Specifications

TYPE OF CIRCUIT: A six tube superheterodyne circuit is used in this model having two tuning ranges covering standard and short wave broadcasts. The receiver is operated by a 6 volt storage battery and uses a synchronous vibrator for supplying "B" voltage. The vibrator unit is mounted in the cabinet and connected to the receiver chassis through a cable and plug.

Additional design features included in this model are: Automatic Volume Control; two point tone control; Class "B" audio output circuit.

The receiver is designed to operate from a standard "L" type aerial, Philco Part No. 45-2428. This aerial system should be used to obtain the maximum performance from the receiver. Instructions for installing the aerial are provided in each kit.

POWER SUPPLY: 6 volt storage battery Philco Type 116K
Current Drain 1.4 Amps.

INTERMEDIATE FREQUENCY: 470 K. C.

FREQUENCY RANGES: Range one 530 to 1720 K. C.
Range two 5.7 to 18.0 M. C.

OUTPUT: 1.5 watts.

PHILCO TUBES USED: One 1C7G, First Detector Oscillator; one 1D5G T. I. F. one 1H4G, 2nd Det, Avc; one 1E5GP, 1st audio; one 1J6G, output; and one 1H4G Audio Driver.

SPEAKERS USED: Philco Type KR26 in "T" Cabinet.
Philco Type HR20 in "K" Cabinet.
Philco Type HR20 in "X" Cabinet.

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 (plate 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 (See Fig. 2). Tighten clamp in this 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:

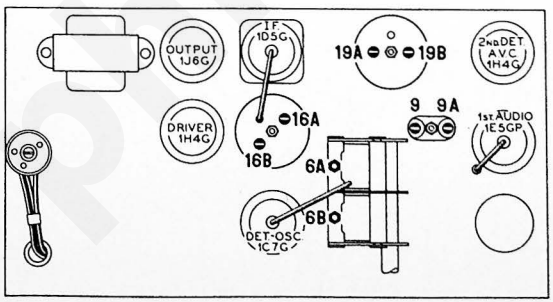

Fig. 2. Locations of Compensators—Top of Chassis

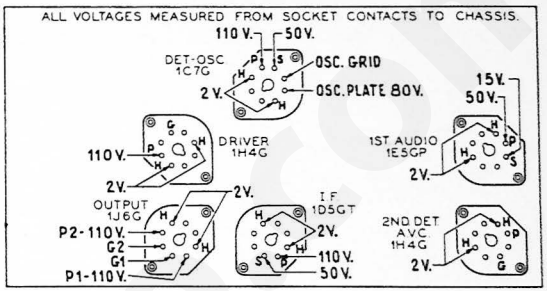

Fig. 1 Socket Voltages—Underside of Chassis

The voltages indicated by arrows were measured with a **Philco 026 Circuit Tester** which contains a sensitive voltmeter. Volume Control minimum—Range Switch in broadcast position—Storage Battery fully charged.

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 **(19B)**, **(19A)**, **(16B)** and **(16A)** for maximum output. If the output meter goes off scale when adjusting the compensators retard signal generator "attenuator."

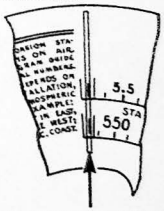

Fig. 2. Dial Calibration

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.	**(6B)** 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.	**(9A), (6A)**
Max.	1	580 K. C.	**(9)**
Max.	1	1500 K. C.	**(9A), (6A)**

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 followed, 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.

Replacement Parts

Schem. No.	Description	Part No.	List Price
1	Transformer, Antenna Short Wave	32-2558	$0.70
2	Transformer, Antenna Broadcast	32-2667	1.60
3	Condenser (.05 μf—.05 μf)	30-4489	.35
4	Resistor (70 Ω, ½ Watt)	33-070339	.20
5	Wave Switch	42-1358	.75
6	Tuning Condenser Assembly	31-2065	
7	Transformer, Oscillator Short Wave	32-2668	1.25
8	Transformer, Oscillator Broadcast	32-2559	.50
9	Padder	31-6188	.50
10	Resistor (5000 Ω, ½ Watt)	33-250339	.20
11	Resistor (120,000 Ω, ½ Watt)	33-412339	.20
12	Condenser, Mica (3500 μμf)	30-1094	.40
13	Condenser, (.05 μf)	30-4444	.20
14	Resistor (2000 Ω, ½ Watt)	33-220339	.20
15	Electrolytic Condenser	30-2226	
16	I. F. Transformer, First	32-2664	2.20
17	Resistor (1.5 megohms, ½ Watt)	33-515339	.20
18	Resistor (600 Ω, ½ Watt)	33-1235	.20
19	I. F. Transformer, Second	32-2666	2.20
20	Resistor (51,000 Ω, ½ Watt)	33-351339	.20
21	Condenser, Mica (110 μμf)	30-1031	.20
22	Resistor (11.7 Ω, ½ Watt)	33-1264	.20
23	Condenser (.015 μf)	30-4515	.20
24	Condenser (.1 μf)	30-4122	.20
25	Condenser (.01 μf)	30-4479	.20
26	Resistor (240,000 Ω, ½ Watt)	33-424339	.20
27	Resistor (240,000 Ω, ½ Watt)	33-424339	.20
28	Resistor (1 megohm, ½ Watt)	33-510339	.20
29	Resistor (99,000 Ω, ½ Watt)	33-399339	.20
30	Resistor (2.0 megohms, ½ Watt)	33-520339	.20
31	Volume Control (.5 megohm)	33-5234	1.00
32	Resistor (20 Ω, ½ Watt)	33-1265	.20
33	Resistor (16.4 Ω, ½ Watt)	33-1266	.20
34	Bias Cell Assembly	38-7275	.20
35	Resistor (25,000 Ω, ½ Watt)	33-325339	.20
36	Resistor (4,000 Ω, ½ Watt)	33-240239	.20
37	Transformer—Push-pull Input	32-7637	2.00
38	Condenser (.02 μf)	30-4215	.20
39	Resistor (8.3 Ω, ½ Watt)	33-1268	.20
40	Transformer—Output	32-7758	
41	Cone & Voice Coil Assembly (KR26)	36-3540	1.00
	Cone & Voice Coil Assembly (HR20)	36-3797	
42	Dial Lamp	34-2150	.22
43	Resistor (16.7 Ω, ½ Watt)	33-1267	.20
44	Power Switch Tone Control	42-1363	1.00
45	Choke	32-7543	1.35
46	Condenser, (0.002 μf tubular)	30-4177	.25
47	Vibrator	41-3222	5.25
48	Power Transformer	32-7682	2.20
49	Condenser (.01 μf)	30-4381	.25
50	Choke ("B")	32-1932	.25
51	Choke ("A")	32-1954	.40
52	Condenser, Mica .250 μμf	5858	.25
53	Condenser, (.5 μf)	30-4296	.60
54	Condenser, (.5 μf)	30-4296	.60
55	Condenser, (.5 μf)	30-4296	.60
56	Choke	32-2247	
57	Condenser, (600 μμf) mica	30-1049	.25
	MODEL 38-39 (Code 121)		
	Cable (Vibrator Unit)	41-3328	
	Cable (Battery)	41-3204	
	Cable (Speaker)	41-3326	.40
	Clip (R. F. Coils)	28-5002	.02
	Dial	27-5333	
	Dial Washer	27-4598	.03
	Dial Clamp	28-5089	.03
	Knob (Tuning)	27-4330	.10
	Knob (Tuning Vernier)	27-4331	.10
	Knob (Tone & Volume)	27-4332	
	Mtg. Panel (Bias Cell)	38-9104	
	Mtg. Corner (Chassis)	27-4564	.10
	Mtg. Rubber (Vibrator) (Small)	27-4307	
	Mtg. Rubber (Vibrator, Assem.) (large)	27-4585	
	Mtg. Rubber (Vibrator) (Square)	27-4287	

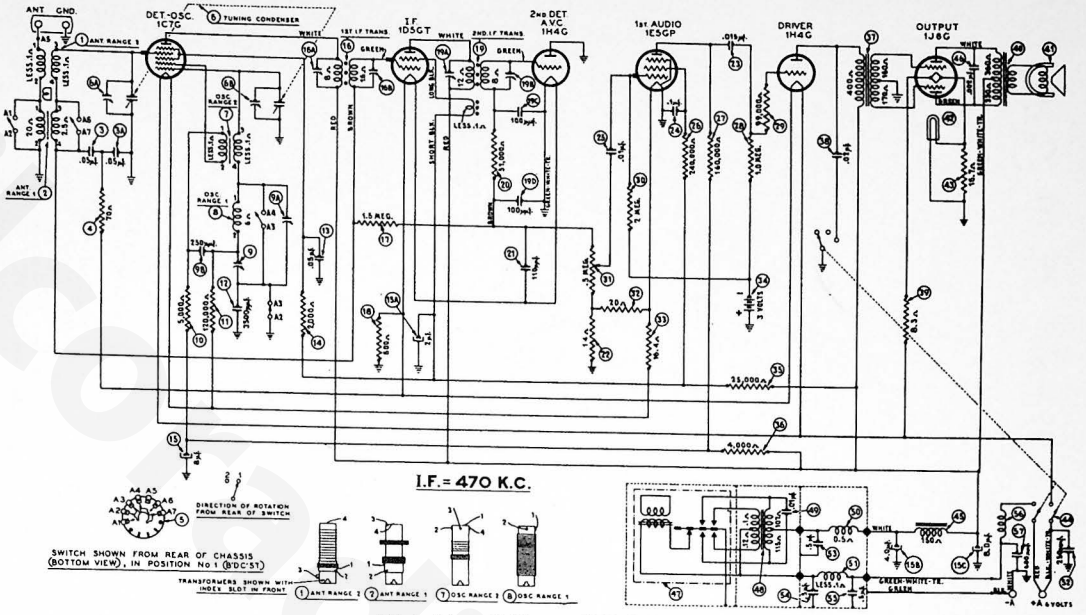

Fig. 4. Schematic Diagram 38-39, Code 121

Schem. No.	Description	Part No.	List Price
	Mtg. Sleeve (Vibrator)	28-6521	
	Mtg. Screw (Vibrator)	W-614	
	Shield (Vibrator)	38-8022	
	Shield (Tube)	28-2726	$0.10
	Screen	27-5320	.75
	Socket (Pilot Lamp)	38-9006	
	Socket (6 prong)	27-6086	.11
	Socket (7 prong)	27-6087	.11
	Socket (Vibrator)	27-6036	
	Terminal Panel (Ant.)	38-8849	.10
	Vernier Drive	31-2072	1.90
	Vibrator Socket Assembly	41-3327	
	MODEL 38-39X and K CABINETS		
	Speaker H. R. 20	36-1351	
	Bezel Frame Assembly	40-6128	1.05
	Bezel Basket	27-8313	.01
	Bezel Glass	27-8300	.06
	Bezel Ring	28-5080	.70
	Battery	116R	
	MODEL 38-39T CABINET		
	Bezel Frame Assembly	40-6124	.90
	Bezel Gasket	27-8311	.01
	Bezel Glass	27-8298	.05
	Bezel Ring	28-5078	.55
	Speaker KR-26	36-1353	10.00

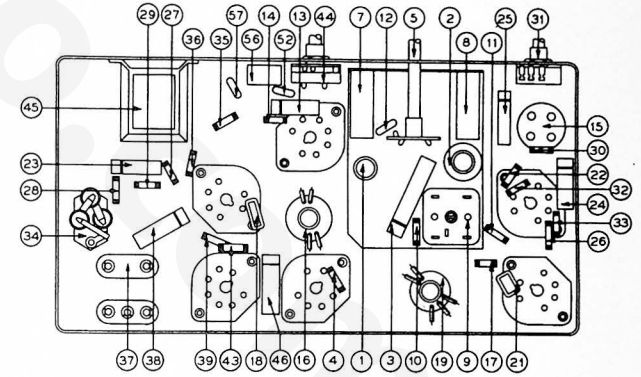

Fig. 5. Part locations, Underside of Chassis