FREQUENCY CONVERSION
RANGE 1500-2600 K.C.

6A7

6VOLT SUPPLY

ON

OFF

RADIO ANTENNA LEAD CAR ANTENNA

ANTENNA PADDLE

OSCILLATOR PADDLE

A B C LABS. MODEL 100
Police Converter

KENNEDY MODEL 1000

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MODELS 14, 21, 31
SEU Chassis
Schematics

BRUNSWICK RADIO CORP.

MODELS 14, 21, 31, 61, 82
R-F Chassis
Schematic

THE BRUNSWICK-SALKE-COLLENDER CO.
SCHEMATIC CIRCUIT OF DIRECT POWER UNIT
(CLOSING ON VV 1)

©John F. Rider, Publisher
MODEL 674
Schematic
Trimmers, Alignment

ESPEY MFG. CO., INC.

© John F. Rider, Publisher
1937 4 Tube "MUSIQUE" TRF Receiver Model L-44-T
Frequency Ranges, 1600KC to 540KC, and 1600KC to 4500KC.

1937 5 Tube "MUSIQUE" TRF Receiver Model L-55-T
Frequency Ranges, 1600KC to 540KC, and 1600KC to 4500KC.
MONARCH
E. M. SARGENT CO.

Schematic Notes
MODEL 1000

Schematic, Socket

CALIBRATION. Four sets of coils are used in Standard Model 10A, five sets in Marine Models. The ebonite on the Wave Changing Switch gives the Regenerators coverage of each band. The Main Tuning Dial above approximates frequencies for wave lengths less than 7000. Each knob on the tuning dial is labeled the same as the Wave Changing Switch, so as to facilitate locating the proper band. The 12-4.3 M.C. and 4.4-1.5 M.C. scales are the center of the dial. The 30-12 M.C. and 1.5-0.5 M.C. (Broadcast Band) below. The top edge of the dial has a standard 0-100 degree scale for use on extra bands and for accurate logging. For details of Hand Spread dial calibration, see Hand Spread paragraph below.

The Antenna Trimmer is to be kept at the f. f. stage resonant with the detector. Its position will vary somewhat for different dial settings and a careful operator will always check it adjustment on each signal. The right setting is the point at which maximum signal is heard. Two such points may be found if the Trimmer knob is rotated over the entire scale. They are identical. Use either.

When regeneration is too far advanced (to right) the receiver will oscillate at the resonant Trimmer setting. This makes it difficult to determine the proper Trimmer setting, and it is a simple way to set it right is to proceed as follows. Turn Regeneration and Volume all the way on and set Wave Changing Switch at same band other than broadcast, say the 4.4-1.5 M.C. band. Set the tuning condenser at about 70 degrees on the top scale. Then turn the Trimmer rapidly back and forth across the "squeal" point, meanwhile reducing regeneration by turning the control slowly to the left. A point will be reached where the Trimmer will no longer cause a "squeal" but instead will bring in a light background hiss. This indicates sensitivity, and means that both Trimmer and Regeneration are at their proper settings. Now turn Main Tuning Dial until signals are heard. If a "squeal" is heard on the signal, there is too much regeneration. Always keep regeneration near the "squeal" point.

SPREADING THE WIDE BANDS—90 and 160 METERS. On adjustment "Q" the Band Spreader should have a little more than 10 of each wide band. If the Band Spreader is adjusted to 0° on the transmitter each side of the frequency on the 90 meter band, and 90 K.C. so each side of the 160 meter band. If the station's frequency happens to be at one end of the band it may be desirable to set the Band Spreader for the edge also in the 90 meter band. The wide bands are marked + and - K.C. to indicate the high and low frequency ends of the bands.
Voltage and currents of Model 660 Sound System all measured with 1000-ohm per volt voltmeter. 

Plate voltage measured from Plate+ to Plate-:
Output: 15 | 895 Volts D.C. |
Driver: 15 | 395 |
185 | 115 |
Plate Currents:
Output: 35 | Milliamperes A.C. |
Driver: 15 | 31.5 |
185 | 12 |
Grid voltage measured from Grid- to Plate-:
Output: 15 | 60 Volts D.C. |
Driver: 15 | 96 |
Platen voltage measured across Plate-:
Output: 15 | 8.5 Volts A.C. |
Driver: 15 | 2.5 |
185 | 0.0 Volts D.C. |
Speaker field voltage measured from output to plate on speaker socket - 75 volts D.C.
Meaning speaker field voltage measured from output to plate on speaker socket - 100 volts D.C.
The early type of Model 55—see A-K page 3-21 in Rider’s Volume III and page 159 in the Rider-Combination Manual—can be distinguished from the late type—see A-K page 3-23 in Rider’s Volume III and page 161 in the Rider-Combination Manual—by the volume control. The first type has a single wire-wound volume control of 6000 ohms, with the movable arm going to the screen grid of the 1st r-f. tube and the late type has a dual wire-wound and carbon volume control. The wire-wound unit of 6000 ohms has its movable arm connected to the screen grids of the r-f. tubes and the carbon unit of 10,000 ohms is connected in the antenna circuit.

Early or First Type:

This set has only one bleeder resistor, which is connected in series with the positive lead to the volume control. In early production of the first type (also known as the Early type) the bleeder is a 6000-ohm tubular resistor No. 15286A (colored purple over the entire resistor) or a 4000-ohm tubular resistor, Part No. 15286B (with a purple band about 3/4 inch wide). In later production of the first type Model 55, the bleeder is a 4000-ohm wire-wound resistor, Part No. 16295, which supersedes No. 15286A. No. 15286B is superseded by wire-wound resistor No. 16340.

This set has only one bias resistor and in all cases it is 160 ohms, which value is critical. In early productions of the first type Model 55, the r-f. bias resistor was wound on the same fibre base with the filament-shunt resistor, the part number of the combined unit being 15274. If either section of this unit is found to be defective, remove the resistor and use a No. 16988, 160-ohm resistor as the r-f. bias, and a No. 17077 Flexible 10-ohm resistor as the filament shunt. In later production of the first type of Model 55, the r-f. bias resistor is a separate unit and, when defective, should be replaced with a No. 16988 resistor.

Late or Second Type:

This set has two bleeder resistors, which are connected in series with the wire-wound section of the volume control. Bleeder No. 1 (4000 ohms) is in the positive lead to the volume control and bleeder No. 2 (850 ohms) is in the negative lead to the volume control. Bleeder resistor No. 1 is Part No. 16295.

Bleeder resistor No. 2 was made in two different styles. At first it was wound on the same fibre base with the r-f. bias resistor, the part number of the combined unit being 16868. If either section of this unit is defective, remove the resistor and install a No. 16988 as the r-f. bias and a No. 16340 as bleeder No. 2. Later production of the second type Model 55 used a separate No. 16340 as the No. 2 bleeder.

The early production of the second type Model 55 had a combined r-f. bias resistor and bleeder No. 2, the part number of the combined unit being 16868. If either section of the unit becomes defective, remove the unit and replace with a No. 16988 as bias resistor and a No. 16340 as bleeder No. 2.

Later production of the second type Model 55 used a separate No. 16988 as the r-f. resistor.

Majestic 400

The accompanying illustration shows the socket layout for the Majestic Model 400, the schematic diagram of which appears on page 3-42 of Rider’s Volume III and page 1234 of the Rider-Combination Manual.

Philette Model G-Code 122

Run No. 1. A 25,000-ohm resistor, Part No. 71, Part No. 3656 has been added. One end is connected to the screen grid lead for the r-f. oscillator and i-f. tubes and the other end is grounded. Run No. 2. Tuning condenser, No. 4, removed. Part No. 31-1274 added.

Run No. 7. Resistor No. 20 (1,500 ohms) replaced with Part No. 33-3048 (2,000 ohms).

Philco Model G-Code 232

Run No. 1. A 25,000-ohm resistor, Part No. 71, Part No. 3656 has been added. One end is connected to the screen grid lead for the r-f. oscillator and i-f. tubes and the other end is grounded. Run No. 2. Tuning condenser, No. 4, removed. Part No. 31-1274 added.

Run No. 7. Resistor No. 20 (1,500 ohms) replaced with Part No. 33-3048 (2,000 ohms).

G.E. A-66 and A-86

Please make a note in your Index to Rider’s Volume VI that the General Electric receiver, Model A-66, uses the same chassis as Models A-64 and A-67. Also that Model A-86 uses the same chassis as Models A-82 and A-87.

G.E. A-70, A-75

On G.E. page 6-19 of Rider’s Volume VI please change the value of the condenser, C-44, in the line between the switch S-6 and the resistor, R-4, in the cathode circuit of the GAB, from 100 mmf. to 50 mmf.

In the list of replacement parts on G.E. page 6-23, delete “RC-235 Capacitor 100 mmf. (C-44)” and substitute for it “RC-210 Capacitor 50 mmf. (C-44) Mica Dielectric.” In the stock number column you will find RC-091. Change the C-29 to C-28.

G.E. A-63

If a noise: Model A-63 is found, the trouble may be due to the field coil breaking down to ground. This trouble is not readily apparent, but it should be checked if you come across a very noisy receiver.

Silvertone 1822, 1831, 1824, 1830

A simple circuit change will correct noisy volume controls. Its effect is to remove the d-c. diode current from the volume control and in practically all cases, it will be found that the trouble will be corrected without changing the volume control. However, if the volume control is replaced, the circuit change should be made in addition to prevent noise difficulties.

Connect a 1-megohm resistor across the outer terminals of the tone control, as indicated in Fig. 1, the schematic, and Fig. 2, the wiring diagram.

Unsolder the two leads from the ungrounded outer terminal of the volume control and solder both these leads to one side of a 0.02-mf. condenser. Connect the other side of this condenser to the volume control terminal from which the two leads were removed.

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The Pilot model 93 is shown in Rider's Manual, page Pilot 5-5. Add to the schematic, the information that the i-f peak is 115 kc. The tube placement is as follows, looking towards the rear of the chassis, with the tuning knob nearest to you: To the right of the 1st i-f transformer, the 6A7. Between the two i-f transformers, the 6D6. To the left of the 2nd i-f unit, the 75 demodulator. Immediately to the left of the speaker transformer, the 25Z5 and on line, but to the rear of the volume control, is the 43 output tube. The i-f transformers are accessible through the rear of the i-f. cans. The model 93 covers from 545 kc. to 1500 kc. and from 5750 kc. to 15,800 kc. The voltage table, which you should add to the page is as follows:

<table>
<thead>
<tr>
<th>Tube</th>
<th>Plate</th>
<th>Cathode</th>
<th>Screen</th>
<th>Fil.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Osc. -1st Dc</td>
<td>115</td>
<td>4</td>
<td>75</td>
<td>6.3</td>
</tr>
<tr>
<td>L-P Amp</td>
<td>150</td>
<td>4</td>
<td>75</td>
<td>6.3</td>
</tr>
<tr>
<td>2nd Dc</td>
<td>220</td>
<td>3.5</td>
<td>75</td>
<td>6.3</td>
</tr>
<tr>
<td>Out.</td>
<td>65</td>
<td>15</td>
<td>105</td>
<td>25</td>
</tr>
<tr>
<td>Rect.</td>
<td>75</td>
<td>15</td>
<td>105</td>
<td>25</td>
</tr>
</tbody>
</table>

*Voltage measured through plate resistor.

All plate and screen voltages measured to cathode. All cathode voltages measured to chassis. Speaker field voltage is 110 volts.

The alignment trimmers are placed in various parts of the chassis. Broadcast band alignment trimmers for 1st detector is on side of first section of gang, nearest the front of the set. The pre-selector unit broadcast band trimmer is on the side of the middle gang and the oscillator trimmer for broadcast band is on side of third section. These trimmers are aligned at 1400 kc. The slide wire adjustment is the image suppressor trimmer, aligned at 160 kc. for minimum response. Broadcast band trimmers aligned for maximum response. Short wave trimmer, aligned at 12,000 kc., is located on rear of chassis on line with the phonograph jack. The 600 kc. oscillator trimmer is located on the front of the chassis. To adjust image suppressor, tune the receiver and the test oscillator, feeding into the antenna and ground of receiver, 1630 kilocycles. Slide the wire in or out of the pre-selector circuit until response is minimum. Then repeat alignment of the broadcast band at 1400 kc. for maximum signal.

Airline Model 62-153

This Montgomery-Ward receiver is the same as Models 62-124 and 62-129, found on page 5-5 of Rider's Manual, with the exception of the following:

A voltage regulator is incorporated on the chassis, this being mounted in the back left corner by means of a two-prong plug and a receptacle on the chassis. When no regulator unit is employed, the receptacle is covered with a piece of fibre, which is eyeleted in place to protect the jumper wire.

When these sets are shipped with a 3-volt dry 'A' battery the regulator unit is in place on the chassis and the initial voltage adjustment has already been made. If the set was originally not equipped with a regulator and it is desired to change from a 2-volt battery to one of 3 volts, the regulator may be inserted by removing the fibre cover, pulling out the jumper wire and inserting the unit by matching up the two-prong plug with the receptacle and pushing down the unit until it rests firmly in the socket. The voltage regulator is connected internally in series with the plus A line.

In some of these sets considerable variation in the type 19 tubes has been experienced with the result that the tone quality has been poor when this tube was operated at a bias of 6 volts. This bias has been changed, therefore, to 4.5 volts, which has been found to be satisfactory in all cases. To effect this change, connect the white battery lead with the "C"-6' maker to the --4.5 volt tap on the "C" battery. This lead and the green and yellow lead, with the "—4.5" volt marker, will then be connected to the same --4.5 volt tap on the battery.


These Montgomery-Ward receivers are the same as those described on page 5-3 of Rider's Manuals (Models 62-120, 62-122, 62-126 and 62-128) with the same exceptions as those noted elsewhere for Airline Model 62-153.

Belmont 580

Starting with serial number 11501 the following changes have been made in the receiver, whose schematic diagram is shown on Belmont page 2-1 of Rider's Specialized Auto Radio Manual, Volume II.

The cathode and the suppressor grid of the G6D6 tube are now connected to R-3, R-5 and C-5 and so to the cathode of the 6A7 tube, instead of to C-1 and R-2. These last mentioned parts are now out of the circuit.

The value of R-6 has been changed to 19,000 ohms from 12,000 ohms and R-11 from 250,000 ohms to 500,000 ohms.

Philco 802

The alignment data for the Philco 802, the schematic of which will be found on Philco page 2-57 of Rider's Specialized Auto Radio Manual, Volume II, is the same as the alignment data for Model 800-Code 127, which may be found on Philco page 2-56 of the same volume.

Run No. 2. Condenser, No. 52 (50 mmf.) removed and Part No. 30-1032 (250 mmf.) added. Filter choke, Part No. 32-1374 added, being connected in series between pilot lamp, No. 51, and resistor No. 53 and condenser No. 52.

Philco 12-Code 122

The original Model 12 was similar to the Model 8, shown on Philco page 3-5 and page 1599 in the Radiotron-Complete Manual, and was properly known as Model 12-Code 121. The later Model 12 is the Model 12-Code 122 and is similar to Model 9, except that it is for 12-volt operation. The tubes, circuit and base arrangement are the same, but the tube heater circuit is that shown in the accompanying illustration. Since 6.3-volt tubes are used, a series multiple connection must be used to operate them from a 12-volt battery.

The shunt resistor on the oscillator tube is Part No. 33-3002 and is 21 ohms. The speaker employed is the A-9 and is equipped with a 12-volt field. The Model EE dynamotor is used, supplying 40 milliamperes at 220 volts.

The Model 12 has been designed especially for bus and boat installations, where 12-volt battery systems are employed.

The alignment procedure for the Model 12-Code 122 will be found on Philco page 4-53 in Rider's Manual, Volume V.

Philco-Hupmobile H

Run No. 6. The first i-f transformer, No. 17, replaced with a new type having the same part number. It may be identified by the green paint mark on the fibre. For schematic, see Philco page 2-19, Volume II, Rider's Auto Radio Manual.
Radiola 60

The schematic diagram of the a.f. transformer and bypass condensers contains incorrect values of capacities. Kindly make the necessary changes from the accompanying diagram in the condensers' values in the corresponding diagram in your Manuals, where it will be found on the following pages: 1-42, 4-99 and 1883 in the Radiotron Complete.

Missing I.F. Peaks

Please add to page Franklin 3-1, the reference that the model 100 and the model 102 employ an i.f. peak of 175 kc.

On Galvin page 3-7 in Rider's Manual, add the data that the i.f. peak is 175 kc. This is the model 7T-47-A. Add the same data onto page Galvin 3-15, covering the model 61. Also add the same information onto Galvin page 3-13 and 3-14 in Rider's Manual, Volume III. This applies to the model 88.

Airline Model 62-165

This Montgomery-Ward receiver is the same as Models 62-132 and 62-137, described on page 5-8 of Rider's Manuals, with the following exception:

Part No. 98006, a three-section wire-wound resistor, has been replaced with Part No. 98006A, a resistor of the same type. The new resistor has the same resistance values, the only change being in the 6,000-ohm section (R-14), where a heavier and different wire is now used. This change was made because of breakage being encountered in this section in some of the early resistors. It is suggested that this section of the resistor be checked if this chassis is serviced. In the case of complete receivers in stock, it is NOT necessary to change this unit.

If in servicing, this section is found to be open, a complete new three-section unit or a separate 6,000-ohm, 1.5 watt, carbon resistor may be used for replacement. Should a separate unit, be used, be sure NOT to use the end connection on the old three-section unit when making this repair, as the old 6,000-ohm section may be open intermittently. Unsolder all the wires which are connected to the end of the carbon resistor and resolder them to one end of the carbon replacement resistor.

Pilot 114 and 115

The intermediate frequency used in these receivers is 456 kc.
Page 7-4 \( \text{CHANGES} \)

\section*{1-F Peaks}

We suggest that you make note of the 1-F peaks given in the accompanying table upon the correct pages in the Rider Manuals. These peak frequencies were not available when the schematic wiring diagrams were first published and we trust that you were not greatly inconvenienced.

<table>
<thead>
<tr>
<th>Model</th>
<th>1-F Peak</th>
<th>Radiotron Cunningham Complete</th>
<th>Other Rider Manuals Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audials Radio Corp.</td>
<td>23-S-10</td>
<td>177.5</td>
<td>344</td>
</tr>
<tr>
<td>23-S-10</td>
<td>177.5</td>
<td>344</td>
<td>3-12</td>
</tr>
<tr>
<td>Crosley Radio Corp.</td>
<td>121-A</td>
<td>176</td>
<td>724</td>
</tr>
<tr>
<td>121-B</td>
<td>176</td>
<td>724</td>
<td>2-8</td>
</tr>
<tr>
<td>122-B</td>
<td>176</td>
<td>724</td>
<td>2-8</td>
</tr>
<tr>
<td>174</td>
<td>176</td>
<td>724</td>
<td>2-8</td>
</tr>
<tr>
<td>176</td>
<td>176</td>
<td>724</td>
<td>2-8</td>
</tr>
<tr>
<td>DeWald Radio (Pierce-Airo)</td>
<td>50</td>
<td>175</td>
<td>797</td>
</tr>
<tr>
<td>80</td>
<td>176</td>
<td>797</td>
<td>1-3</td>
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<td>52</td>
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<tr>
<td>55</td>
<td>175</td>
<td>175</td>
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<td>Hodsemaster</td>
<td>466</td>
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<td>4-5</td>
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<td>Freed Telev. &amp; Radio</td>
<td>123</td>
<td>123</td>
<td>3-2</td>
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<td>123</td>
<td>123</td>
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<td>123-A</td>
<td>123</td>
<td>3-2</td>
<td></td>
</tr>
<tr>
<td>Howard Radio</td>
<td>35-A</td>
<td>123</td>
<td>3-2</td>
</tr>
<tr>
<td>35-A</td>
<td>123</td>
<td>3-2</td>
<td></td>
</tr>
<tr>
<td>(AVO)</td>
<td>176</td>
<td>133</td>
<td>3-10</td>
</tr>
</tbody>
</table>

\section*{Sparton 80, 83, 84, 85-X, 86-X}

In some of the early receivers of this model, the resistor R-13, designated as 5,000 ohms, was 3,000 ohms. If this resistor burns out, check the condenser C-8, located in the plate-voltage supply lead to the r-f. tube. The early production used a 200-volt, 2-mfd. unit for C-8. If replacement is necessary, replace with a 600-volt unit. This receiver is shown on page Sparton 5-15 in Rider's Volume V.

\section*{Sparton 16-AW, 26-AW, 60, 28}

The intermediate frequency of the converter used in these receivers is 900 kc. This data is omitted from the schematic shown on pages 2-10, 2-11 and 2-16 in the Sparton section in Rider's Volume II. The same frequency applies to the model 60 converter shown on page 2259 of the Rider-Radiotron Combination, page 2-39 in the revised Rider II, and on page 568-X-8 of the early Rider II. The model 28 employs 172.5 kc.

\section*{Silverstone 1806, 1823, 1829}

Failure of the tuning meter to change its reading as a station is tuned in, together with failure of the AVC may be due to the following cause:

The lock washer under the screws that mount the No. 3 and No. 4 band short-wave coils to their trimmers may short to the stator plate of these trimmers. Although the likelihood is less, it is also possible for the lock washer to short to the movable plate of the trimmer, in which case the receiver will not operate.

If the tuning meter fails to function properly in these models (except 1806 which has no meter) or if the AVC fails to operate, examine the mounting of these coils to their condensers under the chassis. The trouble can be eliminated by loosening the screw, pushing the lock washer away from the condenser and then tightening the screw while holding the lock washer in this position. Service data covering these receivers appears on pages 5-35 and 5-36 in the Sears-Roebuck section in Rider's Volume V.

\section*{Philco Model 38, Code 123 Changes}

In Run No. 7 a 0.1 mf. condenser (part No. 30-4122) was connected between the plus terminal of the 30 tube (1st A-F.) socket and ground. In Run No. 8 and thereafter, this becomes a 0.25 mf. tubular condenser (part No. 30-4146). This condenser acts as a by-pass and prevents oscillation. The schematic diagram of Model 38 will be found on page 4-22 of Rider's Manual.

Effective with run No. 9 a change in the volume control will be made. The value of the new volume control, which is Part No. 33-5094, is the same as before, i.e., 20,000 ohms; however, the lead from the antenna series condenser (40) will be connected to the arm of the control instead of the upper end, which now will be open. Also a bypass condenser, Part No. 6287K (0.15 mf. bakelite block) will be added from the lower end of the volume control to ground. These changes produce quieter operation of the set.

\section*{Colonial Model 657}

In later production runs, the pilot light circuit has been changed. See schematic diagram on Colonial page 5-40, Rider's Volume V. In place of the two 115-volt pilot lamps, a 50-ohm center-tapped resistor has been connected in the heater circuit between the 25Z5 and the 6A7. A 6.3-volt lamp (part No. R-2288) is connected across each half of this resistor. The sockets for these lamps with brackets are parts numbers R-10573-A and R-10563-F and are mounted on the variable condenser and volume control brackets respectively.

\section*{Colonial Models 651, 655, 657}

In the sketches supplied by the manufacturer showing locations of the trimmers which will be found reproduced on Colonial pages 5-27, 5-35 and 5-40 for models 651, 655 and 657 respectively, the coil marked "Short Wave Antenna Coil" should in each case be marked "Broadcast Antenna Coil."

\section*{Audiloa Socket Layouts}

Below will be found a list of the pages in Rider's Manuals on which the schematic diagrams corresponding to the socket layouts in the accompanying illustrations will be found.

<table>
<thead>
<tr>
<th>Model</th>
<th>Revised Page</th>
<th>Early Page</th>
<th>Radiotron Complete Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>327</td>
<td>1-1</td>
<td>*110</td>
<td>326</td>
</tr>
<tr>
<td>627</td>
<td>1-1</td>
<td>*115</td>
<td>323</td>
</tr>
<tr>
<td>6-7</td>
<td>1-2</td>
<td>*126</td>
<td>326</td>
</tr>
<tr>
<td>115-A</td>
<td>1-2</td>
<td>*115</td>
<td>326</td>
</tr>
<tr>
<td>23-S-10</td>
<td>3-4</td>
<td>344</td>
<td></td>
</tr>
<tr>
<td>699-829</td>
<td>1-10</td>
<td>*119</td>
<td>328</td>
</tr>
<tr>
<td>6 Tube Jr. No. 1-36</td>
<td>176-A-2</td>
<td>324</td>
<td></td>
</tr>
<tr>
<td>6 Tube Jr. No. 2-26</td>
<td>128-A-2</td>
<td>324</td>
<td></td>
</tr>
<tr>
<td>Series 31 T.R.F. 1-5</td>
<td>*120</td>
<td>329</td>
<td></td>
</tr>
<tr>
<td>S-riee 31 Super 1-4</td>
<td>*129-A</td>
<td>330</td>
<td></td>
</tr>
</tbody>
</table>

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Silverstone 7124, 7132

The voltage data for the above Sears-Roebuck models will be found below. The schematic and other data will be

![Schematic of Silverstone 7124, 7132 condenser](image)

found on Sears page 5-65 in Rider's Volume V.

Wilcox-Gay 4G7, 4H11, 4J6, 4J6A, 4J86, 4J6c Alignment

The following alignment instructions apply to the above models in 1930, with the exception of Models 4J6A and 4J86. When aligning either of these two models, disregard that part of the instructions pertaining to the No. 5 Long-Wave Band. Schematics and other data will be found on the following pages in Rider's Volume VI for the respective models: 4G7, 6-3; 4H11, 6-6; 4J6A and 4J86, 6-3; 4J6c and 4J6e, 6-4.

1.F. Amplifier:

Set signal generator to 456 kc. and connect output to grid of first detector. Use minimum signal input consistent with proper indication. The first i.f. transformer is the one furthest to the left at the rear of the set. These two circuits should be tuned for maximum amplitude. After ganging the first transformer, the second one should be ganged, and then the third, which is the transformer in back of the variable condenser.

Ganging Oscillator and Preselector Circuits Broadcast Band:

Connect the output of the signal generator to the antenna grid and ground posts of the set through a dummy antenna. Set the signal generator at 1400 kc., the wave change switch to its fourth position and the tuning dial set so that No. 4 band reads 1400 kc. At this point the trimmer on the first section of the variable condenser should be adjusted. Then the two preselector trimmers on the second and rear sections of the variable condenser should be trimmed for maximum output. Change the signal generator and dial of the set to read 600 kc. and vary the reciprocal trimmer for the broadcast band, which is the left upper of the four trimmers on the front of the chassis, until the 600-kc. signal is indicated on the output meter. Tune the signal generator and the receiver again to 1400 kc. and retrim the trimmer on the first section of the condenser for maximum amplitude at 1400 kc. Check the sensitivity at 1000 kc.

Police Band No. 3

Set wave band switch to No. 3 position, signal generator to 4 mc. Adjust trimmer condensers for maximum output. Then adjust signal generator and receiver to 1.5 mc. and the left lower trimmer to the left of the wave change switch should be adjusted for maximum output. Reset to 4 mc. and recheck.

No. 2 Band:

Set wave change switch to the No. 2 position. Set signal generator to 10 mc. and adjust the dial in the vicinity of this frequency. The center trimmer to the right of the wave change switch should be adjusted for maximum amplitude. Tune generator and set to 4 mc. and adjust the left lower trimmer on the left side of the wave change switch for maximum output.

No. 1 Band:

Set wave change switch to No. 1 position. Signal generator to 20 mc. Adjust dial to vicinity of 20 mc. for maximum output and then vary the lower adjustment to the right of the wave change switch on the front of the chassis for maximum amplitude.

No. 5 Long Wave Band:

Adjust signal generator and receiver to 350 kc. and the wave change switch to No. 5 position. Adjust the left-hand trimmer of the three occurring immediately to the left of the variable condenser on the chassis top, until the signal is maximum. Afterwards the two adjustments immediately to the right of this adjustment should be trimmed for maximum amplitude. The generator and the dial should be set to 150 kc. and the adjustment furthest to the left above and to the left of the wave change switch should be adjusted for peak signal. Check again at 350 kc.

Tuning the Trap:

Set signal generator to 450 kc. and its output to antenna and ground. Its output should be a fairly high level. The trimming adjustment on the trap, which is the one immediately to the right of the first detector, should be trimmed for minimum response.

Pockard Bell 45 M

To align this receiver proceed as follows: Have the variable condenser plates fully meshed. Set signal generator to 460 kc., the i-f. peak. Connect the output of the generator to the control grid of the 6A8 tube (top cap). Adjust trimmers on i.f. transformers for maximum gain. Tune the generator to 1700 kc. and the receiver to approximately the same frequency and adjust the trimmers of the oscillator and modulator condensers for maximum output. Be sure that the wave change switch is turned to the right. In case the receiver will not track, tune the generator to 1400 kc. and readjust for maximum output. The adjustments for 1000 and 600 kc. are made by bending the outside rotor plates of the gang condenser. Then turn the wave-change switch to the left and tune the signal generator to 18 mc. Adjust the trimmer condensers of the short-wave oscillator and modulator coils for maximum output. The adjustment at 6 mc. will have to be made by spacing turns of these two coils, but unless the receiver has been tampered with, it is unlikely that this adjustment will have to be made.

The schematic diagram for this receiver will be found on page 6-40 of Rider's Volume VI.

Pockard Bell 35

The alignment of this receiver is as follows: Set signal generator to 460 kc., the i-f. peak, and the volume control full on. Set variable condenser with the plates fully meshed. Adjust the i-f. trimmers, directly beneath the variable condenser, for maximum output. Then tune the signal generator to 1700 kc. and adjust the trimmers on the variable condenser for maximum output. The adjustments at 1000 kc. and 600 kc. will have to be made by bending the outside rotor plates of the variable condensers for maximum signal.

The schematic will be found on page 6-40 of Rider's Volume VI.
Colonial 603

Changes have been made in the antenna circuit of this receiver, the schematic of which will be found on removing the brown lead which goes from the antenna terminal to the wave trap inductance, L-1, and inserting the condenser between these two points. In some instances, interference in the form of "beats" may be remedied by tuning the antenna wave trap to that station. The wave trap will tune up to 700 kc.

Silverstone 1650

The selectivity of this set can be improved by disconnecting the two leads to the small choke coil in the 1st i.f. circuit and inserting in its stead a 0.005-mf. fixed condenser. (This choke coil is in parallel with the 20,000-ohm resistor in the input circuit of the 58 i.f. tube. See Silverstone's Volume III, Sears page 3-12 and page 2098 in Rider Combination Manual.)

The undesirable effect of time lag (weak programs interrupted during bursts of static) can be greatly reduced by replacing the 0.1-mf. condenser, connected between the plate and cathode leads in the type 57 AVC tube, with one having a value of 0.01 mf. Making this change minimizes the time lag difficulty when tuning in distant stations in some localities without affecting the AVC action. The reduction of capacity lessens the charging time of the condenser and therefore the AVC recovery is practically instantaneous.

Silverstone 1855

The schematic diagram of this Sears-Roebuck receiver, appearing on page 5-45 of Silverstone's Volume V, should be changed according to the manufacturer. There should be no choke coil across the upper 0.5-mf. condenser in the vibrato circuit. The on-off switch should be in the other 32-volt line—not in the same line with the 2.5-amp. fuse.

The tap in the primary winding of the power transformer should go to the 32-volt line to the right of the on-off switch. In other words, the 0.5-mf. condenser should be across the 32-volt line.

The secondary of the power transformer should be tapped and connected to the junction of the two 0.3-mf. condensers that are shunted by the Globar resistor.

Silverstone 1822, 1831

In some receivers carrying these model numbers, a felt ring between the small speaker and the baffle was omitted, with a rattling of the speaker resulting. This is due to the fact that when the mounting screws of the speaker draw the speaker tight against the baffle, the speaker frame may become slightly bent, throwing the cone off center. The felt ring acts as a cushion mounting to prevent this bending. Do not tighten the mounting screws any more than is necessary. If this felt ring is missing, one should be inserted, its part number being R9959.

Fado 25, 25-Z

The volume control used in this receiver is rated at 3,000 ohms. The schematic wiring diagram appears in the Rider Combination on page 915 and on page 1-15 in the Fado section and also on page 79 in the early editions of Rider's Volume I.

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Sentinel Socket Layouts

Below will be found socket layouts for several Sentinel receivers. It is suggested that they be cut out and pasted on the respective pages of the Rider's Manuals indicated. The schematic diagrams of the sets appears on the following pages: 560, page 3-3 and 2117 in the Rider-Combination; 550, page 5-9; 603, page 5-17; 6200, page 5-34; 4300, page 5-24; 3500, page 5-25; 7700, page 5-35; 1040, page 5-21; 660 Battery, page 3-19; and 1020-A, page 4-15.

Erlo Model 6200

The 0.02-mf. capacitor, Part No. 9714, used to bypass the grid return of the first i-f. transformer was a 0.01-mf. capacitor in early production. To eliminate any tendency of the i-f. amplifier to oscillate, the 0.01-mf. capacitor has been changed to 0.02 mf. in later production. If receivers are encountered in which i-f. oscillation occurs, replace the 0.01-mf. capacitor, if there is one, with one having a value of 0.02 mf.

The 10,000-ohm resistor, Part No. 6786, and the 0.005-mf. capacitor, Part No. 1291, connected between ground and the connection between the primary of the first i-f. transformer and the 10,000-ohm resistor in the No. 2 grid circuit of the 6AJ6 tube, has been added in later production sets to eliminate motorboating when the set is operated with low "B" battery voltages. If sets are encountered that motorboat when the "B" battery is low, install a 4-mf. capacitor, as indicated.

The complete servicing data on this receiver will be published in Volume VI of Rider's Manual.

Erlo Models 7700, 7732, 7741

In early production of these sets the value of the capacitor in the grid return of the first i-f. transformer was .01 mf., Part No. 7860. To eliminate tendency of the i-f. amplifier to oscillate, this capacitor has been changed to .02 mf., Part No. 7914. If any receivers are found having i-f. oscillations, change the .01-mf. capacitor to one having a value of .02 mf.

To eliminate self modulation of the 1C6 tube the 50,000-ohm resistor, Part No. 6879, has been changed to 35,000-ohm resistor, Part No. 1618. Whenever self modulation occurs, try another 1C6 tube or replace the 50,000-ohm resistor with one having a value of 35,000 ohms.

Sentinel 108

The voltage and alignment data for Model 108 will be found herewith. The schematic diagram for this receiver appears on Sentinel page 1-3 of the revised edition of Rider's Volume I; page 624-A of the early edition and on page 2107 of the Rider-Combination Manual.

<table>
<thead>
<tr>
<th>Type</th>
<th>Filament Plate Screen Plate MA</th>
</tr>
</thead>
<tbody>
<tr>
<td>224</td>
<td>R.F. 2.4 250 4 75 2.15</td>
</tr>
<tr>
<td>224</td>
<td>1st Det. 2.4 250 6.0 80 2.25</td>
</tr>
<tr>
<td>224</td>
<td>2nd Det. 0.4 250 40* 4.25</td>
</tr>
<tr>
<td>224</td>
<td>2nd Det. 0.4 250 50** 30 4.25</td>
</tr>
<tr>
<td>280</td>
<td>Rect. 4.65 27 per plate</td>
</tr>
</tbody>
</table>

Alignment Data:

Set the signal generator to 175 kc. and connect the output to the grid of the 224, 1st detector, from which the grid cap has been removed. Trimmers of the i-f. transformers are accessible through the small holes in the top of the cans. Align the grid trimmer of the first i-f. coil, then the second i-f. coil.

Replace the grid cap on the 1st detector and connect the signal generator's output to the antenna and ground posts of the set, having tuned it to 1435 kc. Set the receiver's dial to this frequency also. Track the variable condensers by adjusting the trimmers in the following order: Oscillator, antenna and r-f. (The sections of the condenser are in this order, starting at the front of the set.) Then check the condensers at 1295 kc., by bending the end plate of the rotors. Check also at 880, 650, and 550 kc.

Erlo Model 9100

Some of the early Model 9100 receivers had a tendency to motorboat on the broadcast band when the tone control was turned to the bass position. This has been rectified in later production by removing the 0.002-mf. condenser, Part No. 6590, and by passing the plate of each 30-i-f. tube with a 0.004-mf. condenser to the chassis base. Make this change if motorboating should be encountered in any Model 9100 receiver.

International 53, 553

The first production of these models, in which a 6J7 tube is used as the second detector, does not incorporate AVC. When operated in the vicinity of powerful broadcast stations, a tendency toward overloading may be found on strong signals. It is evidenced by blocking out of the signals as the volume control is advanced. This condition can be corrected by making the simple change shown in the accompanying illustration.

Originally the grid returns of the 6K7 and the 6J7 tubes go directly to ground. See schematic diagram in Rider's Volume VI, page 6-8. These should be removed from ground, tied together and returned to ground through a 1-megohm resistor shunted by a condenser of 0.01-mf. or larger. In making this change, be sure that the cathode of the 6J7 tube is connected as shown in the illustration and not left connected to the low end of the second i-f. transformer grid winding.

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Stromberg-Carlos 68, 68-X

Since Volume V of Rider's Manual has gone to press, we have learned of the production of what is known as the Stromberg-Carlson 68-X. Basically, this receiver is the same as the model 68, which is shown in Rider's Volume V, pages 5-5 to 5-10, inclusive. However, the X models, which can be identified by an "X" following the serial number, incorporate certain changes. First, the secondary winding of the oscillator band A transformer contains a .00045-mfd. fixed condenser in shunt with the series trimmer, or in shunt with C-26.

Second, a 10,000-ohm fixed resistor is inserted in the common lead joining the band B and band C secondary windings in the r-f. tube grid circuit. Third, a fixed condenser has been added between the common lead connecting the band A and band B secondaries of the r-f. input transformer, and ground. Fourth, the fixed condenser C-24, located between the common lead connecting all of the oscillator primary windings and ground has been changed from .1 mfd. to .05 mfd. The location of the twelve shunt aligning condensers is shown in the accompanying illustration. The numbers correspond to the designating numbers shown upon the schematic and selector chassis wiring.

Sears-Roebuck 1857

A unique form of volume control is used in this receiver and we feel that it deserves mention. The schematic is shown upon pages 5-47 in the various issues of Rider's Manual Volume V. The output i-f. transformer is equipped with variable coupling between the primary and secondary windings. The variation in signal transfer between these two windings, as a consequence of the change in coupling, is the volume control. Incidentally, the i-f. coupling unit, employed between the i-f. amplifier tube and the demodulator or second detector, is resistance-capacity coupling. Only the input and output i-f. coupling units are of the transformer variety.

Certain instructions pertaining to the increase of "high" audio response has been furnished by the manufacturer. Connect a 15-mmfd. condenser between the plate terminal of the input i-f. transformer primary and the grid terminal of the input i-f. transformer secondary. This condenser can be mounted inside the i-f. transformer shield can, atop of the isolantite base. It will be necessary to re-peak the i-f. transformer at 175 kc.

Sentinel Model 7700, 7732, 7735, 7741

An error is acknowledged in the schematic of this receiver as shown upon page Sentinel 5-35 in Rider's Manual. The A plus lead is connected to the grid circuit instead of to the common filament lead. The diagram as shown and as correct appears below.

The cathode bypass on the 78 first i-f. tube previous to this change was a 0.5-mf. tubular condenser (in Code 125); in code 121 it was a section of the diagram part No. 26 bypass block, as shown in the schematic on page Philco 5-41 in Rider's Volume V.

These changes also apply to Model 506, code 122, Radio Phonograph.

A change was also made in the shadowmeter circuit to improve its operation. Referring to the schematic, the upper end of the shadowmeter is no longer connected to the diagram part No. 65 resistor, but only to the diagram part No. 33 second i-f. transformer primary and also to the primary of diagram part No. 28 first i-f. transformer. The lead from diagram part No. 52 now goes to lower end of shadowmeter only.

A connection must then be made from the lower end of resistor No. 65 to the junction of diagram parts No. 52, 46 resistor and 42 condenser, to complete the circuit.

The shadowmeter used will now be part No. 45-2028 and an 8000-ohm resistor (part No. 33-1114) will be connected across it to prevent too wide a shadow.

Detrola "Roadmaster"

The i-f. peak of this receiver, shown on page Detrola 5-2 in Rider's Manual, Volume V, is 456 kc. Please make this addition to your manuals.

Sparton Model 35

The i-f. peak of this receiver is 172.5 kc. Please make a note of this on the schematic diagram, which will be found on page 3-5 of Rider's Volume III, and on page 2243 of the Radiotron-Complete edition.

Sparton Model 36

To protect the life of the vibrator in the Sparton model 36 auto radio receiver, add a .001 mfd condenser, rated at 1,600 volts, across the secondary winding of the power transformer in the eliminator unit.

Oscillation in Sparton 65, 66

In case the metal braid shielding on the control-grid, lead to either of the type 78 tubes becomes pushed down on the leads, these receivers may oscillate or otherwise operate improperly. This shielding may be pushed down accidentally when removing or installing the tube packing or changing tubes. Therefore, always pull these shields up to their full length in case of oscillation in these models. Sparton models 65 and 66 are shown upon Sparton page 5-7, 5-8, and 5-9 in Rider's Volume V.

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Audiola Socket Layouts

The accompanying illustrations show the socket layouts of six Audiola chassis, the schematics for which will be found on the pages in Rider's Manuals indicated opposite the model numbers below:

Model 23T5, 23T5-SW on Audiola page 3-6 in Rider's Volume III and page 346 in the Rider-Combination Manual; 33A6, page 4-5; 33S7 and 33T4, page 4-7; 33S8, page 4-4; and 33T4, page 4-7.

Howard Socket Layouts

Herewith will be found five socket layouts for Howard receivers, the schematics of which appear on the following pages in Rider's Manuals:

Model "Q" ............... 4-3
Model "S-2" ............... 4-5
Model "X-2" ............... 4-7
Model "W" Explorer (Revised) .... 6-13
Model "W" Explorer - PWR. PACK ....

The last layout—that of the powerpack of the "W" Explorer—applies to both the early and the revised models. See pages 5-6 and 6-13.

Halson Layouts

The accompanying socket layouts of Halson receivers are for those schematics that will be found on the following pages in Rider's Manual, Volume IV:

Model Page
20-A 4-1
20-B 4-1
NS-40 4-3
NS-50 4-3
Roadmaster 4-5

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Atwater Kent 60

The first or early type of Model 60—see A-K page 3-29 in Rider's Volume III and page 167 in the Rider-Combination Manual—has a single volume control and the second or late type—see A-K page 3-31 in Rider's Volume III and page 169 in the Rider Combination Manual—has a dual volume control made up of combined wire-wound and carbon resistors.

First or Early Type:

When replacing the bleeder resistor, use No. 16295 wire-wound resistor, 4000 ohms. When replacing the first r-f. bias resistor, use No. 16253 wire-wound resistor, 1500 ohms and replace the r-f. bias resistor with No. 16988, 160 ohms.

Second or Late Type:

The bleeder resistor No. 1 was made in two types. The first type, No. 16905, consists of two 3000-ohm wire-wound resistors riveted together and connected in series. The second type, No. 17041, is a single 6000-ohm wire-wound resistor with a tap at the center. Use No. 17041 for servicing.

In early production of the second type Model 60, bleeder resistor No. 2 was wound on the same fibre base as the first r-f. bias resistor, the part number of the combined unit being No. 16872. If either section of this combined unit is defective, remove the unit and use a No. 16253 (1500 ohms) as r-f. bias, and a No. 15600 (1050 ohms) as bleeder No. 2. Later production of the second type Model 60 used a separate No. 15600 resistor as bleeder No. 2.

In early production of the second type Model 60, the first r-f. bias resistor was wound on the same fibre base as bleeder resistor No. 2, the number of the combined unit being No. 16872. If either section of this unit is defective, remove the unit and use a No. 16253 as a first r-f. bias resistor and a No. 15600 as bleeder No. 2. Later production of the second type Model 60 used a separate No. 16253 as first r-f. bias resistor.

Use a No. 16988 resistor (160 ohms) for replacement of the r-f. bias resistor.

Motorola Golden Voice

We have been advised by the manufacturer that intermittent operation of their Motorola Golden Voice models, is due to low battery voltage delivered to the set from the car's battery. Check all connections between the car battery and the radio set to avoid undue voltage drop in the car wiring, as the OZ-4 rectifier tube will fail to start and fail to operate on a battery voltage of less than 5½ volts.

The OZ-4 tube requires 15 milliamperes or more of drain to produce ionization and proper rectification in this tube, and on battery voltages of less than 5 ½ volts the plate current drain of the receiver is insufficient to provide the 15 milliamperes starting current. Should the car wiring and the condition of the car battery indicate that at times the voltage may fall below 5½ volts, replace the OZ-4 rectifier tube with a 6X5 metal filament type rectifier.

With the exception of a few Golden Voice sets the filament contacts of the rectifier socket have been wired at the factory and the 6X5 rectifier may be plugged in the socket in place of the OZ-4. This will completely eliminate the difficulty due to low battery voltage.

On those Golden Voice sets not having the filament contacts of the rectifier socket wired, this wiring can be inserted by inverting the chassis and removing the cover from the hash compartment and connecting the filament contacts of the rectifier socket, as shown in the accompanying sketch. One contact to ground as indicated by the heavy arrow at the bottom of the socket and the other contact to the .5 mfd. condenser as indicated by heavy arrow at the top of the sketch. When replacing cover be sure that all screws are tight.

Federal Model K

Below will be found the voltage data for this receiver, the schematic of which appears on the following pages in Rider's Manuals: 1-21 in the revised edition; *284 in the early edition, and 987 in the Rider-Combination Manual.

<table>
<thead>
<tr>
<th>Scr. Grid</th>
<th>Plate to Grid to 10</th>
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</thead>
<tbody>
<tr>
<td>Tube</td>
<td>Function</td>
</tr>
<tr>
<td>227</td>
<td>1st R.F.</td>
</tr>
<tr>
<td>224</td>
<td>2nd R.F.</td>
</tr>
<tr>
<td>227</td>
<td>Det.</td>
</tr>
<tr>
<td>171A</td>
<td>P.P.O.P.</td>
</tr>
</tbody>
</table>

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Grunow Chassis 5B

On page 6-3 of Rider's Volume VI the parts list showed that the same loud speaker was used for all four model numbers using this chassis. This has been changed. For models 501 and 550, the speaker parts are the same as those listed on the page in Volume VI, but in models 520 and 530, the output transformer part number is 34420 and that of the complete speaker is 34498.

Atwater Kent 556

Please note the following changes in the schematic on A-K page 6-45 in Rider's Volume VI.

The resistance of R3 remains the same, but the wattage rating has been changed from one-half to one-third watt (color, brown, black and orange).

A condenser, designated as C15A, has been added. It is connected from the junction of the plate lead from the 6F5 (1st a-f. tube) with C-16, C-17, and R-13 to ground. It has a value of 120 mmf. (color, brown, red, and brown).

The connection between the plates, P1 and P2, of the 6H6, 2nd detector, has been opened. P2 now is connected to the junction of R3, the blue lead from the left-hand 0.05-mf. condenser in C9, and the black lead from point 9 on the antenna coil. The other plate goes to the same point as it did formerly on the i-f. transformer. (If you should happen to see a revised schematic of this receiver, note that the plate designations, P1 and P2, have been reversed. We use in the above explanation of the change, the designations as they appear in Rider's Volume VI, so that there will be no confusion.)

The value of R5 has been changed from 1 megohm to 0.5 megohm, same wattage rating (color, black and purple). The value of R6 has also been changed from 1 megohm to 0.5 megohm, 1/3 watt (color, green, black, and yellow).

Pilot X.43, X.45

The chassis which is used in these models has the same schematic as that shown on page 6-2 of Rider's Volume VI. The range of the X.45 (export model) is 1680-545 kc. and 380-1400 kc.

The following Long-wave Alignment data should be added on Pilot page 6-2x: Procedure in the X.45 is similar to the Broadcast section. Align at 375 kc. and adjust the padder at 160 kc.

Should it be necessary to remove the band switch assembly, it is advisable to realign the receiver after reinstalling.

Silver tone 1570, 1574

The paper form on which the windings of the output transformer were wound in these models, apparently contained some chemical that caused electrolysis in the layer of wire next to this form. This trouble has been eliminated by winding the coils on a bakelite form or else putting a layer of empire cloth between the form and the winding. Also the windings are now preheated and a sealing compound is used.

If any of these models come in to you for repair, it is suggested that you replace the old transformer with one of the new type, Part No. R-6790-A and R-4337-F.

Stewart-Warner 56

This model receiver employed the chassis 105 or 105-A, the schematic of which was published on page 3-3 of Rider's Volume III and page 2340 of the Rider-Combination Manual. The letter "A" after a Stewart-Warner chassis number means that the receiver is for use on 110 volts, 60 cycles a.c.
Wells-Gardner 7G and OD Series

If the double end pointer remains stationary when the tuning knob is turned, the following possibilities should be investigated and procedure followed:

First, be sure that the tuning condenser rotor has not reached the end of its travel. Also, see if the screw at the center of the large pointer is tight. Next, inspect each pointer to be sure that it is not caught at some place.

If slippage continues, remove the chassis from the cabinet. Turn the knob to the point where the shaft seems to bind. See if the drive shaft set screw is tight, and if the idler and idler spring are in position—See Fig. 2.

Take off the two pointers, the large one by taking out the pointer screw and the small micrometer pointer by unscrewing it off of the shaft (turn it counter-clockwise to do this). Turn the tuning knob and see if pointer shaft turns properly. Inspect the shaft to determine if it is at the center of the eyelet in the dial scale. If the shaft appears to be binding against the eyelet, loosen the three screws A, Fig. 1, which hold the dial assembly in position. Shift this assembly until the shaft is centered, tighten the screws and again see if the shaft turns properly when the tuning knob is rotated.

If the shaft continues to stick, remove the dial assembly by taking out the three screws A and the two set screws, B—See Fig. 1. Turn the tuning condenser rotor and see if the pointer shaft wobbles. If it does, straighten it by pressing the shaft to one side.

Also, in a few of the dial assemblies there is a burr at the back edge of the eyelet which can bite into the shaft. If this is the case, take a small round file and file down the burr. A penknife can be used if no file is available.

See if the pointer shaft and tuning condenser rotor turn the entire length of travel. If they do, put the dial assembly back into position to again determine if the drive turns properly. If the shaft and rotor do not turn the entire length of travel, inspect the gears for dirt, damaged teeth and any obstruction to the rotor.

In some cases the belt may slip because it is too long. The best way to correct this condition is to put on a new belt. It can also be corrected in many cases by putting the idler on the inside of the belt as shown in Fig. 3. This method should be followed only as a last resort and is not, in general, as satisfactory as changing the belt. If the idler is moved to the inside of the belt, the idler spring may not be under sufficient tension to keep the belt tight. To remedy this, take the spring off, cut off a piece and again put it back in place. Care should be taken when reducing the spring length not to make the belt too tight as this would cause the drive to turn hard.

After the above procedure has been followed, the drive should operate properly after reassembly. If it does not, it will be necessary to get in touch with the factory for further instructions. See Rider's Volume VI, page 6-20 for further data on the 7G series.

G.E. A-64, A-67

In the schematic diagram for Models A-64 and A-67, on G.E., page 6-14 of Rider's Volume VI, you will find a connection between the low side of L-6 and the high side of L-8 (oscillator coils). This connection should be deleted. In the parts list for these models, note that the capacity for C-5 (Stock No. RC-210) is listed as 50 mf. This is incorrect; it should be 50 mmf., as is shown on the schematic diagram mentioned above. The parts list will be found on G.E., page 6-18.

The electrostatic shield of the 0.05-mf. condenser (C-23) that shunts the bleeder resistor R-7-8-9, sometimes makes contact with the high-voltage a-c. terminal of the 524 rectifier tube socket. This causes a decided a-c. hum, which has none of the characteristics of the a-c. hums usually encountered.

This condenser, C-23, is mounted near the high-voltage terminal of the rectifier socket and vibration in shipment and operation, or pressure accidentally applied when the chassis is being serviced, may cause it to be moved against the terminal. This brings the electrostatic shield (the layer of foil just under the outer layer of wax paper) in contact with the terminal.

Dressing the condenser away from the terminal so as to assure permanent clearance, will eliminate the hum.

Philco 10

Run No. 3. A ground strap was added (Part No. 9481) from tuning condenser housing to receiver housing.

Run No. 8. The first and second i-f. transformers, Parts No. 16 and 25, were replaced with new types having the same part numbers. They can be identified by the red paint marks on the spools.

See Philco page 4-56, Rider's Volume IV.

Philco 10-Code 122

Run No. 2. Condenser Part No. 61 (50 mmf.) was removed and Part No. 30-1052 (250 mmf.) was added.

Run No. 3. The first i-f. transformer, Part No. 18, was replaced with a new type, having the same part number. This can be identified by the green paint marks on the fibre.

Run No. 4. Resistor Part No. 23 (500 ohms) was removed and Part No. 6443 (700 ohms) was added.

For schematic diagram see Rider's Volume V, Philco page 5-5.

Philco-Pierce Arrow MT-3 and Philco-Reo RT-3

Run No. 1. An antenna choke, Part No. 32-1372, No. 75, has been added. It is connected in series with the antenna lead and the antenna transformer No. 1 and condenser No. 2.

Run No. 3. Wire the white lead of the output transformer directly to the plate of the 42 tube socket instead of to the pin jack.

Run No. 4. Tone control, Part No. 56, removed. Part No. 30-4298 added. When using this new tone control, condenser No. 47 is also removed.

See Philco pages 6-99 and 9-102 in Rider's Manuals for data.

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Stromberg-Carlson 29

The chassis wiring diagram of this model, which appears on page 2-15 of Rider’s revised Volume II; page 014-R of the early edition; and page 2401 of the Rider-Combination Manual, is not clear in one or two places. So that no doubt will be in your mind when checking over two of the condenser banks, we are showing herewith enlarged drawings of the bank having eleven condensers, in the upper right-hand side of the diagram, and the nine-condenser bank that is shown in about the middle of the page. You can identify their positions on the wiring diagram by the apparatus in the vicinity and by the color and position of the leads. Notice that the top of the sketch shown here goes to the right-hand side of the diagram in your Manual.

Philco Model 144

Effective April 15, 1935 the center tap is removed from the filament winding on the power transformer. If a hum is experienced in reception, connect a 20-ohm, wire-wound resistor across the filament winding, with center tap of resistor grounded. This set is shown on page 5-41 in Rider’s Manual Volume V.

"X" Models In The Sparton Line

Some of the Sparton model numbers conclude with the letter “X”. The following data will no doubt be of value when seeking equivalent circuits in Rider’s Manuals. In some instances, the “X” denotes a receiver intended for export sale and containing a special power transformer. In other cases, the letter “X” denotes some addition to the basic circuit.

Model 27-X is the model 18 chassis used in a model 27 cabinet. (Rider Manuals Sparton page 3-10, 3-11, 4-2, 4-3.)

Model 67-X is the same as the model 67 with a special power transformer and is intended for export. (Rider Manual Sparton 5-10, 5-11, 5-12.)

Model 73-BX is an export model.

Model 80-X is the same as the model 80, with a special power transformer and is intended for export. (Rider Manual Sparton 5-15, 5-16, 5-17, 5-18.)

Model 81-X is the same as the model 81, with the addition of a wave trap. (Rider Manual Sparton 4-16.)

Model 82-X is the same as model 82, with the addition of a wave trap. (Rider Manual Sparton page 4-17.)

Stromberg-Carlson 55, 56

The i.f. peak of these models, the schematic of which appears on page 4-10 of Rider’s Volume II, is 175 kc. Please make a notation of this on the above-mentioned schematic.

Bosch 239

Please make a note that Model 239 is similar electrically to the Bosch models 239, and 247, the servicing data on which are found on page 3-11 in Rider’s Volume III and on page 253 in the Rider-Combination Manual. This Model 239 was used in a table installation and the only difference between it and the other models mentioned is that the antenna and ground leads were braided together with the power supply cord in Model 239.

Howard Grand

Please make a notation that the power unit shown on Howard page 6-16 of Rider’s Volume VI is for Series 2 of this model, as well as Series 1.

Packard Bell 34

If this set should need to be readjusted, the procedure is as follows: Set dial to about 1700 kc. and connect the output of a signal generator, set at the same frequency, to the antenna. Adjust the trimmer condensers of the r-f. and detector stages for maximum output. All adjustments at 1000 kc. and 600 kc. are made by bending the outside rotor plates of the variable condenser tuning the r-f. stage. The schematic diagram of this receiver will be found on page 6-1 of Rider’s Volume VI.

Crosley 815

We have received word from the manufacturer that no servicing data has ever been issued for the 815, but we get one in the shop look up Model 8B3, on page 6-10 in Volume VI of Rider’s Manuals. We are advised that the 8B3 is practically the same as the 815.

Atwater Kent 145, 325

The schematic diagram shown on page 5-7 of Rider’s Volume V is for the early model but the note at the bottom of the diagram covers the changes that were made in the late model. The elimination of the condenser, C4. in the frequency-changing switch in the late models necessitated a rearrangement of the parts. The chassis layout for the late model is shown in the accompanying illustration.

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Wells-Gardner 7A Series Chassis

In a few receivers of this model, the tone control condenser C9, 0.05 mf., 400 volts, has broken down. When this occurs the output plate voltage is applied across the tone control resistor and in many cases the resulting current burns the tone control. For this reason, if it is necessary to replace the condenser or the tone control resistor in this model; connect the side of the condenser which formerly went to ground to the +B end of the output transformer primary, as shown in Fig. 1.

This connects the tone control condenser and resistor across the primary of the output transformer. In this Fig. 3. Two single terminal mounting strips can be used for the wiring connections. The leads, which connected to terminals No. 1 and No. 2 on the old unit, are connected to the separate terminals marked No. 1 and No. 2 in the illustration.

P-98002A, 4 Section Resistor (2 wire wound, 2 carbon) P-D-94183, 18,000-ohm, 2 watt resistor P-B-94203, 20,000-ohm, 0.5 watt resistor P-1421. Single terminal Mounting strip


Several changes have been made in the chassis used in the above models and they should be noted on the schematic, appearing on Sears page 6-45 of Rider's Volume VI.

The resistor, R1, has been changed from 30,000 ohms to 40,000 ohms. R3 has increased from 5000 to 20,000 ohms. R5 has been decreased from 50,000 ohms, 0.5 watt, to 25,000 ohms, 1 watt. This last change was made to correct motorboating that was sometimes experienced on the s.w. band "C," due to the 6A7 tube variations.

A tone control circuit has been added. One side of a 0.02-mf. condenser is connected to the lead coming from the grid of the 6F6 to the 200,000-ohm resistor, R11, and the other side of this condenser is connected to one side of the 500,000-ohm tone control. The variable arm is grounded.

A condenser, 0.1 mf., 300 volts, has been shunted across the 8-mf. condenser, C20.

Metal glass tubes are used in the i.f., a.v.c., and output stages. These tubes are the same types as shown on the schematic in Rider's Volume VI.

Note the added model numbers above that should be included in your Volume VI index.

G.E. M-106 Changes

A change is recorded in the G.E. M-106 receiver. The type 76 tube originally used as the 2nd detector and AVC, has been replaced by a type 1-V tube. R-16 in the diagram, originally 1,000,000 ohms, now is 1,100,000 ohms. The G.E. M-106 is referred to in Rider's Manual Volume V, as the RCA 262, shown on page 5-103 in the RCA section.

RCA RAE-68

The RAE-68 receiver employs the model 82 Radiola 82 chassis with remote control and the automatic electric phonograph.

Sparton Chassis Similarities

It is possible that some Sparton models may come in for service and that you will not be able to identify the exact chassis because of some suffix letter which may appear in conjunction with the model number. Accordingly, it might be well if you added the following data to your Rider Manual Index:

Models 57-A and 57-B are basically the same as the model 57, shown on page Sparton 5-3, 5-4 and 5-5.

The model 81-A is basically the same as model 81, shown on page Sparton 4-18 in Rider's Manual.

The model 105 is basically the 104, shown on page 5-19 and 5-20 in Rider's Manual Volume V.

Radiola 62

The values of the tapped resistor strip and the volume control of the Radiola 62 were omitted from the manufacturer's schematic. These values are shown in the accompanying illustration. The part number of the tapped resistor is 3810 and that of the volume control is 5811.

The schematic for this receiver will be found on RCA page 1-40 in the revised edition; page 437 in the early edition, and on page 1878 of the Rider Combination Manual.

Philco Model 32

Starting with Run No. 6, the part number of the volume control is changed from 33-5063 to 33-5004, and the waveband switch from 42-1017 to 42-1123. This makes the design and connection of these parts the same as in Model 89. See Rider's Manual, Volume V, page 5-17.

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RCA R-10 DC

With the exception of the interlock, the R-10 DC is identical with the R-7 and R-9 DC chassis, shown on pages RCA 2-8, 2-9 and 2-10 in Rider's Manual, Volume II, pages 504-D-3 and 504-D-4 in the early issues and on pages 1772, 1773 and 1774 in the Rider-RCA Combination Manual.

RCA RE-16

The RCA RE-16 receiver employs the standard R-7, R-9 AC Superette chassis already listed in Rider's Manual. To this chassis is added the phonograph motor, pickup and volume control. Service information other than those relating to replacement parts can be had by referring to the service notes covering the Superette and the Radiola 86 receivers.

In view of the absence of phonograph pickup connection to the Superette receiver, the pickup leads in the RE-16 are connected to terminals 1 and 2, the connecting link being removed. The ground connection upon the shielded lead is joined to terminal 4. The d-c. resistance of the pickup coil is 4.3 ohms. The pickup volume control is 60 ohms.

The input transformer is tapped and the following values of d-c. resistance apply. Between terminals 1 and 2, 3.2 ohms; between terminals 2 and 3, 150 ohms, and between terminals 3 and 4, 4300 ohms. The connections of the pickup correspond with the data shown for the RE-16-A receiver, shown on pages RCA 4-19 and 4-20.

Crosley 5V2 and 5A3

The i-f. peak in these receivers is 181.5 kc. The alignment and servicing procedure for the 5V2 is the same as that for the 5V1, shown on pages Crosley 5-21 and 5-22 in Rider's Manual, Volume V. The circuit is substantially the same except for the addition of a 2,000-ohm resistor between the moving arm of switch 48 and the terminal which is a part of switch 48 and which connects to the low end of the input coil to the mixer portion of the 6A7. The voltage for the 5V2 is the same as that for the 5V1, shown in Rider's Manual.

Airline Model 62-156

The present production of these receivers differs from the early runs. In the early models the plate circuit of the 75 triode, contained only the plate coupling resistor of 150,000 ohms. In the later models a plate filter resistor of 50,000 ohms was added. In addition a 0.25-mfd. bypass condenser, which bypassed this plate filter resistor, was also added.

In the early models the capacity range of the trimmers used across the windings of the first i-f. transformer, was 150 to 300 mmfd.

Majestic 400

The receiver schematic appears upon page Majestic 3-42 and in the RCA-Rider Combination Manual on page 1234.

In some receivers the 250-ohm resistor R-3 and the 2000-ohm resistor R-11 were replaced by a 160-ohm and a 2500-ohm resistor respectively. The purpose of this was to make the G-57A-5 modulator tube oscillate more readily. If a 250-ohm and a 2000-ohm resistor are used in the receiver, it may be necessary to try two or three different tubes in this stage, when replacement is being made, before a tube is found, which will oscillate readily over the entire frequency band. If trouble is experienced along this line, the changing of either one or both of the resistors mentioned should eliminate the difficulty.

Condenser C-17 will be found to have a value of 0.05 mfd, in a number of receivers; however, it should be replaced with a 1-mfd unit, as shown in the schematic.

Silvertone 1840, 1842 Oscillator Plate Resistor

In some instances, the 10,000-ohm wire-wound resistor in the oscillator plate circuit of the models 1840 and 1842 opens during operation. The cause of the breakdown is mechanical, rather than electrical. Apparently, the form on which the resistance wire is wound expands sufficiently during operation to break the wire. If this break occurs during operation, a small arc occurs at the point of open, making a burnt mark upon the resistor and creating the impression that the unit failed due to overload. As has been stated, such is not the case. At any rate, replacement should be made with a 10,000-ohm carbon resistor rated at 2. watts and bearing part No. R10455.


In the early models 6D6 and 42 glass tubes were used. These have been replaced by the metal tubes, 6K7 and 6F6 respectively.

Silvertone 1720, 1725, 7065

Any trouble due to hum in these models can be eliminated by performing the following operations, the purpose being to add an additional section of filtering to the power supply.

Enlarge the hole in the chassis near the power transformer to about 0.25 inch diameter, as indicated in the illustration.

Remove the cover of the power transformer. To do this, it is first necessary to remove the four nuts on the under side of the chassis and then to unscrew the bolts that pass through the laminations. The tone control and switch will have to be dismounted in order to get at one of the transformer’s nuts.

Mount a Part No. R10793B choke on top of the power transformer in place of the original transformer cover. Be sure to mount the choke so that its leads can come down through the enlarged hole in the chassis. Also be sure to tighten the bolts well, in order to prevent hum.

Changes to be made in Silvertone Models 1720, etc. to prevent hum. Then remount the transformer and choke assembly on the chassis and remount the tone control.

Make the wiring changes indicated in the illustration. The dotted lines represent the original wiring, which is to be changed and the solid lines show the new connections. Note that a new part, a 2-mfd, 440-volt, dry electrolytic condenser, Part No. R11114, is added.


Sparton Models 61, 62

A 50-ohm, 2-watt resistor, Part No. B-6061-1, has been added in series with the plate lead of the 25Z5 that is drawn nearest the speaker field in the schematic diagram, shown on Sparton page 4-11 in Rider’s Volume IV. This resistor protects the 25Z5 tube against voltage surges.

It is advisable to put this resistor in any Models 61 and 62 not so equipped that you may service.
Silvertone 1590, 1592

Several changes have been made in the chassis used in this model, the schematic of which appears on page 3-8 in Rider's Volume III and page 2004 of the Rider-Combination Manual.

The first detector has been changed from a 57 type to a 58, which improves the volume control action. The second i-f transformer has been replaced with one whose secondary is tuned by a condenser mounted under the chassis. Some of the receivers have a hole in the chassis end plate to make this condenser accessible. In other sets, it is necessary to remove the end plate.

The cathode circuit of the 58 (first detector) has been changed. The cathode formerly went to ground through a 2000-ohm resistor. This resistor has been increased to 5000 ohms, and, in addition, a 0.001-mf. condenser has been inserted between the cathode and this resistor. Also a 5000-ohm resistor has been connected between the cathode and the junction of the 150-ohm and 50,000-ohm resistors. The 0.001-mf. condenser, which formerly was connected between the cathode of the oscillator tube and the oscillator coil, has its connections changed. One side still is connected to the 0.1-mf. condenser and the oscillator coil, but the other side goes directly to the junction of the cathode and suppressor of the 58 first detector tube.

The 20,000-ohm resistor connected between the screen of the first detector and the high-voltage supply (the filament of the 80 rectifier) has been changed to 30,000 ohms.

In Fig. 1 is shown the first detector and oscillator circuits in which are located some of the changes mentioned above. Also note the numbering of the various coils, which correspond to the numbering on the schematics of the coils as shown in Fig. 2. In most cases it is clear in the schematic diagram (Fig. 1) where the various connections from the coils go, but where there is any doubt, the following notations may be of aid:

Coil "A":
Lug No. 2 is connected to the center terminal of the volume control.
Lug No. 5 is connected to the stator, middle variable tuning condenser unit, and the grid clip of the first detector.

Coil "B":
Lug No. 3 is connected to the stator, No. 1 (shaft end) of the variable tuning condenser unit.

Coil "C":
Lug No. 5 is connected to the frame of the variable tuning condenser.

Silvertone 1584 and 1640

If any trouble is experienced with the 0.003-mf. condenser connected across the primary of the power transformer, breaking down, it has probably been due to a surge built across the transformer primary when the line switch is opened (set turned off).
To correct this difficulty, an 800-volt condenser is replacing the one of 600-volt rating used heretofore. This new condenser (Part No. R-6461, 800 V.) is connected between the line side of the on-off switch and the receiver chassis. Although these condensers may be marked 500 volts, they are really 800 volts and can be identified by the daub of yellow paint.

Westinghouse WR-21

Intermittent oscillator operation in this model may be due to a high resistance ground return in the oscillator coil. The coil is grounded through a spade terminal, this being one of the two spade terminals mounting the coil in its aluminum can. The can is riveted to a strap which in turn is screwed to the chassis. Apparently the oxide film on the aluminum causes the high resistance contact and the consequent intermittent operation. The repair can be made by drilling another hole in the can bringing out a ground wire. The schematic for this receiver will be found on page 5-2 in Rider's Volume V.

Kolster K-60

In the resistance test data appearing on page 2-9 of Rider's Volume II and on page 1455 of the Rider-Combination Manual, the resistance from the plate of the 47 tube to chassis is given as 850 ohms. This reading should be 7300 ohms. Please make this correction in your Manual. Thanks.

G.E. A-70, A-75

In the earlier models of the A-70 and A-75's it will be noted that the diode plate lead (green rubber covered) is soldered to one of the lugs of the second i-f transformer. If for any reason it is necessary to remove or replace this transformer or wire, it is important that the wire be dressed as far as possible toward the front of the chassis to obtain full sensitivity. Sets carrying later serial numbers have this lead tied to the center tap of the coil inside the can. However, it is still necessary to keep it toward the front of the chassis to prevent a feed-back between the plate dropping resistor between the first and second i-f transformers, and the lead itself.

For schematic, see G. E. page 6-19, Rider's Volume VI.

Crosley 161 and 881

We are advised by the manufacturer that only a comparatively few of this model were made and that it is practically the same as Crosley Model 160, the servicing data on which will be found on page 3-32 of Rider's Volume III and on page 756 of the Rider-Combination Manual.

Model 881 is practically the same as Model 143. See page 4-7 of Rider's Volume IV for servicing data.