AMPEREX TUBE TYPE 7737

TENTATIVE DATA

The Ampex 7737 is a ruggedized tube intended for use in environments subject to unusually high shock and vibration conditions and where freedom from microphony is essential. It has application in coaxial cable amplifiers, video amplifiers, broad-band IF amplifiers in communication links, and TV equipment.

It is one of the Ampex "Premium Quality 10,000 Hour" tubes.

PIN CONNECTIONS

1- CATHODE
2- GRID NO. 1
3- CATHODE
4- HEATER
5- HEATER
6- INTERNALLY CONNECTED
7- PLATE
8- GRID NO. 3 & SHIELD
9- GRID NO. 2

GENERAL CHARACTERISTICS

MECHANICAL

Dimensions
Mounting Position
Bulb
Base
Basing

see outline drawing
any
T-6½
small button, 9 pin E 9-1
9MZ

ELECTRICAL

Heating
Heater Voltage
Heater Current

parallel supply
6.3 volts
320 mA

Direct Interelectrode Capacitances

Plate to all other Elements
Grid No. 1 to all other Elements
Plate to Grid No. 1
Transconductance
Amplification Factor - Grid No. 2
to Grid No. 1

3.3 μF
7.6 μF
0.03 μF max
16,500 microhmhos
53

1 Minimum value of Heater Voltage = 6.0 V; Maximum Value of Heater Voltage = 6.6 V.
Maximum Ratings, Absolute Values

Plate Voltage, Cut-Off Condition 400 volts max
Plate Voltage 210 volts max
Plate Dissipation 3.0 watts max
Grid No. 2 Voltage, Cut-Off Condition 400 volts max
Grid No. 2 Voltage 175 volts max
Grid No. 2 Dissipation 0.7 watts max
Grid No. 1 Voltage 0 volts max
Negative Grid No. 1 Voltage 50 volts max
Peak Negative Grid No. 1 Voltage 100 volts max
Cathode Current 25 mA max
Heater-Cathode Voltage 60 volts max
Series Grid Resistor (Automatic Bias) 0.5 megohms max
Series Grid Resistor (Fixed Bias) 0.25 megohms max
Heater to Cathode Resistance 20,000 ohms max
Bulb Temperature 165°C max
Negative Grid No. 1 Voltage
(Grid No. 1 Current = 0.3 μA) 0.5 volts

Typical Operation 2

<table>
<thead>
<tr>
<th></th>
<th>I</th>
<th>II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Supply Voltage</td>
<td>190</td>
<td>180 volts</td>
</tr>
<tr>
<td>Grid No. 3 Voltage</td>
<td>0</td>
<td>0 volts</td>
</tr>
<tr>
<td>Grid No. 2 Supply Voltage</td>
<td>160</td>
<td>150 volts</td>
</tr>
<tr>
<td>Grid No. 1 Supply Voltage</td>
<td>9</td>
<td>0 volts</td>
</tr>
<tr>
<td>Cathode Resistor</td>
<td>630</td>
<td>100 ohms</td>
</tr>
<tr>
<td>Plate Current</td>
<td>13</td>
<td>11.5 mA</td>
</tr>
<tr>
<td>Grid No. 2 Current</td>
<td>3.3</td>
<td>2.9 mA</td>
</tr>
<tr>
<td>Transconductance</td>
<td>16,500</td>
<td>15,900 micromhos</td>
</tr>
<tr>
<td>Amplification Factor - Grid No. 2 to Grid No. 1</td>
<td>53</td>
<td></td>
</tr>
<tr>
<td>Internal Plate Resistance</td>
<td>100,000 ohms</td>
<td></td>
</tr>
<tr>
<td>Equivalent Noise Resistance (f = 45 Mc/s)</td>
<td>160 ohms</td>
<td></td>
</tr>
</tbody>
</table>

2 Operation of the tube under the conditions as given in Column I is recommended because of the small spread in characteristics.
## Characteristic Range Value for Equipment Design

<table>
<thead>
<tr>
<th></th>
<th>Initial</th>
<th>End of Life³</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td><strong>Heater Current</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>($E_f = 6.3$ V)</td>
<td>295</td>
<td>345</td>
</tr>
<tr>
<td><strong>Plate Current</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>($E_f = 6.3$ V, $E_{bb} = 190$ V, $E_{c3} = 0$ V, $E_{cc2} = 160$ V, $E_{c1} = 9$ V, $R_k = 630$ ohms)</td>
<td>12.2</td>
<td>13.8</td>
</tr>
<tr>
<td><strong>Grid No. 2 Current</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>($E_f = 6.3$ V, $E_{bb} = 190$ V, $E_{c3} = 0$ V, $E_{cc2} = 160$ V, $E_{c1} = 9$ V, $R_k = 630$ ohms)</td>
<td>2.9</td>
<td>3.7</td>
</tr>
<tr>
<td><strong>Transconductance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>($E_f = 6.3$ V, $E_{bb} = 190$ V, $E_{c3} = 0$ V, $E_{cc2} = 160$ V, $E_{c1} = 9$ V, $R_k = 630$ ohms)</td>
<td>14,200</td>
<td>18,800</td>
</tr>
<tr>
<td><strong>Negative Grid No. 1 Current</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>($E_f = 6.3$ V, $E_{bb} = 190$ V, $E_{c3} = 0$ V, $E_{cc2} = 160$ V, $E_{c1} = 9$ V, $R_k = 630$ ohms, $R_g = 0.1$ megohms)</td>
<td></td>
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<tr>
<td><strong>Heater-Cathode Current</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>($E_f = 6.3$ V, $E_{k/f} = 100$ V, $R_{series} = 0.1$ megohms, cathode positive or negative)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Insulation Resistance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>($E_f = 6.3$ V, $V_{grid} =$ all electrodes $= 100$ V, $V_{plate} =$ all electrodes $= 300$ V, cathode positive)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Equivalent Signal Grid Hum Voltage</strong>⁴</td>
<td></td>
<td></td>
</tr>
<tr>
<td>($E_f = 6.3$ V, $E_{bb} = 207$ V, $R_p =$ 2000 ohms, $E_{cc2} = 150$ V, $R_k = 78$ ohms, $C_k = 1000$ $\mu$F, $R_{g1} = 0.5$ megohms)</td>
<td></td>
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</tr>
<tr>
<td><strong>Vibrational Noise Output</strong>⁵</td>
<td></td>
<td></td>
</tr>
<tr>
<td>($E_f = 6.3$ V, $E_{bb} = 180$ V, $R_p =$ 2000 ohms, $E_{c2} = 150$ V, $E_{c3} = 0$ V, $R_k =$ 78 ohms (not bypassed) )</td>
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<tr>
<td><strong>Vibrational Noise Output</strong>⁶</td>
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<tr>
<td><strong>Plate Current</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>($E_f = 6.3$ V, $E_b =$ 180 V, $E_{c3} =$ 0 V, $E_{c2} =$ 150 V, $E_{c1} =$ $-4.5$ V)</td>
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</table>
SPECIAL RATINGS

Shock Rating

abt. 500 g

Forces as applied by the NRL impact machine for electronic devices caused by 5 blows of the hammer lifted over an angle of 30° in each of four different directions.

Fatigue Rating

2.5 g

Vibrational forces for a period of 32 hours at a frequency of 50 c/s in each of three directions.

3 Life test conditions:
   - Heater Voltage 6.3 volts
   - Plate Supply Voltage 190 volts
   - Grid No. 3 Voltage 0 volts
   - Grid No. 2 Supply Voltage 160 volts
   - Grid No. 1 Voltage 9 volts
   - Cathode Resistor 630 ohms
   - Life Expectancy = 10,000 hours

4 Center tap of the heater supply transformer grounded and cathode resistor decoupled by a capacitor of 1000µf. Measured with a line frequency of 50 c/s and a filter with a linear band-pass characteristic.

5 Vibrational acceleration 10 g peak, frequency range 50 to 2000 c/s.

6 Vibrational acceleration = 10 g peak, frequency 50 c/s

7 These test conditions are only given for evaluation of the ruggedness of the tube and should by no means be interpreted as suitable operating conditions.
PLATE VOLTAGE = 180 VOLTS
GRID NO. 3 VOLTAGE = 0 VOLTS
GRID NO. 2 VOLTAGE = 150 VOLTS