Successful SERVICING

APRIL, 1951

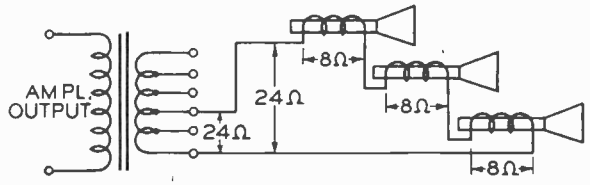


Fig. 1. When three 8-ohm loudspeakers are connected in series, the total impedance will match that of a 24-ohm tap.

LOUDSPEAKER MATCHING

by JOHN F. RIDER

Editor's Note: This article on Loudspeaker Matching is an excerpt from Chapter 3, entitled "Impedance Matching," of INSTALLATION AND SERVICING OF LOW POWER PUBLIC ADDRESS SYSTEMS by John F. Rider, published by John F. Rider Publisher, Inc. The May issue of SUCCESSFUL SERVICING will contain another article on the subject of impedance matching.

The *matching* of one component to another in a p-a system is very important. A bad match between a good amplifier and a loudspeaker will give poor results in terms of power output and fidelity.

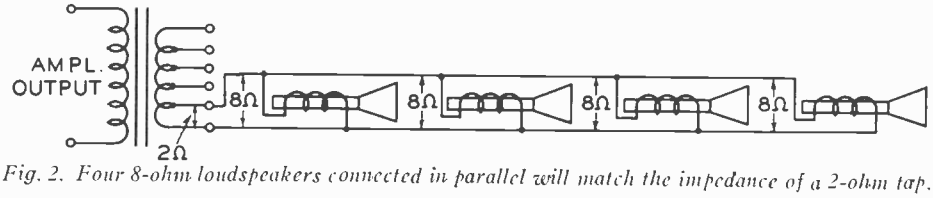


Fig. 2. Four 8-ohm loudspeakers connected in parallel will match the impedance of a 2-ohm tap.

Given an output tube having a stated plate circuit impedance, it is necessary that the loudspeaker voice-coil impedance match the impedance of the plate circuit. For the best possible fidelity, the source and load impedances should match within about 10 percent.

The impedance of a loudspeaker is the impedance of the voice coil and is always included in loudspeaker specifications. This impedance, which is equal to the voltage across the moving coil divided by the current through it, is given at a particular frequency, usually 400 cycles. Voice-coil impedances generally range from 2 to 16 ohms, with most between 6 and 8 ohms, however, in special loudspeakers it may be as much as 50 ohms. When loudspeakers are directly connected in various types of series, parallel, or series-parallel combinations, the impedance offered by the total load may be anywhere from 0.1 ohm to 500 ohms in commercial practice.

Generally when the distance between the amplifier output transformer and the loudspeaker is about 200 feet or less, the line can be run at the impedance of the voice coil. The term "line impedance" as used here does not refer to any characteristic which the line itself has but means that the conductors are connected to a load of that type impedance. Thus a low-impedance line means that the wires are connected to a low-impedance load. Any combination of loudspeakers can be connected by a low-impedance line.

Matching of Loudspeakers on Low-Impedance Lines

The total load impedance offered by two or more loudspeakers connected in series is the sum of their individual impedances. This total load can match the amplifier output by connecting it across the same value of tap impedances. Thus, if three 8-ohm loudspeakers are series-connected, matching is secured by connecting the entire load across a 24-ohm tap on the output transformer as shown in Fig. 1.

The total load impedance offered by two or more loudspeakers connected in parallel, when all have the same voice-coil impedance, is equal to the impedance of any one loudspeaker divided by the number of loudspeakers. Thus, if four 8-ohm loudspeakers are connected in parallel, the total load impedance $Zr = 8/4 = 2$ ohms. For proper matching, the loudspeakers should be parallel-connected to a 2-ohm tap on the output transformer as shown in Fig. 2.

The total load offered by four or more loudspeakers connected in series-parallel, when all have the same voice-coil impedance, is equal to the impedance of any series branch line, divided by the number of such series lines that are in parallel. If four 8-ohm loudspeakers are series-parallel connected so that there are two loudspeakers connected in series in each branch and two branches in parallel, then the effective load is $16/2 = 8$ ohms. This load should be connected to an 8-ohm tap for proper matching, as shown in Fig. 3.

Matching on High-Impedance Lines

Where several loudspeakers are situated at some distance from the amplifier and from each other, then each loudspeaker (or group of loudspeakers) can be matched to a 500-ohm

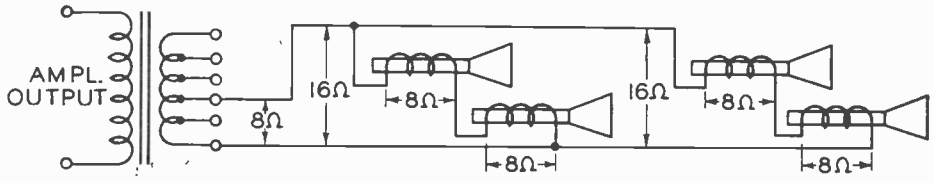


Fig. 3. When four 8-ohm loudspeakers are connected in two parallel branches of two series-connected loudspeakers each, the total load impedance will be 8 ohms.

(Continued on page 10)

Television Changes

Sarkes Tarzian TT3

The following revisions have been made in the TT3: The 6AG5 has been changed to a 6CB6 with no change in the wiring; a 680-$\mu\mu$f capacitor has been added from ground to the junction of R1 and the agc lead.

●

Motorola 9L1

Model 9L1 incorporates a Chassis TS-18 or TS-18A and is electrically identical to the chassis published. The only difference is in the size of the picture tube and the hardware used with 9L1.

●

Affiliated Retailers AR-16CD, AR-16CD-3CR, AR-163CR, AR-216, AR-316, AR-316-3CM, AR-816-3CM

These models are similar to Models AR-16CX and AR-816-3CR, and employ 16-inch round picture tubes.

●

Muntz M159

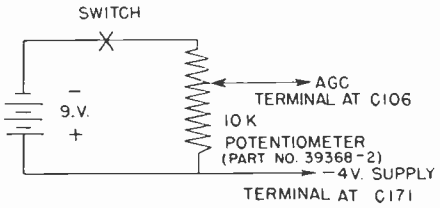
Sets below Serial No. 22,000 did not contain a high-voltage filter capacitor as the coating on the outside of the picture tube had a capacitance effect and the capacitor was not necessary. Since picture tubes now leaving the factory do not have an aquadag coating upon the outer surface of the tube, it will be necessary to add the high-voltage filter capacitor Part No. CC-0070, 500 $\mu\mu$f,, 20,000 volts d.c. (as shown in the schematic for Model M169), if a new picture tube is installed in chassis below 22,000.

Crosley 10-401, 10-414MU, 10-416MU

It has been found that on some receivers the horizontal oscillator exhibits a tendency to drift causing the receiver to fall out of horizontal sync after operating several hours, or, if the horizontal sync adjustment was made after the receiver has been operating for some time, the picture will not fall in sync when the receiver is cold. This trouble may be attributed to the 0.01-μf capacitor, C160. This capacitor, if it is of the molded type (Type 487), may change capacitance with temperature change sufficiently to cause the receiver to fall out of horizontal sync. To make correction, replace the 0.01-μf molded capacitor C160 with a 0.01-μf, 600-v, paper-type capacitor (Part No. 39001-13).

If trouble is experienced with the above models in centering the picture and reducing the neck shadow, it may be caused by reversed polarity of the focus coil. If this is suspected, the polarity can be changed by reversing the current through the coil. To do this, interchange the leads to the focus coil at the points where they are soldered under the chassis. Try centering the picture again. If the centering action is easier and the neck shadow diminished, and if the angle the focus coil makes with the neck of the picture tube is almost a right angle, the connection is correct. The reason for difficulty in centering, when the focus coil polarity is incorrect, lies in the fact that the magnetic field from the focus coil interacts unfavorably with the field from the ion trap. When the coil is connected correctly, the current flow will produce a "North Pole" on that face of the coil nearest to the tube socket.

Picture and sound separation can be caused by a narrow bandpass of the i-f stages, narrow bandpass of the r-f tuner, or a combination of both. Check the i-f bandpass with a sweep generator, marker, and scope. The response curve should appear as shown for Model 10-401. Check the r-f tuner by substituting it with a unit that is known to be in good alignment.



Battery pack arrangement used as bias for age circuit.

In some cases, when using test equipment to align the above models, or when the gain of the receiver may be affected by another section of the receiver such as improper functioning of the horizontal deflection circuits, it is advisable to substitute a bias for the age circuit which can be adjusted manually to any desired setting. It is suggested that the battery pack arrangement shown in the accompanying diagram be used for this purpose by clipping the two external leads into the chassis wiring at the points indicated. No wiring changes are necessary. A spst switch is employed to break the circuit when the battery pack arrangement is not in use. In order to prevent a run down battery, due to the switch being left turned on, it is suggested that a micro-switch be incorporated in one side of the unit. When the unit is placed on the chassis with the switch down the switch contact will close. When the unit is removed from the chassis the switch will open automatically.

●

Westinghouse H-605T12, Ch. V-2150-101

In some deflection yokes used in this model, the nut for the deflection yoke adjustment wing-screw may bind with the metal channel in which it rides. The binding makes it difficult to position the yoke snugly against the bell of the cathode-ray tube. If the yoke is not fitted snugly against the bell, shadows may appear around the edge of the crt face. To correct this condition, loosen the deflection yoke adjustment wing-screw and carefully force the deflection yoke forward as required. In extreme cases, it may be necessary to remove the deflection yoke and pry the nut toward the rear of the yoke using a screwdriver.

Tele King MST14, 14TR, 17CA, 17RO, 114A, 117, 117C, 117CA, 117LO, 162, 173, 516A

These models are similar to Models 116 and 516. Models MST14, 14TR, and 114A employ 14-inch picture tubes. Models 162 and 516A employ 16-inch rectangular picture tubes. Models 17CA, 17RO, 117, 117C, 117CA, 117LO, and 173 employ 17-inch rectangular picture tubes.

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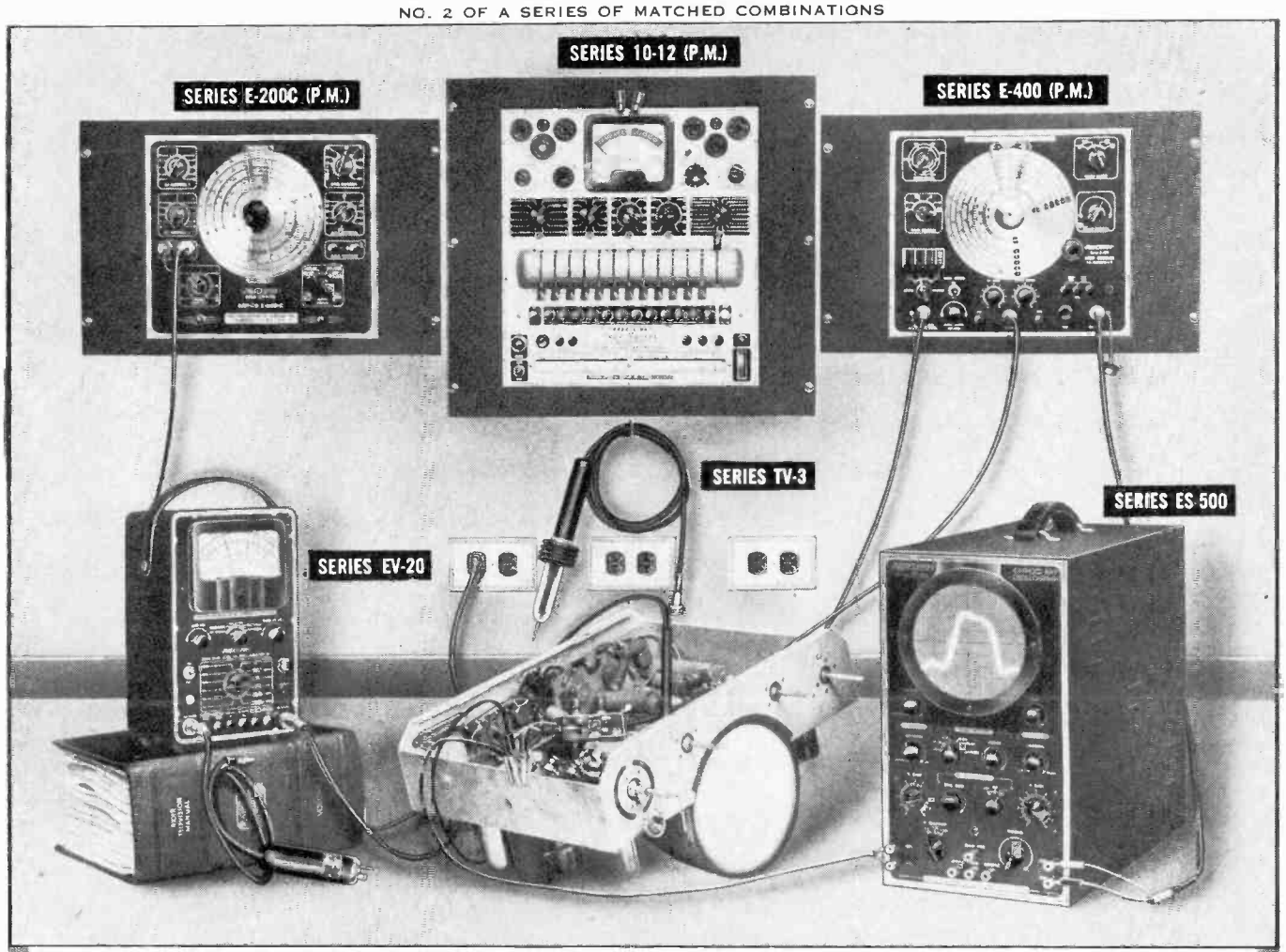

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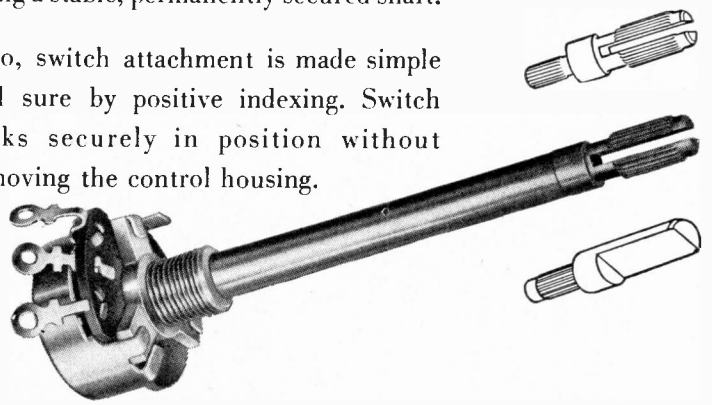

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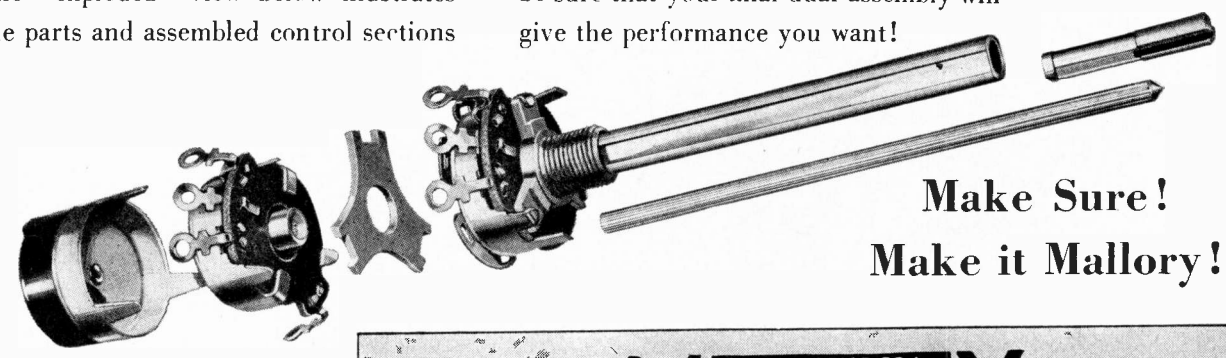

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JOHN F. RIDER, Editor
E. H. BEAUMONT, Associate Editor

CURTAIN TIME

Time is of the essence in the servicing industry! It is a certainty that it will become even more important as the days and months pass. One of the gripes that is being voiced by many service technicians is the time required to *untwine* leads wound around a connecting point as a part of the unsoldering operation. The loss of time, however, is not the only source of aggravation. An equally important sore spot is the frequent need for changing the lead dress of adjacent wires and circuit components in order to unwind the connection. Sometimes this is voluntary and, quite frequently, involuntary.

Considering the importance of correct lead dress in TV receivers, and for that matter in r-f, oscillator, and i-f systems of all receivers, it is only natural that the service technician be anxious to keep all unnecessary changes in wiring and component location to a minimum. To be forced to deliberately alter component conditions and then be certain that they are returned to their original locations so that resonance conditions and feedback conditions be normal, is a problem. Of that there is no doubt. We have had the experience ourselves.

Admittedly, a simple expedient when a connection is to be interchanged or a defective part is to be removed, is to clip a connecting wire at the junction point or soldering lug. This is quick, but it is messy and, strangely enough, is viewed with disfavor by meticulous service technicians. Isn't it possible to adapt a standard procedure of hooking the wire through a hole in the soldering lug or around the connecting point and then soldering? This would make the unsoldering operation very much simpler than having to untwist several turns. Quite frequently the solder cools and hardens before the untwisting job is completed, and it becomes necessary to re-heat the junction. If the soldering is done properly during the manufacturing stage, it makes for an equally good connection and a perfectly safe mechanical joint. Above all, it will be a boon to the servicing industry.

Changes

Quite a few of the changes relating to radio and television receivers contained in Rider Manuals and published in SUCCESSFUL SERVICING make direct reference to servicing problems being solved by the circuit change. This is very important information, and we seriously recommend that if time does not permit a complete reading of each circuit change, the change should be glanced at prior to filing. The trouble being eliminated will be remembered even though the exact procedure may not always be retained in the mind. Quite a few of these troubles are obscure and, while tied specifically to one receiver in the reference, may be duplicated in some other receiver. The remedy as given may not be applied "in toto," but at least some direction of approach will be indicated.

The Self-Made Man

Many of the practicing servicemen of America are self-made men. By this we mean that their technical background has been gained by exposure to literature, by continued reading of theory, and, finally, by daily work at the bench. Expanding the storehouse of knowledge in this manner is nothing to be ashamed of for, after all, it is the practice of all people who have had a formal education and must keep up to date with the changing technology. A formal education can do nothing more than lay the foundation upon which more and more knowledge may be piled. As far as the servicing industry is concerned, the circuit descriptions which are contained in Rider Manuals, especially the TV Manuals, are vital sources of technical information. They comprise an education because they explain what happens in the TV receivers which are sold to the public. It is wrong for the serviceman to feel that he does not have time to read circuit descriptions. He *must* find time. The servicing industry is not a static industry. It is continually on the move, and the technical background of every TV technician must expand with it.

JOHN F. RIDER

Sarkes Tarzian TT2

The following revisions have been made in the TT2: L213 is now .180 (was .173); L313 is now .155 (was .160); and L401 is now .165 (was .170).

Tele King 16C03CR, 16CX, 162, 216, 316, 416CAF, 916, 916C, 916CAF, 3163CM

These models are similar to Models 416 and 716 and employ 16-inch round picture tubes.

Television Changes

DeWald DT-160

The focus coil has been deleted from the circuit. This information was omitted inadvertently from the change notice on this model that appeared in the February 1950 issue of SUCCESSFUL SERVICING.

●

Affiliated Retailers AR-MST14, AR-MST16, AR-16ATR, AR-114A

Models AR-MST14 and AR-114A are similar to Model AR-14TR and employ 14-inch picture tubes. Models AR-MST16 and AR-16ATR are similar to Model AR-16TR and employ 16-inch rectangular picture tubes.

RCA 8T241 Series

Check to see that the receiver antenna transformer T115 is connected properly and that no windings are open. Remove 8T241 r-f unit and change R11 to 10,000 ohms.

If the receiver is to work in weak signal areas and never to receive a strong signal, then maximum r-f gain can be obtained by installing a small bleeder just to supply —0.5 volts for the r-f amplifier grid. R12 should be disconnected from its present position and reconnected to this —0.5-volt point. Check oscillator injection into mixer. This should read at least —2.5 volts on all channels when measured by a VoltOhmyst at test connection R13. If this is not achieved, adjust the link between L2 and L3 until such injection is obtained.

Realign r-f unit for peak performance on the channels to be received.

Change R102 to 68 ohms. Realign the picture i-f making sure that the high frequency slope of the response curve is broad as specified in the service data. If receiver is to be operated in a very weak signal area, place the picture carrier at 60%, or even 80% on the slope. Check to see that the receiver retains proper response at low signal input levels, and —1.0-volt i-f bias. Some change in response is normal, but the picture carrier should remain high on the curve. This alignment causes the picture to be smeared on strong signals but produces the best pictures on signals of less than 100 microvolts.

Make sure that the a-c line feeding the receiver is at least 115 volts at all times, as this radically effects the kinescope anode voltage. If the horizontal deflection system is operating improperly or is incorrectly adjusted, there may be insufficient high voltage on the kinescope. When a "snow flake" occurs, this causes the tube to bloom, making the snow more pronounced. Make sure that all +B voltages are normal, especially the 6BG6 screen. Change R181 to 150,000 ohms. Adjust the drive trimmer as far counterclockwise as possible. It should be possible to have at least 9000 volts on the kinescope at this point.

Adjust the focus coil carefully so as to obtain best focus in white areas of the picture. Modify the video amplifier to saturate on whites, thus reducing the prominence of the "snow." Disconnect R124 from —120 volt bus and return it to ground. This causes adjustment of the picture control to affect brightness, however, once set, these adjustments can be left alone.

Adjust the age threshold control counterclockwise from the normal position to provide the best signal to noise (snow) condition. Unfortunately, this makes the sync more susceptible to impulse type interference such as ignition, etc.

Cut the antenna transmission line length to provide maximum signal. This effect is most noticeable on the high channels.

In general, use the highest gain antenna array that can be had, place it as high in the air as possible and above all surrounding obstacles, especially power lines. In some cases, however, if the electric field is distorted, a simple antenna may produce more signal than an elaborate array, and the height may become critical. In selecting an antenna for gain, make sure that high gain occurs on the channel or channels to be received. Some antennas, in order to reduce size, cut off badly on channel 2, and on some, the response is slightly down even on channel 3. In general, the best antenna or array for any particular channel is one cut for that channel.

Unless bothered with an extremely high noise level (ignition, etc.) the antenna transmission line should be the 300-ohm open type. Coaxial and twinex have higher losses than the open line, which in weak signal areas cannot be tolerated. In time, however, open wire line may foul up and have to be replaced. This fouling shows up as a loss of signal in wet weather.

The above modifications make these receivers so "hot," that a booster is not likely to be of help in the receiving of weak signals.

●

Tele King MST12, 312

These models are similar to Model 812 and employ 12½-inch picture tubes.

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It is our contention that no service shop can operate successfully without a complete set of Rider Manuals, Radio and Television. We now know that for any receiver Television or AM that is brought into our shop to be serviced we have the factory authorized data. It is a satisfaction to know that we have the data on hand when we need it.

Keep up the splendid work.

Very truly yours,
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Television Changes

General Electric 12T3, 12T4, 12T7, 12C107, 12C108 and 12C109

Late production receivers incorporated the following change to increase the horizontal sweep width: Add a 220-$\mu\mu$f, 1500-volt capacitor (Stock RCU-295) between terminals #6 and #8 of the horizontal sweep output transformer, T351. Either two 390-$\mu\mu$f capacitors (Stock UCU-1042) in series or two 470-$\mu\mu$f capacitors (Stock UCU-1044) in series may be substituted for the 220-$\mu\mu$f capacitor.

Early production receivers made use of a 41.25-Mc trap coupled to the 2nd video i-f coil. This caused "buzz" in audio on some receivers when the receiver was properly tuned for best picture detail at low contrast setting or when operating on a rather weak signal. This trap was removed on all late production receivers and was made less effective on receivers in process of fabrication, by shunting the trap by a 5100-ohm, ½-watt resistor by connecting it across the trap trimmer C281. If this change is desired in the field, the shunting of C281 by the resistor does not require a realignment of the video i-f.

To improve the "pull-in" range of the horizontal synchronizing circuit in the above receivers, a late production change was made which changes the value of R379 from 180,000 ohms, to 270,000 ohms, ½ watt. This resistor is in the circuit which supplies bias to the afc control tube. In some receivers, a 220,000-ohm resistor was substituted until an adequate supply of the recommended value was obtainable.

●

Westinghouse H-242, Ch. V-2150-31

The schematic diagram of the service notes for this chassis shows a capacitor, C336, and a resistor, R339, in the cathode circuit of the 6AH6 video output tube. These components were not incorporated in some of the early production chassis. In early chassis that do not contain C336 and R339, a sharper picture can be obtained in strong signal areas by adding the two components as shown on the schematic. It should be noted, however, that insertion of the two components will reduce the gain of the stage somewhat, and in weak signal areas the reduced gain may overbalance the improvement in sharpness.

Steps 5 to 7 of the "High-Voltage Oscillator Adjustment Procedure" should be changed to read as follows:

5. Turn off the receiver, disconnect the 13 megohms of resistance, and connect the high-voltage lead to the crt.
6. Connect the kilovoltmeter between the h-v lead and the chassis.
7. Turn on the receiver and adjust R466, which controls the d-c supply voltage to the h-v oscillator, so that the voltage indicated on the kilovoltmeter is 10.5 kilovolts, plus or minus 0.5 kv.

The frequencies specified in steps 5 to 8 of the alignment procedure should be changed to read as follows:

Step 5—22.6 Mc; Step 6—25.9 Mc; Step 7—25.6 Mc; Step 8—23.8 Mc.

Westinghouse H-603C12, H-608C12, Ch. V-2152-01

The schematic diagram of the V-2152-01 chassis (Figure 14 in the service notes) should be changed to include later production changes as follows:

1. The value of C408, which is connected from pins 5 and 7 of the 6AL5 horizontal afc tube to ground, has been changed from 0.0033 μf to 0.002 μf. This change is made to improve the horizontal hold.
2. Add a 0.0-μf capacitor C439 from the junction of R441 and R433, located in the pin 7 grid circuit of the 12AU7 horizontal multivibrator, to ground. This change is made to improve the horizontal hold.
3. Change the resistance of R456 in the cathode circuit of the 6BQ6/GT horizontal output tubes from 33 ohms to 150 ohms.
4. Change the resistance of R431, located in the pin 6 plate circuit of the 12AU7 horizontal multivibrator, from 10,000 ohms to 33,000 ohms. This change stabilizes the operation of the multivibrator.
5. Add a 0.01-μf capacitor C511 and a 100-ohm resistor R506 connected in series from the junction of L501 and R501 to ground. These components suppress arcing at the selector switch contacts.

The following changes and additions should be made to the Parts List:

Ref. No.	*Part No.*	*Description*
C408	V-6023-6202M	Capacitor, 0.002 μf
C439	V-6023-4104M	Capacitor, 0.1 μf, 440 v
R431	RC30AE333K	Resistor, 33,000 ohms, 1 w
C511	V-6023-4223K	Capacitor, 0.01 μf, 400 v
R506	RC20AE101K	Resistor, 100 ohms, ½ w.

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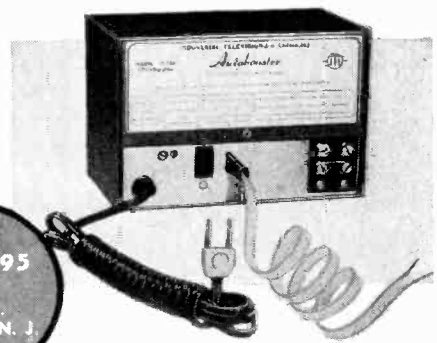

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LOUDSPEAKER MATCHING

(Continued from page 1)

line (or other high impedance) by means of an individual transformer having a primary impedance such that in combination with the other individual transformer primary impedances the total load is 500 ohms (or equal to the amplifier tap impedance used). Four loudspeakers in series-parallel using two matching transformers, or nine loudspeakers in three series-parallel groups using three matching transformers, can each be connected so as to offer an impedance equal to that of the line. Fig. 4 illustrates line matching of the above-mentioned series-parallel connected loudspeakers. It will be noticed that the matching transformer secondary impedance equals the load connected across it.

(More next issue)

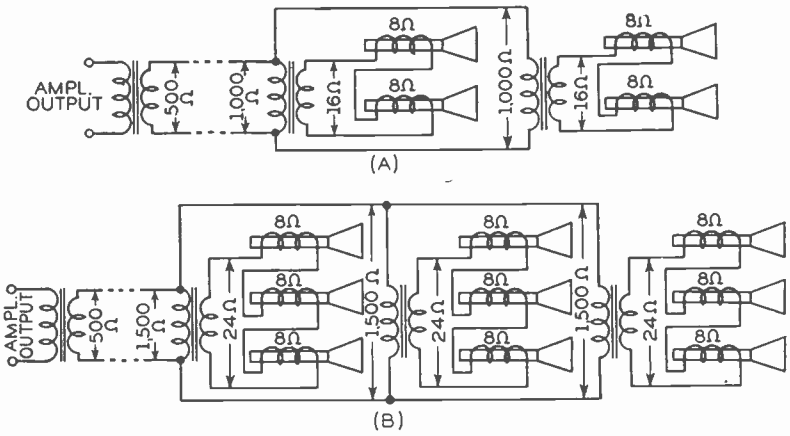

Fig. 4. Low-impedance loudspeakers can be connected to a high-impedance amplifier in many ways using line matching transformers. Parts (A) and (B) illustrate two such possible configurations.

Belmont C-1602 Series C

Model C-1602 Series C is similar to Model C-1602 Code 8 except for the differences mentioned below:

Resistor R3, the 470,000-ohm resistor connected from lug 2 (antenna input) to ground has been deleted. Lug 2 is connected directly to lug 4, 1 and 3 are connected to the antenna input terminals. The value of resistor R4, going to pin 1 of the 6AG5 r-f amplifier, has been changed from 100,000 ohms to 10,000 ohms. Resistors R2, R5, R8 and R10, that were tied to lug 10 of the tuner, are now grounded. Capacitor C33, 1000 $\mu\mu$f, that went from R10 to ground, has been deleted. Capacitor C32, the 200-$\mu\mu$f capacitor going from ground to the junction of pin 4 of 6AG5 r-f amplifier and tuner lug 6, has been deleted. Capacitor C31, the 220-$\mu\mu$f capacitor going from ground to the junction of pin 3 of the 6J6 converter and tuner lug 7, has been deleted. Capacitor C30, the 220-$\mu\mu$f capacitor that was connected from pin 4 of the 6J6 converter and tuner lug 8 to ground, now is connected from pin 3 of the converter to ground. Pin 3 of the 6AG5 and pin 3 of the 6J6 are tied directly to lug 8, which goes to the heater, pins 4 of both tubes are grounded. R4, mentioned above, now goes from pin 1 to lug 9, instead of to ground, and lug 9 is connected to agc at the junction of the low side of capacitor C55 (5 μf, 50 volts) and the 2200-ohm resistor R53. The value of resistor R54 has been changed from 220,000 ohms to 68,000 ohms, and R54 is now inserted in the line going to tuner lug 9, instead of going from ground to tap 7 of T8. A 33,000-ohm resistor R110 has been added from ground to the junction of lug 9 and R54. The 0.2-μf capacitor connected from ground to tap 7 of T8 has been deleted from the circuit.

In the tuner chassis, the 0.5-$\mu\mu$f capacitor C10, connected in parallel with C11, 1.5 μf, has been deleted. The 51-$\mu\mu$f capacitor C28, connected from L9 to C29 has been deleted. The 7-$\mu\mu$f capacitor C27, connected in parallel with L9, has been deleted from the circuit, and capacitor C24, the 7-$\mu\mu$f capacitor connected in parallel with C26, has been substituted in place of C27. The 51-$\mu\mu$f capacitor, C25, connected from the junction of C24 and C26 to pin 5 of the 6J6 converter, has been deleted from the circuit.

●

Gamble-Skogmo 94RA33-43-8135

The 94RA33-43-8135 is the same as Models 94RA33-43-8130C and 94RA33-43-8131C except for the differences mentioned below. The physical difference is the cabinet, larger drum on the tuning gang, speaker bracket, dial glass, dial bracket and power-cord strain relief. The parts list for Model 94RA33-43-8135 is the same as that for the 8130C and 8131C except for the following parts.

Part No.	*Description*
E81650-2	Tuning gang
E81645-S2	Speaker
M1607-2	Dial bracket
P1602-2	Dial glass
SR-2P	Strain relief
P1601A-2	Cabinet, walnut
M1605-2	Chassis.

●

Crosley 11-100U, 11-101U, 11-102U, 11-103U, 11-104U, 11-105U

The following procedure should be used when installing an idler spring (part no. 151085) on the drive shaft:

1. Remove cotter from end of shaft under chassis.
2. Pull drive shaft straight out from chassis being careful to keep drive cord on shaft and pulley.
3. Remove spring washer from shaft.
4. Place idler spring on shaft and then hook one end of the spring under the chassis. The other end of the spring hooks around the portion of drive cord that is between the drive shaft and the tuning capacitor pulley.
5. Place spring washer on the drive shaft, insert drive shaft in chassis, and insert cotter on end of shaft.

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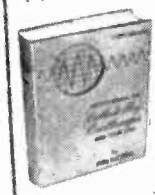

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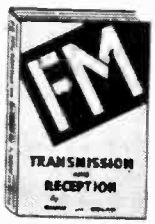

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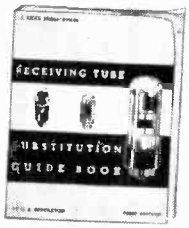

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Radio Changes

General Electric P15

To further clarify the identity of the three spindles for the record speeds for which they are to be used, the following descriptions have been added to the Parts List for record changer P15: RMU-060 Spindle, offset spindle for 7 inch, 33-1/3 rpm records; RMX-162 Spindle, for 10 or 12 inch, 33-1/3 or 78 rpm records; RMX-163 Spindle, for 7 inch, 45 rpm records.

●

Admiral 6RT41, 6RT42, 6RT43, Ch. 5B1-PH

Models 6RT41, 6RT42, and 6RT43 use radio chassis 5B1-PH. The 6RT41 is a plastic table combination using record changer RC160 or RC160A. The 6RT42 and the 6RT43 are wood table combinations using radio chassis 5B1-PH and record changers RC160 or RC160A. In addition to the RC160 and RC160A, the 6RT42 may use an RC150 record changer.

●

Admiral 6C71-71A, Ch. 10A1; 7C62-62A, Ch. 6M1; 7C63-63A, Ch. 7C1

Model 6C71-71A is a console combination using radio chassis 10A1 and record changer RC200. Model 7C62A-62A, Ch. 6M1, and Model 7C63A-63A, Ch. 7C1, are console combinations and use either record changer RC170 or RC170A.

●

Gamble-Skogmo 94RA4-43-8129A, 94RA4-43-8130A, 94RA4-43-8130B, 94RA4-43-8131A, 94RA4-43-8131B, 94RA4-43-8132A

Model 94RA4-43-8129A is the same as Model 43-8129A. Models 94RA4-43-8130A and 94RA4-43-8130B are the same as Models 43-8130A and 43-8130B, respectively. Model 94RA4-43-8131A is the same as Model 43-8131A. Model 94RA4-43-8131B is the same as Model 43-8131B. Model 94RA4-43-8132A is the same as Model 94RA4-43-8131A except that it employs a maroon cabinet.

Motorola BKOA, CT8A, GM9TA, GMOT, HNO, ILOTC, KR9A, OEO, PCO, PC9A, SR9A, Ch. 10A

The above models all use Chassis 10A. Model BKOA is used in 1950 Buick Special, Super and Roadmaster cars. It will also accommodate 1949 Buick Super and Roadmaster; also the 50-70 Series 1948, '47, '46, and '42 Buick cars. Model CT8A is used in 1948 Chevrolet. It will also accommodate 1947, '46, '42, and '41 Chevrolet cars. Model GM9TA is used in 1949 and 1948 GMC and Chevrolet trucks. Model GMOT is used in 1950, '49, and '48 GMC and Chevrolet trucks. Model HNO is used in 1950 Hudson (Pacemaker, Super, and Commodore). Model ILOTC is used in International L-Line trucks. Model KR9A is used in 1949 Kaiser and Frazer. Model OEO is used in 1950 Series 76 and 88, all 1949 and 1948 Futuramic Oldsmobile cars. Model PCO is used in 1950 and 1949 Pontiac cars. Model PC9A is used in 1949 Pontiac cars. Model SR9A is used in 1949 Studebaker cars.

Radio Changes

Admiral 6T06, 6T07, Ch. 4A1

Models 6T06 and 6T07, Ch. 4A1, are wood table models using a farm battery.

●

Admiral 6T01, 6T05, Ch. 6A1

Model 6T01 is a plastic table model using chassis 6A1. Model 6T05 is a wood table model using chassis 6A1.

●

RCA 8X541, Ch. RC-1065L; 8X542, 8X547, Ch. RC-1065M

These instruments are almost identical to the previous production of these instruments which used Chassis RC-1065J and RC-1065K.

Admiral 6T02, 6T04, Ch. 5B1

Models 6T02 and 6T04 are table models using chassis 5B1. Model 6T02 has a plastic cabinet, while Model 6T04 has a wood cabinet.

●

RCA A-82, Ch. RC-1094; A-91, Ch. RC-1095; A-108, Ch. RC-1096; 45-W-9, Ch. RC-1095A

The original carriage in all of the above models used a pull-out handle on the top front, the carriage now in use has a handle under the lower front edge. The same plastic frame may be used for all models. A plug button (supplied with each plastic frame) is used to cover a center hole which is unused on all models except A-108.

Frame—Stock No. 76161 is used as a replacement for frame Stock No. 75549 or 75571 (maroon).

Frame—Stock No. 76162 is used as a replacement for frame Stock No. 75683 or 75684 (light brown).

The new type of pull-out handle (lower front) is available as Stock No. 76125. If the original pull-out handle (top front) is desired it will be necessary to drill two holes in the frame. The holes are .203" diameter and are located .625" each side of the center line and 13/64" down from the top.

In Models A-91 and A-108 the color of wire used in the connecting cable has been changed. A black-white wire has been used as a substitute for the black wire (pin 1 to speaker) and a brown-white wire has been used as a substitute for the brown wire (pin 8 to speaker). A brown wire goes from pin 2 to the jewel lamp and a black wire goes from pin 3 to the jewel lamp.

In Model A-82 a substitute speaker (stamped 92569-9B) has been used in some instruments. It requires a different speaker cone than the one listed in the A-82 Parts List. Speaker 92569-9B uses Stock No. 75875 cone. Speaker 92569-9W uses Stock No. 74901 cone.

●

Admiral 6RT41A, 6RT42A, 6RT43A, Ch. 5B1A

Model 6RT41A is a plastic table combination using radio chassis 5B1A and record changers RC160 or RC160A. Models 6RT42A and 6RT43A are wood table combinations using radio chassis 5B1A and record changer RC160 or RC160A.

Gamble-Skogmo 43-8101, 165, 197, 197U

Model 165 is the same as Model 94RA31-43-8115A. Model 197 is the same as Model 94RA31-43-8115B. Model 197U is the same as Model 94RA31-43-8116A. Model 43-8101 is electrically the same as Models 94RA31-43-8115A, -8115B, and -8116A.

●

Gamble-Skogmo 43-7661, 43-7852

Model 43-7661 is the same as Model 43-7660 except that the 7661 uses a blond cabinet. Model 43-7852 is the same as Model 43-7851 except that it uses a blond cabinet.

●

Westinghouse H-312P4, H-312P4U, H-313P4, H-313P4U, H-314P4, H-314P4U, H-315P4, H-315P4U, Ch. V-2153-1

The following part should be added to the parts list for these models: R13 (Part No. RC30AE332K), 3300 ohms, 1 watt.

●

United Motors 982421, Oldsmobile

Capacitance drift of the 0.0012-μf mica capacitor used in the oscillator tank circuit (Illustration No. 20) sometimes occurs. This appears as intermittent oscillator frequency drift which seems to be the result of high temperature which may be caused by high input voltage or other extreme conditions. It may be necessary to cover the set or run at a high input voltage when bench testing in order to have the intermittent condition reappear. Since a fixed mica capacitor is usually considered a very stable unit, this condition is not a common occurrence. However, when oscillator frequency drift is encountered this capacitor should be considered as a possible source.

Westinghouse H-217, H-217A, Ch. V-2146-11DX; H-217B, Ch. V-2146-35DX

In the schematic diagram of the V-2146-11DX chassis (Fig. 6 of the service notes), the high-frequency oscillator tube should be a 6C4 rather than a 6AB4. In the schematic diagram of the V-2146-35DX chassis (Fig. 7 of the service notes) the 0.05-μf capacitor C338 in the d-c restorer circuit should connect to the top (cathode) of the 1N34 rather than to the bottom (anode).

In later production of Model H-217B, a built-in TV antenna is incorporated. Replacement parts for the antenna are as follows:

Part No.	*Description*
V-9358-2	Antenna assembly, TV
V-5574	Bearing, shaft (TV antenna)
V-6146-5	Knob, TV antenna
V-9323-1	Pulley and shaft assembly (short shaft)
V-9324-3	Pulley and shaft assembly (long shaft)
V-9328-1	Sleeve, rubber (TV antenna)
V-4057	Spring, TV antenna drive
V-3752S	Washer, felt (TV antenna knob).

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† The Rider Manual Page Numbers given under Television Changes are for Rider TV Manuals. The volume number is the number preceding the dash. Volume numbers preceded by an asterisk (*) apply to the 8½" by 11" page size Manual only.

The Rider Manual Page Numbers given under Radio Changes are for Rider AM-FM Manuals. The volume number is the number preceding the dash.