

PHILCO SERVICEMAN

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RADIO · MANUFACTURERS · SERVICE · NEWS

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EDITORIAL

Get Your House in Order

MOST radio servicemen have enjoyed an unusually good business this spring and early summer, due partly to the many interesting broadcasts, the steadily improving business conditions and in many cases to business-promotional efforts on their own part.

About this time, however, there is apt to be a temporary lull in home radio servicing activity due to the usual trend toward out-of-door life, absence on summer vacations, etc. Here is a wonderful opportunity for the serviceman to "get his house in order" and lay complete plans for a campaign to increase his business—and handle it in a thoroughly businesslike fashion—this fall and winter.

First of all, we suggest you take stock of your shop—its location, appearance, equipment and attention value to passersby. Some members may see fit to move to new and better quarters this fall in anticipation of increased business. Others will prefer to overhaul, dress up and improve their present set-up, check over their stock of tools, hardware, test equipment, stationery and their bookkeeping facilities. Dealers or larger service companies will perhaps consider hiring additional employees or revising the schedules of their present employee set-up.

Next you should check up your stock of common service parts, such as resistors, condensers, cones, volume controls, aerials, etc. For extra profits, be sure to have on hand such popular accessory items as shadowmeters, head-phone kits, extension speakers, noise-elimination equipment. Don't lose any chance for extra profit by not having on hand what your customer asks for, ready to install for him while the fancy strikes him.

Finally, you should map out a definite budget for advertising and "promotion." Invest as much as you can possibly spare in display material (see the complete new R. M. S. line for 1937); plan a regular "ad" in your local paper and movie theater, and be sure to send out cards or handbills frequently to your mailing list, as well as distributing them in your neighborhood to let new and old residents know you are "on the job."

Follow out the above suggestions, and there is no reason why you can't make 1936-37 the biggest business season you have ever had.

Unit Construction Offers Many Advantages

Servicemen Find Trouble Shooting Much Easier

THE 1937 line of PHILCO receivers present an entirely new form of construction from that which has been used in the past. This new design is called Unit Construction and has many advantages from a service standpoint. The chassis is made up of three separate units, each of which represents a fundamental circuit of the superheterodyne receiver; that is, the Radio Frequency, Intermediate Frequency and Audio Power Unit Circuits are constructed in individual units. These three units or sections are then assembled to form the completed chassis.

Better Performance Built In

It is obviously feasible with this type of construction to keep the parts necessary for operation of each circuit closely associated with one another. In this way it is possible to eliminate the complications of stray capacities and coupling between parts and wires of the different circuits and thus afford better radio performance. Better shielding of each circuit can be had and a more rigid control over the assembly and inspection of the entire receiver is obtained as each unit is accurately matched before assembly in the final receiver. The result is a more stable and higher gain instrument.

From the serviceman's standpoint, unit construction has many advantages. Trouble can be isolated to one unit; the necessity for tracing various circuits is reduced; parts of each circuit are easily located for testing, and the adjust-

ment of the various tuned circuits is greatly simplified.

The radio frequency unit is separately mounted from the main chassis by rubber supports providing a cushioning effect, which eliminates the possibility of acoustical-mechanical microphonics sometimes caused by the vibration from the speaker reacting on the tuning and compensating condensers.

Construction of R. F. Unit

This unit is composed of the tuning mechanism, tuning condenser, individual coils for each tuning range, the switch, radio frequency amplifier tube, detector-oscillator tube and fixed condensers and resistors necessary for the operation of this circuit.

The antenna, radio frequency and oscillator coils for each tuning range are assembled in three separate sections, each section containing a selector switch, compensating condenser and the necessary coils. The coils are mounted on the selector switch by a bracket, permitting short leads from the coil to the switch. This arrangement will prove to be a distinct advantage to the serviceman in locating trouble in any section, as each section may be removed for the inspection or replacement of parts by removing one screw and a few wires. A further advantage is that the entire selector switch does not have to be removed if one section has become defective, for by removing the control shaft any switch section can be replaced without removing the entire selector switch.



PHILCO Parts Department, Harry Moll, Inc., PHILCO Distributors, Denver, Col.

AVERAGE CHARACTERISTICS OF NEW PHILCO "G" TYPE TUBES

6.3 VOLT SERIES

| Type | Description | Use | Type of Cathode | Fil. Amps. | Plate Volts | Negative Control Grid Volts | Screen Volts | Plate Current (M. A.) | Screen Current (M. A.) | Mutual Conductance Micromhos | Plate Resistance Ohms | Amp Factor | Load Resistance Ohms | Power Output Watts |
|------|----------------------|------------------------|-----------------|------------|-------------------|-----------------------------|-------------------|-----------------------|------------------------|--|-----------------------------|-------------------|-----------------------------------|--|
| 6ASG | Heptode | Converter | Heater | 0.30 | 250 | 3.0 | 100 | 3.0 | 3.0 | 520C | 360,000 | | | Anode Grid 200 Volts Max. Anode Grid Current 4.0 M. A. |
| 6B4G | Triode | Pwr. Amp. | Filament | 1.00 | 250 | 45.0 | | 60.0 40.0 | per tube | Fixed Bias | 800 | 4.2 | | 3.5 Single tube 15.0 Push pull two tubes |
| 6BSG | Double Diode Pentode | R. F. or I. F. | Heater | 0.30 | 180 250 | 3.0 3.0 | 75 100 | 3.4 6.0 | 0.9 1.5 | 840 1000 | 1,000,000 800,000 | 840 800 | Pentode section | |
| 6F6G | Pentode | A. F. Pwr. Amp. | Heater | 0.65 | 250 315 | 4.5 16.5 | 50 250 | 0.65 34.0 | 7.5 8.5 | 2350 2600 | 79,000 100,000 | 185 260 | | 7,000 7,000 |
| 6H6G | Triode | Det. A. V. C. | Heater | 0.3 | 250 | 8.0 | | 9.0 | | 2600 | 100 | | D. C. Output 4 M. A. | |
| 6J5G | Triode | Amp. | Heater | 0.3 | 250 | 3.0 | 100 | 2.3 | 0.5 | 1250 | 7,700 | 1500 | | 20.0 |
| 6J7G | Pentode | R. F. Det. | Heater | 0.3 | 250 | 4.3 | 100 | | Plate | Current to be adjusted to 0.1 M. A. with no signal | 1,500,000 | 1500 | | |
| 6K5G | Triode | Amp. | Heater | 0.3 | 250 | 3.0 | | 1.1 | 2.0 | 1200 | 58,500 | 70 | | |
| 6K6G | Pentode | Pwr. Amp. | Heater | 0.4 | 125 180 250 | 10.0 13.5 18.0 | 125 180 250 | 11.0 18.5 32.0 | 2.0 3.0 5.5 | 1525 1850 2200 | 100,000 81,000 68,000 | 150 150 150 | 11,000 | 0.65 (at 10% distortion) |
| 6K7G | Pentode | R. F. | Heater | 0.3 | 180 250 | 3.0 3.0 | 75 100 | 4.0 7.0 | 1.0 1.7 | 1100 1450 | 1,000,000 800,000 | 1100 1160 | 9,000 7,600 | 3.4 |
| 6L7G | Pentagrid Mixer Amp. | Mixer Mixer Amp. | Heater | 0.3 | 250 250 | 3.0 6.0 | 100 150 | 2.4 3.3 | 6.2 8.3 | 350C 350C | 1,000,000 1,000,000 | | | Control grid volts on Mixer Grid—10 Control grid volts on Mixer Grid—15 Control grid volts on Mixer Grid—3 |
| 6N7G | Double Triode | Pwr. Amp. | Heater | 0.8 | 250 300 294 | 0.0 0.0 6.0 | | 28.0 35.0 7.0 | | 1100 Class "B" (2 tubes) Class "B" (2 tubes) 3200 | 800,000 11,000 | 35 | 8,000* 10,000* 20 to 40,000 | 8.0 10.0 0.4 Plus (Class "A" Single tube) |
| 6Q7G | Double Diode Triode | Det. Amp. | Heater | 0.3 | 250 | 3.0 | | 1.1 | | 1200 | 58,500 | 70 | | (Triode section) |
| 6R7G | Double Diode Triode | Det. Amp. | Heater | 0.3 | 250 | 9.0 | | 9.5 | | 1900 | 8,500 | 16 | | (Triode section) |

25.0 VOLT SERIES

| | | | | | | | | | | | | | | |
|-------|---------|-----------|--------|-----|------------------|----------------------|------------------|----------------------|-------------------|----------------------|----------------------------|-----------------|-------------------------|--------------------|
| 25A6G | Pentode | Pwr. Amp. | Heater | 0.3 | 95 135 180 | 15.0 20.0 20.0 | 95 135 180 | 20.0 37.0 38.0 | 4.0 8.0 7.5 | 2000 2450 2500 | 45,000 35,000 40,000 | 90 85 100 | 4,500 4,000 5,000 | 0.9 2.0 2.75 |
|-------|---------|-----------|--------|-----|------------------|----------------------|------------------|----------------------|-------------------|----------------------|----------------------------|-----------------|-------------------------|--------------------|

2.0 VOLT SERIES

| | | | | | | | | | | | | | | |
|------|----------------------|------------|----------|------|------------------|--------------------|------|-------------------|-----|---------------------|----------------------------|-------------------|--------|---|
| 1C7G | Heptode | Converter | Filament | 0.12 | 180 | 3.0 | 67.5 | 1.5 | 2.0 | 325C | 750,000 | | | Anode Grid 135 Volts Max. Anode Grid Current 2.0 M. A. |
| 1D5G | Tetrode | R. F. Amp. | Filament | 0.06 | 180 | 3.0 | 67.5 | 2.3 | 0.7 | 750 | 960,000 | 720 | | |
| 1D7G | Heptode | Pwr. Amp. | Filament | 0.06 | 180 | 3.0 | 67.5 | 1.3 | 1.8 | 300C | 750,000 | | | Anode Grid 135 Volts Max. Anode Grid Current 2.0 M. A. |
| 1E5G | Tetrode | R. F. Amp. | Filament | 0.06 | 180 | 3.0 | 67.5 | 1.7 | 0.4 | 650 | 1,200,000 | 780 | | |
| 1E7G | Double Pentode | Pwr. Amp. | Filament | 0.24 | 135 | 4.5 | 135 | 7.5 | 2.1 | 1600 | 220,000 | 350 | 16,000 | .230 per Section |
| 1F7G | Double Diode Pentode | Det. Amp. | Filament | 0.06 | 180 | 1.5 | 67.5 | 2.0 | 0.6 | 650 | 1,000,000 | 650 | | |
| 1H4G | Triode | Det. Amp. | Filament | 0.06 | 90 135 180 | 4.5 9.0 13.5 | | 2.5 3.0 3.1 | | 850 900 900 | 11,000 10,300 10,300 | 9.3 9.3 9.3 | | |
| 1H6G | Double Diode Triode | Det. Amp. | Filament | 0.06 | 135 | 3.0 | | 0.8 | | 575 | 13,000 | 20.0 | | Triode section only |
| 1J6G | Double Triode | Pwr. Amp. | Filament | 0.24 | 135 | 0 | | 27.0 | | Class "B" Operation | 35,000 | 10,000* | 2.1 | |

"G" TYPE RECTIFIER SERIES

| Type | Description | Type of Cathode | Filament Rating | | Supply | Max. Plate Volts Per Plate | D. C. Output Current M. A. | Remarks |
|-------|-------------------------------|-----------------|-----------------|-------|----------------|----------------------------|----------------------------|-----------------------|
| | | | Volts | Amps. | | | | |
| 5V4G | Full Wave, High Vacuum | Filament | 5.0 | 2.0 | A. C. | 400 | 200 | |
| 5X4G | Full Wave | Filament | 5.0 | 3.0 | A. C. | 500 | 250 | |
| 5Y4G | Full Wave | Filament | 5.0 | 2.0 | A. C. | 350 | 125 | |
| | | | | | | 400 | 110 | |
| | | | | | | 555 | 135 | With choke input only |
| 25Z6G | Full Wave and Voltage Doubler | Heater | 25.0 | 0.3 | A. C. or D. C. | 125 | 100 | |

*Plate to plate load. C—Conversion Conductance. °Grids connected together and plates connected together.

Comparative Chart of New Philco G-Type Tubes

THE new PHILCO G-type tubes listed below are similar in characteristics with the more familiar tube types of last year. All the new types are furnished with octal bases and will have a minimum of seven pins in the base.

| New G Type | Early Type |
|------------|-----------------------|
| 6A8G | 6A7 |
| 6B4G | 6A3 |
| 6B8G | 6B7 |
| 6F6G | 42 |
| 6H6G | 6H6 |
| 6J5G | 37 & 76 |
| 6J7G | 77 |
| 6K5G | Triode section of 6Q7 |
| 6K6G | 41 |
| 6K7G | 78 |
| 6L7G | 6L7 |
| 6N7G | 6A6 |
| 6Q7G | 75 |
| 6R7G | 85 |
| 25A6G | 43 |
| 1C7G | 1C6 |
| 1D5G | 1A4 |
| 1D7G | 1A6 |
| 1E5G | 1B4 |
| 1E7G | New Double Pentode |
| 1F7G | 1F6 |
| 1H4G | 30 |
| 1H6G | 1B5 |
| 1J6G | 19 |
| 5V4G | 83V |
| 5X4G | 5Z3 |
| 5Y4G | 80 |
| 25Z6G | 25Z5 |

Auto Radio Vibrator Price Reduction Announced

EFFECTIVE immediately, the prices on PHILCO auto radio vibrators are reduced from \$5.00 list to \$4.25 list. The following are the part numbers of the three standard auto radio vibrators involved in this price reduction:

- Part No. 38-5036
- 41-3170
- 41-3186

The same policy with regard to warranty replacements will still apply, but the exchange policy will be eliminated.

Further price changes include the reduction on PHILCO tubular condensers shown in the PHILCO Parts Catalogue. The following condensers are affected:

| Part No. | Old List Price | New List Price |
|----------|----------------|----------------|
| 30-4227 | \$.60 | \$.45 |
| 30-4134 | .35 | .25 |
| 30-4117 | .60 | .45 |
| 30-4427 | .50 | .45 |

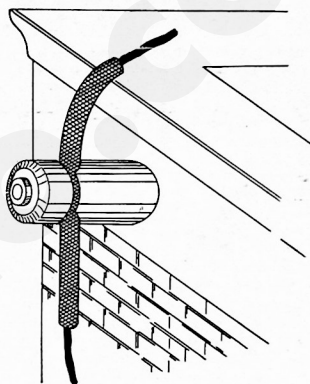
Cut out and paste in your parts catalogue.

Questions and Answers

1. Q. Is it necessary to remove the R.F. unit from the new PHILCOS to replace a coil?

A. Yes. Before access can be had to the mounting screws of the R.F. coils, it is necessary that the particular unit be removed from the main structure. The instructions for this removal are covered in Service Bulletins.

2. Q. What is the best recommended method of eliminating transmission-line breakage due to the wire swaying in the wind?



A. The illustration on this page shows a short section of loom over the transmission line at the point where the line is supported by a nail-on knob. The loom eliminates the possibility of the line swinging at a single point and forming a sharp bend in the transmission wire.

3. Q. Is any damage done to the set if the R.F. unit of the 1937 PHILCOS comes out of the rubber support bracket?

A. Ordinarily there is no damage done, and it is simply necessary to pry the two front brackets slightly with a screw driver so as to permit the R.F. section with its supporting rubber to be replaced in the bracket.

4. Q. What type of broadcast wave trap is recommended for the new '37 PHILCO models?

A. In some locations, where two powerful broadcast stations are near the receiver, interference in the form of a squeal or cross-talk between stations will be experienced. PHILCO has developed three new broadcast wave traps for elimination of this type of interference. These traps are attached to the terminal strip on the back of the chassis and are adjustable over a comparatively wide tuning range of the broadcast band. For frequencies from 550 K.C. to 750 K.C., Part No. 38-8072 should be used. For frequencies from 750 K.C. to 1050 K.C., Part No. 38-8073 should be used. For frequencies from 1050 K.C. to 1500 K.C., Part No. 38-8078 should be used.

Tube Base Identification for New G-Type Philco Tubes

| TYPE | PIN IDENTIFICATION* | | | | | | | | |
|-------|---------------------|--------|------|------|-------|------|--------|------|------|
| | Cap. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 6A8G | | N.C. | H | P | G-3-5 | G-1 | G-2 | H | K |
| 6B4G | G-4 | N.C. | H | P | N.C. | G | N.C. | H | N.C. |
| 6B8G | G-1 | N.C. | H | P | D-2 | D-1 | G-2 | H | K |
| 6F6G | | N.C. | H | P | G-2 | G-1 | No pin | H | K-G3 |
| 6H6G | | Shield | H | P-2 | K-2 | P-1 | No pin | H | K-1 |
| 6J5G | | N.C. | H | P | N.C. | G-1 | No pin | H | K |
| 6J7G | G-1 | Cage | H | P | G-2 | G-3 | No pin | H | K |
| 6K5G | G | N.C. | H | P | N.C. | N.C. | No pin | H | K |
| 6K6G | | N.C. | H | P | G-2 | G-1 | No pin | H | K-G3 |
| 6K7G | G-1 | N.C. | H | P | G-2 | G-3 | No pin | H | K |
| 6L7G | G-1 | N.C. | H | P | G-2-4 | G-3 | No pin | H | K-G5 |
| 6N7G | | N.C. | H | P-2 | G-12 | G-11 | P-1 | H | K |
| 6Q7G | G | N.C. | H | P | D-2 | D-1 | No pin | H | K |
| 6R7G | G | N.C. | H | P | D-2 | D-1 | No pin | H | K |
| 25A6G | | N.C. | H | P | G-2 | G-1 | No pin | H | K-G3 |
| 1C7G | G-4 | N.C. | F+ | P | G-3-5 | G-1 | G-2 | F- | N.C. |
| 1D5G | G-1 | N.C. | F+ | P | G-2 | N.C. | No pin | F-G3 | N.C. |
| 1D7G | G-4 | N.C. | F+ | P | G-3-5 | G-1 | G-2 | F- | N.C. |
| 1E5G | G-1 | N.C. | F+ | P | G-2 | N.C. | No pin | F-G3 | N.C. |
| 1E7G | | N.C. | F+ | P-2 | G-12 | G-11 | P-1 | F- | G-2 |
| 1F7G | G-1 | N.C. | F+ | P | D-2 | D-1 | G-2 | F- | N.C. |
| 1H4G | | N.C. | F+ | P | N.C. | G | No pin | F- | N.C. |
| 1H6G | | N.C. | F+ | P | D+ | D- | G-1 | F- | N.C. |
| 1J6G | | N.C. | F+ | P-2 | G-2 | G-1 | P-1 | F- | N.C. |
| 5V4G | | N.C. | H | N.C. | P | N.C. | P | N.C. | H-K |
| 5X4G | | N.C. | N.C. | P | N.C. | P | N.C. | F | F |
| 5Y4G | | N.C. | N.C. | P | N.C. | P | N.C. | F | F |
| 25Z6G | | N.C. | H | P-2 | K-2 | P-1 | No pin | H | K-1 |

*Element Identification—D, diode; F, filament; G, grid; H, heater; K, cathode; N.C., no connection on pin. Replacement tubes of some types listed above will have only the required number of pins instead of eight.

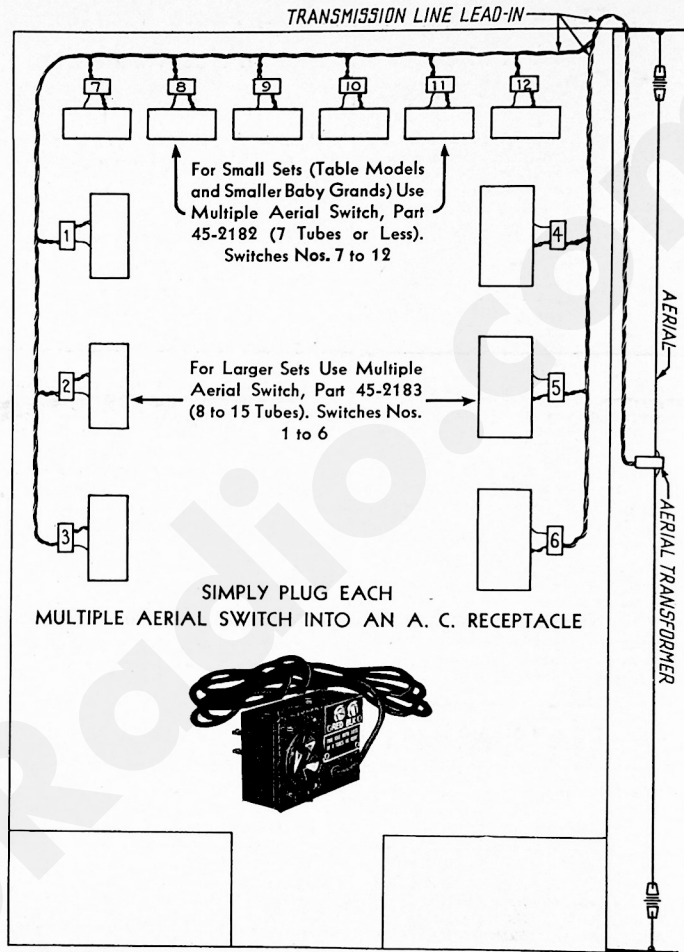
DEALERS PREPARING for BIGGEST PHILCO YEAR

More Foreign Reception Demonstrations in Stores Already Show Big Radio Sales Increase

PHILCO dealers everywhere are making preparations now for the biggest fall and winter business they have ever experienced. The dealer who has listened to foreign reception on the new 1937 PHILCOS operating on the PHILCO High-Efficiency Aerial is not satisfied until he has all of the sets in his store connected to the High-Efficiency Aerial for best store demonstration. The ability to demonstrate foreign reception in the store is one of the most important factors in creating a demand and in closing the sale for new PHILCO receivers. The new sets must be operated with the new High-Efficiency Aerial for best results. This means that the aerial must be connected to the individual sets through a PHILCO Automatic Aerial Switch, the remarkable PHILCO device which enables the dealer to demonstrate any radio set on his floor with the High-Efficiency Aerial simply by turning on the switch. No aerial connection changes need be made.

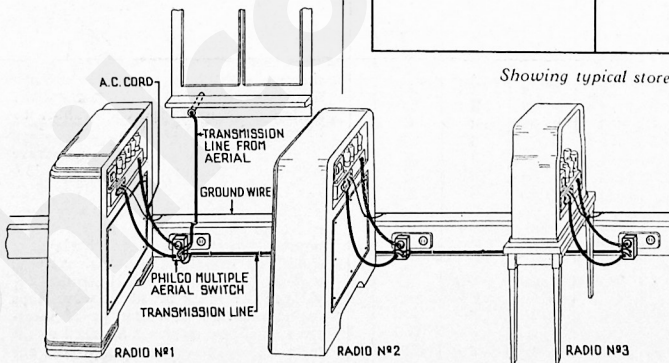
The illustrations on this page show a typical connection arrangement for twelve Multiple Aerial Switches, each of which is connected to the one PHILCO High-Efficiency Aerial installed on the roof of the store. The illustration below shows the details of connection for three different sets operating from a single aerial. The same connections apply with regard to more than three sets, and as many sets can be used on a single aerial as Multiple Aerial Switches are provided.

If you want to sell more PHILCOS this year than you have ever sold before, it is essential that you make a small investment in a high-quality aerial in-



SIMPLY PLUG EACH
MULTIPLE AERIAL SWITCH INTO AN A. C. RECEPTACLE

Showing typical store connection for twelve outlets.



Showing connection details.

stallation for your own store. Just remember that the profit from an extra 116X sale will more than pay for your expense in making a high-quality aerial installation using the PHILCO Multiple Aerial Switch. The many additional sales which you will make by giving a quality demonstration in your store will result in extra profit for you this year.

Your PHILCO distributor can offer you a proposition of installing the complete aerial system at a flat price to you. Be sure to see your distributor at once and be in a position to cash in on the finest radio line the market has ever offered.

DEVLIN-DREW COMPANY

718 "F" Street

Fresno, California