PHILCO . . . . . Model 38-C624

FOR MEMBERS OF
RADIO MANUFACTURERS SERVICE
A PHILCO SERVICE PLAN

SERVICE BULLETIN
No. 272-C

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: One 6 volt storage battery of at least 100 ampere-hour capacity is the only battery required for this receiver.

CONNECTIONS TO THE BATTERY: The red wire and white with black tracer wire are both connected to the same lug. This lug goes to the positive (+) connection on the battery. The black wire and white wire are connected to the same lug, and this lug should be connected to the negative (—) side of the battery.

IMPORTANT—DO NOT ATTEMPT TO LENGTHEN THE BATTERY WIRES, AS THIS WILL RESULT IN GREATLY INCREASED VIBRATOR HUM. THE BATTERY MUST BE CONNECTED TO THE LUGS PROVIDED.

CURRENT DRAIN: 1.5 amperes.

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——540—1700 K.C.
" 2——2.3 —7.4 M.C.
" 3——7.4 —22 M.C.

INTERMEDIATE FREQUENCY: 470 K.C.

SPEAKERS: T Cabinet—KR-17
X Cabinet—HR-12

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 025A Circuit Tester contains a sensitive output meter and is recommended for these adjustments.

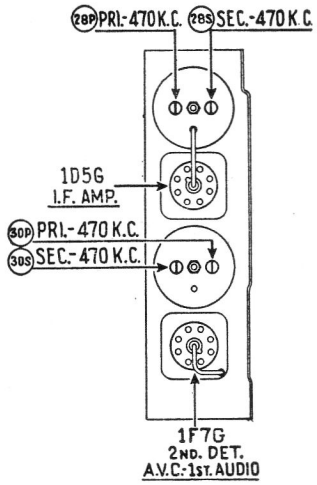

Fig. 2—I. F. Compensators, Top of Chassis

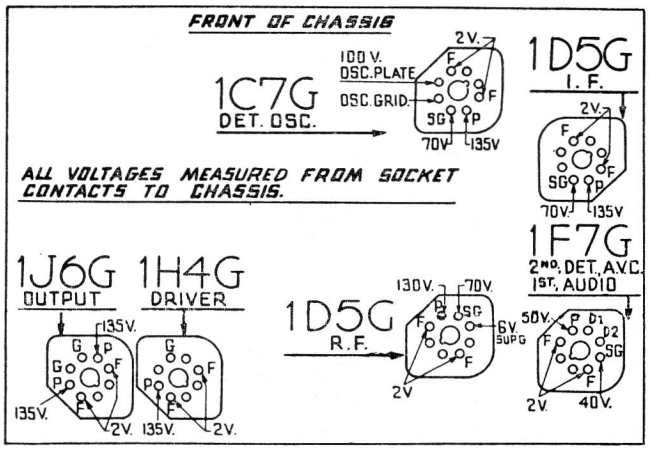

Fig. 1—Socket Voltages and R. F. Compensators

The voltages indicated by arrows were measured with a **Philco 025A Circuit Tester** which contains a voltmeter having a resistance of 1000 ohms per volt. Volume Control at maximum, Storage Battery fully charged.

Philco Fibre Handle Screwdriver 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, 3 and 4.

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 centred between the first and second index lines at the low frequency end of the broadcast scale.

OUTPUT METER—The 025A 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.

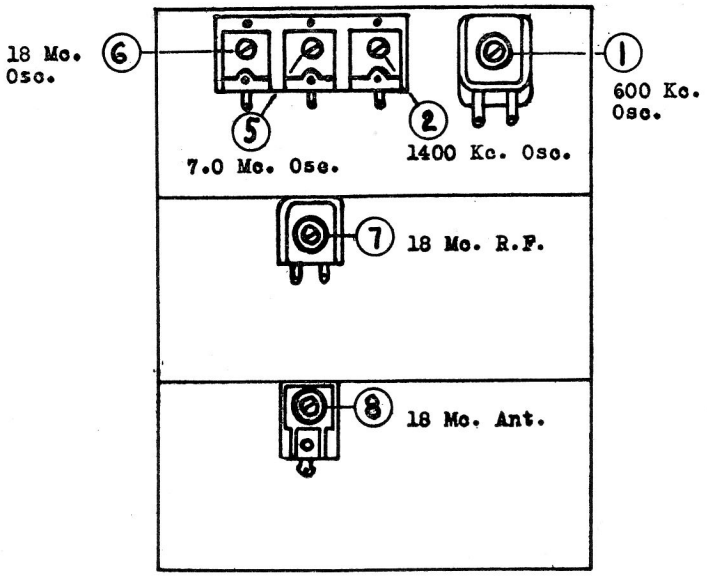

Fig. 3—R. F. Compensators, Underside of Chassis

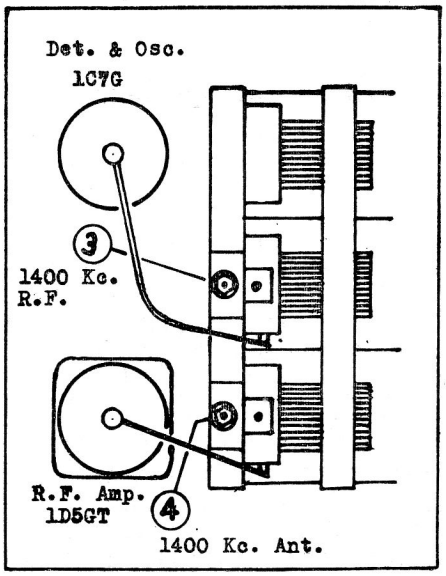

Fig. 4—R. F. Compensators, Above Chassis

Radio Frequency Circuit

TUNING RANGE (7.4 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 18 M.C.

3. Now adjust compensator (6) 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 17.06 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 18 M.C. the antenna and R. F. compensators (7) and (8) are now adjusted, by connecting a variable condenser (Philco Part No. 45-2325) across the oscillator compensator (6) 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 (7) and (8) are now adjusted for maximum output. After these adjustments, remove the external condenser and readjust compensator (6) 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 (5) for maximum output.

TUNING RANGE: 530 to 1700 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 (2) osc., (4) ant. and (3) 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 (1) for maximum output, then vary the tuning condenser of the receiver for maximum output about the 580 K.C. dial mark. Turn compensator (1) slightly to the right or left and vary the receiver tuning condenser for maximum output. If the output reading increases, turn compensator (1) 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 (2) for maximum output.

4. Now turn the signal generator and receiver dials to 1500 K.C. and adjust compensators (4) ant. and (3) R.F. for maximum output.

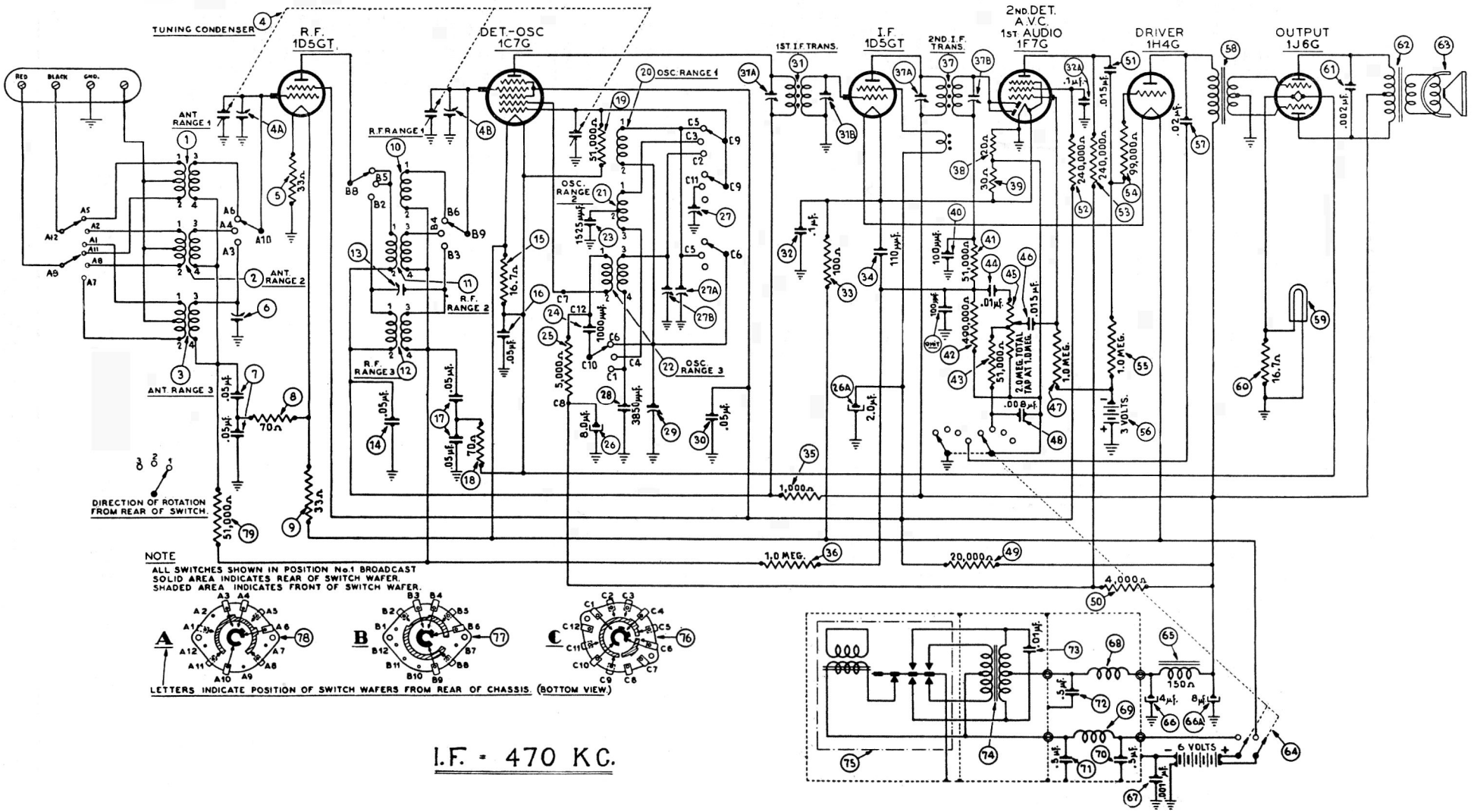

Fig. 5—SCHEMATIC DIAGRAM

Model 38-C624, Code 121

Replacement Parts—Model 38-C624

Schem. No.	Description	Part No.
1	Antenna Trans. (Range 1)	32-2378
2	Antenna Trans. (Range 2)	32-2381
3	Antenna Trans. (Range 3)	32-2384
4	Gang Condenser	31-1966
5	Resistor (33 ohm Wirewound)	32-3233
6	Padding Condenser	31-6161
7	Tubular Condenser (Twin .05 Mfd.)	30-4522
8	Resistor (70 ohms, ½ watt)	33-070344
9	Resistor (33 ohms, Wirewound)	33-3233
10	R.F. Transformer (Range 1)	32-2379
11	R.F. Transformer (Range 2)	32-2382
12	R.F. Transformer (Range 3)	32-2385
13	Padding Condenser	31-6204
14	Tubular Condenser (.05 Mfd.)	30-4123
15	Resistor (16.7 ohm Wirewound)	33-3298
16	Tubular Condenser (.05 Mfd.)	30-4020
17	Tubular Condenser (Twin .05 Mfd.)	30-4522
18	Resistor (70 ohms, ½ watt)	33-370344
19	Resistor (51,000 ohms, ½ watt)	33-351344
20	Osc. Transformer (Range 1)	32-2380
21	Osc. Transformer (Range 2)	32-2383
22	Osc. Transformer (Range 3)	32-2386
23	Tracking Condenser (Police band)	31-6173
24	Fixed Condenser (1000 Mmfd.)	30-1007
25	Resistor (5000 ohms, ½ watt)	33-250344
26	Electrolytic Condenser (2 & 8 Mfd.)	30-2171
27	Oscillator Padder Strip	31-6171
28	Tracking Condenser (Short wave band)	31-6174
29	Padding Condenser (Osc. 600 K.C.)	31-6056
30	Tubular Condenser (.05 Mfd.)	30-4020
31	1st I.F. Transformer	32-2297
32	By-Pass Condenser (Twin .1 Mfd.)	4989DG
33	Resistor (100 ohm Wirewound)	33-3187
34	Condenser (100 Mmfd.)	30-1031
35	Resistor (1000 ohm, ½ watt)	33-210344
36	Resistor (1 Meg., ½ watt)	33-510344
37	2nd I.F. Transformer	32-2299
38	Resistor (20 ohm Wirewound)	33-3043
39	Resistor (30 ohm Wirewound)	33-3119
40	Condenser (250 Mmfd.)	30-1032
41	Resistor (51,000 ohms, ½ watt)	33-351344
42	Resistor (490,000 ohms, ½ watt)	33-449344
43	Resistor (51,000 ohms, ½ watt)	33-351344
44	Tubular Condenser (.01 Mfd.)	30-4479
45	Volume Control	33-5166
46	Tubular Condenser (.015 Mfd.)	30-4358
47	Resistor (1 Meg., ½ watt)	33-510344
48	Tubular Condenser (.008 Mfd.)	30-4112
49	Resistor (20,000 ohms, ½ watt)	33-320344
50	Resistor (4000 ohms, ½ watt)	33-240344
51	Condenser (.015 Mfd.)	3793SU
52	Resistor (240,000 ohms, ½ watt)	33-424344
53	Resistor (240,000 ohms, ½ watt)	33-424344
54	Resistor (99,000 ohms, ½ watt)	33-399344
55	Resistor (1 Meg., ½ watt)	33-510344
56	Bias Cells (3 used per set)	41-8009
57	Tubular Condenser (.02 Mfd.)	30-4113
58	Audio input transformer	32-7637
59	Pilot Light Bulb	34-2150
60	Resistor (16.7 ohm Wirewound)	33-3298
61	Tubular Condenser (.002 Mfd.)	30-4177
62	Output Transformer	32-7639
63	Complete Speaker (T Cab. KR17)	36-1248
	(X Cab. HR12)	36-1250
64	Tone Control & Power Switch	42-1242
65	Filter Choke	32-7543
66	Filter Condenser Block	30-2160
67	Tubular Condenser (.001 Mfd.)	30-4201
68	"B" Choke Assembly	32-1932
69	"A" Choke Assembly	32-1954
70	Condenser (.5 Mfd.)	30-4296
71	Condenser (.5 Mfd.)	30-4296
72	Condenser (.5 Mfd.)	30-4296
73	Tubular Condenser (.01 Mfd.)	30-4381
74	Power Transformer	32-7682
75	Vibrator	41-3222
76	Wave Switch (Osc. section)	42-1290
77	Wave Switch (Det. section)	42-1314
78	Wave Switch (Ant. section)	42-1282
79	Resistor (51,000 ohms, ½ watt)	33-351344
	Cone & Voice Coil Assembly KR-17	36-3540
	HR-12	36-3557
	Switch Index Plate & Shaft	42-1300
	Pilot Lamp Assembly	38-7875
	Dial Scale	27-5285
	Dial Hub	27-7187
	Dial Clamp	28-2837
	Set Screw	W-1641
	Knob—Tuning	27-4330
	Knob—Tuning Vernier	27-4331
	Vernier Drive Assembly	31-1871
	Knob—Waveswitch	27-4326
	Knob—Tone & Volume	27-4332
	Mask	27-5276
	Mask Arm & Link Assembly	31-1959
	Shaft Coupling & Set Screw	31-1941
	Felt Washer	27-8399
	Snap Fastener	28-4279
	Mask Guide & Lamp Support	38-7844
	Indicator Bracket Assembly	38-7912
	Volume Control Shaft	38-8059
	Retaining Clip (V.C)	28-4394
	Shaft Spring (V.C.)	28-4117
	7 Prong Socket	27-6057
	8 Prong Socket	27-6058
	Tube Shield	28-2726
	Tube Shield Base	28-3898
	Bias Cell Panel Assembly	38-7275
	Battery Cable	41-3204
	Speaker Cable	L-2214
	Mtg. Grommet (R.F. Unit)	27-4317
	Mtg. Sleeve (R.F. Unit)	28-2257
	Mtg. Screw (R.F. Unit)	W-729
	Mtg. Washer (R.F. Unit)	28-7807
	Mtg. Rubber (Tuning Condenser)	27-4325
	Mtg. Plate (R.F. Transformer)	28-3808
	Mtg. Spacer (R.F. Transformer)	27-8228
	Mtg. Screw (R.F. Transformer)	W-1635
	Mtg. Bushing (Chassis)	27-4360
	Mtg. Washer Rubber (Chassis)	5189

CABINET PARTS

Bezel Plate & Frame Assembly (T Cab.)	40-6118
(X Cab.)	40-6126
Gasket (T Cabinet)	27-8311
(X Cabinet)	27-8312
Glass (T Cabinet)	27-8298
(X Cabinet)	27-8299
Ring (T Cabinet)	28-5078
(X Cabinet)	28-5079
Screws (Mtg. for Bezel)	W-1644
Baffle & Silk Assembly (T Cabinet)	40-5969
(X Cabinet)	40-6183
Base Plate for Chassis	38-8267

PHILCO PRODUCTS LIMITED

Toronto

October, 1937

Printed in Canada