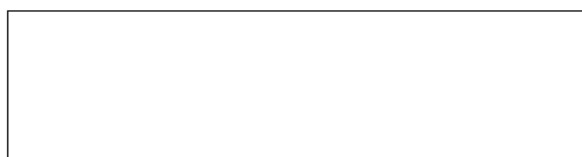


RS-511, RS/A-511 Radio System



STAT

A. INTRODUCTION

1. The RS-511 and RS/A-511 are compact single-unit portable radio systems. The transmitters have a rated output power of 10-16 watts depending on frequency. They are designed for either manual or medium speed CW operation. Reception is either CW or AM (VOICE).

2. The operating characteristics of the two systems are identical except for frequency coverage. Therefore, the instructions contained in this manual apply to either set.

3. The frequency range of the RS-511 is 3 to 16.5 megacycles (MC) divided into two bands:

LOW - 3 to 7 MC - (BLUE position on the control switches)
HIGH - 7 to 16.5 MC - (RED position on the control switches)

4. The frequency range of the RS/A-511 is 4.5 to 22 mc divided into two bands:

LOW - 4.5 to 10 MC - (BLUE position on the control switches)
HIGH - 10 to 22 MC - (RED position on the control switches)

5. The power source for these systems must be alternating current (AC) rating between 90 and 250 volts, a frequency rating between 50 and 400 cycles per second, and a power capability of at least 100 watts. A hand-powered generator possessing these characteristics may be used as a power source.

6. In addition to a suitable power source, a good antenna and ground are required to make the system complete. The most suitable antenna for the system is one which exhibits the electrical characteristics of a single wire antenna three quarter wave lengths long.

7. Since radio frequencies are normally shown in either kilocycles (KC) or megacycles (MC) and the frequency markings on the RS-511 are in megacycles, these terms must be understood. 1000 kc equals 1 mc. Merely move the decimal point three places to the left to convert kilocycles to megacycles or three places to the right to convert megacycles to kilocycles. For example, 6322 kc is equal to 6.322 mc and vice versa.

break-in operation, as desired.

9. Before proceeding to paragraph B, turn to the pictorial Illustration of the RS-511 and become thoroughly familiar with its component layout and the names and locations of the various operating controls.

10. An accessory lamp, which is included in the system, may be plugged in and used as a work lamp.

B. CONNECTING THE SYSTEM FOR OPERATION

1. Unlatch and open the suitcase cover of the system.

2. Be sure the AC line switch (1) is set to the OFF position.

3. Connect the antenna and ground lead-in wires to their respective terminal posts (6 & 5).

4. Open the LINE CORD AND SPARE PARTS compartment (24), extract the two-prong line cord plug, and connect it to the power source. (The universal-type line cord plug can be adapted to the power outlet by reversing the prongs or by splitting off one part of each round prong to make it fit a flat blade receptacle).

5. Connect the earphones to the receiver by inserting the pins into the receptacles marked PHONES (16).

C. PRESETTING THE TRANSMITTER TUNING CONTROLS

1. Insert the crystal for the desired transmitting frequency in the CRYSTAL socket (12).

2. Set the two transmitter range selector slide switches (9 & 11) to the setting which includes the desired operating frequency. (The range of each frequency band is printed on the case beside the switches, and each range is color-coded. Both switches must be set to the same color.)

3. Set calibrated tuning dials 1 and 2 (10 & 10) to the approximate operating frequency. Be sure colors on the dials match each other and the range switch colors (Step 2). The markings 1 and 2 for these two controls are printed on the transmitter control panel.

4. Set the SEND-REC switch (8) to SEND.

5. Set the KEYER-MANUAL switch (14) to MANUAL.

6. Set switch 3 (13) to zero.

7. Turn power ON by moving AC LINE SWITCH (1) from OFF position in a clockwise direction to a numerical setting which will cause the nearby meter indicator (2) to point to the GREEN. (WARNING: DO NOT ADVANCE LINE SWITCH FURTHER OR THE LINE FUSE MAY FAIL).

D. TUNING THE TRANSMITTER

1. Double-check all steps outlined in paragraphs B and C. The control identification numbers in the following steps of this section refer to the numbers printed on the transmitter control panel.

2. Press the SEND key and tune variable control dial 1 until the associated neon light glows most brightly. Release SEND key.

3. Press key and adjust variable control 2 to obtain the brightest glow in the number 2 neon bulb. Release key.

4. Press key and readjust control 1 slightly to increase brilliance of neon 1. Release key.

NOTE: With some crystal/frequency combinations, it may be impossible to obtain a distinct brilliance in control 1 light. When this happens, tune control 1 for peak brilliance of control 2 light.

5. Press key and turn control 3 to the position where control 3 indicator light glows most brightly. Release key.

6. Press key and readjust control 2 for peak brilliance of control 3 light.

7. The transmitter is ready for manual operation.

8. For medium speed operation, set the KEYS-MANUAL switch to KEYS.

E. TUNING THE RECEIVER

NOTE: One antenna serves both the transmitter and the receiver. It is connected to the receiver whenever the transmitter is not being keyed. The receiver is on and operative whenever the AC power is on and the meter reads in the GREEN. The position of the SEND-REC switch does not affect the receiver. Setting the switch to REC merely turns the transmitter OFF and conserves power when operating in REC only mode.

1. Perform all steps outlined in paragraph B and sub-paragraph C-7.

2. Determine the frequency to be received.

3. Set the BAND SWITCH (15) to the range which includes the frequency in mc to be received.

NOTE: Two scales will be observed in the tuning dial window (20). Each scale is tinted in color to match the numbers and colors on the BAND SWITCH color setting.

4. Adjust the TUNING dial (19) to the approximate receiver frequency as read in mc beneath the hairline indicator in the tuning dial window.

5. Turn the VOLUME dial (17) in the direction of the arrow until a slight rushing sound is heard in the earphone.

6. Calibrate the receiver:

a. Turn the TUNING dial (19) to a dial marking ending in zero or five (.0 or .5) nearest to the receive frequency.

b. Disconnect the antenna from the ANTENNA terminal post (6).

c. Turn the BFO dial (22) until its zero mark is aligned with the index mark on the housing.

d. Hold down the button marked PRESS TO CALIBRATE (23).

e. Move the tuning dial slowly while listening in the earphones for a tone which changes in pitch from high to low to high as the dial is turned. Adjust the TUNING dial to the "no-sound" center-point between the two tone peaks. Release the PRESS TO CAL button.

f. Turn the CAL ADJ dial (21) to move the hairline indicator directly over the .0 or .5 calibration marker in the tuning dial window.

g. Turn the TUNING dial until the desired frequency is aligned with the hairline indicator in the tuning dial window.

h. Reconnect the antenna.

7. Listen for the desired signal. Increase volume slightly. If the desired signal is not heard, rotate the TUNING dial from the low frequency side of the dial slowly through the desired frequency setting in search of the signal. Exercise care in listening; the signal may be weak. Look as far as three dial divisions to each side of the desired frequency setting. Always tune from low to high.

8. After locating the signal, tune to the "no-sound" notch (as with the CAL ADJ tone in 6a above).

a. For CW signals, vary the BFO until the loudest pitch is obtained.

b. For AM (VOICE) signals turn the BFO off by turning it 180° until zero is opposite the BFO panel index mark.

9. Adjust the volume dial to the lowest setting possible without destroying audibility. (More noise is fed to the earphones with high VOLUME settings.)

NOTE: The LOG SCALE of the receiver may be used to record dial settings, after calibration, at which desired signals were located.

F. MEDIUM SPEED KEYING

1. Learn to use the special coders, keyers, and cartridges required for medium speed operation in accordance with the separate instructions provided.

2. Prepare medium speed message cartridges in accordance with special message writing instructions.

3. With the equipment AC LINE switch (1) at "0" or off, look in the LINE CORD AND SPARE PARTS (24) compartment, locate and disconnect the seven-pin plug from its socket.

NOTE: To prevent damage while stored, the seven-pin plug on the keyer cable is kept plugged into a seven-pin socket located on one wall of the storage compartment).

4. Connect the keyer to the seven-pin plug.

5. Attach the message cartridge to the keyer.

6. Set the KEYER-MANUAL switch to KEYER.

7. Set the SEND-REC switch to SEND.

8. Ensure that the entire RS-511 system has been prepared for operation in accordance with paragraphs B, C, D, and E.

9. Operate the keyer according to radio operating instructions. Note that during medium speed transmissions all transmitter tuning lights will flicker during transmission.

G. ERASING MEDIUM SPEED MESSAGE CARTRIDGES

1. Set **KEYER-MANUAL** switch to **KEYER**.
2. Set **SEND-REC** switch to **REC**.
3. Attach keyer to the seven-pin plug as in paragraph F above.
4. Turn on RS-511 system AC power until meter indicator reads in **GREEN**. See sub-paragraph C7.
5. Attach the cartridge to the keyer.
6. Follow keyer/cartridge message erasing procedures.

H. OPERATION FROM HAND CRANKED GENERATOR

Operation from a hand cranked generator power source should be accomplished in accordance with instructions issued with the generator.

I. MAINTENANCE

1. The RS-511 contains the following spare parts:

- 4 each, Type 49 incandescent lamps, replacements for the antenna output indicator (Switch 3).
- 4 each, Type 47 incandescent lamps, replacements for the accessory light.
- 10 each, Fuse, 3 AG, 2 ampere, replacements for the power supply fuse.
- 1 each, Tube 5618, replacement for the transmitter oscillator.
- 1 each, Tube 2E24, replacement transmitter power amplifier tube.
- 1 each, Earphones, extra headset.

2. Unless otherwise instructed, field maintenance of the RS-511 should be limited to spare parts substitution. Proceed as follows:

a. Accessory light fails to illuminate. Unscrew metal lamp cover, depress lamp and twist counterclockwise. Lift lamp out of socket and replace with a spare type 47 lamp. Insert new lamp, depress and twist in a clockwise direction. Replace lamp cover.

b. No indication of antenna output. Check indicator lamp. Unscrew lamp cover, depress lamp and twist counterclockwise. Lift lamp out of socket and replace with a spare type 49 lamp. Insert new lamp, depress, and twist in clockwise direction. Replace lamp cover. If trouble persists, see sub-paragraphs C and D below.

ster indication. Disconnect power plug from AC mains, then check fuse located between send key and antenna/ground terminal. If visual inspection shows thin metal strip in glass tube is broken, replace fuse. Fuse cover is removed by turning in counterclockwise direction and replaced by turning clockwise while pressing into position lightly but firmly.

d. Low power output. Trouble may be a defective crystal. Try a different one. Trouble may be a defective tube. Check defective tubes as follows:

(1) Remove ten unpainted screws located along the edge of the transceiver cover plate.

(2) Lift chassis carefully out of container and turn upside down on a flat surface using care to keep weight off panel controls.

(3) Identify transmitter section in center portion of chassis.

(4) Locate transmitter tubes type 5618 and 2E24.

(5) Remove and replace both tubes with spares.

(6) Replace chassis in container.

(7) If the transmitter now works normally, it is probable that only one of the two tubes is defective. Should time permit, the defective tube can be identified by replacing the original tubes individually as follows: restore the original 5618 tube to the set and test. If set fails to work properly, this tube is defective. If normal operation is obtained, restore the original 2E24 tube to the transmitter. If the set fails to work, this tube is defective. Discard the defective tube.

K. ILLUSTRATION

1. Transmitter

1 - AC Line Switch

2 - AC Meter (Indicator should point to GREEN)

3 - Send Key

- 5 - Ground Terminal Post
- 6 - Antenna Terminal Post
- 7 - Notation Plate (For operator convenience)
- 8 - SEND-REC switch
- 9 - Oscillator Range Selector Switch No. 1
- 10 - Calibrated Tuning Dial Nos. 1 and 2 and Neon Indicators
- 11 - Amplifier Range Selector Switch No. 2
- 12 - Crystal Socket and Crystal
- 13 - Antenna Loading Switch No. 3 and Light Indicator.
- 14 - KEYSER-MANUAL Switch

2. Receiver

- 15 - BAND SWITCH Selector
- 16 - PHONES, Earphone Receptacles
- 17 - VOLUME Control
- 18 - LOG Scale
- 19 - TUNING Dial
- 20 - TUNING Dial Indicator Scale
- 21 - CALIBRATE ADJUST Control
- 22 - BFO
- 23 - PRESS TO CALIBRATE Button
- 24 - LINE CORD AND SPARE PARTS Storage Compartment
- 25 - Plug-in Accessory Light
- 26 - Coder Storage Slot
- 27 - Keyer Storage Slot, with keyer in place
- 28 - Cartridge Storage Slots (3 unit capacity), with cartridges
in place.

ILLUSTRATION

