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CORNELL-DUBILIER ELECTRIC CORP.
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These columns are open only to those who have a legitimate, WANTED, SELL or SWAP proposition to offer. The Cornell-Dubilier Electric Corp reserves the right to edit advertisements submitted, and to refuse to run any which may be considered unsuitable. We shall endeavor to restrict the ads to legitimate offers but cannot assume any responsibility for the transaction involved.

Please limit your ad to a maximum of 40 words, including name and address. Advertisements will be run as promptly as space limitations permit.

WANTED—1 in. micrometer, small screw cutting lathe, ac signal generator, Rider's 10-13. Have many items in radio, photography, and sporting goods. W. J. Closson, 295 8th St., Troy, N. Y.

FOR SALE OR SWAP—Meissner FM tuner for Meissner All Wave tuning assembly complete. Frank P. Dane, 3852 Eagle St., San Diego 3, California.

WANTED—One 0-20 microammeter in good condition, any make. Also used motorcycle in running condition. Cash. All replies answered. Arthur Rosenblum, 339 Van Cortland Park Avenue, Yonkers 5, N. Y.

WANTED—Filter block for RCA radio model R-11; power transformer No. 44101 Crosley radio model 1117; speaker for Philco Model 20. F. A. Munson, Radio Supplies, Ashland, New York.

FOR SALE—150 watt phone or CW xmtr first class parts throughout, commercial steel rack and panel job, xtal control on 160 meter, and other ham radio parts. Will swap. Best Radio Shop, 3349 Fulton, Cleveland, Ohio.

WANTED—Superior channel analyzer. CE, QCA, BQC Solar con. tester. Superior 1230 model signal generator. Rider's Manuals. Small metal lathe. Please state condition and price. A Mayfield, 3330 Lawrence, Denver 5, Colo.

TRADE—RCP model 446 Multimeter for Superior model 1230 or similar sig. gen. H. R. Ringold, 132 N. Doheny Dr., Beverly Hills, Calif.

FOR SALE—Beautiful transmitter cw and phone, very complete, crystals, coils, tubes, etc. Panel crackle finish, Exactly like factory job, in fine condition. Also assortment of transmitting tubes, midgets for u.h.f., other parts. Pete Rodriguez, Ex-W2MOF, 1432 N. 7th St., Philadelphia, Pa.

FOR SALE—Brunswick radio chassis, RCA Radiola 46; Colonial model 38; Majestic 90B, Majestic model 370, Kolster mod. 48; Philco, model III; Atwater Kent 60. Louis A. Goldstone, 1279 Sheridan Ave., Bronx 56, New York.

WANT—8 mm projector, movie exposure meter, wireless phonograph oscillator. Have portable radio, tubes and parts. W. M. McDonald, 33 North St., Stoneham 80, Mass.

WANTED—Crystal pick-up arm or cartridge, preferably 1 oz., also phono motor. Will consider record player, portable or table model type. Leonard C. Pochop, 2930 Upton St., N.W., Washington 8, D. C.

WANTED—Late NRI course complete in good condition, also small electric drill. State condition and price. Chas. Lentz, 2300 Bronx Park East, Bronx 67, N. Y.

TRADE—Jackson dynamic tube tester and multimeter, mod. 535A, with diagram. Has 0-1 ma meter, voltmeter ranges 7.5, 75, 150, 300, 750, 1500, six sockets, two octals, for good 2" scope and pocket multimeter or Junior Voltohmyst. R. N. Eubank, 1227 Windsor Ave., Richmond 22, Virginia.

TUBES FOR SALE — New, at OPA list price: Send for list. Send deposit, balance C.O.D. Stein, 456 Bedford Ave., Mt. Vernon, N. Y.

WANTED—Table model television receiver, with or without audio amplifier. Prefer RCA model. For sale—Atlas drill press, with Jacobs ½" chuck. A1 condition. L. Browne, 210 Kings Highway, Brooklyn 23, New York.

WILL TRADE—Hard to get radio tubes for testing equipment. Such tubes as 12SA7, 12SK7, 12SQ7, 12SJ7, 6SA7, etc. Give requirements, and what you have in trade. Sam Berenblum, Greenwich, Conn.

FOR SALE—12" Jensen dynamic speaker, attacked power supply; W.E. 540, one large, one small, mag. spkr.; RCA 100A mag. spkr., Universal 2 but. carbon mike. Edmund McD. Bendheim, 22-33 Thirty-first St., Long Island City 5, N. Y.

WANTED—Triplett 1213 tube tester, good condition. Give description and price. All letters answered. Cash. Bert Buckner, 280 W. Central, St. Paul 3, Minn.

SALE OR SWAP—Stereo lumar 10 power binoculars. Want EC-1 receiver, 4x5 photo enlarger, RCA Voltohmyst, Jr., VOM, etc. Will pay difference on items traded. R. Jos. Flowers, 33 N. 18th St., Harrisburg, Pa.

WANTED—Jensen JHP-52, 15" speaker, also set of Meissner iron core band expanding i.f. transfs., used RCA TRK-12 television receiver. E. P. Schoeneck, Rt. 2, Box 16, Wahpeton, N. Dakota.

SELL OR TRADE—ICS radio course, 51 books, .22 single Remington rifle with shells. Heavy duty phono motor and turntable. Zenith and Crosley mantel radios, various tubes; Ac, dc, battery portable less tubes or batteries, A-K radio, model 627. Bob's Radio Service, 525 Florida St., Laurium, Mich.

FOR SALE—One new Shure Unidyne unidirectional dynamic mike, mod. 559A, high or low impedance, $39.50. Roxy Service, Mitchell, South Dakota.

FOR TRADE—New Weston model 301 thermo galvo., 0-120 mils. for same mod. new 0-200 dc microammeter. M. L. Snedeker, 5300 Archmere Ave., Cleveland (9), Ohio.

WANTED—Experienced radio man, draft exempt, or discharged veteran preferred, steady employment or good partnership proposition, good location centrally in the business part of the city. C. B. Saunders, c/o Central Radio Service, Room 203 Latstetter Bldg., Clarksburg, W. Virginia.

WANTED—Two each of 12A8GT, 12K8GT, 35Z5GT, 50L6GT, 25Z5, 117L7GT, 25A7, 12SF5GT, 12SF7GT, 70L7GT, 117Z6GT, 43, 45. Leyden Radio Sales & Service, 9651 Franklin Ave., Franklin Park, Ill.

TRADE—All Weston instruments, mod. 433 150 v ac voltmeter, mod. 301 o-1 ma, meter, mod. 301 0-200 microamp meter, mod. 425 0-115 ma rf thermo galv.. Want 10-50 binoculars B&L or Zeiss. Joseph Olidort, 31 West Mosholu Parkway North, New York 67, N. Y.

WANTED—Supreme Audolyzer, model 562 also modern condenser checker. State price and condition. Johnson's Radio Shop, Box 477, Baton Rouge, Louisiana.

WANTED—Latest type tube tester, C-D capacitor analyzer, in good condition, or wiring diagram of same. Lamons Service Co., 81 Chestnut St., Shickshinny, Pa.

SWAP — Intercommunication set, five speaker hook-up, one speaker and 40 ft. cable furnished; abridged edition Rider's Manual (old issue). Want Exarta Jr. camera, or other good make. Will pay difference. Thomas' Radio, 61 East Robinson Ave., Orlando, Fla.

FOR SALE—2 Albumatic record caddys, 50 records each with index files, new, both for $15. Brand new drill press and 7" all metal bench saw, $28 each, both for $55 F.O.B., no checks. M. A. Porter, 1713 Larrabee St., Chicago 14, Ill.

FOR SALE — Tubes, OPA list, all new. 1S4, 3S4, 6B4, 6C5, many others. Ask for list. T. E. Holzinger, 146-28 20th Ave., Whitestone, N. Y.

TRADE—Back numbers of Popular Mechanics, Popular Science and other mechanical and radio mags., 10c each or trade for ac-dc radio. A. W. Edgerton, 116 W. 6th Ave., Houston 7, Texas.

WANTED—Small air conditioners, fans ac or dc, vacuum cleaners, radios. Will pay cash or trade for radio parts, intercommunication system, meters. G. Samkofsky, 527 Bedford Ave., Brooklyn, N. Y.

WANTED—For cash or trade, Zenith cabinet for chassis 6D 315 port. 5 tube. Have set Aero plug-in short wave coils with base, condensers, two audio transformers, two Nat. vern. dials on bake. panel. 200 ohm carbon hand mike. Ralph E. Turner, 9 Lawrence Rd., Medford, Mass.

FOR SALE—Rider's Manuals, vols. 2, 8, 10 and 12. Gernsback's vols. 4 and 6. Beitman's "Most Popular Radio Diagrams," vols. 1, 2, 3, 4, 5. Radio Physics Course. Good condition. All $60 f.o.b. Johnson Radio Service, Austin, Minn.

(Continued on page 13)

Phasing of Loud Speakers*

Failure to observe proper phasing of speakers will result in an inefficient audio installation with apparent dead spots and lower volume.

A fact well known to sound men is that in order to obtain best reproduction of sound with more than one speaker, it is necessary that the speaker cones move "in phase." They must all move in or out, "in step," so that the total cone area may be regarded, in effect, as a single diaphragm. In this manner, each speaker contributes aid and reinforcement to the sound wave. If the speakers are not in phase, there will be interference and cancellation.

Not so well known, however, are the means for checking the phase relations, particularly where line-matching transformers are involved. One method permits testing by ear while the speakers are connected; other methods make use of polarity relations, both mechanical and electrical, by which proper phasing is assured at all times.

Ear Test

In order to make the ear test, the following procedure should be followed: Place two speakers in a horizontal line, typical of their placement in a theater. Next, turn up the gain to produce hum and walk across the stage in front of the two baffles, from the outer edge of one to the outer edge of the other.

If the hum level is approximately uniform, the speakers are in phase. However, if the hum is appreciably lower in the vertical plane between the two baffles than at the outer edges, the speakers are out of phase.

A second test is to place two speakers in a vertical line. The procedure is similar to the above, except that the listener must move in a vertical plane. In this case, if the speakers are out of phase, the hum level will be appreciably lower in a horizontal plane between the two speakers.

In the final analysis, instead of remembering these rules, it is helpful to draw a simple diagram representing two speakers in phase and out of phase (Fig. 1). Fig. 1A shows that the instantaneous wave is outward from both cones. Clearly, there is reinforce-

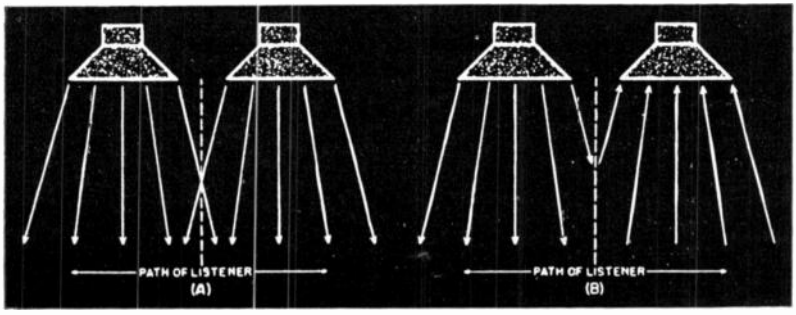

Fig. 1. Proper phasing can be determined by applying ear test. When out of phase the hum level will be lower, in a plane between the two speakers, than at the outer edges (B). When correctly phased, a more uniform distribution of volume will be obtained (A).

** By Nicholas B. Cook, in "Radio News."*

ment where the outputs overlap. In this plane the level is not likely to be *lower,* but rather somewhat *higher* than at the ends of the path transversed by the listener. In Fig. 1B it is shown that the instantaneous wave is *outward* from one cone and *inward* toward the other. Cancellation occurs where these two effects overlap. In this plane the hum level will be appreciably lower.

Phasing Voice Coils

When phasing voice coils, the first step is to excite the speaker field, and then short out the hum-bucking coil, if one is used. Next, apply 1.5 volts from a flashlight cell to the voice-coil terminals. By the trial and error method, polarize the voltage so that the cone jumps *outward* on voltage contact, and put an identifying mark on the voice-coil lead to which the positive voltage was applied when the cone jumped outward. Speakers having permanent magnet fields require no further check.

When the field is electrically excited, the positive terminal of the field coil (as then connected) must be determined and marked. In both cases, the polarity now has been definitely established.

As an aid to remembering that the cone jumps outward, we may recall the rule that *like* poles *repel.* (*Positive* voltage goes to *positive* terminal; cone is *repelled.*) It is generally understood that voice coil currents are assumed to *enter* at the positive terminal. For the use of parallel operation, like terminals are connected together, while for series connection, the unmarked terminal of the first speaker must be joined to the marked terminal of the second, and so on.

Transformer Connections

In a case where a line-matching transformer is used, the phasing between the line and voice coil may be done in a similar manner. By reason of the step-down ratio of the transformer, a higher voltage is required. A 22½-volt "C" battery may be applied to the line. When the cone jumps *outward,* the positive terminal of the transformer, (high side) should be marked.

The polarity of the voice coil is still unknown. For this reason it is best to proceed as follows:

1. Determine the positive terminal of the voice coil in the manner previously described.

2. Connect the transformer to the voice coil. Determine the positive terminal of the primary (the line side). Also, mark the secondary lead that goes to the marked terminal of the voice coil.

Now both the speaker and the transformer are polarized *permanently.* When such marked units are interchanged with others, properly connected, and similarly marked, the speakers will always be in phase.

Transformer Polarity

Transformer polarity is a matter of great importance to the power engineer. The radioman becomes acquainted with

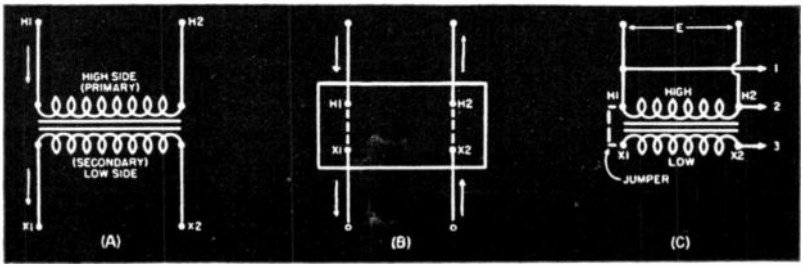

Fig. 2. (A and B) Assumed instantaneous direction of current flow in an output transformer. (C) Determining proper polarity, applying voltmeter method.

it when he replaces an r.f. primary or some other transformer winding in a tuned circuit. He has learned also that feedback may be good or bad, depending upon the polarity of certain coils.

In the electric power industry the practice of marking transformer terminals in such a manner as to indicate the *sense* of the winding has been standardized by the American Institute of Electrical Engineers. The sound man will derive considerable profit from these conventions.

Fig. 2A shows that the assumed instantaneous direction of current flow is into terminal H_1 and out of terminal X_1 as indicated by the arrows. So far as phase relations are concerned, connecting to terminal X_1 is equivalent to connecting to terminal H_1 (Fig. 2B). The magnitude of the secondary voltage (with given primary voltage) depends upon the turns ratio. Phase change is zero in the ideal transformer.

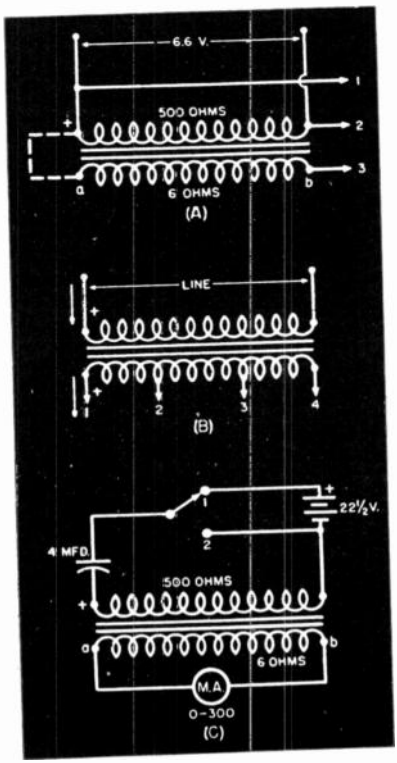

Fig. 3. Diagram of connections and polarity test of an output transformer.

A standard method of checking polarity is by means of voltage measurements, as shown in Fig. 2C. The correct procedure is to connect a jumper between H_1 and X_1. Apply voltage to the primary (high) side, and measure the voltage between points 1-2 and points 2-3. If E_{2-3} is *less* than E_{1-2}, the polarity markings are correct.

The sound man may adopt the following method to determine the polarity of audio transformers.

1. Select one terminal of either the high or the low side and mark it +.

2. Tie this terminal to one lead of the other winding.

3. Apply voltage to the high side and measure voltage (1) across high side and (2) between terminals not tied together.

4. If measurement (2) is lower than measurement (1), then the terminals tied together are of the same polarity.

5. If measurement (2) is higher than measurement (1), then the terminals tied together are of opposite polarity.

Fig. 3A is a diagram of connections and an actual test of a "line to voice coil" transformer. In order to determine the polarity, one terminal of the primary has been arbitrarily selected as positive. The voltage measurements are E_{1-2} measures 6.6 volts and E_{2-3} measures approximately 6.0 volts. Therefore, it is determined that terminal *a* is the positive terminal of the secondary.

Tapped or extended windings can be checked similarly. The polarity of each section is the same as the polarity of the entire winding, as shown in Fig. 3B. Terminal 1 is positive to all other secondary taps, terminal 2 is positive to 3 and 4, and so on.

Checking with D.C.

To check transformers by using direct current, connect a d.c. voltmeter across the low side of the transformer. The range may be 50 v. for the first trial. Next, designate and mark one primary lead as positive and connect the other primary lead to the negative side of a flashlight cell. Now touch the marked primary lead to the positive pole of the cell. The voltmeter pointer should deflect momentarily up or down scale. If it does not, then reduce the range. When the pointer jumps *up* scale on contact then the secondary lead connected to the positive terminal of the voltmeter is the positive end of the secondary. With this connection, the pointer should jump *down* scale when the contact is broken. Keep the voltmeter range high enough so that deflection will be small and make sure that a deflection up scale is not just a rebound from a jump down scale.

This d.c. test is not recommended for transformers of the better grade, since it may put a magnetic bias on the core. However, a series condenser may be used to block the steady direct current while allowing a polarizing pulse to flow. The various connections are shown in Fig. 3C, although the values given are for a particular case.

In the case illustrated in Fig. 3C a milliammeter can be used. Here, one terminal of the primary has been arbitrarily selected as positive. When testing it is seen that in contact (1) the pointer kicks *up* scale, and when breaking contact (2) the pointer kicks *down* scale. From the previous discussion it is concluded that terminal *a* is positive.

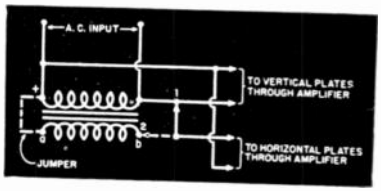

Fig. 4. Method of employing an oscilloscope when determining proper phase polarity.

Testing with Oscilloscope

This is a rapid and safe method, wherein very low exciting voltages may be used. The connections are shown in Fig. 4. The preliminary step is to use connection (1) to determine the "in phase" pattern. Since the same voltage is applied to both sets of plates, the trace will be a straight line. With equal horizontal and vertical amplitudes, the line will be inclined either 45° or 135°. The 45° position is considered standard, but in either case an "in phase" reference position is established.

The next step is to change horizontal input connection from point (1) to point (2). (Readjust for equal horizontal and vertical amplitudes.) If the straight line trace is inclined at the same angle as for the "in phase" connection, then terminal *a* is positive. (The designations "vertical" and "horizontal" may be transposed to utilize the higher gain of the vertical amplifier.)

Summary

Proper reproduction of sound from multiple speakers requires that all diaphragms move simultaneously "in phase." Arbitrarily, we may choose outward motion as positive. Then the positive terminal of the voice coil is the terminal to which positive voltage is applied to produce positive (outward) motion.

Transformers are to be polarized and marked so that the current shall flow, in effect, in at the primary marked terminal and out of the secondary marked terminal. When speakers and transformers have been so marked, they may be interchanged without risk of upsetting phase relations. As has been seen, various simple methods of checking transformer polarity are available.

Manufacturers and users of sound equipment are urged to polarize transformers where proper application involves correct phase relations.

HIGH FIDELITY AND TONE CONTROL*

(Continued from last issue)

Tone controls may be divided into two classes. One is the fixed type where point switching changes the response; the other is the continuously variable type where potentiometers are used to regulate the amount of bass or treble compensation. Console models sometimes use one or the other or a combination of both methods.

Tone control circuits are a combination of resistance, capacitance, and inductance, in such relation, that their loading effect on a circuit varies with frequency, Fig. 4.

Resistors, at audio frequencies, display no frequency characteristic; that is, their resistance remains constant over the frequency spectrum.

Condensers vary in reactance (a-c resistance) inversely with frequency; that is, their resistance increases as the frequency decreases.

Inductances vary in reactance directly with frequency; that is, their resistance decreases as the frequency decreases.

Since the gain of an amplifier stage is a function of the load across the output of that stage, it is possible to vary the stage gain for various portions of the audio spectrum by the appropriate association of resistance, capacitance, and inductance. The above is true where the control is in parallel with the load. By the same reasoning, the transfer characteristic of an audio stage may be made non-linear by the introduction

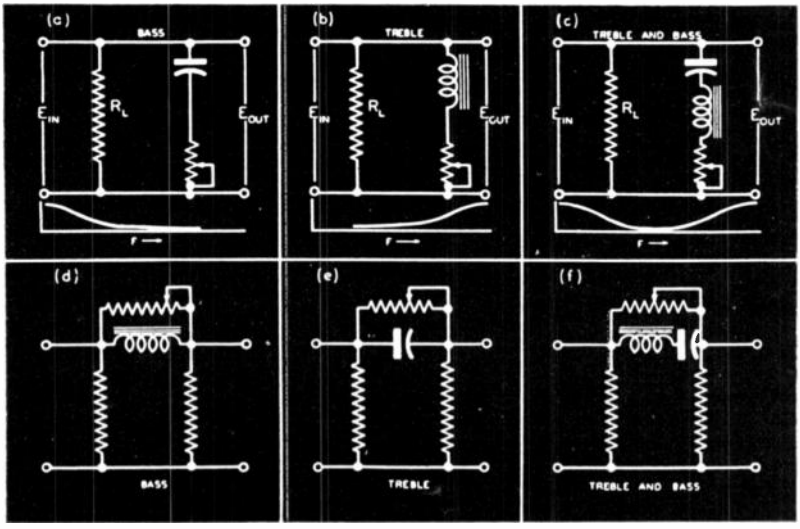

Fig. 4. Six basic methods of tone compensation are illustrated here. Frequency response curves of methods shown in a, b and c also appear. All of these systems are of the losser type, with boosting provided by reducing level of unwanted frequencies.

* *By Edward Arthur in "Service."*

of capacitive and inductive elements, in inverse position to their parallel operation. This is demonstrated in Fig. 4, where the function of an inductive element in parallel operation is duplicated by a capacitance in series operation.

Fig. 4 shows six basic types of tone control. It will be noted that all of these types are losser systems. That is, the boosting is accomplished by reducing the level of the unwanted frequencies. The resistors act as variable controls to influence the amount of bass or treble boost desired. The same circuits may, by inverse reasoning, also be designated as damping circuits; bass-boost may be called treble damper.

Tone circuit designation is a function of the frequency characteristic of the amplifier. For example, a bass-boost system may actually be a treble control, if the bass-boost position is the zero spot on the control. An advance of the potentiometer may introduce resistance into the circuit, reducing the bypass effect of a condenser, thereby increasing the treble response.

The circuits shown in Fig. 4 are basic, and are usually present in one form or another in the tone-control systems of most receivers.

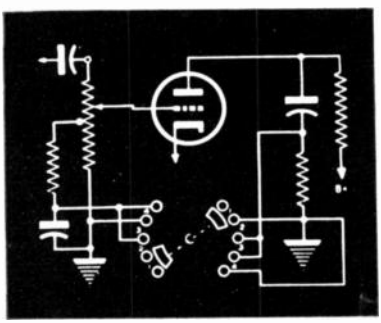

Fig. 5a. Tone-control system used in General Electric 35 receiver. Point switching is used for tone control. Circuit is normal in position 1, with bass compensation operating in the volume control. This position is called brilliant.

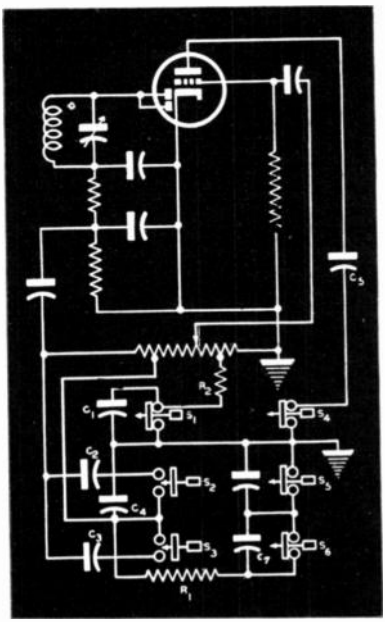

Fig. 5b. Tone-control system in Zenith 8S647. This type of control is used in most of their console models. When the Switch S_1 is opened, bass boost is applied for low volume settings.

Incidentally the values associated with a tone-control system are a function of the tube input and output impedances. Since the action of a tone control is a function of constant voltage, the load presented by the tone circuit must be several times as great as the plate resistance for a triode, or the plate-load resistance for a pentode.

In Fig. 5 appear some typical examples of tone-control systems. Fig. 5*a* shows the tone control system employed by G. E. in their model 35. In position 1, the circuit is normal; that is bass compensation is operating in the volume control and bass boost in the audio. This might be compared with the system shown in Figs. 3*a* and 4*a*. In position 2, R_2 is shorted, and the

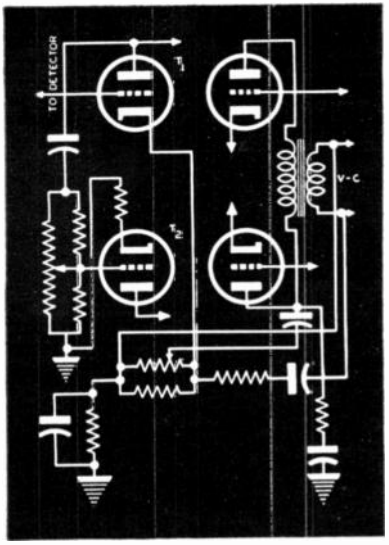

Fig. 5c. Tone-control method used in f-m model 12 of Pilot. Inverse feedback is incorporated to provide high-fidelity response.

treble is further attenuated by having the full effect of C_2 from plate to ground. Position 3 grounds C_1 removing the bass boost in the volume control. Position 4 grounds C_2 and shorts out C_1, thereby attenuating both ends of the audio spectrum. These positions are called: 1—brilliant; 2—bass; 3—treble; 4—mellow.

Fig. 5*b* shows a system used by Zenith in model 8S647. In this diagram S_1 to S_6 represent six tone switches in their normal or off positions. When S_1 is opened, bass boost is applied for low volume settings; compare this with circuit of Fig. 3*a*. When S_2 is closed, C_2 is applied across the volume control, acting as a high-frequency shunt; compare with Fig. 4*e*. When S_3 is closed, this effect is further pronounced. With S_4 opened, the shunting effect of C_6 is removed, thereby increasing the treble response. Opening S_5 boosts the bass, and opening S_6 boosts the treble. There are two-boost networks involved in this system. One consists of R_1 in association with condensers C_2, C_3, C_6, and C_7. The other consists of R_2 in association with C_1. The third element is the plate shunt condenser, C_5. It can be seen from the action of these circuits that bass or treble boost is a matter of relative level.

Fig. 5*c* illustrates an inverse feedback circuit used in Pilot FM 12, that also acts as a tone control circuit. Audio voltage from the voice coil is fed back to the cathode of T_1 resulting in high attenuation of high intensity voltages, and lower attenuation of low intensity voltages, providing more uniform gain. The tone control is a two-section affair, one section using the inverse feedback network, and the other the input to the inverter grid. By a combination of these circuits acting simultaneously, a sharp high-frequency cutoff is effected. This is an excellent feature, since it reduces the high fidelity response when signals of limited frequency range are being received, thereby reducing background noises.

A tone-control system used in the Stromberg Carlson 935 is shown in Fig. 5*d*. The treble control is quite

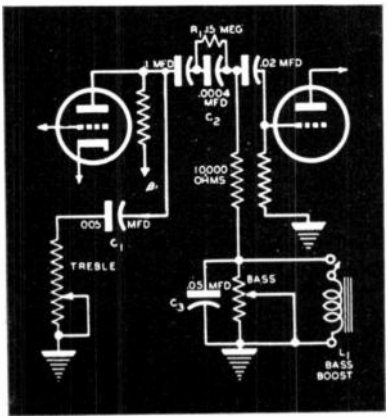

Fig. 5d. Stromberg-Carlson model 35 tone-control system. Bass-boost inductor and RC network coupling system is featured.

simple; compare with Fig. 4*a*. While most tone networks would designate this as a bass compensation system, when acting in reverse, it may be considered as a treble control. It then is a function of the original response curve without tone compensation, which may showed a marked high—or low—frequency characteristic instead of a flat one. In this particular case, increasing the resistance in series with C_1 increases the treble response. The network consisting of R_1 and C_2 (compare with Fig. 4*c*) is a treble-boost network. Since the a-c resistance of condenser C_2 decreases with frequency high frequencies pass more readily than low frequencies. The network consisting of R_1, R_3, and C_3 is a bass-boost system (compare with Fig. 4*a*) with the control across the condenser instead of in series. The addition of the inductance across this circuit introduces a resonant network that is quite broad in response. This increases the low-frequency response quite rapidly at very low frequencies.

Tone controls associated with phono pickups are similar in action to receiver tone systems, and component values again are a function of the input impedance, in this case, the pickup. Magnetic pickups are generally low-impedance devices, and crystal pickups high-impedance sources. Additional factors in the design of phono-tone controls and compensation systems are the frequency range of recording and the amplitude contraction (as opposed to expansion) practiced by the recording studio.

In recording, the low-frequency response is attenuated rapidly to prevent needle jumping and distortion at high amplitude levels. For this reason, pickup tone control circuits are generally heavily bass boosted. The highest recording frequency for general sale records is in the neighborhood of 8,500 cps, and varies with the manufacturer. Pickups also have frequency characteristics. Therefore most phono-tone systems are characterized by sharp bass boost and sharp cutoff above 8,500 cps.

The response of an average crystal pickup is shown in Fig. 6. It will be noted that the rise in amplitude toward the low-frequency end starts at 900 cps.

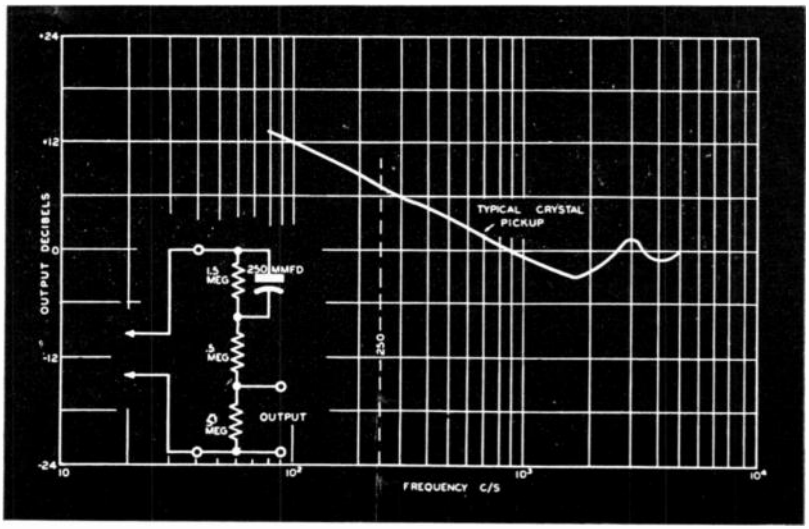

Fig. 6. Typical response curve for a crystal pickup and tone compensation system used with the pickup.

This response is too gradual for good bass response. In order to flatten the response curve, Stromberg Carlson uses system shown in insert of Fig. 6. It is a version of Fig. 4e, in that it is a treble-boost system. Bass boost below 250 cps. is then accomplished in the receiver tone system.

THE RADIO TRADING POST

(Continued from page 4)

WANTED—Small pocket radio. State condition and price. Pfc. F. A. Centanni, Sec. B, Gore Field, Great Falls, Mont.

FOR SALE—All popular radio tubes, brand new, also hard to get types, OPA list prices. Send for free listing. Sidney Abrams, 1340 Croes Ave., Bronx 60, N. Y.

WANTED—Plug-in model record player to attach to radio, state price, condition, make, also all-wave superhet, table model, give particulars. George Wechsler, 1860 Ocean Parkway, Brooklyn, New York.

FOR SALE—Benwood-Linz auto radio filterpac, type 160 C 4 ST, 8-10 amps., 6v.d.c. Operates all auto radios with P.B. tuning (motor driven or magnetic types). $21.75. Wm. Hrasna, 616 Jackson Ave., Elizabeth 4, N. J.

FOR SALE—Buick Sonomatic auto radio 1941-42, in perfect condition. James Lawless, 496 Pleasant Valley Parkway, Providence, R. I.

SALE OR TRADE—Detrola, mod. K, F 3.5 Vellostigmat Wollensak Lens, speed 200 sec., built-in light meter, dial exposure guide, case. Kodak V.P. autographic camera, 127 film either camera. Trade for testing equipment or cash. J. Sikorski, 32 Beacon St., Newark, N. J.

FOR SALE—25 6B7 tubes, $1.30 list, 30 2B7 $1.30 list, in RCA sealed cartons, 40% off list. Scranton Talk, 317-319 Lackawanna Ave., Scranton, Pa.

FOR SALE—NRI radio course, 50 lessons with extras; NRI television course, 25 lessons, all in good condition. Harold Sedgwick, 162 Weir St., Taunton, Mass.

TUBES TO SWAP—New, sealed cartons and good used, scarce numbers. Want 35mm camera, Argus C2-C3, Kodak 35, slide projector. Want photo equipment and cameras. H. Gursh, 1481 Shakespeare, Bronx 52, N. Y.

FOR SALE OR TRADE—Majestic 130-A battery portable set. Weighs 43/4 lbs. Uses 1 A7, 1 N5 and 1 D8GT tubes. Without batts. Will swap for good make sig. gen. or test equipment. Perfect tubes in set. Peter Shavel, 941 Grand St., Brooklyn 6, N. Y.

FOR SALE—Kolster power amplifier K5, model A, new with 11" D. spkr. Zenith 755 table model with tubes; Majestic table models 310B, 370; 90B with 90 spkr. Colonial Kolster, and Brunswick superhet chasses; RCA 46 with tubes. Louis A. Goldstone, 1279 Sheridan Ave., Bronx 56, New York.

WANT—Superior tube tester, model 1240, sig. gen. mod. 1130 or 1240, channel analyzer; Majestic tube No. 4S. 1/2 or 1/4 elec. motor, good or burnt out, Rider's Manuals, 1 to 12. Clarence W. Hull, Radio Service, Mineral Springs, Pa.

CASH—For small tube checker up to 50v. satisfactory. William Lent, c/o Droutman, 315 9th Ave., New York City.

FOR SALE—Tubes available in most types, new in sealed cartons. Send in your AA-1 MRO rating. Valley Radio-Electric Service, 867 Broad St., Central Falls, R. I.

FOR SALE—Sun-Kraft ultraviolet ray lamp, mod. A-1, $63 cash. Tom Davis, Cave Spring, Ga.

FOR SALE—Loud speakers, all sizes and fields, some p.m. Magnavox, Utah, Philco, Motorola, etc. Also 6v. fields. Power transf. for older types using 2 1/2 v. tubes. William Tucker, 393 Elizabeth Ave., Newark 8, N. J.

FOR SALE—Dry can condenser blocks, 2, 3, 4 sections. Exact replacements for wet Mershons, etc. All 8 and 16 mfd. per section at 450 v., also tubular dry electrolytics, 8 mfd., 475 v. William Tucker, 393 Elizabeth Ave., Newark 8, N. J.

WANTED — Carborundum crystal detector unit, consisting of crystal, battery, rheostat, in moulded case, used in late 20's, in crystal and reflex sets. Cash awaits. Lloyd L. Melton, Electric and Radio Shop, Norwalk State Hospital, Norwalk, California.

WANTED—35Z5GT, 12Q7 GT, 12K7GT, 12 K8GT, two 50L6. Wm. Z. Ward, 4346 Cotebrilliante, Apt. 6, St. Louis 13, Mo.

FOR SALE — Carron Signal amplifier in very good condition, with all test leads. New, was $44. Highest offer takes it. Donald Pettera, Box 96, Fennimore, Wis.

FOR SALE—8 mm camera, model C8, 8mm projector, model P300, new with Univex Silverlux Cine projection screen 24x34, complete in case $80. Lincoln Day, 365 Lafayette Ave., Grantwood 8, N. J.

FOR SALE — One each of following 30 tubes in a lot at OPA list price: 1C5, 1E7G, 1H5, 1LB4, 1LH4, 1LN5, 1N5, 1Q5, 6A3, 6A8, 6B4, 6C8G, 6D7S, 6L6, 6SH7, 6V6, 6Z5, 7H7, 10, 12SK7, 12SQ7, 22, 25 L6, 25Z5, 35A5, 35L6, 48, 50, 50L6,, 81. Goodwin Radio Shop, Rankin, Illinois.

FOR SALE—Latest model set and tube tester, Supreme mod. 599 portable. Tests tubes to 117 v. filament, ac and dc volts, ohms to 20 megs 1000 OPV mils, output, batteries, etc. Consider swap for quality multimeter of high ohms per volt. Tone's Radio Service, 126 Fourth Ave., Paterson, N. J.

NEED—Rider's Manuals, vols. 8 to 14 or will take complete set. State cash price for any vols. you have. Have Audel's New Radioman's Guide and ICS Elec. Eng. Course for sale. H. W. Schendel, 518 W. Main St., Sparta, Wis.

SWAP—Leaving for service will trade Radio City VOM, mod. 442, American mike mod. D-220 with 25 ft. cable which has dual magnetic pickup, Masco signal generator, tubes and books for Graflex camera or other make, all offers answered. A. Dempsey, 10416 Hulda Ave., Cleveland 4, Ohio.

WANTED — All kinds of test equipment, Also Rider's Manuals. Send description and cash prices. Samuel Berenblum, Greenwich, Conn.

WILL TRADE—Perfex "55" candid camera, F 2.8 Wollensak lens, with 2 rolls 36 exposure film, for 5" oscillograph, Dumont model 208 or RCA model 158D or 160B. Milton S. Roth, 3646 Antisdale, Cleveland Hts. 18, Ohio.

WANTED—Used Hallicrafter Sky Buddy or Sky Champion. State price and condition. Pfc. Frederick Centanni, Sec. B, Gore Field, Great Falls, Montana.

WANTED—Back numbers of radio News, Radio Craft, Shortwave Craft, Radio and Television Retailing, etc. Want Astatic FP-38 pickup and parts or kit for Meissner FM receiver. E. P. Schoeneck, Rt. 2, Box 76, Wahpeton, N. D.

FOR CASH OR TEST EQUIPMENT—Hadly 300 w. multimatch output transf, National FB7 receiver, less power supply, Simpson 0-500 mill. meter, unused, Hadly fil. trans. 2-6 v 5 fil., 1-5 and 1-7½ on same trans. Hammarlund TCD 225X transmitting var. cond. Albert LePage, 15 Division St., Fall River, Mass.

FOR SALE — Two Rola G-12 dynamic speakers, 18 w. each, with 500-250 ohm O.P. transfs., including two Wright-DeCoster field exciters and extra cone. Want recording head and feed or complete recorder. F. E. Francisco, 227 W. Creighton Ave., Ft. Wayne 6, Ind.

WANTED — Automatic record changing unit. Trade or sell G.I. dual speed basic recording unit. Also Thordarson driver transf., No. 6578, 6F6 triode to PP 6F6 triode. C. Schneider, 1624 Binney St., Omaha 10, Nebraska.

FOR SALE—At 60% off OPA ceiling price. RCA radio and television tubes. Meter-tested perfect, not in original cartons. 2A3, 2A6, 2X2, 2V3, 6A6, 6Y6, 6V6, 6L6, 6N7, 1851, 1852, 6F8, 5U4, 5V4, 5T4, 523, 1V, 807, 874, 879. S. S. Schoenfeld, 1669 Grand Ave., New York 53, N. Y.

FOR SALE—SX-24, less speaker. Good as new in every respect. Make cash offer. Jerry A. Hardison, W4HQM, Rt. 3, Humboldt, Tenn.

WANTED—Complete set of Rider Manuals, 1 Triplett 7" panel VOM complete, Weston model 301, 0-1 ma meter. For Sale Univex camera 8mm with telescopic view finder. Louis F. Lete, 318 South Third, Effingham, Illinois.

FOR SALE — Model BN C-D capacitor bridge complete with tubes. Practically new, with instructions and leads. Price $20.00. Will send prepaid, Cash with order. Also Alliance motor and turntable. Brand new. 110 v.a.c. Best offer accepted. Louis Fialkoff, 143-48 41 Ave., Flushing, N. Y.

FOR SALE—Fine old 'cello, two bows, trade for 9x15 rug equal value, cash difference either way. 'Cello requires slight repairs. Consider rug smaller, larger, or for cash. Satisfactory local musician pass on value, quality of instrument. Fred Edmonds, 426 6th St. N., St. Petersburg, Fla.

FOR SALE—Want best offer for Aerovox model 95 LC checker, Beede 0-150 ac voltmeter round case, Superior 1230 signal generator, used power transformers for 2½ volt tubes. Radio Man, 155 Cotton St., Philadelphia 27, Pa.

WANTED—Any one of the following output transformers, new or used. UTC LS-55, Thordarson CHT 15S90, Kenyon K-407, or K-408. Please state price and condition. C. L. Goebel, 221 W. 233 St., Bronx 63, New York.

WANTED — For cash, all kinds of test equipment, meters and Rider's Manuals. What do you need? Capitol Radio Service, 107 Virginia Ave., Cumberland, Maryland.

WANTED—Rider's Manuals, 9, 10, 11 and 12. Must be in first class condition. Kimmell Radio Sales, 39 E. Pittsburgh St., Greensburg, Pa.

WANT TO BUY—Echophone EC-1 or good short wave set, similar. Also 30 radio tube. Wilson Chastian, 928 Broad St., Nashville 3, Tenn.

FOR SALE—1 FB7 I.F. xstal and holder, 1 gaseous P.E. cell (unknown make), many other parts. What have you and what do you want? Urgent need of instruction sheets (will buy or rent) concerning Superior VTVM Model 1260. Anthony Pusateri, 1101 Fleming St., Coraopolis, Pa.

FOR SALE — Victor Victrola in console table model in very good condition, solid walnut, with records. First good offer takes it. E. Forman, 1212 East 18 St., Brooklyn, N. Y.

WANTED—Rider's Manuals, 1 to 12, also late tube tester. For Sale 500 watt phone transmitter $300.00. Write Fred W. Rudolph Service, 350 E. Beecher St., Adrian, Mich.

WANTED—Used communications receiver, Echophone EC-1 preferred. State price and condition. J. R. Sidelko, 30 Main St., Luzerne, Pa.

WANTED—Rider's Manuals, all or any volumes, must be in fair condition. Cash waiting. Howard Electric Shop, 224 South Riverview Dr., Kalamazoo 15, Mich. Phone 3-5439.

FOR SALE—Precision 2 meter analyzer, separate ac-dc meters, ac-dc ohms, condensers, output milliamps, $25 or suitable U.S. stamp collections. Other material available. Fels Radio, 612 Rogers Ave., Brooklyn 25, New York, N. Y.

WANTED — Condenser tester, any make; amplifier chassis and screen, 10" x 16 or 17"; output trans. to match 6L6s in pushpull of 30-35 watt into 6, 8, 15-500 ohm speaker or line. Have cameras, 15 in. dynamic speakers, radio parts, cash. John Arnold, Bluffs, Illinois.

FOR SALE—RCA ac chassis, pk., spkr., model 46, R 32 chassis, pk. and spkr., ac 60 chassis, pk.; dc chassis. Majestic 90B chassis and 90 spkrs, 370 chassis and spkr., table model. Colonial mod. 38, chassis and spkr. Louis A. Goldstone, 1279 Sheridan Ave., Bronx 56, New York.

WANTED—Stancor or similar A and B battery eliminators. Can use several. Cash or trade for various meters, interoffice outfits, speakers, etc. G. Samkofsky, 527 Bedford Ave., Brooklyn, New York.

WANTED—Tubes. 12 series 25Z5, 25A7, 50L6, 35Z5, OZ4, 43, 45, also good recorder, good condition, instructions. Contact me, state cost and number. South Boston Radio Service Center, 652 E. Broadway, South Boston, Mass.

FOR SALE—Six new 6 v Vibrator trnsf. $2.50 each. Wanted—Record player or recorder and player; hard to get tubes; converter to play 32 v. 60 w. radio from 110 ac line. Have 3 hp Milwaukee Hotshot operated outboard motor for sale or trade. Send your list with prices. McKinley's Radio Service, Zebulon, Ga.

HAVE Webster three stage power amplifier with push pull 250's in output. Complete outfit for making glass numbers and signs. Electric hair clippers, car radio and heater. Want all-wave Silver Scott or similar radio, condition or cabinet not important. Also all test equipment or manuals. Glenn Watt, Chanute, Kansas.

FOR SALE—One new and unused copy of Electrical Engineering, Vol. 2, Alternating Current by Chester L. Dawes, for $3.50 postpaid. T. W. Hopkinson, 600 Bashford Lane, Alexandria, Va.

FOR SALE—Transmitter parts, crystal and tubes, complete 100 watt rig, and 600 power supply. Write for reasonable price and list. Bou Radio Service, 3131 N. Percy St., Philadelphia, Pa.

WANTED—A 67½ volt Mini-Max or equal portable radio battery. Will buy or trade. Also want 12 series and over radio tubes. Jack Rudie, 4725 28th Ave. So., Minneapolis 6, Minn.

WANTED—Rider's Manuals, vols. 9 to 13, with index. Cash, good condition, reasonable. C. M. Zeman, 1918½ Hill St., Davenport, Iowa.

OLD TUBE COLLECTORS—I have the following to swap for what have you. A DeForest 401, and DL5, UX199, C301 and one of the first BH tubes. Have Vibra-pack from RCA 6BT6 farm radio. Never used. Need 45Z3 tube for test inst. Interested in your swap lists. Arthur A. Hale, 357 East Park Blvd., Akron 5, Ohio.

WANTED—Any number of the following tubes: 50L6,12SQ7, 12SA7, 25Z5, 25Z6, 75, 12K7, 41, 42, 12SN7 and 12A8. Quote price and number of tubes. Mervyn Stagg, 484 Valley Place, Englewood, New Jersey.

WANTED—Used CREI or NRI late course complete. Will pay cash or trade table model radio. Also want communications, FM and television receiver. K. H. Stello, 925 Monroe St., N.E., Washington 17, D. C.