

# PHILCO SERVICEMAN

RADIO: MANUFACTURERS: SERVICE: NEWS

OCTOBER, 1941



## TRADE BENEFITS BY LATEST

### EDITORIAL

#### PROFIT INSURANCE

In the March, 1932, issue of the Philco Serviceman we printed the following:

#### PROFIT INSURANCE

##### Before Delivery

1. Check chassis.
  - a. Tubes and tube shields.
  - b. Speaker plug.
  - c. Pilot lamp.
  - d. Performance.
2. Inspect and polish cabinet.

##### Installation

1. Insist on good aerial and ground.
2. Loosen chassis hold down bolts.
3. Check performance.
4. Instruct owner by demonstrating correct tuning, automatic volume control and general operation.

Basically the information contained in this profit insurance box is applicable today just as much as it was in 1932. Careful checking of the chassis and inspection of the cabinet before delivery is most important. Further checking and customer instruction after delivery is equally as important today as it was in 1932.

#### Customer Instruction

Many dealers have lost sales because they neglected these important points. Customers cannot be expected to know how to operate some of the new complicated radios and radio phonograph combinations, and unless the dealer or his salesman instruct these owners carefully, there is naturally going to be some dissatisfied customers. On the other hand, a knowledge of how a set is intended to be operated and the ability on the part of the customer to get the most out of the radio means greater satisfaction with the purchase and fewer complaints back to the dealer.

#### Factory Sealed Cartons

Frankly, no radio manufacturer, Philco included, recommends unpacking a new radio or a radio phonograph in the customer's home from the original factory sealed carton. Philco builds sets as well as they know how to construct them, but there are going to be some occasions because of transportation and other factors wherein the set will require some minor adjustments before it is ready for operation

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## RECORD CHANGER DATA

### Complete Service Information Now in Hands of All R.M.S. Members

Philco's policy of passing along engineering improvements to the trade immediately, has resulted in the production of a record changer which is more nearly trouble free, than any commercial changer ever placed on the market. This new Philco changer, by comparison with others, including Philco's last year's changer, is a marvel of engineering design and precision construction. Servicemen, who have been working with various types of changers for years, almost invariably say that the basic principle of the 1942 Philco changer is the best they have seen.

#### Adjustments Necessary

There have been some cases where adjustments have been necessary after the Radio-Phonograph has been installed in the home. These were such items as the trip adjustment, speed, or even flutter in the reproduction. It is expected in almost any kind of complicated mechanical device, that some installation adjustments will have to be made. Once these are made, however, they usually stay, permanently.

#### Trip Adjustments

In some few cases, the trip adjustment has been erratic, because of a slight amount of play in the trip arm lever. On current production, and on any earlier changers which give this trouble, the remedy is most simple—namely, install a coil spring, Part No. 28-8919, so as to hold the trip arm consistently over to one side.

#### Complete Service Information

Philco has mailed directly to all R.M.S. members, and has supplied all dealers with thousands of additional copies of Service Bulletin No. 402, covering the basic adjustments of the new record changer. In addition, a special Confidential Service Summary, illustrating and describing the latest trip adjustment mentioned above, and containing many other improvements and adjustment hints, has been mailed to all Radio Manufacturers Service members, directly from Philco service headquarters in Philadelphia. Passing along up-to-the-minute production information of this kind, has long been a fixed service policy of Philco. We know that the best performance of all Philco products, at all times, is the desire and goal of every dealer and serviceman in the Philco family.



#### APPLYING THE POSTAGE

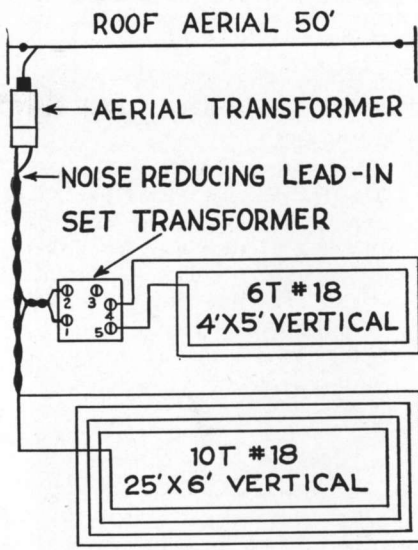
Hundreds of individual letters go out daily from the Philco Service Department in Philadelphia to distributors, dealers, servicemen and Philco owners. The service upkeep on 15 million Philco radios presents a big correspondence job in itself.

### Novel Aerial Arrangement Assures Daytime Reception in Store

A novel arrangement for playing radio sets in the dealer's store has been worked out by Walter Mulcahey, Service Manager of Savier & Son, Philco distributors in Reno, Nevada.

In Reno the big problem is to get California reception in the daytime and unless a large outside aerial is connected to the set, it is very difficult to obtain such reception without considerable noise and natural static. This problem has been solved by constructing a very simple loop which is connected to the Philco aerial atop the roof. A horizontal aerial approximately 50 ft. long is installed on the roof. The Philco noise-reducing lead-in kit, part 40-6484, is connected to this aerial. The aerial transformer up on the roof joins the horizontal aerial to the noise-reducing twisted pair lead-in. The set transformer of this kit is connected to the transmission line and to a special loop 4 ft. x 5 ft., consisting of six turns of number 18 wire. This loop is placed vertically behind the standard Philco display shelves for table and portable models.

The twisted pair lead-in wire is carried on beyond the set transformer to a second vertical loop approximately 25 ft. x 6 ft., consisting of ten turns of number 18 wire. In this case



SHOWING SPECIAL LOOP CONNECTIONS TO ROOF AERIAL

the lead-in is connected directly to the two ends of the loop without any coupling transformer. This larger loop is constructed behind a partition and is used to provide signal strength for the console models. Adequate signal is picked up from the loop to provide good reception on consoles placed in any location on the sales floor.

### Philco Service Schools Held Throughout The Nation

Since the announcement at the May Convention of the 1942 line of Philco radios and radio phonograph combinations, Philco field service engineers have conducted service schools in practically every city throughout the country. Thousands of servicemen have been able to benefit from this valuable educational information and have been in a position to do a better service job on Philco sets during the past summer.

Such subjects were covered in detail as padding procedure and errors commonly made by servicemen on standard sets. Frequency modulation was a subject of discussion and the complete information on fundamental differences of operation of the F.M. sets from the A.M. was covered in detail. Other subjects in connection with frequency modulation were the distance-getting ability of F.M., noise reducing characteristics versus automobile ignition noise problems, tone quality available, aerial systems for various requirements on 1942 Philco sets. The various features of operation adjustment and installation procedure for the 1942 record changer were covered in detail as was also the explanation of the 1942 Philco home recording equipment.

Since June of this year Philco's field service engineers have conducted service meetings for distributors' service managers, dealers' servicemen and independent servicemen in the following cities.

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|--|--|
| ALABAMA —<br>Birmingham<br>Montgomery<br>Tuscaloosa  | LOUISIANA —<br>Lafayette<br>New Orleans<br>Shreveport  |
| ARIZONA —<br>Phoenix   | MASSACHUSETTS —<br>Boston  |
| ARKANSAS —<br>Ft. Smith<br>Little Rock   | MARYLAND —<br>Baltimore  |
| CALIFORNIA —<br>Fresno<br>Los Angeles<br>Long Beach<br>Sacramento<br>San Diego<br>San Francisco<br>Santa Barbara | MAINE —<br>Bangor<br>Portland  |
| COLORADO —<br>Denver   | MICHIGAN —<br>Detroit<br>Grand Rapids<br>Saginaw   |
| CONNECTICUT —<br>Hartford  | MINNESOTA —<br>Minneapolis   |
| DELAWARE —<br>Wilmington   | MISSISSIPPI —<br>Jackson   |
| FLORIDA —<br>Jacksonville<br>Miami<br>Pensacola<br>Tampa   | MISSOURI —<br>St. Louis<br>Joplin<br>Kansas City   |
| GEORGIA —<br>Albany<br>Atlanta<br>Savannah   | MONTANA —<br>Butte<br>Great Falls<br>Miles City  |
| ILLINOIS —<br>Chicago<br>Decatur<br>Peoria<br>Quincy<br>Rock Island  | NEBRASKA —<br>Omaha  |
| INDIANA —<br>Indianapolis<br>South Bend  | NEVADA —<br>Reno   |
| IOWA —<br>Burlington<br>Davenport<br>Des Moines<br>Sioux City  | NEW JERSEY —<br>Trenton  |
| KANSAS —<br>Wichita  | NEW YORK —<br>Albany<br>Binghamton<br>Buffalo<br>Middletown<br>New York<br>Plattsburg<br>Rochester<br>Syracuse |
| KENTUCKY —<br>Harlan<br>Hazard<br>Louisville   | N. CAROLINA —<br>Charlotte<br>Fayetteville<br>Wilmington<br>Winston-Salem                                      |
|  | NORTH DAKOTA —<br>Fargo  |

### Co-operation Is Keynote of R.M.S. Success

"For the past eight years Philco has been referring millions of radio owners to R.M.S. members for expert service at reasonable standard rates."

This statement is a great story in itself because behind it lies the success of the world's largest radio service organization — Radio Manufacturers Service. The fact that Philco has recommended these servicemen to the owners of Philco sets means that Philco is backing the individual R.M.S. member with everything. Philco supplies him with wiring diagrams and adjusting information on all major models in most cases even before he has occasion to service any of these sets. Philco suggests standard labor charges for him to use that are fair to both the R.M.S. member and to the customer.

Philco gives him as a member, and extends only to members, the opportunity to buy at extremely low prices, various kinds of R.M.S. advertising material, letterheads, billheads, signs, etc., tying in his membership with the mammoth National Organization. Philco gives him the monthly sales-service publication, the PHILCO SERVICEMAN, containing valuable up-to-the-minute information on sales and service problems. Through the Philco distributors in every city throughout the country, and through the Philco national service headquarters in Philadelphia, the R.M.S. member is given the benefit of helpful sales and service consultation on all phases of his work.

In every respect the R.M.S. member is one of the vast Philco family and a part of the Philco organization. He can voice his opinions and suggestions and they are given every consideration. He can tie in his business name with that of Philco and R.M.S. and benefit accordingly from the prestige of the nationally accepted name in every household. Philco is co-operating with R.M.S. members to help them do better work and to make more money out of radio. The radio industry cannot help but benefit through such better service.

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|--|---|
| OHIO —<br>Cincinnati<br>Cleveland<br>Columbus<br>Toledo<br>Youngstown  | TEXAS —<br>Amarillo<br>Dallas<br>El Paso<br>Ft. Worth<br>Houston<br>San Antonio |
| OKLAHOMA —<br>Oklahoma City  | UTAH —<br>Salt Lake City  |
| OREGON —<br>Portland   | VIRGINIA —<br>Danville<br>Norfolk<br>Richmond                                   |
| PENNSYLVANIA —<br>Allentown<br>Altoona<br>Erie<br>Harrisburg<br>Lancaster<br>Pittsburgh<br>Pottsville<br>Reading<br>Wilkes-Barre<br>Williamsport | VERMONT —<br>Burlington   |
| RHODE ISLAND —<br>Providence   | WASHINGTON —<br>Seattle<br>Spokane  |
| TENNESSEE —<br>Chattanooga<br>Knoxville<br>Memphis<br>Nashville  | WEST VIRGINIA —<br>Bluefield<br>Huntington                                      |
|  | WISCONSIN —<br>Milwaukee  |
|  | WYOMING —<br>Casper   |
|  | DISTRICT OF COLUMBIA —<br>Washington  |

# Placement of F. M. Aerial Determines Reception Ability

## Vertical Height and Horizontal Position Important Factors

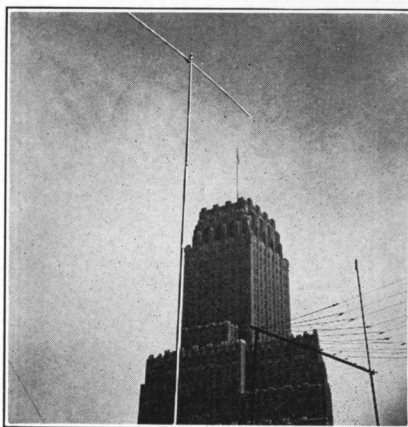
The greatly improved performance of the Philco F-M sets when used with the Philco di-pole aerial is so evident that Philco's recommendation is the installation of this type aerial for every dealer's store where these sets are to be demonstrated.

### Vertical Height

In the August issue of the PHILCO SERVICEMAN, complete information was given on the various types of Philco F-M aerial equipment. In the September issue, information was given on the proper method of locating the aerial on the roof. In this latter connection, too much stress cannot be placed upon the importance of height above the roof and proper placing of the aerial on the roof. The main reason for getting the aerial high is to take advantage of the increased signal level which exists at the higher altitude, and at the same time to get the active part of the aerial as far removed from any possible noise source as it is feasible to do. The accompanying photograph on this page shows a Philco F-M aerial installed atop a roof in New York with one of the New York sky-scrapers in the background. This mast is approximately 30 ft. above the roof-top and exceptionally good performance is obtained.

### Horizontal Placement

In addition to the vertical height, the horizontal placement on the roof is equally important. It will be found that there exists on the roof-top a number of points where signal is maximum and other points approximately 5 or 6 ft. distant where the signal is minimum. For those who are interested in analyzing the reason for this reception, we can refer to the chart on this page which shows the sine wave of a signal of 45 megacycles, which is the middle of the F-M band. A 45 megacycle signal has a wave length of 6.6 meters. This means that from the top of one wave to the top of another, the distance is 6.6 meters or approximately 22 ft. One-quarter of this distance which represents the distance from the top of the wave down to the zero point is 5 1/2 ft. therefore, at points separated by 5 1/2 ft. along the line of direction from the transmitting station, there will be locations of maximum signal strength and locations of minimum signal. Of course, the important

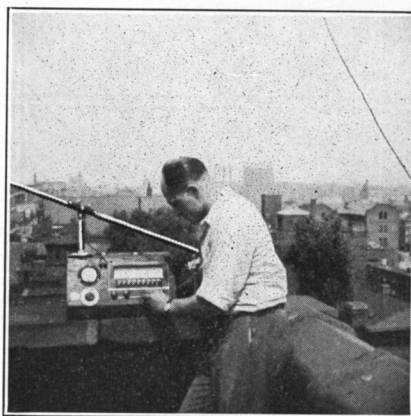


F.M. AERIAL INSTALLED ON NEW YORK ROOFTOP

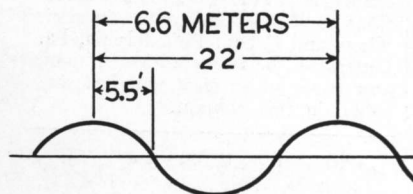
thing is to place the aerial along this line drawn from the transmitter at a point on the roof where the signal is maximum.

### Determining Best Location

The easiest way to determine this maximum location point is through the use of one of the small F-M sets in which the 023 meter has been connected, as shown in the wiring diagram in the September issue of the PHILCO SERVICEMAN. In this case, the 10 mil meter is connected in the plate circuit of the first I.F. tube. The change in this plate circuit, which is caused by the increased or decreased F-M signal flowing through the plate circuit, is indicated definitely on the meter. Minimum scale deflection of the meter, in other words, minimum meter reading indicates the point of maximum signal strength. In the illustration on this page, the serviceman has mounted a model 355 chassis in a special cabinet and is using a one mil meter with a variable shunt resistor in



MEASURING F.M. SIGNAL INTENSITY



order to obtain a slightly wider range than that which might be possible with the 023 with its fixed shunt. Perfect signal intensity indication is obtained in this manner.

## 1941 R.M.S. Year Book Now Out

Over three hundred pages of wiring diagrams, parts lists and adjusting instructions covering all of the 1941 Philco radio sets now available for you at your Philco distributor! This big 1941 Year Book is the most complete compilation of service data that Philco has ever issued. It contains aligning instructions, schematic diagrams, production changes, information on setting push button tuning, complete adjustments on phonograph record changers and replacement parts data on every model home set and auto radio built by Philco during the 1941 season. In the back of the book is a complete up-to-date Philco radio parts list price catalog containing prices of all Philco parts arranged numerically by part number.

Twelve pages are devoted to complete Philco tube characteristics, a chart of tube interchangeability and base pin connection diagrams. These are just a few of the many valuable subjects covered in the 1941 Year Book. Be sure that you get your copy of this big publication from your Philco distributor now while the supply lasts.

### EDITORIAL

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in the home. This is particularly true with respect to the radio phonographs which are much more complicated than the straight radio set. If the customer insists upon seeing a set taken out of an original factory carton, then our suggestion is that the dealer obtain some sealing tape from the distributor so that a preliminary inspection in the store can be made before the set is actually delivered. The customer's first impressions are his lasting ones and it is important that they be the most satisfactory impressions of his new Philco.

## QUESTIONS AND ANSWERS

Free technical consultation for servicemen. Address all communications to Editor, Philco Serviceman, Tioga and C Sts., Philadelphia, Pa. Letters will be answered individually and those of interest will be published in this column.

From Meyers Radio Service  
Ironton, Ohio

"I would like to consult you on a Philco model 41-608 radio phonograph using two 7C6 tubes. This model has about half the volume that it should have on the phonograph. The radio has plenty of volume."

Answer —

"The first step would be a comparison of the voltages throughout the receiver with the tabulation given in service bulletin No. 354A. Notice that there is an appreciable difference between the voltages in the radio and in the phonograph position. Assuming that the voltages are correct and that you have not overlooked any obvious fault, we would conclude that either the photo cell of the pickup or possibly the matching transformer is at fault."

From G. T. Conant  
Chelsea, Mass.

"Would like to know if a push button unit could be installed on a model 116, code 122 Philco radio."

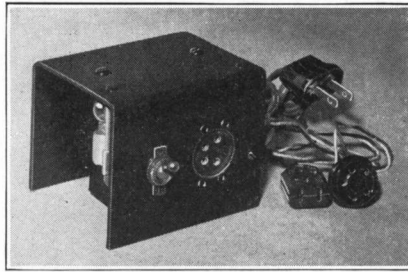
Answer —

"We do not recommend that you undertake to install a push button tuning system in the Philco model 116, code 122. The length of the wiring required to make such an installation in this receiver would considerably reduce the efficiency. This would be especially noticeable on the short wave band."

## Rochester Servicemen To Meet in November

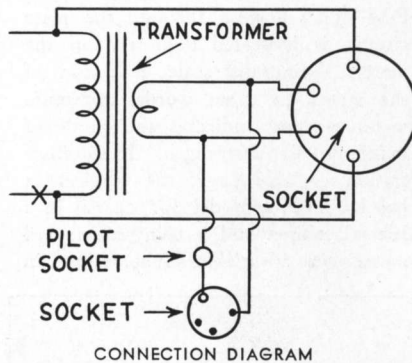
The Third Annual Info-Meet of the Radio Technicians Guild of Rochester will be held on Sunday, November 9, 1941, at the Sagamore Hotel in Rochester, New York. Various engineering subjects are to be covered in this all-day session. The meeting is open to any radio serviceman in the East.

## Convenient Adaptor For Service Work On Record Changer



Every serviceman who does work on the new Philco record changer will want to have the power adaptor illustrated on this page.

When the changer is removed from the cabinet for service work, it is difficult ordinarily to obtain the 110 volt A.C. power supply and also the 6 volt A.C. supply for operation of the relay. Likewise, under ordinary conditions, there is no power source for the light in the Light Beam Pick-up when pick-up adjustments are desirable. The adaptor, which can be readily made in the shop in a very short time, provides an easy way of plugging in the various connector cords for quick and convenient servicing of the record changer on the bench. A small transformer, Part No. 32-7842, is used to step down the 110 A.C. to 6 volts A.C. for the relay power supply. This particular part number has a high voltage secondary the terminals of which are taped inasmuch as the high voltage is not used. In the four-prong plug two of the connections are used for 6 volt supply and the other two are tapped off directly from the 110 volt supply. In the socket at the end



## Philco Window Ventilator Improved

In some of the early production Philco Window Ventilators, Model A-8, a rattling noise developed because of loose rivets in the coupling arms. In later production, the ventilators are much quieter in operation because of the installation of spring washers between the coupling arms to take up any play.

In addition, the two "take-off" wood blocks which control the direction of the air stream coming out of the cabinet have been changed in dimensions to afford less air rush sound. The amount of air flow is still as great, but with noticeably less sound.

For those dealers and servicemen who want to make this changeover, a special kit is now available, no charge, from your Philco distributor. The kit is known as Philco part No. 4500-2, and consists of the following items:

- 2 Part No. 219004 Replacement take-off blocks
- 4 Part No. 56-2256 Spring washers
- 4 Part No. 28-6522 Shoulder rivets

of the cable is the power supply for the light in the Light Beam Pick-up. This power is obtained merely by placing a 3.3 volt pilot light in series with one side of a 6 volt source tapped from the secondary of the transformer, thus providing illumination of the Light Beam Pick-up. An on-off switch is provided on the panel for convenient control of power to the changer. Also on the model illustrated, an additional 110 A.C. cord and socket outlet is provided for convenient plugging in of a soldering iron or other desired electrical equipment. The housing of the adaptor is formed from a sheet of metal approximately 4 inches wide and 10 inches long. This sheet is bent into a U-shape, as illustrated.

Another convenient item for use in this connection is a set of four supporting legs to hold the record changer when bench work is being done. The set of four supports is known as Philco Part No. 45-2894 and is available from the Philco distributor.

### POWER ADAPTOR PARTS LIST

Quantity	Part No.	Description
1	41-3593	Cord Assembly
1	32-7842	Transformer
1	76-1212	Socket
1	34-2408	Pilot Lamp
1	L-2028	A. C. Cord
1	42-1632	Switch
1	Panel 3/32" x 10" x 4"	

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