Electrical Specifications

Type of Circuit: Superheterodyne; battery operated; with class "B" output, the Philco Automatic Aerial Tuning System and built in connections for the Philco High Efficiency Aerial.

Batteries Required: "A"—Philco 172-R two volt storage battery or a dry "A" battery **Philco Part** No. 41-8011. If a dry "A" battery is used, a ballast lamp PHILCO type 1F1 must be inserted in the socket provided in the dry "A" battery. This lamp acts as a voltage regulator, and maintains a constant potential of two volts on the filaments of the receiver tubes.

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

Current Drain: A Battery, 720 M.A.; B Battery, 21 M.A.

Philco Tubes Used: R. F. Amp. 1D5G, Det.—Osc. 1C7G. I. F. Amp. 1D5G, 2nd Det. A. V. C.; 1st audio; 1F7G, Driver 1H4G, Output 1J6G.

Frequency Ranges: Range 1—530 to 1720 K. C.; Range 2—2.3 to 7.4 M. C.; Range 3—7.35 to 22 M. C.

Intermediate Frequency: 470 K. C.

Speakers: KR-17-"B" Cabinet; HR-12-"J" Cabinet.

Alignment of the Compensators

To accurately adjust this receiver, precision test equipment is necessary. A signal generator such as the **Philco Model 088** Signal Generator, covering from 110 to 20,000 K. C. is recommended for use in adjusting the compensators at the various frequencies specified. A visual indication of the receiver output is also necessary to obtain correct adjustment of the compensators. **Philco Model 025** Circuit Tester contains a sensitive output meter and is recommended for these adjustments.

Philco Fibre Handle Screw-Driver No. 27-7059 and Variable Condenser Part No. **45-2325** complete the necessary equipment for these adjustments. The locations of the various compensators are shown in Figs. 2 and 3.

The following procedure must be observed in adjusting the compensators:—

DIAL ADJUSTMENT—The tuning condenser is set at the maximum capacity position, by turning the tuning knob counter-clockwise. Loosen the set screw of dial hub and set dial, with Glowing Indicator centered between the first and second index lines at the low frequency end of the broadcast scale.

OUTPUT METER—The 025 Output Meter is connected between one of the plate prongs of the 1J6G tube and the chassis. Then adjust the meter to use the **(0-30)** volt scale.

INTERMEDIATE FREQUENCY CIRCUIT

Frequency 470 K. C.

1. Connect the 088 Signal Generator output lead, through a .1 mfd. condenser to the control grid of the 1C7G tube, and the ground connection of the output lead to the chassis.
2. Set the range switch in position No. 1 (Broadcast). Rotate the tuning condenser of the receiver to approximately 580 K. C. Then adjust the signal generator for 470 K. C.
3. Adjust compensators **(30S)**, **(30P)**, **(28S)**, and **(28P)** for maximum output, see Fig. 2.

RADIO FREQUENCY CIRCUIT

Tuning Range (7.35 to 22 M. C.)

1. Remove the signal generator output lead from the grid of the 1C7G, and connect it through the .1 mfd. condenser to terminal No. 1 on the aerial input panel. Connect the generator ground lead to terminal No. 3. Terminals 2 and 3 of the aerial input panel must be shorted with the connector link provided on the panel during the following adjustments.
2. Set the range switch in position No. 3 (extreme clockwise). Turn the signal generator and receiver dials to 20 M. C.
3. Now adjust compensator **(20B)** by turning the screw (clockwise) to the maximum capacity position, then slowly turn it counter-clockwise until a second maximum peak is reached on the output meter. The first peak from maximum capacity is the image signal and the receiver must not be adjusted to it. **NOTE:** In adjusting some receivers only one peak will be observed, therefore tune the compensator to maximum on this peak. If the above procedure is correctly performed, the image signal will be found at 19.060 M. C., by advancing the signal generator input, and turning the receiver dial to this frequency mark on the scale.

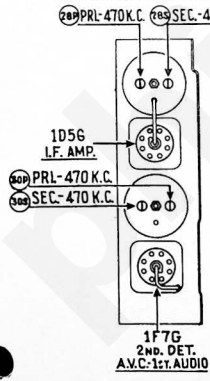

Fig. 2—I. F. Compensators, Top of Chassis

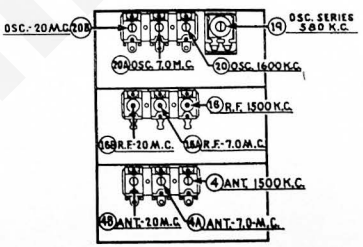

Fig. 3—R. F. Compensators, Under Side of Chassis

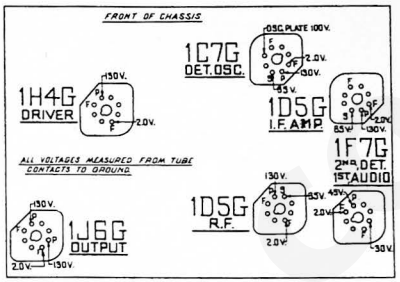

Fig.1—Socket Voltages Underside of Chassis View

The voltages indicated by arrows were measured with a **Philco 025 Circuit Tester** which contains a voltmeter having a resistance of 1000 ohms per volt. Volume Control at minimum, range switch in broadcast position.

4. Leaving the signal generator and receiver dials at 20 M. C. the antenna and R. F. compensators **(4B)** and **(18B)** are now adjusted, by connecting a variable condenser (Philco Part No. **45-2325**) across the oscillator compensator **(20B)** contact (first contact from the left side of the receiver facing rear underside view of the chassis) and ground. Now tune the added condenser until the second harmonic of the receiver oscillator beats against the signal from the generator, resulting in a maximum indication on the output meter. **NOTE:** It may be necessary to increase the signal generator output to obtain a signal of sufficient strength for reading on the output meter. Compensators **(4B)** and **(18B)** are now adjusted for maximum output. After these adjustments, remove the external condenser and readjust compensator **(20B)** as given in paragraph 3 above.

Tuning Range 2.3 to 7.4 M. C.

1. Turn the range switch to position No. 2 (middle range). Rotate the signal generator and receiver dials to 7.0 M. C. Then adjust compensator **(20A)** for maximum output.
2. Now turn the signal generator and receiver dials to 6 M. C. and adjust compensators **(4A)** Ant., and **(18A)** R. F. for maximum output.

Tuning Range 530 to 1720 K. C.

1. Turn the range switch to position No. 1 (Broadcast). Set the 088 signal generator indicator and the receiver dial to 1600 K. C.

Now adjust compensators **(20)** osc., **(4)** ant. and **(18)** R. F. for maximum output.

2. The low frequency end of this range is now adjusted as follows: Turn the signal generator and receiver dials to 580 K. C. Now tune compensator **(19)** for maximum output, then vary the tuning condenser of the receiver for maximum output about the 580 K. C. dial mark. Turn compensator **(19)** slightly to the right or left and vary the receiver turning condenser for maximum output. If the output reading increases, turn compensator **(19)** in the same direction a trifle more and again vary the tuning condenser for maximum output. This procedure of first setting the compensator, and then varying the tuning condenser, is continued until there is no further gain in the output reading. When a decrease in output is noted turn the compensator in the opposite direction.
3. Set the signal generator and receiver dials as given in Paragraph 1 above and adjust compensator **(20)** for maximum output.
4. Now turn the signal generator and receiver dials to 1500 K. C. and adjust compensators **(4)** ant. and **(18)** R. F. for maximum output.

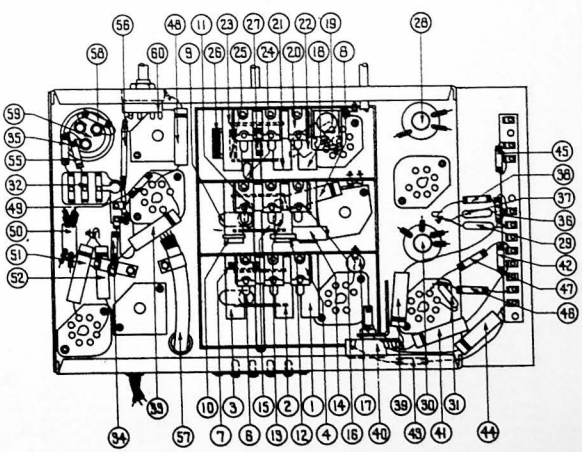

Fig. 4—Parts Location, Under Side of Chassis.

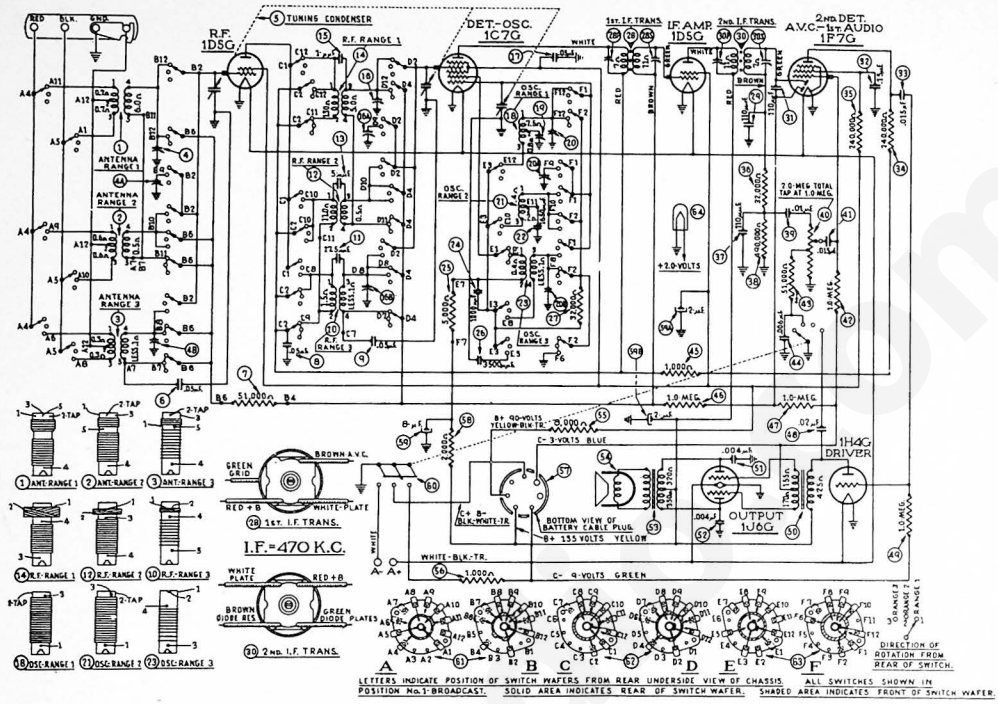

Fig. 5—Schematic Diagram

Replacement Parts — Model 37-623

Schem. No.	Description	Part No.	List Price
1	Antenna Transformer (530-1720 K.C.)	32-2108	$0.80
2	Antenna Transformer (2.3 to 7.4 M.C.)	32-2119	.65
3	Antenna Transformer (7.35 to 22 M.C.)	32-2109	.75
4	Compensator (Three Sections)	31-6092	.60
5	Tuning Condenser	31-1818	4.50
6	Condenser (.05 mfd. Tubular)	30-4020	.20
7	Resistor (51,00 ohms, ½ watt)	33-351339	.20
8	Condenser (.05 mfd. Tubular)	30-4020	.20
9	Condenser (.05 mfd. Tubular)	30-4020	.20
10	R. F. Transformer (7.35 to 22 M.C.)	32-2126	.55
11	Condenser (17.5 mmfd. Mica)	30-1079	
12	R. F. Transformer (2.3 to 7.4 M.C.)	32-2106	.65
13	Condenser (5 mmfd. Mica)	30-1080	
14	R. F. Transformer (530-1720 K.C.)	32-2105	.75
15	Condenser (Twist wire and lug)	38-7878	
16	Compensator (Three section)	31-1621	
17	Condenser (.05 mfd. Tubular)	30-4020	.20
18	Oscillator Transformer (530-1720 K.C.)	32-2120	.65
19	Compensator (580 K.C.)	31-6056	.55
20	Compensator (Three section)	31-6092	.60
21	Oscillator Transformer (2.3 to 7.4 M.C.)	32-2121	.40
22	Condenser (1650 mmfd.)	31-6096	.40
23	Oscillator Transformer (7.35 to 22 M.C.)	32-2110	.75
24	Condenser (1,000 mmfd. Mica)	30-4453	.20
25	Resistor (5,000 ohms, ½ watt)	33-250393	.20
26	Condenser (3,500 mmfd. Semifixed)	31-6097	.50
27	Resistor (32,000 ohms, ½ watt)	33-332339	.20
28	First I. F. Transformer	32-2100	1.50
29	Condenser (110 mmfd. Mica)	30-1031	.20
30	Second I. F. Transformer	32-2102	1.50
31	Condenser (110 mmfd. Mica)	30-1041	.20
32	Condenser (.15 mfd. Bakelite)	62875G	.35
33	Condenser (.015 mfd. Tubular)	30-4226	.20
34	Resistor (240,000 ohms, ½ watt)	33-424339	.20
35	Resistor (240,000 ohms, ½ watt)	33-424339	.20
36	Resistor (32,000 ohms, ½ watt)	33-332339	.20
37	Condenser (110 mmfd. Mica)	30-1031	.20
38	Resistor (490.000 ohms, ½ watt)	33-449339	.20
39	Condenser (.01 mfd. Tubular)	30-4124	.25
40	Volume Control	33-5158	1.00
41	Condenser (.015 mfd. Tubular)	30-4356	.20
42	Resistor (1 megohm, ½ watt)	33-510339	.20
43	Resistor (51,000 ohms, ½ watt)	33-351339	.20
44	Condenser (.006 mfd. Tubular)	30-4125	.20
45	Resistor (1,000 ohms, ½ watt)	33-210339	$0.20
46	Resistor (1 megohm, ½ watt)	33-510339	.20
47	Resistor (1 megohm, ½ watt)	33-510339	.20
48	Condenser (.02 mfd. Tubular)	30-4113	.20
49	Resistor (1 megohm, ½ watt)	33-510339	.20
50	Audio Input Transformer	32-7037	2.00
51	Condenser (.004 mfd. Tubular)	30-4456	.20
52	Condenser (.004 mfd. Tubular)	30-4456	.20
53	Output Transformer	32-7638	1.60
54	Cone and Voice Coil Assembly KR-17. Cone and Voice Coil Assembly HR-12.	36-3540 36-3557	.80 1.20
55	Resistor (8,000 ohm, ½ watt)	33-280339	.20
56	Resistor (1,000 ohms, ½ watt)	33-210339	.20
57	Cable Battery	41-3198	1.40
58	Resistor (2,000 ohms, ½ watt)	33-220339	.20
59	Electrolytic Condenser (2, 2, 8 mfd.)	30-2161	1.60
60	Power and Tone Control Switch	42-1207	1.20
61	Range Switch (ANT)	42-1200	1.20
62	Range Switch (R.F.)	42-1245	1.20
63	Range Switch (Osc.)	42-1246	1.20
	Pilot Lamp Assembly	38-7875	.45
	Pilot Lamp	34-2150	.22
	Vernier Drive Assembly	31-1871	.75
	Dial	27-5214	.40
	Dial Hub	28-7187	.12
	Dial Clamp	28-2837	.10
	Dial Guard	27-8324	.02
	Set Screw	W-1641	.02
	Gear (Dial)	28-7185	.10
	Thrust Spring	28-8611	.01
	Thrust Washer	28-3976	.30/C
	C Washer	28-3904	.01
	Gear (Drive)	31-1834	.25
	Mask	27-5198	.30
	Mask Arm and Assembly	31-1940	
	Shaft Coupling (Mask)	31-1941	
	Felt Washers	27-8399	
	Washer	27-8318	.50/C
	Snap Fastener	28-4279	.75/C
	Indicator Bracket and Lens Assembly	38-7912	.30
	Mask Guide and Lamp Support	38-7844	.15
	Shaft and Index Plate (Range Switch)	42-1173	.50
	Shaft (Volume Control)	38-8069	
	Retaining Clip (Vol. Shaft)	28-4394	.01
	Spring (Vol. Shaft)	28-4117	$0.40/C
	Socket (8 prong)	27-6058	.11
	Socket (7 prong)	27-6057	.11
	Shield Tube	28-2726	.10
	Base Tube Shield	28-3898	.03
	Grommet Mtg. R. F. Unit	27-4317	.04
	Sleeve Mtg. R. F. Unit	28-2257	.01
	Screw Mtg. R. F. Unit	W-729	.45/C
	Washer Mtg. R. F. Unit	28-3927	.01
	Washer Mtg. R. F. Unit	27-8339	.40/C
	Rubber Mtg. Tuning Condenser	27-4325	.02
	Mtg. Plate (Trans.)	28-3808	.02
	Mtg. Spacer (Trans.)	27-8228	.01
	Mtg. Screw (Trans.)	W-1635	.30/C
	Terminal Panel I. F. Unit	38-7703	.25
	Cable Speaker	41-3207	.30
	Mtg. Bolt (Chassis)	W-1495	1.50/C
	Mtg. Rubbers	5189	.03
	Mtg. Bushing	27-4360	
	Knob	27-4330	.10
	Knob	27-4331	.10
	Knob	27-4326	.10
	Knob	27-4332	.10
	"B" Battery	41-8007	
	"A" Battery (Wet)	172R	
	"A" Battery (Dry)	41-8011	
	Ballast Lamp	1FI	
	Bezel Plate and Frame	40-5939	.75
	Gasket	27-8311	.01
	Glass	27-8298	.05
	Ring	28-3967	.35
	Screws	W-1644	.50/C
	B CABINET		
	Baffle and Silk Assembly	40-5970	
	Speaker—KR17	36-1248	10.00
	J CABINET		
	Speaker—HR12	36-1250	11.00
	Baffle and Silk Assembly	40-5971	.80
	Speaker	36-1250	11.00
	Speaker Ring	27-8016	
	Speaker Bolts	W-1693	

Figures in black type indicate circled figures in Base View.

Prices Subject to Change without Notice

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