Philco Radio & Television Corp.

	Model: 38-9	Chassis:	Year: Pre October 1937
	Power:	Circuit:	IF:
	Tubes:		
	Bands:		

Resources
Riders Volume 9 - CHANGES 9-5
Riders Volume 8 - PHILCO 8-64
Riders Volume 8 - PHILCO 8-65
Riders Volume 8 - PHILCO 8-66

Philco 38-2

For 25-cycle operation, the following parts must be changed in addition to the power transformer: the 0.25-mf condenser, No. 98 on the schematic on *page 8-55 of Rider's Volume VIII*, is removed and replaced with a 1 mf-0.5 mf, part No. 30-4549. The white wires of this condenser are connected across the choke, No. 99, and the red wire to the junctions of Nos. 59, 60, and 66 (in the plate circuit of the 1st a-f tube). Also remove the 8-mf electrolytic condenser, No. 96, and replace it with a 16-mf electrolytic condenser, Part No. 30-2200.

Beginning with Run No. 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 accompanying partial schematic and layout. Note that the schematic numbers of parts differ from those in the schematic on *page 8-55*. The wires from each circuit, however, have been marked indicating the connecting points on the schematic in Rider's Volume VIII.

The compensators are adjusted as follows: The range switch of the receiver is set in the broadcast position; the volume control at maximum; the magnetic tuning switch to "off"; and the tone control in the first position. The signal generator is set at 470 kc.

Using a 0.1-mf condenser as a dummy antenna, connect the signal generator to the grid of the 6A8G detector-oscillator tube and connect the cable ground to the set chassis. Set the attenuator of the signal generator for maximum output and 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 2XA and 2XB for maximum output. The adjustment procedure for 2XC is the same as that given at the bottom of *page 8-56 in Rider's Volume VIII* headed "Magnetic Tuning Circuit Adjustments."

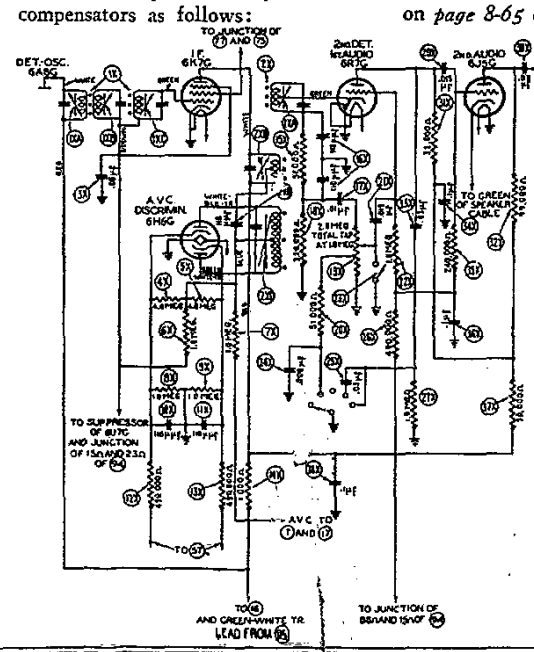
In Run No. 3, a 250-mmf condenser, Part No. 30-1032, was connected from the screen of the 6U7G to ground to prevent parasitic oscillations.

Beginning with Run No. 4, the 6U7G r-f tube was replaced with a 6K7G to eliminate parasitic oscillations. In addition to the tube change, the green wire connecting the screen contact of the 6U7G and condenser 6 (0.05 mf) was increased in length. This wire should circle around the 6U7G socket towards the front of the r-f unit and then back to condenser No. 6. Place the wire as close to the base as possible.

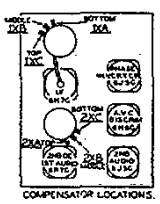
The 250-mmf condenser that was added in Run No. 3 (see above) was removed in this run.

Philco 38-9, Code 121

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



The circuit of the Philco model 38-2 was changed when permeability tuned i-f transformers were substituted for those previously used. Note that the parts numbers in the revised partial schematic at the left, do not correspond with the numbers on the schematic on page 8-55 of Rider's Volume VIII, but that the leads going to the parts of the circuit not shown, employ the original numbering.



Stromberg 150L

Complaints have been received now and then about there being too little bass response in this receiver. If more bass is desired, the following changes in the bass control circuit can be made:

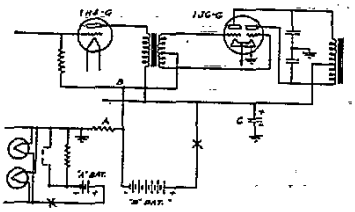
Remove the 10,000-ohm resistor, No. 189 in the schematic on *page 8-7, 8 in Rider's Volume VIII*, and replace it with a 47,000-ohm unit, Part No. 26353. Also replace the 0.04-mf condenser, No. 110 in the volume control circuit, with one having a capacity of 0.01 mf, Part No. 25149.

Note that these changes are not essential except when more bass response in this model is requested.

Zenith 5F233, 5F251

Complaints of short B-battery life or poor tone quality in 4- and 5-tube 2-volt receivers can be corrected by eliminating the C battery and converting the circuit to automatic bias and by by-passing the plate voltage in the set with an electrolytic condenser. The partial schematic diagram shown herewith shows where the changes are made in the chassis No. 5522 (used in the models mentioned above) as an example. *See page 8-5 in Rider's Volume VIII.*

Disconnect the negative B-battery yellow lead where it connects to the chassis inside the chassis base. Connect a 300-ohm resistor (¼-watt) in series with this lead to ground. See "A" in schematic. Run the bias lead from the grid of the 1H4G and the grid of the 1J6G to the yellow B lead under the chassis. Disregard the green lead as the C-battery is omitted. See "B" in schematic.



Partial schematic of Zenith 5F233, 5F251

Connect an 8-mf, 150-volt electrolytic condenser from +B to ground after the B circuit switch so that it is not connected across the B batteries when the receiver is turned off. See "C" in schematic.

These changes allow the bias voltage to drop automatically as the B voltage decreases and thereby preserves the tone quality. Originally the bias voltage remained constant when the B voltage dropped. The batteries should be useable down to about 50 volts or a 135-volt drop.

MODELS 38-7(121,124)
38-8(121),38-9(121) PHILCO RADIO & TELEV. CORP.
Voltage,Trimmers,Chassis

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.

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

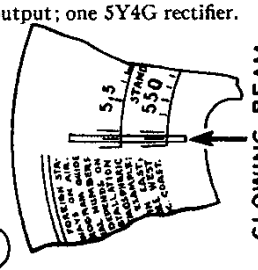


Fig. 6 Dial Calibration Models 38-8; 38-9

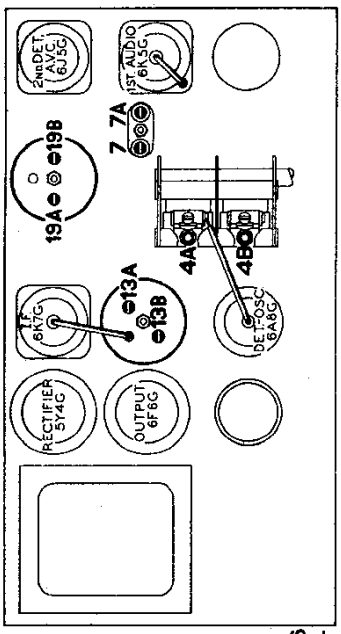


Fig. 4—Locations of Compensators—Top of Chassis

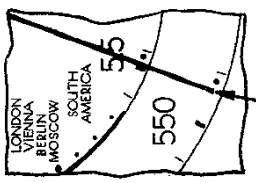


Fig. 5 Dial Calibration Model 38-7

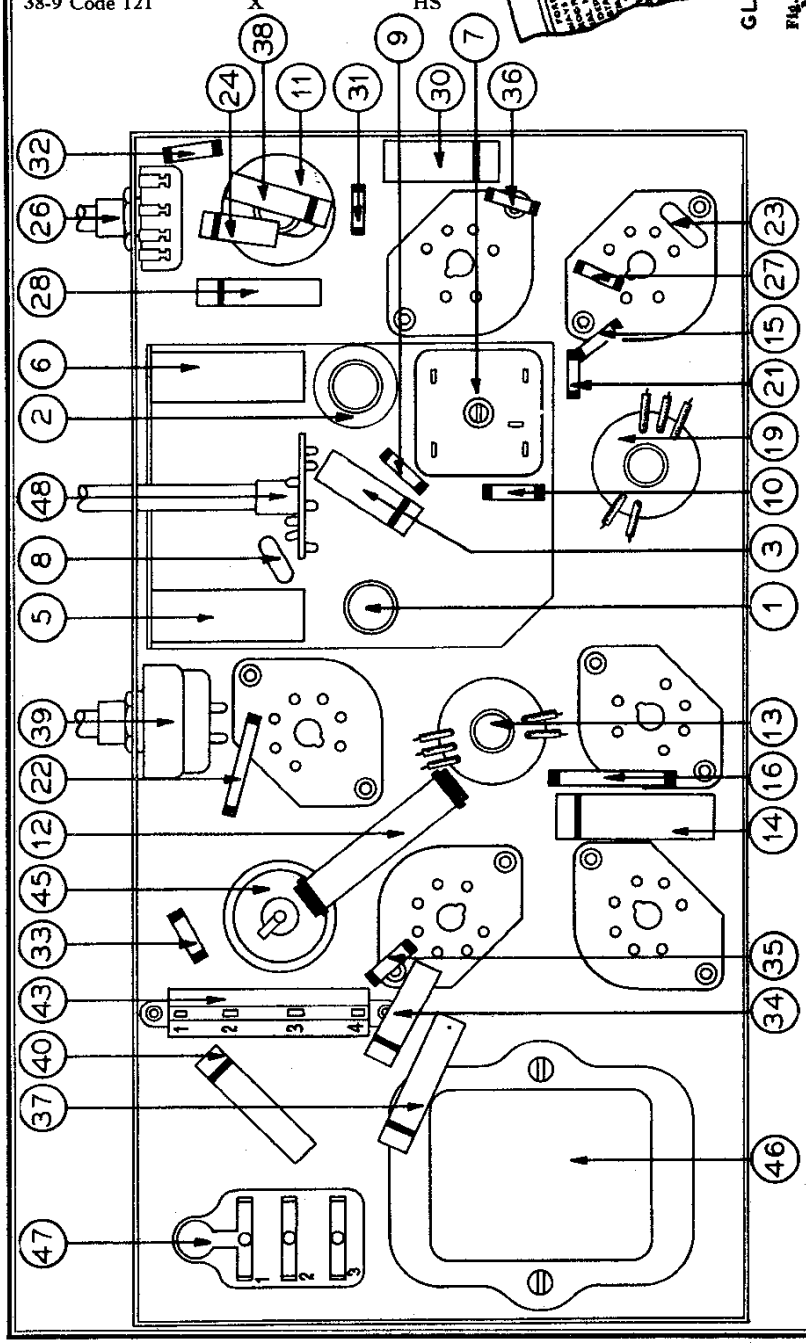


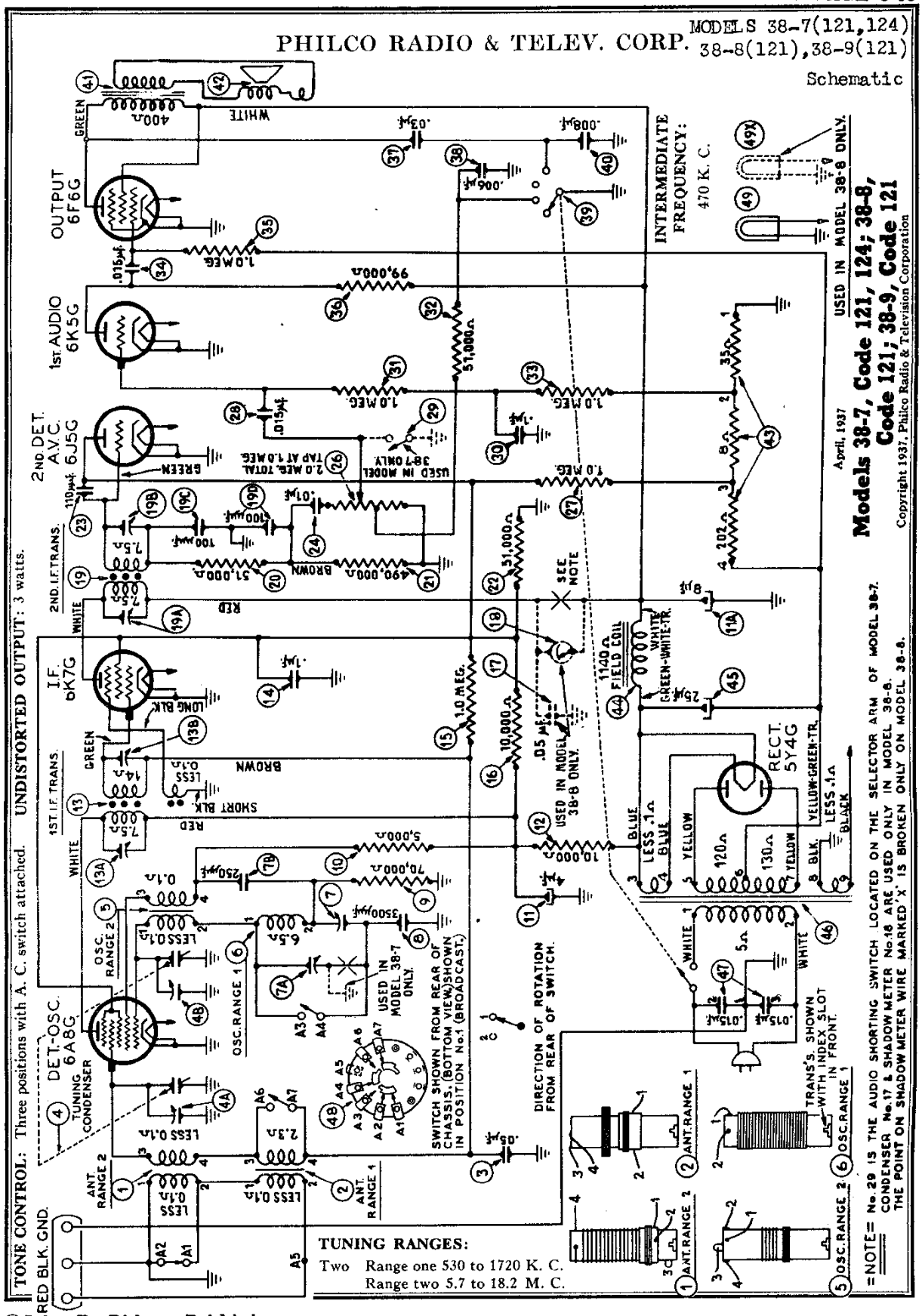
Fig. 1—Socket Voltages—Underside of Chassis View

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.

PHILCO RADIO & TELEV. CORP.

MODELS 38-7(121,124)
38-8(121),38-9(121)

Schematic



MODELS 38-7(121,124)
38-8(121),38-9(121)
Alignment,Parts

PHILCO RADIO & TELEV. CORP.

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.

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 3600 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

Description	Part No.	List Price
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

Description	Part No.	List Price
Bracket Assembly	45-2479	
Brace (Mtg. Unit)	28-5118	

Schem. No.	Description	Part No.	List Price
	Bearing (Main Shaft)	28-7242	
	Bezel Assembly (Scale)	40-6135	
	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)	28-5068	
	Shaft (Tuning Condenser Gear)	28-6675	
	Pointer Assembly	38-8925	
	Wrench (Setting Stops)	45-2475	

CABINET PARTS MODEL 8

Description	Part No.	List Price
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

Description	Part No.	List Price
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.

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.

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.

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 eceiver 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.**

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