

# PHILCO SERVICEMAN

Circulation Over 34,000 Copies Monthly

RADIO · MANUFACTURERS · SERVICE · NEWS

FEBRUARY, 1936



## EDITORIAL

### "Selling Up" in Radio Service

MUCH has been said about "selling up" in almost every form of business, and to the dealer or salesman of automobiles, radios and every similar article, "selling up" is one of the first lessons in the salesman's educational primer. . . . But how many radio servicemen ever think of selling their customer anything more than just what he absolutely needs to restore radio reception?

Naturally, the line of least resistance is to do just what is asked for—"fix the radio"—but why not grasp the opportunity both to make a real improvement in your customer's installation and a larger unit of sale for yourself? A little sales effort combined with careful judgment of your customer and study of his needs will enable you in almost every case to sell him either:

1. A complete tube renewal.
2. A complete R. M. S. tune-up.
3. A new speaker cone.
4. A new aerial installation.
5. An auxiliary speaker in another room.
6. A headphone kit.
7. Shadow tuning, tone control or an electro-dynamic speaker (if it is an old set).

On your next service call try it out. You will find it is a lot easier than you think. Many set owners who have not yet become convinced of the desirability or who are not financially able to purchase a new receiver, are so proud of their old outfit that they will gladly invest extra dollars in improving its equipment or performance. It is to your advantage to find out just what they need and then sell it to them.

Follow out this suggestion and watch your profits increase as the months go by.

## LEADERSHIP AGAIN IN 1935

### R. M. S. Acknowledged in New York Times Ad

ON SATURDAY, December 28, 1935, PHILCO ran a full-page ad in the *New York Times*. The caption on this ad was "Leadership Again in 1935—An Acknowledgment and a Pledge by PHILCO."

An acknowledgment was made to Radio Manufacturers Service in the following manner:

"PHILCO, on behalf of the millions of PHILCO radio owners, desires to voice its appreciation to all those responsible for this consistent and mounting achievement—to the 15,000 PHILCO-trained Radio Manufacturers Service servicemen whose far-flung organization provides skilled and scientific technicians for every radio owner throughout the land."

Reprints of this ad were made in quantities, and a copy was mailed to every radio dealer in the country. Each dealer has been told the facts about PHILCO and about Radio Manufacturers Service. This acknowledgment of R. M. S. in the world's leading newspaper is definite proof of PHILCO'S pledge to R. M. S. members to promote their interests in every way possible.

There were a number of amazing facts in the ad, which are being listed below for their interest to all people concerned in the radio industry:

"The American public in 1935 bought three times as many PHILCOS as any other make—almost half as many PHILCOS as all other makes combined."

"During the year 1935 steady, continuous employment was made possible for 8000 to 10,000 workers, totaling 15,000,000 hours in Philadelphia PHILCO plant alone."

"The hourly wage rate of PHILCO factory workers in 1935 was 19 per cent higher than the average of all industry, 8 per cent higher than the entire electrical industry and 25 per cent higher than the radio industry. The annual payroll of PHILCO radio factory workers, amounting to \$10,000,000 in 1935, was an increase of 34 per cent over 1934."

"For the year 1936 and the years to come, PHILCO pledges itself to adhere to those policies and standards which have made it the leader in the radio industry for the past six successive years."



Parts Department, Jamestown Radio, PHILCO Parts Distributors in Jamestown, N. Y.

## PERFORMANCE TEST CONTINUES AS BEST METHOD FOR TUBES

### Comparison Tests Simple and Dependable

IN THE August, 1933, issue of the PHILCO SERVICEMAN we featured an article entitled "A Convenient and Accurate Method of Testing Tubes in the Home." Since this test method is basic, it applies today just exactly the same way as it applied at the time the article was written. We quote below a portion of the article:

"The most reliable method of testing tubes is to place the tubes in a radio set which is known to be in good operating condition and to obtain an actual operating test of the tubes. Many so-called tube testers are used by dealers as tube sellers and are not accurate indicators of tube quality. Testers of this type must necessarily use the same voltage for testing all types of tubes. The readings which are obtained are at best only a compromise, and often it is found that good tubes will be indicated as poor tubes, while faulty tubes will read O.K."

By using a radio set of known quality it is possible to obtain an accurate test of the tube under actual operating condition. The signal generator of the PHILCO Model 099 All-Wave Signal Generator and Tester is connected to the antenna and ground terminals of the set, and the output meter across the primary of the output transformer. The radio set and the signal generator are both placed in operation at approximately 1000 K.C., and a standard tube is substituted in the proper socket for the tube which it is desired to test. This standard tube has previously been selected from a group of six stock tubes, the standard being the one which gives an average output-meter reading of the six. With the standard tube in the socket, the signal generator is regulated so that the output meter reads approximately half-scale. The tube to be tested is then substituted in the socket for the standard tube and the output-meter reading compared with that obtained when the standard was used. If the reading is 35 per cent or more lower than the reading obtained with the standard tube, the tube under test is considered defective and should be replaced. This method provides a wide range of output signal over which a tube is still considered satisfactory for operation, and the test is a true indication of performance in the radio set.

In a test of this kind the I.F. tube socket can be used for testing all of the tubes in the receiver of the same type as that employed in the I.F. stage. Other sockets can be employed for making similar tests of other type tubes. In all cases it is only necessary

to obtain a comparison in output-meter readings of standard tubes with the tubes to be tested.

The PHILCO Model 099 All-Wave Signal Generator and Tester will afford without question the finest and most accurate tube test available. Equipment of this kind is economical because it never becomes obsolete and can be used for any type of tube.

### Philco Models Use Grid-Bias Cells

THE new Models 602, AC/DC receiver, and 624, six-volt battery receiver, both employ the new grid-bias cells which have recently been introduced in commercial receivers. These cells are small, acorn-shaped units, which are held in a special socket in the receiver. In the Model 602 there is one cell employed, and in the Model 624 three of them are used. The case is the negative electrode, and the disc is the positive. The no-current potential of the cell is one volt. Its life is practically indefinite.

There are certain disadvantages in some types of circuits in using self-bias on detector and audio tubes. These new grid-bias cells overcome the disadvantages and afford much better circuit characteristics and minimize the possibility of overload distortion. The bias cells are connected in the grid circuit in all cases. The negative (case) is connected to the grid end, and the positive (disc) is connected to the ground end of the circuit. In the Model 602 the one-megohm audio filter resistor is connected in series with the bias cell, and the entire circuit is then by-passed to ground with a .1 mfd. condenser. In the Model 624 three cells are used in series, these being connected in the grid circuits of the type 32 first audio and the type 30 driver tube. A .05 mfd. condenser is connected from the negative point to ground.

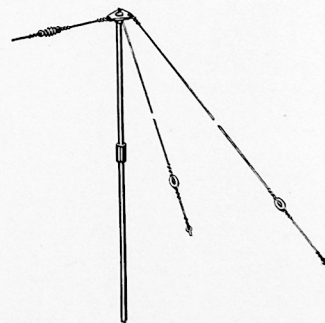
These cells are not adapted for current and should never be tested with a voltmeter. The only way that the voltage can be checked is by means of a vacuum tube voltmeter. Since most servicemen do not have this type of equipment, the only thing to do is change the cell when it has become damaged for some reason.

The new PHILCO grid-bias cells open a number of possibilities to experimenters. The individual bias cell is known as PHILCO Part No. 41-8009 and sells at a list price of 20 cents. The bias-cell panel assembly, consisting of three sockets for the Model 624, is PHILCO Part No. 38-7275 and sells at a list price of 20 cents. The individual socket, as used in the Model 602, is known as PHILCO Part No. 38-7436, list price 15 cents.

## Philco Announces Aerial Mast Kit

THE new PHILCO Aerial Mast Kit is a most convenient item for servicemen and something which will be appreciated by all those who are making aerial installations. On many homes there is no place to attach the aerial unless it is placed on a mast above the house. It is always difficult and inconvenient to shop around for the desired pipe when the primary interest is in getting the aerial installed as quickly as possible.

The new mast kit consists of two four-foot lengths of  $\frac{3}{8}$ -inch iron pipe finished in weather-proofed black. A coupling is furnished in the kit to couple the two lengths of pipe. There is also a flange with three holes at the top of the mast for attaching the guy wires and the aerial. The mast kit is furnished complete in a cardboard container with the necessary flanges, couplings, guy wire and insulators, and sells at a list price of \$2.95. There are also available as extra equipment special mounting brackets for supporting the pipe on the roof. Part No. 28-3758 is a bracket which is intended for mounting at the peak of a slanting roof. Another type bracket, Part No. 28-3757, is designed for mounting the mast on the incline of the roof at an approximate angle of 45 degrees. A third type bracket, Part No. 28-3759, is intended for mounting on a flat roof.



New Aerial Mast

### Tell Us About YOUR Business— Getting Ideas

Help your fellow-members of R. M. S. by sending in your experiences in planning service business-building campaigns. Address R. M. S. Headquarters, C and Tiooga Streets, Philadelphia, Pa.

## New Universal Shadowmeter Installation a Profitable Service Job

### New Meters Adjustable

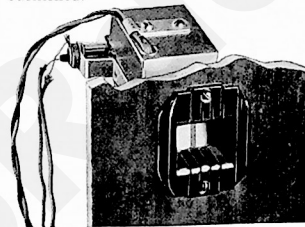
THE PHILCO shadow tuning has become so well known by radio owners and its simplicity of operation is so desirable that many people having sets without this convenient tuning aid ask if it can be installed.

This work on sets without shadowmeters can be made a profitable job for the serviceman, and the added convenience of operation in the customer's set makes the job relatively easy to sell. There are hundreds of thousands of radio sets on which shadow tuning could be installed and used to advantage. At this time of the year owners are becoming more accustomed to their radio sets and are more critical. They want to have the best that is available in the way of tuning.

The new PHILCO Shadowmeter Kit is the answer to this requirement because it includes the new adjustable-type PHILCO shadowmeter. This new shadow-tuning indicator has a variable current range from 8 to 12 milliamperes, this range being controlled by a convenient adjusting screw in the back of the shadow box. This means that the meter can be installed on various types of sets and can be adjusted for best operation with the available plate current in the circuit. The kit consists of the shadowmeter, an attractive bakelite bezel, a mounting bracket for the shadowmeter, a .05 mfd. by-pass condenser, the necessary wood screws for attaching the bracket to the inside of the instrument panel on the cabinet and screws for attaching the bezel to the front of the instrument panel. The installation is comparatively simple; it is only necessary to cut a small hole in

the instrument panel for the bezel opening and fasten the shadowmeter on the back of the panel. The two wires to the shadowmeter are connected between the B+ and the primary of the I.F. tube (primaries, if more than one I.F. stage) on which automatic volume control is used. It is necessary, of course, to by-pass these leads at the radio chassis by connecting a .05 mfd. condenser from B+ to ground. The wires from the pilot light in the shadowmeter are connected across the tube filaments. If the set has 2.5 volts on the filament instead of 6.3 volts, PHILCO pilot light, Part No. 3463, can be substituted for the 6.3-volt light, Part No. 34-2064. After the installation is completed the adjustment is made as described in another article in this issue of the PHILCO SERVICEMAN.

The new PHILCO Shadowmeter Kit, Part No. 45-2165, sells at a list price of \$3.25, subject to your regular parts discount. Installation instructions are furnished.



Cut-Out Instrument Panel Showing  
New Shadowmeter Installed

## Cabinet Polishing an Important Extra Service

THE importance of quality appearance on a radio cabinet after a service job has been completed cannot be overemphasized. When a cabinet is polished carefully after the radio set has been serviced and adjusted the customer has the feeling that he is the owner of a new radio.

It is suggested that every serviceman carry with him in his tool kit a bottle of PHILCO furniture polish, and that it be used on the cabinet after each service job. It may take a few minutes longer on the job, but the customer satisfaction which will result will more than pay for the small amount of effort.

There are two types of PHILCO polish, both of which are highly recommended for all PHILCO cabinets. The PHILCO Special Furniture Polish has been designed to give a high-gloss finish with a minimum of time and effort. It does not leave a sticky surface and is

ideal for all types of furniture. This polish sells at a list price of 55 cents for an eight-ounce bottle. It is known as PHILCO Part No. 45-1175.

The PHILCO Liquid Wax Polish is a high-grade polish which is far superior to the average on the market. It does not have quite such a high luster as the PHILCO Special Furniture Polish, and it requires more rubbing effort to obtain the proper finish. The advantage of this polish, however, lies in the fact that one application will last much longer than the Special Furniture Polish. The Liquid Wax Polish is known as PHILCO Part No. 80207 and sells at a list price of 42 cents for an eight-ounce bottle.

It is recommended that servicemen and dealers, for quick work, use the PHILCO Special Furniture Polish and that the PHILCO Liquid Wax Polish be sold to customers for more permanent application.

## New R. M. S. Helps Now Available

### Book Matches for R. M. S. Members

IN RESPONSE to a wide demand for a book match for use by servicemen-members of R. M. S., we have arranged to supply these in the design shown. The imprint of the member's name, address and phone number appears on the back under the R. M. S. emblem.



R. M. S. Book Matches

The illustration really gives no conception of the striking appearance of this match folder. The colors used, yellow, blue, red and silver, are extremely brilliant and attractively combined. It must be seen to be appreciated.

One of the liveliest and easiest-to-use good-will builders you can have. Order a supply from your PHILCO distributor today. Form No. PR-352. Price, \$4.50 per 1000 net, imprinted.

### R. M. S. Tube Sticker

A GOOD tube sticker is something every serviceman should carry with him and use on every service job. It is a permanent reminder to the customer of where he can get you when he needs radio service.



R. M. S. Tube Sticker

The illustration on this page shows the attractive new sticker just prepared for R. M. S. members. The color is dark blue, and it is supplied imprinted with your name, address and phone number.

Price, \$1.40 per roll of 1000 net, imprinted. Order from your PHILCO distributor.

## Questions and Answers

1. Q. What is the purpose of the clamp around the 80 tube in the Model 680?

A. This clamp is placed in the set to prevent customers from removing the 80 tube while the set is in operation. In the Model 680 there are two rectifier tubes—the type 5Z3 and the type 80. The 5Z3 tube supplies all operating voltages except the grid-bias voltage on the 6A3 tubes. This latter is supplied by the 80 tube. If the 80 tube is removed, the grid bias on these tubes is removed and the plate current increases tremendously—so much so, in fact, that the fuse in the plate of the 6A3s burns out.

2. Q. Can the transmission line of the PHILCO All-Wave Aerial or Three-Purpose Aerial be run through conduit?

A. No. When this wire is placed in conduit the electrical impedance matching of the line is greatly disturbed. There is a very high capacity loss in the conduit, with the result that signal strength is extremely weak by the time the transmission line gets to the receiver. This is particularly true with short-wave reception, since a given capacity will cause a much greater loss in signal strength at the higher frequencies than at standard broadcast frequencies.

3. Q. What are some of the likely causes of intermittent troubles in new PHILCO models?

A. On some models, particularly 59 and 54, there may be found loose eyelets in some of the tube sockets at points which are grounded. There may also be found some loose eyelets in coils at grounded points and also in the brackets for the coils. Bits of solder occasionally get into the bottom of the coil in such a manner as to cause an intermittent short. Occasionally resin joints may also be a cause of this intermittent condition.

4. Q. What is the simplest way to remove the insulation from the transmission wire of the PHILCO All-Wave and Three-Purpose Aerial Systems?

A. The outer insulation of the transmission wire, which is weather-proofed, can easily be removed if the insulation is first heated with a soldering iron or even with a match. The heat melts the binder in the insulation and permits easy removal.

5. Q. What is a possible cause of audio oscillation in sets using a type 75 second detector and first audio tube?

A. Many cases have been observed in which the grid lead and terminal were run outside of the tube shield instead of inside. This is a high-impedance circuit which will pick up all kinds of strays unless properly shielded.

## R. M. S. Member Gets Extra Service Business

A RECENT caller at R. M. S. central headquarters in Philadelphia was Mr. Charles W. Hackenyos, R. M. S. member, of 4233 N. Darien Street, Philadelphia. Mr. Hackenyos described to us several interesting plans he used for getting more radio service business, which we thought well worth while passing on to members of Radio Manufacturers Service.

### 1. Distributing Calling Cards

A special design of business card made up in red and blue ink was used for distributing in the neighborhood by simply slipping one in the letter slot on the front door or under the door. The words "Radio Service" in red ink attract the reader and arouse his interest. The first hundred of these distributed by Mr. Hackenyos brought in four service calls. The cards were made up very reasonably by a local printer.

### 2. Placing Signs in Neighborhood Stores

A number of cardboard signs, 13 inches high by 8 inches wide, with the words "Reliable Radio Service" and the member's name, address and phone number attractively printed in yellow and blue, were made up. Permission was obtained of the various local merchants from whom the member bought food, drugs, notions, etc., to hang one of these signs in their store window or on the wall behind the counter. If a customer inquired about radio service, the merchant immediately got in touch with Mr. Hackenyos and arranged for the service call. A small commission, (10 cents) was paid to the merchant for each call resulting from this card. The cards were made up locally, hand colored, at a cost of about 50 cents each.

### 3. Card for Automobile Window

A horizontal-type yellow-and-blue cardboard "Radio Service" sign, 14 inches long by 5 inches high, was made up for automobile use. This card was set on the ledge inside the rear window while driving so as to be readable from the rear. While parked on a service call or other business, it can be set in the windshield or side window of the front seat. Often its use, while the car was parked, led to inquiries and further service work. It also acted as a protection against objection to parking, since the policeman or traffic officer would know the business of the driver and usually extend friendly co-operation which led to still more service business.

## Philco Shadowmeter Now Adjustable

THE new PHILCO adjustable shadowmeter is a revolutionary step in the development of visual tuning indicators. It is far more sensitive than previous models and incorporates a set-screw to adjust the shadow to any desired width. This is particularly desirable, since the line voltage in different localities will vary from approximately 105 to 130 volts.

This variation of line voltage does not affect the sensitivity of the radio to any large extent, but will have a direct bearing on the width of the shadow. It is, therefore, very important to adjust the shadowmeter when the set is installed or when a service call is made if the meter is found to be out of adjustment.

The set-screw for this adjustment will be found in the back of the shadowmeter, and the procedure is as follows:

Remove the rectifier tube from the set and adjust the shadowmeter pilot light so that the narrow shadow is centered on the screen. This can be done experimentally by moving the lamp bracket from one side to the other. When this is done replace the rectifier tube and adjust the set-screw in the back until the shadow almost covers the screen. Allow about  $\frac{1}{4}$  inch of light to show on each side of the shadow. Turning the set-screw in (clockwise) increases the shadow width and turning it out decreases the width.

## PROFIT INSURANCE

### BEFORE DELIVERY

1. Check chassis.
  - a. Make secure tubes and tube shields.
  - b. Inspect pilot lamp.
  - c. Check shadow tuning.
  - d. Place knobs on shafts.
  - e. Check general performance on broadcast and short wave.
2. Inspect and polish cabinet.

### AFTER DELIVERY

1. Install PHILCO All-Wave Aerial.
2. Check general performance and tune in a foreign station for customer's benefit.
3. Instruct customer by demonstrating correct tuning of standard and foreign stations, adjustment of volume control and general operation.
4. Leave recommended radio program guide issued by the Radio Institute of the Audible Arts.

DEVLIN-DREW COMPANY

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Fresno, California