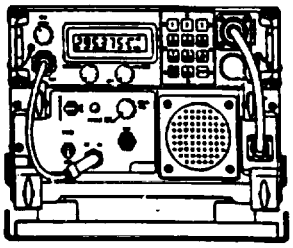
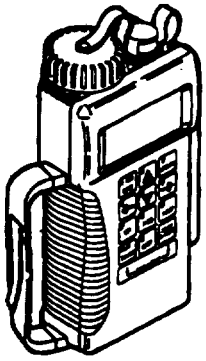
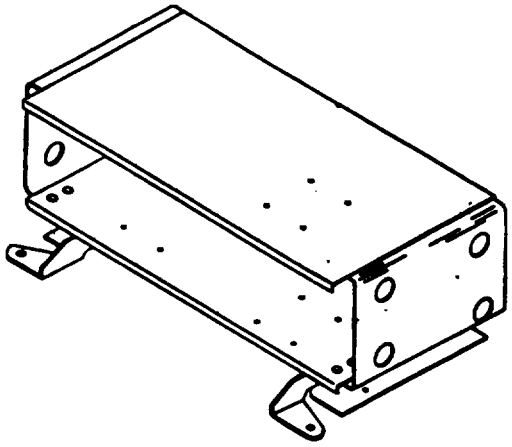
TECHNICAL MANUAL

OPERATOR'S, UNIT AND DIRECT SUPPORT MAINTENANCE MANUAL (INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST) FOR RADIO SET AN/GRC-240 (NSN 5820-01-407-1228) (EIC:NA)







HEADQUARTERS, DEPARTMENT OF THE ARMY

1 MARCH 1996

5 SAFETY STEPS TO FOLLOW IF SOMEONE IS THE VICTIM OF ELECTRICAL SHOCK

1 DO NOT TRY TO PULL OR GRAB THE INDIVIDUAL

2 IF POSSIBLE, TURN OFF THE ELECTRICAL POWER

3 IF YOU CANNOT TURN OFF THE ELECTRICAL POWER, PULL, PUSH OR LIFT THE PERSON TO SAFETY USING A DRY WOODEN POLE OR A DRY ROPE OR SOME OTHER INSULATING MATERIAL

4 SEND FOR HELP AS SOON AS POSSIBLE

5 AFTER THE INJURED PERSON IS FREE OF CONTACT WITH THE SOURCE OF ELECTRICAL SHOCK, MOVE THE PERSON A SHORT DISTANCE AWAY AND IMMEDIATELY START ARTIFICIAL RESUSCITATION

WARNING

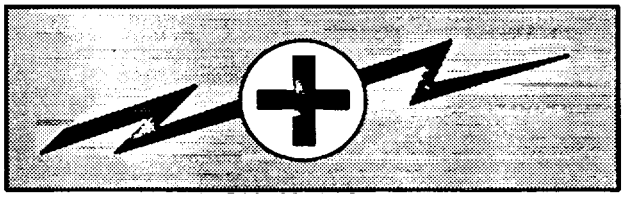
RADIO FREQUENCY RADIATION HAZARD

DO NOT STAND IN THE DIRECT PATH OF THE ANTENNA WHEN THE POWER IS ON!!

DO NOT WORK ON THE WAVEGUIDES WHILE THE POWER IS ON!!

DANGEROUS RF POWER LEVELS EXIST ON AND NEAR THE ANTENNA DURING OPERATION. DO NOT STAND CLOSER THAN 1 METER TO THE ANTENNA WHEN THE TRANSMITTER IS OPERATING. DO NOT TOUCH THE ANTENNA WHILE TRANSMITTING. THE RF ELECTROMAGNETIC RADIATION CAN CAUSE SERIOUS BURNS AND INJURY.

WARNING



HIGH VOLTAGE
is used in the operation of this equipment

DEATH ON CONTACT
may result if personnel fail to observe safety precautions

Never work on electronic equipment unless there is another person nearby who is familiar with the operation and hazards of the equipment and who is competent in administering first aid. When the technicians are aided by operators, they must be warned about dangerous areas.

Whenever possible, the power supply to the equipment must be shut off before beginning work on the equipment. Take particular care to ground every capacitor likely to hold a dangerous potential. When working inside the equipment, after the power has been turned off, always ground every part before touching it.

Be careful not to contact high-voltage connections or 115 volt ac input connections when installing or operating this equipment.

Whenever the nature of the operation permits, keep one hand away from the equipment to reduce the hazard of current flowing through the body.

Warning: Do not be misled by the term "low voltage." Potentials as low as 50 volts may cause death under adverse conditions.

For Artificial Respiration, refer to FM 21-11.

SAFETY SUMMARY

The following general safety precautions are not related to any special procedures and do not appear in this technical manual. They are recommended precautions that personnel must understand and apply during many phases of operation and maintenance

WARNING

Trichlorotrifluoroethane, Trichloroethane, and similar chemical solvents will no longer be used for ordinary cleaning of equipment. These substances threaten public health and the environment by destroying ozone in the earth's upper atmosphere. Suitable nonhazardous cleaning materials will be used instead, such as a clean cloth, water and mild detergent.

WARNING

Beryllium Oxide is used in this equipment. Beryllium Oxide possesses good thermal conduction properties while maintaining electrical insulation. It is used in the form of a washer with some semiconductor devices and is used inside some semiconductors. It can be handled safely if unbroken and undamaged, but dust from broken, crushed, or scratched Beryllium Oxide can cause severe illness. Never cut or file Beryllium Oxide.

If broken Beryllium Oxide is found, collect all particles carefully, being careful not to touch or breathe it. Package and dispose of it properly, then wash thoroughly.

WARNING

Cadmium plated steel parts are used in this equipment to protect steel from corrosion. Occasionally handling or using equipment or components plated with cadmium is harmless, if hands are washed before eating. However, cadmium compounds (and fumes and dust containing them) are toxic. When taken through the mouth, vomiting occurs almost immediately, preventing fatal poisoning. Breathing cadmium fumes or dust affects the respiratory tract, and can cause pulmonary edema and death.

Avoid machining, grinding, or drilling cadmium-plated steel without good ventilation. Wear a ventilation hood. Dispose of dust properly and with care, and wash thoroughly after undertaking all such work.

WARNING

Rack-mounted equipment is not provided with stops. When removing or replacing a piece of equipment, be prepared to pull it completely out of the rack or push it completely into the rack. Failure to do so may cause personnel injury and equipment damage.

CAUTION

Volume levels at the headset, handset and/or earphone must be adjusted to the minimum levels required for operation. The volume control should be adjusted from the minimum position up to comfortable level. Prolonged excessive volume will lead to hearing loss.

WARNING

To avoid personal injury, observe proper procedures for the handling of equipment Lithium batteries. Improper handling may cause fire, explosion, or severe burns. Do not recharge, crush, disassemble, heat the battery above 212° F (100° C), incinerate, or expose the contents to water.

WARNING

DO NOT try to neutralize caustic electrolyte with vinegar or any other acidic solutions. Neutralization will do more harm than good, as it will trap caustic under the skin, preventing it from coming out. Flush with large amounts of water.

WARNING

Lithium organic batteries or cells are used in this equipment and are potentially hazardous if misused or tampered with before, during, or after discharge. Following precautions must be strictly observed to prevent possible injury to personnel or equipment damage:

DO NOT heat, incinerate, crush, puncture, disassemble or otherwise mutilate batteries.

DO NOT short circuit, recharge, or bypass internal fuse.

DO NOT store in equipment during long periods of non-use in excess of 30 days.

Dispose of the battery according to local, state, and federal regulations.

LITHIUM BATTERY EMERGENCY FIRST AID INFORMATION

Battery Type: LS6BA

Solvent(electrolyte): Gamma Butyrlactone is of low toxicity. This solvent can cause some eye and respiratory irritation. According to the manufacturer, the solvent may be released during venting. Venting is an out-gassing of battery material. Short circuit (for more than a few seconds) or overheating the battery usually causes venting.

Solute: LIBF4

CONTACT	DO THIS
Skin	Wash promptly with plenty of water.
Eyes	Flush immediately with plenty of water and use an emergency eyes wash, if available. Report to a medical professional for treatment.
Inhalation	Leave the area and get fresh air. Report to a medical professional for treatment.
Ingestion	Non-toxic according to laboratory testing. However, report to a medical professional for advice.

In case of venting, clear the immediate area. Usually, venting will only last for a few seconds.

CAUTION
C/B DECONTAMINATION

The use of Decontaminating Solution No.2 (DS2) will adversely effect the AN/VRC-834(V) gaskets. For C/B decontamination only Super Tropical Bleach (STB) should be used. Refer to MIL-HDBK-783, Chemical and Biological (CB) Contamination Avoidance and Decontamination for proper use of STB.

Technical Manual

No. 11-5820-1148-13&P

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 1 March 1996

TECHNICAL MANUAL

OPERATORS, UNIT, DIRECT SUPPORT MAINTENANCE MANUAL (INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST) FOR

RADIO SET AN/GRC-240 (NSN 5820-01-407-1228) (EIC:NA)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can improve this manual. If you find any mistakes, or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms) or DA Form 2028-2 located in back of this manual direct to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-LC-LEO-P-MM-T, Fort Monmouth, New Jersey 07703-5000.
In either case a reply will be furnished direct to you.

TABLE OF CONTENTS

TABLE OF CONTENTS (CONTINUED)

TABLE OF CONTENTS (CONTINUED)

TABLE OF CONTENTS (CONTINUED)

TABLE OF CONTENTS (CONTINUED)

LIST OF ILLUSTRATIONS

LIST OF TABLES

CHAPTER 1
INTRODUCTION

Section I. GENERAL INFORMATION

1-1 SCOPE.

This manual provides general description, installation, operation instructions, and operator, unit, and direct support maintenance for Radio Set AN/GRC-240. This manual also contains the Repair Parts and Special Tools List (RPSTL), Appendix F.

The Radio Set AN/GRC-240, hereinafter referred to as the AN/GRC-240, is shown in Figure 1-1.

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

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

1-3 MAINTENANCE FORMS, RECORDS, AND REPORTS.

1-3.1 Reports of Maintenance and Unsatisfactory Equipment.

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAN 738-750 as contained in Maintenance Management Update.

1-3.2 Reporting of Item and Packaging Discrepancies.

Fill out and forward SF 364, Report of Discrepancy (ROD), as prescribed in AR 735-11-2/DLR 4150.55/SECNAVINST 4355.18A/AFSR 400-54/MC04430.3J.

1-3.3 Transportation Discrepancy Report.

Fill out and forward SF 361, Transportation Discrepancy Report (TDR), as prescribed in AR55-38/NAVSUPINST 4610.33C/AFR 75-18/MCO P4610.19D/DLAR 4500.15.

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

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

1-5 PREPARATION FOR STORAGE OR SHIPMENT.

Administrative storage of equipment issued to and used by Army activities shall have preventive maintenance performed in accordance with the Preventive Maintenance Checks and Services (PMCS) charts before storing the equipment. When removing the equipment from administrative storage, the PMCS shall be performed to ensure operational readiness. Disassembly and repacking for shipment or limited storage are covered in Chapter 2, Section III.

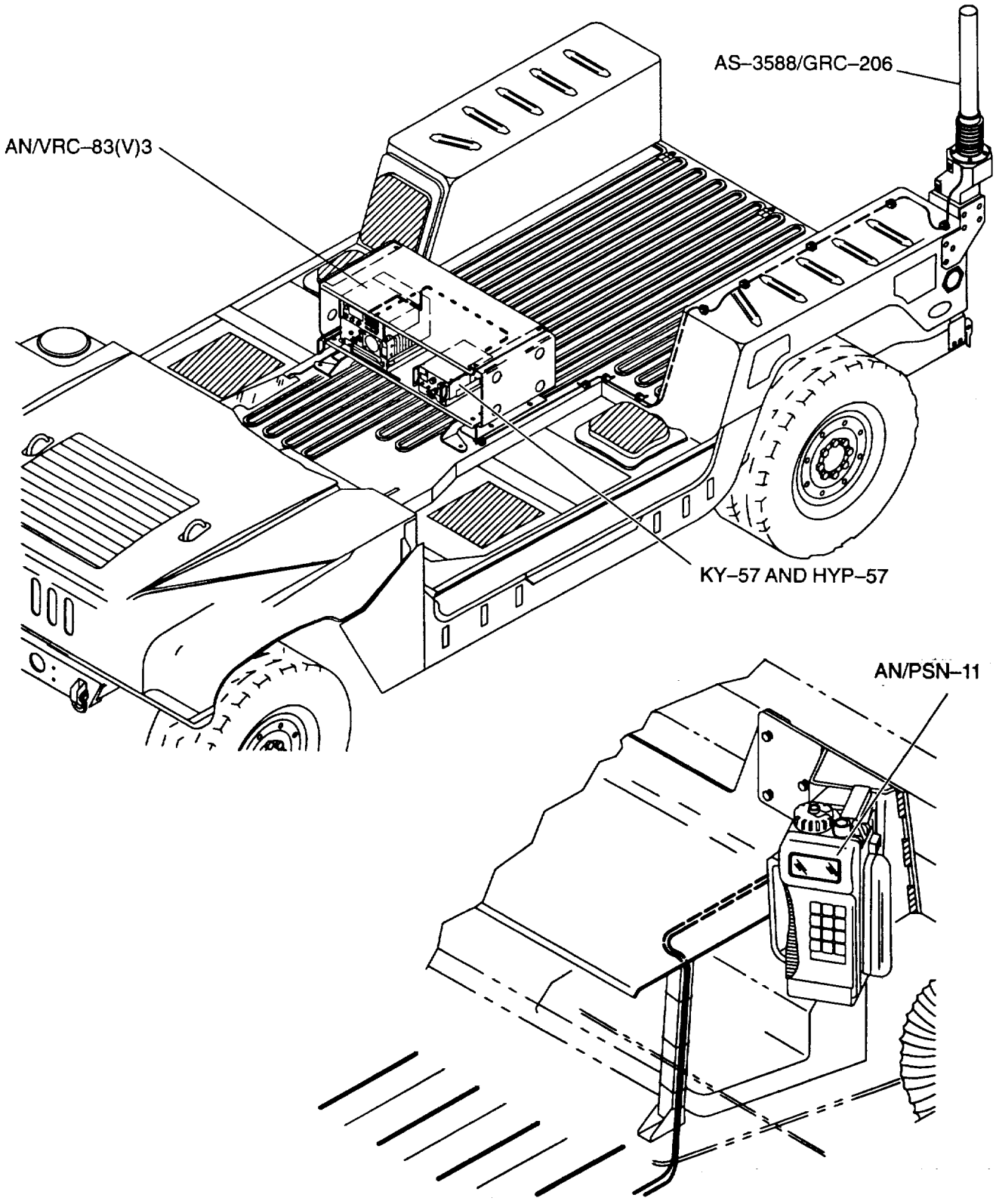


FIGURE 1-1. AN/GRC-240

1-6 REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS.

If your equipment 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: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-LC-LEO-P-MM-T, Fort Monmouth, New Jersey 07703-5023. We'll send you a reply.

1-7 WARRANTY INFORMATION.

The warranty for the AN/GRC-240 component units are as follows:

Equipment	Warranty Period
MK-2827/GRC-240	None
AN/VRC-83(V)3	None
AN/PSN-11	Six (6) years (Refer to TM 11-5825-291-13 for details)
AS-3588/GRC-206	None

The warranty starts on the date found in Block 21, DD Form 250. Report all defects in material and workmanship to your supervisor, who will take the appropriate action.

1-8 CORROSION PREVENTION AND CONTROL.

Corrosion Prevention and Control (CPC) of Army material is a continuing concern. It is important that any corrosion problems with this equipment be reported so that the problem can be corrected and improvements can be made to prevent the problem in future items.

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.

If a corrosion problem is identified, it can be reported using SF 368, Product Quality Deficiency Report. Use of key words such as "corrosion," "rust,", "deterioration," or "cracking" will ensure that the information is identified as a CPS problem.

The form should be submitted to the address specified in DA PAM 738-750.

1-9 NOMENCLATURE CROSS-REFERENCE LIST.

Table 1-1 is a cross-reference list of common names and official nomenclature for equipment described in this manual. Official nomenclature must be used when completing report forms.

Table 1-1. Nomenclature Cross-Reference List

COMMON	OFFICIAL NOMENCLATURE
AN/GRC-240	Radio Set AN/GRC-240
AN/VRC-83(V)3	Radio Set AN/VRC-83(V)3
RT	Receiver-Transmitter RT-1319B/URC
Radio Amplifier (PA)	Radio Amplifier AM-7176A/VRC-83
Handset	Handset H-250/U
COMSEC Equipment/VINSON	Communications Security Equipment KY-57
AN/PSN-11	Satellite Signals Navigation Set AN/PSN-11
Mount	Kit, Installation, Electrical Equipment, MK-2827/GRC-240
W3 Audio Cable/Baseband Cable	Cable Assembly KY-57(NSN 5995-01-154-0140)
W4 Control Cable (Keep Alive Cable)	Cable Assembly, Control (P/N 566033-809)
W1 VRC-83 Input Power Cable	Cable Assembly (P/N 565949-801)
W2 RF Input Cable	Cable Assembly (P/N 565948-801)
Antenna Cable	CX-13502/U
KY-57 Audio Cable	Cable Assembly (36-inch) (P/N 566084-809)
VRC-83 Control Tee Cable	CX-13503/U
Power Supply	COMSEC Vehicle Power Adapter HYP-57

Section II. EQUIPMENT DESCRIPTION AND DATA

1-10 PURPOSE AND USE.

1-10.1 General Information.

The AN/GRC-240 is a HMMWV mounted, HAVE QUICK II Ultra High Frequency (UHF) radio set. The purpose of the AN/GRC-240 is to provide tactical flight operations centers with ground-to-ground, ground-to-air, air-to-ground communications with their supporting aircraft primarily for flight following, emergency location and reporting, logistical and administrative information and flight information updates.

Major component items of the AN/GRC-240 are the AN/VRC-83(V)3, KY-57, HYP-57, AN/PSN-11, AS-3588/GRC-206 antenna, and the MK-2827/GRC-240 installation kit. The AN/GRC-240 operates from the vehicle 24 volt dc battery power. The AN/GRC-240 components are described in paragraphs 1-10.2 through 1-10.7.

1-10.2 AN/VRC-83(V)3 Description.

The AN/VRC-83(V)3 is a two-band Very High Frequency (VHF) and Ultra High Frequency (UHF) unit. It is tunable in 25 kHz steps to either one of two frequency bands, VHF (116.000 MHz to 149.975 MHz with 1360 channels) or UHF (225.000 MHz to 399.975 MHz with 7000 channels). It has an RF power amplifier and a handset. The handset is the audio input-output device. The handset connects to the RT audio input of the AN/VRC-83(V)3 unless KY-57 communications security (COMSEC) equipment is used; then it connects to the KY-57. The handset with Adapter Cable MX-9530 may be used, at the users option, in lieu of the handset. In the AN/GRC-240 application, the AN/VRC-83(V)3 is operated only in the UHF-AM radio spectrum. Cable W4 is connected between RT-1319B and AM-7176A, replacing CX-13503/U when the AN/PSN-11 is not available.

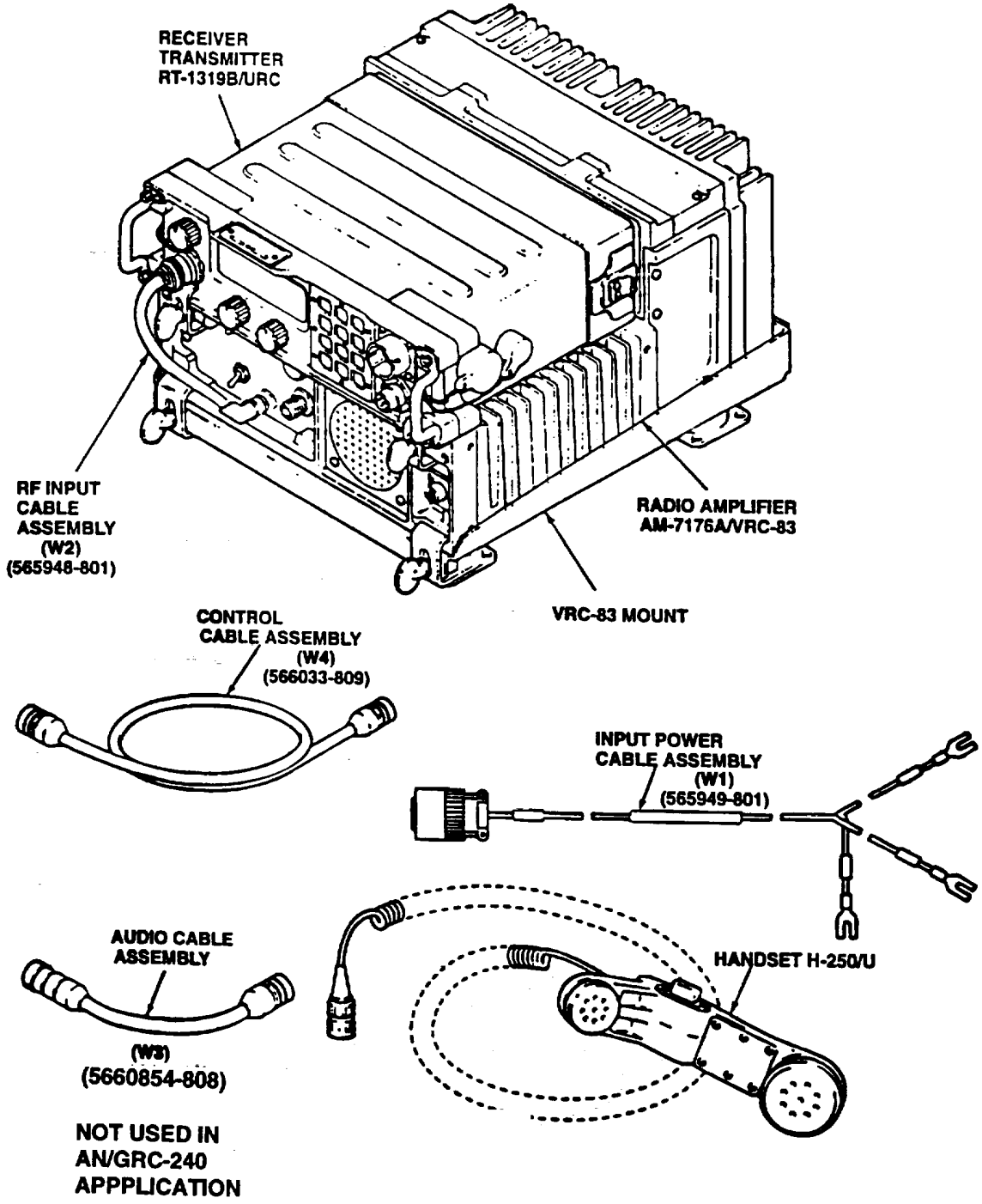


Figure 1-2. ANNRC-83(V)3

1-10.3 KY-57 Description.

The KY-57 (see Figure 1-3) is a lightweight, direct current (dc) powered Controlled Crypotgraphic item (CCI). It is used to provide secured voice inputs to outputs from tactical radio (AM,FM,SSB) equipment or wireline systems.

The power required to operate the KY-57 is provided by the HYP-57 power unit (see Figure 1-4). The HYP-57 is connected at the rear of the KY-57 and secured using two spring latches. Battery operation is available.

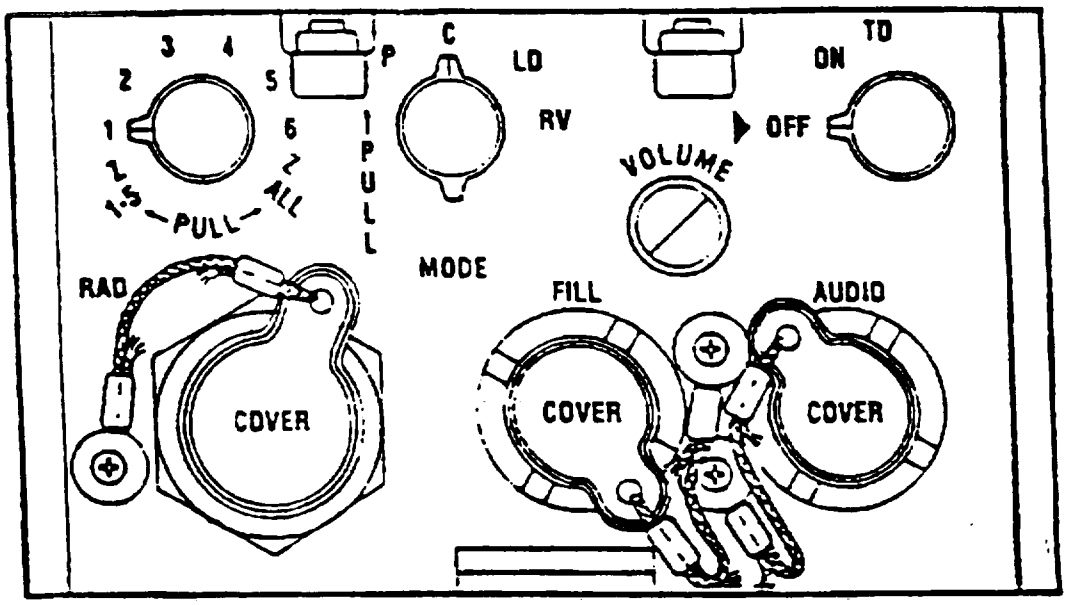


Figure 1-3. KY-57

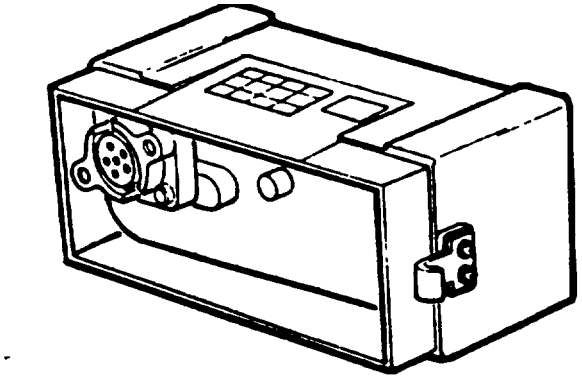


Figure 1-4. HYP-57

1-10.4 AN/PSN-11 Description.

The AN/PSN-11 (see Figure 1-5), is a highly accurate Satellite Signals Navigation Set. The set operates as a part of NAVSTAR GPS. The set has an integral antenna, keyboard, backlit display, receiver processor unit, and a battery. It is operated stand-alone using prime battery power and integral antenna. It is designed for battlefield use anywhere in the world tracking up to five satellites continuously at once. The AN/PSN-11 is mounted on the dashboard of the vehicle.

When installed inside the vehicle, the AN/PSN-11 receives operating power via a cable connected to the vehicle batteries. If required to operate the AN/PSN-11 when disconnected from the vehicle power, then power is provided by a single Type BA-5800/U. Lithium battery LS6BA supplies memory backup power only.

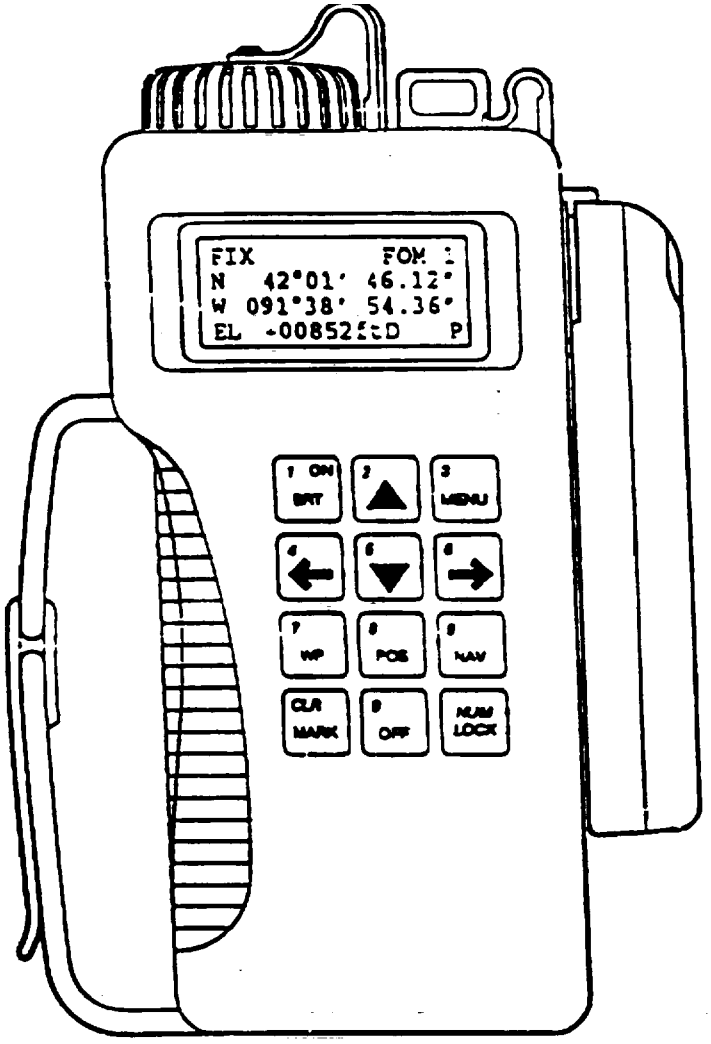


Figure 1-5. AN/PSN-11

1-10.5 AS-3588/GRC-206 Description.

The AS-3588/GRC-206 is shown in Figure 1-6. The AS-3588/GRC-206 is a vertically polarized type antenna and produces an omnidirectional peak radiation pattern. In the AN/GRC-240 application this antenna is operated as an UHF antenna. The antenna can operate in both VHF and UHF. For the AN/GRC-240, only UHF is

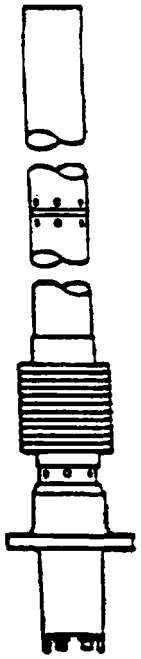


Figure 1-6. AS-3588/GRC-206

1-10.6 AN/PSN-11 Mounting Description.

The AN/PSN-11 mounting base attaches to the AN/PSN-11 Mounting (see Figure 1-7). The AN/PSN-11 mounting is secured to the vehicle dashboard.

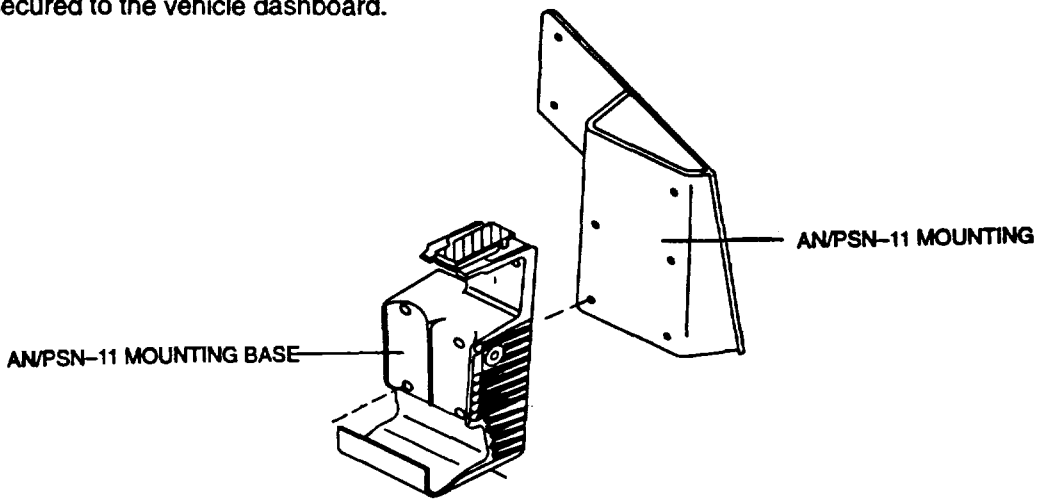


Figure 1-7. AN/PSN-11 Mounting

1-10.7 MK-2827/GRC-240 Description.

Refer to Figure 1-8. The MK-2827/GRC-240 mount attaches to the vehicle to provide a secure base for the installation of the ANNRC-83(V)3 and the KY-57 and HYP-57. The mount also contains space for the installation of additional equipment
AN/VRC-83(V)3 INPUT POWER CABLE (W1)

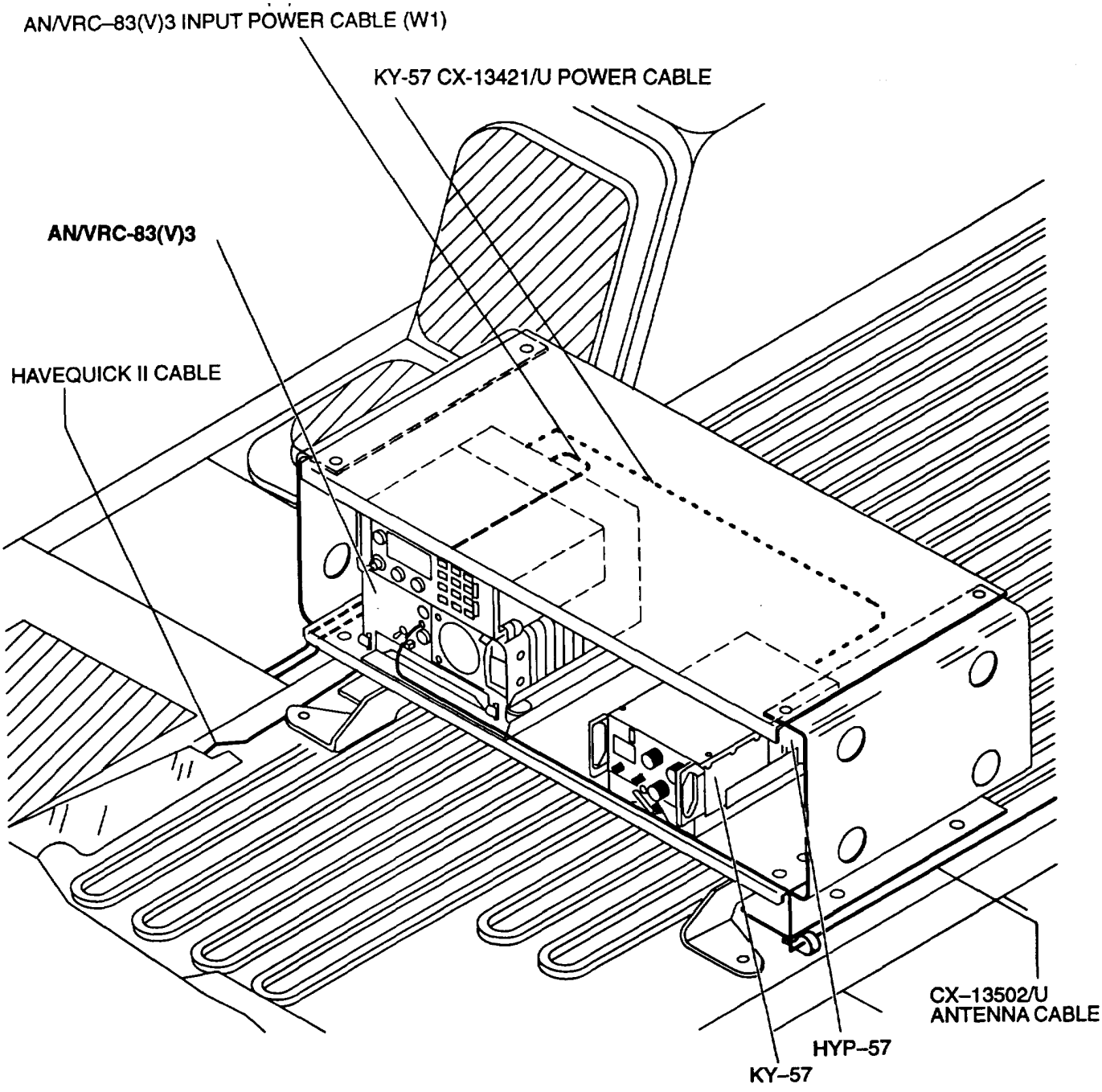


Figure 1-8. MK-2827/GRC-240 Mount

1-11 EQUIPMENT DATA.

1-11.1 ANNRC-83(V)3 Data.

Refer to Appendix A for the ANNRC-83(V)3 technical manuals containing technical data, physical data, capabilities, and limitations for the ANNRC-83(V)3.

1-11.2 KY-57 Data.

Refer to Appendix A for the KY-57 technical manuals containing technical data, physical data, capabilities, and limitations for the KY-57 and HYP-57.

1-11.3 AN/PSN-11 Data.

Refer to Appendix A for the AN/PSN-11 technical manual containing technical data, physical data, capabilities, and limitations for the AN/PSN-11.

1-11.4 AS-3588/GRC-206 Data.

Refer to Appendix A for the *AS-3588*/G*RC-206*(V)3 technical order containing technical data, physical data, capabilities, and limitations for the AS-3588/GRC-206.

1-11.5 MK-2827/GRC-240 Data.

Refer to Table 1-2 for the MK-2827/GRC-240 data.

Table 1-2. MK-2827/GRC-240 Data

PARAMETER	CHARACTERISTIC
Dimensions:	
Length	20 inches (52.83 cm)
Width	13 inches (33.02 cm)
Height	17 inches (43.18 cm)
Weight	78 lbs (35.38 kg)

1-12 AN/GRC-240 CAPABILITIES, LIMITATIONS, AND FEATURES.

The limitations of the AN/GRC-240 are those of the ANNRC-83(V)3, KY-57, AN/PSN-11, and AS-3588/GRC-206 component units. The communication operational capabilities and limitations of the AN/GRC-240 are those of the ANNRC-83(V)3 (see Table 1-3). Other operational capabilities and limitations of the AN/GRC-240 are provided in the technical manuals for the KY-57 and HYP-57, AN/PSN-11, and AS-3588/GRC-206. Refer to Appendix A for applicable TM numbers. The AN/GRC-240 features are those of the ANNRC-83(V)3, KY-57 and HYP-57, AN/PSN-11, and AS-3588/GRC-206 component units.

Table 1-3. AN/GRC-240 Communication Operational Capabilities and Limitations

CAPABILITY AND LIMITATION	DESCRIPTION
Frequency	225.000 to 399.975 MHz (UHF) 7000 Channels 116.000 to 149.975 MHZ (VHF) 1360 Channels
Guard Receiver	243.000 MHz
Channel Spacing	25 kHz
Preset Channels	8, using nonvolatile, electronic memory
Operating Mode	AM voice, AM secure voice, tone
Control Modes	Local or full remote
Frequency Accuracy	±400 Hz maximum
Receiver Sensitivity (Main and Guard)	3 mV(Hard) for 10dB (S+N)/N at 30% modulation Hard=Signal injected directly into receiver)
Receiver Selectivity (Main)	6 dB bandwidth i11 kHz minimum 50 dB bandwidth +80 kHz maximum
Receiver Selectivity (Guard)	6 dB bandwidth +30kHz minimum 60 dB bandwidth ±80 kHz maximum
Normal Audio Output (Main and Guard)	10 mW (minimum) into 600 ohms for 30% modulation 300 to 3500 Hz at 3 dB points
Transmitter Modulation Capability	85±5%
Normal Audio Input	0.63 mV at 150 ohms for 90% modulation, 300 to 3500 Hz at 3 dB points
Tone Modulation	1000 Hz at 90% modulation
Output Power (Nominal)	30W
Output Power (Bypass)	2W, 1OW
Operating Temperature	-510C (-600F) to +68°C (+1550F)
Communication Security Compatibility	KY-57 compatible
Preset Channels	1 thru 8 for storing the preset frequency information 20 thru 15 for storing Word of the Day (WOD) information and preset 14 for Day of Month (DOM) information
Electronic Counter Counter-Measures (ECCM)	ANNRC-83(V)3 uses WOD, TOD, and net number inputs to frequency hop in the FCCM UHF mode

1-13 ENVIRONMENTAL LIMITS.

Refer to Chapter 3, paragraph 3-9 for the AN/GRC-240 environmental limits.

1-14 LIST OF ABBREVIATIONS AND ACRONYMS.

Table 1-4 is a list of abbreviations and acronyms used in this manual.

NOTE

Refer to Glossary for definitions of commonly used terms in this manual.

Table 1-4. List of Abbreviations and Acronyms

ABBREVIATION/ACRONYM	MEANING
AAL	Additional Authorization List
AGC	Automatic Gain Control
ALC	Automatic Level Control
AZ	Azimuth
Bll	Basic Issue Item
BIT	Built-in Test
BITE	Built-in Test Equipment
C	Celsius
COEI	Components of End Item'
CLR	Clear (erase) function
COMSEC	Communications Security Equipment
DOD	Department of Defense
DS	Direct Support
ECCM	Electronic Counter-Counter Measures
ENT	Enter
ESD	Electro-Static Discharge
F	Fahrenheit
GPS	Global Positioning System
Hz	Hertz
kHz	Kilohertz
kg	Kilogram(s)
LRU	Line Replaceable Unit
MAC	Maintenance Allocation Chart
MHz	Megahertz
PA	Power Amplifier
PLGR	Precision Lightweight GPS Receiver
PMCS	Preventive Maintenance Checks and Services
RF	Radio Frequency
RT	Receiver-Transmitter
TM	Technical Manual
TO	Technical Order
TMDE	Test, Measurement and Diagnostic Equipment

CHAPTER 2
INSTALLATION

Section I. GENERAL INFORMATION

2-1 INTRODUCTION.

This chapter contains information for the unpacking, installation, performance checkout and preparation for shipment and preparation for storage of the AN/GRC-240. The AN/GRC-240 can be installed in the following HMMWV combat vehicles:

a. M998
b. M1038

The information in this chapter applies to the AN/GRC-240 installation in a M998 and M1038 four-door vehicle configuration only.

2-2 SHIPPING CONFIGURATIONS.

2-2.1 ANNRC-83(V)3 Shipping Configuration.

The ANNRC-83(V)3 shipping configuration is provided in its technical manual. Refer to Appendix A for the applicable TM for the unpacking procedures for the ANNRC-83(V)3.

2-2.2 KY-57 and HYY-57 Shipping Configuration.

The KY-57 and HYY-57 shipping configuration is provided in its respective technical manual. Refer to Appendix A for applicable TM for the unpacking procedures for the KY-57 and HYP-57.

2-2.3 AN/PSN-11 Shipping Configuration.

The AN/PSN-11 shipping configuration is provided in its technical manual. Refer to Appendix A for the applicable TM for the unpacking procedures for the AN/PSN-11.

2-2.4 AS-3588/GRC-206 Shipping configuration.

The AS-3588/GRC-206 shipping configuration is provided in is technical order. Refer to Appendix A for the applicable TO for the unpacking procedures for the AS-3588/GRC-206.

2-2.5 MK-2827/GRC-240 Shipping Configuration.

The MK-2827/GRC-240 is packaged in a set of four cartons. The cartons contain all components of the radio rack, AN/PSN-11, AS-3588/GRC-206 mount components, interconnecting cables, all mounting hardware, and miscellaneous AN/PSN-11 items.

The four cartons are shipped in a single crate.The shipping crate weighs 130 lbs (58.97 kg), is 75 inches (190.5 cm) long, 24 inches (60.96 cm) high, 36 inches (91.44 cm), and has a volume of 37.5 cubic feet (2.52 cubic meters).

2-3 UNPACKING.

Upon receipt, deliver the unopened shipping cartons to the AN/GRC-240 vehicle installation site. At the site, proceed as follow:

a. Carefully open the shipping cartons.

b. Verify contents of each carton against the enclosed shipping list.

c. Visually inspect each item for shipping damage. Any damage or deficiency are reported in accordance with the procedure given in Chapter 1, paragraph 1-3.3.

d. Do not open hardware packages until contents are ready to be installed.

Retain all shipping cartons, padding, etc., for possible reuse in the event of storage or reshipment of the equipment.

2-4 ENVIRONMENTAL CONSIDERATIONS.

Refer to Chapter 3, paragraph 3-9 for installation and storage environmental considerations.

Section II. M998 AND M1038 FOUR DOOR VEHICLE INSTALLATION INSTRUCTIONS

2-5 GENERAL INFORMATION.

The AN/GRC-240 installation in a M998 and M1038 four-door vehicle consists of the following operations, performed in the given sequence:

a. Removal of vehicle gas tank and drive shaft if the vehicle platform radio rack installation site does not have rivnuts already installed.

b. Removal of vehicle batteries if the vehicle battery box has only one or none of the required cable battery box hole openings.

c. Removal of vehicle cab platform heat shields (if applicable).

d. Removal of vehicle cab platform wood floor at the radio rack installation site (if applicable).

e. Cable modifications such as shortening cable length, installation of connector, and changing battery power cable terminal lugs from spade to circular type (if applicable).

f. AN/PSN-11 mounting base and AN/PSN-11 mount assembly.

g. Partial assembly of the radio rack and the installation of the ANNRC-83(V)3 and the KY-57 mounts onto the bottom shelf of the radio rack. These operations are performed with the components assembled, outside of the vehicle installation site.

h. Installation of the partially assembled radio rack with mounts installed, into the designated platform location in the vehicle.

i. Radio rack top shelf and support brackets installation onto the partially assembled mounted vehicle radio rack.

j. Installation of the AN/PSN-11 mount at the designated vehicle dashboard and front radio rack location.

k. Installation of the AS-3588/GRC-206 antenna mount and antenna element at the roadside rear fender location.

l. Installation and routing of antenna cable from antenna location to the radio rack ANNRC-83(V)3 mount location.

m. Installation and routing of ANNRC-83(V)3 and KY-57 power cables between the mount locations and the vehicle battery location.

n. Installation of the AN/PSN-11 external power cable between the AN/PSN-11 mount location and the vehicle battery box location.

o. Installation of the signal cable between the AN/PSN-11 location and the ANNRC-83(V)3 radio rack bottom shelf mount location.

p. Installation of the AS-4333(V). TO BE SUPPLIED AT A LATER DATE.

q. Installation of ANNRC-83(V)3 into its mount at the radio rack bottom shelf location.

r. Installation of KY-57 (with HYP-57 connected in place) into its mount on the radio rack bottom shelf location.

t. Installation of AN/PSN-11 into its mount at the vehicle dashboard front radio rack location.

u. Performance of the installation operational check to verify that the AN/GRC-240 is operational.

2-6 CABLE REQUIREMENTS.

The installation cable requirements are given in Table 2-1.

Table 2-1. Cable Requirements

REFERENCE DESIGNATION	NOMENCLATURE AND DESCRIPTION	FUNCTION
W1	Cable Assembly, Input Power Part Number 565949-801	Provides primary power connection between the vehicle batteries and the ANNRC-83(V)3.
W2	Cable Assembly, Part Number 565948-801	Provides RF path between RT-1319B and AM-7176A
W4	Cable Assembly, Control Part Number 566033-809	Provides RT connection between RT-1319B and AM-7176A for ECCM operations.
None	Cable Assembly, Special Power Electrical AN/PSN-11	Provides primary power connection between the vehicle batteries and the AN/PSN-11.
None	Cable Assembly, Power, Electrical CX-13421/U	Provides primary power connection between the vehicle batteries and the HYP-57.
None	Cable Assembly, Special Purpose Electrical CX-1 3503/U	Provides connection between AN/PSN-11 Have Quick cable and AM-7176ANRC-83 J7 connector and the RT-1319B/URC connector (Y-cable).
None	Cable Assembly, Special Purpose CX-13502/U	Provides connection between AS-3588/GRC-206 and AM-7176A ANT connector.
None	Cable Assembly, Special Purpose, Electrical P/N 566084-809	Provides audio connection between KY-57 and ANNRC-83(V)3.
None	Cable Assembly, Special Purpose, AN/PSN-11 to Have Quick cable	Provides connection between AN/PSN-11 and connector CX-1 3403/U (Y connector). (Requires connector installation at time of installation).

2-7 INSTALLATION OVERVIEW.

2-7.1 General Information.

Refer to Figure 2-1 for an overview of the AN/GRC-240 installation component locations in the M998 four-door vehicle installation. The AN/GRC-240 interconnection cable diagram is given in Figure 2-2.

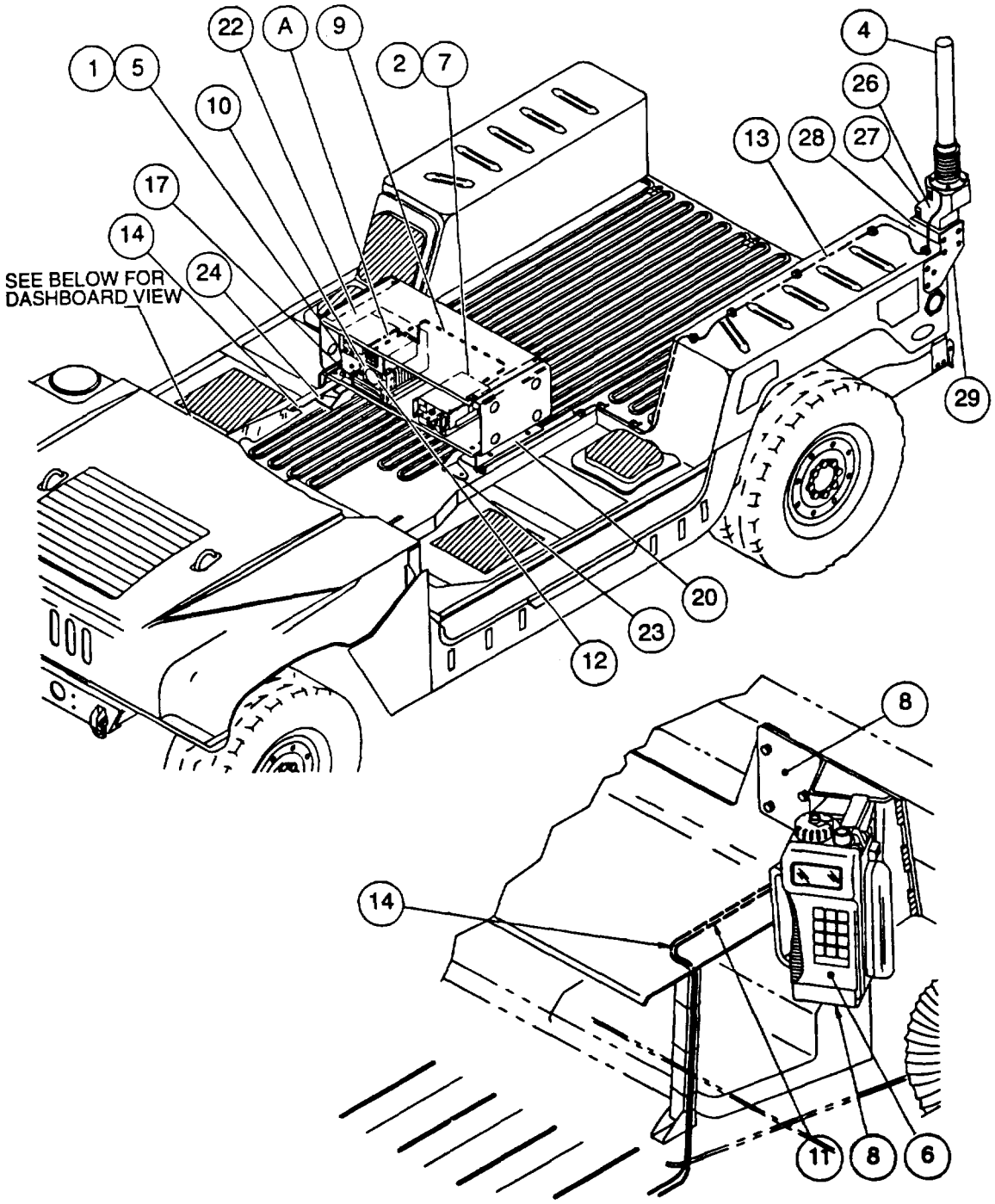


Figure 2-1. AN/GRC-240 Installation Equipment Locations Overview

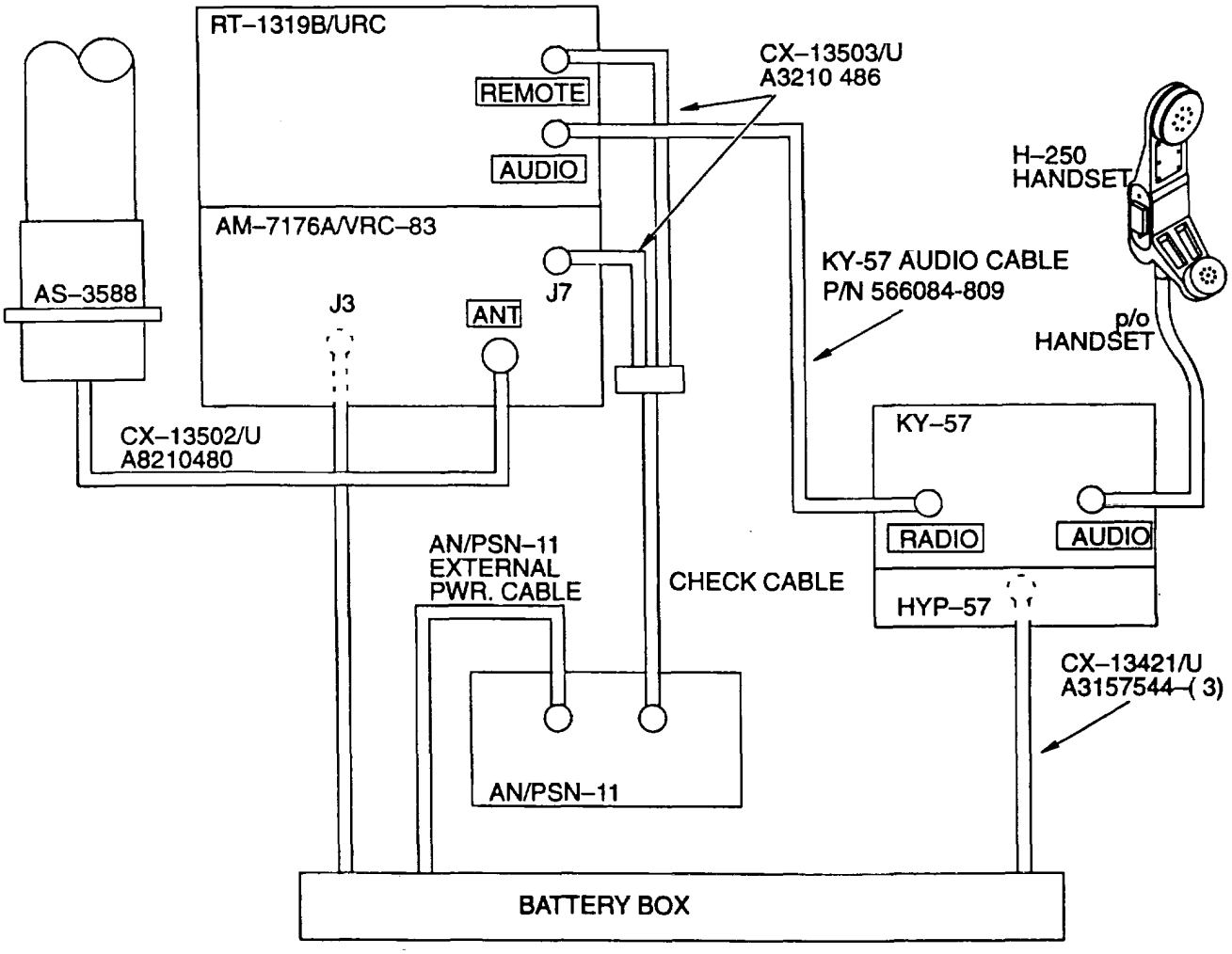


Figure 2-2. AN/GRC-240 Equipment Interconnection Diagram

2-7.2 Safety Guidelines.

Follow the following installation safety guidelines:

a. Always wear safety glasses and gloves.

b. If a plus nuts installation is performed, be sure that a sufficient time has elapsed before removing the gas tank and drive shaft. The exhaust system components must be allowed to cool down before working under the vehicle.

2-8 INSTALLATION PARTS LIST.

The AN/GRC-240 installation parts list is given in Table 2-2. The part's list is numbered and these numbers are used in the installation procedures along with the description of the items.

Table 2-2. AN/GRC-240 Installation Parts List

ITEM NO.	REFERENCE/ PART NUMBER	QUANTITY	DESCRIPTION
1	707123-805 (NSN 5820-01-291-5415)	1	Radio Set ANNRC-83(V)3
2	ON241799 (NSN 5810-00-434-3644)	1	TSEC/KY-57 Assembly
3	822-9977-002 (NSN 5825-01-374-6643)	1	AN/PSN-11 Assembly
4	626489 (NSN 5985-01-110-1051)	1	AS-3588/GRC-206 VHF/UHF Antenna
5	812097-802 (NSN 5820-01-192-0722)	1	ANNRC-83(V)3 Mount Assembly
6	986-0645-001 (NSN 5975-01-375-1302)	1	AN/PSN-11 Mounting Assembly
7	DL-SC-B-884714 (NSN 5975-01-057-6524)	1	TSEC/KY-57 Mount Assembly (MT-4626A)
8	A3210478 (NSN 5975-01-375-1302)	1	AN/PSN-11 Mounting Base
9	A3157544-3 (NSN 5995-01-340-9692)	1	CX-13421/U Cable Assembly (KY-57 Power)
10	566084-809 (NSN 5995-01-224-8698)	1	Cable Assembly, Special Purpose, Electrical (KY-57 Audio)
11	426-0144-010 (NSN 6150-01-375-8661)	1	AN/PSN-11 External Power Cable Assembly

Table 2-2. AN/GRC-240 Installation Parts List (Continued)

ITEM NO.	REFERENCE/ PART NUMBER	QUANTITY	DESCRIPTION
12	A3210486	1	CX-13503/U Cable Assembly (ANNRC-83(V)3 Control "Y" Cable)
13	A3210480	1	CX-1 3502/U Cable Assembly (ANNRC-83(V)3 to AS-3588 Antenna Cable)
14	426-0141-040 (NSN 6150-01-375-8665)	1	AN/PSN-11 Cable Assembly (AN/PSN-11 to HQII Cable)
15	013-1925-030 (NSN 5985-01-375-4660)	1	AS-4333(V) Antenna (AN/PSN-11 Remote Antenna)
16	926-0141-050 (NSN 6150-01-375-8662)	1	AN/PSN-11 Remote Antenna Cable Assembly
17	MS3106F10SL-3S	1	Cable Connect AN/PSN-11 to HQ II)
18	221-0500-020 (NSN 6135-01-301-8776)	1	AS/PSN-11 Memory Battery (LS6BA)
19	021-0706-010 (NSN 5895-01-375-7528)	1	AN/PSN-11 Personnel Carrying Case
20	A3046235	2	LH and RH Radio Rack Side Bracket
21	A3046237	2	Radio Rack Double Angle Bracket
22	A3210477	2	Radio Rack Top and Bottom Mounting Plate
23	A3046242	1	Radio Rack LH Mounting Leg Bracket
24	A3046244	1	Radio Rack RH Mounting Leg Bracket
25	A3046231	1	Mounting Stiffener Plate
26	A3046223	1	Antenna Offset Mount Assembly
27	A3046219	1	Antenna Offset Mount Cover
28	A3103782	1	Antenna Support
29	A3103740	1	Roadside Support Plate
30	A3046222	1	Roadside Support Backing Plate
31	A3103783	1	3/16-Inch Metal Plate
32	A3103784	1	1/4-Inch Metal Plate

Table 2-2. AN/GRC-240 Installation Parts List (Continued)

ITEM NO.	REFERENCE/ PART NUMBER	QUANTITY	DESCRIPTION
33	A3210479	1	Sleeve Spacer
34	565949-801	1	ANNRC-83(V)3 Input Power Cable (W1)
35	MS35489-45 (NSN 5325-00-285-8363)	2	Rubber Grommet
36	SC-B-73180-2	1	Ground Strap
37	MS3367-1-0	15	Tiedown Strap
38	12339355-1	8	Blind Rivet (3/16")
39	A3046248	6	Flat Head Plus Nut (5/16")
40	MS21919WDG12	20	Cable Loop Clamp (3/4")
41	MS21919WDG10	10	Cable Loop Clamp (5/8")
42	MS21919WDG6	10	Cable Loop Clamp (3/8")
43	MS90725-8	3	Hex Cap Screw (1/4" x 1")
44	MS90725-10	10	Hex Cap Screw (1/4" x 1 1/4")
45	MS27183-10	21	Flatwasher (1/4")
46	MS51412-37	5	Flatwasher (1/4" Large)
47	MS35338-44	11	Lockwasher (1/4')
48	MS51967-2	10	Plain Hex Nut (1/4")
49	MS890725-113	2	Hex Cap Screw 1/2" x 1 1/2")
50	MS27183-18	2	Flatwasher (1/2")
51	MS35338-48	2	Lockwasher (1/2")
52	MS90725-36	20	Hex Cap Screw (5/16" x 1 1/4")
53	MS271 83-13	40	Flatwasher (5/16")
54	MS35338-45	24	Lockwasher (5/16")
55	MS51967-5	16	Plain Hex Nut (5/16")

Table 2-2. AN/GRC-240 Installation Parts List (Continued)

ITEM NO.	REFERENCE/ PART NUMBER	QUANTITY	DESCRIPTION
56	MS90725-32	4	Hex Cap Screw (5/16" x 3/4")
57	MS90725-64	17	Hex Cap Screw (3/8" x 1 1/2")
58	MS27183-14	30	Flatwasher (3/8"')
59	MS35338-46	17	Lockwasher (3/8")
60	MS51967-8	13	Plain Hex Nut (3/8")
61	MS35207-265	5	Pan Head Machine Screw (#10 x 3/4")
62	MS35207-267	25	Pan Head Machine Screw (#10 x 1")
63	MS15795-846	5	Flatwasher (#10 ID)
64	MS45904-61	65	Starwasher (#10)
65	MS35338-43	5	Lockwasher (#10 ID)
66	MS35650-304	25	Plain Hex Nut (#10)
67	MS51861-47C	15	Pan Head Tapping Screw (#10 x 1")
68		1	RF Radiation Warning Label
69	AMP P1DG-31897	2	Battery Terminal Lugs (3/8" hole)
70	AMP P1 DG-35112	2	Battery Terminal Lugs (3/8" hole)
71	MS21266-1N	AR	Strip Grommet
72 (	MS21266-4N NSN 5325-00-923-9512)	AR	Strip Grommet

2-9 TOOLS REQUIRED.

Table 2-3 is a list of all tools required for a AN/GRC-240 installation. It is recommended that all tools be assembled at the installation site subsequent to starting the installation.

Table 2-3. Tools Required

NOMENCLATURE	DESCRIPTION
Tri Square	
Wrench, open/box	1/2-inch
Wrench, open/box	7/16-inch
Wrench, open/box	9/16-inch
Wrench, open/box	1 1/6-inch
Socket	1/2-inch
Socket	7/16-inch
Socket	9/16-inch
Handle, Socket Wrench	3/8-inch Drive
Hole Saw	7/8-inch
Soldering Iron	25 Watt
Drill	3/1 6-inch
Drill	1/8-inch (Pilot)
Allen Head Wrench	
Screwdriver	Flat Tip, 1/4-inch
Screwdriver	No. 1 Phillips
Screwdriver	No. 2 Phillips
Riveting Tool	
PLUS Nut Installation Tool (NSN 5120-00-679-6523)	
Marking Pen	
Ruler	
Measurement Tape	12 foot

2-10 PRELIMINARY PROCEDURES.

2-10.1 Removal of Vehicle Gas Tank and Drive Shaft.

CAUTION

Before starting to remove the gas tank and drive shaft, check that the exhaust system has had sufficient time to cool down. Injury may result to personnel if insufficient time for the exhaust system to cool down is not provided.

In vehicles that do not have backing nuts installed in the radio rack mounting location, the vehicle gas tank and drive shaft must be removed to install the radio rack mounting hardware. Refer to TM 9-2320-20-2 for the gas tank and drive shaft removal procedures.

2-10.2 Removal of Vehicle Batteries.

As part of the installation, holes may have to be drilled in the battery compartment in order to connect equipment power cables to the batteries. Refer to TM 9-2320-280-20-2 for the battery removal procedure.

2-10.3 Removal of Cab Platform Heat Shields.

In vehicle installations that have heat shields installed in the cab platform side locations, remove the heat shields for cable routing and radio rack installation. Remove mounting hardware and move the heat shields clear of the respective cab platform work areas.

2-10.4 Removal of Cab Platform Flooring Panel.

Some vehicle installations may have a wood panel covering the platform radio rack installation location. Remove the wood panel and discard.

2-10.5 Cable Modifications.

2-10.5.1 Installation of Cable 426-0141-040 Connector. The 426-0141-040 cable is supplied with one connector wired in place. A connector, MS3106A10SL6 (Item 17) is supplied with the installation kit. Refer to Chapter 5, paragraph 5-23 for the installation procedure for the connector onto the cable.

2-10.5.2 Replacement of Cable 426-0144-010 Battery Connection Lugs. The 426-0144-010 cable (Item 14) is

supplied with spade type lugs for connection to a battery. These lugs are removed and replaced with the type lugs (Item 69) that will be connected to the battery.

2-10.5.3 ANNRC-83(V)3 Power Cable W1 Modification. Measure an eight (8) foot length of cable from the connector end. Cut the cable at the battery terminal lug end. Replace the lug terminals at the cut end.

2-11 PRE-INSTALLATION ASSEMBLY PROCEDURES.

2-11.1 AN/PSN-11 Mounting Base and AN/PSN-11 Mount Assembly Procedure.

2-11.1.1 Hardware Requirements. The AN/PSN-11 mounting base (6) and the AN/PSN-11 mount (8) assembly hardware requirements is as follows:

Item Number	Quantity	Description
61	4	Pan Head Machine Screw (#10 x 3/4")
65	4	Lockwasher (#10 ID)

2-11.1.2 Assembly Procedure. Refer to Figure 2-3 and proceed as follows:

a. Insert machine screw (61) through lockwasher (65).

b. Insert hardware combination through mounting base (6) and into mount assembly (8) (4 places).

c. Use No.2 Phillips screwdriver to tighten hardware.

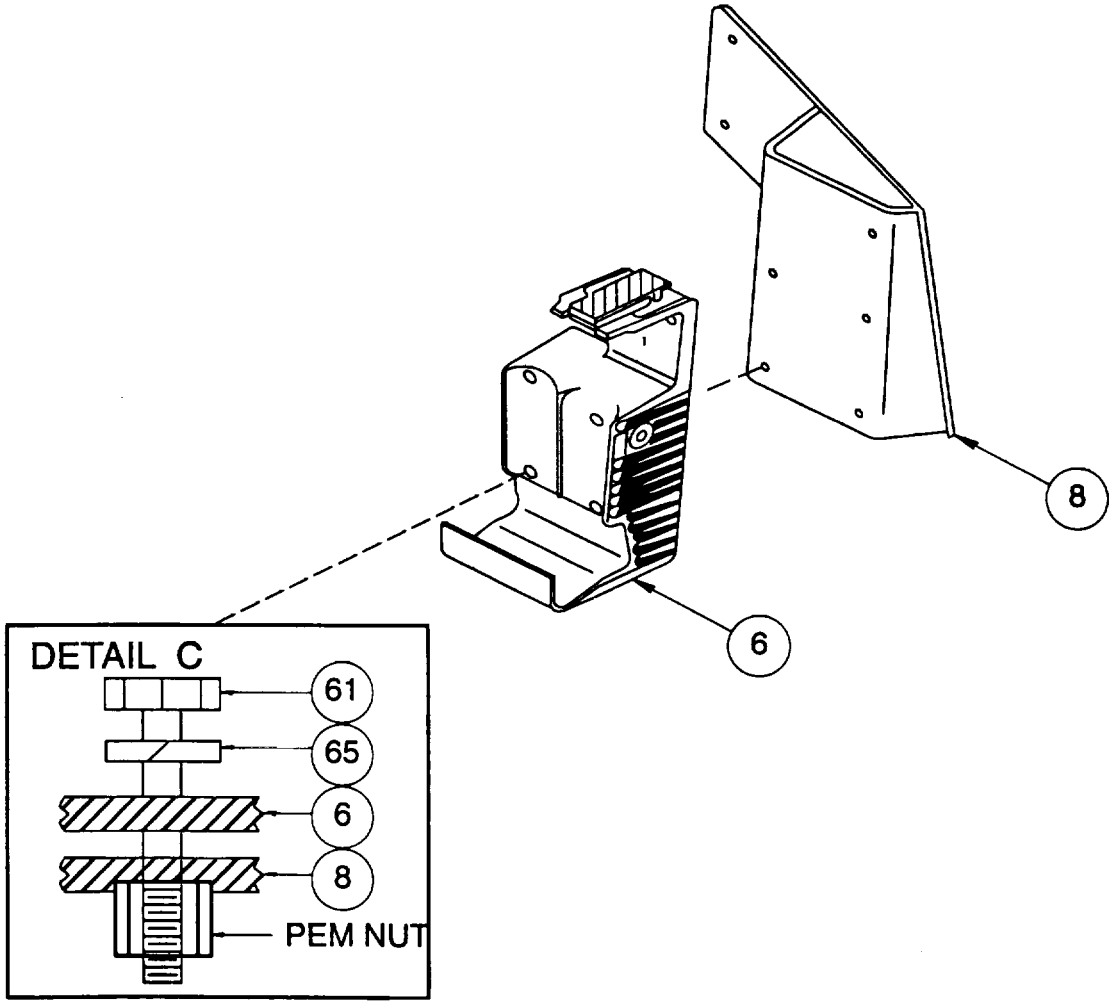


Figure 2-3. AN/PSN-11 Mount Base and Mount Assembly

2-11.2 Radio Rack Assembly.

2-11.2.1 Hardware Requirements. The radio rack assembly hardware requirements are as follows:

Item Number	Quantity	Description
52	8	Hex Cap Screw (5/16" x 1 1/4")
53	16	Flatwasher (5/16")
54	8	Lockwasher (5/16)
55	8	Plain Hex Nut (5/16'")

2-11.2.2 Assembly Procedure. The assembly of the right hand and the left hand radio rack side bracket (20) to the bottom mounting plate (22) are the same. Refer to Figure 2-4 and proceed as follows:

a. Insert hex cap screw (52) through flatwasher (53). Insert hardware combination through bottom mounting plate (22) and side bracket (20) holes, from the top (2 places).

b. Place flatwasher (53), lockwasher (54) and hex nut (55) on hex cap screw (52). Hand tighten nut.

The assembly of the right hand and left hand mounting leg bracket are the same. Refer to Figure 2-4 and proceed as follows:

a. Insert hex cap screw (52) through flatwasher (53). Insert hardware combination through mounting bracket (23) and (24) and radio rack side bracket (20) from the outside end (2 places).

b. Place flatwasher (53), lockwasher (54), and hex nut (55) on hex cap screw (52). Hand tighten nut.

2-11.3 ANNRC-83(V)3 Mount Assembly Installation.

2-11.3.1 Hardware Requirements. The ANNRC-83(V)3 mount assembly (5) installation onto the radio rack bottom mounting plate (22) hardware requirements are as follows:

Item Number	Quantity	Description
44	4	Hex Cap Screw (1/4" x 1 1/4")
45	8	Flatwasher (1/4")
47	4	Lockwasher (1/4")
48	4	Plain Hex Nut (1/4")

2-11.3.2 Installation Procedure. Refer to Figure 2-5 and proceed as follows:

a. Remove hex cap screw (A) and washer (B) (4 places) holding top tray © onto bottom tray (D) of mount assembly (E) and separate.
b. Use bonding brush to remove paint at ground strap mounting hold location at top and bottom of radio rack shelf.
c. Apply a coating of Alodine 600 to each mounting hold side. Allow 3 minutes to dry.
d. Place bottom tray (D) on mounting plate (22) and align tray mounting holes with mounting plate holes.

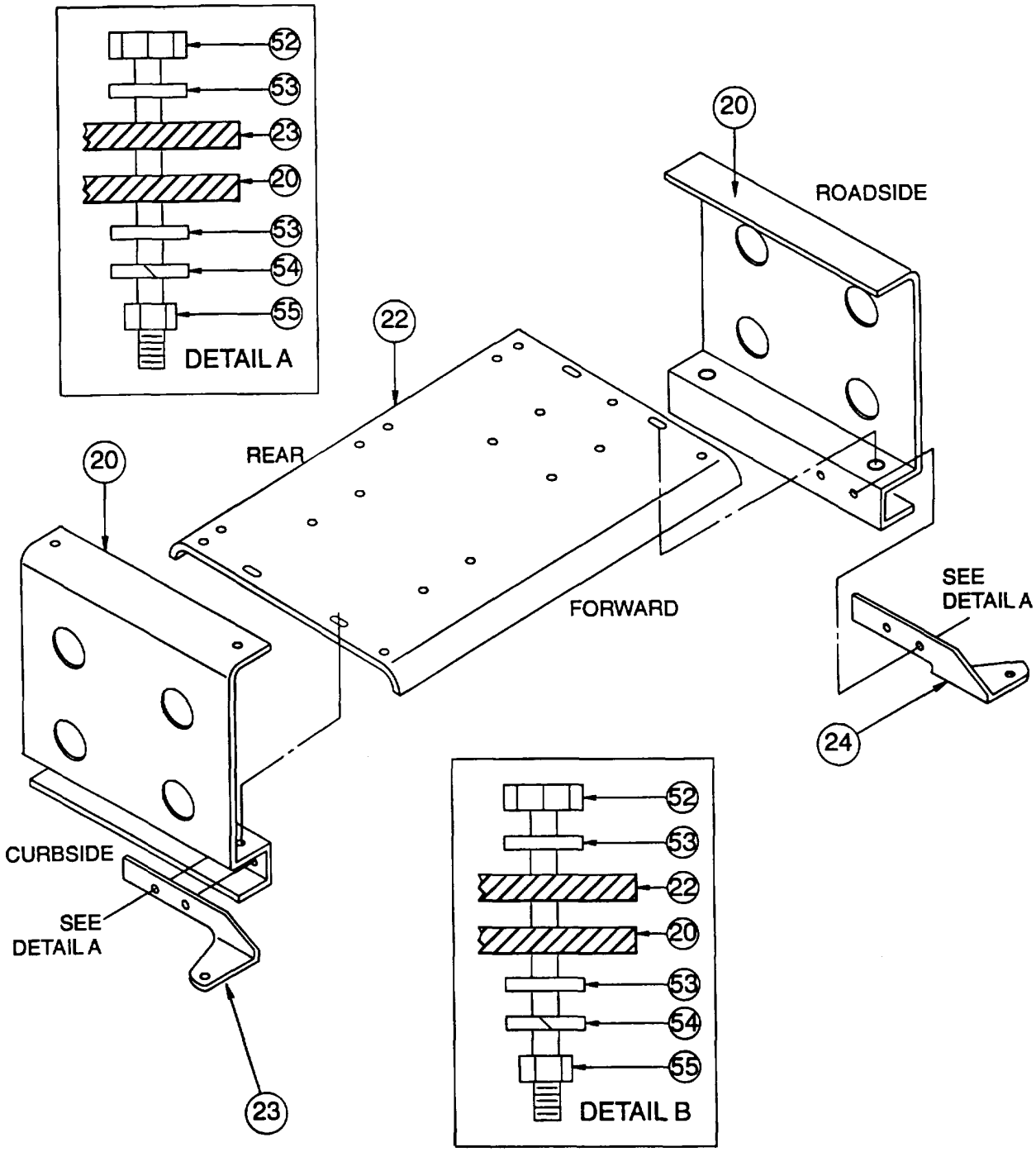


Figure 2-4. Radio Rack Bottom Shelf and Side Brackets Assembly

NOTE

Be sure that the mount is installed with the thumb screws facing the front of the radio rack shelf

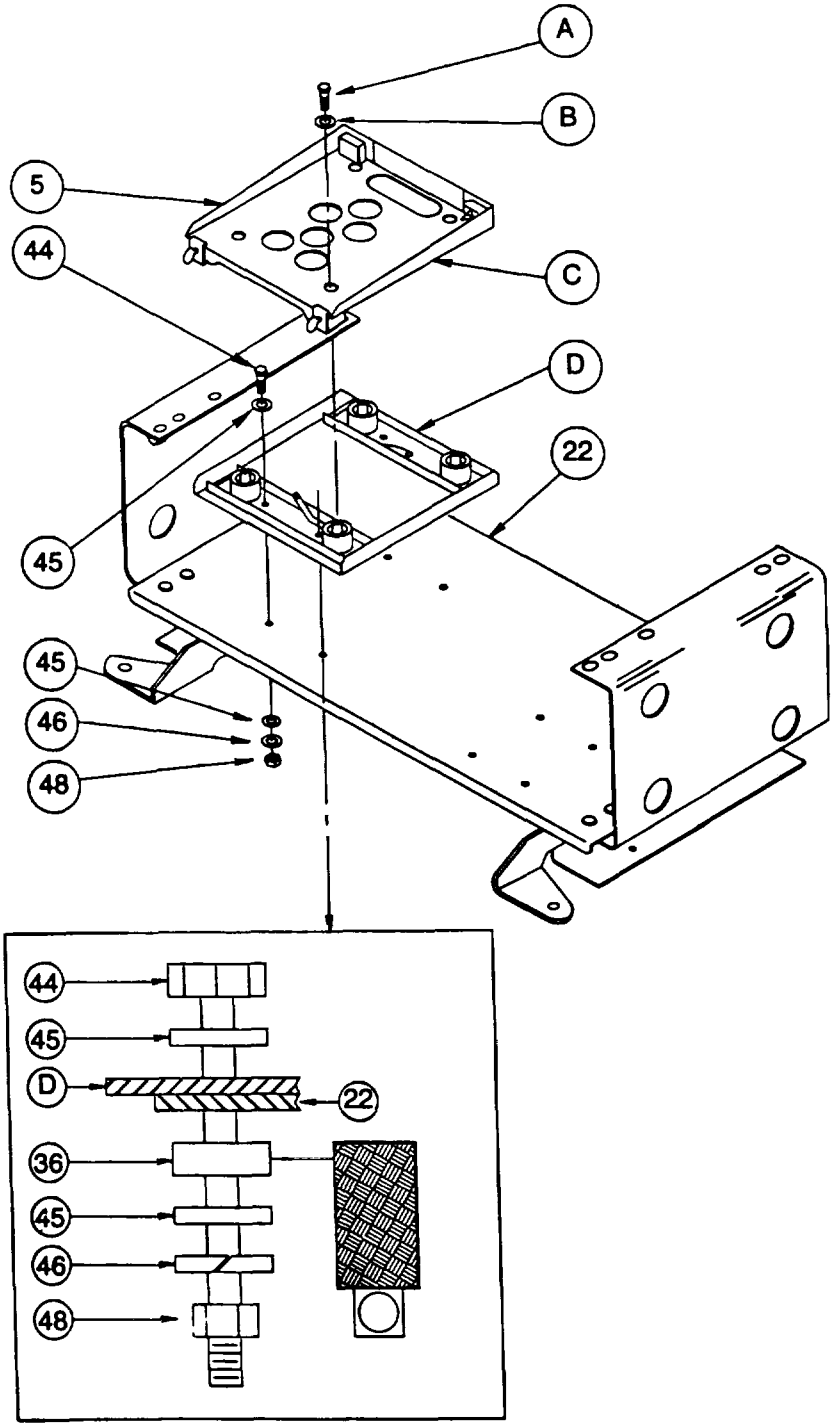


Figure 2-5. ANNRC-83(V)3 Mount Installation

e. Insert hex cap screw (44) through flatwasher (5). Insert hardware combination through bottom tray mounting holes and the bottom mounting plate mounting holes from the top (4 places).

f. From underside of bottom mounting plate, place flatwasher (45), lockwasher (47), and hex nut (48) on hex cap screw (44) at 3 places. At location shown, place ground strap (36), flatwasher (45), lockwasher (47), and hex nut (48) on hex cap screw (44).

g. Place 7-16-inch open/box wrench on hex nut (48) and hold hex nut in place.

h. Place 7/16-inch socket with socket wrench on hex cap screw (44) and turn clockwise until tight.

NOTE

Be sure that the two ground straps are in place at the two forward tray locations before inserting mounting hardware.

i. Place top tray onto bottom tray and secure in place using hex cap screw (A) and flatwasher (B) (4 places).

2-11.4 KY-57 Mount Assembly Installation.

2-11.4.1 Hardware Requirements. The KY-57 mount assembly (7) installation onto the radio rack bottom mounting plate (22) hardware requirements are as follows:

Item Number	Quantity	Description
52	4	Hex Cap Screw (5/16" x 1 1/4")
53	8	Flatwasher (5/16")
54	4	Lockwasher (5/16")
55	4	Plain Hex Nut (5/16")

2-11.4.2 Installation Procedure. Refer to Figure 2-6 and proceed as follows:

a. Remove paint at bottom shelf underside and topside mounting hole to ensure mount is grounded to shelf.

b. Apply a coating of Alodine 600 at each mounting hole side of shelf. Allow 3 minutes to dry.

c. Insert hex cap screw (52) through flatwasher (53). Insert hardware combination through mount assembly mounting holes and the bottom mounting plate mounting holes from the top (4 places).

d. From underside of bottom mounting plate, place flatwasher (53), lockwasher (54), and hex hut (55) on hex cap screw (48).

e. Place 1/2-inch open/box wrench on hex nut (55) and hold in place.

f. Place 1/2-inch socket with socket wrench on hex cap screw (52) and turn clockwise until tight.

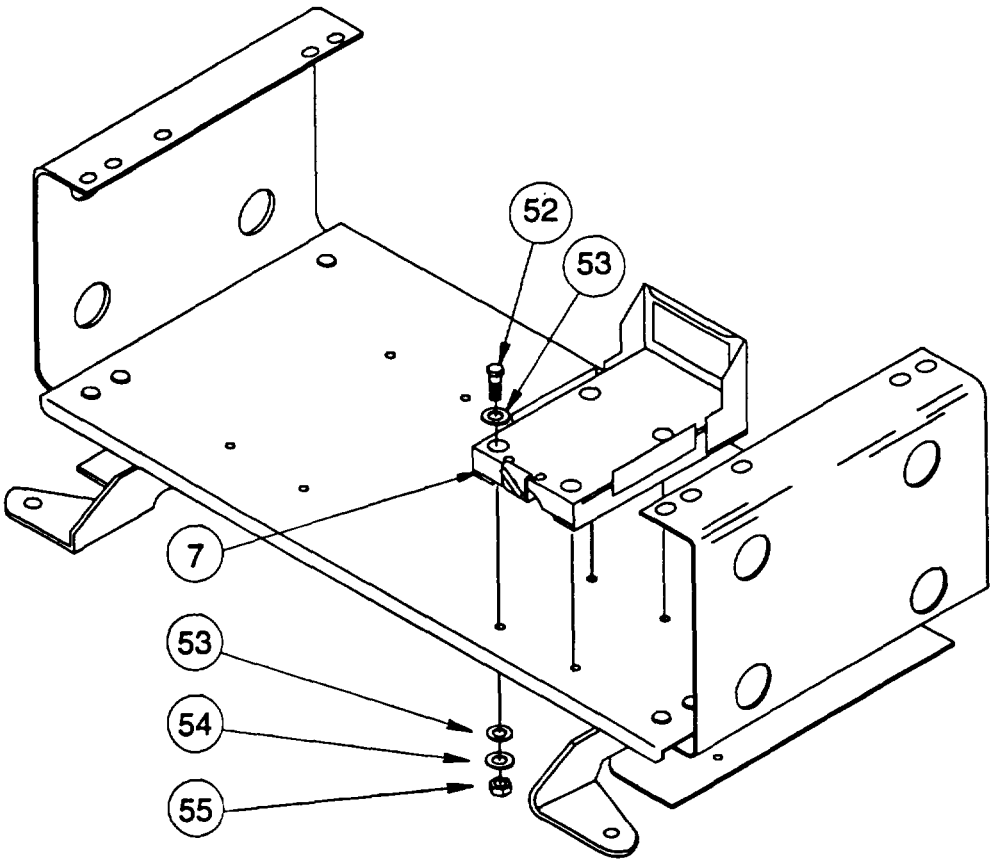


Figure 2-6. KY-57 Mount Installation

2-12 RADIO RACK VEHICLE INSTALLATION.

2-12.1 General Information.

The radio rack location on the vehicle platform is shown in Figure 2-7. The radio rack is secured to the platform floor in either of two ways. If the platform bed contains rivnuts already factory installed, then the radio rack is secured in place with hex cap screws, lockwashers, and flatwashers at those locations. If no rivnuts are in place but pre-drilled holes are provided, then the radio rack is secured with a combination of plus nuts, stiffener places, and standard mounting hardware. The radio rack rivnut installation procedure is given in paragraph 2-12.2. The radio rack plus nut installation procedure is given in paragraph 2-12.3.

2-12.2 Radio Rack Rivnut Installation.

2-12.2.1 Hardware Requirements. The radio rack rivnut installation hardware requirements are as follows:

Item Number	Quantity	Description
49	2	Hex Cap Screw (1/2" x 1 1/2")
50	2	Flatwasher (1/2")
51	2	Lockwasher (1/2")
52	4	Hex Cap Screw (5/16" x 1 1/4")
53	4	Flatwasher (5/16")
54	4	Lockwasher (5/16")
67	1	Pan Head Tapping Screw (#10 x 1")

2-12.2.2 Installation Procedure. Refer to Figure 2-7 and proceed as follows:

NOTE

The D-rings are secured by either an Allen head countersunk screw or a hex head screw.

a. Use applicable tool to remove hardware securing D-ring (A) to platform bed (2 places). Discard mounting hardware but retain D-rings for later reinstallation.

b. Place radio rack on platform. Align radio rack leg brackets [(23) and (24)] with D-ring mounting holes and radio rack side bracket mounting holes, with rivnuts installed in the platform bed.

c. Insert hex cap screw (52) through lockwasher (53) and flatwasher (54). Insert hardware combination through radio rack side bracket mounting holes and into rivnut (4 places). Do not tighten hex cap screws.

d. Install D-rings on top of radio rack side bracket leg mounting holes.

e. Insert hex cap screw (49) through flatwasher (5) and lockwasher (51). Insert hardware combination through D-ring mounting hole, radio rack leg bracket mounting hole, and into platform bed rivnut (2 places). Do not tighten hex cap screws.

f. Secure ground strap to platform bed at existing hole, using pan head tapping screw (67).

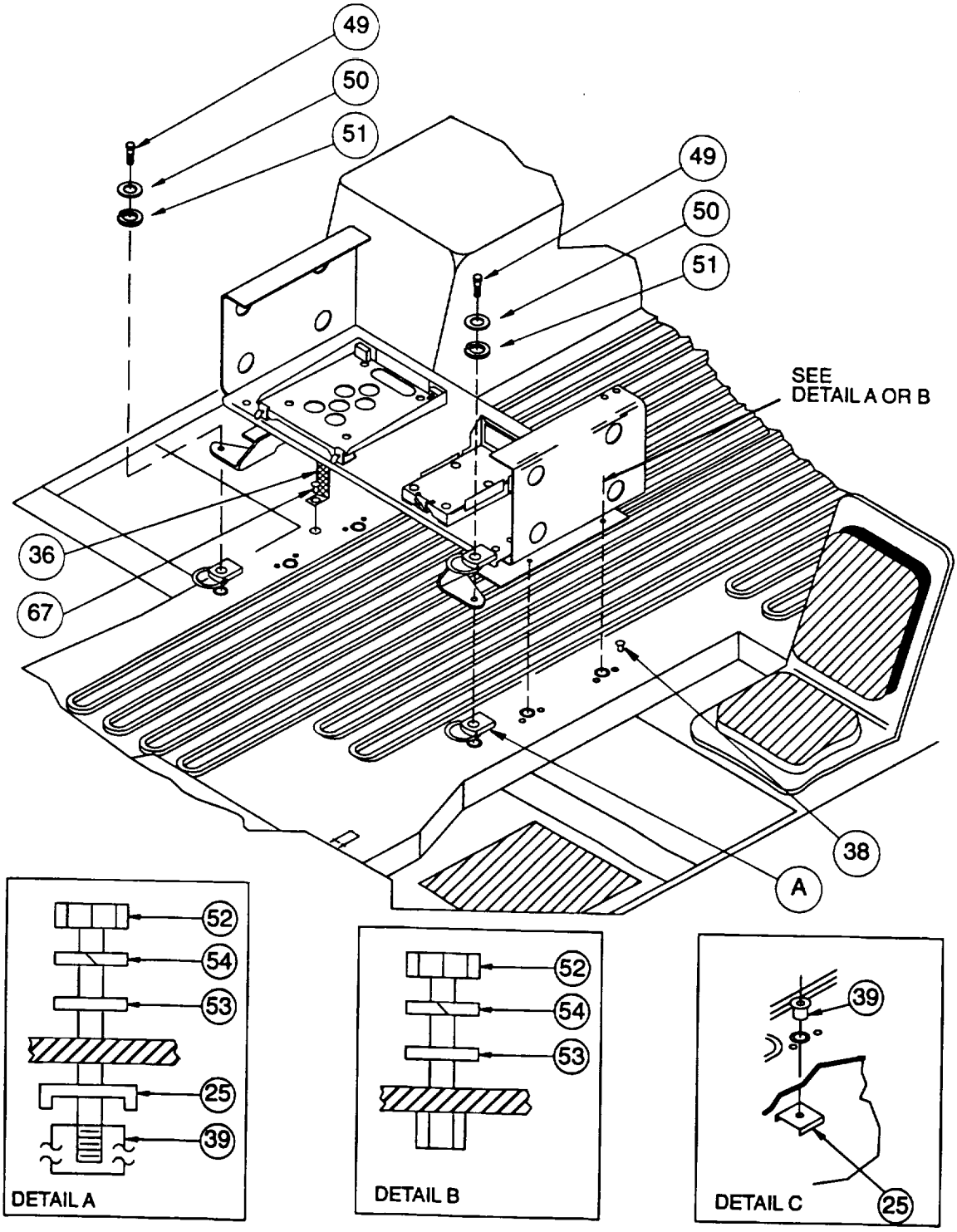
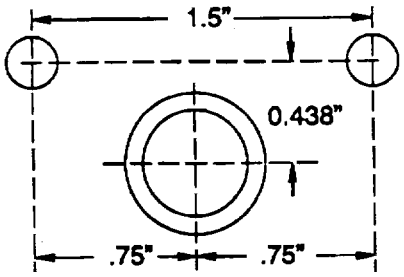


Figure 2-7. Radio Rack Installation

2-12.3 Radio Rack Plus Nut Installation.

2-12.3.1 General Information. Refer to Figure 2-7 DETAIL C. The installation of the plus nut (39) requires the use of a special installation tool. One tool per site will be provided separately for use at each AN/GRC-241 installation. A mounting stiffener plate (25) is used to provide a rigid backing for the plus nut to prevent damage to the platform bed at the radio rack mounting hole location. The stiffener plate is riveted to the platform floor a the mounting hole location. If the platform does not have rivet holes at the pre-drilled mounting hole location use a 3/16-inch drill to drill the rivet holes, as shown below.



2-12.3.2 Hardware Requirements. The radio rack plus nut installation hardware requirements are as follows:

Item Number	Quantity	Description
38	8	Blind Rivet (3-16")
39	4	Flat Head Plus Nut (5/16")

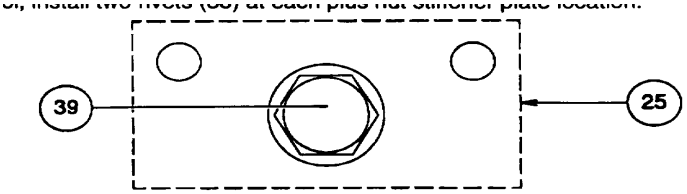
2-12.3.3 Plus Nut Installation Procedure. The plus nut installation is a two person operation. One person crawls under the vehicle and places the stiffener plate [see DETAIL C (25)] at the mounting hole location. The flat face of the stiffener plate is positioned against the bottom of the platform floor and held in place. The other person inserts the plus nut (39) into the installation tool and then inserts the end of the tool into the mounting hole. Using an open end wrench to hold the body of the tool in place, and using an Allen wrench (provided with the installation tool), the tool operator turns the Allen wrench in a counterclockwise direction. This action results in the plus nut expanding in place at the mounting hole. The person under the vehicle tells the tool operator when the plus nut is fully expanded and is holding the stiffener plate (25) tightly against the bottom of the platform floor.

If the radio rack is removed from a vehicle for installation in another, do not remove the plus nuts to install in the other vehicle. Order new plus nuts for the new installation

CAUTION

Do not allow the person who takes the underside of vehicle position to go under the vehicle unless a sufficient time has been allowed for the vehicle exhaust system to cool down to the touch.

After the plus nuts are installed (4 places), drill two holes in the stiffener plate from the top, using a 3/16-inch drill. Using the rivet tool, install two rivets (38) at each plus nut stiffener plate location.



2-12.3.4 Radio Rack Installation.

2-12.3.4.1 Hardware Requirements. The radio rack installation hardware requirements are as follows:

Item Number	Quantity	Description
52	4	Hex Cap Screw (5/16" x 1 1/4")
53	4	Flatwasher (5/16")
54	4	Lockwasher (5/16")
49	2	Hex Cap Screw (1/2" x 1 1/2")
50	2	Flatwasher (1/2")
51	2	Lockwasher (1/2")
67	1	Pan Head Tapping Screw (#10 x 1")

2-12.3.4.2 Installation Instructions. Refer to Figure 2-7 and proceed as follows:

NOTE

The D-rings are secured by either an Allen head countersunk screw or a hex head screw.

a. Use applicable tool to remove hardware securing D-ring (A) to platform bed (2 places). Discard mounting hardware but retain D-rings for later reinstallation.

b. Place radio rack on platform. Align radio rack leg brackets [(23) and (24)] with D-ring mounting holes and radio rack side bracket mounting holes and into rivnuts installed in the platform bed.

c. Insert hex cap screw (52) through lockwasher (53) and flatwasher (54). Insert hardware combination through radio rack side bracket mount holes and into plus nut (4 places). Do not tighten hex cap screws.

d. Install D-rings on top of radio rack side bracket leg mounting holes.

e. Insert hex cap screw (49) through flatwasher (5) and lockwasher (51). Insert hardware combination through D-ring mounting hole, radio rack leg bracket mounting hole, and into platform bed rivnut (2 places). Do not tighten hex cap screws.

f. Secure ground strap to platform bed at existing hole, using pan head tapping screw (67).

2-13 RADIO RACK TOP SHELF AND SUPPORT BRACKETS ASSEMBLY

2-13.1 Hardware Requirements.

The radio rack top shelf (22) and support brackets (21) assembly onto the installed radio rack hardware requirements are as follows:

Item Number	Quantity	Description
44	4	Hex Cap Screw (1/4" x 1 1/4")
45	8	Flatwasher (1/4")
47	4	Lockwasher (1/4")
48	4	Hex Nut (1/4")
52	4	Hex Cap Screw (5/16’ x 1 1/4")
53	8	Flatwasher (5/1 6")
54	4	Lockwasher (5/16’)
55	4	Hex Nut (5/16")

2-13-2 Assembly Instructions.

Refer to Figure 2-8 and proceed as follows:

a. Using 9/32-inch drill, drill through the radio rack bottom shelf mounting hole and radio rack side bracket at location identified as (A) and (B).

b. Insert hex cap screw (44) through flatwasher (45). Place support bracket (21) in place on bottom shelf mounting hole.

c. Insert hardware combination through support bracket and the bottom shelf mounting holes from the top (2 places)

d. From underside of shelf, place flatwasher (45), lockwasher (47), and hex nut (48) on hex cap screw (44).

e. Place 7/16-inch open/box wrench on hex nut (48) and hold in place.

f. Place 7/16-inch socket with wrench on hex cap screw (44) and turn clockwise until tight.

g. Place radio rack top shelf (22) on radio rack side brackets (20) and align all mounting holes.

h. Insert hex cap screw (44) through flatwasher (45). Place support bracket (21) in place on top shelf mounting hole.

i. Insert hardware combination through top shelf and support bracket mounting holes from the top (2 places). Do not tighten nuts.

j. Insert hex cap screw (52) through lockwasher (53). Insert hardware combination through top shelf and side bracket mounting holes at location (B) from the top (4 places).

k. At underside of side bracket location, place flatwasher (53), lockwasher (54), and hex nut (55) on hex cap screw (55).

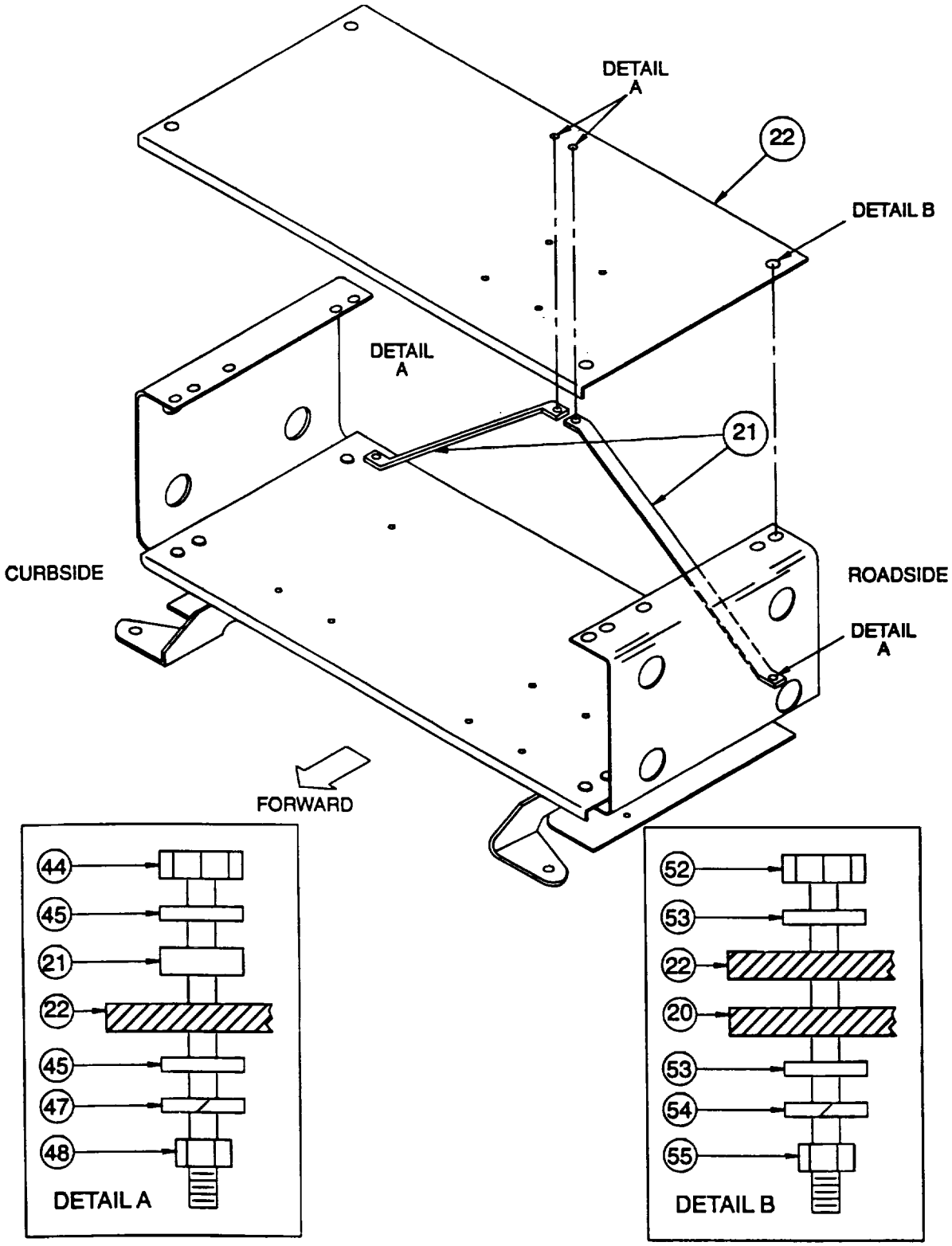


Figure 2-8. Radio Rack Top Shelf and Support Brackets Installation

l. Place 1/2-inch open/box wrench on hex nut (55) and hold in place.

m. Place 1/2-inch socket with wrench on hex cap screw (52) and turn clockwise until tight.

n. At bottom mounting plate and right and left hand side bracket location, use ½-inch socket and open/box wrench to tighten hardware.

o. At bottom mounting plate and right and left hand mounting bracket, use ½-inch socket and open/box wrench to tighten hardware.

p. At the side bracket locations, use a ½-inch socket and wrench to tighten hardware securing the radio rack to the platform floor.

q. At the D-ring locations, use socket and wrench or Allen wrench to tighten hardware securing the radio rack and D-rings to the platform floor.

r. At the top shelf and support brackets location, use a ½-inch socket and open/box wrench to tighten hardware.

2-14 AN/PSN-11 MOUNT ASSEMBLY INSTALLATION.

2-14.1 Hardware Requirements.

The AN/PSN-11 mount assembly (6) installation onto the front radio rack vertical support arm hardware requirements are as follows:

Item Number	Quantity	Description
33	1	Sleeve Spacer
43	1	Hex Cap Screw (1/4" x 1")
44	2	Hex Cap Screw (1/4" x 1 1/4")
45	4	Flatwasher (1/4")
46	1	Flatwasher (1/4" Large)
47	3	Lockwasher (1/4")
48	2	Plain Hex Nut (1/4")

2-14.2 Installation Procedure.

Refer to Figure 2-9 and proceed as follows:

a. Remove bolts holding front radio rack to vehicle dashboard and move rack forward.

b. Insert hex cap screw (44) through flatwasher (45). Insert hardware combination through mount assembly (6) and vertical support mounting holes from the front. See DETAIL A for location of mounting hole.

c. At back of vertical support, place flatwasher (45), lockwasher (47), and hex nut (48) on hex cap screw (44). Hand tighten nut.

d. Insert hex cap screw (44) through flatwasher (45). Insert hardware combination through mount assembly (6) and vertical support mounting holes from the front. See DETAIL B for location of mounting hole.

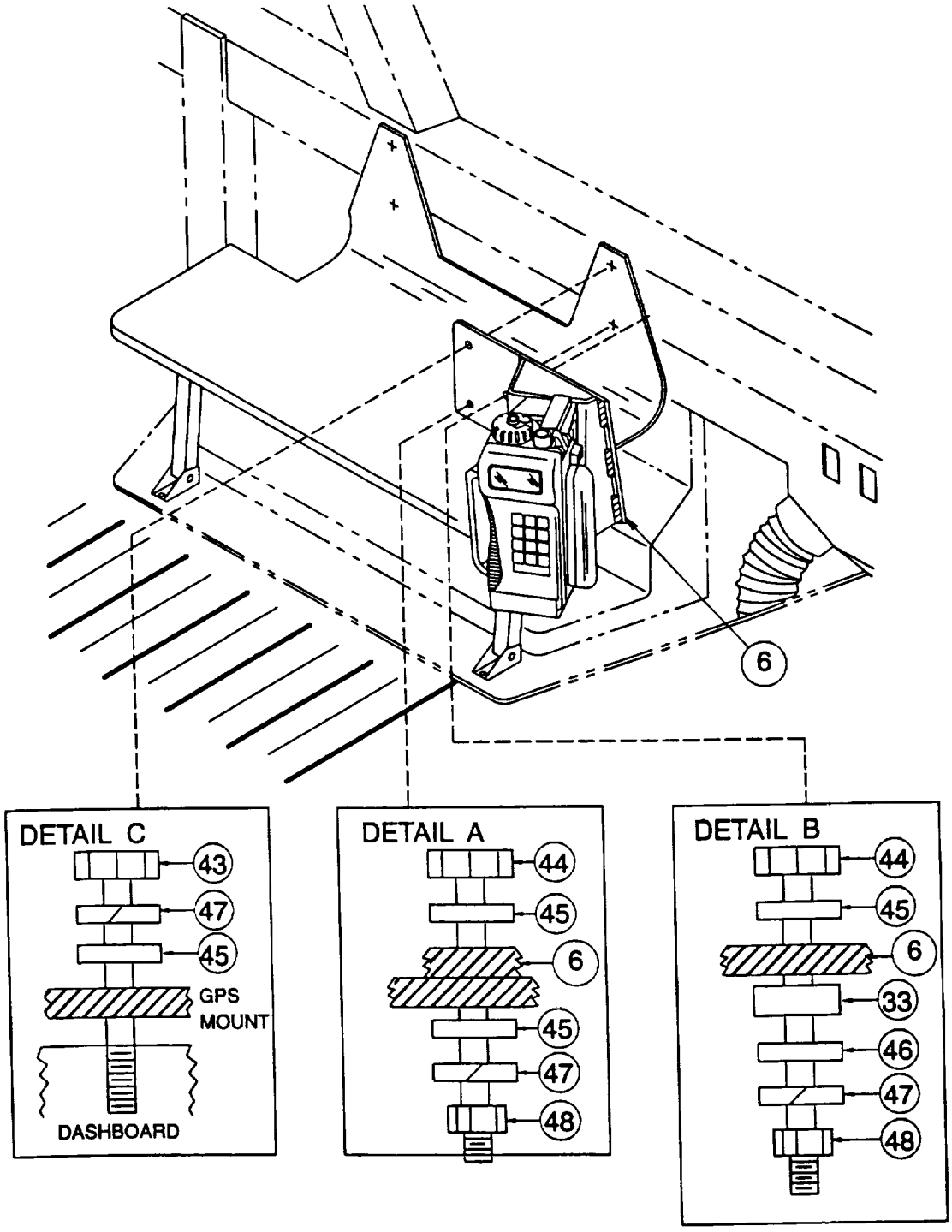


Figure 2-9. AN/PSN-11 Mount Installation

d. At back of vertical support, place spacer (33), flatwasher (46), lockwasher (47), and hex nut (48) on hex cap screw (44) Hand tighten nut.

e. Insert screw (43) through lockwasher (47) and flatwasher (45). Insert hardware through mount assembly (6) and vertical support mounting hole from the front. See DETAIL C for location of mounting hole. Hand tighten nut.

f. Using 7/16-inch socket and wrench tighten all hardware.

2-15 AS-3588/GRC-206 ANTENNA INSTALLATION.

2-15.1 Antenna Support and Roadside Support Plate Assembly.

2-15.1.1 Hardware Requirements. The antenna support (28) and the roadside support plate (29) assembly hardware requirements are as follows:

Item Number	Quantity	Description
57	4	Hex Cap Screw (3/8" x 1 1/2")
58	8	Flatwasher (3/8")
59	4	Lockwasher (3/8")
60	4	Plain Hex Nut (3/8")

2-15.1.2 Assembly Procedure. Refer to Figure 2-10 Sheet 1 A and proceed as follows:

a. Insert hex cap screw (57) through flatwasher (58). Insert hardware combination through roadside support plate and antenna support mounting holes (4 places).

b. Inside antenna support, place flatwasher (58), lockwasher (59), and hex nut (60) on hex cap screw (57).

c. Place 9/16-inch open/box wrench on hex nut and hold in place.

d. Place 9/16-inch socket with wrench on hex cap screw and turn clockwise until tight.

2-15.2 Antenna Support and Roadside Support Plate Installation.

2-15.2.1 Hardware Requirements. The antenna support and roadside support plate installation hardware requirements are as follows:

Item Number	Quantity	Description
57	5	Hex Cap Screw (3/8' x 1 1/2")
58	10	Flatwasher (3/8")
59	5	Lockwasher (3/8")
60	5	Plain Hex Nut (3/8")

2-15.2.2 Hole Drilling. Place the antenna support and roadside support plate assemblage at the rear roadside location of the vehicle location shown in Figure 2-10 Sheet 2. Using the assemblage as a template, mark three(3) hole locations at the roadside fender and two (2) hole locations at the rear antenna support fender location. Use a 3/8-inch drill to drill all five holes.

2-15.2.3 **Installation Procedure**. Refer to Figure 2-10 Sheet 1, B and Sheet 2. Proceed as follows:

a. Remove hole cutout located at rear fender location.

b. Refer to Figure 2-10 Sheet 1 ,B. Secure the roadside support plate to the fender, as follows:

1. Insert hex cap screw (57) through flatwasher (58).

2. Place roadside support backing plate (30) at inside of fender.

3. Insert hardware combination through roadside support plate, vehicle fender, and roadside support backing plate mounting holes (3 places).

4. Place flatwasher (58), lockwasher (59), and hex nut (60) on hex cap screw (57). Hand tighten nut.

c. Refer to Figure 2-10 Sheet 2. Secure the antenna support to the fender, as follows:

1. Insert hex cap screw (57) through flatwasher (58).

2. Place 114-inch metal plate (32) and 3/16-inch metal plate (31) as shown and hold in place.

3. Insert hardware combination through antenna support, 1/4-inch metal plate, fender, and 3/16-inch mental plate mounting holes (2 places)

4. Place flatwasher (58), lockwasher (59), and hex nut (60) on hex cap screw (57). Hand tighten nut.

d. Tighten all mounting hardware as follows:

1. Place 9/16-inch open/box wrench on hex nut and hold in place.

2. Place 9/16-inch socket with wrench on screw and turn clockwise until tight.

2-15.3 Antenna Offset Mount Installation.

2-15.3.1 **Hardware Requirements**. The antenna offset mount (26) installation hardware requirements are as follows:

Item Number	Quantity	Description
57	4	Hex Cap Screw (3/8" x 1 1/2")
58	8	Flatwasher (3/8")
59	4	Lockwasher (3/8")
60	4	Plain Hex Nut (3/8")

2-15-3.2 **Installation Procedure.** Refer to Figure 2-10 Sheet 3 and proceed as follows:

a. Insert hex cap screw (57) through flatwasher (58). Insert hardware combination through antenna offset mount and antenna support mounting hole (4 places).

b. Inside antenna support, place flatwasher (58), lockwasher (59), and hex nut (60) on hex cap screw (57).

c. Place 9/1 6-inch open/box wrench on hex cap screw and hold in place.

d. Place 9/16-inch socket with wrench on hex nut and turn clockwise until tight.

2-15.4 Antenna Element Installation.

2-15.4.1 Hardware Requirements. The antenna element installation hardware requirements are as follows:

Item Number	Quantity	Description
57	4	Hex Cap Screw (3/8" x 1 1/2")
58	4	Flatwasher (3/8")
59	4	Lockwasher (3/8")

2-15.4.2 Preliminary Procedures. Refer to Figure 2-10 Sheet 3 and proceed as follows:

a. Route one end of antenna cable (13) through assembled antenna support assembly and antenna offset mount as shown.

b. Remove protective cap at antenna element UHF connector. Connect antenna cable connector to the antenna element UHF connector.

NOTE

Be sure that the antenna element VHF protective cap is in place on connector.

2-15.4.3 Installation Procedure. Refer to Figure 2-10 Sheet 3 and proceed as follows:

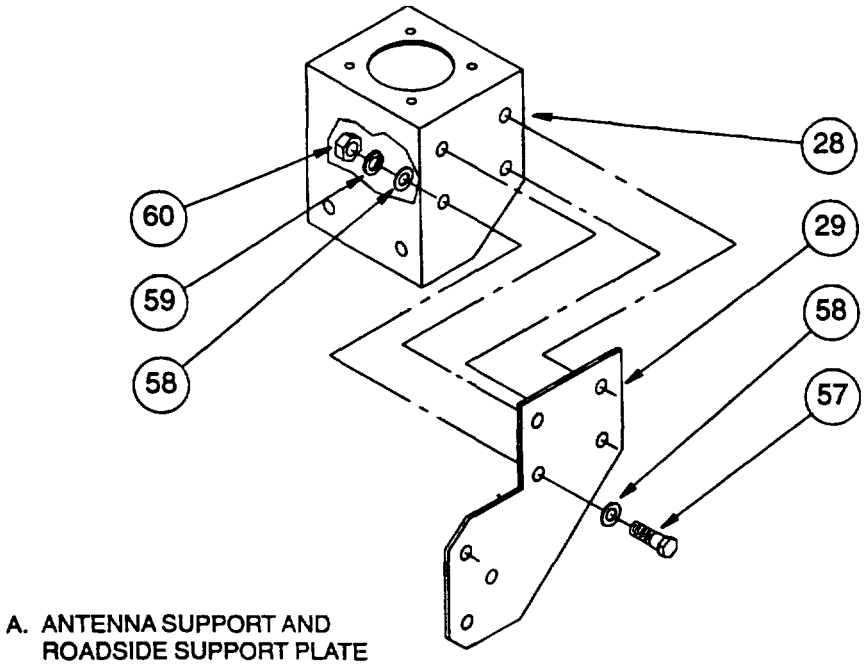
a. Place antenna element on antenna offset mount. Position antenna element so that antenna cable connected to the UHF connector is facing the rear and both the antenna element and antenna offset mounting holes are aligned.

b. Insert hex cap screw (57) through lockwasher (59), and flatwasher (58). Insert hardware combination through antenna element and antenna offset mount holes (4 places) into antenna offset mount PEM.

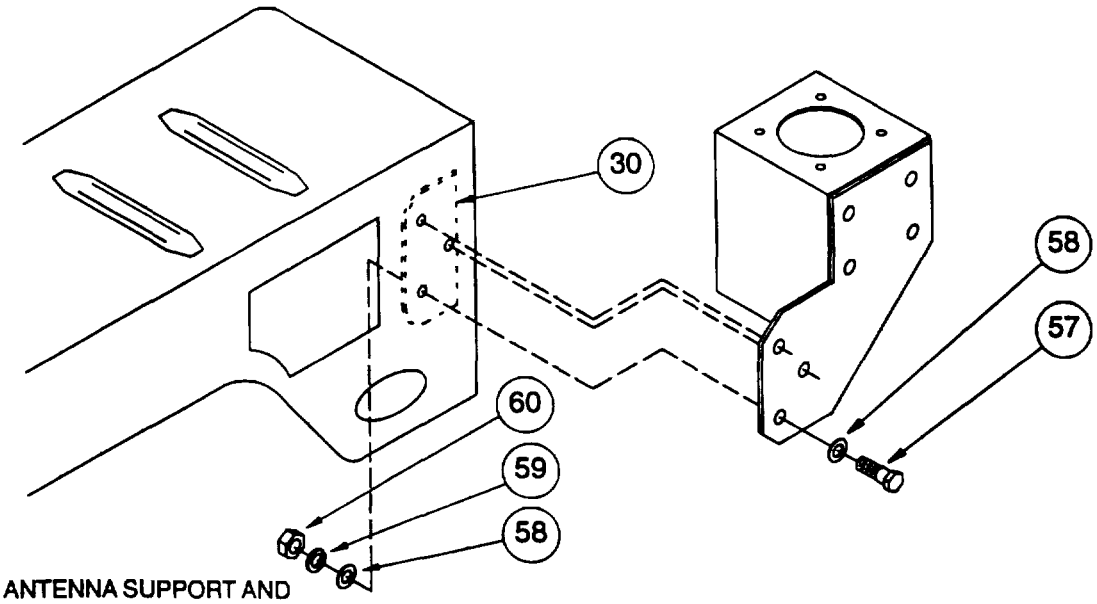
c. Place 9/16-inch socket with wrench on screw (57) and turn clockwise until tight.

2-15.5 RF Antenna Warning Decal Installation.

Refer to Figure 2-10 Sheet 3. Place RF antenna warning decal (68) at the location shown.



A. ANTENNA SUPPORT AND ROADSIDE SUPPORT PLATE ASSEMBLY



B. ANTENNA SUPPORT AND ROADSIDE SUPPORT PLATE INSTALLATION

Figure 2-10. Antenna AS-3588/GRC-206 Installation (Sheet 1 of 3)

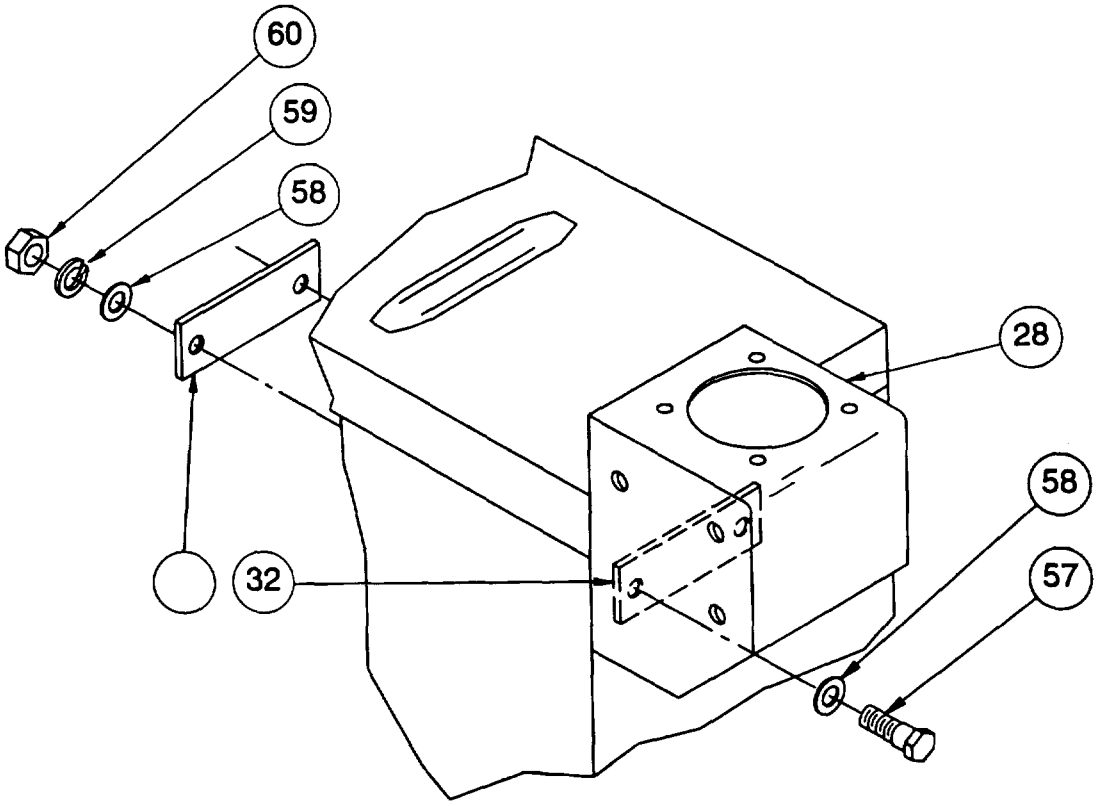


Figure 2-10. Antenna AS-3588/GRC-206 Installation (Sheet 2 of 3)

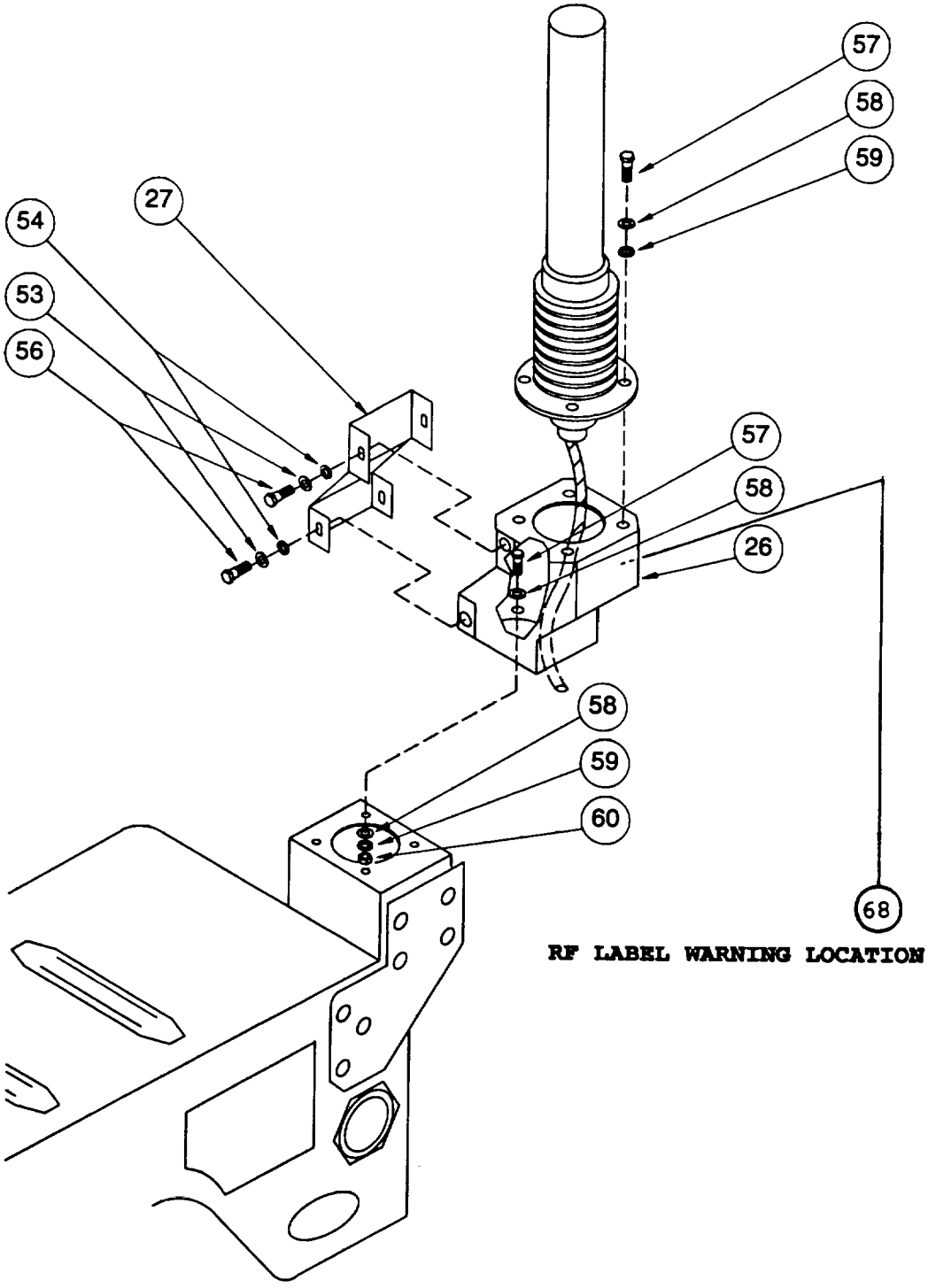


Figure 2-10. Antenna AS-3588/GRC-206 Installation (Sheet 3 of 3)

2-16 ANTENNA CABLE INSTALLATION.

2-16.1 General Information.

The antenna cable (CX-1 3502/U) routing between the antenna element and the ANT connector on the AN/VRC-83(V)3 is provided for two vehicle cab platform arrangements. The antenna cable installation when the cab platform does not have a roadside heat shield in place, is given in paragraph 2-16.2. The antenna cable installation when the cab platform does have a roadside heat shield, is given in paragraph 2-16.3.

2-16.2 Antenna Cable Without Cab Platform Heat Shield Installation.

2-16.1.1 Hardware Requirements, The antenna cable installation hardware requirements are as follows:

Item Number	Quantity	Description
40	7	Cable Loop Clamp (3/4")
67	4	Pan Head Tapping Screw (#10 x 1")
62	4	Pan Head Machine Screw (#10 x 1")
64	8	Starwasher (#10)
66	4	Plain Hex Nut (#10)
35	2	Rubber Grommet
37	2	Tiewrap

2-16.1.2 Hole Drilling. The antenna cable installation hole drill diagram is given in Figure 2-11. The three holes for the cable loop clamps (40) located on the underside and the side of the roadside outer-inboard fender location are made with a 3/16-inch drill. The three holes for the cable loop clamps installed on the platform floor are made with a 3/16-inch drill.

2-16.1.3 Installation Procedure. Refer to Figure 2-12 and proceed as follows:

a. Install strip grommet (72) at the rear fender location opening.

b. Route the end of the antenna cable through the strip grommet.

c. Leave a three inch rain drip loop in the cable. Use a tiewrap (37) to secure the rain drip loop in the cable.

d. Install cable loop clamp (40) on antenna cable (3 places).

e. Insert hex cap screw (62) through starwasher (64). Insert hardware combination through fender mounting hole for the cable loop clamp.

f. Under fender, place cable loop clamp (4), starwasher (64), and hex nut (66) on hex cap screw (62). Hand tighten nut.

g. Route end of antenna cable through fender side location. Install strip grommet (71) at the fender hole location. Install cable loop clamp (40) on antenna cable.

h. Insert hex cap screw (62) through starwasher (64) and cable loop clamp (40) mounting hole. Insert hardware combination through fender mounting hole.

i. Under fender, place starwasher (64) and hex nut (66) on hex cap screw (62). Hand tighten nut.

j. Insert hex cap screw (67) through starwasher (64) and cable loop clamp (40) mounting hole.

k. Using No. 1 Phillips screwdriver, install hardware combination on platform floor (3 places) Do not tighten.

I. Starting at the rear fender antenna cable rain drip loop location, work forward toward the vehicle cab and remove any slack in the cable.

m. After cable slack is removed at each cable loop clamp, tighten the cable loop clamp hardware.

n. Refer to Figure 2-13. At the front radio rack bottom shelf location, use a 3/16-inch drill to drill a hole at the specified location on the front edge of the shelf.

o. Install cable loop clamp (40) on antenna cable.

p. Insert hex cap screw (62) through starwasher (64) and cable loop clamp mounting hole. Insert hardware combination into shelf drilled hole.

q. At inside of bottom shelf, place starwasher (64) and hex nut (66) on hex cap screw (62).

r. Measure 18-inches from the cable loop clamp location to the connector end of the antenna cable.

s. Tighten cable loop clamp hardware.

t. Refer to Figure 2-12. Form a loop of excess antenna cable and tiewrap the loop. Place the excess cable loop under the radio rack bottom shelf.

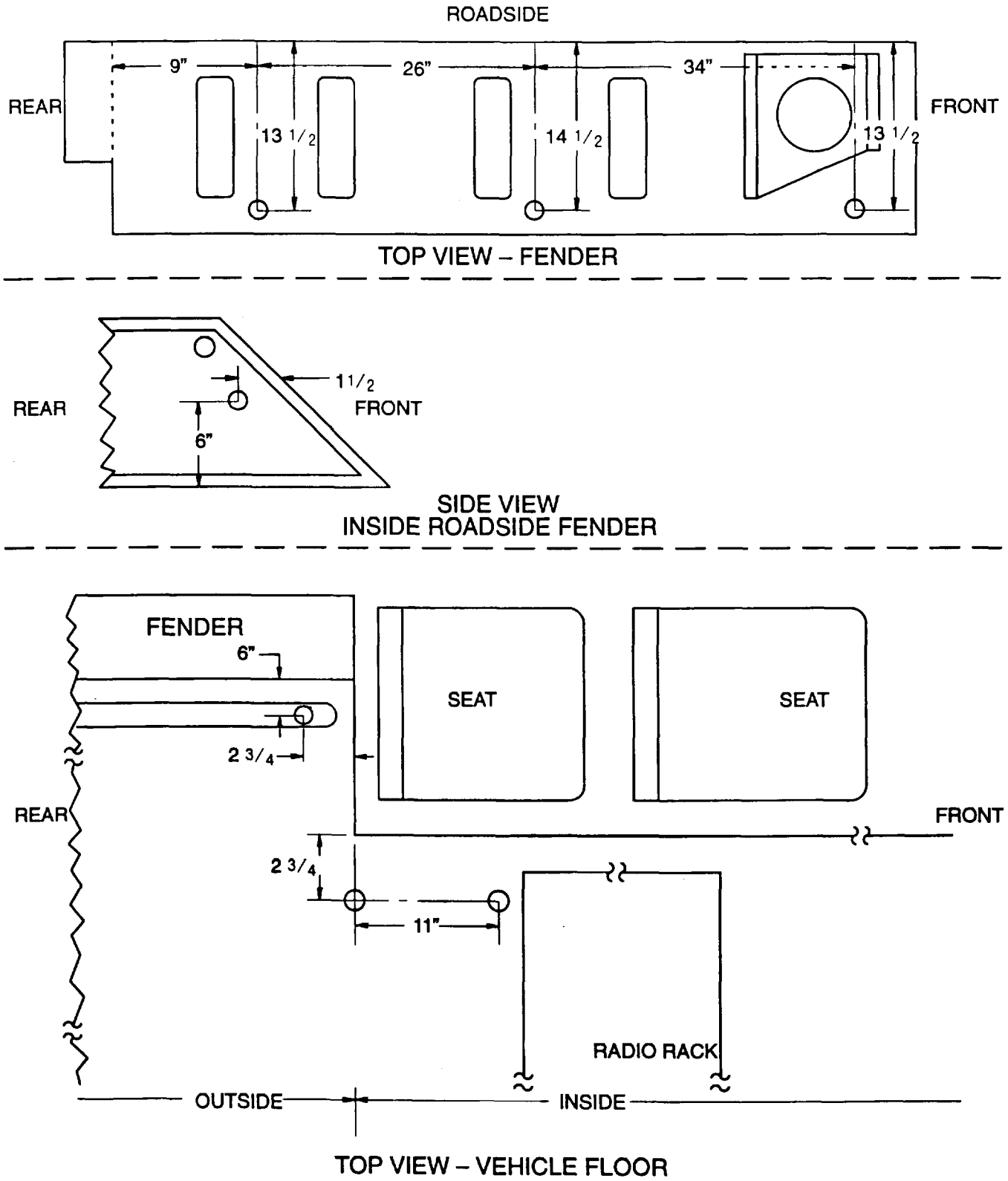


Figure 2-11. Antenna Cable (Without Heat Shield Installation Hole Drilling Diagram

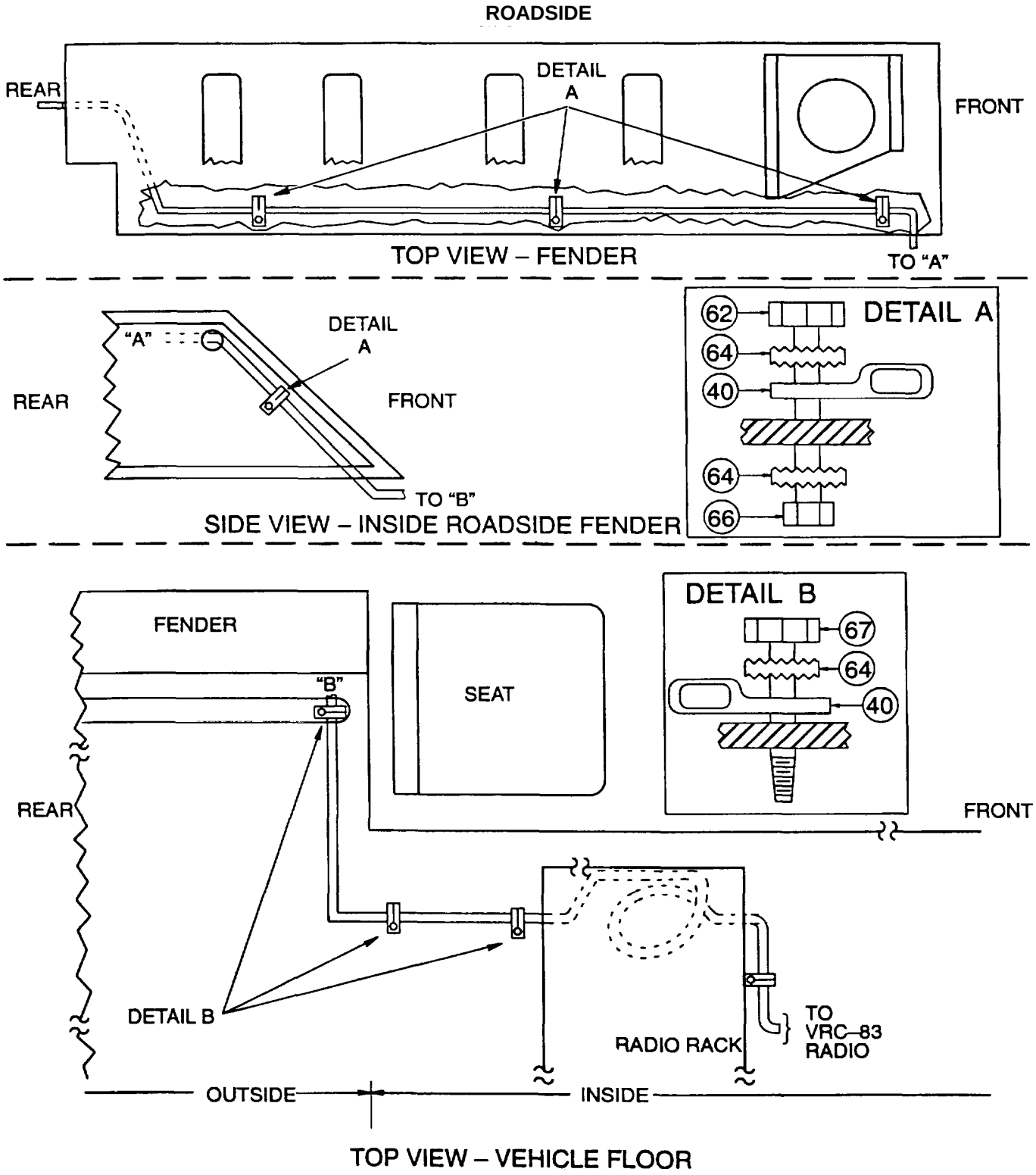


Figure 2-12. Antenna Cable (Without Heat Shield) Installation Cable Routing Diagram

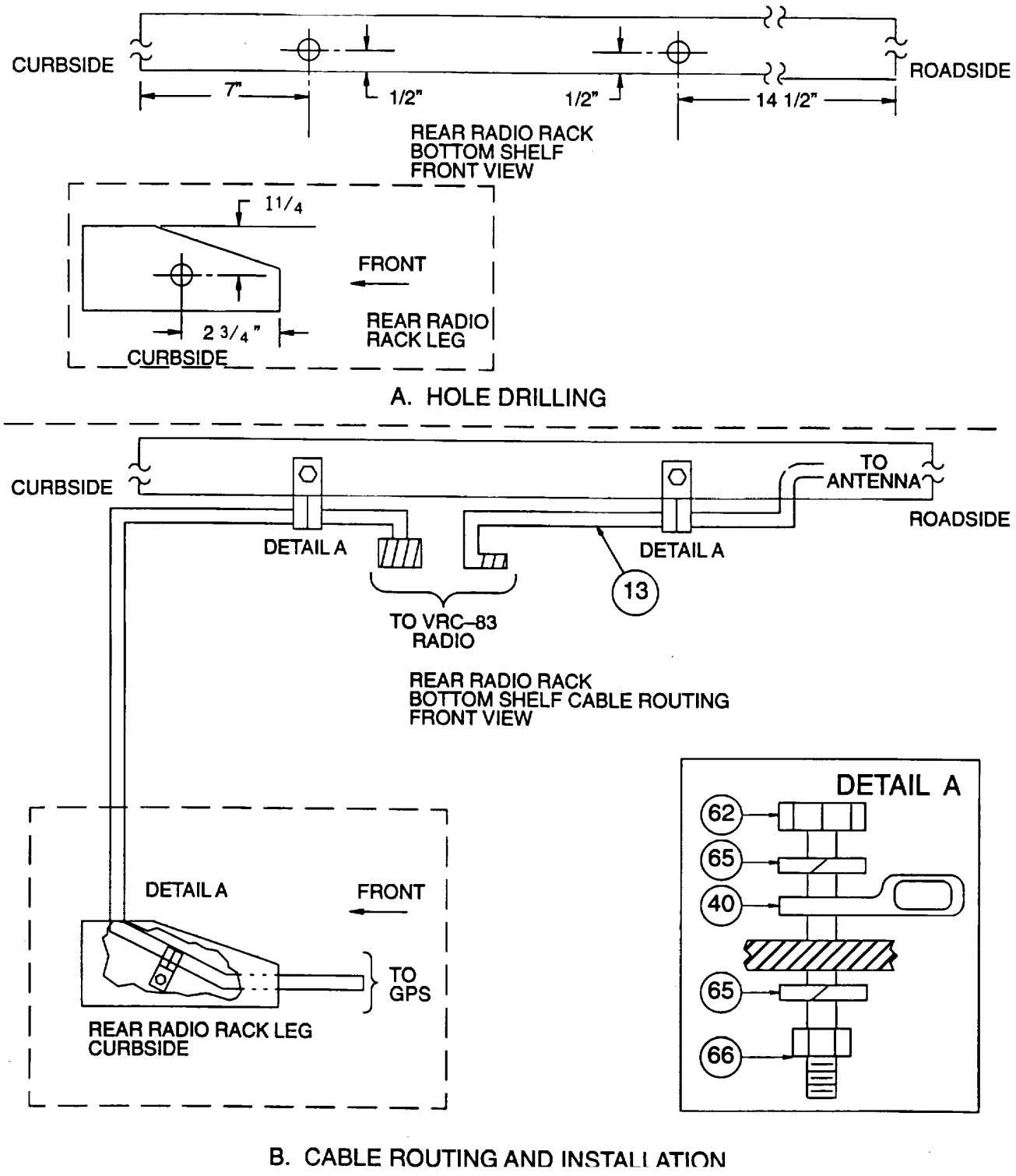


Figure 2-13. Radio Rack Bottom Shelf Cable Routing and Installation

2-16.3 Antenna Cable With Cab Platform Head Shield Installation.

2-16.3.1 Hardware Requirements. The antenna cable installation hardware requirements are as follows:

Item Number	Quantity	Description
40	8	Cable Loop Clamp (3/4")
67	5	Pan Head Tapping Screw (#10 x 1')
62	3	Pan Head Machine Screw (#10 x 1")
64	13	Starwasher (#10)
66	4	Plain Hex Nut (#10)
35	2	Rubber Grommet
37	2	Tiewrap

2-16.3.2 Hole Drilling. The antenna cable installation hole drilling diagram is given in Figure 2-14. The three holes for the cable loop clamps (40) located on the underside of the roadside fender, are made with a 3/16-inch drill. The four (4) holes for the cable loop clamps located on the platform floor are made with a 3/16-inch drill.

2-16.3.3 Installation Procedure. Refer to Figure 2-15 and proceed as follows:

a. Route the end of the antenna cable through the hole at the rear of the fender.

b. Install grommet (35) at the rear fender location.

c. Leave a three inch rain drip loop in the cable. Use a tiewrap (37) to secure the rain drip loop in the cable.

d. Install cable loop clamp (40) on antenna cable (3 places)

e. Insert hex cap screw (62) through starwasher (64). Insert hardware combination through fender mounting hole for the cable loop clamp.

f. Under fender, place cable loop clamp (4), starwasher (64), and hex nut (66) on hex cap screw (62). Hand tighten nut.

g. Route end of antenna cable through fender side location hole opening.

h. Insert hex cap screw (67) through starwasher (64) and cable loop clamp (40) mounting hold.

i. Using No.2 Phillips screwdriver, install hardware combination into platform floor (4 places). Do not tighten.

j. Starting at the rear fender antenna cable rain drip loop location, work forward toward the vechicle cab platform and remove slack in the cable.

k. After cable slack has been removed at each cable loop clamp, tighten the cable loop clamp hardware.

I. Refer to Figure 2-16. At the roadside radio rack leg bracket (24) location, use a 3/16-inch drill to drill a hole at the location specified.

m. Place heat shield (A) and holddown bar (B) over antenna cable (13).

n. Insert hex cap screw (67) through starwasher (64). Insert hardware combination through forward end of the holddown bar (B) mounting hole.

o. Using No.2 Phillips screwdriver, secure the forward holddown bar to the radio rack leg bracket.

p. Secure the rear holddown bar to the platform floor using hardware (C) removed earlier.

q. Refer to Figure 2-13. At the front radio rack bottom shelf location, use a 3/16-inch drill to drill a hole at the specified location on the edge of the shelf.

r. Install cable loop clamp (4) on antenna cable.

s. Insert hex cap screw (52) through starwasher (64) and cable loop clamp mounting hole. Insert hardware combination into shelf drilled hole.

t. At inside of bottom shelf, place starwasher (64) and hex nut (66) on hex cap screw (62).

u. Measure 18-inches from the cable loop clamp location to the connector end of the antenna cable.

v. Tighten cable loop clamp hardware.

w. Form a loop of the excess cable and tie wrap the loop. Place the excess cable loop under the radio rack bottom shelf.

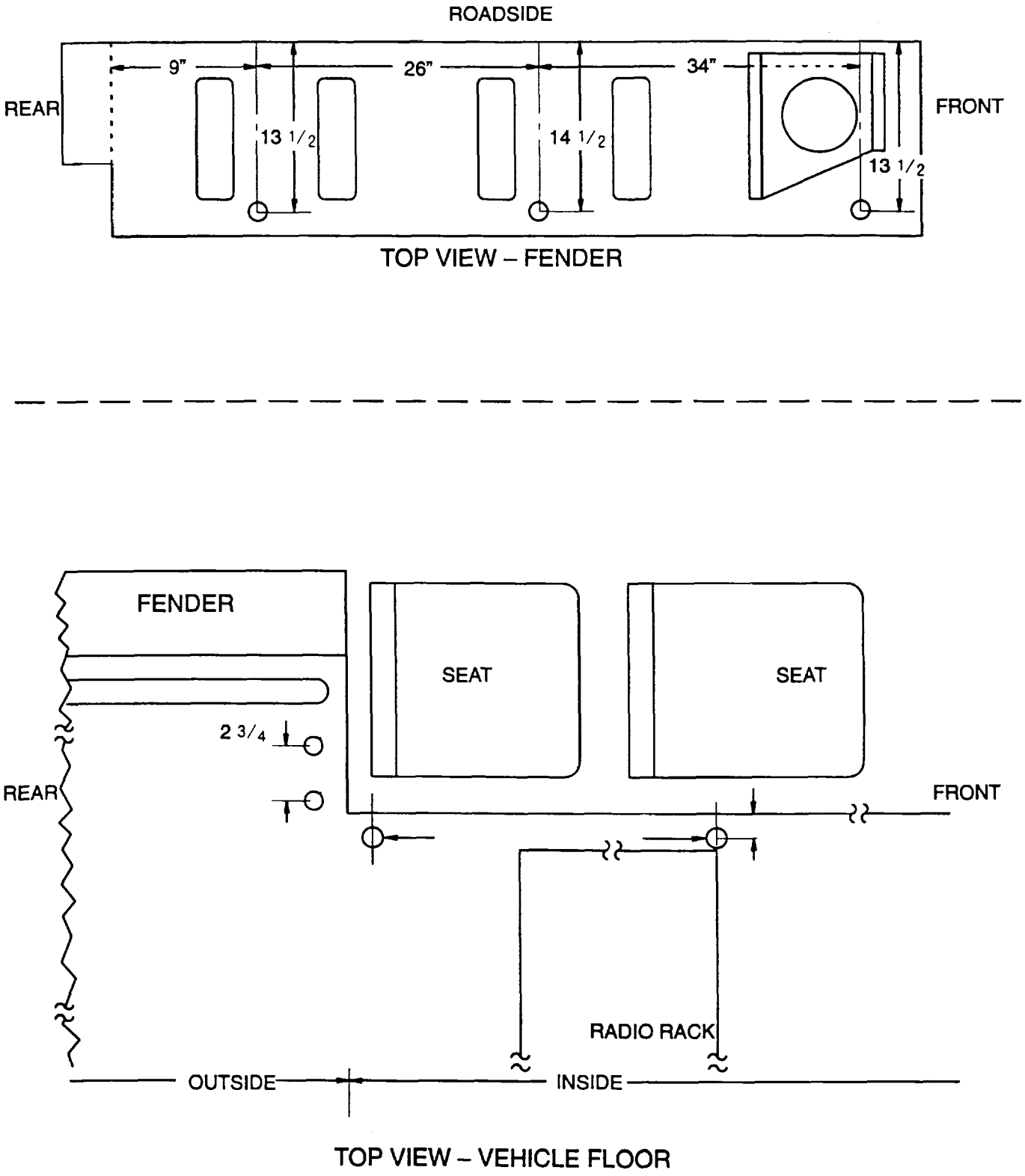


Figure 2-14. Antenna Cable (With Heat Shield) Installation Hole Drilling Diagram

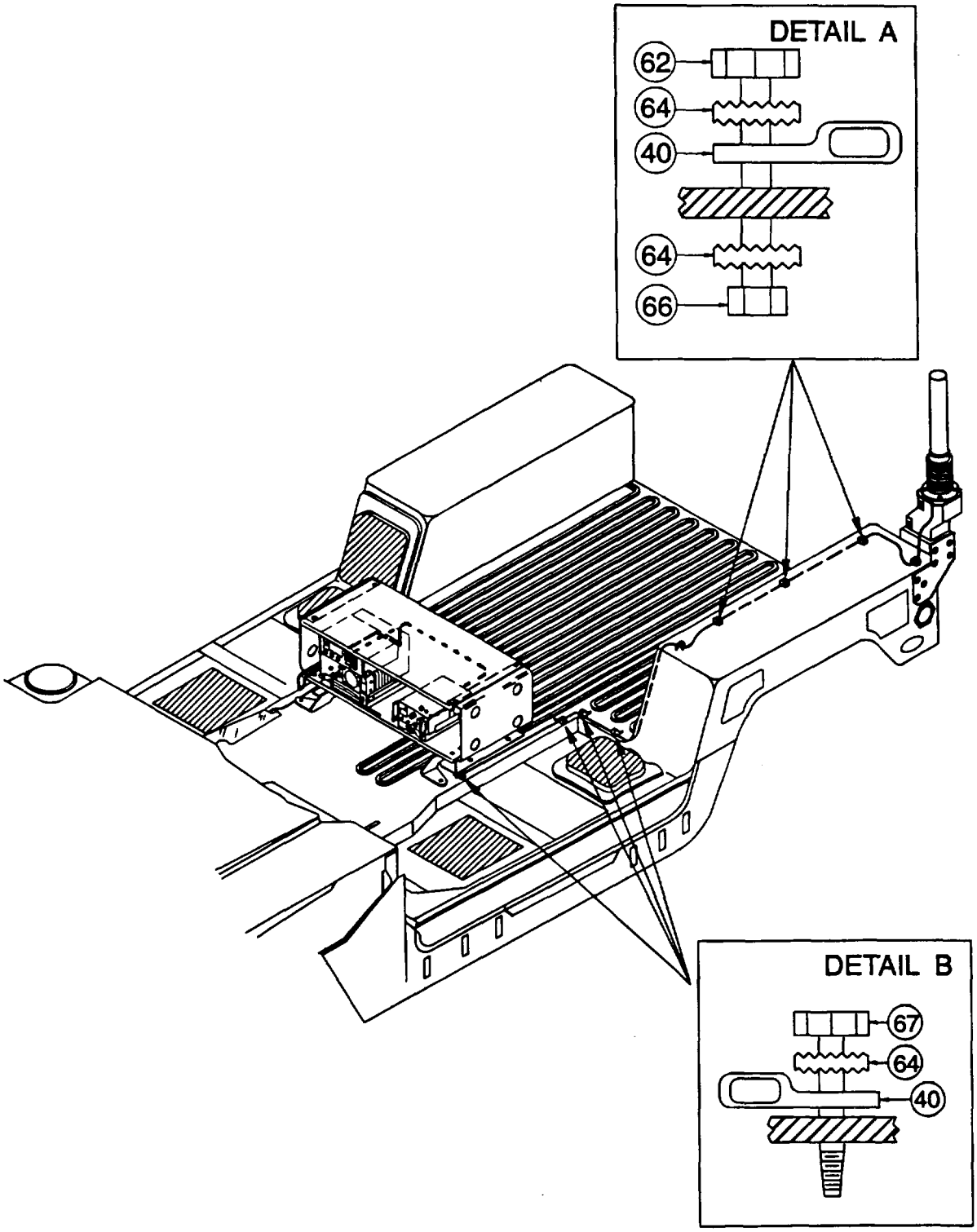


Figure 2-15. Antenna Cable (With Head Shield) Installation Cable Routing Diagram

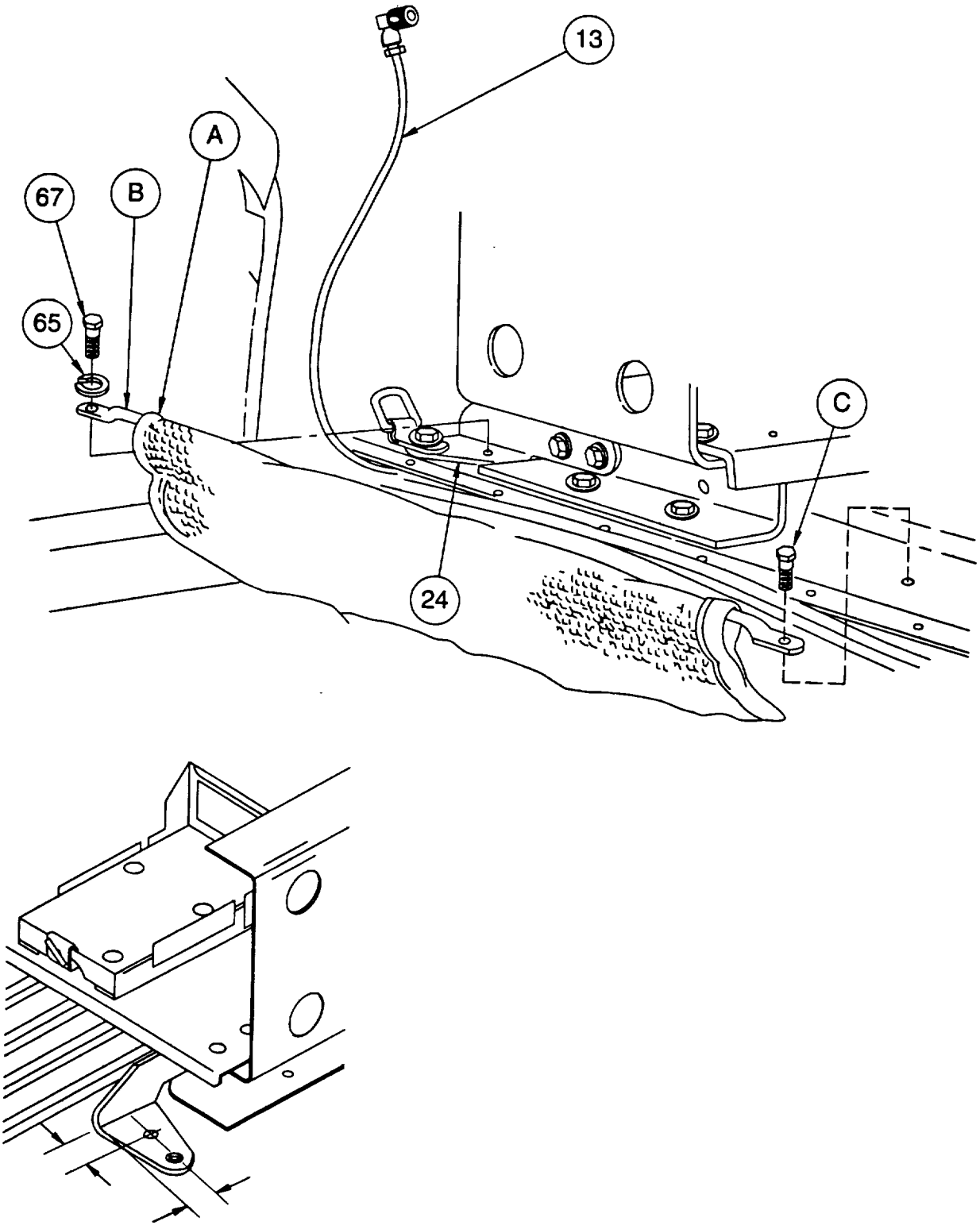


Figure 2-16. Roadside Heat Shield Installation

2-17 POWER CABLES INSTALLATION.

2-17.1 Battery Box Modification.

The battery box may not have the required number of openings for the installation of the AN/VRC-83(V)3 power cable and the KY-57 power cable. Refer to Figure 2-17. If the location shown does not have two openings or has none, provide the holes at the location shown using the hole drilling diagram. Use a 7/8-inch hole saw drill to make both openings. These holes will provide access to the battery box for the AN/VRC-83(V)3 power cable (A) and the KY-57 power cable (10)The AN/PSN-11 external power cable (11) is routed to the batteries via an opening between the battery box top cover and the corner of the battery box. The drilled holes are grommeted (35).

2-17.2 AN/VRC-83(V)3 Power Cable W1 Modification and Installation.

2-17.2.1 Modification. The AN/VRC-83(V)3 power cable WI is provided with the AN/VRC-83(V)3. It is 24 feet long. For this application, the cable is cut to a eight foot length before it is installed. The battery connection spade lug ends are cut and new spade lugs are installed.

2-17.3.2 Installation. Refer to Figure 2-17. After the cable is cut to the eight foot length and the new spade lugs installed, the plug connector end is placed in the area on the radio rack where AN/VRC-83(V)3 the will be mounted. Leave a minimum of 1 foot cable slack at the location. The cable is then routed with the KY-57 power cable to the curbside platform location where they are tie wrapped to the existing vehicle cable run. At the battery box location, the cable is routed via a grommeted hole to the battery. Refer to Figure 2-18 for the cable connections to the battery.

2-17.3 KY-57 Power Cable Installation (Refer to Figure 2-17).

The KY-57 power cable (10) supplied is 18 feet long. It is not recommended that this cable be cut to a shorter length for this installation. In this application an 8-foot length would be sufficient. The cable connector end is placed in the KY-57 radio rack mount location. Leave a minimum of 1-foot cable slack at the location. The cable is routed with the AN/VRC-83(V)3 power cable W1 to the battery box location. At the battery box, the cable is routed via a grommeted hole to the batteries. Refer to Figure 2-18 for the cable connections to the battery. Excess cable is looped, tie wrapped, then stored under the radio rack shelf.

2-17.4 AN/PSN-11 External Power Cable Installation.

Refer to Figures 2-17 and 2-19. After the AN/PSN-11 external power cable (11) connector is located at the AN/PSN-11 mount base location, the lug terminal end is routed to the battery box location, under the curbside heat shield. The cable is routed to the battery through an opening in the upper left corner of the battery case. Excess cable is looped and tie wrapped, then stored in the battery box. Refer to Figure 2-18 for the cable connections to the batteries.

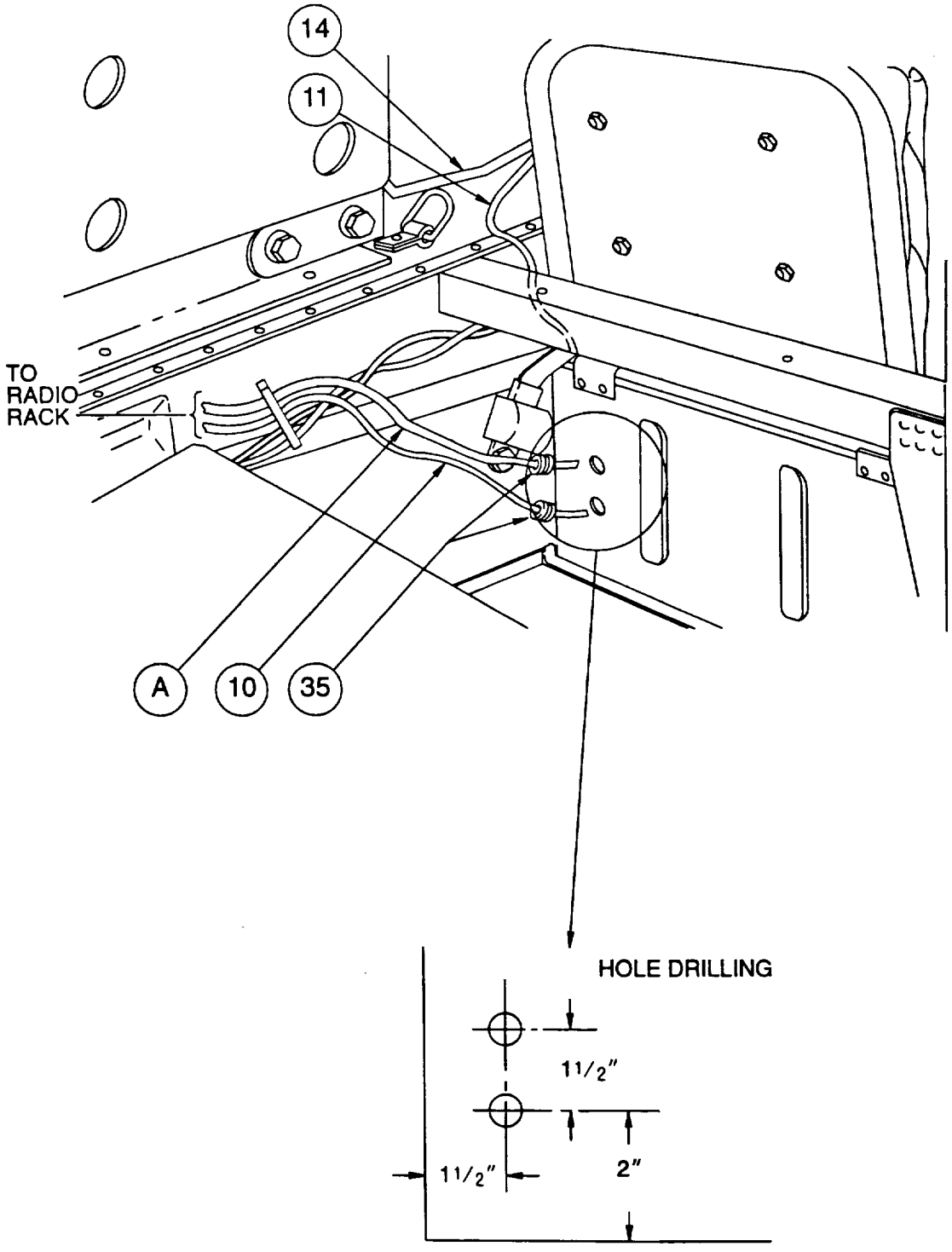


Figure 2-17. Battery Box Hole Drilling and Power Cables Routing

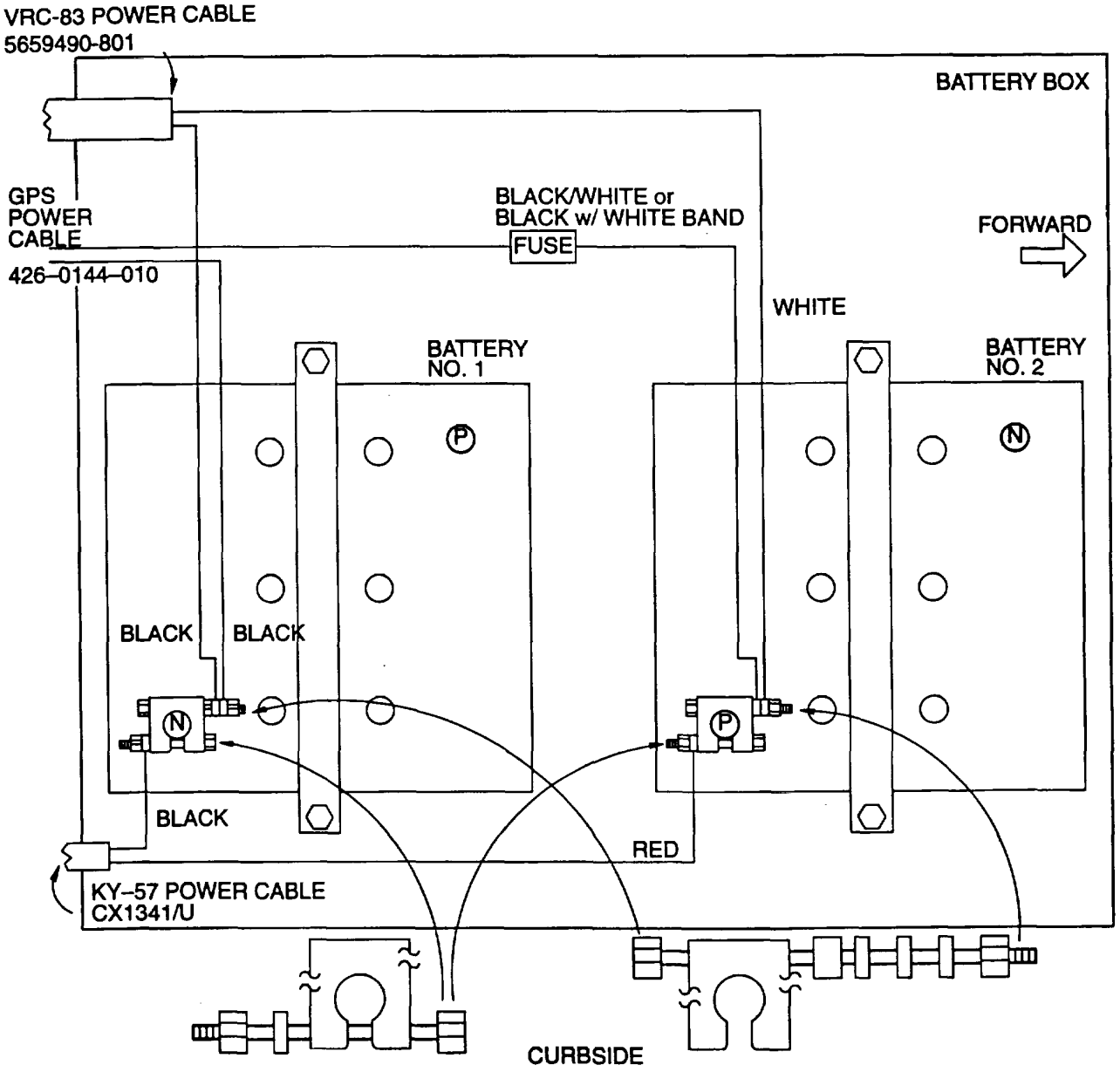


Figure 2-18. Battery Power Cables Wiring Connections

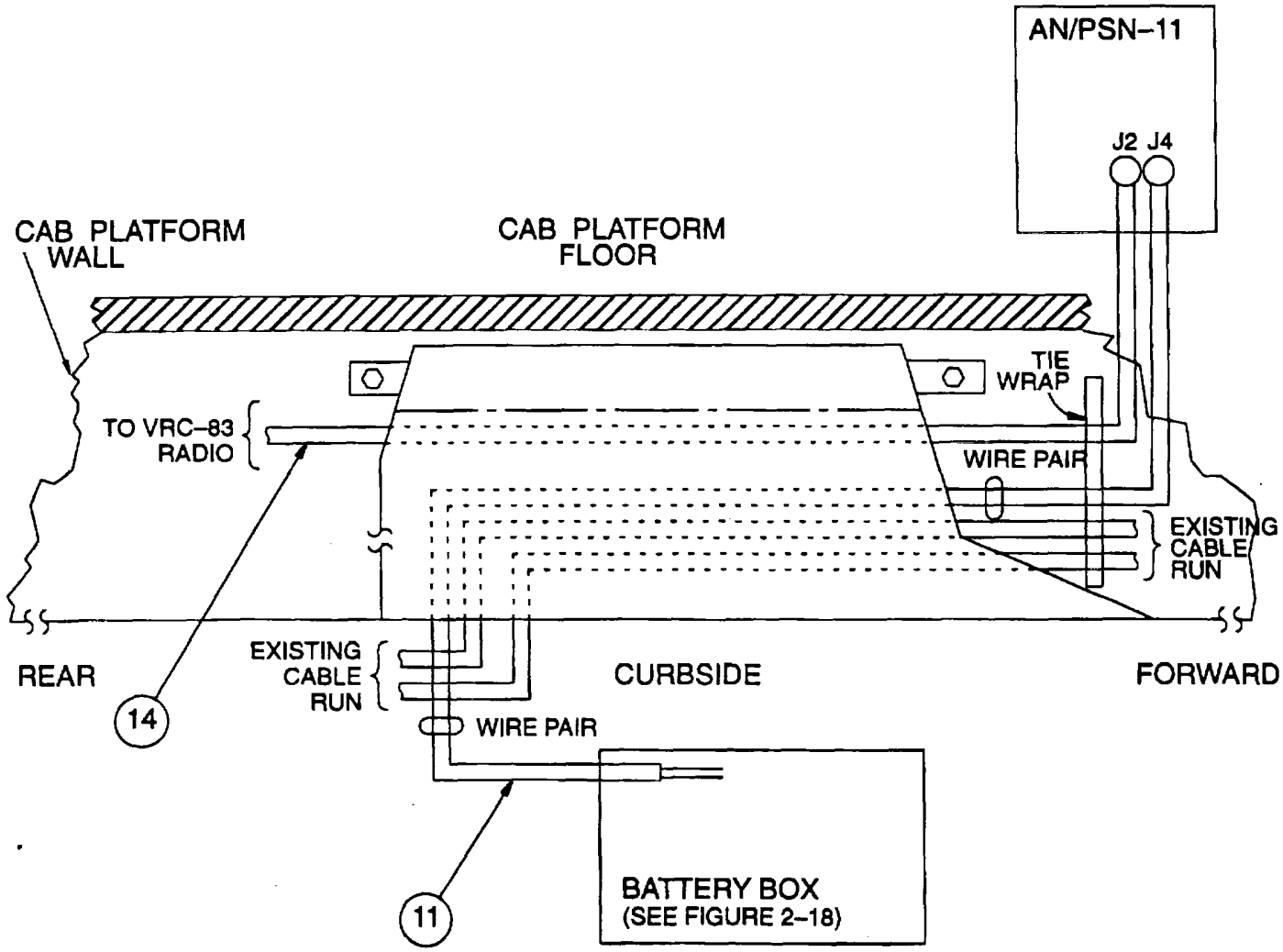


Figure 2-19. Curbside Heat Shield Installation

2-18 AN/PSN-11 CABLE ASSEMBLY INSTALLATION.

2-18.1 General Information.

Refer to Figure 2-19. After the AN/PSN-11 cable assembly (14) connector is located at the AN/PSN-11 mount base location, the other end of the cable is routed under the heat shield to the radio rack bottom shelf AN/VRC-83(V)3 location. This cable and the AN/PSN-11 external power cable are tie wrapped together at the mount base location and with the existing cable run. At the radio rack end, excess cable is looped and tie wrapped; then stored at the heat shield location. The heat shield is then reinstalled in place with the mounting hardware.

2-18.2 Hardware Requirements.

Refer to Figure 2-13. At the radio rack, the cable is secured to both the radio rack curbside leg bracket and the bottom shelf. The hardware requirements are as follows:

Item Number	Quantity	Description
62	2	Pan Head Machine Screw (#10 x 1")
64	4	Starwasher (#10)
40	2	Cable Loop Clamp (3/4")
66	2	Plain Hex Nut (#10)

2-18.3 Hole Drilling.

The radio rack leg and the shelf drilling requirements for the cable routing are shown on Figure 2-13. Use a 3/16-inch for each cable loop clamp.

2-18.4 Installation Procedure.

Refer to Figure 2-13 and proceed as follows:

a. Install cable loop clamp (40) on cable (14)

b. Insert hex cap screw (62) through starwasher (64) and cable loop clamp mounting hole. Insert hardware combination into radio rack leg bracket hole from the inside.

c. Place starwasher (64) and hex nut (66) on hex cap screw (62). Hand tighten nut.

d. Install cable loop clamp (40) on cable (14).

e. Insert hex cap screw (62) through starwasher (64) and cable loop clamp mounting hole. Insert hardware combination into radio rack shelf hole from the outside.

f. Place starwasher (64) and hex nut (66) on hex cap screw (62). Hand tighten nut.

g. Measure 10 inches from the cable loop clamp; location to the connector end of the cable.

h. Tighten cable loop clamp hardware at the shelf edge and the leg bracket locations.

i. Form a loop of any excess cable and tie wrap the loop and store at heat shield location. Secure the heat shield in place using hardware removed earlier.

2-19 AS-4333(V) ANTENNA INSTALLATION.

TO BE SUPPLIED AT A LATER DATE

2-20 AN/VRC-83(V)3 INSTALLATION.

Refer to TM 11-5820-1149-14&P for the AN/VRC-83(V)3 installation instructions for installing the unit in the radio rack mount. Refer to Figure 2-2 for the cable interfaces with the other AN/GRC-240 units.

2-21 KY-57 INSTALLATION.

Refer to paragraph 2-11.4 for the installation of the KY-57 mount on the radio rack. Refer to Figure 2-2 for the cable interfaces with other AN/GRC-240 units. Proceed as follows:

a. Mate cable CX-13421/U connector with rear connector.

b. Install KY-57 in mount and secure to mount using two thumbscrews.

c. Mate cable 566084-809 W2P1 connector to RADIO connector.

d. Mate handset cable connector to AUDIO connector.

2-22 AN/PSN-11 INSTALLATION.

Refer to paragraph 2-11.1 for the installation of the AN/PSN-11 mount at the cab location. Refer to Figure 2-2 for the cable interfaces with other AN/GRC-240 units. Proceed as follows:

a. Connect external power cable to AN/PSN-11 J4 connector.

b. Connect HAVE QUICK cable to AN/PSN-11 J2 connector.

c. Install AN/PSN-11 on mount base and secure in place.

A personnel carrying and storage case is included with the other components of the installation kit. When the AN/PSN-11 is not being used, it is suggested that it be removed from the mounting base, and stored in the case for both security and physical protection. When not in use, the case with the unit inside should be stored in a protected environment.

2-23 INSTALLATION OPERATION CHECKOUT.

2-23.1 AN/VRC-83(V)3 Operational Checkout.

Perform the AN/VRC-83(V)3 turn on procedure given in Chapter 3, paragraph 3-5.3.

2-23.2 KY-57 Operational Checkout.

Perform the KY-57 turn on procedure given in Chapter 3, paragraph 3-6.1.

2-23.3 AN/PSN-11 Operational Checkout.

Perform the AN/PSN-11 turn on procedure given in Chapter 3, paragraph 3-5.2.

2-24 AN/GRC-240 FUNCTIONAL OPERATION.

Perform the turn on procedures, set-up procedures, and operational procedures given in Chapter 3 Operation to perform a functional operation on the AN/GRC-240.

Section III. PREPARATION FOR RESHIPMENT

Repack the AN/VRC-83(V)3, KY-57 and HYP-57,AN/PSN-11, and AS-3588/GRC-206 in their original shipping cartons (if available). If the original shipping carton and packing materials are not available, use a suitable carton and packing material to repack for shipment. Refer to the applicable equipment TM (see Appendix A) for packing and carton padding information.

COMSEC material will be stored and shipped in accordance with TB 380-41. The KY-57 must be zeroized before transporting, except when operational use requires it to be delivered to the user in keyed condition. A keyed KY-57 must be transported as a classified key. TB 380-40-2 provides additional information on storage and shipment of the KY-57. The AN/PSN-11 must be zeroized and operating power battery removed before reshipment. Refer to TM 11-5825-291-12.

Section IV. PREPARATION FOR STORAGE

Repack the equipment as described in the applicable TM using the original or a suitable shipping carton and padding. Refer to Chapter 1, Table 1-5 for storage environmental limits.

CHAPTER 3
OPERATION INSTRUCTIONS

Section I. GENERAL INFORMATION

This chapter contains a description and use of operator controls and indicators, operation under usual conditions, and operation under unusual conditions for the AN/GRC-240. The description and use of operator controls and indicators cover the AN/VRC-83(V)3, KY-57, and AN/PSN-11 controls and indicators. The operation under usual condition's coverage provides the procedure to turn-on the AN/VRC-83(V)3, KY-57, and AN/PSN-11, and the control and switch settings to operate the AN/GRC-240 as a communications system. The operation of the AN/GRC-240 under various environmental conditions is covered under operation under unusual conditions.

Section II. DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS

3-1 AN/VRC-83(V)3 CONTROLS AND INDICATORS.

The location of the AN/VRC-83(V)3 controls and indicators is given in Figure 3-1. The function of the controls and indicators is given in Table 3-1.

3-2 KY-57 CONTROLS AND INDICATORS.

The location of the KY-57 controls and indicators is given in Figure 3-2. The function of the controls and indicators is given in Table 3-2.

3-3 AN/PSN-11 CONTROLS AND INDICATORS.

The location of the AN/PSN-11 controls and indicators is given in Figure 3-3. The function of the controls and indicators is given in Table 3-3.

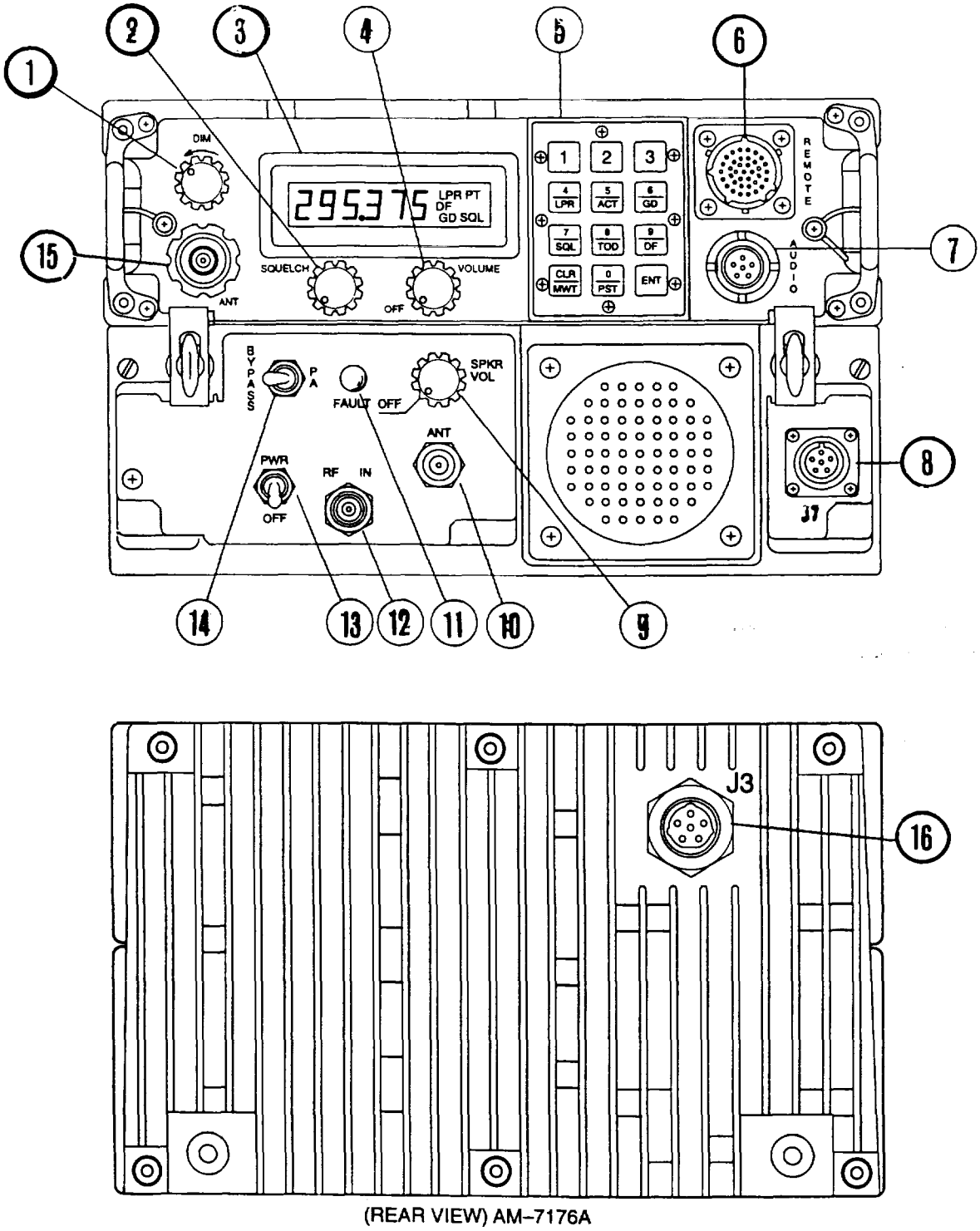


Figure 3-1. AN/VRC-83(V)3 Location of Controls and Indicators

Table 3-1. ANNRC-83(V)3 Functions of Controls and Indicators

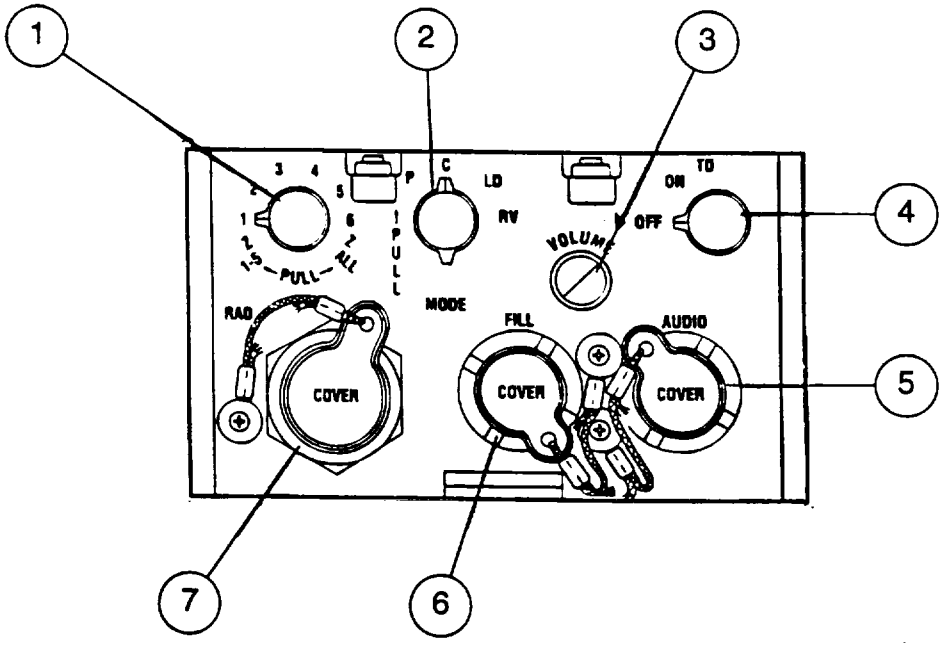
INDEX NO.	NOMENCLATURE	FUNCTION
1	DIM control	Adjusts display light. Rotating this control counterclockwise lowers the LCD and keyboard edge lighting level.
2	SQUELCH control	Adjusts the squelch level. Rotating this control clockwise after SQL has been selected on keyboard increases the level at whichthe squelch "breaks."
3	LCD display	Displays operating modes, frequencies, preset channels and low input voltage condition. Display's data and mode selected by the keyboard. A blinking decimal point indicates a low input voltage condition. Steady decimal indicates megahertz.
4	VOLUME control	ON/OFF and volume control. Rotating this control clockwise turns on the radio set and adjusts the audio level to the AUDIO connector(6). The display (3) indicates 888.888 and all modes for approximately 4 seconds then displays last selected frequency and mode.
5	Keyboard	Permits entry of numeric, alphanumeric, and operating mode data. Allows selection of input frequency in megahertz. Permits selection of modes and frequency assignment of preset channels.
	1	Enters the number 1. Enters a one in next sequential position of the frequency displayed.
	2	Enters the number 2. Enters a two in next sequential position of the frequency displayed.
	3	Enters the number 3. Enters a three in next sequential position of the frequency displayed.
	4	Enters the number 4 or selects low power (2 watts) or high LPR power (10 watts) output power. During frequency selection, enters a four in next sequential position of the desired frequency. After frequency selection, selects low power operation (LPR lights on display) or high power operation (LPR) goes out.
	5 ACT	Enters the number 5 or selects ACT mode (places the AN/GRC-240 in ECCM mode). Enters a five in the next sequential position of the frequency displayed.
	6 GD	Enters 6 or selects guard operation. During frequency selection, enters six in next sequential position of the receiver frequency. In the second function of the switch, the RT will automatically receive guard channel transmissions and GD is displayed.

Table 3-1. ANNRC-83(V)3 Functions of Controls and Indicators (Continued)

INDEX NO.	NOMENCLATURE	FUNCTION
5 (contd)	7 SQL	Enters 7 or selects squelch. During frequency selection, enters seven next sequential position of the desired frequency. In the second function of the switch, SQL is displayed and the incoming signal is squelched at level set by SQUELCH (2) control.
	8 TOD	Enters 8 or selects TOD receive mode. During frequency selection enters an eight in next sequential position of desired frequency.
	9 DF	Enters 9 or selects DF Tone mode. During frequency selection, enters a nine in next sequential position of desired frequency. In the second function of the switch, a DF tone is transmitted at the selected frequency and DF is displayed. CLR Clears (reset) the last entry. Erases the last digit entered.
	HWT	HWT transfers TOD via hardwire.
	0 PST	Enters 0 or selects PST mode. During frequency selection enters a zero in next sequential position of desired frequency. After frequency selection and while selected frequency blinks, pressing this key displays LP--. Entering a digit (one through eight) assigns that digit to the previously selected frequency as a preset channel. Pressing ENT key displays preset channel frequency. Pressing this key after preset frequency has been entered, displays P--. Entering single digit (one through eight) sets radio set to receive or transmit on that preset channel.
	ENT (Enter)	Enters displayed frequency or preset channel number and relates display. Depressing this key after frequency selection (while entire frequency on display is blinking) tunes the radio set to frequency displayed. Depressing this key after battery saver has extinguished display will relight the display. Depressing this key after preset channel has been assigned, displays preset channel frequency.
6	REMOTE connector	Enables down loading of time and keep alive function from AN/PSN-11
7	AUDIO connector	Interface for handset. Provides a means of connecting the handset or for connecting COMSEC equipment.
8	J7 connector	Provides keep alive interconnection to REMOTE connector. Retains time during surge conditions.
9	SPKR VOL control	Turns the speaker amplifier in the radio amplifier on or off and controls the volume level output of the speaker.
10	ANT connector	Provides RF output/input for 50 ohm antenna with VSWR of 2.5:1 or less; operating frequency range of 225.000 to 400.000 MHz.

Table 3-1. ANNRC-83(V)3 Functions of Controls and Indicators (Continued)

INDEX NO.	NOMENCLATURE	FUNCTION
11	FAULT indicator	Status of power amplifier. Can be adjusted for blackout operation. This lamp is lit when the amplifier is manually switched to the bypass mode of operation or when fault sensing circuitry determines transmission in the 30 watt mode fault and automatic switch to bypass occur.
12	RF IN connector	Provides input/output RF connection between RT ANT connector and AM-7176A. FAULT lamp lights when radio set is keyed while in the PA mode if incorrectly connected or defective.
13	OFF/PWR switch	Turns input power to the amplifier on or off. A fault indication unless the OFFNOLUME control (4) is set to ON.
14	BYPASS-PA switch	PA--activates the power amplifier (PA) for increased power operation. BYPASS--disables the PA and connects the antenna input/output of the RT to allow normal RT operation. At the PA position, the transmitted output level is 30 watts. Normal RT transmissions is 2 or 10 watts.
15	ANT connector	Interface between RF and PA ANT connector
16	J3 connector	Provides input power connection to dc power source with cable(rear of AM-7176A) W1.
---	J4 and J5 (Not Shown)	Connectors that provide power and control signal between RT and AM-7176A. Keyed and positioned for proper mating.
---	PT displayed on LCD display	Plain text operation. When lit on LCD display (3) radio set is in non-secure (non cipher) state.
---	Battery Save displayed on LCD display	Prevents unnecessary battery drain. Display goes out approximately 30 seconds after last LCD display. To relight, press ENT key on keyboard.



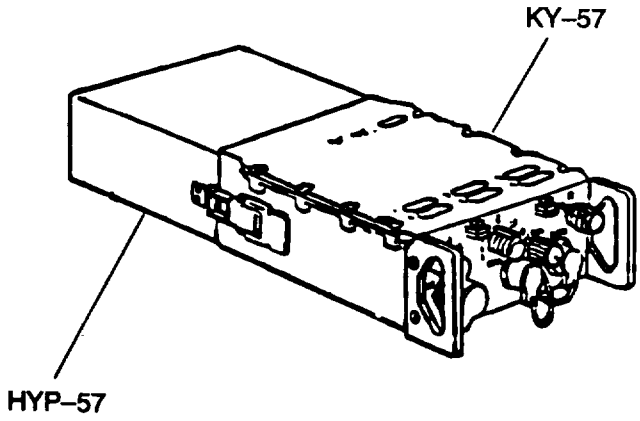


Figure 3-2. KY-57 Locations of Controls and Indicators

Table 3-2. KY-57 Functions of Controls and Indicators

INDEX NO.	NOMENCLATURE	FUNCTION
1	FILL switch	Eight-position switch used to select the KY-57 register into which key is loaded. Also used when zeroizing the KY-57.
2	MODE switch	Four-position switch used to select KY-57 operating mode.
3	VOLUME control	Rotary control used to adjust received audio level.
4	OFF/ON/TD switch	Three-position switch used to control application of operating power to the KY-57
5	AUDIO connector	Six-pin connector used to connect handset to KY-57.
6	FILL connector	Six-pin connector used to connect common fill cable or common fill device to KY-57.
7	RAD connector	Nineteen-pin connector used to connect KY-57 to the radio set.
--	BAT INSTL label	Writing surface used to record date fill battery was last changed.
--	KEY record label	Writing surfaces (1 through 6) used to record key designator(s) for keys loaded in KY-57 registers 1 through 6.

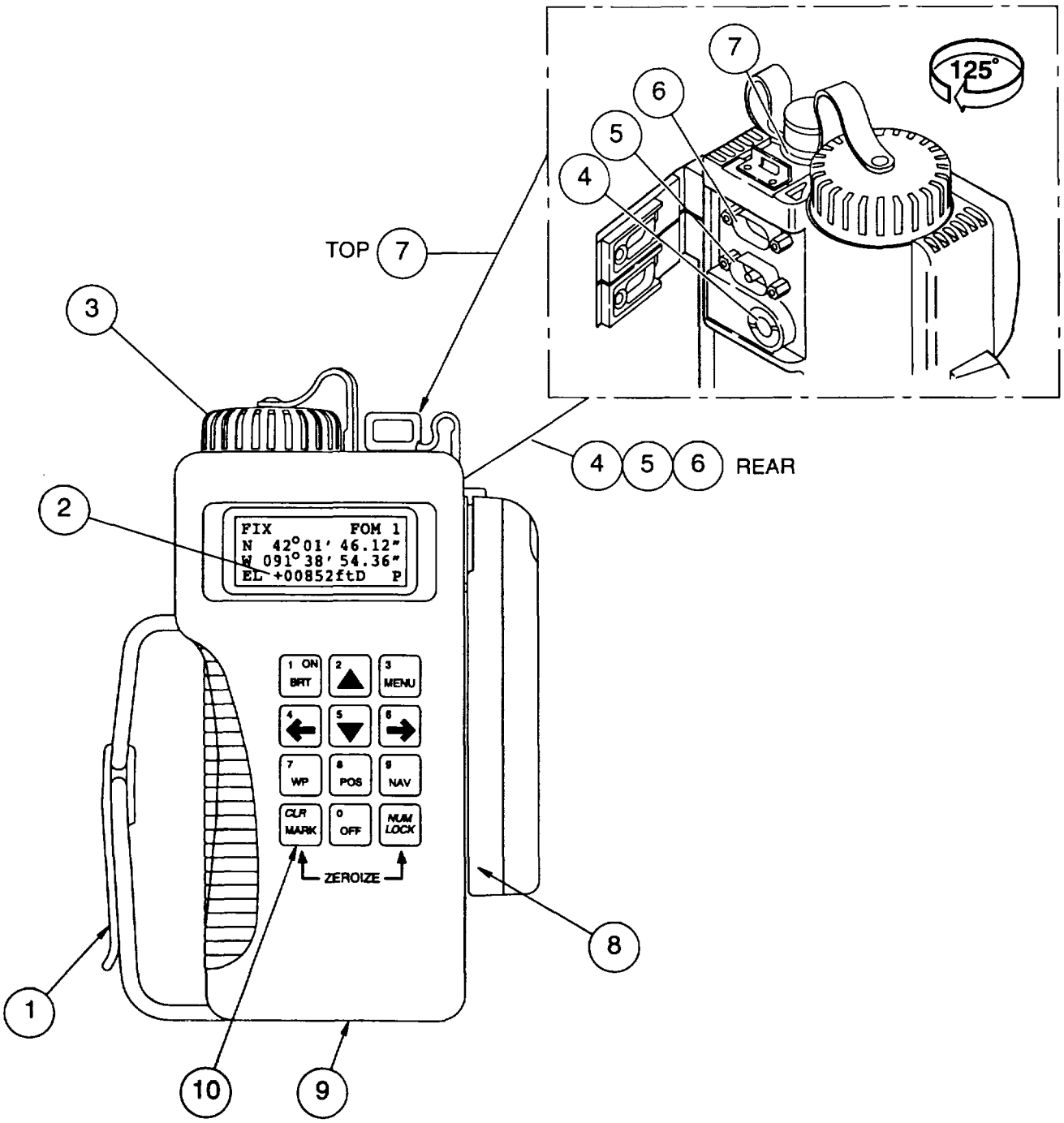


Figure 3-3. AN/PSN-11 Locations of Controls and Indicators

Table 3-3. AN/PSN-11 Functions of Controls and Indicators

INDEX NO.	NOMENCLATURE	FUNCTION
1	Handle	When the AN/PSN-11 is held so that the left hand is inserted between the handle and the unit, the user is free to operate the keypad(10) with the left-hand thumb. Two hands may be used, if desired.
2	Display	Displays alphanumeric data on a 4-line by 16-character per line screen. The data displayed depends on the operation being performed.
3	Battery Cover	Provides access to AN/PSN-11 power battery.
4	Connector J4	Provides external power connection to operate the AN/PSN-11 from an external power source.
5	Connector J3	Provides external antenna connection to the AN/PSN-11.
6	Connector J2	Provides the following interfaces for the AN/PSN-11: a. RS-232 compatible 2-way serial port. b. RS-422 compatible 2-way serial port. c. One-pulse-per-second input. d. One-pulse-per-second output. e. Remote OFF signal. f. HAVEQUICK output. g. External reprogramming capability.
7	Connector J1	Provides SINCGARS and crypto interface with AN/PSN-11.
8	Integral Antenna	Used for signal reception.
9	Memory Battery Cover	Provides access to AN/PSN-11 memory battery.
10	Keypad	Used to control AN/PSN-11 functional operations, turn the unit on and off, control display screen brightness, select user options, enter data, and selection of the display for viewing.

Section III. OPERATION UNDER USUAL CONDITIONS

3-4 GENERAL INFORMATION.

In the AN/GRC-240 version installed in the M998 and M1038 four-door combat vehicle, the system operates as an UHF communication system. The system can operate in plain text and cipher communication networks.

When the AN/GRC-240 operates in a plain text communication net, the ANNRC-83(V)3 operates as a transmitter and a receiver. During receive operations, the RF signals are picked up by the AS-3588/GRC-206 antenna and supplied via the antenna cable to the AM-7176A, then to receiver-transmitter (RT) 1319B/URC unit. The RT processes the RF signal into an audio signal. The audio signal is routed through the KY-57 to the handset in crypto mode. In plain text mode, the audio signal is routed to both the handset and the speaker. During a transmit operation, the handset audio signal input to the RT, amplitude modulates (AM) the RF carrier. The modulated AM signal is routed to the ANNRC-83(V)3 power amplifier AM-7176ANRC-83 unit. The 30 watt output is routed via the antenna cable to the AS-3588/GRC-206 antenna. The antenna radiates the AM RF output signal to the distant receiving station.

When the AN/GRC-240 operates in a cipher communications net, the functional operation of the ANNRC- 83(V)3 is the same as described for the plain text communications net described in the preceding paragraph except the speaker is muted. The KY-57 performs the function of encrypting the signal supplied as the input to the RT during the transmit operation and decryption of the received cipher signal during a receive operation.

3-5 TURN ON PROCEDURES.

3-5.1 General Information.

When the AN/GRC-240 is operating in a plain text communications net, the AN/PSN-11 is turned on; then, the ANNRC-83(V)3. When operating in a secure communications net, the AN/PSN-11 is turned on; then, the ANNRC-83(V)3; then, the KY-57. The KY-57 is the first to be turned off when leaving the secure communications net.

3-5.2 AN/PSN-11 Turn On Procedure.

Proceed as follows:

a. Press ON BRT key.

b. Monitor the LCD display for the following sequence of displays:

1. Test pattern of all pixels.

2. Copyright notices, hardware version, and software version numbers are displayed.

3. Last position location before last power turn off.

c. Backlighting Adjustment. Proceed as follows:

1. Press ON BRT key. The backlight comes on at the last level before the previous power turn off.

2. To increase the backlight level, press and hold the ON BRT key while pressing the UP arrow key.

3. To decrease the backlight level, press and hold the ON BRT key while pressing the DOWN arrow key.

4. To turn off backlight, press the ON BRT key.

3-5.3 ANNRC-83(V)3 Turn On Procedure.

Proceed as follows:

a. Set PWR/OFF switch on PA to PWR position.

b. Rotate the OFFNOLUME control on RT clockwise. The RT display segments all light for approximately 4 seconds. After 4 seconds, the display shows the last frequency or preset channel before last power turn off.

c. Adjust DIM control on RT for desired display brightness.

NOTE

Display will turn off to save power. Press any key to turn display on.

d. Proceed as applicable:

1. For operation on a plain text or cipher communication net on a manually selected frequency, perform set-up procedure given in paragraph 3-7.1 or 3-7.2, respectively.

2. For operation on a plain text or cipher communication net on a preset channel frequency, perform set-up procedure given in paragraph 3-7.1 or 3-7.2, respectively.

3. For operation on a plain text or cipher communication net on a selected preset channel frequency, perform set-up procedure given in paragraph 3-7.1 or 3-7.2, respectively.

4. To set up the operation modes on the selected plain text or cipher communications net frequency, perform set-up procedure given in paragraph 3-7.1 or 3-7.2, respectively.

5. On RT, rotate Squelch control fully counterclockwise.

6. On PA, rotate SPKR VOL control clockwise. Adjust control for desired speaker output level.
NOTE: When KY-57 is used in secure mode, the speaker is disabled.

7. Adjust control until no background noise is heard in handset.

8. For ANNRC-83(V)3 30 watt output, set the PA BYPASS/PA switch to PA position. Check that the PA FAULT indicator is not lit.

3-5.4 KY-57 Turn On Procedure.

Proceed as follows:

a. Perform the ANNRC-83(V)3 turn on procedure given in paragraph 3-5.3.

b. Set OFF/ON/TD switch to ON position.

c. To set-up for plain text operation, refer to TM 11-5820-256-12.

d. To set-up for cipher operation, refer to TM 11-5820-256-12.

3-6 SET-UP PROCEDURES.

3-6.1 KY-57 Keying Procedure.

Proceed as follows:

a. On the KY-57, perform the following:

1. Rotate the VOLUME control to mid-position setting.

2. Set OFF/ON/TD switch to OFF position.

b. On the KYK-13, check for a crypto fill, as follows:

1. Set MODE switch to OFF.

2. Rotate ADDRESS SELECT switch to the number position that contains the crypto data installed (1-6).

3. Press the INITIATE switch and check that the PARITY INDICATOR flashes.

c. Connect the KYK-13 cable to the KYK-57 FILL connector.

d. On the KY-57, perform the following:

1. Set OFF/ON/TD switch to ON position.

2. Pull out and set MODE switch to the C position. Listen for rushing noise with beeps in the handset.

3. Press and release the handset push-to-talk (PTT) switch. No rushing noise or beeps should be heard in the handset.

4. Pull out and turn MODE switch to LD (load) position.

5. Set the KY-57 FILL switch to the position that will have the crypto loaded (1-6)

e. On the KYK-13, proceed as follows:

1. Set the MODE switch to ON.

2. Set the ADDRESS switch to the position that contains the crypto to be loaded (1-6).

NOTE

Do not depress the KYK-13 INITIATE switch.

f. On the H-250, press and release the handset PTT switch. One beep will be heard in the handset when the PTT switch is pressed. One beep will be heard when the PTT switch is released . The PARITY light will flash.

g. Set the KYK-13 MODE switch to OFF/CHECK position.

h. Set the KY-57 OFF/ON/TD switch to OFF and remove the KYK-13 fill cable from the KY-57 FILL connector.

3-6.2 AN/PSN-11 MODE Procedure.

Proceed as follows:

a. Perform AN/PSN-11 turn on procedure given in paragraph 3-5.2.

b. Press MENU key.

c. Press LEFT or RIGHT ARROW key until flashing word SETUP is displayed.

d. Press DOWN ARROW key, once.

e. Press RIGHT ARROW key until flashing word FIX is displayed.

f. Press UP ARROW key until flashing word CONT is displayed.

g. Press LEFT ARROW key, once. Check that a UP and DOWN ARROW are displayed next to the P character display.

h. Press DOWN ARROW key, 4 times.

3-6.3 AN/PSN-11 DATUM Procedure.

Proceed as follows:

a. Press RIGHT ARROW key, once.

b. Press DOWN ARROW key until flashing letters WGD is displayed.

NOTE

The horizontal DATUM comes off the map of the operational area. The normal DATUM for CONUS is the WGD DATUM. Refer to the map TM 11-5829-29-13 for other settings.

c. Press RIGHT ARROW key, once.

d. Press DOWN ARROW key until the flashing word OFF is displayed.

e. Press RIGHT ARROW key, once.

f. Press DOWN ARROW key, once.

3-6.4 AN/PSN-11 Inputs and Outputs Procedure.

Proceed as follows:

a. Press RIGHT ARROW key, twice.

b. Press UP ARROW key until the flashing word ON is displayed.

c. Press RIGHT ARROW key, once.

d. Press DOWN ARROW key until the flashing letters UTC is displayed.

e. Press RIGHT ARROW key once.

f. Press POS (8) key, twice.

When a TFOM of 7 or less is displayed, the AN/PSN-11 is ready to send time to the ANNRC-83(V)3.

3-7 OPERATING PROCEDURES.

3-7.1 Single Channel Plain Text Operation.

Proceed as follows:

a. At the KY-57, perform the following:

1. Set OFF/ON/TD switch to ON.

2. Set MODE switch to P position.

b. Set PA PWR/OFF switch to PWR position.

c. Set PA BYPASS/PA switch to BYPASS position. Check that the PA FAULT light is lit.

d. On ANNRC-83(V)3, rotate PA OFFNOLUME control clockwise.

e. On RT keyboard press the ENT key. Check for the following display:

LPR PT
GD SQL

f. If the display is not as specified, press RT corresponding keys until the display is as specified.

g. Using the RT keyboard, enter a predetermined communication network assigned frequency.

h. After the last digit in the frequency is entered, the frequency displayed on the display will flash.

i. Press the RT keyboard ENT key.

j. Perform a communication check with the distant station on the network.

3-7.2 Single Channel Cipher Operation.

With a communication network link already in place, proceed as follows:

a. Set KY-57 FILL switch to the position that has a crypto loaded (1-6).

b. Set KY-57 MODE switch to the C position.

c. To transmit, key the handset. Wait until a beep is heard in the handset before speaking.

d. Perform a communication check with the distant station on the network.

3-7.3 Single Word of the Day (WOD) Entry Operation.

Proceed as follows:

a. Set-up for a single channel plain text operation (refer to paragraph 3-7.1).

b. Set KY-57 MODE switch to the P position.

c. Load the training and maintenance WOD and NET number (or the WOD and NET number received from 3). Refer to Table 3-4.

Table 3-4. Loading WOD (NET Number 300.000)

CHANNEL	SEGMENT
20	300.050
19	376.000
18	359.100
17	314.300
16	297.600
15	287.400

d. The segments must be entered in the sequence given in Table 3-4. Proceed as follows:

1. Using keyboard, enter 220.000. After the last digit is entered, all the segment digits will be flashing on the display.

2. Press the PST/0 key. The display should read LP, LF, or LC.

3. Enter 20 and press the ENT key. Check that the third digit in the segment number displayed is flashing every other time.

4. Enter the channel number 20 segment of the WOD. If using the training and maintenance WOD, enter 300.050. After the last digit is entered, check that all of the displayed numbers are flashing.

5. Press the PST/O key. Check that LP-- Is displayed.

6. Enter channel number 20 and press ENT key. Segment 20 is entered.

e. Load the remaining channels 19--15 by repeating step's d.4 through d.6.

f. After segment 15 has been entered, proceed to paragraph 3-7.4 and perform the Time Of Day (TOD) entry operation.

3-7.4 Time Of Day (TOD) Entry Operation.

3-7.4.1 General Information. The ANNRC-83(V)3 TOD entry operation can be performed using any one of three sources. This entry operation is performed after the single WOD entry operation.

3-7.4.2 Self Start Method. Proceed as follows:

a. Using RT keypad, press the 3 key.

b. Press the ENT key.

3-7.4.3 AN/PSN-11 Method. Proceed as follows:

NOTE

When the OLD Display in the right hand comer of the display indicates a TFOM of 7 or less, the AN/PSN-11 is ready to send time to the ANNRC-83(V)3.

a. Perform stepsd 3-5.2 and 3-6.2 through 3-6.4.

b. At the RT keyboard, press the 8/TOD key. The display will read 2t or 3t.

c. When the TOD from the AN/PSN-11 is received, the RT display will read 2t TOD or 3t TOD.

d. Press the RT keyboard ENT key.

3-7.4.4 Distant Station Method. Proceed as follows:

a. Request a TOD transmission from the distant station. Both stations must be in the single channel plain text mode.

NOTES

- An update TOD transmission can be given in the active mode if on the same WOD's and NET. The RT will require new TOD every 4 hours for voice communications.
- To receive a transmitted TOD, the AN/PSN-11 must be turned off.

b. Press the RT keyboard 8/TOD key. The display will read 2t or 3t.

c. When the transmitted TOD is received, the RT display will read 2t tod or 3t tod.

d. Press the RT keyboard ENT key.

3-7.4.5 Sending a TOD Transmission. Proceed as follows:

a. Press the RT keyboard DF/9 key once. The TOD is sent to the distant station that requested the TOD.

NOTE

All radios receiving TOD must be on the same frequency or active using the same WOD's and NET.

b. Press the RT keyboard DF/9 key to discontinue the TOD transmission.

3-7.5 Performing a Communication Check in the Plain Text Operation Mode.

To perform an AJ communication check, the distant station must have the same WOD and TOD entered and also have the same NET number. Proceed as follows:

a. Enter assigned NET number or enter the training and maintenance NET number, 300.000 using the RT keyboard.

b. Press the RT keyboard ENT key.

c. Press the RT keyboard ACT/5 key. Check that the display reads: A00.000 of the NET number.

NOTE

If the A character is flashing and a continuous tone is heard, the WOD is wrong or the TOD has not been entered.

d. Perform a communications check with a station with the same WOD, TOD, and NET.

3-7.6 Communications Check Cipher Operation.

To operate in secure mode after the communications link has been established, proceed as follows:

a. Set KY-57 FILL switch to the position that has a crypto loaded (1-6).

b. Set KY-57 MODE switch to the C position.

c. To transmit, key the handset. Wait until a beep is heard in the handset before speaking.

NOTE

When operating the cipher communications mode, the speaker is muted.

3-7.7 Multiple Word Of Day (MWOD) Operation. (220.025 in PRESET 20)

Proceed as follows:

a. Set-up for a single channel plain text operation (refer to paragraph 3-7.1).

b. Set KY-57 MODE switch to the P position.

c. Load MWOD and NET data from your S-3 or use Table 3-5. Proceed as follows:

1. Enter 220.025 using the RT keyboard. After the last digit is entered, check that all digits displayed are flashing.

2. Press the RT keyboard PST/0 key. Check that the display reads LP, LF, or LC.

3. Enter 20 using the RT keyboard and then press the ENT key. Check that the third digit (0) in the display is flashing every other time.

4. Enter the first segment of the first WOD of the MWOD (CH20 300.075). After the last digit is entered, the displayed numbers are flashing.

5. Press the RT keyboard PST/0O key. Check that the display shows LC--.

6. Enter 20 and then press the ENT key.

7. Enter the remaining 5 WOD segments, WOD numbers 19 to 15 (XXX.XXX) in that order, by repeating steps c.4 through c.6.

d. Perform date tag entry operation given in paragraph 3-7.8.

Table 3-5. Loading MWOD

CH	DAY SEGMENTS			
	1	2	3	4
20.	300.075	300.050	300.050	300.050
19.	297.600	314.300	359.100	359.100
18.	287.400	297.600	314.300	297.600
17.	376.000	287.400	297.600	287.400
16.	359.100	376.000	287.400	376.000
15.	314.300	359.100	376.000	314.300

3-7.8 Date Tag Entry Operation.

Each WAD day must have a date tag attached. To attach a date tag to channel 14, proceed as follows:

a. Using RT keyboard, enter 3AB.XXX, where A and B are the day of the month (01--31) and XXX are any three digits.

b. Press keyboard PST/0O key. Check that the display reads LC--. Enter 14 on keyboard, then press ENT key.

d. Repeat steps 3-7.7c4 through 3-7.8c after each WOD of the MWOD.

3-7.9 Operational Date Entry Operation.

After all WOD's with a date tag have been loaded, an operational date must be entered in channel (1). The operational date (CH1) must match one of the date tags (CH14) attached to one of the WOD's. Use the RT keyboard to enter 3AB.XXX, where A and B are the day of the month (01--31) and XXX can be any three digits. Press the PST/0O key, then 1, then press the ENT key.

3-7.10 MWOD Verify Mode.

To verify that a particular day of month has been entered with an MWOD, perform the following check:

a. Place the radio in the HQ operation mode by entering 220.000 into preset 20.

b. Press the 3 key, then the two digit day of the month.

c. Check that the display indicates 3XX.

d. Press the ENT keypad key.

e. Display will PASS or FAIL depending if the date has been entered for a code.

3-7.11 NET Entry.

Proceed as follows:

a. Enter 220.000 by using RT keypad.

b. Press the PST/0 key. Check the display for a LC-- display.

c. Enter 20 and press the ENT key.

d. Enter the net number (300.000 for training), from Table 3-5.

e. Press the ENT key.

f. Press the 5/ACT key. Check for a display reading of A00.000. If the A character is flashing and a continuous tone is heard, the TOD has not been entered.

g. Perform an AJ communications check.

NOTE

The other station must have the same WOD, TOD, and NET programmed.

2-7.12 MWOD Erase Mode.

Prior to shutdown, perform the following procedure:

a. Enter 220.050 using the RT keyboard. After the last digit is entered, check that all digits displayed are flashing and that the second digit is extinguished after every other flash.

b. Press the keyboard PST/0O. Check that the display reads LC--, LP--, LF--.

c. Enter 20 using the RT keyboard and then press the ENT key.

d. ERASE will be displayed for 5 to 6 seconds on the display.

3-8 SHUTDOWN PROCEDURE.

If the AN/GRC-240 is operating in a plain text communications net, the AN/PSN-11 is turned off; then the ANNRC-83(V)3. If the AN/GRC-240 is operating in a secure communications net, power down is as follows:

a. KY-57
b. AN/PSN-11
c. ANNRC-83V)3

Section IV. OPERATION UNDER UNUSUAL CONDITIONS

3-9 ENVIRONMENTAL OPERATION SPECIFICATIONS:

3-9.1 Arctic Climate.

The AN/GRC-240 operates at temperatures as low as -50° F and can be stored at temperatures as low as -70° F. Extreme cold cause components, especially cables and plastic components to become brittle. Permanent damage can result from mechanical shock to components. Cables can break if they are kinked or bent. When cold equipment is brought into a warm area, moisture will condense on its surfaces. Before operation, allow equipment to warm to room temperature. Then, dry the equipment thoroughly with a clean, absorbent cloth.

3-9.2 Tropical Climate.

The AN/GRC-240 operates at temperatures as high as 155°F and can be stored at temperatures as high as 162°F. Extreme heat and humidity can cause moisture and fungus growth that can result in improper operation.

3-9.3 Humidity.

The AN/GRC-240 operates without sustaining physical damage during and after prolonged exposure to relative humidities to 100 percent maximum at all ambient temperatures to +80° F, high absolute humidity corresponding to a dew point of +86°F, and low relative humidity of 5 percent at a temperature of +125°F.

3-9.4 Vibration and Shock.

The AN/GRC-240 can withstand vibration and shock induced during field transportation by military vehicles as loose cargo and by rough handling.

3-9.5 Rain.

The AN/GRC-240 operates without sustaining physical damage during and after exposure to driving rain of up to 40 miles per hour.

3-9.6 Desert Climate.

The AN/GRC-240 is resistant to effects of blowing fine sand or dust particles that may accumulate with the enclosure as a result of operator activity.

3-10 JAMMING.

Under suspected enemy jamming conditions, disconnect the antenna and if the signal disappears, you are being jammed. Use the following guidelines to remain operating:

a. Report the situation to next higher authority immediately.

b. Change the operating site (if possible).

c. Request a change to another preset or manual operating frequency.

3-11 OPERATION UNDER EMERGENCY CONDITIONS.

Failure in the ANNRC-83(V)3 PA normally results in automatic switching to BYPASS operation in the low power (2 watt) operating range. During emergency conditions, when communications in the high power mode is not available, communications may still be possible in the low power mode. Refer to TM 11-5820-1147-13&P-2 for instructions for receiver-transmitter RT-1319B.

The RT can operate on its own internal clock when TOD is not available from an external source. Refer to TOD instructions given in paragraph 3-7.4.

NOTE

This is an emergency or maintenance procedure only. The RT will not communicate with other sets unless it contains the TOD used within the network, TOD can be transferred between radios. Refer to paragraphs 3-7.4 and 3-7.5.

3-12 AN/PSN-11 OPERATIONAL NOTES.

3-12.1 General Information.

Finding your position with the AN/PSN-11 is no problem for a sharp operator. Finding answers to AN/PSN-11 operational problems may be a little harder. Some of the more common problems that keep cropping up and how to correct them, are discussed in the following paragraphs.

3-12.2 Power Problem.

After you install a new BA-5800IA power battery, the AN/PSN-11 may not turn on or it may come on briefly before turning itself off. The problem sometimes happens when you use a battery that has been stored for long periods. The first step to setting things straight is to make sure the battery is installed the correct way. Check for the right battery polarity and a tight-fitting battery cap. Next push the ON/BRT key and wait for 30 to 40 seconds, until the AN/PSN-11 turns on. If it still does not turn on, push the ON/BRT key again. You may have to go through this procedure for five minutes before the AN/PSN-11 turns on. If you still cannot get the AN/PSN-11 to work, try a fresh battery.

3-12.3 AN/PSN-11 Masked.

The AN/PSN-11 relies upon satellite signals received by line-of-sight. It needs a clear field of view to the sky so that it can acquire and track satellites. If you take cover indoors or under dense foliage, the AN/PSN-11 will probably be masked. This means the cover interferes with satellite signals that the AN/PSN-11 is trying to receive.

If the AN/PSN-11 is masked while in the CONT, FIX, AVG or TIME operating mode, it may go into a Search the Sky Mode. In this mode, the AN/PSN-11 tries to find satellites that may not yet be visible. You may be able to return the AN/PSN-11 to normal operation while under cover by following the procedure given in paragraph 4.4.9 of TM 11-5825-291-13.

You may also need to follow the instructions for reacquiring satellites after you leave cover. Refer to paragraph 6.1.2.3 of TM 11-5825-291-13 for this procedure.

If both of these steps fail, turn off the AN/PSN-11, then turn it back on. Go into normal operation and allow Time to First Fix (TTFF). TTFF is the time it takes for the AN/PSN-11 to complete a self-test, acquire the satellites and locate your position after it is turned on.

3-12.4 Power Failure.

Some AN/PSN-11 units have failed their start-up self-test when the memory battery is put in before the power battery. This failure usually occurs only when the AN/PSN-11 is coming out of storage. When you have to insert both the memory and main power batteries, put the main power battery in first. This does not apply to the normal exchange of main power battery during routine AN/PSN-11 operation.

3-12.5 Outdate Group Unique Variable (GUV).

Some operators have gotten this message on their AN/PSN-11 display screen:

WARNING Check GUV Issue number

It means the data gathered from the satellites do not match the group unique variable (GUV) key entered in the AN/PSN-11. Chances are your GUV's 54 week cryptoperiod has run out and you are using last year's GUV. See your COMSEC custodian for a new GUV.

3-12.6 Memory Battery Cover Installation.

Next time you install a memory battery in the AN/PSN-11, take care when you screw the battery cover back on. Make sure the cover's coiled spring does not catch on the raised edge of the memory battery. If it does, the battery will overheat and the AN/PSN-11 will display a failed memory battery warning.

The only thing you can do is turn the AN/PSN-11 off, remove the battery, and let it cool down. If the cover's coiled spring is bent, try to bend it back to its original shape. If that does not work, turn your AN/PSN-11 in for a new one. There are no replacement covers for the memory battery compartment.

CHAPTER 4
OPERATOR MAINTENANCE

4-1 GENERAL INFORMATION.

This chapter provides the AN/GRC-240 operator maintenance instructions. Repair is limited to the operations listed in Appendix B, Maintenance Allocation Chart (MAC).

Section I. TOOLS AND EQUIPMENT

4-2 TOOLS REQUIRED.

No tools or test equipment is authorized for use by the operator.

4-3 REPAIR PARTS.

No repair parts are authorized for operator maintenance.

Section II. OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

4-4 GENERAL INFORMATION.

NOTE

When performing operator PMCS or routine checks, observe all WARNINGS and CAUTIONS listed in the beginning of this manual.

Operator preventive maintenance is the systematic care, servicing, and inspection of equipment to prevent occurrence of trouble, to reduce downtime, and to maintain equipment in serviceable condition. To be sure that the equipment is always ready for a mission, perform the scheduled operator PMCS.

4-5 OPERATOR PMCS PROCEDURES.

4-5.1 Routine Checks.

Routine checks such as cleaning, dusting, and equipment completeness checks are not listed as operator PMCS. These tasks should be done anytime they are needed.

4-5.2 Continuous Use.

If the equipment must be kept in continuous use, check and service those items that can be checked and serviced without disturbing operation. Make the complete checks and services when the equipment is not in use.

4-5.3 Defects.

Deficiencies that cannot be corrected must be reported to higher maintenance personnel. Records and reports of preventive maintenance must be made in accordance with procedures given in DA Pam 738-750.

4-5.4 Scheduling

Operator PMCS must be done at the specified times identified under the Table 4-1 INTERVAL column. If operational requirements prevent doing PMCS at the specified time, make the required checks and services at the first opportunity. During operation, PMCS must be done regularly to help spot small problems before they become big problems. In addition, the specified checks and services must be performed under the following special conditions.

4-5.4.1 Before Using. Always keep in mind the CAUTIONS and WARNINGS. Perform before (B) PMCS.

4-5.4.2 While Using. Always keep in mind the CAUTIONS and WARNINGS. Perform during (D) PMCS.

4-5.4.3 After Using. Be sure to perform (A) PMCS.

4-6 AN/GRC-240 OPERATOR PMCS.

4-6.1 General Information.

The AN/GRC-240 operator PMCS is given in Table 4-1. This table lists the items to check, when to check them, and how to check them. Perform the procedures thoroughly and always observe all CAUTIONS and WARNINGS.

4-6.2 ITEM NO. Column.

The checks and services are listed in the order performed. Use this number for the TM number on DA Form 2404, Equipment Inspection and Maintenance Worksheet, to record results of checks and services.

4-6.3 INTERVAL Columns.

The columns headed B, D, and A contain a mark (*) in the appropriate column. This indicates when to perform the specific PMCS procedure.

4-6.4 ITEMS TO BE INSPECTED Column.

The items listed in this column indicate what part of the equipment is to be checked.

46.5 PROCEDURES Column.

This column indicates how to perform the check on the item listed in the ITEM TO BE INSPECTED column.

4-6.6 EQUIPMENT WILL BE REPORTED NOT AVAILABLE IF: Column

This column contains criteria that will cause the equipment to be classified as not ready because of inability to perform its primary mission. This column will be left blank if the associated equipment will not cause the equipment to be unusable.

Table 4-1. AN/GRC-240 Operator PMCS

B= Before Operation D= During Operation A= After Operation

ITEM NO.	INTERVAL B	D	A	ITEM TO BE INSPECTED	PROCEDURE	EQUIPMENT WILL BE REPORTED NOT READY IF:
1	*	*	*	Radio rack and AN/PSN-11 mounts	Check that radio rack and AN/PSN-11 mounts are securely fastened to vehicle.	Radio rack or AN/PSN-11 mounts not securely fastened.
2	*	*	*	AS-3588/GRC 206 antenna and mount	Check that antenna element is secure to mount. Check that antenna mount is secure to vehicle.	Antenna element or antenna mount are not securely fastened.
3	*		*	AN/VRC 83(V)3, KY-57, and AN/PSN-11 front panel knobs and switches	Check for correct switch position alignment and tightness. All knobs are secure to switch shaft.	Knobs are missing or switch operation is erratic.
4	*			KY-57 Fill Battery cover	Verify that the fill battery cover is secure.	Cover is not secure.
5	*					Perform procedures given in Section III Operation Under Usual Conditions.

4-7 A*NN*/VRC-83(V)3 OPERATOR PMCS.

Perform operator PMCS on the ANNRC-83(V)3 using the above procedure.

4-8 KY-57 OPERATOR PMCS.

Perform operator PMCS on the KY-57 using the procedure given in TM 11-5810-256-12.

4-9 AN/PSN-11 OPERATOR PMCS.

Perform operator PMCS on the AN/PSN-11 using the procedure given in TM 11-5825-291-13.

CHAPTER 5
UNIT MAINTENANCE INSTRUCTIONS

5-1 GENERAL INFORMATION.

This chapter provides the AN/GRC-240 unit maintenance instructions. Repair is limited to removal and replacements of components and cables, listed in Appendix B, Maintenance Allocation Chart (MAC).

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

5-2 COMMON TOOLS AND EQUIPMENT.

The common tools and equipment required for unit maintenance are listed in Section III of Appendix B (MAC).

5-3 SPECIAL TOOLS AND TEST EQUIPMENT.

There are no special tools and test equipment for unit maintenance.

5-4 REPAIR PARTS.

Repair parts are listed and illustrated in Appendix F, Repair Parts and Special Tools List (RPSTL).

5-5 TMDE AND SPECIAL EQUIPMENT.

Special equipment are not required. Refer to Section III of Appendix B (MAC) for TMDE.

Section II. UNIT MAINTENANCE PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

5-6 GENERAL INFORMATION.

NOTE

When performing unit maintenance, PMCS or routine checks, observe all WARNINGS and CAUTIONS listed at the beginning of this manual.

Unit maintenance preventive maintenance is the systematic care, servicing, and inspection of equipment to prevent occurrence of trouble, to reduce downtime, and to maintain equipment in serviceable condition. To be sure that the equipment is always ready for a mission, perform the schedule unit PMCS.

5-7 UNIT MAINTENANCE PMCS PROCEDURES.

5-7.1 Routine Checks.

Routine checks such as cleaning, dusting, and equipment completeness checks are not listed as unit PMCS. These tasks should be done anytime they are needed. Do perform routine checks on the condition of cables, such as, tight connections, frayed condition, and secure installation in place.

5-7.2 Continuous Use.

If the equipment must be kept in continuous use, check and service those items that can be checked and serviced without disturbing operation. Make the complete checks and services when the equipment is not in use.

5-7.3 Defects.

Deficiencies that cannot be corrected must be reported to higher maintenance personnel. Records and reports of preventive maintenance must be made in accordance with procedures given in DA Pam 738-750.

5-7.4 Scheduling.

Unit PMCS must be done at the times specified under Table 5-1 INTERVAL column. If operational requirements prevent doing PMCS at the specified time, make the required checks and services at the first opportunity. During operation, PMCS must be done regularly to help spot small problems before they become big problems.

5-8 AN/GRC-240 UNIT PMCS TABLE.

5-8.1 General Information.

The AN/GRC-240 PMCS is given in Table 5-1. The table lists the items to check, when to check them, and how to check them. Perform the procedures thoroughly and always observe all CAUTIONS and WARNINGS associated with the specific procedure.

5-8.2 ITEM NO. Column.

The procedures are listed in the order to be performed. Use this number for the TM number on DA Form 2404, Equipment Inspection and Maintenance Worksheet, to record results of the procedure performed.

5-8.3 INTERVAL Columns.

The columns headed W (Weekly), M (Monthly), and Qs (Quarterly) contain a mark (*) in the appropriate column. This indicates when to perform the PMCS procedure.

5-8.4 ITEMS TO BE INSPECTED Column.

The items listed in this column indicate what component unit is to be checked.

5-8.5 PROCEDURES Column.

This column indicates how to perform the check on the item listed in the ITEM TO BE INSPECTED column.

5-8.6 EQUIPMENT WILL BE REPORTED NOT AVAILABLE IF: Column.

This column contains criteria that will cause the equipment to be classified as not ready because of inability to perform its primary mission. This column will be left blank if the associated equipment will not cause the equipment to be unusable.

Table 5-1. AN/GRC-240 Unit PMCS

W=WEEKLY M=MONTHLY Q=QUARTERLY

ITEM NO.	INTERVAL W	M	Q	ITEM TO BE INSPECTED	PROCEDURE	EQUIPMENT WILL BE REPORTED NOT READY IF:
1	*			AN/PSN-11	Perform AN/PSN-11 unit PMCS. Refer to TM 11-5820-291-13.	AN/PSN-11 fails unit PMCS.
2	*			ANNRC-83(V)3	Perform ANNRC-83(V)3 Operator PMCS. Refer to Chapter 4.	ANNRC-83(V)3 fails unit PMCS.
3	*			KY-57 and HYP-57	Perform KY-57 and HYP-57 unit PMCS .Refer to TM 11-5820-256-12	KY-57 and HYP-57 fails unit PMCS.
4	*			AS-3588/ GRC-206	Check antenna for physical damage	Antenna is damaged.

Section III. TROUBLESHOOTING PROCEDURES

5-9 GENERAL INFORMATION.

This section contains the troubleshooting procedures for the AN/GRC-240. These procedures will isolate a specific trouble symptom to a defective AN/PSN-11, ANNRC-83M*1)*3, KY-57, HYP-57, AS-3588/GRC-208, or MK-2827/GRC-240 cable. After the defective component or cable has been isolated, the defective item is replaced or the cable is repaired.

As an aid in troubleshooting the AN/GRC-240, a functional block diagram is provided in Figure 5-1. Refer to Appendix A References for the TM applicable to the ANNRC-83(V)3, KY-57, HYP-57, AN/PSN-11, and AS-3588/GRC-206 for troubleshooting Details for the specific component.

5-10 AN/GRC-240 TROUBLESHOOTING TABLE.

The AN/GRC-240 troubleshooting is given in Table 5-2. This table lists the common trouble symptoms that may occur during power up and normal operation.

Table 5-2. AN/GRC-240 Troubleshoot Chart

SYMPTOM	PROCEDURE	REMEDY
No power on ANNRC-83(V)3	Check input power cable (Wl) continuity	1. Replace cable 2. Refer to TM 11-5820-1149-14&P for ANNRC-83(V)3 troubleshooting
Scrambled display on ANNRC-83(V)3	Press ENT key two or more times, or turn off then turn on until display reads 888.888	Refer to TM 11-5820-1149-14&P for ANNRC-83(V)3 troubleshooting
No Power on AN/PSN-11	Check AN/PSN-11 power cable 426-0144-010 continuity	1. Replace cable 2. Refer to TM 11-5825-291-13 for AN/PSN-11 troubleshooting
No power on KY-57	Check HYP-57 power cable CX-13421/U continuity	1. Replace cable 2. Refer to TM 11-5810-256-12 for KY-57 troubleshooting
No RF output	Check antenna cable CX-13502/U continuity	1. Replace cable 2. Check antenna fo physical damage. Refer to ANNRC-83(V)3 TM 11-5820-1149-13&P for troubleshooting the antenna
No COMSEC communications	Check audio cable A566084-809 continuity	1. Replace cable 2. Refer to TM 11-5810-256--12 for KY-57 troubleshooting
No audio in headset	Check audio cable A566084-809 continuity	1. Replace cable 2. Check handset for physical damage
No audio in loudspeaker	See Remedy	Check AM-7176A per ANNRC-83(V)3 TM 11-5820-1149-14&p troubleshooting
No GPS time	1. Check cable 426-0141-040 2. Check cable CX-1350/U continuity 3. If AS-4333 is used, check cable 426-0141-050 continuity	1.a. Replace cable 1.b. Refer to AN/PSN-11 TM 5825-291-13 for routine checkout procedure 2.a. Replace cable 2.b. Same as 1.b above 3a. Replace cable 3.b.1 Check/replace AS-4333 3.B.2 Refer to ANNRC-83(V)3 TM 11-5820-1149-14&P and connector MS3106F10SL3S for troubleshooting

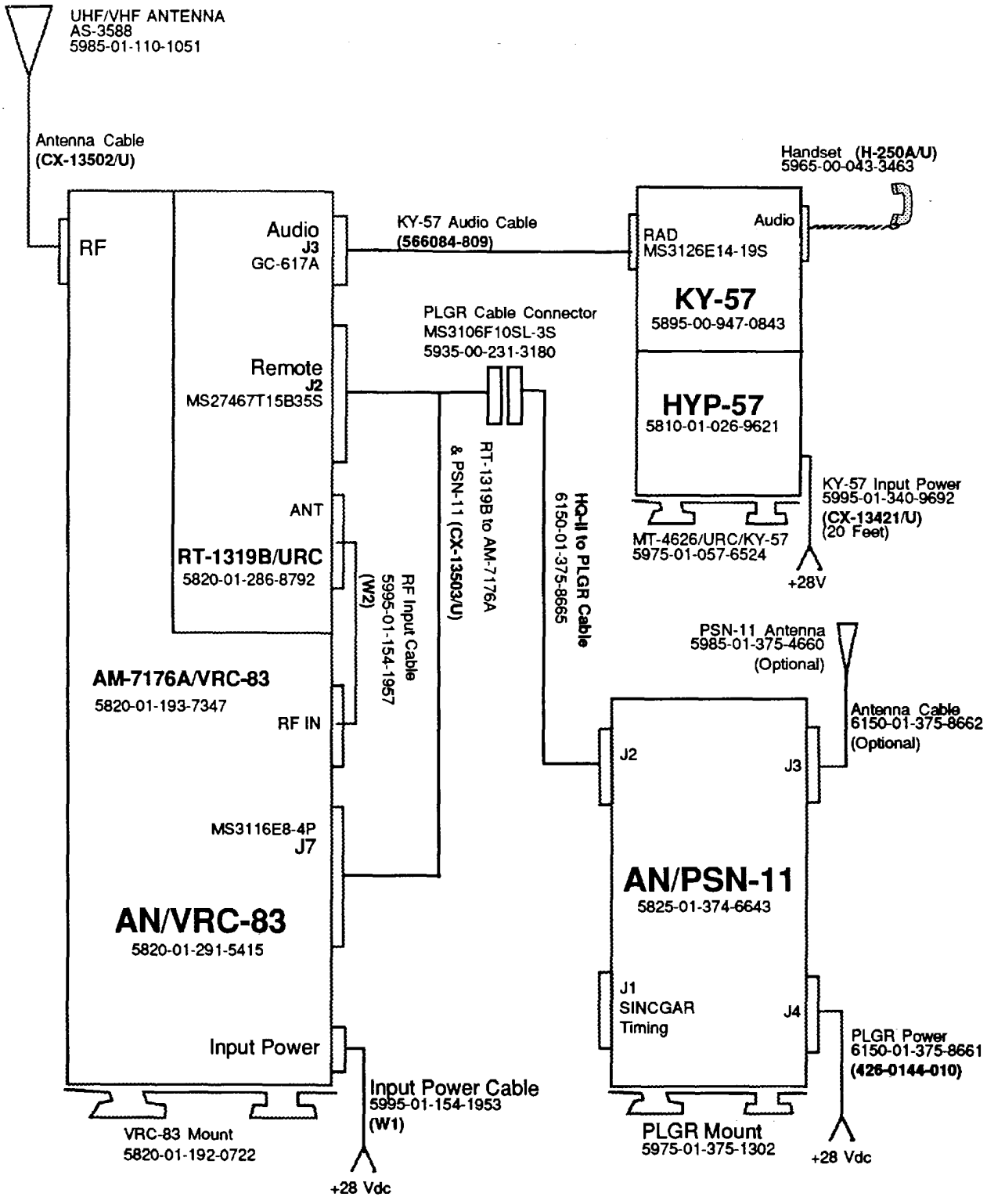


Figure 5-1. Troubleshooting Block Diagram

Section IV. REMOVAL AND REPLACEMENT PROCEDURES

5-11 GENERAL INFORMATION.

This section contains the procedures for the removal of AN/GRC-240 replaceable units and component parts of the MK-2827/GRC-240 that were found to be defective during unit and operator PMCS or unit troubleshooting.

5-12 ANNRC-83(V)3 REMOVAL AND REPLACEMENT.

5-13.1 Removal.

Proceed as follows:

a. At RT section front panel, perform the following:

1. Disconnect cable CX-13503/U from REMOTE connector.

2. Disconnect cable CX-13442/U from AUDIO connector.

b. At PA section front panel, perform the following:

1. Disconnect cable CX-13502/U from ANT connector.

2. Disconnect cable CX-13503/U from J7 connector.

c. At rear location on PA section, disconnect cable 565948-801 (W1) from connector J3.

d. Loosen two thumbscrews and brackets that secure the PA section to the ANNRC-83(V)3 mount and remove ANNRC-83(V)3 from mount.

5-12.3 Replacement.

Replacement is the reverse of removal.

5-13 RECEIVER-TRANSMITTER RT-1319B/URC (RT) REMOVAL AND REPLACEMENT.

5-13.1 Removal.

Proceed as follows:

a. Disconnect cable CX-13503/U from REMOTE connector.

b. Disconnect cable 566084-809 W2P2 connector from AUDIO connector.

c. Disconnect cable W2 from RF IN connector.

d. Loosen two thumbscrews and two brackets that secure the RT to the PA unit.

e. Pull RT forward and separate from PA unit.

5-13.2 Replacement.

Replacement is the reverse of removal.

5-14 RADIO AMPLIFIER AM-7176ANRC-83 (PA) REMOVAL AND REPLACEMENT.

5-14.1 Removal.

Proceed as follows:

a. Perform RT removal procedure given in paragraph 5-13.1.

b. Disconnect cable CX-13503/U from J7 connector.

c. Disconnect cable CX-13502/U from ANT connector.

d. Disconnect cable 565948-801 (W1) from J3 connector at PA rear panel location.

e. Loosen two thumbscrews and two brackets that secure the PA to the VRC-83 mount.

f. Pull PA forward and separate from mount.

5-14.2 Replacement.

Replacement is the reverse of removal.

5-15 KY-57 REMOVAL AND REPLACEMENT.

5-15.1 Removal.

Proceed as follows:

a. Disconnect cable 566084-809 W2P1 connector from RADIO connector.

b. Disconnect handset connector from AUDIO connector.

c. Disconnect cable CX-13421/U from rear connector location.

d. Loosen two thumbscrews that secure KY-57 to mount and separate KY-57 from mount.

5-15.2 Replacement.

Replacement is the reverse of removal.

5-16 AS-3588/GRC-206 REMOVAL AND REPLACEMENT.

5-16.1 Removal.

Proceed as follows:

a. At antenna offset mount location, remove four hex cap screws, lockwashers, and flatwasher holding cover onto mount.

b. Disconnect cable CX-13502/U connector at antenna element UHF connector.

c. Remove four hex cap screws, lockwashers, and flatwashers securing antenna element base to antenna offset mount and separate.

5-16.2 Replacement.

Replacement is the reverse of removal.

5-17 ANIPSN-11 REMOVAL AND REPLACEMENT.

5-17.1 Removal.

Proceed as follows:

a. Disconnect AN/PSN-11 external power cable from J4 connector.

b. Disconnect AN/PSN-11 to HAVE QUICK cable from J2 connector.

c. Separate AN/PSN-11 from mount base.

5-17.2 Replacement.

Replacement is the reverse of removal.

5-18 AN/PSN-11 MOUNTING BASE REMOVAL AND REPLACEMENT.

5-18.1 Removal.

Proceed as follows:

a. Perform AN/PSN-11 removal procedure given in paragraph 5-17.1.

b. Remove two hex cap screws, four flatwashers, two lockwashers, large flatwasher, spacer, and two hex nuts securing mounting base to vehicle front radio rack support arm.

c. Remove hex cap screw, flatwasher, and lockwasher securing mounting base to dashboard.

5-18.2 Replacement.

Replacement is the reverse of removal.

5-19 CABLE ASSEMBLY CX-13502/U REMOVAL AND REPLACEMENT.

5-19.1 Removal.

Proceed as follows:

a. Perform AS-3588/GRC-206 antenna removal procedure given in paragraph 5-16.1.

b. At rear fender antenna mount location, remove rain drip loop and gasket at fender opening for antenna cable.

c. Remove three cable loop clamps secured to the underside of the fender.

d. Remove grommet at fender inboard antenna passage opening location.

e. Route antenna end of cable through to the vechicle cab platform location.

f. Remove cable loop clamp securing the cable to the inboard fender side (if applicable).

g. Remove heat shield at roadside platform location (if applicable).

h. Remove two or four cable loop clamps (depending on installation) that secures the cable to the cab platform floor.

i. At the radio rack bottom shelf location, remove cable loop clamp securing the cable to the radio rack shelf.

j. Disconnect the cable from the PA ANT connector.

5-19.2 Replacement.

Replacement is the reverse of removal.

5-20 CABLE ASSEMBLY CX-13503U REMOVAL AND REPLACEMENT.

5-20.1 Removal.

Proceed as follows:

a. Disconnect cable connector end mated with REMOTE connector on ANNRC-83(V)3 RT unit.

b. Disconnect cable connector end mated with J7 connector on ANNRC-83(V)3 PA unit.

c. Disconnect AN/PSN-11 HAVE QUICK cable connector from remaining CX-13502/U connector.

5-20.1 Replacement.

Replacement is the reverse of removal.

5-21 CABLE ASSEMBLY 566084-809 REMOVAL AND REPLACEMENT.

5-21.1 Removal.

Proceed as follows:

a. At ANNRC-83(V)3 RT unit, disconnect cable at AUDIO connector.

b. At KY-57, disconnect cable at RADIO connector.

5-21.2 Replacement.

Replacement is the reverse of removal.

CHAPTER 6
DIRECT SUPPORT MAINTENANCE INSTRUCTIONS

6-1 GENERAL INFORMATION.

This chapter provides the AN/GRC-240 maintenance instructions for use by direct support maintenance personnel. Corrective maintenance is performed on items identified as faulty by unit maintenance personnel, but are beyond their capability to correct using the maintenance resources authorized at the unit maintenance level. Direct support maintenance tasks are specified in the Maintenance Allocation Chart (MAC) given in Appendix B.

The direct support maintenance for the AN/GRC-240 consists of cable test and repair instructions.

Section I. TOOLS AND EQUIPMENT

6-2 DIRECT SUPPORT COMMON TOOLS AND EQUIPMENT.

For authorized common tools and equipment, refer to Appendix B, Maintenance Allocation Chart (MAC), Section III.

6-3 DIRECT SUPPORT REPAIR PARTS.

Repair parts are listed and illustrated in Appendix F, Repair Parts and Special Tools List (RPSTL).

Section II. CABLE MAINTENANCE

6-4 GENERAL INFORMATION.

Cable maintenance is limited to the test and repair of only the AN/GRC-240 cables supplied as a part of the MK-2827/GRC-240 installation kit. For cable maintenance of the ANNRC-83M3 supplied cables, refer to TM 11-5820-1148-14&P.

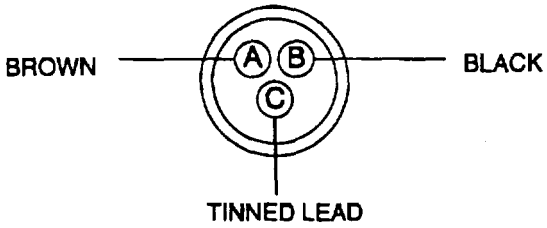
6-5 CABLE 428-0141-040 CONNECTOR INSTALLATION.

The 428-0141-040 cable is supplied with only one connector wired in place. To install the MS3106A10SL3 connector, proceed as follows:

a. Slide the backshell portion of connector assembly over the base end of the AN/PSN-11 to HQ II cable, with the threaded end toward the wire leads.

b. Slide insulator retainer over cable. Position insulator over wires.

c. Solder cable wires to connector pins, as shown below.



6-6 CABLE CONTINUITY CHECKS.

Refer to Figure 6-1. Use this figure to perform the cable continuity checks.

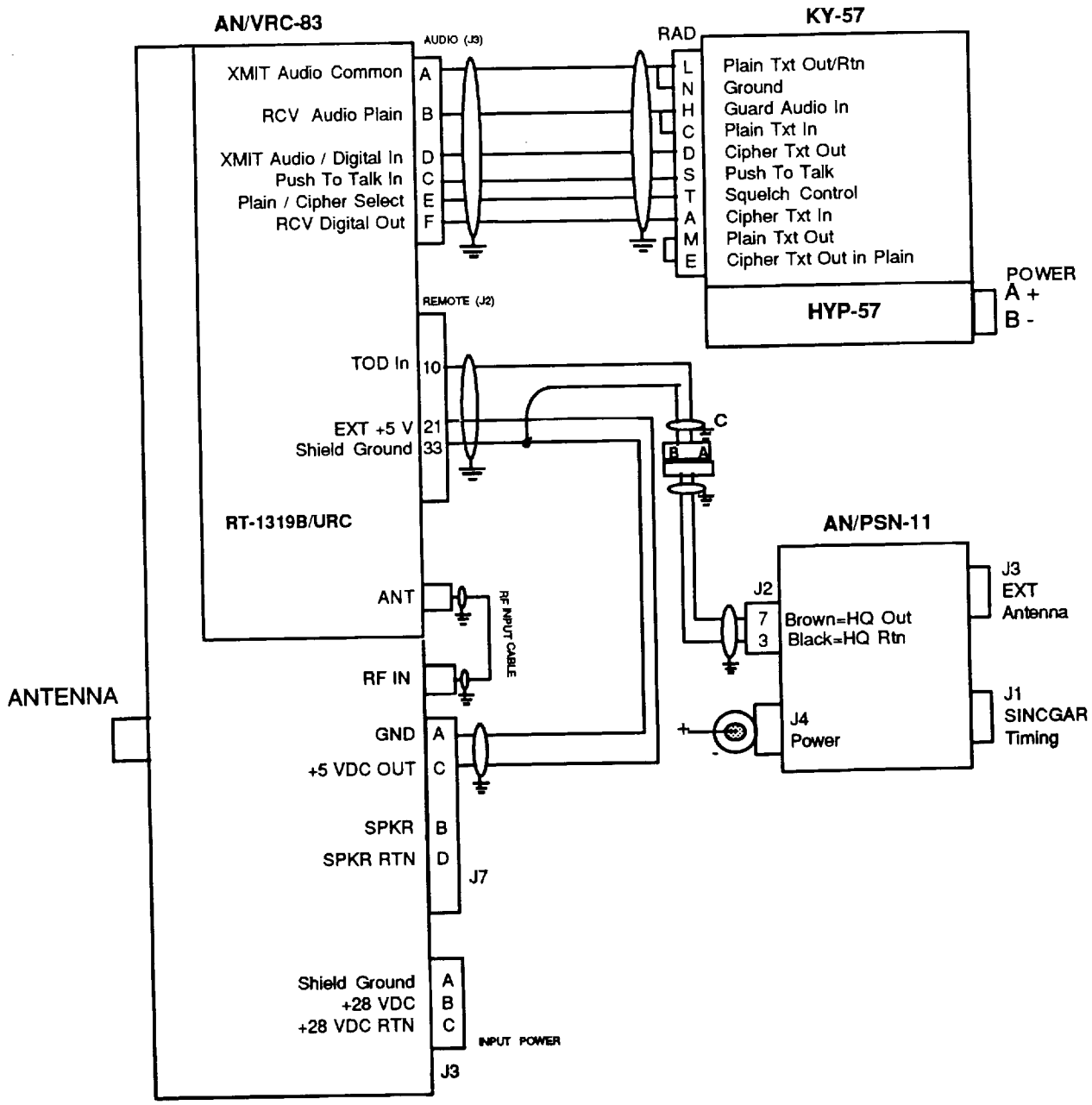


Figure 6-1. Cable Continuity Diagram

6-7 CABLE REPAIR INSTRUCTIONS.

TO BE SUPPLIED

APPENDIX A

REFERENCES

A-1 SCOPE.

This appendix contains lists of all Army regulations, pamphlets, forms service and supply bulletins, technical bulletins, and technical manuals referenced in this manual and manuals that cover components of this equipment.

A-2 ARMY REGULATIONS.

(C) AR 380-40	The Department of the Army Policy for Safeguarding COMSEC information (U)

A-3 DEPARTMENT OF THE ARMY PAMPHLETS (DA PAM's).

DA PAM 25-30	Consolidated Index of Army Publications and Blank Forms
(C) DA PAM 310-9	Index of Communications Security (COMSEC) Publications (U)
DA PAM 738-750	The Army Maintenance Management System (TAMMS)

A-4 FORMS.

DA Form 2404	Equipment Inspection and Maintenance Worksheet
DA Form 2028	Recommended Changes to Publications and Blank Forms
DA Form 2028-2	Recommended Changes to Equipment Technical Publications
SF-361	Transportation Discrepancy Report (TDR)
SF-364	Report of Discrepancy (ROD)
SF-368	Product Quality Deficiency Report

A-5 SERVICE BULLETINS AND SUPPLY BULLETINS (SB's).

SB 11-6	FSC Class 6133: Primary Battery Supply Data.
SB 11-30	FSC Class 6735: Primary Battery Management Data
SB 11-573	Painting and Preservation Supplies Available for Field Use for Electronics Command Equipment
SB 11-700	Installation Kits for Communications Security Equipment
TB 708-41/42	Federal Supply Code for Manufacturers; United States and Canada Name-to-Code and Code-to-Name (GSA-FSS-H4-1/H4-2)

A-6 TECHNICAL BULLETINS.

TB 43-0130	Instructions for Use, Handling, Transportation, and Disposal of Lithium-Sulfur Dioxide Batteries

A-6 TECHNICAL BULLETINS (CONTINUED).

TB 380-41	Procedures for Safeguarding, Accounting, and Supply Control of COMSEC Material (U)
TB 43-0125	Installation of Communications-Electronic Equipment: Hookup of Electrical Cables to Mobile Generator Sets on Fielded Equipment to Meet Electrical Safety Standards
TB 380-40-2	Security Provisions for Use of the TSEC-KY-57 and TSEC/KY-58(U)
TB-385-4	Safety Precautions for Maintenance of Electrical/Electronic Equipment

A-7 TECHNICAL MANUALS.

TO 31 R2-2VRC83-3	Depot Maintenance Manual for Radio Set ANNRC-83(V)3
TO 31 R2-2VRC83-2	Intermediate Maintenance Instructions with Illustrated Parts Breakdown for Radio Set ANNRC-83(V)3
TO 31 R2-2VRC83-2-1	Supplemental Intermediate Maintenance Instructions with Illustrated Parts Breakdown for Radio Set ANNRC-83(V)3
TM 11-5820-1147-13&P-1 (TO 31R2-2URC62)	Intermediate Maintenance Instructions with Illustrated Parts for Receiver-Transmitter RT-1319/URC
TM 11-5820-1147-13&P-2 (TO 31R2-2URC62-1)	Supplemental Intermediate Maintenance Instructions with Illustrated Parts Breakdown for Receiver-Transmitter RT-1319B/URC
TO 31R2-2TRC176-1	Operators Manual for Radio Set AN/TRC-176(V)1 P/N 706710-801 for Radio Set ANITRC-176(V)
TO 31R2-2TRC176-1-1	Supplemental Operators Manual for Radio Set AN/TRC-176(V)2 (P/N 706710-802) for Radio Set AN/TRC-176(V)1.
TO 3142-2TRC176-1	Maintenance Instructions with Illustrated Parts Breakdown, (Intermediate Level), Radio Set, Type AN/TRC-176(V)1 (P/N 706710-801) for Radio Set AN/TRC-176(V)1
TO 31 R2-2GRC206-1	Operators Manual for Radio Communications System AN/GRC-206(V)1 (P/N 707167-801) and AN/GRC-206(V)2 (P/N 707167-801) for Radio Communications System AN/GRC-206(V)
TO 31 R2-2GRC206-1-1	Supplemental Operators Manual for Radio Communications System AN/GRC-206(V)3 (P/N 707167-803) for Radio Communications System AN/GRC-206(V)3
TO 31 R2-2GRC206-2	Maintenance Instructions with Illustrated Parts Breakdown, Intermediate Level, Radio Communication System AN/GRC-206)1, and Radio Communication System AN/GRC-206(V)2 for Radio Communication System(s) AN/GRC-206(V)
TO 31 R2-2GRC206-2-1	Supplemental Maintenance Instructions with Illustrated Parts Breakdown, Intermediate Level, Radio Communication System AN/GRC-206(V)3 (P/N 707167-903) for Radio Communication System AN/GRC-206(V)3
TO 31R2-2VRC83-1	Operators Manual for Radio Set, Type ANNRC-83(V)1 P/N 707123-801) for Radio Set ANNRC-83(V)1

A-7 TECHNICAL MANUALS (CONTINUED)

TO 31R2-2VRC83-1-1	Supplemental Operator's Manual for Radio Set, Type AN/RC-83(V)2 for Radio Set ANNRC-83(V)2
TO 31 R2-2PRC1 13-1	Operator's Manual for Radio Set AN/PRC-1 13(V) (P/N 706738-801) for Radio Set AN/PRC-113(V)1
TO 31 R2-2PRC113-1-1	Supplemental Operator's Manual for Radio Set AN/PRC-113(V)3 (P/N 706738-803) for Radio Set AN/PRC-113(V)3
TO 33D7-71-46-1	Maintenance Instructions with Illustrated Parts Breakdown for Radio Test Set AN/GRM-115 (Magnavox P/N 811843-801)
TM 11-5810-308-12&P	Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tools List) for Communications Security Equipment TSEC/KG-84 (NSN 5810-01-068-3693)
TM 11-5825-291-13	Operations and Maintenance Manual for Satellite Signal Navigation Set for AN/PSN-11
TM 11-5870-312-12-4	Operator's and Organizational Maintenance Manual Installation Kits for Communications Set
TM 11-5820-1149-14&P	Operator's Unit, and General Support Maintenance Manual Including Spare Parts and Special Tools List) for Radio Set ANNRC-83(V)3
TM 43-0139	Painting Instructions for Army Materiel
TM 750-244-2	Procedures for Destruction of Electronics Materiel to Prevent Enemy Use (Electronics Command)

A-8 MISCELLANEOUS PUBLICATIONS.

CTA 50-970	Expendable/Durable Items (Except: Medical, Class V, Repair Parts, and Heraldic Items)
SC 5180-91-CL-R07	Tool Kit, Electronic Equipment TK-105/G (NSN 5180-00-610-8177)
SC 5180-91-CL-RI-3	Tool Kit, Electronic Equipment TK-101/G (NSN 5180-00-064-5178)
FM-21-11	First Aid for Soldiers

APPENDIX B
MAINTENANCE ALLOCATION

Section I. INTRODUCTION

B-1 SCOPE.

This appendix provides a summary of the maintenance operations for Radio Set AN/GRC-240. It authorizes levels of maintenance for specific maintenance functions of repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

B-2 MAINTENANCE FUNCTION.

Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.

b. Test. To verify serviceability and to detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition, i.e., to clean (decontaminate), to preserve, to drain, to paint, or to replenish fuel, lubricants, hydraulic fluids, or compressed air supplies.

d. Adjust. To maintain, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to the specified parameters.

e. Align. To adjust specified variable elements of an item to bring about optimum or desired performance.

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipment's used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. Install. The act of emplacing, seating, or fixing into position an item, part, module (component or assembly) in a manner to allow the proper functioning of the equipment or system.

h. Replace. The act of substituting a serviceable like type part, subassembly, or module (component or assembly) for an unserviceable counterpart.

I. Repair. The application of maintenance services (inspect, test, service, adjust, align, calibrate, replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, remachining, or resurfacing) to restore serviceability to an item by correction specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

j. Overhaul The maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (i.e., DMWR) in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours, miles, etc.) considered in classifying Army equipment's/components.

B-3 EXPLANATIONS OF COLUMNS IN THE MAC (Section II).

a. Column 1, Group Number. Column 1 lists group numbers, the purpose of which is to identify components, assemblies, subassemblies, and modules with the next higher assembly.

b. Column 2, Component/Assembly. Column 2 contains the noun names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column 3, Maintenance Functions. Column 3 lists the functions to be performed on the item listed in Column 2. When items are listed without maintenance functions, it is solely for purpose of having the group numbers in the MAC and RPSTL coincide.

d. Column 4, Maintenance Level. Column 4 specifies, by the listing of a "work time" figure in the.appropriate subcolumn(s), the lowest level of maintenance authorized to perform the function listed in Column 3. This figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance levels, appropriate "work time" figures will be shown for each level. The number of task-hours specified by the "work time" figure represents the average time required to restore an item (assembly, subassembly, component, module, end item or system) to a serviceable condition under typical field operating conditions. This time includes preparation time, troubleshooting time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. Subcolumns of Column 4 are as follows:

C = Operator/Crew
O = Unit Maintenance/Aviation Unit Maintenance
F = Direct Support Maintenance/Aviation Intermediate Maintenance
H = General Support Maintenance

e. Column 5, Tools and Equipment Column 5 specifies by code, those common tool sets (not individual tools) and special tools, test, and support equipment required to perform the designated function.

f. Column 6, Remarks. Column 6 contains an alphabetic code which leads to the remark in Section IV, Remarks, which is pertinent to the item opposite the particular code.

B-4. TOOL AND TEST EQUIPMENT REQUIREMENTS (Section III).

a. Tool or Test Equipment Reference Code. The numbers in this column coincide with the numbers used in the tools and equipment column of the MAC. The numbers indicate the applicable tool or test equipment for the maintenance functions.

b. Maintenance Level. The codes in this column indicate the maintenance level allocated the tool or test equipment.

c. Nomenclature. This column lists the noun name and nomenclature of the tools and test equipment required to perform the maintenance functions.

d. National/NATO Stock Number. This column lists the National/NATO stock number of the specific tool or test equipment.

e. Tool Number. This column lists the manufacturer's part number of the tool followed by the Federal Supply Code for manufacturers (5-digit) in parentheses.

B-5 EXPLANATION OF COLUMNS IN REMARKS (Section IV).

a. Reference Code. This code refers to the appropriate item in Section II, Column 6.

b. Remarks. This column provides the required explanatory information necessary to clarify items appearing in Section II.

Section II. MAINTENANCE ALLOCATION CHART FOR RADIO SET AN/GRC-240

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINT. FUNCT.	(4) MAINTENANCE CATEGORY C	O	F	H	D	(5) TOOLS AND TEST EQUIPMENT	(5) REMARKS
00	Radio Set AN/GRC-240	Inspect		0.1					A
		Service		0.2					B
		Install			4.0			1-5,11,12	C
		Test		0.2					D
		Test			0.3			5	E
		Replace		3.0					
		Repair		0.5				1-4,11	E
01	Radio Set ANNRC-83(V)3 707123805	Replace		0.2					G
		Repair							G
0101	Receiver-Trans-mitter RT-1319B/URC 914858-804	Replace		0.1					H
		Repair							H
0102	Amplifier, RF AM-7176ANRC 811830-802 (A2)	Replace		0.1					G
		Repair							G
02	Installation Kit Electronic Equip-ment MK-2827/GRC-240	Install		4.0				1-5,11,12	C,S
		Replace		2.5					F,M
		Repair		0.5					
0201	Cable Assembly, Special Purpose Electrical CX-13502/U A3210480	Replace		0.5				1	
		Test		0.3				5	1
		Repair			0.5			1	J
		Test			0.5			5	I
0202	Cable Assembly, Special Purpose Electrical CX-13503/U A3210486	Replace		0.1					
		Test		0.3				5	1
		Repair			0.5			1,610	K
		Test			0.5			5	1
0203	Cable Assembly, Power, Electrical, CX-13421/U A3157544-3	Replace		0.5				1	
		Test		0.3				4	1
		Repair			0.5			1,7,8	L
		Test			0.5			5	I
0204	Cable Assembly, Special Purpose, Electrical, 566084-809	Replace		0.1					
		Test		0.3				4	1

Section II. MAINTENANCE ALLOCATION CHART FOR RADIO SET AN/GRC-240 (CONTINUED)

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINT. FUNCT.	(4) MAINTENANCE CATEGORY C O F H D	(5) TOOLS AND TEST EQUIPMENT	(5) REMARKS
0205 1	Mounting Base,	Replace M	0.3		
	Electrical Equip- ment A3210478	Repair M	0.3		1
03 1	Navigation Set,	Replace N	0.2		
	Satellite Signals AN/PSN-11	Repair N			
04 1	Communications	Replace O		02	
	Security Equipment (COMSEC) KY-57	Repair			
05	Antenna 1	Replace P,Q		0.3	
	AS-3588/GRC-206 11	Test		0.5	
		Repair R		X	

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS FOR AN/GRC-240

REFERENCE CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL* NUMBER
1	O,F	Tool Kit, Electronic		
	5180-00-064-5178	TK-101/G		
2	O	Wrench, Box and Open (1 1/16-inch)**		
3	O	Tool Kit, General Mechanics		5180-00-177-7033
4	O	Tool Kit, Blind Rivet		5180-01-201-4978
	D-100-MIL-1			
5	O,F	Voltmeter, Digital		
	6625-01-139-2912	AN/PSM-45		
6	F	Insertion/Extraction Tool		5120-00-018-0575
	MS1969/14-1			
7	F	Inserter, Electrical Contact		5120-00-079-4599
	MS24256A16			
8	F	Remover, Electrical Contact		5120-00-079-4602
	MS24256R16			
9	F	Inserter, Electrical Contact		5120-01-131-0140
	CIT-16			
10	F	Remover, Electrical Contact		5120-00-941-5470
	CIT-16-4			
11	O	Plus Nut Tool***		5120-679-6523
	C772-3118			
12	O	Hole Saw Set**		

* The following is a list of recommended tools and test equipment. Use of equivalent is permissible.

** Required at time of installation.

*** Plus nut tool (Item 11) required at installation. Supplied to installers during initial fielding only. One per site will be provided.

Section IV. REMARKS FOR RADIO SET AN/GRC-240

REFERENCE CODE	REMARKS
A	Visual Inspection. Inspect unit for visible physical damage and completeness.
B	By cleaning and touch-up pain.
C	Requires lowering of fuel tank on M998 Series Vehicles (HMMWV). This task is performed by MOS 63B, Light Wheeled Mechanic. Refer to TM 9-2320-280-20
D	Operational test.
E	Fault isolate to defective LRU's such as RT-1319B/URC, AM-7176A/ VRC-83, KY-57, AN/PSN-11, AS-3588/GRC-206, HYP-57, and. defective cable assemblies. Replaces defective H-250/U handset which is not repairable.
F	Replaces cable assemblies and installation hardware.
G	Refer to TM 11-5820-1149-14&P for maintenance allocation.
H	Refer to TM 11-5820-1147-13&P-1 and TM 11 -5820-1147-13&P-2 for maintenance instructions.
I	Continuity checks.
J	Repair by replacement of connectors.
K	Repair by replacement of connectors or contacts.
L	Repair by replacement of contacts, connector, or terminal lugs.
M	Replacement of component hardware.
N	Refer to TM 11 -5825-291-13 for maintenance instructions.
O	Refer to TM 11-5810-256-12 for maintenance instructions
P	System operational check of antenna.
Q	Test as part of next higher assembly.
R	Return to Air Force depot for repair.
S	Cable assembly 426-0141-040 comes with one end unterminated.. Connector MS3106E O10SL must be attached to cable 426-0141-040 (AN/PSN-11 to HAVEQUICK II) before use.

APPENDIX C
COMPONENTS OF END ITEM LIST AND BASIC ISSUE ITEMS

Section I. INTRODUCTION

C-1 SCOPE.

This appendix lists the Components of End Item (COEI) and the Basic Issue Items (Bll) for Radio Set AN/GRC- 240. These lists are to be used to inventory items for safe and efficient operation.

C-2 SECTION **II, COMPONENTS** OF END ITEM (COEI).

This section identifies the items, which when assembled, comprise the AN/GRC-240. It is not authority to requisition replacements. The items identified must accompany the AN/GRC-240 whenever issued or if it is transferred between property accounts. The illustrations will enable positive identification of the items.

C-3 SECTION III, BASIC ISSUE ITEMS (BII).

This section identifies the items required to place the AN/GRC-240 in operation, to operate it, and to perform emergency repairs. The Bll must be with the AN/GRC-240 during operation and whenever it is transferred between property accounts. This manual is the authority to request/requisition replacement Bll based on TOE/MTOE authorization of the end item.

C-4 EXPLANATION OF COLUMNS.

C-4.1 Column (1) Illustration Number.

This column indicates the illustration number (ILLUS NO) in which the item is shown.

C-4.2 Column (2) National Stock Number.

This column indicates the National Stock Number (NSN) assigned to the item and will be used for requisitioning purposes.

C-4.3 Column (3) Description CAGEC and Part Number.

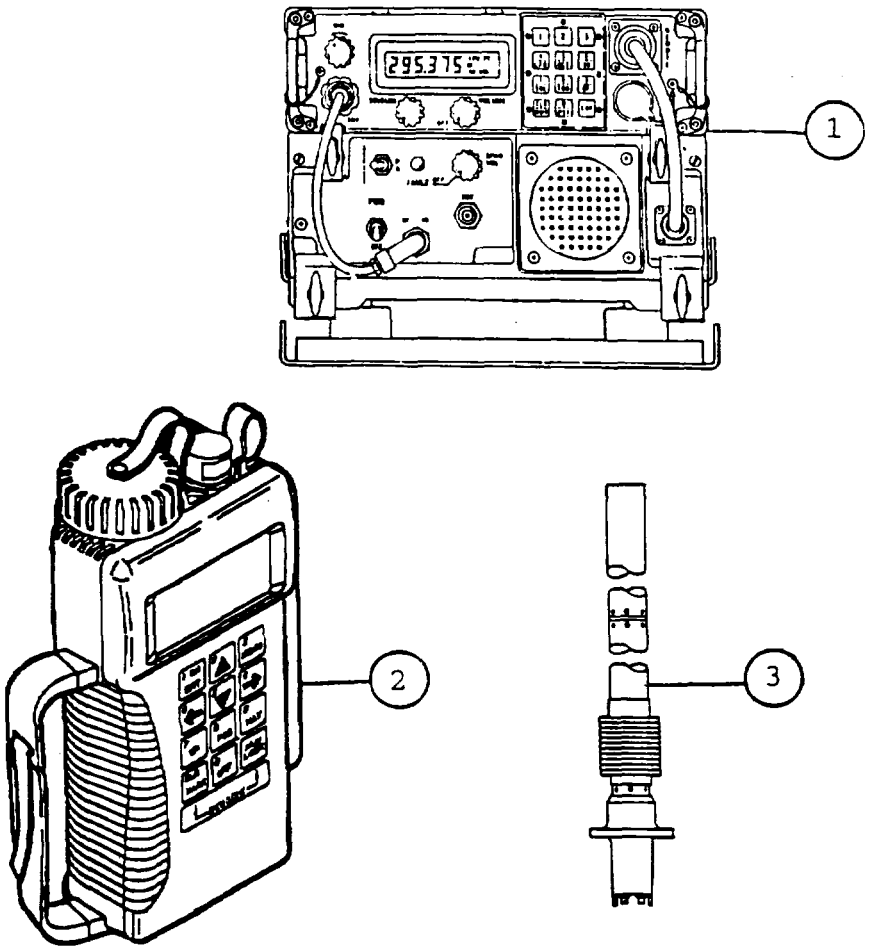
This column indicates the NSN name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the Commercial and Government Entity code (CAGEC) (in parenthesis) followed by the part number. If items needed differs for different models of the AN/GRC-240, the model is shown under the Useable On Code heading in this column.

C-4.4 Column (4) Unit of Measure.

This column indicates the unit of measure (U/M) used in performing the actual operational/maintenance function. This measure is expressed by EA (each).

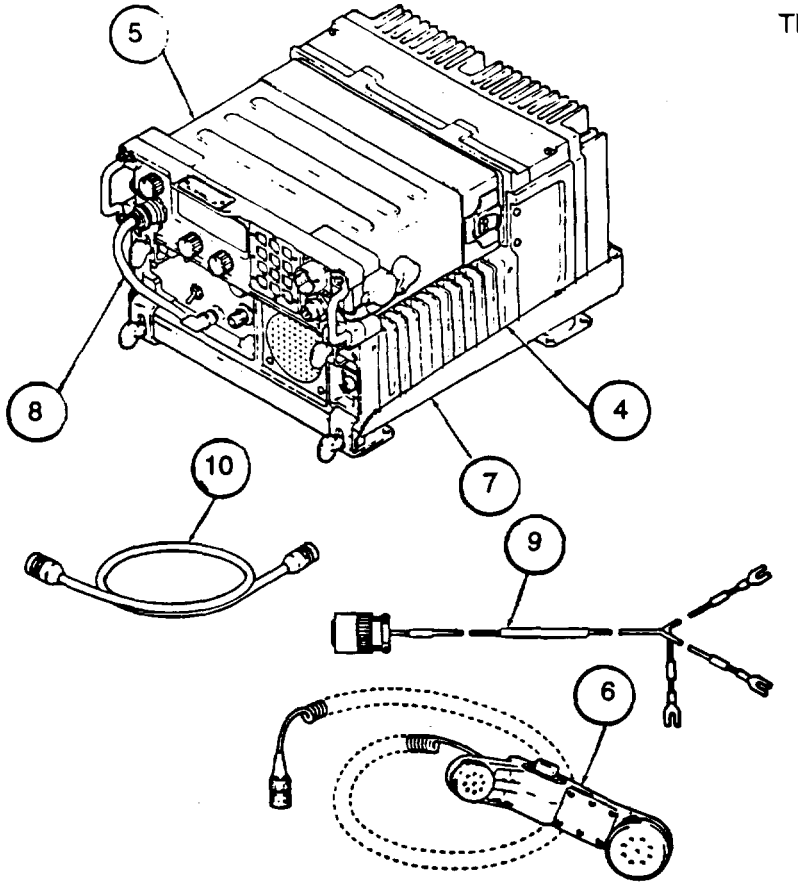
C-4.5 Column (5) Quantity Required.

Indicates the quantity required (QTY RQD) of the item authorized to be used with or on the AN/GRC-240.



(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, (CAGEC) AND PART NUMBER	USABLE ON CODE	(4) U/M	(5) QTY RQD
	5820-01-407-1228	Radio Set AN/GRC-240 A3210476 consisting of:		EA	1
1	5820-01-291-5415	Radio Set, ANNRC-83(V)3 (37695) 707123-805	EA	1	
2	5825-02-374-6643	Navigation Set, Satellite Signal AN/PSN-11 (13499) 822-0077-002	EA	1	
3	5985-01-110-1051	Antenna, UHFNHF AS-3588/GRC-206 (37695) 626489-1	EA	1	

Figure C-1. AN/GRC-240 COEI (Sheet 1 of 7)

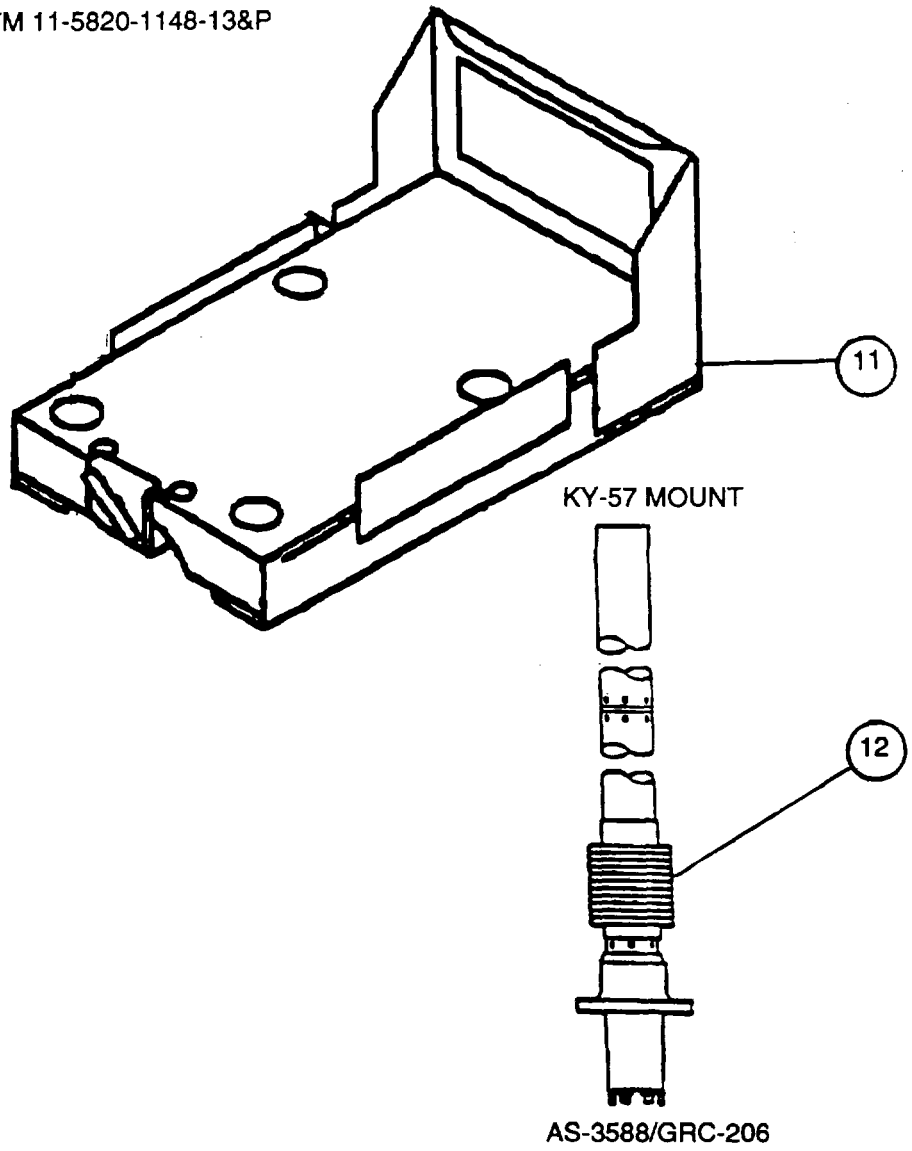


AN/VRC-83(V)3

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, (CAGEC) AND PART NUMBER	USABLE ON CODE	(4) U/M	(5) QTY RQD
		Radio Set, ANNRC-83(V)3 (37695) 707123-805 consisting of:		EA	1
4	5820-01-286-8792	Receiver-Transmitter RT-1319B/URC (37695) 914858-804		EA	1
5	5820-01-193-7347	Amplifier, Radio Frequency AM-7176ANRC (37695) 811830-802		EA	1
6	5965-00-043-3463	Handset H-250/U (81349)		EA	1
7	5820-01-192-0722	Mount, VRC-83(V) (37695) 812097-803		EA	1
8	5995-01-154-1957	Cable Assembly, RF Input M39012/200101 (37695) 565948-801 (W2)		EA	1
9	5995-01-154-1953	Cable Assembly, Input Power (37695) 565949-801 (W1)		EA	1
10	5995-01-154-0138	Cable Assembly, Control (37695) 566033-809 (W4)		EA	1

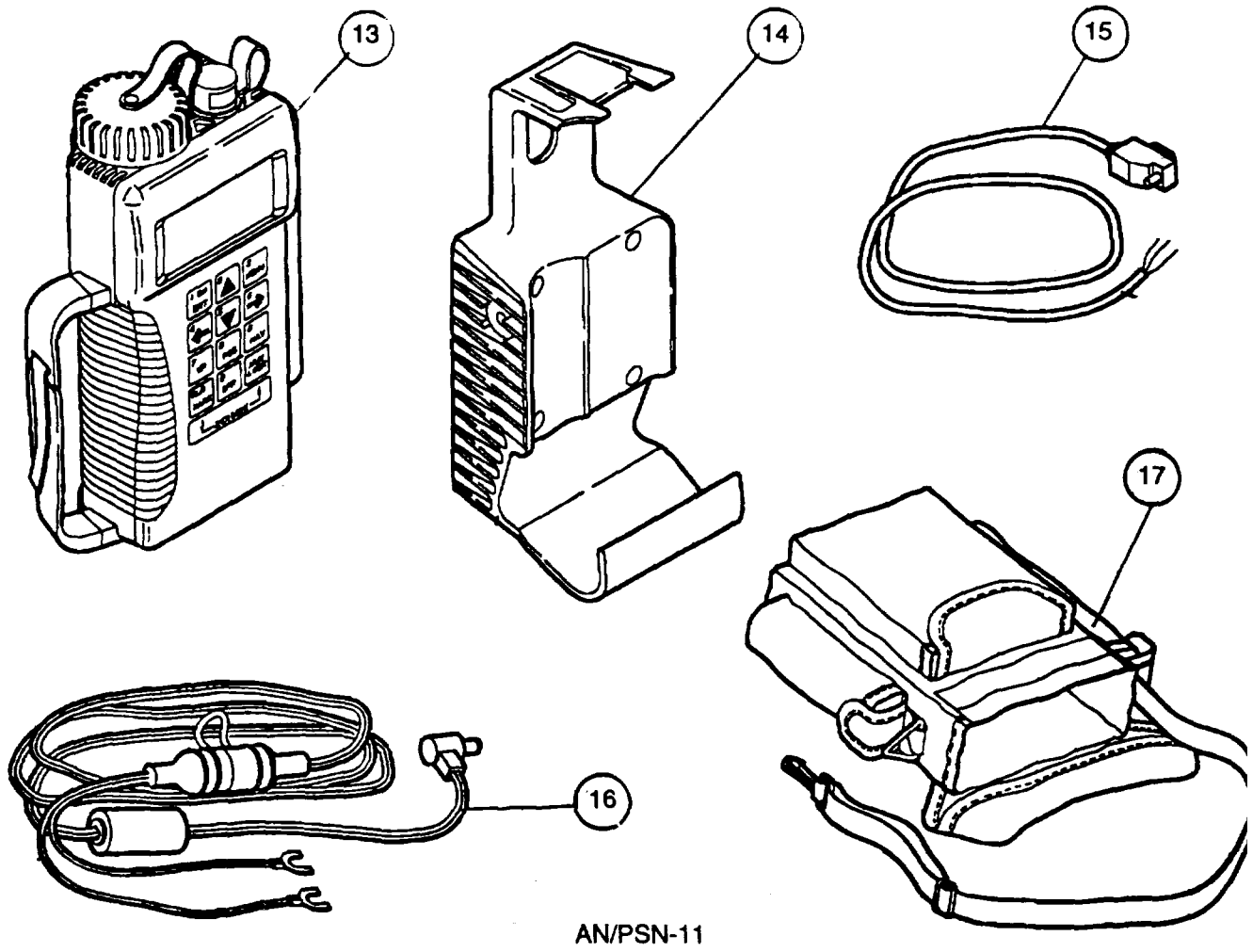
Figure C-1. AN/GRC-240 COEI (Sheet 2 of 7)

TM 11-5820-1148-13&P



(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, (CAGEC) AND PART NUMBER	USABLE ON CODE	(4) U/M	(5) QTY RQD
11	5810-01-057-6524	Mounting Base, Electrical Equipment, MT-4626/URC (80063) DL-SC-B-884714		EA	1
12	5985-01-110-1051	Antenna, UHFNHF AS-3588/GRC-206 (37695) 626489-1		EA	1

Figure C-1. AN/GRC-240 (Sheet 3 of 7)



AN/PSN-11

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, (CAGEC) AND PART NUMBER	USABLE ON CODE	(4) U/M	(5) QTY RQD
13	5825-01-374-6643	Navigation Set, Satellite Signal, AN/PSN-11 (13499) 822-0077-002		EA	1
14	5975-01-375-1302	Mount (13499) 986-0645-001		EA	1
15	6150-01-375-8665	Cable Assembly, Special (AN/PSN-11 to HAVE QUICK CABLE) (OPRZ1) 426-0141-040		EA	1
16	6150-01-375-8661	Cable Assembly, Power (AN/PSN-11 External Power Cable) (82389) 426-0144-010		EA	1
17	5895-01-375-7528	Case Nylon (Personnel) (31586) 021-0706-010		EA	1

Figure C-1. AN/GRC-240 COEI (Sheet 4 of 7)

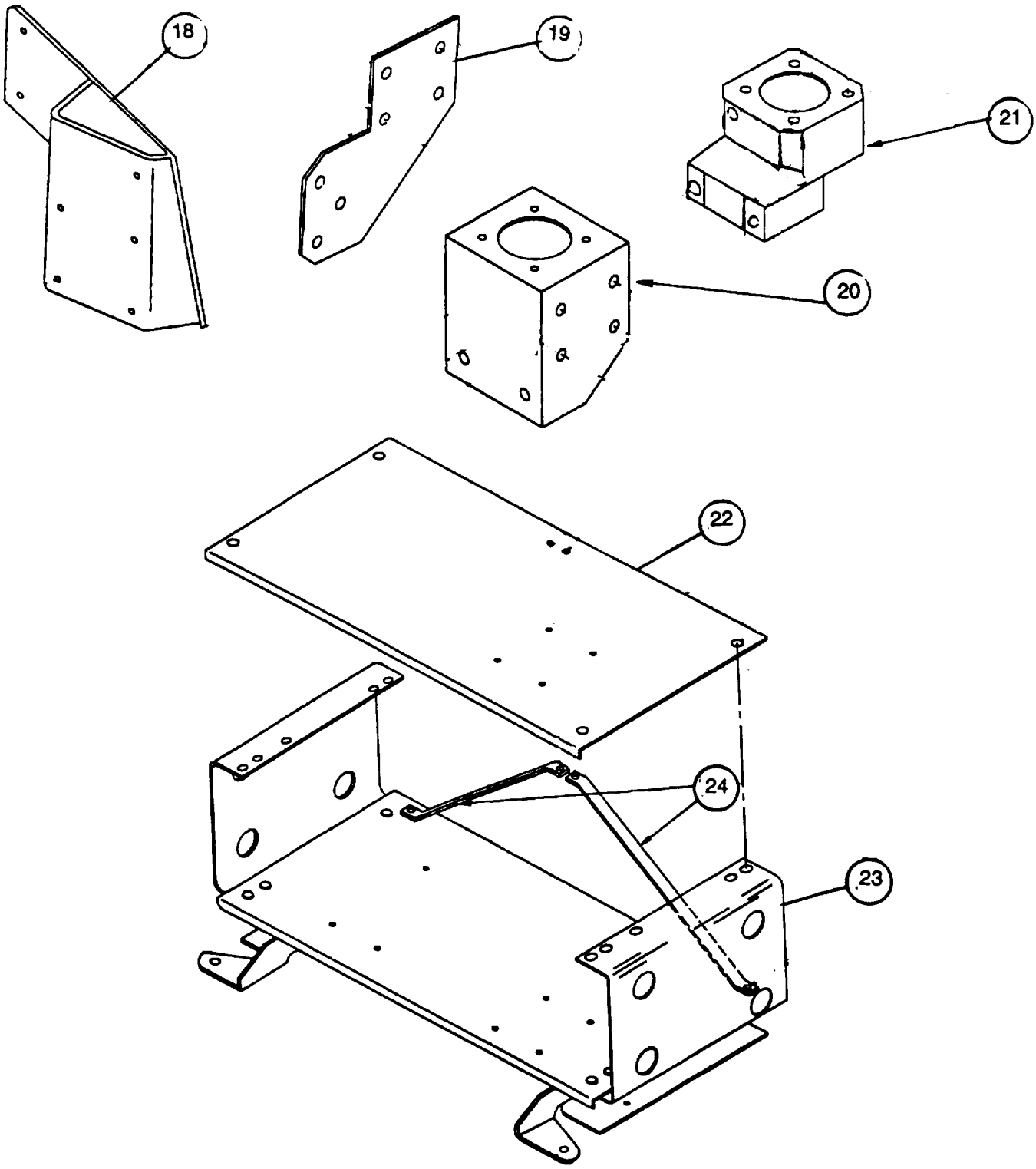


Figure C-1. AN/GRC-240 COEI (Sheet 5 of 7)

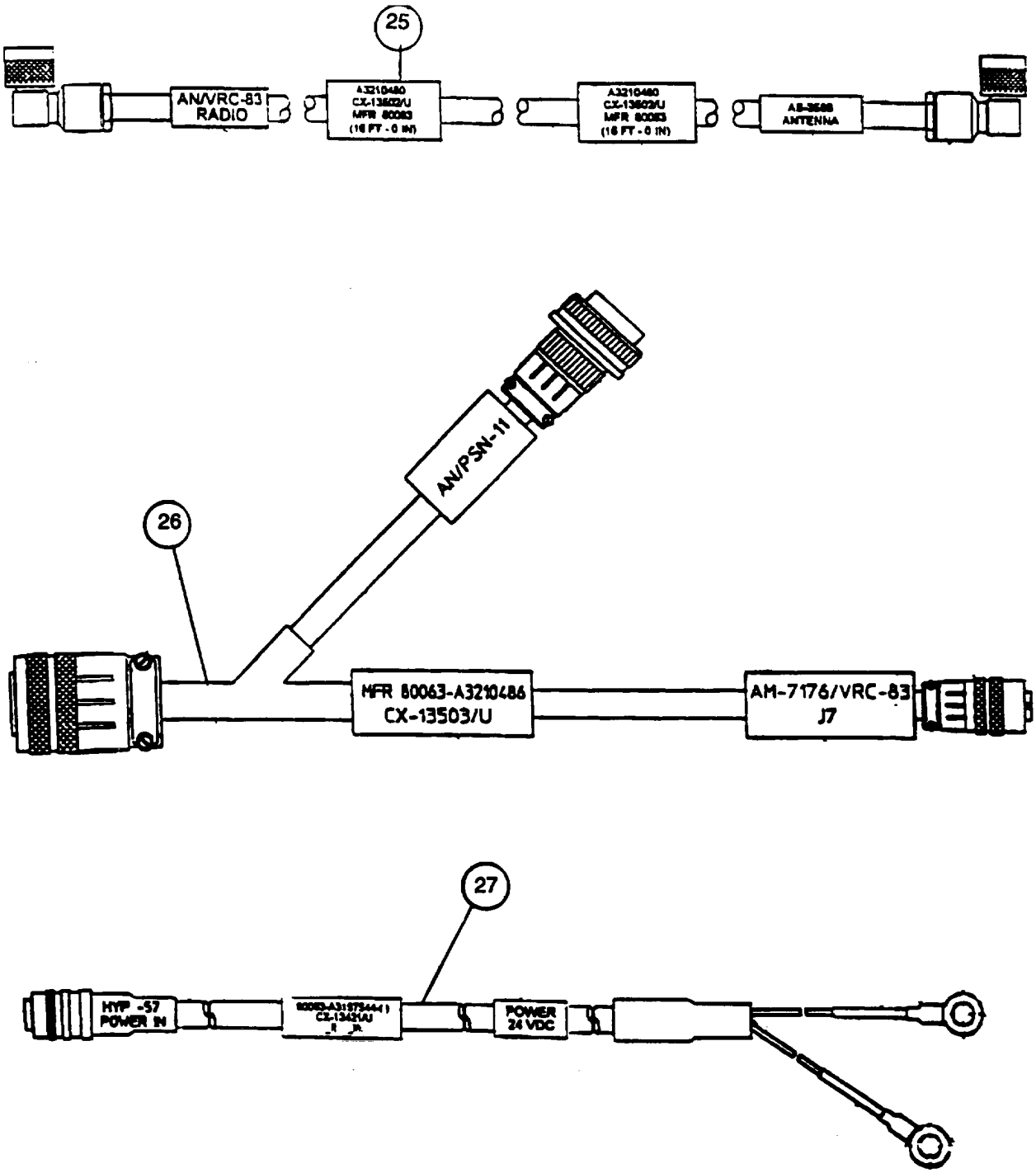
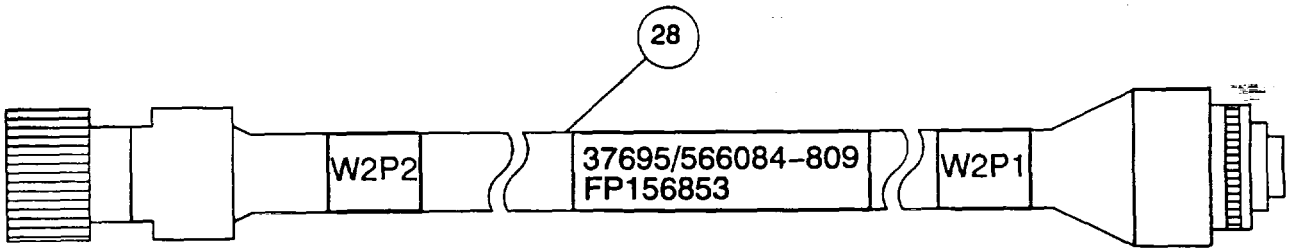


Figure C-1. AN/GRC-240 COEI (Sheet 6 of 7)

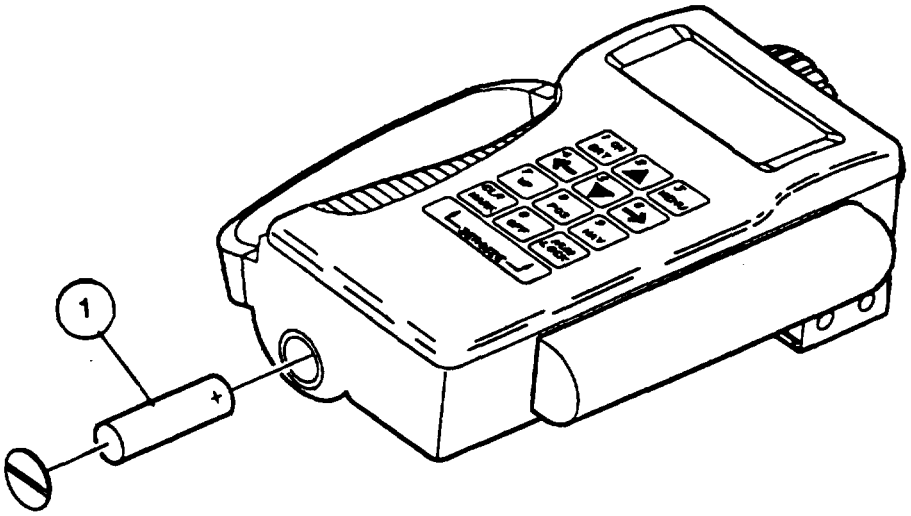


MK-2827/GRC-240

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, (CAGEC) AND PART NUMBER	USABLE ON CODE	(4) U/M	(5) QTY RQD
	5895-01-408-5166	Kit, Installation, Electrical Equipment MK-2827/GRC-240 (AN/GRC-240 Mount) (20309) A3210473 consisting of:		EA	1
18	5975-01-375-1302	AN/PSN-11 Installation Mount (13499) 986-0645-001		EA	1
19		Plate, Metal A3103782		EA	1
20		Support, Antenna A3103782		EA	1
21		Antenna Mount, Offset A3046223		EA	1
22		Plate, Mounting A3210477		EA	2
23		Bracket, Radio Rack A3046235		EA	2
24		Bracket Double ANGLE A3046237		EA	2
25		ANNRC-83(V)3 to AS-3588/GRC-206 Antenna Cable CX-13502/U A3210480		EA	1
26		ANNRC-83(V)3 Control "Y" Cable CX-1 3503/U A3210486		EA	1
27	5995-01-340-9692	Cable Assembly, Power, Electrical CX-13421/U A3157544-3		EA	1
28	5995-01-224-8698	KY-57 Audio Cable (36") (37695) 566084-809		EA	1

Figure C-1. AN/GRC-240 COEI (Sheet 7 of 7)

Section III. BASIC ISSUE ITEMS



AN/PSN-11

ILLUS NO	NATIONAL STOCK NUMBER	DESCRIPTION, (CAGEC) AND PART NUMBER	USABLE ON CODE	U/M	QTY RQD
1	6135-01-301-8776	Battery, Lithium, LS6BA (Memory Battery) (31586) 221-0500-020		EA	1

TECHNICAL MANUALS

ILLUS NO	NATIONAL STOCK NUMBER	DESCRIPTION, (CAGEC) AND PART NUMBER	USABLE ON CODE	U/M	QTY RQD
		TM 11-5820-1148-13&P: Unit, Organizational, Direct Support Maintenance Instructions , AN/GRC-240		EA	1
		TM 11-5825-291-13: Operations and Maintenance Manual for Satellite Signals Navigation Set AN/PSN-11		EA	1

Figure C-2. AN/GRC-240 BII

APPENDIX D

ADDITIONAL AUTHORIZATION LIST

Section I. INTRODUCTION

D-1 SCOPE.

This appendix lists the additional items that are authorized for the support of Radio Set AN/GRC-240

D-2 SECTION II, ADDITIONAL AUTHORIZATION LIST.

This section identifies items that do not have to accompany the AN/GRC-240 and do not have to be transferred between property accounts.

D-3 EXPLANATION OF COLUMNS.

D-4.1 Column (1) National Stock Number.

This column indicates the National Stock Number (NSN) assigned to the item and will be used for requisitioning purposes.

D-4.2 Column (2) Description CAGEC and Part Number.

This column indicates the NSN name and, if required, a minimum description to identify the item. The last line for each item indicates the Commercial and Government Entity Code (CAGEC) (in parenthesis) followed by the part number.

D-4.3 Column (3) Unit of Measure.

This column indicates the unit of measure (U/M) used in performing the actual operational/maintenance functions. This measure is expressed by EA (each).8

D-4.4 Column (4) Quantity Required.

Indices the quantity required (QTY RQD) of the additional item authorized to be used with or on the AN/GRC-240 item

Section II. ADDITIONAL AUTHORIZATION LIST

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION (CAGEC) AND PART NUMBER	(3) U/M	(4) QTY RQD
5965-01-128-1410	Headset H-157A/AIC (37695) 566656-801	EA	1
5965-01-194-5615	Headset, Audio Cable Assembly	EA	1
6135-01-036-3495	Battery, Lithium Organic, BA-5590/U	EA	2
6140-01-063-3918	Battery, BA-590/U	EA	2
8465-00-010-6475	Pack Frame	EA	1
8465-01-019-9101	Field Pack	EA	1
	Charger, Battery, CA-1 35 (110 Vac)	EA	1
	(37695) 813781-801	EA	1
	Charger, Battery, CA-136 (220 Vac) (37695) 813780-801	EA	1
	Charger, Battery CA-139 (11-30 Vdc)	EA	1
	(37695) 707579-801	EA	1
	Battery Case Assembly (37695) 810599-801	EA	1
	UHF Antenna 812058-1(	EA	1
5895-01-370-9410	MXF-109 MWOD/FMT Adapter 901971-801	EA	1
	Interface Cable Assembly 566083-812	EA	1

APPENDIX E
EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

E-1 SCOPE.

This appendix lists the expendable supplies and materials needed to operate and maintain the Radio Set AN/GRC-240.

E-2 SECTION II, EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST.

This list is for information purposes only and is not authority to requisition the listed items. These items are authorized for use by CTA 50-970, Expendable Items (Except Medical, Class V, Repair Parts and Heraldic Items).

E-3 EXPLANATION OF COLUMNS.

E-3.1 Column (1) Item Number.

The number in this column is assigned to the entry in the listing.

E-3.2 Column (2) Level.

This column identifies the lowest level of maintenance that requires the listed item. One of the following codes appears in this column:

C = Operator/Crew
0 = Unit Maintenance
DS = Direct Support

E-3.3 Column (3) National Stock Number.

This column indicates the National Stock Number (NSN) assigned to the item and will be used for requisitioning purposes.

E-3.4 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 Commercial and Government Entity Code (CAGEC) (in parenthesis) followed by the part number.

E-3.5 Column (5) U/M.

This column indicates the unit of measure (U/M) used in performing the actual operational/maintenance functions. This measure is expressed as one of the following:

EA = Each PT = Pint QT = Quart AR = As Required DZ. = Dozen YD = Yard
RI = Roll SH = Sheet

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
1	O	8305-00-222-2423	Cloth, Cheese, Lint-Free (81348) CCC-C-440	YD
2	O	6850-00-177-5095	Lubricant, Silicon MIL-S-8660	EA
3	O	5350-00-186-8854	Sandpaper, Fine, NO.0000	SH
4	O	8010-00-582-5318	Primer, Zinc Chromate	QT
5	O	8010-00-598-5648	Enamel, Semigloss, Light Green	QT
6	O	8010-00-297-0549	Enamel, Alkyd, Lusterless Gray	QT
7	O	8010-00-297-2124	Enamel, Semigloss, OD	QT
8	O	8020-00-262-9084	Brush, Paint, Flat, 1/2-inch	EA
9	O	7510-00-266-6712	Tape, Pressure Sensitive	RI
10	O	6850-00-105-3084	Cleaning Compound, Freon Type TF (10136) 02016	PT
11	O	8030-00-811-3723	Corrosion Resistant Coating, Aodine 600	EA

APPENDIX F
OPERATORS, UNIT, AND DIRECT SUPPORT MAINTENANCE
REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL)

Section I. INTRODUCTION

F-1 SCOPE.

This appendix lists and authorizes spares and repair parts special tools; special test, measurement and diagnostic equipment (TMDE), and other special support equipment required for the performance of unit maintenance of Radio Set AN/GRC-240. It authorizes the requisitioning, issue, and disposition of spares, repair parts and special tools as indicated by the source, maintenance, and recoverability (SMR) codes.

F-2 GENERAL INFORMATION.

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

b. Section II, Special Tools List. Not applicable. A list of special tools, special TMDE, and other special support equipment authorized by this RPSTL as indicated by Basis of Issue (BOI) information [column (5)] for the performance of maintenance.

c. Section IV. Cross-Reference Indexes. 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 listing. National stock numbers and part numbers are cross-referenced to each illustration figure and item number appearance. The figure number and item number index lists figure and item numbers in numeric sequence and cross-references national stock number. Commercial and Government Entity Code (CAGEC), and part numbers.

F-3 EXPLANATION OF COLUMNS (SECTION II AND III).

a. Item No. [Column(1)]. Indicates the number used to identify items called out in the illustrations.

b. SMR Code [Column (2)]. The source, maintenance, and recoverability (SMR) code is a five-position code containing supply/requisitioning information, maintenance category authorization criteria and disposition instruction, as shown in the following breakout:

Source Code	Maintenance Code	Recoverability Code	
XXX (1st two)	XX'	XX'	
How you get an item.	3rd Position	4th Position	Who determines disposition action on an unserviceable item.
	Who can install replace or use the item.	Who can do complete repair (see NOTE) on the item.	

NOTE

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. Explanations of source codes follows:

Code	Application/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 level indicated by the code entered in the third position of the of the SMR code.

NOTE

Items coded PC are subject to deterioration.

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

MO	Made at ORG/AVUM category	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. If the item is authorized to you by the third position code of the SMR code, but the source code indicates it is made at a higher category, order the item from the higher category of maintenance.
MF	Made at DS/AVIM category	
MH	Made at GS category	
ML	Made at Specialized Repair Activity (SRA)	
MD	Made at Depot	

Code		Application/Explanation
AO	Assembled by ORG/AVUM category	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 category of maintenance indicated by the source code. If the third position code of the SMR code authorizes you to replace the item, but the source code indicates the item is assembled at a higher category, order the item from the higher category of maintenance.
AF	Assembled by DS/AVIM category	
AH	Assembled by GS category	
AL	Assembled by SRA	
AD	Assembled by Depot	

Code	Explanation
XA	Do not requisition an "XA" coded item. Order its next higher assembly.
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, 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 CAGEC 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" or those aircraft support items restricted by requirements of AR 750-1.

2. Maintenance Code. Maintenance codes tell you the category of maintenance authorized to USE and REPAIR support items. The maintenance codes are entered in the third and fourth positions of the SMR code as follows:

a). The maintenance code entered in the third position tells you the lowest maintenance category authorized to remove, replace, and use an item. The maintenance code entered in the third position will indicate authorization to one of the following categories of maintenance.

Code	Application/Explanation
C	Crew or operator maintenance done within organizational or aviation maintenance.
O	Unit or aviation unit category can remove, replace, and use the item.
F	Direct support or aviation intermediate category can remove, replace, and use the item.
H	General support category can remove, replace, and use the item.
L	Specialized repair activity can remove, replace, or use the item.
D	Depot category 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 category with the capability to do complete repair (i.e., perform all authorized repair functions). This position will contain one of the following maintenance codes.

NOTE

Some limited repair may be done on the item at a lower category of maintenance, if authorized by the Maintenance Allocation Chart (MAC) and SMR codes.

Code	Explanation
O	Unit or aviation unit is the lowest category that can do complete repair of the item.
F	Direct support or aviation intermediate is the lowest category that can do complete repair of the item.
H	General support is the lowest category that can do complete repair of the item.

Code	Explanation
L	Specialized repair activity (designate the specialized repair activity) is the lowest category that can do complete repair of the item.
D	Depot is the lowest category 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 assigned for the maintenance of a "B" coded item). However, the item may be reconditioned by adjusting, lubrication, etc., at the user category.

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

Recoverability Code	Application/Explanation
Z	Nonrepairable item. When unserviceable, condemn and dispose of the item at the category of maintenance shown in the third position of SMR code.
O	Reparable item. When uneconomically reparable, condemn and dispose of the item at organizational or aviation unit category
F	Reparable item. When uneconomically reparable, condemn and dispose of item at direct support or aviation intermediate category.
H	Reparable item. When uneconomically reparable, condemn and dispose of the item at general support category.
D	Reparable item. When beyond lower category repair capability, return to depot. Condemnation and disposal of item not authorized below depot category.
L	Reparable 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. CAGEC [Column(3)]. The Commercial and Government Entity Code (CAGEC) is a 5-digit numeric code which is used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

d. Part Number [Column (4)]. 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, specifications, standards, and inspection requirements to identify an item or range of items.

NOTE

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

e. Description and Usable on Code (UOC) [Column (5). 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 (insert applicable physical security classification abbreviation, e.g., Phy Sec C1 (Confidential, Phy Sec C1 (S) - Secret, Phy Sec C1 (T) - Top Secret).

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 entry for the item to be manufactured/fabricated.

6. When the item is not used with all serial numbers of the same model, the effective serial numbers are shown on the last line of the description (before UOC).

7. Usable on code, when applicable (refer to paragraph F-5).

8. In the Special Tools section, the basis of issue (BOI) appears as the last line in the entry for each special tool, special TMDE, and other special support equipment. When density of equipment supported exceeds density spread indicated in the basis of issue, the total authorization is increased proportionately.

9. The statement "END OF FIGURE" appears just below the last item description in Column (5) for a given figure in both Section I and Section III.

f. QTY [(Column (6)]. Indicates the quantity of the item used in the breakout shown on the illustration figure, which is prepared for a functional group, sub-functional group, or an assembly. A "V" appearing in this column in lieu of a quantity indicates that the quantity is variable and the quantity may vary from application to application.

F-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 nine digits of the NSN. When using this column to locate an item, ignore the first four digits of the NSN. When requisitioning items use the complete NSN (13 digits) sequence.

2. Fig. Column. This column lists the number of the figure where the item is identified/located. The illustrations are in numerical sequence in Sections II and III.

3. 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.

1. CAGEC Column. This column lists the Commercial and Government Entity Code (CAGEC).

2. Part Number Column. This column indicates the part number assigned to the item.

3. Stock Number Column. This column lists the National Stock Number for the associated part and manufacturer identified in the part number and CAGEC columns to the left.

4. Fig. Column. This column lists the number of the figure where the item is identified/located in Section II and Section III.

5. Item Column. The item number is that number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

c. Figure and Item Number Index.

1. Fig. Column. This column lists the number of the figure where the item is identified/located in Section II and Section III.

2. Item Column. The item number is that number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

3. Stock Number Column. This column lists the National Stock Number for the item.

4. CAGEC Column. The Commercial and Government Entity Code (CAGEC) is a 5-digit numeric code used to identify the manufacturer, distributor, or Government agency ,etc., that supplies the item.

5. 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, specifications, standards, and inspection requirements to identify an item or range of items.

F-5 SPECIAL INFORMATION.

a. Usable on Code. The usable on code appears in the lower left comer of the description column heading. Usable on codes are shown as "UOC" in the description column (justified left) on the first line applicable item description nomenclature. Uncoded items are applicable to all modes. This column UOC is not applicable at this time.

b. Fabrication Instructions. Bulk materials required to manufacture items are listed in the bulk material functional group of this RPSTL. Part numbers for 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 source coded to be manufactured or fabricated are found in accordance with SB 11-681.

c. Kits. Line item entries for repair part kits appear in a group in Section II (refer to the Table of Contents).

d. Index Numbers. Items which have the word BULK in the figure column will have an index number shown in the item number column. This index number is a cross-reference between the National Stock Number/Part Number Index and the bulk material list in Section II.

e. Associated Publications. Refer to Appendix A for a list of associated technical publications.

f. Illustrations Listing. The illustrations in this RPSTL are identical for all levels of maintenance. Only those parts coded "C", "O", or "F" in the third position of the SMR code are listed in the tabular listing; therefore, there may be a break in the item number sequence, figure number and page number. Only illustrations containing organizational or aviation unit authorized items appear in this RPSTL.

g. National Stock Numbers. National Stock Numbers (Nun's) that are missing from P source coded items have been applied for and will be added to this technical manual by future change/revision when they are entered in the Army Master Data File (AMDF). Until the Nun's are established and published, submit exception requisitions to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-LC-MM, Fort Monmouth, NJ 07703-5007 for the part required to support your equipment.

F-6 HOW TO LOCATE REPAIR PARTS.

a. When National Stock Number OR part number is not known.

1. First. Using the table of contents, determine the assembly group or subassembly group 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. Second. Find the figure covering the assembly group or subassembly group to which the item belongs.

3. Third. Identify the item on the figure and note the item number.

4. Fourth. Refer to the Repair Parts Lists for the figure to find the part number for the item number noted on the figure.

5. Fifth. Refer to the Part Number Index to find the NSN, if assigned.

b. When National Stock Number OR part number is known.

1.First 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. The part numbers in the Part Number Index are listed in ascending alphanumeric sequence. Both Indexes cross-reference you to the illustration figure and 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 are looking for, them locate the item number in the repair parts list for the figure.

F-7 ABBREVIATIONS.

This is a combined narrative and RPSTL manual. Refer to GLOSSARY for applicable the definition of unusual terms.

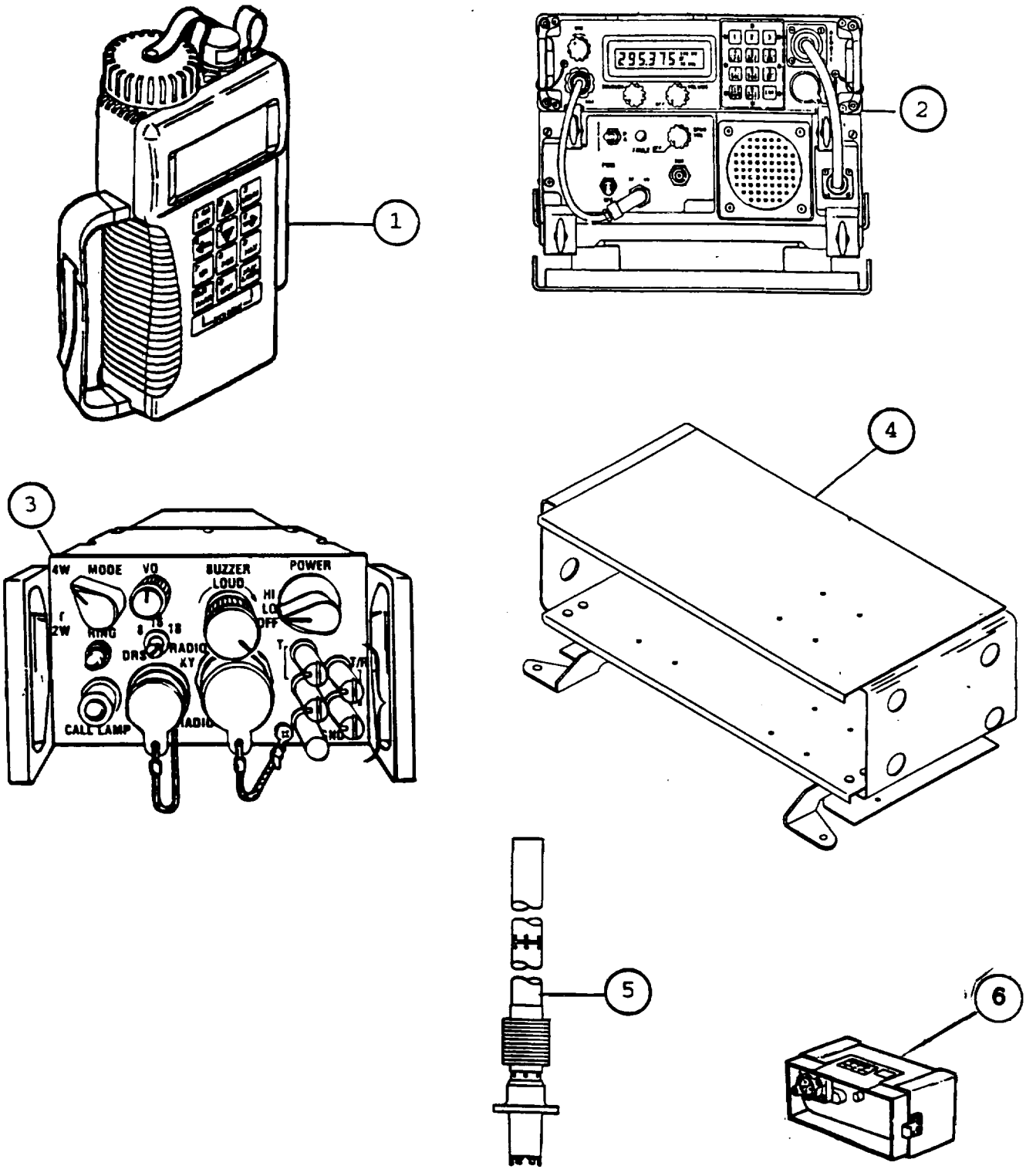


Figure F-1. AN/GRC-240

Section II. REPAIR PARTS LIST

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE (UOC)	(6) QTY
				GROUP 00: RADIO SET AN/GRC-240	1
				FIGURE F-1	
1	PAODD	13499	822-077-002	SATELLITE SIGNALS NAVIGATION SET AN/PSN-11 (FOR PARTS BREAKOUT, SEE TM 11-5825-291-13)	1
2	PAODD	37695	707123-805	RADIO SET, AN/VRC-83(V)3 (FOR PARTS BREAKOUT, SEE TM 11-5820-1149-14&P)	1
3	PAODD	98230	0N241700	COMMUNCIATIONS SECURITY EQIPMENT TSEC/KY-57 (FOR PARTS BREAKOUT, SEE TM 11-5810-256-34P)	1
4	PAOFF	80058	A3210476	INSTALLATION KIT, ELECTRONIC EQUIPMENT MK-2827/GRC-240 (SEE FIGURE F-2 FOR PARTS BREAKOUT).	1
5	PAODD	37695	626489-1	ANTENNA, UHF/VHF AS-3588/GRC-206 (NO PARTS AUTHORIZED)	1
6	PAODD	98230	0N241780	POWER ADAPTER HYP-57 (FOR PARTS BREAKOUT, SEE TM 11-5810-256-34P)	1
				END OF FIGURE	

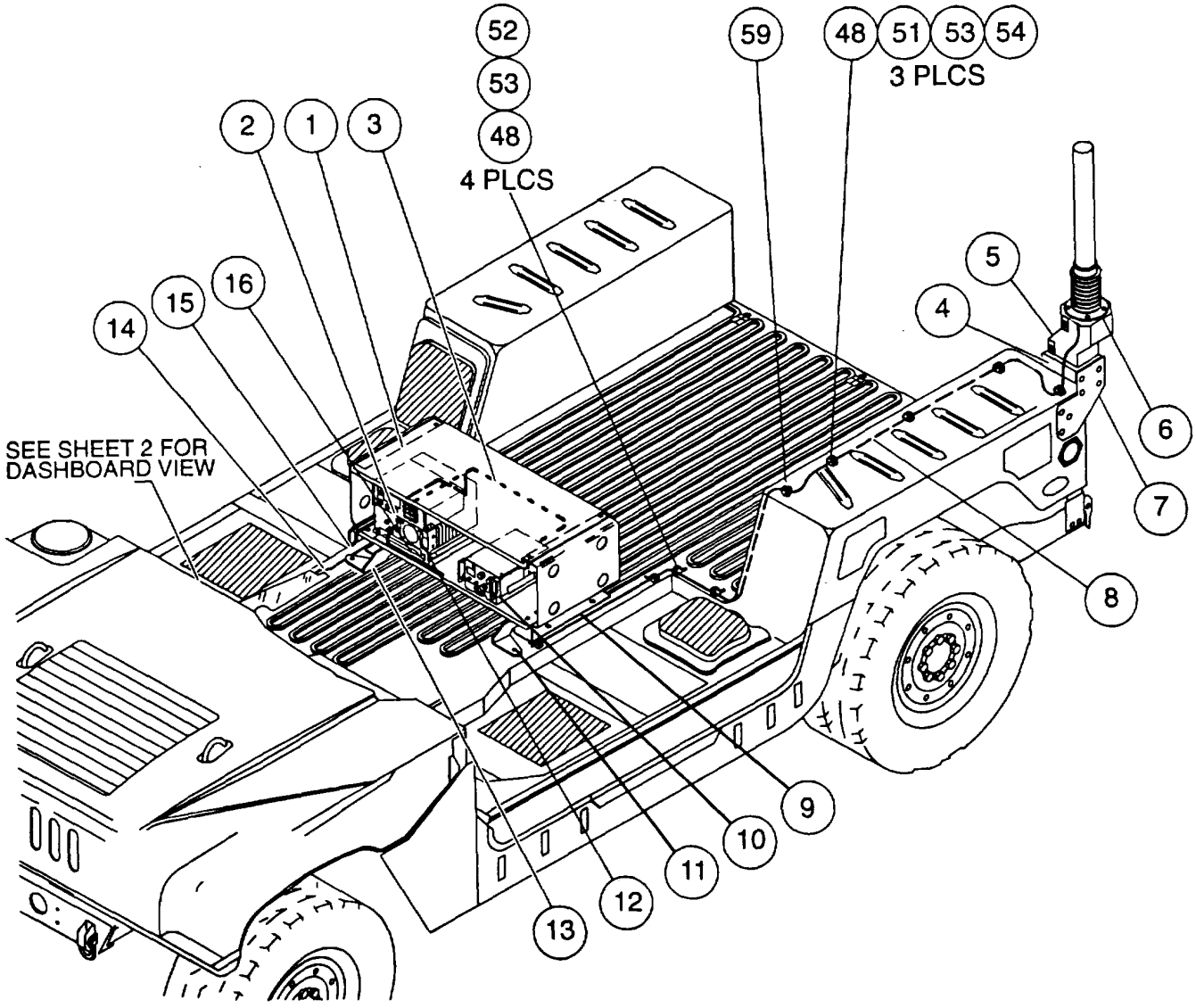


Figure F-2. Installation Kit, MK-2827/GRC-240 (Sheet 1 of 10}

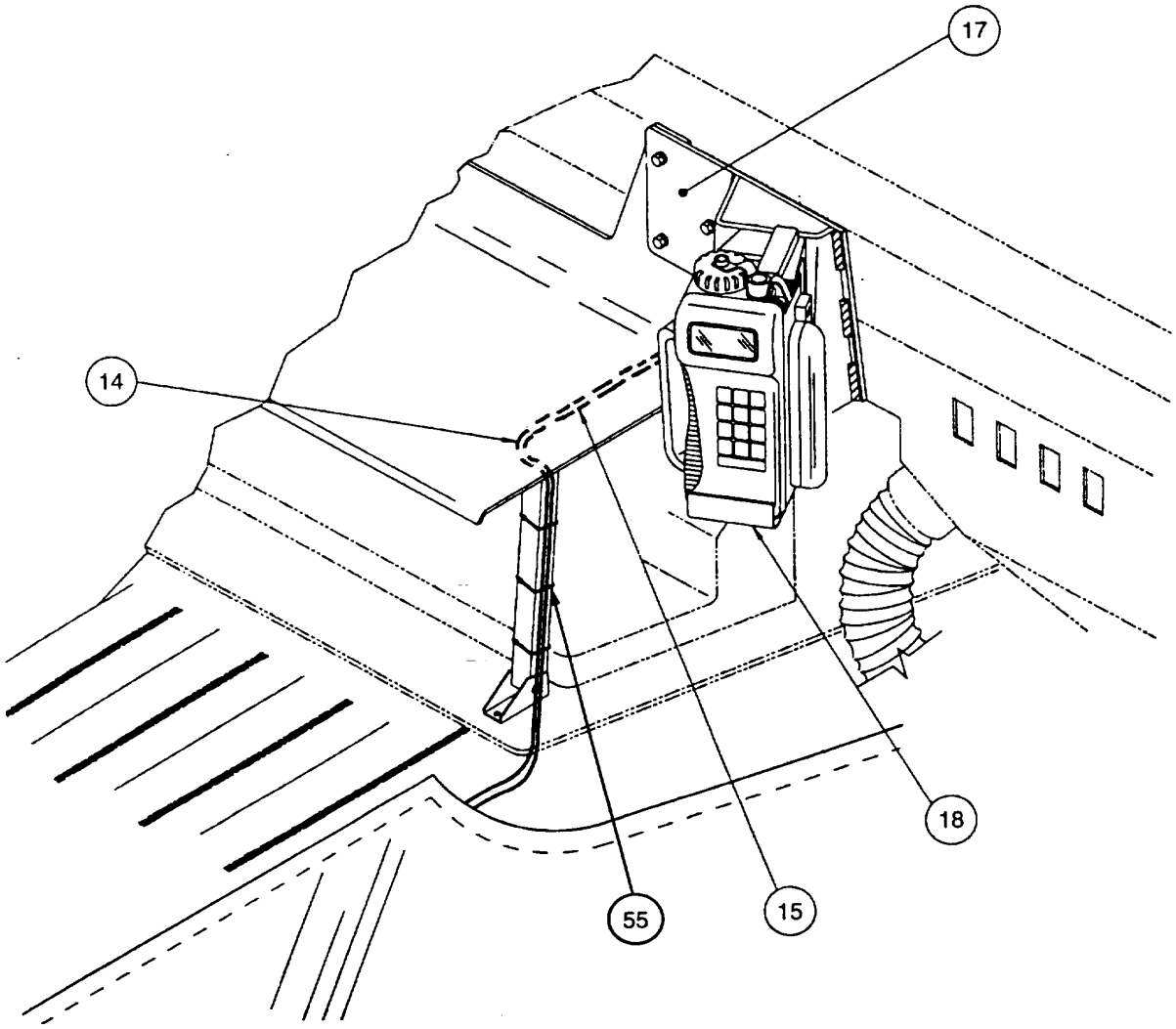


Figure F-2. Installation Kit, MK-2827/GRC-240 (Sheet 2 of 10)

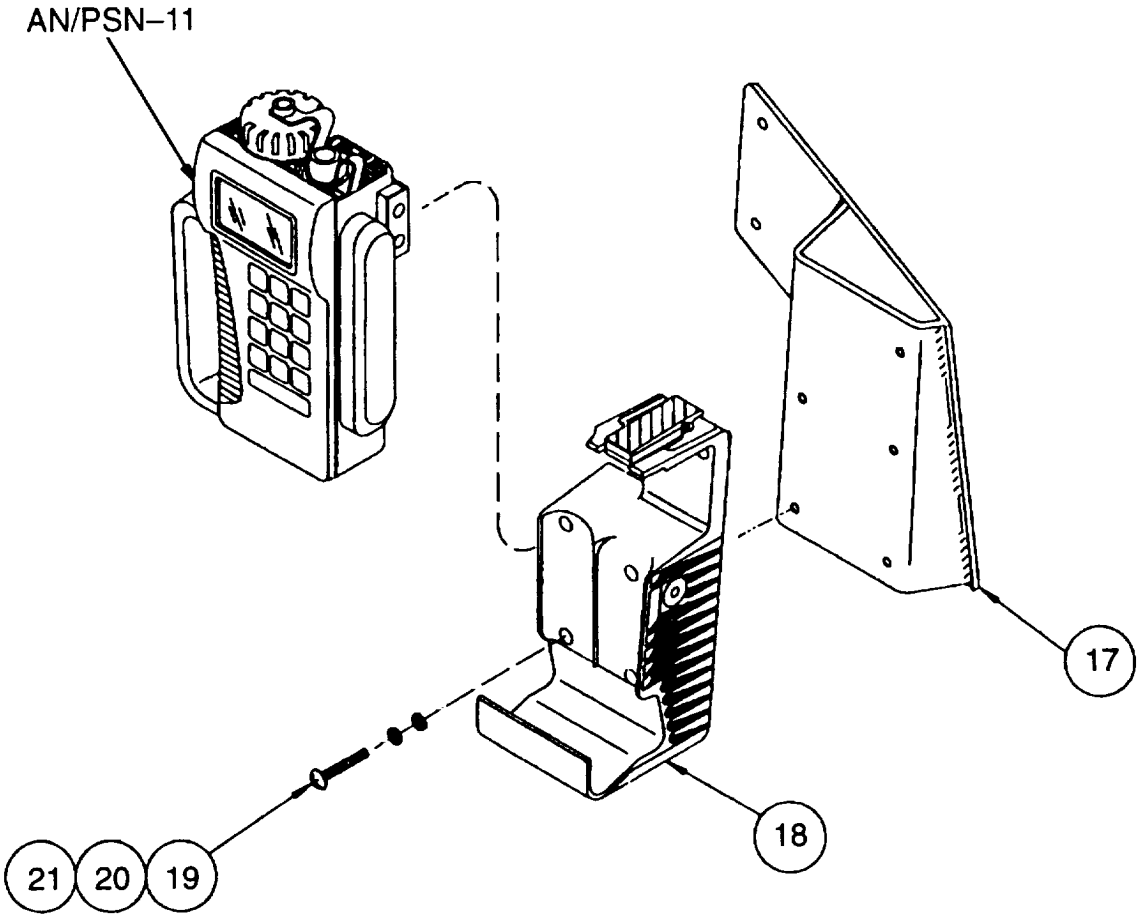


Figure F-2. Installation Kit, MK-2827/GRC-240 (Sheet 3 of 10)

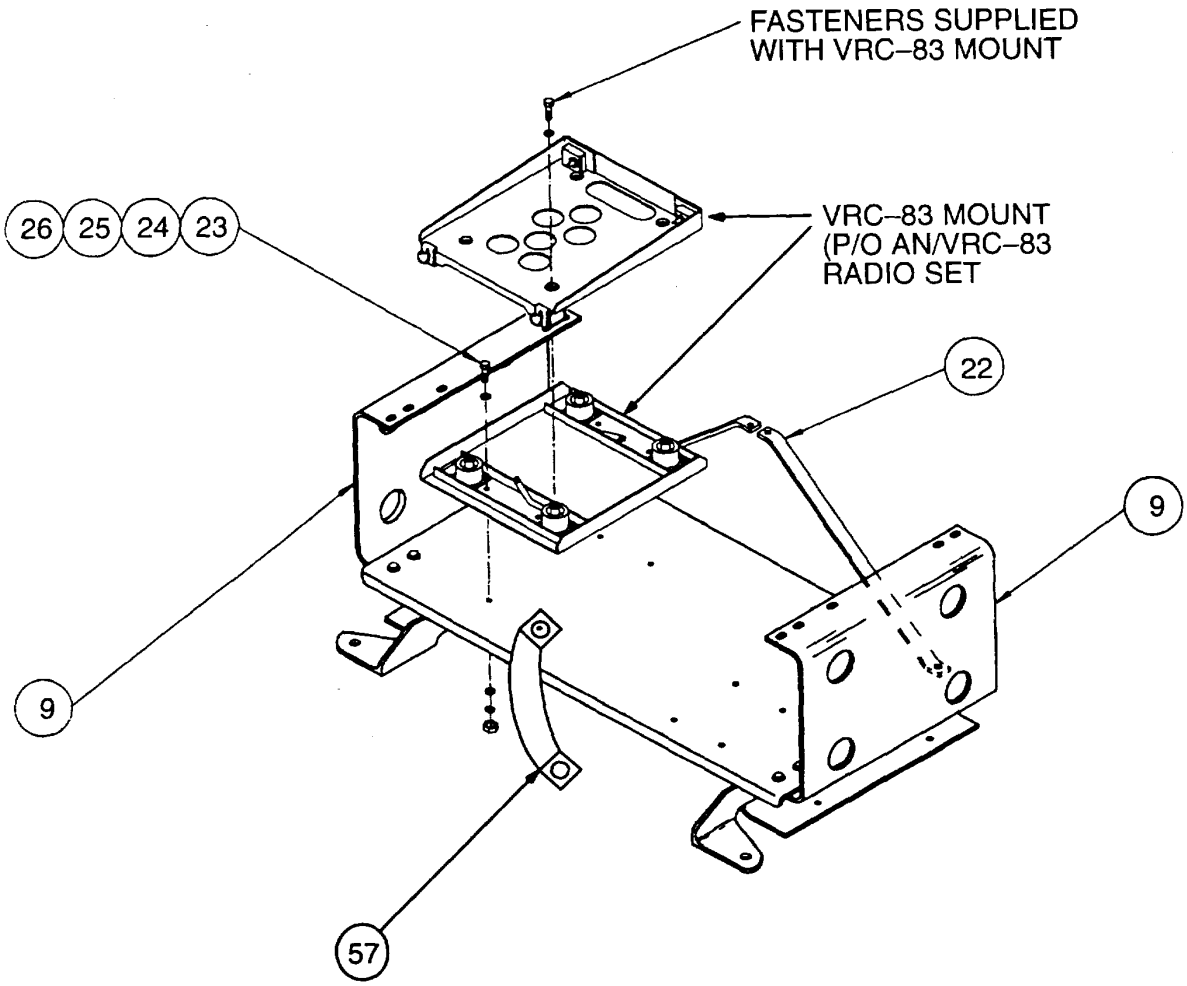


Figure F-2. Installation Kit, MK-2827/GRC-240 (Sheet 4 of 10)

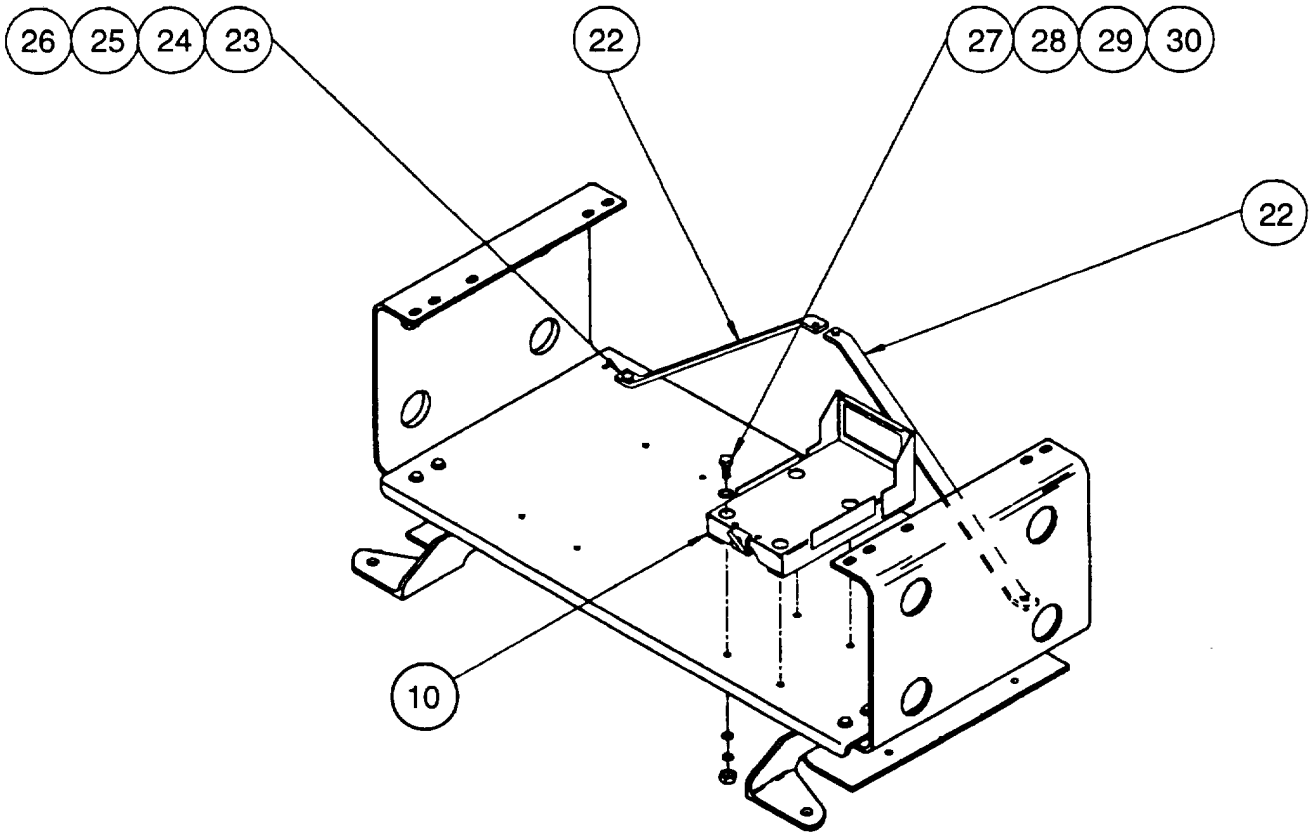


Figure F-2. Installation Kit, MK-2827/GRC-240 (Sheet 5 of 10)

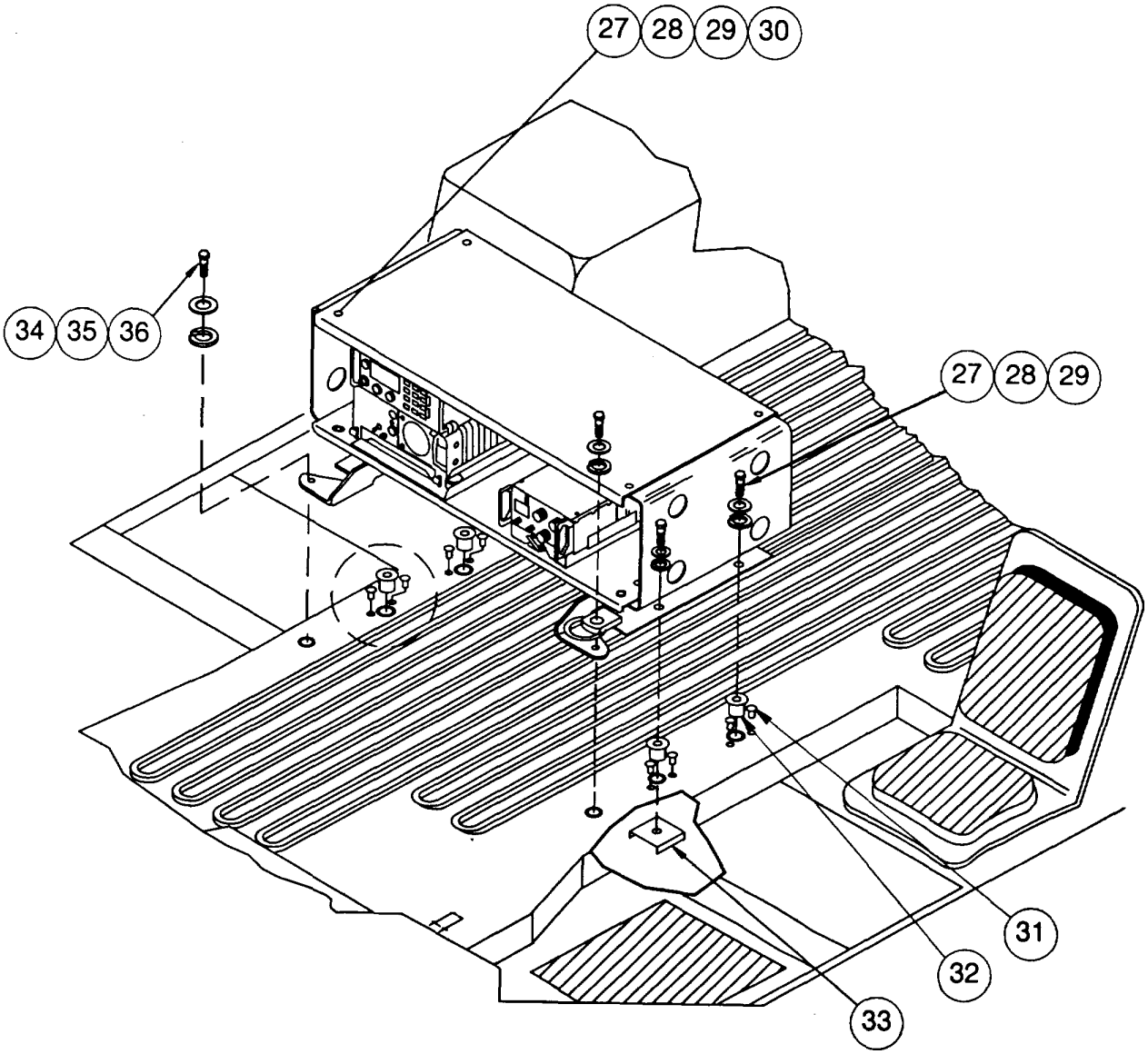


Figure F-2. Installation Kit, MK-2827/GRC-240 (Sheet 6 of 10)

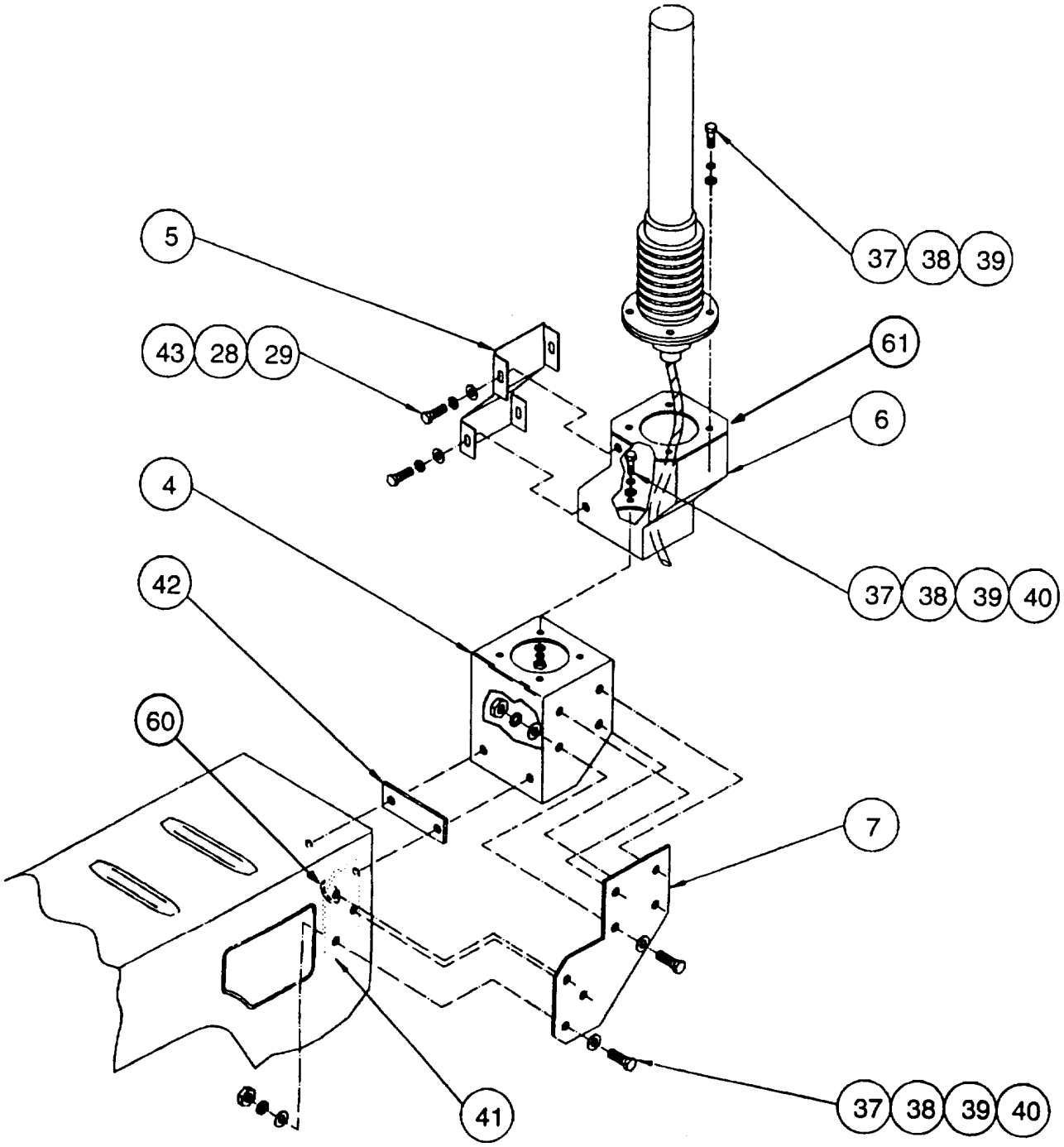


Figure F-2. Installation Kit, MK-2827/GRC-240 (Sheet 7 of 10)

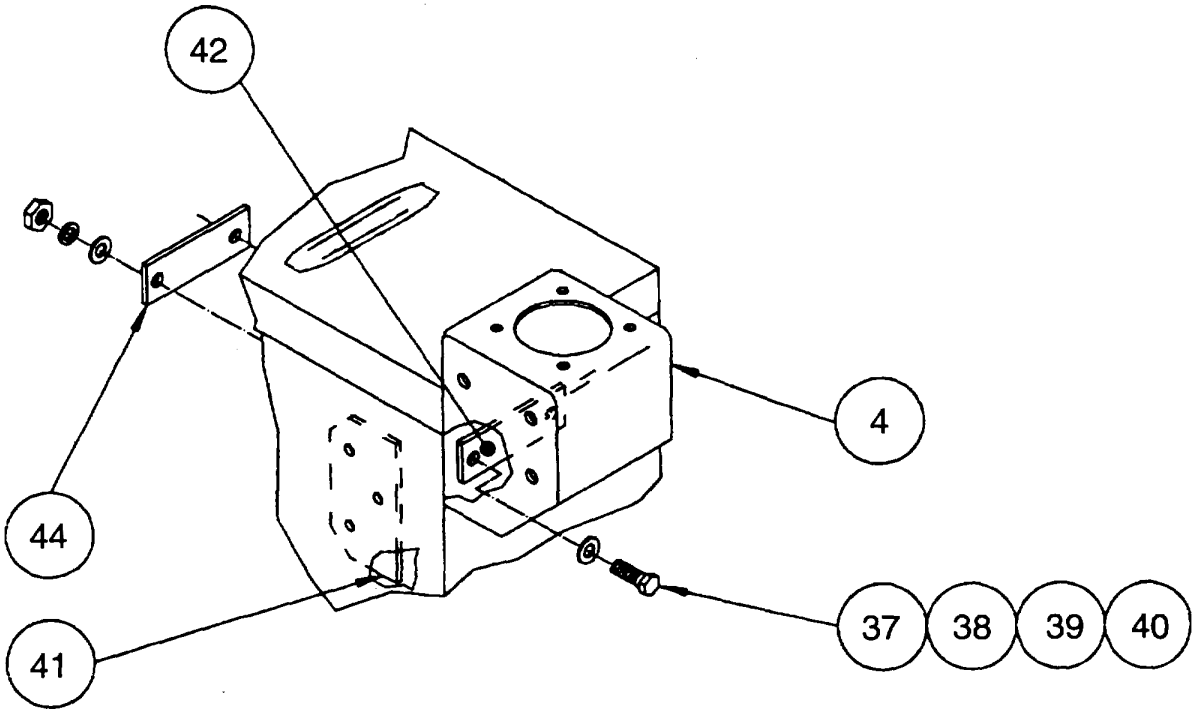


Figure F-2. Installation Kit, MK-2827/GRC-240 (Sheet 8 of 10)

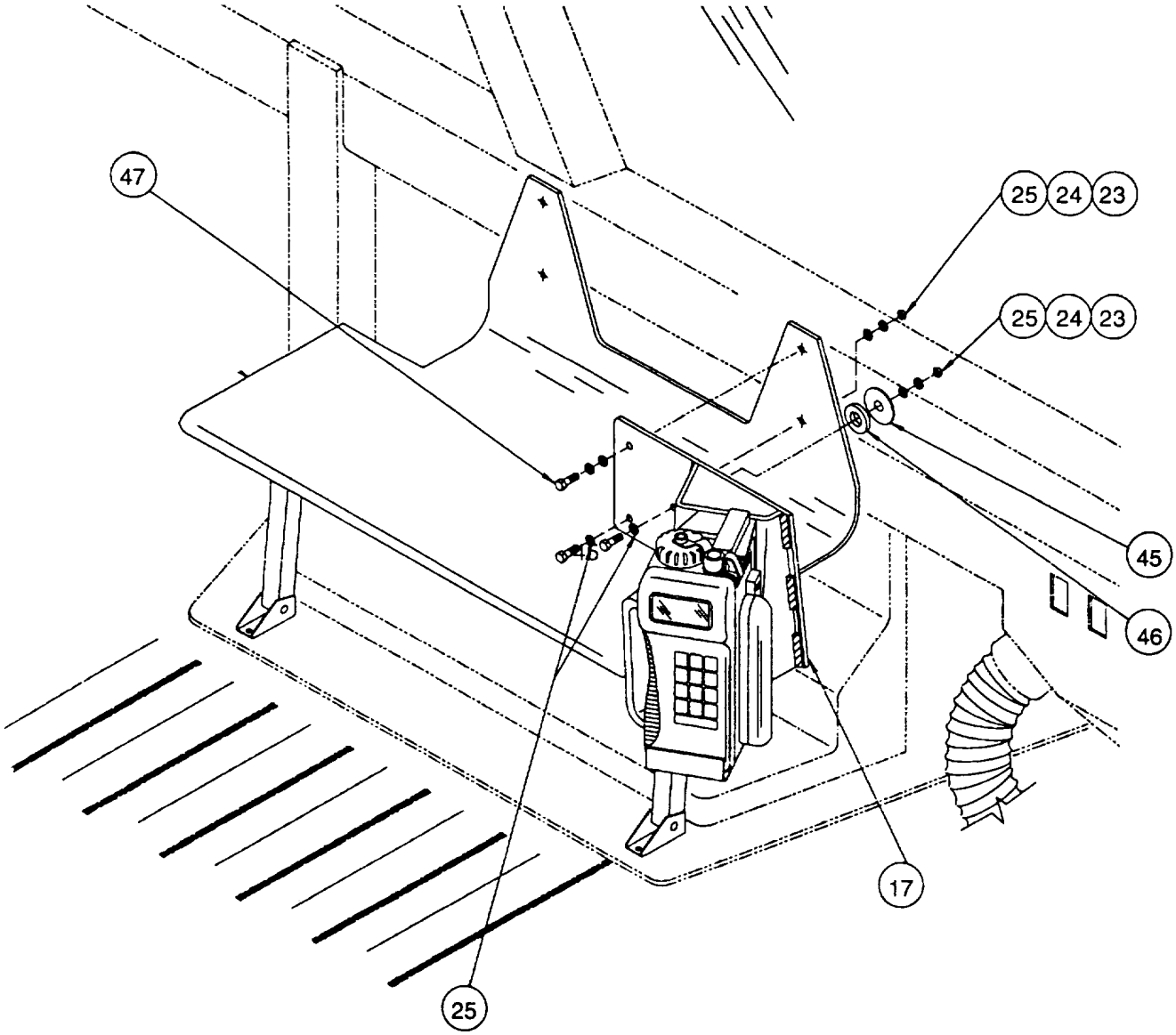


Figure F-2. Installation Kit, MK-2827/GRC-240 (Sheet 9 of 10)

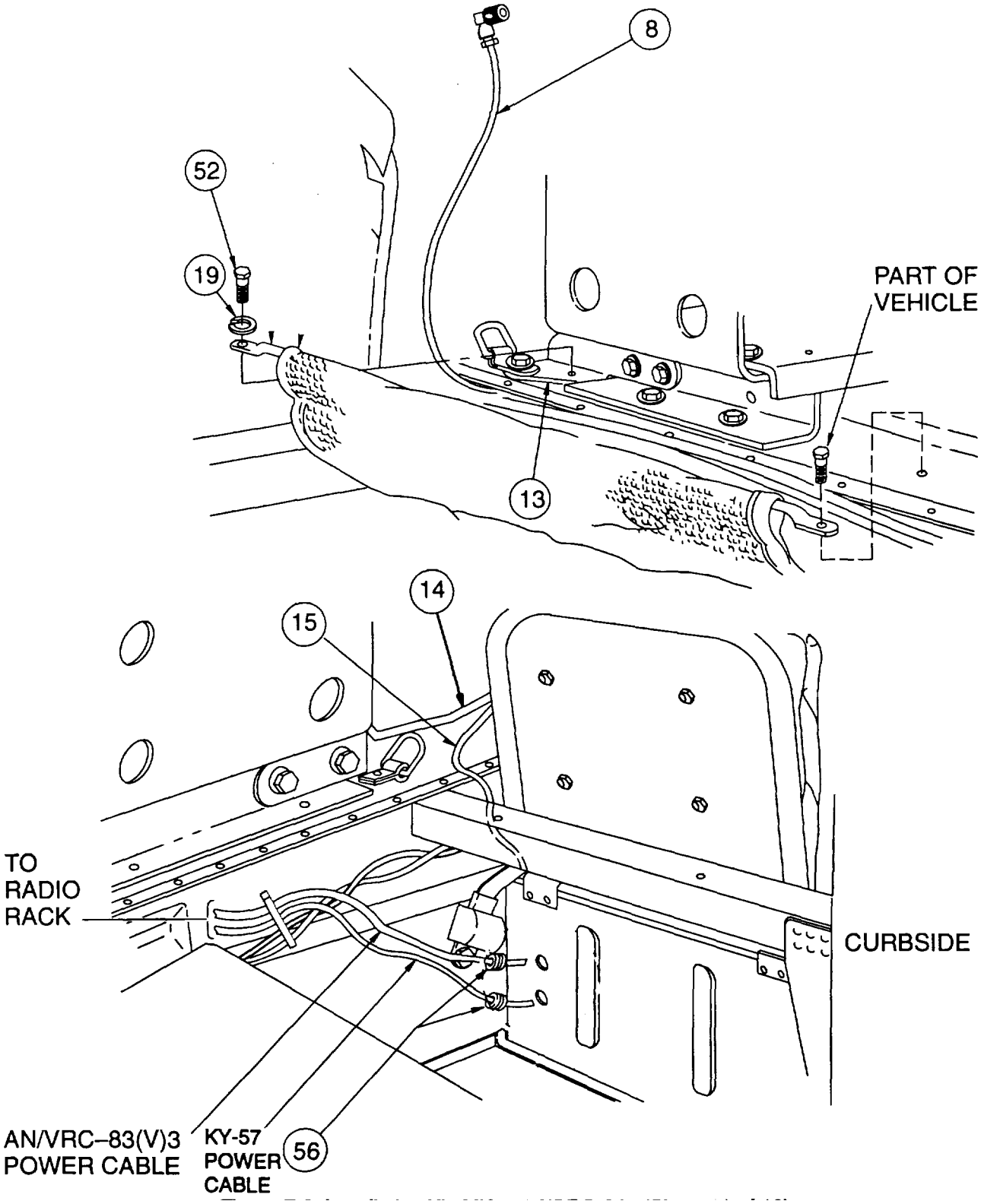


Figure F-2. Installation Kit, MK-2827/GRC-240 (Sheet 10 of 10)

Section II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE (UOC)	(6) QTY
				GROUP 02 Installation Kit, MK-2827/GRC-240	
				FIGURE F-2	
1	PAOZZ	80063	A3210477	PLATE, MOUNTING	2
2	PAOZZ	80063	566084-809	CABLE ASSEMBLY, KY-57 AUDIO CABLE	1
3	PAOFF	80063	A3157544-3	CABLE ASSEMBLY, POWER, ELECTRICAL, CX-13421/U (SEE FIGURE F-5 FOR PARTS BREAKOUT.)	1
4	PAOZZ	80063	A3103782	SUPPORT, ANTENNA	1
5	PAOZZ	80063	A3046219	COVER, ANTENNA	1
6	PAOZZ	80063	A3046223	ANTENNA SUBASSEMBLY	1
7	PAOZZ	80063	A3103740	PLATE, METAL	1
8	PAOFF	80063	A3210480	CABLE ASSEMBLY, SPECIAL PURPOSE CX-13502/U (SEE FIGURE F-3 FOR PARTS BREAKOUT)	1
9	PAOZZ	80063	A3046235	BRACKET, RADIO RACK	2
10	PAOZZ	80063	DL-SC-B-884714	MOUNTING BASE, ELECTRICAL, MT-4626/U	1
11	PAOZZ	80063	A3046242	BRACE, RADIO RACK, LEFT HAND	1
12	PAOFF	80063	A3210486	CABLE ASSEMBLY, SPECIAL PURPOSE CX-13503/U (SEE FIGURE F-4 FOR PARTS BREAKOUT.)	1
13	PAOZZ	80063	A3046244	BRACE, RADIO RACK, RIGHT HAND	1
14	PAOZZ	13499	426-0141-040	CABLE ASSEMBLY, PSN-11 TO HAVEQUICK II	1
15	PAOZZ	13499	426-0144-010	CABLE ASSEMBLY, POWER (AN/PSN-1 1)	1
16	PAOZZ	96906	MS3106A10 OSL3S	CONNECTOR	1
17	PAOOO	80063	A3210478	MOUNTING BASE, ELECTRICAL (REFER TO FIGURE F-6 FOR REPAIR PARTS)	1
18	PAOZZ	13499	986-0641-001	MOUNT, AN/PSN-11	1
19	PAOZZ	96906	MS35338-43	WASHER, LOCK	5
20	PAOZZ	96906	MS15795-846	WASHER, FLAT	5

Section II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE (UOC)	(6) QTY
21	PAOZZ	96906	MS35207-265	SCREW, MACHINE	5
22	PAOZZ	80063	A3046237	BRACE, RADIO RACK	2
23	PAOZZ	96906	MS51967-2	NUT, PLAIN, HEXAGON	8
24	PAOZZ	96906	MS35338-44	WASHER, LOCK	11
25	PAOZZ	96906	MS27183-10	WASHER, FLAT	21
26	PAOZZ	96906	MS90725-10	SCREW, CAP, HEXAGON	8
27	PAOZZ	96906	MS90725-36	BOLT, MACHINE	20
28	PAOZZ	96906	MS27183-13	WASHER, FLAT	40
29	PAOZZ	96906	MS35338-45	WASHER, LOCK	24
30	PAOZZ	96906	MS51967-5	NUT, PLAIN, HEXAGON	16
31	PAOZZ	19207	12339355-1	RIVIT, BLIND	8
32	PAOZZ	80063	A3046248	PLUS NUT, FLAT HEAD	4
33	PAOZZ	80063	A3046231	STIFFENER	4
34	PAOZZ	96906	MS90725-113	SCREW, CAP, HEXAGONAL	2
35	PAOZZ	96906	MS27183-18	WASHER, FLAT	2
36	PAOZZ	96906	MS35338-48	WASHER, LOCK	2
37	PAOZZ	96906	MS90725-64	SCREW, CAP, HEXAGONAL	17
38	PAOZZ	96906	MS27183-14	WASHER, FLAT	30
39	PAOZZ	96906	MS35338-46	WASHER, LOCK	17
40	PAOZZ	96906	MS51967-8	NUT, PLAIN, HEXAGON	13
41	PAOZZ	80063	A3046222	ANTENNA WELDMENT, BASE	1
42	PAOZZ	80063	A3103784	PLATE, METAL	1
43	PAOZZ	96906	MS90725-32	SCREW, CAP, HEXAGONAL	4
44	PAOZZ	80063	A3103783	PLATE, METAL	1
45	PAOZZ	96906	MS514712-37	WASHER, FLAT	1
46	PAOZZ	80063	A3210479	SPACER, SLEEVE	1
47	PAOZZ	96906	MS90725-8	SCREW, CAP, HEXAGONAL	3
48	PAOZZ	96906	MS21919WDG12	CLAMP, LOOP, CUSHIONED	20
49	PAOZZ	96906	MS21919WDG8	CLAMP, LOOP, CUSHIONED	10
50	PAOZZ	96906	MS21919WDG6	CLAMP, LOOP, CUSHIONED	10
51	PAOZZ	96906	MS35207-267	SCREW, MACHINE, PAN HEAD	25
52	PAOZZ	96906	MS51861-47C	SCREW, TAPPING	15
53	PAOZZ	96906	MS45904-61	WASHER, LOCK	65
54	PAOZZ	96906	MS35650-304	NUT, HEX HEAD	25
55	PAOZZ	96906	MS3367-1-0	STRAP, TIE-DOWN, ADJUSTABLE	15
56	PAOZZ	96906	MS35489-45	GROMMET, RUBBER	2
57	PAOZZ	80063	SCB73180-2	STRAP, GROUNDING	1
58	PAOZZ	13499	021-0706-010	CASE, PLGR	1
59	PAOZZ	96906	MS21266-1N	GROMMET, NON-METALLIC	1
60	PAOZZ	96906	MS21266-4N	GROMMET, NON-METALLIC	1
61	PAOZZ			WARNING LABEL, RF	1
				END OF FIGURE	

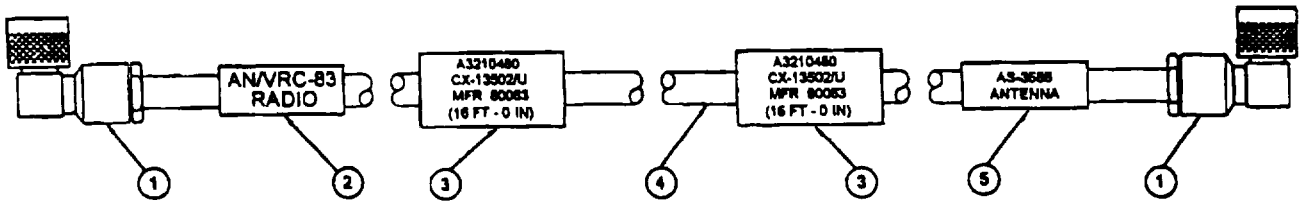


Figure F-3. Cable Assembly, Special Purpose, CX-13502/U (Antenna-to-ANNRC-83(V)M3

Section II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE (UOC)	(6) QTY
				GROUP 0201 Cable Assembly, Special Purpose CX-13502/U	
				FIGURE F-3	
1	XBFZZ	81349	M39012/05-0101	CONNECTOR, PLUG, ELECTRICAL	2
2	PAFZZ	80063	SM-B-165914	BAND, IDENTIFICATION	1
3	PAFZZ	80063	SM-B-165914	BAND, IDENTIFICATION	2
4	PAFZZ	81349	M17/75-RG-214	CABLE, COAXIAL	1
5	PAFZZ	80063	SM-B-165914	BAND, IDENTIFICATION	1
				END OF FIGURE	

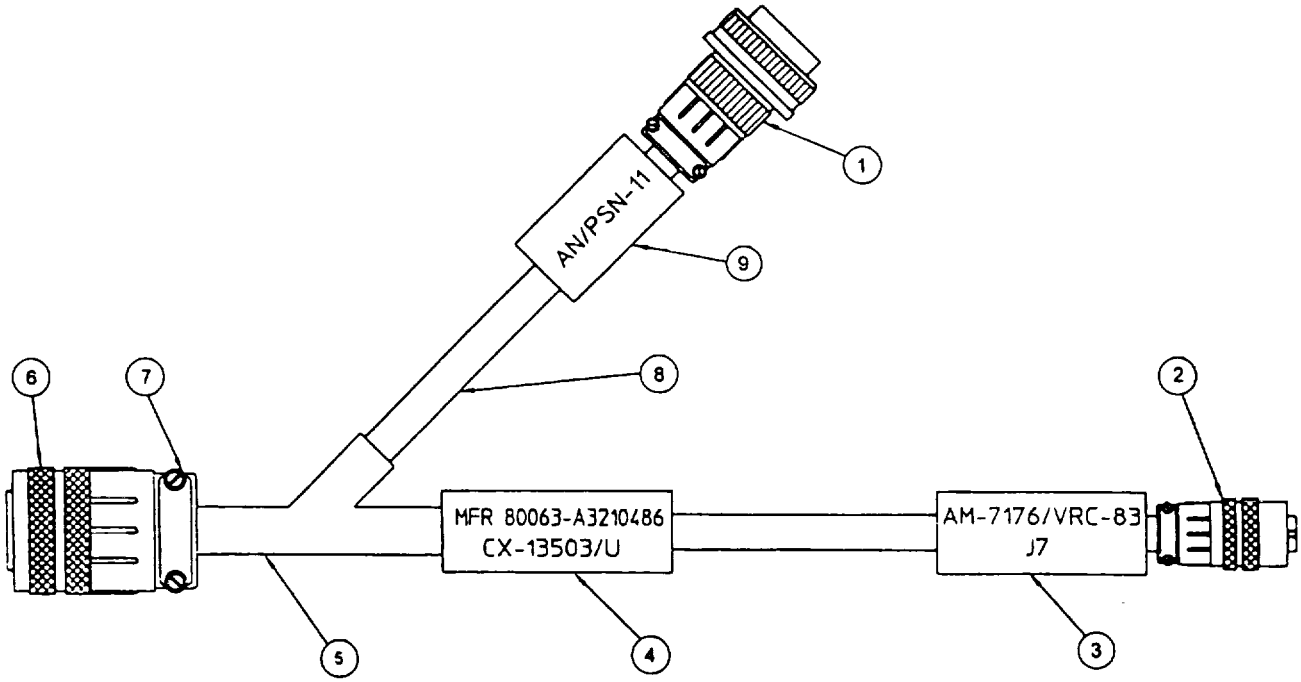


Figure F-4. Cable Assembly, Special Purpose, CX-13503/U
(ANNRC-83 Control "Y" Cable)

SECTION II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE (UOC)	(6) QTY
				GROUP 0202 Cable Assembly, Special Purpose CX-13503/U	
				FIGURE F-4	
1	PAFZZ	96906	MS3110F10SL-3P	CONNECTOR, PLUG, ELECTRICAL	1
2	PAFZZ	96906	MS3116J8-4P	CONNECTOR, PLUG, ELECTRICAL	1
3	PAFZZ	80063	SM-B-165914	BAND, IDENTIFICATION	1
4	PAFZZ	80063	SM-B-165914	BAND, IDENTIFICATION	1
5	PAFZZ	80063	A3210485	TRANSITION, Y, HEAT SINK	1
6	PAFZZ	96906	MS27467T15B35S	CONNECTOR, PLUG	1
7	PAFZZ	96906	M85049/17-14WO4	BACKSHELL	1
8	PAFZZ	96906	CO-02-LG-F-2/SJ-150	CABLE, ELECTRICAL	1
9	PAFZZ	80063	SM-B-165914	BAND, IDENTIFICATION	1
				END OF FIGURE	

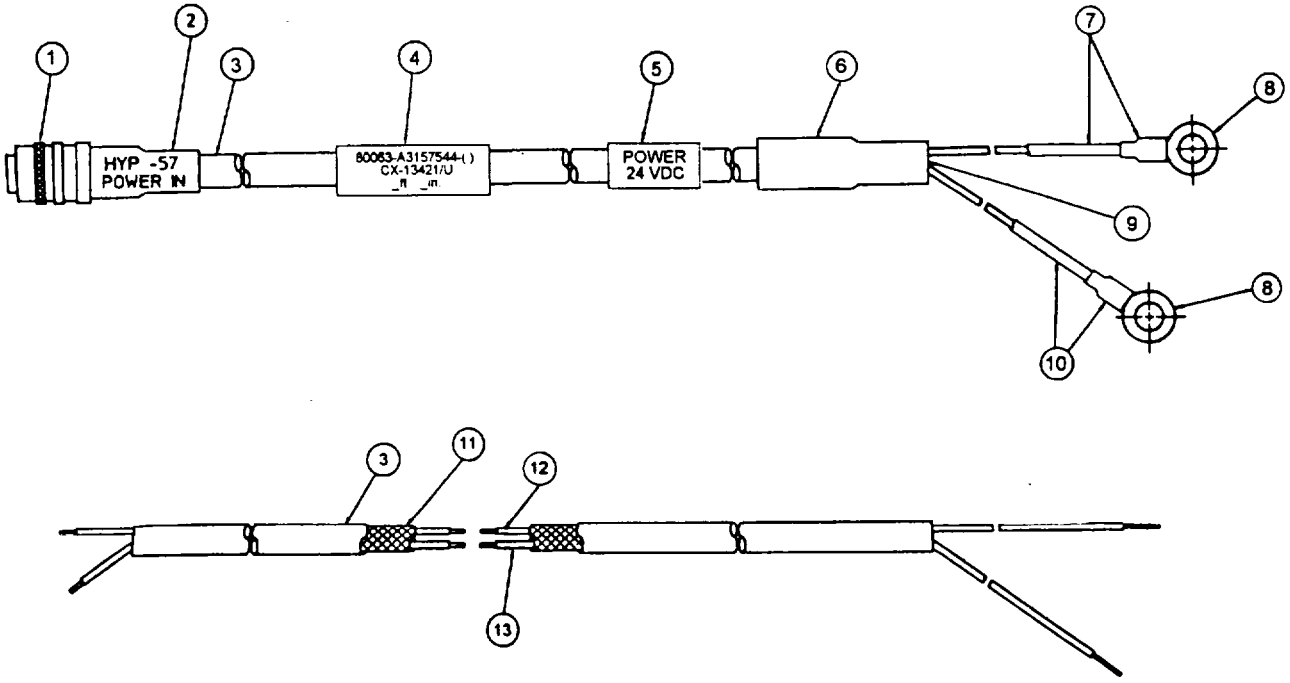


Figure F-5. Cable Assembly, Power Electrical (HYP-57) CX-13421/U

Section II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE (UOC)	(6) QTY
				GROUP 0203 Cable Assembly, Power, Electrical CX-13421/U (HYP-57)	
				FIGURE F-5	
1	PAFZZ	96906	MS3116E14-5S	CONNECTOR, PLUG, ELECTRICAL	1
2	PAFZZ	80063	SM-B-165914	BAND, IDENTIFICATION	1
3	PAFZZ	80063	M6855/4-16L14	TUBING, RUBBER	1
4	PAFZZ	80063	SM-B-165914	BAND, IDENTIFICATION	1
5	PAFZZ	80063	SM-B-165914	BAND, IDENTIFICATION	1
6	PAFZZ	80063	SM-B-165914	BAND, IDENTIFICATION	1
7	PAFZZ	81349	TYPE 1 GRADE B	SLEEVING, BLACK	1
8	PAFZZ	96906	MS20659-161	LUG, TERMINAL, 5/16	1
9	PAFZZ	80063	A3103907	SEALANT, MULTI-CONNECTOR	1
10	PAFZZ	81349	TYPE 1 GRADE B	SLEEVING, RED	1
11	PAFZZ	81349	TYPE 1 GRADE B	CONDUIT, METAL, FLEXIBLE	1
12	PAFZZ	81349	M16878/4BHE-2	WIRE, TEFLON #18, RED	1
13	PAFZZ	81349	M16878/4BHE-0	WIRE, TEFLON #16, BLACK	1
				END OF FIGURE	

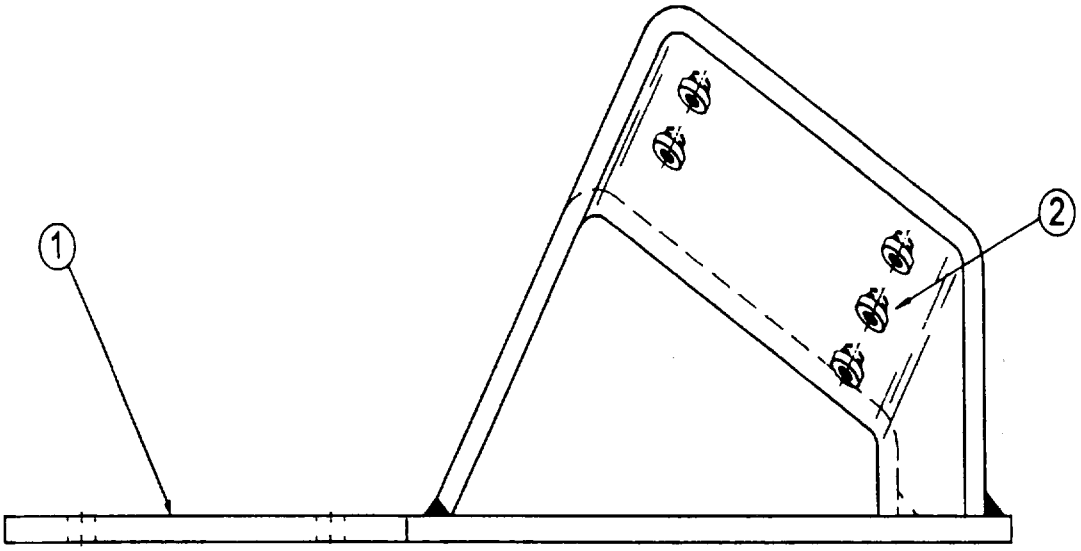


Figure F-6. Mounting Base, Electrical Equipment (AN/PSN-11) (PLGR)

Section II. REPAIR PARTS LIST (CONTINUED)

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE (UOC)	(6) QTY
				GROUP 0205 Mounting Base, Electrical Equipment AN/PSN-11	
				FIGURE F-6	
1	PAOZZ	80063	A321478-1	MOUNTING BASE, ELECTRICAL	1
2	PAOZZ	80063	A3210484	NUT, CLINCH, SELF-LOCK	1
				END OF FIGURE	

Section IV. CROSS-REFERENCE INDEXES

NATIONAL STOCK NUMBER INDEX

NATIONAL STOCK NUMBER	FIGURE NUMBER	ITEM NUMBER
5310-00-003-4094	F-2	36
5310-00-003-9415	F-2	35
5310-00-045-3296	F-2	19
6145-00-062-6682	F-6	12
5305-00-068-0509	F-2	26
5310-00-080-6004	F-2	38
5310-00-087-7493	F-2	28
5940-00-113-3139	F-5	8
5935-00-163-3487	F-4	2
5305-00-225-3839	F-2	47
5306-00-226-4825	F-2	43
5306-00-226-4825	F-2	56
5340-00-286-9427	F-2	48
5310-00-407-9566	F-2	29
5810-00-434-3644	F-2	3
5935-00-4304044	F-4	6
5305-00477-0122	F-2	52
5935-00-539-2650	F-2	16
5310-00-582-5965	F-2	24
5340-00-584-6556	F-2	49
5340-00-598-0146	F-2	50
5310-00-615-1556	F-2	20
5310-00-637-9541	F-2	39
6145-00-660-8054	F-3	4
5975-00-669-9473	F-3	2
5975-00-669-9473	F-3	3
5975-00-669-9473	F-3	5
5975-00-669-9473	F-4	3
5975-00-669-9473	F4	4
5975-00-669-9473	F-4	9
5975-00-669-9473	F-5	2
5975-00-669-9473	F-5	4
5975-004669-9473	F-5	5
5975-00-669-9473	F-5	6
5310-00-732-0558	F-2	40
5310-00-8094058	F-2	25
6145-00-813-1738	F-5	13
5935-00-851669-94221	F-5	1
5310-00-880-7744	F-2	30
5310-00-889-2769	F-2	53
5325-00-923-9512	F-2	59
5310-00-934-9765	F-2	54
5325-00-960-2410	F-2	60
5975-00-984-6582	F-2	55
5305-00-993-1848	F-2	21
5305-00-993-1851	F-2	51
5810-01-026-9621	F-1	6
5935-01-038-1577	F-6	1
5975-01-057-6524	F-2	10
5306-01-075-8519	F-2	27
5985-01-110-1051	F-I	5
5935-01-1808245	F-4	7
5985-01-2444265	F-2	6
5985-01-244-9836	F-2	5
5340-01-262-9536	F-2	9
5340-01-262-9561	F-2	11
5340-01-262-9566	F-2	22
5340-01-262-9562	F-2	33
5340-01-262-9588	F-2	13
5975-01-264-1720	F-2	41
5320-01-2714357	F-2	31
520-01-291-5415	F-1	2
9535-01-3024068	F-2	7
5985-01-312-3028	F-2	4
5310-01-325-388	F-2	34
5995-01-340-9692	F-2	3
5305-01-352-8387	F-2	37
6145-01-363-1374	F4	10
5310-01-366-1178	F-2	45
6145-01-373-2426	F-5	12
5825-01-374643	F-1	1
5975-01-37563-1302	F-2	18
6150-01-3758664	F-2	15
6150-01-375-8665	F-2	14
5310-01814373	F-2	23

PART NUMBER INDEX

CAGE CODE	PART NUMBER	NATIONAL STOCK NUMBER	FIGURE NUMBER	ITEM NUMBER
80063	A3046219	5985-01-244-9836	F-2	5
80063	A3046222	5975-01-264-1720	F-2	41
80063	A3046223	5985-01-244-4265	F-2	6
80063	A3046231	5340-01-262-9562	F-2	33
80063	A3046235	5340-01-262-9536	F-2	9
80063	A3046237	5340-01-262-9566	F-2	22
80063	A3046242	5340-01-262-9561	F-2	11
80062	A3046244	5340-01-262-9588	F-2	13
80063	A3046248		F-2	32
80063	A3103740	9535-01-302-0068	F-2	7
80063	A3103782	5985-01-312-3028	F-2	4
80063	A3103783		F-2	44
80063	A3103784		F-2	42
80063	A3103907		F-5	9
80063	A3157544-3	5995-01-340-9692	F-2	3
80063	A3210478-1		F-6	1
80058	A3210476	5895-01-408-5166	F-1	4
80063	A3210477		F-2	1
80063	A3210478		F-2	17
80063	A321 0479		F-2	46
80063	A3210480		F-2	8
80063	A3210484		F-6	2
80063	A3210485		F-4	5
80063	A3210486		F-2	12
96906	CO-02-LG-F2/SJ-160		F-4	8
80063	DL-SC-B884714	5975-01-057-6524	F-2	10
81349	M17/75-RG-214	6145-00-660-8054	F-3	4
81349	M39012/05-0101		F-3	1
80063	M6855/4-16L14		F-5	3
81349	M16878/4BHE-0	6145-00-813-1738	F-5	13
81349	M16878/4BHE-2	6145-01-373-2426	F-5	12
96906	M85049/17-14W04	5935-01-180-8245	F-4	7
96906	MS3110 F1 OSL-3P		F-4	1
96906	MS3116E14-5S	5935-00-851-0221	F-5	1
96906	MS3116J8-4P	5935-00-163-3487	F-4	2
96906	MS3367-1-0	5975-00-984-6582	F-2	55

PART NUMBER INDEX(CONTINUED)

CAGE CODE	PART NUMBER	NATIONAL STOCK NUMBER	FIGURE NUMBER	ITEM NUMBER
96906	MS15795-846	5310-00-615-1556	F-2	20
96906	MS20659-161	5940-00-113-3139	F-5	8
96906	MS21919WDG6	5340-00-598-0146	F-2	50
96906	MS21919WDG10	5340-00-584-6556	F-2	49
96906	MS21919WDG12	5340-00-286-9427	F-2	48
96906	MS21266-1 N	5325-00-960-2410	F-2	59
96906	MS21266-4N	5325-00-923-9512	F-2	60
96906	MS3106A10SL3S	5935-00-439-2650	F-2	16
96906	MS27183-13	5310-00-087-7493	F-2	28
96906	MS27183-14	5310-00-080-6004	F-2	38
96906	MS27183-18	5310-00-003-9415	F-2	35
96906	MS27467/T15B35S	5935-00-430-4044	F-4	6
96906	MS35207-265	5305-00-993-1848	F-2	21
96906	MS35207-267	5305-00-993-1851	F-2	51
96906	MS35338-43	5310-00-045-3296	F-2	19
96906	MS35338-44	5310-00-582-5965	F-2	24
96906	MS35338-45	5310-00-407-9566	F-2	29
96906	MS35338-46	5310-00-637-9541	F-2	39
96906	MS35338-48	5310-00-003-4094	F-2	36
96906	MS35650-304	531 0-00-934-9765	F-2	54
96906	MS35489-45	5325-00-285-8363	F-2	56
96906	MS45904-61	5310-00-889-2769	F-2	53
96906	MS51412-37	5310-01-366-1178	F-2	45
96906	MS51861-47C	5305-00-477-0122	F-2	52
96906	MS51967-2	5310-01-381-4373	F-2	23
96906	MS51967-5	5310-00-880-7744	F-2	30
96906	MS51967-8	5310-00-732-0558	F-2	40
96906	MS90725-8	5305-00-225-3839	F-2	47
96906	MS90725-10	5305-00-068-0509	F-2	26
96906	MS90725-36	5306-01-075-8519	F-2	27
96906	MS90725-32	5306-00-226-4825	F-2	43
96906	MS90725-64	5305-01-352-8387	F-2	37
96906	MS90725-113	5310-01-325-8388	F-2	34
80063	SC-B-73180-2		F-2	57
80063	SM-B-1 65914	5975-00-669-9473	F-3	2
80063	SM-B-165914	5975-00-669-9473	F-3	3
80063	SM-B-165914	5975-00-669-9473	F-3	5
80063	SM-B-1 65914	5975-00-669-9473	F-4	3
80063	SM-B-1 65914	5975-00-669-9473	F-4	4
80063	SM-B-165914	5975-00-669-9473	F-4	9
80063	SM-B-165914	5975-00-669-9473	F-5	2
80063	SM-B-165914	5975-00-669-9473	F-5	4
80063	SM-B-165914	5975-00-669-9473	F-5	5
80063	SM-B-165914	5975-00-669-9473	F-5	6
80063	SM-B-1 65914	5975-00-669-9473	F-6	5

PART NUMBER INDEX(CONTINUED)

CAGE CODE	PART NUMBER	NATIONAL STOCK NUMBER	FIGURE NUMBER	ITEM NUMBER
81349	TYPE1 GRADE B		F-5	10
81349	TYPE1 GRADE B		F-5	11
81349	TYPE1 GRADE B		F-6	7
80063	A3157660-5	581 0-01-366-8019	F-2	2
98230	ON241780	5810-00-434-9621	F-1	6
13499	021-0706-010	5895-01-375-7528	F-2	58
19207	12339355-1	5320-01-271-6357	F-2	31
13499	426-0144-010	6150-01-375-8664	F-2	15
13499	426-0141-040	6150-01 -375-8665	F-2	14
37695	626489-1	5985-01-110-1051	F-1	5
37695	5666084-809	5995-01-224-8698	F2	2
37695	707123-805	5820-01-291-5415	F-1	2
13499	822-077-002	5825-01-374-6643	F-1	1
13499	986-0645-001	5975-01-375-1302	F-2	18

FIGURE AND ITEM NUMBER INDEX (CONTINUED)

FIGURE NUMBER	ITEM NUMBER	CAGE CODE	NATIONAL STOCK NUMBER	PART NUMBER
F-1	1	13499	5825-01-374-6643	822-0077-002
F-1	2	37695	5820-01-291-5415	707123-805
F-1	3	98230	5810-00-434-3644	ON241700
F-1	4	80058	5895-01-408-5166	A3210476
F-1	5	37695	5985-01-110-1051	626489-1
F-1	6	98230	5810-01-026-9621	ON241780
F-2	1	80063		A3210477
F-2	2	80063	5995-01-224-8698	566084-809
F-2	3	80063	5995-01-340-9692	A3157544-3
F-2	4	80063	5985-01-312-3028	A3103782
F-2	5	80063	5985-01-244-9836	A3046219
F-2	6	80063	5985-01-244-4265	A3046223
F-2	7	80063	9535-01-302-0068	A3103740
F-2	8	80063		A3210480
F-2	9	80063	5340-01-262-9536	A3046235
F-2	10	80063	5975-01-057-6524	DL-SC-B-884714
F-2	11	80063	5340-01-262-9561	A3046242
F-2	12	80063		A3210486
F-2	13	80062	5340-01-262-9588	A3046244
F-2	14	13499	6150-01-375-8665	426-0141-040
F-2	15	13499	6150-01-375-8664	426-0144-010
F-2	16	96906	5935-00-539-2650	MS3106A10SL3S
F-2	17	80063		A3210478
F-2	18	13499	5975-01-375-1302	986-0645-001
F-2	19	96906	5310-00-045-3296	MS35338-43
F-2	20	96906	5310-00-615-1556	MS15795-846
F-2	21	96906	5305-00-993-1848	MS35207-265
F-2	22	80063	5340-01-262-9566	A3046237
F-2	23	96906	5310-01-381-4373	MS51967-2
F-2	24	96906	5310-00-582-5965	MS35338-44
F-2	25	96906	5310-00-809-4058	MS27183-10
F-2	26	96906	5305-00-068-0509	MS90725-10
F-2	27	96906	5306-01-075-8519	MS90725-36
F-2	28	96906	5310-00-087-7493	MS27183-13
F-2	29	96906	5310-00-407-9566	MS35338-45
F-2	30	96906	5310-00-880-7744	MS51967-5
F-2	31	19207	5320-01-271-6357	12339355-1
F-2	32	80063	5310-01-198-1724	A3046248
F-2	33	80063	5340-01-262-9562	A3046231
F-2	34	96906	5305-01-325-8388	MS90725-113
F-2	35	96906	5310-00-003-9415	MS27183-18
F-2	36	96906	5310-00-003-4094	MS35338-48
F-2	37	96906	5305-01-325-8387	MS90725-64
F-2	38	96906	531 0-00-080-6004	MS27183-14
F-2	39	96906	5310-00-637-9541	MS3533846

FIGURE AND ITEM NUMBER INDEX (CONTINUED)

FIGURE NUMBER	ITEM NUMBER	CAGE CODE	NATIONAL STOCK NUMBER	PART NUMBER
F-2	40	96906	5310-00-732-0558	MS51967-8
F-2	41	80063	5975-01-264-1720	A3046222
F-2	42	80063		A3103784
F-2	43	96906	5306-00-226-4825	MS90725-32
F-2	44	80063		A3103783
F-2	45	96906	5310-01-366-1178	MS51412-37
F-2	46	80063		A3210479
F-2	47	96906	5305-00-225-3839	MS90725-8
F-2	48	96906	5340-00-286-9427	MS21919WDG12
F-2	49	96906	5340-00-584-6556	MS21919WDG8
F-2	50	96906	5340-00-598-0146	MS21919WDG6
F-2	51	96906	5305-00-993-1851	MS35207-267
F-2	52	96906	5305-00-477-0122	MS51861-47C
F-2	53	96906	5310-00-889-2769	MS45904-61
F-2	54	96906	5310-00-934-9765	MS35650-304
F-2	55	96906	5975-00-984-6582	MS3367-1-0
F-2	56	96906	5325-00-285-8363	MS35489-45
F-2	57	80063	SC-B-73180-2	
F-2	58	13499	5895-01-375-7528	021-0706-010
F-2	59	96906	5325-00-960-2410	MS21266-1N
F-2	60	96906	5325-00-923-9512	MS21266-4N
F-2	61			
F-3	1	81349		M39012/05-0101
F-3	2	80063	5975-00-669-9473	SM-B-165914
F-3	3	80063	5975-00-669-9473	SM-B-165914
F-3	4	81349	6145-00-660-8054	M17/75-RG-214
F-3	5	80063	5975-00-669-9473	SM-B-165914
F-4	1	96906		MS3110 F1SL-3P
F-4	2	96906	5935-00-163-3487	MS3116J8-4P
F-4	3	80063	5975-00-669-9473	SM-B-1 65914
F-4	4	80063	5975-00-669-9473	SM-B-1 65914
F-4	5	80063		A3210485
F-4	6	96906	5935-00-430-4044	MS27467/T15B35S
F-4	7	81349	5935-01-180-8245	M85049/17-14W04
F-4	8	96906		C0-02-LG-F-2/SJ-160
F-4	9	80063	5975-00-669-9473	SM-B-165914
F-5	1	96906	5935-00-851-0221	MS3116E14-5S
F-5	2	80063	5975-00-669-9473	SM-B-165914
F-5	3	80063		M6855/4-16L14
F-5	4	80063	5975-00-669-9473	SM-B-165914
F-5	5	80063	5975-00-669-9473	SM-B-165914
F-5	6	80063	5975-00-669-9473	SM-8-165914
F-5	7	81349		TYPE1 GRADE B
F-5	8	96906	5940-00-113-3139	MS20659-161
F-5	9	80063		A3103907

FIGURE AND ITEM NUMBER INDEX (CONTINUED)

FIGURE NUMBER	ITEM NUMBER	CAGE CODE	NATIONAL STOCK NUMBER	PART NUMBER
F-5	10	81349		TYPE1 GRADE B
F-5	11	81349		TYPE1 GRADE B
F-5	12	81349	6145-01-373-2426	M16878/4BHE-2
F-5	13	81349	6145-00-813-1738	M16878/4BHE-0
F-6	1	80063		A321478-1
F-6	2	80063		A3210484

GLOSSARY

CCI	Controlled Cryptographic Items. Communications security equipment which is issued and maintained through the Army Standard Supply System.
CECOM	Communications-Electronics Command. The U.S. Army command responsible for logistics support of radio communications equipment, except classified communications security equipment.
Cold	Start The AN/PSN-11 collecting information from a satellite to find out how many satellites are available.
COMSEC	Communications Security: Equipment/procedures employed to prevent interception and use of U.S. military communications information/signals by opposing forces.
Cryptonet	A secure, multisubscriber communications system.
Encrypt	A process (electrical or mechanical) used to mask communications information in such a way that it is unusable by opposing forces.
ESD	Electrostatic Sensitive Devices. Electronic devices which may be damaged, degraded, or destroyed by the discharge of static electricity. Most modern transistors and electronic circuit chips are electrostatic sensitive devices.
Fill	To load a key into a COMSEC/CCI device.
Fill	DeviceAn electronic, electromechanical, or mechanical device used to fill COMSEC/CCI equipment.
KEK	Key Encryption Key. A unique key generated by the net controller to encrypt TEKs for transmission over the air to outstations (OTAR).
KEY	A pattern (electronic, mechanical, etc.) used to alter or mask communications information in such a manner as to render it unusable to anyone not possessing that key.
Logistics	The documentation, spare parts, training, maintenance facilities, etc., required to support and maintain fielded equipment.
TEK	Traffic Encryption Key. The secondary key which is used when actual secure communications information (traffic) is transmitted between net members.
Symptom	An indication or occurrence.

INDEX

INDEX (CONTINUED)

Subject ..... Paragraph,Figure,Table

A (CONTINUED)

C

D

INDEX (CONTINUED)

INDEX (CONTINUED)

INDEX (CONTINUED)

Subject — Paragraph,Figure,Table

O (CONTINUED)

P

R

INDEX (CONTINUED

Subject Paragraph,Figure,Table

R (CONTINUED)

S

T

INDEX (CONTINUED)

Subject — Paragraph,Figure,Table

T(CONTINUED)

U

W

INDEX7/INDEX-8 (blank)

TEAR ALONG PERFORATED LINE

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

THEN. . JOT DOWN THE DOPE ABOUT IT ON THIS FORM, CAREFULLY TEAR IT OUT, FOLD IT AND DROP IT IN THE MAIL!

SOMETHING WRONG WITH THIS PUBLICATION?

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 11-5825-270-10	23 Jul 81	Radio Frequency R-2176/FRN

BE EXACT. . .PIN-POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER

SIGN HERE:

DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ARE OBSOLETE.

P.S.—IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS.

PIN: 074607-000