Philco Radio & Television Corp.

	Model: 38-12	**Chassis:**	**Year:** Pre October 1937
	Power:	**Circuit:**	**IF:**
	Tubes:		
	Bands:		

Resources
Riders Volume 10 - CHANGES 10-3
Riders Volume 8 - PHILCO 8-69
Riders Volume 8 - PHILCO 8-70

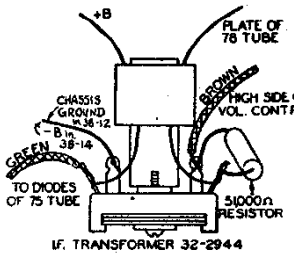
Philco 38-12

Run No. 3. It is important that the following leads be dressed in order to eliminate hum:

Dress the green wire connecting the diodes of the 75 tube to the 2nd i-f transformer as far as possible from the filament prongs of the 75.

The brown wire connecting the 51,000-ohm resistor to the high side of the volume control should be dressed under the coil of the 2nd i-f transformer.

The grid lead of the 75 tube should be dressed toward the back of the receiver and between the tube and shield.



New i-f transformer for Philco models 38-12 and 38-14.

The second i-f transformer, No. 12 in the schematic on *page 8-69 of Rider's Volume VIII*, has been changed from Part No. 32-2674 to No. 32-2944. Note that condenser 12B and 12C are part of the padder in these transformers. The wiring of this new transformer is shown in the accompanying illustration.

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Philco 38-14

In the list of parts on *page 8-72 in Rider's Volume VIII*, the parts numbers of the following are incorrect:

Schematic No.	*Incorrect No.*	*Correct No.*
12—Compensator	31-6209	31-6100
20—Volume Control	33-5236	33-5230

A condenser, 5 mmf, was connected across the secondary of the short-wave transformer, No. 2. This condenser is connected to lugs Nos. 3 and 4 of the transformer shown on the schematic. *See page 8-71 of Rider's Volume VIII.*

Run No. 2. The second i-f transformer, No. 17, was changed from Part No. 32-2674 to No. 32-2944. The wiring lugs on the new transformer are slightly changed. The drawing of this transformer is shown in the preceding change notice covering Philco 38-12. Note that in the case of Model 38-12, the middle left-hand lead in the sketch goes to chassis ground, but in the Model 38-14, this same lead goes to -B.

Philco 38-4

Run No. 5. The two condensers, Part No. 30-1097, which were connected in parallel with the new air padder, No. 16 in Run No. 3 receivers (see SUCCESSFUL SERVICING, July 1938, page 2) have been removed, starting with Run No. 5. For schematic see *page 8-61 in Rider's Volume VIII.* In place of these condensers, a thermal compensator, Part No. 31-6227 is connected in parallel with the air padder. The air padder, No. 16, Part No. 31-6206, has also been relocated and is now mounted between the 6U7G r-f tube and the 6F6G output tube. (*See page 8-63 for chassis layout*). The thermal compensator, Part No. 31-6227, is also mounted in the same position with the thermostatic plate facing the power transformer.

The oscillator transformer, No. 15, was changed from Part No. 32-2631 to 32-2894. Connection No. 1 of the new transformer has been increased in length for soldering to the air padder in the new location.

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Philco 38-14 (121, 124)

Run No. 4, Code 121. In order to eliminate hum modulation, the electrolytic condenser, No. 32, was changed from 16-mf to 40-mf, Part No. 30-2237. The electrolytic condenser in Code 124 receivers was also changed from 16- to 40-mf, Part No. 30-2256. The oscillator blocking condenser No. 8, 250-mmf was changed to 50-mmf, Part No. 30-1029.

See *page 8-71 in Rider's Volume VIII* for schematic of both codes.

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Philco 38-33 (121)

Run No. 3. Resistor No. 20, 8000-ohms, was changed to 20,000-ohms, Part No. 33-320339. It was removed from the 90-volt wire (see schematic on *page 9-3 of Rider's Volume IX*) and reconnected to the 135-volt wire of the battery cable. The battery cable assembly was also changed to Part No. 41-3402.

Belmont 665,765

It will be noticed that another model number, 765, has been added to 665, which appears in the Index to Rider's Volume IX. This new series starts with serial 9A532400 for which the model numbers are 665 Series A, Issue B and 765 Series A. The servicing data on both these models are the same as the information published in Rider's Volume IX with the following changes:

A 6U5 tuning indicator tube has been added in the model 765. The grid of the 6U5 is connected to the junction of No. 5 terminal of the 6Q7G and R8; the target to +B; and the cathode to the junction of R10 and R12. See schematic on *page 9-21 in Rider's Volume IX.*

The short pieces of wire on the antenna coil, which are designated as CA and CB in the schematic, have been removed.

A resistor, R17, 2000 ohms, has been shunted across the P and H terminals of the oscillator coil.

A 0.008-mf, 800-volt condenser, C21, has been added between the plate of the output tube, 6AC5G, and ground.

The short-wave oscillator padder, C12, was not shown on the bottom view of the chassis. This is located on the layout just above and between the trimmers C8 and C11. Note that this padder C12 is adjusted at the factory and needs no other adjustment.

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Zenith Chassis 5516, 5634, 5707

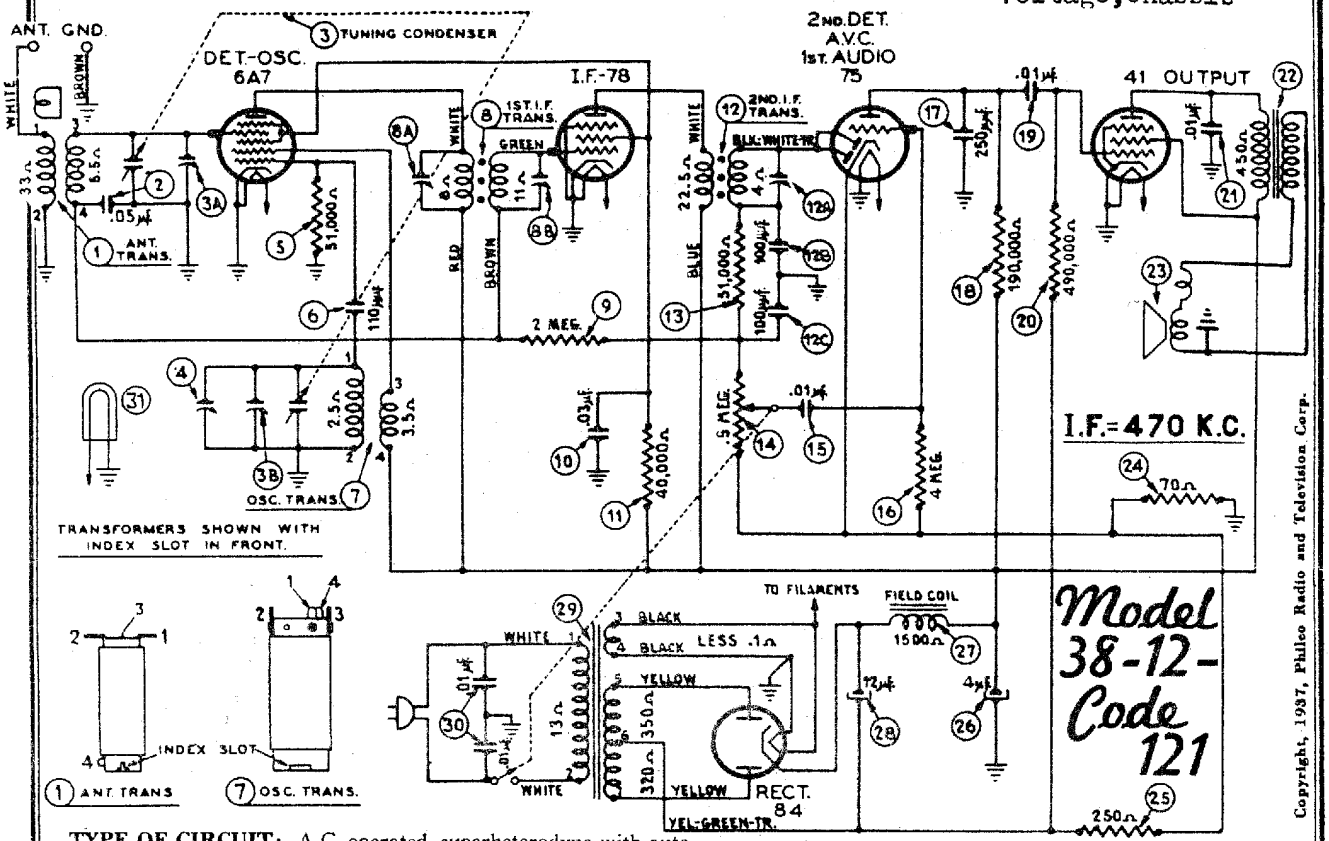
The alignment instructions for the three chassis mentioned above are identical and will be found below. The model numbers of the receivers in which these chassis are used will be found on the pages of *Rider's Volume VII.* The schematics and trimmer locations for the respective chassis will be found on these pages: Chassis 5516, schematic *page 7-7*, trimmers *page 7-2;* Chassis 5634, schematic *page 7-17*, trimmers *page 7-9;* Chassis 5707, schematic *page 7-18*, trimmers *page 7-11.*

Signal Generator Connection	Signal Generator Frequency	Dial Position	Wave-Band Switch Position	Trimmer Number	Output Signal
Det.-Osc.	456 kc[1]	———	———	4 I-F Trimmers	Max.
Control Grid	456 kc	———	———	Wave-Trap Trim. (Rear of chassis)	Min.
Antenna	6 mc	6 mc	Band B	Osc. Trim.[2]	———
Antenna	1400 kc	1400 kc	Band A	Broadcast Trim.[2]	———
				Antenna Trim.	Max.
Antenna	18 mc	18 mc	Band C	Short-Wave Trim.	Max.[3]
Antenna	600 kc	600 kc	Band A	Broadcast Pad.	Max.[3]
Antenna	1400 kc	1400 kc	Band A	Broadcast Trim.[2]	———
				Antenna Trim.	Max.

Note 1—Use smallest possible signal from generator to prevent AVC action from affecting output readings.
Note 2—Adjust for correct dial reading.
Note 3—While rocking.

PHILCO RADIO & TELEV. CORP.

MODEL 38-12, Code 121
Schematic, Trimmers
Voltage, Chassis



TYPE OF CIRCUIT: A.C. operated, superheterodyne with automatic volume control, Pentode audio output, and covers the standard broadcast and state police frequencies.

POWER SUPPLY:	Frequency	Power
Voltage	Cycles	Consumption
115	50 to 60	40 watts

PHILCO TUBES USED: Five: One 6A7, Det. Osc.; One 78, I.F.; One 75, 2nd Det., 1st Audio; One 41, Output, and One 84, Rectifier.

INTERMEDIATE FREQUENCY: 470 K.C.

R.F. TUNING RANGE: 540 to 1720 K.C.

June, 1937

AUDIO OUTPUT: 2 watts.

TUNING MECHANISM: 8 to 1 Ratio using Pulley and Cord.

CABINET: Type "T" and "C."

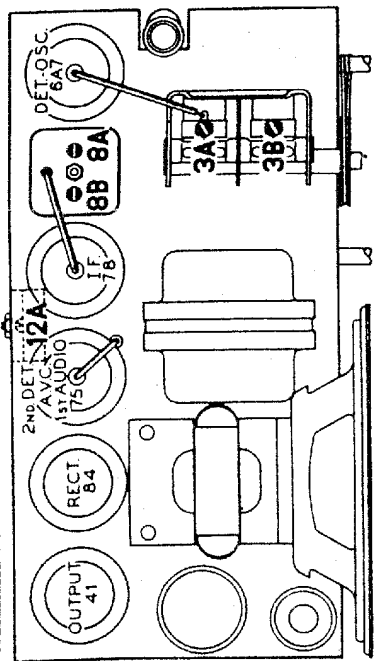


FIG. 2.—Locations of Compensators.

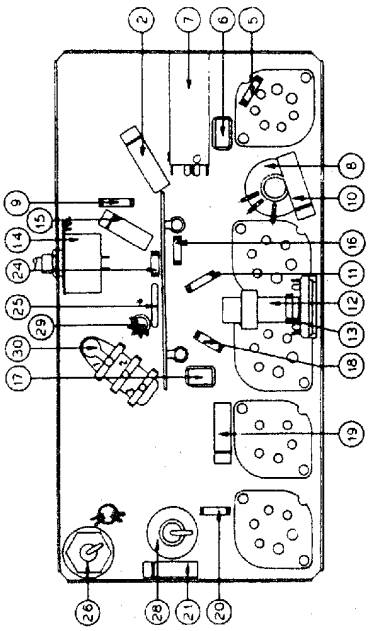


FIG. 5.—Part Locations Underside of Chassis.

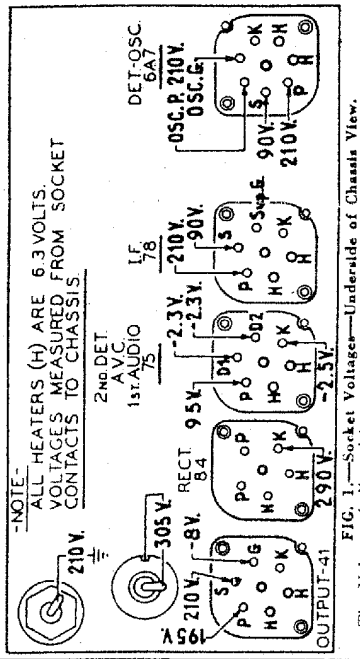


FIG. 1.—Socket Voltages—Underside of Chassis View.
The Voltages indicated by arrows were measured with a Philco 026 Circuit Tester which contains a sensitive voltmeter. Volume Control at minimum —Tuning condenser set for no signal—line voltage 115 A.C.

MODEL 38-12, Code 121
Alignment, Parts

PHILCO RADIO & TELEV. CORP.

Alignment of Compensators

EQUIPMENT REQUIRED: (1) Signal Generator, using a fundamental frequency range covering the tuning and intermediate frequencies of the receiver. Philco Model 077 Signal Generator which has a fundamental frequency range from 115 to 36,000 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 the 41 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 pointer until it is 1/16 of an inch below the three lines of the scale at the 550 K.C. end. (See Fig. 3.) This is the correct position of pointer at maximum capacity of tuning condenser.

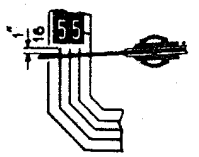


FIG. 3.—Dial Pointer Calibration.

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 6A7 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 the "Attenuator" for maximum output.

2 Turn the receiver dial to 580 K.C.

3 Receiver volume control maximum.

4 Adjust compensators, (12A), (8B), (8A), for maximum output. If the output meter goes off scale when adjusting the compensators, retard the signal generator attenuator.

Radio Frequency Circuit

TUNING RANGE: 540 to 1720 K.C.

1 With one end of the shielded lead of the signal generator output lead in the "Med." jack, connect the other end through a 100 mmfd. condenser to the white aerial wire (rear of chassis). Connect the signal generator ground to the brown lead or to the chassis of the receiver.

2 Set the controls and adjust the R.F. compensators as follows:

Volume Control	Signal Generator and Receiver Dial	R.F. Compensators in Order	
Max.	1500 K.C.	(3B)	(3A)

Replacement Parts Model 38-12

Schematic No.	Description	Part No.	List Price
1	Antenna Transformer	32-2583	
2	Condenser (0.05 mfd. tubular)	30-4444	$0.20
3	Tuning Condenser Assembly)	31-2068	
4	Compensator (Part of tuning condenser 3)		
5	Resistor (51,000 ohms, ½ watt)	33-351339	.20
6	110 mmfd. mica	30-1031	.20
7	Oscillator Transformer	32-2586	
8	First I.F. Transformer	32-2672	
9	Resistor (2 megohms)	33-520339	.20
10	Condenser (0.03 mfd. tubular)	30-4449	.20
11	Resistor (40,000 ohms, ½ watt)	33-340339	.20
12	Second I.F. Transformer	32-2674	
13	Resistor (51,000 ohms, ½ watt)	33-351339	.20
14	Volume Control	33-5230	1.45
15	Condenser (0.01 mfd. tubular)	30-4479	.20
16	Resistor (4 megohms, ½ watt)	33-540339	.20
17	Condenser (250 mmfd. mica)	30-1032	.25
18	Resistor (190,000 ohms, ½ watt)	33-419339	.20
19	Condenser (0.01 mfd. tubular)	30-4169	.20
20	Resistor (490,000 ohms, ½ watt)	33-449339	.20
21	Condenser (0.01 mfd. tubular)	30-4169	.20
22	Output Transformer	32-7861	
23	Cone and Voice Coil Assembly	36-3981	
24	Resistor (70 ohms, ½ watt)	33-070339	.20
25	Resistor (250 ohms, ½ watt)	33-1259	
26	Condenser (Electrolytic 4 mfd.)	30-2236	.90
*27	Field coil assembly (not supplied; see Note)		
28	Condenser (Electrolytic 12 mfd.)	30-2235	1.20
29	Power Transformer (115V, 50 to 60 cycle)	32-7826	3.00
30	Condenser (0.01 mfd., .01 mfd.)	3903-DG	.30
31	Pilot Lamp	34-2068	.12
	Bezel and Glass Assembly	40-6158	
	Bezel Clamp	28-5153	.01
	Bracket (Tuning Condenser)	28-5060	
	Cable (Power)	L-2778	.40
	Clip (R.F. Trans. small)	28-5002	.02
	Clip (R.F. Trans. large)	28-5003	.03
	Clip (Tuning Shaft)	28-8610	.03
	Dial Assembly	31-2097	
	Dial Pointer	28-5185	.15
	Dial Drive Cord Assembly	31-2082	.10
	Dial Drive Drum	28-6662	
	Dial Drive Spring	28-8751	
	Knob (Tuning and Volume)	27-4604	
	Shaft Assembly (Tuning)	38-9102	
	Shield (Tube)	28-5059	
	Socket (6 prong)	27-6036	.11
	Socket (7 prong)	27-6037	.11
	Socket (5 prong)	27-6035	.11
	Stop—Rubber	27-4540	
	Speaker Model BO-1	36-1366	
	Pilot Lamp Assembly	38-9041	

* Entire Speaker must be replaced when field coil is open or damaged.

Prices Subject to Change without Notice