APPLICATION REPORT

This valve was previously coded 5B/250A

The valve type 807 is an indirectly heated beam tetrode designed for use in the output stages of Public Address equipment, or as an RF amplifier or frequency multiplier in transmitters. The heater is intended for operation in parallel with other valves in AC operated equipment.

This report contains characteristics of the valve and details of its use in AF and RF equipment.

NOTE: The maximum ratings given in this report are absolute maxima and should not be exceeded in any circumstances.
DESCRIPTION: The valve consists of a beam tetrode unit capable of an output of the order of 15 watts. The unit is mounted in a standard ST16 bulb, having the plate connection brought out to a top cap and is based with a 5 pin low loss base.

CHARACTERISTICS:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cathode: Indirectly heated</td>
<td></td>
</tr>
<tr>
<td>Voltage</td>
<td>6.3 volts*</td>
</tr>
<tr>
<td>Current (Nominal)</td>
<td>0.9 ampere</td>
</tr>
<tr>
<td>Max. DC Heater to Cathode potential</td>
<td>250 volts</td>
</tr>
<tr>
<td>Max. Cathode Current</td>
<td>125 mA</td>
</tr>
</tbody>
</table>

* The voltage should not vary more than 5% from the rated value if the valve is used under Class AB2 conditions or where the operating conditions are close to the maximum ratings, nor more than 7% if used under Class A or AB1 conditions.

Dimensions:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. Overall Length</td>
<td>5 3/8 ins.</td>
</tr>
<tr>
<td>Max. Diameter</td>
<td>2 7/16 ins.</td>
</tr>
<tr>
<td>Max. Seated Height</td>
<td>5 1/8 ins.</td>
</tr>
</tbody>
</table>

Base: Medium shell small 5 pin low loss

Basing Connections:
- Pin 1 Heater
- Pin 2 Screen g2
- Pin 3 Control Grid g1
- Pin 4 Cathode and Beam Confining Plates
- Pin 5 Heater
- Top Cap Plate

Ratings:

TETRODE CONNECTION:
- Max. Plate Voltage: 600 volts*
- Max. Screen Voltage: 300 volts*
- Max. Plate Dissipation: 25 watts*
- Max. Screen Dissipation: 3.5 watts*
- Max. DC Grid Current: 5 mA*

TRIODE CONNECTION (Plate and Screen Strapped):†
- Max. Plate Voltage: 400 volts*
- Max. Plate Dissipation: 25 watts*
- Max. Signal DC Plate Current: 125 mA*

† In order to avoid parasitic oscillation the plate and pin 2 should be connected together through a 100 ohm resistance or an RF choke of about 20 microhenries.

* These ratings are absolute and must be reduced under certain specified conditions referred to later in this report.

Frequency Ratings: The ratings given in the above paragraphs apply to frequencies up to 60 Mc/s. Above this frequency the maximum plate voltage and plate dissipation must be reduced in the correct proportion. Thus at 80 Mc/s they are reduced to 80%, and at 120 Mc/s to 50% of the values specified. The valve is not normally satisfactory for operation at frequencies higher than 120 Mc/s.

Inter-electrode Capacitances (approx.):

<table>
<thead>
<tr>
<th>Capacitance</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>C_{pg}</td>
<td>0.2 pF*</td>
</tr>
<tr>
<td>C_{in}</td>
<td>12.5 pF</td>
</tr>
<tr>
<td>C_{out}</td>
<td>8.2 pF</td>
</tr>
<tr>
<td>C_{h,k}</td>
<td>10.0 pF</td>
</tr>
</tbody>
</table>

* Measured with external shield.
Mounting: The valve should be mounted in equipment so that it operates in a vertical position with the base downward. In exceptional circumstances it is permissible to mount the valve horizontally but only in such a way that the plane of the major axis of the control grid and screen are vertical. The plane of these grids is correct if Pin 3 is on the vertical diameter of the valve base.

Ventilation: As this valve runs appreciably hot in operation the layout and design of equipment should be such that adequate ventilation is afforded to ensure a safe bulb temperature under all conditions.

Characteristic Curves: Curves are attached to this report as follows:

| $I_p/E_p$ with $E_g = 250$ volts and various values of $E_g$ | No. 307.210
| $I_p/E_p$ $\ldots \ldots = 300$ $\ldots \ldots$ | No. 307.211
| $I_p/E_p$ for various values of $E_g$ with valve connected as a triode | No. 307.212
| $I_g/E_p$ with $E_g = 250$ volts and various values of $E_g$ | No. 307.213
| $I_g/E_p$ $\ldots \ldots = 300$ $\ldots \ldots$ | No. 307.214
| $I_g/E_p$ $\ldots \ldots = 250$ $\ldots \ldots$ | No. 307.215
| $I_g/E_p$ $\ldots \ldots = 300$ $\ldots \ldots$ | No. 307.216

TYPICAL OPERATION AT AUDIO FREQUENCIES:

General Recommendations: Due to the relatively high slope of this valve, trouble may be experienced with parasitic oscillation, and it is advised that a resistor of 100 ohms is wired in series with the plate, directly connected to the valve top cap contact. This resistance should be reduced to 47 ohms in the case of Class AB2 operation. A series grid resistor may also be employed, if necessary, wired directly to the valve holder grid contact, but the value must be chosen after due consideration of the effect on the frequency response. Such a resistance should never exceed 100,000 ohms for Class A operation, and should not be employed for Class AB2 operation.

The type of input coupling should be designed to avoid the introduction of excessive resistance into the grid circuit. It is preferable that such resistance does not exceed 100,000 ohms, except in the case of Class A operation under automatic bias conditions where, if essential, the value may be as high as 500,000 ohms.

Class 'A' Amplifier (Single Ended):

TRIODE CONNECTION (Pin 2 and top cap strapped):

- Heater Voltage: 6.3 6.3 volts
- Plate Voltage: 250 250 volts
- Grid Voltage: -20 - volts
- Autobias Resistor: 500 ohms
- Plate Current (no signal): 40 40 mA
- Plate Impedance: 1700 - ohms
- Amplification Factor: 8 -
- Mutual Conductance: 4.7 - mA/V
- Plate Load Impedance: 5000 6000 ohms
- Peak AF Grid Voltage: 20 20 volts
- Total Harmonic Distortion: 4.5 4.0 %
- Power Output: 1.3 1.1 watts

Curves are attached to this report which show the relation between power output, harmonic distortion and input signal voltage for fixed bias (Curve 307.331) and for autobias (Curve 307.332).
Class 'A' Amplifier (Push-Pull):

TRIODE CONNECTION (Pin 2 and top cap strapped)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value 1</th>
<th>Value 2</th>
<th>Value 3</th>
<th>Value 4</th>
<th>Value 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Voltage</td>
<td>250</td>
<td>250</td>
<td>325</td>
<td>325</td>
<td>volts</td>
</tr>
<tr>
<td>Grid Voltage</td>
<td>-20</td>
<td>-20</td>
<td>-30</td>
<td>-30</td>
<td>volts</td>
</tr>
<tr>
<td>Autobias Resistor</td>
<td></td>
<td></td>
<td>250</td>
<td></td>
<td>375</td>
</tr>
<tr>
<td>Plate Current (no signal)</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>mA</td>
</tr>
<tr>
<td>Output Load Impedance</td>
<td>5000</td>
<td>5000</td>
<td>8000</td>
<td>8000</td>
<td>ohms</td>
</tr>
<tr>
<td>Peak AF Grid Voltage</td>
<td>40</td>
<td>40</td>
<td>60</td>
<td>60</td>
<td>volts</td>
</tr>
<tr>
<td>Total Harmonic Distortion</td>
<td>0.35</td>
<td>0.4</td>
<td>0.7</td>
<td>0.6</td>
<td>%</td>
</tr>
<tr>
<td>Power Output</td>
<td>3.5</td>
<td>3.1</td>
<td>5.75</td>
<td>6.0</td>
<td>watts</td>
</tr>
</tbody>
</table>

NOTE—Values are given for two valves.

Curves are attached to this report which show the relation between power output, harmonic distortion and input signal voltage for autobias at 250 volts HT (Curve 307-333) and at 325 volts HT (Curve 307-336) and for fixed bias at 250 volts HT (Curve 307-334) and at 325 volts HT (Curve 307-335).

Class 'A' Amplifier (single ended):

TETRODE CONNECTION:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value 1</th>
<th>Value 2</th>
<th>Value 3</th>
<th>Value 4</th>
<th>Value 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Voltage</td>
<td>250</td>
<td>250</td>
<td>350</td>
<td>500</td>
<td>volts</td>
</tr>
<tr>
<td>Screen Voltage</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>200</td>
<td>volts *</td>
</tr>
<tr>
<td>Grid Voltage</td>
<td>-14</td>
<td>-18</td>
<td>-14.5</td>
<td></td>
<td>volts</td>
</tr>
<tr>
<td>Autobias Resistor</td>
<td>170</td>
<td></td>
<td></td>
<td></td>
<td>ohms</td>
</tr>
<tr>
<td>Plate Current</td>
<td>72</td>
<td>75</td>
<td>54</td>
<td>50</td>
<td>mA</td>
</tr>
<tr>
<td>Screen Current</td>
<td>5.0</td>
<td>5.4</td>
<td>2.5</td>
<td>1.6</td>
<td>mA</td>
</tr>
<tr>
<td>Plate Impedance</td>
<td>22,500</td>
<td>33,000</td>
<td>38,500</td>
<td></td>
<td>ohms</td>
</tr>
<tr>
<td>Mutual Conductance</td>
<td>6.0</td>
<td>5.2</td>
<td>5.7</td>
<td></td>
<td>mA/V</td>
</tr>
<tr>
<td>Plate Load Impedance</td>
<td>2500</td>
<td>2500</td>
<td>4200</td>
<td>6000</td>
<td>6000</td>
</tr>
<tr>
<td>Peak AF Grid Voltage</td>
<td>14</td>
<td>16</td>
<td>18</td>
<td>14.5</td>
<td>15.5</td>
</tr>
<tr>
<td>Total Harmonic Distortion</td>
<td>10</td>
<td>10</td>
<td>15</td>
<td>11.6</td>
<td>13.6</td>
</tr>
<tr>
<td>Power Output</td>
<td>6.5</td>
<td>6.5</td>
<td>10.8</td>
<td>11.5</td>
<td>11.0</td>
</tr>
</tbody>
</table>

* In cases where the screen voltage is lower than the plate voltage it should be obtained from a potentiometer between the HT line and chassis, adequately bypassed to AF signals and not by means of a series resistor.

Curves are attached to this report which show the relation between power output, distortion and input signal for the 250 volt fixed bias condition (Curve 307-337) and for automatic bias (Curve 307-338).
Class 'A' Amplifier (Push-Pull):

**TETRODE CONNECTION:**

| Plate Voltage | 250 | 270 | 270 | 500 | 500 | 600 | 600 | volts |
| Screen Voltage | 250 | 270 | 270 | 300 | 300 | 300 | 300 | volts |
| Grid Voltage | -16 | -17.5 | -19.5 | -27 | -28 | -29.5 | -29 | volts |
| Autobias Resistor | — | — | 125 | — | 270 | — | 360 | ohms |
| Peak AF Grid-Grid Voltage | 32 | 35 | 40 | 54 | 72 | 59 | 81 | volts |
| Plate Current (no signal) | 120 | 134 | 134 | 100 | 100 | 80 | 80 | mA |
| Plate Current (max. signal) | 140 | 155 | 145 | 154 | 119 | 150 | 97 | mA |
| Screen Current (no signal) | 10 | 11 | 11 | 2.5 | 2.5 | 1.5 | 1.5 | mA |
| Screen Current (max. signal) | 16 | 17 | 17 | 20 | 16.5 | 17.5 | 17.5 | mA |
| Output Load Impedance (plate-plate) | 5000 | 5000 | 5000 | 8000 | 9000 | 10,000 | 10,000 | ohms |
| Total Harmonic Distortion | 2 | 2 | 4 | 2.6 | 2.7 | 2.2 | 4.1 | % |
| Power Output | 14.5 | 17.5 | 18.5 | 38 | 32.5 | 47.5 | 36.5 | watts |

**NOTE**—Values are given for two valves.

Curves are attached to this report which show the relation between power output, distortion and input signal for various conditions. Curves 307-206, 307-208 for fixed bias and plate voltages of 500 and 600 volts respectively; Curves 307-207, 307-209 for autobias and plate voltages of 500 and 600 volts respectively.

Class 'ABI' Amplifier (Push-Pull):

**TRIODE CONNECTION (Pin 2 and top cap strapped):**

| Plate Voltage | 400 volts* |
| Grid Voltage | —45 volts |
| Plate Current (no signal) | 60 mA |
| Plate Current (max. signal) | 140 mA |
| Output Load Impedance (plate-plate) | 3000 ohms |
| Peak AF Grid-Grid Voltage | 90 volts |
| Total Harmonic Distortion | 3% |
| Power Output | 15 watts |

**NOTE**—Values are given for two valves.

*This voltage is based upon the absolute maximum ratings and if the HT line voltage is subject to mains or component variations the value should be reduced to ensure that it is not exceeded at any time.

Curve 307-238, which is attached to this report, shows the relation between power output, distortion and input signal.
Class 'ABI' Amplifier (Push-Pull):

TETRODE CONNECTION:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value 1</th>
<th>Value 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Voltage</td>
<td>360</td>
<td>360</td>
</tr>
<tr>
<td>Screen Voltage</td>
<td>270</td>
<td>270</td>
</tr>
<tr>
<td>Grid Voltage</td>
<td>-22.5</td>
<td>—</td>
</tr>
<tr>
<td>Autobias Resistor (no signal)</td>
<td>—</td>
<td>250</td>
</tr>
<tr>
<td>Plate Current (no signal)</td>
<td>88</td>
<td>88</td>
</tr>
<tr>
<td>Plate Current (max. signal)</td>
<td>138</td>
<td>100</td>
</tr>
<tr>
<td>Screen Current (no signal)</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Screen Current (max. signal)</td>
<td>16</td>
<td>19</td>
</tr>
<tr>
<td>Output Load Impedance (plate – plate)</td>
<td>6600</td>
<td>9000</td>
</tr>
<tr>
<td>Peak AF Grid-Grid Voltage</td>
<td>45</td>
<td>57</td>
</tr>
<tr>
<td>Total Harmonic Distortion</td>
<td>1.8</td>
<td>4%</td>
</tr>
<tr>
<td>Power Output</td>
<td>26.5</td>
<td>24</td>
</tr>
</tbody>
</table>

NOTE—Values are given for two valves.

Curves are attached to this report which show the relation between power output, distortion and input signal voltage for the above conditions. Curve 307-339 for fixed bias, and Curve 307-340 for autobias.

Class 'AB2' Amplifier (Push-Pull):

TETRODE CONNECTION:

Ratings:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. Plate Voltage</td>
<td>600</td>
</tr>
<tr>
<td>Max. Screen Voltage</td>
<td>300</td>
</tr>
<tr>
<td>Max. Signal DC Plate Current</td>
<td>120</td>
</tr>
<tr>
<td>Max. Signal Plate Input Power</td>
<td>60</td>
</tr>
<tr>
<td>Max. Signal Screen Input Power</td>
<td>3.5</td>
</tr>
<tr>
<td>Max. Plate Dissipation</td>
<td>25</td>
</tr>
</tbody>
</table>

Typical Operating Conditions:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value 1</th>
<th>Value 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Voltage</td>
<td>360</td>
<td>360</td>
</tr>
<tr>
<td>Screen Voltage</td>
<td>225</td>
<td>270</td>
</tr>
<tr>
<td>Grid Voltage</td>
<td>-18</td>
<td>-22.5</td>
</tr>
<tr>
<td>Plate Current (no signal)</td>
<td>78</td>
<td>88</td>
</tr>
<tr>
<td>Plate Current (max. signal)</td>
<td>162</td>
<td>220</td>
</tr>
<tr>
<td>Screen Current (no signal)</td>
<td>3.5</td>
<td>5</td>
</tr>
<tr>
<td>Screen Current (max. signal)</td>
<td>21</td>
<td>35</td>
</tr>
<tr>
<td>Output Load Impedance (plate – plate)</td>
<td>6000</td>
<td>3800</td>
</tr>
<tr>
<td>Peak Grid-Grid Input Power</td>
<td>190</td>
<td>400</td>
</tr>
<tr>
<td>Total Harmonic Distortion</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Power Output</td>
<td>31</td>
<td>47</td>
</tr>
</tbody>
</table>

NOTE—Values are given for two valves.
It is essential for Class ‘AB2’ operation that the regulation of the plate and screen supplies is such that the voltages remain constant within 5% and that of the grid bias within 3%, between no signal and maximum signal conditions. The driver stage should be capable of supplying the grids of the two valves with the specified peak voltages at low distortion. The effective resistance per grid circuit presented by the driver valve and/or transformer should not exceed 500 ohms, and the effective impedance represented by leakage inductance, or equivalent, at the highest desired response frequency, should not exceed 700 ohms.

Curves are attached to this report which show the relation between power output, distortion and input signal voltage for the above conditions. Curve 307·341 for 360 volts, Curve 307·217 for 400 volts, Curve 307·218 for 500 volts and Curve 307·219 for 600 volts.

The circuit of a typical amplifier giving 75 watts output from two type 807 valves in Class ‘AB2’ push-pull is given on 401·20. In this unit the output stage is driven by a 6SN7GT operating as a cathode follower which is fed from a 6SN7GT phase splitter stage. A pre-amplifier which is suitable for use with the output unit is also shown on 401·20. This pre-amplifier gives a choice of two inputs: Input 1 is used for microphones or LP lightweight pickups, whereas Input 2 is for a normal pickup. The cathode follower output stage of the pre-amplifier is matched to 10,000 ohms and permits the use of an appreciable length of cable between the two units. The power supply for the output unit is given on 401·12 and the transformer and choke details on 401·21. Details of the performance of each of the units is given on 401·22.

**Class ‘B’ Amplifier (Push-Pull):** In order to avoid the necessity of good regulation of the screen and grid bias supplies when used in Class ‘AB2’ a circuit of the type shown on 432·1 may be used. In this case the screen is connected directly to the secondary of the input transformer and to the control grid via a resistance. The drive required with this type of circuit is higher than that given above, but it may be obtained without difficulty in the manner shown.

**TYPICAL OPERATION AT RADIO FREQUENCIES:**

**General Recommendations:** Due to their relatively high slope these valves are prone to parasitic oscillation and it is advised that a small resistance of the order of 47 ohms, or less if essential, should be wired in series with the plate, directly connected to the top cap.

The total effective grid circuit resistance should not exceed 25,000 ohms and the DC grid circuit should not exceed 5 mA at any time. Attention is drawn to the paragraph regarding frequency ratings.

Neutralisation is not required normally when used as an RF amplifier but it is advantageous for the valve to be mounted through a hole in a screen or sunk in the chassis so that the edges of the screen or chassis are on the same plane as the shield just below the lower mica insulator. This method of mounting will reduce the plate-control grid capacity to a minimum. The valve should never be enclosed in a metal screening can, because it would result in over-heating.

When used as an oscillator the heater to cathode insulation should not be across any part of the oscillator tuned circuit as this will give rise to frequency drift and hum modulation. The valve may be used in an electron coupled oscillator circuit if the heater voltage is supplied via RF chokes, or via a winding interwound with the part of the coil associated with the cathode tap.
If cathode keying is employed a resistance not exceeding 0.25 megohm should be wired permanently between heater and cathode. Keying by opening the screen circuit alone should not be employed because the plate current may not be cut off completely by disconnection of the screen. Further, if the valve is operated near the maximum ratings there may be sufficient screen emission to maintain the screen voltage during the ‘key up’ periods and prevent the use of ‘break in’ facilities. If it is necessary to interrupt the plate current by disconnecting the screen supply, the lowest practicable resistance should be connected permanently between the screen and cathode.

RF Amplifier, Class ‘B’ Telephony:
Carrier conditions per valve for use at maximum modulation factor of 1.0.

Ratings:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Voltage</td>
<td>600 volts max.</td>
</tr>
<tr>
<td>Screen Voltage</td>
<td>300 volts max.</td>
</tr>
<tr>
<td>Plate Input Power</td>
<td>37.5 watts max.</td>
</tr>
<tr>
<td>Screen Input Power</td>
<td>2.5 watts max.</td>
</tr>
<tr>
<td>Plate Dissipation</td>
<td>25 watts max.</td>
</tr>
<tr>
<td>DC Plate Current</td>
<td>80 mA</td>
</tr>
</tbody>
</table>

Typical Operating Conditions:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Voltage</td>
<td>400 500 600 volts</td>
</tr>
<tr>
<td>Screen Voltage</td>
<td>250 250 250 volts</td>
</tr>
<tr>
<td>Grid Voltage</td>
<td>-25 -25 -25 volts</td>
</tr>
<tr>
<td>DC Plate Current</td>
<td>75 75 62.5 mA</td>
</tr>
<tr>
<td>DC Screen Current</td>
<td>4 4 4 mA</td>
</tr>
<tr>
<td>DC Grid Current</td>
<td>0 0 0 mA</td>
</tr>
<tr>
<td>Peak RF Grid Voltage</td>
<td>30 30 20 volts *</td>
</tr>
<tr>
<td>Driving Power (approx.)</td>
<td>0.25 0.25 0.2 watts †</td>
</tr>
<tr>
<td>Power Output (approx.)</td>
<td>9 12.5 12.5 watts</td>
</tr>
</tbody>
</table>

* Total effective grid circuit resistance should not exceed 25,000 ohms.
† At crest of AF cycle with modulation factor of 1.0.

RF Amplifier, Class ‘C’ Plate Modulated:
Carrier conditions per valve for use at maximum modulation factor of 1.0.

Ratings:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Voltage</td>
<td>475 volts max.</td>
</tr>
<tr>
<td>Screen Voltage</td>
<td>300 volts max.</td>
</tr>
<tr>
<td>Grid Voltage</td>
<td>-200 volts max.</td>
</tr>
<tr>
<td>Plate Input Power</td>
<td>40 watts max.</td>
</tr>
<tr>
<td>Screen Input Power</td>
<td>2.5 watts max.</td>
</tr>
<tr>
<td>Plate Dissipation</td>
<td>16.5 watts max.</td>
</tr>
<tr>
<td>DC Plate Current</td>
<td>83 mA max.</td>
</tr>
<tr>
<td>DC Grid Current</td>
<td>5 mA max.</td>
</tr>
</tbody>
</table>
**Typical Operating Conditions:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>325</th>
<th>400</th>
<th>475</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Voltage</td>
<td>325</td>
<td>400</td>
<td>475</td>
</tr>
<tr>
<td>Screen Voltage</td>
<td>225</td>
<td>225</td>
<td>225</td>
</tr>
<tr>
<td>Screen Series Resistor</td>
<td>20,000</td>
<td>30,000</td>
<td>50,000</td>
</tr>
<tr>
<td>Grid Voltage</td>
<td>−75</td>
<td>−80</td>
<td>−85</td>
</tr>
<tr>
<td>Grid Resistor</td>
<td>25,000</td>
<td>22,800</td>
<td>21,300</td>
</tr>
<tr>
<td>DC Plate Current</td>
<td>80</td>
<td>80</td>
<td>83</td>
</tr>
<tr>
<td>DC Screen Current</td>
<td>5</td>
<td>5-75</td>
<td>5</td>
</tr>
<tr>
<td>DC Grid Current (approx.)</td>
<td>3</td>
<td>3.5</td>
<td>4</td>
</tr>
<tr>
<td>Peak RF Grid Voltage</td>
<td>90</td>
<td>95</td>
<td>110</td>
</tr>
<tr>
<td>Driving Power (approx.)</td>
<td>0.25</td>
<td>0.3</td>
<td>0.4</td>
</tr>
<tr>
<td>Power Output (approx.)</td>
<td>17.5</td>
<td>22.5</td>
<td>27.5</td>
</tr>
</tbody>
</table>

* Preferably obtained from a modulated fixed supply or from the modulated plate supply via the resistance value shown.

† The total effective grid circuit resistance should not exceed 25,000 ohms, the voltage may be obtained from the resistor shown, or by a combination of cathode resistor and grid leak bias or preferably fixed supply and grid leak bias.

### 5.4 RF Amplifier and Oscillator, Class ‘C’ Telegraphy:

**Key down conditions per valve without modulation:**

**Ratings:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Voltage</td>
<td>600 volts max.</td>
</tr>
<tr>
<td>Screen Voltage</td>
<td>300 volts max.</td>
</tr>
<tr>
<td>Grid Voltage</td>
<td>−200 volts max.</td>
</tr>
<tr>
<td>Plate Input Power</td>
<td>60 watts max.</td>
</tr>
<tr>
<td>Screen Input Power</td>
<td>3.5 watts max.</td>
</tr>
<tr>
<td>Plate Dissipation</td>
<td>25 watts max.</td>
</tr>
<tr>
<td>DC Plate Current</td>
<td>100 mA max.</td>
</tr>
<tr>
<td>DC Grid Current</td>
<td>5 mA max.</td>
</tr>
</tbody>
</table>

**Typical Operating Conditions:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>400</th>
<th>500</th>
<th>600</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Voltage</td>
<td>250</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>Screen Voltage</td>
<td>20,000</td>
<td>42,000</td>
<td>50,000</td>
</tr>
<tr>
<td>Screen Series Resistor</td>
<td>20,000</td>
<td>42,000</td>
<td>50,000</td>
</tr>
<tr>
<td>Grid Voltage</td>
<td>−45</td>
<td>−45</td>
<td>−45</td>
</tr>
<tr>
<td>Grid Resistor</td>
<td>12,800</td>
<td>12,800</td>
<td>12,800</td>
</tr>
<tr>
<td>Cathode Resistor</td>
<td>410</td>
<td>410</td>
<td>410</td>
</tr>
<tr>
<td>DC Plate Current</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>DC Screen Current</td>
<td>7.5</td>
<td>6.0</td>
<td>7.0</td>
</tr>
<tr>
<td>DC Grid Current (approx.)</td>
<td>3.5</td>
<td>3.5</td>
<td>3.5</td>
</tr>
<tr>
<td>Peak RF Grid Voltage</td>
<td>6.5</td>
<td>6.5</td>
<td>6.5</td>
</tr>
<tr>
<td>Driving Power (approx.)</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Power Output (approx.)</td>
<td>25</td>
<td>30</td>
<td>40</td>
</tr>
</tbody>
</table>

* Modulation essentially negative may be used if the positive peak of the AF envelope does not exceed 115% of the carrier amplitude.

† The total effective grid circuit resistance should not exceed 25,000 ohms; the voltage may be obtained from a fixed supply or by the grid resistor shown, or a cathode resistor of 410 ohms or by combination methods. If the preceding stage is keyed some fixed bias is essential.
RF Frequency Multiplier, Telegraphy:

RF Doubler:
Continuous ratings as a doubler without modulation:
Plate Voltage 400 500 600 volts
Screen Voltage 250 250 250 volts
Screen Series Resistor 18,700 38,500 46,500 ohms
Grid Voltage —84 —84 —84 volts
Grid Resistor 12,500 15,500 18,000 ohms
Cathode Resistor 350 350 350 ohms
DC Plate Current 90 80 75 mA
DC Screen Current 8.0 6.5 7.5 mA
DC Grid Current (approx.) 4.0 3.5 3.0 mA
Peak RF Grid Voltage 105 105 105 volts
Driving Power (approx.) 0.4 0.35 0.3 watts
Power Output 14 16 20 watts*

* Measured with typical tank coil doubling from 7 to 14 Mc/s.

RF Trebler:
Continuous ratings as a trebler without modulation:
Plate Voltage 400 500 600 volts
Screen Voltage 250 250 250 volts
Screen Series Resistor 25,000 62,500 115,000 ohms
Grid Voltage —95 —95 —100 volts
Grid Resistor 16,250 20,000 25,000 ohms
Cathode Resistor 400 400 450 ohms
DC Plate Current 70 60 53 mA
DC Screen Current 6 4 3 mA
DC Grid Current (approx.) 4 3.5 3 mA
Peak RF Grid Voltage 115 115 120 volts
Driving Power (approx.) 0.45 0.4 0.35 watts
Power Output 5 6 7 watts*

* Measured with typical tank coil trebling from 7 to 21 Mc/s.

Operation as Series Valve in Voltage Stabilisers: Due to the fairly high DC cathode current obtainable with this valve it is suitable for use as the series valve in a voltage stabiliser. The valve should be strapped as a triode, observing those precautions mentioned in "ratings" on page 2. Care should be taken to ensure that the maximum ratings are not exceeded under the worst possible operating conditions of the stabiliser unit, i.e., maximum supply voltage, maximum current drain and minimum DC output voltage.
VALVE TYPE 807
PUSH-PULL CLASS "AB," AMPLIFIER
POWER OUTPUT, DISTORTION, SCREEN CURRENT & PLATE CURRENT VERSUS
A.F. INPUT VOLTAGE
PLATE VOLTAGE = 500 VOLTS
SCREEN VOLTAGE = 3000 VOLTS
CONTROL GRID VOLTAGE = -27 VOLTS
PLATE-TO-PLATE LOAD = 8,000 OHMS

HARMONIC DISTORTION (%)
0 1 2 3 4

SCREEN CURRENT (MILLIAMPERES) & POWER OUTPUT (WATTS)
0 10 20 30 40 50

PLATE CURRENT
0 10 20 30 40

OUTPUT
0 50 100 150

SCREEN CURRENT
0 50 100 150

A.F. INPUT VOLTAGE GRID-TO-GRID (VOLTS R.M.S.)
0 10 20 30 40 50 60

JUNE, 1954

Standard Telephones and Cables Pty. Ltd.
SYDNEY
VALVE TYPE 807
PUSH-PULL CLASS "AB1" AMPLIFIER
POWER OUTPUT, DISTORTION, SCREEN CURRENT
& PLATE CURRENT VERSUS
A.F. INPUT VOLTAGE
PLATE VOLTAGE = 500 VOLTS
SCREEN VOLTAGE = 300 VOLTS
AUTOBIAS RESISTOR = 270 OHMS
PLATE-TO-PLATE LOAD = 9,000 OHMS

HARMONIC DISTORTION (PERCENT)

SCREEN CURRENT (MILLIAMPERES) & POWER OUTPUT (WATTS)

A.F. INPUT VOLTAGE GRID-TO-GRID (VOLTS R.M.S.)

PLATE CURRENT

OUTPUT

SCREEN CURRENT

5TH

2ND

3RD
VALVE TYPE 807

PUSH-PULL CLASS 'AB,' AMPLIFIER

POWER OUTPUT, DISTORTION, SCREEN CURRENT & PLATE CURRENT VERSUS A.F. INPUT VOLTAGE

PLATE VOLTAGE = 600 VOLTS
SCREEN VOLTAGE = 300 VOLTS
CONTROL GRID VOLTAGE = -29.5 VOLTS
PLATE-TO-PLATE LOAD = 10,000 OHMS
VALVE TYPE 807
PUSH-PULL CLASS 'AB', AMPLIFIER
POWER OUTPUT, DISTORTION, SCREEN CURRENT & PLATE CURRENT VERSUS
A.F. INPUT VOLTAGE
PLATE VOLTAGE = 600 VOLTS
SCREEN VOLTAGE = 300 VOLTS
AUTOBIAS RESISTOR = 360 OHMS
PLATE-TO-PLATE LOAD = 10,000 OHMS

HARMONIC DISTORTION (PERCENT)

SCREEN CURRENT (MILLIAMPERES) & POWER OUTPUT (WATTS)

A.F. INPUT VOLTAGE GRID-TO-GRID (VOLTS R.M.S.)
VALVE TYPE 807
PLATE CURRENT VERSUS PLATE VOLTAGE
SCREEN VOLTAGE = 250 VOLTS

PLATE CURRENT (MILLIAMPERES)

PLATE VOLTAGE (VOLTS)

CONTROL GRID VOLTAGE = ±30 VOLTS
VALVE TYPE 807
PLATE CURRENT VERSUS PLATE VOLTAGE
SCREEN VOLTAGE = 300 VOLTS

CONTROL GRID VOLTAGE = +25 VOLTS
VALVE TYPE 807
TRIODE CONNECTION
PLATE CURRENT VERSUS PLATE VOLTAGE

PLATE CURRENT (MILLIAMPERES)

PLATE VOLTAGE (VOLTS)

CONTROL GRID VOLTAGE = +15 Volts
VALVE TYPE 807
SCREEN CURRENT VERSUS PLATE VOLTAGE
SCREEN VOLTAGE = 250 VOLTS

CONTROL GRID VOLTAGE = +30 VOLTS

PLATE VOLTAGE (VOLTS)

SCREEN CURRENT (MILLIAMPERES)
VALVE TYPE 807
SCREEN CURRENT VERSUS PLATE VOLTAGE
SCREEN VOLTAGE = 300 VOLTS

PLATE VOLTAGE (VOLTS)

SCREEN CURRENT (MILLIAMPERES)

CONTROL GRID VOLTAGE = -30 VOLTS
VALVE TYPE 807
PUSH-PULL CLASS "AB" AMPLIFIER
POWER OUTPUT, DISTORTION, SCREEN CURRENT
& PLATE CURRENT VERSUS
A.F. INPUT VOLTAGE
PLATE VOLTAGE = 400 VOLS
SCREEN VOLTAGE = 300 VOLS
CONTROL GRID VOLTAGE = -25 VOLS
PLATE-TO-PLATE LOAD = 3,200 OHMS

HARMONIC DISTORTION (PERCENT)

SCREEN CURRENT (MILLIAMPERES)

PLATE CURRENT (MILLIAMPERES)

POWER OUTPUT (WATS)

A.F. INPUT VOLTAGE GRID-TO-GRID (VOLS R.M.S.)
VALVE TYPE 807
PUSH-PULL CLASS "AB₂" AMPLIFIER
POWER OUTPUT, DISTORTION, SCREEN CURRENT & PLATE CURRENT VERSUS
A.F. INPUT VOLTAGE
PLATE VOLTAGE = 500 VOLTS
SCREEN VOLTAGE = 300 VOLTS
CONTROL GRID VOLTAGE = -29 VOLTS
PLATE-TO-PLATE LOAD = 4,740 OHMS
VALVE TYPE 807
PUSH-PULL CLASS "AB 2 " AMPLIFIER
POWER OUTPUT, DISTORTION, SCREEN CURRENT
& PLATE CURRENT VERSUS
A.F. INPUT VOLTAGE
PLATE VOLTAGE = 600 VOLTS
SCREEN VOLTAGE = 300 VOLTS
CONTROL GRID VOLTAGE = -30 VOLTS
PLATE-TO-PLATE LOAD = 6,400 OHMS

HARMONIC DISTORTION (PERCENT)

TOTAL DISTORTION

2ND

3RD

5TH

PLATE CURRENT

SCREEN CURRENT (MILLIAMPERES)

POWER OUTPUT WATTS

PLATE CURRENT (MILLIAMPERES)

A.F. INPUT VOLTAGE
GRID-TO-GRID (VOLTS R.M.S.)

0 5 10 15 20 25

0 2 4 6 8 10 12 14 16 18 20

0 20 40 60 80 100 120 140 160 180 200 220 240 260

0 50 100 150 200 250

ANALYTICAL ASSOCIATE

Standard Telephones and Cables Pty Ltd.

SYDNEY

JUKE 1989
VALVE TYPE 807
TRIODE CONNECTION
PUSH-PULL CLASS "AB," AMPLIFIER
POWER OUTPUT, DISTORTION & PLATE CURRENT
VERSUS A.F. INPUT VOLTAGE
PLATE VOLTAGE = 400 VOLTS
CONTROL GRID VOLTAGE = -45 VOLTS
PLATE-TO-PLATE LOAD = 3,000 OHMS
VALVE TYPE 807
TRIODE CONNECTION
CLASS 'A' AMPLIFIER
POWER OUTPUT & DISTORTION
VERSUS A.F. INPUT VOLTAGE
PLATE VOLTAGE = 250 VOLTS
CONTROL GRID VOLTAGE = -20 VOLTS
PLATE CURRENT = 40-44mA
PLATE LOAD = 5,000 OHMS
Valve Type 807
Triode Connection
Class 'A' Amplifier
Power Output & Distortion
Versus A.F. Input Voltage

Plate Voltage = 250 Volts
AutoBias Resistor = 500 Ohms
Plate Current = 40 - 41 mA
Plate Load = 6,000 Ohms

Diagram showing power output versus a.f. input voltage.

Power Output (Watts)

A.F. Input Voltage (Volts R.M.S.)

Harmonic Distortion (Percent)
VALVE TYPE 807
TRIODE CONNECTION
PUSH-PULL CLASS "A" AMPLIFIER
POWER OUTPUT & DISTORTION
VERSUS A.F. INPUT VOLTAGE

- PLATE VOLTAGE: 250 VOLTS
- AUTOBIAS RESISTOR: 250 OHMS
- PLATE CURRENT: 80 - 84 mA
- PLATE-TO-PLATE LOAD: 5,000 OHMS

CURVE No. 307 333

POWER OUTPUT (WATTS)
A.F. INPUT VOLTAGE GRID-TO-GRID (VOLTS R.M.S.)

HARMONIC DISTORTION (PERCENT)
OUTPUT
2ND
3RD
VALVE TYPE 807
TRIODE CONNECTION
PUSH-PULL CLASS 'A' AMPLIFIER
POWER OUTPUT & DISTORTION
VERSUS A.F. INPUT VOLTAGE

PLATE VOLTAGE = 250 VOLTS
CONTROL GRID VOLTAGE = -20 VOLTS
PLATE CURRENT = 80 - 88mA
PLATE-TO-PLATE LOAD = 5,000 OHMS

POWER OUTPUT (WATTS)

A.F. INPUT VOLTAGE  GRID-TO-GRID (VOLTS R.M.S.)

HARMONIC DISTORTION (PERCENT)

OUTPUT

2ND
3RD
VALVE TYPE 807
CLASS "A" AMPLIFIER
POWER OUTPUT, DISTORTION, SCREEN CURRENT & PLATE CURRENT VERSUS A.F. INPUT VOLTAGE
PLATE VOLTAGE = 250 VOLTS
SCREEN VOLTAGE = 250 VOLTS
CONTROL GRID VOLTAGE = -14 VOLTS
PLATE LOAD = 2,500 OHMS
VALVE TYPE 807
CLASS "A" AMPLIFIER
POWER OUTPUT, DISTORTION, SCREEN CURRENT & PLATE CURRENT VERSUS
A.F. INPUT VOLTAGE
PLATE VOLTAGE = 250 VOLTS
SCREEN VOLTAGE = 250 VOLTS
AUTOBASS RESISTOR = 170 OHMS
PLATE LOAD = 2,500 OHMS

SCREEN CURRENT (MILLIAMPERES) vs A.F. INPUT VOLTAGE (VOLTS R.M.S.)

PLATE CURRENT (MILLIAMPERES) vs A.F. INPUT VOLTAGE (VOLTS R.M.S.)
VALVE TYPE 807
PUSH-PULL CLASS "AB," AMPLIFIER
POWER OUTPUT, DISTORTION, SCREEN CURRENT
& PLATE CURRENT VERSUS
A.F. INPUT VOLTAGE
PLATE VOLTAGE = 360 VOLTS
SCREEN VOLTAGE = 270 VOLTS
CONTROL GRID VOLTAGE = -22.5 VOLTS
PLATE-TO-PLATE LOAD = 6,800 OHMS

PLATE CURRENT (MILLIAMPERES)

SCREEN CURRENT

HARMONIC DISTORTION (PERCENT)

OUTPUT

3RD

2ND

A.F. INPUT VOLTAGE GRID-TO-GRID (VOLTS R.M.S.)

POWER OUTPUT (WATTS)

PLATE CURRENT

SCREEN CURRENT

A.F. INPUT VOLTAGE GRID-TO-GRID (VOLTS R.M.S.)
VALVE TYPE 807
PUSH-PULL CLASS "AB"," AMPLIFIER
POWER OUTPUT, DISTORTION, SCREEN CURRENT
& PLATE CURRENT VERSUS
A.F. INPUT VOLTAGE
PLATE VOLTAGE = 360 VOLTS
SCREEN VOLTAGE = 270 VOLTS
CONTROL GRID VOLTAGE = -22.5 VOLTS
PLATE TO PLATE LOAD = 3,800 OHMS
POWER SUPPLY FOR 75 WATT CLASS "AB2" AMPLIFIER

A.C. MAINS

T3

5 VOLTS

L3 10H

+ 8 \mu F

+ 16 \mu F

10K 10W.

B

-78V CONSTANT 14mA BIAS

6.3 VOLTS

6X5GT

T2

5 VOLTS

L2 7H-15H

16 \mu F

50K 5W.

C

+500V 100-265mA

T1

6.3 VOLTS

6X5GT

LI 70H

LI 70H

+ 8 \mu F

+ 16 \mu F

+ 16 \mu F

D

240V 20mA

C1 & C2 - 0.01 \mu F 2,200V D.C. WORKING.

REF. No. 401-12

ANITY ASSOCIATES
TRANSFORMER AND CHOKE DATA FOR 75 WATT AMPLIFIER

Mains Transformer T1 (Ref. 401.20)
Secondary:
260–0–260 volts 20 mA; 6.3 volts 1.5 amperes and 6.3 volts 0.3 amperes.
Laminations:
Sankey No. 4A Stalloy 1 in. stack.
Primary winding for 200, 220, 240 volts:
1640 + 180 + 180 turns of 30 S.W.G. S.S.E. wire, DC resistance 58 ohms.
Secondary winding:
(a) 2300 + 2300 turns of 36 S.W.G. S.S.E. wire, DC resistance 470 ohms total.
(b) 60 turns 22 S.W.G. enamel.
(c) 56 turns 22 S.W.G. enamel.
Magnetising current: 36 mA.

Chokes L1 (Ref. 401.20)
70 Hy at 20 mA DC. 2200Ω DC resistance.
HT voltage at output of filter 240 volts DC.

Mains Transformer T2 (Ref. 401.12)
Secondary:
600–0–600 volts 260 mA and 5 volts 3 amperes.
Laminations:
Sankey No. 28A Stalloy 1.3 in. stack.
Primary winding for mains voltages 200, 220, 240 volts:
800 + 80 + 80 turns of 22 S.W.G. enamel (8 ohms resistance).
Secondary winding:
(a) 5000 turns centre tapped, 28 S.W.G. S.S.E. wire (205 ohms resistance).
(b) 21 turns 18 S.W.G. enamel.
Magnetising current: approx. 100 mA.

Mains Transformer T3 (Ref. 401.12)
Secondary:
270–0–270 volts 90 mA, 5 volts 2 amperes and 6.3 volts 3.6 amperes.
Laminations:
Sankey No. 4A Stalloy 1 1/2 in. stack.
Primary winding for mains voltages 200, 220, 240 volts:
1200 + 120 + 120 turns of 28 S.W.G. S.S.E. wire (37 ohms resistance).
Secondary winding:
(a) 3300 turns centre tapped, 34 S.W.G. S.S.E. wire (320 ohms).
(b) 36 turns 20 S.W.G. enamel.
(c) 43 turns 18 S.W.G. enamel.
Magnetising current: approx. 50 mA.

Swinging Choke L2 (500 volts supply) (Ref. 401.12)
Laminations:
Stalloy No. 4A Stalloy 1 1/2 in. stack.
Gap spacer 0.005 in.
Inductance:
Approx. 7 Hy with 50 mA DC.
2 Hy with 250 mA DC.
TRANSFORMER AND CHOKE DATA
FOR 75 WATT AMPLIFIER (continued)

Smoothing Choke L3 (300 volts supply)

Laminations:
Sankey No. 4A Stalloy 1½ in. stack.
Gap spacer -015 in.
3400 turns of 26 S.W.G. enamel wire (95 ohms resistance).

Inductance:
Approx. 11 Hy with no DC.
8 Hy with 100 mA DC.

Output Transformer T4 (75 watts)

Laminations:
Sankey No. 28A Stalloy 1¾ in. stack.
Gap spacer -015 in.

Ratio 2.74 : 1 to match 4500 to 600 ohms.
(Max. out of balance current 20 mA).
(Peak AC 250 mA).

Primary winding:
Two sections of 1500 turns each, of 26 S.W.G. D.S.C. wire
(73 ohms).

Secondary winding:
Three sections of 370 turns each, of 22 S.W.G. enamel wire
(11 ohms) sandwiched with primary sections.

Leakage inductance: less than 0.3%.

Primary inductance:
Approx. 12 Hy with no DC.
12 Hy with 50 mA DC (through both primary sections).
PERFORMANCE DATA
FOR 75 WATT AMPLIFIER

PRE-AMPLIFIER

General:
Output load used for measurements is 10,000 ohms at 'E' (Ref. 401.20).
Output voltages measured at 'E'.
Measurements made at 1000 c/s.

Gain:
Input to No. 1 for 10 volts R.M.S. output = 0.5 millivolt.
" 2 " 2 "  "  "  "  "  "  "  "  "  "  " 0.65 volt.

Harmonic Distortion at 1000 c/s.

<table>
<thead>
<tr>
<th>Harmonic</th>
<th>% at 10 volts Output</th>
<th>% at 20 volts Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd</td>
<td>0.11</td>
<td>0.9</td>
</tr>
<tr>
<td>3rd</td>
<td>0.10</td>
<td>0.75</td>
</tr>
<tr>
<td>4th</td>
<td></td>
<td>0.27</td>
</tr>
<tr>
<td>5th</td>
<td></td>
<td>0.09</td>
</tr>
</tbody>
</table>

1000 c/s injected at input 1 with distortion less than 0.01% of any harmonic.

Hum Levels:
Hum voltage on HT line: 0.05 volt R.M.S.
Hum output at 'E' with first gain control of pre-amplifier at minimum and second gain control at maximum: 0.12 volt of 50 c/s; 0.06 volt of 100 c/s.

OUTPUT UNIT

Frequency Response:

Gain control at maximum. Figures taken at output level of 30 watts. Input applied at 'E' (Ref. 401.20) constant.

<table>
<thead>
<tr>
<th>Frequency C.P.S.</th>
<th>No Shunting on Output Transformer</th>
<th>5KΩ and -0015μF Shunting (plate-plate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>-1.6 dB</td>
<td>-1.6 dB</td>
</tr>
<tr>
<td>100</td>
<td>-0.7 dB</td>
<td>-0.7 dB</td>
</tr>
<tr>
<td>400</td>
<td>0 dB</td>
<td>0 dB</td>
</tr>
<tr>
<td>1000</td>
<td>0 dB</td>
<td>0 dB</td>
</tr>
<tr>
<td>3000</td>
<td>0 dB</td>
<td>0 dB</td>
</tr>
<tr>
<td>10,000</td>
<td>-0.2 dB</td>
<td>-2.0 dB</td>
</tr>
<tr>
<td>13,000</td>
<td>0.9 dB</td>
<td>-1.6 dB</td>
</tr>
<tr>
<td>20,000</td>
<td>-2.4 dB</td>
<td>-5.3 dB</td>
</tr>
</tbody>
</table>

Input at 'E' at 1000 c/s for maximum output = 4 volts R.M.S.
* Input at 'E' at 1000 c/s for maximum output = 10 volts R.M.S.

Hum output across 600 ohm load

<table>
<thead>
<tr>
<th></th>
<th>50c/s</th>
<th>100c/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.25 volt</td>
<td>0.13 volt</td>
<td></td>
</tr>
<tr>
<td>0.13 volt</td>
<td>0.05 volt</td>
<td></td>
</tr>
</tbody>
</table>

* These figures apply for 8 dB negative feedback.
PERFORMANCE DATA
FOR 75 WATT AMPLIFIER (continued)

Operating Voltages and Currents*:

<table>
<thead>
<tr>
<th></th>
<th>807 Plates</th>
<th>807 Screen Grids</th>
<th>Each 807 Cathode</th>
<th>300 volts HT Line</th>
<th>78 volts Bias Line</th>
<th>Bias</th>
</tr>
</thead>
<tbody>
<tr>
<td>No drive</td>
<td>volts</td>
<td>volts</td>
<td>mA</td>
<td>mA</td>
<td>mA</td>
<td>volts</td>
</tr>
<tr>
<td>Max. output</td>
<td>508</td>
<td>300</td>
<td>47</td>
<td>17</td>
<td>14</td>
<td>-78</td>
</tr>
<tr>
<td></td>
<td>475</td>
<td>280</td>
<td>125</td>
<td>43</td>
<td>14</td>
<td>-78</td>
</tr>
</tbody>
</table>

Harmonic Distortion at 1000c/s (5KΩ and -0015μF on output transformer):

<table>
<thead>
<tr>
<th>Harmonic</th>
<th>25 watts Output†</th>
<th>50 watts Output†</th>
<th>75 watts Output†</th>
<th>70 watts Output†</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1.0 - .34</td>
<td>1.1 - .5</td>
<td>.9 - .45</td>
<td>1.0 - .92</td>
</tr>
<tr>
<td>3</td>
<td>.9 - .25</td>
<td>1.3 - .62</td>
<td>7.5 - .50</td>
<td>6.0 - 2.9</td>
</tr>
<tr>
<td>4</td>
<td>.13 - .05</td>
<td>.25 - .12</td>
<td>.7 - .23</td>
<td>.9 - .93</td>
</tr>
<tr>
<td>5</td>
<td>.3 - .14</td>
<td>.45 - .28</td>
<td>2.7 - 4.0</td>
<td>3.2 - 6.0</td>
</tr>
<tr>
<td>7</td>
<td>.16 - .07</td>
<td>.66 - .22</td>
<td>.15 - .8</td>
<td>.13 - 2.0</td>
</tr>
<tr>
<td>9</td>
<td>.05 - .02</td>
<td>.32 - .15</td>
<td>.5 - .2</td>
<td>.16 - .65</td>
</tr>
</tbody>
</table>

† The 25 watt, 50 watt, and 75 watt figures were taken with perfect HT and screen supply regulation.

* The 70 watt figures were obtained at maximum output with the regulation given above.

Distortion figures at 100c/s were slightly higher than at 1000c/s averaging 1.1—1.2 times more.

Maximum output at 100c/s was 68 watts.
MODIFIED ZERO BIAS CLASS ‘B’ AMPLIFIER

**Driver Stage**
PLATE LOAD IMPEDANCE = 4200 OHMS

**Output Stage**
GRID-TO-GRID INPUT VOLTAGE = 554 VOLTS
GRID-TO-GRID INPUT POWER = 5.3 WATTS
GRID-TO-GRID INPUT IMPEDANCE = 7,100 OHMS
PLATE-TO-PLATE LOAD IMPEDANCE = 6,600 OHMS