

# PHILCO

# Model 38-33, Code 121



## SERVICE BULLETIN No. 292 for members of RADIO MANUFACTURERS SERVICE

A PHILCO Service Plan

### Electrical Specifications

**TYPE OF CIRCUIT:** Five tube, battery operated superheterodyne circuit covering broadcast frequencies and incorporating Automatic Volume Control and a Push-Pull output stage.

**INTERMEDIATE FREQUENCY:** 470 K. C.

**TUNING RANGE:** 530 to 1720 K. C.

**POWER OUTPUT:** 1 watt

**PHILCO TUBES USED:** One 1D7G, 1st. Det. and Osc.; one 1D5GT, I. F. amplifier; one 1H6G, 2nd Det. 1st audio; one 1H4G, phase inverter; and one 1E7G, output.

**TYPE AERIAL:** "L" type, Philco Part No. 45-2428

**CABINETS AND SPEAKERS USED:**

Cabinet Type	Speaker Used
B	L3
F	KR26

**BATTERIES REQUIRED:** "A" Battery: Two volt storage battery Philco type 172R or Dry "A" battery Philco Part No. 41-8011. If a dry A Battery is used, a ballast lamp "type 1Y1" MUST be inserted in the socket provided in the (41-8011) battery. This lamp acts as a voltage regulator and maintains a constant potential of two volts on the filament of the tubes.

"BC" Battery: Philco battery Part No. 41-8007 is used to supply "B" and "C" voltages. This battery contains a socket into which the receiver battery cable plug is inserted.

### 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 1E7G 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 (plates fully meshed).
2. Holding the tuning condenser in this position, turn the dial pointer until it is parallel with the INDEX LINE See Fig. (3). This is the correct position of pointer at the maximum capacity position.

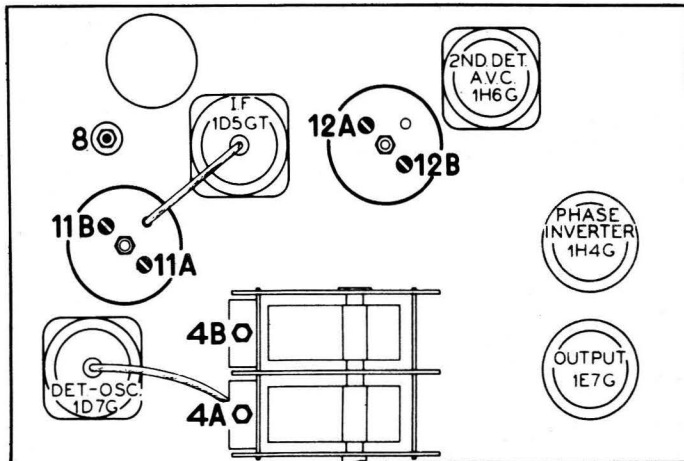


Fig. 2. Locations of Compensators—Top of Chassis

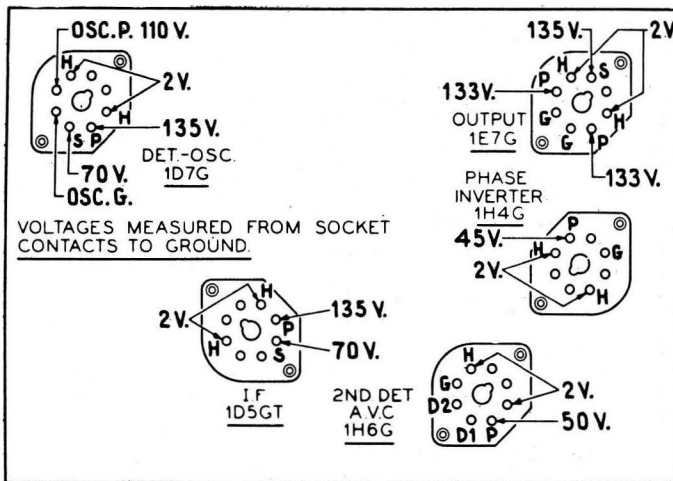


Fig. 1. Socket Voltages, Underside of Chassis

The voltages indicated by arrows were measured with a Philco 026 Circuit Tester which contains a sensitive voltmeter. Volume control at minimum.

### 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 1D7G 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.

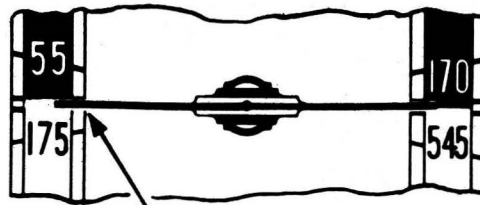


Fig. 3. Dial Calibration. Set pointer as shown

2. Turn the receiver dial to 580 K.C.
3. Receiver Volume Control maximum
4. Adjust compensators (12B), (12A), (11B), (11A) for maximum output. If the output meter goes off scale when adjusting the compensators retard signal generator "attenuator."

### RADIO FREQUENCY CIRCUIT

**Tuning Range:** 530 to 1720 K. 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 200 mfd. condenser 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	Signal Generator and Receiver Dial	Compensators in Order
Max.	1500 K. C.	(4B), (4A)
Max.	580 K. C.	(8)
Max.	1500 K. C.	(4B), (4A)

Replacement Parts

Schem. No.	Description	Part No.	List Price
1	Resistor (20,000 ohms, 1/2 watt)	33-320339	\$0.20
2	Condenser (25 mmf mica)	30-1067	.20
3	Ant. Transformer	32-2212	1.60
4	Tuning Condenser Assembly	31-2100	
5	Resistor (51,000 ohms, 1/2 watt)	33-351339	.20
6	Condenser .05 mf tubular	30-4444	.20
7	Osc. Transformer	32-2213	.70
8	Low Frequency Padder	31-6186	.30
9	Condenser (.001 mf tubular)	30-4453	.20
10	Resistor (10,000 ohms, 1/2 watt)	33-310339	.20
11	1st I. F. Transformer	32-2841	
12	2nd I. F. Transformer	32-2795	
13	Condenser (.1 mf tubular)	30-4499	.20
14	Condenser (Electrolytic 3.0 mf.)	30-2158	.90
15	Condenser (110 mmf mica)	30-1031	.20
16	Condenser (110 mmf mica)	30-1031	.20
17	Resistor (1.0 meg. 1/2 watt)	30-510339	.20
18	Resistor (1.0 meg. 1/2 watt)	30-510339	.20
19	Resistor (1.0 meg. 1/2 watt)	30-510339	.20
20	Resistor (8000 ohms, 1/2 watt)	30-280339	.20
21	Condenser (.015 mf Bakelite)	3793SU	.35
22	Volume Control—Power Switch	33-5249	
23	Condenser (.015 mf Bakelite)	3793SU	.35
24	Condenser (110 mmf mica)	30-1031	.20
25	Resistor (1.0 meg. 1/2 watt)	33-510339	.20
26	Condenser (.015 mf Bakelite)	3793SU	.35
27	Resistor (490,000 ohms, 1/2 watt)	33-449339	.20
28	Resistor (160,000 ohms, 1/2 watt)	33-416339	.20
29	Resistor (490,000 ohms, 1/2 watt)	33-449339	.20
30	Condenser (.25 mf tubular)	30-4446	.25
31	Condenser (.004 mf tubular)	30-4456	.20
32	Output transformer (KR26 speaker)	32-7758	
33	Cone & Voice Coil Assembly (KR26 Speaker)	36-3540	
34	Condenser (.004 mf tubular)	30-4456	.20
35	Resistor (1.0 meg., 1/2 watt)	33-510339	.20
36	Resistor (1500 ohm, 1/2 watt)	33-215339	.20
37	Pilot Lamp	34-2150	.22
38	Speaker L3 "B" Cabinets	36-1359	
39	Cone Assembly L3 Speaker	45-2554-1	
	Bezel Window	27-5348	
	Bezel Throat	27-5248	.50
	Cable (Battery)	41-3203	
	Cable (Speaker)	41-3326	
	Dial Assembly	31-2107	
	Dial Pointer	28-5201	.20
	Dial Bracket	28-5225	
	Dial Drive Cord	31-2086	
	Dial Drive Spring	28-8751	

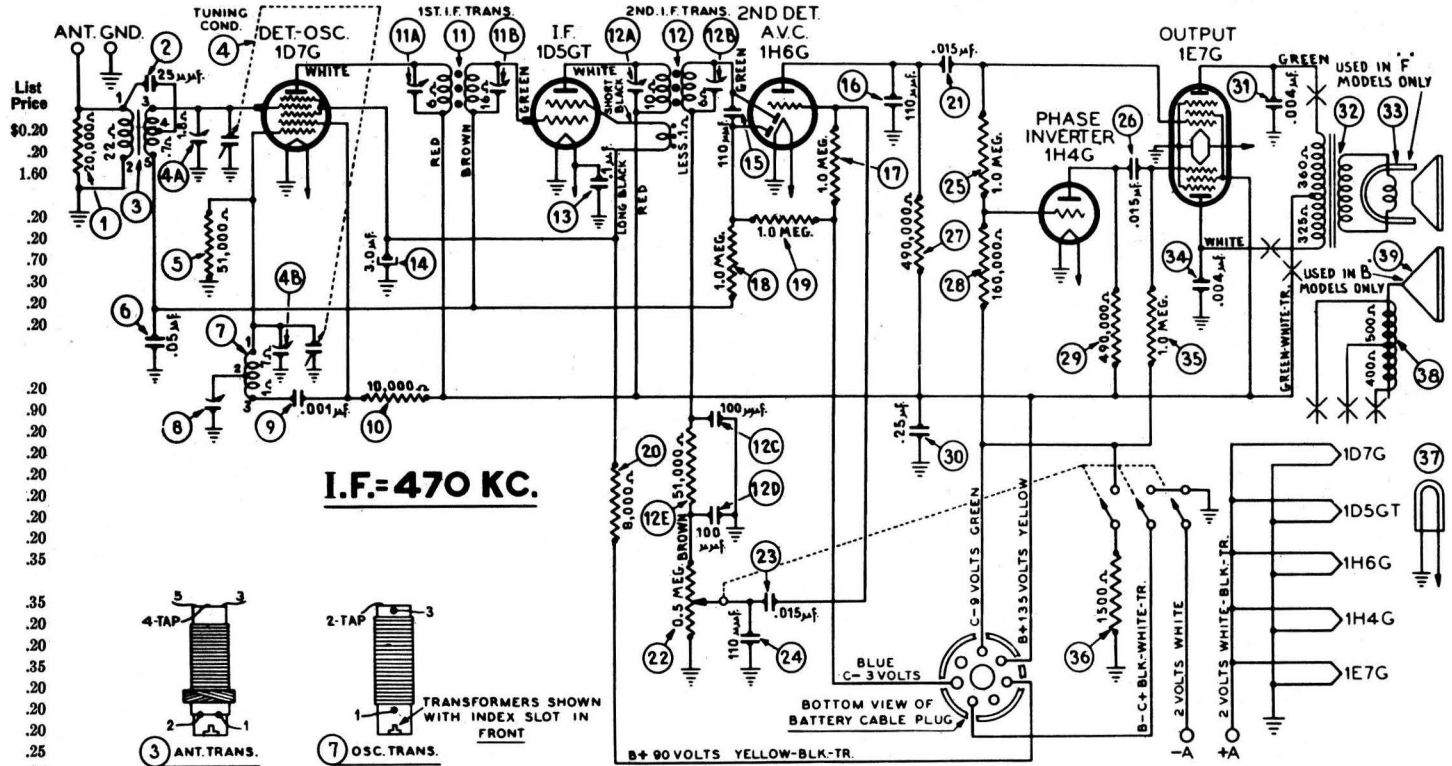


Fig. 4. Schematic Diagram, Model 38-33, Code 121

Schem. No.	Description	Part No.	List Price
	Dial Drive Drum	28-6662	
	Dial Drive Tuning Shaft	38-9107	
	Knob	27-4321	\$0.10
	Pilot Lamp Assembly	38-9121	
	Shield (Tube)	28-2726	.10
	Shield Base (Tube)	28-2725	.03
	Socket 6 prong	27-6086	.11
	Socket 7 prong	27-6087	.11
	Terminal Strip (R. F. Coils)	38-7963	
	Speaker, L3 (B Cabinet)	36-1359-1	
	Speaker (F Cabinet, KR26)	36-1353	10.00

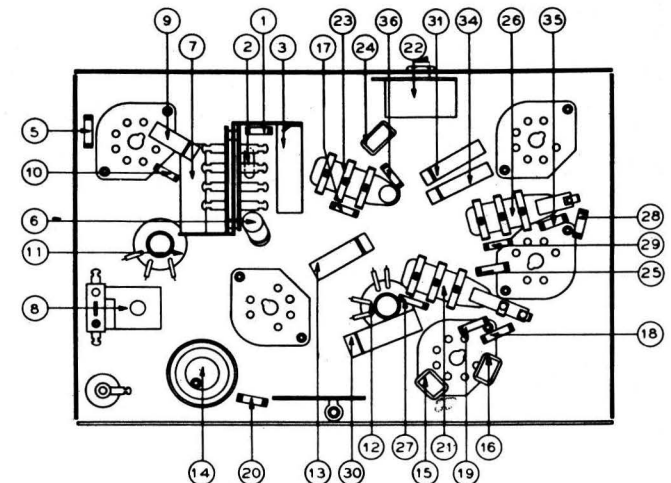


Fig. 5. Part locations, Underside of Chassis

PHILCO RADIO AND TELEVISION CORPORATION

Parts and Service Division

Philadelphia, Pa.