

## **SECTION III – OPERATION**

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## SECTION III OPERATION

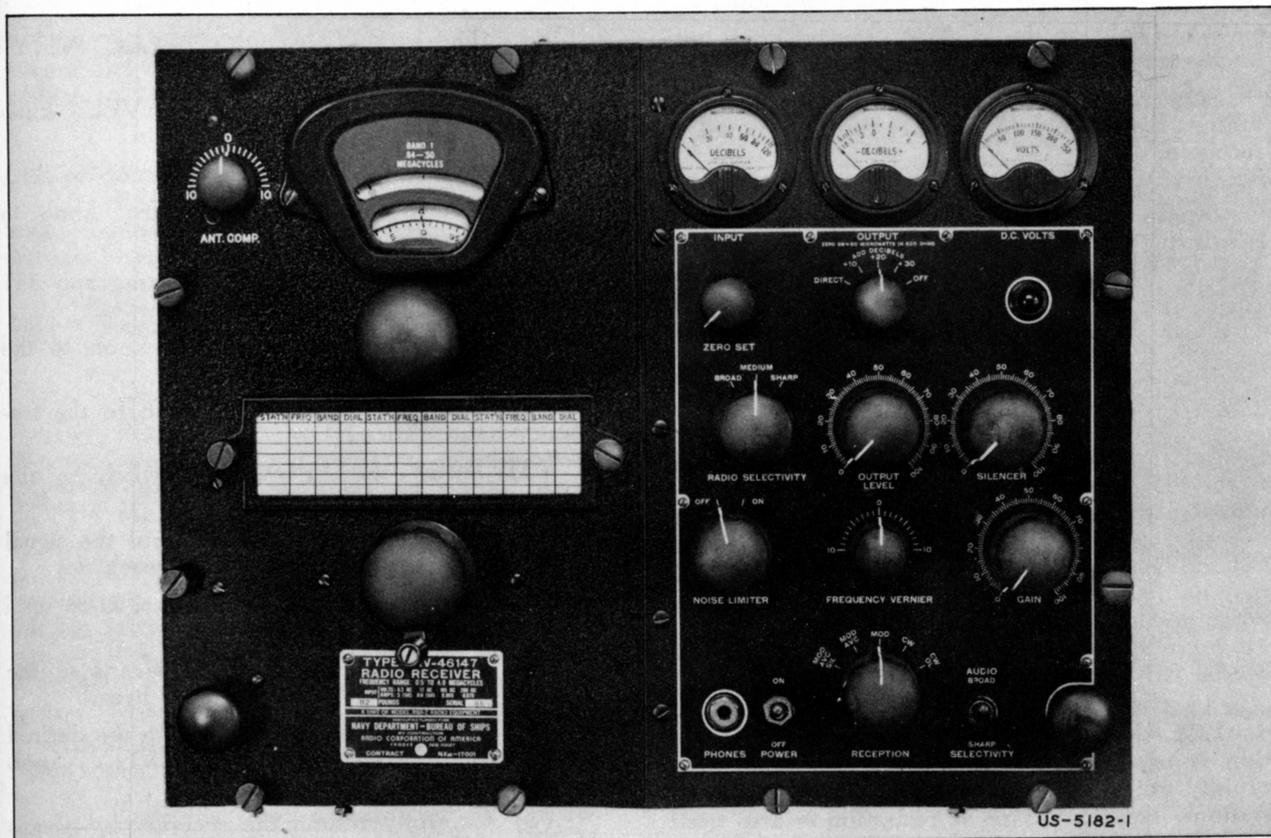


Figure 3-1 — Models RBB/RBC Radio Receivers (Front Panel)

### 1. GENERAL.

a. Before applying power to the equipment it is advisable to check over the installation instructions to insure that external wiring, power supply, antenna output, and grounding connections have been correctly made. Connect one pair of headphones into the panel jack (J303) marked "PHONES" or to the receiver output circuit connected to the receptacle (J302) in the rear of the i-f/a-f unit.

b. The "POWER" switch for the rectifier power unit is located on the panel of the Models RBB/RBC radio receivers, and operates to make or break the a-c supply circuit to the power unit through the interconnecting cable.

c. For the emergency condition where two receiver units are operated from a single power unit, the "POWER" switches on the respective receiver units are connected in parallel through the interconnecting cables, so that power is thrown on by throwing either switch to the "ON" position. To cut off the power supply, both switches must be thrown "OFF."

### 2. CW TELEGRAPH (CODE).

#### a. PRELIMINARY CONTROL SETTINGS.—

- (1) Turn the "ADD DECIBELS" knob to the "OFF" position.
- (2) Turn the "RADIO SELECTIVITY" knob to the "BROAD" position.
- (3) Turn the "NOISE LIMITER" knob to the "ON" position.
- (4) Throw the "AUDIO SELECTIVITY" switch to the "BROAD" position.
- (5) Rotate the "OUTPUT LEVEL" knob to zero.
- (6) Rotate the "SILENCER" knob to zero.
- (7) Rotate the "GAIN" control knob to zero.

#### b. DISTANT RECEPTION.—

- (1) Turn the "RECEPTION" knob to the "CW" position.
- (2) Turn the band switch knob to the frequency band desired.

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(3) Throw the "POWER" switch to the "ON" position.

(4) Rotate the tuning knob until the dial indicates the frequency of the desired station.

(5) Turn up the "GAIN" control knob until background noise can be heard.

(6) Retune the receiver by means of the tuning dial knob, until the desired signal is received.

(7) Adjust the "FREQUENCY VERNIER" knob until a note of medium pitch (1000 cycles) is heard.

(8) Throw the "AUDIO SELECTIVITY" switch to "SHARP."

(9) Readjust the "FREQUENCY VERNIER" knob until the loudest signal possible is heard.

c. Better distant reception may be had if a signal at the extreme high frequency end of the band is tuned in first, and the "ANT. COMP." knob is adjusted to bring in the signal at its greatest volume. If no signal is available, the adjustment may be made for maximum noise output. For this adjustment, set the receiver dial at 860 for the Model RBB radio receiver and at 870 for the Model RBC radio receiver.

d. LOCAL RECEPTION.—This type of reception is used when the signal strength changes rapidly, such as communication with different stations, etc. This type of reception is also used on fading signals.

(1) Turn the "RECEPTION" knob to the "CW-OL" position.

(2) Turn the band switch knob to the frequency band desired.

(3) Throw the power switch to "ON."

(4) Tune the receiver, by means of the tuning dial knob, to the frequency of the desired station.

(5) Turn the "OUTPUT LEVEL" knob to full (100) setting.

(6) Turn up the "GAIN" control knob until the weakest signal can be heard.

(7) Turn back the "OUTPUT LEVEL" knob until the volume begins to decrease on the weak signal. Leave the knob in that position.

(8) Throw the "AUDIO SELECTIVITY" switch "SHARP."

(9) Adjust the "FREQUENCY VERNIER" knob until the loudest note is heard.

### 3. MCW TELEGRAPH (TONE).

a. PRELIMINARY CONTROL SETTINGS.—

(1) Turn the "ADD DECIBELS" knob to the "OFF" position.

(2) Turn the "RADIO SELECTIVITY" knob to "BROAD."

(3) Turn the "NOISE LIMITER" knob to "ON."

(4) Throw the "AUDIO SELECTIVITY" switch to "BROAD."

(5) Rotate the "OUTPUT LEVEL" knob to zero.

(6) Rotate the "SILENCER" knob to zero.

(7) Rotate the "GAIN" control knob to zero.

b. When the above operation (Paragraph 3a) has been completed, proceed as follows:

(1) Turn the "RECEPTION" knob to the "MOD" position.

(2) Turn the band switch knob to the frequency band desired.

(3) Throw the "POWER" switch to the "ON" position.

(4) Rotate the tuning knob until the signal frequency of the desired station is reached.

(5) Turn up the "GAIN" control knob until background noise can be heard.

(6) Retune the receiver, by means of the tuning dial knob, until the signal is heard.

(7) If other signals interfere with the desired signal, turn the "RADIO SELECTIVITY" knob to "MEDIUM" or "SHARP."

(8) Carefully retune the receiver by means of the tuning dial knob.

(9) Readjust the "GAIN" control knob until a "comfortable" noise level is reached.

(10) If noise interferes with any 1000-cycle signal, throw the "AUDIO SELECTIVITY" switch to "SHARP."

### 4. VOICE.

a. PRELIMINARY CONTROL SETTINGS.—

(1) Turn the "ADD DECIBELS" knob to the "OFF" position.

(2) Turn the "RADIO SELECTIVITY" knob to "BROAD."

(3) Turn the "NOISE LIMITER" knob to "ON."

(4) Throw the "AUDIO SELECTIVITY" switch to "BROAD."

(5) Rotate the "OUTPUT LEVEL" knob to zero.

(6) Rotate the "SILENCER" knob to zero.

(7) Rotate the "GAIN" control knob to zero.

b. LOCAL RECEPTION.—

(1) Turn the "RECEPTION" knob to the "MOD-AVC" position.

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(2) Turn the band switch knob to the frequency band desired.

(3) Throw the "POWER" switch to the "ON" position.

(4) Rotate the tuning control knob until the tuning dial indicates the frequency of the desired station.

(5) Turn up the "OUTPUT LEVEL" knob until background noise is heard.

(6) Retune the receiver by means of the tuning control knob, until the desired signal frequency (station) is heard.

(7) Readjust the "OUTPUT LEVEL" knob until a "comfortable" noise level is reached.

(8) If excessive noise occurs, turn the "RADIO SELECTIVITY" knob to "MEDIUM."

(9) Retune the receiver, if necessary, for best reception. The tuning control should be adjusted to produce maximum deflection of the "INPUT METER" indicator.

c. **DISTANT RECEPTION.** — When receiving intermittent voice transmissions and the transmitting station goes off the air between transmissions use the silencing feature of the subject equipment. This feature provides for silencing the receiver when no signal is being received.

(1) Turn the "RECEPTION" knob to the "MOD-AVC-SIL" position.

(2) Turn the band switch knob to the frequency band desired.

(3) Throw the "POWER" switch to "ON."

(4) Rotate the tuning control knob until the tuning dial indicates the frequency of the desired station.

(5) Turn up the "OUTPUT LEVEL" knob until background noise is heard, then turn up "SILENCER" knob until the point is reached at which the noise disappears.

(6) Retune the receiver by means of the tuning control, until the desired signal frequency (station) is heard. When the "SILENCER" knob is in the position described in Paragraph 4c(5), only signals loud enough to over-ride the noise will be heard.

### NOTE

When the signal is weak and can barely be heard above the noise level, it may be desirable to locate the signal with the "SILENCER" knob at zero. Then set the "SILENCER" knob at the point where the noise is taken out when the transmitting station is off the air. The "SILENCER" control may be critical and a division or two may make a big difference when the signal strength is not much greater than the noise level.

d. Better distant reception may be had if a signal at the extreme high frequency end of the band is tuned in first and the "ANT. COMP." knob is adjusted to bring in the signal at its greatest volume. If no signal is available the adjustment may be made for maximum noise output. For this adjustment, set the receiver dial at 860 for the Model RBB and at 870 for the Model RBC.

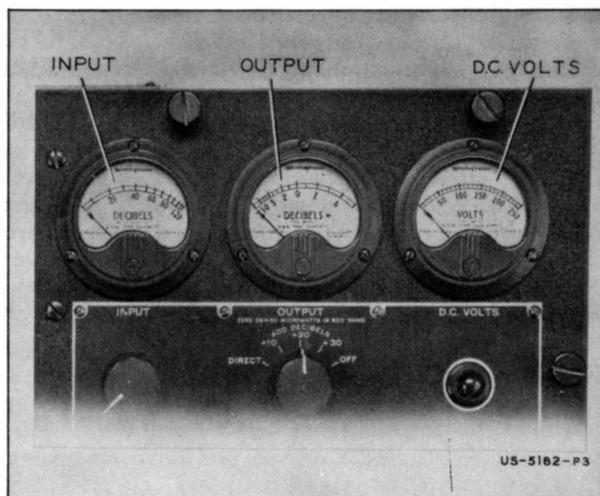


Figure 3-2 — Models RBB/RBC Radio Receivers  
(Meter Designations)

## 5. METER DESIGNATIONS.

### a. INPUT METER.—

(1) This meter (M302) is operative on the "MOD-AVC-SIL" position of the "RECEPTION" knob. When the "INPUT METER" is used as a tuning meter, the receiver should be tuned for maximum deflection of the meter indicator. This instrument is calibrated in decibels above a one microvolt reference, and indicates the approximate input signal level. For input level readings, operate the receiver with the "RADIO SELECTIVITY" knob in the "SHARP" position. Adjust the meter minimum reading to zero, by means of the "ZERO SET" knob, with the receiver tuned near the desired signal but with no signal input. Tune the signal to produce maximum deflection on the "INPUT METER" indicator. The meter reading then indicates the approximate signal input in decibels above one microvolt.

### b. OUTPUT METER.—

(1) This meter (M303) is used to test and adjust the receiver. The "ADD DECIBELS" knob is left in the "OFF" position during normal operation. This instrument is connected to a separate winding on the output transformer (T301), and operates in conjunction with the output meter range switch designated, "ADD DECIBELS." The meter is calibrated in decibels referred to 60

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microwatts. With the "ADD DECIBELS" range switch knob in the "DIRECT" position, zero db reading on the meter corresponds with 60 microwatts in 600-ohm loads at the receiver output terminal. This output level is used for purposes of test and operation in adjustment of the receiver for the condition of "STANDARD GAIN," which is the gain setting that produces 60 microwatts noise output in 600-ohm load with no signal input. The "ADD DECIBELS" switch operates in conjunction with a resistance network to provide four output ranges for the "OUTPUT" meter. A fifth position of the switch is provided to disconnect the meter from the circuit. The switch should normally be left in the "OFF" position to protect the meter from overload. The first, or "DIRECT," position of the switch is provided with a spring release for protection of the meter. In this position, as mentioned above, zero db on the meter indicates 60 microwatts receiver output in 600-ohm load. In the second position, zero db indicates 600 microwatts receiver output

or an increase of 10 db. Similarly, in the third and fourth positions of the switch, zero db on the meter indicates 6 and 60 milliwatts receiver output respectively, or respective increases 20 and 30 db referred to a 60-microwatt level.

### c. D.C. VOLTS.—

(1) This meter (M301) indicates the "B" supply voltage supplied to the i-f/a-f unit from the rectifier power supply. For normal operating conditions, the meter should indicate approximately 200 volts when the receiver is energized. For the emergency condition, where two receivers are operated from one rectifier power unit, the meter should indicate approximately 175 volts.

### 6. PILOT LAMP.

a. The pilot lamp (1301A), located on the i-f/a-f front panel, indicates when power is being supplied to the receiver. The pilot lamp is connected to the i-f/a-f unit tube heater circuit.