

**MIL-HDBK-161A**

**DEPARTMENT OF THE ARMY TECHNICAL MANUAL  
DEPARTMENT OF THE NAVY PUBLICATION  
DEPARTMENT OF THE AIR FORCE TECHNICAL ORDER**

**TM 11-487A-3  
NAVEXOS P-2058  
TO 31-31-3-73**

**MILITARY STANDARDIZATION HANDBOOK**

**ELECTRONIC COMMUNICATION  
EQUIPMENT**



**Third and Final Increment to MIL-HDBK-161A, 12 March 1964**

**FSC MISC**



DEPARTMENTS OF THE ARMY AND NAVY  
WASHINGTON, D.C, 12 March 1964

This Military Handbook is issued for the use of all concerned

By Order of the Secretaries of the Army and the Navy:

Official:

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Major General, United States Army,  
The Adjutant General.

HAROLD K. JOHNSON,  
General, United States Army,  
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W. A. SCHOECH,  
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Distribution:

Active Army:

CNGB (3)  
CC-E (5)  
Dir of Trans (5)  
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USAADEA (1)  
USACDCARMSA (1)  
USACDCIA (1)  
USACDCINTA (1)  
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Proc Dist (1)  
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Natick Lab (2)  
USA CBR Lab (1)  
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NG: State AG (3).

USAR: None.

For explanation of abbreviations used, see AR 320-50.

MILITARY STANDARDIZATION HANDBOOK

ELECTRONICS COMMUNICATION EQUIPMENT

TO ALL ACTIVITIES:

1. The following pages of MIL-HDBK-161A are to be added:

<i>Categories</i>	<i>Pages</i>	<i>Date</i>
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Item Descriptions.....	595.....	12 March 1964
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2. Retain this notice and insert before the Table of Contents.

(THIRD INCREMENT)  
LIST OF TYPE INDICATORS

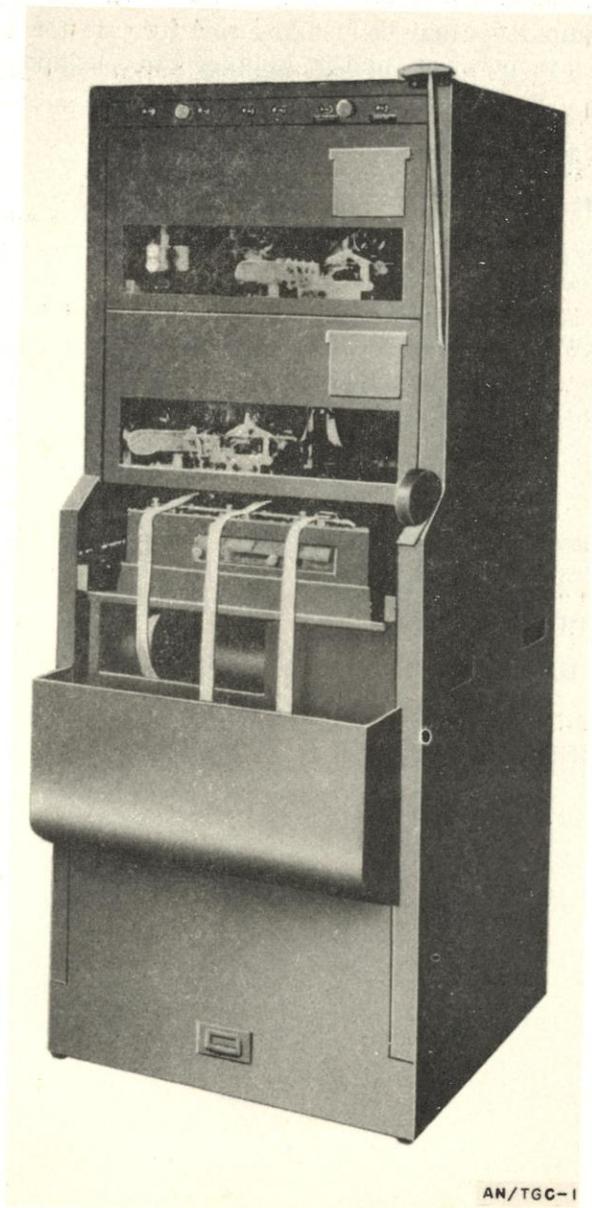
<i>Type Indicator</i>	<i>Page</i>	<i>Type Indicator</i>	<i>Page</i>
AN/TGC -----	595	AN/UIC -----	781
AN/TIP -----	611	AN/UNH -----	783
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TELETYPEWRITER SET  
AN/TGC-1( )

1 March 1964  
Cog. Serv: USA FSN: 5815-198-5952  
USA Line Item No.: 680820

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std C		Std	
Manufacturer:	Thomas A. Edison, Inc			



AN/TGC-1

## TELETYPEWRITER SET

## AN/TGC-1( )

## FUNCTIONAL DESCRIPTION:

Teletypewriter Set AN/TGC-1( ) is an automatic, high-speed, multichannel, teletypewriter station equipment used for sending, receiving, or monitoring, by means of typed and perforated paper tape.

This equipment consists of a single operating assemblage composed of a multiple transmitter-distributor (which provides one number transmitter and two message transmitters) and two typing reperforators. It can be used for conventional duplex make-and-break, duplex polar, single, split duplex make-and-break, split duplex polar, or split single operation.

Several of these equipments may be installed side by side for handling large traffic loads. It can be used for tape-relay operation, and is designed for continuous operation.

It operates on 115-volt ac or dc; the tapewinder motor operates on ac only.

## RELATIONSHIP TO SIMILAR EQUIPMENT:

## TECHNICAL DESCRIPTION:

*Operating Functions:* No keyboard; number release key; message release key; tape feed key; break key; alarm switch.

*Operating Speed:* 368.1 or 600.0 opm.

*Motor Characteristics:* Series-governed motor, tuning fork adjustable to 2,102 rpm, or a synchronous motor requiring no adjustment.

*Power Requirements:* 115-v dc; or 115-v 50/60-cycle ac.

*Major Units:*

1	Cabinet	24" x 24" x 65"	250 lbs
1	54A	5" x 15 $\frac{3}{4}$ " x 6 $\frac{3}{4}$ "	35 lbs
1	Distributor-transmitter (multiple)	15 $\frac{1}{4}$ " x 16 $\frac{3}{4}$ " x 5 $\frac{3}{4}$ "	90 lbs
2	Reperforators	13" x 12" x 8"	34.25 lbs

## TUBES, CRYSTALS, TRANSISTORS:

## REFERENCE DATA AND LITERATURE:

TM 11-2203  
(USA) SC-D-31245

TELETYPEWRITER SET

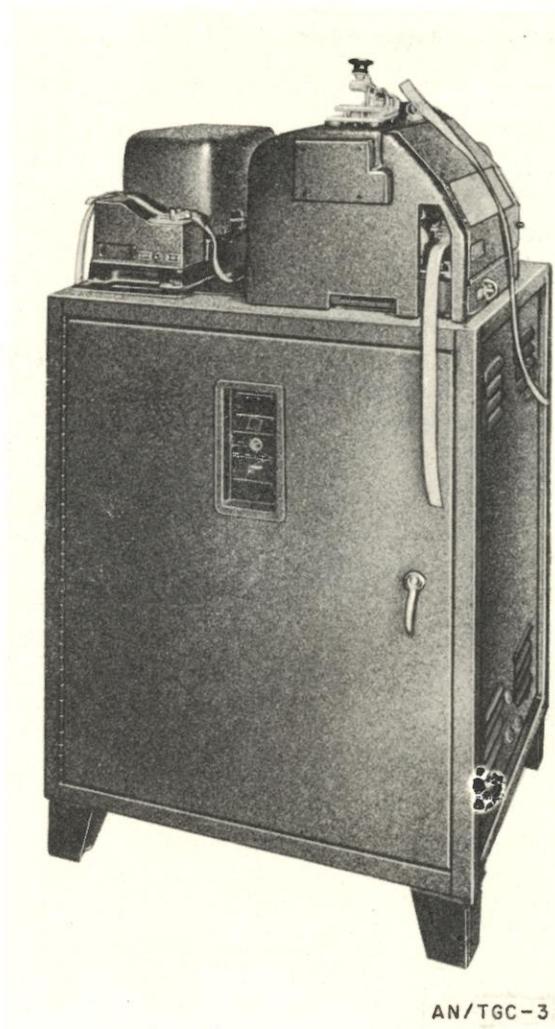
**AN/TGC-3**

1 March 1964

Cog. Serv: USA FSN: 5815-198-9035

USA Line Item No.: 680840

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std B		Std	
Manufacturer:	Western Electric Co			



AN/TGC-3

**FUNCTIONAL DESCRIPTION:**

Teletypewriter Set AN/TGC-3 is an automatic transmitting and receiving unit used for torn-shape switching or teletypewriter relay applications of by means of typed and perforated paper tape.

**TELETYPEWRITER SET**

**AN/TGC-3**

This equipment consists essentially of a transmitter-distributor and a receiving-only typing reperforator. It includes an operating table and related accessories. Tape received by means of the reperforator unit can be used to transmit through the transmitter-distributor.

The set operates in neutral or polar channels and can be used with telegraph terminal equipment and with Teletypewriter Repeater-Mixer AN/FGQ-1.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Transmission and Reception:* Polar or neutral  
*Tape:*

Width:  $1\frac{1}{16}$ "

Type: Perforated, chad, or chadless

*Operating Speed:* 368 opm

*Motor Characteristics:*

Type: Series-governed

Cycles per Second: 87.6

Revolutions per Minute: 2,100

*Power Requirements:*

With Power Unit: 300 w; 95-, 125-, 190-, or 250-, 25- or 60-cycle, ac

Without Power Unit:

dc Supply: 120 v (3), 0.8 amp drain

ac Supply: 115-v 60-cycle ac

*Major Units:*

1	TT-52/FG	9" x 9 $\frac{3}{8}$ " x 15 $\frac{1}{2}$ "	33 lbs
1	PP-748/U	13 $\frac{5}{16}$ " x 11 $\frac{7}{8}$ " x 20 $\frac{3}{4}$ "	89 lbs
1	TT-53/FG	11 $\frac{3}{4}$ " x 13 $\frac{1}{2}$ " x 16 $\frac{3}{4}$ "	62.25 lbs
1	Table	34" x 22" x 26"	205 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-2214

**TELETYPEWRITER SET**  
**AN/TGC-14(V)**

October 1, 1961

Cog. Serv: Marine Corps FSN:

USA Line Item No.: 968078

USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:			Std

Manufacturer: 09083, 26344

No Illustration Available

**FUNCTIONAL DESCRIPTION:**

This unit is a miniaturized, portable, self-contained sending and receiving teletypewriter housed in a rugged, water-resistant, shock-resistant, glass fibre carrying case. It provides for continuous printing of messages over radio circuits, wire lines, and other communications links. It is capable of transmitting and receiving a 64-character alphabet and has the capacity of remote turn-on and turn-off thus permitting unattended operation in fixed, mobile, vehicular or airborne installations. The equipment can operate in both extreme cold and heat and under conditions of severe shock, vibration, humidity, salt atmosphere, and sand and dust; and is unaffected by altitude. It is compatible with conventional nontactical teletypewriter sets and associated equipment.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

Similar to Airborne Teletypewriter TT-264/AG

Similar to Shipboard Teletypewriter TT-299/UG and Shipboard Teleprinter TT-298/UG.

**TECHNICAL DESCRIPTION:**

*Power Requirements:* 28 v dc or 115 v 60 cy 1 phase ac or 115 v 400 cy 1 phase ac, depending on motor and electronics used.

*Signal Line Requirements:* 3 v 1-5 ma in low range. 20-80 ma in high range. Non-polarity sensitive input.

*Service Cable input receptacle:* Amphenol Type 165-11

*Units of major importance:*

TT-297/UG Teletypewriter (FSN 5815-798-0351)

TT-318/UG Keyboard Transmitter (FSN 5815-798-3856)

Carrying Case CY-2976/PG (FSN 5815-798-0344) or Case CY-2977/PG

Power Supply Kit, ac MK-539/UG (FSN 5815-798-0345) or Power Supply Kit, dc, MK-540/UG (FSN 5815-798-0346)

Motor, ac, PD-82/U (60 cps) (FSN 6105-798-0347) or Motor, ac, PD-83/U (400 cps) (FSN 6105-798-0350)

CY-2976/UG Case. Equipment mounted in position by 4 $\frac{1}{4}$ " x 20 screws secured into steel inserts set in rubber feet affixed to bottom of case. When used with shockmounts equipment mounted in position by 6 $\frac{1}{4}$ " x 28 screws secured into threaded inserts in shockmounts.

CY-2977/PG Case. Airborne type shockmounts mounted in position by 8 $\frac{1}{4}$ " x 28 screws. Mount hooks into rear of case with thumb screws holding front thus permitting quick release and removal without unscrewing 8 screws in shockmounts.

*Major Units:* 19 $\frac{1}{4}$ " x 16 $\frac{1}{4}$ " x 8"

39 lbs

TELETYPEWRITER SET

**AN/TGC-14(V)**

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

Specification—Marine Corps CSY-3-FY60-12A

Technical Manual TM 03315-15

Repair Parts List SL-4-00315

Outline and Installation Drawings:

Case, CY-2976/PG, MITE Corporation No. D617-104

Shockmounts, MITE Corporation No. 5060-2

Case, CY, 2977/PG, MITE Corporation No. D618-104

Shockmounts, MITE Corporation No. 5060-3

AN/TGC-type  
TELETYPEWRITER SET

EE-98-( )

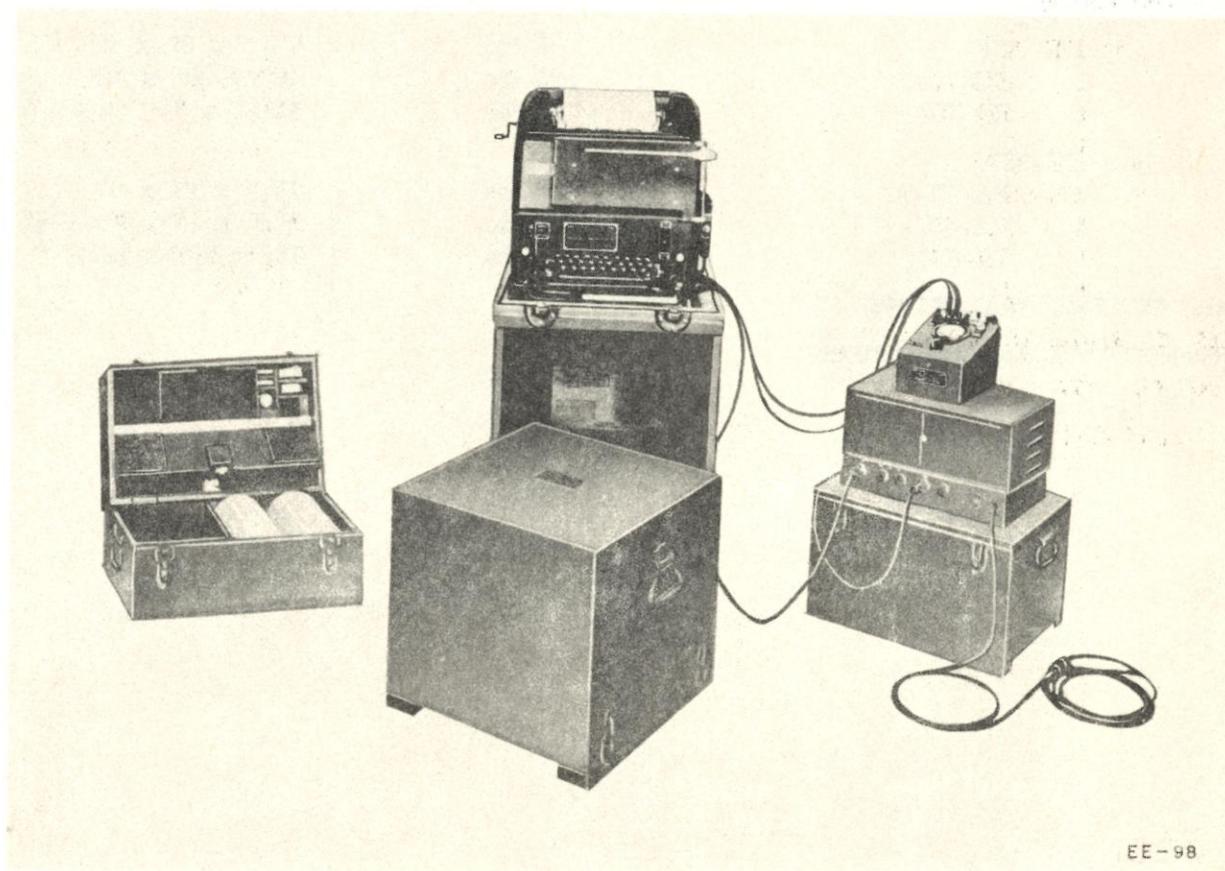
1 March 1964

Cog. Serv: USA FSN: 5815-164-7113

USA Line Item No.: 680960

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:			L/Std	

Manufacturer:



EE-98

**FUNCTIONAL DESCRIPTION:**

Teletypewriter Sets EE-98 and EE-98-A are complete, transportable, field teletypewriter stations which require only connection to power and communication lines in order to operate.

This equipment consists of a conventional page-printing teletypewriter, line control unit, rectifier, and related accessories contained in carrying cases. It can be used in conjunction with carrier terminal facilities and at teletypewriter centrals and radio terminals.

The equipment is designed for quick installation in the open or under shelter. It is connected for operation by means of cords and plug connectors.

AN/TGC-type  
TELETYPEWRITER SET

EE-98-( )

TECHNICAL DESCRIPTION:

*Keyboard:* Standard communication

*Operating Speed:* 60 wpm (368 opm) adjustable to 66 wpm (404 opm)

*Motor Characteristics:* Series-governed, 115-v dc or 250-v, 50 to 60 cps, 87.6 vps tuning fork speed adjusting frequency 1,800 rpm

*Power Requirements:* 200 w; 115-v dc; 95-125/190-250-v 50-60 cy ac

*Major Units:*

For EE-98

1	BE-77	6 lbs	7 <sup>3</sup> / <sub>4</sub> " x 6" x 6"
1	TG-7-A	225 lbs	19" x 20" x 42"
1	RA-37	24 lbs	12 <sup>1</sup> / <sub>2</sub> " x 8 <sup>1</sup> / <sub>2</sub> " x 6 <sup>1</sup> / <sub>2</sub> "

For EE-98A

1	BE-77-A	6 lbs	7 <sup>3</sup> / <sub>4</sub> " x 6" x 6"
1	RA-87	40 lbs	8 <sup>3</sup> / <sub>8</sub> " x 14 <sup>9</sup> / <sub>16</sub> " x 7 <sup>1</sup> / <sub>2</sub> "
1	TG-7-B	225 lbs	19" x 20" x 42"

TUBES, CRYSTALS, TRANSISTORS:

REFERENCE DATA AND LITERATURE:

TM 11-354

AN/TGC-type  
REPEATER SET

TC-18

1 March 1964

Cog. Serv: USA FSN: 5805-224-4962

USA Line Item No.: 660590

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:			Std	

Manufacturer:

**FUNCTIONAL DESCRIPTION:**

Repeater Set TC-18 is a transportable, dc telegraph terminal repeater equipment used in simplex field-wire line circuits or in open-wire, composited, ground-return facilities.

This equipment consists of a single primary operating component and two ground rods.

It is equipped with a hand telegraph key for use of supervisory and maintenance personnel and is usually operated on a half-duplex basis, providing one channel of teletypewriter communication. It is designed to extend the operating range of teletypewriter station equipment.

**TECHNICAL DESCRIPTION:**

*Facilities Required:* Simplex field wire or open-wire (composited, ground return)

*Facilities Provided:*

Line Side: Polarential send, differential send; two-path

Local Side: 30- to 60-ma neutral

*Power Requirements:* 95-125/190-250-v 50/60-cy ac; or 115-v dc

*Major Units:*

2	148/G	72" x 34" (dia)	9.5 lbs
1	TG-30	25" x 16" x 14½"	130 lbs

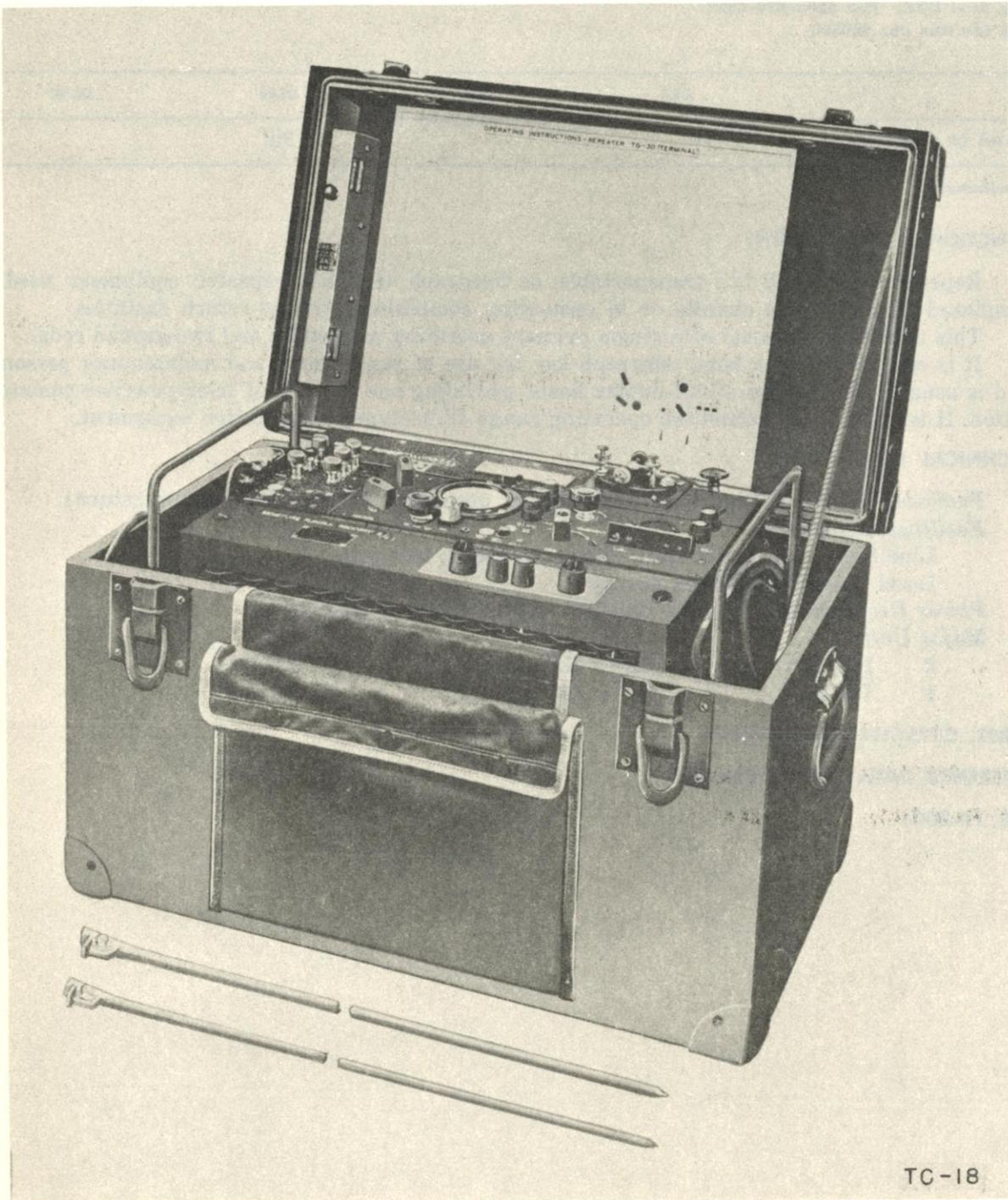
**TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**

TM 11-2004

MIL-HDBK-161A/TM11-487A-3/NAVEXOS P-2058/TO 31-3-73

AN/TGC-type  
REPEATER SET

TC-18



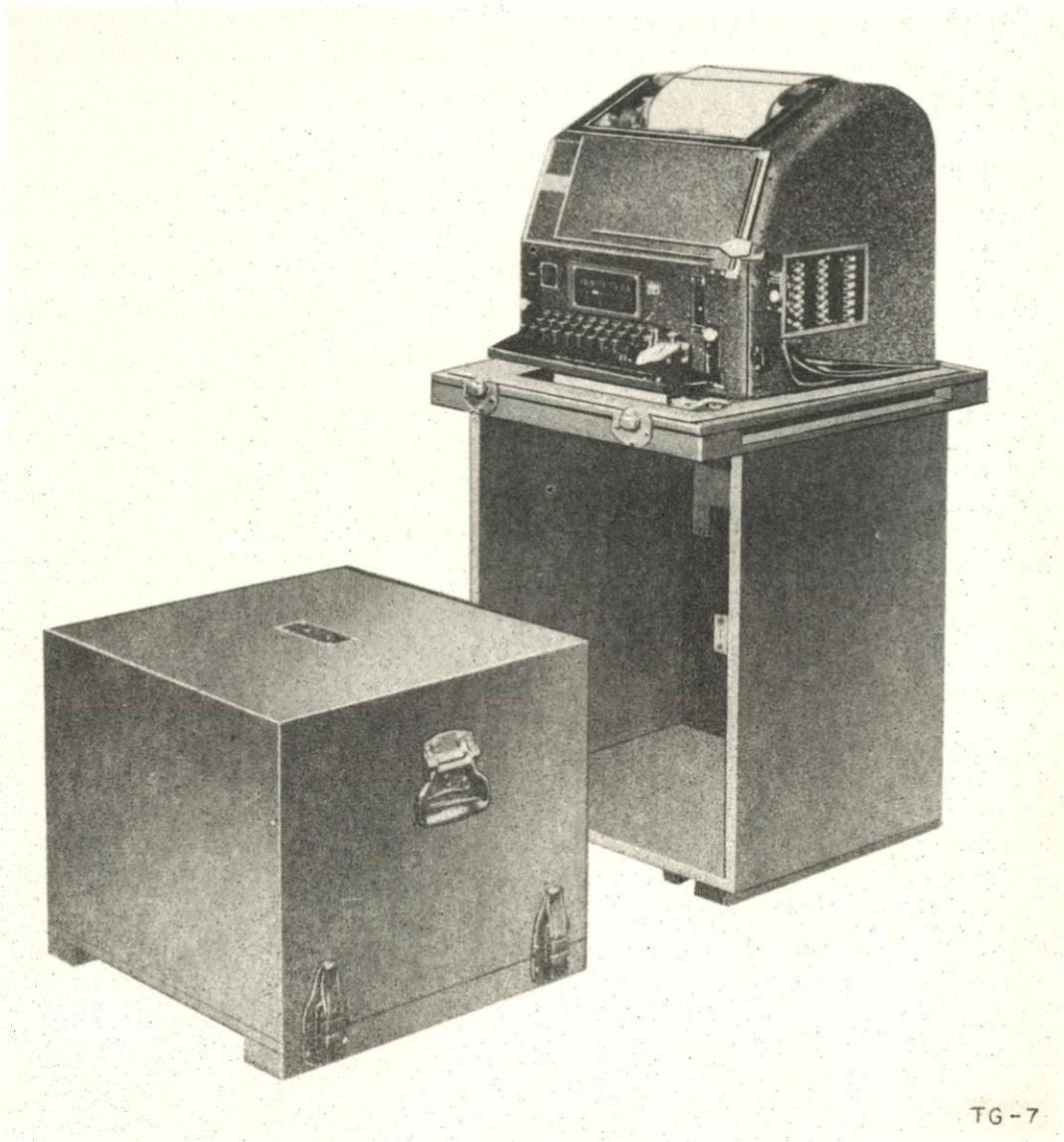
MIL-HDBK-161A/TM11-487A-3/NAVEXOS P-2058/TO 31-3-73

AN/TGC-type  
TELETYPEWRITER SET

**TG-7-B**

1 March 1964  
Cog. Serv: USA FSN: 5815-198-9029  
USA Line Item No.: 680130

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:			L/Std	
Manufacturer:	Teletype Corp			



TG-7

**AN/TGC-type  
TELETYPEWRITER SET**

**TG-7-B**

**FUNCTIONAL DESCRIPTION:**

Teletypewriter TG-7-B is portable, page-printing sending and receiving teletypewriter station equipment designed for the interchange of typewritten messages between two or more points connected by telegraph communication channels.

The equipment consists essentially of a modified commercial teletypewriter (Teletype Corp Model 15) and two chests. One chest serves as a seat for the operator; the other is used as an operating table for the teletypewriter.

The TG-7-B may be adjusted to operate at 404 operations per minute (67 words per minute) for interoperation with British equipment by increasing the speed of the motor. This is done by changing the adjustment of the motor governor.

The TG-7-B is similar in appearance to the TG-7-A.

The B model, however, will operate on 115-v, 40-cy ac in addition to 115-v, 25-cy ac or 115-v, 50- to 60-cy ac.

**TECHNICAL DESCRIPTION:**

*Type Keyboard:* Standard communications

*Characters per Line:* 72

*Operating Speed:* 368 opm, 60 wpm

*Code:* 5-unit, start-stop

*Transmission Pattern:* 7.5-unit

*Number of Channels:* 1

*Type Motor:* Series-governed

*Power Requirements:* 95 w, 115-v 25/50- to 60-cy 1-phase ac; 115-v dc

*Major Units:*

1 Teletypewriter (Teletype Mode 15)

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-352

AN/TGC-type  
TELEGRAPH TERMINAL

## TH-5/TG

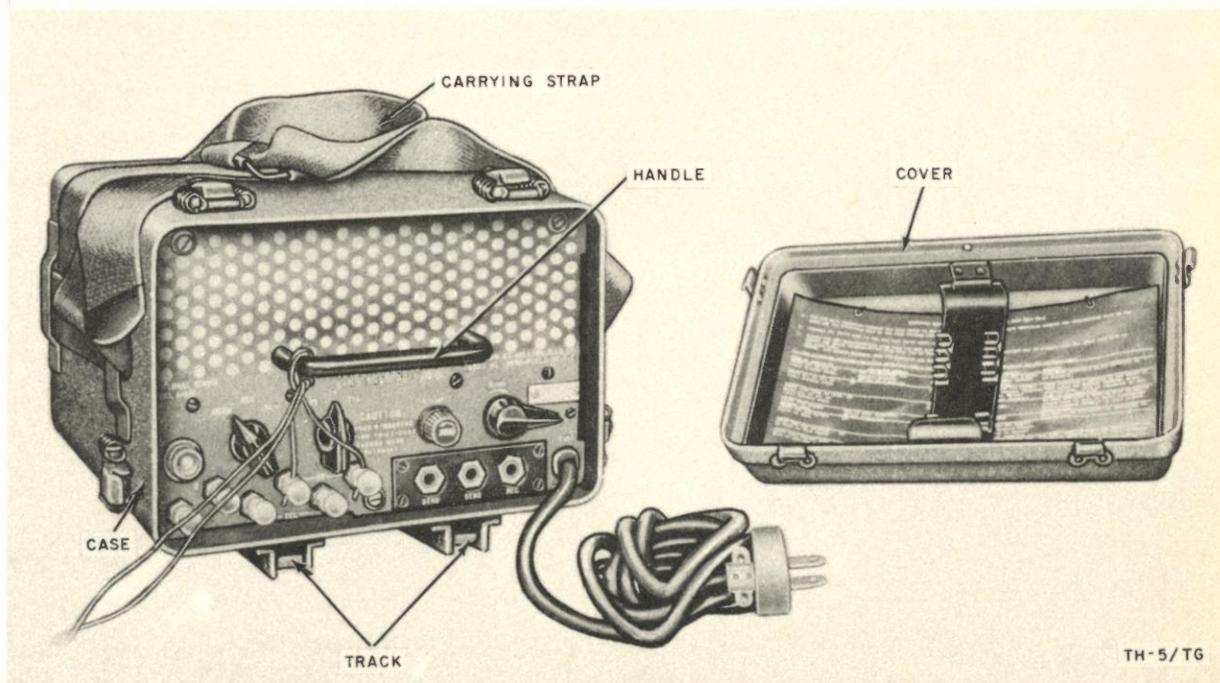
1 March 1964

Cog. Serv: USA FSN: 5805-240-6225

USA Line Item No.: 681702

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std A		Std	

Manufacturer:

**FUNCTIONAL DESCRIPTION:**

Telegraph Terminal TH-5/TG is a small, transportable, frequency-shift modulator and demodulator equipment used in one-way reversible operation of teletypewriter circuits over two-wire, four-wire, or radioteletype facilities.

This equipment can be operated in conjunction with associated equipment in circuits controlled by either local-battery or common-battery switchboards. It can also transmit and receive 20-cycle signaling current.

**TECHNICAL DESCRIPTION:**

*Facilities Required:* Teletypewriter equipment; two-wire, four-wire, or radioteletype circuits

*Facilities Provided:* Translates dc teletypewriter signals into vf, frequency-shift, 1,225- and 1,325-cps signals; or demodulates 1,225- and 1,325-cps signals and translates them into dc impulses; also provides 20-cps ringing

*Power Requirements:* 60 w, 115-v 40/60-cy ac

*Major Units:*

1	TH-5/G	11" x 10 $\frac{1}{2}$ " x 7 $\frac{1}{2}$ "	18.5 lbs
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AN/TGC-type  
TELEGRAPH TERMINAL

## TH-5/TG

TUBES, CRYSTALS, TRANSISTORS:

REFERENCE DATA AND LITERATURE:

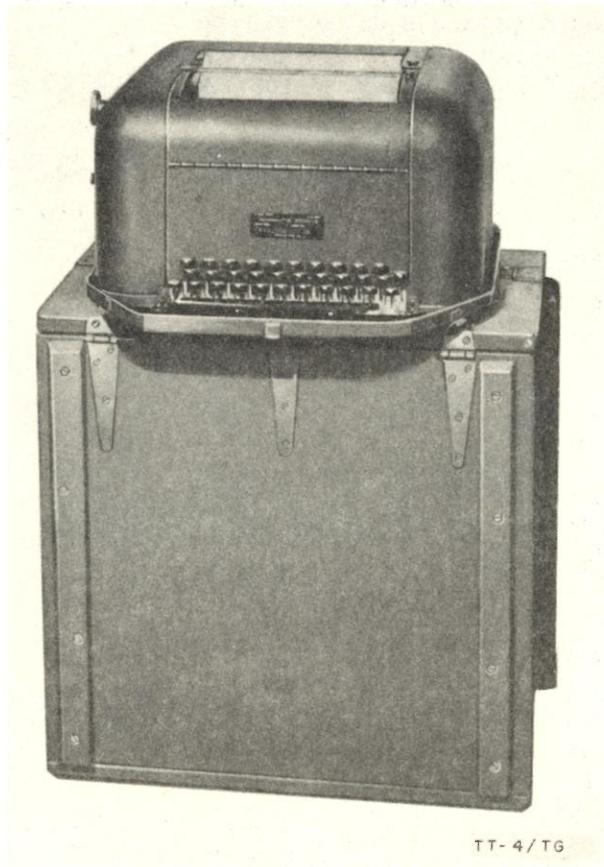
TM 11-2239

AN/TGC-type  
TELETYPEWRITER  
**TT-4( )/TG**

1 March 1964  
Cog. Serv: USA FSN: 5815-198-4433  
USA Line Item No.: 680180

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std A		L/Std	

Manufacturer: Kleinschmidt, Inc



TT-4/TG

**FUNCTIONAL DESCRIPTION:**

Teletypewriter TT-4( )/TG is a portable, lightweight, page-printing teletypewriter for the transmission, monitoring, and reception of messages at battalion headquarters and communications centers of higher headquarters. It is immersionproof and may be floated during amphibious operations and can be carried on a standard packboard.

Normally used in neutral circuits only, this equipment may be adapted to receive and transmit polar signals. It can be connected to distant teletypewriters in field wire or cable, open wire,

AN/TGC-type  
TELETYPEWRITER

TT-4( )/TG

carrier or radio systems. It can be arranged for half-duplex, full-duplex, receiving only, or sending-only operation.

When suitable power for the motor and line is available, two or more Teletypewriters TT-4( )/TG may be connected directly and operated without associated line equipment.

This teletypewriter is the major operating component of tactical Teletypewriter Set AN/PGC-1 and fixed station Teletypewriter TT-61/FG.

**TECHNICAL DESCRIPTION:**

*Operating Functions:* Keyboard operation; remote motor stop; break-in facilities

*Operating Speed:* 368.1 opm (60 wpm); gears furnished for 600 opm (100 wpm)

*Motor Characteristics:* Universal (ac or dc) series type

*Motor Speed:* Tuning fork adjusted to 180 vps; 3,600 rpm

*Power Requirements:* 105-125-vdc; or 150 w, 105-125-v 50/60-cy 1-phase ac

*Major Units:*

1	TT-4/TG	22 $\frac{1}{2}$ " x 18 $\frac{7}{8}$ " x 11 $\frac{1}{4}$ "	43 lbs
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**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-2234  
MIL-T-14579

PUBLIC ADDRESS SET

AN/TIP-2

1 December 1958

Cog. Serv: USN FSN: 5830-511-4448

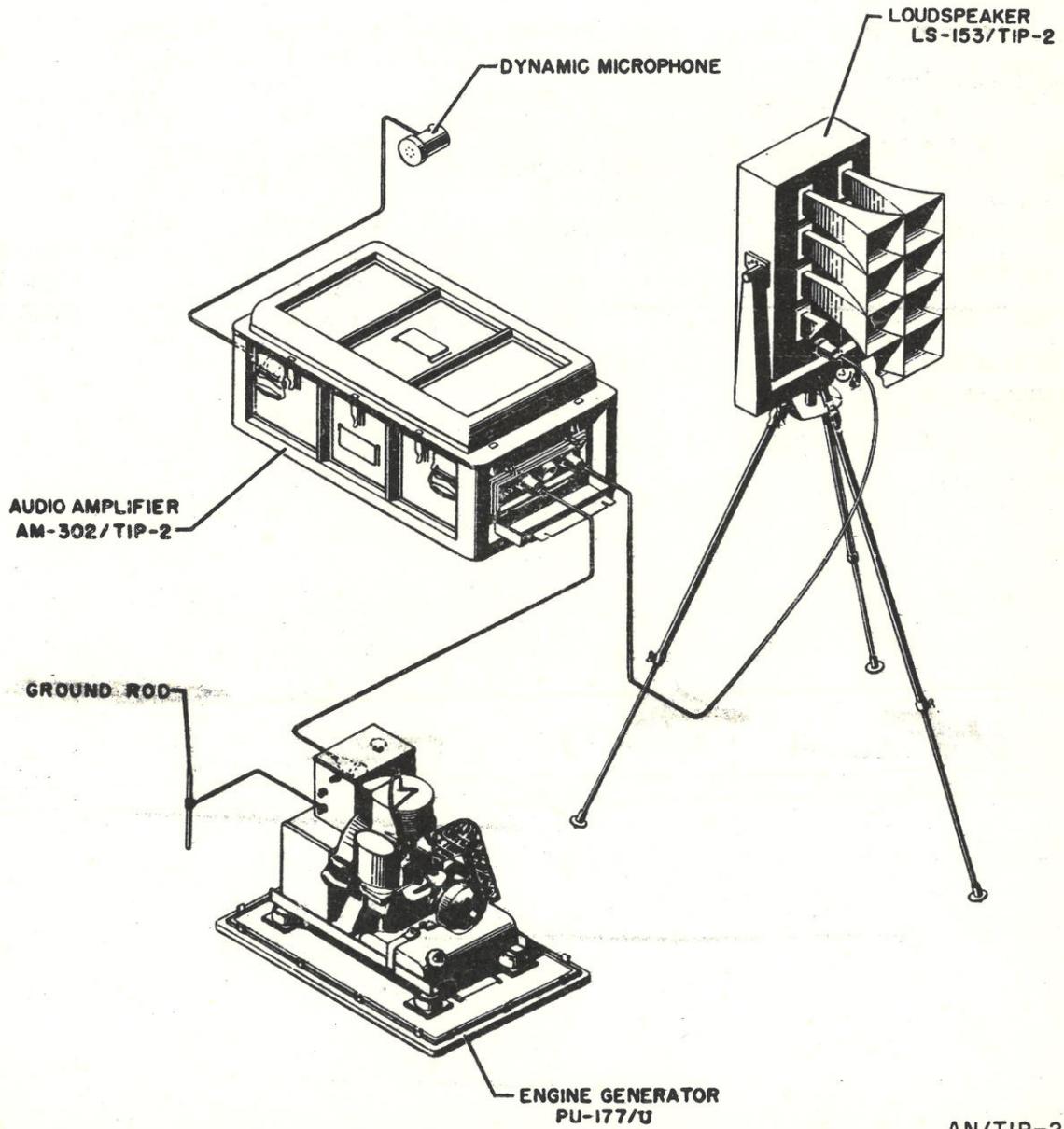
USA Line Item No.: 633525

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	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:			Std	

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Manufacturer:



AN/TIP-2

**PUBLIC ADDRESS SET**

**AN/TIP-2**

**FUNCTIONAL DESCRIPTION:**

Public Address Set AN/TIP-2 is a transportable, high-level, high-gain system used for the distant projection of a signal during landing operations.

This equipment can be operated from a microphone or telephone-line signal input over a wide temperature range and under adverse weather conditions.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Sound Projection:*

Optimum conditions: 10,000 ft

Battle Conditions: 2,500 ft

*Type Controls:* Gain control with volume indicator

*Power Output:* 500 w (350 to 5,000 cps)

*Power Requirements:* 1,100 w, 115-v 1-phase ac

*Major Units:*

1		74 $\frac{1}{4}$ " x 34" x 19 $\frac{3}{4}$ "	220 lbs
1	PU-177/U	24 $\frac{1}{4}$ " x 28 $\frac{1}{4}$ " x 20 $\frac{5}{8}$ "	615 lbs
1	LS-153/TIP-2	24" x 17 $\frac{1}{4}$ " x 13"	106.5 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-5554

CS-276

PUBLIC ADDRESS SET

AN/TIQ-2( )

1 March 1964

Cog. Serv: USA FSN: 5830-164-6618

USA Line Item No.: 633540

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std A	Used by	L/Std	

Manufacturer:

**FUNCTIONAL DESCRIPTION:**

Public Address Set AN/TIQ-2( ) is a portable, electrical sound amplification system designed to project speech, music, or signals from radio, communication circuits, or records. It is intended to serve large audiences and is used in a variety of applications.

This equipment consists essentially of a medium-power audio amplifier, a phonograph turntable, loudspeakers, and related accessories. It is contained in field-type carrying cases.

Provision is made in the amplifier output for connection to a booster amplifier to obtain added coverage. A suitable booster amplifier is Amplifier AN-20/TIQ-2.

There are three models of this equipment AN/TIQ-2, AN/TIQ-2A, and AN/TIQ-2B; all of these items are basically similar with the exception of minor changes in components.

The set can be operated from sources of 115- or 230-volts of alternating-current power, or from either a 6- or 12-volt storage battery using Vibrator Power Supply PP-31/TIQ-2.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:***Amplifier:*

Frequency Range: 50 cps to 10,000 cps; max variation 3 db

Input channels: 5 microphone inputs, 1 radio input, 1 line input, 1 phone input

Power Output: 20 w at less than 5% distortion

*Turntable:*

Heat Control: 75 w heating unit controlled by thermostatic switch

Speed: 33 $\frac{1}{3}$  and 78 rpm

Speed Control: Governor operated by accessible lever

*Microphone:*

Type: Dynamic, moving coil, unidirectional

Frequency Range: 60 cps to 7,500 cps

Output: -56 db

Swivel: Permits full 180° travel

*Speaker:*

Type: Permanent magnet

Impedance: 250, 500, 1,000 or 2,500 ohms

Power Requirements: 275 w; 115- or 230-v, 60-cy 1-phase ac; or 6- or 12-v storage battery dc through Vibrator Power supply PP-31/TIQ-2

*Major Units:*

1	AM-20/TIK-2	14" x 8 $\frac{3}{4}$ " x 19"	151 lbs
2	LS-103/TIQ-2	48 lg (collapsed)	18.5 lbs

PUBLIC ADDRESS SET

AN/TIQ-2( )



- |   |               |   |
|---|---------------|---|
| 1 | MX-39/TIQ-2   | 19" x 15" x 6"                              |
| 1 | AM-20A/TIQ-2  | 19" x 14" x 8 <sup>3</sup> / <sub>4</sub> " |
| 2 | LS-103A/TIQ-2 | 48 lg (collapsed)                           |
| 1 | MX-39A/TIQ-2  | 19" x 15" x 6"                              |

18.5 lbs

PUBLIC ADDRESS SET

**AN/TIQ-2( )**

1	AM-20B/TIQ/2	19" x 14" x 8 <sup>3</sup> / <sub>4</sub> "	
2	LS-103B/TIQ-2	48 lg (collapsed)	18.5 lbs
1	MX-39A/TIQ-2	19" x 15" x 16"	

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-2586  
7-3023



PUBLIC ADDRESS SET  
AN/TIQ-3( )

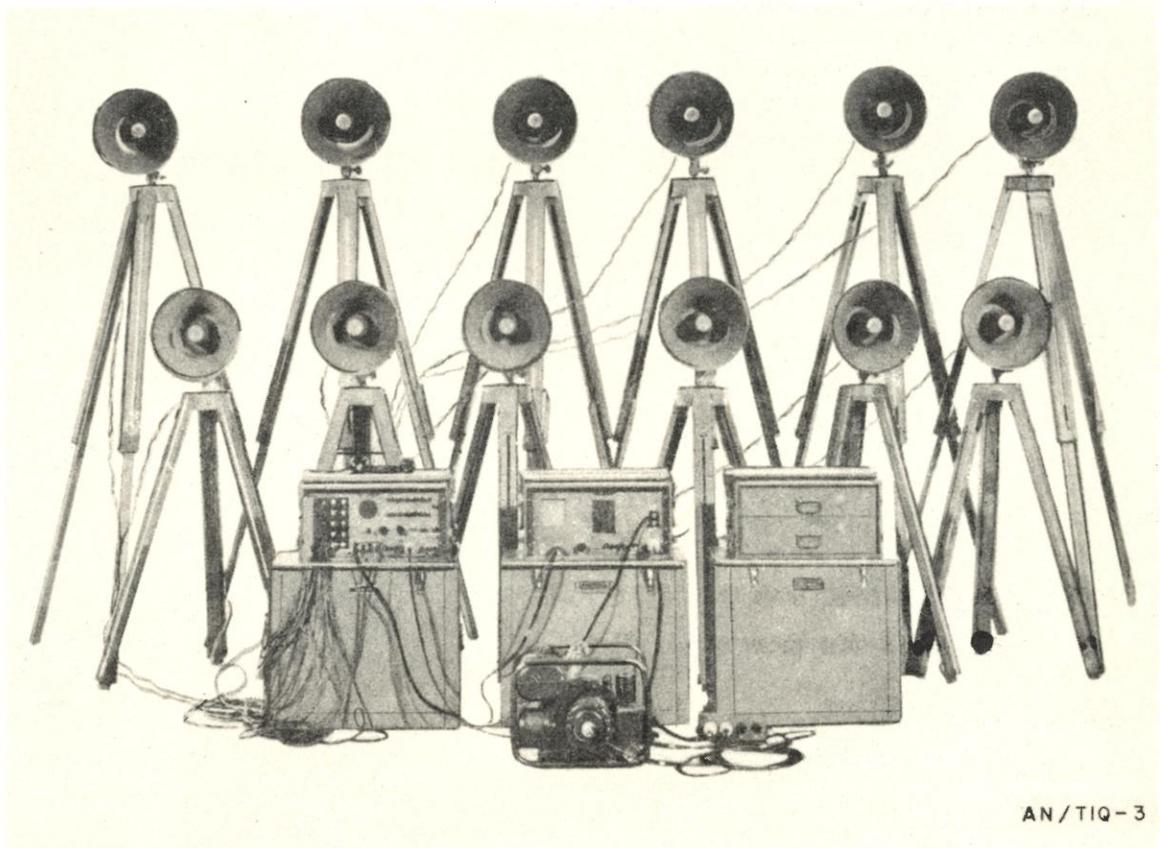
1 March 1964

Cog. Serv: USA FSN: 5830-164-6619

USA Line Item No.: 633550

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std A			

Manufacturer:



AN/TIQ-3

**FUNCTIONAL DESCRIPTION:**

Public Address Set AN/TIQ-3( ) is a portable, sound amplifying, and projecting equipment used in delivering commands or briefing instructions, or in the control of personnel at airfields and at division and higher headquarters.

This equipment consists essentially of an amplifier, a control unit, loudspeakers, and power unit, and accessories.

The set can be modulated by a handset or microphone and by its loudspeaker components, such as the phonograph or similar pick-up devices. It has a tone generator for signaling over the system.

## PUBLIC ADDRESS SET

## AN/TIQ-3( )

Power is supplied by its power unit or an equivalent source of 115 or 230 volts alternating current.

There are two models of this equipment Public Address Set AN/TIQ-3 and AN/TIQ-3A. Both of these are basically similar, differing only in details of the components.

## TECHNICAL DESCRIPTION:

*Facilities:*

Loudspeakers: 12

Tone Generator: For signaling over system

Piped in Sound: Provided for

Intercommunication: Among any and all stations

*Type Controls:* Sound-mixing, volume, loudspeaker selector, press-to-talk

*Frequency Range:* 50 cps to 10,000 cps

*Power Output:* 50 w  $\pm$ 10% distortion max

*Power Input:*

Amplifier: 255 w, 2.2 amp

Control Unit: 20 w, 0.2 amp

*Power Requirements:*

Available Source: 275 w; 115- or 23-v, 50- to 60-cy, 1 phase ac

Power Unit PE-214-B, or equal: 300 w; 120- or 240-v, 60-cy, 1-phase ac

*Major Units:*

1	AM-34/TIQ-3	18" x 15" x 8"	65 lbs
1	C-104/TIQ-3	18" x 15" x 8"	40.75 lbs
12	LS-104/TIQ-3	19 <sup>9</sup> / <sub>16</sub> " x 13 <sup>1</sup> / <sub>4</sub> " dia	20.25 lbs
1	PE-214, PE-21A, -B, or -C	17 <sup>3</sup> / <sub>4</sub> " x 14 <sup>1</sup> / <sub>8</sub> " x 12 <sup>3</sup> / <sub>16</sub> "	60.75 lbs
1	AM-700/TIQ-3	18" x 15" x 8"	
1	C-1090/TIQ-3A	18" x 15" x 8"	
12	LS-104/TIQ-3	19 <sup>9</sup> / <sub>16</sub> " x 13 <sup>1</sup> / <sub>4</sub> " dia	20.25 lbs
12	MT-12A/TIQ-2	53 min, 90 max	19 lbs
1	PE-214, PE-214A, -B, -C	17 <sup>3</sup> / <sub>4</sub> " x 14 <sup>1</sup> / <sub>8</sub> " x 12 <sup>3</sup> / <sub>16</sub> "	60.75 lbs

## TUBES, CRYSTALS, TRANSISTORS:

## REFERENCE DATA AND LITERATURE:

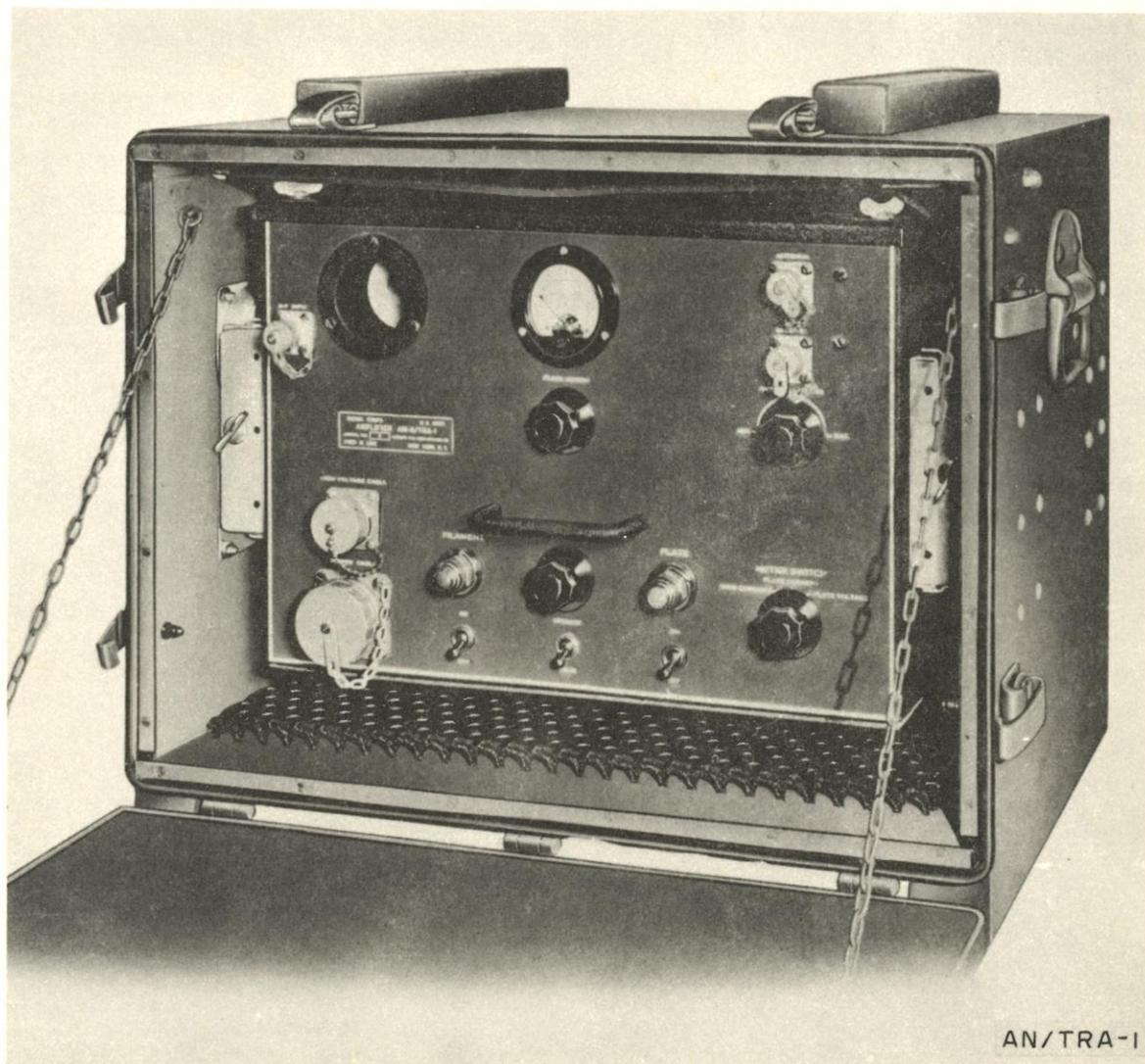
TM 11-2531

AMPLIFIER EQUIPMENT

AN/TRA-1( )

1 March 1964  
Cog. Serv: USA FSN: 5820-164-7146  
USA Line Item No.: 602520

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std A			
Manufacturer:	F. M. Link Radio Co			



AN/TRA-1

**AMPLIFIER EQUIPMENT**

**AN/TRA-1( )**

**FUNCTIONAL DESCRIPTION:**

Amplifier Equipment AN/TRA-1( ) is a transportable, fm, high-power amplifier used to increase the power output and range of Radio Set AN/TRC-1, Radio Terminal Set AN/TRC-3, and Radio Relay Set AN/TRC-4.

The frequency range and power output of the various models of the amplifier are the same; it can be used with all models of Radio Transmitter T-14/TRC-1 (part of the AN/TRC-1, -3, and -4).

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Frequency Range in mc:* 70 to 100

*Type Modulation:* fm

*Type of Signal:* Voice

*Power Output:*

AN/TRA-1: 250 w

AN/TRA-1A, -1B, -1C, -1D: 200 w

*Power Requirements:* 800 w, 115-v 50/60-cy ac (from Power Supply PP-13/TRA-1)

*Major Units:*

1 AM-8/TRA-1

10 $\frac{3}{4}$ " x 12 $\frac{3}{4}$ " x 19 $\frac{1}{8}$ "

48 lbs

1 PP-13/TRA-1

9 $\frac{3}{8}$ " x 14" x 25"

130 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-2601

MIL-A-10725

## REMOTE CONTROL EQUIPMENT

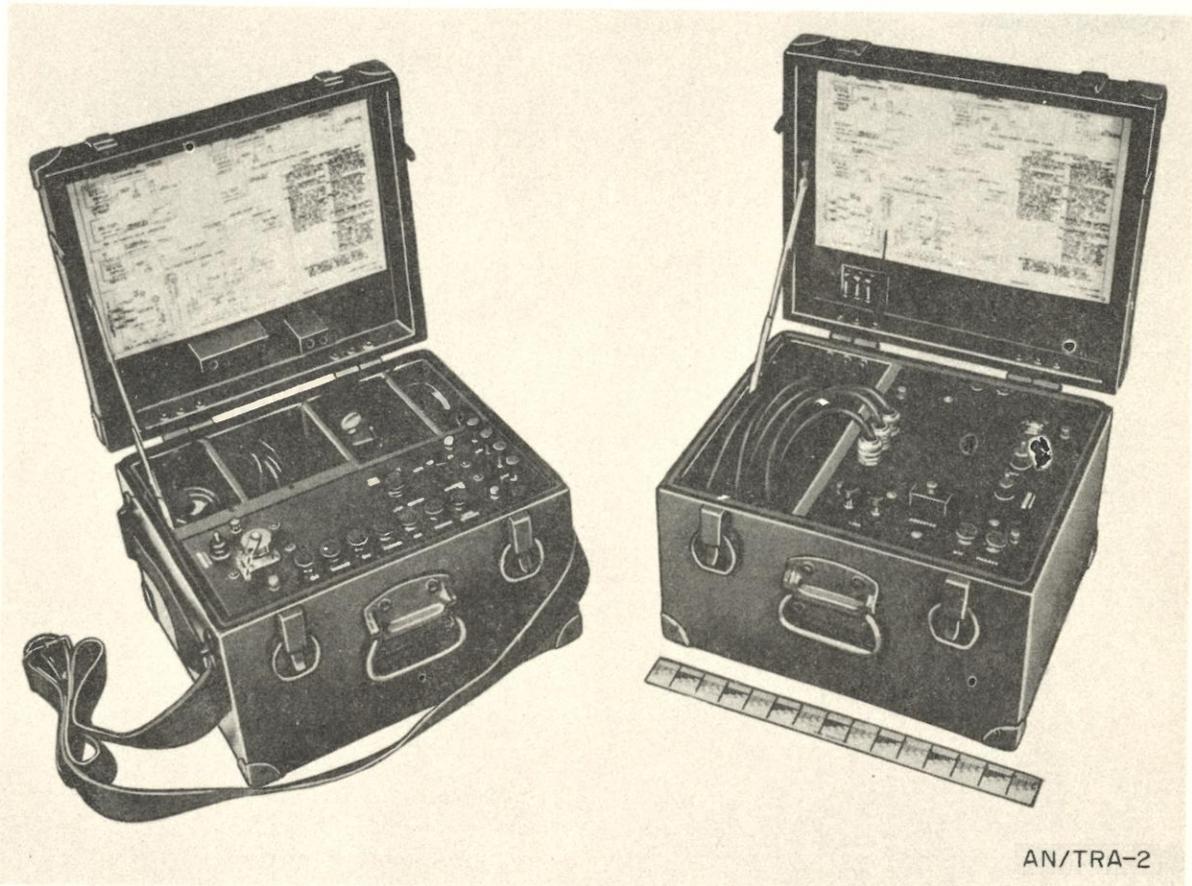
**AN/TRA-2**

1 March 1964

Cog. Serv: USA FSN: 5820-324-8744

USA Line Item No.: 660300

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std A			
Manufacturer:	Scott Radio Laboratories Inc.			



AN/TRA-2

**FUNCTIONAL DESCRIPTION:**

Remote Control Equipment AN/TRA-2 is a transportable assemblage that permits operational control of Radio Set AN/TRC-1, Radio Terminal Set AN/TRC-3, and Radio Relay Set AN/TRC-4 from distances up to 2 miles. This equipment also enables automatic radio-relay operation when the transmitter and receiver of the radio set are more than 10 feet apart, and provides intercommunication between local and remote operating locations.

MIL-HDBK-161A/TM11-487A-3/NAVEXOS P-2058/TO 31-3-73

REMOTE CONTROL EQUIPMENT

# AN/TRA-2

RELATIONSHIP TO SIMILAR EQUIPMENT:

TECHNICAL DESCRIPTION:

*Power Requirements:* 115/230-v 50/60-cy ac

*Major Units:*

1	C-113/TRA-2	9" x 12" x 12"	20 lbs
1	C-112/TRA-2	9" x 12" x 12"	20 lbs

TUBES, CRYSTALS, TRANSISTORS:

REFERENCE DATA AND LITERATURE:

TM 11-2621  
(USA)271-3086

## PULSE FORM RESTORER GROUP

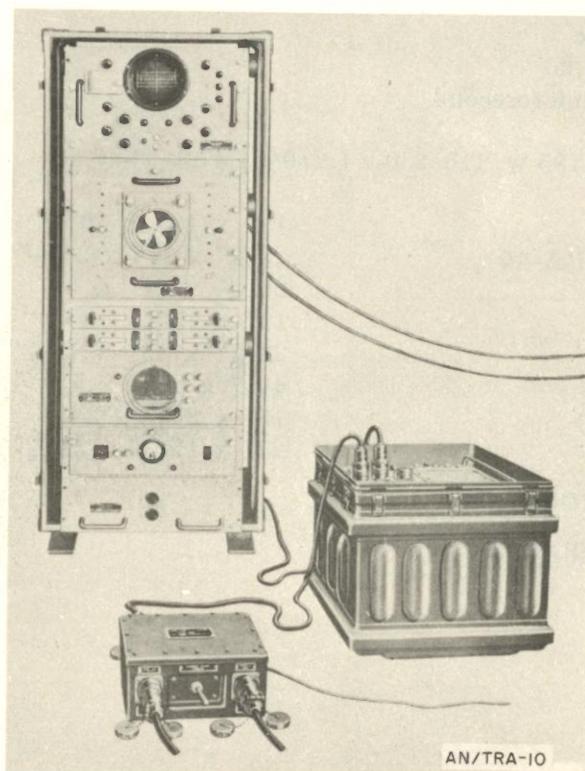
## AN/TRA-10

1 March 1964

Cog. Serv: USA FSN: 5820-510-1600

USA Line Item No.: 660940

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std A			
Manufacturer:	International Tel & Tel Corp			

**FUNCTIONAL DESCRIPTION:**

Pulse Form Restorer Group AN/TRA-10 reshapes the 23- or 45-channel pulse train received from microwave radio receiving equipment into a standard wave shape before it is fed to the radio transmitter at a microwave radio relay system.

This equipment is inserted into the system once every four or five hops.

In addition to reshaping the video signal, this equipment provides communication at the relay station by two drop-and-insert channels.

This set is a major component of Radio Repeater Set AN/TRC-40.

PULSE FORM RESTORER GROUP

# AN/TRA-10

RELATIONSHIP TO SIMILAR EQUIPMENT:

TECHNICAL DESCRIPTION:

*Facilities Required:* Radio Set AN/TRC-29 or equivalent

*Facilities Provided:* Restores pulse train or 23- or 45-channel voice system, and allows for two drop-and-insert voice channels.

*Type of Signal:* Pulse position, time-division multiplex

*Frequency (each of channel):*

Modulating Bandwidth: 300 to 3,500 cps

Signaling: 20 cps

*Video Signal Characteristics:*

Pulse Rate: 192 kc

Pulse Width: 192 kc

Pulse Width: 0.6 microsecond

Bandwidth: 1 mc

*Power Requirements:* 785 w, 115/230-v ( $\pm 10\%$ ) 47.3-63-cy ac

*Major Units:*

1	C-1151/TC	19" x 19" x 10 $\frac{1}{2}$ "	
1	MT-1434/TRA-10	20 $\frac{3}{4}$ " x 19" x 24 $\frac{3}{8}$ "	
1	CY-1719/G	26 $\frac{1}{2}$ " x 27" x 60"	595 lbs
1	PP-691/G	19" x 19" x 12"	
1	TD-68/G	23 $\frac{3}{4}$ " x 19" x 15 $\frac{5}{8}$ "	
2	C-1509/TC	4 $\frac{1}{2}$ " x 2 $\frac{3}{4}$ " x 5 $\frac{1}{2}$ "	
4	MD-179/TC	16" x 21 $\frac{1}{2}$ " x 8 $\frac{1}{2}$ "	5.5 lbs
1	CN-236/G	23" x 17 $\frac{1}{2}$ " x 19 $\frac{1}{2}$ "	215 lbs

TUBES, CRYSTALS, TRANSISTORS:

REFERENCE DATA AND LITERATURE:

TM 11-2141

TM 11-2682

MIL-M-10615

## AMPLIFIER-POWER SUPPLY GROUP

## AN/TRA-19

1 March 1964

Cog. Serv: USA FSN: 5820-503-3282

USA Line Item No.: 602530

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-B		L/Std	

Manufacturer: Lewyt Mfg Corp

**FUNCTIONAL DESCRIPTION:**

Amplifier-Power Supply Group AN/TRA-19 is auxiliary equipment used with such vhf radio equipment as Radio Set AN/TRC-8, Radio Terminal Set AN/TRC-11, and Radio Relay Set AN/TRC-12 to extend the effective transmission range of the transmitter components of these equipments.

This group consists essentially of a Class C rf power amplifier and a power-supply unit contained in a standardized equipment cabinet.

It can be used to improve transmission over long distances, grazing paths, and shadow areas, and to overcome other adverse conditions.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:***Frequency Range in mc:* 230 to 250*Type Modulation:* fm*Type of Signal:* Voice, teletypewriter, facsimile (composite)*Power Output:* 75 w (nominal)*Power Requirements:* 400 w, 115/230-v ac*Major Units:*

1	CY-1204/TRA-19	26 $\frac{1}{2}$ " x 18 $\frac{3}{8}$ " x 17 $\frac{3}{4}$ "	53 lbs
1	PP-840/TRA-19	10 $\frac{1}{2}$ " x 12 $\frac{7}{8}$ " x 14 $\frac{3}{4}$ "	64 lbs
1	AM-456/TRA-19	11" x 12 $\frac{7}{8}$ " x 13 $\frac{1}{16}$ "	46 lbs

**TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**

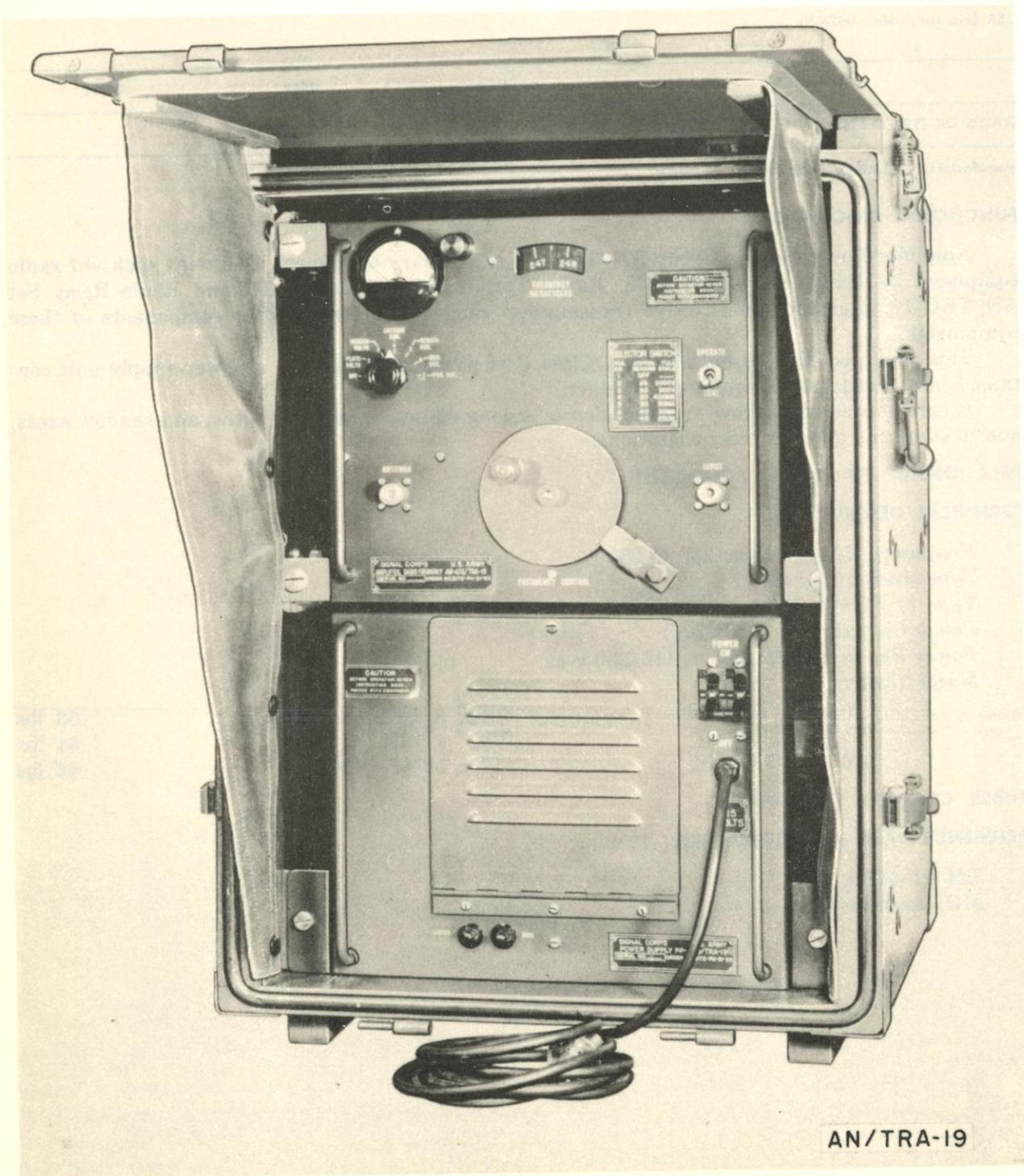
TM 11-618A

MIL-A-0010489B

MIL-HDBK-161A/TM11-487A-3/NAVEXOS P-2058/TO 31-3-73

AMPLIFIER-POWER SUPPLY GROUP

# AN/TRA-19



AN/TRA-19

AN/TRA-type  
CONTROL UNIT

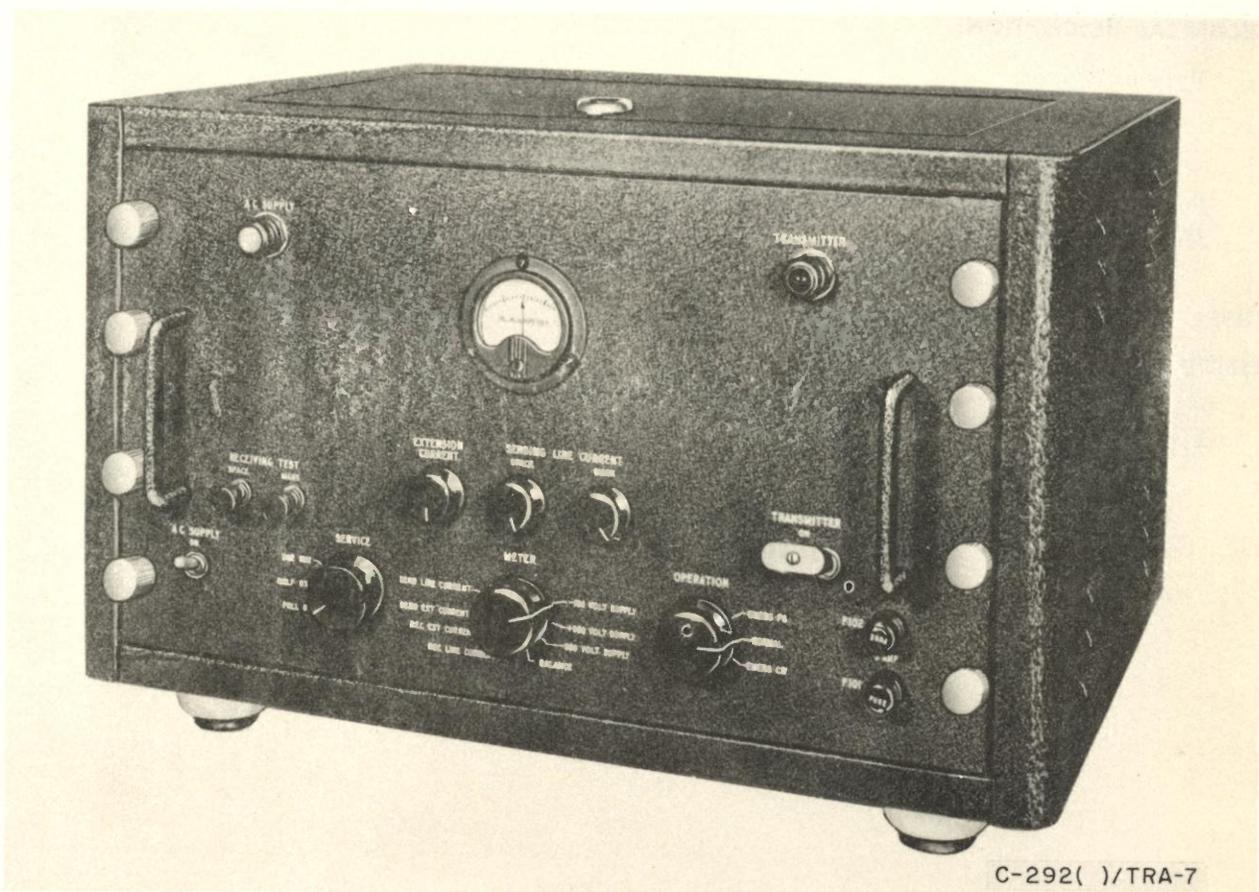
C-292( )/TRA-7

1 March 1964

Cog. Serv: USA FSN: 5815-162-8257

USA Line Item No.: 611325

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std A			
Manufacturer:	Barker & Williamson, Inc, Stelma, Inc			



C-292( )/TRA-7

**FUNCTIONAL DESCRIPTION:**

Control Unit C-292( )/TRA-7, together with other components of a radioteletype system, provides facilities for establishing radioteletype full-duplex, half-duplex, one-way reversible, emergency cw, or frequency-shift transmission and reception.

This equipment is a single component containing an integral power supply and may be used in several different systems such as those using Radio Set AN-GRC-26 or AN/MRC-2.

**AN/TRA-type  
CONTROL UNIT**

**C-292( )/TRA-7**

It is an electronic repeater of polar and neutral teletypewriter signals and converts polar telegraph signals received from a dual-diversity converter into neutral signals to operate a receiving teletypewriter. This control unit also translates neutral signals from a sending teletypewriter into polar signals for transmission over a wire line to control a frequency-shift exciter.

When not used in a specific system, this control unit may be located at the receiving station, the transmitting station, or any desired location within 10 miles of the two.

The C-292/TRA-7, C-292A/TRA-7, and C-292B/TRA-7 are functionally interchangeable and differ from each other in design details only.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Type of Signal:*

Polar input: Mark, +0.025 amp; space, -0.025 amp

Polar output: Mark, +0.020 amp; space, -0.025 amp

Neutral input and output: Mark, +0.060 amp; space, 0 amp

*Power Requirements:* 170 w, 115-v 50-60-cy ac

*Major Units:*

1 C-292( )/TRA-7

12¼" x 16⅞" x 21½"

100 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-262

MIL-R-13172

AN/TRA-type  
DUAL DIVERSITY CONVERTER

CV-31( )/TRA-7

1 March 1964  
 Cog. Serv: USA FSN: 5815-503-2602  
 USA Line Item No. 614330

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std A		L/Std	
Manufacturer:	Barker & Williamson, Inc			

**FUNCTIONAL DESCRIPTION:**

Dual Diversity Converter CV-31( )/TRA-7 is a component of a radioteletype system that provides full-duplex, half-duplex, or one-way reversible, frequency-shift transmission and reception. In an emergency, it also can provide the same service in a cw system.

This equipment consists of one component that contains its own meters, power supply, and oscillator. The oscillator provides an audible means of indicating mark and space signals when required.

The output of each of the two receivers is applied to the, dual- diversity converter to combine the received frequency-shifted signals and to convert the stronger receiver output into dc neutral and polar signals.

The CV-31/TRA-7, CV-31A/TRA-7, CV-31B/TRA-7, CV-31C/TRA-7, and CV-31D/TRA-7 are identical except for minor electrical and mechanical differences.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL CHARACTERISTICS:***Frequency Range in Mc:*

CV-31, -31A, early -31C/TRA-7: 0.400 to 0.470

CV-31C, -31D/TRA-7: 0.440 to 0.510

*Type of Communication Circuit:* Radioteletype*Power Requirements:* 175 w, 115-v 50/60-cy ac*Major Units:*

1 CV-31( )/TRA-7

25 1/4" x 20 5/8" x 22"

220 lbs

**TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**

TM 11-261

TM 11-264

TM 11-278

MIL-R-13172

AN/TRA-type  
DUAL DIVERSITY CONVERTER

CV-31( )/TRA-7



CV-31( )/TRA-7

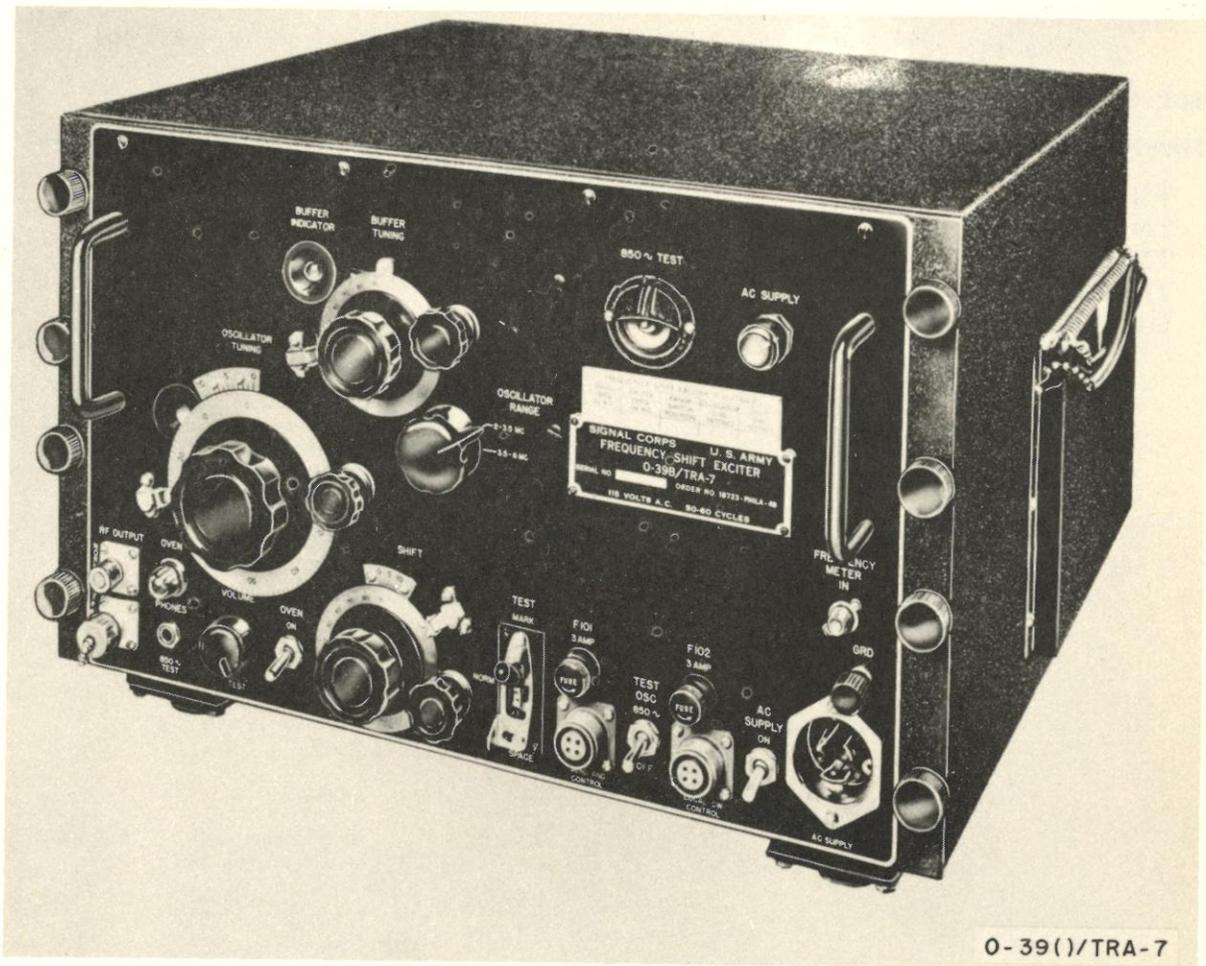
AN/TRA-type  
**FREQUENCY SHIFT EXCITER**  
**O-39( )/TRA-7**

1 March 1964

Cog. Serv: USA FSN: 5815-224-5287

USA Line Item No.: 617104

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std A			
Manufacturer:	Barker & Williamson, Inc			



O-39( )/TRA-7

**FUNCTIONAL DESCRIPTION:**

Frequency Shift Exciter O-39( )/TRA-7 functions as the oscillator of the radio transmitter with which it is associated. It translates a teletypewriter signal into low-power, frequency-shift keyed, rf signals.

AN/TRA-type  
FREQUENCY SHIFT EXCITER

**O-39( )/TRA-7**

The O-39/TRA-7, O-39A/TRA-7, and O-39B/TRA-7 and O-39C/TRA-7 are identical except for minor electrical and mechanical differences.

**TECHNICAL DESCRIPTION:**

*Type of Signal:*

*Dc Input:* Mark, +0.02 amp; space, -0.025

*Frequency shift:* 212.5 to 850 cy, depending on frequency multiplication of associated radio transmitter

*Output Frequency:* 2 to 6 mc

*Power Requirements:* 185 w, 115-v 50/60-cy ac

*Major Units:*

1 O-39( )/TRA-7                      16 $\frac{7}{8}$ " x 21 $\frac{1}{2}$ " x 13"                      125 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

- TM 11-257
- TM 11-264
- TM 11-278
- TM 11-624
- MIL-R-13171

RADIO SET  
**AN/TRC-1( )**

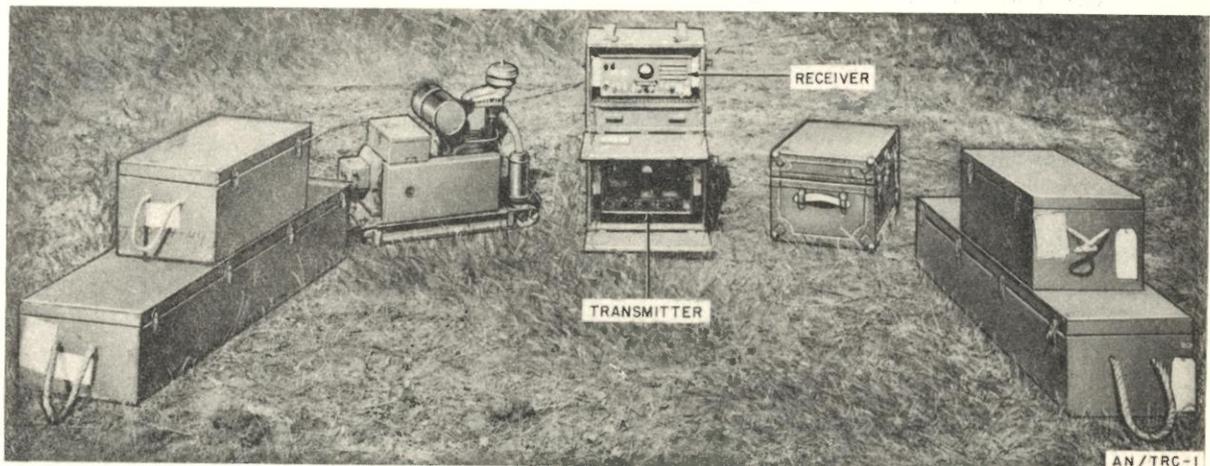
1 March 1964

Cog. Serv: USA FSN: 5820-186-9245

USA Line Item No.: 645500

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std C			

Manufacturer: The Hallicrafters Co

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/TRC-1( ) is a transportable, crystal-controlled, fm radio receiving and transmitting equipment for radio-relay or point-to-point communication in the vhf band. When operated as the terminal of a radio-relay link in a tactical communication system, it provides one-way or simultaneous two-way facilities.

With appropriate auxiliary equipment, four channels of voice signals can be accommodated. Multichannel radio-teletype signals or a facsimile signal can be with appropriate additional equipment.

The set can be operated from a distant control point on a two-wire or four-wire basis by means of Remote Control Equipment AN/TRA-2. Amplifier Equipment AN/TRA-1 can be added when necessary to increase transmitter power output. Antenna tower, dipole elements, power supply, and accessory items are included.

This equipment is intended for operation on an intermittent or prescheduled basis only. It does not include spare operating components.

For continuous operation, Radio Terminal Set AN/TRC-3, composed essentially of two Radio Sets AN/TRC-1( ), is available. In addition, two AN/TRC-1( ) sets (including necessary spares) operating back-to-back at an intermediate point in a system constitute Radio Relay Set AN/TRC-4.

RADIO SET

AN/TRC-3( )

TECHNICAL CHARACTERISTICS:

Frequency Range in mc: 70.0 to 99.9

Type Modulation: fm

Type of Signal: Voice, teletypewriter (with additional equipment)

Power Output:

High Power: 50 w

Low Power: 10 w

Power Requirements:

Transmitter: 250 w, 115-v 50/60 cy ac

Receiver: 110 w, 115-v 50/60 cy ac

Major Units:

AS-19/TRC-1

470 lbs

PE-75

26 1/2" x 19 1/2" x 36"

330 lbs

R-19/TRC-1

22 1/2" x 16" x 17 3/4"

95 lbs

T-14/TRC-1

22 1/2" x 16" x 17 3/4"

108 lbs

TUBES, CRYSTALS, TRANSISTORS:

REFERENCE DATA AND LITERATURE:

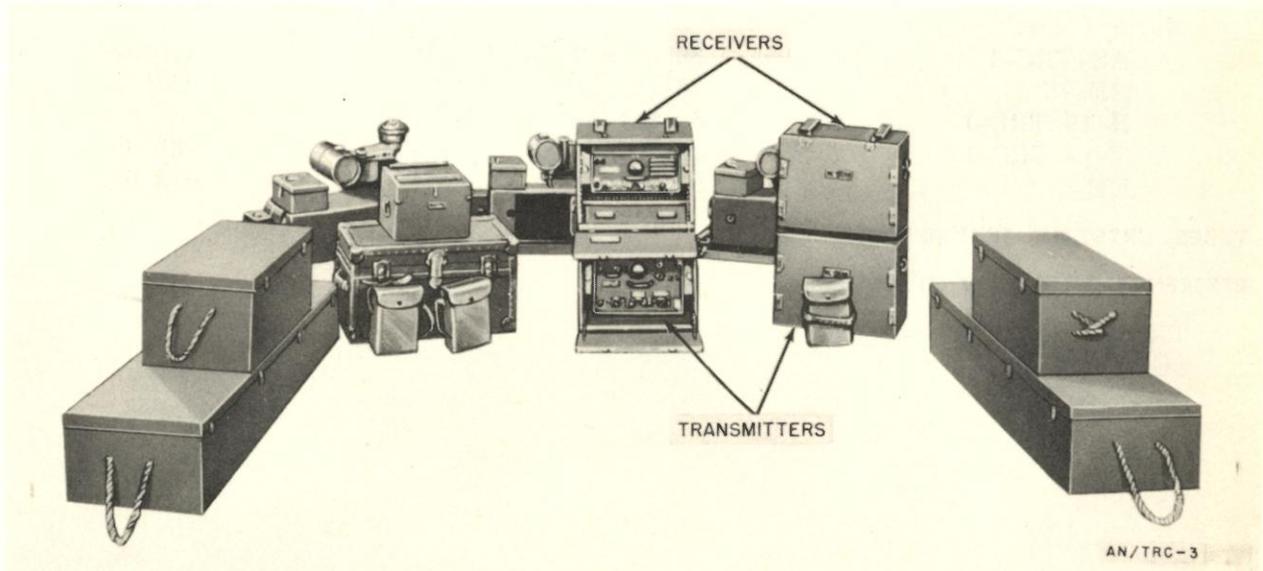
TM 11-2601

MIL-R-10174

**RADIO TERMINAL SET  
AN/TRC-3( )**

1 March 1964  
 Cog. Serv: USA FSN: 5820-193-7107  
 USA Line Item No.: 657230

	USA	USN	USAF	USMC
<b>STATUS OR TYPE CLASS:</b>	Std C			
<b>Manufacturer:</b>	American Machine & Foundry Co			


**FUNCTIONAL DESCRIPTION:**

Radio Terminal Set AN/TRC-3( ) is a transportable, crystal-controlled, FM, field, radio transmitting and receiving equipment that can be used in point-to-point, single or multi-channel communication or as the terminal or a radio relay system.

This equipment consists essentially of two Radio Sets AN/TRC-1, one of which is a spare, assuring continuous operation. It can be used in conjunction with telephone and telegraph equipment to provide various combinations of voice, telegraph or teletypewriter, and facsimile communication.

It can operate in a system in which the remote terminal consists of another Radio Terminal Set AN/TRC-3( ), or Radio Set AN/TRC-1( ), and in which Radio Relay Set AN/TRC-4( ) may be used as the intermediate repeater facility.

When it is necessary to increase power output of the transmitter, Amplifier Equipment AN/TRA-1 (not a component of this equipment) can be used.

RADIO TERMINAL SET

AN/TRC-3( )

TECHNICAL DESCRIPTION:

*Frequency Range in mc:* 70.0 to 99.9

*Type Modulation:* fm

*Type of Signal:* Voice, teletypewriter (with additional equipment)

*Power Output:* High power, 50 w; low power, 10 w

*Power Requirements:*

Commercial power source, Power Unit PE-75 or equivalent

Transmitter: 250 w, 115-v 50/60 cy ac

Receiver: 100 w, 115-v 50/60 cy ac

*Major Units:*

AS-TRC-1	26 <sup>3</sup> / <sub>8</sub> " x 33 <sup>1</sup> / <sub>2</sub> " x 105 <sup>1</sup> / <sub>2</sub> "	470 lbs
PE-75	26 <sup>1</sup> / <sub>2</sub> " x 19 <sup>1</sup> / <sub>2</sub> " x 36"	330 lbs
R-19/TRC-1	8" x 12 <sup>3</sup> / <sub>4</sub> " x 19 <sup>1</sup> / <sub>8</sub> "	43 lbs
T-14/TRC-1	10 <sup>3</sup> / <sub>4</sub> " x 12 <sup>3</sup> / <sub>4</sub> " x 19 <sup>1</sup> / <sub>8</sub> "	66 lbs
EE-8	9 <sup>9</sup> / <sub>16</sub> " x 3 <sup>1</sup> / <sub>2</sub> " x 7 <sup>11</sup> / <sub>16</sub> "	9.75 lbs

TUBES, CRYSTALS, TRANSISTORS:

REFERENCE DATA AND LITERATURE:

TM 11-2601

(USA) 71-3010

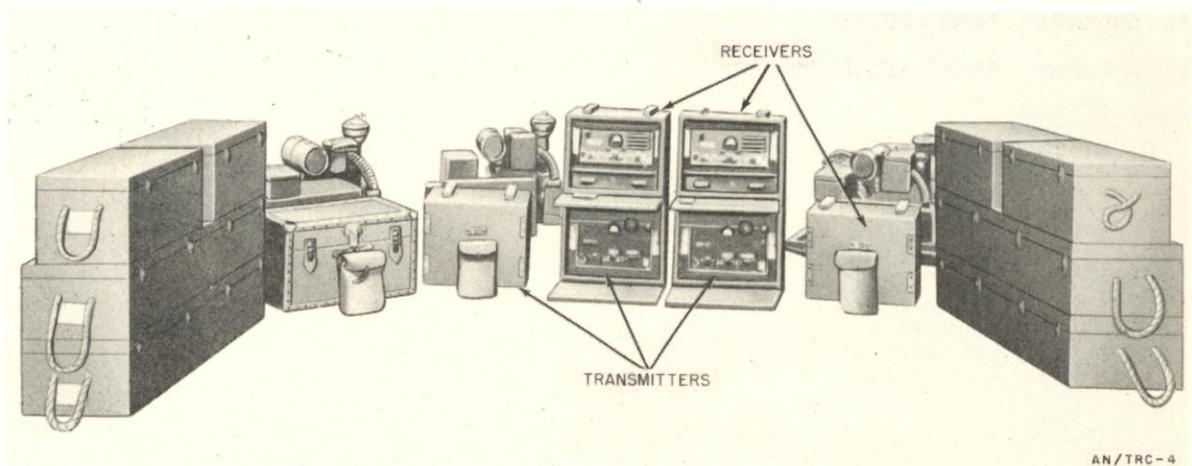
RADIO RELAY SET  
AN/TRC-4( )

1 March 1964

Cog. Serv: USA FSN: 5820-186-9253

USA Line Item No.: 636300

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std A			
Manufacturer:	American Machine & Foundry Co			

**FUNCTIONAL DESCRIPTION:**

Radio Relay Set AN/TRC-4( ) is a transportable, crystal-controlled FM, field, radio transmitting and receiving equipment that can be used in point-to-point single or multi-channel communication, but which is designed as a repeater facility of a radio-relay link of a system using Radio Terminal Set AN/TRC-3.

This equipment consists essentially of two Radio Sets AN/TRC-1, operating back-to-back at intermediate points of a radio-relay facility terminated by Radio Set AN/TRC-1 or Radio Terminal Set AN/TRC-3. It can accommodate various combinations of voice, telegraph, teletypewriter, and facsimile channels. It includes spare operating components antenna, power, and accessory items.

Amplifier Equipment AN/TRA-1 may be used to increase the transmitter output power of this radio-relay set.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

None

**TECHNICAL DESCRIPTION:**

*Frequency Range in mc:* 70.0 to 99.9

*Type Modulation:* fm

*Type of Signal:* Voice, teletypewriter (with additional equipment)

RADIO RELAY SET

**AN/TRC-4( )**

*Power Output:* 10 w or 50 w

*Power Requirements:*

Transmitter: 250 w, 115-v 50/60 cy ac

Receiver: 100 w, 115-v 50/60 cy ac

*Major Units:*

AS-19/TRC-1

26<sup>3</sup>/<sub>8</sub>" x 33<sup>1</sup>/<sub>2</sub>" x 105<sup>1</sup>/<sub>2</sub>"

470 lbs

PE-75

26<sup>1</sup>/<sub>2</sub>" x 19<sup>1</sup>/<sub>2</sub>" x 36"

330 lbs

R-19/TRC-1

8" x 12<sup>3</sup>/<sub>4</sub>" x 19<sup>1</sup>/<sub>8</sub>"

43 lbs

T-14/TRC-1

10<sup>3</sup>/<sub>4</sub>" x 12<sup>3</sup>/<sub>4</sub>" x 19<sup>1</sup>/<sub>8</sub>"

60 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-2601

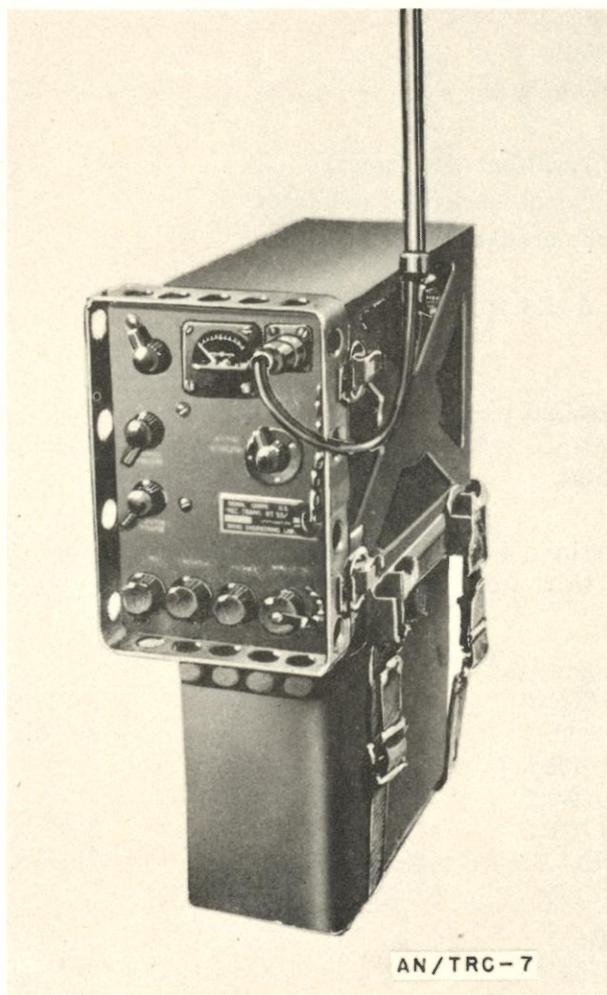
(USA) 71-3010

RADIO SET  
**AN/TRC-7, -7A, -7B**

1 December 1958  
 Cog. Serv: USAF FSN: 5820-537-4006  
 USA Line Item No.: 646000

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std C			

Manufacturer: Andrea Radio Corp



AN/TRC-7

**FUNCTIONAL DESCRIPTION:**

Radio Sets AN/TRC-7, AN/TRC-7A, and AN/TRC-7B are portable, low-power, two-way receiver-transmitter units used for ground-to-air and point-to-point communication. The radio sets are designed for short distance operation in the very high frequency range.

**RADIO SET**

**AN/TRC-7, -7A, -7B**

Normally, these equipments are controlled locally but can be controlled from remote point as far as 2 miles by means of Remote Control Equipment RC-261.

Power may be supplied either from a Battery BA-70 or from handcranked Generator G-3( )/TRC-7, or both. Battery life is a minimum of 4 hours for continuous transmission, and 20 hours maximum for continuous reception.

These sets are basically similar, differing only in details of the various components.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Frequency Range in mc:* 100 to 156

*Number of Channels:* 561

*Number of Preset Channels:* 2

*Type Modulation:* am

*Type Emission and Reception:* A3 (voice)

*Frequency Control:* Crystal controlled oscillator

*Type Receiver:* Superheterodyne

*Power Output:*

Transmitter: 0.4 to 1.5 w

Receiver: 60 mw

*Antenna:*

Type: Whip or ground plane conical

Polarization: vertical

Impedance: 50 ohms

*Power Requirements:*

Battery B-70 or Hand Generator G-3/TRC-7 or both: Current drain 1.106 amp (max)

Battery Life: 20 to 25 hours on reception only; 4 to 5 hours continuous transmission.

*Major Units:*

For AN/TRC-7 and -7A:

1	AT-59/TRC-7	27 <sup>11</sup> / <sub>16</sub> " x 5 <sup>1</sup> / <sub>2</sub> " dia
1	AS-110/TRC-7	30' high
1	AB-37/TRC-7	
1	C-1200/GRC	
1	C-1201/GRC	3 <sup>1</sup> / <sub>2</sub> " x 4 <sup>3</sup> / <sub>16</sub> " x 7 <sup>1</sup> / <sub>2</sub> "
1	G-3/TRC-7 or G-3A/TRC-7	7 <sup>1</sup> / <sub>4</sub> " x 6 <sup>3</sup> / <sub>8</sub> " x 7 <sup>1</sup> / <sub>4</sub> "
1	RT-53/TRC-7 or RT-53A/TRC-7	

For AN/TRC-7B:

1	AT-59/TRC-7	27 <sup>11</sup> / <sub>16</sub> " x 5 <sup>1</sup> / <sub>2</sub> " dia
1	AS-110/TRC-7	30' high
1	AB-37/TRC-7	
1	C-1200/GRC	
1	C-1201/TRC	3 <sup>1</sup> / <sub>2</sub> " x 4 <sup>3</sup> / <sub>16</sub> " x 7 <sup>1</sup> / <sub>2</sub> "
1	G-3B/TRC-7	8 <sup>7</sup> / <sub>8</sub> " x 6 <sup>1</sup> / <sub>2</sub> " x 10"
1	RT-53B/TRC-7	

RADIO SET

**AN/TRC-7, -7A, -7B**

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

AN/TRC-7, AN/TRC-7A: TM 11-617

AN/TRC-7B:

TO 31R2-2TRC7-14

TO 16-30TRC7-3

TO 16-30TRC7-2

271-3103



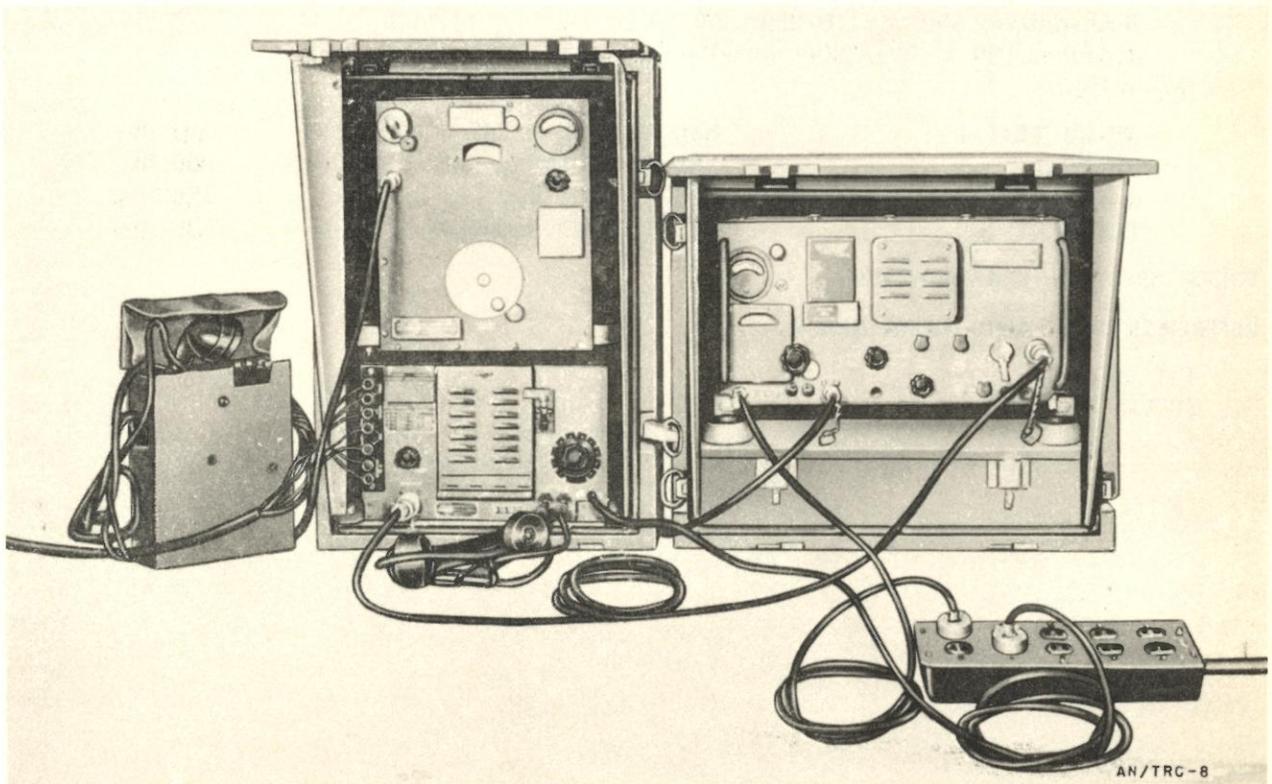
RADIO SET  
AN/TRC-8

1 March 1964

Cog. Serv: USA FSN: 5820-193-7106

USA Line Item No.: 646100

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std C		L/Std	
Manufacturer:	Espey Mfg Co Inc			

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/TRC-8 is a transportable, vhf, fm, single-channel radio receiving and transmitting equipment used for point-to-point or radio relay applications.

This equipment consists of a radio transmitter, a radio receiver, an antenna, and power accessories but does not include spare operating components. It is intended for use on an intermittent or prescheduled basis. It is designed for communication by voice signals and, in conjunction with additional equipment, for radioteletype applications.

For continuous operation, spare operating components are added (constituting Radio Terminal Set AN/TRC-11). For radio relay use, the same primary operating components back-to-back at intermediate points of a system.

RADIO SET

AN/TRC-8

RELATIONSHIP TO SIMILAR EQUIPMENT:

None

TECHNICAL DESCRIPTION:

Frequency Range in mc: 230 to 250

Type Modulation: fm

Type of Signal: Voice, TTY (with additional equipment)

Power Output: 5 w

Power Requirements: Commercial power source, power Unit PE-75, or equivalent

Transmitter: 350 w, 115/230-v 50/60 cy ac

Receiver: 120 w, 115/230-v 50/60 cy ac

Major Units:

AS-52/TRC-8	33½" x 14" x 24"	110 lbs
PE-75	26½" x 19½" x 36"	330 lbs
R-48/TRC-8	23" x 16" x 19"	126 lbs
T-30/TRC-8	17½" x 16" x 24½"	135 lbs

TUBES, CRYSTALS, TRANSISTORS:

REFERENCE DATA AND LITERATURE:

TM 11-618A  
(USA) 71-3244

RADIO TERMINAL SET  
AN/TRC-11

1 March 1964

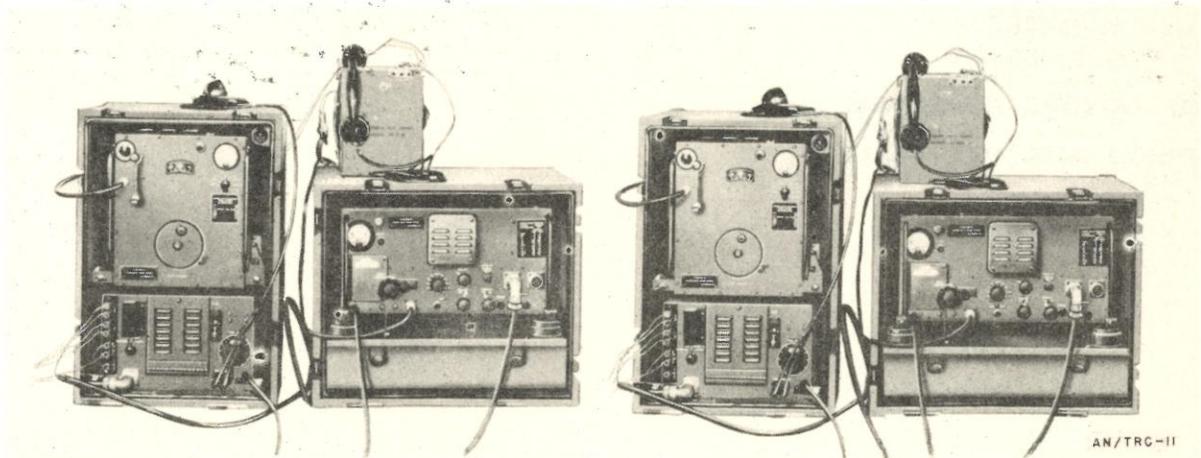
Cog. Serv: USA FSN: AN/TRC-11,-11A: 5820-192-7149

AN/TRC-11B: 5820-503-1717

USA Line Item No.: 657250

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std C		L/Std	

Manufacturer: American Machine & Foundry Co  
Espey Mfg Co

**FUNCTIONAL DESCRIPTION:**

Radio Terminal Set AN/TRC-11( ) is a transportable, fm (voice), vhf, transmitting and receiving equipment used for single-channel, point-to-point communication or as the terminal of a radio relay system.

This equipment consists essentially of two receivers and two transmitters (one of each being a spare), antenna components, and power equipment. It is designed for continuous operation. It can be used in single-channel applications on a half-duplex basis or, with additional equipment, for full-duplex radioteletype communication as the terminal or a radio link in a wire or cable system.

It is designed primarily to operate continuously as the terminal of a radio relay system in which the opposite or remote terminal equipment consists of Radio Set AN/TRC-8, or another AN/TRC-11, and in which Radio Relay Set AN/TRC-12 is used at intermediate points of the system as may be required to extend the distance range between terminals.

It requires 115/230 v ac to operate and can be powered by its power unit component or an equivalent source.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

None

RADIO TERMINAL SET

**AN/TRC-11**

TECHNICAL DESCRIPTION:

*Frequency Range in mc:* 230 to 250

*Type Modulation:* fm

*Type of Signal:* Voice; TTY or composite (with additional equipment)

*Power Output:* 5 w

*Power Requirements:*

Transmitter: 350 w, 115/230-v 50/60-cy ac

Receiver: 120 w, 115/230-v 50/60-cy ac

*Major Units:*

AS-52/TRC-8	33½" x 14" x 24"	110 lbs
PE-75	26½" x 19½" x 36"	330 lbs
R-48/TRC-8	23" x 16" x 19"	126 lbs
T-30/TRC-8	17½" x 16" x 24½"	135 lbs

TUBES, CRYSTALS, TRANSISTORS:

REFERENCE DATA AND LITERATURE:

TM 11-618A

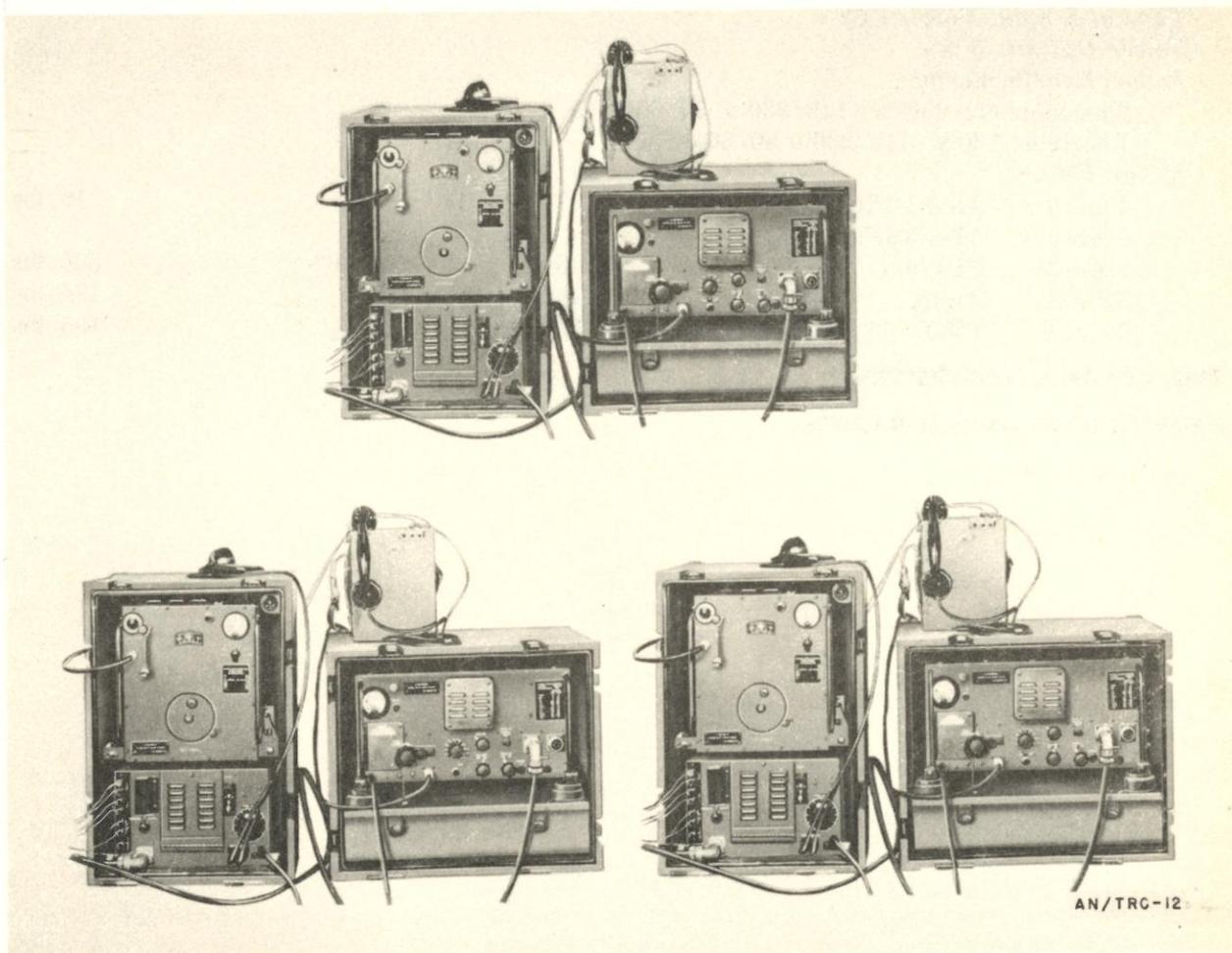
MIL-R-12887

RADIO RELAY SET  
AN/TRC-12( )

1 March 1964  
Cog. Serv: USA FSN: 5820-192-7147  
USA Line Item No.: 636320

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	STD-C		L/Std	

Manufacturer: American Machine & Foundry Co, Electronics Division  
Espey Mfg Co, Inc



**FUNCTIONAL DESCRIPTION:**

Radio Relay Set AN/TRS-12( ) is a transportable, fm (voice), vhf transmitting and receiving equipment used for single-channel, point-to-point communication or as a repeater station at intermediate points of a radio-relay system.

**RADIO RELAY SET**

**AN/TRC-12( )**

This equipment consists essentially of three or four radio transmitters and three or four radio receivers (two of each in operation), antenna components, and power equipment. It is designed to be used primarily on a continuous basis for half-duplex or full-duplex communication in a system terminated by Radio Set AN/TRC-8 or Radio Terminal Set AN/TRC-11 or as a single-channel voice communication facility.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Frequency Range in mc:* 230 to 250

*Type Modulation:* fm

*Type of Signal:* Voice, TTY

*Power Output:* 5 w

*Power Requirements:*

Transmitter: 350 w, 115/230-v 50/60-cy ac

Receiver: 120 w, 115/230-v 50/60-cy ac

*Major Units:*

4 or 6	AS-52/TRC-8	33½" x 14" x 24"	110 lbs
4 or 5	AB-33B/TRC-1		
2 or 3	PE-75-( )	26½" x 19½" x 36"	330 lbs
3 or 4	R-48( )/TRC-8	23" x 16" x 19"	126 lbs
3 or 4	T-30( )/TRC-8	17½" x 16" x 24½"	135 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

MIL-R-12887

RADIO SET  
AN/TRC-20

1 March 1964  
 Cog. Serv: USA FSN: 5820-519-4106  
 USA Line Item No.: 646400

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-A			

Manufacturer:

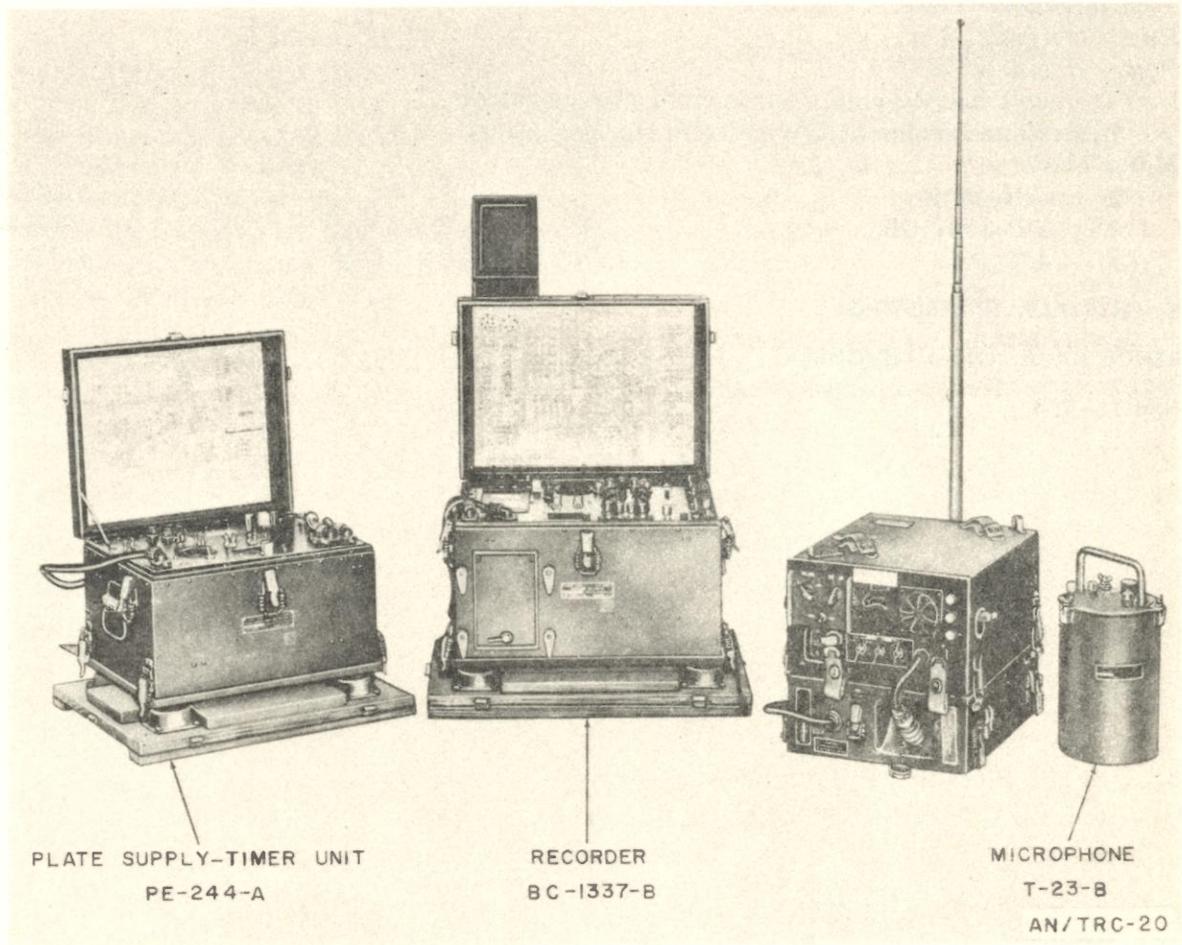


PLATE SUPPLY-TIMER UNIT  
PE-244-A

RECORDER  
BC-1337-B

MICROPHONE  
T-23-B  
AN/TRC-20

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/TRC-20 is a low power, short-range, fm (voice), transmitting and receiving equipment. It is used as part of a sound ranging system to detect low-frequency artillery reports or shell explosions in the field, and to relay this information to a central location for plotting purposes.

**RADIO SET**

**AN/TRC-20**

This set consists of the basic components of Radio Set SCR-610-( ), which have been modified for use in the AN/TRC-20. The modified components have been assigned new type numbers (see MAJOR COMPONENTS), but are capable of performing the same functions as the SCR-610.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Frequency Range in mc:* 27.0 to 38.9

*Type of Modulation:* fm

*Type of Signal:* Voice

*Power Output:* 1.3 w

*Power Requirements:*

Transmitting: 2.0 amp, 24-v dc from storage battery

Receiving: 1.5 amp at 24-v dc from storage battery

*Major Units:*

1	AN-29-C		2.0 lbs
1	PP-1067/GR	8 <sup>7</sup> / <sub>8</sub> " x 16 <sup>1</sup> / <sub>2</sub> " x 18 <sup>7</sup> / <sub>8</sub> "	33.8 lbs
1	RT-111	11 <sup>7</sup> / <sub>8</sub> " x 16 <sup>3</sup> / <sub>8</sub> " x 21 <sup>1</sup> / <sub>2</sub> "	35.13 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-615

RADIO SET  
**AN/TRC-22**

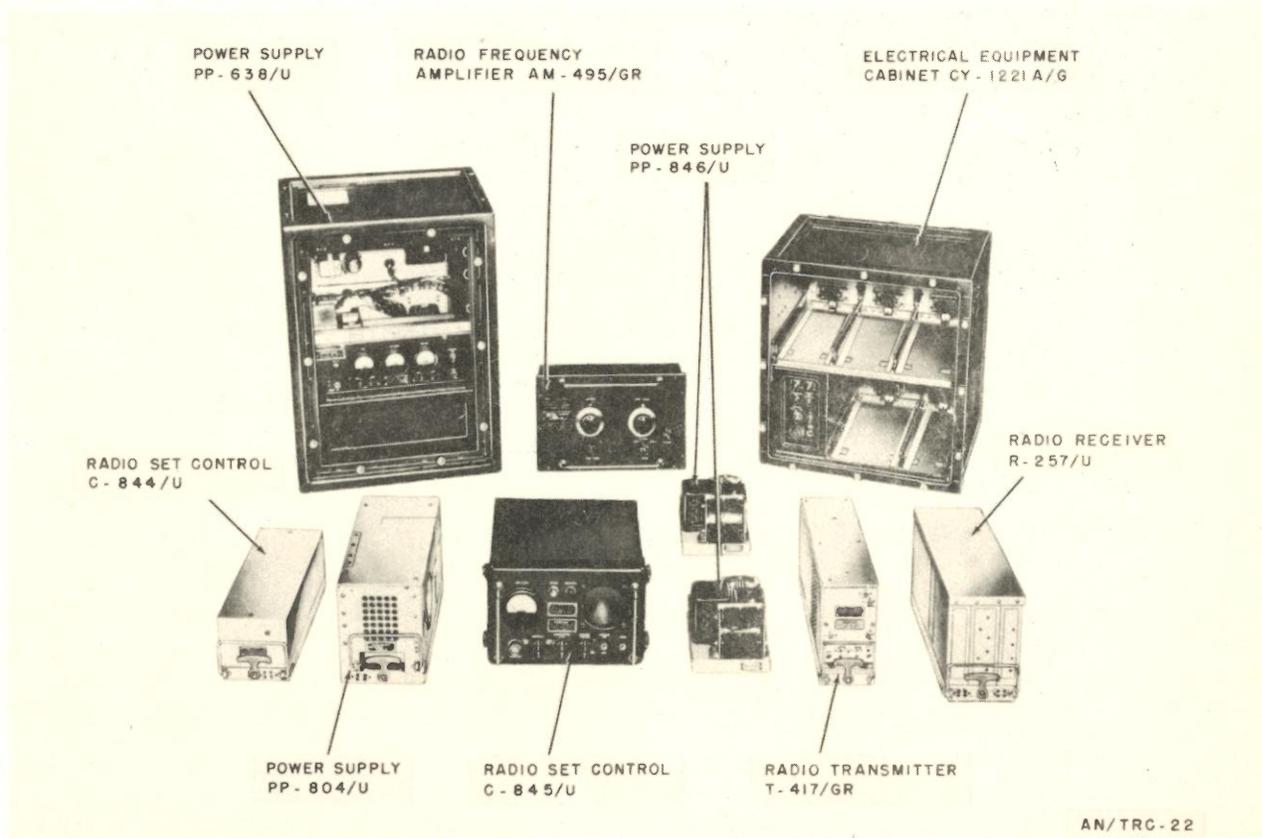
1 March 1964

Cog. Serv: USA FSN: 5820-503-1129

USA Line Item No.: 646600

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS:	Std-A			

Manufacturer: Motorola, Inc

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/TRC-22 is an fm (voice) vhf, crystal-controlled receiving and transmitting equipment, used by military police, guard, and security organizations.

This equipment consists of a radio transmitter, power amplifier, receiver, and auxiliary components.

It is normally operated in a simplex basis but can be arranged for duplex operation by the addition of another receiver and an extra antenna. It can also provide automatic retransmission service between two stations too distant from each other for direct communication.

Remote control with intercommunication between the local and distant operating locations is provided by means of the radio set controls supplied.

RADIO SET

AN/TRC-22

RELATIONSHIP TO SIMILAR EQUIPMENT:

TECHNICAL DESCRIPTION:

Frequency Range in mc: 25 to 50

Type of Modulation: fm

Type of Signal: Voice

Power Output: 45 w without amplifier: 250 w with amplifier

Power Requirements:

Power Supply PP-638/U: 660 w, 115/230-v 60-cy ac

Power Supply PP-804/U: 230 va, 115/230-v 50/65-cy ac

Power Supply PP-846/U: 46 va, 115/230-v 50/65-cy ac

Major Units:

1	AS-612/U	11½" x 41" x 5¼"	30 lbs
1	CY-1221/G	21¼" x 16⅞" x 20½"	58 lbs
1	PP-638( )/U	26¾" x 16½" x 20¼"	187 lbs
1	PP-804/U	8⅝" x 7" x 14½"	40 lbs
2	PP-846/U	5⅛" x 6¼" x 7⅛"	10.5 lbs
1	AM-495/GR	9¾" x 9½" x 15"	13.5 lbs
1	R-257/U	8½" x 14½" x 5¾"	19 lbs
1	C-844/U	8¾" x 14¾" x 5⅞"	6.5 lbs
1	C-845/U	8⅞" x 13¾" x 13½"	17.5 lbs
1	T-417/GR	8½" x 14½" x 4½"	9 lbs

TUBES, CRYSTALS, TRANSISTORS:

REFERENCE DATA AND LITERATURE:

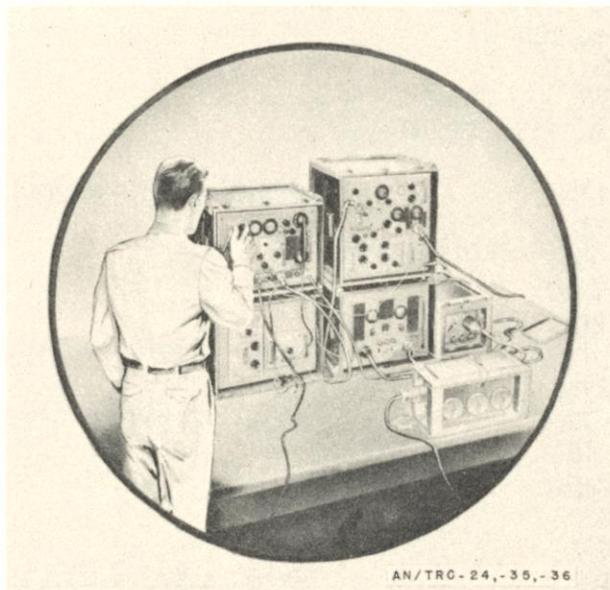
- TM 11-691
- MIL-N-11539

RADIO SET  
**AN/TRC-24( )**

1 March 1964  
Cog. Serv: USA FSN: 5820-503-1133  
USA Line Item No.: 646800

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-A		Std	

Manufacturer: Western Electric Co, Inc



AN/TRC-24,-35,-36

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/TRC-24( ) is the basic fm radio transmitting and receiving equipment used in Radio Terminal Set AN/TRC-35( ) and Radio Relay Set AN/TRC-36( ) and in such equipment as AN/GRC-75, -76, -77 (Band A); AN/GRC-78, -79, -80 (Bands B and D); AN/GRC-81, -82, -83 (Band C) and shelter-housed AN/MRC-54(V), -69(V).

This basic set comprises all components necessary for simultaneous point-to-point transmission and reception of a maximum of 12 or 24 multiplexed telephone channels. The channel multiplexing equipment is not included in this equipment, which is designed to accommodate baseband signals generated by Telephone Terminal AN/TCC-7 or similar telephone carrier equipment.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

Frequency Range in mc:  
Band A: 50 to 100

**RADIO SET**

**AN/TRC-24( )**

- Band B: 100 to 225
- Band C: 225 to 400
- Band D: 400 to 600
- Band F: 790-915 (low)
- Band F: 840-925 (high)
- Band J: 1350-1525 (low)
- Band J: 1525-1700 (med)
- Band J: 1700-1875 (high)

*Type Modulation:* fm

*Type of Signal:* Voice (up to 12 or 24 channels with additional equipment)

*Baseband Frequency Range:* 250 to 68,000 cps

*Power Output:* 50 to 120 w

*Power Requirements:*

Transmitter: 875 va, 115-v 50-60-cycle ac

Receiver: 185 w, 115-v 50/60-cycle ac

*Major Units:*

1	OA-482/TRC	18 $\frac{1}{4}$ " x 12 $\frac{1}{4}$ " x 20 $\frac{1}{2}$ "	
1	OA-483/TRC		
	AM-913/TRC		
	AM-914/TRC		
	TF-167/TRC		
	CY-1338/TRC	18 $\frac{3}{8}$ " x 17 $\frac{1}{8}$ " x 20 $\frac{5}{8}$ "	39 lbs
	PP-685/TRC		
	CY-1340/TRC	17 $\frac{1}{8}$ " x 18 $\frac{3}{8}$ " x 20 $\frac{5}{8}$ "	115 lbs
	AM-912/TRC		
	AM-915/TRC		
	R-417/TRC		
	T-302/TRC		
	T-302/TRC	18 $\frac{1}{2}$ " x 22" x 20 $\frac{5}{8}$ "	120.75 lbs
	R-417/TRC	17 $\frac{1}{2}$ " x 18 $\frac{1}{4}$ " x 20 $\frac{5}{8}$ "	96.5 lbs
	PP-685/TRC	17 $\frac{1}{2}$ " x 18 $\frac{3}{8}$ " x 20 $\frac{5}{8}$ "	115 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

- TM 11-5820-203-15
- TM 11-5820-287-10
- TO 31R2-2TRC24-11
- MIL -R-10616

RADIO SET  
**AN/TRC-27**

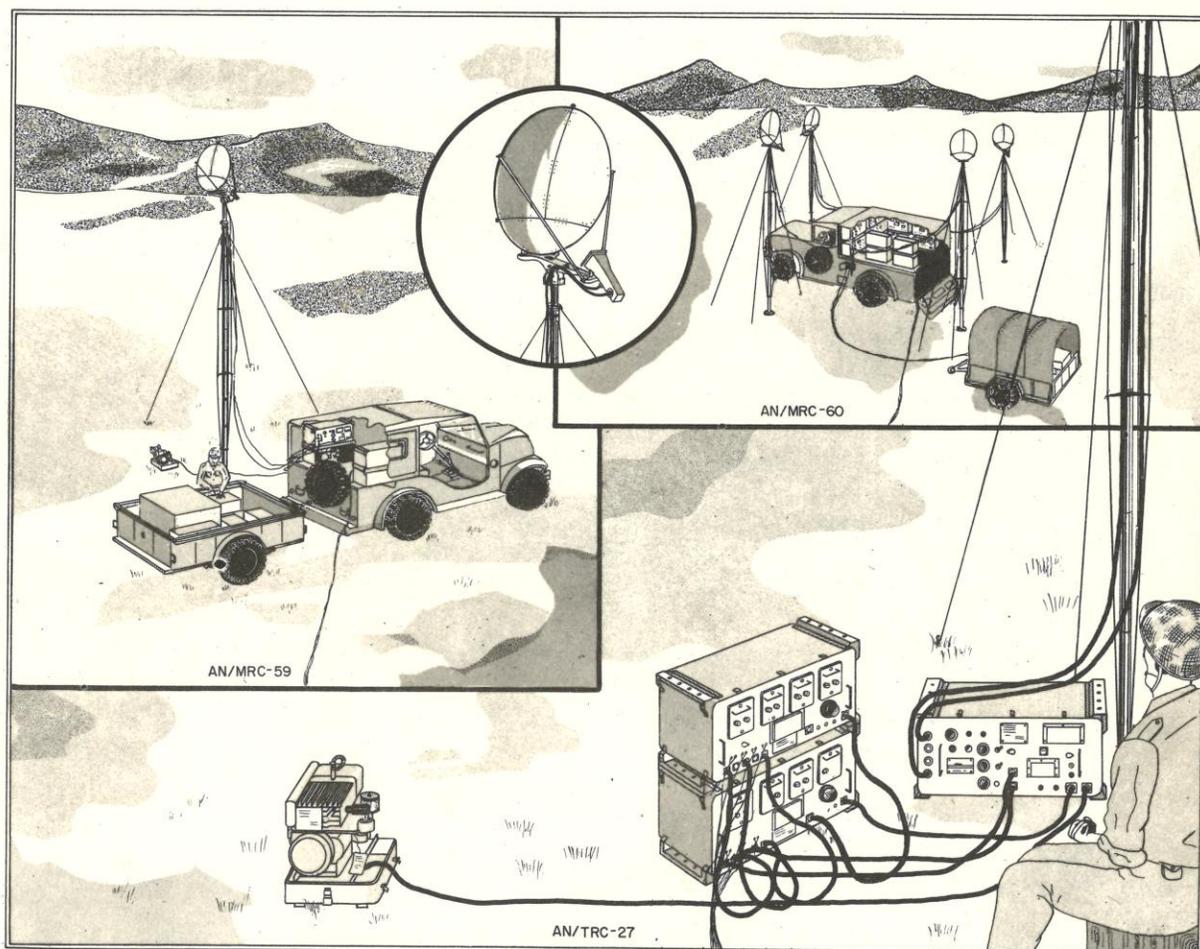
1 March 1964

Cog. Serv: USN FSN: 5820-564-2504

USA Line Item No.: 647089

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-A			

Manufacturer: CRP (49956)

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/TRC-27 is a small, light weight, portable radio communications set. A communications system of two AN/TRC-27 terminals provides two-way microwave radio transmission for eight telephone channels. The radio set is for operation in forward areas. It will operate with a 26 db fade margin over a 10 mile line-of-sight path, or with a 10 db fade mar-

**RADIO SET**

**AN/TRC-27**

gin over a 60 mile line-of-sight path, (a 26 db fade margin permits a reliability of 99.7 percent, while a 10 db fade-margin permits a reliability of 90 percent). Line-of-sight ranges up to 200 miles are theoretically possible, with corresponding decreases in fade margin and reliability. The equipment operates on any one of 30 suggested channels using pulse position modulation.

The AN/TRC-27, AN/MRC-59, and AN/MRC-60 equipments may be used in a multi-hop radio relay link consisting of two terminal stations and up to three repeater stations spaced 10 miles or more apart, depending on terrain and propagation conditions. These equipments may also be used in a network with 24-channel Omnidirectional Radio Set AN/GRC-37. By using additional multiplexing equipment such as the AN/TCC-14, these equipments can be used to transmit and receive teletypewriter and facsimile signals.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

Radio Set AN/TRC-27 contains the same components as Radio Set AN/MRC-59, except that the AN/MRC-59 is truck mounted, and different power sources are supplied. Radio Set AN/TRC-27 contains the same component types as Radio Set AN/MRC-60 except that the AN/MRC-60 contains the same electronic units as four AN/TRC-27 equipments and is truck mounted.

**TECHNICAL DESCRIPTION:**

*Frequency Range:* 4400-5000 mc (shf)

*Type of Frequency Control:*

Transmitter: Variable frequency triode oscillator

Receiver: Variable frequency klystron local oscillator

Type of Emission: P3f (pulse position modulation)

Normal Carrier Output: 1.5 w, peak

Type of Receiver: Superheterodyne, 60 mc If

Attenuation: Max allowable space attenuation is 157 db

*Temperature Range:* -54 C to +65 degrees C

*Multiplexer Characteristics:*

Number of Channels: 4 duplex (8 per installation)

Channel Termination: 2-wire, 600-ohm

Type of Multiplexing: Time division

Type of Modulation: Pulse position

Aduio Bandwidth: 30-35000 cps

Ringng Frequency: 25 cps

Frame Frequency: 8 kc

*Antenna:* 30-inch paraboloid reflector with off-center diplexing horn, vertical and horizontal polarization

*Power Supplies:* Self contained in receiver-transmitter and multiplexer units.

*Primary Power Sources:* 400-cy Generator Set, Gasoline Engine PU-278/TRC-27 (2 supplied)

Major Units:

1	RT-252/TRC-27	14 <sup>5</sup> / <sub>16</sub> " x 25 <sup>5</sup> / <sub>16</sub> " x 11 <sup>3</sup> / <sub>8</sub> "	61 lbs
2	TD-101/TRC-27	14 <sup>5</sup> / <sub>16</sub> " x 25 <sup>5</sup> / <sub>16</sub> " x 9 <sup>7</sup> / <sub>8</sub> "	55 lbs
2	PU-278/TRC-27	17 <sup>5</sup> / <sub>16</sub> " x 13 <sup>1</sup> / <sub>4</sub> " x 12 <sup>5</sup> / <sub>8</sub> "	51 lbs
1	OA-2123/GRC	27" x 17" x 9"	58 lbs

RADIO SET

**AN/TRC-27**

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 93098(A)



RADIO SET  
**AN/TRC-28**

1 March 1964

Cog. Serv: USA FSN: 5820-503-1130

USA Line Item No.: 647090

	USA	USN	USAF	USMC
<b>STATUS OR TYPE CLASS.:</b>	Std-A		Std	

**Manufacturer:** Motorola, Inc**FUNCTIONAL DESCRIPTION:**

Radio Set AN/TRC-28 is vhf, fm voice communication equipment designed for fixed-station operation, with remote control facilities up to 10 miles. It is used primarily by military police, guard and security organizations.

Operation is primarily simplex; duplex operation is possible with two frequency assignments and additional equipment.

This equipment may also be used as an automatic relay station (retransmission) to extend the distance between terminal stations.

Remote control with intercommunication between the local and distant operating locations is provided; local start-stop operation must be used.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:***Frequency Range in mc:* 152 to 174*Type Modulation:* fm*Type of Signal:* Voice*Power Output:* 45 w without amplifier; 250 w with amplifier*Power Requirements:*

Power Supply PP-638/U: 660 w, 115/230-c 60-cy ac

Power Supply PP-804/U: 230 va, 115/230-v 50-65 cy ac

Power Supply PP-846/U: 46 va, 115/230-v 50-65 cy ac

*Major Units:*

1	AT-438/GR	6½" x 31" x 5½"	10 lbs
1	CY-1221( )/G	21¼" x 16⅞" x 20½"	58 lbs
1	PP-638( )/U	26¾" x 16½" x 20¼"	187 lbs
1	PP-804/U	8⅝" x 7" x 14½"	40 lbs
2	PP-846/U	5⅛" x 6¼" x 7⅛"	10 lbs
1	AM-494/GR	9¾" x 9½" x 15"	13.5 lbs
1	R-394/U	8½" x 14½" x 5¾"	19 lbs
1	C-844/U	8¾" x 14¾" x 5⅞"	10 lbs
1	C-845/U	8⅞" x 13¾" x 13½"	17.5 lbs
1	T-416/GR	8½" x 14½" x 4½"	9 lbs

**TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**

TM 11-252

MIL-N-115399

# RADIO SET AN/TRC-28

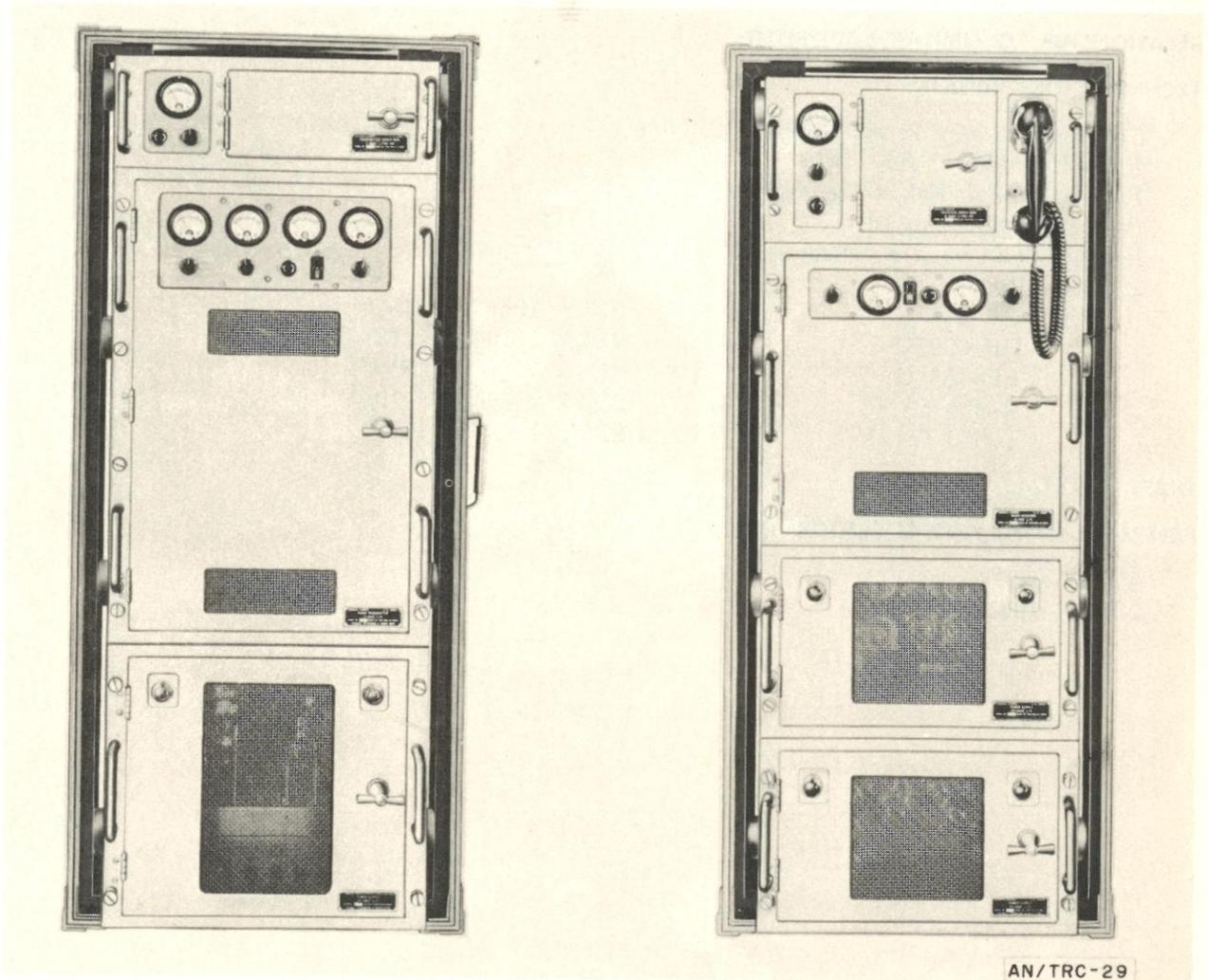


RADIO SET  
**AN/TRC-29**

1 March 1964  
 Cog. Serv: USA FSN: 5820-503-2581  
 USA Line Item No.: 647100

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-A		Std	

Manufacturer: International Tel & Tel Corp, Radio Receptor Co, Inc



**FUNCTIONAL DESCRIPTION:**

Radio Set AN/TRC-29 is a two-way, multichannel fm, microwave receiving and transmitting equipment used in radio-relay systems. Although normally used in a rear area radio-relay

**RADIO SET**

**AN/TRC-29**

system, it is built to satisfy full field service handling requirements. It is contained in equipment transit cases and can be transported by suitable military vehicles, or it can be mounted in standard relay racks.

This equipment consists of receivers, transmitters, and associated components for handling multichannel telephone, facsimile, telegraph, radar data, or television signals. It can be arranged in a radio-relay system as a terminal or as repeater stations with additional equipment.

This set is designed to operate continuously for long periods of time. It will provide communication trunk service over as many as 20 tandem hops to form circuits up to 600 miles in length.

This equipment is used as a major component of Radio Terminal Set AN/TRC-38 and Radio Repeater Sets AN/TRC-39 through -41

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Frequency Range in mc:* 1,700 to 2,400

*Type Modulation:* fm

*Type of Signal:* Fsk, voice, facsimile, TV, composite

*Power Output:* 4 to 10 w

*Power Requirements:* 2,300 w, 115/230-v 50/60 cy ac

*Major Units:*

1	PP-689/G	21" x 19 <sup>3</sup> / <sub>8</sub> " x 21 <sup>1</sup> / <sub>4</sub> "
1	PP-690/G	21 <sup>5</sup> / <sub>8</sub> " x 19 <sup>3</sup> / <sub>8</sub> " x 12 <sup>1</sup> / <sub>4</sub> "
1	PP-764/G	21" x 19 <sup>3</sup> / <sub>8</sub> " x 17 <sup>1</sup> / <sub>2</sub> "
1	R-418/G	21 <sup>5</sup> / <sub>8</sub> " x 19 <sup>3</sup> / <sub>8</sub> " x 19 <sup>1</sup> / <sub>4</sub> "
1	T-303/G	21" x 19 <sup>3</sup> / <sub>8</sub> " x 17 <sup>1</sup> / <sub>2</sub> "

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-689

MIL-R-10615

RADIO SET  
AN/TRC-32

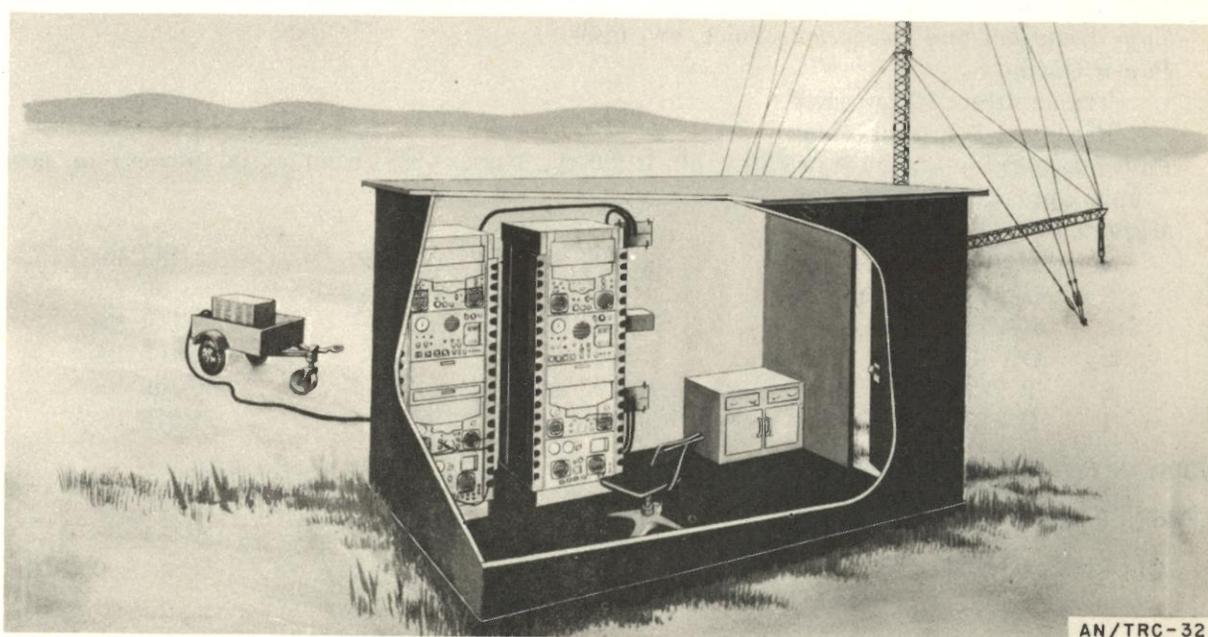
1 December 1958

Cog. Serv: USAF FSN:

USA Line Item No.:

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:			A/Std	

Manufacturer:

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/TRC-32 is a fixed, ground or mobile, ultra high frequency communication equipment designed for contact with aircraft equipped with Radio Sets AN/ARC-27, AN/ARC-33, AN/ARC-34, or similar units.

This equipment consists essentially of two transmitters, two receivers, and two units of all necessary items required in dual operation.

Radio Transmitter T-217/GR operates on any 10 preset channels between 225 and 399.9 megacycles. Radio Receiver R-278/GR operates on any 10 preset channels between 225 and 399.9 megacycles, including any two crystal-controlled guard frequencies in the 238 or 248 megacycle frequency range.

The set matches 53-ohm coaxial cable, such as RG-8/U. A total of three antennas are supplied as part of the set.

All equipment, with the essential operating accessories, is normally transported in 2½ ton truck (modified K-53) and a ½ ton trailer for the power unit.

Remote control operation is possible for a maximum distance of 10 miles over a single field wire pair.

RADIO SET

# AN/TRC-32

Radio Set AN/TRC-32 is intended to replace Radio Set AN/MRC-21.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Frequency Range in mc:* 225 to 399.9.  
*Number of Channels:* 1,750  
*Channel Separation:* 100 kc  
*Range of Guard Frequency:* 238 to 248 mc  
*Type Modulation:* am  
*Type Emission and Reception:* Voice, cw, mcw  
*Power Output:*

Transmitter: 100 w each  
Receiver: 3 w each (max)

*Power Requirements:* 115- or 230-v, 50- to 60-cy, 1-phase ac (commercial power) or power unit, approximately 4.5 kw

*Major Units:*

2	MD-129/GR	19" x 12 $\frac{1}{4}$ " x 22 $\frac{3}{8}$ "	180 lbs
2	C-565/GR	19" x 12 $\frac{1}{4}$ " x 11 $\frac{1}{2}$ "	90 lbs
2	R-278/GR	19" x 12 $\frac{1}{4}$ " x 22 $\frac{3}{8}$ "	144 lbs
2	OA-193/GR	23" x 13 $\frac{1}{2}$ " x 21"	105 lbs
2	T-217/GR	19" x 12 $\frac{1}{4}$ " x 22 $\frac{3}{8}$ "	150 lbs
1	K-53 (Modified)	130" x 96" x 256"	11,575 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

Eng-283 and 284

RADIO SET  
**AN/TRC-34( )**

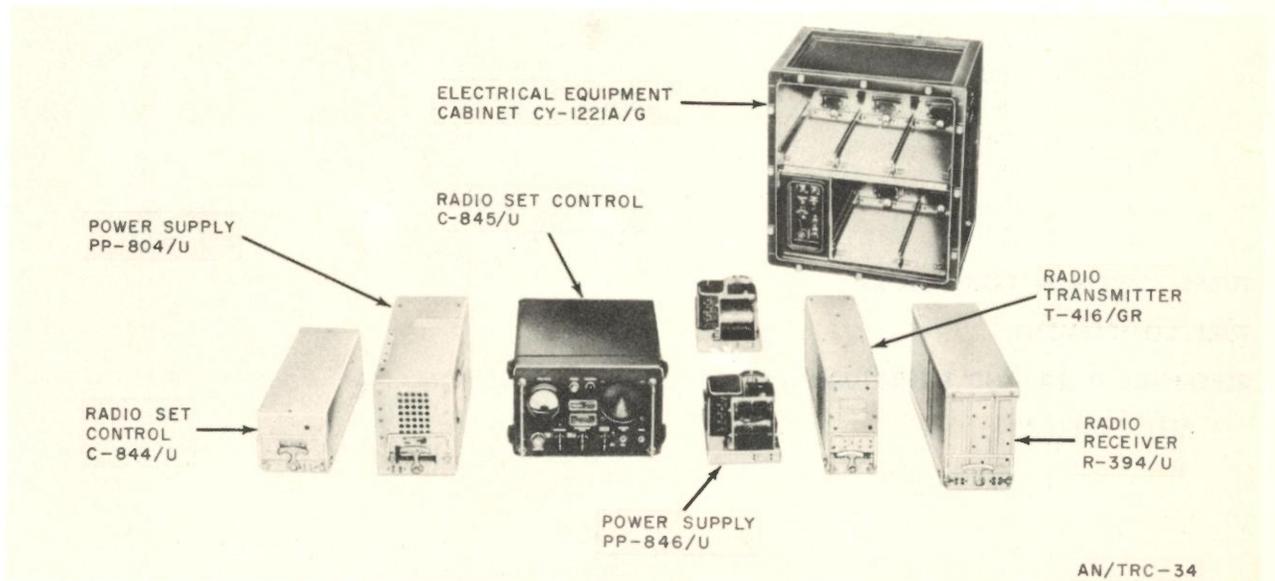
1 March 1964

Cog. Serv: USA FSN: 5820-503-1128

USA Line Item No.: 647150

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS:	Std-A		Std	

Manufacturer: Great American Industries, Inc  
Motorola, Inc

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/TRC-34 ( ) is a vhf, fm, low-powered radio receiving and transmitting equipment used in various communication applications. It is transportable. Its fixed-plant counterpart is Radio Set AN/FRC-27.

This equipment consists of receiver and transmitter components, local- and remote-control units, equipment cabinet, power supplies, and accessories.

It can be operated in simplex, duplex, and retransmission applications. Push-to-talk operation over either of two preset frequency channels is provided either locally or at a maximum distance of 10 miles from the transmitter site. Duplex operation requires an additional antenna and can be conducted from the local operating site only. The remote control unit can be used to transmit tone signals for signaling and for transmitter adjustment, to monitor reception, and to intercommunicate between the remote point and the set.

Radio Sets AN/TRC-34 and AN/TRC-27 are identical, except for a base stand supplied only with the latter.

RADIO SET

**AN/TRC-34( )**

RELATIONSHIP TO SIMILAR EQUIPMENT:

TECHNICAL DESCRIPTION:

*Frequency Range in mc:* 152 to 174

*Type Modulation:* fm

*Type of Signal:* Voice

*Transmitter Power Output:* 50 w

*Power Requirements:*

PP-804/U: 230 va, 115/230-v 50/60-cy ac

PP-846/U: 46 va, 115/230-v 50/60-cy ac

*Major Units:*

1	CY-1221/G		
1	PP-804/U	8 <sup>5</sup> / <sub>8</sub> " x 7" x 14 <sup>1</sup> / <sub>2</sub> "	40 lbs
2	PP-846/U	5 <sup>1</sup> / <sub>8</sub> " x 6 <sup>1</sup> / <sub>4</sub> " x 7 <sup>1</sup> / <sub>16</sub> "	10 lbs
1	R-394/U	8 <sup>1</sup> / <sub>2</sub> " x 14 <sup>1</sup> / <sub>2</sub> " x 5 <sup>3</sup> / <sub>4</sub> "	19 lbs
1	C-844/U	8 <sup>3</sup> / <sub>4</sub> " x 14 <sup>3</sup> / <sub>4</sub> " x 5 <sup>7</sup> / <sub>8</sub> "	10 lbs
1	C-845/U	8 <sup>7</sup> / <sub>16</sub> " x 13 <sup>3</sup> / <sub>4</sub> " x 13 <sup>1</sup> / <sub>2</sub> "	17.5 lbs
1	T-416/GR	8 <sup>1</sup> / <sub>2</sub> " x 14 <sup>1</sup> / <sub>2</sub> " x 4 <sup>1</sup> / <sub>2</sub> "	9 lbs

TUBES, CRYSTALS, TRANSISTORS:

TUBE COMPLEMENT:

REFERENCE DATA AND LITERATURE:

MIL-N-11539

RADIO TERMINAL SET  
**AN/TRC-35( )**

1 March 1964

Cog. Serv: USA FSN: 5820-503-2578

USA Line Item No.: 657255

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-A		Std	

Manufacturer: Philco Radio Corp  
 Western Electric Co, Inc

For Illustration see AN/TRC-24, page 653.

**FUNCTIONAL DESCRIPTION:**

Radio Terminal Set AN/TRC-35( ) is an fm radio transmitting and receiving equipment. It includes one complete Radio Set AN/TRC-24( ) plus additional spare components in sufficient quantities to insure 24-hour-a-day radio terminal operation.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

For detailed description and technical characteristics, refer to Radio Set AN/TRC-24( ).

*Major Units:*

- 1 OA-482/TRC
- 2 OA-483/TRC

**TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**

TM 11-787 TO 31R2-2TRC24-11  
 MIL-R-10616



RADIO RELAY SET  
**AN/TRC-36( )**

1 March 1964

Cog. Serv: USA FSN: 5820-569-0031

USA Line Item No.: 636330

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-A		Std	

Manufacturer: Philco Radio Corp  
Western Electric Co, Inc

For Illustration see AN/TRC-24, page 653.

**FUNCTIONAL DESCRIPTION:**

Radio Relay Set AN/TRC-36( ) is an fm radio repeater station used to extend the range of systems using Radio Terminal Set AN/TRC-35( ). It includes one complete Radio Set AN/TRC-24( ) plus two additional sets of radio components and sufficient accessories to insure 24-hour-a-day, radio-relay operation. Two sets of radio transmitting and receiving equipment are in operation at all times, with the third group of equipment as standby.

Multiplexing equipment is not included as part of this equipment, but may be separately provided to permit partial channel dropoff at any of the relay points using this equipment.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

For detailed description and technical characteristics, refer to Radio Set AN/TRC-24( ).  
*Major Units:*

3 OA-483/TRC

**TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**

TM 11-687/TO 31R2-2TRC24-11



RADIO TERMINAL SET  
**AN/TRC-38**

1 March 1964

Cog. Serv: USA FSN: 5820-545-7292

USA Line Item No.: 657219

	USA	USN	USMC	USAF
STATUS OR TYPE CLASS.:	Std-A			Std

Manufacturer:

For illustration see AN/TRC-29, page 661.

**FUNCTIONAL DESCRIPTION:**

Radio Terminal Set AN/TRC-38 consists of two Radio Sets AN/TRC-29 and one Multiplexer Set AN/TCC-13.

It provides microwave radio-relay terminal facilities for 23 voice channels.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

For technical characteristics of this equipment, see the entry under individual components, pages 572 and 661, respectively.

*Major Units:*

1	AN/TCC-13	60" x 64" x 26½"	1,284 lbs
2	AN/TRC-29	60" x 64" x 26½"	1,051 lbs

**TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**

TM 11-689  
 TM 11-2141



**RADIO REPEATER SET**  
**AN/TRC-39**

1 March 1964  
 Cog. Serv: USA FSN: 5820-501-3618  
 USA Line Item No.: 636360

	USA	USN	USAF	USMC
<b>STATUS OR TYPE CLASS.:</b>	Std-A		Std	

**Manufacturer:**

For Illustration see AN/TRC-29, page 661.

**FUNCTIONAL DESCRIPTION:**

Radio Repeater Set AN/TRC-39 consists of three Radio Sets AN/TRC-29.

It provides microwave radio-relay repeater facilities for the composite radio signals transmitted by Radio Terminal Set AN/TRC-38; Radio Repeater Set AN/TRC-40 or -41; or another AN/TRC-39. No facilities are provided by this equipment for translation of the composite signal, which consists of 23 voice channels.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

For technical characteristics of this equipment, see the entry for Radio Set AN/TRC-29, page 661.

*Major Units:*

3	AI/TRC-29	60" x 64" x 26½"	1,051 lbs
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**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-689



RADIO REPEATER SET  
**AN/TRC-40**

1 March 1964

Cog. Serv: USA FSN: 5820-646-4759

USA Line Item No.: 636361

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-A		Std	

Manufacturer:

For illustration see AN/TRC-29, page 661.

**FUNCTIONAL DESCRIPTION:**

Radio Repeater Set AN/TRC-40 consists of three Radio Sets AN/TRC-29 and one Pulse Form Restorer Group AN/TRA-10.

It provides microwave radio-relay repeater facilities for the composite radio signals transmitted by Radio Terminal Set AN/TRC-38; Radio Repeater Set AN/TRC-39 or -41; or another Radio Repeater Set AN/TRC-40. It also provides facilities to reshape the 23- or 45-channel pulse train received from the radio receiver into a standard wave shape before inserting the signal into the radio transmitter. This equipment (or Radio Repeater Set AN/TRC-41) is used once every four or five jumps throughout the system to increase the maximum number of jumps. In addition, this set provides for dropout and reinsertion of channels 1 and 2 of the 23-channel composite signal.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

For technical characteristics of this equipment, see the entries for Radio Set AN/TRC-29 and Pulse Form Restorer AN/TRA-10, pages 661 and 623, respectively.

*Major Units:*

1	AN/TRA-10	26½" x 27" x 60"	810 lbs
3	AN/TRC-29	60" x 64" x 26½"	1,051 lbs

**TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**

TM 11-689  
TM 11-2141



## RADIO REPEATER SET

## AN/TRC-41

1 March 1964

Cog. Serv: USA FSN: 5820-646-4760

USA Line Item No.: 636362

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-A		Std	

Manufacturer:

For illustration see AN/TRC-29, page 661.

**FUNCTIONAL DESCRIPTION:**

Radio Repeater Set AN/TRC-41 consists of three Radio Sets AN/TRC-29 and one Multiplexer Group AN/TCA-1.

It provides microwave radio-relay repeater facilities for the composite radio signals transmitted by Radio Terminal Set AN/TRC-38; Radio Repeater Set AN/TRC-39 or AN/TRC-40; or another Radio Repeater Set AN/TRC-41.

It provides the same pulse restoration facilities as provided by Pulse Form Restorer Group AN/TRA-10 in Radio Repeater Set AN/TRC-40. In addition, the AN/TRC-41 provides for drop-out of channels 1 to 8 of the 23-channel composite signal.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

For technical characteristics of this equipment, see the entries for Radio Set AN/TRC-29 and Multiplexer Group AN/TCA-1, pages 661 and 558, respectively.

*Major Units:*

1	AN/TCA-1	60" x 64" x 26½"	
3	AN/TRC-29	60" x 64" x 26½"	1.051 lbs

**TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**

TM 11-689  
TM 11-2141



RADIO SET  
**AN/TRC-42( )**

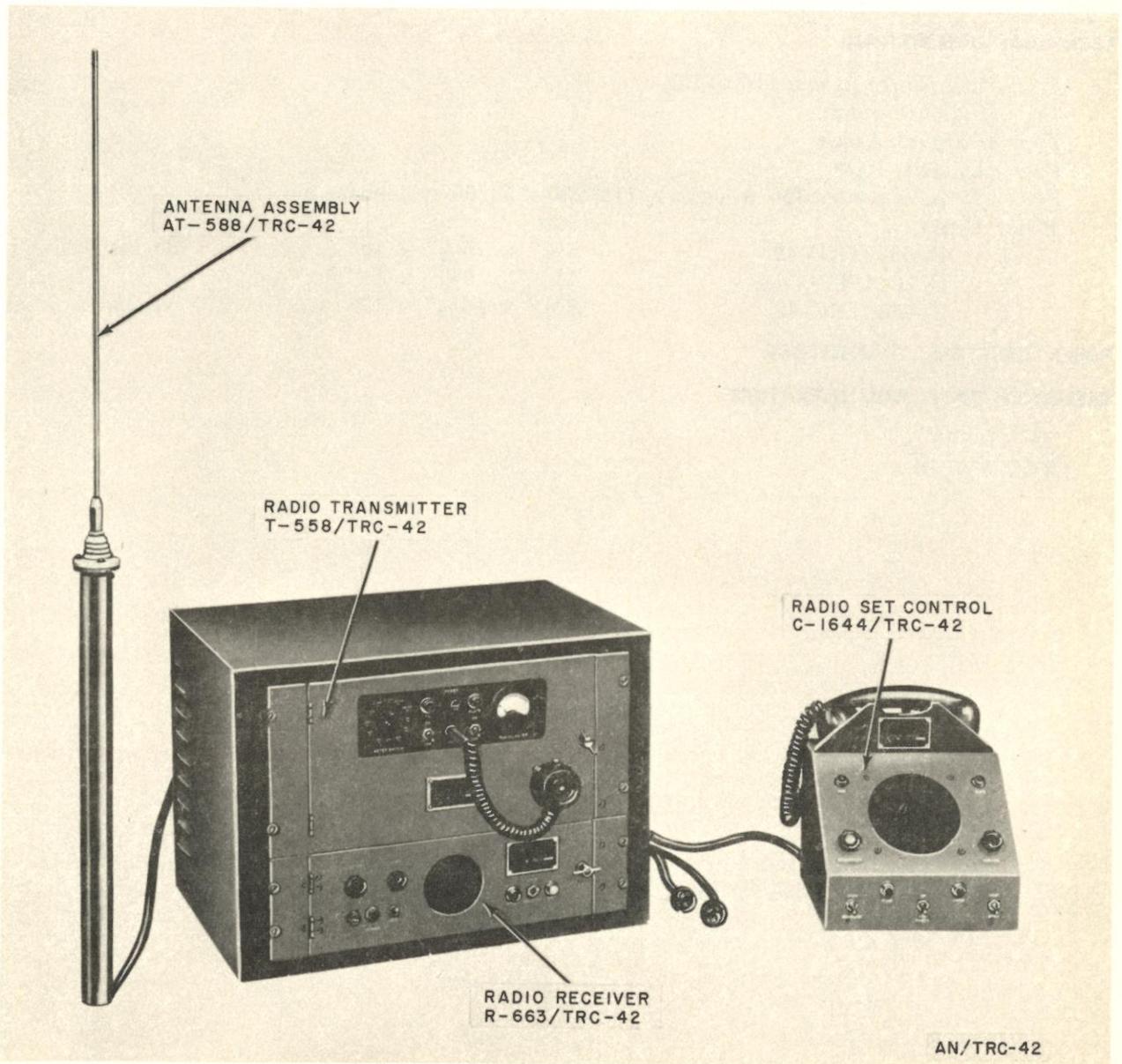
1 March 1964  
Cog. Serv: USA TSN: 5820-503-2582  
USA Line Item No.: 647300

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	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-B			

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Manufacturer: Varo Mfg Co Inc, Schuttig & Co Div



**RADIO SET**

**AN/TRC-42( )**

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/TRC-42( ) is a transportable vhf single-channel, two-way radio equipment used for ground-to-air communication.

This equipment consists of a radio receiver and a transmitter housed in a single cabinet, and includes a radio set control with handset and accessory items.

It may be operated in the cabinet supplied, or mounted on a standard 19-inch rack.

The radio set control enables operation of the radio equipment from a remote point.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Frequency Range in mc:* 116 to 132

*Type Modulation:* am

*Type of Signal:* Voice

*Power Output:* 10 w

*Power Requirements:* 350 w (max), 115/230-v 50/60-cy 1-phase ac

*Major Units:*

1	R-663/TRC-42	51 $\frac{1}{4}$ " x 15 $\frac{1}{2}$ " x 19"	30 lbs
1	C-1644/TRC-42	11 $\frac{3}{4}$ " x 9 $\frac{5}{8}$ " x 11"	
1	T-558/TRC-42	8 $\frac{3}{4}$ " x 14 $\frac{1}{2}$ " x 19"	47 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-221

RAC-1548 B

RADIO SET  
**AN/TRC-69**

1 March 1964  
 Cog. Ser: USAF FSN:  
 USA Line Item No.:

	USA	USN	USAF	USMC
<b>STATUS OR TYPE CLASS.:</b>			L/Std	

**Manufacturer:** Collins Radio Co

No Illustration Available

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/TRC-69 is an air and ground transportable transmitting and receiving equipment that provides two-way communication within its specified frequency range. It utilizes single sideband and/or a compatible amplitude modulated mode of transmission.

This equipment provides air-to-ground and ground-to-ground communications and allows duplex operation with 10 preset channels.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

None

**TECHNICAL DESCRIPTION:**

*Frequency Range in mc:* 2 to 29.999

*Numbers of Bands:* 4

*Number of Channels:* 28,000

*Channel Spacing:* 100 kc

*Type Modulation:* am

*Type Emission and Reception:* A3

*Transmitter Power Output:* 1,000 w nominal

*Power Requirements:* 115-v, 400 cy, 3-phase ac

*Major Units:*

- 1 F-355/UR( )
- 1 PU-419/TRC-69( )
- 2 R-761/ARC-58( )
- 1 T-605/ARC-58( )

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**



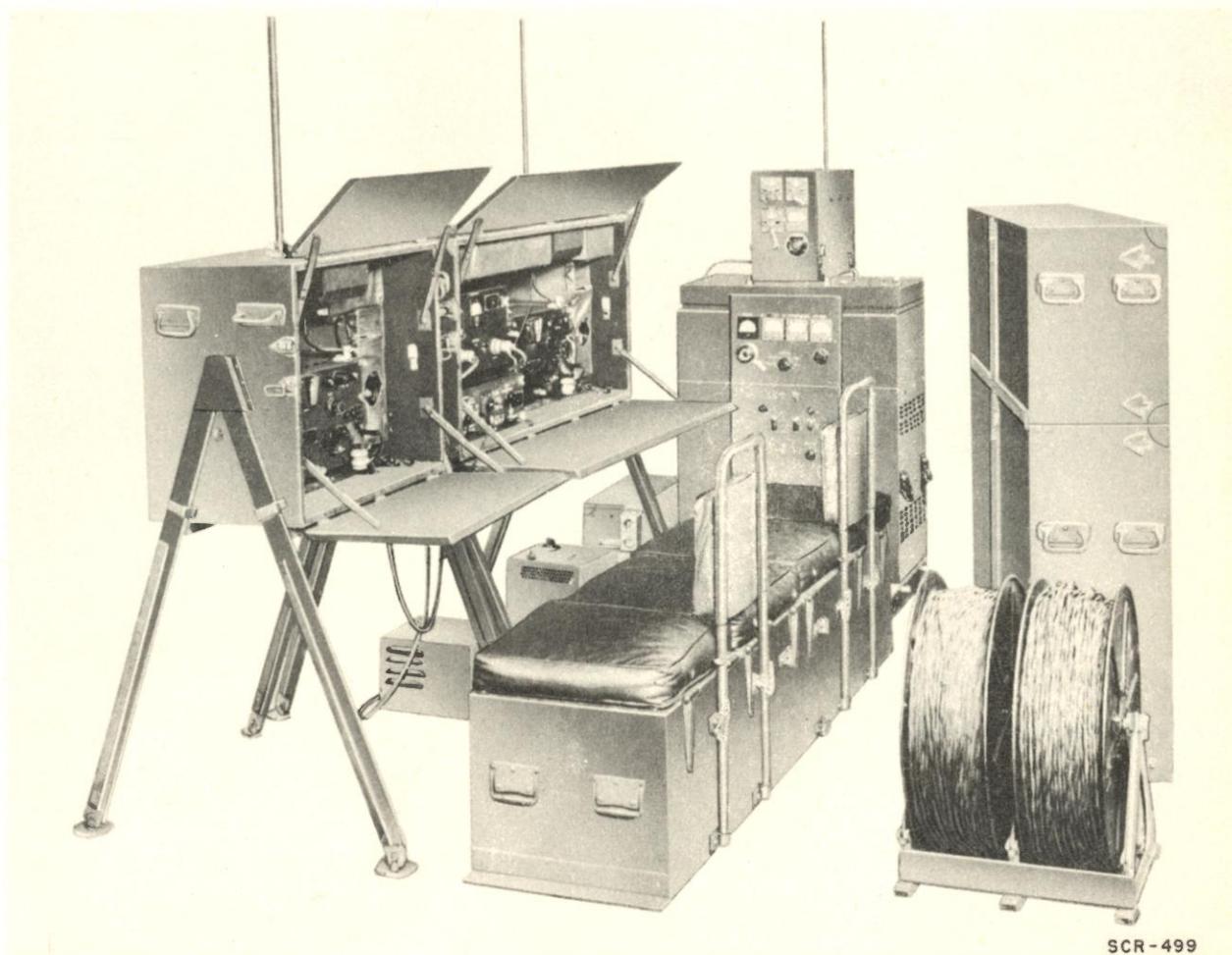
RADIO SET  
AN/TRC-type**SCR-499-( )**

1 March 1964

Cog. Serv: USA FSN: 5820-186-3550

USA Line Item No.: 652600

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	L/Std			
Manufacturer:	The Hallicrafter Co			



SCR-499

**FUNCTIONAL DESCRIPTION:**

Radio Set SCR-499-( ) is the air transportable version of Radio Set SCR-399 and is a medium power, field radio station for AM (voice, tone, and cw) communication over intermediate and long distance in semipermanent or fixed station applications.

**RADIO SET**  
**AN/TRC-type**

**SCR-499-( )**

This equipment consists of radio receiving and transmitting components plus associated power and control accessories, and is designed for installation in a sheltered or semipermanent location.

By means of standard remote control equipment this radio set can be operated from a distance of about 2 miles over a field telephone pair.

It can be arranged to operate in the 1-mc range by the addition of Frequency Conversion Kit MC-509.

It uses a long-wire or doublet antenna and includes a 5-kw field power unit.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

None

**TECHNICAL DESCRIPTION:**

*Frequency Range in mc:*

Transmitting: 2 to 18 (in 3 bands)

Receiving: 1.5 to 18 (in 6 bands)

*Type Modulation:* am

*Type of Signal:* voice, tone, or cw

*Power Output:*

Voice: 300 w

Cw: 400 w

*Power Requirements:* Power Unit PE-95 and 12-v storage battery; or 2,500 w (min), 115-v 60-cy ac commercial power

*Major Units:*

1	PE-95	75½" x 28½" x 38½"	1,545 lbs
1	BC-312	10" x 9½" x 18½"	58 lbs
1	BC-342	10" x 9½" x 18½"	61.5 lbs
1	BC-610	32⅝" x 21⅜" x 39⅞"	452 lbs
1	RA-63	13½" x 9½" x 7½"	29.25 lbs
1	BC-614	16" x 9¼" x 11"	31 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-281

(USA) 71-1683A

## RADIO CONTROL CENTRAL

## AN/TRQ-1

1 March 1964

Cog. Serv: USA FSN: 5820-243-3288

USA Line Item No.: 634700

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-C			

Manufacturer:

**FUNCTIONAL DESCRIPTION:**

Radio Control Central AN/TRQ-1 is a transportable control station used for monitoring, intercept, and mobile communication applications in the mf, hf, and vhf bands.

This equipment consists of radio components, telephone switching equipment, test items and accessories installed in a field-type shelter that can be transported on a 2½-ton 6 x 6, cargo truck. It includes necessary types of antenna equipment.

This set has four operating positions. At all positions coverage of medium and high frequencies is maintained, and provision is made for wire communication, with and remote control of, radio transmitters located at distances up to 1 mile from the control central. Position 3, in addition, communicates with similar control centrals by means of fm radio and 12-line switch-board.

This equipment derives its power from a trailer-drawn power unit and includes a battery charger.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

None

**TECHNICAL DESCRIPTION:***Frequency Range in mc:*

Positions 1, 2, and 4: 0.15 to 18.0

Position 3: 1.25 to 143.0; 27.0 to 38.9 (fm)

*Type Modulation:*

Positions 1, 2, and 4: am

Position 3: am and fm

*Type of Signal:* Voice, tone, and cw*Power Output* (Radio Transmitter BC-924): 30 to 35 w*Power Requirements:*

ac: 10 kw, 115 v, 60 cy from Power Unit PE-95 (-G or -H)

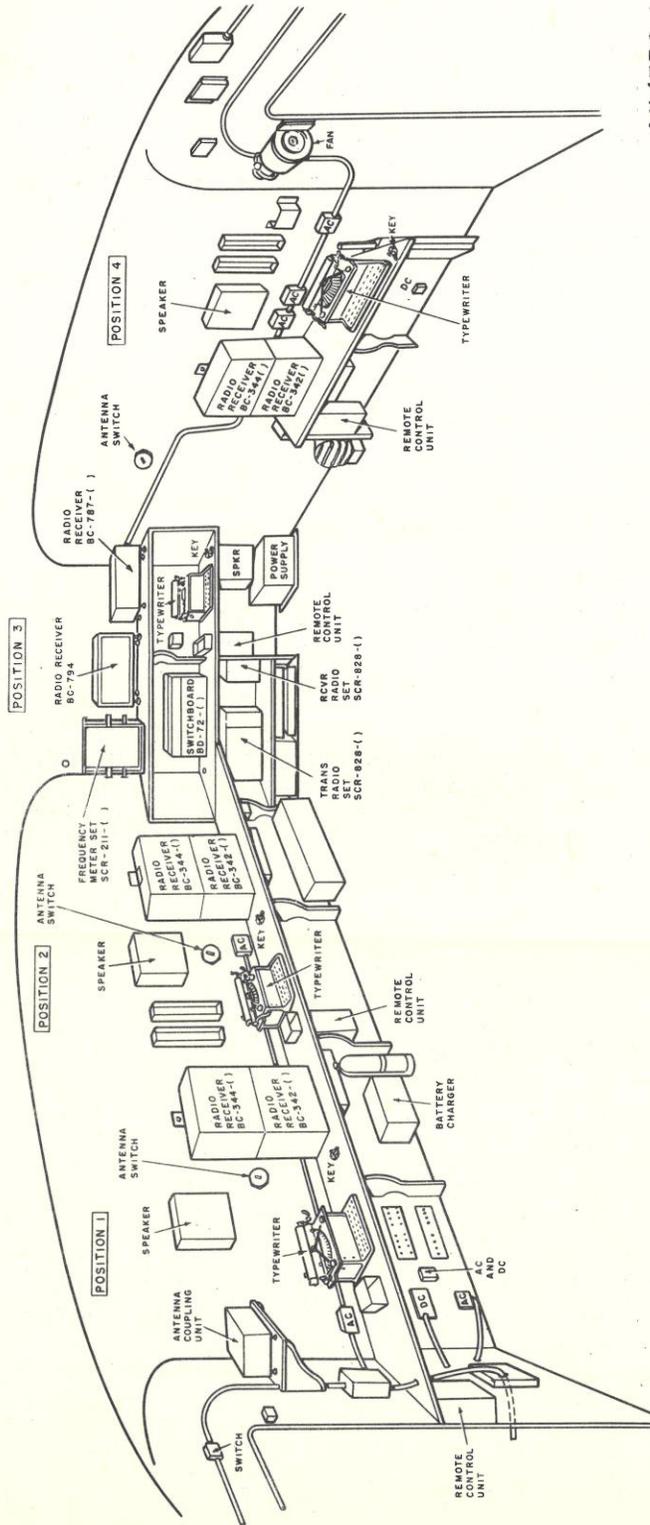
dc: 12-v storage battery; 10 Batteries BA-30; and 6 Batteries BA-2

*Major Units:*

1	SCR-211	9¼" x 13½" x 9"	38 lbs
1	Unit RA-84		
1	PE-95-G	72½" x 28½" x 38½"	1,545 lbs
3	BC-342	10" x 9½" x 18½"	61.5 lbs
3	BC-344	10" x 9½" x 18½"	61.5 lbs

RADIO CONTROL CENTRAL

AN/TRQ-1



AN/TRQ-1

RADIO CONTROL CENTRAL

**AN/TRQ-1**

1	BC-794	10½" x 19" x 15¾"	55 lbs
1	S-36		
1	SCR-828-A		373.5 lbs
4	C-103/TRQ-1		
1	BD-72		72 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-2619  
(USA) 271-3081

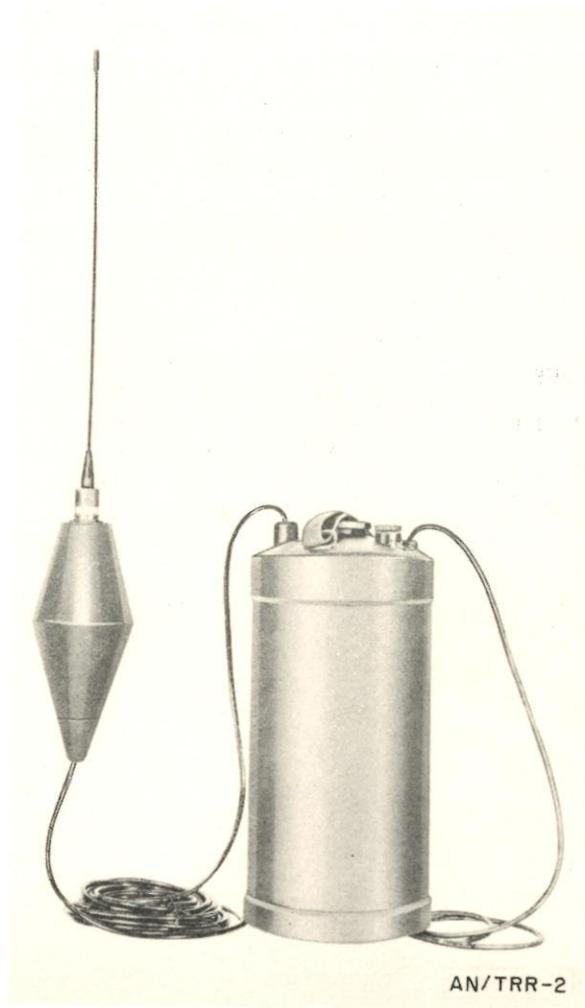


RADIO SET  
**AN/TRR-2**

1 March 1964  
 Cog. Serv: USA FSN: 5820-221-0176  
 USA Line Item No.: 647600

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-A			

Manufacturer: Submarine Signal Co



**FUNCTIONAL DESCRIPTION:**

Radio Set AN/TRR-2 is a radio receiver used in conjunction with Radio Set AN/TRT-1 to comprise a remote detonating system for land and water mines.

**RADIO SET**

**AN/TRR-2**

This receiving set is connected to the detonating device and is left in operation. Selective detonating of any one, or group, of mines is available in this system by selection of coded signal combinations of radio frequency, audio tone signals, and pulse code groups. A total of 21,600 different code combinations is available.

This equipment is installed in a waterproof container, and the antenna can be mounted on a float and connected to the receiver through coaxial cable for underwater operation.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

None

**TECHNICAL DESCRIPTION:**

Frequency Range in mc: 28 to 40 (25 channels 0.5 mc apart; presently available for operation on only 32.0, 31.5, 31.0, 30.5, 30.0, and 29.5 mc)

Type Modulation: am

Type of Signal: Coded pulses of definite rf and audio frequency

Power Requirements: 570 mw from eight Batteries BA-2, one Battery BA-34, and two Batteries BA-35

*Major Units:*

1	Antenna and float	38"	4 lbs
1	Radio receiver	20.5" x 9"	51 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-269 (USA) 471-2118

## RADIO RECEIVING SET

## AN/TRR-7

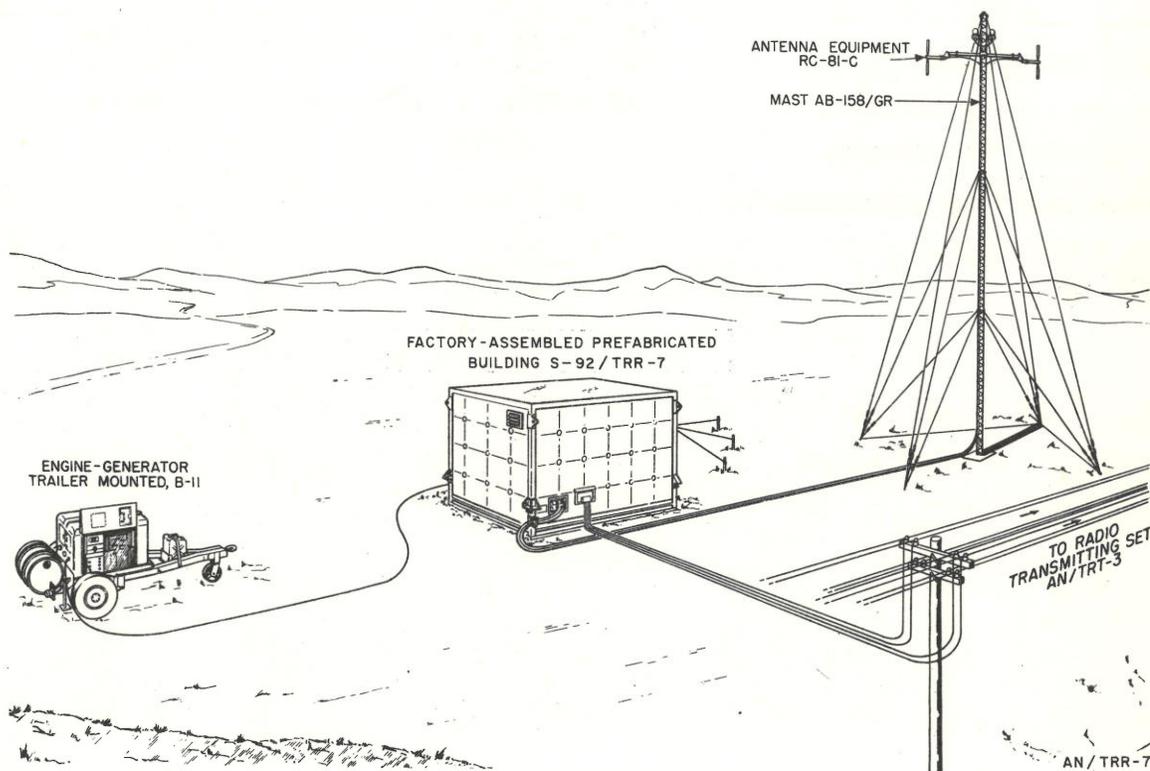
1 March 1964

Cog. Serv: USAF FSN:

USA Line Item No.:

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:			Std	

Manufacturer:

**FUNCTIONAL DESCRIPTION:**

Radio Receiving Set AN/TRR-7 is a complete radio receiving station used for air-to-ground communication. It may also be employed to provide two-way ground-to-air communication when used with Radio Transmitting Set AN/TRT-3, which is a complete mobile radio transmitting station operable through remote control from the radio receiving site.

This equipment includes two radio receivers housed in a prefabricated building. A trailer-mounted engine generator is provided to furnish the necessary power when a suitable commercial power source is not available.

The set is intended to replace Radio Set SCR-574-A.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

None

**RADIO RECEIVING SET**

**AN/TRR-7**

*Frequency Range in mc:* 100 to 156

*Type Modulation:* am

*Type Reception:* Ad, A3 (cw, voice)

*Power Output:* 1.2 w

*Power Requirements:* 6.3 v, 3.5 amp ac; 115-v 1-phase ac (for lighting and ventilation blower motors); 60 ma dc at 210 v

*Major Units:*

2	RC-81-C		6.75 lbs
1	S-92/TRR-7	140 <sup>3</sup> / <sub>4</sub> " x 84" x 77"	3,300 lbs
1	B-11	125" x 63" x 65"	2,450 lbs
1	OA-582/TRR-7	19" x 12 <sup>7</sup> / <sub>8</sub> " x 11"	394 lbs
1	OA-583/TRR-7	19" x 12 <sup>7</sup> / <sub>8</sub> " x 11"	268 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

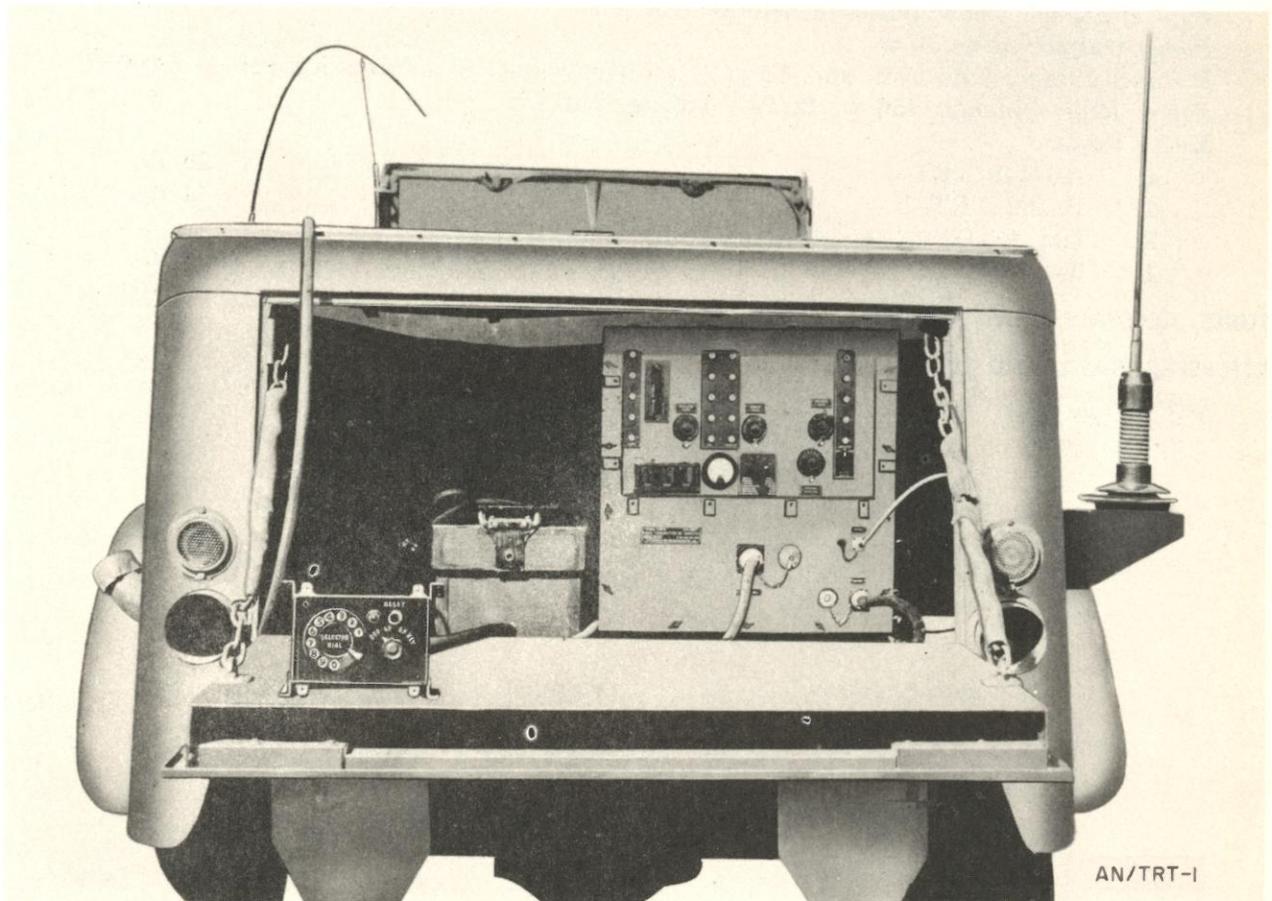
TO 31R2-2TRR7-( )

ENG-317

RADIO SET  
AN/TRT-1

1 March 1964  
Cog. Serv: USA FSN: 5820-164-7144  
USA Line Item No.: 647700

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-A			
Manufacturer:	Submarine Signal Co			



**FUNCTIONAL DESCRIPTION:**

Radio Set AN/TRT-1 is a radio transmitter used in conjunction with Radio Set AN/TRR-2 to comprise a remote detonating system for land and water mines.

Selective detonation is available by adjustment of transmitter RF, audio frequency tone, and coded pulses to correspond with the preset code in the desired Radio Set AN/TRR-2. A total of 21,600 different code combinations are presently available.

**RADIO SET**

**AN/TRT-1**

This equipment can be installed in a vehicle, an aircraft or placed on the ground. An external source of 12- or 24-v dc power is required.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

None

**TECHNICAL DESCRIPTION:**

*Frequency Range in mc:* 28 to 40 (25 channels 0.5 mc apart; presently available for operation on only 32.0, 31.5, 31.0, 30.5, 30.0, and 29.5 mc)

*Type Modulation:* am

*Type of Signal:* Coded pulses of definite rf and af

*Power Output:* 40 to 50 w

*Distance Range:* 8 mi over land, 12 to 20 mi over water, 40 mi from aircraft at 5,000 ft

*Power Requirements:* 456 w, 12/24-v storage battery

*Major Units:*

1	AS-149/TRT-1		20 lbs
1	C-152/TRT-1	5½" x 7" x 5½"	4 lbs
2	DM-35-D		
1	T-87/TRT-1	24½" x 14" x 23"	99 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-269

USA 471-2118

RADIO TRANSMITTER SET  
AN/TRT-3

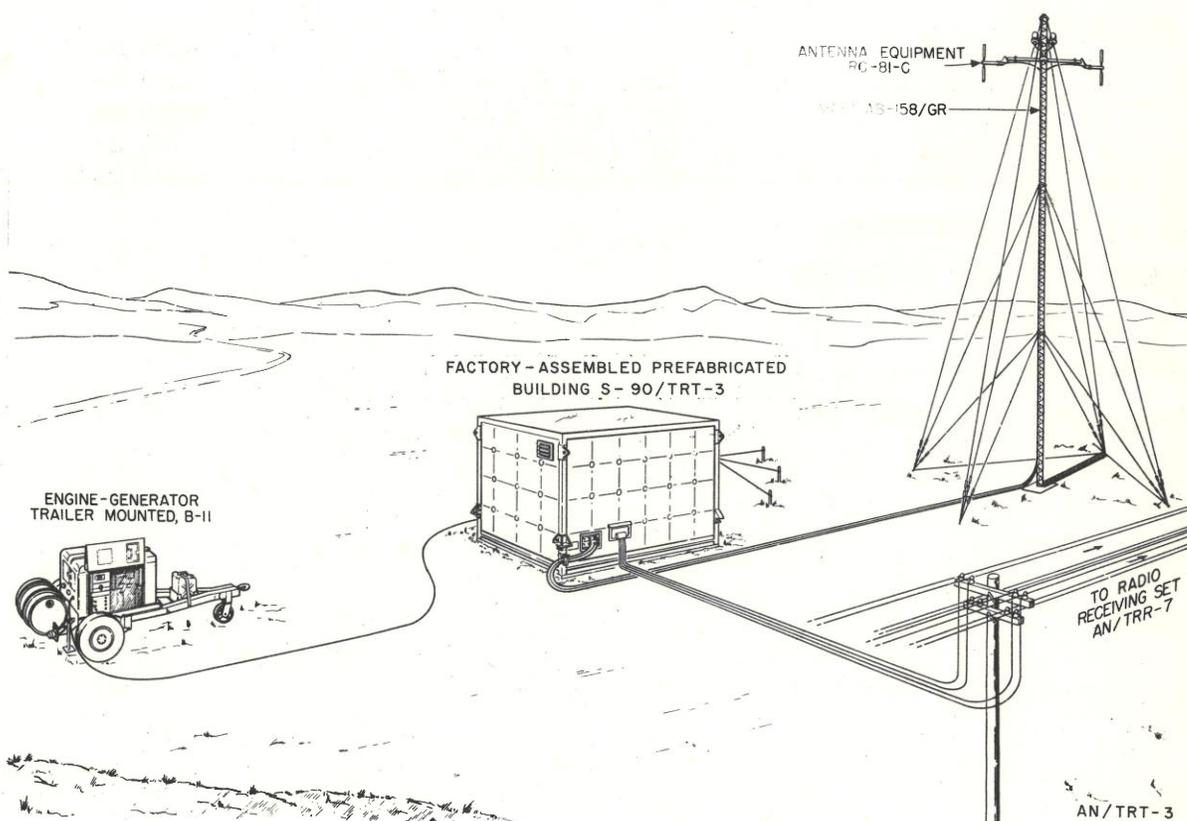
1 March 1964

Cog. Serv: USAF FSN:

USA Line Item No.:

USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:			Std

Manufacturer:

**FUNCTIONAL DESCRIPTION:**

Radio Transmitting Set AN/TRT-3 is a complete mobile radio transmitting station equipped for local or remote radiotelephone and radiotelegraph operation in ground-to-air communication.

The set has two transmitters that can be operated simultaneously on any two desired channels. Operated in conjunction with Radio Receiving Set AN/TRR-7, two-way communication with aircraft or remote radiotelephone and radiotelegraph operation is possible.

This equipment consists essentially of two transmitters housed in a prefabricated building. The building is equipped with alternating current power. Monitoring equipment provides facilities for local and remote operation of the transmitters, and also makes possible two-way telephone communication with as many as five mobile radio stations.

RADIO TRANSMITTER SET

**AN/TRT-3**

RELATIONSHIP TO SIMILAR EQUIPMENT:

None

TECHNICAL DESCRIPTION:

*Frequency Range in mc:* 100 to 156

*Type Modulation:* aM

*Type Emission:* A2, A3 (tone, voice)

*Power Output:* 50 w

*Power Requirements:* 4.5 kw, 115- or 230-v, 50- to 60-cy, 1-phase ac

*Major Units:*

2	RC-81-C		6.75 lbs
1	S-90/TRT-3	140 <sup>3</sup> / <sub>4</sub> " x 84" x 77 <sup>3</sup> / <sub>4</sub> "	3,300 lbs
1	B-11	125" x 63" x 65"	2,450 lbs
1	RC-80-A	72" x 20 <sup>1</sup> / <sub>2</sub> " x 3"	163 lbs
2	BC-640-D	21 <sup>1</sup> / <sub>4</sub> " x 20" x 72"	601 lbs

TUBES, CRYSTALS, TRANSISTORS:

REFERENCE DATA AND LITERATURE:

TO 31R2-2TRT3-( )  
ENG-322

RADIO TRANSMITTER  
AN/TRT-type**T-303A/G**

1 March 1964

Cog. Serv: USA FSN: 5820-503-3422

USA Line Item No.:

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-A			

Manufacturer:

For illustration see AN/TRC-29, page 661.

**FUNCTIONAL DESCRIPTION:**

Radio Transmitter T-303A/G is designed as the transmitting component of Radio Set AN/TRC-29. It converts a video signal output from the multiplexer unit (such as Multiplexer Set AN/TCC-13, used in Radio Terminal Set AN/TRC-38) into an fm microwave carrier. It is designed for rack mounting, and is not readily adaptable for general use without its companion components in Radio Set AN/TRC-29.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

None

**TECHNICAL DESCRIPTION:***Frequency Range in mc:* 1,7000*Frequency Control:* crystal*Type Emission:* composite fm*Power Output:* 8 w at 1,700 mc; 6 w at 2,000 mc; 5 w at 2,200 mc; 4 w at 2,400 mc*Power Requirements:* 115/230-v 50-60-cy ac*Major Units:*

1 T-303A/G

19 $\frac{3}{8}$ " x 21 $\frac{5}{8}$ " x 29 $\frac{3}{4}$ "**TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**

TM 11/689



ORDER WIRE TRANSMITTER AN/TRC-type

**T-389A/TRC-29**

1 March 1964

Cog. Serv: USA FSN:

USA Line Item No.:

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-A			

Manufacturer:

For illustration see AN/TRC-29, page 661.

**FUNCTIONAL DESCRIPTION:**

Order Wire Transistor T-389A/TRC-29 is the transmitting component of the separate order-wire facilities inorporated into Radio Set AN/TRC-29. This equipment provides low-quality voice facilities for transmission within the system of engineering and operational orders and information from one fixed installation to another fixed installation using certain microwave equipment.

It is designed for installation in the cabinet of the transmitting section of AN/TRC-29, and is not readily adaptable for general use without its companion components in Radio Set AN/TRC-29.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

None

**TECHNICAL DESCRIPTION:***Transmitting Frequency Range in mc: 5.5 to 6.5**Order-Wire Frequency Range: 300 to 3,450 cps**Keyed Carrier Signaling: 400 mc/500 ohms impedance power output**Power Requirements: 115-v, 50-60-cy 1-phase, ac**Major Units:*

1

7" x 19<sup>3</sup>/<sub>8</sub>" x 21<sup>5</sup>/<sub>8</sub>"**TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**

TM 11-689



## CONSOLE, COMMUNICATION CONTROL

## AN/TSA-16

1 March 1964

Cog. Serv: USMC FSN: 5895-841-5856

USA Line Item No.:

USA

USN

USAF

USMC

STATUS OR TYPE CLASS.:

Manufacturer: Siltronics, Inc

No Illustration Available

**FUNCTIONAL DESCRIPTION:**

The AN/TSA-16 is a field communication unit designed to receive, monitor and transmit both radio and telephone signals in conjunction with Combat Information Centrals AN/TSQ-5 and AN/TSQ-6. The console will receive and transmit with a 600-ohm impedance when connected to an external, single-phase, 108 to 121-v ac source at an operative frequency of from 58 to 420 cps.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

The AN/TSA-16 is used in conjunction with Combat Information Centrals AN/TSQ-5 and AN/TSQ-6.

**TECHNICAL DESCRIPTION:**

*Frequency range:* 58 to 420 cps

*Power input:* 108 to 121 v ac, single phase, three-wire NEMA cable six ft long, three-pin locking receptacle

*Audio output:* at 400 to 3500 cps

Radio transmitter—72 mw

Radio receiver—1 w to speaker, 150 mw to handset

*Major Units:*

20 $\frac{1}{4}$ " x 26 $\frac{1}{4}$ " x 30 $\frac{5}{8}$ "

137 lbs

**TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**

TM 03059A-15



## MANUAL TELEPHONE CENTRAL OFFICE

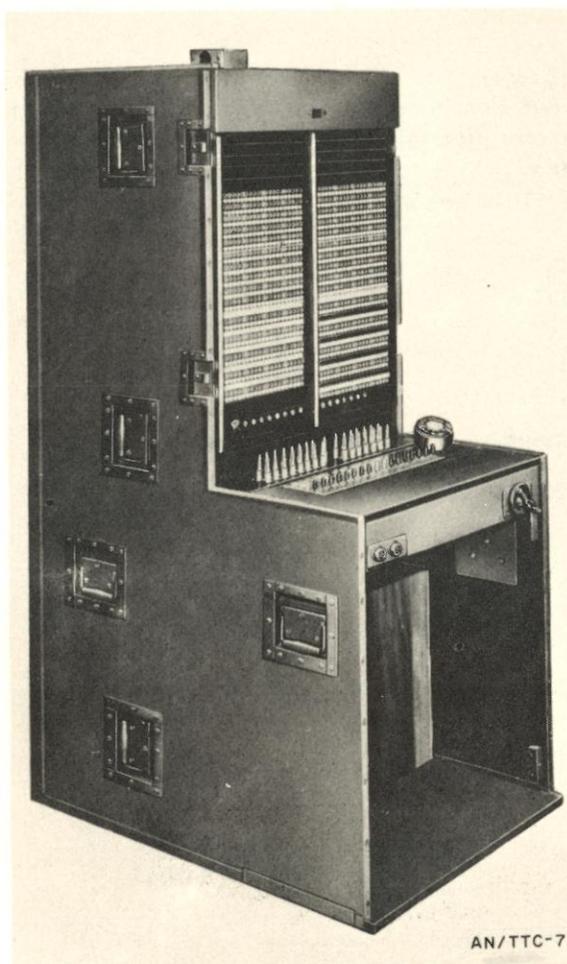
## AN/TTC-7

1 March 1964

Cog. Serv: USA FSN: 5805-503-1210

USA Line Item No.: 609536

	USA	USN	USAF
STATUS OR TYPE CLASS.:	Std-A		Std
Manufacturer:	General Dynamics Corp		



AN/TTC-7

**FUNCTIONAL DESCRIPTION:**

Manual Telephone Central Office AN/TTC-7 is a complete, transportable, three-position multiple field telephone exchange designed for rapid installation. It can handle local or common battery lines.

MANUAL TELEPHONE CENTRAL OFFICE

**AN/TTC-7**

This equipment consists essentially of three two-panel manual switchboards connected in multiple, each board with a maximum capacity of 200 lines and 20 trunks. It includes power and accessory components.

Each position is equipped with 15 cord circuits, thus giving a maximum capacity of 45 simultaneous calls. The face equipment of each position is wired to accommodate 500 lines and 80 trunks. For each additional 200 lines, three more switchboard positions are required.

To handle more than 400 lines, multiplying on a four-panel basis is recommended; in this manner, the exchange may be expanded to accommodate 1,000 lines and 160 trunks.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

None.

**TECHNICAL DESCRIPTION:**

*Number of Switchboard Positions:* 3 min expandable in multiples of 3 or 4

*Number and Type of Circuits:* 45 cord; 200 line; 20 trunk

*Ringling:* 20 cps at 90 v

*Power Requirements:* 110-v ac; 48-v dc

*Major Units:*

1	TA-223/TTC	26 <sup>5</sup> / <sub>8</sub> " x 31 <sup>5</sup> / <sub>16</sub> " x 17"	230 lbs
1	TA-224/TTC	26 <sup>5</sup> / <sub>8</sub> " x 31 <sup>5</sup> / <sub>16</sub> " x 17"	275 lbs
3	SB-249/TTC	72" x 26 <sup>3</sup> / <sub>16</sub> " x 26 <sup>1</sup> / <sub>2</sub> "	850 lbs
1	TA-257/TTC	26 <sup>5</sup> / <sub>8</sub> " x 31 <sup>5</sup> / <sub>16</sub> " x 17"	150 lbs
	TA-226/TTC		

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-2146

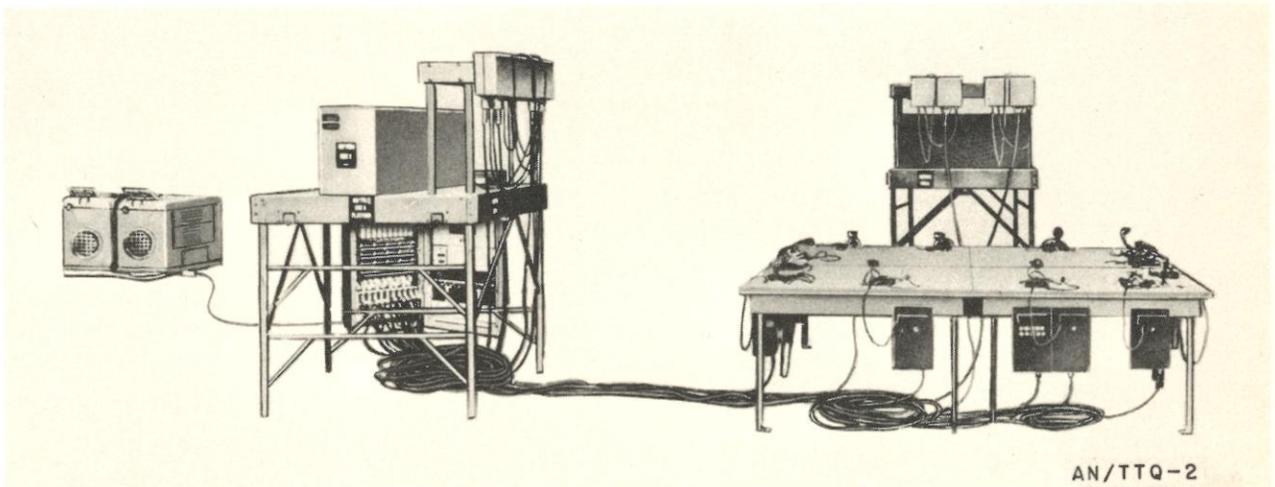
MIL-C-14255

OPERATIONS CENTER

## AN/TTQ-2

1 March 1964  
 Cog. Serv: USA FSN: 5895-171-2682  
 USA Line Item No.: 628830

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:			Std	
Manufacturer:	Western Electric Co			



AN/TTQ-2

**FUNCTIONAL DESCRIPTION:**

Operations Center AN/TTQ-2 is a complete, transportable assemblage of items that can be rapidly erected to serve as an antiaircraft operations room, an aircraft warning center or similar control center. It is designed to be used as the headquarters of an antiaircraft control system.

This equipment consists essentially of telephone, line switching, lighting, and plotting equipment and includes items of furniture, a power supply, control components, and supplies.

Communication between this center and other military units or installations is maintained by radio and telephone facilities. Internal operational and administrative communication is conducted by means of an intercommunication system. Switchboard BD-95 is used to connect to incoming wire facilities and to switch internal telephones serving the center.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

*Type Communication Circuits:* Conventional wire and radio circuits

*Controls:* 8 radio channel control circuits

*Power Requirements:* 115-v 60-cy ac

OPERATIONS CENTER

**AN/TTQ-2**

*Major Units:*

14	TA-10/TTQ	4 1/2" x 5/8" x 9"	
2	PE-197	44" x 31" x 22"	790 lbs
1	RE-24( )/TTQ-1	48" x 24" x 12"	220 lbs
1	SB-26/TTQ	48" x 24" x 12"	298 lbs
20	TA-9/TTQ	9" x 7 5/8" x 4 1/2"	

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-448  
(USA) 71-3170

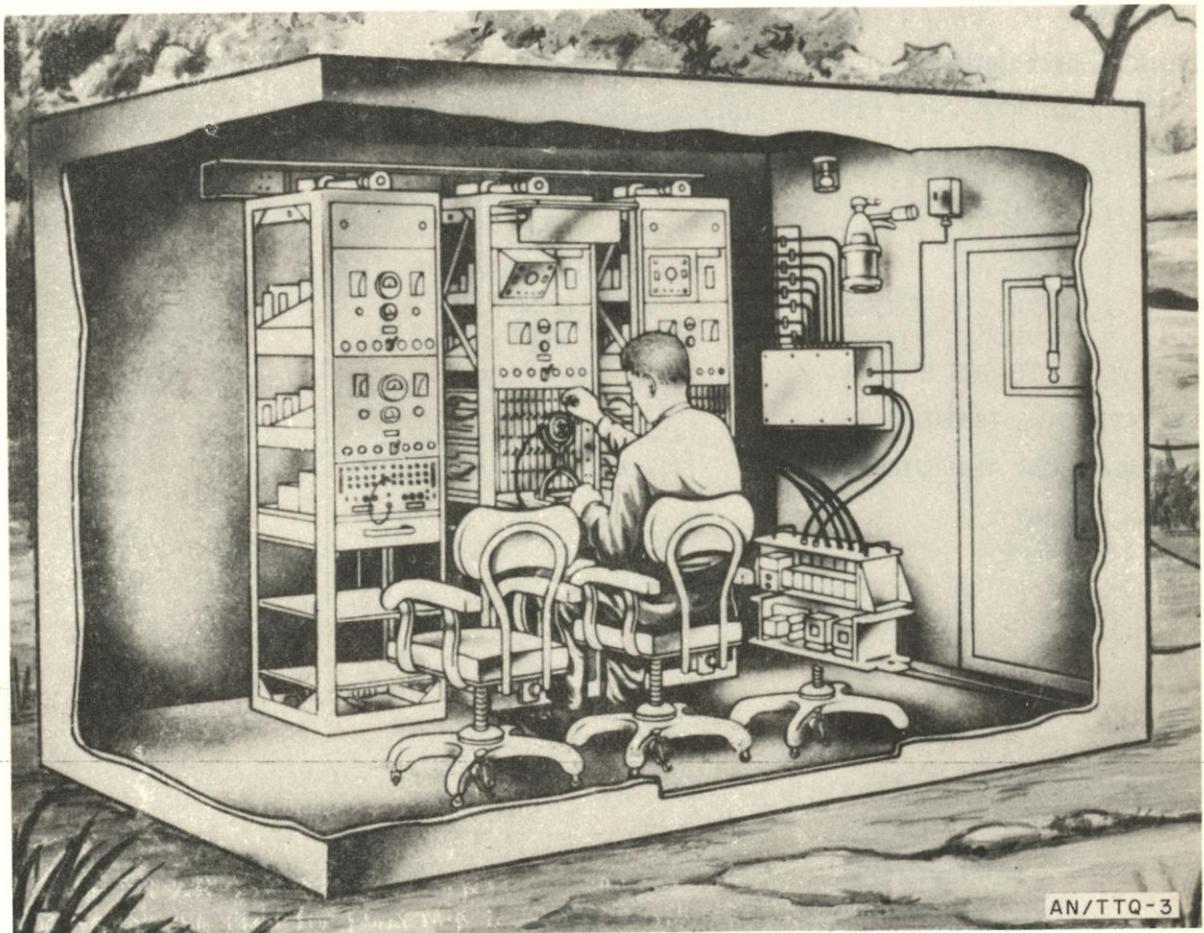
RADIO INTERCEPT CONTROL SET  
**AN/TTQ-3**

1 March 1964

Cog. Serv: USA FSN: 5825-333-9687

USA Line Item No.: 634875

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-B			
Manufacturer:	Emerson Radio & Phonograph Corp			

**FUNCTIONAL DESCRIPTION:**

Radio Intercept Control Set AN/TTQ-3 provides facilities for the supervision and control of a number of such equipment as Radio Intercept Group OA-596-TTQ-3. In a complete radio intercept system, the AN/TTQ-3 can supervise and control eight such groups.

Operating in such a system, it provides monitoring of radio signals intercepted by the operating positions located at the remote groups; local monitoring of intercepted radio signals;

**RADIO INTERCEPT CONTROL SET**

**AN/TTQ-3**

wire communication with all operating positions; establishment of conference calls between all intercept operator positions that are connected through one control position; and coordination of direction-finding operations.

The components of this set are grouped into three operating positions. Two identical control operator positions provide communication and monitoring facilities for supervisory personnel. The third position provides similar facilities for the coordination of direction-finding operations. Wiring within the AN/TTQ-3 is such that each control operator position controls and supervises half the remote groups; the df tracker position can receive signals from all intercept operator positions.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Power Requirements:* 1,500 w, 115-v, 55-65-cy ac

*Major Units:*

1	OA-323/G		128 lbs
1	PU-236/G		
2	RA-133-B		
1	S-44/G	136" x 71" x 74"	2,127 lbs
1	SB-214/TTQ-3	20 <sup>1</sup> / <sub>4</sub> " x 23 <sup>1</sup> / <sub>4</sub> " x 71 <sup>1</sup> / <sub>2</sub> "	145 lbs
2	SB-213/TTQ-3	20 <sup>1</sup> / <sub>4</sub> " x 23 <sup>1</sup> / <sub>4</sub> " x 71 <sup>1</sup> / <sub>2</sub> "	1,166 lbs
2	TS-725/TTQ-3		46 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-5067  
MIL-I-10768

AN/TXA-type  
FREQUENCY SHIFT CONVERTERCV-172/U  
CV-172A/U

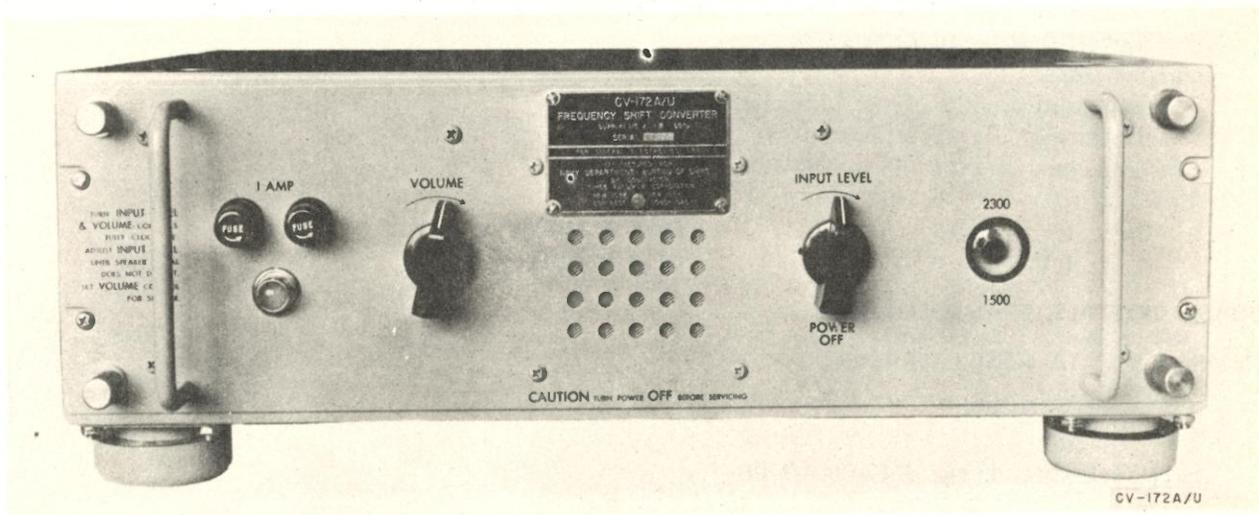
26 November 1958

Cog. Serv: USN FSN: CV-172/U: 5815-665-1995  
CV-172A/U: 5815-096-6992

USA Line Item No.: 617090

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:			L/Std(CV-172/U) Std(CV-172A/U)	

Manufacturer: Times Facsimile Corp

**FUNCTIONAL DESCRIPTION:**

Frequency Shift Converters CV-172/U and CV-172A/U convert 1,500- and 2,300-cps audio-frequency-shift facsimile signals to amplitude-modulated signals for a facsimile recorder. Provisions are made for audible monitoring of the incoming signal and for visual checking of frequency limits.

The input signal is fed through an amplifier to a limiter and then through a frequency discriminator. A loudspeaker is connected to the output of the amplifier and has a separate volume control. The output of the limiter is also fed to two tuned circuits, resonated at 1,500 and 2,300 cycles per second respectively, to operate the tuning eye.

Frequency Shift Converters CV-172/U and CV-172A/U are used as part of terminal equipment at the receiving end of a radio facsimile circuit of the audio-frequency-shift or radio-frequency-shift type. The signal from the radio receiver with either system is an audio-frequency-shifted signal in which 1,500 cps represents maximum signal (black) and 2,300 cycles per second represents minimum signal output (white) from the facsimile transmitter at the sending terminal. The amplitude of the signal to the converter may vary as much as 50 decibels due to transmission effects of the radio circuit.

AN/TXA-type  
FREQUENCY SHIFT CONVERTER

CV-172/U  
CV-172A/U

These converters are used primarily with Facsimile Recorder RD-92/UX, and may be installed in shore or shipboard stations.

The CV-172/U and CV-172A/U are electrically and mechanically interchangeable but the CV-172A/U is an improved design.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Frequency Range:* 1,500 to 2,300 cps, frequency swing  $\pm 400$  cps

*Input Data:*

Impedance: 500 ohms, balanced

Facsimile Signal: 1,500 to 2,300 cps, frequency shift

Level: 0 to  $-40$  dbm

*Output Data:*

Impedance: 500 ohms, balanced

Facsimile Signal: 1,500 cps at .25-v ac; 2,300 cps at 0.01-v ac

*Power Requirements:* 30 w 100-130-v 50-60-cy ac

*Major Units:*

1 CV-172/U

5 $\frac{5}{8}$ " x 16 $\frac{1}{2}$ " x 19 $\frac{3}{16}$ "

1 CV-172A/U

6 $\frac{3}{4}$ " x 16 $\frac{1}{2}$ " x 19 $\frac{1}{8}$ "

56 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 91394

TM 11-5105

SHIPS-F-264; Dwg: 45C-00-00-00

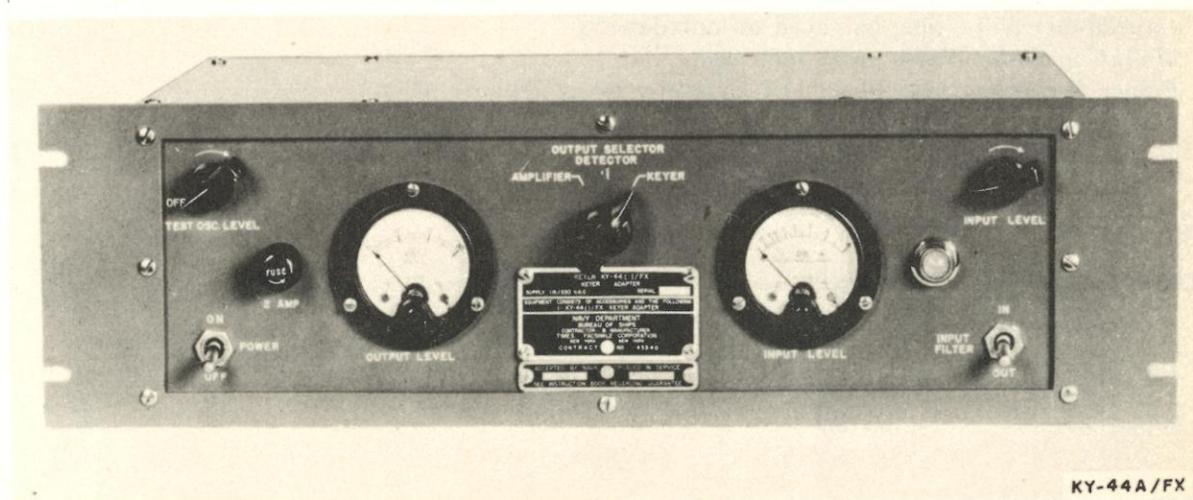
AN/TXA-type  
ADAPTER KEYERKY-44/FX  
KY-44A/FX  
KY-44B/FX  
KY-44C/FX

25 November 1958

Cog. Serv: USN FSN: KY-44/FX: 5815-372-3043

USA Line Item No.: 622080

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:			Std	
Manufacturer:	Times Facsimile Corp			

**FUNCTIONAL DESCRIPTION:**

Adapter Keyers KY-44/FX, KY-44A/FX, KY-44B/FX, and KY-44C/FX are primarily used to convert facsimile signals to direct current. They simplify and rectify amplitude-modulated facsimile signals to provide a variable direct current voltage for the control of frequency-shift exciter units in radio transmitting equipment. They can also be used as unfiltered detectors of amplitude-modulated filters or as line amplifiers.

Meters are provided to monitor the input and output signals. Controls are available for adjusting the output level and for selecting the type of output signal.

The KY-44/FX, KY-44A/FX, KY-44B/FX, and KY-44C/FX are interchangeable with each other and are similar except for changes in design and component parts. They may be installed at shore or shipboard stations.

These equipments are used in conjunction with Keyers KY-30/GRT, KY-58/GRT, KY-75/SRT; Frequency Shift Keyer Equipment FSA; Radio Transmitting Set AN/URT-2, AN/URT-3, AN/URT-4; and similar types of frequency-shift keyers.

AN/TXA-type  
ADAPTER KEYER

**KY-44/FX**  
**KY-44A/FX**  
**KY-44B/FX**  
**KY-44C/FX**

**TECHNICAL CHARACTERISTICS:**

*Frequency Range:* 100 to 7,000 cps

*Type Modulation:* am

*Type Signal:*

Input: Facsimile

Output: Keying signals, dc; detected signals, unfiltered; amplified signals

*Signal Level:*

Input: -20 to + 6 dbm

Output: Linear within  $\pm 5\%$  to 20 v dc or ac

*Impedance:* 600 ohms, balanced or unbalanced

*Mounting Data:* Table or 19-inch relay rack

*Power Requirements:* 40 w, 115- or 230-v 60-cy 1-phase ac

*Major Units:*

1	KY-44/FX, KY-44A/FX, KY-44B/FX, or KY-44C/FX	6½" x 15" x 19¾"	40 lbs
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**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

For KY-44A/FX: NAVSHIPS 91441

For KY-44B/FX: NAVSHIPS 91877

For KY-44C/FX: NAVSHIPS 91627

NE-634-2810, NE-P08-002

FACSIMILE SET  
AN/TXC-1( )

1 March 1964

Cog. Serv: USA FSN: 5815-356-3753

USA Line Item No.: 615550

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-A		Std	

Manufacturer: Time Telephoto Equipment, Inc

**FUNCTIONAL DESCRIPTION:**

Facsimile Set AN/TCX-1( ), is a transmitting and receiving equipment for communication of graphic material, such as documents, photographs, drawings, and charts, over conventional communication channels.

This equipment consists essentially of a rotating drum, an optical system, and related control mechanisms that can be synchronized with compatible transmitting or receiving facsimile sets operating on the same connecting facility.

This set can be used in wire lines by coupling directly to such facilities through input and output terminals provided on the equipment, or through a coil magnetically coupled to the receiver of a handset, or inductively to certain types of wire lines. It can also be used on radio circuits by using Converter CV-2( )/TX to convert to subcarrier frequencies, and by means of one model of this converter (CV-2C/TX) in conjunction with Exciter Unit O-5/FR to operate in frequency shift transmission.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:***Page Size:* 12 x 18 $\frac{1}{4}$  inches*Transmission Time:* 20 min; 40 min at half speed*Scanning Lines Per Inch:* 96*Keying Frequency:* 900 cps*Carrier Frequency:* 1,800 cps*Signal Band Required:* 900 to 2,700 cps*Diametral Index of Cooperation:* 576*Speed of Drum Rotation:* 60 rpm; 30 rpm also available in AN/TXC-1D, -IE, and -IF*Power Requirements:* 250 w, 100-130-v 50-65-cy ac*Major Units:*

1	TT-1/TXC-1	10 $\frac{3}{4}$ " x 17 $\frac{5}{8}$ " x 34 $\frac{5}{8}$ "	85 lbs
1	PH-549/TXC-1		83 lbs
1	PP-86/TXC-1	9" x 10" x 12"	84 lbs
1	MT-252/TXC-1	32" x 22" x 37"	86 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

TM 11-489

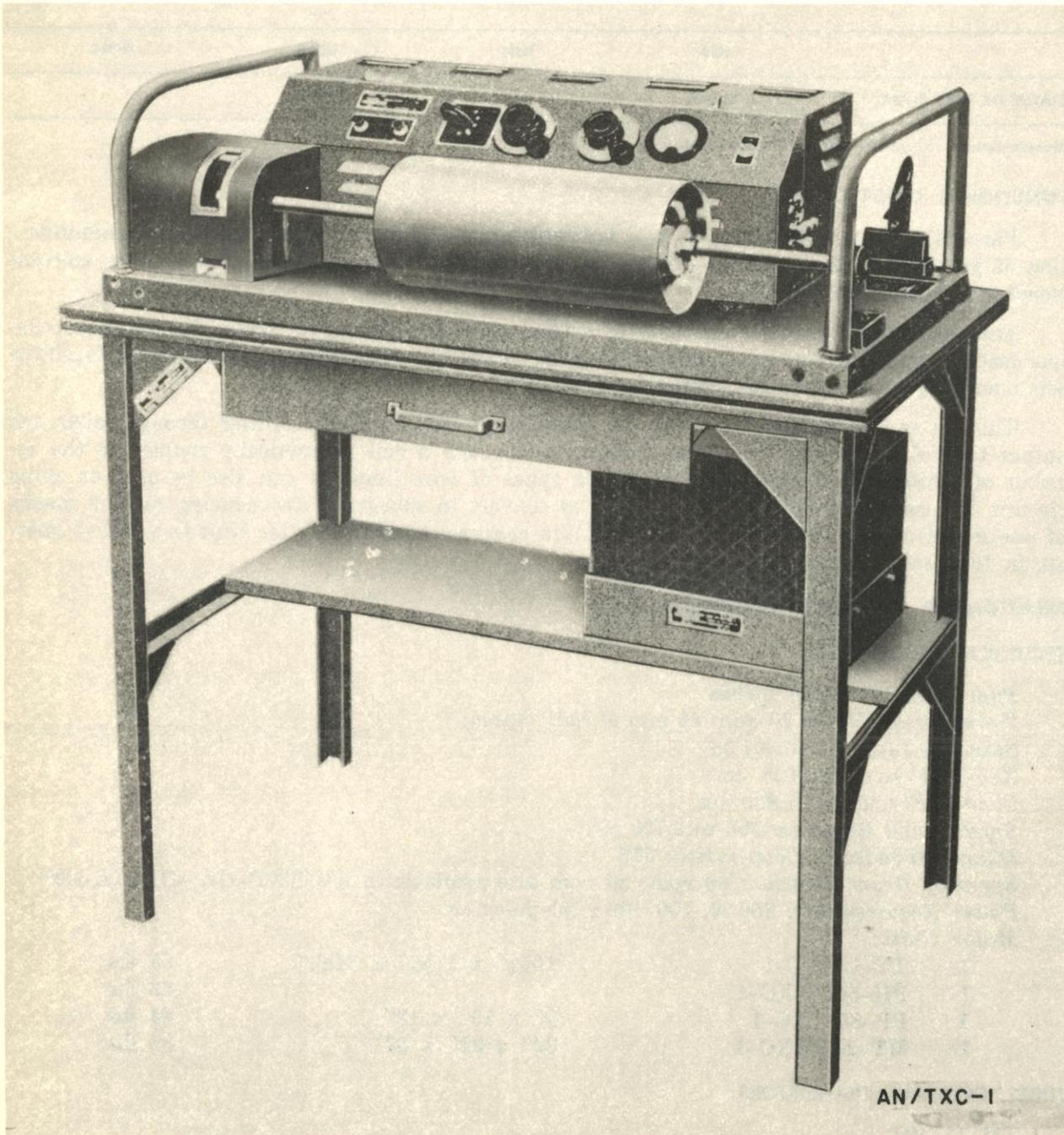
TM 11-2258

(USA) 71-3107

MIL-HDBK-161A/TM11-487A-3/NAVEXOS P-2058/TO 31-3-73

FACSIMILE SET

AN/TXC-1( )



AN/TXC-type  
CONVERTER

## CV-2/TX, -2A/TX, -2B/TX

1 March 1964

Cog. Serv: USA FSN: CV-2/TX: 5815-243-4494

USA Line Item No.: 611390

	USA	USN	USAF
STATUS OR TYPE CLASS.:	Std-A		L/Std

Manufacturer: Rudolph Wurlitzer Co

For illustration see CV-2C/TX, page 717.

**FUNCTIONAL DESCRIPTION:**

Converters CV-2/TX, CV-2A/TX, and CV-2B/TX are used with facsimile equipments to translate their normal am signal output into fm facsimile signals for use over radio systems, or to reconvert received fm signals into am signals to operate the facsimile receiver. These sets produce only one type of fm signal, ranging from 1,800 to 3,000 cps. They have no provisions for take-off of dc signals for operation of fsk radio transmitters.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:***Type of Signal:* fm to am; am to fm*Signal Frequency:*

am: 1,800 cps

fm: 1,800 to 3,000 cps

*Power Requirements:* 100-130-v 54-65-cy 1-phase ac; or 5.6-6.3-v dc (unlettered model only)*Major Units:*

1 Converter

9½" x 11<sup>9</sup>/<sub>16</sub>" x 13<sup>5</sup>/<sub>8</sub>"

35 lbs

**TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**

TM 11-489

TM 11-2252

(USA) 71-3055

MIL-C-13928



AN/TXC-type  
 CONVERTER  
**CV-2C/TX**

1 March 1964  
 Cog. Serv: USA FSN: 5815-503-2598  
 USA Line Item No.:

	USA	USN	USAF
<b>STATUS OR TYPE CLASS.:</b>	Std-A		Std
<b>Manufacturer:</b>	Wilcox-Gay Corp		



CV-2C/TX

**FUNCTIONAL DESCRIPTION:**

Converter CV-2C/TX is similar to the earlier models, except that provisions have been included for a dc signal output, and a choice of fm signal frequencies is available.

AN/TXC-type  
CONVERTER

## CV-2C/TX

### RELATIONSHIP TO SIMILAR EQUIPMENT:

### TECHNICAL DESCRIPTION:

*Type of Signal:* fm to am; am to fm

*Signal Frequency:*

am: 1,800 cps

fm: 1,800 to 3,000 cps or 1,500 to 2,300 cps

*Power Requirements:* 100-130-v 54-65-cy 1-phase ac

*Major Units:*

1 CV-2C/TX

9 $\frac{1}{2}$ " x 11 $\frac{9}{16}$ " x 13 $\frac{5}{8}$ "

35 lbs

### TUBES, CRYSTALS, TRANSISTORS:

### REFERENCE DATA AND LITERATURE:

TM 11-489

TM 11-2252A

(USA) 71-3055

MIL-C-13928

AN/TXC-type  
FACSIMILE TRANSCEIVER  
**FX-1, -1A, -1B**

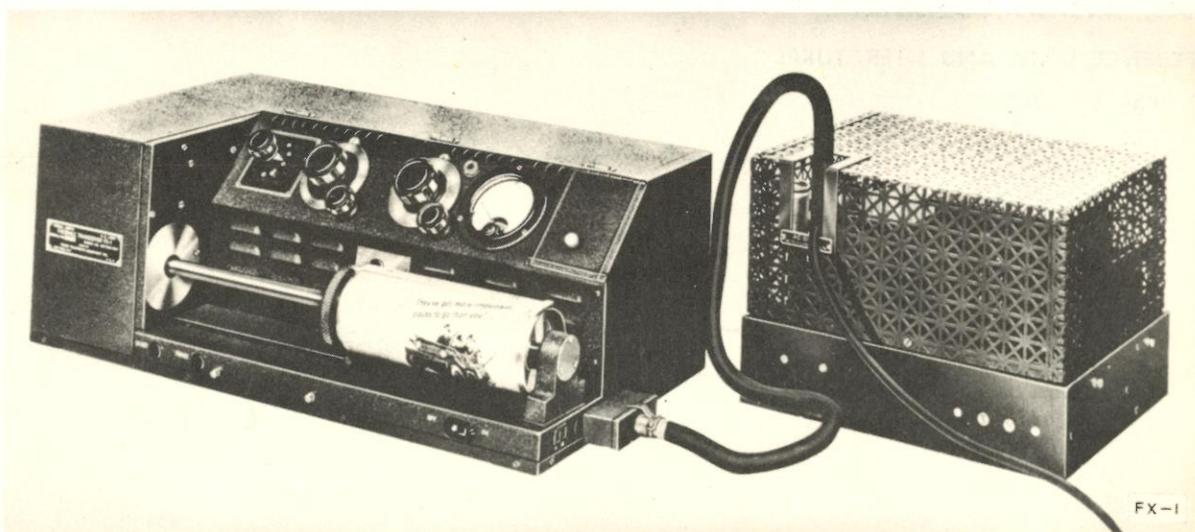
1 March 1964

Cog. Serv: USA FSN: FX-1: 5815-401-3794  
FX-1A: 5815-665-3140  
FX-1B: 5815-665-1092

USA Line Item No.: 615552

	USA	USN	USAF
STATUS OR TYPE CLASS.:	Std-A		

Manufacturer: Times Telephoto Equipment, Inc

**FUNCTIONAL DESCRIPTION:**

Facsimile Transceivers FX-1, FX-1A, and FX-1B are the basic operating components in corresponding Facsimile Equipments RC-120, RC-120-A, and RC-120-B. With their power supplies and accessories, they provide for the transmission and reception of printed, written, drawn, or photographic copy over regular voice communication channels (radio or wire). Copy 7 by  $7\frac{3}{8}$  inches can be transmitted in 7 minutes. The copy can be recorded on material requiring no further processing or on material that must be photographically processed.

Facsimile Transceivers FX-1, FX-1A, and FX-1B become Facsimile Equipment RC-120- ( ) with addition of the following equipment: one Power Supply PE-140, PE-140-A, PE-140-B, or PE-150; one Photographic Equipment PH-411; one Chest CH-117; one Chest CH-116; one Bag BG-124.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

*Keying Frequency:* 900 cps  
*Carrier Frequency:* 1,800 cps

**AN/TXC-type  
FACSIMILE TRANSCEIVER**

**FX-1, -1A, -1B**

*Signal Band Required:* 900 to 2,700 cps

*Page Size:* 7" x 8<sup>5</sup>/<sub>8</sub>"

*Transmission Time:* 7.5 min

*Scanning Lines per Inch:* 96

*Allowable Delay Distortion:*  $\pm 278 \mu\text{sec}$

*Diametral Index of Cooperation:* 264

*Speed of Drum Rotation:* 90 strokes per minute

*Power Requirements:* 250 w, 100-130-v 50-60-cy 1-phase ac; or 25 amp at 6-v dc

*Major Unit:*

1 FX-1, 1A, or 1B

10" x 12" x 22"

60 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-375B

TM 11-489

TM 11-4038

71-1679

AN/TXC-type  
FACSIMILE EQUIPMENT

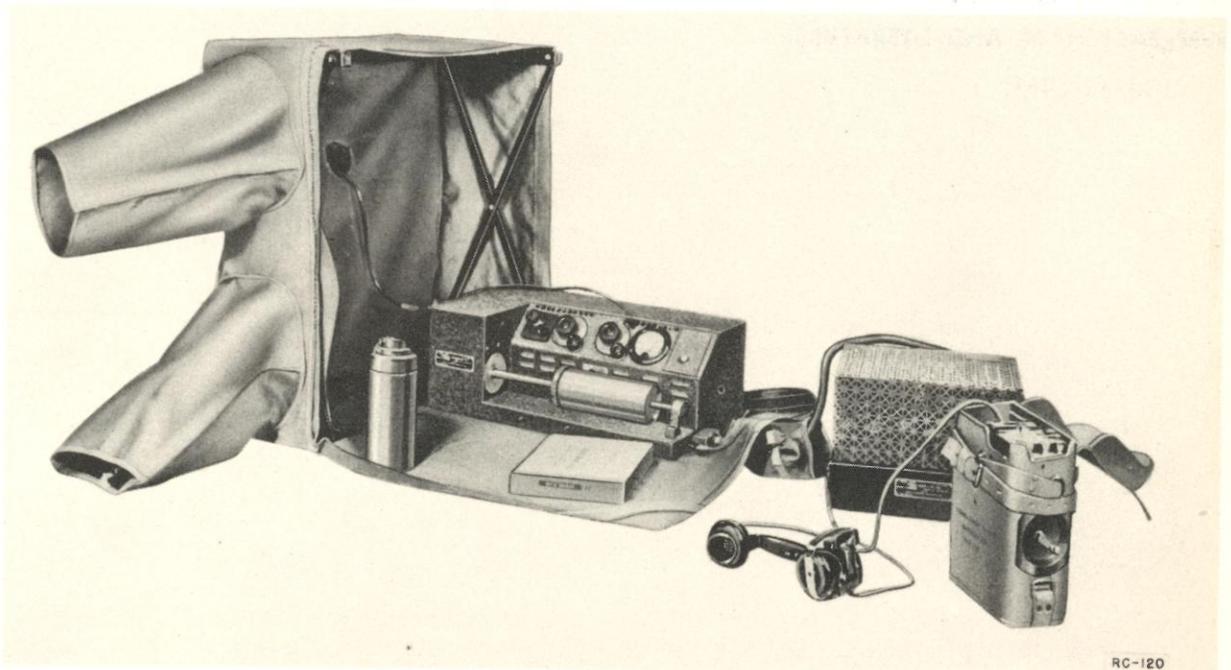
RC-120-( )

1 March 1964

Cog. Serv: USA FSN: 5815-164-7106

USA Line Item No.: 615530

	USA	USN	USAF
STATUS OR TYPE CLASS.:	Std-A		
Manufacturer:			

**FUNCTIONAL DESCRIPTION:**

Facsimile Equipment RC-120-( ) is a transmitting and receiving set used for communicating graphic copy. It will receive positive and negative photographs, printed or written copy, and similar material on film or direct special papers. It is used in fixed or field stations.

This equipment consists of a receiver-transmitter unit, power supply, and associated accessories. A portable darkroom tent is included for field use.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

*Maximum Page Size: 7" x 8<sup>5</sup>/<sub>8</sub>"*

*Transmission Time: 7 min*

*Drum Speed: 90 rpm*

*Diametral Index of Cooperation: 264*

AN/TXC-type  
FACSIMILE EQUIPMENT

**RC-120-( )**

*Scanning Lines Per Inch:* 96

*Carrier Frequency:* 1,800 cps

*Power Requirements:* 100-130-v 50-60-cy ac

*Major Units:*

1	FX-1-( )	22" x 12" x 10"	60 lbs
1	PH-411		
1	PE-140-( )	10" x 12" x 12"	50 lbs
1	PE-150	8 <sup>3</sup> / <sub>4</sub> " x 11" x 14"	60 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

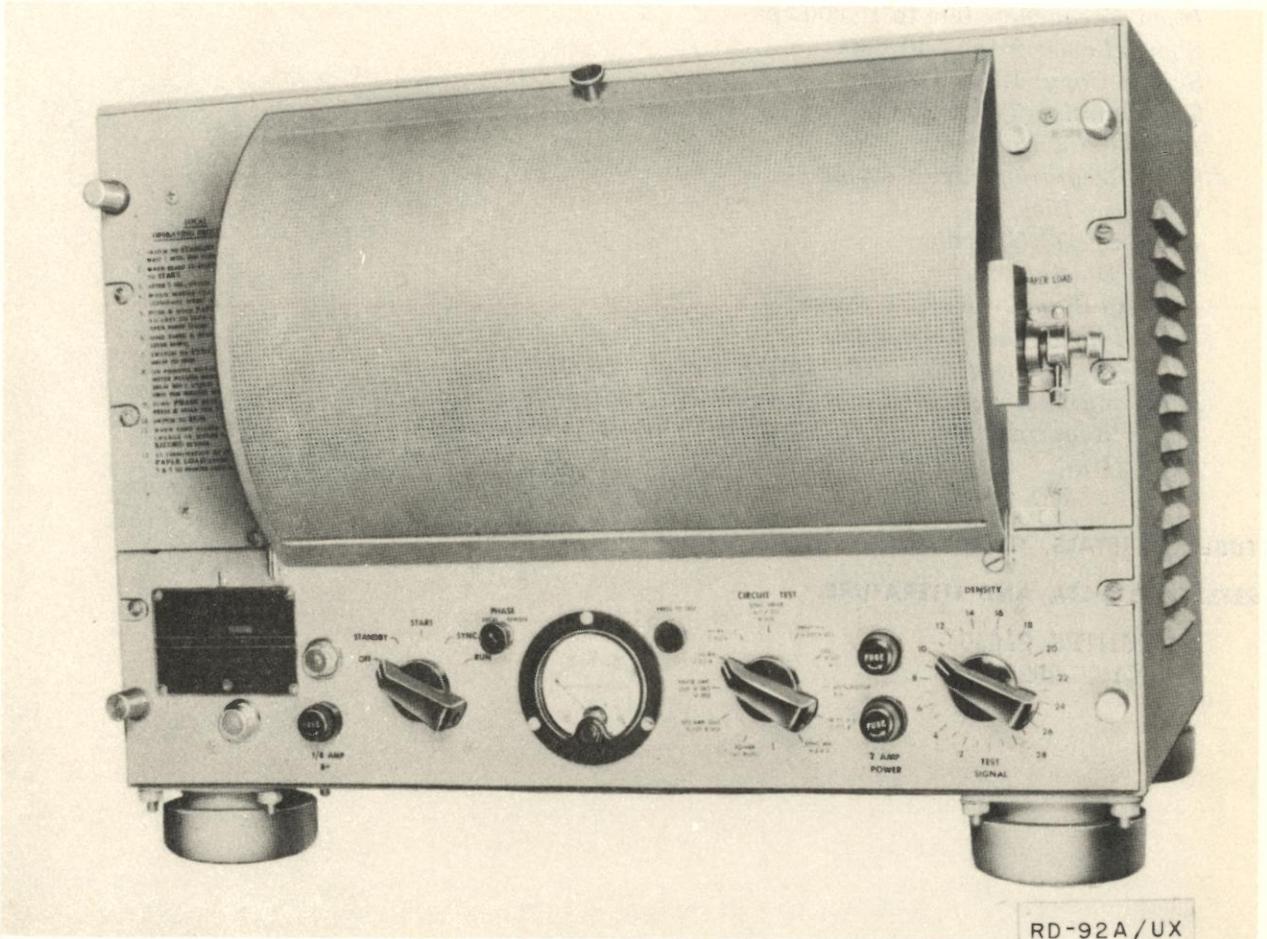
**REFERENCE DATA AND LITERATURE:**

TM 11-375B

AN/TXR-type  
FACSIMILE RECORDER  
**RD-92A/UX**

1 March 1964  
Cog. Serv: USN FSN: 5815-665-3146  
USA Line Item No.:

	USA	USN	USAF
STATUS OR TYPE CLASS.:			Std
Manufacturer:	Times Facsimile Corp		



**FUNCTIONAL DESCRIPTION:**

Facsimile Recorder RD-92A/UX is similar to the unlettered model, the major difference being in the required input impedance. This equipment makes direct recordings of copy transmitted by Facsimile Set AN/TXC-1 or its equivalent. The recorded image may be pictures, maps, sketches, typewritten or printed text, or handwriting. When used with wire lines, the recorder is

**AN/TRX-type  
FACSIMILE RECORDER**

**RD-92A/UX**

connected directly to the line. Or it may be connected to an am receiver, provided that the received facsimile signal is am. Other types of modulation must be converted to am facsimile signals by use of Frequency Shift Converter CV-172/U or converter CV-2( )/TX.

It is a self-contained unit which may be mounted on a standard 19-inch relay rack. The rack may be equipped with shock mounts for bench use or with rollers to permit use as a file drawer.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

- Type:* rotating drum
- Input Frequency:* 500 to 10,000 cps
- Signal Level:* 9 to -40 dbm
- Size of Copy:* 12" x 18<sup>3</sup>/<sub>4</sub>"
- Transmission Time:* 20 min
- Type Modulation:* am
- Type Recording:* direct stylus
- Lines per Inch:* 96
- Drum Speed:* 60 rpm
- Drum Diameter:* 6"
- Phasing Signal:* pulses, 1 per sec
- Input Impedance:* 2,000 ohms
- Index of Cooperation:* 576 (International Index)
- Mounting:* self-contained unit, suitable for rack or bench mounting
- Power Requirements:* 150 w, 90-130-v 55-65-cy 1-phase ac
- Major Unit:*

1 RD-92A/UX 14" x 19<sup>1</sup>/<sub>8</sub>" x 17<sup>2</sup>/<sub>32</sub>" 75 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 91630  
(USN) F-262

## TELEGRAPH TERMINAL TRANSLATOR GROUP

## AN/UGA-1

1 March 1964

Cog. Serv: USN FSN:

USA Line Item No.:

USA

USN

USAF

USMC

## STATUS OR TYPE CLASS.:

Manufacturer: CTT (59433)

## FUNCTIONAL DESCRIPTION:

Telegraph Terminal Translator Group AN/UGA-1 is for specific use with Telegraph Terminal Set AN/UGC-3 in fixed station operation. It provides facilities for operation of Telegraph Terminal Set AN/UGC-3 with Radio Equipment AN/FCC-29. The transmitting and receiving groups of AN/UGA-1 perform complementary functions. The transmitting group accepts a neutral sequential signal such as provided by the 16-channel Telegraph Terminal Set AN/UGC-3. The sequential signal is then converted and retransmitted on 16 individual channels. The receiving group accepts the 16 individual channels and combines them into neutral sequential signals that can be utilized by the 16-channel Telegraph Terminal Set AN/UGC-3. The AN/UGA-1 contains the facilities necessary to change a high speed sequential signal into multiple low speed signals that can be transmitted over conventional radio-teletypewriter facilities, in addition to receiving circuits for converting multiple low speed signals into a high speed sequential signal. The AN/UGA-1 is transistorized. Siting of the AN/UGA-1 should be near the AN/UGC-3 to permit use of the test equipment built in the AN/UGC-3.

## RELATIONSHIP TO SIMILAR EQUIPMENT:

None

## TECHNICAL DESCRIPTION:

*Frequency Control:* by the associated AN/UGC-3*Operation:* start-stop apparatus, 7.42 unit code*Repetition Rate:* determined by associated AN/UGC-3*Operating Power Requirements:*115 volts,  $\pm 10$  percent, 50/60 cy $\pm 5$  percent, 1.6 amp, 140 w*Major Unit:*

1 AN/UGA-1

84" x 23 $\frac{3}{8}$ " x 24"

550 lbs

## TUBES, CRYSTALS, TRANSISTORS:

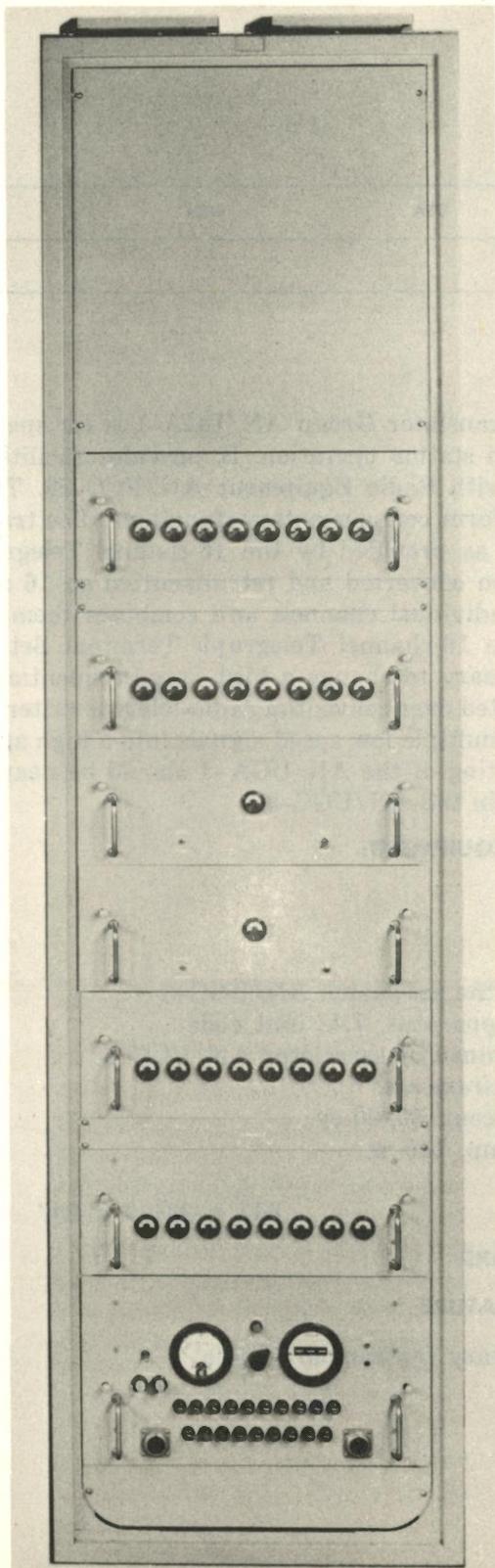
## REFERENCE DATA AND LITERATURE:

Manuscript of Preliminary Instruction Manual

MIL-HDBK-161A/TM11-487A-3/NAVEXOS P-2058/TO 31-3-73

TELEGRAPH TERMINAL TRANSLATOR GROUP

# AN/UGA-1



TELEGRAPH TERMINAL SET  
AN/UGC-3

1 March 1964  
 Cog. Serv: USN FSN:  
 USA Line Item No.:

USA

USN

USAF

USMC

## STATUS OR TYPE CLASS.:

Manufacturer: CTT (59433)

## FUNCTIONAL DESCRIPTION:

Telegraph Terminal Set AN/UGC-3 is a transistorized, 16-channel, time division, multiplex equipment for fixed station installation. A complete set consists of a transmitting and receiving group. The transmitting group accepts neutral, start-stop signals from up to 16 separate circuits and assembles them in sequential order for multiplex signals from a distant source, converts them to start-stop form, and distributes them to 16 separate circuits. Signals are received from a number of start-stop teletypewriter circuits, stored, and transmitted over the common channel. In this process, the message characters from the start-stop circuits are compressed in time so that a character from each of these circuits is transmitted in the time normally required to send one character from a single circuit. The receiving multiplex terminal sorts the compressed signals into their respective circuits and regenerates them into normal length start-stop characters. Adjacent siting of the receiver and transmitter groups permits use of the built-in test equipment in both.

## RELATIONSHIP TO SIMILAR EQUIPMENT:

In four channel operation, the multiplex signals of the AN/UGC-3 are completely compatible with those of AN/UGC-1 at all speeds and with the AN/FGC-5 at 60 and 75 words per minute. Any standard apparatus using a 7.42 unit code may be employed in the start-stop circuits. All start-stop equipment must have the same operating speeds of 60, 75, or 100 words per minute. The AN/UGC-3 is used with the AN/UGA-1.

## TECHNICAL DESCRIPTION:

*Repetition Rate:* 60 wpm-440 pps, 74 wpm-562.5 pps, 100 wpm-733.69 pps

*Frequency Control:* temperature controlled crystal oscillator

*Number of Channels:* 4, 8, 12, or 16

*Operating Power Requirements:*

115 v  $\pm$ 10 percent, 50/60 cy

$\pm$ 1 cy, single phase, 4 am, 361w

*Major Unit:*

1 OA-2994/UGC-3

84" x 23 $\frac{3}{8}$ " x 24"

556 lbs

1 OA-2995/UGC-3

84" x 23 $\frac{3}{8}$ " x 24"

601 lbs

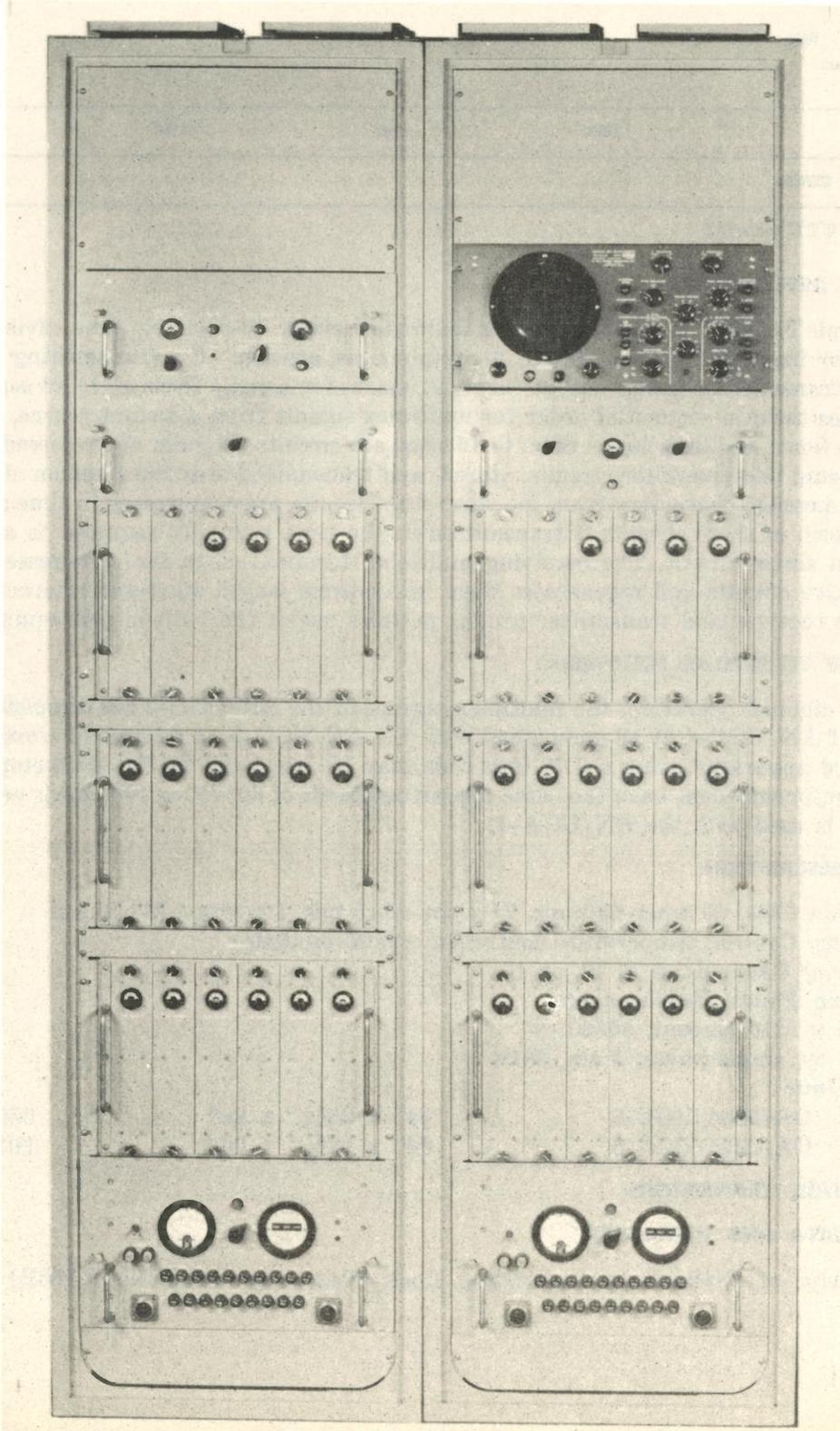
## TUBES, CRYSTALS, TRANSISTORS:

## REFERENCE DATA AND LITERATURE:

Manuscript of Preliminary Instruction Book (Teletypewriter Bulletin 265B)

TELEGRAPH TERMINAL SET

AN/UGC-3



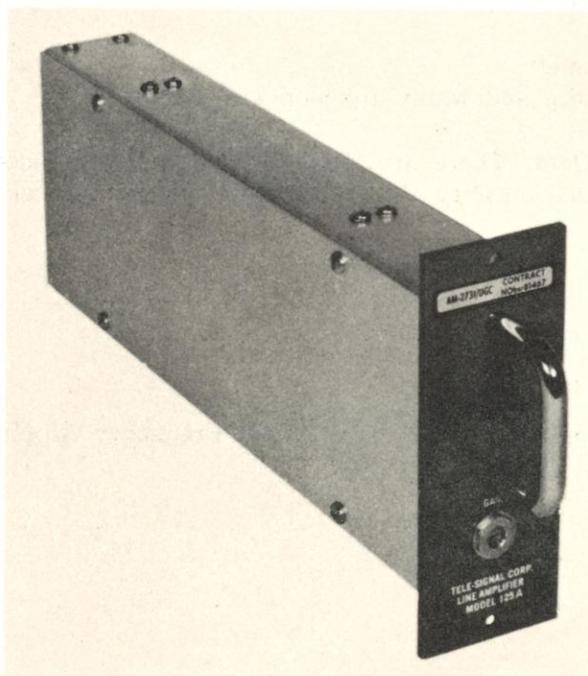
AN/UGC-type  
AUDIO FREQUENCY AMPLIFIER**AM-2731/UGC**

1 March 1964

Cog. Serv: USN FSN:

USA Line Item No.:

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-A	Std		
Manufacturer:	Tele-Signal Corporation			

**FUNCTIONAL DESCRIPTION:**

Audio Frequency Amplifier AM-2731/UGC is a transistorized push-pull amplifier capable of delivering +20 dbm, which is used as an input line amplifier in Telegraph Terminal AN/FGC-60(V).

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

None

**TECHNICAL DESCRIPTION:***Amplification Data:*

Nominal power output: +4 dbm

Minimum voltage gain: 36 db

*Operating Power Requirements:* -15 v dc

**AN/UGC-type  
AUDIO FREQUENCY AMPLIFIER**

**AM-2731/UGC**

*Frequency Response:*

Normal operating range: 300 to 10,000 cps.

Variation in output over operating range:  $\pm 2$  db

*Input Channel Data:* quantity—16 channels supplied by frequency shift keyers or the output from a radio receiver or wire link.

*Input Impedance:* 600 ohms

*Output Impedance:* 600 ohms

*Installation:* mounted on Tele-Signal Model 139, Equipment Shelf, which fits directly into standard 19" rack.

*Construction:* aluminum

*Finish:*

Front panel—enamel

Chassis—caustic dip and water dip lacquer spray

*Heat Dissipation:*  $\frac{3}{4}$

*Specific Application Data:* There are three audio amplifiers used in Telegraph Terminal AN/FGC-60(V); two amplify the input from two radio receivers and the third is used as a spare.

*Major Unit:*

1 AM-2731/UGC

5 $\frac{1}{4}$ " x 2" x 11"

1 $\frac{1}{4}$  lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 93854, Technical Manual for Audio Frequency Amplifier AM-2731/UGC

AN/UGC-type  
SIGNAL COMPARATOR  
**CM-185/UGC**

15 March 1962  
Cog. Serv: USN FSN:  
USA Line Item No.:

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-A	Std		
Manufacturer:	Tele-Signal Corp			



**FUNCTIONAL DESCRIPTION:**

Signal Comparator CM-185/UGC is used in a dual diversity system Telegraph Terminal AN/FGC-60(V). It compares the signal outputs of two frequency shift converters and then returns the signal which exhibits the better signal-to-noise ratio to one of the frequency shift converters for final shaping to drive the output load.

It is intended for use on frequency shift circuits where the additional reliability of receiver diversity is required, such as long distance hf circuits and scatter communication links.

The signal comparator may be used with any of the conventional diversity methods such as frequency, space, or polarization diversity. The two diversity channels may operate either on the same or at different frequencies.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Frequency Range:* 0 to 100 dot-cps  
*Type of Indicator:* meter

**AN/UGC-type  
SIGNAL COMPARATOR**

**CM-185/UGC**

*External Controls:* dc Balance, Gain Balance, Sense Switch, Channel A input, Channel B input

*Operating Power Requirements:* dc, 8v

*Impedance Data:* 10,000 ohms input, 10,000 ohms output

*Installation:* Installed by plugging into Tele-Signal Model 139 Equipment Shelf, which mounts directly into standard 19-inch rack. A shelf accepts four comparators.

*Construction:* aluminum

*Finish:*

Front panel—enamel

Chassis—caustic dip and water dip lacquer spray

*Head Dissipation:* approximately  $\frac{1}{4}$  w

*Major Units:*

1 CM-185/UGC

5 $\frac{1}{4}$ " x 4" x 11"

4 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

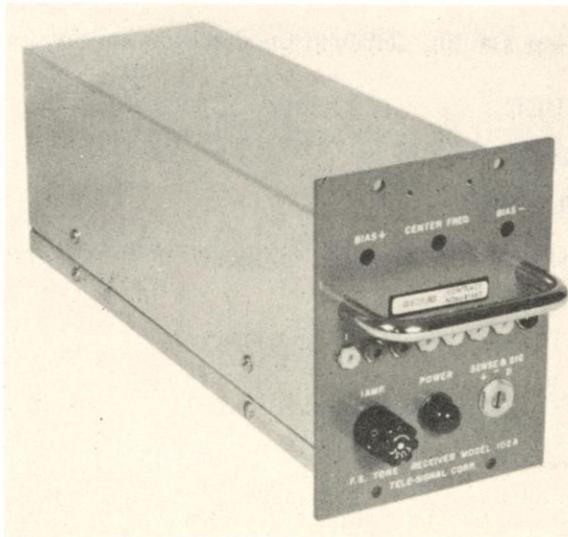
NAVSHIPS 93849

AN/UGC-type  
FREQUENCY SHIFT CONVERTER

## CV-972(P)/UGC

15 March 1962  
 Cog. Serv: USN FSN:  
 USA Line Item No.:

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-A	Std		
Manufacturer:	Tele-Signal Corp			

**FUNCTIONAL DESCRIPTION:**

Frequency Shift Converter CV-972(P)/UGC is used on communication circuits such as tone telegraph systems, telemetering circuits, and single side band radio links. In these applications, it accepts frequency shifted signals in the audio spectrum from the receiving terminal and demodulates them with great precision, converting them into a digital code (e.g. teletypewriter).

It can be paralled with other such converters on the same audio circuit, resulting in a multi-channel frequency shift tone system.

The converter is a completely transistorized unit, including a self-contained power supply and monitoring facilities. It has provision for operation in conjunction with a dual diversity comparator.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:***Frequency Data:*

Frequency Range—425 to 2,975 cps, special frequencies on request

Quantity—16 channels

*Operating Power Requirements:* 115v, 50/60 cps, single phase, can be strapped for 230 v

**AN/UGC-type  
FREQUENCY SHIFT CONVERTER**

**CV-972(P)/UGC**

*Impedance Data:*

Input—600 ohms balanced

Output—Less than 200 ohms

Installation: Mounting frame for standard 19" rack opening. Frame will accept up to 4 converters. For less than 4, blank masking panels supplied.

*Construction:* aluminum

*Finish:*

Front panel—enamel

Chassis—caustic dip and water dip lacquer spray

*Heat Dissipation:* 1 w

*Special Features:* sensing switch, self-contained power supply and diversity capabilities.

*Major Units:*

CV-972(P)/UGC

5¼" x 4" x 11"

5½ lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 93847, Technical Manual for Frequency Shift Converter CV-972(P)/UGC

AN/UGC-type  
 FREQUENCY SHIFT CONVERTER  
**KY-346(P)/UGC**

15 March 1962  
 Cog. Serv: USN FSN:  
 USA Line Item No.:

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-A	Std		

Manufacturer: Tele-Signal Corp



#### FUNCTIONAL DESCRIPTION:

Frequency Shift Keyer KY-346(P)/UGC is used in communication circuits such as telegraph systems, telemetering circuits, and single sideband radio links. In these applications, it provides the transmitting terminal with frequency shifted signals in the audio spectrum. This unit operates by accepting a digital code from an external source (e.g. teletypewriter) and converting it into two-tone frequencies. One frequency will indicate mark bits while the other will indicate space bits.

It can be paralleled with other such keyers on the same audio circuit, resulting in a multi-channel frequency shift tone system.

This keyer is a completely transistorized unit, including internal power supply and monitoring facilities, which are front panel accessible.

#### RELATIONSHIP TO SIMILAR EQUIPMENT:

#### TECHNICAL DESCRIPTION:

*Type of Emission:* fsk

*Power Output (max):* +3 dbm

**AN/UGC-type  
FREQUENCY SHIFT KEYER**

**KY-346(P)/UGC**

*Frequency Deviation:* +42.5 cy; special deviations on request

*Frequency Data:*

Frequency Range—425 to 2975 cps; special frequencies on request.

Quantity of Channels—16 channels normal; additional channels on request

*Operating Power Requirements:* 115v, 50/60 cps, single phase, can be strapped for 230 v

*Installation:* Installed by plugging into Tele-Signal Model 139 Equipment Shelf, which mounts directly into standard 19" mounting rack. This shelf will accept up to 4 keyers.

*Construction:* aluminum

*Finish:*

Front Panel—enamel

Chassis—caustic dip and water dip lacquer spray

*Heat Dissipation:* 1 w

*Special Features:* Self contained power supply; mark and space frequency self-test.

*Major Units:*

1 KV-346(P)/UGC

5 $\frac{1}{4}$ " x 4" x 11"

5 $\frac{1}{2}$  lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 93846

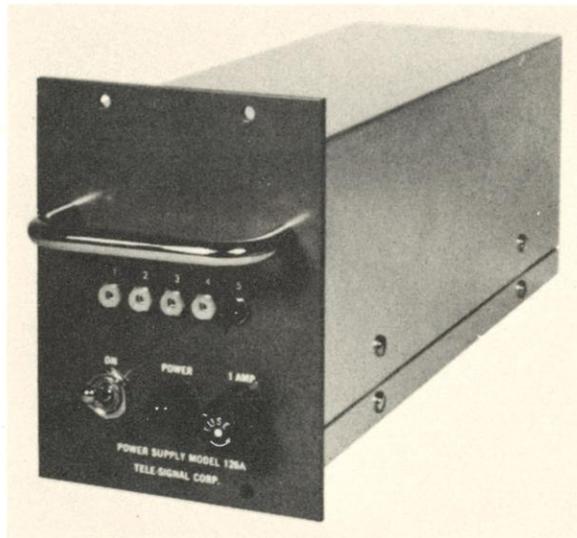
AN/UGC-type  
POWER SUPPLY

PP-2713/UGC

15 March 1962  
Cog. Serv: USN FSN:  
USA Line Item No.:

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-A	Std		

Manufacturer: Tele-Signal Corp

**FUNCTIONAL DESCRIPTION:**

Power Supply PP-2713/UGC provides the dc voltage required for three Audio Frequency Amplifiers AM-2731/UGC and Meter Panel SB-1178/UGC in Telegraph Terminal AN/FGC-60 (V). It employs a bridge type rectifier circuit and a filter circuit.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

*Rectification Data:* electronic type, full wave rectification

*Output Data:* dc, -15 v, 300 ma

*Operating Power Requirements:* 115/230 v, 50/60 cps, single phase; 3 w

*Major Units:*

1 PP-2713/UGC

5 $\frac{1}{4}$ " x 4" x 11"

4 $\frac{9}{16}$  lbs

**TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**

NAVSHIPS 93855



AN/UGC-type  
RECORDING TAPE REWINDER

RL-177A/UG

15 March 1962

Cog. Serv: USN FSN:

USA Line Item No.:

USA

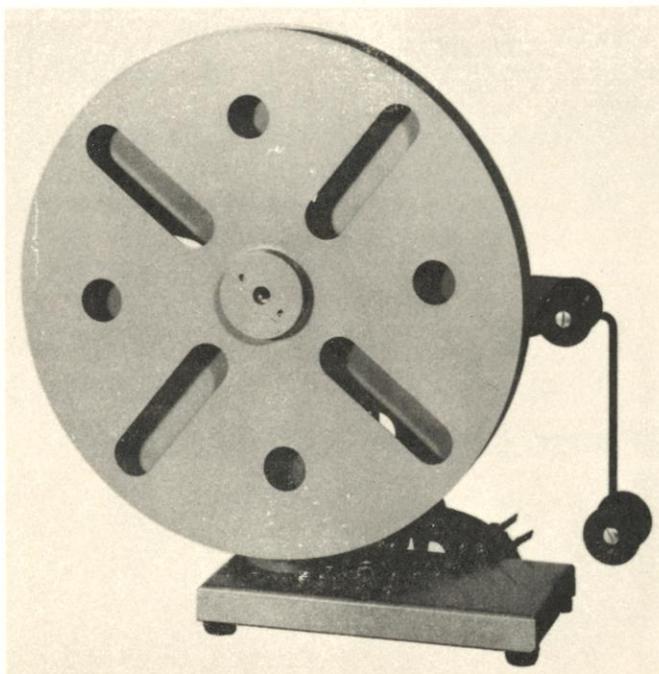
USN

USAF

USMC

STATUS OR TYPE CLASS.:

Manufacturer: CCBF (92239)

**FUNCTIONAL DESCRIPTION:**

Recording Tape Rewinder RL-177A/UG is a device for rewinding and storing recorded tape. It consists of a geared drive motor and a direct shaft extension that mounts a pair of 12-inch reels. The inner reel mounts permanently on the shaft by means of set screws. The outer reel, which also includes a hub, is threaded to allow its removal when required. The hub on the outer reel extends on both sides of the reel face, so that by mounting the reel in its reversed position, tapes of different widths may be accommodated.

Tape snubbing action is provided by means of two neoprene guides which reduce tape winding pull to one-half ounce at the input.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

*Operating Power Requirements:* 115 v ac, 60 cps, 1 phase; 0.2 amp

*Heat Dissipation:* 25 w

**RECORDING TAPE REWINDER**

**RL-177A/UG**

*Winding Direction:* counterclockwise

*Major Units:*

1 RL-177A/UG

14" x 14" x 6"

12 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

Technical Manual for Recording Tape Rewinder, NAVSHIPS 94126

MIL-HDBK-161A/TM11-487A-3/NAVEXOS P-2058/TO 31-3-73

AN/UGC-type  
TELEGRAPH CODE TAPE RECORDER

RO-135/FRR

15 March 1962  
Cog. Serv: USN FSN:  
USA Line Item No.:

USA

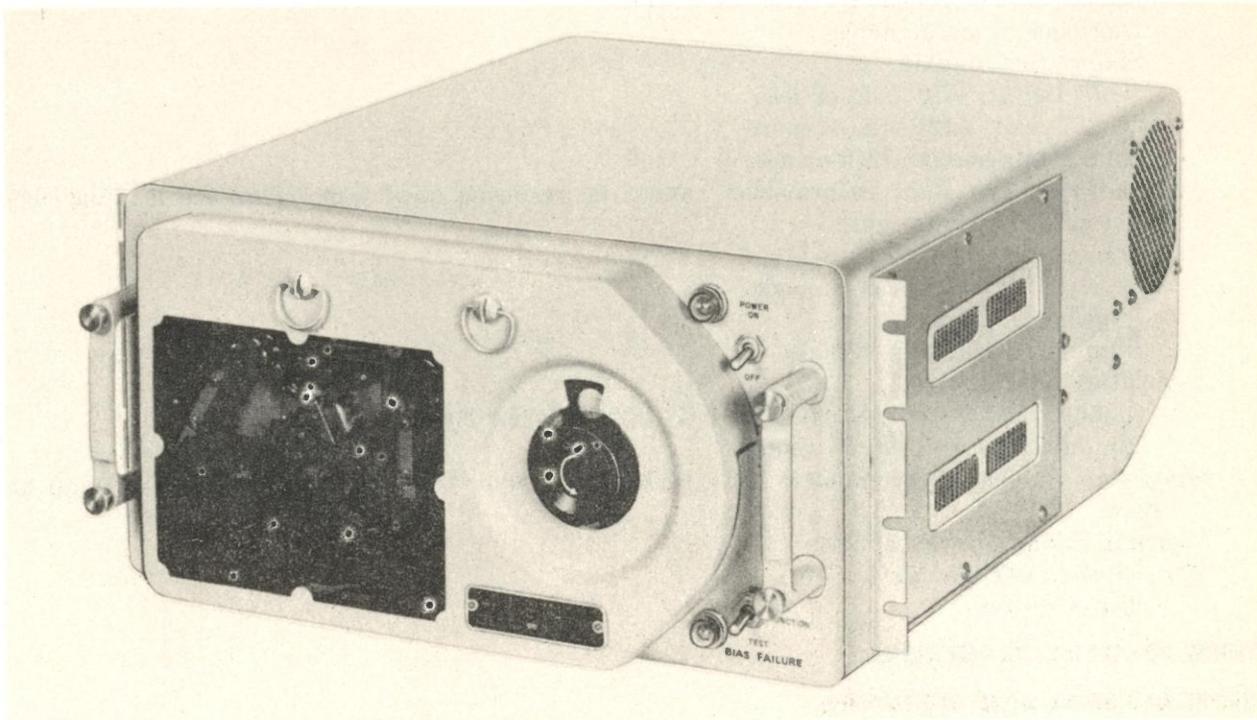
USN

USAF

USMC

STATUS OR TYPE CLASS.:

Manufacturer:



#### FUNCTIONAL DESCRIPTION:

Telegraph Code Tape Recorder RO-135/FRR provides a means of converting the on-off periods of six separate trains of dc pulses, (five information pulse trains, one rog pulse train) to 10-kc envelope-type pulses, and recording each on a separate track on a single, narrow, dry-type electrosensitive paper tape. The recorder contains a tape drive mechanism for moving the tape, and electronic circuits to control tape motion and writing. Writing on the tape is accomplished by passing the tape under styli which are fixed in position. Accordingly, the information recorded is in the form of short dashes burned on the upper surface of the tape.

AN/UGC-type  
TELEGRAPH CODE TAPE RECORDER

**RO-135/FRR**

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

Inputs:

Information Signals:

Pulse Repetition Rate: 0 to 200 pps

Pulse Duration: 200  $\mu$ sec to 4.7 ms

"Off" Level: +70 v dc or less

"On" Level: +135 v dc or more

Source Impedance: 33 k or less

*Positive Signal Gate:*

Function: controls start time of recorder

Duration: 5 ms or more

Shape: rectangular

"Off" Level: +70 v dc or less

"On" Level: +135 v dc or more

Source Impedance: 33 k or less

*Information Time Lag:* Information cannot be recorded until 5 ms after the leading edge of the positive signal gate

*Outputs:*

Level: 850 v ac peak-to-peak

Impedance: 10 k

Number: 6 marking signals

*Operating Limitations:*

Ambient Temperature: 0°C to 50°C (33°F to 122°F)

Humidity: 40% to 90 % relative

*Operating Power Requirements:* 105/115/125 v  $\pm$ 10%, 60 cps  $\pm$ 5%, 1 phase 3.8 amp at 115 v

Warmup Time: approx 30 sec

Tape Speed: 100 ips  $\pm$ 1%

*Major Units:*

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 94312

FREQUENCY SHIFT KEYER  
ELECTRONIC SWITCH

SA-733/UGC

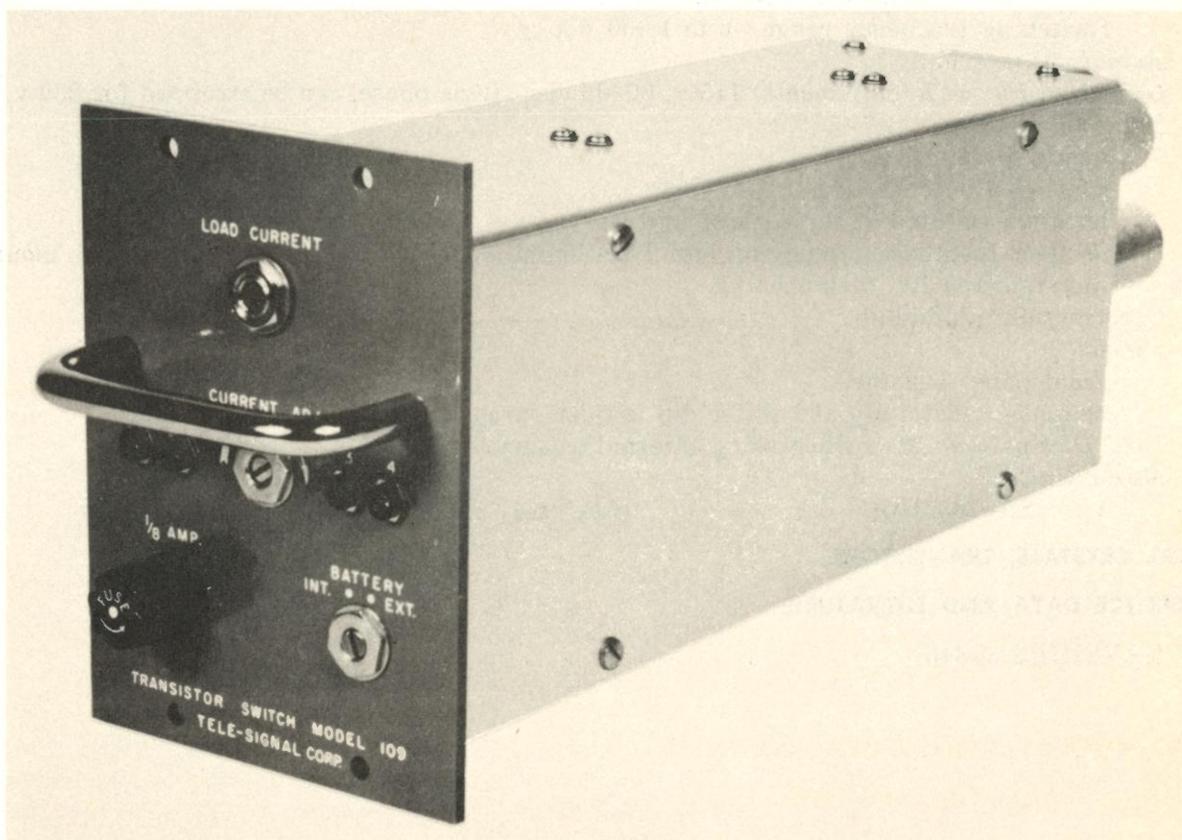
15 March 1962

Cog. Serv: USN FSN:

USA Line Item No.:

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:		Std		

Manufacturer: Tele-Signal Corp

**FUNCTIONAL DESCRIPTION:**

Electronic Switch SA-733/UGC isolates the output of a frequency shift converter from receive terminal equipment (e.g. teletypewriter). The switch accepts a signal from the converter and controls the ON-OFF condition of a transistor. It is capable of accepting signals of over 2000 bits per second.

It is used where complete isolation is required, such as is normally provided by an electro-mechanical relay, but where there are objections to the use of such a relay because of speed limitations or maintenance requirements and where it is necessary to operate into lines equipped with 120 v line batteries.

AN/UGC-type  
ELECTRONIC SWITCH

## SA-733/UGC

In addition, a self contained line battery is provided, which may or may not be utilized. This unit is completely protected against accidental faulty connections in the output circuit.

### RELATIONSHIP TO SIMILAR EQUIPMENT:

### TECHNICAL DESCRIPTION:

*Output Circuit:* single ended

*Input Data:* 2500 ohms impedance, 0 to 1,000 dot-cps

*Output Data:*

Impedance—variable to 2,500 ohms

Switching frequency range—0 to 1,000 dot-cy

*Actuation:* internally

*Operating Power Requirements:* 115 v, 50/60 cps, single phase, can be strapped for 230 v.

*Terminal Data:*

quantity—1

type—plug

location—located at the back of unit

*Installation:* Installed by plugging into Tele-Signal Model 139 Equipment Shelf, which mounts directly into standard 19" rack opening.

*Construction:* aluminum

*Finish:*

front panel—enamel

chassis—caustic dip and water dip lacquer spray

*Heat Dissipation:* 20 w when using internal battery.

*Major Units:*

1 SA-733/UGC

5¼" x 4" x 11"

1½ lbs

### TUBES, CRYSTALS, TRANSISTORS:

### REFERENCE DATA AND LITERATURE:

NAVSHIPS 93848

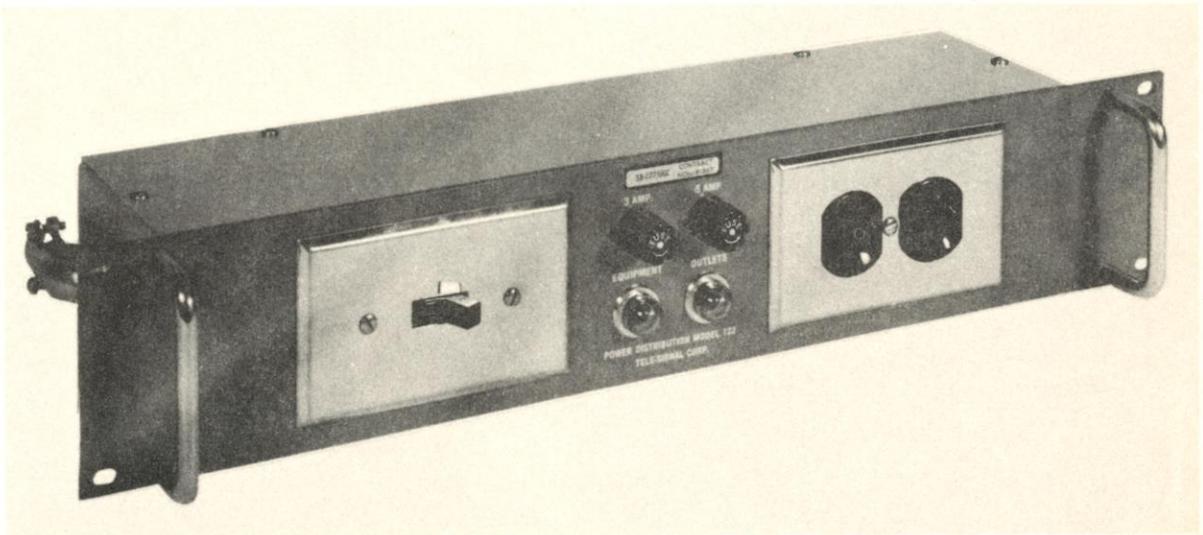
AN/UGC-type  
POWER DISTRIBUTION PANEL

SB-1177/UGC

15 March 1962  
 Cog. Serv: USN FSN:  
 USA Line Item No.:

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-A	Std		

Manufacturer: Tele-Signal Corp

**FUNCTIONAL DESCRIPTION:**

The power distribution panel supplies the main ac power for Telegraph Terminal AN/FGC-60(V). In addition, it supplies as power to two convenience outlets on the front panel. Fuses and indicating lights are located on the front panel.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

*Input Data:* 115/230 v ac, 8 amp, 50/60 cps, single phase

*Output Data:* Two outputs: 115/230 v ac, 3 amp, 50/60 cps, single phase  
 115/230 v ac, 5 amp, 50/60 cps, single phase

*Major Units:*

1 SB-1177/UGC

3½" x 19" x 5"

3¼ lbs

**TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**

NAVSHIPS 93852



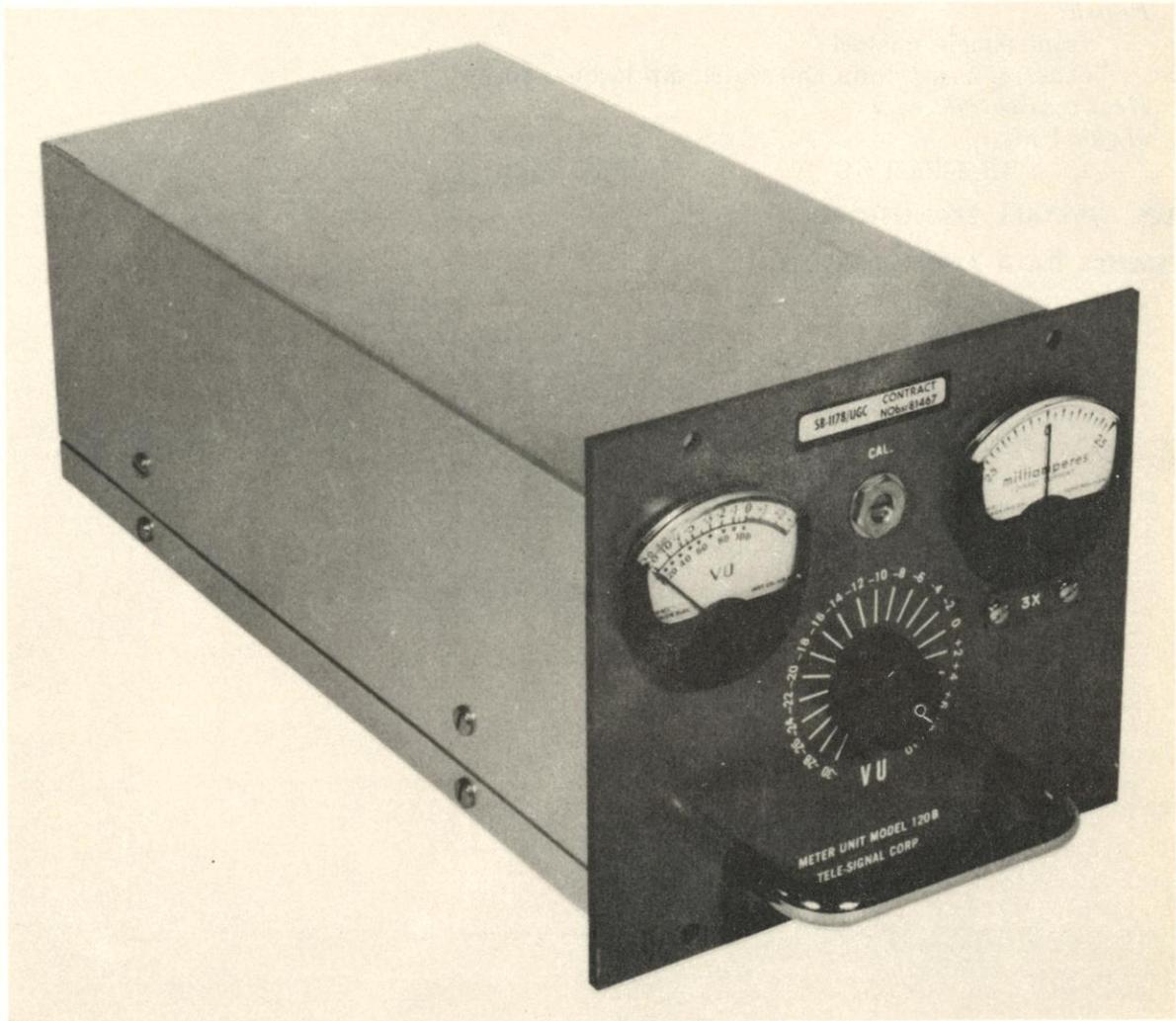
AN/UGC-type  
METER PANEL

**SB-1178/UGC**

15 March 1962  
Cog. Serv: USN FSN:  
USA Line Item No.:

	USA	USN	USAF	USMC
<b>STATUS OR TYPE CLASS.:</b>	Std-A	Std		

**Manufacturer:** Tele-Signal Corp



**FUNCTIONAL DESCRIPTION:**

Meter Panel SB-1176/UGC is used as a monitoring station for Telegraph Terminal AN/FGC-60(V). The signals applied to the meters are patched ccrded via the patch field.

AN/UGC-type  
METER PANEL

## SB-1178/UGC

### RELATIONSHIP TO SIMILAR EQUIPMENT:

### TECHNICAL DESCRIPTION:

*VU Range of Measurement:* —40 dbm to +20 dbm

*DC Range of Measurement:* —75 ma to +75 ma

*Calibration Accuracy:* 300 cps to 10 KC  $\pm 2$  db

*Installation:* Installed by plugging into Tele-Signal Model 139 Equipment Shelf, which mounts directly into standard 19" rack.

*Construction:* aluminum

*Finish:*

front panel—enamel

chassis—caustic dip and water dip lacquer spray

*Heat dissipation:*  $\frac{3}{4}$  w

*Major Units:*

1 SB-1178/UGC

5 $\frac{1}{4}$ " x 6" x 11"

3 $\frac{3}{8}$  lbs

### TUBES, CRYSTALS, TRANSISTORS:

### REFERENCE DATA AND LITERATURE:

NAVSHIPS 93851

AN/UGC-type  
SIGNAL DISTRIBUTION PANEL

SB-1179/UGC

15 March 1962  
Cog. Serv: USN FSN:  
USA Line Item No.:

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-A	Std		

Manufacturer: Tele-Signal Corp

**FUNCTIONAL DESCRIPTION:**

This unit provides the terminal connection and distribution facilities for 16-channel transmit-dual diversity receive tone in Telegraph Terminal AN/FGC-60(V). Three separate tone circuits are provided, one transmitting and two receiving circuits; all tone lines are equipped with line isolation transformers. The transmitting circuit is equipped with an attenuator to adjust the aggregate tone level. The panel connects 16 frequency shift keyers and 16 frequency shift converters.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

*Installation:* four slotted holes (RETMA standard) for 19" rack mounting

*Construction:* aluminum

*Finish:*

front panel—enamel

chassis—caustic dip and water dip lacquer spray

*Heat Dissipation:* negligible

*Major Unit:*

1 SB-1179/UGC

3½" x 19" x 6½"

3<sup>9</sup>/<sub>16</sub> lbs

**TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**

NAVSHIPS 93853



AN/UGC-type  
CHANNEL SELECTOR PANEL

## SB-1180/UGC

15 March 1962  
 Cog. Serv: USN FSN:  
 USA Line Item No.:

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:		Std		
Manufacturer:	Tele-Signal Corp			

**FUNCTIONAL DESCRIPTION:**

This unit is used for combining the output of eight dual diversities into four quadruple diversities into four quadruple diversities.

This unit consists of four combiners. The inputs to each combiner are the outputs of two dual diversity comparators. A switch is provided for the selection of either quadruple or dual diversity system operation.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

*Construction:* aluminum

*Finish:*

front panel—enamel

chassis—caustic dip and water dip laquer spray

*Installation:* four slotted holes (RETMA standard) for 19" rack mounting

*Major Units:*

1 SB-1180/UGC

1 3/4" x 19" x 4 1/2"

3 lbs

**TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**

NAVSHIPS 93850



AN/UGC-type  
MULTIPLEXER

TD-410/UGC

15 March 1962

Cog. Serv: USN FSN:

USA Line Item No.:

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-A	Std		

Manufacturer: Tele-Signal Corp

**FUNCTIONAL DESCRIPTION:**

Multiplexer TD-410/UGC combines two voice frequency circuits into one channel for transmission over a radio link. The radio bandwidth required is 6 kilocycles.

This equipment, which is completely transistorized, consists of two (twin) channels with each channel covering a nominal 375 to 3035 cps voice band. One channel, known as the direct channel, passes the input signal unchanged. The second channel, known as the translated channel, heterodynes the input signal with an internal carrier so that the input signal is changed from the nomi-

**AN/UGC-type  
MULTIPLEXER**

**TD-410/UGC**

nal 375 to 3025 cps voice band to a band of 3265 to 5915 cps. The two channels are then combined and passed as one 6 kc channel.

The multiplexer is a self contained unit including its own power supply and crystal controlled oscillator.

When used with independent sideband transmitters (twin channel), two multiplexers and two demultiplexers TD-411/UGC are needed to provide four independent voice frequency circuits.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Frequency:* division type

*Input Channel Data:*

channel 1:

bandwidth—2650 cps  
impedance—600 ohms  
frequency—375 to 3025 cps

channel 2:

bandwidth—2650 cps  
impedance—600 ohms  
frequency—375 to 3025 cps

*Output Data:*

bandwidth—5540 cps  
impedance—600 ohms  
frequency—375 to 5915 cps

*Operating Power Requirements:* 115/230 v, 50/60 cps, single phase

*Installation:* Installed by plugging into Tele-Signal Model 139 Equipment Shelf. One shelf can accommodate two units (either multiplexers or demultiplexers or a mixed combination thereof).

*Construction:* aluminum

*Finish:*

front panel—enamel  
chassis—caustic dip and water dip laquer spray

*Heat Dissipation:* 4 w

*Major Units:*

1 TD-410/UGC

5 $\frac{1}{4}$ " x 8" x 11"

10 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 93856

TM for Multiplexer TD-410/UGC

AN/UGC-type  
DEMULPLEXER

TD-411/UGC

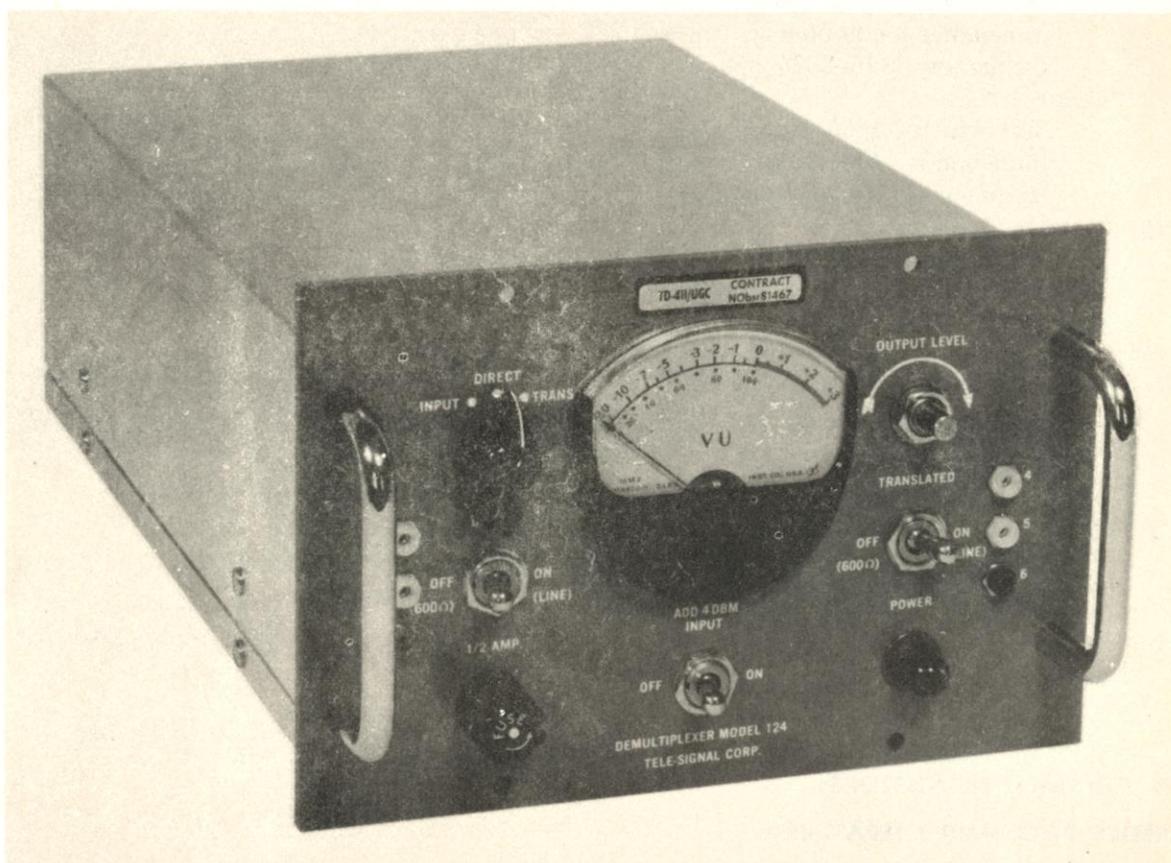
15 March 1962

Cog. Serv: USN FSN:

USA Line Item No.:

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-A	Std		

Manufacturer: Tele-Signal Corporation, Hicksville, N. Y.

**FUNCTIONAL DESCRIPTION:**

Demultiplexer TD-411/UGC is a receiving terminal equipment and operates in conjunction with a Multiplexer TD-410/UGC which is located at the transmitting terminal. The demultiplexer separates the unchanged voice channel from the translated voice channel and converts the latter back to its original voice channel. These two voice channels are separately amplified and fed to external equipments.

The demultiplexer is a completely transistorized, self-contained unit including its own power supply and crystal controlled oscillator.

**AN/UGC-type  
DEMULPLEXER**

**TD-411/UGC**

The independent voice frequency circuits handled by a multiplexer—demultiplexer combination can be utilized for telephony, facsimile, or general data transmission.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

Frequency: division type

*Output Channel Data:*

channel 1:

- bandwidth—2650 cps
- impedance—600 ohms
- frequency—375–3025 cps

channel 2:

- bandwidth—2650 cps
- impedance—600 ohms
- frequency—375 to 2025 cps

*Input Data:*

- bandwidth—5540 cps
- impedance—600 ohms
- frequency—375 to 5915 cps

*Operating Power Requirements:* 115/230 v, 50/60 cps, single phase

*Installation:* Installed by plugging into Tele-Signal Model 139 Equipment Shelf. One shelf can accommodate two units (either multiplexers or demultiplexers or a mixed combination thereof).

*Construction:* aluminum

*Finish:*

- front panel—enamel
- chassis—caustic dip and water dip lacquer spray

*Heat Dissipation:* 4 w

*Specific Application Data:* Used whenever the received signal has been multiplexed at the transmitting terminal.

*Major Units:*

1	TD-411/UGC	5¼" x 8" x 11"	10 lbs
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**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 93857

AN/UGC-type  
TELEGRAPH REPEATER

TH-42/UG

15 March 1962  
Cog. Serv: USN FSN:  
USA Line Item No.:

USA

USN

USAF

USMC

## STATUS OR TYPE CLASS.:

Manufacturer: CBVV (96238), Stelma Inc

No Illustration Available

## FUNCTIONAL DESCRIPTION:

Telegraph Repeater TH-42/UG is an in-line device used to regenerate a signal or signals in telegraph loops. It is designed for one-way reversible operation; it may also be connected for 4-wire (4W) to 4-wire, or 2-wire (2W) to 4-wire operation. The repeater can be used in either 20-ma or 60-ma neutral telegraph loops. The input and output circuits are isolated from each other.

The repeater uses tone couplers for isolation on the input sides, and low resistance vacuum tube keying on the output sides. The chassis is electrically isolated from the circuits. For in-line, 2-wire service, the two one-way repeaters are connected in cascade. The repeaters are coupled so that: (1) the output keying tube on one repeater, in series with the input circuits of the other, is continuously on "MARK" during transmission; and (2) an open circuit on the receiving end puts the sending end on "SPACE."

## RELATIONSHIP TO SIMILAR EQUIPMENT:

Telegraph Repeater TH-42/UG is identical to Stelma Model TR-2B.

## TECHNICAL DESCRIPTION:

*Impedance:*

425 ohms, input and output, 2 wire  
270 ohms, input, 20-ma loop, 4-wire  
90 ohms, input, 60-ma loop, 4-wire  
330 ohms, output, MARK, 4-wire

*Keying Speed:* up to 150 cps (300 baud)

*Distortion:* under 2 percent

*Operating Power Requirement:* 105-125 vac, 50/60 cps, 1 phase, 50 w

*Major Units:*

1	TH-42/UG	31½" x 19" x 10"	12 lbs
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## TUBES, CRYSTALS, TRANSISTORS:

## REFERENCE DATA AND LITERATURE:

NAVSHIPS 93742  
TM for Telegraph Repeater TH-42/UG



AN/UGC-type  
TELETYPEWRITER

TT-47/UG  
TT-48/UG

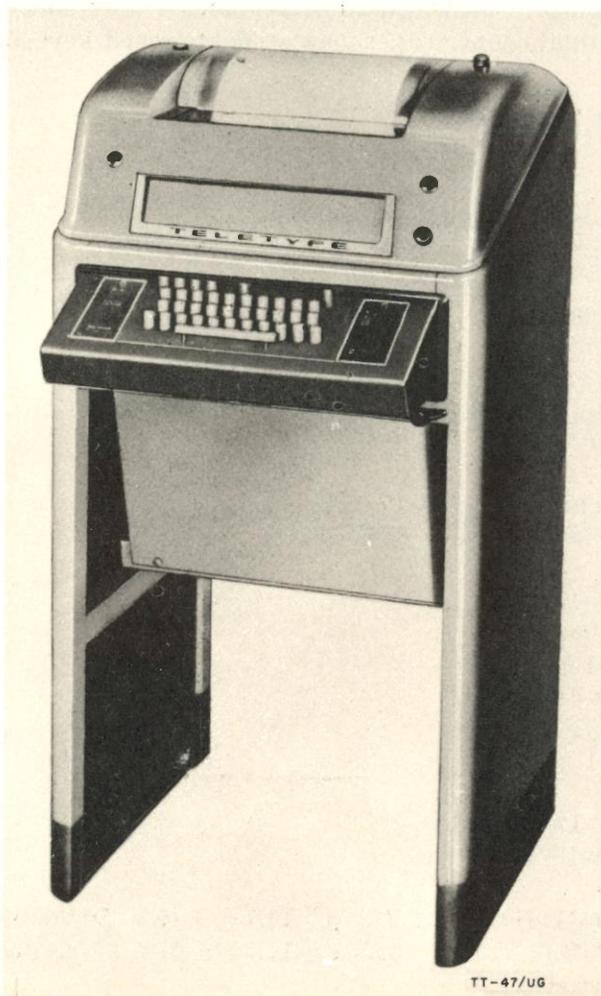
23 October 1958

Cog. Serv: USN FSN: TT-47/UG, 5815-546-6789  
TT-48/UG, 5815-665-2070

USA Line Item No.: 680385  
680387

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-B		Std (TT-47/UG) only	

Manufacturer:



TT-47/UG

**AN/UGC-type  
TELETYPEWRITER**

**TT-47/UG  
TT-48/UG**

**FUNCTIONAL DESCRIPTION:**

Teletypewriters TT-47/UG and TT-48/UG are sending and receiving page-printing teletypewriter sets used for the transmission and reception of teletypewriter messages over wire or radio communication circuits. The signals transmitted and received are of the open-and-closed dc type. The equipments are adjustable to speeds of 460 and 600 operations per minute in addition to their regular speed of 368 operations per minute.

The TT-47/UG and TT-48/UG are electrically and mechanically interchangeable with the exception of their motors. The TT-47/UG is equipped with synchronous ac Motor PD-17/U; the TT-48/UG is equipped with series-governed ac Motor PD-18/U. The cabinet supplied with either unit is suitable for deck mounting.

Teletypewriter TT-47/UG and TT-48/UG differ from the TT-47A/UG and TT-48A/UG in several respects. In addition to electrical and mechanical differences, the "A" models have an increased number of terminal connectors, a new and improved keyboard, and an increase to 85 characters per line.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Type Keyboard:* standard communications

*Characters Per Line:* 72

*Operating Speed:*

368 opm, 60 wpm

460 opm, 75 wpm

600 opm, 100 wpm

*Code:* 5 unit, start-stop

*Number of Channels:* 2

*Type Motor:*

TT-47/UG: synchronous (PD-17/U)

TT-48/UG: series-governed (PD-18/U)

*Current Rating:*

TT-47/UG (PD-17/U):

Starting: 9 amp

Operating: 1.85 amp

TT-48/UG (PD-18/U):

Starting: 1.75 amp

Operating: 1 amp

*Heat Dissipation:*

TT-47/UG (PD-17/U): 50 w

TT-48/UG (PD-18/U): 75 w

*Power Requirements:*

TT-47/UG (PD-17/U): 65 w, 0.3 pf, 115-v  $\pm 10\%$  50- to 60-cy  $\pm 0.5$  cy 1-phase ac

TT-48/UG (PD-18/U): 95 w, 0.83 pf, 115-v  $\pm 10\%$  50- to 60-cy 1-phase ac

*Major Units:*

1 CY-870/UG

39 $\frac{1}{2}$ " x 20 $\frac{1}{2}$ " x 18 $\frac{1}{4}$ "

81 lbs

AN/UGC-type  
TELETYPEWRITER

TT-47/UG  
TT-48/UG

TUBES, CRYSTALS, TRANSISTORS:

REFERENCE DATA AND LITERATURE:

NAVSHIPS 91393



AN/UGC-type  
TELETYPEWRITER

TT-47A/UG  
TT-48A/UG

23 October 1958

Cog. Serv: USN FSN: TT-47A/UG, 5815-644-3407  
TT-48A/UG, 5815-665-2070

USA Line Item No.:

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	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:		Std-B		

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Manufacturer: Teletype Corp



TT-48A/UG

AN/UGC-type  
TELETYPEWRITER

TT-47A/UG

TT-48A/UG

**FUNCTIONAL DESCRIPTION:**

Teletypewriter TT-47A/UG and TT-48A/UG are sending and receiving page-printing teletypewriter sets used for the transmission and reception of teletypewriter messages over wire or radio communication circuits. Signaling between stations is accomplished by the five-unit, start-stop permutation code and utilizes the 7.42-unit transmission pattern. The operating speed of 60 words per minute may be increased to 75 or 100 words per minute by changing to other gears that are available as optional equipment.

The TT-47A/UG and TT-48A/UG are electrically and mechanically interchangeable with the exception of their motors. The TT-47A/UG is equipped with synchronous ac Motor PD-17A/U; the TT-48A/UG is equipped with series-governed ac Motor PD-18/U. The cabinet supplied with either unit is suitable for deck mounting.

Teletypewriters TT-47A/UG and TT-48A/UG differ from the TT-47/UG and TT-48/UG in several respects. In addition to electrical and mechanical differences, the later types have an increased number of terminal connectors, a new and improved keyboard, and an increase to 85 characters per line.

The TT-47A/UG and TT-48A/UG are identical with the TT-128A/UG and TT-129A/UG, respectively, except for their keyboards. The keyboards of the TT-128A/UG and TT-129A/UG have weather symbols instead of the standard communications keyboards on the TT-47A/UG and TT-48A/UG. The TT-47A/UG also is similar to Teletypewriter TT-171/UG except for the sending keyboard.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Type Keyboard:* improved communications

*Characters Per Line:* 85

*Operating Speed:*

368 opm, 60 wpm

460 opm, 75 wpm

600 opm, 100 wpm

*Code:* 5-unit, start-stop

*Transmission Pattern:* 7.42-unit

*Signaling Frequency:*

60 wpm: 22.8 dot-cy

75 wpm: 37.1 dot-cy

*Output Signal:* on-off dc, 0.06 amp nominal from external 115-v source, either positive or negative polarity

*Input Signal:* on-off dc, 0.06 amp nominal from external source, either positive or negative polarity

*Type Motor:*

TT-47A/UG: synchronous (PD-17A/U)

TT-48A/UG: series-governed (PD-18/U)

*Power Requirements:*

TT-47A/UG (PD-17A/U): 65 w, 0.3 pf, 115-v  $\pm 10\%$  60-cy  $\pm .5$  cy, 1-phase ac

TT-48A/UG (PD-18/U): 95 w, 0.83 pf, 115-v  $\pm 10\%$  50- to 60-cy 1-phase

AN/UGC-type  
TELETYPEWRITER

**TT-47A/UG**  
**TT-48A/UG**

*Major Units:*

MX-1114A/UG  
MX-1115A/UG  
SB-154A/UG

4 $\frac{3}{4}$ " x 15 $\frac{1}{2}$ " x 17 $\frac{1}{2}$ "  
9 $\frac{3}{4}$ " x 10 $\frac{1}{2}$ " x 15 $\frac{1}{2}$ "  
8 $\frac{1}{8}$ " x 4 $\frac{5}{8}$ " x 15"

11 lbs  
19 lbs  
5 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 91713



AN/UGC-type  
TELETYPEWRITER  
**TT-69/UG**  
**TT-70/UG**

24 October 1958

Cog. Serv: USN FSN: TT-69/UG, 5815-503-2766  
TT-70/UG, 5815-370-0074

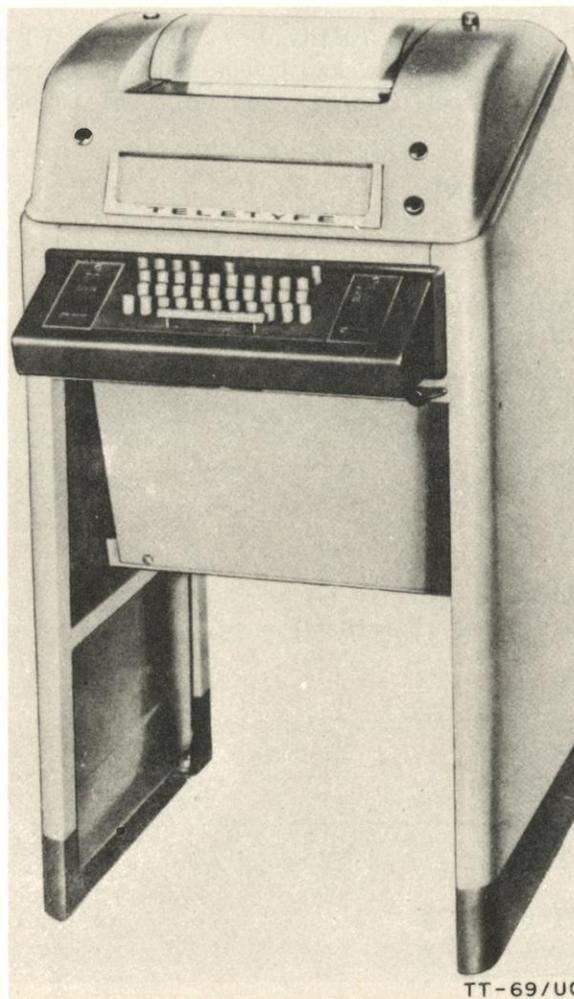
USA Line Item No.: 680410

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	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-B			

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Manufacturer: Teletype Corp



TT-69/UG

AN/UGC-type  
TELETYPEWRITER

TT-69/UG  
TT-70/UG

**FUNCTIONAL DESCRIPTION:**

Teletypewriters TT-69/UG and TT-70/UG are sending and receiving page-printing teletypewriter sets used for the transmission and reception of teletypewriter messages over wire or radio communication circuits. The signals transmitted and received are of the open-and-closed dc type. The equipments are adjustable to speeds of 460 to 600 operations per minute in addition to their regular speed of 368 operations per minute.

The TT-69/UG and TT-70/UG are electrically and mechanically interchangeable with the exception of their motors. The TT-69/UG is equipped with synchronous ac Motor PU-17/U; the TT-70/UG is equipped with series-governed ac Motor PU-18/U. The cabinet supplied with either unit is suitable for bulkhead mounting.

Teletypewriters TT-69/UG and TT-70/UG differ from the TT-69A/UG and TT-70A/UG in several respects. In addition to electrical and mechanical differences, the "A" models have an increased number of terminal connectors, a new and improved keyboard, and an increase to 85 characters per line.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Type Keyboard:* standard communications

*Characters Per Line:* 72

*Operating Speed:*

268 opm, 60 wpm

460 opm, 75 wpm

600 opm, 100 wpm

*Code:* 5-unit, start-stop

*Number of Channels:* 2

*Type Motor:*

TT-69/UG: synchronous (PD-17/U)

TT-70/UG: series-governed (PD-18/U)

*Current Rating:*

TT-69/UG (PD-17/U):

Starting: 9 amp

Operating: 1.85 amp

TT-70/UG (PD-18/U):

Starting: 1.75 amp

Operating: 1 amp

*Heat Dissipation:*

TT-69/UG (PD-17/U): 50 w

TT-70/UG (PD-18/U): 75 w

*Power Requirements:*

TT-69/UG (PD-17/U): 65 w, 0.3 pf 115-v  $\pm 10\%$  60-cy  $\pm .5$  cy 1-phase ac

TT-70/UG (PD-18/U): 95 w, 0.83 pf, 115-v  $\pm 10\%$  50- to 60-cy 1-phase ac

AN/UGC-type  
TELETYPEWRITER

**TT-69/UG**  
**TT-70/UG**

*Major Units:*

1	MX-1115A/UG	9 $\frac{3}{4}$ " x 10 $\frac{1}{2}$ " x 15 $\frac{1}{2}$ "	19 lbs
1	MX-1114A/UG	4 $\frac{3}{4}$ " x 15 $\frac{1}{2}$ " x 17 $\frac{1}{2}$ "	11 lbs
1	SB-154A/UG	8 $\frac{1}{8}$ " x 4 $\frac{5}{8}$ " x 15"	5 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 91393  
Spec No. CS-898



AN/UGC-type  
TELETYPEWRITER

TT-69A/UG  
TT-70A/UG

28 October 1958

Cog. Serv: USN FSN: TT-69A/UG, 5815-503-2766  
5815-644-4705

TT-70A/UG, 5815-665-2068

USA Line Item No.:

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-B		L/Std (TT-70A/UG) only	

Manufacturer: Teletype Corp

No Illustration Available

**FUNCTIONAL DESCRIPTION:**

Teletypewriters TT-69A/UG and TT-70A/UG are sending and receiving page-printing teletypewriter sets used for the transmission and reception of teletypewriter messages over wire or radio communication circuits. Signaling between stations is accomplished by the five-unit, start-stop permutation code and utilizes the 7.42-unit transmission pattern. The operating speed of 60 words per minute may be increased to 75 or 100 words per minute by changing to other gears that are available as optional equipment.

The TT-69A/UG and TT-70A/UG are electrically and mechanically interchangeable with the exception of their motors. The TT-69A/UG is equipped with synchronous ac Motor PD-17A/U; the TT-70A/U is equipped with series-governed ac Motor PD-18/U. The cabinet supplied with either unit is suitable for bulkhead mounting.

Teletypewriters TT-69A/UG and TT-70A/UG differ from the TT-69/UG and the TT-70/UG in several respects. In addition to electrical and mechanical differences, the later types have an increased number of terminal connectors, a new and improved keyboard, and an increase to 85 characters per line.

The TT-69A/UG and TT-70A/UG are identical with the TT-130A/UG and TT-131A/UG, respectively, except for their keyboards. The keyboards of the TT-130A/UG and TT-131A/UG have weather symbols instead of the standard communications keyboards on the TT-69A/UG and TT-70A/UG. The TT-69A/UG also is similar to Teletypewriter TT-171/UG except for the sending keyboard.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Type Keyboard:* improved communications

*Characters Per Line:* 85

*Operating Speed:*

368 opm, 60 wpm

460 opm, 75 wpm

600 opm, 100 wpm

*Code:* 5-unit, start-stop

**AN/UGC-type  
TELETYPEWRITER**

**TT-69A/UG  
TT-70A/UG**

*Transmission Pattern:* 7.42-unit

*Signaling Frequency:*

60 wpm: 22.8 dot-cy

75 wpm: 28.5 dot-cy

100 wpm: 37.1 dot-cy

*Output Signal:* On-off dc, 0.06 amp nominal from external 115-v source, either positive or negative polarity

*Input Signal:* On-off dc, 0.06 amp nominal from external source, either positive or negative polarity

*Type Motor:*

TT-69A/UG: synchronous (PD-17A/U)

TT-70A/UG: series-governed (PD-18/U)

*Power Requirements:*

TT-69A/UG (PD-17A/U): 65 w, 0.3 pf, 115-v  $\pm 10\%$  60-cy  $\pm .5$  cy 1-phase ac

TT-80A/U (PD-18/U): 95 w, 115-v  $\pm 10\%$  50- to 60-cy 1-phase ac

*Major Units:*

1	MX-1115/UG	9 $\frac{3}{4}$ " x 10 $\frac{1}{2}$ " x 15 $\frac{1}{2}$ "	19 lbs
1	MX-1114/UG	4 $\frac{3}{4}$ " x 15 $\frac{1}{2}$ " x 17 $\frac{1}{2}$ "	11 lbs
1	SB-154/UG	8 $\frac{1}{8}$ " x 4 $\frac{5}{8}$ " x 15"	5 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 91713

Spec No. CS-989

AN/UGC-type  
TELETYPEWRITERTT-128A/UG  
TT-129A/UG

28 October 1958

Cog. Serv: USN FSN:

USA Line Item No.: 680458 (TT-128A/UG)

	USA	USN	USMC	USAF
STATUS OR TYPE CLASS.:	Std-B			

Manufacturer: Teletype Corp

No Illustration Available

**FUNCTIONAL DESCRIPTION:**

Teletypewriters TT-128A/UG and TT-129A/UG are sending and receiving page-printing teletypewriter sets used for the transmission and reception of weather aerological information by teletypewriter over wire or radio communication circuits. Signaling between stations is accomplished by the five-unit, start-stop permutation code and utilizes the 7.42-unit transmission pattern. The normal operating speed of 60 words per minute may be increased to 75 or 100 words per minute by changing to other gears which are available as optional equipment.

The TT-128A/UG and TT-129A/UG are electrically and mechanically interchangeable with the exception of their motors. The TT-128A/UG is equipped with synchronous ac Motor PD-17A/U; the TT-129A/UG is equipped with series-governed ac Motor PD-18/U. The cabinet supplied with either unit is suitable for deck mounting.

Teletypewriters TT-128A/UG and TT-129A/UG are identical to the TT-47A/UG and TT-48A/UG respectively, with the exception of their keyboards. The keyboards of the TT-128A/UG and TT-129A/UG have weather symbols instead of standard communications keyboards.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:***Type Keyboards:* improved weather*Characters Per Line:* 85*Operating Speed:*

360 opm, 60 wpm

460 opm, 75 wpm

600 opm, 100 wpm

*Code:* 5-unit, start-stop*Transmission Pattern:* 7.42-unit*Signaling Frequency:*

60 wpm: 22.8 dot-cy

75 wpm: 28.5 dot-cy

100 wpm: 37.1 dot-cy

*Output Signal:* on-off dc, 0.06 amp nominal from external 115-v source, either positive or negative polarity*Input Signal:* on-off dc, 0.06 amp nominal from external source, either positive or negative polarity

AN/UGC-type  
TELETYPEWRITER

TT-128A/UG  
TT-129A/UG

*Type Motor:*

TT-128A/UG: synchronous (PD-17A/U)  
TT-129A/UG: series-governed (PD-18/U)

*Current Rating:*

TT-128A/UG (PD-17A/U):  
Starting: 9 amp  
Operating: 1.85 amp  
TT-129A/UG (PD-18/U):  
Starting: 1.75 amp  
Operating: 1 amp

*Heat Dissipation:*

TT-128A/UG (PD-17A/U): 50 w  
TT-129A/UG (PD-18/U): 75 w

*Power Requirements:*

TT-128A/UG (PD-17A/U): 65 w, 0.3 pf, 115-v  $\pm 10\%$  60 cy  $\pm .5$  cy 1-phase ac  
TT-129A/UG (PD-18/U): 95 w, 0.83 pf, 115-v  $\pm 10\%$  50- to 60-cy 1-phase ac

*Major Units:*

1	MX-1422A/UG	9 $\frac{3}{4}$ " x 10 $\frac{1}{2}$ " x 15 $\frac{1}{2}$ "	19 lbs
1	MX-1421A/UG	4 $\frac{3}{4}$ " x 15 $\frac{1}{2}$ " x 17 $\frac{1}{2}$ "	11 lbs
1	SB-154A/UG	4 $\frac{5}{8}$ " x 8 $\frac{1}{8}$ " x 18"	5 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 91713  
NAVSHIPS 98350

AN/UGC-type  
TELETYPEWRITERTT-130A/UG  
TT-131A/UG

1 March 1964

Cog. Serv: USN FSN:

USA Line Item No.: 680460

	USA	USN	USAF
STATUS OR TYPE CLASS.:	Std-B		

Manufacturer: Teletype Corp

No Illustration Available

**FUNCTIONAL DESCRIPTION:**

Teletypewriters TT-130A/UG and TT-131A/UG are sending and receiving page-printing teletypewriter sets used for the transmission and reception of weather aerological information by teletypewriter over wire or radio communication circuits. Signaling between stations is accomplished by the five-unit, start-stop permutation code and utilizes the 7.42-unit transmission pattern. The normal operating speed of 60 words per minute may be increased to 75 or 100 words per minute by changing to other gears that are available as optional equipment.

The TT-130A/UG and TT-131A/UG are electrically and mechanically interchangeable with the exception of their motors. The TT-130A/UG is equipped with synchronous ac Motor PD-17A/U; the TT-131A/UG is equipped with series-governed ac Motor PD-18/U. The cabinet supplied with either unit is suitable for bulkhead shelf mounting.

Teletypewriters TT-130A/UG and TT-131A/UG are identical to the TT-69A/UG and TT-70A/UG, respectively, with the exception of their keyboards. The keyboards of the TT-130A/UG and TT-131A/UG have weather symbols instead of standard communications keyboards.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:***Type Keyboard:* improved weather*Characters Per Line:* 85*Operating Speed:*

368 opm, 60 wpm

460 opm, 75 wpm

60 opm, 100 wpm

*Code:* 5-unit, start-stop*Transmission Pattern:* 7.42-unit*Signaling Frequency:*

60 wpm: 22.8 dot-cy

75 wpm: 28.5 dot-cy

100 wpm: 37.1 dot-cy

*Output Signal:* on-off dc, 0.06 amp nominal from external 115-v source, either positive or negative polarity

AN/UGC-type  
TELETYPEWRITER

**TT-130A/UG**  
**TT-131A/UG**

*Input Signal:* on-off dc, 0.06 amp nominal from external source, either positive or negative polarity

*Type Motor:*

TT-130A/UG: synchronous (PD-17A/U)  
TT-131A/UG: series-governed (PD-18/U)

*Current Rating:*

TT-130A/UG (PD-17A/U):

Starting: 9 amp  
Operating: 1.85 amp

TT-131A/UG (PD-18/U):

Starting: 1.75 amp  
Operating: 1 amp

*Heat Dissipation:*

TT-130A-UG (PD-17A/U): 50 w  
TT-131A/UG (PD-18/U): 75 w

*Power Requirements:*

TT-130A/UG (PD-17A/U): 65 w, 0.3 pf, 115-v  $\pm 10\%$  60-cy  $\pm .5$  cy 1-phase ac  
TT-131A/UG (PD-18/U): 95 w, 0.83 pf 115-v  $\pm 10\%$  50- to 60-cy 1-phase ac

*Major Units:*

1	MX-1422A/UG	9 $\frac{3}{4}$ " x 10 $\frac{1}{2}$ " x 15 $\frac{1}{2}$ "	19 lbs
1	MX-1421A/UG	4 $\frac{3}{4}$ " x 15 $\frac{1}{2}$ " x 17 $\frac{1}{2}$ "	11 lbs
1	SB-154A/UG	4 $\frac{5}{8}$ " x 8 $\frac{1}{8}$ " x 18"	5 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 91713  
NAVSHIPS 98350

AN/UGR-type  
TELETYPEWRITER  
TT-171/UG

28 October 1958  
Cog. Serv: USN FSN:  
USA Line Item No.: 680464

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-B			

Manufacturer: Teletype Corp

No Illustration Available

**FUNCTIONAL DESCRIPTION:**

Teletypewriter TT-171/UG is a receiving only page-printing teletypewriter set used to receive typewritten messages over wire or radio telegraph circuits from equipment located at a ship or shore station. The normal operating speed of 60 words per minute may be increased to 75 or 100 words per minute by changing to other gears that are available as optional equipment.

The TT-171/UG is similar to the TT-47A/UG and TT-69A/UG with the exception of the sending keyboard. The TT-171/UG is equipped with synchronous ac Motor PD-17A/U, and the cabinet supplied with the unit is suitable for deck mounting.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Characters Per Line:* 85

*Operating Speed:*

368 opm, 60 wmp

460 opm, 75 wpm

600 opm, 100 wpm

*Code:* 5-unit, start-stop

*Transmission Pattern:* 7.42-unit

*Signaling Frequency:*

60 wpm: 22.8 dot-cy

75 wpm: 28.5 dot-cy

100 wpm: 37.1 dot-cy

*Input Signal:* on-off dc, 0.06 amp nominal from external source, either positive or negative polarity

*Type Motor:* synchronous (PD-17A/U)

*Current Rating:*

Starting: 9 amp

Operating: 1.85 amp

*Heat Dissipation:* 50 w

*Power Requirements:* 65 w, 0.3 pf, 115-v  $\pm 10\%$  60-cy  $\pm .5$  cy 1-phase ac

*Major Units:*

MX-1115A/UG

9 $\frac{3}{4}$ " x 10 $\frac{1}{2}$ " x 15 $\frac{1}{2}$ "

19 lbs

SB-154/UG

4 $\frac{5}{8}$ " x 8 $\frac{1}{8}$ " x 15"

5 lbs

MIL-HDBK-161A/TM11-487A-3/NAVEXOS P-2058/TO 31-3-73

AN/UGR-type  
TELETYPEWRITER

**TT-171/UG**

TUBES, CRYSTALS, TRANSISTORS:

REFERENCE DATA AND LITERATURE:

NAVSHIPS 91713

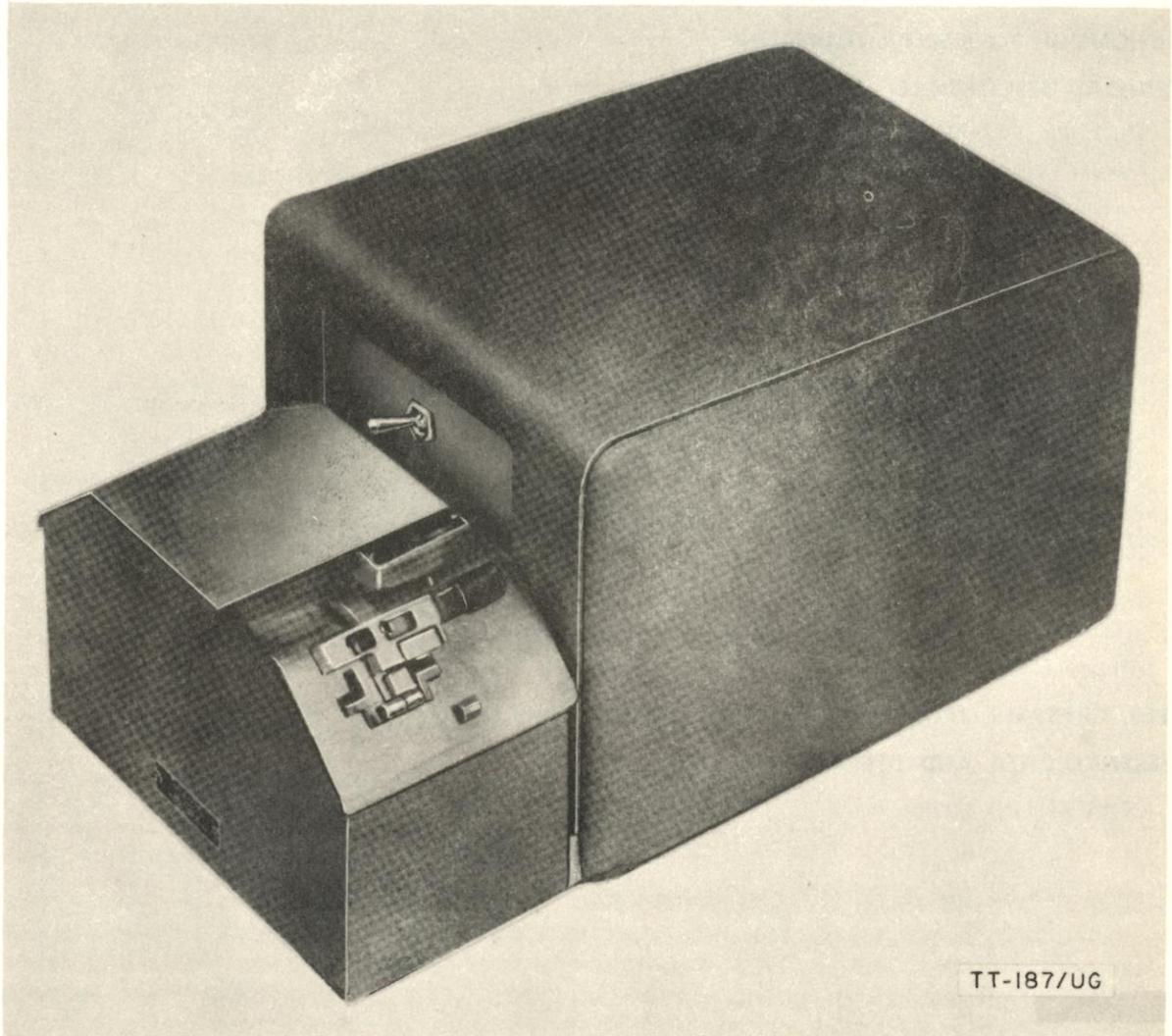
AN/UGT-type  
TELETYPEWRITER DISTRIBUTOR-TRANSMITTER  
**TT-187/UG**

30 October 1958  
Cog. Serv: USN FSN:  
USA Line Item No.: 613694

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	USA	USN	USAF	USMC
<b>STATUS OR TYPE CLASS:</b>	Std-A			
<b>Manufacturer:</b>	Western Electric Co			

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**AN/UGT-type  
TELETYPEWRITER DISTRIBUTOR-TRANSMITTER**

**TT-187/UG**

**FUNCTIONAL DESCRIPTION:**

Teletypewriter Distributor-Transmitter TT-187/UG is an automatic transmitter distributor designed for use in transmitting or relaying stations where large amounts of traffic must be handled with minimum delay. The unit translates code impulses from fully perforated or chadless tape into electrical impulses and transmits these impulses, in the form of a five-unit, start-stop permutation code to one or more receiving stations.

The TT-187/UG consists principally of tape sensing and tape feeding mechanisms, a distributor commutator, and a motor, all of which are housed in a metal cabinet. It has an all steel external expansion clutch, sensing pins with longer travel located in line with axis of the feed wheel, and an increased number of feed pins engaging the feed holes in the tape.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Type Tape:* chad (perforated) or chadless

*Operating Speed:*

368 opm, 60 wpm

460 opm, 75 wpm

600 opm, 100 wpm

*Type Signaling Code:* 5-unit, start-stop

*Transmission Pattern:* 7.42-unit

*Signaling Frequency:*

60 wpm: 22.8 dot-cy

75 wpm: 28.5 dot-cy

100 wpm: 37.1 dot-cy

*Type Motor:* synchronous

*Motor Speed:* 3,600 rpm

*Current Rating:*

Starting: 9 amp

Operating: 1.85 amp

*Power Requirements:* 65 w, 0.3 pf, 115-v  $\pm 10\%$  60-cy  $+75\%$ , 1-phase ac

*Major Units:*

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 92733

## INTERCOMMUNICATION SET

## AN/UIC-1, -1X

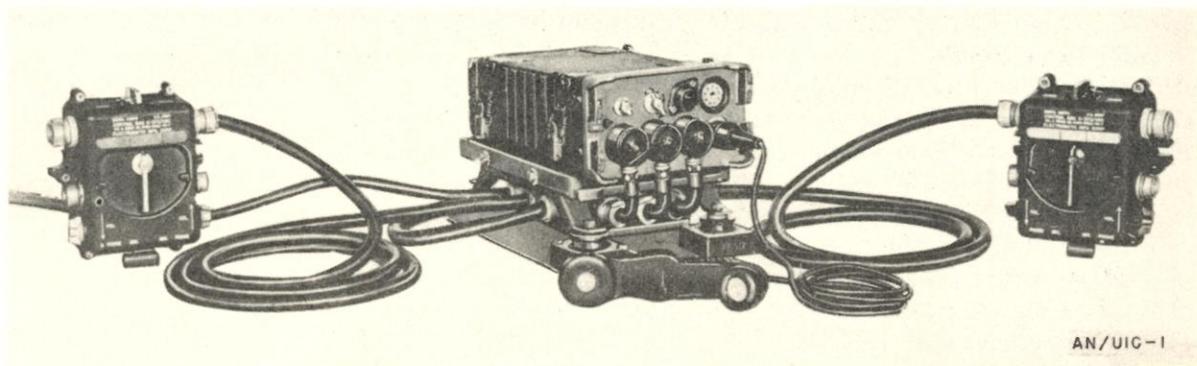
1 March 1964

Cog. Serv: USA FSN: 5830-224-5341

USA Line Item No.: 621266

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-A			

Manufacturer:

**FUNCTIONAL DESCRIPTION:**

Intercommunication Sets AN/UIC-1 and AN/UIC-1X are vehicular interphone units used to provide two-way communication in inclosed or armored vehicles.

These equipments consist essentially of an audio power amplifier, two interphone control stations, and power components plus accessories, depending upon the type of vehicle in which the system is installed. An additional control box can be added to the system.

The sets provide control of one or two radio sets installed and operated within the vehicle equipped with the system. These radio sets are designed to be employed in conjunction with an integrated series of radio equipment.

Power is obtained from vehicular 12- or 24-volt storage batteries through appropriate power supply components.

Both models of this set are similar, with the exception of the power supply. Intercommunication Set AN/UIC-1 is furnished with a 12-volt power supply; the AN/UIC-1X is furnished with a 24-volt power supply.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:***Signal Input Levels:*

Channel 1: 5 v max

Channel 2: 5 v max

Channel 3: 0.25 v max

*Signal Output Levels:*

Channel 1: 350 mw min

**INTERCOMMUNICATION SET**

**AN/UIC-1, -1X**

Channel 2: 350 mw min

Channel 3: 800 mw min; 1,800 mw min (5 v and .25 v signal into channel)

*Input Impedance:*

Channel 1: 1,500 ohms

Channel 2: 1,500 ohms

Channel 3: 150 ohms

*Output Impedance:*

Channel 1: 600 ohms

Channel 2: 600 ohms

Channel 3: 600 ohms

*AF Response:* Flat to within 4 db for frequencies between 400 and 2,500 cps; sharp cutoff beyond these limits

*Distortion Due to Overload:* 10% max each channel

*Crosstalk Between Channels 1 and 2:* 50 db down, min

*Amplifier Power Requirements:*

Plates: 135 v at 35 ma

Filaments: 12- or 24-v operation: 12.6 va at 0.6 amp

Relay: 6.3 v at 166 ma

Microphone: 6.3 at 30 ma

*Operating Temperature Range:* -40°F to +149°F

*Power Requirements:*

AN/UIC-1: 3.85 amp at 12 v dc

AN/UIC-1X: 2.4 amp at 24 v dc

*Major Units:*

1	AM-65/GRC	4 $\frac{1}{4}$ " x 12 $\frac{7}{8}$ " x 7 $\frac{7}{8}$ "	10 lbs
2	C-375/VRC	6 $\frac{13}{16}$ " x 7" x 3 $\frac{1}{4}$ "	3.25 lbs
1	MT-300/GR	3 $\frac{1}{16}$ " x 13" x 8 $\frac{5}{16}$ "	
1	PP-281/GRC		10 lbs
	(For AN/UIC-1)	4 $\frac{1}{4}$ " x 5 $\frac{3}{4}$ " x 2 $\frac{15}{16}$ "	5.5 lbs
1	PP-282/GRC		
	(For AN/UIC-1X)	4 $\frac{1}{4}$ " x 5 $\frac{3}{4}$ " x 2 $\frac{15}{16}$ "	5.5 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-2643

SOUND RECORDER REPRODUCER SET

AN/UNH-3A

1 March 1964  
Cog. Serv: USMC FSN:  
USA Line Item No.:

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USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:			Std

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Manufacturer: U. S. Recording Co



**SOUND RECORDER REPRODUCER SET**

**AN/UNH-3A**

**FUNCTIONAL DESCRIPTION:**

Sound Recorder Reproducer Set AN/UNH-3A is a self-contained tape recorder-reproducer which uses standard one-quarter-inch plastic tape as the recording medium.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

None

**TECHNICAL DESCRIPTION:**

*Recording Tape Speed:* 3 $\frac{3}{4}$  and 7 $\frac{1}{2}$  IPS

*Frequency Response:*

3 $\frac{3}{4}$  IPS: 60 to 5,000 cps

7 $\frac{1}{2}$  IPS: 60 to 10,000 cps

*Power Output:* 5 w

*Operating Power Requirements:* 115 v, 60 cps, single phase

*Case:* watertight transit case

*Shipping Data:*

Size: 12" x 14" x 10"

Weight: 40 lbs

*Major Items:*

No data available

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

None

SOUND RECORDER SET  
AN/UNH-6

1 March 1964

Cog. Serv: USA FSN: 5835-892-3510

USA Line Item No.: 659111

	USA	USN	USAF
STATUS OR TYPE CLASS.:	Std-A		

Manufacturer: Amplex Corp

No Illustration Available

**FUNCTIONAL DESCRIPTION:**

Sound Recorder Set AN/UNH-6 is a general purpose unit designed for airborne requirements. It is lightweight and has a high fidelity dual track. The set functions as a recorder only.

This equipment has single speed only. It has two tracks for simultaneous recording of either voice or data with erasure head for clearing tape ahead of recording.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

None

**TECHNICAL DESCRIPTION:***Type:* electromagnetic*Number of Tracks:* 2*Tape:*

Type: Mylar base

Width: 1/4"

Feed: 7.5" per sec

*Frequency Response:*  $\pm 2$  db from 50 cps to 10,000 cps*Input Impedance (Each Channel):*

Microphone: 200 ohms

Data: 500 ohms

*Recording Time:* 45 min max; continuous*Power Requirements:* 108 to 121-v, 380 to 420 cps, 1-phase ac, 0.32 amp; 25- to 29-v dc, 6.0 amp*Major Units:***TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**



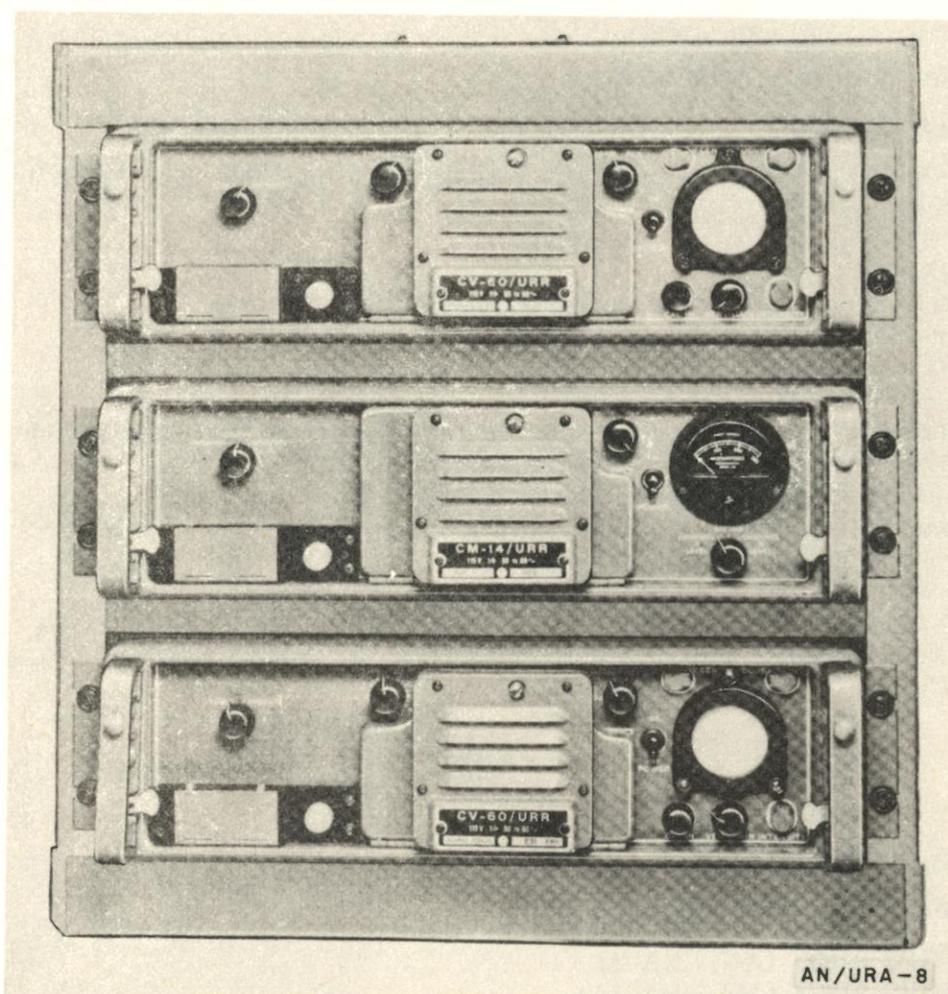
## FREQUENCY SHIFT CONVERTER-COMPARATOR GROUP

## AN/URA-8, -8A

1 March 1964

Cog. Serv: USN FSN: AN/URA-8: 5840-644-4842  
 AN/URA-8A: 5840-642-8360

	USA	USN	USAF
STATUS OR TYPE CLASS:			L/Std
Manufacturer:	Hoffman Radio Corp		

**FUNCTIONAL DESCRIPTION:**

Frequency Shift Converter-Comparator Groups AN/URA-8 and AN/URA-8A are designed to operate on frequency-shift keyed radiotelegraph signals. These signals are derived from the audio frequency outputs of radio receivers and provide keying facilities for the operation of teletypewriter printers or other automatic recording devices.

**FREQUENCY SHIFT CONVERTER-COMPARATOR GROUP**

**AN/URA-8, -8A**

Two receiving channels are used in a diversity arrangement but the frequency-shift converters may be used separately for single receiver reception. A comparator selects the stronger signal to control the teletypewriter loop and the keyed tone.

It is possible to obtain keying speeds of up to 60 words per minute for a single telegraph channel, or of 100 words per minute if external apparatus is used. These keying speeds are useable in the reception of four-channel, multiplex, telegraph signal, diversity, or single-unit operation.

The two equipments are used with two radio receivers and a standard or high-speed teletypewriter with loop power supply. Radio Receiving Equipments RBA, RBB, RBC, or equivalent may be used. The AN/URA-8 and AN/URA-8A are electrically and mechanically interchangeable and differ only in contractual data.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Frequency Range:* audio; with center frequency of either 1,000 cps or 2,550 cps

*Type Modulation:* fm

*Type Reception:* frequency-shift keying

*Power Output:*

Electron Tube Keyer: for keying 60-ma teletypewriter loop

Tone Signal: 12 mw into 600-ohm load

*Audio Input:*

Input Power: 60 uw to 60 mw

Frequency Shifts: 10 to 200 cps for 1,000-cps center frequency, narrow band; 200 to 1,000 cps for 2,500-cps center frequency, wide band

Impedance: 600 ohm, balanced or unbalanced

*Maximum Keying Speed:*

Single Telegraph Channel: 23 dot cps

Four-channel Multiplex Telegraph Signals: 100 dot cps

*Tone Signals Frequencies:* 595; 765; 935; 1,105; 1,275; 1,445; 1,615; 1,785 cps

*Power Requirements:* 160 w or 220 w; 105-v, 115-v, or 125-v 50- to 60-cy, 1-phase ac

*Major Units:*

1	CM-14/URR	5 $\frac{1}{8}$ " x 19" x 15 $\frac{1}{4}$ "	
2	CV-60/URR	5 $\frac{1}{8}$ " x 19" x 15 $\frac{1}{4}$ "	47 lbs
1	CM-22/URA-8A	5" x 17" x 17"	36 lbs
2	CV-89/URA-8A	5 $\frac{1}{4}$ " x 17" x 17"	47 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 91339 (AN/URA-8)

NAVSHIPS 91278 (AN/URA-8A)

## COMPARATOR-CONVERTER GROUP

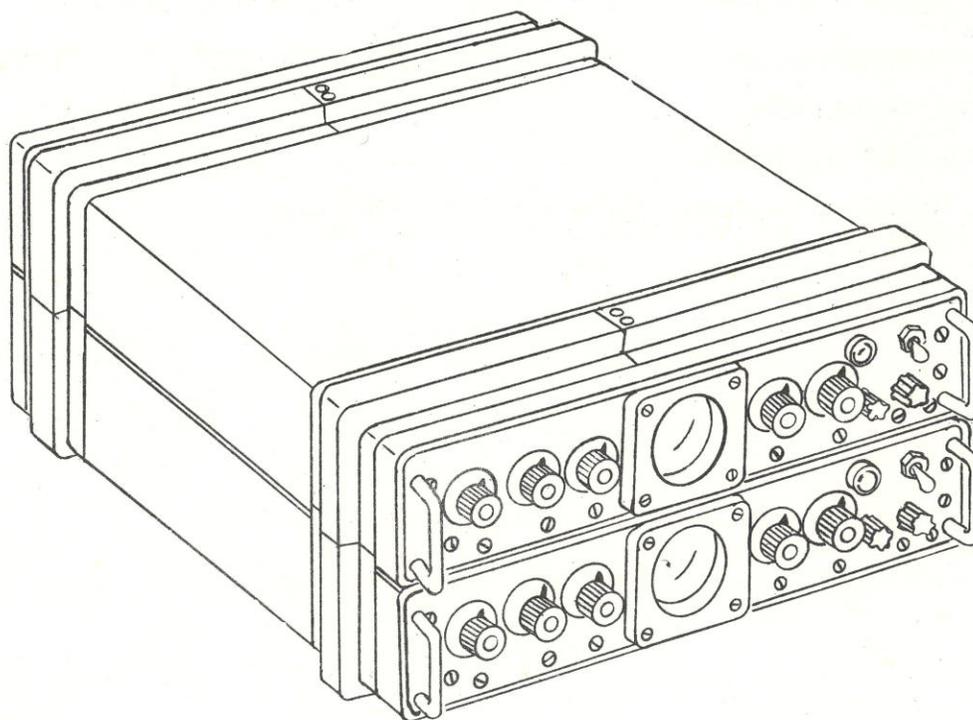
## AN/URA-17

1 March 1964

Cog. Serv: USN FSN: 5820-474-3975

USA Line Item No.:

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:		Std		
Manufacturer:	CKB (28959)			

**FUNCTIONAL DESCRIPTION:**

The AN/URA-17 is designed to provide a link in the receiving end of a frequency shift communication system, in which telegraph or teletype mark-space characters are transmitted as rapid shifts above and below the center frequency of a radio frequency carrier. These fsk (frequency shift keyed) signals are translated by a standard communications receiver into an audio signal. The Comparator-Converter Group changes these signals into dc mark-space pulses for operation of a loop keying circuit of an automatic recording device. This method of communication provides the noise reduction advantages of frequency modulation for coded teletype-writer messages at speeds up to 400 wpm.

COMPARATOR-CONVERTER GROUP

**AN/URA-17**

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

The AN/URA-17 performs the same functions as the AN/URA-8B. It is not electrically or mechanically interchangeable with the AN/URA-8B. The AN/URA-17 uses only a fraction of the power required for the AN/URA-8B because of its semiconductor type construction.

**TECHNICAL DESCRIPTION:**

*Frequency Data:*

Narrow Shift: 1000 cps mean frequency 10 to 200 cps shift

Wide Shift: 2550 cps mean frequency, 200 to 1000 cps shift

*Input Impedance:* 600 ohms

*Output:* Keys 60 ma circuit in teletypewriter receiver loop circuit

*Operating Power Requirements:* 105 to 125 vac, 50 to 400 cps, single phase, 60 w

*Major Units:*

2 CV-483/URA-17

3<sup>15</sup>/<sub>32</sub>" x 16<sup>11</sup>/<sub>16</sub>" x 18<sup>7</sup>/<sub>8</sub>"

27 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

Technical Manual for Comparator Converter Group AN/URA-17  
NAVSHIPS 94028

## RADIO SET CONTROL GROUP

## AN/URA-19

3 December 1958

Cog. Serv: USN FSN:

USA Line Item No.:

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:			T/Std	

Manufacturer:

No Illustration Available

**FUNCTIONAL DESCRIPTION:**

Radio Set Control Group AN/URA-19 provides facilities that permit the calling of individual aircraft by normal ground-to-air communication apparatus. The group utilizes existing types of ground-to-air transmitters and airborne receivers.

This equipment relieves the pilot of the continuous monitoring of voice circuits. Ultimately, it will provide an emergency calling feature as well as a limited message capability.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:***Major Units:***TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**

MIL-R-9542



**MODULATOR-POWER SUPPLY GROUP**  
**AN/URA-23, -23A**

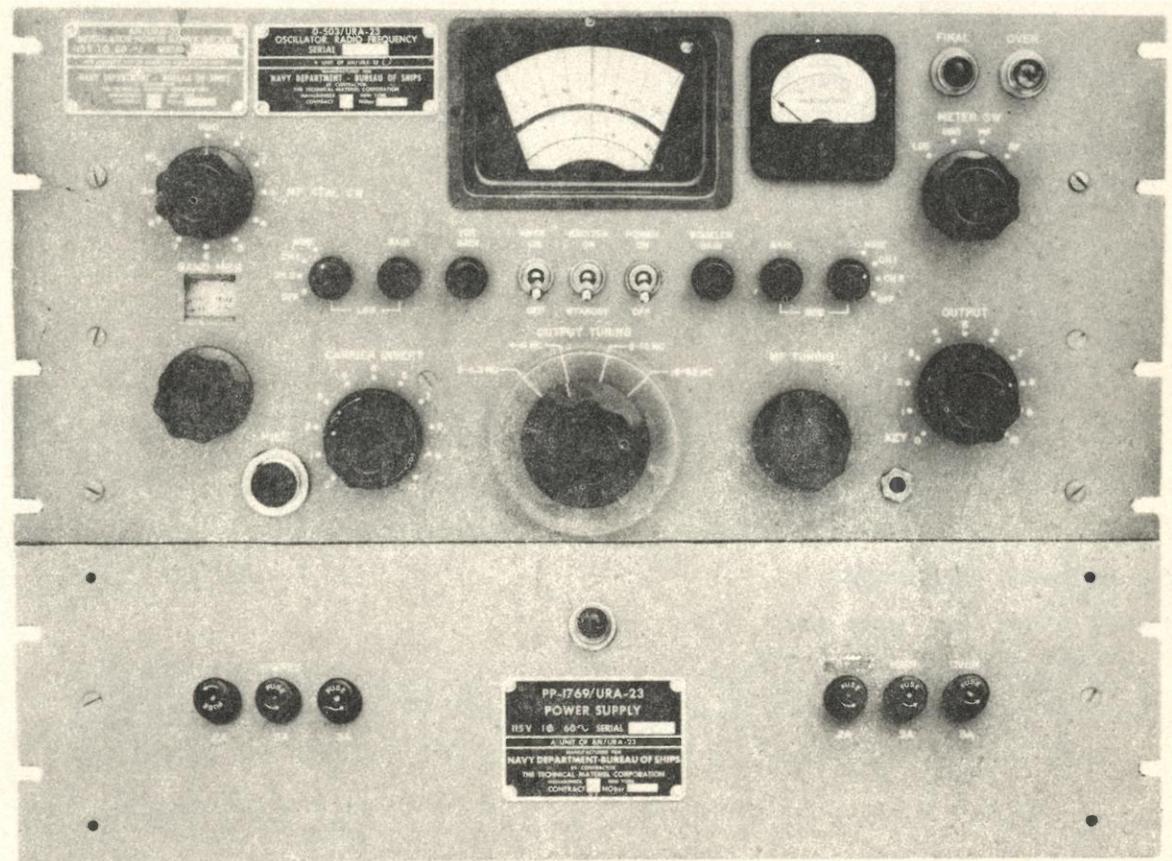
1 March 1964

Cog. Serv: USN FSN: AN/URA-23 5820-543-1215  
 AN/URA-23A 5820-543-1491

USA Line Item No.:

USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:			

Manufacturer: CCLX (82679)



**FUNCTIONAL DESCRIPTION:**

These equipments are exciters permitting the transmission of any intelligence on single sideband or double sideband with or without carrier. Simultaneous or independent transmission of intelligence may be had on either upper or lower sideband.

AN/URA-23 was supplied as the single sideband exciter on early delivered models of AN/URT-17. Later deliveries contained the AN/URA-23A. The difference between the two equipments is in the rf oscillator.

**MODULATOR-POWER SUPPLY GROUP**

**AN/URA-23, -23A**

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

AN/URA-23 is manufacturer's Model SBE-1. AN/URA-23A is manufacturer's Model SBE-2.

**TECHNICAL DESCRIPTION:**

*Power Requirements:* 115/220 v, 50-60 cps, single phase, 140 w

*Frequency Range:* 2-32 mc

*Type of Emission:* A1, A2, A3, A3a, A3b

*Frequency Control:* Crystal or external variable frequency oscillator

*Crystal Oven Temperatures:*

17 kc and 287 kc oscillator: 75 degrees C

mf and hf oscillator: 70 degrees C

*Stability:* 1 ppm for 24-hour period

*Power Output:* continuously adjustable from 0-3 w max

*Output Impedance:* 72 ohms

*Carrier Suppression:* at least 55 db from PEP level

*Carrier Insertion:* adjustable

*Spurious Signals:* at least 60 db below PEP output

*Unwanted Sideband Rejection:* 500 cps single tone at 60 db down

*Audio Response:* within 3 db, 350-3300 cps

*Major Units:*

For AN/URA-23A:

1	0-503/URA-23	8 <sup>3</sup> / <sub>4</sub> " x 19" x 15"	35 lbs
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1	PP-1769/URA-23	5 <sup>1</sup> / <sub>4</sub> " x 19" x 11"	36 lbs
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For AN/URA-23:

1	0-503A/URA-23	8 <sup>3</sup> / <sub>4</sub> " x 19" x 15"	35 lbs
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1	PP-1769/URA-23	5 <sup>1</sup> / <sub>4</sub> " x 19" x 11"	36 lbs
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**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 93162, Technical Manual for Modulator-Power Supply AN/URA-23

NAVSHIPS 93163, Technical Manual for Modulator-Power Supply AN/URA-23A

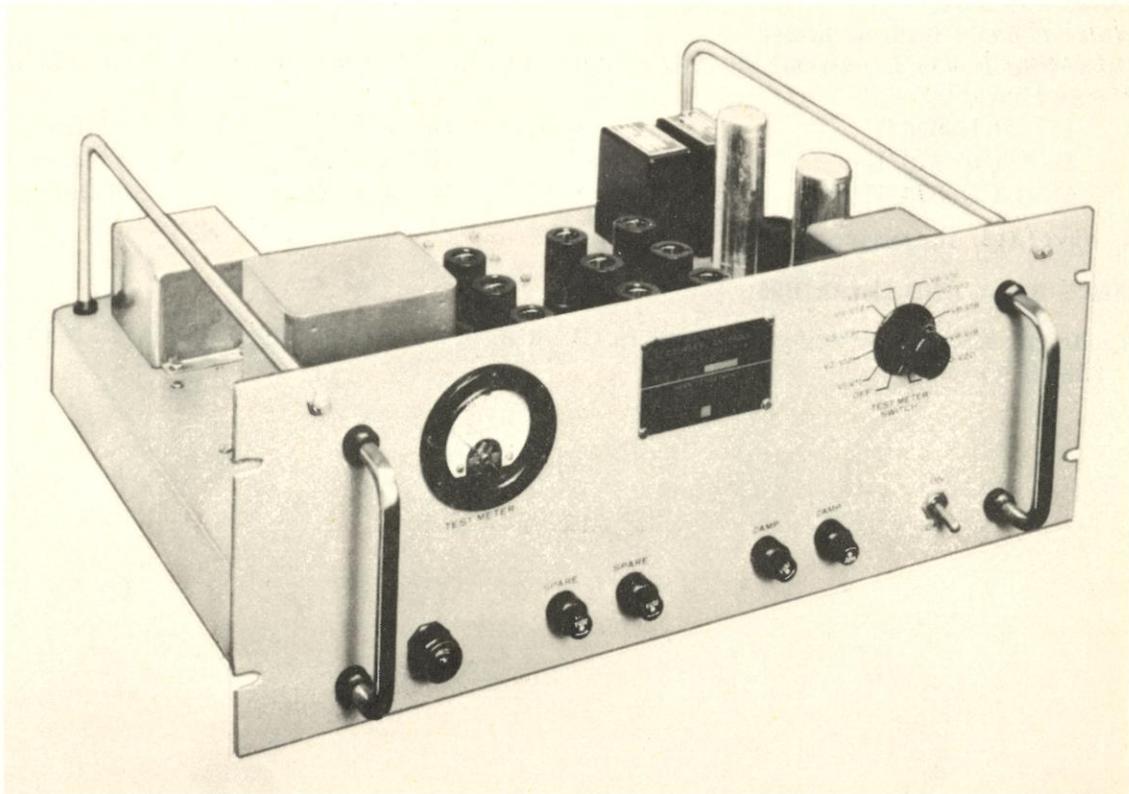
AN/URA-type  
ANTENNA COUPLER

**CU-656/U, CU-873/U,  
and CU-874/U**

1 March 1964  
Cog. Serv: USN FSN:  
USA Line Item No.:

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:			Std	

Manufacturer:



**FUNCTIONAL DESCRIPTION:**

The CU-656/U, CU-783/U, CU-874/U are physically and electrically similar. They provide optimum coupling between a single antenna and as many as eight receivers. Design considerations include selection of circuits and choice of components providing a low voltage standing wave ratio, a wide frequency range, a high attenuation of out of band frequencies, a minimum noise figure, minimum intermodulation, a high degree of isolation between individual outputs, an overall power gain and high reliability.

AN/URA-type  
ANTENNA COUPLER

CU-656/U, CU-873/U,  
and CU-874/U

RELATIONSHIP TO SIMILAR EQUIPMENT:

Antenna Couplers CU-656/U, CU-873/U, and CU-874/U are electrically similar. Antenna Couplers CU-656/U and CU-873/U each have a 70 ohm input, CU-874/U has a 150 ohm balanced input. The units are physically similar except the CU-656/U utilizes type C input and output connectors while CU-873/U and CU-874/U utilize type N input and output connectors.

TECHNICAL DESCRIPTION:

*Frequency Range:* 2.0 to 32 mc

*Number of Outputs:* 8

*Gain:* 0 to 3 db

*Noise Figure:* 6 db or better

*Operating Power Requirements:* 115 v ac or 230 v ac, 48 to 62 cps, single phase, 125 w.

*Major Units:*

1	CU-656/U	6 <sup>3</sup> / <sub>32</sub> " x 19" x 16 <sup>1</sup> / <sub>2</sub> "	33 lbs
1	CU-873/U	6 <sup>3</sup> / <sub>32</sub> " x 19" x 16 <sup>1</sup> / <sub>2</sub> "	33 lbs
1	CU-874/U	6 <sup>3</sup> / <sub>32</sub> " x 19" x 16 <sup>1</sup> / <sub>2</sub> "	33 lbs

TUBES, CRYSTALS, TRANSISTORS:

REFERENCE DATA AND LITERATURE:

Technical Manual for Antenna Couplers CU-656/U, CU-873/U, and CU-874/U, NAVSHIPS 93804(A)

AN/URA-type  
ANTENNA MULTICOUPLER  
**CU-784A/U**

1 March 1964  
Cog. Serv: USN FSN:  
USA Line Item No.:

USA

USN

USAF

USMC

**STATUS OR TYPE CLASS.:**

**Manufacturer:** Westrex Co Div of Litton Systems Inc

No Illustration Available

**FUNCTIONAL DESCRIPTION:**

Antenna Multicoupler CU-784A/U provides coupling between five VLF antennas and fifteen VLF receivers with a maximum of five receivers to any one antenna.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

None.

**TECHNICAL DESCRIPTION:***Antenna Inputs:*

Broadband whip (WHIP I), N-type receptacle  
Tunable loop (LOOP I), 5-pin female receptacle  
Broadband trailing wire (T.W.), N-type receptacle  
Tunable loop (LOOP II), 5-pin female receptacle  
Broadband 50-ohm antenna (50  $\Omega$ ), N-type receptacle

*Frequency Range:* 14.6 to 38.0 kc

*Outputs to Receivers:*

Five N-type receptacles (ANTENNA I MULTICOUPLER OUTPUTS) used for either LOOP I or WHIP I operation.

Five N-type receptacles (ANTENNA II MULTICOUPLER OUTPUTS) used for either LOOP II or T.W. operation.

Five N-type receptacles (50  $\Omega$  MULTICOUPLER OUTPUTS) used for 50-ohm antenna.

*Gain:*

LOOP I and WHIP I: 4 db min

LOOP II and T.W.: 18 db min

50  $\Omega$  Antenna: 4 db min

*Operating Power Requirements:* 117 v, 60 cps, 1 phase; 0.25 amps

*Major Units:*

1 CU-784A/U

10" x 14 $\frac{1}{8}$ " x 11 $\frac{1}{16}$ "

31 $\frac{3}{4}$  lbs

**TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**

NAVSHIPS 94184, Technical Manual for Antenna Multicoupler CU-784A/U



AN/URA-type  
FREQUENCY SHIFT CONVERTER

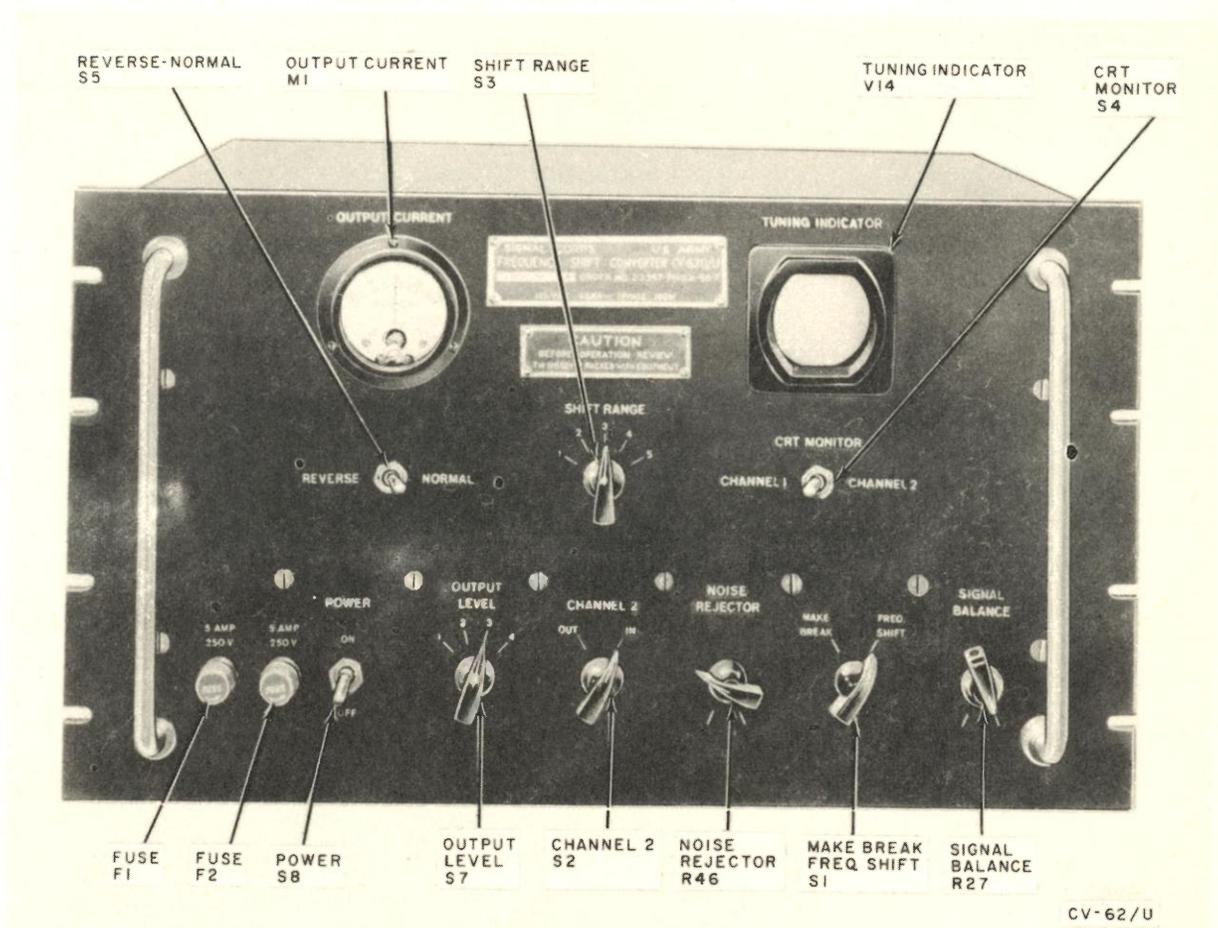
CV-62/U

1 March 1964

Cog. Serv: USA FSN: 5815-337-7277

USA Line Item No.: 611482

	USA	USN	USAF
STATUS OR TYPE CLASS.:	Std-A		
Manufacturer:	Radio Frequency Labs, Inc		



**FUNCTIONAL DESCRIPTION:**

Frequency Shift Converter CV-62/U is used to convert af, fsk signals or make-and-break teletypewriter signals into dc output pulses for the operation of a teletypewriter.

It is intended for use at the receiving terminal of a radioteletype system and is arranged for rack-and-panel mounting.

AN/URA-type  
FREQUENCY SHIFT CONVERTER

## CV-62/U

### RELATIONSHIP TO SIMILAR EQUIPMENT:

### TECHNICAL DESCRIPTION:

Type of Communication Circuits: Dual-diversity (or single received signal) fsk, center frequency of 2,500 cy with shifts of 100 to 1,100 cps or dual-diversity (or single received signal) for make-and-break signal in range of 500 to 5,000 cps or conversion of single received signal (using external discriminator) with center frequency between 850 and 5,000 cps

*Power Requirements:* 130 va, 115-v (+10%), 50/60 cy, 1-phase ac

*Major Units:*

1 6V-62/U

10½" x 13½" x 19"

60 lbs

### TUBES, CRYSTALS, TRANSISTORS:

### REFERENCE DATA AND LITERATURE:

TM 11-5524

MIL-C-10232

AN/URA-type  
FREQUENCY SHIFT CONVERTER

## CV-116/URR

1 March 1964

Cog. Serv: USA FSN: 5815-503-2600

USA Line Item No.: 611484

	USA	USN	USAF
STATUS OR TYPE CLASS:	Std-A		Std
Manufacturer:	Hoffman Laboratories, Inc		

**FUNCTIONAL DESCRIPTION:**

Frequency Shift Converter CV-116/URR changes fsk signals into dc pulses to key the loop circuit of teletypewriters. It operates from the IF output of one or two radio receivers arranged in either space of frequency diversity.

This equipment consists of the converter unit, cables, and accessories.

The converter unit is designed for continuous duty and is used in a radio-teletype communication system. In addition to the CV-116/URR, a typical system consists of a teletypewriter, a control unit, a frequency-shift keyer, a radio transmitter, two radio receivers, two or three antennas (one or two receiving and one transmitting) and another teletypewriter.

This equipment is used with such sets as Radio Receiving Set AN/FRR-38.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

*Operating Speed:* 100 dot-cps

MIL-HDBK-161A/TM11-487A-3/NAVEXOS P-2058/TO 31-3-73

AN/URA-type  
FREQUENCY SHIFT CONVERTER

## CV-116/URR

*Power Requirements:* 200 w 115-v 50/60-cy 1-phase ac

*Major Units:*

1 CV-116/URR

8 $\frac{3}{4}$ " x 17" x 19"

65 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-2241

MIL-F-10532

AN/URA-type  
SINGLE SIDEBAND CONVERTER  
**CV-157/URR**

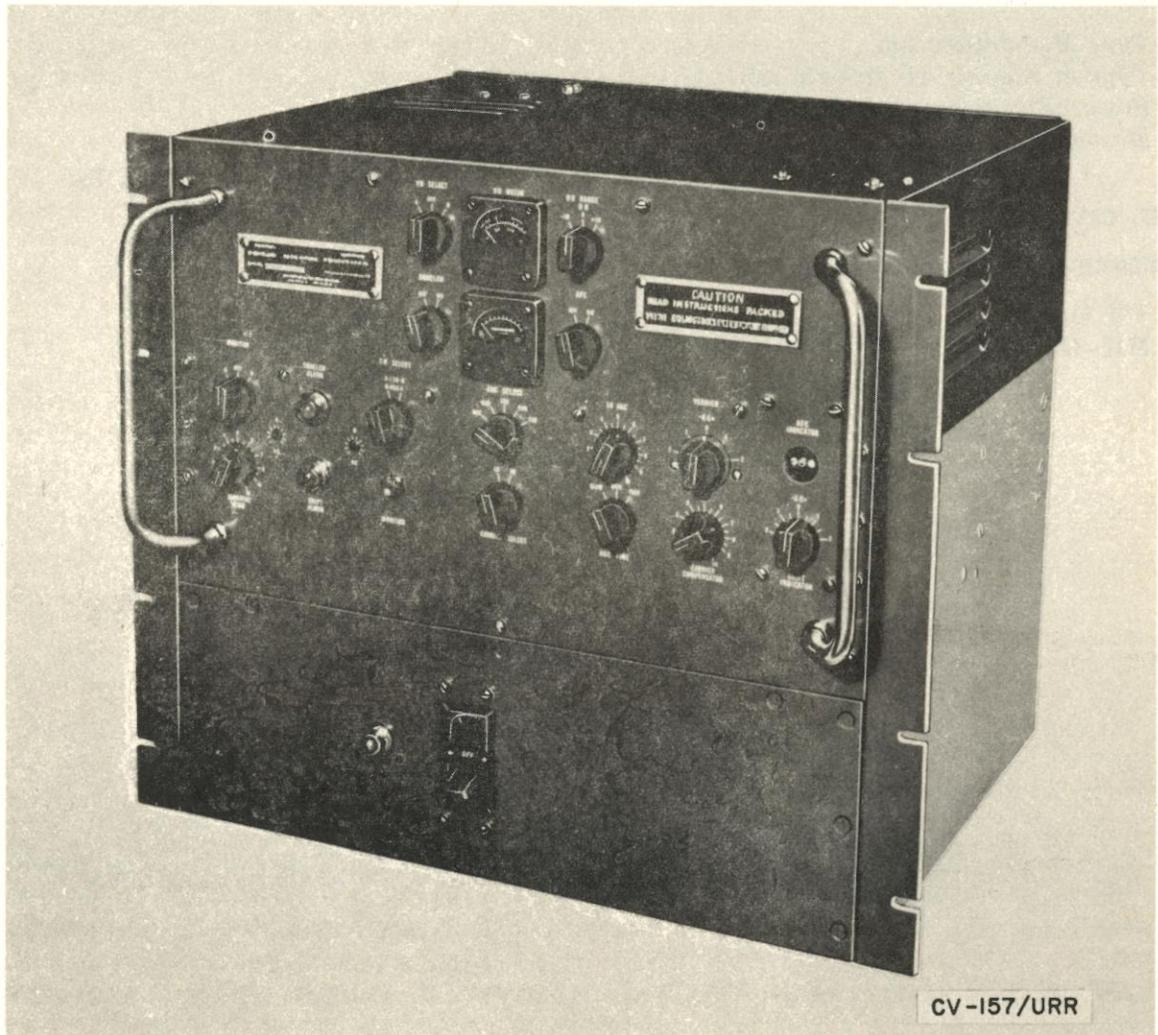
1 March 1964  
Cog. Serv: USA FSN: 5820-503-2594  
USA Line Item No.: 611494

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	USA	USN	USAF	USMC
<b>STATUS OR TYPE CLASS.:</b>	Std-A			

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**Manufacturer:** Dubrow Development Co  
Hoffman Laboratories, Inc  
Munston Manufacturing & Service, Inc



AN/URA-type  
SINGLE SIDEBAND CONVERTER

**CV-157/URR**

**FUNCTIONAL DESCRIPTION:**

Single Sideband Converter CV-157/URR is used at the receiving end of a radio communication system that operates in a single-sideband reduced carrier transmission.

It may also be used as an aid in the reception of am double-sideband signals under severe atmospheric conditions.

This equipment consists of a single operating component arranged for rack-mounting and is intended for the handling of heavy traffic at fixed installations. In such applications, operating with a receiver, it is used to feed carrier terminal equipment that handles several channels of telephone, teletypewriter, and facsimile.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Type Modulation:* am

*Type of Signal:* ssb or twin ssb

*Power Requirements:* 250 w, 105-125/210-250-v 50/60-cy ac

*Major Units:*

1 CV-157/URR

104 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-266

MIL-C-11957A

AN/URA-type  
KEYER**KY-43/URT**1 March 1964  
Cog. Serv: USN FSN:  
USA Line Item No.:

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:			L/Std	
Manufacturer:	Munston Manufacturing and Service Inc			

No Illustration Available

**FUNCTIONAL DESCRIPTION:**

Keyer KY-43/URT is designed for use with appropriate transmitters to adapt them for frequency-shift operation. It is a reactance modulated amplifier used to shift the frequency of the transmitter master oscillator in accordance with direct current signals from a polar keyer which is, in turn, actuated by a standard teletypewriter.

This equipment is designed primarily for use with, Transmitting Equipment TAB-5, TAB-6, or TAB-7. Provision is made for mounting of the keyer on the TAB-series transmitter.

The KY-43/URT is basically identical with Keyer KY-43A/URT except for minor changes in circuitry.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:***Frequency Range:* 100 to 555 kc*Frequency Shift Range:* 170 cps*RF Source:* TAB-5, -6, -7 master oscillator*Output:* to TAB-5, -6, -7 master oscillator through coaxial cable*Keying Voltage:* Polar Keyer output of 40 to 120 v*Mounting Data:* left-hand side of TAB-5, -6, -7 exciter*Power Requirements:* 110 w, 220-v, 60-cy 1-phase ac*Major Units:*

1 KY-43/URT

22½" x 8" x 15½"

34 lbs

**TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**

NAVSHIPS 91138



AN/URA-type  
KEYER

## KY-43A/URT

1 March 1964

Cog. Serv: USN FSN: 5805-665-1514

USA Line Item No.:

	USA	USN	USAF
STATUS OR TYPE CLASS:			Std
Manufacturer:	Fidelity Amplifier Co		

**FUNCTIONAL DESCRIPTION:**

Keyer KY-43A/URT is designed for use with appropriate transmitters to adapt them for frequency-shift operation. It permits the impression of intelligence on a radio frequency carrier by the frequency-shift method in order to minimize the effects of fading, noise interference, and static disturbances on the receiving equipment.

The KY-43A/URT is a reactance-modulated amplifier used to shift the frequency of the transmitter master oscillator in accordance with the direct current polar mark and space impulses from a teletypewriter keyer. It employs a reactance tube circuit to convert the polar dc signals into a rf carrier shift that is symmetrical with respect to the assigned frequency.

This equipment is designed primarily for use with Transmitting Equipment TAB-5, TAB-6, or TAB-7. The keyer consists of a rectangular chassis and front panel mounted on a plate for mounting of the unit on the side of the master oscillator section of the TAB-series transmitters. All controls for the keyer are located on the front panel.

The KY-43A/URT is basically identical with Keyer KY-43/URT except for minor changes in circuitry.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:***Frequency Range:* 100 to 555 kc*Frequency Shift Range:* 170 cps (nominal)*Type Modulation:* fm (F1)*Type Signal:* fsk*RF Source:* TAB-5, -6, -7 master oscillator*Output:* to TAB-5, -6, -7, master oscillator through coaxial cable*Keying Speed Maximum:* at least 60 wpm*Keying Voltage:* dc polar  $\pm 40$  to  $\pm 120$  v*Keying Input Impedance:* 3,800 ohms*Mounting Data:* left-hand side of TAB-5, -6, -7 exciter*Power Requirements:* 110 w, 220-v  $\pm 10\%$  60-cy 1-phase ac*Major Units:*

1 KY-43A/URT

22 $\frac{1}{2}$ " x 8" x 15 $\frac{1}{2}$ "

34 lbs

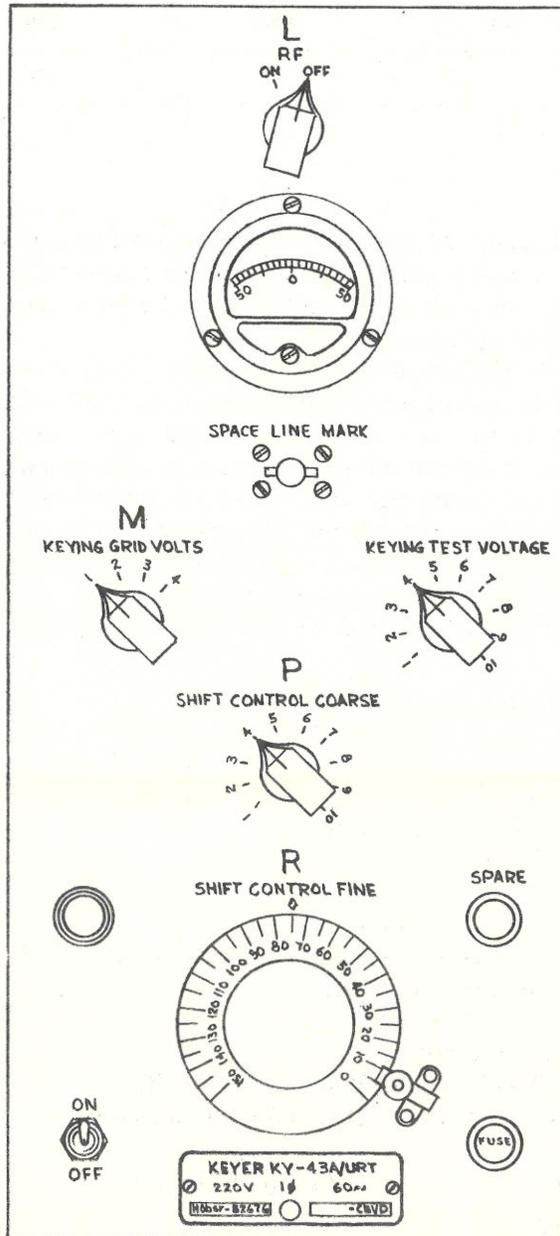
**TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**

NAVSHIPS 91645

MIL-K-15651

AN/URA-type  
KEYER

# KY-43A/URT



KY-43A/URT

AN/URA-type  
RADIO SIGNAL DISTRIBUTION PANEL

## SB-1510/FRR

1 March 1964

Cog. Serv: USN FSN:

USA Line Item No.:

USA

USN

USAF

USMC

STATUS OR TYPE CLASS.:

Manufacturer:

**FUNCTIONAL DESCRIPTION:**

Radio Signal Distribution Panel SB-1510/FRR is used to interconnect three receivers to either of two radio test sets, enabling the operator to test any receiver with any test set.

Three-position coaxial switches connect each receivers input to one of three signal sources:

- (1) The receivers associated antenna
- (2) The receiver selector switch of test set number one
- (3) The receiver selector switch of test set number two

Three-position coaxial switches connect the output of each test set to one of the three receiver inputs; while two-position coaxial switches choose the output of the test set, either rf or noise. In addition, three-position coaxial switches connect each of three oscilloscopes to receive synchronizing triggers from either test set, as necessary.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

*Frequency Range:* 2 to 32 mc  
*Input and Output Impedance:* 70 ohms  
*Voltage Standing Wave Ratio:* 1:1.1 or less  
*Switch Crosstalk:* -100 db  
*Attenuation:* less than 0.5 db  
*Ambient Temperature Range:* 0°C. to 50°C.  
*Major Units:*

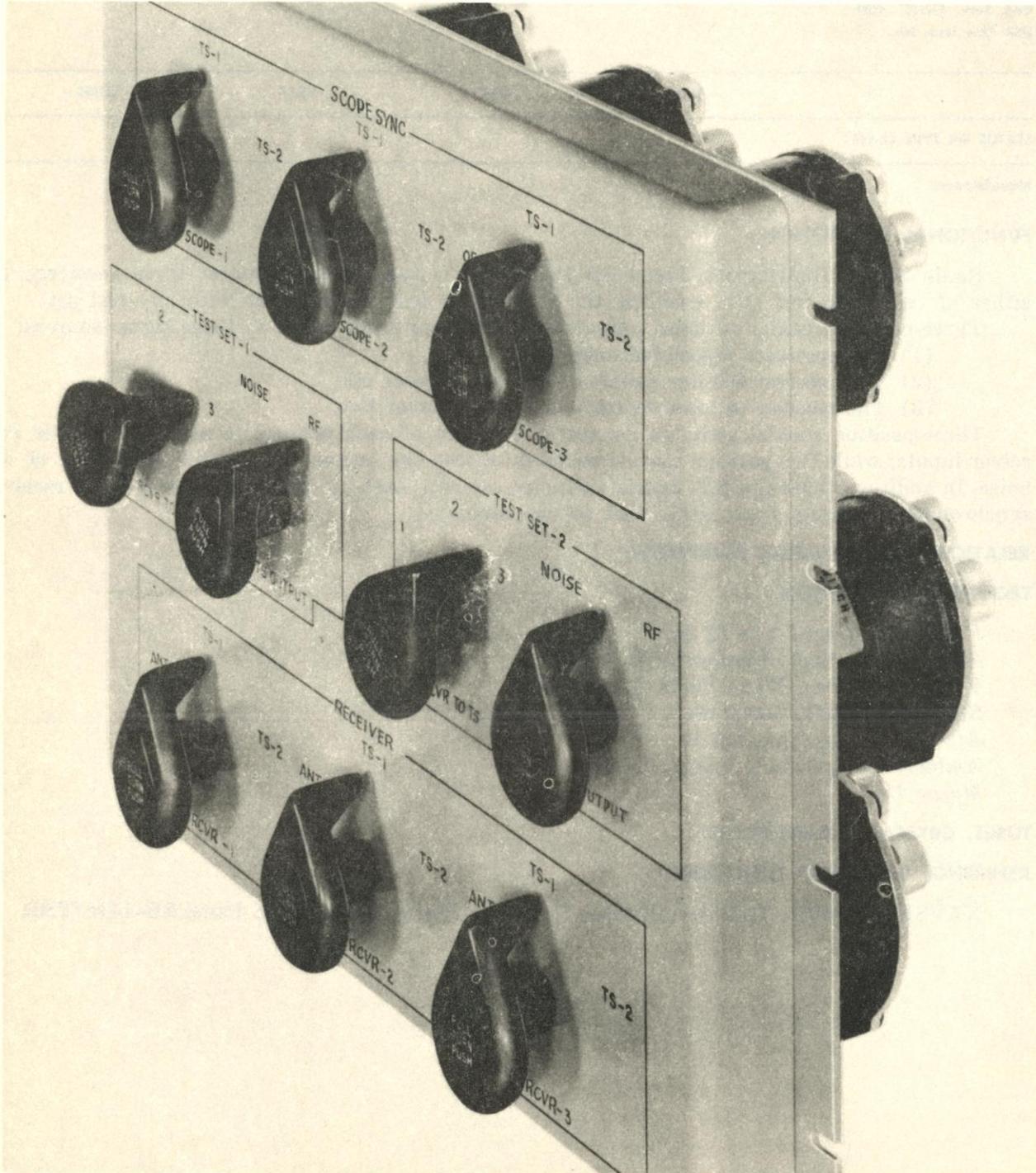
**TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**

NAVSHIPS 94281, Technical Manual for Radio Signal Distribution Panel SB-1510/FRR

MIL-HDBK-161A/TM11-487A-3/NAVEXOS P-2058/TO 31-3-73

AN/URA-type  
RADIO SIGNAL DISTRIBUTION PANEL

SB-1510/FRR



RADIO SET  
**AN/URC-4**

1 March 1964

Cog. Serv: USAF FSN: 5820-352-0015

USA Line Item No.: 647800

USA	USN	USAF
STATUS OR TYPE CLASS.:		L/Std
Manufacturer: Philharmonic Radio and Television Corp		

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/URC-4 is a portable, hand-operated, ultra-high frequency and very-high frequency unit designed to furnish two-way air-to-ground and point-to-point communication in emergency rescue situations. It is dropped from aircraft in a watertight container which floats on the surface of the water.

The transmitter is crystal-controlled and, depending upon the crystal in use, operates on any preset frequency within the given bands. The receiver is of the superregenerative type and can be tuned independently of the transmitter to any frequency within the given range.

The antenna is located in the top of the radioset from where it can be quickly extended.

This equipment may be operated while in motion and will function continuously for 24 hours in cycles of 5 minutes for transmitting and 5 minutes for receiving.

The unit can also be used for emergency airdrome traffic control.

Radio Carrier Vest AN/URC-4 and Droppable Kit AN/URC-4 are part of the radio set and are supplied in addition to the basic components if required.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:***Frequency Range:*

Preset Frequency in mc: 120 to 130

Harmonic Operation: 240 mc to 260 mc

*Number of Crystal-controlled Preset Frequencies:* 1

*Type Modulation:* am

*Type Emission and Reception:* voice, tone, or mcw

*Power Output:*

Receiver: 75 mw

Transmitter: 35 mw

*Power Requirements:*

45 ma Plate Supply: 125-v dc

520 ma Filament Supply: 125-v dc

Battery Life: 24 hr when operated in cy of 5 minutes transmitting and 5 minutes receiving

*Major Units:*

1

22" x 13"

20 lbs

**TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**

TO 16-30URC4-2

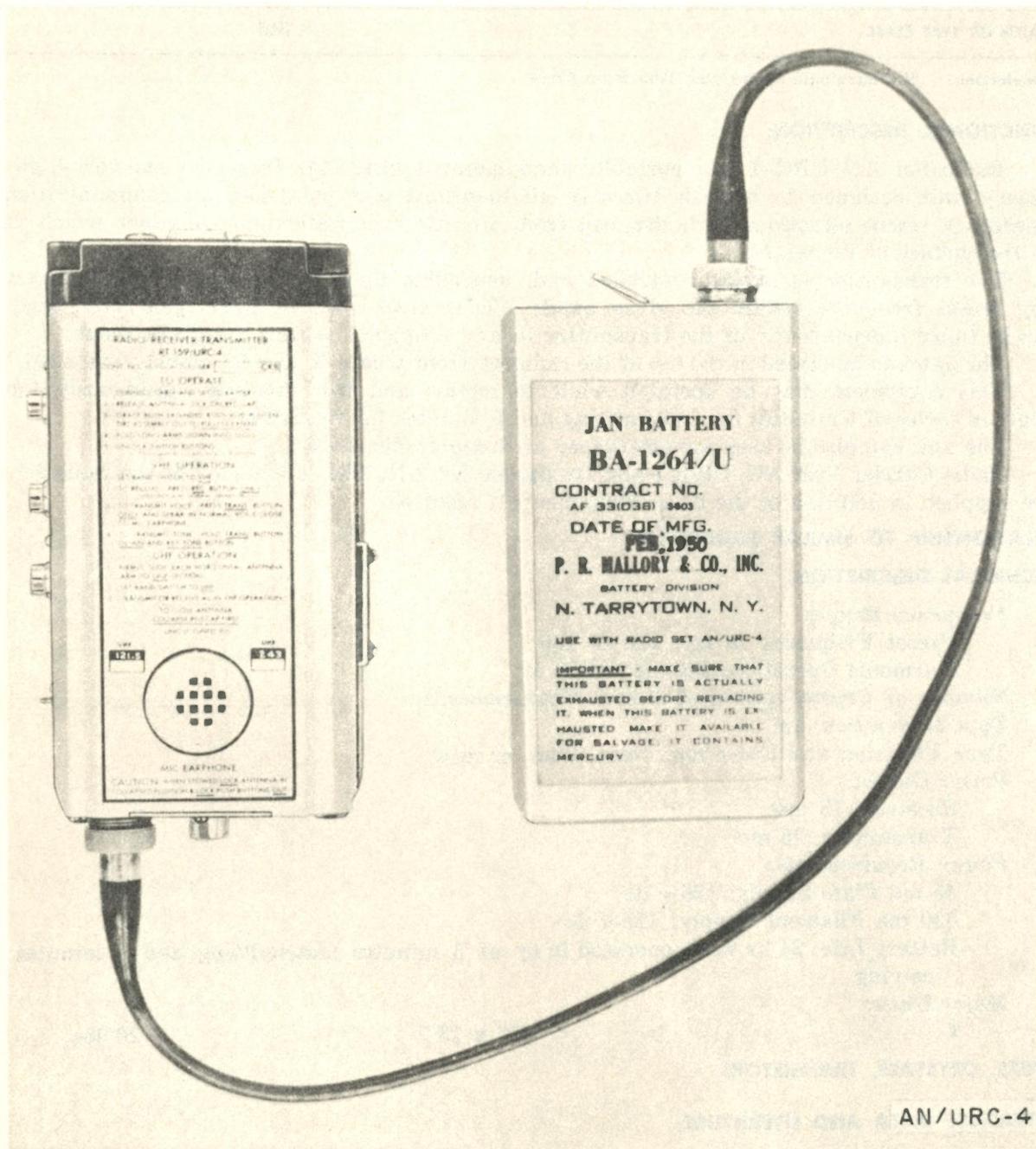
TO 12R2-2URC4-1

MIL-HDBK-161A/TM11-487A-3/NAVEXOS P-2058/TO 31-3-73

RADIO SET

# AN/URC-4

TO 12R2-2URC4-2  
TO 12R2-2URC4-4  
MIL-R-6373; R-7240



RADIO SET  
AN/URC-11

1 March 1964  
 Cog. Serv: USAF FSN:  
 USA Line Item No.:

USA

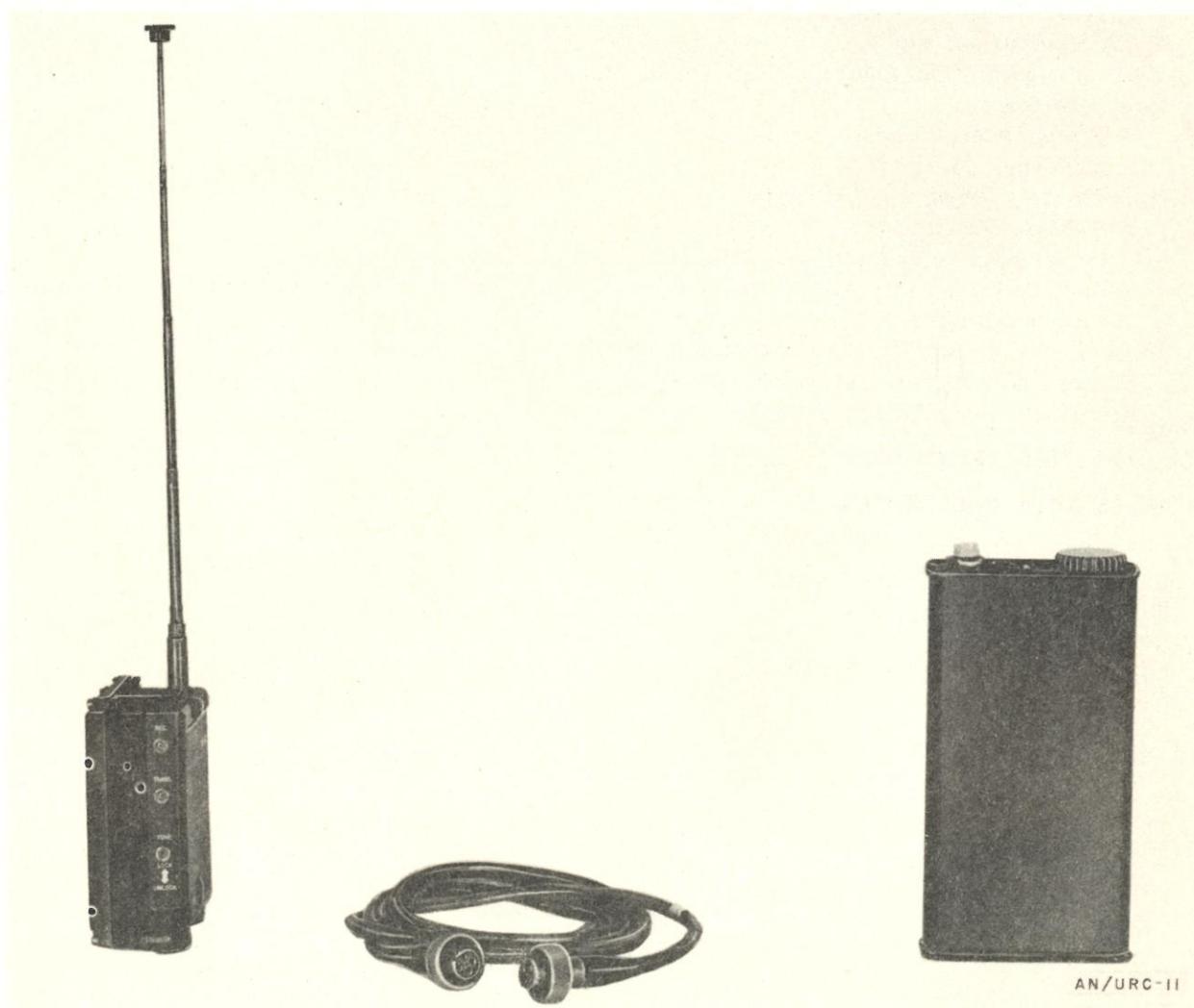
USN

USAF

STATUS OR TYPE CLASS.:

A/Std

Manufacturer: Philharmonic Radio and Television Corp

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/URC-11 is a portable, subminiature, hand-operated, ultra-high frequency receiver-transmitter used for two-way communication between distressed personnel and searching aircraft.

**RADIO SET**

**AN/URC-11**

This equipment can operate on any preset frequency within the band, and its receiver portion can be tuned, independently of the transmitter, to any frequency within the specified range.

The radio set uses a one-half length telescopic antenna that is collapsible and storable within the receiver-transmitter case.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Frequency Range in mc:* 240 to 260

*Type Modulation:* am

*Type Reception and Emission:* A3 (voice, tone)

*Power Output:*

Transmitter: 75 mw

Receiver: 25 mw

*Operational Range:* line of sight

*Power Requirements:*

Power Source: Battery BA-1315/U

Battery Life: 24 hr of continuous operation in cy of 5 minutes transmitting and 5 minutes receiving

*Data:* 1.25 v, 550 ma dc; 120 v, 35 ma dc (continuous operation) 550 ma at 1.25-v dc; 35 ma at 120-v dc for continuous operation.

*Major Units:*

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TO 12R2-2URC11-1

TO 12R2-2URC11-2

TO 12R2-2URC11-4

MIL-R-8178 (USAF)

RADIO SET  
**AN/URC-32**

15 March 1962  
Cog. Serv: USN FSN:  
USA Line Item No.:

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USA

USN

USAF

USMC

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STATUS OR TYPE CLASS.:

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Manufacturer: COL (13499)

No Illustration Available

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/URC-32 is a manually operated single sideband transmitter-receiver used primarily for transmission and reception on upper side band, lower sideband, or two independent sidebands, with separate audio and IF channels for each side band. Provisions are also included for compatible am (carrier reinserted), cw, or fsk operation. The 2-30 mc frequency range is covered in four bands, the desired operating frequency being set by 1 kc increments on a direct reading frequency counter. Frequency accuracy and stability are controlled by a self-contained frequency standard. Provisions are included for using an external frequency standard such as an AN/URQ-9.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Frequency Range:* 2-30 mc

*Mode:* cw telegraphy (A1)

Double sideband, full carrier (A3) on receive

Single sideband, reduced carrier (A3a)

Two independent sidebands, reduced carrier (A3b)

Composite transmission (A9)

Single sideband, full carrier (A9a) on transmit

Frequency shift telegraphy (F1)

*Frequency Stability:* 1 part in  $10^6$  per month and 1 part in  $10^8$  per day under all ambient conditions, using the internal frequency standard.

*Receiver Sensitivity:* 1  $\mu$ v for 10 db signal-plus-noise to noise ratio.

*Receiver Selectivity:*

3 kc bandwidth on either sideband

6 kc bandwidth on am

*Receiver audio distortion:* Less than 5 percent

*Transmit Power Output:*

(A1) 500 w

(A9a) 125 w carrier power

(A3a) 500 w PEP

(A3b) 500 w PEP total

(F1) 500 w

*Distortion on transmit:* 35 db below PEP output (3d order distortion)

**RADIO SET**

**AN/URC-32**

*Carrier suppression:* 45 db below PEP output

*Undesired sideband suppression:* 35 db below PEP output

*Audio inputs:*

USB Line —38 to +8 dbm into 600 ohms balanced

LSB Line —38 to +8 dbm into 600 ohms balanced

Microphone Standard high impedance dynamic microphone

*Audio Outputs:*

USB Line +14 to —34 dbm (adjustable) into 600-ohms balanced

LSB Line +14 to —34 dbm (adjustable) into 600-ohms balanced

Phones: Standard 600-ohm headphones

Speaker 3 w max into 3-4 ohm or 600-ohm speaker

*Receiver RF Input Impedance:* 50 ohms unbalanced

*Transmit RF Output Impedance:* 50 ohms unbalanced

*Power Source Requirements:* 115/230 v, 60 cy, single phase, 1500 w

*Major Units:*

1 AN/URC-32

73" x 21 $\frac{7}{8}$ " x 20 $\frac{7}{8}$ "

390 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 93285(A), Technical Manual for Radio Set AN/URC-32

RADIO SET  
**AN/URC-34, -34X**

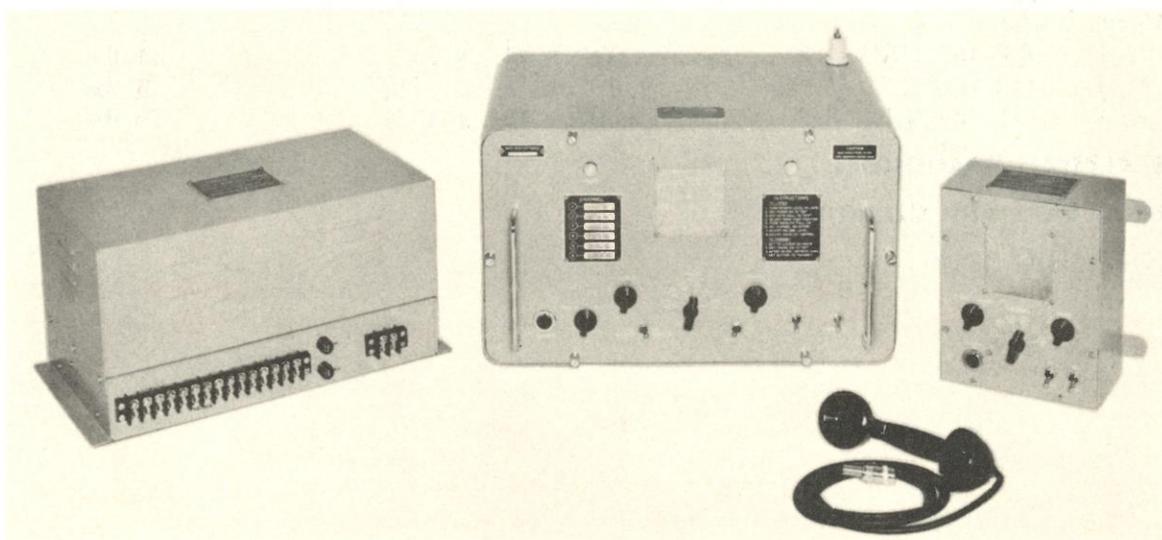
15 March 1962  
Cog. Serv: USN FSN:  
USA Line Item No.:

USA

USN

USAF

USMC

**STATUS OR TYPE CLASS.:****Manufacturer:** CBHT (74096)**FUNCTIONAL DESCRIPTION:**

These equipments are complete operating radio telephone systems, for two-way voice communication shipboard or shore-station use. Automatic channel selection of six pretuned frequency channels is provided. The radio set includes a remote control unit that contains all accessory controls for operating all functions of the radio set. The remote control unit includes the transmitting and receiving handset, and a loudspeaker for the reception of incoming calls.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

Radio Sets AN/URC-34 and AN/UPC-34X are functionally similar, differing only in power supply voltages.

**TECHNICAL DESCRIPTION:**

*Type of Transmission and Reception:* A3 (telephone), 6 kc bandwidth Frequency Range (transmit and receive)

*All Six Channels:* 2.0-9.0 mc

*Alternate Arrangements:*

Two Channels: 2-4 mc band

Four Channels: 4-7 mc band

RADIO SET

**AN/URC-34, -34X**

Four Channels: 2-4 mc band

Two Channels: 7-9 mc band

*Transmitter Power:* 75 w

*Modulation:* The transmitter is capable of providing at least 95 percent modulation

*Receiver Power Output:* 2 w or more with less than 10 percent distortion

*Receiver Sensitivity:* 3  $\mu$ v—30 percent modulation (6 db signal-to-noise ratio) for 100 mw audio output

*Operating Power Requirements:* 250 w receiver; 500 w receiver

*Power Supply (MD-337/URC-34X):* Input 115 v dc

*Power Supply (MD-336/URC-34):* Input 115 v 60 cps, single phase

*Major Units:*

1	RT-452/URC	14" x 21" x 15"	34 lbs
1	C-251/URC	10" x 8" x 7½"	5 lbs
1	MD-336/URC-34	9" x 18" x 10"	70 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

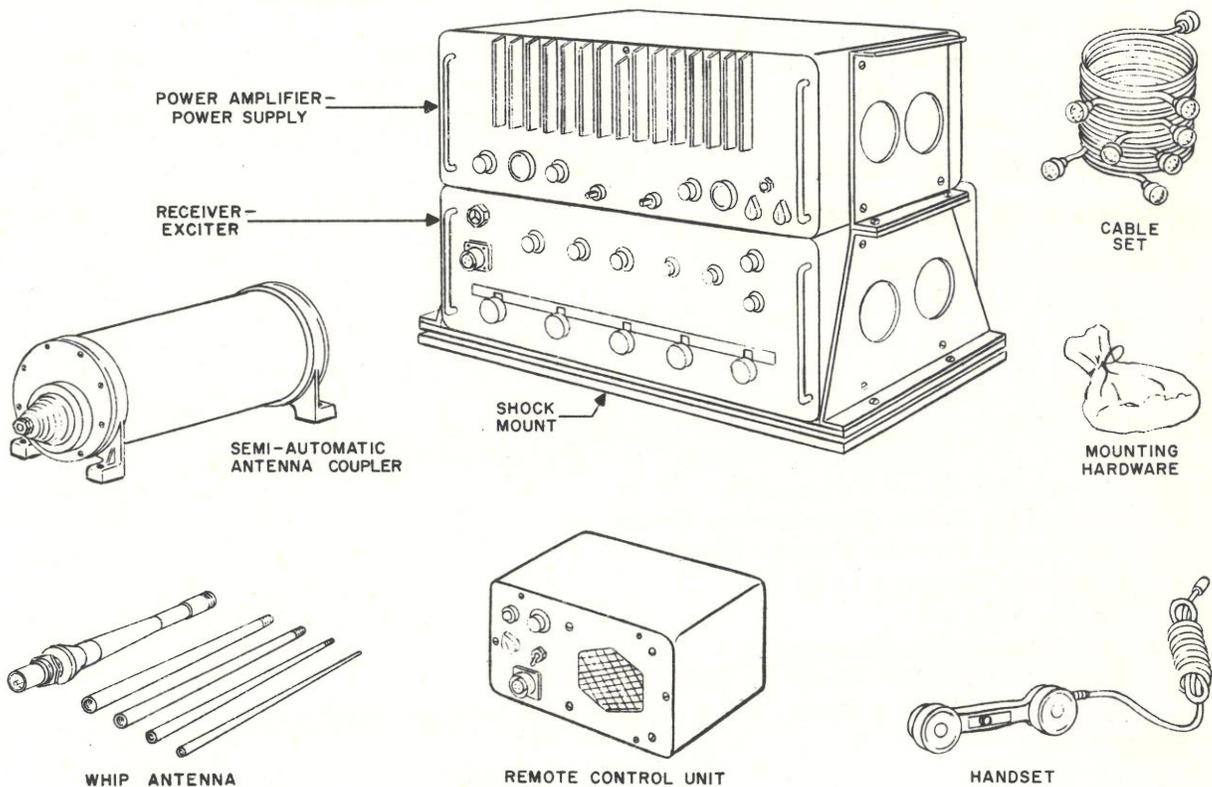
NAVSHIPS 93349

RADIO SET  
AN/URC-35

15 March 1962  
Cog. Serv: USN FSN:  
USA Line Item No.:

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:		P/Std		

Manufacturer:



**FUNCTIONAL DESCRIPTION:**

Radio Set AN/URC-35 is a single sideband (ssb) and amplitude modulation (am) transceiver operable over the frequency range of 2 to 30 megacycles. Three operating modes: upper sideband (usb), lower sideband (lsb), and am are provided. A remote control unit and local operating controls permit both remote and local operation in all of the operating modes. Any one of three antennas can be used with the radio set: a 15-foot probe or whip, a 25-foot centered whip, or a 35-foot whip. Although designed primarily for mobile operation, the AN/URC-35 is supplied with shock-mounts to enable permanent installation in a shipboard or ground communications system. An internal battery provides dc power when the radio set is used in a mobile application.

RADIO SET

# AN/URC-35

RELATIONSHIP TO SIMILAR EQUIPMENT:

TECHNICAL DESCRIPTION:

*Frequency Range:* 2 to 30 mc in 1-kc increments

*Frequency Stability:* 1 part in  $10^7$  per week

*Modes of Operation:* usb, lsb, am

*Receiver IF Rejection:* —80 db

*Receiver Image Rejection:* —80 db

*Receiver Audio Output:*

60 mw into 600-ohm balanced load;

15 mw into 600-ohm unbalanced load;

3 w max with external speaker

*Receiver Audio Distortion:* less than 1 percent

*Receive Noise Blanker:* reduces pulse type interference

*Receiver Sensitivity:*  $1 \mu\text{v}$  for 10 db signal and noise  
noise

*Receiver Bandwidth:* ssb-3.2 kc; am-6 kc

*Transmitter Power Output:*

ssb-100 w PEP

am-25 w carrier

cw-50 w

fsk-50 w

*Power Amplifier Output Termination:* 52 ohms

*Operating Power Requirement:* external 24 v dc; internal 24 v dc zinc battery

*Receiver-Exciter Power Consumption:* 43 w

*Power Amplifier Power Consumption:* 180 w

*Semi-Automatic Antenna Coupler System*

Frequency Range: 2 to 30 mc

VSWR: 1.5:1 max

Input Impedance: 52 ohms

Minimum RF Input Power To Tune: 25 w PEP

Maximum RF Input Power: 100 w PEP or 50 w average (continuous)

*Major Units:*

RT-618/URC

7" x 17 $\frac{3}{8}$ " x 17 $\frac{1}{4}$ "

47 lbs

AM-3008/URT

7" x 17 $\frac{3}{8}$ " x 12 $\frac{3}{4}$ "

45 lbs

TUBES, CRYSTALS, TRANSISTORS:

REFERENCE DATA AND LITERATURE:

NAVSHIPS 94254, Technical Manual for Radio Set AN/URC-35.

AN/URC-type  
ANTENNA ASSEMBLY  
**AS-1018/URC**

15 March 1962  
Cog. Serv: USN FSN: 5985-613-5647  
USA Line Item No.:

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USA

USN

USAF

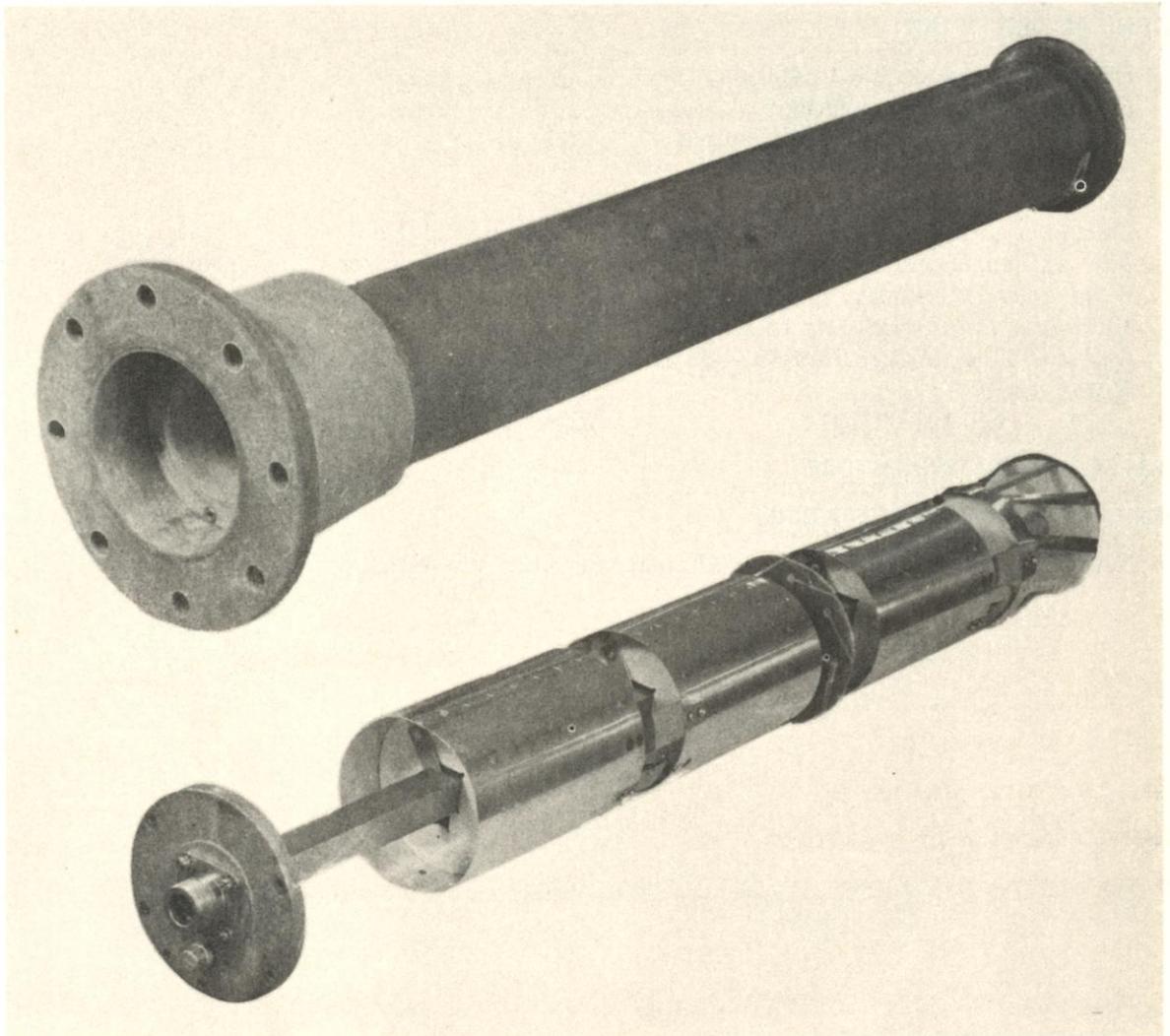
USMC

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STATUS OR TYPE CLASS.:

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Manufacturer: CHU Associates



**AN/URC-type  
ANTENNA ASSEMBLY**

**AS-1018/URC**

**FUNCTIONAL DESCRIPTION:**

Antenna Assembly AS-1018/URC is a broadband uhf communications antenna. It provides essentially hemispherical radiation coverage with an omnidirectional horizontal radiation pattern. The antenna is vertically polarized. The vertical upward propagation, needed to fill the cone of silence, is horizontally polarized. A line on the mast cap of the antenna indicates the direction of this polarization. The antenna consists of the internal transmission line, the antenna (a two-element colinear dipole array), and the polyester fiberglass mast which completely encloses them.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Frequency Range:* 225 to 400 mc

*Power Rating:* 2 kw average

*Gain:* 5 db above an isotropic source

*Input Impedance:* 50 ohms

*Standing Wave Ratio:* 2:1 max

*Circularity:* omnidirectional horizontally to within  $\pm 1.0$  db

*Tilt:* antenna beam is tilted upward to place lower half-power point on or below horizon

*Wind Load:* 120 knots

*Maximum Pressurization:* 15 psig

*Ambient Temperature Range:*  $-32^{\circ}\text{C}$  to  $+52^{\circ}\text{C}$

*Major Units:*

1 AS-1018/URC

72 $\frac{3}{8}$ " x 13 $\frac{1}{2}$ " dia

50 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 94041A. Technical Manual for Antenna Assembly AS-1018/URC

AN/URC-type  
RADIO FREQUENCY MONITOR

IP-591(XN-1)/U

15 March 1962

Cog. Serv: USN FSN:

USA Line Item No.:

USA

USN

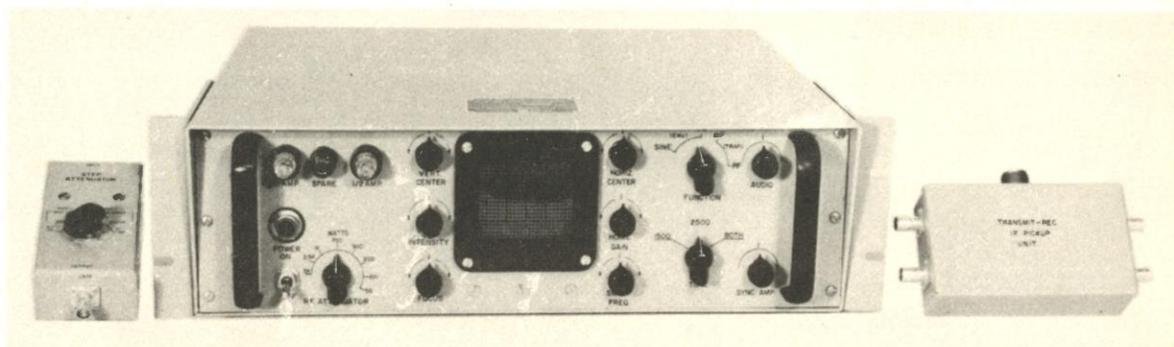
USAF

USMC

STATUS OR TYPE CLASS.:

P/Std

Manufacturer: CCVM (05714)

**FUNCTIONAL DESCRIPTION:**

The IP-591(XN-1)/U provides a continuous visual indication of transmitter performance during normal operation of the transmitter. In case of transmitter malfunction or misadjustment, it aids in locating the point of difficulty. It also displays receiver IF signals allowing diagnosis of troubles at distant station. The unit is designed for mounting in standard 19-inch electronic cabinets.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

*Input Signal Data:* one band, 2 to 30 mc frequency range.

*Modes of Operation:* sine envelope, cw envelope, af trapezoid, rf trapezoid.

*Type of Indication:* cathode ray tube

*Operating Power Requirements:* 110 to 120 v ac, 60 cps, single phase.

*Major Units:*

IP-591(XN-1)/U

5 $\frac{7}{32}$ " x 19" x 17"

30 lbs

Low-level detector and IF pickup

1 $\frac{9}{16}$ " x 6 $\frac{5}{8}$ " x 3 $\frac{11}{16}$ "

1 lb

**TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**

NAVSHIPS 94046



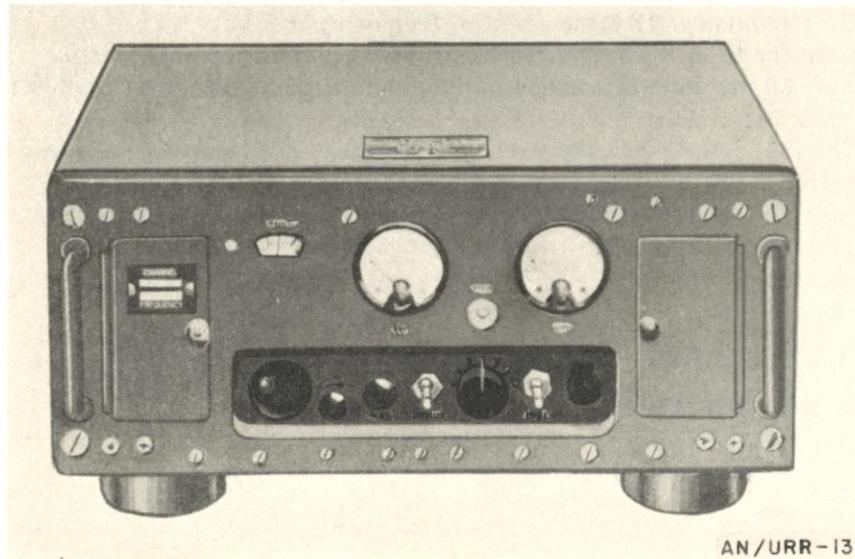
RADIO RECEIVING SET  
**AN/URR-13, -13A, -13B, -13C**

15 March 1962

Cog. Serv: USN FSN: AN/URR-13: 5820-644-477  
 AN/URR-13A: 5820-642-8244  
 AN/URR-13B: 5820-665-2374  
 AN/URR-13C: 5820-644-3395

USA Line Item No.:

	USA	USN	USAF	USMC
<b>STATUS OR TYPE CLASS.:</b>			Std	
<b>Manufacturer:</b>	Federal Telephone and Radio Corp			

**FUNCTIONAL DESCRIPTION:**

Radio Receiving Sets AN/URR-13, AN/URR-13A, AN/URR-13B, and AN/URR-13C are general purpose, compact communication units designed to provide ultra-high frequency reception on naval vessels, at naval air and shore stations, or at other military establishments.

These equipments are used on conjunction with Radio Transmission Equipment TED. They replace Radio Receiving Equipment RED.

Each set consists of a panel, frame, and chassis assembly housed in a cabinet equipped with shockmounts for shipboard installation. For shore installation the set may be mounted in a standard 19-inch relay rack.

The circuit components are grouped on a functional basis into five major sections within the cabinet and consist of the preselector, intermediate frequency/audio frequency, power supply, cable filtering, and front panel sections.

The sets may be operated on a single crystal-controlled channel, or, through the self-excited conversion oscillator, on continuously variable manual tuning. Provision is made for connecting a panoramic type radio receiver to provide a visual image of the received signal.

**RADIO RECEIVING SET**

**AN/URR-13, -13A, -13B, -13C**

All of the equipments are mechanically and electrically interchangeable but have minor differences in components. The AN/URR-13C has two additional test cables not supplied with the previous models. These sets are also similar to Radio Receiving Equipment RDZ and RCN.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Frequency Range in Mc:* 225 to 400

*Type Modulation:* am

*Type Reception:* A2, A3 (voice, mcw)

*Number of Channels:* single

*Type Control:* crystal or continuously variable

*Type Receiver:* double conversion superheterodyne

*Intermediate Frequency:* 18.6 mc (center frequency  $\pm 2$  kc)

*Sensitivity:* better than  $8 \mu\text{v}$  for a 10 db single-to-signal plus noise ratio

*Audio Output:* 60 mw max into a 600-ohm load, 7% max distortion or 600 mc into a 60-ohm load 7% max distortion

*Scanning Channel Bandwidth:* 600 kc, flat to within 6 db

*Heat Dissipation:* 120 w

*Antenna:* quarter-wave, broad-band with 50-ohm terminal impedance

*Power Requirements:* 125 w; 110- to -20- v, 50-to 60-c, 1-phase ac

*Major Units:*

AN/URR-13( )

8 $\frac{7}{16}$ " x 17 $\frac{1}{2}$ " x 19 $\frac{1}{8}$ "

57 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 91270

MIL-R-1513A(SHIPS), 16R53(RE), MIL-R-1513B(SHIPS)

## RADIO RECEIVING SET

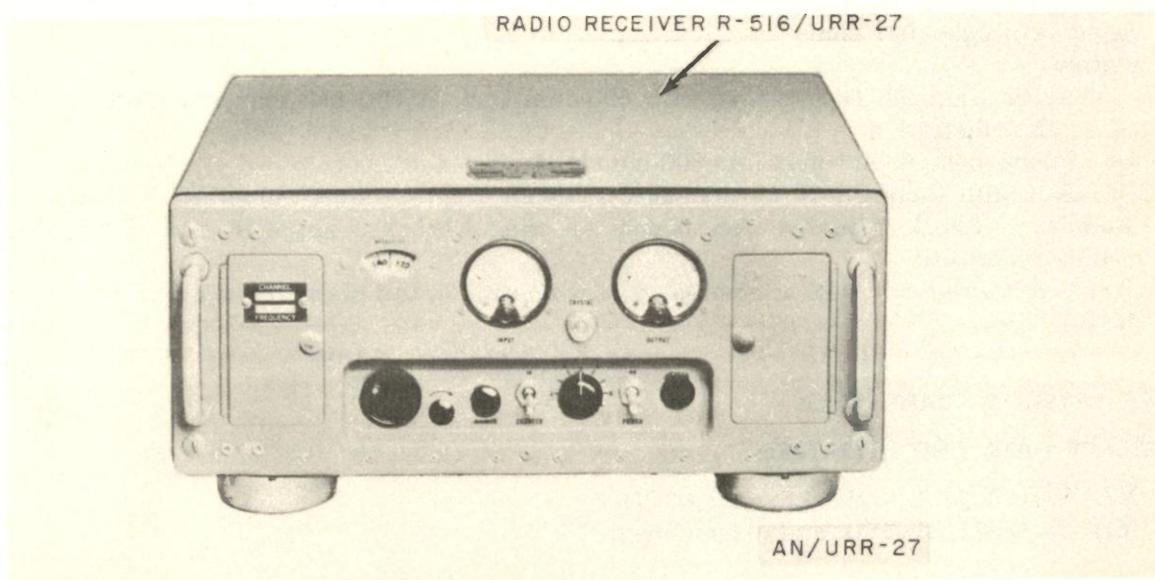
**AN/URR-27**

15 March 1962

Cog. Serv: USN FSN: 5820-644-4991

USA Line Item No.:

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:			L/Std	
Manufacturer:	National Co Inc			

**FUNCTIONAL DESCRIPTION:**

Radio Receiving Set AN/URR-27 is an amplitude modulated communication unit used aboard ship, at shore stations, or by other military establishments in general application. It is designed primarily for operation as a pretuned, single-channel receiver with provisions for continuous variable tuning as well as crystal control.

This equipment includes provisions for connecting a panoramic adapter to obtain a visual indication of the received signal frequency. The scanning channel has a bandwidth of 600 kc, flat to within 6 db.

The AN/URR-27 is similar to Radio Receiving Set AN/URR-13 in electrical design and mechanical construction. However, the AN/URR-13 covers a frequency range of 225 to 400 mc.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

*Frequency Range in Mc:*

Rated: 105 to 190

Maximum: 103.9 to 191.9

**RADIO RECEIVING SET**

**AN/URR-27**

*Tuning Bands:* complete coverage of range with 19 consecutive turns of the tuning control crank

*Preset Frequencies:*

Manual Tuning: none

Crystal Tuning: one; determined by crystal unit installed

*Frequency Control:* crystal-controlled oscillator (crystal tuning only)

*Type Receiver:* superheterodyne

*Intermediate Frequency:* 18.6 mc  $\pm$  2 kc

*Type Reception:* A2 (mcw, tone)

*Type Modulation:* am

*Input Impedance:* 51 ohms

*Output:*

Audio Channel: 60 mw max into 600-ohm load, or 600 mw max into 60-ohm load with 7% distortion

Phone Jack: 60 mw max into 600-ohm load

Scanning Channel: 10  $\mu$ v min across 50-ohm load for signal input of 10  $\mu$ v max

*Mounting:* Shock mounted for bench or shelf; bracket supplied for standard relay-rack mounting

*Power Requirements:* 112 w nominal, 120 w max; 110-, to 115- to 120-v, 60 cy, 1-phase ac

*Major Units:*

1 R-516/URR-27

8 $\frac{7}{16}$ " x 17 $\frac{1}{2}$ " x 19 $\frac{1}{8}$ "

57 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

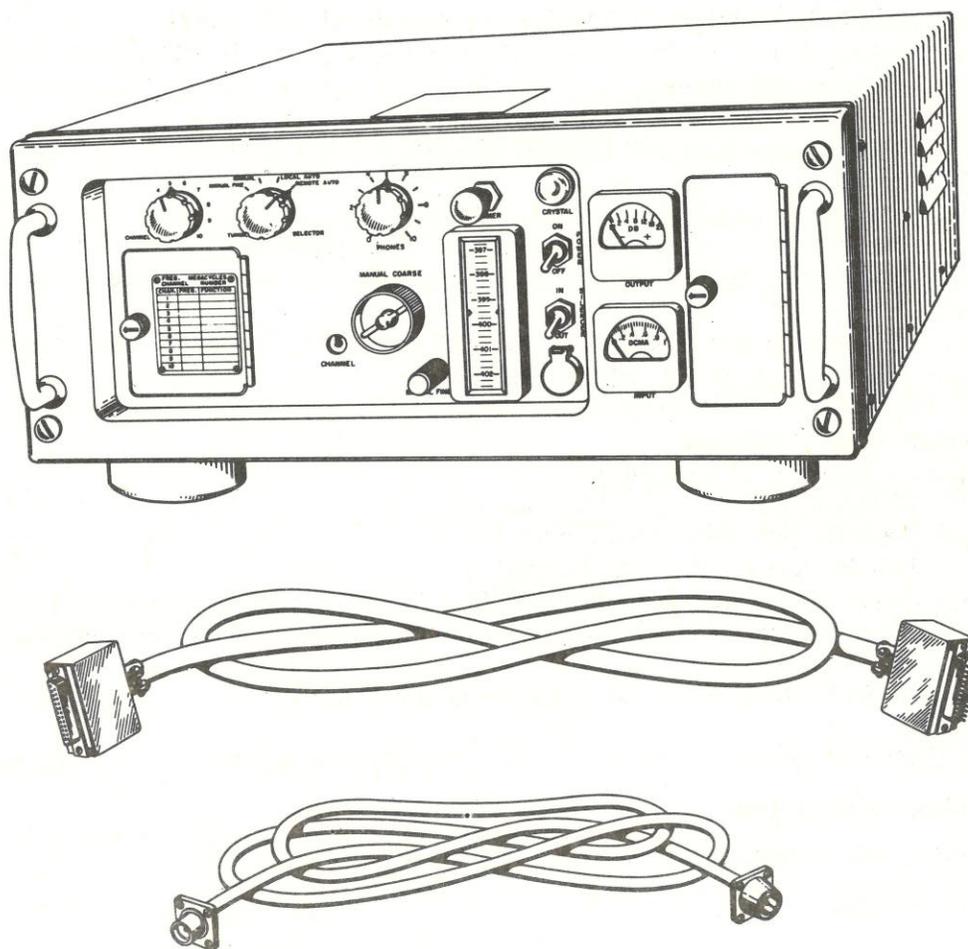
NAVSHIPS 91771, 91771.2, and 91771.4

MIL-R-15872(SHIPS) and Amendment No. 2

RADIO RECEIVING SET  
AN/URR-28(XN-1)

15 March 1962  
Cog. Serv: USN FSN:  
USA Line Item No.:

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:		P/Std		
Manufacturer:	CNA (42498)			

**FUNCTIONAL DESCRIPTION:**

Radio Receiving Set AN/URR-28(XN-1) is a vhf/uhf, double superheteodyne type receiver for general purpose use. The receiver may be mounted on a bench or any other firm horizontal surface, or by attaching brackets in a standard 19-inch relay rack. Provisions are made for connecting a panoramic adapter to the receiver.

**RADIO RECEIVING SET**

**AN/URR-28(XN-1)**

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

Radio Receiving Set AN/URR-28(XN-1) is a redesign of Radio Receiving Set AN/URR-35A. It is similar to the AN/URR-35A except that: (1) 10 crystal controlled channels are provided in the AN/URR-28(XN-1) as compared with 1 in the AN/URR-35A; and (2) remote selection of any of the 10 crystal controlled channels is possible with the AN/URR-28(XN-1). No remote control is possible with the AN/URR-35A.

**TECHNICAL DESCRIPTION:**

*Frequency Range:* 225-400 mc

*Reception:* amplitude modulated (a3) voice and modulated CW (A-2)

*Sensitivity:* better than 8 mv in series with 50 ohms for a 10 db signal-to-noise ratio

*Tuning Bands:* one, continuous

*Intermediate Frequencies:* 18.6 and 1.775 mc

*Scanning Channel Bandwidth:* 300-1000 kc between —6 db points

*Preset Frequencies:*

Manually Tuned: none

Crystal Tuned: 10 as determined by crystal units installed

*Frequency Control:* crystal for preset channel, self-excited for manual tuning

*Receiver Outputs:*

Audio Channel: 60 mw max into a 600 ohm load with 7 percent max distortion

Phone Jacks: same as for audio channel

Scan Channel: 10  $\mu$  min across a 50 ohm load, for max signal strength of 20  $\mu$

*Impedances:*

Antenna: Input: 50 ohms nominal

Audio Channel Output: 600 ohms nominal

Phone Jack Output: 600 ohms nominal

Scan Channel Output: 50 ohms nominal

*Operating Power Requirements:* 105/115/125 v, 50/60 cy; single phase, 1.07 amp normal, 1.88 amp max during automatic tuning, 107 w normal, 196.5 w max during automatic tuning

*Selectivity:* 70-85 kc down 6 db; less than 190 kc down 60 db

*Major Units*

AN/URR-28(XN-1)

8 $\frac{7}{16}$ " x 17 $\frac{1}{2}$ " x 22 $\frac{3}{4}$ "

62 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 92333

RADIO RECEIVING SET  
AN/URR-29

15 March 1962

Cog. Serv: USA FSN: 5820-567-2358

USA Line Item No.: 658590

USA

USN

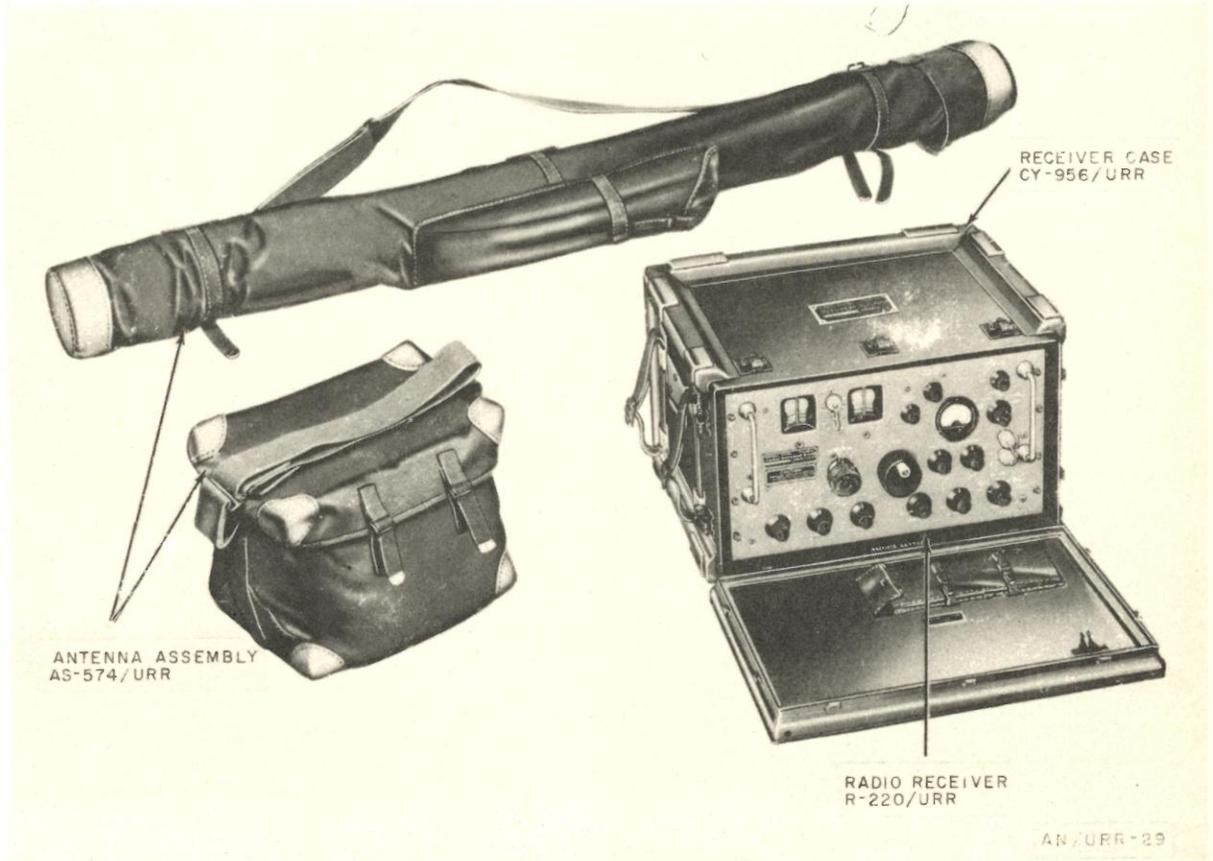
USAF

USMC

STATUS OR TYPE CLASS.:

Std

Manufacturer: Motorola, Inc

**FUNCTIONAL DESCRIPTION:**

Radio Receiving Set AN/URR-29 is a transportable general purpose hf and qv hf equipment used for the monitoring and reception of cw, am, and fm signals. It can be used in fixed, semifixed, and transportable applications.

This equipment consists essentially of Radio Receiver R-220/URR, an internal power supply, and accessory components.

It can be used for diversity reception, direction-finding, frequency-shift radioteletype, facsimile, signal analysis, and single-sideband reception, when operated with suitable associated equipment.

MIL-HDBK-161A/TM11-487A-3/NAVEXOS P-2058/TO 31-3-73

RADIO RECEIVING SET

## AN/URR-29

RELATIONSHIP TO SIMILAR EQUIPMENT:

TECHNICAL DESCRIPTION:

*Frequency Range in Mc:* 20 to 230

*Type Modulation:* am, fm

*Type of Signal:* cw, mcw, fsk, voice

*Power Requirements:* 35 w, 115/230-v 48-62 cy ac

*Major Units:*

1	PP-660/URR	6 $\frac{1}{4}$ " x 5 $\frac{3}{4}$ " x 11 $\frac{1}{2}$ "	30 lbs
1	R-220/URR	10 $\frac{1}{2}$ " x 14 $\frac{3}{4}$ " x 19"	96 lbs

TUBES, CRYSTALS, TRANSISTORS:

REFERENCE DATA AND LITERATURE:

TM 11-882

MIL-R-1058A

**RADIO RECEIVING SET  
AN/URR-29X**

15 March 1962  
 Cog. Serv: USA FSN: 5820-511-8151  
 USA Line Item No.:

	USA	USN	USAF	USMC
<b>STATUS OR TYPE CLASS.:</b>	Std	Used by		

**Manufacturer:**

No Illustration Available

**FUNCTIONAL DESCRIPTION:**

Radio Receiving Set AN/URR-29X is a portable communication unit suitable for fixed, semifixed, or portable installations. It is designed for the reception and monitoring of amplitude-modulated and frequency-modulated signals.

The receiver has provisions for output connections to standard equipments as required for diversity reception, direction finding, carrier-shift radio teletypewriter, facsimile, signal analysis and sideband reception.

This equipment consists essentially of Radio Receiver R644/URR, and related accessory components.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

The set is generally similar to Radio Receiving Set AN/URR-29; however, it differs in respect to the radio receiver and other components.

**TECHNICAL DESCRIPTION:**

*Frequency Range in Mc:* 20 to 230

*Number of Bands:* 7

*Type Modulation:* am, fm

*Type Reception:* A9, F9 (mcw, cw)

*Type Presentation:* electric meter

*Power Requirements:* 22-v to 32-v dc

*Major Units:*

1 R-644/URR

19" x 14<sup>7</sup>/<sub>8</sub>" x 10<sup>1</sup>/<sub>2</sub>"

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-5016



## RADIO RECEIVING SETS

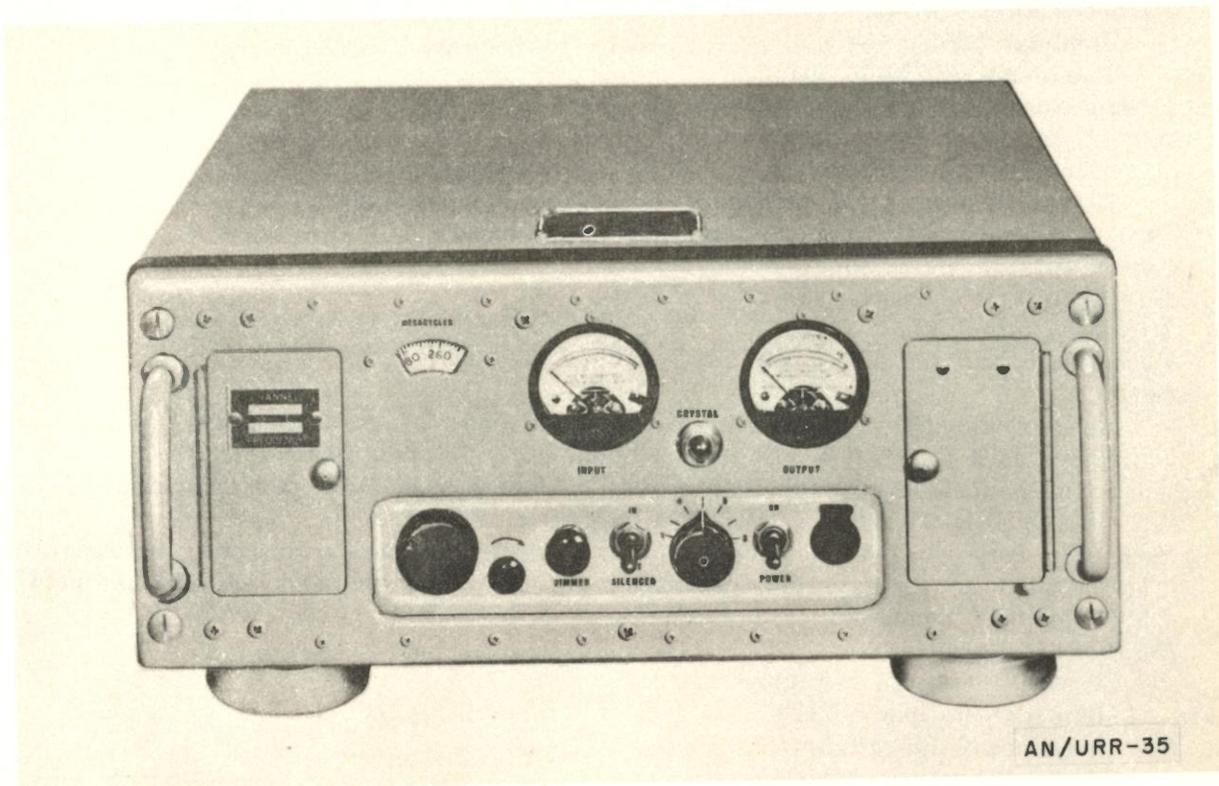
## AN/URR-35, -35A, -35B, -35C

15 March 1962

Cog. Serv: USN FSN: AN/URR-35: 5820-665-2375  
 AN/URR-35A: 5820-665-1245  
 AN/URR-35B: 5820-642-8747  
 AN/URR-35C: 5820-644-4773

USA Line Item No.: 658368

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-A	Used by	Std	
Manufacturer:	AN/URR-35, -35B AN/URR-35A AN/URR-35C	Federal Telephone and Radio Corp National Co, Inc Rauland-Borg Corp		

**FUNCTIONAL DESCRIPTION:**

Radio Receiving Sets AN/URR-35, AN/URR-35A, AN/URR-35B, and AN/URR-35C are general purpose very-high-frequency and ultra-high frequency units used on naval vessels, at naval air and shore stations, or at other military establishments. They provide amplitude-modulated point-to-point communications.

All of these equipments are similar functionally and in appearance. The frequency range, operating modes, sensitivity, and response characteristics are the same for the entire series.

RADIO RECEIVING SET

**AN/URR-35, -35A, -35B, -35C**

The AN/URR-35 and AN/URR-35A are identical except for minor changes in the values of two resistors.

The AN/URR-35B contains a new blower and a plug-and-jack type connection for the blower circuit.

The AN/URR-35C eliminates the entire scanning circuit and the test cables included with previous models. There are, in addition, a few minor modifications of resistance values.

Auxiliary apparatus necessary to operate these equipments are the antenna, antenna transmission line, crystal units, power cable, audio output cable, headphones, and loudspeaker or other responsive devices.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Frequency Range in Mc:*

Nominal: 225 to 400

Maximum: 222.75 to 404.0

*Tuning Bands: 1 (continuous)*

*Number of Preset Frequencies:*

Manual Tuning: None

Crystal Tuning: 1; as determined by crystal unit installed

*Type of Frequency Control:* crystal-controlled oscillator

*Type Receiver:* double superheterodyne

*Intermediate Frequencies:* 18.6 mc; 1.775 mc

*Type Modulation:* am

*Type Reception:* A1, A3 (voice, mc, mcw)

*Outputs:*

Audio Channel Output: 60 mw into 600-ohm load; 7% max distortion

Phone Jack Output: 60 mw into 600-ohm load; 7% max distortion

Scan Channel Output: 10  $\mu$ v min across a 50-ohm load, for max signal input of 75  $\mu$ v (AN/URR-35 and AN/URR-35A only)

*Frequency Stability:* overall stability for any selected frequency, operating between 103.5 and 126.5 v ac (using 115-v transformer tap), between  $-4^{\circ}$  and  $+122^{\circ}$ F. and between 30% and 90% humidity:

*For Voltage Variation:*

Crystal Operation: negligible

Manual Operation:  $\pm 0.02\%$

*For Temperature Variation:*

Crystal Operation:  $\pm 0.008\%$

Manual Operation:  $\pm 0.1\%$

*Silencer Circuit:*

Effective; Silencing Range: 300- $\mu$ v inpt (max)

Audio Output Reduction: 40 db under standard output conditions (max)

Time-Constant: Less than 0.2 sec

*Impedance*

Antenna Input: 50 ohms, coaxial

Audio Channel Output: 600 ohms, nominal

Phone Jack Output: 600 ohms, nominal

AN/URC-type

## AN/URR-35, -35A, -35B, -35C

Scan Channel Output: 50 ohms, coaxial (AN/URR-35, AN/URR-35A only)

*Sensitivity:* 8  $\mu$ v, in series with 50 ohms, for 10-db signal-to-noise ratio (signal modulated 30% at 1,000 cps)

*Selectivity:* 70 to 85 kc down 6 db; less than 190 kc down 60 db

*Power Requirements:* 98 w, (with blower off), 108 w (with blower on); 0.97 amps, 105 to 125 v, 50- to 60-cy, 1-phase ac

*Major Units:*

1 R-482/URR-35

8 $\frac{7}{16}$ " x 17 $\frac{1}{2}$ " x 19 $\frac{1}{8}$ "

57 lbs

### TUBES, CRYSTALS, TRANSISTORS:

### REFERENCE DATA AND LITERATURE:

NAVSHIPS 91906 (AN/URR-35 and AN/URR-35B)

NAVSHIPS 92022 (AN/URR-35A)

NAVSHIPS 92676 (AN/URR-35C)

MIL-R-10584 (AN/URR-35A)

MIL-R-16620 (Each other model)



**RADIO RECEIVING SET**  
**AN/URR-35D**

15 March 1962

Cog. Serv: USN FSN:

USA Line Item No.:

	USA	USN	USAF	USMC
<b>STATUS OR TYPE CLASS.:</b>	Std-A	Used by	Std	

**Manufacturer:** Rauland-Borg Corp  
Western Electric Co

No Illustration Available

**FUNCTIONAL DESCRIPTION:**

Radio Receiving Set AN/URR-35D is a very-high-frequency and a ultra-high-frequency unit used on naval vessels, at naval air and shore stations, or at any other military establishments.

This equipment is designed primarily for operation as a pretuned, single-channel, crystal-controlled receiver. By selecting a suitable crystal, any channel within the frequency range of the set may be used.

An adjustable carrier relay circuit is provided to allow operation over an input signal range of 2 to 20 microvolts.

A panel-mounted pilot light indicates the operation of the carrier relay.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

*Frequency Range in Mc:* 225 to 400

*Type Modulation:* am

*Type Reception:* voice, mcw

*Frequency Control:* crystal or manual

*Type Receiver:* double superheterodyne

*Presentation:* Audio type

*Input Signal Voltage:*

*Power Requirements:* 105-, 115-, or 125-v, 50- to 60-cy 1-phase ac

*Major Units:*

1 F-318( )/URR-35

1 R-482( )/URR-35

**TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**

MIL-R-16620A(SHIPS)



## RADIO RECEIVING EQUIPMENT

## AN/URR-36

15 March 1962  
 Cog. Serv: USN FSN:  
 USA Line Item No.:

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:				

Manufacturer: CNA (42498)

No Illustration Available

**FUNCTIONAL DESCRIPTION:**

Radio Receiving Equipment AN/URR-36 is a general purpose communications receiver. It uses plug-in coils for band coverage. The accessories also are plug-in type. One of the accessories, the vibrator power supply, operates from a 6 v dc supply to furnish complete operating voltages for the receiver. Receiver selectivity characteristics are made adjustable by means of a crystal filter. The equipment is temperature compensated, and contains noise limiter and tone control circuits. Plug-in mountings are included for a narrow band fm adaptor and a crystal calibrator.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

*Operating Modes:* cw, phone, narrow band fm, phono

*Frequency Range:* 50-430 kc and 480 kc— 35 mc

*Frequency Coverage:* 12 bands

*Receiver Output Impedance:* 8 or 500 ohms

*Mounting:* table or rack

*Operating Power Requirements:* 110/220 or 220/240 v, 50/60 cy, approximately 115 w; 6 v dc with storage battery vibrator, power supply accessory; directly from batteries

*Major Units:* AN/URR-36 consists of 1 Receiver Loudspeaker

**TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**

NAVSHIPS 91648



AN/URR-type  
AMPLIFIER, AUDIO FREQUENCY

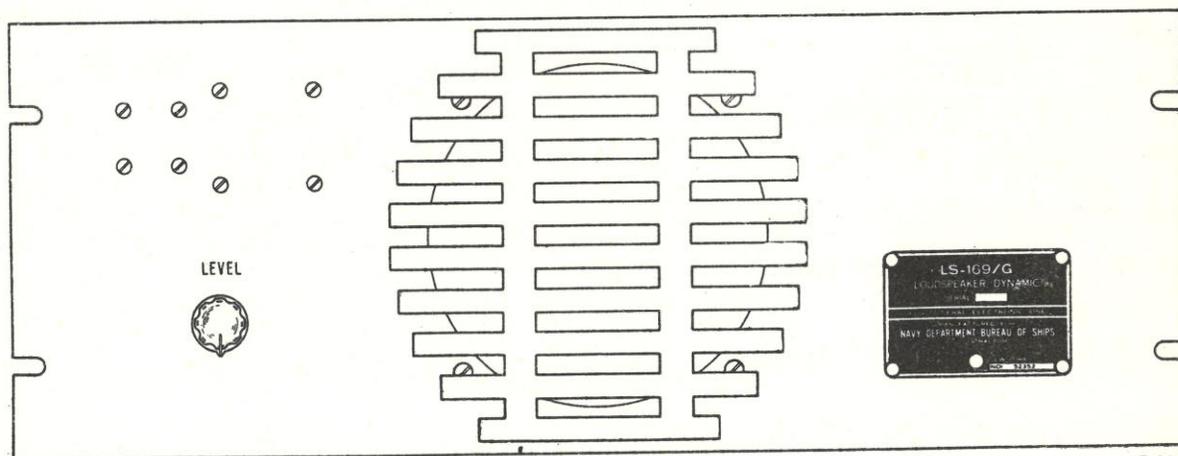
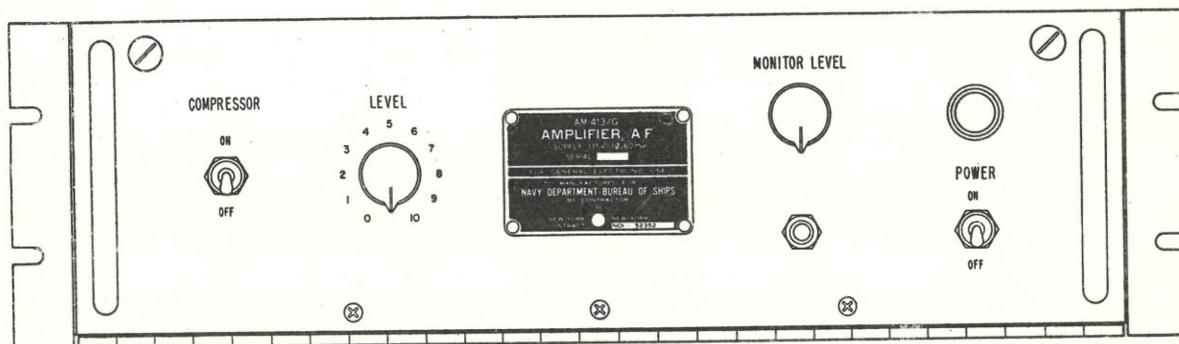
**AM-413D/G**

15 March 1962  
Cog. Serv: USN FSN: 5820-856-1266  
USA Line Item No.:

USA	USN	USAF	USMC
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**STATUS OR TYPE CLASS.:**

Manufacturer: General Sintering Corp



AM-413/G

**FUNCTIONAL DESCRIPTION:**

This is an audio frequency amplifier suitable for general communication purposes when operating in conjunction with Naval radio receiving sets and associated equipment. It is an automatic variable gain amplifier capable of producing rated audio power output of 2 watts with any audio power input between 0.001 milliwatts and 6 milliwatts. The amplifier is designed for mounting in a standard 19-inch relay rack and complies with specification MIL-E-16400 for class 4 temperature requirements.

AN/URR-type  
AMPLIFIER, AUDIO FREQUENCY

## AM-413D/G

### RELATIONSHIP TO SIMILAR EQUIPMENT:

### EQUIPMENT REQUIRED BUT NOT SUPPLIED:

None of the cables required for use with the equipment is supplied, nor are any of the auxiliary devices used in conjunction with the equipment, such as radio receiving sets or speakers.

### TECHNICAL DESCRIPTION:

*Frequency Range:* 200 cps to 5000 cps

*Power Output:*

- A. 600 ohm 2 w balanced circuit for loudspeaker
- B. 600 ohm 6 mu balanced circuit for 600 ohm line
- C. 600 ohm 1 mw unbalanced circuit for headset

*Output signal characteristics:*

With the amplifier operating at a the rated power output over the range of rated power input and frequency, the distortion will not exceed 7 percent (r.m.s. value).

*Accuracies:* With the compressor circuit OFF the frequency response will be within  $\pm 2$  db. With the compressor circuit ON the frequency response will be within  $\pm 5$  db.

*Pertinent electrical and mechanical characteristics:* The input impedance of each audio input circuit of the amplifier (total of two) is 600 ohms  $\pm 10$  percent at 1000 cps

*Where and how installed:* Designed for mounting in a standard 19-inch Navy type relay rack.

*Mounting dimensions:* Designed for mounting in a standard 19-inch Navy Type relay rack.

*Number of operators required:* One

*Major Units:*

1 AM-413D/G

19" x 5 $\frac{1}{2}$ " x 9"

16 $\frac{1}{2}$  lbs

### TUBES, CRYSTALS, TRANSISTORS:

5—12AT7WA

1—6005

1—5Y3WGTA

### REFERENCE DATA AND LITERATURE:

NAVSHIPS 91905

MIL-A-15695C, Amendment 3

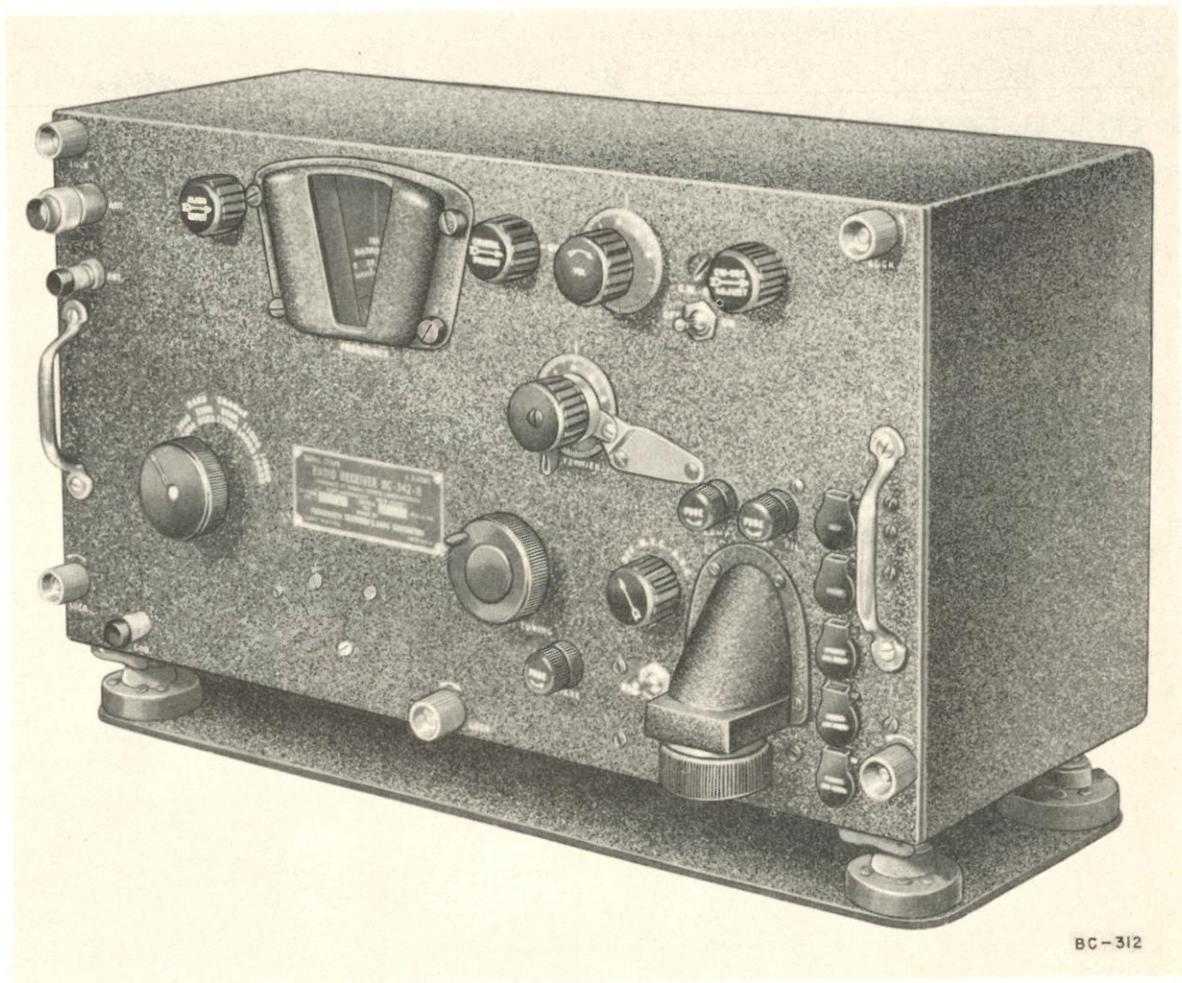
AN/URR-type  
RADIO RECEIVER**BC-312( )**

15 March 1962

Cog. Serv: USA FSN: BC-312, -A, -C thru N: 5820-164-7230  
BC-312-HX, -NX: 5820-164-6371

USA Line Item No.: 635020

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	L/Std			
Manufacturer:	Farnsworth Television & Radio			

**FUNCTIONAL DESCRIPTION:**

Radio Receiver BC-312-( ) is an mf and hf, am (voice, tone, and cw) general utility radio receiving equipment widely used as part of such radio sets as the AN/GRC-26 and SCR-399. It can be used in mobile, vehicular, fixed-plant, or airborne radio communication applications.

**AN/URR-type  
RADIO RECEIVER**

**BC-312( )**

This equipment consists of a single primary operating component. It can be used with a loudspeaker or headphones.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Frequency Range in Mc:* 1.5 to 18.0 in 6 bands

*Type Modulation:* am

*Type of Signal:* cw, tone, voice

*Power Requirements:* BC-312 (most models): 12-14-v dc (storage battery); BC-312-HX,  
-NX: 24-28-v dc (storage battery)

*Major Units:*

1 BC-312

10" x 9 $\frac{1}{16}$ " x 18 $\frac{1}{16}$ "

58 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-850

(USA) 71-914

AN/URR-type  
RADIO RECEIVER  
R-388( )/URR

15 March 1962

Cog. Serv: USA, USN FSN: 5820-537-3895

USA Line Item No.: 635910

USA

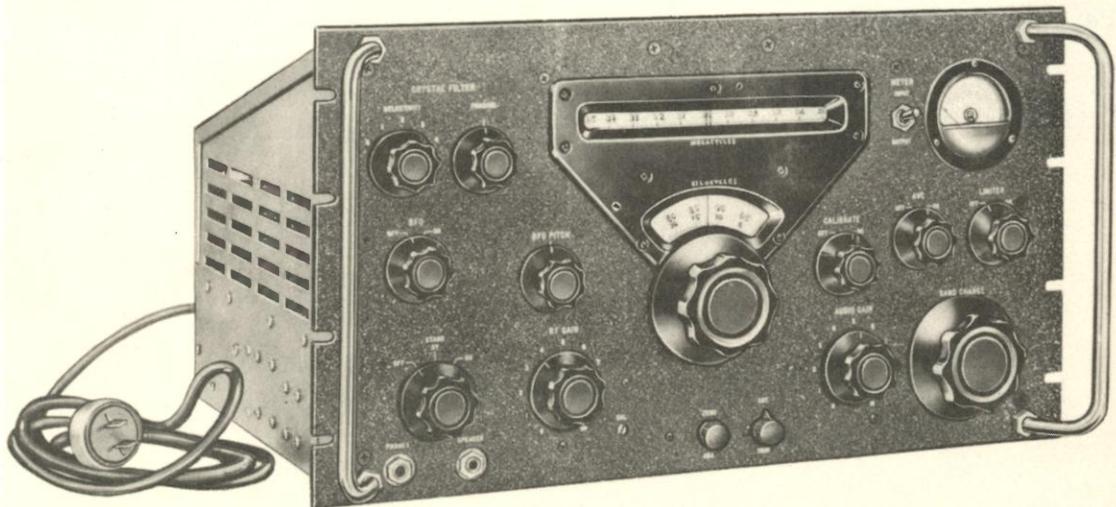
USN

USAF

USMC

## STATUS OR TYPE CLASS.:

Manufacturer: Collins Radio Co (R-388/URR)  
Collins Radio Co (R-388A/URR)



R-388/URR

## FUNCTIONAL DESCRIPTION:

Radio Receiver R-388( )/URR is a general purpose, am (voice, cw, and fsk) radio receiving equipment operating in the mf and hf bands for fixed-station or mobile applications.

This equipment, consisting of a single self-contained rack-mounted radio receiver, having unusual stability and calibration accuracy, is especially useful for operating on known frequencies without searching or readjustment, and for reception of frequency-shift-keyed signals. It includes a 100-kc crystal-calibrated oscillator, a coaxial antenna input connector, a coaxial connector for tapping the IF output, and has provision for connecting an external circuit to control the built-in remote-disabling relay. It can be operated with straight wire or doublet-type antenna systems.

AN/URR-type  
RADIO RECEIVER

## R-388( )/URR

### RELATIONSHIP TO SIMILAR EQUIPMENT:

Radio Receiver R-388A/URR, procured by the USN, is identical to the R-388/URR, except that it uses mechanical filters and nonmagnetic side panels.

### TECHNICAL DESCRIPTION:

*Frequency Range in Mc:* 0.5 to 30.5

*Type Modulation:* am

*Type of Signal:* cw, voice, fsk

*Power Requirements:* 85 w, 115/230-v 45-70-cy ac

*Major Units:*

1 R-388/URR

10 $\frac{1}{2}$ " x 19" x 13 $\frac{1}{16}$ "

35 lbs

### TUBES, CRYSTALS, TRANSISTORS:

### REFERENCE DATA AND LITERATURE:

TM 11-854

AN/URR-type  
 RADIO RECEIVER  
**R-389( )/URR**

15 March 1962  
 Cog. Serv: USA FSN: 5820-503-1417  
 USA Line Item No.: 658381

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS:			Std	

Manufacturer:



R-389/URR

**FUNCTIONAL DESCRIPTION:**

Radio Receiver R-389( )/URR is a general purpose, low- and medium-frequency, fixed station equipment used in communication, intercept, and direction-finding applications.

For radioteletype applications, this equipment has a 455-kc output that can be connected to a suitable frequency-shift converter to operate teletypewriter equipment.

It is intended for standard rack-and-panel installation in fixed-plant applications but may also be used in mobile applications where suitable power is available.

MIL-HDBK-161A/TM11-487A-3/NAVEXOS P-2058/TO 31-3-73

AN/URR-type  
RADIO RECEIVER

# R-389( )/URR

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Frequency Range in Mc:* 0.015 to 1.5

*Type Modulation:* am

*Type of Signal:* cw, mcw, voice, fsk

*Power Requirements:* 250 w, 115/230-v, 48-62 cy, ac

*Major Units:*

1 R-389( )/URR

10 $\frac{1}{2}$ " x 17 $\frac{1}{4}$ " x 19"

82 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-855

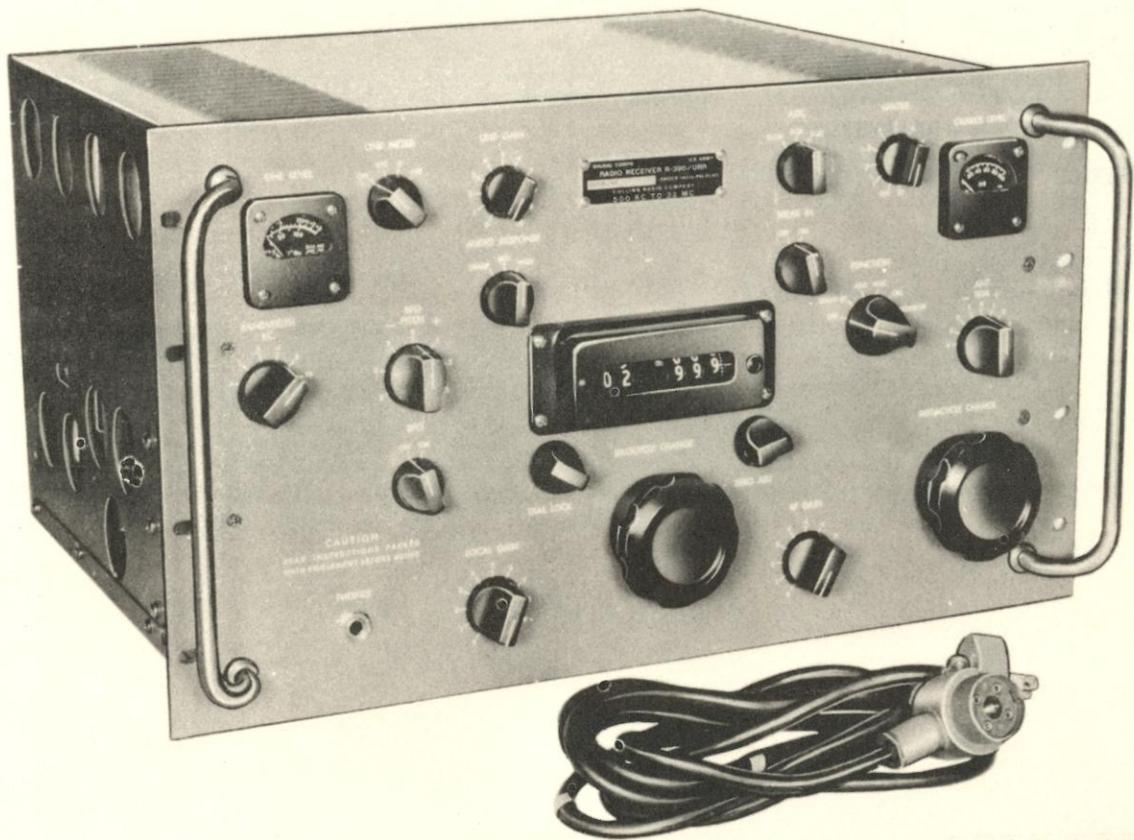
MIL-R-10474

AN/URR-type  
RADIO RECEIVER  
**R-390/URR**

15 March 1962  
Cog. Serv: USA FSN: 5820-503-1242  
USA Line Item No.: 658382

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-A		A/Std	

Manufacturer: Motorola, Inc



R-390/URR

**FUNCTIONAL DESCRIPTION:**

Radio Receiver R-390/URR is a general purpose am (cw, mcw, and voice) medium- and high-frequency equipment of exceptional stability characteristics, used in fixed and mobile applications.

**AN/URR-type  
RADIO RECEIVER**

**R-390/URR**

This equipment can be operated in space-diversity and single sideband arrangements for radioteletype communication, in conjunction with such equipment as Radioteletype Terminal Equipment AN/FGC-1, Frequency Shift Converter CV-116/URR, or Single Sideband Converter CV-157/URR.

This receiver is composed of seven subchassis assemblies that can be removed for troubleshooting and repair.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Frequency Range in Mc:* 0.5 to 32

*Type Modulation:* am

*Type of Signal:* cw, mcw, voice, fsk, composite transmissions

*Power Requirements:* 225/270 w, 115/230-v, 48-62-cy, ac

*Major Units:*

1 R-390/URR

10 $\frac{1}{2}$ " x 17 $\frac{1}{4}$ " x 19"

84.7 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-264B

TM 11-856

MIL-R-10474; MIL-R-13947

AN/URR-type  
RADIO RECEIVER**R-390A/URR**

1 March 1964

Cog. Serv: USA FSN: 5820-510-1605

USA Line Item No.:

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-A		Std	
Manufacturer:	Collins Radio Co			

**FUNCTIONAL DESCRIPTION:**

Radio Receiver R-390A/URR is a high performance, exceptionally stable, general purpose superheterodyne receiver for use in fixed and mobile applications. It provides reception of continuous wave, modulated continuous wave, voice, and frequency-shifted keyed signals within a frequency range of 0.5 to 32 megacycles.

AN/URR-type  
RADIO RECEIVER

**R-390A/URR**

The receiver can be operated in a space-diversity receiving system, either of two types of space-diversity radioteletype receiving systems, and in a single-side band radioteletype receiving system.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Frequency Range in Mc:* 0.5 to 32

*Type of Signal:* A1, A2, A3, A9, F1

*Audio Power Output:*

600-ohm unbalanced line: 500 mw (min)

600-ohm balanced line: 10 mw (min)

Headphones: 1 mw

*If Selectivity:* 100 cps to 16 kc

*Antenna:*

Unbalanced: straight wire or random length or vehicular mounted whip

Balanced: 125-ohm terminating impedance

*Power Requirements:* 225 w, 115/230 v ( $\pm 10\%$ ), 48- to 62-cy, ac

*Major Units:*

1 Amplifier, radio frequency

11 $\frac{3}{4}$ " x 4 $\frac{1}{16}$ " x 5"

1 Audio assembly

11 $\frac{1}{8}$ " x 5 $\frac{1}{4}$ " x 3 $\frac{5}{16}$ "

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

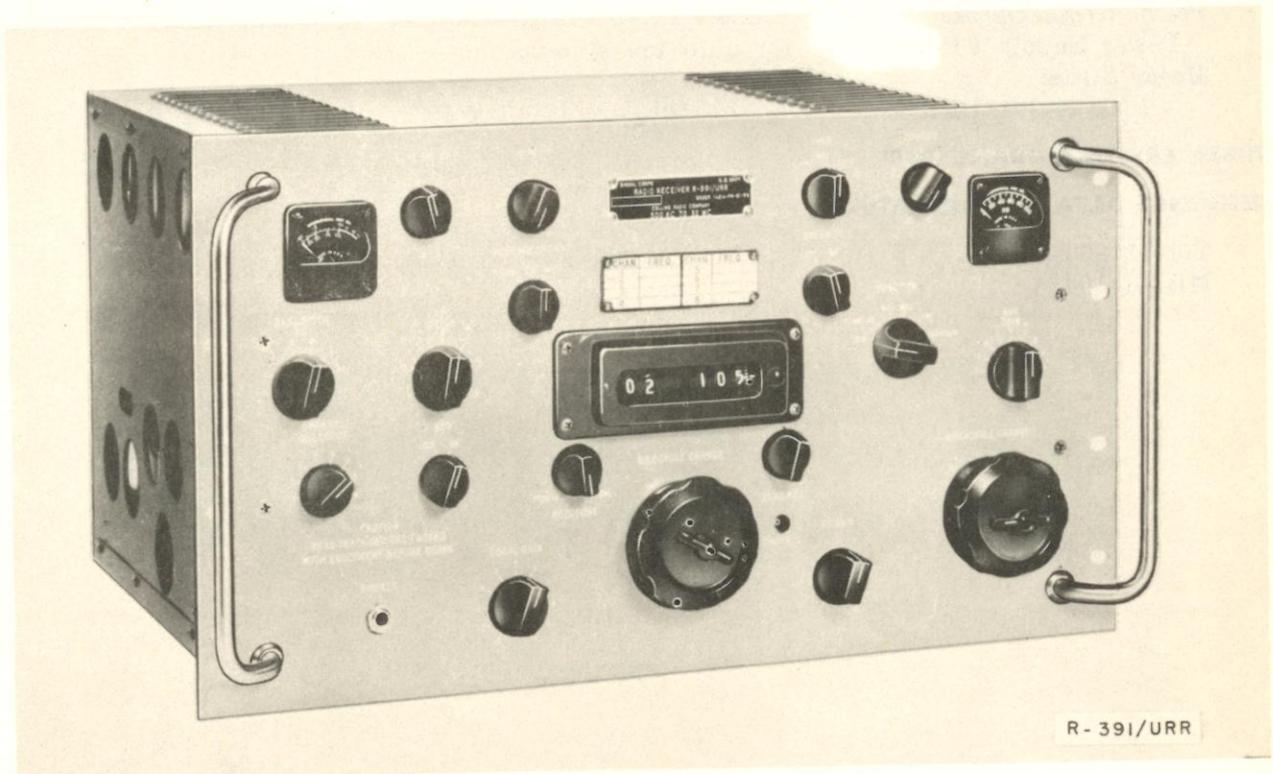
TM 11-856A

MIL-4-1D474

AN/URR-type  
RADIO RECEIVER  
**R-391/URR**

1 March 1964  
Cog. Serv: USA FSN: 5815-503-1256  
USA Line Item No.: 658372

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-A		Std	
Manufacturer:	Collins Radio Co			

**FUNCTIONAL DESCRIPTION:**

Radio Receiver R-391/URR is a general purpose mf and hf equipment for both fixed and mobile service and provides reception of am (cw, mew, voice) and fsk signals.

This equipment consists of the receiver, which contains its own power supply, and necessary cable assemblies. The antenna, headset, speaker, transmission line, adapter connectors, and a separate power supply for use with an autotune system are required but not supplied.

Two or three receivers may be connected as a space-diversity receiving system for reception of voice signals.

MIL-HDBK-161A/TM11-487A-3/NAVEXOS P-2058/TO 31-3-73

AN/URR-type  
RADIO RECEIVER

## R-391/URR

This receiver is one of a series that also includes the R-389/URR and R-390/URR. Each one, differing in the method of tuning and frequency range, has a number of features in common, such as utilized construction and interchangeable subchassis.

This receiver, in mobile applications, requires an external Power Supply PP-629/URR.

### RELATIONSHIP TO SIMILAR EQUIPMENT:

#### TECHNICAL DESCRIPTION:

*Frequency Range in Mc:* 0.5 to 32 in 32 steps

*Type Modulation:* am

*Type of Signal:* cw, mew, voice, fsk

*Power Requirements:* 270 w, 115/230-v ( $\pm 10\%$ ), 48-62-cy, ac; or 3 amp at 24-v dc with

Power Supply PP-629/URR for autotune systems only

*Major Units:*

1 R-391/URR

10 $\frac{1}{2}$ " x 17 $\frac{1}{4}$ " x 19"

87.2 lbs

#### TUBES, CRYSTALS, TRANSISTORS:

#### REFERENCE DATA AND LITERATURE:

TM 11-863

MIL-R-10474

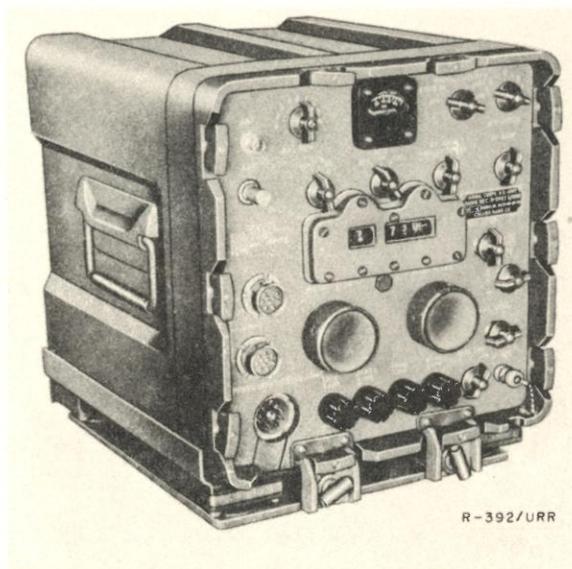
AN/URR-type  
RADIO RECEIVER  
**R-392/URR**

1 July 1958

Cog. Serv: USA FSN: 5820-503-1250

USA Line Item No.: 658384

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-A			
Manufacturer:				



R-392/URR

**FUNCTIONAL DESCRIPTION:**

Radio Receiver R-392/URR is a vehicular equipment used for receiving radiotelegraph, voice, and single-channel, frequency-shift radioteletype signals.

This equipment consists of the receiver and tube case. Additional equipment required, but not supplied, includes an antenna, a headset, a speaker, the mounting, power source, and accessories.

It can be used as a conventional communication receiver, as part of a vehicular two-way communication system, or as part of a single-channel, frequency-shift radioteletype system.

This receiver is immersionproof and is sufficiently rugged to withstand parachute delivery when mounted in a truck or in standard U.S. Army parachute delivery container.

It has provision for connection of its 455-kc IF signal output to a frequency-shift radioteletype converter.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

*Frequency Range in Mc:* 0.5 to 32 in 32 bands

*Type Modulation:* am

MIL-HDBK-161A/TM11-487A-3/NAVEXOS P-2058/TO 31-3-73

AN/URR-type  
RADIO RECEIVER

## R-392/URR

*Type of Signal:* cw, mw, voice, fsk

*Power Requirements:* 3 amp, 22-28-v, dc

*Major Units:*

1 R-392/URR

11½" x 14⅛" x 11"

52 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-858

MIL-R-10474

AN/URR-type  
RADIO RECEIVER  
R-520( )/URR

15 March 1962

Cog. Serv: USA FSN: 5820-503-1403

USA Line Item No.: 658388

USA

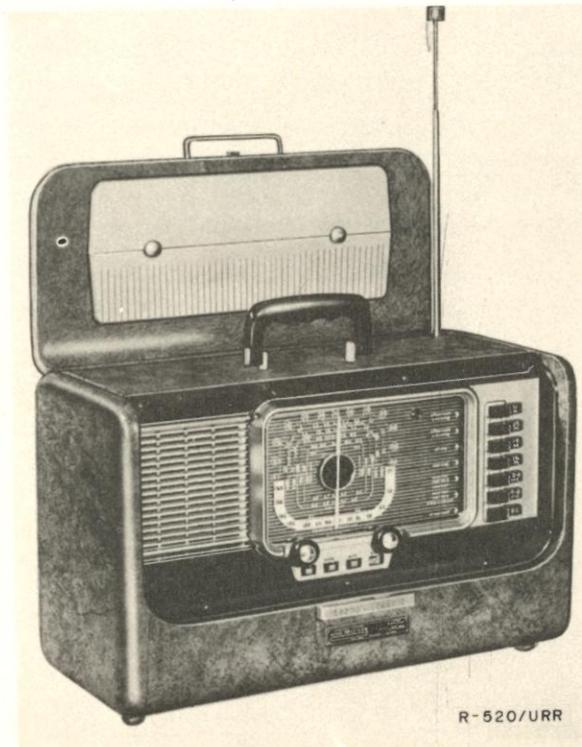
USN

USAF

USMC

## STATUS OR TYPE CLASS.:

Manufacturer: Zenith Radio Corp



R-520/URR

**FUNCTIONAL DESCRIPTION:**

Radio Receiver R-520( )/URR is a portable superheterodyne receiving equipment, used for troop information. It is capable of receiving am signals over the broadcast and shortwave bands (total of seven), and of operating with an internal loudspeaker or an externally connected, low-impedance headset.

Accessory equipment, such as a headset and a long-wire antenna, is not supplied with this equipment.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

*Frequency Range in Mc:* 0.54 to 1.6; 2 to 4; 4 to 8; 9.4 to 9.8; 11.6 to 12; 14.9 to 15.5; 17.5 to 18.1

MIL-HDBK-161A/TM11-487A-3/NAVEXOS P-2058/TO 31-3-73

AN/URR-type  
RADIO RECEIVER

## R-520( )/URR

*Type Modulation:* am

*Type of Signal:* voice

*Power Requirements:* 10/20 w, 115/230-v, ac; 7.5/15 w, 115/230-v, dc; or 67 ma at 9-v, dc (A battery) and 17 ma at 90-v, dc (B battery)

*Major Units:*

1 R-520( )/URR

11 $\frac{1}{16}$ " x 7 $\frac{3}{32}$ " x 17 $\frac{5}{16}$ "

20 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-877

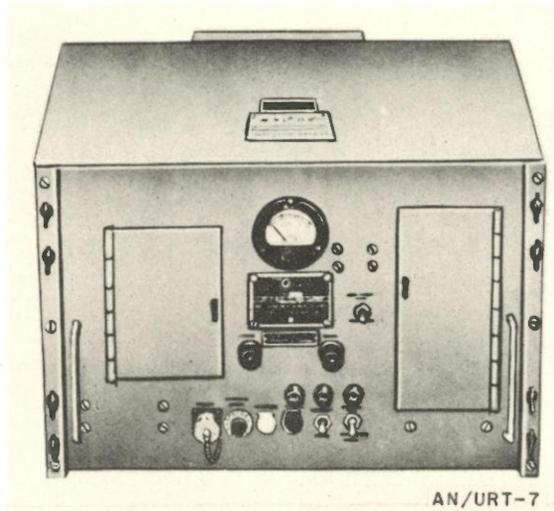
RADIO TRANSMITTING SETS  
**AN/URT-7, -7A, -7B, -7C**

15 March 1962

Cog. Serv: USN FSN: 5820-665-2473 (AN/URT-7B)

USA Line Item No.:

USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:		Used by	
Manufacturer: Federal Telephone and Radio Corp; Rauland-Borg Corp			

**FUNCTIONAL DESCRIPTION:**

Radio Transmitting Sets AN/URT-7, AN/URT-7A, AN/URT-7B, and AN/URT-7C are low power, general purpose units designed for radiotelephone and modulated continuous wave communication on ship, submarine, or at shore installations.

This equipment may be mounted on a table or may be removed from its cabinet and mounted in a standard 19-inch relay rack. Remote control operation may be from a standard Remote Radiophone Unit NT-23500 or equivalent. Limited control from a remote location may be obtained with Transmitter Control NT-23555.

Radio Transmitting Sets AN/URT-7, AN/URT-7A, AN/URT-7B, and AN/URT-7C are interchangeable but differ in minor electrical and mechanical design.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

*Frequency Range in Mc:* 115 to 156

*Frequency Control:* crystal

*Frequency Stability:*  $\pm 0.007\%$

*Type Modulation:* am

*Type Emission:* A2, A3 (cw, mcw, voice)

RADIO TRANSMITTING SETS

**AN/URT-7, -7A, -7B, -7C**

*Power Output:* 30 w, nominal

*Impedance:*

Microphone: 600 ohms input

Antenna: 50 ohms output

*Audio Input Voltage:* 25 to + 5 db from a 0.006-w reference level (0.1 to 3.4 v)

*Audio Frequency Response:* flat within  $\pm 3$  db from a 1,000-cps reference level, from 300 to 3,500 cps

*Audio Frequency Filter:* flat with  $\pm 2$  db from a 1,000 cps reference level, and -50 db at 5,000 and over.

*Input to Clipping Stage:* normally held at  $20 \pm 5$  db above the clipping level by action of the avc circuit for variations in the input of -25 to +5 db from 0.006-w reference level

*Heat Dissipation:* 700 w

*Power Requirements:* 750 w; 115- or 230-v  $\pm 10\%$ , 50- to 60-cy  $\pm 5\%$ , 1-phase ac, 0.85 pf

*Major Units:*

1	T-336/URT-7	$13^{2\frac{3}{32}}''$ x $16\frac{1}{2}''$ x 19"	146 lbs
1	AM-638/URT	5" x $9^{3\frac{1}{32}}''$ x $14\frac{1}{2}''$	
1	CY-1126/URT	$13^{2\frac{3}{32}}''$ x $14^{1\frac{3}{16}}''$ x 19"	
1	PP-773/URT	$12\frac{7}{32}''$ x $16\frac{1}{4}''$ x 19"	
1	MD-163/URT	4" x $9^{3\frac{1}{32}}''$ x $14\frac{3}{8}''$	

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 91684

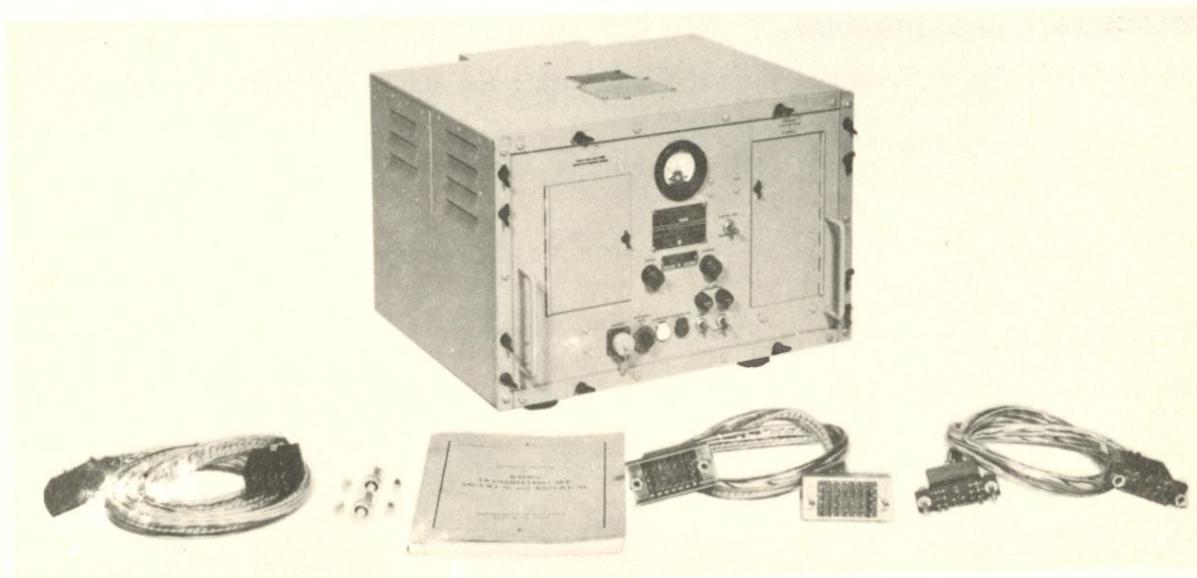
RADIO TRANSMITTING SET  
AN/URT-7D

15 March 1962

Cog. Serv: USN FSN: 5820-713-3939

USA Line Item No.:

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:		Std		
Manufacturer:	CCWJ (89114)			

**FUNCTIONAL DESCRIPTION:**

The AN/URT-7D is predominantly used for ship-to-ship and ship-to-shore communications. It is employed for radio telephone am modulated-continuous wave communications. The range is approximately line of sight. It may be operated from remote units.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

Functionally similar to previous models in the AN/URT-7 series.

**TECHNICAL DESCRIPTION:**

*Frequency Range:* 115 to 156 mc

*Emission:* voice or mcw

*Carrier Power:* 30 w min

*Sideband Power:* 15 w min

*Frequency stability:* 0.007 pct

*Operating Power Requirements:* 115 or 230 v ac, 50 to 60 cps, single phase.

RADIO TRANSMITTING SET

AN/URT-7D

Major Units:

1	T-336D/URT	16 $\frac{1}{2}$ " x 19" x 13 $\frac{23}{32}$ "	34 lbs
1	AM-638D/URT	13 $\frac{3}{4}$ " x 5" x 10"	13 lbs
1	PP-773D/URT	14 $\frac{1}{2}$ " x 19" x 12 $\frac{7}{32}$ "	55 lbs
1	MD-163D/URT	13 $\frac{3}{8}$ " x 4" x 10"	26 lbs
1	CX-1826/U	96" lg	1 $\frac{3}{4}$ lbs
1	CX-1827/U	36" lg	1 $\frac{1}{2}$ lbs
1	CX-3154/U	36" lg	1 lb
1	Maintenance Parts Kit	11 $\frac{1}{4}$ " x 21 $\frac{1}{4}$ " x 7 $\frac{1}{2}$ "	40 lbs

TUBES, CRYSTALS, TRANSISTORS:

REFERENCE DATA AND LITERATURE:

NAVSHIPS 92832; Technical Manual Transmitting Set Radio AN/URT-7C and AN/URT-7D

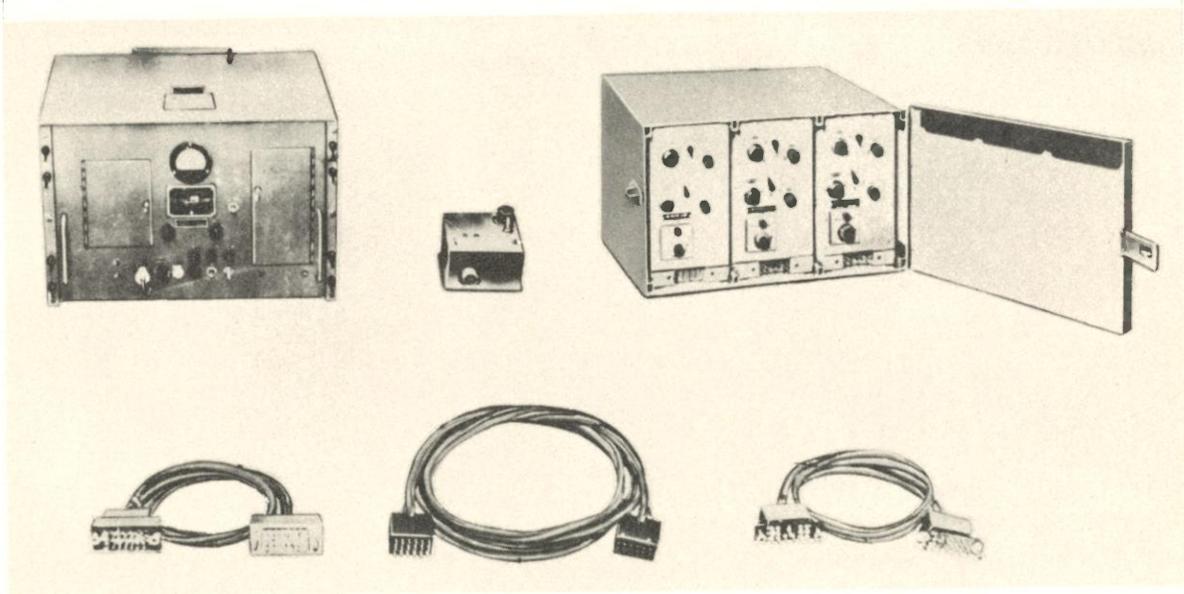
RADIO TRANSMITTING SET  
AN/URT-10(XN-1)

15 March 1962

Cog. Serv: USN FSN:

USA Line Item No.:

USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:		P/Std	
Manufacturer: Federal Telephone and Radio Corp			

**FUNCTIONAL DESCRIPTION:**

Radio Transmitting Set AN/URT-10(XN-1) is used for vhf/uhf radio-telephone and modulated continuous wave (mcw) transmission, and is intended for installation aboard ships, submarines, and at shore stations. The transmitter control unit permits limited control of the equipment from a remote point, and is primarily for use at shore installations and on small ships. Remote operation from standard shipboard remote units is also possible.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

*Frequency Range:* 30-400 mc

*Frequency Control:* crystal

*Emission and Modulation Capability:* A2(mcw) 100 percent; A3 (Phone) 100 percent

*Nominal Carrier Output:* 30 w between 30 and 115 mc; 15 w between 115 and 400 mc

*Frequency Stability:*  $\pm 0.007$  percent under any conditions

RADIO TRANSMITTING SET

**AN/URT-10(XN-1)**

*Impedance:*

Microphone Input: 600 ohms

Antenna Output: 50 ohms

*Audio Input Voltage:* -25 db to +5 db from a 0.006 w reference level (0.1 to 3.4 v)

*Operating Power Requirements:* 115/230 v  $\pm 10$  percent, 50-60 cy  $\pm 5$  percent, single phase,  
0.85 power factor, 750 w

*Major Units:*

1 AN/URT-10(XN-1)

13 $2\frac{3}{32}$ " x 19" x 16 $1\frac{1}{2}$ "

146 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 91625

## RADIO TRANSMITTING SET

## AN/URT-12

3 December 1958

Cog. Serv: USN FSN:

USA Line Item No.:

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS:		Used by	Std	

Manufacturer: Radiomarine Corporation of America

No Illustration Available

**FUNCTIONAL DESCRIPTION:**

Radio Transmitting Set AN/URT-12 is a general purpose communication equipment designed for ship and shore use. It provides eight bands to facilitate the employment of the frequency range.

This equipment consists essentially of a radio transmitter, a power supply, a cabinet, and associated accessories.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:***Frequency Range:* 2 mc to 30 mc*Number of Bands:* 8*Type Modulation:* am*Type Emission:* A1, A3*Frequency Control:* crystal*Power Output:*

Emission A1: 100 w

Emission A3: 75 w

*Power Requirements:* 1,050 w; 115-v or 230-v, 50- to 60-cy, 1-phase ac*Major Units:*

1 AN/URT-12

20" x 20" x 36"

**TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**



RADIO TRANSMITTER  
AN/URT-17

15 March 1962  
Cog. Serv: USN FSN:  
USA Line Item No.:

	USA	USN	USAF	USMC
<b>STATUS OR TYPE CLASS.:</b>				
<b>Manufacturer:</b> CCLX (82679)				

**FUNCTIONAL DESCRIPTION:**

Radio Transmitter AN/URT-17 is for radio telephone, telegraph, frequency shift, and facsimile operation on all frequencies within its range. The AN/URT-17 may be used, because of its pi network output circuit, to load any properly constructed unbalanced antenna system with a reasonable degree of matching. The equipment is adaptable for multi-channel, frequency shift, and single sideband operation. For sideband operation, the transmitter is used in conjunction with a single sideband exciter that provides single sideband with suppressed carrier, double sideband with full carrier, or cw operation.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

This equipment is the military version of manufacturer's radio transmitter Model GPT-750.

**TECHNICAL DESCRIPTION:**

*Frequency Range:* 2-32 mc, band switched

*Power Rating:*

1000 w output, cw or fs

750 w output, radio telephone

750 w output, PEP, single sideband for continuous service.

*Frequency Control:* built-in high stability master oscillator, plus three crystal positions selectable by front panel switch

*Keying Speed:*

up to 240 wpm on cw

up to 1000 wpm on fs

*Master Oscillator Characteristics:*

Frequency Range: 2-4 mc continuously variable

Oscillator Calibration: direct reading in cps

Readability: 20 cps per mc to a previously calibrated frequency

Frequency Calibration: An oven-controlled 100 kc oscillator may provide a crystal check point. The 100 kc oscillator may be calibrated against a primary standard.

Zero Beat Indication: 50 kc check points on neon light null indicator. Additional aural check points are available

Stability: better than 20 cps per mc for a 30° change in ambient temperatures

Line Voltage Effect: not more than 10 cps for a ± 10 percent variation

*Crystal Oscillator Characteristics:*

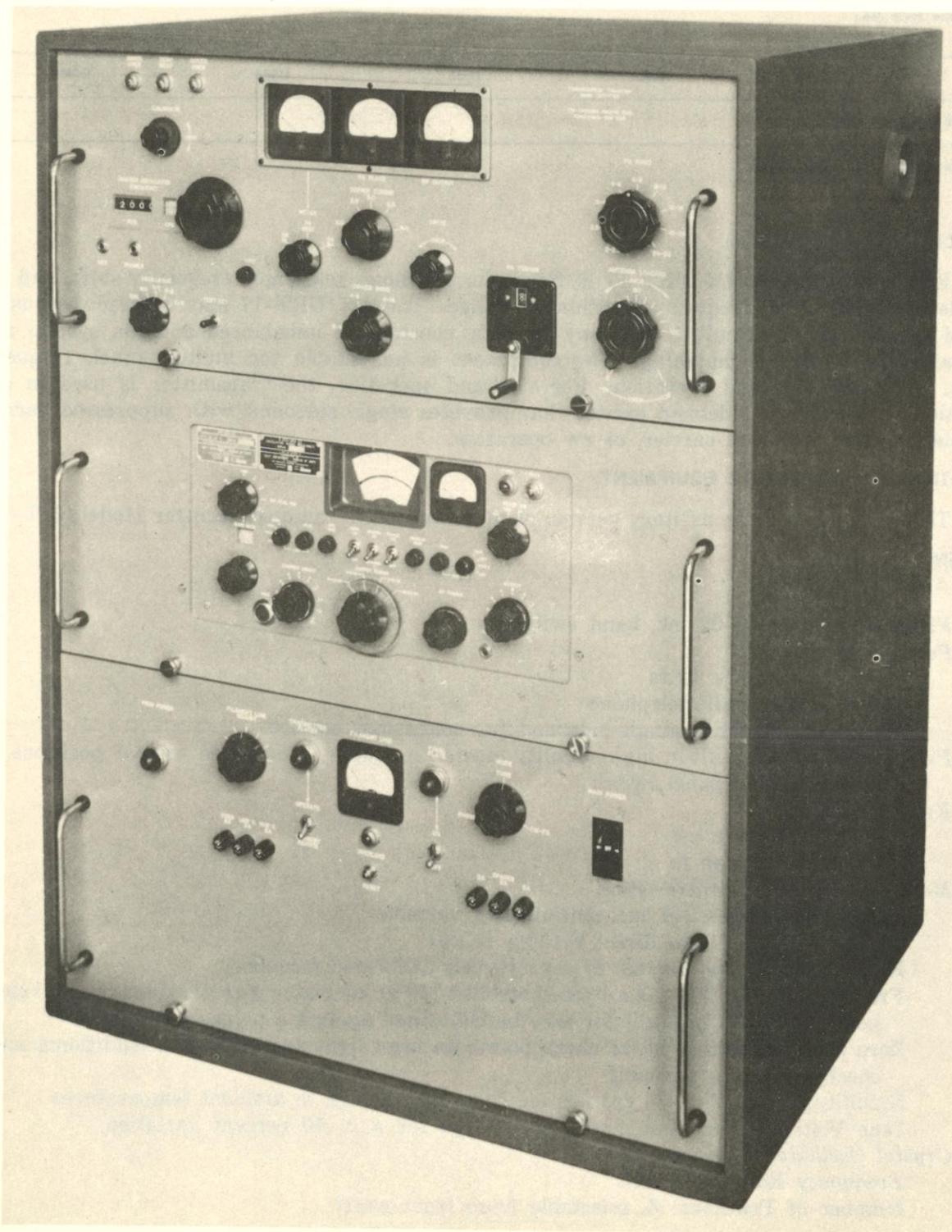
Frequency Range: 2-4 MC

Number of Positions: 3, selectable from front panel

MIL-HDBK-161A/TM11-487A-3/NAVEXOS P-2058/TO 31-3-73

RADIO TRANSMITTER

# AN/URT-17



## RADIO TRANSMITTER

**AN/URT-17**

*Modulation Characteristics:* capable of 100 percent sine wave plate modulation with less than 10 percent distortion.

Noise Level: better than 40 db down

Frequency Response: Uniform within  $\pm 1.5$  db from 100-5000 cps

*Output Impedance:*

30 to 10000 ohms at angle  $0^\circ$  (equivalent SWR-1)

50 to 700 ohms at angle  $\pm 45^\circ$  (equivalent SWR-4) all unbalanced to ground

*Audio Input:* 600 ohm balanced or carbon microphone

*Tuning:* all tuning and band switching from front panel, no plug-in frequency components

*Cooling:* forced filtered air; two separate blowers

*Overload and Bias Protection:* automatic

*Temperature/Humidity:* ambient limits,  $0^\circ$  to  $\pm 50^\circ$  C; relative humidity up to 75 percent

*Operating Power Requirements:* 115/230 v, 50/60 cy, single phase, approximately 2600 w at a .87 power factor for full continuous output.

*Major Units:*

1 AN/URT-17

47" x 34" x 27"

695 lbs

**TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**

NAVSHIPS 93161



RADIO TRANSMITTING SET  
**AN/URT-18**

15 March 1962  
Cog. Serv: USN FSN: 5820-725-4824  
USA Line Item No.:

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USA

USN

USAF

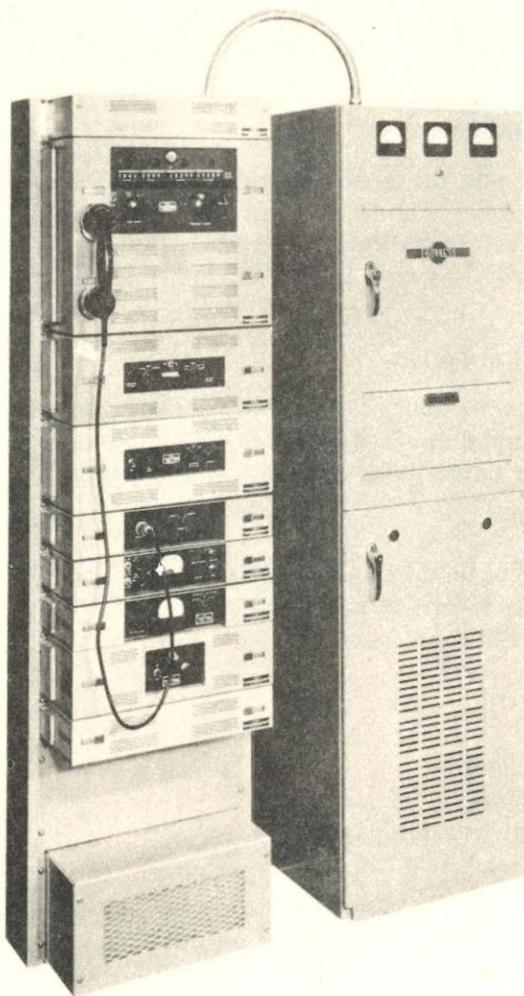
USMC

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STATUS OR TYPE CLASS.:

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Manufacturer: COL 13499



**FUNCTIONAL DESCRIPTION:**

Radio Transmitter Set AN/URT-18 is a manually tuned single-sideband transmitter for operation in the 2 to 30 megacycle high frequency range. The AN/URT-18 delivers 2.5 kilo-

**RADIO TRANSMITTING SET**

**AN/URT-18**

watts peak envelope power or 2.5 kilowatts average power continuously. Although the AN/URT-18 is primarily designed for single sideband transmission on upper sideband, lower sideband or twin sideband (with separate audio and IF channels for each sideband) provisions are included for compatible am (carrier reinserted), cw, or fsk operation. The frequency range of 2 to 30 megacycles is covered in four bands, the desired operating frequency being set to one kilocycle increments on a direct reading frequency counter. Frequency accuracy and stability are controlled by a self-contained frequency standard.

Radio Transmitting Set AN/URT-18 includes an exciter rack, a power amplifier, and an antenna coupler.

The exciter rack consists of functional units mounted on a standard 19-inch open type rack. The power amplifier is contained in a single self-supporting cabinet. The antenna is contained in a single dustproof chassis.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

Similarities between this and other equipments:

Radio Transmitting Set AN/URT-18 is a single sideband transmitter with a 2.5 kw power amplifier, and may be modified to include a receiver function. The Radio Set AN/URC-32, which is similar to the AN/URT-18 is a single sideband transceiver with a 500 w power amplifier.

**EQUIPMENT REQUIRED BUT NOT SUPPLIED:**

Radio Transmitting Set AN/URT-18 is a complete radio communications transmitter requiring only an antenna, an antenna feed system with a 50-ohm unbalanced termination, and a 230 v, 60 cps, single phase power source of 6.5 kva capacity.

**TECHNICAL DESCRIPTION:**

*Type of Transmission:* Single sideband transmission on upper sideband, lower sideband, or twin sideband. Compatible am (carrier reinserted), cw, or fsk operation.

*Frequency Range:* 2.0 to 30. mc

*Power Output:*

- (A1) 2.5 kw
- (A3<sub>a</sub>) 2.5 kw PEP
- (A3<sub>b</sub>) 2.5 kw PEP total
- (A9) 2.5 kw PEP total
- (A9a) 2.5 kw average carrier power
- (FL) 2.5 kw

*Output signal characteristics for visual and/or audio outputs:*

Carrier Suppression: 45 db below PEP output

Undesired sideband suppression: 40 db below PEP output

Audio inputs:

USB Line: -38 to +8 dbm into 600 ohms balanced

LSB: -38 to +8 dbm into 600 ohms balanced

Microphone: Standard high impedance dynamic with push-to-talk switch

Handset: High impedance dynamic, noise cancelling type with push-to-talk switch

R-F output impedance: 50 ohms unbalanced

## RADIO TRANSMITTING SET

## AN/URT-18

*Ranges as rated:*

Not applicable

*Accuracies:* Frequency accuracy and stability are controlled by a self-contained frequency standard which has a stability of 1 part in  $10^6$  per month or 1 part in  $10^6$  per day.

*Power Source Required:* 115/230 v ac, single phase, 60 cps, 6.5 kva capacity.

*Heat Dissipation:* Heat dissipation in the exciter rack is 400.0 w, and in the linear amplifier 2.8 kw.

*Type of Modulation:*

- (1) single sideband of an am signal with suppressed carrier.
- (2) am (single-side (USB) and carrier).

*How and where installed:* This set is used mainly as ground support equipment, but can also be used shipboard.

*Mounting Dimensions*

Antenna Coupler, 180Y-1: May require fabrication of a lattice-type rack by the installing activity. May be mounted using the top, the bottom, or either side as the mounting surface. For top and bottom; mounting holes No. 10 Rivnut, 4 places,  $5\frac{1}{2}$ " by  $13\frac{3}{8}$ ". For both sides; mounting holes No. 10 Rivnut, 4 places,  $13\frac{3}{8}$ " by  $9\frac{5}{8}$ ".

Power Amplifier 204F-1: Base mounting hole dimensions. Front  $12\frac{1}{4}$ " by  $14\frac{1}{4}$ " deep. Holes are  $1\frac{1}{16} \pm \frac{1}{64}$ ".

Exciter Rack: Base mounting hole dimensions. Front  $19\frac{1}{16}$ ," rear  $15\frac{1}{4}$ " and sides  $12\frac{3}{4}$ ".

*No. of operators required:* 1

**TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**

Manuscript Technical Manual for Non-Registered Radio Transmitting Set AN/URT-18



AN/URT-type  
RADIO FREQUENCY AMPLIFIER

## AM-2374/URT

15 March 1962

Cog. Serv: USN FSN:

USA Line Item No.:

USA

USN

USAF

USMC

## STATUS OR TYPE CLASS.:

Manufacturer: COL (13499)

## FUNCTIONAL DESCRIPTION:

Radio Frequency Amplifier AM-2374/URT is a three-stage, linear power amplifier designed to amplify low power radio frequency signals from an associated exciter unit to a level suitable for transmission from an antenna. The AM-2374/URT is primarily intended for single-sideband operation, but can be used with any type of input signal that does not exceed its bandwidth and power capabilities. The amplifier may be switched to either of two channels, and either channel may be tuned to any frequency between 2 and 30 megacycles. The AM-2374/URT is capable of delivering either 2.5 kilowatts peak envelope power or 2.5 kilowatts average power continuously. It can be operated locally or remotely.

## RELATIONSHIP TO SIMILAR EQUIPMENT:

The AM-2374/URT is the military version of the Collins 204F-1 type Amplifier.

## EQUIPMENT REQUIRED BUT NOT SUPPLIED

Radio Frequency Amplifier MA-2374/URT is intended for use as one portion of a complete system. It requires the use of 0.1 watt external exciter; an antenna coupler with a 50 ohms impedance; a three-pole, 250 vac fused disconnect switch, 3 power conductors, and an 8 in. by 4 in. external air duct.

## TECHNICAL DESCRIPTION:

*Types of transmission:* superior for ssb operation. Can be used with any type not exceeding bandwidth or power capabilities of the amplifier.

*Frequency range:* 2 to 30 mc

*Power Output:* 2.5 kw peak envelope power or 2.5 kw average power continuously.

*Output signal characteristics for visual and/or audio outputs:* N/A

*Ranges as rated:* N/A

*Accuracies:* ssb distortion has at least 35 db signal-to-distortion ratio.

*Power source required:* 200 to 250 v ac, 50 or 60 cy, single phase; 28 v dc, 50 ma.

*Heat dissipation:* 2.5 kw

*Excitation required:* 0.1 w nominal, 0.2 w from external exciter

*Bandwidth:* at least 16 kc at 1-db points.

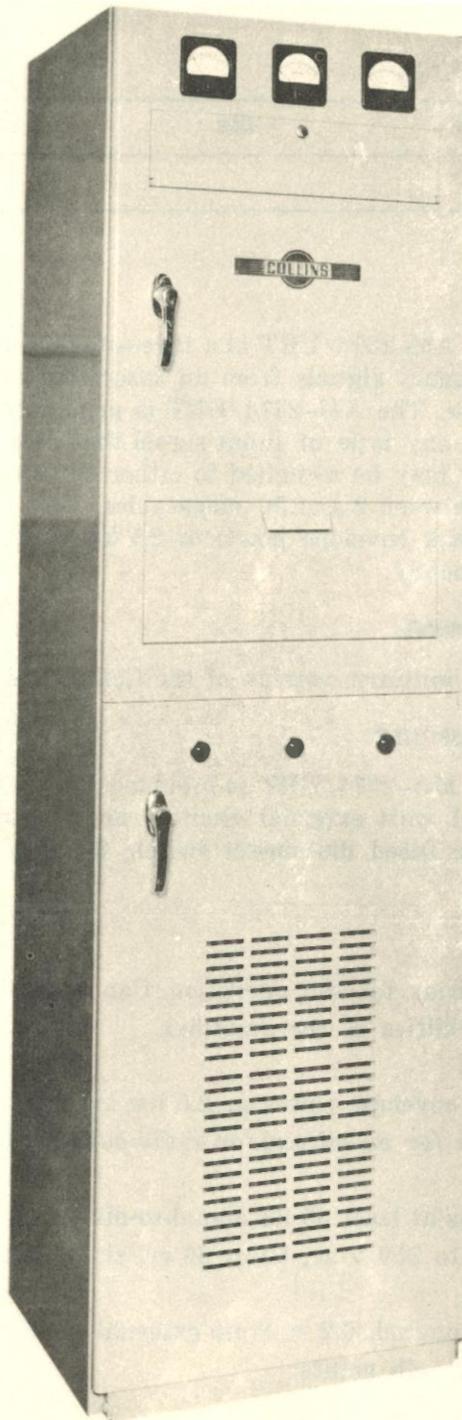
*Input impedance:* 50 ohms

*Output impedance:* 50 ohms

MIL-HDBK-161A/TM11-487A-3/NAVEXOS P-2058/TO 31-3-73

AN/URT-type  
RADIO FREQUENCY AMPLIFIER

**AM-2374/URT**



AN/URT-type  
RADIO FREQUENCY AMPLIFIER

**AM-2374/URT**

*How installed:* Amplifier AM-2374/URT is contained in a self-supporting aluminum cabinet.

*Dimensions:* 20" x 20" x 70"

*Number of operators required:* One

*Major Units:*

1 AM-2374/URT

70" x 20" x 20"

600 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

Technical Manual for Radio-Frequency Amplifier, AM-2374/URT, Contract NObsr 81039



AN/URT-type  
 RADIO TRANSMITTER  
**T-368( )/URT**

Cog. Serv: USA FSN: 5820-503-2640  
 USA Line Item No.: 691947

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:			Std	

Manufacturer: Barker & Williamson, Inc

**FUNCTIONAL DESCRIPTION:**

Radio Transmitter T-368( )/URT is a medium-power, am (cw, voice), hf transmitter that can be used as mobile or fixed-station equipment.

It may also be used as an rf amplifier for low-powered exciter units or as driver or high-power transmitters. In such applications, it will transmit frequency-shift keying, narrowband fm, and a combination of frequency-shift keying with voice am.

This equipment consists of the transmitter and accessory items, and requires a tuning unit when a long-wire or whip-type antenna is used. It also requires auxiliary equipment for frequency-shift keying or other special modes of transmission.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Frequency Range in Mc:* 1.5 to 20

*Type Modulation:* am, fm

*Type of signal:* cw, icw, voice, fsk

*Power Output:*

am: 4000 w

cw: 450 w

*Power Requirements:* 2.2 kw, 115-v 50/60-cy, ac

*Major Units:*

1 T-368/URT

57" x 31" x 32"

**TUBES, CRYSTALS, TRANSISTORS:**

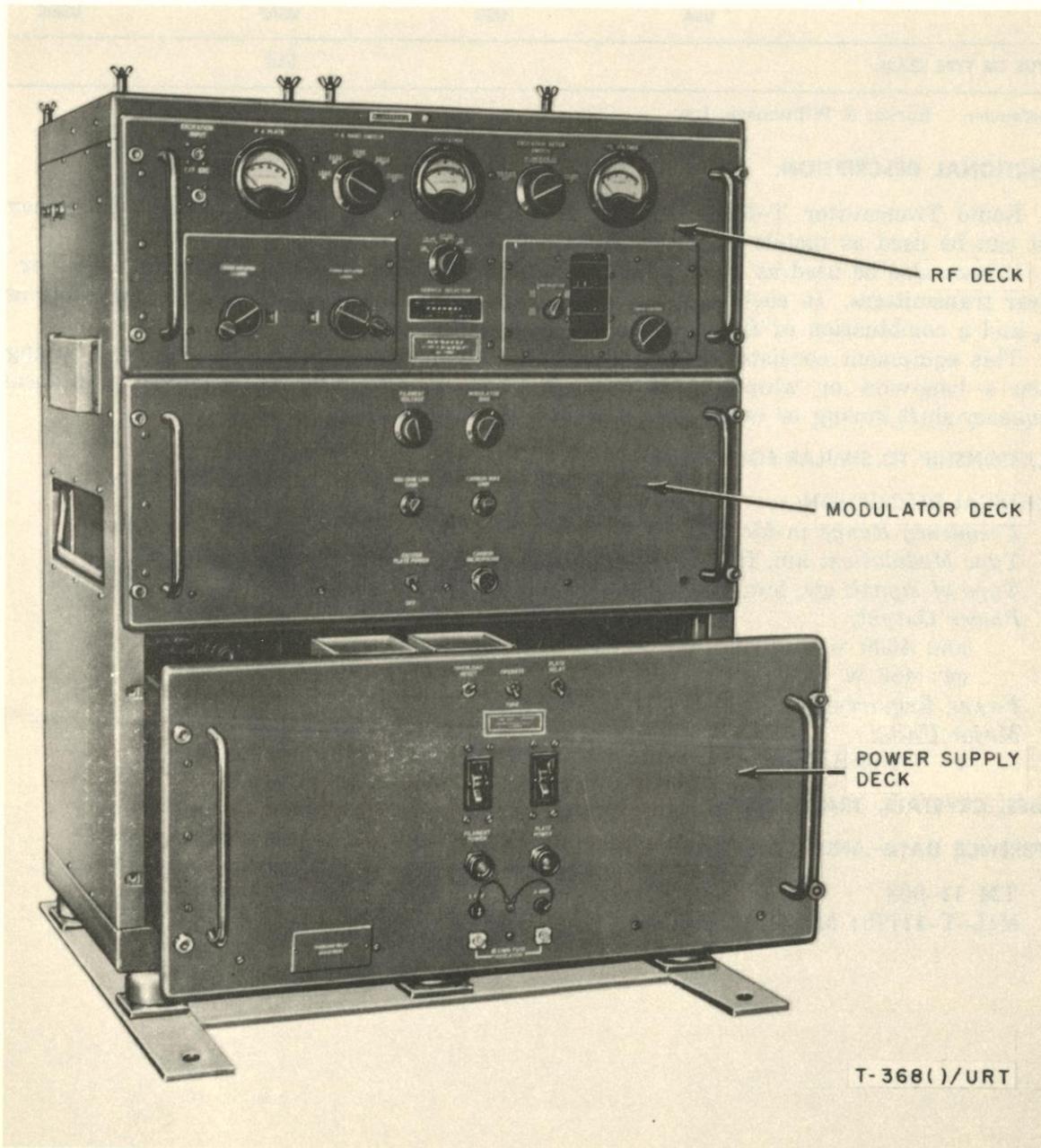
**REFERENCE DATA AND LITERATURE:**

TM 11-908

MIL-T-11770; MIL-T-11437

MIL-HDBK-161A/TM11-487A-3/NAVEXOS P-2058/TO 31-3-73

AN/URT-type  
RADIO TRANSMITTING SET  
T-368( )/URT



AN/USA-type  
TELEPHONE TERMINAL

TA-269/U

1 December 1958

Cog. Serv: USN FSN: 5805-681-9821

USA Line Item No.: 681734

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-B			

Manufacturer: Radio Frequency Laboratories, Inc

No Illustration Available

**FUNCTIONAL DESCRIPTION:**

Telephone Terminal TA-269/U provides two-way conversation over a radio circuit from a two-wire or four-wire telephone system. Connections are provided to extend the two-wire circuit to a point remote from the terminal; or a local four-wire handset can be used to communicate over either the radio circuit or over the two-wire voice line to a remote point.

By setting a remote three-position switch, the internal circuits of this equipment can be switched by relays for communication with the local handset over the radio circuit, to the remote station (or PBX board), or for the usual communication from the remote station on the two-wire line over the four-wire radio circuit.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:***Frequency Range:*

Amplifier Response: within 2 db from 200 to 3,500 cps

Filter Band-Pass: within 3 db from 200 to 3,000 cps

*Power Output:* +8 dbm (max) output level of both receiver and transmitter amplifier*Sensitivity:* input signal to the limiter circuit at level of -15 dbm to +6 dbm appears at limiter circuit output at level of -28 dbm to -18 dbm*Amplification:* signal from limiter output (-28 to -18 dbm) amplified by transmitting amplifier with adjustable amplification gain of 8 to 35 db*Power Requirements:* 35 w, 115/230-v ( $\pm 10\%$ ), 50-60 cy, 1-phase, ac*Major Units:*

TA-269/U

5 $\frac{1}{4}$ " x 16" x 19"

53 lbs

**TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**

NAVSHIPS 92181



AN/USM-type  
MODULATOR**MD-83A/ARN**

4 December 1958

Cog. Serv: USN FSN: 5820-543-1641

USA Line Item No.: 627552

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-A			
Manufacturer:	Collins Radio Co			

No Illustration Available

**FUNCTIONAL DESCRIPTION:**

Modulator MD-83A/ARN is designed to facilitate the testing and calibrating of omni-range navigation receivers for aircraft use.

In conjunction with Signal Generator SG-1/ARN, this equipment provides a synthesis of signals encountered in reception and interpretation of omni-range, tone localizer, voice, and glide slope facilities. In addition, the various components of these signals are available singly and in combination for test purposes.

All voltages obtained from the modulator are generated mechanically.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:***Output Voltage:* 3 v*Voltage Stability:*  $\pm 5\%$ *Frequency Stability:* dependent upon power source*Phase Angle Stability:*  $\pm 0.2$ *Power Requirements:* 115/v, 60-cy, 1-phase, ac*Major Units:*

1 MD-83A/ARN

12" x 12" x 15"

60 lbs

**TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**

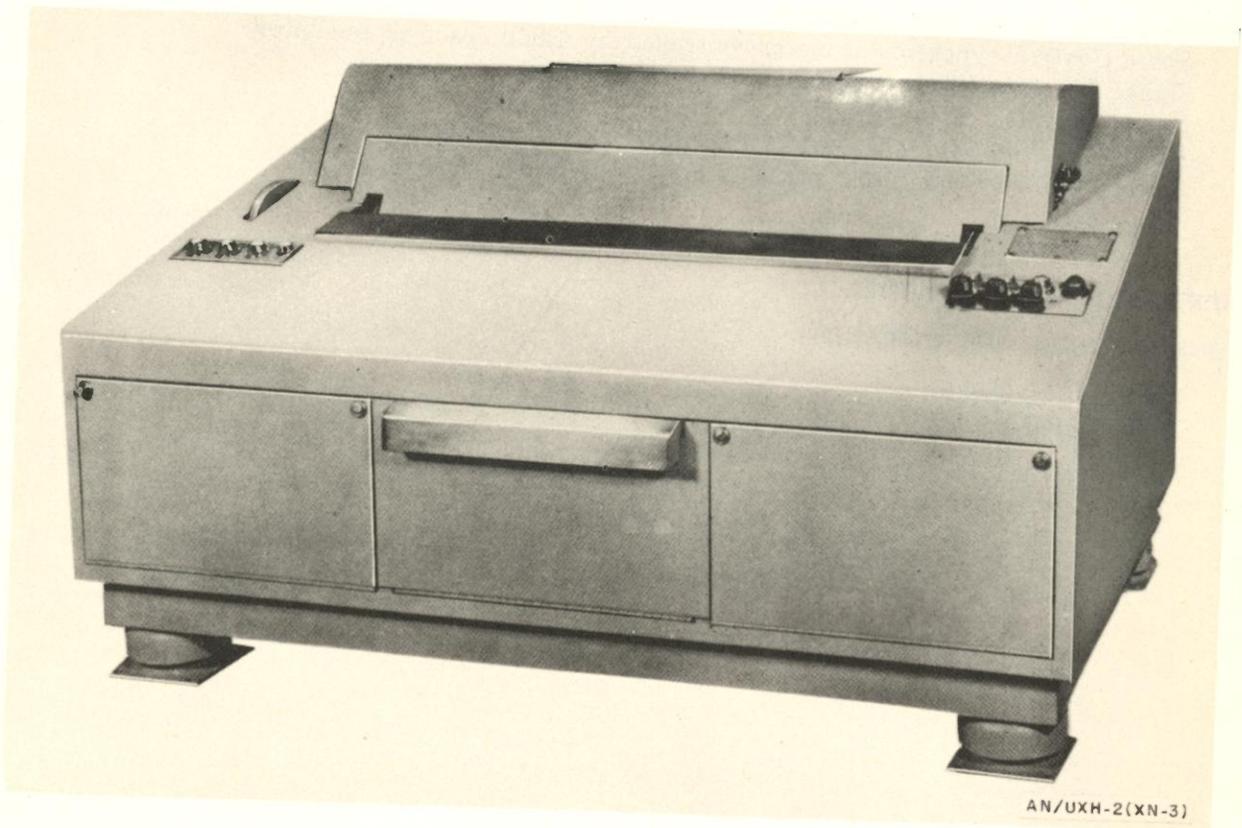
TO 33A1-8-37-1



FACSIMILE RECORDER SET  
**AN/UXH-2(XN-3)**

3 December 1958  
 Cog. Serv: USN FSN:  
 USA Line Item No.:

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:		Used by	Std (AN/UXH-2)	
Manufacturer:	Times Facsimile Corp			



**FUNCTIONAL DESCRIPTION:**

Facsimile Recorder Set AN/UXH-2(XN-3) is a continuous web-type unit designed to automatically produce a record of information transmitted by facsimile. It permits long periods of unattended operation while recording data received from a transmitter capable of sending the proper control signals.

This equipment automatically compensates for changes in signal level between transmissions; it will automatically phase, and start the recording as well as stop the apparatus when the transmission is completed.

**FACSIMILE RECORDER SET**

**AN/UXH-2(XN-3)**

The control signal adapter of the AN/UHX-2(XN-1) is an accessory used between any one of the Facsimile Transmitters AN/TXC-1, AN/TXC-1A, AN/TXC-1B, AN/TXC-1C or AN/TXC-1D and the Facsimile Recorder Set AN/UXH-2(XN-3).

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Recording Width:* 18.85 in.

*Type Recording:* direct stylus

*Scans Per Minute:* 30, 60, 120

*Type Modulation:* am

*Input Frequency:* 450 cps to 2,700 cps

*Speed Control:* synchronous motor controlled by 1,800 cps fork oscillator

*Signal Level:* +4 to -36 dbm

*Input Contrast:* 8 to 16 db

*Power Consumption:* 270 w at 11-v or 230-v

*Power Requirements:* 115-v or 230-v, 45- to 65-cycle, 1-phase, ac

*Major Units:*

1 AN/UXH-2(XN-3)

16" x 21<sup>3</sup>/<sub>4</sub>" x 30"

180 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 92735

MIL-F-19480

FACSIMILE RECORDER SET  
**AN/UXH-5(XN-1)**

15 March 1962  
 Cog. Serv: USN FSN:  
 USA Line Item No.:

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:		P/Std		
Manufacturer:	Westrex Corporation			

No Illustration Available

**FUNCTIONAL DESCRIPTION:**

The AN/UXH-5(XN-1) is a continuous page facsimile recorder designed to make a succession of direct recordings of maps, sketches, typewritten or printed information sent from a distant transmitter. The facsimile signals may be recorded directly from wire circuits, or from radio circuits if the paper auxiliary equipment is used. The recorder is designed for recording black and white copy. The recorder will automatically phase, adjust for optimum printing level, start, and stop is proper control signals are transmitted from the distant transmitter.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

The AN/UXH-5(XN-1) is a modified and improved version of the AN/UXH-2. It is interchangeable mechanically and electrically with the AN/UXH-2.

**TECHNICAL DESCRIPTION:**

*Input Frequency:* 600 to 4200 cps

*Control Signal:* 1800 to 3600 cps carrier modulated by 300 cps to start, 60 cps to start recorder, 450 cps to stop recorder.

*Signal Level:* +4 to -36 dbm

*Input Impedance:* 600 ohms

*Operating Power Requirements:* 115 or 230 v ac, 45 to 60 cps, single phase, 275 w

*Major Units:*

AN/UXH-5(XN-1)

16" x 30" x 21 $\frac{3}{4}$ "

214 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 94358

NAVSHIPS 93158(A)



## AUXILIARY INTERPHONE EQUIPMENT

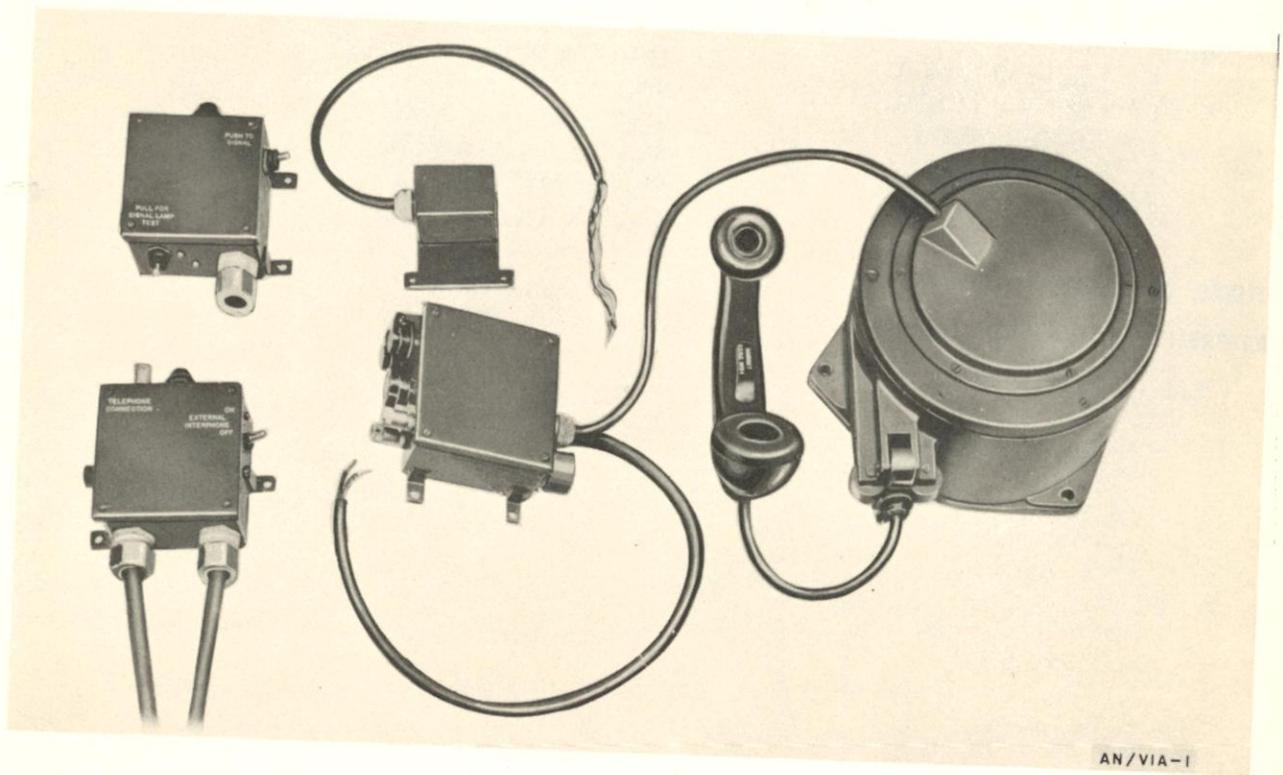
## AN/VIA-1

15 March 1962

Cog. Serv: USA FSN: 5830-539-7728

USA Line Item No.: 621274

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-B			
Manufacturer:				

**FUNCTIONAL DESCRIPTION:**

Auxiliary Interphone Equipment AN/VIA-1 is an assemblage of components used to extend a vehicular interphone system to the exterior of the vehicle. It is used in inclosed or armored vehicles.

This equipment consists essentially of interphone station control units that are installed within the vehicle, and a cable reel which includes a handset and a control unit designed to be mounted on the exterior of the vehicle to provide an outside interphone station.

The stations of this system have call signal lamps to indicate that control with the exterior station is desired.

The only adjustment provided is for control of volume.

The equipment is powered by the electrical system of the vehicle in which it is installed.

AUXILIARY INTERPHONE EQUIPMENT

**AN/VIA-1**

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

*Facilities:* Can be used with Radio Sets SCR-508, -528, -608, -628, or AN-VRC-3 or with Interphone Equipment RC-99 or similar types of units.

*Type Controls:*

C-663: external interphone ON-OFF switch

C-664: external interphone PUSH TO SIGNAL switch

C-665: VOLUME

*Power Output:* dependent on interphone system

*Power Requirements:* draws required power from system to which it is connected.

*Major Units:*

- 1 RL-149/VIA-1
- 1 MTS-1 (USMC)
- 1 C-663/VIA-1
- 1 C-664/VIA-1
- 1 C-665/VIA-1
- 1 C-666/VIA-1

- $10\frac{3}{16}'' \times 9\frac{13}{16}'' \times 5\frac{13}{16}''$
- $8\frac{7}{8}'' \times 2\frac{3}{4}'' \times 3\frac{1}{2}''$
- $6\frac{3}{8}'' \times 4\frac{7}{16}'' \times 5\frac{15}{16}''$
- $6\frac{3}{16}'' \times 6\frac{9}{16}'' \times 2\frac{17}{32}''$
- $8\frac{1}{2}'' \times 5\frac{5}{8}'' \times 3\frac{13}{16}''$
- $4\frac{7}{16}'' \times 4\frac{3}{32}'' \times 1\frac{11}{16}''$

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-704

AN/VIC-type  
INTERPHONE EXTENSION KIT

RC-298

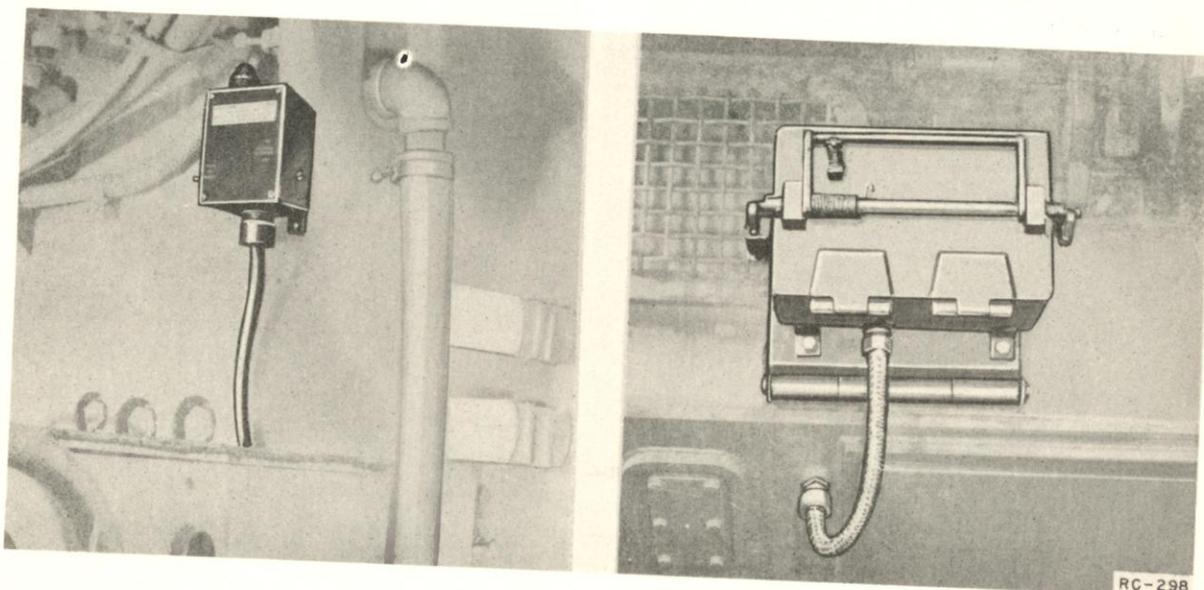
15 March 1962

Cog. Serv: USA FSN: 5830-222-1662

USA Line Item No.: 621390

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-B			

Manufacturer:

**FUNCTIONAL DESCRIPTION:**

Interphone Extension Kit RC-298 is an assemblage of components that can be added to the existing interphone equipment of inclosed vehicles (such as tanks) to provide an interphone station located outside the vehicle. It is used in conjunction with interphone systems designed for use in armored vehicles.

This equipment consists of an external interphone box, an internal interphone switchbox, and related components. The only adjustment provided is for control of volume. Internal and external interphone stations have call signal lamps to indicate that contact with the station outside the vehicle is desired.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

*Type of Signal:* voice

*Type of Communication Circuits:* two-way; press-to-talk

*Controls:* volume only (on external interphone station)

*Power Requirements:* vehicular storage battery

MIL-HDBK-161A/TM11-487A-3/NAVEXOS P-2058/TO 31-3-73

AN/VIC-type  
INTERPHONE EXTENSION KIT

## RC-298

*Major Units:*

- 1 Cordage CO-213
- 1 Box BC-1362
- 1 BC-1361
- 1 ST52R

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-703

RADIO SET  
**AN/VRC-1**

15 March 1962  
 Cog. Serv: USN FSN: 5820-196-1736  
 USA Line Item No.: 648200

USA

USN

USAF

USMC

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 STATUS OR TYPE CLASS.:
 

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Manufacturer:

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/VRC-1 is a vehicular mounted equipment used by ground organizations in the control of tactical aircraft. Normally, the hf section is used for communication within a ground point-to-point net. The hf section may also be used as a beacon for radio compass equipped aircraft, and for communication with hf equipped aircraft. The vhf section is normally used for ground-air communication with aircraft fitted with vhf equipment.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:***Frequency Range:*

## hf Section:

Radio Transmitter BC-191: 3000-4500 kc using TV-6      4500-6000 kc using TV-7

Radio Receiver BC-312: 1500-18,000 kc

## vhf Section:

Radio Transmitter BC-625: 10-156 mc

Radio Receiver BC-624: 100-156 mc

*Type Modulation:* am*Type Signals Transmitted and Received:*

hf section, Radio Set SCR-193: cw, tone, voice

vhf section, Radio Set SCR-542: voice

*Power Supply:* 12 volt vehicular storage battery and dynamotors

## hf Section

Dynamotor BD-77

Input: 12 v, 40 amp

Output: 1000 v, 350 ma

Dynamotor DM-21

Input: 12 v, 2.7 amp

Output: 300 v, 260 ma; 150 v, 10 ma; 13 v, 3.9 amp

*Power Output:*

HF Section: 40-75 w

VHF Section: 8-9 w

*Major Units:*

1 BC-191  
 1 BC-312  
 1 BC-625  
 1 BC-624  
 1 BC-602  
 1 BC-606

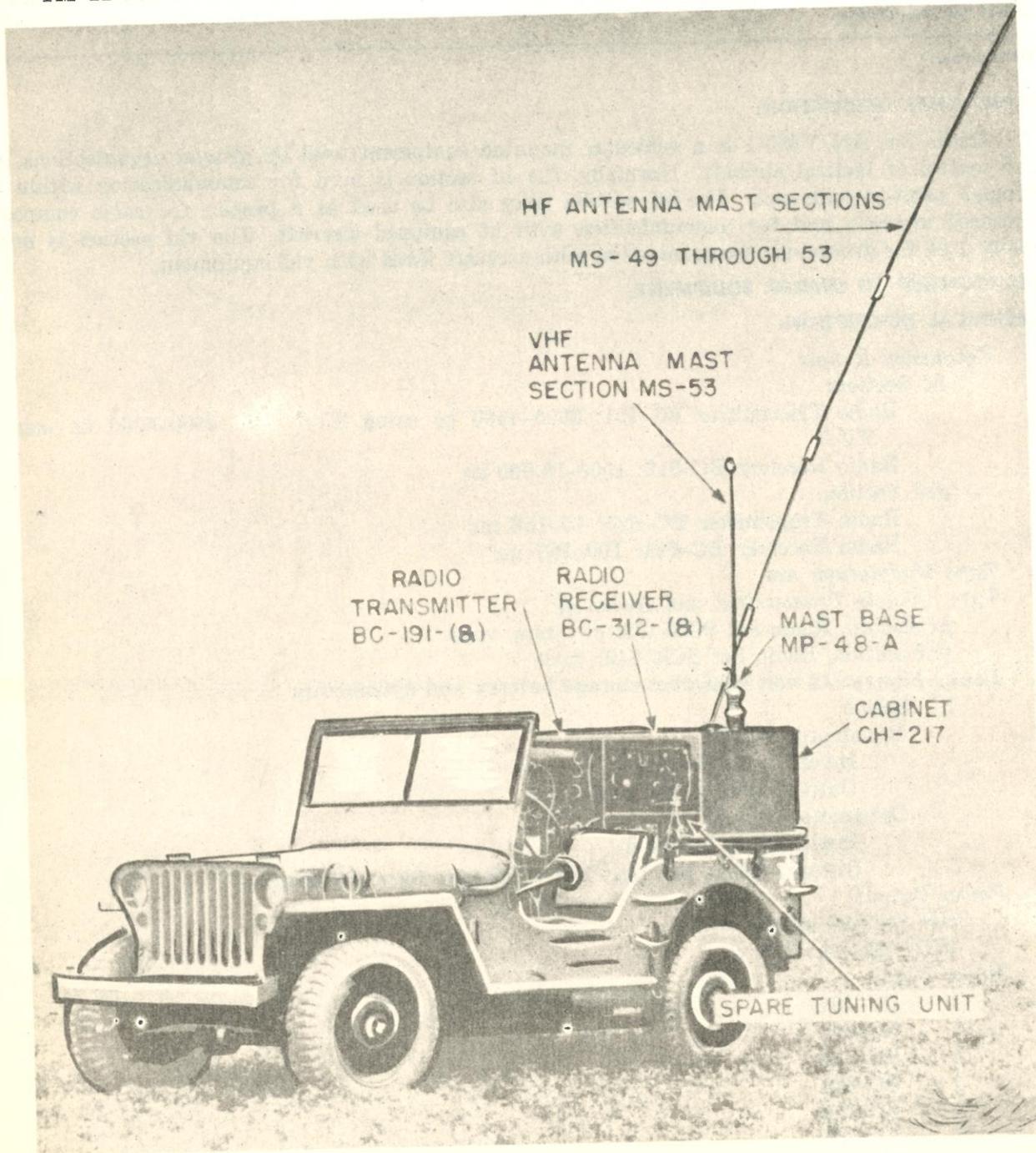
RADIO SET

**AN/VRC-1**

TUBES, CRYSTALS, TRANSISTORS:

REFERENCE DATA AND LITERATURE:

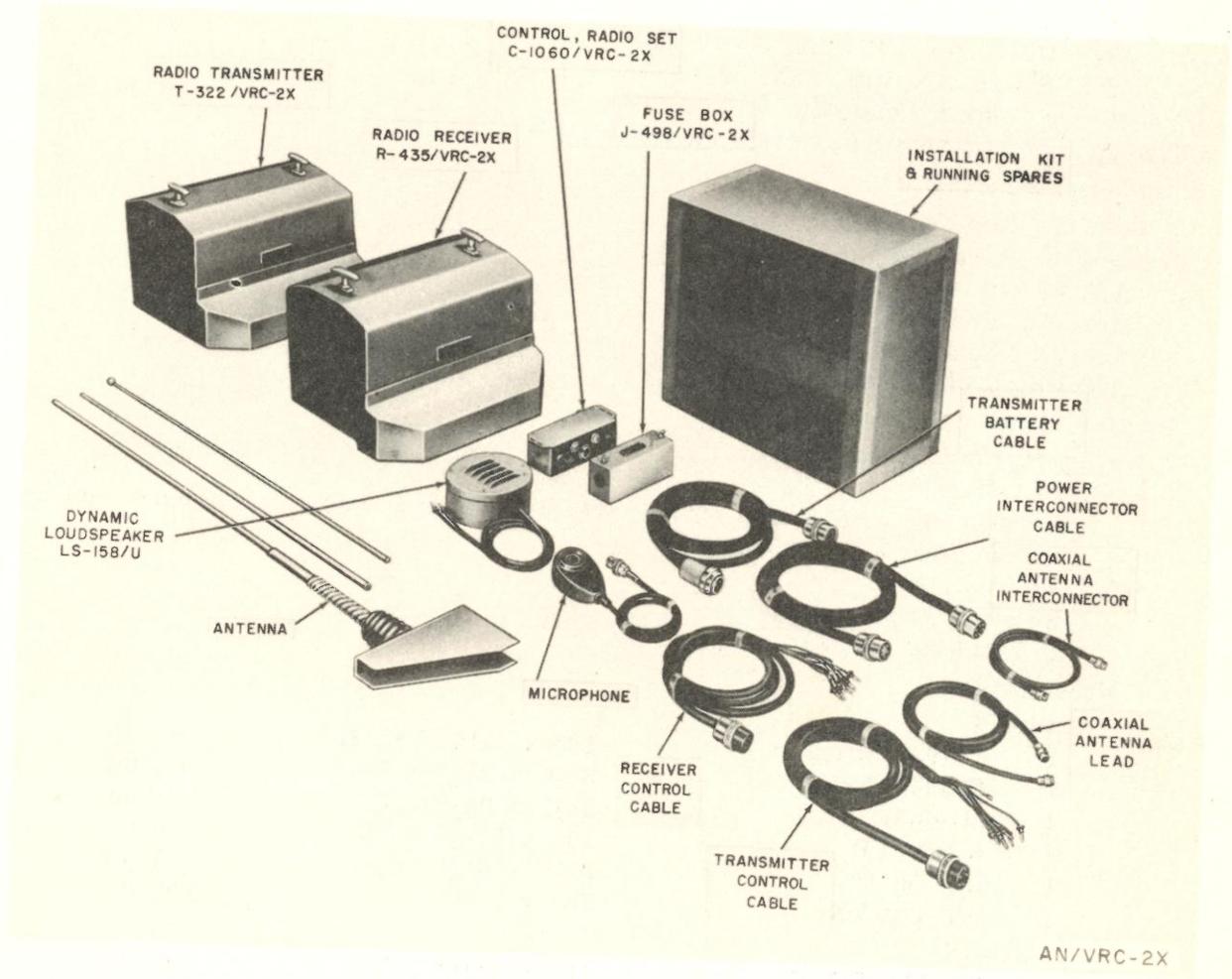
TM 11-277



RADIO SET  
AN/VRC-2, -2X, -26, -26X

15 March 1962  
 Cog. Serv: USN FSN: AN/VFC-2 5820-644-4997  
 AN/VRC-2X 5820-230-3958  
 AN/VRC-26  
 AN/VRC-26X 5820-644-4900  
 USA Line Item No.: 648300

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	AN/VRC-2( ) Std-C			
Manufacturer:	AN/VRC-2, 26 CGG (24009) AN/VRC-2X, 26X CBZM (82892)			



**RADIO SET**

**AN/VRC-2, -2X, -26, -26X**

**FUNCTIONAL DESCRIPTION:**

These fm equipments are complete radio sets, less primary power source. They are for vehicular operation, and provide two-way voice communication with similar fixed or mobile equipments operating at the same frequency. The radio set is preset for a single frequency. The frequency may be changed by changing the crystal frequency control. In open terrain, the reliable communications range is up to 15 miles.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

AN/VRC-2 is similar to AN/VRC-2X, except for the required power source. Completion of Field Change 1 changes the frequency range from 30-40 mc to 32-42 mc and the type designation from AN/VRC-2, AN/VRC-2X to AN/VRC-26 and AN/VRC-26X, respectively.

**TECHNICAL DESCRIPTION:**

*Frequency Range:*

- AN/VRC-2, AN/VRC-2X: 30-40 mc
- AN/VRC-26, AN/VRC-26X: 32-42 mc

*Frequency Control:* Crystal

*Type of Signal* fm voice (F3), transmit and receive

*Number of Bands:* 1

*Number of Channels:* 1

*Transmitter Power Output:*

- AN/VRC-2: 25 w
- AN/VRC-2X: 30 w
- AN/VRC-26: 25 w
- AN/VRC-26X: 30 w

*Antenna:* whip

*Operating Power Requirements:*

- AN/VRC-2, 26:
  - Receiver: 6.3 v, 14.5 amp (6 v dc vehicular battery and self-contained vibrator)
  - Transmitter: 6.3 v, 25 amp
- AN/VRC-2X, 26X
  - Receiver: 24 v dc, 3 amp
  - Transmitter: 24 v dc, 10 amp

*Major Units:*

AN/VRC-2:

1	T-193/VRC-2	10" x 11½" x 15"	41 lbs
1	C-493/VRC-2	2½" x 3¼" x 7¼"	1.5 lbs
1	M-38/U	3½" x 3¾" x 5"	1.25 lbs
1	R-237/VR	10" x 11½" x 15"	35 lbs
1	LS-158/U	4¼" x 9½" (dia)	5 lbs
1	AT-129/VR	78" x 1½"	3.25 lbs

AN/VRC-2X:

1	T-322/VRC-2X	10" x 11½" x 15"	41 lbs
1	C-1060/VRC-2	2½" x 3¼" x 7¼"	1.5 lbs
1	R-435/VRC-2X	10" x 11½" x 15"	35 lbs

## RADIO SET

**AN/VRC-2, -2X, -26, -26X**

1	M-38/U	3½" x 3¾" x 5"	1.25 lbs
1	LS-158/U	4¼" x 9½" (dia)	5 lbs
1	AT-129/VR	78" x 1½" x 1½"	3.25 lbs
AN/VRC-26:			
1	T-193( )/VRC-2	10" x 11½" x 15"	41 lbs
1	R-237( )/VR	10" x 11½" x 15"	35 lbs
1	C-493( )/VRC-2	2½" x 3¼" x 7¼"	1.5 lbs
1	AT-129( )/VRC-2	78" x 1½" x 1½"	3.25 lbs
1	M-38/U	3½" x 3¾" x 5"	1.25 lbs
1	LS-158/U	4¼" x 9½" (dia)	5 lbs
AN/VRC-26X:			
1	T-540/VRC-26X	10" x 11½" x 15"	41 lbs
1	R-435/VRC-2X	10" x 11½" x 15"	35 lbs
1	C-1060/VRC-2X	2¼" x 3¼" x 7¾"	1.5 lbs
1	M-38/U	3½" x 3¾" x 5"	1.25 lbs
1	LS-158/U	4¼" x 9½" (dia)	5 lbs
1	AT-129/UR	78" x 1½" x 1½"	3.25 lbs

**TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**

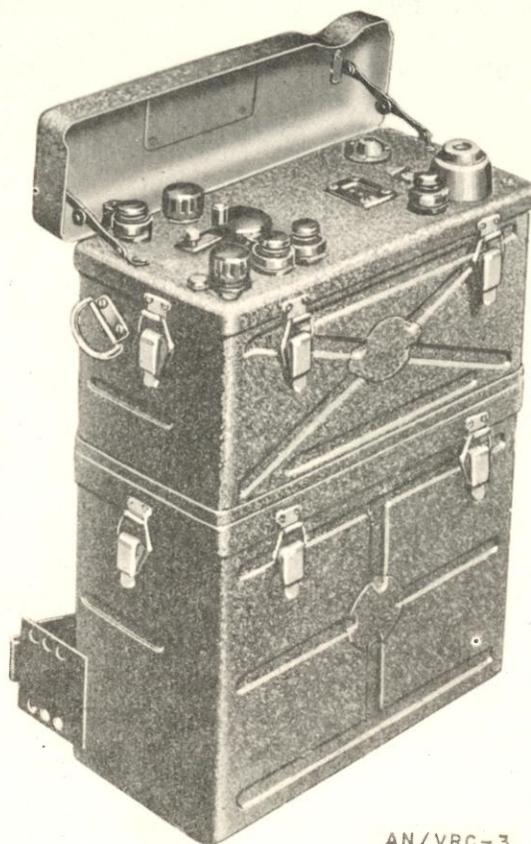
TM 11-607, TO 16-30VRC2-5



RADIO SET  
AN/VRC-3

15 March 1962  
Cog. Serv: USN FSN: 5820-196-1735  
USA Line Item No.: 648400

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-C			
Manufacturer:				



AN/VRC-3

**FUNCTIONAL DESCRIPTION:**

Radio Set AN-VRC-3 is a vehicular mounted fm equipment used for two-way communication over short distances. It is primarily intended for installation in light and medium tanks to provide communications between tanks and supporting infantry.

**RADIO SET**

**AN/VRC-3**

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

Similar to Radio Set SCR-300, with the addition of special mounting brackets.

**TECHNICAL DESCRIPTION:**

*Transmitter:*

Frequency Range: 40-48 mc

Power Output: 0.3 w

*Receiver:*

Frequency Range: 40-48 mc

Power Output: 2 mw

Modulation: frequency

*Frequency Control:* master oscillator

*Range:* 3 miles

*Operating Power:* Power Supply PP-114/VRC-3, BA-7 or loaded Battery Case CS-139

*Major units:*

1 BC-1000-A

11 $\frac{5}{16}$ " x 7 $\frac{1}{8}$ " x 5 $\frac{5}{8}$ "

13 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-487A

TM 11-637

RADIO SET  
AN/VRC-6( )

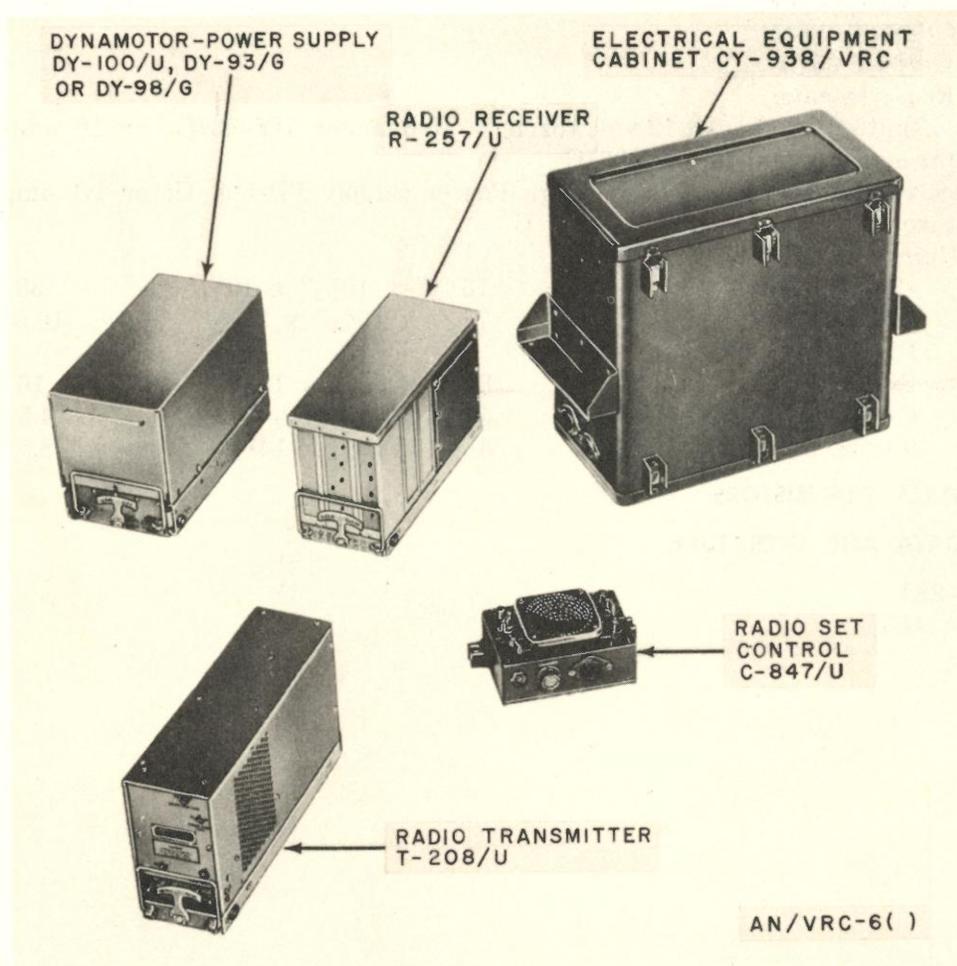
15 March 1962

Cog. Serv: USA FSN: 5820-096-7009

USA Line Item No.: 648700

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-A			

Manufacturer: Motorola, Inc

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/VRC-6( ) is vehicular, hf, fm (voice) receiving and transmitting equipment used for nontactical radio communication with other vehicular and/or fixed stations, including civilian police authorities.

**RADIO SET**

**AN/VRC-6( )**

This equipment consists essentially of receiving and transmitting components, each with its own power supplies and associated components. It can be push-to-talk operated from a remote point by means of suitable remote control equipment.

The AN/VRC-6 and AN/VRC-6X enable operation from storage battery sources of 24 or 12 volts, respectively.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Frequency Range in Mc:* 25 to 50

*Type Modulation:* fm

*Type of Signal:* voice

*Power Output:* 25 w

*Power Requirements:*

Transmitter: 20 amp at 12-v dc through Dynamotor DY-93/G; or 10 amp at 24-v dc through Dynamotor DY-98/G

Receiver: 2 amp at 12-v dc through Power Supply PP-868/U; or 1.1 amp at 24-v dc through Power Supply PP-867/U

*Major Units:*

1	CY-938/VRC	16½" x 10½" x 19¼"	33 lbs
1	MT-1236/VRC	7¾" x 10¾" x 23½"	10.5 lbs
1	PP-868/U or PP-867/U		
1	R-257/U	8½" x 5¾" x 14½"	16 lbs
1	C-847/U	5" x 2¼" x 7½"	4.5 lbs
1	T-208/U	8½" x 4½" x 14½"	8.5 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-283

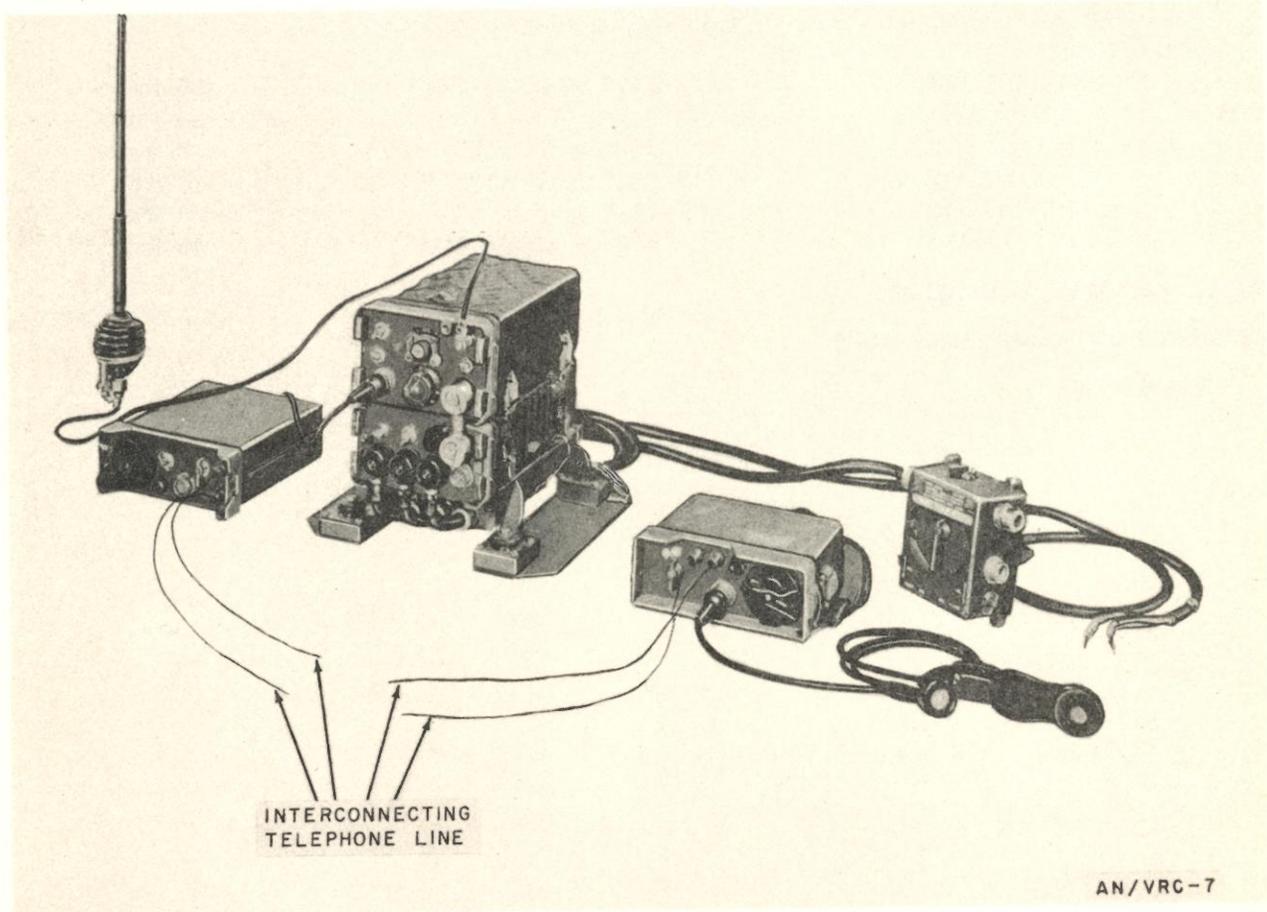
MIL-N-11539

RADIO SET  
**AN/VRC-7( )**

15 March 1962  
 Cog. Serv: USA FSN: 5820-196-8996  
 USA Line Item No.: 648800

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-B			

Manufacturer:



**FUNCTIONAL DESCRIPTION:**

Radio Set AN/VRC-7( ) is a short-range, fm (voice), vehicular radiotelephone equipment used within and among artillery, infantry, and armored force units.

This set consists of a separate, short-range, low-power receiver-transmitter component, designated as Set 2 when used as part of the integrated series of radio sets, such as the AN/GRC-3 through AN/GRC-8.

It includes a vehicular installation unit power supply equipment, and an interphone amplifier, plus various control and accessory equipment such as microphone, headset, and loudspeaker.

**RADIO SET**

**AN/VRC-7( )**

It can be operated by means of Control Group AN/GRA-6 from a remote point up to a distance of about 2 miles over a telephone pair.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Frequency Range in Mc:* 47.0 to 58.4

*Type Modulation:* fm

*Type of Signal:* voice

*Power Output:* 500 mw

*Power Requirements:* 6/12/24-v dc from vehicular storage battery

*Major Units:*

1	AM-65/GRC	4 $\frac{1}{4}$ " x 13" x 7 $\frac{7}{8}$ "	15.5 lbs
1	AN/GRA-6		20.85 lbs
1	PP-281/GR, or	4 $\frac{1}{2}$ " x 6" x 3"	6 lbs
1	PP-282/GR, or	4 $\frac{1}{2}$ " x 6" x 3"	6 lbs
1	PP-448/GR	4 $\frac{1}{2}$ " x 6" x 3"	6 lbs
1	RT-70/GRC	4 $\frac{3}{4}$ " x 13" x 7 $\frac{1}{8}$ "	45 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

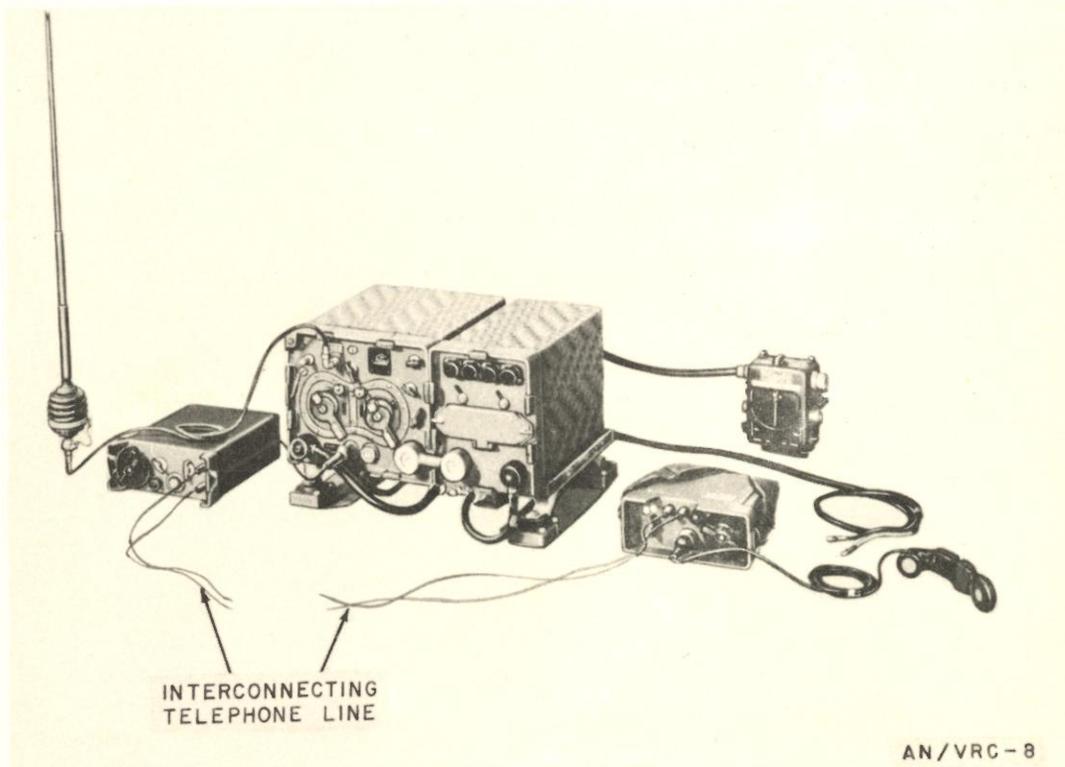
TM 11-285

RADIO SET  
**AN/VRC-8( )**

15 March 1962  
 Cog. Serv: USA FSN: 5820-196-1718  
 USA Line Item No.: 648900

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-B			

Manufacturer:



**FUNCTIONAL DESCRIPTION:**

Radio Set AN/VRC-8( ) is a short-range vehicular fm (voice) equipment for communication within and between armored units.

This set consists of a receiver-transmitter component designated as Set 1 when used as part of the integrated series of radio sets, such as the AN/GRC-3 and AN/GRC-4. A vehicular installation unit, power supply equipment, plus control and accessory components are included.

This equipment can be operated from a remote point up to a distance of about 2 miles over a telephone pair, by means of Control Group AN/GRA-6.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Frequency Range in Mc:* 20.0 to 27.9  
*Type Modulation:* fm

RADIO SET

**AN/VRC-8( )**

*Type of Signal:* voice

*Power Output:*

High Power: 9 to 16 w

Low Power: 2 w

*Power Requirements:* 12/24-v dc from vehicular storage battery

*Major Units:*

1	AN/GRA-6		20.85 lbs
1	PP-109/GR, or	8" x 13" x 9"	33 lbs
1	PP-112/GR	8" x 13" x 9"	33 lbs
1	RT-66/GRC	9" x 13" x 11 $\frac{1}{4}$ "	35 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

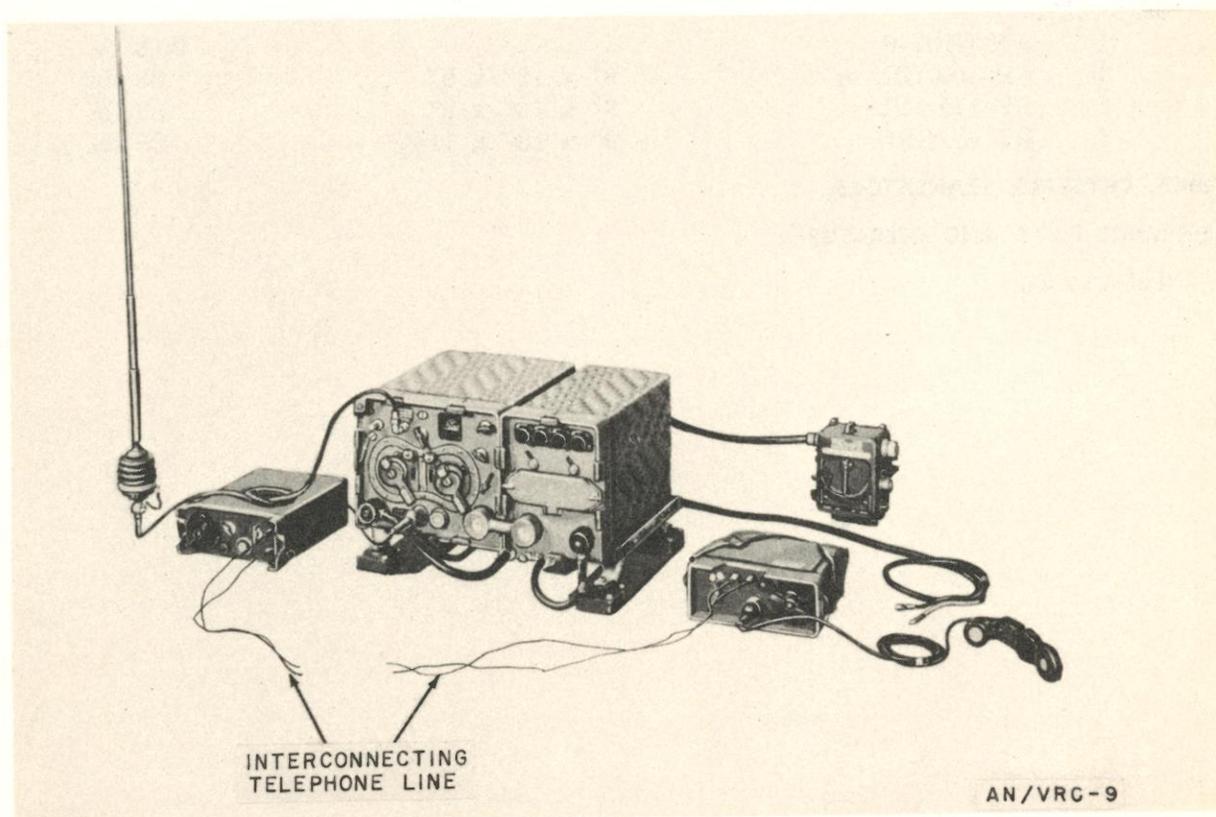
TM 11-286

RADIO RECEIVING SET  
AN/VRC-9( )

15 March 1962  
 Cog. Serv: USA FSN: 5820-193-8809  
 USA Line Item No.: 649000

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-B			

Manufacturer:

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/VRC-9( ) is a short range, vehicular, fm (voice) equipment for communication within and between artillery units.

This set consists of the receiver-transmitter component designated as Set 1 when used as part of the integrated series of radio sets, such as the AN/GRC-6. A vehicular installation unit, power supply equipment, plus control and accessory items are included.

This equipment can be operated by means of Control Group AN/GRA-6 from a remote point up to a distance of about 2 miles over a telephone pair.

RADIO SET

**AN/VRC-9( )**

RELATIONSHIP TO SIMILAR EQUIPMENT:

TECHNICAL DESCRIPTION:

*Frequency Range in Mc:* 27.0 to 38.9

*Type Modulation:* fm

*Type of Signal:* voice

*Power Output:*

High Power: 9 to 16 w

Low Power: 2 w

*Power Requirements:* 12/24-v dc from vehicular storage battery

*Major Units:*

1	AN/GRA-6		20.8 lbs
1	PP-109/GR, or	8" x 13" x 9"	33 lbs
1	PP-112/GR	8" x 13" x 9"	33 lbs
1	RT-67/GRC	9" x 13" x 11½"	35 lbs

TUBES, CRYSTALS, TRANSISTORS:

REFERENCE DATA AND LITERATURE:

TM 11-286

10

RADIO SET  
**AN/VRC-10( )**

15 March 1962  
Cog. Serv: USA FSN: 5820-196-1721  
USA Line Item No.: 649100

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-B			

**Manufacturer:**

For Illustration see AN/VRC-15, page 917.

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/VRC-10( ) is a short-range, vehicular, fm (voice) equipment for communication within and between infantry units.

This set consists of the receiver-transmitter components, designated as Set 1 when used as part of the integrated series of radio sets, such as the AN/GRC-7 and AN/GRC-8. A vehicular installation unit, power supply equipment, plus control and accessory items are include.

This equipment can be operated by means of Control Group AN/GRA-6 from a remote point up to a distance of about 2 miles over a telephone pair.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

*Frequency Range in Mc:* 38.0 to 54.9

*Type Modulation:* fm

*Type of Signal:* voice

*Power Output:*

High Power: 9 to 16 w

Low Power: 2 w

*Power Requirements:* 12/24 v dc from vehicular storage battery

*Major Units:*

1	AN/GRA-6		20.85 lbs
1	PP-109/GR	8" x 13" x 9"	33 lbs
1	PP-112/GR	8" x 13" x 9"	33 lbs
1	RT-68/GRC	8" x 13" x 11 $\frac{1}{4}$ "	35 lbs

**TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**

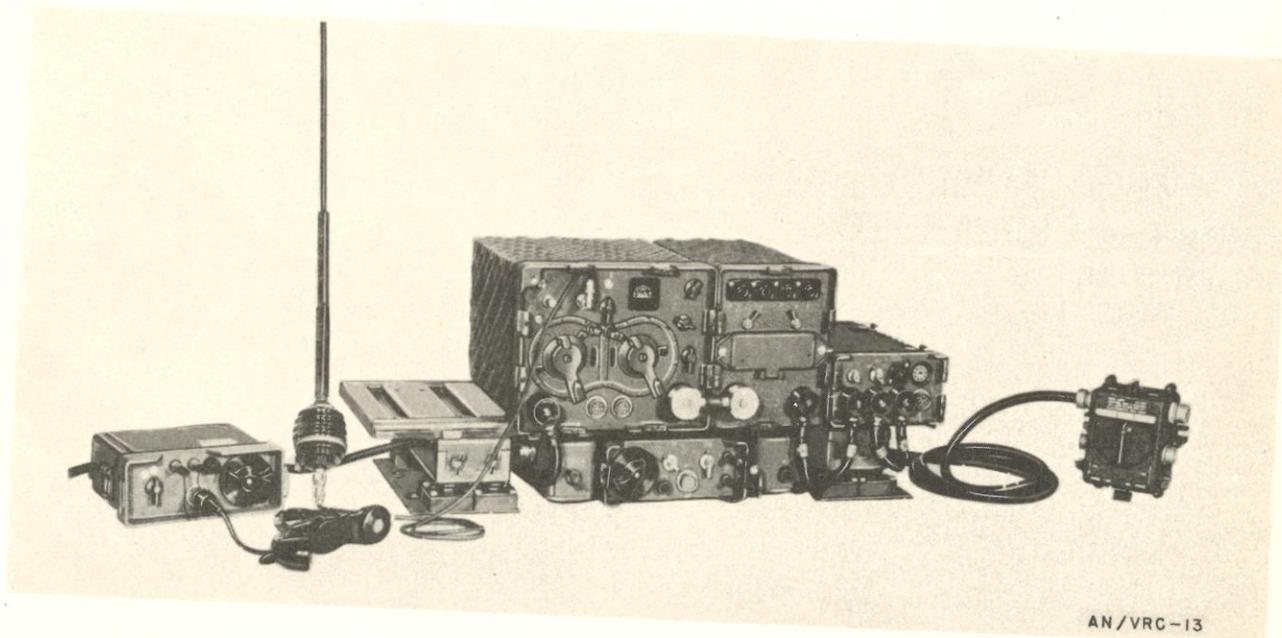
TM 11-286



RADIO SET  
AN/VRC-13( )

15 March 1962  
 Cog. Serv: USA FSN: 5820-192-7133  
 USA Line Item No. 649300

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-B			
Manufacturer:				



AN/VRC-13

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/VRC-13( ) is a short-range, vehicular, fm (voice) equipment for communication within and between armored units.

This set consists of the receiver-transmitter component, designated as Set 1 when used as part of the integrated series of radio sets, such as the AN/GRC-3 and AN/GRC-4. A vehicular installation unit, power-supply equipment, interphone amplifier, antenna, and accessory components are included.

This equipment can be operated by means of Control Group AN/GR A-6 from a remote point up to a distance of about 2 miles over a telephone pair.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

*Frequency Range in Mc:* 20.0 to 27.9

*Type Modulation:* fm

*Type of Signal:* voice

RADIO SET

**AN/VRC-13( )**

*Power Output:*

High Power: 9 to 16 w

Low Power: 2 w

*Power Requirements:* 12/24-vdc from vehicular storage battery.

*Major Units:*

1	AM-65/GRC	4 $\frac{1}{4}$ " x 13" x 7 $\frac{7}{8}$ "	15.5 lbs
1	AN/GR A-6		20.85 lbs
1	PP-109/GR, or	8" x 13" x 9"	33 lbs
1	PP-112/GR	8" x 13" x 9"	33 lbs
1	PP-281/GR, or	4 $\frac{1}{2}$ " x 6" x 3"	6 lbs
1	PP-282/GR	4 $\frac{1}{2}$ " x 6" x 3"	6 lbs
1	RT-66/GRC	9" x 13" x 11 $\frac{1}{4}$ "	35 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-291

RADIO SET  
**AN/VRC-14( )**

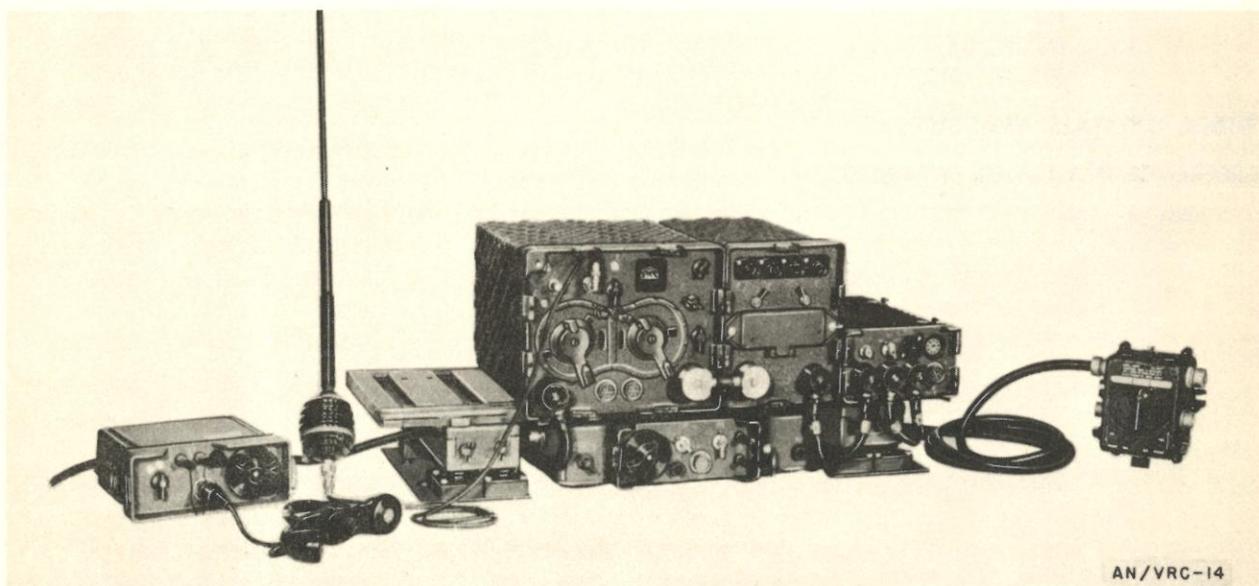
15 March 1962

Cog. Serv: USA FSN: 5820-197-6532

USA Line Item No.: 649400

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-B			

Manufacturer:

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/VRC-14 is a short-range, vehicular, fm (voice) equipment for communication within and between artillery units.

This set consists of a receiver-transmitter component, designated as Set 1 when used as part of the integrated series of radio sets, such as the AN/GRC-5 and AN/GRC-6. A vehicular installation unit, interphone amplifier equipment, power supply equipment, plus control and accessory items are included.

This equipment can be operated by means of Control Group AN/GRA-6 from a remote point up to a distance of about 2 miles over a telephone pair.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

*Frequency Range in Mc: 27.0 to 38.9*

*Type Modulation: fm*

*Type of Signal: voice*

RADIO SET

AN/VRC-14( )

Power Output:

High Power: 9 to 16 w

Low Power: 2 w

Power Requirements: 12/24 v dc from vehicular storage battery

Major Units:

1	AM-65/GRC	4 <sup>1</sup> / <sub>4</sub> " x 13" x 7 <sup>7</sup> / <sub>8</sub> "	15.5 lbs
1	C-375/VRC	7" x 4" x 7"	3.5 lbs
1	AN/GRA-6		20.85 lbs
1	PP-109/GR, or	8" x 13" x 9"	33 lbs
1	PP-112/GR	8" x 13" x 9"	33 lbs
1	PP-281/GR, or	4 <sup>1</sup> / <sub>2</sub> " x 6" x 3"	6 lbs
1	PP-282/GR	4 <sup>1</sup> / <sub>2</sub> " x 6" x 3"	6 lbs
1	RT-67/GRC	9" x 13" x 11 <sup>1</sup> / <sub>2</sub> "	35 lbs

TUBES, CRYSTALS, TRANSISTORS:

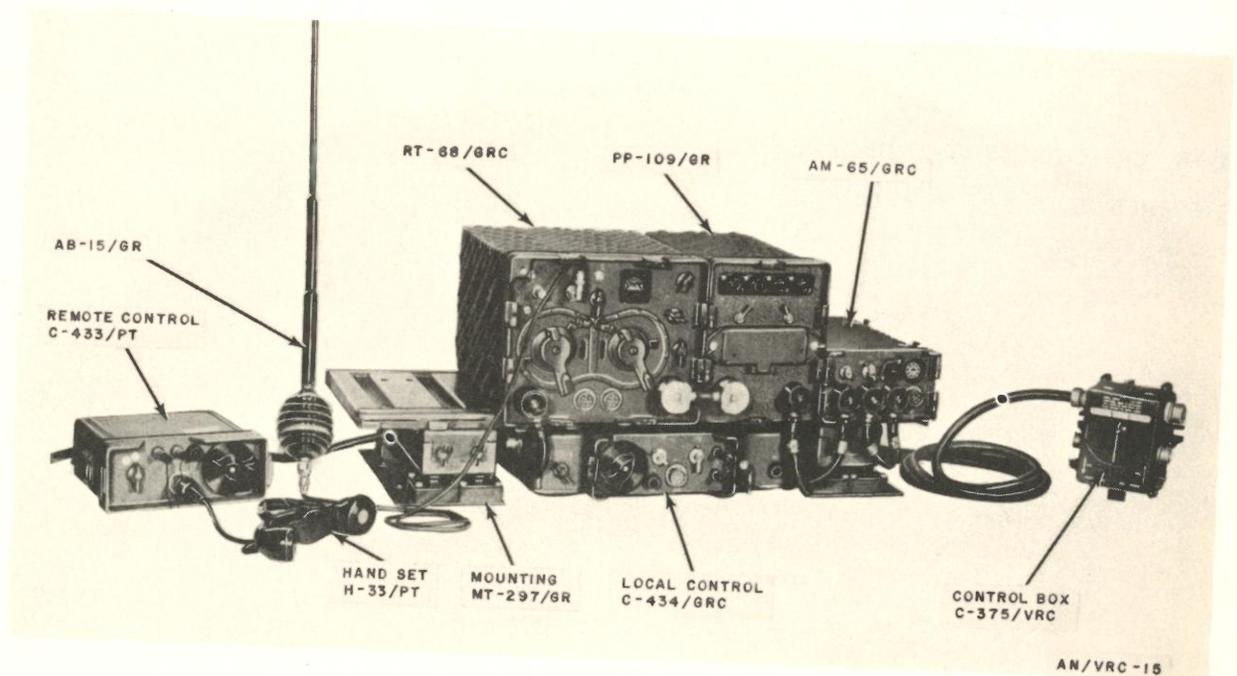
REFERENCE DATA AND LITERATURE:

TM 11-291

RADIO SET  
AN/VRC-15( )

15 March 1962  
 Cog. Serv: USA FSN: 5820-192-7111  
 USA Line Item No.: 649500

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-B			
Manufacturer:				

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/VRC-15( ) is a short-range, vehicular, fm (voice) equipment for communication within and between infantry units.

This set consists of the receiver-transmitter component designated as Set 1 when used as part of the integrated series of radio sets, such as the AN/GRC-7 and AN/GRC-8. A vehicular installation unit, interphone amplifier, power supply equipment, plus control and accessory items are included.

This equipment can be operated by means of Control Group AN/GRA-6 from a remote point at a distance of about 2 miles over a telephone pair.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

*Frequency Range in Mc:* 38.0 to 54.9  
*Type Modulation:* fm

RADIO SET

**AN/VRC-15( )**

*Type of Signal:* voice

*Power Output:*

High Power: 9 to 16 w

Low Power: 2 w

*Power Requirements:* 12/24 v dc from vehicular storage battery.

*Major Units:*

1	AM-65/GRC	4 $\frac{1}{4}$ " x 13" x 7 $\frac{7}{8}$ "	15.5 lbs
1	AN/GRA-6		20.85 lbs
1	PP-109/GR, or	8" x 13" x 9"	33 lbs
1	PP-112/GR	8" x 13" x 9"	33 lbs
1	PP-281/GR, or	4 $\frac{1}{2}$ " x 6" x 3"	6 lbs
1	PP-282/GR	4 $\frac{1}{2}$ " x 6" x 3"	6 lbs
1	RT-68/GRC	9" x 13" x 11 $\frac{1}{4}$ "	35 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

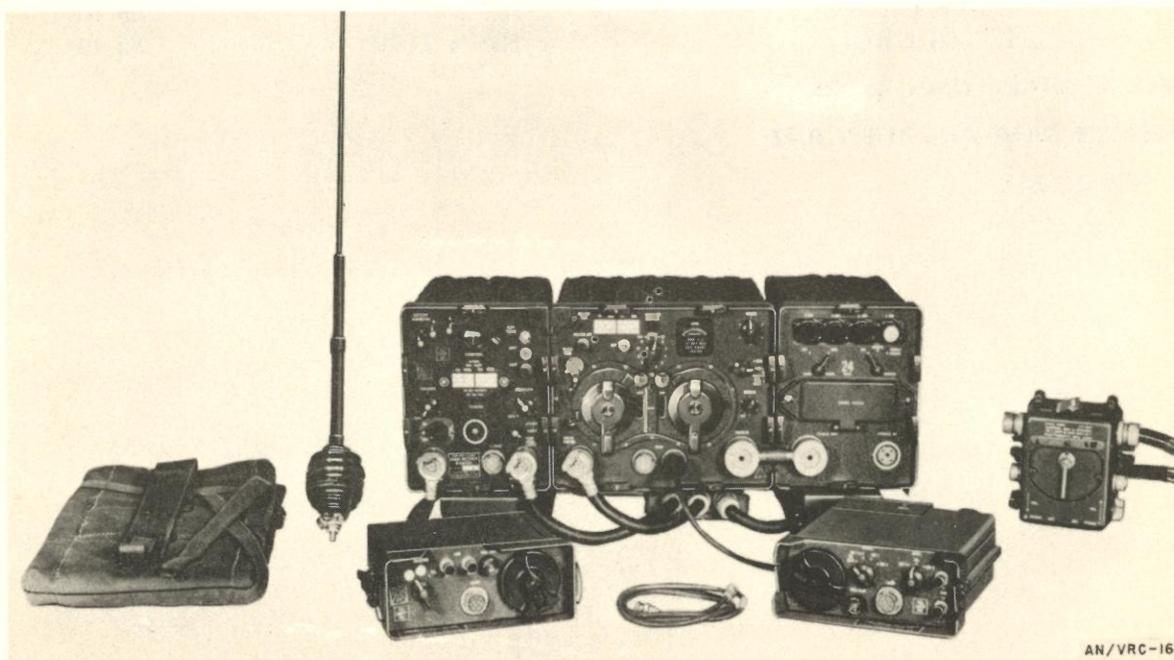
TM 11-291

RADIO SET  
**AN/VRC-16( )**

15 March 1962  
 Cog. Serv: USA FSN: 5820-253-6131  
 USA Line Item No.: 649600

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-B			

Manufacturer:



AN/VRC-16

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/VRC-16( ) is a short-range, vehicular, fm (voice) equipment for communication within and between armored units.

This set consists of the receiver-transmitter component designated as Set 1 when used as part of the integrated series of radio sets, such as the AN/GRC-3 and AN/GRC-4. The auxiliary receiver component of these sets is also provided with this equipment. A vehicular installation unit, power supply equipment, antenna, plus control components are included.

This equipment can be operated by means of Control Group AN/GRA-6 from a remote point up to a distance of about 2 miles over a telephone pair.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

*Frequency Range in Mc: 20.0 to 27.9*

*Type Modulation: fm*

*Type of Signal: voice*

RADIO SET

**AN/VRC-16( )**

*Power Output:*

High Power: 9 to 16 w

Low Power: 2 w

*Power Requirements:* 12/24 v dc from vehicular storage battery

*Major Units:*

1	AN/GRA-6		20.85 lbs
1	PP-109/GR, or	8" x 13" x 9"	33 lbs
1	PP-112/GR	8" x 13" x 9"	33 lbs
1	PP-281/GR, or	4½" x 6" x 3"	6 lbs
1	PP-282/GR	4½" x 6" x 3"	6 lbs
1	R-108/GRC	9" x 13" x 7¼"	35 lbs
1	RT-66/GRC	9" x 13" x 11¼"	35 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-611

RADIO SET  
**AN/VRC-17**

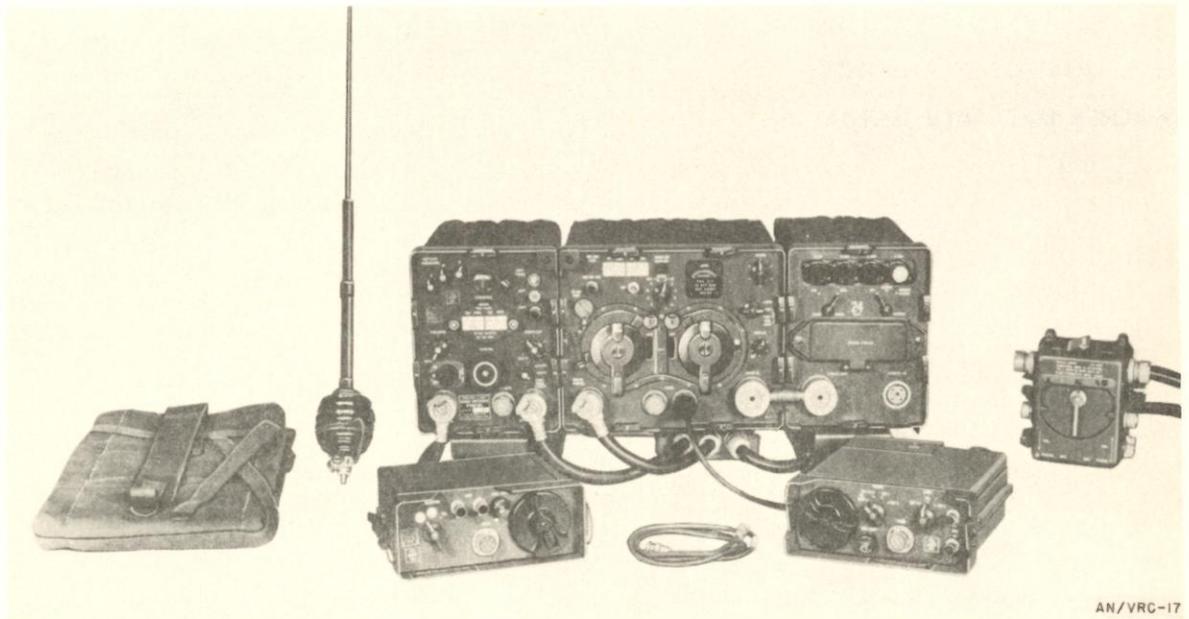
15 March 1962

Cog. Serv: USA FSN: 5820-351-3384

USA Line Item No.: 649700

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-B			

Manufacturer:



AN/VRC-17

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/VRC-17 is a short-range, vehicular, fm (voice) equipment for communication within and between artillery units.

This set consists of the receiver-transmitter component, designated as Set 1 when used as part of the integrated series of radio sets, such as the AN/GRC-5 and AN/GRC-6. The auxiliary receiver component of these sets is also provided with the equipment. A vehicular installation unit, power supply equipment, antenna, plus control components are included.

This equipment can be operated by means of Control Group AN/GRA-6 from a remote point up to a distance of about 2 miles over a telephone pair.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

*Frequency Range in Mc:* 27.0 to 38.9

*Type Modulation:* fm

*Type of Signal:* voice

RADIO SET

**AN/VRC-17**

*Power Output:*

High Power: 9 to 16 w

Low Power: 2 w

*Power Requirements:* 12/24 v dc from vehicular storage battery

*Major Units:*

1	AN/GRA-6		20.85 lbs
1	PP-109/GR, or	8" x 13" x 9"	33 lbs
1	PP-112/GR	8" x 13" x 9"	33 lbs
1	PP-281/GR, or	4 $\frac{1}{2}$ " x 6" x 3"	6 lbs
1	PP-282/GR	4 $\frac{1}{2}$ " x 6" x 3"	6 lbs
1	R-109/GR	9" x 13" x 11 $\frac{1}{2}$ "	35 lbs
1	RT-67/GRC	9" x 13" x 11 $\frac{1}{2}$ "	35 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-611

RADIO SET  
AN/VRC-18( )

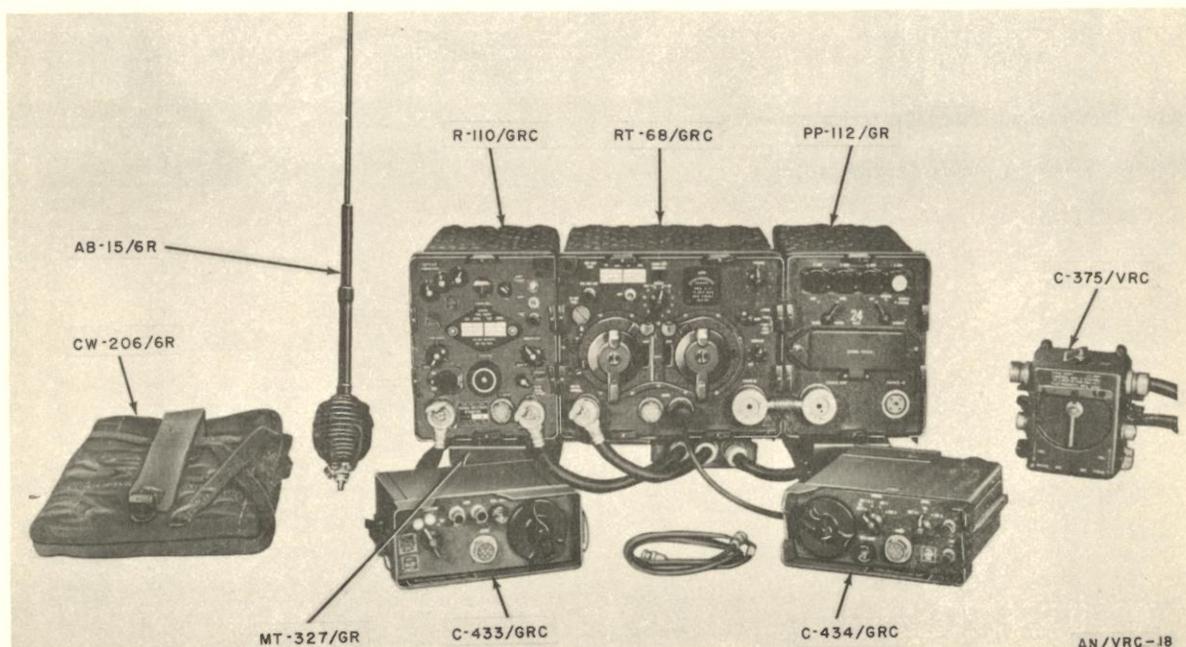
15 March 1962

Cog. Serv: USA FSN: 5820-234-6399

USA Line Item No.: 649800

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-B			

Manufacturer:

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/VRC-18( ) is a short-range, vehicular fm (voice transmitting and receiving) equipment used for communication within and between infantry units.

This equipment consists of the receiver-transmitter component, designated as Set 1 when used as part of the integrated series of radio sets, such as the AN/GRC-7 and AN/GRC-8. The auxiliary receiver component of these sets is also provided with this equipment. A vehicular installation unit, power supply equipment, antenna, plus control components are included.

This equipment can be operated by means of Control Group AN/GRA-6 from a remote point up to a distance of about 2 miles over a telephone pair.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

*Frequency Range in Mc:* 38.0 to 54.9

*Type Modulation:* fm

RADIO SET

**AN/VRC-18( )**

*Type of Signal:* voice

*Power Output:*

High Power: 9 to 16 w

Low Power: 2 w

*Power Requirements:* 12/24 v dc from vehicular storage battery

*Major Units:*

1	AN/GRA-6		20.85 lbs
1	PP-109/GR, or	8" x 13" x 9"	33 lbs
1	PP-112/GR	8" x 13" x 9"	33 lbs
1	PP-281/GR, or	4½" x 6" x 3"	6 lbs
1	PP-282/GR	4½" x 6" x 3"	6 lbs
1	R-110/GRC	9" x 13" x 7¼"	35 lbs
1	RT-68/GRC	9" x 13" x 11¼"	35 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

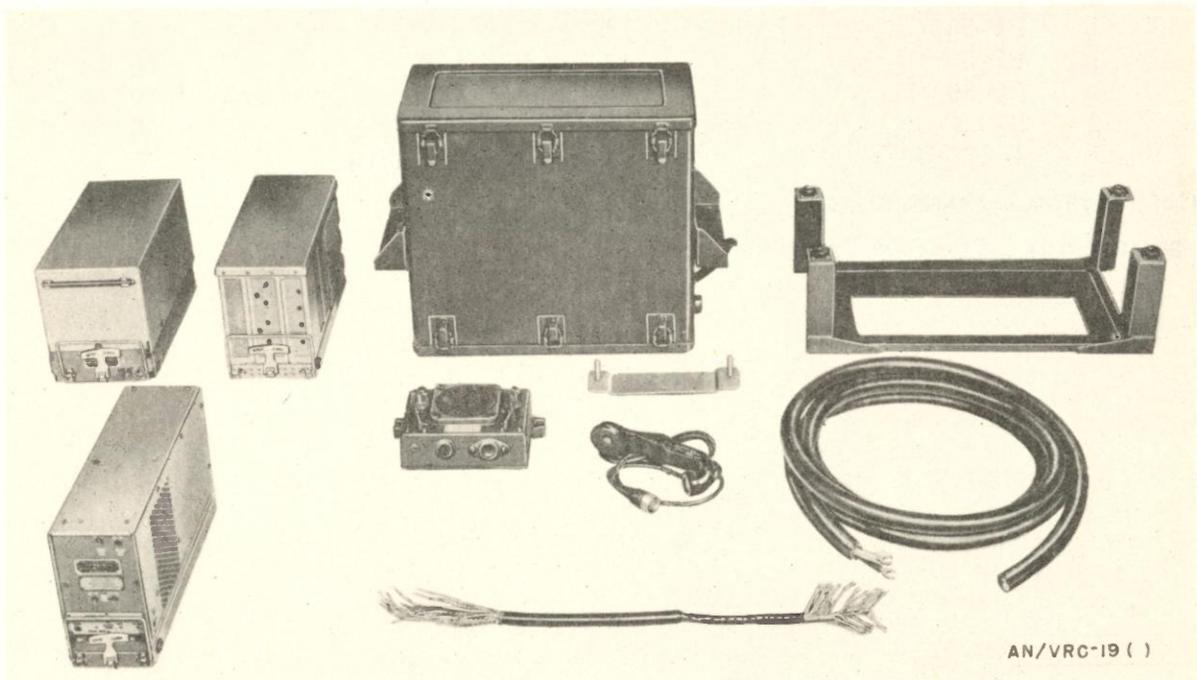
TM 11-611

RADIO SET  
AN/VRC-19( )

15 March 1962  
 Cog. Serv: USA FSN: 5820-503-1124  
 USA Line Item No.: 650300

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-A			

Manufacturer: Motorola, Inc



**FUNCTIONAL DESCRIPTION:**

Radio Set AN/VRC-19( ) is a small, battery-powered, vehicular, low-powered, fm radio communication equipment used by military police, guard, and security troops. It can be installed in railroad trains and motor vehicles.

This equipment consists essentially of a radio receiver and power supply, a transmitter and power supply, a control unit, and an electrical cabinet.

The AN/VRC-19 and AN/VRC-19X operate on a 24-volt and 12-volt, vehicular battery, respectively.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Frequency Range in Mc:* 152 to 174  
*Type Modulation:* fm

**RADIO SET**

**AN/VRC-19( )**

*Type of Signal:* voice

*Power Output:* 20 to 25 w

*Power Requirements:*

AN/VRC-19: 26.4 w (revr), 240 w (xmtr); 24-v dc

AN/VRC-19X: 24 w (revr), 240 w (xmtr); 12-v dc

*Major Units:*

1	DY-93/G, or	8 <sup>5</sup> / <sub>8</sub> " x 6 <sup>7</sup> / <sub>8</sub> " x 14 <sup>1</sup> / <sub>2</sub> "	24 lbs
1	DY-98/G, or	8 <sup>5</sup> / <sub>8</sub> " x 6 <sup>7</sup> / <sub>8</sub> " x 14 <sup>1</sup> / <sub>2</sub> "	24 lbs
1	DY-100/U	8 <sup>5</sup> / <sub>8</sub> " x 6 <sup>7</sup> / <sub>8</sub> " x 14 <sup>1</sup> / <sub>2</sub> "	24 lbs
1	CY-938( )/VRC	10 <sup>1</sup> / <sub>2</sub> " x 19 <sup>5</sup> / <sub>16</sub> " x 16 <sup>1</sup> / <sub>2</sub> "	33 lbs
1	PP-867/U, or	5" x 6 <sup>1</sup> / <sub>4</sub> " x 7"	10 lbs
1	PP-868/U, or	5" x 6 <sup>1</sup> / <sub>4</sub> " x 7"	10 lbs
1	PP-869/U	5" x 6 <sup>1</sup> / <sub>4</sub> " x 7"	10 lbs
1	R-394/U	8 <sup>1</sup> / <sub>2</sub> " x 5 <sup>3</sup> / <sub>4</sub> " x 14 <sup>1</sup> / <sub>2</sub> "	16 lbs
1	T-278/U	8 <sup>1</sup> / <sub>2</sub> " x 4 <sup>1</sup> / <sub>2</sub> " x 14 <sup>1</sup> / <sub>2</sub> "	8.5 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-297

MIL-N-11539

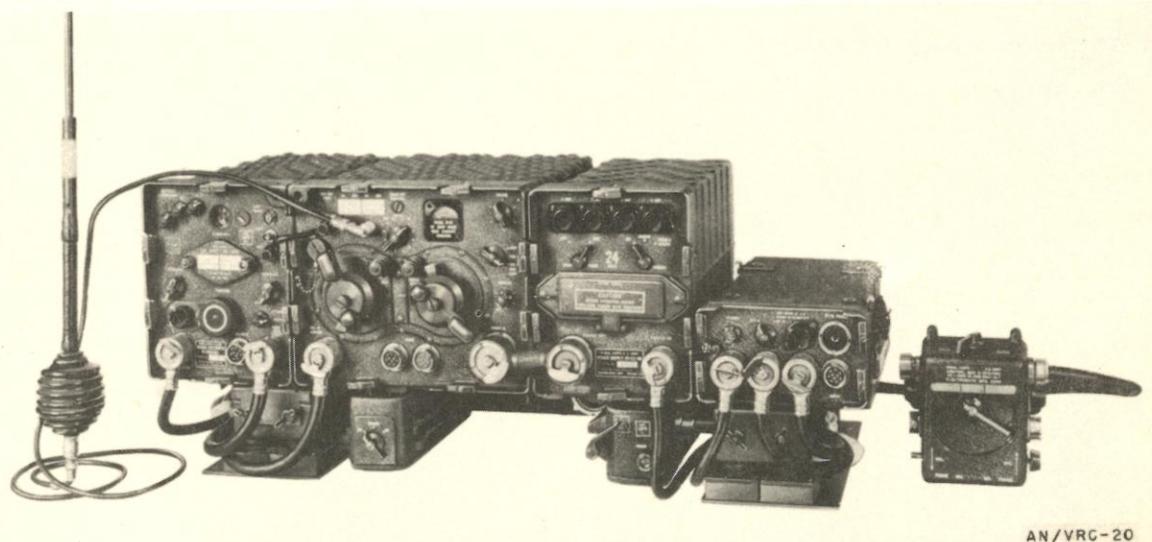
RADIO SET  
**AN/VRC-20**

15 March 1962

Cog. Serv: USA FSN: 5820-519-4104

USA Line Item No.: 650400

	USA	USN	USAF	USMC
<b>STATUS OR TYPE CLASS.:</b>	Std-B			

**Manufacturer:**

AN/VRC-20

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/VRC-20 is a vehicular, short-range, fm (voice), radiotelephone equipment for communication within and between armored units.

This equipment consists of the receiver-transmitter component designated as Set 1 when used as part of the integrated series of radio sets, such as the AN/GRC-3 and AN/GRC-4. The auxiliary receiver component of these sets is also provided with this equipment. A vehicular installation unit, power supply equipment, antenna, plus control components are included.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

*Frequency Range in Mc:* 20.0 to 27.9

*Type Modulation:* fm

*Type of Signal:* voice

*Power Output:*

High Power: 9 to 16 w

Low Power: 2 w

RADIO SET

**AN/VRC-20**

*Power Requirements:* 12/24-volts dc from vehicular storage battery

*Major Units:*

1	AM-65/GRC	4 $\frac{1}{4}$ " x 13" x 7 $\frac{7}{8}$ "	15.5 lbs
1	C-375/VRC	7" x 4" x 7"	3.5 lbs
1	PP-109/GR, or	8" x 13" x 9"	33 lbs
1	PP-112/GR	8" x 13" x 9"	33 lbs
1	PP-281/GR, or	4 $\frac{1}{2}$ " x 6" x 3"	6 lbs
1	PP-282/GR	4 $\frac{1}{2}$ " x 6" x 3"	6 lbs
1	R-108/GRC	9" x 13" x 7 $\frac{1}{4}$ "	35 lbs
1	RT-66/GRC	9" x 13" x 11 $\frac{1}{4}$ "	35 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

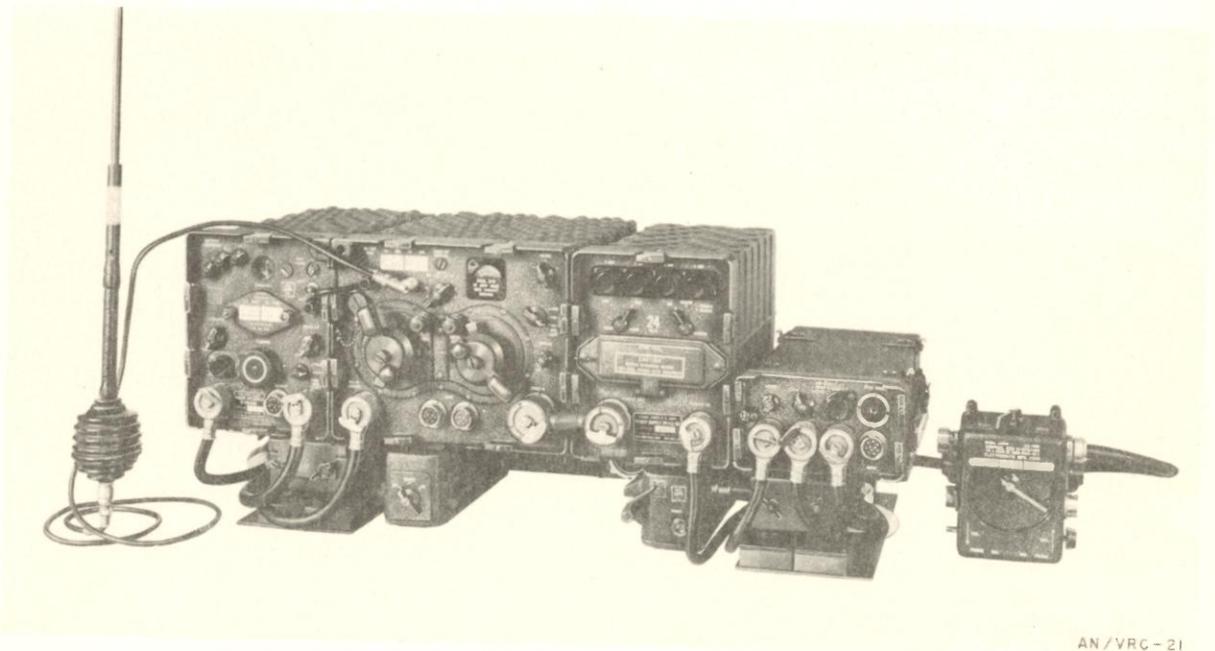
**REFERENCE DATA AND LITERATURE:**

TM 11-642

RADIO SET  
AN/VRC-21

15 March 1962  
 Cog. Serv: USA FSN: 5820-519-4102  
 USA Line Item No.: 650700

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-B			
Manufacturer:				

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/VRC-21 is a vehicular, short-range, fm (voice), radiotelephone equipment for communication within and between artillery units.

This equipment consists of the receiver-transmitter component designated as Set 1 when used as part of the integrated series of radio sets, such as the AN/GRC-5 and AN/GRC-6. The auxiliary receiver component of these sets is also provided with this equipment. A vehicular installation unit, power supply equipment, antenna, plus control components are included.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

*Frequency Range in Mc:* 27.0 to 38.9

*Type Modulation:* fm

*Type of Signal:* voice

*Power Output:*

High Power: 9 to 16 w

Low Power: 2 w

RADIO SET

**AN/VRC-21**

*Power Requirements:* 12/24-v dc from vehicular storage battery

*Major Units:*

1	AM-65/GRC	4 $\frac{1}{4}$ " x 13" x 7 $\frac{7}{8}$ "	15.5 lbs
1	C-375/VRC	7" x 4" x 7"	3.5 lbs
1	PP-109/GR, or	8" x 13" x 9"	33 lbs
1	PP-112/GR	8" x 13" x 9"	33 lbs
2	PP-281/GR, or	4 $\frac{1}{2}$ " x 6" x 3"	6 lbs
2	PP-282/GR	4 $\frac{1}{2}$ " x 6" x 3"	6 lbs
1	R-109/GR	9" x 13" x 7 $\frac{1}{4}$ "	35 lbs
1	RT-67/GRC	9" x 13" x 11 $\frac{1}{2}$ "	35 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-642

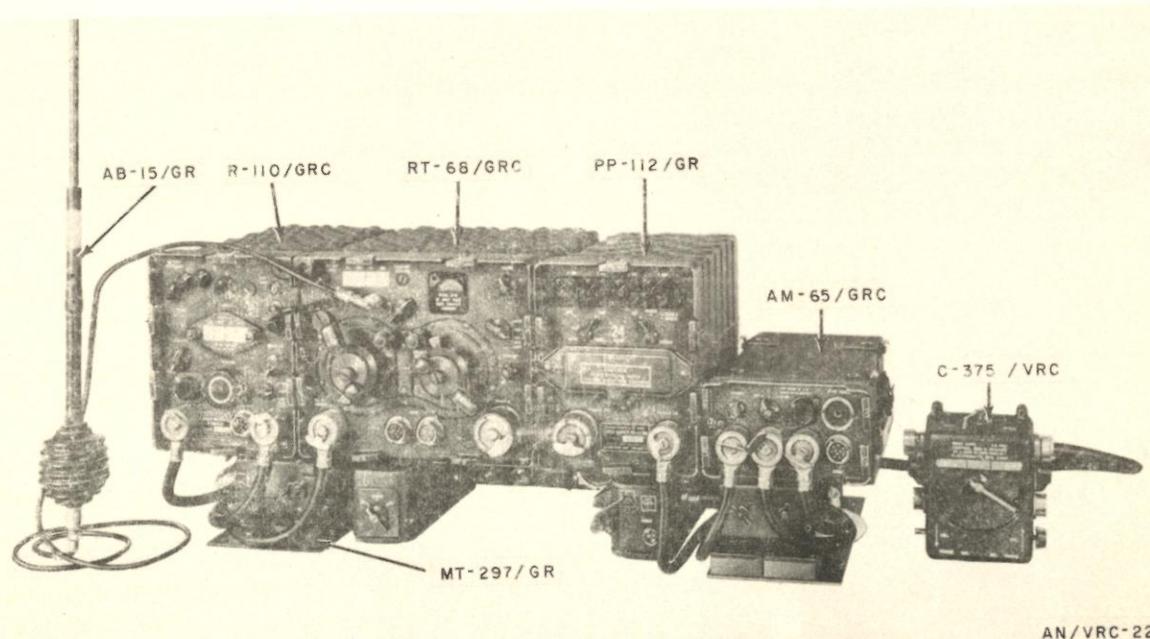
RADIO SET  
**AN/VRC-22**

14 March 1964

Cogn. Serv: USA FSN: 5820-519-4101

USA Use Item No.: 650900

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS:	Std-B			
Manufacturer:				

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/VRC-22 is a vehicular, short-range, fm (voice) radiotelephone equipment for communication within and between infantry units.

This equipment consists of the receiver-transmitter component designated as Set 1 when used as part of the integrated series of radio sets, such as the AN/GRC-7 and AN/GRC-8. The auxiliary receiver component of these sets is also provided with this equipment. A vehicular installation unit, interphone amplifier, power supply equipment, antenna, and accessory components are included.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

*Frequency Range in Mc:* 38.0 to 54.9

*Type Modulation:* fm

RADIO SET

**AN/VRC-22**

*Type of Signal:* voice

*Power Output:*

High Power: 9 to 16 w

Low Power: 2 w

*Power Requirements:* 12/24-v dc from vehicular storage battery

*Major Units:*

1	AM-65/GRC	4 $\frac{1}{4}$ " x 13" x 7 $\frac{7}{8}$ "	15.5 lbs
1	C-375/VRC	7" x 4" x 7"	3.5 lbs
1	PP-109/GR, or	8" x 13" x 9"	33 lbs
1	PP-112/GR	8" x 13" x 9"	33 lbs
2	PP-281/GR, or	4 $\frac{1}{2}$ " x 6" x 3"	6 lbs
2	PP-282/GR	4 $\frac{1}{2}$ " x 6" x 3"	6 lbs
1	R-110/GRC	9" x 13" x 7 $\frac{1}{4}$ "	35 lbs
1	RT-68/GRC	9" x 13" x 11 $\frac{1}{4}$ "	35 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-642

RADIO SET  
AN/VRC-27

15 March 1962

Cog. Serv: USN FSN: 5840-695-4447

USA Line Item No.:

USA

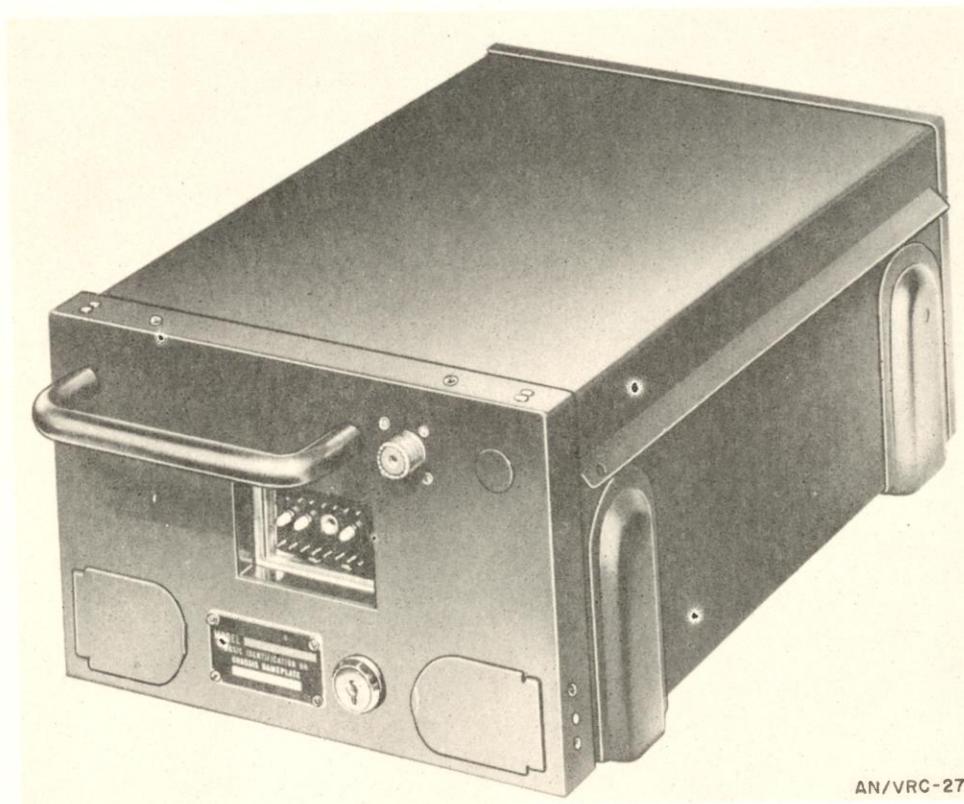
USN

USAF

USMC

STATUS OR TYPE CLASS.:

Manufacturer: CGG (80211)



AN/VRC-27

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/VRC-27 is an fm, two-way radio equipment, consisting essentially of a transmitter, a receiver, and a power supply assembled in a drawer-type mobile housing. The transmitter and receiver operate in fixed, crystal controlled frequencies. The power supply furnishes all the voltages required for operation of both the transmitter and receiver. When installed with the appropriate cable kit, the radio set will operate from either 6 or 12 v dc. The set is for installation in the trunk of a passenger vehicle.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

*Frequency Range:* 30-42 mc

*Transmitter Output:* 25-30 w

RADIO SET

**AN/VRC-27**

*Transmitter Modulation:*  $\pm 15$  kc for 100 percent at 1000 cps

*Receiver Sensitivity:* Less than  $0.35 \mu\text{v}$  for 30 db quieting

*Receiver Selectivity:*  $-100$  db at  $\pm 30$  kc

*Receiver Modulation Acceptance:*  $\pm 15$  kc or more at  $-6$  db

*Power Input:*

Standby: 10 amp at 6.3 v dc

Transmit: 25 amp at 6.3 v dc

*Major Units:*

1 TA-179

$2\frac{3}{8}$ " x  $5\frac{1}{4}$ " x 15"

3.75 lbs

1 TA-180

$3\frac{1}{4}$ " x  $5\frac{1}{4}$ " x 15"

5.4 lbs

1 TV-117

3" x  $5\frac{1}{4}$ " x 15"

9.5 lbs

**REFERENCE DATA AND LITERATURE:**

**TUBES, CRYSTALS, TRANSISTORS:**

NAVSHIPS 92757

RADIO SET  
**AN/VRC-30**

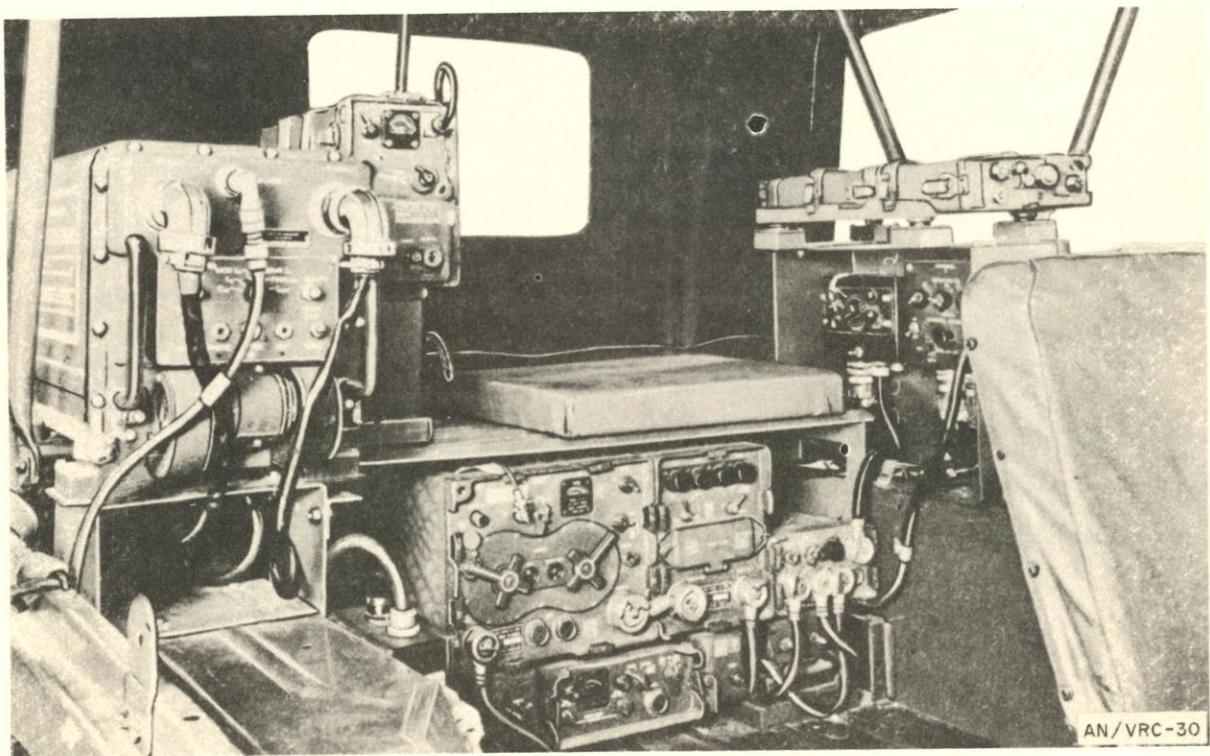
15 March 1962

Cog. Serv: USA FSN: 5895-578-5453

USA Line Item No.: 652900

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-B			

Manufacturer:

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/VRC-30 is an assemblage of transmitting and receiving equipment arranged for vehicular installation and operation. Its components operate in different rf ranges, separately or simultaneously, to increase flexibility of ground and ground-to-air communication.

This equipment consists of the following radio sets: AN/ARC-27, AN/PRC-9, AN/TRC-7 (optional), and AN/VRC-14. The AN/TRC-7 is supplied only when a frequency range of 100 to 156 mc is required.

This equipment provides ground-to-air communication between forward observation posts on the ground and aircraft assigned to close support missions, as well as communication between the forward observation post and a similar radio set at a higher tactical ground-force headquarters.

**RADIO SET**

**AN/VRC-30**

It is usually installed in a 1/4-ton, 4 x 4 truck (M38 or M38A1) but may be mounted in a 3/4-ton truck, an armored personnel carrier, or a tank.

For installation in the 1/4-ton truck, 3/4-ton truck, or other vehicle, a heavy-duty generator must be installed to provide the necessary power to operate all equipment.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

SET	AN/ARC-27	AN/PRC-9	AN/TRC-7	AN/VRC-14
Frequency Range in mc	225.0 to 399.9	27.0 to 38.9	100 to 156	27 to 38.9
Type Modulation	am voice	fm voice	am voice	fm voice
Power Output	10 w	1 w	0.5 to 1.5w	2 or 20
Power Requirements	24- to 28-v dc	Battery BA-279/U	Battery BA-70 or Hand Generator G-3/TRC-7	12- or 24-v vehicular storage battery

*Major Units:*

1	AN/ARC-27	19 <sup>3</sup> / <sub>4</sub> " x 12 <sup>3</sup> / <sub>8</sub> " x 27 <sup>5</sup> / <sub>8</sub> "	81.8 lbs
1	AN/TRC-9		26 lbs
1	AN/TRC-7		143 lbs
1	AN/VRC-14		185 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TB SIG 283

RADIO SET  
**AN/VRC-32**

15 March 1962

Cog. Serv: USN FSN: 5820-665-1709

USA Line Item No.:

USA

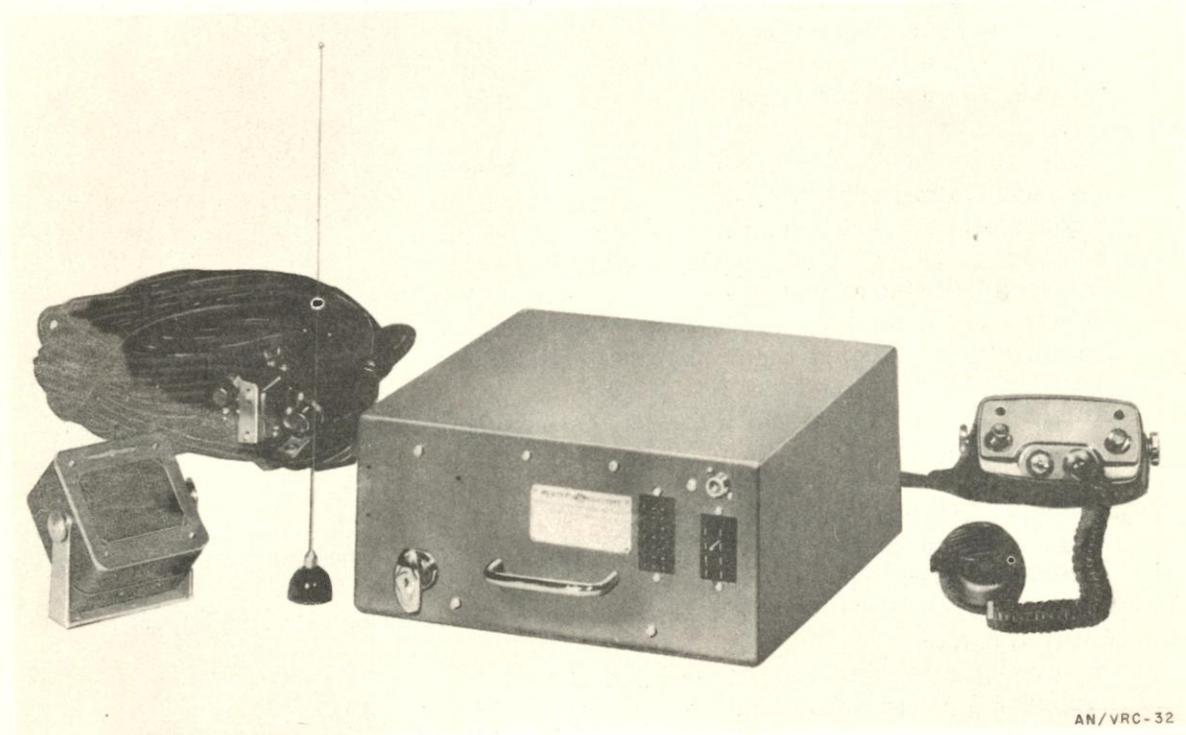
USN

USAF

USMC

STATUS OR TYPE CLASS.:

Manufacturer: CG (24446)



AN/VRC-32

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/VRC-32 is a compact, ruggedly constructed equipment that provides two-way communication with land-mobile equipments.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:***Transmitter*

Frequency Range: 30-42 mc

Power Output: 30 w (nominal)

Modulation:  $\pm 5$  kc (narrow band) or  $\pm 15$  kc (wide band) swing with instantaneous modulation limiting

RADIO SET

**AN/VRC-32**

Crystal Multiplication: 12 times  
Ambient Temperature Range:  $-30^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$   
Frequency Stability:  
    Unheated Crystal:  $\pm 0.002$  percent  
    Heated Crystal:  $\pm 0.0005$  percent  
Audio Frequency: between  $\pm 1$  to  $-3$  db of a 6 db/octave pre-emphasis from 300-3000 cps (1000 cps reference)  
Spurious and Harmonic Radiation: at least 80 db below rated power output at any frequency  
Hum and Noise Level:  $-40$  db (below  $\pm 10$  kc swing)  
Channel Separation (max): 0.4 percent of operating frequency (160 kc approx) for 2, 3, or 4 channel operation  
Control: crystal  
Output: F3 phase modulation

*Receiver:*

Type: wide band, double conversion superheterodyne  
Frequency Range: 30-54 mc  
Audio Output: 1.5 w (less than 10 percent distortion)  
Sensitivity: 0.4 uv (20 db quieting method)  
Squelch: adjustable, will open at less than 0.15 uv at critical setting  
Selectivity: 100 db  $\pm 30$  kc (20 db quieting method)  
Bandwidth:  $\pm 15$  kc at the 6 db points (swing method of measurement)  
Spurious Response: at least 100 db down  
Ambient Temperature:  $-30^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$  (outside of cabinet that houses chassis)  
Frequency Stability:  
    Unheated Crystal:  $\pm 0.002$  percent  
    Heated Crystal:  $\pm 0.0005$  percent  
Audio Frequency: within  $+2$  to  $-8$  db of a 6 db/octave de-emphasis curve from 300-3000 cps (1000 cps reference)  
Channel Separation (max): 0.4 percent operating frequency (160 kc approx)  
Control: crystal  
Intermediate Frequencies: 3.2 mc and 290 kc  
Output: F3 phase modulation

*Operating Power Requirements:* 6, 12, or 24 v dc; battery operated

*Antenna Type:* vertical whip

*Major Units:*

1 CY-1908/VRC-32  
1 RT-367/VRC-32  
1 C-184/VRC-32  
1 LS-255/U

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE**

NAVSHIPS 92652

RADIO SET

## AN/VRC-33, -33A

15 March 1962

Cog. Serv: USN FSN: (AN/VRC-33) 5820-565-0963  
(AN/VRC-33A) 5820-542-7035

USA Line Item No.:

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:				
Manufacturer: CCI			(13848)	

No Illustration Available

**FUNCTIONAL DESCRIPTION:**

The AN/VRC-33 and AN/VRC-33A are universal vehicular radios. They are designed for use by police, maintenance crews, transportation vehicles, and fire department operations to provide dependable two-way communication. The AN/VRC-33 and AN/VRC-33A are identical except in equipment supplied.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:***Frequency Range:* 30 to 42 mc, 1 channel, crystal controlled.*Emission:* F3*Frequency Stability:* 0.002%*Ambient Temperature Range:* -30°C to +60°C*Sensitivity:* 0.4 uv for 20 db noise quieting*Spurious Response:* -100 db*Antenna Input Impedance:* 52 ohms*Audio Output Impedance:* 4 and 500 ohms*Operating Power Requirements:* 6, 12 or 24 v dc, 25 to 35 w*Major Units:*

1	RT-408/VRC-33	5½" x 11" x 13"	38 lbs
1	CY-2108/VRC-33	5½" x 11" x 13"	
1	C-2110/VRC-33	2½" x 3¾" x 4½"	
1	LS-425/U	3¼" x 6" x 6"	
1	RT-408/VRC-33A	5½" x 11" x 13"	38 lbs
1	CV-2018A/VRC-33A	5½" x 11" x 13"	
1	C-2110/VRC-33	2½" x 3¾" x 4½"	
1	LS-425/U	3¼" x 6" x 6"	

**TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**

NAVSHIPS 92922(A)



RADIO SET  
**AN/VRC-51**

15 March 1962

Cog. Serv: USN FSN: 5820-893-0050

USA Line Item No.:

USA

USN

USAF

USMC

STATUS OR TYPE CLASS.:

Manufacturer: CCI (13848)

**FUNCTIONAL DESCRIPTION:**

The AN/VRC-51 is a fixed tuned, crystal controlled unit of the single channel type, designed for fm emission. It is designed for vehicular operation. Power output of the set is variable, depending on the frequency and input voltage.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

This equipment is functionally similar to the AN/VRC-42, except for frequency range.

**TECHNICAL DESCRIPTION:**

*Frequency Range:* 132 to 152 mc

*Control:* crystal controlled

*Power Output:* 25 w min; 30 to 32 w normal

*Modulation:* fm, Type F3 emission

RADIO SET

**AN/VRC-51**

*Operating Power Requirements:* 12 or 24 v dc

*Major Units:*

1	RT-616/VRC-51	12 $\frac{1}{2}$ " x 9 $\frac{1}{4}$ " x 5 $\frac{1}{2}$ "	14 $\frac{3}{4}$ lbs
1	C-3691/VRC-51	3" x 6" x 5"	9 $\frac{1}{2}$ lbs
1	Antenna	22 $\frac{1}{2}$ " x 1 $\frac{1}{2}$ " x 1"	$\frac{1}{2}$ lb
1	Microphone	10 $\frac{1}{4}$ " x 4 $\frac{7}{8}$ " x 2 $\frac{3}{8}$ "	1 $\frac{1}{4}$ lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 94121

11

AN/VRC-type  
RADIO SET

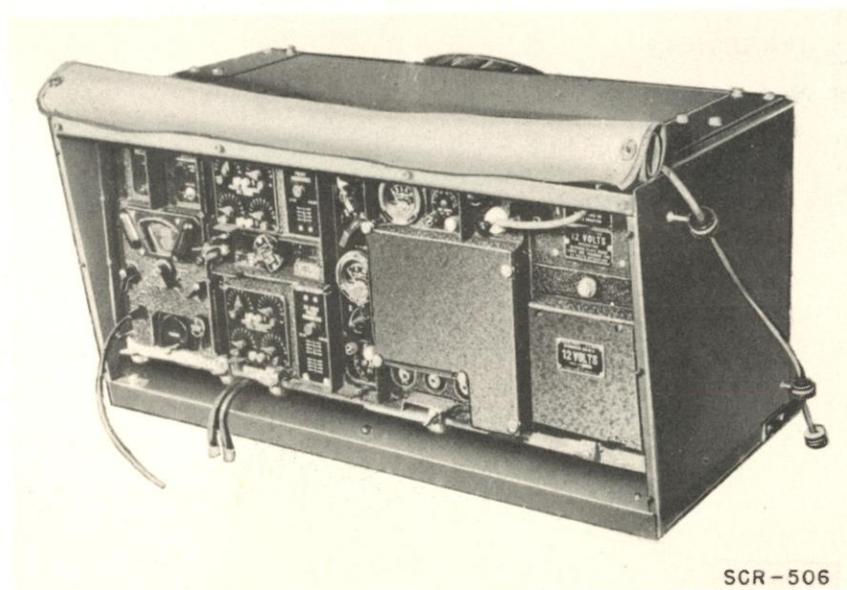
SCR-506-( )

15 March 1962

Cog. Serv: USN FSN: 5820-196-1743

USA Line Item No.: 653000

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	L/Std			
Manufacturer:				



SCR-506

**FUNCTIONAL DESCRIPTION:**

Radio Set SCR-506-( ) is a medium power, am (voice) and cw, vehicular radio transmitting and receiving equipment used by motorized tactical units for ground-to-ground and ground-to-air communication in the medium-frequency range.

This equipment consists of a radio transmitter and a radio receiver mounted on a vehicular shock mounting common to both, and includes antenna, cording, and accessory items. It is usually installed in tanks, armored and amphibious vehicles, personnel carriers and similar vehicles. The set has provision for rapidly adjusting, and operating over any of five preselected channels.

It operates from the storage battery of the vehicle in which it is installed.

This equipment has been replaced by Radio Set AN/GRC-19

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

*Frequency Range in Mc:*

Transmitter: 2.0 to 4.5 (126 channels)

Receiver: 2.0 to 6.0 (210 channels, 2 bands)

AN/VRC-type  
RADIO SET

**SCR-506-( )**

*Type Modulation:* am  
*Type of Signal:* voice and cw  
*Power Output:*

Voice: 10 to 25 w  
Cw: 50 to 90 w

*Power Requirements:* 12/24-v dc from vehicular storage battery

*Major Units:*

1	DM-42	7" x 4" (dia)	
1	BC-652	12 $\frac{1}{2}$ " x 14 $\frac{5}{8}$ " x 7 $\frac{5}{8}$ "	46.5 lbs
1	BC-653	12 $\frac{1}{2}$ " x 14 $\frac{5}{8}$ " x 25 $\frac{9}{32}$ "	143.0 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-630

AN/VRC-type  
RADIO SET

SCR-508-( )

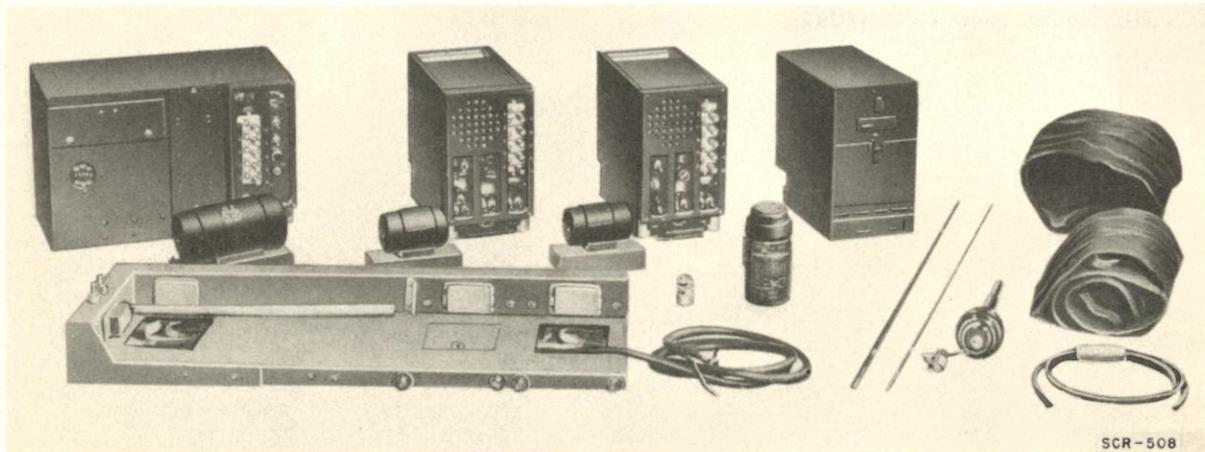
15 March 1962

Cog. Serv: USA FSN: 5820-192-7137 (12 v)  
5820-192-7138 (24 v)

USA Line Item No.: 653100

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	L/Std			

Manufacturer:

**FUNCTIONAL DESCRIPTION:**

Radio Set SCR-508-( ) is a vehicular, medium-range, crystal-controlled, fm (voice) radio-telephone equipment used by armored units.

This equipment consists of two receivers and one transmitter mounted on a common shock mount and provides a total of 20 receiving and 10 transmitting channels. It also provides for operation of the vehicular interphone system. Each receiver and the transmitter provide 80 frequency channels, 10 of which are preset, and are selected by means of a pushbutton mounted on the front panel, of each. A whip-type vehicular antenna, a set of crystals, and related accessories are included.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

*Frequency Range in Mc:* 20.0 to 27.9

*Type of Modulation:* fm

*Type of Signal:* voice

*Power Output:* 25 w

AN/VRC-type  
RADIO SET

**SCR-508-( )**

*Power Requirements:*

Transmitter: 20 amp at 12-v dc from vehicular storage battery, through Dynamotor DM-35; 12 amp at 24-v dc from vehicular storage battery, through Dynamotor DM-37

Receiver: 4 amp at 12-v dc from vehicular storage battery, through Dynamotor DM-34; 2 amp at 24-v dc from vehicular storage battery, through Dynamotor DM-36

*Major Units:*

1	BC-606-H	1/2" x 2 1/4" x 4 1/4"	1.8 lbs
1	FT-237	5 1/2" x 13" x 3 3/8"	26 lbs
2	BC-603	11 1/2" x 10 1/4" x 18"	35 lbs
1	BC-604	11 1/2" x 10 1/4" x 18"	67 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

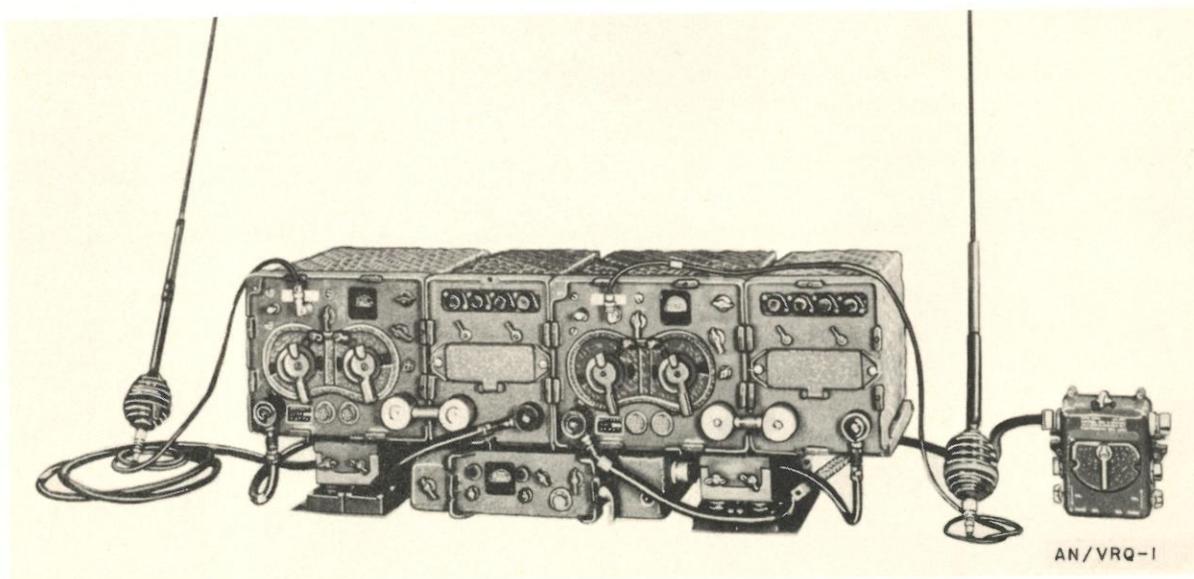
TM 11-600

RADIO SET  
**AN/VRQ-1**

15 March 1962  
Cog. Serv: USA FSN: 5820-222-6404  
USA Line Item No.: 649900

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-B			

Manufacturer:



**FUNCTIONAL DESCRIPTION:**

Radio Set AN/VRQ-1 is a short-range, vehicular, fm (voice) equipment for point-to-point, retransmission, or radio-relay communication within and between armored units.

This set consists of two receiver-transmitters, designated as Set 1 when used as part of the integrated series of radio sets, such as the AN/GRC-3 and AN/GRC-4. A vehicular installation unit, power-supply equipment, and control and accessory units are included.

This equipment can be operated by means of Control Group AN/GRA-6 from a remote point up to a distance of about 2 miles over a telephone pair.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Frequency Range in Mc:* 20.0 to 27.9

*Type Modulation:* fm

*Type of Signal:* voice

*Power Output (Each Transmitter):*

High Power: 9 to 16 w

Low Power: 2 w

RADIO SET

**AN/VRQ-1**

*Power Requirements:* 12/24-v dc from vehicular storage battery

*Major Units:*

1	AN/GRA-6		20.85 lbs
2	PP-109/GR, or	9" x 13" x 8"	33 lbs
2	PP-112/GR	9" x 13" x 8"	33 lbs
2	RT-66/GRC	9" x 13" x 11¼"	35 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

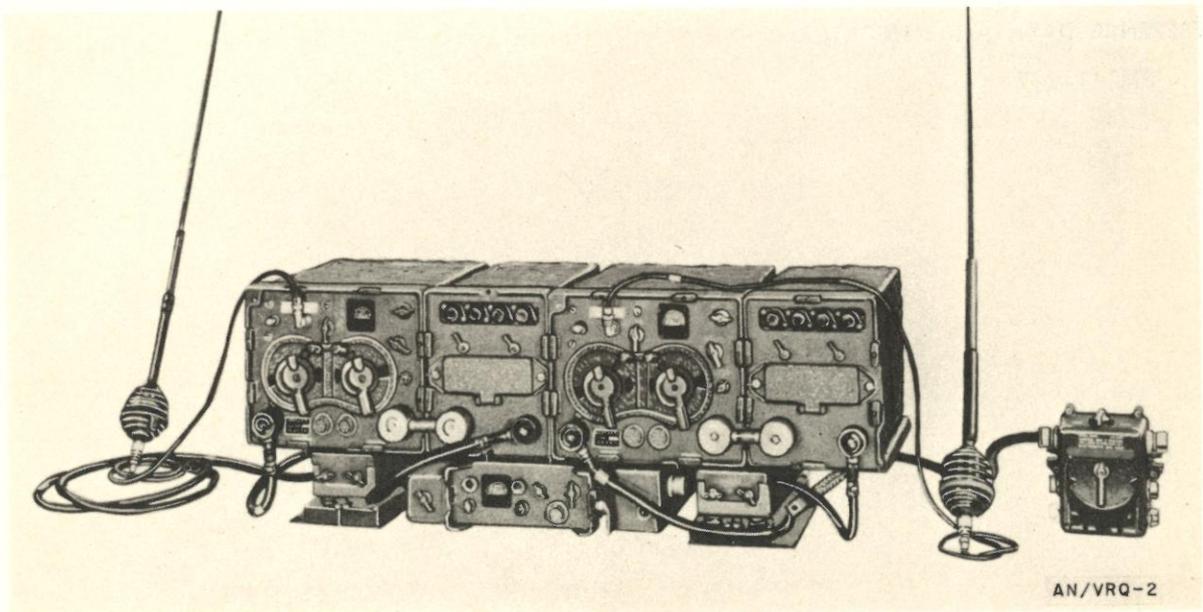
TM 11-287

RADIO SET  
AN/VRQ-2( )

15 March 1962  
Cog. Serv: USA FSN: 5820-193-8838  
USA Line Item No.: 650000

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-B			

Manufacturer:



**FUNCTIONAL DESCRIPTION:**

Radio Set AN/VRQ-2( ) is a short-range, vehicular, fm (voice) equipment for point-to-point, retransmission, or radio-relay communication within and between artillery units.

This set consists of two receiver-transmitters, designated as Set 1 when used as part of the integrated series of radio sets, such as the AN/GRC-5 and AN/GRC-6. A vehicular installation unit, power-supply equipment, and control and accessory units are included.

This equipment can be operated by means of Control Group AN/GRA-6 from a remote point up to a distance of about 2 miles over a telephone pair.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Frequency Range in Mc:* 27.0 to 38.9

*Type Modulation:* fm

*Type of Signal:* voice

**RADIO SET**

**AN/VRQ-2( )**

*Power Output* (Each Transmitter):

High Power: 9 to 16 w

Low Power: 2 w

*Power Requirements:* 12/24-v dc from vehicular storage battery

*Major Units:*

1	AN/GRA-6		20.85 lbs
2	PP-109/GR, or	9" x 13" x 8"	33 lbs
2	PP-112/GR	9" x 13" x 8"	33 lbs
2	RT-67/GRC	9" x 13" x 11 $\frac{1}{4}$ "	35 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

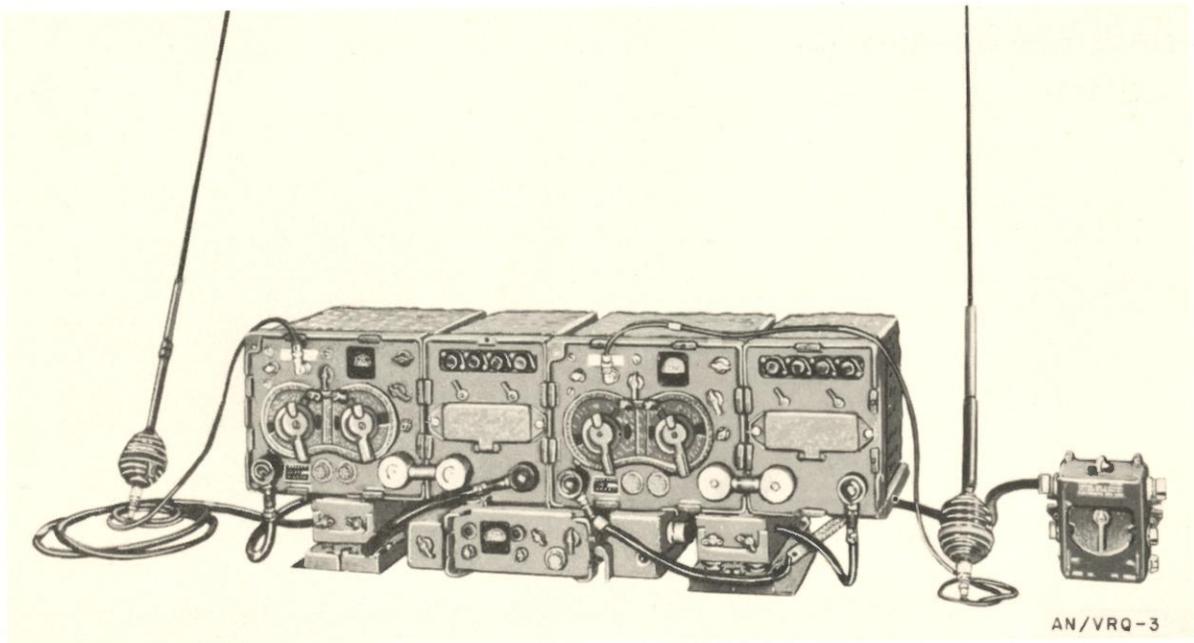
TM 11-287

RADIO SET  
**AN/VRQ-3( )**

15 March 1962  
Cog. Serv: USA FSN: 5820-193-8811  
USA Line Item No.: 650100

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-B			

Manufacturer:



AN/VRQ-3

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/VRQ-3( ) is a short range, vehicular, fm (voice) equipment for point-to-point, retransmission, or radio-relay communication within and between infantry units.

This set consists of two receiver-transmitters designated as Set 1 when used as part of the integrated series of radio sets such as the AN/GRC-7 and AN/GRC-8. A vehicular installation unit, power supply equipment, and control and accessory units are included.

**RADIO SET**

**AN/VRQ-3( )**

This equipment can be operated by means of Control Group AN/GRA-6 from a remote point up to a distance of about 2 miles over a telephone pair.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

**TECHNICAL DESCRIPTION:**

*Frequency Range in Mc:* 38.0 to 54.9

*Type Modulation:* fm

*Type of Signal:* voice

*Power Output (Each Transmitter):*

High Power: 9 to 16 w

Low Power: 2 w

*Power Requirements:* 12/24-v dc from vehicular storage battery

*Major Units:*

1	AN/GRA-6		20.85 lbs
2	PP-109/GR, or	9" x 13" x 8"	33 lbs
2	PP-112/GR	9" x 13" x 8"	33 lbs
2	RT-68/GRC	9" x 13" x 11 $\frac{1}{4}$ "	35 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

TM 11-287

RADIO RECEIVING SET  
**AN/VRR-4**

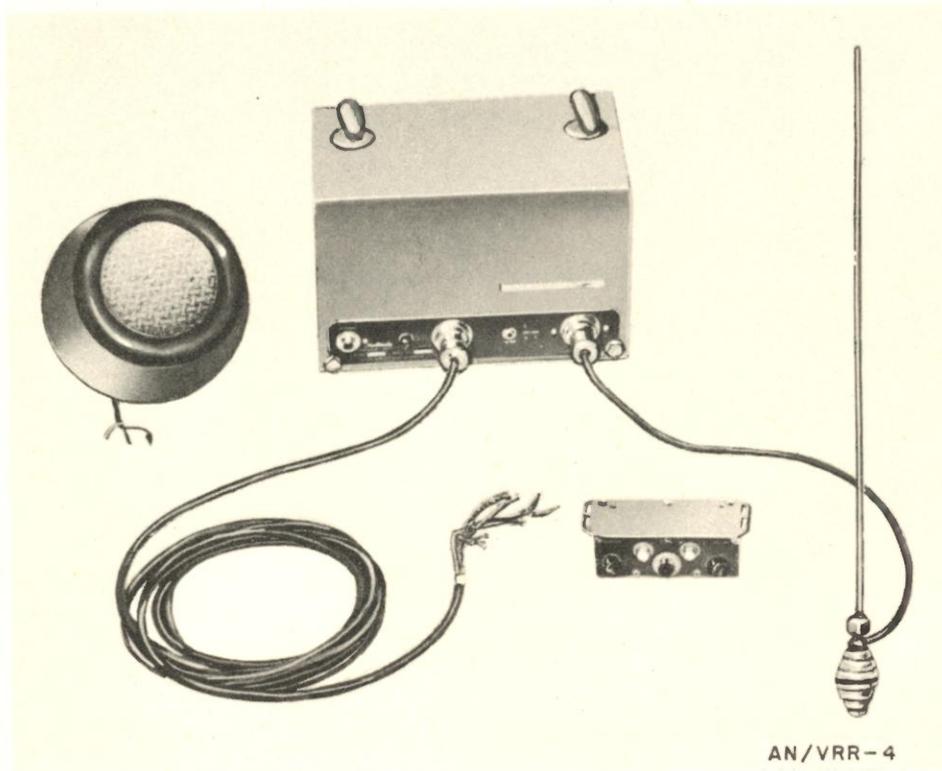
15 March 1962

Cog. Serv: USA FSN: 5820-164-7175

USA Line Item No.: 636280

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-C			

Manufacturer:

**FUNCTIONAL DESCRIPTION:**

Radio Receiving Set AN/VRR-4 is a vehicular, short-range, fm, fixed-frequency, crystal-controlled radio receiver used by military police, guard, and security troops for traffic control and similar communication in the vhf band.

This equipment consists essentially of a commercial (Galvin FMR-13 v), police car radio receiver and loudspeaker, plus accessories.

This set is composed of the receiver components of Radio Set AN/VRC-2 and uses a whip-type vehicular antenna. It is powered by the storage battery of the vehicle in which it is installed.

RADIO RECEIVING SET

**AN/VRR-4**

RELATIONSHIP TO SIMILAR EQUIPMENT:

TECHNICAL DESCRIPTION:

*Frequency Range in Mc:* 30 to 40

*Type Modulation:* fm

*Type of Signal:* voice

*Power Requirements:* 8 amp at 6-v from vehicular storage battery.

*Major Units:*

1 P-8022 (Galvin)

1 FMR-13V (P8028) (Galvin).. 9<sup>5</sup>/<sub>16</sub>" x 14<sup>3</sup>/<sub>4</sub>" x 9<sup>1</sup>/<sub>2</sub>"

TUBES, CRYSTALS, TRANSISTORS:

REFERENCE DATA AND LITERATURE:

## RADIO RECEIVING SET

## AN/VRR-7

15 March 1962

Cog. Serv: USA FSN: 5820-682-2590

USA Line Item No.: 658596

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-A			

Manufacturer: Motorola, Inc

No Illustration Available

**FUNCTIONAL DESCRIPTION:**

Radio Receiving Set AN/VRR-7 is a vhf, fm (voice) equipment used in monitoring and communications applications.

This set consists essentially of a radio receiver with an appropriate power supply, housed in a metal equipment cabinet, and includes either a roof mounted whisker type antenna for hard-top vehicles or a bumper-mounted coaxial antenna for canvas-top vehicles.

It is a vehicular version of Radio Receiving Set AN/FRR-36.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

*Frequency Range in Mc:* 152 to 174

*Type Modulation:* fm

*Type of Signal:* voice

*Power Requirements:*

Power Supply PP-867/U: 1.1 amp at 24-v dc

Power Supply PP-868/U: 2 amp at 12-v dc

Power Supply PP-869/U: 3.7 amp at 6-v dc

*Major Units:*

1	AT-496/G		
1	CY-1150/U	10 <sup>5</sup> / <sub>8</sub> " x 21 <sup>1</sup> / <sub>4</sub> " x 7 <sup>1</sup> / <sub>2</sub> "	14.5 lbs
1	PP-867/U, or	5" x 6 <sup>1</sup> / <sub>4</sub> " x 7"	10 lbs
1	PP-868/U, or	5" x 6 <sup>1</sup> / <sub>4</sub> " x 7"	10 lbs
1	PP-869/U	5" x 6 <sup>1</sup> / <sub>4</sub> " x 7"	10 lbs
1	R-394/U	8 <sup>1</sup> / <sub>2</sub> " x 14 <sup>1</sup> / <sub>2</sub> " x 5 <sup>3</sup> / <sub>4</sub> "	17 lbs

**TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**

TM 11-229

MIL-N-11539



AN/VRR-type  
RADIO RECEIVER**R-108/GRC, -109/GRC, -110/GRC**

15 March 1962

Cog. Serv: USA FSN: R-108/GRC: 5820-503-1258  
R-109/GRC: 5820-503-1413  
R-110/GRC: 5820-503-1254USA Line Item No.: 635660 (R-108/GRC)  
635661 (R-109/GRC)  
635662 (R-110/GRC)

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:	Std-B			
Manufacturer:	Federal Telephone and Radio Corp			

**FUNCTIONAL DESCRIPTION:**

Radio Receivers R-108/GRC, R-109/GRC, and R-110/GRC are small lightweight, frequency-modulated, superhetrodyne-type receivers designed for use in vehicular or ground installations. They provide for the reception of voice modulated fm signals between the range of 20 to 55 megacycles, and are similar except for their operating frequency range, the components that determine the frequency range, and the bias source for the squelch oscillator.

The equipments contain continuously variable tuning; detent selection of three preset frequencies is also included. They may be operated from a storage battery, in conjunction with a plug-in vibrator-type voltage supply, or from an external power source.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:***Frequency Range in Mc:*R-108/GRC: 20 to 28  
R-109/GRC: 27 to 39  
R-110/GRC: 38 to 55*Channel Data:*R-108/GRC: 80  
R-109/GRC: 120  
R-110/GRC: 170*Channel Spacing: 110 kc**Type of Signal: voice or tone**Audio Output:*Loudspeaker: 500 mw  
Earphones: 40 mw*Output Impedance: 600 ohms (unbalanced)**Antenna Type: portable whip**Power Requirements: Power Supply PP-448/GR with 6-v storage battery, Power Supply PP-281/GRC with 12-v storage battery, or Power Supply PP-282/GRC with 24-v storage battery**Major Units:*

1 (of the 3 major equipments)

7 $\frac{1}{4}$ " x 9" x 12 $\frac{13}{16}$ "

20.25 lbs

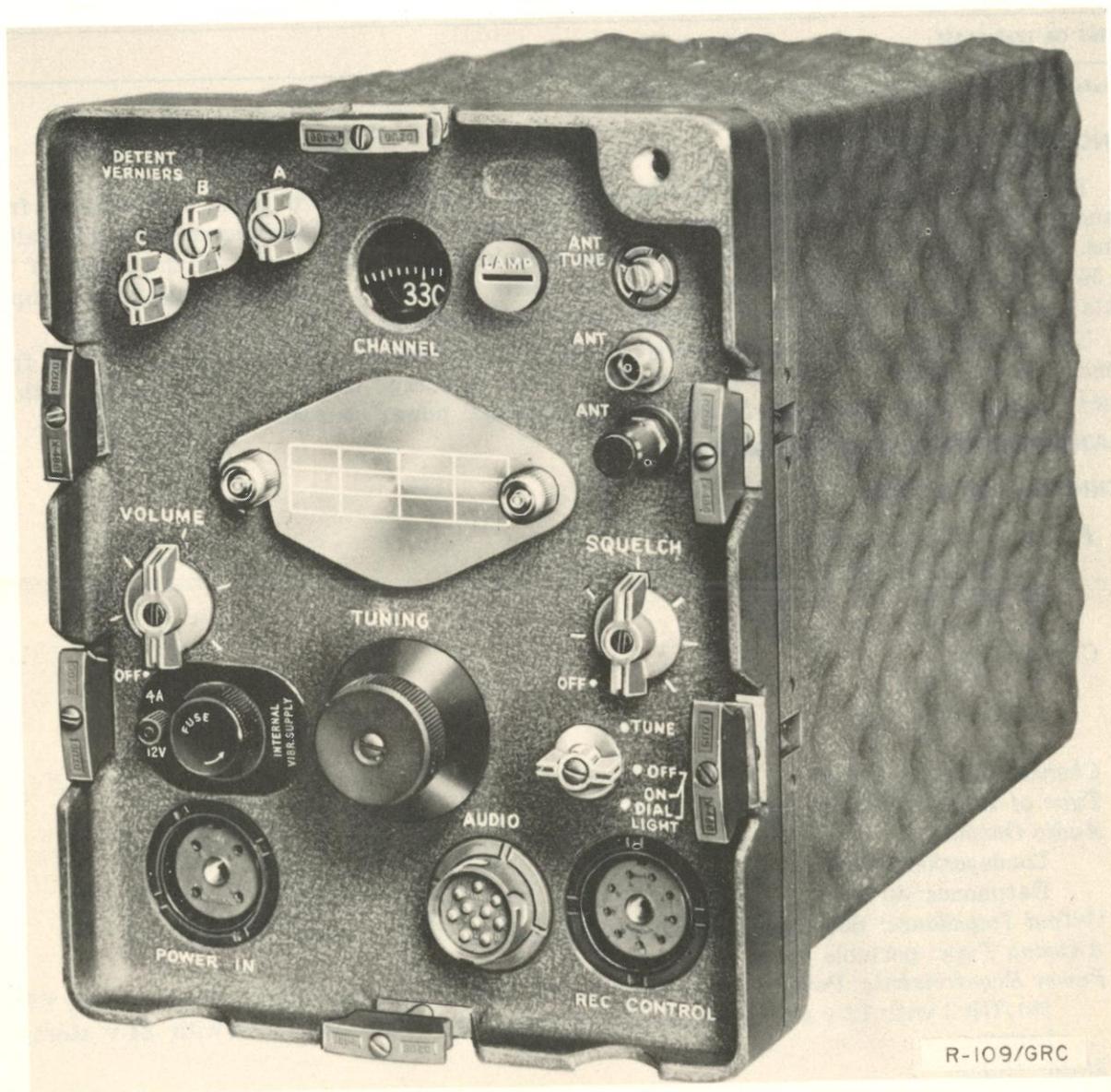
MIL-HDBK-161A/TM11-487A-3/NAVEXOS P-2058/TO 31-3-73

AN/VRC-type  
RADIO RECEIVER

R-108/GRC, -109/GRC, -110/GRC

TUBES, CRYSTALS, TRANSISTORS:  
REFERENCE DATA AND LITERATURE:

TM 11-898



ANTENNA GROUP  
AN/WRA-2(XN-2)

15 March 1962  
Cog. Serv: USN FSN:  
USA Line Item No.:

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:		Pln Std		
Manufacturer:	CKB (28959)			

**FUNCTIONAL DESCRIPTION:**

Antenna Group AN/WRA-2(XN-2) is a telescoping, base-fed, grounded-quarterwave, vertical antenna of the hybrid helix-whip type with remote-control tuning and position-indicating mechanisms. Antenna Group AN/WRA-2(XN-2) is intended for use with Radio Transmitter Set AN/WRT-4(XN-1), (XN-2), or (XN-3) aboard an undersurface vessel. However, with a suitable ground plane and hydraulic system, it can be used in other installations with any transmitter and transmission line having the required electrical characteristics.

The antenna group is capable of radiating the output of any transmitter operating on any frequency between 2 and 32 megacycles and having a power output of not more than 1000 watts continuous or 5000 watts peak (25% duty cycle). The input impedance of the antenna group is variable and permits the matching of a 50 ohm transmission line with a voltage standing wave ratio (vswr) of not more than 1.5 to 1 over most of the frequency range. In no case will the vswr exceed 2.5 to 1. It is possible to match the antenna group to any transmission line having an impedance of from 35 to 150 ohms.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

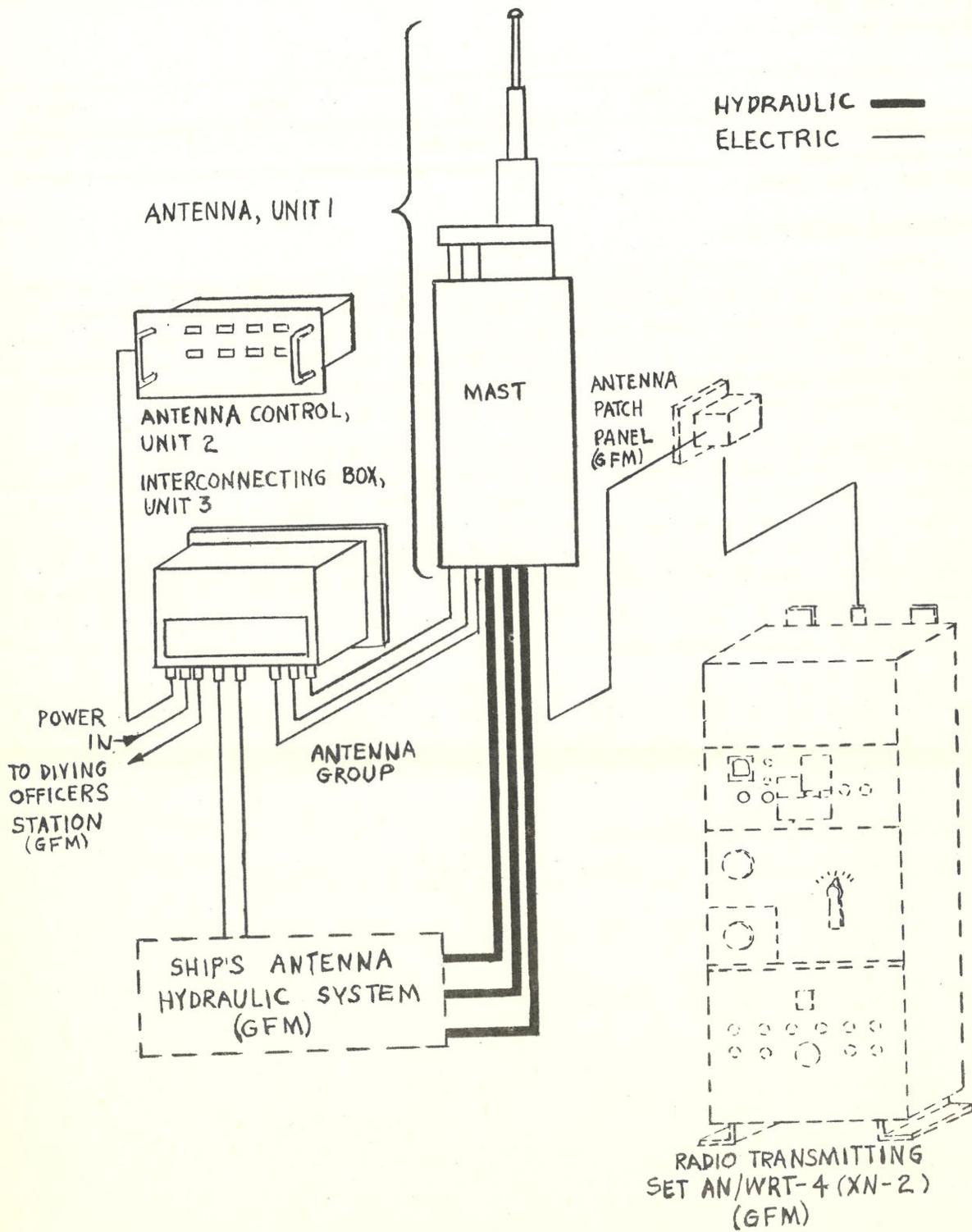
The AN/WRA-2(XN-2) is similar to the AN/WRA-2(XN-1) with the following differences: The AN/WRA-2(XN-1) includes a hydraulic system as part of the equipment supplied; mounts unpressurized in the sail of the undersurface vessel; and its electrical and hydraulic circuits are different. Units are not interchangeable between the two equipments although some assemblies and components are.

**EQUIPMENT REQUIRED BUT NOT SUPPLIED:**

- 1 Radio Transmitting Set AN/WRT-4(XN-1), (XN-2), or (XN-3)
- 9 Interconnecting cables:
  - 1—FSGA-3 (W1)
  - 1—THOF-9 (W3)
  - 1—MHFF-19 (W4)
  - 1—MHFF-14 (W5)
  - 1—TTRSA-6 (W6)
  - 1—WSCA-30 (W8)
  - 1—TSGA-14 (W9)
  - 1—MSCA-10 (W10)
  - 1—RG-17A/U (W11)
- 1 Antenna Hydraulic system
- 1 rf connector (1A1P3)

ANTENNA GROUP

AN/WRA-2(XN-2)



**AN/WRA-2(XN-2)**

**TECHNICAL DESCRIPTION:**

*Frequency range:* 2 to 32 mc

*Rf input power:* 5 kw peak (25% duty cycle), 1 kw continuous

*Input impedance:* 50 ohms (nominal)

*Electrical requirements:* 120 v, 12 amp, 400 cy, 3 phase, ac (delta system, ungrounded)

*Hydraulic requirements:* approx 400 psi; MIL-H-5606A hydraulic fluid for helix hydraulic cylinder. The whip is powered by a transducer using ship's system pressure reduced to 350 psi with MIL-H-5606A fluid.

*Ambient temperature limitations:*

Operating 0° to 50°C (+32° to +122°F)

Nonoperating: -62° to +75°C (-78.8° to +167°F)

How installed: Bolted to ship's mast

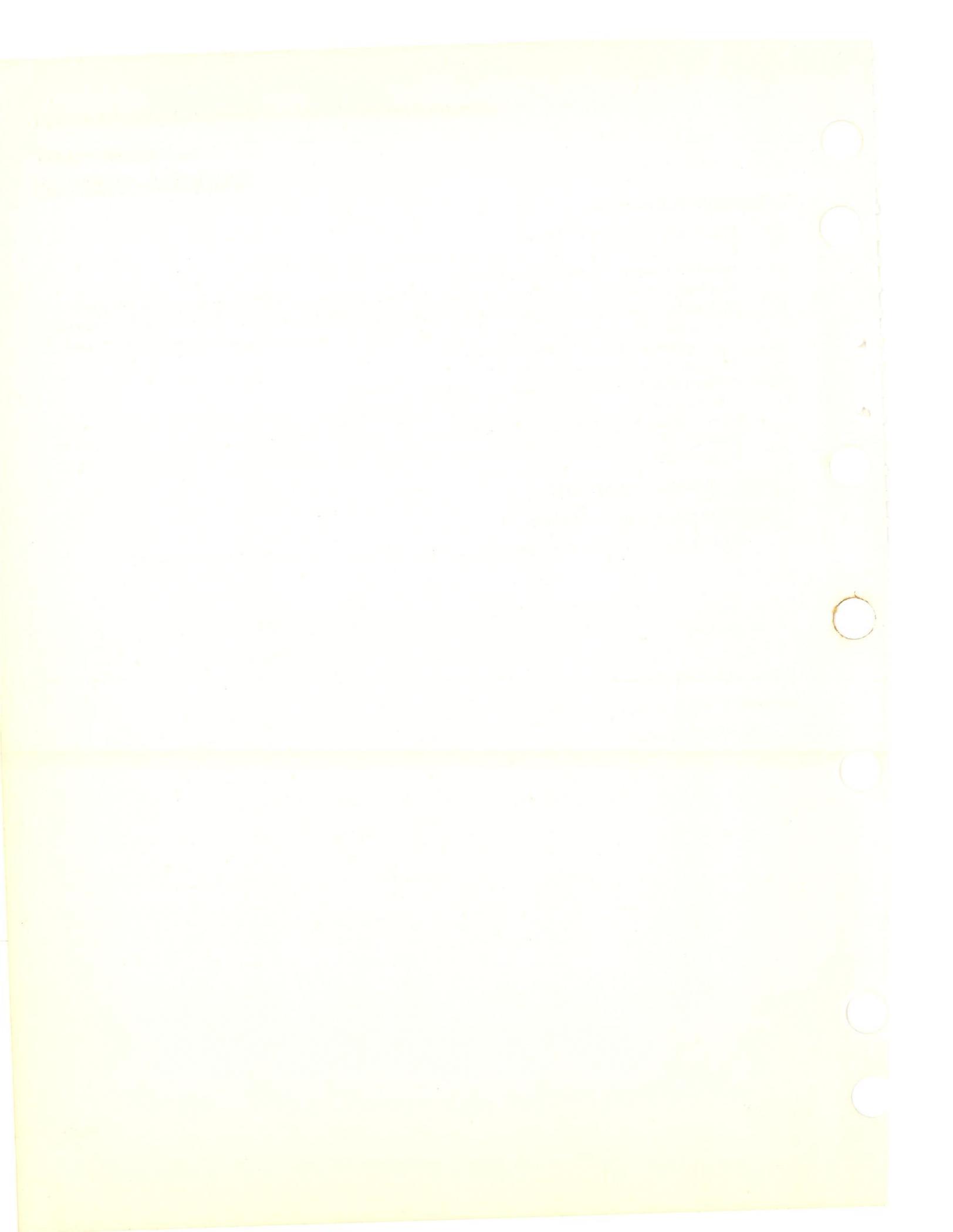
Number of operators required: 1

*Major Units:*

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS XXXXX, Technical Manual for Antenna Group AN/WRA-2(XN-2)



TRANSMITTER GROUP  
**AN/WRA-3(XN-1)**

15 March 1962

Cog. Serv: USN FSN:

USA Line Item No.:

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:		Pln/Std		
Manufacturer:	CKB (82260)			

**FUNCTIONAL DESCRIPTION:**

The AN/WRA-3(XN-1) is a continuous wave (cw) transmitter, designed for 15-watt operation. It is primarily intended for use as an exciter for larger transmitting equipment; however it may also be used independently when coupled to an antenna system with a 50-ohm impedance. It consists of five units housed in a cabinet.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:**

*Frequency Range:* 2 to 32 mc, 5 bands

*Emission:* cw, A1

*Power output:* 15 w

*Operating Power Requirements:* 115 or 230 v ac, 47.5 to 63.0 cps, single phase.

*Major Units:*

1 CY-3022(XN-1)/WRA-3

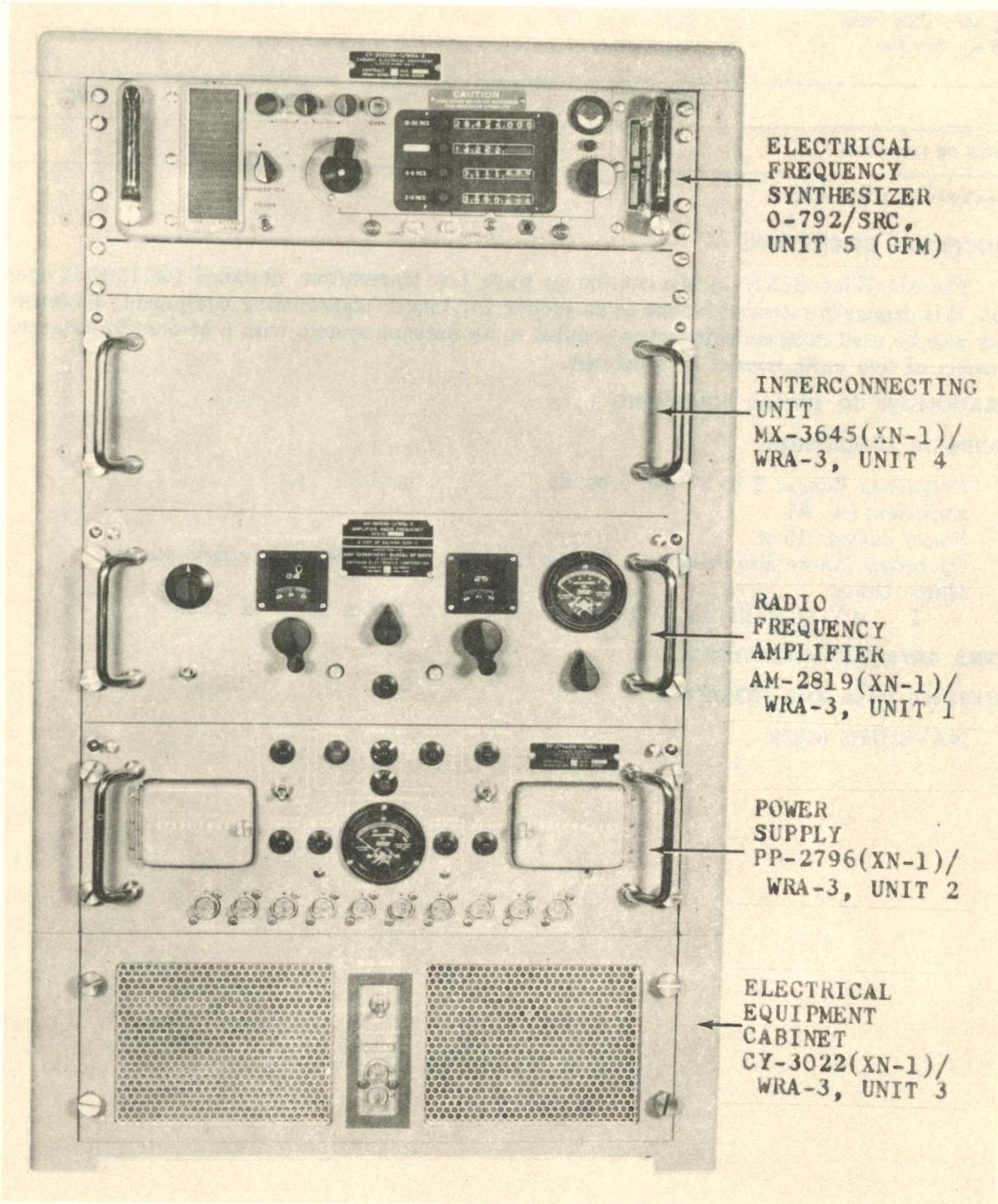
37" x 22.25" x 23.25"

**TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**

NAVSHIPS 94252

TRANSMITTER GROUP

AN/WRA-3(XN-1)



Radio Set  
**AN/WRC-1**

15 March 1962  
 Cog. Serv: USN FSN:  
 USA Line Item No.:

USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:		Std	
Manufacturer: CCPF (95403)			

No Illustration Available

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/WRC-1 is a communication transmitting and receiving system requiring an automatic antenna tuning system for proper operation. The system consists of a receiver, a single sideband exciter, a junction box, and a power amplifier. The inclusion of independent sideband capability makes it possible to transmit and receive different information simultaneously. The exciter may be used to drive any compatible high power linear amplifier; the receiver may be used as a general purpose am or sideband receiver.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

The antenna tuning system generally used with the AN/WRC-1 is the AN/URA-38.

**TECHNICAL DESCRIPTION:**

*Frequency Range:* 2 to 30 mc in 1 kc increments

*Frequency Stability:* 1 part in 10<sup>7</sup> per week

*Modes of Operation:* am, cw, fsk, usb, lsb, isb

*Receiver IF Rejection:* -80 db

*Receiver Image Rejection:* -80 db

*Receiver Audio Output:*

60 mw into 600-ohm balance load

15 mw into 600-ohm unbalanced load

*Receiver Audio Distortion:* less than 1 percent

*Receiver Noise Blanker:* reduces pulse interference

*Receiver Sensitivity:* 1 uv for 10 db signal plus noise/noise

*Receiver Bandwidth:*

ssb-3.2 kc

am, cw-6 kc

*Transmitter Power Output:*

ssb-100 w PEP

am-25 w carrier

cw-50 w

fsk-50 w

*Power Amplifier Output Impedance:* 52 ohms

*Receiver Power Consumption:* 43 w

*Exciter Power Consumption:* 40 w

RADIO SET

**AN/WRC-1**

*Power Amplifier Power Consumption:*

ssb—130 w

am, fsk—150 w

*Operating Power Requirements:* 115 v ac, 48 to 1000 cps, single phase

*Major Units:*

1 R-1051/URR

7" x 17<sup>3</sup>/<sub>8</sub>" x 18<sup>1</sup>/<sub>8</sub>"

25 lbs

1 T-827/URT

7" x 17<sup>3</sup>/<sub>8</sub>" x 18<sup>1</sup>/<sub>8</sub>"

25 lbs

1 AM-3007/URT

7" x 17<sup>3</sup>/<sub>8</sub>" x 15<sup>3</sup>/<sub>4</sub>"

35 lbs

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

RADIO RECEIVING SET  
**AN/WRR-3(XN-1)**

15 March 1962

Cog. Serv: USN FSN:

USA Line Item No.:

	USA	USN	USAF	USMC
<b>STATUS OR TYPE CLASS.:</b>		P/Std		
<b>Manufacturer:</b>	CMX (37695)			

No Illustration Available

**FUNCTIONAL DESCRIPTION:**

The AN/WRR-3(XN-1) is a dual conversion superheterodyne receiver for ashore, surface craft, and submarine installations. The chassis is mounted on slides for ease in servicing. It may be removed from its case and tilted for access to the underside of the receiver or completely removed for servicing. Most parts of the receiver are mounted on printed circuit boards. Each printed circuit board may be removed and replaced with a spare, and the faulty part repaired at a later time, thus keeping the receiver in operation for a maximum period.

**RELATIONSHIP TO SIMILAR EQUIPMENT:****TECHNICAL DESCRIPTION:***Frequency Range:* 14 to 600 mc, 5 band*Reception:* A1, A2, F1*Receiver Output:* two 600-ohm balanced lines and two front panel headphone jacks*Receiver Input:* 50 ohms on low selection; 200 uuf on high selection*Operating Power Requirements:* 105, 115, or 125 v ac, 50 to 60 or 400 cps, single phase*Major Units:*

1 R-/WRR-3(XN-1)

8.75" x 17.25" x 16.75"

69.5 lbs

**TUBES, CRYSTALS, TRANSISTORS:****REFERENCE DATA AND LITERATURE:**

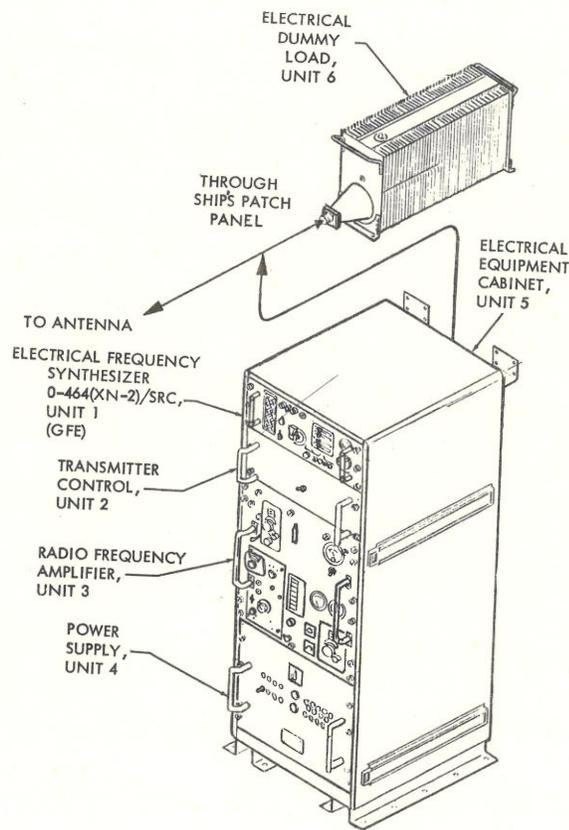
NAVSHIPS 94112



RADIO TRANSMITTING SET  
AN/WRT-4(XN-2)

15 March 1962  
Cog. Serv: USN FSN:  
USA Line Item No.:

	USA	USN	USAF	USMC
STATUS OR TYPE CLASS.:		P/Std		
Manufacturer:	CKB (82260)			



**FUNCTIONAL DESCRIPTION:**

The AN/WRT-4(XN-2) is a high frequency radio transmitter capable of 1 kw of continuous power on A1 emission. It is a lightweight, water-cooled continuous wave (cw) transmitter, primarily designed for submarine installation.

**RELATIONSHIP TO SIMILAR EQUIPMENT:**

Similar to the AN/WRT-4(XN-1)

MIL-HDBK-161A/TM11-487A-3/NAVEXOS P-2058/TO 31-3-73

RADIO TRANSMITTING SET

## AN/WRT-4(XN-2)

### TECHNICAL DESCRIPTION:

*Frequency Range:* 2 to 32 mc, 6 bands

*Emission:* A1 cw

*Impedance:* 50 ohms

*Operating Power Requirements:* 120 v ac, 400 cps, three-phase, 7000 w

*Major Units:*

1 Cabinet Unit 5

55 $\frac{3}{8}$ " x 22 $\frac{5}{8}$ " x 28"

**TUBES, CRYSTALS, TRANSISTORS:**

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 93752

**APPENDIX B**  
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**(THIRD INCREMENT)**

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Custodians:

Army—EL  
Navy—BuShips  
Air Force—AF-85

Preparing Activity:

Army—EL  
MISC-0138

User activities:

Army—MO, MU



