ADDENDA SHEET FOR TM 11-265

ORDER No. 917-Phila.-45

Page	*Par.*	
1	1	The carrying case houses only the Radio Set AN/PRC-5; telegraph key, coils and crystals. Other associated equipment, namely, headset, antenna, running spare tubes, spare fuses, spare indicating lamp, and the remaining 19 crystals are separate items.
2	2	Twenty-six (26) crystals are now provided instead of 6.
2	2	Key J-37 radio telegraph is now used in place of J-47.
8	7*b*(2)g	Twenty-six (26) crystals are now furnished with the unit instead of 6.
10	8	Carrying case: The transceiver assembly is held in the carrying case by 10 small screws. The antenna wire with one insulator attached is wound on a special reel and is a separate unit. The case houses only the transceiver, coils, telegraph key and seven (7) crystals. Headset, spare fuses, spare lamps, antenna, 19 crystals and running spare tubes are external to the set itself.
10	10	Key J-37 radio telegraph is furnished with the equipment instead of J-47.
11	11	ANTENNA—is wound on a special reel and is not contained in the case.
12	13	ADAPTERS—A set of 4 adapters is furnished with each set instead of 5 adapters.
12	14	A set of 26 crystals mounted in FT-243 holders are with the equipment. These crystals permit operation of set on fundamental and second harmonic frequencies as follows:

Fundamental Frequency	*Harmonic Frequency*	*Fundamental Frequency*	*Harmonic Frequency*
4520	9040	7170	14340
4565	9130	4430	8860
4580	9160	4460	8920
4610	9220	4995	9990
4640	9280	5480	10960
4830	9660	6500	13000
4870	9740	6645	13290
4885	9770	5540	11080
5065	10130	5630	11260
5090	10180	5115	10230
4920	9840	6405	12810
5570	11140	6430	12860
5970	11940	6475	12950

13	16	Operating spares—no operating spare parts are housed in the carrying case.
14	17*a*(5)	One set of 26 crystals instead of 6 crystals.
14	17*a*(9)	One set of 4 adapters instead of 5 adapters.
14	17*a*(10)	One antenna (external to the case) wound on a special reel.
14	17*c*	The transceiver can be removed only by removing the 10 screws holding the panel into the carrying case.

WAR DEPARTMENT TECHNICAL MANUAL

TM11-265 SECRET

RADIO SET AN/PRC-5

WAR DEPARTMENT 21 JUNE 1944

WAR DEPARTMENT,

WASHINGTON 25, D. C., 21 JUNE 1944.

TM 11-265, Radio Set AN/PRC-5, is published for the information and guidance of all concerned.

[A. G. 300.7 (11 May 1944).]

BY ORDER OF THE SECRETARY OF WAR:

G. C. MARSHALL,

Chief of Staff.

OFFICIAL:

J. A. ULIO,

Major General,

The Adjutant General.

DISTRIBUTION:

X

(For explanation of symbols see FM 21-6.)

WARNING

HIGH VOLTAGE

is used in the operation of
this equipment.

DEATH ON CONTACT

may result if operating personnel
fail to observe safety precautions.

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

DESTRUCTION NOTICE

WHY - To prevent the enemy from using or salvaging this equipment for his own benefit.

WHEN- As ordered by your commander.

HOW - 1. Smash - Use any heavy instrument at hand.

2. Cut - Use any sharp instrument at hand.

3. Burn - Use gasoline, kerosene, oil, any incendiary material at hand.

4. Explosives - Use firearms.

5. Disposal - Obliterate: bury, scatter, or throw into any body of water.

USE ANYTHING IMMEDIATELY AVAILABLE FOR DESTRUCTION OF THIS EQUIPMENT.

WHAT- 1. Smash - Receiver, transmitter, antenna, power transformer, crystals, tubes, headphones, telegraph key, resistors, capacitors, coils, switches, etc.

2. Cut - Wiring and line cords.

3. Burn - Capacitors, canvas bags and equipment receptacles in carrying case.

4. Bury or scatter - Any or all of above pieces.

DESTROY EVERYTHING

SAFETY NOTICE

THIS EQUIPMENT USES DANGEROUSLY HIGH VOLTAGES. DO NOT CHANGE VACUUM TUBES OR MAKE CHANGES INSIDE OF THE TRANSCEIVER UNIT WITH THE POWER PLUG PLUGGED INTO A POWER SOURCE, EXCEPT AS SPECIFICALLY DIRECTED IN THIS MANUAL.

A MODERATELY HIGH VOLTAGE IS PRESENT ACROSS THE TWO SIDES OF THE KEY. IT IS NOT LIKELY THAT EXPOSURE TO THIS VOLTAGE WILL BE FATAL BUT IT WILL CAUSE A PAINFUL SHOCK UNDER CERTAIN CONDITIONS. DO NOT TOUCH BOTH SIDES OF THE KEY WITH THE EQUIPMENT IN OPERATION; DO NOT TOUCH ONE SIDE OF THE KEY AND THE CHASSIS AT THE SAME TIME.

THE PLUG-IN COILS OF THE TRANSMITTER ARE ISOLATED FROM THE HIGH-VOLTAGE SOURCE BUT THEY CAN CAUSE PAINFUL RADIO-FREQUENCY BURNS IF TOUCHED WHILE THE EQUIPMENT IS IN OPERATION AS A TRANSMITTER.

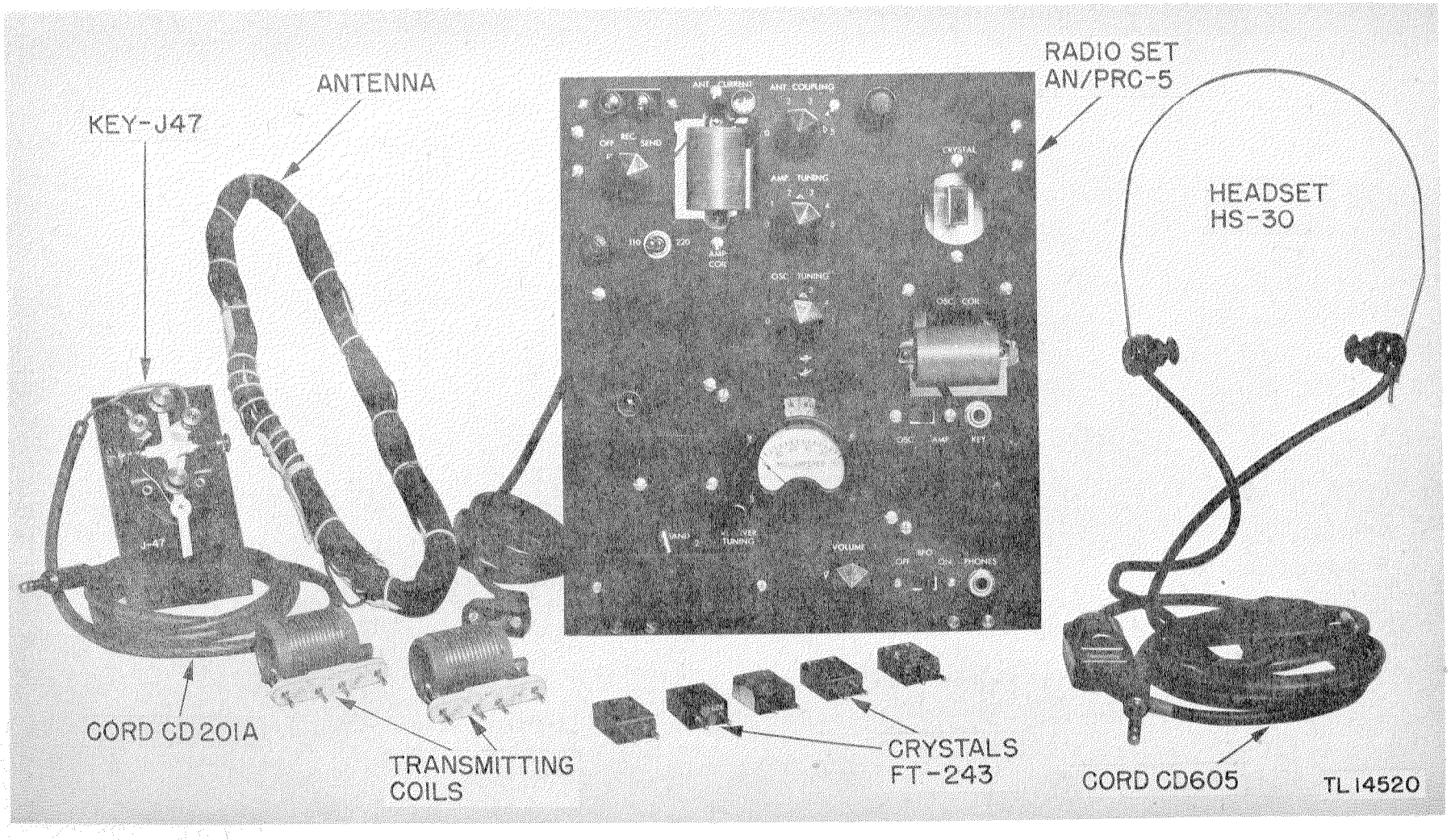

Figure 1. Radio Set AN/PRC-5, front panel and operating components.

SECTION I

DESCRIPTION

1. GENERAL. Radio Set AN/PRC-5 is designed for short-wave communication over medium distances from variable points. It is a portable transceiver, the component parts of which are a radio telegraph transmitter, a radio receiver, and a power-supply unit common to both. All three are constructed in one unit which is mounted in a luggage-type carrying case. The carrying case also houses other associated equipment such as the telegraph key, headset, antenna, and various spare parts such as fuses, indicator lamps, and vacuum tubes.

a. The transmitter is of the radio-telegraph type, with a power output of 16 watts when the output frequency is the same as that of the crystal, and an output of 10 watts when the output frequency is twice that of the crystal. The transmitter is composed of two stages: a crystal-controlled oscillator stage followed by a power-amplifier stage. Both of these stages are keyed during periods of transmission.

b. The receiver is of the superheterodyne type, and contains enough audio-frequency amplification to operate the headset provided with the equipment.

2. TABLE OF COMPONENTS.

Quantity	Name of component	Dimensions (in.)					Unit weight (lb)
		Height	Width	Depth	Length	Diam	
1	Antenna	--	--	--	1800	1/16	0.4
5	Adapters, plug-in, socket power	--	--	--	--	--	0.05
6	Crystals, mounted in Ft-243 holders, one ea. 4635, 5263, 5925, 6525, 7150, and 7825 kc	1-3/16	7/8	7/16	--	--	0.04
1	Case, portable luggage type	--	--	--	--	--	Variable
1	Cord CD-201-A, for key, with Plug PL-55	--	--	--	40	0.3	0.2
1	Cord CD-605, for headset, with Transformer C-410 and Plug PL-55	--	--	--	72	0.22	0.6
1	Headset HS-30 (less cord, transformer, and plug)	--	--	--	--	--	0.15
1	Key J-47, radio telegraph	1-1/8	2-3/4	5-3/8	--	--	0.6
1	Radio receiver and transmitter, Radio Set AN/PRC-5 Includes: 1 set of vacuum tubes as follows:	11.0	10.0	4-1/8	--	--	15.0
	Quantity — JAN type						
	2 — 6SK7						
	1 — 6SA7						
	1 — 6SR7						
	1 — 6N7						

Quantity	Name of component	Dimensions (in.)					
		Height	Width	Depth	Length	Diam	Unit weight (lb)
	Quantity / JAN type 1 6V6 1 6L6 1 5Z4 and also 4 Plug-in type coils for transmitter 1 Pilot Lamp P1 1 Pilot Lamp P2						
2	Technical Manuals 11-265, Radio Set AN/PRC-5	9.0	5-7/8	—	—	—	0.25
1	Set of vacuum tubes, running spares, as follows: Quantity / JAN type 2 6SK7 1 6SA7 1 6SR7 1 6N7 1 6V6 1 6L6 1 5Z4	—	—	—	—	—	0.1

3. TOTAL WEIGHTS. The transceiver unit alone weighs 15 pounds. The complete assembly, including the carrying case and associated operating components and spare parts, weighs approximately 25 pounds (subject to slight variation).

4. FREQUENCY COVERAGE.

a. The transmitter covers 4,000 to 16,000 kilocycles in four bands:

(1) 4,000 to 6,000 kilocycles.

(2) 6,000 to 8,000 kilocycles.

(3) 8,000 to 12,000 kilocycles.

(4) 12,000 to 16,000 kilocycles.

b. The receiver covers 4,500 to 16,000 kilocycles in two bands:

(1) 4,500 to 8,000 kilocycles.

(2) 8,000 to 16,000 kilocycles.

5. SOURCE OF POWER (fig. 1). The equipment is designed for operation from a 110- or 220-volt, 50- to 60-cycle, single-phase source. The equipment is set for operation from a source of either voltage by manipulation of the switch marked 110-220, located near the FUSE receptacle in the upper left-hand corner of the transceiver unit.

CAUTION: THIS EQUIPMENT IS DESIGNED FOR OPERATION FROM 110-VOLT OR 220-VOLT, 50- TO 60-CYCLE A-C POWER ONLY. IF OPERATION IS ATTEMPTED ON A D-C POWER SOURCE OR ON AN A-C SOURCE OF WIDELY DIFFERENT VOLTAGE AND FREQUENCY, THE EQUIPMENT MAY BE PERMANENTLY DAMAGED.

6. POWER INPUT. The line currents and power consumption are as follows:

Item	110 volts	220 volts
Line current (receiver on)	0.51 ampere	0.25 ampere
Line current (transmitter on) No load	0.55 ampere	0.30 ampere
Line current (transmitter on) Full load	0.86 ampere	0.46 ampere
Power input (receiver on)	41.0 watts	46.0 watts
Power input (transmitter on) No load	45.0 watts	51.0 watts
Power input (transmitter on) Full load	78.0 watts	84.0 watts

7. TRANSCEIVER (fig. 1). The transmitter and the power supply form the upper half of the transceiver unit, and the receiver forms the lower half. All of the controls for the transceiver unit are mounted on a single panel covering the face of the unit (fig. 1).

a. Power Supply. The power supply portion of the transceiver unit supplies all operating voltages for both the transmitter and receiver portions of the unit. It consists of a power transformer, a full-wave vacuum-tube rectifier, and a capacitor-input filter consisting of three capacitors (two in series) and one choke coil.

(1) The 110-220 toggle selector switch on the upper left-hand side of the transceiver panel permits operation on either 110-volt or 220-volt, 50- to 60-cycle a-c power source. The power transformer has two 110-volt primary windings. The toggle selector switch connects the two primary windings in parallel for operation from a 110-volt power line, and connects them in series for operation from a 220-volt line.

(2) A fuse, located on the upper left-hand side of the transceiver panel in the holder marked FUSE, is connected between one side of the power input cord and the primary circuit of the power transformer for protection of the equipment from short circuits or accidental overloads.

(3) The green pilot light, located immediately below the FUSE receptacle and the 110-220 toggle switch, is connected across one of the filament windings of the power transformer, and lights when the transformer is energized.

(4) The power cord, which is permanently attached to the transceiver unit, may be adapted for use with various types of power outlet sockets by means of the adapters furnished with the equipment (par. 2).

(5) The OFF-REC-SEND switch, located above the FUSE holder and the 110-220 switch near the upper left-hand corner of the panel, disconnects the primary circuit of the power transformer from the power cord in the OFF position, causes power to be applied to the receiver in the REC position, and causes power to be applied to the transmitter in the SEND position. The filaments of the vacuum tubes in both the receiver and the transmitter circuits are energized at both the REC and SEND positions of the switch. In addition to the above functions, this switch also transfers the antenna connection from the receiver to the transmitter, and vice versa.

(6) The GND and ANT binding posts, located in the upper left-hand corner of the panel, provide a means of connecting the ground and antenna leads to the transceiver unit.

b. Transmitter. The transmitter portion of the transceiver unit consists of a two-tube (crystal-controlled master oscillator followed by a power-amplifier stage), four-band circuit arrangement covering a frequency range of 4,000 to 16,000 kilocycles.

(1) A change from one band to another is accomplished by inserting the proper crystal and the oscillator and power-amplifier coil units into their proper receptacles on the front panel. The oscillator and amplifier coil units are completely interchangeable with each other, and the operating circuits have been designed so that only four coils are required to cover the entire range of the transmitter (par. 20c).

(2) The following transmitter controls and receptacles are located on the front panel of the transceiver unit (fig. 2):

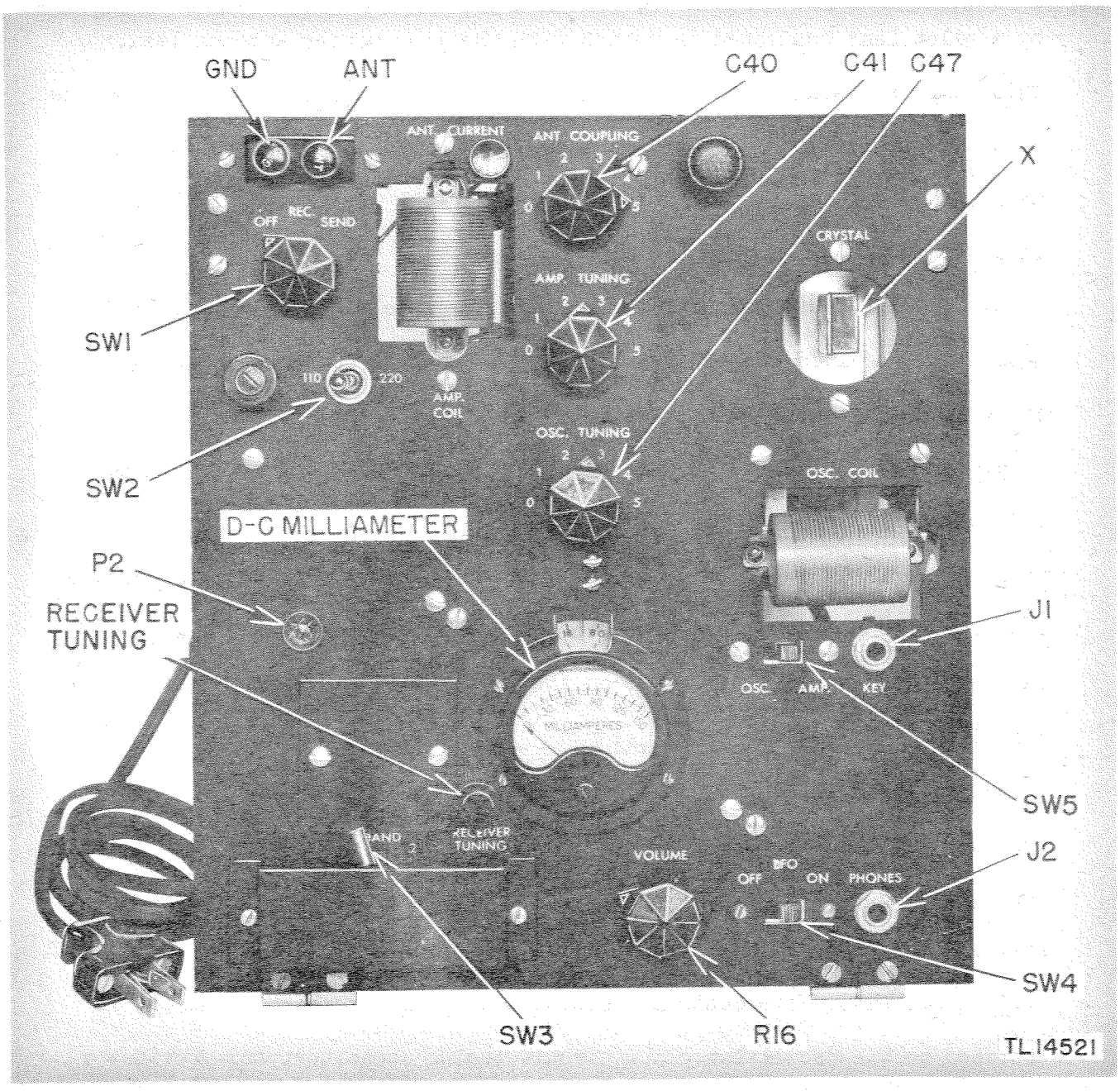

Figure 2. Radio Set AN/PRC-5, front panel details.

(a) ANT CURRENT. An indication of transmitter antenna current is provided by a pilot lamp connected in series with the transmitter antenna lead. This lamp is installed near the top edge of the transceiver unit behind the clear jewel indicator. This lamp is shunted by a small inductor which will maintain operation of the transceiver unit in the event of failure of the lamp filament.

(b) AMP COIL. This receptacle, located immediately below the ANT CURRENT indicator, receives the power-amplifier plate coil required for operation at a given frequency.

(c) OFF-REC-SEND Switch. Refer to subparagraph a(5) above for a description of this switch.

(d) ANT COUPLING. This control, located at the top-center portion of the transceiver unit, provides a means of adjusting the antenna loading capacitor and, in turn, the load on the transmitter power-amplifier circuits (pars. 22d and e).

(e) AMP TUNING. This control, located below the ANT COUPLING control, provides a means of tuning the power-amplifier plate circuit to resonance. The tuning capacitor controlled by this knob is similar to that used in the ANT COUPLING control.

(f) OSC TUNING. This control, located below the AMP TUNING control, is attached to the oscillator plate circuit tuning capacitor, and provides a means of bringing this circuit into resonance.

(g) CRYSTAL. This receptacle, located near the upper right-hand corner of the panel, receives the crystal unit required for operation on a given frequency. Six crystals are furnished with the unit, and the frequency of each is marked directly on the crystal holder (par. 2).

(h) OSC COIL. This receptacle, located immediately below the CRYSTAL receptacle, receives the oscillator plate coil required for operation at a given frequency.

(i) OSC-AMP Switch. This slide-type switch, located below the OSC COIL receptacle, provides a means of switching the d-c milliammeter, located below the receiver tuning dial, from the oscillator cathode circuit to the power-amplifier cathode circuits or vice versa. In the OSC position of this switch, the cathode current of the oscillator tube is indicated by the meter. In the AMP position, the cathode current of the power-amplifier tube is indicated.

(j) KEY Jack. This jack, located below the OSC COIL receptacle and to the right of the OSC-AMP switch, receives Plug PL-55 on the end of the cord attached to Key J-47.

c. Receiver. The receiver portion of the transceiver unit consists of a five-tube superheterodyne circuit arrangement, with automatic volume control (avc), a beat-frequency oscillator, and a frequency range of 4,500 to 16,000 kilocycles covered by two bands. The beat-frequency oscillator is provided for the reception of c-w signals. When the reception of voice- or tone-modulated signals is desired, this oscillator may be switched off as described below (subpar. c(4)). The following receiver controls (fig. 2) are located on the lower portion of the transceiver unit:

(1) RECEIVER TUNING. The RECEIVER TUNING control, located to the left of the d-c milliammeter in the center of the panel, controls the 3-gang variable tuning capacitor in the receiver circuits as well as the calibrated dial which is visible in the small window directly above the d-c milliammeter. This dial is calibrated directly in megacycles (mc), with

band 2 (8.0 to 16.0 mc) on the top portion of the dial, and band 1 (4.5 to 8.0 mc) on the bottom portion.

(2) BAND SWITCH. The BAND change switch, located in the lower left-hand corner of the panel, has two positions marked 1 and 2. The frequency ranges covered in these two positions are as follows: position 1: 4,500 to 8,000 kilocycles; position 2: 8,000 to 16,000 kilocycles. The BAND switch is protected by a rectangular cover fastened to the panel by screws. Underneath this cover are several adjustment screws used in aligning the receiver circuits. Immediately above the BAND switch is another square cover plate over trimmer capacitor adjustment screws also used in aligning the receiver circuit. For the location of these adjustments refer to figure 6.

(3) VOLUME CONTROL. The receiver VOLUME control, located to the right and below the d-c milliammeter, controls the amount of a-f voltage fed to the grid of the first audio-amplifier stage and the level of sound in the headset.

(4) BFO OFF-ON SWITCH. This switch, located to the right of the VOLUME control and immediately below the OSC-AMP switch, controls the operation of the beat-frequency oscillator by opening or closing its plate voltage circuit.

(5) PHONES JACK. The PHONES jack, located in the bottom right-hand corner of the panel immediately below the KEY jack, receives Plug PL-55 attached to the end of the headset cord.

8. CARRYING CASE. The transceiver assembly is mounted on slip-hinges in a luggage-type carrying case, and it is held in place in the case by a spring-tension latch. Folding-type brackets on the two sides of the trans-

ceiver unit are attached to the side walls of the transceiver compartment of the carrying case to permit tilting of the transceiver unit for greater convenience in operating. The antenna wire, with one insulator attached, is wound on blocks, attached to the inside of the carrying-case lid, for carrying purposes only. Several canvas bags attached to the inside of the carrying case, at several convenient points, house Headset HS-30, Key J-47, the extra crystal and transmitter coil units, and spare fuses, pilot lamps, and tubes.

9. HEADSET (fig. 1). Headset HS-30, furnished with the equipment, plugs into the PHONES jack on the transceiver unit by means of Plug PL-55 attached to the end of headset Cord CD-605. The 256-ohm primary winding of Transformer C-410 is connected to the headset, and the 8,000-ohm secondary winding is connected to the receiver output by means of the complete headset and cord assembly.

10. KEY (fig. 1). Key J-47, furnished with the equipment, plugs into the KEY jack on the transceiver unit by means of Plug PL-55 attached to the end of Cord CD-201-A.

11. ANTENNA. The antenna consists of a 150-foot length of flexible insulated wire. The antenna is equipped with a small airplane-type insulator and a 20-foot length of chalk-line cord for attachment of the remote end of the antenna wire to a suitable support. When the equipment is being transported, the antenna wire is coiled around blocks attached to the lid of the carrying-case (par. 8).

12. VACUUM TUBES. The vacuum tubes used in Radio Set AN/PRC-5 are shown in the following tabulation:

Reference	Function	Signal Corps type	JAN type	Base
V1	Receiver r-f amplifier	VT-117	6SK7	Octal
V2	Receiver converter	VT-150	6SA7	Octal
V3	Receiver i-f amplifier	VT-117	6SK7	Octal
V4	Receiver detector and BFO	VT-233	6SR7	Octal
V5	Receiver a-f amplifier stages	VT-96	6N7	Octal
V6	Transmitter crystal oscillator	VT-107	6V6	Octal
V7	Transmitter power-amplifier	VT-115	6L6	Octal
V8	Full wave rectifier	VT-74	5Z4	Octal

13. ADAPTERS. A set of five adapters is furnished so that the plug on the end of the power cord may be adapted to fit into various types of power outlet sockets that may be encountered while using the equipment.

14. CRYSTALS (fig. 1). A set of six crystals, mounted in FT-243 holders, are furnished with the equipment. These crystals permit fundamental frequency operation on the following frequencies: 4635; 5263; 5925; 6525; 7150; and 7825 kilocycles. The crystals also permit operation at the second harmonic frequencies of the crystals as follows: 9270; 10,526; 11,850; 13,050; 14,300; and 15,650 kilocycles.

15. TRANSMITTER PLUG-IN COILS (fig. 1). A set of four transmitter coil units is furnished with the equipment. These coils are wound on clear phenolic forms attached to a ceramic plug strip having four pin-type plugs. The coils plug into ceramic jack strips installed in the trans-

ceiver unit. Identification of the four coils is marked on the bottom of the ceramic plug strip; two coils are marked Band D and one each Band B and Band C. All of the coils are completely interchangeable so far as insertion into the jack strips is concerned.

16. OPERATING SPARES. The operating spare parts, housed in canvas bags attached to the inside of the carrying case, are as follows:

a. A complete duplicate set of vacuum tubes as listed in paragraph 12.

b. Two spare fuses, 2-ampere, 250-volt type.

c. One antenna loading indicator pilot lamp, 0.06-ampere, 2-volt type, with bayonet base.

d. One power indicating pilot lamp, 0.15-ampere, 6- to 8-volt type, with bayonet base.

SECTION II

INSTALLATION AND OPERATION

17. INITIAL PROCEDURE.

a. Unpack the box which contains Radio Set AN/PRC-5 and check to see that the following items are included:

(1) The transceiver unit with fuse, pilot lights, and a set of vacuum tubes installed; mounted in a portable luggage-type carrying case.

(2) One complete set of spare tubes (pars. 12 and 16).

(3) One Headset HS-30.

(4) One Key J-47.

(5) One set of six crystals (par. 14).

(6) One set of four transmitting coils (par. 15).

(7) Two spare fuses (par. 16).

(8) Two spare pilot lamps (par. 16).

(9) One set of five socket adapters (par. 13).

(10) One antenna, wound on blocks inside of carrying-case cover (par. 11).

(11) Two copies of Technical Manual TM 11-265, Radio Set AN/PRC-5.

b. Inspect the equipment for any damage that may have occurred in transit.

c. In order to make sure that each vacuum tube is seated firmly in its socket, it will be necessary to remove the transceiver unit from the carrying case. To do this proceed as follows:

(1) Release the spring-tension latch holding the top end of the transceiver unit and raise the top end of the transceiver unit as far as possible (tilt it up).

(2) Disengage the folding brackets, which hold the transceiver unit, from the heads of the holding screws in the side walls of the transceiver

compartment.

(3) Lift the transceiver unit still further and slip it off the slip-hinges attached to the bottom edge of the transceiver unit and the front edge of the carrying case.

(4) Inspect the interior portion of the unit for possible damage during shipment and make sure that all vacuum tubes are seated firmly in their correct sockets. Make sure that the pilot lamps have been installed in their proper positions.

(5) Replace the transceiver unit on the slip-hinges.

(6) Lower the unit carefully until the folding brackets can be reinstalled properly, and engage the lower ends of the brackets with the heads of the holding screws.

(7) If immediate operation of the equipment is desired, the transceiver unit may be left in this tilted position for convenience in operating. If the equipment is to be carried or stored, lower the transceiver unit until the spring-tension latch engages the top edge of the unit.

18. INSTALLATION OF ANTENNA. Unwind the antenna wire from the supporting blocks attached to the inside of the lid of the carrying case, and attach the end with the insulator to a suitable support by means of the cord attached to the insulator. For best results, this end of the antenna should be as high as possible above the earth and surrounding buildings or other objects. Under certain conditions it may not be possible to install the antenna in such a manner. Under such conditions it may be necessary to coil the antenna wire around the molding in a room or to drop as much as possible of its total length out of a window. No hard and fast rules can be given for the installation of the antenna under such conditions, and

successful operation of the equipment will depend on the skill and ingenuity of the operator. Remember that the entire length of the antenna should be in free space so far as physically possible. If it is necessary to support the wire at points along its length, these additional points of support should be insulated as well as possible either by supporting the wire with pieces of cord or rope or by tying the wire to wooden objects. Do not attach the wire directly to metal objects. Attach the other end of the antenna wire to the binding post marked ANT, located in the upper left-hand corner of the transceiver unit. If a good ground connection such as a water pipe is available, connect the GND post which is adjacent to the ANT post to the pipe by means of a short length of wire (not furnished with the equipment).

19. POWER LINE CONNECTION (fig. 2). Determine the voltage and the frequency of the source of power to be used. For Radio Set AN/PRC-5 to operate properly, the line frequency must be between 50 and 60 cycles and the line voltage must be between 110 and 120 volts or between 220 and 240 volts. Then proceed as follows:

a. Throw the OFF-REC-SEND switch (SW1) to the OFF position.

b. Throw the 110-220 toggle switch (SW2) to the position corresponding to the voltage of the available power source.

c. Determine what adapter is needed, if any, to connect the power cord to the power outlet, and fit the adapter on the power cord plug.

d. Connect the power cord to the power outlet.

20. TRANSMITTER CRYSTAL AND COIL UNITS (fig. 2).

a. Crystal. The frequency of each crystal is marked on the outside of Crystal Holder FT-243. Select the crystal of the desired operating