

PHILCO SERVICEMAN

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RADIO · MANUFACTURERS · SERVICE · NEWS



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EDITORIAL

Taking Enough Time

THE amount of installation attention, performance check-up after installation, and subsequent service on a radio receiver are factors which vary widely with different radio dealers.

Some dealers make it a point to install every new set with a new aerial and to instruct the customer in the operation of the set; to call back once or twice after installation, just to make sure that the set is operating correctly and that the customer thoroughly understands the operation. Since the set is often sold on deferred payment plan, there is no hesitation on the part of the dealer to giving free labor service on the set for at least a year. Other dealers seem to adopt the attitude of wanting to do no more for the customer than is absolutely necessary once a sale has been made. The set is connected to an old aerial and the dealer hopes that he will not hear anything more from the customer. In such cases, the customer is not getting the full performance which he bought and very often a service call, or perhaps several calls, may be necessary in order to satisfy the set owner.

Some dealers write into the original selling price of the radio set an extra charge to the customer which takes care of the added expense in giving the customer the 100% performance which he deserves.

We recommend to every dealer that he give serious consideration to these facts: the padding adjustments must be gone over carefully, new radio sets installed correctly, and customers must be instructed in the correct operation of these sets if selling expense is to be reduced through a reduction in comebacks, and service costs lowered through a reduction in the number of calls per sale.

Radio Manufacturers Service Four Years Old This Month

Membership is world-wide—Over 20,000 members in the United States, 2500 in England, and thousands more in other foreign countries.

Battery Exchange Plan Increases Sales for Active Philco Dealer

A PHILCO dealer who has been unusually successful in the sale of battery-operated receivers attributes a large part of his success to the use of a battery-exchange plan.

With each storage battery-operated radio he sells he attaches a tag to the battery on which is printed the offer of

a fresh, fully charged battery for only \$1.00 with the return of the discharged battery.

The customer need never wait to have a battery charged, and he is not put to the inconvenience of making two trips to town. Any time his battery becomes discharged he can bring it to the dealer and walk out immediately with a freshly charged battery for the cost of only \$1.00.

This plan has many advantages for the dealer. In the first place, he can talk about the convenience of the arrangement and sell more radios because of it. Also, he will get his customers back into his store each time their battery runs down instead of having them go elsewhere. This means extra tube and accessory sales. In addition, the dealer makes a small profit on the \$1.00 charge.

It is suggested that the dealer stock one additional battery for each four batteries put out with radio sets. In some instances the quantity of extra batteries may have to be increased or decreased, but after the plan is in operation for a short time this number can easily be adjusted to suit the particular requirements.

It is suggested that the tag be placed on the vent cap or on one of the battery terminals. In order to make this plan easier for PHILCO dealers, PHILCO has made these battery exchange tags available through the PHILCO distributor (Form PR-510). The net price of the tags is \$1.00 for a minimum of 200 tags. They are made of an acid-resisting stock and are provided with sufficient space for the dealer's name and address.

You can increase the floor traffic in your store, sell more radio sets as well as tubes and accessories, by starting this battery exchange plan now.

**AVOID
DELAY!**

Return this
battery, when discharged,
and receive a fresh one for

ONLY \$ 1.00

•
PHILCO EXCHANGE PLAN
•
DEALER'S NAME

PHILCO Battery Exchange Plan,
Tag Form PR510.

PHILCO AUTO RADIO VIBRATORS

Now Only \$3.00 List

QUALITY BETTER THAN EVER

Simple Battery Care Assures Long Radio Performance

GETTING the most performance out of the 2-volt battery-operated receivers is largely dependent upon the proper care of the battery. If the customer is given the few simple precautions outlined below, you can be sure that he will get maximum radio entertainment.

The PHILCO Type 172-R Radio "A" Battery is a 2-volt storage battery for use with PHILCO battery-operated receivers or any other make of radio using 2-volt battery tubes. The Philco type 116-R is a 6-volt battery for use on 6-volt battery-operated receivers.

Both batteries when shipped are in a fully charged condition. It is suggested that before the battery is placed in service the vent cap be removed and the height or level of the electrolyte be noted. The correct high level is just below the bottom of the vent well. If the level is found to be below this point, pure distilled water may be added and the battery placed in service.

Adding Electrolyte

If there is evidence in the packing that electrolyte has been spilled or lost in transit, the cell should be filled with electrolyte of the same specific gravity as is in the battery. Should there be insufficient electrolyte to make a hydrometer reading, the cell should be filled with electrolyte having a specific gravity of 1.270°. After filling, charge for at least three days at 4 amperes, noting the specific gravity of the electrolyte at various intervals. It is important that the gravity of the electrolyte should in no case be allowed to exceed 1.300°. If it should be necessary to reduce the specific gravity of the electrolyte, this can be done by drawing some of the electrolyte from the cell and replacing with distilled water. Terminate the charge when two hydrometer readings taken at 2-hour intervals indicate no increase in specific gravity. Never add acid after the original filling unless electrolyte has been spilled from the battery by accident.

Adding Water

Never allow the solution or water level to fall below the top of the separators, which is normally the low level mark. However, it will be found that the solution level will gradually fall with use, and only distilled water should be added to keep the solution between the low and high level. Use a small glass or china pitcher for refilling the cell. NEVER USE A METAL CONTAINER.

A cloth dampened in a solution of ammonia or soda will serve to neutralize any acid that may be spilled accidentally.

It is good practice always to keep the top of the battery clean and the terminal wing nuts lubricated so as to prevent corrosion. A light daub of vaseline applied to the studs of each is sufficient.

Charging

The battery should be recharged at least once every three months. Should the receiver be in constant use, it will be necessary to charge the battery more often. The battery can be used until there is a noticeable decrease in the volume of radio reception. Under no circumstances should the battery be allowed to remain for any length of time in a discharged condition. This would result in the accumulation of sulphation, which, due to chemical action, collects on the plates and clogs the pores of the insulating separators. If such a condition occurs, it is necessary that the battery be charged for a longer period of time than would otherwise be the case if the battery was given a periodic charge. The battery, when run down or in a discharged condition, should be charged at the rate of 8 amperes, and it is important that this rate is not exceeded. A lower charging rate may result in failure of the battery to take a charge. Most garages and auto service stations have battery charging facilities which allow them to keep the rate of charge within this limit. The battery is considered fully charged when two consecutive hydrometer readings taken at two-hour intervals show no increase in specific gravity.

To charge from a 32-volt D.C. isolated or farm lighting plant, connect one 250-watt 32-volt Mazda lamp in series with the battery terminals. This will afford a charging rate of approximately 8 amperes.

Charging from 110 Volt D. C.

To charge from 110-125-volt D.C. supply, a resistance of 14 ohms, having a capacity of 10 amperes, may be connected in series with the battery terminals and will afford a charging rate of approximately 8 amperes. If a resistance unit of the above value is not available, lamps up to 800-watt capacity may be used, but when more than one lamp is used the lamps should be connected in parallel and the group then connected in series with the battery. When more than 24 hours' charge is needed, it may be given in successive installments, broken by an evening's use of the battery, if desired.

CO-OPERATION IS KEYNOTE OF R.M.S.

CO-OPERATION is one of the basic principles in back of Radio Manufacturers Service. The co-operation of all parties involved in the sale of a radio set and the many benefits resulting from such co-operation have been expressed most clearly in a recent letter which was received at R.M.S. headquarters in Philadelphia from F. W. Motter, an R.M.S. member in Ferndale, Michigan.

We quote Mr. Motter's letter:

F. W. MOTTER,
225 Wordsworth Av.,
Ferndale, Mich.

Radio Manufacturers Service,
Tioga and C Streets,
Philadelphia, Pa.

Gentlemen:

The "Radio Public" is definitely placing more confidence in the opinion of the "Legitimate Radio Service Man", as evidenced by this question I am asked many times every day:

"What radio would you buy for yourself today?"

Our answer is invariably, "PHILCO builds a radio to suit every purse."

Many times with the assistance of R.M.S. I have saved PHILCO a customer who had soured on the product merely because the "Take all, give nothing" dealer did not make simple adjustments or interest himself in a proper installation.

Believe me, Radio Manufacturers Service pays big dividends to the serviceman, to the PHILCO owner, and naturally to the PHILCO manufacturer.

Thanking you for past favors, I beg to remain on your mailing list.

MOTTER'S RADIO SERVICE,
F. W. Motter (owner).

GRID BIAS CELLS EASILY RECHARGED

THE grid bias cells used in certain battery-operated receivers can be checked by noting whether the plate current is abnormally high on tubes biased by the cells.

A further check on these bias cells, particularly if it is suspected that the control grid leads have been grounded thus shorting the cells, is to connect a 4.5-volt "C" battery between the control grid cap of one of the tubes on the bias cell circuit and the chassis frame. The negative of the "C" battery should be connected to the control grid of the tube and the positive of the battery to the chassis frame. This connection should be made only momentarily. If the bias cell had been weakened before, it will now be found to be recharged and will not ordinarily need to be replaced.

SERVICE HELPS FROM PHILCO

088 *No Signal on Band "A."* Check for open or poor contact at the wave-band switch and for shorted oscillator coil in this circuit. This is oscillator coil assembly, Part No. 32-1743.

37-93 *Low Volume—No A.V.C.* Check coupling wire from terminal one of the antenna coil, Part No. 32-2329, to terminal four, Service Bulletin No. 275. Some have been found where this coupling wire either shorts intermittently or permanently across the primary and secondary of the antenna coil terminals.

37-610 *No Reception on Third Band 7.35 to 22 M.C.* Check for shorted fixed condenser in the oscillator section for range 3. This is condenser No. 7, capacity 250 mmfd., Part No. 30-1032, Service Bulletin No. 249.

37-620 *No Reception at Low Frequency End of Short Wave Band 7.35 to 22 M.C.* Check mica condenser in the oscillator stage, range 3, for short. This is condenser No. 27, capacity 250 mmfd., Part No. 30-1032, Service Bulletin No. 250.

37-630 *No Reception at Low Frequency End of Short Wave Band 7.35 to 22 M.C.* Check mica condenser in the oscillator stage, range 3, for short. This is condenser No. 12, capacity 250 mmfd., Part No. 30-1032, Service Bulletin No. 251.

Intermittent Reception on Broadcast Band. Check oscillator transformer connections in this circuit. This is Fig. 22, Service Bulletin No. 251. A high-resistance joint on the connection at the trimmers or padding condensers for this band will have this effect.

37-650 *Intermittent Fading.* Check mica condenser No. 8, Part No. 30-1076, Service Bulletin No. 254. Some condensers in this model have been found where a 25- or 30-megohm short developed intermittently, causing a positive voltage of 4 to 5 voltages in the A.V.C. circuit.

No Reception on Broadcast Band. Check range switch section, Fig. No. 68, Part No. 42-1190, for shorted wiring leads to the switch wafer terminals. Due to the location of the range switch in the R.F. assembly, some have been found where the wiring leads were shorted at a point where they cross over each other.

37-680 *Intermittent Noise.* Referring to Service Bulletin No. 228, it is recommended that the flexible resistors Nos. 53, 148 and 151 be checked and replacement made of the one found to be at fault. These resistors are of the wire-wound type. Some have been found where the electrical connections at the pigtail leads had a tendency to loosen or stretch, causing noise in reception, es-

pecially when the receiver is operated at extreme bass response.

37-690 *Hum.* To eliminate hum with receivers prior to Run No. 3, the connections from the second bass amplifier 6J5G tube to the cable socket contacts Nos. 11 and 18 (Service Bulletin No. 267), in the power unit are reversed. The grid of the 6J5G tube was wired to the shield and the shielded wire to ground. Therefore, make sure the shielded wire is connected to the grid and the shield is grounded.

Ford F-1440 Intermittent or No Reception. Referring to the schematic wiring diagram for this model, check resistors Nos. 10 and 15. Due to the position of these resistors at the type 78 tube socket in this model, some have been found where a short or intermittent short is present at one end of their wiring leads. At this point it is recommended that one lead from resistor No. 15 be removed, covered with spaghetti and resoldered in position.

PHILCO BATTERY SETS FEATURE LOW CURRENT DRAIN

ONE of the most desirable points in favor of the various PHILCO battery receivers is the comparatively low current drain which these sets take from the battery.

This means that the cost of operation is greatly reduced inasmuch as the useful battery life is increased. The Model 37-624, for example, draws only 1.5 amperes from the 6-volt storage battery, and yet this is a six-tube receiver having very good sensitivity and high output volume. The current drain of the PHILCO Model 37-34 is only 1.3 amperes. Current tests on some competitive receivers in the same class as the Models 37-624 and 37-34 have shown "A" battery current drain as high as 5 or 6 amperes. When using a 100-ampere-hour battery, for example, with the PHILCO Model 37-624, the set will operate approximately sixty-six hours before the battery is fully discharged. The same battery, when used with certain competitive sets, would last only seventeen to twenty hours before recharging was necessary.

This is one of the most important considerations when selling battery-operated receivers because the charging of the battery is an extremely important factor to your customer.

Philco Solder Quality Reduces Intermittents

ANOTHER example of PHILCO quality is found in the type of solder which is used for making all soldered connections in PHILCO receivers. This solder is made to a specified formula developed in the laboratories and is of such a quality that it will afford maximum strength together with quick action.

The solder is considerably more expensive than ordinary solder because of the costly ingredients. PHILCO has found that this more expensive material is a marvelous investment, since it means an absolute minimum of resin joints in the final inspection of PHILCO chassis.

Highly trained and experienced solder operators at PHILCO are able to do a quality solder job in a minimum of time through the use of this high-grade solder. The permanency of these joints is responsible for the relatively few service troubles which arise from intermittent soldered connections.

PHILCO solder is available for dealer and serviceman use in convenient one-pound spools. It is known as PHILCO Part No. 45-1123 and sells at a list price of \$1.25.

Disconnecting Charger Prevents Tube Damage

MANY customers who have battery-operated radio receivers have their own charging facilities for keeping the battery fully charged at all times. In some cases the wind charger is employed, and in others the battery is charged from a 32-volt or 110-volt farm lighting system.

Sometimes users forget to disconnect the charger from the battery when they are using the radio set. The result is almost invariably burned out or weakened tubes in the receiver. This condition is caused by the high voltage which is impressed across the tube filaments when the set is allowed to operate with the charger connected across the battery. The ordinary wind charger, for example, will produce a voltage across a 6-volt storage battery of approximately 8 volts while charging. If this voltage is allowed to get to the tubes in the receiver, such as the Models 37-624 and 37-34, the voltage on the tubes is approximately 2.6 volts as contrasted with a normal voltage of 2 volts or an absolute safe maximum of 2.2 volts. The tubes will not burn out necessarily, but they will become paralyzed within a very few minutes, and then the operation of the set is either greatly weakened or the set stops playing entirely.

Some charging arrangements are provided with automatic relays or switches to disconnect the charger while the set is in operation. If such provisions have not been made, it is recommended that a switch be installed in one of the charging leads, so that the charge circuit can be opened when it is desired to operate the receiver.

Questions and Answers

1. Q. What is the effect of operating an auto radio receiver without the buffer condenser?

A. The most serious result is pitting of the vibrator points due to the excessive sparking which results when the condenser is taken out of the circuit. The main purpose of the buffer condenser is to smooth out the sparking effect at the points, and thus eliminate the heavy sparking which would ordinarily cause serious damage to the points. Another effect is lowered operating voltage in the receiver. This in turn causes the set to lose sensitivity along with the extremely short vibrator life which results.

2. Q. What is the cause of failure to oscillate in the Model 37-116X between 530 K.C. and 900 K.C. and failure to track on the middle of the broadcast band?

A. This can be traced to condenser No. 33 in service bulletin No. 222-A. This is a 250 mmf. condenser which occasionally changes its capacity value. Correction can be made by substituting a new condenser.

3. Q. How is it possible to greatly reduce or attenuate the signal output of the 088 Signal Generator for fine short wave adjustments?

A. A much lower output signal can be obtained by using a harmonic of a lower frequency. For example, if it is desired to make an adjustment at 18 megacycles and the signal generator output at 18 m.c., even when attenuated to the minimum output position, is still too great, the signal generator can be set to 6 megacycles instead of 18 m.c. and the third harmonic then used for the 18 m.c. adjustment. It will be found that the strength of the third harmonic of 6 megacycles is greatly reduced over the strength of the 18 megacycle fundamental signal.

4. Q. Has PHILCO published any practical information in booklet form on the elimination of man-made static interference?

A. Yes. PHILCO has prepared a 12-page booklet entitled "ELIMINATING RADIO NOISE INTERFERENCE". The booklet contains a simple discussion of the different types of interference, the method of transmission of interference, and practical suggestions on the elimination of interference. This book can be obtained from your PHILCO distributor.

Philco Phone Installation Hints

ONE of the biggest and most important sales points in connection with the Philco Phone is the ease of installation. The simple instructions which accompany each Philco Phone unit can be readily followed by anyone, and it is unnecessary to have an expensive installation job made in any case. Salesmen who are actively selling Philco Phone equipment are well aware of this fact, and they are able to sell the units in many cases largely by virtue of the installation ease.

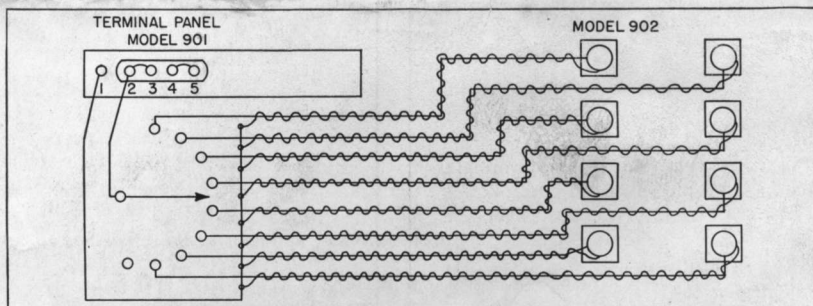
When variations from the standard hook-up are made in order to accomplish different results with the Philco Phone, the installation naturally becomes more complicated and more expensive. The Philco Phone was designed to serve a definite purpose in its standard form. It was felt by PHILCO that the great majority of installations would require the equipment as it is built at the present time.

There is one request which has been received on a number of occasions by PHILCO, and that is for information on connecting more than four extra speakers to a single master control unit. This can be done, and the wiring diagram for such connections is shown below.

Another question which has been asked on various occasions is whether or not the Philco Phone can be installed with approximately 1,000 feet of wire connecting between the master unit and one or more of the remote stations. This can be done but it is necessary to use heavy wire for making the connections to the distant point. The Philco Phone remote stations connect directly

from the voice coil of the remote speaker to the master unit. Being a low impedance circuit, it is evident that a long stretch of standard transmission wire such as usually employed for hook-up purposes would have sufficient resistance to reduce the efficiency of the remote speaker. In order to overcome this condition, it is necessary to use approximately No. 14 twisted pair for such long connections.

In many cases, broadcast interference has been picked up on the Philco Phone when the unit was being operated in the vicinity of a powerful broadcasting station. The Philco Phone is entirely an audio system. Occasionally there may be some rectification which takes place at some point on the line and thus produces a slight audio signal which will be amplified. This condition can usually be overcome by connecting .1 mfd. condenser across the power line at the master control unit. This bypasses any R.F. which may be picked up on the power line and brought into the circuit. In other cases, it may be necessary to connect a 200 mmf. mica condenser from the grid of the first 6A7G tube to the chassis. Another suggestion which is often effective is the connection of a pair of .01 mfd. condensers across the line to the remote speaker and grounding the common center point of these condensers to the chassis of the master control unit. In extreme cases of this kind it may even be necessary to install small R.F. chokes in both sides of the line to the remote speaker in addition to having the twin condenser arrangement just described.



Linn & Scruggs Dry Goods and Carpet Company
Decatur, Ill.