Philco Radio & Television Corp.

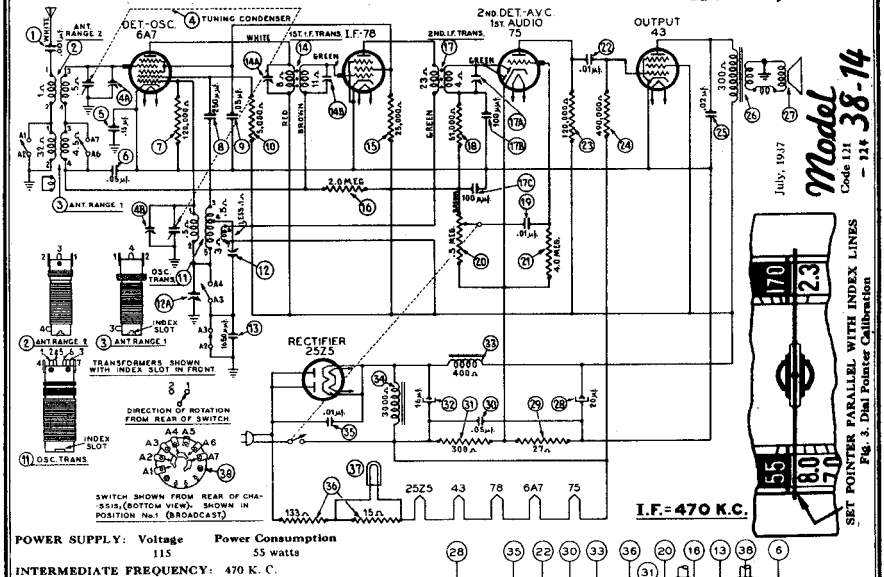
	Model: 38-14	**Chassis:**	**Year:** Pre October 1937
	Power:	**Circuit:**	**IF:**
	Tubes:		
	Bands:		

Resources
Riders 8 (VIII) PHILCO 8-71
Riders 8 (VIII) PHILCO 8-72
Riders 10 (X) CHANGES 10-3

MODEL 38-14, Codes 121, 124

PHILCO RADIO & TELEV. CORP.

Schematic, Voltage Trimmers, Chassis



SET POINTER PARALLEL WITH INDEX LINES
Fig. 3. Dial Pointer Calibration

July, 1937 Model Code 121 - 124 38-14

POWER SUPPLY: Voltage 115 — Power Consumption 55 watts

INTERMEDIATE FREQUENCY: 470 K. C.

R. F. TUNING RANGES: 540 to 1720 K. C.
2.3 to 7.4 M. C.

AUDIO OUTPUT: 1 watt

PHILCO TUBES USED: Five: one 6A7, Det. osc.; one 78, I. F.; one 75, 2nd Det., 1st Audio; one 43, Output, and one 25Z5 Rectifier.

TUNING MECHANISM: 12 to 1 Ratio using Pulley and Cord.

CABINET: Type "T," Code 121
Type "CS," Code 124

Electrical Specifications

TYPE OF CIRCUIT: A. C. or D. C. operated superheterodyne with automatic volume control, pentode audio output, and covers the standard broadcast, municipal and state police frequencies, first class amateur (night) and many night foreign and American short-wave stations. Code 121 & 124 chasses of this Model are identical with the exception of electrolytic condensers, speaker and cabinets. These differences are listed on the part list.

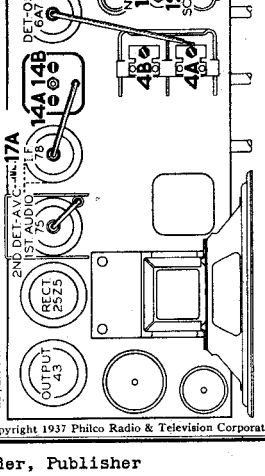


Fig. 2. Locations of Compensators—Top of Chassis

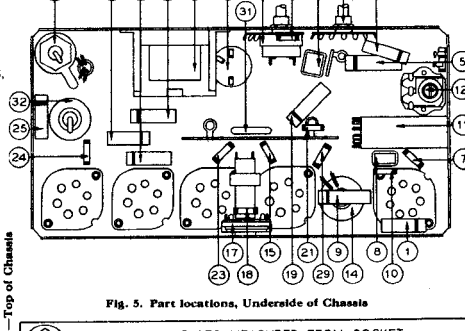


Fig. 5. Part locations, Underside of Chassis

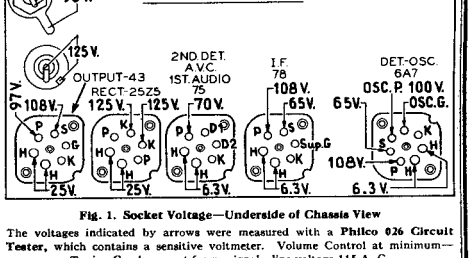


Fig. 1. Socket Voltage—Underside of Chassis View

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 38-14, Codes 121, 124
Alignment, Parts

PHILCO RADIO & TELEV. CORP.

Replacement Parts

Schem. No.	Description	Part No.	List Price
1	Cond. (tubular .001 mf.)	30-4453	$0.20
2	Ant. Trans. (Range 2)	32-2720	
3	Ant. Trans. (Range 1)	32-2718	
4	Tuning Cond. Assembly	31-2094	
5	Cond. (tubular .15 mf.)	30-4191	.25
6	Cond. (tubular .05 mf.)	30-4519	.20
7	Resistor (120,000 ohm ½ watt)	33-412399	.20
8	Cond. (mica 250 mmf.)	30-1032	.25
9	Cond. (tubular .05 mf.)	30-4444	.20
10	Resistor (5000 ohm ½ watt)	33-250339	.20
11	Osc. Trans.	32-2719	
12	Compensator	31-6209	
13	Cond. (mica 1650 mmf.)	5877	.35
14	I. F. Trans. (1st)	32-2672	2.20
15	Resistor (25,000 ohm ½ watt)	33-325339	.20
16	Resistor (2 meg. ½ watt)	33-520339	.20
17	I. F. Trans. (2nd)	32-2674	1.50
18	Resistor (51,000 ohm ½ watt)	33-351339	.20
19	Cond. (tubular .01 mf.)	30-4479	.20
20	Volume Control	33-5236	
21	Resistor (4.0 meg. ½ watt)	33-540339	.20
23	Resistor (120,000 ohm ½ watt)	33-412339	.20
24	Resistor (400,000 ohm ½ watt)	33-440339	.20
25	Cond. (tubular .02 mf.)	30-4215	.20
26	Output Trans. (B 0-2)	32-7874	
	Output Trans. (S-18)	32-7395	1.10
27	Cone and Voice Coil Assembly (S-18)	36-3014	
	Cone and Voice Coil Assembly (B-0-2)	36-3981	
28	Electrolytic Cond. (20 mf. Code 121)	30-2245	.95
	Electrolytic Cond. (Code 124)	30-2275	
29	Resistor (27 ohm ½ watt)	33-027339	.20
30	Cond. (tubular) .05 mf.	30-4444	.20
31	Resistor (300 ohm, 2 watt)	33-1258	
32	Electrolytic Cond. (16 mf. Code 121)	30-2246	.90
	Electrolytic Cond. (Code 124)	30-2277	
33	Choke	32-7868	
34	Field Coil and Pot. Assembly (S-18)	36-3985	
	*Field Coil and Pot. Assembly (B 0-2)	(See Speaker Note below).	
35	Condenser (tubular .01 mf.)	30-4169	.20
36	Filament Resistor (133 ohm—15 ohm)	33-3322	.65
37	Pilot Lamp	34-2068	.12
38	Range Switch	42-1396	.70
	Cable Speaker (Code 124)	L-2984	
	Cable (Power)	L-2778	.40
	Clip, Small (Mtg. R. F. Coil)	28-5002	.02
	Clip, Large (Mtg. R. F. Coil)	28-5003	.03
	Dial Ass'y.	31-2098	
	Dial Pointer	28-5201	.20
	Dial Drive Cord	31-2095	.10
	Dial Drive Shaft	38-9001	
	Insulator Washer (Electrolytic)	27-8882	
	Insulator Washer (Electrolytic)	27-8883	
	Insulator Cover 1¾ (Elec. Cond. 32)	27-8800	
	Insulator Cover, 2¼ (Elec. Cond. 32)	27-8905	
	Mtg. Rubber Dial	27-4150	$0.01
	Mtg. Rubber (Tuning Condenser)	27-4596	
	Pilot Lamp Ass'y.	38-9127	
	Pilot Lamp	34-2068	.12
	Fully (Tuning Condenser)	31-1283	.30
	Speaker (B 0-2, Code 121)	36-1367	
	Speaker (S-18, Code 124)		
	Socket (5 prong)	27-6086	.11
	Socket (7 prong)	27-6087	.11
	Washer "C" (Tuning Shafts)	28-3904	.01
	Bezel and Glass (Code 121)	40-6158	
	Bezel and Glass (Code 124)	40-6264	
	Bezel Clamp	28-5153	.02

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

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

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 43 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 parallel with the index lines (see Fig. 3). This is the correct position of pointer at maximum capacity of tuning condenser.

INTERMEDIATE FREQUENCY CIRCUIT

When adjusting the following compensators, a Philco Set Transformer Part No. 32-2763 must be connected in the signal generator output circuit as follows:

Insert the signal generator output lead into the "Med" jack and the ground lead into the "Gnd" jack of the signal generator.

Connect the other end of the output lead to terminal No. 1 on the Set Transformer and the cable ground to Terminal No. 2. No. 3 and 4 terminals of Set Transformer are then connected to the chassis and 6A7 grid respectively of the receiver with short pieces of wire. Insert a 0.1 mfd. in series with the No. 4 lead which connects to the grid.

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. Range Switch Broadcast position.
4. Receiver volume control maximum.
5. Adjust compensators, (17A), (14B), (14A), for maximum output. If the output meter goes off scale when adjusting the compensators, retard the signal generator attenuator.

RADIO FREQUENCY CIRCUIT

Tuning Range: 2.3 to 7.4 M. C.

1. Remove terminal No. 4 lead of set transformer from the 6A7 grid and connect to the aerial wire of the receiver through a 400 ohm resistor. Remove the .1 mfd. condenser when using the 400 ohm resistor.

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

Range Switch	Volume Control	Signal Generator and Receiver Dial	R. F. Compensators
Shortwave	Max.	6 M. C.	(4B)

Tuning Range: 530 to 1720 K. C.

1. Remove the 400 ohm resistor from the No. 4 lead and replace with a 100 mmfd. condenser and reconnect to the aerial wire.

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

Range Switch	Volume Control	Signal Generator and Receiver Dial	R. F. Compensators in Order
Broadcast	Max.	1550 K. C.	(12A), (4A)
	Max.	580 K. C.	(12) Roll Tuning Condenser
	Max.	1550 K. C.	(12A), (4A)

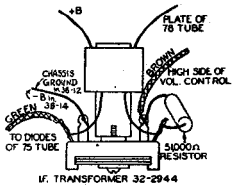
Philco 38-12

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.

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.[3] 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.

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.*