



RADIO AND TELEVISION

# Service News

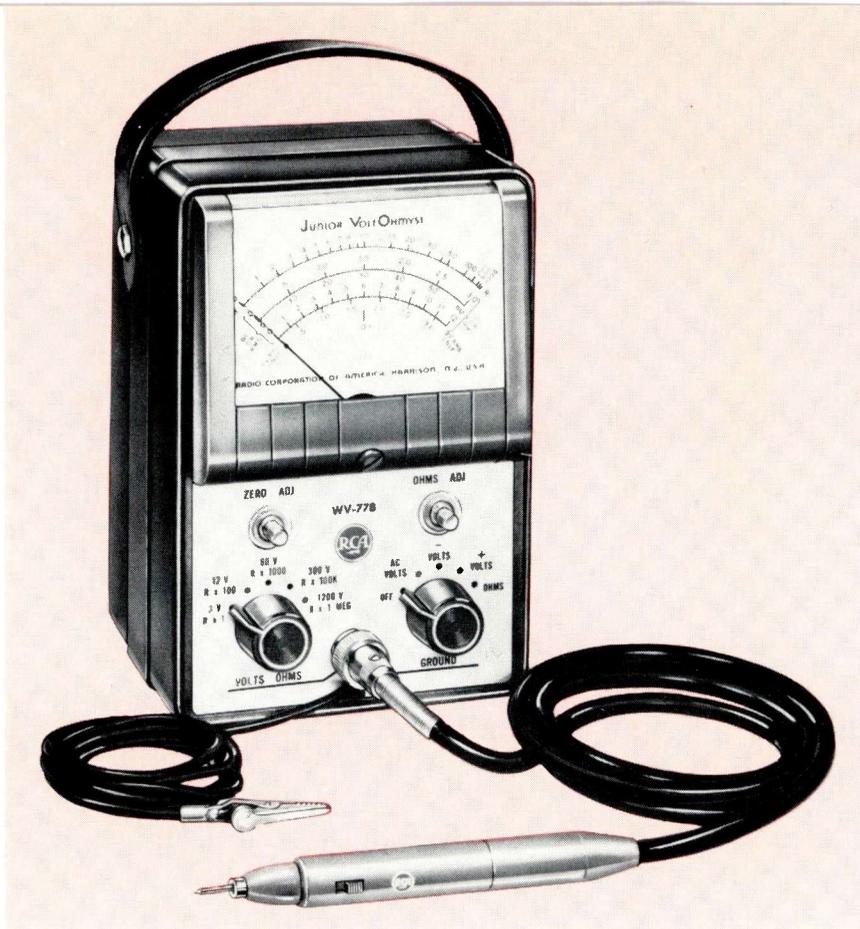
A PUBLICATION OF THE RCA TUBE DIVISION

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Vol. 21, No. 3

Miss Color TV and your local RCA tube distributor present the expanded RCA Institutes' Color-TV Home Study Course, complete with up-to-date, down-to-earth data and servicing techniques on the very latest color circuitry. For details on this 11-lesson course—and how you may obtain it free of extra charge when you buy RCA receiving tubes—turn to page 3.



## NEW RCA TEST INSTRUMENTS

Two new instruments recently added to the already famous RCA line of test equipment will be welcome additions to every efficient radio-TV service bench. They are the WR-46A Video Dot/Crosshatch Generator and the WV-77B Junior VoltOhmyst®.

RCA's WR-46A is a compact, portable test generator that is designed for use in making dc- and dynamic-convergence adjustments in color sets,

and vertical-and-horizontal-deflection linearity adjustments on both color and black-and-white TV receivers.

The WR-46A provides a choice of vertical-bar, horizontal-bar, dot, or crosshatch-pattern output, with all patterns highly stable. The maximum output signal is more than sufficient to drive either a color or black-and-white picture tube directly. The output signal is also continuously adjustable from zero to maximum, thus making it possible to inject the test-pattern signal (a) into the three individual grid circuits or common-cathode circuit of color picture tubes, (b) directly into the grid or cathode circuit of black-and-white kinescopes, or (c) into different points in the video-amplifier section of both black-and-white and color-TV receivers.

To ensure accuracy and stability of test patterns, provision is made for making convergence adjustments at the correct vertical and horizontal scanning rates by locking in the WR-46A with a TV receiver that is tuned to a broadcast signal. And, if desired, convergence adjustments can be made with both the broadcast picture and the WR-46A pattern displayed on the screen of the receiver under test.

Mechanical specifications of the WR-46A are as follows: width, 13½

inches; height, 10 inches; depth, 8 inches; weight, 17 pounds; finish, blue-gray hammeroid case, satin-aluminum panel.

RCA's WV-77B Junior VoltOhmyst®—incorporating latest circuit improvements for radio and TV servicing—offers an accurate, versatile vacuum-tube voltmeter in a compact, attractive design. Weighing but four pounds, the all-electronic WV-77B has features usually found only in more expensive instruments, including zero-centering facilities for discriminator alignment; dc polarity-reversing switch to eliminate need for test-lead switching; an ohms probe that is always positive for quick checking of electrolytic capacitors; degenerative bridge circuit that provides freedom from line-voltage changes; and a completely shielded metal case for stability in radio-frequency fields.

The WV-77B combines the reliable VoltOhmyst bridge circuit, a sturdy 200-microampere meter movement, and carbon-film multiplier resistors that are accurate within 1%. As a dc voltmeter, it measures dc from 50 millivolts to 1200 volts in five ranges—even in presence of ac. Using an isolating probe with less than 3  $\mu\text{f}$  input capacitance, the new Junior VoltOhmyst is invaluable for dc measurements in avc, oscillator, and other high-impedance circuits. As an ac voltmeter, it measures from 100 millivolts to 1200 volts (rms) in five ranges—even in presence of dc. Frequency response is more than adequate for power-line, audio, and ultra-sonic measurements and may be extended to 250 Mc by use of the accessory WG-301A Crystal Diode Probe. As a wide-range ohmmeter, the WV-77B measures from 0.2-ohm to 1-billion ohms in five ranges.

The WV-77B is factory-assembled, wired and tested, and has been factory-calibrated with the finest laboratory standards. With it is supplied the new WG-299A probe that contains a handy, built-in switch for instant selection of dc or ac/ohms operation. This probe is completely shielded, and is also insulated to prevent accidental shorts, grounds, and shocks.

User prices (optional) of the two new RCA test instruments are as follows: \$179.50 for the WR-46A Video Dot/Crosshatch generator—including output cable, sync-pickup lead, ground lead, and instruction booklet; \$55.00 for the WV-77B Junior VoltOhmyst—complete with WG-299A DC/AC-Ohms Probe and cable, ground cable, alligator clip, clip insulator, and instruction booklet.

RADIO AND TELEVISION
Service News

A PUBLICATION OF THE RCA TUBE DIVISION

RCA RADIO & TELEVISION SERVICE NEWS is published in the interest of dealers and service technicians. It is written to assist them in providing better service, and to foster the growth of their business by supplying them with information on the latest trouble-shooting and sales promotion techniques, sales and service aids, together with invaluable data on RCA tubes, transistors, batteries, parts, and test equipment.

RCA RADIO & TELEVISION SERVICE NEWS is a bi-monthly publication of the RCA Tube Division, Harrison, New Jersey.

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Editor

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# Extended Color-TV Home Study Course Offered to TV Technicians Free With Purchases of RCA Receiving Tubes

Television technicians by the thousands—through their purchases of RCA receiving tubes—are now helping to secure their profits in color TV by taking advantage of free enrollments in the RCA Institutes' extended, up-to-date Color-TV Home Study Course, complete with advanced data and techniques on servicing the latest 21-inch color receivers.

The offer of these enrollments—free with your purchase of tubes specified by your local RCA tube distributor—is being made available for a limited time only. So if you haven't as yet signed up with your distributor for the valuable 11-lesson color course, better do so right away . . . or you will miss out on an exceptional opportunity to learn, without delay, as much about servicing color sets as you can in the fastest, most convenient manner.

Surely you will agree that it takes little effort on your part to obtain RCA's vital home study lessons on color TV, which are easily worth the purchase of 1,000 RCA receiving tubes—especially since each of your home assignments will be carefully reviewed, graded, and commented upon with appropriate advice by qualified RCA Institutes instructors.

You enroll in the Color-TV Home Study Course merely by placing your tube order with your RCA distributor

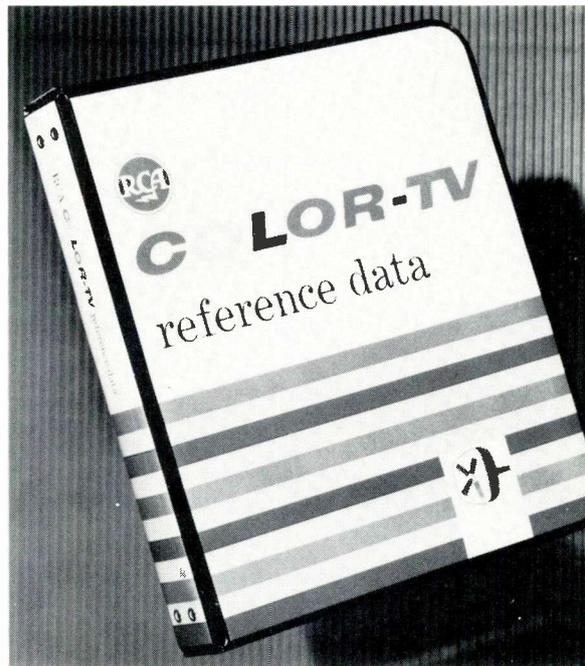
and then filling out the official enrollment form with which he provides you. Have the form countersigned by your distributor and returned to the RCA Institutes.

At the time you receive your official enrollment form, your RCA distributor will present you with lessons 1 through 3 so that you may begin your studies immediately. And, for no charge, he will also provide you with a handsome "Color-TV Reference Data" binder that is designed to hold lessons 1 through 11 in one convenient place.

The balance of the lessons will be mailed to you in groups. Each lesson contains a home assignment which thoroughly covers the material presented in that lesson. Protect your lessons by keeping them in your durable "Color-TV Reference Data" binder.

When you have satisfactorily completed the first nine lessons of the Color-TV Home Study Course—the original series prepared by experts of the RCA Institutes—you will then be entitled to receive two advanced lessons on "Large Screen Color Receivers" and "New Color-TV Circuitry"—a "must" course prepared by John R. Meagher, nationally known RCA au-

(Continued on next page)



When you place your tube order with your RCA distributor and receive your enrollment form in the RCA Institutes' Color-TV Home Study Course, you will also receive this attractive binder—free. It's designed to hold lessons 1 through 11 in one convenient place and to protect your lesson assignments.

Meet Miss Color TV of 1956. She's Miss Marian Stafford, beautiful and vivacious NBC-TV starlet. ▶

The striking giant postcard (Form 4F11) shown at right can be obtained from your local RCA tube distributor. Send it to your complete mailing list to be sure all your customers and prospects know you are qualified for color-TV servicing . . . and that you provide fast, dependable service for black-and-white TV repairs.



Also ask your local RCA tube distributor for this eye-catching streamer (Form 4F13). Then post it on your store window to dramatically tell sidewalk traffic that you are ready for color-TV servicing . . . and that you are local headquarters for black-and-white TV servicing.



# Extended, Up-to-Date RCA Color-TV Course

(Continued from preceding page)

thority on practical television servicing and originator of many important aids to the TV service industry. And, when you have satisfactorily completed these advanced lessons 10 and 11, you will receive an RCA Institutes' *Advanced Color-TV Home Study Course Certificate*. This certificate, suitable for framing, will command customer confidence by enhancing your prestige, as well as by identifying your store or shop as local headquarters for expert color-TV servicing.

## 11 Authoritative Lessons

The RCA Institutes' Color-TV Home Study Course naturally was crystallized with you, the service technician, in mind. Its 11 authoritative lessons are written in a practical, down-to-earth style and feature proven "how-to-do-it" techniques.

*John R. Meagher, nationally recognized RCA authority on TV servicing, prepared lessons 10 and 11 of the Color-TV Home Study Course being offered to you by your RCA distributor. Here is his advice to you:*



*"Many present-day service experts gained their initial knowledge of television principles and circuitry from technical publications and study courses that were based on the famous RCA Model 630 receiver. After building a solid foundation of knowledge on this receiver, technicians found that it was easy to keep up with the stream of developments that followed in black-and-white receivers. In the same way, those technicians who become familiar with the basic principles and circuitry of the famous RCA CT-100 color receiver will have little trouble keeping up with the new developments in color receivers that are fully described in Lessons 10 and 11."*



RCA INSTITUTES  
A SERVICE OF RADIO CORPORATION OF AMERICA • NEW YORK

This Certifies That  
**John Doe**

has satisfactorily completed the prescribed subjects in the

## Advanced Home Study Course in Color Television

and in testimony thereof is awarded this Certificate

In Witness Whereof we affix our signatures on this

tenth day of January A.D. 1957

*George J. Maclell*  
PRESIDENT

*Max S. Feldman*  
DIRECTOR OF HOME STUDY

Each service technician who satisfactorily completes the RCA Institutes' Advanced Color-TV Home Study Course will be awarded this impressive certificate.

The first nine lessons cover the following:

Lesson 1: Introduction to Color Television

Lesson 2: Principles of Two-Phase Modulation and Colorimetry

Lesson 3: Principles of Color-Television Receivers

Lesson 4: Color Picture Tubes

Lesson 5: The Color Television System

Lesson 6: Color Television Receiver Circuits

Lesson 7: Set-Up and Adjustment of Color-Television Receivers

Lesson 8: Servicing and Alignment of Color-Television Receivers

Lesson 9: Test Equipment for Color-Television Servicing

### The Advanced Course

Here is what you will be taught when you take the advanced course:

Lesson 10: Large Screen Color Receivers—The following topics are discussed in detail: RCA 21-inch color tube and accessory components; convergence requirements and circuitry for the 21-inch color tube; purity adjustments in new receivers, including degaussing procedure; black-and-white (grey scale) setup; antenna considerations for color reception. A clearly illustrated, concise, complete step-by-step procedure will enable the experienced service technician to master convergence adjustments without personal instruction. The effect produced by each of sixteen convergence adjustments are clearly explained and illustrated; the lesson shows how each of

these adjustments should be made to produce the desired result.

Lesson 11: New Color-TV Circuitry—This advanced lesson covers the following: demodulator circuitry and adjustments in new color receivers; automatic color-gain-control circuits in new receivers; automatic frequency control of the color oscillator in new receivers; new rf-if-video alignment techniques and test equipment.

• • •

Now that you know that you may receive a free enrollment in the RCA Institutes' Color-TV Home Study Course, the decision whether to take this 11-lesson course is up to you. Let your choice be guided by your desire to continue as an *active* television technician. Bear in mind that your income from servicing color sets will soon become an important—perhaps a fundamental—part of your earning a livelihood. So act now and you won't let the future pass you by.

### Renewal Products Catalog

If you haven't as yet received your copy of the new RCA Renewal Products Catalog (Form 4F2), ask your RCA distributor for it today. This handy 24-page booklet will present you with comprehensive information on RCA replacement electronic products and technical literature which you need in your servicing work.

# NEW RCA SPEAKERS

Your "audiophile" customers will agree that the new 501S1 Biaxial Speaker is a welcome addition to the RCA line of high-fidelity speakers.

Featuring two specially curved cones to provide wide-angle dispersion, the 501S1 combines a 12-inch low-frequency "woofer," a 3-inch "tweeter," and a capacitive crossover network. The "tweeter" unit is mounted off-axis to provide smooth acoustical crossover. The 501S1 has good transient response over its entire range because of its inherently good damping.

A pre-production model of the 501S1, you may recall, was demonstrated publicly for the first time at the last Audio Fair in New York City. Shown along with RCA's 502S1, both precision-built speakers drew the attention and praise of thousands of "hi-fi" enthusiasts.

The biaxial 501S1 is like the single-cone 502S1 in that it has a 14.5-ounce Alnico V magnet and an 8-ohm voice coil. Both speakers are capable of handling 12 watts continuous duty with reproduction down to 40 cycles per second. However, because of its high frequency "tweeter," the 501S1 is capable of superior performance at high frequencies and has a response substantially uniform to 18,000 cycles.

Beautifully styled, both the 501S1 and the 502S1 are two-toned, having an orchid-colored hammeroid housing contrasted with a deep-purple pot-cover and set off with an attractive satin-finish aluminum escutcheon name plate.

Special polarized plug-in leads and terminal boards are provided with the 501S1 and 502S1 speakers. List prices (optional) are only \$55.95 for the 501S1 and \$41.95 for the 502S1. The two speakers are now on hand at your RCA distributor's. He's waiting to show them to you; so why not stop in and see him right away.

• • •

A new, 2½-inch permanent-magnet-type speaker having a depth of only 2⅓ of an inch and requiring a baffle opening of only 12⅓ inches was recently announced by RCA. Known as speaker type 239S1, the new unit is intended for use in applications requiring high sensitivity and where small speaker size is an important consideration. Such applications include transistorized radio receivers, miniaturized sound recorders, intercommunications devices, and similar equipment.

Handling a 250-milliwatt input with good overall performance, the 239S1 provides good balance between cubical content and sensitivity. Its exceptionally small size results from a unique design in which the cone is located within the Alnico V grain-oriented magnet structure. The speaker has a nominal resonant frequency of 375 cps, a sharply attenuated high-frequency response at approximately 4,000 cps, and a response over the midfrequency-range which is substantially uniform. As a result, the 239S1 gives good frequency balance and matches the air load of miniaturized equipment cases.

The 239S1 2½-inch speaker is available now from your RCA distributor. Its List price (optional) is only \$5.50.

## Six New RCA Accessories to Speed Color-TV Servicing

In response to widespread demands from service-dealers, your RCA distributor now stands ready to supply you with RCA's six newest accessories—types 220X1, 221X1, 222X1, 223X1, 206P1, and 205W1—to aid you in the servicing of color-TV receivers employing RCA-21AXP22 and -21AXP-22-A picture tubes.

The 220X1 is a picture-tube-socket extension cable, the 221X1 is a deflecting yoke extension cable, the 222X1 a radial converging-magnet assembly extension cable, and the 223X1 a high-voltage extension cable. Because the picture tube and chassis of color receivers are mounted separately, this complete set of extension cables makes it possible for you to service the chassis outside of the cabinet without having to remove the color picture tube. These extension cables provide 4-foot extensions for all necessary connections to the picture tube socket, deflecting yoke, radial converging-magnet assembly, and high-voltage terminal.

The RCA-206P1 is a high-voltage interlock plug which also simplifies color-TV servicing. It enables you to trouble-shoot a color set with power "on" while the back panel of the cabinet is removed. In addition, the 206P1 may be used as a replacement for damaged interlock plugs on receivers.

The RCA-205W1 is another "must" for color-TV servicing. It is a degaussing coil, required to obtain color purity. As you know, a color picture tube is susceptible to magnetization from

## Four-Page Bulletin On Selenium Rectifiers

Two cents—the price of a post-card—can bring you a valuable time-saver: a four-page bulletin containing maximum ratings, dimensions, and typical operating conditions for every selenium rectifier in the RCA line. In addition, this handy guide entitled, "RCA Selenium Rectifiers," shows simple test circuits you can construct to measure the forward and reverse currents of selenium rectifiers. Notes on troubleshooting circuits utilizing selenium rectifiers are also included.

For your free copy of the "RCA Selenium Rectifiers" bulletin, just send a card—simply stating your request, your name, and your address—to RCA, Commercial Engineering, 415 S. 5th St., Harrison, N. J.

outside sources. While in this state, color purity cannot be obtained. The 205W1 quickly demagnetizes a magnetized tube.

## RCA-8DP4 PICTURE TUBE

RCA-8DP4, a new rectangular, glass picture tube intended primarily for lightweight, compact applications, was recently announced by the RCA Tube Division. Employing low-voltage electrostatic focus and magnetic deflection, the 8DP4 has a spherical Filterglass faceplate, a screen 7⅓ inches by 5⅓ inches with slightly curved sides and rounded corners, and a minimum projected screen area of 35.5 square inches. Maximum overall length of the 8DP4 is only 10⅓ inches; the tube weighs less than three pounds.

Other design features of the 8DP4 include a specially designed, precision electron gun requiring an external, single-field ion-trap magnet; and an external conductive bulb coating which with the internal conductive coating forms a supplementary filter capacitor.

Several manufacturers, including RCA, have designed portable TV receivers around the 8DP4 and they are now on the market. The portable RCA Victor TV set—only slightly larger than a table-model radio—is ideal for use anywhere in the home or office and is also an excellent choice for a "second set."

# Boost Dealer Prestige and Profits



**TV TROUBLES?**  
let us make viewing a pleasure again! ...and if it's RCA Victor we use

**RCA SERVICE PARTS**  
for top performance



**PHONOGRAPH TROUBLES?**  
if it's RCA Victor we'll make listening a pleasure again with ...

**RCA SERVICE PARTS**



**RADIO DEAD?**  
if it's an RCA Victor we'll bring it to life again with factory-tailored

**RCA SERVICE PARTS**

RCA's new posters — (top to bottom) Forms 3F532, 3F533, and 3F534

You will reap increased sales, bonus profits, and heightened prestige when you capitalize on the two extraordinary new programs on RCA Service Parts now being offered by your local RCA distributor.

Sure-fire money-makers, one program—the versatile RCA Dealer Identification Program—is a powerful promotional plan to help you keep your servicing on-the-go—profitably—with RCA Service Parts. Paying tribute to the skill with which you service your customers' RCA Victor TV receivers, radios, and "Victrola" phonographs, this program is simple in function: It alerts your community to your store as local headquarters for RCA Service Parts. Earned and ably put to work for you, its effect in added business can be dynamic.

The other program—the RCA Dealer Parts-Package Program—is geared to jack up your individual parts sales by helping you to maintain a small, inexpensive inventory of RCA Service Parts which you most frequently need in repairing RCA Victor home instruments—thus eliminating many of the profit-clipping, time-consuming delays between service call and parts distributor. However, if perchance you have a request for a Service Part that is not in your basic inventory, merely check your RCA distributor. He now stands ready to assist you further by satisfying—on the spot in most instances—all of your immediate requirements.

### Dealer Identification Program

In conjunction with RCA's Dealer Identification Program, your RCA distributor can supply you with three bold and dramatic new posters, a distinctive new decal, and a colorful new repeat business sticker. These impressive promotional tools will help you spark your parts business by identifying you as a skilled technician who proudly uses RCA Service Parts in his servicing work.

The three large posters (Forms 3F532, 3F533, and 3F534), measuring 35 inches by 45 inches, will tell your customers and prospects about the repair services you offer. You can rotate individual posters or create a strong mass effect by displaying them together.

The eye-appealing decal (Form 3F539) signifies that your service shop is a local headquarters for RCA Service Parts. Easy to apply and weather

resistant, the 8-inch-square decal should be prominently displayed on each of your door or store windows, as well as on your counter panes or truck panels.

The neat repeat business sticker (Form 3F538) should be placed on the back of every RCA Victor TV receiver, radio, and "Victrola" phonograph you repair, so as to remind your customers to call you when they need an experienced and qualified technician. The sticker measures 3 inches by 4 inches.

### Dealer Parts-Package Program

In conjunction with RCA's Dealer Parts-Package Program, your RCA distributor is now prepared to sell you three separate packages of assorted Service Parts. One package contains the 12 most-used stock numbers for RCA Victor TV receivers. Another contains the 12 most-used stock numbers for RCA Victor record-changers. A third contains the 17 most-used stock numbers for RCA Victor TV receivers. Each of the three packages of assorted RCA Service Parts is boxed and labeled distinctively, attractively, and informatively.

Two of these boxed assortments are called "RCA's Top 12." You can identify and order each "Top 12" kit of assorted RCA Service Parts by a single stock number.

Package Stock Number 102802 carries one each of the following 12 most-used Service Parts for RCA Victor TV receivers:

Stock No.	Description
71441	Vertical-linearity control
71449	Horizontal-linearity control
73591	Antenna-matching coil
74144	Vertical-blocking-oscillator transformer
74950	Vertical-deflection-output transformer
74952	Deflecting yoke
75212A	IF transformer
75516	Width control
76483	Horizontal-linearity control
76484	Width control
76675	Crystal diode rectifier
78208	Picture and volume control

Package Stock Number 102815, carrying the 12 most-used Service Parts for RCA Victor record-changers, includes 10 Number 75756 separator shelf return springs plus one each of the following:

Stock No.	Description
74067	45 RPM cartridge
74068	45 RPM stylus
74077	Idler wheel
74620	Spindle nose cap
74864	Record separator
74865	Record shelf
75719	Pickup arm, shell only
75753	Turntable and shaft assembly
75755	Spindle nose cap
75757	Separator shaft with cam
75764	Cam wheel and tire

Distributor Resale prices (optional) of the two "Top 12" assortments are: \$20.79 for Package Stock Number 102802; \$9.19 for Package Stock Number 102815.

In addition to the two "Top 12" kits, your RCA distributor is offering Package Stock Number 102976, an assortment of 17 most-used Service Parts for RCA Victor TV receivers. Package Stock Number 102976 contains one each of the Service Parts in Package Stock Number 102802—plus these five others:

Stock No.	Description
73440	Detent and shaft
76501	Horizontal-output and high-voltage transformer
76803	Volume control and on/off switch
100861	Volume control
101147	Deflecting yoke

Distributor Resale price (optional) of Package Stock Number 102976 is \$42.20.

## Stable Horizontal-Oscillator Sync

A point some service technicians overlook when servicing the horizontal-oscillator section of a TV receiver is that this circuit is somewhat critical insofar as tube characteristics are concerned. When making a replacement of the horizontal-oscillator tube, it is a wise precaution to adjust the circuit to fit the characteristics of the new tube.

For example: in order to improve the picture definition of a receiver, a service technician may replace an older 6SN7-GT or -GTA type oscillator tube with an RCA-6SN7-GTB. Occasionally he may find that the circuit with the new tube will not hold in sync, or cannot be brought into sync by adjustment of the horizontal-hold control. In such cases, the service technician should *readjust the receiver's horizontal-frequency control.*

A similar servicing note was pointed out in a discussion of the older 6SN7-GT tube type in the May-June, 1952, issue of RADIO AND TELEVISION SERVICE NEWS. At that time it was also noted that it is important that the abovementioned frequency adjustment be made so that the picture is in sync at the mid-position of the hold control. If, instead, the adjustment is made while the hold control is in either extreme position, very slight



changes in the condition of the tube might necessitate another service call.

With proper adjustment of the rear-chassis controls, there is usually enough range in the hold control to accommodate reasonable changes in tube characteristics.

### New Binder Adds Volumes 9-10 to RCA Tube Handbook HB-3

For quick-to-find, right-at-hand information on all of RCA's ever-increasing number of tube types and semiconductor devices, many service-dealers rely on the technical data sheets contained in the RCA Tube Handbook HB-3. If you are one of these "on-the-ball" technicians, you should be pleased to note that the RCA Tube Division has recognized that your present four binders are now overcrowded. To alleviate this condition and provide for future expansion, an additional binder designated as Vol. 9-10 is now being made available.

RCA Commercial Engineering, 415 S. 5th St., Harrison, N. J., will gladly handle your request for this new binder, as well as for replacements of any of the previously issued binders (Vols. 1-2, 3-4, 5-6, and 7-8) which you may now possess and which may be the worse for wear. Each of the five binders are individually priced at \$2.25 in the United States and its possessions; \$2.50 in all other countries.

In ordering the Vol. 9-10 binder or

any of the other binders, please be sure to give the serial numbers of your present Handbook binders.

Each binder is serially numbered at the bottom of the inside back cover, and is registered under the subscriber's name at time of shipment. The serial numbers afford convenient and positive identification of any HB-3 Tube Handbook if changed registration is required through transfer in ownership, or if correspondence concerning a particular Handbook should be necessary.

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If you are not already an HB-3 sub-

scriber and wish to become one, just inform RCA Commercial Engineering of this fact. The expanded Handbook, consisting of the five binders complete with data sheets on RCA tubes and semiconductor devices, plus service for one year, is priced at \$17.50 in the United States and its possessions; \$18.50 in all other countries. After the first year, the annual service fee is \$3.00 for domestic subscribers and \$3.50 for foreign subscribers. This service consists of mailings to subscribers of new and revised Handbook data sheets about six times a year.

### SERVICE MANUAL AVAILABLE ON VHF, MICROWAVES

Many service technicians are finding most useful the specially prepared, 226-page service manual on wave propagation and other aspects of VHF and microwave radio relay systems that is now being offered by the Government Service Department, RCA Service Company, Camden, N. J., at

the price of \$2.00 each, postpaid.

The publication—titled "Point-to-Point Radio Relay Systems—44 Mc to 13000 Mc"—originally was published under contract for the United States Air Force which has approved the reprinting and commercial sale of the volume.

# Handy Data on RCA Service Parts

Ask any service technician whose reference "library" includes an up-to-date set of RCA's famous technical publications on RCA Service Parts. He's sure to tell you that they are invaluable in providing him with detailed, authoritative information for rapid, profitable servicing of the RCA Victor line of radio, phonograph, and television sets.

The low-cost RCA Service Parts publications available from your RCA Service Parts distributor are as follows: five comprehensive Service Parts Directories for RCA Victor TV Receivers—the SP-1007, SP-1014, SP-1021, SP-1028, and SP-1035; RCA Victor Service Data Bound Volumes I, IV, V, VI, VII, and VIII; RCA Victor TV Service Parts Guide (SP-2001A); and RCA Phonograph Cartridge Guide (SP-2003B).

## Service Parts Directories

Legibly printed and bound to lie flat when open, the five Service Parts Directories feature concise, easy-to-follow data on each of 370 RCA Victor TV sets produced from 1946 through 1954. Information on color-TV receivers

and three-speed record changers is included in the 1954 Service Parts Directory.

The SP-1007 contains 80 pages with schematic diagrams and replacement parts lists for the 56 models of RCA Victor TV receivers manufactured from 1946 through June, 1950. Each schematic diagram faces its corresponding parts list for fast reference.

The SP-1014 contains 142 pages with schematic diagrams, replacement parts lists, and top and bottom chassis views for the 71 models of 1950 and 1951 RCA Victor TV receivers. The comprehensive index for model and chassis numbers provides a ready source of references.

The SP-1021 contains 36 pages of schematic diagrams, wiring diagrams, replacement parts lists, and top and bottom chassis views for the 27 models of 1952 RCA Victor TV receivers. The comprehensive index cross-references RCA TV model names to model numbers, and model numbers to the directory in which information may be found.

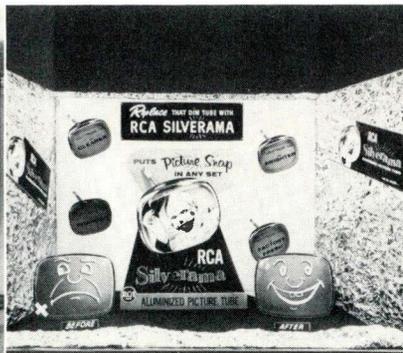
The SP-1028 contains 84 pages with schematic diagrams, wiring diagrams,

replacement parts lists, and top and bottom chassis views for the 108 models of 1953 RCA Victor TV receivers. It also includes schematic diagrams, replacement parts lists, and other information for radio chassis used in radio-TV combination receivers. Cross-referenced are: (1) model names to model numbers of all RCA Victor TV receivers manufactured from 1946 through 1953 and (2) all model numbers and chassis numbers to the directory in which information may be found.

The SP-1035 contains 72 pages with schematic diagrams, top and bottom chassis views, replacement parts lists, and top and bottom chassis adjustments for the 106 models of 1954 RCA Victor TV receivers. Also included is information on the CT-100 and the 21-CT55 color-TV receivers and the RP-197 and RP-198 three-speed record-changers. The comprehensive index cross-references model names to model numbers of all RCA Victor TV receivers manufactured from 1946 through 1954, and all model and chassis numbers to the directory in which information may be found.



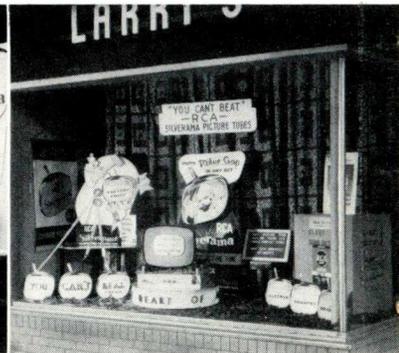
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## PRIZE-WINNING PHOTOS FROM RECENT RCA 'SILVERAMA' WINDOW

Even if you are not one of the eight lucky service-dealers who received a \$1,000 United States Savings Bond for coming in "first" in RCA's recent "Silverama" Window Display Contest, you still can be a "winner." Study the photos of the winning entries shown above — and then put the ideas you gain to work for you. By thus setting up an attention-getting window display built around RCA's "Silverama" Aluminized Picture Tube, you soon will "prize" the results: increased sales, profits, and prestige.

Photo number 1 shows the clever display which won a Bond for David P. Cressey of Cressey Radio and TV Shop, Stockton, Calif. Mr. Cressey's display was judged the most original and compelling in RCA's Western sales region.

Photo number 2 shows the eye-catching display for which Anthony A. Gatti, Valley TV and Radio Company, Glendale, Ariz., took first prize in RCA's Southwestern sales region.

Photo number 3 shows the winning display for RCA's West Central sales

region. It earned a Bond for Everett Parish of Parish Radio and TV, Fort Collins, Colo.

Photo number 4 shows the attractive display winner set up by R. A. Laramy, Larry's Radio and TV Service, St. Paul, Minn. Mr. Laramy's store is located in RCA's Central sales region.

Photo number 5 shows the neat display by Howard G. Swisher, AATV Service, Dayton, Ohio — selected as "best" contest entry in RCA's East Central sales region.

**RCA Victor Service Data Volumes**

The six handsome, sturdily bound volumes of RCA Victor Service Data which your distributor is offering feature data which cannot be found elsewhere. They contain complete, accurate servicing information on all RCA Victor radio, phono, and/or TV sets manufactured from 1923 through 1937 and from 1947 through 1952.

Specifically speaking, the 880-page Volume I covers the period from 1923

through 1937. The 566-page Volume IV covers 1947 and 1948. And the 330-page Volume V, 472-page Volume VI, 304-page Volume VII, and 314-page Volume VIII cover the years 1949, 1950, 1951, and 1952, respectively.

**RCA Victor TV Service Parts Guide**

The 16-page SP-2001A lists stock numbers of major replacement parts for 1946-through-1954 RCA Victor TV sets by receiver-model number and

corresponding receiver-chassis number. It also lists stock numbers of tuner-replacement parts by tuner-chassis number.

**RCA Phonograph Cartridge Guide**

The four-page SP-2003B lists stock numbers of RCA cartridges and replacement styli. It also lists stock numbers of RCA cartridges and model numbers of record players by RCA Victor model numbers.

You can obtain your copies of the technical publications noted in the story above either from your local RCA distributor or from RCA Commercial Engineering, 415 S. 5th St., Harrison, N. J. A complete set is available to you for a worthwhile investment of \$35.50. If you wish to obtain them individually, here is a breakdown of their prices:

Item	Price
SP-1007 Service Parts Directory.....	\$ .75
SP-1014 Service Parts Directory.....	1.50
SP-1021 Service Parts Directory.....	.50
SP-1028 Service Parts Directory.....	1.35
SP-1035 Service Parts Directory.....	1.25
Volume I RCA Victor Service Data.....	3.50
Volume IV RCA Victor Service Data.....	6.00
Volume V RCA Victor Service Data.....	5.00
Volume VI RCA Victor Service Data.....	5.50
Volume VII RCA Victor Service Data.....	5.00
Volume VIII RCA Victor Service Data.....	5.00
SP-2001A RCA Victor TV Service Parts Guide.....	.15
SP-2003A RCA Phonograph Cartridge Guide.....	Free

**New RCA 'Flybacks' Ease Service**

Service technicians concerned with the servicing of Hoffman and/or Emerson TV receivers should be pleased to learn that RCA's two new horizontal-output and high-voltage transformers —types 250T1 and 251T1—are now available from local RCA distributors.

The RCA-250T1 is a direct replacement for "flybacks" used in 60 models of Hoffman TV receivers. It can supply 16 kilovolts and is for use with yokes having deflection angles of 66 to 70 degrees.

The RCA-251T1 is a direct replacement for flybacks used in more than 90 models of Emerson TV receivers. It can supply 15 Kv and is used with yokes having deflection angles of 66 to 70 degrees.



(5)

(6)

(7)

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**DISPLAY CONTEST POINT WAY TO HIGHER SALES, PROFIT, PRESTIGE**

Photo number 6 shows the interesting display for which William Shulman of Huntington Radio and Appliance, Boston, Mass., was awarded a Bond as winner in RCA's Northeastern sales region.

Photo number 7 shows the winning window display in RCA's Eastern sales region. This display was the entry of Carl Renner, Renner Radio and TV, Scranton, Pa.

Photo number 8 shows the handsome display by W. E. Nelson of Nelson and Helton, Morristown, Tenn.,

first-placer in RCA's Southeastern sales region.

**Distributor Salesmen Win, Too**

In addition to the \$8,000 in U. S. Savings Bonds awarded in all to the eight winning service-dealers, a \$500 Savings Bond was presented by RCA to each of the following eight RCA distributor salesmen who counter-signed the winning entries:

Western region: Ray Mitchell, Dunlap Radio and Television Supply Company, Stockton, Calif.

Southwestern region: Arthur Ewald, Midland Specialty Company, Phoenix.

West Central region: George Cox, Ward Terry and Company, Denver.

Central region: Howard L. Johnson, Lew Bonn Company, St. Paul, Minn.

East Central region: Arthur Miller, Stotts-Friedman Company, Dayton, O.

Northeastern region: Lawrence Berk, The Eastern Company, Cambridge, Mass.

Southeastern region: A. B. Tolley, Freck Radio Supply Company, Asheville, N. C.

# TEST LEADS, PROBES, & MISCELLANEOUS

Here is a listing (including corresponding stock numbers) of test leads, probes, and miscellaneous accessories for RCA test equipment. Especially prepared for RCA RADIO AND TELEVISION SERVICE NEWS readers, this list represents the very latest information, including several recent revisions, and supersedes all previous listings. Order the test leads, probes, and miscellaneous accessories from your local RCA distributor. When doing so, be sure to specify instrument model, code, and serial numbers.

Description	Stock or Type No.	Description	Stock or Type No.	Description	Stock or Type No.
<b>OSCILLOSCOPES</b>					
<b>WO-27A DC Oscilloscope</b>		Binding post, pin-plug type	47062	<b>WV-77A Junior VoltOhmyst</b>	
Power cord (including plugs)	52556	Graph screen	57823	Direct Probe and Cable	WG-218
Binding post	46907	Input cable (direct)	53843	DC Probe	WG-217
Binding post, threaded	30277	<b>WO-79B Oscilloscope</b>		Ground cable (with clip and pin plug)	48996
Phone plug (with leads)	46918	Low-capacitance probe and cable		Slip-on alligator clip	59410
<b>WO-55A Oscilloscope</b>		(less clip lead)	53842	1.5-volt battery	V5036
Power cord (including plugs)	53678	Direct cable (less clip lead)	53843	Crystal-Diode Probe	WG-264
Binding post, pin-plug type	47062	Clip lead for low-capacitance probe		High-Voltage Probe	WG-289
Direct Probe and Cable	WG-220	& direct cable	53844	Multiplier Resistor for High-Voltage	
Demodulator Probe	WG-291	Transparent graph screen	57823	Probe	WG-206
Jack, black	56326	Power cord (with plugs)	52556	<b>WV-77B Junior VoltOhmyst</b>	
<b>WO-56A Oscilloscope</b>		Binding post, pin-plug type	47062	DC AC-Ohms Probe and Cable	WG-299A
Direct Probe and Cable	WG-218	<b>WO-88A 5" Oscilloscope</b>		Slip-on alligator clip	210088
Low-Capacitance Probe	WG-2168*	Direct Probe and Cable	WG-218†	Clip Insulator	204717
Ground cable (with clip and pin plug)	93407	Low-Capacitance Probe	WG-2168†	1.5-volt battery	V5036
Slip-on alligator clip	35262	Direct/Low-Capacitance Probe		Crystal-Diode Probe	WG-301A
Green graph screen	93440	and Cable	WG-300A††	High-Voltage Probe	WG-289
Demodulator Probe	WG-291	Ground cable	93914	Multiplier Resistor	WG-206
Binding post	46907	Slip-on alligator clip	59410	<b>WV-84A Ultra-Sensitive DC Microammeter</b>	
<b>WO-57A Oscilloscope</b>		Green Graph Screen	96397	50-megohm Resistor	97181
Direct Probe and Cable	WG-218	Demodulator Probe	WG-291†	950-megohm Resistor	57977
Low-Capacitance Probe	WG-2168*	RF-IF-VF/Signal-Tracing Probe	WG-302A††	1.5-volt battery	V5106
Ground cable (with clip and pin plug)	48996	Wide-Band-Modification Kit	WG-388A	22.5-volt battery	V5102
Slip-on alligator clip	59410	<b>WO-91A 5" Oscilloscope</b>		<b>WV-87A Master VoltOhmyst</b>	
Graph Screen	59235	Direct/Low-Capacitance Probe		Direct Probe and Cable	WG-218
Demodulator Probe	WG-291	and Cable	WG-300A	DC Probe	WG-217
Jack, black	56326	Ground Cable, with clip and plug	93914	Ohms cable (with probe and plug)	93859
Binding post, pin-plug type	47062	RF-IF-VF Signal-Tracing Probe	WG-302A	Current cable, red (with clip and plug)	93725
Phone tip, black	47089	Binding Post (blue)	98479	Current cable, black (with clip and plug)	93914
<b>WO-57B Oscilloscope</b>		<b>15B Oscilloscope</b>		Ground cable (with clip and plug)	93832
Direct Probe and Cable	WG-218	Input cable (complete)	33873	1.5-volt battery	V5036
Low-Capacitance Probe	WG-2168*	Binding post, pin-plug type	47062	Slip-on alligator clip	59410
Ground cable (with clip and pin plug)	93832	Pin plug	47089	Crystal-Diode Probe	WG-264
Slip-on alligator clip	59410	<b>715B Oscilloscope</b>		High-Voltage Probe	WG-289
Graph screen	59235	Attenuating cable	48447	Multiplier Resistor for High-Voltage	
Demodulator Probe	WG-291	Direct cable	48448	Probe	WG-206
Jack, red	93875	Graph screen	48755	Jack, black ("Ohms")	93858
Jack, black	93858	Binding post	95732	Jack, black ("Ground")	93858
Binding post, pin-plug type	93855	Banana-plug jack	48430	Jack, ("± current")	93995
Phone tip, black	93856	Banana plug	18728	Pin plug, black (Ground cable)	93856
<b>WO-58A Oscilloscope</b>		<b>METERS AND VOLTOHMISTS®</b>		Pin plug, red (Ohms cable)	93857
Probe cable (4 ft. long, including chassis		<b>WV-37A Radio-Battery Tester</b>		Pin plug, black (Current cable)	93989
connector & screw base)	58495	Test Prod, Black (less cable)	97769	Pin plug, red (Current cable)	93988
Direct-probe attachment	58496	Test Prod, Red (less cable)	97770	<b>WV-95A Master VoltOhmyst</b>	
Attenuating-probe attachment	58497	<b>WV-65A VoltOhmyst (Battery Op.)</b>		DC cable, blue (with probe & pin plug)	48994
Crystal-rectifier probe attachment	58498	DC cable, blue (with probe & pin plug)	48994	Ohms-ma cable, red (with probe	
Clip attachment	57311	Ohms-ma cable, red (with probe		& pin plug)	51960
Power cord (including plug)	53678	& pin plug)	51960	AC cable, red (with probe & 4-prong	
Binding post, pin-plug type	47062	Common lead, black (with probe		plugs)	57222
Jack, black	56326	& pin plug)	48996	Clip for probes	35267
<b>WO-60C Oscilloscope</b>		Crystal-Diode Probe	WG-263	Power cord (including plugs)	53678
Power cord (including plug)	53678	High-Voltage Probe	WG-289	Diode probe (complete)	500275
Binding post, pin-plug type	47062	Multiplier Resistor for High-Voltage		Diode-probe multiplier (complete)	52817
Direct Probe and Cable	WG-220	Probe	WG-206	Binding post, pin-plug type, red	47089
Demodulator Probe	WG-291	Jack, red	56326	Binding post, pin-plug type, black	47062
Jack, black	55238	Jack, black	56326	High-Voltage Probe	WG-289
<b>WO-78A 5" Oscilloscope</b>		Pin plug, black	47089	Multiplier Resistor for High-Voltage	
Direct Probe and Cable	WG-294	<b>WV-73A Audio Voltmeter</b>		Probe	WG-206
Low-Capacitance Probe	WG-293	Input cable (with plug and clips)	53676	Jack, red	56326
Ground cable	93832	Power cord (including plugs)	53678	Jack, blue	56326
Slip-on alligator clip	59410	<b>WV-75A Advanced VoltOhmyst</b>		Pin plug, black	47089
Green Graph Screen	204782	DC cable, blue (with probe & pin plug)	48994	<b>WV-97A Senior VoltOhmyst</b>	
Clip Insulator	204717	Ohms-ma cable, red (with probe		(code numbers 350 and 850)	
Binding Post	98479	& pin plug)	51960	Direct Probe and Cable	WG-218
Demodulator Probe	WG-291	Ground cable, black (with clip		DC Probe	WG-217
<b>WO-79A Oscilloscope</b>		& pin plug)	48996	Ohms cable (with probe & plug)	51960
Input cable (low capacitance)	53842	Clip for probes	35267	Ground cable (with alligator	
Power cord (including plugs)	52556	Diode-probe multiplier (complete)	52817	clip & plug)	48996
		Binding post, pin-plug type, red	47089	Slip-on alligator clip	59410
		Binding post, pin-plug type, black	47062	1.5-volt battery	V5036
		"Ground" cable with tip		Crystal-Diode Probe	WG-264
		& pin plug, black	52809	High-Voltage Probe	WG-289
		Diode-probe clip attachment	52821	Multiplier Resistor for High-Voltage	
		Alligator clip for ground lead	35262	Probe	WG-206
		High-Voltage Probe	WG-289	Jack, black	56326
		Multiplier Resistor for High-Voltage		Pin plug, black	47089
		Probe	WG-206	<b>WV-97A Senior VoltOhmyst</b>	
		Jack, black	56326	(except code numbers 350 and 850)	
		Jack, red	56326	Direct Probe and Cable	WG-218
		Pin plug, black	47089	DC Probe	WG-222
				Ohms cable (with probe & plug)	93859
				Ground cable (with alligator clip & plug)	93832
				Slip-on alligator clip	59410

\*Supersedes WG-216A probe. Has slightly different input characteristics as described in instruction booklet for type WO-56A oscilloscope  
 †For instruments with Code Nos. 252, 252A, and 353  
 ‡For all instruments except those with Code Nos. 252, 252A, and 353

# ACCESSORIES FOR RCA TEST EQUIPMENT

Description	Stock or Type No.	Description	Stock or Type No.	Description	Stock or Type No.
1.5-volt battery	VS036	Mounting Plate for UHF Traps	WG-228	161 Signalyst®	
Crystal-Diode Probe	WG-264	Binding Post (less insulator)	95732	Output cable, black (complete)	35431
High-Voltage Probe	WG-289	Alligator clip (for WG-224 pad)	59410	RF-output adapter	35434
Multiplier Resistor for High-Voltage Probe	WG-206	<b>WA-44A Audio Signal Generator</b>		IF-output adapter	35696
Jack, black	93875	Output Cable	97564	Jack, red	33890
Pin plug, black	93856	"Slip-on" alligator clip	59410	Jack, black	33891
<b>WV-98A Senior VoltOhmyst</b>		Binding Post (LINE FREQ.)	98479		
Multiplier Resistor for High-Voltage Probe	WG-206	Binding Post (GROUND)	99329		
Crystal-Diode Probe	WG-301A	Alligator clip (for ground lead)	35262		
High-Voltage Probe	WG-289	Insulator, for alligator clip	99539		
DC /AC-Ohms Probe and Cable	WG-279A	<b>WR-46A Video Dot/Crosshatch Generator</b>			
Ground cable with clip	48996	Output-Cable Assembly, with four leads, clips, and insulators	211915		
"Slip-on" alligator clip	210088	Cable lead, single, with clip	211889		
Insulator, for Alligator Clip	204717	Alligator clip	35262		
<b>165, 165A Junior VoltOhmyst</b>		Alligator clip, with piercing needle	211883		
DC cable, blue (with probe)	43915	<b>WR-49A RF Signal Generator</b>			
AC/Ohms cable, red (with probe)	43913	Output Cable	97564		
"Common" lead, black (with clip)	43914	"Slip-on" alligator clip	59410		
Clip for probes	35267	Alligator Clip (for Ground Lead)	35262		
Probe for "AC/Ohms" cable	46533	Insulator, for alligator clip	99539		
Jack, black	50404	<b>WR-53A FM Sweep Generator</b>			
Jack, red	50403	Connector switch	54685		
<b>195, 195A VoltOhmyst</b>		Output cable (complete)	54662		
DC cable, blue (with probe & pin plug)	48994	Power cord (including plugs)	53678		
AC/Ohms cable, red (with probe)	48995	Clip lead for output cable	54663		
"Ground" lead, black (with probe & pin plug)	48996	Clip lead for output cable	54664		
Jack, black	56326	Jack, red	56326		
Pin plug, black	47089	Jack, blue	56326		
		Jack, black	55326		
		<b>WA-54A Audio Oscillator</b>			
		Power cord (including plugs)	53678		
		Binding post, pin-plug type, red	47089		
		Binding post, pin-plug type, black	47062		
		Jack, red	56326		
		Jack, blue	56326		
		Jack, black	55326		
		<b>WR-59A TV Sweep Generator</b>			
		IF/VF-output cable (including co-ax connector and two clips)	59343		
		RF-output cable (including twin-ax connector and three clips)	55280		
		Power cord (including plugs)	53678		
		Binding post, pin-plug type, black	47062		
		Jack, red	56326		
		Jack, blue	56326		
		Low-Pass Filter Kit	WG-219		
		<b>WR-59B TV Sweep Generator</b>			
		(Serial Numbers below 4501)			
		Binding post, pin-plug type	93855		
		IF/VF-output cable	59343		
		RF-output cable	55280		
		Jack, red	56326		
		Jack, blue	56326		
		Low-Pass Filter Kit	WG-219		
		<b>WR-59B TV Sweep Generator</b>			
		(Serial Numbers above 4500)			
		Binding post, pin-plug type	93855		
		IF/VF-output cable	59343		
		RF-output cable	55280		
		Jack, red	56326		
		Jack, blue	56326		
		Low-Pass Filter Kit	WG-219		
		<b>WR-59C TV Sweep Generator</b>			
		Binding post, pin-plug type	93855		
		IF/VF-output cable	59343		
		RF-output cable	55280		
		Jack, red	93875		
		Jack, black	93858		
		Video MultiMarker	WG-295A		
		<b>WR-61A Color-Bar Generator</b>			
		RF-Output Cable	204690		
		Video Output Cable	204691		
		TV-Input Adapter	204903		
		Alligator clip	35262		
		Insulator for alligator clip	204717		
		Test Lead	93832		
		<b>WR-61B Color-Bar Generator</b>			
		RF-Output Cable	204690		
		Video-Output Cable	204691		
		Ground Cable	93832		
		TV-Input Adapter	204903		
		<b>WR-67A Test Oscillator</b>			
		RF-output cable	52524		
		Power cord (including plug)	53678		
		Ground lead (for rf-output cable)	52525		
		<b>WR-86A UHF Sweep Generator</b>			
		RF-Output Cable	WG-227		
		50-300-ohm Padded Balun	WG-296		
		UHF Demodulator (for 300-950 Mc.)	WG-298A		
		<b>WR-89A Crystal-Calibrated Marker Generator</b>			
		RF-Output Cable	204240		
		Alligator Clip	35262		
		Binding Post (Ground)	99329		
		Phone-Tip Jack (red)	93875		
		Phone-Tip Connector (red)	93857		
		Power cord, with male con.	70392		

## CHANALYSTS®

<b>162, 162A Chanalyst</b>	
AF test-cable assembly, green	35263
Oscillator test-cable assembly, brown	35266
RF/IF test-cable assembly, red	35264
Voltmeter test-cable assembly, blue	35265
Clip for probes	35267
Flex. (probe) connector	35710
<b>162B Chanalyst</b>	
AF test-cable assembly, green	35263
Interchannel cable assembly, black	46685
Oscillator test-cable assembly, brown	35266
RF/IF test-cable assembly, red	35264
Voltmeter test-cable assembly, blue	35265
Clip for probes	35267
Flex. (probe) connector	35710
<b>162C Chanalyst</b>	
AF test-cable assembly, green	35263
Ground lead, black	48996
Interchannel cable, black	46685
Oscillator test-cable assembly, brown	35266
RF/IF test-cable assembly, red	35264
Voltmeter test-cable assembly, blue	35265
Clip for probes	35267
Binding post, pin-plug type, red	47089
Binding post, pin-plug type, black	47062
Flex. (probe) connector	35710
Jack, red	56326
Jack, blue	56326
Jack, black	53326
<b>170 Audio Chanalyst</b>	
AF-IN. & voltmeter cable (incl. probe and connector)	44842
Ground cable, black (incl. clip & pin plug)	44844
Clip for probes	35267
Power cable (incl. plug)	52556
<b>170A Audio Chanalyst</b>	
(Interchannel) shielded cable assembly, black	49320
Power cord (including plugs)	52556
Binding post, pin-plug type, red	47089
Binding post, pin-plug type, black	47062
AF test-cable assembly, green	35263
Voltmeter test-cable assembly, blue	35265
Test cable, black	49321
Test cable, red	49322

## OTHER TEST EQUIPMENT

<b>WP-23A Regulated Power Supply</b>	
Power cord (including plugs)	53678
<b>WT-100A Electron-Tube MicroMhoMeter</b>	
<b>Multiple-Socket Plug-in Units:</b>	
Miniature 7-Contact, Novel 9-Contact, and Octal 8-Contact	WG-229A
Lock-in 8-Contact and Combination including Small 7-Contact, Medium 7-Contact, as well as Large Center Contact for testing miniature lamps having screw- or bayonet-type bases	WG-230A
Small 4-Contact, Small 5-Contact, and Small 6-Contact	WG-231A
Subminiature 8-Contact (Circular), Subminiature 7-Contact (In Line), and Acorn 7-Contact (For 5- and 7-pin types)	WG-232A
<b>Industrial Socket Plug-in Units:</b>	
Miniature 7-Contact	WG-233A
Octal 8-Contact	WG-234A
Novel 9-Contact	WG-235A
Binding Post (black)	46907
Tube-Pin Straightener (7-pin)	209583
Tube-Pin Straightener (9-pin)	209584
Tube Top Cap (black plastic)	210753
<b>182-A Dynamic Demonstrator</b>	
Pair of test cables	70355
Cable clip	70354
<b>WG-260 Test-Point Adapters (MI-18760)</b>	
8 pin octal	51354
8 pin lockin	51355
6 pin small	51356
7 pin small	51357
4 pin small	51358
5 pin small	51359
7 pin small	51360

# RADIO PHONO TV TIPS

## Solderless Connections

RCA television chassis beginning with number KCS-95 utilize a new type of electrical connection that does not require soldering. This connection consists of six or seven turns of wire tightly wrapped on a stake or terminal. Wire-wrap connections will be used in many locations throughout the receiver but will be found most frequently as terminal connections on printed-circuit boards.

In making this type of connection, the wire is wrapped on the terminal with a power tool similar to an electric hand drill. The machine spins the wire on the terminal with such force that the edges of the terminal bite into the copper wire and hold it firmly under tension. A wire-wrap connection does not need to be soldered, as it is electrically and mechanically equivalent to a soldered connection. However, if during the servicing of a receiver it should become necessary to open one of these connections, the wire should be soldered to the terminal when it is replaced.

## Linearity Adjustments: 90° Deflection Chassis

Adjustment of the horizontal drive, width, and linearity controls of a TV receiver directly affects the horizontal linearity of the picture. However, because the supply voltage for the vertical oscillator (the B-boost voltage) is a product of the horizontal flyback circuit, it is possible for the horizontal controls to be misadjusted to the extent that vertical linearity will also be affected.

Another effect of misadjustment of the horizontal controls is excessive current in the horizontal output tube. Possible consequences of this excessive current are fuse burn-out, early tube failure, and component failure in the horizontal output circuit.

The proper method of adjusting the horizontal drive, width, and linearity of RCA 90° deflection chassis is:

- 1) Turn the "Width" control to its maximum counter-clockwise position.
- 2) Turn the "Horizontal Drive" trimmer clockwise until tight, then back off two turns counter-clockwise. If an overdrive line appears before you have backed off two turns counter-clockwise, turn the trimmer clockwise until the line just disappears.

3) Insert a 0-500 ma meter in place of the high-voltage fuse. Adjust the horizontal linearity control for a minimum reading on the meter. Repeat step 2 to obtain maximum drive without overdrive. Readjust linearity for minimum meter-reading.

As an alternate method of obtaining minimum current in the horizontal output tube, a pilot lamp may be inserted in series with the plate lead of the tube. A #44 or #45 pilot lamp connected in this manner will become bright when the plate current is maximum, and dim as the current reaches a minimum. Should the bulb dim at two settings of the linearity control, select the setting indicating minimum current (minimum brightness of the test bulb).

4) Adjust the width control for sufficient width to slightly overscan the picture area. If overdrive line appears; decrease the drive.

The corresponding adjustments for TV chassis without a horizontal linear-

ity coil should be made as follows:

- 1) Turn the width control to its maximum counter-clockwise position.
- 2) Adjust the drive trimmer counter-clockwise from tight, or until just before the overdrive line appears.
- 3) Readjust width control for sufficient width to slightly overscan the picture area. Repeat drive adjustment to obtain maximum drive without overdrive.

Since all the above adjustments may have an interlocking effect on other set-up adjustments, the vertical height and linearity controls, the centering adjustment, and the position of the ion trap should be checked following the horizontal adjustments.

To sum up the discussion of horizontal adjustments to TV chassis with 90° deflection, the objectives are:

- 1) Minimum loading in the plate circuit of the horizontal output tube (width core counter-clockwise).
- 2) Maximum drive to the grid of the horizontal output tube (counter-clockwise adjustment).
- 3) Minimum current in the output tube (adjustment with current-indicating device — or adjust for maximum stretch of the right side of the picture).

Because of interaction between adjustments, it will usually be necessary to repeat adjustments in order to obtain these desired results.

## Addition of 'Z-Axis' Input to WO-78A Oscilloscope

BY JOHN R. MEAGHER

RCA author, lecturer, and nationally known TV servicing authority

In certain applications, it may be desired to inject brightening or darkening markers on the cathode-ray oscilloscope trace. Such applications require provision for "Z-axis" input, which can be added to many oscilloscopes. A circuit and instructions for adding "Z-axis" input to the wide-band RCA WO-78A Five-Inch Oscilloscope are given below.

The following parts are required:

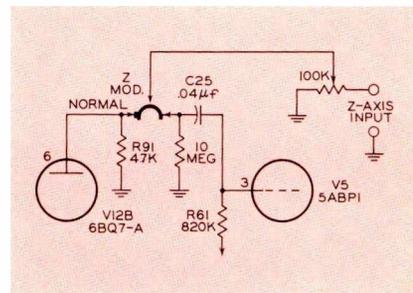
- (1) Potentiometer, carbon, 100,000 ohms;
- (2) Resistor, composition, 10 meg-ohms  $\pm 20\%$ ,  $\frac{1}{2}$  watt;
- (3) Wafer switch, 2 position — 1 pole;
- (4) Capacitor, paper, 0.04  $\mu$ f, 1600 volts dc;
- (5) Binding posts, insulated (two).

The modification procedure is as follows:

- 1) Replace C-25 (0.01  $\mu$ f, 1600 volts) with a 0.04  $\mu$ f 1600-volt capacitor.
- 2) Insert the wafer switch between R-91 (4700-ohm resistor in plate circuit of V12B) and C-25.

The new parts should be mounted on the vertical panel that supports the neck of the cathode-ray tube. The 100,000-ohm potentiometer serves as an adjustable attenuator for the signal applied to the "Z-axis" binding post. The "on-off" selector switch for "Z-axis" modulation can be operated from the rear of the WO-78A if the switch shaft is permitted to project through the case. This arrangement keeps all leads relatively short.

The intensity control on the WO-78A should be adjusted toward minimum brightness to permit acceptance of the additional modulation voltage applied to the "Z-axis."



Schematic diagram showing modification of WO-78A necessary for "Z-axis" input.

# Business-Aids Spur Battery Sales

Service-dealers who have tied in with the latest RCA battery advertising and sales promotion program are finding it extremely beneficial in moving RCA's comprehensive portable radio battery line, especially during these warm-weather months.

If you haven't already capitalized on this intensive consumer-aimed campaign, it will be to your advantage to discuss it immediately with your local RCA battery distributor. Certainly you don't want to miss out on such a good bet for livening your sales and boosting your profits.

Here are the impressive selling tools and persuasive merchandising material which are part and parcel of the current RCA battery program:

(1) RCA Battery Counter Merchandiser (Form 4F321)—a sturdy, smart, and colorful display stand that is believed to be the finest of its kind ever designed for the battery trade. With it, you can set up a prominent display of assorted RCA battery types—an effective in-store merchandising technique to remind your customers and prospects to purchase dependable, longer-lasting RCA batteries.

(2) Illuminated Display (Form 4F325)—an eye-catching display unit that is tailor-made for your store window. With a flashing light and interesting color-planes, the Illuminated Display is sure to attract the attention of passersby and turn prospects into customers quickly. This display can serve as a night light, too, and can be used effectively on counter or shelf as an in-store merchandising aid.

(3) 1956 RCA Battery Select-O-Meter (Form 4F327)—a truly unique battery-operated game that will create a sensation among your customers, stimulating impulse battery sales at the flash of a light. Press the selector under a specific portable radio's picture and—presto!—the RCA battery complement for the portable flashes on.

Colorful and inviting, the new version of a proven sure-fire profit-building device pictures 90 leading portables and indicates their recommended RCA battery complements.

The Select-O-Meter comes complete with light bulbs and an RCA VS036 cell.

(4) "Portables Come to Life with RCA Batteries" Poster (Form 4F322)—one of the most compelling battery business-builders available. A uniquely designed easel gives this colorful poster great versatility. You can use it as

a display unit on your counter or in your store window. Or you can reverse the easel and hang it from the wall. Or you can remove the easel and paste this poster to your store front or on the wall behind your counter.

(5) "Portables Come to Life with RCA Batteries" Window Streamer (Form 4F326)—an attention-getter that will help you pull in more battery business during this peak radio season. You also can use the streamer in your store as a reminder to your customers to get the best in portable-radio enjoyment with a fresh complement of RCA batteries.

(6) "Portables Come to Life with RCA Batteries" Decal (Form 4F324)—an attractive emblem that will quickly identify your store as local headquarters for RCA batteries. Easily applied to door or store window, this colorful decal will stimulate your store traffic for years.

(7) Dealer Advertising Aids—new, especially prepared newspaper ad mats and spot radio and TV commercials with which you can do an effective local advertising job, quickly spreading the good word that you recommend and sell RCA portable radio batteries. Make your final selection of ads for community newspaper insertions from the Dealer Ad Sheet (Form 4F323), which illustrates nine small- and medium-sized ad mats (Forms 4F323A-H and J). Choose your radio and TV commercials from the five sample dealer spot scripts (Form 4F328A-E).

(8) Repeat Business Stamp and Pad (Form 3F413)—a handy item to bring customers back to your store for repeat purchases. You can use this personal-



Illuminated Display (Form 4F325)

ized rubber stamp and ink pad to imprint your store name in the imprint area appearing on all top-volume RCA radio batteries. And you can use the stamp and pad effectively for mailings, too.

(9) RCA Sales Slip Register (Form 3F470)—for recording each service transaction and product sale quickly and accurately, and for providing duplicate receipts for your customers. The compact Sales Slip Register is attractively finished in red metal and tastefully promotes RCA radio batteries at the counter.

The Sales Slip Register comes complete with 1,000 continuous-roll RCA Battery Sales Slips. Provided for on each slip is a special space in which you can imprint your store name and address with your RCA Repeat Business Stamp.

• • •

Remember: the powerful advertising and promotion items noted above are still available from your local RCA battery distributor. However, since there is no guarantee how long his supply will last, you would be wise to ask him today how you can obtain *your* share of these winning business aids.

## BATTERIES FOR TRANSISTORIZED PORTABLES

Here's good news! To increase your profit potential from selling replacement batteries for the ever-increasing number of transistorized portable radios in use, RCA recently announced the VS304, VS305, and VS306. With the addition of these new types, your RCA distributor now can supply you with a comprehensive line of RCA batteries for virtually all transistorized portable radios.

The new RCA VS304, VS305,

and VS306 batteries—along with the previously announced RCA VS400—are intended for replacement use in transistorized portable radios currently marketed by such companies as General Electric, Raytheon, Motorola, Emerson, and DeWald.

RCA's battery line also includes the VS300 and VS301, which are used in two popular RCA transistorized portable radios—Model Numbers 7BT9J and 7BT10K.

# RCA's Gold Label Speaker Line a Boon to

BY D. H. CUNNINGHAM

Manager, Speaker & Relay Development,  
RCA Components Division

As evidenced by the increasing acclaim from service-dealers across the country, RCA's line of Gold Label speakers is establishing itself as the dependable speaker line for virtually all home radio, phonograph, auto radio, television or public address replacement applications.

Reasons for the popularity of Gold Label speakers among service-dealers are not hard to find. One important reason is that *all* speakers in the line follow RETMA mounting standards. In addition, the features usually cited by service-dealers in praise of Gold Label speakers are (a) their excellent sensitivity, (b) their superior tone quality, and (c) their durability. These are the features service-dealers have always desired in a speaker because these are the essentials for customer satisfaction in any speaker replacement application. These are the

features that have been specifically *designed into* every speaker in the Gold Label line.

Take magnets, for example. Alnico V material of high energy product is specified for all speakers in the RCA Gold Label line. Close quality control inspections are made during manufacture to insure proper magnetic performance, mechanical dimensions, and freedom from defects.

## The 'Heart' of a Speaker

Then, consider the "heart" of a speaker — the voice coil. The performance and potential life of a speaker are determined in large measure by the design and construction of its voice coil. RCA voice coils start with a rigid, preformed coil support. Then, special machines automatically wind the voice coil on the support. Finally, both support and coil winding are firmly bonded with a specially formulated cement.

RCA has spent many thousands of dollars in the mechanization of voice coil manufacturing processes. This mechanization, plus RCA's years of

experience in the design and construction of voice coils, is responsible for the fine quality, low distortion, and long life of RCA's popular Gold Label line of replacement speakers.

• • •

Other outstanding design features in Gold Label speakers include the following:

- Anchorage of the flexible voice coil leads to the voice coil form, rather than to the cone.
- Firm mechanical anchorage of the magnets to prevent shifting of center poles; no cement is used in magnet assembly.
- Highest-quality, moisture-resistant cones and center suspensions which minimize defects due to age and humidity.
- Assembly processes which provide free-floating voice coils and cones to minimize internal stresses that might cause distortion.
- Speakers individually jigged and assembled for uniformity.
- And here's an extra "plus" for the Gold Label line: every speaker is in-

## PERMANENT-MAGNET TYPES

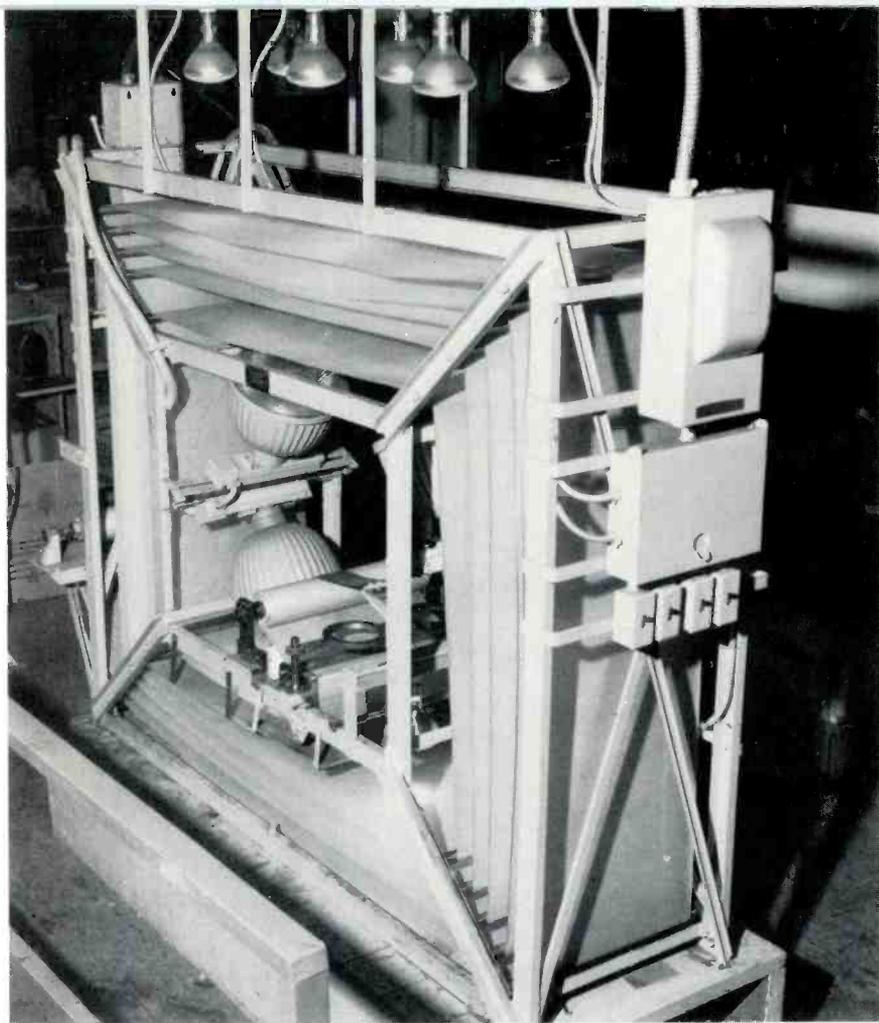
SIZE inches	TYPE	ALNICO V MAGNET WEIGHT ounces	VOICE- COIL IMPEDANCE ohms	POWER RATING watts	MOUNTING DIMENSIONS - inches													MAX. DEPTH-inches			
					FIG.	A	B	C	D	E	F	G	H	J	K	L	M	FIG.	P		
2 3/4	22251	1.0	12	0.25	1	1 1/8													9	1 5/16	
2 x 3	21451	1.0	12	0.125	2		1 1/2	2 7/32											9	1 9/16	
3	21651	1.0	3.2	2	3				3 3/8										9	1 31/32	
3	23151	1.47	3.2	2	3				3 3/8										9	1 31/32	
4	22351	0.68	3.2	3	3				4 1 1/16										9	2	
4	30452	1.0	3.2	3	3				4 1 1/16										9	2	
4	40452	1.47	3.2	3	3				4 1 1/16										9	2	
4 x 6	22751	1.0	3.2	3	4				3 3/8	4 5/8									9	2 3/16	
4 x 6	24652	0.68	3.2	3	4				3 3/8	4 5/8									9	2 3/16	
4 x 6	44652	1.47	3.2	3	4				3 3/8	4 5/8									9	2 3/16	
5	20552	0.68	3.2	3	5						4 1 1/16								9	2 5/16	
5	22851	1.0	3.2	3	5						4 1 1/16								9	2 5/16	
5	40552	1.47	3.2	3	5						4 1 1/16								9	2 5/16	
5 3/4	21751	1.0	3.2	4	5						5 13/32								9	2 1/2	
5 x 7	23251	3.16	3.2	7	6							4 1 1/32	4 1 1/32						9	3 1/4	
5 x 7	23351	2.15	3.2	6	6							4 1 1/32	4 1 1/32						9	3 1/4	
5 x 7	25751	1.47	3.2	6	6							4 1 1/32	4 1 1/32						9	3 1/16	
6 1/2	22451	1.47	3.2	5	5					6 1/8									9	2 7/8	
6 1/2	22951	1.0	3.2	4	5					6 1/8									9	2 7/8	
6 1/2	23051	3.16	3.2	6	5					6 1/8									9	3 3/64	
6 x 9	23551	2.33	3.2	8	7										6 9/16	4 5/8			9	2 15/16	
6 x 9	23851	2.15	3.2	8	7										6 9/16	4 5/8			9	3 1/2	
8	20852	2.15	3.2	8	5					7 5/8									9	3 5/8	
8	20854	2.15	6-8	8	5					7 5/8									9	3 5/8	
8	22551	3.16	3.2	8	5					7 5/8									9	3 9/16	
8	23451	6.8	3.2	9	5					7 5/8									9	4 1/8	
10	21551	6.8	6-8	10	8													9 5/8	9	4 25/32	
10	23651	2.15	3.2	7	8													9 5/8	9	4 1 1/32	
10	23751	3.16	3.2	8	8													9 5/8	9	4 1 1/32	
12	11251	2.15	3.2	12	8														11 9/16	9	5
12	22651	2.9	3.2	12	8														11 9/16	9	4 25/32
12	41256	6.8	3.2	12	8														11 9/16	9	5 7/16
12	41257	6.8	6-8	12	8														11 9/16	9	5 5/8

# Service Industry

dividually tested and inspected by skilled operators before it leaves the RCA factory.

Speaker sizes in the Gold Label line range from the 2½-inch 239S1 up through 12-inches. As shown in the accompanying table, there is also a wide selection of magnet sizes to fit all applications. Voice-coil impedances include 3.2-ohms, 6-8 ohms, and 12-ohms.

More than 25 years of continued advancement in loudspeaker design is incorporated in the manufacture of each Gold Label speaker. Offering highest quality at moderate price, standard mounting sizes, and a wide range of magnet weights, speaker shapes and sizes and voice-coil impedances, the RCA Gold Label line of replacement speakers has been justly hailed as the finest line for radio, TV, and PA replacements.



Specially designed equipment shown at right applies an even coating of cement to selected paper stock—first step in the production of uniform, rigid voice coil supports for RCA Gold Label speakers.

## FIELD-COIL TYPES

SIZE inches	TYPE	FIELD-COIL RESISTANCE ohms	FIELD-COIL CURRENT ma	VOICE-COIL IMPEDANCE ohms	POWER RATING watts	MOUNTING DIMENSIONS - inches											MAX. DEPTH-inches			
						FIG.	A	B	C	D	E	F	G	H	J	K	L	M	FIG.	P
4 x 6	746S1	450	65	3.2	3	4					3%	4%							9	2¾
5	705S1	450	65	3.2	3	5						4 1/16							9	2½
6 x 9	869S1	6	1000	3.2	8	7									6 9/16	4%			9	4¼
12	712S2	1000	70	3.2	12	8											11 9/16		9	6

## DIMENSIONAL OUTLINES

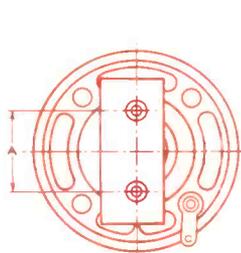


Fig. 1

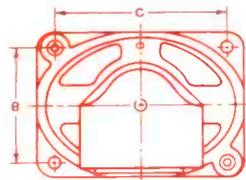


Fig. 2

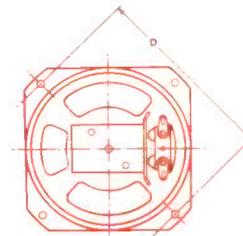


Fig. 3

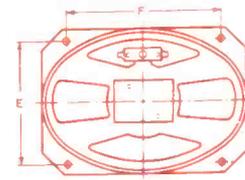


Fig. 4

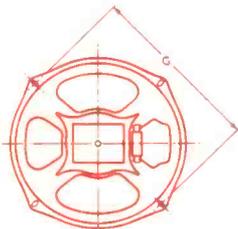


Fig. 5

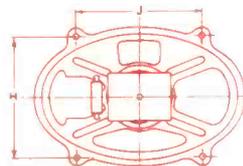


Fig. 6

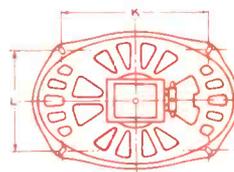


Fig. 7

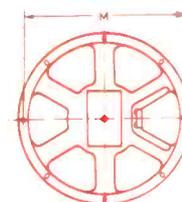


Fig. 8

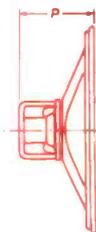


Fig. 9



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New York, N. Y.  
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Tube Division  
Harrison, N. J.

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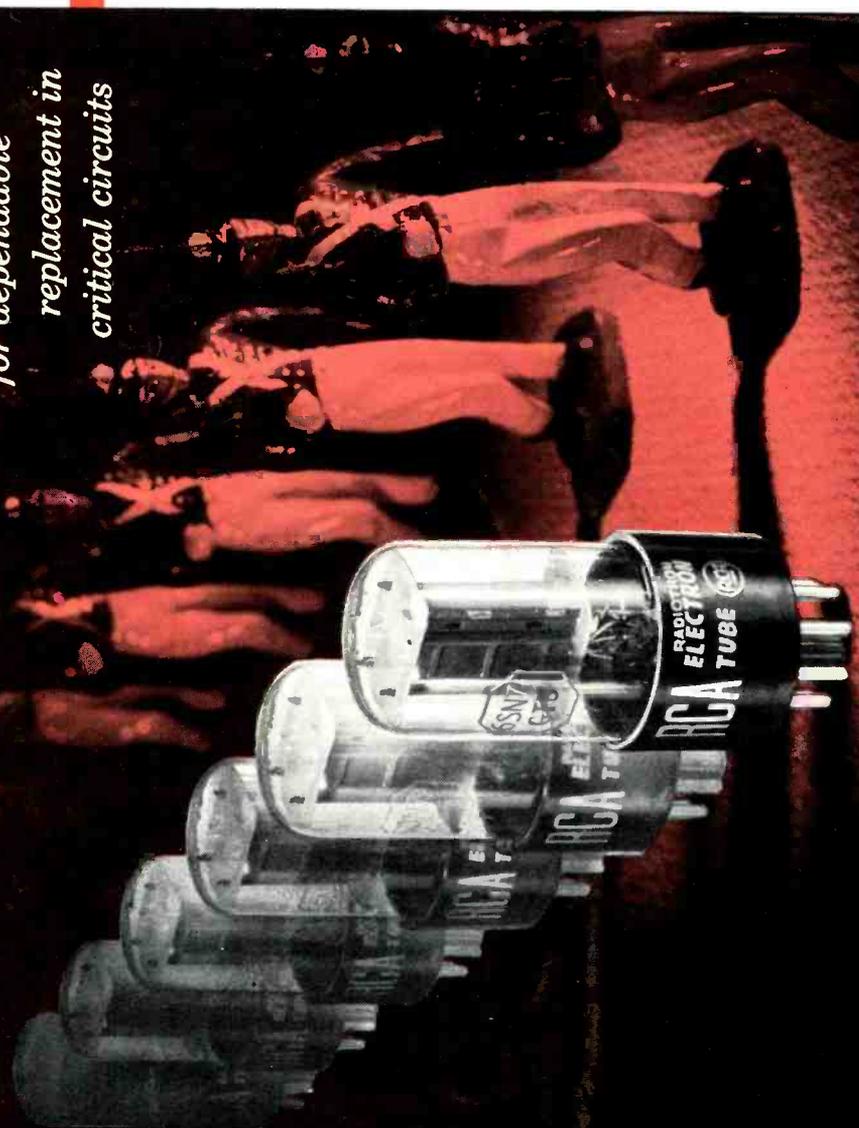
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**TO**

SN  
PURCELL RADIO  
& ELECTRIC CO  
841 CENTRAL  
HORTON KANS

Form 3547 Requested

**ELECTRICAL UNIFORMITY**  
*for dependable  
replacement in  
critical circuits*



A BASIC ENGINEERING FEATURE OF RCA RECEIVING TUBES

To cut down on "tube juggling" and circuit realigning, RCA controls the quality of your tubes for you—at the factory.

Take the RCA-6SN7-CTB, for example. Every single tube—not just one out of a batch—is subjected to no less than 11 tests for individual electrical characteristics. Before and during manufacturing, RCA closely controls such things as: (1) Cathode material to insure uniform cathode emission and minimize interface resistance, (2) Heater wire to assure even cathode temperature, (3) Grid dimensions and inside plate diameter to insure uniform transconductance, (4) Mica hole size and hole spacing to reduce microphonics.

Yes, you can rely on the electrical uniformity of RCA Receiving Tubes! Tell *your* distributor to fill *your* tube order with *RCA Tubes only!*

Just released: 28 page booklet, "RCA Receiving Tubes for AM, FM and TV." Up-to-date. Gives characteristics and socket connections for more than 600 types. See your RCA distributor for Form 1275-G, or write RCA, Commercial Engineering, Harrison, N.J.



**RCA**  
**RECEIVING TUBES**  
RADIO CORPORATION OF AMERICA, HARRISON, N. J.