



FOR MEMBERS OF RADIO MANUFACTURERS SERVICE

SERVICE BULLETIN
No. 259

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" supply—A 2 volt storage battery or an air cell battery, type SA850, or a 3 volt dry "A" battery may be used, providing proper means, such as a voltmeter, is provided for adjusting the voltage to 2 volts.

"B" batteries—Three 45 volt heavy-duty, plug-in type "B" batteries are required.

"C" batteries—Two 4½ volt plug-in type "C" batteries are required. It is important to use the "C" batteries with the small type cell, such as Eveready No. 771, General Dry No. 331 and Burgess No. 536-C. If the proper size cell is not used in the "C" batteries, the "B" batteries will not last as long, and the tone quality will suffer during the latter part of their life.

Connections for Use with 2 Volt Storage "A" Battery—Connect the white wire to the negative (—) terminal of the "A" battery. Connect the white wire with black tracer to the positive (+) terminal of the "A" battery. Tape up the air cell lead (the only remaining lead) in such a manner that it cannot come in contact with any of the batteries.

Connections for Use with Air Cell Battery—If an air cell battery is used in place of a storage battery, connect the white wire to the negative (—) terminal of the air cell. Connect the brown wire to the positive (+) terminal of the air cell. Tape up the white with black tracer lead in such a manner that it cannot come in contact with any of the batteries.

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

Tubes Used: R.F. Amp. 1D5G, Det.—Osc.—1C7G, I.F. Amp. 1D5G, 2nd Det. A.V.C.; 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

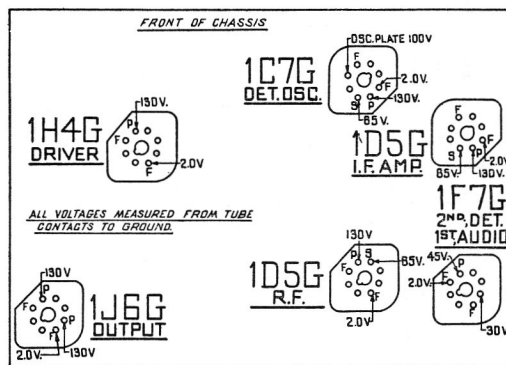


Fig. 1—Socket Voltages Underside of Chassis View

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.

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.

4. Leaving the signal generator and receiver dials at 20 M.C. the antenna and R.F. compensators (4B) and (16B) 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 (16B) 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 (16A) 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 (16) 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 tuning 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 (16) R.F. for maximum output.

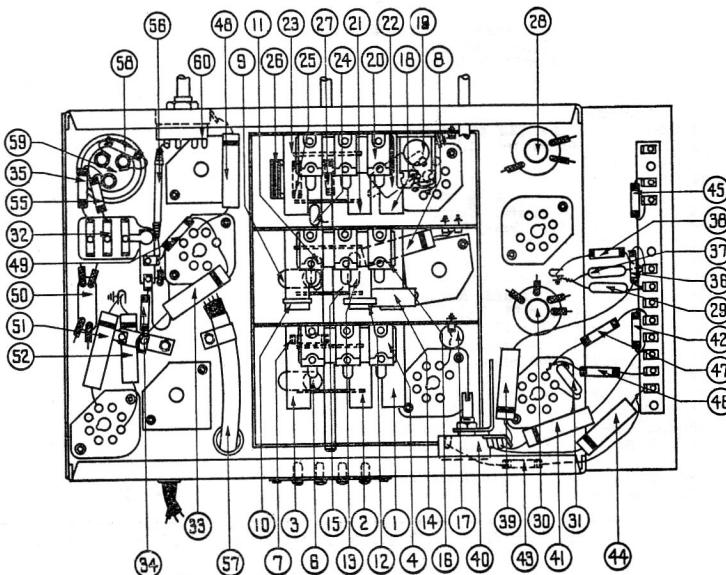


Fig. 4—Parts Location, Under Side of Chassis

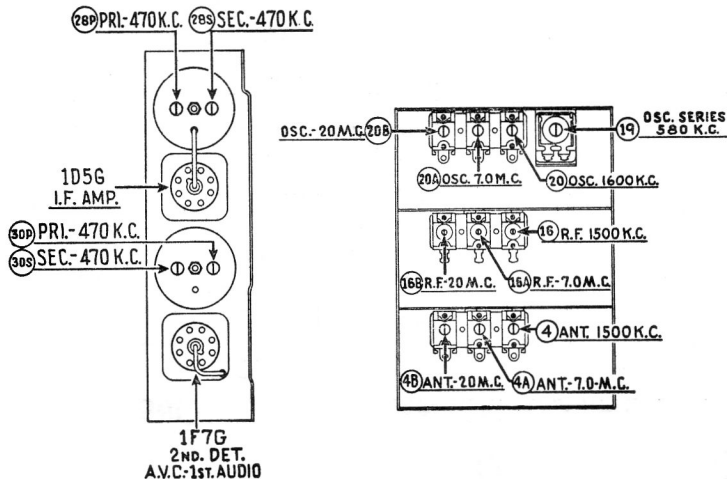


Fig. 2—I. F. Compensators, Top of Chassis

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

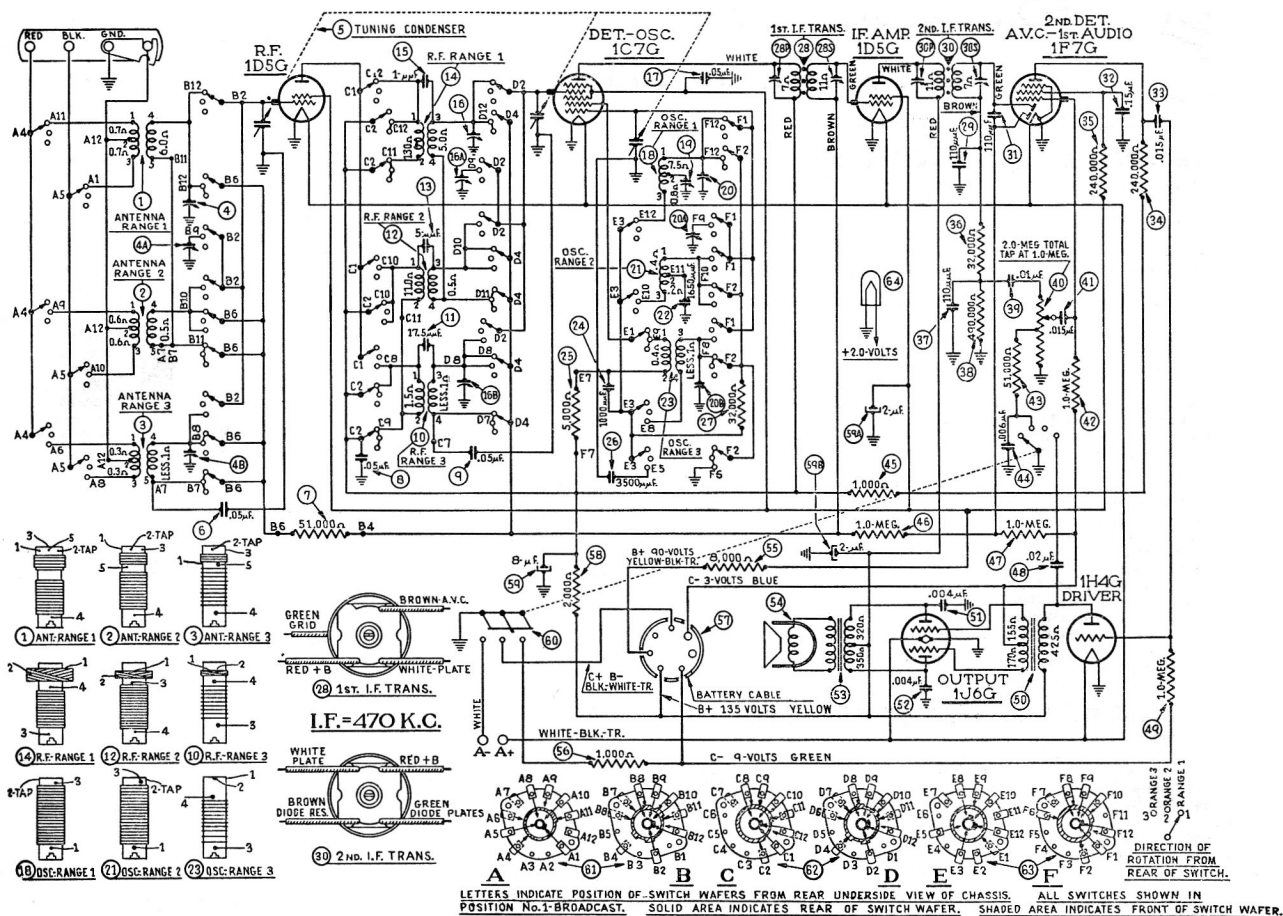


Fig. 5—Schematic Diagram

Replacement Parts—Model 37-3623

Schem. No.	Description	Part No.
1	Ant. Transformer (530-1720 K.C.)	32-2108
2	Ant. Trans. (2.3 to 7.4 M.C.)	32-2119
3	Ant. Trans. (7.35 to 22 M.C.)	32-2109
4	Compensator (Three Sections)	31-6092
5	Tuning Condenser	31-1818
6	Condenser (.05 mfd. Tubular)	30-4020
7	Resistor (51,000 ohms, 1/2 watt)	33-351339
8	Condenser (.05 mfd. Tubular)	30-4020
9	Condenser (.05 mfd. Tubular)	30-4020
10	R.F. Trans. (7.35 to 22 M.C.)	32-2126
11	Condenser (17.5 mmfd. Mica)	30-1079
12	R.F. Trans. (2.3 to 7.4 M.C.)	32-2106
13	Condenser (5 mmfd. Mica)	30-1080
14	R.F. Trans. (530-1720 K.C.)	32-2105
15	Condenser (Twist wire and lug)	38-7878
16	Compensator (Three section)	31-1621
17	Condenser (.05 mfd. Tubular)	30-4020
18	Oscillator Trans. (530-1720 K.C.)	32-2120
19	Compensator (580 K.C.)	31-6056
20	Compensator (Three section)	31-6092
21	Oscillator Trans. (2.3 to 7.4 M.C.)	32-2121
22	Condenser (1650 mmfd.)	31-6096
23	Oscillator Trans. (7.35 to 22 M.C.)	32-2110
24	Condenser (1,000 mmfd. Mica)	30-4453
25	Resistor (5,000 ohms, 1/2 watt)	33-250339
26	Cond. (3,500 mmfd. Semifixed)	31-6097
27	Resistor (32,000 ohms, 1/2 watt)	33-332339
28	First I.F. Transformer	32-2100
29	Condenser (110 mmfd. Mica)	30-1031
30	Second I.F. Transformer	32-2102
31	Condenser (110 mmfd. Mica)	30-1041
32	Condenser (.15 mfd. Bakelite)	6287SG
33	Condenser (.015 mfd. Tubular)	30-4226
34	Resistor (240,000 ohms, 1/2 watt)	33-424339
35	Resistor (240,000 ohms, 1/2 watt)	33-424339
36	Resistor (32,000 ohms, 1/2 watt)	33-332339
37	Condenser (110 mmfd. Mica)	30-1031
38	Resistor (490,000 ohms, 1/2 watt)	33-449339
39	Condenser (.01 mfd. Tubular)	30-4124
40	Volume Control	33-5158

Figures in black type indicate circled figures in Base View.

Schem. No.	Description	Part No.
41	Condenser (.015 mfd. Tubular)	30-4358
42	Resistor (1 megohm, 1/2 watt)	33-510339
43	Resistor (51,000 ohms, 1/2 watt)	33-351339
44	Condenser (.006 mfd. Tubular)	30-4125
45	Resistor (1,000 ohms, 1/2 watt)	33-210339
46	Resistor (1 megohm, 1/2 watt)	33-510339
47	Resistor (1 megohm, 1/2 watt)	33-510339
48	Condenser (.02 mfd. Tubular)	30-4113
49	Resistor (1 megohm, 1/2 watt)	33-510339
50	Audio Input Transformer	32-7637
51	Condenser (.004 mfd. Tubular)	30-4456
52	Condenser (.004 mfd. Tubular)	30-4456
53	Output Transformer	32-7638
54	Cone and Voice Coil Ass. KR-17	36-3540
55	Cone and Voice Coil Ass. HR-12	36-3557
56	Resistor (8,000 ohm, 1/2 watt)	33-280339
57	Resistor (1,000 ohms, 1/2 watt)	33-210339
58	Cable Battery	41-3216
59	Resistor (2,000 ohms, 1/2 watt)	33-220339
60	Electrolytic Cond. (2, 2, 8 mfd.)	30-2161
61	Power and Tone Control Switch	42-1207
62	Range Switch (ANT.)	42-1200
63	Range Switch (R.F.)	42-1245
64	Range Switch (Osc.)	42-1246
65	Pilot Lamp Assembly	38-7875
66	Pilot Lamp	34-2150
67	Vernier Drive Assembly	31-1871
68	Dial	27-5214
69	Dial Hub	28-7187
70	Dial Clamp	28-2837
71	Dial Guard	27-8324
72	Set Screw	W-1641
73	Gear (Dial)	28-7185
74	Thrust Spring	28-8611
75	Thrust Washer	28-3976
76	C Washer	28-3904
77	Gear (Drive)	31-1884
78	Mask	27-5198
79	Mask Arm and Assembly	31-1866
80	Shaft Coupling (Mask)	31-1941
81	Felt Washers	27-8399
82	Washer	27-8318
83	Snap Fastener	28-4279

Schem. No.	Description	Part No.
84	Indicator Brack. and Lens Ass.	38-7912
85	Mask Guide and Lamp Support	38-7844
86	Shaft & Index Plate (Range Switch)	42-1173
87	Shaft (Volume Control)	38-8059
88	Retaining Clip (Vol. Shaft)	28-4394
89	Spring (Vol. Shaft)	28-4117
90	Socket (8 prong)	27-6058
91	Socket (7 prong)	27-6057
92	Shield Tube	28-2726
93	Base Tube Shield	28-3898
94	Grommet Mtg. R.F. Unit	27-4317
95	Sleeve Mtg. R.F. Unit	28-2257
96	Screw Mtg. R.F. Unit	W-729
97	Washer Mtg. R.F. Unit	28-3927
98	Washer Mtg. R.F. Unit	27-8339
99	Rubber Mtg. Tuning Condenser	27-4325
100	Mtg. Plate (Trans.)	28-3808
101	Mtg. Spacer (Trans.)	27-8228
102	Mtg. Screw (Trans.)	W-1635
103	Terminal Panel I.F. Unit	38-7703
104	Cable Speaker	41-3207
105	Mtg. Bolt (Chassis)	W-1495
106	Mtg. Rubbers	5189
107	Knob Bushing	27-4360
108	Knob	27-4330
109	Knob	27-4331
110	Knob	27-4326
111	Knob	27-4332
112	Bezel Plate and Frame	40-5939
113	Gasket	27-8311
114	Glass	27-8298
115	Ring	28-3967
116	Screws	W-1644
B CABINET		
117	Baffle and Silk Assembly	40-5970
118	Speaker—KR17	36-1248
J CABINET		
119	Speaker—HR12	36-1250
120	Baffle and Silk Assembly	40-5971
121	Speaker	36-1250
122	Speaker Ring	27-3016
123	Speaker Bolts	W-1693

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