

is clamped to the ground post. The antenna and ground posts are mounted on a small bracket that is screwed inside the back of the cabinet.

Inspect the volume control carefully. If the resistance unit is damaged, replace with resistance unit No. 9788. Bend the slider so it will make firm contact with

the resistance wire. Clean off the contact end of the slider and see that the top edge of the resistance unit is free from dirt. If resistance unit is of old style with two sizes of wire, replace with new style (same part number) having one size of wire with increased spacing at one end. Also see that slider is of latest style.

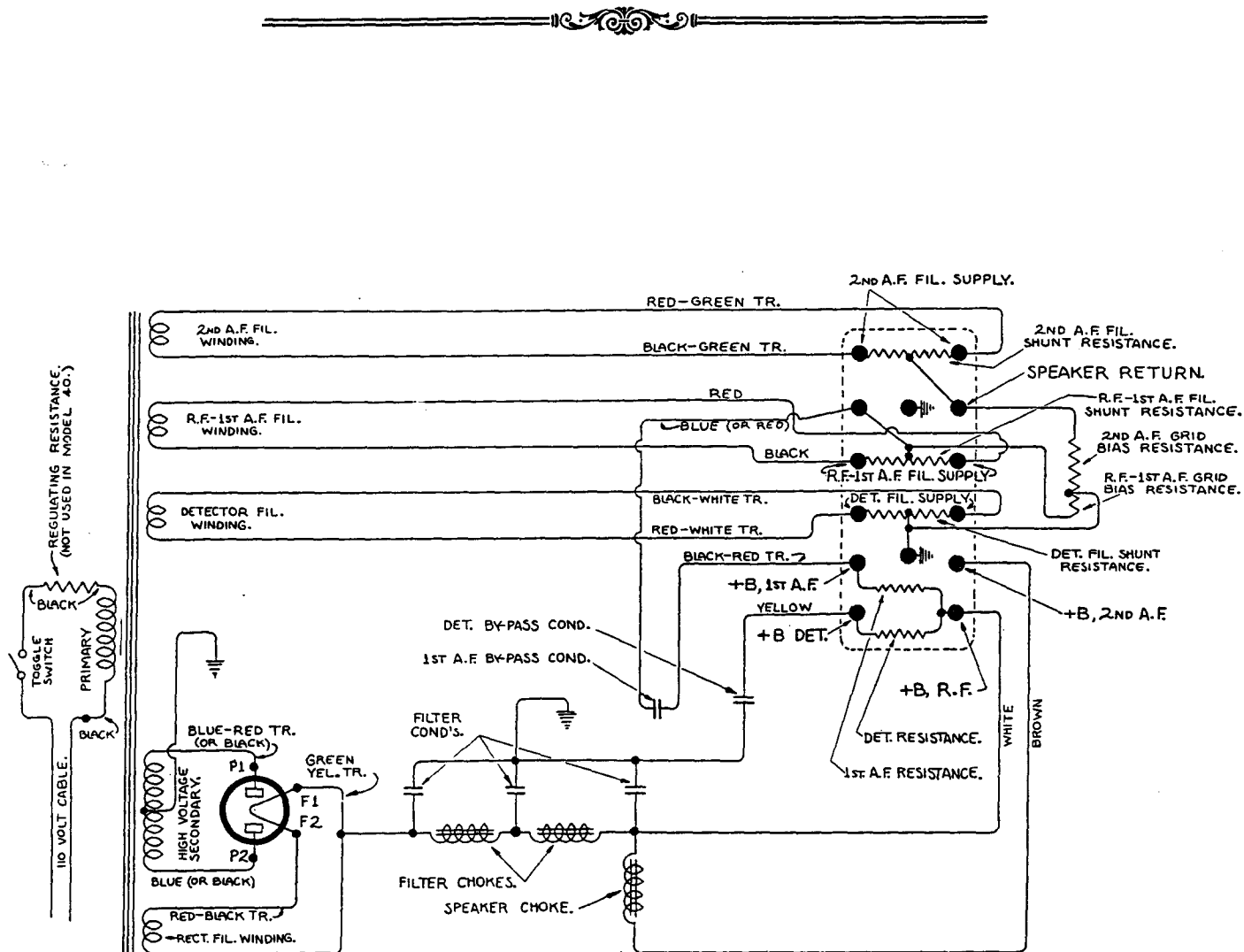


FIG. 63-A. SCHEMATIC DIAGRAM OF POWER UNIT IN MODELS 40, 42, 44, AND 52. SEE PAGE 69 FOR DESCRIPTION OF THIS UNIT. SOME EARLY UNITS OF THIS TYPE HAVE COLOR SCHEME SIMILAR TO UNIT IN MODEL 38 SET. NOTE THAT COLORS AS NOW STANDARDIZED CORRESPOND WITH THE COLORS OF SET-CABLE LEADS.

Power Units in Models 37 and 38 Sets

General Description

Power units in Models 37 and 38 receiving sets are mounted inside the metal cabinet of the set. The units are encased in a metal cover which has an opening in the left hand end of the top for insertion of the rectifier tube.

The power unit is designed for operation on 110 volt, alternating current, and furnishes complete filament, plate and grid voltages to the set.

The unit has two metal containers, one for the power transformer and one for the condensers and chokes.

Information about Atwater Kent power units is given in the Section I of this Manual.

Removing Unit from Cabinet

Remove the cover and cable connection panel from the power unit and remove the set itself from the cabinet. (See instructions for removing 37 set chassis from cabinet). Then remove the A. C. toggle switch by loosening the hexagonal nut with an open-end wrench, unscrewing the front knurled lock-nut with the fingers. Never use a wrench or pliers on the knurled nut, as it will scratch up the nut and probably mar the finish of the cabinet. Note that the toggle switch leads come from the right hand side of the cabinet; arrange the switch in the same way when replacing so it will be "on" when the button is pushed to the right.

The power unit is held to the cabinet by three screws at each end, two of the six screws being the two rear

(Continued on page 62.)

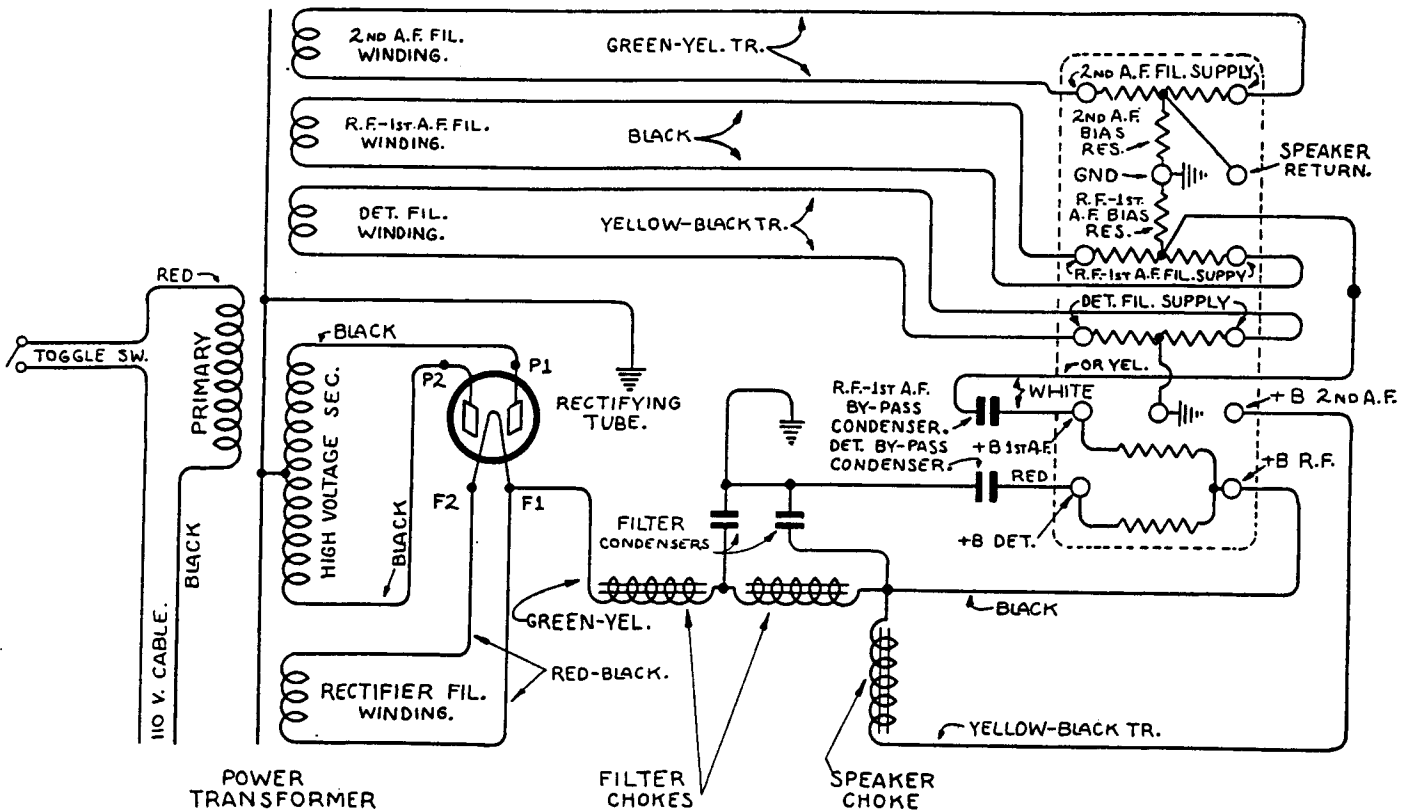


FIG. 64. DIAGRAM OF POWER UNIT IN MODELS 37 AND 38

The diagram of the power unit in Models 40, 42, 44 and 52 is similar to that shown above with the following exceptions: A regulating resistance is connected in series with the primary circuit in Models 42, 44 and 52. A filter condenser is connected between F1 and ground. The junction point of the bias resistance is connected to the lower instead of the upper ground eyelet. The color scheme is different and is shown in Fig. 77.

Continuity Test Table and Chart—Power Unit for Models 37 and 38

For Following Tests Remove Cable Panel from Power Unit

TEST	Correct Reading	WRONG READING INDICATES	REMARKS and FURTHER POSSIBILITIES
Across 2nd A.F. Filament Supply.	<i>Full</i>	None—Open 2nd A.F. fil. winding and open 2nd A.F. filament shunt resistance.	Nearly full—open filament winding. (Unsolder one fil. winding connection and test winding and fil. shunt resistance separately.)
Across R.F.-1st A.F. Filament Supply.	<i>Full</i>	None—Open R.F.-1st A.F. fil. winding and open R.F.-1st A.F. fil. shunt res.	Nearly full—open filament winding. (Unsolder one fil. winding connection and test winding and fil. shunt resistance separately.)
Across Detector Filament Supply.	<i>Full</i>	None—Open det. fil. winding and open detector filament shunt resistance.	Nearly full—open filament winding. (Unsolder one fil. winding connection and test winding and fil. shunt resistance separately.)
FROM +B R.F. to +B 2nd A.F. +B 1st A.F. +B Detector. Ground. F1 (on Rectifier Tube Socket.)	<i>Partial</i> <i>Small</i> <i>Very Small</i> <i>None</i> <i>Partial</i>	None—Open speaker (output) choke. None—Open 1st A.F. plate circuit res. None—Open detector plate circuit res. Shorted filter condenser. None—Open plate supply filter choke.	Full—Shorted speaker choke.
FROM GROUND to +B Detector. One Side of 2nd A.F. Filament Supply. One Side of R.F.-1st A.F. Filament Supply. One Side of Detector Filament Supply. +B 1st A.F. P1, P2 (on Rectifier Tube Socket.) Each Terminal of A.C. Plug.	<i>None</i> <i>Partial</i> <i>Partial</i> <i>Full</i> <i>None</i> <i>Nearly Full</i> <i>None</i>	Shorted by-pass condenser. None—Open 2nd A.F. grid bias resistance. None—Open R.F.-1st A.F. grid bias resis. Open connection to center-tap of detector filament shunt resistance. Shorted by-pass condenser. None—Open high voltage sec. winding. Grounded primary of power transformer.	Full—Shorted bias resistance. Full—Shorted bias resistance. Examine connections under panel assembly. Inspect A.C. cable and switch leads for accidental grounds.
OTHER TESTS Across Terminals of A. C. Plug. (Toggle Switch "On.") F1 to F2 (on Rectifier Tube Socket.) One Side of 2nd A.F. Filament Supply to Speaker Return Terminal.	<i>Full</i> <i>Full</i> <i>Full</i>	Open primary of transformer or open cable or switch leads. Open rectifier filament winding or connections. Open connection to center-tap of 2nd A.F. filament shunt resistance.	

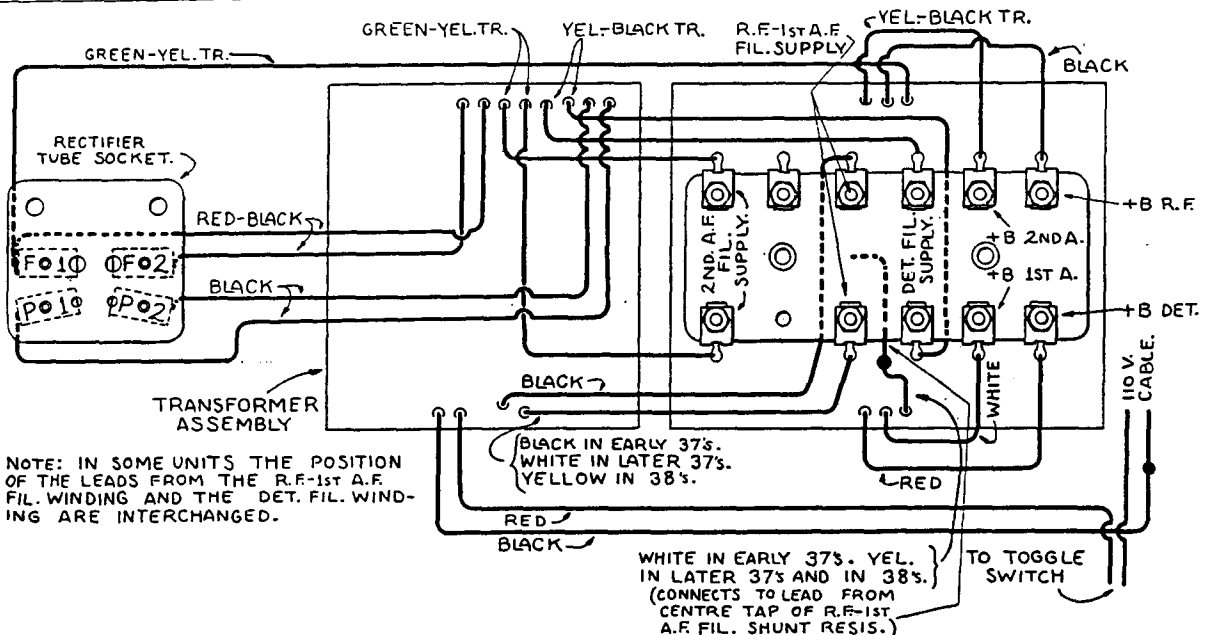


FIG. 65. SHOWING CONNECTIONS FROM TRANSFORMER AND CONDENSER-CHOKE ASSEMBLIES TO PANEL ASSEMBLY
This view shows the approximate position of leads from the metal containers. In replacement condenser-choke assemblies for Model 38 the lead to +B first A. F. terminal is sometimes black-red tracer instead of white.

felt-headed feet of the cabinet. The transformer and condenser-choke sections are held to the base of the power unit by three long bolts and a single heavy metal strap. The panel assembly is fastened to the metal strap by two screws and nuts—one the ground terminal and the other at the center toward the opposite end of the panel assembly.

Note that a bare braided wire comes from each metal container and that these wires are soldered to lugs which are fastened to two of the long bolts.

Testing

Apply the continuity tests given in the table. If the tests indicate that one section of the unit is defective, replace that section, connecting it exactly as the original.

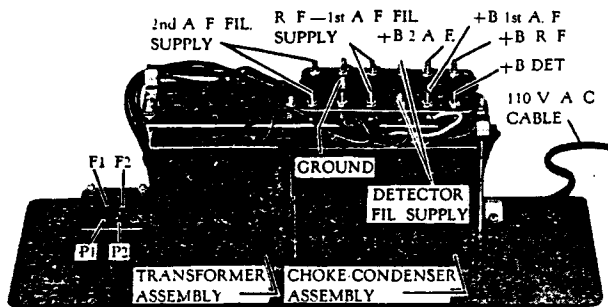


FIG. 66. POWER UNIT IN MODELS 37 AND 38. COVER REMOVED

The unit illustrated is for a Console 37 and the two terminals on either side of the ground terminal are used for toggle switch connection in the 110 volt line.

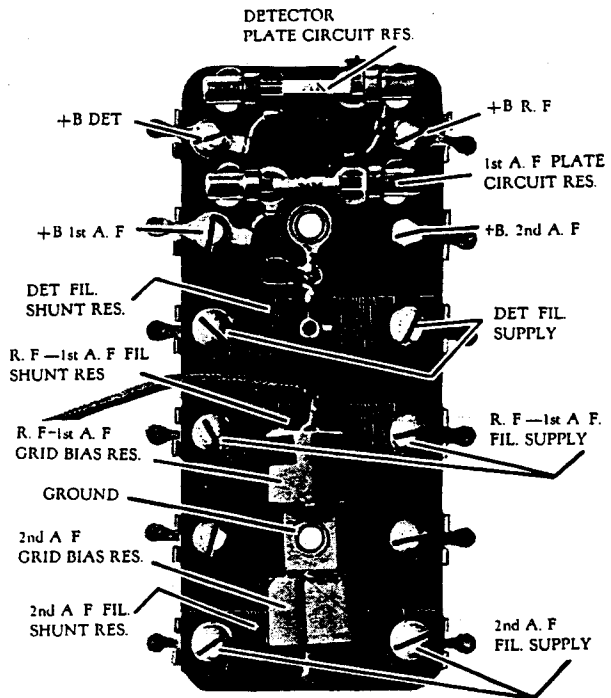


FIG. 67. REAR VIEW OF PANEL ASSEMBLY ON MODELS 37, 38 AND LATER TYPE "Y" POWER UNITS

The terminal on the right hand side of the ground eyelet is used as "speaker-return" terminal on later Models 37 and 38 sets. In Model 37 Console sets, and in later type "Y" power units, the terminals on either side of the ground eyelet are used for toggle switch connection in the 110 volt line.

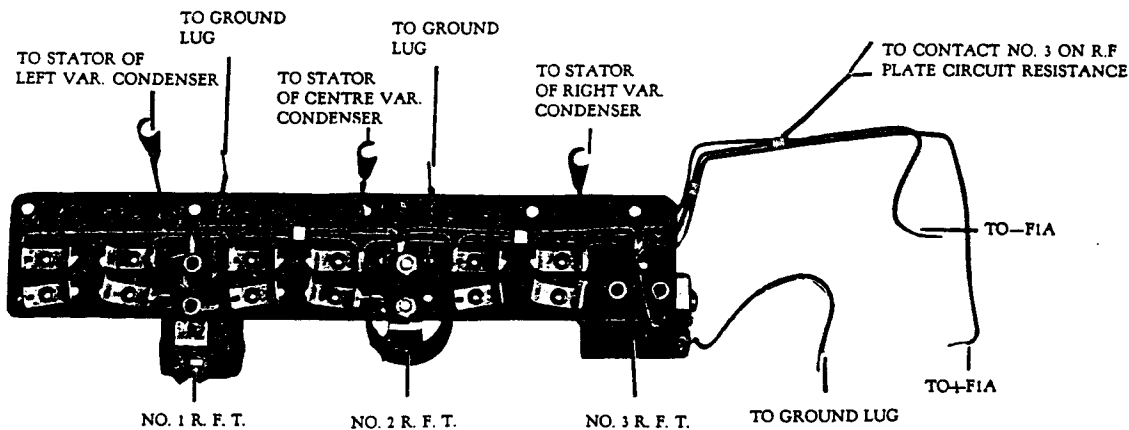


FIG. 68. VIEW OF R. F. AMPLIFIER ASSEMBLY IN MODELS 40, 42 AND 52, SHOWING WHERE EACH LEAD IS TO BE CONNECTED

Model 40, 42, and 52 Sets

General Description

The Models 40, 42 and 52 are six-tube single-dial A. C. receivers with complete power unit incorporated in the metal cabinet that houses the set. The power unit operates from 110 volt, alternating current, and supplies complete filament, plate and grid voltages to the set. The power unit is sealed in a single metal container.

Models 42 and 52 are equipped with an automatic voltage regulator in series with one side of the A. C. line. This device is so designed that owing to the heating effect, a voltage above normal (110) will increase its resistance value, and a voltage below normal will decrease its resistance, so that the voltage across the primary of the transformer is maintained at a constant value.

The circuit of each set has three stages of radio frequency amplification, the first stage acting as a coupling tube in order to eliminate the detuning effect of different antenna sizes (which would otherwise disturb the synchronism of the three tuned circuits). There is a tuned detector and two stages of audio frequency amplification.

The volume control consists of a resistance connected across a section of the antenna coupling transformer. A slider on this resistance connects to ground, and the antenna is connected to one side of the resistance. By adjusting the slider, more or less of the antenna current may be shunted to ground, thus decreasing or increasing the volume.

Model 52 has a metal cabinet about thirty inches high, with a cone speaker mounted in the lower section of the cabinet.

Removing Set from Cabinet

Lift off the cover of the power unit and remove the nuts from posts which pass through the holes in cable connection panel, releasing the cable from power unit.

Remove dial and vernier knob. Remove two screws which hold antenna-and-ground post bracket on inside back of cabinet. (Model 52 does not have this bracket.) Remove the six screws, three in a vertical row at each end, which clamp the chassis to the inside front of cabinet. Pull chassis straight back horizontally to allow condenser shaft and volume control to clear front of cabinet, then lift set up and out.

In Model 52 pull up the antenna and ground leads and remove speaker leads from posts on set.

Replacing Variable Condensers

If one variable condenser is defective, replace entire group of three condensers. Use pulleys and belts of original group.

Procedure: Remove set from cabinet. Loosen nine screws holding condensers to front of metal frame. Note how pulleys and belts are arranged and then remove them. Replace one condenser at a time. Do not mix old condensers with the replacements.

Remove two nuts on back of first variable condenser, which clamp grid resistor (grid condenser on last variable condenser) and lug of secondary lead. Remove three screws holding condenser to chassis and lift out the condenser.

Put in the replacement condenser and its three screws, without tightening screws, attach grid resistor and lug of secondary lead to top and bottom bolts respectively on back of condenser. Repeat procedure with other two variable condensers. When the replacement condensers are installed, put on the pulleys and belts, adjust belt tension and synchronize condensers (see Section XI).

Replacing R. F. Transformers

If one R. F. transformer is defective, replace R. F. amplifier assembly. (See Fig. 68.) The R. F. amplifier assembly consists of three R. F. transformers mounted on a three-socket moulded base. The filament contacts are wired and have two leads for connection to filament contacts of first A. F. socket. The plate circuits are wired and have one lead for connection to the left hand contact (No. 3) on the R. F. plate circuit resistance. A lead from the grid end of each R. F. transformer is soldered to a lug which is to be fastened to the bottom bolt on back of the variable condenser immediately in front of each R. F. transformer. The three return-leads from secondaries of each R. F. transformer are to be soldered to ground lugs which are held by bolts that clamp the R. F. amplifier base to the frame of set.

In replacing R. F. amplifier assembly, the chassis must be removed from the cabinet. Unsolder three leads from by-pass condenser, lead from grid contact of the first R. F., socket, leads from the grid resistors (unsolder at grid contacts of sockets), two filament circuit leads (at filament contacts of first A. F. socket), and the +B, R. F. lead. Remove secondary wire lug from bottom bolt on each variable condenser. Unsolder, at grid contact, the lead from grid condenser, which passes through a hole in the R. F. base. Unsolder three leads from secondaries of R. F. transformers where they are soldered to lugs under bolts holding R. F. base to metal frame. Remove five bolts holding R. F. base to metal chassis and remove the old R. F. amplifier assembly.

Reassemble with replacement R. F. amplifier, reversing above procedure.

Replacing Volume Control

Remove chassis from cabinet:

The volume control is held to the metal frame by two screws and nuts and is mounted in such a way that the three terminals are on the right hand side when looking at the chassis in its normal position. Remove the two screws, using a long-nose pliers to grip the bottom nut, which is close to the second A. F. transformer.

(Continued on next page.)

A yellow lead connects the top one of the three terminals to the inside end of the antenna coupling transformer.

A red lead connects the bottom one of the three terminals to the tap on the antenna coupling transformer.

A green lead runs from the center terminal (slider contact) to a (ground) lug held under the right hand bolt that clamps the base of the R. F. amplifier assembly to the metal frame.

The lead from the antenna post runs through a braided metal shield and is soldered to the lower one of the three terminals on the volume control. The metal braid is clamped to the center one of the three terminals. The other end of the metal braid is clamped to the ground post.

Model 52 does not have the shielded antenna lead. In this set two twenty-foot leads are connected to the volume control, black for antenna, and black-green tracer for ground.

(The outside end of the antenna coupling transformer is connected to the grid contact of the first R. F. socket).

Inspect the volume control carefully. If the resistance unit is damaged, replace with latest style of resistance unit. Bend the slider so it makes firm contact with resistance wire. Clean the contact end of the slider and the top edge of the resistance unit. See that slider is of latest type.

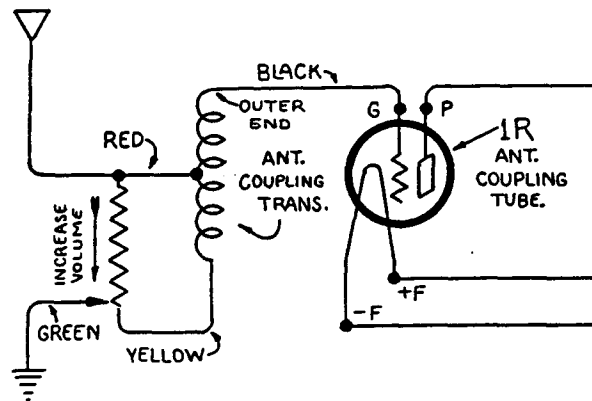


FIG. 69. SCHEMATIC DIAGRAM OF VOLUME CONTROL, MODELS 40, 42, 44 AND 52

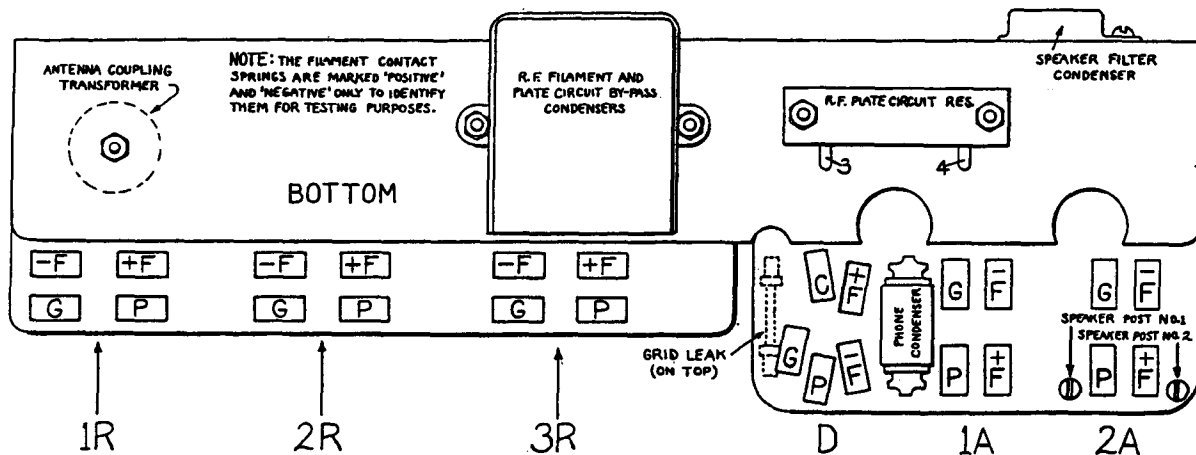


FIG. 70. TEST CHART FOR MODELS 40, 42, 52

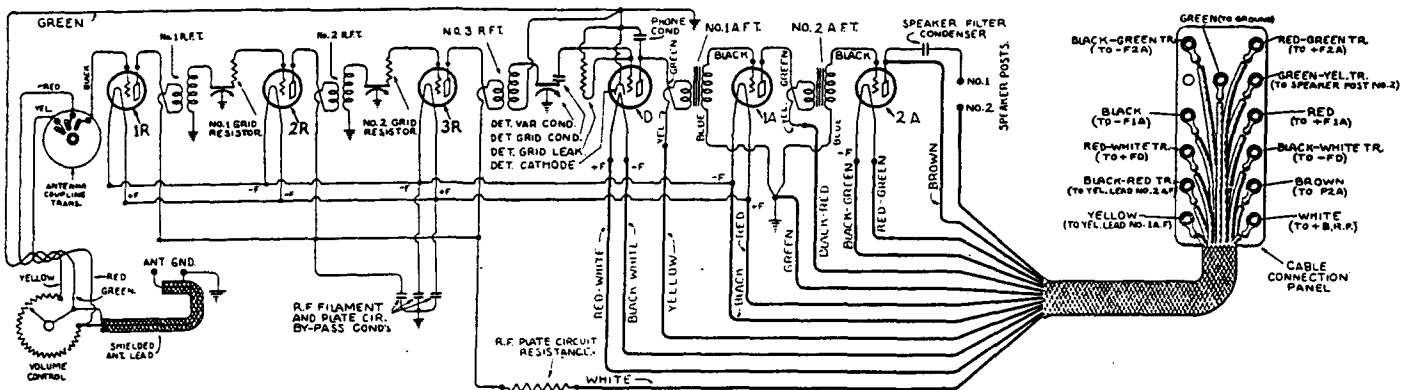


FIG. 71. WIRING DIAGRAM OF MODELS 40, 42 AND 52

Model 52 does not have the shielded antenna lead, but is provided with two twenty-foot leads which are connected to the volume control, black for antenna and black-green tracer for ground.

Continuity Test Table—Models 40, 42 and 52

Colors Refer to Cable Leads

For Following Tests Remove Cable Panel from Power Unit

TEST FROM	Correct Reading	WRONG READING INDICATES	REMARKS and FURTHER POSSIBILITIES
Red-Green Tr. to +F2A Black-Green Tracer to -F2A Red-White Tr. to +FD Black-White Tracer to -FD Red to +F1A Black to -F1A Green-Yellow Tracer to Speaker Post No. 2. Green to Ground Post. Brown to P2A. White to 4 (on R.F. Plate Resistance).	<i>Full</i>	Open in cable or connection.	Examine soldered connections at cable connection panel and set.
GREEN to P1A PD P3R +F3R, -F3R +FD, -FD +F2A, -F2A G2R, G3R G1R G1A G2A Stator of Detector Variable Condenser CD	<i>None</i> <i>None</i> <i>None</i> <i>None</i> <i>None</i> <i>None</i> <i>None</i> <i>Partial</i> <i>Full</i> <i>Partial</i> <i>Partial</i> <i>Full</i> <i>Full</i>	Grounded 1st A.F. plate circuit. Grounded detector plate circuit. Grounded R.F. plate circuit. Grounded R.F.-1st A.F. filament circuit. Grounded detector filament circuit. Grounded 2nd A.F. filament circuit. None—Open grid resistor or secondary No. 1, 2 R.F.T. Full—Shorted grid circuit. Open antenna coupling transformer. None—Open secondary No. 1 A.F.T. None—Open secondary No. 2 A.F.T. Open secondary last R.F.T. Open cathode lead.	Or shorted phone condenser. Or shorted R.F. by-pass condenser. Or shorted R.F. by-pass condenser. Test across resistors and secondaries separately. (Resistors mounted on back of R.F. var. conds.) Volume control full right. Full—Shorted secondary. Full—Shorted secondary.
WHITE to 3 (on R.F. Plate Res.)	<i>Partial</i>	None—Open R.F. plate circuit resistance.	Full—Shorted R.F. plate circuit res.
P1R, P2R, P3R.	<i>Partial</i>	Open primary No. 1, 2, 3 R.F.T.	
YELLOW to PD	<i>Partial</i>	None—Open primary No. 1 A.F.T. (or open in cable connection).	Full—Shorted primary.
Black-Red Tracer to P1A	<i>Partial</i>	None—Open primary No. 2 A.F.T. (or open in cable connection).	Full—Shorted primary.
OTHER TESTS GD to Stator of Last Condenser. P2A to Speaker Post No. 1. G1R to Ant. Terminal. To Test Volume Control, Unsolder Red Lead from Antenna Coupling Transformer and Test Across Antenna and Ground Terminals, Turning Control Knob.	<i>None</i> <i>None</i> <i>Full</i> <i>Smooth and Nearly Full</i>	Shorted grid condenser. Shorted speaker filter condenser. Open antenna connection. No reading—open resistance winding. Erratic reading—damaged resistance winding or slider.	Mounted on back of det. var. cond. If found defective, repair or install new control. Resolder red lead.

Model 44 Set

General Description

Model 44 set is similar to the Model 38 in design, but with the same improvements as contained on the Model 42, that is, newly designed cabinet, antenna coupling transformer and automatic voltage regulator. The power unit of Model 44, as in Models 40, 42 and 52, is sealed in a single metal container. Model 44 also contains the "local-distance" switch which is featured in the Model 38, but in Model 44, this switch cuts out a part of the primary of the second R. F. T.

The circuit has four stages of radio frequency amplification (with double-coil type R. F. transformers), a tuned detector, and two stages of audio frequency amplification. The first R. F. tube acts as an antenna coupling tube. The second A. F. stage is of the power type with condenser-choke coupling to the speaker.

The volume control consists of a resistance connected across a portion of the antenna coupling transformer. The slider on this resistance connects to ground, and the antenna connects to one end of the resistance. By turning the slider (ground) toward the antenna end of the resistance, the volume is decreased.

Removing Set from Cabinet

Lift off the cover of power unit and remove nuts from posts which pass through holes in the cable connection panel, releasing the cable. Remove dial and vernier knob. Remove two screws which hold antenna-and-ground post bracket on back of cabinet.

As in the Model 38, the chassis of the Model 44 is held to the cabinet by eight machine screws, all reached from inside the cabinet. Three screws are in a vertical (Continued on page 68.)

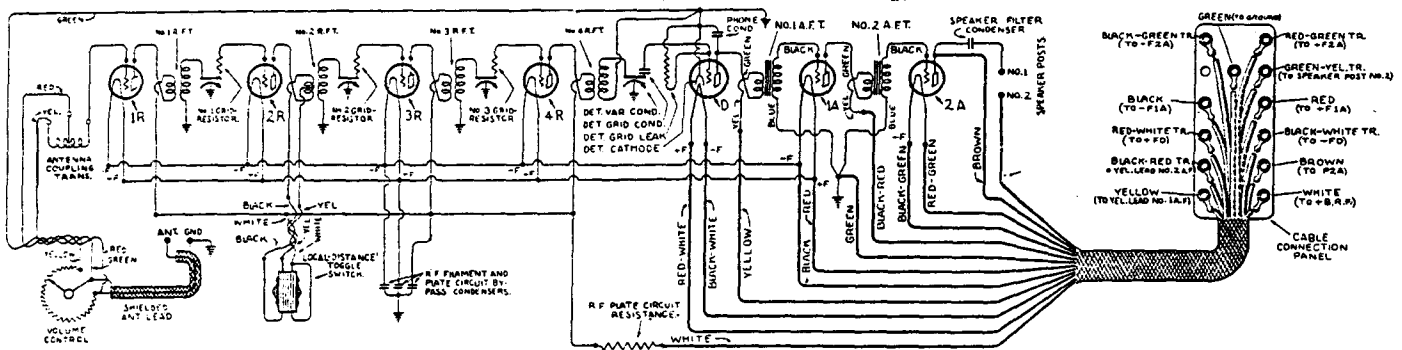


FIG. 72. WIRING DIAGRAM OF MODEL 44

A schematic diagram of the volume control is shown in Fig. 69. The ground connection to the R. F. by-pass condensers, in this and other models, is made through the metal container in which the condensers are sealed. A pictorial representation of the antenna coupling transformer is shown in Fig. 71.

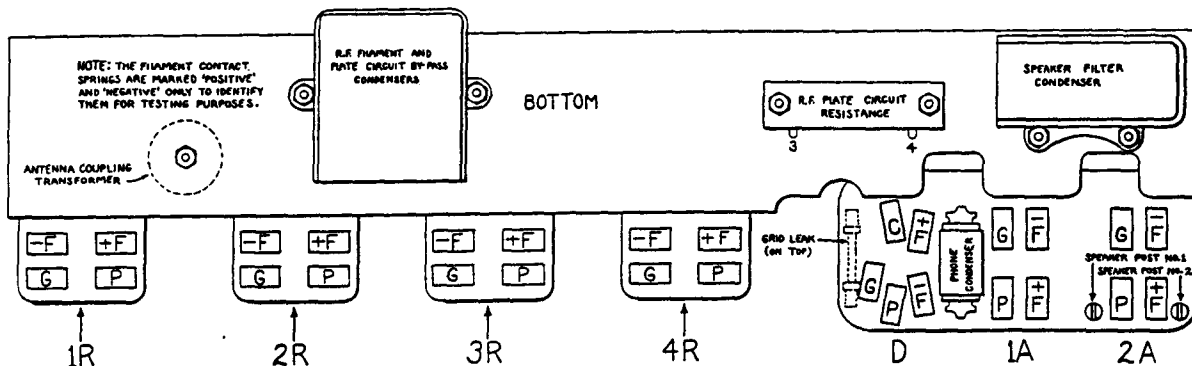


FIG. 73. TEST CHART FOR MODEL 44