Electrical Specifications

TYPE CIRCUIT: Superheterodyne; battery operated; with Class "B" output circuit; the Philco Automatic Aerial Tuning System, and built-in connection for the Philco High-Efficiency Aerial.

BATTERY REQUIRED: "A" Philco 172-R, storage battery or a dry "A" battery Philco Part No. 41-8011. If a dry "A" battery is used, a ballast lamp Philco type 1Z1 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 filament of the receiver tubes.

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

CURRENT DRAIN:

"A" battery 0.9 amps

"B" battery 23 M.A.

PHILCO TUBES USED: Seven: 2—1D5G; 1—1C7G; 2—1H4G; 1—1E5G; 1—1J6G.

FREQUENCY RANGES: Four:

Range 1—530 to 1600 K. C.

Range 2—1.58 to 4.8 M. C.

Range 3—4.7 to 11.6 M. C.

Range 4—11.5 to 18.2 M. C.

INTERMEDIATE FREQUENCY: 470 K. C.

SPEAKER:

"B" KR-17

"X" HR-12

Shadow Meter Adjustment

With receiver turned ON, remove aerial lead and adjust the shadow meter as follows:

1. Move the shadow meter coil backwards and forwards, until the opposite edges of the shadow are 1/8 of an inch from each end of the shadow screen, measuring along the bottom edge of the screen. Adjustment of the shadow meter light bracket may be necessary for perfect centering.

2. Remove the "B" Battery plug from its socket and rotate coil until shadow reaches minimum width. This width must not exceed 3/32 of an inch.

3. Replace the "B" Battery plug in its socket. The shadow should then widen until it is not more than 3/16 inch or less than 1/16 inch from each side of the screen, measuring along the bottom edge. If these limits are not obtained readjust the shadow meter as given in paragraphs 1 and 2 until they are obtained.

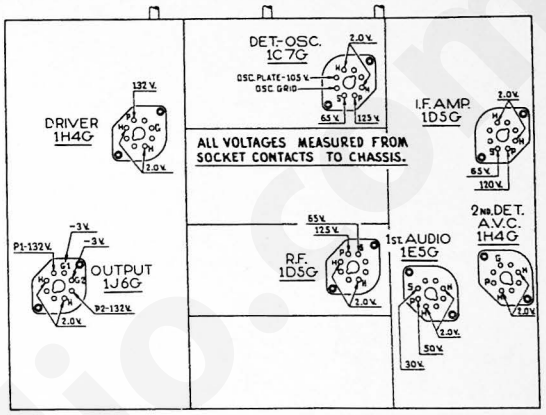


Fig. 1. Socket Voltages and R. F. Compensators

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; Storage Battery fully charged.

Aerial Connections

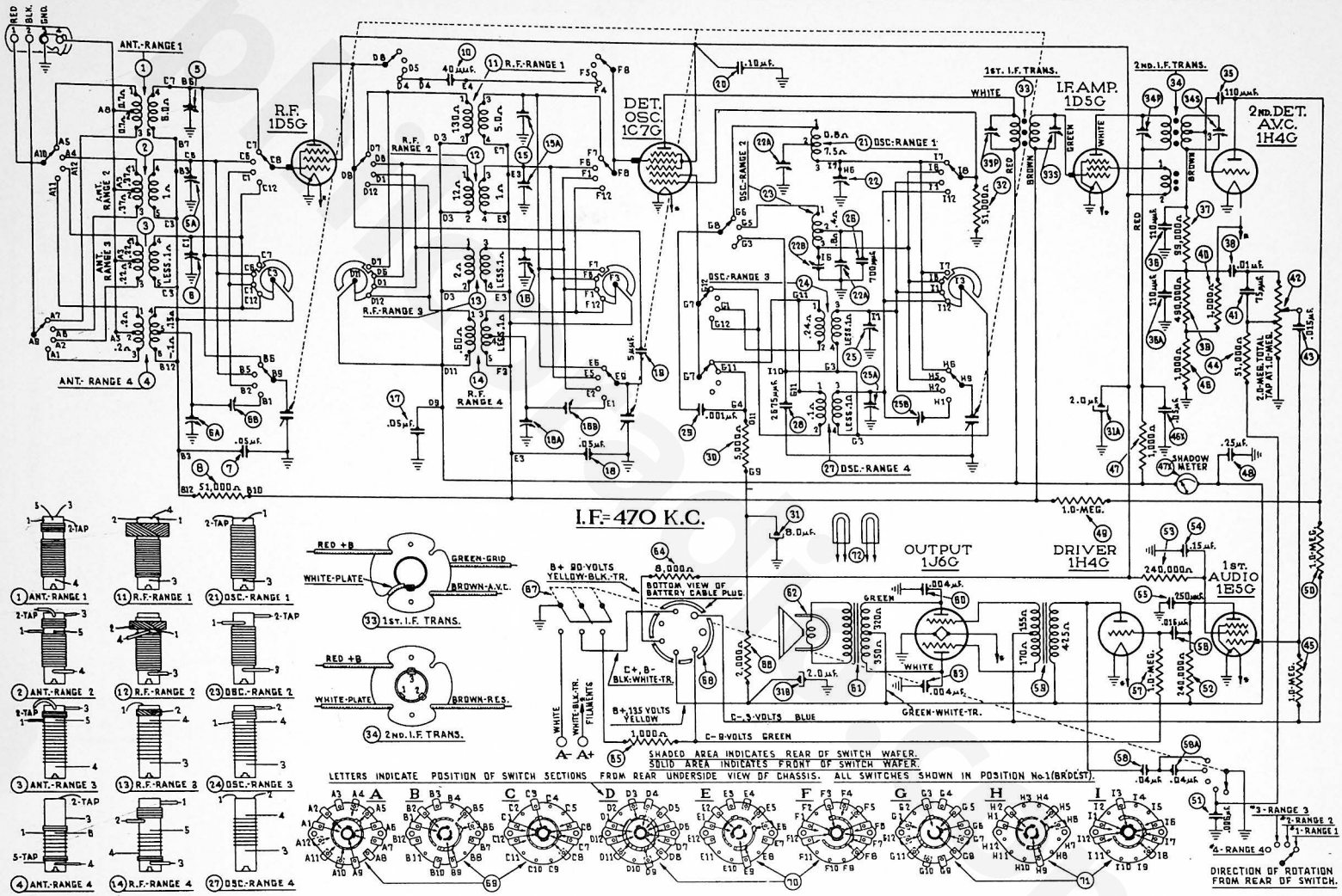
The red and black leads of the High Efficiency Aerial "transmission line" are connected to terminals 1 and 2 respectively, of the terminal panel provided on the rear of the chassis. Connect the jumper on the terminal panel across terminals 3 and 4.

If a temporary aerial is used, the jumper should be across terminals 2 and 3. The aerial connects to terminal 1 and the ground lead to terminal 3. A good ground connection is desirable in all installations.

Dial Calibration

In order to adjust this receiver correctly, the dial must be aligned to track properly with the tuning condenser. To do this rotate the tuning control to the extreme counter-clockwise position (maximum capacity). Loosen the set screw of the dial hub, then turn dial until the glowing indicator is centered on second index line of dial scale (see Fig. 2). Now tighten the dial hub set screw in this position.

Fig. 2—Dial



Model 37-643

Fig. 3. Schematic Diagram

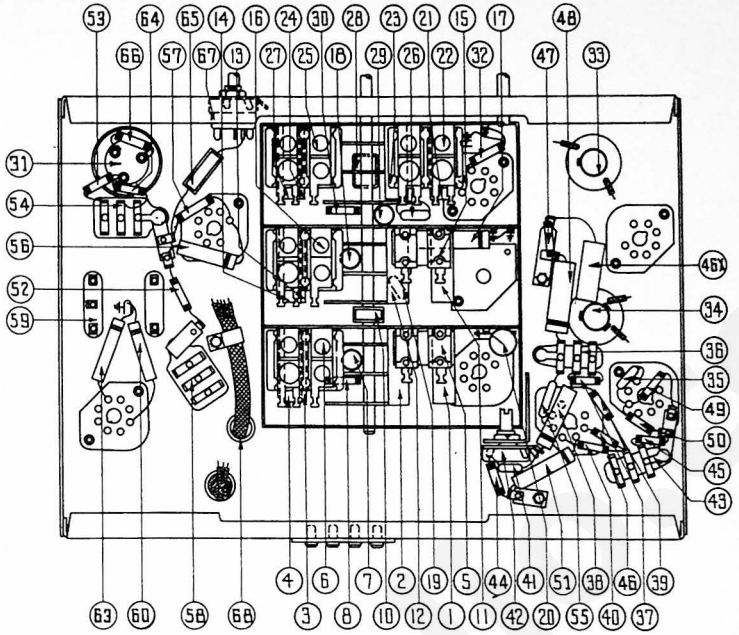


Fig. 4. Base View of Chassis

Replacement Parts—Model 37-643

Schem. No.	Description	Part No.	List Price
1	Antenna Transformer (Range 1)	32-2108	$1.60
2	Antenna Transformer (Range 2)	32-2146	1.20
3	Antenna Transformer (Range 3)	32-2150	1.20
4	Antenna Transformer (Range 4)	32-2175	1.20
5	Compensator (two section)	31-6093	.40
6	Compensator (three section)	31-6128	1.00
7	Condenser (.05 mfd. tubular)	30-4020	.20
8	Resistor (51,000 ohms, ½ watt)	33-351339	.20
9	Tuning Condenser	31-1855	4.50
10	Condenser (40 mmfd. mica)	30-1076	.20
11	R. F. Transformer (Range 1)	32-2105	1.00
12	R. F. Transformer (Range 2)	32-2147	.70
13	R. F. Transformer (Range 3)	32-2151	.70
14	R. F. Transformer (Range 4)	32-2176	1.20
15	Compensator (two section)	31-6120	.50
16	Compensator (three section)	31-6127	1.00
17	Condenser (.05 mfd. tubular)	30-4020	.20
18	Condenser (.05 mfd. tubular)	30-4020	.20
19	Condenser (5 mmfd. mica)	30-1077	.20
20	Condenser (.1 mfd. tubular)	30-4122	.20
21	Oscillator Transformer (Range 1)	32-2120	1.00
22	Compensator (four section)	32-6108	....
23	Oscillator Transformer (Range 2)	32-2149	.70
24	Oscillator Transformer (Range 3)	32-2152	.70
25	Compensator (three section)	32-6128	....
26	Condenser (650 mmfd. mica)	5863	.25
27	Oscillator Transformer (Range 4)	32-2182	.70
28	Condenser (2675 mmfd.)	30-1085	.40
29	Condenser (.001 mmd. tubular)	30-4453	.20
30	Resistor (5,000 ohms, ½ watt)	33-250339	.20
31	Electrolytic Condenser (8, 2, 2, mfd.)	30-2161	1.60
32	Resistor (51,000 ohms, ½ watt)	33-351339	.20
33	1st I. F. Transformer	32-2253	1.80
34	2nd I. F. Transformer	32-2255	1.80
35	Condenser (110 mmfd. mica) 80 mmf.	30-1031	.20
36	Condenser (110 mmfd. dual)	8035-DG	.25
37	Resistor (99,000 ohms, ½ watt)	33-399339	.20
38	Condenser (.01 mfd. tubular)	30-4124	.20
39	Resistor (490,000 ohms, ½ watt)	33-449339	.20
40	Resistor (1,000 ohms, ½ watt)	33-210339	.20
41	Condenser (75 mmfd. mica)	30-1053	....
42	Volume Control	33-5158	1.00
43	Condenser (.015 mfd. bakelite)	3793-SU	.35
44	Resistor (51,000 ohms, ½ watt)	33-351339	.20
45	Resistor (1 megohm, ½ watt)	33-510339	.20
46	Resistor (1000 ohms, ½ watt)	33-210339	.20
46X	Condenser (.05 mfd. tubular)	30-4020	....
47	Resistor (1,000 ohms, ½ watt)	33-210339	$0.20
47X	Shadow Meter	45-2307	....
48	Condenser (.25 mfd. tubular)	30-4446	.25
49	Resistor (1 megohm, ½ watt)	33-510339	.20
50	Resistor (1 megohm, ½ watt)	33-510339	.20
51	Condenser (.006 mfd. tubular)	30-4125	.20
52	Resistor (240,000 ohms, ½ watt)	33-424339	.20
53	Resistor (240,000 ohms, ½ watt)	33-424339	.20
54	Condenser (.15 mfd. tubular)	6287-SG	.20
55	Condenser (250 mmfd. mica)	30-1032	.25
56	Condenser (.015 mfd. tubular)	30-4226	.20
57	Resistor (1 megohm, ½ watt)	33-510339	.20
58	Condenser (.04 mfd. dual bakelite)	8327-DU	.40
59	Audio Transformer (Input)	32-7637	2.00
60	Condenser (.004 mfd. tubular)	30-4456	.20
61	Output Transformer KR-17—HR-12	32-7639	1.60
62	Cone and Voice Coil KR-17	36-3540	.80
	Cone and Voice Coil HR-12	36-3557	1.20
63	Condenser (.004 mfd. tubular)	30-4456	.20
64	Resistor (9,000 ohms, ½ watt)	33-280339	.20
65	Resistor (1,000 ohms, ½ watt)	33-1223	.20
66	Resistor (2,000 ohms, ½ watt)	33-220339	.20
67	Switch and Tone Control	42-1241	1.00
68	Battery Cable Assembly	41-3198	1.40
69	Ant. Range Switch	42-1202	....
70	R. F. Range Switch	42-1254	....
71	Oscillator Range Switch	42-1204	....
72	Pilot Lamp (dial) and Shadow Meter	34-2150	.22
	Shadow Meter Receptacle Assem.	41-3225	....
	Range Switch Shaft and Index Plate	42-1186	.50
	Pilot Lamp Assembly	38-7875	.45
	Dial	27-5250	.70
	Hub	28-7187	.12
	Clamp	28-2837	.10
	Set Screw	W-1641	.02
	Dial Hole Cover	27-8425	.02
	Gear (Dial)	28-7185	.10
	Gear (Drive)	31-1884	.25
	Thrust Spring	28-8611	.01
	Thrust Washer	28-3976	.30 C
	"C" Washer	28-3904	.01
	Mask	27-5240	.30
	Mask Arm and Link Assembly	31-1959	.30
	Mask Washer	27-8318	.50 C
	Mask Guide and Lamp Bracket	38-7844	.15
	Indicator Bracket and Lens Assembly	31-1900	.30
	Scale Guard	27-8324	.02
	Volume Control Shaft	38-8060	$0.12
	Retaining Clip	28-4394	.01
	Spring	28-4117	.40 C
	Tube Shield	28-2726	.10
	Tube Shield Base	28-3898	.03
	Shield Shadow Meter	28-2917	.02
	Socket (7 prong)	27-6057	.11
	Socket (8 prong)	27-6058	.11
	Grommet Mtg. R. F. Unit	27-4317	.04
	Sleeve Mtg. R. F. Unit	28-2257	.01
	Washer Mtg. R. F. Unit	27-7807	.50 C
	Screw Mtg. R. F. Unit	W-729	.45 C
	Mtg. Rubber (Gang Condenser)	27-4325	.02
	Mtg. Spring (Shadow Meter)	28-8623	.70 C
	Mtg. Plate (R. F. Transformer)	28-3808	.02
	Mtg. Spacer (R. F. Transformer)	27-8228	.01
	Mtg. Screw (R. F. Transformer)	W-1635	.30 C
	Mtg. Busher (Cabinet)	27-4360	.04
	Mtg. Rubber (Cabinet)	3558	.03
	Speaker Cable	41-3207	.30
	Knob (Tuning)	27-4330	.10
	Knob (Tuning Vernier)	27-4331	.10
	Knob (Tone and Volume)	27-4332	.10
	Knob (Range Switch)	27-4326	.10
	"A" Battery	172-R	....
	"B" Battery	41-8007	....
	"B" CABINET		
	Speaker KR-17	36-1248	....
	Baffle and Silk Assembly	40-5975	.40
	Bezel Assembly	40-5946	.75
	Gasket	27-8312	.01
	Screw	W-1644	.50 C
	Glass	27-8299	.06
	Ring	28-3987	.40
	"X" CABINET		
	Baffle Silk Assembly	40-6036	1.20
	Speaker HR-12	36-1250	11.00
	Bezel and Plate Assembly	40-5948	.80
	Glass	27-8300	.06
	Ring	28-3988	.45
	Gasket	27-8313	.01
	Screw	W-1644	.50 C

Prices Subject to Change Without Notice

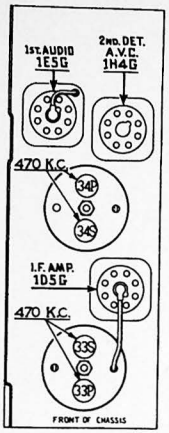


Fig. 5 I. F. Compensators

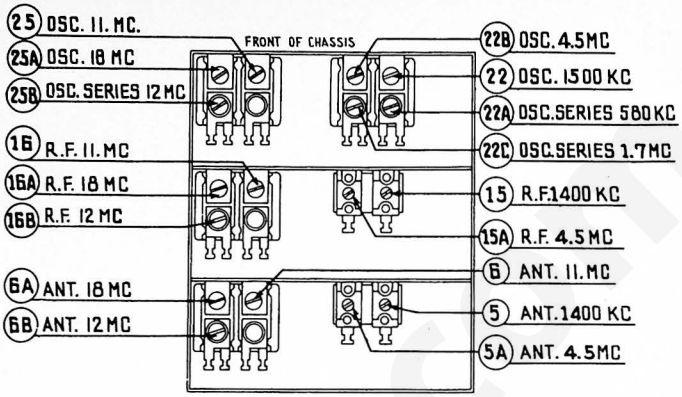


Fig. 6 R. F. Compensators

Alignment of Compensators

EQUIPMENT REQUIRED: (1) Signal Generator; Philco Model 088 (fundamental frequency 110 to 20,000 K. C.) is the correct instrument for this purpose; (2) output meter. Philco Model 025 Circuit Tester incorporates a sensitive output meter and is recommended; (3) Fibre handle screw driver (Philco Part No. 27-7059); (4) Special variable condenser (Philco Part No. 45-2325).

OUTPUT METER: The 025 Output Meter is connected between the plate prong of the 1H4G Driver tube and the chassis. Then adjust the meter to use the (0-30) volt scale.

INTERMEDIATE FREQUENCY CIRCUIT

Set controls as follows:

a. Range switch position one (broadcast)
b. Volume control maximum
c. 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.
d. Receiver dial at 580 K. C.
e. Signal Generator 470 K. C.
f. Adjust compensators (34S), (34P), (33S), and (33P) for maximum output.

RADIO FREQUENCY CIRCUIT

Tuning Range 11.5 to 18.2 M. C.

1. Connect signal generator output lead with the .1 mfd. series condenser to terminal No. 1 and the ground lead to terminal No. 3. Terminals 2 and 3 must be connected with the shorting link provided on the aerial panel.

2. Adjust compensators as follows:

Range Switch	Signal Generator	Receiver Dial	Compensators in Order
4	18.0 M. C.	18.0 M. C.	(25A) check image at 17.06 M. C. on receiver dial (See Note B)
4	18.0 M. C.	18.0 M. C.	(6A), (16A) use shunt condenser on 25A. First lug from left side of R. F. Unit fig. 6. (See Note A)
4	12.0 M. C.	12.0 M. C.	(25B), (16B), (6B)
4	18.0 M. C.	18.0 M. C.	(25A)
4	18.0 M. C.	18.0 M. C.	(6A), (16A) use shunt condenser on (25A). First lug from left side of R. F. Unit fig. 6. See Note (A)

Tuning Range 7.35 to 11.6 M. C.

Range Switch	Signal Generator	Receiver Dial	Compensators in Order
3	11.0 M. C.	11.0 M. C.	(25) check image 10.06 M. C. on receiver
3	11.0 M. C.	11.0 M. C.	(16), (6) use shunt on (25). Third lug from left side of R. F. Unit fig. 6. (See Note A)
3	11.0 M. C.	11.0 M. C.	(25)

Tuning Range 4.7 to 7.4 M. C.

Range Switch	Signal Generator	Receiver Dial	Compensators in Order
2	4.5 M. C.	4.5 M. C.	(22B), (15A), (5A)
2	1.7 M. C.	1.7 M. C.	(22C)
2	4.5 M. C.	4.5 M. C.	(22B), (15A), (5A)

Tuning Range 530 to 1600 K. C.

Range Switch	Signal Generator	Receiver Dial	Compensators in Order
1	1500 K. C.	1500 K. C.	(22), (15), (5)
1	580 K. C.	580 K. C.	(22A) roll tuning condenser
1	1500 K. C.	1500 K. C.	(22)
1	1400 K. C.	1400 K. C.	(15), (5)

NOTE "A"—To eliminate the effect of the Ant. and R. F. compensators detuning the Osc. circuit, a variable tuning condenser, Philco Part No. 45-2325 is connected from the oscillator compensators to ground when designated in the padding instruction above. Tune the added condenser from the minimum capacity position until the second harmonic of the receiver oscillator beats against the signal from the generator, resulting in a maximum indication on the output meter. Then adjust compensators as noted for maximum output.

NOTE "B"—To accurately adjust the compensator to the fundamental and not the image signal, turn the oscillator compensator to the maximum capacity position clockwise. Then slowly turn the compensators counter-clockwise until a second maximum peak is obtained on the output meter. The first peak is the image signal and the receiver must not be adjusted to it. If the above procedure is correctly performed, the image signal will be found 940 K. C. below the frequency being used on any high frequency band.

PHILCO RADIO AND TELEVISION CORPORATION
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