Primary voltage 117 V, AC; Intermediate frequency 665 Kc; Intermediate frequency range 1680 - 1700 Kc; Tuning frequency range 5.2 - 18.6 Kc.

Power consumption 15 watts; Output impedance 2500 ohms.

CR-101M -- Used in Windsor combination.
CR-101A -- Used in Regent combination.
CR-101 -- Used in RTR-308 remote tuner.

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THE MAGNAVOX CO., INC.
CHASSIS CR101, CR101M
Schematic Voltage

MAGNAVOX RADIO CHASSIS
Compensation in volume control for phonograph pickup.

Type Circuit: High-fidelity superheterodyne, with three tuning ranges, bass and treble controls, automatic volume control, band expansion, and bass and treble controls.
It is important that EXACT replacement parts be used when necessary and these parts must be located in exactly the same way that the original part was located and connected. This applies particularly to ground points.

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ALIGNMENT PROCEDURE

It is absolutely necessary that an accurately calibrated test oscillator with some type of output measuring device be used when aligning the receiver.

ALIGNING THE I.F. STAGES AT 465 KILOCYCLES
1. Use a .00025 mfd, condenser in series with the signal generator output.
2. Connect an output meter across the voice coil of the speakers.
3. Turn the tone equalizer to the "sharp-tune" position.
4. Turn the volume control up to 10 or more, and adjust the signal generator output until a reading of one volt is obtained when a signal is applied.
5. Align the third I.F. transformer first by connecting the signal generator to the grid of the 6B6 second I.F. tube. Now adjust the third I.F. transformer until a maximum deflection of the output meter is obtained.
6. Align the second I.F. transformer by connecting the output of the signal generator to the grid of the 6B6, first I.F. tube. Readjust the output of the signal generator so that the output meter reading does not exceed one volt and adjust the second I.F. transformer until a maximum deflection of the output meter is obtained.
7. Connect the output of the signal generator to the grid of the 6A7 tube. Readjust the output of the signal generator so that the output meter reading does not exceed one volt and adjust the first I.F. transformer until a maximum deflection of the output meter is obtained.

ALIGNING THE 540-1700 KILOCYCLE BAND
1. Use a .00025 mfd, condenser in series with the signal generator output.
2. Set the wave band switch for reception on the broadcast band.
3. Run the dial pointer to the extreme left position. This will adjust the tuning condenser to maximum capacity.
4. Holding the tuning condenser at maximum capacity, adjust the dial pointer to a position at the end of the horizontal scale. This is done by sliding the pointer on the dial strings.
5. Connect the signal generator output to the grid of the 6A7 tube, tune the radio and signal generator to 600 KC and adjust the 600 KC padder for maximum deflection of the output meter.
6. Turn the signal generator and radio to 1400 KC and adjust the 1400 KC oscillator trimmer for maximum deflection of the output meter.
7. Leave the signal generator and radio set at 1400 KC, connect the signal generator output to the antenna binding post "A", connect binding post "B" to ground and adjust the 1400 KC R.F. trimmer and the 1400 KC antenna trimmer for maximum deflection of the output meter.

ALIGNING THE 1680-5350 KILOCYCLE BAND
1. Use a 400 ohm resistor in series with the signal generator output when connecting to the antenna binding post. Use both this resistor and a .00025 mfd, condenser when connecting to the 6A7 grid.
2. Set the band switch for reception on the foreign band.
3. Connect the output of the signal generator to the grid of the 6A7 tube, set the signal generator and the radio to 1700 KC and adjust the 1700 KC padder for maximum deflection on the output meter.
4. Set the signal generator and radio to 5000 KC and adjust the 5000 KC oscillator trimmer for maximum deflection of the output meter.
5. Leave the signal generator and radio set at 5000 KC, connect the signal generator output to the antenna binding post "A" and adjust the 5000 KC R.F. trimmer and the 5000 KC antenna trimmer for maximum deflection of the output meter.

ALIGNING THE 5.6-18.0 MEGACYCLE BAND
1. Use a 400 ohm resistor in series with the signal generator when connecting to the antenna post. Use both this resistor and a .00025 mfd, condenser when connecting to the 6A7 grid.
2. Set the band switch for reception on the foreign band.
3. Connect the signal generator output to the grid of the 6A7 tube, set the signal generator and the radio to 18 megacycles and adjust the 18 megacycle oscillator trimmer for maximum deflection of the output meter.
4. Leave the signal generator and radio set for 18 megacycles, connect the signal generator output to the antenna binding post "A" and adjust the 18 megacycle R.F. trimmer and the 18 megacycle antenna trimmer for maximum deflection of the output meter.

RESTRINGING THE DIAL CABLE

To restring the cable on this model, it is necessary first to remove the glass dial. Bend back the small metal ears that hold the glass in place, on the left and lower sides only. Slip the three dividing strips from the assembly and the four glass strips will be easily removable. Slip the brown backing from the assembly exposing the cable tension spring inside the disc. Remove the spring "A" from the small hook "B", and tie the one end of cable to the spring, lacing it through the opening in the groove of the disc, allowing about 1/2 inch between the end of the spring and the inside edge of the groove. Proceed around the disc in a clockwise direction for one complete revolution, continue around the drive shaft "C" for 2 1/2 turns in a counterclockwise direction up through the left-hand idler pulley "F", down around the idler pulley "D" backward around the disc in a clockwise direction, through the opening in the groove and secure it to the spring, until the other end can be secured to the hook. Replace the dial strips in their original locations and the operation is completed.
MISCELLANEOUS NOTES

The radio chassis must "float" freely and it is, therefore, important that none of the knobs touch the panel. The four holes in the radio support bracket "C" Fig. 1, are sufficiently large to permit adjustment of the chassis until it "floats" properly. Be sure that this "floating" condition exists before attempting to tighten the screws "A" Fig. 1, after replacing the chassis in the cabinet.

If one of the push-button switches does not function, remove the radio panel in the manner outlined in the foregoing instructions, and check the switch contacts. It is entirely possible that the trouble can be corrected by either cleaning the contacts or by bending them so that they form a solid connection.

When the release button on the radio push-button assembly is depressed, the switch arm nearest the end of the assembly must break one contact before making the other contact. Failure of the release button switch to operate in this manner will cause the "set-up" pilot lamp to burn out, in which case the arm of the switch should be bent until the "break-before-make" action is obtained.

Due to the extremely high sensitivity of the receiver, it is possible for some excessively strong signals to overload and cause distortion in the radio. This condition is very rare and occurs only on a very strong signal when the receiver has a very efficient antenna. This difficulty is recognized by distortion on a strong signal and being absent on weak signals. To correct this trouble, it is necessary to connect a 500 ohm resistor across the broadcast antenna primary to ground. The terminal for making this connection is available at the rear of the R.F. transformer on the top of the chassis. Connect the resistor from the lug having the red-white-blue tracer lead connected to it, to the ground bus wire which ties the three trimmer condensers together.

It is possible for the distortion mentioned above, to occur due to defective 6Q6 I.F. tubes. The second I.F. tube is more susceptible to this difficulty and should be replaced before checking the first I.F. tube.

When push-button tuning is used, the dial pointer may have a tendency to "hunt" on either side of the desired frequency before coming to rest. This condition is caused by insufficient pressure of the small spring at the rear of the tuning motor, against the armature shaft. The spring should be "kinked" slightly to provide additional pressure, using a pair of long-nosed pliers to make the adjustment.

If a distinct hum is heard in the speakers when using the radio, the 675 tube should be replaced as a possible cure. It is extremely important that the grid lead of the 675 tube is shielded as near to the top of the tube as is possible, or hum will be picked up in this lead.

The two .06 µF condensers connected across the two motor push-button switches should be removed to prevent a "scraping" noise that may be apparent when the receiver is tuned manually.

The 1,000 ohm bias resistor in the cathode circuit of the 6A7 tube should be replaced with a 500 ohm resistor to increase the stability of the receiver.

Some of the earlier models were not equipped with electric muting. This feature may be incorporated by following the instructions outlined below.

1. Remove the two jumpers shunting the cathodes and plates of the 686 tube.
2. One cathode (6) is left at ground potential and the other cathode (4) is connected to the tuning motor as shown in the above schematic.
3. One plate (3) is left in its original circuit connection and the other plate (5) is connected to the junction of the 1 megohm and 500,000 ohm resistors that have been inserted in series with R-22 to ground.
4. Install one .05 µF condenser from the junction of R-22 and the 1 megohm resistor to ground.
5. Ground the side of the transformer winding that connects to the tuning motor, completing the operation.
Primary voltage ............. 117 V, AC; Intermediate frequency ........... 456 KC;
Power consumption .......... 80 watts; Tuning frequency range 540 - 1760 KC;
Power output ............... 4 watts; 1.6 - 5.0 MC;
5.0 - 19. MC;

MAGNAVOX RADIO CHASSIS CR-102, 103, 104 AND 105

CHASSIS CR102, CR103
CR104, CR105

Schematic

FOR ALIGNMENT SEE INDEX

Speaker: Transformer: 750 ohms;
Field Coil: 7000 ohms.

Three Circuit Superheterodyne with
bass compensation in volume control for
phonograph pickup.

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It is important that EXACT replacement parts be used when necessary and these parts must be located in exactly the same way that the original part was located and connected. This applies particularly to ground points.
**CHASSIS CR106, CR109, CR111**

CR-106 -- Used in Concerto combination.

CR-109 -- Used in Chairside combination.

CR-111 -- Used in Berkeley combination.

Type Circuit: Superheterodyne with three tuning ranges, tone control, A.V.C. bass compensation in volume control for phonograph pickup.

**Speaker:** Field Coil.

**Primary voltage:** 117 V. A.C.

**Power consumption:** 90 watts;

**Power output:** 5.5 watts;

---

**Tuning frequency range**

540-1730 KC;

1.7-5.8 Mc;

5.7-18.3 Mc;

---

**Schematic, Voltage**

---

**Part 19 omitted on CR-111.**

**Part 22:** CR-109 and CR-111

Parts 47 52 53 55 omitted on CR-106

**NOTE:** Part 57 condenser

CR-106 --- 1 mfd.

CR-111 and CR-109 --- .15 mfd.

Part 60 resistor

CR-106 --- not used.

CR-109 --- not used in "Chairside."

CR-109 --- 100M in "Duette."

CR-111 --- 250M.

---

**All voltages except heaters and filaments measured from socket terminals to ground with a 1000 ohm per volt meter.**

Heater and filament voltages measured directly across socket terminals. Line voltage 115 Volts A.C.
**MAGNAVOX CHASSIS CR106, CR109, CR111**

**Filter Adjustment**

- **ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE**

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<tr>
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<tr>
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<td>.05</td>
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<tr>
<td>449801</td>
<td>Cable</td>
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<tr>
<td>883308</td>
<td>Dial Assb.</td>
<td>4.00</td>
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<td>153238</td>
<td>Dial</td>
<td>1.20</td>
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<tr>
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<td>Escutcheon</td>
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<tr>
<td>103321</td>
<td>Spring</td>
<td>.05</td>
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</tbody>
</table>

**MAGNAVOX RADIO CHASSIS CR-106, 109 AND 111**

- **ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE**

<table>
<thead>
<tr>
<th>Part Number</th>
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<tbody>
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<td>182592</td>
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<tr>
<td>103321</td>
<td>Spring</td>
<td>.05</td>
</tr>
</tbody>
</table>

**ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE**

- **10 K.C. FILTER ADJUSTMENT**

1. With the tone control set for maximum treble response, tune the receiver to a station 15 kHz below the carrier frequency of the 10 Kc filter. Adjust the filter trimmer 10 MC trimmer to maximize the level of the carrier frequency. The filter trimmer should be adjusted so that the carrier frequency is maximized while minimizing the sidebands.

2. The filter trimmer should be adjusted so that the carrier frequency is maximized while minimizing the sidebands.

3. The filter trimmer should be adjusted so that the carrier frequency is maximized while minimizing the sidebands.

4. The filter trimmer should be adjusted so that the carrier frequency is maximized while minimizing the sidebands.

5. The filter trimmer should be adjusted so that the carrier frequency is maximized while minimizing the sidebands.

6. The filter trimmer should be adjusted so that the carrier frequency is maximized while minimizing the sidebands.

7. The filter trimmer should be adjusted so that the carrier frequency is maximized while minimizing the sidebands.

8. The filter trimmer should be adjusted so that the carrier frequency is maximized while minimizing the sidebands.

9. The filter trimmer should be adjusted so that the carrier frequency is maximized while minimizing the sidebands.

10. The filter trimmer should be adjusted so that the carrier frequency is maximized while minimizing the sidebands.

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Primary voltage..........117 V, AC-DC;  
Power consumption.......60 watts;  
Power output.............6 watts;  

Speaker:  
Field coil.............1800 ohms;  
Transformer...........3000 ohms;  

Tuning frequency range 540 - 1730 KC;  
15.7 - 5.9 MC;  
5.7 - 18.3 MC;  

Type Circuit: Superheterodyne with three tuning ranges, tone control, A.V.C., bass compensation in volume control for phono-
ALIGNMENT PROCEDURE
SEE CHASSIS CR-106.

CR-107 -- Used in AC-DC Concerto combination.

CR-110 -- Has 3.0µf & 0.0004µf condenser for item 5A.

CR-112 -- Has brackets for mounting in chairside cabinet.

CR-120 -- Speaker mounted on the chassis for use in AC-DC Playfellow.

CR-126 -- Has brackets for mounting in Kepplerwhite cabinet.

It is important to use EXACT replacement parts when necessary and these parts must be located in exactly the same way that the original part was located and connected. This applies particularly to ground points.
ALIGNMENT PROCEDURE

1. Set the controls and the aerial to provide for the broadcast in the 750-1200 K.C. band.

2. Tune the dial to 930 K.C. and adjust the mixer for maximum indication of the signal meter.

3. Set the gain control for highest signal indication and check the signal indicator for maximum indication of the signal meter.

4. Set the tuning control to the broadcast station and adjust the band control for maximum indication of the signal meter.

5. Repeat steps 3 and 4 for each station in the broadcast band.

MISCELLANEOUS NOTES

ALIGNING THE 340-500 K.C. BAND

1. Set the dial to 450 K.C. and adjust the mixer for maximum indication of the signal meter.

2. Set the gain control for highest signal indication and check the signal indicator for maximum indication of the signal meter.

3. Set the tuning control to the broadcast station and adjust the band control for maximum indication of the signal meter.

4. Repeat steps 3 and 4 for each station in the broadcast band.

PAGE 10-14 MAGNAVOX

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ALIGNING THE 1.F STAGES AT 455 K.C.

1. Connect the ground lead of the 1.F oscillator to the chassis or radio ground lead. Connect the other lead of the 1.F oscillator to the grid cap of the 6AG7 tube through a .00025 mf. series condenser. DO NOT REMOVE THE GRID CLIP.

2. Set the test oscillator to EXACTLY 455 kilocycles and turn the receiver volume to its maximum setting.

3. Peak each of the second 1.F transformer trimmer condensers.

4. Peak each of the first 1.F transformer trimmer condensers.

ALIGNING THE 540-1730 K.C. BAND

Remove the test oscillator lead from the grid of the 6AG7 tube and connect it to the receiver antenna lead (blue) through a .00025 mf. series condenser. Set the test oscillator frequency and receiver dial to EXACTLY 1730 kilocycles. Adjust the 1730 kilocycle oscillator trimmer to bring in 1730 kilocycle test oscillator signal to maximum output.

Tune the receiver and test oscillator frequency to EXACTLY 1400 kilocycles and adjust the 1400 kilocycle antenna trimmer for maximum output as indicated on the output meter.

Set the test oscillator and receiver frequency to approximately 600 kilocycles. While rocking the gang condenser slightly to the right and to the left, adjust the 600 kilocycle oscillator trimmer for maximum signal.

ALIGNING THE 1.7-5.8 M.G.C BAND

Substitute a 400 ohm resistor for the .00025 mf. condenser in series with the antenna lead.

Tune the receiver and test oscillator frequency to EXACTLY 5 megacycles and adjust the 5 megacycle antenna trimmer for maximum output.

ALIGNING THE 5.7-18.3 M.C. BAND

Leave the 400 ohm resistor in series with the test oscillator lead and set the band selector switch for operation on the 5.7 - 18.3 megacycle band (short wave). Set the receiver and test oscillator frequency to EXACTLY 18.3 megacycles.

Adjust the 18.3 megacycle oscillator trimmer for maximum signal as indicated on the output meter.

When adjusting this trimmer two peaks may be noticed, in which case CARE MUST BE TAKEN THAT THE PROPER PEAK IS USED FOR ALIGNING THE RECEIVER AT 18.3 MC. Always back off the trimmer to minimum capacity, then screw down the trimmer (add capacity) until the second peak is reached. If more than one is noticed -- which is the correct one to use, is tuned in.

Set the receiver and test oscillator frequency to EXACTLY 18 megacycles.

Rock the gang condenser slightly to the right and to the left, adjusting the 18 megacycle antenna trimmer for maximum signal as indicated on the output meter.

ALIGNING THE 1500-5000 KILOCYCLE BAND

1. Set the band selector for operation on the police band.

2. Set the receiver and test oscillator frequency to 4 megacycles and adjust the 4 megacycle antenna trimmer for maximum output.

ALIGNING THE 4.0-9.0 MEGACYCLE BAND

1. Set the band selector for operation on the foreign band.

2. Set the receiver and test oscillator frequency to 10 megacycles and adjust the 10 megacycle antenna trimmer for maximum output.

10 KILOCYCLE FILTER ADJUSTMENT

With the tone control set for maximum treble response, tune the receiver to a point between two stations of about the same signal strength on adjacent channels. If a 10,000 cycle heterodyne is heard as the beat note between the two carriers, it may be eliminated by retuning the 10 KC output filter by means of the 10 KC trimmer condenser on the rear of the chassis adjacent to the speaker socket.

MODELS CR102, 103, 104, 105

ALIgiING THE I.F AT 456 KILOCYCLII.

1. Connect the ground lead of the test oscillator to the chassis or set ground lead (black). Connect the other lead of the test oscillator to the grid cap of the 6AG7 tube through a .00025 mf. condenser.

2. Set the band switch for reception on the broadcast band and set the dial pointer to 1,000 kilocycles, adjusting the receiver volume control to its maximum setting.

3. Now feed a 456 kilocycle signal from the test oscillator and peak each of the second I.F. trimmer condensers.

4. Peak each of the first I.F. trimmer condensers, repeating the adjustments several times for most accurate setting.

ALIGNING THE 540-1760 KILOCYCLE BAND

1. Remove the test oscillator lead from the grid of the 6AG7 tube and connect it to the receiver antenna lead (blue) through a .00025 mf. condenser.

2. Check the tuning dial adjustment by turning the gang condenser until the plates are completely meshed at which point the dial pointer must be exactly even with the test line at the low frequency end of the band (640 KC).

3. With the band selector set for reception on the broadcast band, set the dial pointer to the extreme high frequency end of the band (1760 KC) and feed a 1760 KC signal from the signal generator, adjusting the 1760 kilocycle oscillator trimmer for maximum output.

4. Now set the receiver and test oscillator frequency to 1500 KC and adjust the 1500 KC antenna trimmer for maximum output.

5. Set the receiver and test oscillator frequency to 600 KC and adjust the 900 KC oscillator trimmer to maximum output while tuning the receiver back and forth across the signal. This completes the alignment of the broadcast band.

ALIGNING THE 1500-5000 KILOCYCLE BAND

1. Set the band selector for operation on the police band.

2. Set the receiver and test oscillator frequency to 4 megacycles and adjust the 4 megacycle antenna trimmer for maximum output.

ALIGNING THE 4.0-9.0 MEGACYCLE BAND

1. Set the band selector for operation on the foreign band.

2. Set the receiver and test oscillator frequency to 10 megacycles and adjust the 10 megacycle antenna trimmer for maximum output.

10 KILOCYCLE FILTER ADJUSTMENT

With the tone control set for maximum treble response, tune the receiver to a point between two stations of about the same signal strength on adjacent channels. If a 10,000 cycle heterodyne is heard as the beat note between the two carriers, it may be eliminated by retuning the 10 KC output filter by means of the 10 KC trimmer condenser on the rear of the chassis adjacent to the speaker socket.
Type circuit: Superheterodyne with three tuning ranges, tone control, A.V.C., bass compensation in volume control for phonograph pickup.

Intermediate frequency............. 455 KC;
Tuning frequency range............. 540 - 1730 KC;
1.7 - 5.8 MC;
5.7 - 18.3 MC;

Speaker:
Field coil............. 750 ohms;
Transformer............. 3500 ohms;

Field coil: 750 ohms;
Transformer: 3500 ohms;

Primary voltage: 117 V A.C.;
Power output: 60 watts;

It is important that EXACT replacement parts be used when necessary and these parts must be located in exactly the same way that the original part was located and connected. This applies particularly to ground points. 

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THE MAGNAVOX CO., INC.

Type Circuit: Superheterodyne with two tuning ranges, tone control, A.V.C., bass compensation in volume control for phonograph pickup.

Tuning frequency range: 640-1720 KC
2.3-6.3 MC

CHASSIS CR117
Schematic, Voltage

MAGNAVOX RADIO CHASSIS CR-117

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www.americanradiohistory.com
It is important that EXACT replacement parts be used when necessary and these parts must be located in exactly the same way that the original part was located and connected. This applies particularly to ground points.
TO REMOVE THE CHASSIS FROM THE CABINET: SEE CHASSIS CR-106.

CR-123 DIFFERS FROM CR-128 IN PLATE CIRCUIT OF 6J5 TUBE.

©John F. Rider, Publisher
CR-123, 128

Intermediate frequency.........455 KC; Speaker:
Tuning frequency range; 535 - 1730 KC; Primary voltage.........117 V. AC;
5.7 - 18.1 MC; Field Coil.... 750 ohms; Power consumption.........90 watts;
Circuit: Superheterodyne with two tun- Transformer...3500 ohms; Power output.......... 6 watts;
ing ranges, treble control, A. V. C.; CR-123 -- Used in Concerto, Chairside and Hepplewhite combinations.
bass compensation in volume control for CR-123 -- Used in Concerto, Chairside and Hepplewhite combinations.
phonograph pickup; push-button condenser-type tuner.

Same as CR-123 except:
Item 61 is eliminated.
Item 27 is .03 mfd.

CR-128 -- Used in Hepplewhite automatic combination.
Schematics, Socket Trimmers, Alignment

MAJESTIC RADIO & TELEV. CORP.

MODELS 1A59, 2A59, 1B59, 2B59
1A59A, 1B59A

PARTS LIST FOR MODELS 1A59 & 1A59A

1. 6A7, 12AT7, 12AU7, 12AU7A
2. 6L6, 6BQ5, 6BQ6, 6BQ7
3. 6L6G, 6BQ5G, 6BQ6G, 6BQ7G
4. 6L6GC, 6BQ5GC, 6BQ6GC, 6BQ7GC

The tubes used are:
1. 6A7
2. 6L6
3. 6L6G
4. 6L6GC

The receiver is a superhet using two double purpose tubes. It operates on either AC or DC current of 1.25 volts. It requires stations lying between 530 and 1700 kilocycles. This includes standard broadcast and most police stations.

The tubes used are:
1. 12AX7GT
2. 12AT7GT
3. 12AU7GT
4. 12AT7GT

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Page 10-2 Majestic

Model 3PW Record
Player
Schematic, Socket

Model 651
Schematic, Socket
Trimmers, Alignment

Freq. range: 525-900 KC.

Record Player Model 3-PW

Replacement Parts List for Model 3-PW

<table>
<thead>
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<th>Schematic Location</th>
<th>Part No.</th>
<th>Description</th>
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<tbody>
<tr>
<td>P45S</td>
<td>R-2</td>
<td>Carbon resistor 3K kW20%</td>
</tr>
<tr>
<td>R1</td>
<td>R-65</td>
<td>Carbon resistor 10K kW20%</td>
</tr>
<tr>
<td>R6</td>
<td>R-15312</td>
<td>Carbon resistor 250K kW20%</td>
</tr>
<tr>
<td>R2</td>
<td>R-15315</td>
<td>Carbon resistor 200K kW20%</td>
</tr>
<tr>
<td>C5, C6</td>
<td>CE-47</td>
<td>Adj. ( \pm ) % cond.</td>
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<tr>
<td>C1</td>
<td>CV-77</td>
<td>Paper cond. .1 mid. 400V</td>
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<tr>
<td>C2, C3</td>
<td>CM-15929</td>
<td>Mica cond. 50 mfd. 20%</td>
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Replacement Parts List for Model 651

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<td>Tubular cond. .01 mid 400V</td>
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<td>C2, C9, C23</td>
<td>C-15752</td>
<td>Tubular cond. .05 mid 200V</td>
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<td>C17, C19</td>
<td>C-15757</td>
<td>Tubular cond. .1 mid. 400V</td>
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<td>C24, C25</td>
<td>C-15750</td>
<td>Tubular cond. .25 mid. 1K</td>
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<tr>
<td>C5, C8</td>
<td>CM-15999</td>
<td>Mica cond. .5 mfd.</td>
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<tr>
<td>C1, C5</td>
<td>CM-15923</td>
<td>Mica cond. 250 mfd.</td>
</tr>
<tr>
<td>C13, C16</td>
<td>CM-16000</td>
<td>Mica cond. 100 mfd.</td>
</tr>
<tr>
<td>C20</td>
<td>Y.CV-22</td>
<td>Variable cond. (Signal Section)</td>
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<td>C6</td>
<td>Y.CY-21</td>
<td>Transmit cond. (Signal Section)</td>
</tr>
<tr>
<td>C10</td>
<td>Y.CY-23</td>
<td>Transmit cond. (Signal Section)</td>
</tr>
<tr>
<td>C11, C12</td>
<td>Y.CT-01</td>
<td>Transmit cond. 1st I.F. Trans.</td>
</tr>
<tr>
<td>C30</td>
<td>Y.CT-1</td>
<td>Trimmer cond. 2nd I.F. Trans.</td>
</tr>
<tr>
<td>C21</td>
<td>Y.CE-46</td>
<td>Elect. cond. 16 mid. 150W</td>
</tr>
<tr>
<td>C22</td>
<td>CE-20</td>
<td>Electrode cond. 20 mid. 25W</td>
</tr>
</tbody>
</table>

The tubes used are:

1-6A7 Frequency Converter
1-6D6 Intermediate frequency amplifier
1-75 Second detector
A.V.C., and audio driver

1-250G Beam power output
1-25Z5 Rectifier
1-149B Plug-in ballast resistor

If peak 455 KC

Tone Control

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**TUBES**

The following tube numbers are employed:

<table>
<thead>
<tr>
<th>Tube</th>
<th>Purpose</th>
<th>Kind</th>
</tr>
</thead>
<tbody>
<tr>
<td>6D6</td>
<td>Radio frequency amplifier</td>
<td>GLASS</td>
</tr>
<tr>
<td>6C6</td>
<td>Power detector</td>
<td>GLASS</td>
</tr>
<tr>
<td>25L6G</td>
<td>Beam Power Output</td>
<td>GLASS</td>
</tr>
<tr>
<td>25Z5</td>
<td>Rectifier</td>
<td>GLASS</td>
</tr>
<tr>
<td>YTU9</td>
<td>Line Ballast Tube</td>
<td>METAL</td>
</tr>
</tbody>
</table>

This receiver is a 5 tube AC-DC compact type radio receiver employing tuned radio frequency circuit. The tuning range covers all frequencies between 528 kilocycles and 1750 kilocycles (171 meters to 565 meters). These frequencies cover the standard broadcast band and in addition police calls and some amateur transmitters. This receiver is designed to operate on 50-00 cycle AC or DC at voltages between 105 and 130. These are standard voltages used practically all over the United States and in some foreign countries. The audio power output of the receiver is a maximum of 2 watts. The receiver should not be connected to any power line having higher voltage than mentioned above. On DC operation reverse plug if receiver does not commence operating one minute after switch is turned on. On AC operation reversal of the plug in some cases may reduce hum.
MAJESTIC RADIO & TELEV. CORP.

CHASSIS LAYOUT

MODEL 55

In a super-heterodyne it is very important when realigning the receiver, to use the same frequencies as are used at the factory. Alignment is best accomplished by using an output meter across the voice coil and aligning for maximum. The I. F. frequency is 455 K. C. The short wave must be aligned before the broadcast band. This is done at only one frequency, 6 megacycles. On the broadcast band the alignment frequencies are 1500 and 600 K. C. 1500 K. C. is the first to be aligned using the shunt trimmers. When aligning 600 K. C., adjust the series pad, rocking the gang condenser to assure proper alignment.
IF 455KC:
Adjust trimmers C13, C14, C16, C17 for maximum signal; attenuate signal to avoid misalignment due to A.V.C.

SW BAND:
Ground signal gen. to chassis through .1 mf cond. Osc. at 7.2 MC through 400 ohm carbon resistor to Ant. lead (blue). Turn band selector o'clockwise to 3rd pos. from extreme left. Variable fully open; set C7 at minimum cap. tighten to signal. Osc. at 6 MC tune receiver to signal, adjust C2 to max. and adjust dial calibration. Check band at 4.25 and 2.40 MC.

BC BAND:
Band selector and tone control switch to extreme left. Apply 600 KC through 200 mmf cond to Ant. lead, dial at 600 KC; adj. C9 to max. signal. Osc. at 1750 KC; dial at 1750 KC; adj. C8 to max. sig. Signal at 1500 KC; dial to signal, adj. C3 to max. sig. Osc. at 600 KC adjust C9 to max. sig. with variable. Osc at 1500 KC; tune to max. sig., readjust C3 to maximum signal.

WAVE TRAP:
Band sw. in BC position, dial below 650 KC where no station is heard. Apply 455KC, Adj. C1 to min.
Correct alignment is extremely important. The receiver is properly aligned at the factory and should not be disturbed unless it is absolutely necessary. The procedure is as follows: Turn wave switch to broadcast position (full counter clockwise) and rotate variable condenser until it is about 50% engaged. Apply a 455 KC signal to the grid of 6A8G mixer tube through a tubular condenser on the order of .1 MFD. Referring to chassis layout, adjust C30, C29, C31 and C32 for maximum signal using of course some sort of indicating device such as an AC volt meter or output meter across the voice coil of the speaker. It may be necessary to apply a very strong signal to “find” the signal until alignment is approached. It is advisable to maintain as low a signal input as conveniently possible in order to minimize the possibility of misalignment resulting from A.V.C. and overload effects. If a squeal is heard while tuning, rotate the gang condenser slightly and it should disappear. Naturally, the ground side of the generator should be connected to the chassis either directly or through the .1 MFD condenser.

Short Wave Band

Rotate the wave band switch to full clock wise position. Connect high side of generator output to antenna lead through a 400 ohm dummy antenna. Completely disengage variable condenser. Apply 18.5 meg. signal. Unscrew trimmer C26 to a minimum capacity, slowly turn the screw so that the trimmer capacity increases until the signal is heard. Apply 16 meg. signal, rotate gang condenser until this signal is heard. Adjust C27 for maximum response. It may be found advisable to “rock” generator frequency back and forth through signal to offset detuning effect from interaction between input and oscillator circuits at high frequencies. Check alignment through medium of sensitivity at 11 meg. and 6
ADJUSTMENT OF PUSH BUTTONS

1. Determine which four stations you desire to set up on the push buttons.
2. Determine the frequency of these stations.
3. Determine the proper push buttons on which these stations should be set up from the following tube chart.

4. Push the proper push button.
5. Using an insulated screwdriver, adjust the oscillator trimmer corresponding to the proper push button as shown in Fig. 2 until the station is tuned in with best possible response.
6. Adjust the oscillator trimmer corresponding to the proper push button until the station already tuned in is tuned in with best possible response.
7. Repeat steps 4, 5, and 6 for the other push buttons.
8. It is desirable to check the push buttons occasionally for proper adjustment, as extreme climatic variations may affect the push buttons set on high-frequency stations.

The tubes used are:

1-6A7 Frequency Converter
1-6D6 Intermediate frequency amplifier
1-75 Second detector, AVC, and audio driver
1-25L6G Beam power output
1-25Z5 Rectifier
1-L49B Plug-in ballast resistor

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ALIGNMENT - Turn wave change switch to BC pos. and rotate var. cond. until about 50 percent engaged. Apply a 455 KC sig. to 6A8G thru a .1 mf cond. 
Adjust trimmers marked "Trim 455 KC" for maximum signal.

SHORT WAVE BAND - Rotate wave band switch to full clockwise pos. Connect high side of gen. o.p. to ant. lead thru 400 ohm dummy ant. Set dial at 18 MC - Apply 18 MC signal. 
Adj. C36 trim. to min. cap., slowly turn screw so trim. cap. increases until signal is heard. Apply 18 MC sig. and adj. C7 and C1 for max. - Check align. thru medium of sensitivity at 11 meg. and 6 meg. resp. - When align. at 18 MC the C7 trim. may indicate 2 maxima. Maxima obtained with trimmer tighter is the desired one. Check by leaving gang cond. set and shifting to higher freq.: 19 meg. where image should appear. If properly aligned it should require about 10 times six volt. for image to give same O.P. as real signal.

POLICE BAND - Shift wave band switch to middle pos. - Apply 5 MC sig. - Dial at 5 MC. 
Adj. C34 trim. as previous band until max. sig. is heard. Apply 5 meg. sig. and adj. Check alignment at 3.5 and 2 MC resp. Check for image same as previous band.

BROADCAST BAND - Use a 200 mmf cond. for dummy ant. on this band. Shift wave band sw. to full counter clockwise. Adj. trims C3 and C9 to medium tight pos. - Dial at 600 KC. 
Apply 600 KC sig. and adj. padder C32 for max. - Dial at 1500 KC and 1500 KC sig. adj. C33 for same. Then adj. trims C3 and C9 for max. - Shift gang to 600 KC and apply 600 KC sig. - Adjust C4 for max. sig. - Recheck 1500 KC trimming.
MAJESTIC RADIO & TELEV. CORP.

MODELS 1056X, 1058X
Schematic, Voltage

The tubes used are:
- 1: 6U7 G
- 1: 6A8 G
- 1: 6G7 C
- 1: 6Q7 G
- 1: 6Q5
- 1: 6Q8 G
- 1: 6ES8

R.F. Amplifier
Modulator
Oscillator
Catadiode Amplifier
2nd Det. and AVE Amp.

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There are three terminals on back of chassis marked A, D, G. Terminal A is for use with ordinary outdoor antennas from 30 to 50 feet in length. Terminal G is for connection to a suitable ground such as a water pipe, although radiators or other type grounds are often used successfully. Terminal D is to be used in combination with A when a double type antenna is used and under these conditions there should be no connection between terminals D and G.
PHONOGRAPH—For phonograph, you can use the MAJESTIC Wireless record player, Model 3 PW, or any standard record player. When using a standard record player, place in the pick-up tips in the cabinet marked "PHONO" at the rear of the receiver. If you get undue hum, reverse these pick-up tips. Push the push-button marked "PHONO" and adjust the Volume, Tone, Volume Depression and Bass Compensation by means of the controls on the receiver.

AUTOMATIC FREQUENCY CONTROL—Model 1656X

When tuning manually on the broadcast or "A" band, the station may be pulled and held into proper tuning by using the AFC. This is done by pushing the first button from the right. If the station is approximately tuned, the AFC will do the rest and assure proper tuning.

This should be used only on local or strong stations as the AFC will cause the set to tune itself to the strongest stations within its range.

To release the AFC, push the AFC button slightly upward. This will cause it to come out in the same manner as the "PHONO" button.

SETTING UP OF PUSH BUTTONS

To adjust the push buttons, turn the band switch knob, the second one from the left, all the way to the right, and pull it until the position marked "S" on the cabinet. (Going to the back of the receiver, adjust the coil marked No. 3 in figure 2.) By turning the screw in the center of the coil by means of a screwdriver, until the station you desire to hear is heard with maximum volume and best tone.

It is desirable to turn the tone control to high fidelity when listening on the push-buttons.

Only local or strong stations should be set up on the push-buttons.

<table>
<thead>
<tr>
<th>Push button Number</th>
<th>Model 1565X</th>
<th>Model 1656X</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>720 KC's to 1750 KC's</td>
<td>720 KC's to 1750 KC's</td>
</tr>
<tr>
<td>2</td>
<td>700 and 1560 KC's</td>
<td>720 and 1750 KC's</td>
</tr>
<tr>
<td>3</td>
<td>700 and 1560 KC's</td>
<td>720 and 1750 KC's</td>
</tr>
<tr>
<td>4</td>
<td>680 and 1110 KC's</td>
<td>680 and 1110 KC's</td>
</tr>
<tr>
<td>5</td>
<td>680 and 1110 KC's</td>
<td>680 and 1110 KC's</td>
</tr>
<tr>
<td>6</td>
<td>680 and 1110 KC's</td>
<td>680 and 1110 KC's</td>
</tr>
<tr>
<td>7</td>
<td>540 and 720 KC's</td>
<td>540 and 720 KC's</td>
</tr>
<tr>
<td>8</td>
<td>540 and 720 KC's</td>
<td>540 and 720 KC's</td>
</tr>
<tr>
<td>9</td>
<td>540 and 720 KC's</td>
<td>540 and 720 KC's</td>
</tr>
<tr>
<td>10</td>
<td>&quot;PHONO&quot;</td>
<td>&quot;PHONO&quot;</td>
</tr>
<tr>
<td>11</td>
<td>&quot;PHONO&quot;</td>
<td>&quot;PHONO&quot;</td>
</tr>
<tr>
<td>12</td>
<td>&quot;PHONO&quot;</td>
<td>&quot;PHONO&quot;</td>
</tr>
</tbody>
</table>

When the button is set up and the wave band switch is turned all the way to the left, counter clockwise, pushing any one of the buttons will cause the receiver to receive the station set up on that particular button.

WARNING

When operating the set on "RADIO," make certain that the phonograph push-button is out. If it is not, pushing slightly upwards on this push-button will cause it to be released and come out.
Condenser Alignment

Correct alignment is extremely important in connection with all wave receivers. The receivers are all properly aligned at the factory with precision instruments and realignment should not be attempted unless all other possible causes of the faulty operation have first been investigated and unless the service technician has the proper equipment. A signal generator that will provide an accurately calibrated signal of 456 K. C. and accurately calibrated signals over the broadcast and short wave bands, 530-1740 K. C. and 58-183 M. C., is required. An output indicating meter is also necessary. It will be practically impossible to align the receiver if unsatisfactory apparatus is used.

Use a non-metallic screwdriver for the adjustments. The complete procedure is as follows:

Intermediate Frequency Adjustment

Set the signal generator for 456 K. C. Connect the antenna lead of the signal generator to the grid of the 1st detector through a 0.5 mfd. condenser. Turn the tuning condenser rotor until the plates are completely out. The ground lead from the signal generator goes to the ground lead of the receiver. The volume control should be at the maximum position. Attenuate the signal so that A. V. C. action is not obtained.

Then adjust the four I. F. trimmer condensers until maximum output is obtained. The adjusting screws for these condensers are reached from the top of the chassis and are in the round I. F. cans—See Fig. 2. The openings to the trimmer condensers are covered over by a small cover plate which is held in position by a screw. Loosen these screws until the cover plates can be swung around.

Broadcast Band Adjustment

The broadcast short wave switch should be in the broadcast position. Set the signal generator for 1740 K. C. Turn the rotor to the full open position. The antenna lead from the signal generator is in this instance connected to the antenna lead of the receiver. Attenuate the signal so that A. V. C. action is not obtained. Adjust the oscillator broadcast trimmer until maximum output is obtained. This trimmer is on the tuning condenser and its location is shown in Fig. 2.

Then set the signal generator for 1500 K. C. Turn the rotor until maximum output is obtained. Loosen the pointer screw and set the pointer at the 1500 K. C. mark on broadcast band scale. Retighten pointer screw. Then adjust the oscillator and 1st detector broadcast trimmers until maximum output is obtained.

Next set the signal generator for 600 K. C. and adjust the 600 K. C. trimmer. The adjusting screw is reached through a hole in the front panel of the chassis as shown in Fig. 2. Turn the tuning condenser rotor until maximum output is obtained. Then turn the rotor slowly back and forth over
### Twenty-Five Cycle Receiver

**Alignment, Part 2**

**Voltage, Drive Data Changes, Parts**

**Power Unit**

---

**Short Wave Oscillator**

---

**Alignment Chart**

---

**Repair Parts List for Tube**

---

**Broadcast and Short Wave**

---

**Caution**

---

OPERATION:
The two control knobs in sequence from left to right are (see Fig. No. 2)
Knob 1, Volume Control and On-Off Switch.
Knob 2, Tuning Knob. (Side of Cabinet).

KNOB 1. VOLUME CONTROL AND "ON"-"OFF" SWITCH ARE COMBINED:
When turning on, a click will be heard and the dial will light. Wait approximately 45 seconds for the tubes to heat up. Turn knob all the way to the left to turn set
off.

KNOB 2. MANUAL TUNING:
This radio may be used to tune in stations either by the conventional manual method or by using the Automatic levers.
The tuning range of the radio is from 535 to 1735 kilocycles, the dial being calibrated in channel numbers. It covers all standard broadcast channels and one police band.
To convert channel numbers to kilocycles, add one zero. For example, 170 is 1700 kilocycles.

PROCEDURE FOR SETTING THE AUTOMATIC LEVERS:
There are six levers on the dial by means of which six stations may be selected, (See "B," Fig. 2).

TYPICAL TUNING DATA
The procedure for setting the Automatic Levers is the same for all the above mentioned model's. However, the number of Automatic Levers may differ.

The locking screw "C" and automatic levers shown in both figs 1 and 2 are for the Model 62-552 receiver. However, this is a typical receiver.
MONTGOMERY-WARD & CO.

MODELS 62-292, 62-294
62-373, 62-374

Schematic

Fig. 2—Schematic Circuit Diagram

Sensitivity
B Range \(13.5\) Microvolts Average
D Range \(21.0\) Microvolts Average

Tuning Frequency Range
B Range 528 to 1730 KC
D Range 5750 to 18300 KC

Power Consumption \(-\) 1.3 Amperes at 6.3 Volts
Power Output \(-\) 360 Milliwatts Undistorted
725 Milliwatts Maximum

Selectivity \(-\) 35 KC Broad at 1000 times Signal
Intermediate Frequency \(-\) \(-\) \(-\) 456 KC
Speaker \(-\) 8" P.M. Dynamic—Mantel Models
8" P.M. Dynamic—Console Models
**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:
- An All Wave Signal Generator which will provide an accurately calibrated signal at the last frequencies as listed.
- Output Indicating Meter; Non-Metallic Screwdriver.
- Dummy Antennas — 1 ml, 200 mmf, and 400 ohms.

### TABLE 10-6 MONTGOMERY-WARD MODELS 62-292, 62-294 Coils, Socket, Trimmers

<table>
<thead>
<tr>
<th>Step</th>
<th>Band Switch Setting</th>
<th>Demont</th>
<th>Frequency Setting</th>
<th>Connection at Radio</th>
<th>Trimmers Adjusted</th>
<th>Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Range B</td>
<td>I ref.</td>
<td>456 KC</td>
<td>Grid of Ant Det.</td>
<td>1st L.F. (C9) &amp; (C4)</td>
<td>Turn Rotor to Full Open</td>
</tr>
<tr>
<td>2</td>
<td>Range B</td>
<td>200 mmf</td>
<td>1730 KC</td>
<td>Antenna Lead</td>
<td>Oscillator Range B (C9)</td>
<td>Turn Rotor to Full Open</td>
</tr>
<tr>
<td>3</td>
<td>Range B</td>
<td>200 mmf</td>
<td>1500 KC</td>
<td>Antenna Lead</td>
<td>1st Ant. Range B (C7)</td>
<td>Turn Rotor to Max. Output</td>
</tr>
<tr>
<td>4</td>
<td>Range B</td>
<td>200 mmf</td>
<td>600 KC</td>
<td>Antenna Lead</td>
<td>2nd Ant. Range B (C8)</td>
<td>Turn Rotor to Max. Output</td>
</tr>
<tr>
<td>5</td>
<td>Range D</td>
<td>400 Ohm</td>
<td>15000 KC</td>
<td>Antenna Lead</td>
<td>Oscillator Range D (C8)</td>
<td>Turn Rotor to Full Open</td>
</tr>
<tr>
<td>6</td>
<td>Range D</td>
<td>400 Ohm</td>
<td>15000 KC</td>
<td>Antenna Lead</td>
<td>Ant. Range D (C5)</td>
<td>Turn Rotor to Max. Output</td>
</tr>
<tr>
<td>7</td>
<td>Range D</td>
<td>400 Ohm</td>
<td>6000 KC</td>
<td>Antenna Lead</td>
<td>Ant. Range D (C2)</td>
<td>Turn Rotor to Max. Output</td>
</tr>
</tbody>
</table>

**NOTE:** Resistance of windings less than 1 ohm are not shown.

Fig. 5—Coil Terminal Arrangement and D.C. Resistance of Windings

**VOLTAGES AT SOCKETS**

<table>
<thead>
<tr>
<th>Tube Function</th>
<th>Voltage Between Socket Prong and Ground (Unless otherwise indicated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IGBT 1st Det.—S.S.</td>
<td>[Table entries]</td>
</tr>
<tr>
<td>IGBT L.R.</td>
<td>[Table entries]</td>
</tr>
<tr>
<td>IGBT 2nd Det.</td>
<td>[Table entries]</td>
</tr>
<tr>
<td>IGBT Audio Amp.</td>
<td>[Table entries]</td>
</tr>
<tr>
<td>IGBT Driver</td>
<td>[Table entries]</td>
</tr>
<tr>
<td>IGBT Output</td>
<td>[Table entries]</td>
</tr>
</tbody>
</table>

(1) As read on 1000 volt scale.

**NOTES:**
- When aligning the chart 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. This signal will then be heard at 15,000 less 917 KC, or 14,083 KC on the dial. It may be necessary to increase the input signal to hear the image.

A synchronous type vibrator is used in the power unit. This vibrator interrupts the current through the primary of the power transformer and also rectifies the current in the secondary circuit.

If, after a new 7 section dry electrolytic condenser has been installed, vibrator hash is encountered, reverse the connections of the 2 sections.
NOTE: Circuit diagram and voltage chart indicate connections and voltage measurements for the cathode-ray tuning eye tube type 6U5. This data only applies to the model 62-323; the model 62-353 is not equipped with a cathode-ray tuning eye.

ALIGNMENT PROCEDURE

- Volume control-Maximize 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.

**NOTE:**

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 m, 200, 300, and 400 ohms.
- The following equipment is required for alignment:

**SERVICE NOTES:**

Voltage taken from different points of circuit to chassis are measured with voltmeter control full on all tubes in the sockets and speaker connected, with a volt meter having a resistance of 1000 ohms per volt. All voltages as indicated on the voltage chart are measured with volume control at 115 volts on the primary of the power transformer.

**ALIGNING INSTRUCTIONS:**

**SHORT WAVE**

- Volume control-Maximize all adjustments.

**NOTE:**

1. Turn the dial back and forth slightly (one) and adjust trimmer until the peak of greatest intensity is obtained.

**ALIGNMENT PROCEDURE MODELS 62-380 Series A**

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 m, 200, 300, and 400 ohms.

**NOTE:**

Adjust 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.

**SERVICE NOTES:**

Voltage taken from different points of circuit to chassis are measured with voltmeter control full on all tubes in the sockets and speaker connected, with a volt meter having a resistance of 1000 ohms per volt. All voltages as indicated on the voltage chart are measured with volume control at 115 volts on the primary of the power transformer.

**ALIGNING INSTRUCTIONS:**

**NOTE:**

- Turn the dial back and forth slightly (one) and adjust trimmer until the peak of greatest intensity is obtained.

**ALIGNMENT PROCEDURE MODELS 62-353 Series A**

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 m, 200, 300, and 400 ohms.
**IF ALIGNMENT - 465 KC**

Vol. Control full on, variable condenser in minimum capacity position;
Adjust to resonance 2 trimmers at 465 KC, thru a .1 mf condenser.

**SHORT WAVE ALIGNMENT - 2000 to 7000 KC**

Dial at 6 MC, adjust to resonance the SW oscillator trimmer (at top of rear variable gang condenser) and
SW Antenna trimmer No. 1 (Fig. 1) at 6 M.C., thru a .1 mf condenser and 400 ohm resistor series.

**BROADCAST ALIGNMENT - 535 to 1720 KC**

Gang condenser in minimum capacity position; signal generator in series with a 200 muf condenser and 20 ohm resistor series;

(a) Adjust oscillator trimmer No. 3 Fig. 3, to resonance at 1720 KC.
(b) Adjust Antenna trimmer No. 2 Fig. 3, to resonance at 1400 KC.
(c) Adjust Padder No. 4 Fig. 3, to resonance at 600 KC.
(d) Repeat adjustments a & c until sensitivity is at maximum.
(e) Check for tracking & sensitivity at 1400, 1000 and 600 KC.

Do not bend plates of condenser to correct tracking.

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I.F. vol.contr.full on; Var.at 1400KC. At 465KC,.1 mfd dummy to grid cap of 6K7 tube,align output I.F.signal to 6A8 grid cap,align input I.F.
B.C.BAND-Sw.in B.C.pos.Var.at min.cap.;200 mfd and 20 ohm series resistor dummy to ten ant. lead. At 1750KC adjust trimmer B' to resonance. At 1400KC,trimmer A' and PRE-SEL section of var. to resonance. At 600KC trimmer F' to resonance. Repeat all adjustments of the band. Check sensitivity at 1000 KC.
S.W.BAND-.1 mfd,cond. in series with 400 ohm resistor as dummy;band sw. in S.W. pos. At 17MC,dial at 17MC.adjust G' and C' to resonance. At 6 MC check sensitivity for band coverage check set at 18,1 and 5,5 KC.
MIDDLE BAND-Band sw. at middle wave pos.Dummy as for S.W. adjustments. At 5000 KC,dial at 5000 KC, adjust D'and B' to resonance. At 1900KC check sensitivity; then recheck B.C.Band alignment.
After the antenna is connected, set the signal generator for 175 KC. Connect the output of the signal generator through a 0.05 mfd. condenser to the stator of the interstage section (middle) of the tuning condenser. Connect the ground lead of the signal generator to the chassis. Set the volume control at maximum and the "LD" switch in the distance position. Attenuate the signal from the signal generator to prevent the bleeding off action of the AVC. Then adjust the 4 IF trimmers until maximum output is obtained. Insert the antenna cable plug in the antenna socket on the chassis. Now refer to the antenna capacity changeover socket.

If the jumper is inserted between the HC holes of this socket and the entire 60-inch shielded cable (70 mfd.) is being used, connect the antenna wire at the other end through a 150 mfd. condenser to the antenna post of the signal generator.

If the jumper is inserted between the LC holes of this socket, the antenna cable has been cut as explained in the instructions. If cut in half (30-inch length), the capacity of the antenna cable is approximately 35 mfd. Connect the antenna wire, in this case, through a 25 mfd. condenser to the antenna post of the signal generator.

Turn the adjusting screw of the antenna trimmer (1400 KC trimmer) up or down until maximum output is obtained.

Set the signal generator for 1581 KC. Turn the rotor of the tuning condenser to the full open position. Adjust the trimmer of the oscillator section of the gang condenser until maximum output is obtained. See Fig. 4 for location of this trimmer.

Set the signal generator for 1400 KC. Turn the rotor of the tuning condenser carefully until maximum output is obtained. Adjust the interstage and antenna 1400 KC trimmers for maximum output. Do not change the setting of the oscillator trimmer.

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Alignment and Calibration

Set the signal generator for 175 KC and connect the output of the signal generator through a .05 mf condenser to the input of the 1st detector section of the tuning condenser. Connect the ground lead of the signal generator to the chassis. The chassis should be in the case. Set the volume control at maximum and the 1st or 2nd switch in the distance position. Adjust the trimmer from the signal generator to prevent the level of the peak of the AVC. Then adjust the three I.F. trimmers until maximum output is obtained—See Fig. 2.

Set the signal generator for 1561 KC. Turn the rotor of the tuning condenser to the full open position. Insert the antenna plug with the base on the high capacity (HC) side. Connect the shielded antenna lead from the chassis through a 120 mf condenser to the antenna post of the signal generator. Adjust the trimmer of the oscillator section of the three gang condenser until maximum output is obtained.

Set the signal generator for 1400 KC. Carefully turn the rotor of the tuning condenser until maximum output is obtained. Adjust the lat detector and antenna 1400 KC trimmers for maximum output. Do not change the setting of the oscillator trimmer.

Set the signal generator for 600 KC. Connect the output through a .05 mf condenser to the control grid of the 6K7 R. F. tube. Rock the tuning condenser rotor and adjust the 600 KC oscillator trimmer (See Fig. 2) until the peak of greatest intensity is obtained.

Leave the signal generator set for 600 KC and re-connect the output to the shielded antenna lead through a 120 mf condenser. Adjust the 600 KC antenna trimmer to maximum. (This trimmer is reached from outside of the case—See Fig. 1.) After the alignment procedure is completed, the antenna plug may be withdrawn and reinserted on the HC side if a low capacity (50 mf) ear antenna is used.

Adjusting Antenna 600 KC Trimmer—After the radio is installed and the ear antenna is connected, it is necessary to readjust the antenna trimmer. Tune in a weak signal at approximate ly 600 KC with the volume control about three-fourths on. Turn the adjusting screw of the antenna 600 KC trimmer up or down until maximum output is obtained.

Calibrating the Radio—To calibrate the radio, tune in a station of known frequency. Remove the dial lamp assembly from the back of the dial unit. The scale calibrates the bottom of the dial lamp tube. Hold the tuning knob tight with a blade screwdriver and turn this screw so that the pointer travels in a clockwise direction until it is at the frequency of the station being received.

Location of Tubes and Vibrator.

Alignment Trimmers

Power Consumption - 50 Watts (At 117 volts 60 cycles)
Power Output - 1.0 Watts Undistorted
Selectivity - 38 KC Broad at 1000 times signal
Sensitivity

B Range (Manual Tuning)...... 15 Microvolts Average
B Range (Automatic Tuning) - 15 Microvolts Average
D Range - 25 Microvolts Average

Intermediate Frequency - - - - 456 KC
Speaker - - - - - - - - - - - - 6" or 8" Dynamic Tuning Frequency Range

B Range (Manual Tuning) ... 528 to 1730 KC (Kilocycles)
D Range (Manual Tuning) ... 5750 to 18300 KC (Kilocycles)
Buttons 1 and 2 (Automatic Tuning) ... 820 to 1600 KC
Buttons 3 and 4 (Automatic Tuning) ... 650 to 1250 KC
Buttons 5 and 6 (Automatic Tuning) ... 520 to 980 KC

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.

<table>
<thead>
<tr>
<th>TF GENERATOR</th>
<th>FREQUENCY</th>
<th>CONNECTION AT RADIO</th>
<th>DUMMY ANTENNA</th>
<th>BAND SWITCH</th>
<th>CONDENSER SETTING</th>
<th>ADJUST TRIMMERS TO MAXIMUM</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.F. 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. (C16) &amp; (C17)</td>
<td>2nd I.F. (C19) &amp; (C20)</td>
</tr>
<tr>
<td>RANGE B</td>
<td>1730 KC</td>
<td>Antenna Lead</td>
<td>200 mmf.</td>
<td>B Range</td>
<td>Turn Rotor to Full Open</td>
<td>Oscillator Range B (C8)</td>
</tr>
<tr>
<td></td>
<td>1500 KC</td>
<td>Antenna Lead</td>
<td>200 mmf.</td>
<td>B Range</td>
<td>Set Indicator to 1500 KC—See Note A</td>
<td>Ant. Range B (C4)</td>
</tr>
<tr>
<td></td>
<td>600 KC</td>
<td>Antenna Lead</td>
<td>200 mmf.</td>
<td>B Range</td>
<td>Turn Rotor to Max. Output</td>
<td>600 KC (C9) Rock Rotor—See Note B</td>
</tr>
<tr>
<td>WAVE TRAP</td>
<td>456 KC</td>
<td>Antenna Lead</td>
<td>200 mmf.</td>
<td>B Range</td>
<td>Turn Rotor to 600 KC</td>
<td>Wave Trap (C11)</td>
</tr>
<tr>
<td></td>
<td>18,300 KC</td>
<td>Antenna Lead</td>
<td>400 Ohm</td>
<td>D Range</td>
<td>Adjust Sig. Gen.—See Note C</td>
<td>Adjust for MINIMUM Output</td>
</tr>
<tr>
<td></td>
<td>15,000 KC</td>
<td>Antenna Lead</td>
<td>400 Ohm</td>
<td>D Range</td>
<td>Ant. Range D (C7)</td>
<td>Rock Rotor—See Note B</td>
</tr>
</tbody>
</table>

PERMEABILITY TUNING UNIT

<table>
<thead>
<tr>
<th>BUTTON</th>
<th>DEPRESSED (Band Switch In Push Button Position)</th>
<th>TURN SETTING SCREW TO MAXIMUM OUTPUT (See Instruction Book)</th>
<th>ADJUST COIL POSITION TO MAXIMUM OUTPUT (See Note D)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1100 KC</td>
<td>Antenna Lead</td>
<td>200 mmf.</td>
<td>No. 1</td>
</tr>
<tr>
<td>1100 KC</td>
<td>Antenna Lead</td>
<td>200 mmf.</td>
<td>No. 2</td>
</tr>
<tr>
<td>850 KC</td>
<td>Antenna Lead</td>
<td>200 mmf.</td>
<td>No. 3</td>
</tr>
<tr>
<td>850 KC</td>
<td>Antenna Lead</td>
<td>200 mmf.</td>
<td>No. 4</td>
</tr>
<tr>
<td>700 KC</td>
<td>Antenna Lead</td>
<td>200 mmf.</td>
<td>No. 5</td>
</tr>
<tr>
<td>700 KC</td>
<td>Antenna Lead</td>
<td>200 mmf.</td>
<td>No. 6</td>
</tr>
</tbody>
</table>

Attenuate the signal from the signal generator to prevent the leveling-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 1500 KC on the dial, loosen the 2 clamps which hold the pointer assembly on the cord, move the pointer to the 1500 KC mark, and tighten the clamps.

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

NOTE C—Leave condenser rotor at the 600 KC setting and adjust the signal generator until maximum output is obtained at or near 456 KC.

NOTE D—At the top of the permeability tuning unit see is six "W" openings. Insert the end of a pair of long nose pliers or a screwdriver in the "W" opening of the proper button and adjust the position of the antenna (rear) coil by twisting the pliers or screwdriver until maximum output 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 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.

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Procedure for Setting the Station Buttons

Selecting the Stations to be Set

There are 6 buttons on the push button tuning dial by means of which 6 stations may be set for quick tuning. They are numbered 1 to 6 in Fig. 2.

Make a list of your favorite stations, those which you tune in regularly. There may be any number up to and including 6 in this list.

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

Frequencies Covered by Each Button

The frequency range of each station button is shown in Fig. 2. Any station within the range of a button may be set. Although, in some cases, it may be possible to set a certain station on several buttons, it is better to set the stations so that the kilocycle numbers decrease from buttons 1 to 6.

Setting a Station Button

Select a station from the list you have prepared, preferably the station with the highest kilocycle number, and tune in this station with the tuning knob in the usual way. Determine what program is being broadcast.

At each side of the escutcheon plate is an escutcheon screw. See Fig. 2. Remove the escutcheon plate by unscrewing these two screws. Be careful to avoid scratching the plate.

When this is done, the setting screws above the six buttons will be exposed.

Turn the band switch knob to the PUSH BUTTON TUNING position. See Fig. 2. The station tuned in previously will probably disappear.

If the kilocycle number of the station tuned in is within the range of button No. 1, push this button in. The same station on a different station may be heard.

With a small screwdriver, slowly turn the setting screw above button No. 1 in or out until the desired station (the one previously tuned in) is heard. Turning the screw in (clockwise) will tune in stations with higher kilocycle numbers while turning the screw out (counter-clockwise) will tune in stations with lower kilocycle numbers. Be sure not to tune in some other station broadcasting the same program. Using the tuning eye as a guide, accurately tune in this station. The station is now set on this button.

To determine whether the correct station has been set, turn the hand switch knob back to the BROADCAST position. The same station should be heard (provided the tuning knob has not been turned). If it is not, turn the hand switch knob to the PUSH BUTTON TUNING position again and retune with the setting screw.

Remove the station call letter tab from the sheet provided and push the tab all the way to the bottom of the rectangular space above the correct station button opening in the escutcheon plate. Then cover the call letter tab with one of the clear celluloid tabs.

Proceed in the same manner to set stations on any of the remaining buttons. Use blank tabs above buttons on which stations are not set.

After all of the stations have been set, carefully replace the escutcheon plate.

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. The old call letter tab may be removed by sticking a pin through the notch in the celluloid tab and through the call letter tab.

Fig. 2—Front View

PC. 93RR73A


Procedure for Setting the Automatic Tuner Pushbuttons now, proceed as follows—

Unlock the Tuner Mechanism

(NOTE: The automatic tuner mechanism is locked tight when radio is shipped from the factory.)

1. Remove the snap-in button from the control escutcheon plate on the front panel of the radio (see C. Reset Lock Screw, Fig. 2). If the snap-in button will not come out easily using your fingers, pry it off with a screwdriver or a knife, being careful not to mar the finish on the escutcheon plate.

2. Unlock the tuner mechanism by inserting a screwdriver through the hole in the panel. Press in and loosen the locking screw by turning it to the right as far as it will turn without forcing.

You will note that as the locking screw is turned it will turn easily until the dial reaches its stop and then a slight amount of force will be required to actually start unlocking the tuner mechanism. Beyond this point, the locking screw will turn quite easily again until the tuner mechanism is completely unlocked. At this point do not force the locking screw any further. The tuner mechanism is now unlocked.

SETTING PUSHBUTTONS:

1. Press in all the way any one of the automatic pushbuttons. Holding it in firmly, press on the Dial Tuning Control, No. 4, and tune in the station indicated on the station call letter tab on this pushbutton. You will note that in order to tune the station, the Dial Tuning Control will have to be pressed slightly. Move the Dial Tuning Control very slowly up and down (while still holding the automatic tuner pushbutton in firmly), noting the width of the shadow on the screen of the cathode-ray tuning eye. Minimum width on the tuning eye indicates the ideal tuning position (resonance). The station will then be clearest and accurately tuned in.

2. Press in another tuner pushbutton. Holding it in firmly, press on the Dial Tuning Control and carefully tune in the station indicated on the call letter tab on this pushbutton.

3. Follow this procedure until you have selected all of your favorite stations. (NOTE: If the dial mechanism works hard or has a tendency to slip when setting up a station for one of the pushbuttons, it is due to the tuner mechanism not being unlocked all the way. Loosen the reset locking screw. The Dial Tuning Control should turn the dial drum freely with a pushbutton pushed in.)

LOCKING THE TUNER MECHANISM

1. To lock the tuner mechanism insert a screwdriver through the hole in the escutcheon panel and press in and turn the reset locking screw to the left, until it cannot be turned any further without forcing.

2. This will lock the tuner mechanism and all the stations that have been set up on the pushbuttons will be locked in place for automatic tuning. Press in any one of the pushbuttons and—YOUR FAVORITE STATION IS SELECTED.
MONTGOMERY WARD & CO.

MODEL 62-380
Series A
Serial: 95618200 up
Schematic, Voltage Socket

BAND SWITCH
Extreme Right Rotation
Extreme Left Rotation

FREQUENCY RANGE
Short Wave
5.5 to 18.1 MC.
Broadcast
535 to 1720 KC.

Power Consumption
.55 Watts (At 115 volts 60-60 cycles)

Power Output
750 Watts Undistorted, 1.6 Watts Maximum

Intermediate Frequency
465 KC.

BAND SWITCH

6K6G
607G
6K7
6A8G

I.F. 465 KC

5Y3G

RECTIFIER

FOR ALIGNMENT INDEX

5Y3G

RECTIFIER

BOTTOM VIEW OF SPHER SOCKET

BAND

Series A
Serial: 95618200 up
Schematic, Voltage Socket

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**Montgomery Ward & Co.**

**Models 6Z-471, 6Z-472**

**Schematic**

**Fig. 1—Schematic Circuit Diagram**

- **ANT.**
- **T1 ANTENNA**
- **6A8G 1ST DET.**
- **6U7G I.F.**
- **T2 OSCILLATOR**
- **6J5G OSC.**
- **6U5 TUNING INDICATOR**
- **6Q7G 2ND DET & 1ST A.J.**
- **5Y3G RECT.**
- **6K6G OUTPUT**

**JAN., 1938**

- **Power Consumption** - 50 Watts (At 117 volts 60 cycles)
- **Power Output** - 1.0 Watts Undistorted
- **Selectivity** - 38 KC Broad at 1000 times Signal
- **Speaker** - 6" or 8" Dynamic

**Tuning Frequency Range**

- **B Range** - 528 to 1730 KC (Kilocycles)
- **D Range** - 5750 to 18300 KC (Kilocycles)

**Sensitivity**

- **B Range** - 15 Microvolts Average
- **D Range** - 20 Microvolts Average

**NOTE: Resistances of windings less than 0.1 ohm are not shown.**
Replacing Drive Cords

Three drive cords, Nos. 1, 2, and 3, as shown in Fig. 3, are used. To replace any of these cords, proceed as follows:

Card No. 1

To replace the gang commutator to full open position.

Turn the drive shaft so that the holes for the cord are vertical. The position of the drive shaft can be shown in Fig. 4.

To the outside of the slot in one end of the cord. From the outside of the hole (A) in the drive shaft, thread the end of the cord through the hole.

Slide a 3/8 inch length of fabric tubing on the cord, placing it near the free end. Fasten the shorter of the two spool windings at the free end of the cord, making the distance between the two loops 274 inches.

Starting at the point where the cord leaves hole (A), wind it around the shaft 3/2 times as shown in Fig. 5. Bring the end up to the wider groove (B) in the drive drum and wind on 34 turns, progressing toward the edge of the groove. Pass the cord through the slot in the lever, placing the fabric tube (C) in position to protect the cord from being cut, and hook the spring to the joint at (2).

Card No. 2

The gang commutator and tuning shaft should be in the same position as explained for Card No. 1.

Tie a double knot in one end of the cord. From the top of the hole (B) in the drive shaft, knot the other end of the cord through the hole.

Slide a 3/8 inch length of fabric tubing on the cord, placing it near the free end. Tie a slip knot with a small loop (C) in the center of the loop, so that the length of the cord is 12 inches between the loops.

Starting at the point where the cord leaves hole (C), wind it around the shaft 3 times as shown in Fig. 5. Tie another knot in the cord on the drive drum, but put the loop in the slip knot over pin (R). Rotate the slip loop clockwise about 3/4 turn. This will unwind the cord on the drive shaft (E).

Pass the cord through the slot at (C), placing the fabric tube (F) in position to protect the cord from being cut. While holding the cord with the wider range, rotate the drive drum counterclockwise. The cord will be pulled into position in the groove.

NOTE:—After the 1600 KC adjustment, it makes it the dial indicator should be at the 1600 KC mark on the dial scale. (If it is not the position of the indicator on the drive cord must be changed. This is a possible error in the groove scale and it is necessary only as there is danger of breaking the clamp which holds the indicator in place. If the indicator must be moved, loosen the clamp at the back which holds it in place, move the indicator to the proper position, and bend the clamp back into place.

If the indicator must be moved, loosen the clamp at the back which holds it in place, move the indicator to the proper position, and bend the clamp back into place.

VOLTAGES AT SOCKETS


VOLTAGE BETWEEN SOCKET PEDING AND GROUND (Unless otherwise indicated)

<table>
<thead>
<tr>
<th>Socket</th>
<th>Function</th>
<th>Prong No. 2</th>
<th>Prong No. 3</th>
<th>Prong No. 4</th>
<th>Prong No. 5</th>
<th>Prong No. 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hot</td>
<td>A.C., 60I</td>
<td>0</td>
<td>120</td>
<td>120</td>
<td>120</td>
<td>120</td>
</tr>
<tr>
<td>Hot</td>
<td>D.C.</td>
<td>0</td>
<td>120</td>
<td>120</td>
<td>120</td>
<td>120</td>
</tr>
<tr>
<td>Neutral</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Ground</td>
<td>Ground</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Screw sizes are as follows

Card No. 1—10-20 CS I.F.

Card No. 2 (A.C. voltage across heater terminals) 2 and 1.

Card No. 3—A.C. voltage as read across filament terminals 2 and 8.

For voltages as read across filament terminals 4 and 8.

Card No. 3

Pressure on Springs on Heart Cams — The heart cams must rotate freely relative to the shaft spacers when the tightening lever is in the "right" position and must not rotate relative to the shaft spacers when this lever is in the "left" position.

Pressure of the spacers against the heart cams is determined by the position of nut (R) on the threaded shaft. As Fig. 5, if the tightening lever is turned to the "right" position, the cams can rotate relative to the shaft, this nut must be tightened. Bend back the ears of washer (S)—See Fig. 5, and tighten nut (R) about 3/4 turn; fixed the ears of the washer down again on nut (R). Tighten the tightening lever, and see if the cams are sufficiently tight.

In general, nut (R) should be set such that the threaded shaft is about 1/8 inch on the end of the slot in the tightening washer with a reasonable amount of pressure is exerted on this lever.

Connection Between Gang Commutator and Cam Shaft—One screw only should be used in the universal joint connection between the commutator shaft and the cam shaft. If two screws are used, considerable more pressure must be exerted on the station levers to rotate the cam shaft.
TO REMOVE CHASSIS FROM THE CABINET:

To remove chassis from the cabinet unscrew the locking screw in the center of the tuning knob and pull tuning knob and volume knob off their shafts. Remove the four mounting screws that hold the bottom plate and chassis to the cabinet. Pull off the five buttons on the levers. Move the chassis toward back of cabinet so that control shafts and dial assembly clear holes in cabinet. Then chassis can be slipped out.
MONTGOMERY WARD & CO.

Schematic, Voltage Socket, Trimmers Alignment

Power Consumption
45 Watts

Power Output
800 Milliwatts Undistorted, 1300 Milliwatts Maximum

Intermediate Frequency
465 Kc.

PARTS (Serial 286-700 and UP)

RESISTORS
R1 BE10118 20M ohm volume control
R2 BE10112 50M ohm—1/2 w.
R3 BE10194 35M ohm—1/2 w.
R4 BE10352 6M ohm—1/2 w.
R5 BE1038 2 megohm—1/2 w.
R6 BE1045 250M ohm—1/2 w.
R7 BE1033 500M ohm—1/2 w.
R8 BE10251 160 ohm—1/2 w.

CONDENSERS
C1 BE1027 2 gang variable condense
C1A BE1297 .005 mica
C2 BE1099 Oscillator Trimmer
C3 BE10109 .02 x 200 v.
C4 BE12312 .0025 mica
C5 BE1009 .02 x 200 v.
C6 BE1971 5 mfd. x 25 v. lytic
C7 BE1970 30 mfd. x 150 v. lytic
C8 BE1970 30 mfd. x 150 v. lytic
C9 BE10220 .1 x 200 v.
C10 BE1292 .005 mica
C11 BE1023 1/2 x 400 v.
C12 BE1026 .02 x 200 v.
C13 BE1070 40 mfd. x 25 v. lytic
C14 BE1089 400 v.
C15 C10 and C15 in one unit, part no. BE1970

FREQUENCY RANGE
530 to 1720 Kc.

FOR SETTING THE AUTOMATIC TUNING LEVERS, SEE INDEX.

The tube complement of this chassis consists of octal base glass and metal tubes.

ALIGNMENT PROCEDURE

The following equipment is required for aligning:

- An all wave signal generator.
- Output indicating meter.
- Non-metallic screwdriver.
- Dummy antennas—1 mil, 100 mmd.

<table>
<thead>
<tr>
<th>BAND</th>
<th>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>465 Kc.</td>
<td>.1 MFD.</td>
<td>Grid of 6A8</td>
<td>Rotor full open (Plates out of mesh)</td>
<td>Two trimmers</td>
<td>L. F.</td>
<td>Adjust to maximum output</td>
</tr>
<tr>
<td>BROADCAST</td>
<td>1720 Kc.</td>
<td>100 mmd.</td>
<td>Antenna Lead</td>
<td>Rotor full open (Plates out of mesh)</td>
<td>Trimmer—Top of rear section of gang</td>
<td>Broadcast Oscillator</td>
<td>Adjust to maximum output</td>
</tr>
<tr>
<td>BAND</td>
<td>440 Kc.</td>
<td>100 mmd.</td>
<td>Antenna Lead</td>
<td>Set dial at 1400 Kc.</td>
<td>Trimmer—Top of front section of gang</td>
<td>Broadcast Antenna</td>
<td>Adjust to maximum output</td>
</tr>
</tbody>
</table>

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Frequency Range 540-1650 Kilocycles
I. F. Frequency 465 K.C.

NOTE: In ISSUE A, a 12SQ7 is used as 2nd Det.-A.V.C.-1st. Audio; Resistor R 10, part BE 130282, 2000 ohm 1 watt, and FL part BE 10794, 6.8 v. Pilot Light are used. For all other parts see parts list.

<table>
<thead>
<tr>
<th>BAND</th>
<th>SIGNAL GENERATOR Frequency Setting</th>
<th>Dummy Antenna 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>465 Kc.</td>
<td>.1 MFD. Grid of 12SA7</td>
<td>Rotor full open (Plates out of mesh)</td>
<td>Four Trimmers on Top (See Fig. 1)</td>
<td>Output and Input I.F. Adjust to maximum output</td>
<td></td>
</tr>
<tr>
<td>BROAD-CAST BAND</td>
<td>1650 Kc.</td>
<td>.1 MFD. Grid of 12SA7</td>
<td>Rotor full open (Plates out of mesh)</td>
<td>Trimmer—Bottom of rear section of gang (See Bottom of Radio)</td>
<td>Broadcast Adjust to maximum output</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1400 Kc.</td>
<td>See Note “A”</td>
<td>Set dial at 1400 Kc.</td>
<td>Trimmer—Bottom of front section of gang (See Bottom of Radio)</td>
<td>Broadcast Adjust to maximum output</td>
<td></td>
</tr>
</tbody>
</table>

NOTE “A” Lay the output lead from the generator in back of the loop antenna. Tune up the output of the generator, picking up the energy in the loop antenna without any electrical connection from the generator.

ALIGNMENT PROCEDURE
Do not remove the back cover of the radio which contains the loop antenna from the chassis. It is important during alignment that the same distance between the loop antenna and the chassis be maintained as when the chassis is installed in the cabinet.

Slight adjustments to the oscillator and antenna circuits can be made without removing the chassis from the cabinet through two holes which are provided on the bottom of the cabinet.

The two adjustments on the variable gang condenser can be reached with a long insulated type screwdriver through these two holes.

- 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.

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### Parts (Serial No. 8LA75800 and UP)

#### Condensers

<table>
<thead>
<tr>
<th>Condenser Type</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1, C2, C3, C4, C5</td>
<td>0.05 mmF</td>
<td>2 gang Variable Condenser</td>
</tr>
<tr>
<td>C6, C7</td>
<td>0.0001 mmF</td>
<td>Series Pad</td>
</tr>
<tr>
<td>C8</td>
<td>0.0001 mmF</td>
<td>Oscillator Section Trimmer</td>
</tr>
<tr>
<td>C9</td>
<td>0.01 mmF</td>
<td>Intermediate Frequency Trimmer</td>
</tr>
<tr>
<td>C10, C11</td>
<td>0.001 mmF</td>
<td>Series Pad</td>
</tr>
<tr>
<td>C12, C13, C14</td>
<td>0.01 mmF</td>
<td>Series Pad</td>
</tr>
<tr>
<td>C15, C16</td>
<td>0.001 mmF</td>
<td>25 volts-lyric</td>
</tr>
</tbody>
</table>

#### Signal Generator

<table>
<thead>
<tr>
<th>Band</th>
<th>Frequency Setting</th>
<th>Dummy Antenna</th>
<th>Connection to Radio</th>
<th>Variable Condenser Setting</th>
<th>Trimmers Adjusted</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 IN5G I.F. Tube</td>
<td>Rotor full open (Plates out of mesh)</td>
<td>Two trimmers on top (See Fig. 1)</td>
<td>Output I.F.</td>
<td>Adj. to maximum output</td>
</tr>
<tr>
<td>I.F.</td>
<td>465 Kc.</td>
<td>1 MFD.</td>
<td>Grid of IA7G</td>
<td>Rotor full open (Plates out of mesh)</td>
<td>Two trimmers on top (See Fig. 1)</td>
<td>Output I.F.</td>
<td>Adj. to maximum output</td>
</tr>
</tbody>
</table>

#### Broadcast Band

<table>
<thead>
<tr>
<th>Frequency Setting</th>
<th>Antenna Lead</th>
<th>Rotor full open (Plates out of mesh)</th>
<th>Trimmer-Top of rear section of gang (See Fig. 1)</th>
<th>Broadcast Oscillator</th>
<th>Antenna Broadcast</th>
<th>Adj. to maximum output</th>
</tr>
</thead>
<tbody>
<tr>
<td>1250 Kc.</td>
<td>200 mmF</td>
<td>Antenna lead</td>
<td>Set dial at 1400 Kc.</td>
<td>B.C. Series Pad</td>
<td>Broadcast oscillator series pad</td>
<td>Adj. to maximum output</td>
</tr>
<tr>
<td>1600 Kc.</td>
<td>200 mmF</td>
<td>Antenna lead</td>
<td>Set dial at 1400 Kc.</td>
<td>B.C. Series Pad</td>
<td>Broadcast oscillator series pad</td>
<td>Adj. to maximum output</td>
</tr>
<tr>
<td>600 Kc.</td>
<td>200 mmF</td>
<td>Antenna lead</td>
<td>Set dial at 600 Kc.</td>
<td>B.C. Series Pad</td>
<td>Broadcast oscillator series pad</td>
<td>Adj. to maximum output</td>
</tr>
</tbody>
</table>

**Note:**
- Turn the dial back and forth slightly (rock) and adjust trimmer until the peak of greatest intensity is obtained.
- Use a 1000 ohm per volt voltmeter between socket terminals and chassis.

---

**Diagram**: Fig. 1—Top View

---

**Text**: VOLTAGES MEASURED WITH 1000 OHM PER VOLTMETER BETWEEN SOCKET TERMINALS AND CHASSIS.

**Antenna Grounded**: Volume control at minimum.

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**Text**: © John F. Rider, Publisher

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**Text**: © John F. Rider, Publisher
Schematic, Voltage Socket, Trimmers

MONTGOMERY WARD & CO.

MODEL 62-550, 62-1550
62-2550, Series A
Ser. 8J312900 up

10-25

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www.americanradiohistory.com
Alignment

ALIGNMENT PROCEDURE

The following equipment is required for alignment:

- A pulse signal generator which will provide an accurately calibrated signal at the test frequencies as listed.
- A meter indicating meter.
- Non-inductive screwdriver.
- Dummy antennas—1 in., 200 mil. and 400 ohms.

MODELS 62-550-5550

A. Turn the dial back and forth slowly (clockwise and counterclockwise) until the signal is as strong as possible as indicated on the meter.

B. Turn the dial back until the signal is at its weakest point.

C. Repeat this procedure for all the test frequencies.

D. Adjust the tuning control by trial and error until the signal is at its strongest point as indicated on the meter.

E. Continue this process until the signal is at its strongest point as indicated on the meter.

F. Repeat this procedure for all the test frequencies.

G. Repeat this procedure for all the test frequencies.

H. Repeat this procedure for all the test frequencies.

I. Repeat this procedure for all the test frequencies.

J. Repeat this procedure for all the test frequencies.

K. Repeat this procedure for all the test frequencies.

L. Repeat this procedure for all the test frequencies.

M. Repeat this procedure for all the test frequencies.

N. Repeat this procedure for all the test frequencies.

O. Repeat this procedure for all the test frequencies.

P. Repeat this procedure for all the test frequencies.

Q. Repeat this procedure for all the test frequencies.

R. Repeat this procedure for all the test frequencies.

S. Repeat this procedure for all the test frequencies.

T. Repeat this procedure for all the test frequencies.

U. Repeat this procedure for all the test frequencies.

V. Repeat this procedure for all the test frequencies.

W. Repeat this procedure for all the test frequencies.

X. Repeat this procedure for all the test frequencies.

Y. Repeat this procedure for all the test frequencies.

Z. Repeat this procedure for all the test frequencies.

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MONTGOMERY WARD & CO.

MODEL 62-552, Series A
Schematic, Voltage Socket, Trimmers
Alignment

INTERMEDIATE FREQUENCY
465 K.C.

FREQUENCY RANGE
550 to 1550 K.C.

FOR ALIGNMENT AND
TUNER DATA, SEE INDEX

VOLTAGES MEASURED WITH 500 OHM PER VOLT.
Power Output: 1.5 Watts Max.

In case of difficulty, the fuse contained in the metal fuse
package should be checked. A 4 ampere Type 3AG fuse
is used in this model.

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Power Consumption - 6.25 Amperes at 6.3 Volts
Power Output - - - 1.5 Watts Undistorted
Sensitivity - 1.5 Microvolts at .5 Watt Output

Selectivity - 42 KC Broad at 1000 Times Signal
Tuning Frequency Range - - - 540 to 1560 KC
Intermediate Frequency - - - 456 KC
Speaker - - - - - - 6" Electro-Dynamic

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Procedure for Setting the Station Buttons

**Typical Tuning Data (for Number of Buttons and Location of Locking Screws — See Figures).**

There are 5 buttons on the automatic tuning dial by means of which 5 stations may be set.

Any button may be used for any station you can receive.

Depress the manual tuning button and keep it depressed during the entire setting operation as described below. See Fig. 1 for location of buttons. Turn the manual tuning knob so that the indicator moves toward the 1500 KC end of the dial until the stop is reached.

**Unlock the Tuning Mechanism** by inserting a small handle screwdriver, as shown in Fig. 1, in the locking screw opening at the bottom of the tuning unit. Loosen the locking screw by turning it counter-clockwise as far as it will go.

**To Set Stations Accurately, Do Not Jar the Radio or Buttons While the Mechanism Is Unlocked.** Insert a celluloid reinforcement tab half-way in the slot at the front of station button No. 1. See Fig. 3.

Remove the correct station call letter tab for button No. 1 from the sheet supplied by bending the sheet back and forth at the score marks. Place the call letter tab in front of the celluloid reinforcement tab and insert it in socket. Push both tabs all the way in the button slot. Follow the same procedure for inserting the station call letter tabs in any other buttons.

After the stations are set and the mechanism is locked, tune in each of them by depressing the proper button. If any of them does not appear to be properly tuned in after the button has been depressed, reset the station for that button following the procedure outlined above. Changing the setting of one button will not affect the setting of the others.

**Keep the Manual Tuning Button Depressed with One Hand** and, with the other hand, depress the first (left hand) station button. Both will remain depressed.

Select the first station from the list you have made and tune in this station by means of the manual tuning knob.

**Turn the Manual Tuning Knob Carefully Back and Forth Until the Above Mentioned Station Is Accurately Tuned In to the Loudest Point.** This station is now set on button No. 1.

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

Next keep the manual tuning button depressed with one hand and, with the other hand, depress the second station button firmly and gently. Then proceed to set the second station on your list in the same manner as described above.

Then continue to set any additional stations on your list on the remaining buttons.

After all desired stations have been set, release any station button which is depressed as follows: KEEP the MANUAL TUNING BUTTON DEPRESSED WITH ONE HAND and, with the other hand, push in the OFF button a slight amount — only enough to release any station button which is depressed. Should the OFF button be pushed all the way in to the depressed position, no harm will be done except that the dial will not be illuminated.

Turn the manual tuning knob so that the indicator moves toward the 1500 KC end of the dial, until the stop is reached.

Now lock the tuning mechanism by inserting the small handle screwdriver, as shown in Fig. 1, in the locking screw opening. Turn the locking screw in a clockwise direction until it is tight. DO NOT tighten too much to avoid stripping the threads.
MONTGOMERY WARD & CO.

SPECIFICATIONS

Input Voltages and Currents

- "A" Battery: 1.5 Volts, 30 Amperes
- "B" Battery: 60 Volts, 12 to 15 Ma.

Power Output: 140 Milliwatts Undistorted

Selectivity: 41 KC Broad at 1000 Times Signal

Intermediate Frequency: 456 KC

Speaker: 6" P.M. Dynamic

Tuning Frequency Range: 540 to 1600 KC

Sensitivity (For .05 Watt Output):
- Table Model: .105 Microvolts Average
- Portable Model: .20 Microvolts For Meter Average

Dynamic Range: 1600 KC

Intermediate Frequency: 456 KC

Sensitivity: 4.5 Microvolts Per Meter

Frequency Range: 1000 KC

Table Model Only: 200 mA

Portable Model Only: 1000 KC

Other Specifications:

- Frequency Coverage: 540 to 1600 KC
- Input Voltages and Currents: 1.5 Volts, 30 Amperes
- Power Output: 140 Milliwatts Undistorted
- Selectivity: 41 KC Broad at 1000 Times Signal

Diagram:

[Diagram of radio circuit schematic]

(Note: Diagram includes various components such as transformers, diodes, and capacitors, along with labels for input and output voltages, currents, and frequency ranges.)

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PROCEDURE FOR SETTING THE AUTOMATIC TUNER LEVERS:

IMPORTANT—Read carefully before setting the automatic levers.

There are six levers by means of which six stations may be selected. Make a list of local stations or 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 front of each automatic tuner lever button an opening is provided for inserting the call letter tabs.

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

NOW, PROCEED AS FOLLOWS:

1. Pull the dial tuning knob all the way out (See Illus. "B," Fig. 3), and rotate the tuning knob to the left (counterclockwise) until it cannot be turned any further (See Illus. "D," Fig. 3). This will unlock the automatic tuner mechanism. (NOTE.—Automatic tuner mechanism is locked TIGHT when radio is shipped from the factory.)

2. Press down all the way any one of the automatic tuner levers. Holding it down firmly, press in on the dial tuning knob No. 3 and tune in the station indicated on the station call letter tab on this lever. You will note that in order to tune the station, the dial tuning knob will have to be pressed in (See Illus. "E," Fig. 3). Turn the dial tuning knob very slowly back and forth (while still holding the automatic tuner lever in downward position), noting the width of the shadow on the screen of the cathode-ray tuning indicator. Minimum width on the tuning indicator indicates the ideal tuning position (resonance). The station will then be clearest and accurately tuned in.

3. Press down another automatic tuner lever. Holding it down firmly, press in on the dial tuning knob and carefully tune in the station indicated on the call letter tab on this lever.

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

5. Pull the dial tuning knob all the way out (See Illus. "B," Fig. 3) and rotate the tuning knob to the right (clockwise) until it cannot be turned any further (See Illus. "C," Fig. 3).

TYPICAL TUNING DATA

The procedure for setting the Automatic Levers is the same for all the above mentioned models. However, the number of Automatic Levers may differ.

This will lock the automatic tuner mechanism and the stations you have set up for automatic tuning will be locked in place. After you have locked the tuner mechanism, push the dial tuning knob in.

6. If you should desire to change any station you selected to another, pull the dial tuning knob all the way out and rotate the knob to the left (counterclockwise) and unlock the tuner mechanism. 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 levers, it is due to the tuner mechanism not being unlocked all the way. Pull the dial tuning knob out all the way and rotate the knob to the left (counterclockwise) until it will turn no further. The dial mechanism should work freely with the tuner lever pressed down.)

7. After you have selected the new station, pull the dial tuning knob all the way out and rotate the knob to the right (clockwise) to lock the tuner mechanism. Be sure the knob is turned until it will turn no further, then press the dial tuning knob in.

8. The automatic tuner levers are now set up for quick tuning. Press down the lever key and—YOUR FAVORITE STATION IS SELECTED!

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

1. To unlock the tuner mechanism pull the dial tuning knob all the way out. You may find it necessary to rotate the knob slightly when pulling it out to make certain that the gears mesh properly. Rotate the dial tuning knob to the left (counterclockwise) as far as it will turn without forcing.

2. To set a lever, press down all the way and hold in this position while turning in by means of the dial tuning knob the station you want this lever to be tuned to. (NOTE:—you will notice that it will be necessary to keep pressing in on the dial tuning knob while tuning in the station as a spring tends to push the knob out.) Set all the levers in the same manner before locking the mechanism.

3. To lock the tuner mechanism pull the dial tuning knob all the way out. Rotate the dial tuning knob to the right as far as it will turn making certain that it is tight, but it is not necessary to use force.

4. After locking or unlocking the tuner mechanism always return the dial tuning knob to its normal position (pushed in).

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### Voltage, Alignment, Trimmers

#### Models 62-651, 62-652

- **Signal Generator**
  - **Frequency Setting**
  - **Connectors to Radio**
  - **Position**
  - **Variable Component Setting**
  - **Trimmer Adjusted**
  - **Trimmer Function**
  - **Adjustment**

<table>
<thead>
<tr>
<th>Band</th>
<th>Frequency Setting</th>
<th>Connectors to Radio</th>
<th>Position of Band Switch</th>
<th>Variable Component Setting</th>
<th>Trimmer Adjusted (in Order Shown)</th>
<th>Trimmer Function</th>
<th>Adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.F.</td>
<td>405 kHz</td>
<td>1 MFD</td>
<td>Grid of 18/27</td>
<td>Broadcast</td>
<td>Two trimmers on top</td>
<td>Output</td>
<td>Adjust to maximum output</td>
</tr>
<tr>
<td></td>
<td>462 kHz</td>
<td>1 MFD</td>
<td>Grid of 18/27</td>
<td>Broadcast</td>
<td>Two trimmers on top</td>
<td>Output</td>
<td>Adjust to maximum output</td>
</tr>
</tbody>
</table>

- **Broad-Cast Band**
  - **Frequency Setting**
  - **Connectors to Radio**
  - **Position of Band Switch**
  - **Variable Component Setting**
  - **Trimmer Adjusted**
  - **Trimmer Function**
  - **Adjustment**

<table>
<thead>
<tr>
<th>Band</th>
<th>Frequency Setting</th>
<th>Connectors to Radio</th>
<th>Position of Band Switch</th>
<th>Variable Component Setting</th>
<th>Trimmer Adjusted (in Order Shown)</th>
<th>Trimmer Function</th>
<th>Adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1700 kHz</td>
<td>200 micro</td>
<td>Antenna lead</td>
<td>Broadcast</td>
<td>Two trimmers on top</td>
<td>Output</td>
<td>Adjust to maximum output</td>
<td></td>
</tr>
<tr>
<td>1800 kHz</td>
<td>200 micro</td>
<td>Antenna lead</td>
<td>Broadcast</td>
<td>Two trimmers on top</td>
<td>Output</td>
<td>Adjust to maximum output</td>
<td></td>
</tr>
<tr>
<td>600 kHz</td>
<td>200 micro</td>
<td>Antenna lead</td>
<td>Broadcast</td>
<td>Two trimmers on top</td>
<td>Output</td>
<td>Adjust to maximum output</td>
<td></td>
</tr>
</tbody>
</table>

- **Short Wave Band**
  - **Frequency Setting**
  - **Connectors to Radio**
  - **Position of Band Switch**
  - **Variable Component Setting**
  - **Trimmer Adjusted**
  - **Trimmer Function**
  - **Adjustment**

<table>
<thead>
<tr>
<th>Band</th>
<th>Frequency Setting</th>
<th>Connectors to Radio</th>
<th>Position of Band Switch</th>
<th>Variable Component Setting</th>
<th>Trimmer Adjusted (in Order Shown)</th>
<th>Trimmer Function</th>
<th>Adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>17 MHz</td>
<td>40 ohms</td>
<td>Antenna lead</td>
<td>Broadcast</td>
<td>Two trimmers on top</td>
<td>Output</td>
<td>Adjust to maximum output</td>
<td></td>
</tr>
<tr>
<td>17 MHz</td>
<td>40 ohms</td>
<td>Antenna lead</td>
<td>Broadcast</td>
<td>Two trimmers on top</td>
<td>Output</td>
<td>Adjust to maximum output</td>
<td></td>
</tr>
<tr>
<td>6 MHz</td>
<td>40 ohms</td>
<td>Antenna lead</td>
<td>Broadcast</td>
<td>Two trimmers on top</td>
<td>Output</td>
<td>Adjust to maximum output</td>
<td></td>
</tr>
</tbody>
</table>

#### Bottom View of Chassis

To remove the motor leads from the cabinet, remove the two bolts which are used to fasten the chassis to the cabinet bottom; pull the knobs off their shafts and detach the pointer from the drive string (see Fig. 1, top view).

#### Alignment, Trimmers

- **Models 62-651, 62-652 Series A**

To remove the chassis from the cabinet, remove the four bolts which are used to fasten the receiver to the chassis bottom; pull the knobs off their shafts and detach the pointer from the drive string (see Fig. 1, top view).

#### Bottom View of Chassis

- **Antenna Col**
  - C 7 - B.C. ANT. TRIMMER
  - C 3 - 3.5 W. ANT. TRIMMER
  - C 4 - B.C. OSC. TRIMMER
  - C 5 - 3.5 W. OSC. TRIMMER
  - C 6 - 20 K. OSC. PAD
  - C 8 - 5 W. OSC. PAD

To remove the chassis from the cabinet, remove the four bolts which are used to fasten the receiver to the chassis bottom; pull the knobs off their shafts and detach the pointer from the drive string (see Fig. 1, top view).

#### Antenna Col

- C 7 - B.C. ANT. TRIMMER
- C 3 - 3.5 W. ANT. TRIMMER
- C 4 - B.C. OSC. TRIMMER
- C 6 - 20 K. OSC. PAD
- C 8 - 5 W. OSC. PAD

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SPECIFICATIONS

Power Consumption - 6.8 Amperes at 6.3 Volts
Power Output - - 3 Watts Undistorted
Sensitivity - - 1.5 Microvolts at .5 Watt Output

Selectivity - 39 KC Broad at 1000 Times Signal
Tuning Frequency Range - - 540 to 1560 KC
Intermediate Frequency - - 456 KC
Speaker - - - 6" Electro-Dynamic

MODEL 62-653
Schematic, Voltage Socket, Trimmers

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PAGE 10-40 MONT-WARD

MODELS 62-656, 62-1656, 62-2656
MODELS 93R454A, 93R1455A MONTGOMERY WARD & CO.
MODELS 93R713A

Alignment

- Volume control—Maximum all adjustments.
- Connect mile chasis to ground post of signal generator with & short heavy lead.
- Connect dummy antenna to ground post of signal generator.
- Connect output meter across primary of output transformer.
- Allow chasis and output meters to "heat up" for several minutes.

**BAND**

<table>
<thead>
<tr>
<th>Frequency Setting</th>
<th>Connection to Radio</th>
<th>Function of Band Switch</th>
<th>Variable Condenser Setting</th>
<th>Transients Adjusted (in Order Shown)</th>
<th>Transients Function</th>
<th>Adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.F.</td>
<td>460 Kc.</td>
<td>1 MFD.</td>
<td>Grid of 155G Tube</td>
<td>Base all open plus &amp; minus</td>
<td>Two trimmers adjusted (See Note 1A) Output Adjust to maximum output</td>
<td></td>
</tr>
<tr>
<td>SHORT WAVE BAND</td>
<td>17 Kc.</td>
<td>420 mfd.</td>
<td>Antenna lead Short Wave</td>
<td>Base all open plus &amp; minus</td>
<td>Two trimmers adjusted (See Note 1A) Intermediate output Adjust to maximum output</td>
<td></td>
</tr>
<tr>
<td>BROADCAST BAND</td>
<td>100 Kc.</td>
<td>200 mfd.</td>
<td>Antenna lead Broadcast</td>
<td>Base all open plus &amp; minus</td>
<td>Two trimmers adjusted (See Note 1A) Input Adjustable to maximum output</td>
<td></td>
</tr>
</tbody>
</table>

**BAND**

<table>
<thead>
<tr>
<th>Frequency Setting</th>
<th>Connection to Radio</th>
<th>Function of Band Switch</th>
<th>Variable Condenser Setting</th>
<th>Transients Adjusted (in Order Shown)</th>
<th>Transients Function</th>
<th>Adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>MODELS 93R454A &amp; 93R1455A</td>
<td>MODELS 93R713A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CHASSIS No. 93R713A**

- The following equipment is required for alignment:
- An all wave signal generator which will provide an extremely balanced signal at the test frequency as noted.
- Output indicating meter.
- Non-inductive resistance.
- Dummy antennas—1 mfd, and 300 mfd and 400 mfd.

**BAND**

<table>
<thead>
<tr>
<th>Frequency Setting</th>
<th>Connection to Radio</th>
<th>Function of Band Switch</th>
<th>Variable Condenser Setting</th>
<th>Transients Adjusted (in Order Shown)</th>
<th>Transients Function</th>
<th>Adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.F.</td>
<td>460 Kc.</td>
<td>1 MFD.</td>
<td>Grid of 605F Tube</td>
<td>Base all open plus &amp; minus</td>
<td>Two trimmers adjusted (See Note 1A) Output Adjust to maximum output</td>
<td></td>
</tr>
<tr>
<td>SHORT WAVE BAND</td>
<td>17 Kc.</td>
<td>420 mfd.</td>
<td>Short Wave</td>
<td>Base all open plus &amp; minus</td>
<td>Two trimmers adjusted (See Note 1A) Intermediate output Adjust to maximum output</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE "A"**
- Turn the dial back and forth lightly (rock) and adjust trimmer until the peak of greatest intensity is obtained.
- Adjust the dial back and forth lightly (rock) and adjust trimmer until the peak of greatest intensity is obtained.
- Adjust the dial back and forth lightly (rock) and adjust trimmer until the peak of greatest intensity is obtained.
- Adjust the dial back and forth lightly (rock) and adjust trimmer until the peak of greatest intensity is obtained.
BAND SWITCH
Extreme Right Rotation
Extreme Left Rotation

BAND
Short Wave
Broadcast

FREQUENCY RANGE
5.65 to 18.3 MC
535 to 1700 KC

Power Consumption
45 Watts (At 115 volts 50-60 cycles)

Power Output
1.6 Watts Undistorted, 3 Watts Maximum

Selectivity
58 KC. Broad at 1000 KC. 1000 Times Signal Strength

Intermediate Frequency
465 KC.

PARTS (SERIAL 6H262200 and UP)

Transformers are available and chassis are sometimes equipped with universal transformers for operation on 220 to 60 volt circuits.

Fig. 3

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MODEL 62-901
Alignment, Trimmers Dial Data, Phono.

ALIGNMENT PROCEDURE

The following equipment is required for aligning:
1. An All Wave Signal Generator which will provide an accurately calibrated signal at the test frequencies as listed.
2. Output indicating meter.
4. Detent antenna -1 ft., 200 mm. and 400 ohms.

VOLTAGES AT SOCKETS

The voltages at sockets are shown on the schematic circuit diagram. Unless otherwise specified, the voltage indicated is between the socket terminal and ground. These voltages are read under the following conditions:

- Live Voltage-117V
- Volume Control-Maximum
- Antenna Shorted to Ground
- Readings taken with 1000 ohm-per volt meter.

Drive Cord Replacement

Tie a knot with a small loop at one end of the new drive cord. Slide a 1/4 inch length of fabric tubing on the cord. Tie the free end of the drive cord to the tension spring. The distance between knots should be 48 1/2 inches.

Arrange to keep the gang condenser in the completely closed position.

Place the looped end of the drive cord over hook A on condenser drive drum B (See Fig. 4). Pass the cord through slot C in the drum rim and wind one turn in a clockwise direction (from front of chassis) on condenser drive drum. Pass drive cord over pulleys D and E as shown. See that the fabric tubing is now between pulleys D and E. Continue cord down to shaft F, and wind 2 1/2 turns clockwise, progressing towards the chassis. Bring cord over pulleys G to bottom of condenser drive drum B as shown. Wind drive cord clockwise (from front of chassis) around condenser drive drum B to slot C. See that the drive cord does not cross in groove of condenser drive drum. Pass the remaining drive cord and tension spring through slot C and secure the free end of the spring on hook A.

DIAL POINTER ATTACHMENT

- Turn in a station of known frequency.
- Move the pointer to the frequency on the dial scale. Clamp pointer tightly over the fabric tubing on the cord—See Fig. 4.

Phonograph Connections

Phonograph connections are made as shown in the schematic circuit diagram—Fig. 3. On the back panel of the chassis base is a round knockout 1-3/8 inches in diameter. An metal base socket is mounted in this knockout opening and wired as shown in the schematic.

A phone cable assembly may then be purchased (See parts list). On one end of this cable is an octal plug and on the other an octal-phonograph switch and double tip jack.

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Schematic, Voltage

FOR ALIGNMENT AND TUNER DATA, SEE INDEX

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6K8G MIXER

6K7 2NAC & 1ST AUDIO

6T7G 2ND CoIL AC

6G6G OUTPUT

ANTENNA COILS

TUNING INDICATOR

FACED VIEW OF POWER CORD SOCKETS

WAVE BAND SWITCH SHOWN IN BROADCAST POSITION

5-VOLT BATTERY LINE SOCKET

CONDENSERS

PARTS [SERIAL No. 8M499800 and UP]

R1 BE1012 10M ohms—5 w.
R2 BE1097 200 ohms—5 w.
R3 BE1094 5M ohms—5 w.
R5 BE1091 250M ohms—5 w.
R6 BE1097 30 ohms—5 w.
R7 BE1094 15M ohms—5 w.
R8 BE1093 1M ohms—4 w.
R9 BE1093 1M ohms—4 w.
R10 BE1097 400 ohms—5 w.
R11 BE1092 10M ohms—5 w.
R12 BE1093 3M ohms—3 w.
R13 BE10153 1 megohm volume control
R14 BE10153 1 megohm volume control
R15 BE1091 250M ohms—15 w.
R16 BE1091 250M ohms—15 w.
R17 BE1032 500M ohms—5 w.
R18 BE1093 200 ohms—5 w.
R19 BE1093 450 ohms—5 w.
R20 BE109010 100 ohms—5 w.

C2 BE1002 100uF 600 vac.
C3 BE10020 1 x 200 v.
C4 BE10020 1 x 200 v.
C5 BE10020 1 x 200 v.
C6 BE10020 1 x 200 v.
C7 BE10020 1 x 200 v.
C8 BE10020 1 x 200 v.
C9 BE10020 1 x 200 v.
C10 BE10020 1 x 200 v.
C11 BE10020 1 x 200 v.

C1 BE10025 0.06 x 600 v.
C2 BE10025 0.06 x 600 v.
C3 BE10025 0.06 x 600 v.
C4 BE10025 0.06 x 600 v.
C5 BE10025 0.06 x 600 v.
C6 BE10025 0.06 x 600 v.
C7 BE10025 0.06 x 600 v.
C8 BE10025 0.06 x 600 v.
C9 BE10025 0.06 x 600 v.
C10 BE10025 0.06 x 600 v.
C11 BE10025 0.06 x 600 v.

T1 BE11112 Antenna Coil
T2 BE11108 Oscillator Coil
T3 BE11107 Input I. P. —465 ke.
T4 BE11107 Output I. P. —465 ke.
T5 BE11059C Output Transformer
T6 BE11130 4 in. P. M. speaker—42-759
T6 BE11139 8 in. P. M. speaker—62-759
T7 BE11141C Power Transformer
T8 BE11058 "A" Choke
T9 BE1103C "B" Choke
T10 BE11254 Wave Band Switch
C1 BE12470 S. W. Oscillator Trimmer
C2 BE12470 S. W. Oscillator Trimmer
C3 BE12470 S. W. Oscillator Trimmer
C4 BE12470 S. W. Oscillator Trimmer
C5 BE12470 S. W. Oscillator Trimmer
C6 BE12470 B. C. Oscillator Trimmer
C7 BE12470 B. C. Oscillator Trimmer
C8 BE12470 B. C. Oscillator Trimmer
C9 BE12470 B. C. Oscillator Trimmer
C10 BE12470 B. C. Oscillator Trimmer
C11 BE12470 B. C. Oscillator Trimmer

6K8G 95
6K7 85
6T7G 65
6G6G 0
6ZY50 0
6AE6G 0
6K7 POWER PLUG

REAR OF CHASSIS

6.3 A.C.
6.6 D.C.
10 A.C.
10 D.C.
10 A.C.
10 D.C.
10 A.C.
10 D.C.
10 A.C.
10 D.C.
10 A.C.
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10 A.C.
10 D.C.
10 A.C.
10 D.C.
10 A.C.
10 D.C.
10 A.C.
10 D.C.
10 A.C.
10 D.C.
10 A.C.
10 D.C.
10 A.C.
**Power Consumption**
1.45 Amperes at 32 Volts DC Intermediate Frequency

**Selectivity**
- 30 KC Broad at 1000 times Signal Tuning Frequency Range

**Intermediate Frequency**
456 KC

**Power Output**
0.7 Watts Undistorted

**Speaker**
6" or 8" Electro-Dynamic

**Selectivity**
- 30 KC Broad at 1000 times Signal Tuning Frequency Range

**Sensitivity**

- **B Range**
  - 6.0 microvolts Average
  - Range: 280 to 1720 KC (Kilocycles)

- **D Range**
  - 6.0 microvolts Average
  - Range: 3575 to 18300 KC (Kilocycles)

---

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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 at least several minutes.

SIGNAL GENERATOR

<table>
<thead>
<tr>
<th>FREQUENCY</th>
<th>CONNECTION AT RADIO</th>
<th>DUMANT ANTENNA</th>
<th>BAND SWITCH</th>
<th>CONDENSER SETTING</th>
<th>ADJUST TRIMMERS TO MAXIMUM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,000 Kc</td>
<td>Grid of 1st Det.</td>
<td>J ml.</td>
<td>B Range</td>
<td>Turn to Pilot Open</td>
<td>1st F. (C1)</td>
</tr>
<tr>
<td>RANGE B</td>
<td>1,000 Kc Antenna Lead 200 mfd.</td>
<td>B Range</td>
<td>Turn to Pilot Open</td>
<td>Oscillating Range (C1)</td>
<td></td>
</tr>
<tr>
<td>1,500 Kc</td>
<td>1st Ant Range B (C2)  2nd Ant Range B (C3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,500 Kc</td>
<td>2nd Ant Range B (C3) 3rd Ant Range B (C4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

WAVE TRAP

<table>
<thead>
<tr>
<th>FREQUENCY</th>
<th>CONNECTION AT RADIO</th>
<th>DUMANT ANTENNA</th>
<th>BAND SWITCH</th>
<th>CONDENSER OR DIAL SETTING</th>
<th>ADJUST TRIMMERS TO MAXIMUM</th>
</tr>
</thead>
<tbody>
<tr>
<td>450 KC</td>
<td>Grid of 1st Det.</td>
<td>J ml.</td>
<td>B Range</td>
<td>Turn to Pilot Open</td>
<td>2nd F. (C1)</td>
</tr>
<tr>
<td>RANGE B</td>
<td>450 KC Antenna Lead 200 mfd.</td>
<td>B Range</td>
<td>Turn to Pilot Open</td>
<td>Oscillating Range (C1)</td>
<td></td>
</tr>
<tr>
<td>600 Kc</td>
<td>2nd Ant Range B (C3) 3rd Ant Range B (C4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Drive Cord Replacement

The cord is a small loop at one end of the new drive cord. Tie the free end of the drive cord to the tension spring. Distance between holes should be 0.015 inches.

To keep the gang condenser in the completely closed position:
Place the looped end of the drive cord over hook A in the gang condenser drive drum B (see Fig. 3). Pass the cord through slot C in the drum and wind one turn in a clockwise direction (from front of chassis) on the gang condenser drive drum. Pass drive cord over pulleys D and E as shown. Continue cord down to shaft F and wind 4 turns clockwise, progressing towards the chassis. Bring cord over pulley G to bottom of condenser drive drum B as shown. Wind drive cord clockwise (from top of chassis) around condenser drive drum B to slot D. See that the drive cord does not cross in groove of condenser drive drum. Pass the remaining drive cord and tension spring through slot C and secure the free end of the spring on hook A.

NOTE: If the pointer is not at 1000 Kc on the dial, hold the drive cord and move the pointer to this mark.

CAUTION—When aligning the short wave band, be sure NOT to adjust the image frequency. This can be checked as follows:
Set the radio generator for 15,000 in 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 remove the new signal to hear the image.
MONTGOMERY WARD & CO.

SPECIFICATIONS

Power Consumption - 60 Watts (At 117 volts 60 cycles)
Power Output - - - - - - 3.0 Wats Undistorted
Selectivity - - - - - - 40 KC Broad at 1000 times Signal
Intermediate Frequency - - - - - - 456 KC
Speaker - - - - - - - - - - 10" Dynamic

Tuning Frequency Range

B Range - 528 to 1730 KC (Kilocycles)
D Range - 5750 to 18300 KC (Kilocycles)
Sensitivity (For 0.5 watt output)
B Range - 25 Microvolts Average
D Range - 40 Microvolts Average

"B" Issue Models

The issue letter is the last letter of the chassis number on the chassis number label.

In "B" issue models, the screen grid circuits of the 1st Detector and I.F. tubes are supplied through separate resistors as shown in the schematic.

If distortion is encountered at high signal levels in the "A" issue models, change the screen grid circuits of the 1st Detector and I.F. tubes according to the schematic.

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**ALIGNMENT PROCEDURE**

Connect Radio Chassis to Ground Post of Signal Generator with a Short Heavy Lead.

**GENERAL SERVICE DATA**

*Drive Cord Replacement*

Tie a knot with a small loop at one end of the new drive cord. Tie the other end to the tension spring, leaving a distance of 0.625 inches between the loops.

Turn the gang condenser to the completely closed position. Secure the free end of the spring over hook A. - See Fig. 4. Turn the gang condenser to the completely closed position.

Pass the cord through slot B and, guiding the cord in the groove of the drive drum, turn the gang condenser to the fully open position. Hook the cord in slot B and turn the gang condenser to the completely closed position. Unhook the cord from slot D and pass over pulley C, D, and E as shown. Pass the cord in front of idle pulley F. Wind 2½ turns counter-clockwise (from front of chassis) around the drive shaft, spool, progressing away from the chassis. Pass the cord to the drive drum, turn the gang condenser to the fully open position. If necessary, stretch the tension spring and pull the drive cord taut. Pass the drive cord through slot B and secure the loop to the tension spring at point G.

**EARLY MODELS** - In the early models, use a larger drive shaft spool. (See Fig. 4), there should be a distance of 65½ inches between the loops.

**DIAL POINTER ATTACHMENT** - Tune in a station of known frequency. Move the pointer to the approximate frequency on the dial scale. Pass the cord through the slotted hole. - See Fig. 4. Hold the drive cord and slide the pointer to the exact frequency on the dial scale.

**Rock and Pinion Assembly**

If it is necessary to reassemble the automatic tuning unit, proceed as follows: The pinion gear shaft should be held in such a position that the flat portion is vertical or turned slightly counter-clockwise from the vertical as shown in Fig. 5.

The lower rack should be meshed with the pinion gear so that the 8th tooth from the front on each side of the rack is in line with the axis of the pinion gear shaft. - See Fig. 5. The upper rack should then be lined up with the lower rack and meshed with the pinion gear. The 8th tooth from the front on each side of the upper rack will then line up with the axis of the pinion gear shaft.

The rear and side brackets can be mounted on the rack and pinion assembly.

---

**NOTE A** - The low frequency end mark is a small dot at the left side of the short wave scale under the "3" of the number 5.8 end to the right of the "C" of the letters K.C. If the pointer is not at this mark on the dial, move the pointer to this mark.

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

**ATTENTION** - The signal from the signal generator to prevent the leveling action of the AFC. After each range is completed, repeat the procedure as a final check.

**CAUTION** - When adjusting the short wave bands, be sure NOT to adjust at the image frequency. This can be checked as follows: Left to see the signal generator is set for 5.000 KC. The signal will then be heard at 15,000 KC on the dial of the radio. The signal, which is much weaker, will be heard at 15,000 KHz 912 KHz or 14,086 KC on the dial. It may be necessary to increase the input signal to hear the image.

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**Alignment**

**CHASSIS No. 93-BR-508A and 93-BR-509A**

<table>
<thead>
<tr>
<th>Component</th>
<th>93-BR-508A</th>
<th>93-BR-509A</th>
<th>93-BR-564A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Consumption</td>
<td>40 Watts</td>
<td>40 Watts</td>
<td>40 Watts</td>
</tr>
<tr>
<td>Power Output</td>
<td>800 Milliwatts Undistorted</td>
<td>800 Milliwatts Undistorted</td>
<td>800 Milliwatts Undistorted</td>
</tr>
<tr>
<td>Sensitivity (for .05 Watts Output)</td>
<td>250 Microvolts Per Meter at 1000 KC. (For Loop Antenna)</td>
<td>250 Microvolts Per Meter at 1000 KC. (For Loop Antenna)</td>
<td>250 Microvolts Per Meter at 1000 KC. (For Loop Antenna)</td>
</tr>
<tr>
<td>Selectivity</td>
<td>70 KC Band at 1000 Times Signal at 1000 KC</td>
<td>70 KC Band at 1000 Times Signal at 1000 KC</td>
<td>70 KC Band at 1000 Times Signal at 1000 KC</td>
</tr>
<tr>
<td>Tuning Frequency Range</td>
<td>540 to 1650 KC</td>
<td>540 to 1650 KC</td>
<td>540 to 1650 KC</td>
</tr>
<tr>
<td>Intermediate Frequency</td>
<td>465 KC</td>
<td>465 KC</td>
<td>465 KC</td>
</tr>
<tr>
<td>Speaker</td>
<td>5 in. P. M. Dynamic</td>
<td>5 in. P. M. Dynamic</td>
<td>5 in. P. M. Dynamic</td>
</tr>
</tbody>
</table>

**Alignment Procedure**

**Model No. 93-BR-508A**

- **Alignment Technique**: Use a signal generator to provide the blanking level on the NC. Use a signal generator with a short heavy lead.

**Alignment Procedure**

- **SIGNAL GENERATOR (Output)**
  - **Component**: Dynamic phone. 1000 Volts.
  - **Alignment**: Adjust for maximum output

- **INTERMEDIATE FREQUENCY**
  - **Component**: Type 100, 465 SC.
  - **Alignment**: Adjust for blanking level on the NC. Use a signal generator with a short heavy lead.

- **TUNING FREQUENCY RANGE**
  - **Component**: Type 100, 465 SC.
  - **Alignment**: Adjust for maximum output

- **SPEAKER**
  - **Component**: 25 Watts, 6.5 in. P. M. Dynamic
  - **Alignment**: Adjust for maximum output

**Alignment Procedure**

- **SIGNAL GENERATOR (Output)**
  - **Component**: Dynamic phone. 1000 Volts.
  - **Alignment**: Adjust for maximum output

- **INTERMEDIATE FREQUENCY**
  - **Component**: Type 100, 465 SC.
  - **Alignment**: Adjust for blanking level on the NC. Use a signal generator with a short heavy lead.

- **TUNING FREQUENCY RANGE**
  - **Component**: Type 100, 465 SC.
  - **Alignment**: Adjust for maximum output

- **SPEAKER**
  - **Component**: 25 Watts, 6.5 in. P. M. Dynamic
  - **Alignment**: Adjust for maximum output

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ALIGNMENT PROCEDURE

**Chassis No. 93BR560A**

- Volume control—Maximum all adjustments.
- Connect radio chassis to ground post of signal generator with a short heavy lead.
- Connect antenna output to chassis with generator output lead.
- Connect input 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</th>
<th>Frequency Setting</th>
<th>Connectors to Radio</th>
<th>Variable Condenser Setting</th>
<th>Transmitter Adjusted in Order Shown</th>
<th>Transmitter Frequency</th>
<th>Adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.F.</td>
<td>465 Kc.</td>
<td>1 MFD.</td>
<td>Grid at 1000 to 1 F.</td>
<td>Two trimmers on top (See Fig. 12)</td>
<td>1 F.</td>
<td>1 F.</td>
<td>Adj. to maximum output</td>
</tr>
<tr>
<td>SHORT WAVE BAND</td>
<td>465 Kc.</td>
<td>1 MFD.</td>
<td>Grid at I.A.C.</td>
<td>Two trimmers on top (See Fig. 13)</td>
<td>1 F.</td>
<td>1 F.</td>
<td>Adj. to maximum output</td>
</tr>
<tr>
<td>17 M.</td>
<td>465 Kc.</td>
<td>1 MFD.</td>
<td>Antenna lead Short Wave</td>
<td>Two trimmers on top (See Fig. 14)</td>
<td>1 F.</td>
<td>1 F.</td>
<td>Adj. to maximum output</td>
</tr>
<tr>
<td>17 M.</td>
<td>465 Kc.</td>
<td>1 MFD.</td>
<td>Antenna lead Short Wave</td>
<td>Two trimmers on top (See Fig. 15)</td>
<td>1 F.</td>
<td>1 F.</td>
<td>Adj. to maximum output</td>
</tr>
<tr>
<td>BROADCAST BAND</td>
<td>300 mwl.</td>
<td>300 mwl.</td>
<td>Antenna lead Broadcast</td>
<td>Two trimmers on top (See Fig. 16)</td>
<td>1 F.</td>
<td>1 F.</td>
<td>Adj. to maximum output</td>
</tr>
<tr>
<td>1450 Kc.</td>
<td>300 mwl.</td>
<td>300 mwl.</td>
<td>Antenna lead Broadcast</td>
<td>Two trimmers on top (See Fig. 17)</td>
<td>1 F.</td>
<td>1 F.</td>
<td>Adj. to maximum output</td>
</tr>
</tbody>
</table>

NOTE: “A” Do not adjust the trimmers on the output I.F. Transformer. Adjust the signal from the signal generator to prevent the loading-off action of the AVC.

**Model No. 93BR-460A and 93BR-1460A**

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

<table>
<thead>
<tr>
<th>BAND</th>
<th>SIGNAL GENERATOR</th>
<th>Frequency Setting</th>
<th>Connectors to Radio</th>
<th>Variable Condenser Setting</th>
<th>Transmitter Adjusted in Order Shown</th>
<th>Transmitter Frequency</th>
<th>Adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.F.</td>
<td>465 Kc.</td>
<td>1 MFD.</td>
<td>Grid at 1000 to 1 F.</td>
<td>Two trimmers on top (See Fig. 12)</td>
<td>1 F.</td>
<td>1 F.</td>
<td>Adj. to maximum output</td>
</tr>
<tr>
<td>SHORT WAVE BAND</td>
<td>465 Kc.</td>
<td>1 MFD.</td>
<td>Grid at I.A.C.</td>
<td>Two trimmers on top (See Fig. 13)</td>
<td>1 F.</td>
<td>1 F.</td>
<td>Adj. to maximum output</td>
</tr>
<tr>
<td>17 M.</td>
<td>465 Kc.</td>
<td>1 MFD.</td>
<td>Antenna lead Short Wave</td>
<td>Two trimmers on top (See Fig. 14)</td>
<td>1 F.</td>
<td>1 F.</td>
<td>Adj. to maximum output</td>
</tr>
<tr>
<td>17 M.</td>
<td>465 Kc.</td>
<td>1 MFD.</td>
<td>Antenna lead Short Wave</td>
<td>Two trimmers on top (See Fig. 15)</td>
<td>1 F.</td>
<td>1 F.</td>
<td>Adj. to maximum output</td>
</tr>
<tr>
<td>BROADCAST BAND</td>
<td>300 mwl.</td>
<td>300 mwl.</td>
<td>Antenna lead Broadcast</td>
<td>Two trimmers on top (See Fig. 16)</td>
<td>1 F.</td>
<td>1 F.</td>
<td>Adj. to maximum output</td>
</tr>
<tr>
<td>1450 Kc.</td>
<td>300 mwl.</td>
<td>300 mwl.</td>
<td>Antenna lead Broadcast</td>
<td>Two trimmers on top (See Fig. 17)</td>
<td>1 F.</td>
<td>1 F.</td>
<td>Adj. to maximum output</td>
</tr>
</tbody>
</table>

Attention the signal from the signal generator to prevent the loading-off action of the AVC.

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MONTGOMERY WARD & CO.

SPECIFICATIONS

Power Consumption - 2.2 Amperes at 6.3 Volts

Power Output - 5 Watt Undistorted

Selectivity - 41 KC Broad at 1000 times Signal

Intermediate Frequency - 456 KC

Speaker - 5" P. M. Dynamic

Tuning Frequency Range - 528 to 1730 KC.

Sensitivity (For 0.5 Watt Output) 15 Microvolts Average

Intermediate Frequency

Speaker

Tuning Frequency Range

Sensitivity

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MODEL 93WG662
Schematic, Socket
Alignment, Trimmers
FOR TUNER DATA
SEE INDEX

MONTGOMERY WARD & CO.

Schematic, Voltage
Socket, Trimmers

6D8G
Mixer
6K7
I.F. Amp
465 kc
6T7G
2nd Det. A.M. & 1st Audio
6G6G
Output

FIG. 3

6D8G
Mixer
6K7
I.F. Amp
465 kc
6T7G
2nd Det. A.M. & 1st Audio
6G6G
Output

FIG. 1—TOP VIEW

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Caution

The metal chassis is connected to one side of the line through a 25 mil 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 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 wood or other insulated surface to avoid contacts with ground. The person working on the set should avoid getting in contact with any ground.

Use ONLY a No. 51 dial lamp.
Chassis No. 98BR657A

Power Consumption: 2.5 Amp. at 6.3 Volts
Power Output: 6 Watts Undistorted
Sensitivity (for 0.5 Watts Output): Broadcast 10 Microvolts Average, Shortwave 20 Microvolts Average

Selectivity: 35 KC Broad at 1000 Times Signal at 1000 KC
Tuning Frequency Range: 535 to 1700 KC
Intermediate Frequency: 465 KC
Speaker: 6 in. P. M. Dynamic

- 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.

BAND | SIGNAL GENERATOR Frequency Setting | Dummy Antenna | Connection to Radio | Band Switch | Variable Condenser Setting | Trimmer Condenser Adjusted (in Order Shown) | Trimmer Function | Adjustment
--- | --- | --- | --- | --- | --- | --- | --- | ---
I. F. | 465 KC | .1 MFD | Grid of 6AD6 | Broadcast | Two trimmers on top (See Fig. 1) | Two trimmers on top (See Fig. 1) | Output | Adjust to maximum output
| 465 KC | .1 MFD | Grid of 6AD6 | Broadcast | Two trimmers on top (See Fig. 1) | Two trimmers on top (See Fig. 1) | Output | Adjust to maximum output

SHORT WAVE BAND

- 17 MC | 400 ohms | Antenna lead | Short Wave | Set dial at 17 MC | Trimmer (C6) | Short Wave oscillator | Adjust to maximum output
- 17 MC | 400 ohms | Antenna lead | Short Wave | Set dial at 17 MC | Trimmer (C6) | Short Wave oscillator | Adjust to maximum output
- 6 MC | 400 ohms | Antenna lead | Short Wave | Set dial at 6 MC | Trimmer (C6) | Short Wave oscillator | Adjust to maximum output

BROADCAST BAND

- 170 KC | 200 mfd | Antenna lead | Broadcast | Battery full open (Plates out of mesh) | Trimmer (C7) | Broadcast oscillator | Adjust to maximum output
- 170 KC | 200 mfd | Antenna lead | Broadcast | Battery full open (Plates out of mesh) | Trimmer (C7) | Broadcast oscillator | Adjust to maximum output
- 600 KC | 200 mfd | Antenna lead | Broadcast | Battery full open (Plates out of mesh) | Trimmer (C7) | Broadcast oscillator | Adjust to maximum output

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

Acoustics the signal from the signal generator to prevent the lowering off action of the AVC.

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

Fig. 2—MODEL 62-381 A.C. POWER UNIT
(For 105-125 Volt 50/60 Cycle A. C. Operation)

Model 62-381 Power Unit

Fig. 3—CONNECTOR STRIP ON CHASSIS FOR POWER UNIT

Fig. 4—MODEL 62-381 S.P.U.
### BALANCING INSTRUCTIONS

**ARVIN MODEL 44C CAR RADIO**

All sensitivities are given for 1 watt output equals 1.73 V across speaker voice coil.

**SPECIAL NOTE:** The intermediate frequency transformers in this receiver are coupled so as to secure flat top characteristics and provide semi-high fidelity reception of radio stations. These transformers may be balanced with a standard signal generator and output meter as follows:

Feed a signal of 170 kc into the grid of the 6AS tube through 0.02 mfd. capacity, connect a 30,000 ohm resistor across the primary of the second I.F. transformer (P in B..) and adjust screw No. 1 for maximum output. Disconnect the resistor and place it across the secondary of the same transformer and adjust screw No. 2.

Then connect the resistor across the primary of the let I.F. transformer and adjust screw No. 3 and then after placing the resistor across the secondary, adjust screw No. 4.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6AS Grid</td>
<td>170 kc</td>
<td>1, 2, 3 &amp; 4</td>
<td>700 uv</td>
</tr>
<tr>
<td>2</td>
<td>Ant. Coupler</td>
<td>1570 kc</td>
<td>3</td>
<td>500 kc</td>
</tr>
<tr>
<td>3</td>
<td>Through 20 uuf</td>
<td>1600 kc</td>
<td>6 &amp; 7</td>
<td>550 kc</td>
</tr>
<tr>
<td>4</td>
<td>Through 20 uuf</td>
<td>1600 kc</td>
<td>8</td>
<td>600 kc</td>
</tr>
</tbody>
</table>

*Operation No. 4 adjusts bias on 6AS to obtain 5 uv sensitivity; for metropolitan areas this sensitivity may be set as low as 10 uv, and in mountainous areas as high as 20 uv, to secure the most satisfactory reception.*

---

**Note:** ADJUST THE ANTENNA BALANCING SCREW AFTER INSTALLATION OF THE RADIO ON THE CAR. TUNE IN A WEAK STATION FROM 500 TO 600 KC AND TUNE UNTIL MAXIMUM VOLUME IS OBTAINED.

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This receiver should first be removed from its carton and the cabinet carefully cleaned with a soft rag to remove packing lint.

The hook bolts or clips which secure the chassis to the cabinet should be removed, if the equipment is to be held in place during shipment. The screws which attach the cabinet are rubber grommets. These latter brackets should not be removed unless it is necessary to service the receiver.

The receiver may be prepared for operation by connecting an antenna lead at "A" on the rear terminal strip and connecting a ground lead at "G", leaving the jumper from "D" to "G" in place; or, by removing the jumper and connecting the transmitting line directly to the Arvin all-wave antenna. (Black lead to "D" and red lead to "A".) Plug the line cord into a suitable receptacle.

Make a list of ten stations in your locality which you desire to set up on the station selector, arranging this list so that the stations appear in the order of their frequencies. Cut the call letters of these stations from a sheet of rubber supplied with this receiver, leaving a white tab on each end of the piece cut out.

The receiver is placed in operation by turning the right-hand knob in a clockwise direction. This knob also functions as a tone control. The second knob to the left should be turned to the maximum counter-clockwise or manual tuning position.

Tune in the first station on your list, using the tuning indicator to determine whether station is properly tuned. Change the Manual Automatic Tuning switch to the automatic tuning position. Unless one of the buttons about to be adjusted happens to be set at this point the receiver will now appear to be inoperative. (In event a button happens to be set at the proper point, no adjustment is necessary. If the pilot light is not in proper rotation, the sockets may be exchanged from the rear.) Looking at the rear of the dial and on the side toward which the pointer is now pointing, locate the button in the circular slot whose lead goes to the lowest pilot light on the right side of the dial. Loose this button by means of a turn in the counter-clockwise direction and slide the button in its track slowly until a point is reached where the pointer again occupies the position. This procedure is to be repeated until the pointer is in proper rotation.

If the receiver is being operated with the Manual Automatic Tuning switch in the manual position, the receiver tunes sharply and any station within the range of the receiver may be selected at will. Tuning quality to suit the taste of the listener may be obtained by adjustment of the tone control.

On the other hand, when the Manual Automatic Tuning switch is in the automatic tuning position, the receiver functions in an entirely different manner. Throwing this switch automatically broadens the selectivity characteristics of the receiver.

It should be noted that this broad selectivity will only function satisfactorily on the louder stations, that is, those which are normally selected for use on the Arvin Station Selector. (This broadened selectivity is not practical in the manual tuning position because of inter-station interference which would inevitably result.)

Should the listener so desire, this increased fidelity can be compensated for by readjusting the setting of the tone control.

When this receiver is being operated on the police-amateur or foreign short wave band, tuning should always be done manually and an attempt made to utilize the station selector features which has been set up for the broadcast band.

**BALANCING INSTRUCTIONS**

**MODELS 828AT and 838AT**

Sensitivity:

A. Broadcast Band—50 Microvolts Minimum

B. Police Band—75 Microvolts Minimum

C. Short Wave Band—100 Microvolts Minimum

No. 6-powered output is considered 1.2 miles and 11.2 R.M.S. AC volts across the voice coil of the speaker. Sensitivity is determined by the amount of input in microvolts required to produce 11.2 volts at the voice coil. Measurement may be made with any AC voltmeter or output meter.

The intermediate frequency transformers embodied in the circuit of Arvin Models 828AT and 838AT are of the semi-permature type, the only adjustment being variable iron core in the fields of the transformers. It is advisable before attempting to balance the intermediate stages of this receiver, therefore, to check the overall intermediate frequency stage sensitivity. This may be accomplished by connecting the 455 K. C. output of a standard signal generator to the grid tap of the 6AK5 tube after removing the grid clip. Connection should be made through a standard clip and dummy antenna. Check sensitivity and perform all balancing procedure with the automatic tuning in the "off" position. The intermediate frequency stage adjustments should be made in the same manner as described above for the automatic tuning stage.

If the I.F. sensitivity is found to be below the extreme clockwise position of the knob, the adjustment may be corrected by rotating the knob clockwise.

If the I.F. sensitivity is less than the extreme clockwise position of the knob, the adjustment may be corrected by rotating the knob clockwise.

The following instructions for balancing may then be followed.

1. Connect the signal generator to the A and G terminals on the rear of the radio. Rotate the condenser until it is full in mesh (maximum clockwise position). The dial pointer should point to the center of the station window which is alongside 550 kilocycles (55 on the American broadcast band).

2. Rotate dial pointer to 1,400 K. C. Set band switch to Broadcast Position. Adjust padder No. 5 to resonance. Adjust padder No. 6 for maximum output.

3. Set dial pointer to 600 K. C. With 600 K. C. input from the signal generator adjust padder No. 7 for maximum output.

4. Set band switch to mid-band position. Rotate dial pointer to 5.0 megacycles. With 5,000 K. C. input from signal generator adjust padder No. 8 for resonance. Adjust padder No. 9 for maximum output.

5. Set band switch to short-wave band position. Rotate dial pointer to 15.0 megacycles. With 15 megacycles input from signal generator turn padder No. 10 to the extreme clockwise position. Then raise padder and counterclockwise until the second resonance point reached. Then adjust padder No. 11 for maximum output.
BALANCING INSTRUCTIONS:

All sensitivities given for 1/2 watt output = 1.4 V. across Voice Coil

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6A8 Grid</td>
<td>455</td>
<td>1, 2, 3 &amp; 4</td>
<td>550 XC</td>
<td>50 uv</td>
</tr>
<tr>
<td>2</td>
<td>Ant. Coupler Through 20 uuf</td>
<td>1400</td>
<td>5</td>
<td>1400</td>
<td></td>
</tr>
<tr>
<td>3/4</td>
<td>&quot;</td>
<td>600</td>
<td>6/7</td>
<td>1400/800</td>
<td>10/10 uv</td>
</tr>
</tbody>
</table>

RESISTORS:

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>R5</td>
<td>17-2070</td>
<td>500,000 ohm, 1/2 W.</td>
</tr>
<tr>
<td>R9</td>
<td>17-2080</td>
<td>1,000,000 ohm, 1/2 W.</td>
</tr>
<tr>
<td>R63</td>
<td>17-14091</td>
<td>25,000 ohm, 1/4 W.</td>
</tr>
<tr>
<td>R170</td>
<td>17-14287</td>
<td>800 ohm, 1 W.</td>
</tr>
<tr>
<td>R171</td>
<td>17-14288</td>
<td>15,000,000 ohm, 1/4 W.</td>
</tr>
<tr>
<td>R172</td>
<td>17-14289</td>
<td>100 ohm, 1/4 W.</td>
</tr>
<tr>
<td>R173</td>
<td>17-14290</td>
<td>200 ohm, 1/4 W.</td>
</tr>
<tr>
<td>R174</td>
<td>17-14291</td>
<td>20,000 ohm, 1/4 W.</td>
</tr>
<tr>
<td>R175</td>
<td>17-14292</td>
<td>40,000 ohm, 1/4 W.</td>
</tr>
<tr>
<td>R176</td>
<td>17-16225</td>
<td>500,000 ohm, vol. control</td>
</tr>
</tbody>
</table>

CONDENSERS:

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C182</td>
<td>29-16217</td>
<td>Tuning Condenser</td>
</tr>
<tr>
<td>C155</td>
<td>17-14217</td>
<td>.0002 mfd. 600 V.</td>
</tr>
<tr>
<td>C185</td>
<td>17-14230</td>
<td>.005 mfd. 1200 V.</td>
</tr>
<tr>
<td>C188</td>
<td>17-14294</td>
<td>.003 mfd. 600 V.</td>
</tr>
<tr>
<td>C189</td>
<td>17-14286</td>
<td>.0005 mfd. 600 V.</td>
</tr>
<tr>
<td>C191</td>
<td>17-14272</td>
<td>.01 mfd. 400 V.</td>
</tr>
<tr>
<td>C192</td>
<td>17-14273</td>
<td>.00025 mfd. 600 V.</td>
</tr>
<tr>
<td>C193</td>
<td>17-14274</td>
<td>.05 mfd. 200 V.</td>
</tr>
<tr>
<td>C195</td>
<td>17-14275</td>
<td>.05 mfd. 400 V.</td>
</tr>
<tr>
<td>C196</td>
<td>17-14277</td>
<td>.1 mfd. 200 V.</td>
</tr>
<tr>
<td>C197</td>
<td>17-14278</td>
<td>.001 mfd. 600 V.</td>
</tr>
<tr>
<td>C198</td>
<td>17-14279</td>
<td>.005 mfd. 400 V.</td>
</tr>
<tr>
<td>C199</td>
<td>17-14283</td>
<td>.02 mfd. 200 V.</td>
</tr>
<tr>
<td>C201</td>
<td>17-14285</td>
<td>.5 mfd. 150 V.</td>
</tr>
<tr>
<td>C202</td>
<td>17-13286</td>
<td>10-10 mfd. 300 V.</td>
</tr>
<tr>
<td>C203</td>
<td>17-16242</td>
<td>2 mfd. 200 V.</td>
</tr>
</tbody>
</table>

COILS and TRANSFORMERS:

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-1</td>
<td>00-16219</td>
</tr>
<tr>
<td>T-2</td>
<td>00-16220</td>
</tr>
<tr>
<td>T-3</td>
<td>00-16221</td>
</tr>
<tr>
<td>T-4</td>
<td>00-16222</td>
</tr>
<tr>
<td>T-5</td>
<td>00-16223</td>
</tr>
<tr>
<td>T-6</td>
<td>00-16224</td>
</tr>
<tr>
<td>X-1</td>
<td>20-13458</td>
</tr>
<tr>
<td>X-2</td>
<td>29-13459</td>
</tr>
<tr>
<td>TL</td>
<td>00-1623</td>
</tr>
</tbody>
</table>

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Socket voltages given in table are for an input of 5.8 volts at the tubes in the receiver. 5.8 volts is the average obtained in various cars after allowing for drop in car wiring.

**MODEL 578B ARVIN RADIO**

**TUBES:**
1C7G—1st Detector-Oscillator
1D5G—I. F. Amplifier
1H6G—2nd Detector
1G5G—Audio Output Amplifier

**FREQUENCY RANGE:** 540 to 1,725 Kilocycles

**POWER OUTPUT:** 300 Milliwatts

**SPEAKER:**
6” Permanent Magnet Dynamic 3 ohm voice coil—400 cycles

**VOLTAGE AND POWER CONSUMPTION:**
“A” Battery—360 milliamperes at 2.1 volts
“B” Battery—12-15 milliamperes at 90 volts

**SENSITIVITY:**
1000 KC.—100 Microvolts for 50 milliwatts output
456 KC.—200 Microvolts for 50 milliwatts output

**COIL RESISTANCES**

<table>
<thead>
<tr>
<th>Tube</th>
<th>Filament</th>
<th>Plate</th>
<th>Screen</th>
</tr>
</thead>
<tbody>
<tr>
<td>1C7G</td>
<td>2.1</td>
<td>84</td>
<td>45</td>
</tr>
<tr>
<td>1D5G</td>
<td>2.1</td>
<td>84</td>
<td>45</td>
</tr>
<tr>
<td>1H6G</td>
<td>2.1</td>
<td>84</td>
<td>45</td>
</tr>
<tr>
<td>1G5G</td>
<td>2.1</td>
<td>84</td>
<td>45</td>
</tr>
</tbody>
</table>

**DATA**

Connect an output meter or A. C. Voltmeter across the speaker coil leads.

1. Connect the signal generator to the grid cap of the 1C7G tube and with an input of 456 K. C. adjust padders 1, 2, 3 and 4 for maximum output.

2. Connect the signal generator through a standard 200 micromicrofarad dummy antenna to the antenna (green) lead wire on the rear of the chassis. Ground the generator to the (black) ground wire.

3. Rotate the tuning condenser to the wide open position. Check the dial pointer to see that it is parallel to the horizontal line across the dial face.

4. Rotate the dial pointer to 1,400 K. C. and with an input of that frequency adjust paddler No. 5 to resonance. Adjust padder No. 6 for maximum output.

5. Rotate the dial pointer to 600 K. C. and with an input of that frequency adjust the series padder No. 7 to resonance.

6. Return to 1,400 K. C. and recheck the settings of padders No. 5 and No. 6.
MODEL 9A
MODELS 828AT, 838AT NOBLITT-SPARKS INDUSTRIES, INC.
Socket, Trimmers
Chassis

FREQUENCY RANGE: 1575-3400 Kilocycles
VOICE COIL: 3 Ohms
POWER OUTPUT: 2.7 Watts
POWER SUPPLY: 6 V. Storage Battery
SPEAKER: 5" Dynamic
AMPERE DRAIN: 5.4 Amperes

©John F. Rider, Publisher
Alignment, Trimmers
Sensitivity

ARVIN RADIO CHASSIS RE27

ARVIN MODELS 89 and 91
Schematic, Voltage

All voltage readings taken to chassis base. Allowable voltage variation, plus or minus 20% from values shown.

BALANCING INSTRUCTIONS
ARVIN MODELS 89, 91 - RE27 CHASSIS

All sensitivity readings given for 200 milliwatts output. .78 V across voice coil.

<table>
<thead>
<tr>
<th>Operation No.</th>
<th>Connectors</th>
<th>Generator To</th>
<th>Input Frequency</th>
<th>Adjust Padder No.</th>
<th>Dial Setting</th>
<th>Hand Switch Position</th>
<th>Sensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>64B Grid</td>
<td>455 KC</td>
<td>1.2, 3, 4, 6</td>
<td>600 KC</td>
<td>Broadcast</td>
<td>70 uv</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Antenna Wire</td>
<td>1400 KC</td>
<td>5</td>
<td>1400 KC</td>
<td>Broadcast</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Antenna Wire</td>
<td>1400 KC</td>
<td>6</td>
<td>1400 KC</td>
<td>Broadcast</td>
<td>25 uv</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Antenna Wire</td>
<td>600 KC</td>
<td>7</td>
<td>600 KC</td>
<td>Broadcast</td>
<td>40 uv</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Antenna Wire</td>
<td>15 MC</td>
<td>8</td>
<td>15 MC</td>
<td>Short wave</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Antenna Wire</td>
<td>15 MC</td>
<td>9</td>
<td>15 MC</td>
<td>Short wave</td>
<td>120 uv</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Antenna Wire</td>
<td>7 MC</td>
<td>10</td>
<td>7 MC</td>
<td>Short wave</td>
<td>150 uv</td>
<td></td>
</tr>
</tbody>
</table>

* Dial pointer should be parallel with horizontal line across center of dial with tuning condenser in closed position (maximum capacity) before proceeding with adjustments.

** After balancing 600 KC padder, return and recheck the adjustments of paddles 5 & 6.

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**MODEL 92**  
**Chassis RE31**  
Schematic Alignment  

**NOBLITT-SPARKS INDUSTRIES, INC.**  
Trimmers  
Sensitivity  

**SOCKET VOLTAGES**  

<table>
<thead>
<tr>
<th>6K8</th>
<th>6K7</th>
<th>6Q7G</th>
<th>6V6G</th>
<th>6V6G</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**5V3G ARVIN RADIO MODEL 92 CHASSIS RE31**

- 6K8: P-255; Gs-65; Po-70; K-2.  
- 6K7: P-255; Gs-65; K-2.  
- 6V6G: P-245; Gs-255; K-11.5  
- 6V6G: P-380AC; P-380AC; K-300.  
- 6K7: P-255; Gs-65; K-5.  
- 6Q7: P-115; K-2.  

* Through 1 megohm resistor. Voltage Divider: A=1650; B=6310; C=4230; D=1345; E=170.  

**Speaker Field**  
600 ohms  

**WARNING INSTRUCTIONS**  
(All sensitivities given for 1 watt output - 1.73 V. across voice coil)  

<table>
<thead>
<tr>
<th>Operation Connect To</th>
<th>Input</th>
<th>Adjust</th>
<th>Dial</th>
<th>Band Switch</th>
<th>Sensitivity (Minimum)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6K8 Grid</td>
<td>455 kc</td>
<td>1,2,3,4,5</td>
<td>600 kc</td>
<td>Broadcast</td>
</tr>
<tr>
<td>2</td>
<td>Antenna Term.</td>
<td>1400 kc</td>
<td>6</td>
<td>1400 kc</td>
<td>Broadcast</td>
</tr>
<tr>
<td>3</td>
<td>Antenna Term.</td>
<td>1400 kc</td>
<td>7</td>
<td>1400 kc</td>
<td>Broadcast</td>
</tr>
<tr>
<td>4</td>
<td>Antenna Term.</td>
<td>600 kc</td>
<td>8</td>
<td>600 kc</td>
<td>Broadcast</td>
</tr>
<tr>
<td>5</td>
<td>Antenna Term.</td>
<td>5.0 mc</td>
<td>9</td>
<td>5.0 mc</td>
<td>Mid-Band</td>
</tr>
<tr>
<td>6</td>
<td>Antenna Term.</td>
<td>5.0 mc</td>
<td>10</td>
<td>5.0 mc</td>
<td>Mid-Band</td>
</tr>
<tr>
<td>7</td>
<td>Antenna Term.</td>
<td>2 mc</td>
<td>11</td>
<td>2 mc</td>
<td>Mid-Band</td>
</tr>
<tr>
<td>8</td>
<td>Antenna Term.</td>
<td>15 mc</td>
<td>12</td>
<td>15</td>
<td>Short Wave</td>
</tr>
<tr>
<td>9</td>
<td>Antenna Term.</td>
<td>15 mc</td>
<td>13</td>
<td>15</td>
<td>Short Wave</td>
</tr>
</tbody>
</table>

* Dial pointer should line up with end of broadcast band dial calibration with tuning condenser fully closed.  
* After balancing 600 kc, return and recheck the adjustments of padders 6 & 7.  
* NOTE: Signal generator should be connected to 4 & 6 terminals on rear of radio chassis. 9 & 5 terminals should be connected together.

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NOBLLITT-SPARKS INDUSTRIES, INC.

MODELS 828AT, 838AT

Chassis 818AT
Schematic, Voltage Resistances

FOR OTHER DATA
SEE INDEX

SCHEMATIC CIRCUIT DIAGRAM
ARVIN HOME RADIO CHASSIS 818AT

WATTS POWER CONSUMPTION: 75 Watts
POWER OUTPUT: 5 Watts

MODEL 838AT-828AT SOCKET VOLTAGES
(Input Voltage 110 V. RMS)

<table>
<thead>
<tr>
<th>Tube</th>
<th>Heaters</th>
<th>Plate</th>
<th>Screen</th>
<th>Cathode</th>
<th>Osc. Grid</th>
<th>Anode Grid</th>
</tr>
</thead>
<tbody>
<tr>
<td>6A8G</td>
<td>6.3</td>
<td>0</td>
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<td>6K7G</td>
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<td>0</td>
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</tr>
<tr>
<td>6Y6G</td>
<td>6.3</td>
<td>363AC</td>
<td>0</td>
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</tr>
<tr>
<td>6E5</td>
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<td>150</td>
<td>0</td>
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<td>0</td>
</tr>
</tbody>
</table>

*: A.C. voltage developed approximately 50 volts with 100,000 microvolts input to antenna. Reading taken with a vacuum tube voltmeter.

POINT TO POINT RESISTANCES

All readings taken to ground unless otherwise stated. * Volume control in pull on position. All shell terminals grounded to chassis.

<table>
<thead>
<tr>
<th>Tube</th>
<th>Heaters</th>
<th>Plate</th>
<th>Screen</th>
<th>Cathode</th>
<th>Osc. Grid</th>
<th>Anode Grid</th>
</tr>
</thead>
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<td>0</td>
<td>0</td>
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<tr>
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<td>6.3</td>
<td>0</td>
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<tr>
<td>6Y6G</td>
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<tr>
<td>6E5</td>
<td>6.3</td>
<td>150</td>
<td>0</td>
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</tr>
</tbody>
</table>

*: All readings taken to ground unless otherwise stated. * Volume control in pull-on position. All shell terminals grounded to chassis.

COIL, TRANSFORMER AND SPEAKER RESISTANCES

<table>
<thead>
<tr>
<th>T1—Antenna Coil</th>
<th>T3—Oscillator Coil</th>
<th>T4—1St F. Transformer</th>
<th>T6—3rd 1. F. Transformer</th>
<th>T7—Output Transformer (828AT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broadcast Primary</td>
<td>18.5Ω</td>
<td>Broadcast Primary</td>
<td>Primary</td>
<td>Primary</td>
</tr>
<tr>
<td>Broadcast Secondary</td>
<td>18.5Ω</td>
<td>Broadcast Secondary</td>
<td>Secondary</td>
<td>Secondary</td>
</tr>
<tr>
<td>Mid-Band Primary</td>
<td>18.5Ω</td>
<td>Mid-Band Primary</td>
<td>Primary</td>
<td>Primary</td>
</tr>
<tr>
<td>Mid-Band Secondary</td>
<td>18.5Ω</td>
<td>Mid-Band Secondary</td>
<td>Secondary</td>
<td>Secondary</td>
</tr>
<tr>
<td>Short-Wave Primary</td>
<td>18.5Ω</td>
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<td>Primary</td>
<td>Primary</td>
</tr>
<tr>
<td>Short-Wave Secondary</td>
<td>18.5Ω</td>
<td>Short-Wave Secondary</td>
<td>Secondary</td>
<td>Secondary</td>
</tr>
</tbody>
</table>

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FOR OTHER SERVICING
DATA ON MODEL 982085
SEE PAGES 9-9 TO 9-12
IN RIDER'S VOLUME IX.

FIG. 8 REMOTE CONTROL HEAD

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>409376</td>
<td>Control Unit Complete</td>
<td>Standard</td>
</tr>
<tr>
<td>1212484</td>
<td>Base</td>
<td>Control Assembly</td>
</tr>
<tr>
<td>1212397</td>
<td>Cable Assembly Flexible</td>
<td>Station Selector</td>
</tr>
<tr>
<td>1212398</td>
<td>Cable Assembly Flexible</td>
<td>Volume Control</td>
</tr>
<tr>
<td>1112396</td>
<td>Clamp</td>
<td>Lead</td>
</tr>
<tr>
<td>1212393</td>
<td>Clip</td>
<td>Shaft Retaining</td>
</tr>
<tr>
<td>1212394</td>
<td>Clutch Dial Assembly</td>
<td>Idler Driving and Dial Drive</td>
</tr>
<tr>
<td>1212397</td>
<td>Gear and Shaft Assembly</td>
<td>Dial Drive (Driving Pinion)</td>
</tr>
<tr>
<td>1212396</td>
<td>Gear and Shaft</td>
<td>Off-On Volume (Driving)</td>
</tr>
<tr>
<td>1212398</td>
<td>Gear and Shaft</td>
<td>Off-On Volume (Driven)</td>
</tr>
<tr>
<td>1212401</td>
<td>Knob</td>
<td>Station Selector</td>
</tr>
<tr>
<td>1212402</td>
<td>Knob</td>
<td>Off-On and Volume Control</td>
</tr>
<tr>
<td>1212403</td>
<td>Knob</td>
<td>Tone Control</td>
</tr>
<tr>
<td>115275</td>
<td>Lamp No. 51 Miniature Bayonet Base</td>
<td></td>
</tr>
<tr>
<td>134530</td>
<td>Nut 6/32</td>
<td>Pilot Light</td>
</tr>
<tr>
<td>1212405</td>
<td>Plate</td>
<td>Lead Clamp Mtg.</td>
</tr>
<tr>
<td>1212482</td>
<td>Screw 4/36 x 3/16</td>
<td>Gear Retaining</td>
</tr>
<tr>
<td>107697</td>
<td>Screw 6/32 x 3/8 R.H.</td>
<td>Binder Head</td>
</tr>
<tr>
<td>1212406</td>
<td>Spring</td>
<td>Lead Clamp Mtg.</td>
</tr>
<tr>
<td>1212407</td>
<td>Spring</td>
<td>Case Retaining</td>
</tr>
<tr>
<td>1212418</td>
<td>Stud</td>
<td>Control Unit Mtg.</td>
</tr>
<tr>
<td>1212409</td>
<td>Switch</td>
<td>Dial Tension</td>
</tr>
<tr>
<td>1212410</td>
<td>Switch</td>
<td>Control Unit Mtg.</td>
</tr>
<tr>
<td>1212413</td>
<td>Washer</td>
<td>Off-On</td>
</tr>
<tr>
<td>1212414</td>
<td>WASHER</td>
<td>Tone Control 4 Positions</td>
</tr>
<tr>
<td>121044</td>
<td>WASHER LOCK</td>
<td>Knob Retaining</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Off-On and Volume Shaft Retaining</td>
</tr>
</tbody>
</table>

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The Oldsmobile Deluxe Receiver, with Tone and Sensitivity Controls, was designed specifically for 1928 Oldsmobiles and is equipped with an instrument panel tuning control having a sensitivity switch and variable tone control in addition to the tuning and volume controls.

The antenna circuit is directly coupled to the antenna in contrast with the capacity coupled circuit used in some previous Oldsmobile Models. 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.) instead of at the low frequency end as with the capacity coupled sets. There are two taps provided on the Antenna Coil. One for use with the Running Boards Antenna and the other for use with overhead (roof) type Antennas.
1. Aligning I-F Stages at 266 Kilocycles:
   IMPORTANT: The sensitivity switch on the tuning control should be in the "Distance" position when aligning the receiver, or the cable from the control unit to the receiver disconnected.

   a. Connect the signal lead of the test oscillator to the grid cap of the EABG Tube through a .1 mfd. condenser, leaving the tube's grid clip in place.
   b. Connect the ground lead of the test oscillator to the chassis frame.
   c. Connect the output meter across the plate prongs of the output tube. Care should be taken when connecting the output meter to insert a series condenser to protect the meter from D.C. Voltages.
   d. Set the test oscillator to exactly 266 K.C.
   e. Adjust the trimmers on the I-F coils (Illustration 6 and 7, Figure 2) for maximum output. These adjustments should be repeated several times and during alignment, the test oscillator output should be kept as low a value as is consistent with obtaining a readable indication on the output meter.

2. Aligning at 1560 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.
   c. Set the test oscillator to 1560 Kilocycles.
   d. Adjust the parallel trimmer for the oscillator section of the condenser gang (Illustration 11C, Figure 3) for maximum output. (It is very important that this frequency be set accurately as a slight mis-setting will cause the receiver to be out of track over the entire high frequency end of the dial.)

3. Aligning at 540 Kilocycles:
   a. Leave test oscillator leads connected the same as before.
   b. Turn the rotor plates of the gang condenser all the way into mesh so that they rest against the low frequency stop.
   c. Set the test oscillator to 540 K.C.
   d. Adjust the oscillator padding condenser (Illustration 20, Figure 2) located on the mounting plate of the receiver to maximum output. (This adjustment sets the low frequency tuning range of the receiver to 540 K.C.)

4. Aligning at 1400 Kilocycles:
   a. Remove the signal lead of the test oscillator from the grid of the Translator tube and connect to the antenna terminal of the receiver THROUGH A .00005 mfd. MICA CONDENSER connected in place of the .1 mfd. condenser previously used. (It is very important that a .00005 mfd. mica condenser be used in aligning the antenna stage of these receivers in order that this circuit can be made to track properly. Some test oscillators have this condenser included and if the capacity is correct, it will not be necessary to use an external series condenser.)
   b. Set the test oscillator to 1400 K.C.
   c. Turn the condenser rotor plates until the frequency is tuned in with maximum output.

5. Adjust the R-F parallel trimmer on the condenser gang (Illustration 11B) and the antenna compensating condenser which is the parallel trimmer on the Condenser Gang (Illustration 11A, Figure 2).

6. Aligning at 600 Kilocycles:
   The oscillator padding condenser was previously adjusted at 540 K.C., however, it is necessary in most cases to repace the oscillator tracking condenser at 600 K.C. in order to make the receiver track properly and to secure full sensitivity.

   a. Set the test oscillator on 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 readjust the oscillator gang tuning shaft back and forth through the signal.
   d. This operation should be continued until no further increase in output can be obtained.

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

---

**Alignment Voltages**

**Fig. 5 Tube Probe Voltages**

**Current Drain: 7.1 to 7.5 Amperes**

**B Supply Drain Approximately 46 MA. to 52 MA.**

**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; A Battery 6 Volts
Remot Cont. Head
Assembly, Details
Condenser Schematic

FIG. 8 REMOTE CONTROL HEAD

FIG. 7--#1212439 CONDENSER BLOCK CONNECTIONS

©John F. Rider, Publisher
MODEL 982126
4-Wire Speaker
Schematic

OLDSMOBILE DIV.—GEN. MOTORS

CIRCUIT DIAGRAM OLDS MODEL 982126
4-PRONG CABLE SPEAKER

The circuit used in this receiver is the conventional superheterodyne type and does not employ regeneration.

In Automatic Speed Volume Control, which increases volume with car speed, is incorporated in the receiver.
ANTENNA CIRCUIT

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 (1450 K.C.). There are two antenna receptacles provided on the receiver, one for use with the running boards antenna and the other for use with the overhead (roof) type antenna.

1. Aligning 1-F stages at 240 Kilocycles

(a) Connect the signal lead of the test oscillator to the grid cap of the 6AQ tube through a .01 mfd. condenser, leaving the tube's grid cap in place.
(b) Connect the ground lead of the test oscillator to the chassis frame.
(c) Connect the output meter across the plate prong of the output tube.
(d) Adjust the trimmer "A", "B", "C" 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 600 Kilocycles

(a) Leave the test oscillator leads connected as for aligning the I-F Circuits.
(b) Turn the rotor plates of the gang condenser (Illustration 9) all the way out and against the high frequency step.

(c) Set the test oscillator to 1560 kilocycles.
(d) Adjust the condenser "F" for maximum output. (It is very important that this frequency be set accurately as a slight mis-setting will cause the receiver to be out of track over the high frequency end of the dial.)

3. Aligning at 540 Kilocycles

(a) Leave the test oscillator leads connected as before.
(b) Turn the rotor plates of the gang condenser all the way into mesh so that they rest against the low frequency stop.
(c) Set the test oscillator to 540 kilocycles.
(d) Adjust the oscillator tuning condenser "Z" for maximum output. (This adjustment sets the low frequency tuning range of the receiver to 540 K.C.)

4. Aligning at 1400 Kilocycles

(a) Remove the signal lead of the test oscillator from the grid of the 6AQ tube and connect to the Running Board Antenna receptacle of the receiver through a .00045 mfd. Mica Condenser connected in place of the .1 mfd. condenser previously used. (It is very important that a .00045 mfd. mica condenser be used when aligning the antenna stage of those receivers and that the lead from the test oscillator is in the correct terminal in order that this circuit can be made to track properly.)
(b) Set the test oscillator to 1400 K.C.
(c) Turn the condenser rotor plates until this frequency is tuned in with Maximum output.
(d) Adjust the R-X Parallel trimmer "O" on the condenser gang and the antenna compenating condenser "H" which is the parallel trimmer on the Condenser Gang.

5. Aligning at 600 Kilocycles

The oscillator padding condenser was previously adjusted at 540 K.C., however, it is necessary in most cases to repeat the oscillator tracking 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 readjust the oscillator tracking condenser "E" 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.

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

Model 973126
Date: Dec. 30, 1938.

Oldsmobile Div.—Gen. Motors
OLDSMOBILE DIV.—GEN. MOTORS

MODEL 982126
Voltage, Chassis Control Assembly

MODEL 982127
Control Assembly

- 7235886 TUNER ASSY
- 7235884 CORD & SPRING ASSY
- 7235895 PLUNGER RETURN SPRING
- 7235444 SLIDE BAR ASSY
- 7235440 TUNER ASSY
- 7235446 PULLEY
- 7236446 SET SCREW
- 7236477 SHAFT
- 7236489 SWITCH
- 7236341 BEZEL
- 7236426 LIGHT SHIELD
- 7236424 BACK PLATE
- 7236447 SPACER
- 7236753 CONTROL

BOTOM VIEW OF TUBE SOCKETS

SPEAKER TUBE VOLTAGE CHART

READINGS TAKEN FROM TUBE SOCKET CONTACTS TO GROUND WITH A D.C. VOLTMETER HAVING A RESISTANCE OF 1000 OHMS PER VOLT;
"A" BATTERY 6 VOLTS.
CURRENT DRAIN 6.7 TO 7.6 AMPERES.
"B" SUPPLY DRAIN APPROXIMATELY

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www.americanradiohistory.com
The antenna circuit is simply coupled to the antenna. A small adjustable condenser is provided for adjusting the antenna circuit to the antenna. There are two metal sockets provided for use with the Running Board Antenna and the other with Side Goblet mounted Antenna.
1. **Aligning I-F Stages at 455 Kilocycles**
   (a) Connect the signal lead of the test oscillator to the grid cap of the 6AK5 tube through a .01 mfd. condenser, leaving the tube's grid clip in place.
   (b) Connect the ground lead of the test oscillator to the chassis frame.
   (c) Connect the output meter from the plate spring of the output tube to ground. Care should be taken when connecting the output meter to insert a series condenser to protect the meter from D.C. voltages.
   (d) Set the test oscillator to exactly 455 K.C.
   (e) Turn volume control to maximum.
   (f) Adjust the trimmers "K", "B", "C" 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 as low a value as is consistent with obtaining a readable indication on the output meter.

2. **Aligning at 300 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 [Illus. 6B] all the way out and against the high frequency stop.
   (c) Set the test oscillator to 300 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 by the entire high frequency end of the dial.)

3. **Aligning at 150 Kilocycles**
   (a) Leave test oscillator leads connected the same as before.
   (b) Turn the rotor plates of the gang condenser all the way into mesh so that they rest against the low frequency stop.
   (c) Set the test oscillator to 150 K.C.
   (d) Adjust the oscillator padding condenser "K" for maximum output. (This adjustment sets the low frequency tuning range of the receiver to 150 K.C.)

4. **Aligning the Antenna Stage**
   (a) Remove the signal lead of the test oscillator from the grid of the 6AK5 tube and connect to the Running Board Antenna receptacle of the receiver through a .0004 mfd. Mica Condenser connected in place of the .1 mfd. mica condenser previously used. (It is very important that a .0004 mfd. mica condenser be used when aligning the antenna stage of these receivers and that the lead from the test oscillator is in the correct receptacle in order that this circuit can be made to track properly.
   (b) Set the test oscillator to 600 K.C.
   (c) Adjust antenna trimmer condenser "D" for maximum output.
   (d) Set the test oscillator to 1000 K.C.
   (e) Turn the condenser rotor plates until this frequency is tuned in with maximum output.
   (f) Adjust the parallel trimmer "C" on the condenser gang for maximum output.

5. **Aligning at 600 Kilocycles**
   The oscillator padding condenser was previously adjusted at 300 K.C. however, it is necessary in most cases to resupply 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 readjust the oscillator padding condenser "E" 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.

**NOTE:** If the entire alignment procedure has been accomplished correctly, the receiver should be very nearly uniformly sensitive over the entire frequency range.
OLDSMOBILE DIV.—GEN. MOTORS

READINGS TAKEN FROM TUBE SOCKET CONTACTS TO GROUND WITH A D.C.
VOLTMETER HAVING A RESISTANCE OF 1000 OHMS PER VOLT; "A" BATTERY
6 VOLTS CURRENT DRAIN 7.3 TO 7.5 AMPS.
"B" SUPPLY DRAIN APPROXIMATELY 52 TO 55 MA

POWER SUPPLY UNIT LOCATION OF PARTS
RADIO 982153

©John F. Rider, Publisher
1. Aligning I-F Stages at 285 Kilocycles:
   a. Connect the signal lead of the test oscillator to the grid cap of the 6AG8 tube through a .1 mfd. condenser, leaving the tube's grid slip in place.
   b. Connect the ground lead of the test oscillator to the chassis frame.
   c. Connect the output meter from the plate prong of the 6V6G to ground. Care should be taken when connecting the output meter to insert a series condenser to protect the meter from B.C. voltages.
   d. Set the test oscillator to exactly 285 K.C.

2. Aligning at 1560 Kilocycles:
   a. Leave the test oscillator lead 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.
   c. Set the test oscillator to 1560 Kilocycles.

3. Aligning at 540 Kilocycles:
   a. Leave the test oscillator lead connected the same as before.
   b. Turn the rotor plates of the gang condenser all the way into mesh so that they rest against the low-frequency stop.
   c. Set the test oscillator to 540 K.C.
   d. Adjust the oscillator padding condenser (Illustration 26, Figure 2) located on the mounting plate of the receiver to maximum output. (This adjustment sets the low-frequency tuning range of the receiver to 540 K.C.)

4. Aligning at 1400 Kilocycles:
   a. Remove the signal lead of the test oscillator from the grid of the Transistor tube and connect to the antenna terminal of the receiver THROUGH A .00055 mfd. MICA CONDENSER connected in place of the .1 mfd. condenser previously used. (It is very important that a .00055 mfd. mica condenser be used in aligning the antenna stage of these receivers in order that this circuit can be made to track properly. Some test oscillators have this condenser included and if the capacity is correct, it will not be necessary to use an external series condenser.)
   b. Set the test oscillator to 1400 K.C.
   c. Turn the condenser rotor plates until the frequency is tuned in with maximum output.

5. Aligning at 600 Kilocycles:
   a. Set the test oscillator on 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 readjust the oscillator tracking condenser (Illustration 26, Figure 2) 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 is obtained. Note if the entire alignment procedure has been accomplished correctly, the receiver should be very nearly uniformly sensitive over the entire frequency range.

   ![Diagram of tube sockets](image-url)

   **Diagram: Bottom View of Tube Sockets**

   **Readings Taken from Tube Socket Contacts to Ground with D.C. Voltmeter Having a Resistance of 1000 Ohms Per Volt, "A" Battery 6 Volts. Current Drain 6.6 to 6.8 Amps. "B" Supply Drain Approximately 50 to 54 M.A.**

   **Figure 5: Tube Prong Voltages - Model 9820GS**
Note that Remote Control, 412073, for Radio 982153 is the same as 412304 except it will be less the following:

7236739  Local Distance Switch Knob
1213384  Switch
5271569  6 Prong Cable and Plug Assembly