

# PHILCO

REG. U.S. PAT. OFF.

## Radio Service Bulletin—No. 56

### Models 90 and 90-A Receivers

Model 90 Receivers are for Operation on 105-125 volt, 50-60 cycle AC Lines.  
 Model 90-A Receivers are for Operation on 105-125 volt, 25-60 cycle AC Lines.

Table 1—Tube Socket Readings Taken with AC Set Tester, AC Line, 115 Volts

Tube		Filament Voltage	Plate Voltage	Grid Voltage	Screen Grid Voltage	Cathode Voltage	Plate Milliamperes
Type	Circuit						
24	1st R. F.	2.1	250	3.3	83	15	3
27	Osc.	2.1	60	1	...	15	2
24	1st Det.	2.1	250	5.5	23	15	.5
24	1st I. F.	2.1	250	3.8	80	15	4.5
24	2nd Det.	2.1	48	3.7	42	15	3
27	1st Audio	2.1	140	.25	...	10	...
45	Audio	2.2	243	46	...	...	30
45	Audio	2.2	243	46	...	...	30
80	Rect.	4.5	...	...	...	...	...

All readings taken with antenna disconnected and ground on. Volume Control on full.

Table 2—Power Transformer Voltages

Terminals	A.C. Volts		Color
1—2	105 to 125	Primary	Black (Small Gauge)
3—5	2.5	Heaters of 24 and 27 Tubes	Black (Heavy Gauge)
4	2.5	Center Tap of 3—5	Black with Yellow
6—8	2.5	Filament of 45 Tubes	Dark Green
7	2.5	Center Tap of 6—8	Black with Green
9—10	5.0	Filament of 80 Tube	Light Blue
11—13	650.	Plates of 80 Tube	Yellow
12	...	Center Tap of 11—13	Yellow with Green

Table 3—Resistor Data

No. on Fig.	Terminal	Power (Watts)	Resistance	Color Body—Tip—Dot
38	1—2	...	800	(Long Tubular)
	2—3	...	263	
	3—4	...	75	
	5—6	...	370	
	6—7	...	1,800	
	7—8	...	1,430	
47	....	1.	13,000	Brown—Orange—Orange
21	....	.5	50,000	Green—Brown—Orange
48	....	1.	50,000	Green—Brown—Orange
33	....	1.	250,000	Red—Yellow—Yellow
34 28	....	.5	250,000	Red—Yellow—Yellow
24	....	.5	1,000,000	Brown—Black—Green

Table 4—Condenser Data

No. on Figs.	Capacity	Color
9	.09 Double	Black Bakelite Container
10	.09 Double	Black Bakelite Container
11 15 16 20 48	.00011	Blue, Golden Yellow
17 22	.000035	Yellow and Green
25	.5	Metal Container
28	{.25 Double (Black wires to Ground)}	Metal Container
29	{.5 (White wire to Ground)}	Metal Container
30	.05	Black Bakelite Container
36 37	6.	Electrolytic Type
36 (25 to 40 cycles)	10.	Electrolytic Type
40	.015 Double	Black Bakelite Container
41	.0007	White, Golden Yellow
46	.001	Green and White

# Models 90 and 90-A

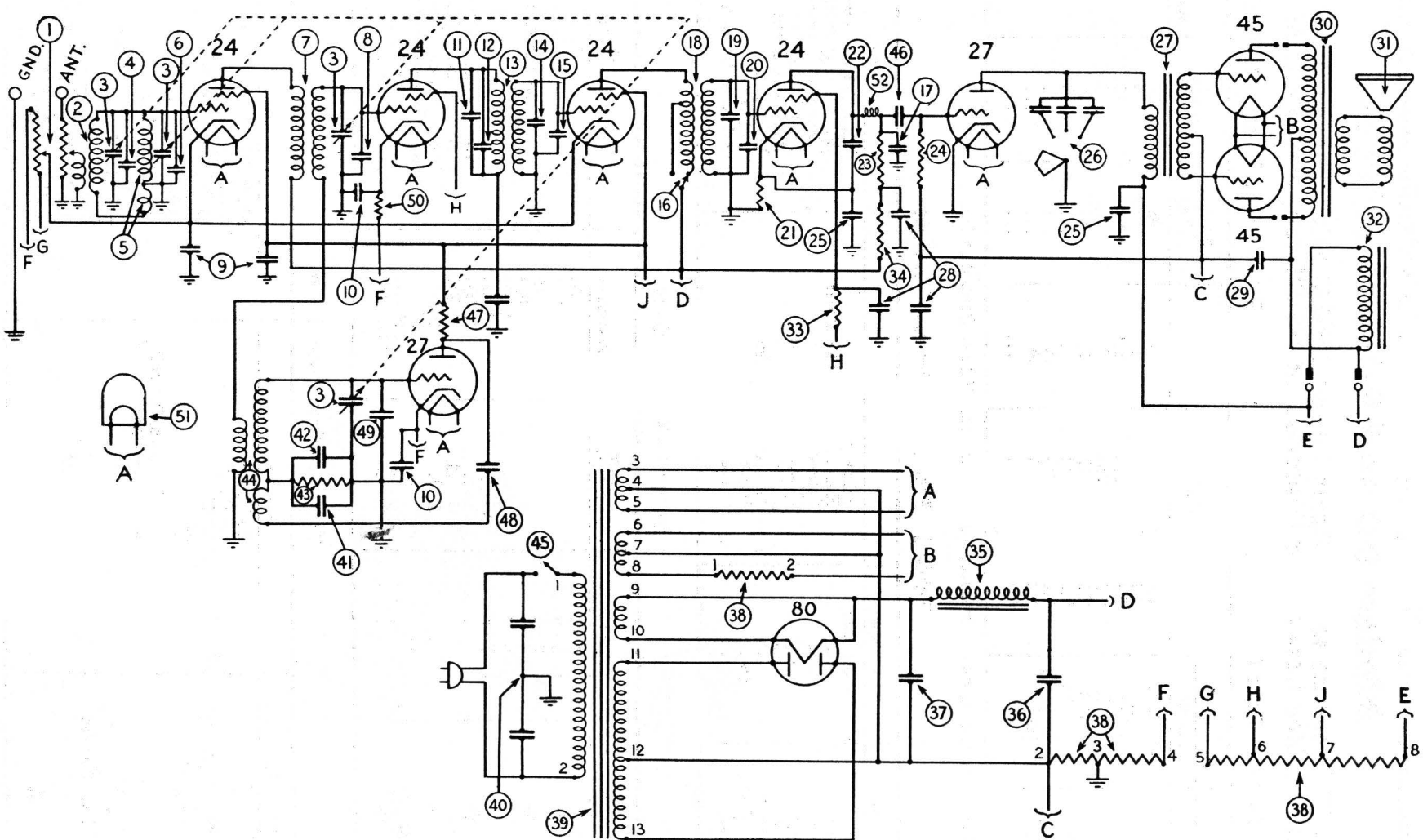


Fig. 1

### Models 90 and 90-A

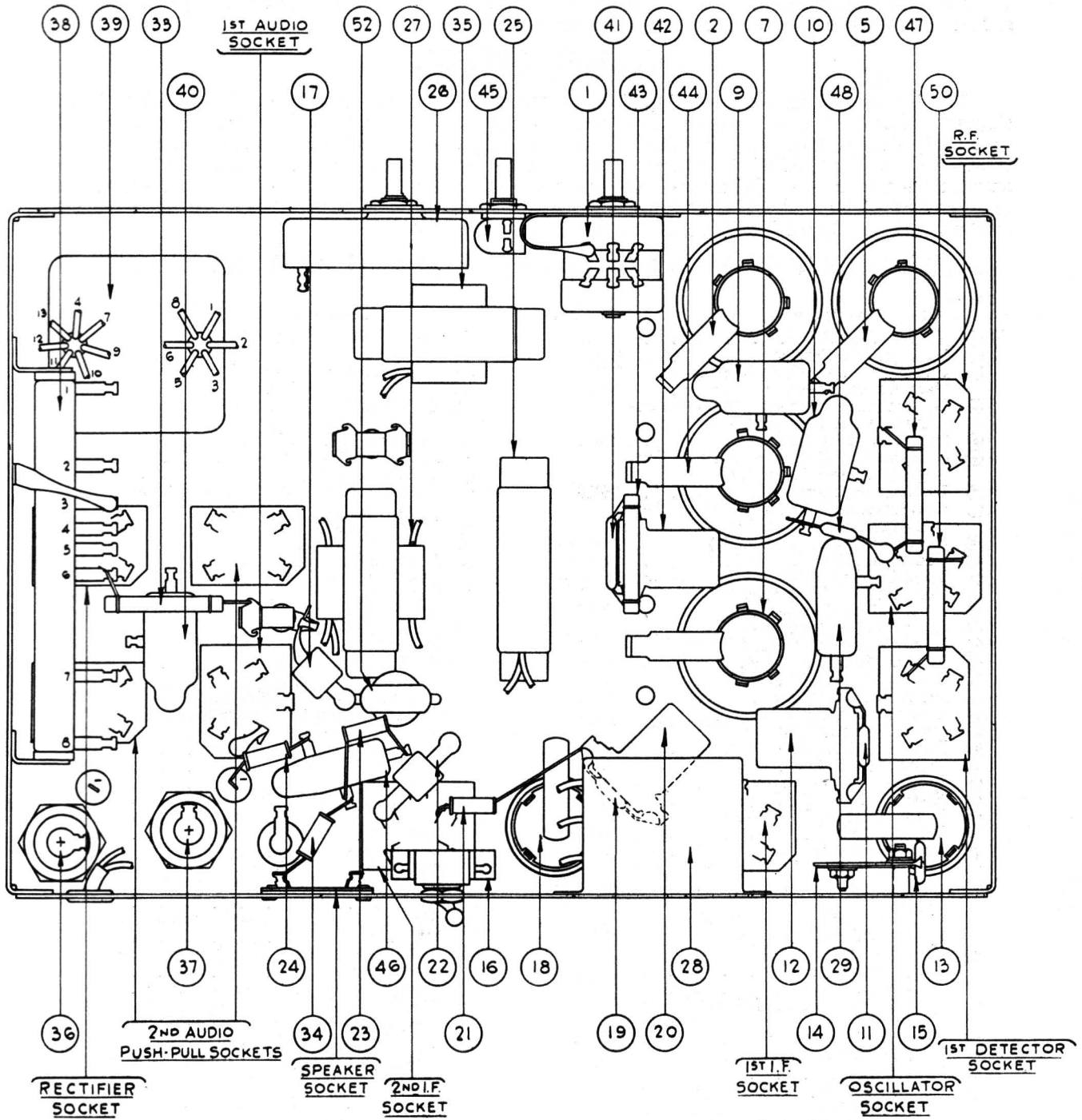


FIG. 2

## ADJUSTMENT OF MODELS 90 and 90-A

These Receivers are accurately adjusted at the Factory prior to their shipment. Under no circumstances are the adjusting condensers to be changed in the field. This alignment requires special oscillator equipment, which all Philco Distributors have. If for any reason the Receiver needs adjustment it must be returned to the Distributor's Service Department.

### RANGE SWITCH

The Range Switch, No. ⑩ in Fig. 1, is placed in the NORMAL position when the Receiver is shipped. This gives great distance range and is the setting which will be found most satisfactory in practically all locations. In places far from broadcasting stations, however, the Range Switch may be changed to the MAXIMUM position. This will make the Receiver super-sensitive and will give extreme distance range. Do not use the Range Switch in the MAXIMUM position if there are one or more powerful broadcasting stations near you. In any location there will be less noise between stations with the Range Switch in the NORMAL position.

### REPLACEMENT PARTS—MODELS 90 and 90-A RECEIVERS

No. on Figs. 3 and 4	Description	Part No.	No. on Figs. 3 and 4	Description	Part No.
①	Volume Control . . . . .	5039	④①	Condenser .015 M. F. (Double) . . . . .	3793-E
②	1st R. F. Transformer . . . . .	03013	④②	Condenser .0007 M. F. } Assembled	03050
③	Gang Condenser—50 to 60 cycles . . . . .	03001	④③	Compensating Condenser } . . . . .	4237
	Gang Condenser—25 to 40 cycles . . . . .	03078	④④	Resistor—50,000 Ohms . . . . .	03016
④	Compensating Condenser (Part of Tuning Condenser Assembly) . . . . .		④⑤	Oscillator Coil . . . . .	4095
⑤	2nd R. F. Transformer . . . . .	03014	④⑥	On-Off Switch . . . . .	5215
⑥	Compensating Condenser (Part of Tuning Condenser Assembly) . . . . .		④⑦	Condenser .001 M. F. . . . .	3766
⑦	1st Det. Transformer . . . . .	03015	④⑧	Resistor—13,000 Ohms . . . . .	4519
⑧	Compensating Condenser (Part of Tuning Condenser Assembly) . . . . .		④⑨	Condenser .00011 M. F. . . . .	
⑨	Condenser .09 M. F. (Double) . . . . .	4989-C	④⑩	Compensating Condenser (Part of Tuning Condenser Assembly) . . . . .	3526
⑩	Condenser .09 M. F. (Double) . . . . .	4989-B	⑤①	Resistor—5,000 Ohms . . . . .	3463
⑪	Fixed Condenser .00011 } Assembled	3772-C	⑤②	Pilot Bulb . . . . .	4147
⑫	Compensating Condenser } . . . . .			R. F. Choke . . . . .	03086
⑬	1st I. F. Transformer . . . . .	03009		Line Cord and Plug . . . . .	L-943
⑭	Compensating Condenser } Assembled	03051		Tube Shield . . . . .	03002
⑮	Fixed Condenser .00011 } . . . . .			Knob (large) Dial Control . . . . .	4958-A
⑯	Normal Maximum Switch . . . . .	3116		Spring (Dial Knobs) . . . . .	4147
⑰	Condenser (.000035 mf) . . . . .	4990		Knobs (small) Tone and Volume Control . . . . .	4959-A
⑱	2nd I. F. Transformer . . . . .	03143		Knob (switch) . . . . .	4290-A
⑲	Compensating Condenser } Assembled	03051		Grid Clip . . . . .	4897
⑳	Fixed Condenser .00011 } . . . . .			Speaker Plug and Cable . . . . .	L-1124-A
㉑	Resistor—50,000 Ohms . . . . .	4518		Grommet for R. F. Transformer Shield . . . . .	3747
㉒	Condenser .00035 . . . . .	4990		Rectifier Tube Socket . . . . .	5026
㉓	Resistor—250,000 Ohms . . . . .	4410		Four Prong Socket Assembly . . . . .	4955
㉔	Resistor—1,000,000 Ohms . . . . .	4409		Five Prong Socket Assembly . . . . .	4956
㉕	Condenser .5 M. F. (Double) . . . . .	03024		Speaker Socket . . . . .	4957
㉖	Tone Control . . . . .	4037-A		Volume Control Insulator . . . . .	4092
㉗	1st Audio Transformer . . . . .	4952		Volume Control Insulator . . . . .	4286
㉘	Condensers 2—.25 M. F. and 1—.5 M. F. . . . .	03029		Fahnstock Clip . . . . .	L-1126
㉙	Condenser .05 M. F. . . . .	3615-G		Finishing Rosettes . . . . .	4267
㉚	Output Transformer:			Speaker Mounting Screws (3 used) . . . . .	W-493
	H <sub>2</sub> (For Large Cone Assembly) . . . . .	2848		Speaker Mounting Screws (1 used) . . . . .	W-483
	K <sub>2</sub> (For Small Cone Assembly) . . . . .	2766		Dial . . . . .	5021
㉛	Voice Coil Assembly and Cone:			Mica for Gang Condenser Compensating Condenser . . . . .	3473
	H <sub>2</sub> (Large Cone) . . . . .	02997		Insulating Washer for Compensating Condenser . . . . .	3500
	K <sub>2</sub> (Small Cone) . . . . .	02996		Tuning Condenser Mounting Washer . . . . .	3914
㉜	Speaker Field—Assembled with Pot and Frame . . . . .			Tuning Condenser Mounting Washer . . . . .	3915
㉝	Resistor—250,000 Ohms . . . . .	3768		Tuning Condenser Mounting Sleeve . . . . .	3916
㉞	Resistor—250,000 Ohms . . . . .	4410		Spring for Tuning Condenser . . . . .	4255
㉟	Filter Choke . . . . .	4951		Bezel . . . . .	5009
㊱	Condenser 6 M. F. Electrolytic Type (50-60 cycles) . . . . .	4916		Complete Pilot Bracket . . . . .	03081-A
	Condenser 10 M. F. Electrolytic Type (25-40 cycles) . . . . .	5142		Dial Disc . . . . .	4925
㊲	Condenser 6 M. F. Electrolytic Type (25-40) and (50-60) cycles . . . . .	4916		Light Shield Screen . . . . .	4937
㊳	B. C. Resistor . . . . .	4953		Friction Drive Bracket . . . . .	4930
㊴	Power Transformer (50 to 60 cycles) . . . . .	4938		Brass Collar for Friction Drive . . . . .	4935
	Power Transformer (25 to 40 cycles) . . . . .	4939		Shaft . . . . .	4931

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