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INSTRUCTION MANUAL/PM-0350A



rf

RF-307A

REMOTE CONTROL

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SECTION 1

GENERAL INFORMATION

1.1 SCOPE.

This instruction manual describes the RF-307A Remote Control unit for use with the RF-301A Transceiver.

1.2 GENERAL DESCRIPTION.

The RF-307A is a remote operation device for use with the RF-301A Transceiver. It incorporates remote speaker and microphone or handset facilities.

The RF-307A is especially useful in vehicular applications where operating space is limited. The transceiver can be mounted where space is available, and only the small Remote Control unit need be mounted near the operator. The Remote Control unit is also useful in cases where operation from two different locations or operation by two persons is desired. This is often the case in aircraft installations.

The Remote Control unit is also necessary for some fixed-station installations. Many times it is desirable to install the transceiver and antenna coupler near an antenna, for instance, and operate the transceiver from another position.

Although the unit is intended primarily for voice operation, provisions have been included for connection to earphones and a CW hand key if CW operation is desired.

1.3 ELECTRICAL DESCRIPTION.

The RF-307A contains the necessary devices to connect and control the audio and keying signals to and from the transceiver. An amplifier in the unit allows the use of a

speaker controlled independently of the speaker in the transceiver. A volume control on the RF-307A adjusts the level of the received audio signal. A switch selects speaker or handset listening or both. Either a dynamic microphone or a telephone-type handset can be supplied with the Remote Control unit. Other carbon and high impedance microphones can be used with the RF-307A.

The unit is connected to the transceiver by a single eight-conductor cable. The cable can be up to 92 feet in length. The only power required is 12 VDC, which is supplied by the transceiver. A fuse in the transceiver protects against damage from shorts or overloads.

1.4 PHYSICAL DESCRIPTION.

The RF-307A is contained in a rugged aluminum case measuring 7-1/2 inches wide, 4-3/4 inches high, and 5-1/2 inches deep. The unit is mounted by means of a swivel-type bracket, which can be adjusted to allow mounting from any surface and at any angle.

1.5 EQUIPMENT SUPPLIED.

The RF-307A is supplied with a swivel mounting bracket, mounting screws, and an interconnecting cable with connectors installed, ready to plug into the transceiver and Remote Control unit. The length of cable supplied can be specified at the time the unit is ordered.

SECTION II

INSTALLATION

2.1 UNPACKING AND INSPECTION.

Remove packing material from container and carefully lift out unit. The cable, microphone or handset, and hardware are wrapped separately. Be careful not to discard small items with packing material.

Inspect the unit for possible damage in transportation. If any exists, save packing material and container to substantiate claim with transportation agency.

2.2 MOUNTING.

The Remote Control unit can be mounted in any position convenient to the operator by means of the swivel bracket supplied. Choose a suitable mounting surface, and mark the holes to be drilled, using the mounting bracket as a template. The bracket detaches from the unit by removing the knurled screws. Drill holes, and securely bolt the swivel bracket to the mounting surface. Fasten the unit in the bracket at the desired angle with the knurled screws.

The microphone or handset hanger can be bolted to any desired mounting surface near the RF-307A. It should be positioned such that, with the microphone in place, the coiled cord will not interfere with the operation of the controls on the Remote Control unit.

2.3 INSTALLING THE INTERCONNECTING CABLE.

The 30 foot cable supplied with the RF-307A has connectors installed. In most installations, the cable can be run without removing a connector. The cable should be plugged into the transceiver's REMOTE connector and the rear connector

on the RF-307A. Both connectors are the same. Should it be necessary to remove one connector to install the cable, refer to the chart below for proper wire to pin connections. If additional cable is required, use RF P/N W-0961 Belden type 8777, or equivalent cable. Up to 92 feet of cable can be used. The connectors are RF P/N P-0401, 12 pin plugs.

CABLE CONNECTIONS

Red	Pin 1	} Pair 1
Black	Pin 3	
White	Pin 4	} Pair 2
Black	Pin 6	
Green	Pin 7	} Pair 3
Black	Pin 9	
Not used	Pins 10, 11, 12	

3 shield wires---Pin 8

2.4 HANDSET AND MICROPHONE CONNECTIONS.

The microphone or handset if supplied with the RF-307A will have a connector already installed. Other microphones, earphones, and keying devices can be used with the RF-307A. They should be wired to a 7 pin, RF P/N P-0400 plug according to the following chart. All devices are connected between a signal pin and a ground pin. If the microphone cable is shielded, the shield lead should be grounded.

It should be noted that the connections to the HANDSET connector are the same as required for the transceiver's HANDSET connector, and devices wired for use with the transceiver or the Remote Control unit are interchangeable.

P-0400 PIN #

USE

1	Spare
2	Carbon Mic. Input
3	Earphone Output
4	Ground
5	Dynamic or Hi Z Mic. Input
6	Ground
7	Keyline or CW Hand Key

2.5 FUSING .

The 12 VDC supplied to the RF-307A is protected against shorts or overloads by a fuse located in the RF-301A Transceiver. The bottom cover of the transceiver must be removed to replace the fuse. Should the fuse blow, the transceiver will also be inoperative.

If it is desired to operate the RF-307A from a separate 12 VDC power source, a 1/2 AMP type AGC fuse should be installed in series with the positive lead to the Remote Control unit.

When the RF-307A is used, it is advisable to keep the RF-301 SPEAKER switch off. Due to the fact that the 12 volt power requirement, when using both speaker amplifiers at high output levels is greater than normally required for the transceiver alone, the 12 volt fuse in the transceiver may blow. If it is necessary to operate speakers at both the transceiver and the Remote Control Unit, it is suggested that a separate 12 volt power source be used for the RF-307A.

SECTION III

OPERATION

3.1 FUNCTIONAL DESCRIPTION.

The RF-307A Remote Control is a device containing the necessary circuitry to allow operation of the RF-301A Transceiver from a remote location. It takes the place of the speaker and microphone on the transceiver. Once the transceiver is tuned to operate on a particular frequency and mode, operation of the radio can be accomplished either at the transceiver or at the remote location.

Each operating position then has its own speaker, controlled independently, and its own handset or microphone. CW operation from the remote location is also possible. The angle, at which the RF-307A rests, can be adjusted to suit the operator.

3.2 OPERATING CONTROLS.

There are only two controls on the Remote Control unit. One turns the unit on, enables the keyline, and adjusts the earphone and speaker volume. The other selects speaker listening, earphone (or handset) listening, or both speaker and earphone operation simultaneously.

3.3 OPERATION.

Operation is the same as normal transceiver operation. The RF-301A Transceiver instruction manual should be consulted for operating procedures. The transceiver must be tuned prior to remote operation. Observe normal precautions stated in the transceiver manual when tuning. Once tuned, operation can be accomplished from the remote location.

Change of frequency, mode, or tuning must be done at the transceiver. Periodically, the transceiver should be checked for proper operation if left unattended.

Two persons can operate the transceiver alternately, if desired. Both handsets or microphones should be of the same type, however, so that the TRANSMIT AUDIO control does not have to be adjusted when changing operators. The TRANSMIT AUDIO control should be adjusted for 100 Watts voice-peak transceiver output with either microphone. Either operator can "take the microphone" when he wishes to transmit.

SECTION IV

MAINTENANCE

4.1 ROUTINE MAINTENANCE.

No routine maintenance is required for the RF-307A.

4.2 PRINCIPLES OF OPERATION. (Refer to schematic diagram figure 4. 1).

Receiver audio from the RF-301A Transceiver is connected to input transformer, T1, through a 600 ohm balanced line. VOLUME control, R5, adjusts the level of the receive audio coupled to the input of the two-stage audio amplifier assembly, A1. This assembly is identical to the 162-1700 Audio Amplifier Assembly in the transceiver. Refer to figure 8.30 in the transceiver manual for schematic diagram.

The audio amplifier output is connected to the speaker or the earphone output terminal through S1. R1, R2, and R3 act as a low impedance load for the amplifier output when the speaker is not connected.

The microphone or handset output is impedance matched to the 600 ohm audio output line by T2. Taps are provided on the primary of T2 for both low and high impedance microphones. Bias voltage for carbon microphones is developed from +12 volts applied through R1. C1 couples the carbon microphone audio developed across R1 to the transformer primary.

A1 and A2 are printed-circuit subassemblies. A1 unplugs and slides out of the chassis for easy testing.

Most of the components in the RF-307A are also used in the RF-301A. The Remote Control unit can be maintained using the spare parts kits for the transceiver.

4.3 PARTS LIST AND SCHEMATIC DIAGRAM.

REF DESIG	DESCRIPTION	RF P/N
	MAIN FRAME ASSEMBLY	
C3	Capacitor, ceramic disc, 0.005 uF, 500 VDCW	C-0002
C4	Capacitor, tantalum, 15 uF, 20 VDCW	C-5832
J1	Receptacle, 7 pin	J-0400
J2	Receptacle, 12 pin	J-0401
LS1	Speaker	162-0233
P1	Plug, P. C. board	162-0172
R1/R3	Resistor, composition, 10 ohms, 10%, 1/2W	R-0100
R4	Resistor, composition, 1K, 10%, 1/2W	R-0124
R5	Potentiometer, 1K, with DPST Switch	R-3173
S1	Switch, 3P3POS, rotary	S-0006
S2	Switch, part of R5	Ref.
	Cable, 8 conductor	W-0961
	Dynamic microphone	MK-0004
	Handset, telephone	A-0016
	Plug, 7 pin	P-0400
	Plug, 12 pin	P-0401
	Swivel bracket	425-0029
	Knurled Thumb Screw	110-0068
	Knob, replacement	MP-0000

REF DESIG	DESCRIPTION	RF P/N
	AUDIO AMPLIFIER ASSEMBLY, A1	162-1700
C1	Capacitor, tantalum, 15 uF, 20 VDCW	C-5832
C2	Capacitor, ceramic, 0.47 uF, + 85 - 20% 10 VDCW	C-0058
C3	Capacitor, tantalum, 33 uF, 20% 10 VDCW	C-5838
C4	Capacitor, electrolytic 580 uF, 15 VDCW	C-4162
C5	Capacitor, plastic, .022 uF, 100 VDCW, 10%	C-2116
C6, C7	Capacitor, ceramic, .01 uF, 150 VDCW	C-0065
C8	Same as C1	C-5832
CR1	Diode, silicon, type 1N4001	CR-0043
Q1	Transistor, type 2N3642	Q-0320
Q2	Transistor, type 2N3638	Q-0306
Q3	Same as Q1	Q-0320
Q4	Same as Q2	Q-0306
Q5	Transistor, type 2N4918	Q-0337
Q6	Transistor, type 2N4921	Q-0334
R1	Resistor, composition, 8.2K, 1/2W, 5%	R-1471
R2	Resistor, composition, 10K, 1/2W, 5%	R-1473
R3	Resistor, composition, 3.3K, 1/2W, 5%	R-1461
R4	Resistor, composition, 1.5K, 1/2W, 10%	R-0126

REF DESIG	DESCRIPTION	RF P/N
R5	Resistor, composition, 100 ohms, 1/2W, 10%	R-0112
R6	Resistor, composition, 33 ohms, 1/2W, 10%	R-0106
R7	Resistor, composition, 470 ohms, 1/2W, 10%	R-0120
R8	Resistor, composition, 1K, 1/2W, 10%	R-0124
R9, R10	Resistor, wirewound, 0.27 ohms, 2W, 10%	R-3891
	TRANSFORMER ASSEMBLY, A2	356-0015
C1/C2	Capacitor, electrolytic, 35 uF, 50 VDCW	C-1112
R1	Resistor, composition, 470 ohms, 10%, 1/2W	R-0120
R2	Resistor, composition, 3.3K, 10%, 1/4W	R-0030
T1/T2	Transformer, interstage	162-0811

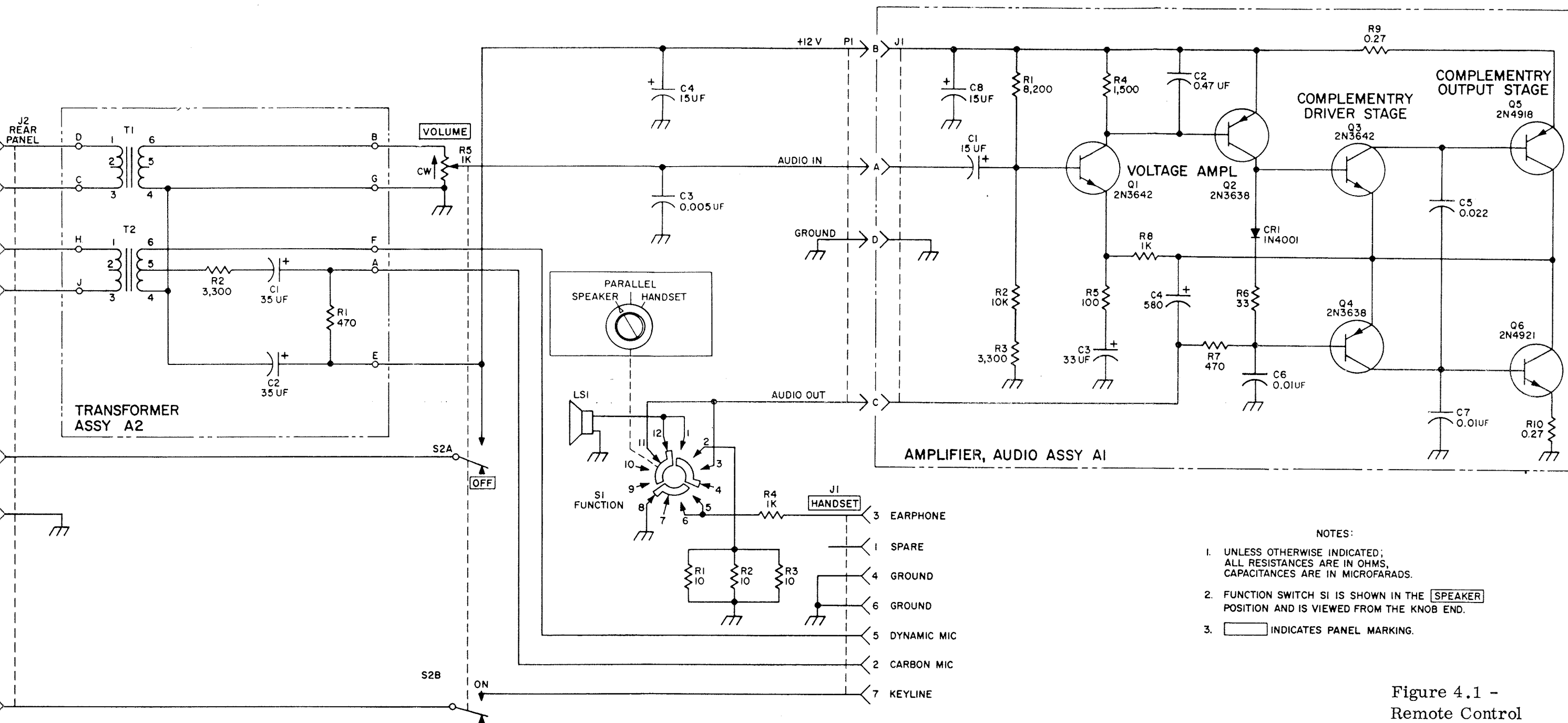
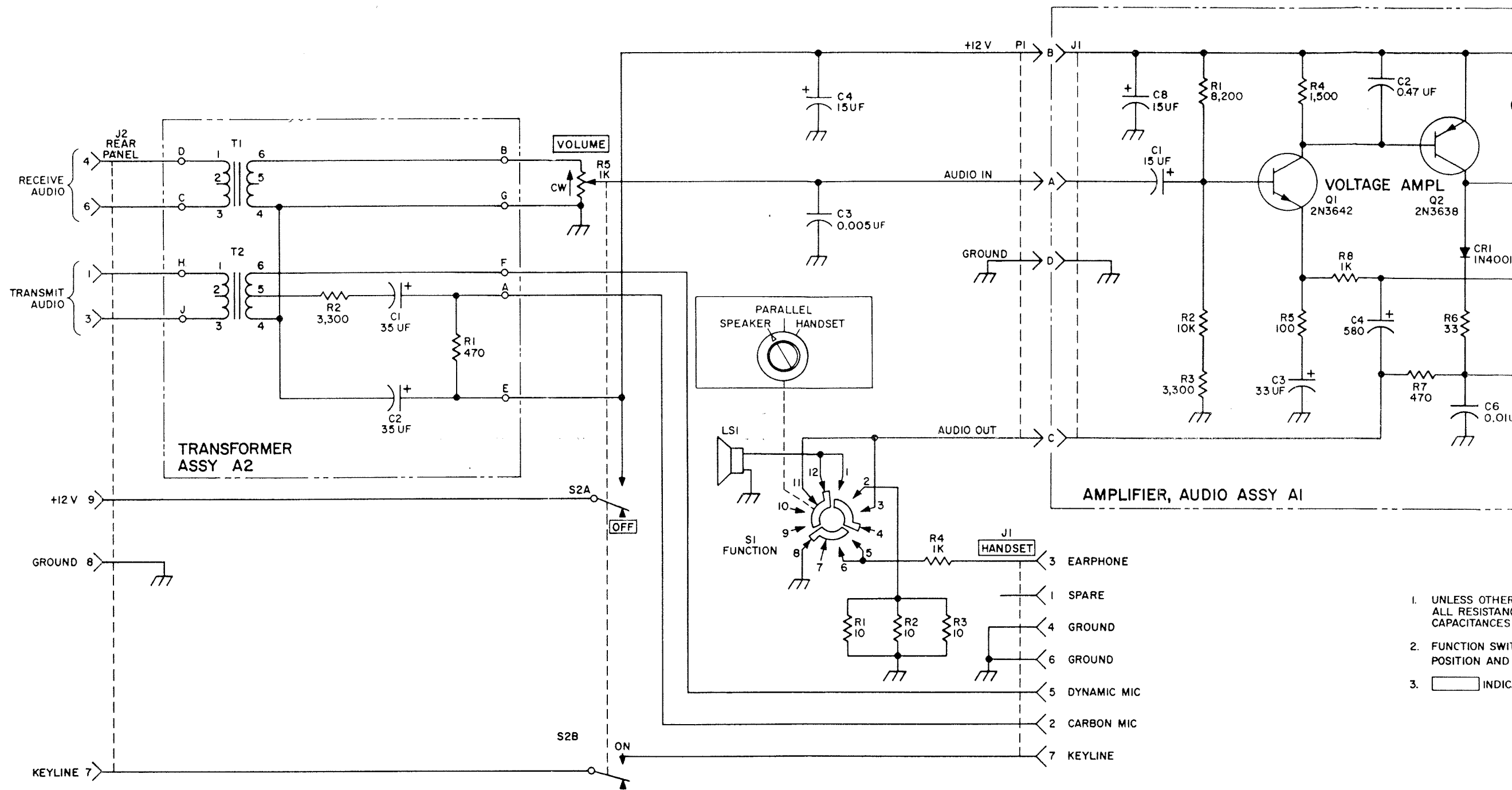


Figure 4.1 -
Remote Control
Schematic Diagram



1. UNLESS OTHERWISE SPECIFIED, ALL RESISTANCE VALUES ARE IN OHMS, CAPACITANCE VALUES ARE IN MICROFARADS.
2. FUNCTION SWITCH POSITION AND INDICATOR ARE SHOWN IN THE ON POSITION.
3. INDICATES A COIL.