PHILCO SERVICEMAN

RADIO · MANUFACTURERS · SERVICE · NEWS

APRIL, 1938

EDITORIAL

Showing a Profit

OBSERVATION of the radio service business nationally shows that service work is not down in the same proportion as general business, and it is fortunate for R. M. S. members that such is the case.

Almost without exception, servicemen have reported a favorable business increase when they employed some of the various R. M. S. sales promotion helps which are available to members. Those who take advantage of this opportunity to provide a regular advertising program using the R. M. S. promotional material are invariably showing a nice profit on their books.

Philco Engineer Speaks

RECENTLY one of the engineers of the PHILCO Auto Radio group gave a talk at the annual meeting of the Institute of Radio Engineers at Rochester on the subject, "Measurements of Characteristics of Automobile Antennas." Regarding the importance of matching, the engineer stated the following:

> "Before the receiver can be completely designed, the characteristics of the antenna to be used have to be known, as they influence the design of the antenna transformer. Very often we have to rely upon the accuracy of design of the antenna transformer to meet prescribed signal-to-noise ratios as well as high sensitivities."

It simply is impossible for us to put too much emphasis on the necessity of using an aerial which is matched to the circuit of the radio set, if we are interested in getting full performance out of the radio.

HERE IS BIG NEWS!

MARVELOUS RADIO EDUCATIONAL PROGRAM

R. M. S. Members Have Chance of a Lifetime

RADIO MANUFACTURERS SERVICE announces one of the greatest opportunities which has ever been presented to the radio service industry. Through the facilities of R. M. S. and the National Radio Institute in Washington, D. C., servicemen are offered a course in radio theory and practice at about half the cost of the regular course.

During the past few months we have pointed out in various articles in the PHILCO SERVICEMAN the importance of a solid basic radio theory foundation for the serviceman who intends to stay in business and who expects to progress with the industry. The complicated radio circuits of today and television in the future present to many servicemen a problem which can best be solved by a definite and supervised course of study.

For the man who has become rusty in his theory, here is a chance to get the kind of directed training which will remain with him always. For the practical serviceman who has never had the opportunity to receive much training in underlying radio principles, here is a chance to get that training which will affect his entire future. And this is an important consideration—the cost to you can be as little as $5.00 a month if you wish.

In order to make this offer even more interesting, there is given with the course—without any extra cost—the famous Model 044 PHILCO Audio Signal Generator. This desirable new instrument, about which you have heard so much lately, is something that every serviceman wants and needs.

The National Radio Institute numbers among its students men from all walks of life. It is particularly interesting to note that many of these radio students are graduate electrical and mechanical engineers, as well as college and high school instructors.

The thirty-two-page book from J. E. Smith, of National Radio Institute in Washington, enclosed with this issue of the PHILCO SERVICEMAN, tells the story completely. We urge every reader of the PHILCO SERVICEMAN to give the most serious consideration to his educational status at this time. Remember that all professional men—doctors, lawyers, ministers, engineers and others—are constantly studying in order to better themselves.

(Continued on Page 2)

Parts Department, C. R. Rogers Company, PHILCO *Distributors in Pittsburgh, Pa.*

ADVERTISING TO BUILD YOUR BUSINESS

Reprinted from Radio and Electric Journal—January, 1938

ONE of the first steps in developing a service business is to prepare a good mailing list. Such a list should contain the names of all the serviceman's past customers and prospects. If desired, the names of all radio owners in the neighborhood may be included in the original list, and a portion of these later weeded out if they are found to be "dead wood" or undesirables.

To be profitable a mailing list must be *used*—and used regularly. Properly designed mailing cards should be sent out, and handbills or "under-the-door" sheets distributed at regular intervals. Often these will arrive at the psychological time—when the prospect's radio is out of order and a good program is scheduled.

Local Advertising

The second essential item in a successful radio service advertising campaign is the regular use of local advertising—newspapers, radio and in your local movie theater. Such advertising is not expensive and is bound to tell your story to a majority of your best potential prospects, as well as promoting good will with the parties in control of these important sources of advertising.

Store Promotional Material

Thirdly, and equally important, is the advertising of your store to the passer-by through outdoor signs, window signs and displays. A good outdoor sign, readable at least fifty feet away, is desirable, and an electric window sign visible across the street is recommended in towns and cities. The window, if you have one, should be made attractive and interesting and the contents changed regularly.

General Promotional Material

Last but not least, there are a number of miscellaneous indirect ways that you can employ to get yourself known and build good-will in your locality. The use of imprinted book matches or specially designed business cards is helpful. Imprinted blotters, program or station lists, calendars, etc., have been found effective. A complete set of imprinted stationery is desirable for an efficiently operating business. Imprinted stickers to place on repaired chassis and tested tubes make good permanent reminders.

Every serviceman should be prepared to loan or rent sound equipment or a demonstration radio-phonograph for local events. The smart serviceman can capitalize on opportunities of this kind to obtain much excellent publicity for his business.

Tie-ins With Prominent Names

Another very valuable method of securing public recognition—and one that costs nothing if the serviceman is qualified—is a tie-in with a nationally known and advertised name—by joining a service organization sponsored by an established company. Radio owners are far more likely to trust their repair work to the serviceman who is sponsored by a prominent manufacturer.

Postcard Size, Form PR 598—$2.80 for 500.

Light-Weight R.M.S. Coat Ready

A SPRING and summer version of the R. M. S. coat is now available to members of Radio Manufacturers Service. The photograph on this page shows the attractive new short-length coat in light-weight tan material. The new coat is preshrunk and washable and is available in all sizes from 34 to 44.

It is known as Form PR-630 and sells at a net price of $1.60. This coat can be obtained from your PHILCO distributor.

920 Adjustment Requires Metal Base Plate

WHEN adjusting the new PHILCO Auto Radio Model 920 chassis it is necessary to place the chassis on a steel base plate in order to prevent the set from oscillating. Normally, the housing acts as the base plate, but with the chassis removed from the housing it is necessary to use a separate base plate. The plate must make a good metallic contact with the sub-base.

A base plate made especially for use in the factory is available from your PHILCO distributor. The part number is 28-5946, and the list price is 75 cents.

HERE IS BIG NEWS!

(Continued from Page 1)

This offer is open to anyone who wants to learn more about radio. It is not necessary that he be a member of R. M. S. at the time of enrollment. It is necessary, however, that he join R. M. S. before he is given the Certificate of Achievement which is awarded jointly by the National Radio Institute and Radio Manufacturers Service.

If you will take just a few minutes to sit down and think about your future in radio and if you feel that your knowledge of radio theory could be improved, you should make your decision to go after this training at once. You will never regret it, and it will be one of the best investments you have ever made.

PHILCO
HOME RADIO AERIALS

A TYPE FOR EVERY PURPOSE

ALL-WAVE NOISE-SUPPRESSION SYSTEMS

PHILCO HIGH-EFFICIENCY AERIAL

ALL-WAVE—Noise Reducing

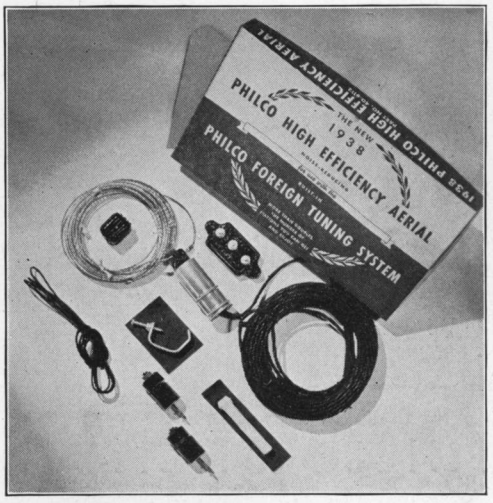
The Philco High-Efficiency Aerial is designed to reduce man-made electrical interference to a minimum and give uniform signal strength over a wide frequency range.

This aerial will operate efficiently with receivers of all types and manufacture and is especially recommended for all-wave receivers.

The transmission line (lead-in) of the aerial can be connected directly to receivers with low impedance antenna primary circuits designed for doublet aerials. For receivers with high impedance antenna primary circuits, a set matching transformer, Philco Part No. 32-2763, is required to match the transmission line to the receiver. All 1939 Philco receivers are of this type.

When the ultimate in noise-suppression aerial systems is desired, the combination of the Philco High-Efficiency Aerial and set transformer will give noise-free radio reception superior to other systems.

Part No. 40-6112 **List Price $5.00**



Heavy-Duty, High-Efficiency Aerial

ALL-WAVE—Noise Reducing

Built to stand up under severe weather conditions

The Heavy-Duty Aerial is built for locations where severe weather conditions or exceptional stress and strain demand a durable aerial with great mechanical strength. The radio receiving and noise suppression performance of the antenna is the same as the standard High-Efficiency Aerial.

This aerial is recommended for installations on top of tall buildings, such as apartment houses, stores, hotels, office buildings, etc.; locations with high wind velocities; humid climates; sections where ice forms on the antenna wire during the winter months; and in industrial locations where smoke and soot are severe. The aerial consists of 50 feet of 6-strand No. 20 enamelled copper antenna wire; 100 feet of extra-heavy transmission line with a thoroughly weatherproof insulating casing, strain insulators, and other equipment required for erection.

Here is an aerial that will stay put a long time!!!

Part No. 40-6192 **List Price $13.50**

PHILCO MARINE AERIAL

ALL-WAVE—Noise Reducing

Here's an aerial built especially for YACHTS, SEAGOING SHIPS *or* LAND INSTALLATION *near water*

The Philco Marine Receiving Aerial is especially designed for seagoing ships, yachts, tugs, or land installations near water locations where moisture, high winds, salt air have such a damaging effect on the ordinary aerial system. The aerial is built to stand up under the most severe electrical and mechanical stresses and is noise reducing on standard and short-wave broadcasts.

The Marine Aerial can be used with radio receivers of all types and manufacture. When used with receivers designed for doublet aerials, which have low impedance antenna primary circuits, the transmission line can be connected directly to the aerial and ground terminals. Receivers which have high impedance antenna primary circuits require the use of the Philco Set Transformer, Part No. 32-2763, to match the transmission line to the receiver. The aerial consists of 60 feet of Heavy stranded enamelled phosphor-bronze antenna wire; 100 feet of heavily impregnated extra-heavy transmission cable, which will resist moisture under the most severe conditions; a 50-foot roll of heavy guy wire; two large antenna supporting insulators, which are highly efficient due to their long leakage path and low moisture absorption factor, and other necessary equipment required in the installation.

Part No. 45-1242 **List Price $32.50**

ADDITIONAL TYPES ON REVERSE SIDE

Form No. PR 680-23-9-38

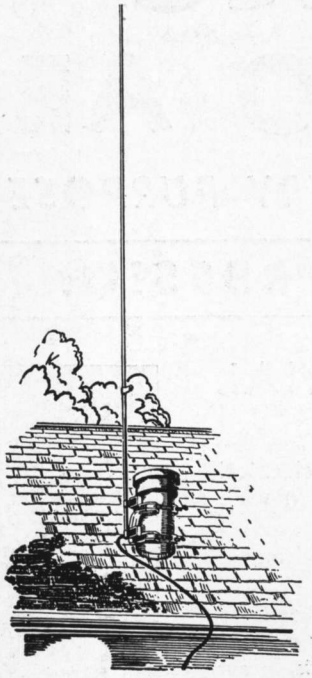
PHILCO SAFETY AERIAL

Highly Efficient—Quickly Installed

Here is a super-safe, highly efficient vertical aerial developed by Philco engineers for quick and easy installation and to protect the radio receiver from lightning and power line shorts. The aerial consists of a 12-foot (in four sections) vertical cadmium plated steel rod which can be clamped to the vent pipe on the roof of the house or screwed to a wooden section on the roof; a 40-foot flexible weatherproof lead-in wire soldered to the base on the rod; specially designed lightning arrestor with a built-in resistance to carry off static electricity charges; fuses to protect against power line shorts and a series condenser to protect the radio set.

All medium and higher priced 1939 Philco receivers have their antenna circuits designed to operate with this aerial.

This is by far the safest aerial ever built and one of the best profit-increasing products on the market today.



Part No. 40-6370 **List Price $3.00**

PHILCO FARM RADIO AERIAL

The Philco Farm Radio aerial was developed by the Philco Engineering Department for use with 1939 Philco Farm Radios. The aerial is accurately matched to the antenna circuit of these receivers and must be used with them in order to obtain maximum performance. The aerial, however, can be used with other battery - operated receivers and will be found ideal in all rural locations. The aerial consists of 60 feet of stranded copper antenna wire; 40 feet of special weatherproof, heavily insulated lead-in wire soldered to the antenna wire; insulators; lightning arrestor and all other necessary parts.

Here is an aerial that is highly efficient and rugged and yet very moderately priced.

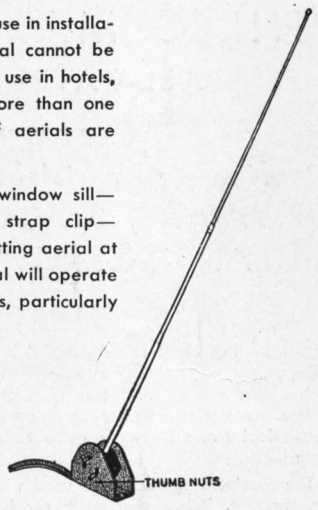
Part No. 40-6383 **List Price $1.75**

PHILCO UTILITY AERIAL

The Handy All-Around Aerial

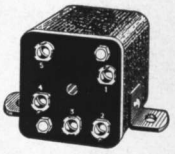
Here is a pole aerial designed for use in installations where the regular roof aerial cannot be used. The Utility Aerial is ideal for use in hotels, apartments, in the home when more than one aerial is required, or when roof aerials are prohibited.

Easily mounted on the outside window sill—complete with four-foot lead-in strap clip—provided with thumb screws for setting aerial at any angle desired. The Utility Aerial will operate exceptionally well with smaller sets, particularly the 1938 and 1939 Philco compacts which are designed to operate with this aerial.



Part No. 40-6384 **List Price $3.00**

ALL-WAVE AERIAL NOISE-REDUCING SET TRANSFORMER



This Matching Transformer is designed for use with the Philco High-Efficiency Aerial, Part No. 40-6112, Heavy - Duty Aerial, Part No. 40-6192, and Marine Aerial, Part No. 45-1242, in adapting these aerials to receivers with high impedance antenna primaries.

The Transformer is particularly recommended for use with the above-mentioned aerials in installations where noise interference is very high and the transmission line does not entirely suppress the interference.

The Matching Transformer is easily mounted near the receiver antenna terminals by the two mounting feet provided. Complete instructions for connecting the Transformer to any type radio and aerial are included with each Transformer.

Part No. 32-2763 **List Price $2.50**

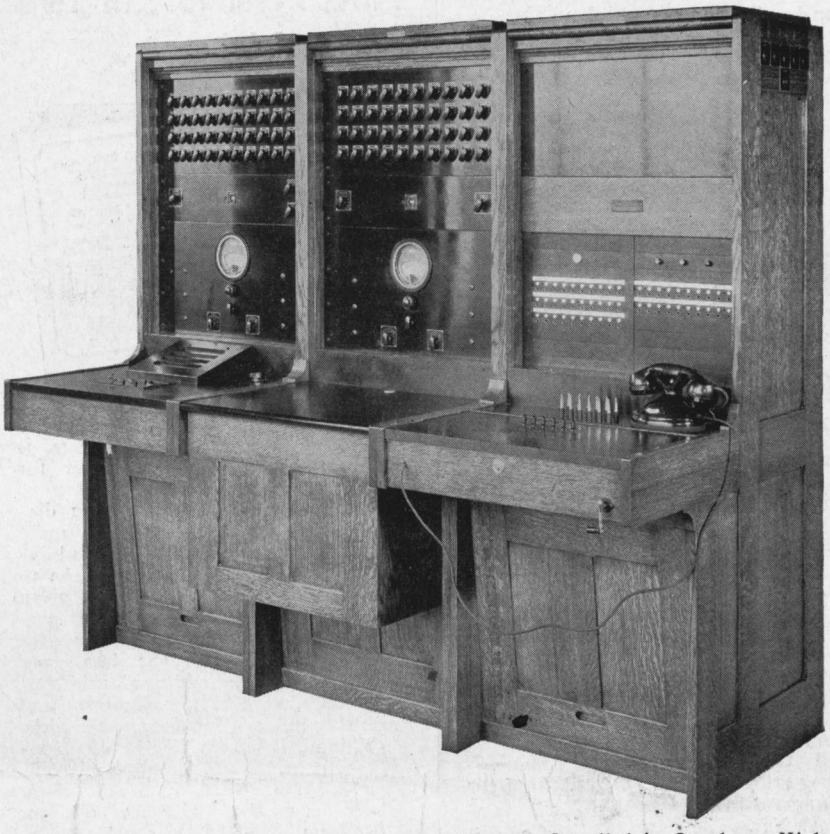
Philco Engineers Design High-Power Sound Equipment

Hundreds of High-Power Installations Now Operating

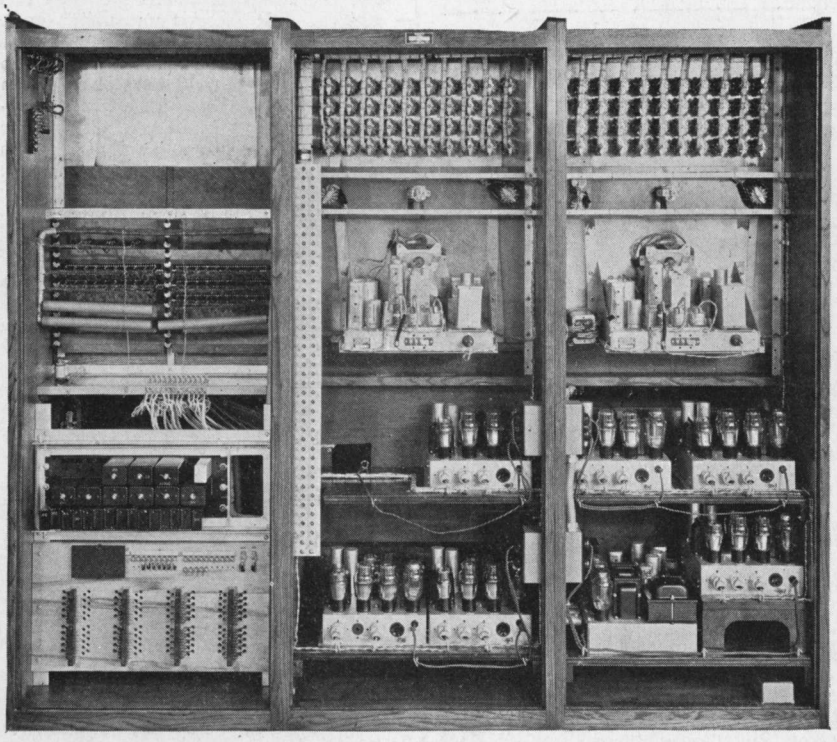
PHILCO engineering and custom-built construction reaches a high in the type of special equipment such as illustrated on this page. Elaborate high-power, sound-amplifier systems, all specially built for individual installation requirements, are being furnished by PHILCO through the International Business Machines Corporation.

These sound systems are installed all over the country in schools, churches, auditoriums, parks and institutions of various kinds. The PHILCO equipment has also been approved by the Bureau of Marine Inspection and Navigation of the Department of Commerce for installation on ships clearing from United States ports. This equipment is known as Marine Emergency Loud Speaker Systems and is for direction of lifeboat drill (a United States Government law) and for all types of emergency sound service at sea.

The two illustrations on this page are a real engineering tribute to the type of elaborate sound-amplifier systems of PHILCO. This particular installation is in the Southeast High School at Kansas City, Mo. It contains an inter-communicating system between the instrument board located in the principal's office and all of the eighty rooms throughout the school. The various switches at the top of the panels control connections to loud speakers in each room. There are two radio receivers so that separate programs can be offered at any given time. The switching arrangement is such that the entire eighty rooms can receive either radio channel, or any desired combination of rooms can receive one channel while the remainder receives the other. The small grille at the left end of the control panel is a monitor speaker which also serves as a microphone. At the right of the unit is the school telephone system with wires running in the same conduit as the speakers for the amplifier system.



PHILCO-*Engineered, Double-Channel Sound System Installed in Southeast High School, Kansas City, Mo.*



Rear View, Showing Elaborate Amplifier and Switching Arrangement.

An interesting feature of the amplifier installation is the chimes system of signaling which replaces all signal and telephone bells throughout the school.

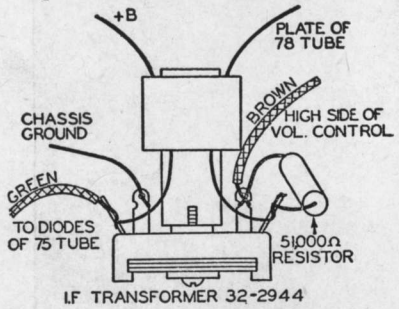
Each channel of the amplifier system has 45 watts undistorted output, thus affording a total of 90 watts available in the system. A phonograph for playing records is located in the center table in the suspended-box compartment illustrated in the front view.

PHILCO has supplied hundreds of high-power systems of this kind for installation in all sections of the country. Each job is a separate and complete engineering achievement in itself. Not only is the equipment custom built throughout, but it is custom engineered by PHILCO'S staff of sound engineering experts.

Questions and Answers

1. Q. How can more stable operation be effected in Model 38-15?

A. The Model 38-15, Code 121-124, second I.F. transformer assembly ⑮, is changed from Part No. 32-2674 to Part No. 32-2944. The wiring of the new transformer, Part No. 32-2944, is indicated below. Condensers 15B and 15C are part of the compensator in these assemblies.



I.F TRANSFORMER 32-2944

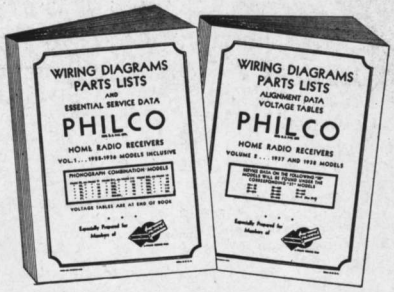
2. Q. What changes can be made in the Model 38-35 to correct excessive hum?

A. Beginning with Run No. 3, the red wire which connects the filament of the 6Q7G tube to the on-off switch has been lengthened. The wire now follows the rear, side and front channels of the chassis near the base instead of being connected directly from the switch to the socket contact.

3. Q. Can new cabinet backs for the 1938 models be obtained from the PHILCO distributor?

A. Yes. The distributor is in a position to furnish at a small cost the cabinet backs for all models of this line.

Philco Wiring Diagrams Now Available in Two Volumes



THE PHILCO Wiring Diagram Book, which has been supplied complete in one volume up until this time, is now available in two volumes for greater convenience.

Volume I contains all wiring diagrams of every PHILCO home radio set from the beginning up to and including the 1936 line. In addition to the wiring diagram, there is also given a parts layout diagram and the complete parts list. Volume II includes the same information on the 1937 and 1938 models. In addition, this volume contains all of the alignment and adjusting information for these models.

Volume I (Form PR-329D) contains 200 pages and is furnished complete with the R. M. S. binder at $1.25 net to the distributor. Volume II (Form PR-329E) contains 176 pages and is furnished complete with the R. M. S. binder at $1.25 net to the distributor.

Watts Output Vs. Acoustic Efficiency

WHEN considering the output power from an amplifier or public address system, it is natural to use as a measuring stick the number of watts output as rated by the manufacturer. Unfortunately, this practice has caused considerable misunderstanding on the part of many dealers and servicemen, because they are confusing two entirely separate factors. A public address system which has an overrated power output might also have an extremely low acoustic efficiency. If the speaker does not reproduce efficiently, both from the standpoint of volume level and tone quality, the system is certainly not a desirable one. The important consideration in public address equipment is the acoustic level which reaches the ear and not the watts output of the amplifier as rated by the manufacturer.

10 Watts Undistorted

For example, the PHILCO Model 905 Portable Amplifier is conservatively rated at 10-watt output. This is an engineering laboratory rating of undistorted output. Some manufacturers might produce a similar amplifier and rate it as high as 20 or 30 watts, but, of course, output in that case would be a distorted output rating and not the undistorted rating.

Small Air Gap

The construction of the speakers in the Model 905 system is such that the acoustic efficiency is extremely high. The speaker cone is light in weight, and the air gap between the voice coil and the pole piece is unusually small. This makes for the highest possible efficiency of volume and tone quality. Actual comparative tests have been made between the 905 and other amplifiers having a higher output wattage rating. The amount of sound which reaches the ear and the undistorted quality of this sound are greater in the 905 than in the other amplifiers.

Watts Output Confusing

The rating of an amplifier system in watts output is confusing, just the same as the rating of a radio set by the number of tubes is confusing. We all know that there are many sets on the market having only eight tubes that will outperform other sets having eleven or twelve tubes. The number of tubes in a set is not necessarily a measure of the quality of that set. Likewise, the number of watts output rating of an amplifier is not the measure of quality and volume for the sound system.

CHARACTERISTICS OF PHILCO GENERAL REPLACEMENT VOLUME CONTROLS

Part Number With Switch	*Part Number Without Switch*	*Resistance*	*Circuit*
33-5027	33-5041	2 megs	Audio Grid or Tone Control
33-5028	33-5042	1 meg	Audio Grid or Tone Control
33-5029	33-5043	500,000 ohms	Audio Grid or Tone Control
33-5030	33-5044	250,000 ohms	Audio Grid or Tone Control
33-5031	33-5045	100,000 ohms	Audio Grid or Tone Control
33-5032	33-5046	20,000 ohms	Antenna Shunt or "C" Bias
33-5034	33-5048	12,000 ohms	Voltage Divider or Antenna Shunt
33-5035	33-5049	8,000 ohms	Voltage Divider
33-5036	33-5050	5,000 ohms	Voltage Divider
33-5037	33-5051	50,000 ohms	Audio Grid or Tone Control (counter-clockwise rotation)
33-5038	33-5052	20,000 ohms	Audio Grid or Tone Control (counter-clockwise rotation)
33-5039	33-5053	500,000 ohms	Audio Grid or Tone Control with bass compensation tap. Tap 100,000 ohms at 50% rotation.
33-5040	33-5054	2,000 ohms	Antenna Shunt or "C" Bias
33-5077	33-5078	50,000 ohms	Voltage Divider
33-5079	33-5080	30,000 ohms	Voltage Divider
33-5081	33-5082	10,000 ohms	Voltage Divider

NOTE: Parts Nos. 33-5040 and 33-5054 incorrectly listed in parts catalog as having tap—25 ohms at one-third rotation. These controls have no tap.

The list price of all of the above controls is $1.00 without the switch and $1.45 with the switch. Regular parts discount applies.

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