

PHILCO

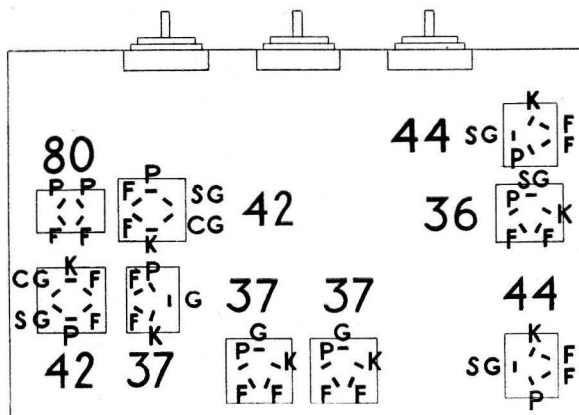
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Service Bulletin—No. 129

Model 91 Series

The Philco Radio of the 91 series is a nine tube superheterodyne, employing the high efficiency 6.3 volt filament tubes, automatic volume control, shadow tuning, and push-pull pentode output. The chassis is made in two different types, one known as the 121 type, employing a single dynamic speaker and the other known as the 221 type, employing twin dynamic speakers. These type numbers appear on the radio chassis as a part of the model number. Chassis of one type are not interchangeable with those of another. The intermediate frequency used in adjusting the superheterodyne circuit of the 91 series is 260 kilocycles. The power consumption of the various models is as follows:

Model	Volts	Cycles	Watts
91-121	115	50-60	90
91-221	115	50-60	95
91A-121	115	25-40	92
91A-221	115	25-40	97
91E-121	230	50-60	90
91E-221	230	50-60	95



F = Filament SG = Screen Grid K = Cathode
P = Plate CG = Control Grid

Fig. 1—Tube Sockets, Under Side of Chassis
CAUTION: Never connect the chassis to the power supply unless the speakers are connected and all tubes are in place.

Table 1—Tube Socket Data*—A.C. Line Voltage 115 Volts

Type	Tube Circuit	Filament Volts	Plate Volts	Screen Grid Volts	Control Grid Volts	Cathode Volts
44	R.F.	6.3	200	50	.6	25
36	Det.—Osc.	6.3	250	80	10	10
44	I.F.	6.3	250	85	.2	5
37	Det.—Rect.	6.3	02	2
37	Det.—Ampl.	6.3	602	2
37	Audio	6.3	100	...	0	2
42	Output	6.3	240	250	15	15
42	Output	6.3	240	250	15	15
80	Rectifier	5.0	310/Plate

*All of the above readings were taken from the under side of the chassis, using test prods and leads with a suitable A.C. voltmeter for filament voltages and a multi-range D.C. voltmeter for all other readings. A.C. set testers with plug connections cannot be used to obtain correct readings. Volume control at maximum and station selector turned to low frequency end.

Table 2—Power Transformer Data

Terminals	A.C. Volts	Circuit	Color
1-2	105 to 125	Primary	White
3-5	6.3	Filament	Black
6-7	5.0	Filament 80	Blue
8-10	670	Plates of 80	Yellow
4	...	Center Tap of 3-5	Black Yellow Tracer
9	...	Center Tap of 8-10	Yellow Green Tracer

Table 3—Resistor Data

Nos. on Figs. 4 & 5	Resistance (ohms)	Power (Watts)	Terminals	Color		
				Body	Tip	Dot
④6 Single Speaker	900	..	1-2	LONG	TUB	ULAR
	2700	..	2-3			
	95	..	3-4			
	205	..	4-5			
④6a Twin Speaker	85	..	3-4	LONG	TUB	ULAR
	205	..	4-5			
	1,000	.5	...			
	10,000	.5	...			
①4	15,000	.5	...	Brown	Black	Red
②1	25,000	.5	...	Brown	Green	Orange
④1	13,000	.5	...	Red	Green	Orange
④1a	99,000	.5	...	Brown	Orange	Orange
③2	51,000	.5	...	White	White	Orange
④0	490,000	.5	...	Brown	Black	Orange
③9	1,000,000	.5	...	Yellow	White	Yellow
④3	2,000,000	.5	...	Brown	Black	Green
③				Red	Black	Green

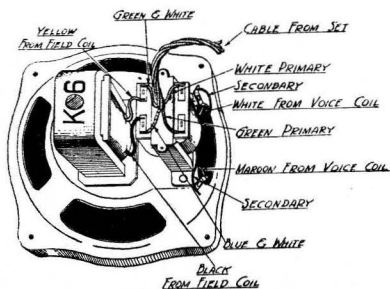


Fig. 2—Speaker Connections—121 Code

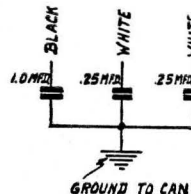


Fig. 3—Internal Connections Filter Condenser

PHILCO MODEL 91 SERIES

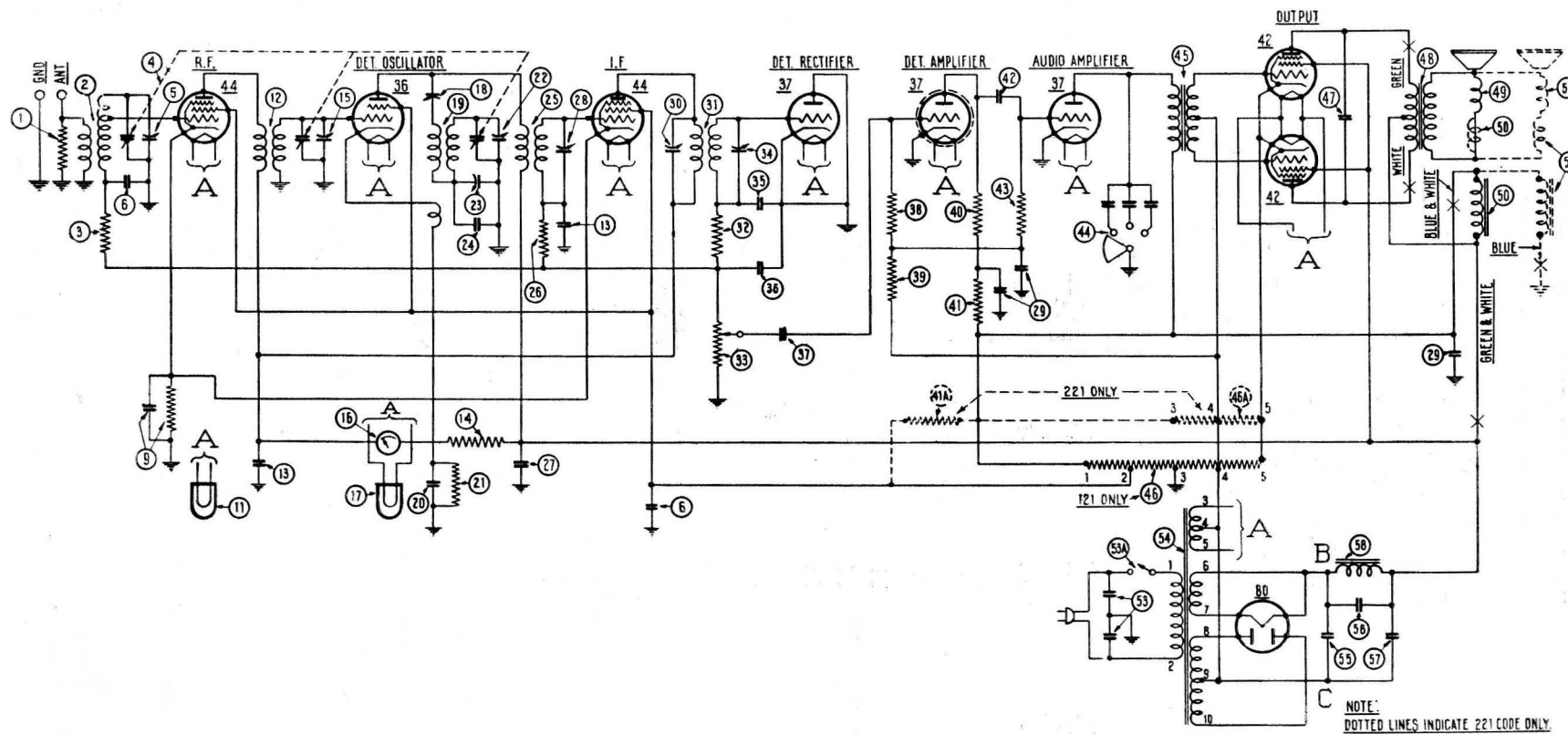


Fig. 4—Schematic Wiring Diagram

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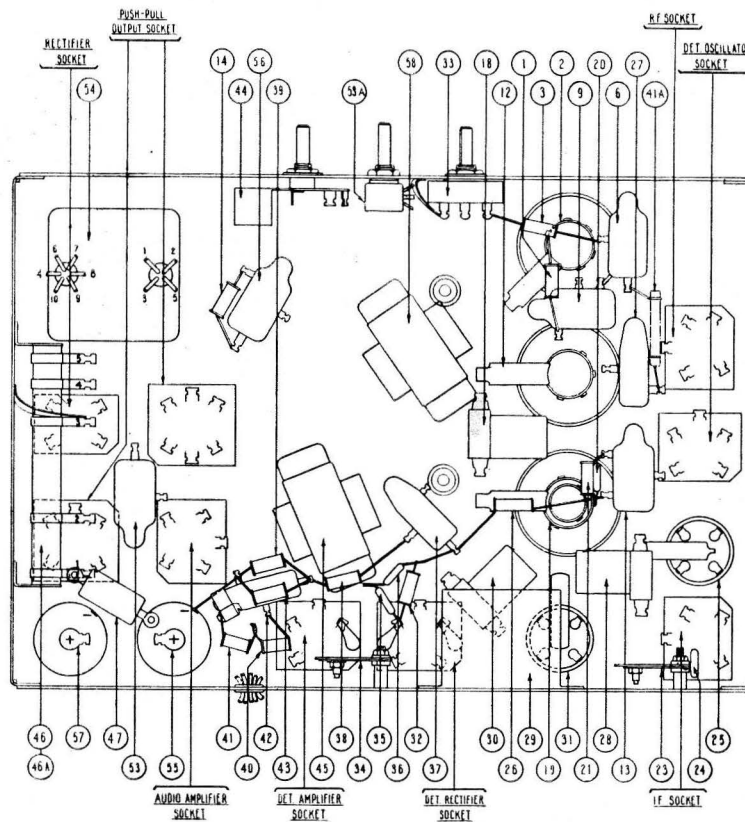


Fig. 5—Parts Diagram

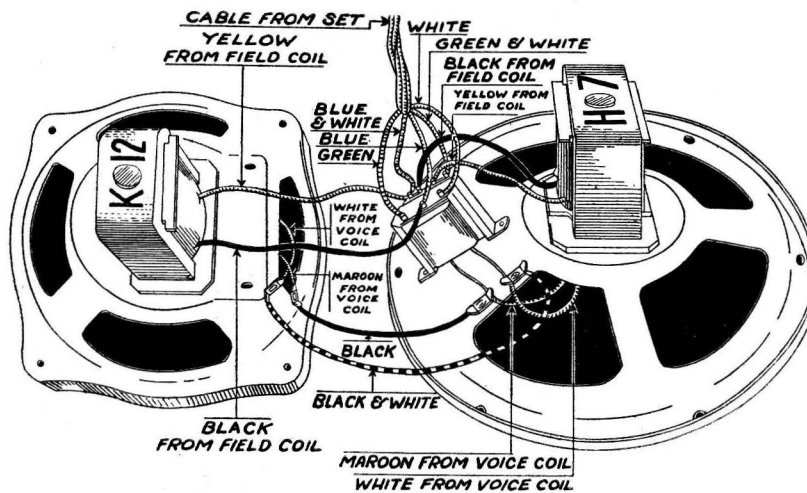


Fig. 6—Speaker Connections—221 Code

ADJUSTMENT OF MODEL 91 SERIES

These receivers are accurately adjusted at the factory prior to shipment. Under normal conditions it will never be necessary to re-adjust the compensating condensers. If for any reason such adjustment should be required, it should not be attempted without first receiving the proper instruction and equipment from your distributor. The Philco Model 095 Oscillator has been especially designed for this work, and will be found the most inexpensive and most reliable for the purpose.

REPLACEMENT PARTS FOR MODEL 91 SERIES

① Resistor (10,000 ohms)	4412	④⑥ Voice coil and cone assembly (K-6 and K-12)	02823
② R. F. Transformer	04317	⑤⑦ Speaker Field Assembled with pot (K-6) single speaker Models	02803
③ Resistor (2,000,000 ohms)	5872	Speaker Field Assembled with pot (H-7) Twin speaker Models	02803
④ Tuning Condenser (50-60 cycles)	04790	⑧ Voice Coil and Cone Assembly—(H-7) Twin speaker Models	02807
Tuning Condenser (25-40 cycles)	04791	⑨ Speaker Field assembled with pot (K-12) Twin speaker Models	02803
⑤ Compensating Condenser—R. F.—Part of tuning condenser assembly		⑩ Condenser (.015 Mfd. Double)	3793-E
⑥ Condenser (.05 Mfd. Double)	3615-AM	⑩a On-off Switch	6498
⑦ Condenser (.15 Mfd. and 200 ohm resistor)	6287-C	⑪ Power Transformer (50-60 cycles) single speaker	6554
⑧ Pilot Lamp—Dial	6608	Power Transformer (25-40 cycles) single speaker	6555
⑨ Detector Transformer	04409	Power Transformer (50-60 cycles—230 volts) single speaker	6556
⑩ Condenser (.05 Mfd. Double)	3615-AJ	Power Transformer (50-60 cycles) Twin speaker	6804
⑪ Resistor (1,000 ohms)	5837	Power Transformer (25-40 cycles) Twin speaker	6805
⑫ Compensating Condenser—Detector—Part of tuning condenser assembly		Power Transformer (50-60 cycles—230 volts) Twin speaker	6806
⑬ Shadow Tuning Box	6497	⑫ Electrolytic Condenser (6 Mfd.) single speaker—50-60 cycles	4916
⑭ Pilot Lamp—Tuning meter	6608	Electrolytic Condenser (8 Mfd.) Twin speaker—50-60 cycles	6707
⑮ Compensating condenser—First I. F. Primary	04000-M	10 Mfd. Single speaker—25-40 cycles	5142*
⑯ Oscillator Coil	04408	10 Mfd. Twin speaker—25-40 cycles	5142*
⑰ Condenser (700 Mmf.) (White and Yellow)	4520	⑬ Condenser (.18 Mfd.) 50-60 cycles	4989K
⑱ Resistor (15,000 ohms)	6208	Condenser (.5 Mfd.) 25-40 cycles, single speaker	05150
⑲ Compensating Condenser—High—Frequency—part of tuning Condenser Assembly		Condenser (.5 and .75 Mfd.) 25-40 cycles twin speakers	05213**
⑳ Compensating Condenser—Low Frequency	04496	⑭ Electrolytic Condenser (6 Mfd.) Single Speaker—50-60 cycles	4916
㉑ Condenser (410 Mmf.) (Yellow and Orange) Assembled with L. F. Condenser	04496	Electrolytic Condenser (8 Mfd.) Twin Speaker—50-60 cycles	6706
㉒ First I. F. Transformer	04319	14 Mfd. Single speaker—25-40 Cycles	5725*
㉓ Resistor (2,000,000 ohms)	5872	14 Mfd. Twin speaker—25-40 Cycles	5725*
㉔ Condenser (.01 Mfd.) Single Speaker	3903-AF	⑮ Filter Choke	4819
㉕ Condenser (.01 Mfd.) Twin Speaker	3903-AE	Tube Shield (Large)	04792
㉖ Compensating condenser—First I. F. secondary	04000-M	Tube Shield (Small)	5387
㉗ Filter condenser (2-25, 1.0 Mfd.)	04830	Shield Plate	03646
㉘ Compensating Condenser—Second I. F. Primary	04000-M	Knob (Large)	03063
㉙ Second I. F. Transformer	04320	Knob (Medium)	03064
㉚ Resistor (99,000 ohms)	4411	Knob (Small)	03437
㉛ Volume Control	7049	Knob Spring (Large)	5262
㉜ Compensating Condenser—Second I. F. Secondary	04000-M	Knob Spring (Small)	4147
㉝ Condenser (110 Mmf.) (Blue and Golden Yellow)	4519	Grid Clip	4897
㉞ Condenser (110 Mmf.) (Blue and Golden Yellow)	4519	Four prong socket assembly	5026
㉟ Condenser (.01 Mfd.)	3903-R	Five prong socket assembly	4956
㊱ Resistor (1,000,000 ohms)	4409	Six prong socket assembly	6417
㊲ Resistor (490,000 ohms)	4517	Dial Complete	04832
㊳ Resistor (51,000 ohms)	4518	Bezel	6418
㊴ Resistor (25,000 ohms)	4516	Shadow Meter Screen	6811
㊴a Resistor (13,000 ohms)	3766	Chassis mounting screw	W-468
㊵ Condenser (.01 Mfd.)	3903-R	Mounting washer	5058
㊶ Resistor (1,000,000 ohms)	4409	Rubber washer	5189
㊷ Tone Control	04787	Mounting Clamp (Electrolytic Condensers)	6440
㊸ Push-pull Input Transformer	6064	Cone Retaining Ring	2600
㊹ B. C. Resistor—Single Speaker	6702	Tuning Condenser Drive Cord	04834
㊹a B. C. Resistor—Twin Speaker	6808	Spring	6508
㊺ Condenser (.002 Mfd.)	6853		
㊻ Push-pull output transformer—single speaker Models	2585		
Push-pull output transformer—Twin speaker Models	2565		

*The physical positions of ⑫ and ⑭ for 25 cycles are reversed, although their electrical connections remain the same.

**The .75 Mfd. section (white wire) is connected to the blue and white lead of the speaker cord.

PHILCO RADIO & TELEVISION CORPORATION

Service Department
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