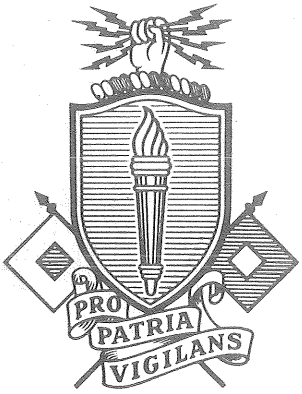
ST 11-174
Supersedes ST 11-174 , 1 SEP 64

REFERENCE DATA FOR
FIELD RADIO COMMUNICATIONS EQUIPMENT



US ARMY

This publication is provided for resident and extension course instruction at the U. S. Army Signal Center and School only. It reflects the current thought of this school and conforms to published Department of the Army doctrine as closely as possible.

1 MAY 1965

HEADQUARTERS
U. S. ARMY SIGNAL CENTER AND SCHOOL
FORT MONMOUTH, NEW JERSEY

1 May 1965

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Suggestions and criticisms relative to the form, content, purpose, or use of this text are invited and should be referred to the Commandant, U. S. Army Signal Center and School, Fort Monmouth, New Jersey, ATTN: SIGOAO-2.

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Section I. GENERAL
PURPOSE and SCOPE

This text is prepared for use in resident and nonresident courses of the US Army Signal Center and School. It provides condensed information and technical characteristics of representative field radio communications equipment used by field units up to and including army level. Data on developmental and interim field radio equipment are covered in sections VII and VIII, respectively.

Section II. AMPLITUDE MODULATED RADIO SETS

RADIO SETS AN/GRC-9(*), AN/GRC-87 AND AN/VRC-34

STATUS: Standard B (AN/GRC-9(*)).

STOCK NR: 5820-193-8845 (AN/GRC-9(*)).

REFERENCE: TM 11-263.

GENERAL INFORMATION

Radio Sets AN/GRC-9(*) (fig.1), AN/GRC-87 (ground version, FSN-5820-543-1997) and AN/VRC-34 (vehicular version, FSN 5820-543-1996) are lightweight, portable, hf field radio sets used in forward areas. Mounting accessories and a power supply are provided for installing and operating the AN/GRC-9(*) in a vehicle. Ultimately, the AN/GRC-87 and the AN/VRC-34 (both standard A) will replace the AN/GRC-9(*).

Meter, Field Strength ME-61/GRC has been made a component of the AN/GRC-9(*), AN/GRC-87, and AN/VRC-34 (TM 11-263, C3). The ME-61/GRC is used to provide a relative measurement of transmitted rf field strength.

TECHNICAL CHARACTERISTICS

Type of Service: AM.
RATG: 0.1A1.
2A2.
Voice: 6A3.

Frequency Range: 2 to 12 MC.

Planning Distance:

RATG (CW 0.1A1):	Ground Operation:	48 km.
	Vehicular Operation:	32 km.
RATG (MCW 2A2):	Ground Operation:	32 km.
	Vehicular Operation:	16 km.
Voice (6A3):	Ground Operation:	24 km.
	Vehicular Operation:	16 km.

Antenna: 15-foot whip or 244.5-foot long wire.

Power Out:
3-6 W for voice using field generator.
10 W for CW using field generator.
7 W for Voice using dynamotor power supply.
15 W for CW using dynamotor power supply.

Power Requirement: There is no internal power supply; as a result all voltages must be supplied externally. There are a variety of power sources used:

1. Generator, GN-58 and G-43 (hand-operated).
2. Generator, Gasoline Engine PE-162.
3. Dynamotor Power Supply DY-88/GRC-9.
4. Dynamotor Power Supply DY-105/GRC-9 with a 24-volt battery.
5. Power Supply PP-327/GRC-9 which requires a source of 115 or 230 v.
6. Battery BA-317 can be used to power the receiver.

Special: The radio set has counterpoises CP-12 and CP-13 which can be used when there is inadequate ground. The length of the long-wire antenna can be adjusted for various operating frequencies, and there is a switch for LO-HI power control.

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu ft)	Weight (lb)
Receiver Transmitter RT-77/GRC-9	16 x 11-1/2 x 8-1/2	.91	33
Generator G-43/G	9-5/16 x 5-7/8 x 9-1/4	.29	16
Hand Generator GN-58	10 x 7-1/2 x 7-1/2	.32	29
Dynamotor, Power Supply DY-88/GRC-9	13 x 11-1/4 x 9-1/2	.80	35
Dynamotor, Power Supply DY-105/GRC-9	13-1/2 x 14-1/2 x 10	1.13	38
Power Supply PP-327/GRC-9	20-5/8 x 15-1/4 x 8-1/2	1.54	90

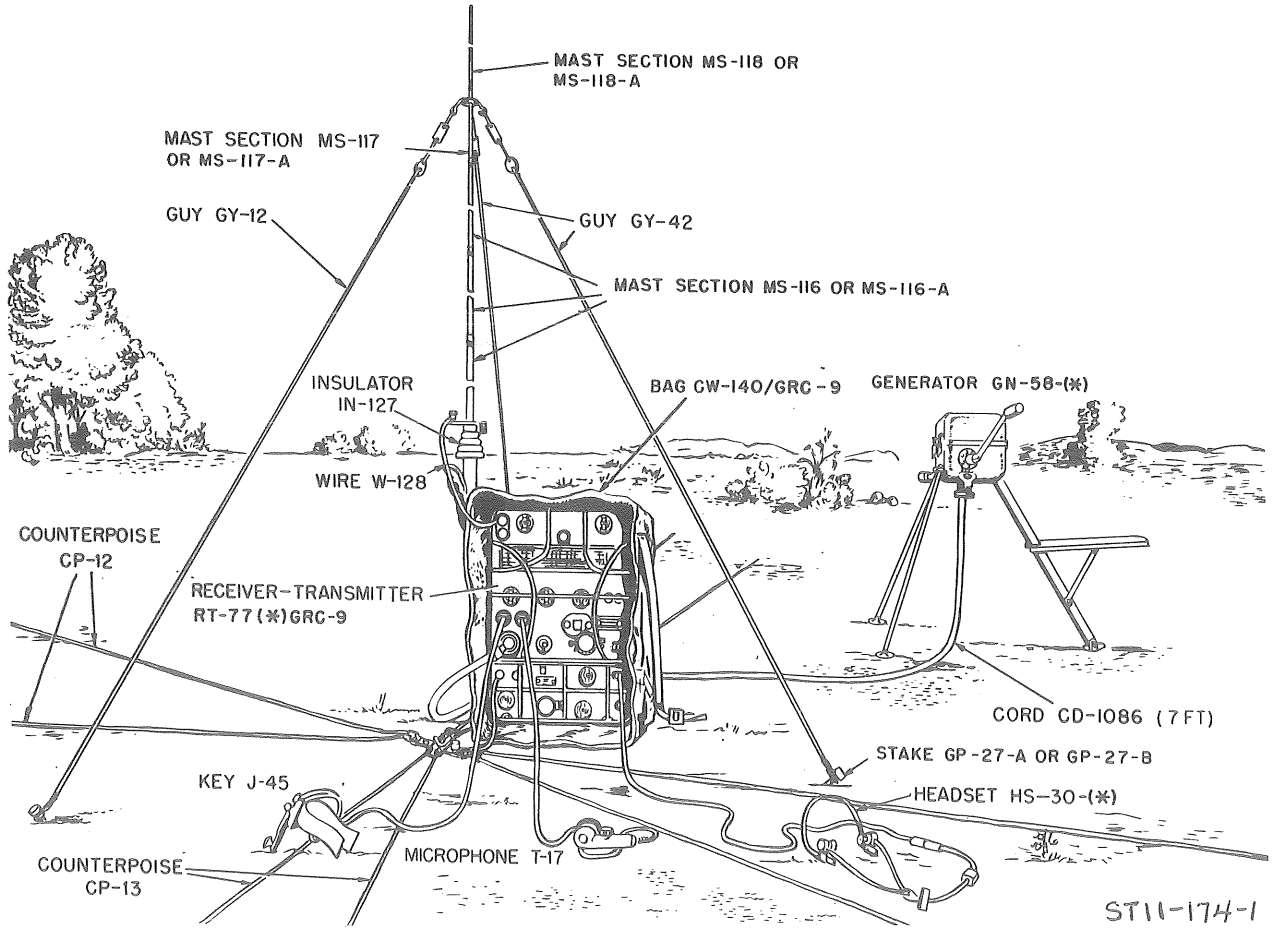


Figure 1. Radio Set AN/GRC-9(*), major components.

RADIO SET AN/GRC-19

STATUS: Standard A.

STOCK NR: 5820-030-0155.

REFERENCE: TM 11-5820-295-10.

GENERAL INFORMATION

Radio Set AN/GRC-19 is a medium range, forward area, hf radio set which provides for transmission and reception of radiotelegraph (RATG), voice signals (amplitude modulated), and also frequency-shifted-keyed (fsk) radioteletype signals. Voice and fsk operation can be conducted either simultaneously or independently. Radioteletypewriter equipment (required for fsk service) is not supplied as a part of the AN/GRC-19.

Radio Set AN/GRC-19 is designed primarily for vehicular installations, however, it can also be installed as a fixed station. The AN/GRC-19 can be used for simplex, duplex, or relay system applications.

The selection of preset channels is accomplished by means of autotune mechanisms which memorize previous settings and return to these settings when the desired channel is selected. The entire system is motor driven and is activated when a new channel is selected.

All tuning of the various stages of the transmitter is done automatically by servomechanisms. After selecting a channel, the operator has only to key the transmitter (using the push-to-talk switch on the microphone or the telegraph key) until a light indicator comes on. This light indicator tells the operator that the transmitter is completely tuned and ready for operation.

Radio Set AN/GRC-19 and Receiver-Transmitter RT-67(*)/GRC-5, form Radio Repeater Set AN/VRC-38. The AN/VRC-38 is used to retransmit signals between the amplitude modulated AN/GRC-19 and the frequency modulated RT-67(*)/GRC-5. The AN/VRC-38 is a mobile radio relay installation that extends the range of Radio Set AN/VRC-35 (a composite of Radio Sets AN/VRC-14, AN/PRC-9, and AN/VRC-24).

The AN/GRC-19 is used in command nets of the infantry division.

TECHNICAL CHARACTERISTICS

Type of Service:	AM. Voice 6A3. RATG 0.1A1.
Frequency Range:	Transmitter: 1.5 to 20 mc. Receiver: 0.5 to 32 mc.
Planning Distance:	Voice: 80 kilometers. RATG: 120 kilometers. For Sky Wave distances, see appropriate charts.
Antenna:	15-ft whip. 50-ohm unbalanced or transformer-fed doublet.
Power Out:	15-ft whip: 13-80 W. Doublet: 80-100 W. 50-ohm unbalanced: 80-100 W.

Power Requirement: 28.5 V DC
The power source is the vehicular system consisting of alternator, rectifier, and battery.

Special: The AN/GRC-19 is used in one-way reversible operation. It should not be loaded to antennas of high input impedance, such as long wire, because the servomechanism will be unable to match high impedances. The transmitter has seven preset channels plus one manual.

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu ft)	Weight (lb)
AN/GRC-19 (receiver-transmitter and mounting combined)	33-7/8 x 14-1/3 x 15-3/4	4.02	253.5

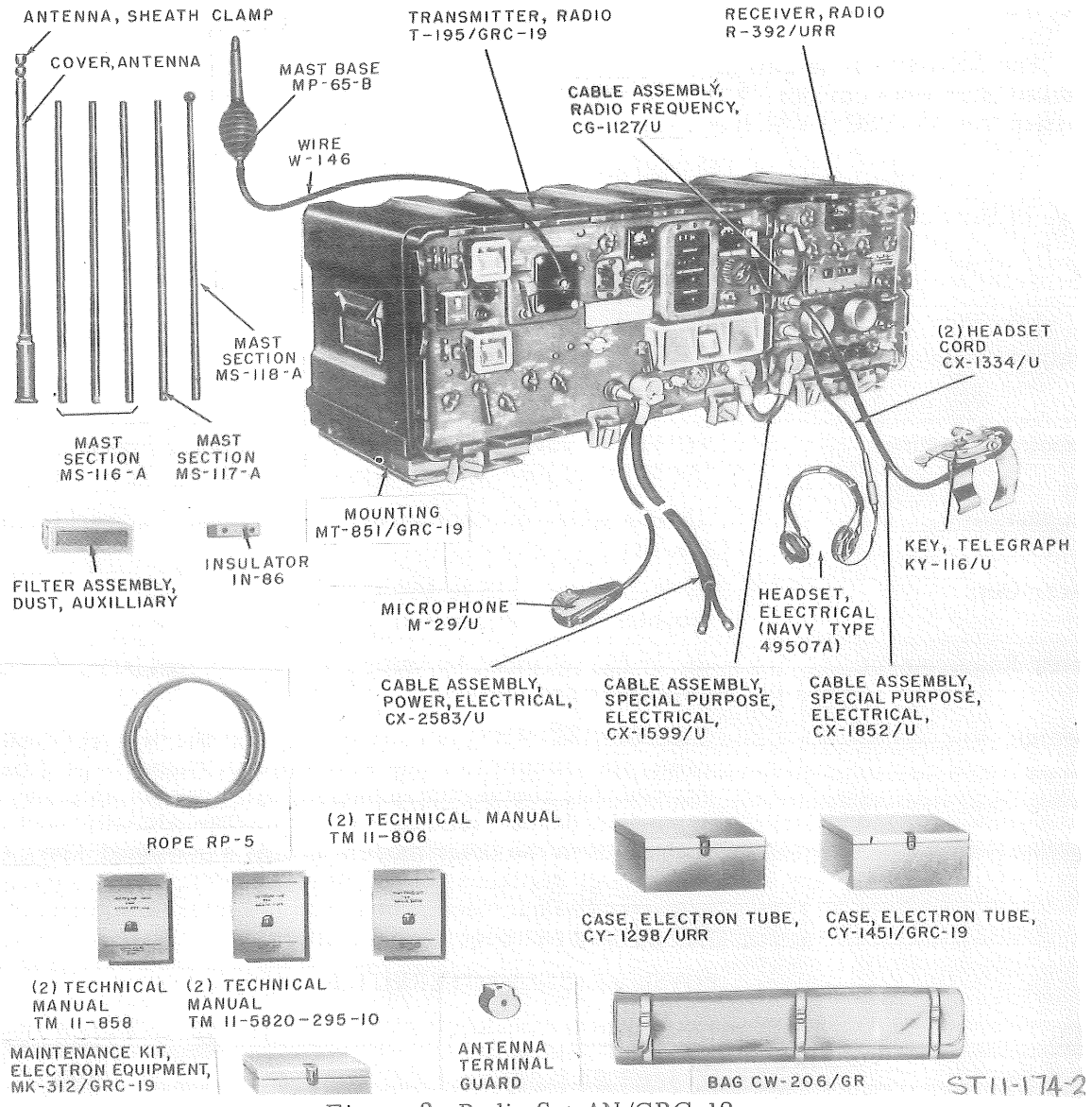


Figure 2. Radio Set AN/GRC-19.

RADIO TELETYPEWRITER SET AN/GRC-46(*)

STATUS: Standard A

STOCK NR: 5815-543-1760

REFERENCE: TM 11-5815-204-10

GENERAL INFORMATION

Radio Teletypewriter Set AN/GRC-46(*) (represents AN/GRC-46, AN/GRC-46A, and AN/GRC-46B) is an assembly of transmitting and receiving teletypewriter equipment arranged in a shelter and mounted on a vehicle. It is a mobile teletypewriter station capable of operating (while vehicle is in motion) in forward areas of a combat zone. This set can provide either separate or simultaneous transmission and reception of voice and radioteletype (RATT) signals.

Radio Teletypewriter Set AN/GRC-46(*) (see figure 4) is mounted in either Shelter, Electrical Equipment S-89C/G (AN/GRC-46, -46B) (see figure 3) or S-144/G (AN/GRC-46A).

The AN/GRC-46 is called the AN/VRC-29 when the components are mounted in a full-tracked personnel carrier. The AN/GRC-46, less TT-76/GGS and shelter, is the airborne division set AN/VSC-1 which is mounted in a 1/4-ton vehicle.

TECHNICAL CHARACTERISTICS

Type of Service: AM.
Voice: 6A3.
RATG: 0.1A1.
FSK: 1.1F1.

Frequency Range: Transmitter: 1.5 to 20 mc.
Receiver: 0.5 to 32 mc.

Planning Distance: 80-120 kilometers. Up to 1,600 kilometers depending on condition of ionosphere, terrain, and frequency.

Antenna: 15-foot whip, 50-ohm unbalanced antenna, or transformer-fed doublet.

Power Out: 15-foot whip: 15 to 100 W.
Doublet: 80 to 100 W.

Power Requirement: 28.5v DC provided by vehicular system consisting of alternator, rectifier, and battery.

Special: The AN/GRC-46(*) is usually used for one-way reversible operation; the transmitter has seven preset channels plus one manual; and the servomechanism will not load antennas of high input impedance, such as long wire. The AN/GRC-46B (fig. 4) differs from the other models in that a new Send-Mark Hold-Rec switch replaces the old Send-Rec-Mark Hold switch, a security file has been added, and the internal arrangement of the shelter has been changed slightly.

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu ft)	Weight (lb)
AN/GRC-46	59 x 77-1/2 x 57	150.46	1,400
AN/GRC-46A	59 x 77-1/2 x 57	150.46	1,175
AN/GRC-46B	62-5/8 x 74 x 57	152.80	1,110

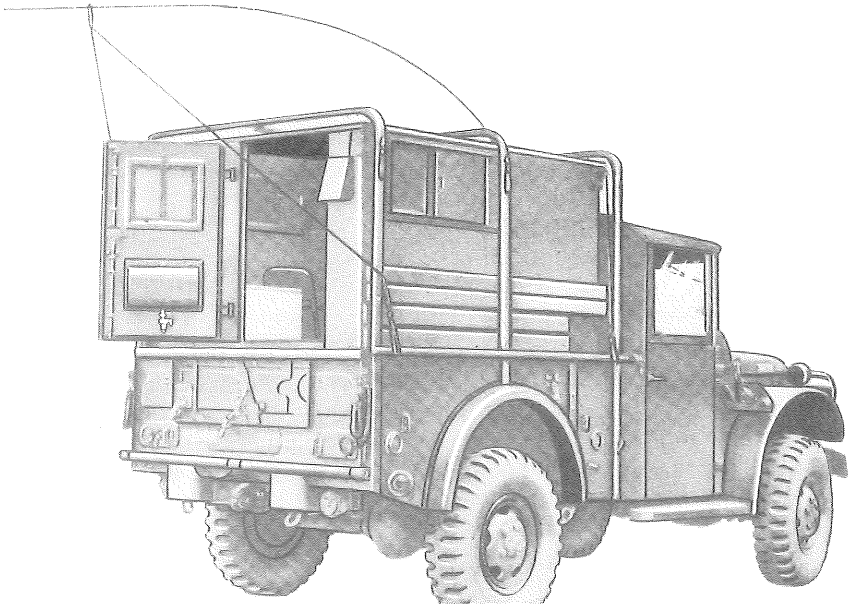


Figure 3. Radio Teletypewriter Set AN/GRC-46(*), mounted on weapons carrier.

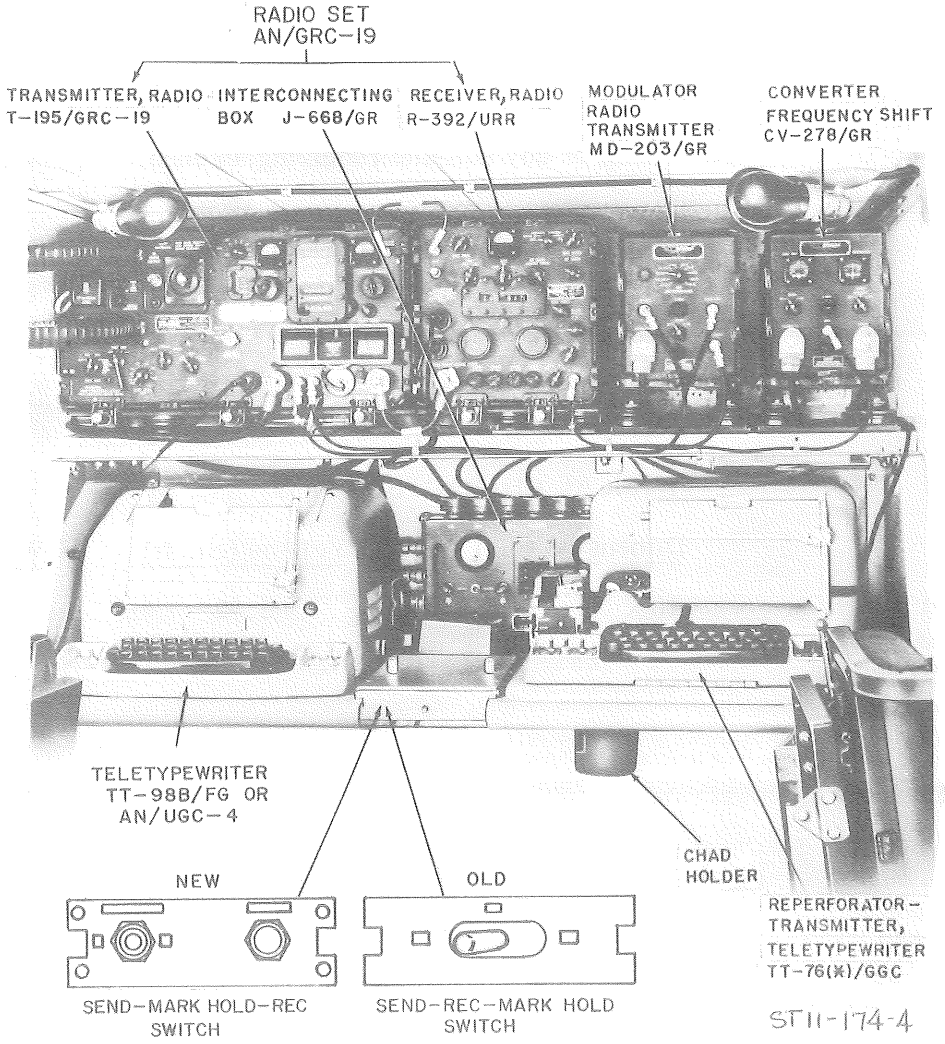


Figure 4. Radio Teletypewriter Set AN/GRC-46B, interior view.

RECEIVING SET, RADIO AN/GRR-5

STATUS: Standard A.

STOCK NR: 5820-248-3508.

REFERENCE: TM 11-295.

GENERAL INFORMATION

Receiving Set, Radio AN/GRR-5 is a receiver intended for use either in a field station or for mobile operation. It may be used alone or in conjunction with an AM transmitter to form a two-way communication system. The superheterodyne type receiver and its power supply are secured together in Cabinet, Electrical Equipment CY-615/URR. Front panel markings are phosphorescent to permit operation in the dark. The AN/GRR-5 is used to monitor the division warning net.

TECHNICAL CHARACTERISTICS

Type of Service:
AM.
Voice 6A3.
RATG 0.1A1.
MCW 2A2.

Frequency Range: 1.5 to 18 mc in four bands.

Antenna: Whip or any suitable receiving antenna.

Power Requirement:
6 v, 12 v, or 24 v DC.
Power source vehicular battery.
Field Operation (portable) 2 ea BA-419/U (90 v DC) and 1 ea BA-405/U (1.5 v DC)
Field Operation (fixed) 115 v AC ± 10%, 50 to 60 cps.

Special: There is a crystal oscillator which provides calibration points every 200 kc.

PHYSICAL CHARACTERISTICS

Item	Dimension (in.)	Volume (cu. ft)	Weight (lb.)
Receiver, Pwr Supply in cabinet, mount and electrical equipment cabinet	18 x 14 x 18-7/8	2.72	69.25

STUDENT NOTES:

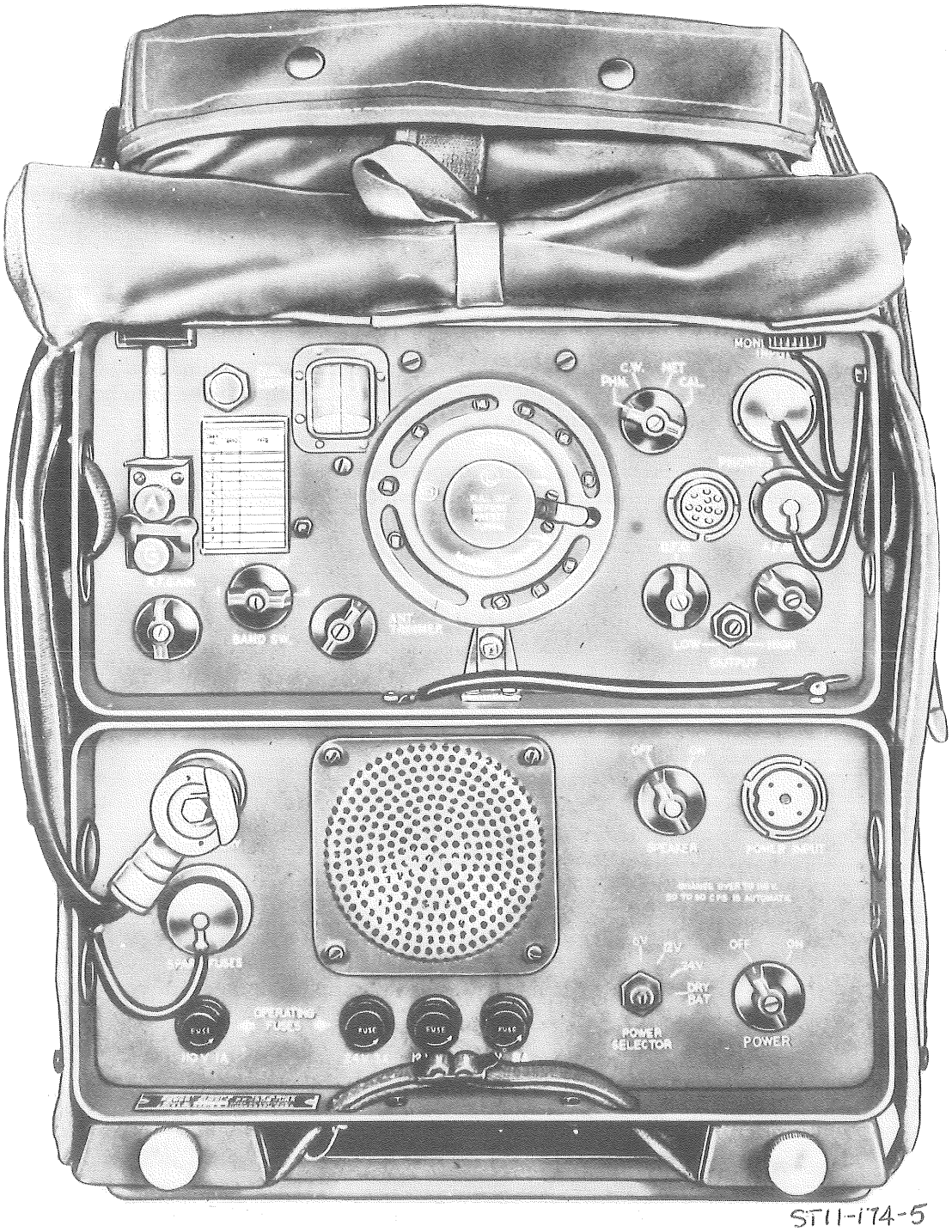


Figure 5. Receiving Set, Radio AN/GRR-5.

RADIO SET AN/GRC-26(*)

STATUS: Standard A.

STOCK NR: 5820-186-9250 (AN/GRC-26, AN/GRC-26A, AN/GRC-26B, AN/GRC-26C). 5820-681-9711 (AN/GRC-26D).

REFERENCE: TM 11-5820-202-10 (AN/GRC-26A -26B -26C)

GENERAL INFORMATION

Radio Set AN/GRC-26(*) (-26D) is a mobile, self-contained, radio teletypewriter station. It provides facilities for transmission and reception of frequency-shift-keyed (fsk), amplitude modulated (am), RATG, and a combination of fsk-am signals. The set is used primarily for fsk facilities. Station-to-station voice communication may be super-imposed on an fsk signal without modifying or recabling the equipment. It can be controlled from the shelter or from a remote location to a distance of 16 kilometers (10 miles).

The AN/GRC-26(*) may be used in either duplex, one-way reversible, or closed loop operation. The components are contained in Shelter, Electrical Equipment S-56(*)/G.

TECHNICAL CHARACTERISTICS

Type of Service:
AM.
Voice 6A3.
FSK 1.1F1.
RATG 0.1A1.
FSK-AM 6A3.

Frequency Range:
2-18 mc (AN/GRC-26A, 26B, and 26C).
1.5-20 mc (AN/GRC-26D).

Planning Distance:
FSK or RATG: 400 kilometers.
Voice: 160 kilometers.

Antenna:
15-ft whip, long-wire, or doublet.

Power Out:
RATG: 400 W (AN/GRC-26A, -26B, -26D).
450 W (AN/GRC-26D).

Voice or Voice-FSK: 300 W (AN/GRC-26A, -26B, -26C).
400 W (AN/GRC-26D).

Power Requirement:
115 v AC 60 cps
Power Source PU-474/M (2 ea. 10 kw generators (fig. 8)).

Special:
100 kc calibration points for receiver

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu ft)	Weight (lb)
Shelter (including installed equipment)	80 x 142 x 84	549.77	5,600 (approx.)
Trailer (including installed power unit)	76 x 108 x 81	381.94	

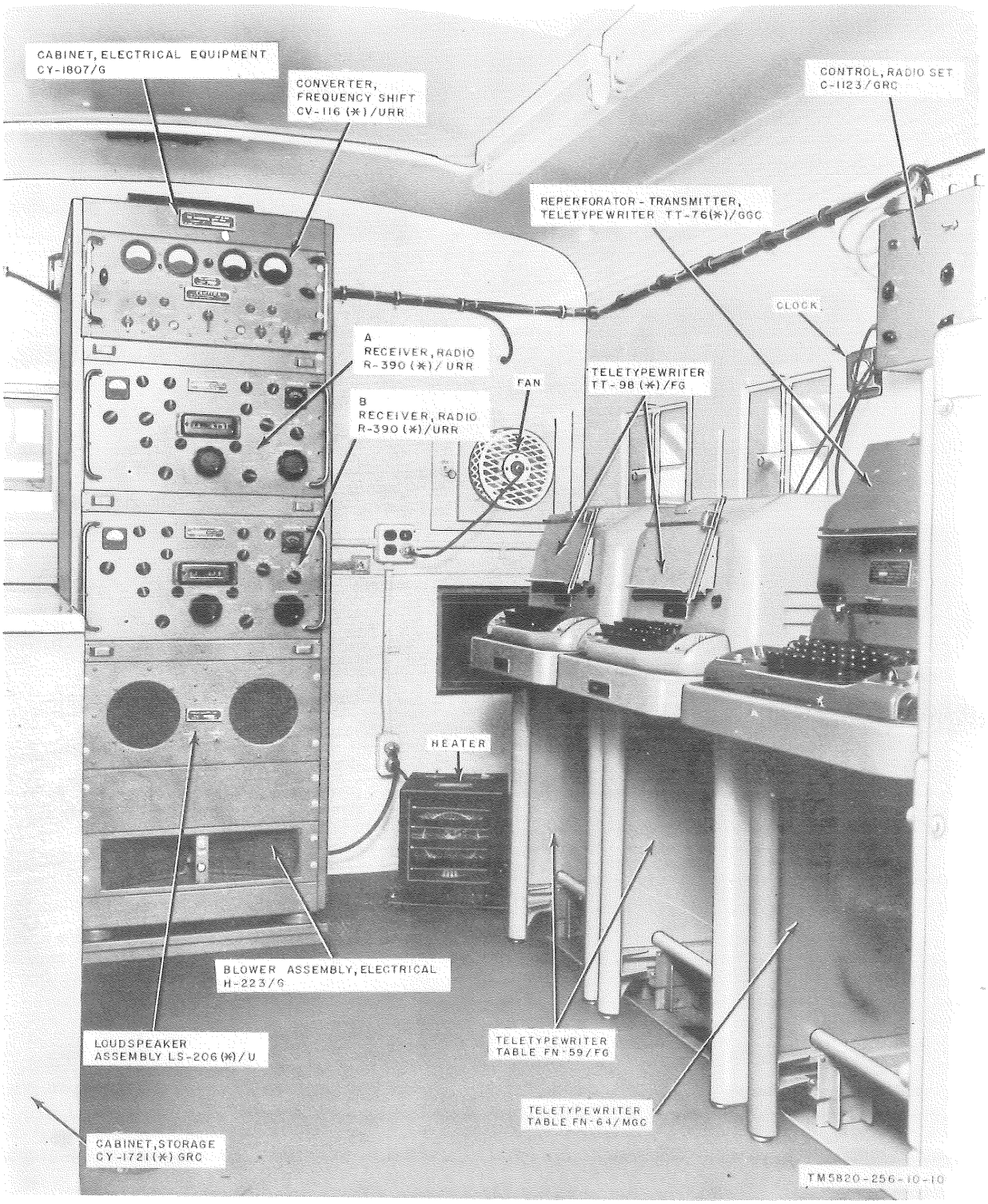


Figure 6. Radio Set AN/GRC-26D, interior front view of shelter.

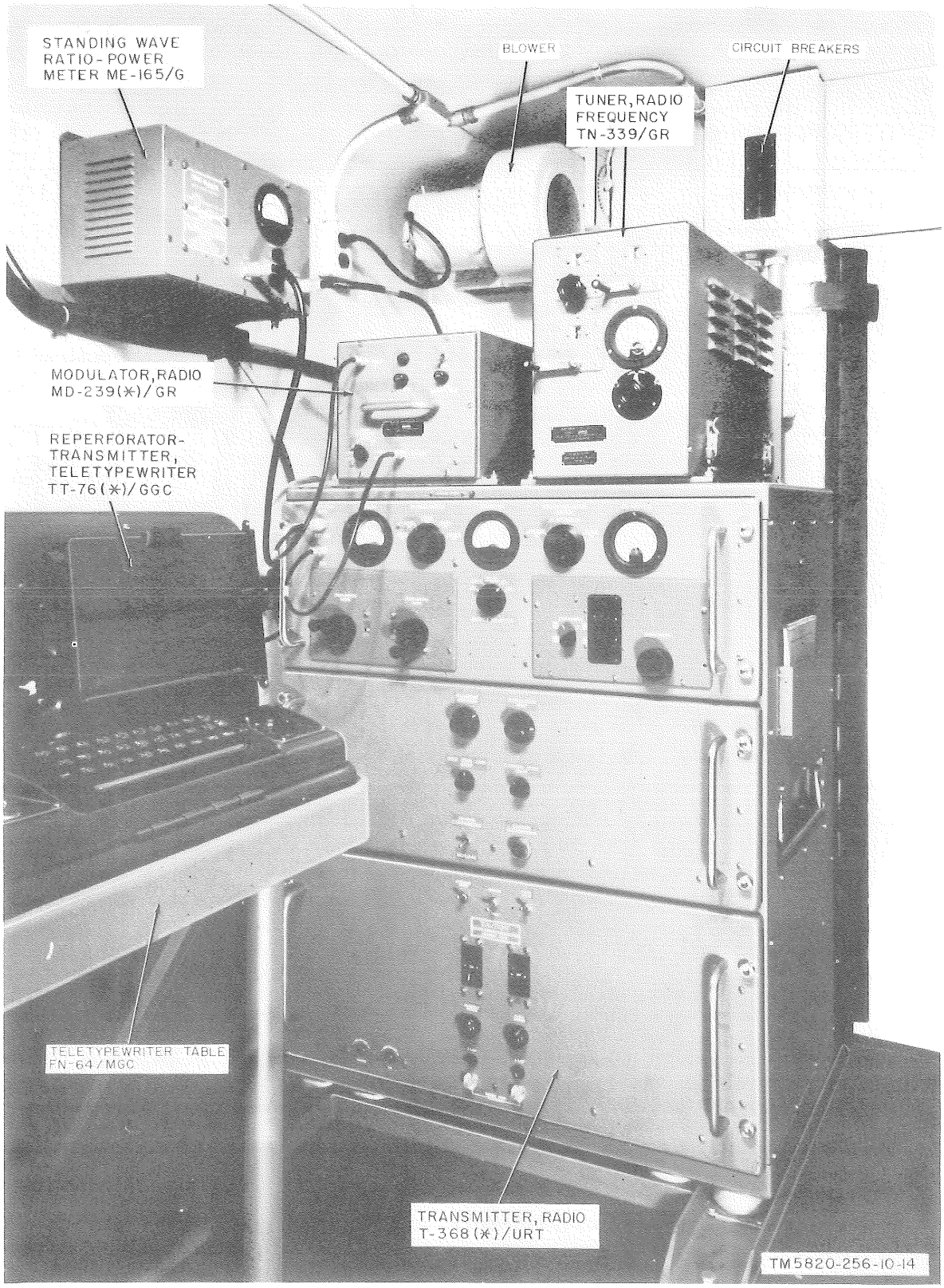


Figure 7. Radio Set AN/GRC-26D, interior rear view of shelter.

TRAILER-MOUNTED GASOLINE GENERATOR SET PU-474/M

The PU-474/M includes a standard 1-1/2 ton, 2-wheel cargo trailer M-105A1 on which two 10 kw power units are mounted. The PU-474/M supplies 115 volts, single or 3-phase, 50-60 cycle current.

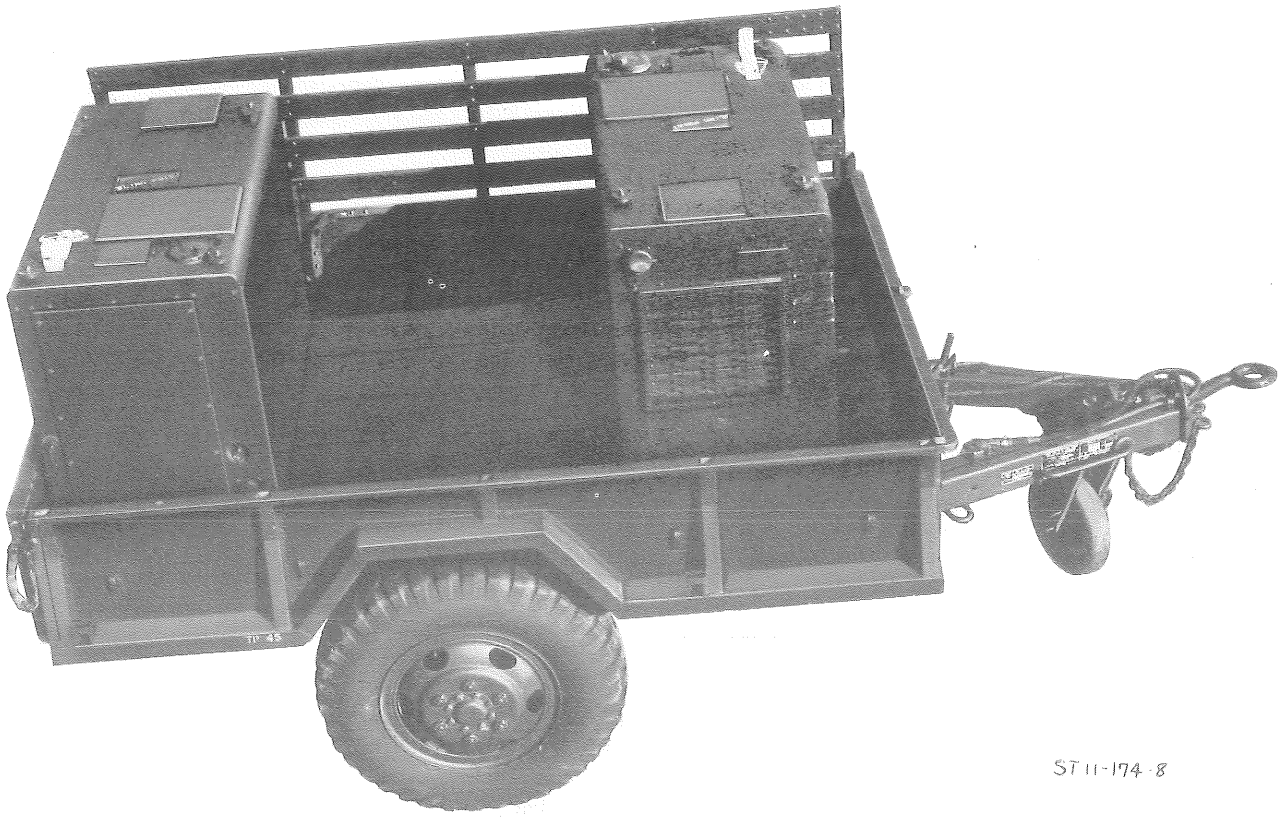


Figure 8. Generator Set PU-474/M.

STUDENT NOTES:

RADIO SET AN/GRC-41

STATUS: Standard A.

STOCK NR: 5820-699-3245.

REFERENCE: TM 11-621.

GENERAL INFORMATION

Radio Set AN/GRC-41 is a radio transmitting and receiving station which provides communication facilities for RATG and radiotelephone (RATEL) operation at ranges up to 1, 600 kilometers (1, 000 miles). The frequency range is from 1.5 to 20 megacycles. The set may be operated while in motion with whip antennas or in fixed locations using a doublet antenna. Either one-way reversible or full-duplex operation may be used.

Radio Set AN/GRC-41 consists primarily of two Receivers, Radio R-390A/URR, one Transmitter, Radio T-368D/URT with Tuner, Radio Frequency TN-339/GR, one Control, Radio Set C-2019A/GR, two Telephone Sets TA-312/PT, and one Generator Set, Gasoline Engine, Trailer Mounted PU-294/U. All components, except the power unit, are shock-mounted.

TECHNICAL CHARACTERISTICS

Type of Service:	AM. Voice 6A3. RATG 0.1A1.
Frequency Range:	Transmitter: 1.5 to 20 mc. Receiver: 0.5 to 32 mc.
Planning Distance:	160 to 1, 600 kilometers (depending on condition of ionosphere, frequency of operation, and terrain).
Antenna:	15-ft whip transmitting. Two 12-ft whip receiving or three doublet antennas.
Power Out:	RATG 450 W. Voice 400 W.
Power Requirement:	115 v AC 50 to 60 cps. Power Source PU-294/G.

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu ft)	Weight (lb.)
Shelter	162 x 96 x 92	792.82	7100
Trailer (with power unit installed)	108 x 81 x 76	381.94	4135

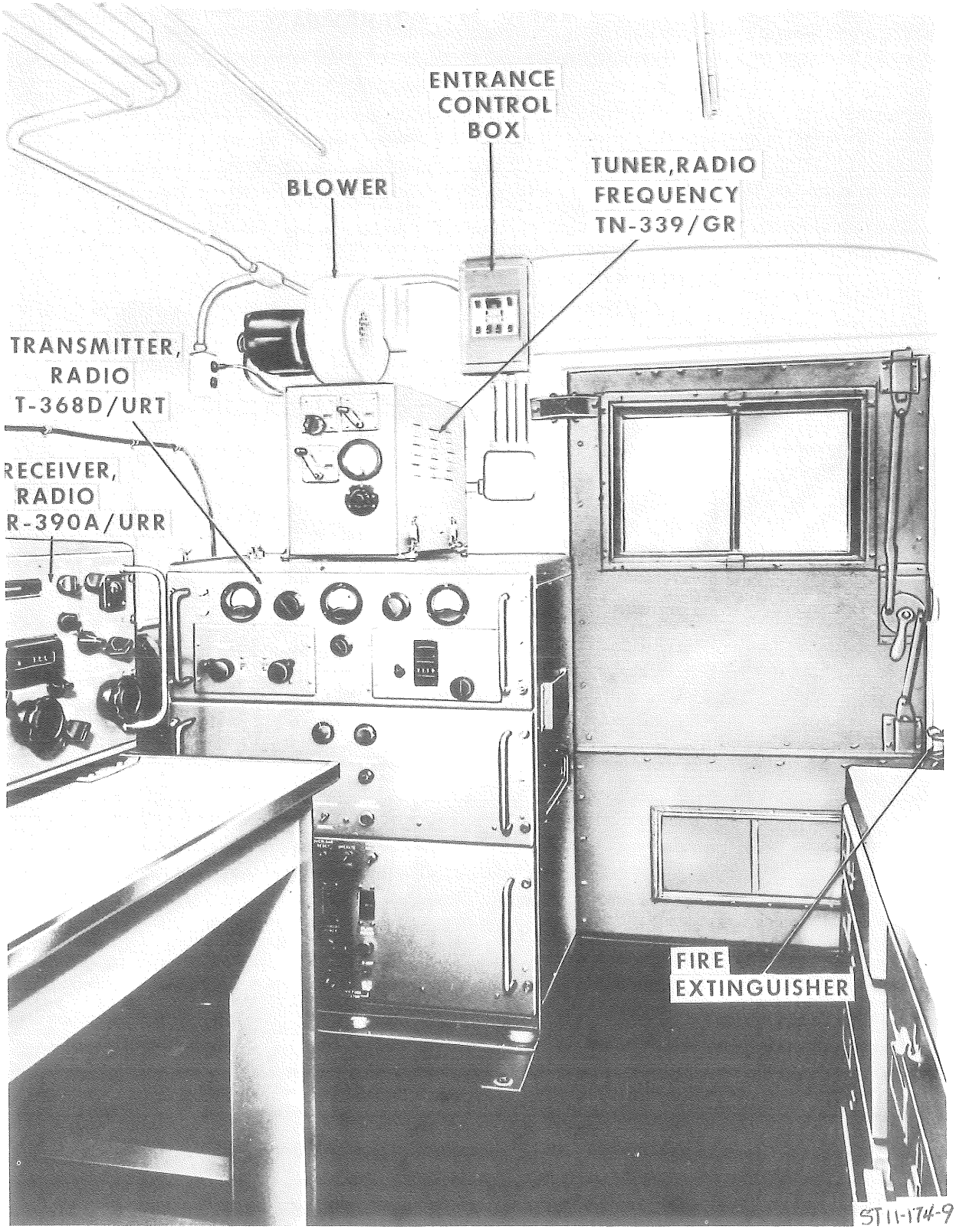


Figure 9. Radio Set AN/GRC-41, rear view of interior, curbside.

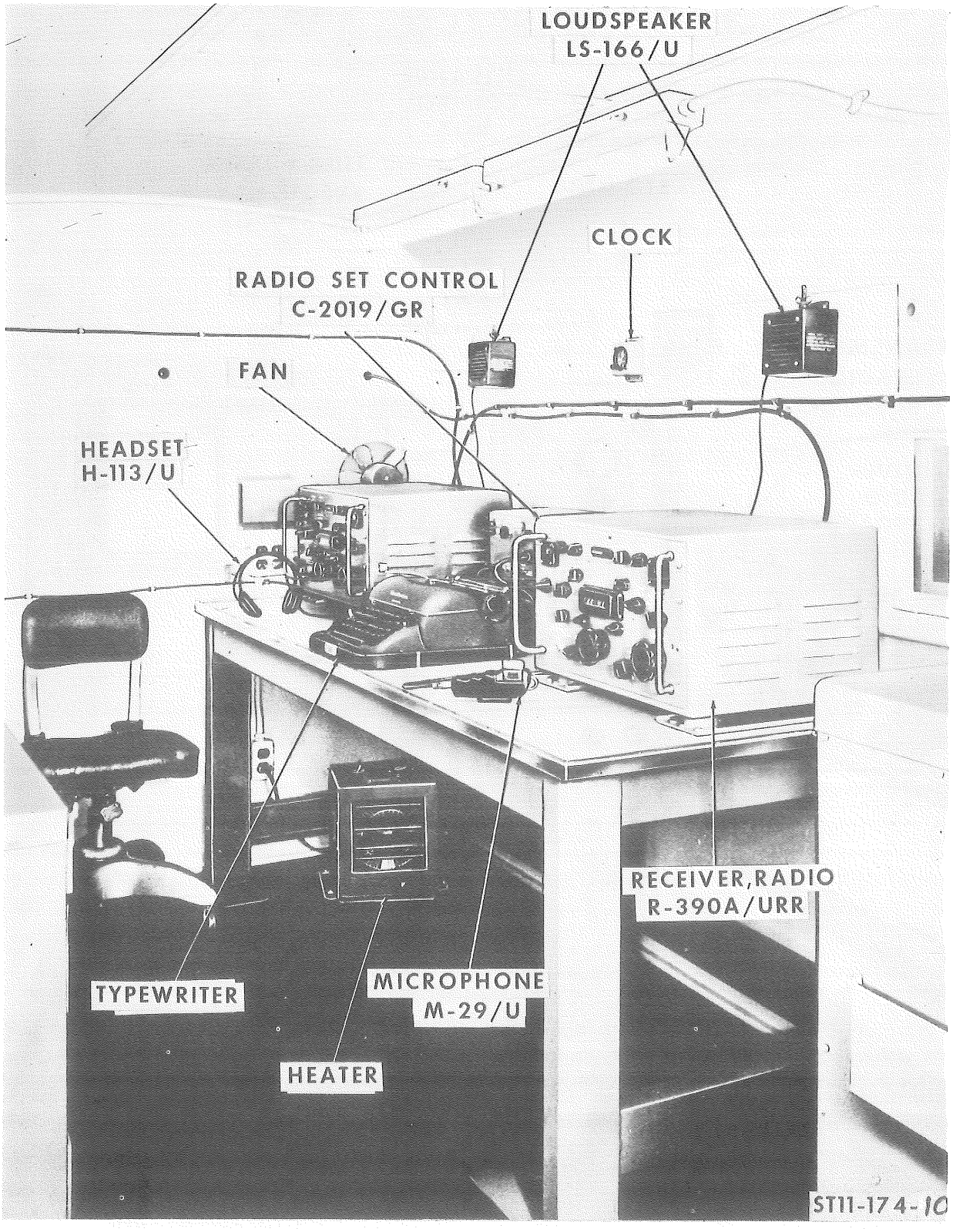


Figure 10. Radio Set AN/GRC-41, interior side view of shelter.

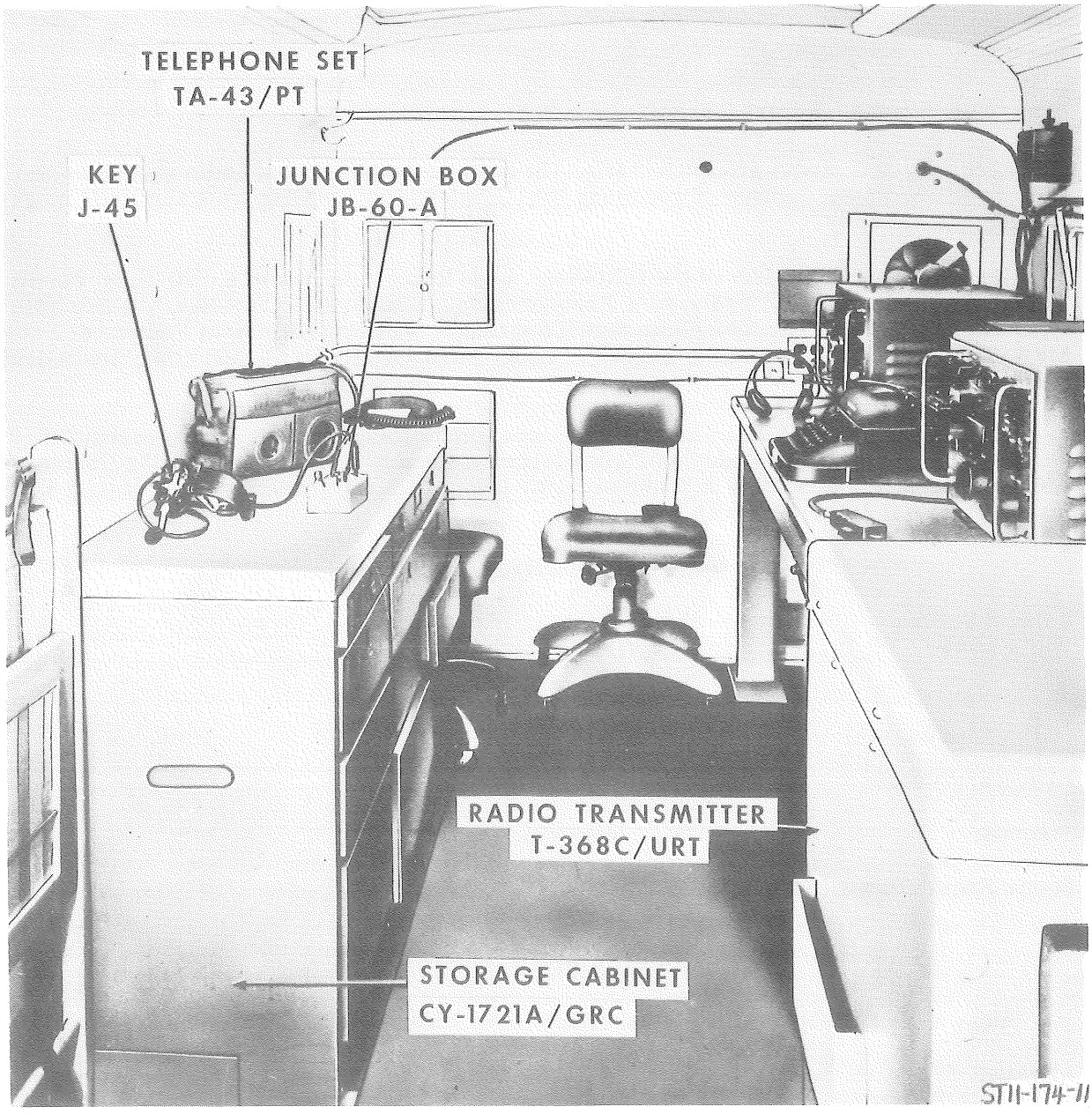


Figure 11. Radio Set AN/GRC-41, interior front view of shelter.

RECEIVING SET, RADIO AN/MRR-8

STATUS: Standard A.

STOCK NR: 5820-892-3479.

REFERENCE: TM 11-5820-353-15.

GENERAL INFORMATION

Receiving Set, Radio AN/MRR-8 (fig. 12) is an assemblage of hf radio receivers and associated equipment capable of receiving RATG, mcw, am, and fsk from 0.5 to 32 megacycles.

The AN/MRR-8 consists of the following: eight Receivers, Radio R-390/URR; eleven Terminals, Telegraph TH-5/TG; four Frequency Shift Converters CV-116/URR; two Teletypewriters TT-98/G; two Telephone Sets TA-312/PT; Shelter, Electrical Equipment S-187/MRR-8; Generator Set, Gasoline Engine, Trailer Mounted PU-294/G; and other miscellaneous components.

The AN/MRR-8 provides four diversity or eight normal circuits, with a maximum of four fsk circuits, and it can provide full duplex circuits when used with Transmitting Control, Radio AN/MRT-9. The AN/MRR-8 is found at Army level. It is air-transportable, designed for installation on a 2-1/2-ton truck.

TECHNICAL CHARACTERISTICS

Type of Service: AM.
Reception of Voice 6A3
FSK 1.1F1
MCW 2A2.
RATG 0.1A1

Frequency Range: 0.5-32 mc.

Antenna: Whip, long-wire, or doublet.

Power Requirement: 115 v AC 60 cps.
Power Source PU-294/G.

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu ft)	Weight (lb.)
AN/MRR-8	138 x 80 x 77-1/2 (outside dimensions of shelter)	494.79	5,860
PU-294/G	76 x 108 x 81	381.94	5,000

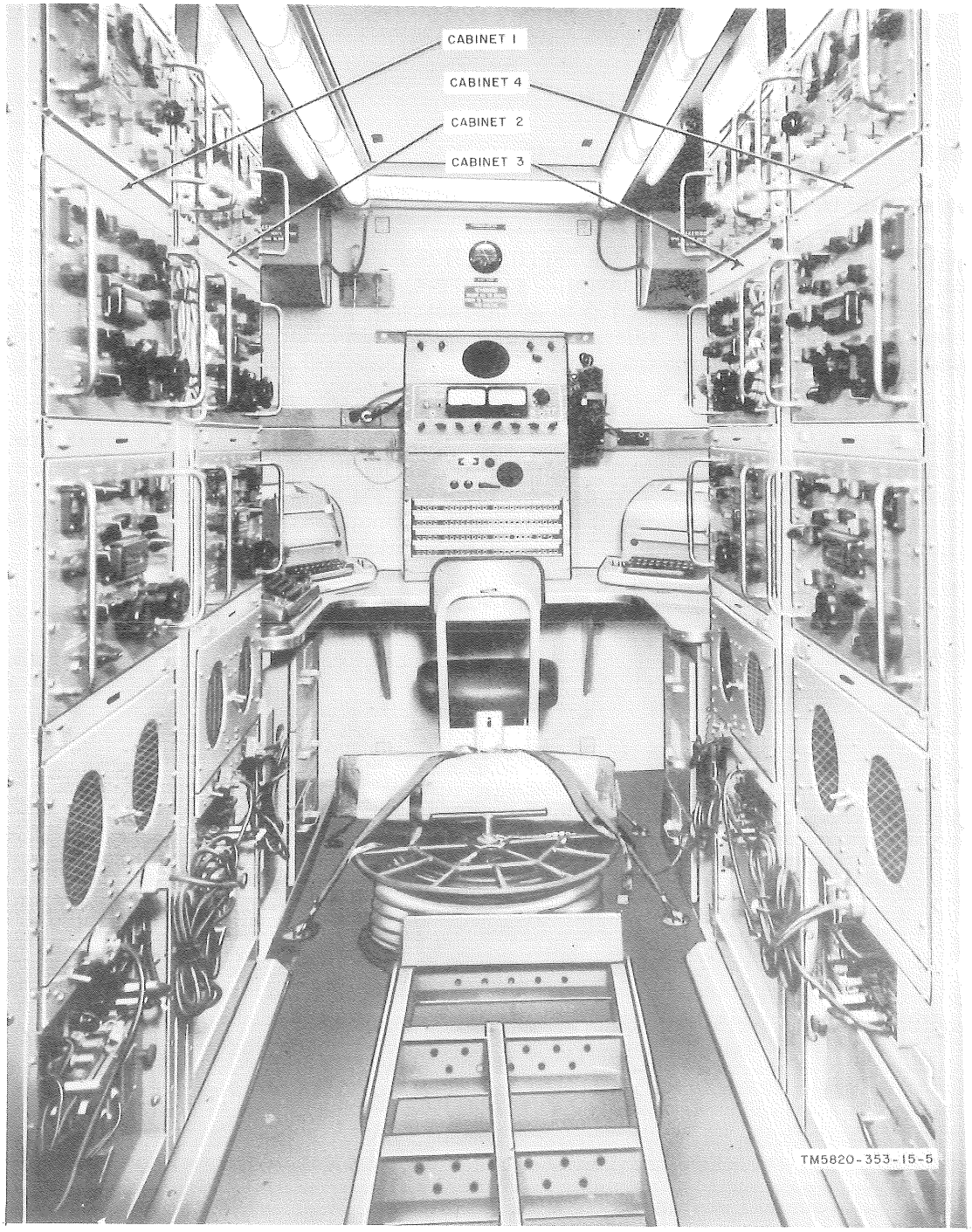


Figure 12. Receiving Set, Radio AN/MRR-8, interior front view.

STUDENT NOTES:

TRANSMITTING CENTRAL, RADIO, AN/MRT-9

STATUS: Standard A

STOCK NR: 5820-892-3476.

REFERENCE: TM 11-5820-352-15.

GENERAL INFORMATION

Transmitting Central, Radio, AN/MRT-9 (fig. 13) is an assemblage of radio transmitters and associated equipment, capable of transmitting am, fsk, and simultaneous transmission of am and fsk over a frequency range of 1.5 to 20 megacycles. The AN/MRT-9 provides three transmission circuits for voice or teletypewriter, or a combination of the two. The AN/MRT-9 is employed at Army level, is air-transportable, and is designed for installation on a 2-1/2-ton truck.

The AN/MRT-9 consists of the following: three Radio Transmitters T-368/URT; Receiver, Radio R-390/URR; Reperforator-Transmitter, Teletypewriter TT-76/GGC; three Antenna Tuning Units BC-939; five Terminals, Telegraph TH-5/TG; Teletypewriter TT-98/FG; two Telephone Sets TA-312/PT; Shelter, Electrical Equipment S-186/MRT-9; Generator Set, Gasoline Engine, Trailer Mounted PU-378/G; and other miscellaneous components.

TECHNICAL CHARACTERISTICS

Type of Service:	AM Voice 6A3 FSK 1.1F1
Frequency Range:	1.5 to 20 mc.
Planning Distance:	FSK: 400 kilometers. Voice: 160 kilometers.
Antenna:	Doublet, whip, long-wire.
Power Out:	FSK 450 W. Voice 400 W.
Power Requirement:	115 v AC 60 cps. Power Source PU-378/G.

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu ft)	Weight (lb)
AN/MRT-9	138 x 80 x 77-1/2 (outside dimensions of shelter).	494.79	6,221
PU-378/G	76 x 108 x 81	381.94	5,000

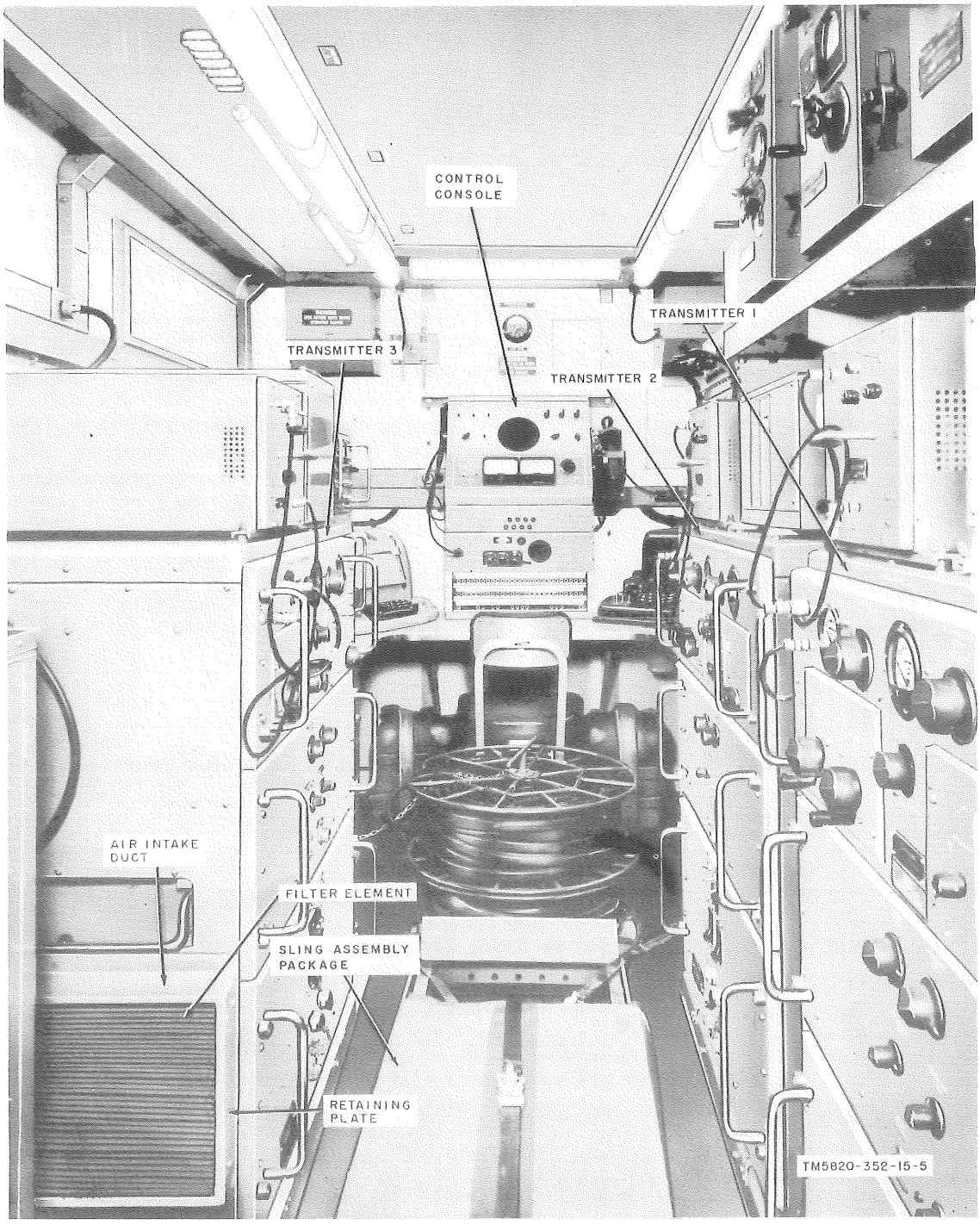


Figure 13. Transmitting Set, Radio AN/MRT-9, interior front view.

STUDENT NOTES:

RADIO SET AN/VRC-24

STATUS: Standard A.

STOCK NR: 5820-543-1997

REFERENCE: TM 11-5820-222-10.

GENERAL INFORMATION

Radio Set AN/VRC-24 (figs. 14 and 15) is a compact, vhf-uhf set that provides for the transmission and reception of amplitude-modulated radiotelephone signals for ground-to-air liaison. The set may also be used to transmit and receive voice encoded signals.

The AN/VRC-24 is used for vehicular ground-to-air communication in conjunction with Radio Set AN/ARC-27 or AN/ARC-55 which may be used in the aircraft. The AN/VRC-24 may also be used as a retransmission device for Radio Sets AN/GRC-3 through -8.

Radio Sets AN/TRC-68 and AN/VRC-24 have similar electrical characteristics. However, the AN/TRC-68 is used for ground-to-air communication from a stationary location; it can be vehicular mounted if a 115-volt or 230-volt alternating current power source is available. Control Radio Set AN/GRC-6 is used to control and operate the AN/TRC-68 from a remote position.

TECHNICAL CHARACTERISTICS

Type of Service: AM.
Voice 6A3.

Frequency Range: 225-399.9 mc.

Planning Distance: 48 kilometers (1,000-ft air elevation),160 kilometers (10,000-ft elevation).

Antenna: Ground plane.

Power Out: 16 watts minimum into 52 ohms, noninductive load.

Power Requirement: 27.5 v DC at 260 W for receiver.
360 W for transmitter.
Power Supply: Dynamotor.

Special: The AN/VRC-24 has 19 preset channels plus one manual which are completely crystal controlled.

Radio Set AN/VRC-35 (includes Radio Sets AN/VRC-24, AN/VRC-14, and AN/PRC-9) is utilized by the Forward Air Control Team (FAC) to communicate with both ground forces and aircraft while directing tactical aircraft over ground targets (fig. 15).

Note: Direct communication from the AN/PRC-9 to the aircraft is possible through automatic retransmission.

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu ft)	Weight (lb)
AN/VRC-24:			
Receiver-Transmitter Group OA-2648/VRC-24	12 x 15 x 10	1.11	62
Mounting MT-1436/U	5-3/4 x 18 x 10-1/2	.63	20

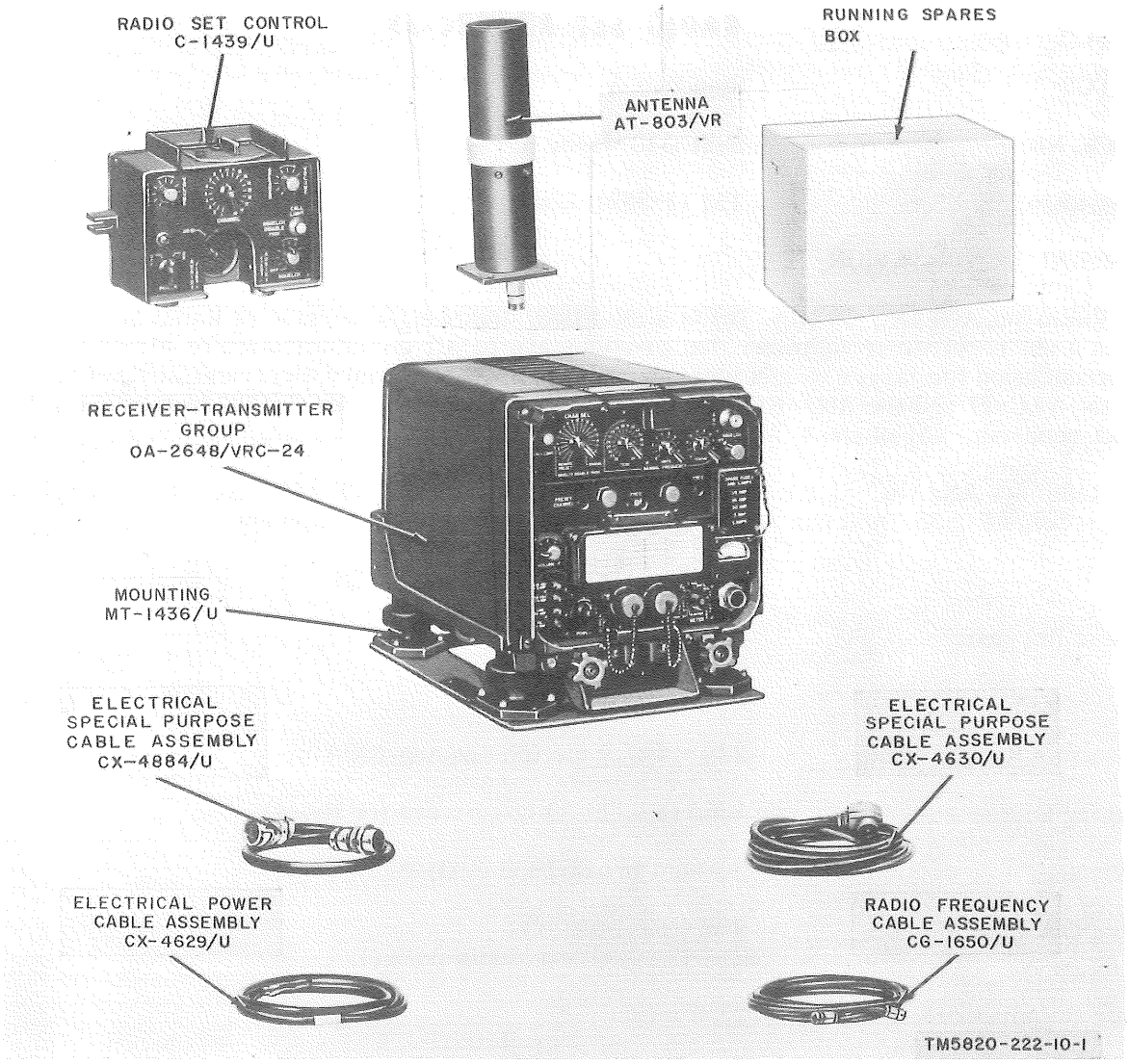


Figure 14. Radio Set AN/VRC-24.

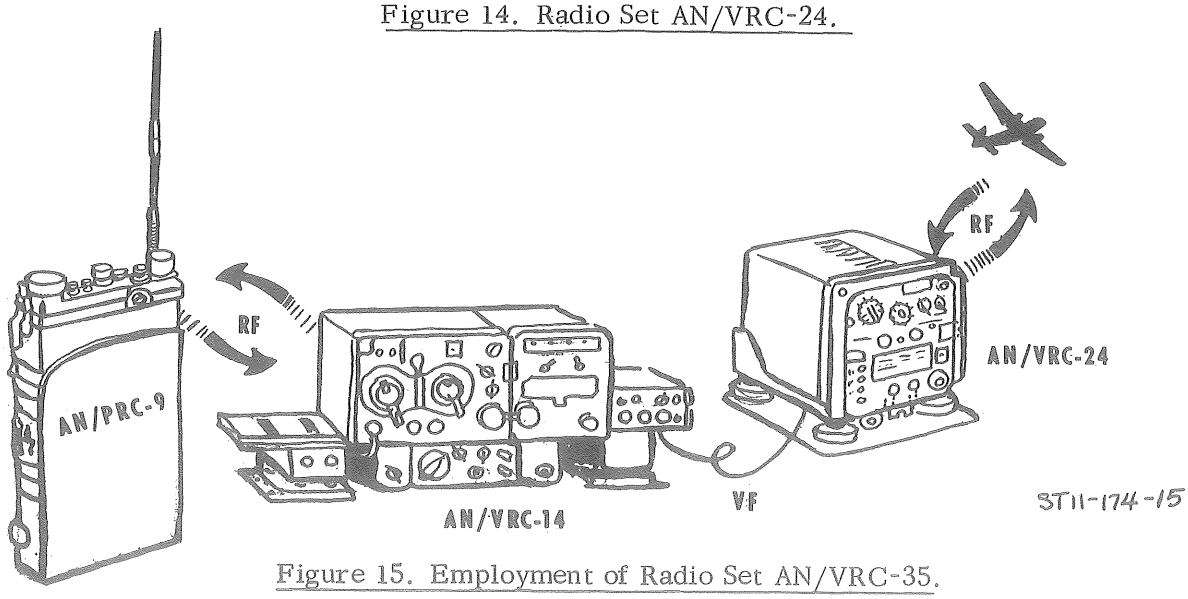


Figure 15. Employment of Radio Set AN/VRC-35.

RADIO SET AN/ARC-55

STATUS: Standard A.

STOCK NR: 5821-510-4545.

REFERENCE: TM 11-5821-225-10.

GENERAL INFORMATION

Radio Set AN/ARC-55 (fig. 16) is a modified, lightweight version of Radio Set AN/ARC-27 and is a uhf receiver-transmitter that provides air-to-air communication or air-to-ground communication for larger weight-carrying aircraft. The primary electrical difference between the AN/ARC-27 and the AN/ARC-55 is that the Control, Radio Set C-1827/ARC-55 selects, on direct read-out, any of the 1,750 channels.

Radio Set AN/ARC-55 consists of Receiver-Transmitter RT-349/ARC-55, Control, Radio Set C-1827/ARC-55, Antenna AT-450/ARC-55 and associated equipment.

TECHNICAL CHARACTERISTICS

Type of Service: AM.
Voice 6A3.
RATG 2A2.

Frequency Range: 225 - 399.9 mc (ch spacing 100 kc).

Planning Distance: Line of sight 50 kilometers (or more).

Antenna: 50-ohm broad-band vertical antenna.

Power Out: 9 W (transmitter).
2 W (2 receivers audio power).

Power Requirement: 27.5 v DC.

Special: The AN/ARC-55 has RATG service using tone modulation; it uses crystal reference for frequency control.

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu ft)	Weight (lb)
AN/ARC-55	9 x 22 x 12	1.38	65

STUDENT NOTES:

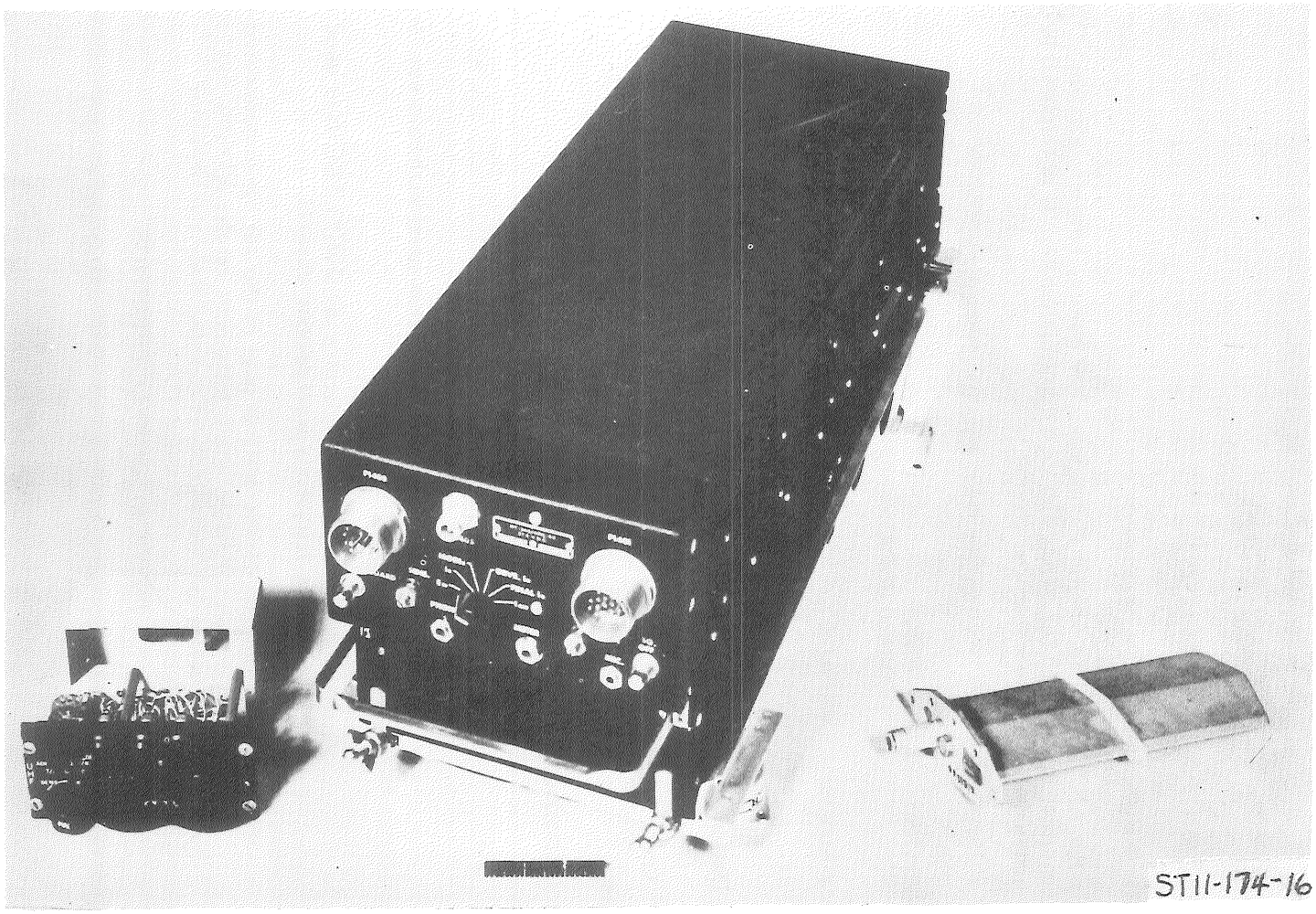


Figure 16. Radio Set AN/ARC-55.

Section III. FREQUENCY MODULATED RADIO SETS

RADIO SET AN/PRC-6

STATUS: Standard A.

STOCK NR: 5820-194-9928.

REFERENCE: TM 11-296.

GENERAL INFORMATION

Radio Set AN/PRC-6 (fig. 17) is a compact, low power, battery-operated, fm radio receiver-transmitter designed for short distance communication. It is intended primarily as a portable handy-talkie for foot-combat troops.

TECHNICAL CHARACTERISTICS

Type of Service: FM.
Voice 36F3.

Frequency Range: 47-55.4 mc.
43 Channels.
Channel every even 200 kc.

Planning Distance: 1.6 kilometers (1 mile).

Antenna: 24-inch Steel Tape.

Power Out: 0.25 W.

Power Requirements: 1.5 v at 1000 ma;
45 v at 14 ma;
1.5 v at 440 ma;
45 v at 13 ma.
Battery BA-270/U

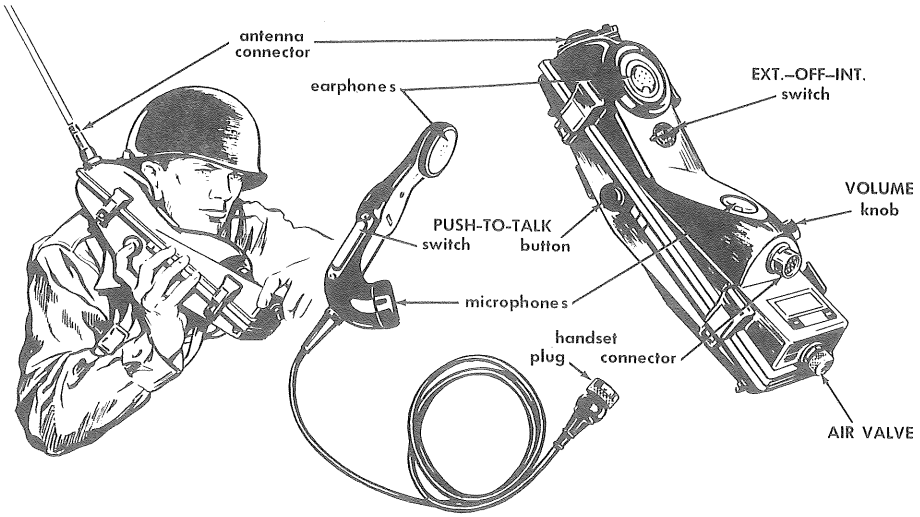
Special: Homing Antenna AT-249/GRD is used with this set. It is requisitioned separately.

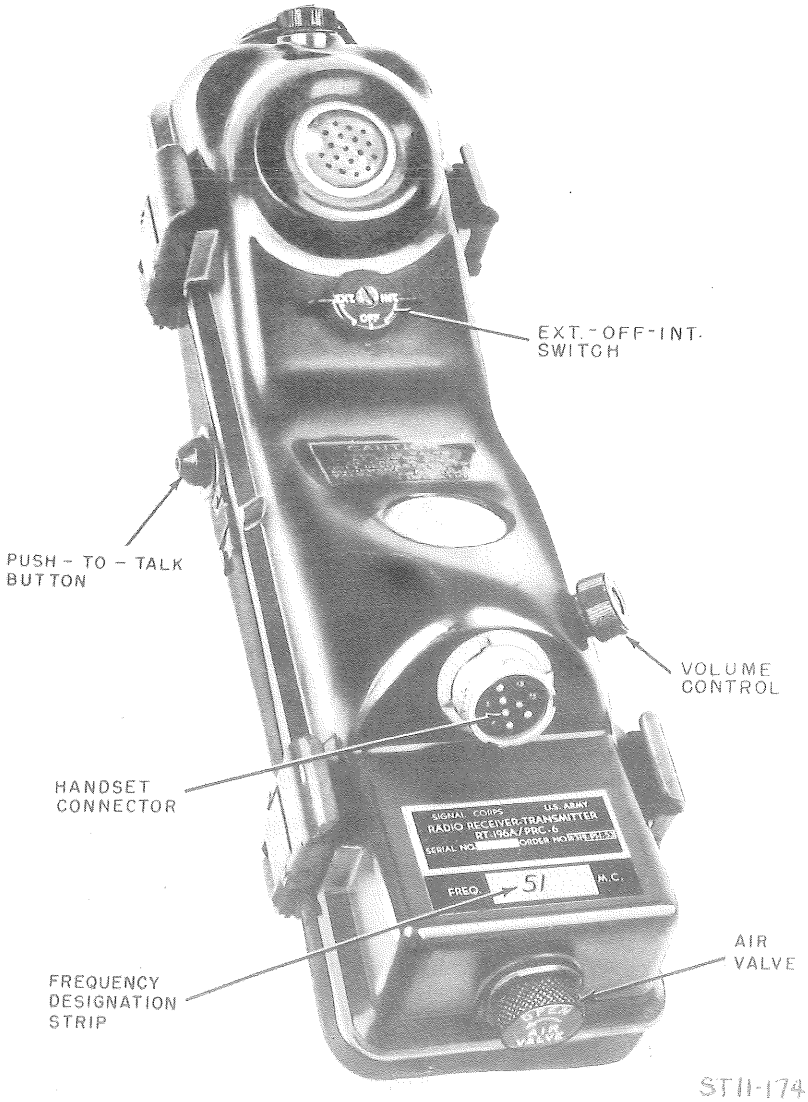
Channel Alinement Indicator ID-292(*)/PRC-6 is used to aline the set on a new frequency with proper crystal.

Handset H-33(*)/PT is part of the set. It is connected to the audio connector below the microphone on the RT-196/PRC-6. It is used when the AN/PRC-6 is carried over the shoulder.

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu in)	Weight (lb.)
Radio Set AN/PRC-6	14-3/4 x 4-3/4 x 4-1/4	298	7-1/2 (approx.) (including battery)





STII-174-17

Figure 17. Radio Set AN/PRC-6.

RADIO SETS AN/PRC-8 (*), -9 (*) AND -10 (*)

STATUS: Standard B.

STOCK NRS: 5820-253-6129, 5820-669-7018, 5820-705-9067.

REFERENCE: TM 11-5820-292-10.

GENERAL INFORMATION

Radio Sets AN/PRC-8(*), -9(*), and -10(*) are lightweight, low power, battery-operated radio receiver-transmitters intended for portable communication. One set is normally carried strapped to the operator's back by means of a harness and suspenders.

Radio Sets AN/PRC-8(*), -9(*), and -10(*) are similar to each other and are intended for portable communication in armor, artillery, and infantry units, respectively.

TECHNICAL CHARACTERISTICS

Type of Service: FM.
Voice 36F3.

Frequency Range:
AN/PRC-8(*) (armored): 20 mc to 27.9 mc -- 80 ch.
AN/PRC-9(*) (artillery): 27 mc to 38.9 mc -- 120 ch.
AN/PRC-10(*) (infantry): 38 mc to 54.9 mc -- 170 ch.

Planning Distance: 5 km to 20 km, dependent upon antenna and siting.

Antenna:
36-in. steel tape (AT-272/PRC) - 5 km.
10-ft multisection whip (AT-271/PRC) - 8 km.

Power Out:
AN/PRC-8(*): 1.2 W.
AN/PRC-9(*): 1.0 W.
AN/PRC-10(*): 0.9 W.

Power Requirements:
1.5 v; 6 v, 67.5 v DC.
Battery BA-279/U
Amplifier-Power Supply AM-598/U.

Special:

Amplifier-Power Supply AM-598/U (fig. 19) replaces Battery BA-279/U in vehicular installations that have 24-volt systems. The AM-598/U supplies complete power required by the radio set; it also has an audio amplifier that permits use of a headset or loudspeaker.

The sets may be used as homing devices in conjunction with the following homing antennas:

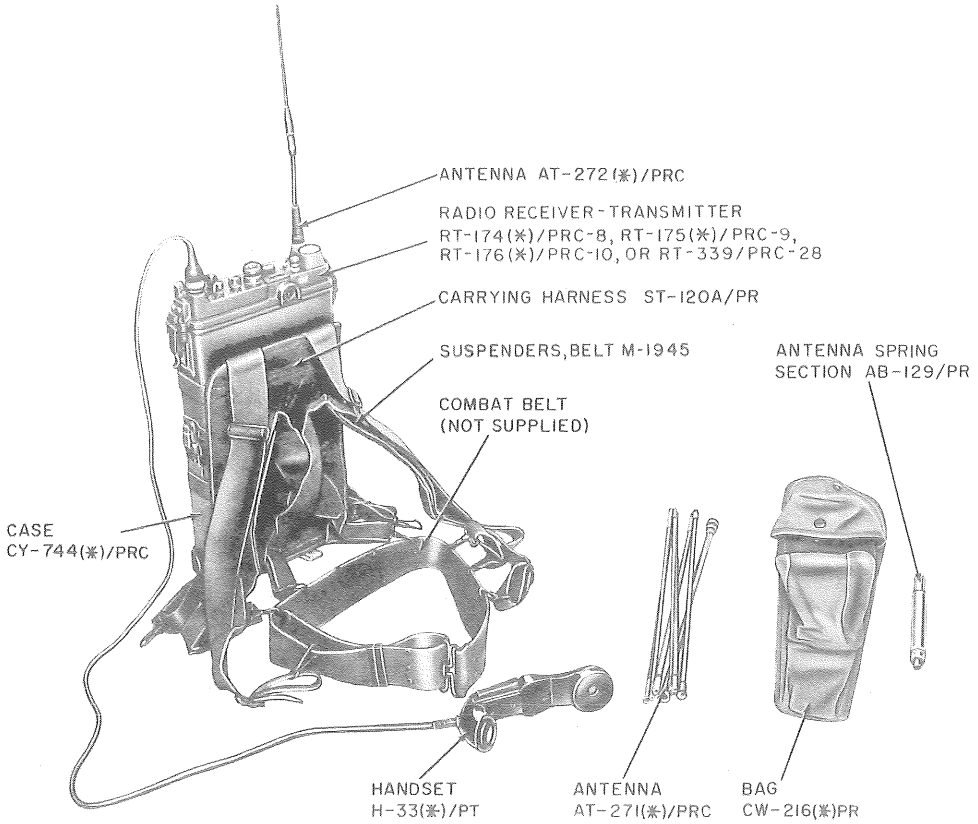
AT-340/PRC, used with AN/PRC-8(*) and -9(*).
AT-339/PRC, used with AN/PRC-10(*).

The ground plane antenna RC-292 (fig. 54) is used with the AN/PRC-8(*), AN/PRC-9(*), and the AN/PRC-10(*) to increase the planning distance between antennas to 20 km.

These sets can operate from a remote position when used with Control, Radio Set AN/GRA-6 (page 52).

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu ft)	Weight (lbs)
Radio Set AN/PRC-8(*), -9(*), or -10(*)	19 x 3 x 10-1/2	1.03	26 lbs including battery



TM5820-292-10-2

Figure 18. Components of Radio Sets AN/PRC-8(*), -9(*), -10(*).

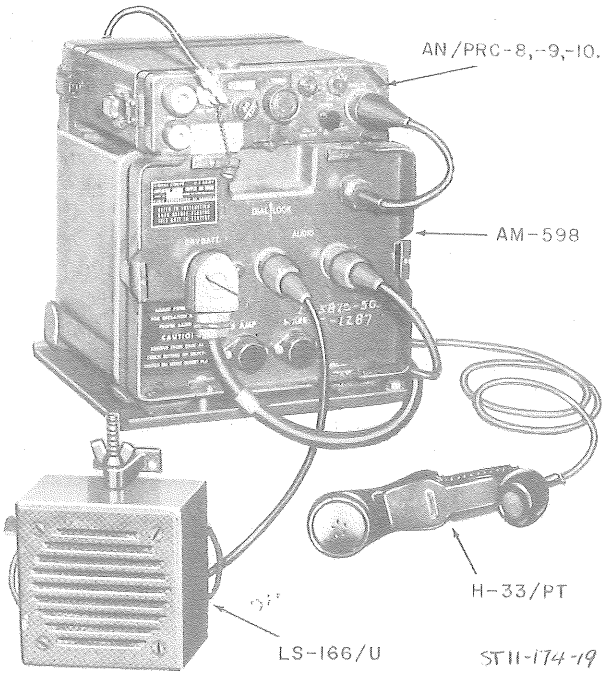


Figure 19. Amplifier Power Supply AM-598.

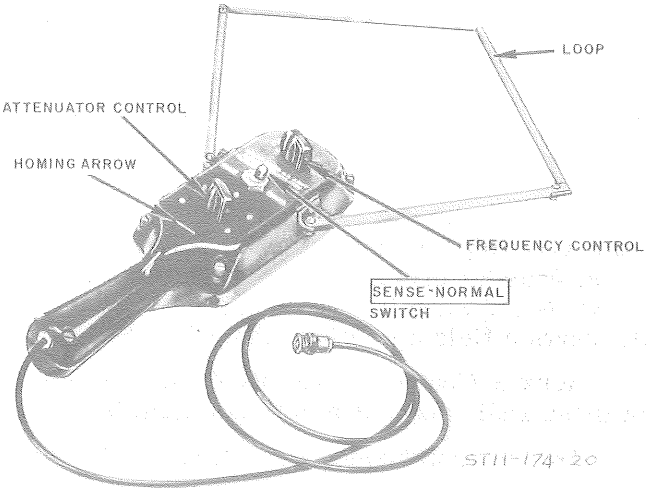


Figure 20. Typical Homing Antenna.

RADIO SETS AN/GRC-3 THROUGH AN/GRC-8

STATUS: Standard B

STOCK NR: See reference for appropriate set

REFERENCE: TM 11-284

GENERAL INFORMATION

Radio Sets AN/GRC-3 through -8 are designed primarily for short range radio telephone operation within and between armored, artillery, and infantry units. Specifically, Radio Sets AN/GRC-3 and -4 are intended for armored units; Radio Sets AN/GRC-5 and -6, for artillery units; and Radio Sets AN/GRC-7 and -8, for infantry units.

The frequency coverage of each set includes two bands: one band is covered by Set Nr. 1, Receiver-Transmitter RT-66, -67, or -68; the other band is covered by Set Nr. 2, Receiver-Transmitter RT-70. In Radio Sets AN/GRC-3, -5, and -7, the coverage of the Set Nr. 1 receiver-transmitter is duplicated by auxiliary receivers R-108, -109, or -110.

Basic components of the AN/GRC-3 to -8 series are utilized to form a total of twenty-four special purpose radio sets. The sets with their components are shown in figures 22-31.

There are over 1,350 sets of various configurations in an Infantry Road Division before substitution by the AN/VRC-12 family of radio sets. These sets are used in command and administrative nets from company level up. Figure 15 on page 23 is an example of how the AN/VRC-14 is integrated with the AN/PRC-8, -9, -10, and the AN/VRC-24 to form the AN/VRC-35 which is used for ground-to-air communication.

These sets are installed in and operated from trucks, personnel carriers, and other authorized vehicles.

TECHNICAL CHARACTERISTICS

Power Requirements: The vehicular 12v or 24v DC battery supplies the necessary power to the radio set mounting, which, in turn, distributes power to Power Supply PP-109 or PP-112 of Set Nr. 1, the auxiliary receiver, R-108, or R-110, and AF Amplifier AM-65 for Set Nr. 2.

For other characteristics, refer to: RT-66, -67, and -68 on page 36.
RT-70 on page 38.
RT-108, -109, and -110 on page 40.

Special: Preset Frequency Channels for Set Nr. 1: Two.
Set Nr. 2: Two.
Auxiliary Receiver: Three.

Modification Kit MX-898/GR contains basically a Hand Generator G-8/GRC, Battery Case CY-590, antenna sections, 2 power cables, antenna mounting, and appropriate carrying case. This kit provides the components necessary for temporary operation of either Set Nr. 1 or Set Nr. 2 when it is used in a field location or when vehicular power is not available. Figure 31 shows a field operation set up with Set Nr. 1.

Remote Control Group AN/GRA-6 is auxiliary equipment designed to extend the application of these radio sets. It is a major item issued as a component of any set. (Reference: page 52.)

The Retransmission Unit (Control C-435) is normally issued with radio sets needing it.

PHYSICAL CHARACTERISTICS

Dependent upon configuration used. See appropriate configuration manual.

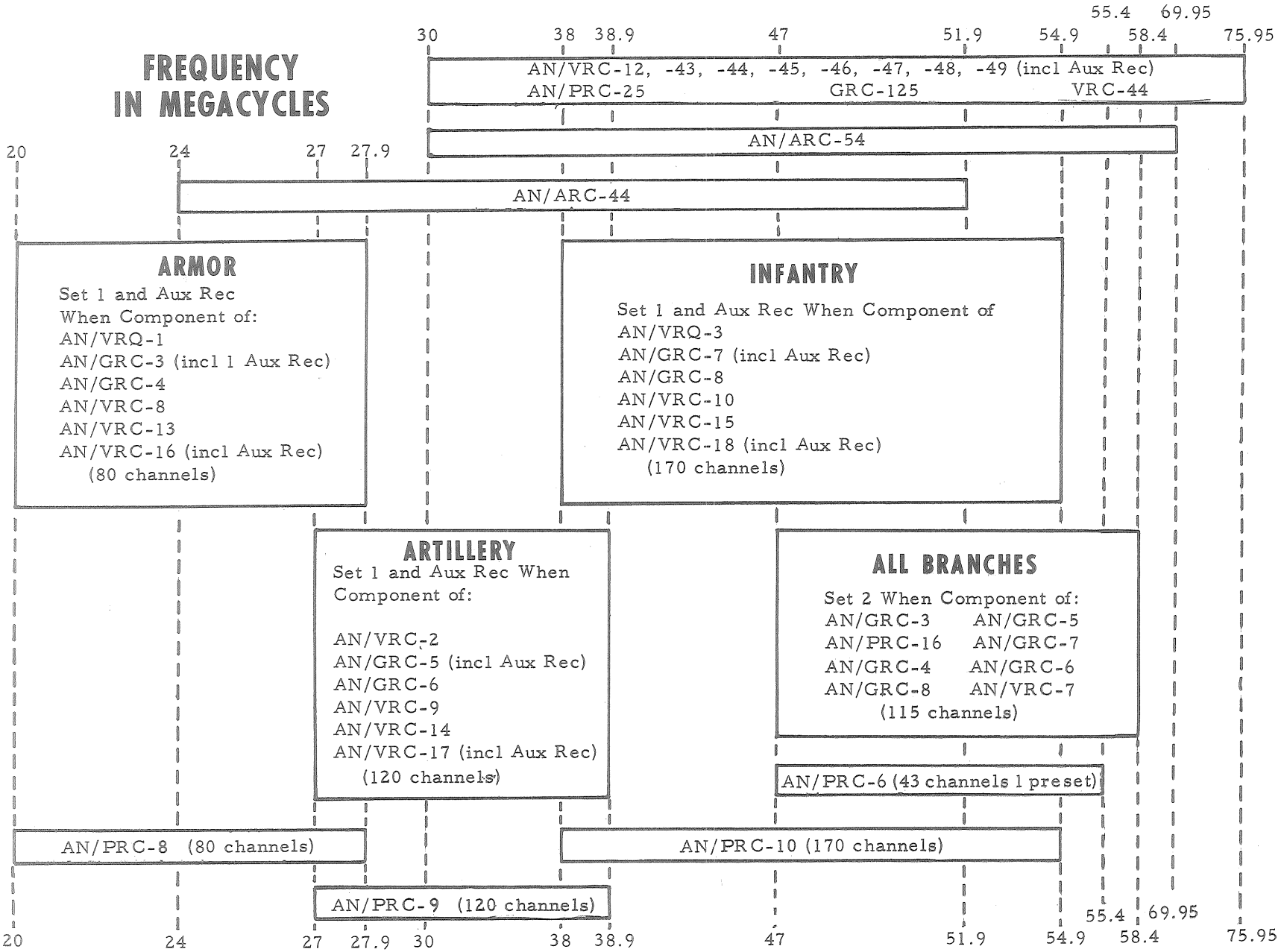


Figure 21. Frequency Allocation of FM tactical radio sets.

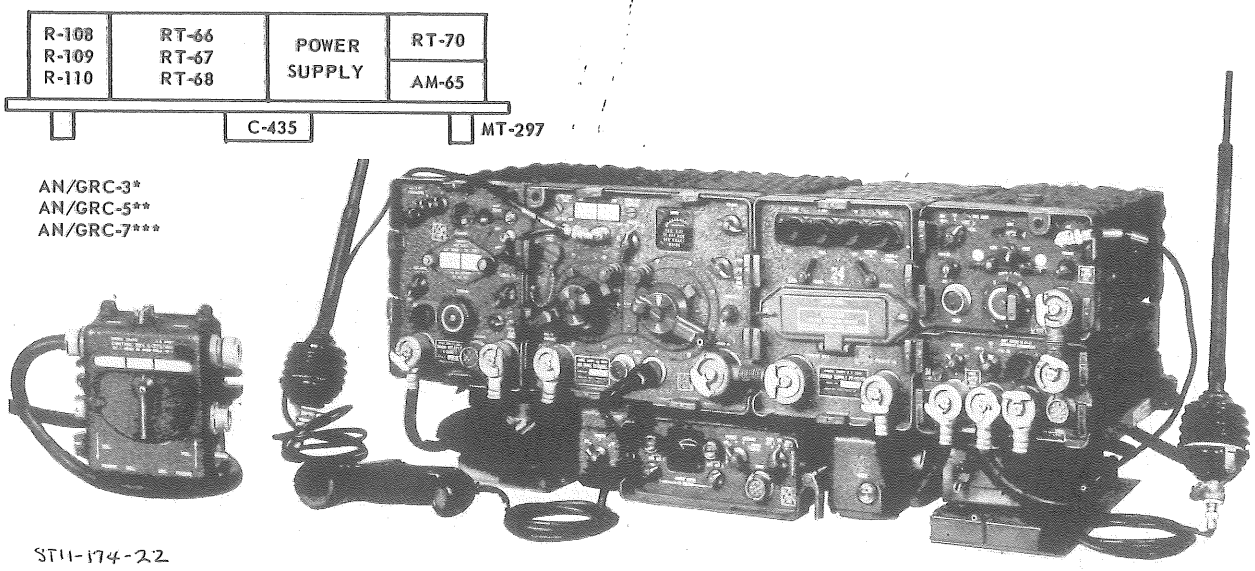


Figure 22. Radio Set AN/GRC-7 less Control Group AN/GRA-6.

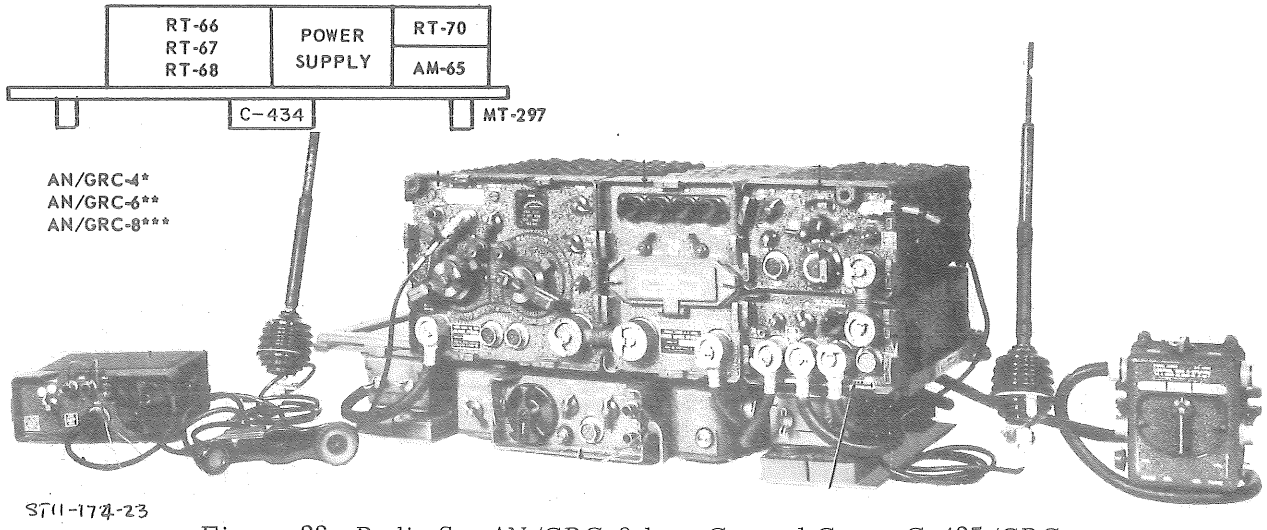
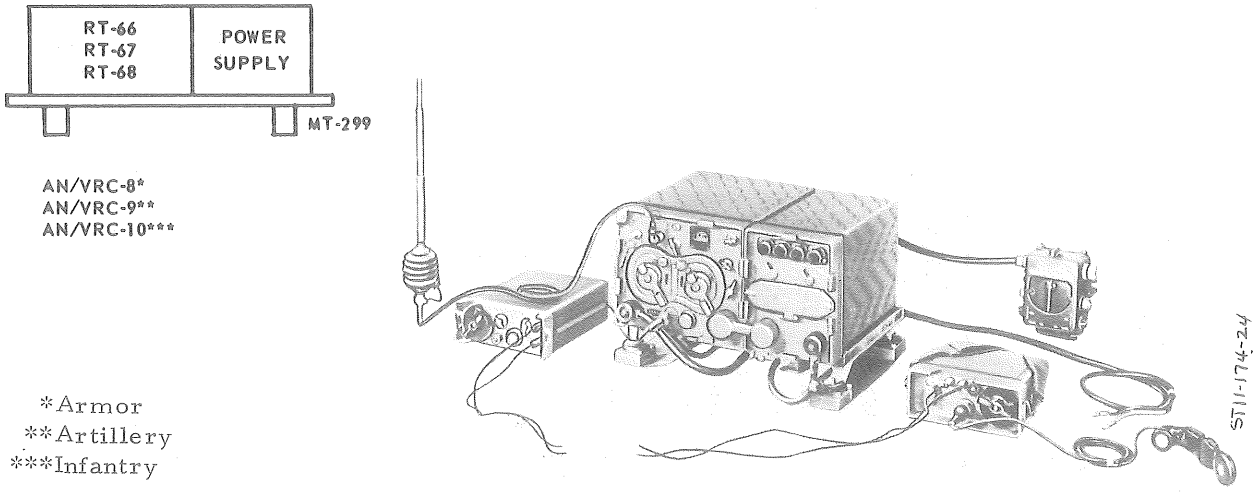
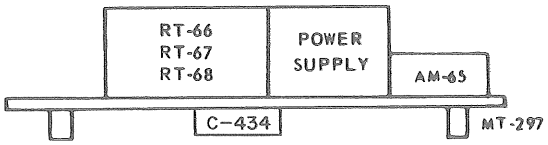


Figure 23. Radio Set AN/GRC-8 less Control Group C-435/GRC.



*Armor
**Artillery
***Infantry

Figure 24. Radio Set AN/VRC-8.



AN/VRC-13*
AN/VRC-14**
AN/VRC-15***

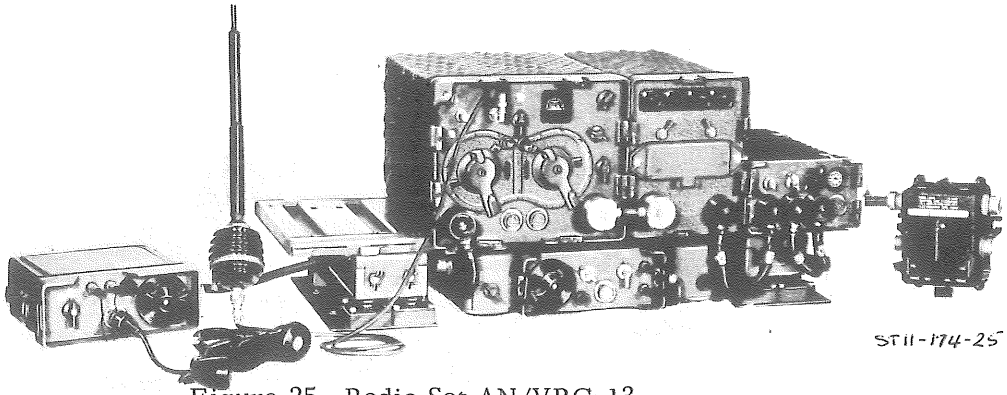
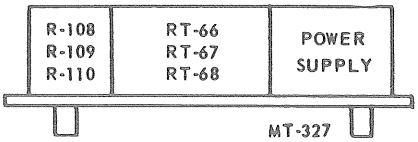
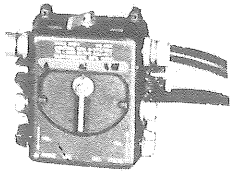


Figure 25. Radio Set AN/VRC-13.



AN/VRC-16*
AN/VRC-17**
AN/VRC-18***



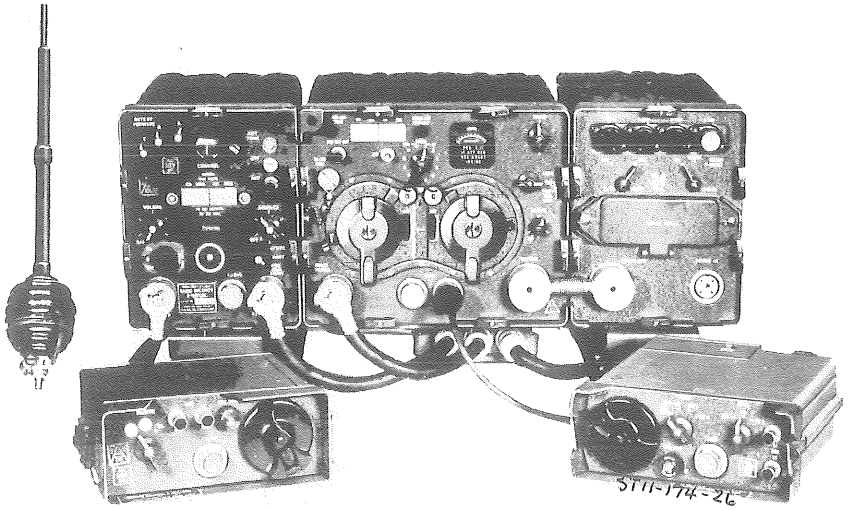
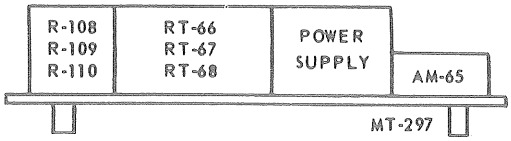
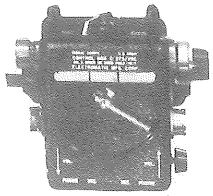
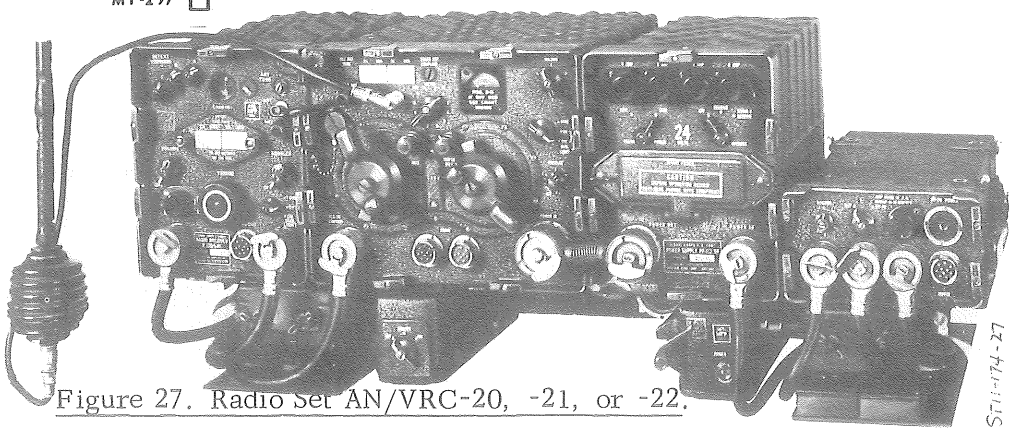


Figure 26. Radio Set AN/VRC-16.



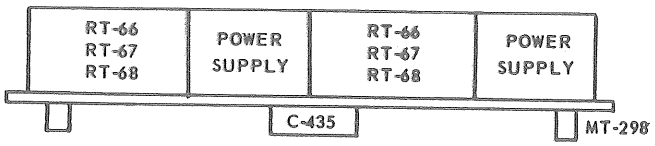
AN/VRC-20*
AN/VRC-21**
AN/VRC-22***





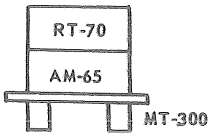
* Armor
** Artillery
*** Infantry

Figure 27. Radio Set AN/VRC-20, -21, or -22.



AN/VRQ-1*
AN/VRQ-2**
AN/VRQ-3***

Figure 28. Radio Set AN/VRQ-1, -2, or -3.



AN/VRC-7

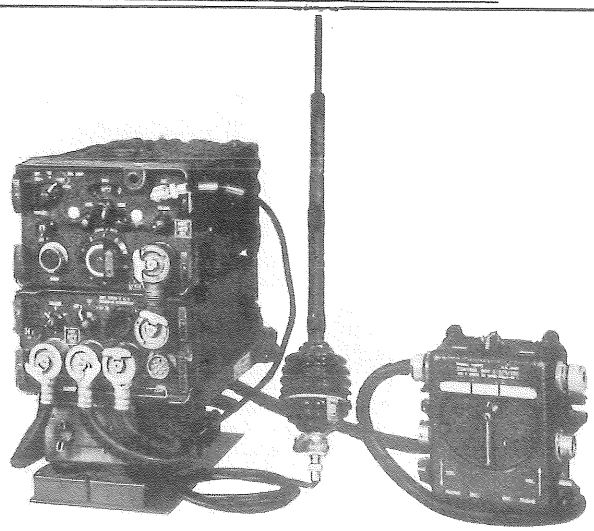
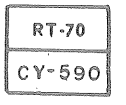
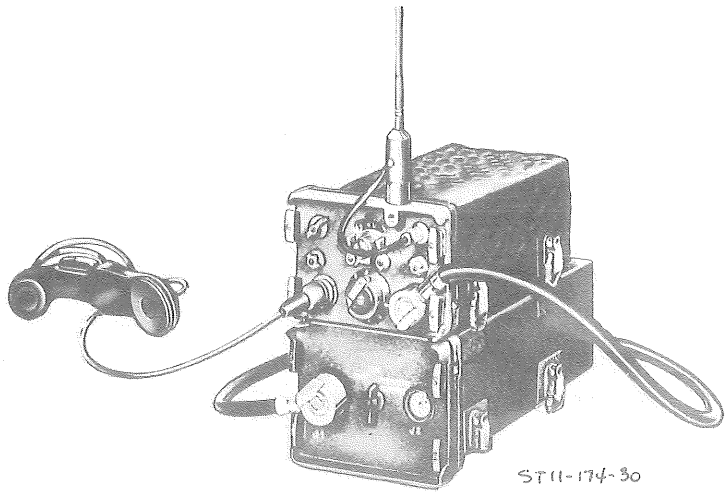


Figure 29. Radio Set AN/VRC-7.



AN/PRC-16



* Armor
** Artillery
*** Infantry

Figure 30. Radio Set AN/PRC-16.

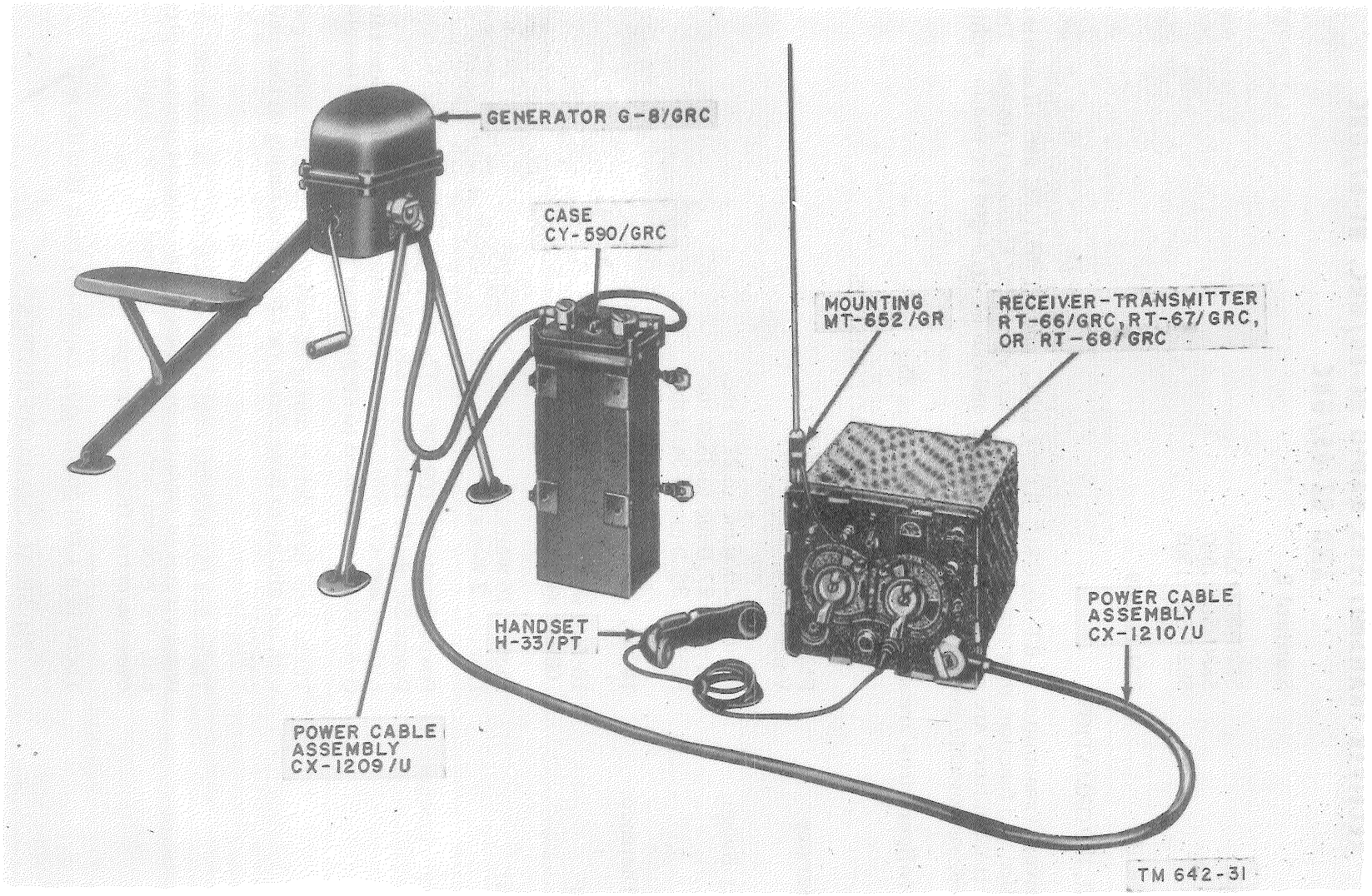


Figure 31. Field operation of Set Nr. 1.

RECEIVER-TRANSMITTERS, RADIO RT-66/GRC, RT-67/GRC AND RT-68/GRC

STATUS: Standard B

STOCK NR: 5820-503-1508
5820-503-1507
5820-503-1505

REFERENCE: TM 11-289

GENERAL INFORMATION

Receiver-Transmitters, RT-66/GRC, RT-67/GRC, and RT-68/GRC are all similar in construction and function; they differ primarily in their operating frequency ranges. The receiver-transmitters are compact and lightweight and can be arranged for use in vehicular, semi-fixed, or portable installations.

Set configurations are shown on pages 32 through 35.

TECHNICAL CHARACTERISTICS

Type of Service: FM.
Voice 36F3.

Frequency Range: RT-66: 20.0 mc to 27.9 mc.
RT-67: 27.0 mc to 38.9 mc.
RT-68: 38.0 mc to 54.9 mc.

Planning Distance: 16 km.

Antennas: 10-foot whip for RT-66 and RT-67.
60foot whip for RT-68.

Power Out: High...16 watts.
Low... 2 watts.

Power Requirements: Power Supply PP-109/GR...12v DC (input).
Power Supply PP-112/GR...24v DC (input).
Either Case CY-590/GRC with dry batteries or Hand Generator G-8/GRC may be used to supply input power to ground installations.

Special: These sets have detent tuning at every 100 kc of the tuning range with the ability to have detent or continuous tuning on the tenths control.

There are two presets available on each set. The transmitter antenna circuit is tuneable by means of the antenna tuning control; and, the receiver antenna circuit is tuned on one frequency for use over the entire frequency range.

There is a 1,600 cps ringing capability built into the set.

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu ft)	Weight (lbs)
RT-66, -67, or -68	9 x 13 x 11-1/4	0.76	38

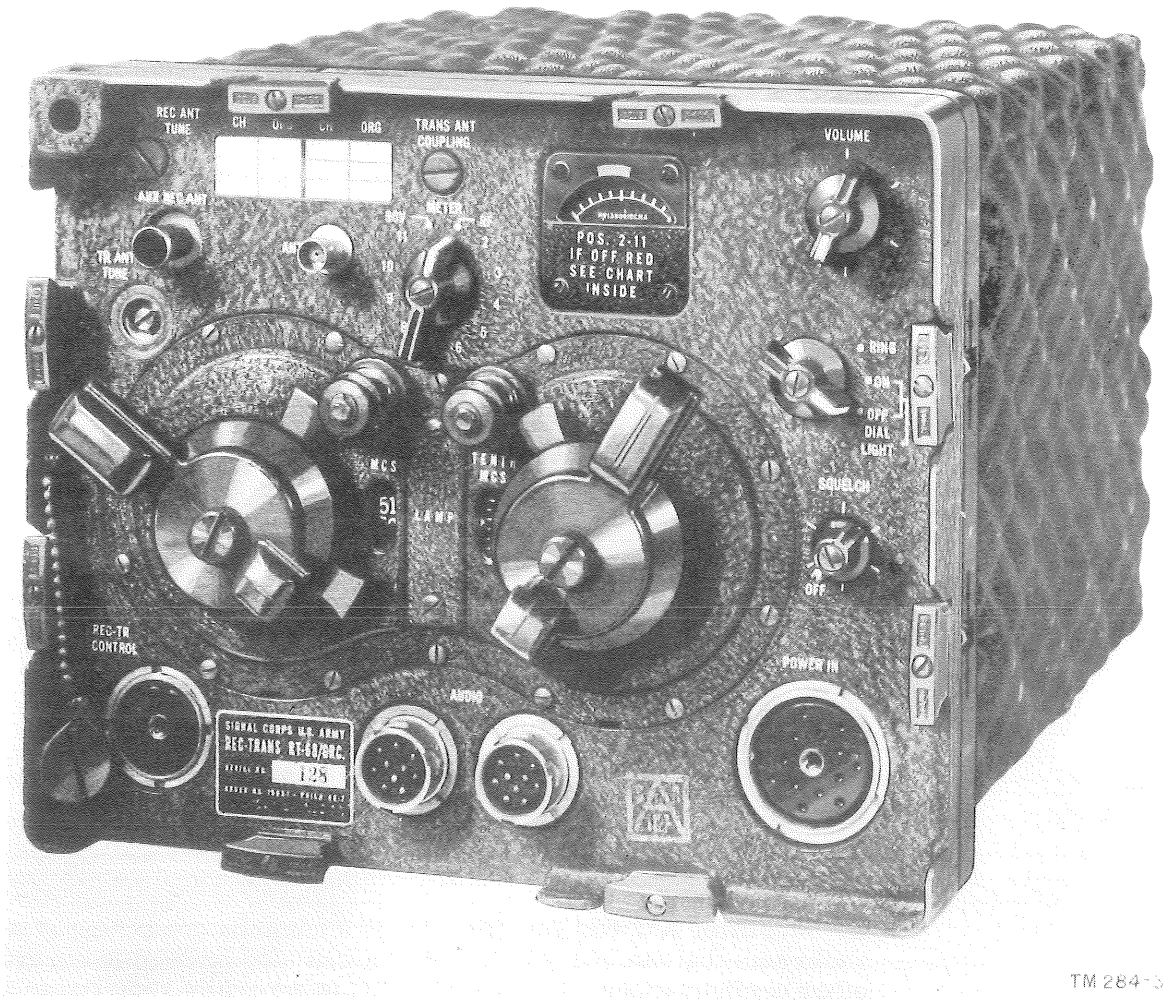


Figure 32. Receiver-Transmitter RT-68/GRC

STUDENT NOTES:

RECEIVER-TRANSMITTER, RADIO RT-70/GRC

STATUS: Standard B

STOCK NR: 5820-196-1722

REFERENCE: TM 11-290

GENERAL INFORMATION

Receiver-Transmitter RT-70/GRC (fig. 33) is small and lightweight and is designed for use in portable, ground, or vehicular installations.

Set configurations are shown on pages 32 through 35.

TECHNICAL CHARACTERISTICS

Type of Service: FM.
Voice 36F3.

Frequency Range: 47.0 mc to 58.4 mc.

Planning Distance: 1.6 km.

Power Requirements: Uses either of the power supplies listed below which are plug-in components of AF Amplifier AM-65/GRC used with the RT-70/GRC.

Power Supply PP-281/GRC: 12v DC input.
Power Supply PP-282/GRC: 24v DC input.

Special: Case CY-590/GRC with dry batteries is used for a portable installation known as the AN/PRC-16 (fig. 30).

This set has two detent preset positions.

AF Amplifier AM-65/GRC (fig. 34) is a common component of all radio sets that use the RT-70/GRC; it can also be used in several other configurations. The AM-65/GRC is generally referred to as an interphone amplifier. In addition, it serves as a monitor amplifier for the two receiver-transmitters and the auxiliary receiver. The AM-65/GRC requires a plug-in power supply unit (Power Supply PP-281/GRC or PP-282/GRC) for either 12v or 24v operation.

STUDENT NOTES:

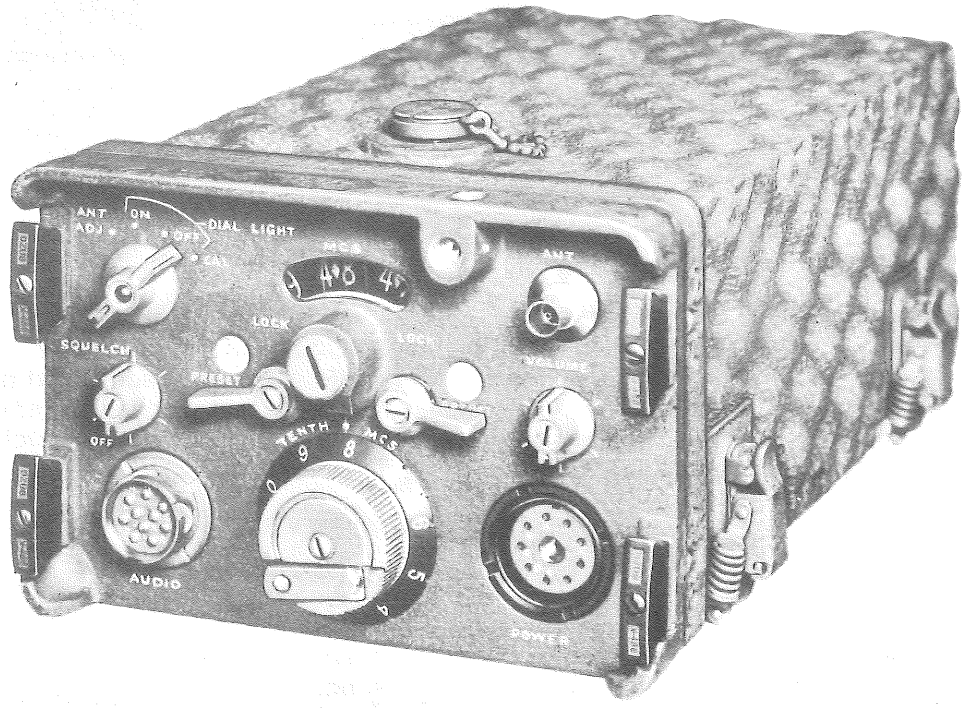


Figure 33. Radio Transmitter RT-70/GRC.

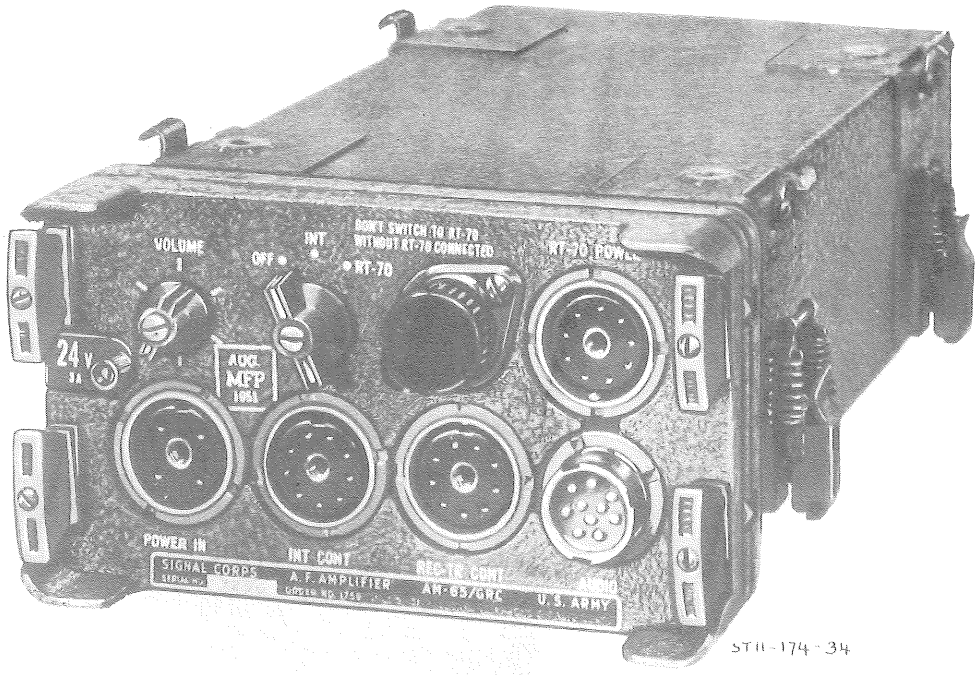


Figure 34. AF Amplifier AM-65/GRC.

RADIO RECEIVERS R-108/GRC, R-109/GRC AND R-110/GRC

STATUS: Standard B.

STOCK NUMBERS: 5820-503-1258
5820-503-1413
5820-503-1254

REFERENCE: TM 11-898.

GENERAL INFORMATION

Radio Receivers R-108/GRC, 109/GRC, and R-110/GRC are used as auxiliary receivers in the AN/GRC-3 through -8 series. The auxiliary receiver is used as an additional monitoring receiver. The receivers are similar in structure, function, and mechanical arrangement, and are different only in their operating frequency ranges. Set configurations in which these sets are used are shown on pages 32 and 33.

TECHNICAL CHARACTERISTICS

Type of Service: FM.

Frequency Range: R-108/GRC: 20.0 mc to 27.9 mc.
R-109/GRC: 27.0 mc to 38.9 mc.
R-110/GRC: 38.0 mc to 54.9 mc.

Antenna: Uses the same as associated RT-66/GRC, RT-67/GRC, or RT-68/GRC.

Power Requirements: PP-281/GRC: 12 v.
PP-282/GRC: 24 v.
External DC supply: 6.3 v and 130 v.

Special: There are 3 presets available on each set.

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu ft)	Weight (lb)
R-108, -109, or -110	9 x 13 x 7-1/4	0.50	28



Figure 35. Radio Receiver R-110/GRC.

RETRANSMISSION UNIT, CONTROL C-435/GRC

STATUS: Standard B.

STOCK NR: 5820-665-0944.

REFERENCE: TM 11-284.

GENERAL INFORMATION

Retransmission Unit, Control C-435/GRC, is a component of Radio Sets AN/GRC-3 through -8. It is installed in the radio set mounting and is normally used to operate the set. The C-435/GRC provides three operational facilities; manual operation of the radio set, duplex operation and automatic retransmission.

The retransmission facility provides a radio link between two sets which are too widely separated to permit direct communication, or between two sets which cannot be tuned to the same frequency. The C-435/GRC may also be used when an intermediate station is necessary because of unfavorable terrain or "line-of-sight" characteristics.

TECHNICAL CHARACTERISTICS

Power Requirement: 90 v, 12 v, or 24 v DC.

Special: Automatic retransmission is possible only if the squelch is properly adjusted and proper frequency separation is maintained between the receiver and transmitter of the radio sets at the relay point.

PHYSCIAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu ft)	Weight (lb.)
Control C-435/GRC	3-1/2 x 10-1/2 x 8-3/4	.18	8

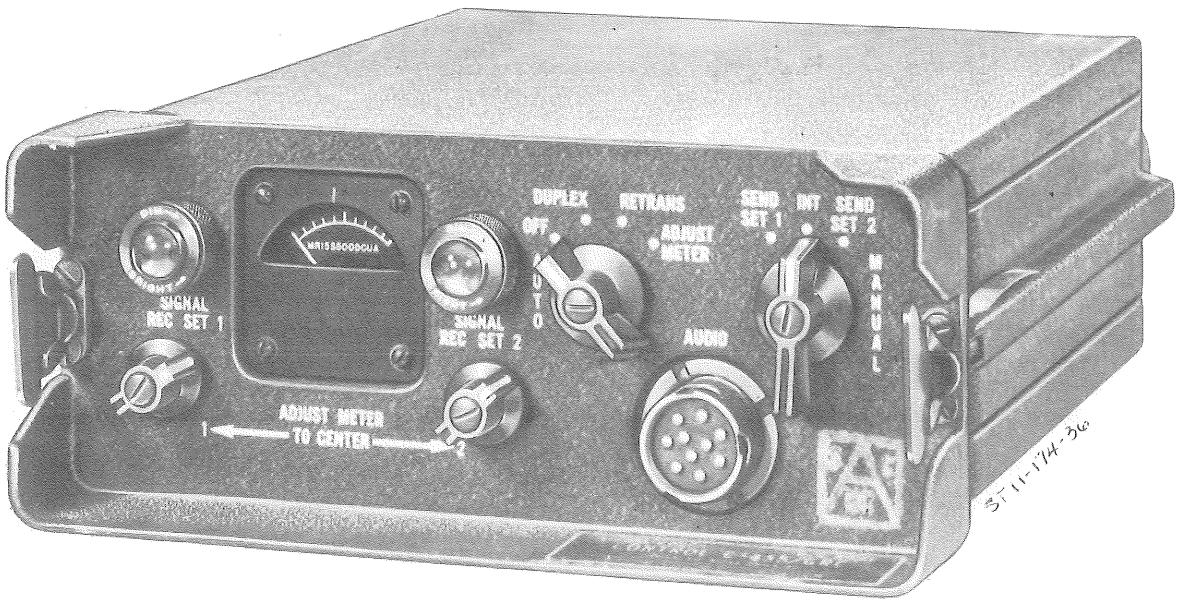


Figure 36. Retransmission Unit, Control C-435/GRC.

RADIO SETS AN/VRC-12 AND AN/VRC-43 THROUGH AN/VRC-49

STATUS: Standard A

STOCK NR: See Manual for appropriate set.

REFERENCE: TM 11-5820-401-10.

GENERAL INFORMATION

The AN/VRC-12 and AN/VRC-43 through -49 (AN/VRC-12 series) are designed to replace the AN/GRC-3 through -8 series.

Radio Sets in the AN/VRC-12 series provide short-range, one-way reversible, radio-telephone communications between vehicles and crew-served weapons.

The radio sets include one or two receiver-transmitters, and, in some cases one or two receivers. The receiver and receiver-transmitters are compatible. The variety of components included in the various nomenclatured radio sets provide flexibility in installation.

The Radio Set Control Group AN/GRA-39 (page 54) may be used for remote control of the AN/VRC-12 series.

TECHNICAL CHARACTERISTICS

Refer to technical characteristics of the RT-246/VRC and RT-524/VRC on page 44 and R-442/VRC on page 46.

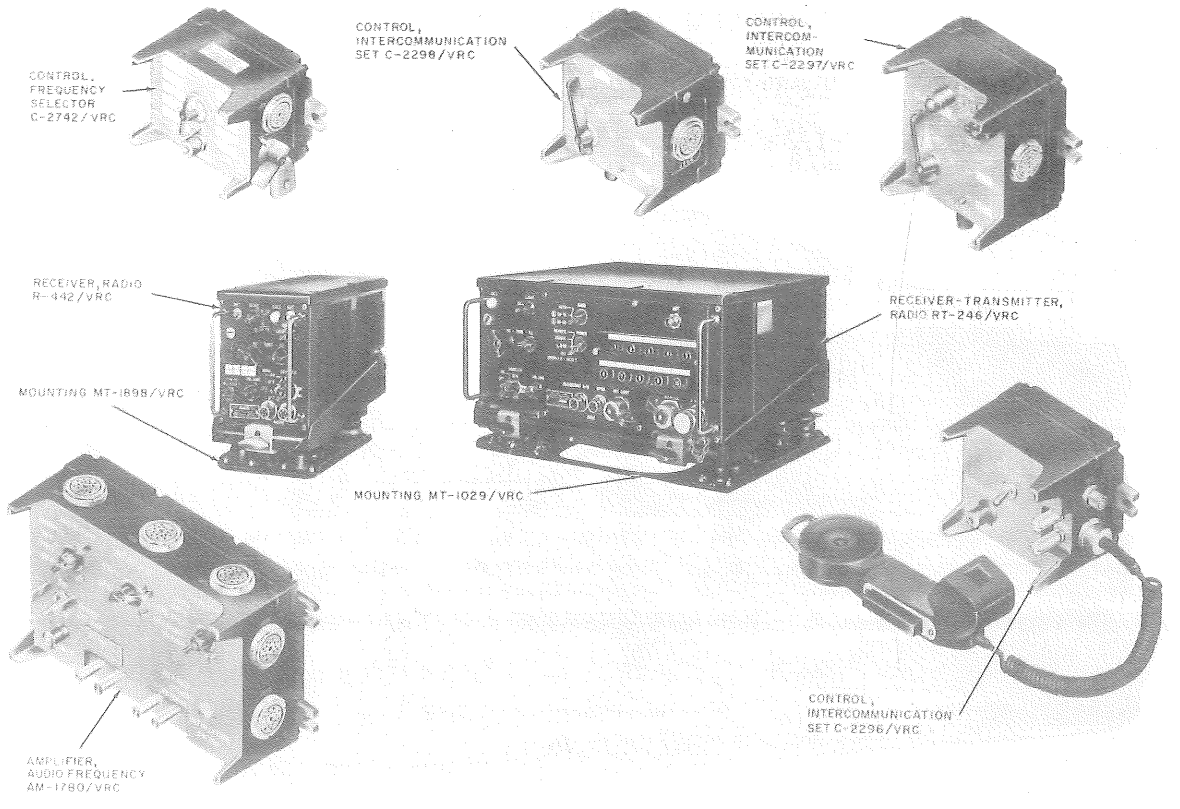
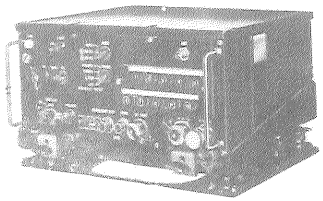


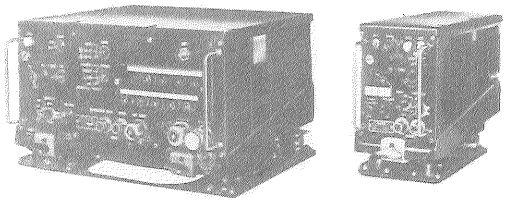
Figure 37. Major Components of Radio Set AN/VRC-12.

AUTOMATIC RECEIVER-TRANSMITTER



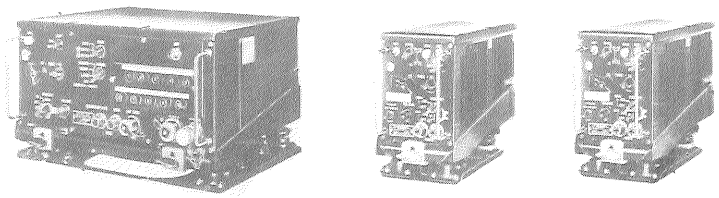
RECEIVER-TRANSMITTER
RT-246/VRC

RADIO SET AN/VRC-43

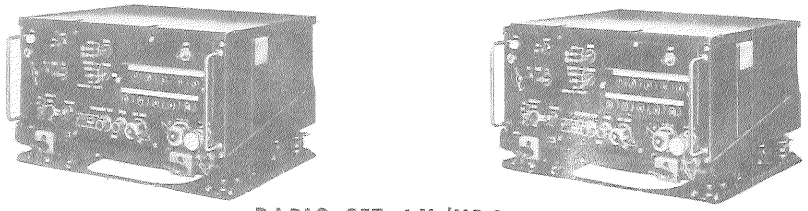


RECEIVER, RADIO
R-442/VRC

RADIO SET AN/VRC-12

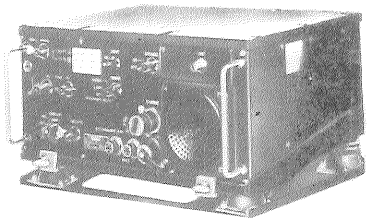


RADIO SET AN/VRC-44



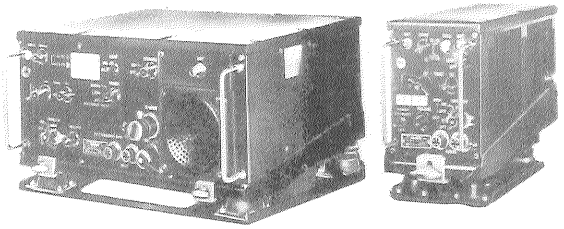
RADIO SET AN/VRC-45

MANUAL RECEIVER-TRANSMITTER



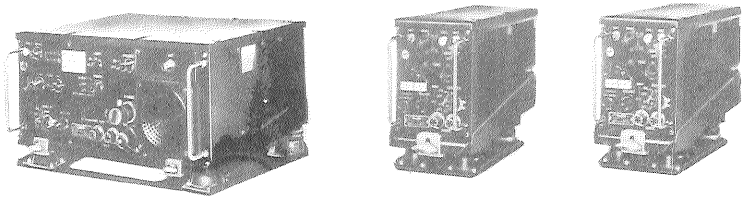
RECEIVER-TRANSMITTER
RT-524/VRC

RADIO SET AN/VRC-46

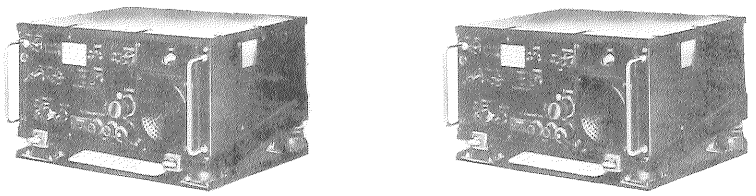


RECEIVER, RADIO
R-442/VRC

RADIO SET AN/VRC-47



RADIO SET AN/VRC-48



RADIO SET AN/VRC-49

Figure 38. Configurations of Radio Set AN/VRC-12 Series.

RECEIVER-TRANSMITTERS, RADIO RT-246/VRC AND RT-524/VRC

STATUS: Standard A.

STOCK NRS: 5820-892-0623 (RT-246/VRC), 5820-892-0622 (RT-524/VRC).

REFERENCE: TM 11-5820-401-10.

GENERAL INFORMATION

Receiver-Transmitters, Radio RT-246/VRC and RT-524/VRC are rugged and compact. Each has a watertight case and uses the new 5-pin connector instead of the 10-pin connector. . AN/VRC-12 series configurations in which the RT-246/VRC and RT-524/VRC are used as shown on page 43.

TECHNICAL CHARACTERISTICS

Type of Service: FM.
Voice 30F3.

Frequency Range: 30.0 mc to 75.95 mc.
920 Channels, Channels 50 kc apart.

Planning Distance: 24 km.

Antenna: 10-foot center fed whip.
AT-912/VRC (fig. 41).

Power output: 35 watts (high)
1-3 watts (low)

Power Requirement: High Power: 10 amps at 25.5v DC.
Low Power: 3 amps at 25.5v DC.

Special: The only differences between the RT-246/VRC and the RT-524/VRC are that RT-246/VRC has 10 push button presets and no internal loudspeaker. The RT-524/VRC has an internal loudspeaker but has no preset abilities.

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu ft)	Weight (lbs)
RT-246/VRC	6-19/32 x 13-5/32 x 15-11/32	0.67	61
RT-524	6-19/32 x 13-5/32 x 15-11/32	0.67	58



Figure 39. Receiver-Transmitter RT-246/VRC.

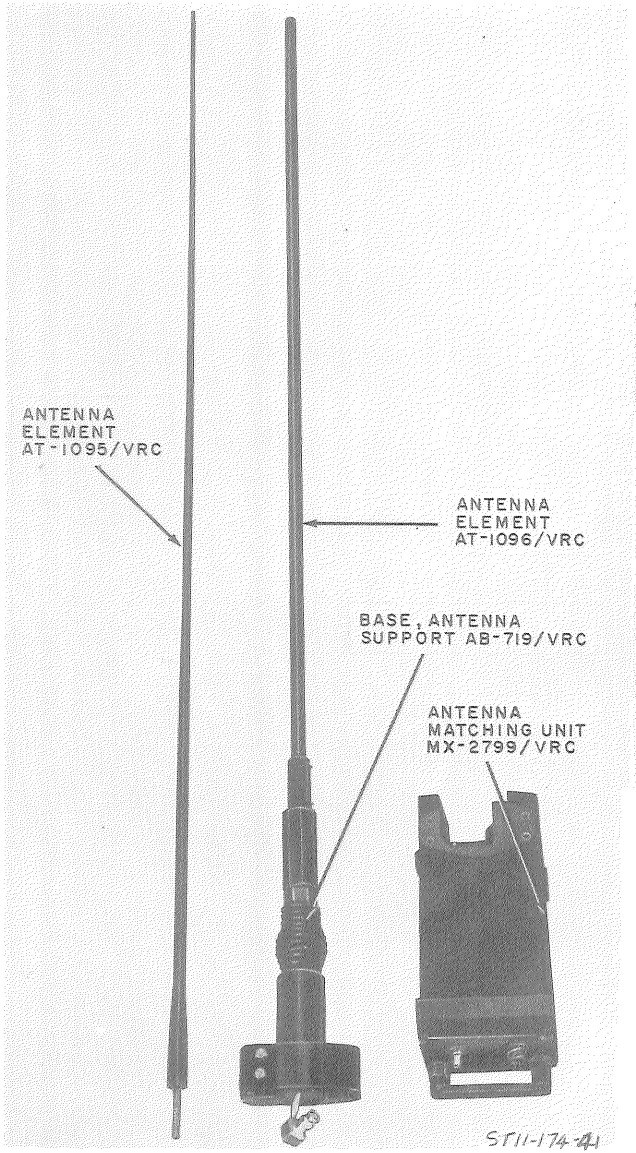


Figure 41. Antenna AT-912/VRC.

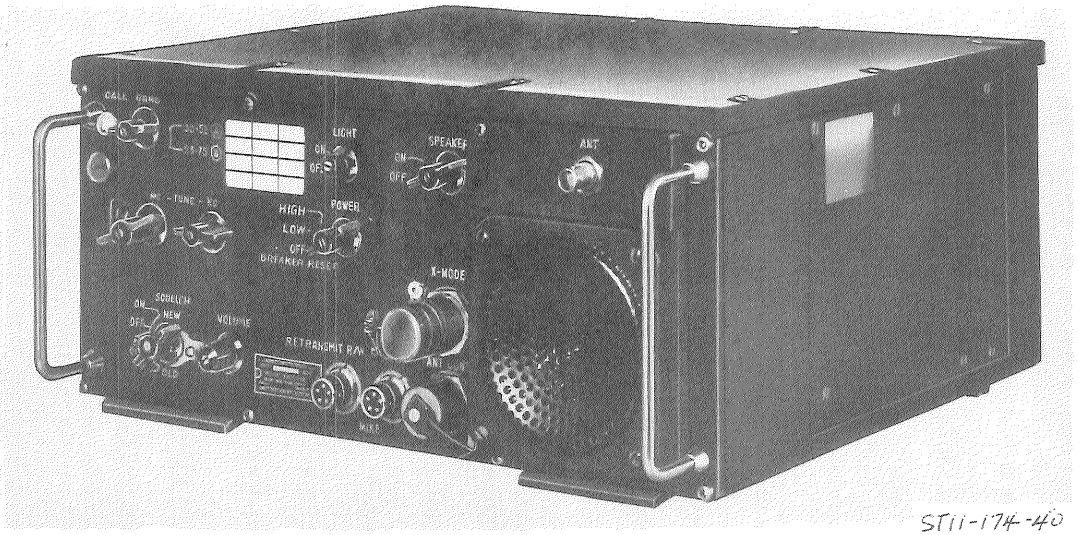


Figure 40. Receiver-Transmitter RT-524/VRC.

RECEIVER, RADIO R-442/VRC

STATUS: Standard A

STOCK NR: 5820-892-0624.

REFERENCE: TM 11-5820-401-10

GENERAL INFORMATION

Receiver, Radio R-442/VRC is a rugged, lightweight, compact receiver housed in a water-tight case. All operating controls are located on the front panel. The R-442/VRC acts as the auxiliary receiver in the AN/VRC-12 and AN/VRC-43 through -49 radio sets.

TECHNICAL CHARACTERISTICS

Type of Service: FM.

Frequency Range: 30.0 mc to 75.95 mc.
920 Channels, Channels 50 kc apart.

Antenna: 3 section whip (fig. 43).

Power Requirements: 0.75 amps at 25.5 v DC.

Special: An external loudspeaker must be used with this set.

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu ft)	Weight (lbs)
R-442/VRC	5-11/32 x 6-24/32 x 13-3/32	0.22	18.5

STUDENT NOTES:

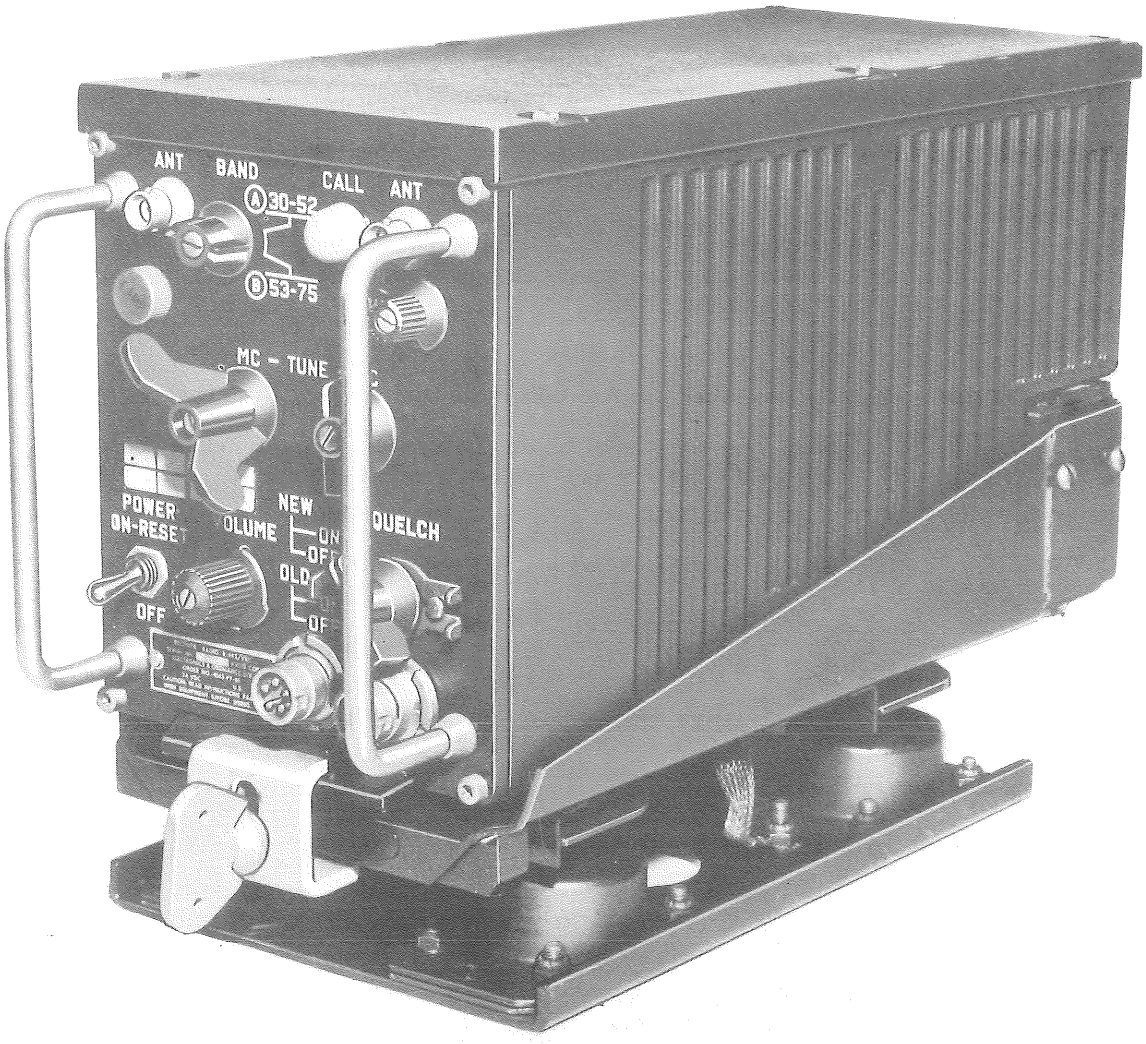


Figure 42. Receiver, Radio R-442/VRC.

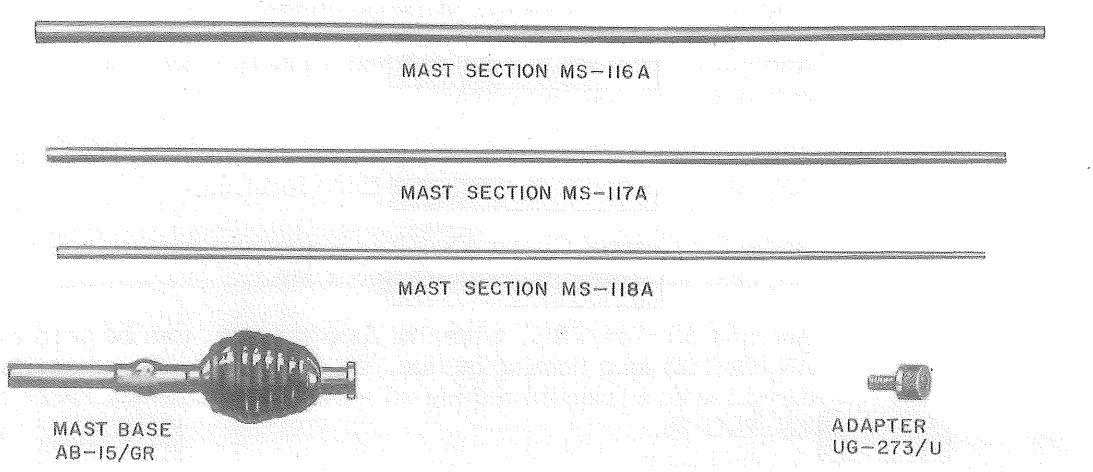


Figure 43. Receiver antenna.

RADIO SET AN/PRC-25

STATUS: Standard A

STOCK NR: 5820-857-0759

REFERENCE: TM 11-5820-398-10

GENERAL INFORMATION

Radio Set AN/PRC-25 is a short-range, man-pack portable, receiver-transmitter that is used to provide two-way voice communication.

Receiver-Transmitter, Radio RT-505/PRC-25 is part of the AN/PRC-25 and is used in vehicular installations as part of Radio Sets AN/GRC-125 and AN/VRC-53 (pages 50 and 51).

The AN/PRC-25 replaces the AN/PRC-8(*) -9(*) and -10(*) series radio sets and the AN/PRC-6 radio set. Also, the AN/GRC-125 and AN/VRC-53 radio sets replace several of the radio sets in the AN/GRC-3 through -8 series.

TECHNICAL CHARACTERISTICS

Type of Service: FM.
Voice 30F3.

Frequency Range: 30.0 mc to 75.95 mc in 920 channels; channels 50 kc's apart.

Planning Distance: 8 km.

Antenna: 3-ft, semi-rigid, steel tape.
10-ft multisection whip.

Power Out: 1.5 W.

Power Requirements: 2.5v DC and 12.5v DC.
Dry battery BA-386.

Special: There are 2 presets available on the tuning dials.

The set has the capability of retransmission by the use of a retransmission cable kit MK-456/G. It consists of an 18-foot long cable with five pin connectors at each end and a junction box, for monitoring purposes only, at the center.

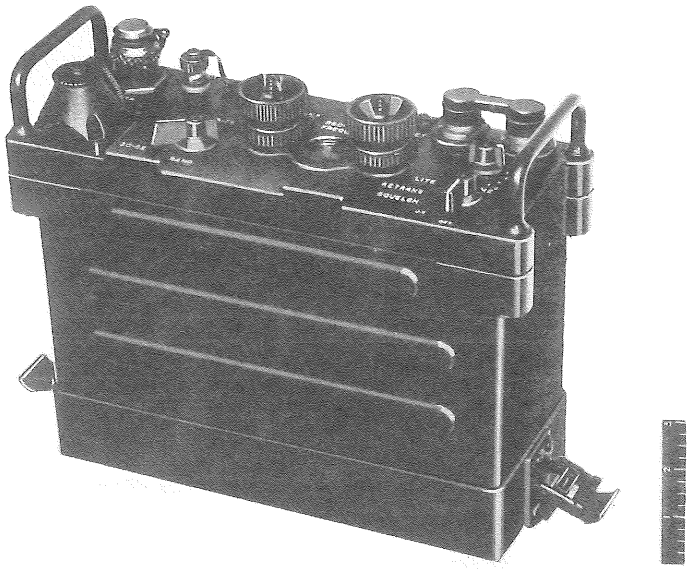
Antenna RC-292 can be used to extend the operating distance of the AN/PRC-25 when it is used at a fixed location.

Radio Set Control Group AN/GRA-39 permits remote control of the AN/PRC-25 from distances up to 3.2 km.

Antenna AT-784/PRC, a homing loop antenna, can be used with the AN/PRC-25 as a homing device. It permits the operator to find the direction of a transmitted signal within the frequency range of the AN/PRC-25.

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu ft)	Weight (lb.)
AN/PRC-25	4 x 14 x 11	.36	19 w/battery



ST II-174-44

Figure 44. Receiver-Transmitter, Radio RT-505/PRC-25.

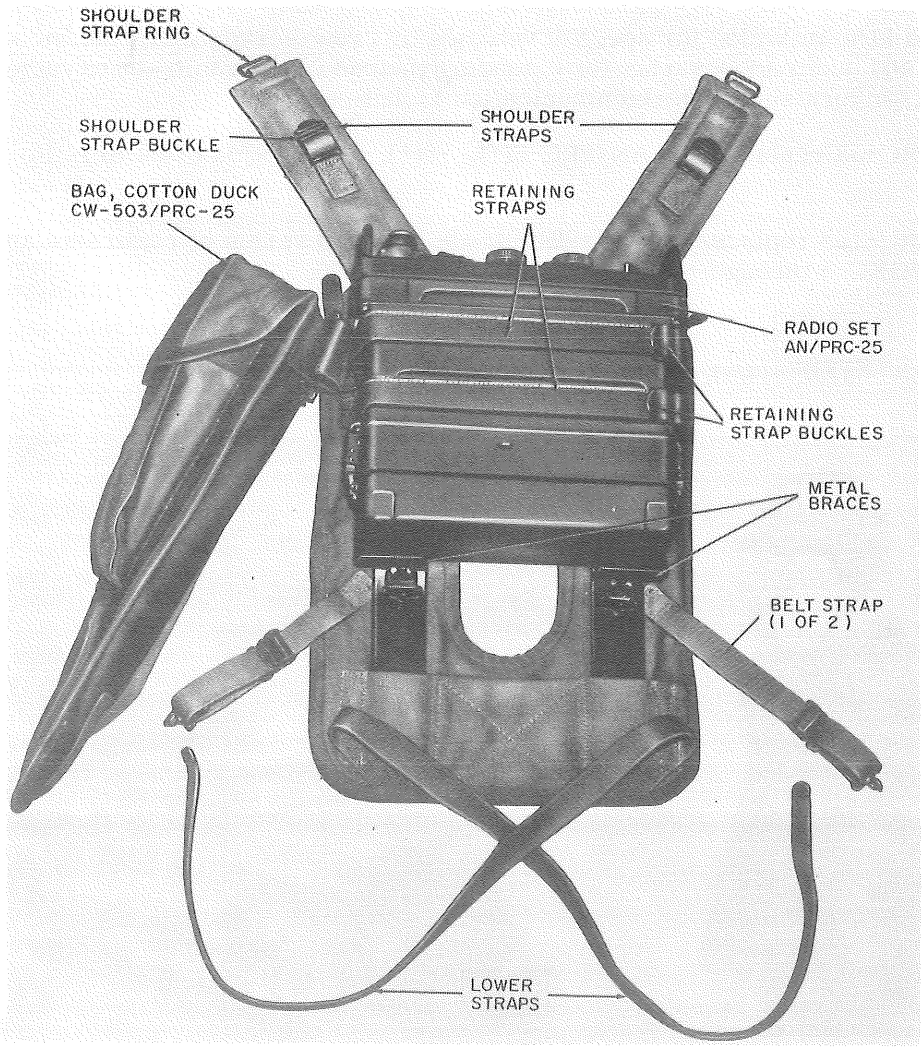


Figure 45. AN/PRC-25 in Harness ST-138 for man pack.

RADIO SETS AN/VRC-53 AND AN/GRC-125

STATUS: Standard A

STOCK NR: 5820-086-7586 (AN/GRC-53); 5820-086-7536 (AN/GRC-125)

REFERENCE: TM 11-5820-498-10

GENERAL INFORMATION

Radio Set AN/VRC-53 is used only in vehicles; the set includes Receiver-Transmitter RT-505/PRC-25, Amplifier-Power Group OA-3633/GRC, and Mounting MT-1029/VRC to hold the OA-3633/GRC onto the vehicle.

Radio Set AN/GRC-125 is a combination of Radio Sets AN/PRC-25 and AN/VRC-53, allowing it to be used as either a man-pack radio set (AN/PRC-25) or a vehicular radio set (AN/VRC-53).

Amplifier-Power Supply Group OA-3633/GRC provides operating voltage to the RT-505/PRC-25, and also provides amplification of received signals through a self-contained loudspeaker.

Installation kits, provided for specific vehicles or crew-served weapons, include control boxes, cables, and audio accessories for extending the use of the radio set to various crew members, and for furnishing intercommunication facilities.

The AN/VRC-53 replaces the AN/PRC-8(*), -9(*), and -10(*) series of radio sets used in vehicles.

The AN/GRC-125 replaces the AN/PRC-8, -9, and -10 series of radio sets and certain sets of the AN/GRC-3 through -8 series.

TECHNICAL CHARACTERISTICS

Refer to the characteristics of Radio Set AN/PRC-25 on page 48.

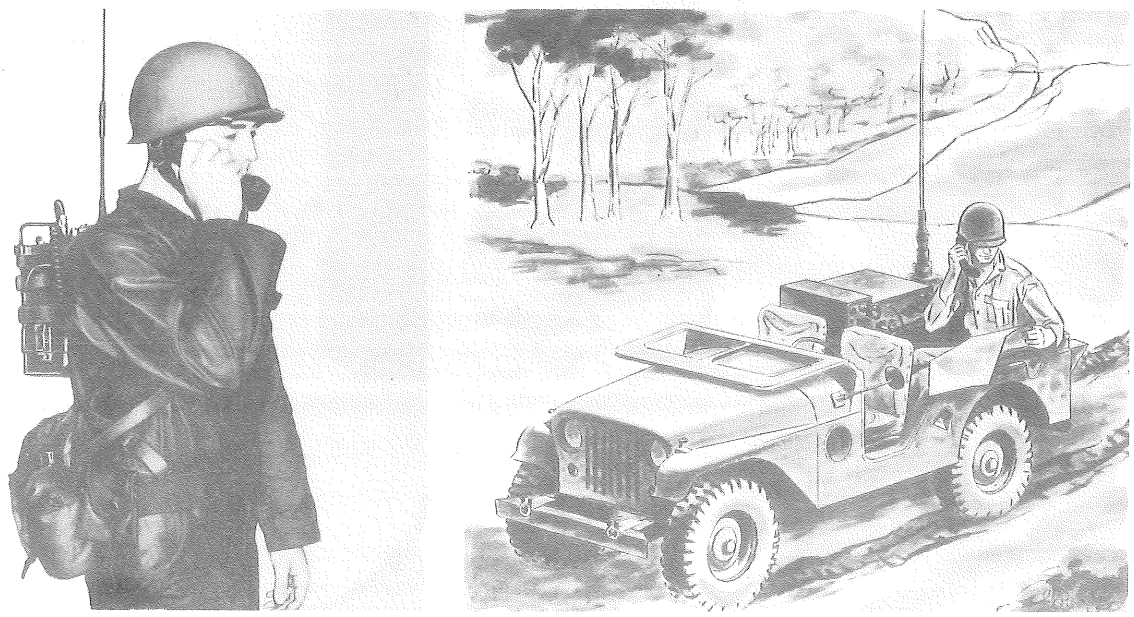


Figure 46. Vehicular and man-pack installations.

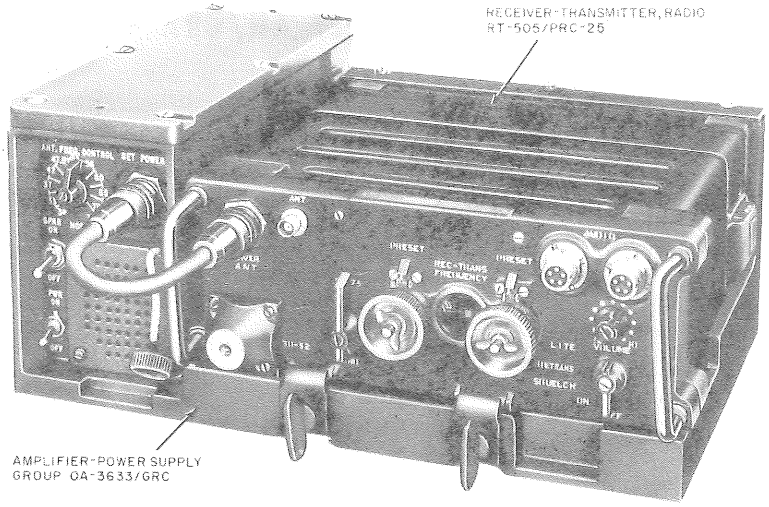


Figure 47. Amplifier-Power Supply Group OA-3633/GRC with RT-505/PRC installed.

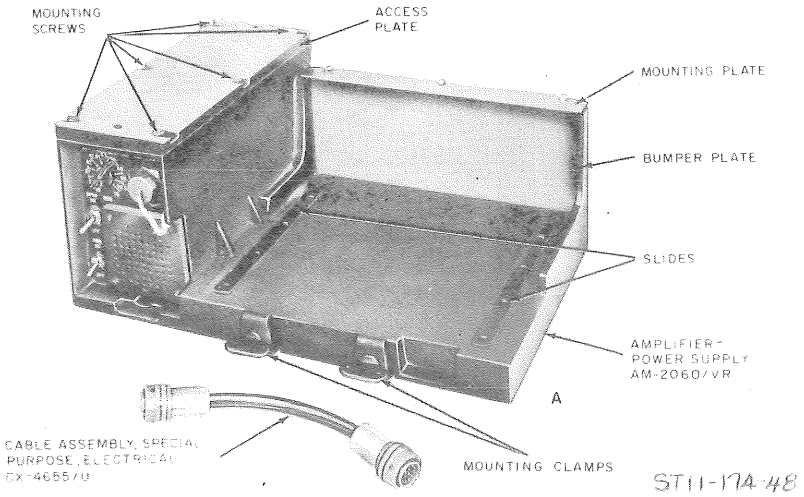


Figure 48. Amplifier-Power Supply Group OA-3633/GRC.

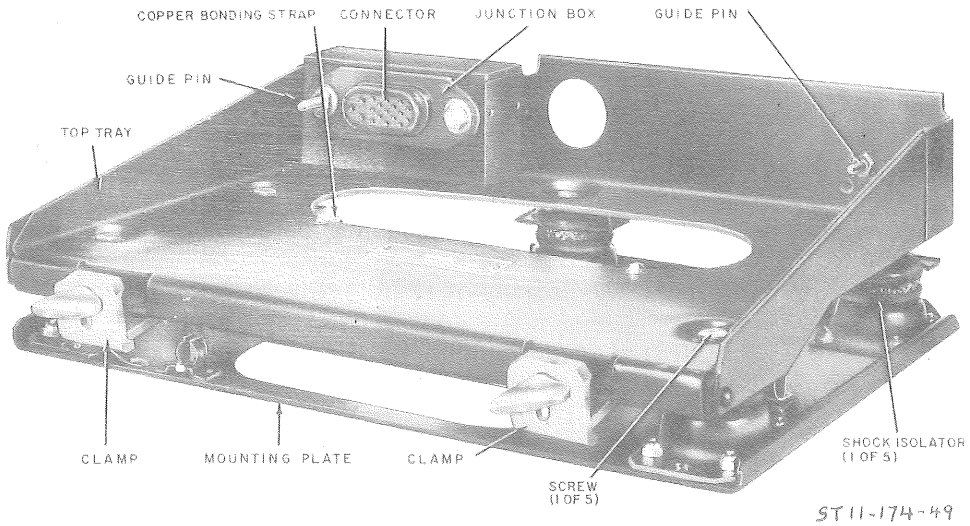


Figure 49. Mounting MT-1029/VRC.

CONTROL, RADIO SET AN/GRA-6

STATUS: Standard A.

STOCK NR: 5820-537-3848.

REFERENCE: TM 11-5038

GENERAL INFORMATION

Control, Radio Set AN/GRA-6 (fig. 50) provides means for controlling and operating a radio set using one or two receiver-transmitters, amplifiers, or other similar units of the push-to-talk type from a position approximately two miles away from the location of the set. In addition, the control group makes provision for local control of the radio set through a continuous dc circuit and for two-way telephone (duplex) communication and ringing between the remote and local control operators. Control, Radio Set AN/GRA-6, consists of Local Control C-434/GRC, Remote Control C-433/GRC, Handset H-33/PT, Bag CW-189/GR, Interconnecting Box J-654, and Loudspeaker, Permanent Magnet LS-166/U.

Provides local and remote control facilities for Radio Sets AN/GRC-3 through -8 and Radio Sets AN/PRC-8, -9, and -10.

INSTALLATION

Local Control C-434/GRC fits into a compartment in the mounting of the AN/GRC-3 through -8 sets. Remote Control C-433/GRC can be carried using the shoulder straps issued with the unit.

TECHNICAL CHARACTERISTICS

Type of Service: Voice, 20 cps, Hand-Crank Generator.

Planning Distance: 3.2 kilometers (2 miles).

Power Requirements: One BA-414/U (45 v): Used in the C-433/GRC.
Four BA-30 (1.5 v): Two each in the C-433/GRC and the C-434/GRC.

Special: The facilities provided by the remote control group when used with a radio set are as follows:

a. With two radio sets connected to the local control unit.
   (1) Telephone communication between the local and remote units.
   (2) Monitoring of both radio sets at the local and the remote control units audio connectors.
   (3) Transmission over either set from the local and the remote control units at the selection of the operator.

b. With one radio set connected to the local control unit.
   (1) Telephone communication between the local and remote control units.
   (2) Monitoring of radio set at both the local and remote control units audio connectors.
   (3) Transmission over the radio set from both the local and remote control units.
   (4) Control of power to the set from the remote control unit.

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu ft)	Weight (lbs)
Remote Control C-433/GRC	3-1/2 x 8-1/4 x 7-3/32	.12	7
Local Control C-434/GRC	3-1/2 x 8-9/16 x 10-1/8	.17	10.5

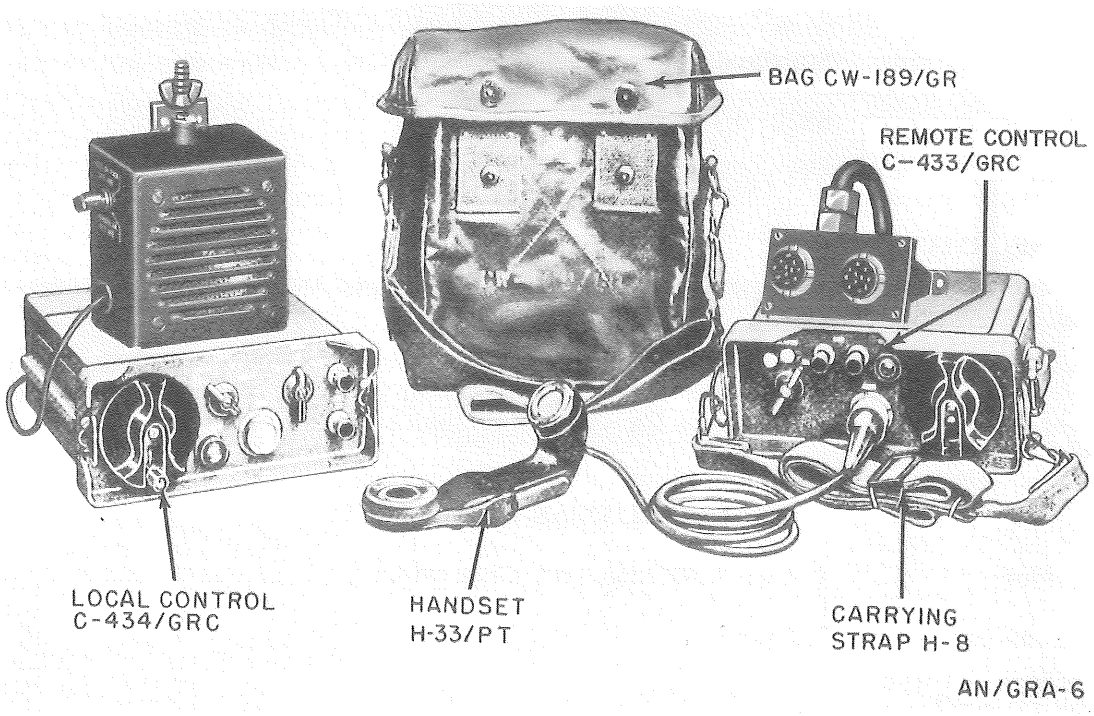


Figure 50. Control, Radio Set AN/GRA-6.

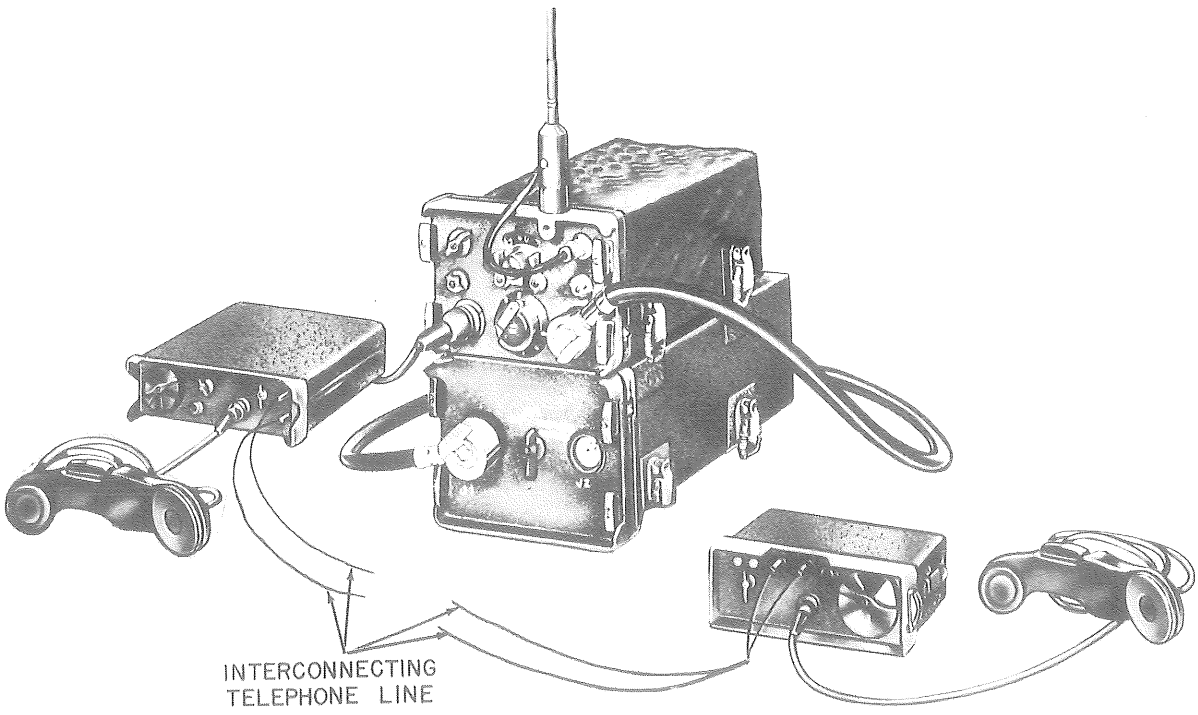


Figure 51. Field Operation of Control, Radio Set AN/GRA-6.

RADIO SET CONTROL GROUP AN/GRA-39

STATUS: Standard A.

STOCK NR: 5820-889-3860.

REFERENCE: TM 11-5820-477-12

GENERAL INFORMATION

Radio Set Control Group AN/GRA-39 is used with Radio Sets AN/VRC-12, AN/VRC-43 through -49, and AN/PRC-25.

The AN/GRA-39 allows a remote operator to transmit or receive voice communications through one radio receiver-transmitter set up at a maximum distance of 3.2 km away from the radio set. The AN/GRA-39 provides for voice communication between the local and remote operators.

TECHNICAL CHARACTERISTICS

Type of Service: Voice, 3,900 cps Tone Generator.

Planning Distance: 3.2 km.

Power Requirements: 9 v to 6.6 v DC.
6 BA-30 Dry Batteries are required for each control unit.

Special: The remote control unit, Control, Radio Set C-2328/GRA-39, has all operating controls and self-contained loudspeaker for monitoring on the front panel. A battery compartment is provided at the rear of the control unit case. The local control unit, Control, Radio Set C-2329/GRA-39, also has all operating controls on the front panel with the battery contained in the rear compartment, but it does not have a self-contained loudspeaker.

PHYSICAL CHARACTERISTICS

Item	Dimensions (in)	Volume (cu ft)	Weight (lbs)
Control, Radio Set C-2328/GRA-39	3.9 x 8.9 x 8.9	0.18	11.0
Control, Radio Set C-2329/GRA-39	3.9 x 8.9 x 8.9	0.18	10.25
Bag, Cotton CW-598/GRA-39	9.5 x 8.8 x 9.5	0.29	2.1

STUDENT NOTES:

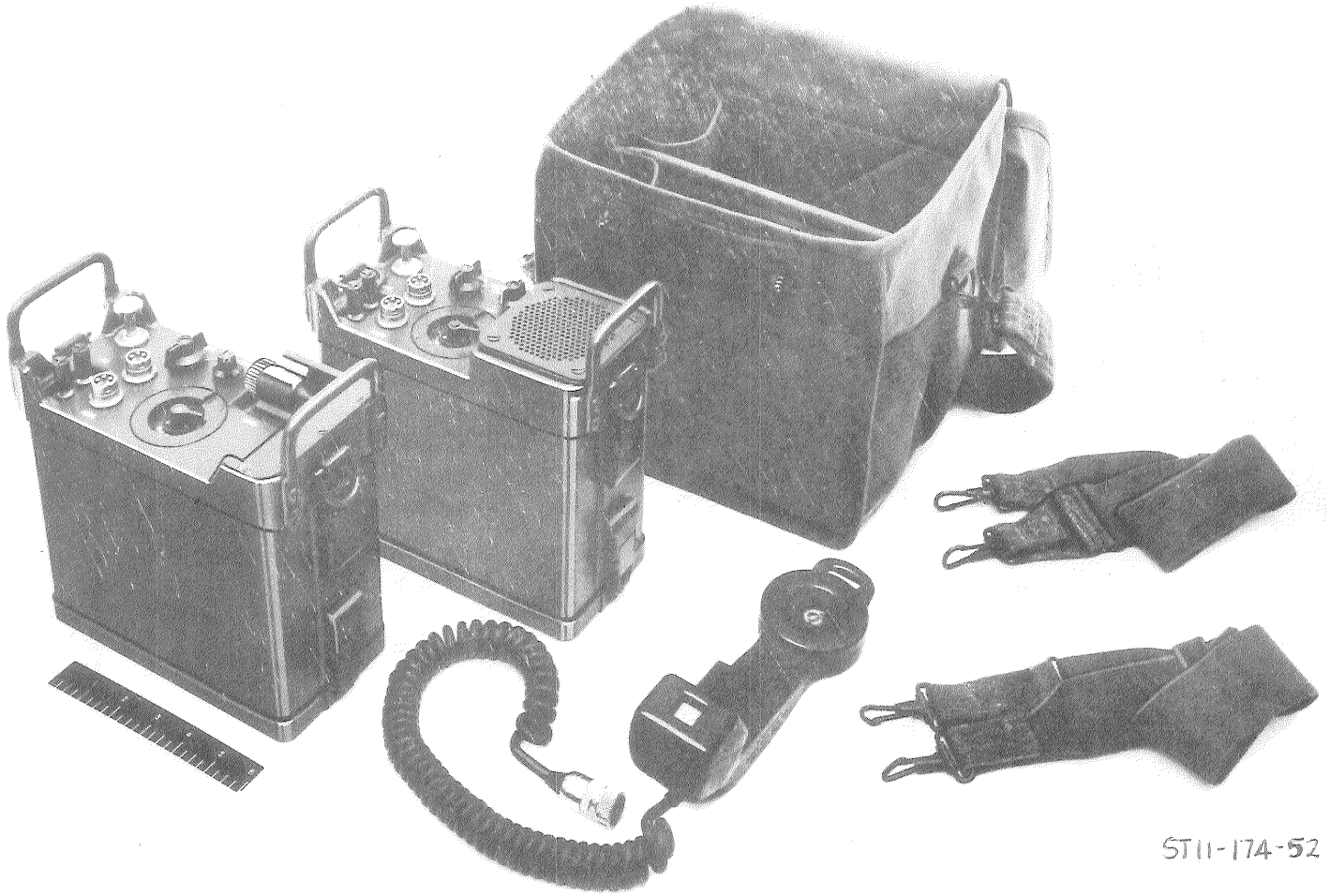


Figure 52. Radio Set Control Group AN/GRA-39( ).

CONTROL, RADIO SET AN/GSA-7

STATUS: Standard A.

STOCK NR: 5820-543-1397

REFERENCE: TM-11-5135-15.

GENERAL INFORMATION

Control, Radio Set AN/GSA-7 (fig. 53) is a small, lightweight, electronic switching device for use in integrated radio-wire systems. Operated on the ground or in stationary vehicles, it can connect radios (transmitters and receivers) with local battery telephone equipment. Two AN/GSA-7 sets can also be used as an automatic relay between two push-to-talk radio sets. The set may be left unattended. Provides facilities for operator to ring the local telephone, ring remote radio station and wire equipment user, monitor transmissions, and to communicate with both ends of a circuit.

Radio Set Control Group AN/GRA-23 is a transistorized version of the AN/GSA-7. Both sets provide the same services and are used in the same manner. The AN/GRA-23 is intended to replace the AN/GSA-7.

TECHNICAL CHARACTERISTICS

Type of Service: Voice.

Planning Distance: Radio - Depends upon radio sets used.
Wire - 16 kilometers (10 miles).

Power Requirements: Self-contained, with choice of operation from: 22-30 volts dc; or, 115 volts ±10%, or 230 volts ±10%, 50 to 400 cps. Approximate power drain is 25 watts.

Special: AN/GSA-7 has a warning device which gives a 2,000 cps beep every 5 seconds while the radio transmitter is on the air.

Audio Frequency Oscillator O-574/GRA may be used in conjunction with the AN/GSA-7 to permit a radio set operator to signal a telephone that is connected to an unattended AN/GSA-7. The O-574/GRA is a self-contained, battery-powered signal generator that generates a 1600-cps ringing signal for use with mobile radio equipment, such as Radio Sets AN/PRC-8(*), -9(*), -10(*), and -25, and the AN/VRC-12 family of sets, that do not have vf ringing circuits.

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu ft)	Weight (lbs)
Control Unit	9 x 7-1/4 x 12-7/8	.49	27.5
Mounting MT-791/U	3-7/8 x 8-3/4 x 12-3/4	.25	11.8

STUDENT NOTES:

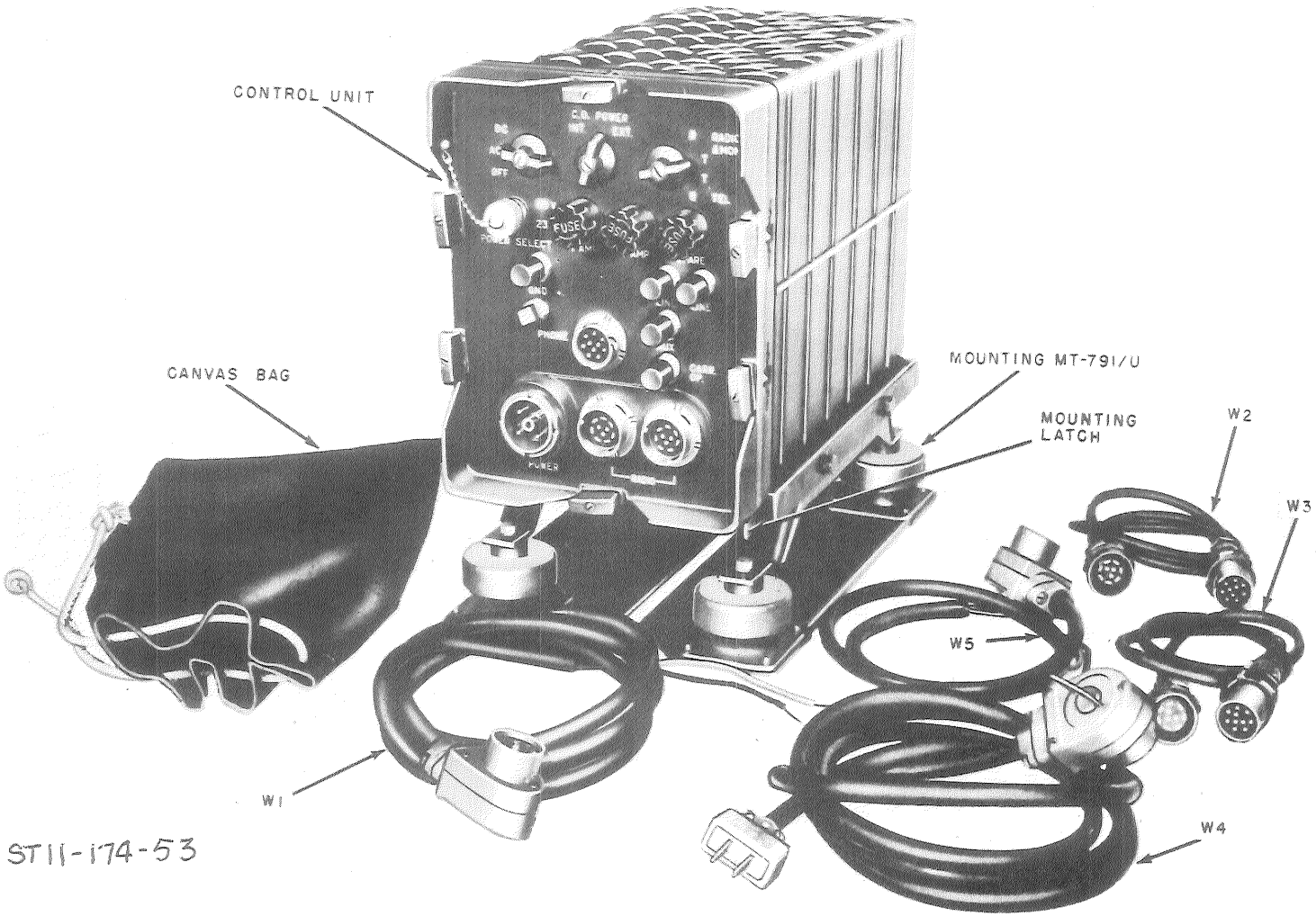


Figure 53. Control, Radio Set AN/GSA-7.

ANTENNA EQUIPMENT RC-292

STATUS: Standard A.

STOCK NR: 5820-497-8554.

REFERENCE: TM 11-5020.

GENERAL INFORMATION

Antenna Equipment RC-292 (fig. 54) is an elevated, wide-band, modified ground plane antenna designed to operate over the frequency range of 20 to 70 megacycles. The antenna consists of one vertical radiating element and three ground plane elements. The lengths of the elements can be preadjusted for the best performance for the frequency range on which it is to be used. The antenna is elevated on a 30-foot sectional mast which, in turn, is held erect by guy ropes and ground stakes. The maximum height of this antenna is 41.5 ft and the minimum is 37 ft. Antenna Equipment RC-292 is used to increase the distance range of Radio Sets AN/PRC-8(*), AN/PRC-9(*), and AN/PRC-10(*), AN/GRC-3 through -8, and any other radio sets using a similar frequency range.

TECHNICAL CHARACTERISTICS

Frequency Range: 20 to 70 megacycles.

Special: No tuning required except for presetting the antenna element lengths to the desired frequency range.

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu ft)	Weight (lbs)
Antenna Equipment RC-292 (including spare parts)	35 x 12 x 8	1.94	48

STUDENT NOTES:

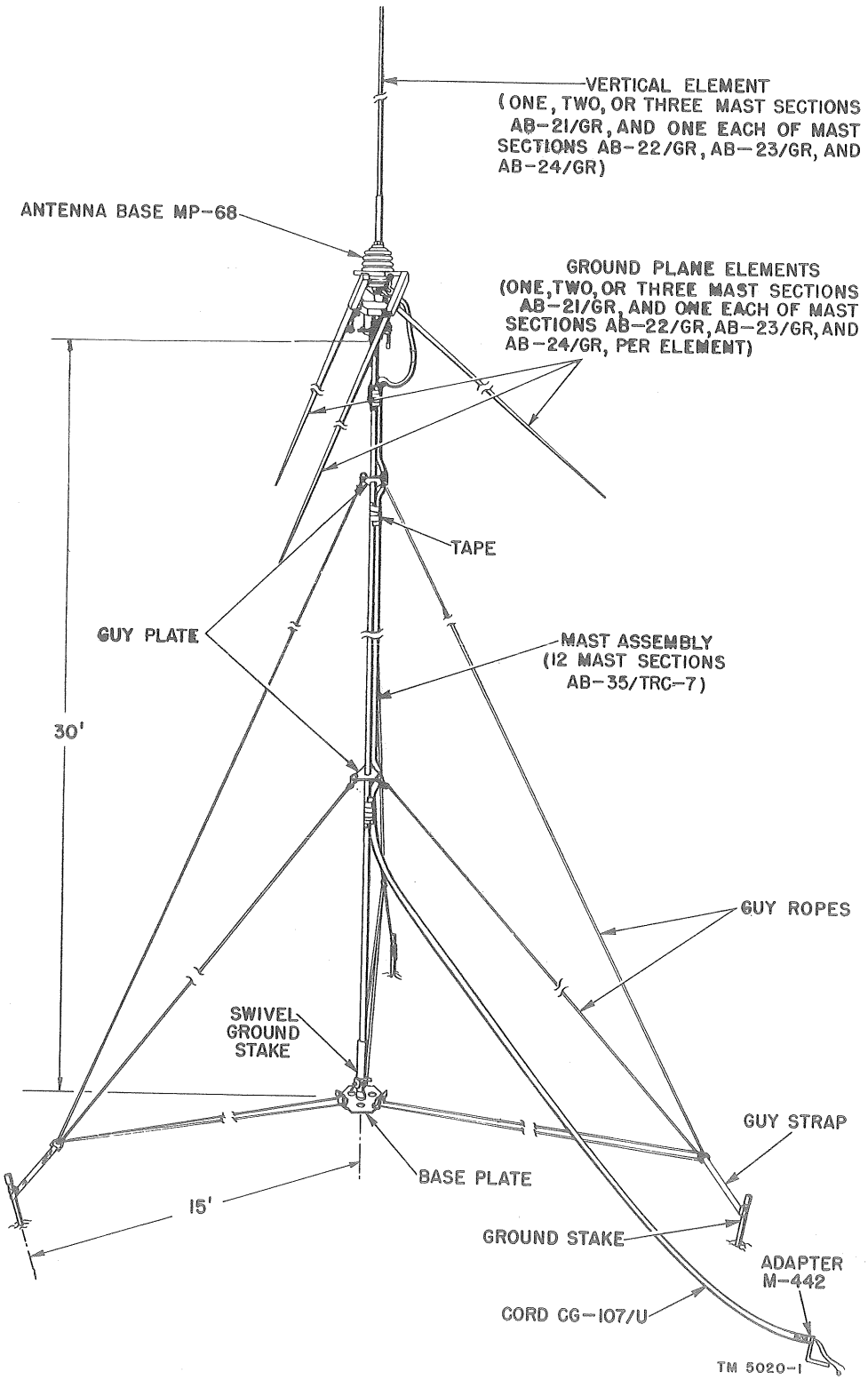


Figure 54. Antenna Equipment RC-292, assembled for operation.

RADIO SET AN/ARC-44

STATUS: Standard A.

STOCK NR: 5821-204-12.

REFERENCE: TM 11-5821-204-12.

GENERAL INFORMATION

Radio Set AN/ARC-44 (fig. 55) is a subminiature, airborne, fm radio, receiver-transmitter. Its primary function is to provide two-way communication links between aircraft or between aircraft and ground stations. An auxiliary antenna system (AN/ARA-31) enables the operator to "home-in" on any fm signal within the frequency range of the AN/ARC-44.

Radio Set AN/ARC-44 is used in aircraft by pilots and observers to communicate with fm radio sets of armored, artillery, and infantry units.

The basic radio set consists of Receiver-Transmitter, Radio RT-294(*)/ARC-44; Panel, Control SB-327/ARC-44; Panel, Signal Distribution, Radio SB-329/AR; Dynamotor DY-107/AR; Headset-Microphone H-101/U; Antenna AT-454/ARC; and five connectors (not shown). Antenna Group AN/ARA-31 may be used with but is not a component of the AN/ARC-44.

TECHNICAL CHARACTERISTICS

Type of Service:	Transmitter: FM, voice (36F3). Receiver: FM, Voice, RATG, MCW (36F2).
Frequency Range:	24 - 51.9 mc (Ch. spacing 100 kc).
Planning Distance:	Line of sight (approx. 80 kilometers (50 miles) Air-Ground).
Antenna:	8.2 ft Whip (consists of Antenna Coupler CU-361A/ARC, Antenna Element AT-455A/ARC and Antenna Base AB-340A/ARC).
Power Out:	6 w, 52 ohm resistive load (RT-294/ARC-44). 8 w, 52 ohm resistive load (RT-294A/ARC-44).
Power Requirement:	27.5 v DC Aircraft Electrical System and Dynamotor DY-107/AR.

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu ft)	Weight (lbs)
Receiver-Transmitter, Radio RT-294(*)/ARC-44	13.9 x 5.13 x 7.24	.30	14
Panel, Control SB-327/ARC-44	6.06 x 5.75 x 3	.06	2.2
Panel, Signal Distribution, Radio SB-329/AR	5.30 x 5.75 x 2.625	.05	1.7
Dynamotor DY-107(*)/AR	9.22 x 3.40 x 5.37	.10	6

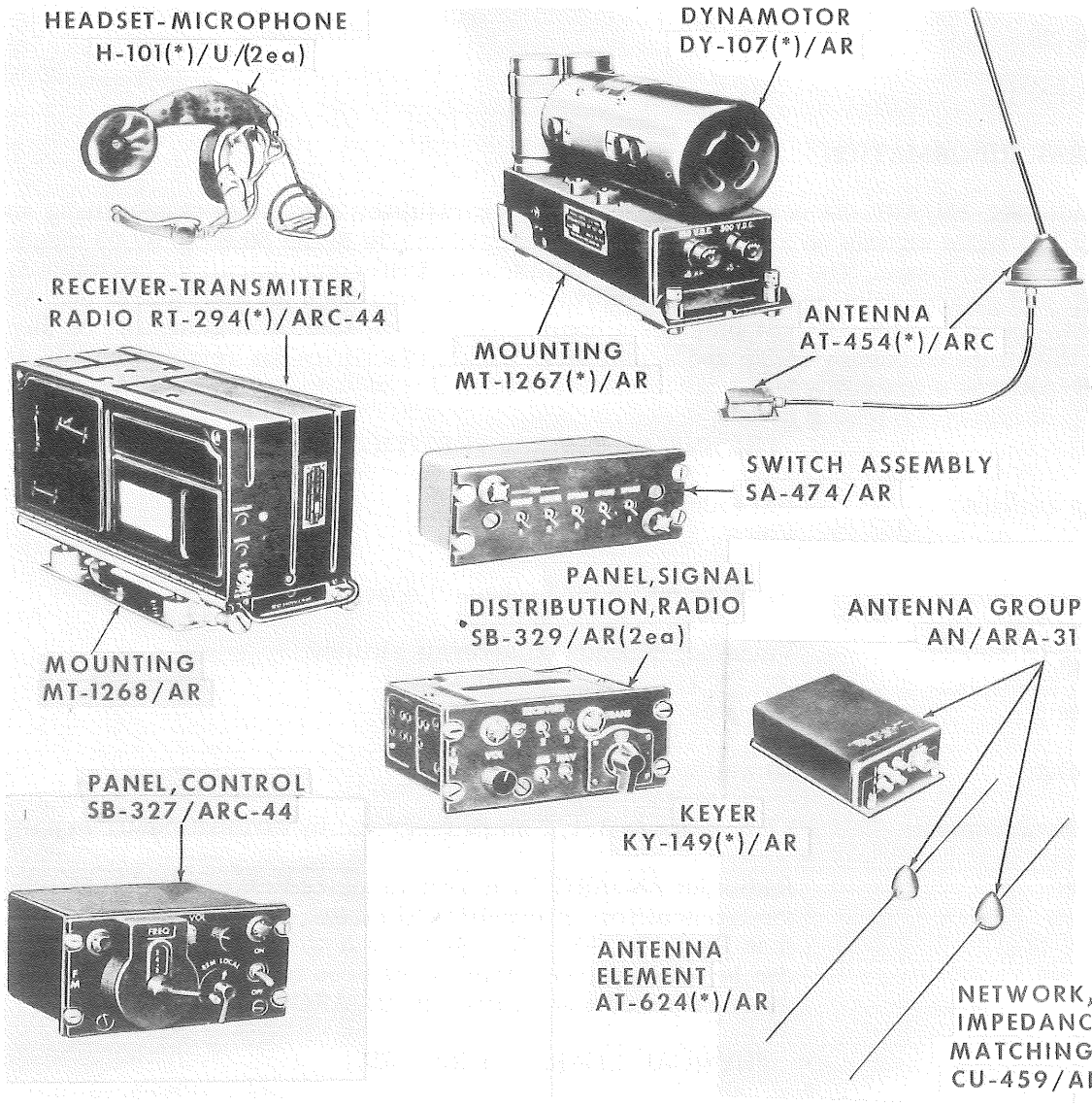


Figure 55. Radio Set AN/ARC-44.

STUDENT NOTES:

RADIO SET AN/ARC-54

STATUS: Standard A.

STOCK NR:

REFERENCE:

GENERAL INFORMATION

Radio Set AN/ARC-54 is an aircraft receiver-transmitter capable of transmitting and receiving FM radio signals on any 20 of the 800 preset channels in the 30.00 to 69.95 megacycle frequency range. The equipment provides tactical VHF communications between Army aircraft and ground units equipped with compatible radio sets such as AN/PRC-25 and AN/VRC-12. Radio Set AN/ARC-54 includes a homing system capable of "homing-in" on any RF signal within its frequency range and sensitivity. Built-in facilities for retransmission using two AN/ARC-54's are provided.

TECHNICAL CHARACTERISTICS

Type of Service:	FM (30F3). Voice.
Frequency Range:	30.00 to 69.95 mcs (channel spacing 50 kc).
Planning Distance:	Variable; depends on aircraft altitude.
Antenna:	AT-765, 5-foot fiberglass.
Power Out:	10 watts.
Power Requirement:	27.5 v DC -- 3-1/2 amps (supplied by aircraft power supply).
Special:	Radio Set AN/ARC-54 is transistorized except for three tubes in the transmitter. It provides 520 more communications channels than Radio Set AN/ARC-44 which it will replace. Retransmission can be accomplished without the need for applique units such as those required with Radio Set AN/ARC-44.

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu ft)	Weight (lbs)
Radio Set AN/ARC-54		0.5	30 (installed)

STUDENT NOTES:



Figure 56. Radio Set AN/ARC-54.

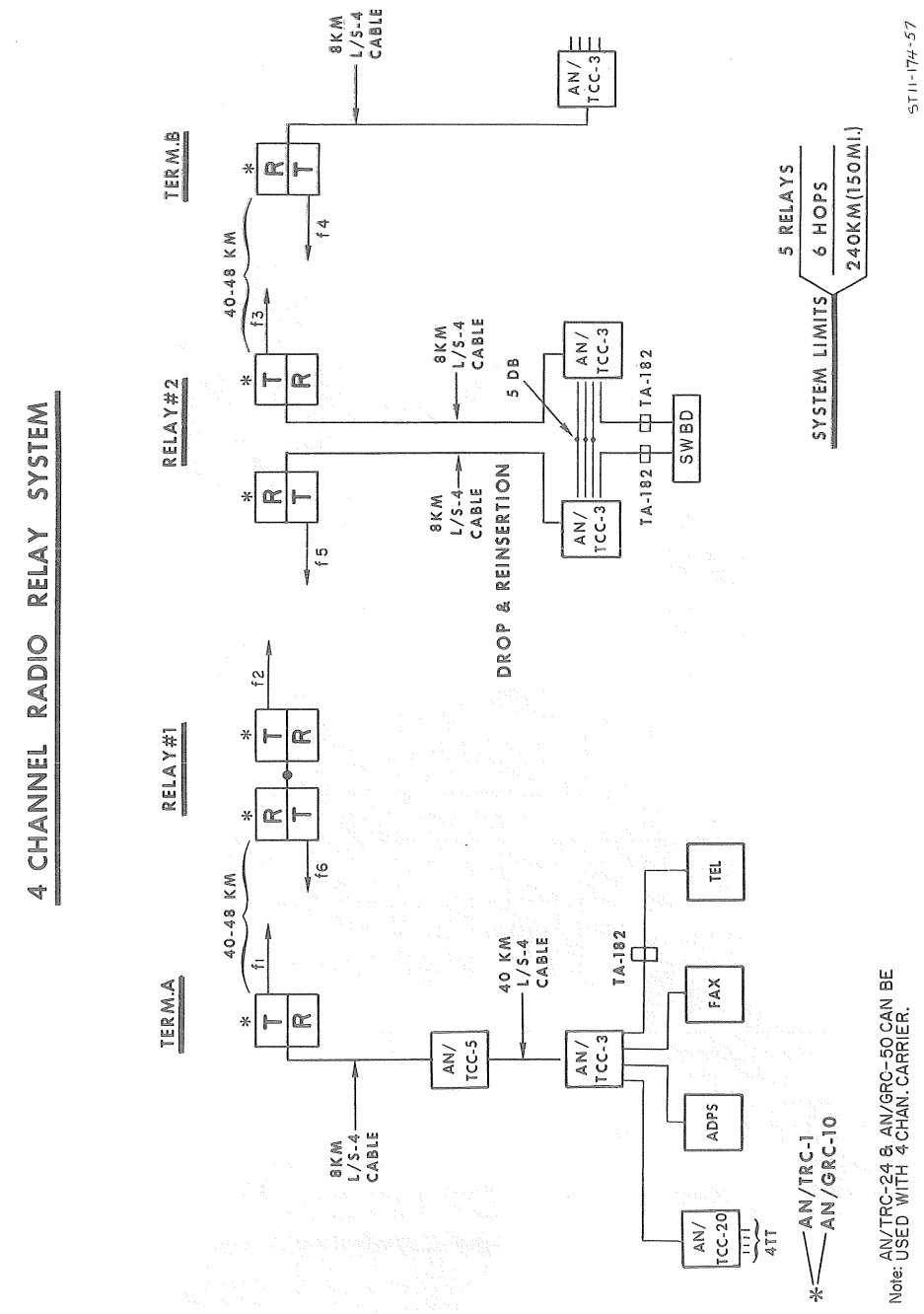


Figure 57. 4 Channel VHF Radio Relay System.

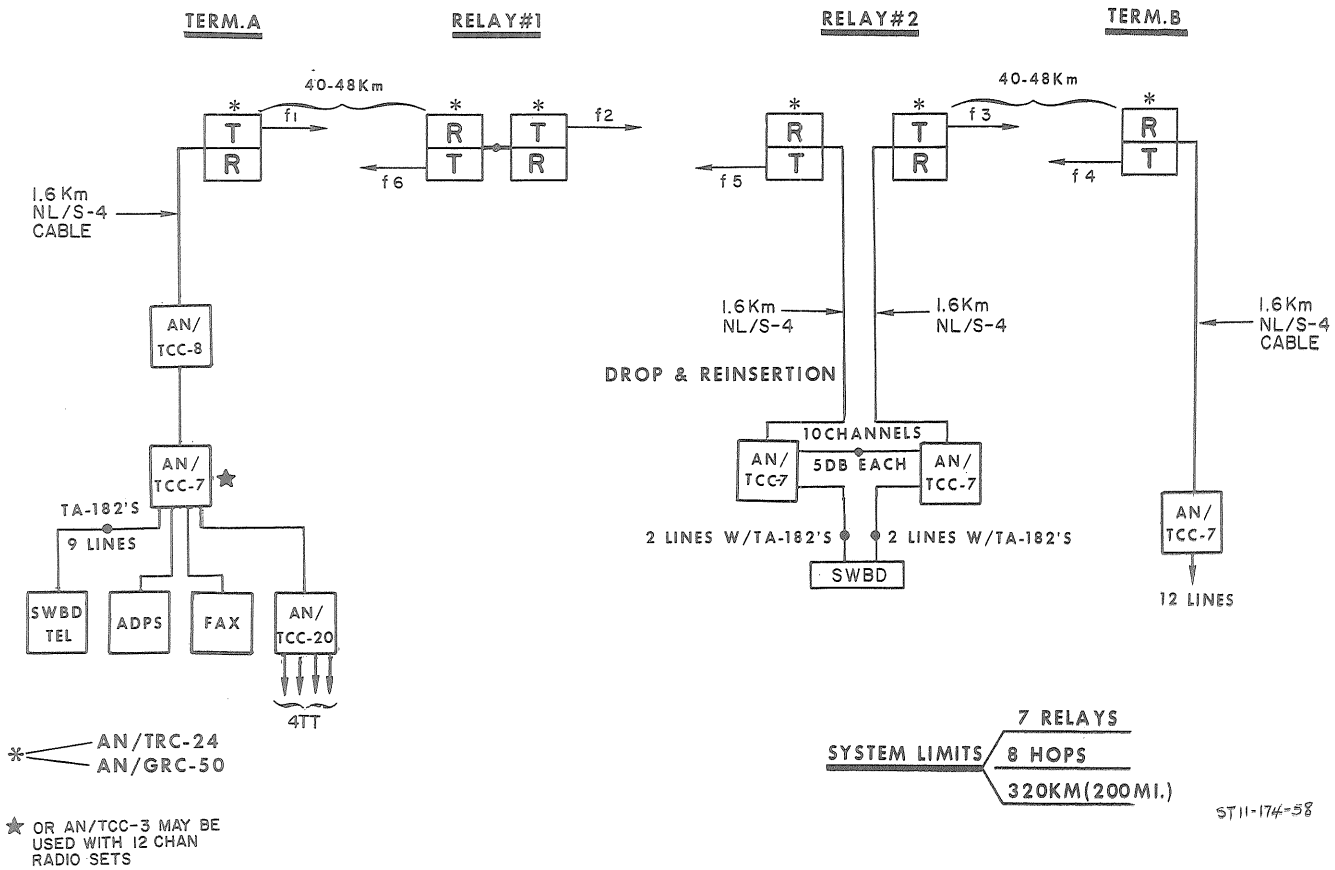


Figure 58. 12 Channel VHF Radio Relay System.

RADIO SETS AN/TRC-1, AN/TRC-3 AND AN/TRC-4

STATUS: Standard C

STOCK NRS: 5820-186-9245 (AN/TRC-1), 5820-186-3137 (AN/TRC-3), 5820-503-1230 (AN/TRC-4)

REFERENCE: TM 11-2601

GENERAL INFORMATION

Radio Sets AN/TRC-1 (fig. 59), -3 and -4 are ground-transportable, vhf radio relay sets designed to be used in conjunction with tactical wire carrier equipment to provide telephone, teletypewriter, or facsimile services; the set also may be used independently to provide a single voice channel. These sets can be mounted on vehicles or used in fixed and mobile installations. Normally used as a semi-fixed or a fixed station at corps and division level to provide both telephone and teletypewriter circuits. When used with the Terminal, Telephone AN/TCC-3, four telephone circuits and one order-wire circuit are provided. By using two Terminals, Telegraph AN/TCC-4, and one of the voice circuits from the AN/TCC-3, 16 full-duplex teletypewriter circuits can also be provided. These sets are used in many special applications such as fixed station radio keying circuits and higher headquarters emergency circuits.

TECHNICAL CHARACTERISTICS

Type of Service:	Voice (FM):	60F9.
	Data:	TTY; Facsimile.
	Baseband:	20 kc (250-20,000 cps).
	Input Devices:	AN/TCC-3 (FDM).
Frequency Range:	70 to 99.9 mc.	
	0.1 mcs channel spacing (300 ch).	
Planning Distance:	40 -48 km.	
System Limits:	5 Relays.	
	6 Hops.	
	240 km (planning).	
Antenna:	Three-element directional array (Yagi) on 40- or 50-foot mast (fig. 78).	
Power Out:	Low: 10 W.	
	High: 40 W.	
Power Requirements:	115 v, 50 to 60 cps.	
Power Source:	PE-75 (2.5 kw).	
Frequency Separation:	Xmtr-Rcvr: 3 mcs min.	
	Rcvr-Rcvr: 0.3 mcs.	
Frequency Control:	Crystal.	

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu ft)	Weight (lb)
Radio Rec. R-19(*)/TRC-1	8 x 19 x 13	1.1	43
Radio Trans. T-14(*)/TRC-1	11 x 19 x 13	1.5	66
Antenna AS-19(*)/TRC-1			470
Power Unit PE-75-(*)	27 x 36 x 20	11.2	330

CONFIGURATIONS

Radio Terminal Set AN/TRC-3: Two AN/TRC-1's

Radio Relay Set AN/TRC-4: Three AN/TRC-1's

Mobile Radio Terminal Set AN/MRC-57: Two AN/TRC-1's, one AN/TCC-3, and major telephone components mounted in 3/4-ton truck.

Mobile Radio Repeater Set AN/MRC-58: Similar to AN/MRC-57 without the AN/TCC-3.

Mobile Radio Terminal Set AN/MRC-67: Four AN/TRC-1's, two AN/TCC-3's, and major telephone components mounted in Shelter, S-56/G, on a 2-1/2-ton truck. This set will net with the AN/MRC-57 and -58.

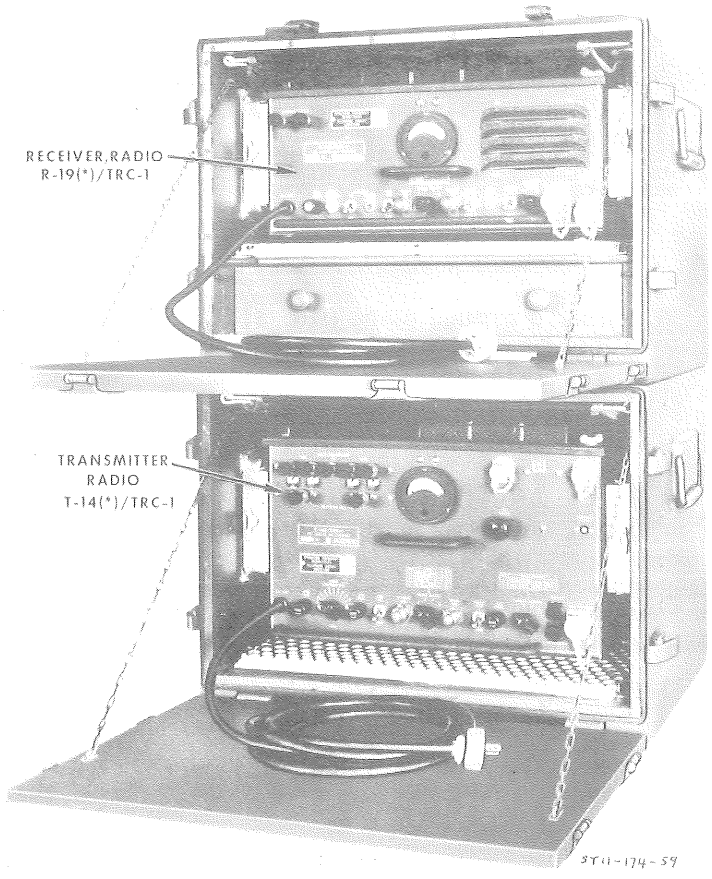


Figure 59. Radio Set AN/TRC-1.

RADIO SET AN/GRC-10

STATUS: Standard A.

STOCK NR: 5820-570-5482

REFERENCE: TM 11-614

GENERAL INFORMATION

Radio Set AN/GRC-10 (fig. 60) is designed for use in portable, mobile, fixed or semi-fixed stations in conjunction with tactical wire carrier equipment that provides telephone, teletypewriter, data, or facsimile circuits. It may be used independently to provide a single voice channel. The AN/GRC-10 provides a single or multichannel radio-relay system, or provides single channel communication between vehicular, semi-fixed, or fixed installations for forward area use such as airborne division to brigades and lateral communications between brigades. It can be operated from a remote location by using the AN/GRC-6.

This set consists of Receiver, Radio R-125/GRC-10; Transmitter, Radio T-235/GRC-10; Dynamotor, Power Supply DY-94/GRC-10; Control, Radio Set C-632/GRC-10; and Antenna Group OA-249/GRC-10.

TECHNICAL CHARACTERISTICS

Type of Service:	Voice (FM) - 80F9 or 60F9; TTY; Facsimile Data. Baseband - 20 kc (250-20,000 cps). Input Devices - AN/TCC-3 (FDM).
Frequency Range:	54 to 70.9 mc. 0.1 channel spacing (170 channels).
Planning Distance:	40 to 48 km.
System Limits:	5 Relays. 6 Hops. 240 km (planning).
Antenna:	Either a ground plane (fig. 81) or Yagi (half-wave folded dipole with a director and reflector elements) on a 40-foot mast (fig. 80).
Power Out:	Low: 10 W. High: 40 W.
Power Requirements:	115 to 230 v, 50 to 60 cps or 24 v DC. Provision is made for automatic use of dc power if normal AC power fails.
Power Source:	PE-75 (2.5 kw), or PU-322/G (fig. 77), page 91.
Frequency Separation:	Xmtr-Rcvr: 1.0 mcs. Rcvr-Rcvr: 0.3 mcs. Xmtr-Xmtr: 0.3 mcs. Xmtr-Xmtr not having the differences of 4.3 mc, 3.2 mc, or 15 to 16 mc.
Frequency Control:	Crystal-controlled (indirectly by monitor receiver for afc of transmitter).

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu ft)	Weight (lb)
AN/GRC-10 (Receiver, Transmitter combination)	13 x 13 x 44-3/4	4.3	180

CONFIGURATIONS

Radio Terminal Set AN/GRC-39: Two AN/GRC-10 sets (one in use, one spare).

Radio Repeater Set AN/GRC-40: Three AN/GRC-10 sets (two in use, one spare).

Mobile Radio Terminal Set AN/MRC-68(*): Three AN/GRC-10 sets (two in use, one spare), together with two Terminals, Telephone AN/TCC-3 and other major components mounted in Shelter, Electrical Equipment S-89/G on a 3/4-ton truck, with PU-322/G (page 91).

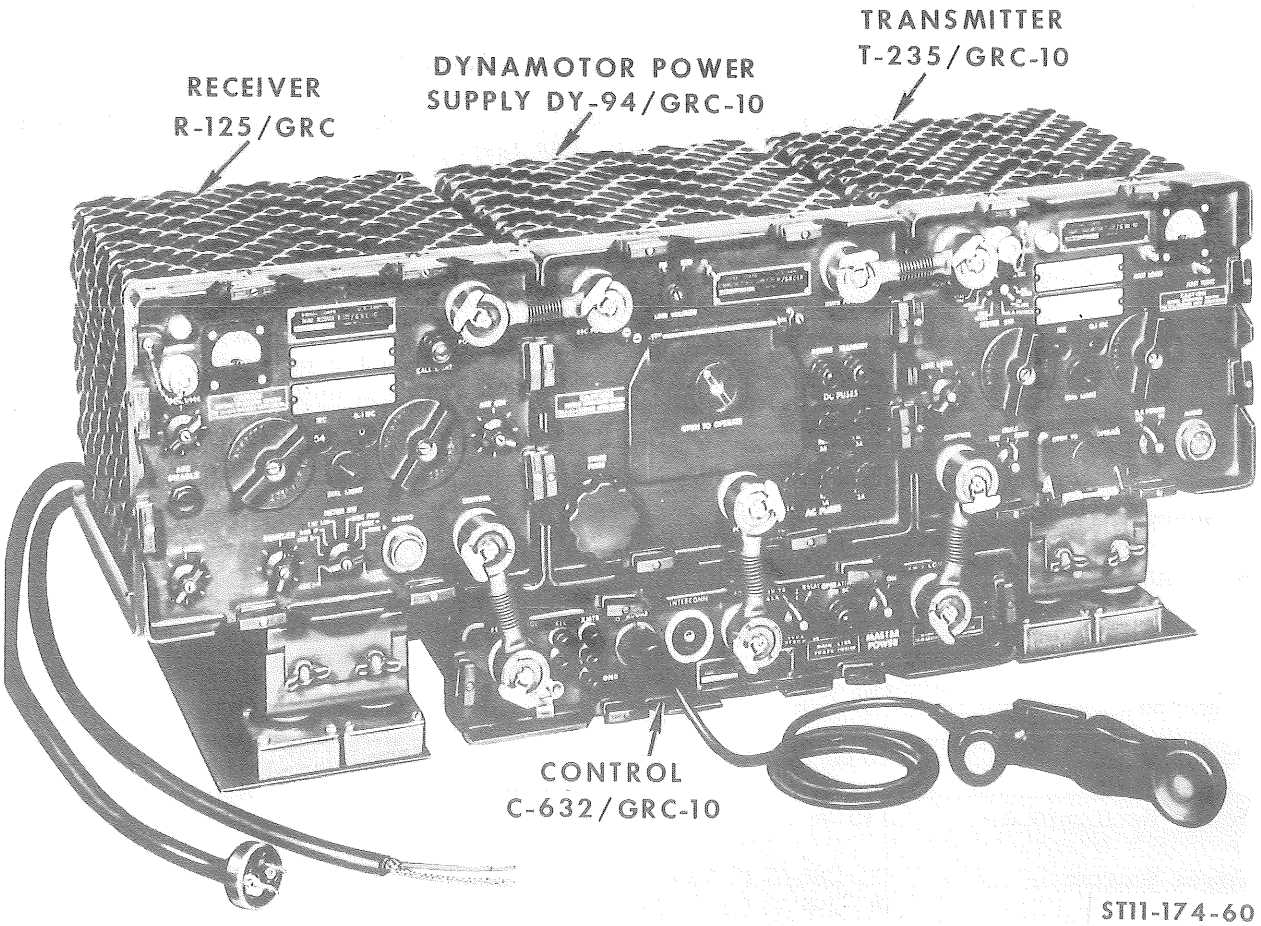


Figure 60. Radio Set AN/GRC-10.

RADIO SETS AN/TRC-24, -35, -36

STATUS: Standard A.

STOCK NRS: Refer to TM 11-5820-287-10

REFERENCE: TM 11-5820-287-10, -20, -35

GENERAL INFORMATION

Radio Set AN/TRC-24 is a transportable, multichannel, vhf-uhf radio set used at division, corps, and army levels to provide high quality, high capacity, tactical communications. The AN/TRC-24 is intended to replace wire when quick installation is required.

Radio Set AN/TRC-24 and the other radio sets in the AN/TRC-35, -36 and AN/GRC-75 through -83 series consist of combinations of the components. Although these radio sets provide facilities for Terminals, Telephone AN/TCC-3 (4-channel) and AN/TCC-7 (12-channel), telephone terminals are not included in the basic issue.

Currently used at division, corps, and army levels to provide multichannel telephone circuits. May be used to form terminals, repeaters, and mobile installations. The equipment is readily portable and can be installed in vehicles and shelters; it can be used in mobile terminal or repeater installations.

TECHNICAL CHARACTERISTICS

Type of Service:	Voice (FM) 200F9, 400F9, 600F9, 750F9; TTY; DATA; Facsimile. Baseband: 68 kc (250 to 68,000 cps). Input Devices: AN/TCC-3 (FDM); AN/TCC-7 (FDM).
Frequency Range:	A Band: 50-100 mc (200 channels in .25 mc steps). B Band: 100-225 mc (250 channels in .5 mc steps). C Band: 225-400 mc (175 channels in 1.0 mc steps). D Band: 400-600 mc (133 channels in 1.5 mc steps). F Band (low): 790-915 mc (250 channels in 0.5 mc steps). F Band (high): 840-965 mc (250 channels in 0.5 mc steps). J Band: 1350-1875 mc (1,000 channels in .5 mc steps).
Planning Distance:	40-48 km.
System Limits:	7 Relays. 8 Hops. 320 km (planning).
Antenna:	See Figures 79, 82, and 83.
Power Out:	10 to 120 W.
Power Requirements:	115 or 230 v, 50- to 60-cps.
Power Source:	PU-286/G (5 kw). PU-294/G (fig. 76). PU-474/M (fig. 8).

Frequency Separation: Minimum Channel and Frequency Separation (in mc).

Band	Transmitter and Receiver								Two Receivers			
	On Same Mast		Same Mast Cross-polarized		On Different Masts: Nearby under .4 km		On Different Masts: 1.6 km apart		Same Polarization		Opposite Polarization	
	Chan	Freq	Chan	Freq	Chan	Freq	Chan	Freq	Chan	Freq	Chan	Freq
A	36	9	Not Possible		32	8	12	3	4	1	4	1
B	36	18	21	10.5	21	10.5	6	3	3	1.5	2	1
C	28	28	11	11	11	11	3	3	2	2	1	1
D	27	40.5	8	12	8	12	2	3	2	3	1	1.5
F	10	5	10	5	8	4	5	2.5	4	2	2	1

Frequency Control: Automatic frequency control (crystal-controlled reference frequency generator for afc system)

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu ft)	Weight (lbs)
Receiver Radio R-417/TRC	17-1/8 x 18-1/4 x 20-5/8	3.7	96
Transmitter T-302/TRC	18-1/2 x 22 x 20-5/8	4.7	120
Power Supply PP-685	17-1/8 x 18-3/8 x 20-5/8	3.8	115

CONFIGURATIONS

AN/TRC-35: Two AN/TRC-24 sets.

AN/TRC-36: Three AN/TRC-24 sets.

Mobile Radio Sets: See pages 72 through 87.

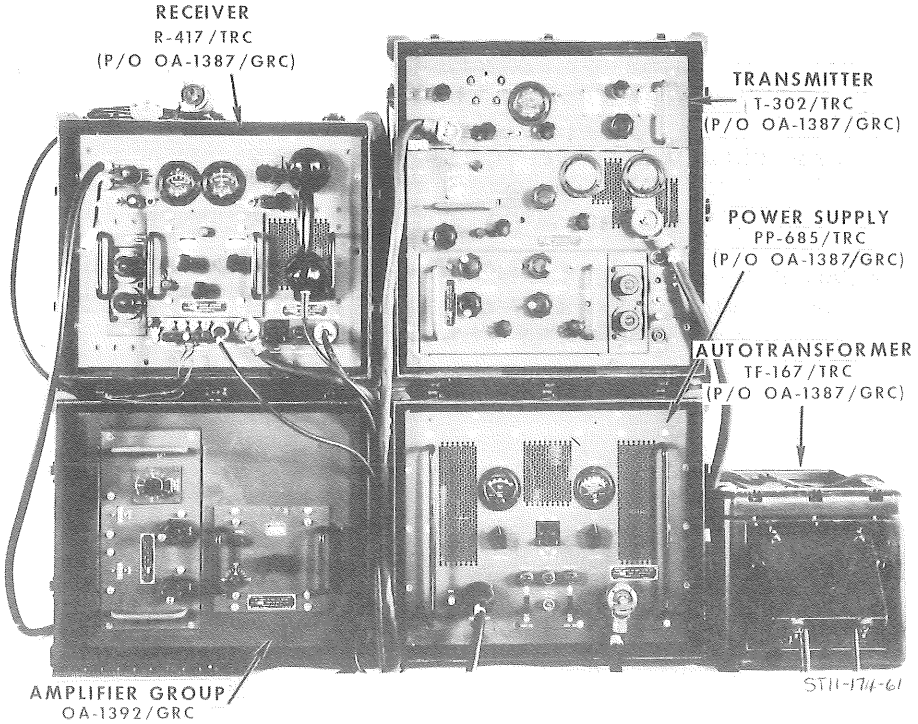


Figure 61. Radio Set AN/TRC-24.

MOBILE CONFIGURATIONS OF AN/TRC-24

Radio Sets AN/TRC-24, together with shelters, trucks, power unit, and other major components form the following mobile radio systems:

Radio Repeater Set AN/MRC-54:	Three AN/TRC-24's. See description below.
Radio Terminal Set AN/MRC-69(V):	Two AN/TRC-24's; one Telephone Terminal AN/TCC-7; one Telephone Terminal AN/TCC-50. See page 78.
Radio Terminal Set AN/MRC-73:	One AN/TRC-24; one Telephone Terminals AN/TCC-7; one Telegraph Terminal AN/TCC-20. See page 84.

RADIO REPEATER SET AN/MRC-54(V)

STATUS: Standard A

STOCK NR: 5820-542-7297

REFERENCE: TM 11-5820-203-15

GENERAL INFORMATION

Radio Repeater Set AN/MRC-54(V) is an air- or vehicular-transportable radio-relay repeater or terminal set used in an area communication system. The equipment is mounted in a modified Electrical Equipment Shelter S-141/G which has been designated Electrical Equipment Shelter S-177/MRC-54. The major components of three Radio Sets AN/TRC-24 are mounted in the shelter.

The AN/MRC-54(V) can be used either as a radio-relay set or as a radio terminal set. It would normally be employed as a single relay or as a double terminal set.

Several of the components of Radio Set AN/TRC-24 are not provided with this assemblage. These items include the Autotransformer Fixed Power Transformer TF-167/TRC, the Interconnecting Box J-532/U, and some other items which are not used with the AN/MRC-54(V).

Provisions are made within the shelter for mounting all necessary antenna components for three radio systems. Spiral-four cable connectors are provided on the outside of the shelter, and antenna coaxial cable connectors are also provided on the outside of the shelter.

The shelter is normally mounted on the bed of a standard 2-1/2-ton cargo truck. Alternating current power is supplied by Trailer-Mounted Gasoline-Engine Generator Set PU-294/G, or a common signal center power source, or a commercial source.

Major Components:	1 ea Electrical Equipment Shelter S-177/MRC-54
	3 ea Radio Set AN/TRC-24 (minus excess equipment and carrying case)
	1 ea Telephone Set TA-312/PT
Power Consumption:	5,303 watts
Weight:	6,210 pounds
Volume:	640 cubic feet

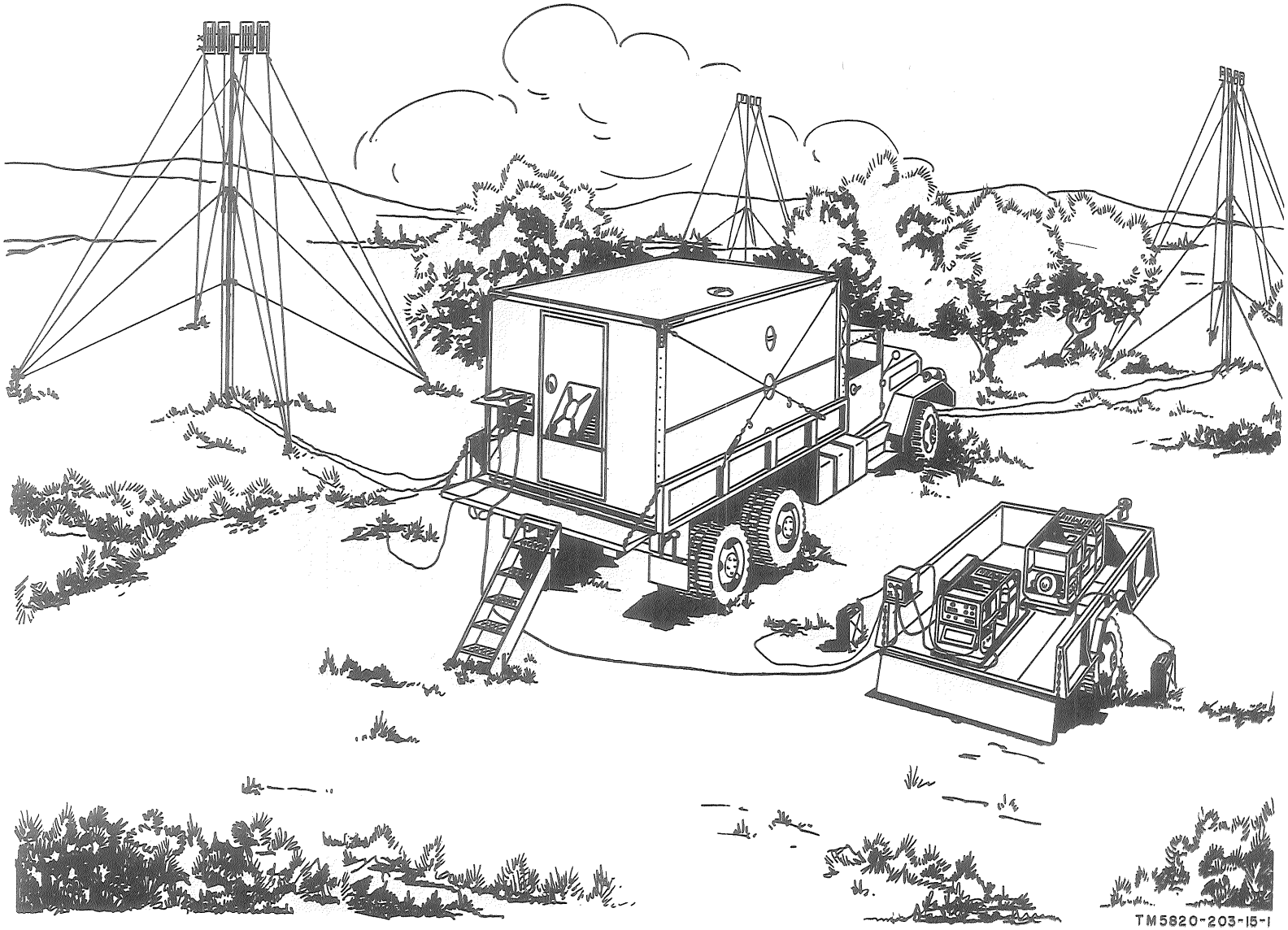


Figure 62. Radio Repeater Set AN/MRC-54(V) connected for operation.

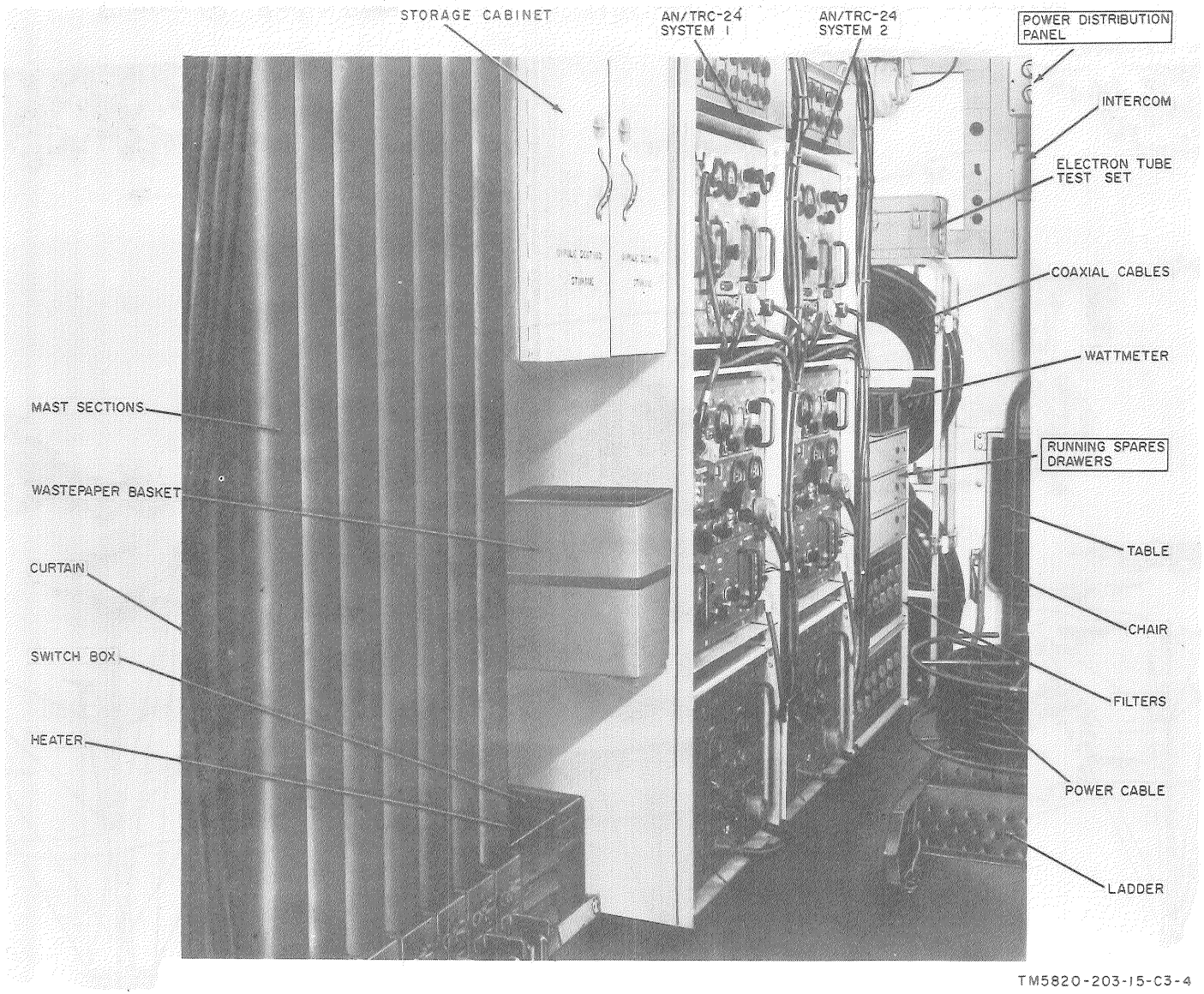


Figure 63. Interior view of left wall, AN/MRC-54.

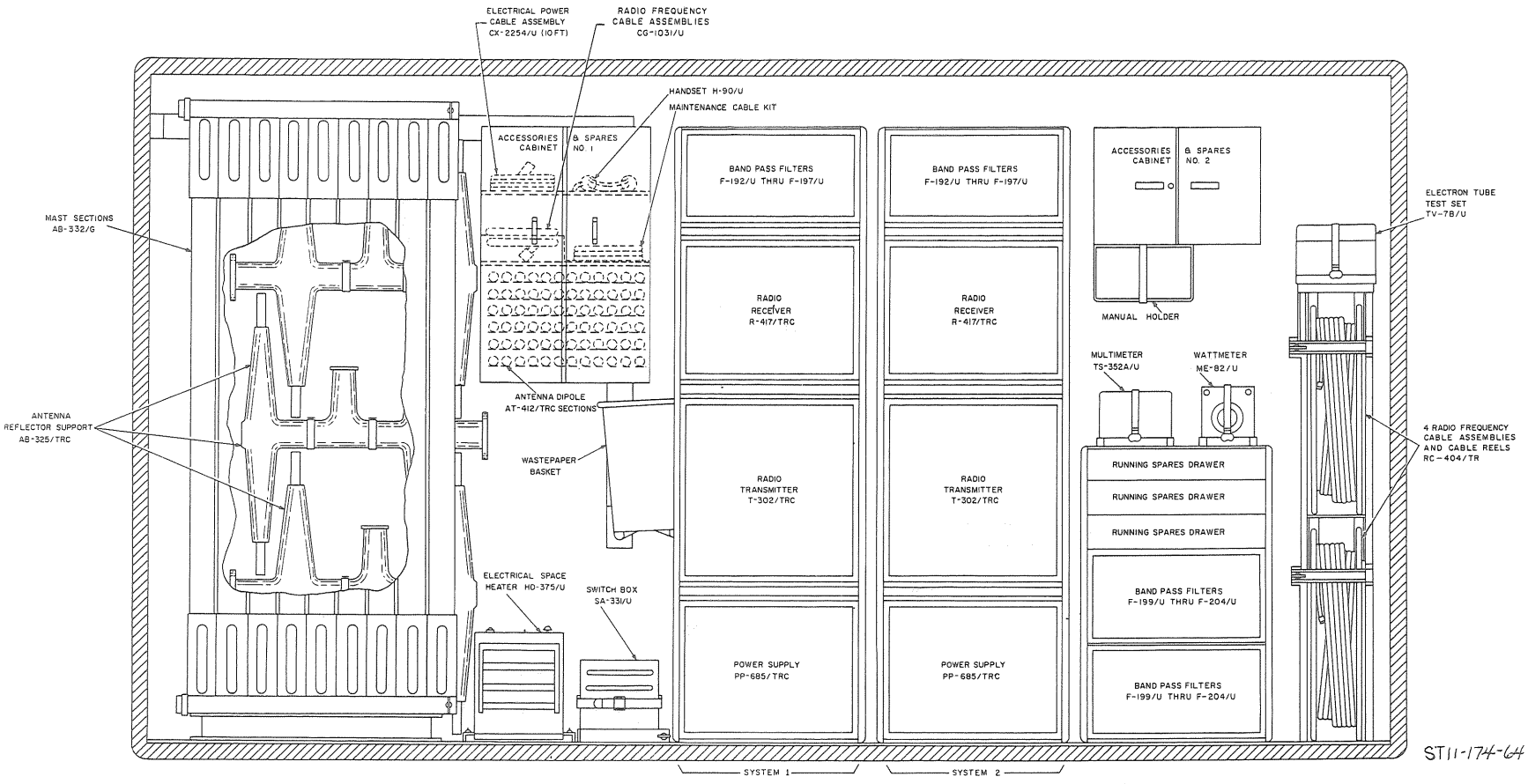


Figure 64. Outline of Components on left wall, AN/MRC-54.

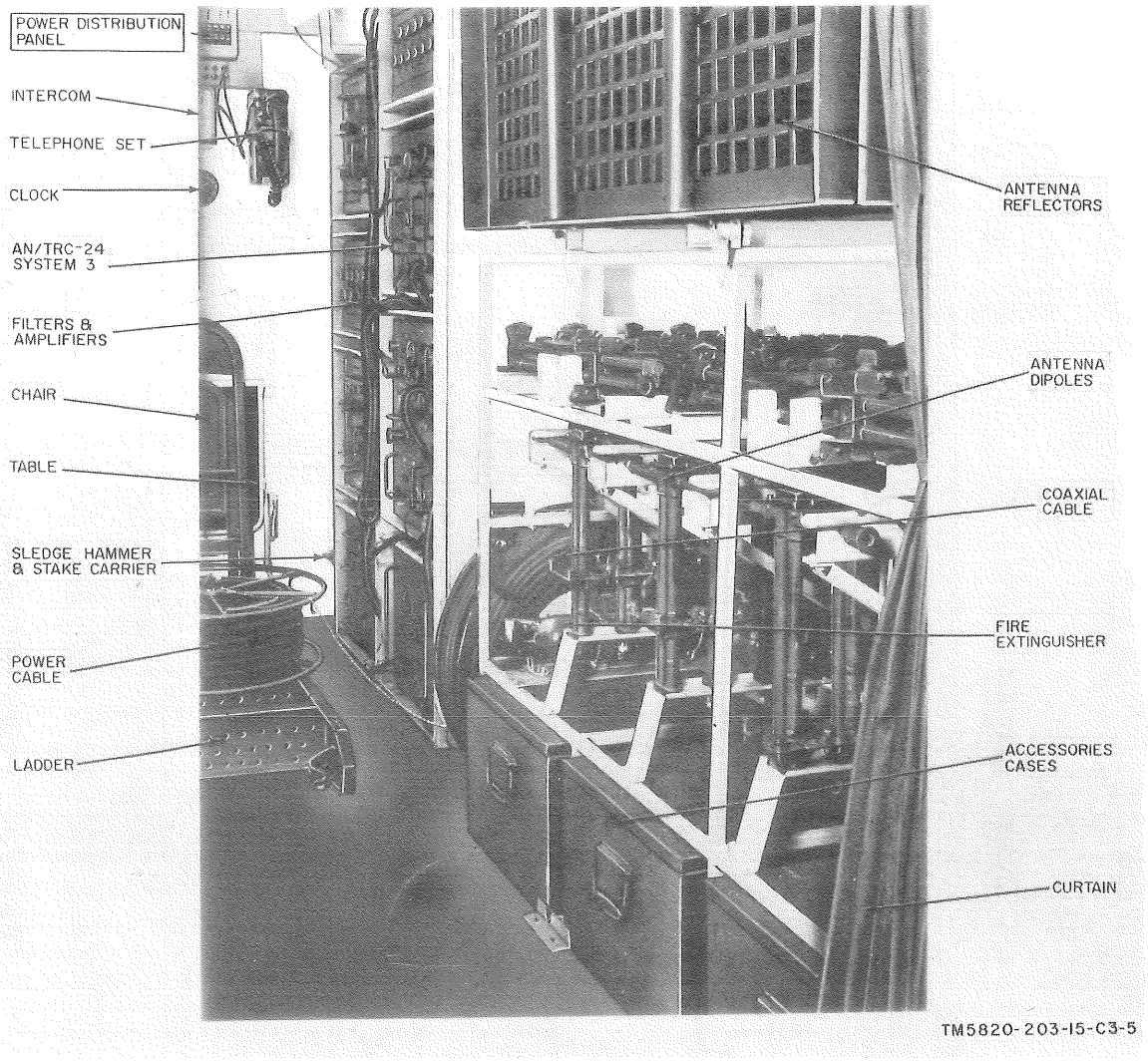


Figure 65. Interior view of right wall, AN/MRC-54.

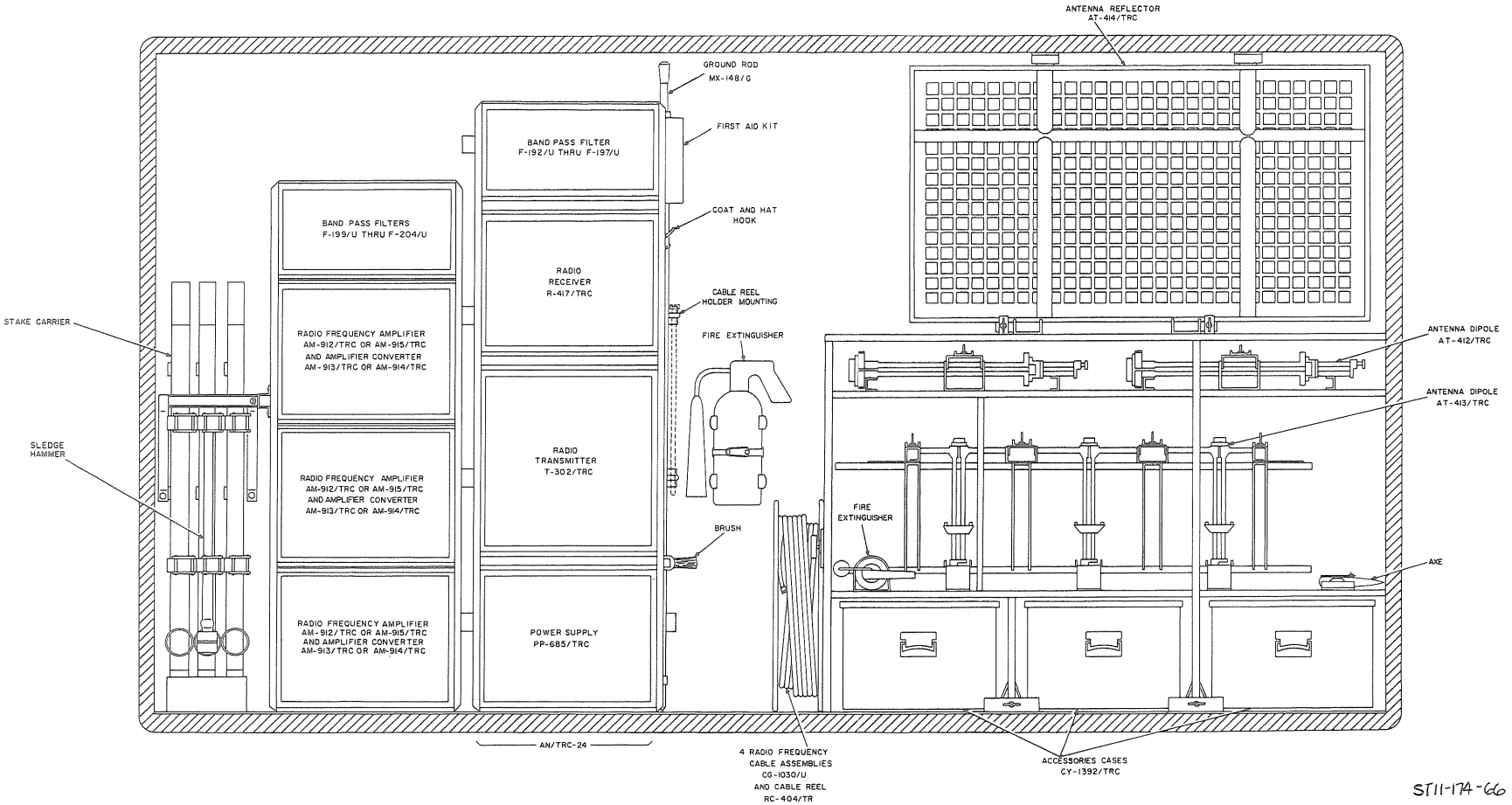


Figure 66. Outline of Components on right wall, AN/MRC-54.

RADIO TERMINAL SET AN/MRC-69(V)

STATUS: Standard A.

STOCK NR: 5820-542-7298

REFERENCES: TM 11-5820-204-15

GENERAL INFORMATION

Radio Terminal Set AN/MRC-69(V) is an air-or vehicular-transportable, radio relay-carrier terminal set. The terminal is housed in a modified Electrical Equipment Shelter S-141/G, which is normally mounted on the bed of a standard 2-1/2-ton cargo truck.

The AN/MRC-69(V) is used to provide trunking facilities in the division area of an area communication system. The set may be used to provide two 12-channel radio-relay terminals or one 12-channel radio-relay and one 12-channel land line carrier terminal. Each of the channels is equipped with a voice-frequency ringer, Telegraph-Telephone Signal Converter TA-182/U.

Twelve Electrical Filter Assemblies F-98/U are provided and may be patched into the channel circuits as required to provide speech-plus-half-duplex and speech-plus-full-duplex service. The patching can be performed at the AN/MRC-69(V) or at Communication Patching Panel SB-611/MRC. Internal wiring in the terminal provides for the connection of 24-channel carrier equipment when it becomes available.

Trunking circuits are normally brought from the AN/MRC-69(V) to the SB-611/MRC by means of 26-pair cable. Local circuits and special service (wide-band) circuits may be connected directly to the signal binding posts on the shelter. Field wire circuits may also be connected to Distribution Box J-1077A/U and then brought into the AN/MRC-69(V) by means of 26-pair cable.

Alternating current power is provided by Trailer-Mounted Gasoline-Engine Generator Set PU-294/G, by a common signal center power source, or by a commercial power source.

Major Components:

1 each Modified Electrical Equipment Shelter S-141/G.

2 each Radio Set AN/TRC-24 (minus excess equipment and carrying case).

1 each Telephone Terminal AN/TCC-7 and 1 each Telephone Terminal AN/TCC-50 (AN/TCC-50 consists of an AN/TCC-7 less Power Supply PP-286/U.

26 each Telegraph-Telephone Signal Converter TA-182/U.

12 each Electrical Filter Assembly F-98/U.

1 each Telephone Set TA-312/PT.

Power Consumption: 6,293 watts.

Weight: 7,500 pounds.

Volume: 640 cubic feet.



Figure 67. Interior view of Radio Terminal Set AN/MRC-69(V).

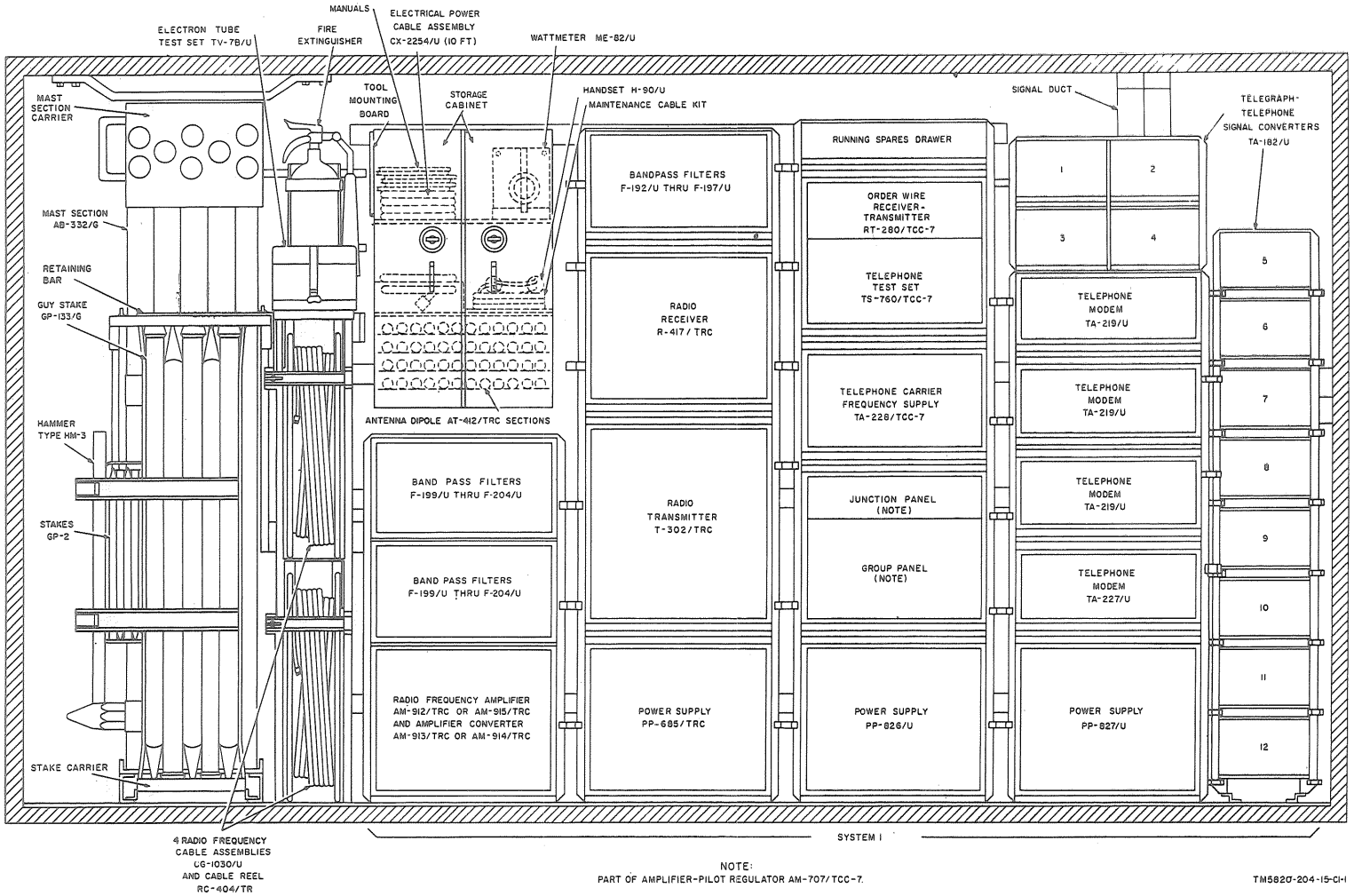


Figure 68. Outline view of left wall, AN/MRC-69(V).

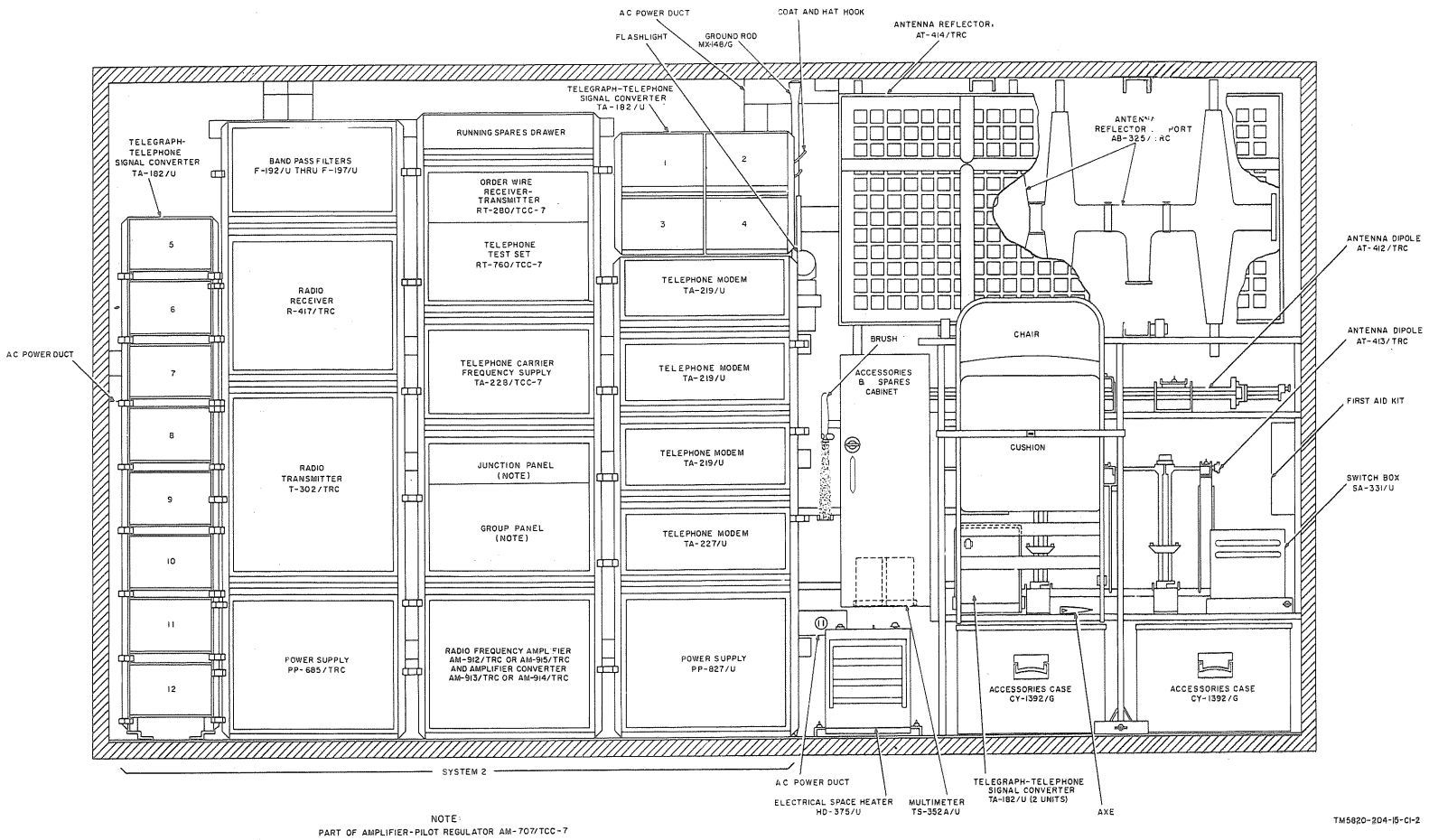


Figure 69. Outline view of right wall, AN/MRC-69(V).

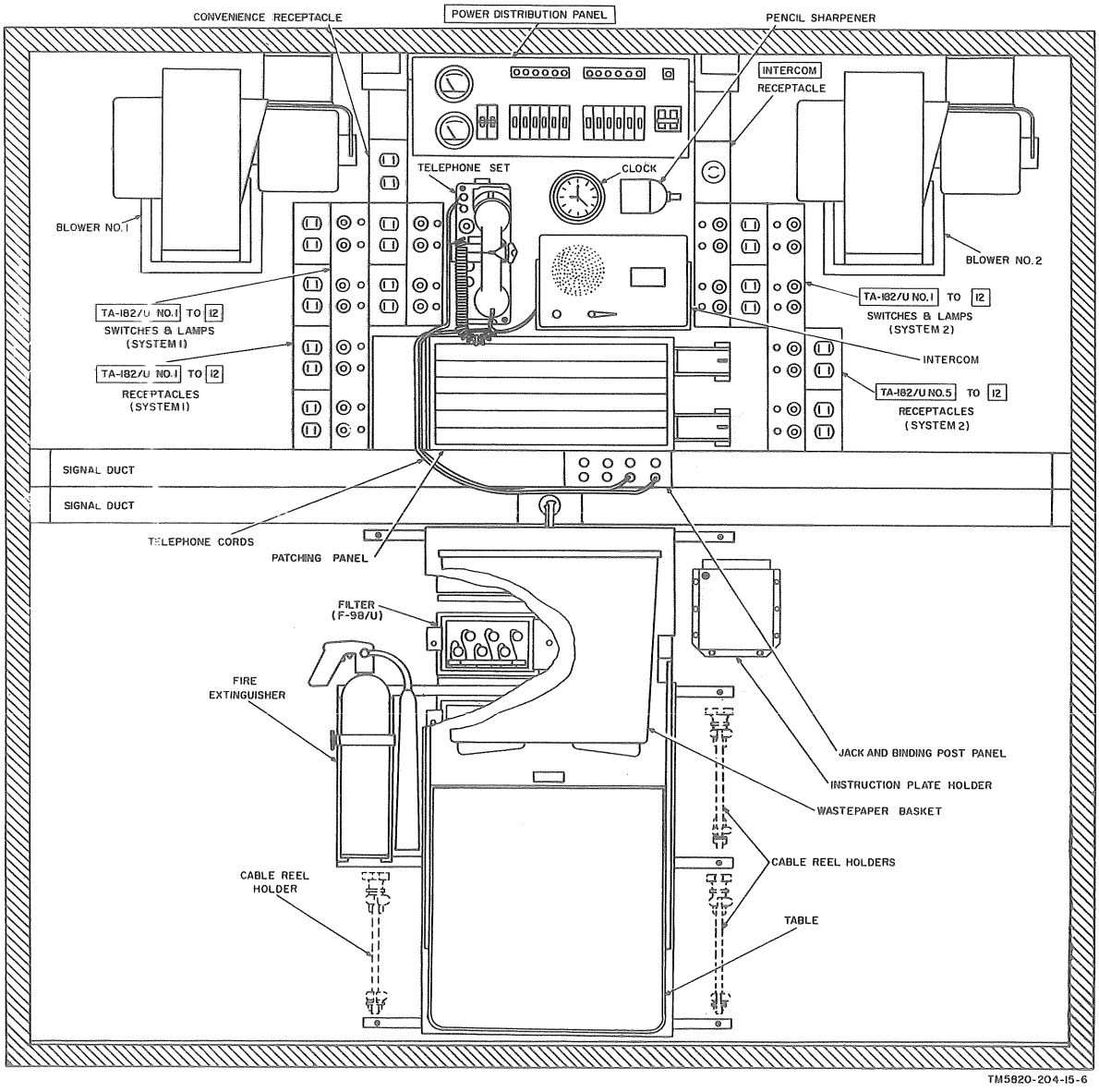


Figure 70. Outline view of front wall, AN/MRC-69(V).

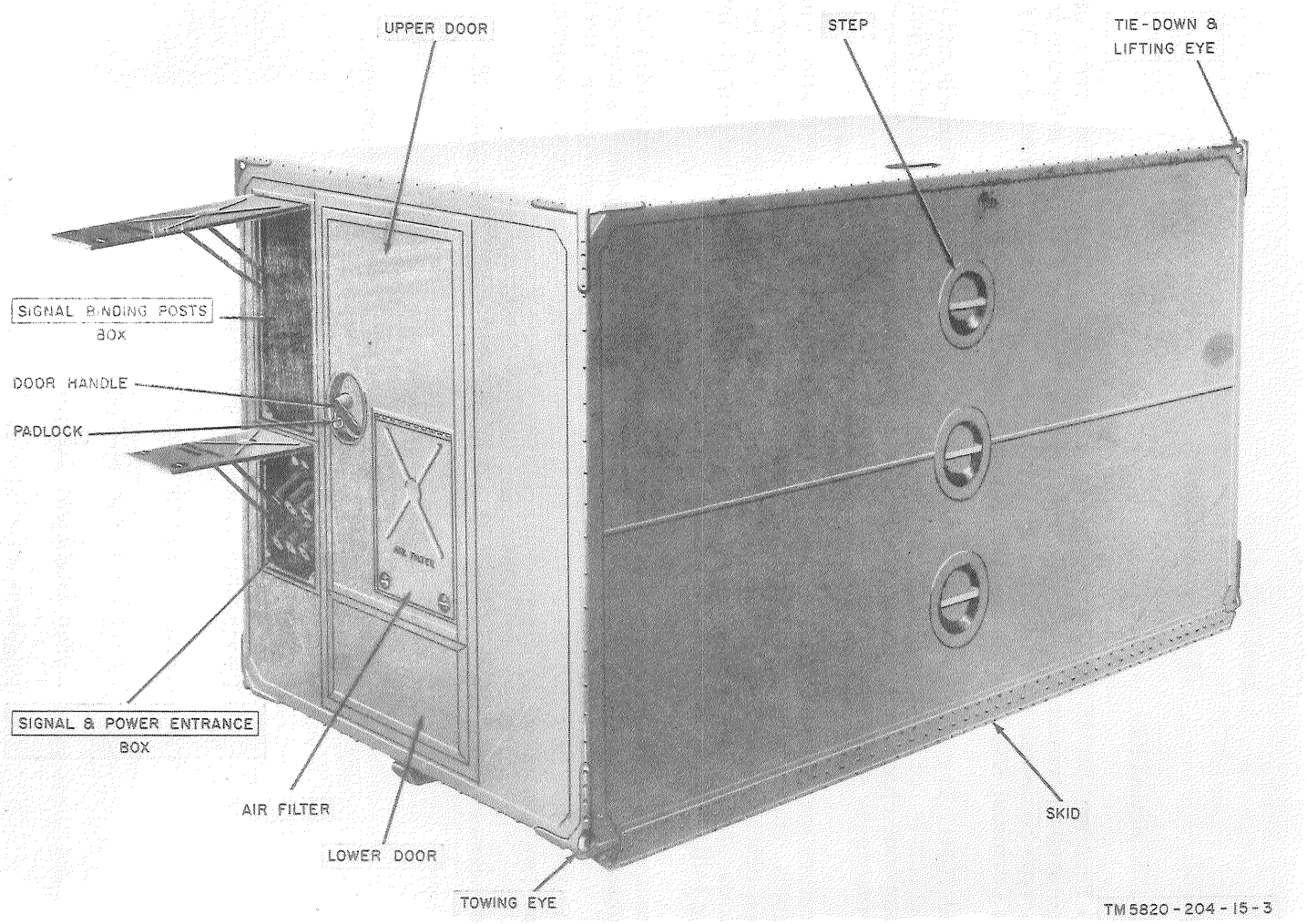


Figure 71. Shelter S-141/G.

RADIO TERMINAL SET AN/MRC-73

STATUS: Standard A

STOCK NR: 5895-892-3493

REFERENCE: TM 11-5895-221-15

GENERAL INFORMATION

Radio Terminal Set AN/MRC-73 is an air- or vehicular-transportable, radio-carrier assemblage used to provide radio-relay, carrier telephone, and carrier telegraph facilities in an area-type communication system. It contains one Telephone Terminal AN/TCC-7, one Telegraph Terminal AN/TCC-20, and one Radio Set AN/TRC-24.

The AN/MRC-73 can be arranged to provide 11 carrier telephone channels and 4 carrier telegraph channels, or 12 carrier telephone channels and no carrier telegraph channels. All carrier telephone channels are equipped with Telegraph-Telephone Signal Converter TA-182/U for voice-frequency signaling.

Connectors are available on the outside of the shelter for spiral-four cables, antenna coaxial cables, and 26-pair cables. Connections between the AN/MRC-73 and other shelters in the signal center are normally made by 26-pair cable. Field wire circuits may be connected directly to the signal binding post box on the shelter, or they may be first brought into Distribution Box J-1077/A and then into the shelter on 26-pair cable.

The equipment is mounted in a modified Electrical Equipment Shelter S-141/G which has been designated Electrical Equipment Shelter S-181/MRC-73. The shelter is normally mounted on the bed of a 2-1/2-ton cargo truck. Alternating current power is provided by Trailer-Mounted Gasoline-Engine Generator Set PU-294/G, by a common signal center power source, or by a commercial power source.

Major Components:

1 each Electrical Equipment Shelter S-181/MRC-73.

12 each Telegraph-Telephone Signal Converter TA-182/U.

1 each Radio Set AN/TRC-24 (less excess components and carrying case).

2 each Telephone Set TA-312/PT.

1 each Teletypewriter TT-4/TG.

1 each Telegraph Terminal AN/TCC-20.

1 each Telegraph Terminal TH-5/TG.

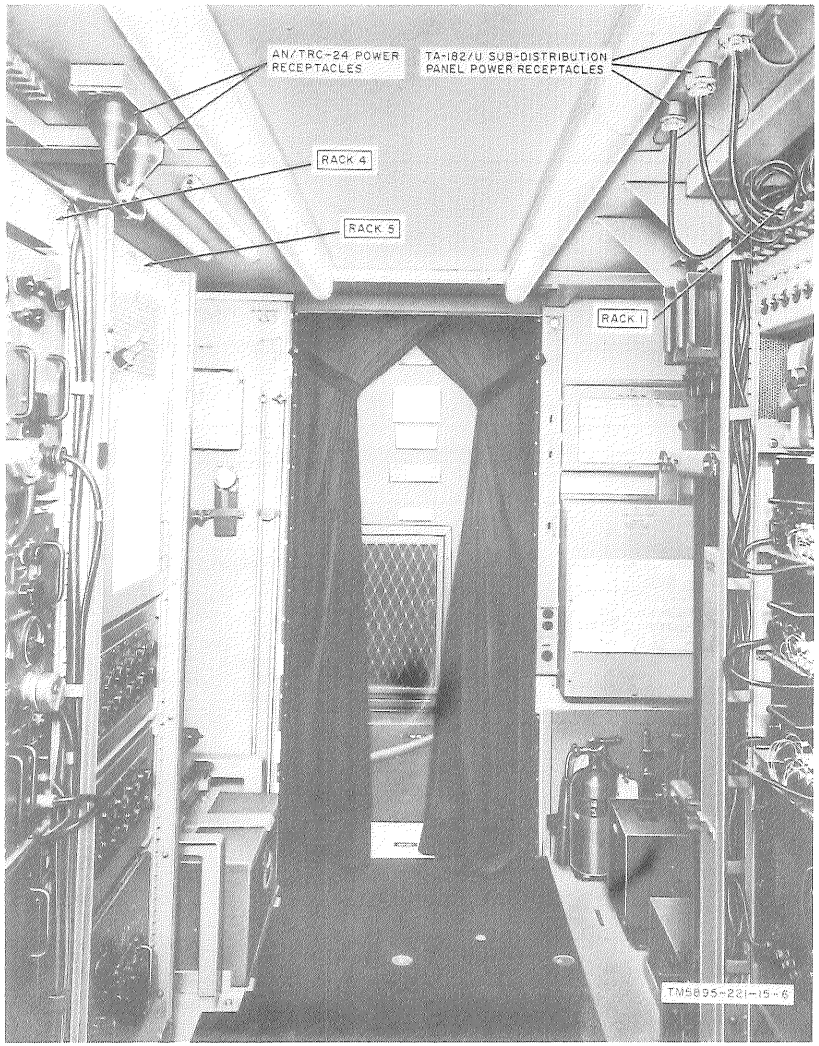
1 each Telephone Terminal AN/TCC-7.

1 each Trailer-Mounted Gasoline-Engine Generator Set PU-294/U.

Power Consumption: 4,397 watts.

Weight: 4,617 pounds.

Volume: 640 cubic feet.



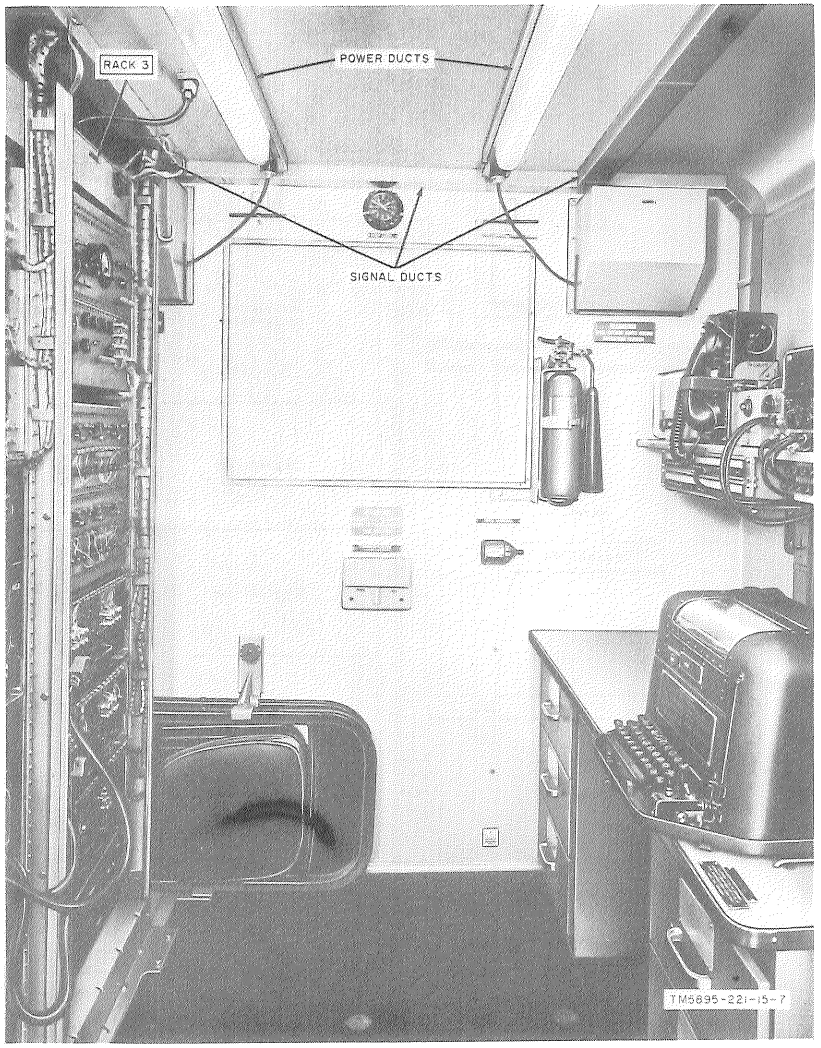


Figure 72. Radio Terminal Set AN/MRC-73.

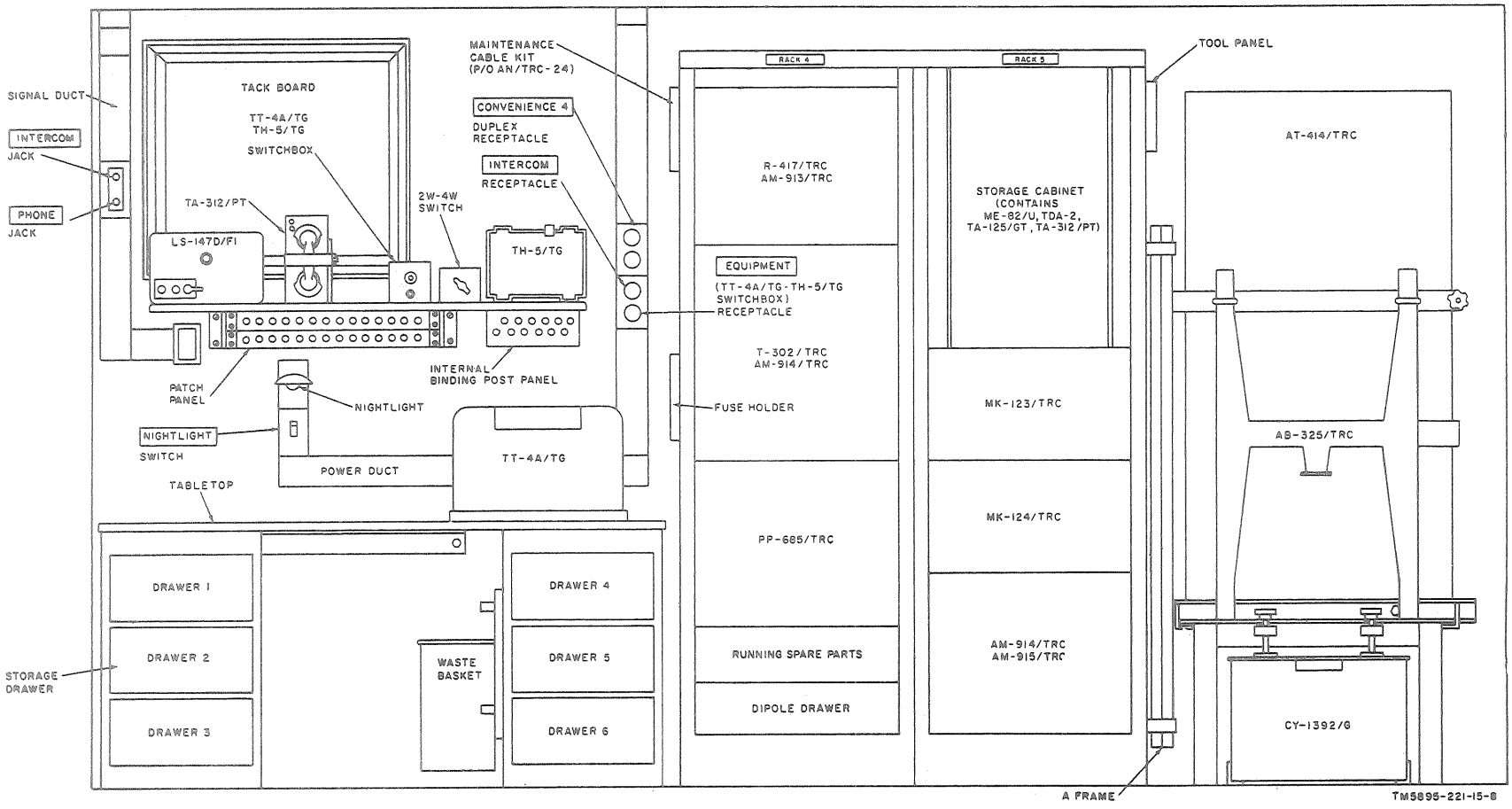


Figure 73. Outline view of left side wall, AN/MRC-73.

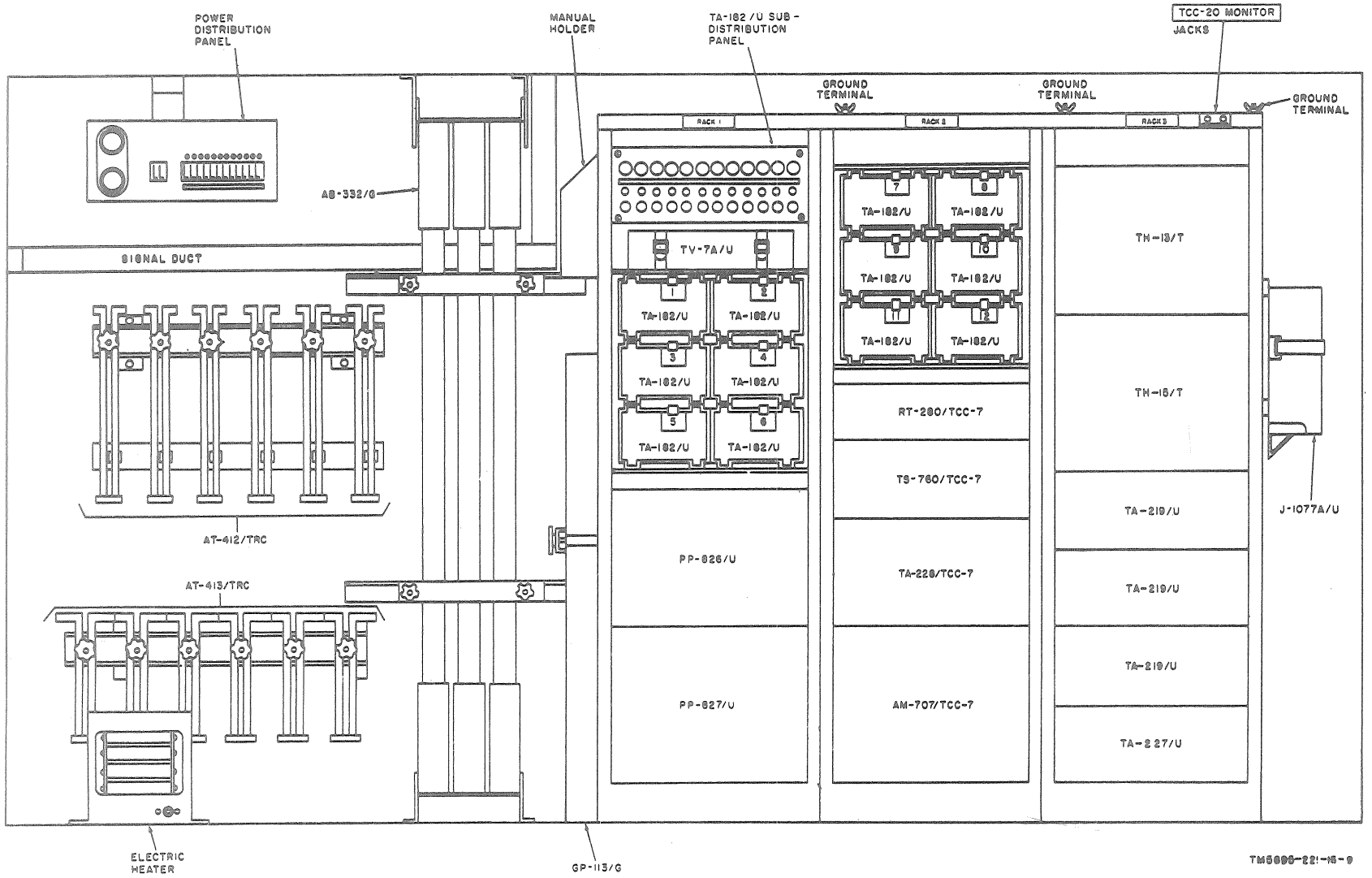


Figure 74. Outline view of right side wall, AN/MRC-73.

RADIO SET AN/GRC-50(V)

STATUS: Standard A

STOCK NR: 5820-892-3851

REFERENCE: TM 11-5820-461-10, -20, -35

GENERAL INFORMATION

Radio Set AN/GRC-50(V) (fig. 75) is a mobile uhf radio transmitting and receiving equipment for use with multichannel-carrier telephone terminal apparatus such as Terminal, Telephone AN/TCC-7. The AN/GRC-50(V) is frequency modulated and covers two frequency bands: 600 to 1, 000 and 1, 350 to 1, 850 megacycles. There are 450 operational channels available on each frequency band.

Radio Set AN/GRC-50(V) is intended primarily for use as a radio link in a communication network, which may include carrier telephone and teletypewriter sets. The radio sets are used in pairs, one set at each end of a line-of-sight path.

The radio set may be used with 4-, 12-, or 24-channel frequency-dividion multiplex (FDM) or 12- or 24-channel time-division multiplex (TDM) equipment to provide telephone, teletypewriter, data, or facsimile circuits; it may be used independently to provide a single voice channel.

Thr AN/GRC-50(V) is designed to be employed in intermediate and rear areas such as corps, army, and the army area communication systems. It will replace the AN/TRC-24 in many applications.

Radio Set AN/GRC-50(V) consists of Transmitter Radio T-893(P)GRC, Receiver Radio R-1148(P)GRC, Power Supply PP-2054/GRC, Regulator, Voltage GN-514/GRC.

The AN/GRC-50(V) is mounted in Shelter, Electrical Equipment S-144/G which can be installed on a 3/4-ton truck or on a ground site.

TECHNICAL CHARACTERISTICS

Type of Service:
FM (1200F9).
Voice (FM); TTY.
Facsimile; Data.
Baseband: 250 cps -240 kc.
Input Devices: AN/TCC-3 (4 chan) FDM.
AN/TCC-7 (12 chan) FDM.
AN/TCC-44 (12 chan) TDM.
AN/TCC-45 (24 chan) TDM.

Frequency Range:
Low Band: 600-1, 000 mcs (400 channels with 1 mcs separation)
High Band: 1, 350 - 1, 850 mcs (500 channels with 1 mcs separation)

Planning Distance: 40-48 km (FDM).

System Limits:
7 Relays.
8 Hops.
320 km (planning).

Antenna: Modified dipole in a ridge-loaded horn (see figures 83 and 84).

Power Out:	Low Band: 15-30 W. High Band: 8-20 W.
Power Requirements:	115V (AC) 47 to 63 cps.
Power Source:	PU-286/G (5 kw). PU-294/G (see figure 76).
Frequency Separation:	Xmtr-Rcvr: 15 mcs. Rcvr-Rcvr: 1 mcs.
Frequency Control:	Automatic frequency control systems (AFC).

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu ft)	Weight (lb)
Receiver, Radio R-1148(P)/GRC	13-3/4 x 20 x 17	2.5	110
Transmitter, Radio T-893(P)/GRC	13-3/4 x 20 x 17	2.5	100
Power Supply PP-2054/GRC	8-1/2 x 20 x 17	1.5	95
Regulator, Voltage CN-514/GRC	8-1/2 x 16 x 17	1.2	75

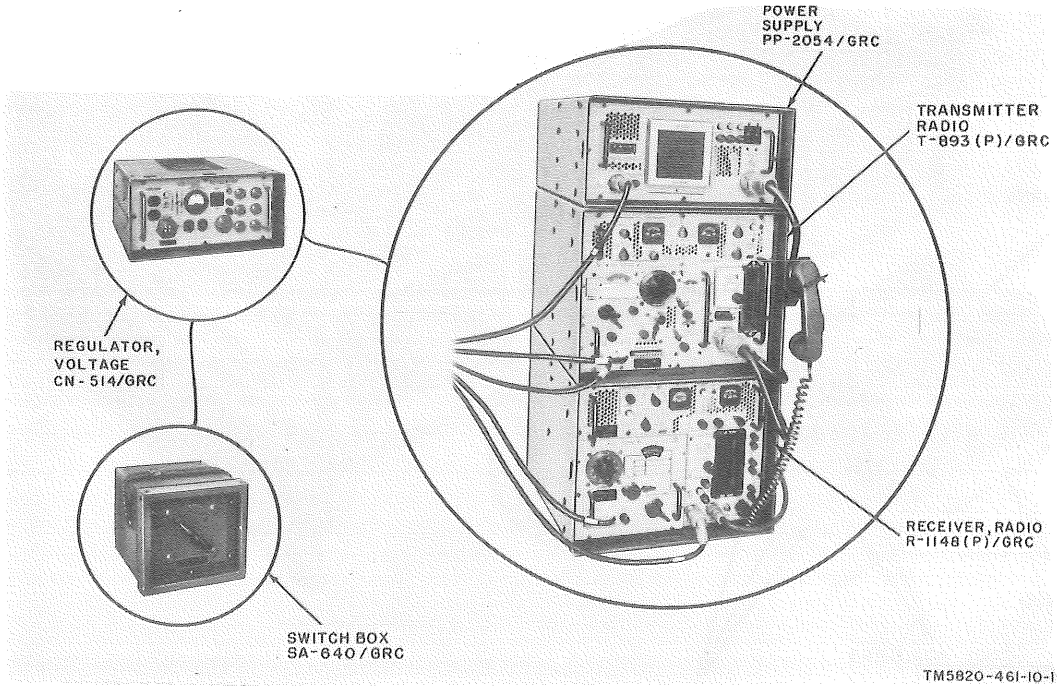


Figure 75. Radio Set AN/GRC-50(V) in operation.

POWER GENERATING EQUIPMENT

Trailer-Mounted Gasoline-Engine Generator Set PU-294/G. This generating unit consists of a standard 1-1/2-ton, 2-wheel cargo trailer, M-104 or M-105, on which two Gasoline-Engine Generator Sets PU-286(*)/G are mounted. It also contains ten 5-gallon gasoline cans, three flexible nozzles, two fuel adapters, a ground rod, and a ground lead. All of these items are designed to be stored on the trailer. Gasoline-can brackets similar to those used on standard cargo vehicles are provided for the ten 5-gallon gasoline cans. The PU-294(*)/G supplies 115-volt, 50- to 60-cycle, 5,000-watt, 52-ampere alternating current when either PU-286(*)/G is operating at full load. Provisions are made for switching from one PU-286(*)/G to the other without power interruption by means of a switch box. The complete generating unit, including the trailer, weighs 4,400 pounds.

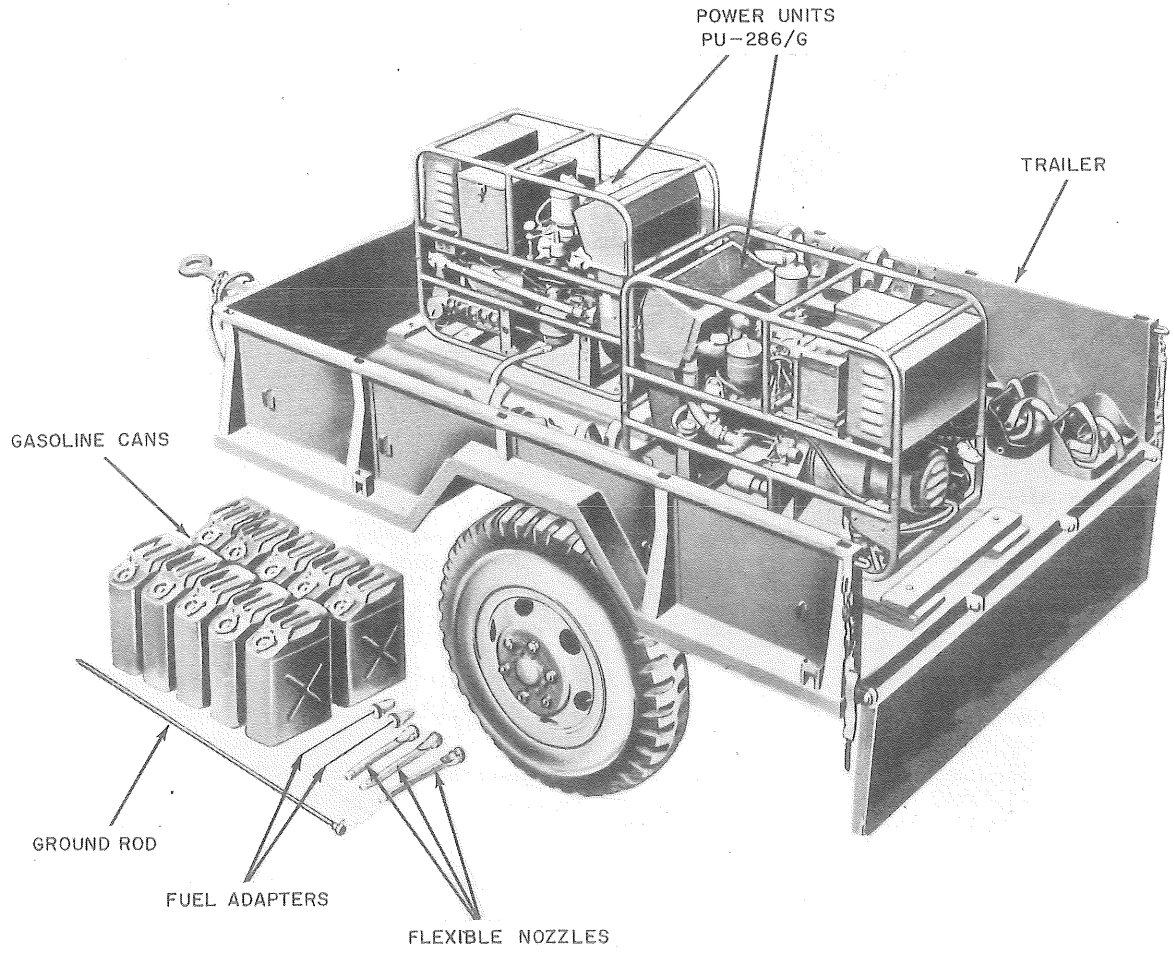


Figure 76. Trailer-Mounted Gasoline-Engine Generator Set PU-294/G.

STUDENT NOTES:

Trailer-Mounted Gasoline-Engine Generator Set PU-322/G. This generating unit consists of a standard 3/4-ton, 2-wheel cargo trailer M-101 on which two Power Units PE-75AF are mounted. It also contains four 5-gallon gasoline cans, flexible nozzles, fuel adapters, a ground lead, and a ground rod, which are stored on the trailer. The PU-322/G supplies 115-volt, 50- to 60-cycle, 2,500-watt, 22-ampere alternating current when either PE-75AF is operating at full load. Power may be switched from one PE-75AF to the other without interruption of power by means of a switch box. The complete unit including the trailer weighs 2,350 pounds.

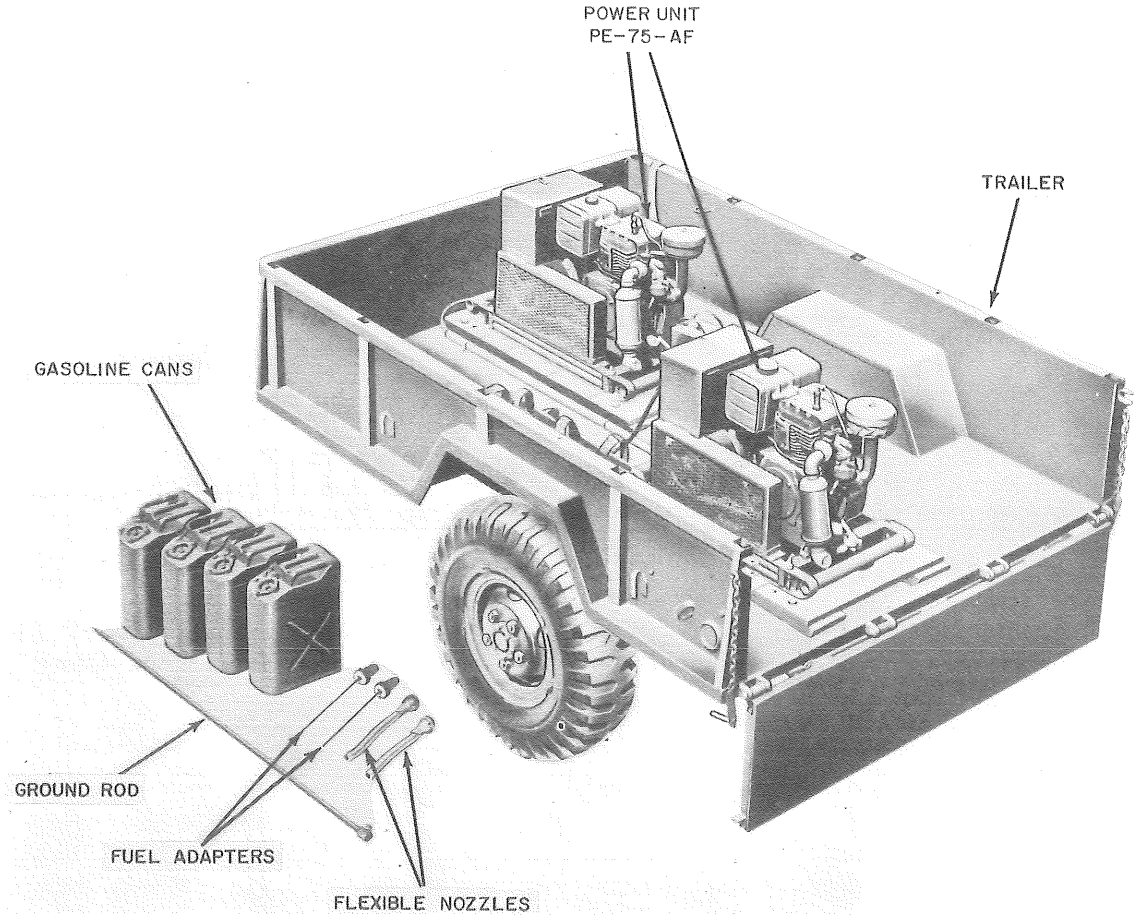


Figure 77. Trailer-Mounted Gasoline-Engine Generator Set PU-322/G.

STUDENT NOTES:

VHF ANTENNAS

YAGI, HORIZONTAL POLARIZATION

Note: Used with AN/TRC-1 (2 per set). Receive and transmit antennas are on separate masts.

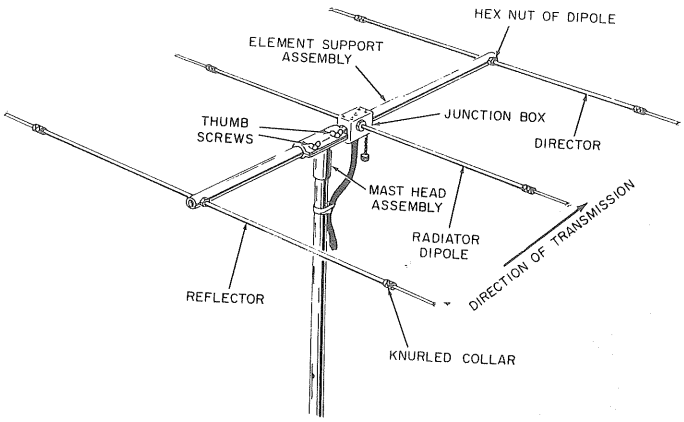


Figure 78. Antenna AS-20(*)/TRC-1.

YAGI, VERTICAL POLARIZATION

Note: Used with AN/TRC-24. Receive and transmit antennas are on same mast. For extremely weak signals, antennas can be double-stacked on separate masts.

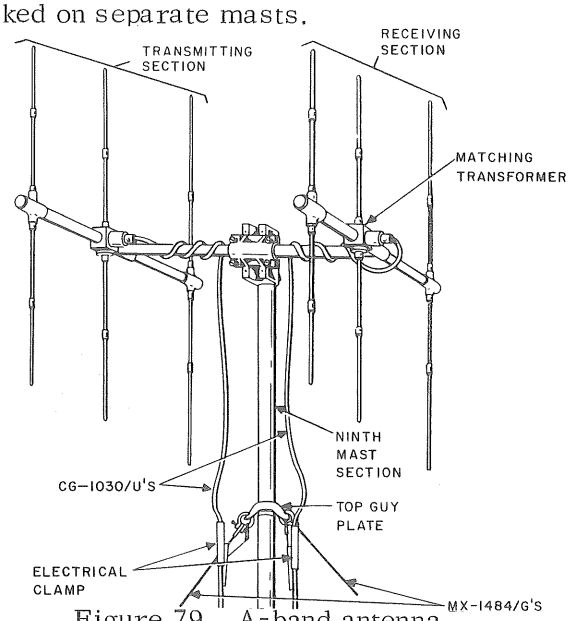


Figure 79. A-band antenna.

YAGI, FOLDED DIPOLE

Note: Used with AN/GRC-10 (2 per set). Transmit and receive antennas are on separate masts.

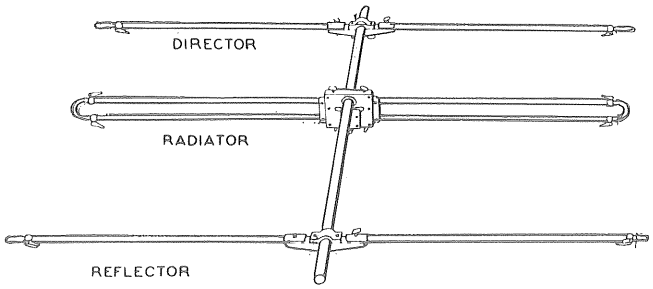


Figure 80. Antenna AS-620/GRC-10.

GROUND PLANE

Note: Used with AN/GRC-10 (1 per set). Elements are the same ones used in the folded dipole.

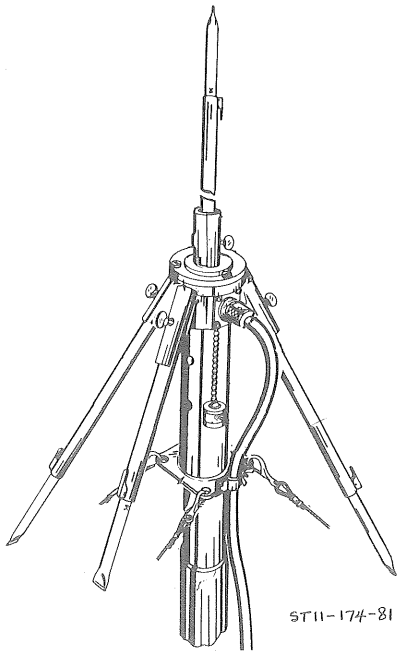


Figure 81. Ground plane antennas, part of AS-620/GRC-10.

PLANE REFLECTOR

Used with AN/TRC-24. Transmit and receive antennas are on same mast.

Dipoles

B-Band (Cross)
2 for transmitter
2 for receiver

C-Band (Rod)
2 for receiver
2 for transmitter

D-Band (Rod-Stubby)
4 for transmitter
4 for receiver

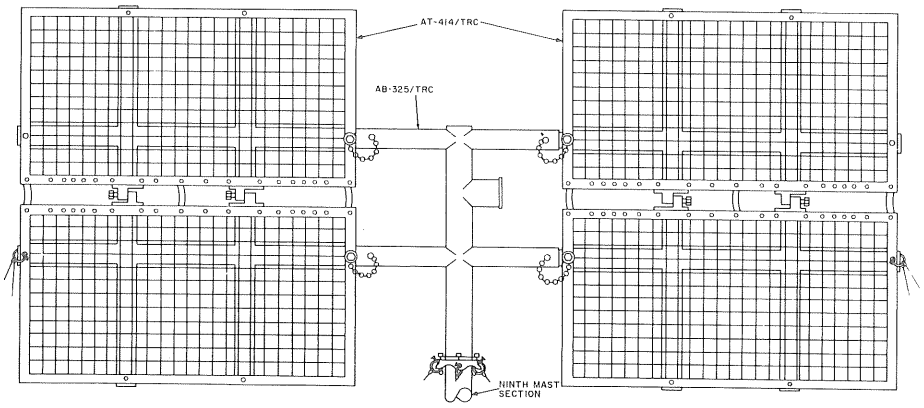


Figure 82. Antenna Reflector AT-414/TRC with B, C, and D-band dipoles, vertically polarized.

RIDGE-LOADED HORN

Used with AN/TRC-24 (F and J bands); 2 per set as shown in figure 83. Also used with AN/GRC-50; 1 per set as shown on Antenna Mast AB-577/GRC in figure 84.

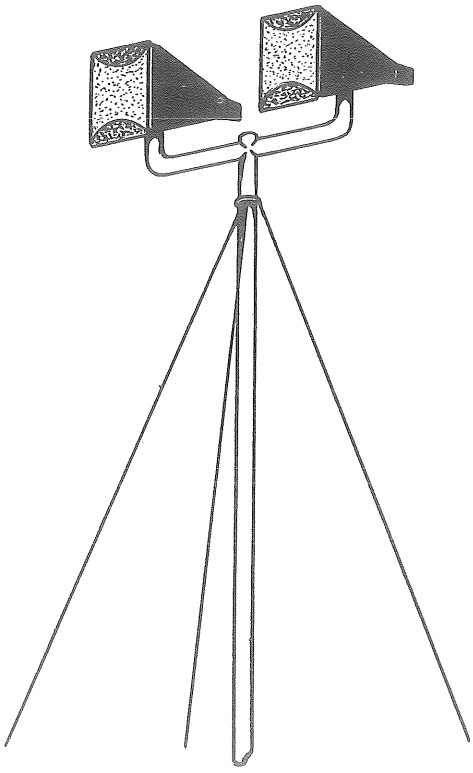


Figure 83. Antenna AT-903/G.

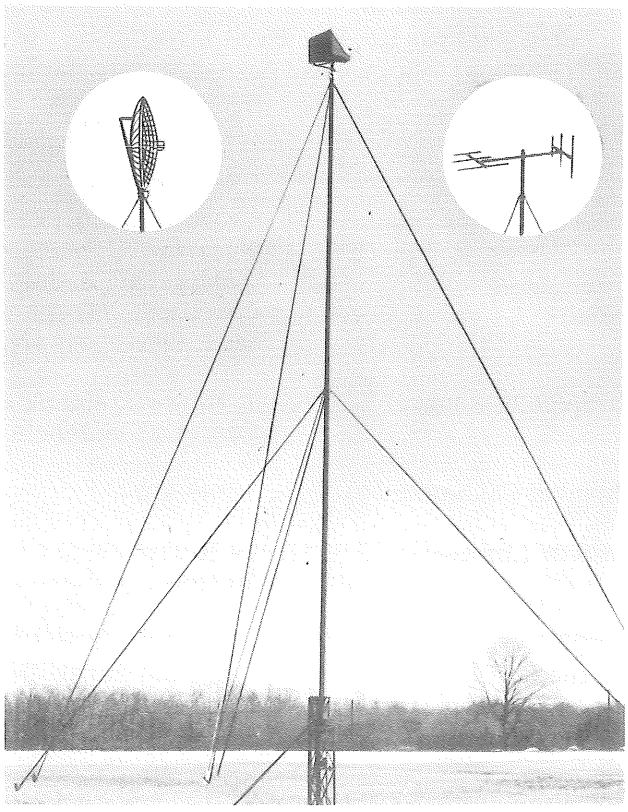


Figure 84. Antenna Mast AB-577/GRC. and applications.

Section V. MICROWAVE EQUIPMENT

RADIO SETS AN/TRC-29, -38, -39, -40 AND -41

STATUS: Standard A

STOCK NRS: 5820-503-2581 (AN/TRC-29), 5820-646-4757 (AN/TRC-38), 5820-646-4759 (AN/TRC-40), 5820-646-4760 (AN/TRC-41).

REFERENCE: TM 11-689, TM 11-2682

GENERAL INFORMATION

Radio Set AN/TRC-29 (fig. 85) is a uhf, microwave radio relay set for field or fixed installations capable of handling television, radar, frequency-division-multiplex, and time-division-multiplex signals. It is designed to operate in both the send and receive directions simultaneously using one antenna and rf transmission line. A separate order-wire receiver and transmitter, integrated with the main equipment, provides order-wire sub-carrier facilities on a party line basis.

The AN/TRC-29 consists of components shown in figure 85, in addition to the 8-foot horn-fed parabolic-reflector antenna, AS-554/TRC-29. Antenna supporting Tower AB-216/U (fig. 89), normally used with AN/TRC-29, provides tower heights from 78 to 204 feet. The AB-216/U is not included with the AN/TRC-29 and must be ordered separately.

The AN/TRC-29 provides high traffic or broad-band signals for radio relay or point-to-point service in rear areas. It is installed in place of or as a back-up for wire facilities.

Designed for field or fixed installation. It is readily transportable by military motor vehicle; the equipment can be transported in only the basic equipment transit cases.

TECHNICAL CHARACTERISTICS

Type of Service:	FM (9000F9). Voice (FM); TTY. Facsimile; DATA. Television; Radar. Baseband: 30 cps to 4.5 mc. Input Devices: AN/TCC-13 (TDM).
Frequency Range:.	1,700 to 2,400 mcs (27 RF channels, 25 mc apart). One of 27 channels preset by the operator; 27 crystals are provided.
Planning Distance:	40-48 km.
System Limits:	19 Relays. 20 Hops. 960 km (planning).
Antenna:	Horn-fed parabolic reflector (8-foot diameter) (see figure 89).
Power Out:	10 W.
Power Requirements:	115 or 230 v, ±10%, 2,300 W, 60 cps.
Frequency Control:	Crystal reference.

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu ft)	Weight (lbs)
Transmitter Rack	26-1/2 x 27 x 60	24.9	517
Receiver Rack	26-1/2 x 27 x 60	24.9	534

CONFIGURATIONS

The AN/TRC-29 is the basic radio set forming Radio Sets AN/TRC-38, -39, -40, and -41.

Radio Terminal Set AN/TRC-38: Two AN/TRC-29's (one in use, one spare) and Multiplexer Set AN/TCC-13. It provides 23 channel operation using one AN/TCC-13 and 45 telephone channels using two AN/TCC-13's.

Radio Repeater Set AN/TRC-39: Three AN/TRC-29's (two in use, one spare). It operates as a straight-through radio relay repeater.

Radio Repeater Set AN/TRC-40: Three AN/TRC-29's (two in use, one spare) and Pulse Form Restorer Group AN/TRA-10. It provides a two-channel drop-and-insert repeater.

Radio Repeater Set AN/TRC-41: Three AN/TRC-29's (two in use, one spare) and Multiplexer Group AN/TCA-1. It provides an eight-channel drop-and-insert repeater.

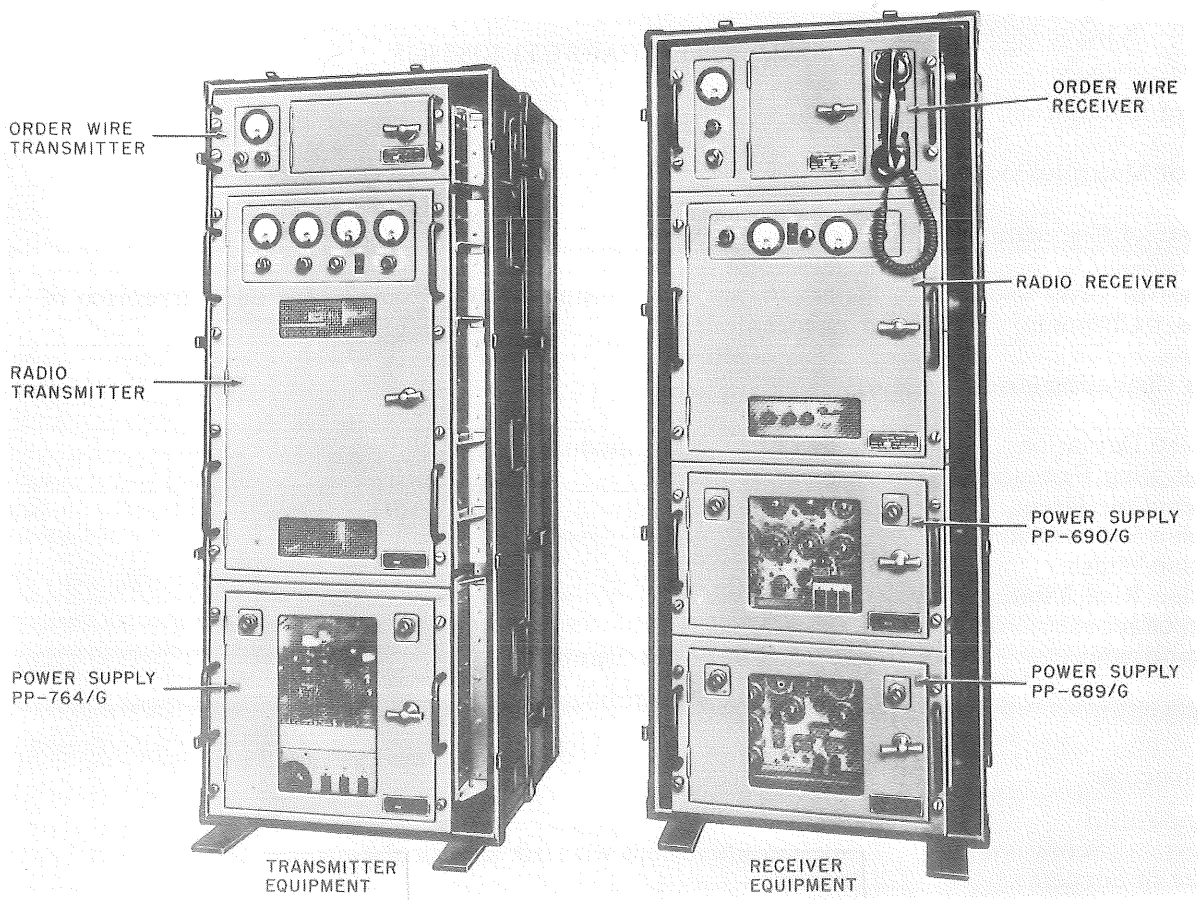


Figure 85. Radio Set AN/TRC-29.

MULTIPLEXER GROUP AN/TCA-1

STATUS: Standard A

STOCK NR: 5820-545-7262

REFERENCE: TM 11-2141, TM 11-2682

GENERAL INFORMATION

Multiplexer Group AN/TCA-1 (fig. 86) is an 8-channel, drop-and-insert, time-division-multiplexing unit used to provide multichannel service at a repeater station. It drops and demodulates, modulates and inserts, the first eight channels in the common-signal pulse train. The AN/TCA-1 consists of a test equipment rack and multiplexer rack. The multiplexer rack contains a multiplexer which drops and inserts the channel pulses, 16 telephone modems (eight for each direction of transmission) which modulate and demodulate the channels, and a power supply which supplies dc for the entire rack. The test equipment rack is identical to the one used in the AN/TCC-13.

One Multiplexer Group AN/TCA-1, three Radio Sets AN/TRC-29 (one used as a spare) and Tower AB-216/U form Radio Repeater Set AN/TRC-41. The combination of components affords equipment for one relay site of a microwave system. This set is installed at repeater stations in fixed or semifixed locations.

TECHNICAL CHARACTERISTICS

Type of Modulation:	PPM.
Type of Multiplexing:	TDM.
Number of Channels:	23 or 45 channels.
Number of Drop-and-Insert Channels:	Eight (16 one-way channels, two required for each direction of transmission).
Video Characteristics:	
Pulse Deviation:	±0.5 usec at 100% modulation.
Sampling Frequency:	8 kc.
Sampling Time:	125 usec.
Pulse Separation:	5.2 usec.
Pulse Width:	0.6 usec.
Pulse Rise Time:	0.3 usec.
Impedance:	50 ohms.
Amplitude:	0.22 to 0.66 V (23 channels). 0.45 to 0.9 V (45 channels).
Bandwidth:	1 mc.
Oscilloscope:	
Bandwidth:	6 mc.
Vertical Sensitivity:	2.5 v/cm maximum with 10-to-1 probe.
Size of Screen:	5 inches.
Power Source:	115 or 230 V ±10%, 60 cps.

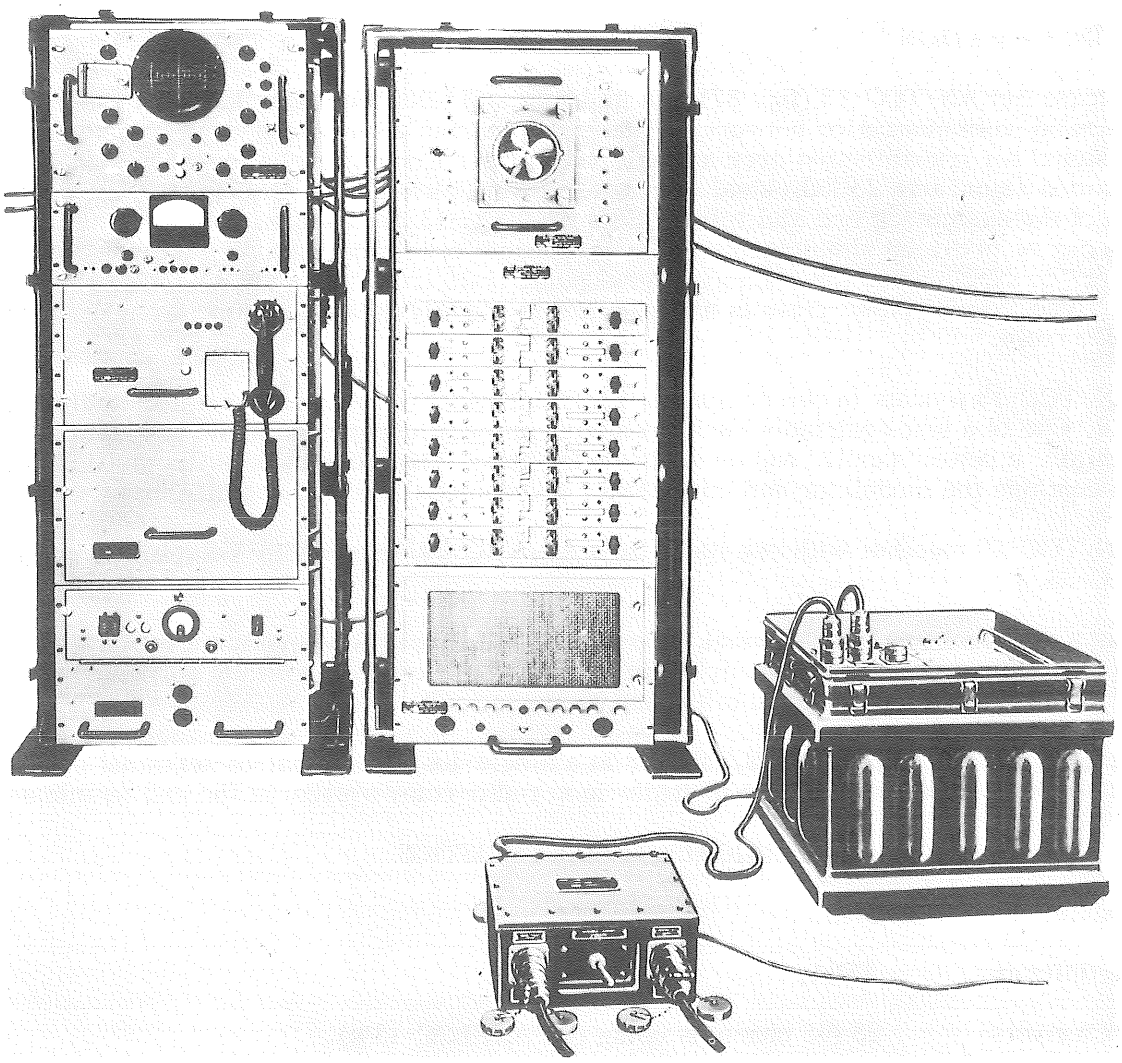


Figure 86. Multiplexer Group AN/TCA-1 (part of Radio Repeater Set AN/TRC-41).

STUDENT NOTES:

MULTIPLEXER SET AN/TCC-13

STATUS: Standard A

STOCK NR: 5805-503-1040

REFERENCE: TM 11-2141, TM 11-2682

GENERAL INFORMATION

Multiplexer Set AN/TCC-13 (fig. 87) is a multichannel telephone terminal used in microwave radio-relay communication networks. This set combines 23 independent vf channels into a common signal for transmission over a single rf carrier. Conversely, it separates an incoming common signal into 23 individual vf channels. Multiplexer Sets AN/TCC-13 are used at each end of the system. If two Multiplexer Sets AN/TCC-13 are used at each terminal, 45 vf channels can be provided simultaneously. In 45-channel operation, one AN/TCC-13 operates as a "master" to synchronize the common-signal pulse train from the other AN/TCC-13 called the "slave." The "slave" pulse-train is negative and is slightly delayed in time from the positive master-pulse train.

The AN/TCC-13 mounts in two equipment racks identical to the racks used for Radio Set AN/TRC-29. One is a test equipment rack containing an oscilloscope, an audio test set, a control monitor, a power supply, and an accessories case. The other rack is the multiplexer rack which contains the modulator and multiplexer and demodulator and demultiplexer.

The AN/TCC-13 together with two Radio Sets AN/TRC-29 form Radio-Telephone Terminal Set AN/TRC-38.

Used as a terminal in a multichannel, microwave radio-relay communications network. This set is used only with a manual switchboard and can be operated on either a 2-wire or 4-wire basis for each of the 23 standard telephone channels.

Designed to be used as part of AN/TRC-38 in a single-loop, terminal-to-terminal system providing 23 channels ppm-tdm or in a multiple-loop radio-relay system at the end terminals.

TECHNICAL CHARACTERISTICS

Type of Modulation: PPM.

Type of Multiplexing: TDM.

Number of Channels: 23 (45 channels using two AN/TCC-13's).

Audio Channel:

Input Level: 0 dbm, 2-wire.
-4 dbm, 4-wire.

Output Level: -3 dbm, 2-wire.
0 dbm, 4-wire.

Termination: 600 ohms, 2-wire or 4-wire.

Signaling: 20 cps.

Modulating Bandwidth: 300 to 3,500 cps.

Signal to Noise Ratio:	60 db (minimum).
Distortion:	4% maximum.
Oscilloscope:	
Bandwidth:	6 mc.
Vertical Sensitivity:	2.5 v/cm maximum with 10-to-1 probe; 0.25 to 0.3 v/cm without probe.
Power Source:	115 or 230 V, ±10%, 60 cps, 1.1 kw.
Video Characteristics:	
Pulse Deviation:	±0.5 usec at 100% modulation.
Sampling Frequency:	8 kc.
Sampling Time:	125 usec.
Pulse Separation:	5.2 usec.
Pulse Width:	0.6 usec.
Pulse Rise Time:	0.3 usec.
Impedance:	50 ohms.
Amplitude:	0.5 v.
Bandwidth:	1 mc.

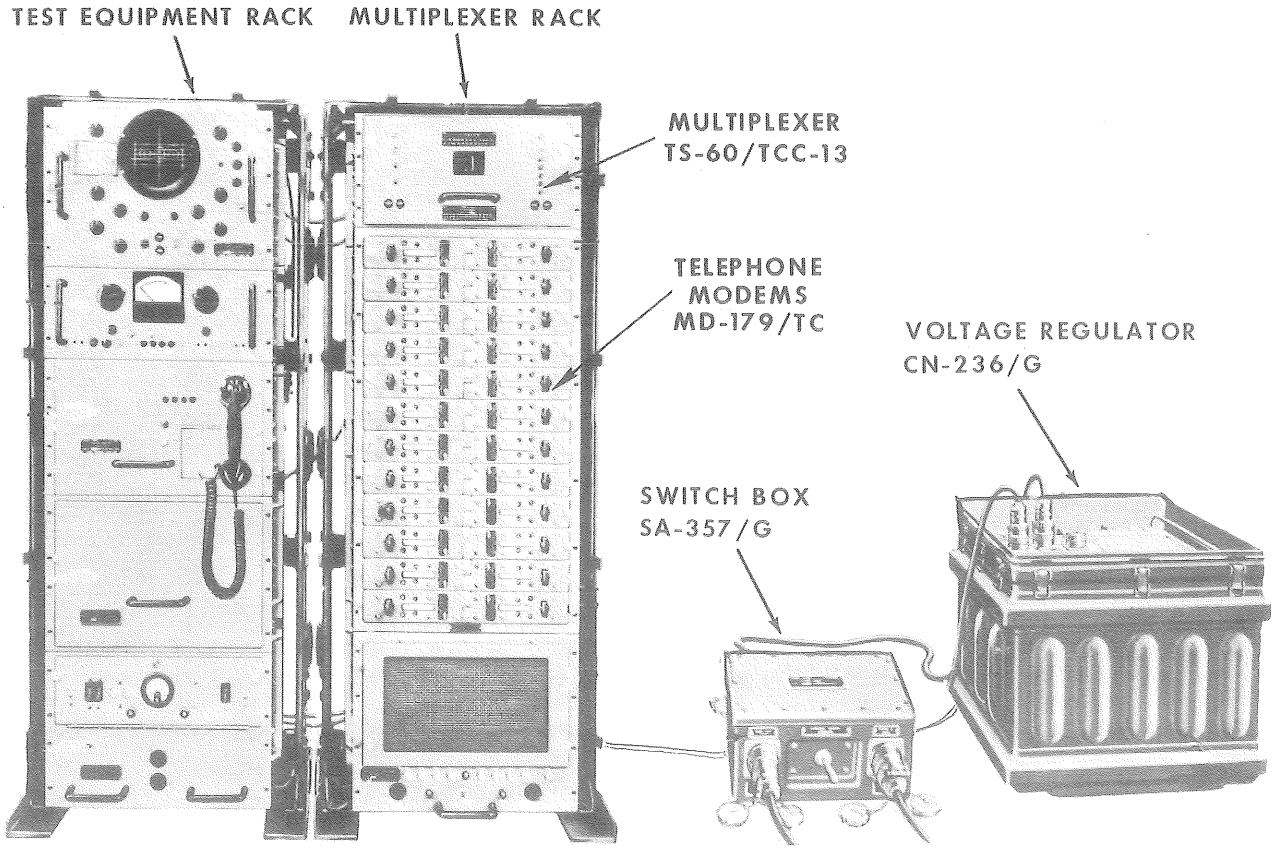


Figure 87. Multiplexer Set AN/TCC-13 (part of Radio-Telephone Terminal AN/TRC-38).

PULSE FORM RESTORER GROUP AN/TRA-10

STATUS: Standard A

STOCK NR: 5820-545-7262

REFERENCE: TM 11-2141, TM 11-2682

GENERAL INFORMATION

Pulse Form Restorer Group AN/TRA-10 (fig. 88) is installed only as part of Radio Repeater Set AN/TRC-40 in a fixed or semifixed repeater station. The AN/TRA-10 is used primarily to reshape the 23- or 45-channel, common-signal pulse train received at the repeater station (AN/TRC-40) in a microwave, multiple-loop, radio-relay system. Pulse restoration is not necessary at every repeater station, therefore Pulse Form Restorer Group AN/TRA-10 is used only at every several loops to restore the video signal to the proper level. A secondary function of the AN/TRA-10 is to provide communications at the repeater station by two drop-and-insert channels (channels 1 and 2). A repeater station which uses the Pulse Form Restorer Group AN/TRA-10 is called a "pulse-forming repeater station." The test equipment racks in the AN/TRA-10 and AN/TCC-13 are identical.

Radio Repeater Set AN/TRC-40 uses one AN/TRA-10, together with three Radio Sets AN/TRC-29 (one used as a spare), and Tower AB-216/U.

TECHNICAL CHARACTERISTICS

Type of Modulation:	PPM.
Type of Multiplexing:	TDM.
Number of Channels:	23 or 45 channels.
Number of Drop-and-Insert Channels:	Two (two channels are dropped and inserted from the pulse in each direction of transmission. Four modems are required, two for each direction of transmission).

Video Characteristics:

Pulse Deviation:	±0.5 usec at 100% modulation.
Sampling Frequency:	8 kc.
Frame Time:	125 usec.
Pulse Separation:	5.2 usec.
Pulse Width:	0.6 usec.
Pulse Rise Time:	0.3 usec.
Impedance:	50 ohms.
Amplitude:	0.22 to 0.66 v (24 channels). 0.45 to 0.9 v (45 channels).
Bandwidth:	1 mc.

Oscilloscope:

Bandwidth:	6 mc.
Vertical Sensitivity:	2.5 v/cm maximum with 10-to-1 probe; 0.25 to 0.3 v. cm maximum without probe.
Size of Screen:	5 inches.
Power Source:	115 or 230 V, ±10%, 60 cps.

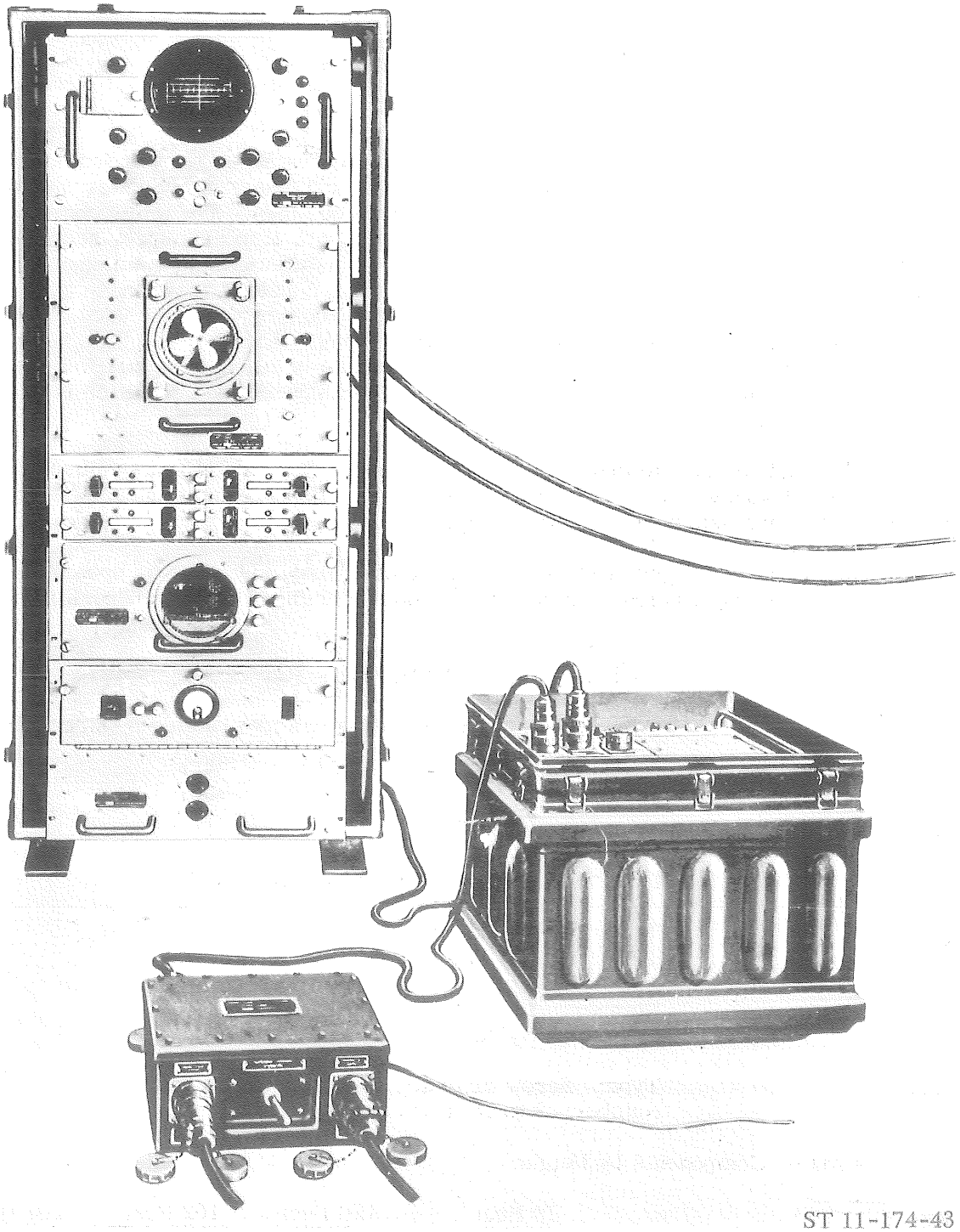


Figure 88. Pulse Form Restorer Group AN/TRA-10 (part of Radio Repeater Set AN/TRC-40).

TOWER AB-216/U

STATUS: Standard A

STOCK NR: 5450-547-0929

REFERENCE: TM 11-5073

GENERAL INFORMATION

Tower AB-216/U (fig. 89) is a sectionalized and guyed rectangular tower fabricated chiefly from aluminum tubing. It is designed for quick assembly and disassembly and is intended to support transmitting and receiving antennas and related equipment. The tower consists of four tower base plates, one folding base section, and twelve identical folding upper sections. Each section has an integral ladder and platforms to facilitate installation and maintenance. Guys, guy anchors, ground rods, light supports, antenna supports, and the tools and accessories necessary for the installation of the tower and associated equipment are included. Supplementary equipment designed for use with Tower AB-216/U permit the tower height to be extended in 6-foot increments from the basic 78 feet to the maximum of 204 feet. A 204-foot tower supporting a maximum of four parabolic dish antennas in balanced load condition is designed to withstand 100-mph winds.

Tower AB-216/U is used to provide a supporting tower for parabolic dish antennas such as used with the AN/TRC-29, -38, -39, -40, and -41. It may also support various other types of vhf or microwave antennas and associated equipment.

Tower AB-216/U is designed to be erected in field or fixed installations upon four tower base plates. The variety of heights which may be obtained with the AB-216/U permits versatility of installation.

TECHNICAL CHARACTERISTICS

Height:	78 to 204 feet (300 feet using two towers side by side and cross-braced).
Maximum Compression Load:	48,000 pounds.
Mounting:	Four Tower Support Base Plates AB-206/U.
Sections:	Tower Section AB-208/U. Tower Section AB-207/U.
Guys:	Number: 16 to 36. Material: Nylon-jacketed, steel-wire rope.
Anchors:	Type: Screw or plate. Number: 8 to 16 (main and back).

Breakdown of Major Components by Height:

	78 Feet	120 Feet	162 Feet	204 Feet
Tower AB-216/U	1	1	1	1
Tower Section Set AB-298/U		1	2	3
Accessory Kit MK-100/I			1	1
Guy Kit MK-101/U				1

Antennas (not furnished):

Type:	Parabolic dish
Number:	The total number of antennas the tower can support is limited by the size of the antennas and the height of the tower (refer to TM 11-5073).

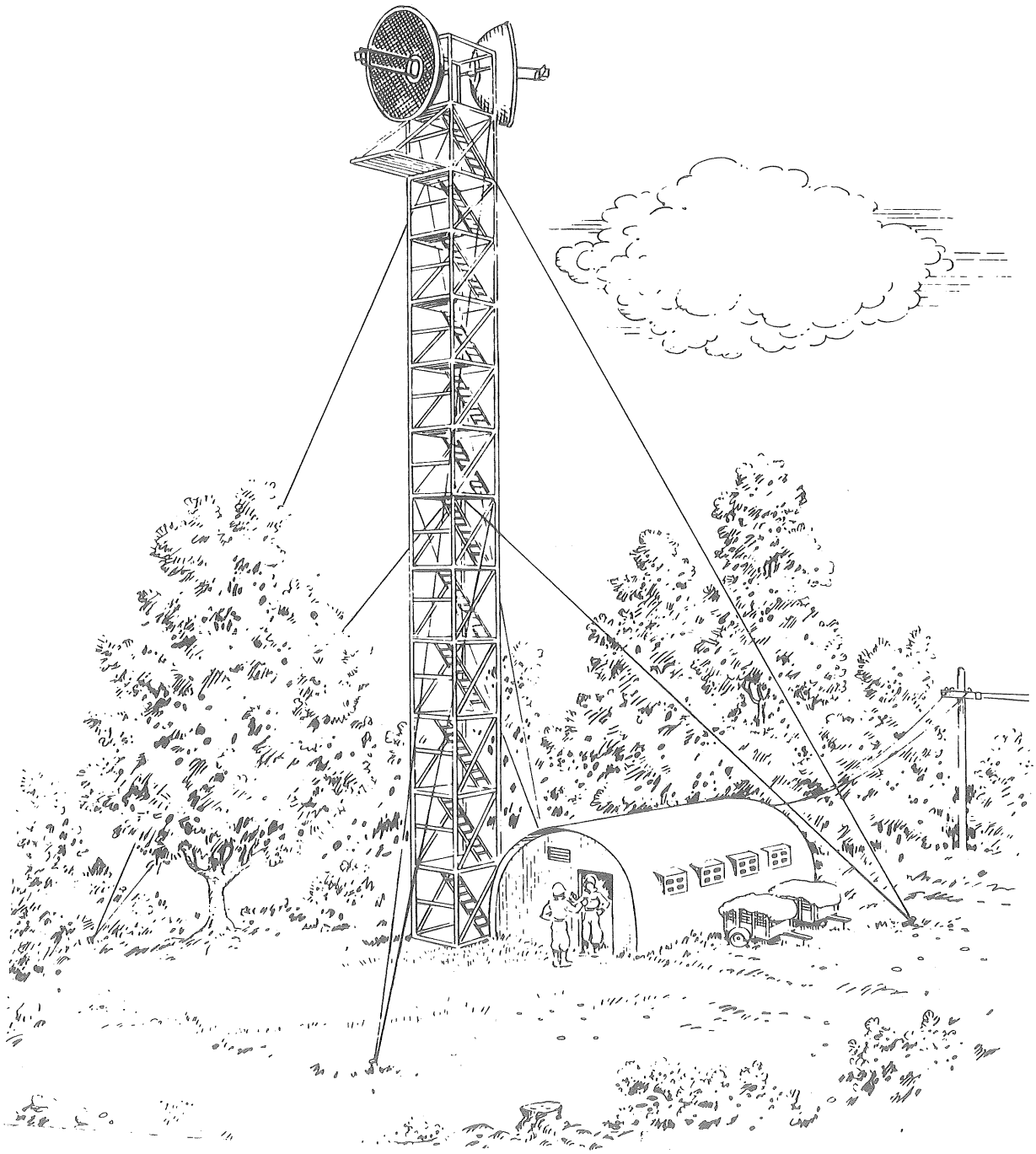


Figure 89. Tower AB-216/U.

Section VI. SINGLE SIDEBAND EQUIPMENT

RADIO SET AN/GRC-106

STATUS: Standard A

STOCK NR:

REFERENCE:

GENERAL INFORMATION

Radio Set AN/GRC-106 is a high-frequency, forward area, tactical communication radio set developed for use in the division communication system. This radio set will be employed primarily for forward area tactical command and administrative traffic where range or terrain preclude the use of frequency modulated equipment. Single sideband mode of operation is employed for voice operation.

The AN/GRC-106 is designed primarily for mounting on a 1/4-ton vehicle, and is designed to replace Radio Set AN/GRC-19 and the radio component of Radio Teletypewriter Sets AN/GRC-46, AN/VRC-29, and AN/VSC-1.

TECHNICAL CHARACTERISTICS

Type of Service:	SSB voice (upper sideband, 3A3J). AM voice (carrier and upper sideband, 3A3A). CW (0.1A1). FSK (with auxiliary equipment).
Frequency Range:	
Transmit:	2.0 to 29.999 mcs in locked 1 kc steps.
Receive:	2.0 to 29.999 mcs in locked 1 kc steps with vernier tuning between steps.
Planning Distance:	80 km (50 mi) with ground wave. 2,400 km (1,500 mi) with sky wave.
Antenna:	15-foot whip or doublet.
Power Out:	SSB Voice: 400 W Peak Envelope Power (PEP). AM Voice: 400 W PEP (70 W carrier). CW: 200 W average.
Power Requirement:	24-27.5 volts DC vehicle battery.

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu ft)	Weight (lbs)
Receiver-Transmitter RT-662	7 x 12 x 18	.88	45
Amplifier AM-3349	8 x 13 x 18	1.08	61



Figure 90. Radio Set AN/GRC-106.

Section VII. DEVELOPMENTAL EQUIPMENT

This section covers certain developmental equipment that may be classified standard A and become basic issue items within one to four years, depending on engineering problems, service test results, and production. Equipment in the developmental stage is not available as normal stock and issue. Official DA literature (TM) coverage is not normally provided for developmental equipment; however, preliminary instruction manuals are prepared for use during the service test period. Instruction manuals do not have a TM number but are identified by the equipment nomenclature used in their titles.

Developmental equipment is sometimes cancelled or revised. Thus, the information covered in this section is subject to change. Revised editions of this text will include all interim changes.

RADIO SET AN/GRC-66

STATUS: Developmental

STOCK NR: Not for stock or issue

REFERENCE: None

GENERAL INFORMATION

Radio Set AN/GRC-66 (fig. 91) is an intermediate and rear-area multichannel, vhf radio relay set mounted in a shelter installed either on a 2-1/2-ton truck or on a ground site. This radio set provides facilities for tdm or fdm equipment and other wideband equipment having a bandwidth not wider than 1 megacycle.

The AN/GRC-66 consists of a radio transmitter and receiver, order wire receiver, and two power supplies. The set contains approximately the same number of transistors as vacuum tubes. The order-wire chassis is completely transistorized and modularized. The radio transmitter and receiver are partially transistorized and modularized, and the power supplies operate exclusively with semiconductors.

TECHNICAL CHARACTERISTICS

Type of Service:	3000F9.
Frequency Range:	1,700 to 2,400 mcs.
Number of RF Channels:	70 (140 with scatter).
Stability:	.007% crystal controlled.
Planning Distance:	48 kilometers (30 miles) (line-of-sight).
Type of Modulation:	FM, ±1 mc deviation.
Communication Bandwidth:	2.6 mc (3 db points) i-f amplifier.
Transmitter Power:	5 to 15 W.
Traffic Capacity:	45 pulse-time-multiplex (PTM) voice channels (bi-polar). 48 TDM-PCM channels with AN/TCC-7. 72 FDM channels.
Power Input:	850 W (with 45 TDM channels).

Antennas and Supports:

Standard:	6-foot sectional parabolic antenna. 50- to 100-foot lightweight tower. 50-foot pneumatic mast or AB-577/G.
Optional:	2-foot square horn of AN/GRC-50 type. 50-foot AB-577/G, 5-inch diameter.
Operation:	"Cigar" antenna of low gain. Twenty-one-foot pneumatic mast.
Power Source:	1-1/2-ton trailer, 2 ea, 3KVA Engine Generator.

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu ft)	Weight (lb)
Transmitter	31-3/4 x 17 x 20	6.25	70
Receiver	13-3/4 x 17 x 20	2.71	60
Orderwire	5 x 17 x 20	.98	35
Transmitter Power Supply	8-1/2 x 17 x 20	1.67	95
Receiver Power Supply	8-1/2 x 17 x 20	1.67	70

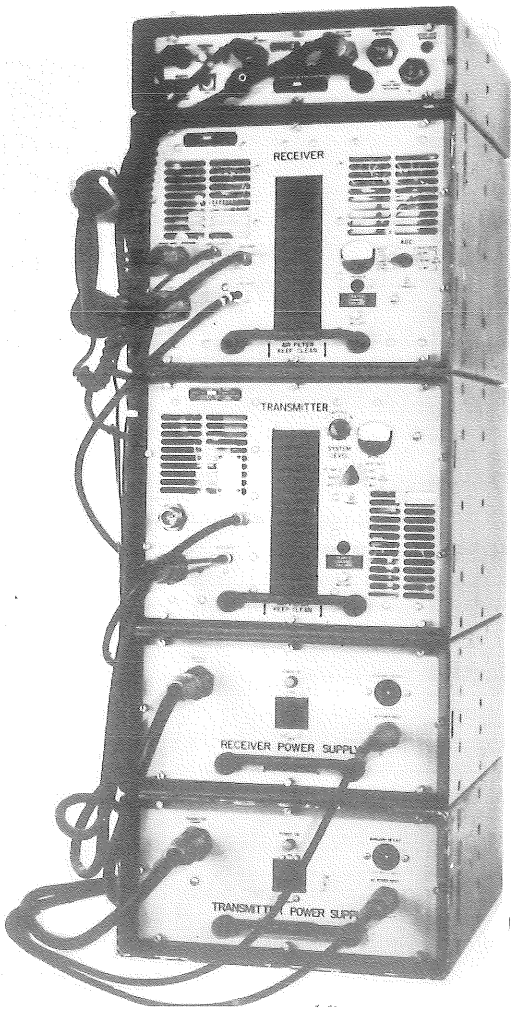


Figure 91. Radio Set AN/GRC-66.

RADIO SET AN/GRC-103

STATUS: Developmental

STOCK NR: None

REFERENCE: None

GENERAL INFORMATION

Radio Set AN/GRC-103 is a lightweight, multichannel, radio relay set designed to operate in the division and forward area. It will replace Radio Sets AN/GRC-10, AN/TRC-27, and AN/TRC-24 at division and below. It will be capable of working with 6-, 12-, or 24-channel PCM multiplexers or 4 plus 1 channel FDM multiplexers.

A complete 12-channel terminal including radio equipment, antennas, mast, multiplexer, signaling and power equipment will be capable of being mounted in a 1/4-ton vehicle and trailer. Two complete 12-channel terminals are also under development capable of being mounted in a 3/4-ton shelter.

TECHNICAL CHARACTERISTICS

Type of Service: 500F9.

Frequency Range: 200 to 1,000 mcs.

Number of RF Channels: 1,560.

Stability: .005% crystal controlled.

Planning Distance: 32 kilometers (20 miles).

Type of Modulation: FM, 0.5 mc deviation.

Communication Bandwidth: 800 kcs (3 db points) i-f.

Transmitter Power: 30 W.

Traffic Capacity: 12 TDM channels.
4 FDM channels.

Power Input: 300 W (approximately).

Antenna: Corner reflector.

Power Requirements: 115 volts, 50-60/400 cycles.

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu ft)	Weight (lbs)
Transmitter	17 x 12 x 8	.94	Approximately 50
Receiver	17 x 12 x 8	.94	Approximately 50
PCM Multiplex	17 x 12 x 8	.94	Approximately 50

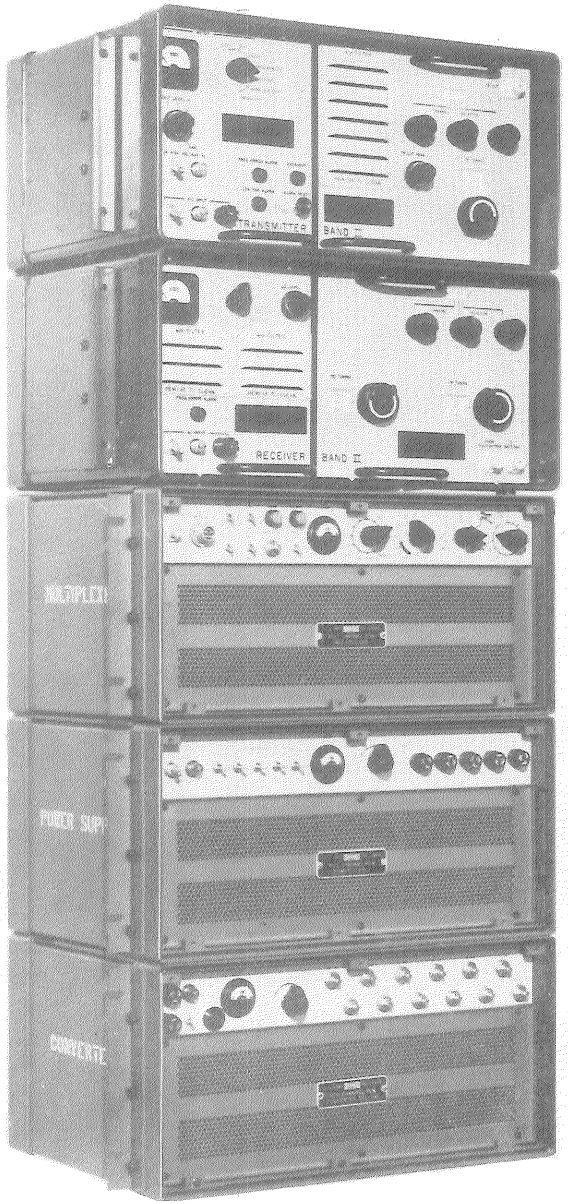




Figure 92. Radio Relay Set AN/GRC-103.

RADIO TELETYPEWRITER SET AN/GRC-108

STATUS: Developmental

STOCK NR: None

REFERENCE: None

GENERAL INFORMATION

Radio Teletypewriter Set AN/GRC-108 is a proposed shelter-mounted (3/4-ton truck) radio set providing full duplex capability for single sideband voice, CW, and secure radioteletype-writer communication for forward area tactical use. The AN/GRC-108 is designed to replace Radio Set AN/GRC-26( ).

TECHNICAL CHARACTERISTICS

Frequency Range:

Transmit: 2.0 to 29.999 mcs in locked 1 kc steps.
Receive: 2.0 to 29.999 mcs in locked 1 kc steps with vernier tuning between steps.

Types of Service: SSB voice (upper sideband).
AM voice (carrier plus upper sideband).
CW.
Audio FSK; 850 cycle shift centered at 2 kc; 85 cycle audio FSK; FSK centered at 2,805 cycles.
SSB voice and 85 cycle audio FSK.

Mode of Operation: Full Duplex (separate doublet or whip for transmitting and receiving).

Frequency Stability: Within 1 part 10^7 per week.

Power Requirement: 115-230 volts, single-phase, 50-60 or 400 cps, AC.
7,500 watts maximum - 10 kw trailer mounted power unit included as part of AN/GRC-108.

Power Output:

SSB Voice: 2,000 watts PEP.
AM Voice: 2,000 watts PEP.
CW 1,000 watts average.
FSK 2,000 watts PEP; 1 kw single tone.

Planning Distance: 100 miles ground wave; 1,500 miles sky wave.

Type of Antenna: 15-foot whips or doublets.

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu ft)	Weight (lbs)
Radio Teletypewriter Set AN/GRC-108 in S-153/G Shelter			1,500

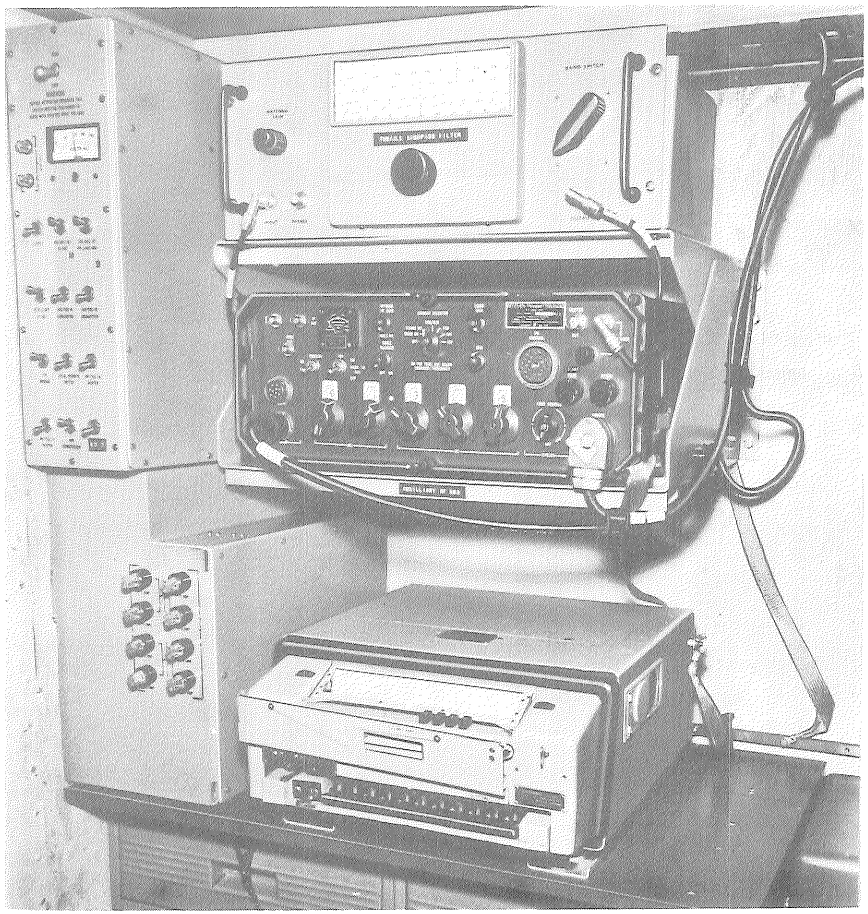


Figure 93. Radio Teletypewriter Set AN/GRC-108, roadside view.

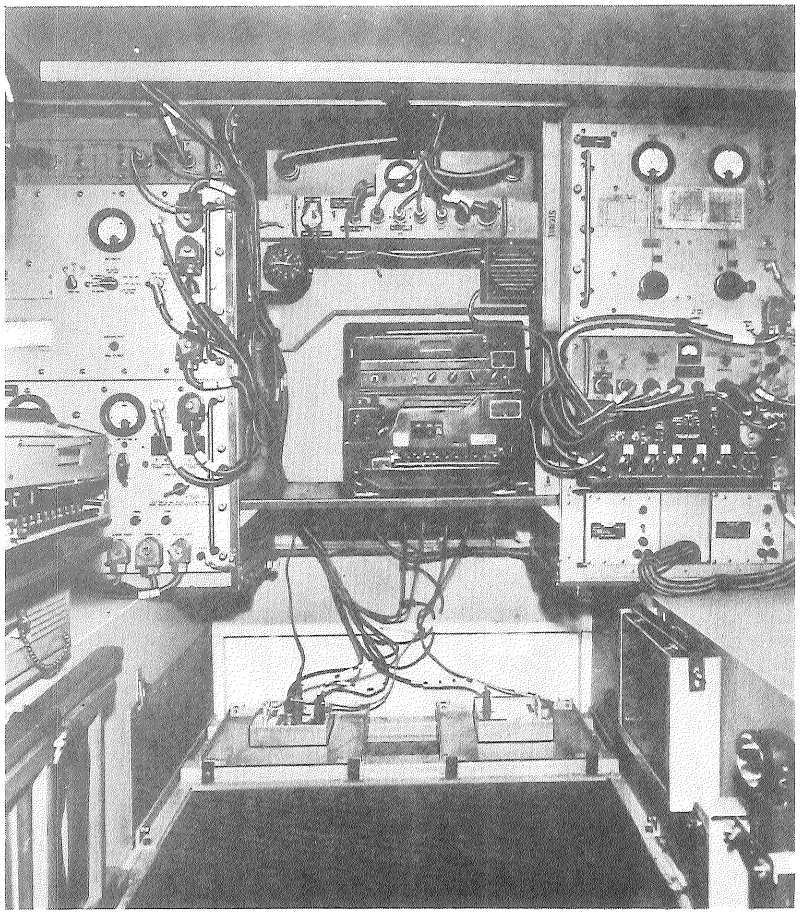


Figure 94. Radio Teletypewriter Set AN/GRC-108, interior view.

RADIO TELETYPEWRITER SETS AN/GRC-122 AND AN/GRC-142

STATUS: Developmental

STOCK NR: None

REFERENCE: None

GENERAL INFORMATION

Radio Teletypewriter Set AN/GRC-142 is a proposed shelter-mounted (3/4-ton truck) radio set providing half duplex capability for single sideband voice, CW, and secure radioteletypewriter communication for forward area tactical use. The radio components are those employed in Radio Set AN/GRC-106 with additional equipment provided for half duplex radioteletypewriter communication. The AN/GRC-142 is designed to replace Radio Teletypewriter Set AN/GRC-46. The AN/GRC-122 and AN/GRC-142 are similar except that the AN/GRC-122 contains an additional receiver-exciter unit to provide full duplex operation.

TECHNICAL CHARACTERISTICS

Frequency Range:

Transmit: 2.0 to 29.999 mcs in locked 1 kc steps.
Receive: 2.0 to 29.999 mcs in locked 1 kc steps with vernier tuning between steps.

Types of Service:

SSB voice (upper sideband, 3A3J).
AM voice (carrier and upper sideband, 3A3A).
CW.
Audio FSK; 850-cycle shift centered at 2 kc; 85-cycle shifts centered at 2,805 cycles.
SSB voice and 85-cycle audio FSK (60-100 wpm).
FSK centered at 2,805 cycles.

Mode of Operation: Full duplex (separate doublet or whip for transmitting and receiving).

Frequency Stability: Within 1 part 10^7 per week.

Power Requirement: 27.5 volts dc, power supplied by either a 100-ampere high capacity generator system, installed in 3/4-ton truck or an equivalent generator system.

Power Output:

SSB Voice: 400 watts Peak Envelope Power (PEP).
AM: 400 watts PEP (70 watts carrier).
CW: 200 watts average.
FSK: 400 watts PEP; 200 watts single-tone power.

Planning Distance: 50 miles ground wave, 1,500 miles sky wave.

Type of Antenna: 15-foot whip or doublet.

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu ft)	Weight (lb)
Radio Teletypewriter Set AN/GRC-122 in S-153/G Shelter			Approximately 1,250

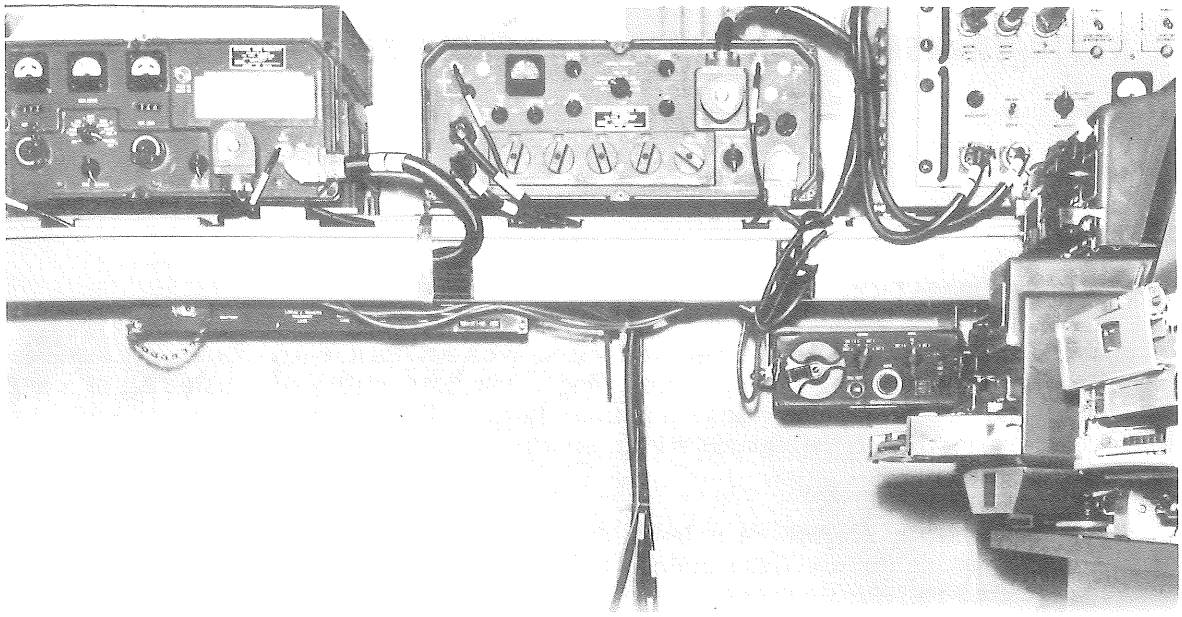


Figure 95. Radio Teletypewriter Set AN/GRC-142, forward view, upper half.



Figure 96. Radio Teletypewriter Set AN/GRC-142, curb-side view.

RADIO TRANSMITTER AN/PRT-4 AND RADIO RECEIVER AN/PRR-9

STATUS: Developmental

STOCK NR: None

REFERENCE: None

GENERAL INFORMATION

Radio Transmitter AN/PRT-4 and Radio Receiver AN/PRR-9 are being developed to fulfill a requirement for a very lightweight short range, low cost, radio set consisting of a separate transmitter and receiver. It is intended primarily to facilitate and expedite transmission of orders and information to individuals within small units, and secondarily, to increase flexibility and effectiveness of small units.

Radio Transmitter AN/PRT-4 is being developed to provide two transmission distance ranges; 1,600 meters for use from platoon leader to squad leader, and 500 meters from squad leader to selected individuals within the squad. Radio Receiver AN/PRR-9 is designed for mounting on the steelhelmet or to be carried in the pocket. Concept of employment is similar to that proposed for the Helmet Radio AN/PRC-34 and AN/PRC-36.

TECHNICAL CHARACTERISTICS

RADIO TRANSMITTER AN/PRT-4

Type of Service:	30F3.
Frequency Range:	47 to 57 mcs.
Planning Distance:	1,600 meters and 500 meters.
Power Requirement:	12-volt dry battery capable of powering the set for 24 hours on a 15 to 1 receive-transmit ratio. 120 ma when transmitting and zero ma for standby.
Power Output:	0.5 watt on channel 1; 90 to 225 milliwatts on channel 2.
Type of Modulation:	FM, 8 kc deviation, Voice or Tone (1,200 cycles).
Antenna:	24-inch telescoping whip.
Special:	200, 50 kc channels possible (100 crystals will be supplied in a crystal kit on 100 kc increments plus 9 extra crystals). Two preset channels available. Channel 2 must be set within plus or minus one megacycle of channel 1. Channel 1 is the high power channel for the 1,600 meter range and channel 2 is the low power channel for the 500 meter range.

RADIO RECEIVER AN/PRR-9

Frequency Range:	47 to 57 mcs.
Type of Modulation:	FM double superheterodyne.
Sensitivity:	0.5 microvolts for 10 db S+N/N with 5 mv output.

Communication Bandwidth: 40 kc at 6 db; 100 kc at 60 db.

Power Requirement:	5-volt battery capable of powering the set continously for 24 hours (10 ma without signal input, 18 ma with signal input.)
Antenna:	Two-position 1-foot long steel tape.

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu in.)	Weight (oz)
Radio Transmitter AN/PRT-4	7-1/2 x 1-1/2 x 2-1/2	28.12	18
Radio Receiver AN/PRR-9	6-1/2 x 3 x 1-1/8	35.28	8

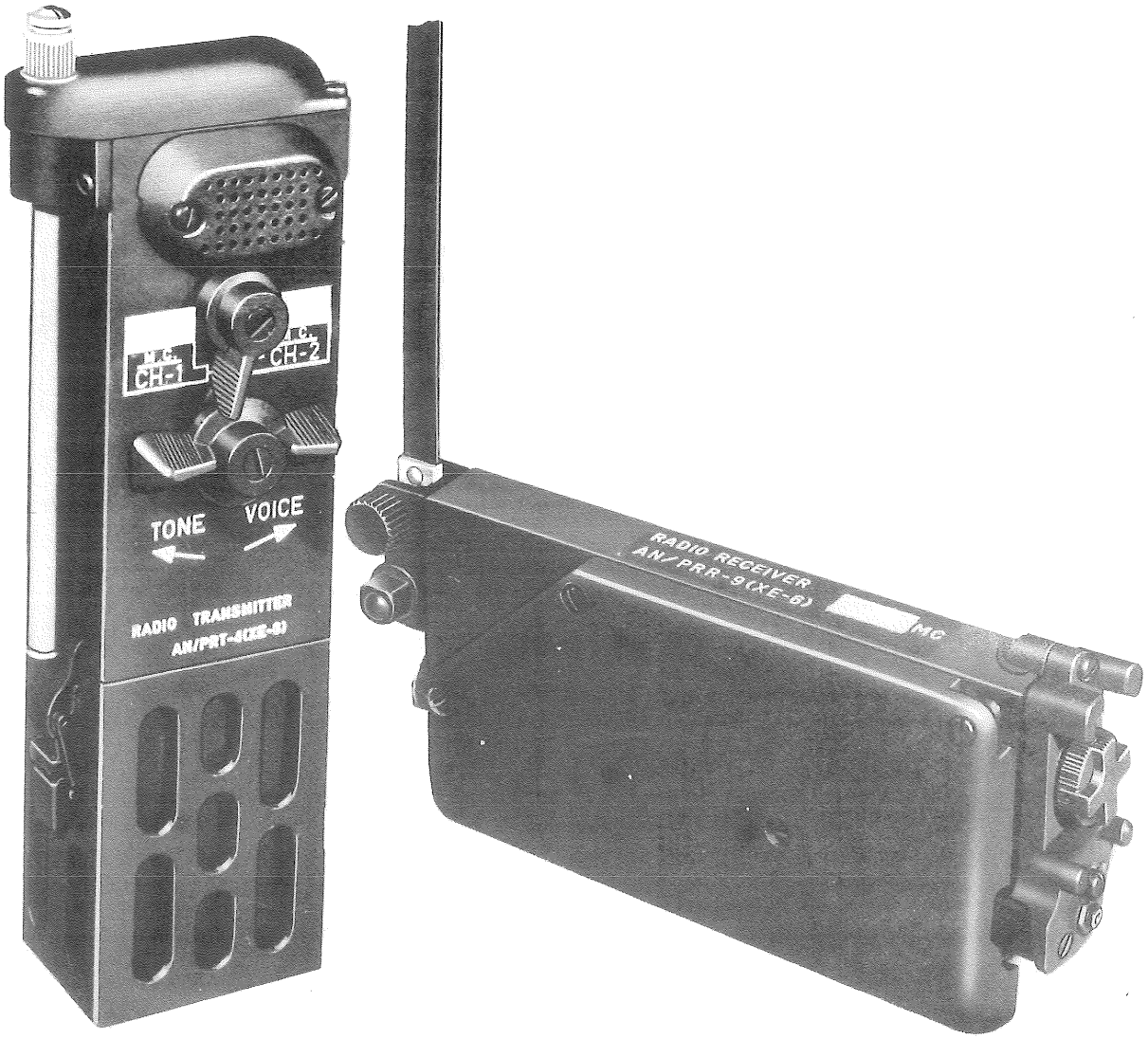


Figure 97. Radio Transmitter AN/PRT-4 and Radio Receiver AN/PRR-9.

POWER AMPLIFIER, MAN PACK, RB-1

STATUS: Developmental

STOCK NR: None

REFERENCE: None

GENERAL INFORMATION

This power amplifier was designed for use with the AN/PRC-25 Radio Set. It is capable of increasing the power output level to 35 watts, doubling the range of the present AN/PRC-25, all other factors being equal.

The man-pack power amplifier consists of two units: an amplifier and a special battery pack. These units are attached to each other and to the AN/PRC-25 with the same clamps already used on the AN/PRC-25.

Special: Tuning of the amplifier is accomplished by a single knob and a neon glow lamp indicator, which glows to maximum brightness when the amplifier is adjusted properly. In addition to giving an indication of proper tuning, the glow lamp also gives a positive indication that the power amplifier is developing a high level of RF energy.

The operating time of the radio set and power amplifier, when using silver-zinc batteries, is approximately 30 hours at 15 watts, and 15 hours at 35 watts.

TECHNICAL CHARACTERISTICS

Frequency Range: 30 to 53 mc.

Power Out: 1.5 w (unamplified).
15 w (low).
35 w (high).

Power Requirements: 3 v or 12 v DC, silver-zinc battery arrangement.

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu ft)	Weight (lbs)
Power Amplifier (with battery)	4 x 10 x 17.5	.40	28

STUDENT NOTES:

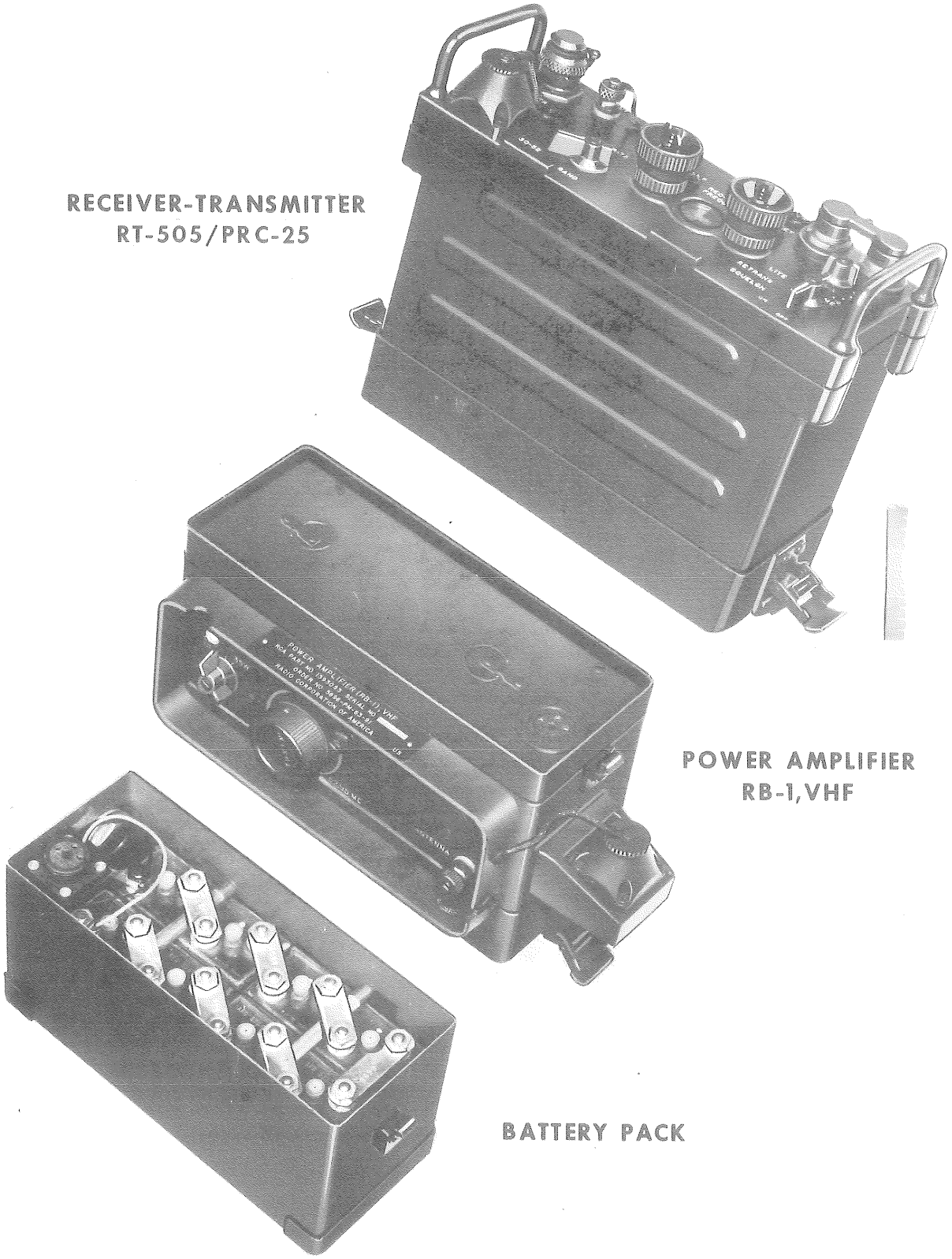


Figure 98. Power Amplifier, Man-Pack, RB-1, with RT-505/PRC-25.

RADIO SET AN/PRC-62

STATUS: Developmental

STOCK NR: None

REFERENCE: None

GENERAL INFORMATION

Radio Set AN/PRC-62 is a medium and high frequency, single sideband transmitter-receiver. It is intended to be transported and operated by one man, and is to replace Radio Sets AN/GRC-9, -34, and -87 and AN/PRC-47. It will also be employed in vehicles, using the vehicular power source and antenna.

Special: This radio set will be compatible with Radio Sets AN/GRC-106 and AN/GRC-108. In the CW mode, either the hand key or the automatic code keyer at speeds up to 300 words-per-minute may be used.

TECHNICAL CHARACTERISTICS

Type of Service: SSB voice (3A3J).
AM voice (3A3A).
CW (0.1A1).

Frequency Range: 2-18 mcs (1 kc channel spacing).

Planning Distance: 25 km (15 miles) man-packed.
40 km (20 miles) stationary.
800 km (500 miles) only under suitable propagation conditions.

Antenna: Whip, long-wire, doublet.

Power Requirement: 24 v DC.

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu ft)	Weight (lbs)
AN/PRC-62 (including batteries and accessories)			37

STUDENT NOTES:



Figure 99. Radio Set AN/PRC-62, vehicular and man-pack operation.

TOWER AB-585/G

STATUS: Developmental

STOCK NR: Not for stock or issue

REFERENCE: None

GENERAL INFORMATION

Tower AB-585/G (fig. 100) is a lightweight, rugged, portable, antenna support for tactical and semi-permanent installations. Although designed specifically for Radio Sets AN/MRC-78 and AN/GRC-66, it can be used with the AN/TRC-24, AN/GRC-50(V), and AN/GRC-59.

The tower is made of fold-up sections fabricated from tubular aluminum. A ladder extends diagonally within each tower section to provide easy climbing. A platform is located at the top of each section. A davit is used to place each section in place. The davit has a heavy duty section for raising heavy antennas and equipment.

TECHNICAL CHARACTERISTICS

Height:	106 feet (maximum). Two 50-foot towers can be formed from basic 106-foot tower.
Sections:	Eleven (4' x 4' x 9'). One (4' x 4' x 4-1/2') used for top. One "A-frame" for each parabola. One base frame.
Guys:	Guyed at four levels. Four additional guys at top.
Antennas:	Four 6-foot parabolas or two 8-foot parabolas.
Weight:	14 pounds per foot. 125 pounds per 9.5 section. 1,500 pounds per 106-foot tower.
Installation Time:	Approximately 4 hours (6 trained men).
Storage and Transportation:	One M-35, 6 x 6 cargo truck with tarpaulin and bows in place.

STUDENT NOTES:

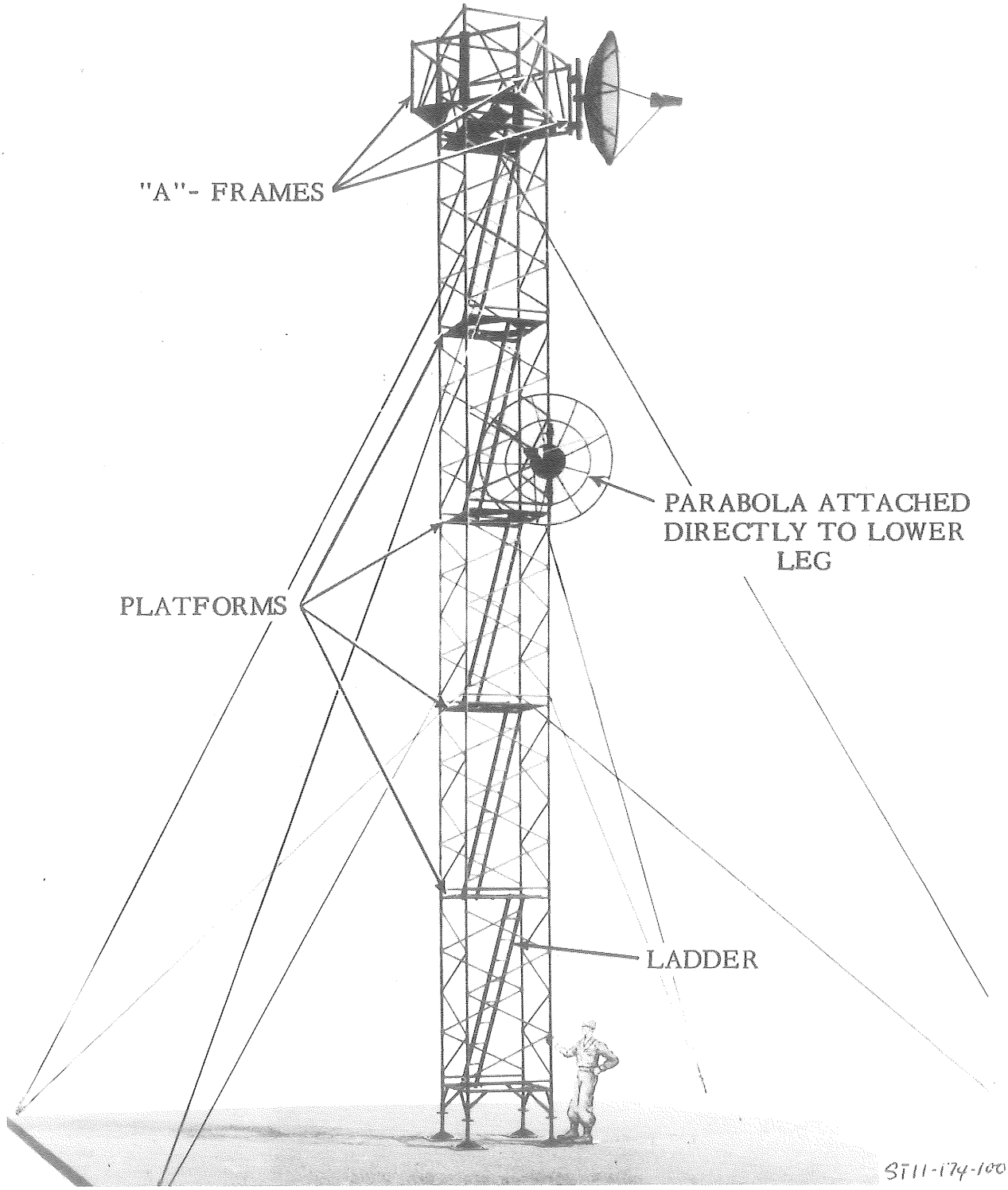


Figure 100. Tower AB-585/G.

RADIO SET AN/MRC-95

STATUS: Limited Standard

STOCK NR:

REFERENCE:

GENERAL INFORMATION

Radio Set AN/MRC-95 is a vehicular mounted (1/4-ton truck), high frequency, SSB voice, CW, and radio teletypewriter set intended for forward area tactical communications. Basic receiver-transmitter unit consists of Collins Radio Corporation 618T-3 Aircraft SSB equipment. The AN/MRC-95 is being used by STRIKE units to provide SSB emission capability pending the development of a suitable replacement for Radio Set AN/VSC-1, AN/GRC-19, and AN/GRC-46.

TECHNICAL CHARACTERISTICS

Frequency Range: 2.0 to 29.999 mcs in locked 1 kc steps.

Types of Service: SSB voice (upper or lower sideband, 3A3J).
AM (carrier plus one sideband).
CW.
FSK radio teletypewriter.

Frequency Stability: 1 part 10^6 per month.

Power Requirement: 27.5 volts dc, power supplied by 100-ampere high capacity generator system in 1/4-ton vehicle.

Planning Distance: 50 miles ground wave, 1,500 miles sky wave.

Power Output: 400 watts PEP.

Type of Antenna: Whip, doublet, or long wire.

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu ft)	Weight (lbs)
Transceiver Case	19-3/4 x 12 x 29-1/2	3.52	40
Antenna Coupler	9 x 9-1/2 x 27	1.34	50
Control Box	6 x 9 x 4	.12	7-1/2

STUDENT NOTES:

Section VIII. INTERIM EQUIPMENT

This section covers selected ("off-the-shelf") items of radio equipment which have been adopted for limited use pending the development of more suitable equipment. These items are used to meet urgent requirements which cannot be met by using standard or normal issue radio sets.

RADIO SET AN/PRC-47

STATUS: Standard A (Marine Corps)

STOCK NR:

REFERENCE:

GENERAL INFORMATION

Radio Set AN/PRC-47 is an SSB, team-pack, transportable, radio transmitter-receiver developed for the Marine Corps. The AN/PRC-47 is being issued to STRIKE units to provide SSB emission capability pending the development of a suitable replacement for Radio Set AN/GRC-9.

TECHNICAL CHARACTERISTICS

Frequency Range:	2.0 to 11.999 mcs in locked 1 kc steps.
Types of Service:	SSB voice (upper sidebands, 3A3J). CW.
Mode of Operation:	Half-duplex.
Frequency Stability:	±25 cps per 30 days.
Planning Distance:	25 miles ground wave.
Power Output:	100 watts PEP.
Power Requirement:	26.5 volts dc (340 watts) or 115 volts ac, 400 cycles.
Antenna:	15-foot whip or long-wire.

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu ft)	Weight (lbs)
Radio Set AN/PRC-47 (less battery)	34-3/4 x 17-1/2 x 16-1/2	5.81	115

STUDENT NOTES:



Figure 101. Radio Set AN/PRC-47.

RADIO TELETYPEWRITER SET AN/GRC-114

STATUS: Interim

STOCK NR:

REFERENCE:

GENERAL INFORMATION

Radio Teletypewriter Set AN/GRC-114 is an interim replacement for Radio Set AN/GRC-26( ), providing radio teletypewriter, CW, and SSB voice emission in forward area tactical communications.

TECHNICAL CHARACTERISTICS

Frequency Range:

Transmitter:	2.0 to 29.999 mcs in 1 kc steps.
Receiver:	0.5 to 32 mcs in 32 bands (R-390/A).

Types of Service: SSB voice (upper or lower sideband, 3A3J).
AM (carrier and upper sideband, 3A3A).
CW (0.1A1).
Radio teletypewriter (85 or 850 cycles FSK, 1.1F1).

Mode of Operation: Full-duplex.

PHYSICAL CHARACTERISTICS

Item	Dimensions (in.)	Volume (cu ft)	Weight (lb)
Radio Teletypewriter Set AN/GRC-114			

STUDENT NOTES:

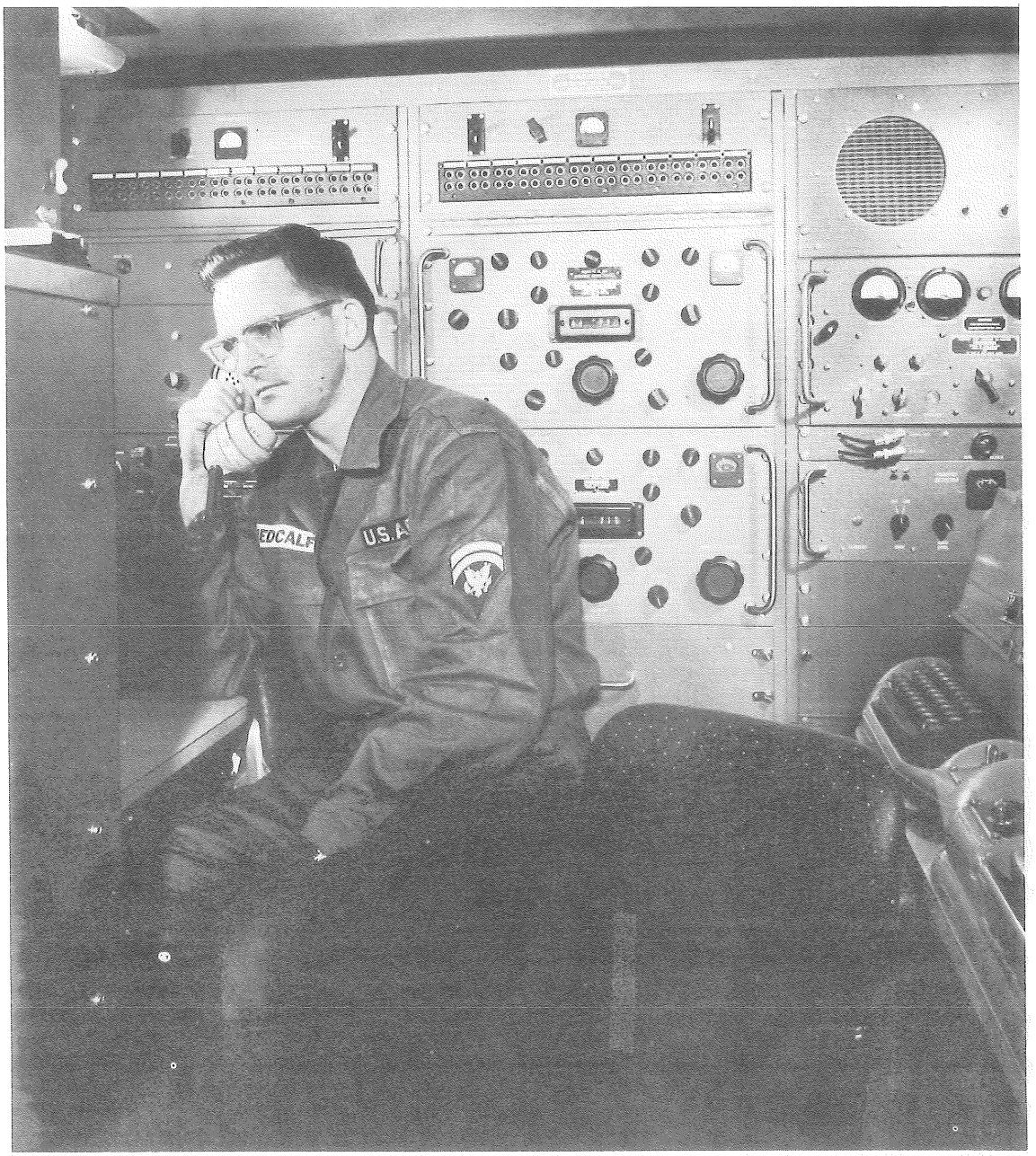


Figure 102. Interior view of Radio Teletypewriter Set AN/GRC-114, front wall.

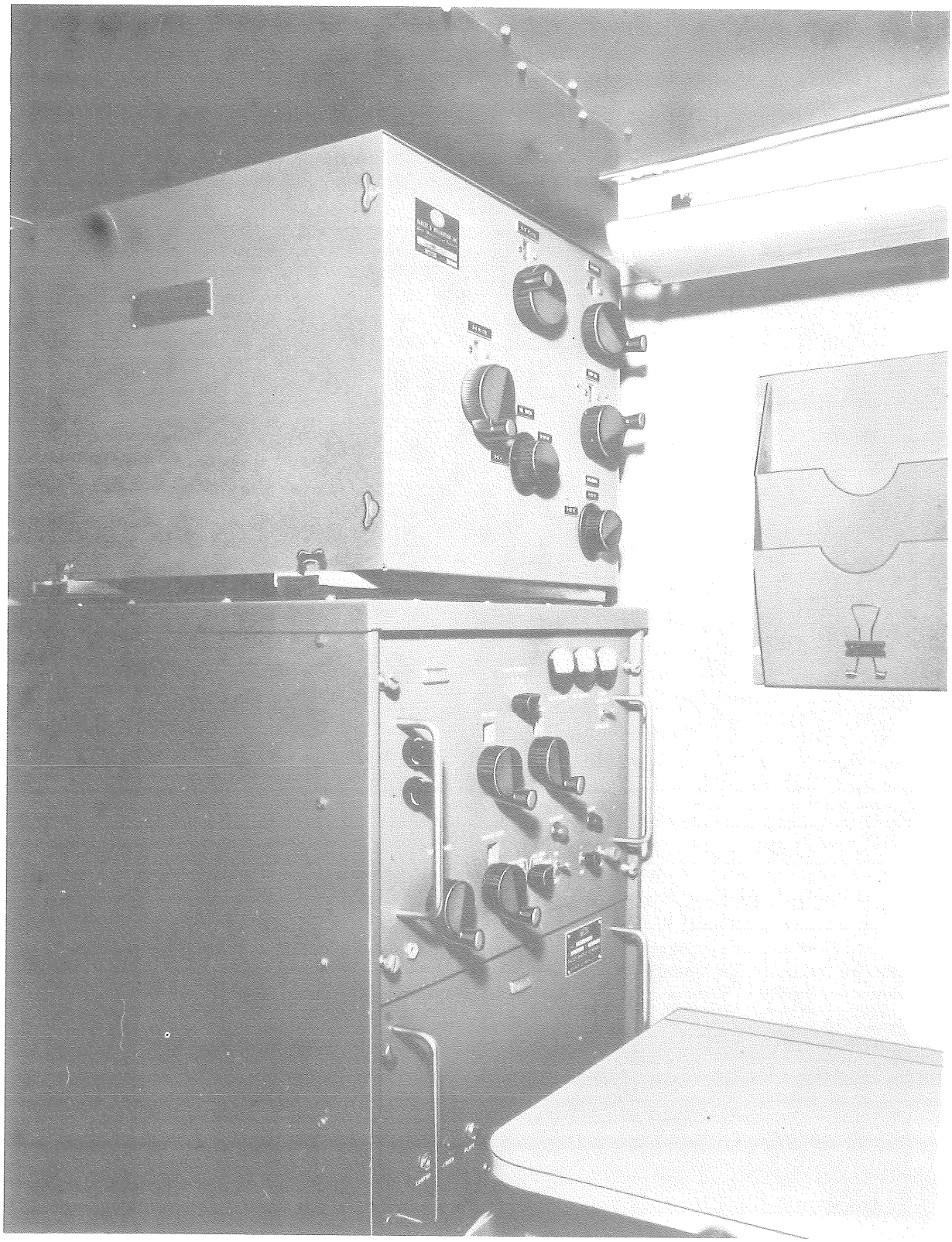


Figure 103. Transmitter, Radio Set AN/GRC-114, left wall.

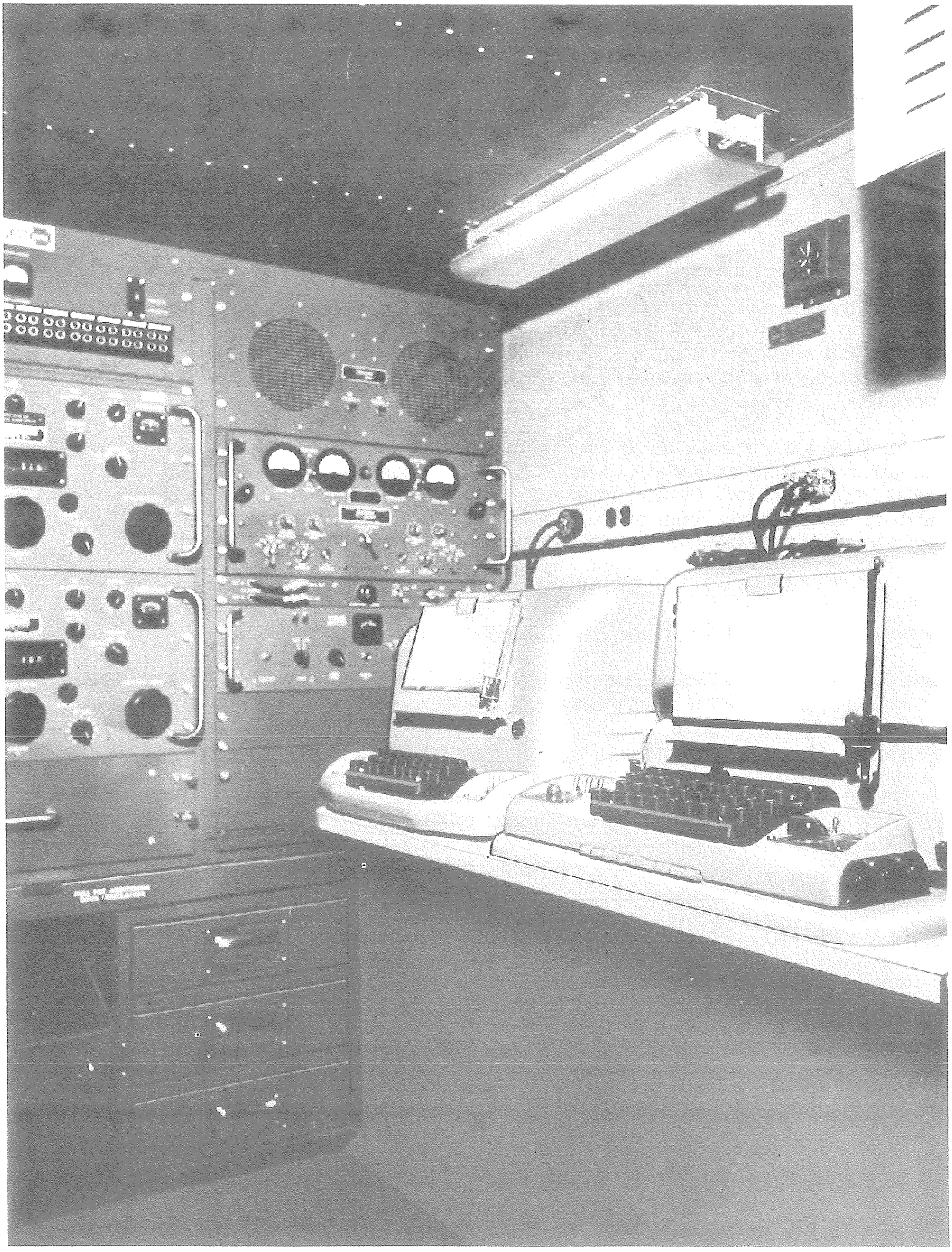


Figure 104. Interior view of AN/GRC-114, right wall.

COMMUNICATIONS SYSTEM AN/USC-3

STATUS: Limited Production

REFERENCE: Manufacturer's Data

GENERAL INFORMATION

Communications System AN/USC-3 provides telephone type service over duplex radio facilities in a mobile environment.

The Central Station AN/MSC-37 (fig. 105) can be mounted in Shelter, Electrical Equipment S-144/G (or similar type) and installed on an M-37, 3/4-ton truck. The shelter-housed units include a Console Assembly (receiver, transmitter, built-in test equipment and power supplies), two Switchboards, Telephone, Manual SB-22/PT, a wire-line terminal board and two antennas. Power is obtained from a power unit (PU-294/G) installed on a two-wheel trailer. With the exception of the receiver front end and power amplifier stages all circuitry is transistorized.

The Subscriber Station AN/URC-40 (fig. 106) is mounted in a 1/4- or 3/4-ton vehicle, small aircraft, tanks and/or personnel carriers. It consists of Receiver-Transmitter RT-617/URC-40, amplifier, Power Supply AM-3005/URC-40, Rack, Electrical Equipment MT-2527/URC-40, antennas, control box, cords and cables. A special high capacity vehicle generator may be required if additional equipment is employed in the vehicle.

TECHNICAL CHARACTERISTICS

Frequency Range: 132-165 mc (180 channels).

Voice Channels: 12 voice channels plus emergency net channel for each rf channel. Each rf channel is 90 kc wide.

Antennas:

- Central Station: Two antennas used, mounted on telescoping mast. Maximum antenna height is 30 feet.
- Subscriber Station: Two vehicular antennas. Antenna height is approximately 8 to 10 feet.

Type of Modulation: 90F3

- Central Station: Coordinated suppressed carrier single sideband with a reference carrier for each rf channel.
- Subscriber Station Transmitter: Partially suppressed carrier single sideband.

Power Output:

- Central Station Transmitter: 120 watts peak envelope power (PEP) minimum average per channel.
- Subscriber Station Transmitter: 120 watts PEP minimum voice power.

Modes of Operation:	Normal duplex communication. Emergency net simplex operation. In-channel net simplex operation.
Power Requirement:	
Central Station:	115 to 230 v 60 cps or 400 cps.
Subscriber Station:	26.5 v dc (nominal).
Planning Distance:	Minimum range 16 kilometers (10 miles) over average terrain between Central Station and Subscriber Station.

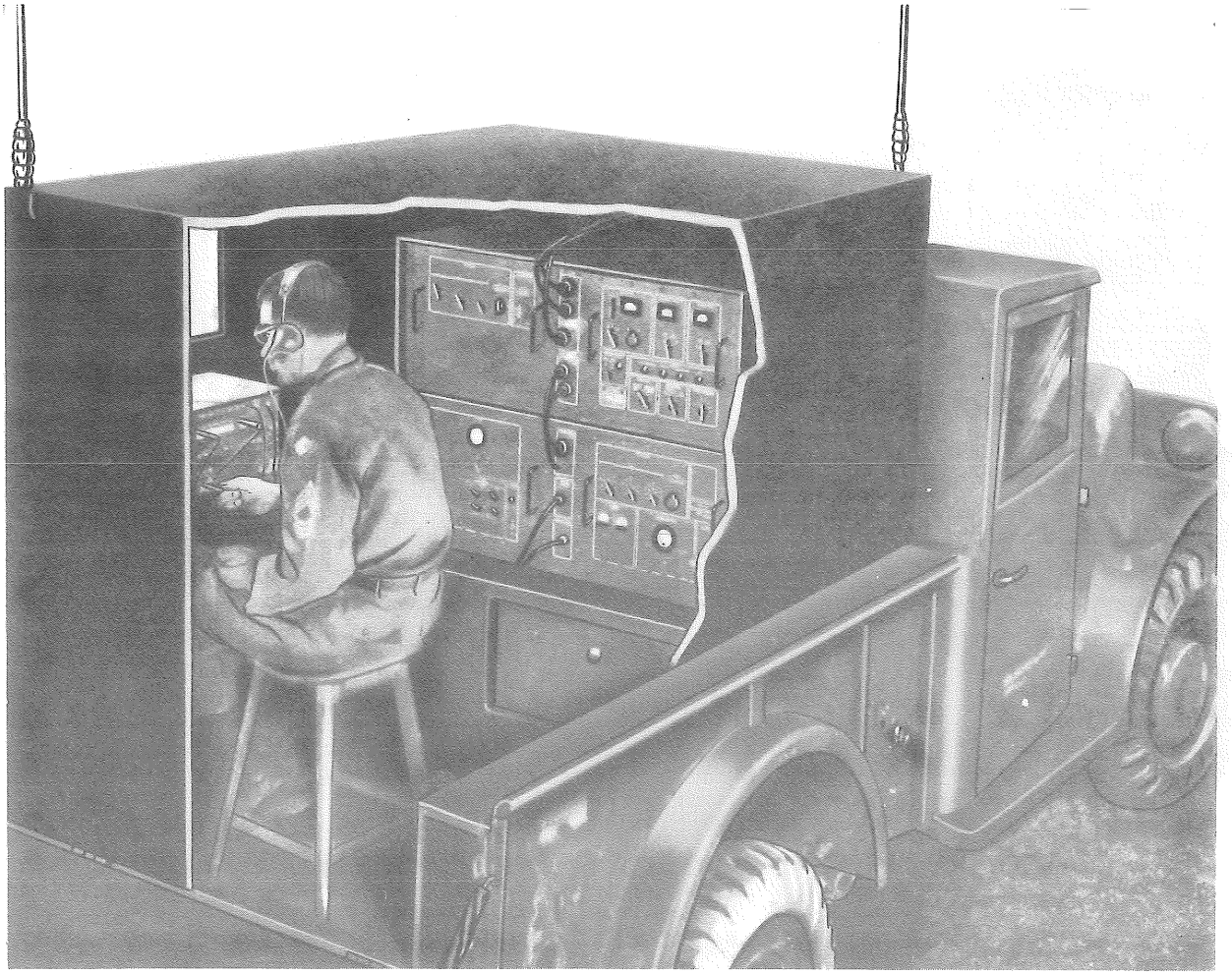


Figure 105. Communications Central AN/MSC-37, part of AN/USC-3.

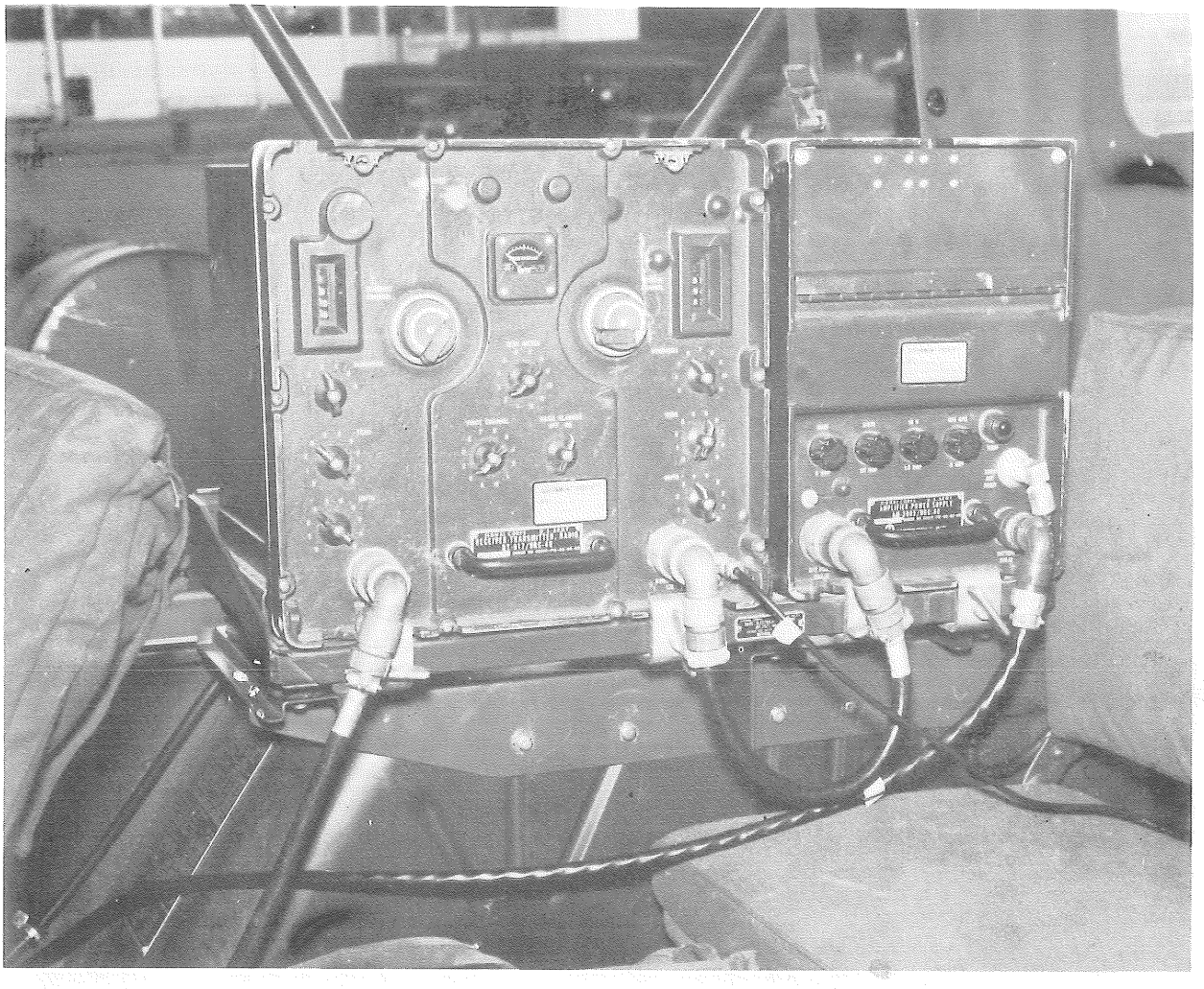


Figure 106. Subscriber Station AN/URC-40, installed in truck (M-151).

APPENDIX I. DESCRIPTION OF NEW RADIO RELAY AND MULTIPLEX EQUIPMENT CONFIGURATIONS

Type Nr.	Nr. of Terminals	Combined or Separate	Vehicle Type	Radio Relay Type	Multiplex Type	Channels Per Set
AN/VRC-59	Single	Combined	1/4-ton	AN/GRC-103	AN/TCC-53	6 or 12
AN/TRC-107	Double	Combined	3/4-ton	AN/GRC-103	AN/TCC-53	12
AN/TRC-108	Single	Combined	3/4-ton	AN/GRC-50	AN/TCC-45	24
AN/TRC-109	Double	Radio	3/4-ton	AN/GRC-50		24
AN/TCC-90	Double	Multiplex	3/4-ton		AN/TCC-45	24
AN/TRC-110	Triple	Radio	2-1/2-ton	AN/GRC-50		24
AN/TCC-61	Quad	Multiplex	2-1/2-ton		AN/TCC-45	24
AN/TCC-62	Double	Multiplex	3/4-ton		AN/TCC-46	48
AN/TRC-111	Double	Radio	2-1/2-ton	AN/GRC-66		48
AN/TCC-63	Quad	Multiplex	2-1/2-ton		AN/TCC-46	48

Appendix II. RADIO EQUIPMENT FREQUENCY RANGE CHARTS

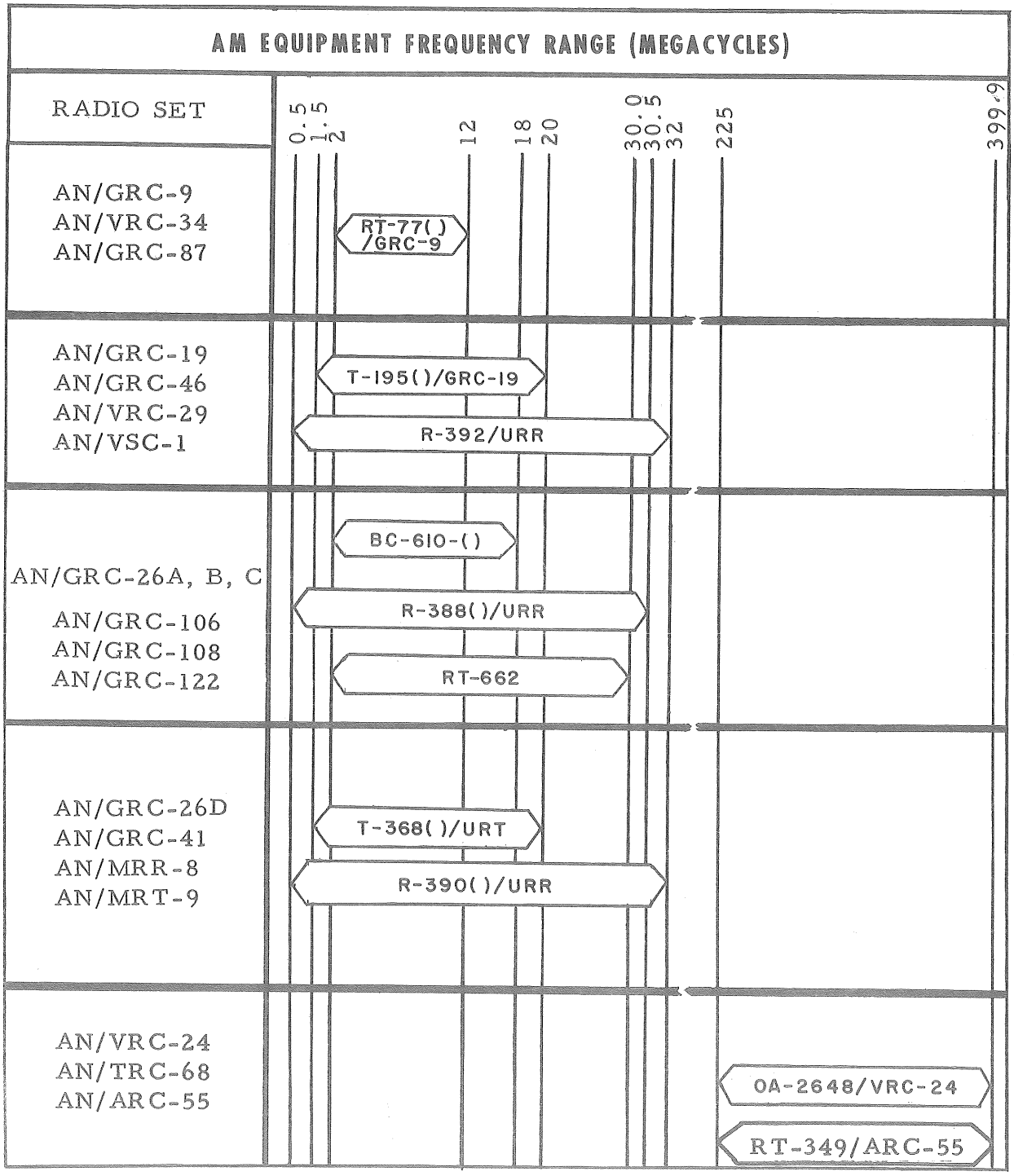


Figure 107. Chart of AM equipment frequency range.

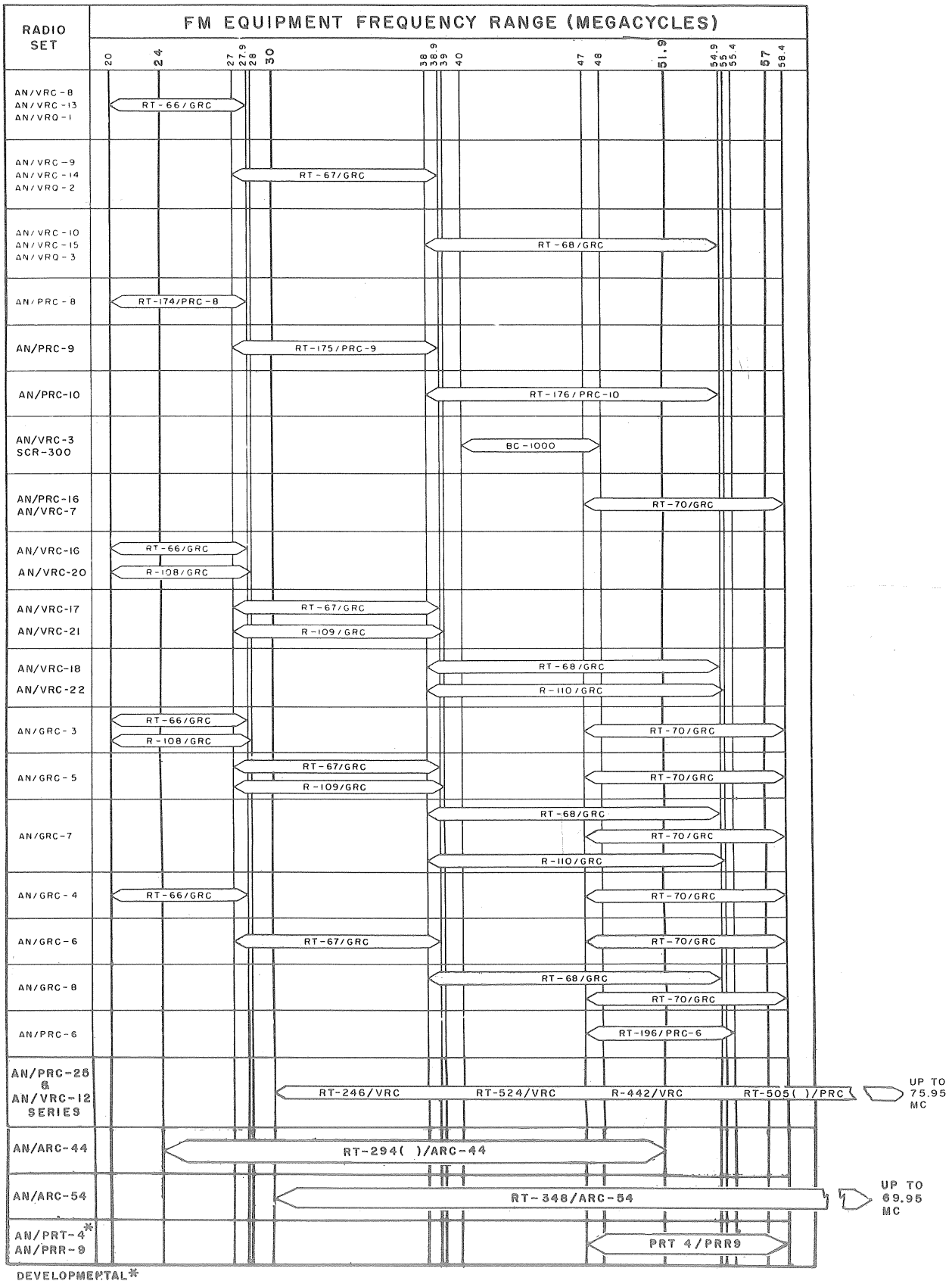


Figure 108. Chart of FM equipment frequency range.

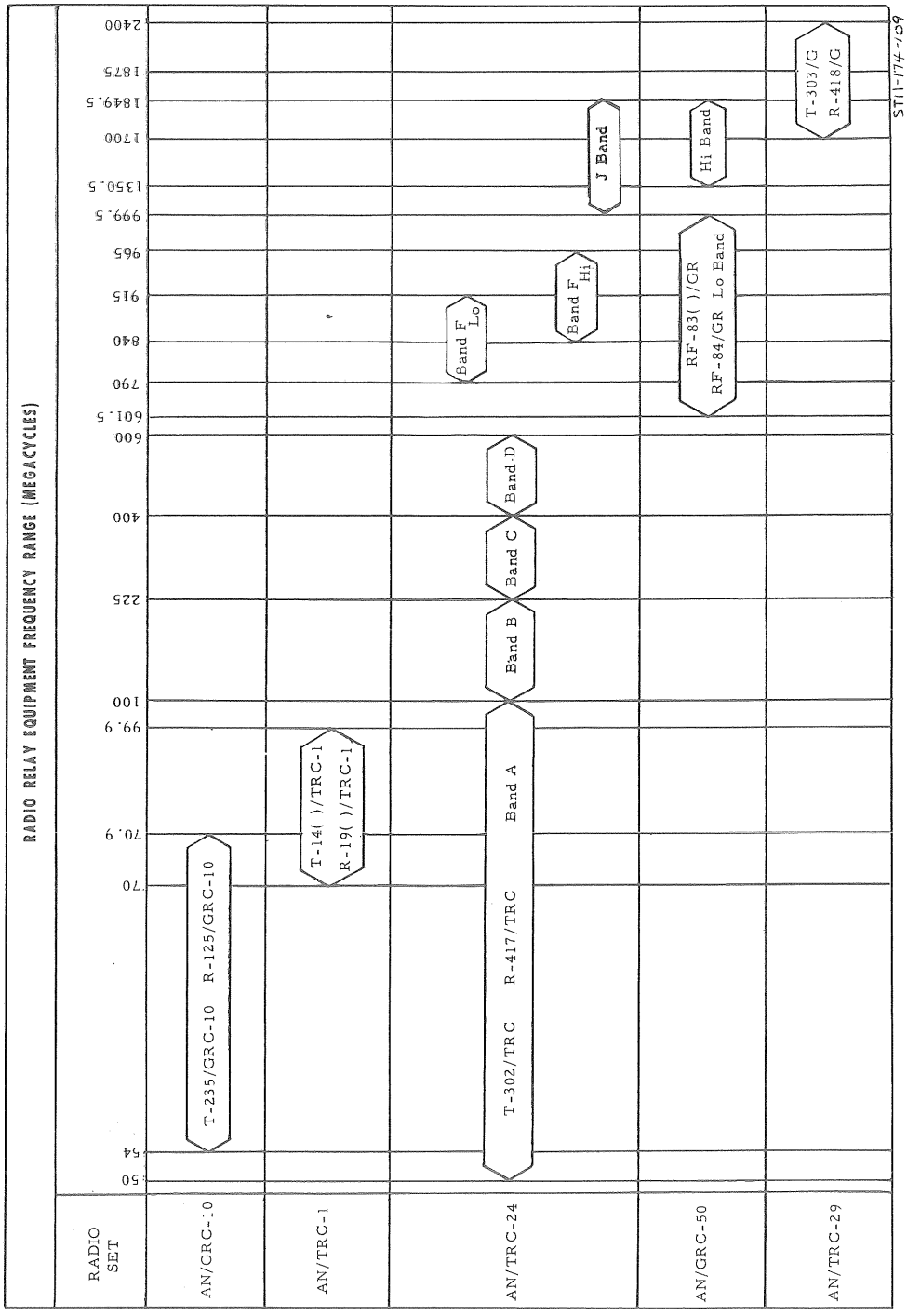


Figure 109. Chart of radio relay equipment frequency range.