PUBLICATION NUMBER: 10515-0124-4200
FEBRUARY 2001
Rev. A

HARRIS

Tactical Radio Products

RF-5800H
125-WATT COMMUNICATION SYSTEM

SYSTEM INSTALLATION/ MAINTENANCE MANUAL

next level solutions

LIMITED ONE YEAR WARRANTY
HARRIS CORPORATION (RF COMMUNICATIONS DIVISION)

FROM HARRIS TO YOU – This warranty is extended to the original buyer and applies to all Harris Corporation, RF Communications Division equipment purchased and employed for the service normally intended, except those products specifically excluded.

WHAT WE WILL DO – If your Harris Corporation, RF Communications Division equipment purchased from us for use outside the United States fails in normal use because of a defect in workmanship or materials within one year from the date of shipment, we will repair or replace (at our option) the equipment or part without charge to you, at our factory. If the product was purchased for use in the United States, we will repair or replace (at our option) the equipment or part without charge to you at our Authorized Repair Center or factory.

WHAT YOU MUST DO – You must notify us promptly of a defect within one year from date of shipment. Assuming that Harris concurs that the complaint is valid, and is unable to correct the problem without having the equipment shipped to Harris:

- Customers with equipment purchased for use outside the United States will be supplied with information for the return of the defective equipment or part to our factory in Rochester, NY, U.S.A., for repair or replacement. You must prepay all transportation, insurance, duty and customs charges. We will pay for return to you of the repaired/replaced equipment or part, C.I.F. destination; you must pay any duty, taxes or customs charges.
- Customers with equipment purchased for use in the United States must obtain a Return Authorization Number, properly pack, insure, prepay the shipping charges and ship the defective equipment or part to our factory or to the Authorized Warranty Repair Center indicated by us.

Harris Corporation
RF Communications Division
Customer Service
1680 University Avenue
Rochester, NY 14610, U.S.A.

Telephone: (716) 244-5830
Fax: 716-242-4755
http://www.harris.com

Harris will repair or replace the defective equipment or part and pay for its return to you, provided the repair or replacement is due to a cause covered by this warranty.

WHAT IS NOT COVERED – We regret that we cannot be responsible for:

- Defects or failures caused by buyer or user abuse or misuse.
- Defects or failures caused by unauthorized attempts to repair or alter the equipment in any way.
- Consequential damages incurred by a buyer or user from any cause whatsoever, including, but not limited to transportation, non-Harris repair or service costs, downtime costs, costs for substituting equipment or loss of anticipated profits or revenue.
- The performance of the equipment when used in combination with equipment not purchased from Harris.
- HARRIS MAKES NO OTHER WARRANTIES BEYOND THE EXPRESS WARRANTY AS CONTAINED HEREIN. ALL EXPRESS OR IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY ARE EXCLUDED.

SERVICE WARRANTY – Any repair service performed by Harris under this limited warranty is warranted to be free from defects in material or workmanship for sixty days from date of repair. All terms and exclusions of this limited warranty apply to the service warranty.

IMPORTANT – Customers who purchased equipment for use in the United States must obtain a Return Authorization Number before shipping the defective equipment to us. Failure to obtain a Return Authorization Number before shipment may result in a delay in the repair/replacement and return of your equipment.

IF YOU HAVE ANY QUESTIONS – Concerning this warranty or equipment sales or services, please contact our Customer Service Department.

PUBLICATION NUMBER: 10515-0124-4200
FEBRUARY 2001
Rev. A

RF-5800H
125-WATT COMMUNICATION SYSTEM

SYSTEM INSTALLATION/MAINTENANCE MANUAL

HARRIS

HARRIS CORPORATION RF COMMUNICATIONS DIVISION
1680 University Avenue Rochester, New York 14610-1887 USA
Tel: 716-244-5830. Fax: 716-242-4755. http://www.harris.com

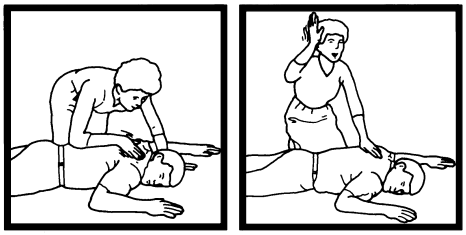
When an Adult Stops Breathing

WARNING

DO NOT attempt to perform the rescue breathing techniques provided on this page, unless certified. Performance of these techniques by uncertified personnel could result in further injury or death to the victim.

1 *Does the Person Respond?*

- Tap or gently shake victim.
- Shout, "Are you OK?"

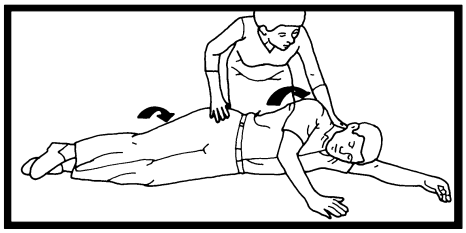


2 *Shout, "Help!"*

- Call people who can phone for help.

3 *Roll Person Onto Back*

- Roll victim toward you by pulling slowly.



4 *Open Airway*

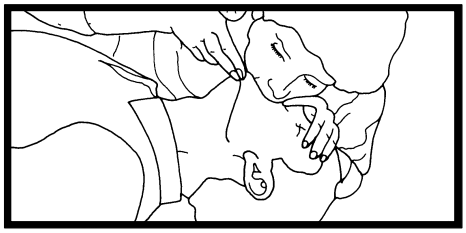
- Tilt head back and lift chin.

5 *Check for Breathing*

- Look, listen, and feel for breathing for 3 to 5 seconds.

6 *Give 2 Full Breaths*

- Keep head tilted back.
- Pinch nose shut.
- Seal your lips tight around victim's mouth.
- Give 2 full breaths for 1 to 1-1/2 seconds each.



7 *Check for Pulse at Side of Neck*

- Feel for pulse for 5 to 10 seconds.

8 *Phone for Help*

- Send someone to call an ambulance.

9 *Begin Rescue Breathing*

- Keep head tilted back.
- Lift chin.
- Pinch nose shut.
- Give 1 full breath every 5 seconds.
- Look, listen, and feel for breathing between breaths.

10 *Recheck Pulse Every Minute*

- Keep head tilted back.
- Feel for pulse for 5 to 10 seconds.
- If victim has pulse but is not breathing, continue rescue breathing. If no pulse, begin CPR.

For more information about these and other life–saving techniques, contact your Red Cross chapter for training.
"When Breathing Stops" reproduced with permission from an American Red Cross Poster.

TABLE OF CONTENTS

TABLE OF CONTENTS – Continued

LIST OF FIGURES

LIST OF FIGURES – Continued

LIST OF TABLES

SAFETY SUMMARY

1. INTRODUCTION

All operators and maintenance personnel must observe the following safety precautions during operation and maintenance of this equipment. Specific warnings and cautions are provided in the manual and at the end of this Safety Summary. Warnings, Cautions, and Notes appear before various steps in the manual and will be used as follows:

- **WARNING** – Used when injury or death to personnel and damage to equipment is possible
- **CAUTION** – Used when there is a possibility of damage to equipment
- **NOTE** – Used to alert personnel to a condition that requires emphasis

2. PERSONNEL AND EQUIPMENT SAFETY

Basic safety precautions consider factors involved in protecting personnel from injury or death. Electrical, mechanical, electromagnetic radiation (EMR), material, or chemical hazards are the most common types of hazards found in electronic equipment. The following are types of hazards that may exist:

ELECTRICAL – Hazardous voltage and current levels may exist throughout the equipment. Contact with these hazards could cause electrocution, electrical shock, burns, or injury due to involuntary reflexes of the body.

MECHANICAL – Mechanical hazards are created when heavy assemblies and components must be removed and replaced. Moving parts (such as fan blades) and hot surfaces are potential mechanical hazards.

THERMAL – Burn hazards may exist in the equipment that could cause personal injuries and/or serious equipment damage. Internal surfaces of the equipment may be in excess of 65°C, the point at which personnel could be burned. Extreme caution should be used when working with any hot assemblies (for example, power supply or power amplifier assemblies). Physical injury or damage may result to personnel and/or equipment as a result of a reflex action to a burn.

CHEMICAL – Chemicals or materials used for servicing the equipment may present potential hazards. Many chemical agents, such as cleaners and solvents, may be toxic, volatile, or flammable. If used incorrectly, these agents can cause injury or death.

EMR – Overexposure to electromagnetic radiation resulting from amplified radio frequencies that may produce a health hazard.

3. OPERATIONAL AND MAINTENANCE SAFETY GUIDELINES

Good safety discipline is critical to prevent injury to personnel. All other safety measures are useless if personnel do not observe the safety precautions and do not follow safety disciplines. Once aware of a hazard, personnel should ensure that all other personnel are aware of the hazard. The following basic safety disciplines are stressed:

a. Read a procedure entirely before performing it. Personnel must always perform each assigned task in a safe manner.

b. Prior to applying equipment power after maintenance, personnel must ensure that all unsecured hand tools and test equipment are disconnected from the serviced/maintained equipment and properly stored.

c. Power to the equipment must be removed before a piece of equipment is removed.

d. Extreme care must be used when adjusting or working on operating equipment. Voltages in excess of 70 V or current sources in excess of 25 A are covered with barriers. Barriers include warning information about the hazard encountered upon barrier removal.

e. Personnel must react when someone is being electrically shocked. Perform the following steps:

1. Shut off power.

2. Call for help.

3. Administer first aid if qualified.

Under no circumstances should a person come directly in contact with the body unless the power has been removed. When immediate removal of the power is not possible, personnel must use a non-conductive material to try to jolt or pry the body away from the point of shock.

f. Personnel should work with one hand whenever possible to prevent electrical current from passing through vital organs of the body. In addition, personnel must never work alone. Someone must be available in the immediate area to render emergency first aid, if necessary.

g. Lifting can cause injury. Items weighing more than 37 pounds must be lifted by two or more people.

h. Some electrolytic capacitors contain aluminum oxide or tantalum. If connected incorrectly, the capacitor will explode when power is applied. Extreme care must be used when replacing and connecting these capacitors. The capacitor terminals must always be connected using the correct polarity: positive to positive and negative to negative.

The next section contains general safety precautions not directly related to specific procedures or equipment. These precautions are oriented toward the maintenance technician. However, all personnel must understand and apply these precautions during the many phases of operation and maintenance of the equipment. The following precautions must be observed:

DO NOT SERVICE EQUIPMENT ALONE

Never work on electrical equipment unless another person familiar with the operation and hazards of the equipment is near. When the maintenance technician is aided by operators, ensure that operators are aware of the hazards.

GROUNDING

Always ensure that all equipment and assemblies are properly grounded when operating or servicing.

TURN OFF POWER AND GROUND CAPACITORS

Whenever possible, power to equipment should be turned off before beginning work on the equipment. Be sure to ground all capacitors that are potentially dangerous.

KEEP AWAY FROM LIVE CIRCUITS

Operators and maintainers must observe all safety regulations at all times. Do not change components or make adjustments inside equipment with a high voltage supply on unless required by the procedure. Under certain conditions, dangerous potentials may exist in circuits with power controls off, due to charges retained by capacitors.

DO NOT BYPASS INTERLOCKS

Do not bypass any interlocks unnecessarily. If it is necessary to employ an interlock bypass for equipment servicing, use extreme care not to come in contact with hazardous voltages.

USE CARE HANDLING HEAVY EQUIPMENT

Never attempt to lift large assemblies or equipment without knowing their weight. Use enough personnel or a mechanical lifting device to properly handle the item without causing personal injury.

HEED WARNINGS AND CAUTIONS

Specific warnings and cautions are provided to ensure the safety and protection of personnel and equipment. Be familiar with and strictly follow all warnings and cautions on the equipment and in technical manuals.

PROTECTIVE EYEWEAR

All personnel must wear protective eyewear when servicing or maintaining equipment. Protective eyewear must be worn at all times when using tools.

4. PROTECTION OF STATIC-SENSITIVE DEVICES

Diode input-protection is provided on all CMOS devices. This protection is designed to guard against adverse electrical conditions such as electrostatic discharge. Although most static-sensitive devices contain protective circuitry, several precautionary steps should be taken to avoid the application of potentially damaging voltages to the inputs of the device.

To protect static-sensitive devices from damage, the following precautions should be observed.

a. Keep all static-sensitive devices in their protective packaging until needed. This packaging is conductive and should provide adequate protection for the device. Storing or transporting these devices in conventional plastic containers could be destructive to the device.

b. Disconnect power prior to insertion or extraction of these devices. This also applies to PWBs containing such devices.

c. Double check test equipment voltages and polarities prior to conducting any tests.

d. Avoid contact with the leads of the device. The component should always be handled carefully by the ends or side opposite the leads.

e. Avoid contact between PWB circuits or component leads and synthetic clothing.

f. Use only soldering irons and tools that are properly grounded. Ungrounded soldering tips or tools can destroy these devices. SOLDERING GUNS MUST NEVER BE USED.

5. EXPLANATION OF HAZARD SYMBOLS

The symbol of drops of a liquid onto a hand shows that the material will cause burns or irritation of human skin or tissue.

The symbol of a person wearing goggles shows that the material will injure your eyes.

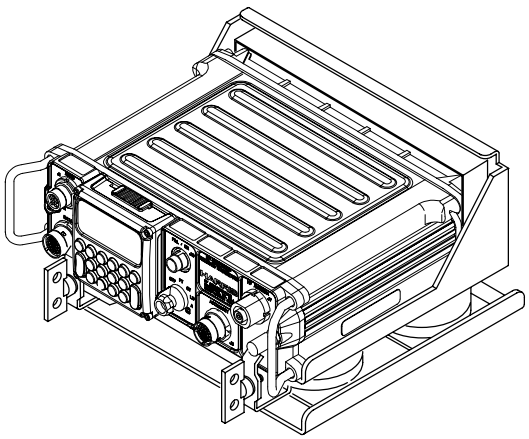
The symbol of a flame shows that a material can ignite and burn you.

The symbol of a skull and crossbones shows that a material is poisonous or a danger to life.

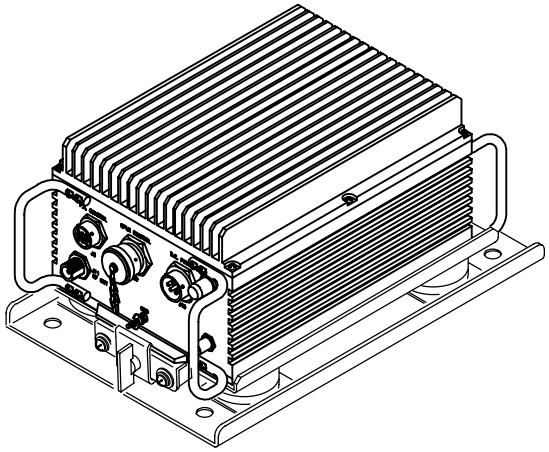
The symbol of a human figure in a cloud shows that vapors of a material present danger to your life or health.

RF-5800H 125-WATT COMMUNICATION SYSTEM

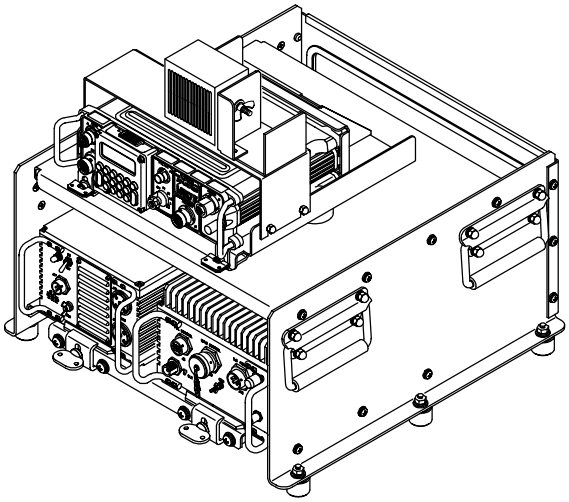
SYSTEM INSTALLATION/MAINTENANCE MANUAL



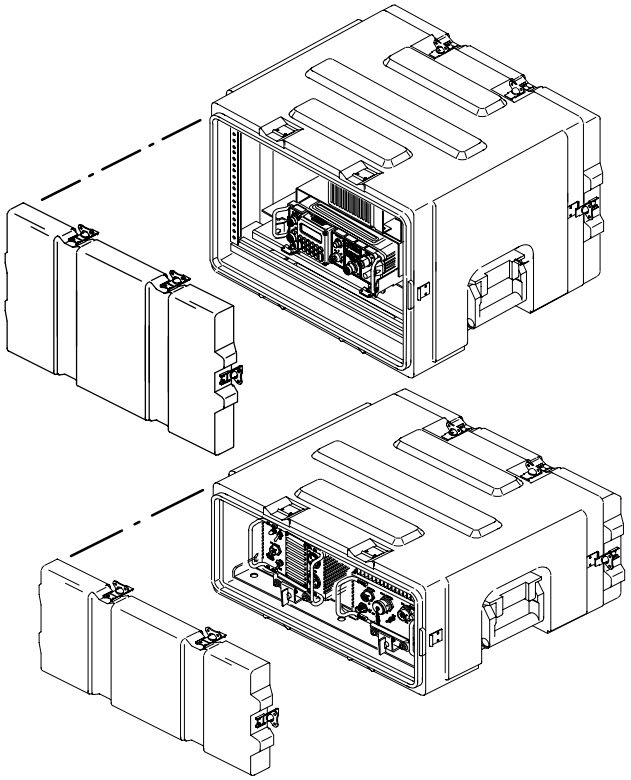
RF-5800H-MP



RF-5832H-PA



BASE STATION



TRANSIT CASE

5800H-125-V120A

Figure 1-1. Typical RF-5800H 125-Watt Communication System

CHAPTER 1

GENERAL INFORMATION

1.1 INTRODUCTION

This manual provides the maintainer with all technical information required to support Level II maintenance as described in Paragraph 1.3.2.

The overall intent of this manual is to help the maintainer expedite repair of the unit in a reasonable amount of time, resulting in reduced downtime and increased system availability. Detailed information that will be useful to the maintainer is provided in the following areas:

- Installation
- Configuration
- Equipment specifications
- Fault isolation and repair techniques
- Required tools and test equipment
- Functional descriptions at the system level

1.2 SAFETY PRECAUTIONS

All safety precautions necessary for the protection of personnel and the equipment are cross-referenced here. The WARNING or CAUTION is referenced to the paragraph number where it is used in the manual, and a brief subject phrase indicating the content is provided. It is recommended that these items be read in their entirety before performing the referenced procedure. References are as follows:

- WARNING – Paragraph 2.2.1.1 – Inadequate or defective grounding presents a personnel hazard that could result in injury or death.
- CAUTION – Paragraph 2.2.1.1 – Inadequate or defective grounding could damage the equipment.
- CAUTION – Paragraph 2.2.1.3 – Inadequate or defective grounding could damage the equipment.
- CAUTION – Paragraph 2.2.1.4 – Inadequate or defective grounding could damage the equipment.

1.3 MAINTENANCE LEVELS

Harris/RF Communications designs its products and systems to be supported by up to four maintenance levels. See Figure 1-2. Each maintenance level relies on a defined set of support documentation and equipment in order to fulfill its maintenance tasks. The tasks performed at each level grow in complexity as fault isolation is narrowed to the component causing the fault. This concept assists the maintainer by supplying only the information and materials required for that maintenance level. These levels may be combined to sustain any particular user maintenance philosophy. The four maintenance levels are described in Paragraphs 1.3.1 through 1.3.4.

1.3.1 Level I

This level is restricted to fault recognition and detection. Fault isolation is not usually performed at this level. An operator who detects a faulty condition alerts Maintenance Level II for repair.

1.3.2 Level II

The maintenance technician repairs the radio system by utilizing a System (Level II) manual to fault isolate to the faulty unit (for example, receiver-transmitter, power amplifier, antenna coupler, etc.). The faulty LRU is replaced with a spare and sent to Maintenance Level III.

1.3.3 Level III

The faulty unit is serviced at a facility that has support equipment available, typically a hot test bed radio system. The suspected faulty unit is inserted into the hot test bed radio system to isolate the faulty assembly using a Maintenance (Level III) manual. The faulty SRU or module is replaced with a spare and passed to Maintenance Level IV.

1.3.4 Level IV

The faulty SRU or module is returned to Harris/RF Communications for repair. If Level IV maintenance capabilities are available on-site, the maintenance technician can identify the faulty component on the SRU using a Depot Maintenance (Level IV) manual that outlines the electronic maintenance techniques and test fixtures necessary to repair the SRU.

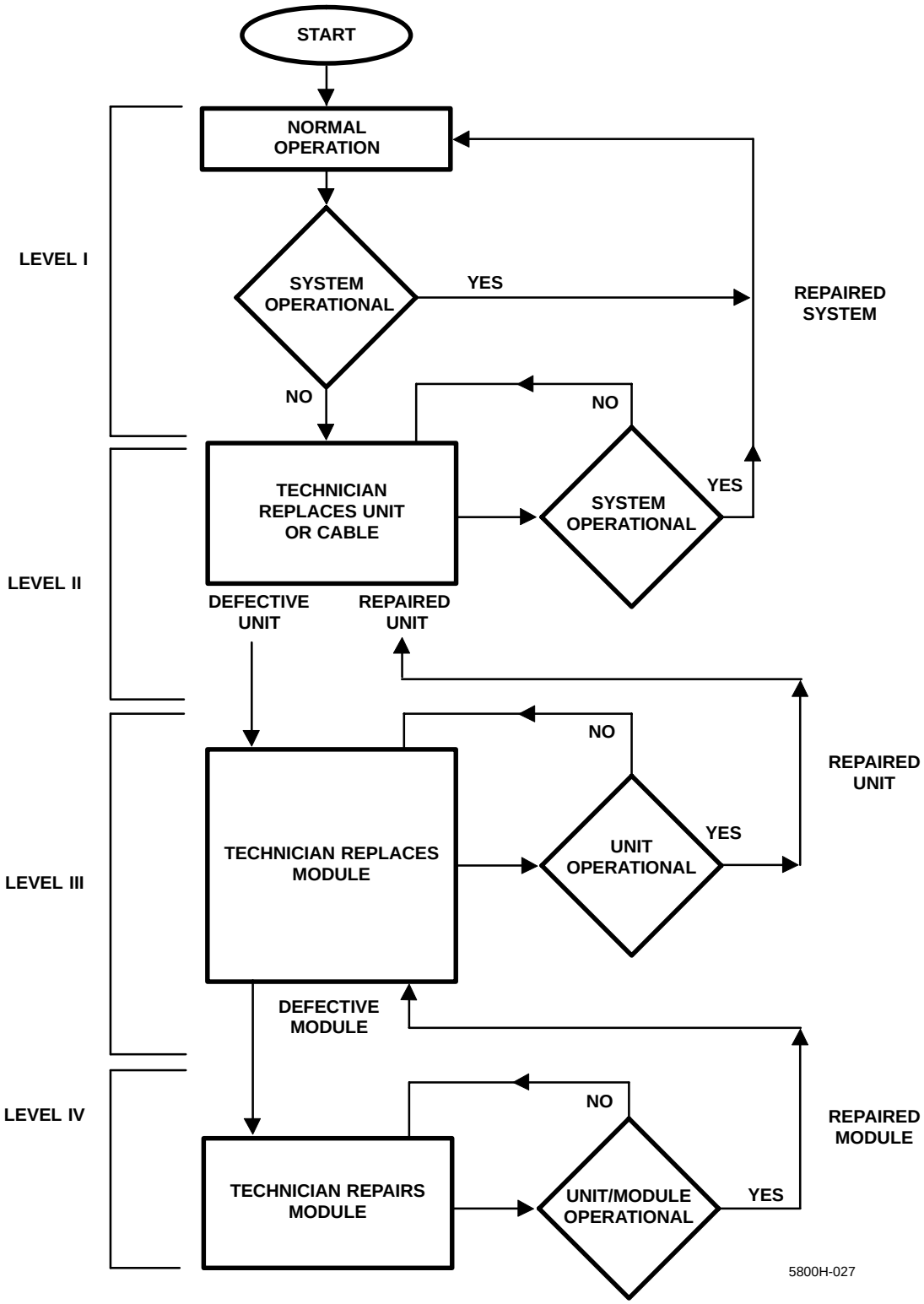


Figure 1-2. Maintenance Flow Chart

1.4 WARRANTY

Harris Corporation guarantees that if the equipment fails from normal use within one year from the date of shipment due to a defect in workmanship or materials, Harris will repair or replace the equipment at no charge. Repairs made by Harris to the equipment under this warranty are warranted to be free from defects in material and workmanship for 60 days from the date of repair.

For information on how to process a claim under this warranty, and on what is not covered by this warranty, refer to the warranty information printed on the inside front cover of this manual.

1.5 GENERAL SYSTEM DESCRIPTION

Table 1-1 identifies the RF-5800H 125-Watt Communication System configurations. Paragraphs 1.5.1 through 1.5.3 describes the configuration.

Table 1-1. RF-5800H 125-Watt Configurations

Description
125-Watt Vehicular System
125-Watt Base Station System
125-Watt Transit Case System

1.5.1 RF-5800H 125-Watt Vehicular System

Figure 1-3 shows the relationship of the units contained in the RF-5800H 125-Watt Vehicular System and Figure 1-4 is the family tree. This system contains an RF-5832H-PA 125-Watt Power Amplifier (herein after referred to as RF-5832H-PA), interconnect cables, ground strap, and two shock mounts. The RF-5211VSM Vehicular Shock Mount (herein after referred to as RF-5211VSM) is used with the RF-5800H-MP Manpack Radio (herein after referred to as RF-5800H-MP) and the RF-5071VSM Vehicular Shock Mount (herein after referred to as RF-5071VSM) is used with the RF-5832H-PA. The RF-5800H-MP and the optional RF-382A Automatic Antenna Coupler (herein after referred to as RF-382A) are ordered separately.

1.5.2 RF-5800H 125-Watt Base Station System

Figure 1-5 shows the relationship of the units contained in the RF-5800H 125-Watt Base Station System. Figure 1-6 is the family tree. This system contains an RF-5832H-PA, an RF-5051PS Power Supply (herein after referred to as RF-5051PS), and an external speaker. The RF-5800H-MP and RF-382A are ordered separately.

1.5.3 RF-5800H 125-Watt Transit Case System

Figure 1-7 shows the relationship of the units contained in the typical configuration of the RF-5800H 125-Watt Transit Case System. Figure 1-8 is the family tree. This system consists of a transit case containing an RF-5832H-PA, an RF-5051PS, and a shock mount for the RF-5832H-PA. A mounting tray for an RF-5800H-MP and an external speaker are mounted in a separate transit case. The RF-5800H-MP and RF-382A are ordered separately.

1.5.4 Related Equipment Manuals

Table 1-2 identifies the manuals that may be necessary to configure and maintain the RF-5800H 125-Watt Communication System in its various configurations.

Table 1-2. Related Equipment Manuals

Part Number	Manual Description
10515-0008-4300	RF-382, CU-2397 Antenna Coupler Intermediate Maintenance Manual
10515-0117-4200	RF-5800H Operations Manual
10515-0117-4300	RF-5800H-MP Intermediate Maintenance Manual
10515-0124-4300	RF-5832H-PA 125-Watt Power Amplifier Intermediate Maintenance Manual
10515-0071-4100	RF-5056PS 12/24 V DC/DC Power Converter Supplement
10515-0164-4300	RF-5845-PP Pre/Postselector Intermediate Maintenance Manual

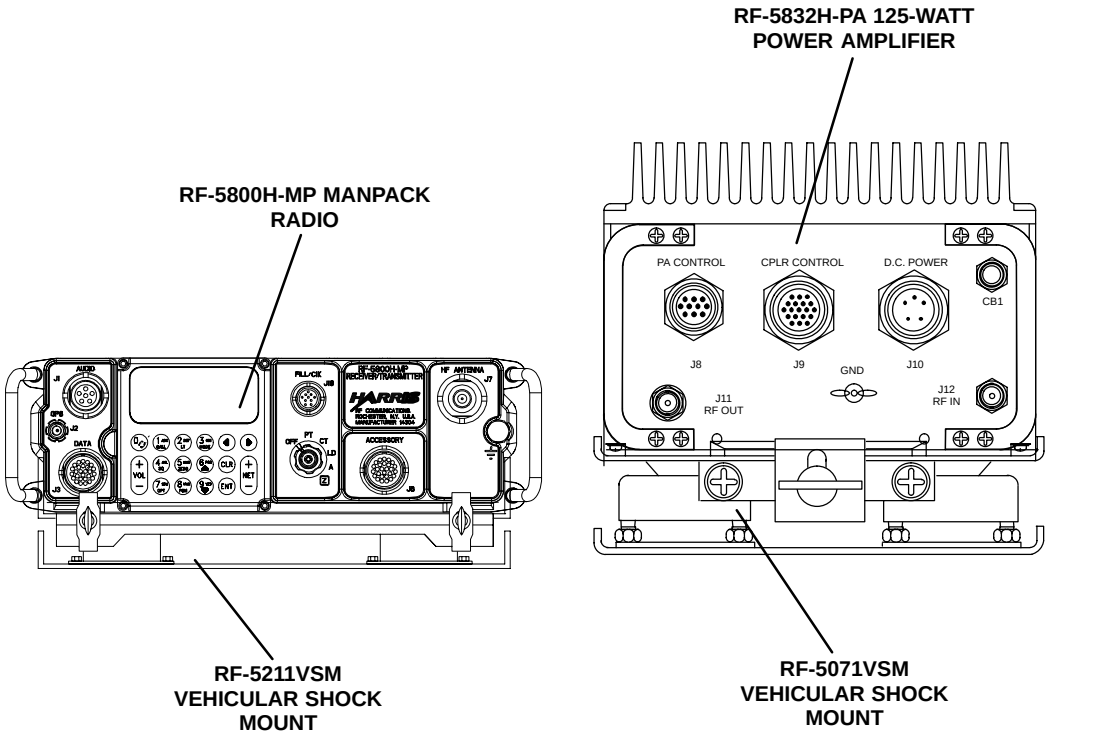


Figure 1-3. Relationship of Units in RF-5800H 125-Watt Vehicular System Typical Configuration

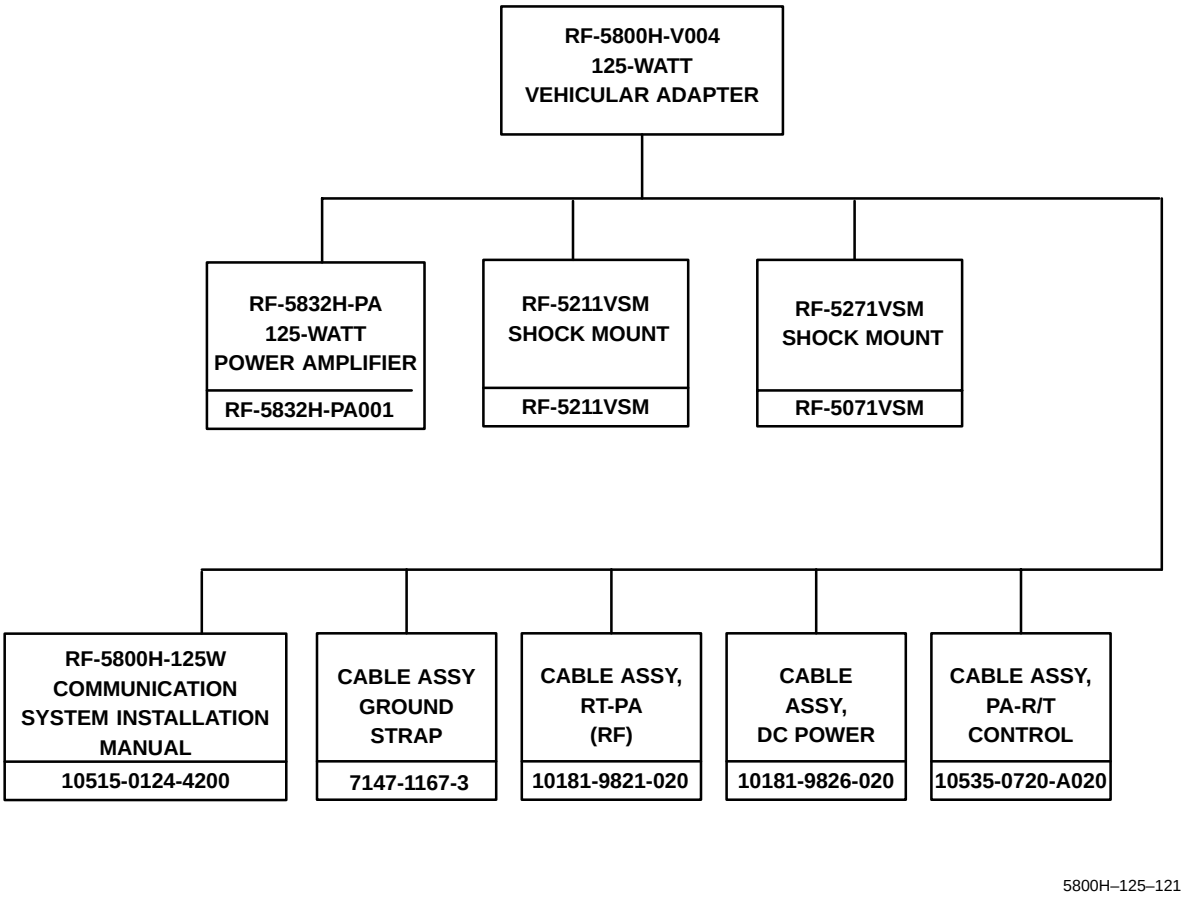


Figure 1-4. RF-5800H 125-Watt Vehicular System Family Tree Typical Configuration

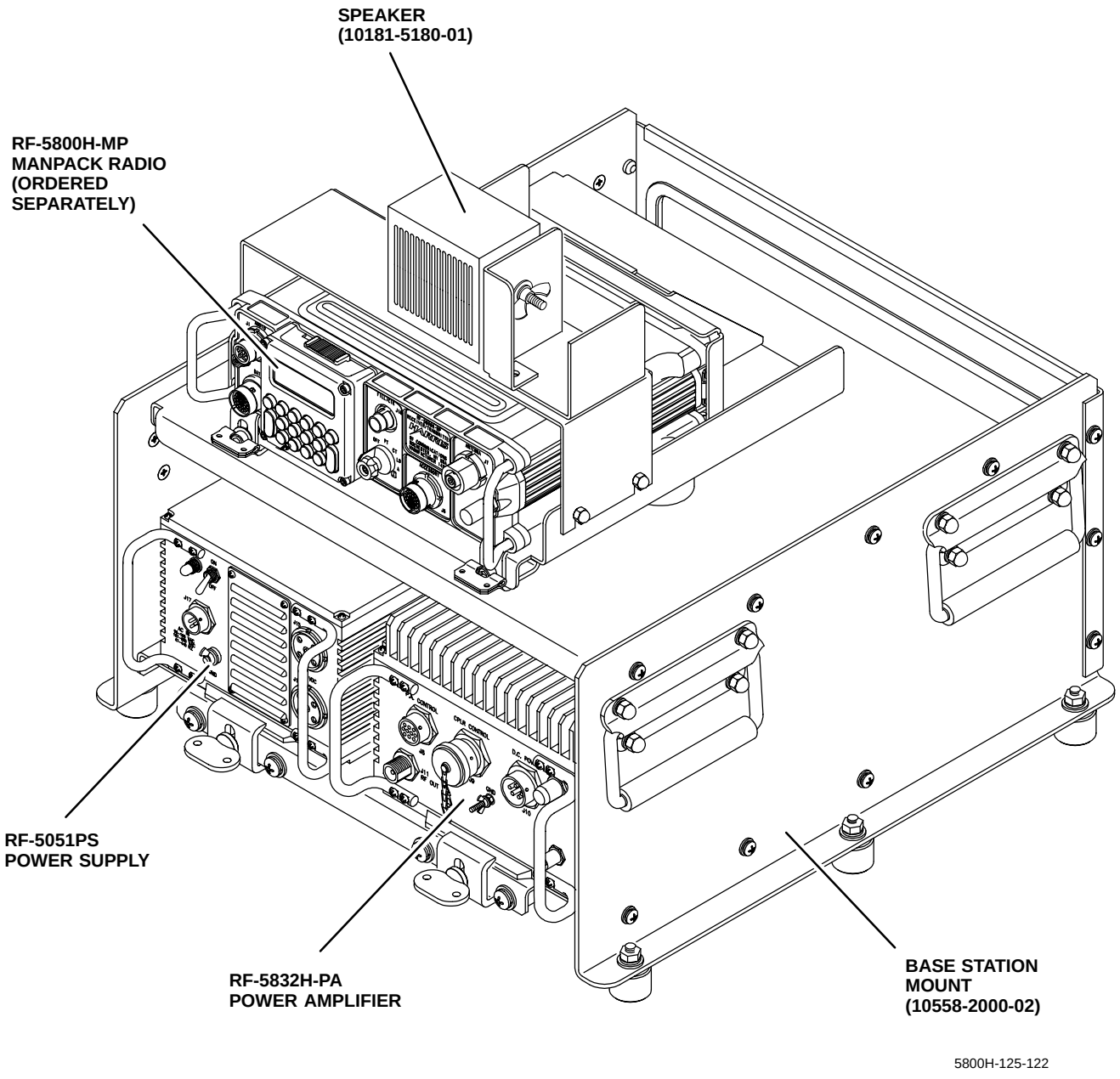


Figure 1-5. Relationship of Units in RF-5800H 125-Watt Base Station System Typical Configuration

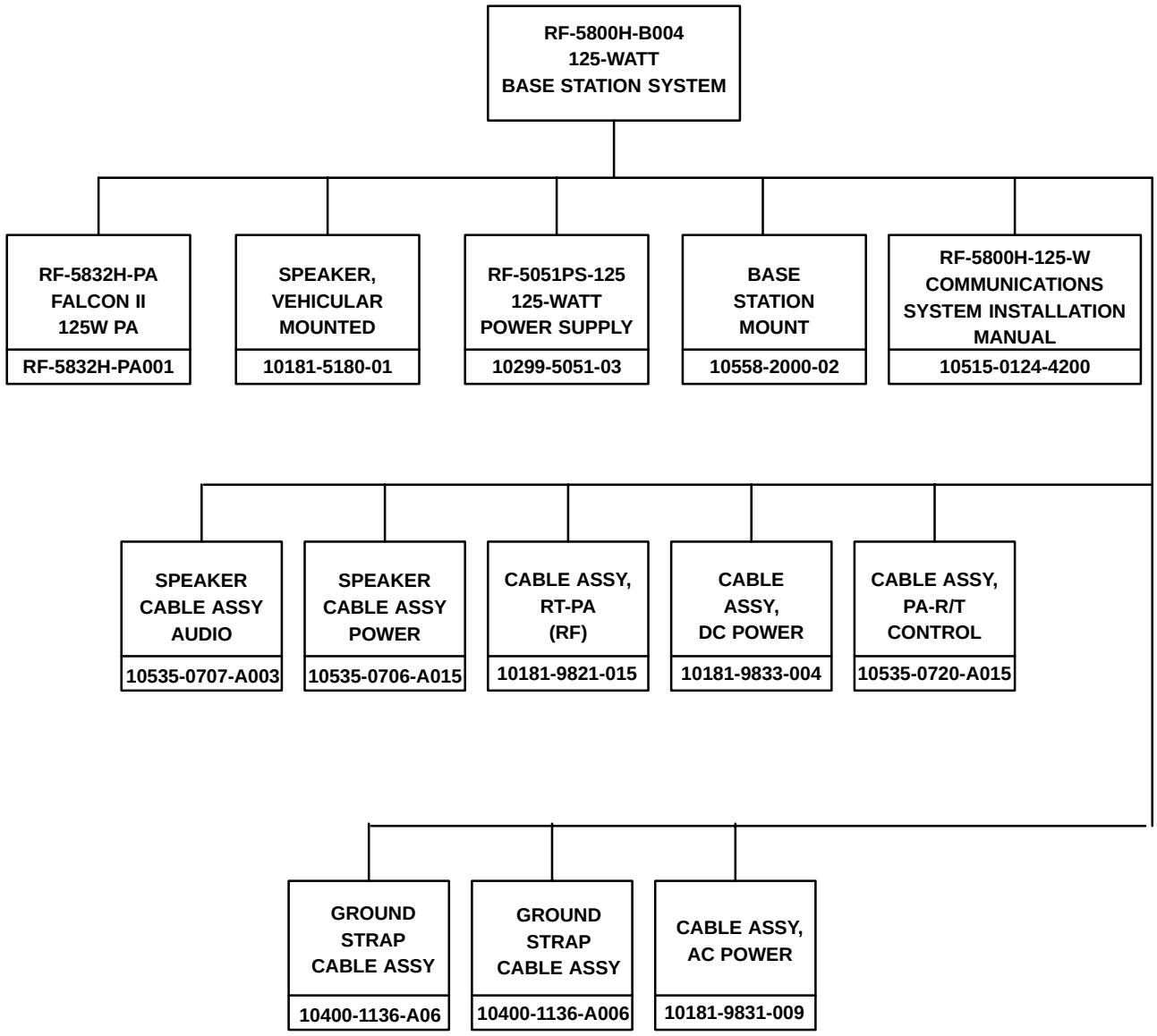


Figure 1-6. RF-5800H 125-Watt Base Station System Family Tree Typical Configuration

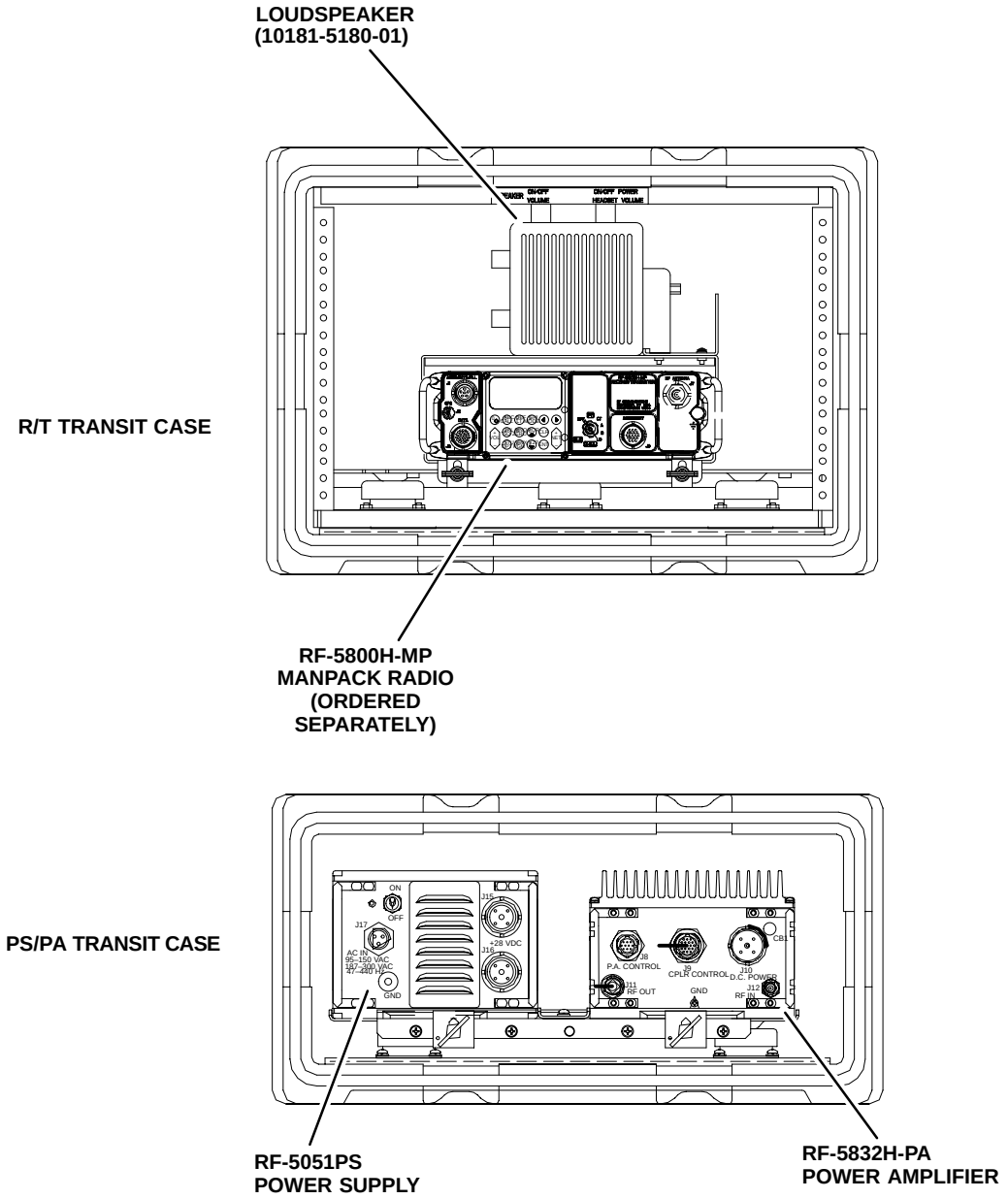


Figure 1-7. Relationship of Units in the RF-5800H 125-Watt Transit Case System Typical Configuration

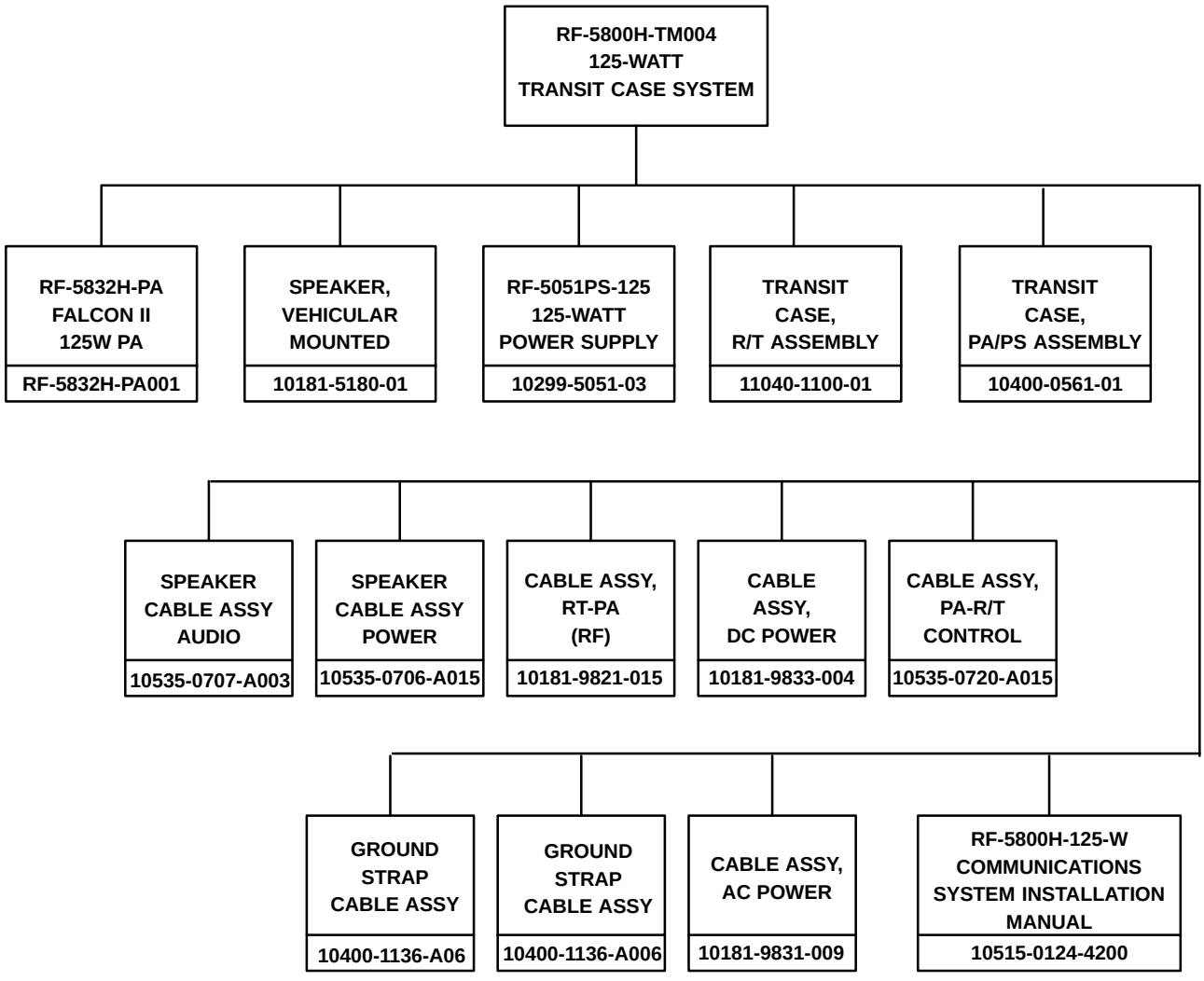


Figure 1-8. RF-5800H 125-Watt Transit Case System Family Tree Typical Configuration

1.6 GENERAL EQUIPMENT DESCRIPTIONS

The following paragraphs describe the units that make up the RF-5800H 125-Watt Communication System.

1.6.1 RF-5832H-PA

The RF-5832H-PA responds to control inputs from the RF-5800H-MP and is operator transparent. It requires either a separate antenna coupler such as the RF-382A or a 50-ohm broadband antenna.

The RF-5832H-PA has the following features:

- Frequency range of 1.6 MHz to 29.9999 MHz
- Power output range of 10 watts PEP/average to 125 watts PEP/average into a 50 ohm load
- Automatic control from the RF-5800H-MP
- Integral power supply, control circuits, and harmonic filters
- Power supply overload protection for the RF-5800H-MP
- Operational status monitored via the control cable to the RF-5800H-MP

1.6.2 RF-5051PS

The RF-5051PS provides 24 Vdc at 30 amperes from 90 Vac to 300 Vac, 47 Hz to 400 Hz sources. It is typically used for fixed station operation of RF-5800H 125-Watt Transceiver Systems. The RF-5051PS can be mounted in an RF-5071VSM.

1.6.3 RF-382A (Optional)

The RF-382A is a 500 Watt PEP/250 watt average fast tune automatic antenna coupler. This unit automatically matches the output of the RF-5832H-PA to a wide range of whip, dipole, and long-wire antennas over the full operating range of the system. After an initial tuning cycle, the tune time of the RF-382A is 25 milliseconds. The initial tune cycle time is typically less than one second.

1.6.4 Unit Identification

The units are identified by tags with the model (part) number and serial number.

1.6.5 Specifications

For RF-5832H-PA specifications, refer to Table A-1. For RF-5051PS specifications, refer to Table A-2. For RF-382A specifications, refer to Table A-3.

1.7 LIST OF ITEMS REQUIRED BUT NOT SUPPLIED

Table 1-3 lists the tools and materials required for installing, and removing and replacing the individual units. Part number and CAGE Code information is also provided.

Table 1-3. Required Tools, Test Equipment, and Materials

Description	Part Number	CAGE Code
Wrench, Rachet, 3/8-Inch Drive	F830	55719
Socket Set, 3/8-Inch Drive	214FSY	55719
Screwdriver, Cross-Tip, #2, 12-Inch Blade	SDDP122	55719
Screwdriver, Flat-Tip, 4-Inch Blade	R144	96508
Multimeter, Digital	87	89536

1.8 LIST OF MANUFACTURERS

Table 1-4 provides a list of manufacturers.

Table 1-4. List of Manufacturers

CAGE Code	Manufacturer Name and Address
14304	Harris Corporation RF Communications Division 1680 University Avenue Rochester, NY 14610-2842
55719	Snap-On Tools 2801 80th Street Kenosha, WI 53141-1440
89536	John Fluke Mfr Co., Incorporated 6920 Seaway Blvd. P.O. Box 9090 Everrett, WA 98206-9090
96508	Cooper Industries, Incorporated Cooper Tools Division Lufkin Road Apex, NC 27502-0000

This page intentionally left blank.

CHAPTER 2

INSTALLATION

2.1 INTRODUCTION

This chapter describes the following:

- Site information – Paragraph 2.2
- Tools and materials required – Paragraph 2.3
- Unpacking and repacking – Paragraph 2.4
- Equipment installation – Paragraph 2.5
- Installation checkout – Paragraph 2.6

2.2 SITE INFORMATION

The information contained here provides general guidelines for setting up the RF-5800H 125-Watt Communication System. In general, select a ventilated, well-lit location. Avoid placing the system in a congested area, or where there is excessive noise. The following are general site considerations:

- Availability of power source, earth ground, antenna, etc.
- Ease of operation, maintenance, or removal and replacement
- Ventilation
- Clearance of cable connections
- Stable surface to mount equipment

2.2.1 General Guidelines

The information contained in the following paragraphs provides general site guidelines. Before choosing a location, become familiar with the dimensions of the equipment and mounting brackets, and make sure there is plenty of room for maintenance when the radio system is installed.

2.2.1.1 Grounding

WARNING

The following paragraphs suggest grounding guidelines that should be followed when performing Vehicular, Base Station or Transit Case installations.

Inadequate or defective grounding presents a personnel hazard that could result in injury or death.

CAUTION

Inadequate or defective grounding could damage the equipment.

2.2.1.2 Vehicular Configuration Grounding

The following are general guidelines for vehicular grounding:

- All ground straps should be as short as possible (ideally less than 12 inches [30 cm]).

NOTE

This system is grounded by connecting power ground return directly to the power source ground to maximize noise immunity.

- Paint, grease, rust, etc. must be removed so only bare metal is visible at grounding points. Use the chassis frame or a welded steel body panel for the grounding point.
- Never ground to trim or hinged panels (door, hood, etc.) or to surfaces which can be removed from the chassis (dashboard, seats, etc.).
- Ground cables should be fabricated from tinned, braided copper of the correct length. Ground is provided via vehicle shock mount ground strap.

2.2.1.3 Base Station Configuration Grounding

CAUTION

Inadequate or defective grounding could damage the equipment. Do not daisy-chain ground connections, as voltage differentials develop over long distances.

CAUTION

Any artificial ground system must also be connected to the primary power source to prevent generation of RFI and high voltage electromagnetic fields around the equipment.

The transceiver ground terminal must be connected to a grounded pipe (such as a cold water pipe), preferably where the pipe enters the ground, or a steel or copper rod driven six to ten feet into the soil. In situations where the water table is far below the surface (such as desert or mountainous terrain), it may be necessary to create an artificial ground system by burying steel or copper plates six to ten inches below the transceiver location. In all cases, these grounds must be connected to both the transceiver and the antenna coupler using at least No. 8 copper cable directly from the ground point.

2.2.1.4 Transit Case Configuration Grounding

CAUTION

Inadequate or defective grounding could damage the equipment. Do not daisy-chain ground connections, as voltage differentials develop over long distances.

CAUTION

Any artificial ground system must also be connected to the primary power source to prevent generation of RFI and high voltage electromagnetic fields around the equipment.

The transceiver ground terminal must be connected to a grounded pipe (such as a cold water pipe), preferably where the pipe enters the ground, or a steel or copper rod driven six to ten feet into the soil. In situations where the water table is far below the surface (such as desert or mountainous terrain), it may be necessary to create an artificial ground system by burying steel or copper plates six to ten inches below the transceiver location. In all cases, these grounds must be connected to the transceiver, the power supply, the power amplifier, and the antenna coupler using at least No. 8 copper cable directly from the ground point.

2.2.1.5 Environmental

The RF-5832H-PA will function normally in the environments listed in Table A-1.

2.3 TOOLS AND MATERIALS REQUIRED

A typical installation requires wrenches, hammer, punch, pliers, power drill, and drill bits in addition to the tools listed in Table 1-3.

2.4 UNPACKING AND REPACKING

Equipment is packed in corrugated boxes. A two-piece foam enclosure protects the equipment against corrosion and rough handling. The boxes and packing materials should be retained in case the equipment is shipped again.

The following paragraphs describe how to unpack and repack the radio system units.

2.4.1 Unpacking

Perform the following procedure to unpack the equipment:

a. Inspect the exterior of the box for signs of damage during shipment. Note any problems and report them to the proper authority. An external sticker on the shipping box provides additional instructions concerning inspection of the package.

b. Use normal care to move the boxed equipment into the general location where the installation is to be performed. Certain boxes, depending on system configuration, may be heavy. Exercise care when moving boxed assemblies to and from locations.

c. After removing the equipment from the box, check the contents against the packing slip to see that the shipment is complete. Report discrepancies to Harris/RF Communications' customer service department (tel: 716-244-5830).

2.4.2 Repacking

Perform the following procedure to repack the equipment:

a. Use the original box if it was retained. If not, use a box that allows three inches of clearance on all sides of the unit.

b. Use the original packing material if it was retained. If not, use foam packing material to fill the space between the unit and the box. Surround the entire unit with three inches of foam packing material.

c. Use a good quality packing tape (or straps) to seal the box after closing.

2.5 EQUIPMENT INSTALLATION

The following paragraphs describe the power requirements and ancillary items kit required to properly install the radio system. Cabling, switch settings, unit removal and installation procedures, clearance and ventilation requirements, and mounting information is also included. For installation information regarding the RF-5056PS 12/24 V DC/DC Power Converter or RF-382A refer to their applicable manuals listed in Table 1-2.

2.5.1 Power Requirements

NOTE

Use of power cables less than 10 AWG or that are greater than 20 feet long will result in significant voltage drops.

The RF-5800H 125-Watt Communication System is designed to operate as either a base station or transit case station with the RF-5051PS or as a vehicular system from a standard 28 Vdc vehicular battery-alternator system, typical of military vehicles (per MIL-STD-1275).

The required voltage for the RF-5800H 125-Watt Communication System is between 90 – 300 Vac, single phase for the RF-5800H 125-Watt Base Station and Transit Case Systems, or +22.5 Vdc to +30.0 Vdc (negative ground) for the RF-5800H 125-Watt Vehicular System. Maximum power consumption is 1010 watts at full load. Refer to Chapter 7 for pinouts of power cables.

2.5.2 Access Clearance and Ventilation Requirements

See Figures 2-1, 2-2, and 2-3 for RF-5800H 125-Watt Communication System installation and maintenance clearances. Consider the following access clearance and ventilation requirements when possible:

- Ventilation clearance of at least 1.5 inches (3.81 cm) behind the system.
- Clearance in front of the system for maintenance personnel of at least 41 inches (104 cm).
- Ventilation clearance of at least 3.0 inches 7.62 cm) above the system.

When adequate space is provided as described above, special ventilation requirements are not necessary.

2.5.3 Vehicular Shock Mounts

See Figures 2-4 and 2-6 for the vehicular shock mount dimensions. Refer to Table 7-5 for a list of attaching hardware included in the RF-5071VSM ancillary kit and Table 7-7 for a list of attaching hardware included in the RF-5211VSM ancillary kit.

For the four hole locations on the RF-5071VSM, attach to the vehicle in the following arrangement:

- Hex Bolt
- Lockwasher
- Shock mount bottom plate
- Vehicle body
- Lockwasher
- Hex Nut

Add a ground strap at one of the four locations between the lockwasher and the shock mount bottom plate.

For the four hole locations on the RF-5211VSM, attach to the vehicle in the following arrangement:

- Hex Bolt
- Shock mount bottom plate
- Vehicle body
- Flatwasher
- Lockwasher
- Hex Nut

Add a ground strap at one of the four locations between the flatwasher and the shock mount bottom plate or at the ground stud located near the rear of the shock mount bottom plate. Refer to the RF-5211VSM outline and installation drawing, Part Number (10372-0876) included with the shock mount for additional information.

2.5.4 Jumper/DIP Switch Settings

There are no jumper/DIP switch settings required when installing the RF-5800H 125-Watt Communication System.

2.5.5 Unit Removal and Installation Procedures

See Figures 2-7, 2-8, and 2-9 for RF-5800H 125-Watt Communication System installation diagram.

2.5.6 System Cabling Interconnect Information

See Figures 2-10 and 2-11 for RF-5800H 125-Watt Communication System cabling interconnect diagrams.

This page intentionally left blank.

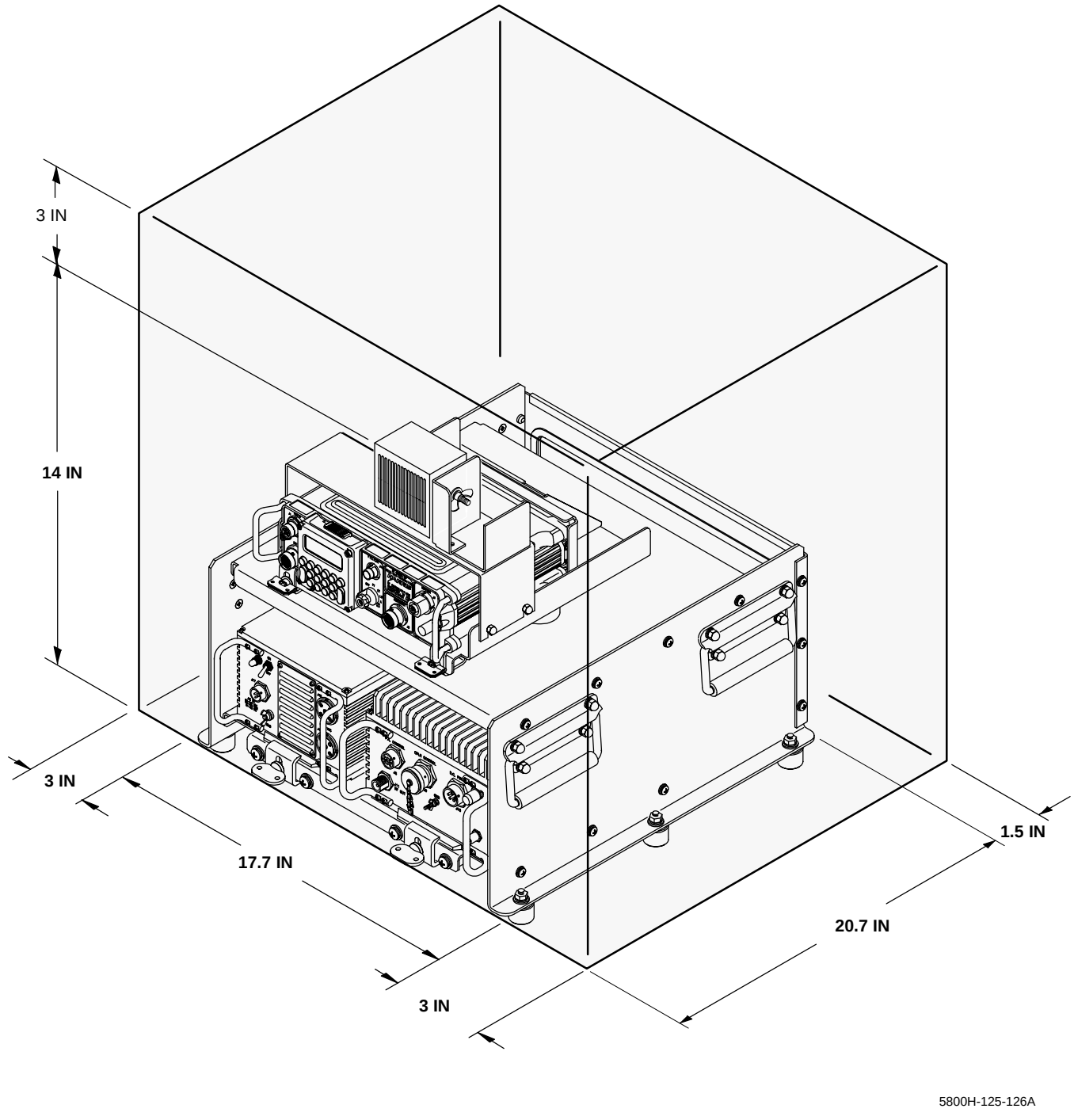


Figure 2-2. RF-5800H-125 Watt Base Station Installation and Maintenance Clearances

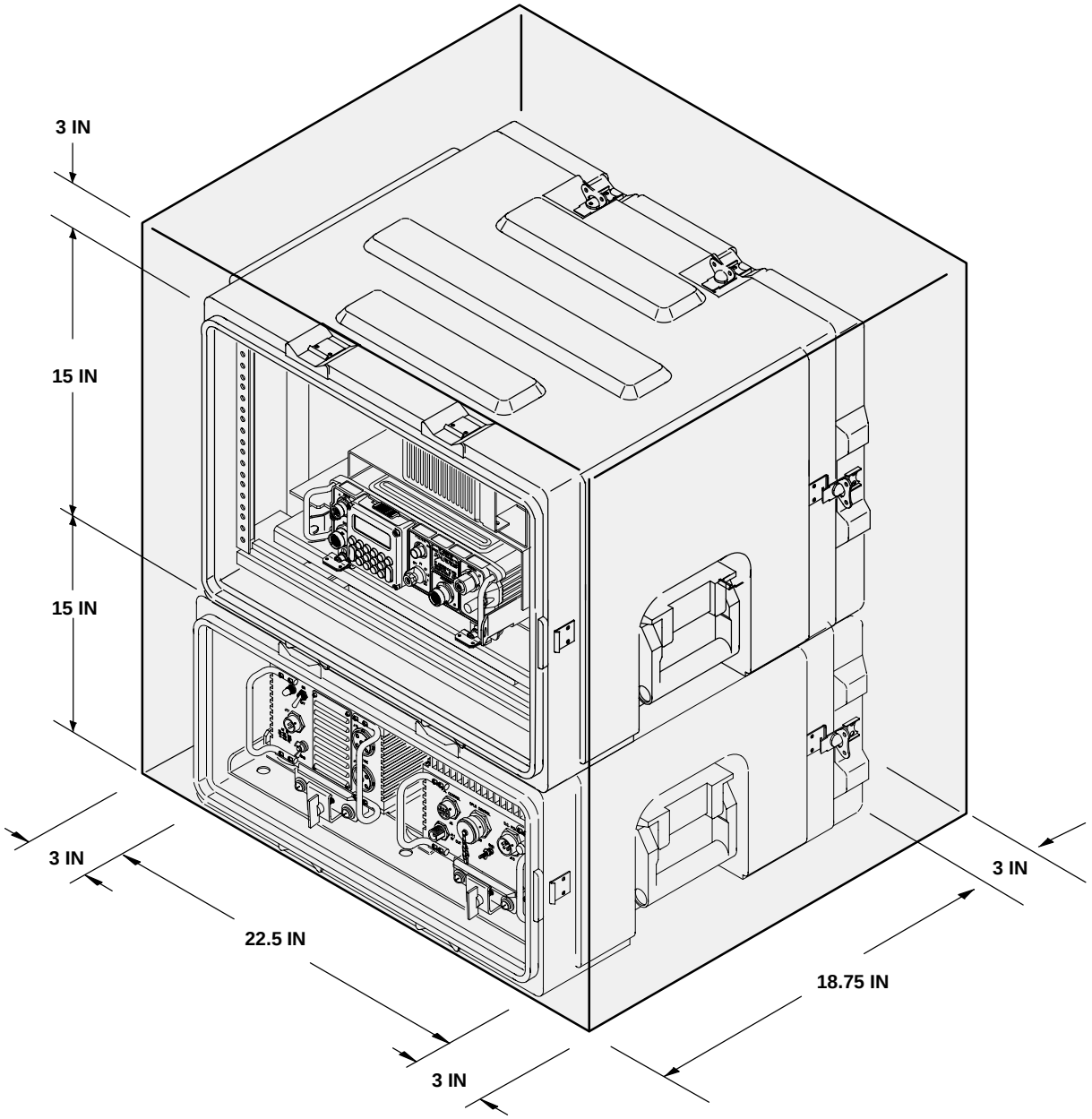


Figure 2-3. RF-5800H-125 Watt Transit Case Installation and Maintenance Clearances

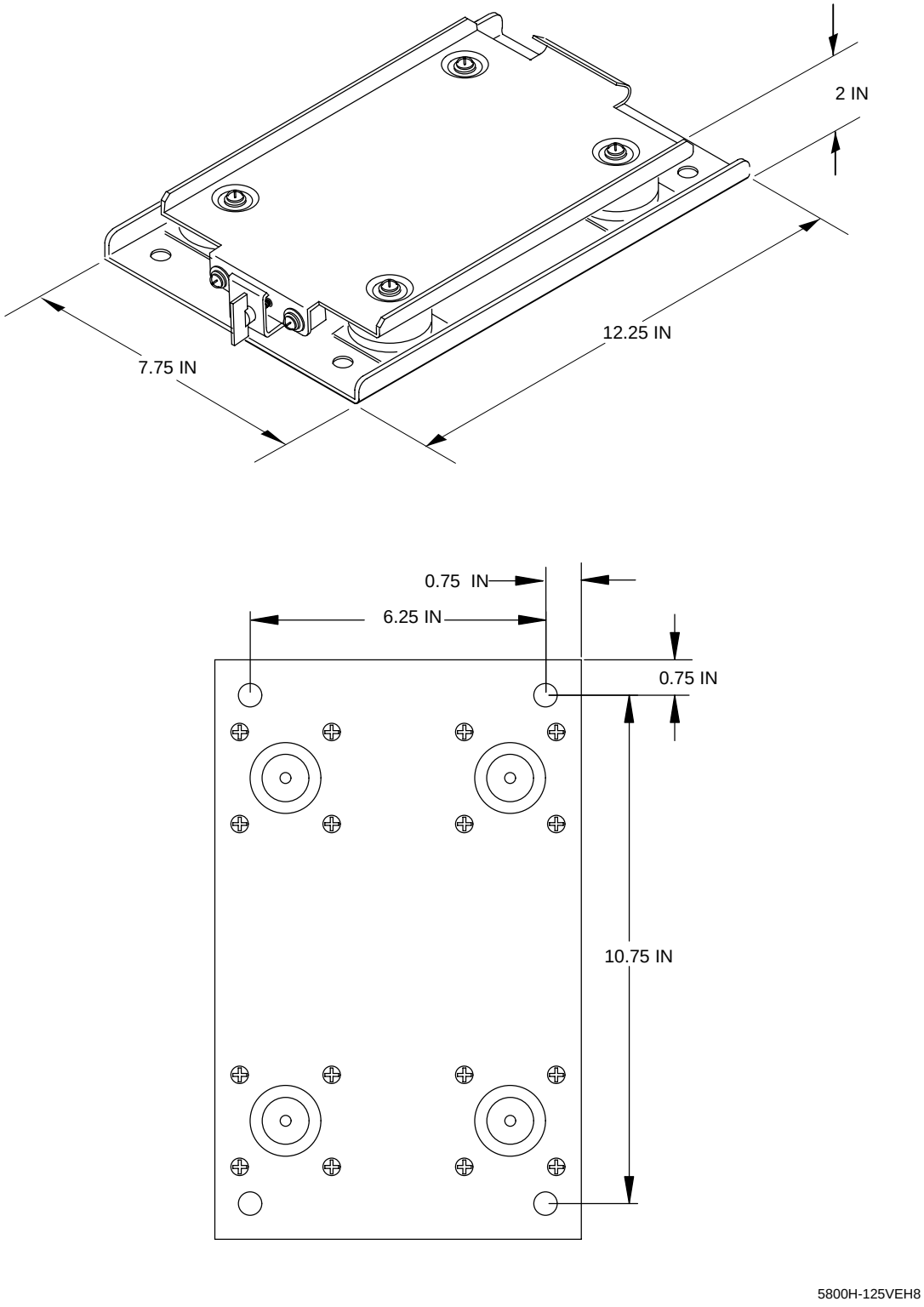


Figure 2-4. RF-5071VSM Shock Mount Dimensions

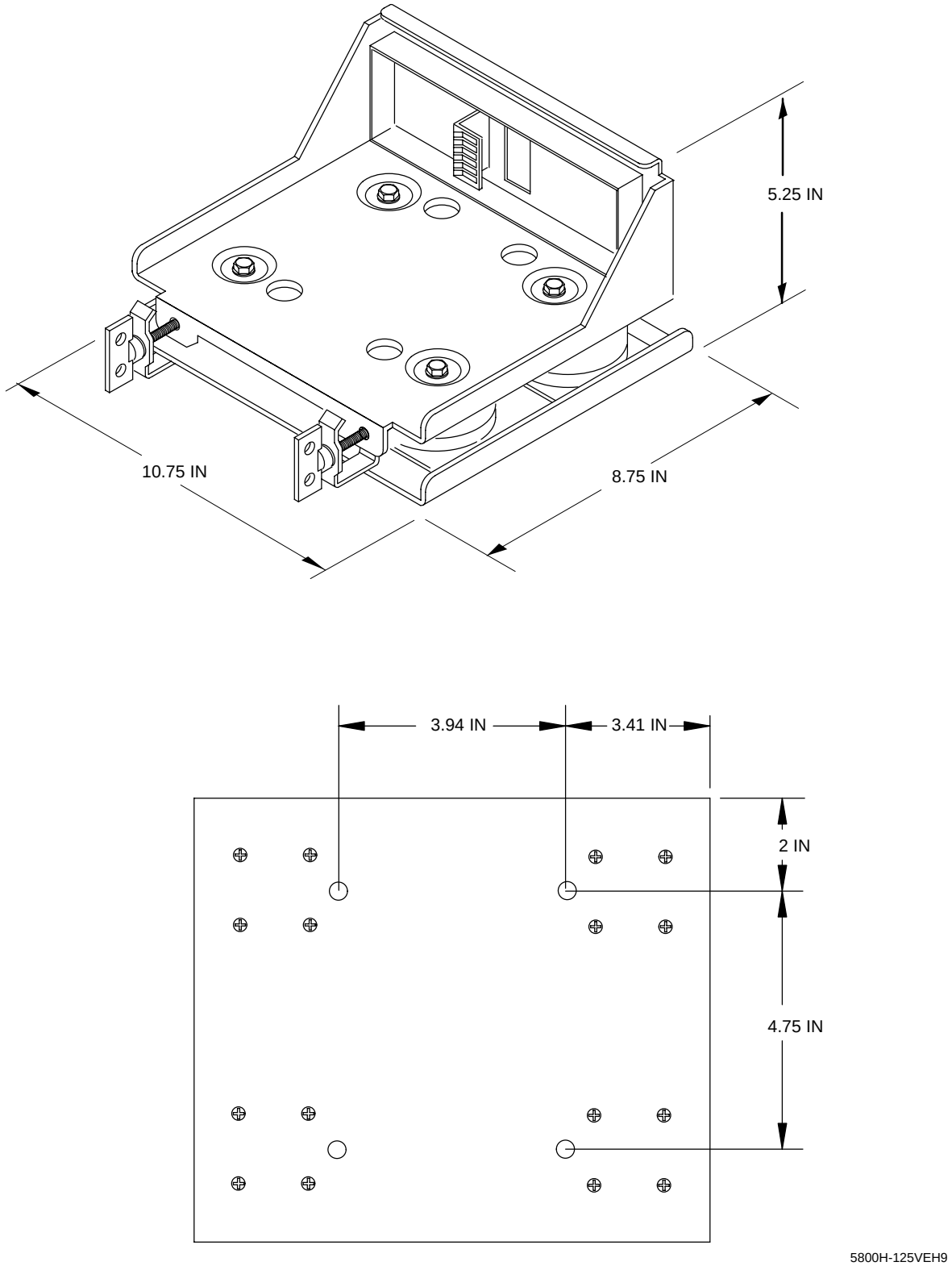


Figure 2-5. RF-5211VSM Shock Mount Dimensions

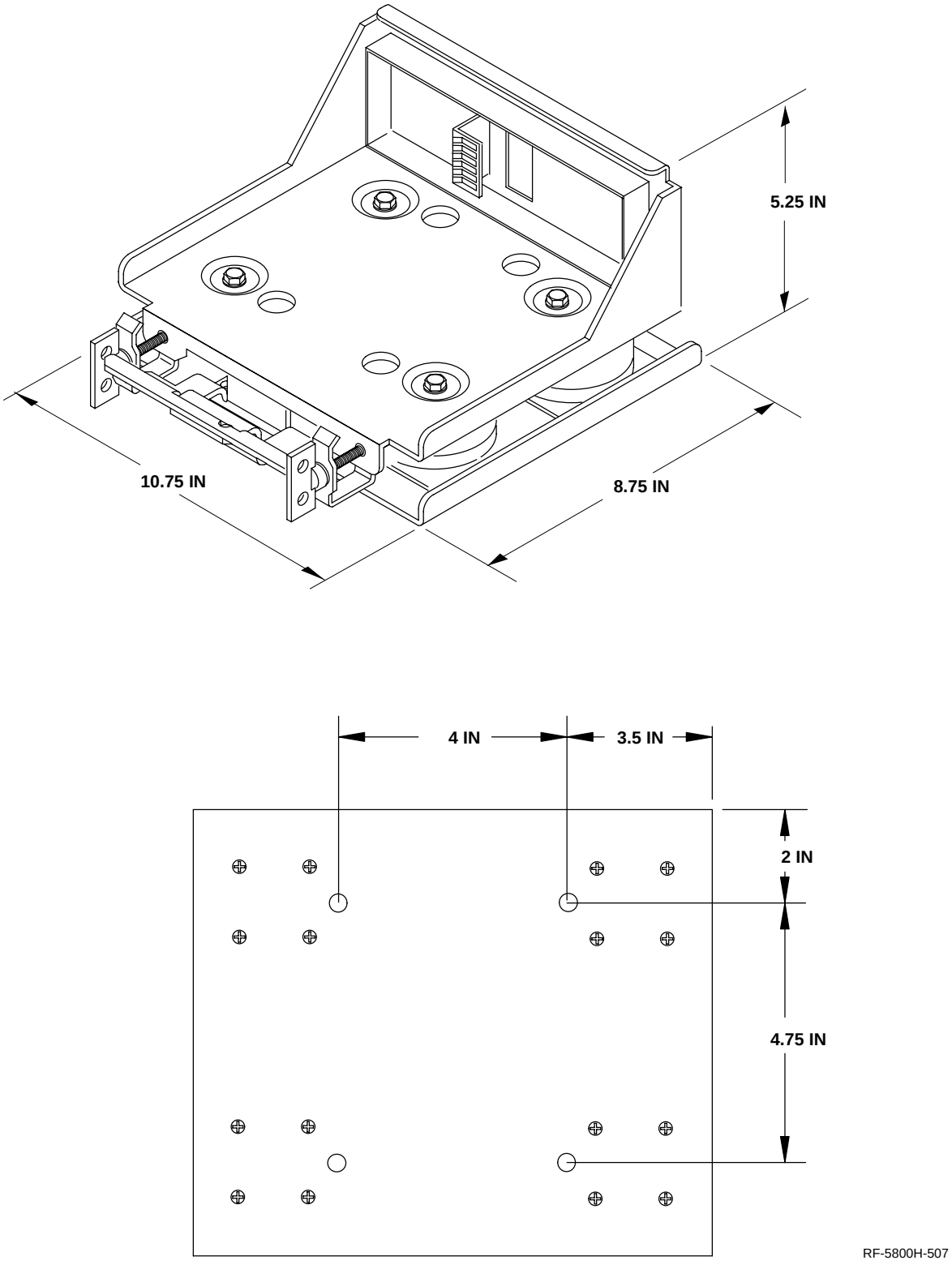


Figure 2-6. RF-5211-01VSM Shock Mount Dimensions

This page intentionally left blank.

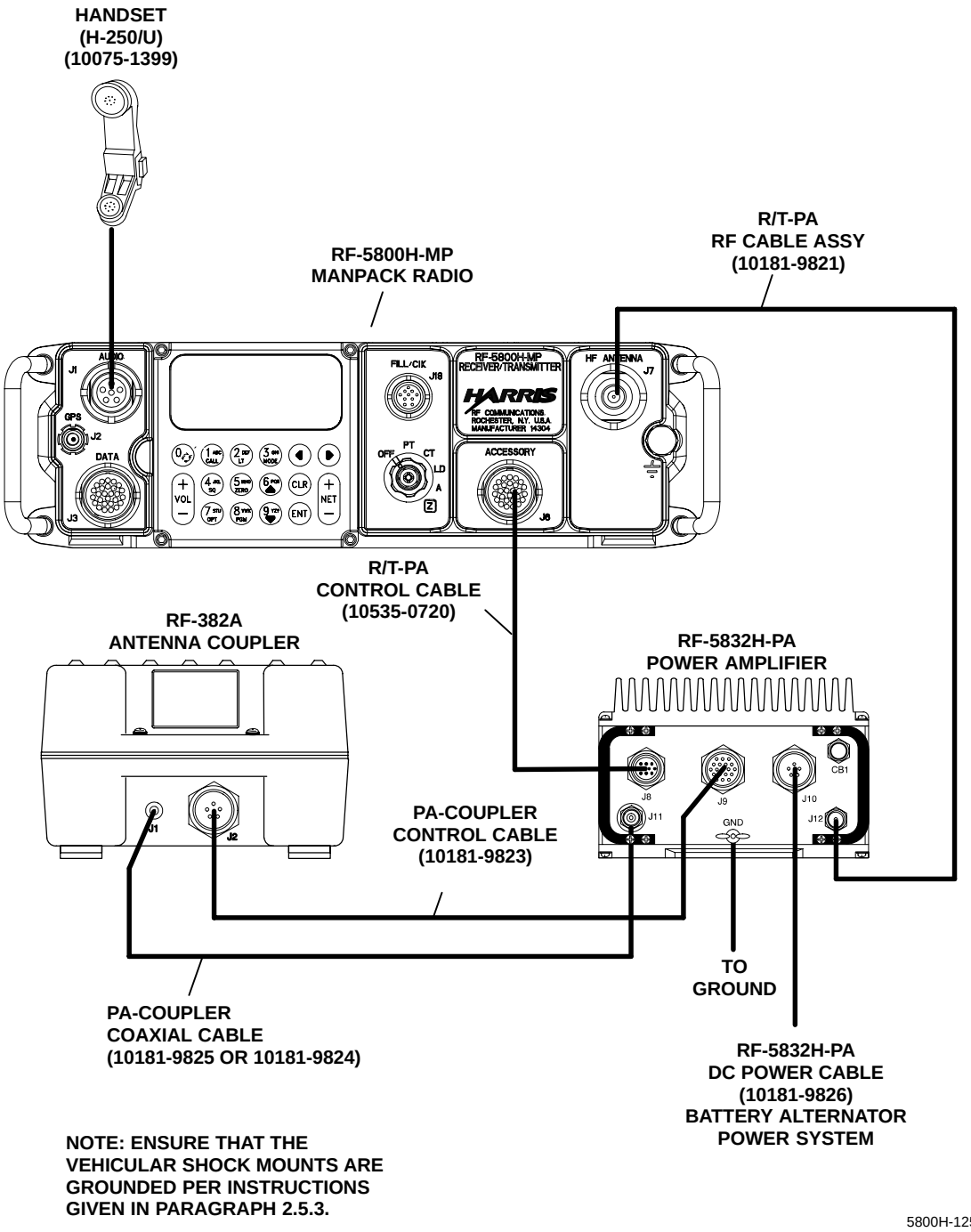
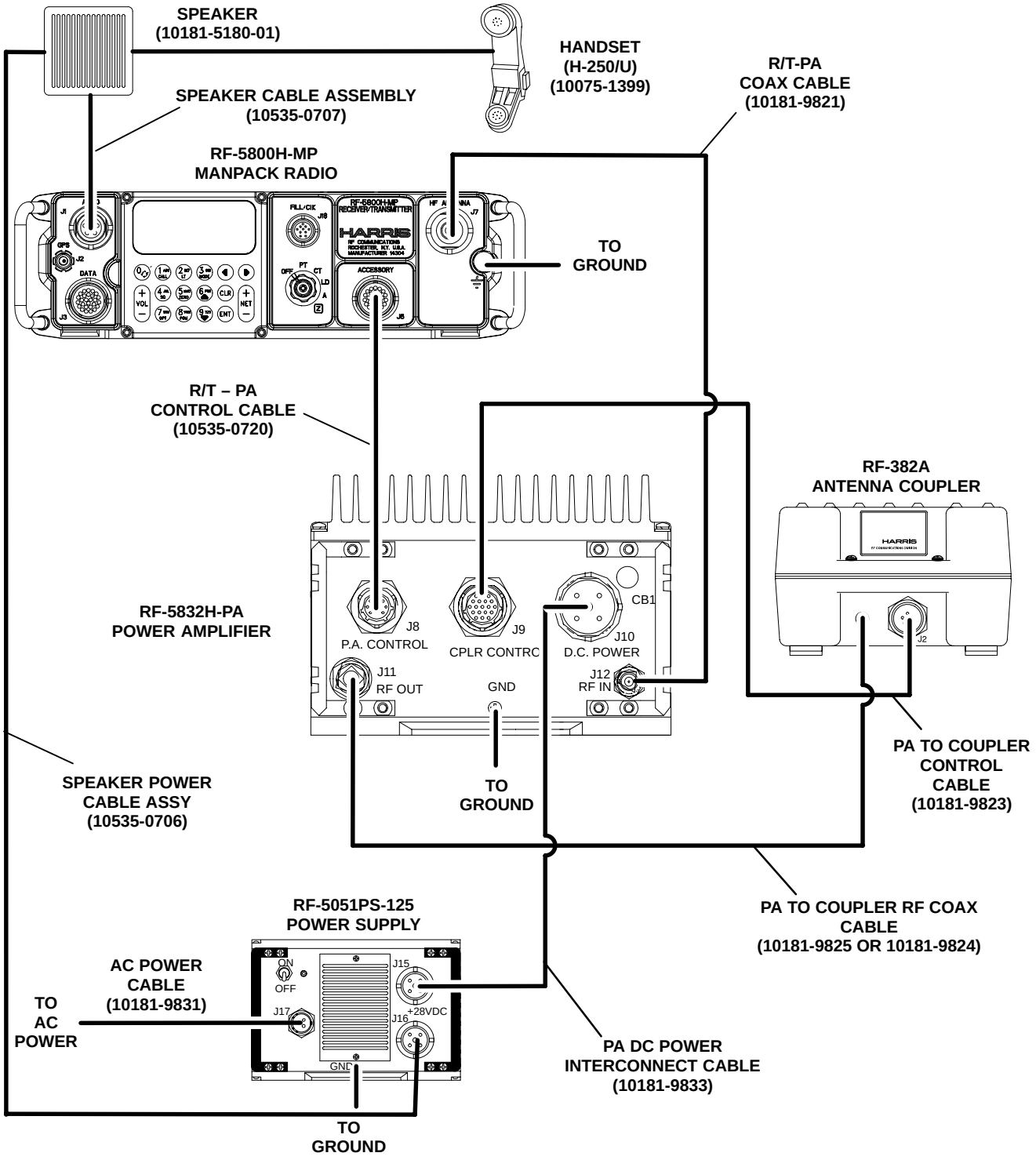


Figure 2-10. RF-5800H 125-Watt Vehicular System Cable Interconnects



NOTE: BE SURE TO GROUND SYSTEM FROM THE GROUNDING STUD PROVIDED AT THE TOP OF THE BASE STATION MOUNT.

5800H-125-130

Figure 2-11. RF-5800H 125-Watt Base Station or Transit Case System Cable Interconnects

2.5.7 Antenna Considerations

A number of factors should be considered before erecting an antenna. Radio signals are absorbed and reflected by nearby obstructions such as hills, trees, buildings, and power lines. Avoid these if possible, especially when they are in a direct line with the RF signal path. Signal strength is usually greatest from the top of a hill, over level terrain, or over water. Mountainous or hilly terrain may present unpredictable transmission or reception problems. Some antennas are more directional than others, and must be correctly oriented for maximum signal gain. A good earth ground connection and radial grounding system improves antenna performance and protects the equipment and personnel from lightning and electrical shock.

2.6 INSTALLATION CHECKOUT

Installation checkout has three phases. Paragraph 2.6.1 is a pre-power up check to make sure the system is installed correctly, and that all support items are available. Paragraph 6.2.2 covers the radio system's power up and preliminary tests.

2.6.1 Inspection and Pre-Power Up Procedures

When the RF-5800H 125-Watt Communication System is installed and all connector cables are attached, verify that the following items are completed:

- All connectors are attached and associated hardware is secure.
- System units are connected to ground, preferably at a single point.
- Ground wires are connected between the radio system units and a known good ground.
- Ensure all hardware is tightened.
- Area cooling is adequate for removing heat that may develop during equipment operation.
- Power source is of adequate capability and adequately protected for the radio system's load, and that installation of the power cable is correct.
- Antenna is in place, correctly connected, and protected against accidental contact.
- Companion equipment, such as the RF-382A, or remote control, are in operational readiness condition.

2.6.2 Initial Settings and Power Up

Perform the following procedure to power up the RF-5800H-MP and RF-5832H-PA and execute BIT:

a. If the system is vehicular, skip this step and proceed directly to step b. Turn the power switches of the RF-5051PS to the **ON** position.

b. On the RF-5800H-MP, set the function switch to the **PT** position.

c. On the RF-5800H-MP, press the **OPT** pushbutton.

d. If necessary, press the left/right arrow pushbuttons to select the **TEST** field.

NOTE

While in TEST mode, the RF-5800H-MP cannot receive or transmit.

e. Press the **ENT** pushbutton.

f. If necessary, press the left/right arrow pushbuttons to select the **ALL** field.

g. Press the **ENT** pushbutton.

h. If the unit passes BIT, place in service. If a BIT code is displayed refer to the following paragraphs.

If the RF-5800H-MP displays a fault code on the LCD after completing the BIT test, record the fault code and proceed to Paragraph 6.2.4, BIT Troubleshooting.

If the RF-5800H-MP displays no error messages, try to operate the RF-5800H 125-Watt Communication System in an attempt to generate a run-time fault. If a run-time fault is generated, refer to the non-BIT troubleshooting procedures in Paragraph 6.2.3.

If a run-time fault cannot be generated and the RF-5800H 125-Watt Communication System is still not operating properly, refer to the non-BIT troubleshooting procedures in Paragraph 6.2.3.

CHAPTER 3

OPERATION

There are no special operating procedures at Level II maintenance. Refer to Paragraph 6.2.2 for a Level II operational check. For normal operation, refer to the RF-5800H-MP Operations Manual listed in Table 1-2.

This page intentionally left blank.

CHAPTER 4

FUNCTIONAL DESCRIPTION

4.1 INTRODUCTION

This chapter covers the functional description of the RF-5800H 125-Watt Communication System. Refer to Chapter 6 for BIT and system troubleshooting information. The major function level description is divided into the following three signal paths:

- RF/Audio Signal Path
- Control Path
- Power Distribution

The description of each signal type is further divided as each LRU relates to the signal path. Each signal type is not present on every LRU, which will be apparent in the following paragraphs.

NOTE

For more detailed information, refer to the Level III RF-5800H-MP and RF-5832H-PA Intermediate Maintenance Manuals.

4.2 SIGNAL PATHS

4.2.1 RF/Audio Signal Path

See Figure 4-1. The RF/Audio signal path begins at the handset connected to J1 on the RF-5800H-MP. The RF-5800H-MP converts the analog audio appearing at J1 into RF. The RF output from the RF-5800H-MP at J7 is routed via the R/T-PA Coaxial Cable Assembly to J12 of the RF-5832H-PA. The RF signal is amplified to 125 Watts by the RF-5832H-PA. The signal is then output at connector J11. If the optional RF-382A is used, the RF signal is routed from J11 on the RF-5832H-PA to J1 of the RF-382A. The receive path is identical, except in the reverse direction.

When an external speaker is used, audio is also routed via the data connector on the RF-5800H-MP to an external loudspeaker or VIC-1 or VIC-3 VIS.

The external loudspeaker (optional for the vehicular system) contains an integrated audio amplifier and volume control. The amplifier and speaker are capable of .5 watts minimum.

4.2.2 Control Path

See Figure 4-1. Control signals from the RF-5800H-MP are routed from J6 via the R/T-PA Control Cable Assembly to J8 on the RF-5832H-PA. Coupler control signals are sent from J9 on the RF-5832H-PA to J2 on the RF-382A (if used) via the PA-Coupler Control Cable Assembly.

4.2.3 Power Distribution Path

The following paragraphs describe the power distribution of the RF-5800H 125-Watt Communication System.

4.2.3.1 RF-5800H 125-Watt Vehicular System

See Figure 4-2. Power distribution for the RF-5800H 125-Watt Vehicular System consists of distributing +28 Vdc nominal voltage from the vehicle alternator/battery system to the various units in the system. External power enters the RF-5832H-PA at connector J10. Power is supplied to the RF-5800H-MP at connector J6 from J8 on the RF-5832H-PA via the R/T-PA Control Cable. Power to the optional RF-382A would be supplied from J9 on the RF-5832H-PA via the PA-Coupler Control Cable Assembly.

4.2.3.2 RF-5800H 125-Watt Base Station and Transit Case Systems

See Figure 4-3. In the RF-5800H 125-Watt Base Station and Transit Case Systems, AC power enters the RF-5051PS at connector J17. +28 Vdc nominal exits the RF-5051PS at J15 where it is then routed via the DC Power Cable Assembly to J10 of the RF-5832H-PA. Power is supplied to the RF-5800H-MP at J6, from J8 of the RF-5832H-PA via the R/T-PA Control Cable. Power to the optional RF-382A would be supplied from J9 of the RF-5832H-PA via the PA-Coupler Control Cable Assembly.

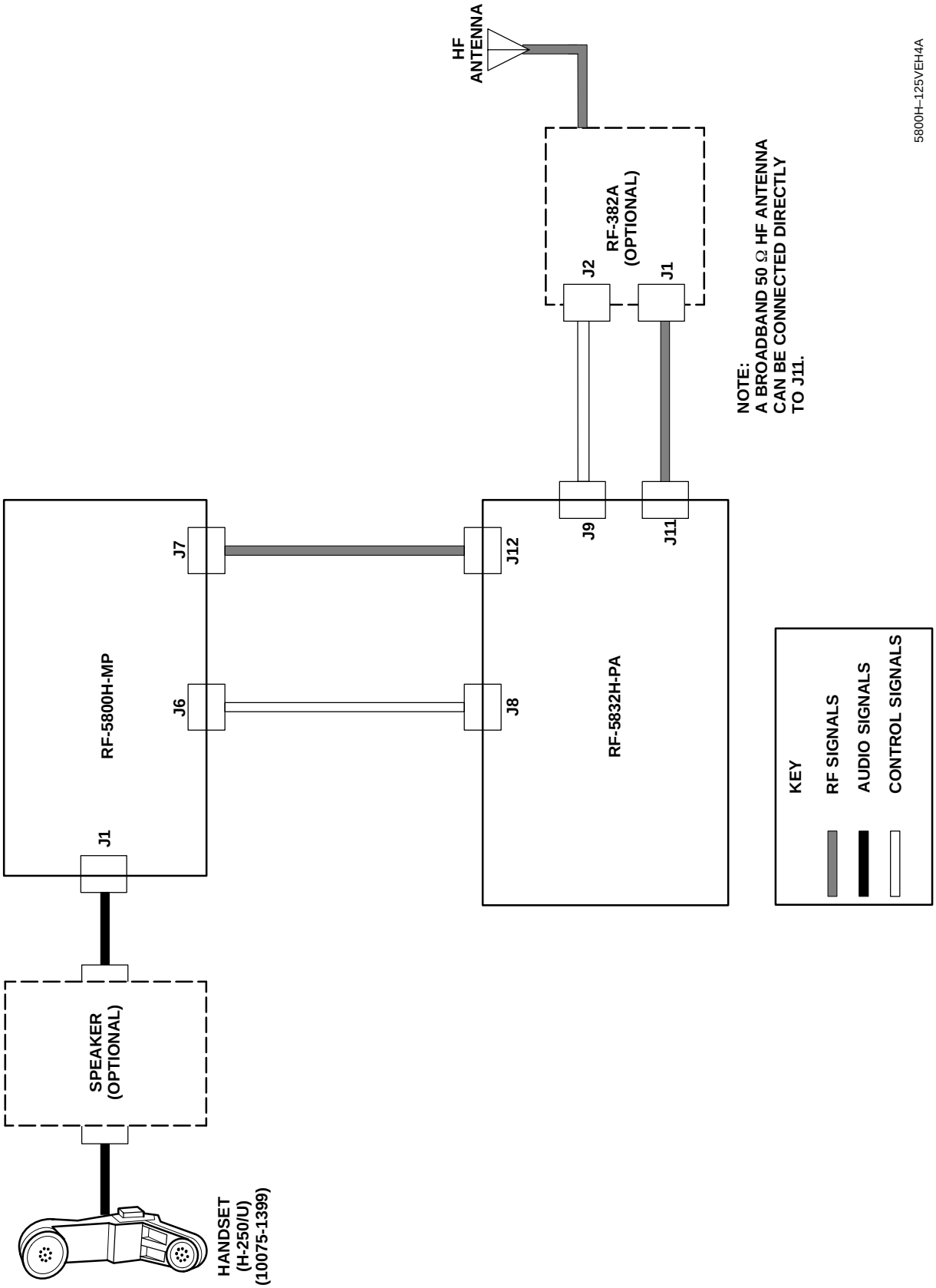


Figure 4-1. RF-5800H 125-Watt Communication System RF/Audio and Control Paths

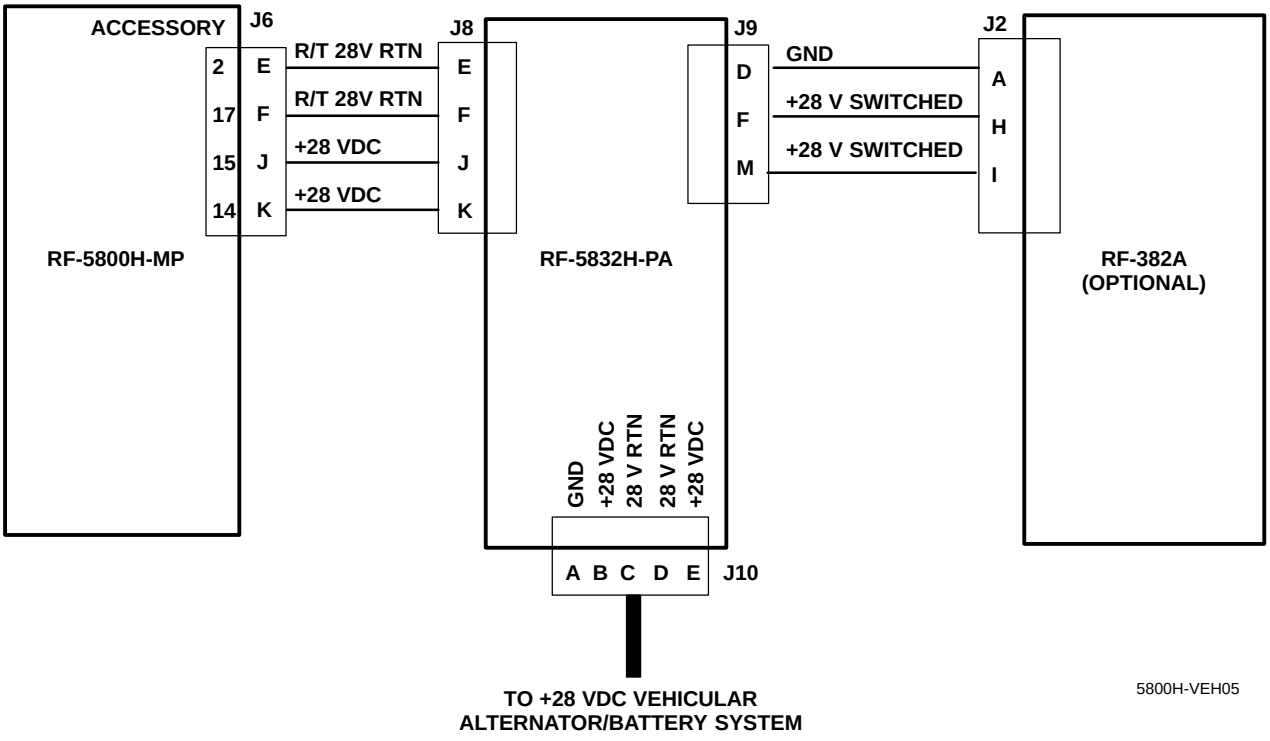
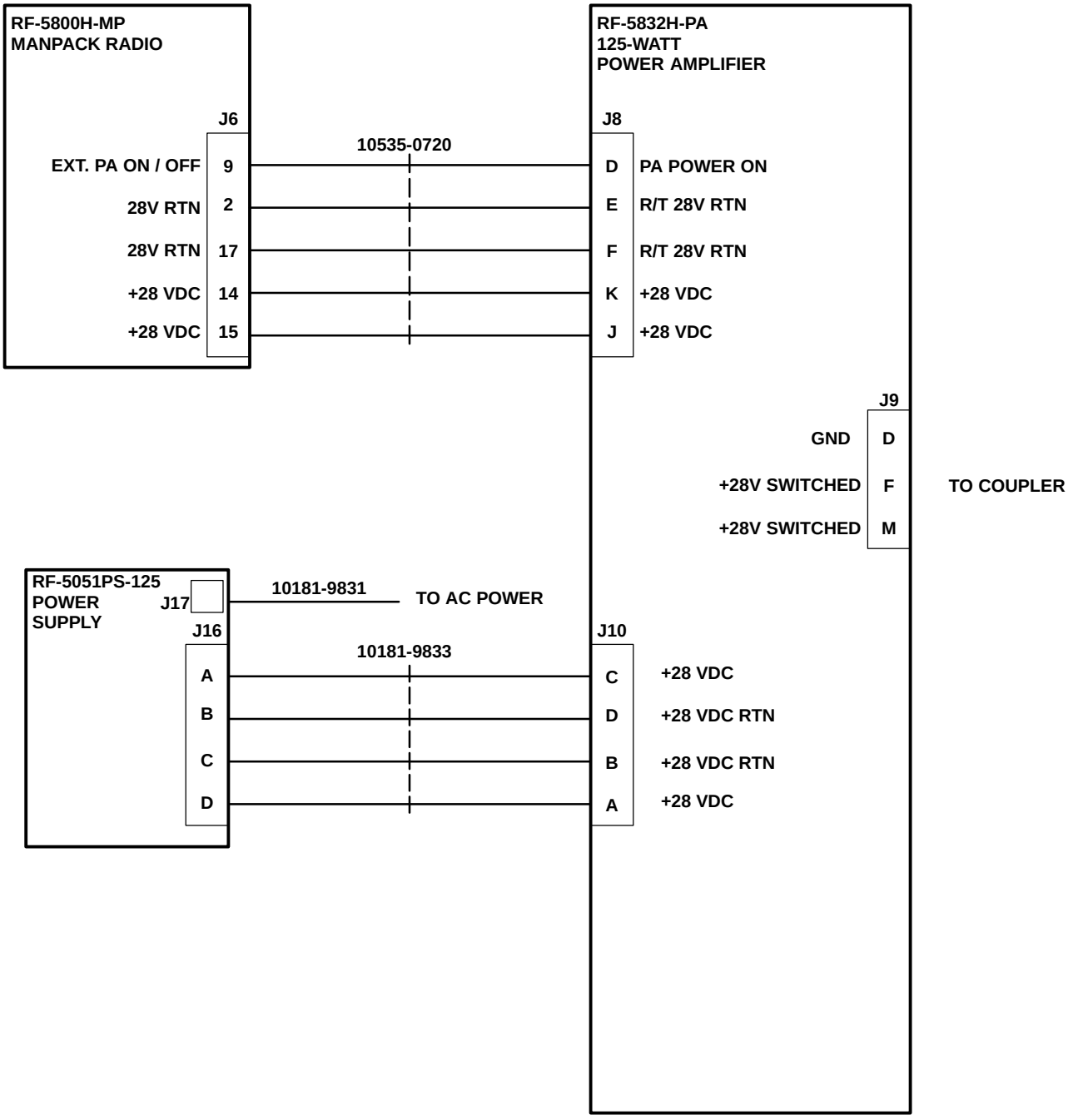


Figure 4-2. Vehicular Power Distribution Diagram



5800H-125-132

Figure 4-3. Base Station or Transmit Case System Power Distribution Diagram

This page intentionally left blank.

CHAPTER 5

SCHEDULED MAINTENANCE

5.1 PREVENTIVE MAINTENANCE

Preventive maintenance is the systematic, daily care and inspection of equipment to prevent equipment failure and reduce downtime.

Table 5-1 contains the checks and services that should either be performed on a daily basis when the equipment is in use or on a weekly basis when the equipment is in a standby condition. Table 5-2 contains the checks and services that should be performed on a weekly basis.

Table 5-1. Daily Preventive Maintenance Checks and Services

Check No.	Item to be Inspected	Procedure
1	Completeness	Check to see that the equipment is complete.
2	Exterior Surfaces	Remove dust, dirt, and moisture from all surfaces and clean front panel display window with a soft cloth.
3	Controls	Check all controls for looseness or damage; check mechanical action of each control for smooth operation.
4	Fan	Remove dust and dirt. Check if fan turns freely.
5	Operation	Perform self-test.

Table 5-2. Weekly Preventive Maintenance Checks and Services

Check No.	Item to be Inspected	Procedure
1	Connectors	Check all connectors for debris, damage, or corrosion. Contact a qualified Level III or Level IV maintainer if further repair is required.
2	Antenna	Check for breaks or strains; repair or replace as required.

This page intentionally left blank.

CHAPTER 6

TROUBLESHOOTING

6.1 INTRODUCTION

6.1.1 General

This chapter provides troubleshooting data necessary for fault isolation to the LRU level.

6.1.2 Scope of this Chapter

See Figure 6-1. The procedures presented in this chapter assume that a Level I fault has led the maintainer to suspect a fault with the RF-5800H 125-Watt Communication System. The maintainer begins the troubleshooting process by using the maintenance turn-on procedure to find a fault indication that identifies the faulty LRU. If there is a non-BIT fault, the maintainer will use the non-BIT troubleshooting procedures. If there is a BIT fault, the maintainer will use the BIT troubleshooting procedures. TAPs are provided to help the maintainer isolate faults using procedures other than simple unit swapping. When the problem is found and corrected, the radio system is returned to operational readiness.

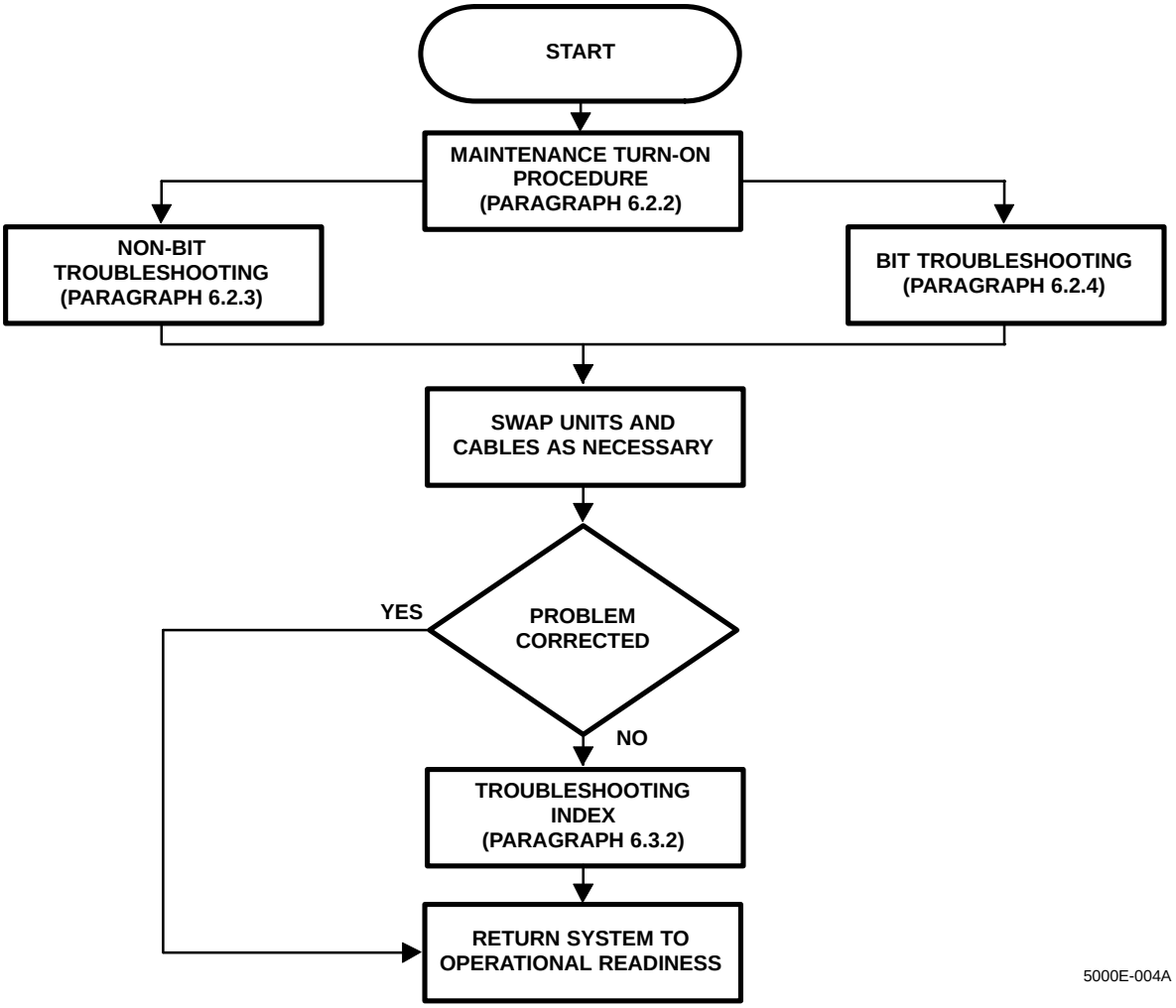


Figure 6-1. Troubleshooting Process Used in this Chapter

6.2 TROUBLESHOOTING PROCEDURES

6.2.1 General

Troubleshooting begins with performing the maintenance turn-on procedure. The maintenance turn-on procedure references the non-BIT and BIT troubleshooting procedures.

6.2.2 Maintenance Turn-On Procedure

The maintenance turn-on procedure is used to guide the maintainer through the proper RF-5800H-MP front panel settings to power up the RF-5800H 125-Watt Communication System from a de-energized state to a fully operational state. In each step the maintainer is to observe the RF-5800H 125-Watt Communication System for normal operating conditions. Faults may be determined by using BIT or visual observation. BIT faults for all units are displayed on the RF-5800H-MP KDU.

Perform the following procedure to power up the RF-5800H-MP and execute BIT:

a. Turn the power switch of the RF-5051PS to the **ON** position. If the system is vehicular, skip this step and proceed directly to Step b.

b. Rotate the FUNCTION switch to the **PT** position. If the RF-5800H-MP does not power-up, verify that the power source is on. If necessary proceed to Paragraph 6.2.3, non-BIT fault troubleshooting.

c. Press the **OPT** button.

d. If necessary, press the left/right arrow buttons to select the **TEST** field.

NOTE

While in TEST mode, the radio cannot receive or transmit.

e. Press the **ENT** button.

f. If necessary, press the left/right arrow buttons to select the **ALL** field.

g. Press the **ENT** button.

If the RF-5800H-MP displays a fault code on the LCD after completing the BIT test, record the fault code and proceed to Paragraph 6.2.4, BIT Troubleshooting.

If the RF-5800H-MP displays no error messages, try to operate the RF-5800H 125-Watt Communication System in an attempt to generate a run-time fault. If a run-time fault is generated, refer to the non-BIT troubleshooting procedures in Paragraph 6.2.3.

If a run-time fault cannot be generated and the RF-5800H 125-Watt Communication System is still not operating properly, refer to the non-BIT troubleshooting procedures in Paragraph 6.2.3.

6.2.3 Non-BIT Troubleshooting

Table 6-1 is a list of the non-BIT fault symptoms. Next to the symptom is a reference to the recommended action that should be taken. Perform the recommended actions one at a time in the order listed, testing the system after each action is performed. Chapter 2, Paragraph 2.5 provides the LRU removal and installation procedures. When the action column refers to a Troubleshooting Analysis Procedure (TAP), proceed to the specified TAP in Paragraph 6.2.5.

If the actions do not correct the problem, proceed to the troubleshooting index in Paragraph 6.3.2.

Table 6-1. Non-BIT Fault Symptoms/Run Time Fault Codes

Symptom Observed	Action
System does not power up.	Refer to TAP-1 for vehicular or TAP-2 for base station or transit case system.
COUPLER FAULT displayed on RF-5800H-MP KDU.	Perform the following: • Replace RF-382A. • Replace RF-5832H-PA.
HIGH VSWR displayed on RF-5800H-MP KDU.	Perform the following: • Check RF cables and antenna, replace as necessary. • Replace RF-382A. • Replace RF-5832H-PA.
PA BAD FILTER displayed on RF-5800H-MP KDU.	Perform the following: • Check RF cables, replace as necessary. • Replace RF-5832H-PA.
PA COMM FAULT displayed on RF-5800H-MP KDU.	Perform the following: • Replace PA-R/T Control Cable. • Replace RF-5832H-PA.
PA HIGH DC INPUT displayed on RF-5800H-MP KDU.	Perform the following: • Check level of DC input voltage is within specification. • Replace RF-5832H-PA.

Table 6-1. Non-BIT Fault Symptoms/Run Time Fault Codes – Continued

Symptom Observed	Action
PA LOW DC INPUT displayed on RF-5800H-MP KDU.	Perform the following: • Check that DC input voltage is within specification. Perform check under both a loaded and unloaded condition. • Replace RF-5832H-PA.
PA OVERCURRENT displayed on RF-5800H-MP KDU.	Perform the following: • Replace RF-5832H-PA.
PA OVERTEMP displayed on RF-5800H-MP KDU.	Perform the following: • Unkey RF-5800H-MP and allow RF-5832H-PA to cool. Confirm RF-5832H-PA is well ventilated and not in direct sunlight. If problem persists, remove and replace RF-5832H-PA.
PA WARNING displayed on RF-5800H-MP KDU.	Perform the following: • Retune RF-5800H-MP and rekey. If fault clears, continue operating. • Replace RF-5832H-PA.
THERMAL WARNING displayed on RF-5800H-MP KDU.	Perform the following: • Unkey RF-5800H-MP and allow RF-5832H-PA to cool. Confirm RF-5832H-PA is well ventilated and not in direct sunlight. If problem persists, remove and replace RF-5832H-PA.
Low or no transmit power on some (but not all) HF or VHF frequencies.	Perform the following: • Replace RF-5832H-PA.
Low or no transmit power on all HF or all VHF frequencies.	Perform the following: • Check RF cables and antenna, replace as necessary. • Replace RF-382A. • Replace RF-5832H-PA.

Table 6-1. Non-BIT Fault Symptoms/Run Time Fault Codes – Continued

Symptom Observed	Action
Variable or no audio signals.	Perform the following: • Check PA-R/T audio cable and replace as necessary. • Replace RF-5800H-MP. • Replace RF-5832H-PA.
Accessory connected to RF-5832H-PA does not power up.	Perform the following: • Check auxiliary power cable and replace as necessary. • Replace RF-5832H-PA.
Suspected power output problem.	Perform the following: • If possible, perform scheduled maintenance tests. Refer to RF-5800H-MP and RF-5832H-PA Intermediate Maintenance Manuals. • Check RF cables and replace as necessary. • Check that DC input voltage is within specification. Perform check under both a loaded and unloaded condition. • Replace RF-5832H-PA. • Replace RF-5800H-MP.
Suspected receive sensitivity problem.	Perform the following: • If possible, perform scheduled maintenance tests. Refer to RF-5800H-MP and RF-5832H-PA Intermediate Maintenance Manuals. • Check RF cables and replace as necessary. • Replace RF-5800H-MP. • Replace RF-5832H-PA.
RF-5800H-MP does not reach normal operational display.	Perform the following: • Replace RF-5800H-MP.

6.2.4 BIT Troubleshooting

BIT is executed from the KDU of the RF-5800H-MP connected to the RF-5800H 125-Watt Communication System, or from an optional terminal connected to the RF-5800H-MP. The self-test function of the RF-5800H-MP automatically tests the system. If a problem is located, a fault code is displayed on the KDU display.

See Figure 6-2 for a sample fault code displayed on the KDU. Table 6-2 is a list of the BIT fault codes. Next to each fault code is a recommendation of which assemblies may have caused the fault. Remove and replace the recommended LRUs one at a time in the order listed, executing BIT after replacing each LRU. Paragraph 2.5 includes the LRU removal and installation procedures. If the unit passes BIT, the faulty LRU has been isolated.

If replacing the suspected LRU does not correct the problem, refer to Paragraph 6.3.2, the troubleshooting index, for additional troubleshooting recommendations.

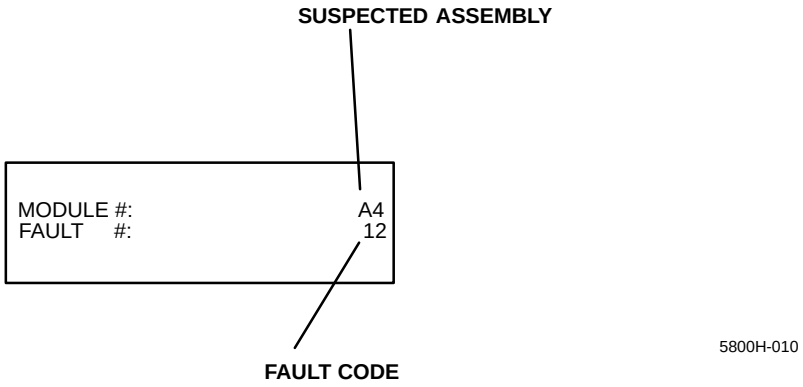


Figure 6-2. Sample Fault Code Display

Table 6-2. RF-5800H 125-Watt Communication System Operator Initiated BIT Fault Codes

BIT Fault Observed	Action
A1 01 through A1 XX	Perform the following: • Replace RF-5800H-MP.
A4 01 through A4 XX	Perform the following assemblies: • Replace RF-5832H-PA.

6.2.5 TAPs

TAPs are provided to help the maintainer isolate faults using procedures other than simple unit swapping. The TAP begins with a simple description of the fault or symptom. Refer to Table 6-3 for a list of TAPs.

When applicable, begin by performing the listed initial checks. These are checks that can be performed without the use of tools or test equipment. If the initial checks do not solve the problem, continue by performing the procedure itself. If the problem still exists after completing the TAP, proceed to the troubleshooting index. Refer to Paragraph 6.3.2.

Table 6-3. Troubleshooting Analysis Procedures

Tap	Symptom Observed
TAP-1	No power up (Vehicular System)
TAP-2	No power up (Base Station and Transit Case System)

TAP-1: NO POWER UP (VEHICULAR)

RF-5800H 125-Watt Vehicular System does not power up.

INITIAL CHECKS

- Make sure all cables are connected.
- Make sure all units are properly seated.
- Make sure all connections are tight and there are no broken connections.

PROCEDURE

Check fuse in vehicle circuit supplying radio system.

Is fuse good?

Y **N**

Remove and replace fuse.

Check CB1 on RF-5832H-PA.

Is CB1 closed?

Y **N**

Reset circuit breaker and retest system.

Does CB1 stay closed?

Y **N**

Remove and replace RF-5832H-PA and retest system.

Does CB1 stay closed?

Y **N**

Reinstall old RF-5832H-PA. Remove and replace RF-5800H-MP and retest system.

Does CB1 stay closed?

Y **N**

Refer to troubleshooting index to identify faulty system cable.

Return system to operational readiness.

Return system to operational readiness.

A **B**

A **B**

Does system power up?

Y **N**

Remove and replace RF-5800H-MP. Return system to operational readiness.

Return system to operational readiness.

Remove and replace RF-5832H-PA.

Does system power up?

Y **N**

Remove and replace RF-5800H-MP. Return system to operational readiness.

Return system to operational readiness.

TAP-2: NO POWER UP (BASE STATION OR TRANSIT CASE SYSTEM)

RF-5800H 125-Watt System does not power up.

INITIAL CHECKS

- Make sure all cables are connected.
- Make sure all units are properly seated.
- Make sure all connections are tight and there are no broken connections.

PROCEDURE

Check AC line voltage being supplied to RF-5051PS.

Is input voltage either 115 or 230 Vac?

Y **N**

Connect RF-5051PS to a proper AC source.

Check AC line voltage at the output of primary AC Power Cable, (10181-9831) connected to J17 on the RF-5051PS.

Is AC voltage present?

Y **N**

Remove and replace primary AC Power Cable, (10181-9831).

Does system power up?

Y **N**

Refer to troubleshooting index.

Return system to operational readiness.

Check DC output voltage from RF-5051PS at connector J15.

Is output voltage +28.3 Vdc nominal?

Y **N**

Remove and replace RF-5051PS.

Does system power up?

Y **N**

Refer to troubleshooting index.

Return system to operational readiness.

A

A

Check RF-5051PS DC output voltage at the output of DC Power Cable Assembly, (10181-9833) connected to J10 on the RF-5832H-PA.

Is DC voltage present?

Y **N**

Remove and replace DC Power Cable Assembly, (10181-9832).

Does system power up?

Y **N**

Refer to troubleshooting index.

Return system to operational readiness.

A

Remove and replace RF-5832H-PA and retest system.

Does system power up?

Y **N**

Reinstall previously removed RF-5832H-PA. Remove and replace RF-5800H-MP and retest system.

Does system power up?

Y **N**

Refer to troubleshooting index to identify faulty system cable.

Return system to operational readiness.

Return system to operational readiness.

6.3 TROUBLESHOOTING SUPPORT DATA

6.3.1 Protective Device Index

Table 6-4 is the protective device index. The RF-5832H-PA is protected by one 30-ampere circuit breaker. The circuit breaker, CB1, is accessible at the front panel of the power amplifier. The circuit breaker protects both the power amplifier and RF-5800H-MP.

Table 6-4. Protective Device Index

Reference Designation	Panel Marking or ID	Rating		Circuit Protected	Figure Ref.
		Volts	Amperes		
CB1	CB1	65 Vdc	30 A	RF-5832H-PA/ RF-5800H-MP	1-3

6.3.2 Troubleshooting Index

Table 6-5 is the troubleshooting index for the RF-5800H 125-Watt Communication System. Use the troubleshooting index if the actions in the non-BIT troubleshooting (Paragraph 6.2.3) or the BIT troubleshooting (Paragraph 6.2.4) procedures do not correct the problem. The first column of Table 6-5 references the functional areas. The second column references the Figure for each functional area. The third column references the text description for each functional area. Analyze the information for each functional area, and determine which units and cables affect each functional area in an attempt to isolate the problem to an LRU.

The information contained in this manual complies with the requirements specified for Level II maintenance.

Table 6-5. Troubleshooting Index

Functional Area	Signal Path Diagram	Functional Description Paragraph
RF/Audio Signal Path	4-1	4.2.1
Control Path	4-1	4.2.2
Power Distribution	4-2	4.2.3

6.4 TROUBLESHOOTING DIAGRAMS

6.4.1 General

Troubleshooting diagrams include the following:

- RF Signal Path Diagram – See Figure 4-1 for RF signals diagram.
- Control Path Diagram – See Figure 4-1 for control and data signals diagram.
- Power Distribution Diagram – See Figures 4-2 and 4-3 for power distribution diagram.

6.5 INTERCONNECT INFORMATION

6.5.1 General

For RF-5800H 125-Watt Communication System interconnect information, refer to Paragraph 2.5.6. For connector pinouts, refer to the Level III maintenance manual.

This page intentionally left blank.

CHAPTER 7

PARTS LIST

7.1 INTRODUCTION

This chapter contains radio system parts list information for the RF-5800H 125-Watt Communication System. This information can be used to identify units within each radio system configuration, and to place orders for those units. This chapter is organized as follows:

- Paragraph 7.2 – LRUs
- Paragraph 7.3 – LRU Diagrams

7.2 LRUs

Tables 7-1 through 7-9 list the LRUs that comprise the RF-5800H 125-Watt Communication System. Tables 7-10 and 7-11 list the optional cables available. Quantity, part number, and figure number references, including those in Chapter 1, are also provided.

Table 7-1. RF-5800H 125-Watt Vehicular System LRUs

Ref. Des.	Item Name	Part Number	Quantity	Figure Number
–	RF-5832H-PA 125-Watt Power Amplifier	RF-5832H-PA001	1	7-1
–	Vehicular Shock Mount	RF-5071VSM	1	7-3
–	Vehicular Shock Mount	RF-5211VSM	1	7-4
–	Optional Vehicular Shock Mount	RF-5211-01VSM	Optional	7-5
–	Coaxial Cable Assembly, R/T-PA (RF)	10181-9821-020	1	7-8
–	Cable Assembly, DC Power	10181-9826-020	1	7-9
–	Cable Assembly, R/T-PA (Control)	10535-0720-A020	1	7-10
–	Ground Strap, Braided	7147-1167-3	1	7-25

Table 7-2. RF-5800H 125-Watt Base Station System LRUs

Ref. Des.	Item Name	Part Number	Quantity	Figure Number
–	RF-5832H-PA 125-Watt Power Amplifier	RF-5832H-PA001	1	7-1
	RF-5051PS-125 Power Supply	10299-5051-03	1	7-2
	Speaker, Vehicular Mount	10181-5180-01	1	
	Coaxial Cable Assembly, R/T-PA (RF)	10181-9821-015	1	7-8
	Cable Assembly, AC PWR	10181-9831-009	1	7-11
	DC Power Cable	10181-9833-004	1	7-22
	Cable Assembly, Ground Strap	10400-1136-A006	1	7-25
	Cable Assembly, Ground Strap	10400-1136-A06	1	7-25
	Cable Assembly, Speaker Power	10535-0706-A015	1	7-23
	Cable Assembly, Speaker	10535-0707-A003	1	7-24
	Cable Assembly, R/T-PA (Control)	10535-0720-A015	1	7-10
	RF-5800H-125W Base Station Mount	10558-2000-02	1	7-6

Table 7-3. RF-5800H 125-Watt Transit Case System LRUs

Ref. Des.	Item Name	Part Number	Quantity	Figure Number
–	RF-5832H-PA 125-Watt Power Amplifier	RF-5832H-PA001	1	7-1
	RF-5051PS-125 Power Supply	10299-5051-03	1	7-2
	Speaker, Vehicular Mount	10181-5180-01	1	
	Coaxial Cable Assembly, R/T-PA (RF)	10181-9821-015	1	7-8
	Cable Assembly, AC PWR	10181-9831-009	1	7-11
	DC Power Cable	10181-9833-004	1	7-22
	Cable Assembly, Ground Strap	10400-1136-A006	1	7-25
	Cable Assembly, Ground Strap	10400-1136-A06	1	7-25
	Cable Assembly, Speaker Power	10535-0706-A015	1	7-23
	Cable Assembly, Audio Speaker	10535-0707-A003	1	7-24
	Cable Assembly, R/T-PA (Control)	10535-0720-A015	1	7-10
	RF-5800H-125W Transit Case, R/T	11040-1100-01	1	7-7
	RF-5800H-125W Transit Case, PA/PS	10400-0561-01	1	7-7

Table 7-4. RF-5071VSM Shock Mount Assembly Parts List (10181-5071)

Ref. Des.	Item Name	Part Number	Quantity	Figure Number
–	RF-5071VSM Shock Mount, Single	10181-9800	1	7-3
–	RF-5071VSM Ancillary Kit	10181-9030	1	–

Table 7-5. RF-5071VSM Ancillary Kit Parts List (10181-9030)

Ref. Des.	Item Name	Part Number	Quantity	Figure Number
–	Bolt, Hex, 3/8	MS35307-358	4	–
–	LW SS INT.#3/8	MS35333-76	8	–
–	Nut, 9/16 Hex	MS51971-3	4	–

Table 7-6. RF-5211VSM Shock Mount Assembly Parts List

Ref. Des.	Item Name	Part Number	Quantity	Figure Number
–	RF-5211VSM Chassis Assembly	10372-0870-01	1	7-4
–	RF-5211VSM Ancillary Kit	10372-0875-01	1	–

Table 7-7. RF-5211VSM Ancillary Kit Parts List (10372-0875-01)

Ref. Des.	Item Name	Part Number	Quantity	Figure Number
–	FW SS .281X.625	MS15795-810	3	–
–	FW SS .344X.688	MS15795-812	4	–
–	Bolt Hex HD 1/4-20X1	MS35307-308	1	–
–	Bolt Hex HD 5/16-18X7/8	MS35307-333	4	–
–	LW SPLT SS	MS35338-139	2	–
–	LW SPLT SS	MS35338-140	4	–
–	Lockwasher .250	MS45904-68	1	–
–	Nut Hex 1/4-20	MS51971-1	2	–
–	Nut No. 5/16-18	MS51971-2	4	–
–	O&I Drawing	10372-0876	1	–
–	Ground Strap	7147-1167-3	1	7-25

Table 7-8. RF-5051PS Power Supply Assembly Parts List (10299-5051-03)

Ref. Des.	Item Name	Part Number	Quantity	Figure Number
– –	RF-5051PS Chassis Assembly	10299-5051	2	7-2
– –	RF-5051PS Ancillary Kit	10181-9010	1	–

Table 7-9. RF-5051PS Ancillary Kit Parts List (10181-9010)

Ref. Des.	Item Name	Part Number	Quantity	Figure Number
– –	Fuse, 1/8A, SB	F03-0002-005	5	–
– –	Fuse, 15A, Ceramic, SB	F03-0003-021	5	–
– –	AC Power Cable	10181-9831-009	1	7-11
– –	Ground Strap	7147-1167-3	1	7-25

Table 7-10. Available Power Cables (Purchased Separately)

Ref. Des.	Item Name	Part Number	Quantity	Figure Number
–	Cable Assembly, AC Power	10181-9831-XXX	– –	7-11

Table 7-11. Available Option Cables (Purchased Separately)

Ref. Des.	Item Name	Part Number	Quantity	Figure Number
–	Cable Assembly, PA-Coupler (Control)	10181-9823	– –	7-13
–	Cable Assembly, PA-Coupler (RF)	10181-9824	– –	7-12
–	Cable Assembly, KY-99A Audio/Black Data	10535-0701-A004	– –	7-14
–	Cable Assembly, RS-232 Black Data to Encryption Device	10535-0702-A1	– –	7-15
–	Y-Cable Assembly, ASCII Remote and PA Control	10535-0730	– –	7-16
–	Cable Assembly, KG-84C Black Data	10535-0750	– –	7-17
–	Cable Assembly, ASCII Remote Control Rear D-Connector	10535-0760	– –	7-18
–	Cable Assembly, Sync/Async RS-232 DTE Data	10535-0770	– –	7-19
–	Cable Assembly, Synchronous RS-232 DTE Data (DB-25)	10535-0780	– –	7-20
–	Cable Assembly, Asynchronous Data (PPP)	10535-0775	– –	7-21

7.3 LRU DIAGRAMS

Figures 7-1 through 7-7 show the LRUs within each system configuration identified in Tables 7-1 through 7-9. Optional cables for the system are listed in Tables 7-10 and 7-11 and shown in Figures 7-8 through 7-25.

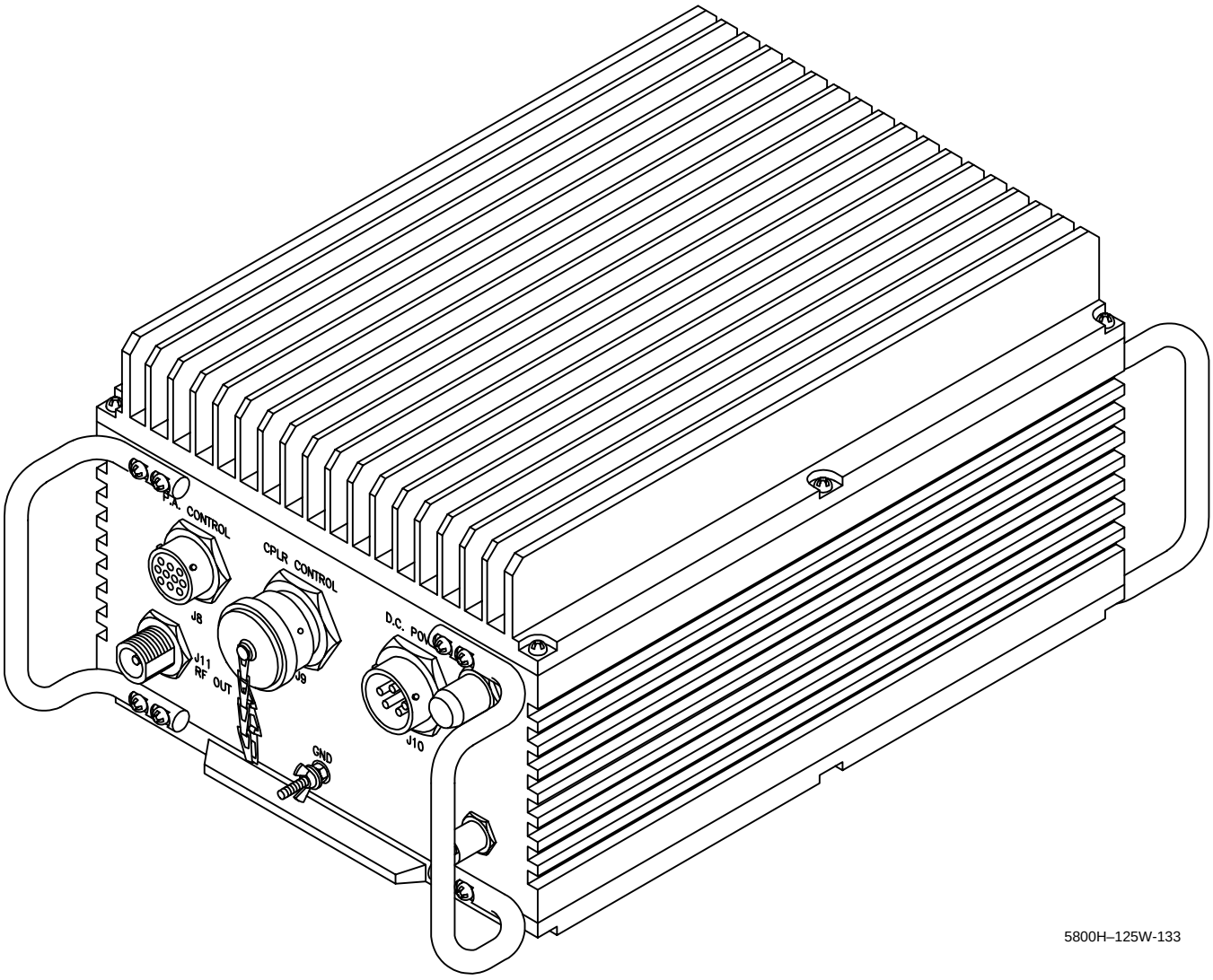


Figure 7-1. RF-5832H-PA 125-Watt Power Amplifier

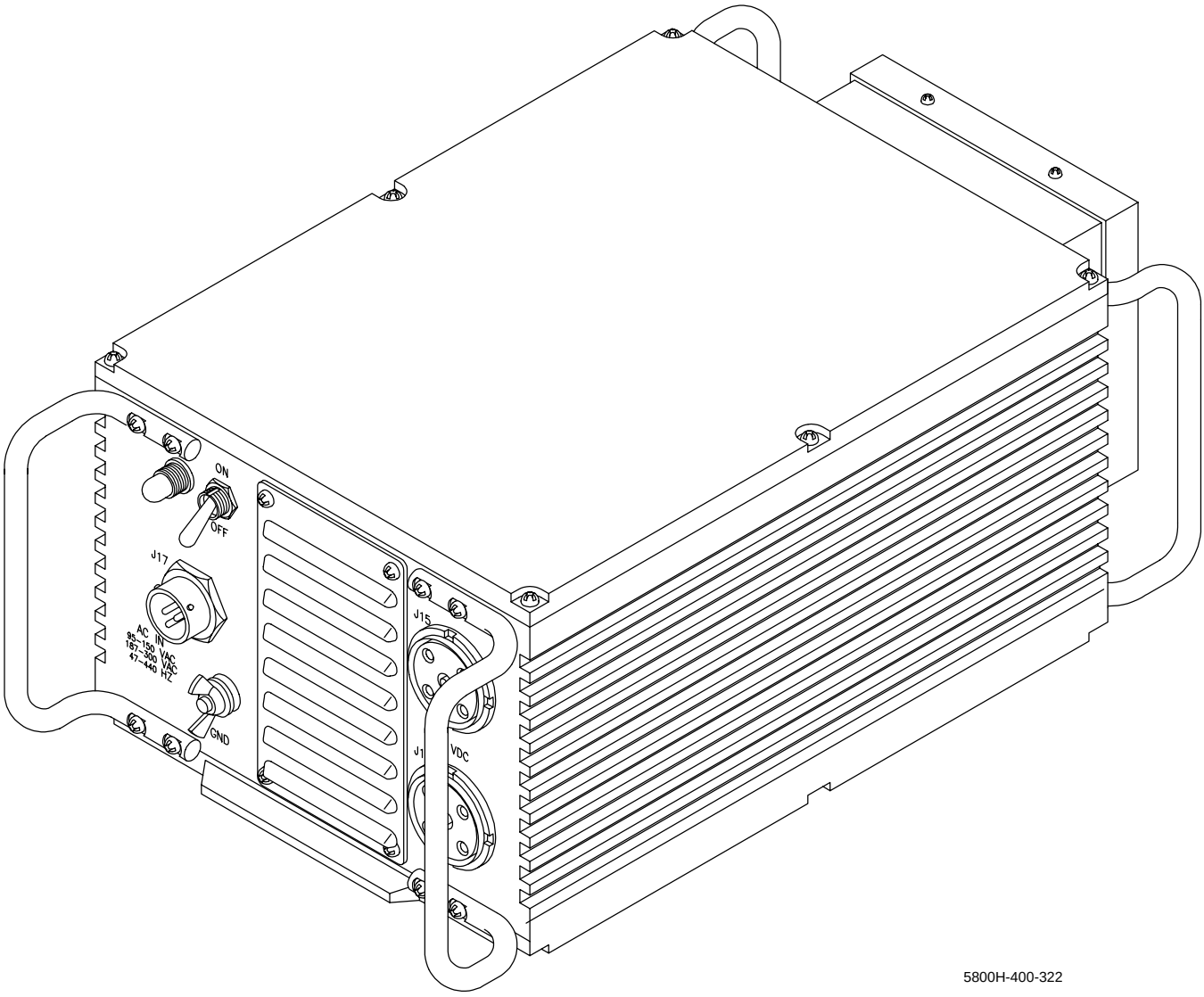


Figure 7-2. RF-5051PS Power Supply

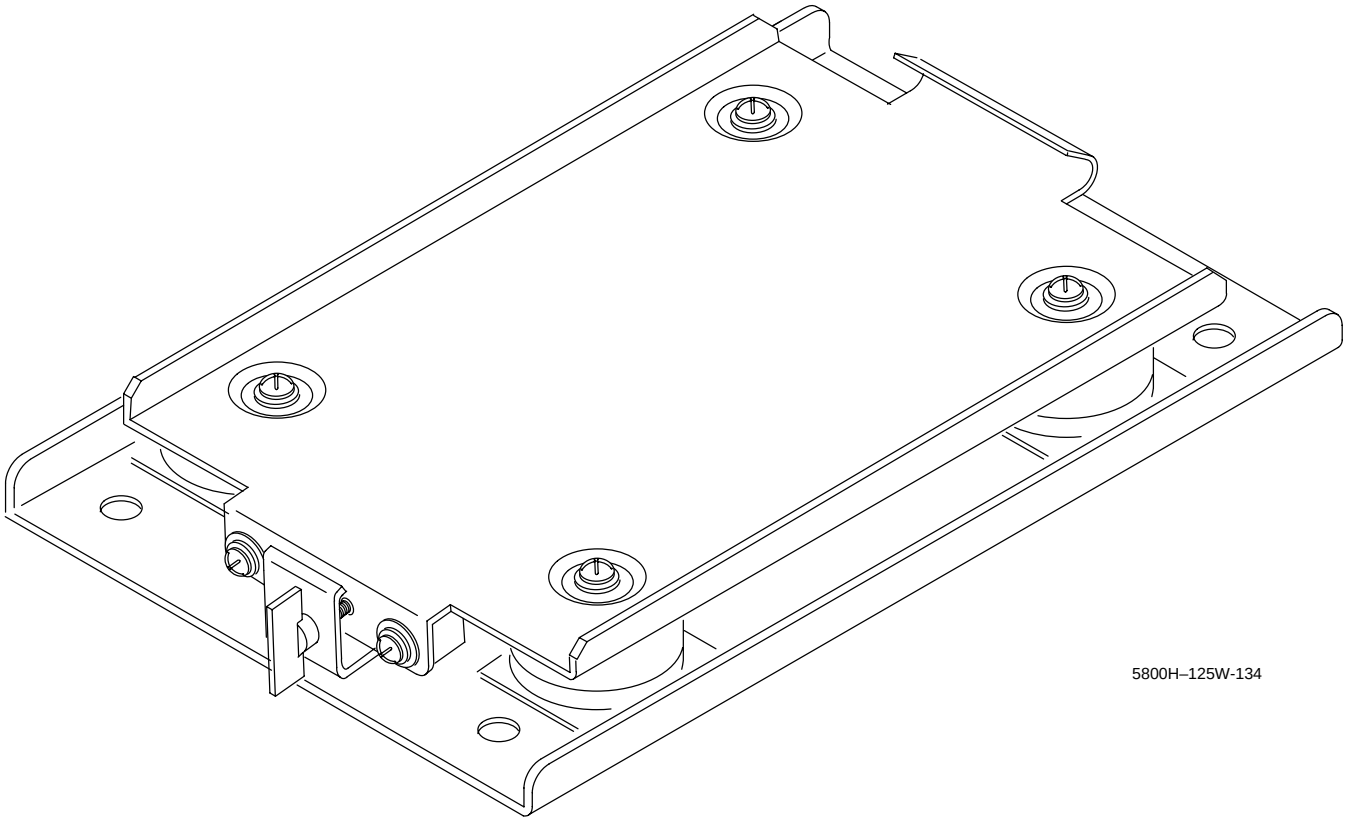


Figure 7-3. RF-5071VSM Shock Mount Assembly

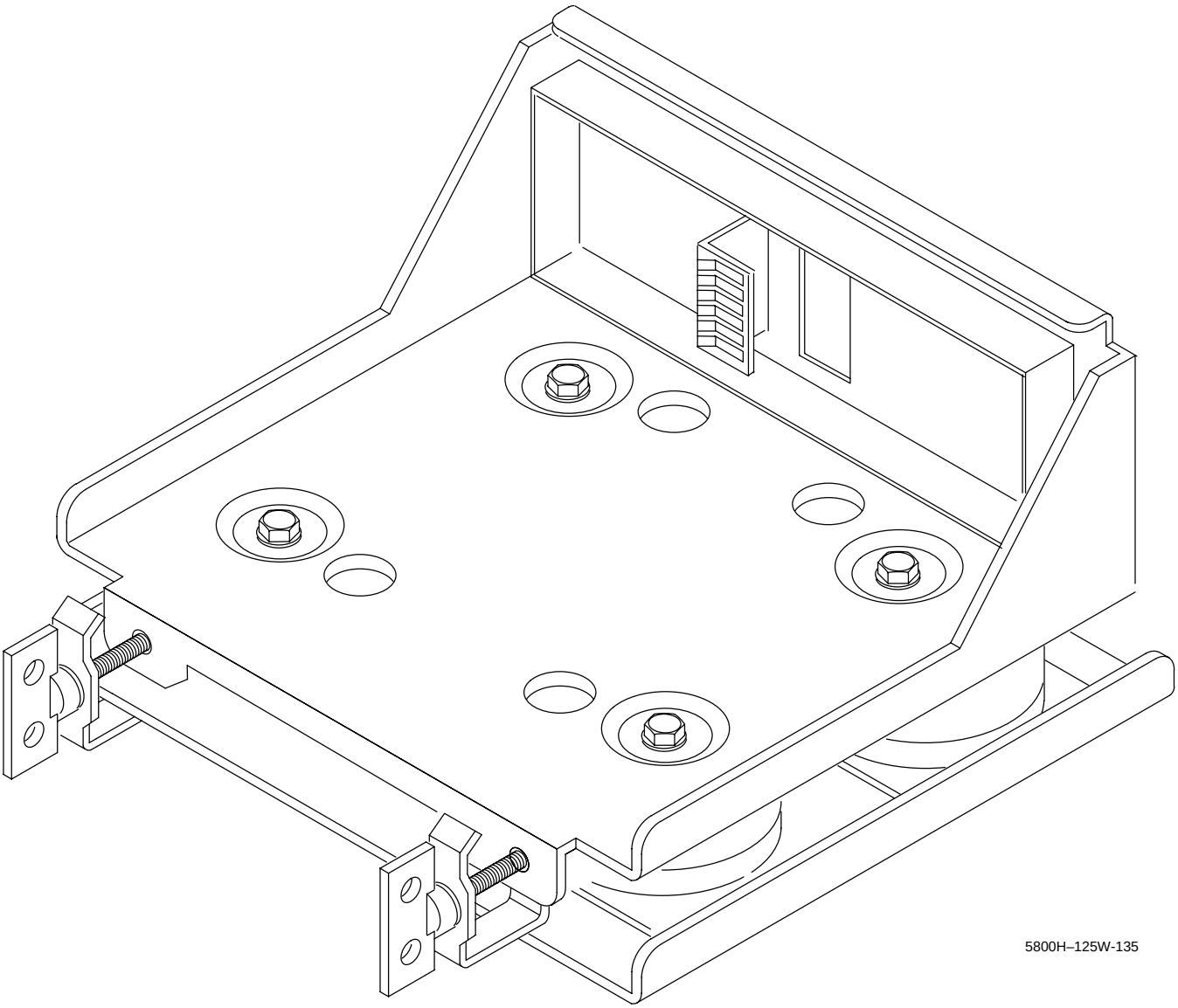


Figure 7-4. RF-5211VSM Shock Mount Assembly

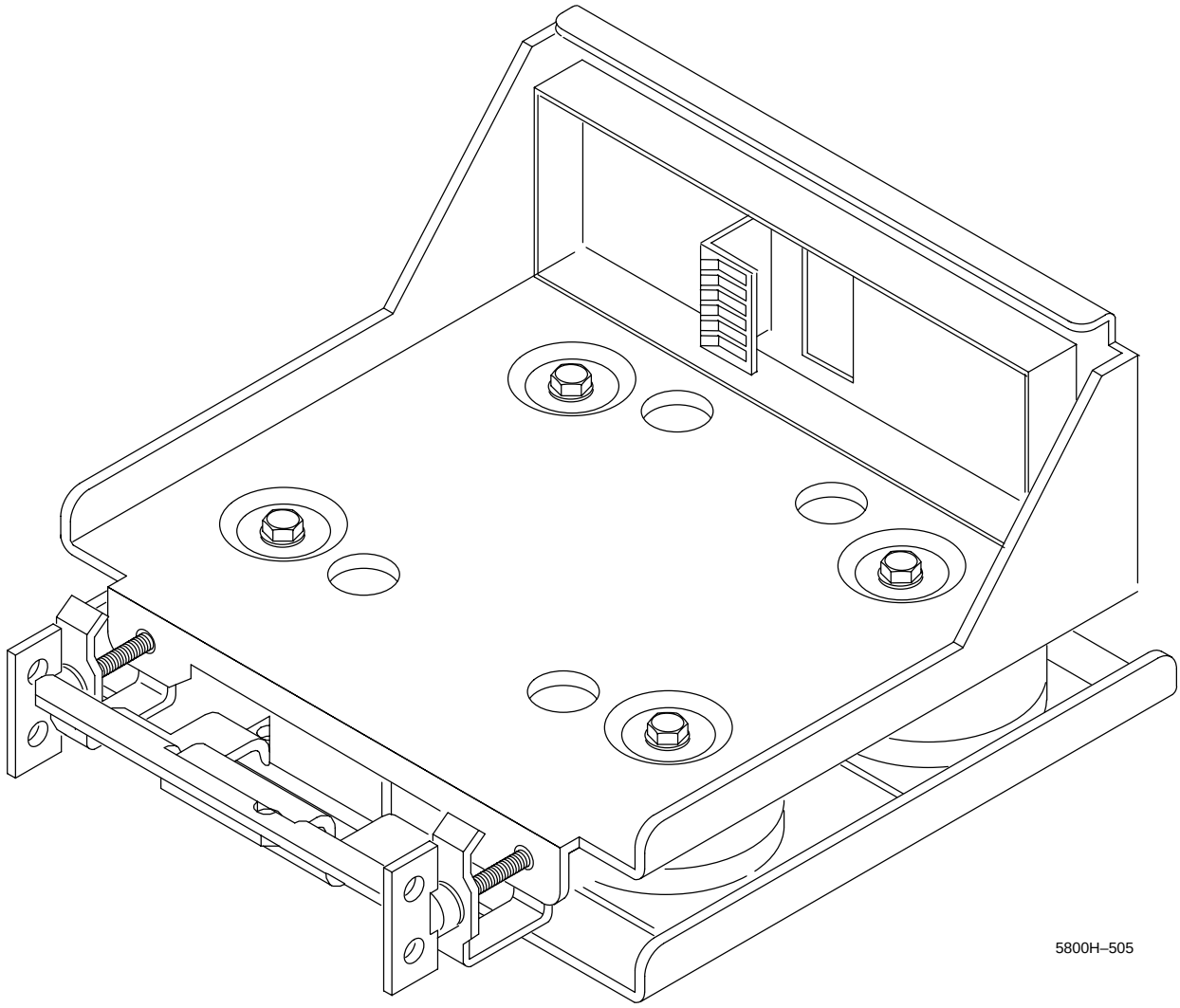


Figure 7-5. RF-5211-01VSM Shock Mount Assembly

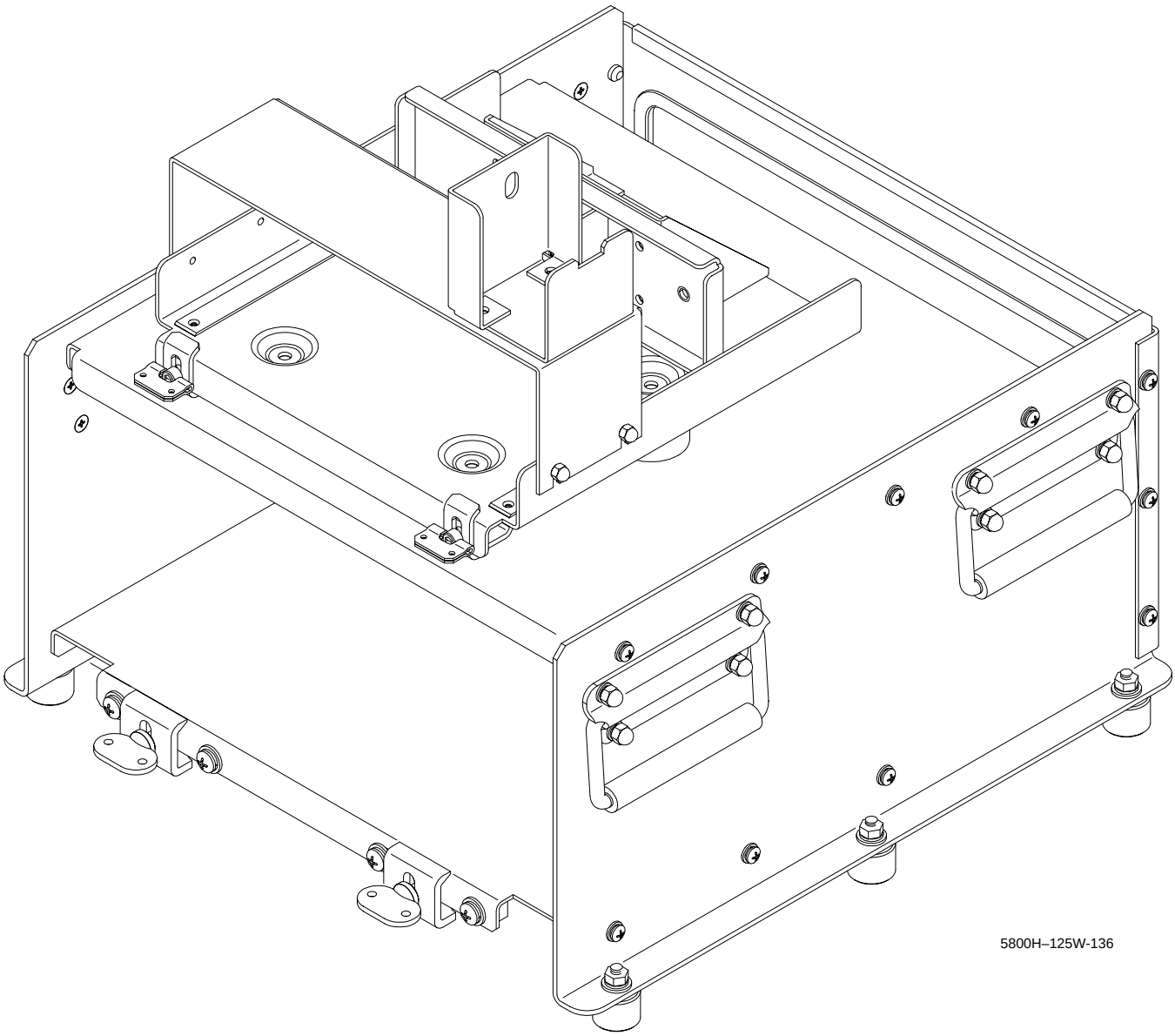
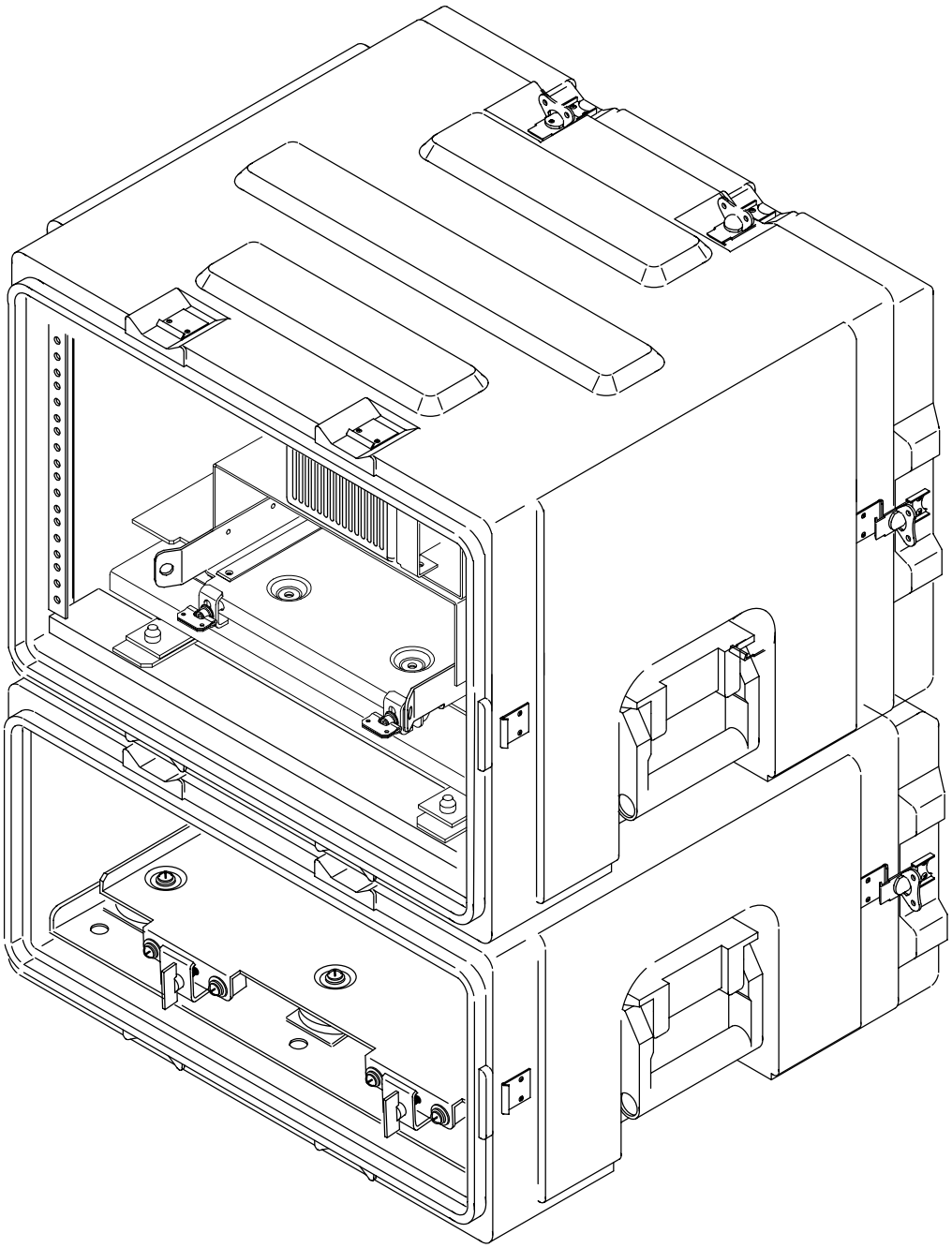


Figure 7-6. RF-5800H-125 Watt Base Station Mount Assembly Typical Configuration



5800H–125W-137A

Figure 7-7. RF-5800H-125 Watt Transit Case Mount Assembly Typical Configuration

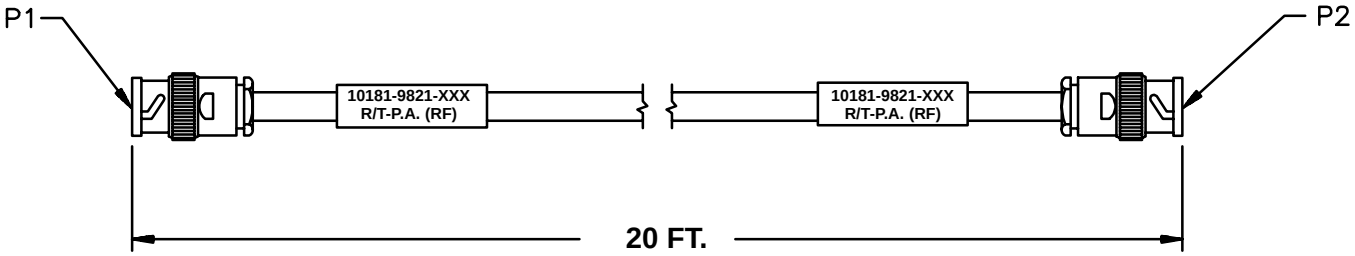


Figure 7-8. R/T-PA Coaxial Cable Assembly (10181-9821)

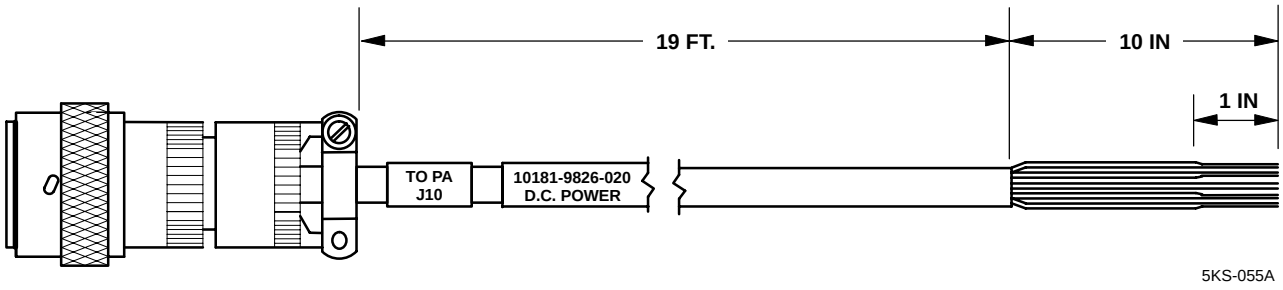


TABLE 1		
(Item 2)	Wire Color	Function (Reference)
PIN A	N/A	SHIELD GND
PIN B	RED	+DC
PIN C	BLK	DC RETURN
PIN D	BRN	DC RETURN
PIN E	ORN	+DC

Figure 7-9. DC Power Cable Assembly (10181-9826-020)

NOTES:
1. COMPLETED ASSEMBLY SHALL COMPLY WITH QC−3000, HARRIS CORP/RF COMMUNICATIONS STANDARDS OF WORKMANSHIP.
2. REQUIRED LENGTH SHALL BE SPECIFIED BY SALES ORDER AND A 3 DIGIT DASH NUMBER SHALL BE ASSIGNED. SEE TABLE 1 FOR STANDARD LENGTHS.

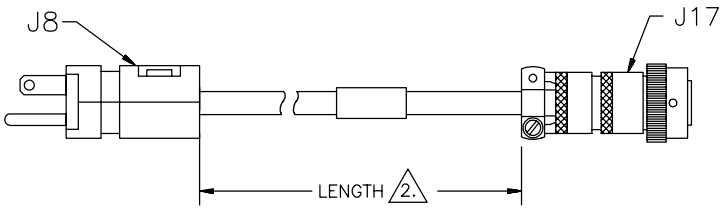


TABLE 2

WIRE RUN LIST			
FROM J18	TO CABLE 3	TO J17	FUNCTION
COPPER SCREW	BLACK	A	HOT
SILVER SCREW	WHITE	C	NEUTRAL
GREEN SCREW	GREEN	B	GROUND

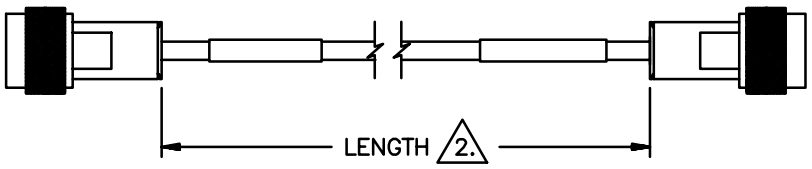
TABLE 1

10181−9831−008	8 FEET ±2 IN
10181−9831−009	9 FEET ±2 IN
10181−9831−015	15 FEET ±2 IN
PART NO.	LENGTH

10181−9831 D

Figure 7-11. AC Power Cable Assembly (10181-9831 Rev. D)

NOTES:
1. COMPLETED ASSEMBLY SHALL COMPLY WITH QC−3000, HARRIS CORP/RF COMMUNICATIONS STANDARDS OF WORKMANSHIP.
2. REQUIRED LENGTH SHALL BE SPECIFIED BY SALES ORDER AND A 3−DIGIT DASH NUMBER SHALL BE ASSIGNED. DASH NUMBER REPRESENTS LENGTH IN FEET(EX. −001=1 FOOT) (MAXIMUM RECOMMENDED LENGTH IS 250 FEET)
3. THIS ASSEMBLY IS RECOMMENDED FOR LENGTHS OVER 10 FEET. FOR LENGTHS UNDER 10 FEET, SEE DRAWING 10181−9825.



10181−9824 E

Figure 7-12. PA-Coupler RF Cable Assembly (10181-9824 Rev. E)

This page intentionally left blank.

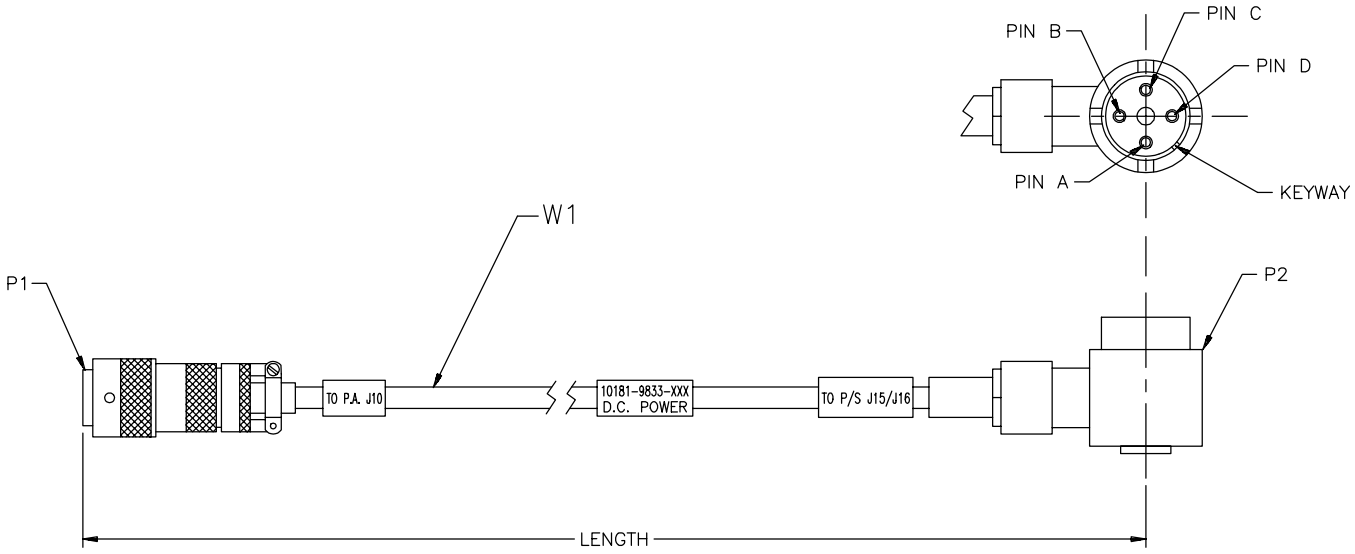


TABLE 1

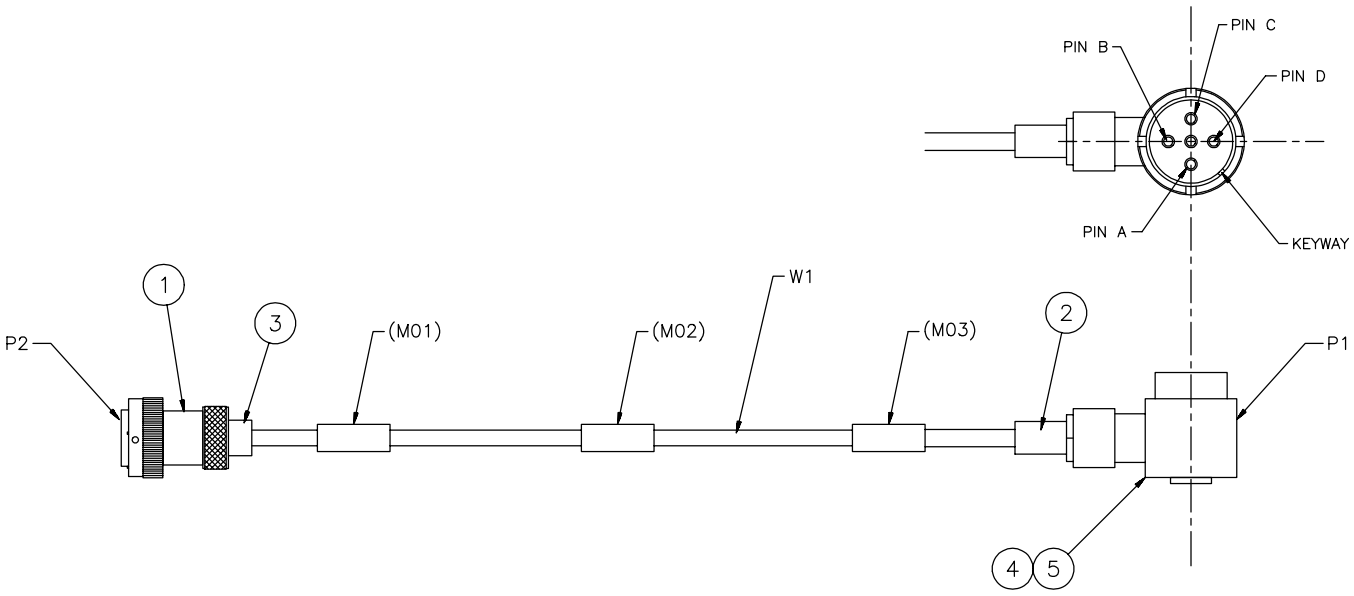
WIRE RUN LIST			
FROM	COLOR	TO	FUNCTION
P1–B	RED	P2–C	+DC
P1–C	BLK	P2–A	GROUND
P1–D	BRN	P2–B	GROUND
P1–E	ORN	P2–D	+DC

TABLE 2

10181–9833–020	20 FEET	AS SHOWN
10181–9833–010	10 FEET	AS SHOWN
10181–9833–006	6 FEET	AS SHOWN
10181–9833–004	4 FEET	AS SHOWN
10181–9833–002	2 FEET	AS SHOWN
PART NO.	LENGTH	DESCRIPTION

5800H–125-146

Figure 7-22. DC Power Cable Assembly (10181-9833)

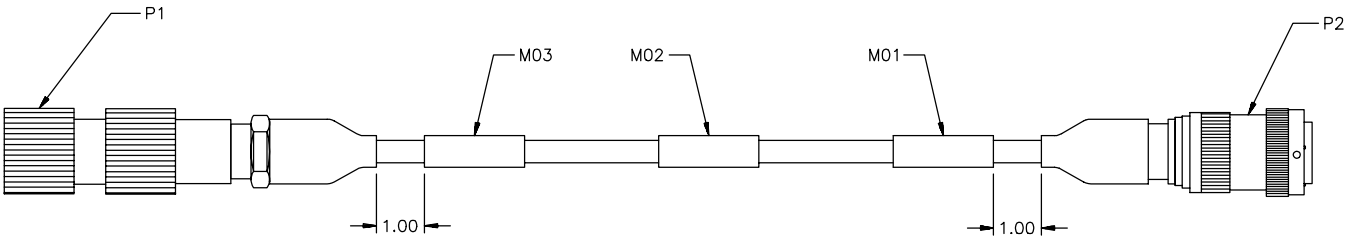


WIRE RUN LIST

COLOR	FROM	TO	FUNCTION
SHIELD	P1 BACKSHELL	P2 BACKSHELL	SHIELD
–	P1–B	–	N/C
BLK	P1–A	P2–B	POWER GND
RED	P1–C	P2–C	+26.5VDC
–	P1–D	–	N/C
–	–	P2–A	N/C

5800H–125-147

Figure 7-23. Speaker Power Cable Assembly (10535-0706)



WIRE RUN LIST

FROM	COLOR	TO	FUNCTION
P1–A	BLACK	P2–A	GROUND
P1–B	BROWN	P2–B	RX HANDSET AUD
P1–C	RED	P2–C	PTT KEY
P1–D	ORANGE	P2–D	MIC TX AUD
P1–E	YELLOW	P2–E	RETRANS–AUD–OUT
P1–F		N–C	N/A

5800H–125-148

Figure 7-24. Speaker Cable Assembly (10535-0707)

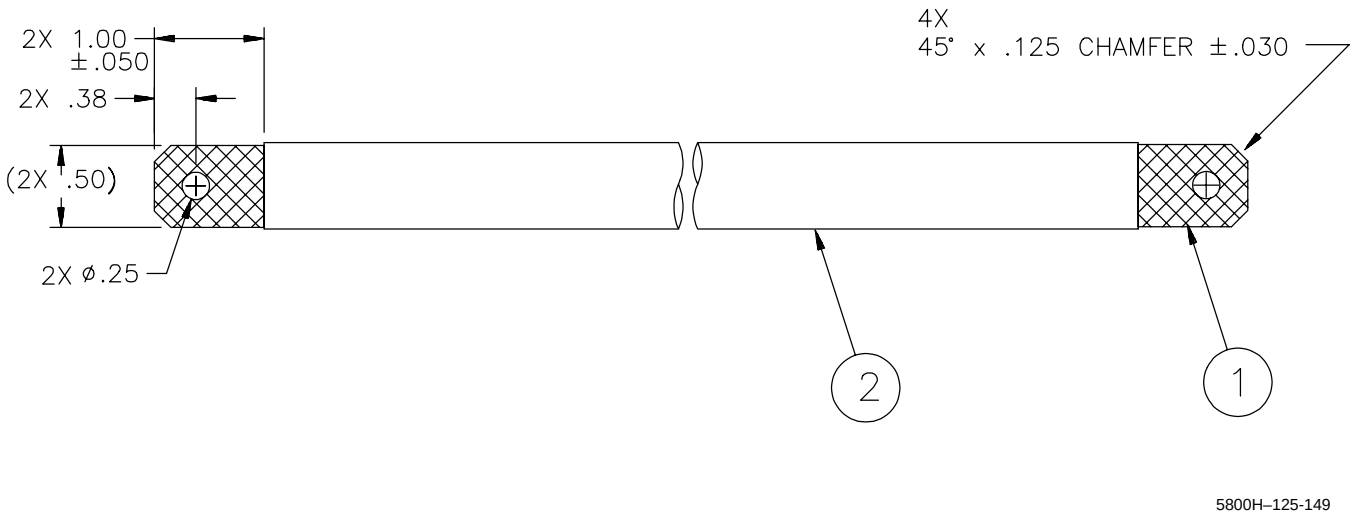


Figure 7-25. Ground Strap Cable Assembly (10400-1136)

APPENDIX A

A.1 TECHNICAL SPECIFICATIONS

Table A-1 provides RF-5832H-PA specifications. Tables A-2, A-3, and A-4 provide specifications for the RF-5051PS, RF-382A, and the RF-5056PS DC/DC Power Converter.

Table A-1. RF-5832H-PA Specifications

Function	Specification
GENERAL	
Frequency Range	1.6 MHz to 29.99999 MHz
RF Input/Output Impedance	50 ohm nominal, unbalanced
Power Input	+28.0 Vdc (per MIL-STD-1275) at 30 A maximum
Voltage	+22.5 Vdc to +30 Vdc
Temperature Range	–40° C to +70° C
Environmental	MIL-STD-810E
Heat Dissipation to Air	395 W
Cooling Air Flow Required	106 Cubic Feet per Minute (CFM)
Relative Humidity	0 to 95%
Leakage	MIL-STD-810E (1 meter depth)
Size	7.5W x 10.0D x 5.5H inches (19.0W x 25.5D x 14.0H cm.)
Weight	12.8lbs. (5.8 kg)
POWER AMPLIFIER	
Power Output	125 watts PEP/Average into a 50 ohm load
RF Drive Requirements	+20 dBm (100 mW)
Intermodulation Distortion	–30dB below PEP
Harmonic Output	–40 dB

Table A-2. RF-5051PS Specifications

Function	Specification
GENERAL	
Input Voltage	90–150 V_{rms} Single Phase (120 V nominal tap selected) 180–300 V_{rms} Single Phase (240 V nominal tap selected) Note: Tap selection is automatic.
Line Frequency	47 – 440 Hz
Power Consumption	1010 Watts/1450 VA at full load
Output	28 Vdc at 30 A (+26.4 Vdc nominal)
Load Regulation	–10 mV/ampere
Line Regulation	30 mV maximum output variation for 120/240 V ± 20% input variation
Size	7.5 W x 13.5 D x 5.5 H (inches) 19.0 W x 34.3 D x 14.0 H (centimeters)
Weight	17.3 lbs. (7.86 kg)

Table A-2. RF-5051PS Specifications – Continued

Function	Specification
Temperature Range	–40° C to +70° C
Shock/Vibration	MIL-STD-810D

Table A-3. RF-382A Specifications

Function	Specification
GENERAL	
Rated RF Input Power, Frequency Range, and Tuning Capability	Up to 500 watts PEP 1.5 to 30 MHz: 75- to 150-ft. long-wires (long-wires longer than 75 ft. require 1960-3006 Long-Wire Adapter), 40 to 100 feet dipoles (including RF-1912 and AS-2259/GR) 2.5 to 30 MHz: 35 ft. whips 4 to 30 MHz: 24 ft. whips 6 to 30 MHz: 15 ft. whips
Tuning Accuracy	Automatically tunes to 50 ohms to within a Voltage Standing Wave Ratio (VSWR) of 1.5:1.
Tuning Time	25 milliseconds tuning from memory based on prior tuneup of typically less than one second (four seconds maximum).
Efficiency	Whips: 1.5 to 4 MHz, 15 to 85%; 4 to 30 MHz, 50 to 95% Dipoles: 1.5 to 30 MHz, 60 to 95%
Features	Protection from high VSWR, high temperature, RF overvoltage and overcurrent; Built-In Test (BIT); automatic and manually-controlled receive bypass; 25 ms tune time; 10 to 32 Vdc primary power; lightning surge protection on all control lines; 512-channel memory.
Tune Power Requirements	Nominal 50 watts forward power throughout tuning cycle
Primary Power Requirements	10 to 32 Vdc at 2.5 A maximum during tuning; 1.5 A maximum after tuning
Remote Capability	Up to 250 ft. separation between transmitter and coupler
Enclosure Design	Submersible to 3 ft. (.9 m) of water, designed for exposed installations.
Weight	29 lbs. (13.2 kg)
Size	7.5 x 11.1 x 18.5 inches (19.1 x 28.2 x 47.0 cm), including projections 6.6 x 11.1 x 15.1 inches (16.8 x 28.2 x 38.4 cm), excluding projections Four mounting holes dimensions: 7.25 x 14.85 inches (18.4 x 37.7 cm)
Operating Temperature Range	–28° C to +65° C (–18° F to +150° F)
Control Lines	Keyline, Key Disable, Tune Power Request, Fault and Thermal Fault (RF-382A-02 Antenna Coupler only), Retune Pulse, and Bypass
Accessories Supplied	Type N RF coaxial mating connector, control cable mating connector, cable installation material, coupler mounting hardware, installation material, and instruction manual
VIBRATION	
MIL-STD-810E	Method 514.3, category 8, test procedure 1-3.2.10 (random vibration) for ground mobile equipment
MIL-STD-810B	Method 514, procedure VIII, curve Y, except 5 to 55 Hz and .15 inches D.A. or 3.5 G (whichever is less)

Table A-3. RF-382A Specifications – Continued

Function	Specification
MIL-STD-167-1	Type I (sinusoidal resonance search) for shipboard equipment
SHOCK	
MIL-STD-810E	Method 516.3, procedure I (functional shock) for ground mobile equipment (40 G, 11 ms sawtooth); procedure VI (bench handling shock) for equipment experiencing bench-type maintenance
Temperature	MIL-STD-810E, Method 501.2, procedures I and II (storage at 70° C and operation at 65° C); Method 502.2, procedures I and II (storage and operation at -40C)
Humidity	MIL-STD-810E; Method 507.2, procedure II (0 to 100% relative humidity at 65° C)
Altitude	MIL-STD-810E; Method 500.2, procedures I and II (storage and operating to 15,000 ft.)
Salt Fog	MIL-STD-810E; Method 509.2, procedure I (5% salt solution)
Dust	MIL-STD-810E; Method 510.2, procedures I and II (blowing dust and sand)
Rain	MIL-STD-810E; Method 506.2, procedure I (blowing rain)
Leakage	MIL-STD-810E; Method 512.2, procedure I (basic leakage-immersion)
Accessories	RF-2066 Antenna Base Plate Kit RF-285-04 Mounting Tray RF-382/SSK Site Spares Kit RF-382/ARK Assembly Repair Kit RF-382/MRK Maintenance Repair Kit

Table A-4. RF-5056PS DC/DC Power Converter Specifications

Function	Specification
Input Voltage	12 to 28 Vdc nominal
Output	26.4 Vdc at 22 A
Efficiency	75% minimum at full load with an input voltage of 25 to 30 Vdc
Load Regulation	300 mV
Line Regulation	50 mV
Output Current Duty Cycle	4:1 RX/TX
Size	7.5 W x 12.75 D x 3.3 H inches (19.1 W x 32.4 D x 8.38 H cm)
Weight	11 lbs. (5.0 kg)
Temperature Range	–55° C to +70° C (–67° F to +158° F)
Environmental	MIL-STD-810E

This page intentionally left blank.

GLOSSARY

-A-

AIC Ancillary Interface Connector

ALT Altitude

ANT Antenna

AWG American Wire Gauge

-B-

BIT Built-In Test

-C-

CAGE Commercial and Government Entity

Collocation Placing or arranging systems in close proximity of each other.

Configuration The process of setting parameter values which define the current hardware setup and/or operational modes. Also, a collection of all such values at any given time.

CT Cipher Text

CVSD Continuously Variable Slope Delta. Also known as Wideband Digital Voice.

-D-

D/A Digital to Analog

dB Abbreviation for decibel, which is one-tenth of a bel.

dBm The amount of power relative to one milliwatt of power into a 50 ohm or 600 ohm resistive load. (Unless otherwise stated, 50 ohms is assumed.)

DC Direct Current

DCE Data Communications Equipment (such as a modem).

Default Settings Transmission parameters established during the setup of the network configuration that remain in effect unless they are explicitly changed for an individual message.

DIP Dual-In-Line Package

GLOSSARY – Continued

Display	An electronic device which produces visible output (in non-permanent form). The output may take the form or text, graphics, or a combination of the two.
DSP	Digital Signal Processor
DTE	Data Transmission Equipment
DTR	Data Terminal Ready
DV (Digital Voice)	Analog voice that has been converted into a digital data stream of 1's and 0's.
	-E-
EEPROM	Electrically Erasable Programmable Read-Only Memory
ENT	Enter
EOM	End Of Message
EPROM	Erasable Programmable Read-Only Memory
	-F-
FM	Frequency Modulation
FPGA	Field Programmable Gate Array
Functionality	The set of all functions which a device is capable of performing.
	-G-
GPS (Global Positioning System)	A unique system that uses satellites to provide Time-Of-Day and geographical position information.
	-H-
HDG	Heading
HF	High Frequency
Hz	Abbreviation for hertz, or cycles per second.
	-I-
IFPA	Integrated Filter/Power Amplifier
Interface	A boundary between two systems, a device which connects two systems, or a specification for connecting two systems.

GLOSSARY – Continued

INFOSEC	Information Security Processor
IRQ	Interrupt Request
	-J-
	-K-
KDU	Keypad Display Unit
kHz	Abbreviation for kilohertz, or thousands of cycles per second.
	-L-
LCD	Liquid Crustal Display
LAT	Latitude
LD	Load
LNG	Longitude
LPC (Linear Predictive Coding)	A technique used to generate digital voice.
LRU	Line Replaceable Unit (Units in this manual.)
LT	Light
	-M-
Menu	A list of options presented to a user along with some means of selecting one of those options by pressing one or more keys on the keyboard or keypad.
MHz	Abbreviation for megahertz, or millions of cycles per second.
Mode	The radio's mode of operation, such as NORMAL, TEST, or SCAN.
Modem	Acronym for MOdulator/DEModulator. This is a type of data communications equipment which converts digital signals into an analog format (modulation) suitable for transmission through various media and reconverts received signals into a digital format (demodulation).

GLOSSARY – Continued

-N-

NCS (Net Control Station) — The station in the radio net that has radio control over net members.

NV — Non-Volatile

-O-

OPT — Options

-P-

PA — Power Amplifier

Parameter — Data provided to a program to alter its function in some manner defined by that program. Parameters may be either optional or required. The actual value selected by the user is called a parameter value.

Password — The password is a sequence of 6 – 12 characters that must be entered by the operator to gain access to the NCS function or the radio programming functions.

PEP — Peak Envelope Power

Peripheral — A device normally external to the physical computer, but controlled by the computer. Since hardware designs vary widely, a peripheral is sometimes built into the same case that houses the computer. Examples of peripherals are printers and modems.

PGM — Program

PROM — Programmable Read-Only Memory

PS — Power Supply

PT — Plain Text

PWB — Printed Wiring Board

-Q-

-R-

Radio Presets — A named, pre-defined set of radio parameters that allows the radio to be setup using only the name. Parameters include a frequency, data preset name, squelch setting, etc.

GLOSSARY – Continued

Radio Configuration	Data describing a radio including name, description, etc.
RAM	Random Access Memory
RF	Radio Frequency
ROM	Read-Only Memory
R/T	Receiver-Transmitter
RTC	Real-Time Clock
RV	Receive Variable
RX	Receive
	-S-
SOM	Start Of Message
SPCM	Signal Processing Core Module
SQ	Squelch
SRAM	Static RAM
SRU	Shop Replaceable Unit
SYNC	Synchronous
	-T-
TAP	Troubleshooting Analysis Procedure
TD	Time Delay
TOD	Time Of Day
TX	Transmit
	-U-
	-V-
VAU	Vehicular Adapter Unit
VDP	Voice Data Processor
VHF	Very High Frequency

GLOSSARY – Continued

VIS	Vehicular Intercom System
VOL	Volume
VRCS	Vehicular Radio Communications System

-W-

-X-

-Z-

ZERO	Zeroize
Zeroize	A command sequence which erases all programmed radio configuration information

TECHNICAL PUBLICATION
EVALUATION FORM

To the User of this Instruction Manual:

HARRIS Corporation, RF Communications Division continually evaluates its technical publications for completeness, technical accuracy, and organization. You can assist in this process by completing and returning this form. Please specify section, page number, figure or table number where applicable.

MANUAL TITLE: _____

MANUAL NUMBER: _____ REVISION: _____ COVER DATE: _____

GENERAL	**EXCELLENT**	**GOOD**	**FAIR**	**POOR**
TEXT	[ ]	[ ]	[ ]	[ ]
SETUP/ALIGNMENT INST.	[ ]	[ ]	[ ]	[ ]
TROUBLESHOOTING INST.	[ ]	[ ]	[ ]	[ ]
TABLES	[ ]	[ ]	[ ]	[ ]
ILLUSTRATIONS	[ ]	[ ]	[ ]	[ ]
PARTS LISTS	[ ]	[ ]	[ ]	[ ]
SCHEMATIC DIAGRAMS	[ ]	[ ]	[ ]	[ ]

CHAPTER	**EXCELLENT**	**GOOD**	**FAIR**	**POOR**
INTRODUCTION/GENERAL INFORMATION	[ ]	[ ]	[ ]	[ ]
OPERATION	[ ]	[ ]	[ ]	[ ]
FUNCTIONAL DESC/THEORY OF OPERATION	[ ]	[ ]	[ ]	[ ]
SCHEDULED MAINTENANCE	[ ]	[ ]	[ ]	[ ]
TROUBLESHOOTING	[ ]	[ ]	[ ]	[ ]
CORRECTIVE MAINTENANCE	[ ]	[ ]	[ ]	[ ]
DOCUMENTATION	[ ]	[ ]	[ ]	[ ]
INSTALLATION	[ ]	[ ]	[ ]	[ ]
ACCESSORIES	[ ]	[ ]	[ ]	[ ]

GENERAL COMMENTS: Please include your suggestions for improvements to the manual. Specify chapter, page, paragraph, figure number, or table number as applicable. Attach examples or extra pages if more space is needed.

_____

_____

_____

_____

_____

_____

_____

_____

CUT HERE

NAME: _____ DATE: _____

CUT HERE

COMPANY: _____

ADDRESS: _____

CITY: _____ STATE: _____

ZIP: _____ COUNTRY: _____

PHONE NUMBER (INCLUDE AREA CODE): _____

NOTE

U.S. POSTAL REGULATIONS NO LONGER PERMIT THE USE OF STAPLES. PLEASE SEAL THIS FORM WITH TAPE.

MAKE FIRST FOLD HERE

MAKE LAST FOLD HERE

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 4033 ROCHESTER, N.Y.

POSTAGE WILL BE PAID BY ADDRESSEE

HARRIS CORPORATION
RF COMMUNICATIONS DIVISION
1680 UNIVERSITY AVENUE
ROCHESTER, NEW YORK 14610-1887

ATTN: TECHNICAL SERVICES

RF Communications Division | 1680 University Ave | Rochester, NY USA 14610
Tel: 716-244-5830. Fax: 716-242-4755 **www.harris.com**

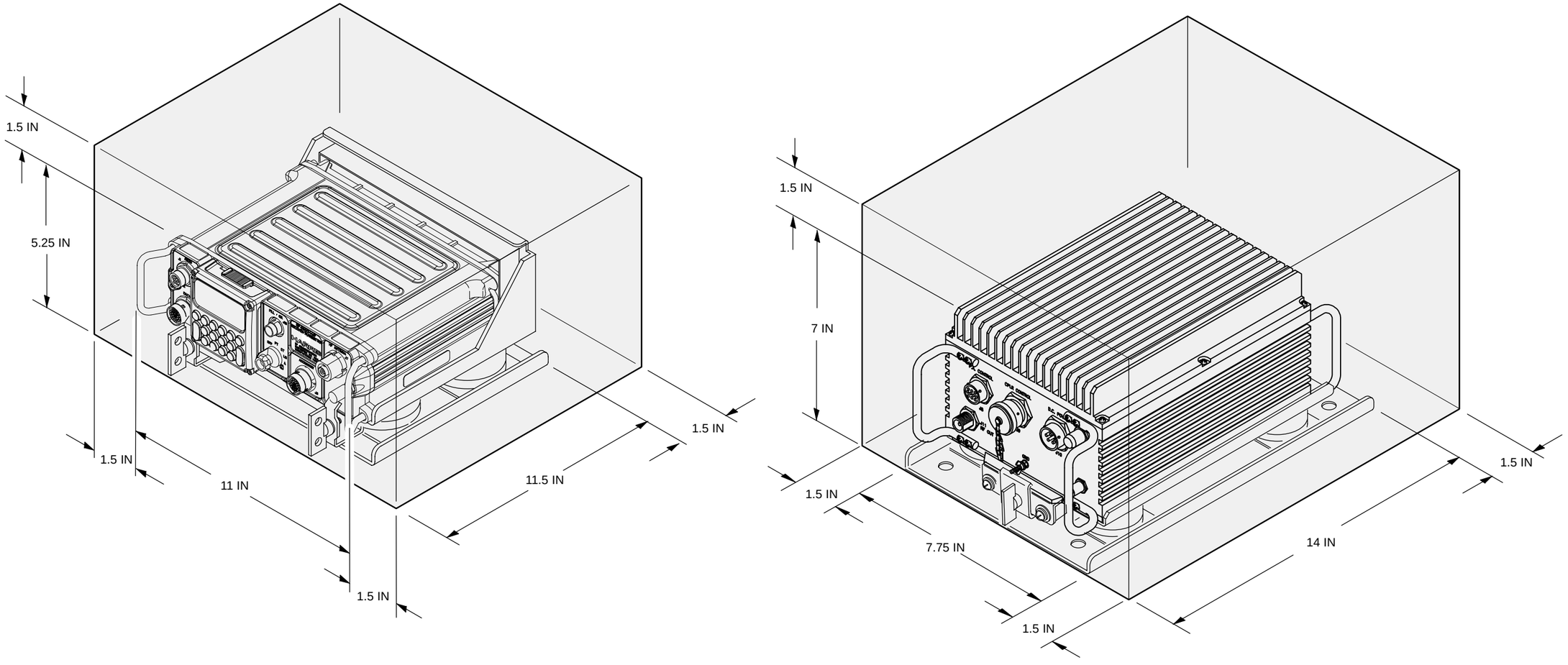
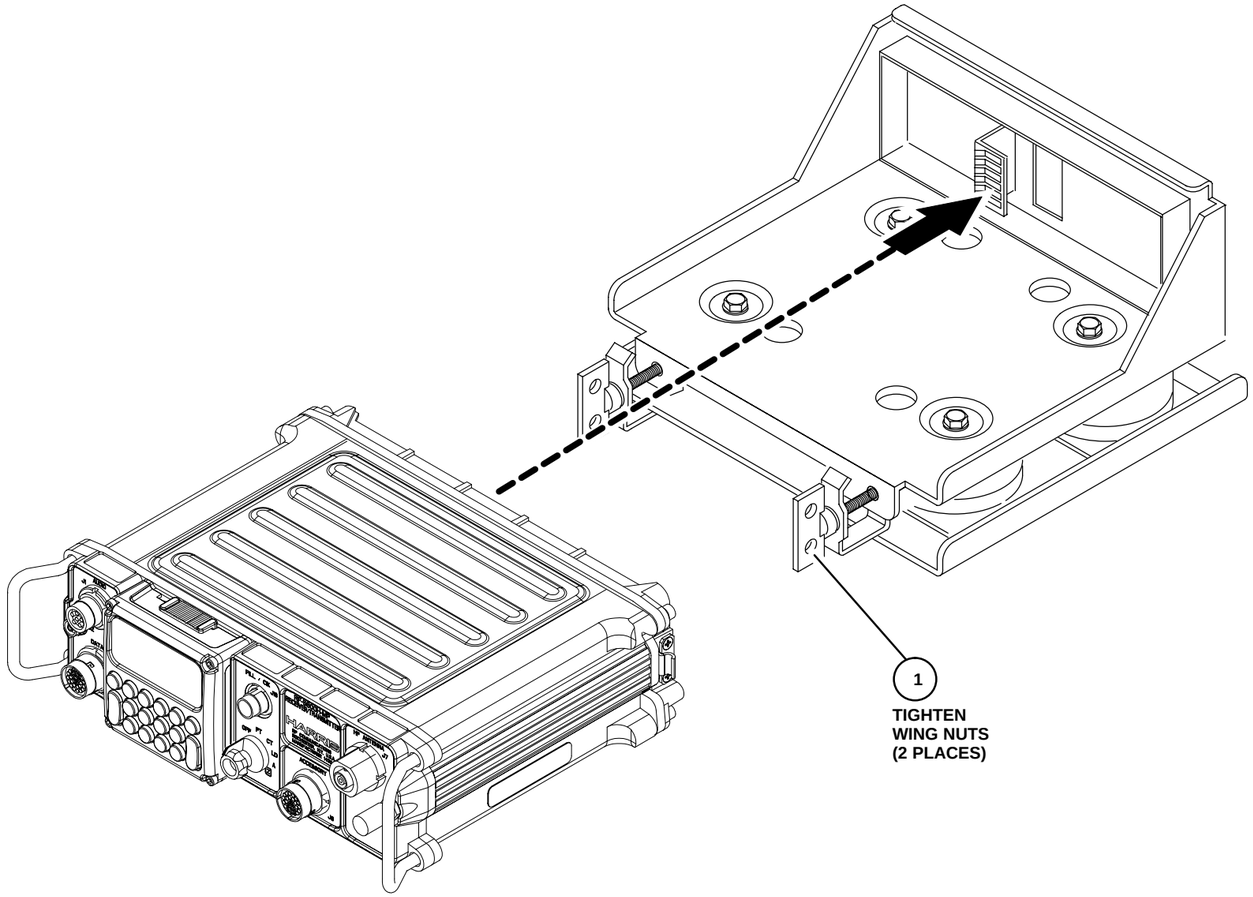


Figure 2-1. RF-5800H 125-Watt Vehicular System Installation and Maintenance Clearances



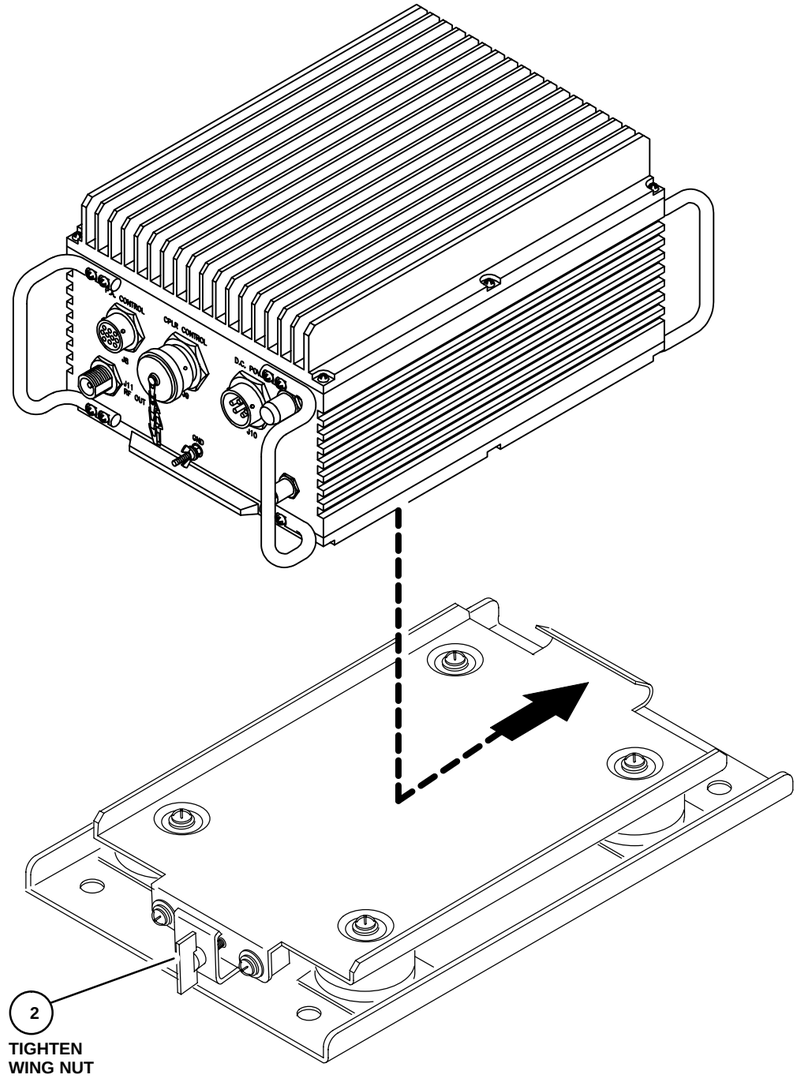


Figure 2-7. RF-5800H 125-Watt Vehicular System Installation Typical Configuration

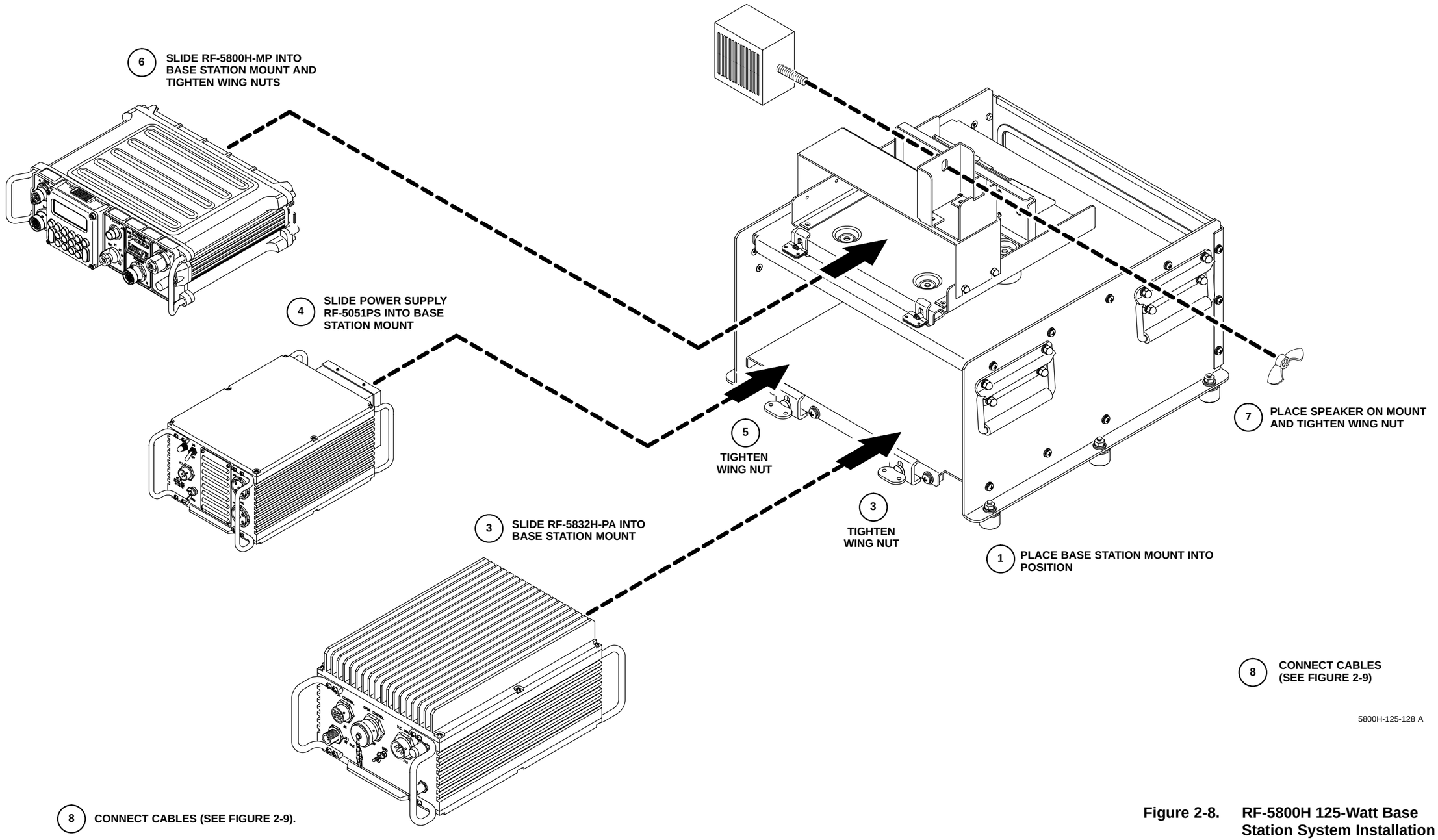


Figure 2-8. RF-5800H 125-Watt Base Station System Installation Typical Configuration

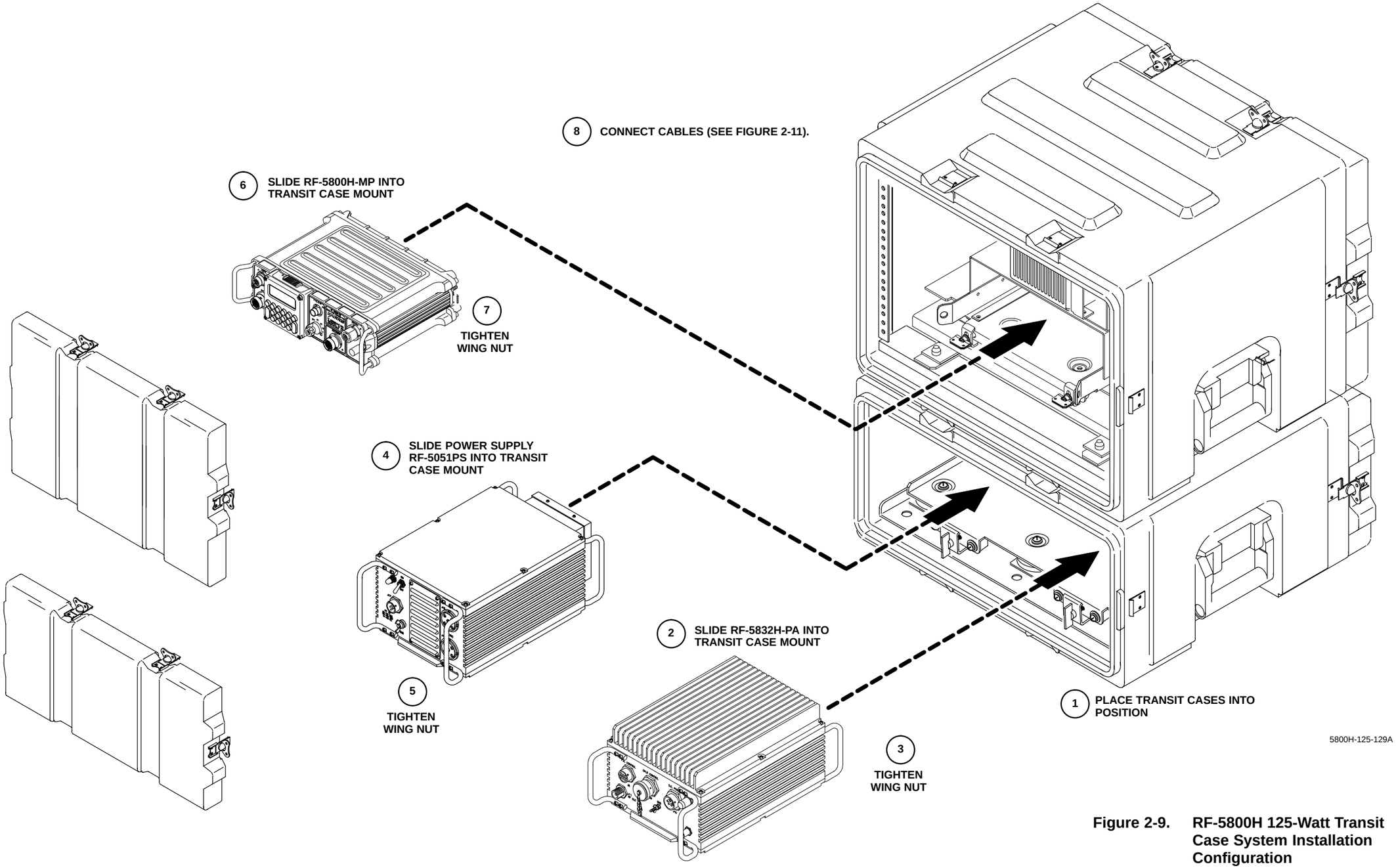
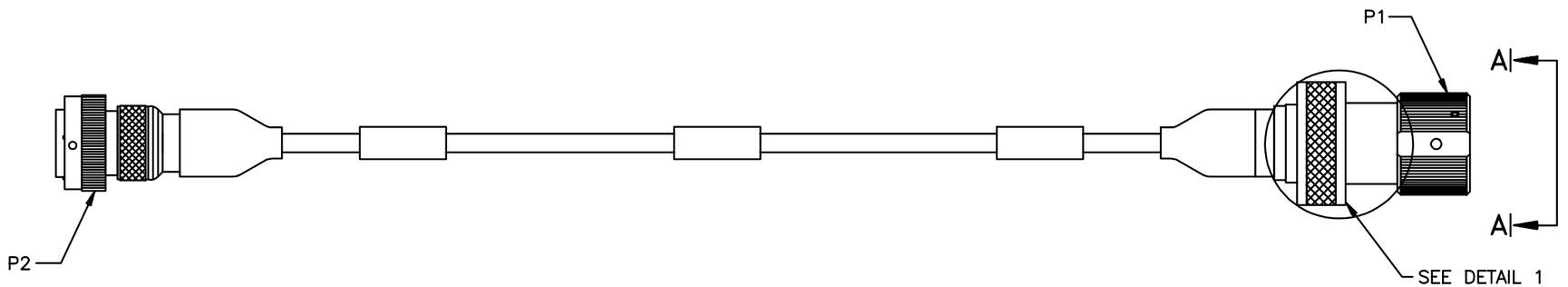
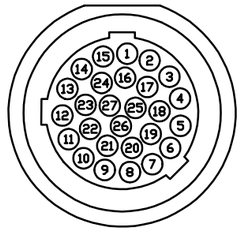


Figure 2-9. RF-5800H 125-Watt Transit Case System Installation Configuration

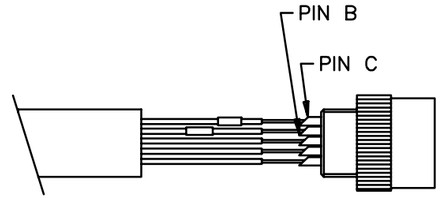




VIEW A–A

WIRE RUN LIST

FROM P1 (RADIO J6)	TO P2 (PA J8)	FUNCTION
PIN 2	PIN E	EXT–DC PWR RIN
PIN 3	PIN B	DATA +
PIN 4	PIN C	DATA –
PIN 9	PIN D	ON/OFF
PIN 14	PIN K	EXT +DC PWR IN
PIN 15	PIN J	EXT +DC PWR IN
PIN 17	PIN F	EXT –DC PWR RIN
PIN 19	PIN H	FEEDBACK +
PIN 20	PIN G	FEEDBACK –
PINS 1,5,6–8,10–13,16,18,21–27	NC	N/A
BRAID OF ITEM 6	CONNECTOR BODY OF P2 & P1	SHIELD GND & CONNECTOR BODY GND



DETAIL 1

5800H–125-138

Figure 7-10. PA-R/T Cable Assembly (10535-0720 Rev. B)

NOTES:
1. COMPLETED ASSEMBLY SHALL COMPLY WITH QC–3000, HARRIS CORP/RF COMMUNICATIONS STANDARDS OF WORKMANSHIP.
2. REQUIRED LENGTH SHALL BE SPECIFIED BY SALES ORDER AND A 3 DIGIT NUMBER SHALL BE ASSIGNED. SEE TABLE 2 FOR STANDARD LENGTHS. (MAXIMUM RECOMMENDED LENGTH IS 250 FT).
3. WIRE CONNECTORS PER TABLE 1.

TABLE 1

FROM	TO	FUNCTION (REFERENCE)	WIRE COLOR
PIN A	N.C.		
PIN B	N.C.		
PIN C	PIN N	T–FAULT	WHT/BLK
PIN D	PIN A	GDN & SHIELD	BLK & SHIELD
PIN E	N.C.		
PIN F	PIN H	+DC	ORN
PIN G	PIN C	CPLR–FAULT	GRY
PIN H	PIN B	KEYLINE	BRN
PIN J	N.C.		
PIN K	PIN F	TPR	GRN
PIN L	PIN E	RECHANNEL	YEL
PIN M	PIN I	+DC	RED
PIN N	PIN G	BYPASS	BLU
PIN P	N.C.		
PIN R	N.C.		
PIN S	N.C.		
PIN T	PIN J	KEY–DISABLE	WHT
PIN U	N.C.		
PIN V	N.C.		

TABLE 2

PART NO.	LENGTH
10181–9823–250	250 FEET
10181–9823–150	150 FEET
10181–9823–100	100 FEET
10181–9823–050	50 FEET
10181–9823–020	20 FEET
10181–9823–010	10 FEET
10181–9823–006	6 FEET

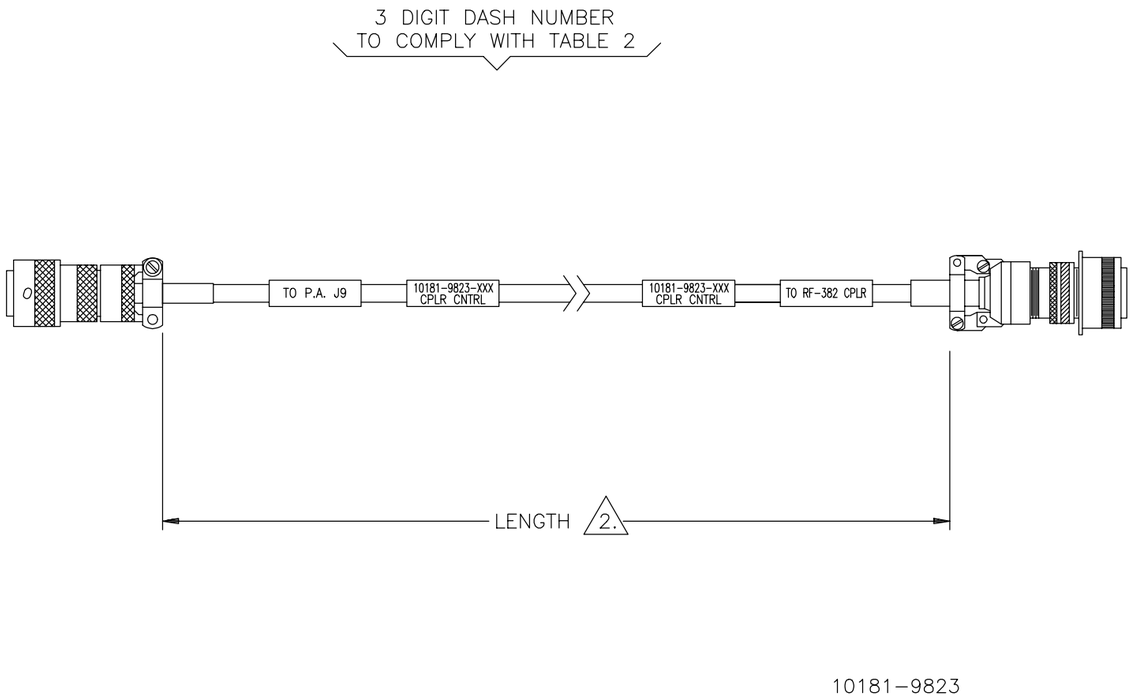
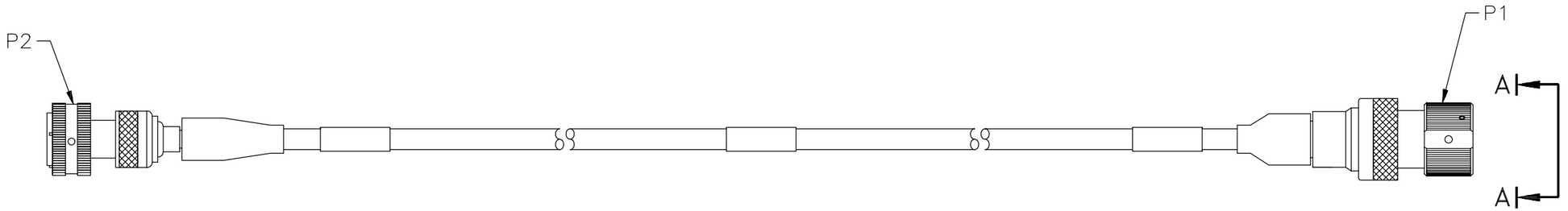
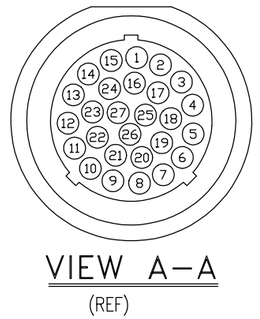


Figure 7-13. PA-Coupler Control Cable Assembly (10181-9823 Rev. E)





VIEW A–A
(REF)

WIRE RUN LIST

FROM		TO	
PIN	WIRE	PIN	FUNCTION
P2–1	ITEM–1 BLK	P1–13	GND
P2–2	ITEM–1 BRN	P1–11	FIXED LEVEL AUD OUT
P2–3	ITEM–1 RED	P1–15	RED PTT
P2–4	ITEM–1 ORN	P1–13	GROUND
P2–5	ITEM–1 YEL	P1–12	FIXED LEVEL AUD IN
P2–6	ITEM–1 GRN	P1–5	GND
P2 BACKSHELL	ITEM–1 BRAID	P1 BACKSHELL	FRAME GROUND

5800H–125-140

Figure 7-14. KY-99A Audio/Black Data Cable Assembly (10535-0701 Rev. A)

NOTES:

REFERENCE TABLES B, C & D FOR CUSTOM TESTING.

TABLE B

CONTINUITY TEST		
P2-7	TO	P1-6
P2-8	TO	P1-3
P2-9	TO	P1-19
P2-10	TO	P1-18
P2-12	TO	P1-13

TABLE C

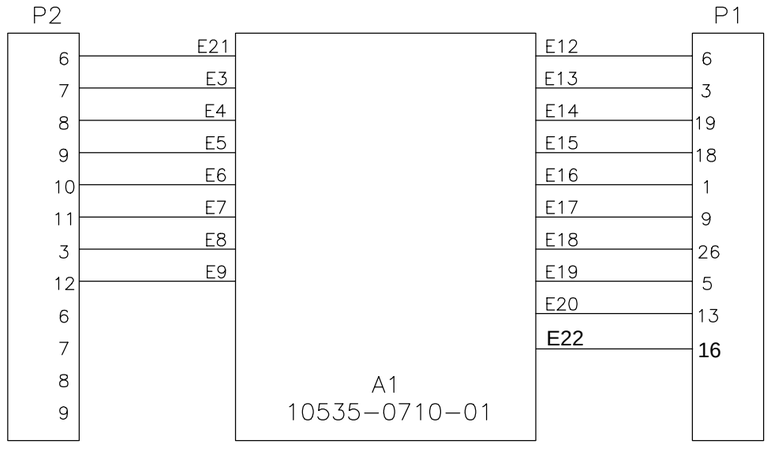
NO SHORTS TEST		
P2-7	TO ALL PINS EXCEPT	P1-6
P2-8	TO ALL PINS EXCEPT	P1-3
P2-9	TO ALL PINS EXCEPT	P1-19
P2-10	TO ALL PINS EXCEPT	P1-18
P2-11	TO ALL PINS EXCEPT	P1-1

TABLE D

FUNCTIONAL TEST (FOR KY-99 CABLE CIRCUITRY) +/-10%
1. USING AN OHMMETER, CONNECT POS LEAD TO P1-9 AND NEG LEAD TO P1-26. VERIFY THAT THE METER MEASURES 10K OHMS.
2. GROUND P1-5.
3. APPLY +9VDC TO P1-1. VERIFY THAT P2-11 DOES NOT EXCEED 5VDC.
4. APPLY -9VDC TO P1-1. VERIFY THAT P2-11 DOES NOT DROP BELOW -1VDC.
5. APPLY +9VDC TO P1-9.
6. MEASURE +9VDC AT P1-16.
7. CONNECT GROUND TO P2-3. VERIFY THAT THE VOLTAGE AT P1-26 IS 1.5VDC MINIMUM.
8. REMOVE GROUND TO P2-3. VERIFY THAT THE VOLTAGE AT P1-26 DOES NOT EXCEED 200MV.

5800H-125-141

Figure 7-15. RS-232 Black Data to Encryption Device Cable Assembly (10535-0702 Rev. A) (Sheet 1 of 2)

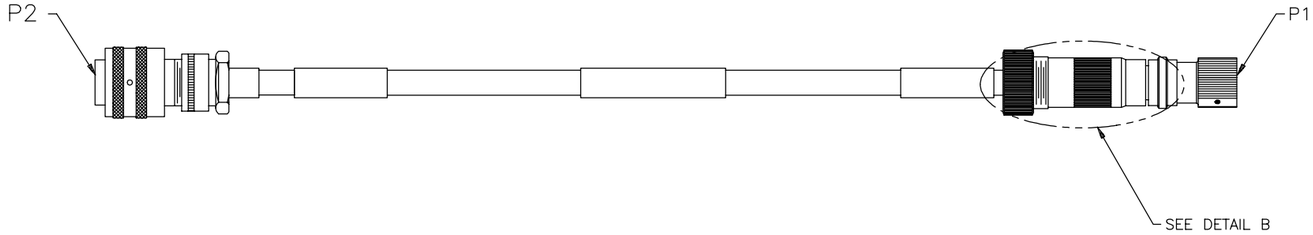


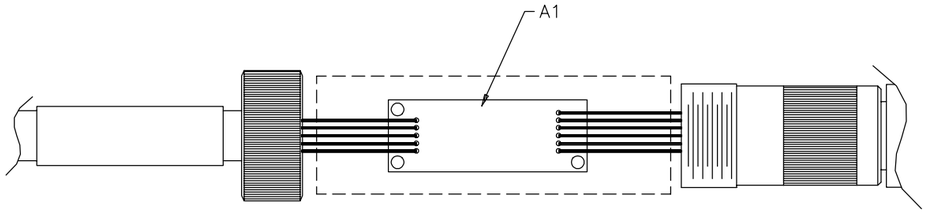
DETAIL A
SCHEMATIC

WIRE RUN LISTS

FROM	TERM	TO	TERM	FUNCTION
A1E12		P1–6		R_DCE_RXDATA
A1E13		P1–3		R_DCE_RXCLK
A1E14		P1–19		R_DCE_TXDATA
A1E15		P1–18		R_DCE_TXCLK
A1E16		P1–1		R_DCE_CTS
A1E17		P1–9		RAD_PRES
A1E18		P1–26		R_DCE_RTS
A1E19		P1–5		GND
A1E20		P1–13		GND
A1E22		P1–16		R_DCE_DTR
		P1–4		N/C
		P1–7,8		N/C
		P1–(10–12)		N/C
		P1–(14,15,17)		N/C
		P1–(20–25)		N/C
		P1–27		N/C

FROM	TERM	TO	TERM	FUNCTION
P2–1				N/C
P2–2				N/C
P2–3		A1E8		BPTT
P2–4				N/C
P2–5				N/C
P2–6		A1E21		GND
P2–7		A1E3		RX_D
P2–8		A1E4		EXT_TX/RX_CLK
P2–9		A1E5		TX_DATA
P2–10		A1E6		INT_TX_CLK
P2–11		A1E7		CTS
P2–12		A1E9		LOSSEL
P2–13				N/C

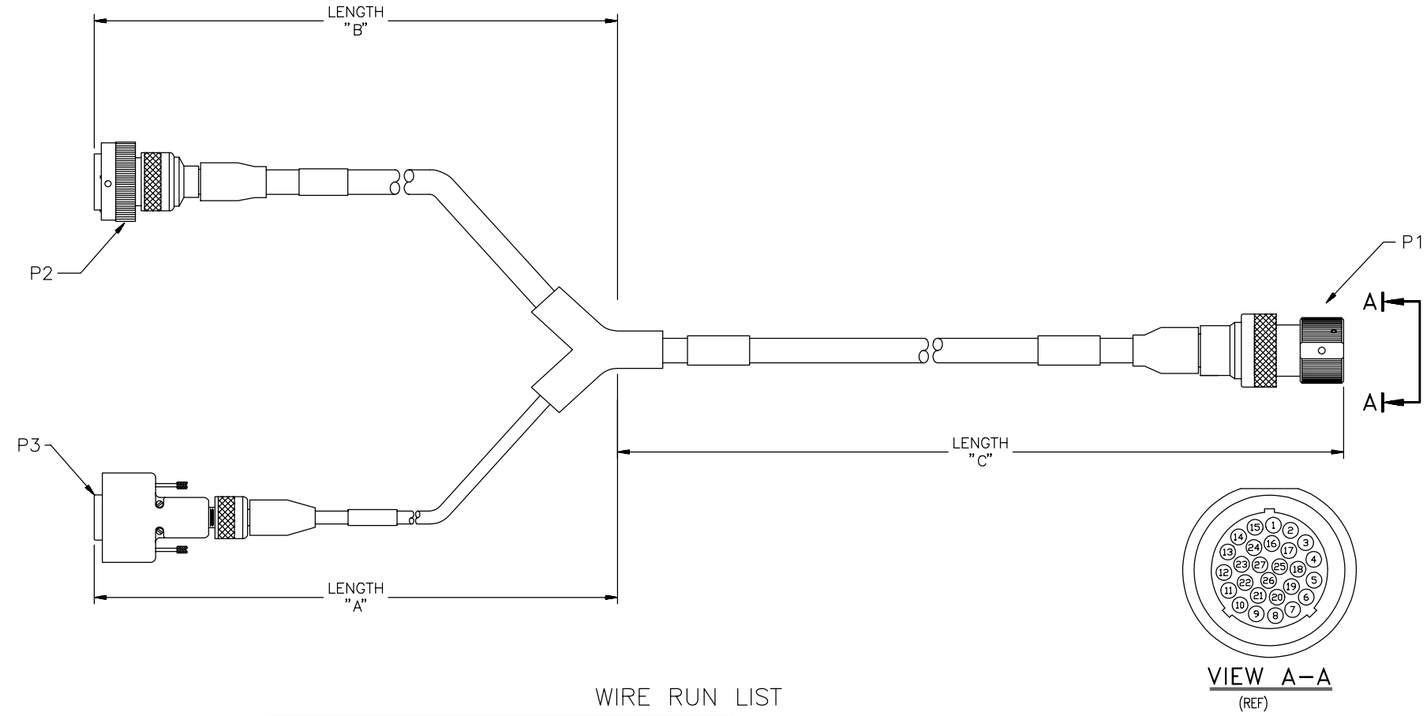




DETAIL B

5800H–125-142

Figure 7-15. RS-232 Black Data to Encryption Device Cable Assembly (10535-0702 Rev. A) (Sheet 2 of 2)



WIRE RUN LIST

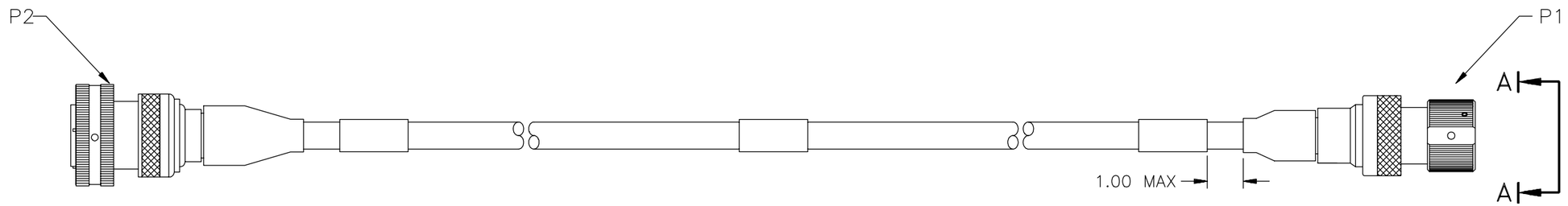
FROM		TO						
P1 PIN	ITEM 6 WIRE	ITEM 14 WIRE	P2 PIN	WIRE	P3 PIN	FUNCTION	RF5800 SIGNAL NAME(REF)	NOTES
2	BLK	BLK	E			EXT DC PWR RTN	FRNT_EXT_PWR_RTN	
3	BRN	BRN	B			DATA +	AIC_PA_CT–	SEE NOTE 5
4	RED	RED	C			DATA –	AIC_PA_CT+	SEE NOTE 5
9	ORN	ORN	D			ON/OFF	/AIC_PA_ON	
14	YEL	YEL	K			EXT +DC PWR IN	FRNT_EXT_PWR_IN1	
15	GRN	GRN	J			EXT +DC PWR IN	FRNT_EXT_PWR_IN2	
17	BLU	BLU	F			EXT –DC PWR RTN	FRNT_EXT_PWR_RTN	
19	VIO	VIO	H			FEEDBACK+	AIC_PA_FB+	
20	GRY	GRY	G			FEEDBACK–	AIC_PA_FB–	
25	WHT			ITEM 11 (RED)	2	RX DATA	AIC_RMT_RXD–	
26	WHT/BLK			ITEM 12 (ORN)	3	TX DATA	AIC_RMT_TXD–	
5	WHT/BRN			ITEM 13 (GRN)	5	GROUND	COMGND	
BACKSHELL	SHIELD	SHIELD	BACKSHELL	ITEM 8	BACKSHELL	OVERALL CABLE SHIELD		

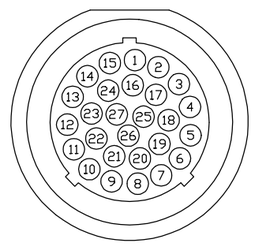
TABLE A

10535–0730		P2 TO PA CONTROL	10535–0730–A1 REV–	P1 TO J6 OF RF–5800–MP	P3 TO DTE	1 "A" = 4.00 FEET "B" = 4.00 FEET "C" = 6.00 FEET
PART NUMBER						CUSTOM LENGTH

5800H–125–143

Figure 7-16. ASCII Remote and PS Control Cable Assembly, Y (10535-0730 Rev. –)





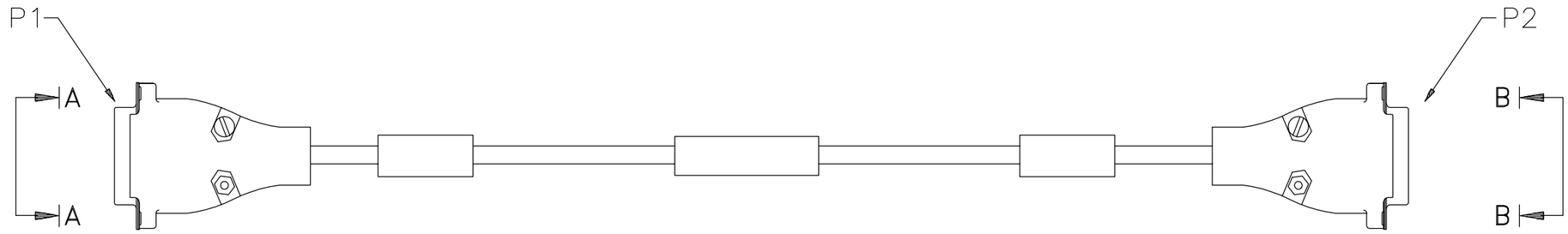
VIEW A–A
(REF)

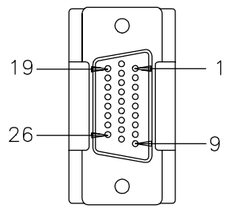
WIRE RUN LIST

FROM			TO	
KG–84C FUNCTION	PIN	WIRE	PIN	RF–5800H FUNCTION
DCD	P2–34	ITEM–3 BLK	P1–2	DCD
RX DATA	P2–13	ITEM–3 BRN	P1–6	RX DATA
TX DATA	P2–14	ITEM–3 RED	P1–19	TX DATA
SIG GND	P2–1	ITEM–3 ORN	P1–5	SIG GND
RTS	P2–47	ITEM–3 YEL	P1–26	RTS
CTS	P2–27	ITEM–3 GRN	P1–1	CTS
RX CLOCK	P2–19	ITEM–3 BLU	P1–18	TX CLOCK
TX CLOCK	P2–32	ITEM–3 VIO	P1–3	RX CLOCK
SHIELD	P2–2	ITEM–3 BRAID	P1 BACKSHELL	FRAME GROUND
SHIELD	P2 BACKSHELL	ITEM–3 BRAID	P1 BACKSHELL	FRAME GROUND
P2 JUMPERS				
	P2–19	ITEM–6 WHT	P2–21	
	P2–51	ITEM–6 WHT	P2–52	
	P2–49	ITEM–6 WHT	P2–52	
	P2–6	ITEM–6 WHT	P2–25	
	P2–10	ITEM–6 WHT	P2–28	
	P2–18	ITEM–6 WHT	P2–30	
	P2–1	ITEM–6 WHT	P2–12	
	P2–20	ITEM–6 WHT	P2–22	
	P2–12	ITEM–6 WHT	P2–20	

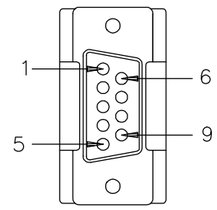
5800H–125-143

Figure 7-17. KG-84C Black Data Cable Assembly, Y (10535-0750 Rev. –)





VIEW A–A



VIEW B–B

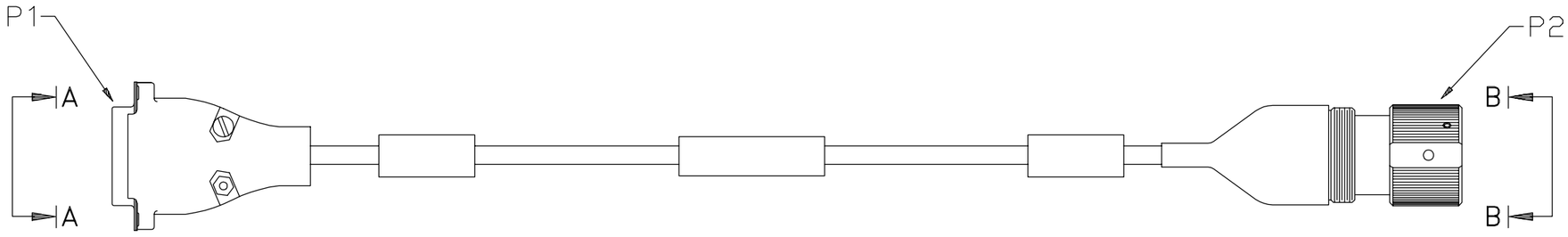
WIRE RUN LIST

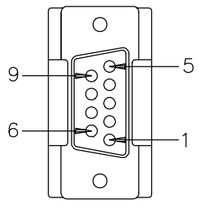
FROM	COLOR	TO	FUNCTION
P1–7	RED	P2–3	TX DATA
P1–17	BROWN	P2–2	RX DATA
P1–12	BLACK	P2–5	GND
P1–1 – P1–6			N/C
P1–8 – P1–16			N/C
P1–18 – P1–24			N/C
P2–1, 3, 4			N/C
P2–6 – P2–9			N/C

5800H–125-144

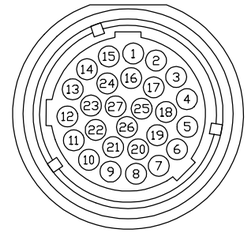
10535–0760 –

Figure 7-18. ASCII Remote Control Rear D-Connenctor Cable Assembly (10535-0760 Rev. –)





VIEW A–A



VIEW B–B

TABLE B

CONTINUITY TEST		
P1–2	TO	P2–6
P1–3	TO	P2–19
P1–5	TO	P2–5

TABLE C

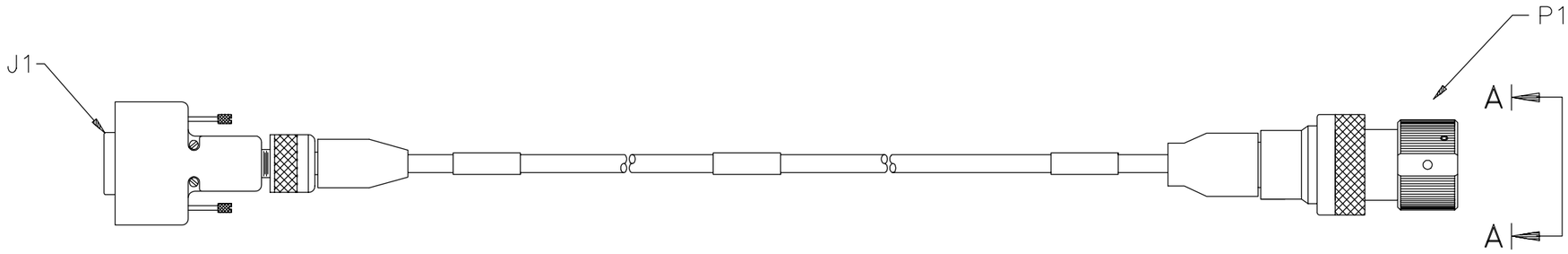
NO SHORTS TEST		
P1–2	TO ALL PINS EXCEPT	P2–6
P1–3	TO ALL PINS EXCEPT	P2–19
P1–5	TO ALL PINS EXCEPT	P2–5

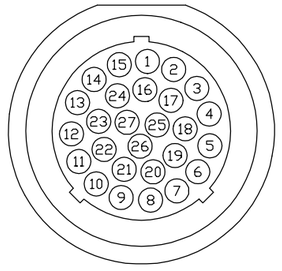
WIRE RUN LIST

FROM	COLOR	TO	FUNCTION
P1–SHELL	SHIELD	P2–SHIELD	SHIELD
P1–1	BROWN	N/C	
P1–2	RED	P2–6	RX DATA
P1–3	ORANGE	P2–19	TX DATA
P1–4	YELLOW	N/C	
P1–5	GREEN	P2–5	GND_CHAS
P1–6	BLUE	N/C	
P1–7	VIOLET	N/C	
P1–8		N/C	
P1–9		N/C	
N/C		P2–1 THRU 4,7 THRU 18,20 THRU 27	

10535–0770

Figure 7-19. Sync/Async RS-232 DTE Data Cable Assembly (10535-0770 Rev. –)





VIEW A–A
(REF)

WIRE RUN LIST

WIRE	FROM	TO	FUNCTION	RF–5800H SIGNAL NAME
BLK	P1–4, 5, 13, 20, 25	J1–7	D GND	GND_CHAS
YEL	P1–6	J1–3	RX DATA	R_DCE_RXD–
GRN	P1–19	J1–2	TX DATA	R_DCE_TXD–
BLU	P1–26	J1–4	RTS DATA	R_DCE_RTS
VIO	P1–3	J1–15,17	SYNC CLOCK OUT	R_DCE_RXC–
BRN	P1–2	J1–8	RLSD	R_DCE_DCD
RED	P1–1	J1–5	CTS DATA	R_DCE_CTS
ORG	P1–18	J1–24	SYNC CLOCK IN	R_DCE_TXC–
BLK	P1–24	J1–6	DSR	R_DCE_DSR
WHT	P1–16	J1–20	DTR	R_DCE_DTR
NC	P1– 7–12, 14, 15, 17, 21–23, 27	J1–1, 9–14 16, 18, 19 21–23, 25		

5800H–125-145

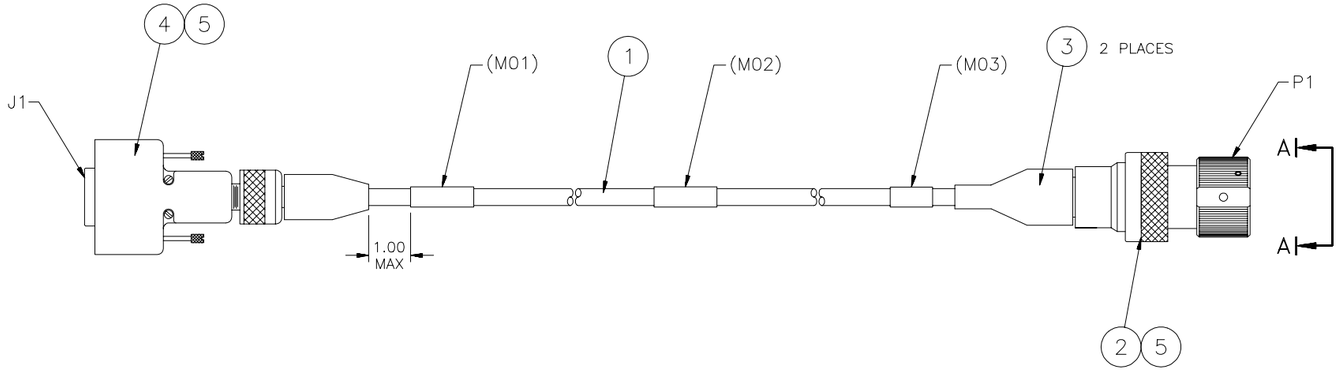
Figure 7-20. Synchronous RS-232 DTE Data Cable Assembly (10535-0780 Rev. –)

NOTES:
1. SEE DRAWING 10052–9000, "GENERAL CABLE SPECIFICATION" FOR AN EXPLANATION OF EACH REQUIRED ITEM LISTED BELOW.

NOTE DESCRIPTION			"X" INDICATES APPLICABLE REQUIREMENTS	REFERENCE NOTE FROM 10052–9000
REF DOCUMENTS	MIL SPEC		△2.	2.0
MATERIAL	WIRE	AS SPECIFIED	X	3.1
		ALTERNATE		
	SLEEVING			3.2
LENGTH	n (CUSTOM)		SEE TABLE A	4.0
	nn (INCHES)		SEE PARTS LIST	
	nnn (FEET)		SEE PARTS LIST	
TOLERANCE	STANDARD			5.0
	OTHER			
GROUNDING REQUIREMENTS	NOT REQUIRED			6.1.1.1
	SHIELD TO BACKSHELL		X	6.1.1.2
	SHIELD TO WIRE			6.1.1.3
	SHIELD TO SOLDER CUP			6.1.1.4
	CUSTOM			6.1.1.5
MARKING REQUIREMENTS	NONE			7.0
	PER TABLE A		X	
	REVISION	PARTS LIST		
		DRAWING		
	COLOR	SLEEVING		
		TEXT		
TESTING REQUIREMENTS	CONTINUITY		X	8.1
	HIGH POT			8.2
	CUSTOM			8.3
	STRAIN RELIEF		X	8.4
	NONE			8.5
PACKAGING	BULK		X	10.1
	INDIVIDUAL			10.2
PROGRAM SPECIFIC REQUIREMENTS	NONE		X	
	1ST ARTICLE			11.1
	C. OF C.			11.2
	WORKMANSHIP			11.3
	OTHER			11.4

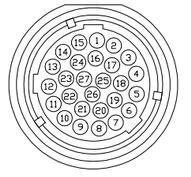
△2. REFERENCE MILSPEC DOCUMENT 810E METHOD 512.3 PARA. II–3 (BASIC LEAKAGE, 1 METER)

△3. SHIELD ALL SOLDERED CONNECTIONS USING ITEM 5. INSULATE ENDS OF UNTERMINATED WIRES (NC's) WITH ITEM 5 INSIDE P2 BACKSHELL.



WIRE RUN LIST

FROM	COLOR	TO	FUNCTION
J1–SHELL		P1–SHIELD	SHIELD
J1–1	BRN	P1–9	DCD
J1–2	RED	P1–21	RXD
J1–3	ORN	P1–8	TXD
J1–4	YEL	P1–22	DTR
J1–5	BLK	P1–5	SIG GND
J1–6 THRU 9 N/C		P1– (1–4), (6–8)	
		(10–20), (23–27) N/C	



VIEW A–A

Figure 7-21. Asynchronous Data (PPP) Cable Assembly (10535-0775 Rev. –)

PUBLICATION NUMBER: 10515-0124-4200
FEBRUARY 2001
Rev. A

Tactical Radio Products

RF-5800H
125-WATT COMMUNICATION SYSTEM

SYSTEM INSTALLATION/ MAINTENANCE MANUAL

next level solutions