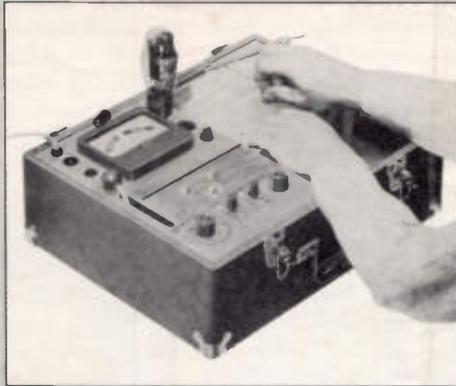




RADIO AND TELEVISION

Service News

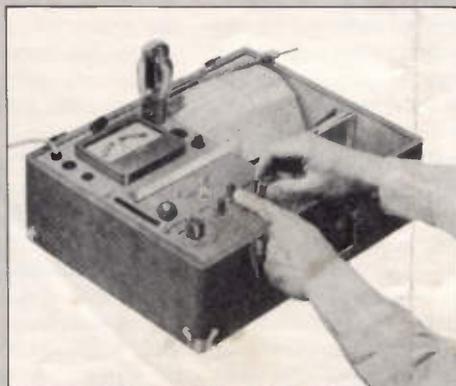
A PUBLICATION OF THE RCA ELECTRON TUBE DIVISION



A. Merely insert card in slot.



B. Flip power lever to "on" position.



C. Press calibrate lever and adjust calibration control.

SIMPLE TO OPERATE AS A-B-C . . . the new portable RCA WT-110A Automatic Electron Tube Tester is ideally suited for your use in satisfying tube-testing requests by television-set owners alerted to your active participation in the vital, new RCA "Tubes Tested by Experts" merchandising program.

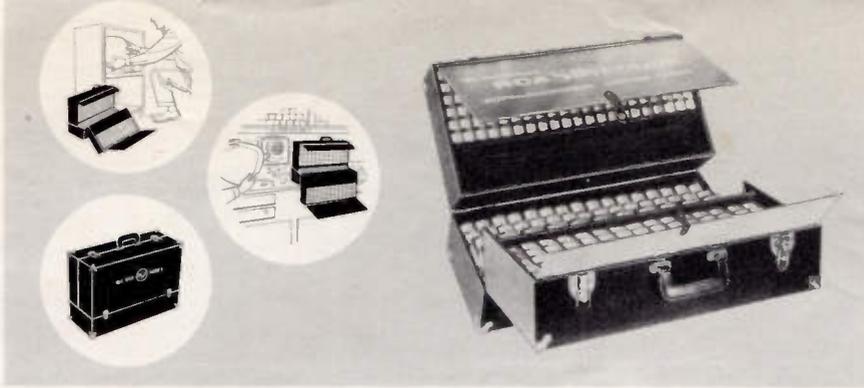


NOVEMBER

1957

Vol. 22, No. 4

● BE SURE TO SEE PAGES 2 AND 5 FOR RESPECTIVE DETAILS ON RCA'S "TUBES TESTED BY EXPERTS" CAMPAIGN AND PORTABLE WT-110A AUTOMATIC ELECTRON TUBE TESTER.



SIGNIFICANT RCA

By Popular Demand: New Treasure Chest

Your local RCA tube distributor is now prepared to offer you an all-new, entirely remodeled RCA Treasure Chest. Ask him how you may obtain it.

Designed to accommodate a full selection of receiving tubes to save you time and footwork on your service calls, the 1957 version of RCA's famous tube-and-tool carrying case is sturdy, custom-built, professional-looking. You'll carry it with pride.

Similar to the previous Treasure Chest in some respects, far superior in others, the revised scuffproof model is not only handsome yet durable, but also—and this is its chief asset—has a carrying capacity that is double that of

the "older" Chest. Yet the new case is only slightly larger and heavier than the former model.

With a sturdy wood frame, the strongly hinged 1957 version of the RCA Treasure Chest measures 22 inches by 16 inches by 8½ inches and weighs only 12½ pounds. Nevertheless, despite its handy size and relative lightness, the carrying case has provision for a total of 268 miniature, GT, and larger tubes—with all type numbers in full view when the Chest is opened. In addition, the tool compartment of the case contains more-than-ample space for all the small tools you ordinarily use on home service calls.

Radio-TV dealers and service technicians across the nation are becoming increasingly concerned with the growing "do-it-yourself" tube-testing trend on the part of consumers. Already, testers for radio and TV receiving tubes are springing up in supermarkets, drug-stores, stationery stores, and filling stations. Indeed, here is a trend that could conceivably have an adverse effect on your service business.

Thus, it is vital that you immediately inform your RCA tube distributor that you wish to tie in with RCA's timely new "Tubes Tested by Experts" merchandising program. Its dynamic promotion material will help you solve your neighborhood retail-outlet tube checker problem by awakening your customers to the fact that tubes should be checked by experts and not amateurs . . . and that the practice of trying to fix a radio or TV receiver without the skill, knowledge, and experience this repair work requires can, in the long run, penalize the set owner by costing him more and not less than if he called on the services of a professional service technician to begin with.

PART 2 OF A SERIES OF SPECIALLY PREPARED ARTICLES

Electronics Servicing is Big Business

by R. B. Sampson

Manager, Market Research
RCA Electron Tube Division

What about the electronics service business today? What are its weaknesses? What are the areas in which

improvement can be expected?

I have mentioned previously what I believe to be a serious weakness: the too prevalent conception among service-dealers that electronics servicing is just another job. *It is not a job. It is a business* in which a reasonable return of profit on the investment of capital and effort should be expected with regularity.

If you are not earning a fair return on your investment, then you have good reason to question the manner in which the business is being conducted . . . and you have good reason to question whether the risks, the worry, the problems, the weekly payroll, etc., are really worth the effort.

The job holder is not faced with the multitude of problems with which you contend on a day-to-day basis. Likewise, he has reasonable job security, pensions, regular vacations, and a fixed income. These are his compensations for the effort he expends.

A business—an electronics service business—must provide a sufficient return of profit to compensate you for all these factors, plus a return for the

risks and the frustrations that are inevitable in any business enterprise. Is your business doing these things for you? It should.

I'll make no pretense at having a wide knowledge of service-dealer operations. But, I would like to call on some of the basic experiences I have had in dealer work to see if they can be applied to your business.

The first point for consideration in any operation analyses is sales. In the service business, the term is more appropriately called "sales revenue" or, if you prefer, "sales income."

Sales revenue for a servicing business is derived principally, if not entirely, from three sources: (1) labor, (2) material, and (3) products. All three are important, but the first two are the life-blood of your business. Your accounting records should clearly reflect the daily income from each of these sources. It is a mistake to lump them together under one heading of "Sales." Such a practice only makes it more difficult to control your sales operations.

Let us deal first with the sale of

RADIO AND TELEVISION

RCA

Service News

A PUBLICATION OF THE RCA ELECTRON 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 Electron Tube Division, Harrison, New Jersey.

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Radio Corporation of America

Harvey Slovic
Editor

Robert Leedy
Technical Editor

NOVEMBER 1957

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PROGRAM ANSWERS SERVICE INDUSTRY NEED

RCA's all-out "Tubes Tested by Experts" campaign "package" consists of the following:

(1) "Tubes Tested by Experts" Promotion Kit (Form 4F94)—an envelope containing three simple but extremely effective merchandisers:

- An eased card for your counter or store window. Its offer to consumers: "TV-Radio Tubes Tested by Experts Free!"

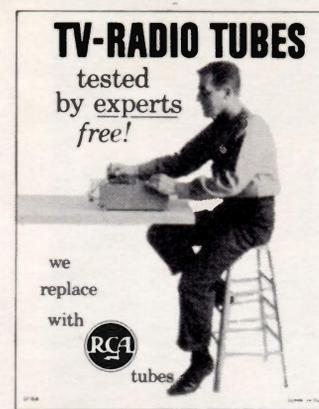
- An effective ad mat with a straightforward message you can run in your local newspaper to advise set owners to have their radio-TV tubes and receivers checked free by expert technicians.

- A packet of 100 leaflets which you should hand out over the counter,

personally circulate when you make your house calls, and mail to every one of your customers and prospects. This special leaflet, headlined "When Your TV Set Requires New Tubes," features an important, up-to-the-minute message that will help to decrease the number of local "do-it-yourselfers" and, in turn, will spark these TV-set owners to come to your store to have their tubes tested expertly or, better still, to call you for fast, dependable home service.

In addition to the counter card, the ad mat, and the packet of leaflets, the "Tubes Tested by Experts" Promotion Kit also contains a fast-reading flyer that depicts the new RCA illuminated

(Continued on next page)



The Litho Display (Form 4F100) is a 30-inch by 40-inch version of the "Tubes Tested by Experts" counter card (Form 4F94B).



Hanging or standing in your store window, the new Indoor Illuminated Sign (Form 4F92) will attract television-set owners to your free tube-testing service.



The Form 4F30 Window Streamer

labor. When we speak of labor sales, we are actually talking about "time." No area of your business is of greater importance than "time." Translated into accounting terms, it is productive labor on the one hand and non-productive labor on the other. Both are a necessary part of your business, but it is only from productive time that sales revenue is created. Non-productive labor is an essential ally, but it does not produce the sales dollar.

The manner in which you control the productive time of your technicians can spell the difference between profit or non-profit. Again, to resort to accounting terminology, it is the labor efficiency factor that assumes great importance in your business. In other words, the ratio between a technician's productive labor and his non-productive time is a measure of his overall efficiency and, consequently, a test of his real value to you.

I do not have any efficiency standards by which to compare your actual experience, but I do suggest that daily time reports should clearly reflect this information for profit control purposes.

The areas to watch in connection with non-productivity are, of course, the check-in time in the morning, the check-out time in the evening, errors in dispatching, faulty information regarding customer complaints, failure

to have the proper parts, call-backs, pickup time for parts, etc.

The price at which labor should be sold is the second point of importance in a service business. While competitive practices will play an important part in establishing the hourly rates, your rate must be set at a level which will cover your operating expenses (including loss time) and a return of profit. If the rate is too high in relation to your competitors', then some loss of business can be expected. On the other hand, if it does not cover all or a proper portion of your overhead, then a poor or no return of profit can be expected. The price at which your labor is sold cannot be taken lightly for, as you well know, it can lead into all sorts of trouble. Thus, while competitive practices cannot be ignored, I do not think that the alert, progressive dealer need concern himself too much with the unrealistic price policies of his competition.

Are you achieving a proper profit on your sales of material? By material, I refer to tubes, parts, accessories, hardware, etc. The gross earnings from this area of your business should provide a profit margin of 40% to 45%. What are your gross earnings from this second source of sales revenue? Do your books reflect this information? It is a mistake if they do not.

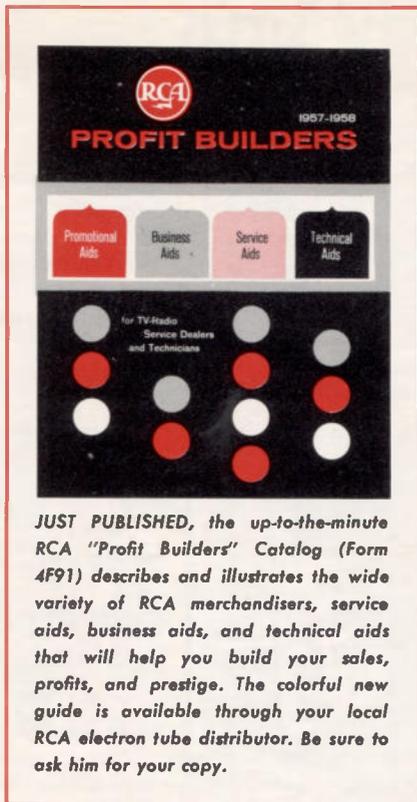
What about your sales effort in this

category? Do your technicians consider these materials, particularly accessories, as merely a step in the repair process, or do they sincerely endeavor to suggest a replacement for those parts and accessories which are approaching the wearout point?

I do not intend to imply that the customer should be oversold. There are, however, many of us who would be glad to receive the advice of a competent serviceman in that respect. Let me cite a personal experience:

I have an air conditioner which was reinstalled in my new home. The serviceman who made the first installation failed to suggest the desirability of providing a cover for winter use. The second man who made the reinstallation did suggest such a cover—and, forthwith, he had a plus sale over and above the original purpose of his call. The moral of this story: *Sell up*, as they say in merchandising circles—but *sell right*.

The third source of revenue is the sale of "other" products. I refer to radios, batteries, record players, tape recorders, etc. As a service-dealer, your inclination might be to go lightly in this direction. But, I know of no good reason why you should not stock an ample supply of these random items. They're a "natural" to produce plus business and profits without impairing your efforts in the servicing area.



JUST PUBLISHED, the up-to-the-minute RCA "Profit Builders" Catalog (Form 4F91) describes and illustrates the wide variety of RCA merchandisers, service aids, business aids, and technical aids that will help you build your sales, profits, and prestige. The colorful new guide is available through your local RCA electron tube distributor. Be sure to ask him for your copy.

Answers Industry Need

(Continued from preceding page)

sign and litho display described below.

(2) Indoor Illuminated Sign (Form 4F92)—a brilliant 18-inch-high by 11-inch-wide sign with a modern, acrylic plastic face backed by a sturdy metal housing. The fluorescent lamp quickly calls attention to your "TV-Radio Tubes Tested by Experts Free" message, produced in bright red and black. Slots provide the means for you to hang the sign in your shop window; a metal easel enables you to stand the sign upright.

(3) Litho Display (Form 4F100)—a 30-inch by 40-inch version of the "Tubes Tested by Experts" counter card. Use it to build an attention-getting display in your store window.

(4) Window Streamer (Form 4F30)—a natural adjunct to your sign identification. For ready application to your store window, this three-color, transparent type window streamer has self-adhering edges.

* * *

Now that you are fully aware of the power-packed "Tubes Tested by Experts" merchandising "weapons" available to you from your RCA electron tube distributor, you should waste no time in obtaining them and putting them to work for you to educate local TV-set owners on their need for expert service in troubleshooting television receivers. The time to act is now.

IT'S SILVERAMA BRIGHTEN-UP TIME!

Have you heard about RCA Silverama's newest, freshest merchandising program that's tailor-made for your autumnal support?

Timed to coincide with the many excellent telecasts being carried by the networks during the fall season, this "Brighten-Up Time" campaign will further build consumer favoritism of RCA super-aluminized picture tubes and the service-dealers who recommend and install them. The current program's advertising and promotions have been skillfully interwoven to spread the good word to the TV-set owner that there's no time like the present to have you brighten-up his TV picture with a new Silverama picture tube.

As you most probably agree, RCA's consumer advertising has proved to be the strongest in the picture tube field. This enviable top-rated position will assuredly be maintained during the present campaign. From coast to coast, from season to season, America's TV-set owners will continue to read, see, and hear about RCA Silverama's clearer, brighter pictures. On the NBC radio and TV networks, as well as in LIFE, TV GUIDE, and THE SATURDAY EVENING POST magazines, the unsurpassed quality of RCA Silverama Super-Aluminized Picture Tubes will continue to be hailed repeatedly, paving the way for every Silverama installation you make and recommend.

You can further capitalize on the consumer impact of RCA's national public relations endeavors by personally taking an active advertising and promotion role in your community.

To help you in your advertising, your RCA Silverama distributor is now

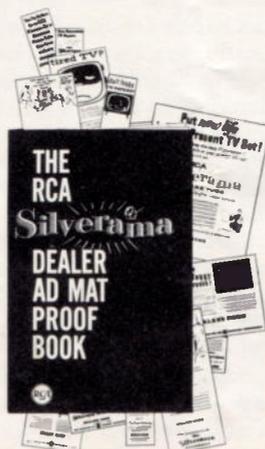
offering you your selection of individual ad mats from RCA's specially prepared Silverama Dealer Ad Mat Proof Book (Form 5F908), as well as Professionally-Recorded Radio Spot Commercials (Form 4F934) and the TV Script-and-Slide Commercial (Form 4F935A). These ads and commercials will flag the attention of local TV-set owners to the fact that you are the logical, trusted source of neighborhood TV service.

Promotion-wise, your RCA Silverama distributor can provide you with the following consumer-directed merchandisers:

(1) TV Service Sign (Form 5F910)—a smartly designed unit that will give your store a new look. Evenly illuminated for 'round-the-clock visibility, the flasher sign is also compact and sturdy, for it has been carefully die-formed of heavy-gauge plastic to provide the ultimate in detailed construction. Pictured on the back cover of this issue, the sign is excellently suited as a counter piece and as a window display. You can also rest it on any of your display merchandise.

(2) "The Silverama Story" Booklet (Form 5F902)—handy reading matter for your local TV-set owners. Mail copies to your entire customer list, leave a copy at every house-call, and hand out copies over the counter. The booklet will help alert your customers to the top quality of the RCA Silverama picture tubes you install.

(3) Silverama Seal of Excellence (Form 5F903)—also designed to build your reputation. Affix this Seal to the safety glass of every TV receiver you service with a Silverama tube. A pressure-sensitive adhesive makes the Seal



Ad Mats (5F908A-Z)



Seal of Excellence (5F903)



Form 5F906 Poster



Handy Booklet (5F902)

of Excellence easy to apply—and easy to peel off when your customer is ready to enjoy his brighter, sharper Silverama picture.

(4) Repeat Business Sticker (Form 5F904)—featuring the industry's famous Code of Ethics, a concise statement on the integrity of your business practices. Beneath this statement, your imprint provides your customer with a useful record of your name, address, and telephone number. You'll surely want to attach one of these stickers to

the back of every TV receiver you service.

(5) "Safe-TV-Mat" (Form 5F901)—a protective rubber pad specifically designed to help you guard out-of-chassis picture tubes against scratches and dangerous jolts. Also pictured on the back cover of this issue, this new rubber mat is deep-piled and shock-absorbent, providing an excellent surface upon which to rest, faceplate down, any picture tube, regardless of its weight or size. Used under a chassis,

"safe-TV-mat" also doubles as a furniture pad or floor mat, protecting delicate finishes against chassis mars and scratches. Because "safe-TV-mat" rolls into a light, compact bundle, you can carry it easily in your tool kit and use it both in your shop and on house-calls.

(6) Two Bold New Silverama Posters (Forms 5F906 and 5F907)—inexpensive sales aids that identify you with RCA Silverama's nationwide consumer-directed magazine-TV-radio advertising.

Portable WT-110A Automatic Electron Tube Tester Among Six New RCA Test Instruments for Service Technicians

Here's welcome news to excite the entire service-dealer industry: RCA's new WT-110A Automatic Electron Tube Tester is now commercially available. Just what service technicians have been asking for, the relatively inexpensive WT-110A is ideally suited for your use to satisfy customer requests when you tie in with the new RCA "Tubes Tested by Experts" campaign (see page 2).

Portable, lightweight, compact, and dependable, the WT-110A is being offered to you by your local RCA distributor along with five other recently announced RCA test instruments: the

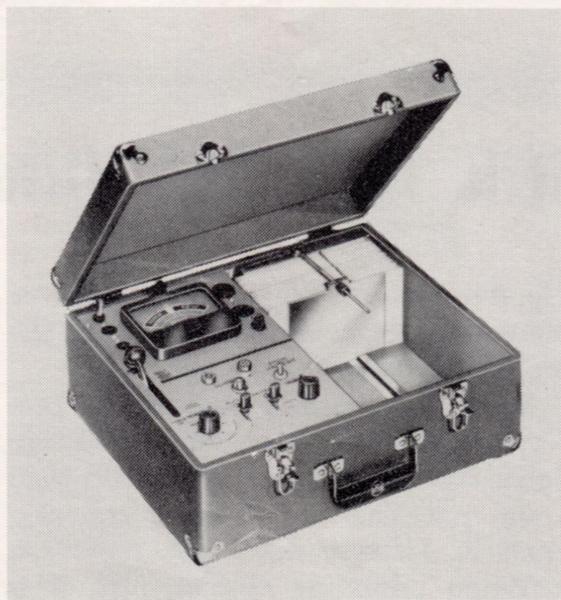
R-69A Television/FM Sweep Generator, the R-49B RF Signal Generator, the R-84B Ultra-Sensitive DC Milliammeter, the R-99A Crystal-Calibrated Marker Generator, and the 306B Video Test Adapter.

* * *

The RCA WT-110A Automatic Electron Tube Tester is designed to fill a definite niche in radio, television, and industrial servicing applications. It has high sensitivity and can test a wide variety of receiving tubes. Its new portable design is capable of simplified, accurate, and rapid tube analysis with individual pre-punched computer-type information cards. The design for each different tube type automatically sets up all tube-pin and test-voltage connections when the card is inserted into the panel slot of the tester.

You can use the WT-110A to check all popular receiving tubes for internal shorts and leakage, for general condition, and for general quality. The general-quality test is based on measurement of the transconductance of the tube. Readings are provided for in terms of "Renew-?—Good" on a 4½-in. meter. The gas condition of the tube is also indicated on the meter.

At present, the WT-110A is supplied



The WT-110A Automatic Electron Tube Tester

to you equipped with a set of 239 pre-punched cards for 7-pin and 9-pin miniature, octal-type, and 1½-in.-type receiving tubes. Test cards are available as accessories to test other popular receiving-type tubes used in radio and television receivers. Unpunched cards and a punch are also available as accessories to allow you to make your own cards.

Made of durable plastic, the pre-punched cards are hinged in the case and are indexed in numerical-alphabetical order by tube type. The attached punch-card can be easily engaged from the front to permit the addition or removal of individual tests.

The punched-card system used in the WT-110A accommodates the popular receiving-tube types used in radio and television receivers, including diodes, triodes, tetrodes, pentodes, and multi-diode receiving tubes having both similar and dissimilar units.

Special provisions are included in the WT-110A for making high-resistance interelectrode leakage and low-value gas-current tests on certain tube types. These special tests make possible a better evaluation of tube types us-

in applications critical to leakage or gas.

Other features of the Automatic Electron Tube Tester include a front-panel calibration control to permit compensation for above- or below-normal line voltage; easily replaceable screw-mounted tube sockets; and steel pin straighteners for miniature tubes. These pin straighteners are mounted on the front panel of the WT-110A.

Weighing only 25 pounds, the WT-110A has an aluminum panel and is housed in a vinyl plastic case with a detachable cover.

* * *

RCA's new R-49B RF Signal Generator is designed for general radio and television servicing and other applications which require a continuous wave or modulated rf signal of sine waveform from 85 Kc to 30 Mc. The rf output from the R-49B may be modulated internally by a 40 cps audio oscillator or may be modulated externally by an audio signal fed into a connector on the front panel. The internal 400-cps modulating signal is also available separately at a front-panel connector.

Six tuning ranges are employed to cover the frequency from 85 Kc to 30 Mc and individual ranges are selected by means of a separate range switch. A fine tuning control is provided to permit precise setting of the output frequency. The function of the dial and tuning assembly permits a direct reading of the exact frequency setting. The construction of the unit minimizes radiation which might otherwise interfere with the test procedure.

Especially designed for your servicing needs, the R-49B is a highly versatile and portable test instrument which will give long and reliable service.

(Continued on next page)

New Test Equipment

(Continued from preceding page)

formance. The WR-49B may be used in such applications as alignment and signal tracing of AM or FM radio receivers, alignment of low-frequency if amplifiers in television receivers, and signal tracing and troubleshooting in nearly all sections of television receivers.

* * *

Another of the latest additions to RCA's famous line of test equipment is the WR-69A Television/FM Sweep Generator. A must for every well-equipped service technician, this new RCA instrument is designed for sweep-frequency alignment of color and black-and-white TV receivers and FM

receivers. When used in conjunction with an oscilloscope, the WR-69A will provide you with a continuous trace display of the bandpass characteristics of the receiver you are testing.

RCA's WR-69A provides radio-frequency, intermediate-frequency, and video-frequency output, permitting the alignment of VHF tuners, picture- and sound-if amplifiers, video amplifiers, and chrominance circuitry in color-TV receivers. RF output is provided for each of the 12 VHF-TV channels. Individual channel output is selected by means of a switch. Output at the intermediate and video frequencies is continuously tunable from 50 Kc to 50 Mc. Sweep width for FM-receiver alignment is continuously adjustable in the range from 88 to 108 Mc. Output voltage at minimum setting of the attenuator on all frequencies is at least

0.1 rms volt, which is more than adequate for general alignment work.

The WR-69A is housed in a blue hammeroid case which measures 13 $\frac{3}{8}$ inches long, 10 inches high, and 7 inches deep. The satin-aluminum panel is recessed in the front of the case. The unit weighs approximately 16 pounds and is equipped with a black carrying handle.

* * *

The new RCA WV-84B Ultra-Sensitive DC Microammeter is a battery-operated vacuum-tube microammeter designed for measuring minute currents. When used with external multiplier resistors which are supplied with the instrument, the WV-84B may be used as a high-resistance voltmeter with an input resistance of at least 100 megohms per volt. The instrument may also be used as a megohm-meter

Convergence Circuit in 1957 RCA Victor Color Receivers

BY JOHN R. MEAGHER*

RCA author, lecturer, and nationally known TV servicing authority

Center convergence in 1957 RCA color receivers is obtained by means of electromagnets instead of permanent magnets. The polarity and strength of direct current flowing through the electromagnet coils is controlled by means of center-tapped potentiometers which are mounted at the front of the cabinet for convenience in observing the pattern on the picture tube while adjusting center convergence. The dynamic-convergence circuitry in these receivers is also different from earlier models in that separate windings are provided for the horizontal-and-vertical-dynamic converging currents, as shown in the simplified diagram of Figure 1.

Positive horizontal-retrace pulses, obtained from a winding on the horizontal-output transformer, are applied through an adjustable inductor, which is used as the horizontal amplitude control, and through a 0.47- μ f capacitor, to a low-value (22-ohm) resistor which is shunted by a horizontal-tilt coil. The voltage developed across the horizontal-dynamic converging coil is sawtooth in shape (as shown in Figure 2) and it produces a current of parabolic waveform.

It is possible to make rough adjustments of center convergence by observing details in the center of a black-and-white picture, but it is impractical,

if not impossible, to adjust dynamic convergence successfully without the aid of a suitable dot/bar generator.

Many experienced technicians prefer to use a crosshatch pattern of thin vertical and horizontal bars, rather than a dot pattern, for adjusting convergence in large-screen color receivers.

When adjusting convergence it is desirable to have sharp vertical edges on the dots in a dot pattern, and on the vertical bars in a crosshatch pattern. Sharp edges indicate abrupt transitions from the black level to the white level and vice versa. To obtain sharp edges, the signal pulses that form the dots and vertical bars must have fast rise and fall time. When the rf output of a generator that produces pulses with sufficiently fast rise and fall time is used, the higher-frequency components of the pulses are attenuated in the rf/lf amplifiers and also in the video amplifier. As a result, the rise and fall time is slowed down and the vertical edges of the dots and bars change gradually from the black level to the white level. This effect is not too evident on small-screen color receivers but it becomes obvious and is a disadvantage when endeavoring to obtain best convergence on large-screen color receivers. To obtain the sharpest vertical edges, it is preferable to use the video-frequency output of the generator rather than the rf output, and apply the signals to the last video-frequency amplifier.

The horizontal dynamic-convergence circuits in large-screen color receivers have relatively high Q, and the am-

plitude and phase of the horizontal dynamic-convergence currents are affected by change in the horizontal-scanning frequency. Hence, it is advisable to have the receiver operating at the correct horizontal frequency when adjusting convergence.

The simplest and most effective way to keep the receiver operating at the correct horizontal frequency when using a portable-type dot/bar generator is to tune the receiver to a black-and-white station and use the station's sync to lock the horizontal and vertical oscillators in the receivers at the correct frequencies. The video-frequency output of the dot/bar generator is then fed into the grid of the last video-frequency amplifier in the receiver, and the oscillators in the generator are locked to the correct frequencies by a deflection voltage coupled from the receiver to the generator in the usual manner. The receiver contrast control is turned down to keep the picture from appearing in the dot or crosshatch pattern.

The video-frequency output of the generator may be applied to the last video amplifier by means of a socket adapter. This method can be used for all present RCA color receivers. Circuits of suitable socket adapters to be used with RCA Victor color receivers, and with RCA WR-36A dot/bar generators, are shown in Figure 4. The WG-305A adapter, for use with RCA Victor 600 series receivers, is available as an accessory. The WG-306A adapter, for use with RCA Victor 700 series receivers, is also available as an acces-

*As prepared for the RCA Institutes Color Television Home Study Course.

which will measure resistances from 900 to 90,000 megohms.

The WV-84B features negligible loading of the circuit under test, with only a 0.5-volt drop required for full-scale deflection of the meter and an amplifier which limits the current flow through the meter and thereby protects it against burnout.

You will find the WV-84B an extremely useful instrument for measuring feeble currents in various servicing applications.

* * *

RCA's WR-99A Crystal-Calibrated Marker Generator is designed for use in the alignment and troubleshooting of black-and-white and color TV receivers, FM receivers, and other equipment operating in the frequency range from 19 to 260 Mc. The WR-99A provides an rf output signal from 19 to

260 Mc in eight bands on fundamental frequencies. A wide choice of modulation facilities is provided, including 4.5 Mc which produces dual markers on a sweep-response curve to mark the picture-carrier and sound-carrier points on the curve.

The new instrument combines the functions of a marker generator, a horizontal bar pattern generator, a re-broadcast transmitter, and a heterodyne-frequency meter. The calibration of the instrument is straightforward—no charts are needed.

The tuning dial is specially marked with all VHF sound-carrier and picture-carrier frequencies as well as important intermediate frequencies in the 20-30 Mc and 40-50 Mc regions. Important color-TV frequencies are also marked on the dial scales. A special socket located at the rear of the

WR-99A permits the connection of an external crystal or L-C circuit into one of the internal calibrating oscillators. When an external frequency-determining unit is used, it is possible to produce calibrating beats at intervals other than 1 or 10 Mc. Designed for various servicing applications in commercial and industrial equipment, the WR-99A weighs only 17 pounds.

* * *

The new RCA WG-306B Video Test Adapter is service-designed for use in the video output stage of color-TV receivers which use 6CL6 or 12BY7 tubes. Usable in place of the WG-305A or WG-306A adapters, the WG-306B is designed for use with the RCA WR-36A Dot-Bar Generator and provides for operation of the color-TV receiver without attenuation of the test signal.

sory. (A recently announced adapter, WG-306B, may be used in place of the WG-305A and WG-306A.) These adapters may be used with other makes of dot/bar generators providing the generators have video-frequency output of sufficient amplitude.

Because it is necessary to use video-frequency signals instead of rf signals to obtain clean sharp vertical edges on dots and on vertical bars in large-screen color receivers, RCA has designed a portable dot/bar/crosshatch generator, the WR-46A, which furnishes high-level video-frequency output, of either polarity, to drive the grids or cathodes of the color picture tube directly, without going through the rf/lf or video-frequency amplifiers in the receiver. The output of the generator is fed directly to the three grids or three cathodes of the color kinescope, or it may be applied to a common point in the cathode circuit. The latter method is recommended.

The amplitude of the output signal is continuously adjustable and may be reduced to feed the input of a video amplifier if desired. The output signal is obtained from a low-impedance source to maintain the fast rise and fall time of the pulses (which are shown in Figure 3). The output signals are applied through built-in blocking capacitors.

Only one sync lead is used in the WR-46A. This lead picks up horizontal retrace pulses from the receiver. A built-in frequency divider locks the horizontal bars in relation to the horizontal frequency, so there is no jitter or crawl in the pattern. The correct horizontal frequency is obtained by tuning the receiver to a TV station.

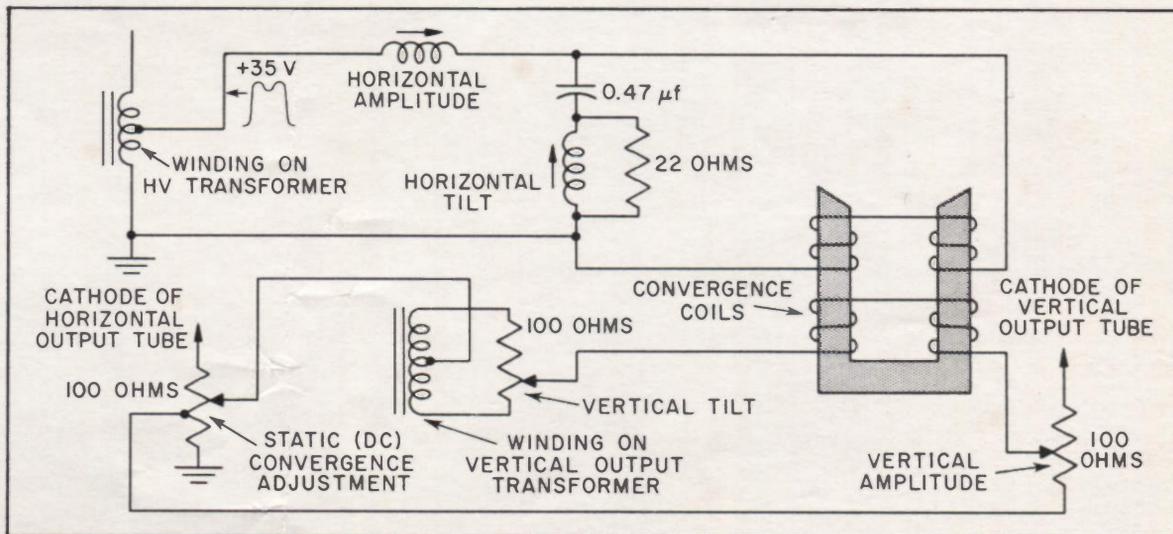


Figure 1. Convergence circuitry of RCA 1957 color receiver.

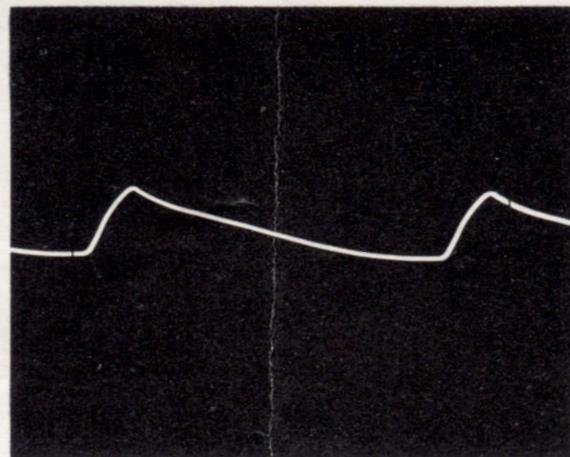


Figure 2. Sawtooth-voltage waveform across horizontal converging coil.

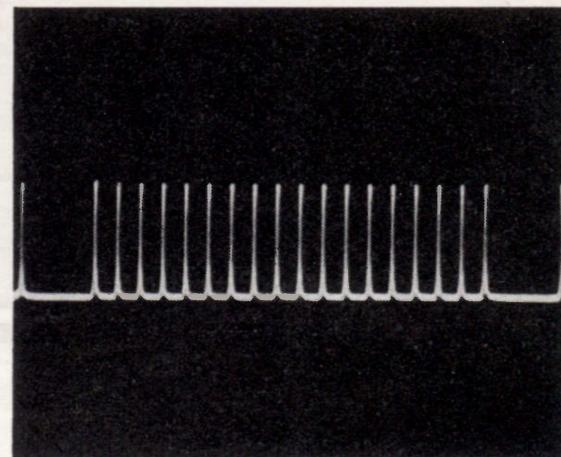


Figure 3. RCA WR-46A vertical-bar signals have extremely fast rise and fall time as shown here.

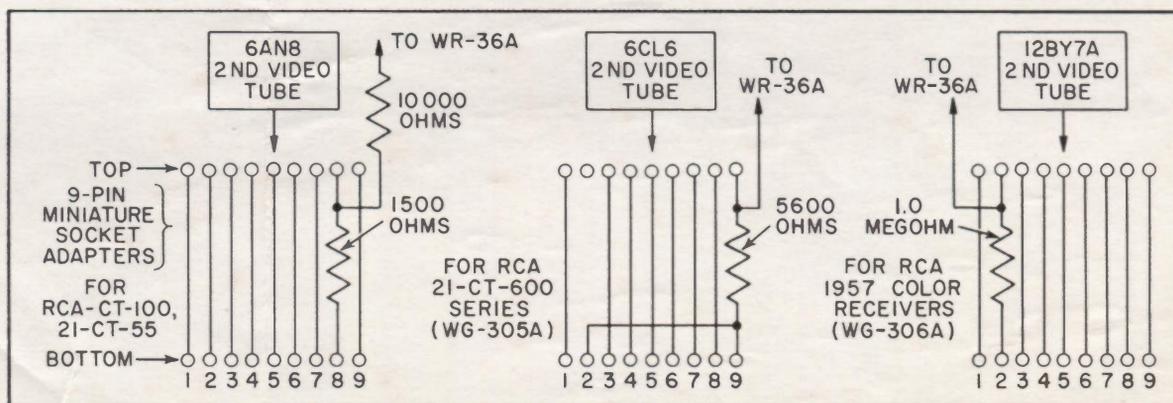


Figure 4. RCA color-receiver socket-adaptor circuits.



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