BEAM POWER TUBE
For audio-frequency power amplifier applications

**GENERAL DATA**

**Electrical:**
- Heater, for Unipotential Cathode:
  - Voltage: 6.3 \( \text{ac or dc volts} \)
  - Current: 0.9 \( \text{amp} \)

**Mechanical:**
- Mounting Position: Any
- Maximum Overall Length: 3-15/32" 2-29/32" 1-7/16" 1 5/8" 1 11/16" 1 5/16"
- Maximum Diameter: T11
- Base: Short Intermediate-Shell Octal 7-Pin with External Barriers (JETEC No. 87-59)
- Basing Designation for BOTTOM VIEW: 7AC

**AF POWER AMPLIFIER - Class A**

**Maximum Ratings, Design-Center Values:**
- PLATE VOLTAGE: 400 max. volts
- GRID-No.2 (SCREEN-GRID) VOLTAGE: 400 max. volts
- GRID-No.2 INPUT: 3 max. watts
- PLATE DISSIPATION: 23 max. watts
- PEAK HEATER-CATHODE VOLTAGE:
  - Heater negative with respect to cathode: 200 max. volts
  - Heater positive with respect to cathode: 200 max. volts

**Typical Operation and Characteristics:**
- Plate Voltage: 250 300 350 volts
- Grid-No.2 Voltage: 250 200 250 volts
- Grid-No.1 (Control-Grid) Voltage: -14 -12.5 -18 volts
- Peak AF Grid-No.1 Voltage: 14 12.5 18 volts
- Zero-Signal Plate Current: 75 48 53 \( \text{ma} \)
- Max.-Signal Plate Current: 80 55 65 \( \text{ma} \)
- Zero-Signal Grid-No.2 Current: 4.3 2.5 2.5 \( \text{ma} \)
- Max.-Signal Grid-No.2 Current: 7.6 4.7 8.5 \( \text{ma} \)
- Plate Resistance (Approx.): 30000 35000 48000 ohms
- Transconductance: 6100 5300 5200 \( \mu \text{mhos} \)
- Load Resistance: 2500 4500 4200 ohms
- Total Harmonic Distortion: 10 11 13 \%
- Max.-Signal Power Output: 6.7 6.5 11.3 watts
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Maximum Circuit Values:
Grid-No.1-Circuit Resistance:
  For fixed-bias operation ....... 0.1 max. megohm
  For cathode-bias operation ...... 0.5 max. megohm

AF POWER AMPLIFIER - Class A1
Triode Connection - Grid No.2 Connected to Plate

Maximum Ratings, Design-Center Values:
PLATE VOLTAGE .................. 400 max. volts
PLATE DISSIPATION ............... 26 max. watts
PEAK HEATER-CATHODE VOLTAGE:
  Heater negative with respect to cathode. 200 max. volts
  Heater positive with respect to cathode. 200 max. volts

Typical Operation and Characteristics:
Plate Voltage .................. 250 300 volts
Grid-No.1 (Control-Grid) Voltage. -18 -20 volts
Peak AF Grid-No.1 Voltage ........ 18 20 volts
Zero-Signal Plate Current ....... 52 78 ma
Max.-Signal Plate Current ...... 58 85 ma
Amplification Factor ............. 8 -
Transconductance ............... 5250 - umhos
Load Resistance ................. 4000 4000 ohms
Total Harmonic Distortion ...... 6 5.5 %
Max.-Signal Power Output ...... 1.4 1.8 watts

Maximum Circuit Values:
Grid-No.1-Circuit Resistance:
  For fixed-bias operation ...... 0.1 max. megohm
  For cathode-bias operation .... 0.5 max. megohm

PUSH-PULL AF POWER AMPLIFIER - Class A1

Maximum Ratings, Design-Center Values:
PLATE VOLTAGE .................. 400 max. volts
GRID-No.2 (SCREEN-GRID) VOLTAGE .... 400 max. volts
GRID-No.2 INPUT .................. 3 max. watts
PLATE DISSIPATION ............... 23 max. watts
PEAK HEATER-CATHODE VOLTAGE:
  Heater negative with respect to cathode. 200 max. volts
  Heater positive with respect to cathode. 200 max. volts

Typical Operation:
Unless otherwise specified, values are for 2 tubes
Plate Voltage .................. 250 270 volts
Grid-No.2 Voltage ............... 250 270 volts
Grid-No.1 (Control-Grid) Voltage. -16 -17.5 volts
Peak AF Grid-No.1-to-Grid-No.1 Voltage ........ 32 35 volts
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Zero-Signal Plate Current... 120 134 ma
Max.-Signal Plate Current... 140 155 ma
Zero-Signal Grid-No.2 Current. 10 11 ma
Max.-Signal Grid-No.2 Current. 16 17 ma
Plate Resistance (Approx., per tube). ... 24500 23500 ohms
Transconductance (Per tube). ... 5500 5700 μmhos
Effective Load Resistance (Plate to plate) ... 5000 5000 ohms
Total Harmonic Distortion... 2 2 %
Max.-Signal Power Output ... 14.5 17.5 watts

Maximum Circuit Values:
Grid-No.1–Circuit Resistance:
   For fixed-bias operation .... 0.1 max. megohm
   For cathode–bias operation ... 0.5 max. megohm

PUSH-PULL AF POWER AMPLIFIER - Class AB1

Maximum Ratings, Design-Center Values:
PLATE VOLTAGE. ... 400 max. volts
GRID-No.2 (SCREEN-GRID) VOLTAGE. ... 400 max. volts
GRID-No.2 INPUT. ... 3 max. watts
PLATE DISSIPATION. ... 23 max. watts
PEAK HEATER-CATHODE VOLTAGE:
   Heater negative with respect to cathode. 200 max. volts
   Heater positive with respect to cathode. 200 max. volts

Typical Operation:
Values are for 2 tubes

Plate Voltage. ... 360 360 volts
Grid-No.2 Voltage. ... 270 270 volts
Grid-No.1 (Control-Grid) Voltage† -22.5 -22.5 volts
Peak AF Grid-No.1-to-Grid-No.1 Voltage. ... 45 45 volts
Zero-Signal Plate Current. ... 88 88 ma
Max.-Signal Plate Current. ... 132 140 ma
Zero-Signal Grid-No.2 Current. ... 5 5 ma
Max.-Signal Grid-No.2 Current. ... 15 11 ma
Effective Load Resistance (Plate to plate) ... 6600 3800 ohms
Total Harmonic Distortion... 2 2 %
Max.-Signal Power Output ... 26.5 18 watts

Maximum Circuit Values:
Grid-No.1–Circuit Resistance:†
   For fixed-bias operation .... 0.1 max. megohm
   For cathode–bias operation ... 0.5 max. megohm

†: see next page.
# BEAM POWER TUBE

## PUSH-PULL AF POWER AMPLIFIER - Class $AB_1$

*Triode Connection - Grid No.2 Connected to Plate*

### Maximum Ratings, Design-Center Values:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLATE VOLTAGE</td>
<td>400 max.</td>
</tr>
<tr>
<td>PLATE DISSIPATION</td>
<td>26 max.</td>
</tr>
<tr>
<td>PEAK HEATER–CATHODE VOLTAGE:</td>
<td></td>
</tr>
<tr>
<td>Heater negative with respect to cathode</td>
<td>200 max.</td>
</tr>
<tr>
<td>Heater positive with respect to cathode</td>
<td>200 max.</td>
</tr>
</tbody>
</table>

### Typical Operation:

Values are for 2 tubes

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Voltage</td>
<td>400 volts</td>
</tr>
<tr>
<td>Grid-No.1 (Control-Grid) Voltage†</td>
<td>-45 volts</td>
</tr>
<tr>
<td>Peak AF Grid-No.1-to-Grid-No.1 Voltage</td>
<td>90 volts</td>
</tr>
<tr>
<td>Zero-Signal Plate Current</td>
<td>65 ma</td>
</tr>
<tr>
<td>Max.-Signal Plate Current</td>
<td>130 ma</td>
</tr>
<tr>
<td>Effective Load Resistance</td>
<td>4000 ohms</td>
</tr>
<tr>
<td>Total Harmonic Distortion</td>
<td>4.4 %</td>
</tr>
<tr>
<td>Max.-Signal Power Output</td>
<td>13.3 watts</td>
</tr>
</tbody>
</table>

### Maximum Circuit Values:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grid-No.1-Circuit Resistance:†</td>
<td>0.1 max.</td>
</tr>
<tr>
<td>For fixed-bias operation</td>
<td>0.5 max.</td>
</tr>
<tr>
<td>For cathode-bias operation</td>
<td>megohm</td>
</tr>
</tbody>
</table>

## PUSH-PULL AF POWER AMPLIFIER - Class $AB_2$

### Maximum Ratings, Design-Center Values:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLATE VOLTAGE</td>
<td>400 max.</td>
</tr>
<tr>
<td>GRID-No.2 (SCREEN-GRID) VOLTAGE</td>
<td>400 max.</td>
</tr>
<tr>
<td>GRID-No.2 INPUT</td>
<td>3 max.</td>
</tr>
<tr>
<td>PLATE DISSIPATION</td>
<td>23 max.</td>
</tr>
<tr>
<td>PEAK HEATER–CATHODE VOLTAGE:</td>
<td></td>
</tr>
<tr>
<td>Heater negative with respect to cathode</td>
<td>200 max.</td>
</tr>
<tr>
<td>Heater positive with respect to cathode</td>
<td>200 max.</td>
</tr>
</tbody>
</table>

### Typical Operation:

Values are for 2 tubes

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Voltage</td>
<td>360 volts</td>
</tr>
<tr>
<td>Grid-No.2 Voltage</td>
<td>225 volts</td>
</tr>
<tr>
<td>Grid-No.1 (Control-Grid) Voltage†</td>
<td>-18 volts</td>
</tr>
<tr>
<td>Peak AF Grid-No.1-to-Grid-No.1 Voltage</td>
<td>-22.5 volts</td>
</tr>
<tr>
<td>Voltage</td>
<td>52 volts</td>
</tr>
<tr>
<td>Zero-Signal Plate Current</td>
<td>78 ma</td>
</tr>
</tbody>
</table>

† The type of input coupling used should not introduce too much resistance in the grid-No.1 circuit. Transformer- or impedance-coupling devices are recommended.

‡: See next page.
5881

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Max.-Signal Plate Current ... 142 205 ma
Zero-Signal Grid-No.2 Current ... 3.5 5 ma
Max.-Signal Grid-No.2 Current ... 11 16 ma
Effective Load Resistance
(Plate to plate) ............ 6000 3800 ohms
Total Harmonic Distortion ... 2 2 %
Max.-Signal Power Output ... 31 47 watts

Maximum Circuit Values:
Grid-No.1-Circuit Resistance:
  For fixed-bias operation .......... 0.1 max. megohm
  For cathode-bias operation .......... Not recommended

* Driver stage should be capable of supplying the specified driving power
  at low distortion to the No.1 grids of the AB2 stage. To minimize
distortion, the effective resistance per grid-No.1 circuit of the AB2 stage
should be held at a low value. For this purpose, the use of transformer
 coupling is recommended.

Curves shown under Types 6L6, 6L6-G also apply to the 5881