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RADIO SERVICE NEWS

PUBLISHED · IN · THE · INTEREST · OF · RADIO · SERVICE · SALES · ENGINEERS

AUGUST 25, 1934 CAMDEN, NEW JERSEY Vol. I, No. 3

RCA Victor Service Meetings Start in 31 Cities

NO BURN OUTS WITH NEW $4 OUTPUT METER

New RCA Instrument, for Use With Any Oscillator, Uses Neon Lamp

Here is more good news for service sales engineers who want the best in equipment but who don't want to pawn the family jewels to get it: a visual output indicator that will not ordinarily burn out, has high sensitivity, three input impedances, and costs only $4.00.

The RCA Parts Division has just announced the TMV-121-A Visual Output Indicator as a companion instrument to the famous TMV-97-B Test Oscillator. It is an ideal instrument for all types of service work where an accurate indicator of output is needed.

Has Three Impedances

The instrument consists of a Neon lamp, a transformer and a potentiometer, all mounted in an attractive bakelite case. Three binding posts are provided so that either a low or high impedance input may be used. Having both high and low impedance taps, this output indicator may be used on all receivers. Different binding post connections provide impedances of 1½ ohms, 4 ohms, or .6 ohms.

RCA Output Indicator, Type TMV-121-A, has no delicate parts and is ideal for "peaking" receivers.

For accurate alignment of a receiver, a sensitive output indicator is just as necessary as an oscillator. Using the ear gives only an approximate adjustment, as the ear does not differentiate in small variations in volume. In the past, such an instrument has cost two or three times the low price of the TMV-121-A. In many cases, they were not sufficiently sensitive and only too often they were burned out. From this, it can be readily seen that the TMV-121-A fills a well-felt need among all sales service engineers. The price at all RCA parts jobbers' is $4.00, net.

LARGE SIZE SCHEMATICS and WIRING DIAGRAMS FREE at RCA Victor Service Meetings

But He Can't Balance a Superhet

Mrs. Baer's little boy Maxie is pretty good at a lot of things. Neither Hollywood's Klieg lights nor NBC's microphones worry him any more than Primo did. But when it comes to balancing a superheterodyne, for instance, even Max will admit that it takes a trained radio service engineer.

ALL SERVICE ENGINEERS INVITED; FIRST MEETINGS ON AUGUST 20th

MARK YOUR CALENDAR

You are invited to attend the series of Service Meetings to be held by the RCA Victor Service Division in more than 160 cities and towns. Dates have not yet been set for the smaller towns. Following is a tentative schedule for the first of the meetings to be held in larger cities. Consult your RCA Victor distributor to get the time and place and to check on the date.

Monday, August 20th—Albany, Richmond, Cincinnati, St. Louis, Atlanta, Dallas, San Diego.

Wednesday, August 22nd—Washington, Indianapolis, Kansas City, Mo., Birmingham.

Thursday, August 23rd—Los Angeles.

Friday, August 24th—Newark, Baltimore, Columbus, Ohio; Omaha, Houston.

Saturday, August 25th—San Francisco.

Monday, August 27th—New York City, Pittsburgh, Cleveland, Des Moines, New Orleans, Portland, Oregon.

Wednesday, August 29th—Philadelphia, Buffalo, Detroit, Minneapolis, Seattle.

Friday, August 31st — Salt Lake City, Boston, Milwaukee.

Wednesday, Sept. 5—Chicago.

NEW CIRCUITS EXPLAINED

If you live in or near one of the 31 largest cities of the country, get set for a big evening during the last ten days of this month. Between August 20th and 31st, the RCA Victor Service Division will start a new series of its popular meetings to which all service engineers are invited.

Seven groups of engineers will leave "Radio Headquarters" in time to hold meetings in seven different cities on August 20th. By the end of the month, these groups will have covered all the major cities. Each group will have the talent and the equipment to present a program that will be invaluable to service engineers who wish to keep abreast of the times in radio service.

Small Town Meetings Also

For those service engineers in smaller towns who cannot get to the city meetings, the 120 field engineers of the RCA Service Division will conduct smaller, but no less interesting, meetings wherever a few service engineers can be gathered together. Consult your RCA Victor distributor for dates of these meetings.

"Service meetings for service men," said C. C. Aiken, RCA Victor Service Division, who is in charge of the work of preparation for the meetings. "The theoretical as well as the practical side of radio service will be covered, with special reference to the new RCA Victor models. The meetings held during the past two years were so very popular that this year we have gone into it in a big way.

"We are going to considerable expense to make the meetings not only profitable but enjoyable. The programs have been carefully planned and rehearsed to keep them short and snappy and to avoid any dullness. The four meetings that will be held in each large city might be called a course in radio in four installments."

(*Continued on page 5, col. 5*)

CAESAR'S WIFE—*and* RACKETEERS

An Editorial by E. M. Hartley, Manager, RCA Parts Division

Radio service sales engineers—like Caesar's wife—must be above reproach.

Radio repair racketeers have so undermined public confidence in the radio service industry that every honest radio service sales engineer is under suspicion until he proves himself worthy of public support.

Looking the facts in the face, we must admit that the individual members, as well as the entire radio service industry, are on the spot.

Witness the following paragraphs taken from a large display advertisement sponsored by the Better Business Bureau of Los Angeles, Ltd.:

* * * * * *

"RADIO REPAIR RACKETS—If you are lured by the offer of 'free radio inspection,' pull back the curtain and see what is behind these schemes.

E. M. Hartley

"A telephone call brings an 'inspector,' who seldom fails to find something wrong with your radio set. He may tell you that your set needs new tubes. Often he installs as 'new tubes' old ones taken from your neighbor's radio as 'worn out.' He may sell yours to the next neighbor he calls upon.

"Another variation is that the 'inspector' examines the set, and suggests taking the chassis with him for a thorough shop test. Later the 'inspector' telephones, claims that the set needs extensive repairs. If you refuse to authorize these repairs, he may charge you for the inspection, storage or delivery. 'Free radio inspection'

(*Continued on page 2, col. 3*)

SALES AIDS AND LOWER PRICE BOOST RCA ANTENNA SALES

Famous RCA World-Wide Antenna Now at $6 List; Sales Aids Available

A lower list price combined with new sales aids has multiplied the radio service sales engineer's opportunity for profit with the new RCA World-Wide Antenna System, states E. C. Cahill, Chicago District Manager for the RCA Parts Division.

"On July 1st the list price of the RCA World-Wide Antenna System was reduced to $6.00 without any change in the dealer discount," explained Cahill. "This makes it possible for a dealer or service engineer to offer to the customer a scientific antenna system, backed by the prestige of RCA and carrying with it a Certificate of Installation according to RCA specifications, for no more than an ordinary antenna costs.

"Furthermore, the ease of installation of the RCA Antenna is another profitable factor in favor of the service engineer. The RCA system uses no transposition blocks or cage aerial. The customer likes the neat appearance of the transmission line of the RCA World-Wide System and it saves time

(*Continued on page 4 col. 3*)

TUNING WAND IS HANDY TOOL

Special Tools Speed Service Work; Are Used in Factory

While a good service sales engineer can do a creditable job of service with a limited tool equipment, it is a fact that he will do a better job with proper equipment. And the man not quite so clever will do an even better job if properly equipped.

The following tools, in conjunction with the RCA Full Range Test Oscillator, give the service sales engineer the proper equipment for doing a real line-up job on any receiver. We know; we use them ourselves in regular production work.

Oscillator Adapter

The Stock No. 4316 Oscillator Adapter is a desirable accessory for use with the TMV-97-B Test Oscillator. The adapter is for inserting in the modulator tube socket when operation without modulation is desired. Stock No. 4316, net price, $0.45.

Tuning Wand

The Stock No. 6679 Tuning Wand is a special alignment tool which makes possible the checking of alignment in all-wave receivers without disturbing the adjustment of the trimmer capacitors. The tool consists of a bakelite rod having a brass cylinder at one end and a special finely divided iron core at the other end. Inserting the brass cylinder into a coil lowers its inductance, while inserting the iron increases the inductance. From this it is evident that before adjusting trimmers, the adjustment may be checked by inserting each end of the wand into the coil. Proper adjustment is evidenced by a reduction in output with either end of the wand inserted into the coil. The wand is 7" long and 5/16" diameter. Stock No. 6679, net price, $1.10.

Alignment Tool

The Stock No. 4160 Alignment Tool is a bakelite shaft combination screwdriver and socket wrench. The metal screwdriver bit is so shaped that the increase in capacity caused by its touching a trimmer screw is offset by the reduction in inductance caused by its shape. This is very important when making adjustments on all-wave receivers where the screwdriver must be inserted through the end of the coil. The socket end fits the main tuning capacitor trimmer adjustment screws used on numerous receivers. The bakelite shaft is 7/32" diameter, which gives entrance to 1/4" holes, used on many receivers. The overall length is 6 1/2". Stock No. 4160, net price, $0.60.

Off-Set Screwdrivers

The Stock Nos. 3064 and 2930 Off-Set Screwdrivers are useful for making adjustments to remote control units and other small screws that are inaccessible with an ordinary screwdriver. The No. 3064 screwdriver is 2 1/2" long, while No. 2930 has an overall length of 4 3/8". Stock No. 3064, net price, $0.50. Stock No. 2930, net price, $0.50.

Knurled Nut Wrench

The Stock No. 10982 Knurled Nut Wrench is a special wrench designed for tightening or removing the knurled nuts such as are used with toggle-type switches. These nuts are ordinarily impossible to remove or tighten without marring. The wrench will hold a nut from 5/8" to 1/2" diameter. The overall length is 8 1/2". Stock No. 10982, net price, $1.20.

Alignment Wrench

The Stock No. 7065 Alignment Wrench is a combination screwdriver and alligator jaw end wrench. The metal screwdriver bit is shaped so that it will have minimum effect on the alignment of the set when it touches a trimmer screw. The end wrench is suitable for adjusting trimmer screws that are accessible only from the side. The shaft is of bakelite, 7/32" diameter, and the overall length is 5 1/2". Stock No. 7065, net price, $0.50.

ANTENNA DISPLAY

James Bailey Co., of Portland, Me., used a toy house and a miniature RCA World-Wide Antenna to build this effective window display. A world-globe on each side of the house suggests distant reception. Simplicity adds power to this display.

CALIBRATION SERVICE OFFERED BY R. C. A. C.

Among the little-known services performed by RCA is that of measuring the frequency of broadcast transmitters so as to provide radio station engineers with a means of checking and calibrating their own frequency-measuring instruments. This service is offered to broadcast stations for a small charge by R.C.A. Communications, Inc.

Listens to Subscribers

On order from a radio station, one of the laboratories of the RCA subsidiary "listens in" at specified times to the station's signal and, on the finest laboratory apparatus, measures the frequency emitted by the station. The broadcast station's frequency-measuring instruments can then be calibrated by comparison with the findings of the R.C.A.C. laboratories. The listening points are at Riverhead, New York, and Point Reyes, California.

The frequency-measuring services are described as follows in a circular issued by R.C.A. Communications, Inc.:

"The exacting requirements of the Federal Radio Commission covering frequency variation of any radio transmitter make imperative a close supervision of the frequency of its emitted energy.

Frequency Drifts Checked

"Present day transmitters are stable and reliable when skillfully operated and maintained. However, occasional frequency drifts may occur and it becomes important to correct these before they assume a wide variation. Local checking equipment is of considerable value to this end, but cannot be relied upon unless occasionally calibrated against standards of unquestioned accuracy. To meet this need the laboratories of the R.C.A. Communications, Inc., offer an unexcelled measuring service.

"Periodic measurements by an independent, impartial source have a distinct value, because they supply extremely accurate frequency checks and also set up a performance record which often proves of great advantage.

Used by Many Stations

"Many broadcasting, police and commercial stations throughout the United States rely with confidence upon this RCA service and call on it in emergencies for measurements to aid in adjusting their crystal controls and calibrating their monitors.

"The RCA method of scanning the frequency bands permits its laboratories to keep a close supervision of the accuracy of its subscriber's transmitter operation, wherever signal strength and freedom from interference allow."

Attend the
RCA VICTOR SERVICE MEETING NEAR YOU
Between
Aug. 20 and 31

RCA HALL THRILLS CROWDS AT FAIR

Tube Manufacture and Record Making Feature RCA Exhibit

A most mighty mobilization of mankind's marvelous masterpieces of mentality! An all-embracing aggregation of fact and fancy! Stirring! stupendous! . . . dynamic! dramatic!

Words fail us. Only a circus pressagent could do justice to the great spectacle that is now in full swing in Chicago.

Last year RCA Hall was acclaimed by impartial observers as one of the most interesting exhibits at the Fair.

Records and Tubes Made

RCA Radio Tubes were assembled at a model production line. Cathode ray tubes were used to give a marvelous visual demonstration of how a radio set works. The part radio plays in rescues at sea was dramatized in a miniature theatre. From the RCA Museum came an historical exhibit that depicted the progress of radio from the time of the first crude apparatus to the present day. Weary sightseers were soothed by the blending of music and color tones of a Color Organ. So many of them made "home recording" phonograph records that it was necessary to enlarge the space devoted to this purpose.

Service sales engineers will find a visit to the 1934 Chicago World's Fair well worth while. They are cordially invited to make their first stop at RCA Hall and to meet the RCA representatives stationed there.

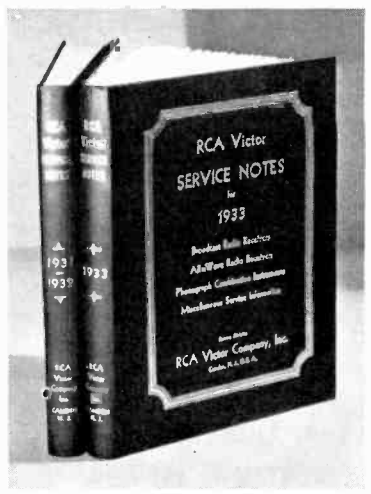
SERVICE NOTES FOR 1931-32 NOW ISSUED IN BOOK FORM

Two Volumes Cover All RCA Victor Receivers Manufactured During Past Three Years

The unusual approval given the bound volume of the RCA Victor Service Notes for 1933 (two editions have been printed) has made necessary the printing of some of the older Service Notes in the same style. The new Service Notes for 1931–1932 is a complete edition of all the Service Notes printed for the receivers manufactured during those years.

There are no deletions and the complete Service Notes and replacement parts list for all of the receivers listed are contained in the volume. The volume is approximately the same size as the previous one and is bound in a durable green cover.

The net price for bound volumes of Service Notes, either the 1933 book or the 1931–32 book, is $1.00 each at RCA Parts jobbers'.



List of Contents, 1931-32 Book

RCA World-Wide Antenna System
RCA Victor Shield Antenna Kits
Frequency, Impedance, Inductance and Capacity Chart
RCA Full-Range Test Oscillator
RCA Tools and Accessories
Radiotron Data Sheets
SR-1, SR-2, and SR-3 (Two-Speed Turntables)
SK-7
R-8 and R-12
R-8 D.C. (220-volt)
R-10
R-10 D.C.
R-11
R-11 Supplement
RE-16
RE-16-A
RE-18
RE-18-A
RE-19
RE-20
R-21
RO-23
RAE-26
CE-29
M-30
MB-1, MB-2 and MB-3 (Replacement Motor Boards)
2-25
2-65
SWA-2
R-4 and R-6
R-5
R-5X
R-5 D.C.
T-5
R-7 (Superette)
R-7A
R-7 L.W.
R-7 D.C. and R-9 D.C.
P-31
M-32
PT-33
R-43
R-50 and R-55
RAE-59
RAE-68
R-70
RE-73
R-74, R-76 and R-77
RAE-79
Automatic Record Changing Mechanism
Special Service Information

EDITORIAL

(*Continued from page 1*)

rackets are aided by the public misconception of cost factors in radio work. Most of the legitimate service man's profit comes from his labor."

* * * * * * * * * *

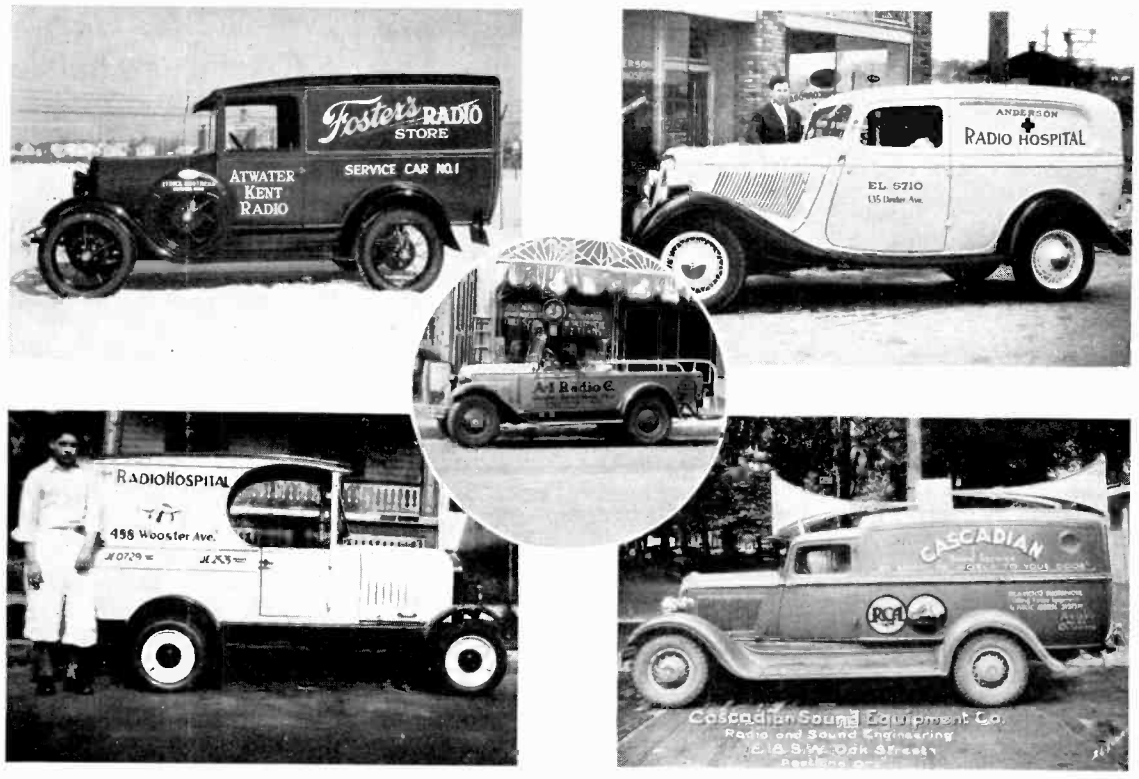
Every reputable radio service sales engineer condemns radio racketeering as strongly as any Better Business Bureau. But it is not enough to *condemn* it. Individually and collectively radio service sales engineers, for their own good, must *combat* radio racketeering.

And that is why every radio service sales engineer must be above reproach. To overcome the harm wreaked by racketeers, he must so conduct his business in every detail that nothing can reflect on his integrity. His tactics must be just the opposite of the tactics of the racketeer.

Individually radio service engineers can combat racketeering by a generous application of the Golden Rule, coupled with the use of only high-quality parts of standard make.

Collectively, radio service engineers can combat radio racketeering by permitting no racketeering by members of their organizations—and by using various forms of advertising to make membership in the organizations so valuable that no member of the trade can afford not to be a member.

IMPRESSIVE RADIO SERVICE TRUCKS



Above are shown the service trucks that won genuine pigskin wallets for their owners. (Next month's prize awards are for photos of display windows. See page 5.)

Foster's (Mt. Blanchard, O.) truck is notable for the manner in which it suggests stability and size of the business, and at the same time advertises the set handled without subordinating the store's name . . . Anderson Radio Hospital, of Seattle, cleverly carries out the hospital idea by a truck that suggests an ambulance . . . The truck of The Radio Hospital of Akron, O. (lower left) shows a sick radio being carried on a stretcher. Irving Olson, Manager, writes, "This truck weighs only 800 pounds and is powered by a Ford Model T engine. Will make 35 miles on a single gallon of gas." . . . A-1 Radio Co. (in circle), Glendale, Calif., uses a fire truck type of truck . . . Cascadian Sound Equipment Co., Portland, Ore., advertises with a handsome sound truck.

SERVICE TIPS

Win a handsome pigskin wallet. Until further notice, these popular wallets will be given to all whose tips on any phase of radio service are published in this column. Send your favorite idea to RCA RADIO SERVICE NEWS, Camden, N. J.

Service Tips are our readers' ideas, not ours. While RCA RADIO SERVICE NEWS believes they are worth while, we can not be responsible in any way for results obtained.

RCA Victor Model M30

If the receiver plays without any control of volume, the green wire in the cable that runs from the set to the control unit may be broken inside the cable. This disconnects the cathode of the AVC tube.

Paul W. Curtis,
Curtis & Statzer Radio Service,
101 W. 12th St., Coffeyville, Kansas.

[Editor's Note: The same condition could be caused by a defective (open or high resistance) volume control.]

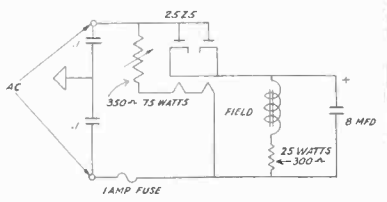
Stewart-Warner Model 950

The screen-grid voltage is bled through a 20,000-ohm, 2-watt purple resistor, and is controlled by the volume control. The purple resistor may drop gradually to about 2,000 ohms and burn out the volume control. When replacing the volume control, check the resistance of the purple resistor also, or the new volume control may go the way of the old one.

Paul W. Curtis,
Curtis & Statzer Radio Service,
101 W. 12th St., Coffeyville, Kansas.

RCA Model 41

While writing this I am listening to an RCA Model 41, the speaker of which I have just changed over from disk rectifier to tube rectifier. Here are the data:



The variable-wire-wound resistance is adjusted until the heater voltage is 25, at the highest line voltage where set is used. The resistor in series with the field was selected as that value which placed a drain of about 90 M.A. on the tube. Sufficient field excitation is secured to operate the speaker satisfactorily. The hum level is very slight, and larger filter capacity did not help any. A certain amount of hum from the set itself can be eliminated by connecting a 150,000-ohm, 1-watt resistor between the 210-grid terminal on the tube socket to chassis frame. The condensers shunted across the line are those in the speaker output transformer assembly.

Alvin F. Braeking,
2110 W. Wells Street,
Milwaukee, Wis.

Atwater Kent Model 82

In the Atwater Kent Model 82 the cathodes and grids of the 1st detector and I. F. tubes are at high potential with respect to ground. As the voltage to the grids is supplied through an .8 megohm resistor, a very minute leak from the grid circuits to ground will seriously increase the bias and reduce the sensitivity. I have found in the above-mentioned sets that the R. F. coil forms frequently absorb sufficient moisture to show leaks to ground ranging from 30 to 10 megohms or thereabouts. Removing and baking the coils in an oven corrects the trouble. In other sets employing similar circuits, grid return by-pass condensers have developed high-resistance leaks and cause the same type of trouble. By temporarily shorting across the high resistance that supplies the voltage to the grids, and obtaining an increase in volume, one gets a quick indication of this type of trouble.

V. W. Edleman,
Miller Radio Shop,
West Palm Beach, Fla.

RCA Radiola 44 and 46

After the RCA 44 or 46 has been in service several years the tuning condenser gang sometimes becomes twisted, causing very broad tuning in the low-frequency end. This can be corrected by loosening the four screws that hold each stator section and adjusting the stator plates so that the rotor plates are exactly between the stator. Rebalance at 1,400 kc. and the gang will now track over the entire scale, making it tune sharp at the low-frequency end.

Merrill Lindley,
2659 Napoleon St.,
Indianapolis, Ind.

Majestic 15

Recently I had a service man bring a Majestic 15 to my shop for me to balance. He claimed that there was nothing wrong but the I. F.'s needed lining-up. (Mine was the only shop in town that had an oscillator.) I balanced the set, but there was no volume, and I checked everything in the set but could not bring out the volume as it should be, and the man who brought it in said that this set had been sent to several towns for adjustment and that none of them had found the trouble. I turned it back to him and about a month later I had a call to a house and this set had been sold to this party. I picked it up and brought it to the shop and said that I was going to find the trouble. Sometimes it would have plenty of volume and in two or three days the volume would vanish and maybe the next day it would come back again. I found the trouble in the antenna coil; where the coil ended, it was run back through the form to the bottom and through a hole in the form and to ground. Where the wire went through the hole in form it was broken, and would make connection with ground at times and at other times it would not. I pulled the wire out and added a short piece to it and soldered to ground and set has been giving good service ever since. I located this trouble by taking antenna wire and placing on top of first detector grid and traced back to the primary of antenna coil. The antenna feeds to primary of antenna coil to ground and also to volume control and ground.

I think that the RCA RADIO SERVICE NEWS is fine and I hope that you keep up the good work.

E. B. Fussell,
Highland Radio Shop,
330 Highland Ave.,
Eufaula, Ala.

Locating Faulty Wiring

Quite often a service man is called in to repair a set and finds the trouble lies in faulty house-wiring in receptacles or fixtures.

The quickest way to locate these bad connections is to plug in your A. C. voltmeter across the line and take an ordinary household laundry iron and plug it into each outlet separately.

Fluctuations on the voltmeter will be noticed while the appliance is plugged into the faulty outlet.

Walter R. Wright,
Wright Electric Shop,
50 Westchester Square,
Bronx, New York.

Cleaning Condenser Plates

While aligning the R. F. sections of receivers, set your local service oscillator at a moderate level with a suitable output meter connected to the audio output. Now take a small medical atomizer filled with carbon tetrachloride and start spraying the gang condenser sections. It will be surprising to see the output increase with each squeeze of the atomizer bulb. After going over the rotors and stators of each section, apply the spray on the end bearings and contact wiper springs.

I have found this method of cleaning up condensers, plates and the insulation of the trimmers to be not only quicker but more thorough than by the use of pipe cleaners dipped in carbon tetrachloride, and it is also more economical. Leaving the oscillator and output meter on gives an indication of just what you are accomplishing in your cleaning-up process.

Rodger Radio Service,
Potsdam, N. Y.

(Editor's Note: Carbon tetrachloride will dissolve wax. Be careful to keep it off wax-impregnated parts.)

Noisy Two-Volt Jobs

Here is a tip for those service men who run across those noisy two-volt jobs. Refer to your set diagram and be sure the right pilot lamp is being used. It may be a two-volt lamp all right, but some of these sets employ the 60 M. A. lamp, and if this is not used the volume will be low and more or less set noise will result when the volume is increased.

Oscar F. Curtis,
Morrisonville, Ill.

CASED SPEAKERS FOR P. A. SYSTEMS

High Quality Extra Speakers Offered at Attractive Prices

There is a need for a portable dynamic speaker for use with public address systems. The RCA Parts Distributors have a limited number of speakers for just this purpose.

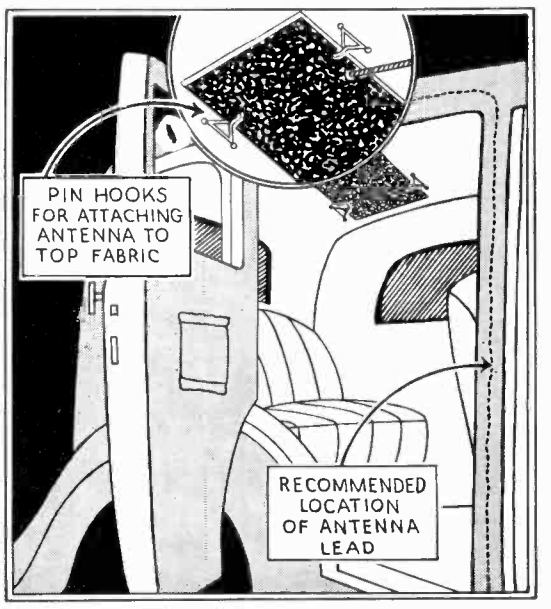
The 9530 Speaker is cased in a trunk with hinged top and suitcase handle. The case is 19" long, 9½" wide and 14" high. The speaker is mounted on an 18" x 15½" x ½" baffle so that it is self-supporting.

The unit is just the thing to handle the one or more additional speakers required for temporary installations. Arrive on the job, open the case, pull out the speaker, set it up any place where a soap box could stand, uncoil the wire from the hooks and plug it into your amplifier.

The fact that the unit has an 8" core, with a voice coil impedance of 15 ohms at 1000 cycles, makes it easily adaptable to most amplifiers. Add to this the standard field coil which draws 85 mils direct current at 110 volts and you can appreciate how well it will meet many requirements for extra speakers.

It is seldom that a speaker of this construction is available at the price at which RCA Parts Distributors are offering it to dealers and service engineers.

RCA Auto Antenna Solves Many Problems



When the auto radio antenna installed by the car manufacturer does not give satisfactory results, or when making an installation in a car with no built-in antenna, many radio service engineers are finding the RCA Auto Roof Antenna is the ideal solution of the problem. It takes only a few minutes to install, since it is simply pinned to the inside fabric of the car roof with six safety-pin fasteners which come with the antenna.

Made in either gray (No. 7622) or tan (No. 7621) covering, the auto antenna matches the interior finish of practically all cars. The aerial is composed of No. 23 gauge single-cotton-covered soft copper wire which is wound on a piece of heavy flat cardboard and then covered with attractive book-cover paper. The size is 11 inches by 32 inches.

To avoid interference pickup by the driver, it is recommended that the RCA Auto Antenna be mounted over the rear seat when possible. The low list price of $1.50 insures a profit on many jobs that might otherwise result in a loss if more difficult antenna installations were made. RCA Parts Jobbers usually have Auto Antennae in stock.

RCA RADIO SERVICE NEWS CUT-OUT SERVICE

To enable you to preserve in convenient form the articles of permanent interest that appear in RCA RADIO SERVICE NEWS, henceforth such material will be published in the form shown below. By cutting on the dotted lines you will get a 5½ inch by 9 inch sheet that will fit a standard 6 by 9 inch ring binder. Start your RCA Radio Service News Cut-Out Service today.

TEAR ON THIS LINE

RCA RADIO SERVICE NEWS CUT-OUT SERVICE

TEAR ON THIS LINE

PORTABLE PUBLIC ADDRESS SYSTEMS

By W. H. BOHLKE

Portable Public Address (P. A.) Systems have been in use for the last few years in many applications. There is a continually growing field for these systems. Any public address system really should be called a sound system, as usually it provides the necessary facilities for paging, announcing, and phonograph-record reproduction as well as for amplifying a speaker's voice for large gatherings.

In the past many sound systems were seriously lacking in naturalness in response both on speech and musical reproduction. The commercial systems placed on the market by RCA Victor and other manufacturers have done much to improve the reproduction and thus pave the way for wider and wider application of the use of sound systems. This improvement is due to the fact that apparatus manufactured as a unit has all its necessary parts co-ordinated in engineering design to give satisfactory performance at a minimum of cost.

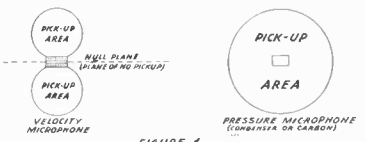


FIGURE 1

The success of a service engineer's work in the sound field depends on the impression his equipment makes on the user and the public in general who listen to the sound reproduction. The proper use of equipment having units co-ordinately designed helps the service engineer immeasurably to achieve this success.

Small Portable P. A. Systems

The smaller public address or sound systems usually have an output power rating in the neighborhood of 5 to 6 watts. They are designed primarily for speech pickup at relatively short distances with a low-priced carbon-button microphone. Provision is usually made for phonograph pickup input also. Since the average electro-dynamic speaker can handle 10 watts of output power, such a system has need for only one loudspeaker. Under normal conditions such equipment will cover indoor auditoriums up to a maximum of 600 seats.

Some of the uses for such equipment are listed below:

Selling in auction rooms.
Public speaking in small auditoriums.
Announcing in small cabarets.
Ballyhooing at carnival stands.
Paging in clubs, hotels, etc..
Calling systems in hospitals, factories.
Directing labor on docks, yards, etc.
Amplifying window salesmen's voice.
Waiter to kitchen call systems in restaurants.

Large Portable P. A. System

The larger public address or sound systems have an output power rating of 15 to 20 watts. They are designed for all-around application, being especially good for music or speech pickup.

Usually two electro-dynamic loudspeakers of the flat baffle type are supplied to handle the power output and give a response characteristic in keeping with the high-quality amplifier and input units.

A jack is provided for plugging in a phonograph pickup. Due to the excellent response of the amplifier to the higher frequencies a tone control is essential to reduce any disturbing needle scratch present in phonograph reproduction.

To pick up music or speech equally well calls for a microphone having practically a flat response from 30 to 8000 cycles. The recently developed velocity or "ribbon" type microphone provides this desirable characteristic.

Location of Microphone

The velocity microphone finds use with the larger and better public address systems also because of its directional characteristics. When properly oriented or directed in relation to the loudspeakers of the system, there is less chance for

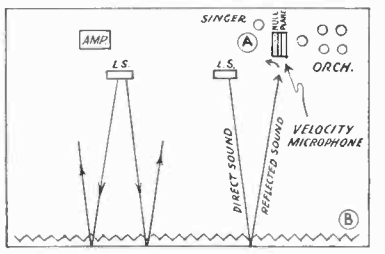


FIGURE 2

feed-back or "singing" to occur with the velocity type than with the other types of microphones such as the pressure-operated carbon or condenser types. Under normal acoustic conditions, gain in a public address system using a velocity microphone can be increased so as to enable 1.7 times more pickup distance than with other microphones. The directional effect of the velocity microphone as compared to the pressure-operated type can be roughly illustrated by Figure 1.

(Continued on the next page)

RCA AUTO RADIO ACCESSORIES PROTECT SETS, MAKE NEAT JOB

Auto radio lock works like spare tire lock; dash control unit fits most makes of cars

An auto radio lock that effectively prevents theft of the receiver, and an instrument panel control unit that adapts late RCA Victor auto sets for dash installation, are two new profit-making accessories now offered by RCA Parts distributors.

In view of the publicity newspapers are giving to auto radio thefts, the lock should find a ready market.

Lock Easily Installed

The RCA Auto Radio Lock looks like the popular type of spare tire lock and slips on just as easily. The nut on the bolt holding the receiver to the bulkhead is removed, a special bushing is slipped on the bolt, after which the nut is replaced. Then the lock slips over the nut and bushing and it is impossible to turn the nut.

The practice of auto radio thieves is first to lift the hood and remove the nut from the bulkhead bolt, then to break into the body of the car and pull loose the remote control unit, after which the chassis and control is easily lifted from the car. Thus the RCA Auto Radio Lock protects the radio receiver from theft and the auto body from damage. The list price is only $1.35 and there is the usual discount to the trade.

Dash Control Unit

On some cars an installation with the control unit mounted on the instrument panel makes a neater as well as more convenient job. With the Instrument Panel Control Unit, the RCA

Victor Models M-107 and M-123 can be installed with the controls appearing to be an integral part of the instrument panel. Thus customers can get RCA Victor Auto Radio quality with the finished appearance of a factory-installed job.

The Instrument Panel Control Unit was specially designed for Ford, Plymouth, Chrysler, DeSoto and Dodge cars. These makes comprise over half of recent production. The unit may be adapted to other cars where sufficient panel space is available. It mounts flush with the panel. Chromium finish with black stripes assure a handsome appearance for the finished job. The suggested net price to dealers is $1.50, Stock No. 4476.

ANTENNA SALES

(*Continued from page 1, col. 5*)

on the installation, thus increasing the profit.

"A Certificate of Installation is included with every kit, to be filled in and signed by the service engineer making the installation. The certificate is a good sales-clincher for those prospects who are accustomed to think of an antenna system as a dime's worth of wire attached to their set and hung out the window by themselves."

The sales aids on the RCA World-Wide Antenna System which are now ready for use by active dealers and service engineers include a striking window streamer featuring the new $6.00 list price and a small two-color folder suitable for mailing to previous purchasers of all-wave sets and for counter use.

The copy of the circular carefully explains the differences between standard broadcast and short-wave reception and points out that where a makeshift antenna is used the listener has no just cause to blame his all-wave receiver if the foreign programs are drowned out by undesirable noises. Dealers could undoubtedly save themselves many future complaints by mailing a copy of the circular to all old customers and delivering a copy of the circular with each all-wave set sold—unless the customer has already bought an RCA World-Wide Antenna System.

PITTSBURGH HAS ACTIVE GROUP

Steel City Association publishes magazine; supports higher ethics

If servicemen's associations can be judged by the magazine they put out, the Radio Servicemen's Association of Pittsburgh is a live bunch of fellows. Their monthly magazine, *The Amplifier*, is a splendid example of what a local association can accomplish in the way of a publication at small expense.

The July issue contains 14 mimeographed pages, all packed with interest for the members, and a cover printed on coated book. Several pages of paid advertising in this issue prove that the business manager of *The Amplifier* seems to be right on the job as much as the editor.

"Co-operation — Not Codes," the editorial from the last issue of RCA RADIO SERVICE NEWS, was endorsed and reprinted in the July *Amplifier*.

For further information about *The Amplifier*, address William Irlam, Wilmerding, Pa., Secretary of the Pittsburgh association.

DID THIS EVER HAPPEN TO YOU?

A small twist on the trimmer condenser screw. Bang, goes the needle on the output meter. It is wrapped around the stop pin.

Just as you have the set aligned, one of the customer's kids starts to pick up your tools. The twist you gave the screw as you dropped your screw driver, jumped the output and while you were chasing the kid to get your tools the meter burned out.

With the RCA Output Indicator there is no meter to burn out and no needle to worry about. A meter reading means much to you, but little to your customers. They do know that the brighter the light, the greater the power required to run it.

You are talking your customer's language when you use an Output Indicator. The light is dim when you start to work on a poorly-aligned receiver. As you improve the sensitivity through alignment, the Neon bulb gets brighter and brighter. There is no question in the mind of a customer who may be watching you as to the improvement you are making.

The RCA Output Indicator very definitely stamps the man who is using it as being "up-to-date" in the mind of his customer. It is but one of the many inexpensive means which the RCA Parts Division is offering Service Engineers to enable them to "dress up," so that they can command higher prices for their work.

Accuracy Requires Output Indicator

When aligning a receiver, do you use your ear for an indicator of proper adjustment, or do you use a visual indicator? If you are the type of man who takes pride in his work, you will be glad to know that now you can get a fine output indicator for only $4.00 net.

Do you know that all receiver manufacturers use a visual indicator for making all factory adjustments in receivers?

Do you know that it takes ten times the energy to make a difference in sound level that sounds twice as loud to the ear? In other words, small changes of power are imperceptible to the human ear.

Do you know that the accumulative error of several adjustments made in the same receiver by the ear may leave the receiver in as poor or worse condition than before an "ear" alignment was attempted?

The RCA TMV-121-A Output Indicator has been designed to supply the need for a reliable output indicator at a reasonable price. It is not a meter, but for "peaking" receivers, it is fully the equal to or better than any meter used for this purpose. And you *can't* burn it out.

The Voice of Radio Service

Editor
RCA Radio Service News
Camden, New Jersey

I CERTAINLY LIKE this new paper and especially agree with Mr. E. M. Hartley and his article.

Radio Service is more than just a trade and should be raised to higher levels and better standing by having service men pass an examination in radio theory and practical servicing of radio sets.

There is a great difference between a *radio mechanic* and a *radio service engineer* and in this is the key to what is wrong with the radio service industry now. Radio service and radio engineering are closely associated and linked together and this is where close and willing cooperation is necessary between the manufacturer and service man.

P. M. Ohlinger,
Portsmouth, Iowa

Portable Public Address Systems

(*Continued from previous page*)

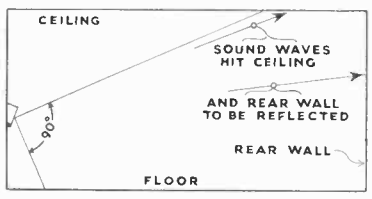
The typical setup to reduce feed-back to a minimum is illustrated by Figure 2. Sometimes more direct sound will come from the loudspeakers than reflected sound and cause feed-back troubles. Therefore it may be necessary to rotate the microphone in direction of arrow (A) to reduce this pickup. Reflected sound pickup will be reduced if the direct sound is absorbed by people's clothes, upholstered seats, or a curtain drape (B).

Loudspeaker Considerations

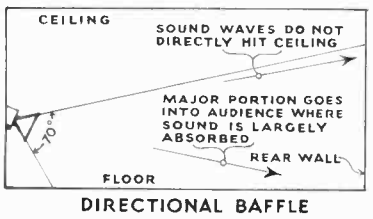
Reflected as well as reverberant sound can also be reduced by resorting to the use of directional baffle loudspeakers instead of the usually more convenient and less costly flat baffle loudspeakers supplied with the standard larger public address systems.

Reducing reflections and minimizing reverberant effects of spaces with poor acoustics is extremely important for improving speech intelligibility, whereas for some types of musical reproduction certain reverberant effects tend to improve the sound distribution.

The flat baffle loudspeaker can be considered to have a directional or coverage angle of 90 degrees in both horizontal and vertical planes, whereas directional baffles may have coverage angles from 33 to 70 degrees in either horizontal, vertical planes, or both. Generally speaking, the directional angle decreases with the length of the baffle throat. Figure 3 illustrates an example how reflected sounds are reduced by "steering" the sound beam away from the ceiling and the rear wall by use of a directional baffle.



FLAT BAFFLE



DIRECTIONAL BAFFLE

FIGURE 3

Acoustic conditions, size and shape of space, type of pickup—whether mostly music or speech—will determine the best setup for any large portable public address systems. Because of their compactness, the flat baffle speakers are usually supplied. With intelligent handling they are considered most satisfactory for average conditions and application.

The larger portable public address systems find use where larger spaces are to be served with sound, such as auditoriums up to 2500 seats, or spaces up to 100,000 cubic feet.

Some of the applications for such a system are listed below:

Public address to large crowds.
Music, speech, or both, re-enforcing such as for theatre stage pickup.
Re-enforcing crooners and singers in large cabarets or night clubs to high-class orchestral accompaniment.
Call systems where more power is essential to help override noise levels.

In short, any application where large power output, more usable gain and best quality of sound reproduction are necessary.

Selling Methods

The wide-awake service engineer will cash in on the opportunities that portable public address systems provide.

Generally the portable public address system provides revenue by being sold outright or by rental to a user.

Outright sales are usually made after a successful trial demonstration over a few days period. Where the customer has a permanent need for a portable public address system, such as night clubs, amusement parks, etc., it is self-evident that it would be cheaper for him to own the equipment outright.

Rentals are secured usually from the occasional user such as a vaudeville act, election campaign, window demonstrating, carnival-stand ballyhoo, etc.

Prospects for a portable public address system are virtually anyone who must speak or entertain groups or crowds of people. These prospects can be found among the various local sporting clubs, political clubs, fraternal organizations, theatres, schools, etc. Interest may, of course, be aroused by a post card mailing to all prospects, following up newspaper announcements of events where people gather, etc. Few people realize the ease, advantages and economy in the use of a portable public address system.

When a prospect has requested a demonstration, his desire to own or rent the equipment will depend how well the trial demonstrations impress him. If the sound reproduction sounds "tinpanny" and raspy (which unfortunately many people believe to be the normal characteristics of a sound system), there is apt to be little interest shown. On the other hand, if the reproduction is as natural and clear-cut as possible, due to use of properly engineered and coordinately-designed units, the customer's interest is immediately awakened and usually he can be sold.

TEAR ON DOTTED LINES

RCA RADIO SERVICE NEWS CUT-OUT SERVICE

RCA DEVELOPS QUIETER FILMS

Newest Type of Sound Track Reduces Background Noise to Minimum

Talkies without irritating extraneous noises is the hope held out to theatre goers by recent technical developments from the RCA Victor laboratories. This latest contribution of RCA engineers to sound-on-film recording was described recently by two of the engineers who participated in its development, G. L. Dimmick and H. Belar, in a paper read at the meeting of the Society of Motion Picture Engineers at Atlantic City, N. J. Excerpts from the paper follow:

Does Not Cause Distortion

"Often as we sit in a theatre interested in the picture on the screen, we are annoyed by 'frying' and 'sputtering' noises accompanying the dialogue or musical reproduction. This noise is especially irritating in so-called silent scenes where the action is portrayed by the actors without spoken words. In the motion-picture industry this extraneous noise effect is known as 'ground noise' or 'background noise.' The unfavorable audience reaction to ground noise has given impetus to the research engineer for developing methods of eliminating extraneous sounds in talking pictures. RCA Victor research engineers have studied this problem for a number of years, with the result that a practical variable area sound-recording system has been developed which reduces the ground noise to an inaudible level without introducing distortion.

New Equipment Not Required

"Not only is the ground noise reduced by this system, but the audible frequencies produced by the envelope of the high frequency recording is cancelled out by the use of a push-pull transformer in the photo-electric cell circuit. At the same time the high frequencies are more clearly recorded due to the fact that the peaks of the recorded sound signals are separated by a greater distance than heretofore possible. Because of the reduction in ground noise the volume range of the recording can be increased considerably thus producing more realism in the reproduction of sound in the theatre. The use of this system does not require any additional recording equipment in the studio, nor does it require special care in recording, developing or printing of the films.

Scratches Cause Noise

"The two principal sources of extraneous noise from film recording are the film grains in the exposed portion, and foreign particles or scratches in the clear portion. Because of the random distribution of silver grains and groups of grains, the transmission through the dense part of the track varies at audible frequencies producing a high-pitched hiss which sounds very much like the hiss due to 'thermal agitation' in resistors and that due to 'shot effect' in vacuum tubes. At the recommended print density for variable area films, this hiss is of extremely low amplitude. Foreign particles and scratches on the transparent portion of the sound track form the most annoying source of ground noise. The photo-electric cell is unable to distinguish between the reduction in light due to a decrease in width of the transparent portion of the track and the reduction in light which is due to opaque particles in the clear track.

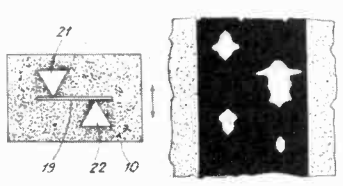


FIGURE 1

Sound Areas Only Transparent

"A new type of sound track which permits the reduction of ground noise to the theoretical minimum is shown in Fig. 1. Only the areas actually occupied by the sound waves are transparent, which means that the ratio of ground noise to signal is constant regardless of the amplitude. The only change necessary in the standard Photophone recording optical system is the replacement of the single triangular mask by a mask having two triangles. An optical image of these two opposing triangles is formed at the slit after being reflected from the galvanometer mirror as shown in Fig. 1. The apexes of the triangular images are coincident with the center of the slit and spaced half the length of the slit apart. When a signal is impressed upon the galvanometer the triangular light beams vibrate in a vertical plane and record two symmetrical tracks, one of which carries the positive half, the other the negative half of the sound waves. The axes of the two component tracks are located a quarter of the total track width from each edge. The purpose of this is to assure proper scanning at low modulation and the proper separation of the two halves of the reproducing light beam in case of either a slight weaving of the film or a slight misalignment of the track. The axes of the two half tracks might be made to coincide at the center of the track, but it would be practically impossible to separate them later. The axes might also be placed at the two outside edges of the track, but then there would be less assurance of proper scanning at low modulation.

Simple to Operate

"In practice, the recording system is quite simple to operate and adjust. The points of the two triangles may be made to lie upon a line parallel to the slit by a rotary adjustment of the barrel containing the aperture. The points are brought to the center of the slit by a vernier adjustment of the galvanometer around its horizontal axis. If, for any reason, the latter adjustment were either not made correctly or thrown off by accident, there would not be any distortion introduced. The only effect would be a slight increase in ground noise.

Better Prints Possible

"In addition to its inherent freedom from ground noise, the push-pull sound track has other advantages of equal importance. The finite width of the recording light beam and the spreading of the photographic image of the recording light beam are responsible for filling in the valleys and for reducing the density of the peaks of the high frequency waves. The push-pull track improves this condition in two ways. As shown in Fig. 2, the negative is composed only of peaks which are separated from each other by clear spaces equal in width to a half-wave length. In order to make a good print, it is necessary to make the peaks quite dense. In the conventional type of variable area recording a compromise between light peaks and dense valleys must determine the density of the negative. Elimination of the valleys from the negative makes it possible to increase the negative density and thereby obtain better prints.

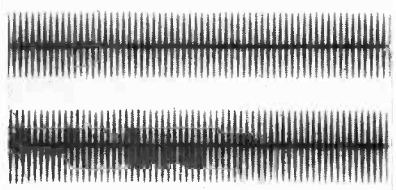
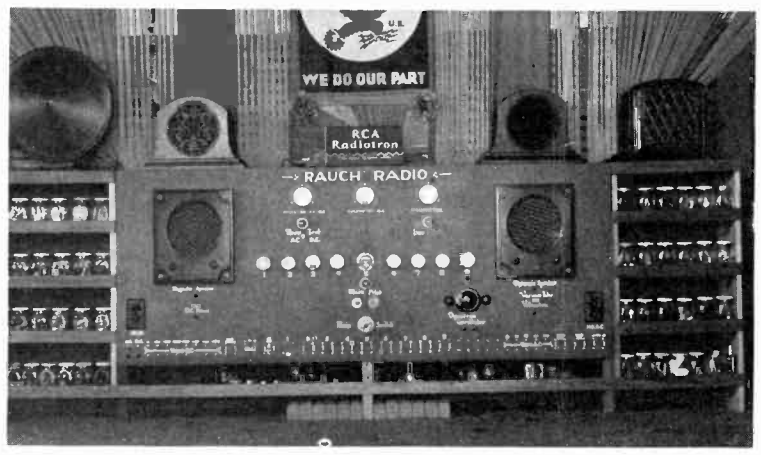


FIGURE 2

Eliminates Distortion

"Another important advantage of the push-pull sound-recording system is the elimination of a type of distortion which results from the improper processing of variable area films. By the proper choice of negative and print density, it is possible to eliminate this distortion from any type of variable area track. The push-pull system completely eliminates all of this distortion which is not already printed out."



SERVICE BENCH of BEN. J. RAUCH

5835 MAGAZINE STREET, NEW ORLEANS, LA.

The photo of the remarkable service bench shown above was received too late to win a prize in the recent RCA Radio Service News Service Bench Contest. A special award of bound volumes of RCA Victor Service Notes for 1931–32 and 1933 has been made to Mr. Rauch. His letter describing his bench follows:

RCA Radio Service News,
Camden, N. J.

The main panel of this service bench is made of pressed wood. The titles and names of the various instruments are "lettered-in" with white enamel. On each side of the test panel are shelves with various small parts, screws, nuts, bolts, brads, glue, etc., that are always needed on the service bench.

Since all parts are plainly marked, very little need be said about the panel. However, it may be well to point out some small details: The dynamic speaker field coil is tapped so that it may be used in connection with any set we may have. It starts with 100 ohms and goes up to 10,000 ohms. The pilot lights are neon lamps, standard base. One of these lamps, by means of a D. P. D. T. toggle switch, may be thrown in series with either A. C. or D. C. current. This makes a very, very good, quick way to test condensers. When hooked to A. C. the neon lamp should light. On D. C., it should light momentarily and then go out. It is very easy to determine the amount of leakage by means of this test.

Over the work-bench, we have two 100-watt lamps that slide across the room on an overhead wire. This enables us to have good light wherever and whenever it is needed.

Six volts, D. C., is obtained on the test table for use on D. C. sets and auto radios from a standard 100-ampere-hour storage battery, located under the bench. Our soldering irons are connected to the front of the bench and fit into cement-lined pipes.

By means of a S. P. D. T. toggle-switch, when the iron is not in use, it is connected in series with the battery charger. This serves to keep the iron warm and ready for use at any time and also keeps our 6-volt storage battery always charged.

The bench is about 4 feet deep and 25 feet long. It is built of 2-inch by 8-inch stock, and the top covered with ¼-inch plywood. This gives a very strong and sturdy bench with a smooth finish top.

Should any of your readers of the Radio Service News be interested, we would be glad to go into the details and construction of our equipment.

Rauch-Radio-Electric
Ben. J. Rauch,
5835 Magazine Street,
New Orleans, La.

WINDOW DISPLAY PHOTO CONTEST

First Prize: $5.00

Second Prize: Two Volumes RCA Victor Service Notes

Pigskin wallets to all others whose photos are published

The window must sell radio service, and should suggest quality in service and parts

Send your photo or snapshot to

RCA Radio Service News
Camden, N. J.

The Voice of Radio Service

Letters of general interest will be published

RCA Radio Service News,
Camden, N. J.

When we test a radio set and find that some or all of the tubes need replacement, our problem then becomes to convince the customer of this need. Even old customers are not always easily persuaded, and as for the skeptical one—well, we have all heard them say, "What's the matter with that tube? It lights up and plays, doesn't it?" Then there is the hard-boiled type who thinks he must match his wits against your sales talk, for he firmly believes that the service man is out to gyp him.

Customers Are Skeptical

Thus, we find a real need for a portable tube tester of reputable make that will indicate plainly "Good" or "Bad." Even then we would still find plenty of resistance, for there are many who have not forgotten how they were cheated by "fixed" meters with secret push-buttons back in the old bootleg tube days (may they be gone forever!).

The service engineer knows that there are several good testers on the market for around forty dollars that can be depended upon to give a good, practical check on tube performance, but how is the customer going to know the meter is trustworthy and the test honest? But let us suppose that your tube checker has the RCA nameplate on it and clearly states the extent and accuracy of the test. How much easier to convince him of the honesty and thoroughness of the test. If he believes in RCA tubes, he will believe in the RCA checker.

I well understand the technical difficulties in the way of producing, at a price the service man can afford, an instrument of laboratory precision, but we do not need such accuracy to sell tubes. What we want is an instrument that the customer can read himself and which will show conclusively when a tube is worn out, or when it has become a source of noise, or otherwise has lost its usefulness and should be scrapped.

Certified by RCA?

RCA need not hesitate to put its name on such a checker because of the purely comparative readings, for it could be stated clearly on the face of the instrument the limits of its usefulness.

It should be remembered that all service men use some sort of a tube checker, many of which are practically useless and certainly do not help to establish customer confidence in Radiotron agents. If RCA does not develop its own checker, it should at least recommend several reputable makes and then arrange to have service men submit their instruments to the RCA laboratory. Those approved should be stamped or labeled in such a way that the certification could be displayed to the customer when checking his tubes.

Charles H. Watts,
R. No. 1, Box 183,
Dover, N. J.

SERVICE MEETINGS

(Continued from page 1, col. 5)

"Technical matters will be presented in as simple terms as possible," continued Aiken, "but the talks will by no means be for beginners only. Doctors, lawyers, and all professional men must continually study to keep up with the latest developments of their professions. So, too, must radio service engineers. And the best way to keep up with the complicated all-wave circuits of today is to learn about them at first hand from factory engineers.

"But these meetings are not held just to explain the new models to our friends, the service engineers. We at "Radio Headquarters" realize that to do a good job we must keep in close touch with the men who are servicing our products. By means of these meetings we hope to meet them personally and to establish those intimate relations that can come only from face-to-face acquaintanceship."

Magic Brain Introduced

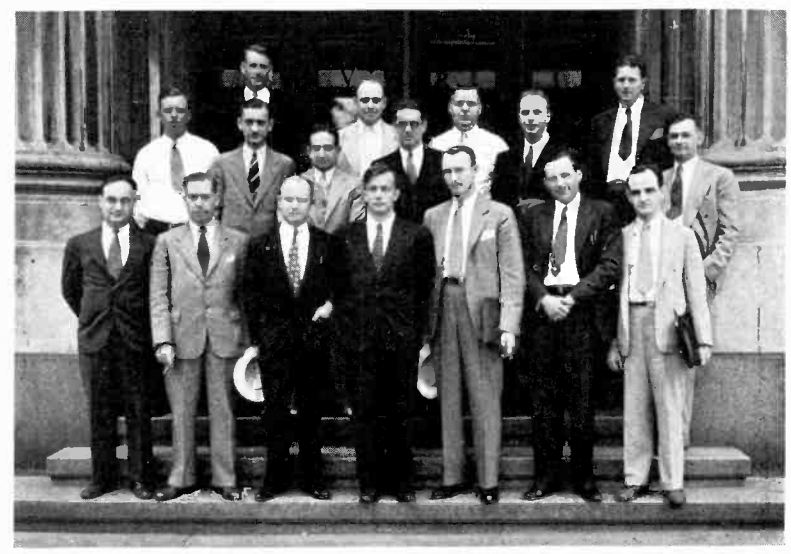
Of special interest to all service engineers will be the description of the "Magic Brain" of the new RCA Victor receivers which will be the feature of all meetings held this month. A thorough understanding of the "Magic Brain" will be a big help in service work.

Each meeting will be profusely illustrated by lantern slides and moving pictures. In addition, a purely entertaining feature is promised. The subject of tubes and their uses in this year's sets will be covered by engineers borrowed from the RCA Radiotron Company.

Large Schematics Distributed

A special edition of RCA Radio Service News will be distributed at the meetings. Large scale schematic and wiring diagrams, suitable for hanging over the service bench, will be the feature of the special edition. Be sure you save your copy.

All radio service engineers are urged to phone or write to their distributors to get the exact date, time, and place of the meetings. No service engineer can afford to miss them.



RCA VICTOR DISTRICT SERVICE MANAGERS' CONVENTION

Above are shown the ten district managers of the RCA Victor Service and Parts Division who recently held a two weeks' session in Camden.

These men direct the activities of 120 field service representatives. Besides co-operating with radio service engineers, they service RCA Photophone theatre installations, install broadcast equipment, etc. George Urey, District Manager of the San Francisco Office, was not present for the above picture.

From left to right, bottom row—W. W. Jones, Philadelphia; W. L. Jones, New York City; S. D. McIntosh, Dallas; H. M. Leighly, Atlanta; E. C. Cahill, Chicago; Charles Herbst, Chicago; J. E. Heney, Pittsburgh. Middle row—W. H. Bohlke, Camden; G. A. Toepperwein, Camden; J. Mauran, Boston; George Allen, Camden; O. V. Swisher, Kansas City; A. E. Jackson, Los Angeles. Top row—E. M. Hartley, Camden; E. O. Johnson, Detroit, C. C. Aiken, Camden; F. B. Ostman, Camden.

Loading Coils Adapt RCA Antenna to Any Location

The widely varying surroundings in which RCA World-Wide Antenna Systems have been installed have led to the development of several general types of installation. Highly satisfactory results have been obtained from all types.

The most frequent obstacle encountered by service engineers in setting up this famous double-doublet antenna has been lack of space. To overcome this difficulty, RCA engineers have developed special loading coils so that the antenna may be installed in as little as 34 feet of space. Figure 2 illustrates the use of loading coils in an installation that is otherwise of the standard type.

Loading coils are suggested for use with the RCA World-Wide Antenna only where space does not permit the installation of the standard lengths of the "double-doublet" antenna. The use of the loading coils provides the tuning effect lost by cutting the upper doublet. The overall loss when the loading coils are used is not an appreciable amount. They must be purchased separately, not being included in the kit.

Loading Coils Shorten Aerial

Each loading coil consists of the proper number of turns of enameled wire wound on a high-grade porcelain tube, the entire assembly dipped in a weather-proof compound. Tinned soldering lugs are provided for ready connection to the "double-doublet" antenna. There are two coils to a set.

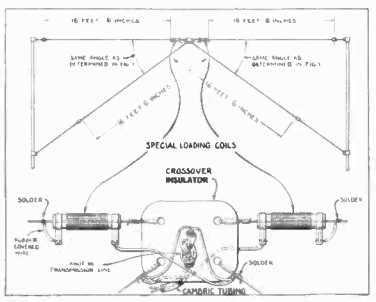


Figure 2—Method of installing loading coils to shorten antenna span.

The two loading coils may be ordered by calling for Catalog No. 6958, list price $0.60 per pair.

Vertical vs. Horizontal

Due, principally, to the non-directional receiving ability of a vertical doublet, it may be said that the vertical doublet is sometimes superior to the usual horizontal doublet. On the other hand, horizontal doublets will usually give a better signal to noise ratio. A vertical doublet, having similar characteristics to a horizontal doublet, would require a support 60 feet in height. Where a vertical doublet is desirable or necessary, one of the arrangements shown in Figure 5, utilizing loading coils again, may be used to cut down the overall height of the vertical installation.

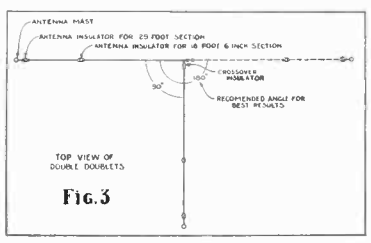


Fig. 3

Ninety degrees between doublets where full length is not available.

Although a 180-degree angle between sides of the doublet is the ideal arrangement, very satisfactory results have been obtained by decreasing the angle to 90 degrees. Where approximately 29 feet of space in two directions is available, this method may be used and the loading coils thereby eliminated.

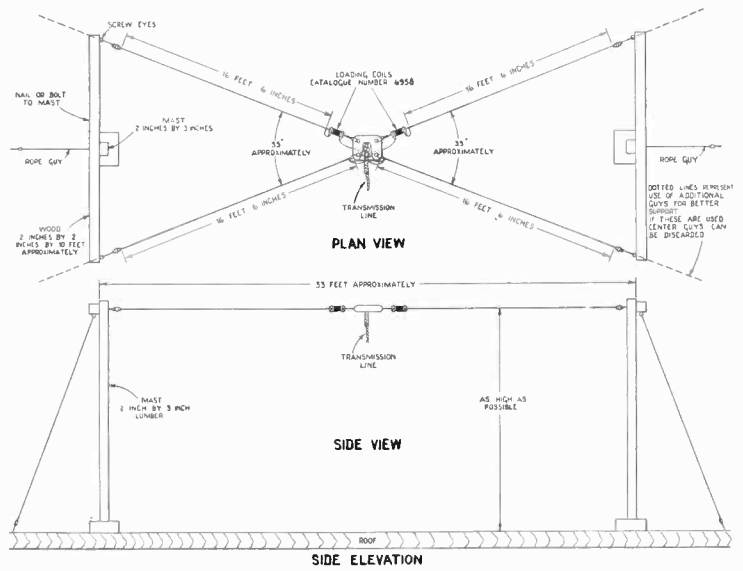


Figure 4—Horizontal installations are sometimes used on apartment house roofs.

Apartment House Installations

Apartment-house regulations sometimes require a certain height above the roof for all antenna wires. In such cases, the horizontal installation of the RCA World-Wide Antenna System, shown in Figure 4, meets all the requirements without appreciably reducing the efficiency of the system. The most economical and frequently-used style of installation for one or two story homes utilizes a short mast atop the roof and a tree for the other support. Figure 6 illustrates the ease of installation by this method.

The RCA World-Wide Antenna System may be readily adapted to any location. To give your customer a revelation of how noise-free and enjoyable short-wave reception can be, the important thing is that the double-doublet itself be installed as far from all sources of local interference as possible.

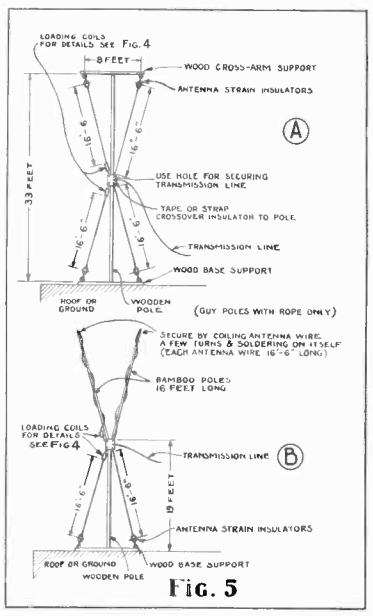


Fig. 5

For upright installations in cramped quarters, use bamboo poles for supports.

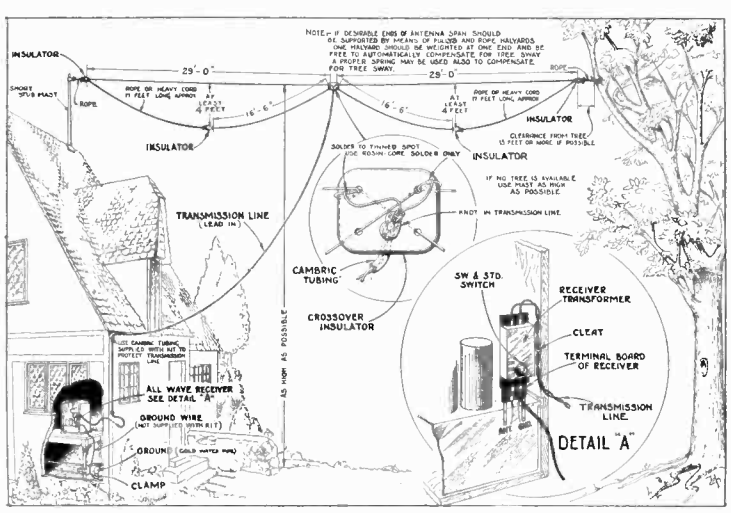


Figure 6—Typical residence installation, using stub mast on roof and a tree for other support.

DISPLAY WINDOW PHOTO CONTEST
See Page 5

Did You Know That—

The calibrated TMV-97-B oscillators are accurate to better than one-half of one per cent?

Each calibrated TMV-97-B is checked at over 100 points against a frequency standard accurate to several points in a million?

The TMV-97-B oscillator is the only instrument on the market (except laboratory instruments) that covers the full range of frequencies needed for proper alignment of all-wave receivers with its *fundamental* frequency?

The TMV-97-B oscillator is the only oscillator on the market (laboratory included) that covers its frequency range without using manually interchanged coils?

The TMV-97-B uses a separate coil for all frequencies? No taps or harmonics.

That you can get this remarkable new RCA Test Oscillator from your RCA Parts distributor for only $29.50? For individual Calibration, $5 extra.

To get the greatest good from the TMV-97-B oscillator, or any oscillator, you should have a good output indicator? The new Output Indicator is ideal for service work and sells for only $4.00 net to service engineers.

CITY OFFICIAL HEARS RUSSIA WITH DOUBLET

Florida Short-Wave Fan Marvels at Results with RCA Antenna

Short-wave listeners are frequently so amazed by the improvement in reception brought about by a scientific antenna system that they can scarcely believe their ears, as is shown by the letter quoted below:

City Commission of
The City of Jacksonville
Jacksonville, Florida

May 8, 1934

R.C.A. Communications
Rocky Point, L. I.
New York, N.Y.

I have a Model 240, RCA Victor Receiving Set, which I have been using for several months with conventional type "L" antenna, having a total over-all length of 105 feet, including 19 feet of No. 10 ground wire.

I have experienced exceptionally good international short-wave reception with this outfit.

Last week I erected one of your newly designed "double doublets" exactly in accordance with specifications and suspended between two creosoted pine poles 50 feet long and spaced 100 ft. apart. This gives a height above ground of 43 feet for the horizontal doublet.

Hear Two-Way Conversation

On last Sunday morning, May 6th, at about eight o'clock, E.S.T., I was playing with the dial of my set and suddenly cut into one of your Rocky Point stations talking to Moscow, Russia, on a wavelength of 14.8 megacycles.

Your operator was talking to a Comrade Germack, in Moscow, and making arrangements for a joint broadcast to commence at 8:30 o'clock (13:30 G.M.T.).

I could distinctly hear both sides of the conversation without moving the dial of my set.

After the preliminary arrangements were completed between the operators I waited for the broadcast to commence. The Russian broadcast came through with good volume, but the modulation was not so good (as I heard your operator mention afterwards).

Russia Comes in Clearly

The return broadcast, by Rudy Vallée and his orchestra, came through with splendid volume and tone, equal to those of a local broadcasting station. After the broadcast was over, I then heard your operator call "Comrade Germack" and talk over the results with him, and I could again hear all of the Russian's replies distinctly and with good volume.

I understood from the conversation that the Russian broadcast was transmitted by two stations, RK1 and RNE, and that the American broadcast was from WQP and WEB.

Now the question that is worrying me is: Was I receiving the Russian broadcast and conversation directly from Moscow, or was it being rebroadcast to me through your transmitter?

Incidentally, I am delighted with the results so far obtained with the "double doublet." It increases the all-around receiving performance of my receiving set on short waves by at least 50 per cent.

Yours very truly,
C. S. Graham,
City Utilities Inspector
and Rate Engineer.

GOTHAM DEALERS WELCOME SPECIAL STORE ANTENNA

Special Dealer Demonstration Antenna Replaces Old Inadequate Systems

The RCA World-Wide Dealer Demonstration Antenna System, which was only recently announced to the trade, met with an immediate demand in the metropolitan New York area, according to S. L. Barriette, Service Manager for Bruno, Inc., distributors.

Old Aerials Spoiled Demonstrations

"I have personally inspected practically all of the radio dealers' antenna systems in the metropolitan area and I was amazed at the poor installations which were being used to demonstrate short-wave radio apparatus. Dealers who were complaining of their inability to make good demonstrations were using woefully inadequate aerials. In some cases the antenna system had not been inspected for years and was found actually to be disconnected.

Four-Way Switch an Advantage

"Most of these dealers were familiar with the remarkable results obtained even in difficult locations with the RCA World-Wide Antenna System for home use and therefore were delighted to know that the same principle had been adapted to store requirements. The feature of being able to change from one set to another by merely throwing a switch is very useful when a dealer is trying to sell higher priced models."

The RCA Dealer Demonstration Antenna System employs the same efficient double-doublet antenna as the RCA World-Wide home antenna system. The transmission line, however, is broken by a four-way switch from which four secondary transmission lines each 38 feet 8 inches long run to the four receivers, which may be placed at any points in the store within the length of the secondary transmission lines. A transformer to match the impedance of the complete transmission line is provided for each set.

Increases Unit Sale

A switch on the transformers connects the antenna as a regular inverted T antenna for greatest efficiency on standard broadcast frequencies. Customers are quickly convinced of the need of a special antenna system for short waves when, during the course of a demonstration, the switch is thrown from the short-wave position to the standard broadcast position, Thus the RCA Dealer Demonstration Antenna System has several features of particular value to dealers: (1) by bringing in more short-wave stations with greatly reduced noise it is a big help in selling all-wave sets, (2) it permits convincing demonstrations in the dealer's store, thus avoiding costly and generally unsatisfactory demonstrations on a temporary set-up in the customer's home, (3) by switching instantly from one set to another it simplifies the process of building up the unit of sale from a cheap set to a better one, and (4) by proving the value of the RCA World-Wide Antenna System for home installations it again permits the dealer to increase his unit of sale by including an antenna job in the sale.

The RCA World-Wide Dealer Demonstration Antenna Kit is sold by RCA Parts distributors at $9.85 net to the dealer. Since it is intended only for dealer use, parts that are usually found in a dealer's stock, such as antenna wire, are not included in the kit.

The RCA World-Wide Antenna System and a full line of genuine factory-tested RCA Parts are featured in the above window of Radio Laboratories, Kansas City, Mo. A toy house is part of the model antenna set-up.