VOLUME I

PERPETUAL

TROUBLESHOOTER'S
MANUAL

JOHN F. RIDER
GENERAL MOTORS RADIO CORP.

MODEL 5044-5 Tube
MODEL 527-5 Tube

DAY-FAN FIVE
Model 5044-5 Tube

Day-Fan Five Twenty-Seven—5-Tube

ANTENNA  GROUND +60 +2200 -B -A

DAY-FAN 5-27
MODEL Day-Fan 6 Jr.  GENERAL MOTORS RADIO CORP.
MODEL Day-Fan 6-61
(5060)

STANDARD, BATTERY CABLE CONNECTIONS

<table>
<thead>
<tr>
<th>Color of Wire</th>
<th>(DAY-FAN 6 Jr.)</th>
<th>N. E. M. A. Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td></td>
<td>B + Pwr. 2.</td>
</tr>
<tr>
<td>Red and White</td>
<td></td>
<td>B + Pwr. 1.</td>
</tr>
<tr>
<td>Red and Maroon</td>
<td></td>
<td>B + Amp.</td>
</tr>
<tr>
<td>Maroon</td>
<td></td>
<td>B + Det.</td>
</tr>
<tr>
<td>Yellow</td>
<td></td>
<td>A +</td>
</tr>
<tr>
<td>Green with Red and Yellow tracers</td>
<td></td>
<td>B — A — C +.</td>
</tr>
<tr>
<td>Black and Green</td>
<td></td>
<td>C — Pwr. 1.</td>
</tr>
<tr>
<td>Black and White</td>
<td></td>
<td>C — Pwr. 2.</td>
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</tbody>
</table>

Day-Fan 61

<table>
<thead>
<tr>
<th>CX-301A</th>
<th>1CX-112A</th>
<th>CX-301A</th>
<th>CX-301A or CX-302A or CX-112A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st R.F.</td>
<td>2nd A.F.</td>
<td>1st A.F.</td>
<td>3rd R.F.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

www.americanradiohistory.com
GENERAL MOTORS RADIO CORP.

MOTOR GENERATOR SET—6 TUBE

MOTOR GENERATOR AND FILTER

Day-Fan 5051 (Motor Generator Set)

CX-301A
CX-300A
CX-312A

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
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<td>☐</td>
<td>☐</td>
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<td>☐</td>
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</tr>
</tbody>
</table>

110-120 VOLTS AC

MOTOR GENERATOR AND FILTER
GENERAL MOTORS RADIO CORP.

MODEL Day-Fan 5066
MODEL Day-Fan 5065
MODEL 5524, 5525,
SPU For 5065

POWER CABLE COLOR CODE:
N.E.M.A. Rating
B - + Power
B - + Det.
C - Power

Color of Wire
Red and White
Red and Maroon
Green and Yellow Tracers
Black with Green tracer

Radio "B" Power Supply - Model Nos. 5524 and 5525.
(For 6 tube R.C.A.) A.C. Set.)
MODEL Day-Fan 5052
MODEL Day-Fan 5060

GENERAL MOTORS RADIO CORP.

110 VOLT DIRECT CURRENT SET—6 TUBE
Model 5052

32 VOLT DIRECT CURRENT SET—6 TUBE
Model 5060

TRICKLE CHARGER RECEPTACLE

TO "A" BATTERY

B & C POWER SUPPLY

AUTOMATIC RELAY

ATTACHMENT CORD and PLUG

Day-Fan 5060 (D.C. 32V. Set)
" " 5052 (D.C. 110V. Set)
GENERAL MOTORS RADIO CORP.

MODEL Day-Fan 35
MODEL Day-Fan 25, 26, 27, 28, 43, 48

Two Types

7 TUBE BATTERY RECEIVER

DAY-FAN 8-A. C. POWER SET

Note—Use this circuit diagram for receivers equipped with sealed power blocks, or condenser blocks not having brown nor slate colored leads.

DAY-FAN 8-A. C. POWER SET

Note—Use this circuit diagram for receivers equipped with sealed power blocks, or condenser blocks not having brown nor slate colored leads.

8-AC. Models 25-26, 27, 28, 43, 48
CIRCUIT DIAGRAM

115 VOLT A.C. LINE

POWER TRANSFORMER

PHON. SWITCH

HUM CONTROL

POWER CHOKES

POWER CONDENSER BLOCK

GENERAL MOTORS RADIO CORP.

MODEL Day-Fan 5091

1. RED
2. GREEN
3. BLUE
4. BLACK
5. YELLOW
6. BROWN
7. WHITE

DAY-FAN—Model 5091
Line Voltage 120—Set on 120 Volt Tap—Volume Control Position Max
Note: “C” Bias Voltage Reading on Audio tubes is low due to the current draw of the set tester and high resistances in the set.

Day-Fan 5091

(A.C.)

CX-326 1st A.F.
CX-326 2nd A.F.
CX-326 1st R.F.
CX-326 2nd R.F.
CX-326 F.T.
CX-326 D.V.
CX-326 Rect.

CX-345

DAY-FAN

CHASSIS MODEL 5091
1929 - 1930
GENERAL MOTORS RADIO CORP

Models 120, 130 & 140

Circuit Diagram of Chasiss with Serial Numbers Below 29100A and 1700B.

Chassis Model A

www.americanradiohistory.com
Models 120, 130 & 140
(Chassis Models "A" and "B")

Circuit Diagram of Chassis with Serial Numbers Between 29100A and 1700B and 1946B.

<table>
<thead>
<tr>
<th>Tube</th>
<th>F1. V.</th>
<th>Pl. V.</th>
<th>C.G.Volts</th>
<th>S.G.Volts</th>
<th>Cath. Volts (MA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF-1</td>
<td>2.3</td>
<td>150</td>
<td>-3</td>
<td>55</td>
<td>3</td>
</tr>
<tr>
<td>RF-2</td>
<td>2.3</td>
<td>150</td>
<td>-3</td>
<td>55</td>
<td>3</td>
</tr>
<tr>
<td>RF-3</td>
<td>2.3</td>
<td>150</td>
<td>-3</td>
<td>55</td>
<td>3</td>
</tr>
<tr>
<td>Det.</td>
<td>2.3</td>
<td>100</td>
<td>-8</td>
<td>..</td>
<td>10</td>
</tr>
<tr>
<td>AF-1</td>
<td>2.3</td>
<td>140</td>
<td>-3</td>
<td>..</td>
<td>10</td>
</tr>
<tr>
<td>AF-2</td>
<td>2.3</td>
<td>220</td>
<td>-12</td>
<td>..</td>
<td>10</td>
</tr>
<tr>
<td>AF-2</td>
<td>2.3</td>
<td>220</td>
<td>-12</td>
<td>..</td>
<td>10</td>
</tr>
<tr>
<td>Rect</td>
<td>4.5</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>100.</td>
</tr>
</tbody>
</table>

Line Voltage - 110 Volume Control on Full
Models 120, 130 & 140

(Chassis Models "A" and "B")

Circuit Diagram of Chassis with Serial Numbers Above 62100A and 1964B.
Model 170, Battery Powered Receiver

(Chassis Model E)
NOTE: NOS. 94, 92, 93 & 94
ARE GRID CAPS OF 1ST, 2ND & 3RD
R.F. TUBES AND DETECTOR TUBE.

FILTER UNIT
Filter Units, Part No. 1202735, have been supplied to the field with instructions for installation on Model "E" Chassis with Serial Nos. below 3205-E only. All receivers above 3205-E have the Filter Units incorporated in the chassis and speaker. These parts include the Audio Filter Choke which is mounted on the speaker and one 1 Mfd. condenser located in the Chassis. On sets with Serial Numbers below 3205-E, use No. 1951 Speaker. Sets with Serial Numbers above 3205-E use Speaker No. 1952.
If Oscillation persists when a small aerial is used, connect a .0001 mfd condenser across the aerial and ground posts.
GENERAL RADIO CO

MODEL 250 Amplifier
MODEL 210 Amplifier
MODEL 390 Eliminator

Showing the schematic diagram of the Type 390 Rectron "B" Eliminator and Power Amplifier
Figure 1 Amplification Constant.
Figure 2 Plate Resistance
Figure 3 Mutual Conductance
Figure 4 Static Characteristics

Special adaptors are available for conversion and application of the 361-B bridge to AC tubes.
Model 360 Oscillator

Model 320 Oscillator

Model 360-A Oscillator
GREBE BROADCAST RECEIVER, TYPE CR-14.

GREBE "13" REGENERATIVE RECEIVER, 80 TO 300 M.

(a) BATTERY AMPLIFIER DETECTOR "A" BATTERY
(b) BATTERY AMPLIFIER DETECTOR "A" BATTERY

CR-14 (Batt.)

CX-299  1st A.F.
CX-299  Det.
CX-299  2nd A.F.
CX-299 is recommended where the receiver is to be portable and dry cells may therefore be used for filament supply.
GREBE SYNCHROPHASE MU-2
A. H. GREBE & CO., Inc.

GREBE SYNCHROPHASE RECEIVER TYPE MU-2
A. H. GREBE & CO. INC
RICHMOND HILL, N.Y.

MU-2

CX-299

*2nd A.F.
CX-299

1st A.F.
CX-299

2nd R.F.
CX-299

Detl.

CX-299

2nd A.F.

CX-299

1st A.F.

* 2nd Audio Frequency tubes are in parallel.

GREBE SYNCHROPHASE "5" or "MU-1"
Tube No. 5 Used in 1925 Models
Tube No. 6 Used in Early 1927 Models
Tube No. 7 Used in Late 1927 Models

MU-1

CX-301A of CX-112A

CX-301A

2nd A.F.

CX-301A

1st R.F.

CX-301A

2nd R.F.

Detl.

CX-301A of CX-500A of CX-112A

CX-301A

1st A.F.

CX-301A

2nd A.F.

CX-301A

1st R.F.

CX-301A

2nd R.F.

Detl.

CX-301A of CX-500A of CX-112A

CX-301A

1st A.F.

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A. H. GREBE & CO.

WIRING DIAGRAM FOR GREBE DELUXE CONSOLE TYPE 428

A.C. SIX RECEIVER, PUSH PULL AMPLIFIER TYPE 413
OUTPUT TRANS. TYPE 415 AND DYNAMIC SPEAKER TYPE 400

A.H. GREBE & CO., INC.
RICHMOND HILL, N.Y.

...
A. H. GREBE & CO.

MODEL Synchrophase SK-4
Early Model
Schematic

Line Voltage 120—Volume Control Position Min.*
Note: *-Resistors in circuit prevent readings.
Note: +-224 plate current read with volume control at
maximum position.

Models Super-Synchrophase SK4,
21950, 270, 285, 450, 563

RECEIVER
RECTIFIER, POWER AMPLIFIER

www.americanradiohistory.com
A. H. GREBE & CO.

MODEL HS-4
1 Pentode

Model HS-4, Model 1, 2 Pentode

Caption:

SE-764
5-1-31

Specifications:

Tube
RF
0.8 A
1st D
IP
2nd D
Rect

Fil.
Plt.
K
Sor.
50
11.5
128
266
130
128

All readings to ground.
Line voltage 115 V.C.M.
WIRING DIAGRAM FOR MAJESTIC POWER UNIT MODEL 7PG (OLD WIRING)

WIRING DIAGRAM FOR MAJESTIC POWER UNIT MODEL 7P3 (OLD WIRING)
MODEL 7-P-6, 7-P-3
Wiring Diagram

GRIGSBY - GRUNOW CO.

WIRING DIAGRAM FOR MAJESTIC POWER UNIT MODEL TPG

WIRING DIAGRAM FOR MAJESTIC POWER UNIT MODEL TPG

www.americanradiohistory.com
Line Voltage 112—Volume Control Full
2nd A. F. Stage—2 Tubes Push Pull

Separate Power Unit uses CX-380.
MAJESTIC—Model 181
Line Voltage 112—Set on *Volt Tap—Volume Control
Position Full On
*Voltage Regulator Is Used

<table>
<thead>
<tr>
<th>Type</th>
<th>Rect.</th>
<th>Plate Current</th>
<th>Plate Voltage</th>
<th>Tube</th>
<th>Plate Current</th>
<th>Plate Voltage</th>
<th>Tube</th>
<th>Plate Current</th>
<th>Plate Voltage</th>
<th>Tube</th>
</tr>
</thead>
<tbody>
<tr>
<td>27</td>
<td>6.50</td>
<td>200</td>
<td>200</td>
<td>26</td>
<td>6.30</td>
<td>6.30</td>
<td>27</td>
<td>6.30</td>
<td>6.30</td>
<td>27</td>
</tr>
<tr>
<td>29</td>
<td>6.50</td>
<td>200</td>
<td>200</td>
<td>27</td>
<td>6.30</td>
<td>6.30</td>
<td>27</td>
<td>6.30</td>
<td>6.30</td>
<td>27</td>
</tr>
<tr>
<td>27</td>
<td>6.50</td>
<td>200</td>
<td>200</td>
<td>27</td>
<td>6.30</td>
<td>6.30</td>
<td>27</td>
<td>6.30</td>
<td>6.30</td>
<td>27</td>
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<tr>
<td>25</td>
<td>8.50</td>
<td>200</td>
<td>200</td>
<td>27</td>
<td>6.30</td>
<td>6.30</td>
<td>27</td>
<td>6.30</td>
<td>6.30</td>
<td>27</td>
</tr>
</tbody>
</table>

Model Majestic 181 (1928)

RECT Rect O C 1928
2 KF 1 KF DET 2 RF 2 RF 1 RF
10 10 10 10 10 10 10 10 10
PILOT 2.5 V
FRONT
### BALLAST SPECIFICATIONS FOR THE VARIOUS TYPES OF MAJESTIC ELECTRIC POWER UNITS

<table>
<thead>
<tr>
<th>POWER UNIT TYPE</th>
<th>FREQUENCY CYCLES PER SECOND</th>
<th>BALLAST MARKING</th>
<th>BALLAST COLOR</th>
<th>LINE VOLTAGE</th>
<th>PRIMARY VOLTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>7PG</td>
<td>60</td>
<td>B</td>
<td>BLACK</td>
<td>115</td>
<td>80</td>
</tr>
<tr>
<td>7P3</td>
<td>25-30-40</td>
<td>B</td>
<td>BLACK</td>
<td>115</td>
<td>60</td>
</tr>
<tr>
<td>7BP5</td>
<td>60</td>
<td>7BP6</td>
<td>BLACK</td>
<td>115</td>
<td>80</td>
</tr>
<tr>
<td>7BP3</td>
<td>25</td>
<td>7BP3 25</td>
<td>RED</td>
<td>115</td>
<td>80</td>
</tr>
<tr>
<td>7BP3</td>
<td>30</td>
<td>7BP3 30</td>
<td>RED</td>
<td>115</td>
<td>80</td>
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<td>7BP3</td>
<td>40</td>
<td>7BP3 40</td>
<td>RED</td>
<td>115</td>
<td>80</td>
</tr>
<tr>
<td>8PG</td>
<td>60</td>
<td>8PG</td>
<td>GREEN</td>
<td>115</td>
<td>90</td>
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<tr>
<td>8PG</td>
<td>60</td>
<td>8PG</td>
<td>YELLOW</td>
<td>230</td>
<td>180</td>
</tr>
<tr>
<td>8P3</td>
<td>25</td>
<td>8P3 25</td>
<td>ORANGE</td>
<td>115</td>
<td>90</td>
</tr>
<tr>
<td>8P3</td>
<td>30</td>
<td>8P3 30</td>
<td>ORANGE</td>
<td>115</td>
<td>90</td>
</tr>
<tr>
<td>8P3</td>
<td>40</td>
<td>8P3 40</td>
<td>ORANGE</td>
<td>115</td>
<td>90</td>
</tr>
</tbody>
</table>
Line Voltage 112—Set on *Volt Tap—Volume Control Position Full On

*Voltage Regulator Is Used
MAJESTIC—Models 130, 131, 132, 133 and 233
Line Voltage 115—Voltage Tap 115
Volume Control Maximum

<table>
<thead>
<tr>
<th>Model</th>
<th>1 RF</th>
<th>2 RF</th>
<th>3 RF</th>
<th>1 RF</th>
<th>2 RF</th>
<th>3 RF</th>
<th>1 RF</th>
<th>2 RF</th>
<th>3 RF</th>
<th>1 RF</th>
<th>2 RF</th>
<th>3 RF</th>
</tr>
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<tbody>
<tr>
<td>FRONT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DET</td>
<td>3.2 V</td>
<td>24A</td>
<td>24A</td>
<td>3.2 V</td>
<td>24A</td>
<td>24A</td>
<td>3.2 V</td>
<td>24A</td>
<td>24A</td>
<td>3.2 V</td>
<td>24A</td>
<td>24A</td>
</tr>
<tr>
<td>PILOT</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Models 130A, 230A (1930)

Models Majestic 130, 131, 132, 233 (1930)
MAJESTIC PAGE 1-17

SCHEMATIC DIAGRAM OF POWER UNIT AND VOLTAGE DIVIDER SYSTEM
MODEL 30 MAJESTIC SCREEN GRID CHASSIS 50-60 CYCLE.

INTERCONNECTIONS:
- Connect to:
  - Power Transformer
  - Filter Unit
  - RF & Detector Heaters
  - Power Tube Filament Supply
  - Voltage Divider
  - Speaker Field

FILTER UNIT:
- A = 21MF
- B = 31MF
- C = 11MF
- D = 31MF
- E = 16F
- F = 1MF
- G = 25000 OHMS
- H = 15000 OHMS
- J = 0.33 MF

POWER TUBE:
- 250 V
- 2360 OHMS

VOLTAGE DIVIDER:
- 3300 OHMS
- 3460 OHMS
- 101 OHMS
- 750 OHMS
- -37½ V

SPEAKER FIELD:
- GREEN
- BROWN
- BARE

GRIGSBY - GRUNOW CO.

MODEL 30
Voltage - Data

NOTE: All Planes, Screen Grid, Control Grid, and Cathode Voltages are measured from Ground (A-minus) with a standard 6.3 volt plug in. Standard grid bias will vary 1 volt for each 100 volts of plate voltage.
Rear View of Model 50 Chassis, Showing Voltage Taps, Etc.
OPERATING VOLTAGES FOR MODEL 60 and 160 CHASSIS OR 61,62,163 Receivers

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>1st RF</td>
<td>2.35</td>
<td>285</td>
<td>215</td>
<td>3</td>
</tr>
<tr>
<td>Osc.</td>
<td>2.35</td>
<td>135</td>
<td>8</td>
<td>4.5</td>
</tr>
<tr>
<td>1st Det</td>
<td>2.35</td>
<td>285</td>
<td>215</td>
<td>3</td>
</tr>
<tr>
<td>IF Amp</td>
<td>2.35</td>
<td>285</td>
<td>215</td>
<td>12</td>
</tr>
<tr>
<td>2nd Det</td>
<td>2.35</td>
<td>275</td>
<td>135</td>
<td>50</td>
</tr>
<tr>
<td>1st PA</td>
<td>2.4</td>
<td>300</td>
<td>50</td>
<td>11</td>
</tr>
<tr>
<td>2nd PA</td>
<td>2.4</td>
<td>300</td>
<td>50</td>
<td>0.80</td>
</tr>
<tr>
<td>IF Amp</td>
<td>2.35</td>
<td>45</td>
<td>0.25</td>
<td></td>
</tr>
<tr>
<td>Rect</td>
<td>4.88</td>
<td>490</td>
<td>0.25</td>
<td></td>
</tr>
</tbody>
</table>

+ Readings of the automatic volume control tube plate terminal will be erratic because of the 700000 ohm resistance which is in series with the plate supply lead.

Note: All plate, screen grid, control and cathode voltages are measured from ground (chassis) with a standard 1000 ohms per volt meter. Voltage readings with volume control setting at maximum.

COLOR CODING DATA

**Power Transformer.** Start of winding of primary: 105 volts Red, 115 volts Yellow, 125 volts Green

Filament 45 Blue, Centre tap 45 Red

Filament 80 Brown, Rectifier anodes Green, Centre tap anodes Bare

Heater 2nd Det., AVC, and Osc. Red

Heater white (135 volts above ground)

Filter Unit:
- 2 mfd condenser Green
- 2 mfd condenser Red
- 1 mfd condenser Blue
- .07 mfd condenser White
- Condenser common Black


**General**

The antenna compensator control is located adjacent to the antenna terminal. A 5 ampere fuse is used.

Resistances:
- 100000 ohm oscillator grid leak - Orange
- 600000 ohm Acoustic control - Red
- 70000 ohm AVC plate resistor - Yellow
- 35000 ohm 2nd detector cathode bias - Green
- 5700 ohm section of voltage divider - Blue
- 10000 ohm 2nd detector screen decoupler - Orange
- 250 ohm 1st detector screen
- 1st detector plate, 2nd detector cathode, AVC grid
- 750 ohm RF, 1st detector
- IF auto bias - Yellow
- 2000 ohm 1st detector auto bias - Blue

**Model - 163**

The radio circuit and performance of the model 163 is identical to that of the model 60 chassis. The front panel controls of the 163 combination are radio controls only, and are the same as that of the model 61 and 62 radio receivers. The second detector tube grid comprises the audio frequency input circuit, that is when the phono switch is in phono position. The second detector tube becomes an audio amplifier, the grid bias and input circuit being changed accordingly.
GRIGSBY - GRUNOW CO.

MODEL 160, 163
Schematics

For Voltage Data See Model 60
Coding of 1928 and 1929 Models

1. Parts with like part number in different assemblies and models are interchangeable; others are not.

2. The following prefixes and model numbers are for 1928 apparatus assemblies:

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GA</td>
<td>G1</td>
<td>Power Speaker for 7-A Chassis only</td>
</tr>
<tr>
<td>70-A</td>
<td>7-A</td>
<td>Chassis for 1928 No. 71 and No. 72 models only</td>
</tr>
<tr>
<td>60-A</td>
<td>6-A</td>
<td>Chassis for 1928 No. 61 and No. 62 models only</td>
</tr>
<tr>
<td>7-P-6</td>
<td>Power Pack, 60 cycle for No. 7-A Chassis only</td>
<td></td>
</tr>
<tr>
<td>7-P-3</td>
<td>Power Pack, 30 cycle for No. 7-A Chassis only</td>
<td></td>
</tr>
<tr>
<td>6-P-6</td>
<td>Power Pack, 60 cycle for No. 6-A Chassis only</td>
<td></td>
</tr>
<tr>
<td>6-P-3</td>
<td>Power Pack, 30 cycle for No. 6-A Chassis only</td>
<td></td>
</tr>
</tbody>
</table>

The following prefixes and model numbers are for 1929 apparatus assemblies.

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GB</td>
<td>G2</td>
<td>Super Dynamic Speaker for 7-B Chassis and 180 Chassis</td>
</tr>
<tr>
<td>70B</td>
<td>7-B</td>
<td>Chassis for 1929 No. 71 and No. 72 models only</td>
</tr>
<tr>
<td>180</td>
<td>180</td>
<td>Chassis for 1929 No. 181 radio and phonograph combination</td>
</tr>
<tr>
<td>7-BP-6</td>
<td>Power Pack, 60 cycle for 7-B Chassis only</td>
<td></td>
</tr>
<tr>
<td>7-BP-3</td>
<td>Power Pack, 30 cycle for 7-B Chassis only</td>
<td></td>
</tr>
<tr>
<td>8-P-6</td>
<td>Power Pack, 60 cycle for 180 Chassis only</td>
<td></td>
</tr>
<tr>
<td>8-P-3</td>
<td>Power Pack, 25, 30, 40 cycle for 180 Chassis only</td>
<td></td>
</tr>
</tbody>
</table>

MAJESTIC—Model 91 and 92
Line Voltage 112—Set on *Volt Tap—Volume Control Position Full On
*Voltage Regulator Is Used
GULBRANSEN CO.

**Model 160, 161 60 Cycles Schematic Data**

**Fixed Condensers**

Condensers C1 to C9 inclusive are in the filter bank. C1, C7, C8, and C9 are in the main filter circuits. C3 bypasses R4, which is the main 600 ohm resistor in the tone control circuit. The main circuit is continued in the 24F tube, (obtained through R4 and R12) and C9 by-passes the 10,000 ohm resistor R2 in the detector plate circuit.

C10 and C19 are located on the resistor-condenser terminal strip. (See Figs. 4 and 6) and are both 0.01 mfd. condensers. C10 is the coupling condenser and C19 is the coupling condenser.

C11, C12, and C13 are the tuning condensers and are used in the detector plate circuit. C11 and C12 are the tuning condensers and C13 is the coupling condenser. C17 is a single 0.01 mfd. condenser, and is mounted alongside of the triple 0.01 mfd. condenser, etc.

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**Schematic Wiring Diagram, 8 tube chassis. 60 Cycles**

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**GULBRANSEN PAGE 1-3**
The filter system of the 25-cycle chassis shown above is somewhat different than that in the 60-cycle chassis, and the detector plate circuit resistor has been changed from 10,000 ohms to 100,000 ohms.

All servicing data, with the exception of the tube voltages, is the same for both the 25 and 60-cycle chassis.

APPROXIMATE OPERATING VOLTAGES

A. C. LINE VOLTAGE—117. VOLUME CONTROL FULL ON

<table>
<thead>
<tr>
<th>Tube</th>
<th>Position</th>
<th>Filament</th>
<th>Plate</th>
<th>Screen</th>
<th>Grid</th>
<th>Cathode</th>
</tr>
</thead>
<tbody>
<tr>
<td>224</td>
<td>1st R.F.</td>
<td>2.3</td>
<td>178</td>
<td>90</td>
<td>-3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>224</td>
<td>2nd R.F.</td>
<td>2.3</td>
<td>178</td>
<td>90</td>
<td>-3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>224</td>
<td>3rd R.F.</td>
<td>2.3</td>
<td>178</td>
<td>90</td>
<td>-3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>227</td>
<td>Detector</td>
<td>2.3</td>
<td>100</td>
<td></td>
<td>-10.5</td>
<td>10.5</td>
</tr>
<tr>
<td>227</td>
<td>1st Audio</td>
<td>2.3</td>
<td>130</td>
<td></td>
<td></td>
<td>9.0</td>
</tr>
<tr>
<td>245</td>
<td>2nd Audio</td>
<td>2.4</td>
<td>250</td>
<td></td>
<td>51.0</td>
<td></td>
</tr>
<tr>
<td>245</td>
<td>2nd Audio</td>
<td>2.4</td>
<td>250</td>
<td></td>
<td>51.0</td>
<td></td>
</tr>
<tr>
<td>280</td>
<td>Rectifier</td>
<td>4.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Grid voltages on the 224 R.F. and 227 detector tubes are taken from grid to cathode and not from grid to ground. The grid voltage on the first audio tube is measured from cathode to ground.
COLOR CODE

Changes on this chassis have been made on several different occasions and to distinguish how one chassis differs from another, an identification mark is placed on each one changed. This identification mark is a dot of paint found on the end rivet of the tube socket strip.

Looking at the chassis from the back the mark is at the extreme left of the 226 tube sockets.

If the chassis has no mark it is understood that it is an early set.

Yellow Mark The chassis having the first changes may be identified by the yellow indicating mark. This involves four changes.

1. A "dual volume control" in place of the single type. The new volume control is made in two sections, five lugs. The section nearest the chassis, having two lugs, operates exactly the same as the single volume control. The section behind the first, having three lugs, is placed in the first audio circuit to reduce the audio amplification and operates in tandem with the antenna volume control.

2. An interchange of position of the two audio transformers. The re-arrangement of the audio transformers has not altered their connections in the circuit.

3. An addition of a "dual half microfarad condenser" and two carbon resistors in the "B" circuit of the detector and first audio tubes. The 40,000 ohm black resistor with one section of the dual condenser is placed in the detector circuit (224) and the 15,000 ohm blue resistor with the other section of the dual condenser is placed in the first audio circuit (226). You will note that the yellow and blue leads in the cable connecting to the terminal strip have been interchanged.

4. A change in the location of the grounding of No. 1 lug on the condenser block. This lug is now grounded to the condenser case with a short piece of bare wire.

Red Mark All chassis having a red mark on the rivet of the tube socket strip have all of the changes mentioned above and in addition, have a one-tenth microfarad condenser connected from ground to one side of the 110 volt line. A peculiarly that may be experienced by the addition of this condenser is a loud hum on every station tuned in only when the antenna wire coming from the set is connected to ground. This can be eliminated by reversing the plug in the socket. Also be sure your antenna is not grounded, either by some other set being connected to your aerial or through any other means.

Green Mark All Chassis with a green mark on the rivet of the tube socket strip contain the above changes and in addition have a change in the "combination phonograph switch" circuit. This changed circuit makes use of only the audio system of the set for phonograph reproduction, whereas the original circuit included the detector tube.

The Phonograph, Radio, On, and Off positions of the switch are the same as in the early sets. To obtain maximum volume and best tone quality a pick-up coupling transformer should be used to match the pick-up used.
MODEL 200, 291, 292, 295, 9950

Schematic
Two Types

GULBRANSEN CO.

Old Type

New Type

www.americanradiohistory.com
CIRCUIT DIAGRAM OF
HAMMARLUND-ROBERTS
"HI-Q SIX" RECEIVER

WIRING DIAGRAM OF
HAMMARLUND ROBERTS
"HI-Q SIX" POWER SUPPLY
- FOR USE WITH 171 POWER TUBE

Battery Cable
To B+ 135 Gray
" B- 90 Yellow
" B+ 67 Blue
" B- C+ A- Black
" C- 4.5 Green
" C- 9 Black Brown
" A+ Red

Power Cable
To B+ 180 Gray
" B- 90 Yellow
" B+ 67 Blue
" B- Black
" C- Green
" Fil.center tap Brown

Socket Layout

www.americanradiohistory.com
HAMMARLUND-ROBERTS, INC.

MODEL H-R "HI-Q" 29
Junior-Three Types

CIRCUIT DIAGRAM
HAMMARLUND - ROBERTS
"HI-Q 29" RECEIVER
(JUNIOR)
(FOR BATTERY OPERATION)

CIRCUIT DIAGRAM OF-
HAMMARLUND-ROBERTS
"HI-Q 29" RECEIVER
(JUNIOR)
WITH "B-C" ELIMINATOR
(FOR USE WITH "A" ELIMINATOR
ON STORAGE BATTERY).

CIRCUIT DIAGRAM
HAMMARLUND-ROBERTS
"HI-Q 29" RECEIVER
(JUNIOR) A.C. MODEL

110V 60v
METAL BASE

110V 60v
METAL BASE

www.americanradiohistory.com
MODEL H-R "HI-Q" 29
Master—Three Types
HAMMARLUND-ROBERTS, INC.

CIRCUIT DIAGRAM
HAMMARLUND-ROBERTS
"HI-Q 29" RECEIVER
(MASTER)
(FOR BATTERY OPERATION)

CIRCUIT DIAGRAM
HAMMARLUND-ROBERTS
"HI-Q 29" RECEIVER
(MASTER)
(A.C. MODEL).

CIRCUIT DIAGRAM
OF
HAMMARLUND-ROBERTS
"HI-Q 29" RECEIVER
(MASTER A.C. MODEL)
USING 2.25 V A.C. TUBES.

[Diagram showing circuit details with various components and connections, including labels and specifications for power supply and component types.]

www.americanradiohistory.com
HAMMARLUND-ROBERTS, INC.  

MODEL H-R "HI-Q" 30  
A.C.-Battery

CIRCUIT DIAGRAM OF HAMMARLUND "HI-Q 30" BATTERY RECEIVER MODEL 30-R-BAT

CIRCUIT DIAGRAM OF HAMMARLUND "HI-Q 30" A.C. RECEIVER

RECT. CK-380  2AF CK-345  1AF C-327  3RF C-324  2RF C-324  DET. C-327
Hammarlund-Roberts, Inc.

Model H-R "HI-Q"30
D.C.

Model H-R "HI-Q"31

Circuit Diagram of Hammarlund "HI-Q 30" D.C. Receiver for 110 Volts Direct Current

Volmeter readings from chassis to:

Top of voltage divider - 110 V.
Middle tap - 60 "
(P) term. of socket # 1, 2, 3 and 5 - 100 "
(P') " " " "4 - 50 "
(P) " " " 6 and 7 - 110 "
(G) " " " 1, 2 and 3 - 20 "
(K) " " " 1, 2 end 3 - 1-2 "
(K) " " " 5 - 6 "

HI-Q 30 D.C.
HIGH FREQUENCY LABORATORIES

MODEL A.C. Special
MODEL 9-in-Line

Model "A.C. Special"

Model "Nine-in-Line"

Tube layout showing position of respective tubes.
Power Unit and A.F. Amplifier for HOWARD Models S.G."A" and S.G."C"

R.F. Chassis Term. Plate.

<table>
<thead>
<tr>
<th>No.</th>
<th>Color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Gray</td>
<td>Audio Grid</td>
</tr>
<tr>
<td>2</td>
<td>Gray</td>
<td>Audio Grid</td>
</tr>
<tr>
<td>3</td>
<td>Red</td>
<td>B - 175 Volts</td>
</tr>
<tr>
<td>4</td>
<td>Blue</td>
<td>B - 70&quot;</td>
</tr>
<tr>
<td>5</td>
<td>Yellow</td>
<td>Fil. 2.25&quot;</td>
</tr>
<tr>
<td>6</td>
<td>Yellow</td>
<td>Fil. 2.25&quot;</td>
</tr>
<tr>
<td>7</td>
<td>Black</td>
<td>B - Ground</td>
</tr>
</tbody>
</table>

Dyn. Speaker
for models S.G."A" and S.G."C".

HOWARD RADIO—Model A—Screen Grid
Line Voltage 110—Set on 110 Volt Tap
Volume Control Position Max
*Detector Plate Voltage on Phone Combination

Detector coil shorted to give correct voltage when measuring detector
HOWARD RADIO CO.

MODELS 395, 445, 470, 495 (135-AC Chassis)


PILOT 6.3 V

<table>
<thead>
<tr>
<th>DET</th>
<th>1 AF</th>
<th>2 AF</th>
</tr>
</thead>
<tbody>
<tr>
<td>27</td>
<td>25</td>
<td>13</td>
</tr>
</tbody>
</table>

RF: 25

= 81 RECT IN POWER UNIT
FRONT