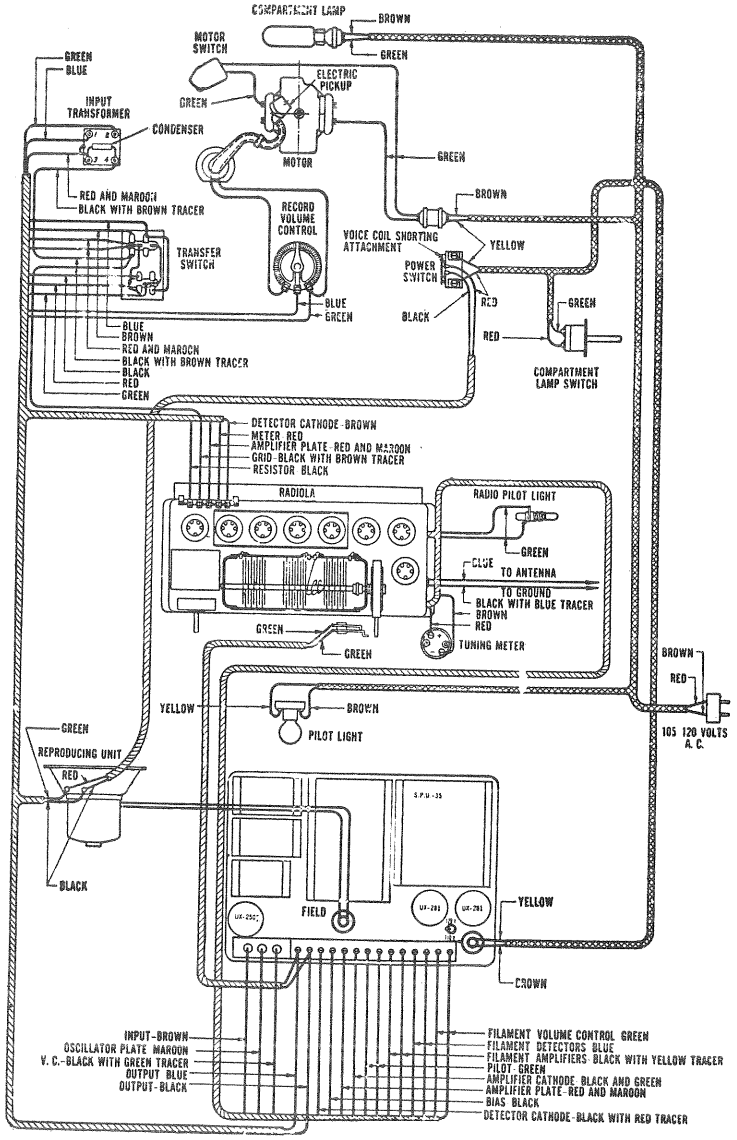
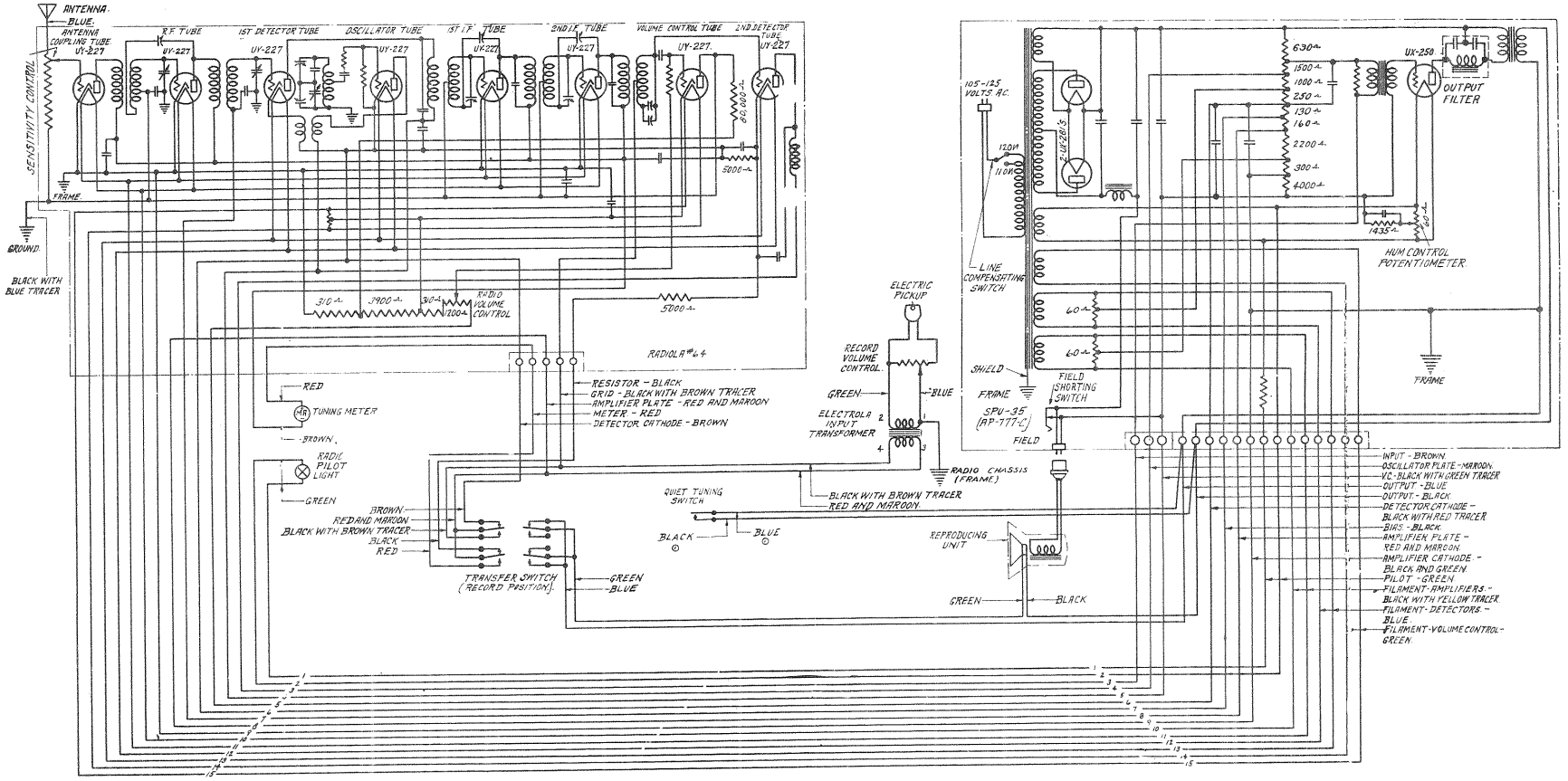
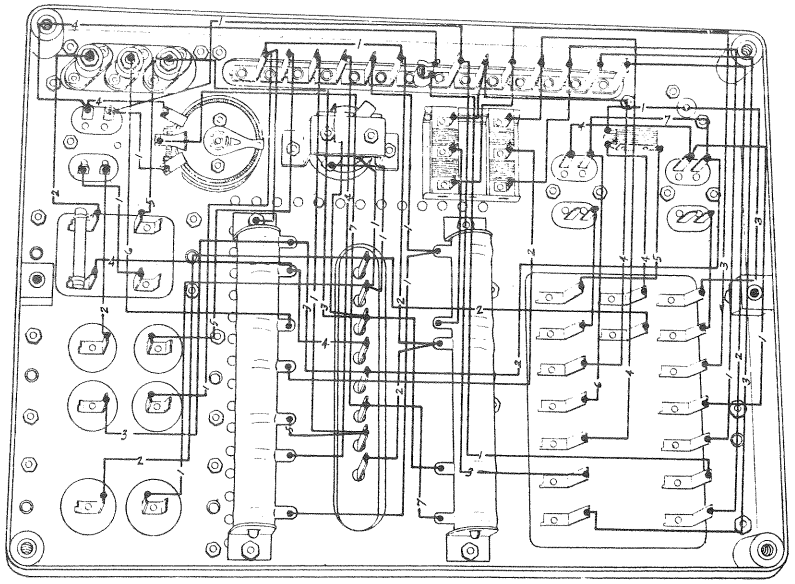
Victor Model 9–18



Cable Wiring Diagram Electrola Radiola No. 9-18



Schematic Wiring Diagram Electrola Radiola Model 9-18



Color Code of Wiring

1. Black
2. Green
3. Blue
4. Red
5. Brown
6. Maroon
7. Yellow

Bottom of Power-Amplifier Unit, showing wiring between terminals

VICTOR RADIOLA 64

(Used in Models 9-18, 9-54 and 9-56)

The Victor Radiola 64 is a power operated superheterodyne receiver, using eight Radiotrons UY-227, and is operated in conjunction with the power amplifier unit AP-777-C, using a power stage of amplification with the UX-250, and two rectifiers UX-281. The circuit utilizes an untuned coupling stage of amplification, one stage of tuned radio frequency, a first detector, an oscillator, two stages of intermediate frequency, a second detector, and an automatic volume control.

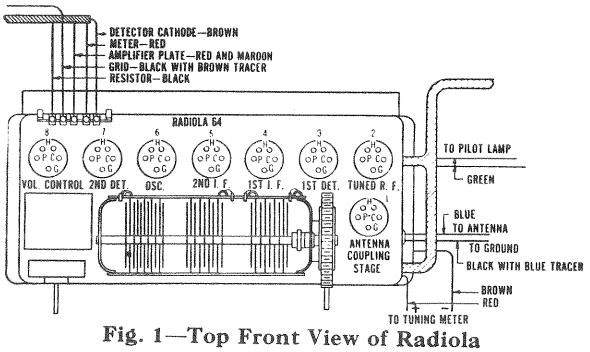


Fig. 1—Top Front View of Radiola

The second (power) detector operates at a high plate voltage, producing sufficient power output to operate the UX-250 Radiotron direct, thus eliminating any distortion which might be present if an intermediate audio stage were used.

The Radiola is designed for operation on 105 to 125 volts, 50 to 60 cycles, alternating current. Special equipment is available for operation on 105 to 125 volts, 25 to 40 cycles.

CONTROLS

1. STATION SELECTOR—The three tuning condensers are controlled from the station selector knob which operates the drive mechanism. A switch on the control, operated by pushing the knob, short circuits the voice coil of the reproducing unit while tuning the instrument. Should it become necessary at any time to remove this knob, the set-screw can be loosened by inserting a screw driver up through the hole in the radio panel. Any slack in the condenser drive cable can be taken up by tightening the adjusting screw shown in Fig. 2. The tuning switch mechanism is simple, and should not ordinarily require any adjustment.

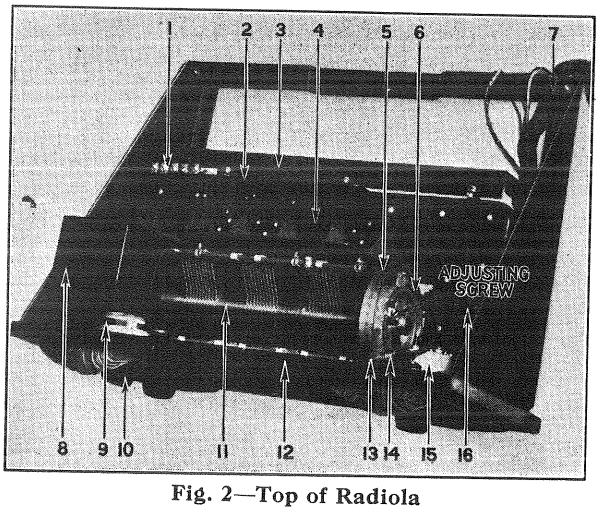


Fig. 2—Top of Radiola

2. TUNING METER—The tuning meter is connected in the plate circuit of the radio frequency and intermediate frequency amplifiers. The meter is so constructed that the needle remains at 10 on the scale while the instrument is turned off.

3. SENSITIVITY CONTROL—The sensitivity control is a potentiometer connected in the antenna circuit. A loose contact between the sensitivity control contact arm and the resistance strip will be a cause of noisy reception or no reception. If such a condition is found, the control arm should be bent until it makes a firm contact against the resistance strip.

4. VOLUME CONTROL—The volume control is a potentiometer controlling the grid bias of the volume control tube, which tube in turn controls the grid bias of the radio frequency and intermediate frequency tubes. The same adjustment for loose contact arm as described in the sensitivity control applies to the volume control.

GENERAL TESTS FOR FAULTY OPERATION

In making the tests described below, the following equipment is suggested:

Weston Radio Set Tester Model 537, type 1 or 2, equipped with adapter for testing amplifier Radiotrons UY-227

or

Weston Radio Set Tester Model 519, high resistance type, with UY-227 adapter especially supplied for this model tester

or

High resistance D. C. voltmeter with double range scale of 0-50, 0-250 volts, equipped with well insulated leads and test plugs

and

A. C. voltmeter with a 0-4 volt scale (if Model 537 test box is not available).

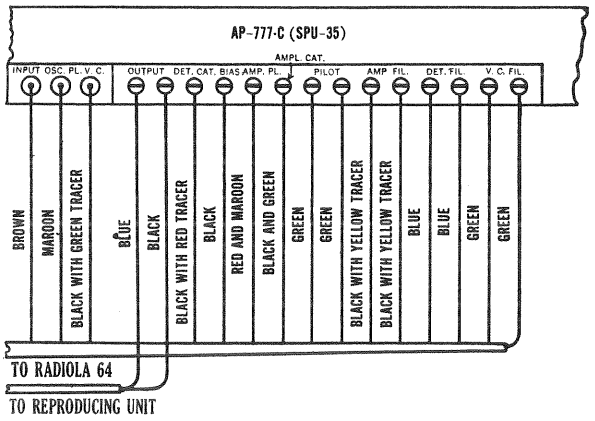


Fig. 4—Power Amplifier Unit Terminals

Readings will vary with different line voltages, different settings of the volume control, and different tubes. It is important that the power switch be turned off each time a tube is removed and the adapter inserted. A period of approximately 45 seconds must elapse each time the power switch is turned on to allow the tubes to heat properly.

1. RADIOTRON TESTS—The tests for the Radiotrons should be made in accordance with the instructions furnished with the Radio Set Tester. A filament voltage reading when using the 519 test box can be made by connecting a pair of wires to an A. C. voltmeter with a 0-4 volt scale, and plugging these leads into the pin jacks on the side of the adapter.

If the Radio Set Tester is not available, each Radiotron should be replaced, successively, with a new one which is known to be in good operating condition.

Any Radiotrons which have been found to be defective in these tests should be replaced.

2 RE-ARRANGING RADIOTRONS—Socket No. 2, Fig. 1, the tuned radio frequency stage, is the most critical for the selection of Radiotrons, and socket No. 7, the second detector, is next in importance. In socket No. 2 place the Radiotron which gives loudest reproduction on distant stations and which does not go into oscillation throughout the entire tuning range of the instrument. Place in socket No. 7 the Radiotron which will best handle large volume without distortion.

3. RADIOLA SOCKET TESTS—If the trouble has not yet been located, make the grid and plate voltage tests according to the instructions furnished with the Radio Set Tester.

If this test box is not available, the high resistance D. C. voltmeter described above can be substituted. Great care should be observed when making the tests with this meter that the terminals do not come into contact with any part of the metal construction of the set, since a high difference of potential exists between certain of the socket terminals and the frame.

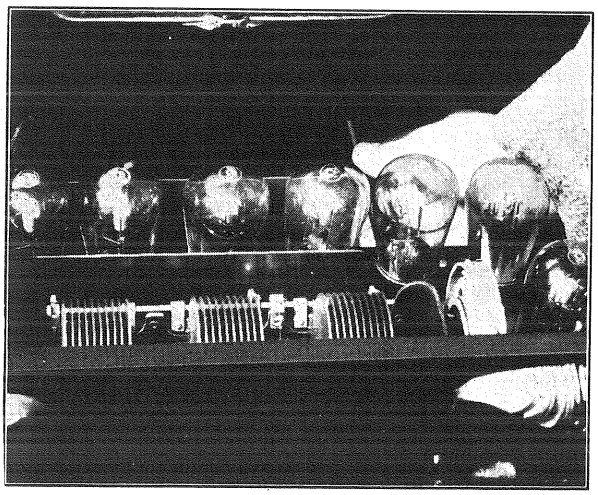


Fig. 5—Adjusting Compensating Condenser

Any open circuits or defects in the various voltage supplies can be detected by these tests. Before looking for such defects in the wiring of the radio set, (1) examine the cable terminals at the power amplifier unit terminal strip, and note that all terminals are making proper contact and are properly spaced; and (2) make the power amplifier terminal tests described in subject No. 4. Should it be desired to remove the radio set from the cabinet for testing, the three center terminals of the terminal strip of five connections can be connected together, thus giving the same effect as placing the transfer switch in the "Radio" position.

A. FILAMENT TESTS—The filament voltages in the various sockets will vary between 2.25 volts and 2.5 volts. Trouble in the filament circuit of the radio set can be traced to:
   a. Poor socket contacts.
   b. Poor or shorted contact on terminal strip.
   c. Broken wire in cable.
   d. Defective power unit.

B. GRID TESTS—Using the "C" position of the Radio Set Tester, or touching the C and G socket contacts with the test leads of the separate voltmeter, test the "C" voltage in all sockets except the oscillator, No. 6, Fig. 1. In addition to the faults listed below a defective power unit will cause variation from the normal readings.

GRID VOLTAGE READINGS

All Readings with Volume Control in Maximum Position

Normal	Faulty	Fault
G1 3 Volts	0	Open sensitivity control, poor contact, shorted condenser 28, Fig. 3 broken wire.
Normal	**Faulty**	**Fault**
G2 3 Volts	0	Open first R. F. transformer secondary, shorted condenser 28, Fig. 3 broken wire.
G3 10 Volts	0	Open second R. F. transformer secondary, shorted by-pass condenser, or broken wire.
G4 15 Volts	0	Open secondary first I. F. transformer, shorted condenser 28, Fig. 3 or broken wire.
G5 11 Volts	0	Open secondary second I. F. transformer, shorted condenser 28, Fig. 3 or broken wire.
G7 22 Volts	0	Open secondary third I. F. transformer, poor contact in transfer switch, or broken wire.
G8 2 Volts	0	Open volume control, poor contact, open 1 Meg. resistor, shown at 26, Fig. 3, open resistor 29, Fig. 3 poor contact in transfer switch, or broken wire.

C. PLATE TESTS—Using the "B" scale of the Radio Set Tester, or the high scale of the separate voltmeter, test the plate voltages in the various sockets with the tubes in place. A defective power unit may cause a variation from these readings in addition to the possible defects listed below.

PLATE VOLTAGE READINGS

All Readings with Volume Control in Maximum Position

Normal	Faulty	Fault
P1 125 Volts	0	Transfer switch or tuning meter defective, shorted by-pass condenser 8, Fig. 2, open primary of first radio frequency transformer, or broken wire.
P2 130 Volts	0	Transfer switch or tuning meter defective, shorted by-pass condenser 8, Fig. 2, open primary of second R. F. transformer, or broken wire.
P3 80 Volts	0	Shorted by-pass condenser 8, Fig. 2, open primary of first I. F. transformer, or broken wire.
P4 150 Volts	0	Transfer switch or tuning meter defective, shorted by-pass condenser 8, Fig. 2, open primary of second I. F. transformer, or broken wire.
P5 150 Volts	0	Transfer switch or tuning meter defective, shorted by-pass condenser 8, Fig. 2, open primary of third I. F. transformer, or broken wire.
P6 80 Volts	0	Shorted by-pass condenser 8, Fig. 2, open primary of first I. F. transformer, or broken wire.
P7 185 Volts	0	Shorted by-pass condenser 8, Fig. 2, open 5000 ohm resistor 26, Fig. 3, or broken wire.
P8 75 Volts	0	Open 80000 ohm resistor 26, Fig. 3 open resistor 29, or broken wire.

4. POWER AMPLIFIER TERMINAL TESTS—With the Radiola in operation and with all terminals connected to the terminal strip, make the following voltage tests at the power amplifier terminal strip with the volume control at maximum. The high voltage scale of the voltmeter should be used for these tests.

TERMINAL STRIP VOLTAGE READINGS

Test Between	Voltage
Det. Cath. and Bias	10 Volts D. C.
Ampl. Pl. and Ampl. Cath.	185 Volts D. C.
Ampl. Cath. and Fil. Ampl.	15 Volts D. C.
Det. Cath. and Fil. Det.	16 Volts D. C.
Use 0-4 A. C. Voltmeter	
Ampl. Fil.	2.75 Volts A. C.
Vol. Con. Fil.	2.8 Volts A. C.
Det. Fil.	2.8 Volts A. C.

A lack of voltage at any of the above points will be a cause for faulty operation or no operation.

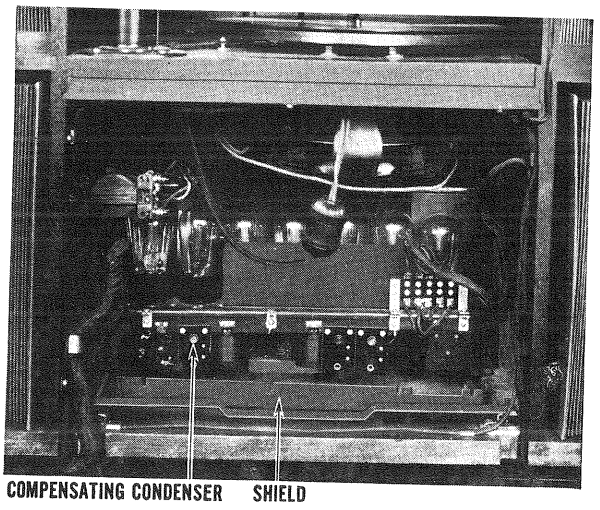


Fig. 6—Back of Cabinet Removed Showing Location of Compensating Condenser.

ELECTROLA TESTS

Trouble in the radio set when operating in the "Record" position can be traced to:

1. Open in either 5000 ohm resistor 26, Fig. 2.
2. Poor contact at terminal strip of five connectors.
3. Broken wire or cable.

SPECIAL TESTS

1. EXCESSIVE HUM—Excessive hum may be caused by:

A. Reversed polarity of power plug. Remove plug and reverse position of the prongs.
B. Low emission Radiotron UX-281.
C. Hum control potentiometer out of adjustment. Adjust with a screw driver until hum is a minimum.
D. Open ground connection to frame of Radiola.
E. Lack of voltage across Ampl. Cath. and Amp. Fil. or across Det. Cath. and Det. Fil.
F. Open center tap resistor 27, Fig. 3.

2. AUDIO HOWL—This condition may be caused by:

A. Incorrect operation of volume and sensitivity control
B. Arrangement of Radiotrons in the detector and amplifier sockets.
C. Open audio by-pass condenser.
D. Open ground connection to frame of Radiola.
E. Compensating condenser out of adjustment. Adjustment can be made as shown in Figs. 5 and 6 by means of the neutralizing screw driver part 18460. The following procedure should be used.
(1) Pull the radio panel forward as far as possible
(2) Loosen the four screws in the shield at the back of the chassis, and lift the shield away from the chassis.
(3) Tune the Radiola to a broadcasting station on the lower wave lengths.
(4) Turn the volume control to the point of maximum intensity and the sensitivity control all the way to the right.
(5) Insert the neutralizing screw driver in the condenser adjustment screw, and turn the screw until the receiver goes into osciliation.
(6) Turn the screw in the opposite direction until the oscillation just stops.
(7) Check this adjustment for a station at approximately the middle of the scale and for one near the top of the scale, making certain that the R. F. stage does not oscillate at any of these points.
(8) Replace the shield.

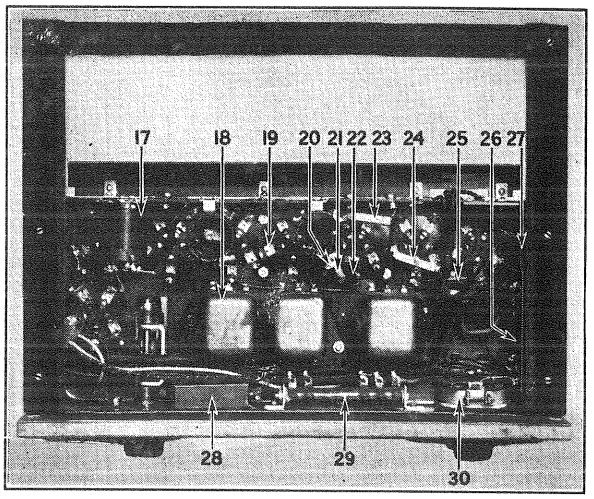


Fig. 3—Bottom of Radiola

3. WEAK RECEPTION—This condition can be caused by one or more of the following:

A. Arrangement of tubes in Radiola. (For correct arrangement of tubes see subject 2 under General Tests for Faulty Operation.)
B. Compensating condenser out of adjustment. (See sub topic E under subject 2 above.)
C. Open or shorted resistor in Radiola.
D. Low voltage from power amplifier unit. This point can be checked as described in subject 4 under General Tests for Faulty Operation.

4. DISTORTION FROM POWERFUL STATIONS —Distortion on powerful local stations will be noted if the volume control is advanced too far. The control should be set at the point where local stations will be clearly received without distortion.

Because of the high degree of sensitivity of the Radiola, it may be necessary in some cases,where an outside antenna is used, to obtain a further reduction in volume on powerful local stations than that afforded by a minimum setting of the volume and sensitivity controls. A single pole switch can be connected between the antenna lead-in and the binding post on the back of the cabinet so that the antenna can be conveniently disconnected when desired, and only the metal plate antenna used. The switch should be closed for all other stations except the powerful local.