

**INSTRUCTION BOOK**  
for  
**RADIO SET CENTRAL**  
**AN/MRC-35A**

**REPAIR DIVISION**  
**MARINE CORPS SUPPLY CENTER**  
**ALBANY, GA.**

**U. S. MARINE CORPS**

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**Project 54741**

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## ARTIFICIAL RESPIRATION

### GENERAL PRINCIPLES

1. Seconds count! Begin at once! Don't take time to move the victim unless you must. Don't loosen clothes, apply stimulants or try to warm the victim. Start resuscitation! Get air in the lungs! You may save a life!

2. Place the victim's body in a prone position, so that any fluids will drain from the respiratory passages. The head should be extended and turned sideward *never flexed forward*; the chin shouldn't sag, since obstruction of the respiratory passages may occur.

3. Remove any froth or debris from the mouth with your fingers. Draw the victim's tongue forward.

4. Begin artificial respiration. Continue it rhythmically and without any interruption until natural breathing starts or the victim is pronounced dead. Try to keep the rhythm smooth. Split-second timing is not absolutely essential.

5. When the victim starts breathing, or when additional help is available loosen the clothing; remove it, if it's wet; keep the victim warm. Shock should receive adequate attention. Don't interrupt the rhythmical artificial technique for these measures. Do them only when you have help or when natural breathing has started.

6. When the victim is breathing, adjust your timing to assist him. Don't fight his efforts to breathe. Synchronize your efforts with his. After resuscitation, keep him lying down until seen by a physician or until recovery seems certain.

7. Don't wait for mechanical resuscitation! If an approved model is available, use it, but, since mechanical resuscitators are only slightly more effective than properly performed "push-pull" manual technique, *never* delay manual resuscitation for it.

### BACK-PRESSURE ARM LIFT METHOD

1. *Position of Victim.* Place the victim in the prone (face-down) position. Bend his elbows; place one hand upon the other. Turn his face to one side, placing his cheek upon his hands.

2. *Position of Operator.* Kneel on your left or right knee, at the victim's head, facing him. Your knee

should be at the side of the victim's head close to his forearm, your foot should be near his elbow. Kneel on both knees if you find it more comfortable, with one knee on each side of the head. Place your hands on the flat of the victim's back so that their heels are just below the lower tip of his shoulder blades. With the tip of your thumbs touching spread your fingers downward and outward. (See A)

3. *Compression Phase.* Rock forward until your arms are approximately vertical and allow the weight of the upper part of your body to exert a slow, steady, even, downward pressure upon your hands. This forces air out of the lungs. Keep your elbows straight and press almost directly downward on the back. (See B)

4. *Expansion Phase.* Release the pressure, avoid any finish thrust, and commence to rock backward slowly. Place your arms upon the victim's arms just above the elbows, and draw his arms upward and toward you. Apply just enough lift to feel resistance and tension at the victim's shoulders.

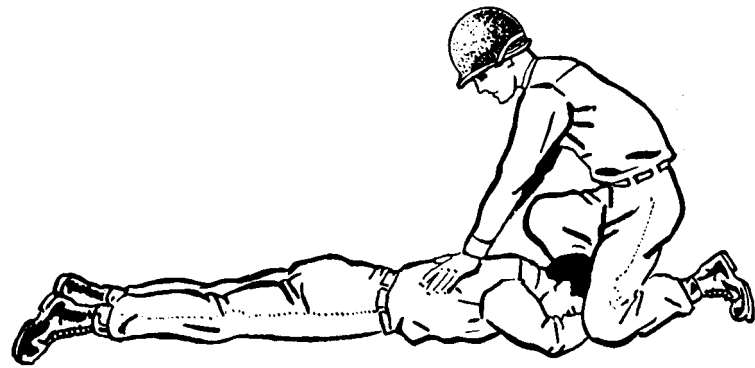
Don't bend your elbows. As you rock backward, the victim's arms will be drawn toward you. (The arm lift expands the chest by pulling on the chest muscles, arching the back and relieving the weight on the chest.) Drop the arms gently to the ground or floor. This completes the cycle. (See C and D). Now, repeat the cycle.

5. *Cycle Timing and Rhythm.* Repeat the cycle 10 to 12 times per minute. Use a steady uniform rate of Press, Release, Lift, Release. Longer counts of about equal length should be given to the "Press" and "Lift" steps of the compression and expansion phases. Make the "Release" periods of minimum duration.

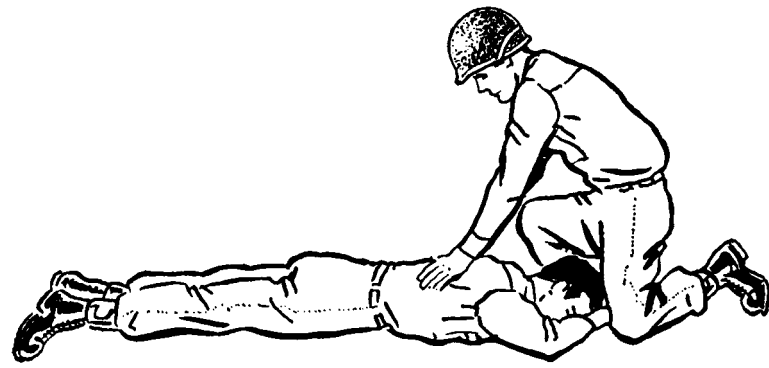
6. *Changing Position or Operator.*

(a) Remember that you can use either or both knees or can shift knees during the procedure, provided you don't break the rhythm. Observe how you rock forward with the back-pressure and backward with the arm-lift. The rocking motion helps to sustain the rhythm and adds to the ease of operation.

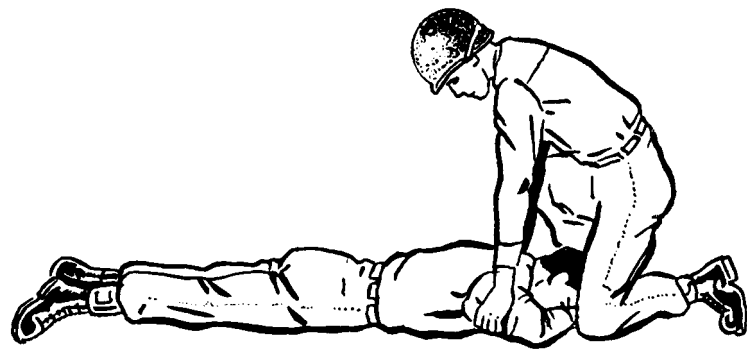
(b) If you tire and another person is available, you can "take turns." Be careful not to break the rhythm in changing. Move to one side and let your replacement come in from the other side. Your replacement begins the "Press-Release" after one of the "Lift-Release" phases, as you move away.



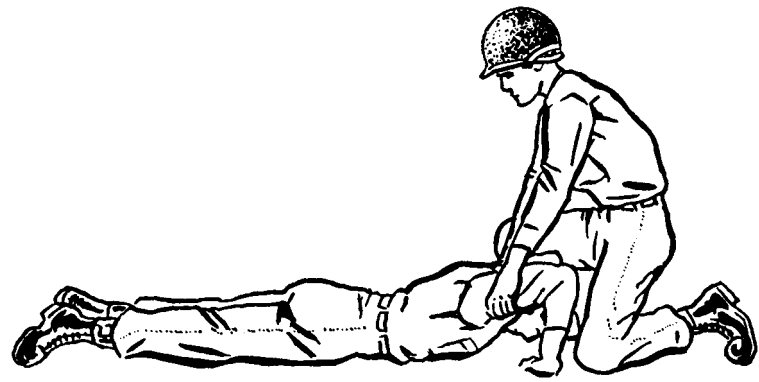
**A** Position of operator and victim



**B** Compression phase



**C** Expansion phase (arm lift)



**D** Expansion phase (arm release)

# **WARNING HIGH VOLTAGE**

is used in the operation of  
this equipment

## **DEATH ON CONTACT**

may result if operating personnel  
fail to observe safety precautions

Be careful not to contact high-voltage connections when working on or near this equipment. Do not touch the antenna when the transmitter is being keyed. Do not add gasoline to the fuel tank unless all equipment is turned off.

### **EXTREMELY DANGEROUS POTENTIALS**

exist in the following units:

RADIO TRANSMITTER T-47/ART-13

RADIO RECEIVER BC-348-(\*)

TERMINAL BOX

DYNAMOTOR UNIT DY-12/ART-13

RECEIVER-TRANSMITTER RT-178/ARC-27

## **DESTRUCTION OF ABANDONED MATERIAL IN THE COMBAT ZONE**

In case it should become necessary to prevent the capture of this equipment, and when ordered to do so, DESTROY IT SO THAT NO PART OF IT CAN BE SALVAGED, RECOGNIZED, OR USED BY THE ENEMY. BURN ALL PAPERS AND BOOKS.

### Means:

1. Explosives, when provided.
2. Hammers, axes, sledges, machetes, or whatever heavy object is readily available.
3. Burning by means of incendiaries such as gasoline, oil, paper or wood.
4. Grenades and shots from available firearms.
5. Burying all debris, where possible and when time permits.
6. Throwing overboard or disposing of in streams or other bodies of water.

### Procedure:

1. Obliterate all nameplates and identifying marks.
2. Smash all receiving and transmitting equipment.
3. Smash keyer, controls, UHF antenna and RF Coil.
4. Chop cables and smash all connectors.
5. Smash generator, regulator and fan belts.
6. Smash all components of the antennas.
7. Burn as much of the equipment as time permits.
8. Bury or scatter all debris.

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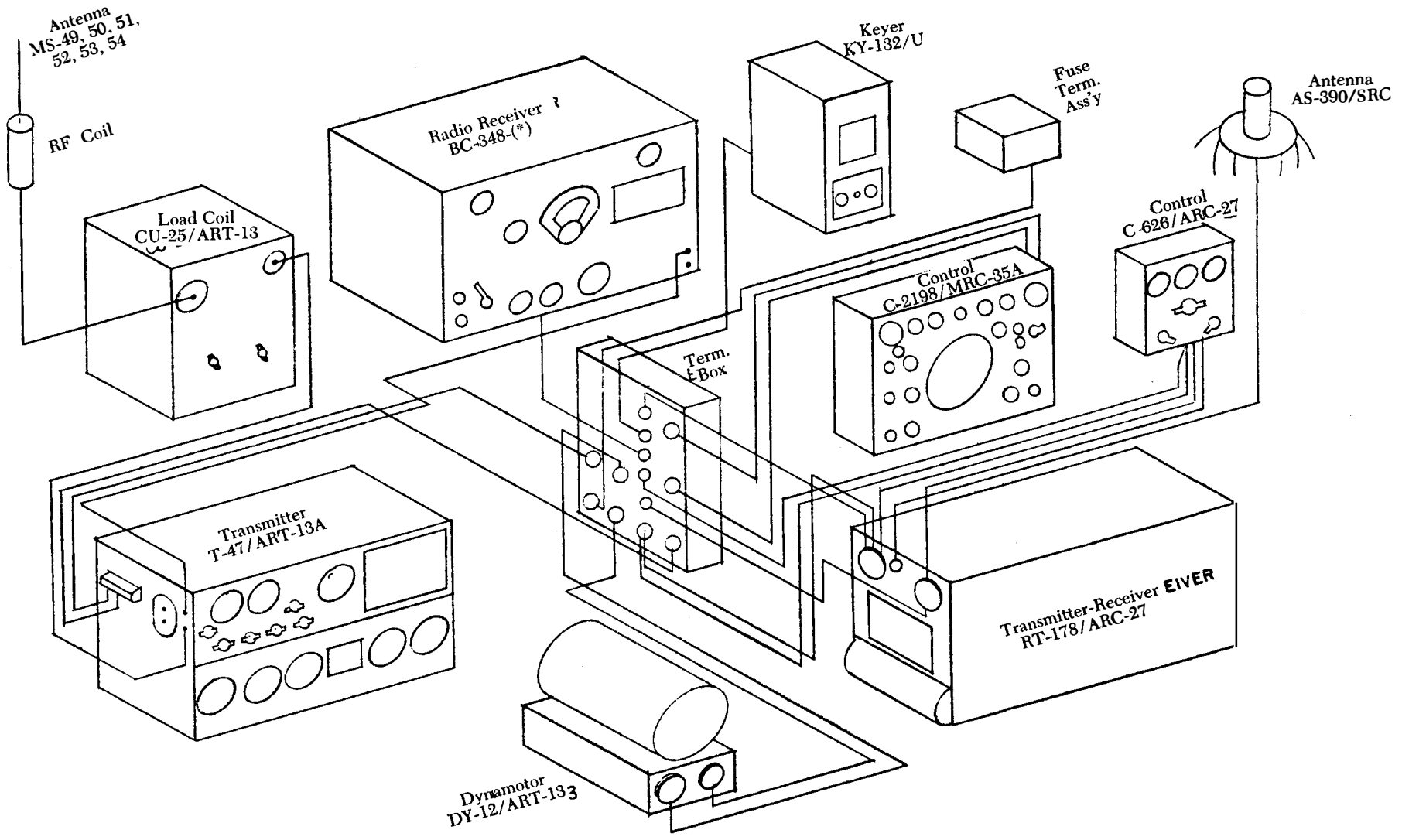


Figure 1-1. Relationship of Components.

## GENERAL INFORMATION

### 1-1. EQUIPMENT ILLUSTRATION.

The Radio Set Central AN/MRC-35A consists of a number of components mounted in a truck, automotive M38A1 (Figure 1-2). The relationship of the components is shown in figure 1-1.

a. Radio Set Control C-2198/MRC-35A, mounted in the dashboard of the vehicle is illustrated in figure 3-1.

b. The Field Strength Meter, furnished as a part of the AN/MRC-35A, is illustrated in figure 4-4.



*Radio Set Central AN/MRC-35A*

### 1-2. FUNCTIONAL DESCRIPTION.

a. The RADIO SET CENTRAL AN/MRC-35A is a mobile radio station for control of tactical aircraft operating in close support of ground forces. The mobile radio equipment will provide forward aircraft control by ground-to-air and ground-to-ground communications. The equipment will net with standard UHF air-borne radio sets and LF, MF, and HF ground AM radio sets. This equipment will provide homing facilities for aircraft, communications with aircraft during convoy

movement, temporary airstrip control, and control of rescue operations. The LF equipment should not be used while the vehicle is in motion.

b. The AN/MRC-35A consists of a Receiver-Transmitter RT-178/ARC-27, Radio Transmitter T-47/ART-13, Radio Receiver BC-348-(\*), Radio Set Control C-2198/MRC-35A, Modification Kit MK-213/MRC, Installation Kit MK-327/MRC-35A, Keyer KY-132/U, Dynamotor DY-12/ART-13 and associated controls and equipment.

**1-3. EQUIPMENT MODIFICATION.**

Modifications to certain components were necessary in order to adapt them for installation in the M38A1 vehicle. Modifications accomplished are listed as follows:

a. RADIO TRANSMITTER T-47/ART-13.—Purpose of modification: Under severe road conditions, the Radio Transmitter T-47/ART-13 may move to such an extent that the back of the radio case may strike the back of the cabinet CY-2018/MRC-35A. The installation of two rubber bumpers on the rear of the radio case has been accomplished to prevent this movement and prevent damage to the case.

b. KEYER KY-132/U.—Purpose of modification: Difficulty in the adjustment of the keyer was experienced during original usage. The following modifications were made to implement proper adjustment:

- (1) Drilled four Allen set screw heads and provided lock wires to secure screws in the coding wheel.
- (2) Painted red indicator line on stop cam, as shown, item 4, figure 3-1, of Instruction Book NAVMC ELECT-2001 (Keyer KY-132-U), in order to comply with adjustments outlined in the instruction book.

c. RADIO RECEIVER BC-348(\*).—Purpose of modification: To enable netting the Radio Transmitter T-47/ART-13 with a signal received on Radio Receiver BC-348(\*).

(1) The modification of the receiver consists of the installation of a single pole double throw toggle switch JAN Type ST-13D. This switch has two positions. The NET position permits the receiver to operate while the transmitter is being keyed. The SEND position allows the receiver to be disabled when the transmitter is keyed. (See figure 4-5.)

d. INSTALLATION KIT MK-327/MRC-35A.

(1) CABINET CY-2017/MRC-35A.—The right-hand or curbside cabinet is modified by removing the stuffing tube located on the top of the cabinet and installing an Adapter Connector UG-701/U on the rear.

(2) CABINET CY-2018/MRC-35A.—The left-hand or roadside cabinet is modified by mounting a feedthru insulator on the rear of the cabinet. The bottom stuffing tube which is not used has a flat plate inside to block the tube.

(3) CABINET CY-2019/MRC-35A.—The control cabinet is modified by the addition of two stuffing tubes. Four machine screws welded to inside back of the cabinet permit the mounting of terminal strips.

e. ANTENNA SHUNT CAPACITOR CU-24/ART-13.—Purpose of modification: It was necessary to remove the three capacitors from the original mounting plate and mount in line on a replacement plate due to space limitations.

f. TRUCK M38A1.—The truck has been modified by installation of Modification Kit MK-213/MRC.

(1) This provides a 70 ampere generator and voltage regulator in place of the vehicle's standard components.

(2) The replacement generator requires flushing with fresh water as soon as possible after fording in salt water.

**1-4. QUICK REFERENCE DATA**

a. Due to the number of individual component units used in connection with the Radio Set Central AN/MRC-35A, a number of technical manuals and instruction books are included. Table 1-1 lists the instruction books or technical manuals used with each individual component.

**TABLE 1-1. INSTRUCTION BOOKS AND TECHNICAL MANUALS SUPPLIED**

AN/MRC-35A COMPONENT PART	TECHNICAL MANUAL OR INSTRUCTION BOOK
Antenna Assembly AS-390/SRC	Instruction Book NAVSHIPS 91338
Antenna Loading Coil CU-25/ART-13	AN 08-30ART13-5
Antenna Shunt Capacitor CU-24/ART-13	TM 11-692C-1 & 2
Control Group AN/GRA-6	TM 11-5038
Control, Radio Set C-2198/MRC-35A	Instruction Book AN/MRC-35A
Dynamotor DY-12/ART-13	AN 08-30ART13-5
Installation Kit MK-327/MRC-35A	Technical Manual NAVMC ELECT-2020
Keyer KY-132/U	Instruction Book NAVMC ELECT-2001
Mast AB-370/G	Instruction Book AB-370/G
Modification Kit MK-213/MRC	Instruction Book MK-213/MRC
Oscillator O-16/ART-13	TM 11-692C-1 & 2
Radio Receiver BC-348-J, N, Q	TM 11-692D
Radio Receiver BC-348-H, K, L, R	TM 11-692D and MCSC Albany Supplement
Radio Set Control C-626/ARC-27	TM 11-692C-1 & 2
Radio Transmitter T-47/ART-13	TM 11-692B-1 & 2
Receiver-Transmitter RT-178/ARC-27	TM 11-692C-1

b. Table 1-2 is a quick reference chart indicating the power required, transmitter and receiver outputs, frequency ranges, etc. of each component unit of the

AN/MRC-35A. Additional technical data may be obtained from technical manuals or instruction books as listed in table 1-1.

**TABLE 1-2. ELECTRICAL CHARACTERISTICS OF AN/MRC-35A COMPONENTS**

Component of AN/MRC-35A	Frequency	Types of Emission or Reception	Receiver or Trans Output	Power Requirement at 24 V DC
Radio Transmitter Set AN/ART-13	2mcs to 18.1 mcs 200kc-600kc	CW-MCW-Voice Ampl Mod	200kc-4 watts 4mcs-60 watts 9mcs-90 watts 18.1mcs-65 watts	Max 480 watts
Radio Set AN/ARC-27	225mcs-399mcs	MCW-Voice Ampl Mod	Trans—9 watts into a 50 ohm load Rec.—.05 watts audio into 300 ohm resistive load with RF input of 5 microvolts, 30% modulation a/1000 cycles	Max 380 watts
Radio Receiver BC-348-(*)	200kc-18mcs	CW-Voice Ampl Mod		60 watts
Keyer KY-132/U				70 watts

**1-5. EQUIPMENT LISTS**

a. The equipment not supplied with the AN/MRC-35A is listed in table 1-3.

**TABLE 1-3. RADIO SET CENTRAL AN/MRC-35A, EQUIPMENT REQUIRED BUT NOT SUPPLIED**

Quantity Per Equip	NOMENCLATURE		REQUIRED USE
	NAME	DESIGN.	
2	Headset Microphone Assembly	AN/URA-2	Aural monitoring of receivers Modulation of transmitters

b. Equipment components and accessories supplied are listed in table 1-4.

TABLE 1-4. EQUIPMENT COMPONENTS AND ACCESSORIES  
SUPPLIED

Qty.	Description	Length	Width	Height	Weight
1	Adapter, Antenna (MS-44 to AS-390)	7	1½	2½	
1	Adapter, Connector, UG-567A/U	1¼	1¼	¾	
1	Adapter, Connector UG-565A/U	1½	¾	⅝	
1	Adapter, Connector UG-701/U	1½	1	1	
1	Antenna AS-390/SRC (Includes)	23	23	16	3.625
2	Instruction Books NAVSHIPS 91338	11	8½	3/16	1.3
1	Bag BG-176	66	36	½	
1	Base Mast MP-57	12-11/16	4½	4½	
1	Cable Assembly, Power, Electrical W-116	12' 9"			
1	Cable Assembly, Power, Electrical W-117	8' 7½"			
1	Cable Assembly, Power, Electrical W-118	28			
1	Cable Assembly, Power, Electrical W-119	12' 10"			
1	Cable Assembly, Power, Electrical W-120	47			
1	Cable Assembly, Power, Electrical W-121	39			
1	Cable Assembly, Power, Electrical W-122	79¼			
1	Cable Assembly, Radio Frequency W-123	48			
1	Cable Assembly, Radio Frequency W-124	74			
1	Cable Assembly, Radio Frequency W-125	70'			
1	Cable Assembly, Special Purpose, Electrical W-126	8' 10"			
1	Cable Assembly, Special Purpose, Electrical W-127	23¾			
1	Cable Assembly, Special Purpose, Electrical W-128	44			
1	Cable Assembly, Special Purpose, Electrical W-129	11' 3"			
1	Cable Assembly, Special Purpose, Electrical W-130	11' 1"			
1	Coil, Radio Frequency	13½	2½	2½	
1	Control, Radio Set C-2198/MRC-35A	14¾	9	4¼	
1	Control Group AN/GRA-6 (Includes)				
1	Bag CW-189/GR	11	10⅝	7¾	2½
2	Book, Instruction	11	8½	⅙	0.5
1	Handset H-33E/PT	7⅞	3	2-1/16	1⅞
1	Local Control C-434/GRC	10⅞	8¾	3½	10½
1	Remote Control C-433/GRC	8¾	7-3/32	3½	7
1	Cord Assembly, Electrical W-131	37			
1	Cord Assembly, Electrical W-132	10' 3"			
1	Cover, Electrical Connector MX-1142/U	13/16	¾	¾	
1	Cover, Fuse Assembly	5⅞	3	2	
1	Cover, Mast Base BG-67				
1	Fuse Cartridge 60 amp 32 v Littlefuse 513060	1½	13/32	13/32	
1	Guy Plate	3	3	⅙	
3	Guy 20'	20'			
1	Handset H-33E/PT	7⅞	3	2-1/16	1⅞
2	Headset MHS-11 (Includes)				
1	Cord CD-307	65	½	½	
1	Headset Navy type 49507	27	5⅝	2½	
2	Instruction Book AN/MRC-35A	11	8.5	¼	
1	Installation Kit MK-327/MRC-35A (Includes)				
1	Cabinet CY-2017/MRC-35A	35¼	19¾	30½	
1	Cabinet CY-2018/MRC-35A	35¼	19¾	27	
1	Cabinet CY-2019/MRC-35A	16½	11½	5¾	
1	Case CY-2016/MRC-35A	35	20¼	11⅝	
2	Technical Manual MK-327/MRC-35A				
	NAVMC-ELECT-2020	11	8.5	⅙	0.4
4	Insulator Strain IN-86	4¼	¾	¾	
1	Key, Telegraph J-37	5-3/16	2⅞	1	
1	Keyer KY-132/U (Includes)	10⅞	4-11/16	8¼	14
2	Instruction Book NAVMC-ELECT-2001	11	8.5	½	0.5
2	Lead, Electrical W-133, 134	35			
1	Lead, Electrical 8' long W-135	96			
1	Lead, Electrical 40' long W-136	40'			
1	Lead, Electrical 2' 1" W-140	25			
1	Lead, Electrical 6½" W-141	6½			
1	Lead, Electrical 3' 2" W-142	38			
1	Lead, Electrical 9" W-143	9			
2	Lead, Electrical 3½" W-144, 145	3½			
1	Lead, Electrical 2' 11" W-146	35			
1	Mast AB-370/G (Includes)				
1	Antenna Mast Plate MX-1592/G	7	7	¼	1.25
1	Antenna Support CW-332/G	14	9	5	4.5
4	Guy MX-382/GRA-4	31'			0.8
4	Guy MX-1591/G 31'	31'			0.8
6	Guy Fastener (2 spare) MX-379/U	6	1¼	1	0.2
1	Halyard MX-1593/U	75'			1.5
1	Hammer HM-1	16	4½	1½	2.5
2	Instruction Books AB-370/G	11	8½	⅙	0.2
1	Mast Base AB-154/U	18¾	2-9/32	1⅞	1.25
5	Mast Section (1 spare) MS-44	5' 6"	1.615	1.615	3.0

Qty.	Description	Length	Width	Height	Weight
6	Stake (2 spare) GP-101/U	15¾	1¼	1¼	1.0
4	Wood Stake	30	1½	1½	2.0
1	Mast Section MS-49	38½	½	½	1
1	Mast Section MS-50	39¼	½	½	1
1	Mast Section MS-51	39-5/16	½	½	1
1	Mast Section MS-52	39½	½	½	1
1	Mast Section MS-53	39¾	½	½	1
1	Mast Section MS-54	39¾	½	½	1
1	Meter, Field Strength	9½	3-11/16	3-3/16	3
2	Microphone, Carbon T-17E	5¾	2⅝	2⅝	1.0
1	Modification Kit MK-213/MRC (Includes)				
2	Belt, V				
1	Generator, Direct Current	12-9/32	6-9/16	6-9/16	62
2	Instruction Book MK-213/MRC	11	8.5	¼	0.5
1	Regulator, Current and Voltage	9	6¼	5⅞	9.4
1	Voltmeter				
1	Mounting FT-154	18	8½	1⅜	3.84
1	Radio Set AN/ARC-27 (Includes)				
1	Control, Radio Set C-626/ARC-27	9-9/16	5½	6⅜	9
2	Maintenance Instructions TM 11-692C-2	11	8½	½	0.7
1	Mounting MT-821/ARC-27	6-11/16	6½	6-11/16	0.6
1	Mounting MT-822/ARC-27	19¾	11⅞	2⅜	4
1	Receiver-Transmitter RT-178/ARC-27	27⅞	11¼	12⅜	70.5
1	Radio Transmitting Set AN/ART-13 (Includes)				
1	Antenna Loading Coil CU-25/ART-13	11-1/16	10	9⅜	9.75
1	Antenna Shunt Capacitor CU-24/ART-13 (Modified)	5	3.9	2.0	1.75
1	Dynamotor Unit DY-12/ART-13	13.2	8.05	7.2	28
2	Maintenance Instructions TM 11-692B-1	11	8.5	0.5	0.7
1	Mounting Base MT-164/ART-13	11.2	7	1.3	1.1
1	Mounting Base MT-284/ART-13	20.8	15	2.5	3
1	Mounting Plate MT-283/ART-13	20.9	13.2	1.5	1.6
2	Operating Instructions TM 11-692B-2	11	8.5	0.5	0.7
1	Oscillator O-16/ART-13	9.7	5.4	6.4	4
1	Receiver, Radio BC-348(*) (Includes)	18	10½	9½	38
2	Technical Manual TM 11-692D	11	8.5	¼	0.5
2	Reel, Wire RL-29	11½	5½	½	2
1	Rod, Ground	54	½	½	
3	Stake GP-101/U	15¾	1¼	1¼	1.0
1	Strap, Web, 16" long	16	1	¼	
1	Truck, Automotive M38A1				
1	Wire, Electrical 400' long W-137	400'			2.0

Note: \* May be BC-348 Model H, J, K, L, N, Q or R.

Note: Dimensions are in inches unless otherwise indicated.

c. Spare parts for the Radio Set Central AN/MRC-35A and its components are supplied as shown in Table 1-5.

**TABLE 1-5, SPARE PARTS SUPPLIED FOR RADIO SET CENTRAL AN/MRC-35A AND ITS COMPONENTS**

SPARE PARTS FOR RADIO SET CENTRAL AN/MRC-35A

- 1 Adapter, Connector UG-567A/U
- 1 Adapter, Connector UG-565A/U
- 2 Belt, Fan
- 10 Fuse, Cartridge 60 amp 32 v Littlefuse 513060
- 1 Guy Plate
- 1 Mast Section MS-49
- 1 Mast Section MS-50
- 1 Mast Section MS-51
- 1 Mast Section MS-52
- 1 Mast Section MS-53
- 1 Mast Section MS-54

MAINTENANCE PARTS FOR ANTENNA ASSEMBLY AS-390/SRC

- 1 Adapter, Connector
- 1 Contact, Connector

- 1 Insulator, Bushing
- 1 Insulator, Washer
- 2 Insulator, Spacer

SPARE PARTS FOR DYNAMOTOR DY-12/ART-13

- 1 Brush, Input Assembly, Positive
- 1 Brush, Input Assembly, Negative
- 1 Brush, Low Voltage Output Assembly, Positive
- 1 Brush, Low Voltage Output Assembly, Negative
- 1 Brush, High Voltage Output Assembly, Positive
- 1 Brush, High Voltage Output Assembly, Negative
- 5 Fuse, Cartridge 1 amp 250 v

MAINTENANCE PARTS FOR KEYER KY-132/U

- 1 Brush Set, Electrical Contact
- 10 Fuse, Cartridge 5 amp 32 v
- 2 Lamp Incandescent 28 v .17 amp
- 2 Spring, Helical Compression

SPARE PARTS FOR OSCILLATOR O-16/ART-13

- 1 Electron Tube 1625



SPARE PARTS FOR RADIO RECEIVER BC-348  
MODELS J, N, AND Q

- 1 Brush and Spring, Low Voltage Output, Positive
- 1 Brush and Spring, Low Voltage Output, Negative
- 2 Brush and Spring, High Voltage Output
- 1 Electron Tube 6K6GT
- 1 Electron Tube 6SA7
- 1 Electron Tube 6SJ7
- 2 Electron Tube 6SK7
- 1 Electron Tube 6SR7
- 1 Electron Tube 991
- 5 Fuse, Cartridge 5 amp 32 v
- 1 Lamp, Incandescent LM-27

SPARE PARTS FOR RADIO RECEIVER  
MODELS H, K, L, AND R

- 1 Brush and Spring, Low Voltage Output, Positive
- 1 Brush and Spring, Low Voltage Output, Negative
- 2 Brush and Spring, High Voltage Output
- 1 Electron Tube 6B8
- 1 Electron Tube 6C5
- 1 Electron Tube 6F7
- 1 Electron Tube 6J7
- 1 Electron Tube 6K6GT
- 2 Electron Tube 6K7
- 1 Electron Tube 991
- 5 Fuse, Cartridge 5 amp 32 v
- 1 Lamp, Incandescent LM-27

SPARE PARTS FOR RADIO TRANSMITTER  
T-47/ART-13

- 1 Electron Tube 6V6
- 1 Electron Tube 12SA7
- 1 Electron Tube 12SJ7
- 1 Electron Tube 12SL7GT
- 1 Electron Tube 811
- 1 Electron Tube 813
- 1 Electron Tube 837
- 1 Electron Tube 1625
- 1 Lamp, Incandescent LM-38

SPARE PARTS FOR RECEIVER-TRANSMITTER  
RT-178/ARC-27

- 3 Electron Tube 6J4
- 4 Electron Tube 6AG5
- 4 Electron Tube 12AT7
- 4 Electron Tube 6BA6/5749
- 2 Electron Tube 6AL5W/5726
- 1 Electron Tube 6AQ5/6005
- 1 Electron Tube 2C43
- 1 Electron Tube 2C39A
- 1 Electron Tube 829B
- 1 Electron Tube 6AK5W/5654
- 1 Brush set, Continental E Co, Electrolux or Winco (Includes)
- 6 Brushes

SPARE PARTS FOR RADIO SET CONTROL  
C-2198/MRC-35A

- 2 Lamp, Incandescent, LM-38

### 1-6. EQUIPMENT SIMILARITIES

Various models of equipment have been used to fabricate the Radio Set Central AN/MRC-35A as follows:

a. DYNAMOTOR UNIT.—Models DY-11/ART-13, DY-12/ART-13 and DY-17/ART-13 are mechanically and electrically interchangeable. (See TM 11-692B-2)

b. RADIO RECEIVER BC-348-(\*).—Models BC-348-J, N and Q are mechanically and electrically interchangeable. Models BC-348-H, K, L and R are mechanically and electrically interchangeable. All models listed are mechanically and electrically interchangeable. There is considerable difference in the internal wiring and parts used between the two groups of receivers including the electron tube complement which is completely different, but this does not affect the external wiring or mounting of the receiver. For details of the wiring and parts differences, see TM 11-692D and attached supplement provided with those equipments containing the BC-348-R.

c. SPECIAL NOTICE.—The receiver models throughout this book when mentioned collectively are indicated by an asterisk as follows: Radio Receiver BC-348-(\*).

## INSTALLATION

**2-1. UNPACKING AND HANDLING.**

No unusual precautions are necessary in unpacking the equipment. It is suggested that the fan belts supplied as a maintenance part be retained in the spare parts cabinet CY-2016/MRC-35A. The fan belts are unusual as they are not standard and may be difficult to replace.

**2-2. SITE SELECTION.**

For efficient operation of Radio Set Central AN/MRC-35A, the best available site should be chosen. Where possible, choose a flat, well-drained, elevated location for the installation of the radio set. Signals from the AN/MRC-35A have a greater range if the antenna is high and clear of hills, buildings, cliffs, densely wooded areas, and other obstructions. Depressions, valleys and other low places are poor locations for radio reception and transmission because the surrounding high terrain absorbs RF energy. Weak or otherwise undesirable signals may be expected if the radio set is operated under or close to steel bridges, underpasses, power lines, buildings or power units. Normally, transmission over water is better than over land. In locating the antenna, avoid obstructions which are about two or three degrees above the horizontal plane of the antenna in the direction of desired transmission. This is approximately 200 to 300 feet at a distance of one mile from the antenna.

**2-3. POWER REQUIREMENTS AND DISTRIBUTION.**

The vehicle generator of the AN/MRC-35A is replaced by a heavy duty generator that is capable of producing up to 70 amps of current. No auxiliary generator sets are required.

**2-4. INSTALLATION LAYOUT.**

The Radio Set Central AN/MRC-35A is supplied to the using activity with all interconnecting cables installed.

a. Operation of the Receiver-Transmitter RT-178/ARC-27 requires installation of Antenna Assembly AS-390/SRC with Mast AB-370/G and Mast Adapter (MS-44 to AS-390/SRC). The complete mast is not always used in the operation of the AN/MRC-35A. Its use is dependent upon the terrain and the line of sight path requirement for proper transmission and reception. If height is a requirement, the complete mast can be used. (See Instruction Book for Mast AB-370/G.) If height is not a requirement, one or two sections of the mast, as necessary, may be utilized and mounted on the vehicle mast bracket. (See figure 2-4.)

b. Radio Transmitter T-47/ART-13 and Radio Receiver BC-348-(\*) antenna consists of Mast Base MP-57A, Mast Sections MS-49 through MS-54, inclusive, with the RF Coil (used at low frequencies, 200 to 600 KCS), placed between sections MS-52 and MS-53. Normally, the spring base on the MP-57A will support the six sections of antenna and the RF Coil; however, three Guys, Guy Plate, and three Stakes GP-101/G are supplied to support the antenna when required. The guy plate is to be installed between RF Coil and Mast Section MS-52. (See figure 2-1.)

Using activities are cautioned against operating the transmitter at frequencies between 200 KCS and 600 KCS *without* the RF Coil in the antenna. *This practice is dangerous and will damage equipment.*

**2-5. INSTALLATION POINTERS.****a. TYPICAL ANTENNA INSTALLATION.**

(1) The Radio Set Central AN/MRC-35A is supplied with 400 feet of antenna wire in addition to Mast AB-370/G to be used as a fixed station antenna installation when required. One end of the antenna is to be connected to Antenna Halyard MX-1593 of Mast AB-370/G using Strain Insulator IN-86. The remaining end of the antenna can be connected to a guyed Lance Pole, PO-2, or equivalent. Connection to the lance pole should be made by securing an insulator to the top of the pole, the antenna wire to be secured to the insulator and a leadin run to the Mast Base located on the AN/MRC-35A. (The PO-2 is not supplied with the AN/MRC-35A.)

(2) The Antenna Assembly AS-390/SRC is designed for Ultra High Frequency. It is used with the Receiver-Transmitter RT-178/ARC-27. Two lengths of RF cable are provided to connect the RT-178 to the AS-390/SRC. The Mast Bracket fastened to the jeep is designed to hold a Mast Section MS-44. The AS-390/SRC is placed on the MS-44 and the short coaxial cable is connected between the AS-390/SRC and the Adapter Connector UG-567A/U which is connected to the Connector UG-701/U mounted on the right-hand cabinet. Mounted in this way, mobile operation is possible; however, caution must be observed to avoid striking low hanging objects with the antenna. It is possible to add another MS-44 to the one already in place but it will be necessary to use the long coaxial cable. Still greater height can be obtained in semi-permanent installations by erecting the entire Mast AB-370/G. The 70 foot coaxial cable permits some flexibility in choice of antenna location.

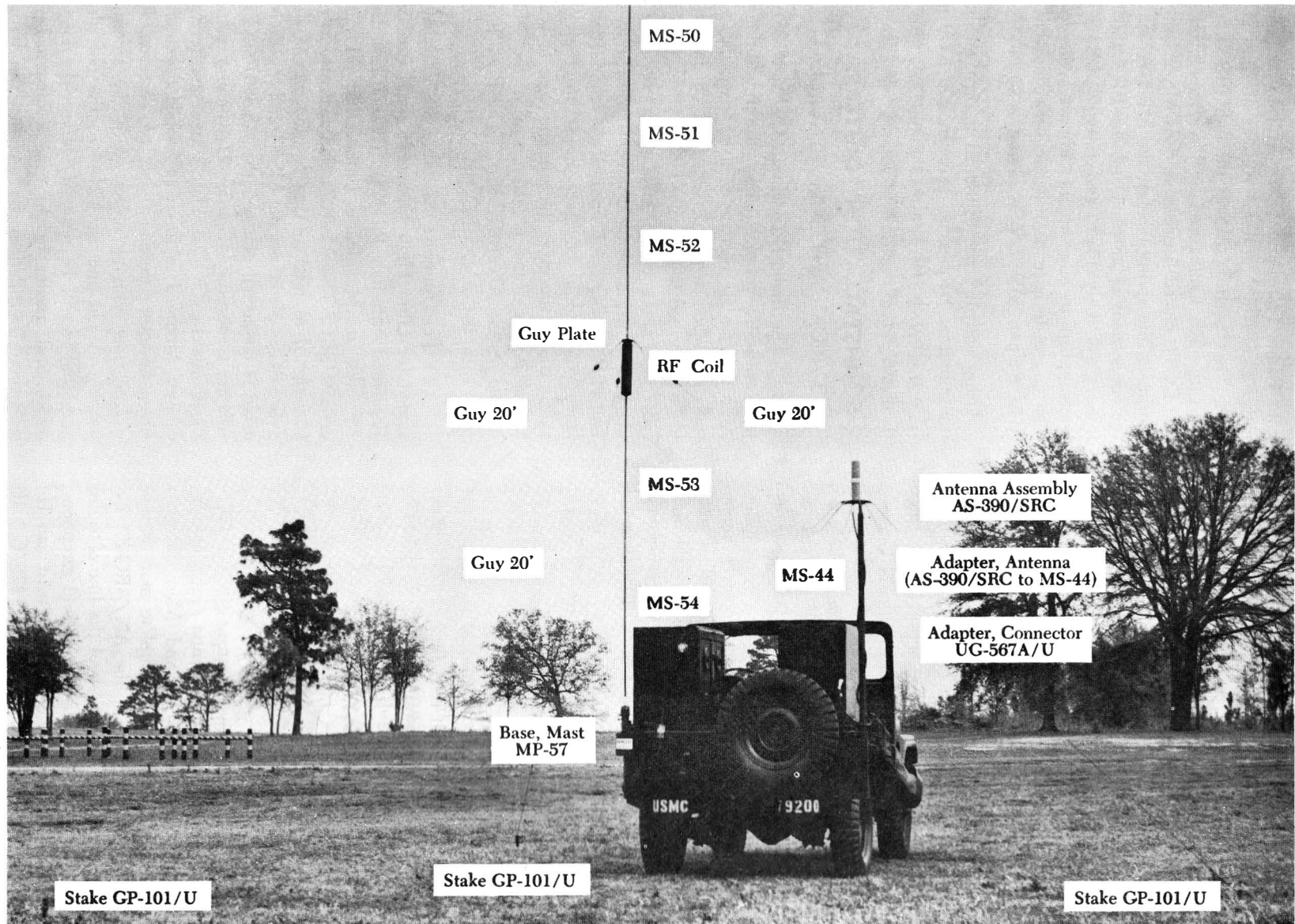


Figure 2-1. Antenna Installation.

b. GROUND ROD AND COUNTERPOISE.— After the whip antenna and Antenna Assembly AS-390/SRC are installed, (see figure 2-1) it is advisable to install the ground rod which is provided with the AN/MRC-35A. The ground rod should be driven into the ground approximately four feet and be connected to the AN/MRC-35A vehicle chassis utilizing the 10 feet of braid supplied. For permanent installations, a counterpoise system can be fabricated using field telephone wire or similar items. The counterpoise should consist of a minimum of eight radials approximately

the length of one quarter wave at the lowest frequency to be utilized in transmissions. The center of the counterpoise system to be connected to the vehicle chassis of the AN/MRC-35A.

c. Control Group AN/GRA-6 is supplied as part of the AN/MRC-35A for purposes of controlling the equipment components from a remote position. Two Audio Receptacles, J-801 and J-802 are located on Radio Set Control C-2198/MRC-35A. These audio receptacles are used to receive the plugs of Local Control C-434/GRC which is a part of the control group.

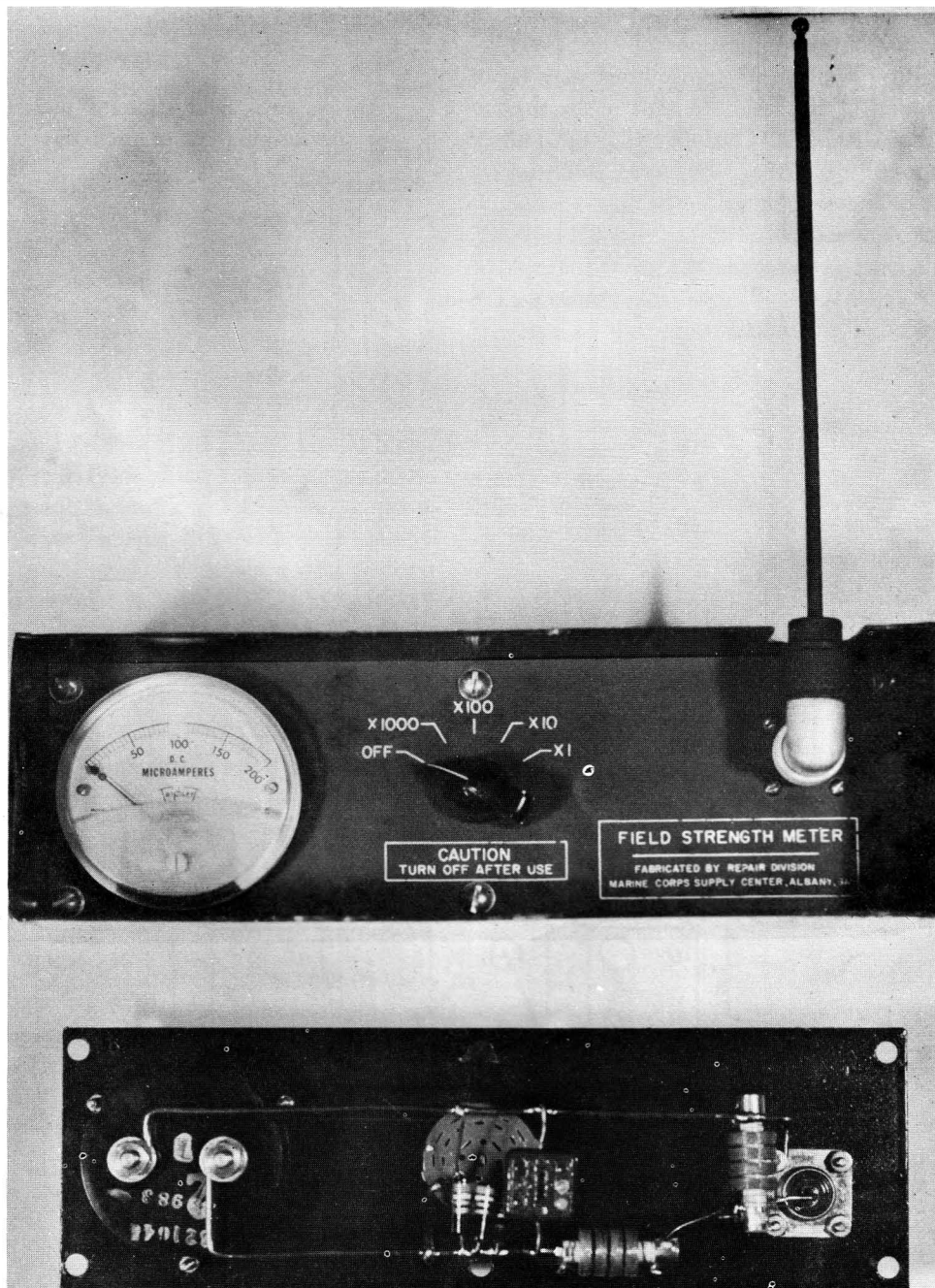


Figure 2-2. Field Strength Meter.

d. An interconnecting diagram for Radio Set Central AN/MRC-35A is shown in figure 5-2. Designation of cables and interconnecting data is shown to aid in trouble shooting equipment.

## **2-6. INSPECTION AND ADJUSTMENTS.**

a. Section 3 outlines detailed procedures for the operation of equipment components. Table 1-1 of section one shows the technical manuals and instruction books that apply to each component of the AN/MRC-35A. Detailed information on adjustments required for each component may be obtained from the technical manuals or instruction books.

b. Radio frequency output indications of the T-47/ART-13 and the RT-178/ARC-27 transmitters may be obtained by utilization of the field strength meter supplied with the AN/MRC-35A. (See figure 2-2.) The

field strength meter should be placed at some convenient location on the AN/MRC-35A vehicle body. With the meter antenna extended and the meter multiplier knob turned to X1000, transmitter should be keyed. A relative field strength indication will appear on the panel meter. If no indication appears, turn multiplier knob to the next lowest multiplier position (X100), etc. until a field strength indication is received. Always turn field strength meter to the OFF position at the termination of each test. After using the meter to tune one transmitter and it is intended that a second one be tuned, it is necessary to turn the meter switch to the OFF position to prevent any damage to the meter should the second transmitter have a higher field strength.

### **CAUTION**

Always turn field strength meter to OFF position at the termination of each test.

CHANNEL SELECTOR	Selects the channel of the RT-178/ARC-27
GUARD, BOTH, MAIN T/R	Guard—Transmit and receive on the guard freq. Both—Receive on the guard frequency and transmit and receive on the preset channel Main T/R—Transmit and receive on the preset channels.
OFF ON REC-TRANS RT-178/ARC-27	Turns the RT-178/ARC-27 on and off

#### b. SEQUENCE OF OPERATION.

(1) LF, MF, HF equipment. Before using, see TM 11-692D and TM 11-692B-2 to set Radio Transmitter T-47/ART-13 and Radio Receiver BC-348-(\*) on the desired frequency. The receiver is turned on for presetting on frequency by the use of Rec BC-348 ON-OFF switch of the radio set control. After the transmitter is set to the desired frequency, the LOCAL-REMOTE switch is placed in the REMOTE position. Do not operate the transmitter at frequencies below 600 Kc without installing the RF Coil in whip antenna between Mast Sections MS-52 and MS-53.

(2) UHF equipment. Before using, see paragraph 3-4 to preset the Receiver-Transmitter RT-178/ARC-27 to guard channel and the 18 preset channels. After all channels are preset, the LOCAL-REMOTE switch is placed in the REMOTE position and the TONE-VOICE switch is placed in the VOICE position for voice operation and TONE for MCW operation.

(3) Volume controls for both receivers are attenuators in the line between the receiver and the speaker on the Radio Set Control C-2198/MRC-35A. The CW, MCW, VOICE controls on the Radio Receiver BC-348(\*) are set for the desired operation.

#### (4) Keyer KY-132/U

(a) Keyer KY-132/U coding wheel is set up on the assigned code by following the procedure shown in the instruction book on the keyer. (See instruction book NAVMC ELECT-2001.)

(b) The Radio Transmitter T-47/ART-13 is first set up for operation on CW as described in TM 11-692B-2 and turned to REMOTE operation.

(c) When the transmitter has been properly set up and control has changed over to the Radio Set Control by placing the LOCAL-REMOTE switch of the transmitter in the REMOTE position, the Radio Set Control S-801 (OFF-VOICE-CW-MCW) is placed in the CW position. The keyer is turned on when it is desired to transmit the code signal.

(d) To cease transmitting, it is important that the keyer be turned off first.

#### c. NETTING OF RADIO TRANSMITTER T-47/ART-13 WITH RECEIVER BC-348-(\*)

(1) Tune receiver to frequency of station with which it is intended to net.

(2) Turn on the CW OSCILLATOR in the receiver and adjust to zero-beat with the stations carrier.

(3) Place NET-SEND function switch on the receiver to NET position.

(4) Place CALIBRATE-TUNE-OPERATE function switch to TUNE on the transmitter.

(5) Observe frequency setting on the receiver and adjust the transmitter oscillator frequency coarse and fine controls to the same approximate frequency observed on receiver.

(6) Place transmitter function switch to VOICE position. Key the transmitter and adjust the OSCILLATOR FINE frequency control to the exact netting frequency as indicated by a zero beat with the receiver frequency setting.

(7) Tune antenna circuit of the transmitter, place CALIBRATE-TUNE-OPERATE function switch in OPERATE position. Place PHONE-CW-MCW function switch to desired type of emission. Place NET-SEND function switch on the receiver to SEND position for automatic muting when the transmitter is keyed.

#### d. FREQUENCY ADJUSTMENT OF RADIO TRANSMITTER T-47/ART-13 FROM CALIBRATION CHART.

(1) Place NET-SEND function switch on the receiver to SEND position.

(2) Locate C. F. I. calibration check point on calibration chart nearest the listing of the desired frequency. (See chart in TM 11-692B-2.) Set coarse and fine oscillator controls of the transmitter.

(3) Place CALIBRATE-TUNE-OPERATE switch to CALIBRATE position. Adjust the fine oscillator frequency to exact C. F. I. check frequency as indicated by zero-beat with the C. F. I. crystal frequency. Adjust the fine oscillator corrector to correspond with the calibration check point listing from the calibration chart.

(4) Adjust the fine oscillator frequency control to the numerical listing of the calibration book for the desired operating frequency.

(5) Place the CALIBRATE-TUNE-OPERATE function switch to TUNE position and tune the antenna circuits.

(6) Place the CALIBRATE-TUNE-OPERATE function switch to OPERATE, and the PHONE-CW-MCW function switch to the type of emission desired.

#### e. PRECAUTIONS.—There are certain precautions

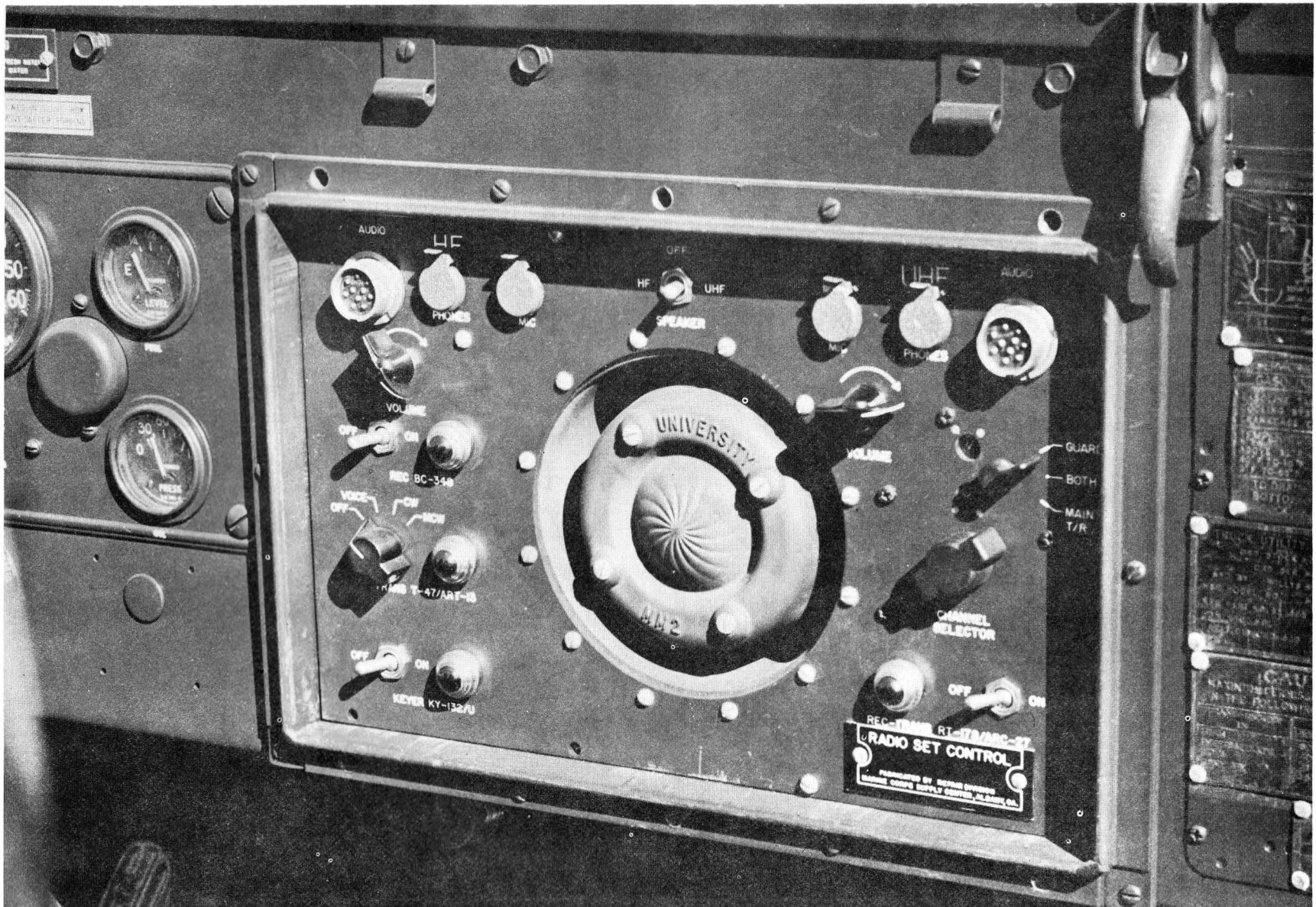


Figure 3-2. Radio Set Control C-2198/MRC-35A

that must be observed with the use of this equipment.

(1) The RF Coil is only used on the low frequency range and should never be used when the vehicle is moving because of the possibility of damaging the coil either by excessive whipping of the antenna or by striking low hanging objects.

CAUTION

Do not operate the Radio Transmitter T-47/ART-13 at low frequencies without the RF Coil installed.

CAUTION

Remove the RF Coil before moving the vehicle.

(2) The Antenna Loading Coil CU-25/ART-13 is not designed to withstand the high voltage generated with modulation under conditions of fixed wire antennas on voice and MCW operation. It is permissible to place the transmitter function switch on VOICE for netting purposes without modulation.

CAUTION

Do not amplitude modulate the Radio Transmitter T-47/ART-13 on frequencies below 600 Kcs.

(3) The emission switch should not be operated when the transmitter is keyed either by pressing the key, the microphone switch, or by turning on the keyer KY-132/U. Failure to observe this precaution may cause arcing at contacts of relays.

CAUTION

Do not operate emission switch when the Radio Transmitter T-47/ART-13 is keyed.

(4) The Antenna Loading Coil CU-25/ART-13 is only used in the frequency range (200 to 600 Kc). The Antenna Shunt Capacitor CU-24/ART-13 will probably only have to be used at the high frequency range or when a long wire antenna is used.

(5) The Radio Transmitter T-47/ART-13 cannot be tuned to a frequency lower than 250 Kcs when only the whip antenna is installed.

(6) The top bows when secured in the transport condition are close to the rear antenna standoff insulator and leadin. There is danger of arcing unless the bows are moved.

CAUTION

Do not operate the Radio Transmitter T-47/ART-13 while the top bows are in the transport condition.

(7) The AN/MRC-35A has been equipped with Modification Kit MK-213/MRC which consists of a 70 ampere generator with necessary regulator. This heavy duty generator and regulator replaces the standard components originally supplied with the model M38A1 vehicle. The generator has an open bell housing and should be immediately washed out with fresh water if it is immersed in salt water at any time.

CAUTION

Flush generator with fresh water as soon as possible after fording in salt water.

(8) The fan belts used with the vehicle are not a part of the Modification Kit MK-213/MRC and are not a standard item. Care must be taken to keep the spare fan belts with the equipment at all times.

CAUTION

Keep spare non-standard fan belts with the vehicle at all times.

(9) The fuse in the Fuse Terminal Assembly is a slow blow 60 ampere, 32 volt fuse and may not always be readily available. For this reason 10 spare fuses are furnished with this equipment.

**3-4. OPERATING PROCEDURES FOR RADIO SET AN/ARC-27.**

a. FUNCTIONS OF THE EQUIPMENT.—With Radio Set AN/ARC-27 the operator may hold two way radio telephone communication on any one of 1750 frequencies between 225.0 and 399.9 mc. Any eighteen of these frequencies may be preset for remote selection. Constant monitoring of a guard frequency is provided. The transmitter may be tone modulated at 1020 cycles per second if desired.

b. FUNCTIONS OF THE CONTROLS.—A list of the controls, their function, and their location follows: (Sec figures 3-2 to 3-4 incl.)



NAME OF CONTROL	FUNCTION	LOCATION
1. ON-OFF (Local)	Primary power control.	Radio Set Control C-626/ARC-27 (See figure 3-3.)
2. GUARD-BOTH-COMD T/R (Local)	Selects operation on guard frequency, indicated channel frequency, or both.	
3. LOCAL CHANNEL SELECTOR	Selects one of 18 preset channels or manual operation.	
4. LOCAL-REMOTE	Selects operation from local or remote position.	
5. TONE-VOICE	Emission selection. Tone modulates transmitter at 1020 cps.	
6. MEGACYCLES	Three selector switches for frequency selection (manual) and preset.	
7. GUARD-BOTH-MAIN T/R AND OFF-ON	Primary power control from Remote position. Selects operation on indicated channel frequency plus the guard receiver.	Radio Set Control C-2198/MRC-35A (See figure 3-2.)
8. CHANNEL SELECTOR	Selects one of the 18 preset channels or guard channel.	
9. VOLUME	Adjusts amplitude of audio signals delivered to the headset circuit or speaker.	
10. SENS. (GUARD REC.)	Controls sensitivity of Guard Channel.	Receiver-Transmitter RT-178/ARC-27 (See figure 3-4.)
11. SQ. OFF (GUARD REC.)	Cuts out guard channel receiver squelch circuit.	
12. SENS. (MAIN REC.)	Controls sensitivity of main receiver.	
13. SQ. OFF (MAIN REC.)	Cuts out main receiver squelch circuit.	
14. METER SWITCH	Selects metered circuit.	
15. METER JACK	Connects TS-80/U.	
16. PHONE JACK	Connects Headset.	
17. MIC JACK	Connects Microphone.	

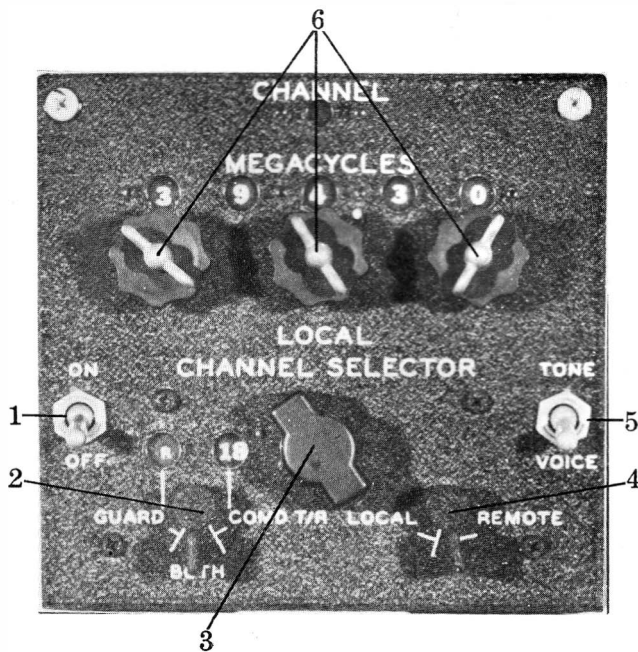


Figure 3-3. Radio Set Control C-626/ARC-27 Operating Controls

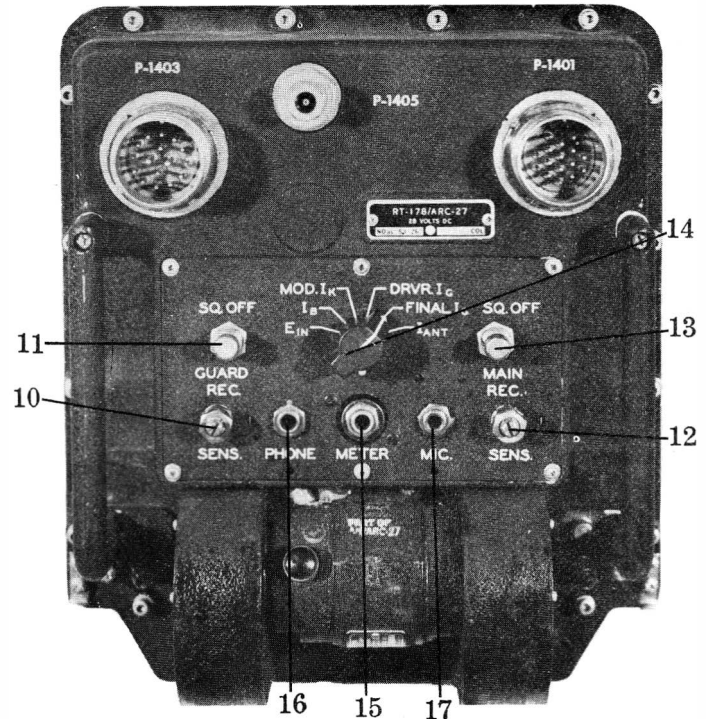


Figure 3-4. Receiver-Transmitter RT-178/ARC27 Operating Controls

c. SEQUENCE OF OPERATION.—Plug a microphone and headset into the appropriate jacks on the Radio Set Control C-2198/MRC-35A. The VOLUME control on the radio set control may be used to adjust the headphone level. (See Figure 3-2.)

d. RECEPTION.

(1) Operate the LOCAL-REMOTE (4) switch to the REMOTE position.

(2) Operate TONE-VOICE (5) switch to the VOICE position.

(3) Operate the GUARD-BOTH-MAIN T/R switch (on C-2198/MRC-35A) to T/R position and OFF-ON switch to ON.

(4) Allow at least one minute for the equipment to warm up. At the end of this time, signals above the squelch level will be heard. The SENS. (13) control on the main receiver should be set to the point where only signals of the desired strength will operate the squelch. If the SENS. control on the main receiver is set too high, the set noise will itself operate the squelch, in which case a "hiss," characteristic of thermal noise, will be heard in the headset.

(5) Turn the GUARD-BOTH-MAIN T/R switch to the BOTH position. Reception is now possible on both the main and guard channel frequencies.

(6) Turn the CHANNEL switch to the desired preset channel. Reception and transmission will now be on this frequency.

e. TRANSMISSION.—After the equipment has been operated as above for reception, it is also ready for transmission. This is accomplished simply by pressing the microphone push-button switch. The microphone should be held in a vertical position and just touching the lips. Talk in a loud and clear voice. Do not shout into the microphone. Intelligibility of the received signals will be improved if care is taken in proper articulation of each word. Release the microphone button at the end of each transmission. This is necessary to hear incoming signals, and also reduces the load on the dynamotor.

f. OPERATION ON GUARD FREQUENCY.—(See figure 3-2.) A completely separate guard channel receiver is provided in the equipment to monitor the guard frequency continuously while operating on the

main channel frequency. This is accomplished by placing the GUARD-BOTH-MAIN T/R switch on the BOTH position. In the MAIN T/R position, the main channel is on but the separate guard receiver is turned off. Both receivers are off during any transmission period, but sidetones will be heard in the headset.

g. To transmit on the guard frequency, the GUARD-BOTH-MAIN T/R switch is placed in the GUARD position. This actually turns the separate guard receiver off but tunes the main transmitting and receiving equipment to the guard frequency.

h. TONE OPERATION.—Tone or modulated continuous wave operation can be accomplished on any of the operating frequencies, including the guard frequency, by placing the TONE-VOICE (3) switch in the TONE position. This automatically turns the transmitter on so that it is not necessary to hold the microphone button. The resulting tone modulation is at approximately 1020 cycles per second. It may be used as an emergency signal or to aid direction finder equipment.

i. STOPPING THE EQUIPMENT.—To turn the equipment off, simply place the OFF-ON switch in the OFF position. However, it is desirable that the TONE-VOICE (5) switch be checked to see that it is in the VOICE position. This will avoid starting the equipment in the transmit position the next time it is turned on.

### 3-5. OPERATING CHECKS AND ADJUSTMENTS FOR RADIO SET AN/ARC-27.

a. GENERAL.—Certain operating checks are necessary and must be made by the operator prior to or during actual operation in order to insure optimum utility of Radio Set AN/ARC-27. Careful observance of these procedures will greatly reduce the chances of equipment failure in service, since any deviation from normal operation may be quickly reported to maintenance personnel if correction of the defect is beyond the scope of the operator.

b. TEST METER READINGS.—A very good indication of how the equipment is operating may be gained by observing the indications of a TS-80/U Test Meter or equivalent plugged into the front panel of Receiver-Transmitter RT-178/ARC-27. Typical meter readings for normal operation of Radio Set AN/ARC-27 are indicated below.

CONDITION	SWITCH POSITION	FUNCTION	METER READING	MULTIPLYING FACTOR	CORRECTED READING
RECEIVER	1	Supply Voltage	.55	x 50 volts	27.5 volts
	2	Total B+ Current	.27	x 1000 ma	270 ma
	3	Modulator Cathode Current	0		0
	4	P. A. Driver grid Current	0		0
	5	P. A. Final Grid Current	0-0.17	x 100 ma	0-17 ma
	6	Power to Antenna	0		0
TRANSMIT	1	Supply Voltage	.55	x 50 volts	27.5 volts
	2	Total B+ Current	.40-.45*	x 1000 ma	400-450 ma
	3	Modulator Cathode Current	.40-.45*	x 200 ma	80-90 ma
	4	P. A. Driver grid Current	.30	x 50 ma	15 ma
	5	P. A. Final grid Current	.5	x 100 ma	50 ma
	6	Power to Antenna	.20	x 50 (approx)	10 watts

\*Modulated approximately 30 percent.

c. CHANNEL PRESET PROCEDURE.—Radio Set AN/ARC-27 provides means for presetting eighteen frequencies and a guard channel frequency. These are preset on Radio Set Control C-626/ARC-27 and may then be selected by the operation of the CHANNEL SELECTOR switch from either that control or from the Radio Set Control C-2198/MRC-35A. The following procedure is to be followed in presetting these frequencies.

(1) On Radio Set Control C-626/ARC-27, set the LOCAL-REMOTE switch in the LOCAL position.

(2) Set ON-OFF switch to the ON position.

(3) Set the GUARD-BOTH-COMD T/R switch to the COMD T/R position.

(4) Set the LOCAL CHANNEL SELECTOR switch to position 1.

(5) Loosen the three wing nuts on the frequency selectors by counter-clockwise rotation until they turn freely.

(6) Rotate the three knobs until the numerals in the windows indicate the desired frequency for position 1.

(7) Tighten the three wing nuts again by clockwise rotation, holding the knobs so that they do not turn in the process.

(8) Turn the LOCAL CHANNEL SELECTOR switch to some other channel, then turn back to the channel which has just been set up (in this case channel 1), and check the indicated frequency.

(9) Repeat steps 3, 4, 5, 6 and 7 above for each of the eighteen channels to be preset.

(10) Set the GUARD-BOTH-COMD T/R switch in the GUARD position.

(11) Following the procedure outlined above, set the dials to the guard channel frequency. This channel position may be checked by rotating the GUARD-BOTH-COMD T/R switch to the BOTH position and then setting it back to the GUARD position. The mechanism should operate and return the dials to the desired guard channel frequency.

(12) After all channels have been preset to the desired frequencies, operation on transmit and receive for each channel should be checked as outlined in paragraph 3-5d.

d. PRELIMINARY TEST.—The preliminary check will make certain that the equipment is operating properly.

(1) Place the LOCAL-REMOTE switch on Radio Set Control C-626/ARC-27 in the LOCAL position

(2) Operate the TONE-VOICE switch to the VOICE position.

(3) Operate the ON-OFF switch to the ON position.

(4) Check operation of the receiver by operation of the squelch switch on the front panel of the receiver-transmitter unit. If the receiver is operating normally, the "hiss" characteristic of set noise should be heard in the phones.

(5) With the GUARD-BOTH-COMD T/R switch in the BOTH position, operation of the guard channel receiver should be checked in the same manner as the main receiver in the previous step.

(6) When tactical restrictions permit, check operation of the transmitter by observing the antenna current while the transmitter is being operated. With the meter switch in position 6, a TS-80/U plugged into the meter jack should be deflected two or more divisions on all channels.

(7) Operation of the transmitter should also operate the sidetone which will be heard in the headphones.

(8) Repeat the above checks on each of the preset frequencies if time permits. This may be accomplished by making the checks at each of the eighteen positions of the CHANNEL SELECTOR switch.

#### NOTE

All checks should be made with the vehicle engine running since the transmitter power output will vary with battery voltage.

(9) When tactical restrictions and time permit, check of the complete system should be made by establishing two-way communication with an airplane or another ground station.

(10) Make checks similar to above by operation from the remote position.

e. DAILY INSPECTION.—The following tests should be made by the operator every 24 hours.

(1) Check all connectors to the units of the equipment to make certain the locking rings are tight.

(2) Check the wing-nuts on Radio Set Control C-626/ARC-27 to be sure the preset frequencies are not disturbed.

(3) Check the headphone and microphone cords for possible damage.

(4) Check for loose nuts and screws on the units themselves as well as in the mounting facilities.

(5) Check the screws around the edge of the front castings of the receiver transmitter unit to make certain that the air seal of the case is maintained.

(6) Check air pressure in the transmitter-receiver case, using a pressure gauge. It should be no more than one to two pounds at sea level.

### 3-6, EMERGENCY OPERATION AND REPAIR OF RADIO SET AN/ARC-27.

a. EMERGENCY OPERATION.—While vehicle is in motion, if the transmitter and receiver should fail to operate, there are actually only a few procedures which will allow a continuation of communication. These are enumerated below.

(1) Switch the CHANNEL SELECTOR to a different frequency, and return it immediately to the desired channel. If an obstruction has caused the defective operation of one of the relays, this will often correct the difficulty.

(2) Try operation at a different frequency. A crystal failure will not affect all frequencies.

(3) In the event the trouble has occurred between the remote unit, Radio Set Control C-2198/MRC-35A and the local control, Radio Set Control C-626/ARC-27, the equipment may be operated using the CHANNEL selector on Radio Set Control C-626/ARC-27.

(4) If the equipment will not channel to the desired frequency, turn the LOCAL CHANNEL SELECTOR switch to the manual position and set up the desired frequency by manually operating the three selector switches.

(5) If the decade frequency selectors will not send the selector switches to any position unlock the three thumb screws, and manually adjust the three selector switches to the desired positions.

(6) If the phones or microphone are defective, use the phones or microphone from another position.

b. EMERGENCY REPAIR.—In case of equipment failure, check all cable terminating plugs to be sure they are tight. If all power to the unit has failed, check the fuse in the supply line from the primary source. If a cable has been visibly damaged to the extent that wires have been broken, it may be repaired by splicing the wires back together, matching color codes. Be sure to tape the exposed wires to avoid shorting.

PRINCIPLES OF OPERATION

4-1. OVERALL FUNCTIONAL DESCRIPTION.

The equipments used to make up the Radio Set Central AN/MRC-35A may be set up and operated from the local position as described in their respective technical manuals. They may be operated from the remote position by the use of the Radio Set Control mounted in the vehicle dash. The Control Group AN/GRA-6 may be used to provide remote operation of the equipment up to a maximum distance of 2 miles.

4-2. RADIO SET CONTROL C-2198/MRC-35A.

a. HIGH FREQUENCY RECEIVER SECTION.—This portion of the radio set control has a standard Audio Receptacle J-802 which can receive the plug of Handset H-33E/PT or Local Control C-434/GRC and an Audio Jack J-806 (see figure 5-1) which can receive the plug of the Headset Extension Cord. The volume control consists of attenuators which are so arranged that the input and output impedance will be 300 ohms at all times. Power to the Radio Receiver BC-348(\*) is controlled by switch S-806. In an emergency, S-806 may be bypassed by closing the switch in the Terminal Box located in the Cabinet CY-2017/MRC-35A. (See figure 5-2.)

b. HIGH FREQUENCY TRANSMITTER SECTION.—This portion of the radio set control permits

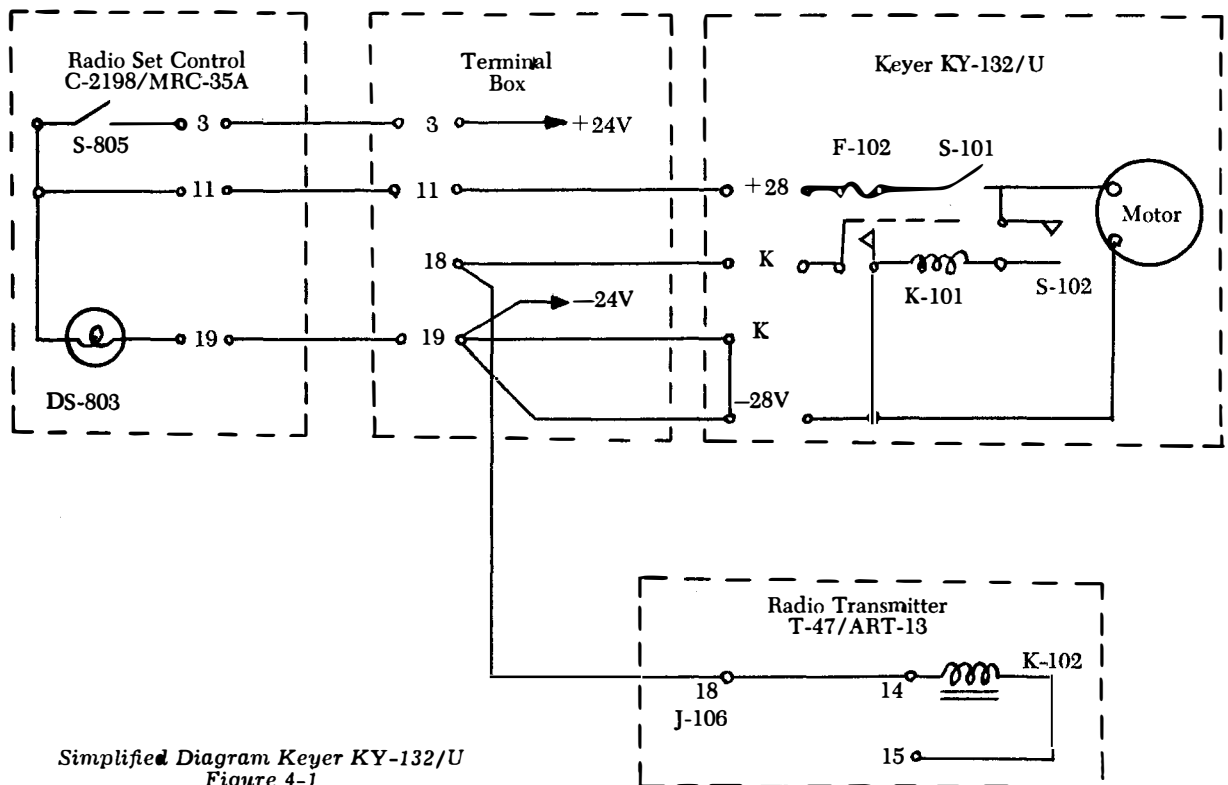
the operator to turn the power to the Radio Transmitter T-47/ART-13 on and off and also control the type of emission. (See figure 5-1.) Microphone Jack J-804 may be used with the Microphone T-17E or Audio Receptacle J-802 may be used with H-33E/PT.

c. ULTRA HIGH FREQUENCY CONTROL SECTION.—Switch S-803 (see figure 5-1) permits remote selection of one of 18 preset channels. Switch S-807 controls power to the set. S-802 and S-803 permit selection of any of 18 preset channels and/or guard channel.

d. ULTRA HIGH FREQUENCY AUDIO SECTION.—(See figure 5-1.) Microphone Jack J-803 and Headphone Jack J-805 or Audio Receptacle J-801 may be used with appropriate accessories or Local Control C-434/GRC. The volume control consists of attenuators which are so arranged that the input and output impedance will be 300 ohms at all times.

4-3. HOMING FACILITIES.

a. PURPOSE.—The homing facilities encompassed in the Radio Set Central AN/MRC-35A involve the use of the Radio Transmitter T-47/ART-13, the Keyer KY-132/U and the antenna system consisting of Antenna Mast Section MS-49 to MS-54, inclusive, with an RF Coil which is mounted in the antenna between sections MS-52 and MS-53.



Simplified Diagram Keyer KY-132/U  
 Figure 4-1

b. KEYER KY-132/U.—The Keyer coding wheel is set up on the assigned code by following the procedure shown in the instruction book on the keyer. (NAVMC ELECT-2001) The keyer can transmit a maximum of two letters at a code speed of 6 to 10 words per minute. Between cycles, a 30 to 40 second signal is transmitted. Operation of the keyer is normally controlled by S-805 on the Radio Set Control C-2198/MRC-35A; however, the keyer can be controlled locally by closing S-101, only. In either case, both switches must be on before the keyer will operate. (See figure 4-1.) The Radio Transmitter T-47/ART-13 is first set up for operation on CW as described in TM 11-692B and turned to remote operation. When the transmitter has been properly set up and control has been changed over to the radio set control by placing the LOCAL REMOTE switch of the transmitter in the REMOTE position, the radio set control OFF, VOICE, CW, MCW switch (S-801) is placed in the CW or MCW position. In CW position, greater range may be realized; however, MCW is preferred. Mode of operation should be in accordance with operations plans or standard operating procedure of the using organization. The keyer is turned on when it is desired to send out the coded signal. To cease transmitting, it is important that the keyer be turned off first. Otherwise, the emission selector switch which is used to turn the transmitter off would be changed while the transmitter is being keyed which may result in damage to switches and relays.

c. RADIO TRANSMITTER T-47/ART-13.—This equipment was originally designed to operate with a

trailing wire antenna of approximately 200 feet. Installation of the T-47/ART-13 in a M38A1 jeep and utilizing an antenna of approximately 19½ feet (Mast Sections MS-49 through 54 incl) presented a problem inasmuch as the antenna was very short electrically, presenting excessive capacity, at the homing frequencies (approximately 200-500 KCS). In order to transmit properly at the homing frequencies, it was necessary to design an RF Coil to cancel out the large amount of capacitive reactance in the short whip antenna.

d. RF COIL.—Figure 4-2 shows the construction of the RF Coil. The characteristics are as follows:

Resistance (DC)	1.6 ohms
*Q	158
*L	1140 uh
No. of turns	288
Size & type of wire	19 AWG copper, enamelled

\*Measurements made on Boonton Radio Corp Model 260A Q Meter.

It is highly important that the RF Coil be installed in the antenna system when tuning to the homing beacon frequencies. If the RF Coil is *not* installed when transmitting at the lower frequencies, serious arc-overs will occur due to the high RF potential generated in the short length of the antenna. The reason for the high voltage in the short whip portion of the antenna can be illustrated by the accompanying figure 4-3.

e. ANTENNA SYSTEM.—As the antenna system actually consists of Antenna Loading Coil CU-25/ART-

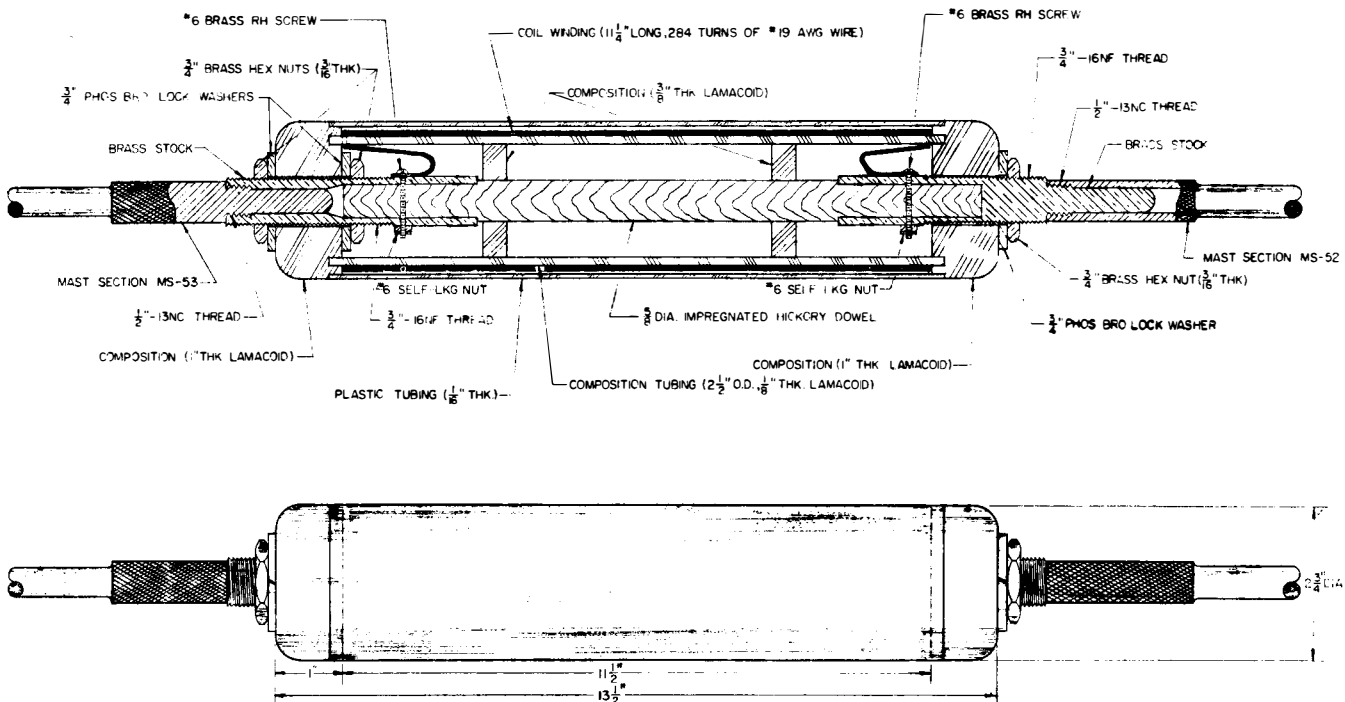


Figure 4-2. RF Coil

13, the RF Coil and the antenna sections MS-49 through 54, incl, the short portion of the antenna (19½') would be in the maximum voltage portion of the voltage curve as indicated in figure 4-3.

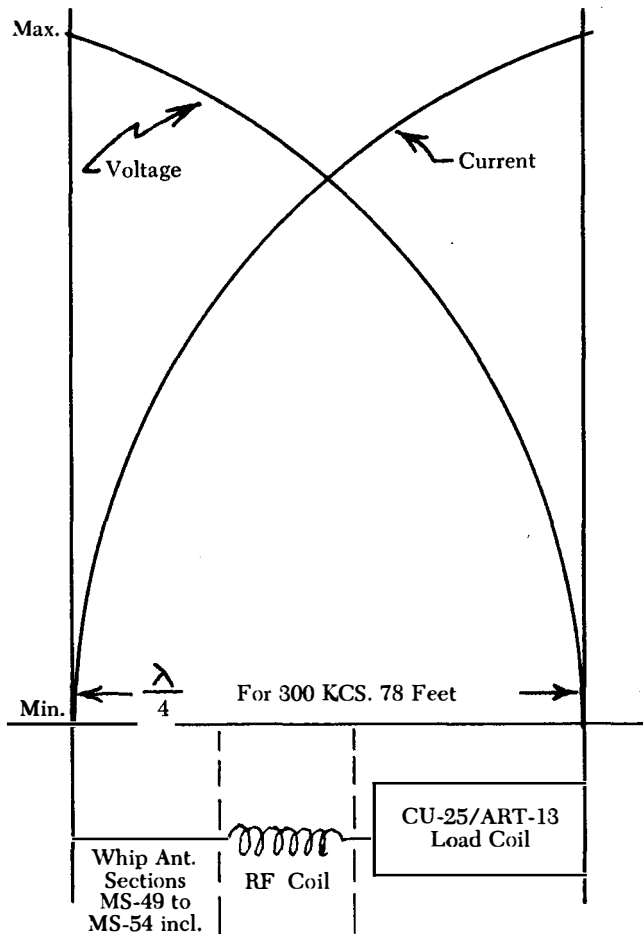


FIGURE 4-3. Voltage and Current Curve of AN/MRC-35A, 1/4 Wavelength (300KCS) Antenna System Used with T-47/ART-13.

f. ANTENNA THEORY.—300 KCS is a typical low frequency. A quarter wave antenna at 300 KCS physically measures approximately 78 feet. The AN/MRC-35A whip antenna measures approximately 19½ feet or 25% of the entire antenna length. It was therefore necessary to effectively lengthen the antenna in order to resonate it. This was accomplished by the design of an RF Coil as described in paragraph 4-3(c) and the utilization of Antenna Loading Coil CU-25/ART-13. The addition of the RF Coil and CU-25/ART-13 effectively lengthens the 19½ foot whip antenna to 78 feet which is the physical length of antenna that will resonate at 300 KCS. It is easy to see by the curve of figure 4-3 that the potential on the whip antenna is in the area of highest voltage.

g. ANTENNA PATTERNS.—It must be realized

that although a long wire antenna will greatly increase the efficiency of the transmitter output, its radiation pattern will not be uniform. This is not usually a desirable feature; however, in some instances, it can be turned to an advantage if greater range is desired in a particular direction. The radiation pattern will be strongest at right angles to the length of the long wire antenna.

#### 4-4. CONTROL GROUP AN/GRA-6.

This equipment can be used to key and modulate the Radio Transmitter T-47/ART-13 and receive on the Radio Receiver BC-348(\*); also it is possible to receive and transmit over the Receiver-Transmitter RT-178/ARC-27. It is necessary to turn the equipment on and set the controls at the radios and control panel before attempting to operate at the remote position as it is not possible to turn the equipment off and on at the remote position. The AN/GRA-6 is designed to provide remote operation up to a maximum distance of 2 miles.

#### 4-5. FIELD STRENGTH METER.

A field strength meter (figure 4-4) is supplied with the AN/MRC-35A. Utilization of the meter is described in paragraph 2-6(b). The field strength meter consists of a whip antenna, antenna load, a crystal rectifier-filter circuit and a 0-200 D.C. microammeter with necessary meter shunts.

a. (Refer to figure 4-4, schematic diagram of field strength meter.) The first RF Choke between the antenna and ground is used as the load. The voltage drop across this load is rectified and filtered across the rectifier-filter network which consists of Crystal IN-69, the RF Choke and the 1200 mmfd capacitor. The 0-200 microammeter with necessary shunts, 0.39 ohms, 3.9 ohms and 39 ohms, measures the rectified radio frequency current received by the antenna. In the OFF position of the switch SW, the meter is shorted out of the circuit. The meter should be in the OFF position when not in use in order to prevent damage from possible high RF voltages.

b. The resistance of meter M is 360 ohms and its maximum current indication is 200 micro-amperes. In the X1000 position, a 0.39 ohm resistor is connected in parallel with the meter resistance. Current flowing in the meter circuit will divide proportionately between the 360 ohms in the meter resistance and the 0.39 ohm meter shunt. This effectively multiplies the meter reading by one thousand. For position X100 and X10, a 3.9 ohm and a 39 ohm resistor respectively, are shunted across the meter in the same manner and the meter scale is effectively multiplied by 100 and 10 respectively.

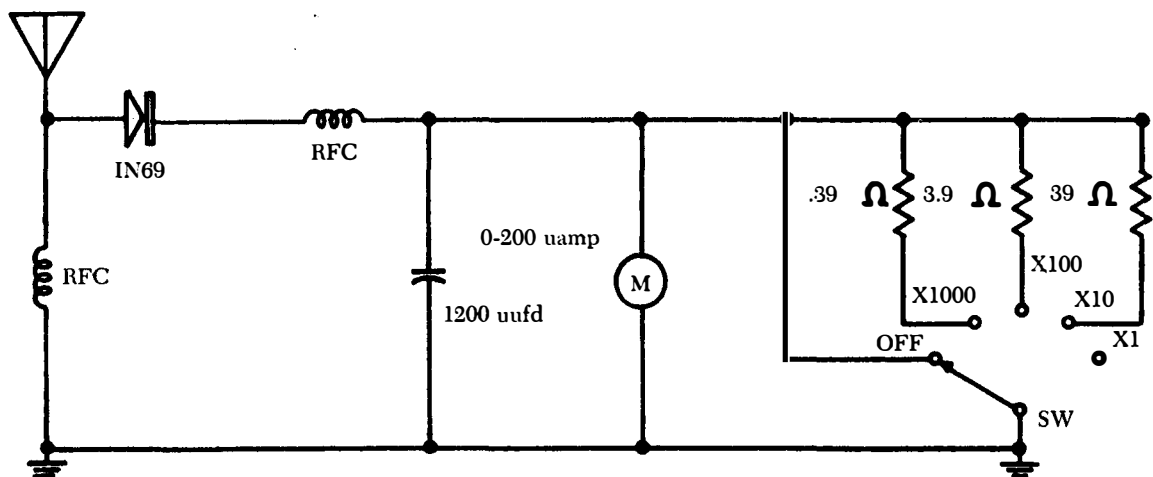


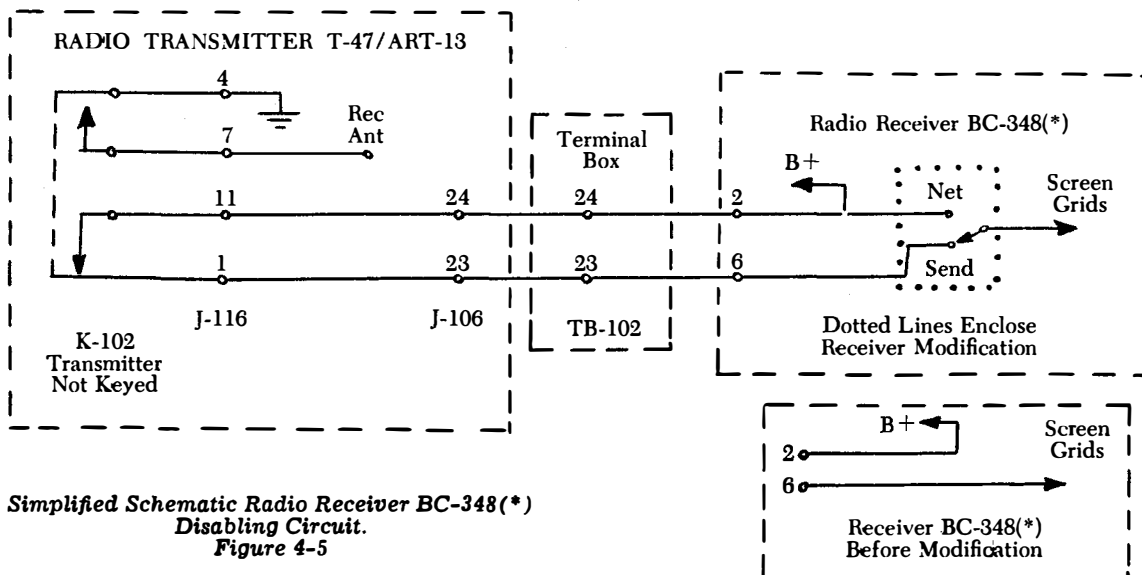
Figure 4-4. Field Strength Meter for AN/MRC-35A

**4-6. RADIO RECEIVER BC-348.**

(See figure 4-5.) The Radio Receiver BC-348(\*) required a modification to permit netting of the Radio Transmitter T-47/ART-13 with the receiver. By installing a single pole, double throw switch, JAN Type ST-13D, a means of connecting and disconnecting the receiver disabling circuit located in the transmitter was obtained.

SEND function identification plate are installed on the front panel of the receiver. This switch has two positions:

- (1) NET position.—Removes the receiver screen circuit from the relay K-102 and connects it to the receiver B-plus circuit;
- (2) SEND position.—Removes the receiver screen



Simplified Schematic Radio Receiver BC-348(\*)  
Disabling Circuit.  
Figure 4-5

a. Through inter-connecting cabling, the receiver is connected to relay K-102 in the transmitter which in its de-energized position connects the receiver screen circuits to the receiver B-plus circuit. K-102, when energized by keying the transmitter, removes the receiver screen circuit from the receiver B-plus circuit and places the screen circuit at ground potential, thus disabling the receiver.

circuit from the B-plus and connects it to the relay K-102 in the transmitter to automatically disable the receiver when the transmitter is keyed.

b. Toggle switch, JAN-Type ST-13D, and a NET-

c. It should be noted at this point that the receiver antenna input is routed through the transmitter and is grounded when the transmitter is keyed. This modification has no effect on the antenna input disabling circuit.



TROUBLE SHOOTING

5-1. GENERAL.

Trouble shooting procedures for the major individual component units of the Radio Set Central AN/MRC-35A are shown in the technical manuals listed in Table 1-1. The Radio Set Control C-2198/MRC-35A does not have a separate technical manual. This instruction book contains all information on the radio set control necessary for its maintenance and operation. (See figure 5-1.)

5-2. TEST EQUIPMENT.

a. Test equipment required for trouble shooting the AN/MRC-35A consists of Multimeter TS-297/U or equivalent as most of the troubles will be encountered in interconnecting cables or the C-2198/MRC-35A.

b. Test equipment required for trouble shooting individual components can be derived from technical manuals or instruction books pertaining thereto.

5-3. OVERALL TROUBLE SHOOTING.

a. SYSTEM TROUBLE SHOOTING.—Figure 5-2 is an interconnecting diagram of the overall cabling of the AN/MRC-35A. This will assist in trouble shooting of the overall system.

b. RADIO SET CONTROL C-2198/MRC-35A.—Faulty operation of the control may be caused by circuit difficulties which in turn may be detected by a resistance check of the unit. Table 5-1 gives normal resistance readings for the control. Figure 5-3 shows location of parts. Figure 5-1 is the schematic diagram of the control.

(1) Control Settings.—Turn all switches to the OFF position. Turn all controls CCW. Turn RT-178/ARC-27 to GUARD. Place microphone in jacks J804 and J803. Place handsets in jacks J802 and J801. Place headsets in jacks J806 and J805.

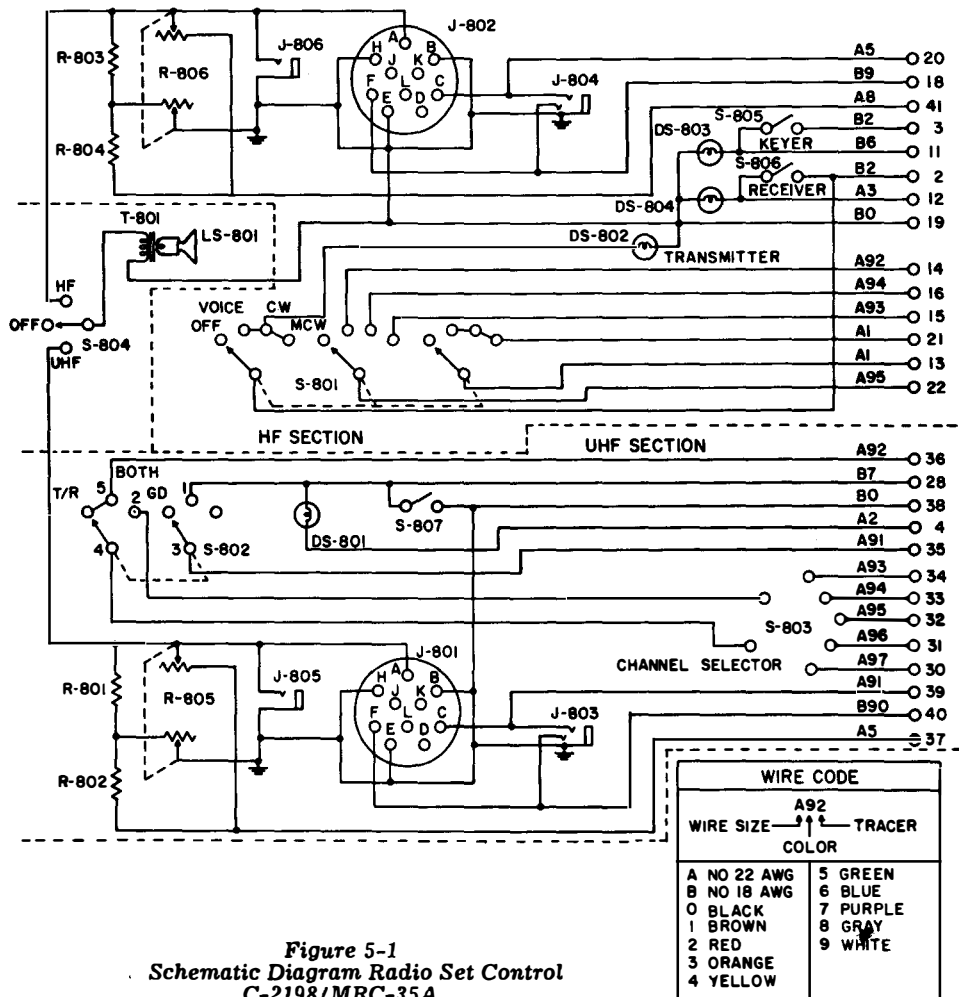


Figure 5-1  
Schematic Diagram Radio Set Control  
C-2198/MRC-35A

TABLE 5-1. RESISTANCE MEASUREMENTS OF RADIO SET CONTROL C-2198/MRC-35A.

	C-2198 TERMINALS	CONTROL POSITION	NORMAL RES. IN OHMS
Keyer KY-132/U	3 and 11	S805 in the ON position	0
	4 and 28		20-30
	11 and 19		20-30
	12 and 19		20-30
T-47/ ART-13	2 and 19	S806 ON	20-30
	13 and 21	S801 ON V, CW, MCW	0
	14 and 22	S801 VOICE	0
	15 and 22	S801 MCW	0
	16 and 22	S801 CW	0
	BC-348(*)	2 and 12	S806 ON S806 OFF
18 and 19		Key J802 and J804	0
20 and 19		Key J802 and J804	Microphone Resistance
28 and 38		S807 ON	0
41 and 19		Vary R806 S804 HF	15-300
		Vary R806 S804 OFF	100-300
30-31-32-33-34		S802 on GUARD	0
30 and 36		S802 on BOTH	S803 on channels— 3, 5, 6, 10, 11, 13, 16, 17, 18 = Infn. 1, 2, 4, 7, 8, 9, 12, 14, & 15 = 0
31 and 36		S802 on BOTH	S803 on channels— 1, 4, 6, 7, 11, 12, 14, 17, 18 = Infn. 2, 3, 5, 8, 9, 10, 13, 15, 16 = 0
32 and 36		S802 on BOTH	S803 on channels— 1, 2, 5, 7, 8, 12, 13, 15, 18 = Infn. 3, 4, 6, 10, 11, 14, 16, 17 = 0
33 and 36	S802 on BOTH	S803 on channels— 1, 2, 3, 6, 8, 9, 13, 14, 16 = Infn. 4, 5, 7, 10, 11, 12, 15, 17, 18 = 0	
34 and 36	S802 on BOTH	S803 on channels— 1, 2, 3, 4, 7, 9, 10, 14, 15, 17 = Infn. 5, 6, 8, 11, 12, 13, 16, 18 = 0	
35 and 28	S802 on BOTH	0	
37 and 38	Vary R805, S804 on UHF S804 on OFF	15-300 100-300	
39 and 38	Key J801 and J803	Microphone Resistance	
40 and 38	Key J801 and J803	0	

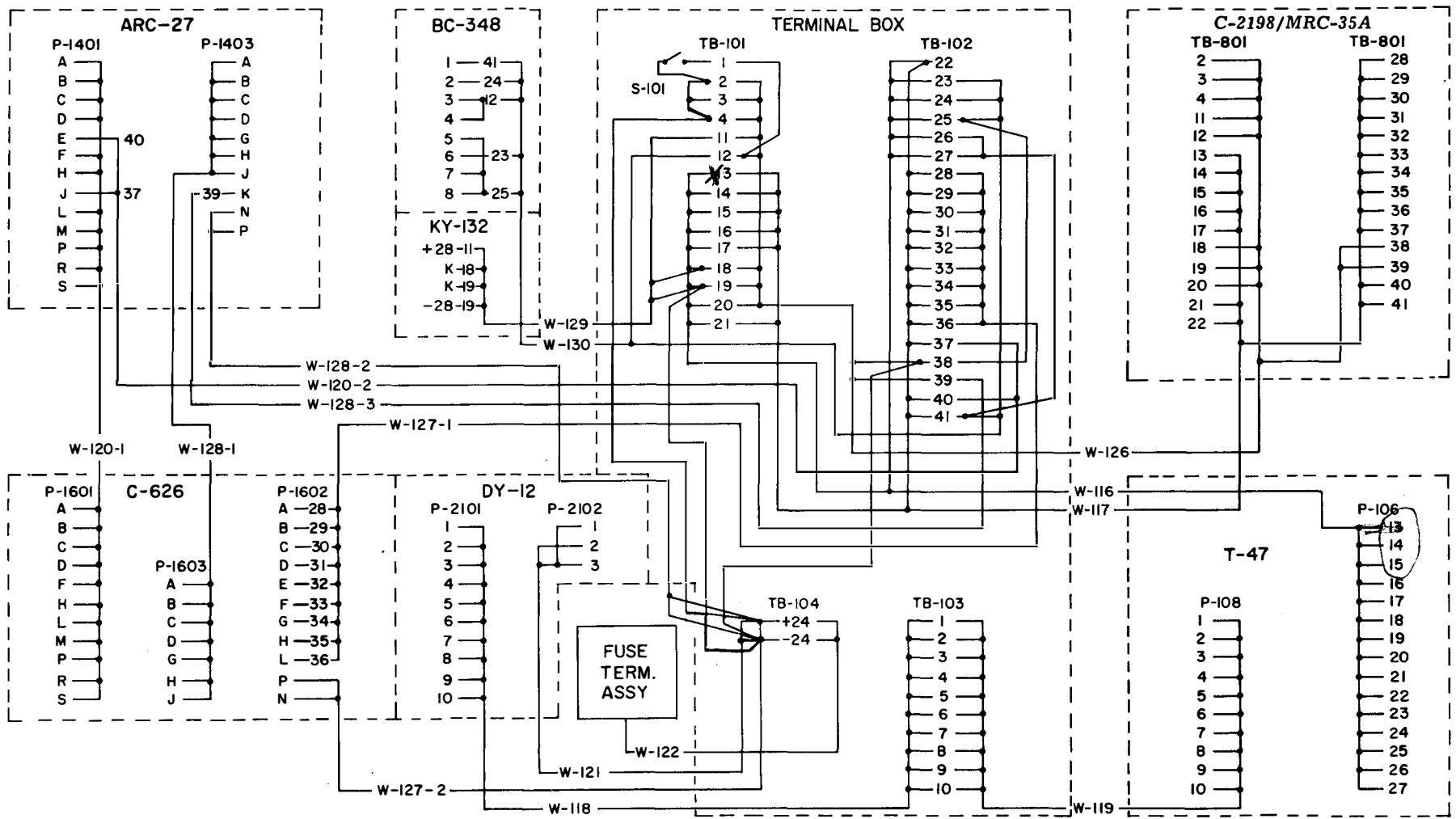


Figure 5-2. Radio Set Central AN/MRC-35A, Interconnecting Diagram

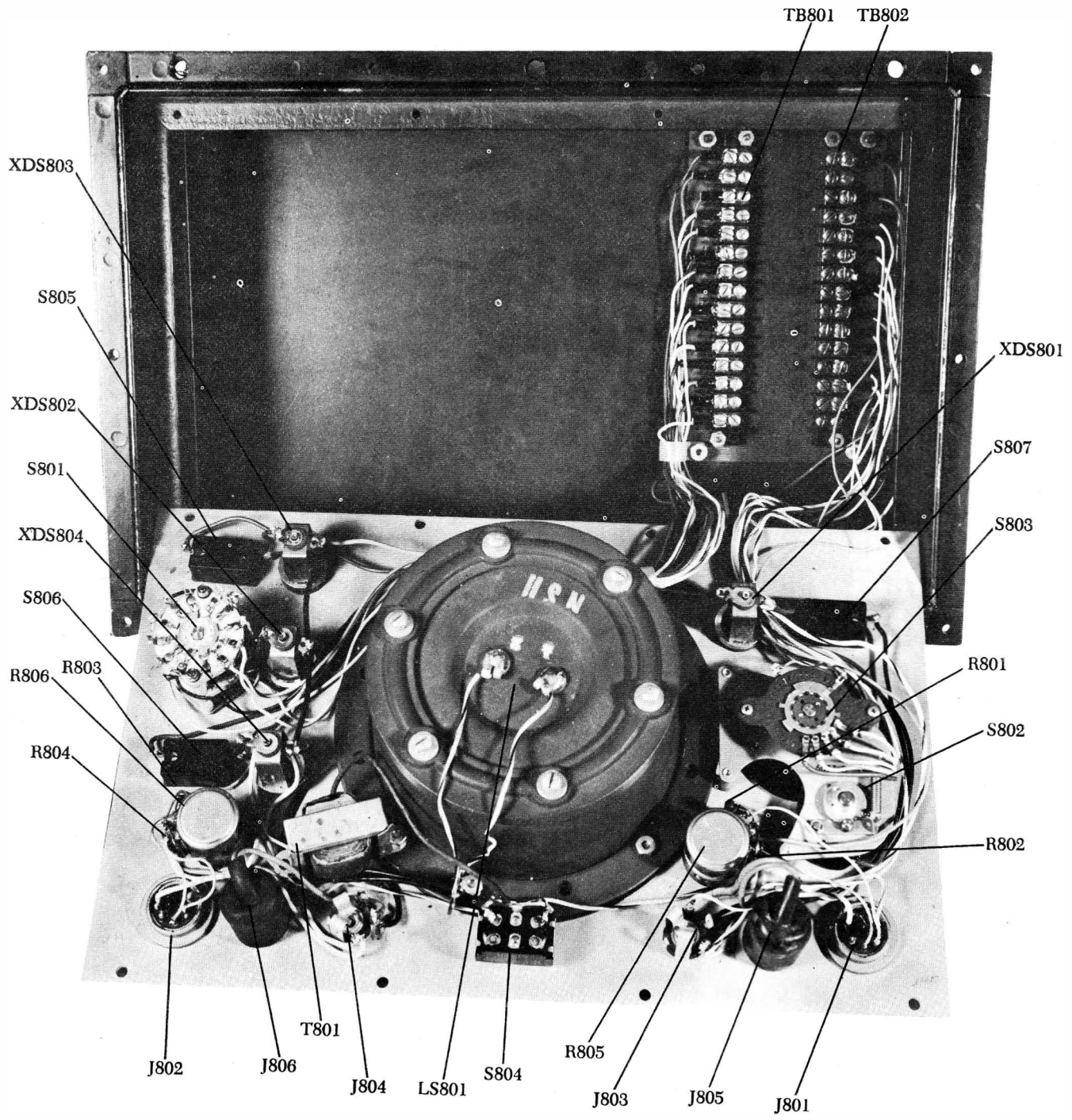


Figure 5-3. Location of Parts, Radio Set Control  
C-2198/MRC-35A

REPAIR

6-1. FAILURE REPORTS.

Report each failure of the equipment, whether caused by a defective part, wear, improper operation, or an external cause. Use Electronic Failure Report DD Form 787-1. Each pad of the forms includes full instructions for filling out and forwarding to Commanding General (IMPAC), Marine Corps Supply Activity, 1100 South Broad Street, Philadelphia, Pennsylvania. However, the importance of providing complete information cannot be emphasized too much. Be sure that you include the model designation and serial number of the equipment (from the equipment identification plate), the type number and serial number of the major unit (from the major unit identification plate), and the type number and reference designation of the particular defective part (from the technical manual or Sig M8). Describe the cause of the failure completely, continuing on the back of the form if necessary. Do not substitute brevity for clarity. And remember—there are two sides to the failure report—

“YOUR SIDE”

Every FAILURE REPORT is a boost for you:

1. It shows that you are doing your job.
2. It helps make your job easier.
3. It insures available replacements.
4. It gives you a chance to pass your knowledge to every man on the team.

Always keep a supply of failure report forms on board. You can order them through normal supply channels.

“MARINE CORPS SIDE”

The Marine Corps uses the information to:

1. Evaluate present equipment.
2. Improve future equipment.
3. Order replacements for stock.
4. Prepare Marine Corps Orders and field changes.
5. Publish maintenance data.

6-2. MAINTENANCE PARTS.

Lists of maintenance parts for the various components of the Radio Set Central AN/MRC-35A can be located in publications furnished with this equipment as follows:

Sig 7 and 8 AN/GRA-6	Control Group AN/GRA-6
Sig M8 AB-370/G	Mast AB-370/G
Sig M8 AN/ARC-27	Receiver-Transmitter RT-178/ARC-27
Sig M8 AN/ARC-27	Mounting MT-821/ARC-27
Sig M8 AN/ARC-27	Mounting MT-822/ARC-27
Sig M8 AN/ARC-27	Control, Radio Set C-626/ARC-27
Sig M8 AN/ARC-27	Switches S-802 and S-803 of Radio Set Control C-2198/MRC-35A
Sig M8 AS-390/SRC	Antenna Assembly AS-390/SRC
Sig M8 KY-132/U	Keyer KY-132/U
Sig M8 MK-213/MRC	Modification Kit MK-213/MRC
TM 11-692B-1	Radio Transmitter T-47/ART-13
TM 11-692B-1	Antenna Loading Coil CU-25/ART-13
TM 11-692B-1	Antenna Shunt Capacitor CU-24/ART-13
TM 11-692B-1	Dynamotor Unit DY-12/ART-13
TM 11-692B-1	Mounting Base MT-164/ART-13
TM 11-692B-1	Mounting Base MT-284/ART-13
TM 11-692B-1	Mounting Plate MT-283/ART-13
TM 11-692D	Oscillator O-16/ART-13
MCSC Albany Supplement to TM 11-692D	Radio Receiver BC-348 J, N, and Q
Instruction Book for AN/MRC-35A	Radio Receiver BC-348 K, L, and R
Instruction Book for AN/MRC-35A	Radio Set Control C-2198/MRC-35A
	Field Strength Meter

6-3. TUNING AND ADJUSTMENT.

Tuning and adjustment procedure for each component may be derived from individual technical manuals and instruction books as well as Section 3 of this manual.

PARTS LIST

7-1. INTRODUCTION.

a. Two of the principal components of the Radio Set Central AN/MRC-35A, Radio Set Control C-2198/MRC-35A and Field Strength Meter, were designed and manufactured by the Marine Corps Supply Center, Albany, Georgia. Tables 7-1 and 7-2 are tables of parts

for the radio set control and the field strength meter respectively.

b. Maintenance parts for other components of the AN/MRC-35A are listed in publications referred to in paragraph 6-2.

TABLE 7-1.

TABLE OF PARTS.

RADIO SET CENTRAL AN/MRC-35A

RADIO SET CONTROL C-2198/MRC-35A

Ref Desig	Fed. or Sig C Stk No.	Item Name, Description JAN/MIL Type No.	Function	Mfr's Name Part/Dwg No.
	5820-543-0104	CONTROL, RADIO SET: JCENS Control, Radio Set C-2198/MRC-35A for Radio Set Central AN/MRC-35A; remote control of Radio Transmitter T-47/ART-13, Radio Receiver BC-348(*), Radio Receiver-Transmitter RT-178/ARC-27, and Keyer KY-132/U; includes switches, volume controls, loudspeaker, telephone jacks and connectors on a mounting panel; mounts in Cabinet CY-2019/MRC-35A		C-2198/MRC-35A
DS-801 thru DS-804	6240-155-8714 2Z5938	LAMP, INCANDESCENT: Lamp LM-38; 28 v, 0.17 amp; miniature bayonet base; T-3 1/4 clear bulb; tungsten filament C-2E, white light emitted; 1-3/16 in. max lg o/a; 500 hrs rated life; any burning position	Power on-off indicator for KY-132/U, RT-178/ARC-27, T-47/ART-13, and BC-348(*)	
DS-805 thru DS-808	6210-404-9828 2Z5891-53	LENS, INDICATOR LIGHT: red; 1/2 in. dia plain jewel w/2 pol discs, 1 of which is rotatable to vary amount of light passing to jewel; 1 in. lg by 3/4 in. dia; polaroid		Gothard no. 147-421
E-801 thru E-804	5935-129-3200 2Z3352.156	COVER: for jack; steel, olive drab paint finish; 1-1/16 in. lg by 13/16 in. wd by 19/32 in. d; mtg hole for 3/8 in. dia jack; neoprene insert	Dust cover for microphone and headset jacks	Rauland Corp Part/Dwg no. VG-2012
E-805		INSULATION SHEET, ELECTRICAL: for terminal boards; 1/16 in. thk laminated plastic material; 6 3/4 in. lg by 4 in. wd; 4 countersunk holes for no. 6 screws located on 6 in. centers; 4 mtg holes for no. 8 screws located on 6 1/4 in. by 3 1/4 in. centers; marked for terminal identification	Insulation and terminal identification for Terminal Boards TB-801 and TB-802	RepDiv MCSC, Albany, Ga, Part/Dwg no. 320A-4
E-806 thru E-809	2Z5843.12	KNOB: black bakelite; o/a dim. 1 1/8 in. by 3/4 in. by 11/16 in.; complete with set screw, no. 6-40 by 1/8 in. lg; multiple spline, 4 flutes, cup. point	Knobs for volume controls and Switches S-801 and S-804	
E-810	2Z5822-676	KNOB: lever; cast aluminum, black wrinkle finish; for 0.190 in. max dia shaft; two no. 6-40NF-2 mtg holes, 90 deg apart; 1 in. lg by 1/2 in. wd by 23/32 in. h o/a; 0.312 in. d shaft hole	Knob for Switch S-802	
E-811	2Z5822-670	KNOB: hex. knob w/round skirt; aluminum, black enamel finish; for 0.255 in. dia shaft; two no. 6-40NF-2 mtg holes at 120 deg; single white lacquer 0.062 in. wd groove in skirt; 1 in. dia by 0.687 in. thk; 5/8 in. d shaft hole	Knob for Switch S-803	Collins Radio Part/Dwg no. 505 4641 002
H-853		STUFFING TUBE: cast Feraloy; straight type; 3/4 in. male th; w/watertight tapered rubber bushing to accom cable 0.500 to 0.625 in dia; 11/16 in. id of hole through nipple of connector; cable will pass entirely through connector w/o removing outer covering; w/hex. nut	Provides feedthru connection for Cabinet CY-2019/MRC-35A	Crouse and Hinds no. CGB295
H-854	6Z2410- 3CGB/396	STUFFING TUBE: cast Feraloy; straight type; 1 in. male th; w/watertight tapered rubber bushing to accom cable 0.625 in. to 0.750 in. dia; 15/16 in. id of hole through nipple of connector; cable will pass entirely through connector w/o removing outer covering; w/hex. nut	Provides feedthru connection for Cabinet CY-2019/MRC-35A	Crouse and Hinds no. CGB396

TABLE 7-1.(CONTINUED).

TABLE OF PARTS

RADIO SET CENTRAL AN/MRC-35A

RADIO SET CONTROL C-2198/MRC-35A

Ref Desig	Fed. or Sig C Stk No.	Item Name, Description JAN/MIL Type No.	Function	Mfr's Name Part/Dwg No.
J-801 J-802	5935-405-0501 2Z7250-79	CONNECTOR, RECEPTACLE, ELECTRICAL: JCENS Connector, Receptacle, Electrical U-79/U; 10 rd male cont, pol; gnd; straight; 1-3/16 in. lg by 1-9/32 in. dia o/a; cont rated at 0.5 amp, 60 v max; cylindrical body; SS, sandblast finish, locking type; thermosetting plastic inser; 1-9/32 in. od coupling nut, 1 in-32NS-2 int coupling thd; watertight	Audio receptacle	U-79/U
J-803 J-804	5935-288-7063 2Z5595-16	JACK, TELEPHONE: accom 3 cont plug, shank 0.206 in. dia by 1-3/32 in. lg; cont arrangement J2; 1 3/4 in. lg by 1 in. dia o/a; mtg hole 3/8 in. dia; accessories c/o hex. nut, encl in rubber balloon, incl 3 ins wire leads soldered to cont	Microphone jack	Motorola dwg no. 1X36447
J-805 J-806	5935-228-7062 2Z5595-15	JACK TELEPHONE: accom 2 cont plug, shank 1/4 in. dia by 17/32 in. lg; cont arrangement J1; 1 3/4 in. lg by 1 in. dia o/a; mtg hole 3/8 in. dia; encl in rubber balloon, incl 2 ins wire leads soldered to cont	Headset jack	Motorola dwg no. 1X36448
LS-801	5965-232-8494 6C43-31	SPEAKER, DYNAMIC: Navy type no. 491285; dphgm, re-entrant horn, flush type; PM field; 15 w normal; voice coil impedance 15 ohms; 7 in. od by 3 1/4 in. d o/a; panel mtg type, 12 holes 0.180 in. dia equally spaced on 6-3/16 in. dia; incl 1 rubber mtg gasket; reflex air column type w/built-in HS driver unit, submergence proof		Univ Lab model MM-2-7
MP-801		PANEL, MOUNTING: aluminum, USMC green finish; 14 3/4 in. lg by 9 in. wd by 1/8 in. thk; holes provided for mtg of speaker and various controls, switches, and jacks; 8 mtg holes 3/16 in. dia	Mtg panel for components of Radio Set Control C-2198/MRC-35A	RepDiv MCSC, Albany Ga, Part/Dwg no. 309-1-1
N-801		PLATE, IDENTIFICATION: for Radio Set Control C-2198/MRC-35A; aluminum; 3 in. lg by 1 1/8 in. wd by 1/32 in. th; 2 mtg holes 1/8 in. dia spaced 2 3/4 in. c to c; silk screened white on black enamel		RepDiv MCSC, Albany, Ga, Part/Dwg no. 313-2
0-801	5820-392-5546 2Z380-116	ARM: detent, SS arm and post, bronze roller; "L" shape; 1-37/64 in. lg by 1/4 in. wd by 9/16 in. h; 1 mtg hole 0.093 in. dia	u/w Switch S-803	Collins Rad Part/Dwg no. 504 7162 002
0-802	5820-387-4409 2Z380-117	ARM: detent; SS arm and post, bronze roller; "L" shape; 1-5/32 in. lg by 1/4 in. wd by 9/32 in. h; 1 mtg hole 0.093 in. dia	u/w Switch S-802	Collins Rad Part/Dwg no. 504 7208 002
0-803 0-804	2Z8879-366	SPRING: helical extension type; detent; SS spring wire, 0.023 in. dia; 0.190 in. od by 0.734 in. lg; 17 turns; hook ends; cylindrical	u/w Switches S-802 and S-803	Collins Rad Part/Dwg no. 504 6823 002
R-801 thru R-804	3RC30BF301J	RESISTOR, FIXED: JAN type no. RC30BF301J; 300 ohm $\pm 5\%$ ; 1 w; 0.750 in. max lg by 0.280 in. max dia; ins; axial wire leads	Connects with Variable Resistors to give constant load to receivers	
R-805 R-806	5905-257-6764 2Z394.108	RESISTOR, VARIABLE: comp; 2 sect 300 ohms p/m 20% in each sect; 2 w per sect; 3 solder lug term. ea sect; metal case, 1-3/16 in. d by 1-1/16 in. dia, enclosed case; rd metal shaft, 0.250 in. dia by 7/8 in. lg FMS; lin taper; ins cont arm; normal torque; bushing 3/8 in.-32NEF-2, 3/8 in. lg for mtg; fungi resistant	Varies volume output to headset and speaker	
S-801	3Z9825-62.174	SWITCH: rotary; two deck; ceramic insulation; 4 position; single hole mtg; 3 circuit; o/a dim. 1 1/8 in. by 1 1/8 in. by 2-5/16 in. thk	On-Off and emission selector for Radio Transmitter T-47/ART-13	
S-802	3Z9903E-34.10	SWITCH SECTION, ROTARY: for 12 position rotary sw; phenolic ins. varnish treated, spring silver alloy cont; 1 pole; 1 1/8 in. lg by 1 1/8 in. wd by 1/16 in. thk; two 0.140 in. dia mtg holes 1.562 in. mtg/c, ctr hole 0.253 in. by 0.188 in. for shaft mtg; "X" designates top front of sw; non-shorting type cont, cont 5 and 6 long clips	Guard, Main T/R control for Radio Receiver-Transmitter RT-178/ARC-27	
S-803	3Z9903E-2.92	SWITCH SECTION, ROTARY: 1 pole 20 throw; 2 1/2 in. lg by 2-1/32 in. wd by 5/64 in. thk o/a	Channel selector for Radio Receiver-Transmitter RT-178/ARC-27	Oak part no. 43554-HS

TABLE 7-1. (CONTINUED).

TABLE OF PARTS

RADIO SET CENTRAL AN/MRC-35A

RADIO SET CONTROL C-2198/MRC-35A

Ref Desig	Fed. or Sig C Stk No.	Item Name, Description JAN/MIL Type No.	Function	Mfr's Name Part/Dwg No.
S-804	5930-050-2708 3Z9863-52P	SWITCH, TOGGLE: JAN type no. ST52P; DPDT; phenolic body 1-21/64 in. max d excluding bushings and handle; bat type actuating handle 11/16 in. lg excluding bushing lg; locking action; 6 solder lug term; mtg bushing 15/32 in.-32 by 15/32 in. lg FMS	Couples speaker to either receiver or turns it off	
S-805 thru S-807	5930-636-1227 3Z9863-17A	SWITCH TOGGLE: SPST; black phenolic body; body 1-9/32 in. by 23/32 in. by 23/32 in.; AWS no. ST-17-A; 5 amp at 125 v; single hole mtg, bushing 15/32 in.-32 by 1/4 in. lg; solder lug term.; 0.035 in. by 0.068 in. keyway	Power switch for Radio Receiver BC-348-(*), Keyer KY-132/U and Radio Receiver-Transmitter RT-178/ARC-27	
T-801		TRANSFORMER: line type; 300 ohms pri impedance, 15 ohms sec impedance; 3.5 w min; 1 3/8 in. h by 2 3/8 in. wd by 1 1/4 in. d o/a; 2 mtg holes on 2 in. center	Matches output of receivers to speaker	Merit type no. A-5931
TB-801 TB-802		TERMINAL BOARD: molded thermosetting plastics; 13/32 in. h by 7/8 in. wd; 15 term. 3/8 in. centers 5/16 in.; mtg no. 6-32 by 1/2 in. lg screws		Kulka no. 600-15
XDS-801 thru XDS-804	6210-186-7956 2Z5883-105	LAMPHOLDER: for miniature bayonet base pilot light; horiz mtg bkt, 1 1/8 in. behind panel; 29/32 in. wd tapering to 17/32 in. at rear; socket shell riveted to bkt; 2 solder term.; requires 11/16 in. dia mtg hole		Gothard no. 420

TABLE 7-2.

TABLE OF PARTS

RADIO SET CENTRAL AN/MRC-35A

FIELD STRENGTH METER

Ref Desig	Fed. or Sig C Stk No.	Item Name, Description JAN/MIL Type No.	Function	Mfr's Name Part/Dwg No.
C-901	5910-101-4005 3K3012232	METER, FIELD STRENGTH: 0.10 to 400.0 mc freq range, untuned, uncalibrated; relative field strength reading; housed in USMC green aluminum case 9 1/2 in. lg by 3-11/16 in. wd by 3-3/16 in. h o/a; w/whip antenna for field pick-up; range selector switch increases meter range from 200 ua to 200,000 ua in 4 steps	RF Filter	
CP-901	5935-196-4689 2Z299-359	CAPACITOR, FIXED, MICA DIELECTRIC: JAN type no. CM30C122J, NT no. 481084C5; silver mica, 1200 uuf ± 5%, 500v dc working; 53/64 in. sq by 9/32 in. thk; molded low-loss bakelite case, two 1 1/8 in. lg, no. 18 AWG axial wire leads	Antenna receptacle	Amphenol no. 83-1AP
CR-901	5960-194-9408 2J1N69	ADAPTER, CONNECTOR: Sig Adapter M-359, NT no. 49192; male 1 end, female other end; 1 round male cont, 1 round female cont; 90 deg angle type; 57/64 in. lg by 13/16 in. h to junction of axial ctr lines, 3/4 in. dia o/a; non-constant freq impedance characteristic; cyl zinc body w/brass coupling ring, silver pl; polystyrene insert	RF rectifier	General Electric no. C5K
E-901	2A288A-105	CRYSTAL UNIT, RECTIFYING: MIL type no 1N69; electrical ratings, 75v peak inverse voltage at 25 deg C, 60v continuously oper inverse voltage at 25 deg C, 40ma average oper rectified current at 25 deg C, 125ma peak rectified current at 25 deg C, 400ma surge current for 1 sec at 25 deg C, minus 50 deg C to plus 70 deg C ambient range; 2 3/4 in. lg by 0.220 in. dia o/a; wire ends soldered to term.	RF pickup for Field Strength Meter	Raytheon no. 141-6115G1
E-902		ANTENNA: whip type; for transmitting and receiving; SS w/USMC green paint finish; telescopic construction; 13 in. extended, 7-39/64 in. collapsed, 3/4 in. od; 5/8-24 thd NF-2 mtg nut; fixed; 225 to 390 mc freq range	Knob for meter shunt selector switch	Mallory no. 366-1
		KNOB: bar type; molded bakelite; 1 1/4 in. knob dia, 1/4 in. shaft hole dia; black		



TABLE 7-2. (CONTINUED). TABLE OF PARTS

## RADIO SET CENTRAL AN/MRC-35A

## FIELD STRENGTH METER

Ref Desig	Fed. or Sig C Stk No.	Item Name, Description JAN/MIL Type No.	Function	Mfr's Name Part/Dwg No.
J-901	5935-161-9639 2Z8799-239	CONNECTOR, RECEPTACLE, ELECTRICAL: Sig Socket SO-239, Navy Socket no. 49194; 1 round female cont; pol; straight type, 1-1/6 in. lg by 1 in. wd by 1 in. h o/a; cont rated 5 a, 500 v peak; rf connector, non-constant freq impedance characteristic; cyl body w/sq mtg flange; zinc silver pl, locking type; teflon insert; four 0.125 in. dia holes on 0.719 in. by 0.719 in. mtg/c; bronze, silver pl cont	Receptacle for antenna and adaptor	Amphenol no. 83-798
L-901 L-902		COIL, RADIO FREQUENCY: 4 pie wnd; 2.5 mh inductance, 45 ohms resistance, 125 ma; enameled copper wire, silk covered; wnd on 1/4 in. dia ceramic core; 1 1/2 in. lg; w/2 axial wire leads	RF filter	Bud Radio no. CH-920W
M-901		AMMETER: microammeter, 0 to 200 ua; panel mtg type; dc, D'Arsonval movement, approx 360 ohms resistance, 2% accuracy; clear plastic lens, thermoplastic case, spade pointer, 40 scale divisions, 2.197 in. scale lg; 2-11/16 in. dia flange, 2-13/64 in. dia body, 1 in. d barrel; 3 mtg screws, no. 4-40 thd, spaced 120 deg on 1-7/32 in. rad, complete with 3 hex. nuts no. 4-40 and 3 no. 4 lock washers	Relative field strength indicator	Triplet Instru- ment model no. 221-PL
MP-901		HOUSING, ELECTRICAL METER: aluminum, USMC green finish, box shape; 9-11/16 in. lg by 3-3/16 in. wd by 3 5/8 in. h o/a; 6 holes tapped no. 10-32NC facilitate attachment of mounting plate		RepDiv MCSC, Albany Ga, Part/Dwg no. 375-2
MP-902		PANEL, MOUNTING: aluminum, USMC green finish; 9 1/2 in. lg by 3 in. wd by 1/16 in. thk; apertures provided for mtg of meter, switch, and antenna receptacle; 6 mtg holes 41/64 in. dia		RepDiv MCSC, Albany, Ga, Part/Dwg no. 375-3
R-901		RESISTOR, FIXED, WIRE WOUND: equivalent MIL type RU3; 0.39 ohms $\pm 5\%$ ; 1/2 w power dissipation, 40 deg C ambient temp; 5/8 in. lg by 3/16 in. dia; 2 axial wire leads 1 1/2 in. lg; MIL characteristic B	Increase range of meter M-901	International Resistance Co no. BW-1/2 0.39 PLUS-MINUS-5
R-902		RESISTOR, FIXED, WIRE WOUND: equivalent MIL type RU3; 3.90 ohm $\pm 5\%$ ; 1/2 w power dissipation, 40 deg C ambient temp; 5/8 in. lg by 3/16 in. dia; 2 axial wire leads 1 1/2 in. lg; MIL characteristic B	Increase range of meter M-901	International Resistance Co no. BW-1/2 3.90 PLUS-MINUS-5
R-903		RESISTOR, FIXED, WIRE WOUND: equivalent MIL type RU3; 39.0 ohms $\pm 5\%$ ; 1/2 w power dissipation, 40 deg C ambient temp; 5/8 in. lg by 3/16 in. dia; 2 axial wire leads 1 1/2 in. lg; MIL characteristic B	Increase range of meter M-901	International Resistance Co no. BW-1/2 39.0 PLUS-MINUS-5
S-901		SWITCH, ROTARY: single section, 1 circuit, 5 positions, shorting type; phenolic resin insulation material; voltage breakdown rating 500 v ac or dc; max and min breaking currents, resistive load, 0.125 a at 300 v dc, 3 a at 6 v dc, 0.2 at 300 v ac, 5 a at 6 v ac; max non-breaking current, resistive load, 5 a; 1 1/4 in. dia by 3-3/16 in. lg o/a; shaft 1/4 in. dia by 2 in. lg; bushing 3/8-32 thd by 3/8 in. lg	Meter shunt selector switch	Mallory no. 3115J

REPAIR DIVISION  
MARINE CORPS SUPPLY CENTER  
ALBANY, GEORGIA

INSTRUCTION BOOK  
RADIO SET CENTRAL AN/MRC-35A

ERRATA SHEET

28 May 1957

Make the following ink corrections to the Instruction Book as indicated below and make entry on the Record of Corrections Made page.

Page 1-0 Figure 1-1. There are several extra marks and letters in the labels of the components. These should be crossed out to avoid any confusion.

Below CU-25 cross out the mark shown.

Behind Radio Receiver cross out the mark shown.

In front of Term Box cross out the mark shown.

Behind Transmitter-Receiver cross out EIVER.

Behind DY-12/ART-13 cross out the mark shown.

Page 1-1 The Illustration should be titled: Figure 1-2 Radio Set Central AN/MRC-35A

Page 1-5 Table 1-4, line 20. Reads: 2 Maintenance Instructions TM 11-692C-2  
Change to: 2 Maintenance Instructions TM 11-692C-1.

Page 4-3 Figure 4-3 reads: 78 feet. Change to: 780 feet.

Page 4-3 Paragraph 4-3f, 3rd line reads: 78 feet. Change to: 780 feet.

Paragraph 4-3f, 5th line reads: 25%. Change to: 2.5%.

Paragraph 4-3f, 12th line reads: 78 feet. Change to: 780 feet.

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SUP. CENTER, ALB. GA., A. L. SEELY PRtg. Co.,  
ALB. GA., 3-14-57-800.