

headset when he is on RADIO. If the tank commander is on RADIO, he also will hear sidetone.

(4) When interphone equipment RC-48 or RC-60 is used with other radio sets than those previously described, no control of the transmitting elements of these sets is ordinarily provided. However, when the audio output of the receiving elements of these sets is connected to terminal block TM-183 in the car terminal box, receiver output can be heard as indicated in paragraph 7b(1).

c. Driver's position.—When the driver wishes to speak to the tank commander, he glances to see whether the green light in jack box BC-370 (driver and bow gunner) is lighted. If so, he then turns the microphone switch ON and speaks. If the tank commander is not on the interphone system, as indicated by the green light being off, the driver presses the signal button. This causes an audio signal in the radio output, heard by the tank commander. If the tank commander desires to interrupt his radio reception, he operates his INTERPHONE-RADIO selector switch to INTERPHONE. The driver, by watching the indicating lamp, will know that the transfer has been made and he may proceed with his message. The red light in control box BC-369 (driver) remains lighted as long as any microphone switch of the interphone system is turned on. It is not necessary for the driver to turn his microphone switch OFF each time to receive conversation. However, when the entire conversation is completed, the driver's microphone switch should be turned OFF, as steady current for long periods is liable to damage the microphone.

d. General.—(1) When microphones T-30-A are used, all except the driver's microphone should have control switches. Their operation is identical to that of microphone T-17 except that the switches can be locked ON for short periods of time. When using throat microphones, talk naturally—*do not shout*.

(2) When using microphone T-17, with the tank in motion some noise will enter the amplifier directly through the microphone. Therefore, personnel should be instructed to talk louder into microphone T-17 as the engine speed increases. This increases the signal-to-noise ratio and improves communication.

(3) Headsets HS-18 should be checked occasionally to maintain proper operating condition. A simple way to check this is to listen to each of the headset receivers independently while someone is speaking on the interphone system. Both receivers should be approximately the same strength. If the entire headset response is believed to be weak, it may be compared with that of another headset known to be good. Care must be exercised in the operation of the interphone system to prevent damage to the headphones.

Continued chattering of the headphones caused by excessive volume output will damage them if it happens over a long period of time.

(4) The filament switch of the interphone amplifier should be turned off at the end of each communication.

SECTION III

MAINTENANCE

| | Paragraph |
|--------------|-----------|
| General..... | 8 |
| Repair..... | 9 |

8. General.—Provided the component units of interphone equipment RC-48 and RC-60 are properly installed and interconnected, little or no maintenance will be required.

9. Repair.—Low volume at any listening position indicates trouble in the amplifier circuit or its associated circuits. Low audio oscillator signals may be caused by a faulty radio set, where the radio is utilized as the oscillator signal amplifier. When difficulty is experienced with the amplifier, the vacuum tubes should be checked first. Usually, they will be the cause of the trouble. If the tubes are normal, check the output voltage at the headset jacks with a test set I-56, I-56-A, or I-56-C. The measurements are made as follows: Using any standard audio frequency oscillator apply 0.5 volt, 1,000-cycle alternating current, at any microphone jack of the system. With all switches in the INTERPHONE position and the system operating, the voltage at any headset jack should be about 75 volts. With the switches in the RADIO position and the driver's signal button depressed, the voltage at either the radio operator's or tank commander's headset jack should not be less than 22 volts. If the trouble is found to be in the amplifier chassis assembly, steps should be taken to replace the defective unit. All cover chassis assemblies for interphone amplifier BC-367 are interchangeable. Repairs other than replacing defective tubes should not be attempted except by authorized Signal Corps repair shop personnel and radio repair section personnel.

SECTION IV

SUPPLEMENTARY DATA AND LIST OF REPLACEABLE PARTS

| | Paragraph |
|--|-----------|
| Tube VT-107..... | 10 |
| List of replaceable parts..... | 11 |
| Manufacturers and their addresses..... | 12 |

10. Tube VT-107.—Typical operating characteristics for tube VT-107 (RCA 6V6 or equal) operating as a pentode:

| | |
|--|-------------------|
| Heater voltage (a-c or d-c)..... | 6.3 volts |
| Heater current..... | 0.45 ampere |
| Plate voltage (typical operation)..... | 2.50 volts |
| Screen voltage..... | 250 volts |
| Grid bias..... | -12.5 volts |
| Plate current (zero signal)..... | 45.0 milliamperes |
| Screen current (zero signal)..... | 4.5 milliamperes |
| Plate resistance..... | 52,000 ohms |
| Transconductance..... | 4,100 microhms |

11. List of replaceable parts.—a. List of parts, interphone equipment RC-48 or RC-60.

| Stock No. | Name | Description | Function |
|-----------|---|---------------------------|------------|
| | Brush HV..... | | |
| | Brush LV..... | | |
| | Control box BC-369..... | | |
| | Control box BC-422..... | | |
| | Cord CD-307-A..... | | |
| 2C659 | Cord CD-307-A..... | For dynamotor DM-25-() | Spare |
| 3E1307A | Cord CD-307-A..... | For dynamotor DM-25-() | Spare |
| 3E1307A | Cord CD-318..... | 48 inches long | |
| 3E1318 | Cord CD-416..... | 65 inches long | |
| 3E1416 | Cord CD-420..... | | |
| | Fuse FU-21-A..... | | |
| 3Z1921 | Headset HS-18..... | 10 amp, 25 v, 5-sec delay | RC-48 only |
| 2B818 | Interphone amplifier BC-367..... | | Spare |
| 2C1614 | Interconnecting conduit, wires, and clamps, RC-48 or RC-60..... | | |
| | Jack box BC-370..... | | |
| 2C2217 | Lamp LM-38..... | | |
| 2Z5933 | Microphone T-30-A..... | 12-16 v, G4 ½ bulb, Mazda | Spare |
| 2B1630A | Tube VT-107..... | (RCA 6V6, or equal) | |
| 2T107 | | | |

b. Interphone amplifier BC-367.

| Reference No. | Stock No. | Name | Description | Function | Manufacturer | Manufacturer's part No. | Signal Corps drawing No. |
|-----------------|-----------|-------------------|---|-----------------------------|--------------|-------------------------|--------------------------|
| C ₁ | 3D275 | Capacitor CA-275 | Fixed paper, 4.0 μ f, 50 v, d-c. | Bias capacitor | | | SC-D-512 |
| C ₂ | 3D193 | Capacitor CA-193 | Fixed mica, 0.0005 μ f, 250 v, d-c. | Blocking capacitor | | | SC-D-1993 |
| C ₃ | 3D277 | Capacitor CA-277 | Fixed paper, 0.1 μ f, 400 v, d-c. | Filter capacitor | | | SC-D-1995 |
| C ₄ | 3D353 | Capacitor CA-353 | Fixed paper, 0.01 μ f, 400 v, d-c. | Bypass capacitor | | | SC-D-1995 |
| C ₅ | 3D308 | Capacitor CA-308 | Electrolytic, 50 μ f, 25 v, d-c. | Bypass capacitor | | | SC-D-2246 |
| C ₆ | 3D284 | Capacitor CA-284 | Fixed paper, 0.05 μ f, 400 v, d-c. | Oscillator tuning capacitor | | | SC-D-1995 |
| C ₇ | 3D374 | Capacitor CA-374 | Fixed paper, 2.0 μ f, 600 v, d-c. | Filter capacitor | C-D | TLA-6020 | |
| DM ₁ | | Dynamotor DM-25 | 12 v input; 0.05 amp, 250 v output | Plate supply | | | SC-D-4366 |
| F ₁ | 3Z1921A | Fuse FU-21-A | 10 amp, 25 v, 5-sec delay | Supply fuse | Littlefuse | Type 3 AG 1081-10A | |
| L ₁ | | Transformer C-253 | Primary resistance, terminals 1-3 and 4-6, 70 ohms maximum; turns ratio secondary winding to each primary winding 10 to 1. | Input transformer | | | SC-D-4365 |
| L ₂ | | Transformer C-255 | Primary resistance 210 ohms maximum; secondary resistance, terminals 3-7, 190 ohms maximum. | Output transformer | | | SC-D-4365 |
| L ₃ | | Transformer C-254 | Primary resistance, terminals 1-2, 45 ohms maximum, terminals 2-3, 115 ohms maximum; secondary resistance, terminals 4-5, 215 ohms maximum. | Oscillator transformer | | | SC-D-4364 |

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SIGNAL CORPS

| Reference No. | Stock No. | Name | Description | Function | Manufacturer | Manufacturer's part No. | Signal Corps drawing No. |
|-----------------|-----------|----------------------|--|-------------------|--------------|-------------------------|--------------------------|
| L ₄ | | Coil C-279 | Iron core, 10 henrys, 50 ma, 500 ohms maximum. | Filter choke | | | SC-D-4347 |
| R ₁ | | Resistor RS-242 | Wire-wound, 100 ohms, 8 w | Dropping resistor | | | RL-D-6223 |
| R ₂ | | Resistor RS-244 | Molded, 350 ohms, 1 w | Bias resistor | | | SC-D-970 |
| R ₃ | | Resistor RS-243 | Wire-wound, 10,000 ohms, 8 w | Dropping resistor | | | RL-D-6223 |
| R ₄ | | Potentiometer RS-239 | Linear, 500,000 ohms | Gain control | | | SC-D-1928 |
| | | Socket | 8 prong, octal | Tube socket | American | MIPS | |
| SW ₁ | | Switch SW-151 | Toggle, D. P. D. T. | Power switch | | | SC-D-4187 |
| TB ₁ | | Terminal strip | Phenolic plate, 14 terminals | Connection board | | | SC-D-4361-GR-2 |

c. Control box BC-422.

| Reference No. | Stock No. | Name | Description | Function | Manufacturer | Manufacturer's part No. | Signal Corps drawing No. |
|-----------------|-----------|----------------------|---------------------------------|--------------------------|--------------|-------------------------|--------------------------|
| J ₁ | 2Z5544 | Jack JK-44 | Two-terminal jack | Headset jack | | | SC-D-1585 |
| J ₂ | 2Z5543 | Jack JK-43 | Three-terminal jack | Microphone jack | | | SC-D-1585 |
| R ₄ | | Potentiometer RS-241 | Wire-wound, linear, 10,000 ohms | Volume control | | | SC-D-1982 |
| SW ₂ | | Switch SW-142 | Toggle, D. P. D. T. | INTERPHONE-RADIO switch. | | | SC-D-4187 |
| SW ₃ | | Switch SW-142 | Toggle, D. P. D. T. | INTERPHONE-RADIO switch. | | | SC-D-4187 |
| TB ₂ | | Terminal block | Phenolic plate, 16 terminals | Terminal board | | | SC-D-4408 |

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d. Control box BC-369.

| Reference No. | Stock No. | Name | Description | Function | Manufacturer | Manufacturer's part No. | Signal Corps drawing No. |
|-----------------|-----------|---------------------|------------------------------|--------------------|--------------|-------------------------|--------------------------|
| LM ₁ | | Jewel pilot light | Red pilot lens | Pilot light | Radio | K6429 | |
| LM ₂ | 2Z5933 | Lamp LM-33 | 12-16 v, G41/2 bulb, Mazda | Pilot light socket | Westinghouse | 57 | |
| LM ₃ | | Socket, pilot light | Bayonet base, for G41/2 bulb | Microphone switch | Dial | 707 | SC-D-4187 |
| SW ₁ | | Switch SW-132 | Toggles, D. P. S. T. | Signal button | | | SC-A-4376 |
| SW ₂ | | Push-button SW-133 | Push-button switch | Terminal board | | | SC-D-4375 |
| TB ₁ | | Terminal block | Phenolic plate, 6 terminals | | | | |

e. Jack box BC-370.

| Reference No. | Stock No. | Name | Description | Function | Manufacturer | Manufacturer's part No. | Signal Corps drawing No. |
|-----------------|-----------|----------------------|--------------------------------|--------------------|--------------|-------------------------|--------------------------|
| J ₁ | 2Z5544 | Jack JK-44 | Two-terminal jack | Headset jack | | | SC-D-1585 |
| J ₂ | 2Z5543 | Jack JK-43 | Three-terminal jack | Microphone jack | | | SC-D-1585 |
| J ₃ | 2Z5544 | Jack JK-44 | Two-terminal jack | Headset jack | | | SC-D-1585 |
| J ₄ | 2Z5543 | Jack JK-43 | Three-terminal jack | Microphone jack | | | SC-D-1585 |
| LM ₁ | | Jewel pilot light | Red pilot lens | | Rudlo | K6429 | |
| LM ₂ | | Lamp LM-33 | Green pilot lens | | Radio | K6430 | |
| LM ₃ | 2Z5933 | Lamp LM-33 | 12-16 v, G41/2 bulb, Mazda | Red pilot light | Westinghouse | 57 | |
| LM ₄ | 2Z5933 | Lamp LM-33 | 12-16 v, G41/2 bulb, Mazda | Green pilot light | Westinghouse | 57 | |
| R ₁ | | Socket, pilot light | Bayonet base, for G41/2 bulb | Pilot light socket | Dial | 707 | |
| R ₂ | | Potentiometer RS-241 | Wire-wound, linear 10,000 ohms | Volume control | | | SC-D-1982 |
| R ₃ | | Potentiometer RS-241 | Wire-wound, linear 10,000 ohms | Volume control | | | SC-D-1982 |
| TB ₁ | | Terminal block | Phenolic plate, 16 terminals | Terminal board | | | SC-D-4379 |

12. Manufacturers and their addresses.

| Abbreviation | Name | Address |
|--------------|-------------------------------------|-------------------------------------|
| Amphenol | American Phenolic Corporation | 1250 Van Buren St., Chicago, Ill. |
| C-D | Cornell-Dubilier Electric Co. | South Plainfield, N. J. |
| Dial | Dial Light Company of America, Inc. | 136 Liberty St., New York, N. Y. |
| Littlefuse | Littlefuse, Inc. | 4757 Ravenswood Ave., Chicago, Ill. |
| Radio | Radio Wire Television, Inc. | 100 Sixth Ave., New York, N. Y. |
| Westinghouse | Westinghouse Electric Mfg. Co. | 1180 Raymond Ave., Newark, N. J. |

[A. G. 062.11 (2-21-42).]

BY ORDER OF THE SECRETARY OF WAR:

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