

# 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.

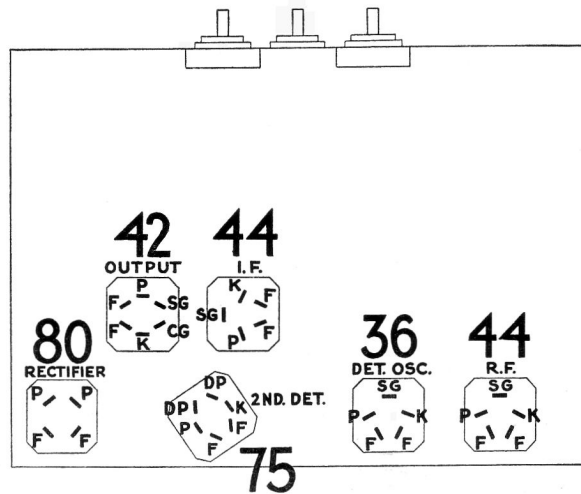
**Table 1—Tube Socket Data\*—A. C. Line Voltage 115 Volts**

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 Volts—SG to K	90	90	90	245	245	
Control Grid Volts—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	

\*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**

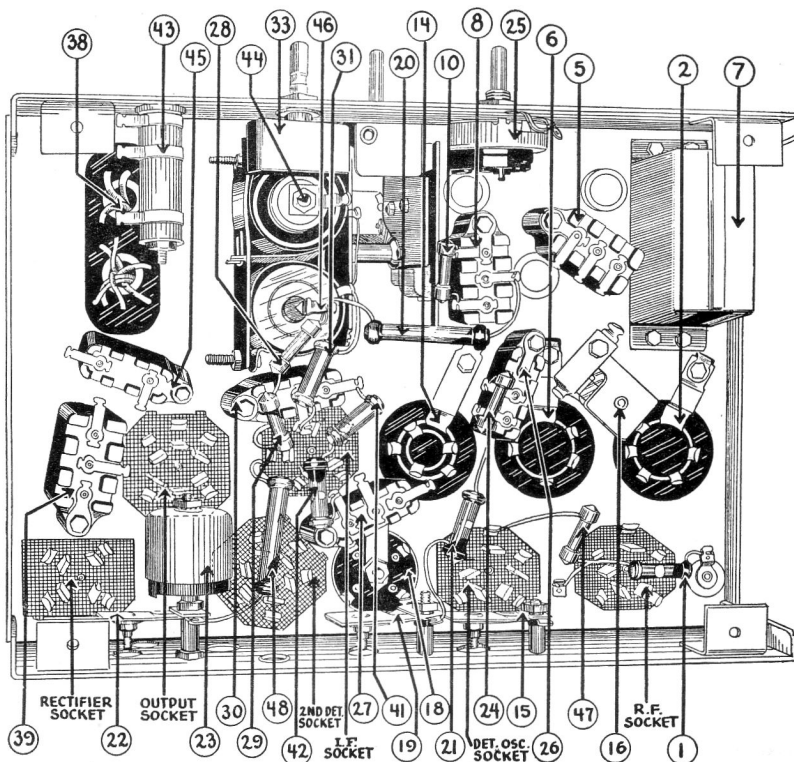
Terminal	A. C. Volts	Circuit	Color
1-2	105-125	Primary	White
3-4	6.3	Filaments	Black
6-7	5.0	Filament of 80	Blue
9-10	670	Plates of 80	Yellow
5	....	Center Tap of 3-4	Black-Yellow Tracer
8	....	Center Tap of 9-10	Yellow-Green Tracer



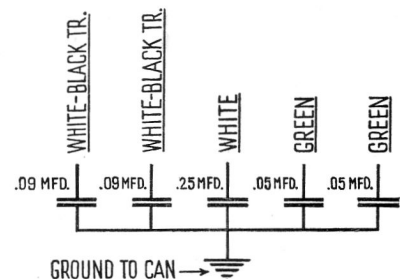
F Filament      SG Screen Grid      K Cathode  
P Plate      CG Control Grid      DP Diode Plate

**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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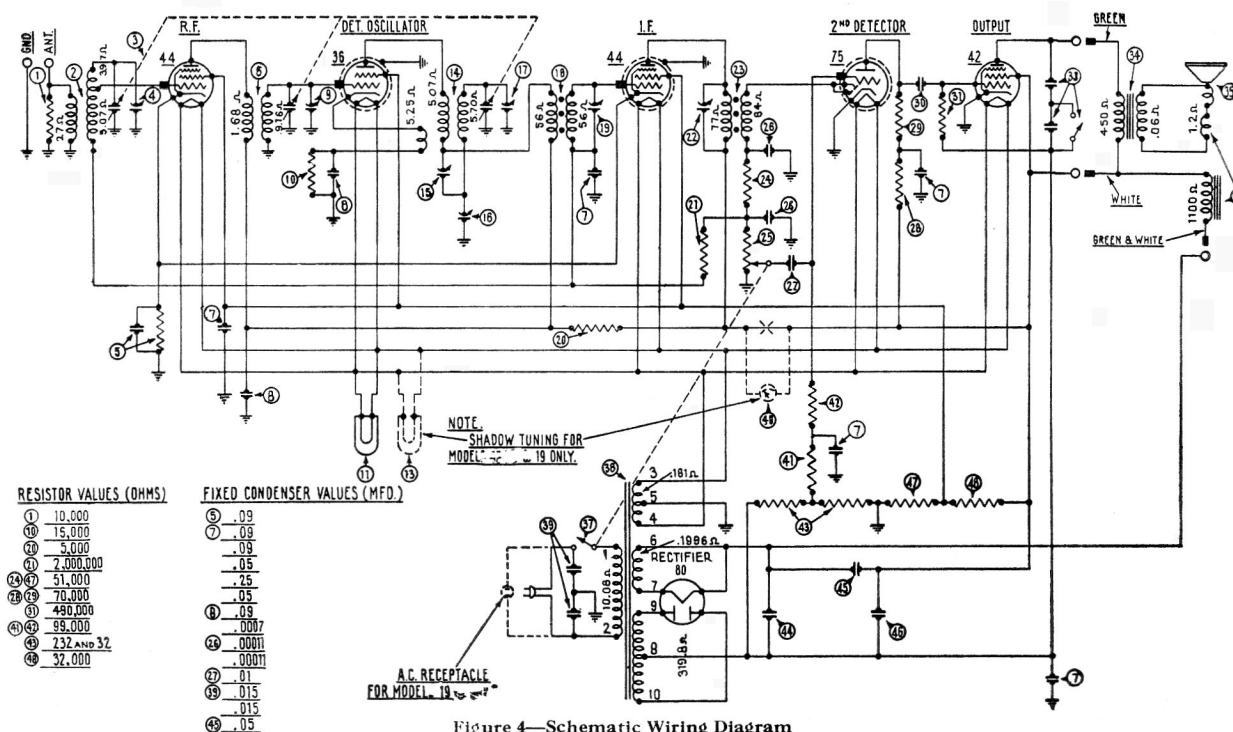


Figure 4—Schematic Wiring Diagram

## 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