Philco Radio & Television Corp.

	Model: 38-39	**Chassis:**	**Year:** Pre October 1937
	Power:	**Circuit:**	**IF:**
	Tubes:		
	Bands:		

Resources
Riders Volume 9 - CHANGES 9-3
Riders Volume 8 - PHILCO 8-75
Riders Volume 8 - PHILCO 8-76

G.E. D-51, D-52

A switch is provided in these chassis which is used to cut in and out a series audio coupling condenser between the plate of the 6B7 second detector-avc-af tube and the control grid of the 41 output tub. In most cases it has been found best to allow this switch to remain closed all the time; therefore, its usefulness can be increased by making the following changes:

Disconnect the two wires connected to the switch, S2, in the schematic found on *RCA page 6-9 in Rider's Volume VI*, and after soldering them together, tape them.

Connect a wire from the control grid cap connector of the 6B7 to one terminal of the switch. To the other terminal of S2, solder one side of a 0.0015-mf condenser and connect the other side of the condenser to the case of the receiver.

This procedure provides a variable tone control which is extremely effective in reducing the tube hiss on weak signals. When the incoming signal is strong, the condenser may be switched out of the circuit, which gives the best fidelity. This type of tone control is more effective in reducing noise than the usual type of control connected across the output of the 41 power amplifier.

Motorola 5T-71A

The schematic for this chassis is the same as that shown on *page 3-2 in Rider's Volume III and on page 1054 in the Rider Combination Manual*, with the following changes:

The 0.25-megohm and 1-megohm resistors in series in the plate circuit of the third 24 r-f tube and the 0.1-mf by-pass condenser from their junction, have been replaced with a choke having the same parts number as the one shown in the grid circuit of the 171A output tube. This choke is connected directly between the plate of the 24 tube and the +B lead.

The choke in the grid circuit of the output tube has been replaced with a 0.2-megohm resistor.

Mid-West 7-36

As was noted on *page 7-2 in Rider's Volume VII*, the tube complement of the late model of this receiver was changed, four metal tubes being employed. Below will be found the voltage data for both the early and the late models.

Early 7-36

Tube		Plate	Screen	Cathode	Supp.	Grid
58	R-F	235	80	[illegible]		AVC
56	Osc.	120	—	[illegible]		—
58	Mixer	215	80	[illegible]		AVC
58	1st I-F	190	80	[illegible]		AVC
55	2nd Det	35	0	0		
2A5	Output	220	245	[illegible]	0	17.5
80	Rect	240 volts from [illegible]				

Filament voltage, 2.5

Late 7-36

Tube		Plate	Screen	Supp.	Cathode
6K7	R-F	225	100	0	0
6L7	Mixer	225	100	3	3
6C5	Osc.	150	0	0	0
85	2nd Det-A.F.	30	0	0	0
		0			
42	Output	225	250	0	0
80	Rect	250 A.C.			

Filament voltage, 5.9 Volume control at maximum

Arvin Chassis 518

In order to correct the calibration of the dial, the following procedure is to be used:

Rotate the dial pointer to 550 kc. Press with the thumb on the dial face above its center. Rotate the tuning knob while preventing the dial pointer *from moving*. This will enable the position of the dial pointer to be varied with respect to the tuning condenser and makes it possible to readjust the calibration without removing the chassis from its cabinet.

For other servicing data see *pages 8-10, 8-12, and 8-13 in Rider's Volume VIII*.

G.E. B-40

The schematic of this receiver, which is the same as RCA M-34, is shown on *RCA page 3-14 of Rider's Volume III and page 1854 of the Rider Combination Manual*. The change explained below will increase the audio gain on medium and strong signals and also improve the A.V.C. action. The partial schematic shown herewith are the original and revised circuits.

Interchange the connections at the terminal board of the red and green wires from the volume control. This places the grid coupling condenser in the circuit of the movable arm of the volume control. Then disconnect the green A.V.C. lead from the terminal board. (This lead is connected to the second terminal from the end on the bottom side of the terminal strip.) Solder a small 2-megohm resistor to this lead and solder the other end of the resistor to the lug on the terminal board to which the green lead from the volume control is attached.

Lafayette M-31 (1935)

Please make this change on the lower schematic on *Lafayette page 8-6 in Rider's Volume VIII*: A connection should be made where the lead from B+ crosses the lead from the plate of the 58. A jumper appears there in the schematic.

Philco 602

The tap between the voice coil and the hum bucking coil should be grounded to minimize hum. See schematic on *page 7-83 of Rider's Volume VII*.

The 133-15 ohms resistor, No. 36, has a part number 33-3235 instead of 33-3225.

Beginning with Run No. 3, the tuning condenser assembly was changed to a vernier type. The part number of this condenser, scale, and pointer remain the same.

The 1-megohm resistor, No. 40 had a rating of ¼ watt. This should be replaced with a ½ watt resistor of the same resistance value; the Part No. 33-510344.

Philco 270

Please make a note in your Index to Rider's Manuals that the parts list of Model 70 applies to the schematic of Model 270, found on *page 1-28 of the revised edition of Rider's Volume I; on page *466-C of the early edition; and on page 1657 of the Rider Combination Manual.*

Philco 116

A 50-mmf. condenser has been added from the end terminal of condenser No. 63 (see schematic on *page 6-11 of Rider's Volume VI*) to ground. This addition was made to prevent oscillation.

As of Run No. 14, the 1-megohm resistor, No. 81, has been changed from Part No. 4409 to 33-510344.

A change has been made in the design of the volume control, No. 66 on the schematic, the old part number was 33-5022 and this has been replaced with Part No. 33-5153.

The Model K-17 speaker, Part No. 36-1025, is used on the new Model 116-B. The cone assembly number is 02996; the field coil and pot assembly is 36-3104.

Philco 116X

The resistance of the field coil, No. 95 on the schematic shown on *page 6-13 of Rider's Volume VI*, is shown as 1125 ohms. Change notes from the manufacturer state that this value is 1450 ohms.

The volume control No. 68 has been changed from Part No. 33-5110 to 33-5155.

Philco I-F Transformers

The i-f transformers of several models have been changed and are listed below. In each case the new part number of the first i-f transformer is 32-2296 and that of the second i-f transformer is 32-2298.

Model	*Parts List on Page*	*Rider's Volume*
37-33	7-15	VII
37-34	8-17	VIII
37-38*	7-17	VII
37-623	7-55	VII
37-624	8-23	VIII

The second i-f transformer has a tertiary winding which is connected in series with the screen-grid circuit of the 1D5G i-f tube.

*In order to prevent oscillation in the i-f circuit of Model 37-38, a tubular condenser, Part No. 30-4020, 0.05 mf, is connected from the screens of the 1C7G detector-oscillator and the 1D5G i-f tubes to ground.

Philco 37-9, Code 121

Run No. 2. Condenser No. 35 has been changed from 16 mf to 18 mf, Part No. 30-2194.

To improve the operation of the i-f circuit, a 0.1-mf condenser, Part No. 30-4455, has been connected from the red lead of the primary of the i-f transformer, No. 53, to ground.

To prevent distortion at minimum volume, the green-white wire connecting the center lug of the volume control, No. 67, to the automatic tuning dial a-f switch, No. 93, must be kept clear of the compensator, No. 54, and the diode circuit of the 6Q7G.

Run No. 3. Condensers 70 and 70A have been replaced by 8- and 10-mf condensers respectively, Part No. 30-2201. The 8-mf condenser, No. 72, has been replaced by a 18-mf condenser, Part No. 30-2200.

The schematic of this receiver will be found on *page 8-11 of Rider's Volume VIII*. Note that the dial calibration notes of Model 37-10, see *page 8-15*, can be used for calibrating the dial of Model 37-9.

Philco 38-39

In order to reduce maximum volume buzz, the following parts were changed: the 11.7-ohm resistor, No. 22, was changed to 12.3 ohms; the 2-megohm resistor, No. 30, was changed to 4 megohms; and the 160,000-ohm resistor, No. 27, was changed to 240,000 ohms. See schematic on *page 8-75 of Rider's Volume VIII*.

Philco 38-4, 38-5

When either of these models are operated on 25 cycles, a power transformer, Part No. 32-7598 must be employed. Also a 0.1-mf condenser must be connected across the speaker field coil, No. 65.

In order to reduce station rumble in the Model 38-4, the following parts were changed: the 0.01-mf condenser, No. 36, was changed to 0.0015 mf. and the 40,000-ohm resistor, No. 38, changed to 32,000 ohms.

In order to reduce frequency drift at the high-frequency end of the broadcast tuning range, in Run No. 3 the compensator No. 16, 1500 kc, Part No. 31-6196, was replaced with Part No. 31-6206, and two condensers, Part No. 30-1097, are connected in parallel with the new condenser. The range 1 oscillator transformer, No. 15, was changed from Part No. 32-2631 to 32-2894.

In Run No. 4 of 38-4 and Run No. 2 of 38-5, the 70,000-ohm resistor, No. 19, was changed to 51,000 ohms to improve the performance of the oscillator circuit on the short-wave bands. For schematic see *page 8-61 in Rider's Volume VIII.*

Philco 38-7, Codes 121,124

Run No. 2 To provide uniform performance of the oscillator circuit, a 20-ohm resistor was connected in series with the cathode of the 6A8G detector-oscillator tube. See schematic on *page 8-65 of Rider's Volume VIII.*

In order to reduce bass response, the following parts were changed in the Code 124 chassis:

Condenser, No. 24, was changed from 0.01 mf to 0.001 mf, Part No. 30-4201. Resistor, No. 32, was changed from 51,000 ohms to 40,000 ohms, Part No. 33-340339. Condenser, No. 38, was changed from 0.006 mf to 0.01 mf, Part No. 30-4479.

Run No. 3. To reduce frequency drift further at the high-frequency end of the broadcast range, the compensator, No. 7A, was replaced with Part No. 31-6206. Also a new thermal compensator was connected in parallel with compensator, No. 7A and mounted near resistor No. 12. The resistor is mounted in the chassis with a mounting clamp and an asbestos insulator. The resistor must be mounted like this or else the thermal compensator will not function properly.

Run No. 4. The thermal compensator added to the chassis in Run No. 3, was replaced by two fixed condensers, Part No. 30-1097.

Run No. 5. The 20-ohm resistor added in Run No. 2 was removed.

The part numbers of Nos. 26, 39, and 48 found in the list of parts on *page 8-66* are correct for Models 38-8 and 38-9. The correct part numbers for Model 38-7, both codes, follow:

No. 26, Volume Control, Part No. 33-5225; No. 39, Tone Control, Part No. 42-1347; and No. 48, Range Switch, Part No. 42-1339.

Philco 38-8, Code 121

Run No. 2. In order to increase the sensitivity of the shadowmeter, the following changes were made: Resistor, No. 12, was changed from 10,000 ohms to 13,000 ohms, Part No. 33-313639 and condenser, No. 17, was changed from 0.05 mf to 0.25 mf, Part No. 30-4134. See schematic on *page 8-65 of Rider's Volume VIII.*

Run No. 3. To provide uniform performance of the oscillator circuit, a 20-ohm resistor was connected in series with the cathode of the 6A8G detector-oscillator tube.

Run No. 4. In order to increase the a-f response in the high frequencies, condenser No. 40, was changed from 0.008 mf to 0.004 mf, Part No. 30-4456.

Run No. 5. The 20-ohm resistor added in Run No. 3, was removed.

Philco 610

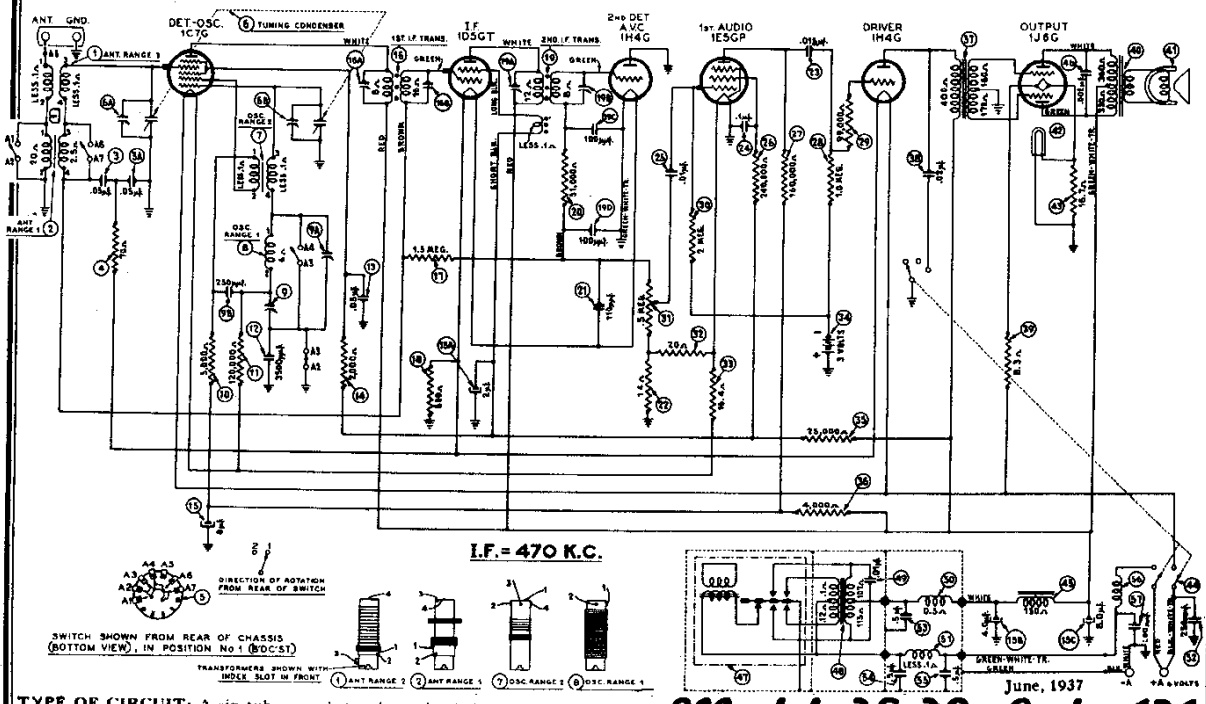
We have been advised by the manufacturer that the following changes should be made in the schematic numbers of this model found on *page 6-19 of Rider's Volume VI:* the schematic number 54 should be changed to 41; No. 41 to 56; No. 56 to 54; No. 39 to 40; and No. 40 to 39. This will make the numbers of the wiring diagram, the base view, and the parts list agree.

Beginning with Run No. 15, the oscillator circuit, of the second type of this chassis (*see page 7-87 of Rider's Volume VII*) was changed to improve the oscillator action at 6.0 mc. Resistors No. 17 and No. 18 (51,000 ohms and 25,000 ohms) were removed. A 32,000-ohm resistor (Part No. 33-332133) was added from the switch terminal side of condenser No. 7 in the antenna circuit to ground. A 20-ohm resistor, Part No. 33-020133 was connected between the 6A7 cathode and ground.

MODEL 38-39, Code 121

PHILCO RADIO & TELEV. CORP.

Schematic, Voltage Trimmers, Chassis



June, 1937

Model 38-39, Code 121

TYPE OF CIRCUIT: A six tube superheterodyne circuit is used in this model having two tuning ranges covering standard and short wave broadcasts. The receiver is operated by a 6 volt storage battery and uses a synchronous vibrator for supplying "B" voltage. The vibrator unit is mounted in the cabinet and connected to the receiver chassis through a cable and plug.

Additional design features included in this model are: Automatic Volume Control: two point tone control: Class "B" audio output circuit.

The receiver is designed to operate from a standard "I" type aerial, Philco Part No. 45-2428. This aerial system should be used to obtain the maximum performance from the receiver. Instructions for installing the aerial are provided in each kit.

POWER SUPPLY: 6 volt storage battery Philco Type 116K
Current Drain 1.4 Amps.

INTERMEDIATE FREQUENCY: 470 K. C.

FREQUENCY RANGES: Range one 530 to 1720 K. C.
Range two 5.7 to 18.0 M. C.

OUTPUT: 1.5 watts.

SPEAKERS USED: Philco Type KR26 in "T" Cabinet.
Philco Type HR20 in "K" Cabinet.
Philco Type HR20 in "X" Cabinet.

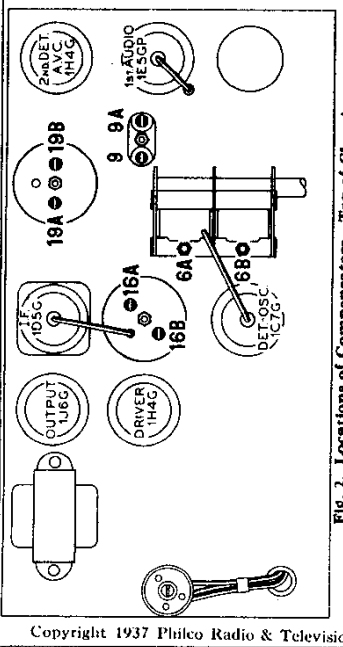


Fig. 2. Locations of Compensators—Top of Chassis

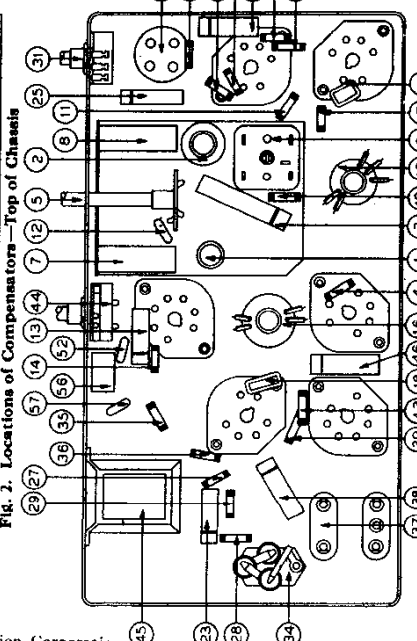


Fig. 3. Part locations, Underside of Chassis

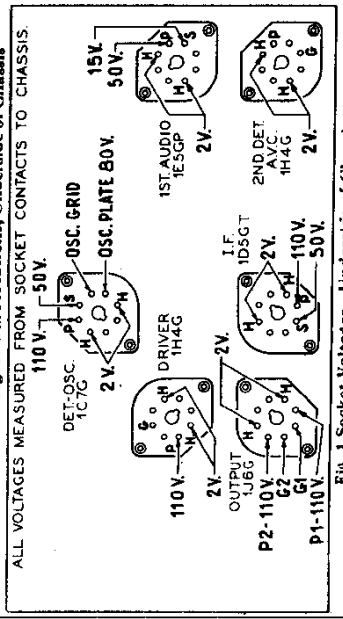


Fig. 1 Socket Voltages—Underside of Chassis

The voltages indicated by arrows were measured with a Philco 026 Circuit Tester which contains a sensitive voltmeter. Volume Control minimum—Range Switch in broadcast position—Storage Battery fully charged.

MODEL 38-39, Code 121
Alignment, Parts

PHILCO RADIO & TELEV. CORP.

Alignment of Compensators

EQUIPMENT REQUIRED: (1) Signal Generator, having a fundamental frequency range covering the tuning and intermediate frequencies of the receiver. Philco Model, 077 A. C. operated, Signal Generator or Model 088 Battery operated, Signal Generator, which have the required frequency range are the correct instruments 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 terminals of the 1J6G tube. 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.

DIAL CALIBRATION: In order to adjust the receiver correctly the dial must be aligned to track properly with the tuning condenser. To adjust the dial proceed as follows:

1. Turn the tuning condenser to maximum capacity position (plate fully meshed).

2. Holding the tuning condenser in this position, loosen the dial clamp; then turn the dial until the indicator is centered on the middle index line (See Fig. 2). Tighten clamp in this position.

INTERMEDIATE FREQUENCY CIRCUIT

Insert the signal generator shielded output lead into the "Med" jack on the panel of the generator. Connect the other end of the output lead through a .1 mfd. condenser to the grid of the 1C7G Det. Osc. tube and the ground connection of the signal generator to the chassis. Set the signal generator and receiver controls and adjust the I. F. compensators as follows:

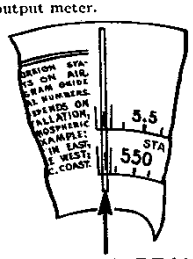
1. Set Signal Generator at 470 K. C. Turn "Multiplier" Control to 1000 and adjust the attenuator for a readable indication on the output meter.

2. Turn the receiver dial to 580 K. C.

3. Receiver Volume Control maximum.

4. Range Switch Broadcast Position.

5. Adjust compensators (19B), (19A), (16B) and (16A) for maximum output. If the output meter goes off scale when adjusting the compensators retard signal generator "attenuator."



GLOWING BEAM INDICATOR

Fig. 2. Dial Calibration

RADIO FREQUENCY CIRCUIT

Tuning Range: 5.7 to 18 M. C.

1. With one end of the shielded lead of the signal generator output cable in the "Med" jack, connect the other end through a 400 ohm carbon resistor to the "Ant." terminal of the aerial panel of the receiver. The output lead ground must be connected to the "Gnd." terminal or to the chassis.

2. Set the controls and adjust the R. F. compensators as follows:

Volume Control	Range Switch	Signal Generator and Receiver Dial	Compensators in Order
Max.	2	18 M. C.	(6B) See Note A

Tuning Range: 530 to 1720 K. C.

Remove the 400 ohm resistor from the generator output cable and replace with a 200 mmfd. condenser. Then set the controls and adjust the compensators as follows:

Volume Control	Range Switch	Signal Generator and Receiver Dial	Compensators in Order
Max.	1	1500 K. C.	(9A), (6A)
Max.	1	580 K. C.	(9)
Max.	1	1500 K. C.	(9A), (6A)

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 followed, the image signal will be found (much weaker) by turning the receiver dial 940 K. C. below the frequency being used on the high frequency range.

MODEL 38-39T CABINET

Bezel Frame Assembly	40-6124	.90
Bezel Gasket	27-8311	.01
Bezel Glass	27-8298	.05
Bezel Ring	28-5078	.55
Speaker KR-26	36-1353	10.00

Replacement Parts

Schem. No.	Description	Part No.	List Price
1	Transformer, Antenna Short Wave	32-2558	$0.70
2	Transformer, Antenna Broadcast	32-2667	1.60
3	Condenser (.05 μf—.05 μf)	30-4489	.35
4	Resistor (70 Ω, ½ Watt)	33-070339	.20
5	Wave Switch	42-1358	.75
6	Tuning Condenser Assembly	31-2065	
7	Transformer, Oscillator Short Wave	32-2668	1.25
8	Transformer, Oscillator Broadcast	32-2559	.50
9	Padder	31-6188	.50
10	Resistor (5000 Ω, ½ Watt)	33-250339	.20
11	Resistor (120,000 Ω, ½ Watt)	33-412339	.20
12	Condenser, Mica (3500 μμf)	30-1004	.40
13	Condenser, (.05 μf)	30-4444	.20
14	Resistor (2000 Ω, ½ Watt)	33-220339	.20
15	Electrolytic Condenser	30-2226	
16	I. F. Transformer, First	32-2664	2.20
17	Resistor (1.5 megohms, ½ Watt)	33-515339	.20
18	Resistor (600 Ω, ½ Watt)	33-1235	.20
19	I. F. Transformer, Second	32-2666	2.20
20	Resistor (51,000 Ω, ½ Watt)	33-351339	.20
21	Condenser, Mica (110 μμf)	30-1031	.20
22	Resistor (11.7 Ω, ½ Watt)	33-1264	.20
23	Condenser (.015 μf)	30-4515	.20
24	Condenser (.1 μf)	30-4122	.20
25	Condenser (.01 μf)	30-4479	.20
26	Resistor (240,000 Ω, ½ Watt)	33-424339	.20
27	Resistor (240,000 Ω, ½ Watt)	33-424339	.20
28	Resistor (1 megohm, ½ Watt)	33-510339	.20
29	Resistor (99,000 Ω, ½ Watt)	33-399339	.20
30	Resistor (2.0 megohms, ½ Watt)	33-520339	.20
31	Volume Control (.5 megohm)	33-5234	1.00
32	Resistor (20 Ω, ½ Watt)	33-1265	.20
33	Resistor (16.4 Ω, ½ Watt)	33-1266	.20
34	Bias Cell Assembly	38-7275	.20
35	Resistor (25,000 Ω, ½ Watt)	33-325339	.20
36	Resistor (4,000 Ω, ½ Watt)	33-240239	.20
37	Transformer—Push-pull Input	32-7637	2.00
38	Condenser (.02 μf)	30-4215	.20
39	Resistor (8.3 Ω, ½ Watt)	33-1268	.20
40	Transformer—Output	32-7758	
41	Cone & Voice Coil Assembly (KR26)	36-3540	1.00
	Cone & Voice Coil Assembly (HR20)	36-3797	
42	Dial Lamp	34-2150	.22
43	Resistor (16.7 Ω, ½ Watt)	33-1267	.20
44	Power Switch Tone Control	42-1363	1.00
45	Choke	32-7543	1.35
46	Condenser, (0.002 μf tubular)	30-4177	.25
47	Vibrator	41-3222	5.25
48	Power Transformer	32-7682	2.20
49	Condenser (.01 μf)	30-4381	.25
50	Choke ("B")	32-1932	.25
51	Choke ("A")	32-1954	.40
52	Condenser, Mica .250 μμf	5858	.25
53	Condenser, (.5 μf)	30-4296	.60
54	Condenser, (.5 μf)	30-4296	.60
55	Condenser, (.5 μf)	30-4296	.60
56	Choke	32-2247	
57	Condenser, (600 μμf) mica	30-1049	.25

MODEL 38-39 (Code 121)

Cable (Vibrator Unit)	41-3328	
Cable (Battery)	41-3204	
Cable (Speaker)	41-3326	.40
Clip (R. F. Coils)	28-5002	.02
Dial	27-5333	
Dial Washer	27-4598	.03
Dial Clamp	28-5089	.03
Knob (Tuning)	27-4330	.10
Knob (Tuning Vernier)	27-4331	.10
Knob (Tone & Volume)	27-4332	
Mtg. Panel (Bias Cell)	38-9104	
Mtg. Corner (Chassis)	27-4564	.10
Mtg. Rubber (Vibrator) (Small)	27-4307	
Mtg. Rubber (Vibrator, Assem.) (large)	27-4585	
Mtg. Rubber (Vibrator) (Square)	27-4287	
Mtg. Sleeve (Vibrator)	28-6521	
Mtg. Screw (Vibrator)	W-614	
Shield (Vibrator)	38-9922	
Shield (Tube)	28-2726	$0.10
Screen	27-5320	.75
Socket (Pilot Lamp)	38-9009	
Socket (6 prong)	27-6086	.11
Socket (7 prong)	27-6087	.11
Socket (Vibrator)	27-6036	
Terminal Panel (Ant.)	38-8849	.10
Vernier Drive	31-2072	1.90
Vibrator Socket Assembly	41-3327	

MODEL 38-39X and K CABINETS

Speaker H. R. 20	36-1351	
Bezel Frame Assembly	40-6128	1.05
Bezel Basket	27-8313	.01
Bezel Glass	27-8300	.06
Bezel Ring	28-5080	.70
Battery	116R	

PRICES SUBJECT TO CHANGE WITHOUT NOTICE