

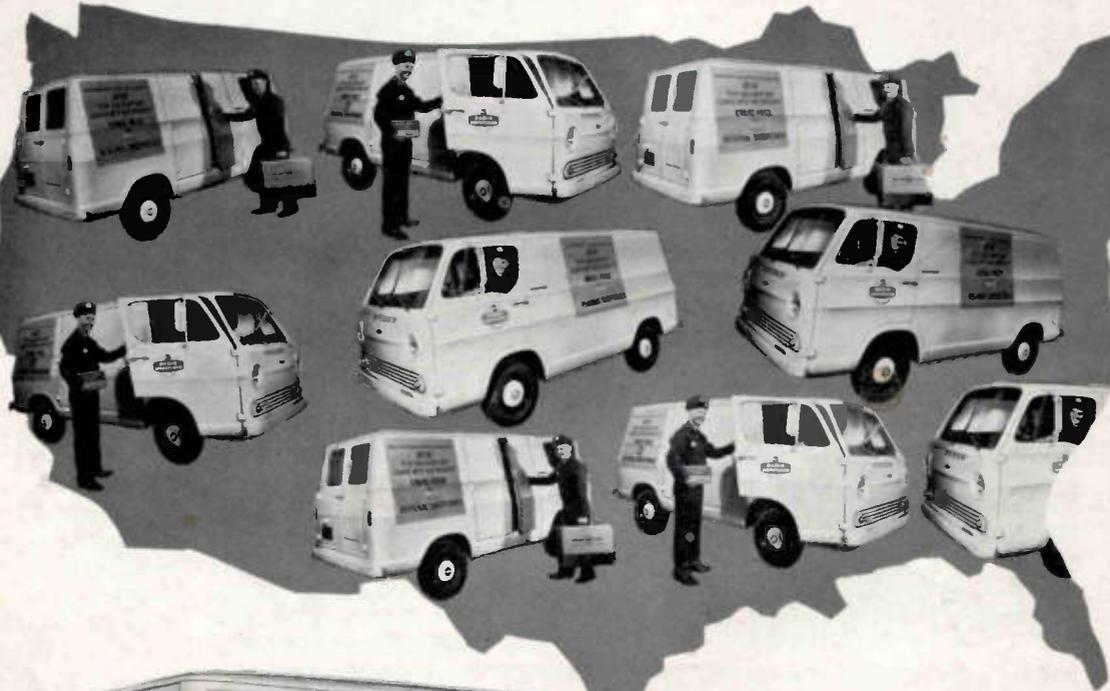


RADIO AND TELEVISION

# Service News

A PUBLICATION OF RCA ELECTRONIC COMPONENTS AND DEVICES

**FREE** ... From RCA  
**126**  
Sensational Prizes!



SPRING  
1965



One of These  
**9** Brand New CHEVY-VANS  
Loaded With Valuable RCA  
Products MAY BE YOURS!

Vol. 30, No. 1

**OR** ... You may be eligible to win any one of thirteen other superb prizes to be awarded in EACH of nine separate regions of the United States. These fabulous giveaways are all part of RCA's exciting 1965 Regional Sweepstakes — created for Radio/TV/Hi-Fi Service-Dealers and Technicians **EXCLUSIVELY!** For complete details on one of the servicing industry's biggest prize-promotions ever, see story pages 4-5.

# Three New Reference Aids Available From RCA Distributors

Keeping your reference library up to date?

Having product information at your fingertips when and where you need it is a sure way to keep a job running smoothly. The time you save by quickly spotting a replacement type or particular application can more than pay for your comparatively small investment in technical literature.

Among the more recently announced RCA reference booklets are the 1965 edition of the popular battery catalog, a new receiving tube and picture tube catalog, and a revised and updated interchangeability guide for foreign versus U. S. A. receiving tubes.

- **RCA Batteries (BAT-134C)** — a completely revised and expanded 32-page catalog designed for appearance, legibility, and comprehensive coverage. With battery applications growing by leaps and bounds, this handy reference aid is a "must" item for every technician, and offers detailed information on RCA's extensive line of 142 battery types for radios, industrial applications, emergency lighting, ignition service, toys, and experimental purposes. The latest edition features a revised and expanded Classification Chart; a revised Data Characteristics Chart; an expanded Battery Replacement Guide — covering more than 3,200 portable radio models from 1948 to 1964 for almost 300 domestic and foreign manufacturers; an expanded Battery Interchangeability Directory which lists the RCA replacement battery types for comparable types of 13 other domestic manufacturers; a quick-reference Index for the 142 RCA battery types; and a new Cross-Reference Chart of NEDA versus RCA Battery type numbers.



The 1965 edition of the RCA battery catalog bears a "Suggested Price" of 35¢.

- **RCA Receiving Tubes and Picture Tubes (ERT-1275L)** — a detailed 56-page catalog featuring data on 1,285 RCA entertainment-receiving-tube types and 109 black-and-white and color-TV picture tubes.

Highlights of this classic RCA publication include a special quick-reference characteristics chart; expanded and detailed applications guide; detailed index-and-contents chart including family groups and similar types; new section on basing diagrams; and a new section on black-and-white and color-TV picture tubes.

The seven-page "Application Guide for RCA Receiving Type Tubes" section lists tube type numbers for 42 specific applications ranging from "Audio-Frequency Amplifiers" through "Video Amplifiers."

Comprehension of symbols relating to physical quantities, units, and special terms is aided by a "Key to Abbreviations" page. Also aiding the reader is a full-page table of "RCA Discontinued Receiving Type Tubes."

The "RCA Receiving Tubes and Picture Tubes" catalog carries a "Suggested Price" of 50¢.

- **RCA Interchangeability Directory of Foreign Vs. U. S. A. Receiving-Type Electron Tubes (ERT-197D)** — a revised and updated edition of one of RCA's more popular interchangeability directories for tube products. Specifically prepared to help you in selecting the proper U. S. tube type as a replacement for a foreign tube type, this eight-page

chart covers 900 receiving tube types for AM and AM-FM radios, TV receivers, and audio amplifiers. To facilitate your use of the chart, types in RCA's current line of tubes indicated as direct replacement types are shown in bold-face print.

This practical and frequently used reference aid bears a "Suggested Price" of only 10¢.

## New RCA Battery Types

RCA's extensive line of select batteries has been further broadened by the recent addition of the VS340, VS330, VS331, and VS312A.

The VS340 is a 12-volt special-purpose battery used in toy cars, fence controls, and hobby devices. It is interchangeable with the Eveready 1463, Burgess 2C8H, NEDA number 922, and RayOVac 922.

The VS330 and VS331 are 9-volt zinc-carbon types for light-industrial and special-purpose applications. The VS330 is interchangeable with the Eveready 2356N, Burgess C6X, and NEDA number 1612, while the VS331 is interchangeable with the Eveready 2761N, Burgess D6S, NEDA number 1608, and RayOVac 1608.

The VS312A is an improved version of RCA's 8.4-volt mercury-transistor-radio battery.

**RCA** RADIO AND TELEVISION SERVICE NEWS

**Service News**

A PUBLICATION OF RCA ELECTRONIC COMPONENTS AND DEVICES

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 troubleshooting and sales promotion techniques, sales and service aids, together with invaluable data on RCA tubes, transistors, batteries, and electronic instruments.

1965

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Radio Corporation of America



Shown at top left is RCA's 3-Prong Wire Rack Displayer (1P1193) for "top two" types. Only 4½ inches wide, it can accommodate 36 blister-pack packages of the popular VS323 and VS334 transistor-radio batteries. Center photo shows the Gravity-Feed Slide Rack for "top two" types (1P1192). Ideal for placement next to your cash register, the unit is less than 3 inches wide. Photo at right shows the Deluxe Counter Merchandiser (1P1183) for transistor-radio batteries.

## 1965 Program Geared to Help Dealers Get the Most Out of the Battery Business

# Product Display Key to Increased Sales

A dynamic, five-part program from RCA and your participating RCA battery distributor is targeted towards helping you—the radio/TV/hi-fi service dealer—achieve your share of the growth market in batteries in 1965.

With over 70 million transistor radios in use and a steady stream of new battery-operated devices creating new markets for "portable power," the consumer's dollar outlay continues to increase. And with this increase in his expenditures, the consumer looks for—and expects—a dependable source for his diverse battery needs.

To the forward-looking dealer, this means featuring a broad line of reputable, top-quality, moderately priced batteries—plus effective merchandising and promotional aids that establish his outlet as a local headquarters and supply point.

What better way to gain all these advantages at one stroke than by stocking RCA batteries—the name your customers look to for quality and dependability?

Offering you more support than ever to help you get the most out of the battery business, RCA's '65 program features top product displays, national advertising, reference aids, promotional material, and the prestige of "The Most Trusted Name in Electronics."

### A Merchandiser for Every Need

Highlight of the 1965 program is a selection of outstanding merchandisers designed to accommodate the needs of every dealer—regardless of his individual space requirements. Frequently overlooked as an important sales factor, product display more and more emerges as the dominant need toward registering more sales.

To quickly identify your outlet as a "battery headquarters," RCA makes available a selection of ten attractive merchandisers ranging in size from a few inches to a couple feet.

How do you prefer your batteries—in blister-packs or in bulk? Either way, you have a choice of five smart merchandisers in each category—all de-

signed to effectively display the product to your store customers.

For displays featuring RCA batteries in attractive blister-packs, you can select from among the 3-Prong Wire Rack Displayer (1P1193), 6-Prong Wire Rack (1P1112), or three different 12-prong units.

For bulk batteries, RCA offers the Slide Rack for "Top Two" Types (1P1192) or any of four others, including the handsome new Deluxe Counter Merchandiser (1P1183).

How much space can you allocate to batteries—a few inches or several feet? Again, RCA merchandisers can provide a fast answer to your needs. The gravity-feed Slide Rack for "Top Two" Types (1P1192) occupies a width of less than 3 inches. The Deluxe Counter Merchandiser (1P1183), on the other hand, can combine a broad selection of types in a handsome cabinet arrangement measuring slightly more than 2 feet in width.

Not to be omitted from RCA's wide assortment of merchandisers are two handy units for flashlight batteries.

The familiar and popular 3-in-1 gravity-feed rack for counter use (1P1114) places RCA flashlight batteries within convenient reach of your customers—as does the popular "Sell 'Em by the Bag" floor display unit (1P1177), an effective bin-type merchandiser that promotes the purchase of batteries in free plastic tote bags. These handy bags can be used by your customers again

and again for numerous purposes.

### Other Selling Aids

RCA's wide selection of "silent salesmen" for merchandising batteries at the point-of-purchase is only one phase of a vigorous across-the-board program aimed at helping you sell more product in 1965.

With these, you have a choice of colorful promotional material that can help you immediately impress your customers with the fact that they're making their purchases in a reliable, well-stocked battery headquarters.

Added to your promotional aids are several handy reference aids, featuring the 1965 edition of RCA's popular Battery Catalog (BAT-134G) and the brand-new RCA Battery Identifier Wall Chart (1P1187)—a perennial favorite among dealers.

### Network-TV Advertising

Lastly, but just as important, is the nation-wide support you receive through the impact of network-TV advertising. Again this year, Walt Disney's "Wonderful World of Color"—with an average viewing audience of some 27 million people—will carry RCA Radio Battery commercials concentrated to achieve maximum results during your key selling season.

Contact your participating RCA battery distributor to learn how you can benefit from RCA's battery-profit program for 1965.

Your participating RCA battery distributor will see to it that your purchases of RCA batteries bring you handy reference aids (left) and attractive promotional material (right) designed to increase store traffic and reduce selling time.



# 1965 Regional Sweepstakes Spots Nine Chevy-Vans Loaded

It's new, exciting, and a "winner"—one of the biggest prize bonanzas ever made available through RCA distributors to the nation's servicing industry!

Created and tailored *exclusively* for you—the Independent Radio/TV/Hi-Fi Service-Dealer and Technician—the "RCA 1965 Regional Sweepstakes" will present 126 outstanding prizes.

Each of nine separate regions of the United States will have 14 winners. This offer, of course, is not made in states and localities where restricted or prohibited, such as Wisconsin and Florida.

The Sweepstakes is easy to enter and "streamlined" for your benefit and convenience. You have **NOTHING TO WRITE! NOTHING TO BUY! NO JINGLES! NO GUESSWORK!** You merely visit your local participating RCA tube distributor to get your official entry blank, or ask your distributor's salesman to supply you with one. Fill it out and mail it to sweepstakes headquarters by April 1, 1965.

You may enter as often as you like, but *each entry must be mailed separately* and submitted in accordance with the rules outlined in the box below.

You then may be eligible to win any one of the 14 prizes being offered in your particular region. These consist of a Grand Prize, two Second Prizes, three Third Prizes, and eight Fourth Prizes.

• **Grand Prize: New 1965 Chevy-Van With RCA Products.** Every one of the nine regional Grand Prize winners will receive a brand-new 1965 Chevy-Van loaded with a selection of costly work aids and RCA products vital to the servicing needs of every radio/TV/hi-fi technician.

A spacious, easily-loaded-and-unloaded utility vehicle that every service-dealer has dreamed of owning at one time or another, the 1965 Chevy-Van features 211 cubic feet of load space and a load capacity up to 2,200

pounds. Ideal for service calls, this light van offers a large, flat floor; double side and rear doors; economical high-torque engine; tough, unitized body frame; flat, broad-view windshield; and underbody areas specially treated to resist rust and corrosion.

With the Chevy-Van, each winner of a Grand Prize receives two RCA Mark Nine CB Transceivers; a large RCA *Superweld* Treasure Chest Tube Caddy filled with RCA receiving tubes; a selection of three color-and black-and-white-TV picture tubes; a counter merchandiser stocked with RCA batteries for use in portable radios; two complete kits of RCA's newest, most popular replacement transistors for entertainment-type equipment; and five famous, high-precision RCA test instruments for color-TV servicing.

The pair of RCA Mark Nine CB Transceivers represents RCA's latest advances in 27-Mc radio-phone units. Introduced in 1964, the Mark Nine surpasses the predecessor-type Mark VIII in such additional useful features as a combination "S" meter and relative RF output meter; a spotting switch; and an external speaker jack. Here is the prac-

tical answer to a technician's requirements for fast, efficient, shop-to-truck communication during neighborhood service calls.

RCA's *Treasure Chest Tube Caddy* featuring "Superweld" vinyl protection and "slimmed-down" portability—is already well known among service technicians. Built for longer, harder wear, this large, popular tube caddy includes an enlarged side-section which maximizes its total capacity. As a portion of the Grand Prize, each *Treasure Chest Tube Caddy* is packed to the brim with fast-selling RCA entertainment-receiving-tube types for replacement use in radio, hi-fi, color- and black-and-white television receivers.

The three-unit selection of one color and two black-and-white television picture tubes features the popular RCA Colorama-type 21FJP22 and Silverama®-types 21CBP4A and 23BLP4. Each RCA Silverama picture tube contains all new parts and materials in a re-used envelope. Each RCA Colorama picture tube contains used materials that have been carefully inspected to meet RCA's high quality standards. In RCA Silverama, the television serv-

## Official Contest Rules

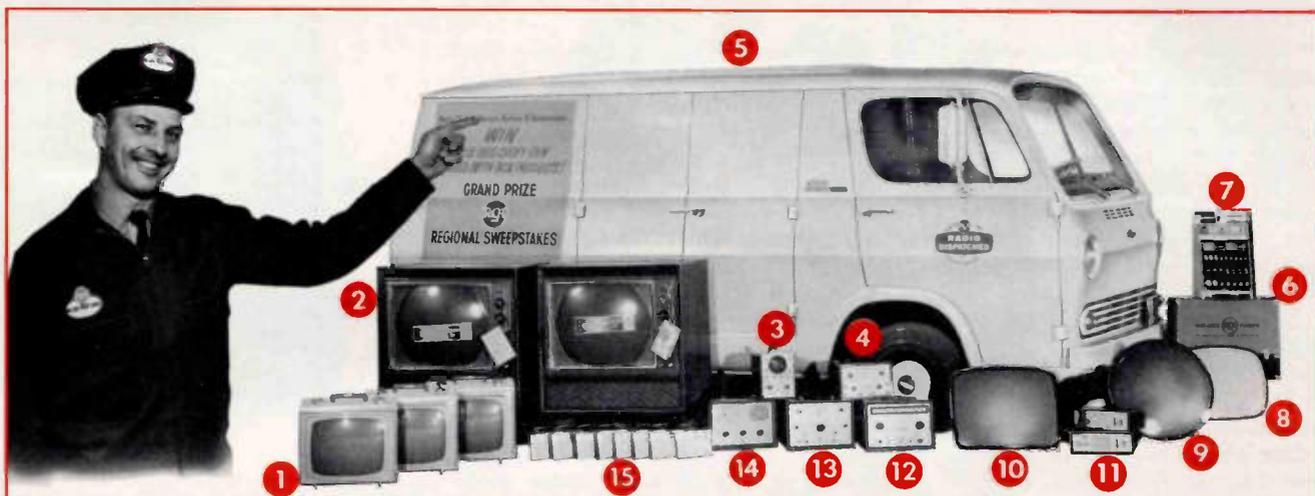
1. Sweepstakes limited to Radio/TV/Hi-Fi Service-Dealers and Technicians in the United States. This offer is not made in states and localities where restricted or prohibited, such as Wisconsin and Florida.
2. You may enter the RCA Sweepstakes by filling out an entry blank with your name and address, plus the name and address of your employer and your RCA Distributor. Get your entry blank from your RCA Distributor. Nothing to buy.
3. You may enter as often as you like—but each entry must be submitted according to the rules and mailed separately to:  

**RCA Sweepstakes**  
P. O. Box 394  
New York, N. Y. 10046
4. All entries must be postmarked by April 1, 1965, and received by April 10, 1965.
5. Only one prize will be awarded per person. No substitutes or equivalent cash values. Liability for federal, state, or other taxes is the sole responsibility of winners.
6. All entries become the sole property of Radio Corporation of America.
7. Winners will be selected in random drawings by the D. L. Blair Corporation, an independent judging organization, whose decisions are final. Prizes will be awarded equally among each of RCA Distributor Products' nine regions in the United States.
8. Winners will be notified by mail. List of winners may be obtained by sending a separate stamped, self-addressed envelope to RCA Sweepstakes Winners, P. O. Box 33, New York, N. Y. 10046.
9. Contest not open to RCA employees or RCA Distributors and their employees.

**See Your Participating RCA Distributor for Full Details and Entry Blank**



# With Choice Products Plus 117 Other Valuable RCA Prizes



## Win These Valuable Prizes

- |   |  |
|---|--|
| <ol style="list-style-type: none"> <li>1. RCA Victor "Funster" 16-inch Portable Television</li> <li>2. RCA Victor "Longport" 21-inch Color Television</li> <li>3. RCA WO-33A Super-portable 3-inch Oscilloscope</li> <li>4. RCA WR-70A RF/IF/VF Marker-Adder</li> <li>5. 1965 Chevy-Van</li> <li>6. RCA Treasure Chest "Superweld" Tube Caddy with RCA Replacement Receiving Tubes</li> <li>7. RCA "Low-Boy" Counter Merchandiser with RCA Batteries for Transistor Radios</li> </ol> | <ol style="list-style-type: none"> <li>8. RCA Silverama 21CBP4A</li> <li>9. RCA Colorama 21FJP22</li> <li>10. RCA Silverama 23BLP4</li> <li>11. RCA Mark Nine CB 27-Mc 2-way Radios</li> <li>12. RCA WR-99A Crystal-Calibrated Marker Generator</li> <li>13. RCA WR-69A Television/FM Sweep Generator</li> <li>14. RCA WR-64A Color Bar/Dot/Cross-hatch Generator</li> <li>15. RCA Victor "Marathon" 8-Transistor Portable Radios</li> </ol> |
|---|--|

Here are the top-quality products that will be awarded in your region — one of the nine territories of the United States that will equally share a total of nine Grand Prizes, 18 Second Prizes, 27 Third Prizes, and 72 Fourth Prizes. Included in the Grand Prizes are the Chevy-Van, two RCA Mark Nine CB transceivers, RCA Treasure Chest "Superweld" tube caddy filled with entertainment-receiving tubes, RCA television picture tubes, "Low-Boy" counter merchandiser filled with RCA radia batteries, two complete kits of RCA's "SK-Series" replacement transistars for entertainment-type equipment, and five outstanding RCA electronic test instruments for calar-TV servicing.

ice technician has a recognized quality leader in black-and-white replacement tubes, while RCA Colorama represents a front runner in the rapidly growing color-TV picture tube replacement market.

The colorful and attractive "Low-Boy" counter merchandiser featuring RCA batteries for portable radios is stocked with a balanced assortment of fastest-selling battery-types for transistor radios. With the consumer's dollar outlay in batteries constantly on the increase, this portion of the Grand Prize can aid the winner in capitalizing on a large-scale 1965 program developed by RCA to enable every dealer to move more batteries.

To broaden the selection of popular, famous-quality products presented to each Grand Prize winner, RCA includes two complete kits of its high-demand "Top-of-the-Line" replacement transistors, also frequently referred to as the "SK-Series."

These 10 germanium p-n-p and n-p-n types can speedily and economically fill

(Continued on next page)



Have you entered the RCA 1965 Regional Sweepstakes? If not, get this entry blank from your participating RCA distributor, fill it in, and mail it to "RCA Sweepstakes, P. O. Box 394, New York, N. Y. 10046. Mail in as many individual entries as you like. A total of one-hundred-and-twenty-six prizes awaits the lucky winners.

## RCA 1965 Regional Sweepstakes

(Continued from preceding page)

more than 2,000 replacement needs in automobile radios, battery-operated portables, phonographs, and tape recorders. Three p-n-p drift-field transistors are specially slotted for top-quality replacement service in standard-broadcast auto receivers, battery-operated portables, all-wave receivers, and FM and AM/FM receivers.

Each transistor in the SK-Series is individually packaged in an attractive carton which identifies the transistor by its SK-Series number and type of service. Also enclosed in each carton is a complete list of all transistor types replaced by the RCA type.

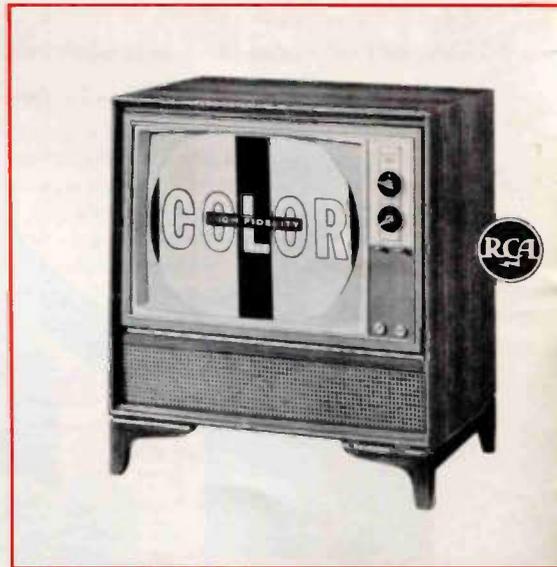
Adding the final "topping" to the fabulous array of choice items in each Grand Prize is an assortment of five versatile, widely popular RCA test instruments. Carefully selected to meet today's frequent and demanding requirements in the servicing of black-and-white and color-TV receivers—as well as FM receivers and other electronic equipment—this assortment features the WR-64A Color-Bar/Dot/Crosshatch Generator, WO-33A Super-Portable 3-Inch Oscilloscope, WR-69A

Television/FM Sweep Generator, WR-99A Crystal-Calibrated Marker Generator, and WR-70A RF/IF/VF Marker-Adder.

In this assortment, RCA—a pioneer of color television—brings you virtually all the instruments you need for color-TV servicing. The WR-64A Color-Bar/Dot/Crosshatch Generator, for example, is a lightweight, extremely portable instrument that provides all essential color-TV test patterns. Having only three controls, it's simple to operate. RF output leads connect directly to antenna terminals of receiver; no external sync leads required. Crystal-controlled signals help assure rock-steady patterns, free from "jitter" and "crawl."

The service-dealer or technician may find it difficult to see how all this tremendous value can be packed into a single prize—an award that will be repeated in nine different sections of the United States!

Actually, however, the nine Grand Prizes are only a part of RCA's 1965 Regional Sweepstakes. An additional 117 prizes—13 to a region—will consist of the following on a regional basis:



Eighteen of these handsome RCA Victor "Longport" 21-inch color-television receivers will be awarded as Second Prizes throughout the nine United States regions comprising the contest territory.



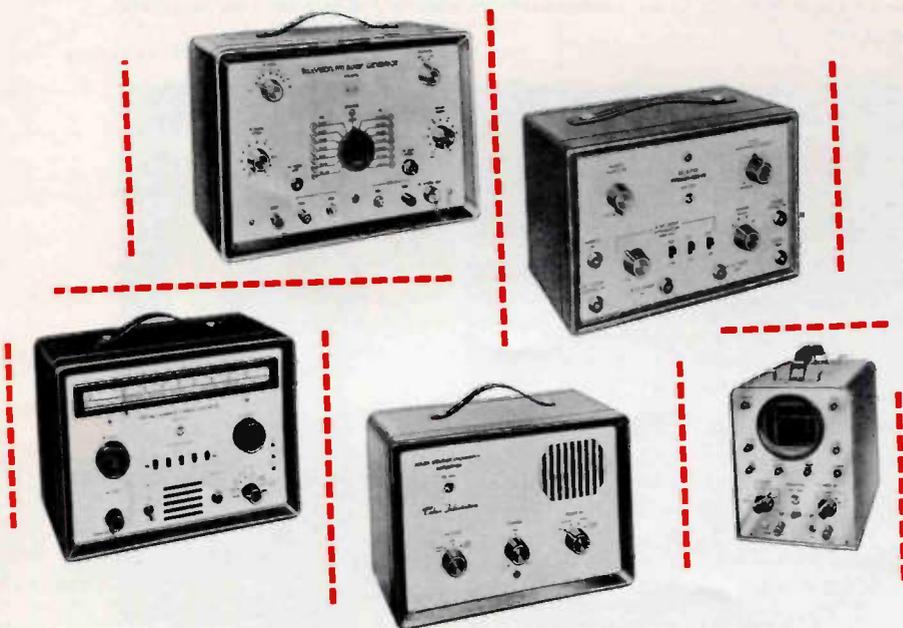
Fourth Prize consists of the RCA Victor "Marathon" 8-transistor portable radio. Seventy-two winners in the Sweepstakes will receive this smart portable, whose optimized 3-volt transistor circuit is engineered to rival table radios in sensitivity and selectivity.

- Two Second Prizes: RCA Victor "Longport" 21-Inch High-Fidelity Color-Television Receiver Model GF-641

- Three Third Prizes: RCA Victor "Funster" 16-Inch Portable Television Receiver Model AF-020

- Eight Fourth Prizes: RCA Victor "Marathon" 8-Transistor Portable Radio Receiver Model RFG20

Service-dealers and technicians already acquainted with the superior workmanship and performance of these units need no further details on engineering and circuitry advantages. It might prove a useful reminder, however, to mention how RCA "portable" entertainment enjoys economies sel-



Each Grand Prize in the 1965 Regional Sweepstakes includes these five popular and widely preferred RCA test instruments. Especially suited to color-television servicing, they are (left to right) the WR-99A Crystal-Calibrated Marker Generator, WR-69A Television/FM Sweep Generator, WR-64A Color-Bar/Dot/Crosshatch Generator, WR-70A RF/IF/VF Marker-Adder, and WO-33A Super-Portable 3-Inch Oscilloscope.



Twenty-seven of these popular RCA Victor "Funster" 16-inch portable TV receivers will be distributed among Third-Prize winners in the RCA 1965 Regional Sweepstakes.



1965 Chevy-Van features 211 cubic feet of load space and a weight capacity up to 2,200 pounds. Double side and rear doors and a large, flat floor make the vehicle an ideal conveyance for delivery and service calls. Operating economy is aided by tough, unitized body-frame construction and an efficient high-torque engine.



RCA Treasure Chest Tube Caddy, featuring "Superweld" vinyl covering for added durability. Each Grand Prize will include this popular tube caddy—completely loaded with fast-selling RCA entertainment-receiving-tube types for replacement use.

dom encountered among contemporary types. The RCA "Marathon" 8-Transistor Portable Radio, for example, is outstanding in power economy. Many so-called "shirt-pocket radios" use 9-volt batteries. The full-size "Marathon"

Also in the Grand Prize are two complete kits of RCA's popular "Top-of-the-Line" replacement transistors, also referred to as the "SK-Series". These 10 transistors can fill more than 2,000 replacement needs in auto radios, portable radios, phonographs, and tape recorders.



The RCA Mark Nine Citizens-Band 2-Way Radio features some of the latest advances in 27-Mc radio-telephone communication, including a combination "S" meter and relative RF output meter. Two of these popular transceiver units are included in each Grand Prize.

uses "D" batteries which last several times longer.

Altogether, the fabulous, 126-prize, RCA 1965 Regional Sweepstakes brings you—the Independent Radio/TV/Hi-Fi Service-Dealer and Technician—one of the decade's most exciting opportunities to take part in a prize-drawing programmed especially for you. No

guesswork—no jingles to write—nothing to buy! You merely obtain an entry blank, fill it in, and mail it—as many times as you wish.

Remember—the contest officially closes midnight April 1, 1965, so why not get started now on your entries if you haven't already done so. You may be one of the lucky winners!



# The Best of '65

## Program Helps Service-Dealers Promote Picture Tubes

The market for color-TV is booming and set sales continue to climb at unprecedented rates!

Sales of black-and-white-TV receivers continue to surge!

This means bigger-than-ever opportunities in the replacement picture tube business for service-dealers and technicians who focus their sales efforts on products of proven quality and dependability. The foremost leaders in quality and dependability are RCA Colorama and RCA Silverama®—the most widely advertised and promoted picture tubes in the industry.

To help you promote and sell these famous leaders in picture-tube performance, RCA and your RCA picture-tube distributor bring you "The Best of '65"—an all-star program featuring six outstanding servicing and promotional aids. These consist of a new flashing display, picture-tube replacement guide, picture-tube replacement chart, newspaper advertising mats, window streamer, and a practical giveaway.

- **Flashing Display (1D1207).** A real "curtain raiser" that puts emphasis on product leadership and your own expert TV service, this display simultaneously lights up an RCA Colorama and RCA Silverama message—calling fast

*The Picture Tube Replacement Chart (1D1208)—an important adjunct to the slide guide—can be placed on the wall of your store or service shop for quick reference to 111 RCA types and the more than 400 industry picture-tube types they are capable of replacing.*



*Curtain Raiser to "The Best of '65" promotional program for RCA replacement picture tubes is the Flashing Display (1D1207), which lets prospective customers know that the quality of your products is synonymous with the high quality of your service.*

attention to your top brands in color and black-and-white replacement picture tubes.

- **Picture Tube Replacement Guide (1D1206).** Back by popular demand, RCA's practical slide guide for selection of picture tubes is one of the most useful items of its kind ever introduced to the television service industry. The sophisticated and ingenious arrangement of information in the 1965 Guide enables you to quickly obtain replacement and interchangeability facts on more than 400 black-and-white and color-TV tube types. Compact and durable, this slide guide easily fits into your tube caddy for ready reference.

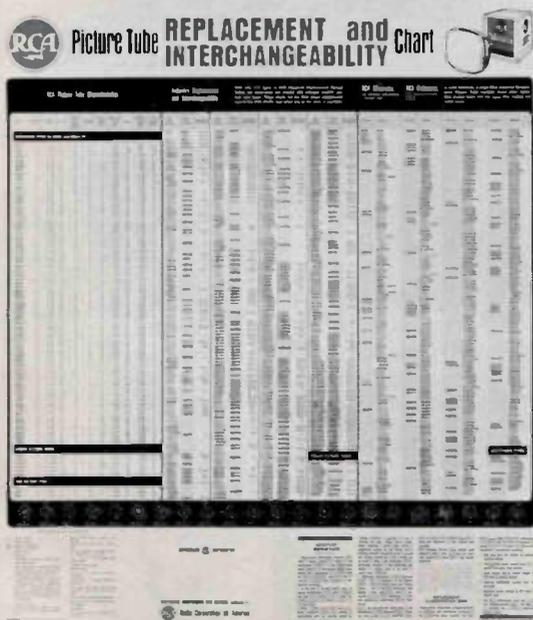
- **Picture Tube Replacement Chart (1D1208).** Here's an important accessory to the picture-tube slide guide that can be conveniently placed on the wall of your store or service shop for handy use. The 1965 wall chart offers detailed information on tube characteristics—including interchangeability facts—on 111 RCA picture-tube types and the more than 400 industry picture-tube types that they replace.

- **Newspaper Advertising Mats (1D1209A-1D1209E).** Once again, RCA dramatically points to newspaper advertising as one of the more effective means by which you can attract busi-

ness at the local level. Five one-column ads require only your name, address, and phone number before they're ready to work for you in boosting RCA picture-tube sales.

- **Window Streamer (1D1210).** The same message contained in the Flashing Display is repeated on an attractive

*The Picture Tube Replacement Guide (1D1206) is the latest version of RCA's compact slide guide repeated by popular demand. This 1965 version of the versatile fact-finder provides quick access to replacement data on more than 400 black-and-white and color-picture-tube types.*



29-inch-by-23-inch streamer that can be employed to advantage on the windows or doors of your store. Together, they provide you with a double-barrel reminder of RCA Colorama and RCA Silverama quality.

- **Plastic Litter Bag (1D1211).** Generate sales by being a name dropper! The Plastic Litter Bag offers a convenient way to get the name of your establishment into the automobiles of your customers and prospects. With a

three-line imprint, this durable vinyl container can serve as a constant reminder of your products and expert TV service.

Immediately available through your participating RCA picture tube distributor, "The Best of '65" program can be your guarantee to new identification with RCA's famous lines of Colorama and Silverama television picture tubes.

RCA Colorama picture tubes, front runners in the booming color picture

tube replacement market, contain used materials that have been carefully inspected to meet RCA's high quality standards. RCA Silverama, a quality leader in black-and-white replacement picture tubes, contains all new parts and materials in a re-used envelope.

Take the positive approach to peak sales in replacement picture tubes. Contact your RCA picture tube distributor today for complete details on "The Best of '65."

Now Available With Your Purchases of RCA Silverama Picture Tubes and RCA Receiving Tubes:

## Smart, Practical Gifts From 'Homemaker's Showcase'

Join the growing numbers of service-dealers who are harvesting rich gains in wide-appeal, practical gifts for the home—gifts which you can obtain with your purchases of RCA Silverama® picture tubes and RCA receiving tubes from participating RCA distributors.

RCA and your local tube distributor bring you the "Homemaker's Showcase," a premium-incentive program offering a wide assortment of appealing, utility items designed to brighten every room in the house.

A sure hit with the ladies, these items consist of generously apportioned selections of aluminum cookware, glassware, ovenware, cutlery, towels, and sheets and pillow cases. All are eagerly sought-after gifts that have been carefully chosen for quality, durability, and attractiveness to homemakers everywhere.

Consider, for example, luxuriant *Pepperell* percale sheets and pillow cases — or top-quality *Martex* towels. Think of the many uses for a large set of *Anchor Hocking* glassware offered in smart Swedish design. Every one of the "Homemaker's Showcase" items imparts its own charm and convenience to everyday living. Here's what you can get with your purchases of RCA Silverama and RCA receiving tubes:

- **Complete 11-Piece Set of West Bend Teflon-Coated Aluminum Cookware (1D1215).** These sturdy aluminum vessels, coated on the inside with

duPont's *Teflon*, can cook foods without the aid of oils or fats. *Teflon* helps prevent sticking — avoiding the inconvenience of baked-on fragments. The homemaker can forget the drudgery of scouring — simply wipe the pots clean with a soapy cloth. This set is available as separate pieces or as a complete assortment consisting of a one-quart sauce pan with cover; two-quart sauce pan with cover; three-quart sauce pan with cover; five-quart sauce pan with cover; and a 10-inch skillet with nylon spoon and spatula.

- **Anchor Hocking 12-Piece Ovenware Set (1D1216).** This large set of heavy-duty ovenware features the "Fire King" copper-tint design for baking and serving. The 12-piece set consists of a one-quart casserole and cover; a 9-inch pie plate; a deep loaf pan; a 6½-inch-by-10-inch utility baking pan; an 8-inch round cake pan; and six 6-ounce dessert or custard dishes.

- **Imperial 5-Piece Cutlery Set (1D1217).** Well known among homemakers, *Imperial's* "Veri-Sharp" stainless steel cutlery set is featured with "Wonda Wood" handles that resist splitting, burning, staining, and water absorption. Superior hardness and tough edges are provided by the high-carbon, cold-tempered steels employed in the manufacture of this cutlery. The set consists of a 9-inch serrated ham slicer; an 8-inch French cook's knife; a 9¼-inch chef's carving knife and fork;

and a 3-inch paring knife.

- **Anchor Hocking 24-Piece Glassware Set (1D1218).** The heavy base incorporated in this handsome Swedish-design glassware not only offers beauty but utility. The set consists of eight 4½-ounce cocktail glasses; eight 7¾-ounce double juice size glasses; and eight 12-ounce tall tumblers.

- **Martex 3-Piece Towel Set (1D1219).** Offered in blue, pink, or yellow solid colors, this long-wearing selection of cotton terry towels and wash cloth consists of a 24-inch-by-46-inch bath towel; a 16-inch-by-26-inch guest towel; and a 12-inch-by-12-inch wash cloth.

- **Combed Percale Pepperell Sheet and Pillow Cases (1D1220).** The fine-quality combed percale *Pepperell* sheet and matching pillow cases making up this set consists of an 81-inch-by-108-inch sheet and two 42-inch-by-36-inch matching pillow cases. Available in pastel pink, blue, or white.

If you haven't already obtained all the particulars on RCA's "Homemaker's Showcase" premium-incentive program, contact your participating RCA tube distributor and learn how you may earn these valuable gifts with your purchases of RCA picture tubes and receiving tubes. (RCA Silverama picture tubes contain the finest parts and materials, including an envelope that has been carefully tested and inspected prior to re-use).

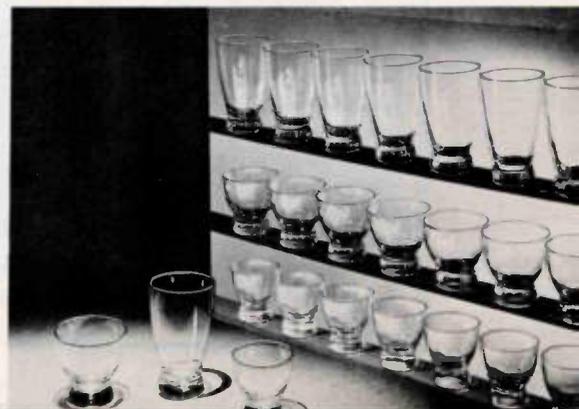
Aluminum Cookware Set (1D1215)



Anchor Hocking Ovenware Set (1D1216)



Anchor Hocking Glassware Set (1D1218)



# PROBES AND ACCESSORIES: Are They Interchangeable?

Can I use a "Brand-A" probe with my "Brand-B" VTVM or 'scope? Do I have to modify my VTVM to use a "Model-X" high-frequency probe?

These are typical questions which electronics people ask themselves and manufacturers of test equipment.

In reply, RCA has come up with some ready answers in the form of a colorful pamphlet titled the "RCA Test Probes and Accessories Interchangeability Guide" (1Q1123), whose charts are shown on these pages.

Apart from the tailor-made cross-reference guide, however, the answers are relatively easy to come by.

Matching an instrument to a probe or some other accessory involves two general considerations — mechanical and electrical.

## Mechanical Considerations (VTVM's and Oscilloscopes)

Coverage of this area can be resolved by answering the three following questions:

- Can the accessory be directly connected to the instrument? For example, do the joining connectors, binding posts, or banana plugs mate?
- If the connectors do not mate, is an adaptor available?
- If the connectors do not mate, and adaptors are not readily available, can either the accessory or test instrument be modified to meet mechanical requirements?

Screw-type connectors which do not mate can be frequently matched by means of standard adaptors available

through any parts distributor. Banana plugs and jacks are inexpensive and can be changed quickly.

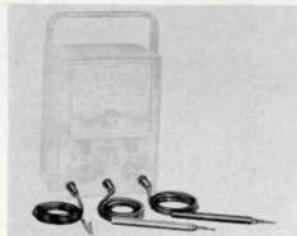
"Slip-on" accessories, such as the RCA WG-301A and WG-302A high-frequency probes, have special connectors and can be used only with original equipment. Whatever the mating problem, cursory inspection should indicate the solution.

## Electrical Considerations (Vacuum-Tube Voltmeters)

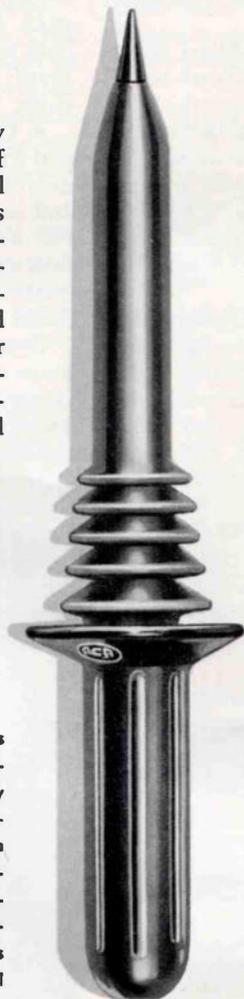
Matching electrical characteristics of instruments and accessories is the more important of our considerations but, even here, the answers are self-evident if an orderly examination is made. For simplicity, we shall consider one instru-

## RCA Test Probes and Accessories...

may be used with many models of test equipment of other manufacturers as well as the RCA test instruments for which they were designed. The Interchangeability Chart on the right cross-references VTVM's and VOM's of RCA and other test equipment manufacturers, and RCA Probes and Accessories which may be used with these instruments.



The information contained in this guide is based on the latest available data, has been carefully checked for accuracy, and is believed to be reliable. However, no responsibility is assumed for inaccuracies. The reporting of any inaccuracies to Commercial Engineering, RCA Electronic Components and Devices, Harrison, N. J., will be appreciated.



## INTERCHANGEABILITY CHART: RCA Probes and Accessories Versus VTVM

TEST INSTRUMENTS Manufacturer and Model No.

| Type No. | Description   | RCA WV-77A, 77B, 77C | WV-87A | WV-87B | WV-97A | WV-98A, 98B, 98C | WV-65A, 75A | WV-95A | 165, 165A | WV-38A | WV-74A, 76A | 195A | B&K Dynamic 375 | Eico 222, 222K | 232, 232K |
|----------|---|----------------------|--------|--------|--------|------------------|-------------|--------|-----------|--------|-------------|------|-----------------|----------------|-----------|
| WG-218   | Direct Probe & Cable  |                      |        |        |        |                  |             |        |           |        |             |      |                 |                |           |
| WG-222   | DC/Direct Slip-on Probe for Use with WG-218   |                      |        |        |        |                  | b           | b      | ab        |        |             | b    |                 |                |           |
| WG-264   | Crystal-Diode Slip-on Probe for Use with WG-218   |                      |        |        |        |                  |             |        |           |        |             |      |                 |                |           |
| WG-289   | High-Voltage Probe (Use WG-206 1090 Meg. $\Omega$ Multiplier Resistor)                              |                      |        |        |        |                  |             |        |           |        |             |      |                 |                |           |
| WG-287   | High-Voltage Probe (Use WG-210, 900 Meg. $\Omega$ or WG-211, 495 Meg. $\Omega$ Multiplier Resistor) |                      |        |        |        |                  |             |        |           |        |             |      |                 |                |           |
| WG-299D  | DC/AC-Ohms Probe and Cable  |                      | c      |        | c      |                  | b           | b      | ab        |        |             | b    |                 |                |           |
| WG-301A  | Crystal-Diode Slip-on Probe for Use with WG-299D  |                      |        |        |        |                  |             |        |           |        |             |      |                 |                |           |
| WG-351A  | Crystal-Diode Probe   |                      |        |        |        |                  |             |        |           |        |             |      |                 |                |           |
| WG-271A  | AC, DC and Ground Leads   |                      |        |        |        |                  |             |        |           |        |             |      |                 |                |           |
| WG-352A  | RF Diode  |                      |        |        |        |                  |             |        |           |        |             |      |                 |                |           |
| WG-361A  | Current Measuring Adaptor   |                      |        |        |        |                  |             |        |           |        |             |      |                 |                |           |
| WG-300B  | Direct/Low Cap Probe and Cable  |                      |        |        |        |                  |             |        |           |        |             |      |                 |                |           |

a Use HH Smith Connector 118 or equivalent b DC only

ment and accessory at a time, commencing with VTVM's.

- **Direct Probes** are used for measurements of ohms and AC voltage. Electrical characteristics are not of great importance in ohms-measurements. If the probe-and-cable fits the instrument, use it for resistance checks.

Probes and cables for AC-voltage measurements are electrically interchangeable for nearly all applications. Differences in cable capacitance and instrument input characteristics will have no effect upon readings at low frequencies. In general, AC probes which are mechanically interchangeable can be used interchangeably for AC-voltage measurements.

- **DC Probes** of modern VTVM's contain a 1-megohm isolating resistor, and work into a 10-megohm instrument resistance. These probes are electrically interchangeable.

- **High-Voltage Probes** contain a high-value dropping resistor which divides the input voltage fed to the

VTVM. For modern VTVM's, which have a 10-megohm input resistance, the value of this resistance will be 1090 megohms. Total input resistance will then be 1100 megohms, or 100 times the nominal DC resistance of 11 megohms. Consequently, all DC-voltage readings must be multiplied by 100.

- **RF Probes** for VTVM's are peak-reading types which are sometimes called signal-tracing probes, rectifier probes, or high-frequency probes. Their primary function is to rectify and filter high-frequency signals and provide a DC-output voltage to the VTVM.

In RF work, relative DC-voltage readings are usually more significant than precise measurements. In these applications, therefore, electrical matching is not a critical problem. It is safe to assume that if other VTVM probes and cables are interchangeable, the RF probes may be electrically interchanged.

For example, the RCA WG-301A RF Probe is a "slip-on" type designed for

use only with the RCA WG-299-series DC/Direct Probe and Cable. It will not mate electrically or mechanically with any other cable or connector. It can be used, however, in conjunction with the WG-299D and any other VTVM having similar DC input characteristics.

### Electrical Considerations (Oscilloscopes)

Input capacitance and resistance become increasingly important as 'scope performance increases. Oscilloscopes use three types of probes: direct, low-capacitance, and demodulator types. Probes, cables, and 'scopes should be electrically compatible to insure correct voltage and frequency response.

- **Direct Probes** should have shielded cables to minimize stray pick-up, and the cables should have the lowest possible capacitance to reduce test-circuit loading. For "direct" applications, such probes and cables may be interchanged, but performance will best be preserved

(Continued on next page)

## VTVM's and VOM's of RCA and Other Leading Test Equipment Manufacturers

| Model                                       | 232, 232K | 249, 249K | 555, 555K | 556, 556K | EMC (Electromatic) 70-7 | Heath IM-10 | IM-11 | IM-13 | IM-21 | IM-32 | V1, V2, V3 | V4, V5, V6, V7A | MM-1 | Hickock 450 | Jackson 709 | Knight KG-620 | 83Y-125J | 83Y-504J | 83Y-140D | Lafayette KT-174 | KT-202 | TE-31 | TK-10 | Precision 48 | Precision/Pace V70, V70W | Radio City Prods. 655 | Simpson 260, 260-4M | 260-4 MRT | 260-RT, 261, 261-RT | 270-2, 270-2RT | Superior 77 | Triplett 850 | 630-L, 630-PL | 630-APL |  |  |  |
|---|-----------|-----------|-----------|-----------|-------------------------|-------------|-------|-------|-------|-------|------------|-----------------|------|-------------|-------------|---------------|----------|----------|----------|------------------|--------|-------|-------|--------------|--------------------------|-----------------------|---------------------|-----------|---------------------|----------------|-------------|--------------|---------------|---------|--|--|--|
| With Banana Jacks                           |           |           |           |           |                         | a           | a     | a     | a     | a     | a          | a               |      |             |             |               |          |          |          |                  |        |       |       |              |                          |                       |                     |           |                     |                |             |              |               |         |  |  |  |
| With Banana Jacks                           |           |           |           |           |                         | b           | b     | b     | b     | b     | b          | b               |      |             |             |               | b        | b        | b        |                  |        | b     |       |              |                          |                       |                     |           |                     |                |             |              |               |         |  |  |  |
| For R.F. Measurement from 100 Kc to 100 Mc. |           |           |           |           |                         | a           | a     | a     | a     | a     | a          | a               |      |             |             |               |          |          |          |                  |        |       |       |              |                          |                       |                     |           |                     |                |             |              |               |         |  |  |  |
| Having a .5 DC Volt Range                   |           |           |           |           |                         |             |       |       |       |       |            |                 |      |             |             |               |          |          |          |                  |        |       |       |              |                          |                       |                     |           |                     |                |             |              |               |         |  |  |  |
| AC and DC only                              |           |           |           |           |                         | ab          | ab    | ab    | ab    | ab    | ab         | ab              |      |             |             |               | b        | b        | b        |                  |        | b     |       |              |                          |                       |                     |           |                     |                |             |              |               |         |  |  |  |
| Use WG-210 Multiplier with WG-297           |           |           |           |           |                         |             |       |       |       |       |            |                 |      |             |             |               |          |          |          |                  |        |       |       |              |                          |                       |                     |           |                     |                |             |              |               |         |  |  |  |
| Use WG-211 Multiplier with WG-297           |           |           |           |           |                         |             |       |       |       |       |            |                 |      |             |             |               |          |          |          |                  |        |       |       |              |                          |                       |                     |           |                     |                |             |              |               |         |  |  |  |

only C AC and DC only X Use WG-210 Multiplier with WG-297 Y Use WG-211 Multiplier with WG-297

## CROSS-REFERENCE GUIDE: RCA Probes and Accessories With RCA Test Instruments

| Probe/Accessory Type Number | Instrument Type No. | WO-33A (3") | WR-51A | WO-55A (3") | WO-56A (7") | WO-57A (3") | WO-60C (5") | WO-78A, B (5") | WO-88A (5") | WO-91A (5") | WV-38A | WR-64A | WV-65A | WV-74A | WV-75A | WV-76A | WV-77A | WV-77B, C | WV-77E | WV-87A, B | WV-95A | WV-97A | WV-98A, B, C | 165, A | 195, A | WR-40A, 41A, B | WR-59A, B, C | WR-69A | WR-86A | WT-100 | WT-110 |
|-----------------------------|---------------------|-------------|--------|-------------|-------------|-------------|-------------|----------------|-------------|-------------|--------|--------|--------|--------|--------|--------|--------|-----------|--------|-----------|--------|--------|--------------|--------|--------|----------------|--------------|--------|--------|--------|--------|
| WG-206                      |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-207                      |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-210                      |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-211                      |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-218                      |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-219                      |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-220                      |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-222                      |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-224                      |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-227                      |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-229A                     |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-230A thru WG-236A        |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-240A                     |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-264                      |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-270                      |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-271                      |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-277                      |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-289                      |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-291                      |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-295C                     |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-297                      |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-299D                     |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-300B                     |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-301A                     |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-302A                     |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-325A                     |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-326A                     |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-337A thru WG-340A        |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-349A                     |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-350A                     |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-351A                     |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-352A                     |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-354A                     |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-356A                     |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-357A                     |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-361                      |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-374                      |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |
| WG-388A                     |                     |             |        |             |             |             |             |                |             |             |        |        |        |        |        |        |        |           |        |           |        |        |              |        |        |                |              |        |        |        |        |

- NOTES:**
- (a) Requires use of WG-271A Adapter and slight readjustment of WO-33A input circuit. See instructions supplied with probe and cable.
  - (b) Requires minor readjustment of instrument input circuit. See instructions supplied with probe and cable.
  - (c) Requires minor readjustment of input circuit when used with WO-78A. See instructions supplied with probe and cable.
  - (d) For instruments with Code Numbers 252, 252A, and 353.
  - (e) Some instruments having Code Number 655 may require minor readjustment of the input circuit. See instructions supplied with probe and cable.
  - (f) For use with WR-59A and WR-59B instruments with serial numbers below 4501.
  - (g) For use with WR-59C instruments having serial numbers preceded by the letter "A".

## Probes and Accessories

(Continued from preceding page)

by a cable of low capacitance.

For example, the RCA WG-300B Direct/Low-Capacitance Probe and Cable is constructed with a special coaxial cable which gives an approximate probe-and-cable capacitance of only 40 pf on the "direct" function. The WG-300B, therefore, is an excellent electrical replacement for direct 'scope cables which it matches mechanically.

• **Low-Capacitance Probes** have three effects which must be considered:

1—They raise total 'scope input resistance by a factor (usually 10)

2—They reduce total oscilloscope-and-cable loading capacitance by a factor

3—They attenuate the input signal by a factor (usually 10 to 1)

For example, the RCA WG-300B Direct/Low-Capacitance Probe and Cable, when used in the low-cap position, raises total 'scope input resistance from 1 megohm to 10 megohms, and reduces total capacitance from 75 pf to 11 pf. It likewise attenuates the input signal by the even factor of 10 to 1. The WO-91A 'scope, with which the WG-300B is used, has 1-megohm input resistance shunted by 40 pf at the panel connector.

The WG-300B can be used in its "low-cap" position with many other service-type 'scopes. To insure top performance and best matching between the cable and 'scope, however, the reproduction of a 1-Kc square wave should be checked on the 'scope screen.

Optimum matching can be achieved by mounting a trimmer capacitor of approximately 7-45 pf from the input connector to ground in the 'scope, and adjusting it for best square-wave response with the WG-300B.

• **Demodulator Probes** find their greatest application in signal-tracing and general RF applications, where they are used as rectifier-filter devices.

# Across the Bench

By 'Doc'



When my toughest competitor walked into the shop, I was glad to see him.

Bernie runs his own business across town, but he got his first burns from a soldering iron while working for me. He stops in often — usually with a problem. I knew he'd eventually bring one up in his roundabout manner.

"Got any hot coffee, Doc?" he asked. "It's cold out there." He rubbed his hands and grinned from under a mop of red hair.

"Sure, Bernie, but it's *vintage espresso*. I'd suggest sitting down before you drink it."

Carefully placing the cup beside him, he hoisted himself onto the bench and looked around. His gaze rested on some of my nearby gear.

"When are you going to get some new alignment equipment," he needed. "Those things look like they were salvaged from a sunken Roman galley."

"So do I," came my quick reply, but I'm not turning myself in yet! Besides — they're only fourteen years old."

I admit that my WR-59 "sweep" and WR-39 "calibrator" have lots of mileage and are pretty beat-up and worn. The steel case of the "39" is badly bent too. Bernie probably forgot the day he used it as a stepladder.

"Would you turn in a perfectly good Rolls-Royce just to get the latest-model Whizzeroo?" I asked. "Sure — I've replaced some tubes and the output cables over the years, but those two units can tackle any alignment job that comes in here — black-and-white or color — and well you know that!"

"That's not the point, Doc," Bernie argued. "Think of your public image. Here you are — an established businessman in this community. You ought to spruce up this place. Throw out that wooden counter up front, put down some new floor tile, and get yourself a bright sign."

Bernie went on, popping suggestions one after the other, as I chewed desperately on my pipe. As he talked, his gaze kept returning to my sweep and marker generators.

"Tell you what, Bernie," I chimed in. "Why don't you buy the two units from me, and I'll get a brand new pair of RCA's latest. Then I'll have a better image and you'll have a better set of alignment gear than you have now."

Bernie smiled, a faraway look in his eyes. Maybe now I'd find out what was on his mind.

"Tell me, Doc," he suddenly blurted. "Does your sweep go in the right direction?"

"Come again?" I asked, puzzled.

"Well, on the one I got, when I put a marker on the sweep and tune the marker to a higher frequency, it moves to the left. My curves are switched around too. The low-frequency points of my RF curves are on the right — not on the left like they are demonstrated in the service notes."

I knew what his problem was — blanking phase. The solution was simple, but I just couldn't resist the temptation to even the score.

"My — My — you do have a problem," I said, tongue in check. "Let's see how it looks with my gear."

I pulled a black-and-white chassis across the bench and warmed up the generators. I clipped the sweep-output cable to the tuner antenna terminals.

"You forgot the matching pad, Doc," Bernie commented.

"And you've forgotten that this old generator doesn't need one," I quipped. "It's built in. Did you also forget that the RF-output cable is a special, two-conductor type that's shielded? This cable and its output are truly balanced — all the way out from the oscillator stage — just like the latest WR-69A."

"Try channel 13," said Bernie, ignoring my last remarks.

I rotated the sweep-generator channel switch to 13, and connected the 'scope probe to the tuner looker point. I then switched the 'scope to "LINE" and made touch-up tuning adjustments. A good tuner-response curve locked in on the 'scope.

"That's good amplitude, Doc," he said. "That tuner must be hot."

"About average," I replied. "You can get good amplitude if your sweep signal is strong enough. I can still get more than a tenth of a volt out — even on channel 13." I then paused and added, meaningfully, "Just like the latest model."

Bernie watched as I tuned the "39" generator to 210 megacycles, flipped on the crystal calibrator, and zero-beat the two signals. I slid the tuning back to the channel-13 picture spot.

"Fourteen years old and still on the beam," I commented. "With this crystal calibration, you don't have to worry about VFO drift with age. It doesn't make any difference."

"Just like the latest model?" Bernie jibed.

"Just like the latest model," I answered. "Of course, that WR-99A has some dandy new features — like a slide-rule dial and eight switched ranges; crystal calibration at both 10-Mc and 1-Mc points from 19 to 260 megacycles; and . . ."

"Hold it, Doc!" interrupted Bernie. "Stop being a pitch man and show me that marker."

I clipped the calibrator lead to the antenna terminal. A marker rode on the top left of the curve.

"That's the picture-carrier," I announced. "Let's also spot the sound carrier."

I switched to "4.5 Mc MOD." The sound carrier marker appeared to the right of the picture marker. Bernie reached over and tuned the calibrator to a higher frequency. Both markers slid to the right and down the curve.

"Well I'll be . . ." he murmured in amazement. "Just what's the matter with my set-up?"

"Nothing really," I started to explain. "It's simply that your 'scope sweep is going in one direction while your generator is sweeping in the other. They are 180 degrees out of phase. Reverse the line plug on either your sweep or your 'scope. You should have known that."

Bernie spent several minutes playing with the set-up on my bench. He switched the sweep generator in steps from channel 13 through 2; the sweep curves popped onto the 'scope screen in rapid succession.

"I like the channel switching on that old sweep, Doc. You don't have to tune around to set channel output."

"Try that piston attenuator, too. Watch it pull those curves down to nothing without changing their shapes. Try *that* on your new Whizzeroo," I added.

"What are you trying to do, Doc? Sell me these old generators?"

I hadn't been serious about selling them, but now Bernie got me thinking. He just *might* be interested.

I didn't get very far with my day-dream before Bernie broke in.

"Thanks for the coffee and advice, Doc. I've got to run now." Opening the door, he paused and turned. "You know I was only kidding about your old generators, Doc. They're really terrific."

I heard him start his truck and drive off. The wall clock ground noisily past quitting time.

I put on my hat and coat, set the night lights, and stepped over to the shop switch. I took a look at the bench. My old RCA sweep and marker boxes were faithfully humming away — the tuner curve painted, bright and steady, on the 'scope screen.

I sighed, pulled the switch, and started for home.

**'Let's Get Down to Business!' Brings an Open Invitation From RCA and Your Local**

## Exciting New Aids to Promote Your Color-TV Services

RCA corporate sources predict that more than 2 million color-TV sets will be sold in 1965. By the end of 1968, more than 15 million color receivers will be installed in American homes.

The conclusions are obvious. Servicing know-how in color television is no longer a novelty but a *necessity!*

The service-dealer and technician must be in a position not only to furnish fast and accurate answers in color-TV set repair and maintenance, but to *make certain that he gets this message across to his customers and prospects.*

That is why RCA and your local authorized RCA tube distributor now present "Let's Get Down to Business"—a fast-paced program featuring all the top-rung items you need to help promote your skills and let your customers know you "have what it takes" when it comes to servicing their color sets.

### Promotional Aids

Looking for a sure attention-getter to advertise your complete TV service (black-and-white and color) to passers-by? The Color-TV Service Flashing Window Display (1A1491) is just what you need for your store window. Meas-

uring 20½ inches in width, 17¾ inches in height, and 7¼ inches in depth, this striking sign promotes both types of service by alternating between full-color illumination and black and white. The color-phosphor dot pattern is particularly attractive in red, green, and blue.

And when it comes to attractive signs for advertising your expert color-TV service and tubes, another "winner" is RCA's Color-TV Service Banner (1A1492). This rich-looking banner of smooth satin highlights "Color TV" in multi-colored letters producing a rainbow effect against the bright-red background. It's twenty inches wide and 28 inches long, and can be displayed in your window area or inside the store.

Still a third type of sign for your consideration is the Color-TV Service Transparent Streamer (1A1495). Urging prospective customers to "Bring Out the Best" in their color-TV, this 15-inch-wide and 22½-inch-long Polyethylene streamer does a first-rate selling job on your store wall or window. To combine a little advertising with your regular statement and invoice mailings, you can't beat RCA's handy Envelope

Stuffer (1A1511). An important item in your over-all promotion campaign on your color-TV services, this one-sheet flyer can also be used as a separate mailing piece, and lets your regular customers know that you are fully qualified and prepared to service color TV.

Do you need a handy giveaway to present to your customers on each service call? If so, RCA's Match Box Sets (1A1508) offer a "natural" as good-will builders. Four to a set, these match boxes, handsomely designed in gold-finish background with red lettering, are an effective way you can say "thank you" to your customers on each service call.

For an effective direct-mail campaign, you need RCA's assortment of three Color-TV Service Post Cards (1A1500 through 1A1502). An additional avenue of promotion, these humorous but pointed messages reach the prospect in his own home to tell him that you are a qualified color-TV service technician. This may be the "final nudge" that spurs him to action over a servicing need he has put off.

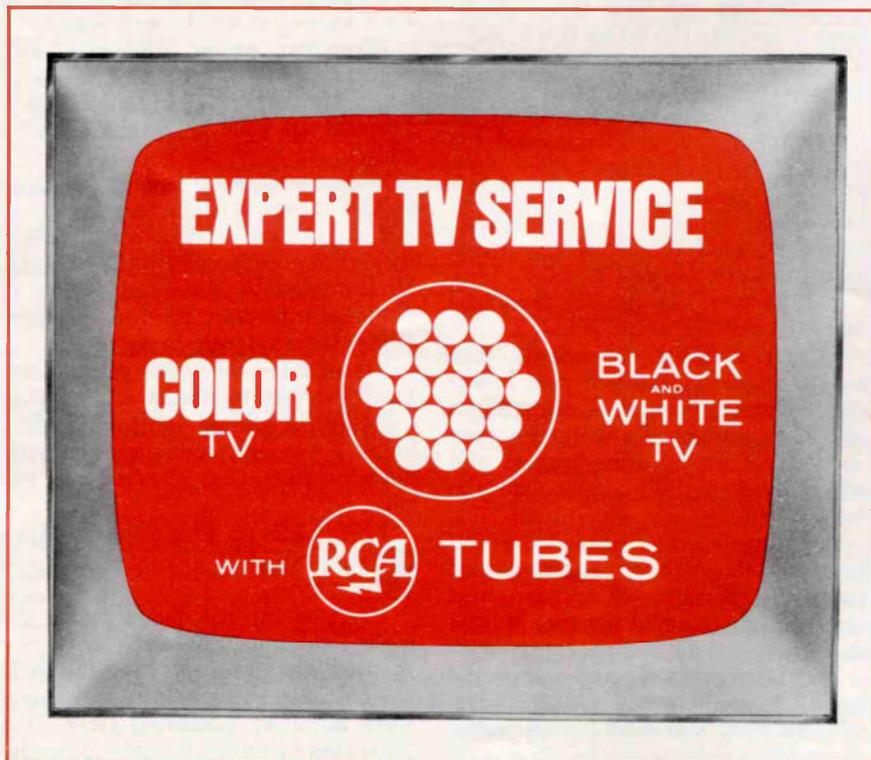
Another way to reach the prospective customer in his own home is through RCA's four Color-TV Service Ad Mats (1A1496 through 1A1499). Use them to advertise your services to color-TV set owners via your local newspaper. You will be pleasantly surprised by the number of inquiries and service calls that result.

### Ready to Tackle Any Color-TV Servicing Problem?

No doubt by now you have availed yourself of RCA's numerous opportunities to "train for Color" and are ready to put your full effort behind promoting your services. However, if you still need orientation or brushing up on any particular phase of color-TV, RCA and your local authorized RCA tube distributor make it easy for you to gain this information.

One way is through the famous 8-lesson, *definitive* course on color-TV made available through RCA Institutes (1A1325). The lessons include such broad subjects as "Principles of Color Television," "Color Picture Tubes," "Basic Receiver Functions," "Setup and Adjustments," "Modern Receiver Circuitry," "Receiver Alignment," and "Troubleshooting Techniques."

The complete course includes free



Color TV Service Flashing Window Display (1A1491) alternates between full color illumination and black and white. Display measures 20½ inches wide, 17¾ inches high, and 7¼ inches deep.

## Authorized RCA Tube Distributor to Share in Color Television's Promising Future

examinations and counselling service. Complete this course and display your RCA Institutes Graduation Certificate to your customers. They'll admire you for your RCA training—the best color-TV training available.

A handy on-the-job aid for color-TV servicing is the RCA Color-TV Troubleshooting Pict-O-Guide (1A1389). Available through your RCA tube distributor, the new, completely updated Pict-O-Guide offers a quick-and-easy, all-in-one aid to proper troubleshooting and adjusting of color-TV receivers.

### Service and Business Aids

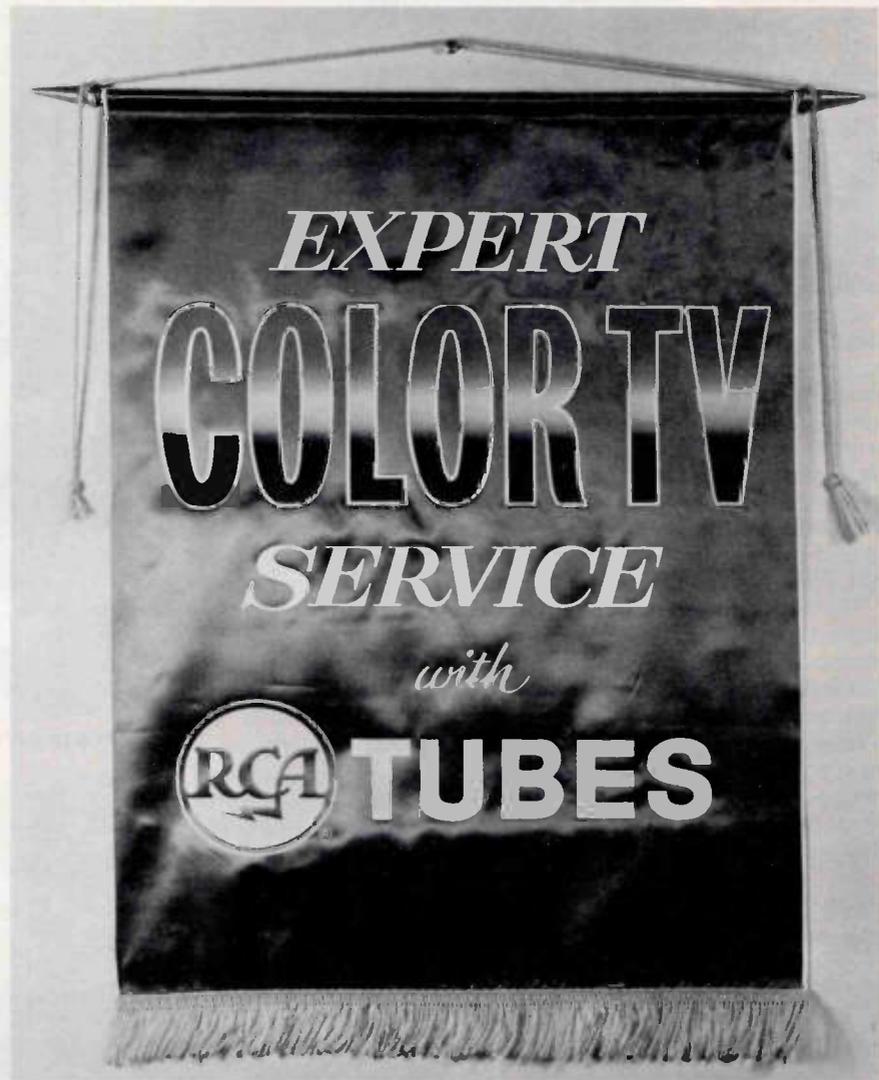
Helping you to acquire technical skills and then showing how you can promote this know-how to prospective customers are but two of the outstanding values of the "Let's Get Down to Business" program. RCA and your participating RCA tube distributor now go two steps further and bring you full complements of great service and business aids professionally designed in the RCA manner.

In service needs, for example, do you sometimes find yourself on a customer call without that *one* alignment tool for a particular job? RCA now eliminates that problem with the RCA TV Tool Kit (1A1509)—a handy container of twelve most-wanted tools, each in its individual pocket. "Wrapping up" just about everything you need in tools for a service call, the kit consists of an Aligner, K-Tran TV Aligner, Tuning Wand, TV Aligning Wrench, Universal Aligner, 3 Adjusting Trimmer Tools, Clamping-Type Tweezers, Solder-Aid Tool, Heat Sink, and a double-in-One Screwdriver, one end recessed.

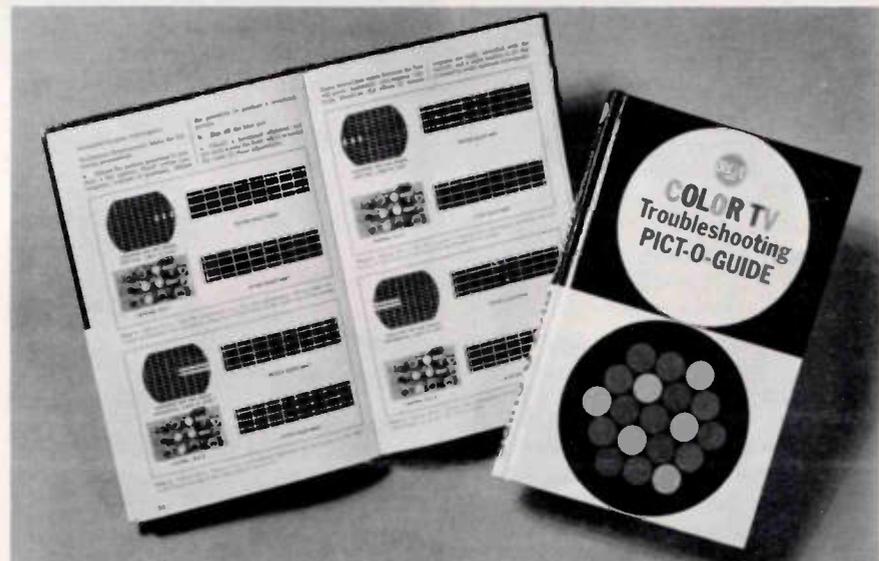
Another great service aid in the "Let's Get Down to Business" program is the ever-popular junior-size Treasure Chest tube caddy. Improved in design and durability through the addition of "Superweld," the new vinyl material that can take heavy punishment without damage, plus stronger hardware, the RCA Superweld Jr. Treasure Chest Tube Caddy (1A1002A) is tougher and more useful than ever. This caddy, which formerly held up to 162 receiving tubes, now holds up to 234.

And when it comes to storing tubes, how are you fixed for space? Think you'd like to arrange your tube inventory to have each type you need at your fingertips? A simple matter!—with two handsome new compact shelving units now at your disposal. These gravity-feed merchandisers feature sloping

(Continued on next page)



Color TV Service Bonner (1A1492)



RCA Color TV Troubleshooting Pict-O-Guide (1A1389)

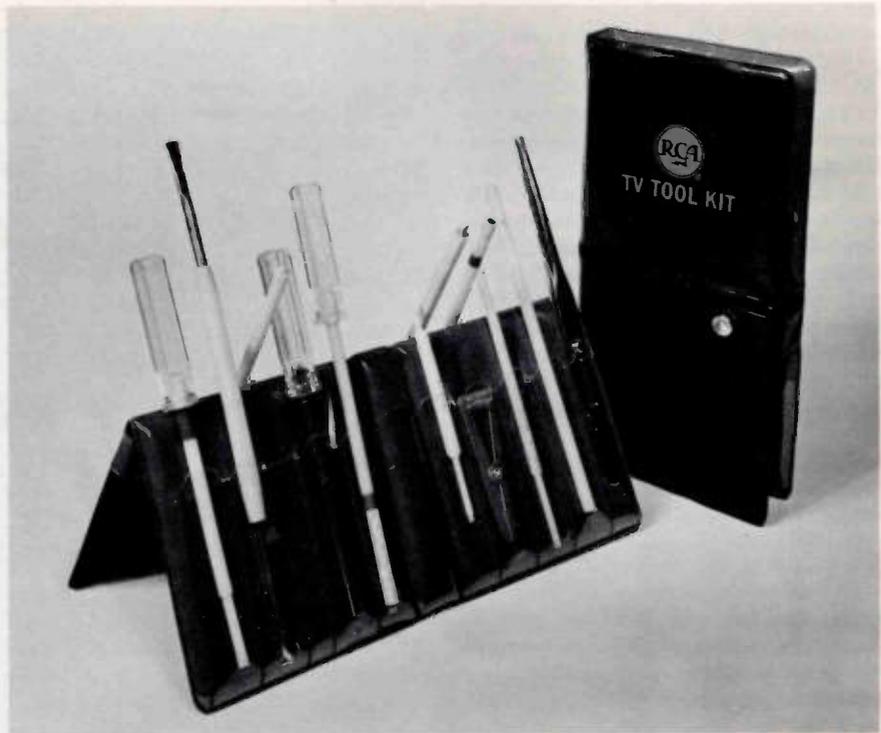
# 'Let's Get Down to Business' Program Offers Exciting New Aids

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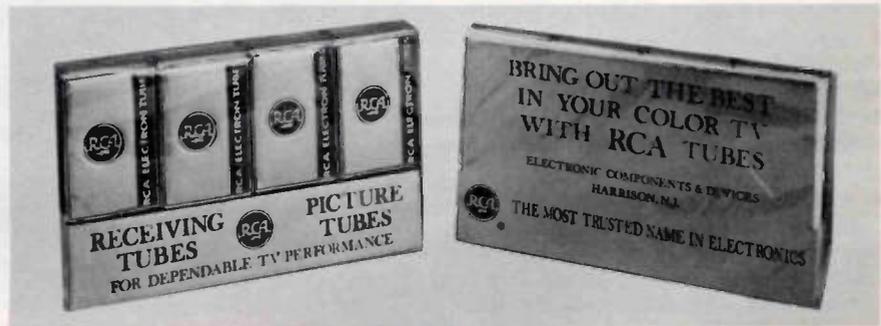
shelves with adjustable dividers on each shelf; sturdy construction; and red-baked-enamel finish. The RCA Receiving Tube Wall Merchandiser (1A1503) has three shelves and measures 36 inches wide, 32½ inches high, and 12½ inches deep. The RCA Receiving Tube Floor Merchandiser (1A1504) has seven shelves and measures 36 inches wide, 72 inches high, and 12½ inches deep.

In the area of business aids, what about the *little things* that can prove so important in relations with your customers? Do they know your business hours—thereby avoiding fruitless trips to your store? How do you let them know you called at their homes while they were away? Your participating RCA tube distributor can help you in both of these areas with a special store sign and door-knob hangers.

The Store Hours Sign (1A1494)—offering two simulated clock faces on a handsome sign—advertises your products and services and can be placed on the inside of your door. When you wish to change business hours, merely move the clock hands. A real convenience for both you and your customers, this "open-and-close" sign is made of sturdy plastic.



RCA TV Tool Kit (1A1509)



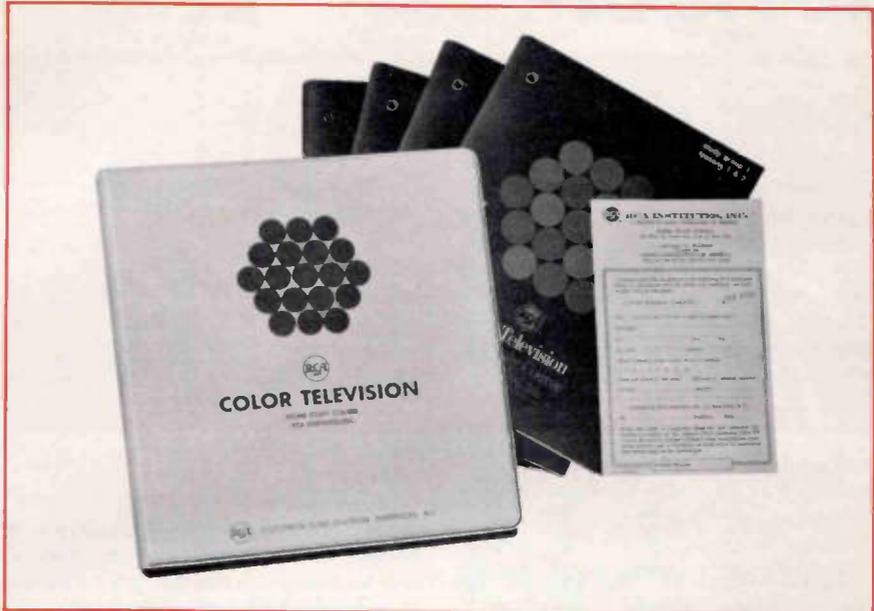
Match Box Sets (1A1508)

## WEEKLY SERVICE AND INSTALLATION SCHEDULE

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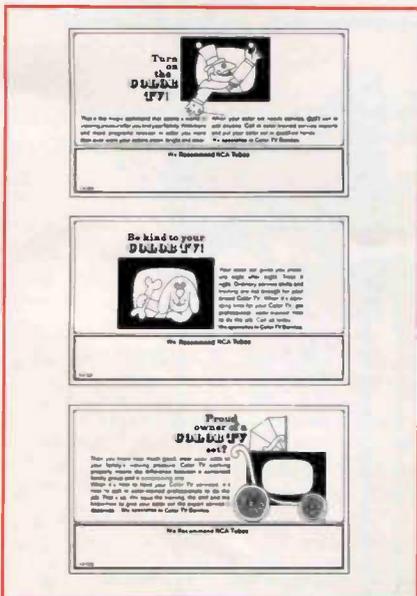
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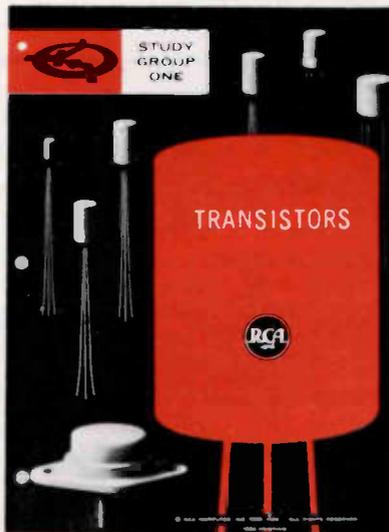
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As an electronic technician you cannot afford to let yourself fall behind in your understanding of these new and exciting developments. To



low glass rod, and the glass is coated with the resistive material. After coating, the glass rod and portions of the leads are sealed in a solid plastic case that forms the body of the resistor. The air gap between the lead ends inside the glass rods is approximately 1/16 inch. The discharging static finds this small air gap an easy ground path and the static build-up is dissipated without damage to the resistor or the tube itself. Arc-over occurs at approximately 2,000 volts.

### RCA-6BK4A Beam Triode

RCA's 6BK4A beam triode is intended for use as a shunt voltage-regulator tube in high-voltage power supplies of color-TV receivers. It possesses all the desirable features of the 6BK4 plus a higher plate dissipation capability (30 watts).

Although the 6BK4A is recommended for new receiver designs, it is interchangeable in existing receivers with the 6BK4.

The 6BK4A is a double-ended, glass-octal vacuum type utilizing a T12 bulb having a maximum DC plate-voltage rating of 27,000 volts, a maximum DC plate-current rating of 1.6 milliamperes, and a maximum plate-dissipating rating of 30 watts. Except for its higher plate dissipation capability, the 6BK4A is electrically and mechanically similar to the 6BK4. The 6BK4A utilizes the RCA Dark Heater to help insure long life and dependable performance.

Either the 6BK4 or the 6BK4A high-voltage regulator types may exhibit a blue glow on the upper half of the inner surface of the bulb wall under normal operating conditions. This effect is caused by fluorescence and is not to be mistaken for gas.

### The RCA-CTC16 Color Chassis

- **Focus Circuit.** A new focus adjustment transformer permitting greater variation and faster action is used in the CTC16 color chassis. A tube-type focus rectifier is used; the over-all focus circuit gives minimum loading of the high-voltage transformer.

- **Color Circuits.** Basically, the chroma section of the CTC16 retains the familiar circuitry as used in the CTC15 color chassis; however, a change in the operation of the "X" and "Z" demodulators has been introduced. A change in value of the capacitor, C728, results in greater displacement of the "X" and "Z" axes — thus giving better rendition. The need for the change is based upon the range of colors delivered by the sulphide-type picture tube; therefore the demodulators in this way "compensate" for the slight difference in the color output of the sulphide tube.

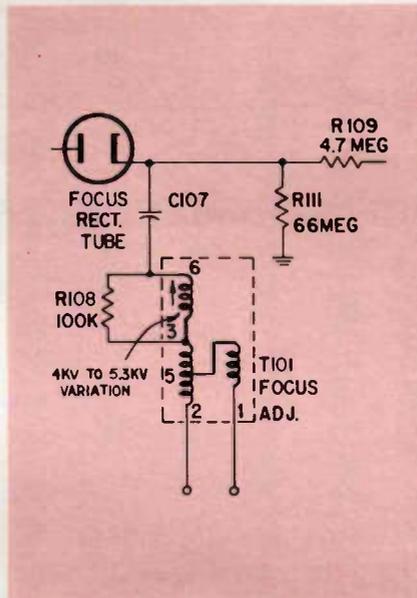


Figure 3: Improved focus circuitry.

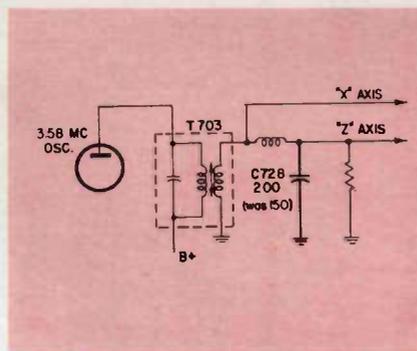


Figure 4: Improved color rendition.

From a viewing standpoint, the net effect will be truer rendition of color values.

### Automatic Degaussing

A new feature is included in all wood-cabinet color-TV receivers which automatically degausses the receiver. Automatic Degaussing, or "ADG," is accomplished during initial warm-up each time the set is turned on. At the time the power switch is turned on, the chassis and power supply circuit cause a substantial current flow, part of which flows through the degaussing coils. Thermistor, RT201, being temperature dependent, has about 120

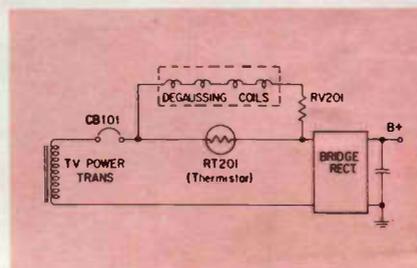


Figure 5: Automatic Degaussing (ADG).

ohms resistance at this time. Varistor, RV201, presents a low resistance since it is voltage dependent, and an AC voltage is present at this time.

As RT201 heats, its resistance drops to about 2 ohms shunting the Automatic Degaussing coils. Since AC is now lowered across RV201, its resistance rises. The accumulative effect is that after warm-up of the receiver, very little current flows through the ADG coils and degaussing ceases. This action takes place prior to the appearance of a picture on the screen, thereby avoiding any distraction to the viewer.

### Spot Optimizer Magnet

A "spot optimizer" magnet is used on the neck of the 16AYP4 picture tube. This magnet is similar in appearance to an ion trap, however, it affects picture detail instead of picture brightness. Adjustment of this magnet is not critical and need be made only when a new picture tube is installed or the magnet has been moved.

To adjust the spot optimizer magnet: use a crosshatch or dot pattern and set brightness so that the crosshatch lines or dots are visible on the raster.

While observing the pattern in the center portion of the screen, adjust the spot optimizer magnet for a symmetrical halo surrounding the lines or dots. Greatest effect of the magnet will be observed in the upper center section of the picture tube face.

If a dot-bar generator is not available, the magnet may be adjusted as follows:

Turn the channel selector to a non-operating channel which displays the greatest amount of noise or "snow." While observing the snowy raster, adjust the spot optimizer for greatest detail in the vertical center line portion of the screen.

### "Getter" Action

Have you ever wondered what the silvery deposit inside the glass envelope of vacuum tubes is or been curious as to why it is there?

Actually, it is the "getter." It consists of an alkali or alkaline earth metal placed in the vacuum tube during manufacture; after the tube is evacuated and sealed, the material is vaporized by means of an external RF heater.

When the getter is vaporized, it absorbs any gases which may have been left in the tube after evacuation. The absorbing of gases (which may be released by the metal elements in the tube) continues for a long period of time after tube manufacture; this can be a year or longer depending upon the size of the tube and the type of getter material employed.



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