

Fig. 2. Schematic Diagram Model 38-2, Code 121

Replacement Parts

Schem. No.	Description	Part No.	List Price
1	Antenna Transformer (Range 1)	32-2575	\$0.70
2	Antenna Transformer (Range 2)	32-2576	.70
3	Antenna Transformer (Range 3)	32-2573	.70
4	Compensator, Antenna (Range 3)	31-6160	.30
5	Condenser (.05μf tubular)	30-4519	.20
6	Condenser (.05μf, Bakelite)	3615DG	.40
7	Resistor (51,000 Ω, ½ Watt)	33-351339	.20
8	Tuning Condenser Assembly	31-2075	
9	Resistor (.100 Ω, ½ Watt)	33-110339	.20
10	Condenser (.05 μf, tubular)	30-4020	.20
11	R. F. Transformer (Range 1)	32-2379	.40
12	R. F. Transformer (Range 2)	32-2382	1.00
13	R. F. Transformer (Range 3)	32-2385	1.20
14	Condenser (5 μf, Mica)	30-1097	.20
15	Compensator (R. F. Range 3)	31-6212	
16	Condenser—Part of 6		
17	Condenser (.05 μf, Tubular)	30-4519	.20
18	Compensator Osc. (Range 1)	31-6212	
19	Osc. Transformer (Range 1)	32-2373	1.60
20	Osc. Transformer (Range 2)	32-2383	.70
21	Osc. Transformer (Range 3)	32-2386	.70
22	Compensator (Range 1 Series)	31-6151	.40
23	Condenser (1605 μf, Mica)	31-6201	.40
24	Resistor (200 Ω, ½ Watt)	33-170339	.20
25	Condenser (.01 μf, Tubular)	30-4479	.20
26	Condenser (110 μf, Mica)	30-1031	.20
27	Condenser (110 μf, Mica)	30-1031	.20
28	Resistor (99,000 Ω, ½ Watt)	33-399339	.20
29	Resistor (85 Ω, ½ Watt)	33-085339	.20
30	Resistor (99,000 Ω, ½ Watt)	33-399339	.20
31	Condenser (.3 μf, Bakelite)	6287DG	.40
32	Compensator (2 Sections)	31-6211	
33	Condenser (250 μf, Mica)	30-1032	.25
34	Resistor (32,000 Ω, ½ Watt)	33-332339	.20
35	Resistor (10,000 Ω, ½ Watt)	33-310339	.20
36	Condenser (4280 μf, Mica)	31-6202	.50
37	1st I. F. Transformer	32-2604	2.20
38	2nd I. F. Transformer	32-2362	3.30
39	Compensator	31-6203	.30
40	Condenser (110 μf, Mica)	30-1031	.20
41	Resistor (1.0 Meg., ½ Watt)	33-510339	.20
42	Resistor (1.0 Meg., ½ Watt)	33-510339	.20
43	Resistor (51,000 Ω, ½ Watt)	33-351339	.20
44	Resistor (330,000 Ω, ½ Watt)	33-433339	.20
45	Condenser (.1 μf, Tubular)	30-4455	.25
46	Condenser (.05, Bakelite)	3615SG	.35
47	Resistor (1000 Ω, ½ Watt)	33-210339	.20
48	Resistor (330,000 Ω, ½ Watt)	33-433339	.20
49	Resistor (2.0 Meg., ½ Watt)	33-520339	.20
50	Resistor (2.0 Meg., ½ Watt)	33-520339	.20
51	Resistor (1.0 Meg., ½ Watt)	33-510339	.20
52	Resistor (1.0 Meg., ½ Watt)	33-510339	.20
53	Condenser (110 μf, Mica)	30-1031	.20
54	Condenser (110 μf, Mica)	30-1031	.20
55	Resistor (490,000 Ω, ½ Watt)	33-449339	.20
56	Resistor (490,000 Ω, ½ Watt)	33-449339	.20
57	Condenser (.15 μf—15 μf, Bakelite)	6287DG	.40
58	Condenser (.006 μf, Tubular)	30-4445	.25
59	Resistor (25,000 Ω, ½ Watt)	33-325339	.20
60	Condenser (.1 μf, Tubular)	30-4455	.25
61	Condenser (.01 μf, Tubular)	30-4479	.20
62	Condenser (.015 μf, Tubular)	30-4226	.20
63	Resistor (51,000 Ω, ½ Watt)	33-351339	.20
64	Volume Control	33-5233	1.00
65	Resistor (1.0 Meg., ½ Watt)	33-510339	.20
66	Resistor (99,000 Ω, ½ Watt)	33-399339	.20
67	Resistor (240,000 Ω, ½ Watt)	33-424339	.20
68	Condenser (.006 μf, Tubular)	30-4467	.20
69	Resistor (490,000 Ω, ½ Watt)	33-449339	.20
70	Condenser (.1 μf, Tubular)	30-4499	.20
71	Condenser (.03 μf—0.3 μf, Bakelite)	8318DU	.40
72	Resistor (1.0 Meg., ½ Watt)	33-510339	.20
73	Audio Shorting Switch (Parts (6) and (16) Bulletin 273)		
74	Tone Control	42-1268	.75
75	Resistor (7,500 Ω — 9,000 Ω Wire Wound)	33-3320	.65
76	Electrolytic Condenser (4 μf—3 μf)	30-2243	1.50

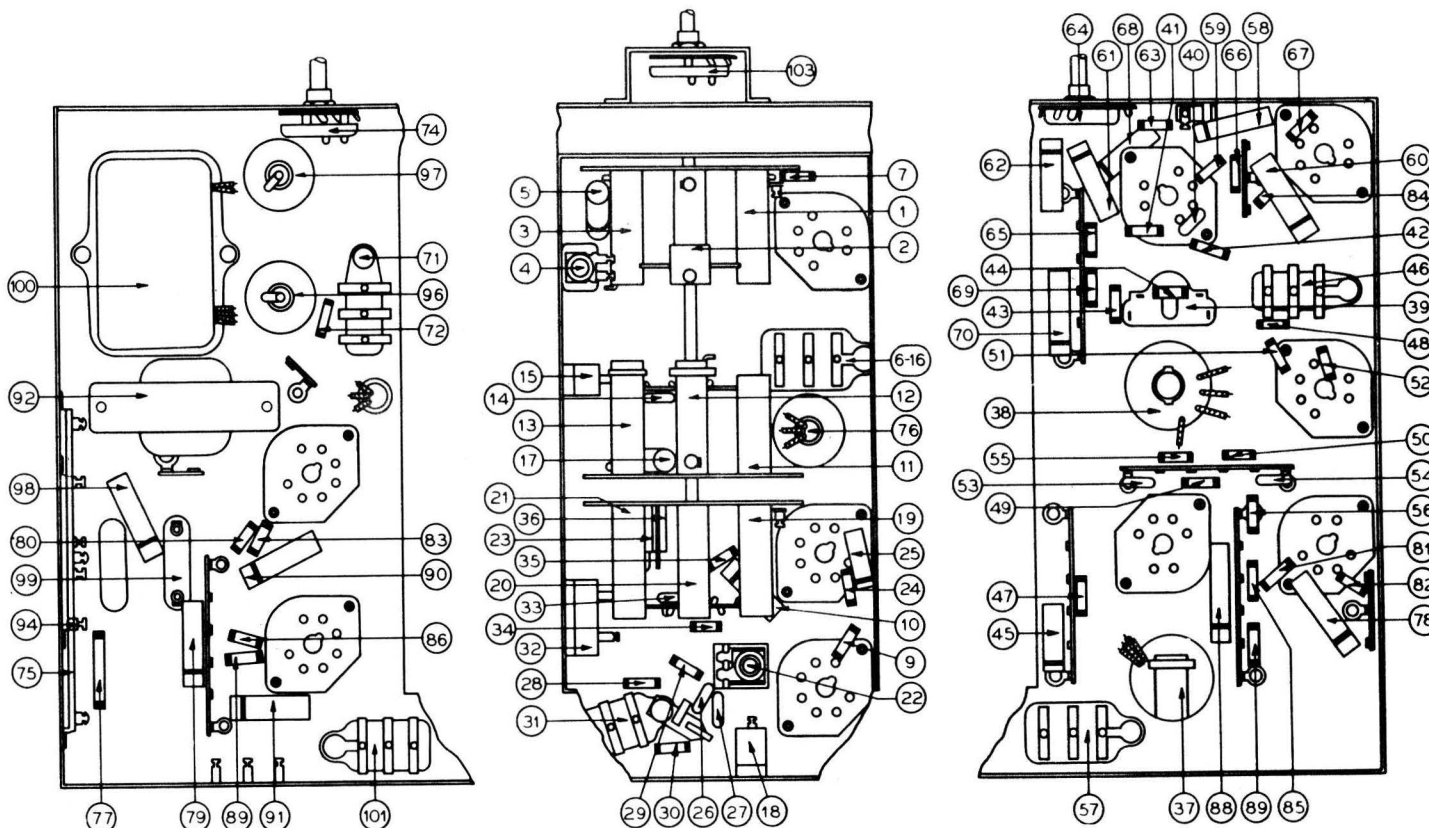


Fig. 3. Part Locations, Underside of Chassis

Schem. No.	Description	Part No.	List Price
77	Resistor (40,000 Ω, 1 Watt)	33-340439	\$0.20
78	Condenser (.03 μf, Tubular)	30-4449	.20
79	Condenser (.03 μf, Tubular)	30-4449	.20
80	Resistor (99,000 Ω, ½ Watt)	33-399339	.20
81	Resistor (490,000 Ω, ½ Watt)	33-449339	.20
82	Resistor (51,000 Ω, ½ Watt)	33-351339	.20
83	Resistor (330,000 Ω, ½ Watt)	33-433339	.20
84	Resistor (40,000 Ω, ½ Watt)	33-340339	.20
85	Resistor (5,000 Ω, ½ Watt)	33-250339	.20
86	Resistor (330,000 Ω, ½ Watt)	33-433339	.20
87	Resistor (45,000 Ω, ½ Watt)	33-445339	.20
88	Condenser (.03 μf, Tubular)	30-4449	.20
89	Resistor (99,000 Ω, ½ Watt)	33-399339	.20
90	Condenser (.006 μf, Tubular)	30-4445	.20
91	Condenser (.006 μf, Tubular)	30-4445	.20
92	Output Transformer	32-7754	1.50
93	Cone & Voice Coil Assembly	36-3801	1.40
94	Resistor (88—15—23 Ω)	33-3321	.40
95	Field & Pot. Assembly	36-3941	
96	Electrolytic Condenser	30-2211	1.00
97	Electrolytic Condenser	30-2211	1.00
98	Condenser (.25 μf, Tubular)	30-4446	.25
99	Choke	32-7115	1.80

Schem. No.	Description	Part No.	List Price
100	Power Transformer (115V — 50-60 Cycles)	32-7869	
	Power Transformer (115V, 25-40 cycles)	32-7870	
	Power Transformer (115/230V, 50-60 cycles)	32-7871	
101	Condenser (.015 μf—0.15 μf, Bakelite)	3793DG	\$0.40
102	A. F. C. Shorting Switch	45-2330	1.20
103	A. F. C. Switch	42-1269	
104	Flood Lamp Bulb	34-2064	.09
105	Pilot Lamp	34-2064	.09
106	Wave Switch	42-1362	3.00
	Automatic Tuning Mechanism (complete)	38-9145	
	Cable (Power)	L-2183	.40
	Cable (Speaker)	41-3329	.20
	Clip (R. F. Coils)	28-5002	.20
	Coupling (Tuning Condenser)	31-1961	.80
	Coupling (Range Switch & Mash)	38-8693	
	Knob (Range Switch)	27-4326	.10
	Knob (Tuning)	27-4330	.10
	Knob (Vernier)	27-4331	.10
	Knob (Tone, Volume)	27-4332	.10
	Mtg. Rubber (Chassis)	27-4564	.10
	Mtg. Rubber (Rear of R. F. Unit)	27-4197	.08

Schem. No.	Description	Part No.	List Price
	Mtg. Rubber (Front of R. F. Unit)	27-4581	
	Shield (R. F. Unit)	38-8969	
	Shield (Tube) (Square)	28-2726	\$0.10
	Shield (Tube) (Round)	8005	.10
	Shield Base (Square)	28-2725	.03
	Socket Assembly (Pilot Lamp)	38-9100	
	Socket (6 prong)	27-6086	.11
	Socket (7 prong) (6F6G tubes)	27-6057	.11
	Socket (7 prong)	27-6087	.11
	Speaker H-32	36-1299	
	Support (rear of R. F. Unit)	38-8923	
	Terminal Panel (Antenna)	38-8746	.15
<b>CABINET PARTS</b>			
	Bezel Assembly	38-8833	2.50
	Cover (Back of cabinet)	27-8864	1.00
<b>AUTOMATIC TUNING MECHANISM PARTS</b>			
	*Cover (handle)	28-5092	.50
	*Dial	27-6358	
	*Dial Screen Holder	31-2053	.75
	*Escutcheon Assembly (Station tabs)	45-2472	
	*These Automatic Tuning Mechanism Parts differ from those shown in Service Bulletin 273.		

The Genuine PHILCO Replacement Parts listed above must be used to obtain the Accurate Balanced Performance built into this Philco Model



**Alignment of Compensators**

**EQUIPMENT REQUIRED:** (1) Signal Generator, having a fundamental frequency range covering the intermediate and tuning frequencies of the receiver. Philco Model 077 Signal Generator which has a fundamental frequency range from 115 to 36000 K. C. is the correct instrument for this purpose; (2) Output Meter, Philco Model 026 Circuit Tester incorporates a sensitive output meter and is recommended; (3) Philco Fibre Handle Screw Driver, Part No. 27-7059 and Fibre Wrench, Part No. 3164.

**OUTPUT METER:** The 026 Output Meter is connected to the plate and cathode terminals of one of the 6F6G tubes. Adjust the meter to use the (0-30) volt scale and advance the attenuator control of the generator until a readable indication is noted on the output meter after signal is applied to stage being adjusted.

**DIAL CALIBRATION:** In order to adjust the compensators of 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 turn the dial until the glowing beam indicator is on the INDEX LINE at the low frequency end of Range 2. See Fig. 4. With dial and tuning condenser in this position, tighten set screws.
2. Turn the tuning condenser control until the indicator is on the 2.2 M. C. Mark.
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. Be careful when turning the dial that the position of the tuning condenser is not disturbed.

**INTERMEDIATE FREQUENCY CIRCUIT**

A. Set the receiver and signal generator controls as follows:

1. Range Switch (Broadcast)
2. Volume Control (Maximum)
3. Magnetic Tuning Switch "out"
4. Tone control & A. C. switch first position.
5. Signal generator dial 470 K. C.

B. Connect the signal generator output cable through a .1 mfd. condenser to the grid of the 6A8G Det. Osc. tube and connect the cableground to the receiver chassis. Now adjust the following compensators for maximum output (38A), (39), (37B), and (37A).

**RADIO FREQUENCY CIRCUIT**

1. Set the controls as given under "Intermediate Frequency Circuit" 1 to 4 and set the range switch, signal generator and receiver dials as given under the adjustments of each tuning range in the following procedure.

Connect the Signal Generator output cable into the "Med" jack of the generator panel and connect the other end through a .1 mfd. condenser to the "Red" terminal of the receiver aerial panel (rear of chassis). The ground connection of the cable should be connected to the "Blk" terminal.

2. Adjust the "R. F." compensators for maximum output as follows:

**Tuning Range: 530 to 1720 K. C.**

Range Switch Position	Signal Generator and Receiver Dials	Compensators in Order
1	1550 K. C.	(18), (8B) and (8A)
1	580 K. C.	(22) Roll gang. Note B
1	1550 K. C.	(18), (8B), (8A)

**Tuning Range 2.3 to 7.4 M. C.**

Range Switch Position	Signal Generator and Receiver Dial	Compensators in Order
2	6.0 M. C.	(32)

**Tuning Range 7.35 to 22.0 M. C.**

Range Switch Position	Signal Generator and Receiver Dial	Compensators in Order
3	20.0 M. C.	(32A), (15), (4) Roll Tuning condensers when adjusting (15) and (4). See Note B. Check image at 17.060. See Note A. (32A)
3	20.0 M. C.	



Fig. 4. Dial Calibration

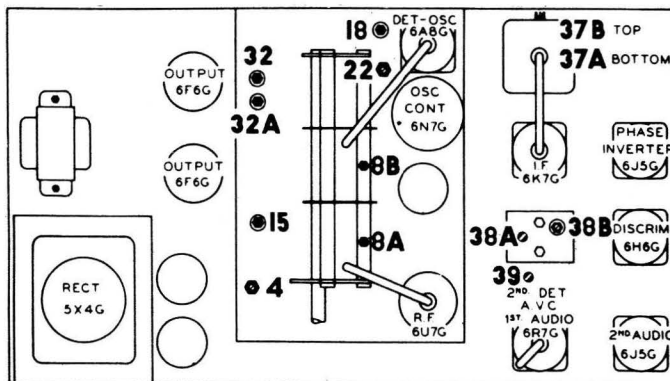


Fig. 5. Compensator Locations

**MAGNETIC TUNING CIRCUIT ADJUSTMENTS**

1. Set the Magnetic Tuning switch in the "out" position.
2. Turn the signal generator indicator to 1000 K. C. and adjust the "Attenuator" control for a weak signal.
3. Adjust volume control for a readable indication on the output meter.
4. Now tune the receiver dial for maximum output at 1000 K. C. The dial must be tuned very accurately to the 1000 K. C. signal in order to make the following adjustment correctly.
5. Turn the Magnetic Tuning switch "in" and adjust compensator (38B) for maximum output.

The above adjustments are now checked for accuracy as follows:

**FREQUENCY TEST**

With the 1000 K. C. signal tuned for maximum output turn the Magnetic Tuning control back and forth; that is, from the "out" to "in" position. The reading of the output meter should not change in either position. If the output meter reading changes, the above magnetic tuning circuit adjustments should be repeated.

A further check on the Magnetic Tuning adjustment is to very carefully tune in a broadcasting station and turn the switch from the "out" to the "in" position. With the switch in either position, the tone of the station being received should not change. If a change of tone or hiss develops repeat the above Magnetic Tuning Adjustments.

**SENSITIVITY TEST**

1. To check the magnetic tuning circuit for sensitivity, turn the magnetic tuning switch to the "out" position, and tune in the 1000 K. C. signal. Then adjust the "attenuator" control of the signal generator for a good audible signal. Approximately 20 volts on the output meter.

2. Now detune the signal (first above and then below) the 1000 K. C. mark to a point at which the signal is weakly heard. At each point turn the magnetic tuning control "on". When the control is turned on the signal should return to normal output strength. If the magnetic tuning circuit does not pull the signal into resonance, the compensator should be carefully readjusted.

**NOTE "A"**—To accurately adjust the high frequency oscillator compensator to the fundamental instead of the image signal, turn the oscillator compensator to the maximum capacity position (clockwise). From this position slowly turn the compensator counter-clockwise until a second maximum peak is obtained on the output meter. Adjust the compensator for maximum output using this second peak. The first peak from maximum capacity position of the compensator is the image signal and must not be used in adjusting the compensator.

If the above procedure is correctly performed, the image signal will be found (much weaker) by turning the receiver dial 940 K. C. below the frequency being used on any high frequency range.

**NOTE "B"**—When adjusting the low frequency compensator of Range One (Broadcast) or the antenna and R. F. compensators of the high frequency tuning ranges; the receiver Tuning Condenser must be adjusted (rolled) as follows: First tune the compensator for maximum output, then vary the tuning condenser of the receiver for maximum output about the frequency dial mark. Now turn the compensator slightly to the right or left and vary the receiver tuning condenser for maximum output. If the out reading increases, turn the compensator 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.

**PHILCO RADIO AND TELEVISION CORPORATION**

**Parts and Service Division**

**Philadelphia, Pa.**