

PHILCO SERVICEMAN

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RADIO · MANUFACTURERS · SERVICE · NEWS

SEPTEMBER, 1935

Your Business and
Radio Manufacturers Service

EDITORIAL

RADIO Manufacturers Service was originated by PHILCO as a means of promoting to the general public the thought of having radios kept in perfect condition at all times, so as to get the greatest benefit from the radio programs on the air.

A program of this kind could not have been carried out on a national scale by attempting to advertise individual men all over the country. The only way it could be carried out successfully was through an organization made up of picked men doing business under their own name, but tied in with the national plan.

After enough members were enrolled, the advertising and publicity campaign to provide more service work for R. M. S. members got under way. This campaign has been the largest and the most consistent service campaign that we know of in any American industry.

Over two million owners of PHILCO radios have been told individually in writing by PHILCO to call a member of Radio Manufacturers Service when service is needed.

Chain broadcasting over the Columbia system several times a week for the past eighteen months has told many millions of the public the same story.

Spot broadcast announcements of forty-five seconds' duration are being used on many stations reaching still more radio listeners.

Chicago, New York, Philadelphia, San Francisco and many other cities, both large and small, have started a consistent newspaper advertising campaign to get service work for R. M. S. members.

Newspaper publicity stories sent out by PHILCO Department of Public Information have appeared in many of the leading newspapers as news items, giving the details of the R. M. S. organization.

All of the above advertising is being paid for by PHILCO distributors and the PHILCO Company. None of this costs the R. M. S. members anything.

To tie in with this, a complete assortment of outdoor signs, newspaper ads, handbills, postcards, letters and other sales literature is available at small cost for the individual members to use over their own name. This type of advertising over the member's name is

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PHILCO AND METAL TUBES

ALL PHILCO 1936 receivers, of course, are equipped with PHILCO high-efficiency glass tubes. In view of the current publicity on metal tubes, it will be of interest to the serviceman to learn the reason why PHILCO employs glass tubes in the new 1936 line of receivers.

Many Technical Problems

The technique and manufacture of glass tubes have improved considerably in the last few years, with the result that tube rejections in PHILCO receivers now amount to less than 0.6 per cent. Tube manufacture, however, is still an art, and every new tube type, whether it be glass or metal, presents technical problems which may require weeks and sometimes months of patient application to correct. Many servicemen will recall the serious performance troubles coincident with the introduction of Types 99, 27 and 24. Metal tubes have provided new and immeasurably more complicated problems, many of which are difficult of solution. It is not difficult to picture the situation presented by the entirely new processes involved, not alone on one type of tube, but with the whole group of metal tubes. Factory difficulties on metal tubes have not only seriously restricted the production output, but the types of troubles encountered result in poorer

performance, even worse than had been predicted from a study of the structure and electrical characteristics.

Causes of Field Troubles

Such metal tube difficulties as air leakage, internal deposits of welding flash causing electrical leakage and noise, rusting of steel parts, shorts from lead wire to shell, grid current due to air leakage and grid current due to evolution of gas from metal parts are serious problems which may mean field trouble and plenty of it until corrections are discovered and applied. PHILCO foresaw and predicted many such difficulties for metal tubes and the decision to remain with glass tubes for 1936 resulted.

It has been claimed that the performance to be expected from metal tubes would be superior to glass. Actually the reverse is true.

Size Not a Factor

The size of metal tubes at first appears to be an advantage, but little if any space saving can be effected since coils must be located as far from heat-radiating surfaces as possible, in order to reduce the frequency drift of the oscillator responsible for a type of fading noticeable on short waves. To approximate the performance obtainable from

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Parts and Service Department, PHILCO Radio and Television Corporation of Michigan, PHILCO distributors in Detroit

Performance Efficiency As Well As Noise Elimination in Philco All-Wave Aerial

MANY dealers have been confronted with the question of selling a PHILCO All-Wave Aerial with a PHILCO All-Wave Receiver in a location which is relatively free from noise.

In addition to the noise-reducing features of the PHILCO All-Wave Aerial, the increased efficiency of reception which the aerial affords makes its use highly essential on every installation.

In the case of an ordinary aerial, the average lead-in wire is from fifty to sixty feet in length. By far the greater amount of signal pickup is obtained in the horizontal portion of the aerial. The lead-in wire, however, acts somewhat in the same manner as a resistance to the flow of the incoming signal which is picked up on the aerial. This means that in the ordinary aerial there is actually an efficiency loss between the horizontal portion of the aerial and the radio receiver. If the lead-in wire is near any surrounding objects, this loss of signal strength will be increased because of the capacity action to ground.

The PHILCO All-Wave Aerial affords what is technically known as a low-impedance lead-in system. With this arrangement there is actually the same efficiency of reception at the radio set as there would be up on the roof at one end of the aerial itself. In other words, all of the losses which were normally existing in the lead-in wire have been eliminated in the low-impedance system, and the utmost in reception efficiency is thus obtained.

In order to obtain satisfactory foreign reception, as well as to get the best in broadcast reception, it is highly essential that a good aerial be employed. PHILCO has recently started a publicity campaign in the popular scientific and radio magazines, and also in the radio pages of the daily newspapers, pointing out the necessity for an efficient aerial installation in order to receive foreign stations.

There is less sales resistance when your salesman says that the radio set is so powerful it does not require a good outside aerial, but you are not telling the true story. It is true that the modern receivers, when located relatively near a strong broadcasting station, will receive fair signals with a poor aerial. In this case, however, the radio set is being overworked in order to build up the signal which should be obtained on a good aerial, but which is actually being obtained on an inefficient aerial. When you sell a radio under such conditions, you are taking a chance on a revert, because the customer will never be entirely satisfied with the performance. You are also failing to give the

customer all to which he is entitled when you give him such an installation.

Actual tests, both in the field and in the laboratory, have shown conclusively that the PHILCO All-Wave Aerial gives far greater efficiency of performance over the entire broadcast spectrum standard and short wave than any kind of standard aerial installation. Whether your customer is in a noisy area or whether he lives in the country remote from any source of man-made static interference, it is highly important that you convince him of the need of a good aerial.

Your Business and Radio Manufacturers Service

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worth far more because of the national R. M. S. publicity.

Local advertising done by individual members tying in with R. M. S. will eventually identify that member to the radio public in his community. Until the member does become known, the R. M. S.-Western Union service call plan provides the public with an easy means of getting acquainted with the dependable service done by R. M. S. members.

PHILCO distributors, through the R. M. S.-Western Union plan, will help you get service business in your community until such time as you become known to your entire community as the R. M. S. representative.

PROFIT INSURANCE BEFORE DELIVERY

1. Check chassis.
 - a. Make secure all 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. Loosen chassis hold-down bolts.
3. Check general performance and tune in a foreign station for customer's benefit.
4. Instruct customer by demonstrating correct tuning of standard and foreign stations, adjustment of volume control and general operation.
5. Leave recommended radio program guide issued by the Radio Institute of the Audible Arts.

R. I. A. A. Program Guides Being Used by Service Organization

THE Radio Institute of the Audible Arts and R. M. S. servicemen are partners in the broad field of radio. Their common aim is to stimulate interest in radio programs, thereby increasing the use of radio and the demand for sets that will give perfect reception. Since its organization by PHILCO some six months ago, the Institute has recognized this community of interest and has endeavored to act as an informal clearing house, and, by co-operating with broadcasters, to further these common aims of the Institute and servicemen.

The Institute's program bulletins and brochures were a first step in this direction. More recently, the Institute prepared a series of radio talks, calling attention to the wide variety of radio's offerings and stressing the need for the intelligent use of radio. The talks are entirely non-commercial, mentioning only the R. I. A. A., and are designed to aid listeners in deriving the maximum enjoyment from their sets. These talks are being broadcast currently on a weekly basis by many stations throughout the country. A communication received from the program director of one of these stations in a large mid-western city reveals how the Institute's efforts, combined with those of broadcasters and servicemen, can stimulate the business of R. M. S. servicemen everywhere.

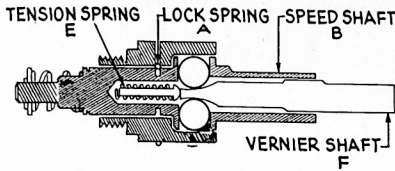
"Through the Institute of Radio Service Men, which is an association of reputable repair men," this station executive writes, "we are trying to get people to derive the greatest efficiency out of their sets. Through having their sets realigned, through the use of new tubes, aerials and an understanding of how to properly tune a set, we feel that people will get greater enjoyment out of programs now on the air.

"We have arranged for this organization one fifteen-minute program weekly, because of the necessity, as we certainly feel it, of educating the public to the proper use and treatment of their radio sets as instruments. We go on the assumption that the average person does not think of driving an automobile, year after year, without having it overhauled for possible defects. Also, with the least bit of trouble with an automobile, the average person takes it to a garage immediately and has it repaired.

"Unfortunately, people do not treat their radio sets in a like manner, but go on year after year apparently satisfied with poor tonal quality, bad reception and interference and do nothing about it.

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Correction of Dial Slip Model 116



THERE are two points that can be adjusted on the Model 116 dial drive in the event that there is any slipping or roughness.

ASSEMBLY PART 31-1563

(Used on Models 116, 640, 641, 650, 660, 680)

First remove the lock spring "A" from the assembly and then, by pulling on the Speed Shaft "B," both the speed shaft and the vernier shaft, as well as the bearings and the tension spring "E," can all be removed from the housing. Through the use of two blades, placed at each end of spring "E" and expanding with pressure, this spring can be stretched. Normally spring measures 9/16 inch, and after stretching 1/8 inch this will be sufficient to increase pressure on vernier shaft "F" when re-assembled.

Part number of inside tension spring is 28-8366.

The second adjustment is effected when tightening the upper bracket of the drive in place (not illustrated). When enmeshing the semi-circular ring with the drive mechanism, place the bracket in such a position as to allow the ring to fit well into the spring slot, but not all the way. This allows for any irregularity in the ring itself and completes the necessary adjustment.

Price Correction on Eyeletting Kit

IN THE June issue of the PHILCO SERVICEMAN, we announced the new PHILCO Eyeletting Kit furnished complete with assortment of eyelets at \$5.00 list, subject to regular parts discount. There is a correction in this price, which is now \$2.25 list, subject to regular parts discount.

Part # 451162

New Dealer Parts Kits Bring Increased Service Profits

PHILCO has recently introduced several new parts kits made especially for dealers and servicemen. A pilot lamp kit consisting of ten each of the 6.3-volt and 2.5-volt pilot lamps sells at a list price of \$1.80 subject to regular parts discount. This kit affords the dealer an adequate stock of the necessary replacement pilot lamps for the majority of standard sets. It enables him to give his customers immediate service whenever these replacements are required.

There are also tubular condenser kits consisting of six condensers of a given capacity, all attractively arranged in a special packing box and fully labeled with complete part number, capacity and working voltage information. The general replacement condenser kit consists of eight assorted replacement section condensers ranging in capacity from .1 Mfd. to 2 Mfd.

Dealers and servicemen everywhere are finding it increasingly profitable to



have one or more of these kits on hand, so that they will be in a better position to give customers quick service. Be sure to ask your distributor's service manager to show you the complete line of PHILCO replacement kits containing all major parts for PHILCO radio.



Boake Carter's



R. M. S.
Broadcasts

July 23, 1935

"And if you would wish that your radio is in the best of shape to follow these changing times in the world's history, call Western Union and tell the operator that you want a Radio Manufacturers serviceman to come and fix your set and tune it up. This is a nation-wide organization PHILCO has set up to make it easier for people who own radios to get servicemen they can rely on, can trust to do a good job. R. M. S. men stretch from coast to coast; they are PHILCO-trained experts, and their charges are set standard ones. And they're the ones to get hold of every few months just to see that your set is giving you everything that it's capable of giving you in the way of tone, reception and picking up of world stations."

Cutting Out Modulation in the 088 Signal Generator

THE new PHILCO Model 088 All-Wave Signal Generator can be arranged with an unmodulated signal if desired. The standard instrument has a modulated signal for general service work, but some servicemen prefer to use an unmodulated signal for certain types of service tests.

Modulation is obtained by means of a modulating choke in the grid circuit of the oscillator section. A demodulating switch can be mounted on the instrument panel and connected across the black and the black-and-white wires of the choke. The switch can be the standard single-pole toggle switch, PHILCO part No. 3253 (list price, 45 cents). When connected in the suggested manner, the switch is placed in the "on" position to short out half of the modulating choke, thus providing an unmodulated signal.

Questions and Answers

1. Q. Does the PHILCO All-Wave Aerial supersede the PHILCO Three-Purpose Aerial for standard broadcast receivers?

A. No. The all-wave aerial has been designed primarily for all-wave receivers and affords high efficiency and noise reduction over the entire broadcast and short-wave bands. The PHILCO Three-Purpose Aerial has been designed primarily for broadcast reception and is intended to operate on a frequency between 540 K.C. and 4000 K.C. Whenever the aerial is being used with a standard broadcast receiver, the three-purpose type can be employed.

2. Q. How can parasitic oscillations on the upper bands of the Model 16, Codes 125 and 126, be corrected?

A. This condition, which is caused by a slightly unstable circuit, can be corrected by placing a 70-ohm carbon resistor, part No. 33-1129, in the plate circuit of the 78 R.F. tube. The wires on the plate terminal of the tube socket are removed, and the resistor is inserted in series. The condenser, shown in the diagram as No. 2-A, Service Bulletin No. 205, is removed from the circuit.

3. Q. What is the difference between the two types of PHILCO furniture polish?

A. The new type polish, which was announced on the back page of PHILCO Service Bulletin No. 224, and which also appears in the new PHILCO parts catalog, is a high-gloss, non-sticky type of polish which can be applied with a minimum of rubbing effort. It is intended primarily for use in the dealer's store, where it is desirable to polish cabinets daily in order to keep them looking their best at all times. This new polish, which is known as PHILCO part No. 45-1176, lists at \$3.30 for a case of six eight-ounce bottles. It is also obtainable in single eight-ounce bottles at 55 cents list.

The PHILCO liquid wax polish, part No. 80207, sells at a list price of 42 cents for an eight-ounce bottle, or \$2.52 for a case of six bottles. A counter display card is included with each case.

The liquid wax polish is a more durable polish which will last for a long period of time. It requires more polishing, however, to obtain the desired luster than the other type polish mentioned above.

3. Q. What are the advantages of the type 6A3 tube, used in the Model 116-X, over the type 42 tube, used in some of the other models?

A. The main advantage of the 6A3 tube is its ability to give high-volume output with minimum distortion. The number of undistorted watts output in the case of the 116-X is considerably in

excess of that obtainable from the 116-B due to the fact that the X model employs 6A3 output tubes, whereas the B model employs type 42 output tubes.

PHILCO and METAL TUBES

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glass tubes, additional metal tubes are required, still further offsetting any possibility of space saving and adding to tube cost.

Metal tube life is as yet an uncertain factor, with field reports of many early failures in sample lots and considerable uncertainty regarding maintenance of quality of tubes kept in stock for even short periods.

The question of tube cost is of vital interest to all of us. Present list prices of metal tubes are high. More metal tubes are required to equal the performance obtainable from PHILCO glass tubes. Poor performance per tube, high cost of metal tubes, production difficulties associated with any new type tube and lack of confidence in tubes kept in stock over a period of time are the major reasons why PHILCO has adhered to glass tubes. Experience has shown that PHILCO high-efficiency tubes provide superlative performance, stand up in service and can be purchased at reasonable prices.

R. I. A. A. Program Guides Being Used by Service Organization

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"I will pass on the Radio Institute's weekly radio talk to members of the local Institute of Radio Service Men. I feel that we can kill two birds with one stone by giving to the speakers for the Institute of Radio Service Men your splendid material on the programs which are now on the air and worth listening to. Through a suitable use of your material, the radio servicemen can augment their talks and, I believe, can accomplish your purpose and our purpose at one and the same time."

Activities such as this, that result in increased interest in radio on the part of the listening public, mean increased business for R. M. S. As the public becomes more discriminating in its listening habits, it will learn to keep its sets in perfect condition in order to insure perfect reception. A boost for radio is a boost for service business. R. M. S. servicemen can co-operate with their local stations in building interest in local programs; and by calling customers' attention to the program bulletin service of the Radio Institute of the Audible Arts they can co-operate in building interest in radio generally—which means more service business.

Battery Set Ground Important

THE necessity for a good ground connection with a battery-operated receiver is often not thoroughly appreciated by dealers. In the ordinary A.C. radio, an effective ground is obtained through the electric power line, but in the case of a battery set no such grounding effect is present, and it is necessary, therefore, to employ a good ground connection as well as a good aerial in order to obtain satisfactory performance. The efficiency of a battery receiver is reduced approximately 35 per cent when the ground wire is omitted.

In the instruction sheet for the PHILCO All-Wave Aerial, it is pointed out that in many cases a ground wire is not required. This applies only to A.C. receivers. When using the PHILCO All-Wave Aerial with a battery-operated receiver, such as PHILCO Models 38, 39, 623, 643, etc., a ground connection must be made to the radio chassis.

The ground may be a connection to a pump or spring house, to a water pipe or to a long rod driven into moist earth. A wire laid on the bottom of a lake or stream also makes an effective ground connection. Likewise a counterpoise erected approximately eight inches above the ground and as nearly as possible under the aerial will also be effective. The counterpoise depends for its effectiveness upon the amount of wire paralleling the earth. The more wire used, the greater is the efficiency of the counterpoise type of ground. The best results are obtained by using about ten or eleven wires parallel to the ground's surface and equal in length to the aerial. The counterpoise is used largely in locations where it is difficult to obtain a good electrical connection to a water pipe or driven ground rod in moist earth.

Remember, it is highly important that a good ground connection be used whether it is with the PHILCO All-Wave Aerial or with the ordinary "L" type aerial.

DEVLIN-DREW COMPANY

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SERVICE DEPARTMENT