RCA

Radiola 60

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Super-Heterodyne

"AC" Socket-Powered

Instructions

IB-60-1

Radio Corporation of America

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RCA
Radiola 60

RE& U.S. PAT. OFF.

Super-Heterodyne

"AC" Socket-Powered 50 to 60 Cycles,

105 to 125 Volts

INTRODUCTION

RCA Radiola 60 Super-Heterodyne is a lighting circuit operated, antenna type radio receiver, utilizing the new "AC" Radiotrons introduced by the Radio Corporation of America. The circuit includes two stages of radio frequency amplification, oscillator, first detector, two stages of intermediate frequency amplification, second (power) detector and one stage of audio frequency amplification.

"AC" Radiotrons UY-227 are used throughout on the receiver unit, with the exception of the audio frequency stage, where power-amplifier Radiotron UX-171-A is used.

RCA Radiola 60 may be connected to any alternating-current circuit within the limits of 50 to 60 cycles and 105 to 125 volts. The socket-power unit contained within the Radiola cabinet furnishes alternating current to the filaments, as well as rectified plate and grid supply for all Radiotrons in the receiver. Rectification is accomplished by Radiotron UX-280.

This Radiola is of the lint-Selector type, and is the first "Super-Heterodyne" to incorporate this feature. A pilot lamp illuminates the Selector dial and indicates when the power is "on". Excellent sensitivity and selectivity are provided over the entire broadcast range of 550 to 1500 kilocycles (545 to 200 meters).

Part I—Installation and Operation

EQUIPMENT

Furnished—

1. One complete set of Radiotrons, as follows:
   Seven RCA Radiotrons UY-227. One RCA Radiotron UX-171-A. One RCA Radiotron UX-280.
2. One pilot lamp, Type T-3 Mazda, miniature base, 6 volts, 0.15 ampere (packed in the instruction book envelope).

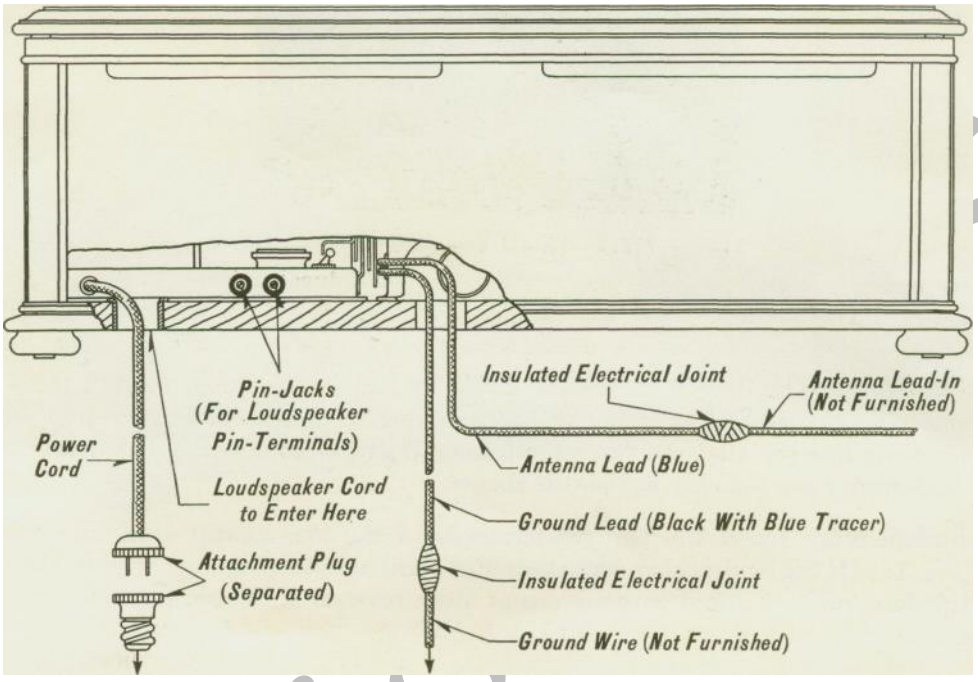
To Be Provided—

1. Loudspeaker (either RCA Loudspeaker 103 or RCA Loudspeaker 100-A is recommended).
2. Antenna and ground equipment (refer to pages 6 and 7).

INSTALLATION

Preliminary—After taking RCA Radiola 60 from the shipping container, open the lid and remove the cardboard insert, being careful not to disturb the plates of the variable condenser underneath this insert. Remove the nine Radiotrons. Unwrap the power cord and the antenna and ground leads, and bring these out through the holes provided in the bottom of the cabinet, as shown in Figures 1 and 3.

Locate the Radiola near an electrical outlet, preferably where the antenna lead-in and ground connections will be as short as practicable. For best results avoid placing the Radiola on a metallic surface or too close to a radiator or other large metal object.



To Ground Clamp **Fig. 1—Rear of RCA Radiola 60—Partial Section to Show External Connections**

To Electrical Outlet (See Below) Connect Attachment Plug to a Socket or Convenience Outlet **Supplying** 105/125 Volt, 50/60 Cycle Alternating Current.

Antenna and Ground—Satisfactory reception is dependent upon proper installation of the antenna and ground (see pages 6 and 7).

Connect the antenna lead (blue) of the Radiola to the lead-in wire, and the ground lead (black with blue tracer) to the ground wire (see Fig. 1). Both connections should be soldered and insulated.

Pilot Lamp—The pilot lamp socket is located within the cabinet above the Selector dial. Remove the pilot lamp socket clamp from the fixed bracket (see Fig. 2) and screw the pilot lamp securely into the socket. Replace the socket clamp on its bracket. (See "Pilot Lamp", Part III, page 7.)

Important—*Never apply power to RCA Radiola 60 unless all Radiotrons are in the sockets.*

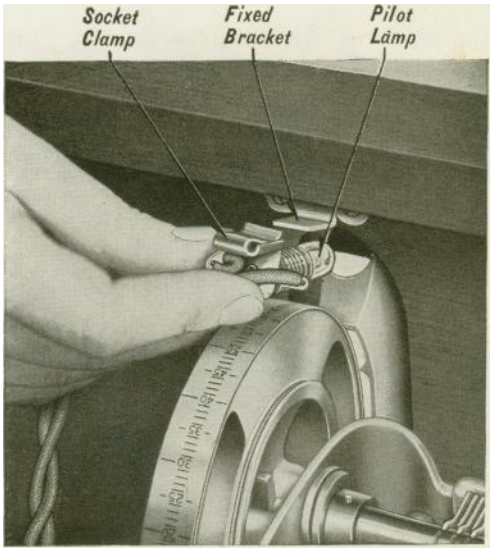


Fig. 2—Pilot Lamp Mounting

Showing Method of Installing Pilot Lamp. Socket Clamp Slides Over Fixed Bracket.

Radiotrons—The Radiotrons should always be handled carefully. Insert the Radiotrons in the proper sockets, as shown in Fig. 3. Be sure that the UX-171-A and UX-280 Radiotrons are faced so that the two large pins enter the large holes, and that the base of every Radiotron rests squarely against its socket.

Loudspeaker—Insert the two pin-terminals of the loudspeaker cord into the pin-jacks, Fig. 1. (If the loudspeaker cord is equipped with a radio plug, first remove the plug.) Since this Radiola is equipped with an output filter, reversal of the pin-terminals will have no effect.

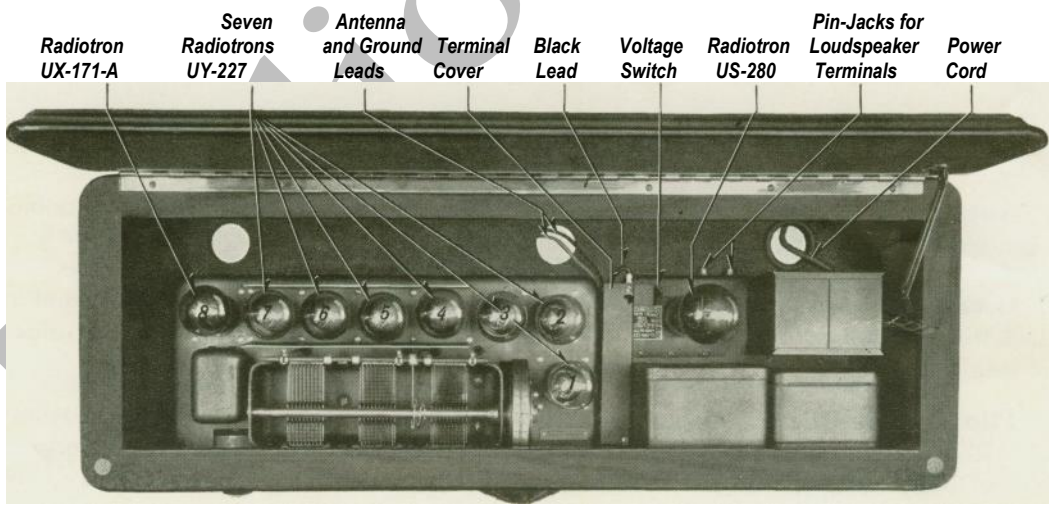


Fig. 3—Top View of RCA Radiola 60 with Radiotrons Installed

Power Supply—RCA Radiola 60 should never be connected to any circuit supplying other than alternating current, within the limits of 50 to 60 cycles and 105 to 125 volts. Failure to observe this requirement may result in damage to the Radiola. If there is any doubt about the rating of the house lighting circuit, consult the Electric Light and Power Company before connecting the Radiola.

The Voltage Switch, Fig. 3, has been previously set at the "120 V." position and should not be changed unless it is definitely known that the supply is below 115 volts. (See "Voltage Switch", Part II.)

Insert the attachment plug of the power cord in an electrical outlet (see Fig. 1). Set the Power Switch (Fig. 4) to the "on" position, downward. Make sure that all Radiotrons and the pilot lamp are lighted. (If they are not lighted, refer to "Power Supply," Part III, page 7, for further instructions.) When sure that all Radiotrons are lighted, snap "off" the Power Switch.

Volume Control *Selector* *Power Switch*

Fig. 4—RCA Radiola 60

OPERATION

To operate RCA Radiola 60 refer to Fig. 4 and proceed as follows:

1. Set the Power Switch to the "on" position, downward. The pilot lamp should light. An interval of approximately 30 seconds is required for Radiotrons UY-227 to heat before satisfactory reception is possible.
2. Set the Volume Control in approximately the middle position (radial line indicator on knob in vertical position). Then turn the Selector slowly in either direction. If no station is heard at any point advance the Volume Control in the clockwise direction slowly, while rotating the Selector, until a station is heard.
3. Adjust the Selector for maximum signal strength.
4. Adjust to the desired volume by means of the Volume Control.
5. When through operating, raise the Power Switch to the "off" position.

Note—If the Volume Control is too far advanced when receiving strong signals, it may occur that the station can be tuned in over a broad continuous range or at more than one setting of the Selector. In such cases, the Volume Control should be turned in the counterclockwise direction until the station is received at only one point on the dial. In general, best reception of any station will be obtained if the tuning is done with the Volume Control set at the lowest position at which the station can be heard. After the correct setting of the Selector is thus obtained, the volume may be increased as desired with the Volume Control.

Part II—General Information

The following suggestions are offered to assist the user in obtaining the best performance from RCA Radiola 60:

Voltage Switch—Where the supply is below 115 volts, improved reception with normal life of Radiotrons will be obtained if the Voltage Switch is set at the "110 V." position. To determine whether the supply is below 115 volts, consult the RCA Authorized Dealer or the Electric Light and Power Company.

The Voltage Switch is accessible by removing the terminal cover (Fig. 3). Before removing the terminal cover, the Power Switch should be set in the “off" position (upward) and left in this position until the cover is replaced. When replacing the terminal cover, make sure that the terminal of the black lead of the receiver **cable** is clamped securely against the bracket by the rear holding screw of the cover (see Fig. 3).

Power Supply—Reception may possibly be improved by reversing the attachment plug (Fig. 1) at the electrical outlet.

Radiotrons—The characteristics of the circuits connected with sockets Nos. 2 and 7 (see Fig. 3) are such that they have an important bearing upon the operation of the Radiola. It is therefore advisable, when installing, to interchange the UY-227 Radiotrons in sockets Nos. 2 and 7 with the others until best reception is obtained. This arrangement, once made, should not be changed*

Always switch off the power before interchanging Radiotrons.

Volume—Reduction of volume should be accomplished by adjustment of the Volume Control rather than the Selector.

Selector Dial—The dial scale is arbitrarily graduated from "1” to "100". The shorter wavelength (higher frequency) stations are received toward the zero end of the scale.

Antenna—

(a) *Outdoor Type*—A single-wire (No. 14 bare copper is recommended) outdoor antenna 25 to 50 feet long will usually provide good reception. A shorter antenna is preferable in a locality near high-power broadcast stations. A longer antenna may give improved results in a locality distant from broadcast stations.

The antenna should be isolated from other objects. It should be erected as high as possible and at right angles to all electric light and power lines and must not cross either above or below such lines. The antenna and lead-in should be supported by high-grade glass or glazed porcelain insulators, and the lead-in should be spaced a foot or more from the building. All splices should be soldered.

The lead-in and ground connections should be separated from one another and as short and direct as practicable. It is preferable that the lead-in wire be a continuation of the antenna itself, and where brought through the wall or window frame it should be insulated therefrom by some means, such as a porcelain tube.

An outdoor antenna should be protected by an approved lightning arrester, in accordance with the requirements of the National Board of Fire Underwriters.

(b) *Indoor Type*—An indoor antenna is not as effective for distant reception as a properly installed outdoor antenna. Where the installation of an outdoor antenna is not practicable, satisfactory results may be obtained by using about 20 to 40 feet of insulated wire inside the building. The size of the wire is not particularly important, though No. 18 bell wire is suggested. In buildings with metal lath, satisfactory results are not always possible with this type of antenna. Under such conditions, various arrangements of the **indoor antenna may** be tried.

Ground—A good connection to ground is as important as a well constructed antenna. Definite instructions cannot be given, as conditions vary in different locations. Water pipes or steam pipes generally make good grounds. The use of gas pipes should be avoided. The ground lead should be connected by means of an approved ground clamp to a section of the pipe that has been scraped thoroughly clean. If water or steam pipes are not available, a pipe or metal rod may be driven into the ground to a depth of several feet. The success of this type of ground depends upon the presence of moisture in the soil.

Part III—Maintenance

Radiotrons—Before inserting or removing Radiotrons, always be sure that the current is "off", the Power Switch being in the upward position. (See **"Important",** page 3). The contact pins of the Radiotrons should be inspected periodically and kept clean. It is a good plan to have available at least one new RCA Radiotron of each type. Occasionally, the condition of each Radiotron in use should be checked by substituting a new one and comparing results in reception, both local and distant.

Power Supply—Should the pilot lamp and Radiotrons fail to light with the Power Switch in the "on" position, downward, it is probable that the Radiola is not properly connected to the power supply. Make sure that the attachment plug is properly inserted in the electrical outlet and that the current is not switched off at any point. If the attachment plug is screwed into a socket, try substituting an electric lamp to make sure that current is available at the outlet.

Volume Control—If the operation of the Volume Control should at times produce a grating sound in the loudspeaker, this may be remedied by turning the knob back and forth between the extreme positions a few times in order to remove any foreign material which may have collected on the control resistance.

Antenna and Ground—A decrease in receiving range and volume may be caused by loose or corroded connections in the antenna and ground circuit, or by an accumulation of dirt or soot on the antenna insulators.

Loudspeaker—Imperfect reproduction may possibly be caused by trouble in the loudspeaker. This can be checked by substituting another loudspeaker. Before interchanging loudspeakers, the Power Switch should be set in the "off" position.

Pilot Lamp—Renewal bulbs (see "EQUIPMENT—Furnished", page 2) may be purchased from any RCA Authorized Dealer. Before removing the pilot lamp socket from its bracket, always switch "off" the power.

RCA Authorized Dealer—The RCA Authorized Dealer is required to test this Radiola and assure himself that it is in satisfactory operating condition when installed.

This Radiola is guaranteed to be free from defects as outlined on the guarantee tag accompanying the instrument. Should any part become defective within the guarantee period, the RCA Authorized Dealer will furnish a new part to replace the defective one. A reasonable charge may be made for installing such parts.

If any service on this Radiola is needed, either before or after the expiration of the 90-day guarantee, the RCA Authorized Dealer from whom it was purchased should be consulted. If this Dealer cannot be reached because of change in location, or other reasons, the nearest RCA Authorized Dealer should be consulted. RCA Authorized Dealers are organized to handle customers' service needs either by their own service department or by arrangement with their distributors.

Important

The RCA 90-day guarantee on this Radiola is not effective unless the RCA Guarantee Tag is countersigned and dated at time of sale by the RCA Authorized Dealer from whom it was purchased. If you have not received the signed Guarantee Tag, be sure to have the RCA Authorized Dealer give it to you immediately.

NOTICE

The apparatus and devices which, or the use of which, are covered by patents are sold only under certain specified licenses set forth in a notice attached permanently to the said apparatus and devices, or if this is impracticable on account of size, then on tags or wrappers attached to the said apparatus and devices or on the cartons containing the same. This license notice is as follows:

"In connection with devices it sells, Radio Corporation of America has rights under patents having claims (a) on the devices themselves and (b) on combinations of the devices with other devices or elements, as for example in various circuits and hook-ups.

"The sale of this device carries a license under the patent claims of (a), but only for (1) talking machine uses, (2) radio amateur uses, (3) radio experimental uses and (4) radio broadcast reception; and only where no business features are involved.

"The sale does not carry a license under patent claims **of** (b) except only (1) for legitimate renewals and repairs in apparatus and systems already licensed for use under such patent claims on combinations, (2) for assembling by amateurs and experimenters, and not by others, with other licensed parts or devices, or with parts or devices made by themselves, but only for their own amateur and experimental radio uses where no business features are involved, and not for sale to or for use by others, and (3) for use with licensed talking machines and licensed radio broadcast receiving devices; and only where no business features are involved."

RADIO CORPORATION OF AMERICA