PHILCO . . . . . Models 38-7, 38-8, 38-9

SERVICE BULLETIN No. 280 for members of RADIO MANUFACTURERS SERVICE

A PHILCO Service Plan

Models 38-7, Code 121, 124; 38-8, Code 121; 38-9, Code 121

Electrical Specifications

Models 38-7, 38-8 and 38-9 receivers employ a six tube A. C. operated superheterodyne circuit with such features as: Two tuning ranges covering standard and short wave broadcasts; Philco foreign tuning system; automatic volume control; bass compensation; tone control, and pentode audio output circuit.

The same circuit is used for each receiver. The features, however such as, tuning mechanism, speakers and cabinets differ in each model.

Model 38-7 in addition to the features given above employs the Philco automatic tuning mechanism with cone-centric tuning. The chassis of this model is built into a console cabinet type XX, Table Cabinet Type "T" and is designated code 121. The same chassis built into a type "CS" cabinet is identified as code 124.

Model 38-8 differs from the 38-7 in that a manually operated tuning mechanism with shadowmeter tuning is used. This receiver is built into a type "X" cabinet with a type "HS" dynamic speaker.

Model 38-9 is identically the same as model 38-8 with the exception that the shadowmeter is not used, and that the speaker and cabinet types differ. This model is assembled in a type "T" cabinet with dynamic speaker type "S7" and a "K" type cabinet using a dynamic speaker type "HS".

POWER SUPPLY:

Voltage	Frequency	Consumption
115	50 to 60 cycles	70 Watts
115	25 to 40 cycles	70 Watts
115/220V	50 to 60 cycles	70 Watts

Different transformers are required for operation on the frequencies listed above. These are shown on the Parts List.

INTERMEDIATE FREQUENCY: 470 K. C.

TUNING RANGES: Two Range one 530 to 1720 K. C.
Range two 5.7 to 18.2 M. C.

UNDISTORTED OUTPUT: 3 watts.

PHILCO TUBES USED: Six—one 6A8G, det. osc.; one 6K7G, I. F. amp.; one 6J5G, 2nd Det. A. V. C.; one 6K5G 1st audio; one 6F6G, output; one 5Y4G rectifier.

TONE CONTROL: Three positions with A. C. switch attached.

CABINETS AND SPEAKERS:	Cabinet	Speaker
38-7 Code 121	XX	H31
38-7 Code 121	T	K41
38-7 Code 124	CS	K41
38-8 Code 121	X	HS
38-9 Code 121	K	HS
38-9 Code 121	T	S7
38-9 Code 121	X	HS

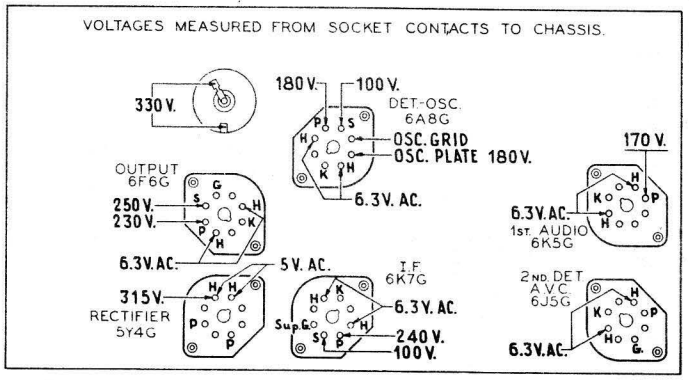

Fig. 1—Socket Voltages—Underside of Chassis View

The Voltages indicated by arrows were measured with a **Philco 026 Circuit Tester** which contains a sensitive voltmeter. Volume Control at minimum, range switch in broadcast position, line voltage 115 A. C.

SERVICE DATA FOR AUTOMATIC TUNING MECHANISM—MODEL 7

Complete information for setting the stations on the cone-centric tuning mechanism of Model 38-7 is covered in the instruction form no. (39-5533) which is supplied with each set.

A few major assemblies of the automatic cone-centric tuning mechanism are listed on page 3 of this bulletin. A complete list of replacement parts, however, and detailed service data for the automatic mechanism, will be found in bulletin 282.

SHADOW METER ADJUSTMENT
Model 38-8

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

1. Move the shadow meter coil backwards and forwards, until the opposite edges of the shadow are ⅛ of an inch from each end of the shadow screen, measuring along the bottom edge of the screen. Adjustment of the shadow meter light bracket may be necessary for perfect centering.

2. Remove the rectifier tube from its socket, and rotate the shadowmeter coil until shadow reaches minimum width. This width should not exceed 3/32 of an inch.

3. Replace the 5Y4G rectifier tube in its socket. The shadow should then widen to not more than 3/16 inch or less than 1/16 inch from each side of the screen measuring along the bottom edge. If these limits are not obtained readjust the shadow meter as given in paragraphs 1 and 2 again.

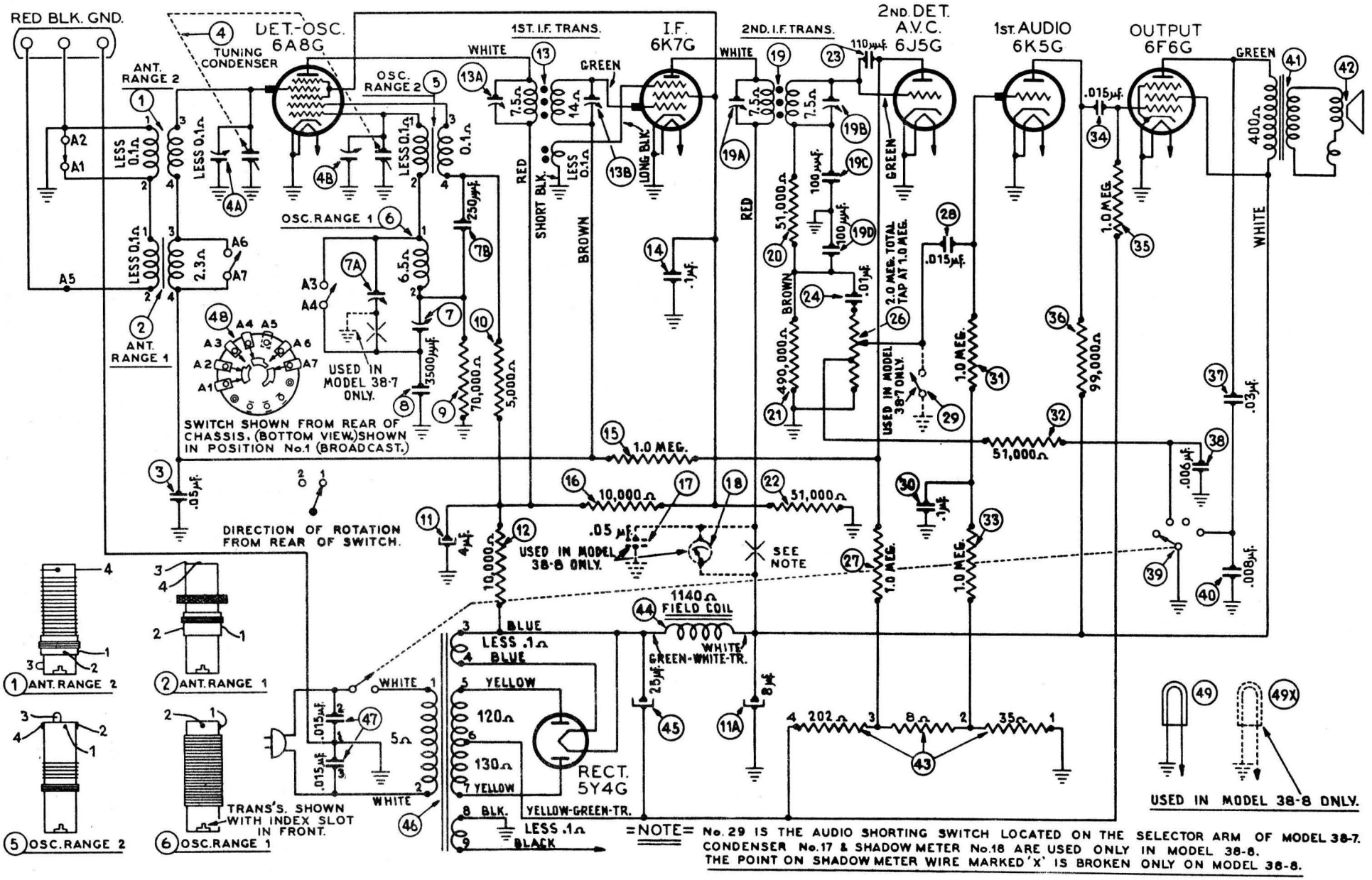

Fig. 2—SCHEMATIC DIAGRAM

Models 38-7, Code 121, 124; 38-8, Code 121; 38-9, Code 121

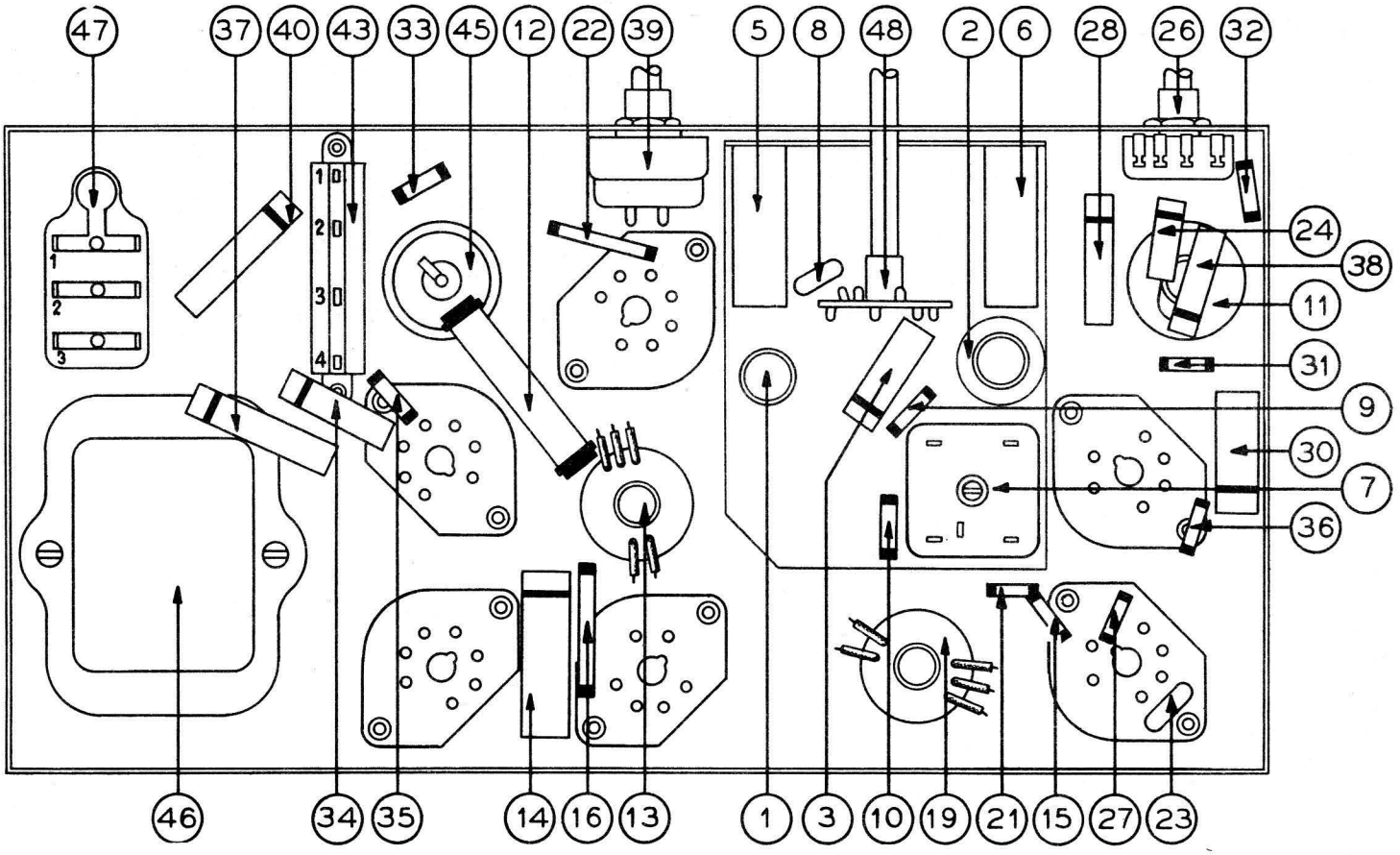

Fig. 4. Part Locations, Underside of Chassis.

REPLACEMENT PARTS

Schem. No.	Description	Part No.	List Price
1	Antenna Transformer—Short Wave	32-2558	
2	Antenna Transformer—Broadcast	32-2557	$1.25
3	Condenser .05 mf.	30-4519	.20
4	Tuning Condenser, Models 8 and 9	31-2026	
	Tuning Condenser, Model 7	31-2040	
5	Osc. Transformer—Short Wave	32-2560	1.25
6	Osc. Transformer—Broadcast	32-2559	
7	Compensator Dual Models 8 and 9	31-6188	
	Compensator, 580 KC. (Model 7)	31-6195	
7A	Compensator Model 7 (1500 KC.)	31-6196	
8	Condenser 3500 mmf. mica	30-1094	.40
9	Resistor 70,000 ohms (½ watt)	33-370339	.20
10	Resistor 5000 ohms (½ watt)	33-250339	.20
11	Condenser, Electrolytic Dual (4 and 8 mfd.)	30-2217	
12	Resistor 10,000 ohms (3 watt)	33-310639	.30
13	1st I. F. Transformer	32-2580	
14	Condenser .1 mf.	30-4455	.25
15	Resistor 1.0 meg. (½ watt)	33-510339	.20
16	Resistor 10,000 mmf. (1 watt)	33-310439	.20
17	Condenser .05 mf. (38-8 only)	30-4454	
18	Shadowmeter (38-8 only)	45-2307	2.50
19	2nd I. F. Transformer	32-2582	
20	Resistor 51,000 mmf. (mounted in 19)	33-351339	.20
21	Resistor 490,000 ohms (½ watt)	33-449339	.20
22	Resistor 51,000 ohms (1 watt)	33-351439	.20
23	Condenser, mica, 110 mmf.	30-1031	.20
24	Condenser .01 mf.	30-4479	.20
25	Removed Prior to Production		
26	Volume Control	33-5216	
27	Resistor 1 meg. (½ watt)	33-510339	.20
28	Condenser .015 mf.	30-4358	.20
29	Audio Shorting Switch (38-7 only) Part of Selector Crank		
30	Condenser .1 mf.	30-4499	.20
31	Resistor 1.0 meg. (½ watt)	33-510339	.20
32	Resistor 51,000 mf. (½ watt)	33-351339	.20
33	Resistor 1.0 meg. (½ watt)	33-510339	.20
34	Condenser .015 mf.	30-4515	.20
35	Resistor 1.0 meg. (½ watt)	33-510339	.20
36	Resistor 99,000 mf. (½ watt)	33-399339	.20
37	Condenser .03 mf.	30-4447	.20
38	Condenser .06 mf.	30-4467	.20
39	Tone Control	42-1327	
40	Condenser .008 mf.	30-4112	$0.20
41	Output Transformer (Model 7)	32-7862	
	Output Transformer (Models 8 and 9)	32-7019	.85
42	Cone and Voice Coil Assembly (H31)	36-3801	1.40
	Cone and Voice Coil Assembly (K41)	36-3174	1.00
	Cone and Voice Coil Assembly (HS)	36-3796	1.20
	Cone and Voice Coil Assembly (S7)	36-3157	1.00
43	Bias Resistor	33-3316	
44	Field Coil Assembly (H31)	36-3665	4.25
	Field Coil Assembly (K41)	36-3931	
	Field Coil Assembly (HS)	36-3690	3.50
	Field Coil Assembly (S7)	36-3039	3.50
45	Electrolytic Condenser	30-2219	
46	Power Transformer, 115V, 50/60 cycle	32-7833	
	Power Transformer, 110V, 25 to 40 cycle	32-7627	
	Power Transformer, 115/230V, 50/60 cycle	32-7835	
47	Condenser .015—.015 mf., 25 mf.	3793DG	.40
48	Wave Switch	42-1325	
49	Pilot Lamp, Models 8 and 9	34-2064	

MODELS 38-7, 8, 9 PARTS

	Pilot Lamp, Model 7	34-2184	
	Cable (Power)	L -2778	.40
	Cable (Speaker)	L -2840	
	Cable (Shadowmeter, Model 8)	41-3225	.40
	Dial, Models 8 and 9	27-5327	
	Dial Clamp	27-5089	
	Dial Washer	27-4598	
	Knob	27-4330	.10
	Knob	27-4331	.10
	Knob	27-4332	.10
	Mtg. Corner, Rubber (Chassis)	27-4564	.10
	Mtg. Rubber (Tuning Condenser)	27-4599	
	Screen Brkt. Assembly (Models 8 and 9)	31-2047	
	Socket (7 prong)	27-6087	
	Socket (6 prong)	27-6086	
	Socket Ass'y (Pilot lamp) Models 8 & 9	38-8844	
	Vernier Drive Ass'y, Models 8 and 9	31-2072	

MODEL 37-8 PARTS

	Bracket Assembly	45-2479	
	Brace (Mtg. Unit)	28-5118	
	Bearing (Main Shaft)	28-7242	
	Bezel Assembly (Scale)	40-6136	
	Coupling Assembly	31-2056	
	Dial Model 7, supld. by your distributor	27-5338	
	Dial Retaining Ring	28-5107	
	Dial Mechanism, Cone-centric complete	31-2092	
	Escutcheon Ring	28-5128	
	Felt (Stop Cover)	27-8822	
	Gear, Tuning Condenser (small)	45-2490	
	Gear, Tuning Condenser (large)	45-2491	
	Knob (Selector)	27-4572	
	Knob (Vernier)	45-2477	
	Knob Spring	28-8761	
	Knob Retaining Screw	28-6672	
	Reflector Assembly	45-2478	
	Selector Crank Assembly	45-2476	
	Shaft (Coupling)	28-6675	
	Stop Assembly	31-2055	
	Stop Cover (Mounted on Selector Crank)	28-5088	
	Shaft (Tuning Condenser Gear)	28-6675	
	Pointer Assembly	38-8925	
	Wrench (Setting Stops)	45-2475	

CABINET PARTS MODEL 8

	Baffle and Silk Assembly (X)	40-6448	
	Bezel Plate Assembly (X)	40-6129	
	Bezel Gasket	27-8313	$0.01
	Bezel Glass	27-8300	.06
	Bezel Ring	28-5080	

CABINET PARTS MODEL 9

	Baffle and Silk Assembly (X cabinet)	40-6448	
	Baffle and Silk Assembly (K cabinet)	40-6139	
	Baffle and Silk Assembly (T cabinet)	40-6140	
	Bezel Plate Assembly (K, X)	40-6128	
	Bezel Plate Assembly (T)	40-6124	.90
	Bezel Gasket (X, K)	27-8313	.01
	Bezel Gasket (T)	27-8311	.01
	Bezel Glass (K, X)	27-8300	.06
	Bezel Glass (T)	27-8298	.05
	Bezel Ring (K, X)	28-5080	
	Bezel Ring (T)	28-5078	.55

Prices to subject to change without notice.

Alignment of Compensator

EQUIPMENT REQUIRED: (1) Signal Generator, using a fundamental frequency covering the intermediate and tuning ranges of the receivers. 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 No. 3164.

OUTPUT METER: The 026 output meter is connected to the plate and cathode terminals of the 6F6G 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.

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 of each model proceed as follows:

Model 38-7: 1. Loosen the shaft coupling set screws, using wrench Part No. 45-2481; then turn the tuning condenser to the maximum capacity position (plate fully meshed). Now turn the selector knob until the dial pointer is on the small black circle at the low frequency end of the Range One scale. With condenser and pointer set in this position tighten set screws. **2.** Now turn the selector knob (clockwise) until the dial pointer moves 1/16 of an inch from the small circle (clockwise), see Fig. 5. Leave pointer in this position and loosen coupling set screws. **3.** After loosening set screws, turn the selector knob until pointer is again on the small black dot at low frequency end of Range One scale. Be careful when turning the selector knob that the position of tuning condenser is not disturbed. Tighten coupling set screws with condenser and dial pointer in this position.

Models 8 and 9: 1. Turn the tuning condenser to maximum capacity position (plates fully meshed). **2.** Loosen the clamp of dial, then turn the dial—being careful that position of tuning condenser is not disturbed—until the glowing indicator is centered on the middle index line at the low frequency end of Range One scale. Tighten the dial clamp in this position.

Note—Before the following adjustments are performed, the receiver must be turned on and allowed to heat for 15 minutes.

INTERMEDIATE FREQUENCY CIRCUIT

Insert the signal generator 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 6A8G, 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. compensator as follows:

1. Set Signal Generator at 470 K. C. Turn "Multiplier" Control to 1000 and the "Attenuator" for maximum output.

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

3. Receiver Volume Control maximum.

4. Range Switch Broadcast Position.

5. Adjust compensators (19B), (19A), (13B), and (13A) for maximum output. If the output meter goes off scale when adjusting the compensators retard signal generator attenuator.

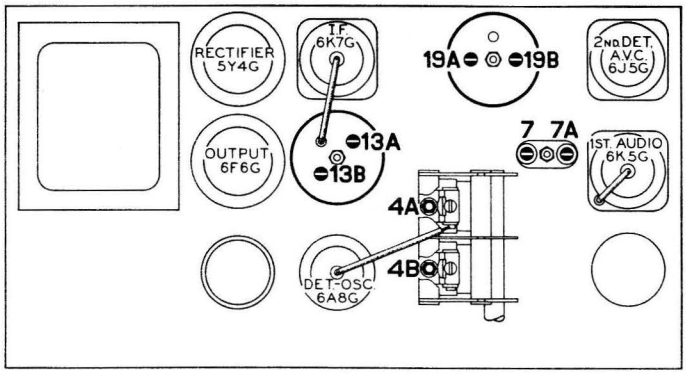

Fig. 4—Locations of Compensators—Top of Chassis

RADIO FREQUENCY CIRCUIT

Tuning Range: 5.7 to 18 M. C.

1. Insert the Signal Generator output lead in the "Med." jack on the panel, and connect the other end through the .1 mfd. condenser to the "Red" terminal of the aerial panel of the receiver. The output lead ground must be connected to the "Blk" terminal or to the chassis.

2. Leave the receiver volume control at maximum. Then set the controls and adjust the R. F. compensators as follows:

Range Switch	Signal Generator and Receiver Dial	Compensators in Order
2	18 MC.	4B See Note A

Tuning Range: 530 to 1720 K. C.

Range Switch	Signal Generator and Receiver Dial	Compensators in Order
1	1500 KC.	(7A), (4A)
1	580 KC.	7
1	1500 KC.	7A

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). Now, slowly turn compensator counter-clockwise until a second maximum peak is obtained on the output meter. The second peak is the fundamental signal, and must be used in adjusting the receiver for maximum output. The first peak from maximum capacity position of the compensator is the image signal and must not be used in adjusting this compensator.

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

Fig. 5 Dial Calibration Model 38-7

The GENUINE PHILCO REPLACEMENTS listed in this bulletin MUST BE USED

to obtain the Accurate Balanced Performance

BUILT INTO THESE PHILCO MODELS

PHILCO RADIO AND TELEVISION CORPORATION

Parts and Service Division

Philadelphia, Pa.

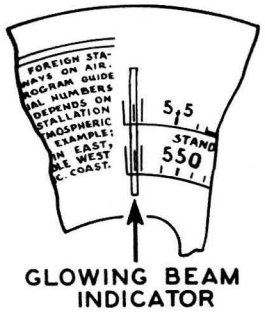

Fig. 6 Dial Calibration Models 38-8; 38-9