

RADIO SERVICE NEWS

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QUEEN OF THE TURNTABLE



Popular songstress, Betty Hutton, steps away from the "mike" for a moment to say hello to her dealer and serviceman friends. Betty records for RCA Victor and her discs are "solid senders" with those who enjoy the latest in swing tunes.

LARGE SALES SEEN IN HOLIDAY SPREE

Attractive Store Displays Play Major Role in Pushing Sales

The short period which remains before Christmas and New Year's will be abundantly spiced with the hectic shopping activity characteristic of the pre-holiday season. It offers the radio and service dealer some real opportunities.

American Christmases and New Years are traditionally spent at home, and the average family will look to its radio as a major source of entertainment. Aside from sales of receivers, and phono combinations, lots of sets are going to be brought to the service shop and that means the sale of tubes, parts and batteries, too!

Merchandise minded dealers and servicemen will tie in their promotional efforts with the holiday season. Their windows will project "eye catchers" before which shoppers will pause—their sparkling store displays will keep the cash registers ringing.

That genial old fellow with the red get-up and white whiskers is just around the corner. Bid him welcome!

SOME SWEEPING STATEMENTS ON SWEEP FREQUENCY GENERATORS

By J. B. DEARING

Field Supervisor, National Office, RCA Service Co., Inc.

The need for the Sweep Frequency Generator was first felt with the advent of Hi Fidelity Receivers and became a necessity when Television and FM were introduced. Such a Generator (with companion oscilloscope) offers the only practical means for the radio service man to observe the frequency response characteristics of radio circuits.

There is no universal all-frequency, all-purpose sweep, and in choosing one for practical use there are a number of important considerations.

Paramount, of course, are the requirements of center and band width of frequencies to be covered. For the service man now handling FM and looking forward to television business, the minimum requirement should provide coverage from 2 to 30 Mc., and able to sweep at least 0.2 Mc. in the range 2-5 Mc. and at least 6 Mc. in the range 7-30 Mc. This would provide for alignment of FM if's and discriminators and of Television if's.

For the High-Fi BC if's or, in fact, for careful alignment of ordinary BC if's, the Sweep Generator should center its frequency at any

point from 125 to 500 kc and sweep at least 20 kc.

Of less importance, but still worth while for the service man wanting to do the best possible alignment job, the FM and television rf bands should be provided for with at least a six Mc. sweep in the range 40-120 Mc.

An essential part of, or accessory to, a sweep generator is some accurate frequency measuring device to be used in establishing the center, the limits, and the contour of alignment curves.

(Continued on Page 2, Column 1)

ALL-ELECTRONIC COLOR TELEVISION DEMONSTRATED BY RCA SCIENTISTS

Electronic color television pictures, produced by all-electronic means, were demonstrated publicly for the first time by RCA's Princeton Laboratories on October 30th. The exhibition proved that flickerless, all-electronic color television is practical without rotating discs or other moving parts.

REAL TUBE VALUE

Dealers and servicemen can be sure of customer satisfaction when they sell RCA tubes, and here's a story to prove it.

In a series of studies recently concluded by the Tube Department and covering the sale of 100,000,000 receiving tubes on which field records were obtained, less than 1½% were involved in defective claims. Only 1% were found to be actually defective.

A new color slide television camera, developed by RCA and used in the demonstration, produces signals from 35 mm. Kodachrome slides. Transmission of the picture on the slide is achieved in natural colors when a light beam from a kinescope is focused through the slide and separated into component colors by a system of mirrors and photoelectric cells.

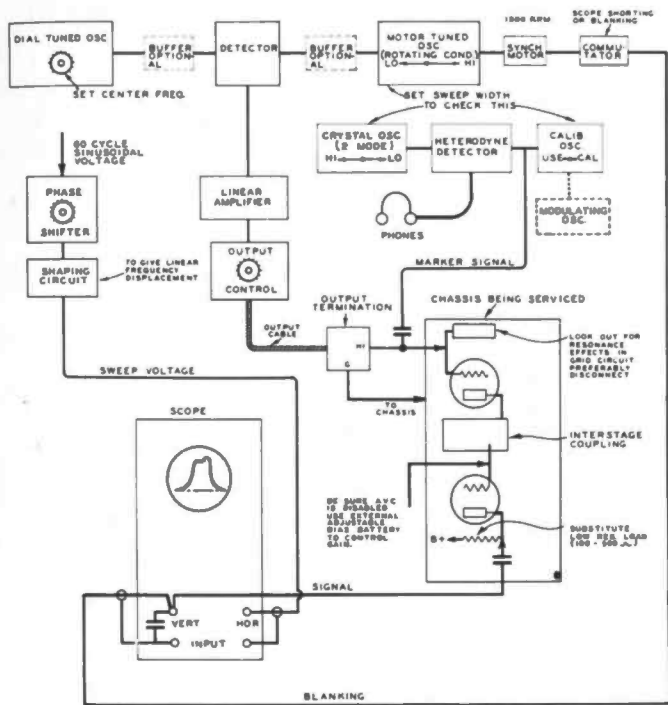
The receiving set is equipped with three 3-inch kinescopes, which separately receive the signals representing red, blue and green. This trio of kinescopes is called a Trinoscope. From it the three color images are optically projected into a brilliant composite picture which appears on a 15 x 20-inch screen. By this new advance in television, simultaneous color transmission, instead of sequential transmission, color by color, is achieved.

No Obsolescence Problem

Since the electrical characteristics and all of the standards of the green image—including the synchronizing pulses—are identical to those of the present black-and-white standards, any broadcasts from color stations using the electronic simultaneous system can be received clearly on black-and-white receivers by the addition of the easily installed radio-frequency converter. No modifications whatever are required inside the set.

This converter will enable present-day television sets to receive color programs and reproduce them in black-and-white, even when transmitted on ultra-high frequencies. Thus, existing receivers will not be made obsolete by the introduction of color at some future date. Likewise, it will be possible for electronic color television sets to receive the broadcasts of black-and-white stations.

In commenting upon this important advance, Dr. C. B. Jolliffe, Executive Vice President in charge of the RCA Laboratories Division, declared that five years would be required to bring a color system to the present status of black-and-white television.



Block diagram of a motor-driven sweep frequency generator.

SWEEPING STATEMENTS

(Continued from Page 1, Column 3)

One of the best consists of a crystal-calibrated oscillator modulated with a second frequency. Both of these marker frequencies must be variable, the first, acting as the carrier, must tune through the sweep ranges, and the second should tune from approximately five kc. (for audio channels) to about three Mc. (for video if's).

When the signal from this combination is injected with the sweep signal, it appears as three markers (interference patterns) on the scope trace—that is, a center frequency and two equidistant side-band beats. Most alignment curves can be boxed in nicely once these marker frequencies are set in accord with the receiver design specifications.

Providing the Sweep

Simply injecting the signal from any calibrated oscillator along with the sweep signal gives one marker; frequency limits may be determined by tuning this along the alignment curve that appears on the scope. As a less desirable expedient an absorption wave meter may be used to "suck" a hole in the alignment curve at measured points. This is done by coupling it to some convenient point in the circuit under observation, preferably at the sweep output.

Synchronizing, or actually providing the sweep voltage for the scope is another problem. Owing to the difficulty in getting a signal (with linear rate of change of frequency with time) from the sweep, and of providing a pulse that will

positively synchronize the scope, probably the best arrangement is for the sweep generator to provide scope sweep voltage.

Another refinement of particular value when sawtooth scope sweep is used is means for shorting out the reverse trace so that a single image with baseline appears on the scope.

A linear diode is a necessary accessory for sweep alignments, particularly when it is necessary to examine the response of individual rf or if stages or combinations of stages not coupled to the receiver second detector. This diode can be used also as a check on the linearity of output of the sweep itself by simply rectifying the sweep signal in the various ranges and widths of sweep, and applying the rectified voltage to a scope.

Most commercial sweeps for rf, if, and vf utilize the beat note between a fixed and a variable oscillator. To preclude interference troubles, the fundamental frequencies of these should be well above the desired difference or signal frequency; to prevent lock-in between the two, the variable one should not be swept closer than within one or two per cent of the fixed one. (Buffer stages can be used to reduce this.)

Modulation Methods

A linear detector and broad-band amplifier are further requirements of the beat-note type of sweep.

Simpler design, particularly good for the higher if and rf bands, uses a single oscillator directly frequency modulated. If the band swept is wide, say 20% of the average, a buffer or limiter is advisable

(Continued on Page 7, Column 3)

HELPFUL CONSIDERATIONS IN BUSINESS MANAGEMENT

By JOHN F. RIDER

In speaking about the proper management of a service business, it is necessary to consider the scope of the enterprise. By scope, we mean the size of the business—the amount of money which is handled—the program adopted for the development of sales—the manner in which the funds of the concern are spent, etc. The larger the concern, the greater is the number of items which must be considered in formulating the plan of administration.

Sales Possibilities

The presence of a competing establishment does not in itself mean that the location of our shop is poor—but if an analysis shows that the number of available prospective customers, when apportioned among the existing shops, is insufficient to return the proper income required for the successful operation of our man's business, then the location selected is a poor one for the newcomer.

After having analyzed the sales possibilities of the market, it is necessary to consider the minimum sales requirements of the establishment. This is normally expressed as a sales quota and indicates the amount of business which must be done by the organization during a definite period in order to cover the expenses incurred during that period. The period may be figured on a basis of six months or a year, the latter being most common.

Rent

A service organization should, of course, be located in the most advantageous spot with respect to the possibilities of securing business and attracting trade from among the people who daily pass the establishment. It is, therefore, necessary to find the best compromise between trade and rent.

An analysis of business selling maintenance throughout the United States, shows that the amount of money appropriated for rent or allotted to rent, seldom, if ever, runs above 5% of the total volume of sales during a year.

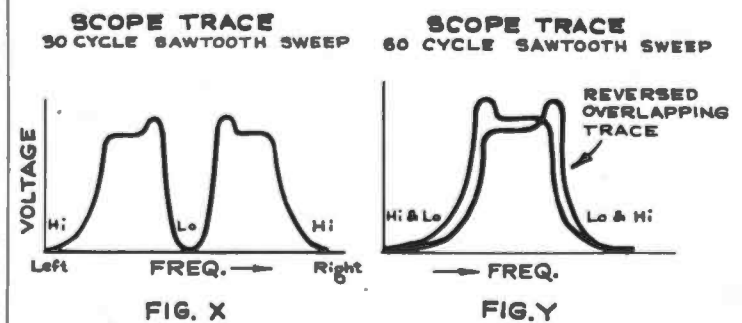
Equipment

The amount of money you should spend for equipment during any one year is related to the volume of business you intend doing, or are doing. It is illogical to suppose that a man is going to maintain \$1,000.00 worth of apparatus in order to do \$1,000.00 worth of business, because the depreciation on this equipment, which is a portion of the fixed expense, must come out of the income in order to establish a fund for the replacement of such equipment. Investigation discloses that the amount of money set aside to compensate for depreciation, and which reflects the investment in equipment, is usually between 4 and 5% of the total sales.

Free and Paid Inspection

Basically, free inspection or nominal-priced inspection is a form of sales promotion. Which of these methods is to be employed by you is entirely up to you. We are not attempting to recommend one form or the other. Free inspection will attract more requests for calls than nominal priced inspection. However, if the expense relating to such free calls is not given due consideration, it cannot help but dig into the profits.

Since it has become common practice among service station operators to refund the nominal inspection charge if the job is secured, we believe that so far as proper management is concerned, both the free inspection and the nominal priced inspection, of the type mentioned, mean one and the same thing.



Reversed adjacent curves and reversed overlapping traces.

Looking things over with Dave Finn

Manager, RCA Renewal Sales

For the Home Instrument Department, one of the four departments which make up the RCA Victor Division, November 3rd was "T" Day—the day when the first post war RCA television receivers were announced to the public. To herald this occasion, gala television programs originated from Station WNBC, New York, and Philadelphia's television station, WPTZ. Papers in the cities where sets are to be available, carried full-page announcement ads.

What does all this mean for the serviceman? If you are not in one of the markets where television sets are being offered, it means for the moment very little. For the serviceman located in the "Kick Off" cities, it means at least the start of a new field of endeavor. It means that while the immediate amount of service business may not be great, the time is not too far distant, possibly a year, when those who qualify can expect this field of operation to produce a sizeable volume of service and renewal business.

Television service, like radio service, will take some time to materialize. When sets become more plentiful and in wider use, and when the necessary service notes and various pieces of television test equipment are generally available, it should mean much to all who qualify. But television must first be sold and accepted, and the desire for ownership stimulated, before the maximum will be derived from a servicing standpoint.

One of the most important moves that RCA or any other television receiver manufacturer can make today is to see that the purchaser becomes an enthusiast to the point where he recommends and influences the sale of additional sets to his friends and neighbors. There must be no slip up on that score. To be sure of this, the television receivers currently going into homes must give peak performance with maximum customer satisfaction and minimum service expenditure.

RCA gave considerable thought to how this might best be accomplished. Many months were consumed going over various possible approaches, talking to television owners, interviewing dealers and servicemen. Finally, a plan was developed which we believe will most rapidly bring about the end goal and accomplish the most good for a majority of the service fraternity. It was named the "guaranteed installation and maintenance policy," effective for one year.

Under this plan, RCA Engineers will service RCA Victor television receivers from factory to home, be in a position to catch any bugs that may develop, and better assure the

enthusiastic support of all who purchase television sets.

Techniques of television installation and service are complex; at present, due to the lack of actual field experience, many reputable and otherwise qualified service accounts may not be ready to take on such work. Rather than do anything which might hold up the development of this future service market, it was deemed logical to immediately start the sale of sets and expect that those servicemen who so desire would prepare themselves to participate.

Also, it was felt, as this developed the necessary video test equipment required for this type of service work would be generally available. In the past, the average radio service shop has had little need for the specialized equipment essential for television service. It was also thought advisable not to expect individual service accounts to assume this test equipment expense until the market was more mature and the expenditure for such equipment justified.

Finally, the war taught our engineers many new techniques with high frequency work, and much of this was incorporated into the design of the television receivers now reaching the market. Until such new methods are generally understood in the service field, installation and maintenance by factory engineers appear to be the only plausible way to start the mass sale of receivers.

During the next year, it is our aim to make available the most outstanding and up-to-date technical literature and service notes possible; to conduct, wherever possible, training courses for those who desire to cash in on future television service work. We shall also try to help you equip your shops with the most modern television servicing equipment.

At the same time a good share of RCA Victor Home Instrument Department sales and promotional efforts will be directed at placing receivers in American homes—at creating a whole new era for you, the serviceman.

The scene is being set for your participation.

NEW VOLTOHMYST FOR HIGH FREQUENCY WORK



The new WV-75A VoltOhmyst and its diode probe are designed to meet many applications in FM and television testing.

ADVANCED RCA VOLTOHMYST TESTS FM AND TELEVISION

The servicing of industrial and radio equipment using the very high frequencies up to 250 megacycles will be facilitated by an advanced model of the popular RCA VoltOhmyst which is now in production and will be available shortly.

Employing a newly developed diode probe and capable of measuring peak-to-peak voltages at very high frequencies, the new meter, designated as RCA Type WV-75A, incorporates all the refinements of its low-frequency companion, the VoltOhmyst Type 195A, in addition to circuit innovations which make the new meter excellent for high-frequency work.

The instrument is actually six meters in one, comprising a uhf Voltmeter, Audio Voltmeter, ac Voltmeter, dc Voltmeter, Ohmmeter, and FM indicator. Outstanding features of the unit are its ability to read both ac and dc voltages up to 1000 volts and the special electronic monitoring circuit which makes the meter virtually burn-out proof. A polarity reversing switch saves the operator the trouble of having to change leads when testing.

A full-wave rectifier, which is built into the ac probe, makes possible the reading of both negative and positive voltage peaks even at the higher frequencies. The diode probe contains a standard AN (Army-Navy) integral female fitting for direct connection to a co-axial line. Measurements at high frequencies are made by direct contact with the central pin and the ground ring at the end of the diode probe, while an alligator clip for the central pin and the short ground lead serve as adapters for voltage measurements at the lower frequencies.

When used for FM and television testing, the meter can make all measurements in radio receivers up

to 1000 volts, from the primary of the power transformers to the output transformer or voice coil of the speaker. The WV-75A is also used for checking dc measurements directly at the grid, plate, screen, or cathode terminal, as well as bias cell voltages and the values of the Automatic Frequency Control, AVC and FM discriminator voltages.

Other Models Not Obsolete

Originally it was intended to make a diode probe for adaptation to the many existing Type 165-A and 195-A VoltOhmysts to extend the range of those instruments for high-frequency measurements. Certain limitations in the transformer load factor, bucking voltage requirements and meter scale variations necessitated the design of an entirely new instrument. As a result, the new VoltOhmyst was developed for those requiring an instrument primarily capable of high-frequency measurements. The WV-75-A does not in any way obsolete the Type 195-A since the latter is ideal for all low frequency ac measurements up to 100 kc. as well as general purpose dc resistance measurements.

HOW TO BUILD SALES IN A BUYER'S MARKET

By FRED FAVRE

RCA Tube Advertising and Sales Promotion Section

To win in the coming buyer's market, you must put everything you have on the ball! And that includes a continuous, hard-hitting sales promotion program. Just for the record, sales promotion is any effort to promote the sale of your product or service, other than space advertising and actual personal selling.

Here is a wide area, where the use of originality and aggressive effort can be the deciding factor for success. Let's explore a few aspects of sales promotion for the radio and service dealer.

Identification

If you are new in the business, you have to let everybody know who you are. If you are well established, you have to continually tell new people who you are. You have to give the place a "shot in the arm"—dress it up.

Start with an outdoor sign. You may think, "How can anyone miss my radio service shop?" But . . . people do! For a few facts, note this survey. A recent bit of research revealed that 65% of the people questioned as to where a certain brand of products were sold, could name the dealer when the store had an outside sign! When no sign was used, only 10% could name the dealer!

Now, if you will add to the value of an ordinary sign, the bonus of recognition value you can have by using one of the signs RCA makes available to you through its distributors, then you are beginning to see how RCA customer-building sales-aids work for you.

What is this "bonus" of recognition value? Listen. Naturally, you as a radio service dealer cannot afford—nor would it be wise—to

advertise in the huge number of popular magazines that RCA does. But, all this advertising is read by your customers and prospective new customers. So, when your signs and displays say RCA tubes, RCA parts, and RCA batteries you tie right in to the enormous weight of RCA advertising and publicity. You make the kind of FIRST impression you want to make on new customers. You convince old customers that you sell them only quality radio service and parts. Remember . . . to date, 530 million RCA branded tubes and millions of dollars worth of advertising and publicity have created identification and pre-sold customers! That is unequalled in the radio field.

So much now for outdoor signs. Tell your RCA or Cunningham distributor today that you want an outdoor metal flange sign, with your name on the pendant. You saw their pictures in the last RCA RADIO SERVICE NEWS. Here are the numbers. RCA 1F9971, Cunningham 1F9943, RCA Victor 2F62.

Using Displays Most Effectively

First and foremost is to use the displays RCA makes available to

you through your RCA distributor. Keep in touch with him for the newest displays. Pictured below are 3 small but effective displays that are now available. Note how they sell your service. Start with one or two in the window. Another on a counter. Place them carefully—where people STOP and LOOK. Where they can notice that you are an RCA service dealer. They'll remember it and come again.

What Direction to Take

Avoid cluttering up the store with displays. Use those which are supplied by companies that are the best known for engineering and manufacturing skill in radio. Your customer knows RCA and what it stands for. You can merchandise this quality name to build greater sales and service business. Think about that a minute.

Different displays do different jobs. RCA will continue to provide you with the best of all types. Hard hitting and simple, beautiful and attractive, unusual and colorful, large and commanding—no pains or money is being spared.

You will admit, we think, that sales enthusiasm, intelligent customer follow-up and aggressive use of sales promotion material is not something you can accomplish all at once with 100% effectiveness. You have to keep working on it.

ORDER THE PROFIT-BUILDING SALES-AIDS SHOWN ON THIS PAGE FROM YOUR DISTRIBUTOR TODAY

The attractive easel-type displays shown on this page emphasize radio service, a valuable theme for the winter months when repair work is at a peak.

- RCA Electron—Form #2F125
- Cunningham —Form #2F127
- RCA Victor —Form #2F129

Each form number covers a complete set of the three different displays.

Alice-in-Wonderland was asked by one of her amazing companions, "In what direction should I go?"

Said Alice, "Where do you want to get to?"

"I don't really know."

Then, answered Alice, "It makes no difference what direction you take!"

How true of most of us this is. But we can start to find the direction in which we want to go by self-analysis. Sit down with yourself and do some thorough checking. For example:

- 1—Do you know enough about your market? By income groups? Do you know what population you are now reaching with your present activity?
- 2—How many people pass your store daily? How many stop to look? For how long? How many come in?
- 3—How many people who come into your store buy your service or merchandise? How many do not—and why? What are you doing to make every customer or prospect contact a business builder?
- 4—Are you making clever and consistent use of the sales promotion material, sales aids and displays RCA makes available to you?

New habits take time to form—require constant restatement. It takes energy to steer a new course. Why not start now?



RADIO SERVICE PLAQUE



RCA RADIO GIRL



TOWN CRIER

SALES *and* SERVICE TIPS

Once again you can win a handsome RCA Resistor-Code Pencil by sending tips to RCA Radio Service News, Harrison, New Jersey . . . All tips become the property of RCA to be used as it sees fit . . . Service Tips are our readers' ideas, not ours. While we believe they are worthwhile, we cannot be responsible for them.

REPAIRING JAMMED TUNING UNIT IN '46 AUTO RADIOS

A common trouble in 1946 Ford, Nash and Hudson custom-built car radios is jamming of the tuning mechanism. This is caused by the ratchet gear bouncing away from the turret gear because of violent action on the part of the solenoid plunger. As a result the turret only turns part way to its next position, which in turn lets the tuning core cross-arm get behind the adjusting nut. This jams the entire mechanism.

An easy way to remedy this is: (1) tie the fingers, found on opposite sides of the turret, out of their normal position, (2) turn the turret half way to the next position, (3) push the cross-arm completely forward, (4) put the turret in its next position and let the cross-arm come back against the adjusting nut, (5) release the fingers. Then put a liberal coating of any good grease on the teeth of the ratchet gear.

C. K. Allen
Allen Radio Service
1700 - 7th Ave. Rear
Beaver Falls, Pa.

NOISY TUNING TRACED TO "FUZZY" CAPACITOR PLATES

"Fuzzy" capacitor plates are often a cause of noisy tuning. This trouble can be remedied by discon-

necting the leads from the variable capacitor and applying the line voltage between the stator and rotor plates. A high-current incandescent lamp, approximately 150 watts, should be placed in series with the line. Application of the current to the capacitor will burn off the trouble-causing "fuzz".

Charles Sandberg
377 Hinsdale St.
Brooklyn 7, N. Y.

METHOD TO INSURE GOOD TUBE-SOCKET CONTACT

In the course of my radio servicing business I came across this handy tip for eliminating noise in radio receivers equipped with one or more locking-in type tubes. Occasionally the socket contacts for these tube types became excessively oxidized. As a result poor electrical connection is made when the tube is inserted and noisy reception occurs. To eliminate this defect, take a small wire brush and move it back and forth across each pin of the locking-in tube. The pin surface is roughened by this treatment so that when the tube is replaced in the socket it breaks through the oxide coating.

Stanley Miktus
East Side Radio
44 Pulaski St.
Newark 5, N. J.

NEW MERCHANDISER BOOSTS BATTERY SALES

Now . . . sell more RCA flashlight batteries



Again RCA leads the field in progressive merchandising with a new flashlight battery merchandiser. It contains 2 dozen RCA No. VS-001 Flashlight Batteries, yet it's so compact that it only takes a little of your active counter space. See your RCA Distributor today about this new way of selling more RCA Flashlight Batteries.

NEW HOME OF SAELENS' RADIO SERVICE



This popular, Portland, Oregon, servicing firm celebrated its 15th anniversary by occupying its new and modern building. It contains 7000 square feet and a large parking area for customers' cars. The firm operates three trucks to care for residential calls. Shown above is an interior view of the sales area. Left to right, Mrs. Saelens, Albert Saelens, Russell Stanton, and Maurice M. Saelens, head of the organization.

SMALL VACUUM CLEANER ELIMINATES SET DUST

Most set chassis are quite dust laden when brought to the service shop. Cleaning the chassis by using an air hose or dust brush causes considerable flying dust—a situation which is both uncomfortable and untidy. A simple solution is to use a small hand vacuum cleaner held above the chassis while the serviceman cleans the interior of the set with a 1" paint brush.

A. Pell Moyer
A. S. Moyer & Son
Estherton Ave., at 5th St.
Harrisburg, Pa.

hind the knob. Then, by pulling first one end of the cord in a direction away from the chassis, and then the other end, the knob will be forced off the shaft.

Ralph Hickenbottom
340 West 7th St.
Elyria, Ohio

RCA TESTPOINT ADAPTERS AID IN ALIGNING SETS

One of the most important uses which I have discovered for RCA Test point Adapters is that these facilitate connecting an output meter directly to the plate of the audio tube. Better alignment conditions are obtained here than across the voice coil because of the reduced signal input required. The inconvenience of making a connection inside the chassis is eliminated by these adapters, insuring safe and sure contact above the tube socket.

A. E. Donovan
Donovan Radio Service
316 N. Rock St.
Shamokin, Pa.

RUBBER FINGER GUARDS HANDY FOR HOT TUBES

Despite many advantages of mechanical means for removing hot tubes from sockets, I think this simple method has many things in its favor. Buy two thick rubber finger covers, one for the thumb, the other for the fore finger. They give a good grip on the tube and prevent burned fingers.

J. Stephen Gold
406 Tyson Ave.
Glenside, Pa.

TRANSMISSION LINE LINK BETWEEN ROOF AND ROOM

In the alignment of television and FM antennas the transmission line may be used for audio communication between roof and radio set if suitable low-pass filters are used. In a common application, where a carbon button microphone is employed, use an rf choke in series with each terminal and an rf bypass capacitor across the button.

M. Grebler
1554 St. Johns Pl.
Brooklyn 13, N. Y.

STRING PULLEY REMOVES STUBBORN RADIO KNOBS

One of the problems in pulling radio knobs from a receiver is to avoid scratching the cabinet. A simple way to eliminate use of a lever such as a screwdriver is to slip one complete turn of fish line or dial cord around the shaft be-

REPLACEMENT PARTS

Section

SPECIALS

The following list of parts are available in limited quantities and at the special prices listed. After the available quantities are exhausted, no additional orders will be accepted.

RCA 54410 Transformer—Plate power type, primary wound for 125 volts, 60 cycles, and tapped at 115 and 105 volts. Secondary 700 volts each side of center tap with a continuous rating of 550 milliamperes. Potted in metal can with mounting flanges. Outside dimensions approximately $6\frac{1}{2} \times 7\frac{1}{8} \times 7\frac{3}{4}$ inches. Net weight approximately 25 lbs. Lug type terminals on bakelite board.

This item is excellent for a heavy duty power supply in experimental or amateur use. List Price \$18.00.

RCA 40618 Capacitor—.0475 uf., tolerance plus or minus 5%, 200 volts working, tubular case with wire leads. List Price \$.10.

RCA 40773 Capacitor—0.22 uf., tolerance plus or minus 10%, 200 volts working, mounted in small rectangular metal can, wire leads. List Price \$.50.

RCA 41257 Capacitor—10 uf., 250 volts, dry electrolytic, aluminum can with lug terminals, $2\frac{3}{4}$ inches long by $1\frac{1}{8}$ inches diameter. Can is insulated from both terminals. List Price \$.28.

RCA 41677 Capacitor—0.5 uf., 600 volts, paper type, oil filled. In metal case $1\frac{1}{8}$ inches high by $1\frac{1}{2}$ inches wide. With insulated stand-off type lug terminals. List price \$.60.

RCA 36274 IDLER WHEEL

Tire only for Idler Wheel RCA 36274 is available as RCA 70280. This tire is unground and recommended for use on record changers and players where the wheel is used as an idler.

The RCA 36274 wheel and tire assembly has the tire ground concentric with bore after assembly and must be used on record changers such as the RP162 where tire contacts the driven surface. It is also very important to continue using the RCA 36274 wheel on the RP151 two-sided record changer.

RCA 70280 Tire is sold in standard package of ten (10). Suggested list price is \$.10 for each tire.

JUST BETWEEN US GIRLS



"No, it isn't a television set—that's just our radio with a photograph of my husband on top."

RCA PHONOGRAPH MODERNIZATION KIT

Stock No. 9890

With RCA Victor Magic Tone Cell

The new Magic Tone Cell contained in this kit offers an opportunity for improving record reproduction from radio-phonographs or other record playing devices. Its design provides reduced "needle" chatter and surface noise, plus the additional feature of converting the pickup to a permanent sapphire point type completely eliminating the changing of needles, and crystal breakage at the time of needle change. It is particularly designed for installation in RCA Victrolas and Record Players manufactured during 1938 and later, with practically no exceptions and slight changes.

1.5 D.B.
PER DIV.

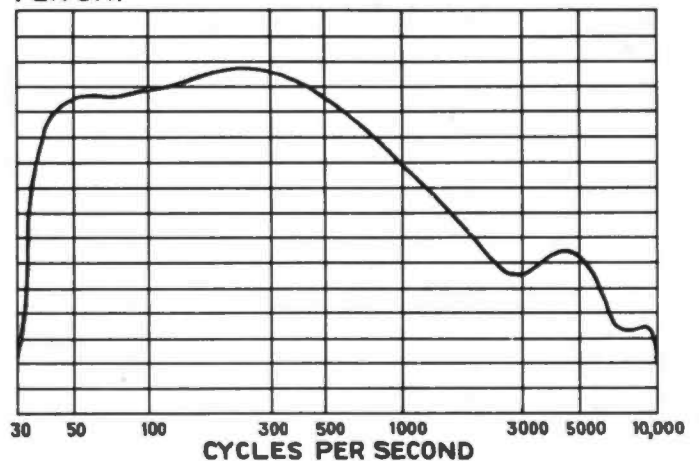


Fig. 1.

Output-Frequency Response Curve

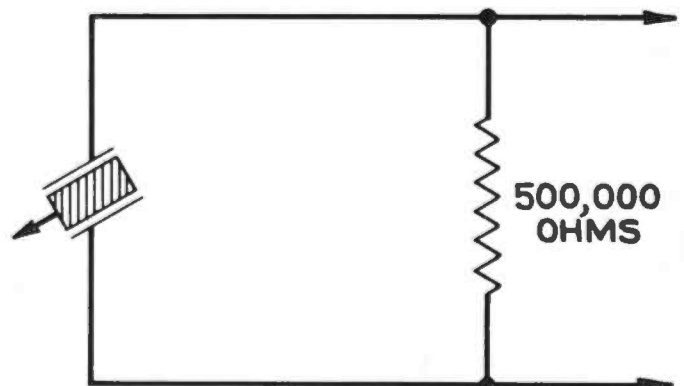


Fig. 2

Circuit Diagram

Electrical Characteristics—

Output $1\frac{1}{2}$ volts at 400 cycles approximately.

Impedance 200,000 ohms at 400 cycles approximately.

The kit consists of:

- 1 RCA Victor Magic Tone Cell with Flexible Tone Bridge and Jewel-Lite Scanner assembled complete in cartridge form.
- 4 Mounting Screws.
- 2 Spacers.
- 1 Mounting Plate.
- 4 Washers.
- 1 Plug Button.

Full installation instructions are packed with each kit. This new Crystal Kit is recommended as an improved replacement for the following RCA Needle Type Crystals: RCA 31050, 33122, 34307, 33217, 34225, and 34710.

Suggested list price on RCA 9890 Kit is \$8.35 each.

A FINANCIAL CONTROL SYSTEM THROUGH ACCOUNTING RECORDS

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The service dealer who is alert to the risks of business failure will maintain strict financial control of his organization. The hazards of operating a profitable business in the face of rapidly changing economic conditions and alert competition are well known to every service man. Adequate accounting records that supply accurate up-to-date information on the financial status of the business are a safeguard against failure.

Already, rumblings of a business recession are being heard. There are many who predict early spring as the probable date. Others say surely sometime in 1947. The length and depth of the recession are also matters of conjecture among experts. What then, does this convey to the man engaged in operating a small business? What steps can be taken now to ride the deflationary wave to the boom period which, it is said, will follow?

The alert service man will ask these questions now. He will do more. He will examine the state of his finances, the condition of his inventories, his outstanding commitments, the liquidity of his receivables, sales potential and many other facts about his business. He needs accurate information on these subjects if the rough course ahead is to be successfully negotiated and, not only must they be known, but they must also be properly evaluated and plans made accordingly.

The question may also be asked—how can a service man keep up with these factors now when he is occupied with the job of filling orders in the face of short merchandise supply and other innumerable day-to-day problems. The answer lies in the availability of records and reports which will quickly reveal the information which he must know to direct the business.

Pulse of a Business

It is a mistake to think of book-keeping records as a sort of necessary evil. Unfortunately, this feeling does prevail in the minds of the uninitiated. The result is that all too often business men operate their businesses without the benefit of fact-revealing information on which to base their day-to-day decisions and overall planning. A system of accounts and records embracing every phase of the business can be a source of lively up-to-the-minute news on its financial condition. Accounting is the pulse of the entire organization measuring the effect of yesterday's decisions in the light of today's knowledge. It can become the life blood of the business or just some lifeless routine by which to determine profits or losses and to fulfill government income tax requirements.

The forward looking service dealer will not relegate the facts of his business as revealed through records to a corner of the back

room. He will bring them out in the open where they may be seen in the light of today's operations and become the basis for planning ahead. Properly kept records are the eyes and ears of the business—showing the necessity for stimulating sales on this or that product—reducing or increasing expenses when the need arises—detecting operating inefficiencies and financial leaks and forming a fountain of knowledge with regard to sales, stock turn, gross margin, expenses, profits, etc.

Types of Business Forms

Many service dealers must, of necessity, employ only part-time help in maintaining their business records. Certainly, this is desirable where the amount of sales and profits does not justify employment of a full-time or part-time book-keeper. Certain specific accounting information and reports should be available monthly and, if full value is to be received from these data, they must be prepared promptly and in a form by which they can be readily interpreted and understood.

What accounting reports should a service dealer expect from his book-keeper? The least he should expect is (1) a Statement of Financial Condition and (2) an Operating Statement. The first report is commonly referred to as a Balance Sheet while the second is called a Profit and Loss Statement. These reports should be prepared as of the close of business each month. They should also be in sufficient detail to enable the dealer to quickly gauge the condition of the business and to analyze operating results. In addition, the reports should reflect a comparison with prior period operations and budgeted amounts. The dealer should also expect an age analysis of accounts—receivable monthly, and reflecting the status of the accounts in accordance with the length of time they remain uncollected.

With a complete set of accounting records as a foundation, the above, as well as other reports, can be furnished regularly for management purposes.

The service dealer who expects to attain his sales and profit objectives must be supplied with the information he needs to guide and direct the business. Accounting reports, prepared accurately and promptly, will accomplish this purpose.

SWEEPING STATEMENTS

(Continued from Page 2, Column 2)

to insure flat output over the range swept.

Three schools of thought exist as to the best method of modulating or sweeping the frequency:

1. Reactance tube sweep.
2. Motor-driven condenser sweep.
3. Vibrator or voice-coil-driven sweep.

The first (as used in the RCA Stock 150 Sweep) utilizes the fact that a tube plate circuit can be made to look like a variable capacitor if it is shunted across an rf tank circuit and if tank voltage with 90-degree phase shift is fed back to the grid.

To the tank such a tube looks like a condenser because the voltage lags the current by 90 degrees. The effective size of this condenser, hence the tuning of the tank or frequency of the oscillator, is made to vary by simply varying the gain of the tube or, as is the case in Stock 150 sweep, applying the 60-cycle line-voltage to the grid.

This type sweep has the advantage of no moving parts—no vibration, no commutation, and an easily variable width of sweep, but has the disadvantage of limited width of sweep (still good for amplitude-modulated audio if and rf). It has a useful upper limit of frequency swept on the order of 10 Mc.

The second system employs a motor-driven condenser or condensers either turning at synchronous speed (as in RCA stock 159) or having a synchro-pulse or sweep generator mounted on the condenser shaft (RCA TMV 128A). Careful mechanical construction is required of such a sweep, or vibration, poor commutation, worn bearings, end-play, and the like will result in a jittery trace.

The third method, as utilized in RCA types MI-18711 video Sweep and TX-818A and MI-8242 uhf Sweeps, is perhaps the most reliable.

A simple PM loudspeaker type mechanism is used with a movable condenser plate or diaphragm attached to the voice coil. This voice coil is energized with 60 cycles and the resultant motion of the condenser provides the frequency sweep. Width of sweep is easily controlled and no vibration, commutation, or synchronization problems exist.

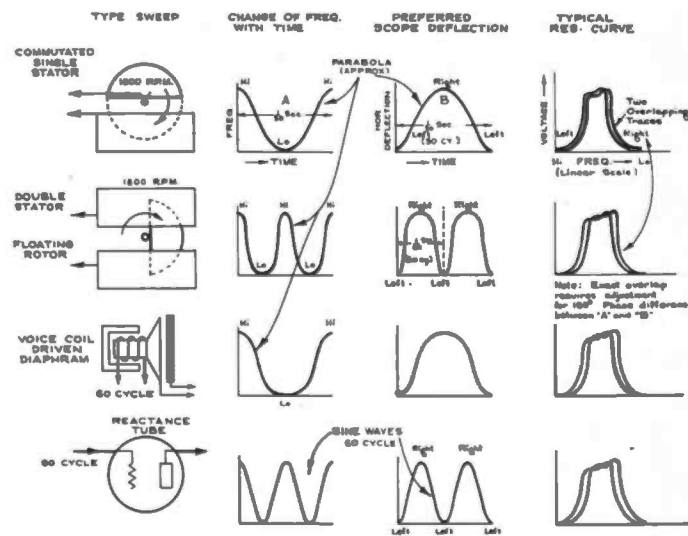
Oscilloscope Patterns

To insure sweep amplitude stability, however, it is essential that the natural resonance of the voice-coil-condenser assembly be well away from 60 cycles or 120 cycles.

A speaking acquaintance at least with old man Lissajou is essential to understand the time phase relations between the sweep generator output and the oscilloscope trace. In order that the spot on the scope may move in step with the frequency change rate of the sweep generator or, in other words, may produce a fixed pattern or curve on the scope screen, either a synchronizing pulse or actual sweep voltage of proper phase must be provided by the sweep unit. Illustrated are response patterns of several combinations of frequency-versus-scope sweeps.

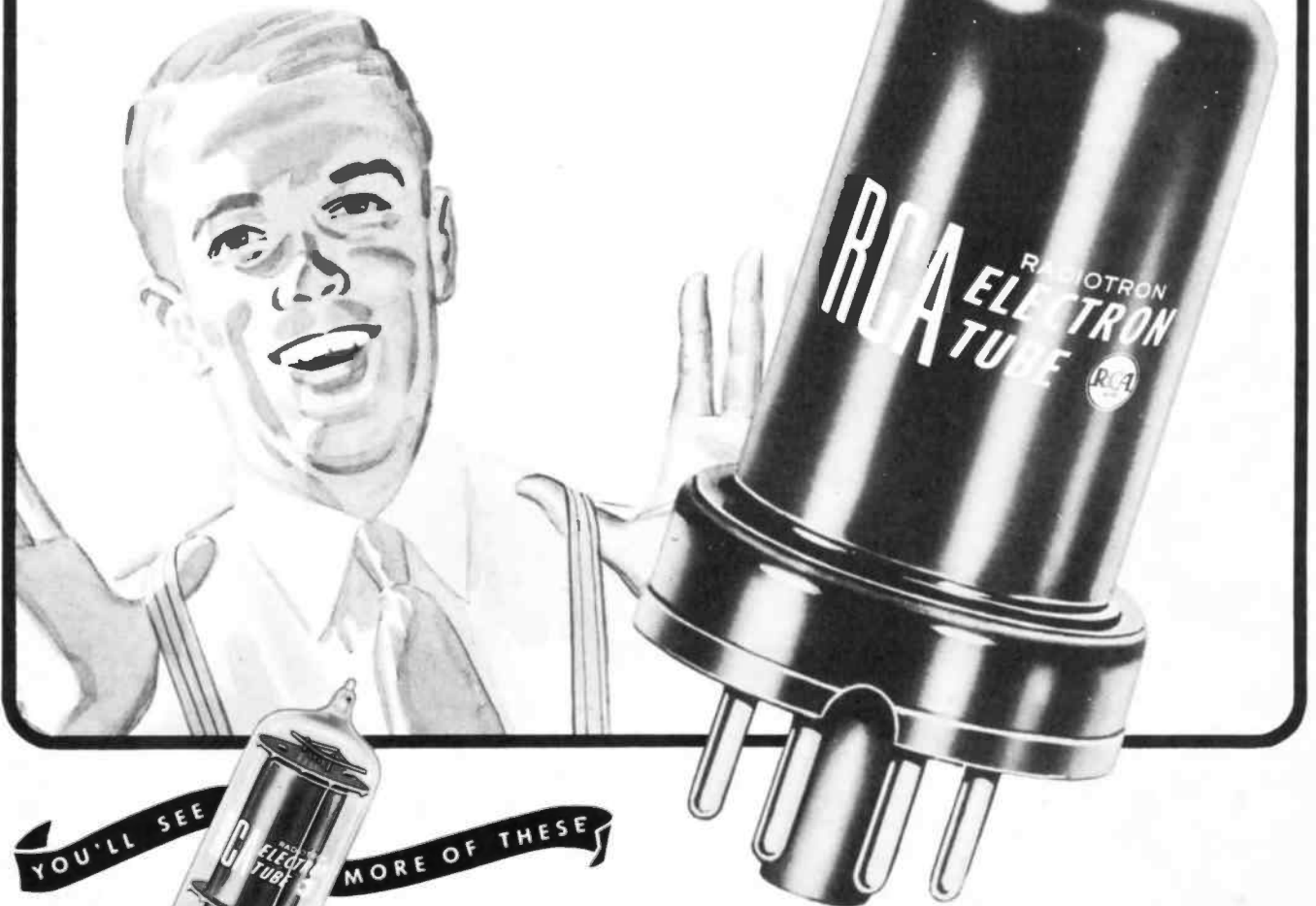
Linear or sawtooth deflection (as provided by the oscilloscope) with any of the frequency sweeps illustrated will produce reversed adjacent curves like (X) (30-cycle sweep), or reversed overlapping traces like (Y) (60-cycle sweep) with more or less non-linear horizontal (frequency) scale.

The reversed overlapping trace is satisfactory where the resonance curves observed are symmetrical left to right. Otherwise, a commutating device can be provided to eliminate every second trace.



Patterns of frequency-versus-scope sweeps.

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