



SERVICE BULLETIN No. 280 for members of RADIO MANUFACTURERS SERVICE A PHILCO Service Plan

Models 38-C7, Code 121, 124; 38-C9, Code 121

Electrical Specifications

Models 38-C7 and 38-C9 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-C7, 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-C9 differs from the 38-C7 in that a manually operated tuning unit is used and the speaker and cabinet types differ. This model is assembled in a type "T" cabinet with dynamic speaker type "S7" and an "X" 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.

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.

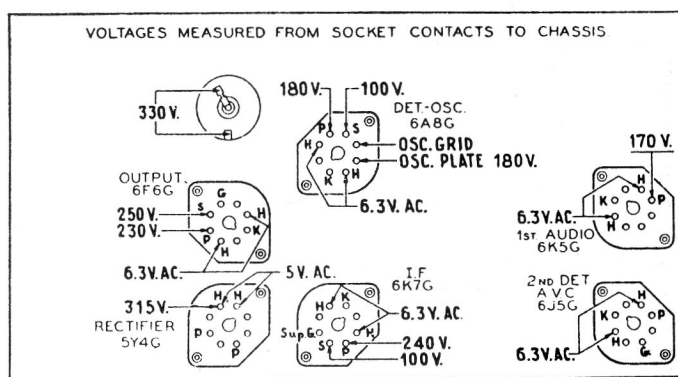


Fig. 1—Socket Voltages—Underside of Chassis View

The Voltages indicated by arrows were measured with a Philco 025A Circuit Tester which contains a sensitive voltmeter. Volume Control at minimum, range switch in broadcast position, line voltage 115 A. C.

CABINETS AND SPEAKERS:

	Cabinet	Speaker
38-C7 Code 121	XX	H31
38-C7 Code 121	T	K41
38-C7 Code 124	CS	K41
38-C9 Code 121	T	S7
38-C9 Code 121	X	HS

SERVICE DATA FOR AUTOMATIC TUNING MECHANISM—MODEL C7

Complete information for setting the stations on the cone-centric tuning mechanism of Model 38-C7 is covered in the instruction form No. (39-5533A) 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.

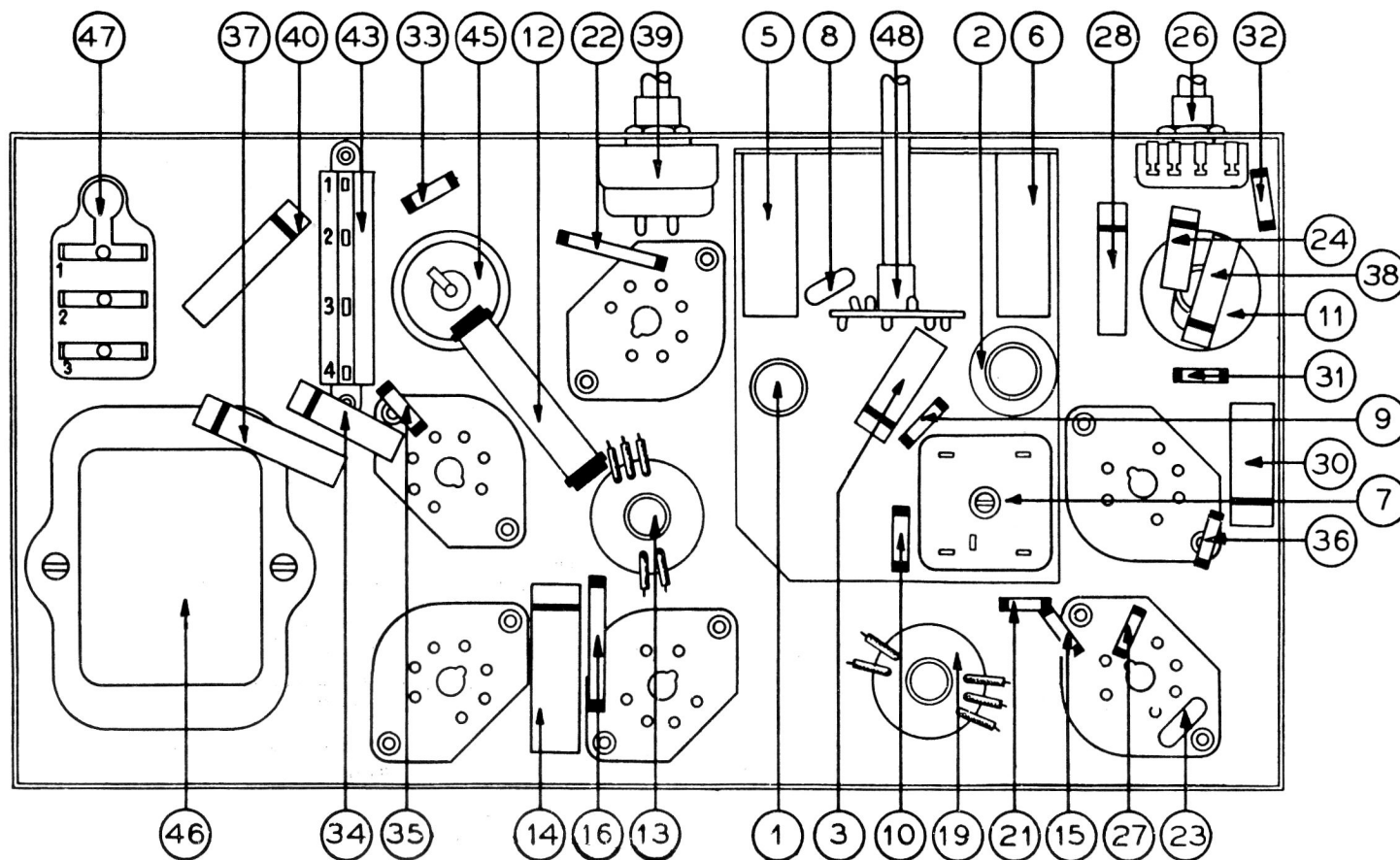


Fig. 3—Part Locations, Underside of Chassis

REPLACEMENT PARTS

Schem. No.	Description	Part No.
1	Antenna Transformer—Short Wave.....	32-2553
2	Antenna Transformer—Broadcast	32-2557
3	Condenser .05 mf.....	30-4519
4	Tuning Condenser, Model C9.....	31-2026
5	Osc. Transformer—Short Wave.....	32-2560
6	Osc. Transformer—Broadcast	32-2559
7	Compensator Dual Model C9.....	31-6188
	Compensator, 580 K. C. (Model C7).....	31-6195
7A	Compensator Model C7 (1500 K. C.).....	31-6196
8	Condenser 3500 mmf. mica.....	30-1094
9	Resistor 70,000 ohms (½ watt).....	33-370344
10	Resistor 5,000 ohms (½ watt).....	33-250344
11	Condenser, Electrolytic Dual (4 and 8 mfd.).....	30-2217
12	Resistor 10,000 ohms (3 watts).....	33-310633
13	1st I. F. Transformer.....	32-2580
14	Condenser .1 mf.....	30-4455
15	Resistor 1.0 meg. (½ watt).....	33-510344
16	Resistor 10,000 ohms (1 watt).....	33-310434
19	2nd I. F. Transformer.....	32-2582
20	Resistor 51,000 ohms (mounted in 19).....	33-351344
21	Resistor 490,000 ohms (½ watt).....	33-449344
22	Resistor 51,000 ohms (1 watt).....	33-351434
23	Condenser, mica, 110 mmf.....	30-1031
24	Condenser .01 mf.....	30-4479
25	Removed Prior to Production	
26	Volume Control	33-5216
27	Resistor 1 meg. (½ watt).....	33-510344
28	Condenser .015 mf.....	30-4358

Schem. No.	Description	Part No.
29	Audio Shorting Switch (38-C7 only) Part of Selector Crank	
30	Condenser .1 mf.....	30-4499
31	Resistor 1.0 meg. (½ watt).....	33-510344
32	Resistor 51,000 ohms (½ watt).....	33-351344
33	Resistor 1.0 meg. (½ watt).....	33-510344
34	Condenser .015 mf.....	30-4515
35	Resistor 1.0 meg. (½ watt).....	33-510344
36	Resistor 99,000 ohms (½ watt).....	33-399344
37	Condenser .03 mf.....	30-4447
38	Condenser .06 mf.....	30-4467
39	Tone Control	42-1345
40	Condenser .008 mf.....	30-4112
41	Output Transformer (Model C7).....	32-7896
	Output Transformer (Model C9).....	32-7027
42	Cone and Voice Coil Assembly (H31).....	36-3801
	Cone and Voice Coil Assembly (K41).....	36-3174
	Cone and Voice Coil Assembly (HS).....	36-3796
	Cone and Voice Coil Assembly (S7).....	36-3157
43	Bias Resistor	33-3316
44	Field Coil Assembly (H31).....	36-3665
	Field Coil Assembly (K41).....	36-3787
	Field Coil Assembly (HS).....	36-3690
	Field Coil Assembly (S7).....	36-3039
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.....	3793 DG
48	Wave Switch	42-1325
49	Pilot Lamp, Model C9.....	34-2064

Schem. No.	Description	Part No.
	Pilot Lamp, Model C7.....	34-2184
	Cable (Power)	L-2830
	Cable (Speaker)	L-2850
	Dial, Model C9.....	27-5327
	Dial Clamp	27-5089
	Dial Washer	27-4574
	Knob	27-4330
	Knob	27-4331
	Knob	27-4332
	Mtg. Corner, Rubber (Chassis).....	27-4564
	Mtg. Rubber (Tuning Condenser).....	27-4599
	Screen Bracket Assembly (Model C9).....	31-2047
	Socket (7 prong).....	27-6087
	Socket (6 prong).....	27-6086
	Socket Assembly (Pilot Lamp) Model C9.....	38-8844
	Vernier Drive Assembly, Model C9.....	31-2072

CABINET PARTS MODEL C9

Baffle and Silk Assembly (X cabinet).....	40-6183
Baffle and Silk Assembly (T cabinet).....	40-6140
Bezel Plate Assembly (X).....	40-6128
Bezel Plate Assembly (T).....	40-6124
Bezel Gasket (X).....	27-8313
Bezel Gasket (T).....	27-8311
Bezel Glass (X).....	27-8300
Bezel Glass (T).....	27-8298
Bezel Ring (X).....	28-5080
Bezel Ring (T).....	28-5078

Alignment of Compensator

EQUIPMENT REQUIRED: (1) Signal Generator, using a fundamental frequency covering the intermediate and tuning ranges of the receivers. Philco Model 088 Signal Generator which has a fundamental frequency range from 110 to 20,000 K. C. is the correct instrument for this purpose; (2) Output meter, Philco Model 025A 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 025A 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-C7: (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 $\frac{1}{8}$ 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.

Model 38-C9: (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 centred 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.

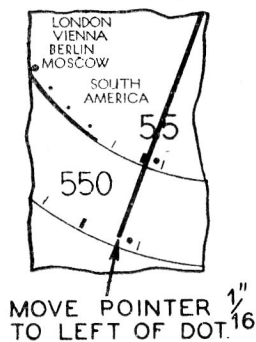


Fig. 5—Dial Calibration
Model 38-C7

July, 1937

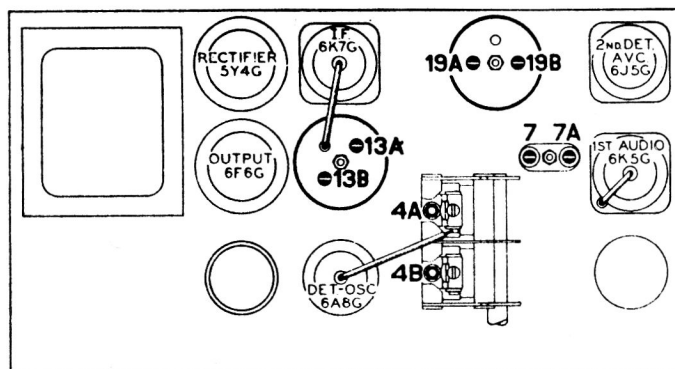


Fig. 4—Locations of Compensators—Top of Chassis

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 M. C.	4B See Note A

Tuning Range: 530 to 1720 K. C.

Range Switch	Signal Generator and Receiver Dial	Compensators in Order
1	1500 K. C.	(7A), (4A)
1	580 K. C.	7
1	1500 K. C.	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 K. C. below the frequency being used on any high frequency range.

The
GENUINE PHILCO REPLACEMENTS listed in this bulletin
MUST BE USED
to obtain the Accurate Balanced Performance
BUILT INTO THESE PHILCO MODELS

PHILCO PRODUCTS LIMITED

Toronto

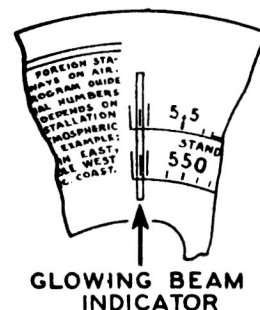


Fig. 6—Dial Calibration
Model 38-C9

Printed in Canada

MODELS 38-C7 and 38-C9

SUPPLEMENTARY SERVICE BULLETIN
to Bulletin #280

Shown on this bulletin are a few corrections to the original bulletin #280, together with the changes that were made during the various production runs of this model.

Model 38-C7, Codes 121 and 124

- (26) #33-5225 Volume Control not shown on service bulletin.
#33-5216 shown is for Model 38-C9 only.
- (39) #42-1350 Tone Control not shown on service bulletin.
#42-1345 shown is for Model 38-C9 only.
- (48) #42-1339 Wave Switch not shown on service bulletin.
#42-1325 shown is for Model 38-C9 only.

Run #2 (7A) #31-6196 Padder changed to #31-6206.

#31-6232 Thermal Compensating Condenser added.
(wired in parallel with #31-6206)

Model 38-C9, Codes 121 and 122

All Code 121 sets were Run #1.

Conversion Code 121 to Code 122:

- #45-2307 Shadowmeter added to chassis.
- #41-3225 Cable added to chassis.
- #30-4454 Condenser added to chassis.
- #40-6128 Bezel Plate removed from X cabinet,
- #40-6129 Bezel Plate added to X cabinet,
- #28-8623 Shadowmeter Clips (2) added.
- #40-6124 Bezel Plate removed from T cabinet,
- #40-6125 Bezel Plate added to T cabinet.
- #28-8623 Shadowmeter Clips (2) added.