



FOR MEMBERS OF RADIO MANUFACTURERS SERVICE A PHILCO SERVICE PLAN

SERVICE BULLETIN
No. 271-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: "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.

IMPORTANT—It is absolutely essential that the "C" batteries be changed at the same time as the "B" batteries are replaced.

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, 19 M.A.

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.

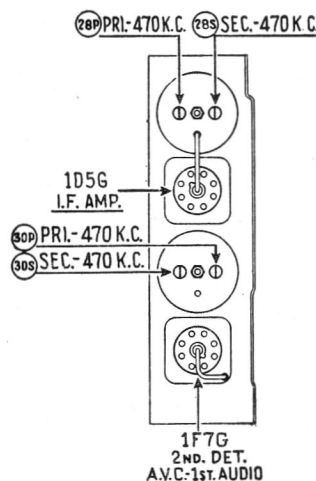


Fig. 2—I. F. Compensators, Top of Chassis

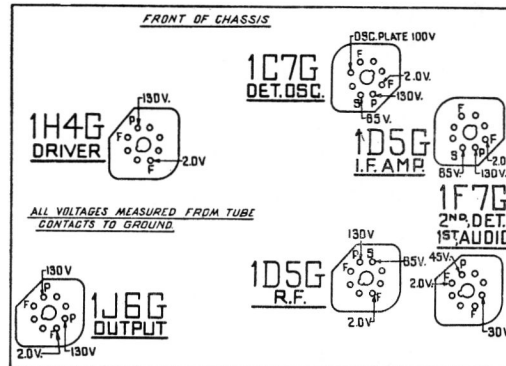


Fig. 1—Socket Voltages Underside of Chassis View

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 minimum, range switch in broadcast position.

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.

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.

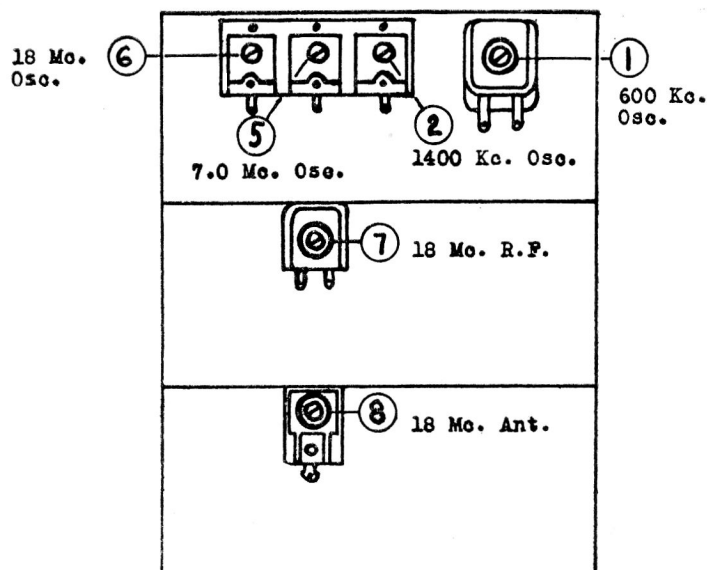


Fig. 3—R. F. Compensators, Underside of Chassis

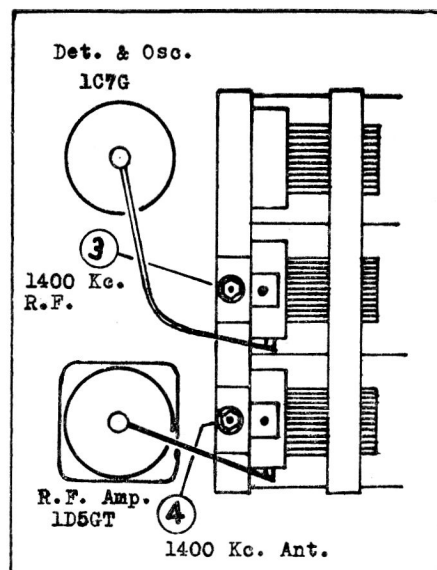


Fig. 4—R. F. Compensators, Above Chassis

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.

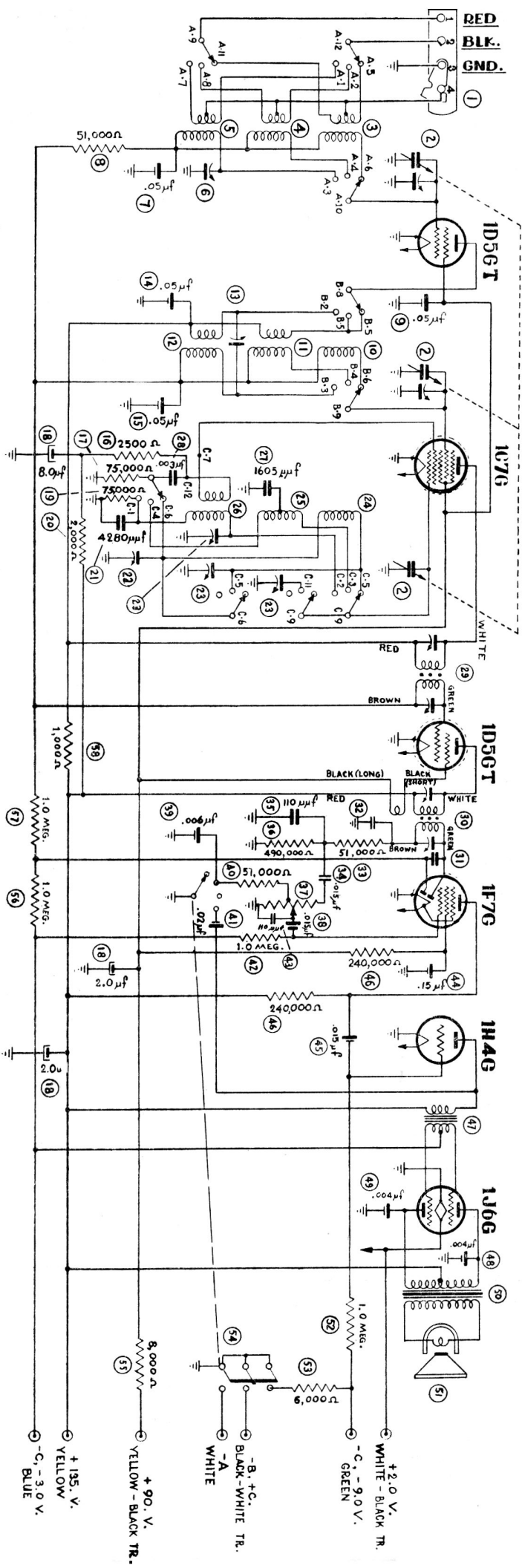
1. Turn the range switch to position No. 1 (Broadcast). Set the 088 signal generator indicator and the receiver dial to 1600 K.C.

Now adjust compensators (2) osc., (4) ant. and (3) R.F. for maximum output.

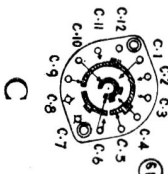
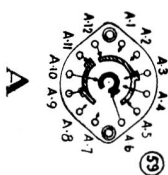
2. The low frequency end of this range is now adjusted as follows: Turn the signal generator and receiver dials to 580 K.C. Now tune compensator (1) for maximum output, then vary the tuning condenser of the receiver for maximum output about the 580 K.C. dial mark. Turn compensator (1) slightly to the 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.

**NOTE.**

LETTERS INDICATE POSITION FROM REAR OF CHASSIS.
 SOLID AREA INDICATES REAR OF SWITCH WAFER.
 SHADED AREA INDICATES FRONT OF SWITCH WAFER.
 Δ INDICATES DUMMY LUGS
 ALL SWITCHES SHOWN IN POSITION N° 1
 (BROADCAST)



L.F. = 470 KC.



Fig. 5—SCHEMATIC DIAGRAM

Model 38-C623, Code 121

Replacement Parts—Model 38-C623

Schem. No.	Description	Part No.	Schem. No.	Description	Part No.
1	Antenna Terminal Strip.....	38-7714	60	Waveswitch (Detector section).....	42-1314
2	Gang Condenser	31-1906	61	Waveswitch (Oscillator section).....	42-1290
3	Antenna Transformer B.C.....	32-2378	62	Pilot Lamp	34-2150
4	Antenna Transformer M.B.....	32-2381		Cone & Voice Coil Assembly (KR17).....	36-3540
5	Antenna Transformer S.W.....	32-2384		(HR12).....	36-3557
6	Compensator	31-6161		Vernier Drive Assembly.....	31-1871
7	By-Pass Condenser (.05 Mfd.).....	30-4444		Dial Scale	27-5285
8	Resistor (51,000 ohm, ½ watt).....	33-351344		Battery Cable	L-2195
9	By-Pass Condenser (.05 Mfd.).....	30-4020		Pilot Lamp Assembly.....	38-7875
10	R.F. Transformer B.C.....	32-2379		Dial Hub	28-7187
11	R.F. Transformer M.B.....	32-2382		Dial Clamp	28-2837
12	R.F. Transformer S.W.....	32-2385		Dial Guard	27-8324
13	Compensator	31-6204		Set Screw	W-1641
14	By-Pass Condenser (.05 Mfd.).....	30-4123		Gear (Dial)	28-7185
15	By-Pass Condenser (.05 Mfd.).....	30-4519		Thrust Spring	28-8611
16	Resistor (2500 ohm, ½ watt).....	33-225344		Thrust Washer	28-8976
17	Resistor (75,000 ohm, ½ watt).....	33-375344		"C" Washer	28-3904
18	Electrolytic Condenser	30-2161		Gear (Drive)	31-1884
19	Resistor (75,000 ohm, ½ watt).....	33-375344		Mask	27-5276
20	Resistor (2,000 ohm, ½ watt).....	33-220344		Mask Arm & Link Assembly.....	31-1866
21	Tracking Condenser	31-6156		Shaft Coupling (Mask).....	31-1941
22	Series Padder (Broadcast).....	31-6056		Felt Washer	27-8399
23	Oscillator Padder Strip.....	31-6171		Washer	27-8318
24	Oscillator Transformer B.C.....	32-2380		Snap Fastener	28-4279
25	Oscillator Transformer M.B.....	32-2383		Indicator Bracket & Lens Assembly.....	38-7912
26	Oscillator Transformer S.W.....	32-2386		Mask Guide & Lamp Support.....	38-7844
27	Tracking Condenser	31-6155		Shaft & Index Plate (Waveswitch).....	42-1300
28	Condenser	30-1028		Volume Control Shaft.....	38-8059
29	1st I.F. Transformer	32-2297		Retaining Clip (Volume Control Shaft).....	28-4394
30	2nd I.F. Transformer.....	32-2299		Spring (Volume Control Shaft).....	28-4117
31	Condenser	30-1031		Socket (8 Prong)	27-6058
32	Condenser	30-1031		Socket (7 Prong)	27-6057
33	Resistor (51,000 ohm, ½ watt).....	33-351344		Tube Shield	28-2726
34	Condenser (.015 Mfd.)	30-4358		Grommet (R.F. Unit Mtg.).....	27-4317
35	Condenser	30-1031		Sleeve (R.F. Unit Mtg.).....	28-2257
36	Resistor (490,000 ohm, ½ watt).....	33-449344		Screw (R.F. Unit Mtg.).....	W-729
37	Volume Control	33-5158		Washer (R.F. Unit Mtg.).....	28-3927
38	Condenser (.015 Mfd.).....	30-4358		Rubber (Tuning Cond. Mtg.).....	27-4325
39	Condenser (.006 Mfd.).....	30-4467		Terminal Panel (I.F. Unit).....	38-7703
40	Resistor (51,000 ohm, ½ watt).....	33-351344		Speaker Cable	L-2214
41	Condenser (.02 Mfd.).....	30-4113		Mounting Bolt (Chassis).....	W-1495
42	Resistor (1 Meg., ½ watt).....	33-510344		Mounting Rubbers	5189
43	Condenser	30-1031		Mounting Bushing	27-4360
44	Condenser (.15 Mfd.).....	6287-SG		Knob (Tuning)	27-4330
45	Condenser (.015 Mfd.).....	30-4515		Knob (Vernier)	27-4331
46	Resistor (240,000 ohm, ½ watt).....	33-424344		Knob (Waveswitch)	27-4326
47	Push-Pull Input Transformer.....	32-7637		Knob (Tone & Volume).....	27-4332
48	Condenser (.004 Mfd.).....	30-4456		Bezel Plate & Frame (T Cab.).....	40-6118
49	Condenser (.004 Mfd.).....	30-4456		(X Cab.).....	40-6126
50	Output Transformer	32-7639		Gasket (T Cab.).....	27-8311
51	Speaker (T Cab—KR-17).....	36-1248		(X Cab.).....	27-8312
	(X Cab—HR-12)	36-1250		Glass (T Cab.).....	27-8298
52	Resistor (1 Meg., ½ watt).....	33-510344		(X Cab.).....	27-8299
53	Resistor (6000 ohm, ½ watt).....	33-260343		Ring (T Cab.).....	28-5078
54	Tone Control & Power Switch.....	42-1207		(X Cab.).....	28-5079
55	Resistor (8,000 ohm, ½ watt).....	33-280344		Screws	W-1644
56	Resistor (1 Meg., ½ watt).....	33-510344		Base Plate	38-8267
57	Resistor (1 Meg., ½ watt).....	33-510344		Baffle & Silk Assembly (T Cab.).....	40-5969
58	Resistor (1000 ohm, ½ watt).....	33-210344		Baffle & Silk Assembly (X Cab.).....	40-6183
59	Waveswitch (Antenna section).....	42-1282		Speaker Bolts (T Cab.).....	W-1604FC10
				(X Cab.).....	W-1695FC10

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