THE MAGNAVOX CO. INC.

1F—455 KC

BAND SWITCH SHOWN IN COUNTER-CLOCKWISE POSITION

SHORTEST WAVE BAND VIEWED FROM FRONT.

CR-149

--- Used in Windsor Combination.

--- Used in Regent Combination.

--- Used in Belvedere Combination.

CR149-595189
VOLTAGE TABLE
(BOTTOM VIEW OF CHASSIS)

MEASURE HEATER AND THROTTLE VOLTAGES DIRECTLY ACROSS SOCKET TERMINALS

ALL OTHER VOLTAGES MEASURED FROM SOCKET TERMINALS TO GROUND WITH A 1000 OHM/VOLT VOLTMETER WITH BAND SWITCH IN BROADCAST POSITION.

1F - 455 KC
BAND SWITCH SHOWN IN COUNTER-CLOCKWISE POSITION (SHORT WAVE BAND) VIEWED FROM FRONT.

CHASSIS CR-152
CR-161

THE MAGNAVOX CO. INC.

CHASSIS CR-152

CH-152 -- Used in Belvedere Combination.
THE MAGNAVOX CO. INC.

VOLTAGE TABLE
(BOTTOM VIEW OF CHASSIS)

NOTE
MEASURE HEATER AND FILAMENT VOLTAGES DIRECTLY ACROSS SOCKET TERMINALS
ALL OTHER VOLTAGES MEASURED FROM SOCKET TERMINALS TO GROUND WITH A 1000 OHM/VOLT VOLTMETER WITH BAND-_SWITCH IN BROADCAST POSITION

A (H) HEATERS 8.3 VOLTS A.C.

MEASURE CATHODES ON 30V SCALE.
ALL OTHERS ON 600V SCALE

1F - 455 KC
BAND SWITCH SHOWN IN COUNTER-CLOCKWISE POSITION
(SHORT WAVE BAND VIEWED FROM FRONT)

CR-154 -- Used in Adam Secretary
Used in Chippendale Symphony
Used in Belvedere Combination

CR-154 595200

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VOLTAGE TABLE
(BOTTOM VIEW OF CHASSIS)

NOTE
MEASURE HEATER AND FILAMENT VOLTAGES DIRECTLY ACROSS SOCKET TERMINALS.

19 W\text{íí}/245 V
102 V
95 V

ALL OTHER VOLTAGES MEASURED FROM SOCKET TERMINALS TO GROUND WITH A 1000 OHM/VOLT VOLTMETER WITH BAND SWITCH IN BROADCAST POSITION.

A/C SUPPLY
3 AMP FUSE

CR-155 — Used in Regency Console
Used in Berkeley Combination

I.F. — 455 KC
BAND SWITCH SHOWN IN COUNTER-CLOCKWIE POSITION
SHORT WAVE BAND VIEWED FROM FRONT

CR155 595201 11/1/40

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1. Connect the "high" side of the generator output to the grid (G8) of the 6SA7 converter, and the "low" side of the generator to the ground of the chassis. The connection to the grid is most easily made by connecting to the stator of middle condenser in the tuning gang. If it is found that the generator does not furnish enough signal, it will be necessary to make this connection directly to the control grid of the 6SA7 tube and to disconnect the mixer coil from this grid. This point is indicated at "D" on the schematic diagram.

2. Connect a 0-60 or 0-200 microammeter in series with the "ground" end of the 100,000 ohm resistor (G2). This point is "T" on the diagram. Connect the positive terminal of the meter to ground. This will measure the grid current of the 6AC7 tube. A reading of 30 to 100 microamperes is all that should be expected at this point. If an Amperol or a D.C. electronic voltmeter is available, it can be connected directly across this 100,000 ohm resistor (G2) without disconnecting the resistor. This measures the grid bias voltage. A reading of 3 to 10 volts should be considered normal.

3. Set the generator at 450 kcs, and align the I.F. trimmers for maximum grid current in the 6AC7 tube as indicated by the microammeter or voltmeter.

4. The I.F. stages are now aligned. Remove the microammeter and re-connect the 100,000 ohm resistor (G2) as it was before.

5. The discriminator will be adjusted next. Connect the microammeter in series with the "ground" end of the 100,000 ohm resistor (G2). This is indicated as point "T" on the diagram. The positive side of the meter is connected to ground. Instead of this, a high impedance electronic voltmeter, such as an Amperol or other similar device, can be connected across the resistor. This measures the detector output current or voltage.

6. Adjust the test generator to 4375 kcs. Adjust both trimmers on the discriminator transformer (7) for a peak. Adjust the output of the generator so that the meter reads a least 60 microamperes or 6 volts, depending on the oscillator frequency at 4300 kcs. Adjust the trimmer nearest the 6BM tube until the current or voltage is zero. A non-metallic screwdriver is essential; this is an extremely important operation. Re-set the oscillator to 4375 kcs, and note the meter reading.

Now reverse the meter connections so that the negative terminal is connected to ground. Set the generator to 4250 kcs, and the meter reading should be within 10% of the same. If not, the tuning of the discriminator transformer was not done carefully enough and must be repeated. This completes the adjustment of the discriminator. Re-connect the 100,000 ohm load resistor (G2) to restore the circuit to its original condition.

7. Re-connect the control grid of the 6SA7 to the mixer coil if this connection had been removed and disconnect the generator from this point.

8. The antenna, mixer, and oscillator coils are now ready to be aligned. Check to see that the dial pointer is at the end of the dial calibration (141.6 mc) when the tuning gang is fully closed.

9. Prepare to measure the limiter grid current by again connecting the microammeter as described in Paragraph 5.

10. If an extremely accurate signal generator is available, it may be used for setting the oscillator to the dial calibration. The generator is connected to the antenna post through a 70 ohm resistor. Otherwise it will be ne-
THE MAGNAVOX CO. INC.

VOLTAGE TABLE

NOTE: MEASURE HEATER AND FILAMENT VOLTAGES AT TERMINALS ONLY.

CR-165 -- Used in Contemporary Combination
Used in Georgian Combination
Used in Hepplewhite Combination
Used in Chaireide Combination

IF = 455 KC

BAND SWITCH SHOWN IN COUNTER CLOCKWISE POSITION (SHORT WAVE BAND VIEWED FROM FRON'T)

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**MAJESTIC RADIO & TELEV. CO. CORP.**

**MODELS 2060, 2060P, 260**

**PRE-SETTING OF PUSH BUTTONS**

The push-buttons may be easily set to receive any five stations desired provided that three of them lie between 540 and 1100 KC, one of them between 800 and 1350 KC, and one of them between 1200 and 1600 KC. Note on the diagram that push button number 1 covers the range 1200-1600 KC. If the station selected lies between those frequencies then push the button in as far as possible and with a small screwdriver adjust the screw from the back of the receiver that corresponds to that button until the station desired can be heard as loudly as possible. Complete the adjustment by adjusting the corresponding trimmer from the top of the chassis until maximum volume again results. In making these adjustments, it is desirable to keep the volume control turned down to low volume. By pressing button number 2, the corresponding coil adjusting screw and trimmer condenser may be adjusted to the next station and the same process repeated for the balance of the buttons.

**Resistor**

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Condensers</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>R2</td>
<td>R-15601</td>
<td>100 ohm ¼ W 20% Carbon</td>
</tr>
<tr>
<td>R1, R13, R14</td>
<td>R-54</td>
<td>50K ohm ¼ W 20% Carbon</td>
</tr>
<tr>
<td>R3</td>
<td>R-15541</td>
<td>5K ohm ¼ W 20% Carbon</td>
</tr>
<tr>
<td>R4</td>
<td>R-15544</td>
<td>15K ohm 1 W 20% Carbon</td>
</tr>
<tr>
<td>R5, R16</td>
<td>R-15500</td>
<td>2 megohm ¼ W 20% Carbon</td>
</tr>
<tr>
<td>R6, R10</td>
<td>Y-VC-33</td>
<td>Volume and Tone Controls</td>
</tr>
<tr>
<td>R7, R9</td>
<td>R-15517</td>
<td>(Model 2060 only)</td>
</tr>
<tr>
<td>R8, R15, R17</td>
<td>R-15512</td>
<td>1 megohm ¼ W 20% Carbon</td>
</tr>
<tr>
<td>R11, R12</td>
<td>R-87</td>
<td>250K ohm ¼ W 20% Carbon</td>
</tr>
<tr>
<td>To</td>
<td>Y-CS-100</td>
<td>70 ohm ¼ W 20% Carbon</td>
</tr>
</tbody>
</table>

**Lights for Phono Compartment**

**Electrolytic Condenser**

<table>
<thead>
<tr>
<th>Capacitance</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.01-400 V Tubular</td>
<td>0.01-400 V Molded</td>
</tr>
<tr>
<td>0.01-600 V Tubular</td>
<td>0.05-400 V Tubular</td>
</tr>
<tr>
<td>0.05-400 V Molded</td>
<td>0.01-400 V Molded</td>
</tr>
</tbody>
</table>

**Summary**

- Push button number 1 covers the range 1200-1600 KC.
- Adjust the corresponding trimmer from the top of the chassis until maximum volume again results.
- The push buttons may be easily set to receive any five stations.
- Complete the adjustment by adjusting the corresponding trimmer from the top of the chassis until maximum volume again results.
- By pressing button number 2, the corresponding coil adjusting screw and trimmer condenser may be adjusted to the next station and the same process repeated for the balance of the buttons.
The tuning range is 540-1800 Kilocycles.

CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII

The battery packs recommended to be used:
Burgess No. 17GD60 or equivalent
Eveready No. 748 or equivalent
Ray-O-Vac No. AB-82 or equivalent

The tubes used are:
1-6A7 Frequency converter
1-8D6 Intermediate frequency amplifier
1-75 2nd detector, AVC, and audio driver
1-41 Output
1-80 Rectifier

MODEL 5ADA

This is a five (5) tube Alternating Current (AC) receiver. This set operates on 110-115 Volts 60 Cycles current. The tuning range is from 540 to 1750 kilocycles. This includes standard broadcast and most city police stations. This set is equipped with automatic volume control and a Majestic Hi-Q Loop Antenna shielded as a Faraday screen.
The frequency coverage is from 540 to 1650 kilocycles, i.e. from 555 to 182 meters. This includes the standard broadcast band and some police calls.

The tubes used are:
1-1A7GT Converter.
1-1NSGT I. F. Amplifier.
1-1HSGT 2nd Detector, AVC, and A. F. Amplifier.
1-1DBGT 2nd A. F. Amplifier and Output Tube Used on Battery Operation only.
1-70L7GT Output and Rectifier Tubes Used on Line Operation Only.

The receiver is equipped with three push buttons. The first from the right is for line operation. The middle push button is for battery operation. The left hand push button is to turn the set off.
**ALIGNMENT PROCEDURE**

**MODEL 04BR-5891**

The following equipment is required for aligning:

- An all-wave signal generator which will provide an accurately calibrated signal at the test frequencies as listed.
- Output indicating meter.
- Non-dummy aerials.
- Dummy antennas—1 M. 200 Mfd., 400 Ohms.

**BAND**

<table>
<thead>
<tr>
<th>Frequency Setting</th>
<th>Dummy Antenna</th>
<th>Connection to Radio</th>
<th>Position of Band Switch</th>
<th>Trimmer Setting</th>
<th>Trimmer Adjustment (See Fig.)</th>
<th>Trimmer Function</th>
<th>Adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>I F</td>
<td></td>
<td>Grid of 65-67</td>
<td>Broadcast</td>
<td>Rotor full open (Papers out of mesh)</td>
<td>Two trimmers on top</td>
<td>L.F.</td>
<td>Adjust to maximum output</td>
</tr>
<tr>
<td>462 Kc.</td>
<td>1 MFD.</td>
<td>Grid of 65-67</td>
<td>Broadcast</td>
<td>Rotor full open (Papers out of mesh)</td>
<td>Two trimmers on top</td>
<td>L.F.</td>
<td>Adjust to maximum output</td>
</tr>
</tbody>
</table>

**SHORT WAVE BAND**

<table>
<thead>
<tr>
<th>Frequency Setting</th>
<th>Dummy Antenna</th>
<th>Connection to Radio</th>
<th>Position of Band Switch</th>
<th>Trimmer Setting</th>
<th>Trimmer Function</th>
<th>Adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>21 M.</td>
<td>40 ohms</td>
<td>Antenna lead</td>
<td>Set Dial at 21 M.</td>
<td>Trimmer (C2)</td>
<td>Medium wave oscillator and antenna</td>
<td>Adjust to maximum output</td>
</tr>
<tr>
<td>31 M.</td>
<td>50 ohms</td>
<td>Antenna lead</td>
<td>Set Dial at 31 M.</td>
<td>Trimmer (C2)</td>
<td>Medium wave oscillator and antenna</td>
<td>Adjust to maximum output</td>
</tr>
</tbody>
</table>

**MEDIUM WAVE BAND**

<table>
<thead>
<tr>
<th>Frequency Setting</th>
<th>Dummy Antenna</th>
<th>Connection to Radio</th>
<th>Position of Band Switch</th>
<th>Trimmer Setting</th>
<th>Trimmer Function</th>
<th>Adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 M.</td>
<td>40 ohms</td>
<td>Antenna lead</td>
<td>Medium Wave</td>
<td>Set Dial at 4 M.</td>
<td>Trimmer (C2)</td>
<td>Medium wave oscillator and antenna</td>
</tr>
<tr>
<td>2.5 M.</td>
<td>50 ohms</td>
<td>Antenna lead</td>
<td>Medium Wave</td>
<td>Set Dial at 2.5 M.</td>
<td>Trimmer (C2)</td>
<td>Medium wave oscillator and antenna</td>
</tr>
</tbody>
</table>

**BROADCAST BAND**

<table>
<thead>
<tr>
<th>Frequency Setting</th>
<th>Dummy Antenna</th>
<th>Connection to Radio</th>
<th>Position of Band Switch</th>
<th>Trimmer Setting</th>
<th>Trimmer Function</th>
<th>Adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>520 Kc.</td>
<td>90 ohms</td>
<td>Antenna lead</td>
<td>Broadcast</td>
<td>Rotor full open (Papers out of mesh)</td>
<td>Trimmer (C2)</td>
<td>Broadcast oscillator and antenna</td>
</tr>
<tr>
<td>150 Kc.</td>
<td>100 ohms</td>
<td>Antenna lead</td>
<td>Broadcast</td>
<td>Trimmer (C2)</td>
<td>Broadcast oscillator and antenna</td>
<td>Adjust to maximum output</td>
</tr>
</tbody>
</table>

**Frequency Range**

<table>
<thead>
<tr>
<th>Broadcast</th>
<th>540-1720 Kc. (555-1734 Meters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium</td>
<td>22-72 M. (113.6-428 Meters)</td>
</tr>
<tr>
<td>Short Wave</td>
<td>464-840 M. (45.4-81.3 Meters)</td>
</tr>
</tbody>
</table>

Test Frequencies Used (in Kilocycles)

<table>
<thead>
<tr>
<th>Kilocycles</th>
<th>Meters</th>
</tr>
</thead>
<tbody>
<tr>
<td>465</td>
<td>645.1</td>
</tr>
<tr>
<td>2100</td>
<td>14.2</td>
</tr>
<tr>
<td>600</td>
<td>5</td>
</tr>
<tr>
<td>1300</td>
<td>13</td>
</tr>
<tr>
<td>1350</td>
<td>13.5</td>
</tr>
<tr>
<td>1500</td>
<td>20</td>
</tr>
<tr>
<td>500</td>
<td>0</td>
</tr>
</tbody>
</table>

**BAND**

Select the first station from the list you have prepared, and carefully tune in this station by rotating the manual tuning knob until the signal is clearest and strongest.

With one hand, hold the manual tuning knob to prevent it from turning and with the other hand, push one of the station buttons shown in the illustration all the way in. It is better to start with the top button.

Hold this button all the way in. With the other hand, see whether or not this station is still accurately tuned in by turning the tuning knob a slight amount back and forth. Be sure to hold the button all the way in.

Release the button slowly after the station is tuned in.

**CAUTION**—Do not touch this button again while the mechanism is unlocked as the setting may be altered.

Carefully tune in the second station on your list. Then hold the tuning knob and push the second button slowly and firmly all the way in. Check for accurate tuning.

Proceed in the same manner to set any additional stations on your list on the remaining station buttons.

**Setting the Station Buttons**

**Select a Station Button**

Turn the manual tuning knob so that the dial pointer moves toward 1500 KC until the stop is reached. At the top of the escutcheon (from the front) will be seen a cap which covers a hole in the escutcheon—See illustration. Pry up this cap.

At the end of the tube in back of the hole in the escutcheon is the locking screw. Using a small handled screwdriver, unlock the mechanism by turning this screw in a counter-clockwise direction several turns.

**TO SET STATIONS ACCURATELY. DO NOT JAR THE RADIO OR BUTTONS WHILE THE MECHANISM IS UNLOCKED.**

**Release the button slowly after the station is tuned in.**

**CAUTION**—Do not touch this button again while the mechanism is unlocked as the setting may be altered.

Carefully tune in the second station on your list. Then hold the tuning knob and push the second button slowly and firmly all the way in. Check for accurate tuning.

Proceed in the same manner to set any additional stations on your list on the remaining station buttons.

After all the stations are set, it will be necessary to lock the mechanism so that the settings will not change. Turn the manual tuning knob so that the dial pointer moves toward 1000 KC until the stop is reached. Then, with a SMALL HANDLED screwdriver, turn the locking screw in a clockwise direction until it is tight. Tighten the locking screw firmly but not excessively to avoid warping the threads. Replace the cap over the hole.

Remove the correct station call letter tabs from the sheet of paper supplied by bending the sheet back and forth at the score mark until the tab can be broken off. Press the tab all the way to the bottom of the space provided in the box. Cover the call letter tab with a celluloid tab press to this in until it snaps into place.

If at any time you wish to change the setting of a button from one station to another, repeat the above procedure. Changing the setting of one button will not affect the setting of any of the other buttons.
ALIGNMENT PROCEDURE

<table>
<thead>
<tr>
<th>SIGNAL GENERATOR</th>
<th>FREQUENCY SETTING</th>
<th>CONNECTION AT RADIO</th>
<th>DUMMY ANTENNA</th>
<th>CONDENSER SETTING</th>
<th>ADJUST TRIMMERS TO MAXIMUM</th>
</tr>
</thead>
<tbody>
<tr>
<td>456 KC</td>
<td>Signal Grid of 1st Det. (Top Cap)</td>
<td>.1 mf.</td>
<td>Turn rotor to full open</td>
<td>1st I.F. (C7) &amp; (C8)</td>
<td>2nd I.F. (C10) &amp; (C11)</td>
</tr>
<tr>
<td>1500 KC</td>
<td>Signal Grid of 1st Det.</td>
<td>.1 mf.</td>
<td>Turn rotor to full open</td>
<td>Oscillator (C2)</td>
<td></td>
</tr>
<tr>
<td>1500 KC</td>
<td>None—See Note A</td>
<td>Turn rotor to max. output Antenna (C1)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CALIBRATION—To obtain dial scale calibration, tune in an 800 KC signal. The pointer should be at the 800 KC mark on the dial. If it is not, pull pointer off shaft, set pointer at the 800 KC mark and push back.
DRIVE CORD REPLACEMENT

Tie a knot with a small loop at each end of new drive cord. The distance between knots should be 36½ inches. Turn gang condenser to full open position—See illustration.

Thread one end of drive cord down through hole in groove of drive pulley. Place loop on hook on pulley. Wind other end of cord ¾ turn counter-clockwise (from pulley side of chassis) around drive pulley. Pass cord under idler stud A. Wind 3 turns clockwise (from front of chassis) around tuning control shaft. Turn should progress away from chassis.

Continue cord over idler studs B and C as shown. Then wind cord ¾ turn counter-clockwise (from drive pulley side of chassis) around drive pulley. This turn should be on left side (from rear of chassis) of pulley groove. Thread cord through hole in drive pulley. Hook loop on tension spring. Fasten other end of spring to hook on pulley.

ALIGNMENT PROCEDURE

Volume Control—Maximum All Adjustments. Connect Radio Chassis to Ground Post of Signal Generator with a Short Heavy Lead. Allow Chassis and Signal Generator to "Heat Up" for several minutes.

The following equipment is required for aligning:
- A Signal Generator which will provide an accurately calibrated signal at the test frequencies as listed.
- Output Indicating Meter—Non-Metallic Screwdriver.
- Dummy Antennas—1000 Ω and 100000 Ω.

CONNECTING THE GENERATOR TO THE RADIO CHASSIS

Connect 456 KC Signal Grid to chassis. Connect 1000 Ω dummy antenna to 456 KC grid. Set dial to 1400 KC, remove pointer from drive cord. Turn in a 1400 KC signal. Set indicator at 1400 KC mark on dial scale. Attach pointer to drive cord.

NOTE A—Reassemble chassis in cabinet. Replace back panel. Connect ground part of signal generator to external ground clip on loop.

NOTE B—If the pointer is not at 1400 KC on the dial, remove pointer from drive cord. Turn in a 1400 KC signal. Set pointer at the 1400 KC mark on the dial scale. Attach pointer to drive cord.

SPECIFICATIONS

Input Voltages and Currents

<table>
<thead>
<tr>
<th>Component</th>
<th>Voltage</th>
<th>Current</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Battery</td>
<td>1.5 V</td>
<td>20 A</td>
</tr>
<tr>
<td>B Battery</td>
<td>60 V</td>
<td>300 mA</td>
</tr>
</tbody>
</table>

Intermediate Frequency Range

- 456 KC
- 500 KC
- 750 KC
- 1000 KC
- 1400 KC
- 2800 KC

Maximum Power Output

- 150 milliwatts
- 180 milliwatts

Selectivity

- 40 KC
- 100 KC
- 500 KC

Sensitivity

- For 0.5 milliwatt output

- 50 millivolts average

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www.americanradiohistory.com
Models 04BR-511A and 04BR-512A
Series A (serial No. OE428700 and up)

Selectivity - 85 KC broad at 1000 times signal at 1000 KC
Tuning Frequency Range - - - - - 535 to 1720 KC
Intermediate Frequency - - - - - 455 KC
Speaker - - - - - 4 in. P. M. Dynamic
Power Consumption - - - - - 35 Watts
Power Output - - - - 800 Milli-watts Undistorted
Sensitivity (for .5 Watts Output) - 30 Microvolts Average

Aligning Instructions

CAUTION: No aligning adjustments should be attempted without first thoroughly checking over all other possible causes of trouble, such as poor installations, open or grounded antenna systems, low line voltage, defective tubes, condensers and resistors, volt A.C. or D.C. line.

In order to properly align this radio, resistances of coil windings in the chassis should be removed from dicated in ohms on the schematic circuit diagram.

Service Notes

All voltages as indicated on the voltage chart are measured with 117 volt A.C. or D.C. line.

Parts

Antenna plate - walnut
Antenna plate - ivory
Oscillator permeability coil
Input I.F. Coil - 455 kc.
Output Transformer
4 P.M. Speaker
Switch on volume control
Models No. 04BR-511A and 04BR-512A  ALIGNMENT PROCEDURE

IMPORTANT: See Aligning Instructions

- Volume control—Maximum all adjustments.
- Connect B—of radio chassis to ground post of signal generator through .1 Mfd. condenser.
- Connect dummy antenna value in series with generator output lead.
- Connect output meter across primary of output transformer.
- Allow chassis and signal generator to "heat up" for several minutes.

<table>
<thead>
<tr>
<th>BAND</th>
<th>SIGNAL GENERATOR Frequency Setting</th>
<th>Dummy Antenna</th>
<th>Connection to Radio</th>
<th>Position of Iron Cores (Dial Setting)</th>
<th>Trimmers Adjusted (in Order Shown)</th>
<th>Trimmer Function</th>
<th>Adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. F.</td>
<td>455 Kc.</td>
<td>.1 MFD.</td>
<td>Connect to Metal Antenna Backplate</td>
<td>Iron Cores All the way out</td>
<td>Two trimmers on top of output I. F. can</td>
<td>Output I. F.</td>
<td>Adjust to maximum output</td>
</tr>
<tr>
<td></td>
<td>455 Kc.</td>
<td>.1 MFD.</td>
<td>Connect to Metal Antenna Backplate</td>
<td>Iron Cores All the way out</td>
<td>Two trimmers on top of output I. F. can</td>
<td>Input I. F.</td>
<td>Adjust to maximum output</td>
</tr>
<tr>
<td>BROAD-CAST BAND</td>
<td>1720 Kc.</td>
<td>.1 MFD.</td>
<td>Connect to Metal Antenna Backplate</td>
<td>Iron Cores All the way out</td>
<td>Trimmer (C7) (See bottom of chassis view)</td>
<td>Oscillator</td>
<td>Adjust to maximum output</td>
</tr>
<tr>
<td></td>
<td>1720 Kc.</td>
<td>200 MFD.</td>
<td>Connect to Outside Antenna Clip</td>
<td>Iron Cores All the way out</td>
<td>Trimmer (C5) (See bottom of chassis view)</td>
<td>Antenna Coil Adjustment</td>
<td>Adjust to maximum output</td>
</tr>
<tr>
<td></td>
<td>1400 Kc.</td>
<td>200 MFD.</td>
<td>Connect to Outside Antenna Clip</td>
<td>Turn Dial to 1400 Kc.</td>
<td>Adjust position of antenna coil (See coil assembly view)</td>
<td>Antenna Coil Adjustment</td>
<td>Adjust to maximum output</td>
</tr>
<tr>
<td></td>
<td>1720 Kc.</td>
<td>200 MFD.</td>
<td>Connect to Outside Antenna Clip</td>
<td>Turn Dial to 1720 Kc.</td>
<td>Adjust trimmer (C3) (See bottom of chassis view)</td>
<td>Antenna Check for tracking (See Note &quot;B&quot;)</td>
<td>Adjust to maximum output</td>
</tr>
</tbody>
</table>

NOTE "A"—The antenna coil assembly is made so that it is movable. When making the adjustment as given in the alignment procedure move the coil assembly very slowly. It can be moved by hand or by pivoting one edge of the blade of a screwdriver in the hole and engaging the blade in the gear teeth of the coil form.

NOTE "B"—After the antenna coil has been tracked at 1400 Kc. it is necessary to check the antenna trimmer (C3) adjustment again at 1720 Kc. If no appreciable change in trimmer adjustment is made the coil is in track, if the trimmer requires considerable change it will be necessary to again adjust the position of the antenna coil at 1400 Kc. These two adjustments should be tried several times until no change of trimmer adjustment is required at 1720 Kc.

Model No. 04BR-570A

- Volume control—Maximum all adjustments.
- Connect radio chassis to ground post of signal generator.
- Connect dummy antenna value in series with generator output lead.
- Connect output meter across primary of output transformer.
- Allow chassis and signal generator to "heat up" for several minutes.

<table>
<thead>
<tr>
<th>BAND</th>
<th>SIGNAL GENERATOR Frequency Setting</th>
<th>Dummy Antenna</th>
<th>Connection to Radio</th>
<th>Variable Condenser Setting</th>
<th>Trimmers Adjusted (in Order Shown)</th>
<th>Trimmer Function</th>
<th>Adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. F.</td>
<td>455 Kc.</td>
<td>.1 MFD.</td>
<td>Grid of 65G I. F. Tube</td>
<td>Rooster full open (Plates out of mesh)</td>
<td>Two trimmers on top of output I. F. can</td>
<td>Output I. F.</td>
<td>Adjust to maximum output</td>
</tr>
<tr>
<td></td>
<td>455 Kc.</td>
<td>.1 MFD.</td>
<td>Grid of 6DRG</td>
<td>Rooster full open (Plates out of mesh)</td>
<td>Two trimmers on top (See Top View)</td>
<td>Input I. F.</td>
<td>Adjust to maximum output</td>
</tr>
<tr>
<td>BROAD-CAST BAND</td>
<td>1650 Kc.</td>
<td>.1 MFD.</td>
<td>Grid of 6DRG</td>
<td>Rooster full open (Plates out of mesh)</td>
<td>Trimmer—Top of gang (See Top View)</td>
<td>Oscillator</td>
<td>Adjust to maximum output</td>
</tr>
<tr>
<td></td>
<td>1400 Kc.</td>
<td>(See Note &quot;A&quot;)</td>
<td>Set dial at 1400 Kc.</td>
<td>Trimmer—Top of gang (See Top View)</td>
<td>Antenna</td>
<td></td>
<td>Adjust to maximum output</td>
</tr>
</tbody>
</table>

NOTE "A"—Lay the output lead from the signal generator in back of the loop antenna. Turn up the output of the generator, picking up the energy in the loop antenna without any electrical connection from the signal generator.

Loop aerial should be connected when aligning receiver and should be the same distance from the chassis as when mounted in the cabinet.

The following equipment is required for aligning:

- An all wave signal generator which will provide an accurately-calibrated signal at the test frequencies as listed.
- Output indicating meter.
- Non-metallic screwdriver.
- Dummy antennas—.1 Mfd., and 200 Mfd.
**MONTGOMERY WARD & CO.**

**MODELS 04BR-513A, 04BR-514A**

** above ser # 428000**

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**Interim Range:** 535 to 1650 KC

**Intermediate Frequency:** 455 K.C.

**Diagram Part**

**Resistors**

- R1: BE13014, 2200 ohm—1/2 w.
- R2: BE13401, 50M ohm—5 w.
- R3: BE13089, 200M ohm—5 w.
- R4: BE13035, 75 ohm—1/2 w.
- R5: BE13020, 40 ohm—5 w.
- R6: BE1304, 3 megohm—5 w.
- R7: BE1301, 25M ohm—5 w.
- R8: BE13015, 25 ohm—5 w.
- R9: BE13019, 1megohm volume control
- R10: BE13035, 5 megohm—5 w.
- R11: BE1303, 500M ohm—5 w.
- R12: BE1303, 500M ohm—5 w.
- R13: BE13096, 150 ohm—5 w.
- R14: BE130287, 1200 ohm—1 w.

**Condensers**

- C1: BE102132, 2 gang variable condenser
- C2: BE10001, 0.1 x 400 v.
- C3: BE1000, 1 x 400 v.
- C4: Antenna trimmer on gang
- C5: BE12921, 0.002 mfd. mica

**Power Consumption**

- 35 watts

**Power Output**

- 800 Milliwatts

**Sensitivity for 50 Milliwatt Output:**

- 20 Microvolts Average

**Selectivity**

- 65 KC Broad at 1000 Times Signal at 1000 KC

---

**Parts**

- T1: BE11182 Loop antenna—complete assembly
- T2: BE10145 Oscillator coil
- T5: BE10124 Output Transformer
- T6: BE14201 5" P. M. Speaker
- L1: BE1211 Loading coil
- S1: On-off switch on volume control
- F1: BE10247 Pilot light bulb T47

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**Bottom View of Chassis**

- Voltages measured with 1000 ohm per volt, voltmeter on hot, socket off. A.C. at 117 V. S. and 65 V. S.

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SETTING PUSHBUTTONS

Make a list of your 6 favorite stations. Push out the call letters of these stations from the call letter sheets supplied. Insert a call letter in the slot on top of each pushbutton.

Next pull one of the pushbuttons all the way out as far as it will come (pull, with fingers on top and bottom of button). Now tune in the station you want with the tuning knob—Tune back and forth until the station is clear and distinct. Now push the button hard all the way in to lock the station in place. (Push directly on front of button) Continue setting each pushbutton in the same way. Pressing the proper button will now tune the station you want. If it does not do so you did not push the button hard enough to lock in place when setting up the station.

To change stations simply repeat the procedure above.

ALIGNING INSTRUCTIONS

CAUTION—No aligning adjustments should be attempted without first thoroughly checking over all other possible causes of trouble, such as poor installations, open or grounded antenna systems, low line voltage, defective tubes, condensers and resistors. In order to properly align this radio, the chassis should be removed from the cabinet. Although the short wave bands on this radio are of the broad spread type, the alignment procedure is not difficult. However, because each short wave scale covers only a small portion of the short wave spectrum you must do the work carefully and your oscillator must be accurate.

Do not realign the band spread scales unless you are positive they are out of adjustment. When adjustment is necessary proceed as follows.

First refer to the "Iron Core Adjustment View" now turn the tuning knob until the drive bar comes within 1/64 to 1/32 from the stops. (A piece of blotting paper is about the right thickness and will serve as a gauge.) The clearance of the bar must be the same at both stops. If far off you can raise one drive screw gently and equalize them. Minor adjustments may be made with the drive bar adjustments.

Next rotate each iron core until the fine score marks are even with the edge of the coil forms.

You are now ready to continue with the trimmer adjustments as shown on the alignment chart.

REPLACING PUSHBUTTONS

Should it ever be necessary to replace a broken or lost pushbutton you will notice they are made in two parts, a clear front and a brown body. To separate the two portions first take off the escutcheon. Push the button in—Next push the brown body of the button back until it snaps free from the clear front. You can now lift the clear portion off and take the escutcheon off. To replace the pushbutton, reverse the procedure.

HOW TO REMOVE CHASSIS

Should it ever be necessary to take the chassis out of the cabinet be sure to pull the plug from the light socket. Next pull the control knobs off the shafts and take the escutcheon off.

Turn the spring clips clear of the back and take the back off—be sure to disconnect the loop aerial and the speaker plug, also the plugs from the phono unit. Remove the chassis mounting screws and lift the chassis out.

SERVICE NOTES

Voltages taken from different points of circuit to chassis are measured with volume control at minimum, all tubes in their sockets and speaker connected with a volt meter having a resistance of 1000 ohms per volt.

 Resistances of coil windings are indicated in ohms on the schematic circuit diagram.

To check for open by-pass condensers shunt each condenser with another condenser of the same capacity and voltage rating, which is known to be good, until the defective unit is located.

Excessive hum, stuttering, low volume and a reduction in all D. C. voltages is usually caused by a shorted electrolytic condenser: open by-pass condensers frequently cause oscillation and distorted tone.

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Aligning Instructions

CAUTION:—No aligning adjustments should be attempted without first thoroughly checking over all other possible causes of trouble, such as poor installations, open or grounded antenna systems, low line voltage, defective tubes, condensers and resistors. In order to properly align this radio, the chassis should be removed from the cabinet.

To remove chassis from the cabinet, pull tuning knob and volume knob off their shafts. Remove the four mounting screws that hold the chassis to the cabinet. Move the chassis toward back of cabinet so that control shafts and dial assembly clear holes in cabinet, then chassis can be slipped out.
Model No. 04BR-515A

- Volume control—Maximum all adjustments.
- Connect B of radio chassis to ground post of signal generator through .1 Mfd. condenser.
- Connect dummy antenna value in series with generator output lead.
- Connect output meter across primary of output transformer.
- Allow chassis and signal generator to "heat up" for several minutes.

<table>
<thead>
<tr>
<th>BAND</th>
<th>SIGNAL FREQUENCY SETTING</th>
<th>Dummy Antenna</th>
<th>Connection to Radio</th>
<th>Position of Iron Cores (Dial Setting)</th>
<th>Trimmers Adjusted (in Order Shown)</th>
<th>Trimmer Function</th>
<th>Adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. F.</td>
<td>465 Kc.</td>
<td>.1 MFD.</td>
<td>Connect to Antenna Plate</td>
<td>See Trimmer View</td>
<td>Iron Cores All the way out</td>
<td>Two trimmers on top (See Top View)</td>
<td>Output I. F.</td>
</tr>
<tr>
<td></td>
<td>465 Kc.</td>
<td>.1 MFD.</td>
<td>Connect to Antenna Plate</td>
<td>See Trimmer View</td>
<td>Iron Cores All the way out</td>
<td>Two trimmers on top (See Top View)</td>
<td>Input I. F.</td>
</tr>
<tr>
<td>BROAD-CAST BAND</td>
<td>1690 Kc.</td>
<td>.1 MFD.</td>
<td>Connect to Antenna Lead</td>
<td>See Trimmer View</td>
<td>Iron Cores All the way out</td>
<td>Trimmer (C6) (See Trimmer View)</td>
<td>Oscillator</td>
</tr>
<tr>
<td></td>
<td>1690 Kc.</td>
<td>200 MFD.</td>
<td>Connect to Antenna Lead</td>
<td>See Trimmer View</td>
<td>Iron Cores All the way out</td>
<td>Trimmer (C5) (See Trimmer View)</td>
<td>Antenna</td>
</tr>
<tr>
<td></td>
<td>1400 Kc.</td>
<td>200 MFD.</td>
<td>Connect to Antenna Lead</td>
<td>See Trimmer View</td>
<td>Turn Dial to 1400 Kc.</td>
<td>Adjust position of antenna coil right or left.</td>
<td>Antenna Coil Adjustment</td>
</tr>
<tr>
<td></td>
<td>1690 Kc.</td>
<td>200 MFD.</td>
<td>Connect to Antenna Lead</td>
<td>See Trimmer View</td>
<td>Turn Dial to 1690 Kc.</td>
<td>Adjust trimmer (C3) (See Trimmer View)</td>
<td>Antenna</td>
</tr>
</tbody>
</table>

NOTE "A"—The antenna coil assembly is made so that it is movable right or left. When making the adjustment as given in the alignment procedure move the coil assembly very slowly. It can be moved by hand or by pivoting one edge of the blade of a screwdriver in the hole and engaging the blade in the gear teeth of the coil form.

NOTE "B"—After the antenna coil has been tracked at 1400 Kc. it is necessary to check the antenna trimmer (C3) adjustment again at 1690 Kc. If no appreciable change in trimmer adjustment is made the coil is in track, if the trimmer requires considerable change it will be necessary to again adjust the position of the antenna coil at 1400 Kc. These two adjustments should be tried several times until no change of trimmer adjustment is required at 1690 Kc.

Model Nos. 04BR-679A

- Volume control—Maximum all adjustments.
- Connect radio chassis to ground post of signal generator with a short heavy lead.
- Connect dummy antenna value in series with generator output lead.
- Connect output meter across primary of output transformer.
- Allow chassis and signal generator to "heat up" for several minutes.

<table>
<thead>
<tr>
<th>BAND</th>
<th>SIGNAL FREQUENCY SETTING</th>
<th>Dummy Antenna</th>
<th>Connection to Radio</th>
<th>Variable Condenser Setting</th>
<th>Trimmers Adjusted (in Order Shown)</th>
<th>Trimmer Function</th>
<th>Adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. F.</td>
<td>455 Kc.</td>
<td>.5 MFD.</td>
<td>Grid of 6KG I.F. Tube</td>
<td>Rotor full open (Plates out of mesh)</td>
<td>Two trimmers on top (See Fig. 2)</td>
<td>Output I. F.</td>
<td>Adjust to maximum output</td>
</tr>
<tr>
<td></td>
<td>455 Kc.</td>
<td>.5 MFD.</td>
<td>Grid of 6ARG</td>
<td>Rotor full open (Plates out of mesh)</td>
<td>Two trimmers on top (See Fig. 2)</td>
<td>Input I. F.</td>
<td>Adjust to maximum output</td>
</tr>
<tr>
<td>BROAD-CAST BAND</td>
<td>1550 Kc.</td>
<td>175 mfd.</td>
<td>Antenna lead</td>
<td>Rotor full open (Plates out of mesh)</td>
<td>Trimmer—Top of Middle section of gang (See Fig. 2)</td>
<td>Oscillator</td>
<td>Adjust to maximum output</td>
</tr>
<tr>
<td></td>
<td>1400 Kc.</td>
<td>175 mfd.</td>
<td>Antenna lead</td>
<td>Set dial at 1400 Kc.</td>
<td>Trimmer—Top of front and rear section of gang (See Fig. 2)</td>
<td>Antenna and R. F.</td>
<td>Adjust to maximum output</td>
</tr>
<tr>
<td></td>
<td>600 Kc.</td>
<td>175 mfd.</td>
<td>Antenna lead</td>
<td>Set dial at 600 Kc.</td>
<td>B.C. Series Pad (See Fig. 2)</td>
<td>Oscillator series pad</td>
<td>Adjust to maximum rock dial (See note &quot;A&quot;)</td>
</tr>
</tbody>
</table>

NOTE "A"—Turn the dial back and forth slightly (rock) and adjust trimmer until the peak of greatest intensity is obtained. Trimmer is located on top of chassis along side of gang.

After each band is completed, repeat the procedure as a final check. Do not bend plates of variable condenser to correct tracking.
MONTGOMERY WARD & CO.

MODEL 04BR-567A
above ser. #225040

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RADIO LOCATION

Determine the most desirable mounting location, (See Fig. 1—General Installation View, page 2). In the majority of installations it will be found that the radio can be mounted under the dash panel directly to the left of the steering column.

BONDING

Cars with floating power must have the motor bonded to the bulkhead and again to the frame to provide a direct path for the high frequency interference developed in the ignition system. 2/8" copper braid will be necessary, SMALL DIAMETER WIRE WILL NOT DO. Bond flexible shaft leads, such as free wheeling, choke wires, etc., which pick up motor noise and reread it into the car. Free wheeling cables should be grounded at the point at which they go through the firewall of the car. In extreme cases it has been found necessary to ground the steering column.

GENERATOR INTERFERENCE

Remove the generator cutout mounting screw and fasten the condenser (100-81) bracket on the generator cutout mounting lug. Replace the cutout mounting screw and tighten down securely.

Connect the condenser lead to the battery terminal of the cutout. The generator condenser is absolutely necessary as it is used to eliminate a high pitched whining noise which would otherwise be heard as the motor is accelerated.

PROCEDURE FOR SETTING THE AUTOMATIC LEVERS

There are five levers on the dial by means of which five stations may be selected, (See "B" Fig. 2).

Make a list of local stations you tune in regularly; any number up to and including five.

Punch out from the set of station call letter tabs supplied, the call letters of the stations you have selected.

On the front of each automatic lever an opening is provided for inserting the call letter tabs, (See "A" Fig. 2).

Insert the call letter tabs in the rectangular openings of each of the automatic tuner levers. One of the small celluloid tabs supplied should be snapped into place over each of the station call letter tabs.

Press DOWN ALL THE WAY any one of the automatic tuner levers. Holding it down FIRMLY, tune in by means of the tuning knob (No. 1) the station you have assigned to this lever. Turn the tuning knob very slowly back and forth (while still holding lever in downward position) until the signal is clearest. The station will then be accurately tuned in. Release the lever.

Press down another automatic tuner lever. Holding it down FIRMLY, carefully tune in the station assigned to this lever. Release the lever.

Follow this procedure until you have selected all of your favorite stations.

Now rotate the tuning knob (No. 1) to the right (clockwise) as far as it will turn, and tighten the special locking screw ("C") located on left side of tuner dial assembly (See Fig. 2).

It is VERY IMPORTANT that this locking screw is turned until it is ABSOLUTELY TIGHT.

This screw will lock in place all the stations you have selected on the automatic tuner levers. (Note: Locking screw "C" is loose when radio is shipped from factory.)

If you should desire to change any station you selected to another, loosen the locking screw "C" one or two turns, select the new station as explained. Be sure to retighten the locking screw, otherwise the stations you have selected will not stay adjusted to the levers.

The automatic dial is now set up for quick tuning. Press down on the lever and your favorite station is selected.

ADJUST ANTENNA TRIMMER

Tune in a weak signal at approximately 600 K.C. with volume control about three-fourths on. Adjust trimmer screw "X" until maximum output is obtained. (See Fig. 1, Adjustment "X" on right side of radio).

L.F. ALIGNMENT: (465 K.C.)

1. With variable condenser in its minimum capacity position (plates entirely out of mesh) and with volume control full on, connect test oscillator set at 465 K.C. in series with I.F. dummy antenna, to grid of 6SK7 I.F. tube.

2. Adjust trimmer condensers of output I.F. transformer No. 108121 to resonance with oscillator.

3. Move test oscillator connection to grid of 6SA7 tube and adjust trimmer condensers of input I.F. transformer No. 108139 for resonance with oscillator. There are two adjustments on each and they are accessible from the top of the transformer shield and should be adjusted with an insulated screw driver. (See Fig. 3—top view, page 3.)

BROADCAST ALIGNMENT

1. With variable condenser in its minimum capacity position, connect test oscillator set at 1550 K.C. in series with broadcast dummy to the antenna lead of receiver.

2. Adjust oscillator trimmer of variable condenser to resonance. (This adjustment is the rear section of the two-gang condenser—see top view, Fig. 3). Shift test oscillator to 1400 K.C. and pick up signal by rotating condenser and adjust antenna trimmer (front section of two-gang condenser) to resonance (see top view, Fig. 3).

3. Re-set test oscillator to 600 K.C. and rotate variable condenser to 600 K.C. Adjust series pad in the antenna circuit for maximum gain. This pad is mounted on the side of the antenna can, adjustment "X".

5. Go back and check 1400 K.C. If adjustment is made here, check 600 K.C. again.

6. Check for sensitivity at 1000 K.C. by setting test oscillator to this frequency and picking up the signal by rotating variable condenser. Under no circumstances bend plates of variable condenser sections to correct tracking.

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When the A Battery is fresh the economizer switch on the back of the chassis should be pushed to the right. After the radio has been in use several weeks and reception becomes weaker push the switch to the left. Leave in this position until new batteries are installed.

5459 Ballast Resistor
35Z5GT Rectifier

Specifications

Power Consumption
"A" Battery 50 MA; "B" Battery 8 MA.

Power Output
100 Milliwatts, Undistorted
200 Milliwatts, Maximum

Sensitivity (for .05 Watta)
50 Microvolts Average

Selectivity
52 Kc. Broad at 1000 Times Signal at 1000 Kc.

Tuning Range
540 to 1550 Kc.

Intermediate Frequency
465 Kc.

Speaker
5 in. P. M. Dynamic

FIG. 2—TOP VIEW

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MODEL 04WG-510 MODEL 04WG-611

Power Consumption... 28 Watts (117 volt AC Supply)
Power Output... .8 Watt Under Ideal Conditions
Selectivity... 50 KC Broad at 1000 times Signal
Intermediate Frequency... 455 KC

Speaker... 5" Electro-Dynamic
Tuning Frequency Range... 520 to 1650 KC
Sensitivity (For 5 Watt Output)... 8 Microvolts Average
External Antenna... 10 Microvolts Average

CAUTION
The metal chassis is connected to one side of the line through a 2 mfd. condenser. Both AC and DC power lines are generally grounded on one side. If the side of the line not connected to the metal chassis through this condenser is grounded and the metal chassis comes in contact with an external ground, this condenser will be connected across the line and there will be an increase in hum.
Therefore, in any service work on the chassis, keep it on a wooden or other insulating surface to avoid contact with ground. The person working on the set should avoid getting in contact with any ground.

ALIGNMENT PROCEDURE
Volume Control-Maximum All Adjustments
Allow Chassis and Signal Generator to "Heat Up" for several minutes.

The equipment is turned on for alignment.

SIGNAL GENERATOR ANTENNA GROUND CONN. DUMMY ANTENNA CONDENSER SETTINGS
ADJUST TRIMMERS TO MAXIMUM

FREQUENCY SETTINGS
455 KC
- 520 to 1650 KC
- External Antenna

The equipment is turned off.

NOTE A-B. A battery of wooden blocks should be placed on the chassis. Use 1/2 inch blocks from the back of the chassis.

NOTE B.-If the potentiometer is set at 1650 KC, there is a 1920 KC signal. Set potentiometer to 1000 KC on the dial scale, set potentiometer to 1000 KC mark on the dial scale.

SPECIFICATIONS
Power Consumption... 28 Watts (117 volt AC Supply)
Power Output... .8 Watt (undistorted)
Selectivity... 50 KC Broad at 1000 times Signal
Intermediate Frequency... 455 KC

Model 04WG-612

Tuning Frequency Range... 520 to 1650 KC
Sensitivity (For 5 watt output)... 8 Microvolts Average
External Antenna... 10 Microvolts Average

CAUTION
The metal chassis is connected to one side of the line through a 2 mfd. condenser. Both AC and DC power lines are generally grounded on one side. If the side of the line not connected to the metal chassis through this condenser is grounded and the metal chassis comes in contact with an external ground, this condenser will be connected across the line and there will be an increase in hum.
Therefore, in any service work on the chassis, keep it on a wooden or other insulating surface to avoid contact with ground. The person working on the set should avoid getting in contact with any ground.

MONTGOMERY WARD & CO.

www.americanradiohistory.com
### Procedure for Setting the Automatic Pushbuttons

There are six pushbuttons on the front of the radio by means of which six stations may be selected (see "B", Fig. 2).

1. Make a list of local stations you tune in regularly; any number up to and including six.

2. Punch out from the set of station call letter tabs supplied, the call letters of the stations you have selected.

3. On the front of each automatic tuner button an opening is provided for inserting the call letter tabs. (See "A", Fig. 2.)

4. Insert the call letter tabs in the rectangular openings in each of the automatic tuner pushbuttons. One of the small celluloid tabs supplied should be snapped in place over each of the station call letter tabs.

5. Press in ALL THE WAY any one of the automatic tuner pushbuttons. Holding it in firmly, tune in by means of the tuning knob (No. 4) the station you have assigned to this pushbutton. Turn the tuning knob very slowly back and forth (while still holding button in downward position) until the signal is clearest. The station will then be accurately tuned in. Release the pushbutton.

6. Press in another automatic tuner pushbutton. Holding it in firmly, carefully tune in the station assigned to this pushbutton. Release this pushbutton.

7. Follow this procedure until you have selected all of your favorite stations.

8. Now rotate the tuning knob to the right (clockwise) as far as it will turn, and with a coin (quarter), tighten the special locking screw ("C") in the center of the tuning knob, (see Fig. 2).

It is VERY IMPORTANT that this locking screw is turned until it is ABSOLUTELY TIGHT. This screw will lock in place all the stations you have selected on the pushbuttons. (Note: Reset Lock Screw "C" is loose when radio is shipped from factory. If you should desire to change any station you selected to another, loosen the reset locking screw two or three complete turns; select the new station as explained. (Note: If the dial mechanism works hard when setting up a new station for one of the automatic tuner pushbuttons, it is due to the locking screw being too tight. Loosen the reset locking screw until the dial mechanism works freely with the tuner pushbutton pressed in.)

BE SURE TO RETIGHTEN THE RESET LOCK SCREW, otherwise the stations will not stay adjusted to the pushbuttons.

The automatic dial is now set up for quick tuning.

---

### Table: Signal Generator Specifications

<table>
<thead>
<tr>
<th>Band</th>
<th>Frequency Setting</th>
<th>Dummy Antenna</th>
<th>Connection to Radio</th>
<th>Position of Band Switch</th>
<th>Variable Condenser Setting</th>
<th>Trimmer Adjusted</th>
<th>Trimmer Function</th>
<th>Adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. F.</td>
<td>455 kc.</td>
<td>1 MFD.</td>
<td>Grid of 125K</td>
<td>Broadcast</td>
<td>Rotor full open</td>
<td>Two trimmers on top</td>
<td>Output I. F.</td>
<td>Adjust to maximum output</td>
</tr>
<tr>
<td></td>
<td>455 kc.</td>
<td>1 MFD.</td>
<td>Grid of 125K</td>
<td>Broadcast</td>
<td>Rotor full open</td>
<td>Two trimmers on top</td>
<td>Output I. F.</td>
<td>Adjust to maximum output</td>
</tr>
<tr>
<td>SHORT</td>
<td>700 kc.</td>
<td>200 mfl.</td>
<td>Antenna Clip</td>
<td>Short Wave</td>
<td>Rotor full open</td>
<td>Trimmer C2</td>
<td>Short Wave oscillator</td>
<td>Adjust to maximum output</td>
</tr>
<tr>
<td>WAVE</td>
<td>600 kc.</td>
<td>200 mfl.</td>
<td>Antenna Clip</td>
<td>Short Wave</td>
<td>Set Dial at 6 Mc.</td>
<td>Trimmer C3</td>
<td>Short Wave oscillator</td>
<td>Adjust to maximum output</td>
</tr>
<tr>
<td>BAND</td>
<td>220 kc.</td>
<td>200 mfl.</td>
<td>Antenna Clip</td>
<td>Short Wave</td>
<td>Set Dial at 2.2 Mc.</td>
<td>Trimmer C10</td>
<td>Short Wave oscillator series pad</td>
<td>Adjust to maximum output</td>
</tr>
<tr>
<td>BROADCAST</td>
<td>1500 kc.</td>
<td>200 mfl.</td>
<td>Antenna Clip</td>
<td>Broadcast</td>
<td>Rotor full open</td>
<td>Trimmer C15</td>
<td>Broadcast oscillator</td>
<td>Adjust to maximum output</td>
</tr>
<tr>
<td>BAND</td>
<td>1600 kc.</td>
<td>200 mfl.</td>
<td>Antenna Clip</td>
<td>Broadcast</td>
<td>Set Dial at 1600 kc.</td>
<td>Trimmer C7</td>
<td>Broadcast oscillator</td>
<td>Adjust to maximum output</td>
</tr>
<tr>
<td>BAND</td>
<td>600 kc.</td>
<td>200 mfl.</td>
<td>Antenna Clip</td>
<td>Broadcast</td>
<td>Set Dial at 600 kc.</td>
<td>Trimmer C9</td>
<td>Broadcast oscillator series pad</td>
<td>Adjust to maximum output</td>
</tr>
</tbody>
</table>

NOTE "A"—Turn the dial back and forth slightly (rock) and adjust trimmer until the peak of greatest intensity is obtained.

NOTE "B"—Turn the dial back and forth slightly (rock) and adjust trimmer until the peak of greatest intensity is obtained.

Attenuate the signal from the signal generator to prevent the leveling-off action of the AVC after each band is completed, repeat the procedure as a final check.
To remove the chassis, pull the loop antenna plug from the chassis. Pull out the tuning and volume knobs. Lift the 4 screws in the bottom of cabinet and lift chassis out.

MODEL 04BR-570A (SERIAL No. OE528700 and UP)

Selectivity - 50 KC Broad at 1000 Times Signal at 1000 KC
Tuning Frequency Range - 535 to 1650 KC

POWER CONSUMPTION - 30 Watts
Battery Drain - 2½ Amps
Power Output - 700 Milliwatts Undistorted Sensitivity for 50 Milliwatt Output: 15 Microvolts Average

BOTTOM VIEW OF CHASSIS

VIBRATOR PLUGS

62Y5G 6G6G 6S7G

REAR OF CHASSIS

6T7G 6D8G
Power Consumption: 57 Watts (At 117 volts 60 cycles)
Power Output: 1.7 Watts Undistorted
2.5 Watts Maximum
Selectivity: 40 KC Broad at 1000 times Signal
Intermediate Frequency: 455 KC
Speaker: 6" or 8" Electro-Dynamic

Tuning Frequency Range
B Range: 528 to 1600 KC
D Range: 5750 to 18300 KC

Sensitivity — External Antenna — (For 0.5 Watt output)
B Range: 7 Microvolts Average
D Range: 15 Microvolts Average

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OPERATING THE PHONOGRAPh AND RECORDER

Turn radio on. Turn recording switch to playback position.
Put your record on turntable and start motor. Place playback arm on record and control tone and volume with the radio volume and tone control knobs.

RECORdING VOICE

Turn the radio volume control nearly full on. Recording switch should be in 'Record-Mute' position. Start motor, and set cutting needle gently on start of record. Turn mike switch on and talk.

NOTE: The cutting arm must be raised about three inches to move it freely across the record.

HOW TO MAKE PERFECT RECORDINGS

Unpack the microphone and check to see that it is plugged into the chassis. The microphone must be connected to the chassis at all times.
Insert a playback needle in the playback arm. Insert a special cutting style needle in the cutting arm. Handle this needle with care.
Be sure the needle is tight after each recording. Should it loosen during the recording, it will chatter and ruin your record.

CUTTING NEEDLE

The cutting style needle is razor sharp and must not be dropped on the record or allowed to rest on the turntable.
For best results, the instrument should be level in all directions. To check this, place a small level, if you have one, on the turntable. If you do not have a level, a marble will do. If the marble rolls off the turntable, it is not in the direction in which it rolls. Place something under the cabinet until the machine is reasonably level.

SHAVING

The cutting style needle cuts a fine shaving that is just a little thicker than a human hair. These shavings should not be allowed to gather under the cutting stylus.
While cutting, gently brush the shaving from the left side of the record toward the center pin, allowing them to fall rearward until the record is completed.

DO NOT USE TOO MUCH VOLUME

The most frequent cause of poor recordings is too much volume or overloading. If some passages of your recording are smooth and clear while others are ragged, rough and distorted, you are probably using too much volume. Overloading occurs most often on strong passages. This is due to reducing the volume slightly and studying the different effects of microphone technique.

With your volume control on middi, your record will sound as it should have if you had not overstrained your cabinet. To make your record sound better, do not try to force the needle to cut too much.

LOADING

When loading your machine, the adjoining arms of both posts are turned toward the center of the turntable as indicated by the engraved arrows, and that both sets of angles are set for the same size (10° or 12°) as described in the preceding paragraph.

Assemble the machine in such a position that the record head and the cutting arm are aligned as shown in the accompanying diagram. Make sure that the record is positioned as indicated in the diagram.

STARTING THE CHANGER

Turn on the radio to full volume. Place the record on the turntable and turn on the record changer. When the record is played, it will automatically start the next record.

UNLOADING

First switch off the motor. Grasp each post by the handle at the top and turn them out of the way. Lift the played record from the turntable. Then return the posts to the proper position as indicated by the arrows on the selecting arm.

Example: If your record changer is loaded with a record with the selection arm on the left side, you will need to unload the record before playing the next one.

Turning off the record changer switch will turn on the motor and the machine will automatically start the next record. If the selection arm is on the right side, the machine will automatically start the next record on the left side.
## ALIGNMENT PROCEDURE

### Model No. 04BR-615A

<table>
<thead>
<tr>
<th>BAND</th>
<th>SIGNAL GENERATOR Frequency Setting</th>
<th>Dummy Antenna</th>
<th>Connection to Radio</th>
<th>Position of Band Switch</th>
<th>Variable Condenser Setting</th>
<th>Trimmers Adjusted (in Order Shown)</th>
<th>Trimmer Function</th>
<th>Adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. F.</td>
<td>455 Kc. .1 MFD.</td>
<td></td>
<td>Grid of 6S7 I. F.</td>
<td>Broadcast</td>
<td>Rotor full open (Plates out of mesh)</td>
<td>Two trimmers on top (See Top View)</td>
<td>Output I. F.</td>
<td>Adjust to maximum output</td>
</tr>
<tr>
<td>I. F.</td>
<td>455 Kc. .1 MFD.</td>
<td></td>
<td>Grid of 6SA7 Mixer</td>
<td>Broadcast</td>
<td>Rotor full open (Plates out of mesh)</td>
<td>Two trimmers on top (See Top View)</td>
<td>Input I. F.</td>
<td>Adjust to maximum output</td>
</tr>
<tr>
<td>SHORT WAVE</td>
<td>17 Mc. 400 Ohms</td>
<td>External</td>
<td>Antennas and Ground</td>
<td>Short Wave</td>
<td>Set Dial at 12 Mc.</td>
<td>Trimmer C5</td>
<td>Short Wave oscillator</td>
<td>Adjust to maximum output</td>
</tr>
<tr>
<td>BAND</td>
<td>(See Note A)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BROADCAST</td>
<td>1600 Kc. 200 mMil.</td>
<td>Grid of 6SA7</td>
<td>Broadcast</td>
<td>Rotor full open (Plates out of mesh)</td>
<td>Trimmer C6</td>
<td>Broadcast oscillator</td>
<td>Adjust to maximum output</td>
<td></td>
</tr>
<tr>
<td>BAND</td>
<td>(See Note A)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOOP</td>
<td>1400 Kc. 200 mMil.</td>
<td>External</td>
<td>Antennas and Ground</td>
<td>Broadcast</td>
<td>Set Dial at 1400 Kc.</td>
<td>Trimmer C1</td>
<td>Broadcast antenna</td>
<td>Adjust to maximum output</td>
</tr>
<tr>
<td>ALIGNMENT</td>
<td>600 Kc. 200 mMil.</td>
<td>External</td>
<td>Antennas and Ground</td>
<td>Broadcast</td>
<td>Set Dial at 600 Kc.</td>
<td>Trimmer C7</td>
<td>Broadcast oscillator series pad</td>
<td>Adjust to maximum output</td>
</tr>
</tbody>
</table>

**NOTE “A”**—The signal generator is connected to the “ANT.” and “GND.” leads when aligning the Short Wave Band and to the grid of the 6SA7 tube and ground terminal when setting the Broadcast Band oscillator and frequencies (1600 and 355 K. C.). The loop antenna should be connected to the radio when making these adjustments.

**NOTE “B”**—Loop alignment is made with the chassis mounted in the cabinet and the loop antenna connected. The signal generator is connected to the “ANT.” and “GND.” terminals.

**NOTE “C”**—Turn the dial back and forth slightly (rock) and adjust trimmer until the peak of greatest intensity is obtained.

After each band is completed, repeat the procedure as a final check.

### Model 04BR-675A and 04BR-676A

<table>
<thead>
<tr>
<th>BAND</th>
<th>SIGNAL GENERATOR Frequency Setting</th>
<th>Dummy Antenna</th>
<th>Connection to Radio</th>
<th>Position of Band Switch</th>
<th>Variable Condenser Setting</th>
<th>Trimmers Adjusted (in Order Shown)</th>
<th>Trimmer Function</th>
<th>Adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. F.</td>
<td>455 Kc. .1 MFD.</td>
<td></td>
<td>Grid of 6S7 I. F.</td>
<td>Broadcast</td>
<td>Rotor full open (Plates out of mesh)</td>
<td>Two trimmers on top (See Top View)</td>
<td>Output I. F.</td>
<td>Adjust to maximum output</td>
</tr>
<tr>
<td>I. F.</td>
<td>455 Kc. .1 MFD.</td>
<td></td>
<td>Grid of 6SA7 Mixer</td>
<td>Broadcast</td>
<td>Rotor full open (Plates out of mesh)</td>
<td>Two trimmers on top (See Top View)</td>
<td>Input I. F.</td>
<td>Adjust to maximum output</td>
</tr>
<tr>
<td>SHORT WAVE</td>
<td>17 Mc. 400 Ohms</td>
<td>External</td>
<td>Antennas and Ground</td>
<td>Short Wave</td>
<td>Set Dial at 12 Mc.</td>
<td>Trimmer C4</td>
<td>Short Wave oscillator</td>
<td>Adjust to maximum output</td>
</tr>
<tr>
<td>BAND</td>
<td>(See Note A)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BROADCAST</td>
<td>1600 Kc. 200 mMil.</td>
<td>Grid of 6SA7</td>
<td>Broadcast</td>
<td>Rotor full open (Plates out of mesh)</td>
<td>Trimmer C6</td>
<td>Broadcast oscillator</td>
<td>Adjust to maximum output</td>
<td></td>
</tr>
<tr>
<td>BAND</td>
<td>(See Note A)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOOP</td>
<td>1400 Kc. 200 mMil.</td>
<td>External</td>
<td>Antennas and Ground</td>
<td>Broadcast</td>
<td>Set Dial at 1400 Kc.</td>
<td>Trimmer C2</td>
<td>Broadcast antenna</td>
<td>Adjust to maximum output</td>
</tr>
<tr>
<td>ALIGNMENT</td>
<td>600 Kc. 200 mMil.</td>
<td>External</td>
<td>Antennas and Ground</td>
<td>Broadcast</td>
<td>Set Dial at 600 Kc.</td>
<td>Trimmer T3</td>
<td>From Core Tracking Coil</td>
<td>Adjust to maximum output</td>
</tr>
</tbody>
</table>

The loop antenna should be connected to the radio when making all adjustments. Loop alignment is made with the chassis mounted in the cabinet and the loop antenna connected.

**NOTE “A”**—Turn the dial back and forth slightly (rock) and adjust trimmer until the peak of greatest intensity is obtained.

After each band is completed, repeat the procedure as a final check.
PHONOGRAPh CONNECTIONS: Insert phono pickup cable into phono socket (top of chassis). An a-c phono motor socket can be used to operate the record player motor.

TELEVISION SOUND AND F.M. CONNECTIONS: Audio amplifier and speaker of the receiver used to reproduce television sound or FM programs. Connect television picture receiver and sound converter or FM converter to phono socket. Turn knob to phono position.
ALIGNMENT PROCEDURE

1. Volume control—Maximize all adjustments.
2. Connect nube to ground post of signal generator with short heavy lead.
3. Connect trimmer antenna across primary of output transformer.
4. Allow choice and signal generator to "rest up" for several minutes. The following equipment is required for alignment:

- An Ultra-Sensitive Signal Generator (which will provide an accurately calibrated signal at the test frequencies listed).
- Tuning indicator (Note: A tuning indicator may be used instead of an Ultra-Sensitive Signal Generator, provided the 300-meter, 455-meter, 1000-meter, and 1500-meter signal generator settings are accurately calibrated).
- Non-metallic screwdriver.
- Driving antenna.

The signal generator is connected to the "A" and "B" ends of the drive cord.

After each band is completed, repeat the procedure in a test check.

MODEL 04WG-619
" 04WG-621" 04WG-621NI

DRIVE CORD REPLACEMENT

Turn gain control to full open position. See illustration. Use new drive cord 42 inches in length. The area and end of cord to tension springs. Feed other end of cord through hole in front of drive pulley. Pull cord through hole, let end spring against inside of drive pulley. Wind cord 3 1/2 turns counter-clockwise (from pulley side of chassis) around drive pulley. When correct tension is reached, hold cord in this position. Install universal coupling. Tighten coupling securely. Install cord over drive pulley. Drive pulley is flat, drive pulley should slide freely over drive pulley. Turn front end of drive pulley, wind cord 3 1/2 turns clockwise, cut off excess cord. Install new drive cord. DRIVE CORD REPLACEMENT

ATTACHED TO DIAL—Type "A", "B", "C", or "D" on dial. Mount on the chassis, using a non-metallic screwdriver. Drive pulley should slide freely over drive pulley. Turn front end of drive pulley, wind cord 3 1/2 turns clockwise, cut off excess cord. Install new drive cord. DRIVE CORD REPLACEMENT

ANTENNA

Two built-in Air Wave Aerials are used with this radio.

One of these aerials is a loop type and is used for broadcast band reception. The other is a counterpoise full aerial and is used for reception on the short wave band. For the reception of local or nearby stations, an outside antenna and ground are usually not required.

For best results, an outside antenna 30 to 60 feet long, including the lead-in, should be used.

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### SPECIFICATIONS MODEL 04WG-73-751

- **Power Consumption**: 28 Watts (117 volts AC Supply)
- **Power Output**: 12 Watts Maximum
- **Selectivity**: 3.5 KC Band at 1000 Times Signal
- **Intermediate Frequency**: 456 KC
- **Speaker**: 6 P.M. Dynamic

**Tuning Frequency Range**

- **A Range**: 500 to 1500 KC
- **B Range**: 2000 to 5000 KC

**Adjust Trimmers to Maximum**

- **A Range**: 100 Ohm
- **B Range**: 100 Ohm

---

### ALIGNMENT PROCEDURE

**Volume Control—Maximum All Adjustments.**

- **Allow Chassis and Signal Generator to “Warm Up” for several minutes.**
- **The equipment is calibrated at right angles for aligning.**

<table>
<thead>
<tr>
<th>SIGNAL GENERATOR</th>
<th>FREQUENCY</th>
<th>DUMMY ANTENNA</th>
<th>GROUND CONNECTION</th>
<th>CONNECTION</th>
<th>ADJUST TRIMMERS TO MAXIMUM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>F.</strong></td>
<td>456 KC</td>
<td>Signal Grid Points “X”</td>
<td>Ground Grid Points “X”</td>
<td>.1 mil.</td>
<td>A Range Turn Rotor to full open at 11.1 KC &amp; C1B</td>
</tr>
<tr>
<td><strong>RANGE B</strong></td>
<td>1600 KC</td>
<td>Signal Grid Points “X”</td>
<td>Ground Grid Points “X”</td>
<td>.1 mil.</td>
<td>B Range Turn Rotor to full open at 11.1 KC &amp; C1B</td>
</tr>
<tr>
<td><strong>RANGE C</strong></td>
<td>6000 KC</td>
<td>External Antenna Clip</td>
<td>Ground Grid Points “X”</td>
<td>100 Ohm</td>
<td>B Range Turn Rotor to full open at 11.1 KC &amp; C1B</td>
</tr>
</tbody>
</table>

---

### SPECIFICATIONS MODEL 04WG-622A, 04WG-623A

- **Power Consumption**: 60 Watts (117 volts 60 cycles)
- **Power Output**: 25 Watts Maximum
- **Selectivity**: 40 KC Band at 1000 Times Signal
- **Intermediate Frequency**: 456 KC
- **Speaker**: 6.6 Power

**Tuning Frequency Range**

- **B Range**: 550 to 1500 KC
- **C Range**: 1500 to 3000 KC

**Adjust Trimmers to Maximum**

- **B Range**: 100 Ohm
- **C Range**: 100 Ohm

---

### ALIGNMENT PROCEDURE

**Volume Control—Maximum All Adjustments.**

- **Connect Keyed Oscillator with 1st Inter-Rectifier Signal Generator with a Short Heavy Lead.**
- **Allow Chassis and Signal Generator to “Warm Up” for several minutes.**

<table>
<thead>
<tr>
<th>SIGNAL GENERATOR</th>
<th>FREQUENCY</th>
<th>DUMMY ANTENNA</th>
<th>GROUND CONNECTION</th>
<th>CONNECTION</th>
<th>ADJUST TRIMMERS TO MAXIMUM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>F.</strong></td>
<td>456 KC</td>
<td>Grid of Jot Dst.</td>
<td>.1 mil.</td>
<td>B Range Turn Rotor to Full Open at 11.1 KC &amp; C1B</td>
<td>(See Trimmer Illustration)</td>
</tr>
<tr>
<td><strong>RANGE B</strong></td>
<td>1600 KC</td>
<td>External Antenna Clip</td>
<td>Ground Grid Points “X”</td>
<td>100 mil.</td>
<td>B Range Turn Rotor to Full Open at 11.1 KC &amp; C1B</td>
</tr>
<tr>
<td><strong>RANGE C</strong></td>
<td>6000 KC</td>
<td>External Antenna Clip</td>
<td>Ground Grid Points “X”</td>
<td>100 mil.</td>
<td>B Range Turn Rotor to Full Open at 11.1 KC &amp; C1B</td>
</tr>
</tbody>
</table>

---

### CAUTION

The metal chassis is connected to one side of the line through a 2 ft. solid conductor. Both AC and DC power lines are generally grounded on one side. If the line flat not connected to the metal chassis through this conductor is grounded and the metal chassis comes in contact with an external ground, this conductor will be connected across the line and there will be an increase in hum.

Therefore, in any service work on the chassis, keep it on a wood or other insulating surface to avoid contacts with ground. The person working on the set should avoid getting in contact with any ground.

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SPECIFICATIONS

Input Voltages and Currents—Battery Operation

“A” Batteries: 9 Volts—50 Ma.
“B” Batteries: 90 Volts—11.5 Ma.

Power Consumption (At 117 volts AC Supply) 28 Watts

Power Output

Battery Operation: 150 Mw. Undistorted
330 Mw. Maximum

AC Operation: 200 Mw. Undistorted
400 Mw. Maximum

Selectivity - 50 KC Broad at 1000 Times Signal
Intermediate Frequency - - - - - - 456 KC
Speaker - - - - - - - - - - - - - - - 6” P.M. Dynamic
Tuning Frequency Range - - - - - - 540 to 1600 KC
Sensitivity (For 0.5 Watt Output)

External Antenna - - - - - - 10 Microvolts Average

ALIGNMENT PROCEDURE

Volume Control—Maximum All Adjustments.

Allow Chassis and Signal Generator to “Heat Up” for several minutes.

SIGNAL GENERATOR

<table>
<thead>
<tr>
<th>FREQUENCY</th>
<th>ANTENNA CONNECTION</th>
<th>GROUND CONNECTION</th>
<th>DUMMY ANTENNA</th>
<th>CONDENSER SETTING</th>
<th>ADJUST TRIMMERS TO MAXIMUM</th>
</tr>
</thead>
<tbody>
<tr>
<td>456 KC</td>
<td>External</td>
<td>Ground Clip on Loop</td>
<td>.1 mF</td>
<td>Turn Rotor to full open</td>
<td>1st I.F. (C4) &amp; (C7) 3rd I.F. (C13) &amp; (C14)</td>
</tr>
<tr>
<td>1600 KC</td>
<td>External</td>
<td>Ground Clip on Loop</td>
<td>.1 mF</td>
<td>Turn Rotor to full open</td>
<td>Oscillator (C3)</td>
</tr>
<tr>
<td>1400 KC</td>
<td>External</td>
<td>Ground Clip</td>
<td>200 mF</td>
<td>Turn Rotor to max. output</td>
<td>Antenna (C2)</td>
</tr>
</tbody>
</table>

NOTE A—Re-assemble chassis in cabinet.

Close back on cabinet.

CALIBRATION—To obtain dial scale calibration, tune in an 800 KC signal. The pointer should be at the 800 KC mark on the dial. If it is not, set the pointer at the 800 KC mark.

DRIVE CORD REPLACEMENT

Use a new drive cord 28 inches in length; tie one end to tension spring. Thread other end through hole in groove of drive pulley and pull spring flush against inside of pulley rim. Turn gang condenser to full open position—See illustration.

Wind cord 1/4 turn clockwise (from back of chassis) around drive pulley. Pass cord over idler studs A, B, & C, as shown. Then wind cord 1/4 turn clockwise (from back of chassis) around drive pulley. This turn should be on left side (from gang condenser side of chassis) of pulley groove.

Thread cord through hole in pulley groove and tie to tension spring. Attach other end of spring to hook on drive pulley.

Dial Pointer Attachment—Tune in a signal of known frequency. Set pointer to this frequency mark on dial scale. Attach pointer to drive cord.—See illustration.
SPECIFICATIONS

Input Voltages and Currents—Battery Operation

"A" Battery .................................. 6 Volts—50 Ma.
"B" Batteries .................................. 90 Volts—11.5 Ma.

Power Consumption (At 117 volts AC Supply) 28 Watts

Power Output

Battery Operation ................................ 150 Mw. Undistorted
350 Mw. Maximum
AC Operation ................................... 200 Vw. Undistorted
400 Vw. Maximum

Selectivity .................................... 38 Vw Broad at 1000 Times Signal

Intermediate Frequency .......................... 456 KC
Speaker ........................................... 6" or 8" P.M. Dynamic

Tuning Frequency Range

B Range ........................................... 528 to 1600 KC
D Range ........................................... 5750 to 18300 KC

Sensitivity—External Antenna—(For 05 Watt output)

B Range ........................................... 12 Microvolts Average
D Range ........................................... 20 Microvolts Average

ALIGNMENT PROCEDURE

An All Wave Signal Generator which will provide an accurately calibrated signal at the test frequencies as listed.

Output Indicating Meter—Non-Metallic Screwdriver.

DUMMY ANTENNAS—1 mf., 100 mmf., and 400 ohms.

Loop Aerial must be connected to chassis during all adjustments. Manifold Model—Take out hinge screws from cabinet back as well as other screws and remove chassis and back intact from cabinet.

Loop Range B

1600 KC External Ground Wire—See Note B 100 mmf. B Range Turn Rotor to Max. Output 600 KC (C6) Rock Rotor—See Note C

EXTERNAL ANTENNA WIRE—See Note D 100 mmf. B Range Turn Rotor to Max. Output 600 KC (C6) Rock Rotor—See Note C

TUNING CONTROL SHAFT

IMPORTANT—Metal base tubes must be used in those sockets at Which shields are shown.

DRIVE CORD REPLACEMENT

Tie one end of cord to tension spring. Pass other end of cord up through hole in groove of drive pulley. Pull cord through hole until spring is flush against inside of pulley rim.

Pass cord under small pulley A—See illustration. Then wind 4 turns counter-clockwise (from back of chassis) around tuning control shaft. These turns should progress toward back of chassis without contact with pulleys B, C, and D as shown. Then wind cord ¾ turn counter-clockwise (from drive pulley groove) around drive pulley. This should be on left side (from back of chassis) of pulley groove.

Pass cord through hole in groove of drive pulley. Tie cord to tension spring. Fasten other end of spring to hook on drive pulley.

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NOTE—If the pointer is not at 1400 KC on the dial, tune in a 1400 KC signal. Set pointer at the 1400 KC mark on the dial scale.

NOTE B (Manifold Model Only)—By means of wooden blocks, lower the loop assembly upright exactly 1 ½ inches from the back of the chassis.

NOTE C—Turn the rotor back and forth and adjust the trimmer until the peak of greatest intensity is obtained.

NOTE D—Re-assembly chassis in cabinet. Mantle Model—Replace diode in cabinet. Antenna Range B trimmer may be reached through narrow slot in cabinet back.

CAUTION—When aligning the short wave bands, be sure NOT to adjust at the image frequency. This can be checked as follows:

Let us say the signal generator is set for 15,000 KC. The signal will then be heard at 15,000 KC on the dial of the radio. This image signal is much weaker, will be heard at 15,000 less 912 KC, or 14,088 KC on the dial. It may be necessary to increase the input signal to hear the image.

MODELS

04W6-673
04WG-674
04WS-303
ALIGNMENT PROCEDURE

The following equipment is required for aligning:
- An all wave signal generator which will provide an accurately calibrated signal at the test frequencies as listed.
- Output indicating meter.
- Non-magnetic screwdriver.
- Dummy antennas—1 ml., 125 mml.

<table>
<thead>
<tr>
<th>BAND</th>
<th>SIGNAL GENERATOR</th>
<th>Dummy Antenna</th>
<th>Connection to Radio</th>
<th>Remote Tuner Dial Setting</th>
<th>Trimmers Adjusted (in Order Shown)</th>
<th>Trimmer Function</th>
<th>Adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. F.</td>
<td>465 Kc.</td>
<td>.1 MFD</td>
<td>Grid of 6SK7 L.F. Tube</td>
<td>Set dial at 1000 Kc.</td>
<td>Trimmers C9, C20</td>
<td>Output L.F.</td>
<td>See note “A”</td>
</tr>
<tr>
<td></td>
<td>465 Kc.</td>
<td>.1 MFD</td>
<td>Grid of 6SK7</td>
<td>Set dial at 1400 Kc.</td>
<td>Trimmers C1 (See Fig. 3)</td>
<td>Output L.F.</td>
<td>See note “B”</td>
</tr>
<tr>
<td></td>
<td>465 Kc.</td>
<td>.1 MFD</td>
<td>Grid of 6ABGT</td>
<td>Set dial at 1400 Kc.</td>
<td>Trimmers C1, C15</td>
<td>Input L.F.</td>
<td></td>
</tr>
<tr>
<td>BROADCAST</td>
<td>1565 Kc.</td>
<td>125 mml.</td>
<td>Antenna lead</td>
<td>Set dial at 1565 Kc.</td>
<td>Trimmer C5 (See Fig. 4)</td>
<td>Antenna and R.F.</td>
<td>Adjust to maximum output</td>
</tr>
<tr>
<td>BAND</td>
<td>1400 Kc.</td>
<td>125 mml.</td>
<td>Antenna lead</td>
<td>Set dial at 1400 Kc.</td>
<td>Trimmer C1, C3</td>
<td>Antenna and R.F.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>600 Kc.</td>
<td>125 mml.</td>
<td>Antenna lead</td>
<td>Set dial at 600 Kc.</td>
<td>Trimmer C2 (See Fig. 4)</td>
<td>Antenna series adj</td>
<td></td>
</tr>
</tbody>
</table>

NOTE "A": IMPORTANT. To align the output I.F. transformer, without using a cathode ray oscillograph a 10M ohm resistor must be shunted across the doode tuned circuit. Connect the resistor as indicated by points "X" and "Y" on the circuit diagram and the bottom view of the radio chassis Fig. 5. A red dot on top of output I.F. can designate location of trimmer "C1". NOTE "B": Before adjusting trimmer C1 disconnect the 10M ohm resistor. Under no circumstances readjust trimmers C9 or C20 after the 10M ohm resistor has been removed.

ALIGNMENT OF THE IRON CORES

The iron cores for the antenna, R.F. and oscillator permeability coils have been very carefully adjusted at the factory and require no further adjustment, unless it becomes necessary to replace a coil, or if the adjustments have been tampered with.

The procedure for aligning the iron cores will be supplied with replacement coils when ordered.

Fig. 4.—Bottom View of Remote Tuner

IMPORTANT—ADJUSTING ANTENNA TRIMMER:

Tune in any weak station between 600 and 800 Kc.

Make sure that the antenna shunt trimmer on the bottom of the Remote Tuner is turned all the way out (counter clockwise), (see adjustment "C1," Fig. 4).

Adjust antenna series trimmer on the side of the remote Tuner Unit. For maximum output. (See adjustment "C2," Fig. 4).

NOTE: If resonance (maximum output) cannot be obtained within the range of the antenna series trimmer "C2," turn the adjustment screw all the way out (counter clockwise) and then adjust the antenna shunt trimmer "C1," on the bottom of the remote tuner unit for a peak of maximum output.

The above arrangement will cover any antenna capacity that is now in use.
PROcedure for setting the automatic pushbuttons:

There are six pushbuttons on the Remote Tuner Unit by means of which six stations may be set up for automatic tuning (see B, Fig. 2).

Make a list of local stations you tune in regularly; any number up to and including six.

Punch out from the set of station call letter tabs supplied, the call letters of the stations you have selected.

On the top of each pushbutton a slot is provided for inserting the call letter tabs, (see A, Fig. 2).

Insert the call letter tabs.

Now, proceed as follows:

1. Push the dial tuning knob in hard enough to make it latch in.
2. Rotate the dial tuning knob to the left (counter-clockwise), until the knob can not be turned any further without forcing.

You will note that as the knob is rotated it will turn easily until a slight amount of force will be required to actually start unlocking the tuner mechanism. Beyond this point the knob will turn quite easily again until the tuner mechanism is completely unlocked. At this point do not force the knob any further. The tuner mechanism is now unlocked.

(Note:—Automatic tuner mechanism is locked tight when radio is shipped from the factory)

3. Push in all the way any one of the pushbuttons and at the same time hold in firmly the dial tuning knob. Both the dial tuning knob and the pushbutton should be pushed hard enough to make them stay latched in. The reason for holding the dial tuning knob firmly when the pushbutton is pressed in is due to the latching mechanism in the Remote Tuner Unit which is so constructed to release the dial tuning knob entirely when a pushbutton is pressed in. When setting up stations for automatic tuning, however, it is necessary that both the dial tuning knob and the pushbutton be latched in together.

4. Press in on the pushbutton which is latched in. Holding it in firmly, tune in by means of the dial tuning knob the station indicated on the station call letter tab on this pushbutton. Turn the dial tuning knob very slowly back and forth (while still pressing in firmly on the pushbutton), until the station is clearest. The station will then be accurately tuned in.

5. Push in all the way another pushbutton, at the same time holding the dial tuning knob in so that both the pushbutton and the dial tuning knob are latched together. Holding the pushbutton in firmly, tune in the station indicated on the call letter tab on this pushbutton.

6. Follow this procedure until you have tuned in all of your favorite stations.

7. When the last pushbutton has been properly set up, it is necessary to release it from the latched-in position before the tuner mechanism can be locked. To release this pushbutton, press the pushbutton release pin on the bottom of the tuner unit. This will release the latching mechanism and all the pushbuttons will be released to out position, (See Fig. 2A).

8. Now, Press on the dial tuning knob hard enough to make it latch in. Rotate the dial tuning knob to the right (clockwise) until the knob can not be turned any further without forcing it. This will lock the tuner mechanism and all the stations that have been set up the pushbuttons will be locked in place for automatic tuning.

9. Press in any one of the pushbuttons and—YOUR FAVORITE STATION IS SELECTED.

The important steps to remember when setting up stations on the pushbuttons for automatic tuning are:

1. To unlock the tuner mechanism press on the dial tuning knob hard enough to make it stay latched in. Rotate the dial tuning knob to the left (counterclockwise) until the knob can not be turned any further without forcing it.

2. To set a pushbutton, Push in all the way and hold in firmly both the pushbutton and the dial tuning knob so that both latch in. Hold in firmly the pushbutton and tune in the station by means of the dial tuning knob. Set all the pushbuttons in the same manner.

3. To release the last pushbutton press the pushbutton release pin on the bottom of the tuner unit.

4. To lock the tuner mechanism push on the dial tuning knob hard enough to make it stay latched in. Rotate the dial tuning knob to the right (clockwise) until the knob can not be turned any further without forcing it.

(Note:—All the pushbuttons must be in out position when locking the tuner mechanism.)

Service notes:

Voltages taken from different points of circuit to chassis are measured with volume control full on, all tubes in their sockets and speaker connected, with a volt meter having a resistance of 1000 ohms per volt. These voltages are clearly indicated on the voltage chart.

In order to prevent signal from acting upon A.V.C. and affecting accuracy of voltage measurements, aerial and ground leads should be short circuited while making measurements.

All voltages are to be measured with 6.3 volts input to receiver. Resistances of coils and transformer windings are indicated in ohms on schematic circuit diagram.

To check for open by-pass condensers, shunt each condenser with another condenser of the same capacity and voltage rating which is known to be good, until the defective unit is located.

Failure to operate, noisy or weak reception is usually due to defective tubes, the tubes making poor contact with sockets or grid clips making poor contact with the caps of the tubes. Tubes may be checked very easily by replacing with other tubes which are known to be good. If fuse blows out frequently, the trouble is probably in the vibrator, it should be replaced. Do not attempt to make any adjustments on the vibrators.

Aligning instructions:

All of the adjustments have been very carefully set with signal generators at the factory and require no further adjustment, unless it becomes necessary to replace a coil or transformer, or if the adjustments have been tampered with in any manner. Under no circumstances attempt any adjustments without first making certain that adjustment is necessary and only after voltages, tubes and condensers have been checked and found to be normal. To properly re-align this receiver, a test oscillator, as well as an output meter, must be used.
MONTGOMERY WARD & CO.

MODELS 04BR-729A, 04BR-730A

Above Ser. #0E509600

Schematic Diagram Part
Ref. No. No. Description

RESISTORS
R1 BE13064 350 ohm-1/2 w.
R2 BE13076 10 ohm-1/2 w.
R3 BE13040 3 megohm-1/2 w.
R4 BE13035 30M ohm-1/2 w.
R5 BE13007 15M ohm-1 w.
R6 BE13030 300 ohm-1/2 w.
R7 BE13012 50M ohm-1/2 w.
R8 BE13018 2 megohm-1/2 w.
R9 BE13011 250M ohm-1/2 w.
R10 BE13049 15M ohm-1 w.
R11 BE13022 Tone Control-1 megohm.
R12 BE13024 Volume control-5 megohm.
R13 BE13057 5 ohm-1/2 w.
R14 BE13033 500M ohm-1/2 w.
R15 BE13018 5M ohm-1/2 w.
R16 BE13003 100M ohm-1/2 w.
R17 BE13010 100M ohm-1/2 w.
R18 BE13033 500M ohm-1/2 w.
R19 BE13033 500M ohm-1/2 w.
R20 BE13032 330 ohm-1 w.

CONDENSERS
C1 BE12113 2 gag variable condenser
C2 BE12416 Short wave antenna trimmer
C3 BE12414 B.C. Antenna Trimmer
C4 BE12892 .005 mica
C5 BE12842 Dual Adj. Trimmer-S.W. osc.
C6 BE12442 Dual Adj. Trim.-B.C. osc.
C7 BE12840 Dual Adj. Cond.-S.W. Pad
C8 BE12860 .0005 mica
C9 BE1013 .05 x 400 v.
C10 BE1009 .05 x 200 v.
C11 BE1009 .05 x 200 v.
C12 BE1004 .1 x 400 v.
C13 BE12861 Dual-.0001 Mica
C14 BE12961 Dual-.0001 Mica
C15 BE12919 16 mfd. x 450 w. ol'tic cond.
C16 BE12919 16 mfd. x 450 w. ol'tic cond.
C17 BE1295 .0003 mica
C18 BE10120 .085 x 200 v.
C19 BE10060 .006 x 600 v.
C20 BE10026 .03 x 400 v.
C21 BE1009 .03 x 600 v.
C22 BE1009 .03 x 400 v.
C23 BE10061 .02 x 600 v.
C24 BE10061 .02 x 600 v.
C25 BE10019 .006 x 600 v.
C6 and C5, C6 and C7, and C13 and C14 are in same unit.

PARTS
T1 BE11185 Loop Antenna Assembly
T2 BE11186 Round loop antenna assembly
T3 BE11183 Loop Adj. Coil
T4 BE10194 B.C.-S.W. Oscillator coil
T5 BE10178 Input I.F. Coil-455 kc.
T6 BE10179 Output I.F. Coil-455 kc.
T7 BE0512 Output Transformer
T8 BE12403 6.75 Dynamic Speaker
T9 BE10219 10.7 Dynamic Speaker
T10 BE10421 Power Transformer
L1 BE1312 R.F. Choke Coil
S1 BE2519 Wave Band Switch
S2 BE25120 Radio-Phone On off switch
P1 BE10794 (2) Pilot light bulbs T-44

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MONTW-WARD PAGE 12-41
ALIGNMENT PROCEDURE

The following equipment is required for aligning:
- An all wave signal generator which will provide an accurately calibrated signal at the test frequencies as listed.
- Output indicating meter.
- Non-metallic screwdriver.
- Dummy antenna—2 ft. 200 mmd. 400 ohms.

<table>
<thead>
<tr>
<th>BAND</th>
<th>SIGNAL GENERATOR</th>
<th>Frequency Setting</th>
<th>Dummy Antenna</th>
<th>Connection to Radio</th>
<th>Position of Band Switch</th>
<th>Variable Condenser Setting</th>
<th>Trimmers Adjusted (In Order Shown)</th>
<th>Trimmer Function</th>
<th>Adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. F.</td>
<td>455 Kc. 1 MFD. Grid of 6SA7</td>
<td>Broadcast</td>
<td>Rotor full open (Plates out of mesh)</td>
<td>Two trimmers on top (See Top View)</td>
<td></td>
<td>Output I. F.</td>
<td>Adjust to maximum output</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SHORT WAVE BAND (See Note A)</td>
<td>17 Mc. 400 Ohms External Antenna and Ground</td>
<td>Short Wave</td>
<td>Set Dial at 17 Mc.</td>
<td>Trimmer C4</td>
<td>Short Wave oscillator</td>
<td>Adjust to maximum output</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BROADCAST BAND (See Note A)</td>
<td>1600 Kc. 200 mmd. Grid of 6SA7</td>
<td>Broadcast</td>
<td>Rotor full open (Plates out of mesh)</td>
<td>Trimmer C5</td>
<td>Broadcast oscillator series pad</td>
<td>Adjust to maximum output</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOOP ALIGNMENT (See Note B)</td>
<td>1400 Kc. 200 mmd. External Antenna and Ground</td>
<td>Broadcast</td>
<td>Set Dial at 1400 Mc.</td>
<td>Trimmer C2</td>
<td>Broadcast antenna</td>
<td>Adjust to maximum output</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BROADCAST BAND (See Note B)</td>
<td>500 Kc. 300 mmd. External Antenna and Ground</td>
<td>Broadcast</td>
<td>Set Dial at 600 Kc.</td>
<td>Trimmer T3</td>
<td>Iron Core Tracking Coil</td>
<td>Adjust to maximum output</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTE "A"—The signal generator is connected to the "ANT" and "GND." terminals on the rear of the chassis when aligning the Short Wave Band and to the grid of the 6SA7 tube and ground terminal when setting the Broadcast Band oscillator and frequencies, (1600 and 335 K C).

NOTE "B"—Loop alignment is made with the chassis mounted in the cabinet and the loop antenna connected. The signal generator is connected to the "ANT." and "GND." terminals.

HOW TO REMOVE CHASSIS

Should it ever be necessary to take the chassis out of the cabinet be sure to first pull the plug from the light socket. Next pull off all control knobs and take off the escutcheon. Pull out the loop aerial and speaker plugs, then remove the 4 chassis mounting screws and lift the chassis out.

PHONOGRAPH-TELEVISION OR FM. JACK

Should you wish to use an external phonograph it should be plugged into the phonograph shown in the top view—The on-off radio-phonograph knob on the front panel will then switch from radio to phonograph operation.

If television or frequency modulation (FM) programs ever become available in your community this radio may still be used in conjunction with the necessary converters.

The jack marked phono-television-FM in the top view will accomodate either the Phonograph or a television or FM converter.

PUSHBUTTON TUNING

Pull one of the pushbuttons all the way out as far as it will come (pull, with fingers on top and bottom of button). Now tune in the station you want with the tuning knob—Tune back and forth until the station is clear and distinct. Now push the button hard all the way in to lock the station in place. (push directly on front of button) Continue setting each pushbutton in the same way.

NOTE "C"—Turn the dial back and forth slightly (rock) and adjust trimmer until the peak of greatest intensity is obtained. Attenuate the signal from the signal generator to prevent the leveling off action of the AVC.

After each band is completed, repeat the procedure as a final check.
Operating the Automatic Phonograph

The operation of the phonograph is simple but the phonograph instructions in the instruction folder packed with the phonograph must be carefully read and understood before an attempt to operate the phonograph is made. A phonograph changer is a small device which performs the task of placing the record changer in position.

The phonograph changer is entirely automatic and no assistance is required after it has been set in operation. Any number of records up to 10 or 20 may be played consecutively without the need for handling the changer by the listener. Standard 10 inch or 12 inch records may be used and only one set may be played at a time. Each record must have a two-inch groove so that the record changer will operate properly. This groove is the one which moves the tone arm downward to the center of the record after the record has stopped playing. The volume and tone controls are used in the same manner for phonograph reproduction as they are for radio reception—See article “Operating the Radio.”

To Turn the Phonograph On

Turn the on-off switch knob to the right. A click will be heard and the dial will light. Wait 30 seconds for the tubes to heat.

To Turn the Phonograph Off

Turn the on-off switch knob to the left. A click will be heard and the dials will be off.

NOTE: If the phonograph is turned on in the off position, the tone arm will not touch the record and the dial will not light. Turn the on-off switch knob to the right to turn the phonograph on and to the left to turn it off.

Home Recorder - Television - Frequency Modulation

Home Recorder

This radio is designed so that you can take advantage of a new and extremely interesting form of entertainment. By replacing the record changer unit in this radio with a record changer, the new world of making your own records is opened up to you. Your favorite radio programs, comedy, dance or symphony may be permanently recorded by means of a phonograph attached, remote or of your own production may be recorded. For detailed information regarding the record changer unit, get in touch with your local Mercury Ward store or the nearest Macy's Order House.

Television Sound Connections

If Television programs are to be available in your community, the radio amplifier and speaker of this radio may be used to reproduce television sound in conjunction with any Television Picture Receiver or Television Sound Converters. If this is the case, the Phonograph-Radio knobs should be turned to the Television (P) position. For radio reception, the knobs should be in one of the two Radio positions.

Frequency Modulation Connections

When Frequency Modulated programs are to be used, the Phonograph-Radio knob should be turned to the Television (P) position. For radio reception, the knobs should be in one of the two Radio positions.
Volume Control—Maximum All adjustments.

<table>
<thead>
<tr>
<th>SIGNAL GENERATOR</th>
<th>FREQUENCY SETTING</th>
<th>CONNECTION AT RADIO</th>
<th>DUMMY ANTENNA</th>
<th>BAND SWITCH SETTING</th>
<th>CONDENSER SETTING</th>
<th>ADJUST TRIMMERS TO MAXIMUM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>456 KC</td>
<td>Grid of 1st Det.</td>
<td>.1 mf.</td>
<td>B Range</td>
<td>Turn Rotor to Full Open</td>
<td>1st I.F. [(C15) &amp; (C16)]</td>
</tr>
<tr>
<td>RANGE B</td>
<td>1600 KC</td>
<td>Antenna Lead</td>
<td>100 mmf.</td>
<td>B Range</td>
<td>Turn Rotor to Full Open</td>
<td>2nd I.F. [(C19) &amp; (C20)]</td>
</tr>
<tr>
<td></td>
<td>1400 KC</td>
<td>Antenna Lead</td>
<td>100 mmf.</td>
<td>B Range</td>
<td>Turn Rotor to Full Open</td>
<td>Oscillator Range B [(C2)]</td>
</tr>
<tr>
<td></td>
<td>600 KC</td>
<td>Antenna Lead</td>
<td>100 mmf.</td>
<td>B Range</td>
<td>Turn Rotor to Max. Output</td>
<td>See Note A</td>
</tr>
</tbody>
</table>

SHORT WAVE BANDS

|                  | 6300 KC          | Antenna Lead        | 400 Ohm       | 49 Meter          | Leave Setting as above | Antenna Band Spread [(C9)] |
|                  | 6300 KC          | Antenna Lead        | 400 Ohm       | 49 Meter          | Turn Tuning Knob until Pointer is at 6.3 KC | Oscillator Band Spread [(C5)] |

LOOP RANGE B

|                  | 1400 KC          | Antenna Lead        | See Note C    | 100 mmf.          | B Range               | Turn Rotor to Max. Output | Ant. Range B [(C10)] |

CAUTION—Two of the coils in the band spread coil assembly, the 19 Meter Antenna and Oscillator coils, have adjustable iron cores in the "B" and later issues of this model. One of the adjusting screws extends out from the front panel of the chassis base at the left of the band switch. The other adjusting screw extends up from the chassis base in back of the tuning condenser.

DO NOT CHANGE THE POSITION OF THESE ADJUSTING SCREWS as they have been properly set at the factory and cannot be satisfactorily re-adjusted in the field.

DO NOT CHANGE the LEVELLING-OFF action of the AVC.

After each range is completed, repeat the procedure as a final check.

NOTE A—If the pointer is not at 1400 KC on the dial, remove pointer from drive cord. Tune in a 1400 KC signal. Set pointer at the 1400 KC mark on the dial scale. Attach pointer to drive cord.

NOTE B—Turn the rotor back and forth and adjust the trimmer until the peak of greatest intensity is obtained.

NOTE C—Re-assemble chassis in cabinet.

CAUTION—When aligning the short wave band, be sure NOT to adjust at the image frequency. This can be checked as follows: Let us say the signal generator is set for 15,000 KC. The signal will then be heard at 15,000 on the dial of the radio. The image signal, which is much weaker, will be heard at 15,000 less 912 KC or 14,088 KC on the dial. It may be necessary to increase the input signal to hear the image.

- Tone control-Treble
- Volume control-Maximum all adjustments.
- Connect radio chassis to ground post of signal generator with a short heavy lead.
- Connect dummy antenna in series with generator output lead.
- Connect output meter across primary of output transformer.
- Allow chassis and signal generator to "heat up" for several minutes.

The following equipment is required for aligning:
- An all wave signal generator which will provide an accurately calibrated signal at the test frequencies as listed.
- Output indicating meter.
- Non-metallic screwdriver.
- Dummy antenna—1 ft., 200 mm., and 400 ohms.

<table>
<thead>
<tr>
<th>SIGNAL GENERATOR</th>
<th>Frequency Setting</th>
<th>Dummy Antenna</th>
<th>Connection to Radio</th>
<th>Position of Band Switch</th>
<th>Dial Pointer Setting</th>
<th>Trimmers Adjusted in Order Shown</th>
<th>Trimmer Function</th>
<th>Adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.F. O.0456-O.0458</td>
<td>455 Kc.</td>
<td>1 MFD</td>
<td>Grid of 65K7 (2nd I.F.)</td>
<td>Broadcast</td>
<td>Set Dial at 1600 Kc.</td>
<td>Two Trimmers on Top</td>
<td>Output L.F.</td>
<td>Adjust to maximum output</td>
</tr>
<tr>
<td></td>
<td>455 Kc.</td>
<td>1 MFD</td>
<td>Grid of 65K7 (1st I.F.)</td>
<td>Broadcast</td>
<td>Set Dial at 1600 Kc.</td>
<td>Three Trimmers on Top</td>
<td>Interstage L.F.</td>
<td>Adjust to maximum output</td>
</tr>
<tr>
<td></td>
<td>455 Kc.</td>
<td>1 MFD</td>
<td>Grid of 65K7</td>
<td>Broadcast</td>
<td>Set Dial at 1600 Kc.</td>
<td>Two Trimmers on Top</td>
<td>Input L.F.</td>
<td>Adjust to maximum output</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BAND</th>
<th>31 METER BAND</th>
<th>49 METER BAND</th>
<th>25 METER BAND</th>
<th>19 METER BAND</th>
<th>BROADCAST</th>
<th>BAND</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9.6 Mc.</td>
<td>400 ohms</td>
<td>Antenna lead</td>
<td>31M</td>
<td>Set Dial at 9.6 Mc.</td>
<td>(See Trimmer View) C20</td>
</tr>
<tr>
<td></td>
<td>6.1 Mc.</td>
<td>400 ohms</td>
<td>Antenna lead</td>
<td>49M</td>
<td>Set Dial at 6.1 Mc.</td>
<td>(See Trimmer View) C8</td>
</tr>
<tr>
<td></td>
<td>11.8 Mc.</td>
<td>400 ohms</td>
<td>Antenna lead</td>
<td>25M</td>
<td>Set Dial at 11.8 Mc.</td>
<td>(See Trimmer View) C4</td>
</tr>
<tr>
<td></td>
<td>15.2 Mc.</td>
<td>400 ohms</td>
<td>Antenna lead</td>
<td>19M</td>
<td>Set Dial at 15.2 Mc.</td>
<td>(See Trimmer View) C10</td>
</tr>
<tr>
<td></td>
<td>1600 Kc.</td>
<td>200 mmf.</td>
<td>Antenna lead</td>
<td>Broadcast</td>
<td>Set Dial at 1600 Kc.</td>
<td>(See Trimmer View) C6</td>
</tr>
<tr>
<td></td>
<td>1400 Kc.</td>
<td>200 mmf.</td>
<td>Antenna lead</td>
<td>Broadcast</td>
<td>Set Dial at 1400 Kc.</td>
<td>Rotate Core T1</td>
</tr>
</tbody>
</table>

SPECIFICATIONS

Model No. 04BR-903A and 04BR-907A
Model No. 04BR-904A and 04BR-906A

- Power Output - - - - 5 Watts Undistorted
- Sensitivity for 500 Milliwatt Output: 10 Microvolts Average
- Selectivity - 35 KC Broad at 1000 Times Signal at 1000 KC
- Tuning Frequency Range Broadcast Band - - 540 to 1600 KC
- 49M Band - - - - 5.9 to 6.1 MC
- 31M Band - - - - 9.1 to 10 MC
- 25M Band - - - - 11.4 to 12.1 MC
- 19M Band - - - - 14.9 to 15.4 MC
- Intermediate Frequency - - - - 455 KC
- Speaker - - - - 10 in. Electro Dynamic

Model No. 04BR-1105A
Model No. 04BR-1106A

- Power Consumption - - - - 120 Watts
- Power Output - - - - 10 Watts Undistorted
- Sensitivity for 500 Milliwatt Output: 10 Microvolts Average
- Selectivity - 27 KC Broad at 1000 Times Signal at 1000 KC
- Tuning Frequency Range Broadcast Band - - 540 to 1600 KC
- 49M Band - - - - 5.9 to 6.1 MC
- 31M Band - - - - 9.1 to 10 MC
- 25M Band - - - - 11.4 to 12.1 MC
- 19M Band - - - - 14.9 to 15.4 MC
- Intermediate Frequency - - - - 455 KC
- Speaker - - - - 12 in. Electro Dynamic

HOME RECORDING

This radio is designed so you can replace the present record changer unit with one that also includes a recording arm.
Setting a Station Button

It is better to list the station with the lowest kilocycle number first, the station with the next higher kilocycle number next, and so on.

At the right side of the cabinet (from the front) will be seen a cap which covers a hole in the cabinet—See illustration. Pry off this cap, being careful not to scratch the cabinet. Removal of the cap will expose a large locking screw. Using a screwdriver, loosen the mechanism by turning this screw in a counterclockwise direction. The screw will turn easily until the dial stops rotating. Then exert a slight amount of additional pressure and continue to turn the screw about one and one-half complete turns.

With one hand, hold the manual tuning control to prevent it from turning and with the other hand, push one of the station buttons shown in the illustration all the way down. It will go down easily at first and then a firm gentle pressure must be applied to push it down the rest of the way. It is better to start with the left hand button.

Hold this button all the way down. With the other hand, see whether or not this station is still accurately tuned in by moving the tuning control a slight amount back and forth while observing the tuning eye. Be sure to hold the button all the way down.

Release the button after the station is tuned in.

Carefully tune in the second station on your list. Then hold the tuning control and push the second button slowly and firmly all the way down. Check for accurate tuning.

Proceed in the same manner to set any additional stations on your list on the remaining station buttons.

After all the stations are set, it will be necessary to lock the mechanism so that the settings will not change. Do this by turning the locking screw in a clockwise direction until it is tight. It will turn easily until the dial stops rotating—then additional pressure must be exerted. Tighten firmly but not excessively. Replace the cap over the hole.

ALIGNMENT PROCEDURE

Remove Jumper on Loop Antenna for All Adjustments. The following equipment is required for aligning:

Volume Control—Maximum All Adjustments.
Connect Ground Post of Signal Generator to B—(12SK7—Frong No. 3) in Chassis.
Allow Chassis and Signal Generator to "Heat Up" for several minutes.

<table>
<thead>
<tr>
<th>SIGNAL GENERATOR</th>
<th>CONNECTION AT RADIO</th>
<th>DUMMY ANTENNA</th>
<th>BAND SWITCHSETTING</th>
<th>CONDENSERSETTING</th>
<th>ADJUST TRIMMERS TO MAXIMUM</th>
</tr>
</thead>
<tbody>
<tr>
<td>FREQUENCYSETTING</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(See Trimmer Illustrations)</td>
</tr>
<tr>
<td>L.F.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>456 KC</td>
<td>Signal Grid of Ist Det.</td>
<td>.1 mf.</td>
<td>B Range</td>
<td></td>
<td>1st L.F. (C11) &amp; (C12)</td>
</tr>
<tr>
<td></td>
<td>Connect at Stator of Large Gang Section.</td>
<td></td>
<td></td>
<td></td>
<td>2nd L.F. (C13) &amp; (C14)</td>
</tr>
<tr>
<td>RANGE B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1730 KC</td>
<td>Signal Grid of Ist Det.</td>
<td>.1 mf.</td>
<td>B Range</td>
<td></td>
<td>Antenna Range B (C6)—See Illustration Range J</td>
</tr>
<tr>
<td>1500 KC</td>
<td>Red Antenna Screw at Back of Loop</td>
<td>.1 mf.</td>
<td>B Range</td>
<td></td>
<td>600 KC (C8) Rock Rotor—See Note A</td>
</tr>
<tr>
<td>605 KC</td>
<td>Same as Above</td>
<td>.1 mf.</td>
<td>B Range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RANGE C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6500 KC</td>
<td>Same as Above</td>
<td>.1 mf.</td>
<td>C Range</td>
<td></td>
<td>Ant. Range C (C1) Rock Rotor—See Note A</td>
</tr>
<tr>
<td>6000 KC</td>
<td>Same as Above</td>
<td>.1 mf.</td>
<td>C Range</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

After each range is completed, repeat the procedure as a final check.

NOTE A—Turn the rotor back and forth and adjust the trimmer until the peak of greatest intensity is obtained.

CAUTION—When aligning the short wave bands be sure NOT to adjust at the image frequency. This can be checked as follows: Let us say the signal generator is set for 5000 KC. The signal will then be heard at 5000 KC on the dial of the radio. The image signal, which is much weaker, will be heard at 5000 less 912 KC, or 4088 KC on the dial. It may be necessary to increase the input signal to hear the image.
NOBLITT-SPARKS INDUSTRIES, INC.

MODELS 622, 622A, CH. R3-78
632, CH. R2-79
CHASSIS R2-91

ARVIN PAGE 12-1

NOBLITT-SPARKS INDUSTRIES, INC.
COLUMBUS, INDIANA

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www.americanradiohistory.com
ADJUST THIS ANTENNA BALANCING SCREW AFTER INSTALLATION OF THE RADIO ON THE CAR.
TUNE IN A WEAK STATION FROM 1200 TO 1400 KC AND TUNE UNTIL MAXIMUM VOLUME IS OBTAINED.
Installation of Batteries:

To install batteries it will be necessary to remove the back of the cabinet which is fastened by six screws (three on each side). After removing the six screws, do not attempt to pull the back away from the radio without first disconnecting the pin jacks from the loop antenna.

When the back has been removed, turn the cabinet upside down (handle to the bottom).

Note the battery cable extending from the right side of the chassis. This cable terminates in one two-prong plug for the long “A” battery and two three-prong plugs for the smaller “B” batteries.
Synchronizing Station Selector Controls

1) Disconnect the push button control cable (with the covered cable) by pulling out the plug from the radio case.

2) Turn on the power switch and set the Automatic Station Selector Control to "Dial" position — that is, to the position where the word "Dial" appears at the window of the control.

3) Plug the cloth covered cable back into the radio.

The three preceding steps will have synchronized the Automatic Station Selector control system so that the numerals on the control dial correspond to the positions of the automatic tuning switch in the radio.

The remote control automatic Station Selector can be set to tune in five broadcast stations. Preferably powerful local station(s) of your choice. The dial of the control unit carries the numbers 1 to 5 to designate the stations.

To Tune in Stations with Push Buttons

1) Set the Automatic Station Selector to position No. 2 (the numeral "2" appearing on the dial of the control unit). With the Selector in this position the set may be tuned to any station whose broadcast frequency lies between 900 and 2000 kilocycles.

2) Remove the slot cover on the front of the set below the speaker grille for access to the Oscillator Adjustment Screws and Antenna Trimmers, by adjustment of which the tuning is accomplished. See Fig. 7.

3) Adjust (with screwdriver) Oscillator Adjustment Screw No. 1A (see Fig. 7) until the broadcast signal of the desired station is received. Turning the Oscillator Adjustment Screw in a clockwise direction lowers the frequency and turning in a counter clockwise direction increases the frequency.

4) Adjust Antenna Trimmer No. 1B to position where maximum volume is attained. The entire range of the Antenna Trimmers is covered within three counter clockwise turns of the screw from tight position. Do not back screws out more than three turns. Counterclockwise rotation lowers the frequency. Counterclockwise rotation increases the frequency.

The preceding instructions outline completely the steps for setting up station selector positions No. 1, For positions No. 2, No. 3, No. 4 and No. 5 the same general procedure is to be used.

Below is a table showing five Station Selector positions, the kilocycle range covered by each position and the Oscillator screws and Antenna Trimmers by adjustment of which any desired station within the given range may be tuned in.

<table>
<thead>
<tr>
<th>Position of Automatic Station Selector</th>
<th>Broadcast Range in Kilocycles</th>
<th>Oscillator Screw To Select Station</th>
<th>Antenna Trimmer To Adjust for Maximum Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>900 to 1500</td>
<td>1A</td>
<td>1A</td>
</tr>
<tr>
<td>2</td>
<td>800 to 1300</td>
<td>2A</td>
<td>2A</td>
</tr>
<tr>
<td>3</td>
<td>600 to 1100</td>
<td>3A</td>
<td>3A</td>
</tr>
<tr>
<td>4</td>
<td>540 to 1000</td>
<td>4A</td>
<td>4A</td>
</tr>
<tr>
<td>5</td>
<td>505 to 850</td>
<td>5A</td>
<td>5A</td>
</tr>
</tbody>
</table>

The preceding steps are repeated as necessary, and the appropriate Oscillator and Antenna Trimmer may be adjusted in order to select a station of the selection.
The antenna circuit is directly coupled to the antenna. A small adjustable condenser is provided for adjusting the antenna circuit to the antenna. This adjustment is made near the high frequency end of the band (1400 K.C.).

The antenna system used with these receivers is of the extension rod type, mounting the entire antenna system to the body of the car. The antenna is mounted in the cowl along with the body. The raising and lowering of the rod is accomplished by means of a remote control on the instrument panel.
CIRCUIT ALIGNMENT

All of the adjustable condensers in this receiver are very accurately adjusted at the factory and will need no further adjustment (excepting antenna condenser "G") unless tampered with or a defective coil has been replaced. If realignment is found to be necessary, the circuits can be properly adjusted only with the use of a calibrated test oscillator or signal generator and an output meter.

DO NOT ATTEMPT TO PEAK THE I-F STAGES OF THIS RECEIVER WITHOUT CAREFULLY NOTING THE INSTRUCTIONS BELOW:

1. Aligning I-F Stages at 260 Kilocycles
   (a) Turn volume control to the maximum position.
   (b) Connect the signal lead of the test oscillator through a .1 mfd. condenser to terminal X, which is the grid prong of the 7A6 tube.
   (c) Connect the ground lead of the test oscillator to the chassis frame.
   (d) Connect the output meter across the speaker voice coil at the terminal board mounted on the speaker.
   (e) Set the test oscillator to exactly 260 Kilocycles.
   (f) Adjust the trimmers "A", "B", "C" and "D" on the I-F Transformers for maximum output. These adjustments should be repeated several times and during alignment the test oscillator output should be kept to as low a value as is consistent with obtaining a readable indication on the output meter.

2. Aligning at 1610 Kilocycles
   (a) Remove the signal lead of the test oscillator from the grid of the 7A6 tube and connect to the antenna terminal of the receiver THROUGH a .000075 mfd. MICROCONDENSER connected in place of the .1 mfd. condenser previously used. (It is very important that a .000075 mfd. Micro condenser be used when aligning the antenna stage of these receivers in order that this circuit can be made to track properly.)
   (b) Loosen lock screw "E" and tune the receiver by means of the manual control to the extreme high frequency position, against the stop, and tighten screw "E".
   (c) Set the test oscillator to 1610 Kilocycles.
   (d) Adjust the condenser "F" for maximum output. (It is very important that this frequency be set accurately as a slight missetting will cause the receiver to be out of track over the high frequency end of the dial.)
   (e) Adjust the antenna compensating condenser "G" for maximum output.
   (f) Adjust the R.F. trimmer condenser "J" for maximum output.

3. Adjusting the I-F Wave Trap
   (a) Leave the test oscillator lead the same as for aligning at 1610 K.C.
   (b) Set the test oscillator to exactly 260 K.C.

   (e) Adjust the trimmer "H" for minimum deflection on the output meter. (It may be necessary to increase the signal from the test oscillator when making this adjustment.)

NOTE: With permeability tuning it is necessary to adjust the capacity at only one frequency. The coils are so wound that tracking is automatic and the usual low frequency adjustments are not necessary.

If the entire alignment procedure has been accomplished accurately, the receiver should be uniformly sensitive over the entire frequency range.

Lock screw "B" maintains the location of the mechanical stop at the high frequency end of the band.

New frequency assignments to 1600 K.C. make it desirable for the receiver to cover this range, but due to local ordinances it is not permissible in all locations. The high frequency stop is set at 1560 K.C. in production and after aligning the receiver, reset the stop to this frequency which is accomplished by loosening lock screw "B", tune in manually to 1600 K.C. and tighten screw.

Where ordinances permit, the high frequency stop may be set at any frequency up to 1900 K.C.

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Fig. 4 - Chassis Tube Voltage Chart

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BOTTOM VIEW OF TUBE SOCKETS

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READING TAKEN FROM TUBE SOCKET CONTACTS TO GROUND WITH A D.C. VOLTMETER HAVING A RESISTANCE OF 1000 OHMS PER VOLT. "B" BATTERY 6.0 VOLTS. CURRENT DRAIN 6.6 AMPERES.

"B" SUPPLY DRAIN APPROXIMATELY 55 MA.
AUTOMATIC PUSH BUTTON TUNER

The iron cored automatic tuner consists of three coils with variable iron cores actuated by a rugged mechanical device for varying the position of the cores in the coils. Changing the position of the cores changes the inductance of the antenna, R.F. and oscillator coils, and provides a means of tuning the radio over the entire broadcast band. A special compensating condenser is employed in the oscillator circuit to prevent the set from drifting off station due to normal variations in car voltage and radio temperatures.
The antenna circuit is coupled directly to the antenna. The antenna coil is coupled to the grid of the R.F. amplifier through a high frequency filter which minimizes ignition and other high frequency interferences. Due to the antenna circuit being directly coupled to the antenna, the antenna adjustment screw must be adjusted to give maximum volume when the receiver is tuned to a weak station which is received between 130 and 150 on the dial.
CIRCUIT ALIGNMENT

Alignment Procedure: The trimmer condensers in this receiver have been carefully adjusted at the factory and should require no further adjustment (except the antenna trimmer) unless tampered with or a defective coil has been replaced. It is advisable not to attempt any adjustment unless it is definitely known that an adjustment is necessary.

An accurately calibrated test oscillator or signal generator and an output meter must be used to align the receiver circuits correctly. To make all alignment adjustments the front and back covers must be removed. All trimmers are readily accessible. The antenna trimmer is adjusted through a hole in the end of the case.

Due to the fact that the iron cores have been sealed in place at the factory only the trimmer adjustments as outlined under capacity alignment should be made unless the coils of the iron cored tuning unit are changed.

CAPACITY ALIGNMENT

1. I.F. Alignment at 260 K.C.
   (a) Connect an output meter across the speaker voice coil, leaving speaker connected.
   (b) Connect the ground lead of the signal generator to the chassis frame.
   (c) Connect the signal lead of the signal generator to the 708 tube grid side of the R.F. Trimmer Condenser F through a 0.1 mfd. condenser.
   (d) Turn set volume control on full and tone control to the extreme treble end. Set the signal generator at 260 K.C. Tune the receiver to a frequency where no squeals or best notes may be heard and so that when the tuning control is moved in narrow limits no appreciable change in output may be noted.
   (e) Adjust the I.F. trimmers A, B, C, and D for maximum output.

2. Alignment at 1560 K.C.
   (a) Connect the signal lead of the signal generator to the receiver antenna connection through a 75 mfd condenser.
   (b) Turn the manual tuning control of the receiver to the stop at the extreme high frequency end of the dial.
   (c) Set the signal generator to 1560 K.C.
   (d) Adjust the oscillator trimmer "E" for maximum output.
   (e) Adjust the R.F. trimmer "F" for maximum output.
   (f) Adjust the antenna trimmer "G" for maximum output.

3. Alignment at 1400 K.C.
   (a) Set the signal generator to 1400 K.C.
   (b) Turn the receiver to the signal and readjust the trimmers F and G for maximum output. Signal generator signal should be as low as possible and still give a satisfactory meter reading.

   This type of tuning circuit does not require alignment at 600 K.C.

4. Alignment with Car Antenna
   Antenna trimmer G must be adjusted to match car antennas when receiver is installed; use a weak station signal near 1400 K.C. The antenna should be fully extended when making this adjustment.

   CAPACITY AND INDUCTANCE ALIGNMENT

   To be used only when there is definite evidence of iron cores being out of adjustment.

1. I.F. Alignment at 260 K.C.
   (a) Connect the signal lead of the signal generator to the antenna connection of the set through a 70 mfd condenser.
   (b) Set signal generator to 1560 Kilocycles.
   (c) Rotate the manual tuning mechanism until the high frequency stop is reached. Mechanically align the iron cores E, H, and J by setting each core so that its front edge sticks out 1-1/16" from the end of the coil form and the antenna and R.F. cores H and J stick out 1-13/32" from the end of the respective coil windings.
   (d) Adjust the oscillator trimmer E, R.F. trimmer F, and antenna trimmer G for maximum output.

2. Alignment at 1560 K.C.
   (a) Connect the signal lead of the signal generator to the antenna connection of the set through a 70 mfd condenser.
   (b) Set signal generator to 1560 Kilocycles.
   (c) Rotate the manual tuning mechanism until the high frequency stop is reached. Mechanically align the iron cores E, H, and J by setting each core so that its front edge sticks out 1-1/16" from the end of the coil form and the antenna and R.F. cores H and J stick out 1-13/32" from the end of the respective coil windings.
   (d) Adjust the oscillator trimmer E, R.F. trimmer F, and antenna trimmer G for maximum output.

3. Alignment at 1400 K.C.
   (a) Set signal generator to 1400 K.C. and tune set to this signal.
   (b) Adjust the R.F. core J for maximum output.

4. Realignment at 1560 and 1400 K.C.
   (a) Repeat alignment of trimmer E and trimmers F and G at 1560 K.C.
   (b) Repeat alignment of cores H and J at 1400 K.C. Apply shakers to the core screws sealing the adjustment.

5. Alignment with Car Antenna
   Antenna trimmer G must be adjusted to match car antennas when receiver is installed; use a weak station signal near 1400 K.C. The antenna should be fully extended when making this adjustment.
OLDSMOBILE DIV.—GEN. MOTORS

MODEL 982259

OLDSMOBILE DIV.—GEN. MOTORS

MODEL 982259

MODEL NUMBER — 982259
SERIAL NUMBER — 687C01 & UP
TUBE COMPLEMENT — 6SA7GT, 6SK7GT, 6SQ7GT, 6V6GT, OZ4G
BATTERY CURRENT — 6.0 AMPERES
B+ VOLTS — 230 VOLTS
I.F. KC — 455
R.F. KC — 1560 TO 540
VIBRATOR TYPE — NON SYNCHRONOUS

BOTTOM VIEW OF TUBE SOCKETS

READINGS TAKEN FROM TUBE SOCKET CONTACTS TO GROUND WITH A D.C. VOLTMETER HAVING A RESISTANCE OF 1000 OHMS PER VOLT. ALL VOLTAGES EXCEPT THE HEATER VOLTAGES MEASURED ON THE 0-250 VOLT SCALE.

A" BATTERY 6.0 VOLTS. CURRENT DRAIN 6.0 AMP.
"B" SUPPLY DRAIN APPROXIMATELY 45 MA.

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1. Aligning I-F Stages at 455 Kilocycles

(a) Connect the signal lead of the test oscillator to terminal "X" on variable condenser 25-A (See Parts Layout), which is the grid lead of the 6SA7GT tube, through a .1 mfd. condenser.
(b) Connect the grid lead of the test oscillator to the chassis frame.
(c) Connect the output meter across the voice coil of the speaker.
(d) Set the test oscillator to exactly 455 K.C.
(e) Turn volume control to maximum.
(f) Adjust the trimmers "A", "B", "$G$" and "$D$" on the I-F Transformers for maximum output. (See Parts Layout). These adjustments should be repeated several times and during alignment the test oscillator output should be kept to as low a value as is consistent with obtaining a readable indication on the output meter.

2. Aligning at 1660 Kilocycles

(a) Leave the test oscillator leads connected the same as for aligning the I-F circuits.
(b) Turn the rotor plates of the gang condenser all the way out and against the high frequency stop "H" (See Parts Layout).
(c) Adjust the condenser "$D$" (See Parts Layout) for maximum output. (It is very important that this frequency be set accurately as a slight missetting will cause the receiver to be out of track over the entire high frequency end of the dial.)

3. Aligning the Antenna Stage

(a) Remove the signal lead of the test oscillator from the grid of the 6SA7GT tube and connect to the Antenna Terminal of the receiver THROUGH a .000075 mfd. MICA CONDENSER connected in place of the .1 mfd. condenser previously used. (It is very important that a .000075 mfd. mica condenser be used when aligning the antenna stage of these receivers in order that this circuit can be made to track properly.)
(b) Set the test oscillator to 1660 K.C.
(c) Turn the condenser rotor plates until this frequency is tuned in with maximum output.
(d) Adjust the Antenna Trimmer "$G$" (See Parts Layout) for maximum output.

4. Aligning at 600 Kilocycles

Peak the oscillator padding condenser at 600 K.C. in order to make the receiver track properly and to secure full sensitivity.
(a) Set the test oscillator at 600 K.C.
(b) Turn the condenser rotor plates until the signal from the test oscillator is tuned in with maximum output.

(c) Maintain a low output signal from the test oscillator and adjust the oscillator padding condenser "$F$" (See Parts Layout) while rocking the variable condenser gang tuning shaft back and forth through the signal.
(d) This operation should be continued until no further increase in output can be obtained.
(e) After the above operation turn the condenser rotor plates to the high frequency stop position. Check the 1560 K.C. setting and if necessary readjust trimmer "$B". Then return to 1400 K.C. for final antenna trimmer adjustment.

Note: If the entire alignment procedure has been accomplished correctly, the receiver should be uniformly sensitive over the entire frequency range.

In addition to manual tuning, there are four push buttons which may be adjusted to tune-in the local broadcasting stations.

It is not necessary to set the buttons in order of broadcasting stations frequency, but for convenience it is desirable.

To adjust the buttons, proceed as follows:

1. Turn on receiver for ten minutes or more.
2. Loosen the four push buttons by turning each button counter clockwise about half a turn.
3. Tune in the first desired station manually and press in the first push button as far as it will go.
4. With the button held all the way in, tighten it gently. Then release it and tighten it securely.
5. Proceed in the same manner for the remaining stations.
6. After all of the buttons have been adjusted, recheck the setting. Push each button and see if the station may be tuned-in more accurately manually. If so, loosen button and re-set it.
7. A station setting may be changed at any time by loosening the push button, tuning in the new station and resetting the button.
8. After the push buttons have been adjusted, insert the sell letter tabs for the stations in their proper places above the buttons.