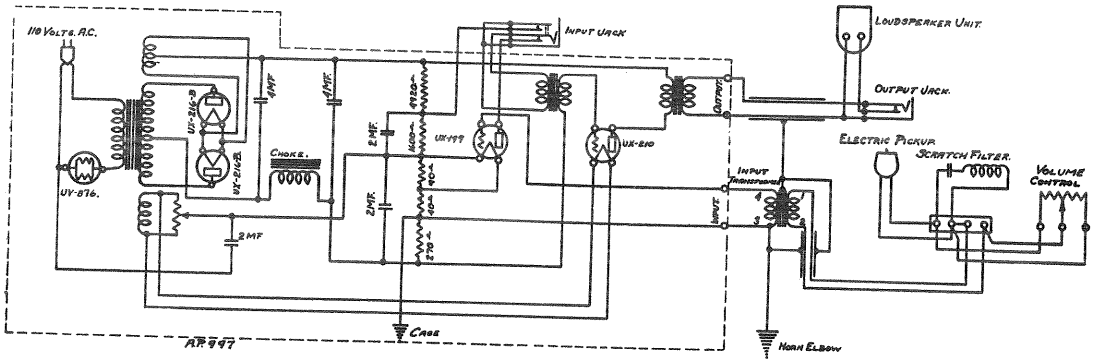
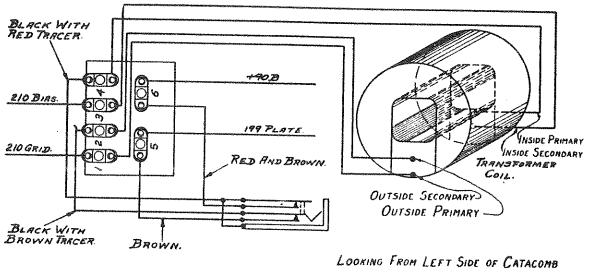
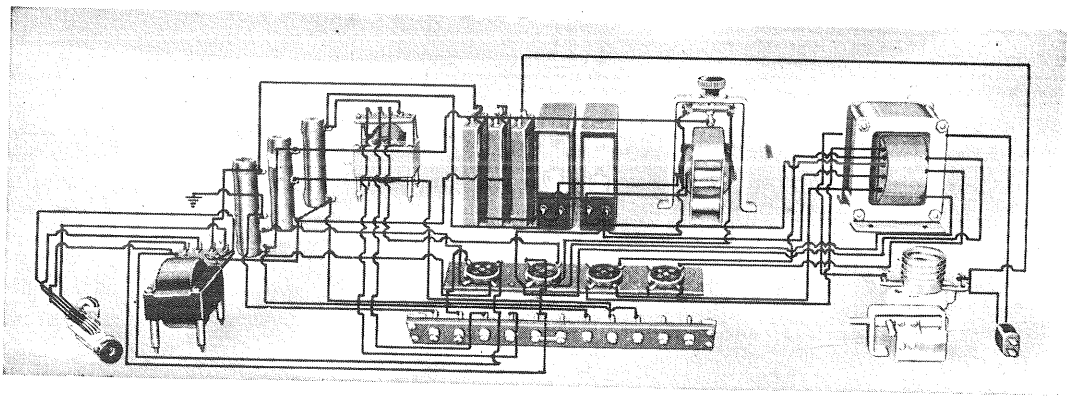
Victor Model VE–8–60



Wiring Diagram for Electrola 8-60



8-60 Input Transformer Wiring



Parts and Wiring of Power-Amplifier Unit AP 997 (RPA 5 Special)
(Used in 8-60)

SERVICING

Below is a summary of the most common points on the Power Unit which will require service from time to time. CAUTION should be observed while working on this Unit to have the alternating current supply cut off.

DO NOT IMMEDIATELY CONCLUDE THAT THE TROUBLE IS IN THE TOMCAT UNTIL BOTH THE TUBES IN THE TOMCAT AND THE RADIO SET HAVE BEEN THOROUGHLY TESTED AS A DEFECTIVE TUBE AT ANY POINT WILL EFFECT ALL VOLTAGE READINGS.

1. Either one of the 216B rectifier tubes may be defective. This will be noticed by low voltage in tube sockets, low volume, failure of Set to operate or a difference in plate temperature of tubes.

2. One of filaments in ballast tube may be burnt out in which case Victrola or Set will not operate. This defect can be very easily detected because the remaining half of the filament burns very bright. The 216B and the UX210 filaments will burn correspondingly low.

3. The UX210 may be burnt out or of low emission in which case the voltage at the tube sockets will be O. K., but the output will be low or no production whatever.

4. It is well in all cases to remove the AC Plug from the Tomcat, open the safety switch and check to see that all connections are tightened properly.

If the above does not correct the trouble, the following is a more comprehensive test and if followed, should permit of locating and correcting any and all faults which may show up in this equipment.

We will assume that none of the tubes light in the Radio Set or Power Unit. To locate this trouble, the steps are:

1. Check monitor lamp in turntable compartment. If monitor lamp does not light also is an indication of an open in the alternating current line. Note:—On the Hyperion, the toggle switch controls this lamp, while on the Borgia II, the toggle switch controls only the supply to the Tomcat, the lamp being controlled automatically by raising and lowering the lid.

2. Next check to see if motor will run.

(a) If motor runs, disconnect alternating current plug from alternating current supply socket.

b) Short circuit toggle control switch on motor board.

(c) Replace AC plug in socket. If this rectifies trouble, replace or repair toggle switch.

(d) If this does not complete the AC supply, remove the short on the switch and proceed.

(e) Check for broken or loose connections or a defective cable between where the AC feed for the Power Unit taps on to the main feed and the female plug at the Tomcat.

If all the previous tests have been made correctly, the trouble will be found in making the last test.

3. If motor does not run nor the tubes light:

(a) Check AC supply socket either with a motor or a test lamp.

(b) If this checks O. K. examine AC plug on end of cord for broken or loose connections.

(c) If this checks O. K., test between motor plug and plug at current supply for broken or loose connections or an open cable.

If previous tests were carried out properly trouble will be ocated at this point.

4. If motor runs and pilot lamp lights in turntable compartment but the Tomcat tubes do not light:

(a) Check voltage in Tomcat female socket.

(b) If no voltage at this point, trouble lies in broken or loose connections or in the cable itself between this point and the toggle switch on the motor board.

(c) If voltage is O. K. at this point and ballast lamp does not light the trouble may be:

Firstly—A defective ballast lamp.

Secondly—A defective UP591 resistor.

Thirdly—If both of the above are O. K. the trouble is in the Tomcat in which case same should be removed and a new one installed in its stead.

Fourthly—The above test will also hold good on the 216B and the UX210, namely, if these tubes do not light, even after spares have been tried in the various sockets, the trouble is in the Tomcat.

5. It might be well to mention here that the UP591 resistor serves a double purpose:

(a) To close the AC circuit through the ballast tube

(b) To shunt a resistance in the direct current circuit to maintain a constant B Battery voltage.

While it is possible or the resistor to be functioning properly in the AC circuit allowing the ballast tube to light, it still may be open or short circuited as far as the DC resistance is concerned, in which case the following will be noted in the results both on Victrola and Radio:

(a) If the resistance is short circuited, there will be no B Battery voltage.

(b) If the resistance is open, the B Battery voltage will be higher than it should be.

6. Assuming that all tubes light in the Tomcat, and Radio Set is equipped with tested tubes and the volume on either record or Radio is low:

(a) Check tube voltage on Set.

(b) If voltages are low, it will be found that one of the 216B rectifying tubes need replacing. If this does not rectify trouble, remove AC plug from Tomcat, open safety lock, lift hinged cover and check all connections to see that they are properly tightened in Tomcat.

It might be well to mention here that if the plates of the rectifying tubes become red hot, one or both of the filter condensers has become short-circuited, in which event it will be necessary to replace the Tomcat. In this case, there will be no output voltage to the pick-up or to the Radio Set.

(c) If the voltages check O. K., the UX210 power amplifying tube should be replaced.

(d) If volume still is low, place set switch on Radio, tune in station and check with earphones or external loud speaker in last stage jack.

e) If volume is greater than received through the horn on the Set, the loud speaking unit is defective and should be replaced with a new one or adjusted.

(f) If volume still is low, repeat the test only using the first stage jack. If the broadcast comes in as strong or stronger than on the second stage jack, the trouble is in the Tomcat.

(g) If the volume is very low at this point, it would be well to check the receiving set. (The test for this will be taken up under separate cover.)

7. Another cause for non-operation of Victrola and Radio, even though all the Tomcat tubes light, will be found in the ballast tube. This tube has two filaments in parallel and will still light even though one of the filaments is burnt out. The one filament will pass enough current to light the tubes, but the capacity will be so low that it will not operate the Set. This condition of the ballast tube is readily discernable as the one remaining filament will light much brighter and the other tubes in the Tomcat will have less brilliancy.

8. If the change-over switch on the front of the Radio panel is in the Radio position and the Set operates properly, but when it is thrown to record or electric pick-up fails to operate, the trouble is in:

(a) The volume control.

(b) Connections leading from the volume control.

(c) The resistance mounted on the frame of the Radio Set which takes care of the filament voltage drop when using the electric pick-up.

(d) The connections leading from this point (1st audio) can be checked: if open, tube will not light, or tube may be shorted or burnt out.

(e) Pick-up may not be making contact.

(f) Pick-up may be defective.

All tests mentioned herein include continuity tests of cables between the various points. The tubes operate in series and are shunted by resistance, so if any tube is removed, it changes not only the voltage in that socket, but the voltage on all remaining tubes and sockets, although no injury can happen to the tubes.

ELECTRIC PICK-UP

The electric pick-up is the introduction of an electrical method of sound reproduction.

The pick-up is mainly composed of three major parts:

1st. The permanent magnet.
2nd. A small generating coil.
3rd. The vibrating armature on the end of which is the needle holder.

The generating coil, both ends of which run to the volume control, is placed in the center of the permanent magnet which causes a constant flow of magnetic lines of force through the coil. In order to generate current in the coil it is necessary to vary the magnetic field, so, in order to accomplish this, the vibrating armature is placed in the center of the coil with a needle inserted in the needle holder. As the needle vibrates back and forth along the grooves in the record the density of the magnetic field is changed correspondingly generating pulsating electric current which corresponds to sound waves of music. The advantage of this method of reproduction is that these electrical pulsations can be amplified many times by means of radio amplifying tubes.

When these pulsations have passed through the amplifying tubes they are then carried to the speaker unit where they set in motion its diaphragm thus generating sound waves in the air.

These sound waves may be generated in large volume by use of a large diaphragm such as the cone or, if a small diaphragm is used, may be amplified by use of a horn.

Another advantage of this method of reproduction is the ease with which volume of sound may be varied by the volume control which varies the amount of amplification of the electrical pulsations before delivery to the amplifying tubes.

The following data covers the servicing of the pick-up unit

1st. Place the pick-up on the tone arm of the machine, turn on the tubes and have the machine in readiness to play a record.

2nd. Tap the needle lightly with your finger, first on one side and then on the other. Each time you touch the needle there should be a loud click through the speaker.

(A) If the click is louder when striking the needle on one side than it is on the other, the electric pick-up is out of adjustment. To determine this, remove the metal case from the pick-up and note whether the vibrating armature which is operated by the needle is directly in the center between the two pole pieces of the magnet. If the vibrating armature is off center remove the holding clamp from the magnet allowing further accessibility to the working parts. You will then see two knurled nuts locked in place by ordinary nuts. By loosening the lock nuts you can adjust the knurled nuts until the vibrating armature is again in the center of the pole pieces.

(B) If there is no click at all in the loud speaker, put a record on the turntable start the motor, put the electric pick-up in place and let the record play.

(a) Take a pair of ear phones, place the tips across the two connections of the volume control to which the leads run from the pick-up. You should hear the record playing with very low volume.

(b) If there isn't sound at this point, remove the pick-up wires from the volume control and check for open circuit from this point through the pick-up. (NOTE:—Occasionally the contacts in the tone arm are not springing into position properly.)