

# PHILCO

REG. U.S. PAT. OFF.

## Service Bulletin — No. 195

### Model 29

Philco Model 29 is a superheterodyne receiver operating on alternating current and capable of receiving either standard and police broadcasts between 540 and 1720 kilocycles, or short-wave stations between 4.2 and 13 megacycles. The left hand side of the dial is calibrated in kilocycles and the right in megacycles. A two-position switch changes reception from standard to short-waves. This model is equipped with shadow tuning, three point tone control with fixed bass compensation, and automatic volume control. The output is 5 watts.

Model 29 uses a type 6-A-7 detector-oscillator, two type 39-44 I. F. tubes, type 75 2d detector, type 42 output tube, and type 80 rectifier. The power consumption is 70 watts. The intermediate frequency is 460 K.C.

### Adjusting Compensating Condensers

For adjustment of compensating (padding) condensers in Model 29, an accurately calibrated signal generator and a special insulated padding wrench and screwdriver are needed. We suggest the Philco Model 024 Signal Generator or the 048 Tester which includes a similar instrument. Philco No. 3164 wrench and 27-1159 screwdriver are recommended in addition.

Adjustments are made in the following order:—

**ADJUSTMENT OF INTERMEDIATE FREQUENCY**—Remove the grid clip from the type 6-A-7 tube and connect the “ANT” output terminal on the signal generator to the grid cap of the tube. Connect the “GND” terminal of the signal generator to the “GND” terminal of the receiver chassis.

Connect the output meter to the primary terminals of the output transformer. Set the signal generator at 460 K.C. (the intermediate frequency of Model 29) turn wave-band switch of receiver to left and dial to 600 K.C. Turn receiver and Signal Generator “ON”. Adjust each of the I. F. compensating condensers in turn, to give maximum response in the output of the receiver. The three pairs of I. F. compensating condensers are located, one pair at the top of each of the three I. F. transformer shields. These are the metal “Cans” near the rear of chassis. Each of these transformers has a dual compensating condenser mounted at its top, and accessible thru a hole in the top of the coil shield. In the dual compen-

sators, the Primary circuit is adjusted by turning the screw; the secondary circuit is adjusted by turning the hex-head nut.

**ADJUSTMENT OF WAVE TRAP**—Replace the grid clip upon the Detector-Oscillator tube (Type 6-A-7). Connect the output leads from the Signal Generator directly to the antenna and ground terminals of the receiver. Set the wave-band switch of the receiver to the standard broadcast band (left hand position) and the Station Selector at the low frequency (540 K.C.) end. Adjust the Wave Trap condenser to give MINIMUM response to a 460 K.C. Signal from signal generator. The Wave Trap ① is located at rear and underneath the chassis, and is shown in Figure 4. It is reached from the rear of the chassis, thru hole at right hand end of set base.

**DETECTOR; AND OSCILLATOR — “HIGH” AND “LOW FREQUENCY” ADJUSTMENTS**—The “Antenna” and “Oscillator H. F.” compensators are located on top of the tuning condenser assembly, reached from above.

Set the signal generator at 1500 K.C., tune in this signal on the set, and adjust the antenna compensator ⑦ (nearest tuning control), to give maximum reading in the output meter.

Next adjust the oscillator H. F. condenser ③, located on the other section of tuning condenser, to maximum reading. Finally set the signal generator at 600, tune in this signal and adjust the oscillator L. F. condenser, located underneath chassis ⑩ in Fig. 4) to maximum reading. This adjustment is reached thru the hole in top of chassis, between the two electrolytic condensers (left-hand end of chassis when facing rear).

#### Tube Socket Voltages—(Line Voltage 115)

Function	Det. Osc.	1st I. F.	2nd I. F.	2nd Det.	Out-put	Rectifier
Type	6A7	39/44	39/44	75	42	80
Filament (F to F).....	6.3	6.3	6.3	6.3	6.3	5.0
Plate (P to K).....	210	200	200	200	300	310
Screen (SG to K).....	80	80	80	...	315	...
Cathode (K to GND).....	4.8	4.8	4.8	0	0	...
6-A-7 Grid G1 to K.....	35	...	...	...	...	...
6-A-7 Grid G2 to K.....	170	...	...	...	...	...

#### Power Transformer Voltages

Terminals	A. C. Volts	Circuit	Color of Leads
1-2	120	Primary	White
3-4	5.0	Fil. of 80	Blue
5-7	746	Plates of 80	Yellow
8-10	6.3	Filaments	Black
6	...	Center of 5-7	Black—Yellow Tracer
9	...	Center of 8-10	Yellow—Green Tracer

The above tests were made with an A. C. voltmeter for filament voltages and a high-resistance D. C. voltmeter for all others. Dial at 550 K.C., wave-band switch to left, volume control at maximum. Tests made with test prods applied to sockets underneath chassis.

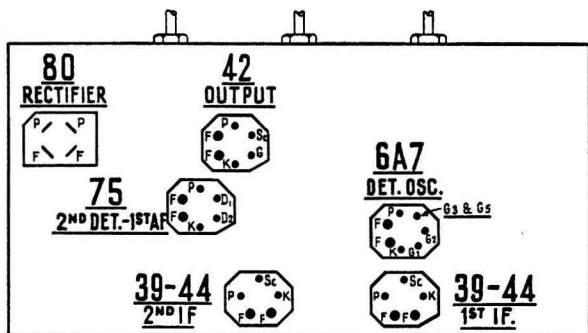


Fig. 1—Tube Socket Layout

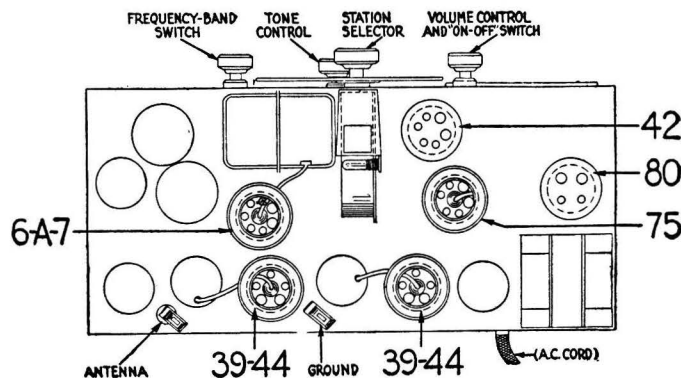


Fig. 2—Top View

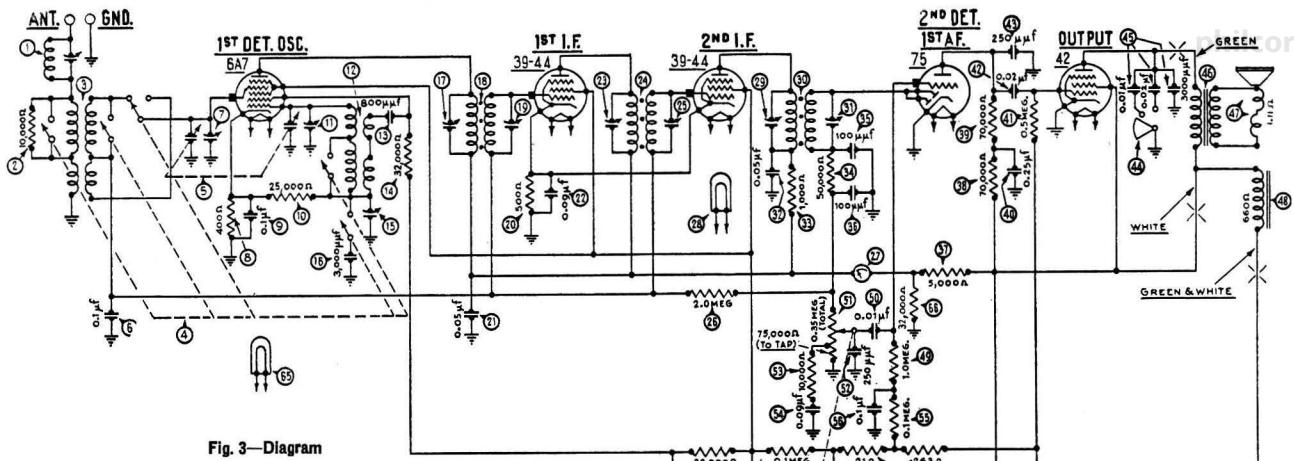


Fig. 3—Diagram

I.F. 460 K.C.

## REPLACEMENT PARTS MODEL 29

Nos. on Diagram	Description	Part No.	List Price
1	Wave Trap.....	38-5199	\$0.30
2	Resistor (10,000 ohms) (Brown-Black-Orange).....	33-1000	.25
3	Antenna Transformer.....	32-1360	.60
4	Wave-Band Switch.....	42-1062	1.10
5	Tuning Condenser Assembly.....	*31-1192	....
6	Condenser (.1 Mfd. Tubular).....	30-4122	.35
7	Compensating Condenser (Det.).....	Part of 5	....
8	Resistor (400 ohms Flexible Wire-Wound).....	33-3016	.20
9	Condenser (.1 Mfd. Tubular).....	30-4122	.35
10	Resistor (25,000 ohms) (Red-Green-Orange).....	4516	.25
11	Compensating Condenser (Osc. H. F.).....	Part of 5	....
12	Oscillator Transformer.....	32-1361	.65
13	Condenser (.0008 Mfd. Mica).....	5878	.35
14	Resistor (32,000 ohms) (Orange-Red-Orange).....	3525	.25
15	Compensating Condenser (Osc. L. F.).....	04000S	.35
16	Condenser (.003 Mfd. Mica).....	7301	.45
17	Compensating Condenser (1st I. F. Primary).....	Part of 18	....
18	1st I. F. Transformer.....	32-1362	1.50
19	Compensating Condenser (1st I. F. Sec.).....	Part of 18	....
20	Resistor (500 ohms Flexible Wire-Wound).....	6977	.20
21	Condenser (.05 Mfd. Tubular).....	30-4123	.35
22	Condenser (.09 Mfd. Twin) (Bakelite Block).....	4989-Z	.40
23	Compensating Condenser (2d I. F. Pri.).....	Part of 24	....
24	2d I. F. Transformer.....	32-1363	1.50
25	Compensating Condenser (2d I. F. Sec.).....	Part of 24	....
26	Resistor (2 Megohms) (Red-Black-Green).....	5872	.25
27	Shadowmeter.....	6497	2.50
28	Pilot Lamp (Shadowmeter).....	Part of 27	....
29	Compensating Condenser (3d I. F. Pri.).....	Part of 30	....
30	3d I. F. Transformer.....	32-1364	1.55
31	Compensating Condenser (3d I. F. Sec.).....	Part of 30	....
32	Condenser (.05 Mfd. Tubular).....	30-4123	.35
33	Resistor (1,000 ohms) (Brown-Black-Red).....	5837	.25
34	Resistor (50,000 ohms) (Green-Brown-Orange).....	6098	.25
35	Condenser (.0001 Mfd. Mica).....	30-1031	....
36	Condenser (.0001 Mfd. Mica).....	30-1031	....
37	Resistor (5,000 ohms) (Green-Black-Red).....	3526	.25
38	Resistor (70,000 ohms) (Violet-Black-Orange).....	5385	.25
39	Resistor (70,000 ohms) (Violet-Black-Orange).....	5385	.25
40	Condenser (.25 Mfd. Tubular).....	30-4134	.45
41	Resistor (500,000 ohms) (Yellow-White-Yellow).....	4517	.25
42	Condenser (.02 Mfd. Tubular).....	30-4113	.30
43	Condenser (.00025 Mfd. Mica).....	5858	.35
44	Tone Control.....	30-4178	.75
45	Condensers (Inside 44).....	Part of 44	....
46	Output Transformer.....	32-7178	1.60
47	Voice Coil and Cone Assembly (H-16).....	02625	.80
48	Field Coil and Pot. Assembly (H-16).....	36-3218	3.50
49	Resistor (1 Meg.) (Brown-Black-Green).....	4409	.25
50	Condenser (.01 Mfd. Tubular).....	30-4124	.35
51	Volume Control and On-Off Switch.....	33-5066	1.45
52	Condenser (.00025 Mfd. Mica).....	5858	.35
53	Resistor (10,000 ohms) (Brown-Black-Orange).....	33-1000	.25
54	Condenser (.09 Mfd.) (Bakelite Block).....	4989-AM	.35

Nos. on Diagram	Description	Part No.	List Price
55	Resistor (100,000 ohms) (White-White-Orange).....	4411	\$0.25
56	Condenser (.1 Mfd. Tubular).....	30-4122	.35
57	B. C. Resistor (263 ohms; 23 ohms; Wire-Wound).....	33-3069	.25
58	Resistor (.1 Meg.) (White-White-Orange).....	3767	.25
59	Resistor (32,000 ohms) (Orange-Red-Orange).....	33-1026	.35
60	Filter Choke.....	32-7018	1.50
61	Condenser (Electrolytic—6 Mfd.).....	30-2020	1.40
62	Condenser (.015 Mfd. Twin—Bakelite Case).....	3793-E	.40
63	Power Transformer.....	32-7229	5.25
64	Condenser (Electrolytic—8 Mfd., 8 Mfd., 10 Mfd.).....	30-2073	3.45
65	Pilot Lamp (Dial).....	6608	.11
66	Resistor (32,000 ohms) (Orange-Red-Orange).....	33-1026	.35
A. C. Cord and Plug Assembly..... I-943-A .60			
Tube Shield..... 28-1107 .10			
Four-Prong Socket..... 7544 .10			
Five-Prong Socket..... 7547 .11			
Six-Prong Socket..... 7546 .11			
Seven-Prong Socket..... 27-6005 .11			
Speaker Socket..... 4957 .10			
Knob (Large)..... 27-4051 .10			
Knob (Small)..... 27-4052 .10			
Dial Assembly..... *31-1208 .45			
Dial Scale..... 27-5042 .25			
Chassis Mounting Screw..... W-1345A 2.75 C.			
Chassis Mounting Foot (Steel)..... 29-1983 .03			
Chassis Mounting Foot (Rubber)..... 27-4116 .05			
Chassis Mounting Foot Plate..... 27-7497 .35 C.			
Screw (Foot mtg.)..... W-644A 1.50 C.			

NOTE: Run No. 6 has a No. 33-1114 resistor (8000 ohms) (Gray - Black - Red) shunted across shadowmeter. Runs No. 7 and after have No. 5309 resistor (2900 ohms) (Red - White - Red) shunted across shadowmeter.

\*Note: Some Model 29 sets use tuning condenser assembly No. 31-1250, which has dial assembly 31-1245. This is not interchangeable with 31-1192 and 31-1208.

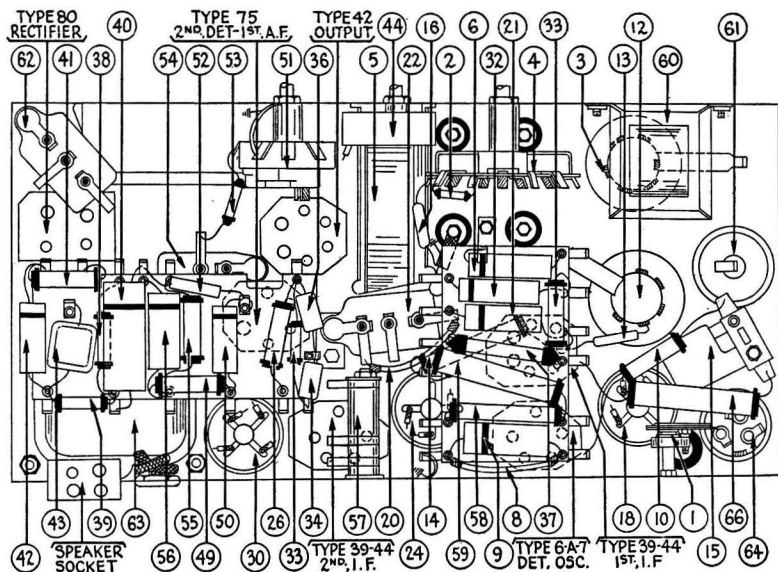


Fig. 4—Bottom View

# PHILCO RADIO & TELEVISION CORPORATION

Service Department