

## Electrical Specifications

Model 38-2, Code 121, is an eleven tube, A. C. operated super-heterodyne receiver with three tuning ranges covering the frequencies listed below, and employs the PHILCO AUTOMATIC TUNING DIAL MECHANISM. Additional design features incorporated in this receiver are: Magnetic Tuning Control on the broadcast tuning range; Automatic Volume Control; Bass Compensation; Special Push-pull Pentode Audio Output circuit designed for the reduction of harmonic distortion; Four Point Tone Control; R. F. Circuit completely shielded and contained in one unit; all aligning compensators accessible from the top of the chassis.

### POWER SUPPLY:

Voltage	Frequency Cycles	Power Consumption
115	50 to 60	140 Watts
115	25 to 40	140 Watts
115/230	50 to 60	140 Watts

Different transformers are required for operation on the voltages and frequencies listed above. The part numbers for these transformers are listed on page 3. A special transformer for operation on either 115 or 230 volt—50 to 60 cycles A. C. power circuit can be obtained. This transformer is provided with a plug and socket for selection of either voltage rating. Place the plug with arrow pointing toward voltage being used.

### FREQUENCY RANGES: Three.

- Range one—530 to 1720 K. C.
- Range two—2.3 to 7.4 M. C.
- Range three—7.35 to 22.0 M. C.

### INTERMEDIATE FREQUENCY: 470 K. C.

### AUDIO OUTPUT: 7 Watts.

**PHILCO TUBES USED:** 6U7G, R. F. Amplifier; 6A8G, Det. Osc.; 6N7G Osc. Control; 6K7G, I. F. Amplifier; 6H6G, Magnetic Tuning Discriminator; 6R7G, 2nd Det., A.V.C., 1st. Audio; 6J5G, Audio Phase Inverter; 6J5G, 2nd Audio; Two 6F6G, Output; and 5X4G, Rectifier.

### TONE CONTROL: Four Point.

- A. Brilliant—for speech.
- B. Bright—for normal reception of music.
- C. Mellow—first noise-reducing stage.
- D. Deep—Noise-reducing for distant reception.

### PHILCO SPEAKER: H32.

### CABINET: Type XX.

## Aerial Connections

To obtain the full advantage of the sensitivity of this receiver the Philco High Efficiency Aerial supplied with the instrument must be used. Connect the aerial as follows:

The aerial terminal panel located on the rear of the chassis, contains three terminals marked "Red," "Blk" and "Gnd". Connect the red and black wires of the aerial lead in (Transmission Line) to the "Red" and "Blk" terminals respectively. Connect the "Gnd" terminal to a good ground source. If a temporary aerial is used, connect it to the "Red" terminal.

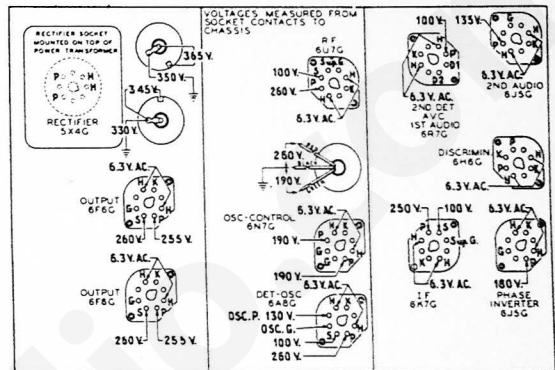


Fig. 1. Underside View of Chassis showing Socket Voltages

The voltages indicated by the arrows were measured with a Philco 026 Circuit Tester, which contains a sensitive voltmeter. Line voltage 115 A. C.—Volume control minimum—Dial set at point where no signal is present—Range Switch in broadcast position.

## Automatic Tuning Mechanism Service Data

Service data and a complete parts list for the Automatic Tuning Mechanism of this receiver will be found in Service Bulletin 273. When referring to bulletin 273, use the dial parts list for Model 37-10 as the same parts are used on Model 38-2. There are four automatic dial parts, however, which differ from those shown in bulletin 273. These parts are marked with an asterisk on page 3 of this bulletin.

## Service Notes

For reference between illustrations, Parts List, and for replacement of parts, the various diagrams in this bulletin are marked with "circled numbers" indicating a particular part.

Physical views of the R. F. transformers are shown on page 2. Each transformer is marked with the corresponding schematic diagram circled number. The connections of the R. F. transformer are numbered to indicate the connecting points in the circuit diagram which are correspondingly marked.

The colors of the I. F. transformer leads are marked on the schematic diagram.

Range switch lugs are marked with a letter and number—example (A2)—indicating the connecting point in the circuit diagram. Each range switch section is marked with a letter indicating the position of the section from the rear of the chassis. Section "A" is used in the oscillator circuit. Section "B" the "RF" circuit, and Section "C" the antenna circuit.

The colors of the connections on the power transformer and speaker unit are also marked on the schematic diagram.



# Replacement Parts

Schem. No.	Description	Part No.	List Price
1	Antenna Transformer (Range 1)	32-2575	
2	Antenna Transformer (Range 2)	32-2576	\$0.70
3	Antenna Transformer (Range 3)	32-2577	.70
4	Compensator Antenna (Range 1)	30-4140	.70
5	Compensator Antenna (Range 2)	30-4141	.70
6	Compensator Antenna (Range 3)	30-4142	.70
7	Resistor (5,000 Ω, 1/2 Watt)	33-51339	.40
8	Resistor (10,000 Ω, 1/2 Watt)	33-51340	.40
9	Tuning Condenser Assembly	31-7073	.20
10	Resistor (100 Ω, 1/4 Watt)	30-10338	.20
11	Spring Tension (Range 1)	32-2579	.40
12	R. F. Transformer (Range 1)	32-2580	.40
13	R. F. Transformer (Range 2)	32-2581	1.00
14	R. F. Transformer (Range 3)	32-2582	1.00
15	Compensator (Part of 6)	30-4143	.20
16	Compensator (Part of 6)	30-4144	.20
17	Compensator (Part of 6)	30-4145	.20
18	Compensator (Part of 6)	30-4146	.20
19	Compensator (Part of 6)	30-4147	.20
20	Compensator (Part of 6)	30-4148	.20
21	Compensator (Part of 6)	30-4149	.20
22	Compensator (Part of 6)	30-4150	.20
23	Compensator (Part of 6)	30-4151	.20
24	Compensator (Part of 6)	30-4152	.20
25	Resistor (100 Ω, 1/4 Watt)	30-10339	.20
26	Resistor (100 Ω, 1/4 Watt)	30-10340	.20
27	Resistor (100 Ω, 1/4 Watt)	30-10341	.20
28	Resistor (100 Ω, 1/4 Watt)	30-10342	.20
29	Resistor (100 Ω, 1/4 Watt)	30-10343	.20
30	Resistor (100 Ω, 1/4 Watt)	30-10344	.20
31	Resistor (100 Ω, 1/4 Watt)	30-10345	.20
32	Resistor (100 Ω, 1/4 Watt)	30-10346	.20
33	Resistor (100 Ω, 1/4 Watt)	30-10347	.20
34	Resistor (100 Ω, 1/4 Watt)	30-10348	.20
35	Resistor (100 Ω, 1/4 Watt)	30-10349	.20
36	Resistor (100 Ω, 1/4 Watt)	30-10350	.20
37	Resistor (100 Ω, 1/4 Watt)	30-10351	.20
38	Resistor (100 Ω, 1/4 Watt)	30-10352	.20
39	Resistor (100 Ω, 1/4 Watt)	30-10353	.20
40	Resistor (100 Ω, 1/4 Watt)	30-10354	.20
41	Resistor (100 Ω, 1/4 Watt)	30-10355	.20
42	Resistor (100 Ω, 1/4 Watt)	30-10356	.20
43	Resistor (100 Ω, 1/4 Watt)	30-10357	.20
44	Resistor (100 Ω, 1/4 Watt)	30-10358	.20
45	Resistor (100 Ω, 1/4 Watt)	30-10359	.20
46	Resistor (100 Ω, 1/4 Watt)	30-10360	.20
47	Resistor (100 Ω, 1/4 Watt)	30-10361	.20
48	Resistor (100 Ω, 1/4 Watt)	30-10362	.20
49	Resistor (100 Ω, 1/4 Watt)	30-10363	.20
50	Resistor (100 Ω, 1/4 Watt)	30-10364	.20
51	Resistor (100 Ω, 1/4 Watt)	30-10365	.20
52	Resistor (100 Ω, 1/4 Watt)	30-10366	.20
53	Resistor (100 Ω, 1/4 Watt)	30-10367	.20
54	Resistor (100 Ω, 1/4 Watt)	30-10368	.20
55	Resistor (100 Ω, 1/4 Watt)	30-10369	.20
56	Resistor (100 Ω, 1/4 Watt)	30-10370	.20
57	Resistor (100 Ω, 1/4 Watt)	30-10371	.20
58	Resistor (100 Ω, 1/4 Watt)	30-10372	.20
59	Resistor (100 Ω, 1/4 Watt)	30-10373	.20
60	Resistor (100 Ω, 1/4 Watt)	30-10374	.20
61	Resistor (100 Ω, 1/4 Watt)	30-10375	.20
62	Resistor (100 Ω, 1/4 Watt)	30-10376	.20
63	Resistor (100 Ω, 1/4 Watt)	30-10377	.20
64	Resistor (100 Ω, 1/4 Watt)	30-10378	.20
65	Resistor (100 Ω, 1/4 Watt)	30-10379	.20
66	Resistor (100 Ω, 1/4 Watt)	30-10380	.20
67	Resistor (100 Ω, 1/4 Watt)	30-10381	.20
68	Resistor (100 Ω, 1/4 Watt)	30-10382	.20
69	Resistor (100 Ω, 1/4 Watt)	30-10383	.20
70	Resistor (100 Ω, 1/4 Watt)	30-10384	.20
71	Resistor (100 Ω, 1/4 Watt)	30-10385	.20
72	Resistor (100 Ω, 1/4 Watt)	30-10386	.20
73	Resistor (100 Ω, 1/4 Watt)	30-10387	.20
74	Resistor (100 Ω, 1/4 Watt)	30-10388	.20
75	Resistor (100 Ω, 1/4 Watt)	30-10389	.20
76	Resistor (100 Ω, 1/4 Watt)	30-10390	.20
77	Resistor (100 Ω, 1/4 Watt)	30-10391	.20
78	Resistor (100 Ω, 1/4 Watt)	30-10392	.20

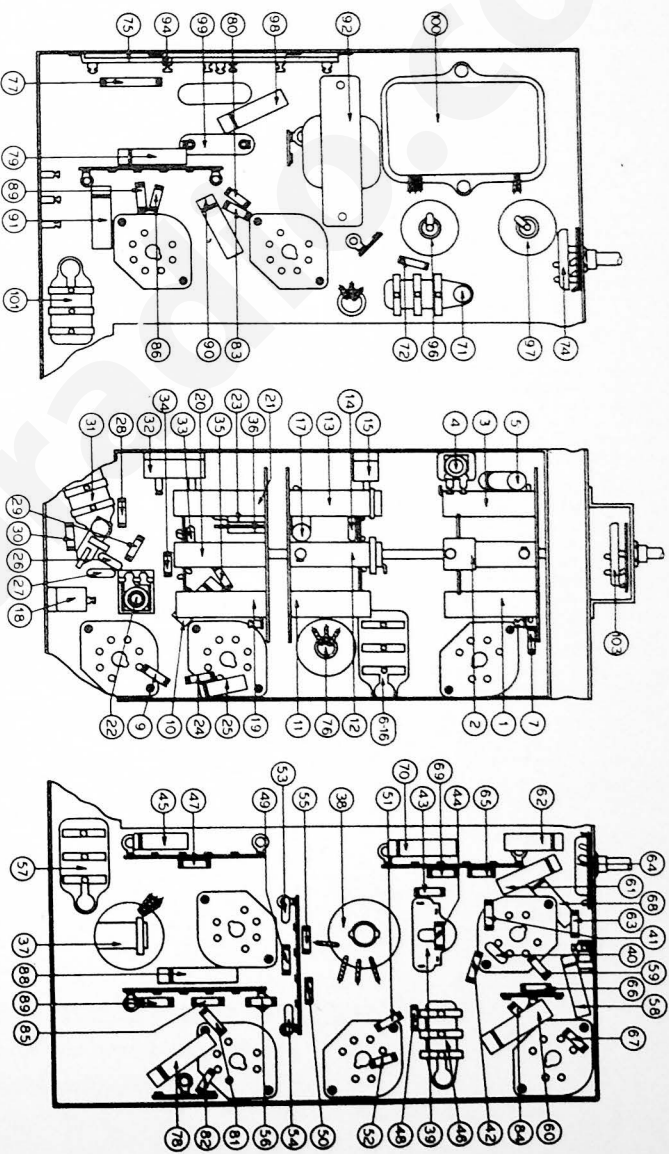


Fig. 3. Part Locations, Underside of Chassis

Schem. No.	Description	Part No.	List Price
74	Resistor (40,000 Ω, 1 Watt)	33-540439	\$0.20
75	Resistor (40,000 Ω, 1 Watt)	33-540440	.20
76	Resistor (40,000 Ω, 1 Watt)	33-540441	.20
77	Resistor (40,000 Ω, 1 Watt)	33-540442	.20
78	Resistor (40,000 Ω, 1 Watt)	33-540443	.20
100	Power Transformer (115V - 50-60 2ø, 2ø, 2ø)	32-7871	\$0.40
101	Condenser (.015 μf - .015 μf, Bakelite)	33-51339	.40
102	A. F. C. Shorting Switch	33-51340	.40
103	Food Lamp Bulb	33-51341	.40
104	Wave Switch	33-51342	.40
105	Wave Switch	33-51343	.40
106	Wave Switch	33-51344	.40
107	Wave Switch	33-51345	.40
108	Wave Switch	33-51346	.40
109	Wave Switch	33-51347	.40
110	Wave Switch	33-51348	.40
111	Wave Switch	33-51349	.40
112	Wave Switch	33-51350	.40
113	Wave Switch	33-51351	.40
114	Wave Switch	33-51352	.40
115	Wave Switch	33-51353	.40
116	Wave Switch	33-51354	.40
117	Wave Switch	33-51355	.40
118	Wave Switch	33-51356	.40
119	Wave Switch	33-51357	.40
120	Wave Switch	33-51358	.40
121	Wave Switch	33-51359	.40
122	Wave Switch	33-51360	.40
123	Wave Switch	33-51361	.40
124	Wave Switch	33-51362	.40
125	Wave Switch	33-51363	.40
126	Wave Switch	33-51364	.40
127	Wave Switch	33-51365	.40
128	Wave Switch	33-51366	.40
129	Wave Switch	33-51367	.40
130	Wave Switch	33-51368	.40
131	Wave Switch	33-51369	.40
132	Wave Switch	33-51370	.40
133	Wave Switch	33-51371	.40
134	Wave Switch	33-51372	.40
135	Wave Switch	33-51373	.40
136	Wave Switch	33-51374	.40
137	Wave Switch	33-51375	.40
138	Wave Switch	33-51376	.40
139	Wave Switch	33-51377	.40
140	Wave Switch	33-51378	.40
141	Wave Switch	33-51379	.40
142	Wave Switch	33-51380	.40
143	Wave Switch	33-51381	.40
144	Wave Switch	33-51382	.40
145	Wave Switch	33-51383	.40
146	Wave Switch	33-51384	.40
147	Wave Switch	33-51385	.40
148	Wave Switch	33-51386	.40
149	Wave Switch	33-51387	.40
150	Wave Switch	33-51388	.40

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

Schem. No.	Description	Part No.	List Price
37-4351	Mfg. Rubber (Front of R. F. Unit)	37-4351	\$0.10
37-4352	Mfg. Rubber (Rear of R. F. Unit)	37-4352	.10
37-4353	Shield (Tubes) (Square)	37-4353	.08
37-4354	Shield (Tubes) (Round)	37-4354	.08
37-4355	Shield Base (Square)	37-4355	.11
37-4356	Socket Assembly (Pilot Lamp)	37-4356	.11
37-4357	Socket (9 prong)	37-4357	.11
37-4358	Socket (7 prong)	37-4358	.11
37-4359	Socket (6 prong)	37-4359	.11
37-4360	Speaker H-32	37-4360	.15
37-4361	Support (Rear of R. F. Unit)	37-4361	.15
37-4362	Terminal Panel (Antenna)	37-4362	.15
37-4363	Terminal Panel (Antenna)	37-4363	.15
37-4364	Terminal Panel (Antenna)	37-4364	.15
37-4365	Terminal Panel (Antenna)	37-4365	.15
37-4366	Terminal Panel (Antenna)	37-4366	.15
37-4367	Terminal Panel (Antenna)	37-4367	.15
37-4368	Terminal Panel (Antenna)	37-4368	.15
37-4369	Terminal Panel (Antenna)	37-4369	.15
37-4370	Terminal Panel (Antenna)	37-4370	.15
37-4371	Terminal Panel (Antenna)	37-4371	.15
37-4372	Terminal Panel (Antenna)	37-4372	.15
37-4373	Terminal Panel (Antenna)	37-4373	.15
37-4374	Terminal Panel (Antenna)	37-4374	.15
37-4375	Terminal Panel (Antenna)	37-4375	.15
37-4376	Terminal Panel (Antenna)	37-4376	.15
37-4377	Terminal Panel (Antenna)	37-4377	.15
37-4378	Terminal Panel (Antenna)	37-4378	.15
37-4379	Terminal Panel (Antenna)	37-4379	.15
37-4380	Terminal Panel (Antenna)	37-4380	.15
37-4381	Terminal Panel (Antenna)	37-4381	.15
37-4382	Terminal Panel (Antenna)	37-4382	.15
37-4383	Terminal Panel (Antenna)	37-4383	.15
37-4384	Terminal Panel (Antenna)	37-4384	.15
37-4385	Terminal Panel (Antenna)	37-4385	.15
37-4386	Terminal Panel (Antenna)	37-4386	.15
37-4387	Terminal Panel (Antenna)	37-4387	.15
37-4388	Terminal Panel (Antenna)	37-4388	.15
37-4389	Terminal Panel (Antenna)	37-4389	.15
37-4390	Terminal Panel (Antenna)	37-4390	.15
37-4391	Terminal Panel (Antenna)	37-4391	.15
37-4392	Terminal Panel (Antenna)	37-4392	.15
37-4393	Terminal Panel (Antenna)	37-4393	.15
37-4394	Terminal Panel (Antenna)	37-4394	.15
37-4395	Terminal Panel (Antenna)	37-4395	.15
37-4396	Terminal Panel (Antenna)	37-4396	.15
37-4397	Terminal Panel (Antenna)	37-4397	.15
37-4398	Terminal Panel (Antenna)	37-4398	.15
37-4399	Terminal Panel (Antenna)	37-4399	.15
37-4400	Terminal Panel (Antenna)	37-4400	.15

\*Power (handle) \*Pilot \*Dual Screen Holder \*Selection Assembly (Station label) \*These Automatic Tuning Mechanism Parts differ from those shown in Service Bulletin 270.

# 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:

- 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.
- Turn the tuning condenser control until the indicator is on the 2.2 M. C. Mark.
- 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:

- Range Switch (Broadcast)
- Volume Control (Maximum)
- Magnetic Tuning Switch "out"
- Tone control & A. C. switch first position.
- 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 cable ground 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
1	1550 K. C.
1	580 K. C.
1	1550 K. C.

Compensators in Order
(18), (8B) and (8A)
(22) Roll gang. Note B
(18), (8B), (8A)

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

Range Switch Position	Signal Generator and Receiver Dial
2	6.0 M. C.

Compensators in Order
(32)

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

Range Switch Position	Signal Generator and Receiver Dial
3	20.0 M. C.

Compensators in Order
(32A), (15), (4)

Roll Tuning condensers when adjusting (15) and (4). See Note B. Check image at 17.060. See Note A. (32A)



Fig. 4. Dial Calibration

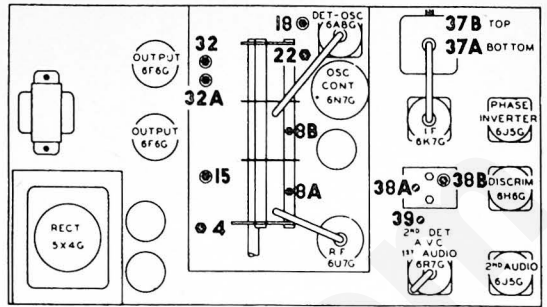


Fig. 5. Compensator Locations

### MAGNETIC TUNING CIRCUIT ADJUSTMENTS

- Set the Magnetic Tuning switch in the "out" position.
- Turn the signal generator indicator to 1000 K. C. and adjust the "Attenuator" control for a weak signal.
- Adjust volume control for a readable indication on the output meter.
- 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.
- 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 output 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.

Printed in U. S. A.

## Model 38-2, Code 121—Run No. 2

### Intermediate Frequency Circuit Changes

#### I. F. Compensator Adjustments

RUN 2—Beginning with run 2, the I. F. circuit has been changed to use permeability tuned I. F. transformers. These changes and the locations of the Compensators are shown on the Schematic Diagram below. The schematic part numbers differ from those in Bulletin 294.

The wires from each circuit, however, on this diagram have been marked indicating the connecting points in the circuit diagram of Bulletin 294.

The Compensator adjustments are as follows:

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

1. Range Switch (Broadcast Position).
2. Volume Control (Maximum).
3. Magnetic Tuning Switch "Off."
4. Tone Control First Position.
5. Signal Generator Dial 470 K. C.

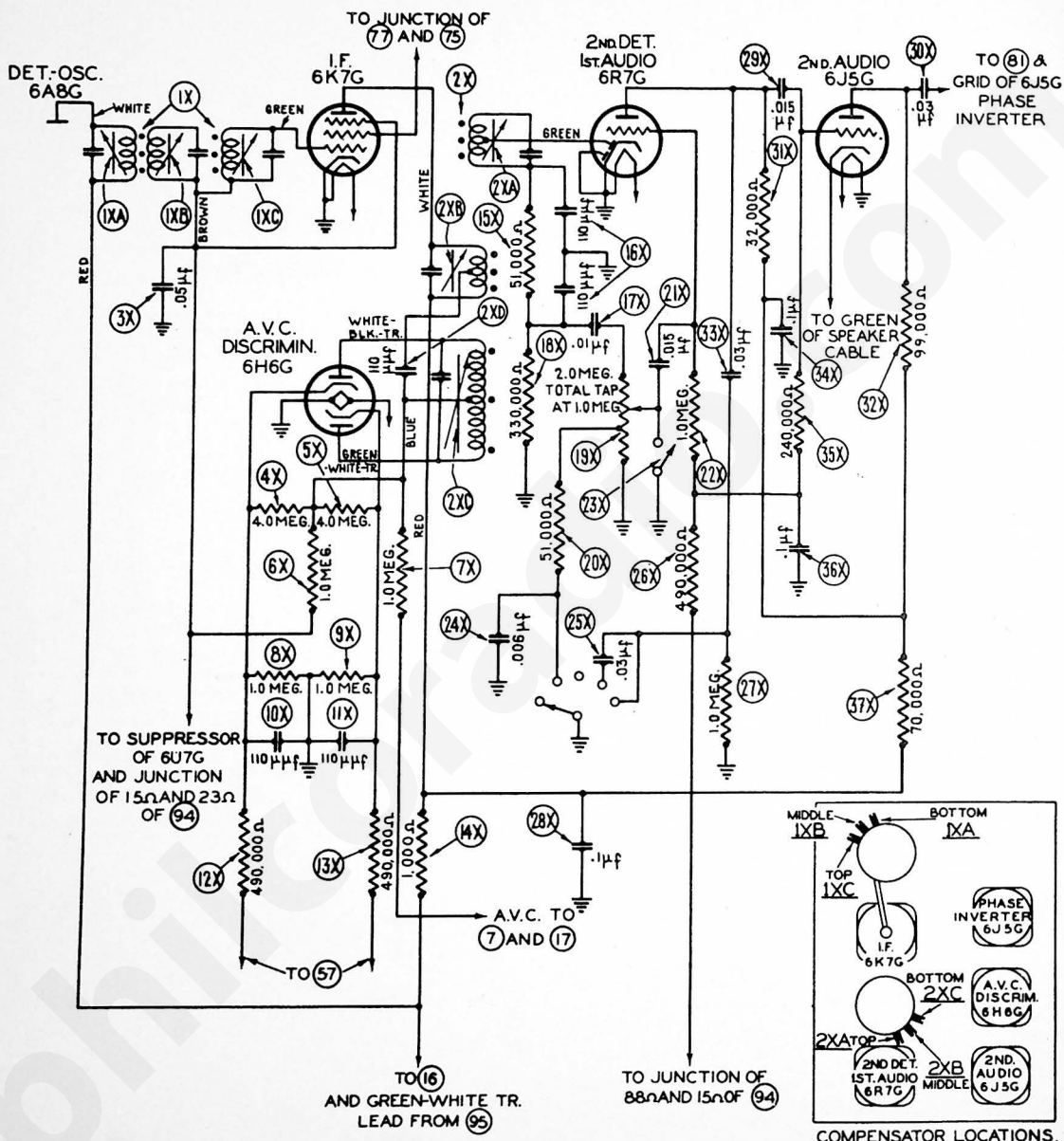
B. Connect the signal generator output cable through a .1 mfd. condenser to the grid of the 6A8G Det. Osc. tube and connect the cableground to the receiver chassis. Set the generator "attenuator" for maximum output. Adjust the I. F. Compensators as follows:

1. Turn compensator (1XB) in until the output meter reading decreases almost to zero.
2. Now adjust the compensator (1XA) and (1XC) for maximum output; then readjust (1XB) for maximum output.
3. Turn compensator (2XC) in about three turns; then adjust compensators (2XA) and (2XB) for maximum output. The adjustment procedure for compensator (2XC) is the same as that given in the "Magnetic Tuning Circuit Adjustments" of Bulletin 294.

#### Replacement Parts

Schem. No.	Description	Part No.	List Price
<b>1X</b>	1st I. F. Transformer.....	32-2741	\$3.50
<b>2X</b>	2nd I. F. Transformer.....	32-2742	4.00
<b>3X</b>	Condenser .05 mfd. bakelite.....	3615 SG	.35
<b>4X</b>	Resistor 4.0 meg., ½ watt.....	33-540339	.20
<b>5X</b>	Resistor 4.0 meg., ½ watt.....	33-540339	.20
<b>6X</b>	Resistor 1.0 meg., ½ watt.....	33-510339	.20
<b>7X</b>	Resistor 1.0 meg., ½ watt.....	33-510339	.20
<b>8X</b>	Resistor 1.0 meg., ½ watt.....	33-510339	.20
<b>9X</b>	Resistor 1.0 meg., ½ watt.....	33-510339	.20
<b>10X</b>	Condenser 110 mmfd. mica.....	30-1031	.20
<b>11X</b>	Condenser 110 mmfd. mica.....	30-1031	.20
<b>12X</b>	Resistor 490,000 ohms, ½ watt.....	33-449339	.20
<b>13X</b>	Resistor 490,000 ohms, ½ watt.....	33-449339	.20
<b>14X</b>	Resistor 1000 ohms, ½ watt.....	33-210339	.20
<b>15X</b>	Resistor 51,000 ohms, ½ watt.....	33-351339	.20
<b>16X</b>	Condenser 110-110 mmfd. bakelite.....	8035 DG	.25
<b>17X</b>	Condenser .01 mfd. tubular.....	30-4479	.20
<b>18X</b>	Resistor 330,000 ohms, ½ watt.....	33-433339	.20
<b>19X</b>	Volume Control.....	33-5233	1.00
<b>20X</b>	Resistor 51,000 ohms, ½ watt.....	33-351339	.20
<b>21X</b>	Condenser .015 mfd. tubular.....	30-4226	.20
<b>22X</b>	Resistor 1.0 meg., ½ watt.....	33-510339	.20
<b>23X</b>	Audio shorting switch.....	See Bul. No. 294	
<b>24X</b>	Condenser .006 mfd. tubular.....	30-4467	.20
<b>25X</b>	Condenser .03 mfd., .03 mfd. bakelite.....	8318 DU	.40
<b>26X</b>	Resistor 490,000 ohms, ½ watt.....	33-449339	.20
<b>27X</b>	Resistor 1.0 meg., ½ watt.....	33-510339	.20
<b>28X</b>	Condenser .1 mfd. tubular.....	30-4455	.25
<b>29X</b>	Condenser .015 mfd. tubular.....	30-4226	.20
<b>30X</b>	Condenser .03 mfd. tubular.....	30-4449	.20
<b>31X</b>	Resistor 32,000 ohms, ½ watt.....	33-332339	.20
<b>32X</b>	Resistor 99,000 ohms, ½ watt.....	33-399339	.20
<b>33X</b>	Condenser Part of 25X		
<b>34X</b>	Condenser 1 mfd. tubular.....	30-4455	.25
<b>35X</b>	Resistor 240,000 ohms, ½ watt.....	33-424339	.20
<b>36X</b>	Condenser .1 mfd. tubular.....	30-4499	.20
<b>37X</b>	Resistor 70,000 ohms, ½ watt.....	33-370339	.20





**SCHEMATIC DIAGRAM SHOWING RUN No. 2 CHANGES IN MODEL 38-2 CODE 121. CONNECTING POINTS LABELED IN RESPECT TO SCHEMATIC MODEL 38-2 IN BULLETIN No. 294.**