

PHILCO SERVICEMAN

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RADIO · MANUFACTURERS · SERVICE · NEWS



MAY, 1936

EDITORIAL

May, 1936—Biggest Month for Increased Service Business

PROBABLY more people will use their radios during June, 1936, than any other month for the past several years. The great national conventions, plus the big summer sporting events and the many other news items of national and international interest, will cause many persons to dust off their radios and try to "tune in."

We say "try to tune in" because many radios which have not been used for some time will be found by their owners to be dead; many others will produce such poor reception that a complete overhauling and probably a new aerial and new set of tubes will be needed to restore proper reception.

YOU can get in line for a tremendous service business during the next thirty days if you will get out an announcement or letter to your mailing list or run an ad in your local paper, informing radio owners of the importance of getting their sets ready in plenty of time for the conventions, and the advantage of having you—an authorized member of Radio Manufacturers Service—do the job.

Use the mailing card illustrated in last month's "SERVICEMAN" (Form PR-384) or make up an ad, using copy similar to that in the mailing card, to be run frequently in your local newspaper. If you send cards or handbills out, be sure to follow up every one with a personal call or phone call. Many dormant prospects for service work can be aroused to action by a little extra effort on the part of the serviceman.

Take advantage of this marvelous chance to get extra business, provided to you without cost by the national political broadcasts. Cash in on the public's red-hot enthusiasm about "who will be our next president." Whoever may be nominated, we feel sure you can use \$50 to \$100 extra profit in getting radios tuned up before the convention broadcasts start.

THANK YOU, R. M. S. MEMBERS!

Response to R. M. S. Questionnaire Helpful to R. M. S. Headquarters

IN THE spring mailing to R. M. S. members from Central Headquarters in Philadelphia, a questionnaire was enclosed for members to fill out and return. The purpose of this was to provide members with an opportunity to give us their frank comments on the contents of the R. M. S. mailings and also the other service data and service-selling helps R. M. S. has provided for members. New suggestions were welcomed.

Several Thousand Returns

At this writing several thousand returns have been received; each has been carefully read and answers to all questions noted. All of the returns are extremely enlightening; many contained worth-while suggestions and interesting comments on the radio service profession in general and R. M. S. in particular. We greatly appreciate the many favorable comments received on R. M. S. and what it has done for the serviceman.

We desire to thank each member who

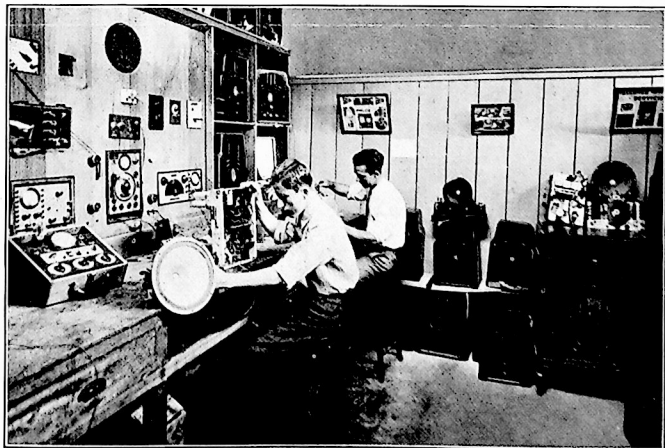
95%
OF ALL RETURNS
to the Questionnaire
FAVOR
STANDARD SERVICE
CHARGES

filled out and returned the questionnaire—each return helps us that much more to provide better service and sales helps to give you maximum technical and business assistance.

To those who have not as yet returned the questionnaire, we ask that you fill it out and mail it to R. M. S.

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PHILCO SERVICE IN SOUTH AMERICA



Service Shop of A. Aristizabal & Cia., PHILCO Distributors in Cali, Colombia.

SERVICE ANALYSIS HELPS SERVICEMAN LEARN

THE desire of the average serviceman to learn more about his job is evidenced on all sides. The commendable part about this constant search for practical knowledge lies in the fact that the serviceman must rely upon *himself* and not upon a school teacher who is going to force him.

Without studying any additional radio theory, many servicemen can make big strides in their knowledge and ability in service work. This practical knowledge, which produces the ability to do a better and faster service job, can be readily obtained if the serviceman will occasionally sit down and analyze his own methods before he attempts to analyze a radio set. If we are honest with ourselves, we will realize that the first inclination when attempting to shoot trouble in a radio set is to hop from one place to another and hope to find it by luck rather than by scientific reasoning based upon the technical knowledge at hand.

Method of Analyzing

To be more specific, let us assume that the radio chassis has come into the shop as being inoperative. The serviceman's basic radio knowledge tells him that if there is absolutely no sound of any kind coming out of the speaker, the trouble is quite likely in the speaker or in the output circuit. The voice-coil circuit may be open, or the trouble may be in the primary circuit of the output transformer. If the field coil is open in a small set, the set will probably be entirely dead, because the plate current to the various tubes must go through the field coil. All of these facts, when we read them, seem obvious, but how often do we start checking up the audio circuit when ordinary reasoning beforehand would tell us that the trouble was in the speaker or output circuit?

Quick Test Method

If we find that the trouble is not in the speaker circuit, naturally we want to know next if it is in the audio circuit or if it is ahead of the audio at some point. One of the quickest ways to do this is to place the finger on the control grid of the first audio tube. This is not a positive test, but in 90 per cent of the cases it will tell us quickly whether or not the audio circuit is functioning. If the speaker test has been satisfactory, we suspect that there might be something wrong with the voltage-supply circuit. In this case the easiest and quickest thing to do is to make a plate-voltage test at the output tube or tubes to tell us immediately if voltage is being furnished from the voltage-supply system. If the voltage is incorrect, we usually find a worn-out rectifier tube and replace it. If this is not the answer, we look for a short or an open circuit.

The method of servicing radio sets by isolating the trouble into one particular section of the set is without question the

fastest and most accurate way to locate difficulty of any kind. After the particular section has been found, it becomes a relatively simple matter to run down the particular part by means of voltage or resistance tests.

If the quick analysis, as described here, proves that the audio circuit is functioning, it is possible to learn more about the particular source of trouble in a very short time by placing a signal from a signal generator on the input of the second detector. In cases of sets with 460 K.C. I.F., the signal generator should, of course, be adjusted to this frequency. If the signal comes through to the speaker properly, we know immediately that the trouble is ahead of the second detector at some point. We then take the signal into the I.F. system by attaching the output lead from the signal generator to the various input circuits throughout the I.F. stage. In this way we can find out very quickly if the trouble is in the I.F. circuit. We next go to the R.F. end and eventually to the antenna input, using a 1400-K.C. signal in this case or, in the case of short waves, a signal of suitable frequency to be received on the band under test.

Thinking First

The purpose of this discussion is not to tell the serviceman how to trouble-shoot a radio set. It is believed, however, that the serviceman, after reading the above suggestions, will stop and analyze the situation the next time before he plunges into the job of locating the source of trouble in the set. His basic knowledge of radio and of service methods enables him to do a good job of analyzing and thus do a better and quicker job of restoring operation in the receiver.

PROFIT INSURANCE

BEFORE DELIVERY

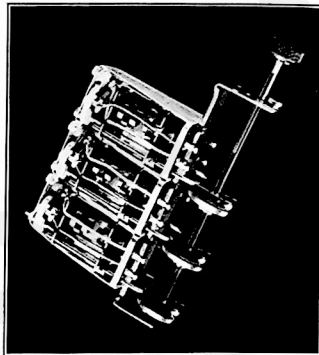
1. Check chassis.
 - a. Make secure tubes and tube shields.
 - b. Inspect pilot lamp.
 - c. Check shadow tuning.
 - d. Place knobs on shafts.
 - e. Check general performance on broadcast and short wave.
2. Inspect and polish cabinet.

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.

Philco I. F. Expander Unit Used Experimentally

AT THE request of many servicemen-experimenters, PHILCO has prepared detailed information on the use of the I.F. expander unit which is used in the PHILCO high-fidelity Model 680. These instructions, which are furnished with the unit, provide complete wiring



information as well as an explanation of the method by which the circuit functions.

Many experimenters have built special circuits around the unit and have had remarkable success with its use.

The list price of the unit is \$15.

Radio Service Sessions Highly Instructive

THE annual exhibition of the Radio Technicians Guild of Massachusetts was held on April 27th at the Hotel Lenox in Boston. The exhibition, which is an annual affair, was attended by hundreds of servicemen from throughout New England.

Many interesting exhibits by radio set and equipment manufacturers formed a big attraction for all servicemen in attendance. Talks by various leaders in radio service and allied fields were instructive and made a big hit with the members of the radio service fraternity in New England. The Radio Technicians Guild of Massachusetts is one of many splendid service organizations throughout the country helping to advance the radio service industry.

Of keen interest to radio servicemen in the South is the annual radio service school, which is being held by the University of Florida at Gainesville, Florida, on June 8th to 12th. For many years these intensive and highly educational sessions have been attended by servicemen who want to improve their radio knowledge. Practically all of the larger radio manufacturers have exhibits at the school and send their engineers to Gainesville to give talks on the many aspects of modern radio design, construction and service.

Good Aerial Installations Important for Summer Reception

A HIGH-QUALITY aerial installation is more important in getting quality reception during the summer time than during the fall and winter months. Many radio set owners seem to think that they can get less static interference during the summer when using a small indoor aerial than they would in using a quality outside aerial. Such is not the case, however, since it is necessary in the summer time to get a high ratio of signal strength with regard to other noises. The only way that this can be done is through the use of a good aerial.

The noise-eliminating feature of the PHILCO All-Wave Aerial will have no effect upon the elimination of natural static, but it will improve reception in general because of its high efficiency. Servicemen who feel that the advent of summer necessitates their stopping all aerial installation work should give serious thought to the reasons outlined above for having a good aerial during the summer months. When this is done it then becomes possible to go out and sell aerial-installation jobs to customers who do not have good aerials at the present time and who are not going to have good radio reception in the summer until a quality aerial is installed.

Philco Announces New 10-Watt Resistors

PHILCO has recently announced a complete line of 10-watt vitreous enamel resistors. These new resistors, which are extremely popular among servicemen, experimenters and radio



amateurs, range in value from 100 ohms to 25,000 ohms. The resistors are clearly marked with the PHILCO part number and the resistance value, and are priced at 40 cents list. The following is the complete line:

Part Number	Ohms	Part Number	Ohms
33-3251	100	33-3243	2,000
33-3252	150	33-3263	2,500
33-3253	200	33-3244	3,000
33-3254	250	33-3266	4,000
33-3255	300	33-3267	5,000
33-3256	400	33-3245	6,000
33-3257	500	33-3268	7,500
33-3258	600	33-3246	10,000
33-3259	700	33-3269	12,000
33-3260	800	33-3247	15,000
33-3242	1,000	33-3264	20,000
33-3261	1,200	33-3265	25,000
33-3262	1,500		

REPLACED PARTS A SAVING OVER REPAIRED ONES

THE illustration at the right on this page shows a PHILCO speaker cone which was repaired by a Middle West serviceman. This repair job was done, not because the serviceman was unable to obtain a new replacement cone, but because he felt that he would save himself a few cents on the replacement costs and thus make more money on the job. Comparing the repaired cone with the standard cone, as shown at the left, and considering the low price of the replacement, it is hard to understand why a serviceman should want to go to such trouble with an old cone.

The cost of new replacement parts, and particularly PHILCO speaker cones, is extremely low. Whenever a serviceman attempts to repair a part rather than

replace it, he is taking a chance on losing his prestige as a good serviceman, and he is not giving the customer a square deal on the repair job. Whenever a defective part is replaced you can be sure that the job will be done right and there will be no cause for a comeback from the customer.

All PHILCO replacement parts are made in accordance with the exacting specifications laid down by the PHILCO Engineering Department. The quality of material and workmanship must be absolutely right before the parts are released from production. Because of the tremendous production facilities on PHILCO radio, it is possible to obtain PHILCO high quality and still maintain low prices.



Practical Repair Hints Continued

HERE are more practical repair hints that have been encountered since publication of the April issue of the PHILCO SERVICEMAN.

The cause or correction of the con-

dition listed will not in all cases be the same as that given below, but these are unusual cases, and it will be well to remember the solution found for these particular complaints.

Condition	Model	Cause or Correction
Noisy.	116-B	Intermittently noisy coupling condenser 66B, Part No. 30-4020.
Intermittent noise when chassis is jarred.	620-B	Intermittent connection between ground lug mounted on tube-socket rivet.
Intermittent reception on broadcast band only.	645	Intermittently shorted low-frequency compensator 24, Part No. 31-6027.
Weak reception and frequency drifting.	16-RX Codes 121-2-3	Replace first, second and third I.F. transformers with new transformers having high-melting-point wax impregnation. The wax is tan in color. The respective part numbers are 32-1186, 32-1187 and 32-1188. First and second I.F. compensators are replaced with Part No. 31-6030, and each section of these compensators is shunted with mica condenser, Part No. 30-1036. The third I.F. compensator remains the same.

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Questions and Answers

1. Q. Is there a PHILCO vibrator suitable for replacement use in General Motors auto radio receivers?

A. Yes. The PHILCO vibrator, Part No. 41-2015, is being used with great success on this type of replacement. The installation is comparatively simple in the vibrator container. The PHILCO vibrator, Part No. 41-3186, can be used with marvelous results as a replacement in the Ford-Majestic receivers. Both of these vibrators sell at a list price of \$5, subject to parts discounts.

2. Q. What is the best recommended method of preventing breakage of PHILCO All-Wave Aerial lead-in wire caused by swaying in the wind?

A. A length of electrician's loom, approximately one foot long, slipped over the lead-in wire and allowed to extend half the length of the loom on each side of the point of attachment will distribute the bend in the line so that the swaying in the wind does not cause breakage. The main reason for breakage of transmission wire is because of excessive weight on the wire or because of the wire swaying at a point where there is a sharp bend.

3. Q. Does PHILCO supply a higher-quality fiber compensating wrench than the Part No. 3164, which lists at 20 cents?

A. Yes. Part No. 7696, which lists at 35 cents, subject to regular parts discount, is a hard bakelite type of wrench which will give superior service to the cheaper wrench. It can be obtained from your PHILCO distributor.

4. Q. What is the primary difference between the new PHILCO Under-Car Aerial, Part No. 45-2184, and the earlier type, No. 45-1128?

A. The main difference is in the insulation of the aerial from the running board. The rubber-block construction on the new aerial is so arranged that there will be a minimum of leakage during wet weather. The channel of the aerial itself is closed at the top and the ends on the new aerial, instead of being entirely open as in the case of the earlier-type aerial, thus preventing accumulation of dirt and mud in the channel. The list price of \$5 remains the same.

5. Q. Does PHILCO have an exchange policy on auto radio vibrators?

A. Yes. The standard list price of the PHILCO auto radio vibrator is \$5, and there is a \$4 exchange list price for the old vibrator. In other words, the old vibrator, when presented to the PHILCO distributor, is worth \$1 list when applied to the purchase of a new vibrator. These list prices, of course, are subject to regular parts discount.

Facts Show Noise Interference Responsibility

AN ANALYSIS of several thousand radio noise complaints made by large electric power companies recently showed that the responsibility for the trouble was about equally divided between power companies and consumers' equipment and that the sum of these two complaints was approximately 50 per cent of the total complaints received. Further analysis of the consumer complaints showed that motor devices were by far the worst offenders, and building wiring defects accounted for about half as many complaints as the motor devices.

To the serviceman who is planning on increasing his summer income by doing interference elimination work, these figures will be most interesting.

A CAUTION

DO NOT attempt to check the grid-bias voltage cells in the PHILCO Models 602 and 624 with an ordinary voltmeter. As explained in the February issue of the PHILCO SERVICEMAN, voltage measurements on these cells must be made with a vacuum-tube voltmeter.

THANK YOU, R. M. S. MEMBERS!

(Continued from Page 1)

Headquarters in Philadelphia as soon as possible—it is not too late, as we will continue to tabulate returns for several weeks.

Many of the additional selling helps that members suggested in their returns were already in the process of preparation, and a new line of these will be announced through distributors about June 1st.

The suggestions made for articles in the PHILCO SERVICEMAN, Service Lessons, additional data in bulletins, etc., are all being noted, and many will be put into effect during the coming season.

We have endeavored to answer all questionnaires in which an actual question was asked or some piece of literature (such as R. M. S. lessons) requested.

After tabulation, the questionnaires will be turned over to the various local headquarters, so that they can arrange to mail the PHILCO SERVICEMAN regularly to members not already getting it; also a copy of the 1936 PHILCO Parts Catalog to members who have not yet received it.

Again we say—Thank you, R. M. S. members!

Practical Repair Hints Continued

(Continued from Page 3)

Condition	Model	Cause or Correction
Noisy	610	Intermittent high-resistance short in first I.F. transformer.
Intermittent reception.	610	Loose connection on type 80 rectifier socket.
No reception on S.W. band.	645	Replace defective oscillator transformer.
Microphonic action on bass notes.	680	Replace microphonic tubes. Replace resistors Nos. 148 and 151. No. 148 replaced with Part No. 33-1219. No. 151 replaced with Part No. 33-1214. Remove coil shield from the shadow-meter I.F. transformer No. 132 and put rubber bands around the leads from the compensator to hold them tight against the I.F. coil.

DEVLIN-DREW COMPANY

718 "F" Street

Fresno, California