

# PHILCO

REG. U.S. PAT. OFF

## Service Bulletin — No. 146

### Models 89 and 19

The Philco Radio of the 89 and 19 Series is a 6 tube super-heterodyne, employing the high efficiency 6.3 volt filament tubes, automatic volume control and pentode output. The intermediate frequency used in adjusting the super-heterodyne circuit is 260 kilocycles. The power consumption of the models 89 and 19 is 60 watts.

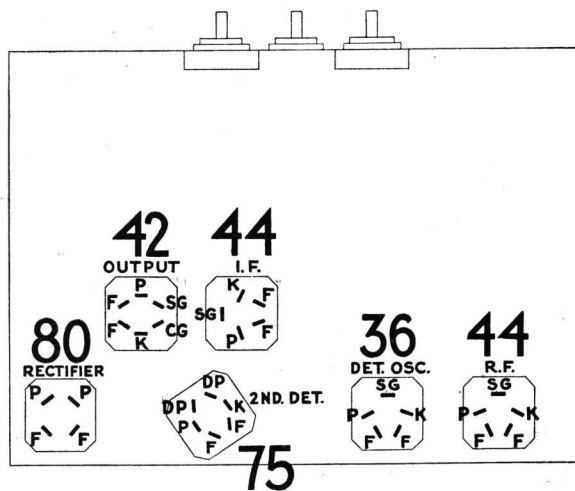
**Table 1—Tube Socket Data\*—A. C. Line Voltage 115 Volts**

Circuit	RF	Det. Osc.	IF	2nd Det.	Out-put	Rectifier
Type Tube	44	36	44	75	42	80
Filament Volts—F to F...	6.3	6.3	6.3	6.3	6.3	5.0
Plate Volts—P to K...	235	230	240	175	235	350/Plate
Screen Grid—SG to K	90	90	90	245	245	
Control Grid—CG to K...						
Cathode Volts—K to F...	.3	7.5	.3	.3	.15	
Diode Plate Volts—K to DP	3.5	7.8	3.5		14	
				2		

\*All of the readings above in Table 1 were taken from the under side of chassis, using test prods and leads with a suitable A. C. voltmeter for filament voltages and a high resistance, multi-range D. C. voltmeter for all other readings. Volume control at maximum and switch and station selector set for 550 KC. Readings taken with a radio set tester and plug-in adapter will not be satisfactory.

**Table 2—Power Transformer Data**

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



F Filament      SG Screen Grid      K Cathode  
P Plate      CG Control Grid      DP Diode Plate

Figure 1—Tube Socket, Under Side of Chassis

**Caution:** Never connect the chassis to the power supply unless the speaker is connected and all tubes are in place.

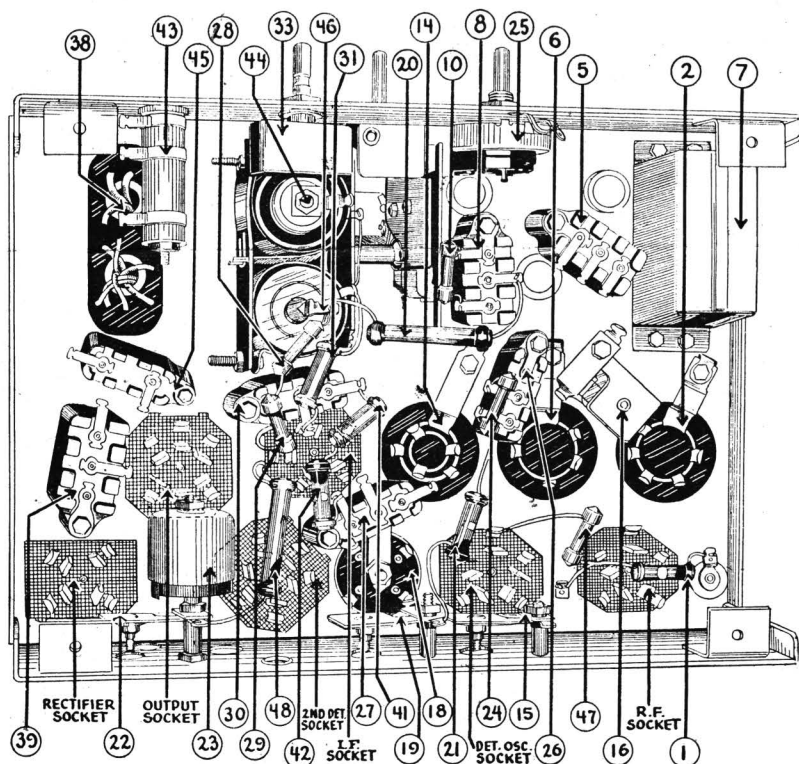


Figure 2—Bottom View of Chassis, Showing Parts

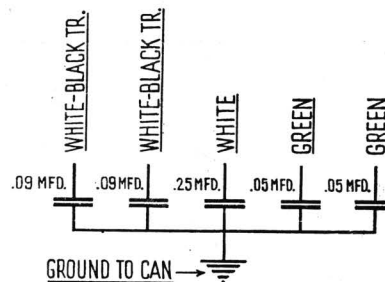


Figure 3—Internal Connections Filter Condenser.

### Adjustment of Models 89 and 19

These receivers are accurately adjusted at the factory prior to shipment. Under normal conditions it will never be necessary to readjust 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 Oscillator equipment has been designed for use in this work and will be found the most inexpensive and most reliable for the purpose.

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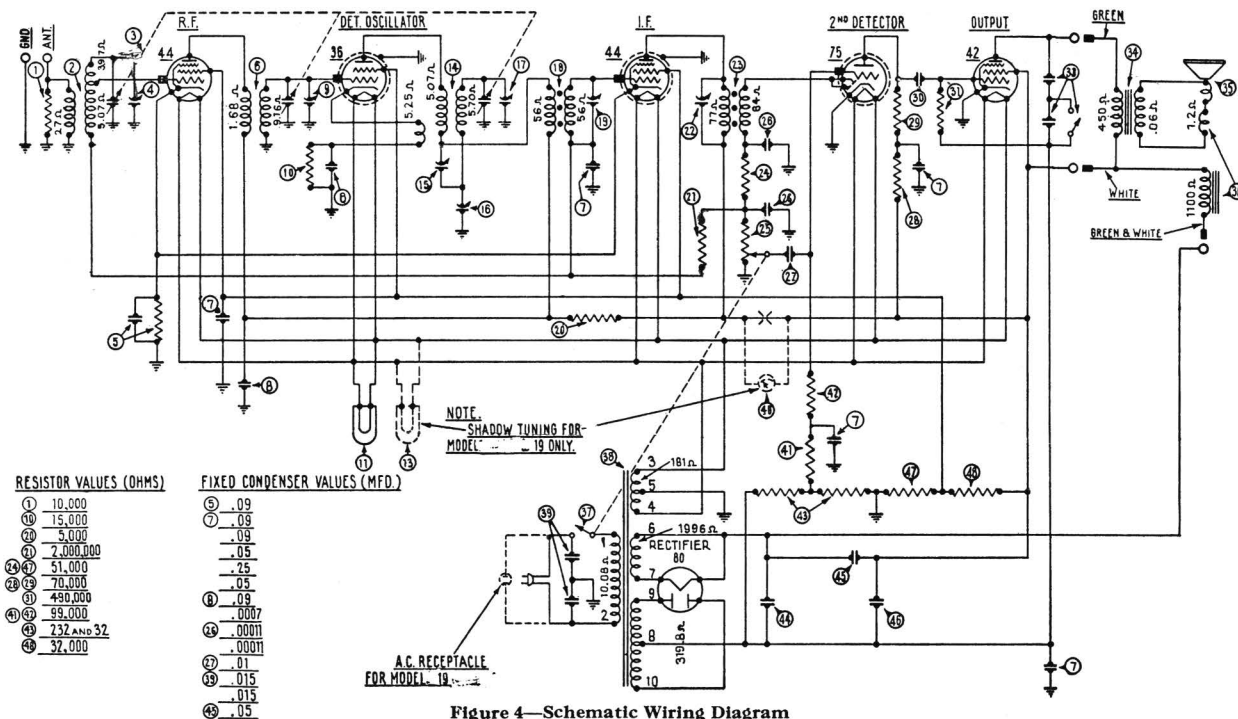


Figure 4—Schematic Wiring Diagram

**RESISTOR VALUES (OHMS)**

1	10,000
10	15,000
20	5,000
21	2,000,000
22	51,000
23	70,000
24	490,000
25	99,000
26	232 AND 32
28	32,000

**FIXED CONDENSER VALUES (MFD.)**

5	.09
7	.09
8	.09
9	.05
11	.25
12	.05
13	.09
14	.0007
15	.00011
16	.00011
17	.01
19	.015
27	.015
45	.05

### Replacement Parts for Models 89 and 19

1	Resistor (10,000 Ohms) Brown—Black—Orange	4412	29	Resistor (70,000 Ohms) Violet—Black—Orange	5385
2	Antenna Transformer	06619	30	Condenser (.01 Mfd.)	3903-T
3	Tuning Condenser Assembly	06577	31	Resistor (490,000 Ohms) Yellow—White—Yellow	4517
4	Compensating Condenser—(R.F. Part of Tuning Condenser Assembly)		32	Bezel	8055
5	Condenser and Resistor—(.09 Mfd. and 200Ω)	4989-W	33	Tone Control	06764
6	Interstage Transformer	06662	34	Output Transformer	2580
7	Filter Cond. Bank (.09—.09—.05—.05—.25)	06624	35	Voice Coil and Cone Assembly	02823
8	Condenser (Double—.09 and .0007 Mfd.)	8174-B	36	Speaker Field and Bucking Coil Assembled with Pot (K-7)	02761
9	Compensating Condenser—(R.F. Part of Tuning Condenser Assembly)		37	Switch (A.C.) Part of Vol. Control Assembly	
10	Resistor (15,000 Ohms) Brown—Green—Orange	6208	38	Power Transformer (50-60 Cycles, 115 Volts)	8046
11	Pilot Lamp	6608		Power Transformer (25-40 Cycles—115 Volts)	8047
12	Dial Scale	7882		Power Transformer (50-60 Cycles—230 Volts)	8048
13	Pilot Lamp—(Shadow Tuning)	6608	39	Condenser (Double—.015 and .015 Mfd.)	3793-E
14	Oscillator Transformer	06620	40	Shadow Tuning	6497-G
15	Compensating Condenser — (1st I.F. Primary)	04000-M	41	Resistor (99,000 Ohms) White—White—Orange	4411
16	Compensating Condenser — (Low Frequency)	04000-S	42	Resistor (1,000,000 Ohms) Brown—Black—Green	4409
17	Compensating Condenser—(R.F. Part of Tuning Condenser Assembly)		43	B.C. Resistor (235 Ohms and 32 Ohms—Wire Wound)	7998
18	First I.F. Transformer	06621	44	Electrolytic Condenser—6 Mfd.	8165
19	Compensating Condenser (1st I.F. Secondary)	04000-M	45	Condenser (.05 Mfd.)	3615-E
20	Resistor (5,000 Ohms) Green—Black—Red	3526	46	Electrolytic Condenser—6 Mfd.	8166
21	Resistor (2,000,000 Ohms) Red—Black—Green	5872	47	Resistor (51,000 Ohms) Green—Brown—Orange	4518
22	Compensating Cond. (2nd I.F. Primary)	04000-A	48	Resistor (32,000 Ohms) Orange—Red—Orange	3525
23	Second I.F. Transformer	06622		Tube Shield	8005
24	Resistor (51,000 Ohms) Green—Brown—Orange	6098		Knob (Large)	03063
25	Volume Control and A.C. Switch	8003		Knob (Small)	03064
26	Condenser (Double—.00011 & .00011 Mfd.)	8035-C		Knob Spring	5262
27	Condenser (.01 Mfd.)	3903-AB		Grid Clip	4897
28	Resistor (70,000 Ohms) Violet—Black—Orange	5385		Four Prong Socket	7544
				Five Prong Socket	7546
				Six Prong Socket	7547
				Pilot Lamp Shield	5760

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## PHILCO RADIO & TELEVISION CORPORATION

Service Department