# Philco Radio & Television Corp.

| | | | |
|---|---|---|---|
| | Model: 610 | Chassis: | Year: Pre October 1938 |
| | Power: | Circuit: | IF: |
| | Tubes: | | |
| | Bands: | | |

| Resources |
|---|
| Riders Volume 9 - CHANGES 9-3 |
| Riders Volume 6 - PHILCO 6-19 |
| Riders Volume 6 - PHILCO 6-20 |
| Riders Volume 6 - PHILCO 6-21 |
| Riders Volume 7 - PHILCO 7-87 |
| Riders Volume 7 - PHILCO 7-88 |
| Riders Volume 7 - PHILCO 7-147 |

### G.E. D-51, D-52

A switch is provided in these chassis which is used to cut in and out a series audio coupling condenser between the plate of the 6B7 second detector-avc-af tube and the control grid of the 41 output tub. In most cases it has been found best to allow this switch to remain closed all the time; therefore, its usefulness can be increased by making the following changes:

Disconnect the two wires connected to the switch, S2, in the schematic found on *RCA page 6-9 in Rider's Volume VI*, and after soldering them together, tape them.

Connect a wire from the control grid cap connector of the 6B7 to one terminal of the switch. To the other terminal of S2, connect one side of a 0.0015-mf condenser and connect the other side of the condenser to the case of the receiver.

This procedure provides a variable tone control which is extremely effective in reducing the tube hiss on weak signals. When the incoming signal is strong, the condenser may be switched out of the circuit, which gives the best fidelity. This type of tone control is more effective in reducing noise than the usual type of control connected across the output of the 41 power amplifier.

### Motorola 5T-71A

The schematic for this chassis is the same as that shown on *page 3-2 in Rider's Volume III and on page 1054 in the Rider Combination Manual*, with the following changes:

The 0.25-megohm and 1-megohm resistors in series in the plate circuit of the third 24 r-f tube and the 0.1-mf by-pass condenser from their junction, have been replaced with a choke having the same parts number as the one shown in the grid circuit of the 171A output tube. This choke is connected directly between the plate of the 24 tube and the +B lead.

The choke in the grid circuit of the output tube has been replaced with a 0.2-megohm resistor.

### Mid-West 7-36

As was noted on *page 7-2 in Rider's Volume VII*, the tube complement of the late model of this receiver was changed, four metal tubes being employed. Below will be found the voltage data for both the early and the late models.

*Early 7-36*

| Tube | | Plate | Screen | Cathode | Supp. | Grid |
|---|---|---|---|---|---|---|
| 58 | R-F | 235 | 80 | [illegible] | ) | AVC |
| 56 | Osc. | 120 | — | [illegible] | ; | — |
| 58 | Mixer | 215 | 80 | [illegible] | ; | AVC |
| 58 | 1st I-F | 190 | 80 | [illegible] | ) | AVC |
| 55 | 2nd Det | 35 | 0 | 0 | | |
| 2A5 | Output | 220 | 245 | [illegible] | 0 | 17.5 |
| 80 | Rect | 240 volts from [illegible] | | | | |

Filament voltage, 2.5

*Late 7-36*

| Tube | | Plate | Screen | Supp. | Cathode |
|---|---|---|---|---|---|
| 6K7 | R-F | 225 | 100 | 0 | 0 |
| 6L7 | Mixer | 225 | 100 | 3 | 3 |
| 6C5 | Osc. | 150 | 0 | 0 | 0 |
| 85 | 2nd Det-AF | 30 | 0 | 0 | 0 |
| | | 0 | | | |
| 42 | Output | 225 | 250 | 0 | 0 |
| 80 | Rect | 250 A-C | | | |

Filament voltage, 5.9 Volume control at maximum

### Arvin Chassis 518

In order to correct the calibration of the dial, the following procedure is to be used:

Rotate the dial pointer to 550 kc. Press with the thumb on the dial face above its center. Rotate the tuning knob while preventing the dial pointer *from moving*. This will enable the position of the dial pointer to be varied with respect to the tuning condenser and makes it possible to readjust the calibration without removing the chassis from its cabinet.

For other servicing data see *pages 8-10, 8-12, and 8-13 in Rider's Volume VIII*.

### G.E. B-40

The schematic of this receiver, which is the same as RCA M-34, is shown on *RCA page 3-14 of Rider's Volume III and page 1854 of the Rider Combination Manual*. The change explained below will increase the audio gain on medium and strong signals and also improve the A.V.C. action. The partial schematic shown herewith are the original and revised circuits.

Interchange the connections at the terminal board of the red and green wires from the volume control. This places the grid coupling condenser in the circuit of the movable arm of the volume control. Then disconnect the green A.V.C. lead from the terminal board. (This lead is connected to the second terminal from the end on the bottom side of the terminal strip.) Solder a small 2-megohm resistor to this lead and solder the other end of the resistor to the lug on the terminal board to which the green lead from the volume control is attached.

### Lafayette M-31 (1935)

Please make this change on the lower schematic on *Lafayette page 8-6 in Rider's Volume VIII*: A connection should be made where the lead from B+ crosses the lead from the plate of the 58. A jumper appears there in the schematic.

### Philco 602

The tap between the voice coil and the hum bucking coil should be grounded to minimize hum. See schematic on *page 7-83 of Rider's Volume VII*.

The 133-15 ohms resistor, No. 36, has a part number 33-3235 instead of 33-3225.

Beginning with Run No. 3, the tuning condenser assembly was changed to a vernier type. The part number of this condenser, scale, and pointer remain the same.

The 1-megohm resistor, No. 40 had a rating of ¾ watt. This should be replaced with a ½ watt resistor of the same resistance value; the Part No. 33-510344.

### Philco 270

Please make a note in your Index to Rider's Manuals that the parts list of Model 70 applies to the schematic of Model 270, found on *page 1-28 of the revised edition of Rider's Volume I; on page *466-C of the early edition; and on page 1657 of the Rider Combination Manual.*

### Philco 116

A 50-mmf. condenser has been added from the end terminal of condenser No. 63 (see schematic on *page 6-11 of Rider's Volume VI*) to ground. This addition was made to prevent oscillation.

As of Run No. 14, the 1-megohm resistor, No. 81, has been changed from Part No. 4409 to 33-510344.

A change has been made in the design of the volume control, No. 66 on the schematic, the old part number was 33-5022 and this has been replaced with Part No. 33-5153.

The Model K-17 speaker, Part No. 36-1025, is used on the new Model 116-B. The cone assembly number is 02996; the field coil and pot assembly is 36-3104.

### Philco 116X

The resistance of the field coil, No. 95 on the schematic shown on *page 6-13 of Rider's Volume VI*, is shown as 1125 ohms. Change notes from the manufacturer state that this value is 1450 ohms.

The volume control No. 68 has been changed from Part No. 33-5110 to 33-5155.

### Philco I-F Transformers

The i-f transformers of several models have been changed and are listed below. In each case the new part number of the first i-f transformer is 32-2296 and that of the second i-f transformer is 32-2298.

| *Model* | *Parts List on Page* | *Rider's Volume* |
|---|---|---|
| 37-33 | 7-15 | VII |
| 37-34 | 8-17 | VIII |
| 37-38* | 7-17 | VII |
| 37-623 | 7-55 | VII |
| 37-624 | 8-23 | VIII |

The second i-f transformer has a tertiary winding which is connected in series with the screen-grid circuit of the 1D5G i-f tube.

*In order to prevent oscillation in the i-f circuit of Model 37-38, a tubular condenser, Part No. 30-4020, 0.05 mf, is connected from the screens of the 1C7G detector-oscillator and the 1D5G i-f tubes to ground.

### Philco 37-9, Code 121

*Run No. 2.* Condenser No. 35 has been changed from 16 mf to 18 mf, Part No. 30-2194.

To improve the operation of the i-f circuit, a 0.1-mf condenser, Part No. 30-4455, has been connected from the red lead of the primary of the i-f transformer, No. 53, to ground.

To prevent distortion at minimum volume, the green-white wire connecting the center lug of the volume control, No. 67, to the automatic tuning dial a-f switch, No. 93, must be kept clear of the compensator, No. 54, and the diode circuit of the 6Q7G.

*Run No. 3.* Condensers 70 and 70A have been replaced by 8- and 10-mf condensers respectively, Part No. 30-2201. The 8-mf condenser, No. 72, has been replaced by a 18-mf condenser, Part No. 30-2200.

The schematic of this receiver will be found on *page 8-11 of Rider's Volume VIII*. Note that the dial calibration notes of Model 37-10, see *page 8-15*, can be used for calibrating the dial of Model 37-9.

### Philco 38-39

In order to reduce maximum volume buzz, the following parts were changed: the 11.7-ohm resistor, No. 22, was changed to 12.3 ohms; the 2-megohm resistor, No. 30, was changed to 4 megohms; and the 160,000-ohm resistor, No. 27, was changed to 240,000 ohms. See schematic on *page 8-75 of Rider's Volume VIII*.

### Philco 38-4, 38-5

When either of these models are operated on 25 cycles, a power transformer, Part No. 32-7598 must be employed. Also a 0.1-mf condenser must be connected across the speaker field coil, No. 65.

In order to reduce station rumble in the Model 38-4, the following parts were changed: the 0.01-mf condenser, No. 36, was changed to 0.0015 mf. and the 40,000-ohm resistor, No. 38, changed to 32,000 ohms.

In order to reduce frequency drift at the high-frequency end of the broadcast tuning range, in Run No. 3 the compensator No. 16, 1500 kc, Part No. 31-6196, was replaced with Part No. 31-6206, and two condensers, Part No. 30-1097, are connected in parallel with the new condenser. The range 1 oscillator transformer, No. 15, was changed from Part No. 32-2631 to 32-2894.

In Run No. 4 of 38-4 and Run No. 2 of 38-5, the 70,000-ohm resistor, No. 19, was changed to 51,000 ohms to improve the performance of the oscillator circuit on the short-wave bands. For schematic see *page 8-61 in Rider's Volume VIII.*

### Philco 38-7, Codes 121,124

*Run No. 2* To provide uniform performance of the oscillator circuit, a 20-ohm resistor was connected in series with the cathode of the 6A8G detector-oscillator tube. See schematic on *page 8-65 of Rider's Volume VIII.*

In order to reduce bass response, the following parts were changed in the Code 124 chassis:

Condenser, No. 24, was changed from 0.01 mf to 0.001 mf, Part No. 30-4201. Resistor, No. 32, was changed from 51,000 ohms to 40,000 ohms, Part No. 33-340339. Condenser, No. 38, was changed from 0.006 mf to 0.01 mf, Part No. 30-4479.

*Run No. 3.* To reduce frequency drift further at the high-frequency end of the broadcast range, the compensator, No. 7A, was replaced with Part No. 31-6206. Also a new thermal compensator was connected in parallel with compensator, No. 7A and mounted near resistor No. 12. The resistor is mounted in the chassis with a mounting clamp and an asbestos insulator. The resistor must be mounted like this or else the thermal compensator will not function properly.

*Run No. 4.* The thermal compensator added to the chassis in Run No. 3, was replaced by two fixed condensers, Part No. 30-1097.

*Run No. 5.* The 20-ohm resistor added in Run No. 2 was removed.

The part numbers of Nos. 26, 39, and 48 found in the list of parts on *page 8-66* are correct for Models 38-8 and 38-9. The correct part numbers for Model 38-7, both codes, follow:

No. 26, Volume Control, Part No. 33-5225; No. 39, Tone Control, Part No. 42-1347; and No. 48, Range Switch, Part No. 42-1339.

### Philco 38-8, Code 121

*Run No. 2.* In order to increase the sensitivity of the shadowmeter, the following changes were made: Resistor, No. 12, was changed from 10,000 ohms to 13,000 ohms, Part No. 33-313639 and condenser, No. 17, was changed from 0.05 mf to 0.25 mf, Part No. 30-4134. See schematic on *page 8-65 of Rider's Volume VIII.*

*Run No. 3.* To provide uniform performance of the oscillator circuit, a 20-ohm resistor was connected in series with the cathode of the 6A8G detector-oscillator tube.

*Run No. 4.* In order to increase the a-f response in the high frequencies, condenser No. 40, was changed from 0.008 mf to 0.004 mf, Part No. 30-4456.

*Run No. 5.* The 20-ohm resistor added in Run No. 3, was removed.

### Philco 610

We have been advised by the manufacturer that the following changes should be made in the schematic numbers of this model found on *page 6-19 of Rider's Volume VI:* the schematic number 54 should be changed to 41; No. 41 to 56; No. 56 to 54; No. 39 to 40; and No. 40 to 39. This will make the numbers of the wiring diagram, the base view, and the parts list agree.

Beginning with Run No. 15, the oscillator circuit, of the second type of this chassis (*see page 7-87 of Rider's Volume VII*) was changed to improve the oscillator action at 6.0 mc. Resistors No. 17 and No. 18 (51,000 ohms and 25,000 ohms) were removed. A 32,000-ohm resistor (Part No. 33-332133) was added from the switch terminal side of condenser No. 7 in the antenna circuit to ground. A 20-ohm resistor, Part No. 33-020133 was connected between the 6A7 cathode and ground.

PHILCO RADIO & TELEV. CORP.

MODEL 610
Schematic, Voltage Data

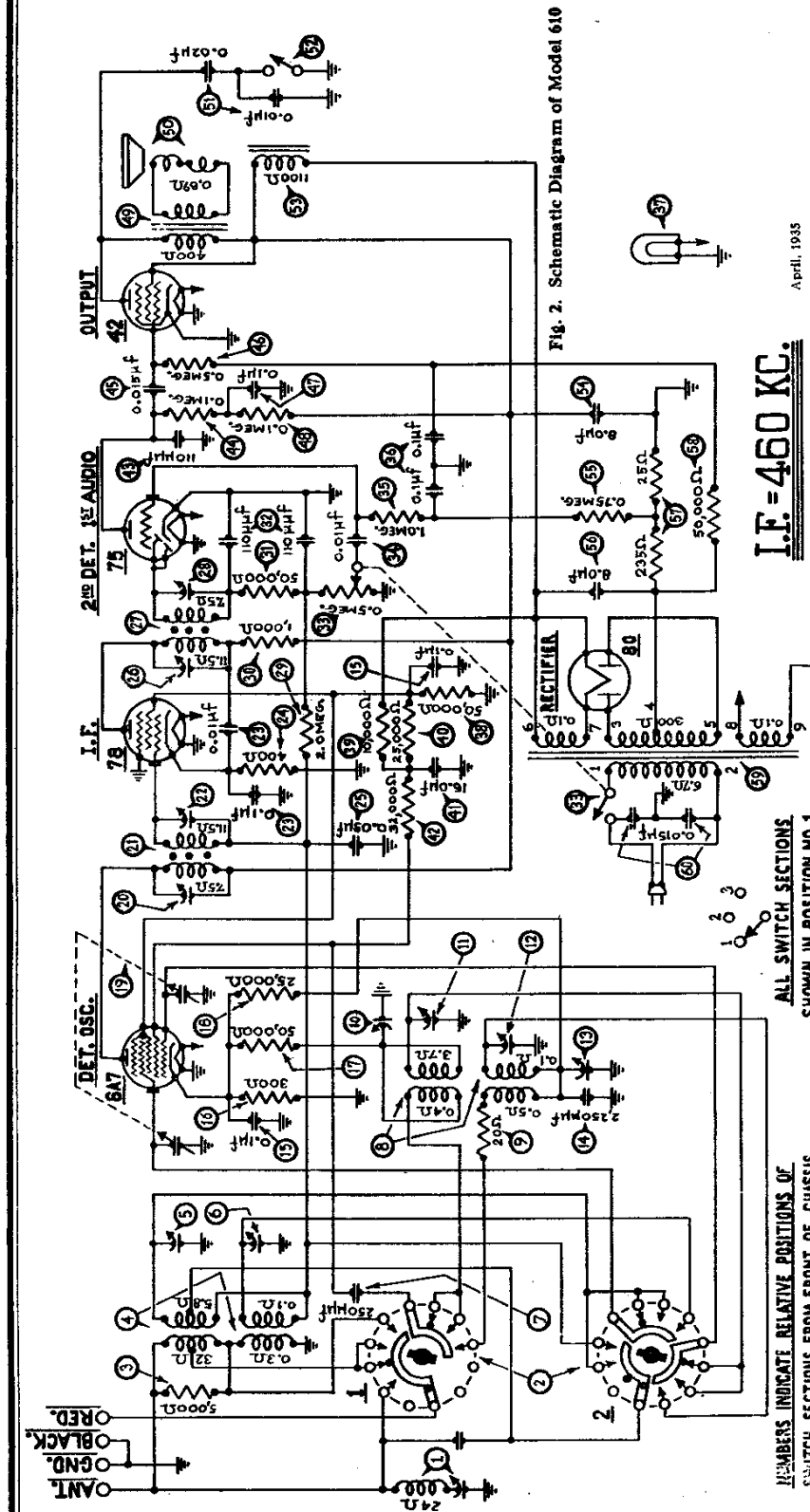



Fig. 2. Schematic Diagram of Model 610

April, 1935

Tube Socket Voltages
Measured to Ground

| Tube | 6A7 Det. Osc. | 78 I.F. | 75 2d Det. | 42 Output |
|---|---|---|---|---|
| Point P | 255 | 250 | 145 | 238 |
| SG | 85 | 85 | ... | 255 |
| K | 2.3 | 2.5 | ... | ... |

6A7: G1 & 3 = 147

Above voltages were obtained by using a PHILCO type 025 Circuit Tester (or 048A All-purpose Tester), using test prods applied to underside of chassis. Volume control at maximum; dial at 55; waveband switch counter-clockwise (band 1). Use Fig. 1 for test points.

Power Transformer Data

| Terminals | A.C. Volts | Current | Circuit | Color |
|---|---|---|---|---|
| 1–2 | 120 | ..... | Primary | White |
| 3–5 | 680 | 65 M.A. | Secondary | Yellow |
| 6–7 | 5.0 | 2.0 A. | Fil. Rect. | Blue |
| 8–9 | 6.3 | 2.2 A. | Filaments | Black |
| 4 | ... | ..... | Center Tap of 3-5 | Yellow, Green Tracer |

MODEL 610
Socket, Trimmers
Alignment, Data

PHILCO RADIO & TELEV. CORP.

# Model 610

**Type Circuit:** Superheterodyne, with pentode output (3 watts); built in connections for Philco All-wave aerial; aerial selector built into and operated by wave-band switch.

**Power Supply:** Alternating Current. Voltage and frequency as specified on chassis nameplate.

**Tubes Used:** 1 type 6A7, Detector-Oscillator; 1 type 78, I.F.; 1 type 75, 2d Detector and 1st A.F.; 1 type 42 Output; 1 type 80 Rectifier.

**Wave Bands:** Three—(1) standard (with some Police); (2) Police; (3) Short-wave.

**Coverage of Each Band:** Band 1, 530-1720 K.C.; Band 2, 2300 to 2500 K.C. (2.3-2.5 M.C.); Band 3, 5700-18000 K.C. (5.7 to 18.0 megacycles).

**Tuning Drive:** Dual planetary, ball bearing. 50 to 1 ratio for slow-speed tuning.

**Tone Control:** 2-position.

**Intermediate Frequency:** 460 K.C.

**Power Consumption:** 54 watts.

The adjustment of the compensating condensers in Model 610 requires a signal generator covering the broadcast and police band, and also one capable of producing a signal at certain frequencies in the short wave band. The Philco Model 088 All-Wave Signal Generator covers these requirements perfectly. An output meter is also required. Philco Model 025 or 012 unit is recommended. The location of all compensating condensers is shown in Fig. 4.

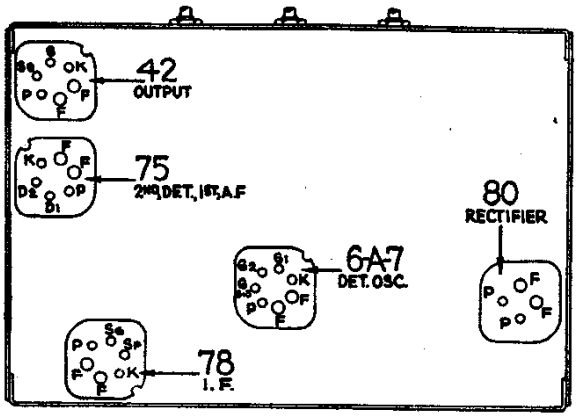



**Fig. 1. Tube Sockets as viewed from bottom.**

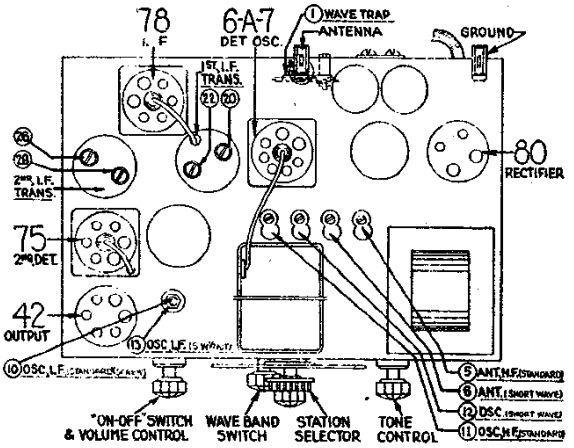



**Fig. 2. Locations of Compensating Condensers**

## Adjustment of I. F.

1. Remove the antenna connection from the receiver, disconnect the grid clip from the first detector (type 6A7 tube), and connect the "ANT" output terminal of the signal generator to the grid cap of this tube; connect the "GND" terminal of the signal generator to the "GND" terminal of the receiver.

2. Connect the 0 to 30 volt range of the output meter to the plate and cathode of the output tube or to the two bottom prongs of the speaker plug.

3. Adjust the signal generator to a frequency of 460 K.C. Place the receiver in operation with the dial turned to the low frequency end of the standard broadcast band, wave band switch to extreme left (clockwise), and have the volume control adjusted near its maximum setting. Adjust the signal generator attenuator for approximately half-scale reading of the output meter.

4. The I.F. compensating condensers are located at the tops of the I.F. coil shields and adjusted by turning the two screws in top. Adjust condensers ㉘ and ㉙ (2d I.F. primary and secondary) for maximum reading in the output meter, and then condensers ⑳ and ㉒ (1st I.F. primary and secondary).

## Adjustment of Wave-Trap

1. Connect the signal generator leads to the antenna and ground terminals of the receiver. Replace the grid clip on the 6A7 grid cap.

2. With the wave-band switch of the receiver still in the extreme left (broadcast position), turn the station selector to 550 K.C.

3. With the signal generator in operation at 460 K.C., adjust the wave-trap ① condenser until a MINIMUM reading is obtained on the output meter. The Philco fibre wrench, part No. 3164, is used for this adjustment. The wave-trap compensator is reached from rear of chassis.

## Adjustment of High and Low Frequency Compensators

1. With the wave-band switch still at Position No. 1 (broadcast band), set the dial at 1600 K.C. Set the signal generator at this frequency and adjust compensators ⑪ and ⑤ for maximum output. These are the oscillator and antenna "H.F. standard" compensators respectively.

2. Tune the receiver and the signal generator to 600 K.C. and adjust compensator ⑩ (screw) for maximum output. This is the oscillator L.F. standard compensator.

3. Turn the wave-band switch to the extreme right (short-wave band) and adjust the station selector to 18.0 megacycles. By means of the Philco wrench, part No. 3164, adjust the oscillator S.W., and antenna S.W. compensators for maximum reading in the output meter. These are numbered ⑫ and ⑥ respectively in figure No. 4.

4. Turn the tuning dial to 7.2 M.C., and adjust condenser ⑱ osc. L.F., (S.W.) (nut) to maximum signal.

MODEL 610
Chassis, Parts

PHILCO RADIO & TELEV. CORP.

# Replacement Parts—Model 610

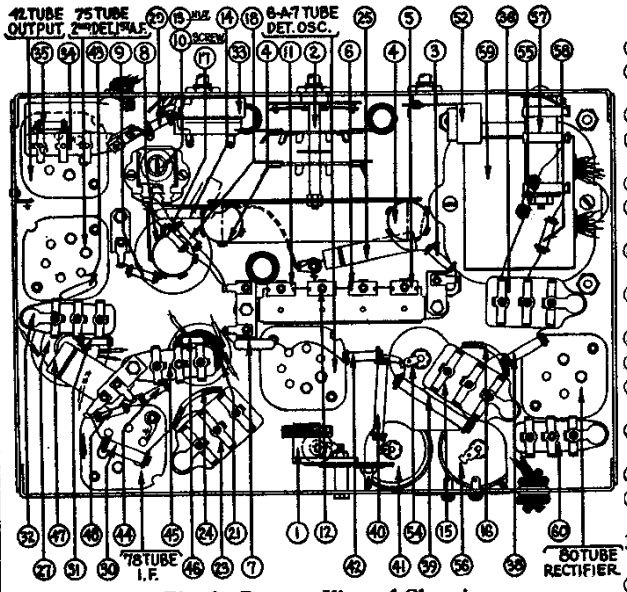
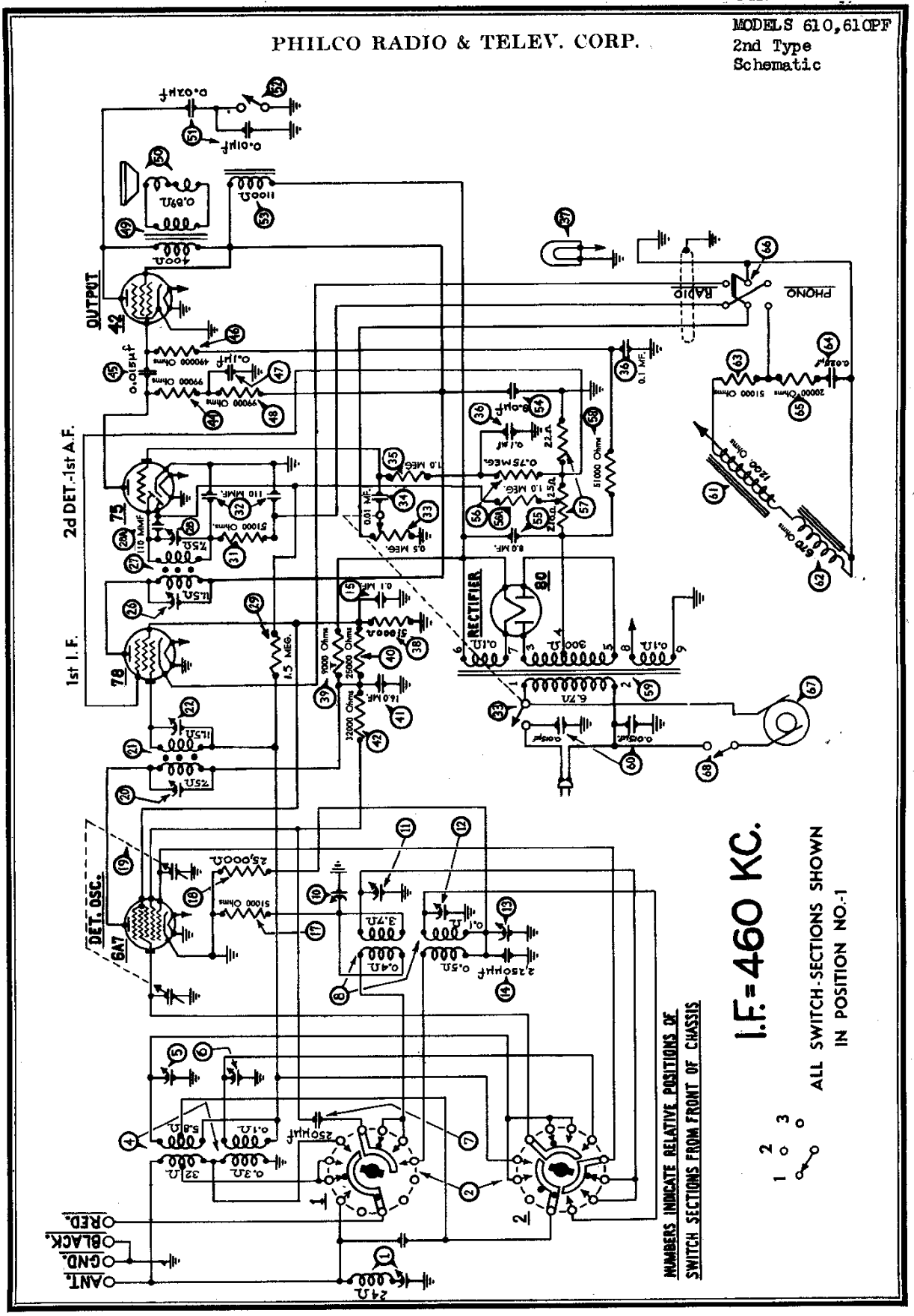



Fig. 3. Bottom View of Chassis

| | Description | Part No. | List Price |
|---|---|---|---|
| ① | Wavetrap | 36-6777 | $1.00 |
| ② | Waveband Switch | 42-1112 | 1.10 |
| ③ | Resistor (5000 ohms) (Green, Black, Red) | 6096 | .20 |
| ④ | Antenna Transformer | 32-1669 | 1.15 |
| ⑤ | Compensating Condenser (Antenna, Standard) | Part of 31-6047 | .50 |
| ⑥ | Compensating Condenser (Antenna, S.W.) | Part of 31-6047 | .50 |
| ⑦ | Condenser (.00025 Mfd. Mica) | 5858 | .35 |
| ⑧ | Oscillator Transformer | 32-1670 | 1.40 |
| ⑨ | Resistor (20 ohms) (Red, Black, Black) | 33-1206 | .20 |
| ⑩ | Compensating Condenser (Osc. L.F. Standard) (Screw) | Part of 31-6027 | .70 |
| ⑪ | Compensating Condenser (Osc. H.F., Standard) | Part of 31-6047 | .50 |
| ⑫ | Compensating Condenser (Osc. S.W., H.F. End) | Part of 31-6047 | .50 |
| ⑬ | Compensating Condenser (Osc. S.W., L.F. End) (Nut) | Part of 31-6027 | .70 |
| ⑭ | Condenser (.00225 Mfd. Mica) | 30-1055 | .40 |
| ⑮ | Condenser (.09 Mfd. Twin Bakelite Block) | 4989-DG | .40 |
| ⑯ | Resistor (300 ohms Flexible) (Orange, Black, Brown) | 33-3010 | .20 |
| ⑰ | Resistor (50000 ohms) (Green, Brown, Orange) | 6098 | .20 |
| ⑱ | Resistor (25000 ohms) (Red, Green, Orange) | 33-1013 | .20 |
| ⑲ | Tuning Condenser Assembly | 31-1528 | 3.75 |
| ⑳ | Compensating Condenser (1st I.F. Primary) | Part of ㉑ | .... |
| ㉑ | 1st I.F. Transformer | 32-1671 | 1.35 |
| ㉒ | Compensating Condenser (1st I.F. Secondary) | Part of ㉑ | .... |
| ㉓ | Condenser (.09 Mfd., and .01 Mfd. Bakelite Block) | 4989-FU | .40 |
| ㉔ | Resistor (400 ohms Flexible) (Yellow, Black, Brown) | 33-3016 | .20 |
| ㉕ | Condenser (.05 Mfd. Tubular) | 30-4020 | $0.35 |
| ㉖ | Compensating Condenser (2nd I.F. Primary) | Part of ㉗ | .... |
| ㉗ | 2nd I.F. Transformer | 32-1672 | 1.35 |
| ㉘ | Compensating Condenser (2nd I.F. Secondary) | Part of ㉗ | .... |
| ㉙ | Resistor (2 Megs.) (Red, Black, Green) | 33-1025 | .20 |
| ㉚ | Resistor (1000 ohms) (Brown, Black, Red) | 5837 | .20 |
| ㉛ | Resistor (50000 ohms) (Green, Brown, Orange) | 6098 | .20 |
| ㉜ | Condenser (.00011 Twin Bakelite Block) | 8035-DG | .25 |
| ㉝ | Volume Control & On-Off Switch | 33-5106 | .85 |
| ㉞ | Condenser (.01 Mfd. Bakelite Block) | 3903-SU | .25 |
| ㉟ | Resistor (1 Meg.) (Brown, Black, Green) | 33-1096 | .20 |
| ㊱ | Condenser (.1 Mfd. Twin Bakelite Block) | 4989-DG | .40 |
| ㊲ | Pilot Lamp | 34-2064 | .09 |
| ㊳ | Resistor (50000 ohms) (Green, Brown, Orange) | 4237 | .20 |
| ㊴ | Resistor (10000 ohms) (Brown, Black, Orange) | 3524 | .20 |
| ㊵ | Resistor (25000 ohms) (Red, Green, Orange) | 3656 | .20 |
| ㊶ | Condenser (Electrolytic—16 Mfd.) | 30-2118 | 1.65 |
| ㊷ | Resistor (32000 ohms) (Orange, Red, Orange) | 5279 | .20 |
| ㊸ | Condenser (.00011 Mfd. Mica) | 30-1031 | .35 |
| ㊹ | Resistor (.1 Meg.) (Brown, Black, Green) | 6099 | .20 |
| ㊺ | Condenser (.015 Mfd. Bakelite Block) | 3793-SU | .35 |
| ㊻ | Resistor (.5 Meg.) (Yellow, White, Yellow) | 6097 | .20 |
| ㊼ | Condenser (.1 Mfd. Tubular) | 30-4170 | .35 |
| ㊽ | Resistor (.1 Meg.) (White, White, Yellow) | 6099 | .20 |
| ㊾ | Output Transformer | 32-7019 | 1.25 |
| ㊿ | Cone & Voice Coil Assembly (P-27 Speaker) | 02861 | .65 |
| (51) | Condensers (in Tone Control) | Part of (52) | .... |
| (52) | Tone Control | 30-4318 | .50 |
| (53) | Field Coil & Pot Assembly (P-27 Speaker) | 36-3341 | 2.75 |
| (54) | Condenser (Electrolytic—8 Mfd.) | 30-2025 | 1.35 |
| (55) | Resistor (750000 ohms) (Violet, Green, Yellow) (½ Watt) | 33-1203 | .20 |
| (56) | Condenser (Electrolytic) (8 Mfd.) | 30-2025 | 1.35 |
| (57) | Resistor (B.C. Wire-wound, 235 ohms, 25 ohms) | 33-3037 | .20 |
| (58) | Resistor (50000 ohms) (Green, Brown, Orange) | 6098 | .20 |
| (59) | Power Transformer (110 volts 60 cycles) | 32-7381 | 4.00 |
| | (110 volts 25 cycles) | 32-7382 | 6.25 |
| | (230 volts 50 cycles) | 32-7383 | 4.50 |
| (60) | Condenser (.015 Mfd. Twin Bakelite Block) | 3793-DG | .40 |
| | Dial Assembly | 31-1539 | .30 |
| | Tube Shield Body | 28-2726 | .10 |
| | Tube Shield Base | 28-2725 | .03 |
| | Four Prong Socket | 27-6034 | .10 |
| | Six Prong Socket | 27-6036 | .11 |
| | Seven Prong Socket | 27-6037 | .11 |
| | Knob (Station Selector) | 27-4206 | .12 |
| | Knob (Fine Tuning) | 27-4207 | .10 |
| | Knob (Volume, Waveband and Tone Control) | 27-4208 | .10 |
| | Bezel | 27-2928 | .35 |
| | Bezel Glass | 27-7887 | .60 |

PHILCO RADIO & TELEV. CORP.

MODELS 610,610PF
2nd Type
Schematic



MODELS 610, 610PF
Changes, Parts

# PHILCO RADIO & TELEV. CORP.

## Later 1935 Production Runs

This sheet supplements the regular bulletin No. 217 on the Philco 610 and also covers the Philco Radio-Phonograph 610PF. All circuit and part number changes up to date have been included.

Beginning with run No. 9 the grid bias arrangement for the 6A7 1st detector and 78 I.F. was changed. A fixed bias from the B.C. resistor is fed through the AVC circuit to the grids of these tubes.

Beginning with run No. 11 the oscillator circuit was changed to series feed to eliminate possibilities of failure at 6.0 mc.

Beginning with run No. 14 the dial mask assembly was changed to the glowing arrow wave band indicator type.

## PARTS LIST

| | Description | Part No. | List Price |
|---|---|---|---|
| ① | Wavetrap | 38-6777 | $1.00 |
| ② | Waveband Switch | 42-1152 | 1.75 |
| ④ | Antenna Transformer | 32-1669 | 1.15 |
| ⑤ | Compensating Condenser (Antenna, Standard) | Part of 31-6047 | .50 |
| ⑥ | Compensating Condenser (Antenna, S.W.) | Part of 31-6047 | .50 |
| ⑦ | Condenser (.00025 Mfd. Mica) | 30-1032 | .20 |
| ⑧ | Oscillator Transformer | 32-1973 | 1.00 |
| ⑩ | Compensating Condenser (Osc. L.F. Standard) (Screw) | Part of 31-6027 | .70 |
| ⑪ | Compensating Condenser (Osc. H.F., Standard) | Part of 31-6047 | .50 |
| ⑫ | Compensating Condenser (Osc. S.W., H.F. End) | Part of 31-6047 | .50 |
| ⑬ | Compensating Condenser (Osc. S.W., L.F. End) (Nut) | Part of 31-6027 | .70 |
| ⑭ | Condenser (.00225 Mfd. Mica) | 30-1055 | .40 |
| ⑰ | Resistor (50000 ohms) (Green, Brown, Orange) | 6098 | .20 |
| ⑱ | Resistor (25000 ohms) (Red, Green, Orange) | 33-1013 | .20 |
| ⑲ | Tuning Condenser Assembly | 31-1740 | .... |
| ㉙ | Compensating Condenser (1st I.F. Primary) | Part of ㉛ | .... |
| ㉛ | 1st I.F. Transformer | 32-1671 | 1.35 |
| ㉜ | Compensating Condenser (1st I.F. Secondary) | Part of ㉛ | .... |
| ㉝ | Condenser (.05 Mfd. Tubular) | 30-4020 | .35 |
| ㉞ | Compensating Condenser (2nd I.F. Primary) | Part of ㊱ | .... |
| ㉟ | 2nd I.F. Transformer | 32-1672 | 1.35 |
| ㊱ | Compensating Condenser (2nd I.F. Secondary) | Part of ㊱ | .... |
| ㊴ | Resistor (2 Megs.) (Red, Black, Green) | 33-1188 | .20 |
| ㊵ | Resistor (50000 ohms) (Green, Brown, Orange) | 6098 | .20 |
| ㊷ | Condenser (.00011 Twin Bakelite Block) | 8035-DG | .25 |
| ㊸ | Volume Control & On-Off Switch | 33-5106 | 1.45 |
| ㊹ | Condenser (.01 Mfd. Bakelite Block) | 3903-SU | .25 |
| ㊺ | Resistor (1 Meg.) (Brown, Black, Green) | 33-1096 | .20 |
| ㊻ | Condenser (.1 Mfd. Twin Bakelite Block) | 4989-DG | .40 |
| ㊼ | Pilot Lamp | 34-2039 | .09 |
| ㊽ | Resistor (50000 ohms) (Green, Brown, Orange) | 4237 | .20 |
| ㊾ | Resistor (9000 ohms) (Black, White, Orange) | 33-1215 | .20 |
| ㊿ | Resistor (25000 ohms) (Red, Green, Orange) | 3656 | .20 |
| (51) | Condenser (Electrolytic—16 Mfd.) | 30-2118 | 1.65 |
| (52) | Resistor (32000 ohms) (Orange, Red, Orange) | 5279 | .20 |
| (54) | Resistor (.1 Meg.) (Brown, Black, Green) | 6099 | .20 |
| (59) | Condenser (.015 Mfd. Bakelite Block) | 3793-SU | .35 |
| (68) | Resistor (.5 Meg.) (Yellow, White, Yellow) | 6097 | .20 |
| (69) | Condenser (.1 Mfd. Tubular) | 30-4170 | $0.35 |
| (69) | Resistor (.1 Meg.) (White, White, Yellow) | 6099 | .20 |
| (70) | Output Transformer | 32-7019 | 1.25 |
| (72) | Cone & Voice Coil Assembly (P-27 Speaker) | 02861 | .65 |
| (80) | Condensers (in Tone Control) | Part of (82) | .... |
| (82) | Tone Control | 30-4318 | .50 |
| (83) | Field Coil & Pot Assembly (P-27 Speaker) | 36-3341 | 2.75 |
| (84) | Condenser (Electrolytic—8 Mfd.) | 30-2025 | 1.35 |
| (85) | Resistor (750000 ohms) (Violet, Green, Yellow) (½ Watt) | 33-1203 | .20 |
| (86) | Condenser (Electrolytic) (8 Mfd.) | 30-2025 | 1.35 |
| (86a) | Resistor (1. Megohm) (Brown, Black, Green) | 33-1096 | .20 |
| (87) | Resistor (B.C. Wire-wound, 22 ohms, 25 ohms, 210 ohms) | 33-3222 | .20 |
| (88) | Resistor (50000 ohms) (Green, Brown, Orange) | 6098 | .20 |
| (90) | Power Transformer (110 volts, 60 cycles) | 32-7381 | 4.00 |
| | (110 volts, 25 cycles) | 32-7382 | 6.25 |
| | (230 volts, 50 cycles) | 32-7383 | 4.50 |
| (91) | Condenser (.015 Mfd. Twin Bakelite Block) | 3793-DG | .40 |
| (92) | Pickup Head | 35-2014 | 7.25 |
| (93) | Hum Bucking Coil | 32-1940 | 1.10 |
| (94) | Resistor (51,000 ohm) | 6098 | .20 |
| (95) | Resistor (20,000 ohm) | 33-1178 | .20 |
| (96) | Condenser (.025 mf.) | 7653-SU | .35 |
| (97) | Phono. Radio Switch & Cable Assy. | 35-3014 | 1.30 |
| (98) | Phono. Radio Motor (115 V., 60 cycles) | 35-1116 | 18.00 |
| (99) | Phono. Radio Motor Switch | 4535 | .75 |
| | Glowing Arrow Mask | 27-5162 | .20 |
| | Glowing Arrow Screen | 27-5161 | .10 |
| | Mask Arm | 29-3274 | .... |
| | Link | 29-3285 | .04 |
| | Coupling | 29-3586 | .10 |
| | Screen Bracket Assy. | 31-1745 | .... |
| | Dial Mask | 27-5137 | .15 |
| | Dial Assembly | 31-1539 | .30 |
| | Tube Shield Body | 28-2726 | .10 |
| | Tube Shield Base | 28-2725 | .03 |
| | Four Prong Socket | 27-6034 | .10 |
| | Six Prong Socket | 27-6036 | .11 |
| | Seven Prong Socket | 27-6037 | .11 |
| | Knob (Station Selector) | 27-4206 | .12 |
| | Knob (Fine Tuning) | 27-4207 | .10 |
| | Knob (Volume, Waveband and Tone Control) | 27-4208 | .10 |
| | Bezel | 28-2928 | .35 |
| | Bezel Glass | 27-7887 | .60 |

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

PHILCO RADIO & TELEV. CORP.

MODELS 29, 54, 60, 116(121, 122) 116X, 610
Changes

# CHANGES IN MODELS

## Since Publication of Each Service Bulletin

Grouped under each model and arranged according to date . . . All models included . . . August 1st to December 31st, 1935.

The second column on each page gives the "Run Number" of the set at the time of the change (where this information was available from our records). The Run Number is stamped on the top of the chassis with a rubber stamp and is the lefthand number in the rectangle.

The Code Number of the set is given on the chassis name plate or name label (at rear of chassis).

## MODEL 29

| Approximate Date of Change | Run No. | CHANGES |
|---|---|---|
| 11-1-35 | | No. 34 on base view of Fig. 4 should be 39. No. 39 next to 30 on base view of Fig. 4 should be 34. |

## MODEL 54

| | | | |
|---|---|---|---|
| 9-1-35 | 14 | | |
| | | Old Part No. | New Part |
| Condenser 39 | | 3793-AG | 3793-AM |
| Condenser 40 | | 3615-BF | 3615-BY |
| Condenser 41 | | 8035-F | 8035-T |

## MODEL 60

| | | |
|---|---|---|
| 10-1-35 | 11 | Tube Shield and Tube Shield Base Nos. 28-2726 and 28-2725 for the 6A7 Tube will no longer be necessary. |

| | Old Part No. | New Part No. |
|---|---|---|
| Resistor 51 | 5872 (½ watt) 2 meg. | 33-1025 (¼ watt) |
| Resistor 52 | 4409 (½ watt) 1 meg. | 33-1096 (¼ watt) |
| Resistor 53 | 4411 (½ watt) 99,000 ohms | 6099 (¼ watt) |
| Resistor 54, 55 | 5385 (½ watt) 70,000 ohms | 33-1115 (¼ watt) |

## MODEL 116 (Code 121 and 122)

| | | |
|---|---|---|
| 8-1-35 | .. | Adjustment of high frequency end of broadcast band should be made at 1500 K. C. (1.5 M. C. on the Philco 088 scale) instead of 1600 K. C. |
| | 5 | There will be an addition of resistor and condenser assembly. Replace Condenser No. 6287DU 57 with 6287-ODU. The latter is impregnated with the new high melting point wax. |

| Remove | No. on Schematic Code 121 | No. on Schematic Code 122 | Install |
|---|---|---|---|
| 30-4336 (.00125 mfd.) | 46 | 46 | 38-6978 |
| 5837 (1000 ohms) | 52 | 52 | |
| 33-1114 (8000 ohms) | 56 | 56 | |
| 30-1028 (.003 mfd.) | 61 | 61 | 7301 |

| | | |
|---|---|---|
| 9-1-35 | 9 | This change made to eliminate frequency drift. |

| | Old Part No. | New Part No. |
|---|---|---|
| 2nd I. F. Transformer 58 | 32-1734 | 32-1865 |

| | | |
|---|---|---|
| | 8 | Code 122 only |

| | Old Part No. | New Part No. |
|---|---|---|
| Condenser 59 | 30-2011 | 30-2069 |
| Insulator | 27-7195 | 27-7194 |

## MODEL 116 (Code 121 and 122)

| Approximate Date of Change | Run No. | CHANGES |
|---|---|---|
| 11-1-35 | .. | Code 122 |
| | .. | The grid lead from the 6A3 power tube near the front of the chassis is changed to run over to and parallel with the end of the chassis down as far as condenser 65 then over to the input transformer. Change made to prevent audio oscillation. |

Code 121, Run No. 9 Code 122, Run No. 11

| Part | Schematic No. | Removed |
|---|---|---|
| Resistor | (Code 121) 62 (Code 122) 63 | 6984 (2000 ohms) ½ watt |

| | |
|---|---|
| 10 | Code 121 |
| 8 | Code 122 |

| Schematic No. | Old Part | New Part |
|---|---|---|
| Tuning Condenser Assembly 68 | 31-1606 | 31-1607 |
| Dial Mask and Hub Assembly | 31-1575 | 29-5136 |

12-1-35

Code 121, Run No. 12

Code 122, Run No. 10

| | | | |
|---|---|---|---|
| Input Transformer | 58 | 32-7447 | 32-7057 |

Change 109 Resistor (10,000 ohm) to 109a

September Change Notices indicated a change in the 2nd I. F. Transformer 58. The Part No. of the new Transformer is 32-1865 and the corresponding Compensating Condenser Part No. is 31-6067.

## MODEL 116X and 116B

| | | |
|---|---|---|
| 8-1-35 | .. | Add bezel frame gasket No. 27-7973. Remove Rubber Bumper No. 27-4150 to prevent microphonics. Remove Bezel Light Guard No. 27-8001 on Codes 121 and 122. |

## MODEL 610

| | | |
|---|---|---|
| 8-1-35 | 7 | Tube Shield and Tube Shield Base on the 6A7 tube will not be necessary. Remove Part No. 28-2726 and 28-2725. |
| 10-1-35 | 8 | Part No. 6096 (5000 ohms) 3 Resistor and Part No. 33-1206 (20 ohms) 9 Resistor will not be used. In eliminating Resistor 9, shunt a wire across the terminals from which it is disconnected. |
| 11-1-35 | .. | Reverse numbers 11 and 36 shown in Figure 3. |