

PHILCO Models 38-7, 38-8, 38-9

Models 38-7, Code 121, 124; 38-8, Code 121; 38-9, Code 121

Electrical Specifications

Models 38-7, 38-8 and 38-9 receivers employ a six tube A. C. operated superheterodyne circuit with such features as: Two tuning ranges covering standard and short wave broadcasts; Philco foreign tuning system; automatic volume control; bass compensation; tone control, and pentode audio output circuit.

The same circuit is used for each receiver. The features, however such as, tuning mechanism, speakers and cabinets differ in each model.

Model 38-7 in addition to the features given above employs the Philco automatic tuning mechanism with cone-centric tuning. The chassis of this model is built into a console cabinet type XX, Table Cabinet Type "T" and is designated code 121. The same chassis built into a type "CS" cabinet is identified as code 124.

Model 38-8 differs from the 38-7 in that a manually operated tuning mechanism with shadowmeter tuning is used. This receiver is built into a type "X" cabinet with a type "HS" dynamic speaker.

Model 38-9 is identically the same as model 38-8 with the exception that the shadowmeter is not used, and that the speaker and cabinet types differ. This model is assembled in a type "T" cabinet with dynamic speaker type "S7" and a "K" type cabinet using a dynamic speaker type "HS".

POWER SUPPLY:

| Voltage | Frequency | Consumption |
|----------|-----------------|-------------|
| 115 | 50 to 60 cycles | 70 Watts |
| 115 | 25 to 40 cycles | 70 Watts |
| 115/220V | 50 to 60 cycles | 70 Watts |

Different transformers are required for operation on the frequencies listed above. These are shown on the Parts List.

INTERMEDIATE FREQUENCY: 470 K. C.

TUNING RANGES: Two Range one 530 to 1720 K. C.
Range two 5.7 to 18.2 M. C.

UNDISTORTED OUTPUT: 3 watts.

PHILCO TUBES USED: Six—one 6A8G, det. osc.; one 6K7G, I. F. amp.; one 6J5G, 2nd Det. A. V. C.; one 6K5G 1st audio; one 6F6G, output; one 5Y4G rectifier.

TONE CONTROL: Three positions with A. C. switch attached.

| CABINETS AND SPEAKERS: | Cabinet | Speaker |
|------------------------|---------|---------|
| 38-7 Code 121 | XX | H31 |
| 38-7 Code 121 | T | K41 |
| 38-7 Code 124 | CS | K41 |
| 38-8 Code 121 | X | HS |
| 38-9 Code 121 | K | HS |
| 38-9 Code 121 | T | S7 |
| 38-9 Code 121 | X | HS |

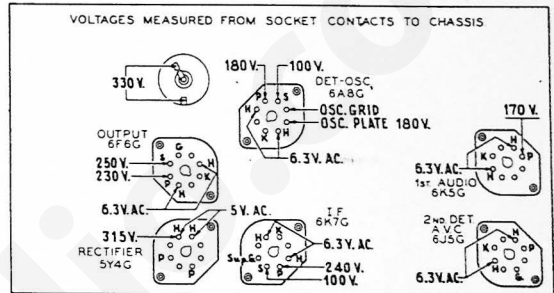


Fig. 1—Socket Voltages—Underside of Chassis View
The Voltages indicated by arrows were measured with a Philco 026 Circuit Tester which contains a sensitive voltmeter. Volume Control at minimum, range switch in broadcast position, line voltage 115 A. C.

SERVICE DATA FOR AUTOMATIC TUNING MECHANISM—MODEL 7

Complete information for setting the stations on the cone-centric tuning mechanism of Model 38-7 is covered in the instruction form no. (39-5533) which is supplied with each set.

A few major assemblies of the automatic cone-centric tuning mechanism are listed on page 3 of this bulletin. A complete list of replacement parts, however, and detailed service data for the automatic mechanism, will be found in bulletin 282.

SHADOW METER ADJUSTMENT Model 38-8

Apply power to the receiver and allow tubes to warm up. Then adjust shadow meter as follows:

1. Move the shadow meter coil backwards and forwards, until the opposite edges of the shadow are $\frac{1}{8}$ of an inch from each end of the shadow screen, measuring along the bottom edge of the screen. Adjustment of the shadow meter light bracket may be necessary for perfect centering.
2. Remove the rectifier tube from its socket, and rotate the shadowmeter coil until shadow reaches minimum width. This width should not exceed $\frac{3}{32}$ of an inch.
3. Replace the 5Y4G rectifier tube in its socket. The shadow should then widen to not more than $\frac{3}{16}$ inch or less than $\frac{1}{16}$ inch from each side of the screen measuring along the bottom edge. If these limits are not obtained readjust the shadow meter as given in paragraphs 1 and 2 again.

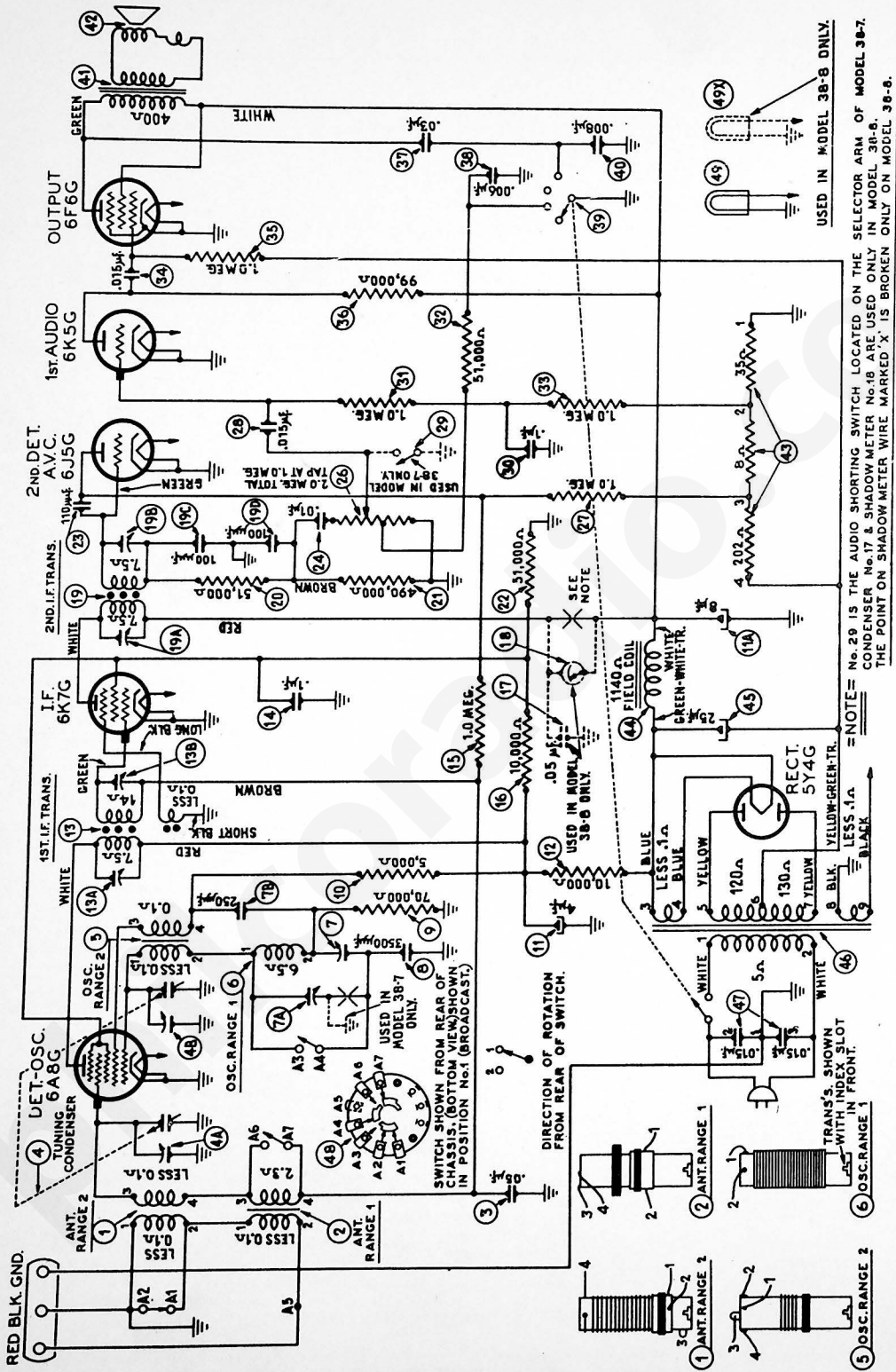


Fig. 2—SCHEMATIC DIAGRAM

Models 38-7, Code 121, 124; 38-8, Code 121, 38-9, Code 121

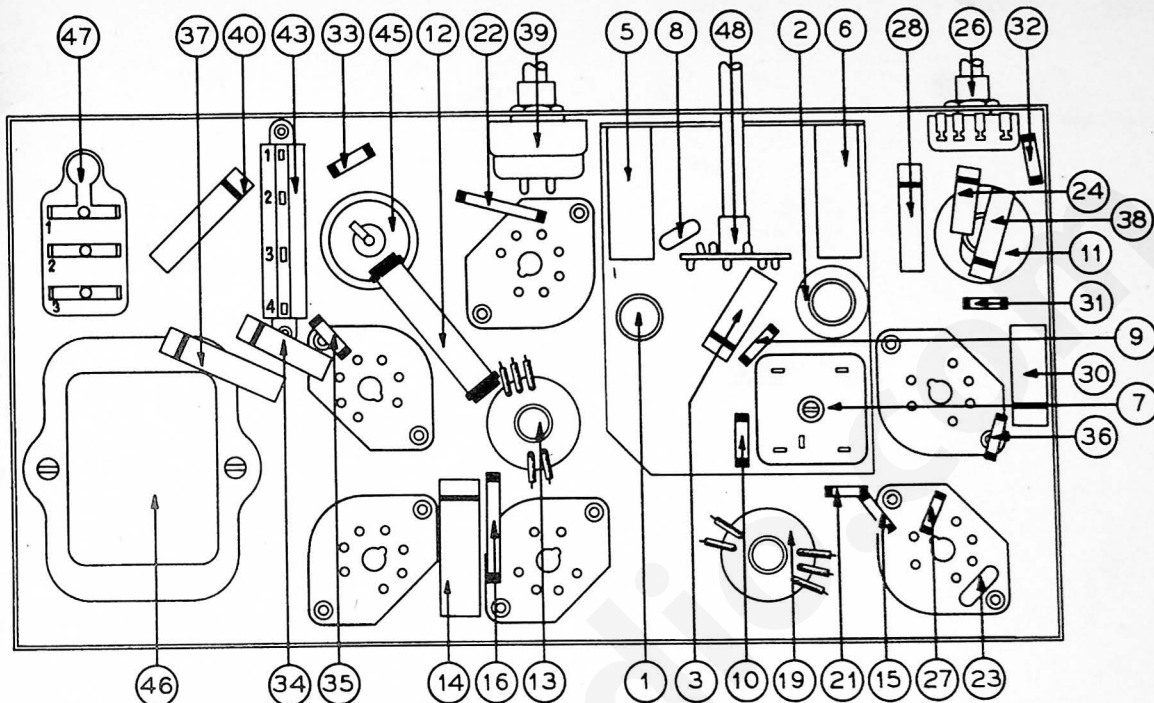


Fig. 4. Part Locations, Underside of Chassis.

REPLACEMENT PARTS

| Schem. No. | Description | Part No. | List Price | Schem. No. | Description | Part No. | List Price | Schem. No. | Description | Part No. | List Price |
|------------|--|-----------|------------|------------|---|----------|------------|------------|--|----------|------------|
| 1 | Antenna Transformer—Short Wave | 32-2558 | | 40 | Condenser .008 mf. | 30-4112 | \$0.20 | | Bearing (Main Shaft) | 28-7242 | |
| 2 | Antenna Transformer—Broadcast | 32-2557 | \$1.25 | 41 | Output Transformer (Model 7) | 32-7862 | | | Bezel Assembly (Scale) | 40-6136 | |
| 3 | Condenser .05 mf. | 30-4519 | .20 | 42 | Output Transformer (Models 8 and 9) | 32-7019 | .85 | | Coupling Assembly | 31-2056 | |
| 4 | Tuning Condenser, Models 8 and 9 | 31-2026 | | 42 | Cone and Voice Coil Assembly (H31) | 36-3801 | 1.40 | | Dial Model 7, supplied by your distributor | 27-5338 | |
| 5 | Osc. Transformer—Short Wave | 32-2560 | 1.25 | | Cone and Voice Coil Assembly (K41) | 36-3174 | 1.00 | | Dial Retaining Ring | 28-5107 | |
| 6 | Osc. Transformer—Broadcast | 32-2559 | | | Cone and Voice Coil Assembly (HS) | 36-3706 | 1.20 | | Dial Mechanism, Cone-centric complete | 31-2082 | |
| 7 | Compensator Dual Models 8 and 9 | 31-6188 | | | Cone and Voice Coil Assembly (S7) | 36-3187 | 1.00 | | Escutechon Ring | 28-5128 | |
| 7A | Compensator Model 7 (1600 KC.) | 31-6195 | | 43 | Bias Resistor | 33-3316 | | | Felt (Stop Cover) | 27-8322 | |
| 8 | Condenser 3500 mmf. mica | 30-1084 | .40 | 44 | Field Coil Assembly (H31) | 36-3665 | 4.25 | | Gear, Tuning Condenser (small) | 45-2490 | |
| 9 | Resistor 70,000 ohms (½ watt) | 33-370339 | .20 | | Field Coil Assembly (K41) | 36-3931 | | | Gear, Tuning Condenser (large) | 45-2491 | |
| 10 | Resistor 6000 ohms (½ watt) | 33-250339 | .20 | | Field Coil Assembly (HS) | 36-3690 | 3.50 | | Knob (Selector) | 27-4572 | |
| 11 | Condenser, Electrolytic Dual (4 and 8 mfd.) | 30-2217 | | 45 | Electrolytic Condenser | 30-2219 | | | Knob (Vernier) | 45-2477 | |
| 12 | Resistor 10,000 ohms (3 watt) | 33-310639 | .30 | 46 | Power Transformer, 115V, 25 to 40 cycle | 32-7833 | | | Knob Spring | 28-8761 | |
| 13 | 1st I. F. Transformer | 32-2580 | | | Power Transformer, 115V/230V, 50/60 cycle | 32-7827 | | | Knob Retaining Screw | 28-6672 | |
| 14 | Condenser 1 mf. | 30-4455 | .25 | | Power Transformer, 115/230V, 50/60 cycle | 32-7835 | | | Reflector Assembly | 45-2478 | |
| 15 | Resistor 1.0 meg. (½ watt) | 33-510339 | .20 | 47 | Condenser .015—.015 mf., 25 mf. | 3793DG | .40 | | Selector Crank Assembly | 45-2476 | |
| 16 | Resistor 10,000 mmf. (1 watt) | 33-310439 | .20 | 48 | Wave Switch | 42-1325 | | | Shaft (Coupling) | 28-6675 | |
| 17 | Condenser .05 mf. (38-8 only) | 30-4454 | | 49 | Pilot Lamp, Models 8 and 9 | 34-2064 | | | Stop Assembly | 31-2055 | |
| 18 | Shadowmeter (38-8 only) | 45-2307 | 2.50 | | | | | | Stop Cover (Mounted on Selector Crank) | 28-5088 | |
| 19 | 2nd I. F. Transformer | 32-2582 | | | | | | | Shaft (Tuning Condenser Gear) | 28-5076 | |
| 20 | Resistor 51,000 ohms (mounted in 19) | 33-351339 | .20 | | | | | | Pointer Assembly | 38-8925 | |
| 21 | Resistor 490,000 ohms (½ watt) | 33-449339 | .20 | | | | | | Wrench (Setting Stops) | 45-2478 | |
| 22 | Resistor 51,000 ohms (1 watt) | 33-351439 | .20 | | | | | | | | |
| 23 | Condenser, mica, 110 mmf. | 30-1081 | .20 | | | | | | | | |
| 24 | Condenser .01 mf. | 30-4470 | .20 | | | | | | | | |
| 25 | Removed Prior to Production | | | | | | | | | | |
| 26 | Volume Control | 33-5216 | | | | | | | | | |
| 27 | Resistor 1 meg. (½ watt) | 33-510339 | .20 | | | | | | | | |
| 28 | Condenser .018 mf. | 30-4358 | .20 | | | | | | | | |
| 29 | Audio Shorting Switch (38-7 only) Part of Selector Crank | | | | | | | | | | |
| 30 | Condenser 1 mf. | 30-4499 | .20 | | | | | | | | |
| 31 | Resistor 1.0 meg. (½ watt) | 33-510339 | .20 | | | | | | | | |
| 32 | Resistor 51,000 ohms (½ watt) | 33-351339 | .20 | | | | | | | | |
| 33 | Resistor 1.0 meg. (½ watt) | 33-510339 | .20 | | | | | | | | |
| 34 | Condenser .015 mf. | 30-4515 | .20 | | | | | | | | |
| 35 | Resistor 1.0 meg. (½ watt) | 33-510339 | .20 | | | | | | | | |
| 36 | Resistor 99,000 mf. (½ watt) | 33-399339 | .20 | | | | | | | | |
| 37 | Condenser .06 mf. | 30-4447 | .20 | | | | | | | | |
| 38 | Condenser .03 mf. | 30-4467 | .20 | | | | | | | | |
| 39 | Tone Control | 42-1327 | | | | | | | | | |

Prices to subject to change without notice.

Alignment of Compensator

EQUIPMENT REQUIRED: (1) Signal Generator, using a fundamental frequency covering the intermediate and tuning ranges of the receivers. Philco Model 077 Signal Generator which has a fundamental frequency range from 115 to 36000 K. C. is the correct instrument for this purpose; (2) Output meter, Philco Model 026 circuit tester incorporates a sensitive output meter and is recommended; (3) Philco Fibre Handle Screw Driver, part No. 27-7059 and Fibre Wrench No. 3164.

OUTPUT METER: The 026 output meter is connected to the plate and cathode terminals of the 6F6G tube. Adjust the meter to use the (0-30) volt scale and advance the attenuator control of the generator until a readable indication is noted on the output meter.

DIAL CALIBRATION: In order to adjust the receiver correctly the dial must be aligned to track properly with the tuning condenser. To adjust the dial of each model proceed as follows:

Model 38-7: 1. Loosen the shaft coupling set screws, using wrench Part No. 45-2481; then turn the tuning condenser to the maximum capacity position (plate fully meshed). Now turn the selector knob until the dial pointer is on the small black circle at the low frequency end of the Range One scale. With condenser and pointer set in this position tighten set screws. 2. Now turn the selector knob (clockwise) until the dial pointer moves $1/16$ of an inch from the small circle (clockwise), see Fig. 5. Leave pointer in this position and loosen coupling set screws. 3. After loosening set screws, turn the selector knob until pointer is again on the small black dot at low frequency end of Range One scale. Be careful when turning the selector knob that the position of tuning condenser is not disturbed. Tighten coupling set screws with condenser and dial pointer in this position.

Models 8 and 9: 1. Turn the tuning condenser to maximum capacity position (plates fully meshed). 2. Loosen the clamp of dial, then turn the dial—being careful that position of tuning condenser is not disturbed—until the glowing indicator is centered on the middle index line at the low frequency end of Range One scale. Tighten the dial clamp in this position.

Note—Before the following adjustments are performed, the receiver must be turned on and allowed to heat for 15 minutes.

INTERMEDIATE FREQUENCY CIRCUIT

Insert the signal generator output lead into the "Med" Jack on the panel of the generator. Connect the other end of the output lead through a .1 mfd. condenser to the grid of the 6A8G, det. osc. tube and the ground connection of the signal generator to the chassis. Set the signal generator and receiver controls, and adjust the I. F. compensator as follows:

1. Set Signal Generator at 470 K. C. Turn "Multiplier" Control to 1000 and the "Attenuator" for maximum output.
2. Turn the receiver dial to 580 K. C.
3. Receiver Volume Control maximum.
4. Range Switch Broadcast Position.
5. Adjust compensators (19B), (19A), (13B), and (13A) for maximum output. If the output meter goes off scale when adjusting the compensators retard signal generator attenuator.



MOVE POINTER $1/16$ "
TO LEFT OF DOT.

Fig. 5 Dial Calibration
Model 38-7

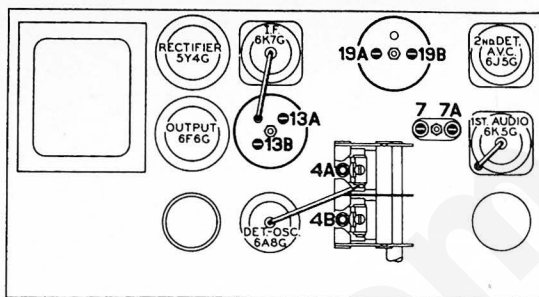


Fig. 4—Locations of Compensators—Top of Chassis

RADIO FREQUENCY CIRCUIT

Tuning Range: 5.7 to 18 M. C.

1. Insert the Signal Generator output lead in the "Med." jack on the panel, and connect the other end through the .1 mfd. condenser to the "Red" terminal of the aerial panel of the receiver. The output lead ground must be connected to the "Blk" terminal or to the chassis.

2. Leave the receiver volume control at maximum. Then set the controls and adjust the R. F. compensators as follows:

| Range Switch | Signal Generator and Receiver Dial | Compensators in Order |
|--------------|------------------------------------|-----------------------|
| 2 | 18 MC. | 4B See Note A |

Tuning Range: 530 to 1720 K. C.

| Range Switch | Signal Generator and Receiver Dial | Compensators in Order |
|--------------|------------------------------------|-----------------------|
| 1 | 1500 KC. | (7A), (4A) |
| 1 | 580 KC. | 7 |
| 1 | 1500 KC. | 7A |

NOTE A—To accurately adjust the high frequency oscillator compensator to the fundamental instead of the image signal, turn the oscillator compensator to the maximum capacity position (clockwise). Now, slowly turn compensator counter-clockwise until a second maximum peak is obtained on the output meter. The second peak is the fundamental signal, and must be used in adjusting the receiver for maximum output. The first peak from maximum capacity position of the compensator is the image signal and must not be used in adjusting this compensator.

If the above procedure is correctly performed, the image signal will be found (much weaker) by turning the receiver dial 940 KC. below the frequency being used on any high frequency range.

The GENUINE PHILCO REPLACEMENTS listed in this bulletin
MUST BE USED
to obtain the Accurate Balanced Performance
BUILT INTO THESE PHILCO MODELS

PHILCO RADIO AND TELEVISION CORPORATION
Parts and Service Division
Philadelphia, Pa.



GLOWING BEAM
INDICATOR

Fig. 6 Dial Calibration
Models 88-8; 38-9