

THE SCR-67-A RADIOTELEPHONE SET.

POSSIBLE SOURCE OF TROUBLE.

1. Frequently the set does not operate satisfactorily on account of incomplete adjustment of the transmitting circuit. In making adjustments, each setting affects all the others, and it is therefore necessary to go over all adjustments in the same order until proper conditions are obtained. Once the set is adjusted, it will therefore save time to record the settings and corresponding wave length. These settings will, of course, change if the antenna is changed.

2. With a set properly adjusted, the results are still dependent on the voice of the operator. The speech should be clear, rather slow, and in an even, moderate tone, and with the lips close to the telephone transmitter.

3. In general, it may be said that the set is operating properly when, with the switch on "Power on" and the control push button closed and the amplification switch on "Minimum," the operator hears himself distinctly in the telephone receiver while talking in the transmitter in a low tone of voice. The test is a check on the working condition of the circuits, but may not be considered as a conclusive proof that the circuits are perfectly adjusted.

4. *Noise in Receiver.*

a. Worn-out dry batteries. Voltage should not be less than 17.5 volts per battery.

b. Noisy leak resistance.

c. Loose connections in plate, filament, or grid circuits. Inspect soldered connections, especially of long wires which may vibrate loose. Inspect connection clips of grid leak and telephone jack.

d. Poor contact between vacuum tube and spring contacts in socket.

e. Broken-down grid leak condenser. Remove condenser and test for click, using telephones.

f. Noisy detector vacuum tube.

g. Sparking at dynamotor commutator, due to poor brushes or dirty commutator.

5. *Failure to Receive.*

a. Tap on the detector tube. If a loud ringing noise is heard, the trouble is probably in the antenna primary and secondary circuits. If no noise is heard, the trouble is probably between the detector and telephones.

b. Failure of filaments to light; due to broken filament in one of the receiver tubes (VT-1) or open in filament circuit. May also be due to broken-down antenna stopping condenser.

c. Blocking of detector tube; due to too high resistance grid leak or open in grid circuit. Examine grid leak connecting clips.

d. Receiving condenser short-circuited, due to buckled plates; or antenna stopping condenser broken down.

6. Failure of Amplifier.

a. Amplifier resistances may be burned out, or short-circuited, or the connections may be broken.

b. Condenser terminals grounded to metal frame.

c. Loose connections. Condenser terminal connections broken off.

7. Failure to Oscillate.

a. Failure to have any plate current with modulator switch open may be due to a failure to impress the plate voltage on the tube. Test direct current plate circuit for an open by shunting the plate and filament terminals of the tube socket with a buzzer or receiver. Test dynamotor voltage on power board. The milliammeter circuit may be open. Inspect plate current jack and plug. The contacts on the control relay may not operate properly. Too small a plate current may be due to too small a filament current.

b. Failure to have any grid current may be due to a burned-out grid resistance. Test the latter by clicking through with the telephones. It may also be due to an imperfect grid current jack or burned-out ammeter.

c. Oscillator tube filament may not light due to an open in the filament circuit.

d. No reading on antenna ammeter, may be due to an open in the antenna circuit. Ammeter may be burned out or antenna inductance coil may be open. Test by buzzer. Antenna condenser may be shorted. Antenna switches may be faulty.

e. Test grid coupling condenser by buzzer.

f. Circuit may not be adjusted properly.

g. Antenna insulator may leak or antenna may be grounded.

8. Overheating of Oscillator Tube.

a. Too much plate voltage.

b. Improper adjustment of circuit.

c. Lack of grid current or excessive grid current due to improper adjustment of circuit.

d. Faulty tube.

9. Failure to Modulate.

a. Receiving tube filaments may not light.

b. Control relay contacts may not work.

c. Open in modulator plate circuit. Modulator knife switch should be closed. If the latter is open, plate current ammeter should read 40 to 50 milliamps. When closed, space current should be 60 to 70 milliamps.

d. Iron core choke coil may be short-circuited.

e. Faulty or burned-out input transformer.

f. Short circuit on input transformer secondary.

g. Open circuit between transformer and grid of modulator tube.

h. Faulty telephone transmitter.

i. Faulty tube.

j. Blocking of modulator may be due to too high or too low a plate current or to improper resistance in plate circuit. A tendency of the tube to block will be evidenced by a high and unsteady reading on the plate current ammeter when blowing or whistling on the telephone transmitter. Blocking of the modulator is also evidenced by the fact that when the operator talks into the transmitter while sending he hears his speech interruptedly. A remedy, if the tube is not faulty, is to interchange the oscillator and modulator tubes.

PARTS LISTS OF SET FOR FIELD OPERATION.

SET, RADIOTELEPHONE, TYPE SCR-67-A.

1 Equipment, Type PE-2-A; power.

- 6 Batteries, Type BB-5 or Type BB-14.
- 1 Powerboard, Type BD-1-A.
- 1 Cord, Type CD-48.
- 2 Cords, Type CD-38; 1 in use, 1 spare.

1 Equipment, Type RE-2-A; radio.

- 1 Set Box, Type BC-13-A.
- 1 Cord, Type CD-23; powerboard to set box.
- 1 Cord, Type CD-25; set box to operator's cut-in switch.
- 1 Cord, Type CD-24; set box to operator's jack.
- 2 Head sets, Type P-11; 1 in use, 1 spare.
- 1 Radio Communication Pamphlet No. 22.
- 2 Transmitters, Type T-3; 1 in use, 1 spare.
- 16 Tubes, Type VT-1; 3 in use, 13 spare.
- 16 Tubes, Type VT-2; 2 in use, 14 spare.
- 8 Batteries, Type BA-2; 2 in use, 6 spare.

1 Equipment, Type A-9; antenna.

- 6 Insulators, Type IN-5.
- 6 Insulators, Type IN-7.
- 6 Couplers, Type FT-2.
- 3 Mats, Type MT-3.
- 750 feet Wire, Type W-1.
- 2 Reels, Type RL-3.
- 300 feet Wire, Type W-6.

STUDENTS MANUAL FOR ALL ARMS.

- 6 Mast Sections, Type MS-5.
- 2 Bags, Type BG-14.
- 12 Stakes, Type GP-3.
- 1 Bag, Type BG-8.
- 50 feet Wire, Type W-4.
- 1 Hammer, Type HM-1.
- $\frac{1}{2}$ pound Marlin, Type RP-2.
- 300 feet, Cord Type RP-3.