

## Instructions for Using Model UR-556 Adapter

The Model UR-556 Adapter is designed for using Radiotron UX-120 in the *last audio stage only* of radio receiving sets originally using Radiotrons Model UV-199, and more particularly in Radiola Super-VIII or Radiola Super-Heterodyne (Second Harmonic). The use of this Radiotron as the last audio amplifier will provide greater volume of signal along with increased quality of reproduction. The Adapter takes care of the difference in size and arrangement of the contact pins in the bases of the two Radiotrons, and provides terminals for making ready connection to the additional plate and grid bias batteries required for the new Radiotron.

### APPLICATION TO RADIOLA SUPER-HETERODYNE SECOND HARMONIC

**Additional Batteries Required.** Radiotron UX-120 with its Adapter will require the following batteries, in addition to those already installed:

B—Two 22½-volt plate batteries connected in series. Approximate size, 4½ in. by 2¼ in. by 2½ in. such as: 2 Burgess No. 5156 BP plate batteries, or 2 Eveready No. 768 Plate Batteries, or 2 Ray-O-Vac No. 5151-BP Plate batteries,

#### OR EQUIVALENT

Or, One 45-volt battery may be used instead of two 22½-volt batteries. Approximate size 2½ in. by 4¼ in. by 5¼ in., such as 1 Burgess No. 5308 plate battery, OR EQUIVALENT.

C—One 22½-volt "B" battery used as a grid bias or "C" battery, such as those listed as follows:

Horizontal		Vertical
1 Burgess No. 5156 BP or	No. 5158 plate battery or	
1 Eveready No. 768 or	No. 764 plate battery or	
1 Ray-O-Vac No. 5151 BP or	No. 1153 plate battery OR EQUIVALENT.	

### Installation of Equipment in Radiola Super-Heterodyne (Second Harmonic).

Remove the control panel C by turning the control panel latch T, pulling the panel forward, unhooking the stay joint D, lifting the panel off its hinges and laying it face down in front of the set, all as shown in Fig. 2 of the Instruction Book 86963. Remove the six UV-199 Radiotrons from their sockets.

Place a block of wood (6 in. long by 3 in. wide by ½ in. thick) in the rear left-hand corner of the compartment behind the panel, laying it on the loop frame. Make the connections described in the next paragraph for the two "B" batteries, and stand them on end, facing each other, on top of the block as shown in Fig. 1. (If one 45-volt block is used lay it on its side.) Make the connections required for the "C" battery, and place it on top of the two batteries just put in place, also as shown in Fig. 1.

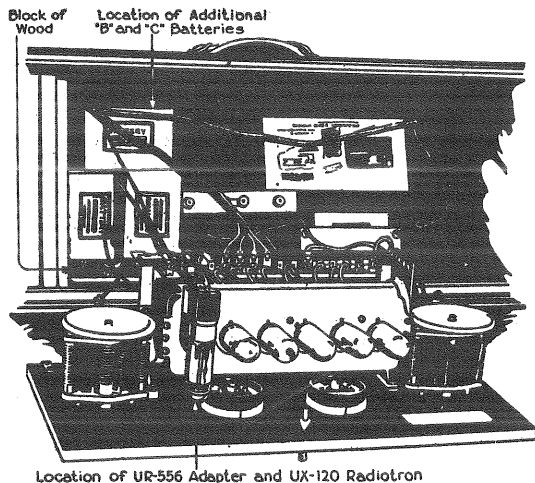
The connections referred to above are made as shown in Fig. 3. The two "B" batteries are connected in series by fastening the "+ 22.5" (red) lead of the first battery to the negative "-" binding post of the second. The negative "-" binding post of the first battery is connected by a flexible lead (a 20-inch length of No. 18 rubber covered lamp cord, or equivalent) to the Adapter terminal marked "- 45B." The "+ 22.5" (red) lead of the second battery is connected by a second flexible lead to the "+ 45B" Adapter terminal. The junction between the battery and flexible lead may be made by using a machine screw (say No. 8-32 by ¼ in. long) with nut and lock washer, or by soldering, if convenient. In any case, make the joint securely and cover it with friction tape. (In case a 45-volt "B" battery is used in place of the above, connect the negative "-" and "+ 45" binding posts to the "- 45B" and "+ 45B" Adapter terminals respectively.) On the "C" battery, connect the "-" binding post and the "+ 22.5" (red) lead to the "- 22C" and "+ 22C" Adapter terminals, respectively. Use the screw or soldered joint on the battery lead, as described above, and insulate it with friction tape.

While making the above connection, take care to avoid permitting any wires on battery terminals (or the terminals themselves) to come into contact with other wires, battery terminals or metal parts of the set. Make and keep all connections secure. Check the connections with the diagram when they have been completed and before inserting the Radiotrons. It is very important that the batteries be connected to the Adapter in the proper way.

Insert the Adapter UR-556 in the *left-hand socket* (see Fig. 1) letting the bayonet pin drop into the slot, pressing the Adapter down and giving it a twist to the right. Push the Radiotron UX-120 into the Adapter. It will be noticed that Radiotron UX-120 has two small and two large diameter pins in the base. The Radiotron should point toward the panel, with the large pins in the lower holes. Replace five of the UV-199 Radiotrons in the remaining sockets (1 to 5 counting from the right). Replace and latch the panel.

**Operation.** The operation of Radiola Super-Heterodyne will not be changed by the substitution of the new Radiotron, except for the position of the "BATTERY SETTING" knob. This will have to be advanced slightly to the right (about 4 dial graduations) beyond the setting when the six UV-199 Radiotrons were being used. Set it at 55 instead of at 47 or the arrow mark, when batteries are fresh. The most desirable method of setting this control is to measure the filament voltage, as described on pages 11 and 12 of Instructions 86963, setting the voltage at 3.0 volts.

Push in the amplifier switch (S in Instructions 86963), when using the second audio stage. In case the signal is too loud, and it is desired to operate on the first audio stage, interchange the Adapter (with Radiotron UX-120 in place) with the Radiotron UV-199 in socket 2, counting from the left. Then pull out the amplifier switch.



Location of UR-556 Adapter and UX-120 Radiotron

Fig. 1

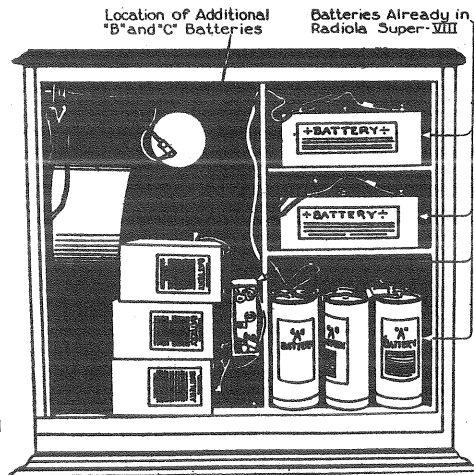


Fig. 2

## APPLICATION TO RADIOLA SUPER-VIII

**Additional Batteries Required.** The batteries required are as follows:

**B**—Two 22½-volt plate batteries, connected in series. Approximate size 2¾ in. by 3¼ in. by 6 in., such as  
2 Eveready No. 764 or 2 Ray-O-Vac No. 1153, OR EQUIVALENT

**C**—One 22½-volt plate battery, used as a grid bias or "C" battery. Size as above, such as:  
1 Eveready No. 764 or 1 Ray-O-Vac No. 1153, OR EQUIVALENT

**Installation of Equipment in Radiola Super-VIII.** Remove the upper rear panel as described on page 4 of the Instruction Book 86962 for that set. Remove the control panel and place it face down on the desk fall of the set, using the same method as described in the foregoing for Radiola Super-Heterodyne. *Remove the six Radiotrons from their sockets.*

Connect the batteries as shown in Fig. 3, and as described for Radiola Super-Heterodyne. In this case, however, no screw joints are needed, as all the batteries listed have binding posts and terminals, but no flexible leads. Place the batteries on the loop bearing plate as shown in Fig. 2.

Insert the Adapter and Radiotrons, replace the control and back panels and operate the receiver as under the instructions for Radiola Super-Heterodyne.

## APPLICATION TO OTHER RECEIVERS

**Additional Batteries Required.** When substituting a UR-556 Adapter and UX-120 Radiotron for a UV-199 Radiotron in the *last stage* of other receiving sets, it will be necessary to provide additional "B" and "C" batteries to give 135 volts for the plate and 22½ volts for the grid of *this Radiotron only*, instead of the 90 volts plate and 4½ volts grid usually employed with the UV-199 Radiotron.

The user should determine what plate voltage was being used on the plate of the Radiotron being replaced. If 90 volts were being used by connecting four 22½-volt or two 45-volt blocks in series, the additional 45 volts will be obtained by connecting two 22½-volt or one 45-volt block to the "B" terminals of the Adapter, similar to the manner described above. The actual size and arrangement of contacts on the batteries may be as required by the particular set, but no batteries smaller than those listed for Radiola Super-Heterodyne above should be used.

The "C" battery should be a 22½-volt block, of size at least as large as those listed above, and should be connected in a way similar to that already described.

If the Radiotron UV-199 was being used with plate and grid voltages other than those mentioned, the user should provide sufficient additional "B" battery voltage so that this voltage plus that already used equals 135 volts. Then provide an extra 22½-volt block for "C" battery.

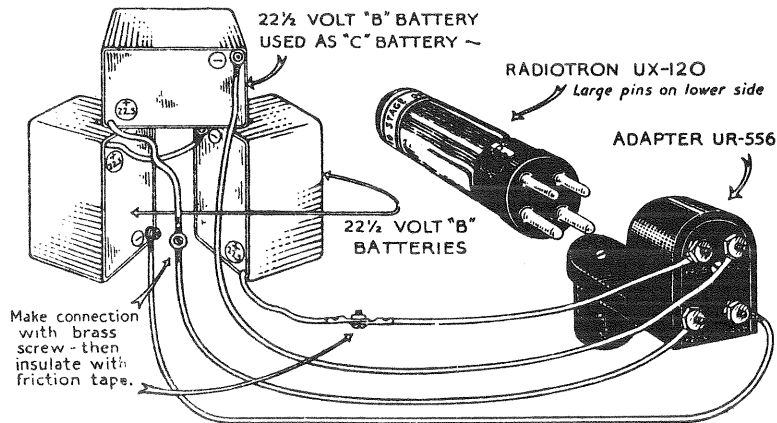
**Rheostat.** The UX-120 Radiotron will require the same "A" battery voltage as the UV-199 being replaced,—three dry cells connected in series, giving a total voltage of 4½ volts. Sufficient of these groups should be connected in parallel to provide the needed current.

The value of the rheostat used to control UX-120 Radiotron depends upon the set used and its connections. Radiotron UX-120 may be used with a UV-199 rheostat (usually 33 ohms), although a rheostat of only 15 ohms resistance is all that is required. For other conditions follow the table below:

Number of Radiotrons Controlled by Rheostat	Value of Rheostat (Ohms)
1 UX-120 alone	15 ohms
1 UX-120 and 1 UV-199	10 ohms
1 UX-120 and 2 UV-199	7½ ohms
1 UX-120 and 3 UV-199	6 ohms*
1 UX-120 and 4 UV-199	5 ohms*
1 UX-120 and 5 UV-199	4 ohms*

\*NOTE.—These combinations generally use same rheostat as in the radio receiver, and the proper filament terminal voltage for all the Radiotrons may be secured by advancing the rheostat pointer slightly beyond the position usually required when UV-199 Radiotrons were being used throughout.

The rheostat should be set to prevent overvoltage on the Radiotrons. To do this, measure the filament voltage with a high-grade, high-resistance voltmeter, and adjust the filament terminal voltage of all the Radiotrons to 3.0 volts. Aside from the readjustment of the filament voltage, there will be no difference in the operation of the set.



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