

PHILCO Models 37-620 & 37-630



SERVICE BULLETIN No. 251A for members of RADIO MANUFACTURERS SERVICE

A PHILCO Service Plan

Models 37-620, Code 125 and 37-630, Code 125-126

Electrical Specifications

POWER SUPPLY:

Voltage	Frequency	Consumption
115	50 to 60 cycles	65 watts
115	25 to 40 cycles	65 watts
110/220	50 to 60 cycles	65 watts

UNDISTORTED OUTPUT: 3 watts each receiver.

TUNING RANGES: Three.

- 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.

PHILCO TUBES USED: Six. One 6A8G; one 6F6G; two 6K7G; one 5Y4G; and one 6Q7G.

STONE CONTROL: Three point tone control. Base Compensation in the volume control circuit.

TUNING CONTROL RATIO: 8-1; 40-1.

SPEAKERS:

	Receiver	Cabinet
S7	37-620	B
HS	37-620	J
H24	37-630 Code 125	MX, X
K38	37-630 Code 126	T

Circuit and Receiver Description

The Superheterodyne Circuit is incorporated in this receiver. The receiver consists of one stage of R. F. amplification; detector-oscillator circuit, using the 6A8G tube; one stage of I. F. amplification; a combined diode detector, automatic volume control, and first audio stage; and a pentode audio output circuit. The rectifier socket in code 125 receiver is mounted on the power transformer.

Model 37-620 and 37-630 employ the same fundamental circuits, however, the 37-630 uses a shadowmeter for visual tuning; has larger speakers and output transformers and is mounted in cabinet types "MX," "X," and "T."

The shadowmeter replaces resistor (31) of the 37-620 chassis, as will be noted on the schematic diagram (Fig. 2).

Model 37-630 code 126 receiver differs from code 125 only in the mounting of the voltage rectifier tube socket. This rectifier socket in code 126 is mounted adjacent to the 6F6G tube in the power unit, instead of on top of the power transformer as in code 125 receiver. Code 126 receiver is mounted in a type "T" cabinet and uses speaker type K38.

Aerial Connections

The red and black leads of the High-Efficiency Aerial "transmission line" are connected to terminals 1 and 2 respectively, of the

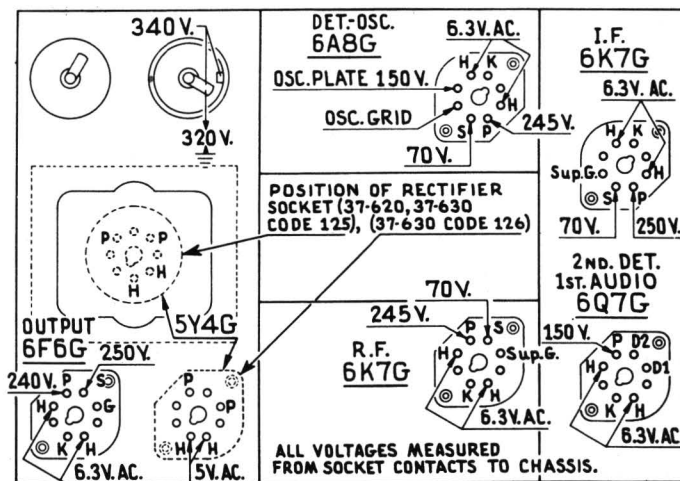


Fig. 1. Socket Voltages—Underside of Chassis View

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, line voltage 115 A. C.

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.

Shadowmeter Adjustment

Apply power to the receiver and allow tubes to warm up. Then adjust shadowmeter as follows:

1. Move the shadowmeter coil backwards and forwards, until the opposite edges of the shadow are $\frac{1}{8}$ of an inch from each end of the shadow screen, measuring along the bottom edge of the screen. Adjustment of the shadowmeter light bracket may be necessary for perfect centering.
2. Remove the rectifier tube from its socket, and rotate coil until shadow reaches minimum width. This width must not exceed $\frac{3}{32}$ of an inch.
3. Replace the 5Y4G rectifier tube in its socket. The shadow should then widen to not more than $\frac{3}{16}$ inch or less than $\frac{1}{16}$ inch from each side of the screen measuring along the bottom edge. If these limits are not obtained readjust the shadowmeter as given in paragraphs 1 and 2 again.

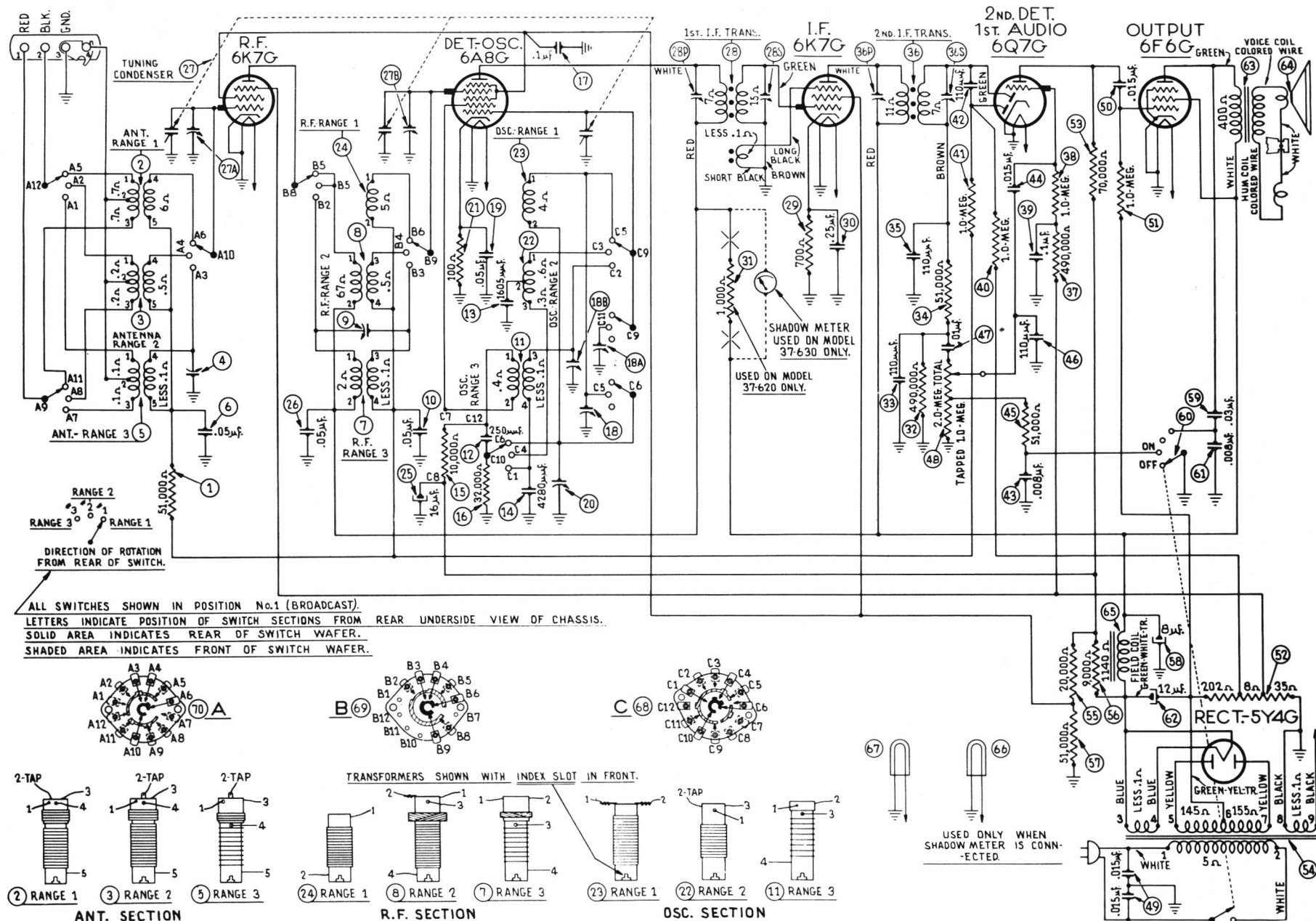
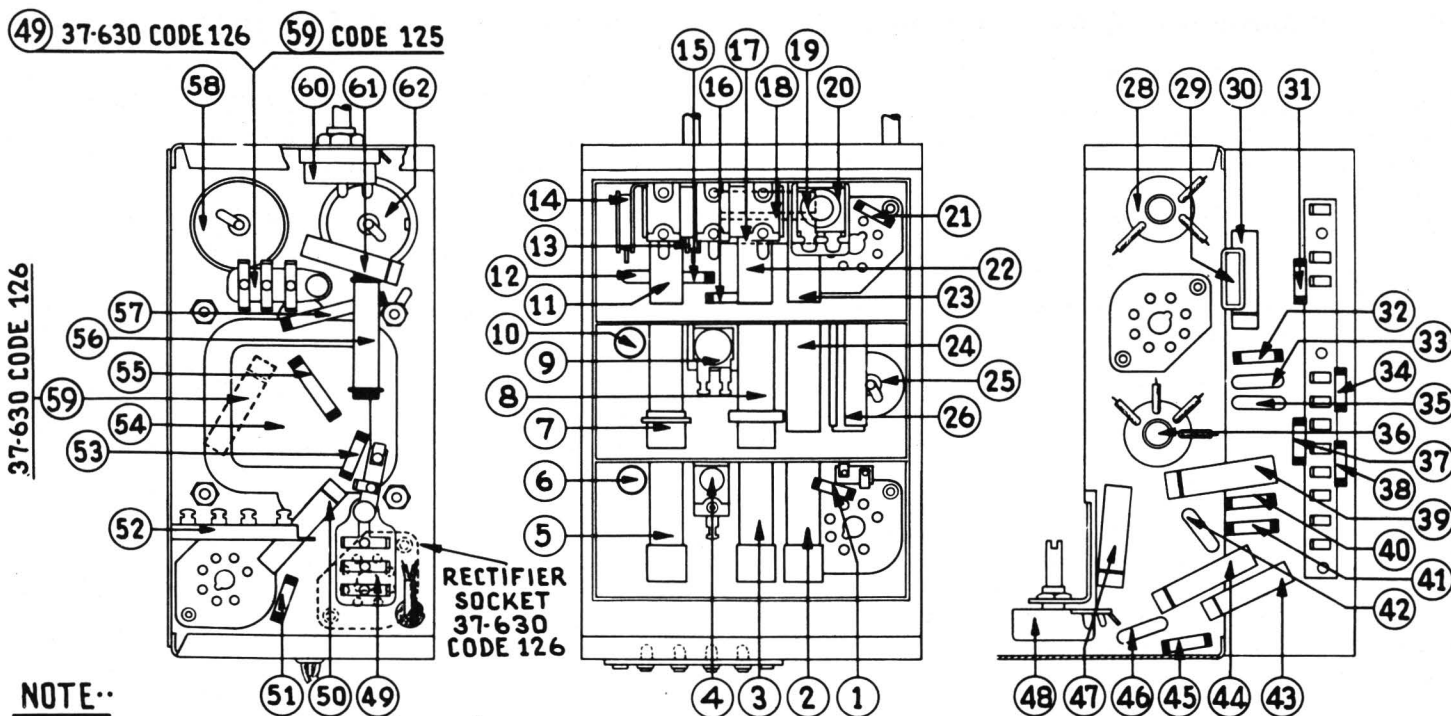


Fig. 2. Schematic Diagram 37-620, Code 125; 37-630, Codes 125-126



NOTE..
 CONDENSER SHOWN DOTTED (No. 59)
 USED ONLY ON 37-630 CODE 126.
 CONDENSER No. 49 IS RELOCATED IN
 37-630 CODE 126 AS SHOWN ABOVE.

Fig. 3. Location of Parts Under Chassis

REPLACEMENT PARTS

Schem. No.	Description	Part No.	List Price
1	Resistor (51,000 ohms, 1/2 watt).....	33-351339	\$0.20
2	Antenna Transformer (Range 1).....	32-2378	1.60
3	Antenna Transformer (Range 2).....	32-2381	1.20
4	Compensator (Antenna).....	31-6161	.30
5	Antenna Transformer (Range 3).....	32-2384	1.20
6	Condenser (.05 mfd. Tubular).....	30-4444	.20
7	R. F. Transformer (Range 3).....	32-2385	1.20
8	R. F. Transformer (Range 2).....	32-2382	1.00
9	Compensator (R. F.).....	31-6160	.30
10	Condenser (.05 mfd. Tubular).....	30-4020	.20
11	Oscillator Transformer (Range 3).....	32-2386	.70
12	Condenser (250 mmfd. mica).....	30-1032	.25
13	Condenser (1650 mmfd., semi-fixed).....	31-6155	.40
14	Condenser (4280 mmfd., semi-fixed).....	31-6156	.60
15	Resistor (10,000 ohms, 1/2 watt).....	33-310339	.20
16	Resistor (32,000 ohms, 1/2 watt).....	33-332339	.20
17	Condenser (.1 mfd. tubular).....	30-4455	.25
18	Compensator Oscillator (Three section).....	31-6171	.75
19	Condenser (.05 mfd. tubular).....	30-4020	.20
20	Compensator (Oscillator series).....	31-6056	.55
21	Resistor (100 ohms, 1/2 watt).....	33-110339	.20
22	Oscillator Transformer (Range 2).....	32-2383	.70
23	Oscillator Transformer (Range 1).....	32-2380	.50
24	R. F. Transformer (Range 1).....	32-2379	.40
25	Electrolytic Condenser (16 mfd.).....	30-2118	1.65
26	Condenser (.05 mfd. tubular).....	30-4123	.20
27	Tuning Condenser.....	31-1966	4.75
28	1st I. F. Transformer Assembly.....	32-2274	
29	Resistor (700 ohms, 1/2 watt).....	38-7834	
30	Condenser (.25 mfd. tubular).....	30-4446	.25
31	Resistor (1,000 ohms, 1/2 watt—37-620).....	33-210339	.20
	Shadowmeter (37-630).....	45-2307	2.50
32	Resistor (490,000 ohms).....	33-449339	.20
33	Condenser (110 mmfd. mica).....	30-1031	.20
34	Resistor (51,000 ohms, 1/2 watt).....	33-351339	.20
35	Condenser (110 mmfd. mica).....	30-1031	.20
36	2nd I. F. Transformer Assembly.....	32-2276	
37	Resistor (490,000 ohms, 1/2 watt).....	33-449339	.20
38	Resistor (1 megohm, 1/2 watt).....	33-510339	.20
39	Condenser (.1 mfd. tubular).....	30-4122	.20
40	Resistor (1 megohm, 1/2 watt).....	33-510339	.20
41	Resistor (1 megohm, 1/2 watt).....	33-510339	.20
42	Condenser (110 mmfd. mica).....	30-1031	.20
43	Condenser (.008 mfd. tubular).....	30-4112	.20
44	Condenser (.015 mfd. tubular).....	30-4358	.20
45	Resistor (51,000 ohms, 1/2 watt).....	33-351339	.20
46	Condenser (110 mmfd. mica).....	30-1031	.20
47	Condenser (.01 mfd. tubular).....	30-4479	.20
48	Volume Control.....	33-5158	1.00
49	Condenser (.015 mfd. dual bakelite).....	3793-DG	.40
50	Condenser (.015 mfd. tubular).....	30-4926	.20
51	Resistor (1 megohm, 1/2 watt).....	33-510339	.20
52	Bias Resistor.....	33-3284	.30

Schem. No.	Description	Part No.	List Price
53	Resistor (70,000 ohms, 1/2 watt).....	33-370339	\$0.20
54	Power Transformer (115V, 50 to 60 cycles).....	32-7583	4.50
	Power Transformer (115V, 25 to 40 cycles).....	32-7584	6.50
	Power Transformer (110V/220V, 50 to 60 cycles).....	32-7585	6.50
55	Resistor (20,000 ohms, 1 watt).....	33-320439	.20
56	Resistor (9,000 ohms, 2 watt).....	33-290539	.30
57	Resistor (51,000 ohms, 1 watt).....	33-351439	.20
58	Condenser (8 mfd.).....	30-2024	1.10
59	Condenser (.03 mfd. bakelite, Code 125).....	8328-SU	.35
	Condenser (.03 mfd. tubular, 37-630 Code 126).....	30-4447	
60	Tone Control and A. C. Switch.....	42-1182	.75
61	Condenser (.008 mfd. tubular).....	30-4317	.20
62	Electrolytic Condenser (12 mfd.).....	30-2117	1.20
63	Output Transformer (S7, HS).....	32-7019	
	Output Transformer (H-24, K-38).....	2580	
64	Cone and Voice Coil (S7).....	36-3157	1.00
	Cone and Voice Coil (HS).....	36-3796	
	Cone Assembly (H-24).....	02625	1.40
	Cone Assembly (K-38).....	36-3159	1.00
65	Field Coil Assembly (S-7).....	36-3341	2.75
	Field Coil Assembly (HS).....	36-3690	3.00
	Field Coil Assembly (H-24).....	36-3665	4.00
	Field Coil Assembly (K-38).....	36-3787	
66	Shadowmeter Lamp (37-630 only).....		
67	Dial Lamp.....	34-2039	.07
68	Oscillator Range Switch.....	42-1290	.75
69	R. F. Range Switch.....	42-1245	1.20
70	Antenna Range Switch.....	42-1170	1.10
	Antenna Terminal Panel.....	38-7703	.25
	Dial.....	27-5285	.50
	Dial Hub.....	28-7187	.12
	Dial Clamp.....	28-2837	.10
	Dial Set Screw.....	W-1641	.02
	Dial Guard.....	27-8324	.02
	Dial Drive Gear.....	31-1884	.25
	Dial Gear.....	28-7185	.10
	Dial Gear Thrust Spring.....	28-8611	.01
	Dial Gear Washer.....	28-3976	.30 C
	Dial Gear C Washer.....	28-3904	.01
	Indicator and Lens Assembly.....	38-7912	.30
	Knob (Range Switch).....	27-4326	.10
	Knob (Volume, Tone).....	27-4332	.10
	Knob (Vernier).....	27-4331	.10
	Knob (Tuning).....	27-4330	.10
	Mask.....	27-5276	.20
	Mask Arm Assembly.....	31-1959	.30
	Mask Washer.....	27-8318	.50 C
	Mask Guide and Lamp Support.....	38-7844	.15

Schem. No.	Description	Part No.	List Price
	Mtg. Grommet (R. F. Unit).....	27-4317	\$0.04
	Mtg. Rubber (Tuning Condenser).....	27-4325	.02
	Mtg. Rubber (Chassis 4 required).....	5189	.03
	Mtg. Spacer (Chassis).....	27-4360	.04
	Mtg. Bolt (Chassis).....	W-1495	1.50 C
	Pilot Lamp Assembly.....	38-7706	.35
	Socket (7 prong).....	27-6057	.11
	Socket (8 prong).....	27-6058	.11
	Socket (Rectifier).....	27-6052	.11
	Shaft and Plate (Range Switch).....	42-1300	.50
	Shadowmeter Receptacle Assembly (37-630).....	41-3225	.40
	Shield Chassis.....	38-8267	.25
	Shield (Shadowmeter).....	28-2917	.02
	Spring (Mtg. Shadowmeter).....	28-8623	.70 C
	Vernier Drive.....	31-1871	.75
	Volume Control Shaft.....	38-8059	.10
	Volume Control Clip.....	28-4394	.01
	Volume Control Spring.....	28-4117	.40 C
B CABINET—37-620, Code 125			
	Baffle and Silk Assembly.....	40-5970	.40
	Bezel and Frame Assembly.....	40-5939	.75
	Bezel Gasket.....	27-8311	.01
	Bezel Glass.....	27-8298	.05
	Bezel Ring.....	28-3967	.35
	Bezel Screw.....	W-1644	.50 C
	Speaker (S-7).....	36-1009	5.75
J CABINET—37-620, Code 125			
	Baffle and Silk Assembly.....	40-5971	.80
	Bezel Assembly (Same as B Cabinet).....		
	Speaker (HS).....	36-1220	6.25
MX CABINET—37-630, Code 125			
	Baffle and Silk Assembly.....	40-6023	
	Baffle (Wood).....	16277	.60
	Bezel Frame Assembly.....	40-5945	.70
	Bezel Gasket.....	27-8312	.01
	Bezel Glass.....	27-8299	.06
	Bezel Ring.....	28-3987	.40
	Speaker (H-24).....	36-1224	8.25
	Speaker Bolt.....	W-1695	.60 C
X CABINET—37-630, Code 125			
	Baffle and Silk Assembly.....	40-5972	.65
	Bezel Asst. (Same as MX Cabinet).....		
T CABINET—37-630, Code 126			
	Baffle and Silk Assembly.....	40-5973	.45
	Bezel Frame and Plate.....	40-5937	.60
	Speaker (K-38).....		

Prices subject to change without notice.

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 screwdriver (Philco Part No. 27-7059); (4) Philco No. 3164 fibre wrench.

OUTPUT METER

Connect the output meter across the Plate and Cathode terminals of the 6F6G tube. Adjust the meter to use the 0-30 volt scale.

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 condenser control to the extreme counter-clockwise position (maximum capacity). Loosen the screw of the hub, then turn dial until the glowing indicator is centered on the first index line of dial scale. Now tighten the dial hub set screw in this position.

INTERMEDIATE FREQUENCY CIRCUIT

1. Connect the signal generator output lead through a .1 mfd. condenser to the control grid of the 6A8G tube and the generator ground to the chassis. Set controls and adjust compensators for maximum output as follows:

Range Switch	Signal Generator	Receiver Dial	Compensators in order
Range 1	470 K. C.	580 K. C.	(36S), (36P), (28S) and (28P)

RADIO FREQUENCY CIRCUIT

Tuning range 530 to 1720 K. C.

1. Connect the signal generator output lead through a 100 ohm carbon resistor to terminal 1 and the generator ground to terminal 3 of the aerial input panel. Terminal 2 and 3 must be connected with the shorting link provided on the aerial panel. Set controls and adjust compensators for maximum output as follows:

Range Switch Position	Signal Generator and Receiver Dial	Compensators in order
1	1600 K. C.	(18), (27A), (27B)
1	580 K. C.	(20) Roll gang. See Note A.
1	1600 K. C.	(18)
1	1500 K. C.	(27A), (27B)

Tuning Range 2.3 to 7.4 M. C.

Range Switch	Signal Generator and Receiver Dial	Compensators in order
2	6 M. C.	(18A)

Tuning Range 7.35 to 22 M. C.

Set controls and adjust compensators for maximum output as follows:

Range Switch	Signal Generator and Receiver Dial	Compensators in order
3	18 M. C.	(18B) check image at 17.06 M. C. (See Note C.)
3	18 M. C.	(4), (9) use shunt condenser on osc. section of tuning condenser when adjusting (9). (See Note B.)
3	18 M. C.	(18B) (See Note C.)

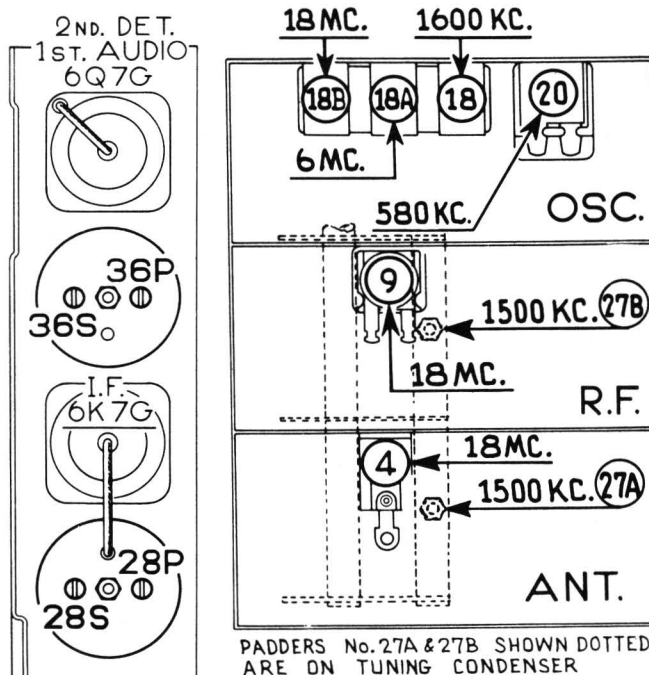


Fig. 4. I. F. Compensators Top of Chassis

Fig. 5. R. F. Compensators Under Chassis

NOTE A

First tune compensator (20) for maximum output, then vary the tuning condenser of the receiver for maximum output about the 580 K. C. dial mark. Now turn compensator (20) slightly to the right or left and vary the receiver tuning condenser for maximum output. If the output reading increases, turn compensator (20) in the same direction a trifle more, and again vary the tuning condenser for maximum output. If the output decreases, set the compensator in the opposite direction. This procedure of first setting the compensator and then varying the tuning condenser is continued until there is no further gain in output reading.

NOTE B

To eliminate the effect of the R. F. compensators detuning the Oscillator circuit, a variable tuning condenser of approximately 350 mmfd. is connected from the oscillator compensator to ground where designated in the padding instructions above. 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. Then adjust compensators as noted for maximum output.

NOTE C

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 compensator 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
Parts and Service Division
Philadelphia, Pa.