Electrical Specifications

TYPE OF CIRCUIT: Six tube, battery operated superheterodyne circuit, having two tuning ranges covering broadcast and short-wave frequencies; Automatic Volume Control; Tone Control, and a class "B" output stage.

INTERMEDIATE FREQUENCY: 470 K. C.

TUNING RANGES: Two—Range 1, 530 to 1720 K. C.
Range 2, 5.7 to 18.0 M. C.

POWER OUTPUT: 1 watt.

PHILCO TUBES USED: One 1C7G, 1st Det. & Osc.; one 1D5GT, I. F. amplifier; one 1H4G, 2nd Det. (A.V.C.); one 1E5GP, 1st Audio; one 1H4G, Audio Driver, and one 1J6G, output.

TYPE AERIAL: "L" type, Philco Part No. 45-2428.

CABINETS AND SPEAKERS USED:

Cabinet Type	Speaker Used
T	KR26
K	HR20
X	HR20

BATTERIES REQUIRED:

"A" Battery: Two volt storage battery Philco type 172R or Dry "A" battery Philco Part No. 41-8011.

If a dry A Battery is used, a ballast lamp "type 1F1" **MUST** be inserted in the socket provided in the (41-8011) battery. This lamp acts as a voltage regulator and maintains a constant potential of two volts on the filament of the tubes.

"BC" Battery: Philco battery Part No. 41-8007 is used to supply "B" and "C" voltages. This battery contains a socket into which the receiver battery cable plug is inserted.

Alignment of Compensators

EQUIPMENT REQUIRED: (1) Signal Generator, having a fundamental frequency range covering the tuning and intermediate frequencies of the receiver. Philco Model 077 A. C. operated Signal Generator or Model 088, battery operated Signal Generator which have the required frequency range are the correct instruments 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, Part No. 3164.

OUTPUT METER: The 026 Output Meter is connected to the plate terminals of the 1J6G 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 after signal is applied.

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 proceed as follows:

1. Turn the tuning condenser to maximum capacity position (plates fully meshed).

2. Holding the tuning condenser in this position, loosen the dial clamp; then turn the dial until the indicator is centered on the middle index line. Tighten clamp in this position. See Fig. 3

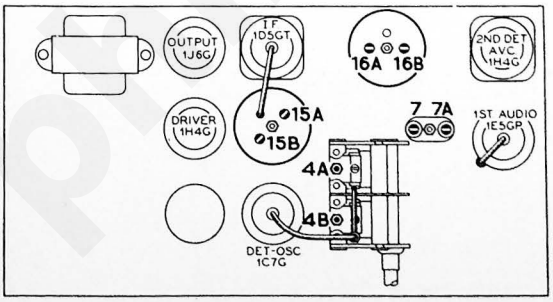


Fig. 2. Locations of Compensators—Top of Chassis

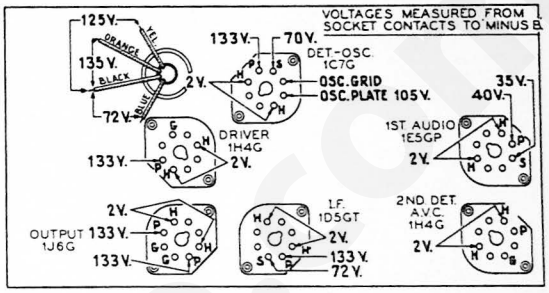


Fig. 1. Socket Voltages, Underside of Chassis

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.

INTERMEDIATE FREQUENCY CIRCUIT

Insert the signal generator shielded 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 1C7G 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. compensators as follows:

1. Set Signal Generator at 470 K. C. Turn "Multiplier" Control to 1000 and adjust the attenuator for a readable indication on the output meter.

2. Turn the receiver dial to 580 K. C.

3. Receiver Volume Control maximum.

4. Range Switch Broadcast Position.

5. Adjust compensators (16B), (16A), (15B) and (15A) for maximum output.

If the output meter goes off scale when adjusting the compensators retard signal generator "attenuator."

RADIO FREQUENCY CIRCUIT

Tuning Range: 5.7 to 18 M. C.

1. With one end of the shielded lead of the signal generator output cable in the "Med" jack, connect the other end through a 400 ohm carbon resistor to the "Ant." terminal of the aerial panel of the receiver. The output lead ground must be connected to the "Gnd" terminal or to the chassis.

2. Set the controls and adjust the R. F. compensators as follows:

Volume Control	Range Switch	Signal Generator and Receiver Dial	Compensators in Order
Max.	2	18 M. C.	(4B) See Note A

Tuning Range: 530 to 1720 K. C.

Remove the 400 ohm resistor from the generator output cable and replace with a 200 mmfd. condenser. Then set the controls and adjust the compensators as follows:

Volume Control	Range Switch	Signal Generator and Receiver Dial	Compensators in Order
Max.	1	1500 K. C.	(7A), (4A)
Max.	1	580 K. C.	(7)
Max.	1	1500 K. C.	(7A), (4A)

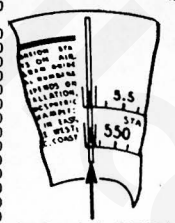
NOTE A—To accurately adjust the high frequency oscillator compensator to the fundamental instead of the image signal, turn the oscillator compensator to the maximum capacity position (clockwise). From this position slowly turn the compensator counter-clockwise until a second maximum peak is obtained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

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

Copyright 1937 Philco Radio & Television Corporation

Replacement Parts

Schem. No.	Description	Part No.	List Price
1	Antenna Transformer Range (2)	32-2558	$0.70
2	Antenna Transformer Range (1)	32-2667	1.60
3	Condenser (0.5 μf, tubular)	30-4519	.20
4	Tuning Condenser	31-2025	5.00
5	Oscillator Coil Range (2)	32-2668	1.25
6	Oscillator Coil Range (1)	32-2559	.50
7	Padding Condenser	31-6188	
8	Resistor (120,000 Ω, ½ W.)	33-412339	.20
9	Condenser (3500 μμf, Mica)	30-1094	.40
10	Condenser (.05 μf, tubular)	30-4444	.20
11	Resistor (1000 Ω ½ W.)	33-210339	.20
12	Resistor (5000 Ω, ½ W.)	33-250339	.20
13	Electrolytic Condenser (4—2—2 μf)	30-2241	1.50
14	Resistor (2000 Ω, ½ W.)	33-220339	.20
15	First I. F. Transformer	32-2664	2.20
16	Second I. F. Transformer	32-2666	2.20
17	Condenser (110 μμf, Mica)	30-1031	.20
18	Resistor (1 megohm, ½ W.)	33-510339	.20
19	Volume Control	33-5234	1.00
20	Condenser (.015 μf tubular)	30-4358	.20
21	Resistor (8000 Ω, ½ W.)	33-280339	.20
22	Resistor (1 megohm, ½ W.)	33-510339	.20
23	Resistor (1 megohm, ½ W.)	33-510339	.20
24	Condenser (110 μμf, Mica)	30-1031	.20
25	Condenser (.015 μf, tubular)	30-4515	.20
26	Condenser (.15 μf, tubular)	30-4191	.25
27	Resistor (240,000 Ω, ½ W.)	33-424339	.20
28	Resistor (240,000 Ω, ½ W.)	33-424339	.20
29	Resistor (1 megohm, ½ W.)	33-510339	.20
30	Resistor (99,000 Ω, ½ W.)	33-399339	.20
31	Condenser (.02 μf, tubular)	30-4215	.20
32	Input Transformer	32-7637	2.00
33	Condenser (.004 μf, tubular)	30-4456	.20
34	Condenser (.004 μf, tubular)	30-4456	.20
35	Output Transformer	32-7758	1.50
36	Cone and Voice Coil Assembly	36-3540	1.00
37	Power and Tone Switch	42-1351	
38	Resistor (900 Ω, 1 W.)	33-1223	.20
39	Range Switch	42-1358	.75
40	Pilot Light	34-2150	.22
	Cable (Battery)	41-3198	1.40
	Cable (Speaker)	41-3326	.40
	Clip (Mtg. R. F. Trans.)	28-5002	
	Dial	27-5333	.60
	Dial Washer	27-4598	.03
	Dial Clamp	27-5089	
	Knob (Tuning)	27-4330	
	Knob (Vernier)	27-4331	
	Knob (Tone, Volume)	27-4332	
	Mtg. Rubber (Chassis)	27-4564	
	Mtg. Rubber (Tuning Condenser)	27-4599	
	Mtg. Rubber (Screen Bracket)	27-4570	
	Screen	27-5320	
	Shield (Tube)	28-2725	
	Socket Assembly (Pilot Lamp)	38-9002	
	Socket (6 prong)	27-6086	.11
	Socket (7 prong)	27-6087	.11
	Terminal Panel (Ant.)	38-8849	.10
	Vernier Drive Assembly	31-2072	1.00



GLOWING BEAM INDICATOR

Dial Calibration

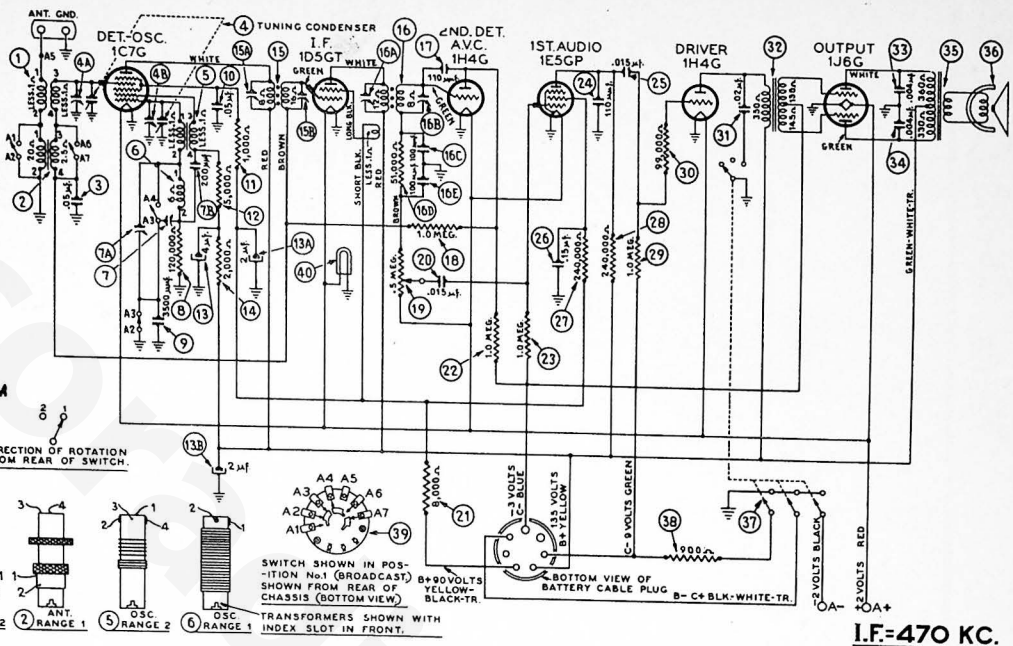


Fig. 3. Schematic Diagram 38-10, Code 121

Schem. No.	Description	Part No.	List Price
	MODEL 38-38T		
	Bezel Frame Assembly	40-6124	$0.90
	Bezel Gasket	27-8311	.01
	Bezel Glass	27-8298	.05
	Bezel Ring	28-5078	.55
	Speaker KR-26	36-1353	10.00
	MODEL 38-38 K, X		
	Bezel Frame Assembly	40-6128	1.05
	Bezel Gasket	27-8313	.01
	Bezel Glass	27-8300	.06
	Bezel Ring	28-5080	.70
	Speaker (HR-20)	36-1351	
	Battery (A)	172R	
	Battery (B)	41-8007	

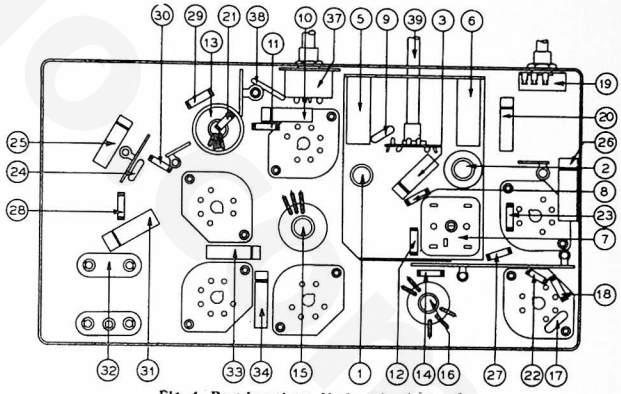


Fig. 4. Part locations, Underside of Chassis