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INSTALLATION AND OPERATION TECHNICAL MANUAL  
INCLUDING REPAIR PARTS AND SPECIAL TOOLS LISTS

**RADIO SET AN/PRC-41A**  
(FSN 5820-104-0351)

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DEPARTMENT OF THE NAVY  
NAVAL ELECTRONIC SYSTEMS COMMAND

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*(Non Registered)*

INSTALLATION AND OPERATION

TECHNICAL MANUAL

FOR

**RADIO SET**  
**AN/PRC-41A**

DEPARTMENT OF THE NAVY  
NAVAL ELECTRONIC SYSTEMS COMMAND

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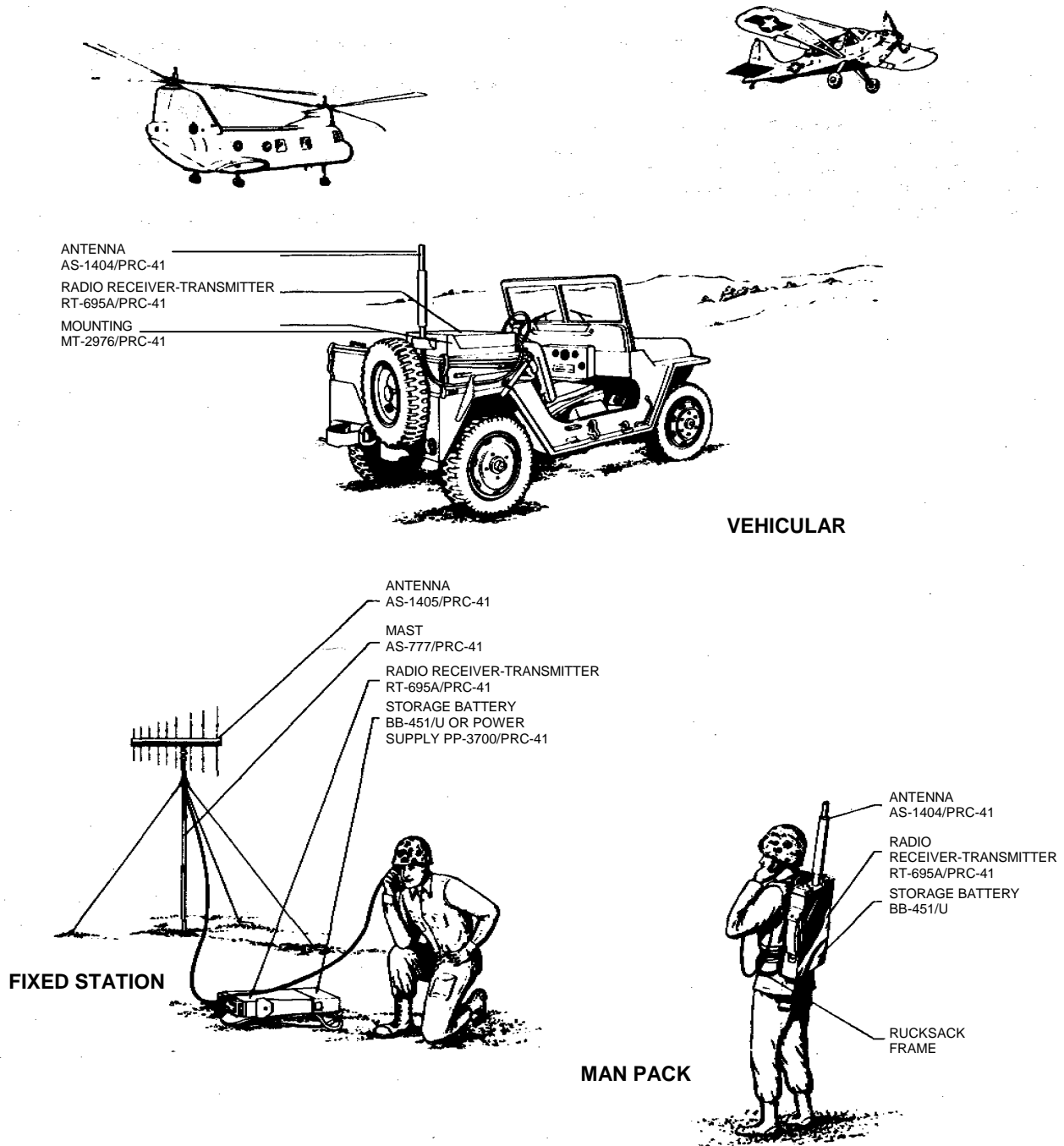


Figure 1-1. Radio Set AN/PRC-41A, Operating Configurations

SECTION 1

GENERAL INFORMATION

1-1. SCOPE

Information applicable to Radio Set AN/PRC-41A is contained in the Installation and Operation Technical Manual for Radio Set AN/PRC-41A and the Repair and Maintenance Technical Manual for Radio Set AN/ PRC-41A. The format and content of these manuals is in accordance with the requirements of Military Specification MIL-M-15071F (SHIPS) and Contract N00039-69-C-3511. The installation and Operation Technical Manual includes sections 1, 2, and 3. The Repair and Maintenance Technical Manual for Radio Set AN/PRC-41A, NavShips 0967-872-5020, includes sections 1, 4, 5, and 6. These manuals are applicable to the items and accessories of Radio Set AN/PRC-41A. Section 1 contains a general description, provides reference data, lists the applicable items and accessories, and provides information required for the preparation for reshipment of the Radio Set AN/PRC-41A equipment. Section 2 provides installation information such as unpacking, power requirements for operation, site selection, inspection and adjustment, and inter-

ference reduction. Section 3 contains operating instructions. Section 4 provides a theoretical description and test data of the functional sections and subordinate circuits of the equipment. Section 5 provides preventive maintenance instructions, repair information, and illustrations that are applicable to all sections such as part location, exploded views, connection diagrams, and overall equipment schematics. Section 6 lists the detail parts of the items and accessories of Radio Set AN/PRC-41. These technical manuals are in effect upon receipt. Extracts from these publications may be made to facilitate the preparation of other Department of Defense publications.

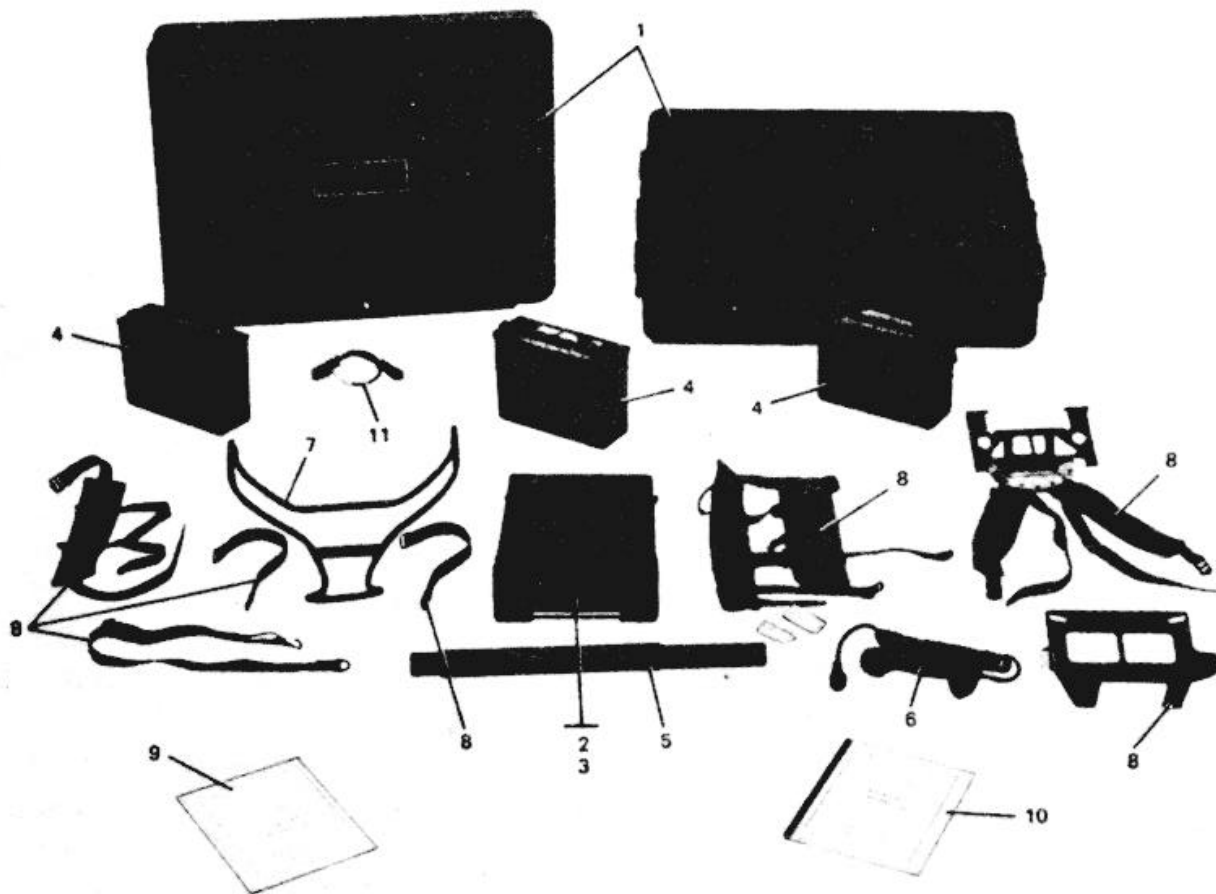
1-2. EQUIPMENT SUPPLIED.

Radio Set AN/PRC-41 consists of the equipment contained in Radio Set Case CY-3883/PRC-41. Refer to table 1-1 and figure 1-2. Radio Set Accessory Kit MK-706/PRC-41 consists of the equipment contained in Electronic Equipment Case CY-3885/PRC-41. Refer to table 1-2 and figures 1-1 and 1-3.

TABLE 1-1. RADIO SET AN/PRC-41A, EQUIPMENT SUPPLIED

ITEM	QTY	NOMENCLATURE		OVERALL DIMENSIONS (in)			VOL (in <sup>3</sup> )	WT (lb)
		NAME	DESIGNATION	H	W	D		
1	1	Radio set case (less contents)	CY-3883/PRC-41	15-1/2	35	26-1/2	14,376	79
2	1	Radio receiver-transmitter ( without case CY-3884/ PRC-41)	RT-695A/PRC-41	14	11-5/16	4-9/16	812	18.5
3	1	Receiver-transmitter case	CY-3884/PRC-41	12-5/8	11-3/16	4-15/32	635	3.6
4	3	Storage battery	BB-451/U	7-11/16	11-9/16	4-9/64	402	16
5	1	Antenna	AS-1404/PRC-41	23-1/2	1-3/4 dia			0.7





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Figure 1-2. Radio Set AN/PRC-41A, Equipment Contents of Radio Set Case CY-3883/PRC-41

TABLE 1-1. (Continued)

ITEM	QTY	NOMENCLATURE		OVERALL DIMENSIONS			VOL (in <sup>3</sup> )	WT (lb)
		NAME	DESIGNATION	H	W	D		
6	1	Handset	H-33E/PT (GFE)	2	8	3-3/8		1.2
7	1	Rucksack frame	(GFE)	19	17	6-1/4		1.5
8	1	Harness set						3.1
9	2	Installation and operation technical manual	NavShips 0967-872-5010 TM-03816B-12/1 TM11-5820-510-12-1	8-1/2	11	1-1/2		
10	2	Repair and maintenance technical repair parts list	NavShips 0967-872-5020 TM-03816B-35/2 TM11-5820-510-35-1	8-1/2	11	1-3/4		
11	1	Special purpose electrical cable assembly	CX-10831/PRC-41A	24				

Table 1-2. RADIO SET ACCESSORY KIT MK-706/PRC-41, EQUIPMENT SUPPLIED

ITEM	QTY	NOMENCLATURE		OVERALL DIMENSIONS (in)*			VOL (in <sup>3</sup> )	WT (lb)
		NAME	DESIGNATION	H	W	D		
1	1	Electronic equipment case (less contents)	CY-3885/PRC-41	15-1/2	35	26-1/2	14,376	65
2	1	Power supply	PP-3700/PRC-41	7-47/64	10-15/16	4-5/32	355	17.6
3	1	Antenna	AS-1405/PRC-41	3-1/2	30-27/32	27-11/16		6.3
4	1	Mast	AB-777/PRC-41	78-1/4 28-1/4	3-1/2 open, 3-1/2 closed			3.0

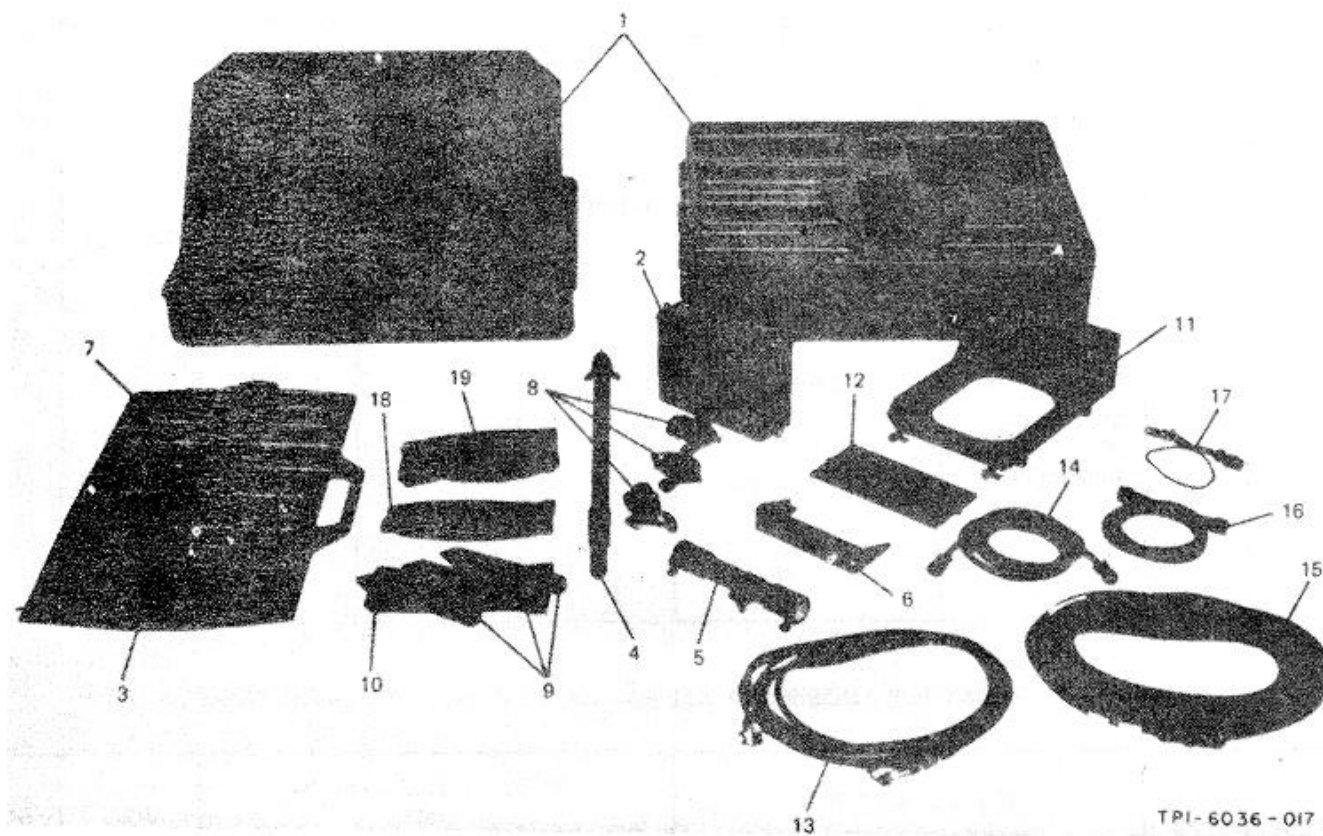


Figure 1-3. Radio Set Accessory Kit MK-706/PRC-41, Accessory Contents of  
Electronic Equipment Case CY-3885/PRC-41

TABLE 1-2. (Continued)

ITEM	QTY	NOMENCLATURE		OVERALL DIMENSIONS (in)*			VOL (in <sup>3</sup> )	WT (lb)
		NAME	DESIGNATION	H	W	D		
5	1	Adjustable antenna mast adapter		10-3/4	1-7/8			1.0
6	1	Antenna mounting bracket		4-13/16	8-5/8	1-7/8		0.7
7	1	Directional antenna carrying bracket		19-23/32	31-17/32	1-3/4		4.8
8	3	Guy rope accessory: v		10 ft				1.5
9	3	Guy stake		10	1	1		2.1
10	1	Bag (for guy stake)		12	5			0.1
11	1	Mounting	MT-2976/PRC-41	6-1/8	17-3/4	11-13/16	1230	6.6
12	1	Mounting	MT-2977/PRC-41	17/32	11-1/2	5-3/8	31	2.1
13	1	Radio frequency cable assembly	CG-55G/U	20 ft				2.4
14	1	Power electric cable assembly	CX-8686/PRC-41	10 ft				2.8
15	1	Power electric cable assembly	CX-8687/PRC-41	50 ft				5.4
16	1	Special purpose electrical cable assembly	CX-8688/PRC-41	10 ft				1.0
17	1	Dc adapter cable		27				0.3
18	1	Maintenance cable kit		12	5			
19	1	Tool Kit		7-1/4	3-1/2			0.8

\*Unless otherwise stated, all overall dimensions are in inches.

1-3. EQUIPMENT REQUIRED BUT NOT SUPPLIED.

The equipment required for maintenance of Radio Set AN/PRC-41A is listed in table 1-3.

TABLE 1-3. EQUIPMENT REQUIRED BUT NOT SUPPLIED

QTY PER EQPT	NOMENCLATURE		REQUIRED USE	RADIO SET AN/PRC-41 EQUIPMENT CHARACTERISTICS
	NAME	DESIGNATION		
1	Signal generator	AN/USM-44A or AN/URM-26B	Guard and main receiver functional section troubleshooting and maintenance procedures	Frequency range: 225 to 400MHz Type of signal: AM Modulation: 1000Hz internal with external provisions
1	Signal generator	AN/URM-25D	Troubleshooting and maintenance procedures	Frequency range: 10Hz to 50MHz Type of signal: AM Output voltage: 0.1 to 100,000 microvolts
1	Rf wattmeter	AN/URM-43C or TS-1389	Power output measure- ments	Power output: 0 to 5 watts Impedance: 50 ohms
1	Oscilloscope	AN/USM-105A	Troubleshooting and maintenance procedures	General purpose
1	Output power meter or output meter Output meter	ME-2/U or ME-184 TS-585B/U ME-6C/U	Audio output measure- ments	Power output: 0 to 1 watt Impedance: 300 ohms
1	Audio oscillator	TS-382B/U or AN/URM-127	Troubleshooting and maintenance procedures	Frequency: 100 to 20,000 Hz Output: 0 to 2 volts
1	Fuse	MX-1730/U (p/o AN/USM-44)	Attenuator protection for signal generator	Rf fuse: 225- to 400 MHz range
1	Multimeter	AN/PSM-4C	Troubleshooting and maintenance procedures	Voltage ranges: 0 to 250 volts dc, 0 to 250 volts ac. Ohmmeter section
1	Electronic multimeter	TS-505/U or AN/USM-116	Troubleshooting and Maintenance procedures	Voltage ranges: 0 to 250 volts dc, 0 to 250 volts dc. Ohmmeter section
1	Frequency counter	AN/USM-122 or CAQI-524D	Frequency measurement	} Measure frequencies in 20- to 30- MHz and 225- to 400- MHz ranges
1	Electronic frequency converter	CV-394/USA-5 or CAQI-525C	Used with AN/USM-122 to extend the frequency measuring capabilities	
1	Transfer oscillator	CM-102/USM-73	Used with AN/USM-122 to extend the frequency measuring capabilities	

TABLE 1-3.(Continued)

QTY PER EQPT	NOMENCLATURE		REQUIRED USE	RADIO SET AN/PRC-41 EQUIPMENT CHARACTERISTICS
	NAME	DESIGNATION		
1	Adjustable attenuator	CN-318/G or CAG-874-GA	An attenuator and T-connector used for modulation and signal measurements	Rf attenuator to provide attenuation for high-level outputs
1	Signal generator pad	CN-315/URM-26 (p/o AN/URM-26B) or CBSH-50-6	Used for impedance matching between signal generator and radio equipment	Pad attenuation: 6 dB Impedance: 50 ohms input and output. Frequency range: 225 to 400 MHz
1	Power resistor		Used for loading Power Supply PP-3700/PRC-41 when performing tests	Variable 0- to 20-ohm resistor, 100 watts
1	Transistor test set	TS-1100A/U	Used for checking transistors	
1	Electron tube test set	TV-7D/U	Used for checking electron tubes	
1	Coaxial crystal detector	HP-420A (Hewlett-Packard)		Rf crystal for detection of modulated rf signals
1	Junction box	To be fabricated (Refer to section 5.)		
1	Battery charger	PP-3240/U, PP-4567/U, PP-6241/U	Used for charging radio battery	

1-4. GENERAL DESCRIPTION.

Radio Set AN/PRC-41A is a lightweight, portable uhf receiver-transmitter equipment. The versatility of this equipment permits man-pack, fixed station, or vehicular operation (figure 1-1). The items and accessories of Radio Set AN/PRC-41A and Accessory Kit MK-706/PRC-41 are listed in tables 1-1 and 1-2. This equipment is stored for transit in Radio Set Case CY-3883/PRC-41 and Electronic Equipment Case CY-3885/PRC-41 (figures 1-2 and 1-3). Radio Set Case CY-3883/PRC-41 contains the items necessary for man-pack operation. Electronic Equipment Case CY-3885/PRC-41 contains the accessory items required for fixed station or vehicular operation and maintenance items such as tools and extender cables. Radio Receiver-Transmitter RT-695A/PRC-41 of Radio Set AN/PRC-41A may be operated on any one of 1750 channels spaced 100 kHz in the 225.0- to 399.9-MHz range. In transmit operation, the equipment uses type A3 (AM voice) emission and provides an average of at least 3 watts across the

frequency range. All controls are part of the front panel of Radio Receiver-Transmitter RT-695A/PRC-41. These controls provide frequency selection, application of power, and adjustment of volume and squelch levels. Automatic relay operation in normal voice mode may be provided when two Radio Receiver Transmitter RT-695A/PRC-41 equipments are operated together. Cabling is provided for all modes of operational installation. Radio Receiver-Transmitter RT-695A/PRC-41 has the capability of secure voice operation when used in conjunction with TSEC/KY-38 equipment. Primary power may be provided by either Storage Battery BB-451/U, Power Supply PP-3700/PRC-41, or vehicular battery supply. The equipment may use Antenna AS-1405/PRC-41 (directional) or Antenna AS-1404/PRC-41 (omni-directional).

1-5. DESCRIPTION OF UNITS.

a. GENERAL - Radio Set AN/PRC-41A consists of Radio Set Case CY-3883/PRC-41 and its contents (figure 1-2). Radio

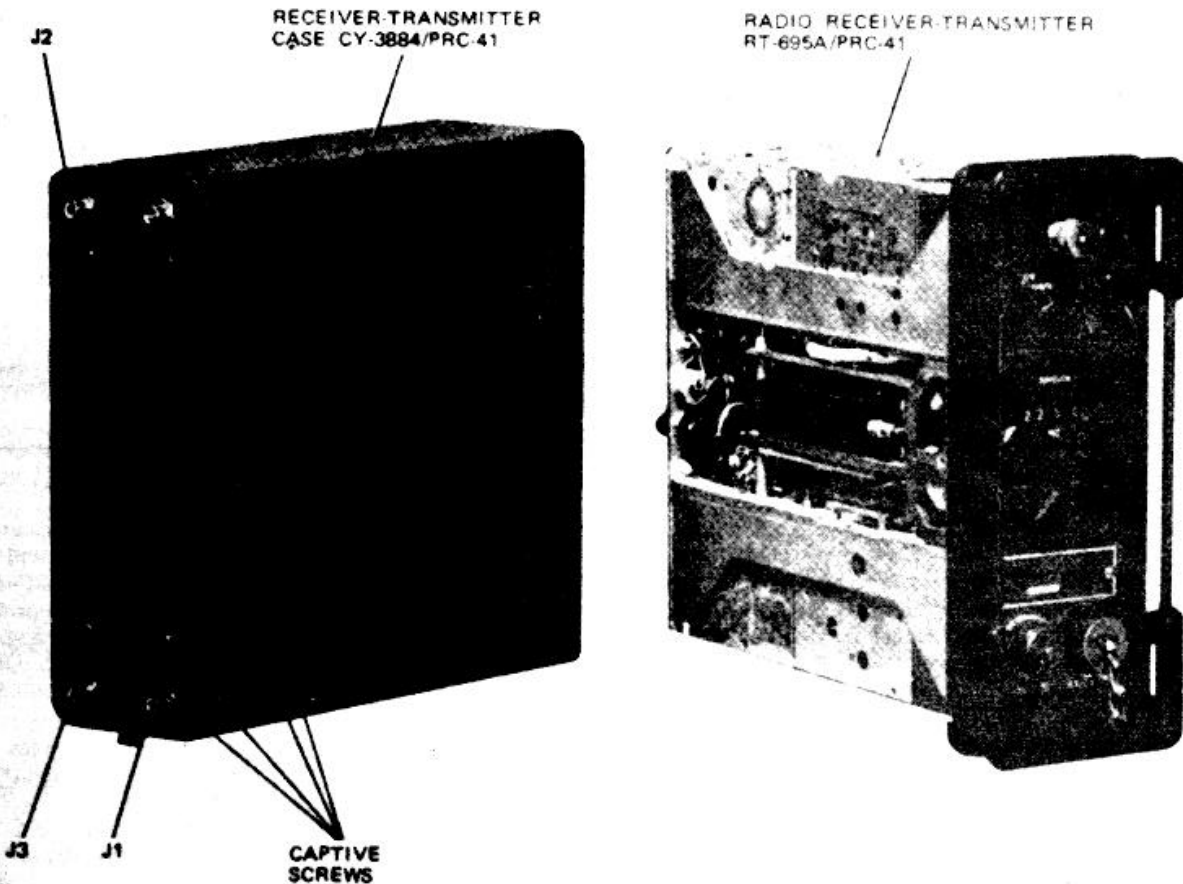
Set Accessory Kit MK-706/PRC-41 consists of Electronic Equipment Case CY-3885/PRC-41 and its contents (figure 1-3). The following paragraphs of this subsection provide physical, electrical, and functional descriptions of Radio Set Case CY-3883/PRC-41, Electronic Equipment Case CY-3885/ PRC-41, and their contents.

b. RADIO SET AN/PRC-41A.

(1) RADIO SET CASE CY-3883/PRC-41.

Radio Set Case CY-3883/PRC-41 is an aluminum transit case with a compartmentalized molded foam rubber insert. The case is used for storage of the items of Radio Set AN/PRC-41A that are required for man-pack operation. It measures 15-1/2 by 35 by 26-1/2 inches and weighs 45 pounds (figure 1-2).

(2) RADIO RECEIVER-TRANSMITTER RT-695A/PRC-41. - Radio Receiver-Transmitter RT-695A/PRC-41 consists of a main chassis with eight plug-in modules, a control panel, and a waterproof dust cover (Receiver-Transmitter Case CY-3884/PRC-41) (figure 1-4). The modules are removable from the main chassis by loosening captive screws on each module. All electrical connections between the modules and the main chassis are made through multipin connectors on each module to jacks mounted on the main chassis. The coaxial cables and the connectors, which are integral with the multipin connectors except for the power amplifier output, conduct the rf signals between the plug-in modules. Mechanical coupling for tuning functions is achieved by a



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Figure 1-4. Radio Receiver-Transmitter RT-695A/PRC-41, Receiver-Transmitter Case CY-3884/PRC-41, Displaced

mechanical gear train and couplers mounted on the main chassis, and the couplers of the mechanically tuned modules. The main chassis gear train is driven by the frequency selector controls on the front panel. Pressure contacts located at the rear of the main chassis provide the electrical connections to case CY-3884/PRC-41 for supplying the primary 26.5-volt dc supply from either Storage Battery BB-451/U or Power Supply PP-3700/PRC-41. A coaxial connector located on the front panel mates with Antenna AS-1404/PRC-41 (omnidirectional) or with Radio Frequency Cable Assembly CG-55G/U when using Antenna AS-1405/PRC-41 (directional). The front panel also mounts a function switch for application of power, a volume control, a squelch control, three frequency selector controls, a window that indicates the frequency to which the equipment is tuned, one audio connector for Handset H-33E/PT and one connector to provide interface with TSEC/ KY-38 security equipment

(3) RECEIVER-TRANSMITTER CASE CY-3884/PRC-41. - Receiver-Transmitter Case CY-3884/PRC-41 is a watertight cover for Radio Receiver-Transmitter RT-695A/PRC-41 (figure 1-4). The CY-3884/PRC-41 is secured to the RT-695A/PRC-41 by four captive screws, which are located at the rear of the CY-3884/PRC-41. With the CY-3884/PRC-41 in place on the RT-695A/PRC-41, primary power is applied through pressure contacts located at the rear corners to the contacts centrally located on the inside rear of the CY-3884/PRC-41. The power is then available to the pressure contacts at the rear of the main chassis of the RT-695A/PRC-41 and hence to the power distribution circuits of the RT-695A/PRC-41.

(4) STORAGE BATTERY BB-451/U. (Refer to figure 1-5.)

(a) GENERAL. - Storage Battery BB-451/U is a silver-zinc alkaline 24-volt (nominal) rechargeable storage battery. It is used to provide primary power to Radio Receiver-Transmitter RT-695A/PRC-41 in a man-pack operation or where no

other suitable power source is available. Storage Battery BB-451/U is secured directly on the rear of Radio Receiver-Transmitter RT-695A/PRC-41 with clamps provided on either side of the battery case. Electrical connection is accomplished through pressure contacts in the top of the battery case to contacts on the rear of case CY-3884/PRC-41. Three Storage Battery BB-451/U units are contained in Radio Set Case CY-3883/PRC-41.

(b) CONSTRUCTION. - The BB-451/U is contained in a watertight fiber glass case with a stainless steel cover plate. After removing the cover plate, the cells may be removed in groups of four using ordinary hand tools. A plastic sheet for recording charging history is bonded to the underside of the cover plate. To avoid a long formation and activation period, the BB-451/U is supplied in a dry charge condition.

(c) CELLS. - The BB-451/U battery consists of 16 series-connected silver-zinc cells constructed in blocks of four cells each. Nominal open-circuit voltage of a fully charged cell is 1.86 volts per cell. The minimum voltage per cell under specified load is 1.375 volts at -11 °C (+12 °F) and above, and 1.250 volts from -10 to -25 °C (+14 to -13 °F).

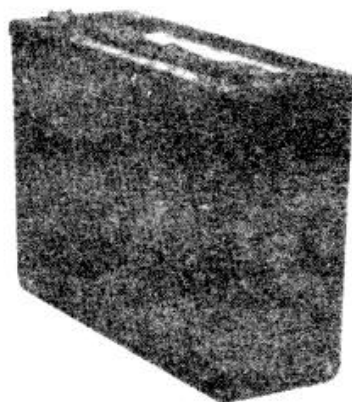
(d) CHARGE RETENTION (DRY). - Charge retention of a dry charged cell over the specified periods will be in accordance with the minimum values indicated below:

2 years at +30 °C (+86 °F) and below -  
98 percent (19.6 ampere-hours)

1 year at +50 °C (+122 °F) and below -  
80 percent (16 ampere-hours)

3 months at +65 °C (+149°F) and below -  
50 percent (10 ampere-hours)

(e) ACTIVATION. - The cells of the silver-zinc battery will deliver the specified ampere-hour capacity after a 24-hour soak in the electrolyte, a 40-percent solution of



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Figure 1-5. Storage Battery BB-451/U, Oblique View



potassium hydroxide and other additives furnished by the manufacturer. A booster charge is permissible if the temperature and storage limits of paragraph 1-5b(4)(d) above have been exceeded.

(f) CHARGE ACCEPTANCE. - The battery cells will perform according to specifications after charging at a modified constant current of 2.5 amperes average with voltage cutoff at 2.05 volts per cell. Emergency charging of the cells is possible by charging at a constant potential of 2.03 volts per cell with charge acceptance as follows: a 0.5-hour charge previous discharge; a 4-hour charge period replaces 60 percent of the capacity removed on the previous discharge. All recharging must be with Battery Charger PP-3240/U, PP-4567/U, PP-6241/U or an exact replacement

(g) STORAGE. - Dry charged cells are filled with an inert gas by the manufacturer and may be stored under the following conditions:

- Temperature range..... -65 to +65 °C (-85 to +149 °F)
- Relative humidity ..... 100 percent
- Attitude..... any
- Altitude..... 40,000 ft

Wet charged cells should be stored in an upright position.

For further detailed information concerning Storage Battery BB-451/U see TM-04072A-15/1.

(5) ANTENNA AS-1404/PRC-41. (Refer to figure 1-6.) - Antenna AS-1404/PRC-41 is an omnidirectional antenna for use with Radio Receiver Transmitter RT-695A/PRC-41. The AS-1404/PRC41 is used for transmission and reception of signals in the 225- to 399.9-MHz range without electrical or physical adjustments. It may be mounted directly on antenna connector J28 on the front panel of Radio Receiver-Transmitter RT-695A/PRC-41 or the connector on the antenna mounting bracket on mount MT-2976/PRC-41 or, when mounted on Mast AB-777/ PRC-41, it must be connected through Adapter UG-29B/U and Radio Frequency Cable Assembly CG-55G/U to the RT-695A/PRC-41.

(6) HANDSET H-33E/PT. (Refer to figure 1-6.) Handset H- 33E/PT consists of a handpiece, a length of cable, and a connector that mates with the H-33E/PT connector J13 on front panel of Radio Receiver-Transmitter RT-695A/PRC-41. The H33E/PT contains a carbon microphone, an electromagnetic earphone, and a press-to-talk button. In operation, pressing the press-to-talk button places the RT-695A/PRC-41 equipment in transmit operation; releasing returns the equipment to receive operation.

(7) RUCKSACK FRAME. (Refer to figure 1-6.) - The rucksack frame is a government furnished equipment. The rucksack frame and associated straps and harness provide a back-pack frame for carriage of Radio Receiver-Transmitter RT-695A/PRC-41, Storage Battery BB-451/U, Handset H-33E/PT, and Antenna AS-1404/PRC-41 in man-pack operation.

(8) SPECIAL PURPOSE ELECTRICAL CABLE ASSEMBLY CX-10831/PRC-41A. (Refer to figure 1-3.) - The CX-10831/PRC-41A is a 2-foot length of 7-conductor cable with suitable mating connectors. It is used to connect Radio Receiver Transmitter RT-695A/PRC-41 to the TSEC/KY-38 security equipment.

c. RADIO SET ACCESSORY KIT MK-706/ PRC-41.

(1) ELECTRONIC EQUIPMENT CASE CY-3885/PRC-41. -Electronic Equipment Case CY-3885/ PRC-41 is an aluminum transit case with a compartmentalized molded foam rubber insert. The case is used for storage of accessories of Radio Set AN/PRC-41A. The contents of Electronic Equipment Case CY-3885/PRC-41 permit operation of the AN/PRC-41A equipment in a fixed station or vehicular configuration and provide extender cables and tools required for equipment maintenance. The case measures 15-1/2 by 35 by 26-1/2 inches and weighs 45 pounds (figure 1-3)

(2) POWER SUPPLY PP-3700/PRC-41. (Refer to figure 1-7.) - The circuits of Power Supply PP-3700/PRC- 41 are contained in an aluminum case having the same dimensional configuration as Storage Battery BB-451/U. Power Supply PP-3700/PRC-41 is used to provide the 26.5-volt dc primary power for Radio Receiver-Transmitter RT-695A/PRC-41 where either 115- or 230-volt, 50- to 400-Hz power is available. Refer to paragraph 2-5b(1) This component may be clamped directly to the rear of Radio Receiver Transmitter RT-695A/PRC-41, or its primary power may be made available by use of Power Electric Cable Assembly CX-8686/PRC-41 connected between dc connector J2 on the side of the PP-3700/PRC-41 and the rear of Mounting MT-2976/PRC-41. When operating the RT-695A/PRC-41 on the test bench with Receiver-Transmitter Case CY-3884/PRC-41 removed, primary power may be applied to the RT-695A/PRC-41 through the dc maintenance adapter: Power Supply PP-3700/PRC-41 may also be mounted on Mounting MT-2977/PRC-41.

(3) MOUNTINGS MT-2976/PRC-41 AND MT-2977/PRC-41. (Refer to figure 1-8.) - Mounting MT-2976/PRC-41 is used to mount Radio Receiver Transmitter RT-695A/PRC-41 in a vehicular installation. Power Electric Cable Assembly CX-8686/PRC-41 may be connected to the input connector at the rear of the MT-2976/PRC-41. Mounting MT-2976/PRC-41 contains circuits to prevent voltage polarity reversal from damaging the RT-695A/PRC-41 and filter circuits for input filtering of the primary power voltage. Primary power is taken from the input connector at the rear- of the MT-2976/PRC-41, fed through the mounting circuits, and made available to the connectors at the front of the rear bracket of the MT-2976/PRC-41. These connectors mate with those at

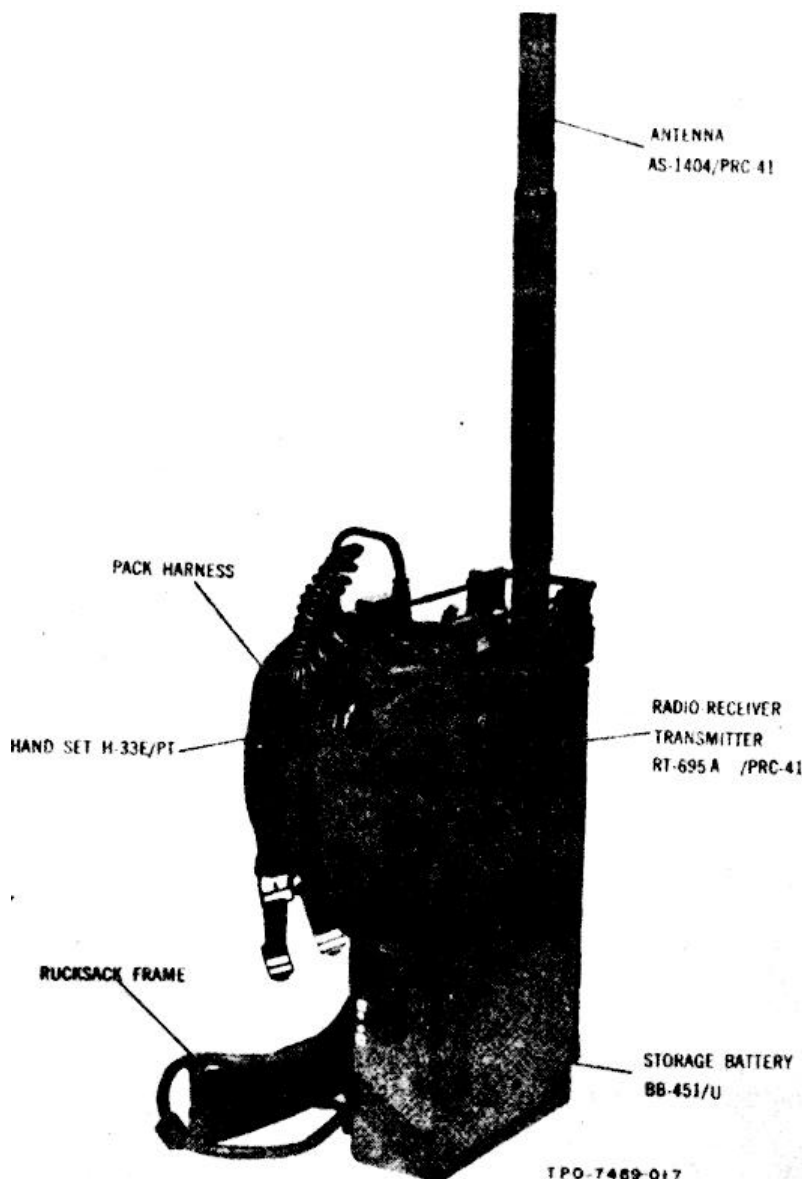
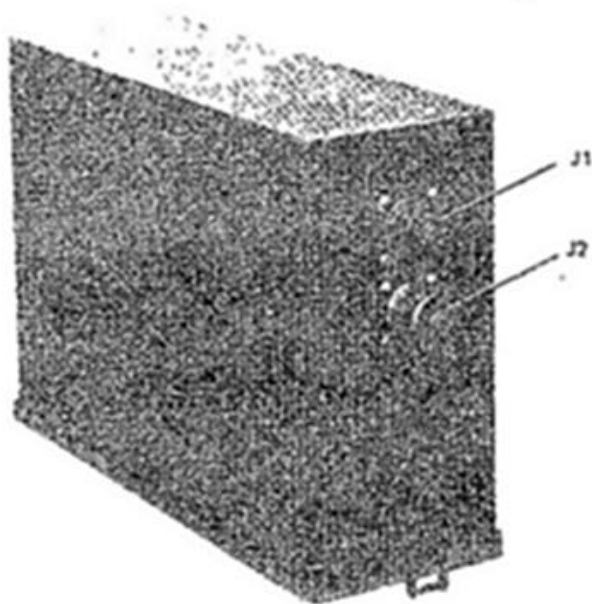


Figure 1-6. Radio Set AN/PRC-41A, Man-Pack Operation Configuration

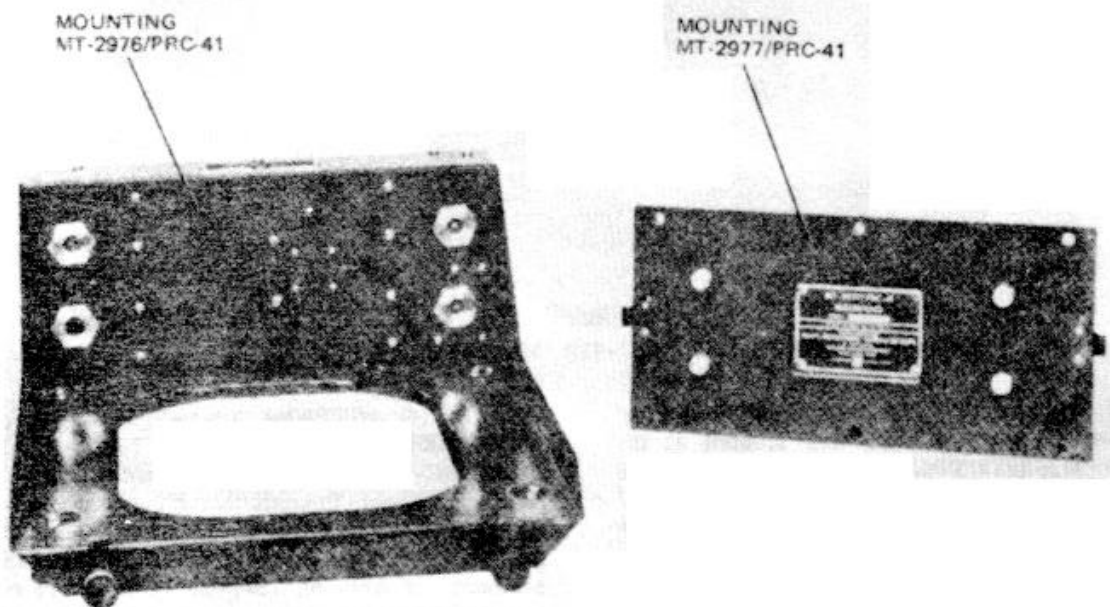
the rear of Receiver-Transmitter Case CY-3884/ PRC-41. Two takeup fasteners are located at the front of the MT-2976/PRC-41 that clamp over the protection handles on the front panel of the RT-695A/ PRC-41 and hold the contacts at the rear of the CY-3884/PRC-41 to the contacts at the front of the rear bracket of the MT-2976/PRC-41. A mount for antenna AS-1404/PRC-41 may be secured on the rear of mount MT-2976/PRC-41 for vertical positioning of the antenna when the RT-695A/PRC-41 and MT-2976/PRC-41 mount are installed in a horizontal position on a vehicle. Mounting MT-2977/PRC-41 is used in a fixed station installation for mounting Power Supply PP-3700/PRC-41.

4) ANTENNA AS-1405/PRC-41 AND ACCESSORIES. (Refer to figure 1-9.) - Antenna AS-1405/PRC-41 is a directional antenna for use with Radio Receiver-Transmitter RT-695A/PRC-41. The AS-1405/PRC-41 is used for transmission and reception of signals in the 225- to 399.9-MHz range. The elements of Antenna AS-1405/PRC-41 are made collapsible for storage but are extended to the maximum length for use in the 225- to 399.9-MHz range. Refer to figure 1-9. The AS-1405/PRC-41 is a planar log periodic dipole array that provides unidirectional radiation characteristics. Antenna AS-1405/PRC-41 mounts on an adjustable antenna mast adapter and Mast AB-777/PRC-41. Guy ropes and stakes permit Mast AB-777/PRC-41



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Figure 1-7. Power Supply PP-3700/PRC-41, Oblique View



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Figure 1-8. Mounting MT-2976/PRC-41 and MT-2977/PRC-41, Oblique Views

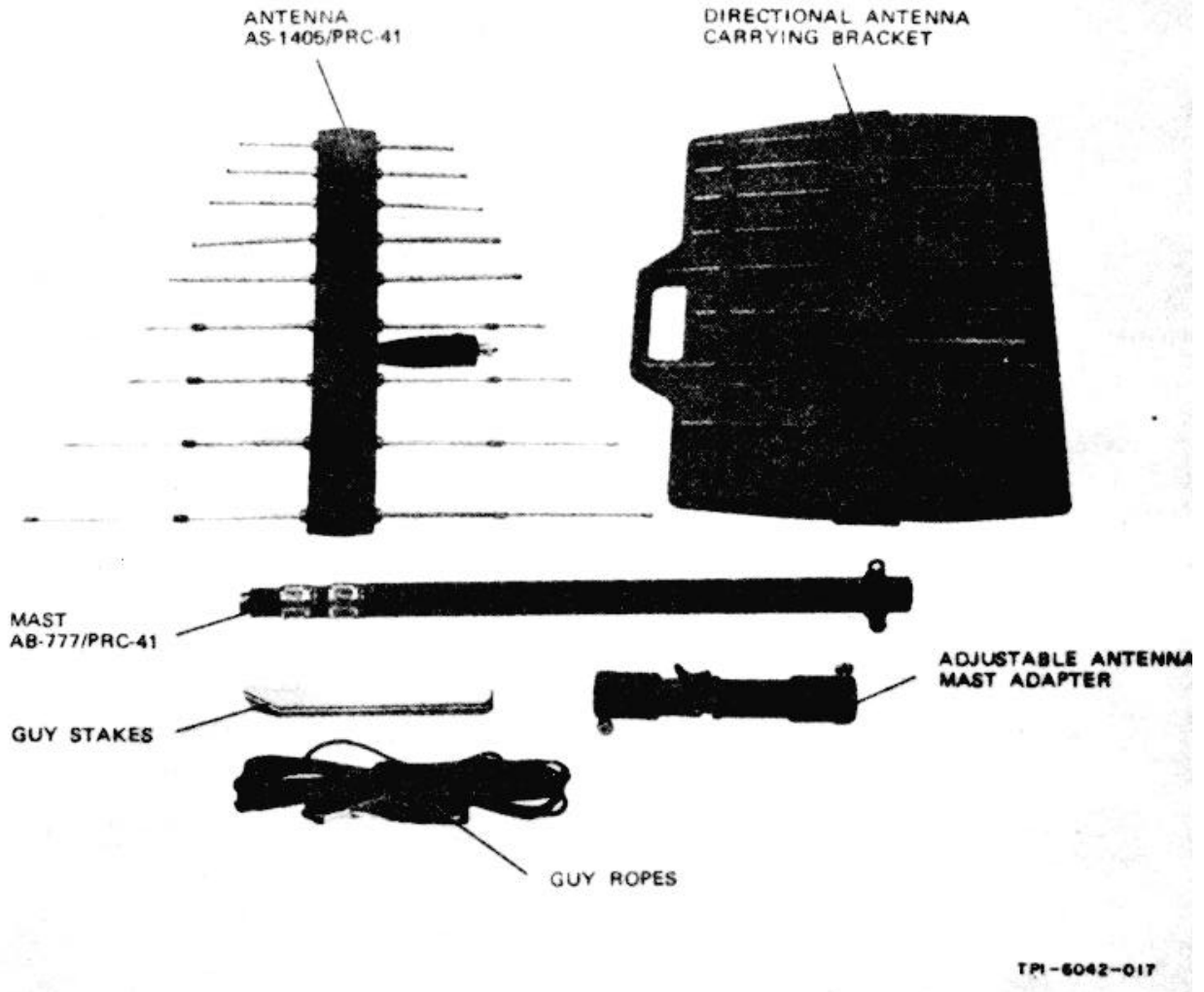


Figure 1-9. Antenna AS-1405/PRC-41, Mast AB-777/PRC-41, and Accessories

to be staked in place in a fixed station installation. The adjustable antenna mast adapter permits elevation orientation of Antenna AS-1405/PRC-41. Radio Frequency Cable Assembly CG 55G/U connects between Antenna AS-1405/PRC-41 and the antenna connector on the front panel of Radio Receiver-Transmitter RT-695A/PRC-41. The AS-1405/PRC-41 may be stored in the directional antenna carrying bracket by collapsing the adjustable elements.

(5) ANTENNA MOUNTING BRACKET. (Refer to figure 1-10.) - The antenna mounting bracket permits vertical mounting of omnidirectional Antenna AS-1404/PRC-41 in a vehicular installation. It is

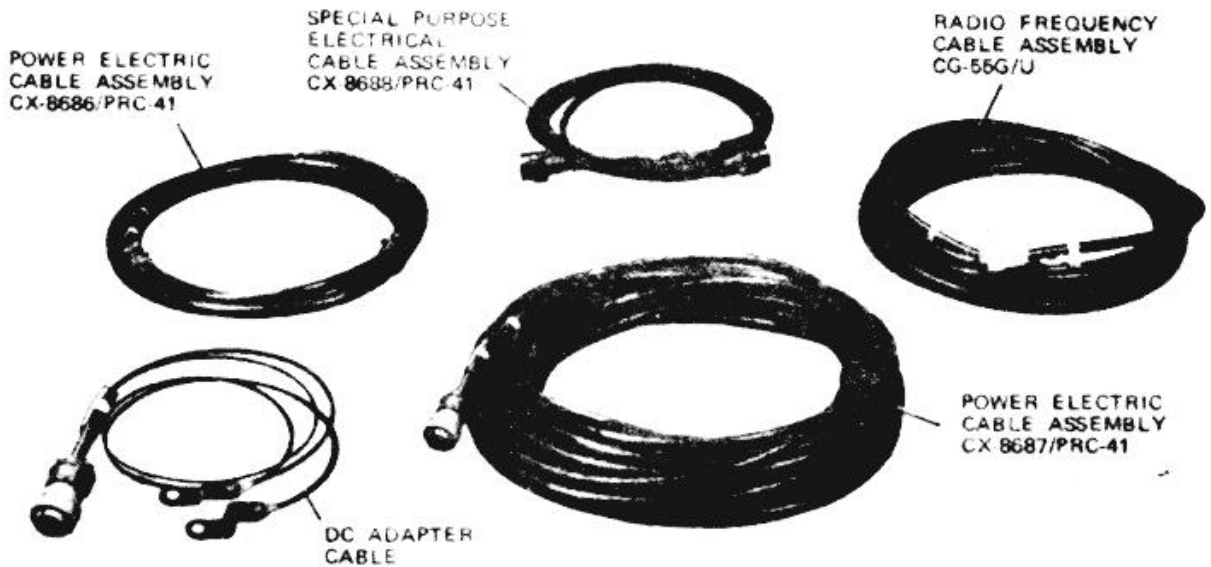
normally mounted on the rear of Mounting MT-2976/PRC-41 but may be secured to any flat vertical surface by four screws or bolts. The antenna mounting bracket has a UG-30D/U feed through connector. The upper part of this connector fits Antenna AS-1404/PRC-41, and the lower part mates with a connector on Radio Frequency Cable Assembly CG-55G/U.

(6) RADIO FREQUENCY CABLE ASSEMBLY CG-55G/U. (Refer to figure 1-1.) -Radio Frequency Cable Assembly CG-55G/U is a 20-foot length of RG-213/U coaxial cable with mating connectors. It is used for connection between the antenna connector on the front panel of Radio Receiver-Transmitter



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Figure 1-10. Antenna Mounting Bracket



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Figure 1-11. Cable Assembly

RT-695A/PRC-41 and Antenna AS-1405/PRC-41 or Antenna AS-1404/PRC-41 with adapter UG-29B/U.

(7) POWER ELECTRIC CABLE ASSEMBLY CX-8686/PRC-41. (Refer to figure 1-11.) - Power Electric Cable Assembly CX-8686/PRC-41 is a 10-foot length of 3-wire electrical cable with mating connectors. It is used for connection of Power Supply PP-3700/PRC-41 to Mounting MT-2976/PRC-41 or to dc maintenance adapter for RT-695A/PRC-41 when case CY-3884/PRC-41 is removed.

(8) POWER ELECTRIC CABLE ASSEMBLY CX-8687/PRC-41. (Refer to figure 1-11.) - Power Electric Cable Assembly CX-8687/PRC-41 is a 50 foot length of 3-wire cable with suitable mating connectors. It is used to connect Power Supply PP-3700/PRC-41 to a 115-volt, 50- to 400-Hz primary supply.

(9) SPECIAL PURPOSE ELECTRICAL CABLE ASSEMBLY CX-8688/PRC-41. (Refer to figure 1-11.) - Special Purpose Electrical Cable Assembly CX-8688/PRC-41 is a 10-foot length of 7-conductor cable having suitable mating connectors. It is used to connect the H33E/PT connector on one Radio Receiver-Transmitter RT-695A/PRC-41 to the H33E/PT connector on another RT-695A/PRC-41 for automatic relay operation. Refer to paragraph 2-4e.

(10) DC ADAPTER CABLE. (Refer to figure 1-11.) The dc adapter cable is a 2-wire cable with a suitable connector on one end and terminal lugs on the other used in

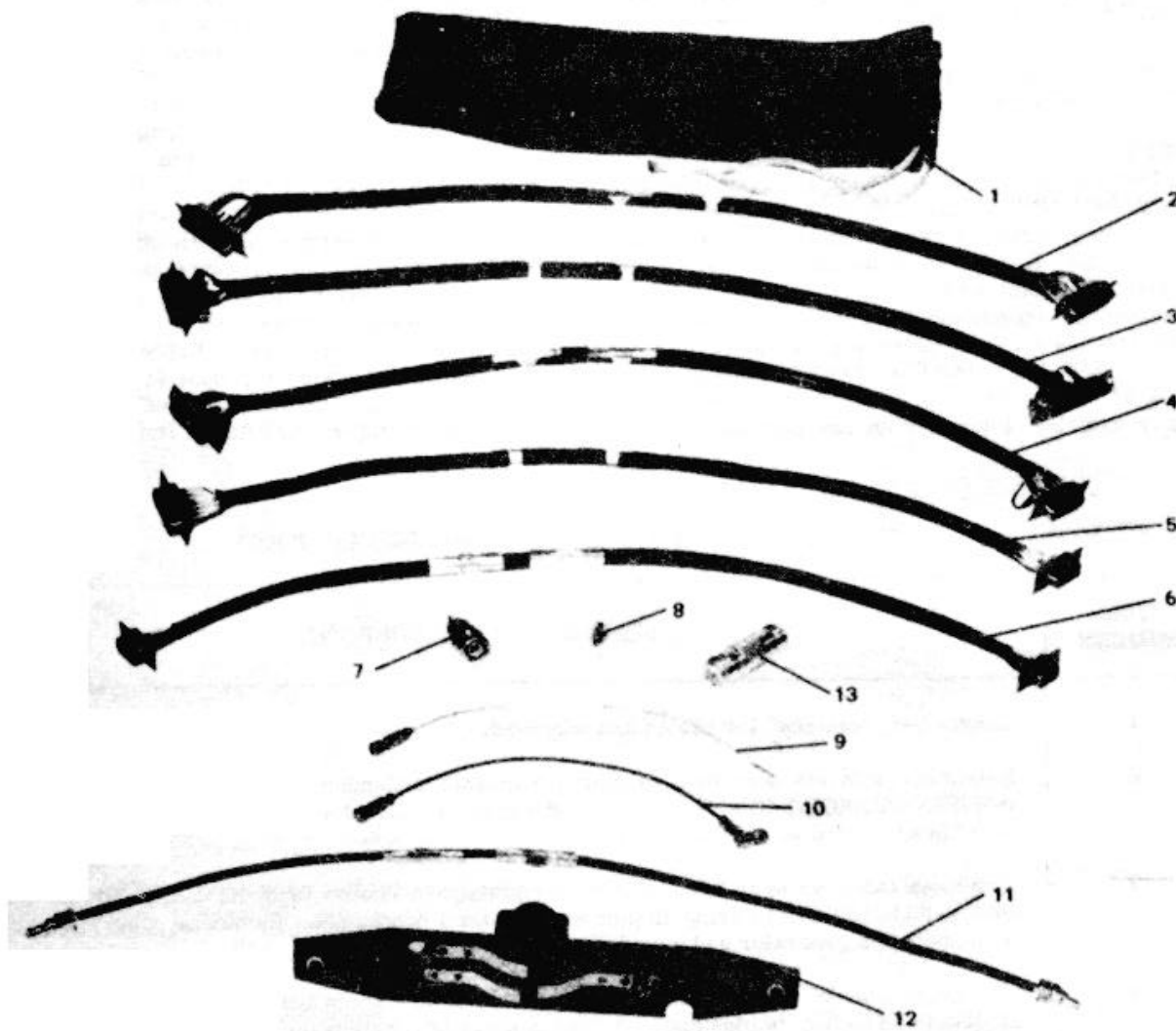
a vehicular installation to connect power between the vehicle dc power source and the rear connector of Mounting MT-2976/PRC-41 through Special Purpose Power Electric Cable Assembly CX-8688/PRC-41.

(11) MAINTENANCE CABLE KIT. (Refer to figure 1-12.) - The maintenance cable kit is composed of five multipin cables, one Microdot cable, two Conhex cables, a BNC-to-Conhex connector, a Conhex-to-Conhex connector, and a dc maintenance adapter. The multiwire and Microdot cables are used for operating the modules of Radio Receiver-Transmitter RT-695A/PRC-41 extended from the main chassis while performing maintenance procedures. The Conhex cables, BNC-to-Conhex, and Conhex-to-Conhex connectors provide adaptations for connection of test equipment. With Receiver-Transmitter Case CY-3884/PRC-41 removed from Radio Receiver Transmitter RT-695A/PRC-41, the dc maintenance adapter may be secured to the rear of the RT-695A/PRC-41. This permits application of primary power while performing maintenance procedures. The dc maintenance adapter is a 3-wire pressure contact to connector adapter (table 1-4).

(12) TOOL KIT. (Refer to figure 1-13.) The tool kit contains the special tools supplied for adjustment and maintenance of Radio Receiver-Transmitter RT-695A PRC-41 (table 1-5).

TABLE 1-4. CONTENTS OF MAINTENANCE CABLE KIT

ITEM NUMBER	DESCRIPTION AND PURPOSE
1	Canvas bag, container for cables and adapters.
2	Extension cable W2 is an 18-inch cable terminated in Cannon DBM-F13C3P(C27)) and Cannon DBMF-K13C3S(C27)-1 having 10 pins and 3 coaxial connections. Extension cable W2 is used with 1st and 2nd if amplifier module.
3	Extension cable W3 is an 18-inch cable terminated in Cannon DAM-H11C1P(C27) and Cannon DAMF-K11C1S(C27)-1 having 10 pins and 1 coaxial connection. Extension cable W3 is used with spectrum generator and guard receiver modules.
4	Extension cable W1 is an 18-inch cable terminated in Cannon DBM-21W1P(C27)) and Cannon DBM-21W1S having 15 pins and 1 coaxial connection. Extension cable W1 is used with rf and power amplifier module.
5	Extension cable W4 is an 18-inch cable terminated in Cannon DA-15P-C7 and Cannon DAF-15S-C7 connectors having 15 pins. Extension cable W4 is used with 3rd if and squelch module.
6	Extension cable W5 is an 18-inch cable terminated in Cannon DE-9P and Cannon DEF-9S having nine pins. Extension cable W5 is used with dc power supply, modulator, and audio modules.



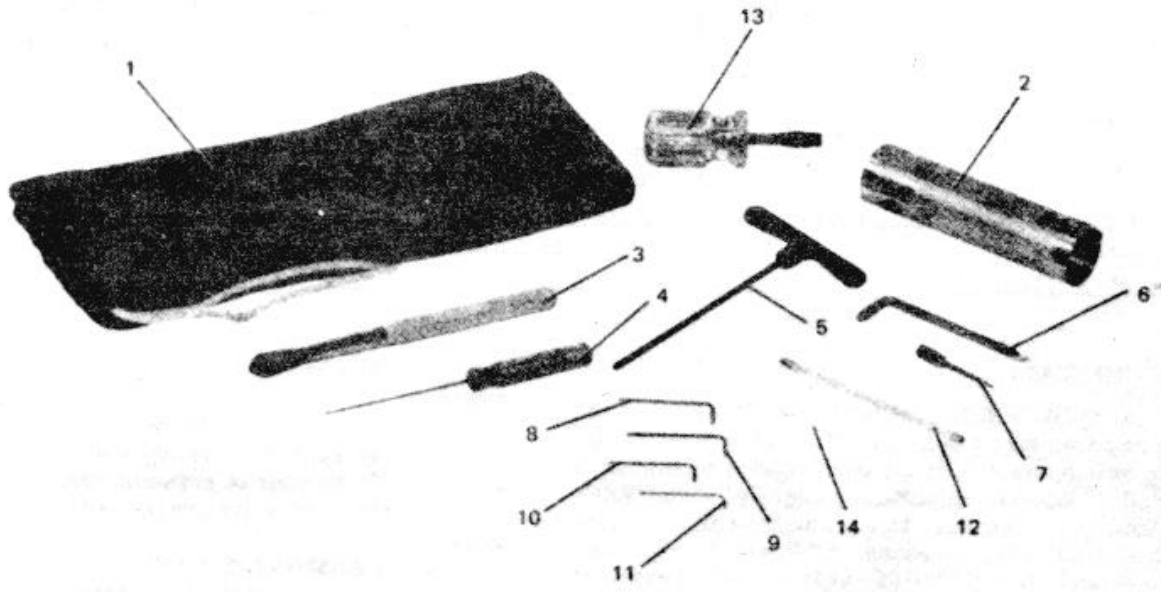
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Figure 1-12. Maintenance Cable Kit

ORIGINAL

TABLE 1-4 (Continued)

ITEM NUMBER	DESCRIPTION AND PURPOSE
7	Adapter A1 is a BNC-to-Conhex adapter required for connection of test equipment to Conhex cables in RT-695A/PRC-41.
8	Adapter A2 is a Conhex-to-Conhex adapter required for connection of Conhex cables to extend their length for connection of test equipment.
9	Extension cable W7 is an 8-inch Conhex cable terminated in one Conhex 33-01 connector used for connection of test equipment.
10	Extension cable W6 is an 8-inch Conhex cable terminated in two Conhex 33-01 connectors used for extension of Conhex cables and connection of test equipment.
11	Extension cable W8 is an 18-inch coaxial cable terminated in one Microdot 51-258 connector and one Microdot 3242 connector used for rf and power amplifier module.
12	Dc maintenance adapter A3 is used to provide power to RT-695A/PRC-41 when operated with CY-3884/PRC-41 removed. Adapter A3 secures to rear of RT-695A/PRC-41 by use of two captive screws. Electrically, dc maintenance adapter has three pressure contacts like those in rear of CY-3884/PRC-41. These make contact with three pressure contacts on rear of RT-695A/PRC-41 and are connected to a 3-pin plug on opposite side of dc maintenance adapter bracket. This plug mates with cable CX-8686/PRC-41.
13	Adapter UG-29B/U permits connection of Radio Frequency Cable Assembly CG-55G/U to Antenna AS-1404/PRC-41 when used with Mast AB-777/PRC-41.



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Figure 1-13. Tool Kit



TABLE 1-5. CONTENTS OF TOOL KIT

ITEM NUMBER	NAME	PURPOSE
1	Canvas bag	Container for tools
2	Spanner wrench	Used for removing antenna connector J24, Handset H-33E/PT, connector J13, and KY-38 connector J14 on front panel of Radio Receiver-Transmitter RT-695A/PRC-41, and antenna connector on antenna mounting bracket
3	Brush	Used to clean connectors
4	Screwdriver	Used for adjustment of trimpots and tuning capacitor of 1st and 2nd if amplifier, 3rd if and squelch, guard receiver, spectrum generator, modulator, and audio modules
5	T-handle wrench	Used for loosening captive screws on modules of Radio Receiver- Transmitter RT-695A/PRC-41
6	Cross-recessed screwdriver	Used for removal and replacement of module side cover screws and for removal of main chassis backplate of Radio Receiver-Transmitter RT-695A/PRC-41
7	Alignment tool	Used for adjustment of if coils in guard receiver
8	Multiple spline socket wrench #8	Used to tighten all coupler clamps on main chassis gear train
9	Multiple spline socket wrench #6	Used for setscrews on all knobs on front panel and setscrews in gears of main chassis of RT-695A/PRC-41
10	Multiple spline socket wrench #4	Used for setscrews in main chassis gear train as required
11	Multiple spline socket wrench #2	Used for adjustment of rotor and grounding hub setscrews in rf and power amplifier and spectrum generator modules
12	Alignment tool	Used for adjusting trimmer capacitors of rf and power amplifier module.
13	Screwdriver	Used for loosening and tightening captive screws of dust covers of Power Supply PP-3700/PRC-41, Storage Battery BB-451/U, and Receiver-Transmitter Case CY-3884/PRC-41
14	Alignment tool	Used for tracking rf and power amplifier, and spectrum generator modules

1-6. REFERENCE DATA.

a. POWER REQUIREMENTS. - The normal power requirements are 26.5 volts dc  $\pm 10$  percent (equipment will operate with an input voltage as low as 22 volts dc). When using ac Power Supply PP-3700/PRC-41, the input voltage is 115 volt or. 230 volts  $\pm 10$  percent, 50 to 400 Hz single phase. AC Power Electric Cable Assembly CX-8687/PRC-41 is normally connected for 115 volts requiring cable fabrication for operation from a 230-volt source. Refer to paragraph 2-5b(1) for 230-volt operation.

b. FREQUENCY DATA.

(1) Range: 225.0 to 399.9 MHz.

(2) Channels: 1750 spaced at 100-kHz intervals over the range.

(3) Stability:  $\pm 15$  kHz.

(4) Type of frequency control: Crystal.

(5) Number of crystals: 39.

(6) Type of transmission and reception: A3 or A9.

c. TRANSMITTER DATA.

(1) Power output: 3watts or greater average unmodulated power into a 50-ohm load.

(2) Modulation: AM.

(3) Modulation sensitivity: Carbon microphone input of 0.7 volt.

(4) Modulation capability: 80 percent minimum (adjusted to clip between 70 to 90percent).

(5) Transmitter fidelity:  $\pm 4$  dB, 300 Hz to 20 kHz (from 1000-Hz reference).

(6) Transmitter distortion: Less than 10 percent with modulation 3 dB below clipping level.

(7) Duty cycle: 1-minute transmit, 9 minute receive, extended transmit cycle permissible.

d. RECEIVER DATA (PLAIN MODE).

(1) Sensitivity: A signal having an average level of 3  $\mu$ V modulated 30 percent at 1000 Hz produces at least 7 mW at a signal-plus-noise to noise (s+n)/n ratio of 10 dB or greater.

(2) Selectivity: 6 dB, 80 kHz minimum; 60 dB, 150 kHz maximum.

(3) Images and spurious responses: 70 dB down. (50 dB for signals within 500 kHz of desired channel; 45 dB for subharmonics.)

(4) If rejection: 80 dB down.

(5) Avc characteristics: Output within  $\pm 3$  dB from 10 to 100,000  $\mu$ V (from 1000-  $\mu$ V reference).

(6) Blocking: No blocking for input signals up to 0.5 volt.

(7) Squelch operation: A change in audio output of at least 10 dB is effected by a 1-dB change in input signal.

(8) Ultimate (s+n)/n ratio: At least 35 dB (measured at 1000  $\mu$ V).

(9) Audio output: 50 mW into a 300-ohm load with 30-percent modulation, 1000  $\mu$ V.

(10) Audio fidelity: +1, -3 dB from 300 to 3500 Hz (from 1000-Hz reference).

(11) Audio distortion: Less than 10 percent at 50 mW output.

e. MAIN RECEIVER AUXILIARY OUTPUT DATA (SECURE MODE).

(1) Sensitivity: Signal with average level of 3  $\mu$ V, modulated 80 percent at 1000 Hz, produces at least 0.25 volt at an (s+n)/n ratio of 6 dB or greater.

(2) Audio distortion: 15 percent maximum at 1000  $\mu$ V input.

(3) Ultimate (s+n)/n ratio: 24 dB minimum (measured at 1000  $\mu$ V modulated 30 percent).

(4) Audio fidelity:  $\pm 4$  dB from 300 Hz to 20 kHz (from 1000 Hz reference).

f. GUARD RECEIVER DATA (PLAIN MODE).

(1) Sensitivity: A signal having an average

level of 5  $\mu$ V into the guard receiver modulated 30 percent at 1000 Hz produces at least 7 mW at an (s+n)/n ratio of 10 dB or greater.

(2) Selectivity: 6 dB, 50 kHz minimum; 60 dB, 200 kHz maximum.

(3) Images and spurious responses: 60 dB down.

(4) If rejection: 80 dB down.

(5) Avc characteristics: Output within  $\pm 3$  dB from 10 to 100,000  $\mu$ V. (from 1000-microvolt reference).

(6) Blocking: No blocking for input signals up to 0.5 volt.

(7) Squelch operation: A change in audio output of at least 10 dB is effected by a 1-dB change in input signal.

(8) Ultimate (s+n)/n ratio: At least 35 dB (measured at 1000  $\mu$ V).

(9) Audio output: 50 mW into a 300-ohm load with 30-percent modulation, 1000  $\mu$ V.

(10) Audio fidelity: +1, -3 dB from 300 to 3500 Hz (from 1000-Hz reference).

(11) Audio distortion: Less than 10 percent at 50 mW output (1000 microvolt input, 1000 Hz 30 percent modulated).

g. GUARD RECEIVER AUXILIARY OUTPUT DATA (SECURE MODE).

A signal having a 5-  $\mu$ V level into guard receiver modulated 30 percent at 1000 Hz produces at least 0.15 volt at (s+n)/n ratio of 6 dB or greater.

1-7. FACTORY OR FIELD CHANGES.

Effective the date of this technical manual there have been no factory or field changes to Radio Set AN/PRC-41A or Radio Accessory Kit MK-706/PRC-41.

1-8. PREPARATION FOR RESHIPMENT.

To prepare Radio Set AN/PRC-41A and Radio Set Accessory Kit MK- 706/PRC- 41 for reshipment, return all items and accessories to their respective cases. Refer to figures 2-1 and 2-2. Place Radio Set Case CY-3883/PRC-41 and Electronic Equipment Case CY-3885/PRC-41 in packing boxes and carefully nail the crate planking in place. Properly mark the packing boxes for reshipment or storage.

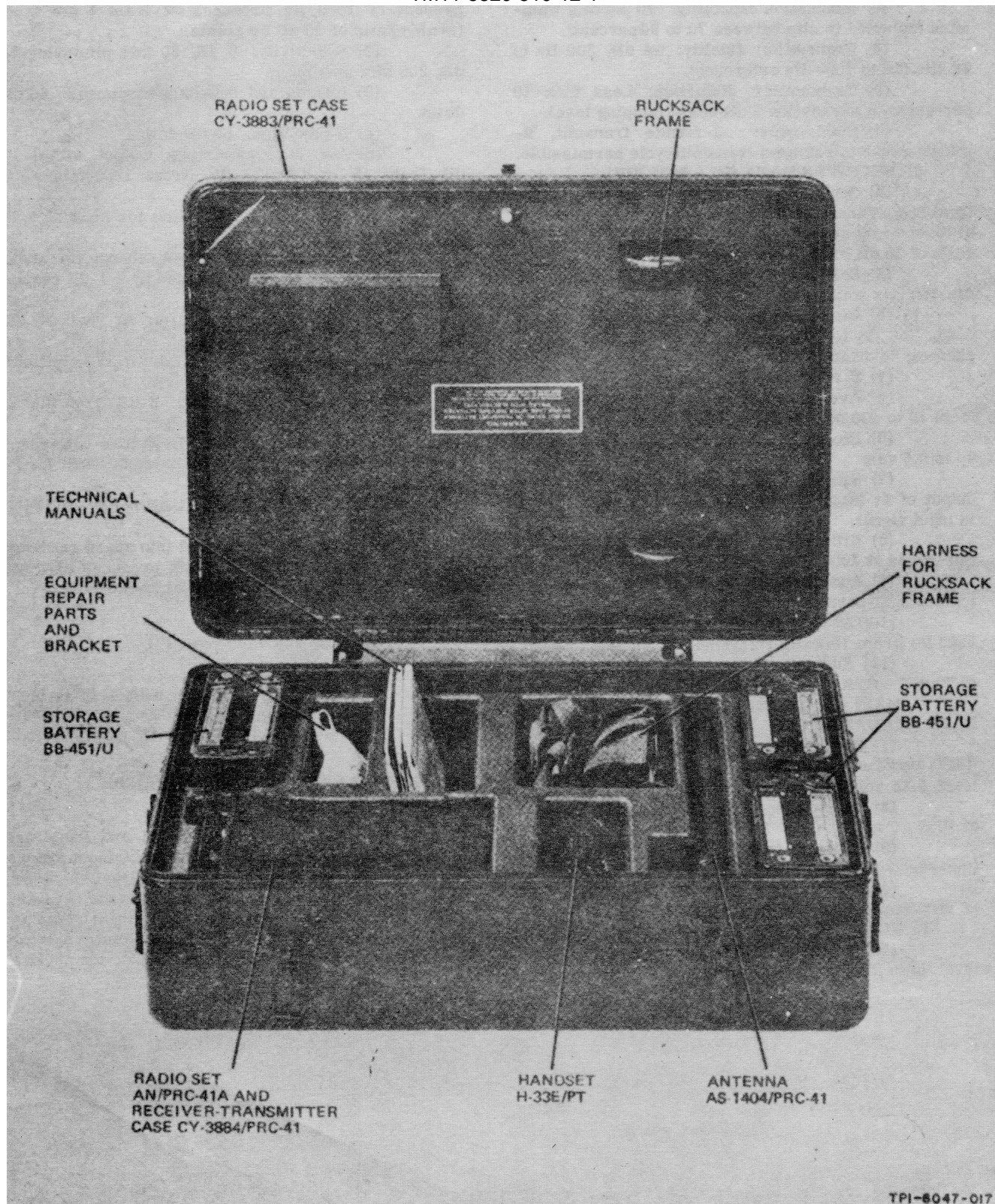


Figure 2-1. Location of Items of Radio Set AN/PRC-41A in Radio Set Case CY-3883/PRC-41

## SECTION 2

## INSTALLATION

## 2-1. UNPACKING AND HANDLING.

The units and accessories of Radio Set AN/PRC-41A and Radio Set Accessory Kit MK-706/PRC-41 are contained in Radio Set Case CY-3883/PRC-41 and Electronic Equipment Case CY-3885/PRC-41 respectively. Radio Set Case CY-3883/PRC-41 contains the units and accessories required for man-pack and secure voice operation. Electronic Equipment Case CY-3885/PRC-41 contains the units and accessories required for fixed station or vehicular operation, or for the performance of maintenance procedures. The location of the various units and accessories within these cases is shown in figures 2-1 and 2-2.

## CAUTION

Extreme care should be exercised in uncrating Radio Set Case CY-3883/PRC-41 and Electronic Equipment Case CY-3885/PRC-41 to prevent scratching or other damage. Always use a nail puller rather than a hammer; do not attempt to pry the case open with a crowbar.

Open Radio Set Case CY-3883/PRC-41 and Electronic Equipment Case CY-3885/PRC-41 and check the units and accessories received against the packing slip and the list of equipment supplied. Refer to tables 1-1 and 1-2. Inspect each unit and accessory in each of the cases for evidence of damage. Report any damage or shortages to the transportation agency concerned.

## 2-2. POWER PROVISIONS AND DISTRIBUTION.

a. **POWER PROVISIONS** - Radio Receiver Transmitter RT-695A/PRC-41 requires a nominal 26.5-volt dc primary source. This supply may be provided by use of Power Supply PP-3700/PRC-41, Storage Battery BB-451/U, or by an aircraft or vehicular battery supply. Figure 2-3 illustrates the various configurations which may be used to supply the required dc primary power to Radio Receiver Transmitter RT-695A/PRC-41.

Primary power for Radio Receiver-Transmitter RT-695A/PRC-41 may be provided by a separately located Power Supply PP-3700/PRC-41. Refer to A, figure 2-3. In this configuration, Power Electric Cable Assembly CX-8686/PRC-41 is used to connect the 26.5-volt dc output from the PP-3700/PRC-41 to Mounting MT-2976/PRC-41 and to the RT-695A/PRC-41. Power Electric Cable Assembly CX-8687/PRC-41 is used to connect the 115-volt ac primary power to Power Supply PP-3700/PRC-41.

Primary power for Radio Receiver-Transmitter RT-695A/PRC-41 may also be provided by Power Supply PP-3700/PRC-41 attached directly to the RT-695A/PRC-41 as shown in B, figure 2-3. This configuration uses Power Electric Cable Assembly CX-8687/PRC-41 to connect the primary 115-volt ac supply to Power Supply PP-3700/PRC-41. For aircraft or vehicular operation, Radio Receiver-Transmitter RT-695A/PRC-41 may be mounted on Mounting MT-2976/PRC-41 and connected to the aircraft or vehicular battery supply through Power Electric Cable Assembly CX-8686/PRC-41 and the dc adapter cable. Refer to C, figure 2-3. For man-pack operation, Storage Battery BB-451/U is attached directly to the rear of Radio Receiver-Transmitter RT-695A/PRC-41 to provide the required dc primary supply voltage. Refer to D, figure 2-3. For operation of Radio Receiver Transmitter RT-695A/PRC-41 with its case removed, the dc maintenance adapter must be secured to the rear of the RT-695A/PRC-41; and Power Electric Cable Assembly CX-8686/PRC-41 must be connected between the dc maintenance adapter and Power Supply PP-3700/PRC-41. The 115-volt ac primary supply is then connected through Power Electric Cable Assembly CX-8687/PRC-41 to Power Supply PP-3700/PRC-41. Refer to E, figure 2-3.

b. **POWER DISTRIBUTION.** - The primary power for Radio Receiver-Transmitter RT-695A/PRC-41 is 26.5 volts dc. Power distribution to the modules and circuits of the RT-695A/PRC-41 is illustrated schematically in figure 4-7 and described following paragraph 4-6d of the Repair and Maintenance Technical Manual for Radio Set AN/PRC-41A, NavShips 0967-872-5020.

## 2-3. SITE SELECTION.

Because Radio Set AN/PRC-41A is a uhf equipment, transmission and reception is considered to be line of sight. Maximum performance is thus obtained by line-of-sight operation.

## 2-4. INSTALLATION REQUIREMENTS.

The assembly layout of Radio Set AN/PRC-41A is dependent on the type of installation required. Radio Set AN/PRC-41A may be assembled for man-pack, fixed station, or vehicular operation. Refer to figures 2-4 through 2-7. For outline and mounting dimensions, refer to figures 2-13 through 2-17.

a. **MAN-PACK INSTALLATION.** (Refer to figure 2-4)- In man-pack installation, Radio Receiver Transmitter RT-695A/PRC-41 is provided primary power by Storage Battery BB-451/U, and Antenna

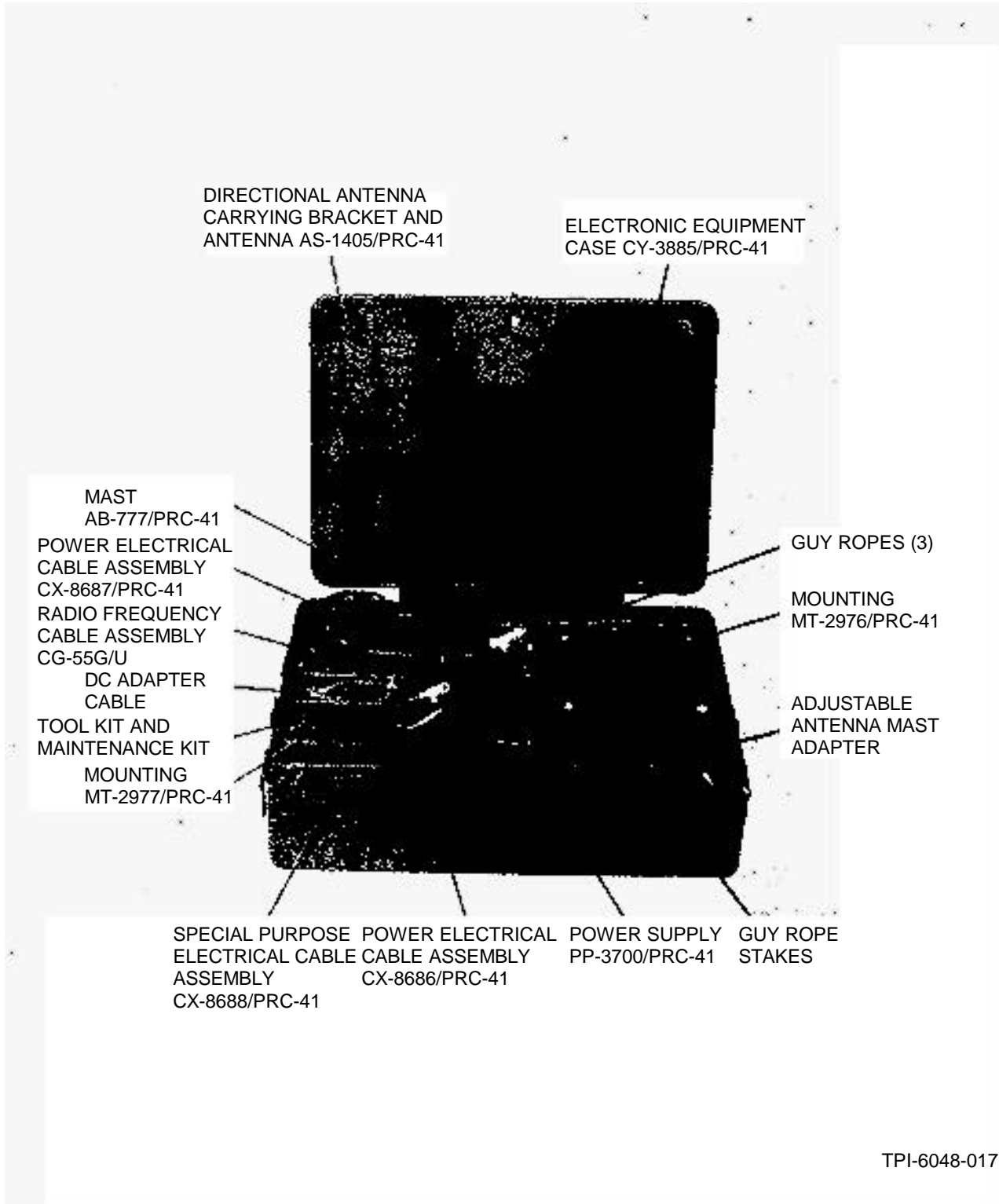


Figure 2-2. Location of Items of Radio Set Accessory Kit MK-706/PRC-41 in Electronic Equipment Case CY-3885/PRC-41

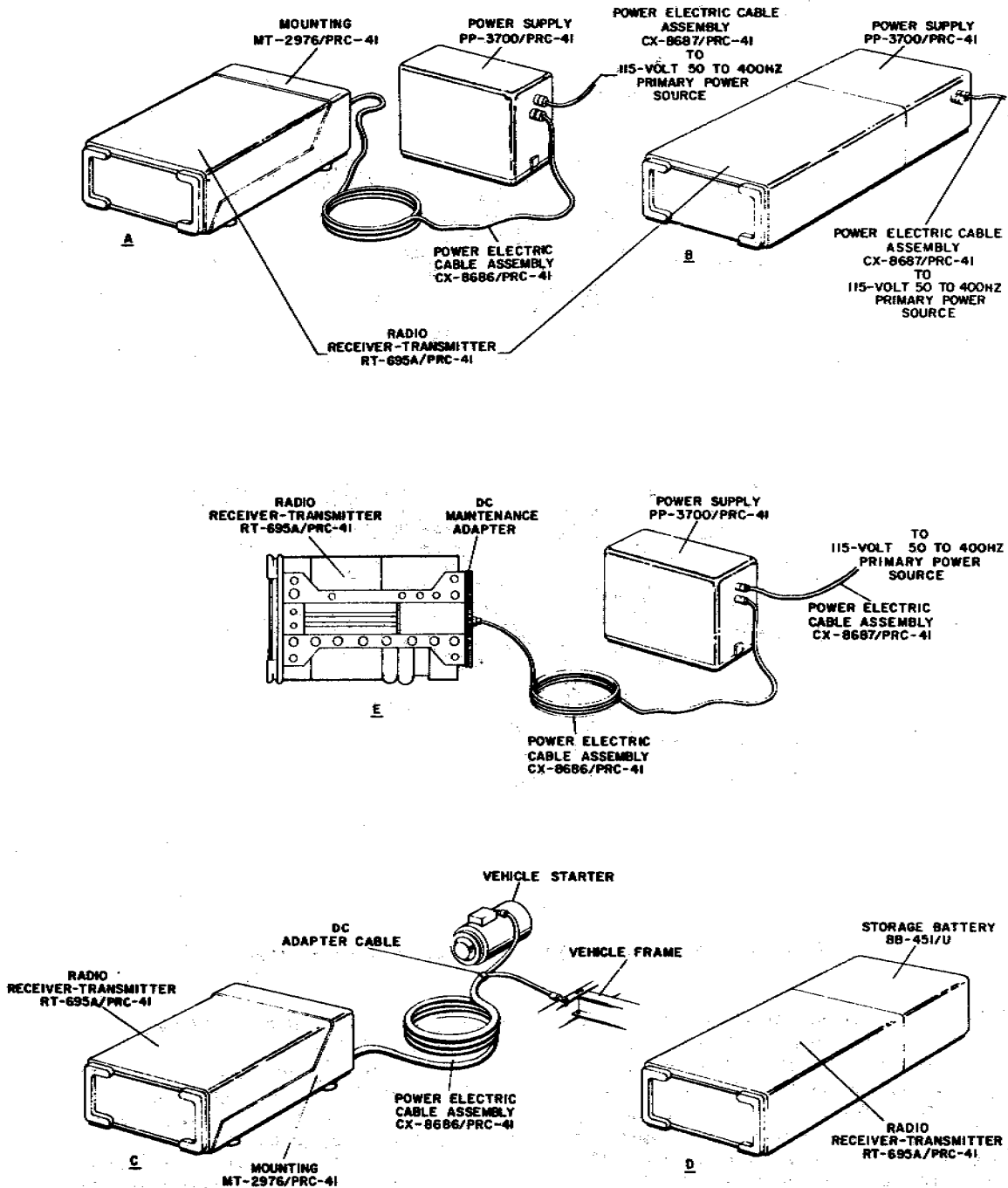


Figure 2-3. Source of Power Configurations of Radio Receiver-Transmitter RT-695A/PRC-41

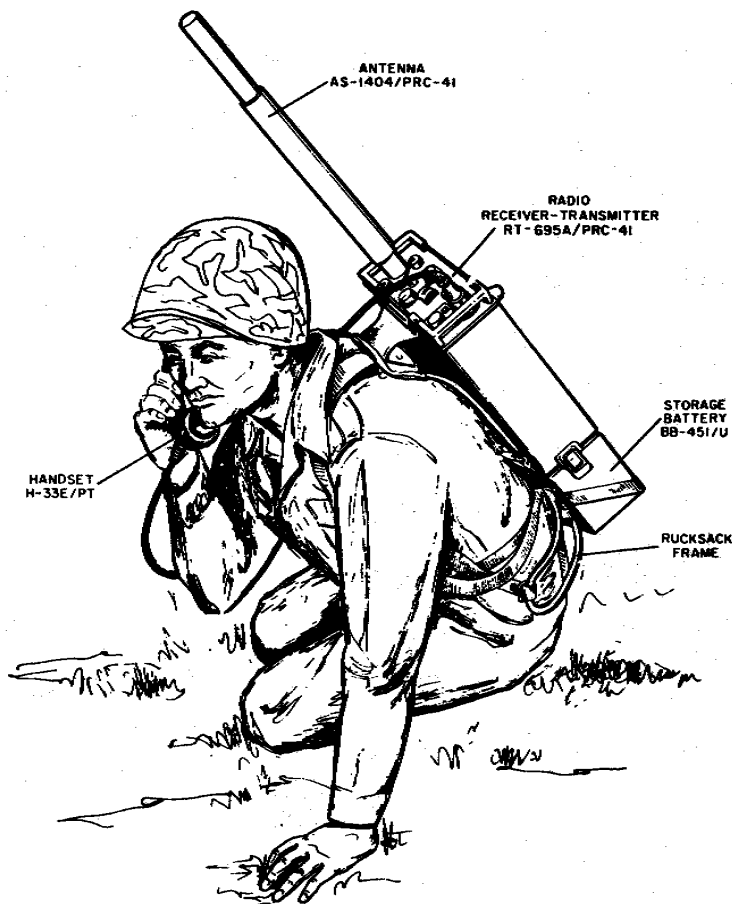


Figure 2-4. Radio Set AN/PRC-41A, Man-Pack Installation

AS-1404/PRC-41 is connected directly to antenna connector J28 on the front panel of Radio Receiver-Transmitter RT-695A/PRC-41. Connect Handset H-33E/PT to H33E/PT connector. This equipment is then stowed on the rucksack frame. Storage Battery BB-451/U is supplied in a dry charge condition to avoid a long information and activation period. For detailed information concerning BB-451/U, see TM-04072A- 15/1.

(1) STOWING EQUIPMENT FOR MAN-PACK OPERATION. (Refer to figure 2-5.) - The strap-ping and harnessing required for man-pack operation are contained in Radio Set Case CY-3883/PRC-41. Assemble the straps and harness to the frame, and Radio Receiver-Transmitter RT-695A/PRC-41 and Storage Battery BB-451/U on the

rucksack as follows:

- (a) Set shoulder strap assembly over top of rucksack frame and snap in place.
- (b) Set back strap in place at bottom of rucksack frame and tighten straps.
- (c) Set retainers of frame assembly in place on bottom of rucksack frame and tighten two wingnuts. Remove buckle from two takeup straps of shoulder strap assembly and, loop takeup straps down through lances on frame assembly. Place buckles on hooks of top frame assembly and loop takeup straps through buckles. Do not tighten at this time.
- (d) Clamp Storage Battery BB-451/U to Radio Receiver-Transmitter RT-695A/PRC-41.

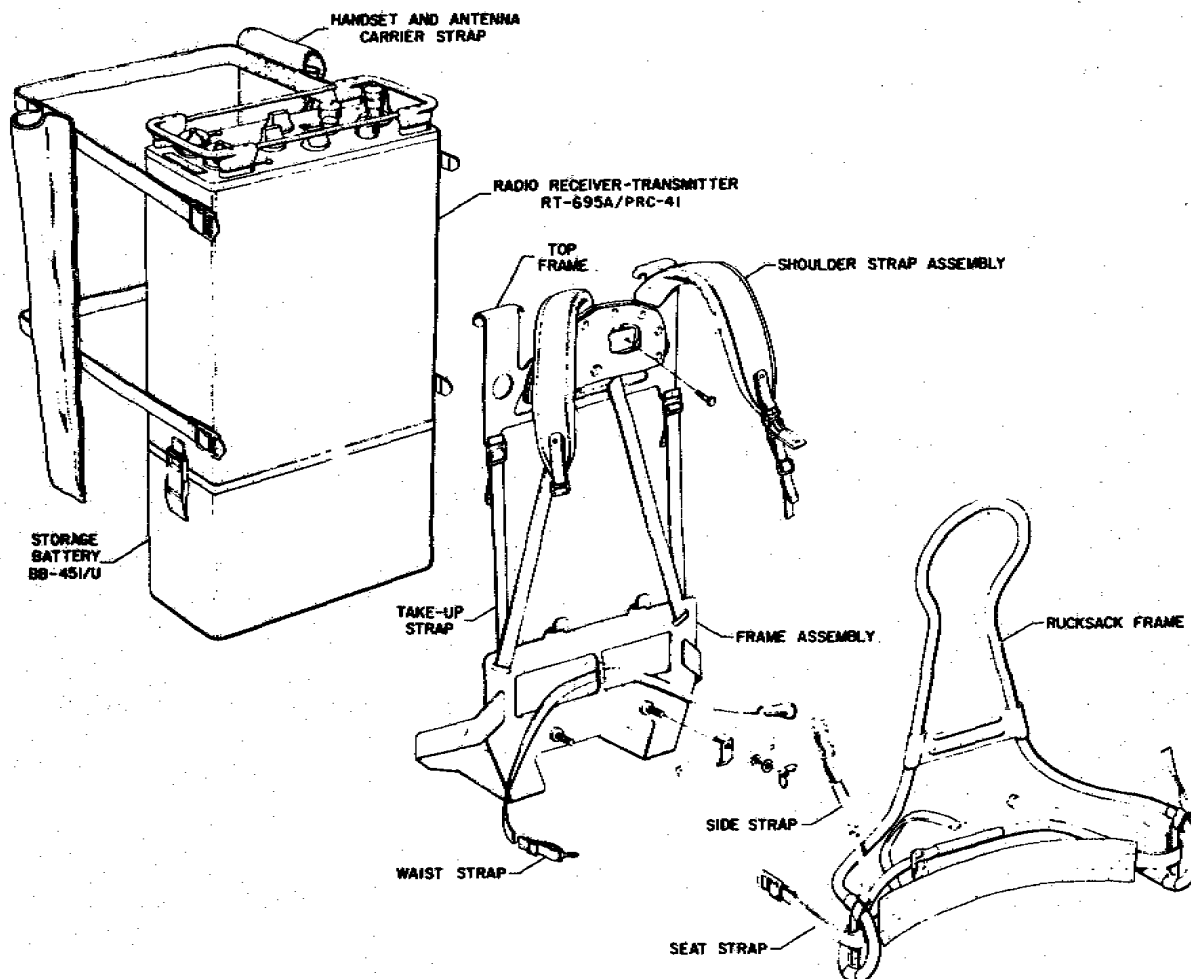


Figure 2-5. Assembly of Strappings of Rucksack Frame for Man-Pack Operation

Set them in place on frame assembly. Secure Radio Receiver-Transmitter RT-695A/PRC-41 in place on rucksack harness with handset and antenna carrier strapping around top frame of shoulder strap assembly. Position lower strap of handset and antenna carrier strapping around rucksack frame. Tighten these straps.

(e) Fit top frame of shoulder strap assembly over handles on front panel of Radio Receiver-Transmitter RT-695A/PRC-41 and tighten take-up straps of shoulder strap assembly

(f) Tighten Antenna AS-1404/PRC-41 in place on antenna connector J28 on front panel of the RT-695A/PRC-41 and connect Handset H-33E /PT to H-33E/PT connector. Dress shoulder straps of shoulder strap assembly over operator's shoulders and fasten to side straps. Loop

waist strap through ends of rucksack frame on either side; fasten and tighten as required at operator's front. If desired, waist strap may be looped through lower frame assembly at operator's back as shown in figure 2-5 and tightened at operator's front. Adjust shoulder straps for proper fit with quick-release clamps closed.

(g) Pack may be removed from operator's back by unfastening waist strap, unhooking quick release fasteners, and sliding straps off shoulders while pack is supported from rear by another man.

(2) STORAGE BATTERY BB-451/U EXCHANGE. - Under a normal 1-minute transmit, 9-minute receive duty cycle, Storage Battery BB-451/U



provides approximately 8 to 10 hours of operation. To replace discharged Storage Battery BB-451/U by a fully charged one with the equipment stowed on the rucksack frame, refer to figure 2-5 and perform the following steps.

(a) Remove pack from operator's back by unfastening waist strap, unhooking quick-release fasteners, and sliding straps off shoulders while pack is supported from rear by another man.

(b) Loosen two straps on handset and antenna carrier strap, loosen two take-up straps of shoulder strap assembly, and separate Radio Receiver-Transmitter RT-695A/PRC-41 and Storage Battery, BB-451/U from rucksack harness.

(c) Unclamp discharged BB-451/U and replace with fully charged BB-451/U. Replace RT-695A/PRC-41 and BB-451/U on rucksack harness. Tighten two takeup straps on shoulder strap assembly and two straps on handset and antenna carrier strap.

b. FIXED STATION INSTALLATION. (Refer to figure 2-6.) - Radio Receiver-Transmitter RT-695A/PRC-41 may be supplied power by Power Supply PP-3700/PRC-41, Storage Battery BB-451/U, or by vehicular battery supply for a fixed station installation. A fixed station installation may use either Antenna AS-1404/PRC-41 or AS-1405/PRC-41 mounted on Mast AB-777/PRC-41. Radio Frequency Cable Assembly CG-55G/U must be fitted up through Mast AB-777/PRC-41 and connected to Antenna AS-1405/PRC-41 or through Adapter UG-29B/U to Antenna AS-1404/PRC-41. Connect the other end of Radio Frequency Cable Assembly CG-55G/U to antenna connector J28 on the front panel of the RT-695A/PRC-41. Connect Handset H-33E/PT to H-33E/PT connector on the RT-695A/PRC-41.

(1) ANTENNA MAST INSTALLATION. - Rig the antenna mast as follows:

(a) Loosen two knurled clasp nuts and fully extend Mast AB-777/PRC-41.

(b) Remove spike in secure clasp nuts bottom section of Mast AB-777/PRC-41, and stake in ground.

(c) Reattach Mast AB-777/PRC-41 to spike. Arrange antenna guy stakes at 120-degree positions approximately 6 feet from AB-777/PRC-41. Fasten snap hooks to AB-777/PRC-41 and draw up guy ropes through guy fasteners.

(d) Clamp adjustable antenna mast adapter to AB-777/PRC-41.

(e) Pass Radio Frequency Cable Assembly CG-55G/U through Mast AB-777/PRC-41 to Antenna AS-1405/PRC-41 or through Adapter UG-29B/U and Antenna AS-1404/PRC-41. Set antenna into Mast AB-777/PRC-41 and secure in place by tightening screw clamp.

(f) Position antenna AS-1405/PRC-41 with short element end of boom directed in a line with site of receiver-transmitter with which communications are to be established. Position antenna AS-1404/PRC-41 in a vertical

position. Lock antenna in position by tightening locknut on adjustable antenna mast adapter

c. VEHICULAR OR AIRCRAFT INSTALLATION. (Refer to figure 2-7.)

(1) MOUNTING AND POWER CONSIDERATIONS. - When Radio Receiver-Transmitter RT-695A/PRC-41 is used in a vehicular installation, it is mounted on Mounting MT-2976/PRC-41 and supplied power through Power Electric Cable Assembly CX-8686/PRC-41 and the dc adapter cable from the vehicle battery supply (C, figure 2-3). Refer to figures 2-13 and 2-16 for outline and mounting dimensions when fastening Mounting MT-2976/PRC-41 to a vehicle. When the RT-695A/PRC-41 is used in an aircraft, it is mounted in the same way as for a vehicular installation. Power for an aircraft installation is supplied by Power Supply PP-3700/PRC-41 which may be located at some remote location in the aircraft. Power Supply PP-3700/PRC-41 clamps to Mounting MT-2977/PRC-41. Mounting MT-2977/PRC-41 must be secured to the aircraft frame. Refer to figures 2-14 and 2-17 for outline and mounting dimensions. Power Electric Cable Assembly CX-8687/PRC-41 connects Power Supply PP-3700/PRC-41 to the 115-volt, 50- to 400-Hz primary aircraft supply. Power Electric Cable Assembly CX-8686/PRC-41 is used to connect Power Supply PP-3700/PRC-41 to Mounting MT-2976/PRC-41 to supply power to the RT-695A/PRC-41.

(2) ANTENNA CONSIDERATIONS. - When Radio Receiver-Transmitter RT-695A/PRC-41 is installed in a vehicular or aircraft installation, it is secured to Mounting MT-2976/PRC-41 and used with Antenna AS-1404/PRC-41. If, in an aircraft installation, the aircraft is equipped with or has provisions for an externally mounted uhf antenna, this shall be used in lieu of antenna AS-1404/PRC-41. The antenna mounting bracket normally fastens to the rear of Mounting MT-2976/PRC-41 to permit vertical mounting of Antenna AS-1404/PRC-41. Radio Frequency Cable Assembly CG-55G/U connects between the connector on the antenna mounting bracket and antenna connector J28 on the front panel of Radio Receiver Transmitter RT-695A/PRC-41. Because Radio Frequency Cable Assembly CG-55G/U is a 20-foot length, it may be more convenient to fabricate a shorter length for this installation. Refer to paragraph 2-5b(2) for fabrication instructions. The four screws indicated by figure 2-16 may be removed from the rear of Mounting MT-297/PRC-41 and used to secure the antenna mounting bracket to the rear of the MT-2976/PRC-41. If it is desirable to mount the antenna mounting bracket on some other flat vertical surface, use the antenna mounting bracket mounting holes as a template, scribe their location on the mounting surface, drill four 5/32 inch holes at the scribed positions, and secure the antenna mounting bracket by use of four 6-32 machine screws or bolts.

d. SECURE VOICE INSTALLATION. - In secure voice installation, Radio Receiver-Transmitter RT-695A/PRC-41 is connected to the TSEC/KY-38 security equipment by means of Special Purpose Electrical Cable Assembly CX-10831/PRC-41A. Connect Handset H-33E/PT to the appropriate connector on the TSEC/KY-38.

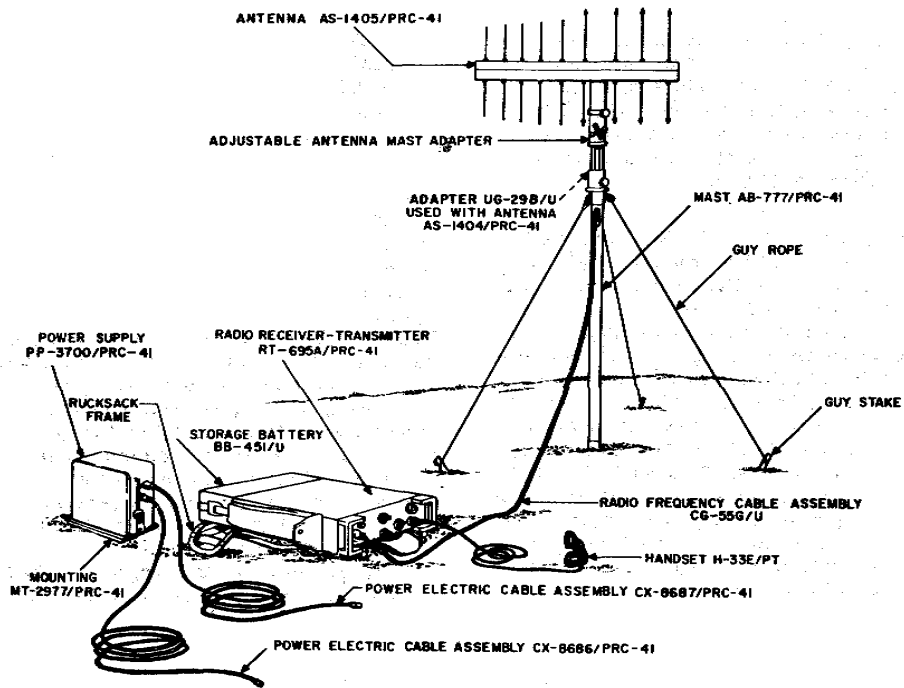


Figure 2-6. Radio Set AN/PRC-41A, Fixed Station Installation

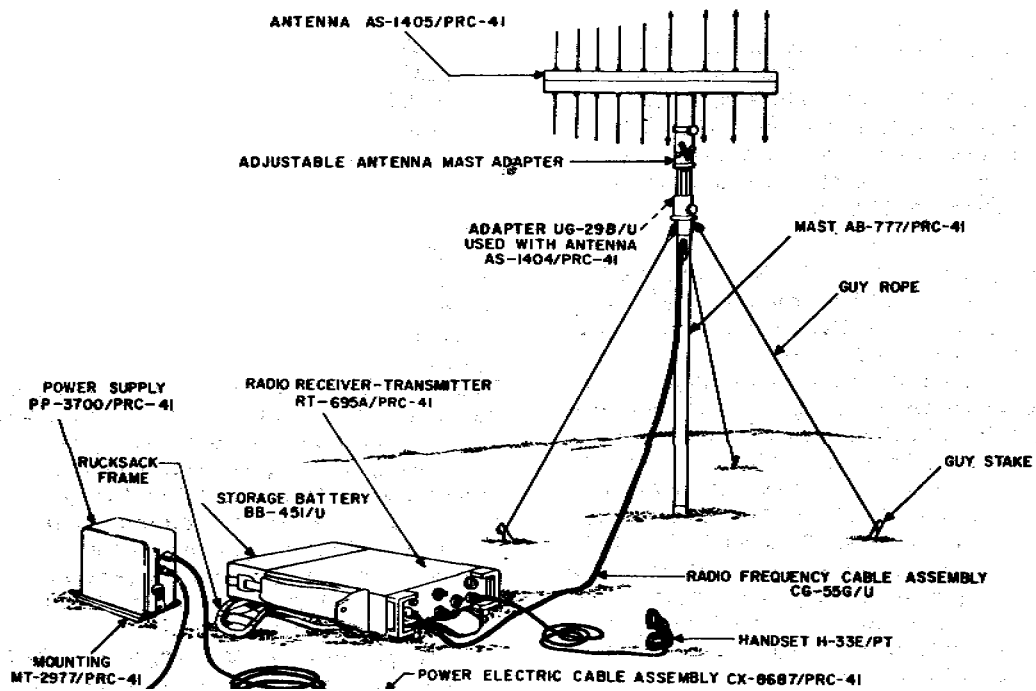


Figure 2-7. Radio Set AN/PRC-41A, Vehicular Installation

Note

A modulation inhibit feature is built into Special Purpose Electrical Cable Assembly CX-10831/PRC-41A. RT-695A/PRC-41 can-not be modulated from Handset H-33E/PT connector when Special Purpose Electrical Cable Assembly CX-10831/PRC-41A is con-nected to RT-695A/PRC-41.

e. AUTOMATIC RELAY INSTALLATION. - Automatic relay operation requires two Radio Receiver-Transmitter RT-695A/PRC-41 installations. The installations may be fixed station, vehicular, or man-pack. The automatic relay installation is completed by connecting Special Purpose Electrical Cable Assembly CX-8688/PRC-41 between the front panel connector marked H-33E/PT on one RT-695A/PRC-41 equipment and the H-33E/PT connector on the front panel of a second RT-695A/PRC-41. In this type of operation, two Radio Receiver-Transmitter RT-695A/PRC-41 equipments are connected so that reception of a plain mode signal on the frequency to which either RT-695A/PRC-41 is tuned will result in retransmission of the signal on the frequency to which the other RT-695A/PRC-41 is tuned.

Note

SQUELCH control 1A9R5 on each RT695A/PRC-41 must be adjusted for squelch on condition when no signal is being received. Refer to paragraph 3-3b(3).

(1) DESCRIPTION OF AUTOMATIC RELAY INSTALLATION. - Automatic relay operation makes possible several tactical advantages. By using a station that has two RT-695A/PRC-41 equipments connected for automatic relay operation with any uhf transmitter and receiver or other RT-695A/PRC-41 equipment, the line-of-sight distance, which ordinarily limits the range of uhf equipment, can be considerably increased. A diagram illustrating the use of automatic relaying operation is shown in figure 2-8. In this illustration, any signal transmitted by C can be received at A after being automatically relayed at B. Conversely, any signal transmitted by A can be received at C after being automatically relayed at B. Several such relay links may be possible, but in each case, retransmission must always be on a frequency other than that received.

A simplified schematic diagram of the automatic relay circuits is shown in figure 2-9. Assume that

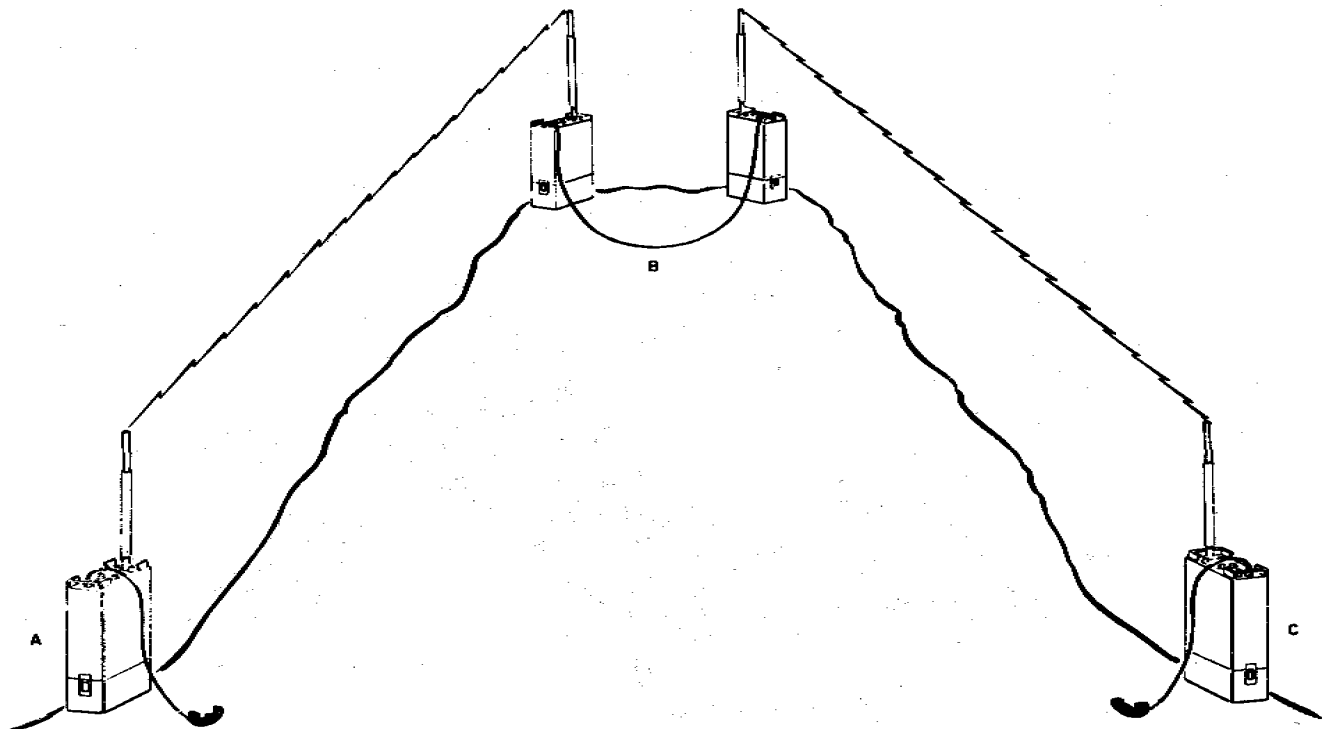


Figure 2-8. Principle of Automatic Relay Operation

Radio Receiver-Transmitter RT-695A/PRC-41 number 1 is receiving a plain mode signal on a particular frequency. Relay 1A3K1 of the 3rd if and squelch module of RT-695A/PRC-41 number 1 is energized by the carrier squelch circuits. The contacts of relay 1A3K1 provide a ground through J13-K, through Special Purpose Electrical Cable Assembly CX-8688/PRC-41, and through J13-F of RT-695A/PRC-41 number 2 to relays 1A9K1, 1A9K3, and 1A9K4. These relays are energized and place RT-695A/PRC-41 number 2 in transmit operation. Audio output from RT-695A/PRC-41 number 1 is applied through J13-A through Special Purpose Electrical Cable Assembly CX-8688/PRC-41, through J13-C on RT-695A/PRC-41 on number 2, to the modulator module and is transmitted by RT-695A/PRC-41 number 2. The sidetone circuits sample the modulator output and couple this signal through contact of main chassis relay 1A9K4 to the input of the audio module. Sidetone output from the audio module is available at J13-A and J14-J and may be heard in the headset connected with special adapter cable assembly (detail A, figure 2-9) to J14 of RT-695A/PRC-41 number 2. The sidetone output through J13-A, through CX-8688/PRC-41, through J13-C on RT-695A/PRC-41 number 1 to the modulator input is of no consequence to RT-695A/PRC-41 number 1 since there is no voltage applied to the modulator. The operation when RT-695A/PRC-41 number 2 is in receive is the reverse of this theory of operation except for pin numbers and connection points. Whether RT-695A/PRC-41 number 1 or number 2 is first to receive on its respective frequency determines which will place the other into transmit condition. Relay 1A9K6 of the main chassis allows compatible operation with Control Group AN/GRA-6.

With two Radio Receiver-Transmitter RT-695A/PRC-41 equipments connected by Special Purpose Electrical Cable Assembly CX-8688/PRC-41 and a Handset H-33E/PT

connected to each through special adapter cable assembly (detail A, figure 2-9), plain mode transmission may be made on either equipment by use of its respective handset. When the press-to-talk button is depressed on Handset H-33E/PT a ground is applied to main chassis relays 1A9K1, 1A9K3, and 1A9K4 of RT-695A/PRC-41 number 2; and it is placed in the transmit condition (figure 2-9). Relay 1A3K1 of RT-695A/PRC-41 number 1 is energized when this RT-695A/PRC-41 is receiving a signal, therefore, it does not provide a ground for the relays of RT-695A/PRC-41 number 2 unless a signal is being received. Relay 1A3K1 of RT-695A/PRC-41 number 2 is not energized because the 24.5-volt dc supply is removed from the 3rd if and squelch module. The sidetone circuits sample the modulator module output of RT-695A/PRC-41 number 2 and couple this signal through contact 3 of main chassis relay 1A9K4 to the input of the audio module. Sidetone output from the audio module is available at J13-A and J14-J and may be heard in a headset connected with special adapter cable assembly (detail A, figure 2-9) to J14 on RT-695A /PRC-41 number 2. The sidetone output through J13-A (RT-695A/PRC-41 number 2) is applied through CX-8688/PRC-41 and through J13-C on RT695A/PRC-41 number 1 to the modulator module. This is of no consequence since RT-695A/PRC-41 number 1 is in the receive condition. The same sequence of conditions results if RT-695A/PRC-41 number 1 is keyed.

2-5. CABLE ASSEMBLIES.

a. GENERAL. - The cables required for fixed station or vehicular installations are listed in table 2-1. These cables are supplied as part of Radio Set Accessory Kit MK-706/PRC-41. The cable required for interface with TSEC/KY-38 equipment for secure voice operation, Special Purpose Electrical Cable Assembly CX-10831/PRC-41A, is supplied as part of

TABLE 2-1. CABLES SUPPLIED WITH RADIO SET ACCESSORY KIT MK-706/PRC-41

CABLE*	LOAD REQUIREMENTS	ACTIVE CONDUCTORS	LENGTH (feet)
Radio Frequency Cable Assembly CG-55G/U	8.5 A max	RG-213/U	20
Power Electric Cable Assembly CX-8686/PRC-41	15 A max	3	10
Power Electric Cable Assembly CX-8687/PRC-41	15 A	3	50
Special Purpose Electrical Cable Assembly CX-8688/PRC-41	3 A	7	10
Dc adapter cable	15 A	2	1

\*Refer to table 1-4 for information pertaining to cables of the maintenance cable kit.

Radio Set AN/PRC-41A. In addition to the cables listed in table 2-1, it may be desirable to fabricate ac power and radio frequency coaxial cables which are described in paragraph 2-5b.

b. FABRICATION OF SPECIAL CABLES.

(1) 230-VOLT POWER CABLE. - Power transformer T1 of Power Supply PP-3700/PRC-41 has a split primary. Terminals 1 and 2 of transformer T1 are connected to pins A and F of power connector J1. Terminals 3 and 4 of transformer T1 are connected respectively to pins D and C of connector J1. The connector of Power Electric Cable Assembly CX-8687/ PRC-41 which mates with power connector J1 of Power Supply PP-3700 /PRC-41 is wired for use with a 115-volt, 50- to 400-Hz primary power source. Refer to figure 1-11. In event that only 230-volt, 50- to 400-Hz primary power is available, the ac power cable shown in figure 2-10 may be fabricated from bulk supplies. This cable differs from Power Electric Cable Assembly CX-8687/PRC-41 in that connector P1 is a 3-prong, 230-volt, twist-lock plug, and plug P2 is wired so as to connect the two primary sections of PP-3700/PRC-41 power transfer T1 in series.

(2) RADIO FREQUENCY COAXIAL CABLE. -Normally when it becomes necessary to connect

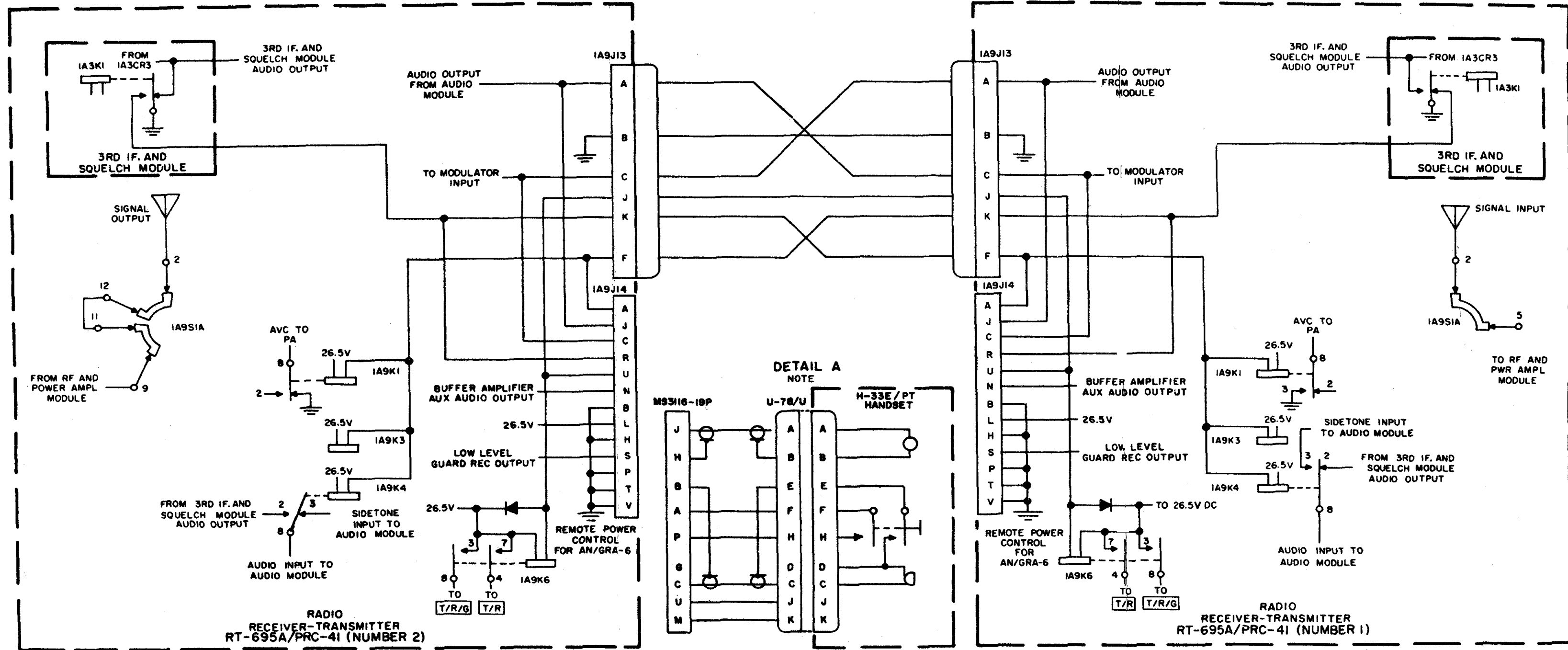
an antenna to antenna connector J28 on the front panel of Radio Receiver-Transmitter RT-695A/PRC-41 through a cable, Radio Frequency Cable Assembly CG-55G/U is used. In a vehicular, and in some cases a fixed station, installation where Antenna AS-1404/PRC-41 (omnidirectional) is used on the antenna mounting bracket, the length of CG-55G/U is excessive and cumbersome. For this application, the radio frequency coaxial cable illustrated in figure 2-11 may be desirable. Refer to figure 2-12 for assembly of connectors MS91236 on RG-213/U coaxial cable.

2-6. INSPECTION AND ADJUSTMENT.

Inspect Radio Set AN/PRC-41A by performing the operating procedures of paragraph 3-3 and by making visual checks for evidence of damage. No additional installation adjustments are required.

2-7. INTERFERENCE REDUCTION.

Under normal conditions of installation and operation, radio interference generated by Radio Set AN/PRC-41A and its susceptibility to radio interference is controlled within the limits of military specification MIL-I-16910.



NOTE:  
AUTOMATIC RELAYING CAPABILITY IS POSSIBLE IN NORMAL MODE ONLY.  
TO MONITOR AT RELAY POINT, ADAPTER CABLE SHOWN IN DETAIL A  
MUST BE FABRICATED. MS3116-19P MATES WITH IA9J14.

Figure 2-9. Automatic Relay Operation (Normal Mode), Simplified Schematic Diagram ORIGINAL

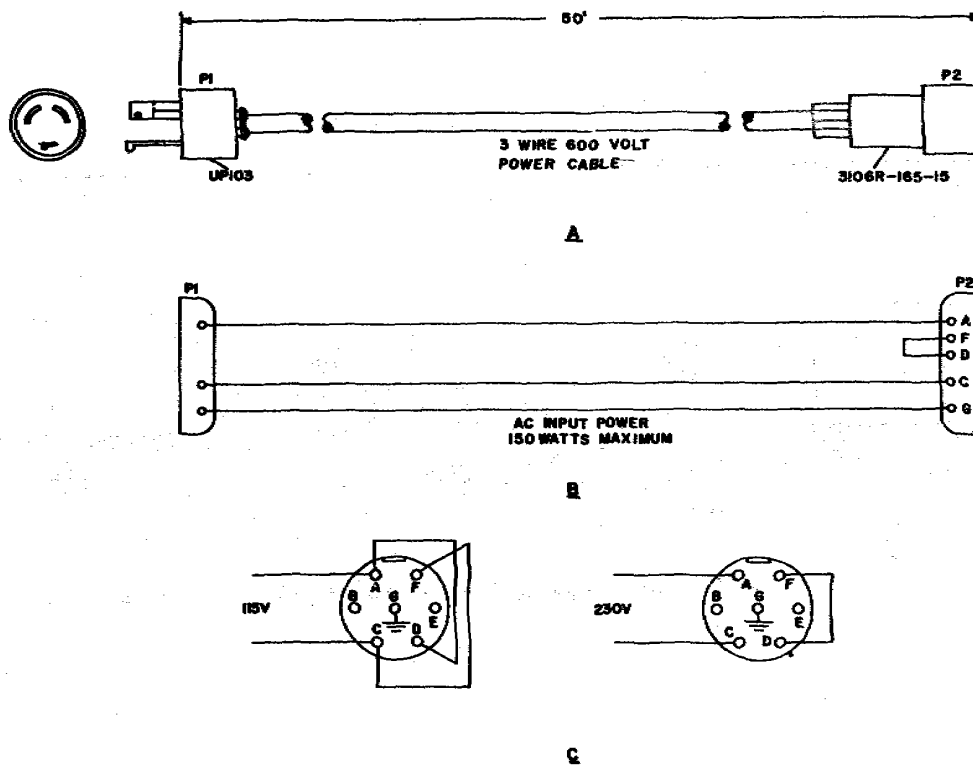


Figure 2-10. 230-Volt Power Cable, Fabrication Diagram

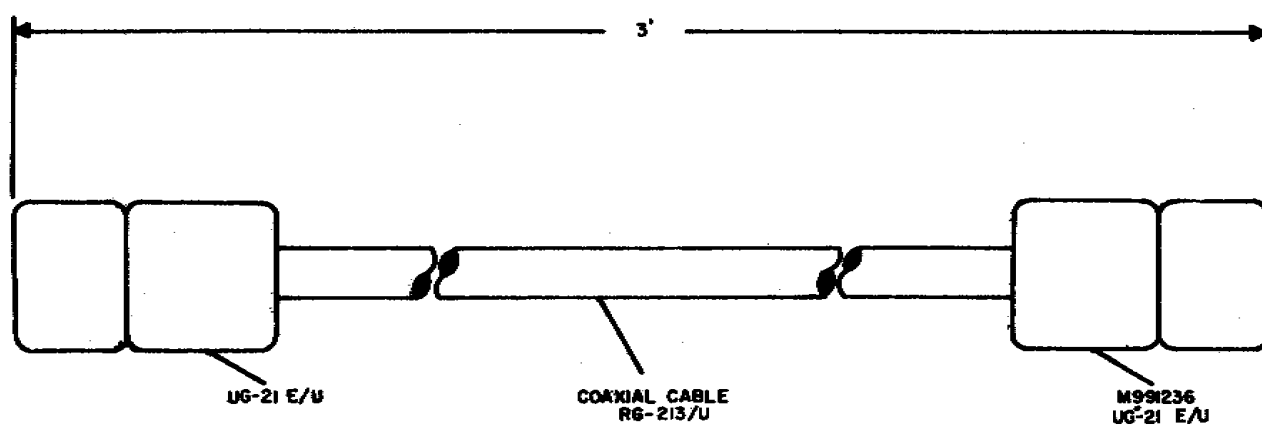
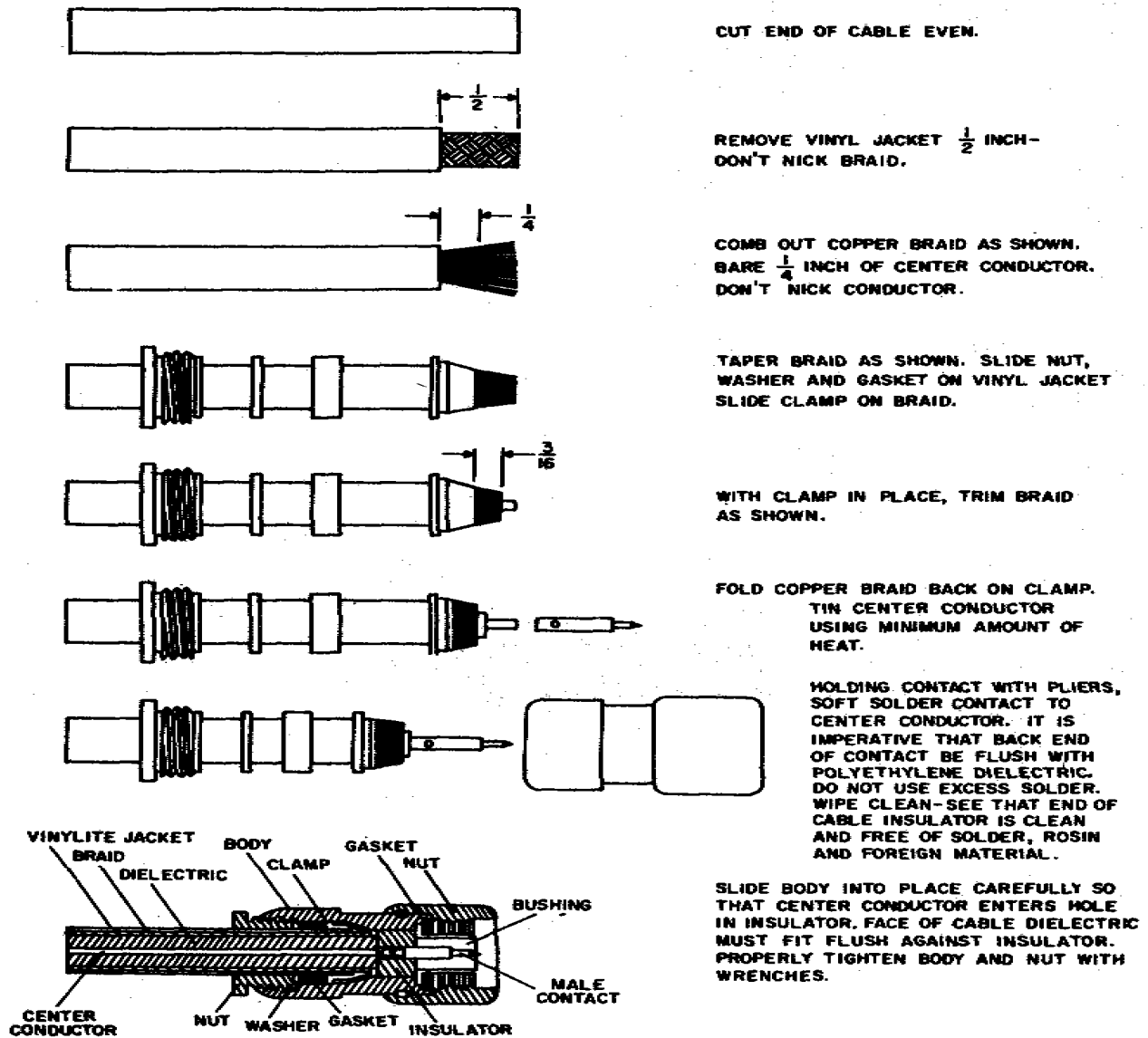


Figure 2-11. Radio Frequency Coaxial Cable, Fabrication Diagram





CUT END OF CABLE EVEN.

REMOVE VINYL JACKET  $\frac{1}{2}$  INCH-  
DON'T NICK BRAID.

COMB OUT COPPER BRAID AS SHOWN.  
BARE  $\frac{1}{4}$  INCH OF CENTER CONDUCTOR.  
DON'T NICK CONDUCTOR.

TAPER BRAID AS SHOWN. SLIDE NUT,  
WASHER AND GASKET ON VINYL JACKET  
SLIDE CLAMP ON BRAID.

WITH CLAMP IN PLACE, TRIM BRAID  
AS SHOWN.

FOLD COPPER BRAID BACK ON CLAMP.  
TIN CENTER CONDUCTOR  
USING MINIMUM AMOUNT OF  
HEAT.

HOLDING CONTACT WITH PLIERS,  
SOFT SOLDER CONTACT TO  
CENTER CONDUCTOR. IT IS  
IMPERATIVE THAT BACK END  
OF CONTACT BE FLUSH WITH  
POLYETHYLENE DIELECTRIC.  
DO NOT USE EXCESS SOLDER.  
WIPE CLEAN-SEE THAT END OF  
CABLE INSULATOR IS CLEAN  
AND FREE OF SOLDER, ROSIN  
AND FOREIGN MATERIAL.

SLIDE BODY INTO PLACE CAREFULLY SO  
THAT CENTER CONDUCTOR ENTERS HOLE  
IN INSULATOR. FACE OF CABLE DIELECTRIC  
MUST FIT FLUSH AGAINST INSULATOR.  
PROPERLY TIGHTEN BODY AND NUT WITH  
WRENCHES.

Figure 2-12. Assembly of Type RG-8/U Connector

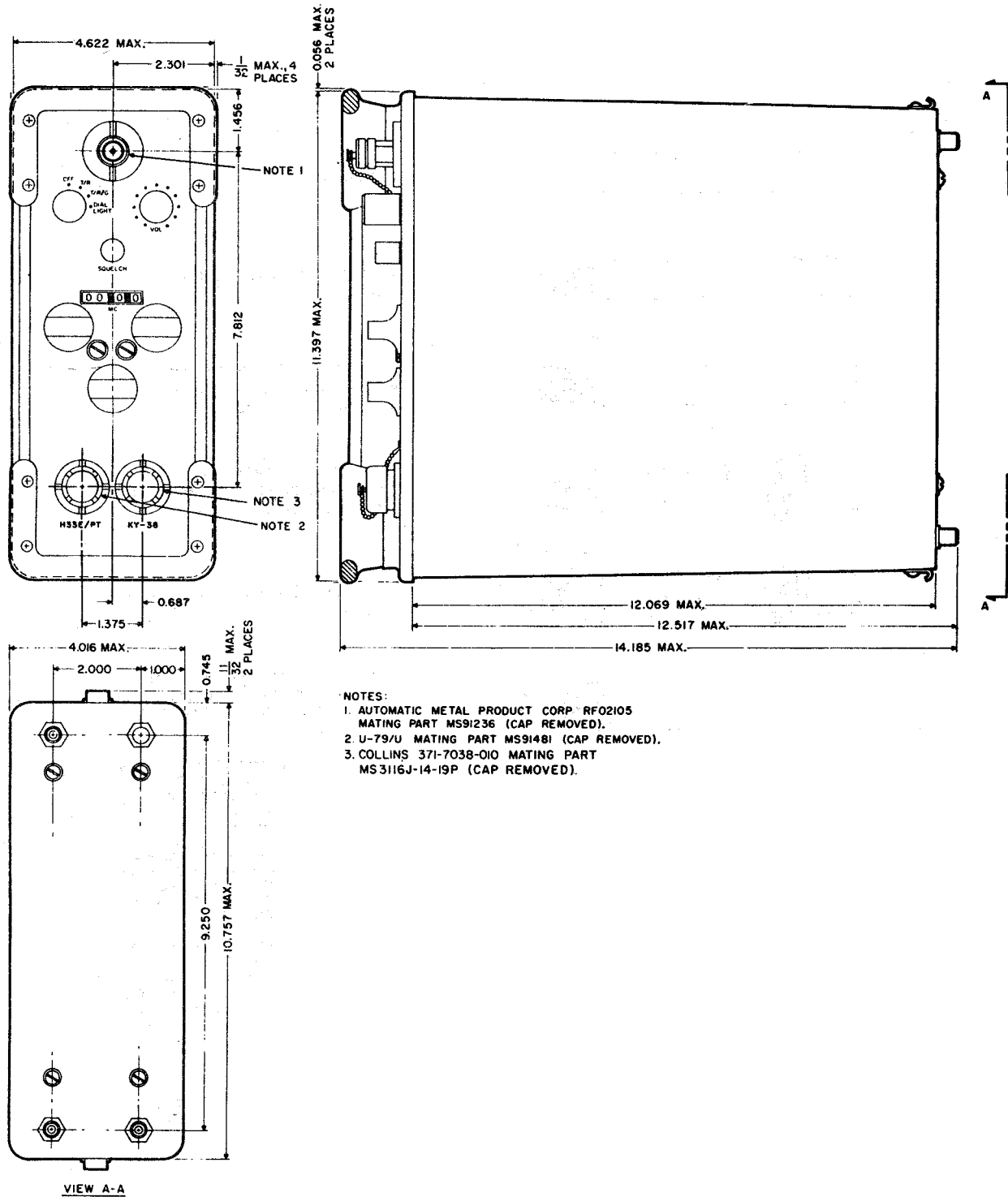


Figure 2-13. Radio Receiver-Transmitter RT-695A/PRC-41, Outline and Mounting Dimensions

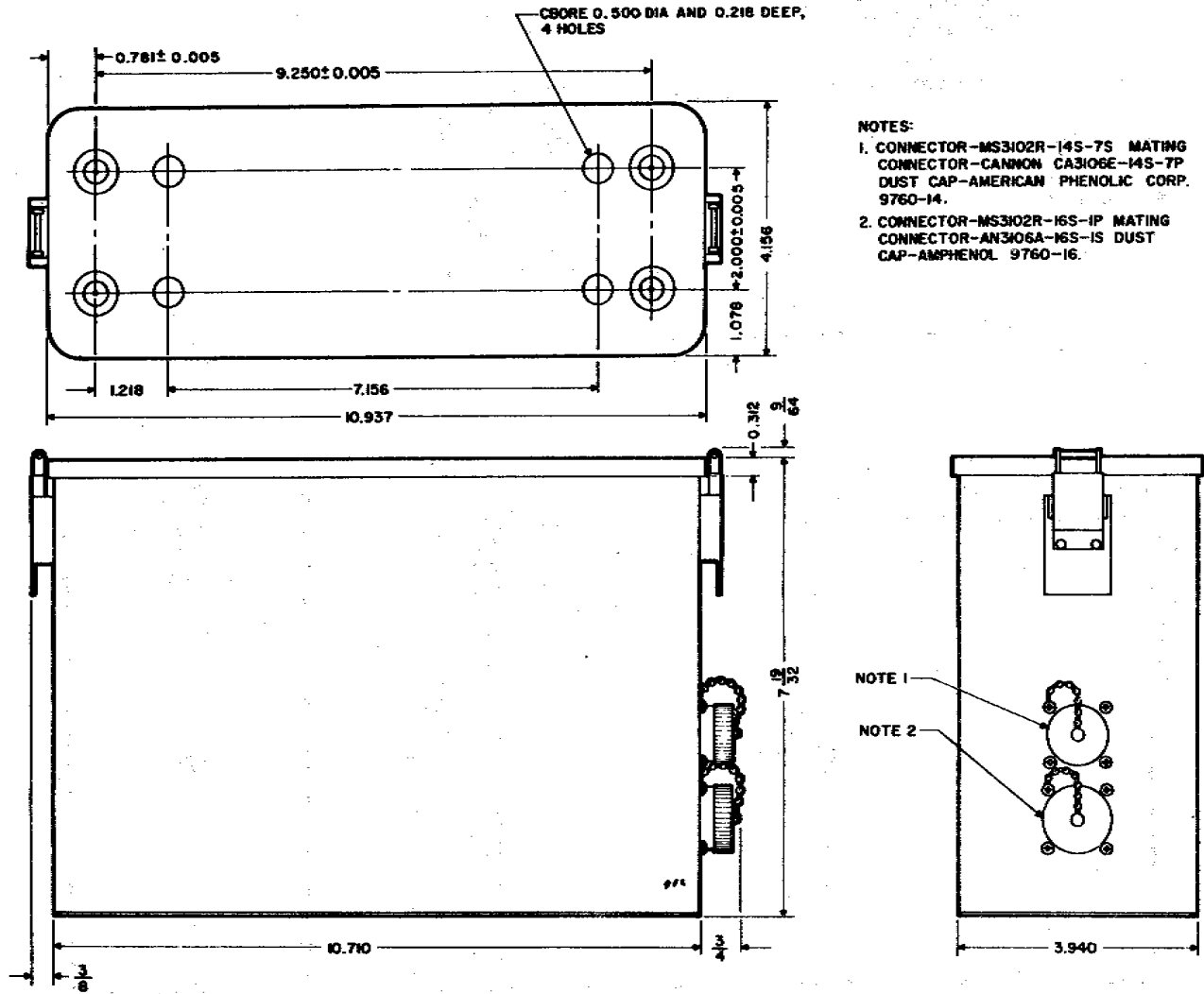


Figure 2-14. Power Supply PP-3700/PRC-41, Outline and Mounting Dimensions

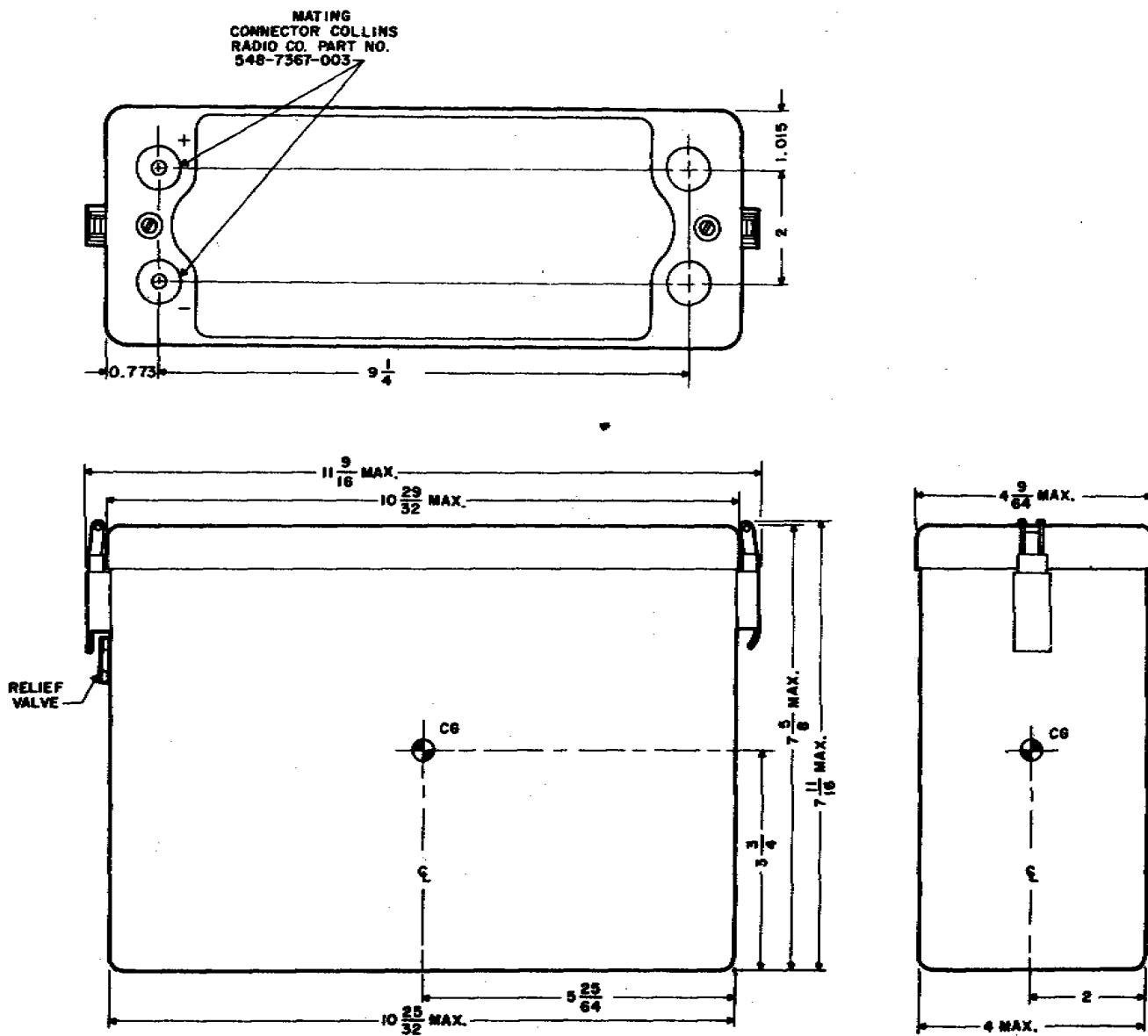


Figure 2-15. Storage Battery BB-451/U, Outline and Mounting Dimensions

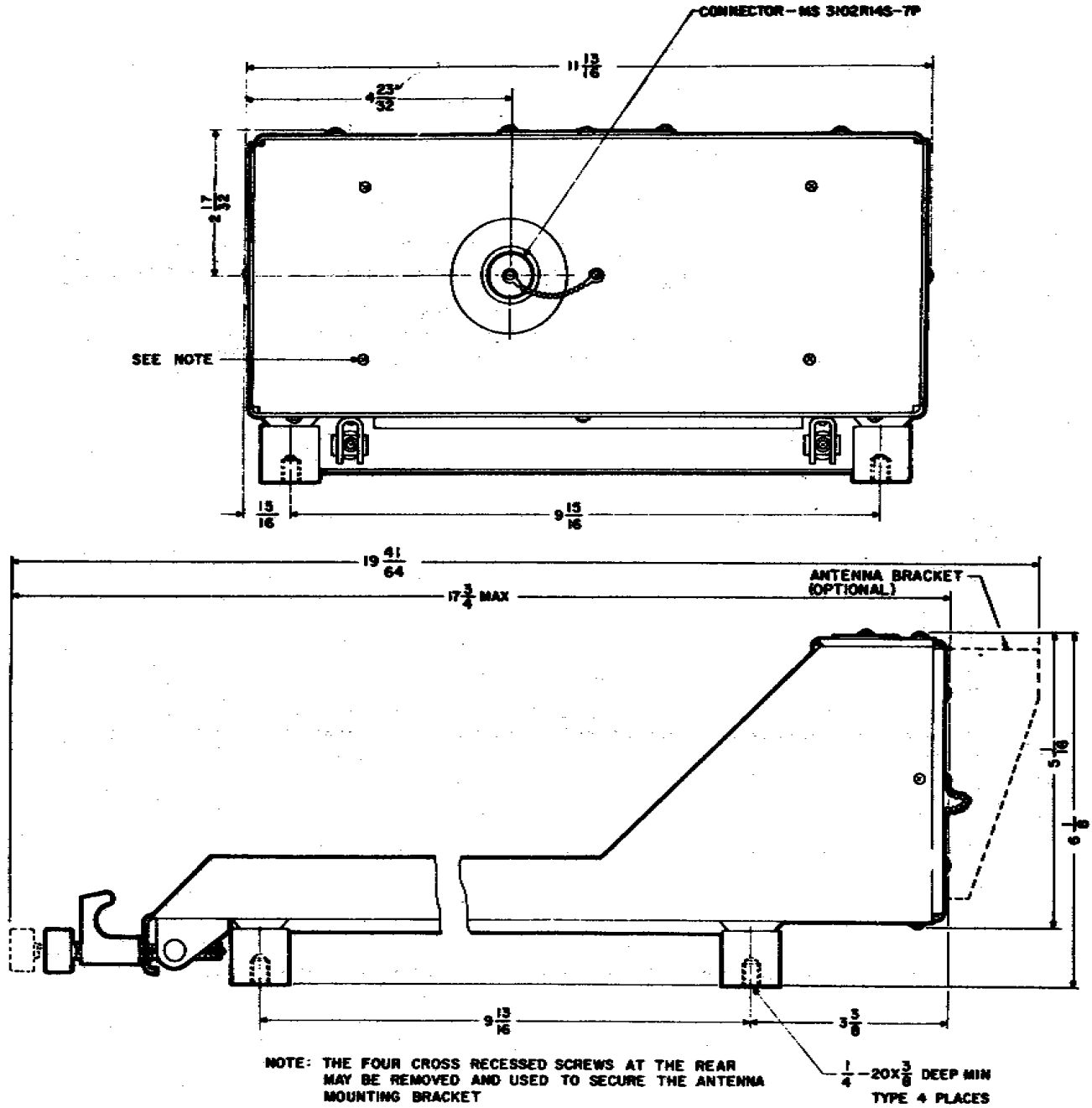


Figure 2-16. Mounting MT-2976/PRC-41, Outline and Mounting Dimensions

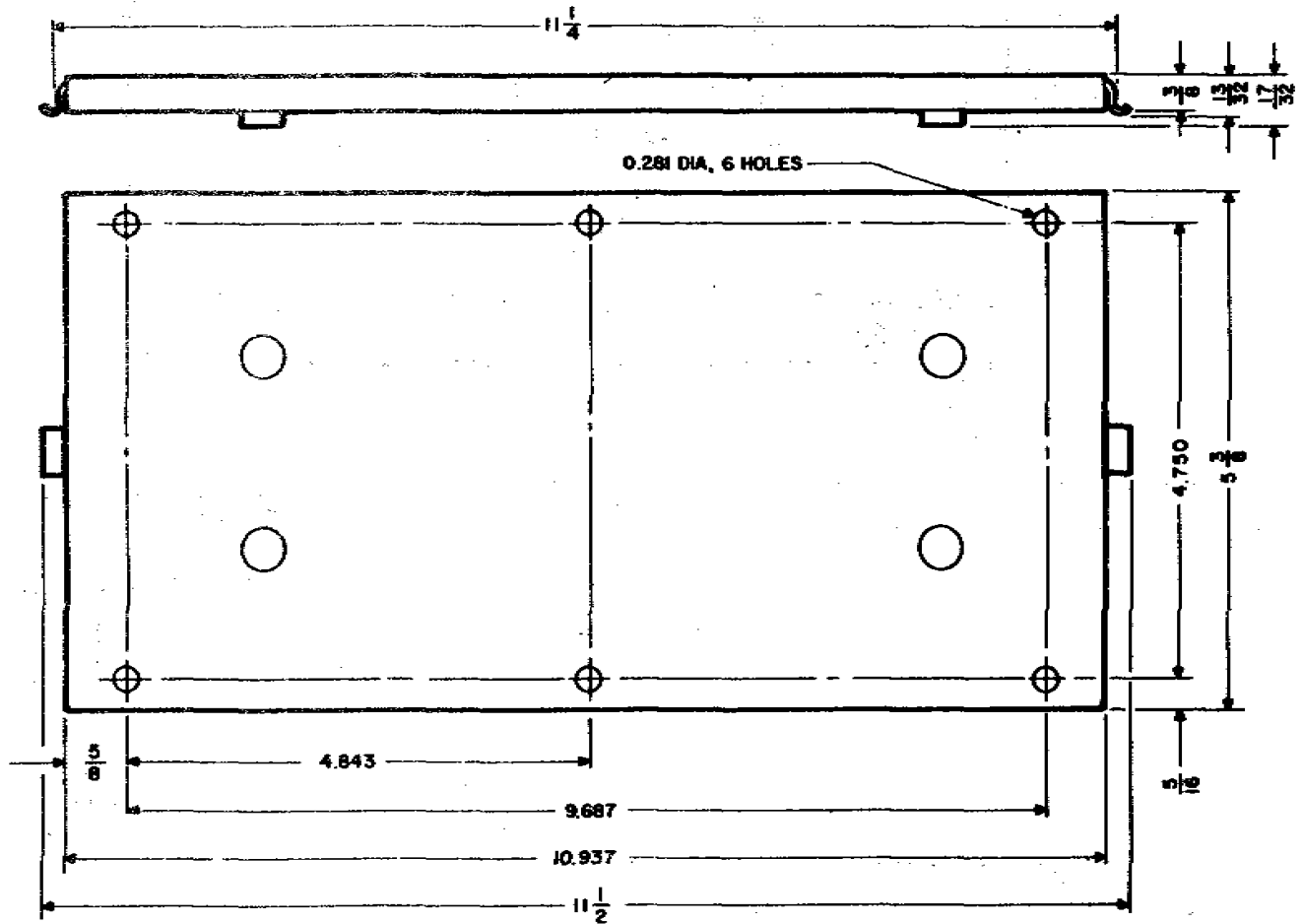


Figure 2-17. Mounting MT-2977/PRC-41, Outline and Mounting Dimensions

SECTION 3  
OPERATION

3-1. FUNCTIONAL OPERATION.

Radio Set AN/PRC-41A provides man-pack, vehicular or aircraft, or fixed station communications from ground to air or ground to ground. This equipment will net with other radio communication equipment operating in the 225.0- to 399.9-MHz frequency range in 100-kHz increments using A3 radiotelephone communication. Radio Set AN/PRC-41A is capable of secure voice operation when used in conjunction with TSEC/KY-38 equipment. For secure voice operation, Handset H-33E/PT must be connected to the appropriate connector on the TSEC/KY-38 instead of the RT-695A/PRC-41. Handset H-33E/PT is then operated in the normal manner.

Radio Set AN/PRC-41A consists of the units and accessories listed in tables 1-1 and 1-2. Radio Receiver-Transmitter RT-695A/PRC-41 uses some of its circuits for both transmit and receive operation. The equipment is in receive operation when the OFF-T/R-T/R/G-DIAL LIGHT switch is set to any position except OFF. When the press-to-talk button on Handset H-33E/PT is pressed, the equipment is placed in transmit operation by relay switching. A guard receiver (separate from the main receiver except for the circuits of the audio module) is always available to signals received on the guard channel when the equipment is in receive operation and the OFF-T/R-T/R/G-DIAL LIGHT switch is set to T/R/G.

3-2. PREPARATION FOR USE.

The units and accessories of Radio Set AN/PRC-41A, listed in tables 1-1 and 1-2, permit use of the equipment in various installation configurations. All of this equipment is not used at the same time for a particular installation. Refer to section 2 of this handbook for installation instructions.

3-3. OPERATING PROCEDURES.

a. DESCRIPTION OF CONTROLS. - All controls required for operation of the Radio Set AN/PRC-41A equipment are located on the front panel of Radio Receiver-Transmitter RT-695A/PRC-41. Refer to figure 3-1 for location and identification of the controls of this equipment. Table 3-1 provides a list and functional description of each of these controls.

b. SEQUENCE OF OPERATION. (Refer to figure 3-1.)

Note

Before attempting to operate the equipment, make certain the requirements of the particular installation are satisfied.

(1) Energize Radio Receiver-Transmitter RT-695A/PRC-41 by setting OFF-T/R-T/R/G-DIAL LIGHT switch to T/R or T/R/G. Channel frequency is selected by frequency selector controls either with equipment energized or with its function switch set to OFF.

(2) Adjust audio output to receiver of Handset H-33E/PT to satisfactory level by rotation of VOL (volume) control.

(3) Rotate SQUELCH control counter-clockwise until noise is audible in handset then clockwise slightly until noise disappears.

(4) For transmit operation. press press-to-talk button on Handset E H-33E/PT. Transmission is on same frequency as for receiver operation.

(5) When OFF-T/R-T/R/G-DIAL LIGHT switch is set to T/R/G, reception of guard frequency signal is monitored by handset.

(6) To deenergize equipment, set OFF-T/R-T/R/G-DIAL LIGHT switch to OFF.

c. AUTOMATIC RELAY OPERATION. - When two Radio Set AN/PRC-41A equipments are connected together for automatic relay operation, it is necessary that each equipment be adjusted to a different frequency. Other than frequency adjustment of the two equipments, automatic relay operation is a matter of making the correct cabling connections. Refer to section 2 of this handbook for installation instructions applicable to automatic relay operation.

d. SECURE VOICE OPERATION. - For secure voice operation, Handset H-33E/PT is operated in the same manner as for normal mode but is connected to the appropriate connector on the TSEC/KY-38 instead of the RT-695A/PRC-41. Refer to section 2 of this handbook for installation instructions applicable to secure voice operation.

3-4. OPERATOR'S MAINTENANCE.

a. OPERATING CHECKS. - Before using Radio Set AN/PRC-41A in a tactical operation, make the following checks to ensure that the equipment is operative.

(1) When Storage Battery BB-451/U is used to provide primary power for Radio Receiver-Transmitter RT-695A/PRC-41, check the charging log chart under the battery cover to ensure that the battery has been recently charged.

(2) If the tactical situation permits, the operator should establish communications with a netting equipment on several channels across the range as soon as practicable. An operational test establishes conclusively whether the equipment is suitable for tactical operation.

(3) The tactical situation may not permit an operational check. In this event, check for the availability

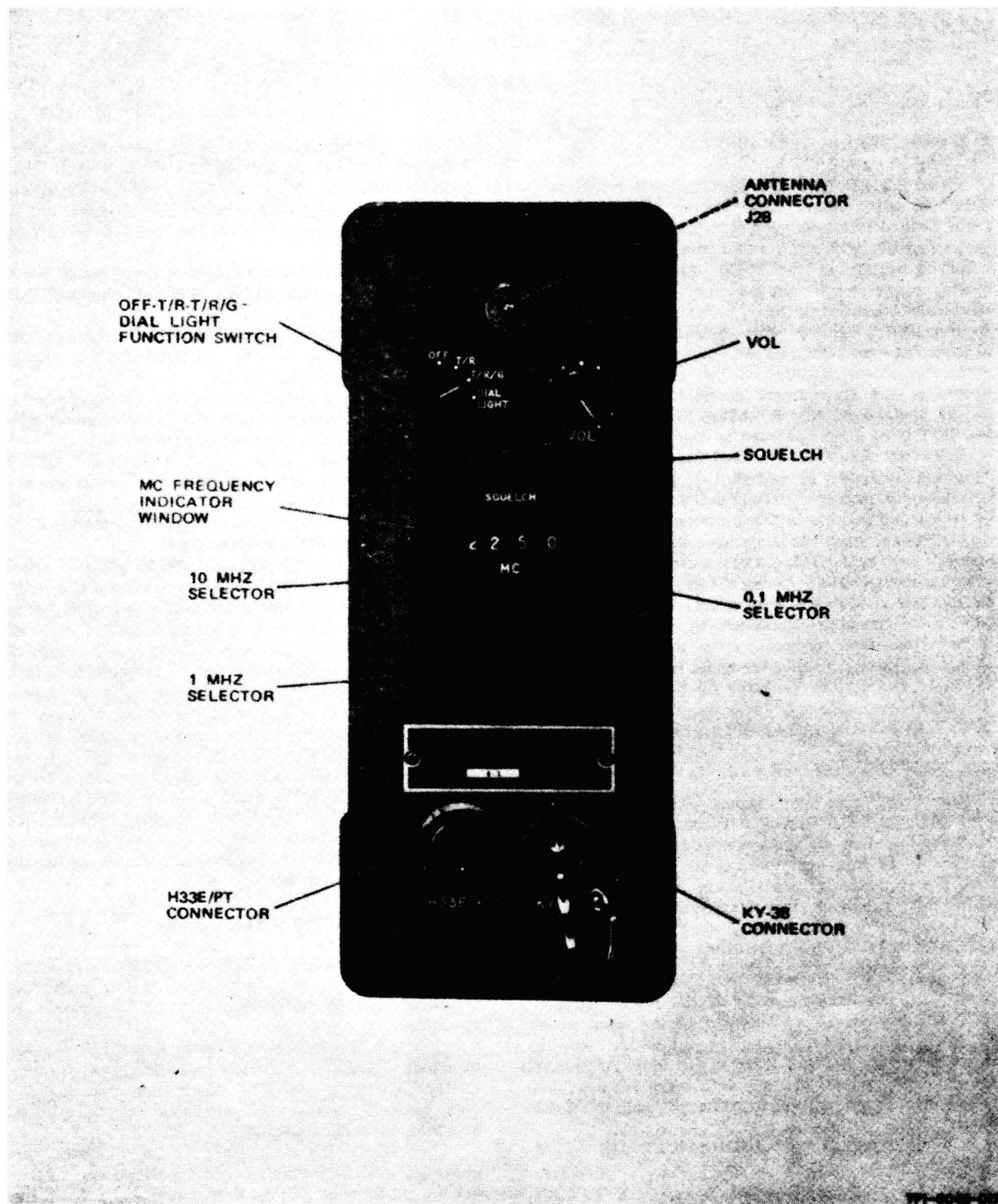


Figure 3-1. Radio Receiver-Transmitter RT-695A/PRC-41. Front Panel Components



TABLE 3-1. RADIO SET AN/PRC-41A, CONTROLS

CONTROL MARKING	TYPE CONTROL	FUNCTION
OFF-T/R-T/R/G-DIAL LIGHT	Function switch	<p>In OFF position, RT-695A/PRC-41 is deenergized. In T/R position, RT-695A/PRC-41 is turned on and activated for transmitting and receiving operations. (Equipment is in receive operation until handset press-to-talk button is pressed.)</p> <p>In T/R/G position, RT-695A/PRC-41 may operate in transmit or receive and, in addition, reception on guard frequency is provided continuously when equipment is in receive operation.</p> <p>In DIAL LIGHT position, RT-695A/PRC-41 may operate in transmit or receive, receive on guard frequency, and MC frequency indicator window is lighted. This position is spring-loaded and must be held on when it is desirable to light indicator windows.</p>
SQUELCH	Potentiometer	<p>Rotate SQUELCH control counterclockwise until noise is just heard in handset then clockwise until noise is not heard. This control sets sensitivity level for squelch control over audio output.</p>
VOL	Potentiometer	<p>Enables operator to change audio output level of handset.</p>
MC	Frequency indicator window	<p>Provides direct readout of selected frequency.</p>
10-MHz frequency selector control (left)*	Switch	<p>Rotates through 18 detented positions to select numbers 22 through 39 in MC window and mechanically tunes RT-695A/PRC-41 for hundreds-tens position.</p>
1-MHz frequency selector control (center)*	Switch	<p>Rotates through 10 detented positions to select number 0 through 9 in MC window and mechanically tunes RT-695A/PRC-41 for units position.</p>
0.1-MHz frequency selector control (right)*	Switch	<p>Rotates through 10 detented positions to select numbers 0.0 through 0.9 in MC window and mechanically tunes RT-695A/PRC-41 tenths position.</p>
<p>*The 10-MHz, 1-MHz, and 0.1-MHz frequency selector controls provide manual selection of any one of 1750 channels within 225.0- to 399.9-MHz frequency range.</p>		

of primary power by setting the OFF -T/R-T/R/G-DIAL LIGHT switch to DIAL LIGHT. The dial lights should be lighted in this position. Rotate the SQUELCH control fully counterclockwise and listen in the receiver of Handset H-33E/PT for noise. Absence of noise may indicate a dead receiver.

b. PREVENTIVE MAINTENANCE. - The operator must be concerned with the operability of his equipment. Any degrading of the performance of the

AN/PRC-41A equipment is made most evident by a daily operational check. At such times as the performance of the equipment has been considered to have degraded significantly, the equipment should be sent to a maintenance facility for checking and repair as required. Because of the absence of indicator devices and the simplicity of operation of the AN/PRC-51A equipment, operator maintenance is limited to surface protection and fuse replacement. The operator should attempt, in so far as field operations will

allow, to keep the surfaces, plugs and jacks, controls, and harness free from excessive moisture, dust and dirt, or other foreign materials. Refer to paragraph 3-4c for the procedure of replacing fuses.

c. EMERGENCY MAINTENANCE. - If the equipment fails to operate during a tactical operation, the operator should immediately check the condition of charge of Storage Battery BB-451/U (if the BB-451/U is in use), make a complete check to see that all cables are undamaged and that their connectors are secure, and check for the availability of primary power by setting the OFF-T/R-T/R/G-DIAL LIGHT switch to DIAL LIGHT (paragraph 3-4a(3)). If the dial light will not light and the equipment is completely dead, replace the fuses in Radio Receiver-Transmitter RT-695A/PRC-41 and Power Supply PP-3700/PRC-41 (if it is in use) according to the following steps of procedure. Refer to figure 3-2. If Power Supply PP-3700/PRC-41 is in use, before replacing fuses set the OFF-T/R-T/R/G-DIAL LIGHT switch to OFF then to one of the other switch positions and recheck operation.

(1) RADIO RECEIVER-TRANSMITTER

RT-695A/PRC-41. (Refer to figure 3-2.)

(a) Separate Radio Receiver-Transmitter RT-695A/PRC-41 from Mounting MT-2976/PRC-41, from Power Supply PP-3700/PRC-41, or from rucksack frame and Storage Battery BB-451/U depending on type of installation involved.

(b) Loosen four captive screws at bottom of Receiver-Transmitter Case CY-3884/PRC-41 and remove CY-3884/PRC-41 from Radio Receiver Transmitter RT-695A/PRC-41.

(c) Remove fuse F1 and spare fuse from rear of RT-695A/PRC-41. Replace fuse F1 with spare fuse. Replace Receiver-Transmitter Case CY-3884/PRC-41 on Radio Receiver-Transmitter RT-695A/PRC-41.

(d) Replace Radio Receiver-Transmitter RT-695A/PRC-41 into installation from which it was removed and attempt operation. If fuse replacement fails to correct equipment malfunction, RT-695A/PRC-41 must be sent to maintenance facility for further troubleshooting and repair as required.

(2) POWER SUPPLY PP-3700/PRC-41.

(Refer to figure 3-2.)

(a) Separate Power Supply PP-3700/PRC-41 from Radio Receiver-Transmitter RT-695/PRC-41 or Mounting MT-2977/PRC-41 depending on type of installation involved.

(b) Loosen two captive screws at top of Power Supply PP-3700/PRC-41 and remove dust cover.

(c) Remove fuses F1 and F2 and replace with spare fuses. Replace dust cover.

(d) Reconnect Power Supply PP-3700/PRC-41 into installation from which it was removed and attempt operation. If fuse replacement fails to correct equipment malfunction, attempt operation of Radio Receiver-Transmitter RT-695/PRC-41 with fully charged Storage Battery BB-451/U. If RT-695A/PRC-41 can be operated with BB-451/U but not with PP-3700/PRC-41 which has had fuses replaced, PP-3700/PRC-41 must be sent to maintenance facility for further troubleshooting and repair as required. If RT-695A/PRC-41 cannot be operated with BB-451/U, trouble is located in the RT-695A/PRC-41.

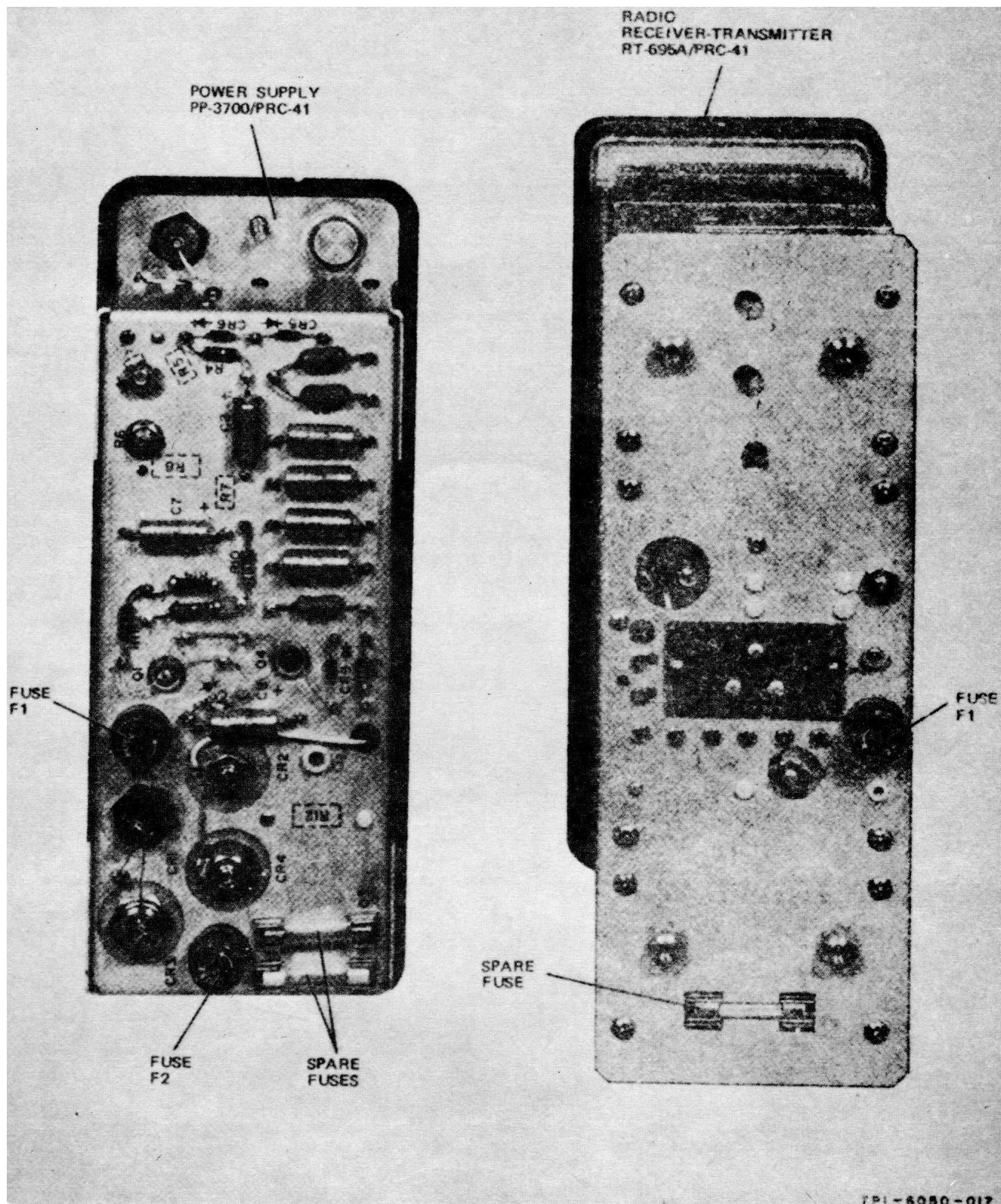


Figure 3-2. Radio Receiver-Transmitter RT-695A/PRC-41 and Power Supply PP-3700/PRC-41, Rear Views, Fuse Locations

# APPENDIX A

## ORGANIZATIONAL MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS LIST

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### Section I. INTRODUCTION

**A-1. Scope**

This appendix lists repair parts required for the performance of organizational maintenance of Radio Set AN/PRC-41A.

**NOTE**

No special tools, test, or support equipment is required

**A-2. General**

This repair parts list is divided into the following sections:

*a. Prescribed Load Allowance (PLA)-Section II.* A composite listing of the repair parts having quantitative allowances for initial stockage at the organizational level.

*b. Repair Parts for Organizational Maintenance-Section III.* A list of repair parts authorized for the performance of maintenance at the organizational level.

*c. Index—Federal Stock Number and Reference Number Cross-Reference to Figure and Item Number or Reference Designation—Section IV.* A list of Federal stock numbers in ascending numerical sequence, followed by a list of reference numbers in ascending alphanumeric sequence, cross-referenced to the figure number and reference designation.

*d. Index--Reference Designation Cross Reference to Page Number-Section V.* A list of reference designations cross-referenced to page numbers

**A-3. Explanation of Columns**

The following provides an explanation of columns in the tabular lists:

*a. Source, Maintenance, and Recoverability Codes (SMR).*

(1) Source Codes indicate the selection status and source for the listed item. Source codes are

<i>Code</i>	<i>Explanation</i>
P-	Repair parts which are stocked in or supplied from the GSA/DSA, or Army supply system and authorized for use at indicated maintenance categories.
P2-	Repair parts which are procured and stocked for insurance purposes because the combat or military essentiality of the end item dictates that a minimum quantity be available in the supply system.

<i>Code</i>	<i>Explanation</i>
P9-	Assigned to items which are NSA design controlled: unique repair parts, special tools, test, measuring and diagnostic equipment, which are stocked and supplied by the Army COMSEC logistic system, and which are not subject to the provisions of AR 380-41.
P10-	Assigned to items which are NSA design controlled: special tools, test, measuring and diagnostic equipment for COMSEC support, which are accountable under the provisions of AR 380-41, and which are stocked and supplied by the Army COMSEC logistic system.
M-	Repair parts which are not procured or stocked, but are to be manufactured at indicated maintenance levels.
A-	Assemblies which are not procured or stocked as such, but are made up of two or more units. Such component units carry individual stock numbers and descriptions. are procured and stocked separately and-can be assembled to form the required assembly at indicated maintenance categories.
X-	Parts and assemblies which are not procured or stocked and the mortality of which normally is below that of the applicable end item or component. The failure of such part or assembly should result in retirement of the end item from the supply system.
X1-	Repair parts which are not procured or stocked. The requirement for such items will be filled by use of the next higher assembly or component.
X2-	Repair parts which are not stocked. The indicated maintenance category requiring such repair parts will attempt to obtain same through cannibalization. Where such repair parts are not obtainable through cannibalization Requirements will be requisitioned, with accompanying justification, through normal supply channels.
G-	Major assemblies that are procured with PEMA funds for initial issue only as exchange assemblies at DSU and GSU level. These assemblies will not be stocked above DS and GS level or returned to depot supply level.

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(2) Maintenance code indicates the lowest category of maintenance authorized to install the listed item. The maintenance level code is—

Code	Explanation
O	Organizational maintenance

(3) Recoverability codes indicate whether unserviceable items should be returned for recovery or salvage. Items not coded are expendable. Recoverability codes are—

Code	Explanation
R—	Repair parts and assemblies which are economically repairable at DSU and GSU activities and are normally furnished by supply on an exchange basis.
S—	Repair parts and assemblies which are economically repairable at DSU and GSU activities and which normally are furnished by supply on an exchange basis. When items are determined by a GSU to be uneconomically repairable, they still be evacuated to a depot for evaluation and analysis before final disposition.
T—	High dollar value recoverable repair parts which are subject to special handling and are issued on an exchange basis. Such repair parts normally are repaired or overhauled at depot maintenance activities.
U—	Repair parts specifically selected for salvage by reclamation units because of precious metal content, critical materials, or high dollar value reusable casings or castings.

*b. Federal Stock Number.* This column indicates the Federal stock number assigned to the item and will be used for requisitioning purposes.

*c. Description.* This column indicates the Federal item name and any additional description of the item required. A part number, or other reference number, is followed by the applicable five-digit Federal supply code for manufacturers in parenthesis.

*d. Unit of Measure.* A two-character alphabetical abbreviation indicating the amount or quantity of the item upon which the allowances are based, e.g., ft., ea, pr, etc.

*e. Quantity Incorporated in Unit.* This column indicates the quantity of the item used in the AN/PRC-41A.

*f. 15-Day Organizational Maintenance Allowance.*

(1) The allowance columns are divided into four subcolumns. Indicated in each subcolumn, opposite the item, is the total quantity of items authorized for the number of equipments supported. Items authorized for use as required, but not for initial stockage, are identified with an asterisk in the allowance column.

(2) The quantitative allowances for organizational level of maintenance represents one initial prescribed load

for a 15-day period for the number of equipments supported. Units and organizations authorized additional prescribed loads will multiply the number of prescribed loads authorized by the quantity of repair parts reflected in the appropriate density column to obtain the total quantity of repair parts authorized.

(3) Organizational units providing maintenance for more than 100 of these equipments shall determine the total quantity of parts required by converting the equipment quantity to a decimal factor by placing a decimal point before the next to last digit of the number to indicate hundredths, and multiplying the decimal factor by the parts quantity authorized in the 51-100 allowance column. Example, authorized allowance for 51-100 equipments is 40; for 150 equipments multiply 40 by 1.50 or 60 parts required.

(4) Subsequent changes to allowances will be limited as follows: No change in the range of items is authorized. If additional items are considered necessary, recommendations should be forwarded to Commanding General, US Army Electronics Command, ATTN: AMSEL-MA-C, Fort Monmouth, N. J. 07703 for exception or revision to the allowance list. Revisions to the range of items authorized will be made by the USAECOM National Maintenance Point based upon engineering experience, demand date, or TAERS information.

*g. Illustrations.*

(1) *Figure number.* Indicates the figure number in which the item is shown.

(2) *Item number or reference designation.* Indicates the reference designation used to identify the item in the illustration.

### A.4. Special Information

Repair parts mortality is computed from failure rates derived from experience factors with the individual parts in a variety of equipments. Variations in the specific application and periods of use of electronics equipment, the fragility of electronic piece parts, plus intangible material and quality factors intrinsic to the manufacture of electronic parts, do not permit mortality to be based on hours of end item use. However, long periods of continuous use under adverse conditions are likely to increase repair parts mortality.

### A-5. Location of Repair Parts

*a.* This appendix contains two cross-reference indexes (secs. IV and V) to be used to locate a repair part when either the Federal stock number, reference number (manufacturer's part number), or reference designation is known. The first column in each index is prepared in numerical or alphanumerical sequence in ascending order. The reference numbers (manufacturer's part numbers)

## A-2. Change 1

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are listed immediately following the last listed Federal stock number.

b. When the Federal stock number or reference number is known, follow the procedures given in (1) and (2) below.

(1) Refer to the index of Federal stock numbers (sec. IV) and locate the Federal stock number or reference number. The Federal stock number or reference number is cross-referenced to the applicable figure and reference designation.

(2) When the reference designation is determined, refer to the reference designation index (sec. V). The reference designations are listed in alphanumerical order followed by numerical ascending order and are cross-referenced to the page number on which they appear in the repair parts list (sec. III). Refer to the page number noted in

the index and locate the reference designation in the repair parts list (col 7b).

c. When the reference designation is known, follow the procedures given in b (2) above.

d. When neither the Federal stock number, reference number, nor reference designation is known, identify the part in the illustration and follow directions given in c above or scrutinize column 3 of the repair parts list (sec. III).

**A-6. Federal Supply Codes for Manufacturers**

<i>Code</i>	<i>Manufacturer</i>
13499.....	Collins Radio Co.
80058.....	Joint Electronic Type Designation System
81349.....	Military Specification
96906.....	Military Standards

**(Next page is A-5)**

**Change 1 A-3**

TM 11-5820-510-12-1  
**SECTION II PRESCRIBED LOAD ALLOWANCE**

(1) FEDERAL STOCK NUMBER	(2) DESCRIPTION	(3) 15-DAY ORG MAINT ALLOWANCE				
		USABLE ON CODE	(a) 1-5	(b) 6-20	(c) 21-50	(d) 51-100
5820-104-9511	AMPLIFIER, INTERMEDIATE FREQUENCY: 528-0372-017; (13499)			1	3	5
5820-890-8563	MODULATOR, RADIO TRANSMITTER: 528-0089-017; (13499)			1	1	2
5820-986-7402	POWER SUPPLY, DIRECT CURRENT: 528-0084-005; (13499)				1	2
5820-991-2229	AUDIO ASSEMBLY: 528-0087-005; (13499)			1	1	2
5821-017-8262	RECEIVER, GUARD: 528-0090-005; (13499)		1	2	6	11
5920-281-0210	FUSE CARTRIDGE: F02A250V4AS; (81349)		1	2	6	11
5985-956-4991	ANTENNA-OMNI: AS1404PRC41; (80058)					1

**SECTION III REPAIR PARTS FOR ORGANIZATIONAL MAINTENANCE**

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION  REFERENCE NUMBER & MFR. CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 15-DAY ORGANIZATIONAL MAINTENANCE ALW				(7) ILLUSTRATIONS	
					(a)	(b)	(c)	(d)	(a) FIG NO.	(b) ITEM NO. or REFERENCE DESIGNATION
					1-5	6-20	21-50	51-100		
P--O	5820-104-0351 5985-956-4991	RADIO SET AN/PRC-41A (THIS ITEM IS NONEXPENDABLE) ANTENNA-OMNI: AS1404PRC41; (80058)	EA	1	*	*	*	1		A1
G--O	5995-135-0205	CABLE ASSEMBLY, SPECIAL PURPOSE: CX10831PRC41A; (80058)	EA	1						W1
G--O		FRAME, RUCKSACK: GFP; ( 80058 )	EA	1					1-2	MP2
G--O	5965-950-0602	HANDSET-H-33F/PT: GFP; ( 80058 )	EA	1					1-2	HS1
G--O		HARNESS, ELECTRICAL KIT: 756-5343-004; (13499)	EA	1						A2
G--O-T		RECEIVER-TRANSMITTER, RADIO: RT695APRC41; (80058)	EA	1					1-2	UNIT 1
P--O-S	5820-991-2229	AUDIO ASSEMBLY: 528-0087-005; (13499)	EA	1	*	1	1	2	1-4	1A4
X2-0	5305-023-2237	SCREW, SHOULDER : 544-8223-002; (13499)	EA	2						1A4H2
P--O-T	5820-104-9511	AMPLIFIER, INTERMEDIATE FREQUENCY: 528-0372-017; (13499)			*	1	3		1-4	1A3
P--O-S	5820-890-8563	MODULATOR, RADIO TRANSMITTER: 528-0089-017; ( 13499 )	EA	1	*	1	1	2	1-4	1A6
X2-0	5305-023-2237	SCREW, SHOULDER: 544-8223-002; (13499)	EA	2						1A6H2
P--O-S	5820-986-7402	POWER SUPPLY DIRECT CURRENT: 528-0084-005; (13499)	EA		*	*	1	2	1-4	1A1
X2-0	5305-957-7794	SCREW MACHINE, MODIFIED: 544-8109-002; (13499)	EA	4						1A1H4
P--O-T	5821-017-8262	RECEIVER, GUARD: 528-0090-005; (13499)	EA	1	1	2	6	11		1A7
X2-0	5305-867-0097	SCREW SHOULDER: 548-7159-002; (13499)	EA	2						1A7H2
P--O	5920-281-0210	FUSE, CARTRIDGE: F02A250V4AS; ( 81349 )	EA	1	1	2	6	11		1A9F1
P--O	5355-073-8736	KNOB, SWITCH, FUNCTION: 554-6973-003; (13499)	EA	1	*		*	*	3-1	1A9MP5
X2-0		SETSCREW: MS51053-428; (96906)	EA	2						1A9MP5H1



**SECTION IV INDEX-FEDERAL STOCK NUMBER & REFERENCE NUMBER CROSS REFERENCE  
TO FIGURE & ITEM NUMBER OR REFERENCE DESIGNATION**

FEDERAL STOCK NUMBER	FIGURE NUMBER	ITEM NUMBER OR REF. DESIGNATION	FEDERAL STOCK NUMBER	FIGURE NUMBER	ITEM NUMBER OR REF. DESIGNATION	FEDERAL STOCK NUMBER	FIGURE NUMBER	ITEM NUMBER OR REF. DESIGNATION
5305-023-2237								
5305-023-2237								
5305-867-0097								
5305-952-7794		1A1H4						
5355-073-8736	3-1	1A9MP5						
5820-104-9511	1-4	1A3						
5820-890-8563	1-4	1A6						
5820-986-7402		1A1						
5820-991-2229	1-4	1A4						
5821-017-8262		1A7						
5920-281-0210		1A9F1						
5965-950-0602	1-2	HS1						
5985-956-4991		A1						
5995-135-0205		W1						
REF NO.	MFG CO.	FIG NO.	ITEM NO. OR REF DES.					
AS1404PRC41	80058		A1					
CX10831PRC41A	80058		W1					
GFP	80058	1-2	HS1					
GFP	80058	1-2	MP2					
F02A250V4AS	81349		1A9F1					
MS51053-428	96906		1A9MP5H1					
RT695APRC41	80058	1-2	UNIT 1					
528-0084-005	13499	1-4	1A1					
528-0087-005	13499	1-4	1A4					
528-0089-017	13499	1-4	1A6					
528-0090-005	13499		1A7					
528-0372-017	13499	1-4	1A3					
544-8109-002	13499		1A1H4					
544-8223-002	13499		1A4H2					
544-8223-002	13499		1A6H2					
548-7159-002	13499		1A7H2					
554-6973-003	13499	3-1	1A9MP5					
556-5343-004	13499		A2					

**SECTION V INDEX-REFERENCE DESIGNATION  
CROSS-REFERENCE TO PAGE NUMBER**

REFERENCE DESIGNATION	PAGE NUMBER	REFERENCE DESIGNATION	PAGE NUMBER	REFERENCE DESIGNATION	PAGE NUMBER
A1	C-6				
A2	C-6				
HS1	C-6				
MP2	C-6				
UNIT 1	C-6				
W1	C-6				
1A1	C-6				
1A1H4	C-6				
1A3	C-6				
1A4	C-6				
1A4H2	C-6				
1A6	C-6				
1A6H2	C-6				
1A7	C-6				
1A7H2	C-6				
1A9F1	C-6				
1A9MP5	C-6				
1A9MP5H1	C-6				

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