

Philco Radio & Television Corp.

Model: 37-116, Code 121, 122

Chassis:

Year: Pre October 1936

Power:

Circuit:

IF:

Tubes:

Bands:

Resources

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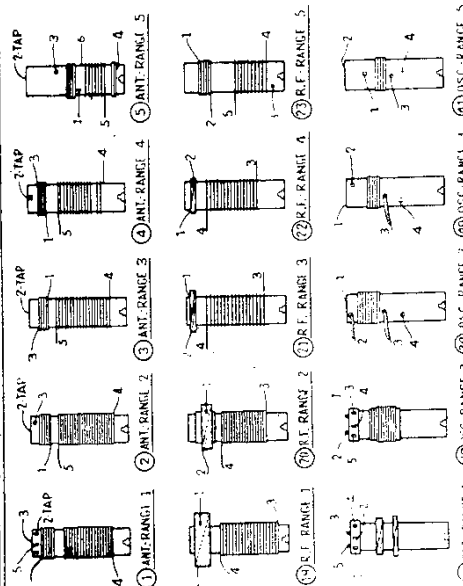
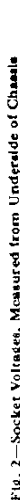
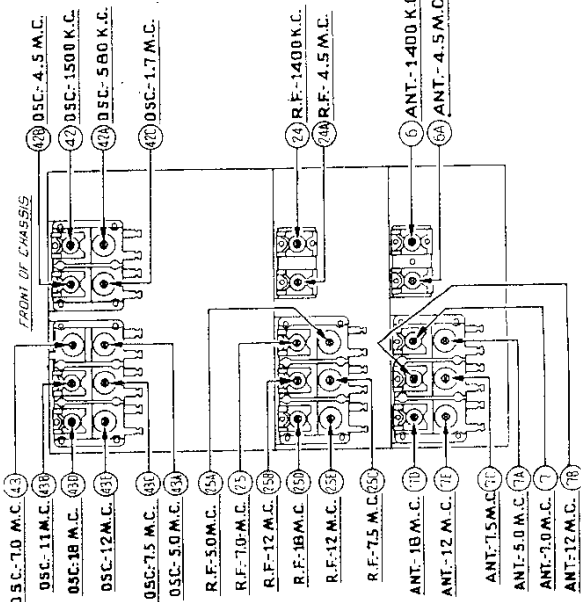


FIG. 5—Coil Wiring

The numbers on the coil leads correspond to those shown on the schematic diagram.



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.



PRIMUM ADJUSTMENT

With Volume control at minimum volume position, adjust Potentiometer (128) on power unit for minimum hum.

SHADOWMETER ADJUSTMENT

Code 121
Remove aerial and allow tubes to warm up. Then adjust shadow meter as follows:

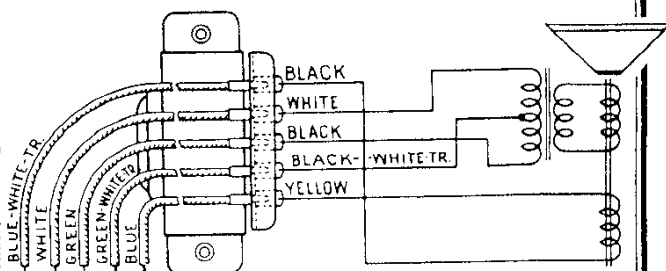


Fig. 6—Speaker Wiring

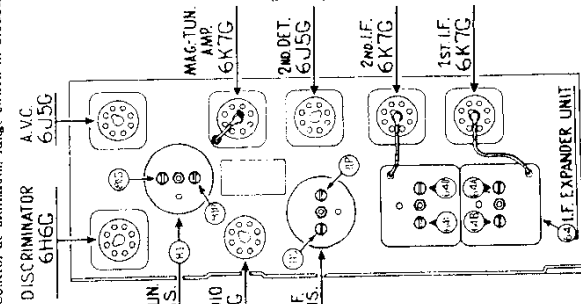


Fig. 7—Locations of I.F. Compensators
Ton of I.F. Unit

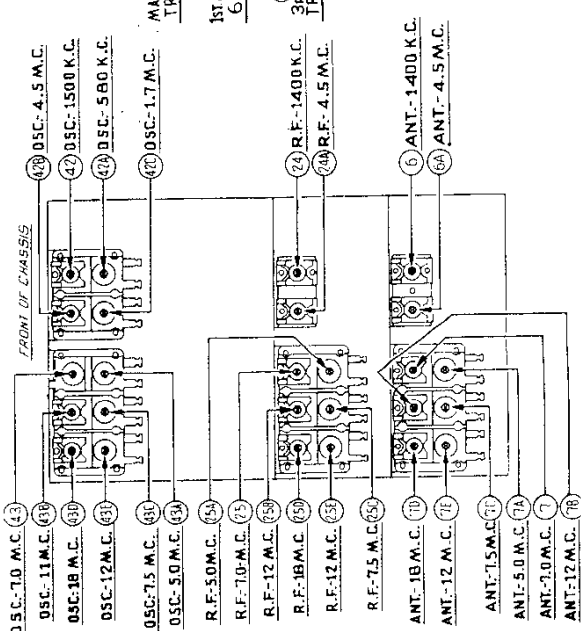


Fig. 8—Locations of R.F. Compensators
Henderson of Chassis View

MODEL 37-116(Codes 121,122)

Chassis Views

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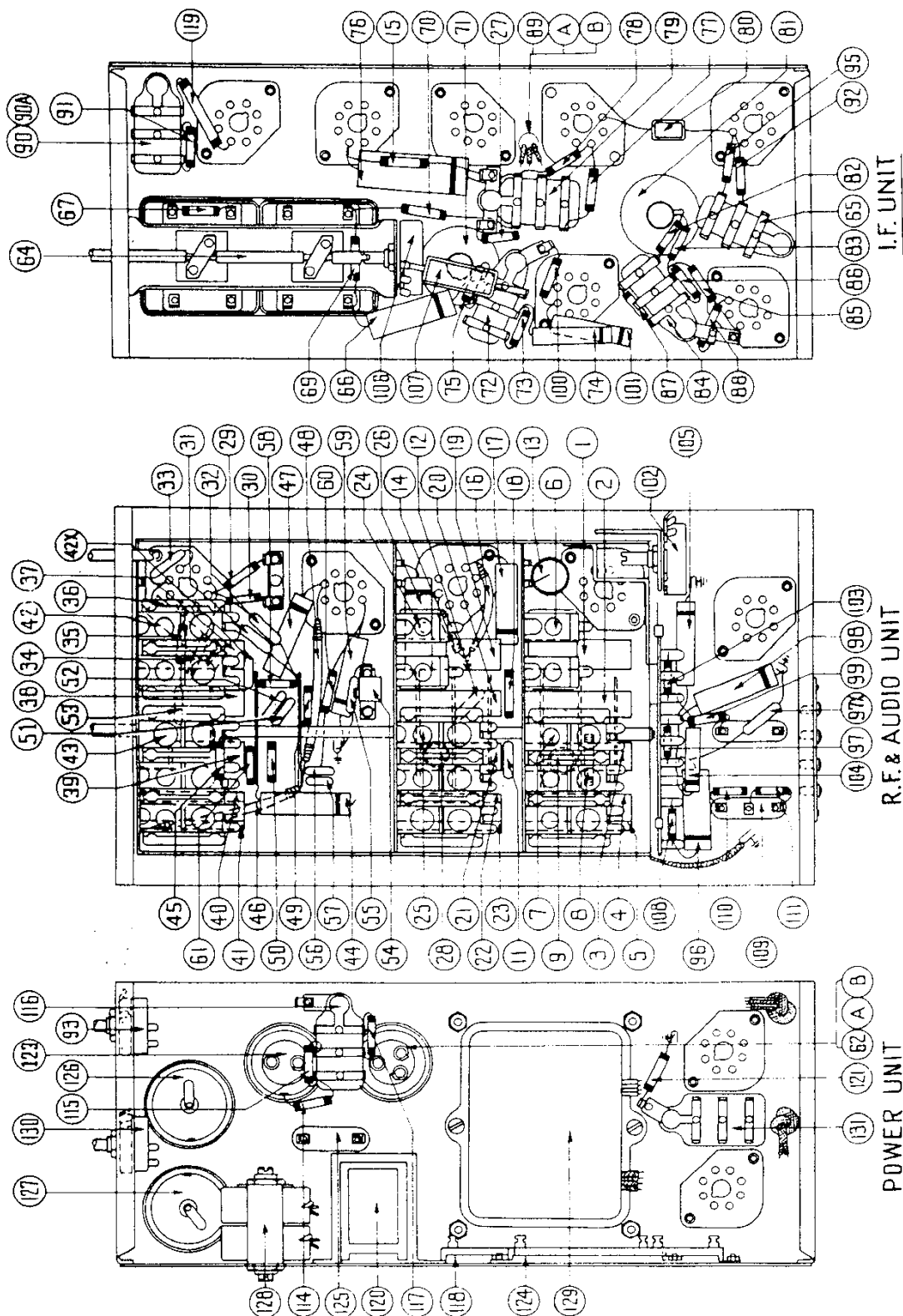


Fig. 3—Parts Locations— Underside of Chassis View

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MODEL 37-116(Codes 121,122)

Alignment

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 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 completes the necessary equipment for these adjustments. The locations of the various compensators are shown in Figs. 7 and 8.

NOTE—The receiver should be allowed to heat for at least 15 minutes before adjusting the compensators.

OUTPUT METER

The 025 Output Meter is connected to 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 proceed as follows:

1. Loosen the set screws on the shaft coupling of the tuning condenser. Then turn the tuning condenser until the plates are in the maximum capacity position. Now set the glowing beam indicator on the index line at the low frequency end of the broadcast band. With dial and tuning condenser in this position tighten set screws.

2. Turn the tuning condenser control until the indicator is on the first division from the index line.

3. With the dial in this position, loosen the shaft coupling set screws. Then turn the dial until the indicator is again on the index line. Tighten the set screws in this position.

NOTE: Be careful when turning the dial that the position of the tuning condenser is not disturbed.

INTERMEDIATE FREQUENCY CIRCUIT

Frequency 470 K. C.

1. Connect the 088 Signal Generator output lead in series with a .1 mfd. condenser to the grid of the 6L7G tube, and the ground connection of the output lead to the chassis.

2. Set the receiver volume control in the maximum position. Turn the fidelity-selectivity control clockwise; magnetic tuning control in the "off" position (counter-clockwise); range switch in position No. 1 (Broadcast); tuning condenser to approximately 580 K. C., and adjust the signal generator for 470 K. C.

3. Now adjust compensators (64B) 1st I.F. Sec., (64A) 1st I.F. Pri., (64D) 2nd I.F. Sec., (64C) 2nd I.F. Pri., (71S) 3rd I.F. Sec., and (71P) 3rd I.F. Pri. for maximum output.

4. Turn the fidelity-selectivity control to the expanded position (counter-clockwise). The intermediate frequency curve is now checked for symmetry as follows: Slowly shift the signal generator dial between 460 K. C. and 480 K. C. As the dial is turned two peaks will be indicated on the output meter—one about 465 K. C. and the other about 475 K. C. These peaks should give the same deflection or reading on the output meter. If they are unequal, compensator (71S) must be readjusted slightly to the right or left—depending on which peak gives the lowest reading—until they are equalized.

Each time the compensator is set in another position, rotate the signal generator dial through 460 to 480 K. C. and note the reading of each peak on the output meter. If the peaks become more equal when compensator (71S) is turned to the left, continue in this direction until they are equal. If they become more unequal turn the compensator to the right. Continue this adjustment in either direction until the peaks equalize.

5. After adjusting the third I.F. transformer, turn the fidelity-selectivity control clockwise (selective position) and adjust the attenuator of the signal generator for maximum output. Now tune the primary compensator (81P) of the magnetic tuning transformer for minimum output.

RADIO FREQUENCY CIRCUIT

Tuning Range 11.5-18.2 M. C.

1. The signal generator output lead with the .1 mfd. condenser, is connected to terminal No. 1 on the aerial input panel (rear of chassis) and the generator ground lead to terminal No. 3. Terminals 2 and 3 must be connected with the shorting link provided on the panel.

2. Set the magnetic tuning control in the "off" position, and the fidelity-selectivity control in the extreme clockwise position. Set the range switch in position No. 5 (11.5 to 18.2 M. C.). Turn the receiver and signal generator dials to 18 M. C. and adjust the generator attenuator for a readable indication on the output meter. Now adjust compensator (43D) 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 this signal. On some receivers, however, only one peak will be found, therefore, adjust compensator (43D) to this peak. If the above procedure is correctly performed, the image signal will be found at 17.060 M. C. by advancing the signal generator input, and turning the receiver dial to this frequency mark on the scale.

3. Leaving the signal generator and receiver dials at 18 M. C. the antenna and R. F. compensators (7D) and (25D) are now adjusted by connecting a variable condenser (Philco Part No. 45-2325) across the oscillator compensator (43D) 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 (7D) and (25D) are now adjusted for maximum output. After these adjustments, remove the external condenser and readjust compensator (43D) as given in paragraph 2 above.

4. Turn the signal generator and receiver dials to 12 M. C. and adjust compensators (43E), (25E) and (7E) for maximum output.

5. Readjust compensator (43D) as given in paragraph 2 above, for maximum output.

6. Readjust compensators (7D), (25D) and (43D) as given in paragraph 3 above. This readjustment is to correct any variation that the low frequency compensator may have caused in the high end of this range.

Tuning Range (7.35-11.6 M. C.)

1. Turn selector switch to Range 4. Set the signal generator and receiver dials to 11.0 M. C. Now adjust compensator (43B) for maximum output. Check for image at 10.06 M. C.

2. Leaving signal generator and receiver dial turned to 11.0 M. C., connect the external variable condenser across the oscillator compensator (43B) contact (third contact from left side of the receiver facing rear underside view of chassis) and ground. Tune the added condenser for maximum output, then adjust compensators (7B) and (25B) for maximum output. Remove the added condenser and adjust (43B) for maximum.

3. Turn the signal generator and receiver dials to 7.5 M. C. and adjust compensators (43C), (25C) and (7C) for maximum output.

4. Readjust compensator (43B) as given in paragraph 1 above.

5. Readjust compensators (7B), (25B) and (43B) as given in paragraph 2 above.

Tuning Range (4.7 to 7.4 M. C.)

1. Turn selector switch to range 3. Set the signal generator and receiver dials for 7.0 M. C. and adjust compensators (43), (25) and (7) for maximum output.

2. Rotate the signal generators and receiver dials to 5.0 M. C., then adjust compensators (43A), (25A) and (7A) for maximum output.

3. Readjust compensators (43), (25) and (7) on the 7.0 M. C. signal.

Tuning Range (1.58 to 4.75 M. C.)

1. Turn the selector switch to range 2. Set the signal generator and receiver dials to 4.5 M. C. Now adjust compensators (42B), (24A) and (6A) for maximum output.

2. Rotate the signal generator and receiver dials to 1.7 M. C. Compensator (42C) Osc. series is now adjusted for maximum output as follows:

First tune compensator (42C) for maximum output, then vary the tuning condenser of the receiver for maximum output about the 1.7 M.C. dial mark. Now turn compensator (42C) slightly to the right or left and vary the receiver tuning condenser for maximum output. If the output reading increases, turn compensator (42C) 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.

3. Readjust compensators (42B), (24A) and (6A) for maximum output as given in paragraph 1 above.

Tuning Range (538 to 1600 K. C.)

1. Set selector switch in range 1. Rotate the signal generator and receiver dial to 1500 K. C. Adjust compensators (42), (24) and (6) for maximum output.

2. Turn the signal generator and receiver dials to 580 K. C. Compensator (42A) Osc. series is now adjusted, using the same procedure as given in paragraph 2 under Tuning Range (1.58 to 4.75 M. C.). The only difference in the two adjustments is the frequency and compensator used.

3. Readjust compensator (42) on 1500 K. C. and compensators (24) and (6) on a 1400 K. C. signal.

ADJUSTMENT OF THE MAGNETIC TUNING CONTROL

1. Leave the selector switch in position 1. Set the fidelity-selectivity control in the "selective" position (clockwise). Magnetic tuning in the "out" position. Turn the signal generator and dial to 1000 K. C., then adjust the receiver tuning condenser for maximum output.

NOTE: It is very important to accurately adjust the receiver tuning condenser, also, adjust the signal generator attenuator to maximum output.

2. Turn the (Magnetic Tuning Control) to the "on" position (clockwise). Compensator (81S) Sec. of magnetic tuning transformer is now adjusted for maximum output. If the indicator of the output meter goes off scale, turn the volume control of the receiver toward the minimum position until a readable indication is obtained.

3. The above adjustment is now checked for accuracy, by turning the magnetic tuning control "off". When this is done there should be no change in the tone of the receiver signal. If a change of tone or a hiss develops, it indicates a shift in frequency and the adjustment must be made again.

MODEL 37-116(Codes 121,122)

PHILCO RADIO & TELEV. CORP.

Parts List

Replacement Parts—Model 37-116

Schem. No.	Description	Part No.	List Price	Schem. No.	Description	Part No.	List Price
1	Antenna Transformer (Range 1)	32-2108	\$0.80	119	Resistor (20000 ohms, 1 watt)	33-320439	\$0.20
2	Antenna Transformer (Range 2)	32-2146	.60	120	Choke (Filter)	32-7491	.95
3	Antenna Transformer (Range 3)	32-2183	.60	121	Resistor (18 ohms, 1/2 watt)	33-020439	.20
4	Antenna Transformer (Range 4)	32-2185	.70	122	Field Coil (W. Speaker)	32-7383	.20
5	Antenna Transformer (Range 5)	32-2175	.80	123	Electrolytic Capacitor (8 and 10 mfd.)	30-2123	1.60
6	Compensator (2 Gang)	31-6093	.40	124	Resistor (1000 and 4000 ohms)	33-32289	.50
7	Compensator (6 Sections)	31-6112	1.40	125	Choke (Filter)	32-7056	2.20
8	Resistor (51000 ohms, 1/2 watt)	33-351339	.20	126	Electrolytic Capacitor (8 mfd.)	30-2026	1.05
9	Condenser (.05 mfd. Tubular)	30-4020	.20	127	Electrolytic Capacitor (8 mfd.)	33-5176	.75
10	Tuning Condenser (Range 1)	31-1892	3.75	128	Potentiometer (Dual 60 ohms)	32-7688	7.50
11	Condenser (.40 mfd.)	30-1076	.20	129	Power Transformer 115 Volts, 60 Cycle	32-7689	.75
12	Condenser (.5 mfd.)	30-1077	.20	130	Power Transformer 220 Volts	32-7690	.75
13	Condenser (.05 mfd. Tubular)	30-4123	.20	131	Power and Tone Switch	42-1196	.40
14	Resistor (1 meg. ohm, 1/2 watt)	33-510339	.20	132	Condenser (.015 mfd. Dual Bakelite)	42-1217	2.00
15	Resistor (1000 ohms, 1/2 watt)	33-3016	.20	133	Range Switch (Osc)	42-1212	1.50
16	Resistor (400 ohms wirewound)	30-4444	.20	134	Range Switch (R. F.)	42-1211	1.50
17	Condenser (.05 mfd. Tubular)	33-310339	.20	135	Range Switch (Ant.)	34-2039	.15
18	Resistor (10000 ohms, 1/2 watt)	33-310339	.20	136	Pilot Lamp (Codes 121-122)	34-2039	.15
19	R. F. Transformer (Range 1)	32-2147	.60		Shadowmeter Lamp (Code 121 only)		
20	R. F. Transformer (Range 2)	32-2177	.60				
21	R. F. Transformer (Range 3)	32-2178	.70				
22	R. F. Transformer (Range 4)	32-2176	.60				
23	R. F. Transformer (Range 5)	31-6093	.40				
24	R. F. Compensator (2 Section)	31-6113	1.40				
25	R. F. Compensator (6 Section)	30-4123	.20				
26	Condenser (.05 mfd. Tubular)	33-351339	.20				
27	Resistor (51000 ohms, 1/2 watt)	30-4020	.20				
28	Condenser (.05 mfd. Tubular)	33-399339	.20				
29	Resistor (99000 ohms, 1/2 watt)	33-399339	.20				
30	Resistor (99000 ohms, 1/2 watt)	33-399339	.20				
31	Condenser (250 mfd. Mica)	30-1032	.25				
32	Condenser (250 mfd. Mica)	33-170339	.20				
33	Resistor (700 ohms Wirewound)	33-020339	.20				
34	Resistor (20 ohms, 1/2 watt)	33-020339	.20				
35	Resistor (20 ohms, 1/2 watt)	30-4481	.20				
36	Condenser (.02 mfd. Tubular)	32-2191	.80				
37	Oscillator Transformer (Range 1)	32-2194	.80				
38	Oscillator Transformer (Range 2)	32-2197	.80				
39	Oscillator Transformer (Range 3)	32-2198	.50				
40	Oscillator Transformer (Range 4)	32-2199	.50				
41	Oscillator Transformer (Range 5)	31-6124	1.00				
42	Compensator Oscillator (4 Section)	30-4123	.20				
43	Compensator Oscillator (6 Section)	33-280339	.20				
44	Condenser (.05 mfd. Tubular)	30-4020	.20				
45	Resistor (8000 ohms, 1/2 watt)	33-3023	.25				
46	Resistor (200 ohms Wirewound)	33-375339	.20				
47	Condenser (.02 mfd. Tubular)	33-320339	.20				
48	Resistor (100 ohms Wirewound)	30-1049	.25				
49	Resistor (75000 ohms, 1/2 watt)	30-1049	.25				
50	Resistor (75000 ohms, 1/2 watt)	32-2242	.25				
51	Condenser (250 mfd. Mica)	30-1047	.25				
52	Condenser (600 mfd. Mica)	30-1045	.20				
53	Condenser (600 mfd. Mica)	30-1067	.20				
54	Coil (Osc. Plate)	33-310339	.20				
55	Condenser (25 mfd. Mica)	30-4123	.20				
56	Condenser (55 mfd. Mica)	30-4123	.20				
57	Condenser (25 mfd. Mica)	30-4123	.20				
58	Resistor (10000 ohms, 1/2 watt)	33-320339	.20				
59	Condenser (.01 mfd. Tubular)	30-4123	.20				
60	Resistor (32000 ohms, 1/2 watt)	33-320339	.20				
61	Resistor (20000 ohms, 1/2 watt)	30-2169	1.00				
62	Electrolytic Capacitor (2, 3, 8 mfd.)	33-320339	.20				
63	Condenser (.05 mfd. Tubular—Code 121 only)	30-2169	1.00				
64	Expander Unit	38-7929	.35				
65	Condenser (1 mfd. Bakelite)	48898G	.35				
66	Condenser (.05 mfd. Tubular)	30-4123	.20				
67	Resistor (1000 ohms, 1/2 watt)	33-510339	.20				
68	Shadowmeter	45-2189	.20				
69	Resistor (1000 ohms, 1/2 watt)	33-210339	.20				
70	Resistor (1000 ohms, 1/2 watt)	33-210339	.20				
71	Third I. F. Transformer	32-2217	.25				
72	Condenser (110 mfd. Dual Bakelite)	80351DG	.25				
73	Resistor (51000 ohms, 1/2 watt)	33-351339	.20				
74	Condenser (.004 mfd. Tubular)	30-4185	.25				
75	Resistor (160,000 ohms, 1/2 watt)	33-416339	.20				
76	Condenser (.25 mfd. Tubular)	30-4134	.25				
77	Resistor (500 ohms, 1/2 watt)	33-150339	.20				
78	Resistor (4000 ohms, 1/2 watt)	33-240339	.20				
79	Condenser (.05 mfd. Dual Bakelite)	30-1081	.20				
80	Condenser (110 mfd. Mica)	30-1081	.20				
81	Magnet Tuning Transformer	32-2217	.25				
82	Resistor (490,000 ohms, 1/2 watt)	33-449339	.20				
83	Resistor (490,000 ohms, 1/2 watt)	33-449339	.20				
84	Condenser (110 mfd. Dual Bakelite)	80351DG	.25				
85	Resistor (490,000 ohms, 1/2 watt)	33-449339	.20				
86	Resistor (1 meg. ohm, 1/2 watt)	33-510339	.20				
87	Resistor (1 meg. ohm, 1/2 watt)	33-510339	.20				
88	Resistor (490,000 ohms, 1/2 watt)	33-449339	.20				
89	Condenser (Three section 1, 1, 8 mfd.)	30-4466	1.40				
90	Condenser (.01 mfd. Dual Bakelite)	39031DG	.30				
91	Resistor (20,000 ohms, 1/2 watt)	33-320339	.20				
92	Resistor (1.0 meg. 1/2 watt)	33-510339	.20				
93	Switch (Max. Tuning)	42-1216	.75				
94	Flood Lamp (Code 122)	34-2039	.20				
95	Resistor (490,000 ohms, 1/2 watt)	33-449339	.20				
96	Condenser (.05 mfd. Tubular)	30-4123	.20				
97	Resistor (51,000 ohms, 1/2 watt)	33-351339	.20				
98	Condenser (.05 mfd. Tubular)	30-1031	.20				
99	Resistor (99,000 ohms, 1/2 watt)	33-398339	.20				
100	Resistor (1 meg. 1/2 watt)	33-510339	.20				
101	Condenser (.01 mfd. Tubular)	30-4124	.25				
102	Volume Control	32-5158	1.00				
103	Resistor (70,000 ohms, 1/2 watt)	33-370339	.20				
104	Condenser (.008 mfd. Tubular)	30-4112	.20				
105	Condenser (.008 mfd. Tubular)	30-4445	.20				
106	Potentiometer (Expander unit)	32-5172	.20				
107	Condenser (100 mfd. Mica)	30-1035	.20				
108	Resistor (240,000 ohms, 1/2 watt)	33-424339	.20				
109	Input Auto Transformer	32-7057	3.50				
110	Resistor (25,000 ohms, 1/2 watt)	33-322339	.20				
111	Resistor (25,000 ohms, 1/2 watt)	33-325339	.20				
112	Output Transformer	32-7117	2.00				
113	Cone and Voice Coil	33-4664	2.25				
114	Resistor (330,000 ohms, 1/2 watt)	33-433339	.20				
115	Resistor (160,000 ohms, 1/2 watt)	33-416339	.20				
116	Condenser (.1 mfd. Dual Bakelite)	48898DG	.40				
117	Resistor (51,000 ohms, 1/2 watt)	33-351339	.20				
118	Resistor (14,000 ohms, 1/2 watt)	33-3291	.20				

Figures in black type indicate circled figures in Base View.

Prices Subject to Change without Notice.