

PHILCO SERVICEMAN

• SERVICE • NEWS • FOR • PHILCO • DEALERS •

JANUARY, 1933

Modernizing with Philco Parts and Tubes

HERE is a real chance to get some business from the many people in your neighborhood who want a modern radio, but who feel that they are financially unable to make such a purchase at the present time. There is also the opportunity to make a sale to those people who are so pleased with the tone or with the cabinet of their present set they would not part with it, even though they realize that many other features of the radio make it an old set in performance.

Frank L. Sprayberry, nationally known radio author and instructor formerly of the National Radio Institute, Washington, D. C., has prepared a series of instructions on the method of improving old radio sets of various different manufacture. Tuned radio frequency receivers can be changed into superheterodynes, and old type obsolete tubes are replaced by the latest and most modern tubes. Philco parts and Philco tubes are specified in all lessons.

A Valuable Service for Servicemen

Once a month, Sprayberry issues a detailed set of instructions, describing to the serviceman in simple language and with clear illustrations and diagrams, the method of converting an old make receiver to a modern type. The author, being a serviceman himself with a wide range of experience in the instruction of servicemen as well as in the actual problems of the serviceman, is particularly well fitted to prepare such information in understandable form. The purpose of these special instructions is not to hinder the sale of new receivers in any way, but to sell a service to the radio set owner who cannot afford to buy a new set. At the top of each lesson, Sprayberry says "Try to sell the customer a new Philco first. If you are unable to do this then sell him on the idea of modernizing his old set."

Every month the modernization of a different make radio receiver is described. Sprayberry actually

makes these alterations in his laboratory before he ever attempts to write any instructions. Every change over that he describes is a workable one and a comparatively simple one. The instructions are clear and the diagrams are understandable. A complete list giving the Philco part numbers and net dealer price of the necessary parts for the work is a part of each of these groups of data sheets. Every conversion job which is written is first submitted to the Philco factory for listing of the proper Philco parts.

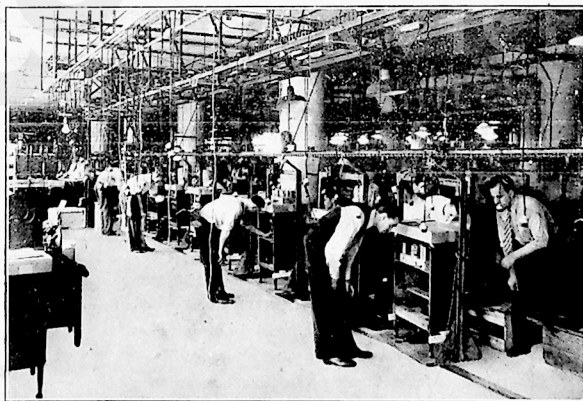
\$15 Profit

One of the first lessons deals with the modernizing of a well known commercial receiver which was specially popular about three years ago. The cost of the job to the customer is suggested at \$25.00. The actual cost of the Philco parts and tubes to the serviceman is approximately \$10.00, leaving a return of \$15.00 for about a half day's work. There are a number of receivers of this particular make and model in practically every neighborhood. Once a serviceman sells and completes one job of this kind, there are a number of like jobs which he can get with but little effort. Sprayberry in his course not only outlines the method of doing these various jobs, but he devotes several pages to good practical information which tells the serviceman how to go out and sell the service.

Complete Data Service

In addition to the regular data sheets described above, there is other information in the data sheet course which includes special and up-to-the-minute information for the serviceman on test equipment, tubes, radio set test methods, etc. All information of this type is new, it is accurate, and it is of a nature which cannot be obtained from any other source unless the serviceman is equipped with a laboratory, has lots of time, and has a sufficient technical knowledge to be able to find out these facts for himself. There is

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PHILCO FINAL TEST OF CABINET MODELS

Every Philco as it passes along this conveyor is given a complete electrical and mechanical operating test. The radio is played on five different broadcasting stations as well as on a special "beat frequency oscillator", which affords an overall test of the speakers from the lowest to the highest musical notes.

New Philco Service Items

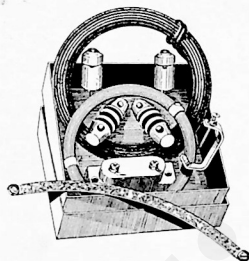
PHILCO has recently announced several new additions to the line of service parts, which are of particular interest to every dealer and serviceman.

The Philco Aerial Kit is the first of these new items brought out by Philco specially to fill a definite demand. The kit contains 75 feet of stranded copper aerial wire, 35 feet of rubber covered lead-in wire, a large "C" type ground clamp, a window lead-in strip, glazed porcelain insulators, a weather proof lightning arrestor, and two glazed porcelain nail-on knobs. The Philco Aerial Kit contains only quality material, yet the price is just as low as that of inferior kits, using cheaper parts. The kit, part 8043, sells at a list price of \$1.30 and a net dealer price of \$0.78.

The two new general replacement condensers of the self supporting tubular type described in the Interference Elimination article in the December issue of the PHILCO SERVICEMAN are now available. These condensers are made in two sizes—the .05 Mfd., part No. 8205 at \$0.10 net to the dealer, and the .1 Mfd., part No. 8206, at \$0.12 net to the dealer. Both units are of the same high quality as the Philco by-pass condensers in the black bakelite containers. The essential difference is in the shape of the units. These new condensers have been designed primarily for general replacement and interference elimination work where small size and convenient connection are essential. They have heavy leads making the unit easy to install and entirely self supporting. They are comparatively small, and can be used in many places where the larger condensers in the black bakelite cases could not readily be employed. Each type is available either singly or in boxes of six.

The new Philco power transformer, part No. 8220,

has been designed for general replacement work on various midget radios using a 2.5 volt filament. The transformer is identical in construction and specifications with that used in the Philco Radio Model 80, but has a 2.5 volt filament winding instead of the 6.3 volt winding. This latest addition to the Philco line of general replacement parts sells at a net dealer price of \$2.25.



PHILCO AERIAL KIT

At the request of many dealers and servicemen, Philco has made available in 100 foot coils all of the most commonly used hook-up wire which is employed in the wiring of the Philco chassis. All of this wire is listed and described in the new Philco general replacement sheet No. 34, your copy of which is now available.

The Philco socket wrench kit has been greatly improved, and is now of such a quality that it would be a proud possession of anyone who appreciates good tools. The price of the new kit has not been increased. The kit, part No. 7016, sells at a net dealer price of \$1.65 and is comprised of the following items:—

- 1 Long Handle
- 1 Short Handle
- 1 1/4" Socket
- 1 5/16" Socket
- 1 3/8" Socket
- 1 7/16" Socket

The new Philco General Replacement Sheet No. 34, mentioned above, will complete your catalogue listing of the various Philco replacement parts. If you have not as yet received your copy be sure to ask for it at our Service Department as well as for any of the other sheets which may be missing from your file.

Remember the Type 26 Filament Voltage

A NUMBER of cases have been called to our attention recently in which dealers have burned out 26 tubes by placing them in tube checkers with the filament control set for 3.3 volts or 5 volts. When using tube checkers to test these tubes, always be sure to adjust the filament setting for 1.5 volts before inserting the tube.

The 26 filament is of a rugged construction; it will

Let Us Stop—

- Delivering sets without first testing them.
- Connecting sets to old aerials that are noisy and inefficient.
- Forgetting to loosen the chassis hold down bolts.
- Using steam pipes and gas pipes as ground.
- Failing to instruct customer in correct operation.
- Returning sets with nothing wrong but a tube.
- Knocking the job done by the last serviceman.
- Arguing with the customer.

stand rough treatment and will give exceptionally long life at its normal filament voltage of 1.5 volts, but it will not stand from 100 to 400 percent over-voltage.

This may seem like a needless caution, but it is a matter which can easily be neglected unless proper attention is given the tube checker settings before testing these low voltage tubes.

Circuit Description of Philco Model 89

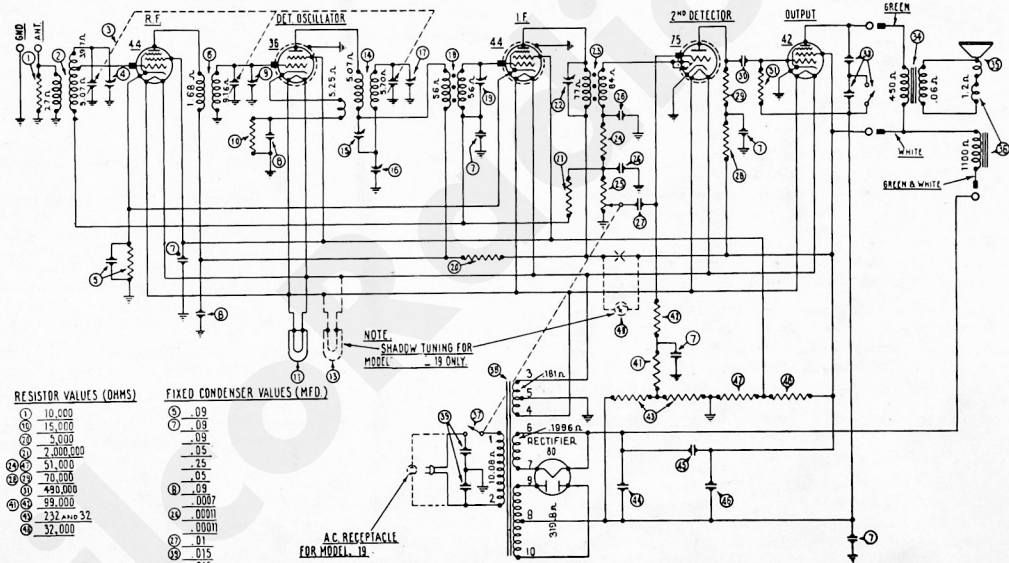
THE analysis of the R. F. and I. F. circuit of the Model 89 is practically the same as that given for the Model 91 in the November issue of the PHILCO SERVICEMAN.

At the second detector of the Model 89 the signal is applied to the diode plate of the newly developed type 75 tube. This tube consists of a dual diode section and a very high gain triode section. It was specially developed for use in this type of circuit. The diode section gives performance identical to that of the 37, and the triode section gives very good audio gain as well as good fidelity characteristics, being resistance coupled. The signal after passing through this 75 tube is further amplified by the Type 42 output pentode which delivers the power to the speaker.

Shadow tuning is used on the Model 19-LZX. In this case the shadow tuning indicator is connected in the plate circuit of the I. F., detector oscillator, and R. F. tubes.

The LZX model is essentially the same chassis as the standard 89 model, with the exception that the flat cord connecting the control unit and speaker unit contains the antenna and ground connections, the speaker connections, and the A.C. power supply to the chassis.

The combination of detector and oscillator and the combination of second detector and triode amplifier affords performance equal to that of an ordinary eight-tube set.



RESISTOR VALUES (OHMS)

- ① 10,000
- ② 15,000
- ③ 5,000
- ④ 7,000,000
- ⑤ 51,000
- ⑥ 70,000
- ⑦ 490,000
- ⑧ 59,000
- ⑨ 232,000
- ⑩ 37,000

FIXED CONDENSER VALUES (MFD.)

- ① .09
- ② .09
- ③ .09
- ④ .05
- ⑤ .25
- ⑥ .05
- ⑦ .09
- ⑧ .0007
- ⑨ .0001
- ⑩ .01
- ⑪ .015
- ⑫ .015
- ⑬ .05

Wiring Diagram Philco Radio Model 89

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a total of from three to four mailings a month, including the regular monthly modernization data.

The net cost of this service for one year to the serviceman or dealer is \$3.50. The profit obtained from one conversion job will more than pay for the whole year's mailings of these valuable data sheets. Every owner of an old radio in your neighborhood is a logical prospect; every job you get means a big profit on an extremely small investment; and every

job that you do will perform because the circuit and method have been laboratory tested beforehand. The high quality of the Philco parts and tubes used and their low prices assure quality performance with minimum cost to you. Phone or write the Service Department now for your subscription to this new method of making extra money. Remember your cost is only \$3.50 for one year, and your profit on one job is \$15.00. Let us have your order now.

Resistance Test Measuring Equipment

IN past issues of the PHILCO SERVICEMAN we have discussed resistance test methods of servicing. Last month we presented an easily constructed low range ohm-meter. This meter permits testing of resistances below 100 ohms; such values as those of R.F. and I.F. coils, speaker voice coils, and filament windings of power transformers.

While every serviceman likes to construct his own equipment he has the desire to own instruments of proven accuracy and neat appearance. Such instruments for resistance test measurements are available at a reasonable price.

The Weston-Jewell Instrument Corp., Newark, N. J., has three types of ohm-meters that will prove of extreme interest to the serviceman.

The Jewel pattern 89 ohm-meter is a practical, reasonably priced instrument that can be used for

continuity work as well as for measuring resistances in ranges of 0-5000 and 0-50,000 ohms. A similar instrument known as Model 563 Weston D.C. Circuit Tester embodies the same ranges of measurement. Both of these instruments have an adjustment permitting compensation for changes in potential of the self contained $1\frac{1}{2}$ volt battery.

A more expensive instrument having a complete range of resistance scales, voltage, and current ranges is the Weston Model 663 Volt Ohm-meter. This model was designed to answer the demand for an instrument to measure with extreme accuracy such low resistances of 0.1 ohm and such high resistances as 10 megohms. This wide coverage of ranges is made possible through the use of a highly sensitive 50 microampere meter. A selector switch connects the proper resistances with the self contained batteries for each range of resistance measurement.

Questions and Answers

1. Q. What is the cause of dial slipping on the models with drive cord tuning?

A. This is caused by the weakening of the drive cord spring tension allowing the cord to slip over the drum of the dial. It can often be corrected by moving the spring from the second to the third notch on the inside of the drum. If this does not correct the condition completely, a new and heavier spring, part No. 7776, should be installed.

2. Q. What is the cause of a cone rattle in models with twin speakers?

A. This is caused by a faulty cone, by an improperly centered cone or by faulty tubes in the output circuit. In the case of rattle caused by tubes in the output circuit a change of tubes will correct this condition, although the tubes may test perfectly in a tube checker. These same tubes, however, may work in one set perfectly and still cause a rattle in another set.

3. Q. What is the best method of attaching the flat cable of the models 14 LZX and 19 LZX when it is desired to run this cable around the baseboard?

A. Under no circumstances should this cable be tacked by running tacks through the cable, this will cause an immediate short and possible burn out due to the wires being placed so close together. A special Kit, part No. 8256 has been prepared for attaching the flat cable around the baseboard; this kit includes special tacks and fibre brackets to hold the cable in place.

4. Q. Does adjusting of the I.F. compensating condensers affect the tone of the radio?

A. All Philco superheterodynes are adjusted to give normal results in broadcast reception but in some cases it has been found that it is necessary to re-adjust the compensating condensers to provide extreme sensitivity. This is generally done when the instrument is placed in the home. The tone is affected slightly in as much as readjustment to a finer point will suppress some of the extremely high musical notes but not to an extent that it will be noticeable to the average ear.

5. Q. What is the cause of a 60 cycle mechanical hum in the power transformer of some models?

A. This is caused by a mechanical vibration of the outer layers of the core which become loosened after the set is in operation a short period of time. The noise can be corrected by removing the case from the transformer and bending the center leg of the two outside "E" shaped core pieces inwardly so as to cause a spring tension when the case is replaced and the bolts are securely tightened.

6. Q. What is the best polish to use for Philco cabinets of the present line?

A. A special polish has been compounded by the Philco Chemical Laboratories and is available from your distributor in the bulk. The polish is highly suitable to produce the finest finish desired on the modern Philco cabinets. In a short time the polish will be available in small bottles for customer use.

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