

PHILCO Model 635

SERVICE BULLETIN
No. 239



For Members of
RADIO MANUFACTURERS SERVICE
A PHILCO SERVICE PLAN

Model 635

Type Circuit: Superheterodyne, with preselector R.F. amplifier, and pentode output (5 watts); built in connections for Philco All-wave aerial; aerial selector built into and operated by wave-band switch.

Power Supply: Alternating Current. Voltage and frequency as specified on chassis nameplate.

Tubes Used: 1 type 78, R.F.; 1 type 6A7, Detector Oscillator; 1 type 78, I.F.; 1 type 75, 2d Detector and 1st A.F.; 1 type 42 Output; 1 type 80 Rectifier.

Wave Bands: Three—(1) Short Wave (with some Police); (2) Police, Aircraft and Amateur; (3) Standard.

Coverage of Each Band: Band 1, 540-1720 K.C.; Band 2, 1750 to 5800 K.C. (1.75-5.8 megacycles); Band 3, 5700-18000 K.C. (5.7 to 18.0 megacycles).

Tuning Drive: Two-speed gear drive, ball bearing. 50 to 1 ratio for slow-speed tuning.

Tone Control: 3-position, with bass compensation effective in first position.

Intermediate Frequency: 460 K.C.

Power Consumption: 70 watts.

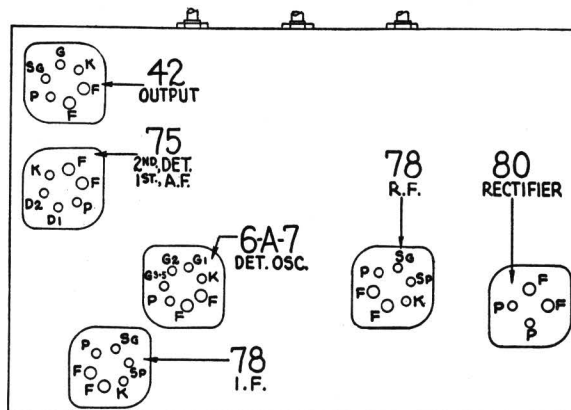


Fig. 1. Tube Sockets as viewed from bottom

Tube Socket Voltages Measured to Ground

Tube	78 R.F.	6A7 Det. Osc.	78 I.F.	75 2d Det.	42 Output
Point P	245	245	245	188	298
SG	102	102	102	...	311
K	...	...	2.6	...	...
6A7: G ₃ & G ₅ = 175					

Above voltages were obtained by using a PHILCO type 025 Circuit Tester (or 048A All-purpose Tester), using test prods applied to underside of chassis. Volume control at maximum; dial at 55; waveband switch counter-clockwise (band 1). Use Fig. 1 for test points. Line voltage 115 volts.

Power Transformer Data

Terminals	A.C. Volts	Current	Circuit	Color
1-2	120	.....	Primary	White
3-5	746	78 M.A.	Secondary	Yellow
6-7	5.0	2.0 A.	Fil. Rect.	Blue
8-9	6.3	2.25 A.	Filaments	Black
4	...	.....	Center Tap of 3-5	Yellow, Green Tracer

Adjusting Compensating Condensers Model 635

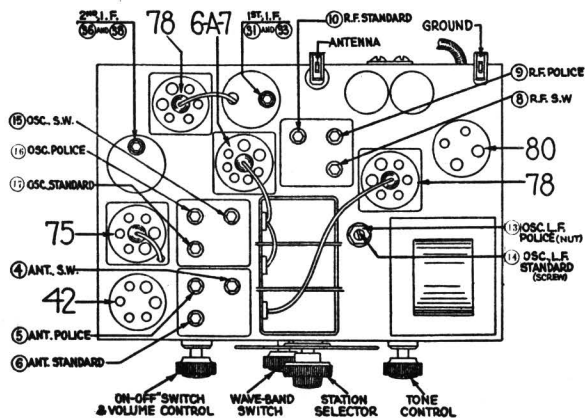


Fig. 2. Location of Compensating Condensers

The adjustment of the compensating condensers in Model 635 requires a signal generator covering the broadcast and police band, and also one capable of producing a signal at certain frequencies in the short wave band. Philco Model 088 All-wave signal generator is ideal for these requirements. Or you can use the Philco Model 024 or 048A instrument for the broadcast frequencies, and the Model 091 crystal controlled short wave signal generator for the "short wave" frequencies. The location of all compensating condensers is shown in Fig. 2. An output meter is also needed, such as in Philco Model 025

Adjustment of I. F.

1. Remove the antenna connection from the receiver, disconnect the grid clip from the first detector (type 6A7 tube), and connect the "ANT" output terminal of the broadcast signal generator to the grid cap of this tube; connect the "GND" terminal of the signal generator to the "GND" terminal of the receiver.

2. Connect the 0 to 30 volt range of the output meter in the Philco 048A or 025 unit to the plate and cathode of the output tube or to the two bottom prongs of the speaker plug.

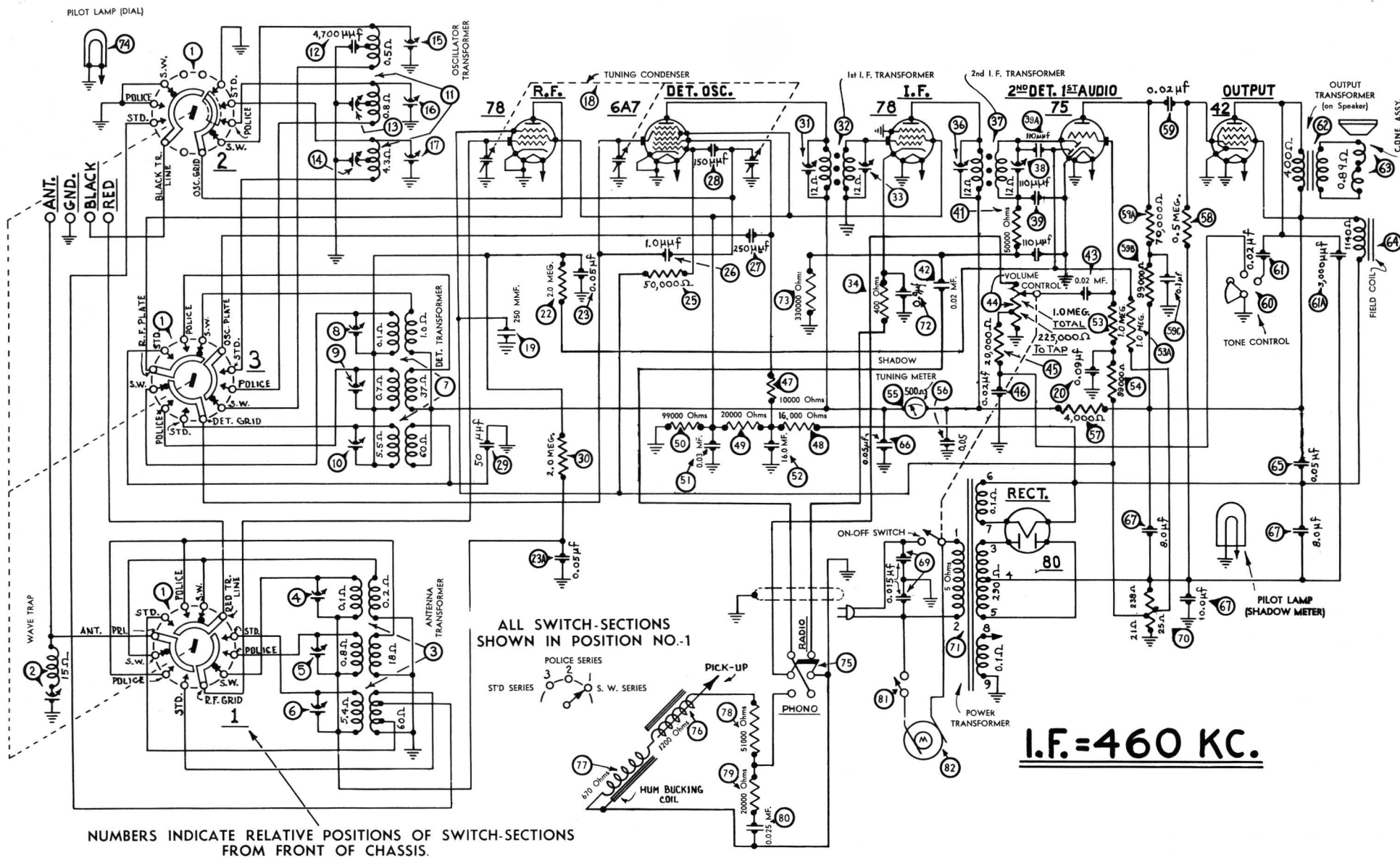


Fig. 3. Schematic Diagram of Model 635

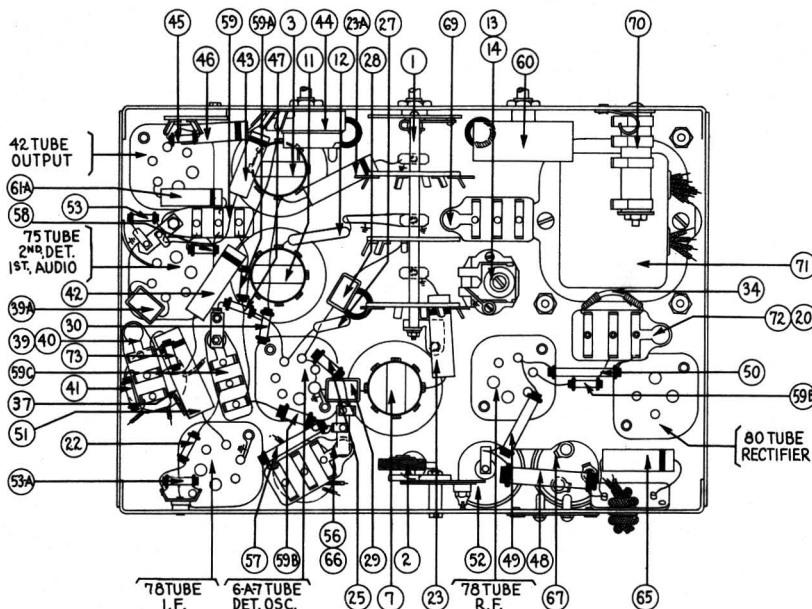


Fig. 4. Bottom View of Chassis

Replacement Parts—Model 635

Description	Part No.	List Price	Description	Part No.	List Price
① Wave Band Switch.....	42-1152	\$1.75	⑤⑧ Resistor (490,000 ohms) (Yellow, White, Yel- low).....	33-1097	\$0.20
② Wavetrap.....	38-6850	1.10	⑤⑨ Condenser (.02 Mfd. Bakelite).....	8318-SU†	.30
③ Antenna Transformer.....	32-1867	3.00	⑤⑩ Resistor (70000 ohms) (Violet, Black, Orange).....	5385	.20
④ Compensater (Ant. S.W.).....	Part of ③	.....	⑤⑪ Resistor (99000 ohms) (White, White, Orange).....	6099	.20
⑤ Compensater (Ant. Police).....	Part of ③	.....	⑤⑫ Condenser (.09 Mf. Bakelite).....	4989-SG‡	.35
⑥ Compensater (Ant. Standard).....	Part of ③	.....	⑤⑬ Tone Control (3 position).....	30-4332†	.75
⑦ R. F. Transformer.....	32-1868	3.00	⑤⑭ Condenser in Tone Control.....	Part of ⑤⑬	.....
⑧ Compensater (R.F. Short-Wave).....	Part of ⑦	.....	⑤⑮ Condenser (.003 Mfd. Tubular).....	30-4042	.25
⑨ Compensater (R.F. Police).....	Part of ⑦	.....	⑤⑯ Output Transformer.....	32-7178	1.60
⑩ Compensater (R.F. Standard).....	Part of ⑦	.....	⑤⑰ Field Coil & Cone Assembly (K-32).....	36-3159	.80
⑪ Oscillator Transformer.....	32-1869	2.50	⑤⑱ Voice Coil & Pot Assembly (K-32).....	36-3498	3.25
⑫ Condenser (.0047 Mfd. Mica).....	30-1052	.60	⑤⑲ Condenser (.05 Mfd. Tubular).....	30-4020	.35
⑬ Compensater (Osc. L.F. Police).....	31-6027	.70	⑤⑳ Compensater (.05 Mfd.).....	Part of ⑤⑱	.....
⑭ Compensater (Osc. L.F. Standard).....	Part of ⑬	.....	⑤㉑ Condenser (8 Mfd., 8 Mfd., 10 Mfd. Electrolytic).....	30-2073	2.15
⑮ Compensater (Osc. S.W.).....	Part of ⑬	.....	⑤㉒ Pilot Lamp (Shadow Tuning Meter).....	Part of ⑤㉑	.....
⑯ Compensater (Osc. Police).....	Part of ⑬	.....	⑤㉓ Condenser (.015 Mfd. Twin Bakelite Block).....	3793-DG‡	.40
⑰ Compensater (Osc. Standard).....	Part of ⑬	.....	⑤㉔ Resistor (BC Wirewound—22 ohms, 25 ohms, 210 ohms).....	33-3222	.20
⑱ Tuning Condenser Assembly.....	31-1741	.....	⑤㉕ Power Transformer (115 Volts 60 Cycles).....	32-7384	5.50
⑲ Condenser (.00025 Mica).....	5858	.25	..... (115 Volts 25 Cycles).....	32-7385	7.75
⑳ Condenser (.09 Mfd. Twin Bakelite Block).....	4989-DG‡	.40	..... (230 Volts 50 Cycles).....	32-7420	.....
㉑ Resistor (1 Meg.) (Brown, Black, Green).....	33-1096	.20	⑤㉖ Condenser (.09 Mf.).....	Part of ⑤㉕	.....
㉒ Condenser (.05 Mfd. Tubular).....	30-4020	.35	⑤㉗ Resistor (330,000 ohms) (Orange, Orange, Yel- low).....	33-1200	.20
㉓ Condenser (.05 Mfd. Tubular).....	30-4020	.35	⑤㉘ Pilot Lamp.....	34-2039	.09
㉔ Resistor (50000 ohms) (Green, Brown, Orange).....	6098	.20	⑤㉙ Phono Switch Cable Assy.....	35-3014	1.30
㉕ Condenser (1 Mmfd.).....	Part of ⑱	.....	⑤㉚ Pickup Head Assy.....	35-2014	7.25
㉖ Condenser (.00025 Mfd. Mica).....	30-1032	.35	⑤㉛ Hum Bucking Coil Assy.....	32-1940	1.10
㉗ Condenser (.00015 Mfd. Mica).....	30-1033	.35	⑤㉜ Resistor (51,000 ohms).....	6098	.20
㉘ Condenser (.00005 Mfd. Mica).....	30-1029	.35	⑤㉝ Resistor (20,000 ohms).....	33-1178	.20
㉙ Resistor (51000 ohms) (Green, Brown, Orange).....	6098	.20	⑤㉞ Condenser (.025 Mf.).....	7653-SU‡	.35
㉚ Compensater (1st I.F. Primary).....	Part of ⑲	.....	⑤㉟ Automatic Stop.....	6345	3.15
㉛ 1st I.F. Transformer.....	32-1646	2.25	⑤㊱ Phono. Motor (115 V. 60 Cycle).....	35-1112	20.00
㉜ Compensater (1st I.F. Secondary).....	Part of ⑲	.....	⑤㊲ Dial Scale.....	27-5098	.25
㉝ Resistor (400 ohms Flexible) (Yellow, Black, Brown).....	33-3016	.20	⑤㊳ Dial Hub & Set Screw.....	31-1550	.15
㉞ Compensater (2nd I.F. Pri.).....	Part of ⑲	.....	⑤㊴ Dial Front Spring.....	28-2837	.10
㉟ 2nd I.F. Transformer.....	32-1647	2.25	⑤㊵ Knob (Station Selector).....	27-4206	.12
㊱ Compensater (2nd I.F. Sec.).....	Part of ⑲	.....	⑤㊶ Knob (Fine Tuning).....	27-4207	.10
㊲ Condenser (.00011 Mfd.) (Twin Bakelite).....	8035-DG‡	.35	⑤㊷ Knob (Waveband).....	27-4219	.10
㊳ Condenser (.00011 Mfd. Mica).....	30-1031	.35	⑤㊸ Knob (Volume Control, Tone Control).....	27-4208	.10
㊴ Condenser (.00011).....	Part of ㊲	.....	⑤㊹ Tube Shield.....	28-2726	.10
㊵ Resistor (50000 ohms) (Green, Brown, Orange).....	6098	.20	⑤㊺ Tube Shield Base.....	28-2725	.03
㊶ Condenser (.02 Mfd. Tubular).....	30-4215	.30	⑤㊻ Tube Socket (4-Prong).....	27-6034	.10
㊷ Condenser (.02 Mfd. Tubular).....	30-4215	.30	⑤㊼ Tube Socket (6-Prong).....	27-6036	.11
㊸ Volume Control and On-Off Switch.....	33-5105	1.45	⑤㊽ Tube Socket (7-Prong).....	27-6037	.11
㊹ Resistor (20000 ohms) (Red, Black, Orange).....	33-1178	.20	⑤㊾ Speaker Plug Socket.....	27-6033	.08
㊺ Condenser (.02 Mfd. Tubular).....	30-4215	.30	⑤㊿ Chassis Mfg. Screw.....	W-1495	1.50perC.
㊻ Resistor (10000 ohms) (Brown, Black, Orange).....	4412	.20	① Chassis Mtg. Washer (Rubber).....	27-4198	.01
㊼ Resistor (16000 ohms) (Brown, Black, Orange).....	33-316633	.30	② Electric Cord & Plug.....	L-943-A	.60
㊽ Resistor (20000 ohms) (Red, Black, Orange).....	3524	.20	③ Glowing Arrow Mask.....	27-5162	.20
㊾ Resistor (20000 ohms) (Red, Black, Orange).....	6649	.20	④ Glowing Arrow Screen.....	27-5161	.10
㊿ Condenser (.15 Mfd. Tubular).....	30-4191	.40	⑤ Mask Arm.....	29-3274	.03
① Condenser (.16 Mfd. Electrolytic).....	30-2118*	1.65	⑥ Link.....	29-3285	.04
② Resistor (1 Meg.) (Brown, Black, Green).....	33-1096	.20	⑦ Coupling.....	29-3586	.10
③ Resistor (1. Meg.) (Brown, Black, Green).....	33-1096	.20	⑧ Shadow Screen.....	27-5120	1.50C
④ Resistor (99000 ohms) (White, White, Orange).....	6099	.20	⑨ Inverted Dial Scale.....	27-5121	.....
⑤ Shadow Tuning Meter.....	45-2083	2.50			
⑥ Condenser (.05 Mf. Twin Bakelite).....	3615-DG‡	.40			
⑦ Resistor (4000 ohms) (Yellow, Black, Red).....	33-1031	.20			

*CODE 124:—30-2126

† 30-4350

‡ Use "O" (ODG, etc.) Type Condensers

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

3. Adjust the signal generator to a frequency of 460 K.C. Place the receiver in operation with the dial turned to the low frequency end of the standard broadcast band, wave band switch to extreme left (clockwise), and have the volume control adjusted near its maximum setting. Adjust the signal generator attenuator for approximately half-scale reading of the output meter.

4. The I.F. compensating condensers are located at the tops of the I.F. coil shields. The primary is adjusted by turning the screw in top and the secondary by the nut. Adjust condensers ⑧ and ⑨ (2d I.F. primary and secondary) for maximum reading in the output meter, and then condensers ⑩ and ⑪ (1st I.F. primary and secondary).

Adjustment of Wave-Trap

1. Connect the signal generator leads to the antenna and ground terminals of the receiver. Replace the grid clip on the 6A7 grid cap.

2. With the wave-band switch of the receiver still in the extreme left (standard band), (540-1720 K.C.), turn the station selector to 55.

3. With the signal generator in operation at 460 K.C., adjust the wave-trap ② condenser until a MINIMUM reading is obtained on the output meter. The Philco fibre wrench, part No. 3164, is used for this adjustment. The wave-trap compensator is reached from rear of chassis.

Adjustment of High and Low Frequency Compensators

1. With the wave-band switch still at Range No. 3 (broadcast band), set the dial at 1700 K.C. Set the signal generator at this frequency and adjust compensators ⑭, ⑮ and ⑯ for maximum output. These are the oscillator, antenna, and R.F. "standard" compensators respectively.

2. Tune the receiver and the signal generator to 600 K.C. and adjust compensator ⑰ (screw) for maximum output. This is the oscillator L.F. standard compensator.

3. Turn the wave-band switch to the second (middle) position. Set the dial at 3.6 M.C. at which point the fundamental of the 091 signal will be heard. If the Model 088 Signal Generator is being used, set it at 3.6 M.C. Adjust condensers ⑱, ⑲ and ⑳ in succession. These are the oscillator, antenna and R.F. police band adjustments.

4. Turn the tuning dial to 1.8 M.C., and set the signal generator (Model 026 or Model 088) at 1800 K.C. Adjust condenser ㉑ (Osc. L.F., police) (nut), to maximum signal.

5. Turn the wave-band switch to Band 1 (extreme right) and adjust the station selector to 18.0 megacycles. Set the signal generator at 18 M.C. By means of the Philco wrench, part No. 3164, adjust the oscillator S.W., antenna S.W. and R.F. S.W. compensators for maximum reading in the output meter. These are numbered ㉒, ㉓ and ㉔ respectively in figure No. 2.

Use PHILCO AUTO-RADIO REPLACEMENT Vibrators

Dependability and Long Life

Philco vibrators (all of the "full-wave" type) are designed by engineers with many years' experience in this type of equipment, and are subjected to rigid inspection and test throughout the various stages of manufacture. Definite standards of performance are established and must be maintained in every Philco vibrator sold.

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The most desirable features in a vibrator are (1) Dependability; (2) Long life; (3) Maximum output; (4) No readjustments required; (5) Quiet operation. Philco vibrators give you all these qualities in full measure. Throughout the full length of their life, these vibrators render consistent trouble-free service and their operation introduces no noise or disturbance to interfere with radio reception.

Recommend Them

You can sell a Philco vibrator to your customer with the assurance that it will give him 100% performance, and that he will thus be a friend and booster for you and Philco. And thru each purchaser more will come to you as the result of his "word-to-mouth" advertising.

A Vibrator for Every Need

Select the vibrator you need from the several types shown below. Dimensions for all are given. The three Philco types are designed to plug into a standard 4-prong socket. Any Philco auto-radio set and many other makes can be serviced with these high-grade replacement vibrators.

<p>STANDARD PHILCO Replacement Unit (All PHILCO Sets up to 1936)</p>  <p>This is the standard vibrator which has been used in all Philcos up to and including the models sold during 1935. Ruggedly constructed, it has proved its dependability over a period of years, both as initial and replacement equipment. Dimensions, 4 11/16" x 2 3/8" (not including prongs).</p> <p>PART No. 38-5036—List Price..... \$5</p>	<p>NEW Compact Type Replacement Unit (All PHILCOS previous to 1936 except 1934 Ford)</p>  <p>This unit has practically the same electrical characteristics as the standard type (shown at left), however, its diameter is considerably less, which permits it to be used in some types and makes of sets where the standard type would be physically a trifle large. Dimensions, 4 3/4" x 1 5/8" (not including prongs).</p> <p>PART No. 41-3186—List Price..... \$5</p>	<p>REPLACEMENT VIBRATOR for 1936 PHILCOS only Models 817—818—818K—819</p>  <p>This is the unit used in the new Philco auto radios for 1936. While even smaller and more compact than previous types—it maintains the same high standards of quality and performance. Full-wave, standard four-prong base. Dimensions, 3 7/8" x 1 15/16" (not including prongs).</p> <p>PART No. 41-3170—List Price..... \$5</p>
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PHILCO Majestic REPLACEMENT VIBRATOR

Especially designed for replacement use in Majestic auto radios, Models 66 and 116, many of which are still in service. Designed and built by Philco, to the same standards and along the same principles as the vibrators above, it will give a new lease of life to these old Majestic receivers. Easily installed in place of the original by simply re-arranging the vibrator leads as shown in the accompanying cut. Full explanatory instructions supplied with each unit. Dimensions, 3 1/2" x 2" x 1".

Majestic Replacement Unit No. 38-6057—List Price..... **\$5**

