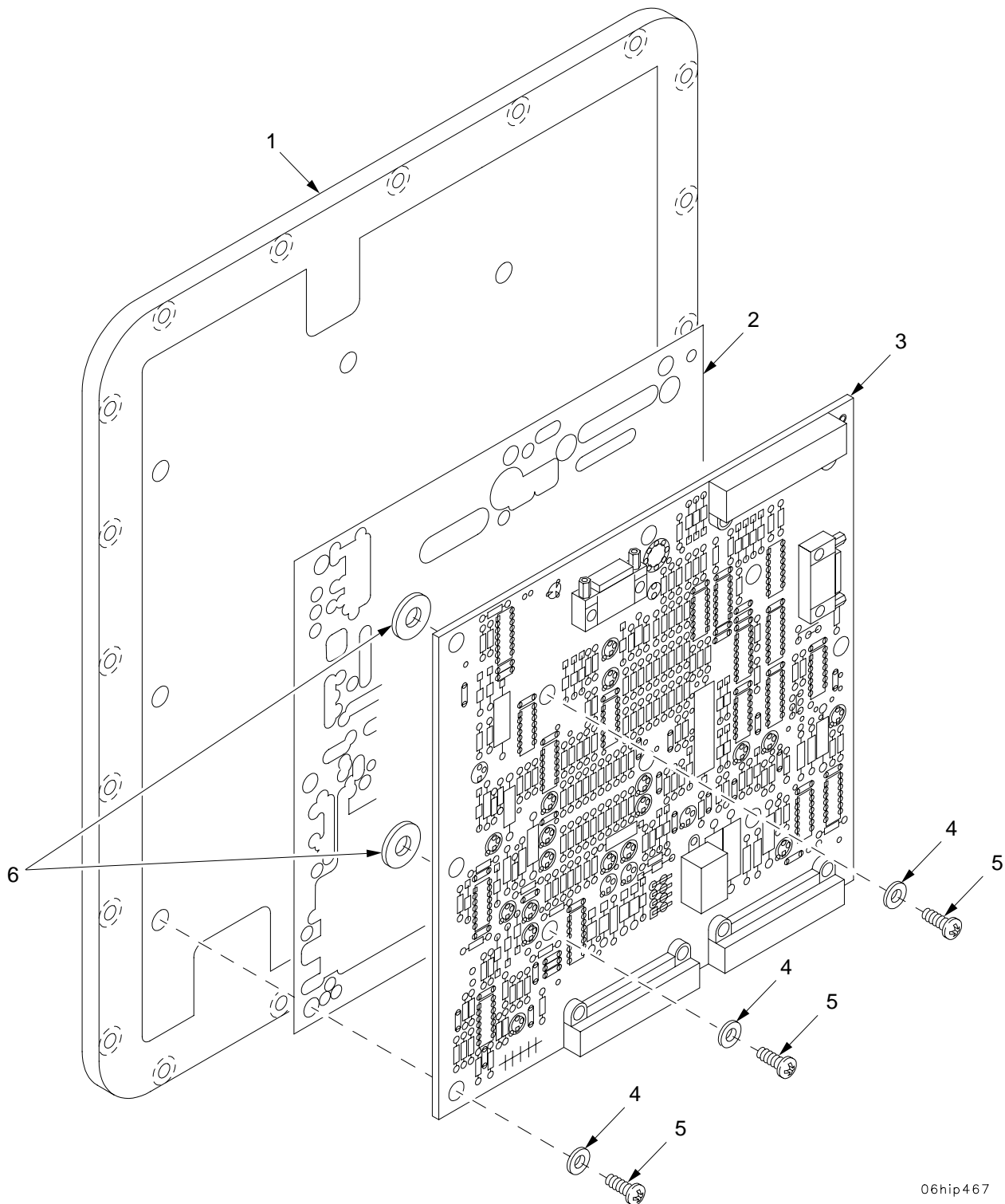
From:		To:		From:		To:		
T1 Terminal No.	Terminal No.	Component Ref. Des.	T1 Terminal No.	Terminal No.	Component Ref. Des.	T1 Terminal No.	Terminal No.	Component Ref. Des.
GND	10	TB5						

Figure C11. Control, Power Supply (12561743) (Sheet 20 of 20)

SECTION II		TM9-1200-215-34&P		C01			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	
ITEM	SMR	NSN	CAGE	PART	DESCRIPTION AND		
NO				NUMBER	USABLE ON CODE (UOC)		QTY
					GROUP 0605 CONTROL, POWER SUPPLY		
					FIGURE C11 CONTROL, POWER SUPPLY,		
					12561743		
1	PAFDD	5340-01-362-1601	19200	12561698	COVER,ACCESS (FOR COMPLETE		1
					COMPONENT LISTING SEE GROUP 060501).		
2	PAFZZ	5305-01-204-8380	80205	NAS1802-08-7	SCREW,MACHINE.....		22
3	PAFZZ	5310-00-685-3744	80205	NAS1149CN832R	WASHER,FLAT.....		22
4	PAOZZ	5305-00-738-0624	96906	MS3212-1	SCREW,MACHINE.....		1
5	PAFZZ	5305-00-978-9354	96906	MS16997-44	SCREW,CAP,SOCKET HE.....		8
6	PBDZZ	5340-01-362-4592	19200	12562084	HANDLE,BOW.....		1
7	PAFZZ	5305-00-253-5614	96906	MS21318-20	SCREW,DRIVE.....		4
8	PAFZZ	9905-01-373-0859	19200	12561920	PLATE,IDENTIFICATIO.....		1
9	PAOZZ	1650-00-222-4525	96906	MS20813-1	CAP,VALVE.....		1
10	PAOZZ	2640-00-050-1229	81348	TYV/CL2/TR C1	VALVE CORE.....		1
11	PAFZZ	4820-00-114-1096	96906	MS51607-1	VALVE STEM,PURGING.....		1
12	PAFZZ	5999-01-370-8348	19200	12561807-3	GASKET,SHIELDING,EL.....		1
13	PADZZ	6130-01-M25-3404	19200	12562484	BATTERY CHARGER.....		1
14	PADZZ	5915-01-361-6938	19200	12562481	FILTER,RADIO FREQUE NCY		1
					INTERFERENCE (A4).....		
15	PAFZZ	5310-00-773-7624	80205	NAS620C6	WASHER,FLAT.....		37
16	PADZZ	5305-00-054-6653	96906	MS51957-29	SCREW,MACHINE.....		37
17	PADZZ	5330-01-355-5353	19200	12561807-7	PACKING,PREFORMED.....		1
18	PADZZ	5305-00-798-0862	96906	MS3212-15	SCREW,MACHINE.....		7
19	PADZZ	5925-01-047-1458	81349	M39019/01-254	CIRCUIT BREAKER.....		1
20	PADZZ	5925-01-037-3324	81349	M39019/01-248	CIRCUIT BREAKER.....		2
21	PADZZ	5925-01-044-5507	81349	M39019/01-257	CIRCUIT BREAKER.....		4
22	PADZZ	6130-01-363-4740	19200	12562480	POWER SUPPLY (A3).....		1
23	PADZZ	5925-01-361-6927	19200	12562026-1	CIRCUIT BREAKER.....		2
24	PADZZ	5925-01-361-6928	19200	12562026-2	CIRCUIT BREAKER.....		1
25	PADZZ	5999-01-382-3310	19200	12561807-11	SHIELDING GASKET,EL.....		2
26	PADZZ	6150-01-363-4653	19200	12562034	WIRING HARNESS,BRAN.....		1
27	PADZZ	5998-01-365-6053	19200	12562483	ELECTRONIC COMPONEN TS ASSEMBLY,FET		1
					HEATSINK (A5).....		
28	PADZZ	5998-01-416-1914	19200	12562482	ELECTRONIC COMPONEN TS		1
					ASSEMBLY,DIODE HEATSINK (A6).....		
29	PADZZ	5950-01-361-4204	19200	12562458	TRANSFORMER,POWER.....		1
30	PADZZ	5950-01-231-4102	19200	12562456-1	REACTOR.....		1
31	PADZZ	5950-01-361-4103	19200	12562456-2	REACTOR.....		1
32	PADZZ	5130-00-515-7449	80205	NAS1149C0432R	WASHER,FLAT.....		19
33	PADZZ	5310-00-933-8121	96906	MS35338-139	WASHER,LOCK.....		10
34	PADZZ	5305-00-720-8248	96906	MS35308-304	SCREW,CAP,HEXAGON,.....		3
35	PADZZ	5305-01-243-9392	96906	MS3212-33L	SCREW,SELF-SEALING.....		12
36	PADZZ	5905-01-M25-3541	19200	12562031	PLATE,MOUNTING,RESI STOR (A7).....		1
37	PADZZ	5310-01-352-9575	80205	NAS1149C0363R	WASHER,FLAT.....		7
38	PADZZ	5310-00-934-9765	96906	MS35650-304	NUT,PLAIN,HEXAGON.....		7
39	PADZZ	5999-01-364-1174	19200	12561807-10	SHIELDING GASKET,EL.....		3
40	PADZZ	6150-01-363-4654	19200	12562035	WIRING HARNESS,BRAN.....		1
41	PADZZ	5975-00-727-5153	96906	MS3367-4-9	STRAP,TIEDOWN,ELECT.....		1
* 42	PADZZ	6150-01-376-3051	19200	12562032	WIRING HARNESS,BRAN.....		1
43	PADZZ		81349	M83528/002D-028	SHIELDING GASKET.....		1
44	PADZZ	6150-01-364-2072	19200	12562037	LEAD ASSEMBLY,ELECT.....		1
45	PAFZZ	6210-01-166-7635	19200	12562029	LIGHT,INDICATOR.....		3
46	MDDZZ		81349	M23053/5-104-9	INSULATION SLEEVING MAKE FROM		1
					SLEEVING,NSN 5970-00-088-2975.....		
47	PAOZZ	5980-01-281-5356	19207	12360905-3	LIGHT EMITTING DIOD.....		3
48	PADZZ	5945-01-M25-3391	19200	12562486	RELAY,ELECTROMAGNET IC,200 AMP (K2)		1
49	PADZZ	5310-00-400-5503	96906	MS35650-3254	NUT,PLAIN,HEXAGON.....		9
50	PADZZ	6150-01-363-4652	19200	12562033	WIRING HARNESS,BRAN.....		1
51	PADZA	5999-01-370-8347	19200	12561807-8	SHIELDING GASKET,EL.....		1
52	PADZZ	6150-01-364-2071	19200	12562036	WIRING HARNESS,LOAD.....		1
53	PADZZ	5945-01-M25-3392	19200	12562485	RELAY,ELECTROMAGNET IC,50 AMP (K1).		1
54	XADZZ		19200	12561840-3	RACK,ELECTRONIC JUN.....		1
55	XADZZ		19200	12561840-1	RACK,ELECTRONIC JUN.....		2
56	XADZZ		19200	12561840-4	RACK,ELECTRONIC JUN.....		1
57	XADZZ		19200	12561840-2	RACK,ELECTRONIC JUN.....		1
58	XADZZ		19200	12561672	HOUSING,ELECTRONIC.....		1

SECTION II		TM9-1200-215-34&P				
(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR	NSN	CAGE	PART	DESCRIPTION AND	QTY
NO				NUMBER	USABLE ON CODE (UOC)	
59	PADZA	5999-01-164-2434	19200	12562039	CONTACT,ELECTRICAL.....	19
60	PADZZ	5935-01-M25-3395	19200	12562023-3	CONNECTOR,RECEPTACL.....	1
61	PADZZ	5305-00-059-3658	96906	MS51958-62	SCREW,MACHINE.....	6
62	PADZZ	5305-00-688-2020	96906	MS35308-305	SCREW,CAP,HEXAGON H.....	7
63	MDDZZ		81349	M23053/5-107-2	INSULATION SLEEVING MAKE FROM	1
					SLEEVING,NSN 5970-00-787-2335.....	
64	XADZZ		19200	12561977	TERMINAL JUNCTION B.....	38
65	MDDZZ		96906	MS9226-05	WIRE,NONELECTRICAL MAKE FROM	1
					WIRE,NSN 9505-00-063-1444.....	
66	XADZZ		19200	12561978	BRACKET,MOUNTING.....	10
67	XADZZ		19200	12561980-2	TERMINAL JUNCTION B.....	10
68	XADZZ		19200	12561980-1	TERMINAL JUNCTION B.....	5
69	PBDZZ	7690-01-381-4348	19200	12561981	MARKER,IDENTIFICATI.....	5
70	XADZZ		19200	12561979	PLATE,MOUNTING.....	10
71	XADZZ		19200	12561980-3	TERMINAL JUNCTION B.....	1
72	MDDZZ		81349	M22759/34-16-0	WIRE,ELECTRICAL MAKE FROM WIRE,NSN	1
					6145-01-360-2077.....	
73	PADZZ	5940-00-143-4771	96906	MS25036-103	TERMINAL,LUG.....	3
74	MDDZZ		81349	M22759/34-22-9	WIRE,ELECTRICAL MAKE FROM WIRE,NSN	1
					6145-01-110-8894.....	
75	PADZZ	5940-00-813-0698	96906	MS25036-101	TERMINAL,LUG.....	3
76	MDDZZ		81349	M22759/34-20-9	WIRE,ELECTRICAL MAKE FROM WIRE,NSN	1
					6145-01-111-0754.....	
77	PADZZ	5940-00-143-4780	96906	MS25036-108	TERMINAL,LUG.....	3
78	MDDZZ		81349	M22759/34-16-2	WIRE,ELECTRICAL MAKE FROM WIRE,NSN	1
					6145-01-360-2076.....	
79	MDDZZ		81349	M22759/34-14-0	WIRE,ELECTRICAL MAKE FROM WIRE,P/N	1
					M22759/34-14-01.....	
80	MDDZZ		81349	M22759/34-20-2	WIRE,ELECTRICAL MAKE FROM WIRE,NSN	1
					6145-01-360-2073.....	
81	MDDZZ		81349	M22759/34-20-0	WIRE,ELECTRICAL MAKE FROM WIRE,NSN	1
					6145-01-360-2074.....	
82	MDDZZ		81349	M22759/34-14-2	WIRE,ELECTRICAL MAKE FROM WIRE,NSN	1
					6145-01-360-1798.....	
83	MDDZZ		81349	M22759/34-12-2	WIRE,ELECTRICAL MAKE FROM WIRE,NSN	1
					6145-01-360-1797.....	
84	MDDZZ		81349	M22759/34-12-0	WIRE,ELECTRICAL MAKE FROM WIRE,NSN	1
					6145-01-360-2075.....	
85	PADZZ	5940-00-143-4794	96906	MS25036-112	TERMINAL,LUG.....	2
86	PADZZ	5940-00-143-5284	96906	MS25036-115	TERMINAL,LUG.....	3
87	PADZZ	5940-00-143-4777	96906	MS25036-157	TERMINAL,LUG.....	6
88	PADZZ	5940-00-204-8990	96906	MS25036-111	TERMINAL,LUG.....	4
89	PADZZ	5940-00-114-1305	96906	MS25036-116	TERMINAL,LUG.....	10
90	PADZZ	5940-00-557-4345	96906	MS25036-118	TERMINAL,LUG.....	3

END OF FIGURE

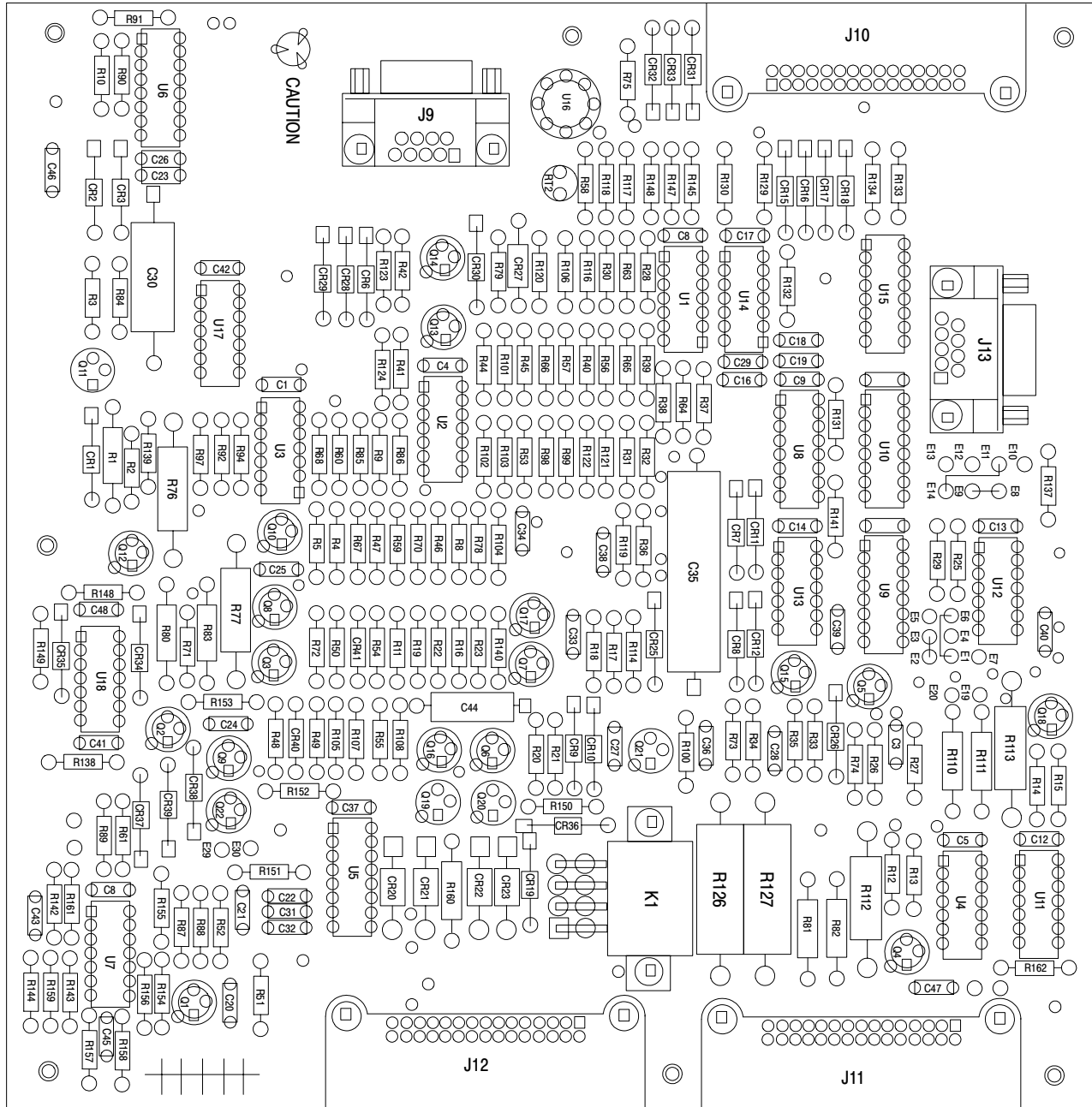


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Figure C12. Cover, Access (12561698)

SECTION II		TM9-1200-215-34&P				
(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR	NSN	CAGE	PART	DESCRIPTION AND	
NO				NUMBER	USABLE ON CODE (UOC)	QTY
					GROUP 060501 COVER, ACCESS	
					FIGURE C12 COVER, ACCESS,	
					12561698	
1	XADZZ		19200	12562362	COVER,ACCESS.....	1
2	XADZZ		19200	12562487	SPACER,PLATE.....	1
3	PADDD	5998-01-362-1900	19200	12561695	CIRCUIT CARD ASSEMB (FOR COMPLETE	1
					COMPONENT LISTING SEE GROUP	
					06050101).....	
4	PADZZ	5310-01-338-4121	80205	NAS1149CN432R	WASHER,FLAT.....	13
5	PADZZ	5305-00-054-5650	96906	MS51957-16	SCREW,MACHINE.....	13
6	PADZZ		19200	12561698-3	SLEEVE,SPACER.....	2

END OF FIGURE



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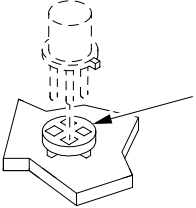
Component and Mounting Pad Detail (typical)	Component Reference Designator	Mounting Pad Item #
	Q1 thru Q10, Q12 thru Q18, Q22	1
	Q11, Q19, Q20, Q21	2
	U16	3

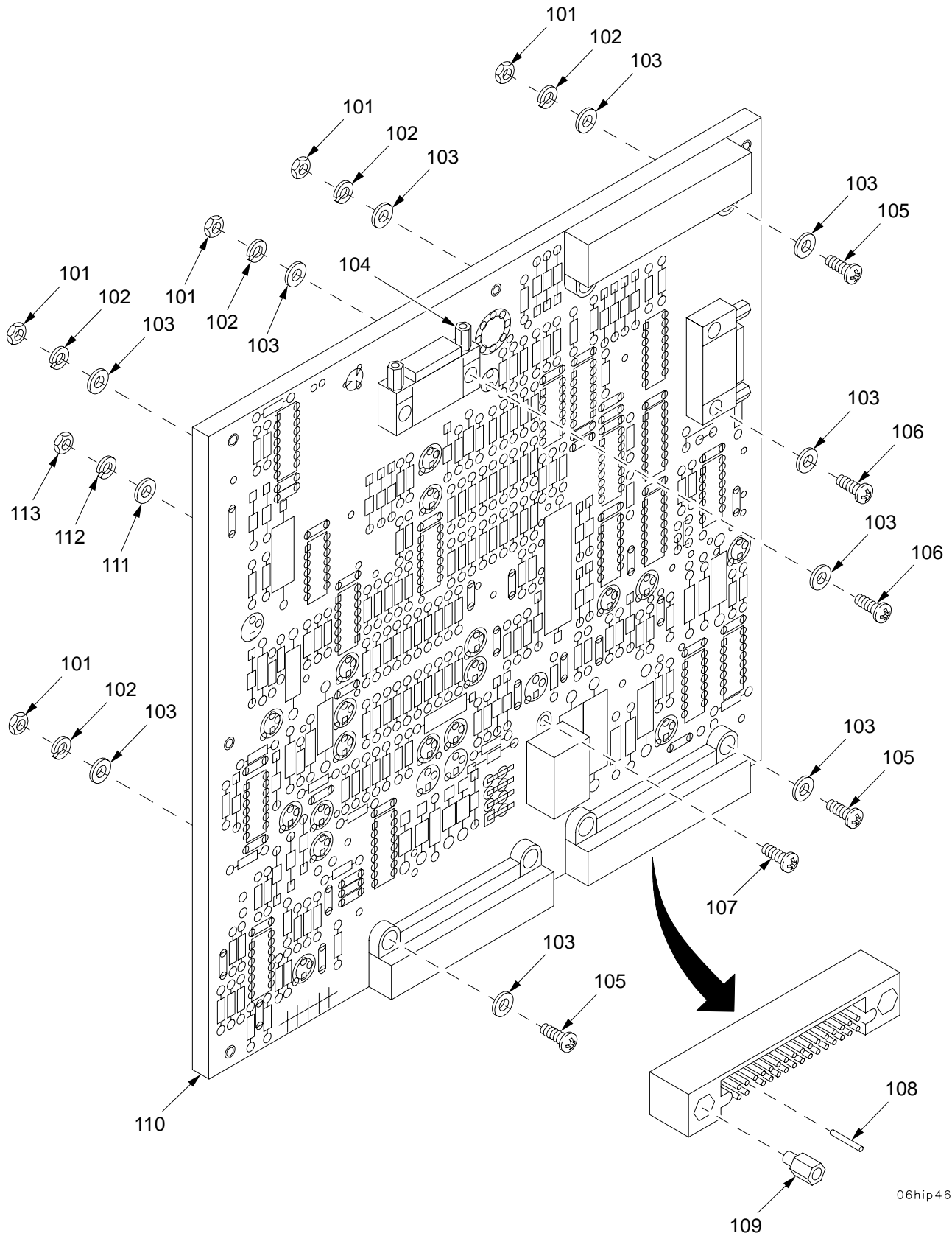
Figure C13. Circuit Card Assembly, PCU Main (12561695) (Sheet 1 of 3)

SECTION II

TM 9-1200-215-34&P

REF DES	ITEM NO.	REF DES	ITEM NO.	REF DES	ITEM NO.	REF DES	ITEM NO.
C01, C03 thru C06, C08 thru C14, C16 thru C19, C31, C36, C39, C42	4	Q2, Q3	25	R46, R116	43	R114	71
		Q8, Q9	26			R118	72
		Q10, Q12 thru Q18	27	R48, R50	44	R119	73
		Q11	28	R59 thru R61, R63 thru R66, R138, R142, R143	45	R120	74
C20 thru C22	5	Q19, Q20	29			R122	75
		Q21	30			R123, R124	76
C23	6	R1	31			R126, R127	77
C24, C25	7	R2, R85	32	R70	46		
C26 thru C29, C40, C41, C43	8	R3	33	R71 thru R75	47	R129	78
		R4, R5, R10 thru R12, R14 thru R20, R23, R25 thru R27, R29, R31 thru R35, R41, R42,	34	R76, R77	48	R130	79
C30	9			R78	49	R131, R132	80
C32, C33, C37, C38, C46 thru C48	10			R79	50	R133, R134	81
				R80 thru R83, R110, R111	51		
C34	11					R144	82
C35	12	R140, R141, R145 thru		R84	52	R150	83
C44	13			R86	53	R155	84
C45	14	R149, R151, R158, R159, R162		R87	54	R157	85
CR1 thru CR3	15			R88	55	R160	86
				R89	56	RT2	87
CR6 thru CR12, CR15 thru CR19, CR28 thru CR38	16			R91	57	U1, U2	88
		R8, R30, R40, R156, R9	35	R92	58	U3, U4	89
				R94	59	U5	90
CR20 thru CR23	17			R97	60	U6	91
		R13, R22, R47, R49, R51 thru R58, R154, R161	36	R98	61	U7, U17	92
CR25 thru CR27	18			R99, R100	62	U8	93
CR39	19			R101	63	U9, U10	94
CR40, CR41	20	R21, R67, R68	38	R102	64	U11	95
J9, J13	21			R103	65	U12, U13	96
J10 thru J12	22	R28, R37 R39, R44, R152, R153	39	R104	66	U14	97
K1	23			R105, R137, R139	67	U15	98
Q1, Q4 thru Q7, Q22	24	R36	40	R106, R121	68	U16	99
		R38, R90	41			U18	100
		R45, R117	42	R107, R108	69		
				R112, R113	70		

Figure C13. Circuit Card Assembly, PCU Main (12561695) (Sheet 2 of 3)



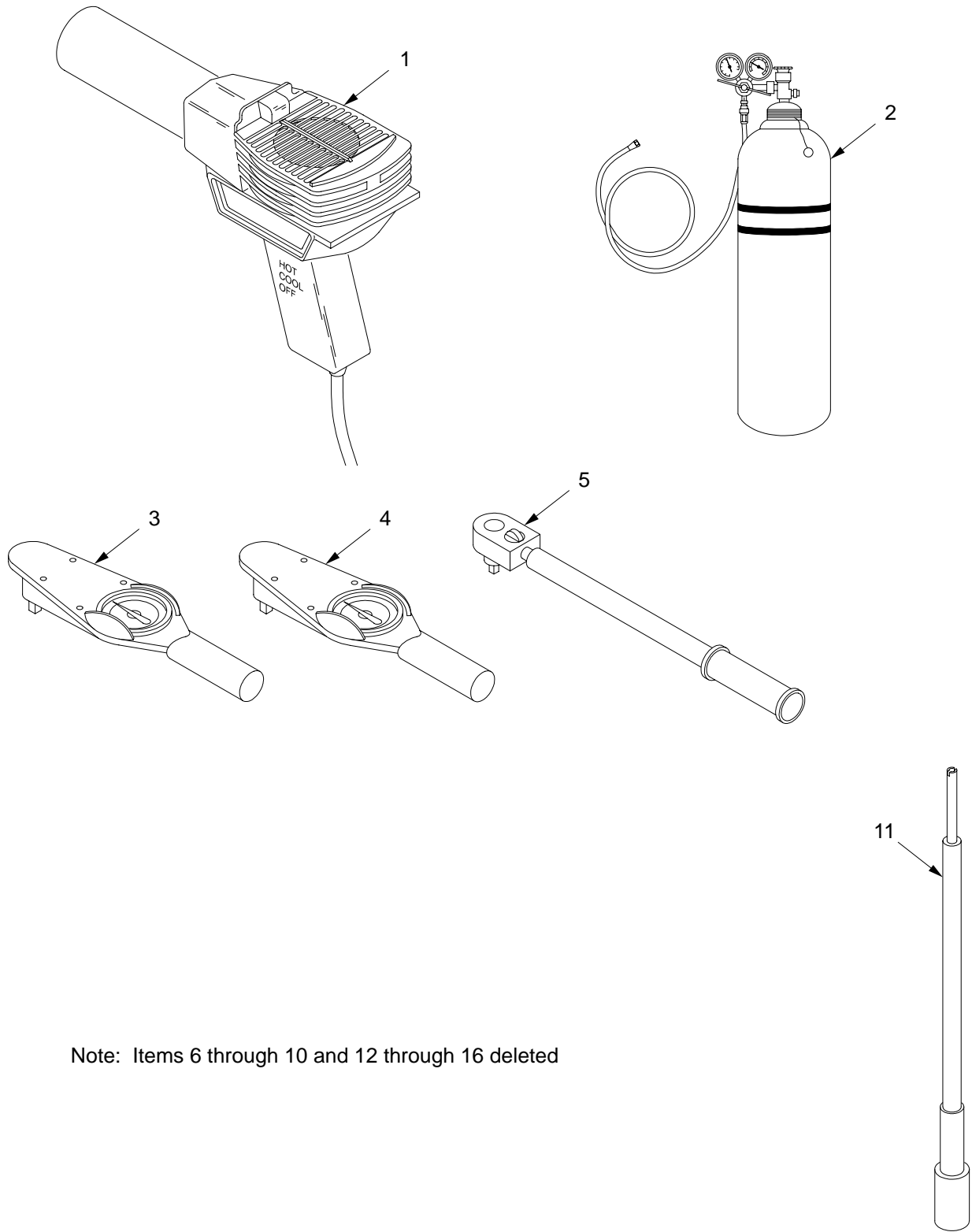
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Figure C13. Circuit Card Assembly, PCU Main (12561695) (Sheet 3 of 3)

SECTION II (1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM NO	SMR CODE	NSN	CAGEC	PART NUMBER	DESCRIPTION AND USABLE ON CODE (UOC)	QTY
					GROUP 06050101 CIRCUIT CARD ASSEMBLY FIGURE C13 CIRCUIT CARD ASSEMBLY PCU MAIN, 12561695	
1	PADZZ	5999-01-319-4556	81349	M38527/03-010N	MOUNTING PAD.....	18
1	PADZZ		81349	M83536/2-027	RELAY,ELECTROMAGNET.....	1
2	PADZZ	5999-01-194-9729	81349	M38527/02-017D	MOUNTING PAD,ELECTR.....	4
3	PADZZ	5999-01-199-2857	81349	M38527/04-012D	MOUNTING PAD,ELECTR.....	1
4	PADZZ	5910-01-211-5029	81349	M39014/22-0514	CAPACITOR,FIXED,CER.....	20
5	PADZZ	5910-01-171-8688	81349	M39014/22-1010	CAPACITOR,FIXED,CER.....	3
6	PADZZ	5910-01-227-8886	81349	M39014/22-0423	CAPACITOR,FIXED,CER.....	1
7	XDDZZ	5910-01-232-0963	81349	M39014/22-1120	CAPACITOR,FIXED,CER.....	2
8	PADZZ	5910-01-210-5322	81349	M39014/22-1156	CAPACITOR,FIXED,CER.....	7
9	PADZZ	5910-01-119-4302	81349	M39006/22-0571	CAPACITOR,FIXED,ELE.....	1
10	PADZZ	5910-01-171-8693	81349	M39014/22-1094	CAPACITOR,FIXED,CER.....	7
11	PADZZ	5910-01-171-7406	81349	M39014/22-1082	CAPACITOR,FIXED,CER.....	1
12	PADZZ	5910-01-119-4283	81349	M39006/22-0620	CAPACITOR,FIXED,ELE.....	1
13	PADZZ	5910-01-239-3994	81349	M39003/01-8078	CAPACITOR,FIXED,ELE.....	1
14	PADZZ	5910-01-141-5549	81349	M39014/22-1058	CAPACITOR,FIXED,CER.....	1
15	PADZZ	5961-00-584-4527	81349	JANTX1N4148-1	SEMICONDUCTOR DEVIC E, DIODE (C1,C2).....	3
16	PADZZ	5961-00-425-9815	81349	JANTX1N5617	SEMICONDUCTOR DEVIC.....	23
17	PADZZ	5961-00-403-4545	81349	JANTX1N5417	SEMICONDUCTOR DEVIC.....	4
18	PADZZ	5961-01-081-3863	81349	JANTX1N967B1	SEMICONDUCTOR DEVIC.....	3
19	PADZZ	5961-01-102-2873	81349	JANTX1N756A-1	SEMICONDUCTOR DEVIC.....	1
20	PADZZ	5961-01-105-0608	81349	JANTX1N965B-1	SEMICONDUCTOR DEVIC.....	2
21	PADZA	5935-01-113-2938	81349	M24308/24-31	CONNECTOR,RECEPTACL.....	2
22	PADZZ	5935-01-132-5333	81349	M55302/110-10	CONNECTOR,RECEPTACL.....	3
*	PADZZ		19207	83536/2-027	RELAY,ELECTROMAGNET.....	1
24	PADZZ	5961-01-019-4947	81349	JANTXV2N2907A	TRANSISTOR.....	6
25	PADZZ	5961-01-067-7294	81349	JANTX2N4033	TRANSISTOR.....	2
26	PADZZ	5961-01-187-8067	81349	JANTX2N3019S	TRANSISTOR.....	2
27	PADZA	5961-00-858-3826	81349	JANTX2N2222A	TRANSISTOR.....	8
28	PADZZ	5961-00-113-7650	81349	JANTX2N3501	TRANSISTOR.....	1
29	PADZZ	5961-01-196-9452	81349	JANTX2N6796	TRANSISTOR.....	2
30	PADZZ	5961-00-233-4851	81349	JANTX2N2323	SEMICONDUCTOR DEVIC.....	1
31	PADZZ	5905-01-152-0051	81349	RLR20C1001FS	RESISTOR,FIXED,FILM.....	1
32	PADZZ	5905-01-170-3450	81349	RLR07C2212FS	RESISTOR,FIXED,FILM.....	2
33	PADZZ	5905-01-183-6145	81349	RLR07C4020FS	RESISTOR,FIXED,FILM.....	1
34	PADZZ	5905-01-144-3838	81349	RLR07C1002FS	RESISTOR,FIXED,FILM.....	35
35	PADZZ	5905-00-429-5712	81349	RNR55C1002BS	RESISTOR,FIXED,FILM.....	4
36	PADZZ	5905-01-184-5318	81349	RLR07C1152FS	RESISTOR,FIXED,FILM.....	1
37	PADZZ	5905-01-143-8369	81349	RLR07C1001FS	RESISTOR,FIXED,FILM.....	14
38	PADZZ	5905-01-165-5218	81349	RLR07C3011FS	RESISTOR,FIXED,FILM.....	3
39	PADZZ	5905-01-181-3227	81349	RLR07C2052FS	RESISTOR,FIXED,FILM.....	9
40	PADZZ	5905-01-154-6157	81349	RLR07C1212FS	RESISTOR,FIXED,FILM.....	1
41	PADZZ	5905-01-178-2234	81349	RLR07C1302FS	RESISTOR,FIXED,FILM.....	2
42	PADZZ	5905-01-344-2374	81349	RNR55C4222BP	RESISTOR,FIXED,FILM.....	2
43	PADZZ	5905-01-122-7550	81349	RNR55C3482BS	RESISTOR,FIXED,FILM.....	2
44	PADZZ	5905-01-170-7738	81349	RLR07C2210FS	RESISTOR,FIXED,FILM.....	3
45	PADZZ	5905-01-044-9110	81349	RLR07C1004FS	RESISTOR,FIXED,FILM.....	10
46	PADZZ	5905-01-250-2471	81349	RNR55C5111BS	RESISTOR,FIXED,FILM.....	1
47	PADZZ	5905-01-177-2012	81349	RLR07C4641FS	RESISTOR,FIXED,FILM.....	5
48	PADZZ	5905-00-121-9857	81349	RCR32G4R7JS	RESISTOR,FIXED,FILM.....	2
49	PADZZ	5905-01-244-8073	81349	RNR55C1692BS	RESISTOR,FIXED,FILM.....	1
50	PADZZ	5905-01-174-0097	81349	RNR55C2052BP	RESISTOR,FIXED,FILM.....	1
51	PADZZ	5905-01-185-4131	81349	RLR20C46R4FS	RESISTOR,FIXED,FILM.....	6
52	PADZZ	5905-01-139-0810	81349	RLR07C2741FS	RESISTOR,FIXED,FILM.....	1
53	PADZZ	5905-01-150-4508	81349	RLR07C3322FS	RESISTOR,FIXED,FILM.....	1
54	PADZZ	5905-01-177-2002	81349	RLR07C1100FS	RESISTOR,FIXED,FILM.....	1
55	PADZZ	5905-01-158-9002	81349	RLR07C9091FS	RESISTOR,FIXED,FILM.....	1
56	PADZZ	5905-01-170-0374	81349	RLR07C5232FS	RESISTOR,FIXED,FILM.....	1
57	PADZZ	5905-01-181-2345	81349	RLR07C1072FS	RESISTOR,FIXED,FILM.....	1
58	PADZZ	5905-01-180-8912	81349	RLR07C2551FS	RESISTOR,FIXED,FILM.....	1
59	PADZZ	5905-01-190-6292	81349	RLR07C6981FS	RESISTOR,FIXED,FILM.....	1
60	PADZZ	5905-01-187-7461	81349	RLR07C1331FS	RESISTOR,FIXED,FILM.....	1
61	PADZZ	5905-01-153-8275	81349	RLR07C3653FS	RESISTOR,FIXED,FILM.....	1

SECTION II	TM9-1200-215-34&P				C01	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR	NSN	CAGEC	PART	DESCRIPTION AND	QTY
NO	CODE			NUMBER	USABLE ON CODE (UOC)	
62	PADZZ	5905-01-165-9847	81349	RLR07C1471FS	RESISTOR, FIXED, FILM.....	2
63	PADZZ	5905-01-360-6044	81349	RNR55C3652BP	RESISTOR, FIXED, FILM.....	1
64	PADZZ	5905-01-177-1906	81349	RLR07C2371FS	RESISTOR, FIXED, FILM.....	1
65	PADZZ	5905-01-186-9625	81349	RLR07C2152FS	RESISTOR, FIXED, FILM.....	1
66	PADZZ	5905-01-106-9005	81349	RLR07C8252FS	RESISTOR, FIXED, FILM.....	1
67	PADZZ	5905-01-176-5451	81349	RLR07C5111FS	RESISTOR, FIXED, FILM.....	3
68	PADZZ	5905-01-243-4010	81349	RNR55C6192BP	RESISTOR, FIXED, FILM.....	2
69	PADZZ	5905-01-166-3920	81349	RLR07C2151FS	RESISTOR, FIXED, FILM.....	2
70	PADZZ	5905-01-176-8938	81349	RWR89S1470FS	RESISTOR, FIXED, FILM.....	2
71	PADZZ	5905-01-144-2174	81349	RLR07C1000FS	RESISTOR, FIXED, FILM.....	1
72	PADZZ	5905-01-180-3259	81349	RLR07C1621FS	RESISTOR, FIXED, FILM.....	1
73	PADZZ	5905-01-132-1524	81349	RLR07C6192FS	RESISTOR, FIXED, FILM.....	1
* 74	PADZZ	5905-01-460-8829	81349	RNR55C4022BP	RESISTOR, FIXED, FILM.....	1
75	PADZZ	5905-01-250-8860	81349	RNR55C8061BS	RESISTOR, FIXED, FILM.....	1
76	PADZZ	5905-01-043-9236	81349	RLR07C1003FS	RESISTOR, FIXED, FILM.....	2
77	PADZZ	5905-01-173-8935	81349	RWR84S1780FS	RESISTOR, FIXED, WIRE.....	2
78	PADZZ	5905-01-184-7970	81349	RLR07C1504FS	RESISTOR, FIXED, FILM.....	1
79	PADZZ	5905-01-205-7214	81349	RLR07C1543FS	RESISTOR, FIXED, FILM.....	1
80	PADZZ	5905-01-185-0065	81349	RLR07C4642FS	RESISTOR, FIXED, FILM.....	2
81	PADZZ	5905-01-177-2000	81349	RLR07C10R0FS	RESISTOR, FIXED, FILM.....	2
82	PADZZ	5905-01-176-0610	81349	RLR07C1622FS	RESISTOR, FIXED, FILM.....	1
83	PADZZ	5905-01-317-7334	81349	RLR07C2003FS	RESISTOR, FIXED, FILM.....	1
84	PADZZ	5905-01-108-4400	81349	RNR55C1622BS	RESISTOR, FIXED, FILM.....	1
85	PADZZ	5905-01-360-6045	81349	RLR07C3574FR	RESISTOR, FIXED, FILM.....	1
86	PADZZ	5905-01-159-6541	81349	RLR20C2201FR	RESISTOR, FIXED, FILM.....	1
87	PADZZ	5905-01-360-6629	81349	RTH06AS511F	RESISTOR, THERMAL.....	1
88	PADZZ	5962-01-286-2238	81349	M38510/11201BCA	MICROCIRCUIT, LINEAR.....	2
89	PADZZ	5962-01-083-5992	81349	M38510/17101BCB	MICROCIRCUIT, DIGITA.....	2
90	PADZZ	5962-01-369-6559	67268	5962-8951103EA	MICROCIRCUIT, LINEAR.....	1
91	PADZZ	5962-01-317-3936	81349	M38510/12602BEA	MICROCIRCUIT, LINEAR.....	1
92	PADZZ	5962-01-238-5501	81349	M38510/11005BCA	MICROCIRCUIT, LINEAR.....	2
93	PADZZ	5962-01-309-1046	81349	M38510/05553BEA	MICROCIRCUIT, DIGITA.....	1
94	PADZZ	5962-01-188-6436	21877	166161	MICROCIRCUIT, DIGITA.....	2
95	PADZZ	5962-01-288-6899	81349	M38510/17001BCA	MICROCIRCUIT, DIGITA.....	1
96	PADZZ	5962-01-285-9161	81349	M38510/05151BCA	MICROCIRCUIT, DIGITA.....	2
97	PADZZ	5962-01-263-9083	81349	M38510/10902BCA	MICROCIRCUIT, LINEAR.....	1
98	PADZZ	5980-01-310-6252	67268	5962-8767901EA	COUPLER, OPTOELECTRO.....	1
99	PADZZ	5962-01-216-6944	81349	M38510/12802BGA	MICROCIRCUIT, LINEAR.....	1
100	PADZZ	5962-01-282-7007	81349	M38510/05051BCA	MICROCIRCUIT, DIGITA.....	1
101	PADZZ	5310-00-938-2013	96906	MS35649-224	NUT, PLAIN, HEXAGON.....	10
102	PADZZ	5310-00-928-2690	96906	MS35338-134	WASHER, LOCK.....	10
103	PADZZ	5310-00-595-6761	96906	MS15795-802	WASHER, FLAT.....	20
104	PADZZ	5935-01-052-9436	81349	M24308/26-1	JACKSCREW, ELECTRICA.....	4
105	PADZZ	5305-00-054-5639	96906	MS51957-5	SCREW, MACHINE.....	6
106	PADZZ	5305-00-054-5640	96906	MS51957-6	SCREW, MACHINE.....	4
107	PADZZ	5305-00-054-5648	96906	MS51957-14	SCREW, MACHINE.....	2
108	PADZZ	5935-00-262-5173	81349	M55302/31-02	POLARIZING KEY, ELEC.....	3
109	PADZZ	5935-01-228-8735	19200	12562021	JACKSCREW, ELECTRICA.....	6
110	XADZZ		19200	12561694	PRINTED WIRING BOAR.....	1
111	PADZZ	5310-01-338-4121	80205	NAS1149CN432R	WASHER, FLAT.....	2
112	PADZZ	5310-00-933-8118	96906	MS35338-135	WASHER, LOCK.....	2
113	PADZZ	5310-00-934-9748	96906	MS35649-244	NUT, PLAIN, HEXAGON.....	2

END OF FIGURE



Note: Items 6 through 10 and 12 through 16 deleted

Figure C14. Special Tools Listing (Sheet 1 of 4)

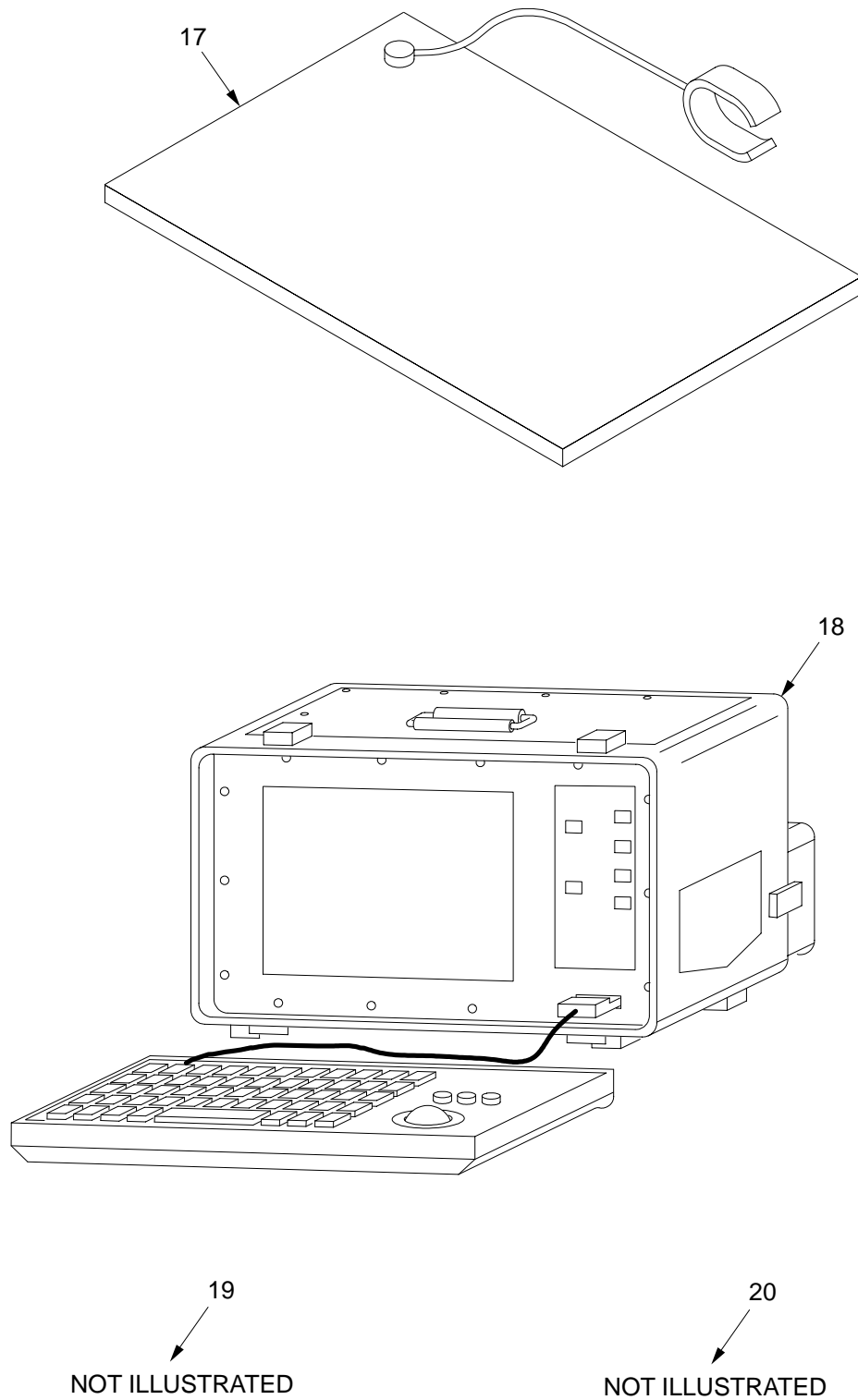
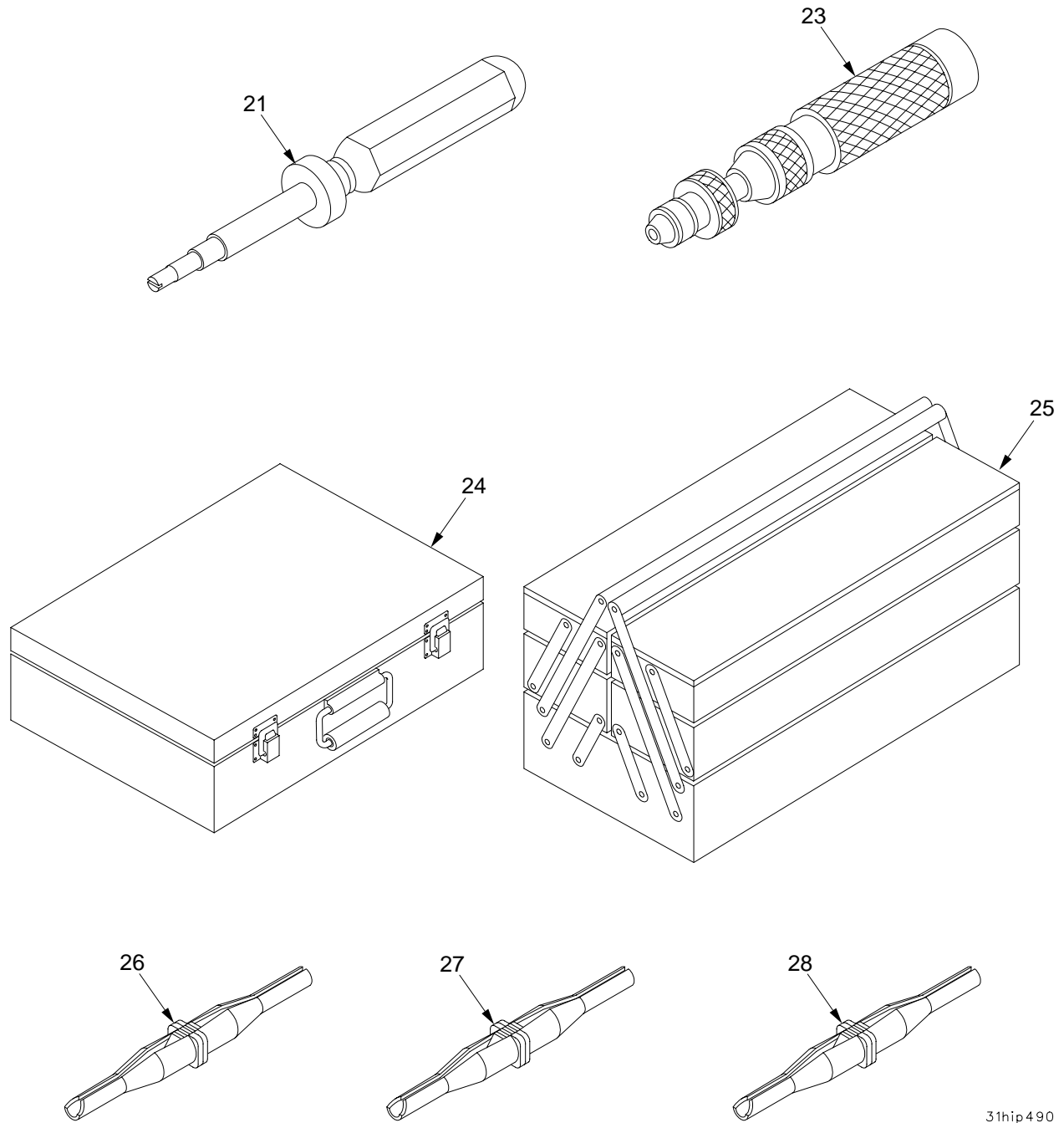


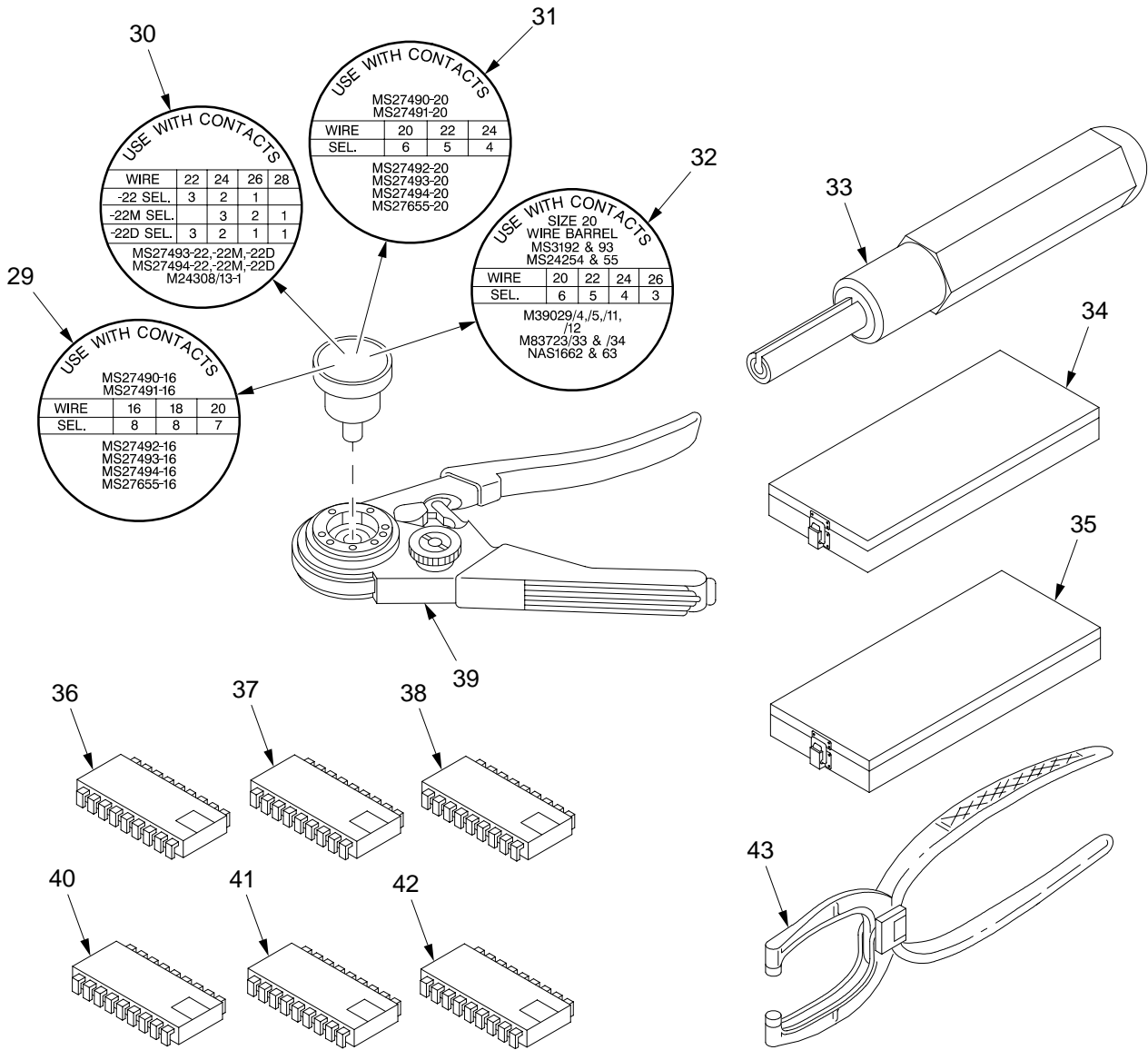
Figure C14. Special Tools Listing (Sheet 2 of 4)



31hip490

Note: Item 22 deleted

Figure C14. Special Tools Listing (Sheet 3 of 4)



NOTE: ITEMS 48 TO 57 NOT ILLUSTRATED
(SEE APPENDIX E)

31hip491

Note: Items 44 through 47 deleted

Figure C14. Special Tools Listing (Sheet 4 of 4)

SECTION III	TM9-1200-215-34&P			C01		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR	NSN	CAGEC	PART	DESCRIPTION AND	
NO	CODE			NUMBER	USABLE ON CODE (UOC)	QTY
					GROUP 9500 SPECIAL TOOLS	
					FIGURE C14 SPECIAL TOOLS	
1	PDFZZ	4940-01-028-7493	83284	HG-501A	HEATER,GUN TYPE,ELE.....	1
2	PDOZZ	4931-00-065-1110	19200	SC4931-95CLJ54	PURGING KIT,FIRE CO.....	1
3	PDFZZ	5120-01-092-3277	58536	A-A-2411	WRENCH,TORQUE(0-15 IN/LBS) NSN	1
					5120002306380.....	
4	PDFZZ	5120-01-355-1812	55719	TE6FUA	WRENCH,TORQUE.....	1
5	PDFZZ	5120-01-092-3277	58536	A-A-2411	WRENCH,TORQUE(0-15 NSN	1
					5120002306380.....	
*	6			DELETED		
*	7			DELETED		
*	8			DELETED		
*	9			DELETED		
*	10			DELETED		
11	PDOZZ	5120-00-972-8357	27783	8769	INSERTER AND REMOVE.....	1
*	12			DELETED		
*	13			DELETED		
*	14			DELETED		
*	15			DELETED		
*	16			DELETED		
17	PDFZZ	4940-01-250-4236	81349	M87893-02	WORK STATION KIT,EL.....	1
18	PEFDD	6625-01-352-3060	80058	AN/PSM-80(V)2	TEST SET,ELECTRONIC.....	1
19	PEFDD	4940-01-324-1505	80058	AN/TSM-191(V)3	ELECTRONIC SHOP,TRA.....	1
20	PEFZD	6625-01-381-9184	19200	12958912	TEST PROGRAM SET.....	1
21	PEDZZ	5120-00-079-4601	81349	M81969/19-07	REMOVER,ELECTRICAL.....	1
*	22			DELETED		
23	PEFZZ	5120-00-943-0941	30106	TS-100	WRENCH,TORQUE.....	1
24	PEFZZ	5180-01-073-3845	52346	JTK-17A	TOOL KIT,ELECTRICIA.....	1
25	PEFZZ	5180-00-177-7033	50980	SC5180-90-CL-N26	TOOL KIT,GENERAL ME.....	1
26	PEDZZ	5120-00-018-0575	81349	M81969/14-01	INSERTER AND REMOVE.....	1
27	PEDZZ	5120-00-915-4587	81349	M81969/14-02	INSERTER AND REMOVE.....	1
28	PEDZZ	5120-00-915-4588	81349	M81969/14-03	INSERTER AND REMOVE.....	1
29	PEDZZ	5120-00-133-1772	81349	M22520-7-04	CONTACT POSITIONER,.....	1
30	PEDZZ	5120-00-133-1782	81349	M22520-7-07	CONTACT POSITIONER,.....	1
31	PEDZZ	5120-00-133-1785	81349	M22520-7-08	CONTACT POSITIONER,.....	1
32	PEDZZ	5120-00-133-1769	81349	M22520-7-02	CONTACT POSITIONER,.....	1
33	PEDZZ	5120-00-079-4598	81349	M81969/17-03	INSERTER,ELECTRICAL.....	1
34	PEDZZ	5180-01-049-8598	06540	4131-02-1	TOOL KIT,SCREW THRE.....	1
35	PEDZZ	5180-00-935-0735	01556	4132-3-1	TOOL KIT,SCREW THRE.....	1
36	XDDZZ		19200	12562767	PROGRAM,MICROCIRCUI.....	1
37	XDDZZ		19200	12562768	PROGRAM,MICROCIRCUI.....	1
38	XDDZZ		19200	12562789-2	MICROCIRCUIT SET.....	1
39	PEDZZ	5120-00-133-1747	81349	M22520-7-01	CRIMPING TOOL,TERMI.....	1
40	XDDZZ		19200	12562789-1	MICROCIRCUIT SET.....	1
41	XDDZZ		19200	12562786	PROGRAM,MICROCIRCUI.....	1
42	XDDZZ		19200	12562785	PROGRAM,MICROCIRCUI.....	1
43	PEDZZ	5120-00-507-0659	65434	DA2	RIVET SQUEEZER SET.....	1
*	44			DELETED		
*	45			DELETED		
*	46			DELETED		
*	47			DELETED		
48	PEFZZ	7030-01-382-8284	19200	12562814	SOFTWARE KIT,NOT IL.....	1
49	PEDZZ	7035-01-299-5379	54193	29B	PROGRAMMER,ELECTRON.....	1
50	XDDZZ		54193	950-1942-007	INTERFACE,PROM PROG.....	1
51	XDDZZ		54193	303A-011A	MODULE,PROGRAMING A.....	1
52	PEDZZ	7035-01-344-7836	54193	950-0086-013	PROGRAMMER,MICROCIR.....	1
53	XDDZZ		54193	970-0030-001	CHART PROGRAMMABLE.....	1
*	54			DELETED		
55	PEDZZ	7025-01-332-5545	67041	ML-14	LABELLING SYSTEM.....	1
*	56			DELETED		
57	PEDDD	6625-01-406-7402	19200	12958913	TEST PROGRAM SET.....	1

END OF FIGURE

SECTION II		TM9-1200-215-34&P		C01			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	
ITEM	SMR	NSN	CAGE	PART	DESCRIPTION AND		
NO				NUMBER	USABLE ON CODE (UOC)	QTY	
					GROUP 9999 BULK MATERIEL		
					FIGURE BULK BULK		
1	PADZZ	6145-01-025-1372	81349	M27500-20ML4T08	CABLE,SPECIAL PURPO.....	1	
2	PADZZ	6145-00-090-5401	81349	M27500-22ML2T08	CABLE,SPECIAL PURPO.....	1	
3	PADZZ	6145-01-016-0757	81349	M27500-22ML4T08	CABLE,SPECIAL PURPO.....	1	
4	PADZZ	6145-00-275-4046	81349	M27500-24ML2T08	CABLE,SPECIAL PURPO.....	1	
5	PADZZ	5930-01-175-5992	96906	MS25224-1	GUARD,SWITCH.....	V	
6	PCDZZ	5970-00-470-4575	81349	M23053/10-002-0	INSULATION SLEEVING.....	V	
7	PADZZ	5970-00-008-3295	81349	M23053/10-004-0	INSULATION SLEEVING.....	1	
8	PADZZ	5970-00-812-2968	81349	M23053/5-102-0	INSULATION SLEEVING.....	1	
9	PCFZZ	5970-00-812-2969	81349	M23053/5-104-0	INSULATION SLEEVING.....	1	
10	PCDZZ	5970-00-088-2975	81349	M23053/5-104-9	INSULATION SLEEVING.....	1	
11	PADZZ	5970-00-787-2335	81349	M23053/5-107-2	INSULATION SLEEVING.....	1	
12	PADZZ	5962-01-374-3069	19200	12553992	MICROCIRCUIT,MEMORY.....	1	
*	13	PADZZ	5962-01-383-0573	67268	5962-8871301RA	MICROCIRCUIT,MEMORY.....	V
14	PAFZZ	5330-01-366-3602	81349	M6855/2-10R108	SEAL,NONMETALLIC.....	1	
15	XDDZZ		81349	M22759/11-26-9	WIRE,ELECTRICAL.....	1	
16	PADZZ	6145-01-360-2075	81349	M22759/34-12-0	WIRE,ELECTRICAL.....	1	
17	PADZZ	6145-01-360-1797	81349	M22759/34-12-2	WIRE,ELECTRICAL.....	V	
18	PADZZ	6145-01-360-1799	81349	M22759/34-14-0	WIRE,ELECTRICAL.....	1	
19	PADZZ	6145-01-360-1798	81349	M22759/34-14-2	WIRE,ELECTRICAL.....	1	
20	PADZZ		81349	M22759/34-16-0	WIRE,ELECTRICAL.....	1	
21	PADZZ		81349	M22759/34-16-2	WIRE,ELECTRICAL.....	1	
22	PADZZ		81349	M22759/34-20-0	WIRE,ELECTRICAL.....	1	
23	PADZZ		81349	M22759/34-20-2	WIRE,ELECTRICAL.....	1	
24	PADZZ	6145-01-111-0754	81349	M22759/34-20-9	WIRE,ELECTRICAL.....	1	
25	PADZZ	6145-01-110-8894	81349	M22759/34-22-9	WIRE,ELECTRICAL.....	1	
26	PADZZ	6145-00-144-0231	81349	M81044/12-22-9	WIRE,ELECTRICAL.....	1	
27	XDDZZ		81349	M81822/13-B28-9	WIRE,ELECTRICAL.....	1	
28	PADZZ	9525-00-355-6072	96906	MS20995NC32	WIRE,NONELECTRICAL.....	1	
29	PADZZ	9505-00-063-1444	96906	MS9226-05	WIRE,NONELECTRICAL.....	1	

END OF FIGURE

NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIGURE NO	ITEM NO	STOCK NUMBER	FIGURE NO	ITEM NO
5970-00-008-3295	BULK	10		BULK	26
5120-00-018-0575	C14	26	5905-00-153-0254	C7	8
5310-00-043-4708	C5	17	5180-00-177-7033	C14	25
	C6	46	5940-00-204-8990	C11	88
	C7	17	1650-00-222-4525	C2	11
2640-00-050-1229	C2	12		C10	13
	C10	12		C11	9
	C11	10	5340-00-232-9083	C4	24
5331-00-052-5267	C1	53	5961-00-233-4851	C13	30
5305-00-054-5635	C3	15	5935-00-235-8970	C8	21
5305-00-054-5639	C13	105	5320-00-243-8356	C9	3
5305-00-054-5640	C13	106	5305-00-253-5614	C2	26
5305-00-054-5642	C5	19		C10	19
	C6	48		C11	7
	C7	19	5935-00-262-5173	C13	108
5305-00-054-5647	C8	11	6145-00-275-4046	C4	37
5305-00-054-5648	C13	107		BULK	1
5305-00-054-5650	C1	15	9525-00-355-6072	C1	26
	C3	1		C8	38
	C4	38		BULK	29
	C12	5	5310-00-400-5503	C11	49
5305-00-054-5652	C4	22	5961-00-403-4545	C13	17
5305-00-054-5653	C4	31	5961-00-421-2979	C7	2
5305-00-054-5654	C4	33	5975-00-421-5080	C4	32
5305-00-054-6652	C10	1	5961-00-425-9815	C13	16
5305-00-054-6653	C11	16	5905-00-429-5712	C13	35
5305-00-054-6654	C1	64	5330-00-460-8310	C1	55
	C10	9	5935-00-466-3394	C4	27
5305-00-054-6669	C2	18	5905-00-470-1319	C8	20
5305-00-054-6670	C1	51	5970-00-470-4575	BULK	11
5305-00-054-6680	C1	13	5310-00-480-3641	C1	7
5310-00-057-0573	C3	2	5935-00-489-1997	C8	10
	C10	20	5935-00-490-5219	C8	23
5305-00-059-3658	C11	61	5935-00-490-8389	C8	4
5305-00-059-3659	C4	5	5935-00-496-7171	C8	15
9505-00-063-1444	C11	65	5935-00-497-5738	C1	45
	BULK	28	5120-00-507-0659	C14	43
4931-00-065-1110	C14	2	5130-00-515-7449	C11	32
5305-00-066-7328	C2	1	5310-00-531-9515	C2	19
5305-00-068-5414	C4	20	5930-00-539-7013	C3	18
5310-00-069-5291	C2	16	5340-00-543-3934	C8	33
5975-00-074-2072	C4	36	5940-00-557-4345	C11	90
5120-00-079-4598	C14	33	9905-00-579-8501	C1	19
5120-00-079-4601	C14	21	5961-00-584-4527	C6	1
5970-00-088-2975	C11	46		C7	1
	BULK	7		C13	15
6145-00-090-5401	C8	28	5310-00-595-6211	C1	42
	BULK	3		C4	18
5961-00-113-7650	C13	28	5310-00-595-6761	C13	103
4820-00-114-1096	C2	13	5310-00-615-1556	C1	11
	C10	11		C4	6
	C11	11	5340-00-631-7894	C9	7
5940-00-114-1305	C11	89	5930-00-655-4247	C3	20
5905-00-121-9857	C13	48	5325-00-684-9501	C9	6
5120-00-133-1747	C14	39	5310-00-685-3744	C11	3
5120-00-133-1769	C14	32	5305-00-688-2020	C11	62
5120-00-133-1772	C14	29	5305-00-720-8248	C11	34
5120-00-133-1782	C14	30	5310-00-722-5998	C1	62
5120-00-133-1785	C14	31	5975-00-727-5153	C8	9
5340-00-139-7498	C8	24		C11	41
5905-00-140-6333	C7	7	5305-00-738-0624	C11	4
5940-00-143-4771	C11	73	5310-00-773-7624	C10	2
5940-00-143-4777	C11	87		C11	15
5940-00-143-4780	C11	77	5310-00-781-9483	C1	1
5940-00-143-4794	C11	85	5970-00-787-2335	C11	63
5940-00-143-5284	C11	86		BULK	8
6145-00-144-0231	C8	8	5305-00-798-0862	C11	18

NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIGURE NO	ITEM NO	STOCK NUMBER	FIGURE NO	ITEM NO
5340-00-800-7874	C9	1	5999-01-064-5069	C6	42
5970-00-812-2968	C8	19	5961-01-067-7294	C13	25
	BULK	9	5180-01-073-3845	C14	24
5970-00-812-2969	C1	27	5961-01-081-3863	C13	18
	C10	16	5962-01-083-5992	C13	89
	BULK	6	5120-01-092-3277	C14	3
5310-00-812-4294	C5	15		C14	5
	C6	44	5935-01-095-6437	C8	40
	C7	15	5980-01-096-2084	C1	25
5940-00-813-0698	C3	23		C8	30
	C11	75	5961-01-102-2873	C13	19
5310-00-845-5030	C8	35	5961-01-105-0608	C13	20
5961-00-858-3826	C13	27	5905-01-106-9005	C13	66
5310-00-880-5978	C8	34	5905-01-108-4400	C13	84
5305-00-903-8292	C1	21	5935-01-108-7768	C5	18
5975-00-906-2414	C1	50		C6	47
5120-00-915-4587	C14	27		C7	18
5120-00-915-4588	C14	28		C7	20
5310-00-928-2690	C5	16	6145-01-110-8894	C11	74
	C6	45		BULK	25
	C7	16	6145-01-111-0754	C3	22
	C13	102		C11	76
5310-00-933-8118	C1	30		BULK	15
	C4	19	5935-01-113-2938	C13	21
	C13	112	5962-01-113-8584	C6	38
5310-00-933-8119	C1	8	5910-01-119-4283	C13	12
	C2	17	5910-01-119-4302	C13	9
5310-00-933-8120	C1	14	5305-01-120-0274	C1	3
5310-00-933-8121	C11	33	5905-01-122-7550	C13	43
5310-00-934-9748	C1	31	6145-01-130-1049	C6	39
	C13	113		BULK	17
5310-00-934-9765	C11	38	5905-01-132-1524	C13	73
5180-00-935-0735	C14	35	5935-01-132-5333	C13	22
5310-00-938-2013	C13	101	5940-01-135-7080	C4	28
5120-00-943-0941	C14	23	5940-01-135-7081	C8	2
5305-00-953-4502	C1	22	5940-01-135-7086	C8	14
5310-00-956-4549	C2	6	5940-01-136-2540	C4	30
6145-00-958-6007	C8	17		C8	29
	BULK	27	5905-01-138-6261	C6	11
5305-00-959-1909	C4	8	5905-01-139-0810	C13	52
5120-00-972-8357	C14	11	5305-01-139-2034	C2	10
5305-00-978-9354	C11	5		C10	21
5340-00-988-3210	C1	44	5910-01-141-5549	C13	14
5305-00-988-7603	C1	9	5905-01-143-8369	C13	37
5305-00-988-7846	C1	48	5905-01-144-2174	C13	71
5340-00-989-9224	C2	15	5905-01-144-3838	C13	34
5935-01-010-1848	C8	1	5905-01-150-4508	C13	53
5930-01-016-0510	C3	21	5905-01-150-4517	C6	9
6145-01-016-0757	C8	16	5905-01-151-1187	C6	10
	BULK	4	5905-01-152-0051	C13	31
5961-01-019-4947	C13	24	5905-01-153-8275	C13	61
6145-01-025-1372	C8	39	5905-01-154-6157	C13	40
	BULK	2	5905-01-158-9002	C13	55
4940-01-028-7493	C14	1	5905-01-159-6541	C13	86
5925-01-037-3324	C11	20	5999-01-164-2434	C11	59
5320-01-043-2994	C5	23	5935-01-165-2960	C8	18
	C6	52	5905-01-165-5218	C13	38
	C7	23	5305-01-165-8608	C1	2
5905-01-043-9236	C13	76	5905-01-165-9847	C13	62
5925-01-044-5507	C11	21	5905-01-166-3920	C13	69
5905-01-044-9110	C13	45	6210-01-166-7635	C10	14
5330-01-046-3300	C2	9		C11	45
5925-01-047-1458	C11	19	5905-01-170-0374	C13	56
5180-01-049-8598	C14	34	5905-01-170-3450	C13	32
5935-01-052-9436	C3	4	5905-01-170-7738	C13	44
	C13	104	5910-01-171-7406	C13	11
5905-01-058-9627	C6	13	5910-01-171-8688	C13	5

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	C7	3	5935-01-261-7876	C8	37
	C13	10	5962-01-263-9083	C13	97
5962-01-173-7737	C5	10	5962-01-265-5985	C6	36
5905-01-173-8935	C13	77	5962-01-268-7769	C6	33
5905-01-174-0097	C13	50	4920-01-275-2139	C14	51
5930-01-175-5992	C3	16	5910-01-276-6252	C5	2
	BULK	5		C6	6
5905-01-176-0610	C13	82	5962-01-280-5488	C6	18
5905-01-176-5451	C13	67	5980-01-281-5356	C10	15
5905-01-176-7334	C13	83		C11	47
5905-01-176-9308	C13	70	5962-01-282-7007	C13	100
5905-01-177-1906	C13	64	5950-01-284-2876	C6	14
5905-01-177-2000	C13	81	5961-01-285-6684	C6	2
5905-01-177-2002	C13	54	5962-01-285-9161	C13	96
5905-01-177-2012	C13	47	5962-01-286-2238	C13	88
5905-01-178-2234	C13	41	5962-01-288-6899	C13	95
5905-01-180-3259	C13	72	5998-01-294-2104	C4	9
5905-01-180-8912	C13	58	5998-01-294-2105	C4	11
5905-01-181-2345	C13	57	5998-01-294-2108	C4	10
5905-01-181-3227	C13	39	5910-01-294-3056	C6	4
5905-01-183-6145	C13	33		C7	4
5905-01-184-5318	C13	36	7035-01-299-5379	C14	49
5905-01-184-7970	C13	78	5998-01-305-0425	C9	4
5905-01-185-0065	C13	80	5998-01-305-0426	C9	2
5905-01-185-4131	C13	51	5962-01-309-1046	C13	93
5905-01-186-9625	C13	65	5962-01-309-7919	C6	29
5905-01-187-7461	C13	60	5980-01-310-6252	C13	98
5961-01-187-8067	C13	26	5962-01-313-0661	C6	31
5962-01-188-6436	C13	94	5962-01-313-9926	C5	9
5905-01-190-6292	C13	59	5962-01-316-9970	C5	11
5999-01-194-9729	C13	2	5962-01-317-3936	C13	91
5961-01-196-9452	C13	29	5999-01-319-4556	C13	1
5999-01-199-2857	C13	3	5962-01-319-4613	C6	27
5980-01-201-4483	C1	24	5962-01-320-1678	C6	21
	C8	27	5999-01-323-2330	C3	14
5305-01-204-3017	C4	23	4940-01-324-1505	C14	19
5305-01-204-8380	C11	2	5962-01-325-4471	C6	26
7035-01-204-9609	C14	50	7025-01-332-5545	C14	55
5905-01-205-7214	C13	79	5310-01-338-4121	C2	22
5935-01-208-6391	C8	3		C12	4
5910-01-210-5322	C13	8		C13	111
5910-01-211-5029	C13	4	5905-01-344-2374	C13	42
5962-01-214-9935	C7	9	5935-01-344-3957	C8	12
5962-01-216-6944	C13	99	7035-01-344-7836	C14	52
5910-01-227-8886	C13	6	5962-01-349-3396	C5	5
5962-01-228-8376	C6	16	6625-01-352-3060	C14	18
5935-01-228-8735	C13	109	5310-01-352-9575	C11	37
5905-01-229-7117	C5	14	5120-01-355-1812	C14	4
	C6	41	5330-01-355-5353	C10	5
5950-01-231-4102	C11	30		C11	17
5910-01-232-0963	C13	7	5998-01-355-7324	C10	8
5962-01-235-3490	C6	35	5999-01-356-2477	C3	9
5962-01-238-5501	C13	92	9905-01-356-2745	C10	18
5910-01-239-3994	C13	13	6150-01-358-2004	C10	7
5962-01-239-9752	C5	7	5962-01-358-9065	C6	32
	C7	10	6145-01-360-1797	C11	83
5905-01-243-4010	C13	68		BULK	16
5305-01-243-9392	C11	35	6145-01-360-1798	C11	82
5905-01-244-8073	C13	49		BULK	19
5962-01-245-6812	C5	13	6145-01-360-1799	C11	79
5905-01-250-2471	C13	46		BULK	20
4940-01-250-4236	C14	17	6145-01-360-2075	C11	84
5962-01-250-4384	C7	11		BULK	18
5905-01-250-8860	C13	75	5905-01-360-6044	C13	63
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1290-01-361-1350	C2	24	5955-01-372-4176	C6	15
5950-01-361-4103	C11	31	5935-01-372-6903	C4	15
5950-01-361-4204	C11	29	5999-01-373-0554	C6	17
5925-01-361-6927	C11	23	5999-01-373-0728	C10	17
5925-01-361-6928	C11	24	9905-01-373-0859	C11	8
5915-01-361-6938	C11	14	9905-01-373-0862	C2	27
5340-01-362-1601	C11	1	1290-01-374-0196	C3	13
5998-01-362-1900	C12	3	6150-01-374-1885	C2	4
5962-01-362-3788	C6	19	6150-01-374-1903	C2	5
	C14	40	5962-01-374-3069	BULK	13
5962-01-362-3789	C6	20	6150-01-376-3051	C11	42
	C14	38	5980-01-380-7624	C2	23
5340-01-362-4591	C2	8	7690-01-381-4348	C11	69
5340-01-362-4592	C11	6	6625-01-381-9184	C14	20
5340-01-362-9820	C4	34	5999-01-382-3310	C11	25
5340-01-362-9864	C8	31	7030-01-382-8284	C14	48
5905-01-363-0692	C7	13	5962-01-383-0573	BULK	12
5340-01-363-1594	C4	17	6130-01-384-2700	C4	7
5340-01-363-2906	C4	2	5310-01-391-2795	C2	7
5330-01-363-2971	C4	16	6625-01-406-7402	C14	57
5330-01-363-2972	C4	1	5998-01-416-1914	C11	28
5999-01-363-3272	C6	43	5998-01-422-2044	C1	34
6150-01-363-4652	C11	50	5962-01-424-8122	C6	30
6150-01-363-4653	C11	26	5310-01-439-4186	C3	19
6150-01-363-4654	C11	40	6150-01-440-3462	C1	46
5961-01-363-4678	C7	12	6150-01-440-3463	C1	41
6130-01-363-4740	C11	22	6150-01-440-3464	C1	47
5985-01-363-6342	C7	14	6150-01-440-3466	C1	58
5955-01-363-6355	C5	12	6150-01-440-3467	C1	33
5999-01-364-1172	C2	14	6130-01-440-3469	C1	29
5999-01-364-1174	C11	39	7025-01-440-3472	C1	28
6150-01-364-2071	C11	52	5962-01-440-5934	C1	17
6150-01-364-2072	C11	44	5998-01-440-5941	C1	37
5905-01-365-2376	C6	12	5998-01-440-5942	C1	38
5940-01-365-4284	C4	3	5998-01-440-5943	C1	35
	C4	35	5998-01-440-5944	C1	36
5998-01-365-6053	C11	27	1290-01-441-3111	C1	56
5930-01-365-6547	C3	12	5340-01-454-9399	C1	32
5999-01-365-8059	C2	3	5340-01-455-1814	C1	4
5998-01-365-8066	C3	10	5999-01-455-6283	C1	20
5999-01-365-9947	C2	25	5999-01-455-6288	C1	23
5955-01-366-0204	C6	25	5999-01-455-6291	C1	43
5962-01-366-0842	C6	22	5999-01-455-6294	C1	49
5305-01-366-1114	C2	20	5999-01-455-6297	C1	59
5305-01-366-1115	C3	3	5340-01-456-0274	C1	6
5999-01-366-1557	C2	28	5340-01-456-2282	C1	60
7690-01-366-2974	C5	21	5999-01-457-3061	C1	16
	C6	50	5999-01-457-5253	C1	40
	C7	21	5340-01-457-7584	C1	66
5330-01-366-3602	C4	4	5999-01-457-9454	C1	12
	BULK	14	5340-01-458-3096	C1	18
9905-01-366-7621	C4	14	5340-01-458-3685	C1	10
5935-01-366-8165	C8	6	5340-01-458-4117	C1	5
	C8	7	5340-01-458-6820	C1	67
5935-01-367-1958	C8	22	5985-01-459-2402	C1	61
5998-01-367-9685	C4	12	5310-01-460-1538	C1	63
5999-01-367-9855	C10	4	5905-01-460-8829	C13	74
5998-01-369-2795	C4	29	5945-01-M25-3391	C11	48
5998-01-369-2814	C4	21	5945-01-M25-3392	C11	53
5962-01-369-6559	C13	90	5935-01-M25-3395	C11	60
5998-01-369-6872	C10	10	6130-01-M25-3404	C11	13
5962-01-370-6125	C6	24	5905-01-M25-3541	C11	36
5999-01-370-8347	C11	51	5999-01-M26-2219	C2	23A
5999-01-370-8348	C11	12	5325-01-M26-2404	C2	21
5935-01-371-3128	C5	4	5999-01-M26-5691	C1	57

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12360905-3	C10	15	12562032	C11	42
	C11	47	12562033	C11	50
12553985	C7	14	12562034	C11	26
12553991	C7	13	12562035	C11	40
12553992	BULK	13	12562036	C11	52
12553994	C6	15	12562037	C11	44
12554003	C7	12	12562039	C11	59
12554005	C5	12	12562063	C2	27
12554010	C4	7	12562084	C11	6
12554021	C6	40	12562085	C2	20
12554022	C4	2	12562362	C12	1
12554023	C4	14	12562456-1	C11	30
12554025	C4	10	12562456-2	C11	31
12554029	C4	9	12562458	C11	29
12554031	C7	20	12562480	C11	22
12554032	C8	36	12562481	C11	14
12554039	C5	20	12562482	C11	28
12554040	C5	21	12562483	C11	27
	C6	50	12562484	C11	13
	C7	21	12562485	C11	53
12554041	C4	11	12562486	C11	48
12554043	C6	49	12562487	C12	2
12561670	C2	28	12562726	C4	34
12561672	C11	58	12562728	C4	15
12561694	C13	110	12562730	C4	12
12561695	C12	3	12562731	C4	29
12561697	C2	24	12562734-1	C4	16
12561698	C11	1	12562734-2	C4	1
12561698-3	C12	6	12562737	C9	5
12561701	C2	5	12562738	C4	13
12561707	C2	4	12562751	C6	38
12561708	C2	23	12562755	C4	21
12561807-10	C11	39	12562758-1	C9	2
12561807-11	C11	25	12562758-2	C9	4
12561807-13	C2	25	12562760	C4	3
12561807-3	C11	12		C4	35
12561807-4	C10	4	12562761	C5	22
12561807-5	C2	3		C6	51
12561807-7	C10	5		C7	22
	C11	17	12562762	C8	31
12561807-8	C11	51	12562767	C6	34
12561807-9	C2	14		C14	36
12561821-1	C2	8	12562768	C6	23
12561824	C10	17		C14	37
12561839	C10	10	12562772	C8	24
12561840-1	C11	55	12562773	C4	24
12561840-2	C11	57	12562774	C4	26
12561840-3	C11	54	12562775	C4	25
12561840-4	C11	56	12562777	C8	5
12561842	C10	3	12562785	C5	6
12561843	C10	8		C14	42
12561845	C10	7	12562786	C5	8
12561864	C2	2		C14	41
12561915	C10	18	12562789-1	C6	19
12561920	C11	8		C14	40
12561977	C11	64	12562789-2	C6	20
12561978	C11	66		C14	38
12561979	C11	70	12562810	C6	43
12561980-1	C11	68	12562811	C4	32
12561980-2	C11	67	12562812	C4	17
12561980-3	C11	71	12562814	C14	48
12561981	C11	69	12906791	C3	13
12562021	C13	109	12906802	C3	11
12562023-3	C11	60	12906805	C3	17
12562026-1	C11	23	12906806	C3	8
12562026-2	C11	24	12906807	C3	6

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12906817-2	C3	14	950-1942-007	C14	50
12906818	C3	3	970-0030-001	C14	53
12906825	C3	12	A-A-2411	C14	3
12906834	C3	5		C14	5
12958912	C14	20	AN/PSM-80(V)2	C14	18
12958913	C14	57	AN/TSM-191(V)3	C14	19
12959177	C3	18	AN960C416	C2	19
12959178	C3	7	AS3582-032	C1	55
12959180	C3	19	BP-DEM9P-WC-L4	C1	66
12959208	C2	23A	BP-DEM9S-WC-L4	C1	67
12973717	C2	21	D20418-50	C1	45
1487812	C1	19	D38999/28-11	C1	54
166161	C13	94	D38999/28-9	C1	52
25091-436	C1	63	D38999/44WD97PD	C8	26
2616950G001	C1	11	D38999/44WD97PN	C8	37
	C4	6	D38999/44WH55SB	C8	18
29B	C14	49	DA2	C14	43
303A-011A	C14	51	DP-BAR-SO-WC-3	C1	60
4131-02-1	C14	34	HG-501A	C14	1
4132-3-1	C14	35	JANTX1N4148-1	C6	1
507302B00000	C1	16		C7	1
50785	C1	34		C13	15
5962-8672101EA	C6	37	JANTX1N4615-1	C6	2
5962-8754802XA	C6	31	JANTX1N4958	C7	2
5962-8757906XX	C6	30	JANTX1N5417	C13	17
5962-8764701CA	C5	9	JANTX1N5617	C13	16
5962-8767901EA	C13	98	JANTX1N756A-1	C13	19
5962-8852504XX	C5	5	JANTX1N965B-1	C13	20
5962-8866201XA	C6	21	JANTX1N967B1	C13	18
5962-8871301RA	BULK	12	JANTX2N2222A	C13	27
5962-8951103EA	C13	90	JANTX2N2323	C13	30
6125110	C1	39	JANTX2N3019S	C13	26
6125111	C1	5	JANTX2N3501	C13	28
6125112	C1	4	JANTX2N4033	C13	25
6125121-1	C1	57	JANTX2N6796	C13	29
6125121-2	C1	12	JANTXM19500/5210	C1	24
6125128	C1	32	2		
6125130	C1	28		C8	27
6125200	C1	38	JANTXV2N2907A	C13	24
6125300	C1	36	JTK-17A	C14	24
6125400	C1	37	JTXM19500/51902	C1	25
6125500	C1	35		C8	30
6125600	C1	56	LT1032MJ/883C	C6	32
6125700	C1	17	M21038/27-02	C6	14
6125701	C1	58	M22520-7-01	C14	39
6125704	C1	47	M22520-7-02	C14	32
6125705	C1	46	M22520-7-04	C14	29
6125706	C1	41	M22520-7-07	C14	30
6125707	C1	33	M22520-7-08	C14	31
6125900	C1	29	M22759/11-26-9	C8	17
6125905-1	C1	10		BULK	27
6125905-2	C1	6	M22759/34-12-0	C11	84
6125923-01	C1	59		BULK	18
6125923-02	C1	49	M22759/34-12-2	C11	83
6125923-03	C1	40		BULK	16
6125923-04	C1	23	M22759/34-14-0	C11	79
6125923-05	C1	20		BULK	20
6125923-06	C1	43	M22759/34-14-2	C11	82
83536/2-027	C13	23		BULK	19
8405601CB	C6	16	M22759/34-16-0	C11	72
8407201RB	C6	35		BULK	22
8409101CX	C6	29	M22759/34-16-2	C11	78
8501001ZA	C6	36		BULK	21
8550601RX	C5	11	M22759/34-20-0	C11	81
8769	C14	11		BULK	24
90029-006	C5	3	M22759/34-20-2	C11	80
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	BULK	15	M39014/22-1082	C13	11
M22759/34-22-9	C11	74	M39014/22-1094	C5	1
	BULK	25		C6	3
M23053/10-002-0	BULK	11		C7	3
M23053/10-004-0	BULK	10		C13	10
M23053/5-102-0	C8	19	M39014/22-1120	C13	7
	BULK	9	M39014/22-1156	C13	8
M23053/5-104-0	C1	27	M39019/01-248	C11	20
	C10	16	M39019/01-254	C11	19
	BULK	6	M39019/01-257	C11	21
M23053/5-104-9	C11	46	M46846/1-1/2-0	C8	13
	BULK	7	M46846/1-1/4-0	C8	25
M23053/5-107-2	C11	63	M55302/110-10	C13	22
	BULK	8	M55302/169A562	C8	7
M24308/2-1	C8	23	M55302/170B60Y1	C5	4
M24308/2-5	C8	10		C6	8
M24308/24-31	C13	21		C7	6
M24308/25-10	C8	3	M55302/172-03	C8	6
M24308/26-1	C3	4	M55302/31-02	C13	108
	C13	104	M55302/78-02	C5	18
M24308/4-1	C4	27		C6	47
M24308/4-5	C8	4		C7	18
M27500-20ML4T08	C8	39	M55310/18-B41A15	C6	25
	BULK	2	3K6000		
M27500-22ML2T08	C8	28	M5594/1-2	C3	21
	BULK	3	M6855/2-10R108	C4	4
M27500-22ML4T08	C8	16		BULK	14
	BULK	4	M81044/12-22-9	C8	8
M27500-24ML2T08	C4	37		BULK	26
	BULK	1	M81822/13-B28-9	C6	39
M38510/05051BCA	C13	100		BULK	17
M38510/05151BCA	C13	96	M81969/14-01	C14	26
M38510/05553BEA	C13	93	M81969/14-02	C14	27
M38510/10902BCA	C13	97	M81969/14-03	C14	28
M38510/11005BCA	C13	92	M81969/17-03	C14	33
M38510/11201BCA	C13	88	M81969/19-07	C14	21
M38510/12602BEA	C13	91	M8340109K4701JC	C5	14
M38510/12802BGA	C13	99		C6	41
M38510/17001BCA	C13	95	M83461/1-012	C2	9
M38510/17101BCB	C13	89	M83519/1-2	C4	30
M38510/19007BEA	C7	9		C8	29
M38510/29104BJA	C6	18	M83519/2-2	C4	28
M38510/33001BCA	C5	10	M83519/2-3	C8	2
M38510/34302BEA	C5	13	M83519/2-8	C8	14
M38510/55501BZA	C6	22	M83528/002D-028	C10	6
M38510/65201BCA	C5	7		C11	43
	C7	10	M83532/01D016B	C6	17
M38510/65203BCX	C6	27	M83536/2-027	C13	1
M38510/65503BRA	C6	33	M85049/48-2-5-F	C8	12
M38510/65601BRA	C7	11	M85049/50-1-F	C8	22
M38510/65701BCA	C6	28	M87893-02	C14	17
M38510/75001BCA	C6	26	ML-14	C14	55
M38510/752018BCA	C6	24	MS15795-802	C13	103
M38527/02-017D	C13	2	MS15795-803	C1	42
M38527/03-002D	C6	42		C4	18
M38527/03-010N	C13	1	MS15795-805	C1	62
M38527/04-012D	C13	3	MS15795-807	C8	34
M39003/01-8078	C13	13	MS16995-11	C4	20
M39003/06-2080	C6	4	MS16995-27	C1	9
	C7	4	MS16995-83	C1	48
M39003/06-4051	C5	2	MS16996-11	C4	8
	C6	6	MS16997-44	C11	5
M39006/22-0571	C13	9	MS20470AD2-3-5	C5	23
M39006/22-0620	C13	12		C6	52
M39014/22-0423	C13	6		C7	23
M39014/22-0514	C13	4	MS20470AD2-4	C9	3
M39014/22-0949	C6	5	MS20813-1	C2	11

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PART NUMBER	FIG.	ITEM	PART NUMBER	FIG.	ITEM
	C10	13		C3	1
MS20813-1	C11	9		C4	38
MS20995NC32	C1	26		C12	5
	C8	38	MS51957-18	C4	22
	BULK	29	MS51957-19	C4	31
MS21083C6	C2	6	MS51957-20	C4	33
MS21209C0415	C9	7	MS51957-28	C10	1
MS21209F1-10	C9	6	MS51957-29	C11	16
MS21209F1-15	C9	1	MS51957-30	C1	64
MS21318-20	C2	26		C10	9
	C10	19	MS51957-44	C2	18
	C11	7	MS51957-45	C1	51
MS24524-22	C3	20	MS51957-5	C13	105
MS24693-C27	C2	1	MS51957-53	C1	13
MS25036-101	C3	23	MS51957-6	C13	106
	C11	75	MS51957-8	C5	19
MS25036-103	C11	73		C6	48
MS25036-108	C11	77		C7	19
MS25036-111	C11	88	MS51958-62	C11	61
MS25036-112	C11	85	MS51958-63	C4	5
MS25036-115	C11	86	MS9068-030	C1	53
MS25036-116	C11	89	MS9226-05	C11	65
MS25036-118	C11	90		BULK	28
MS25036-157	C11	87	NAS1149C0363R	C11	37
MS25224-1	C3	16	NAS1149C0432R	C11	32
	BULK	5	NAS1149C0663R	C2	7
MS25281-R6	C2	15	NAS1149CN432R	C2	22
MS25281-R8	C8	33		C12	4
MS25281R4	C1	44		C13	111
MS27468T19B35P	C8	1	NAS1149CN832R	C11	3
MS27468T19B35PA	C8	40	NAS1291C08M	C8	35
MS27488-16	C8	21	NAS1635-04LR5	C4	23
MS27488-20	C8	15	NAS1802-08-7	C11	2
MS27502A19N	C8	32	NAS1802-3-10	C1	3
MS3212-1	C11	4	NAS1802-3-7	C1	2
MS3212-10	C1	21	NAS620C10L	C1	1
MS3212-15	C11	18	NAS620C2	C5	17
MS3212-19	C1	22		C6	46
MS3212-21L	C2	10		C7	17
	C10	21	NAS620C4	C3	2
MS3212-33L	C11	35		C10	20
MS3367-1-9	C4	36	NAS620C6	C10	2
MS3367-4-9	C8	9		C11	15
	C11	41	NAS620C8	C2	16
MS35308-304	C11	34	NAS671C2	C5	15
MS35308-305	C11	62		C6	44
MS35338-134	C5	16		C7	15
	C6	45	RCR05G204JS	C8	20
	C7	16	RCR32G4R7JS	C13	48
	C13	102	RFI25-2	C1	65
MS35338-135	C1	30	RLR07C1000FS	C13	71
	C4	19	RLR07C1001FS	C13	37
	C13	112	RLR07C1002FS	C13	34
MS35338-137	C1	8	RLR07C1003FS	C13	76
	C2	17	RLR07C1003GS	C6	10
MS35338-138	C1	14	RLR07C1004FS	C13	45
MS35338-139	C11	33	RLR07C1072FS	C13	57
MS35649-224	C13	101	RLR07C10R0FS	C13	81
MS35649-244	C1	31	RLR07C1100FS	C13	54
	C13	113	RLR07C1152FS	C13	36
MS35650-304	C11	38	RLR07C1212FS	C13	40
MS35650-3254	C11	49	RLR07C1302FS	C13	41
MS51607-1	C2	13	RLR07C1331FS	C13	60
	C10	11	RLR07C1471FS	C13	62
	C11	11	RLR07C1504FS	C13	78
MS51957-1	C3	15	RLR07C1543FS	C13	79
MS51957-13	C8	11	RLR07C1621FS	C13	72
MS51957-14	C13	107	RLR07C1622FS	C13	82
MS51957-16	C1	15	RLR07C2003FS	C13	83

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PART NUMBER	FIG.	ITEM	PART NUMBER	FIG.	ITEM
RLR07C2052FS	C13	39	RNC55H54R9DP	C6	12
RLR07C2151FS	C13	69	RNC65H1821FS	C7	7
RLR07C2152FS	C13	65	RNC70H2000FS	C7	8
RLR07C2210FS	C13	44	RNR55C1002BS	C13	35
RLR07C2212FS	C13	32	RNR55C1622BS	C13	84
RLR07C2371FS	C13	64	RNR55C1692BS	C13	49
RLR07C2551FS	C13	58	RNR55C2052BP	C13	50
RLR07C2741FS	C13	52	RNR55C3482BS	C13	43
RLR07C3011FS	C13	38	RNR55C3652BP	C13	63
RLR07C3301GS	C6	11	RNR55C4022BP	C13	74
RLR07C3322FS	C13	53	RNR55C4222BP	C13	42
RLR07C3574FR	C13	85	RNR55C5111BS	C13	46
RLR07C3653FS	C13	61	RNR55C6192BP	C13	68
RLR07C4020FS	C13	33	RNR55C8061BS	C13	75
RLR07C4641FS	C13	47	RTH06AS511F	C13	87
RLR07C4642FS	C13	80	RWR84S1780FS	C13	77
RLR07C5111FS	C13	67	RWR89S1470FS	C13	70
RLR07C5232FS	C13	56	SC4931-95CLJ54	C14	2
RLR07C6192FS	C13	73	SC5180-90-CL-N26	C14	25
RLR07C6200GS	C6	9	TE6FUA	C14	4
RLR07C6981FS	C13	59	TNG1-4-120	C1	61
RLR07C8252FS	C13	66	TS-100	C14	23
RLR07C9091FS	C13	55	TY35M	C1	50
RLR20C1001FS	C13	31	TYV/CL2/TR C1	C2	12
RLR20C1240FS	C6	13		C10	12
RLR20C2201FR	C13	86		C11	10
RLR20C46R4FS	C13	51			

APPENDIX D EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

D-1. SCOPE

This appendix lists expendable/durable supplies and materials you will need to operate and maintain AFCS.

These items are authorized to you by CTA 50-970, Expendable Items (except Medical, Class V, Repair Parts, and Heraldic Items).

D-2. EXPLANATION OF COLUMNS

a. **Column (1) – Item number.** This number is assigned to the entry in the listing. It is referenced in the Materials/parts section of the task to identify the material (e.g., “Cleaning solvent (item 6, Appendix D)”).

b. **Column (2) – Level.** This column identifies the lowest level of maintenance below that requires the listed item.

F – Intermediate Direct Support

c. **Column (3) – National Stock Number.** This is the National Stock Number (NSN) assigned to the item; use it to order the item.

d. **Column (4) – Description.** This column indicates the Federal Item name and, if required, a description to identify the item. The last line for each item indicates the part number in parentheses followed by the Commercial and Government Entity (CAGE) code.

e. **Column (5) – Unit of Measure (U/M).** This column indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., EA, IN, PR). If the unit of measure differs for the unit of issue, order the lowest unit of issue that will satisfy your requirements.

SECTION II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST¹

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description, Part Number, and CAGE	(5) (U/M)
1	F	8040-00-152-0063	Adhesive, Type II, MMM-A-1617, 81349	CA
2			ITEM DELETED	
3	F	8030-01-334-1469	Adhesive/Sealant, 4 oz tube 12562780, 19200	TU
4	F	6810-00-205-6790	Alcohol, Denatured	BT
5	F	6515-00-059-5235	Applicator, Disposable, A-A-30016TYII, 58536	EA
6	F	8105-01-206-1226	Bag, Plastic, MIL-B-117, 80244	EA
7	F	9905-00-345-3783	Band, Marker, WM-133, 85480	SH
8	F	8115-01-019-4085	Box, Shipping, PPP-B-1672, 80244	EA
9	F	8115-00-787-2146	Box, Shipping, PPP-B-1672, 80244	EA
10	F	8115-00-101-7647	Box, Shipping, PPP-B-1672, 80244	EA
11	F	7920-00-514-2417	Brush, Acid Swabbing, A-A-289, 01556	EA
12	F	6850-00-597-9765	Cleaning Compound, Solvent, O-C-1889, 80244	GL
13	F	7920-00-044-9281	Cloth, Cleaning, MIL-C-85043, 80244	BX
14	F	8030-00-292-1102	Compound, Thread, 8 oz. tube, MIL-T-22361, 81349	TU
15	F	3439-00-009-2334	Desoldering Wick, 40-3-5, 34605	RL
16	F	7930-00-357-7386	Detergent, General Purpose, 7930-00-357-7386, 83421	
17	F	3439-00-400-1972	Flux, Soldering, MIL-F-14256TYRMA,19200	BT
18	F	3439-00-009-8808	Flux, Soldering, MIL-F-14256, 81349	QT
19	F	7530-01-119-2563	Label, 43-143, 16956	EA
20	F	6830-00-432-0354	Nitrogen, Technical, BB-N-411TY1CL1GRB, 80244	LB
21	F	8030-00-900-2373	Primer, Surface, 4 oz. Bottle, M22473GRN, 81349	BT
22	F	5330-01-366-3602	Rubber Strip, Neoprene, 12 in. lg x 1 in. wide x 3/8 in. thick, M6855/2-10R108, 81349	IN.
23	F	8105-01-197-2966	Sack, Shipping, MIL-P-81997, 81349	EA
24	F	8030-01-396-3201	Sealant Locktite, M22473GRCV, 81349	
25	F	8030-01-014-5869	Sealing Compound, MIL-S-46163TY2GRN, 80244	BT
26	F	5970-00-812-2969	Sleeving, Insulation, M23053/5-104-0, 81348	SL
27	F	3439-00-453-5473	Solder, Wire Flux Core, SN60WRAMP2, 81348	SL
28	F	3439-01-254-6686	Solder, Wire Flux Core, SN63WRMAP2, 81348	LB
29	F	7510-00-527-1458	Type Cleaner, O-T-620TY2, 80244	BT
30	F	9525-00-355-6072	Wire, Safety, MS20995NC32	LB

¹Or equivalent supply

APPENDIX E TOOL LIST

E-1. GENERAL

The tool table lists the tools used in this manual to remove, repair, maintain, and install the AFCS at the Direct Support level of maintenance. The first column gives the item number used in this text. The second column provides the noun nomenclature of the tool. The third and fourth columns contain the National Stock Number (NSN) and the manufacturer's part number, respectively. If any of the numbers are not available an "N/A" is shown.

E-2. TOOL TABLE

Item	Description	NSN	Manufacturer's Part Number	Reference
1	Adapter, Socket Wrench, 1/2" to 3/4"	5120-00-144-5207	A-A-2172	Appendix C
2	Adapter, Socket Wrench, 3/8" to 1/2"	5120-00-240-8703	A-A-2172	
3	Adapter, Socket Wrench, 3/8" to 1/4"	5120-00-224-9219	A-A-2172	
4	Adapter, Test, Pin, #16	6625-01-098-7264	1059-2	
5	Adapter, Test, Pin, #20	6625-01-038-2105	3561-0	
6	Adapter, Test, Pin, #22	6625-01-159-7959	4691-0	
7	Adapter, Test, Socket, #16	5935-01-101-9495	3562-0	
8	Adapter, Test, Socket, #20	6625-01-051-3428	3560-0	
9	Adapter, Test, Socket, #22	6625-01-159-7957	4690-0	
10	Crowfoot Attachment, 9/16"	5120-00-184-8397	FC18	
11	Electronic Shop, Transportable	4940-01-324-1505	AN/TSM-191(V)3	Appendix C
12	Electronic Systems Test Set	6625-01-352-3060	AN/PSM-80(V)2	Appendix C
13	Insertion and Extraction, Valve Core Tool	5120-00-972-8357	8769	
14	Lead, Electrical	5995-01-176-7235	B-24-0	
15	Minigun, Hot Air	4940-00-314-9789	CV5700MINIGUN3	
16	Purging Kit	4931-00-065-1110	SC4931-95CLJ54	
17	Socket 1-5/8" x 3/4" Drive	5120-00-199-7765	A-A-1394	
18	Socket, 1-9/16" x 3/4" Drive (Modified)	5120-00-189-7910	A-A-1394	
19	Socket, 2" x 3/4" Drive	5120-00-199-7770	A-A-1394	
20	Socket, Deep 7/16" x 1/4" Drive	5120-00-189-7923	B107.1CL1STB	
21	Socketwrench, Screwdriver, Crosstip #1	5120-01-367-3497	TMP12A	
22	Socketwrench, Screwdriver, Crosstip #2	5120-01-367-3441	TMP82	

E-2. TOOL TABLE CONTINUED

Item	Description	NSN	Manufacturer's Part Number	Reference
23	Socketwrench, Screwdriver, Flat Tip 3/16"	5120-01-367-3499	TMC104A	Appendix C
24	Socketwrench, Sockethead Screw, 5/32"	5120-00-555-2353	FA5L	Appendix C
25	Software Assembly, Bootloader	7030-01-379-1655	12561962	
26	Software Assembly, Bootloader	7030-01-379-1656	12562000	
27	Data I/O Unipak 2B Adapter	-	950-0086-020	
28	Source and Object Code, Application	7030-01-379-1657	12562072	
29	Source and Object Code, Application	7030-01-379-1659	12562073	
30	Source and Object Code, Application	7030-01-379-1658	12562071	
31	Source and Object Code, Application	7030-01-379-1661	12562070	
32	Source and Object Code, Application	7030-01-M25-5570	12562075	
33	Source and Object Code, Application	7030-01-379-1660	12562074	
34	Tool Kit, Electronic, JTK-17A	5180-01-073-3845	JTK-17A	Appendix C
35	Tool Kit, Electronic, TK-101/G	5180-00-064-5178	TK101GISSUE6	
36	Tool Kit, Electronic, TK-105/G	5180-00-610-8177	TK105G	Appendix C
37	TPS for Paladin LRUs	6625-01-381-9184	12958912	Appendix C
38	Work Station Kit, Electronic	4940-01-250-4236	M87893-02	Appendix C
39	Wrench, Torque, 0-15 in-lb	5120-01-355-1810	TE1FUA	
40	Wrench, Torque, 0-75 in-lb	5120-01-355-1812	TE6FUA	Appendix C
41	Wrench, Torque, 0-150 in-lb	5120-00-230-6380	A-A-2411	
42	Tool Kit, General Mechanic's	5180-00-177-7033	SC5180-90-CL-N26	Appendix C
43	Wrench, Torque 1-100 in-oz.	5120-00-943-0941	TS-100	Appendix C
44	Bit, Screwdriver	5120-00-367-3427	TMP23A	Appendix C
45	Socket Wrench, Attachment Screwdriver #1 Crosstip	5120-00-180-0876	GGG-B-1222	Appendix C

E-2. TOOL TABLE CONTINUED

Item	Description	NSN	Manufacturer's Part Number	Reference
46	Socket, Socket Wrench 1-9/16" hex, 3/4 " drive	5120-01-278-1187	AS954TY1CL1STADR 3/4SZ1-9/16"	Appendix C
47	Pliers, Wire Twister	5120-00-542-4171	8491162	Appendix C
48	Tool Kit, Electronic, TK-100/G	5180-00-605-0079	PPL863	
49	Test Set, Electronic Commer- cial Equivalent	-	AN/GSM-340(V)1	
50	Test Program Set, Shop	6625-01-406-7402	12958913	Appendix C
51	Socket, Socket Wrench Size, 2-0 in.	-	A-A-1394	
52	Handle, Socket Wrench	5120-00-240-5364	GF720	Appendix C
53	Software Kit	7030-01-382-8284	12562814	Appendix C
54	Data I/O 29B Programmer	7030-01-299-5379	29B	Appendix C
55	Data I/O Logic Pak	7035-01-204-9609	950-1942-007	Appendix C
56	Programming/Testing Adapter	-	716-0045-001	
57	Data I/O Wall Chart of Pro- grammable Devices	-	970-0030-001	Appendix C
58	Label Microcircuit	7530-01-372-9849	12562790-2	Appendix C
59	Labeling System	7025-01-332-5545	ML-14	Appendix C
60	Program Microcircuit Pal for U23 on Fig. C5	-	12562786	Appendix C
61	Microsoft Pal for U7 on Fig. C6	5962-01-362-3788	12562789-1	Appendix C
62	Microsoft Pal for U8 on Fig. C6	5962-01-362-3789	12562789-2	Appendix C
63	Microcircuit Set Pal for U12 on Fig. C6	-	12562768	Appendix C
64	Microcircuit Set Pal for U27 on Fig. C6	-	12562767	Appendix C
65	Software Download Assy	-	12951730	Appendix C
66	Microcircuit Pal for U23 on Fig. C5	-	12562785	Appendix C
67	Socket Wrench, Sockethead Screw, 9/64"	5120-00-935-7474	GGG-W-641	-
68	Wrench, Torque, 0-50 ft.-lb	5120-00-541-3001	J23729	SC4931-95-CL-A07
69	Screwdriver Attachment	5120-00-879-3547	GGG-B-001222	Appendix C
70	Socket, Socket Wrench	5120-00-199-7770	B107.1 CL1STA	Appendix C
71	Insertor, Elec. Contact	5120-00-079-4598	M81969/17-03	Appendix C
72	Wrench, Torque 0-150 in.-lb	5120-00-230-6380	A-A-2411	Appendix C
73	Insertor and Removal	5120-00-018-0575	M81969/14-01	Appendix C
74	Insertor and Removal	5120-00-915-4587	M81969/14-02	Appendix C
75	Insertor and Removal	5120-00-915-4588	M81969/14-03	Appendix C

TM 9-1200-215-34&P

Item	Description	NSN	Manufacturer's Part Number	Reference
76	Inserter and Removal	5120-00-079-4601	M81969/19-07	Appendix C
77	Crimping Tool, Positioner Contact	5120-00-133-1747	M22520-7-01	Appendix C
78	Crimping Tool, Positioner Contact	5120-00-133-1772	M22520-7-04	Appendix C
79	Crimping Tool, Positioner Contact	5120-00-133-1782	M22520-7-07	Appendix C
80	Crimping Tool, Positioner Contact	5120-00-133-1785	M22520-7-08	Appendix C
81	Crimping Tool, Positioner Contact	5120-00-133-1769	M22520-7-02	Appendix C
82	Tool Kit, Screw Thd. Insert	5180-01-049-8598	4131-02-1	Appendix C
83	Tool Kit, Screw Thd. Insert	5180-00-935-0735	4132-3-1	Appendix C
84	Rivet Squeezer Set	5120-00-507-0659	DA2	Appendix C
85	Module, Programming Adpt.	—	303A-011A	Appendix C
86	Program, Microcircuit Adpt.	7035-01-344-7836	950-0086-013	Appendix C
87	Screwdriver Attachment	5120-00-293-0318	GGG-B-001222	Appendix C

¹Note: To get the complete version of this tool, the short version, TMA3, must also be purchased.

APPENDIX F

MANDATORY REPLACEMENT PARTS LIST

F-1. GENERAL

This appendix lists the mandatory replacement parts that are referenced in the initial setup table of various maintenance replacement procedures.

F-2. EXPLANATION OF COLUMNS

a. **Column (1) – Item number.** This number is assigned to the entry in the listing. It is referenced in the Materials/parts section of the task to identify the material (e.g., “Cleaning solvent (item 6, Appendix D)”).

b. **Column (2) – Level.** This column identifies the lowest level of maintenance below that requires the listed item.

F – Intermediate Direct Support

c. **Column (3) – National Stock Number.** This is the National Stock Number (NSN) assigned to the item; use it to order the item.

d. **Column (4) – Description.** This column indicates the Federal Item name and, if required, a description to identify the item. The last line for each item indicates the part number in parentheses followed by the Commercial and Government Entity (CAGE) code.

e. **Column (5) – Unit of Measure (U/M).** This column indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., EA, IN, PR). If the unit of measure differs for the unit of issue, order the lowest unit of issue that will satisfy your requirements.

F-3. TABLE OF REPLACEMENT PARTS

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description, Part Number, and CAGE	(5) (U/M)
1	F	5310-00-933-8119	Lockwasher, MS35338-137, 96906	EA
2	F	5310-00-956-4549	Nuts, Self-Locking, MS21083C6, 96906	EA
3	F	5305-00-738-0624	Screws, Self-sealing, MS3212-1, 96906	EA
4	F	5330-01-363-2972	Preformed Packing, 12562734-2	EA
5	F	5330-01-363-2971	Preformed Packing, 12562734-1	EA
6	F	5310-00-933-8118	Lockwasher, MS35338-135	EA
7	F	5305-01-204-3017	Screw, self-locking NAS1635-04LR5	EA
8	F	-	Lockwasher, 25091-436	EA
9	F	5305-00-903-8292	Screw, Machine, MS3212-10	EA
10	F	5305-00-798-0862	Screw, Machine, MS3212-15	EA
11	F	5330-01-046-3300	Preformed Packing, M83461/1-012	EA
12	F	5331-00-052-5267	Preformed Packing, MS9068-030	EA
13	F	5330-00-460-8310	Preformed Packing, MS9068-032	EA

GLOSSARY

Backplane	Provides connectors for mating with the CCAs and distributes signals and power among the CCAs and connections going to the EMI/EMP filter component.
Cable Assembly	Connects the Circuit Card Assembly receptacles to the J1 and J2 receptacles
Central Processing Unit Circuit Card Assembly (CCA)	Performs all computations of projectile ballistics.
Connector Descriptions	Connectors J1, J5, and J8 are the 28 Vdc power input ports to the ACU.
Display Panel	An electro-optical assembly consisting of a 4 x 8 inch thin-film electroluminescent panel, control circuitry and a power supply.
DRU Controller	Provides control of the interface with the navigation processor.
Electrical Connector	A standard 41 pin cylindrical connector marked J1.
EMI Filter	Prevents external power and noise from entering the system.
Expanded Memory Board	Stores program instructions and data.
Loopback Function	Allows the looping of transmitted signals to the receiver.
LRU Interface	Provides the operational interface with the VMS Modem CCA and its cable
Memory Board	Stores various relevant data, including operating instructions, test instructions, variable values, system constants, calculations results and target data.
Nuclear Event Detector	Conducts current when exposed to gamma radiation.
Power Supply Module	Converts conditioned vehicle power to local system voltage levels.
Power-up Relays	Provides emergency output power.
Servo Controller Interface CCA	Supplies operating current to azimuth and elevation electrohydraulic servo valves. Provides a link between the CPU module and the servo controller module.
Solenoid Relay	Provides power to the Hydraulic Solenoid Valve and the Bypass Valve.
Status Monitor Circuit	Monitors the vehicle battery and back-up battery voltages and generates the vehicle battery status and back-up battery status.
Switch Panel	An electro-mechanical assembly which contains 23 push button switches, three toggle switches and two indicator lights.
TCIM CCA	Allows direct connection between the ACU single-board computer CCA and the SINCGARS.
Test Interface	The J2 connector provides the VMS Modem CCA test interface.
Trainer Controller	Provides control of the interface with an external training device.
Transient Voltage Suppressors	Cuts off voltage spikes to less than 100 volts.

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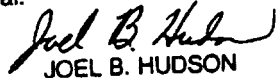
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From Your Unit

DATE SENT

PUBLICATION NUMBER

TM 9-2350-215-34&P

PUBLICATION DATE

February 1999

PUBLICATION TITLE

DS/GS for Automatic Fire Control System (AFCS)

BE EXACT. . .PIN-POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO
2-24	2-18		

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

Recommend that illustration show insulating block placement

Reason: Text does not adequately explain how insulating block should be replaced.

SAMPLE

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Your name, your title, your phone number

SIGN HERE

Your signature

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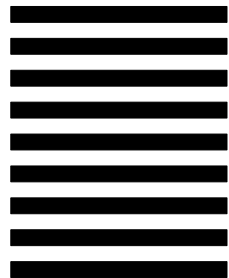
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THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
 1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
 1 Kilometer = 1000 Meters = 0.621 Miles

WEIGHTS

1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
 1 Kilogram = 1000 Grams = 2.2 Lb.
 1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
 1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

SQUARE MEASURE

1 Sq. Centimeter = 100 Sq. Millimeters = 0.155 Sq. Inches
 1 Sq. Meter = 10,000 Sq. Centimeters = 10.76 Sq. Feet
 1 Sq. Kilometer = 1,000 Sq. Meters = 0.386 Sq. Miles

CUBIC MEASURE

1 Cu. Centimeter = 1000 Cu. Millimeters = 0.06 Cu. Inches
 1 Cu. Meter = 1,000,000 Cu. Centimeters = 35.31 Cu. Feet

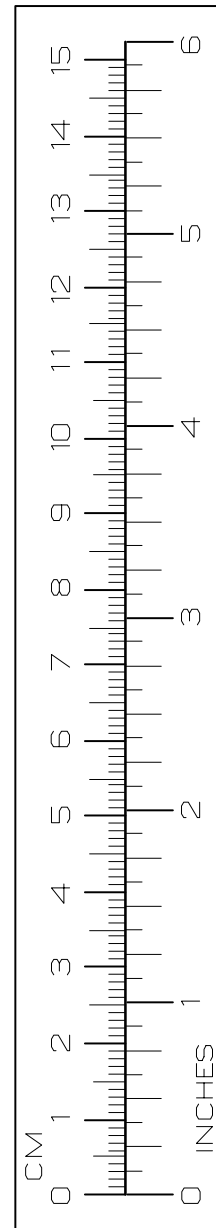
TEMPERATURE

$^{\circ}\text{C} = 5/9 (^{\circ}\text{F} - 32)$
 212 $^{\circ}$ Fahrenheit is equivalent to 100 $^{\circ}$ Celsius
 90 $^{\circ}$ Fahrenheit is equivalent to 32.2 $^{\circ}$ Celsius
 32 $^{\circ}$ Fahrenheit is equivalent to 0 $^{\circ}$ Celsius
 $(9/5 \times ^{\circ}\text{C}) + 32 = ^{\circ}\text{F}$

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Millimeters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
Kilometers per Liter	Miles per Gallon	2.354
Kilometers per Hour	Miles per Hour	0.621



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