TYPE 6870
V.H.F. POWER PENTODE

This tube is an indirectly heated fully screened V.H.F. power pentode for operation up to 150 mA. It is intended for use as a class C amplifier or as a frequency multiplier. It may also be used as a video amplifier where the supply voltage is low and a large output voltage is required with a low value plate resistor. The tube features a centre-tapped heater for both AC and AC/DC applications.

The 6870 is designed for trustworthy operation under conditions of shock and vibration usually found in aircraft and mobile equipment.

MECHANICAL DATA.

Coated unipotential cathode.
Outline drawing: 6-3
Bulb: T-6\(\frac{1}{2}\)
Base: mini 4 Miniature Button 9-pin
Maximum diameter: 8\(\frac{1}{8}\)"
Maximum overall length: 2.5/8"
Maximum seated height: 2.3/8"
Pin Connections:
Pin 1 - Cathode.
Pin 2 - Grid No. 1.
Pin 3 - Grid No. 3, internal shield.
Pin 4 - Heater.
Pin 5 - Heater.
Pin 6 - Heater centre tap.
Pin 7 - Plate.
Pin 8 - Grid No. 2.
Pin 9 - Grid No. 3, internal shield.
Basing JETEC 9BF
Mounting position:
Any

Maximum shock (intermittent service): 550"g"
Maximum vibration (continuous service): 2\(\frac{1}{2}\) "g"
Minimum mechanical resonance: 100c/s

ELECTRICAL DATA.

Direct Inter-electrode Capacitances - without external shield
Grid to plate: (g1 to p) max. 0.0254\(\mu\)F
Input: g1 to (h+k+g2+g3 and I.S.) 8.5 \(\mu\)F
Output: p to (h+k+g2+g3 and I.S.) 7.0 \(\mu\)F

Sheet 1 of 2.

from JETEC release #1809, Dec. 17, 1956
### Ratings

Design Centre Values

- Heater voltage (A.C. or D.C.): 12.6/6.3 volts
- Maximum heater-cathode voltage: 290 volts
- Maximum plate voltage: 3000 DC volts
- Maximum grid No. 2 voltage: 250 DC volts
- Maximum plate supply voltage (Ib = 0 mA): 5000 DC volts
- Maximum grid No. 2 supply voltage (Ig2 = 0): 5000 DC volts
- Maximum plate dissipation: 6.3 watts
- Maximum grid No. 2 dissipation: 2.0 watts
- Maximum grid No. 1 current: 3.0 mA
- Maximum cathode current: 50 mA
- Maximum grid No. 1 circuit resistance:
  - Fixed bias: 0.1 meg
  - Self bias: 0.5 meg
- Maximum bulb temperature: 190°C

### Typical Operating Conditions and Characteristics, class A1 Amplifier

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value 1</th>
<th>Value 2</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heater voltage (A.C. or D.C.)</td>
<td>6.3/12.6</td>
<td>6.3/12.6</td>
<td>volts</td>
</tr>
<tr>
<td>Heater current</td>
<td>0.6/0.3</td>
<td>0.6/0.3</td>
<td>amps</td>
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<tr>
<td>Plate voltage</td>
<td>250</td>
<td>180</td>
<td>DC volts</td>
</tr>
<tr>
<td>Grid No. 3 voltage - pins 3 and 9 connected to pin 1 at socket</td>
<td>250</td>
<td>180</td>
<td>DC volts</td>
</tr>
<tr>
<td>Grid No. 2 voltage</td>
<td>250</td>
<td>180</td>
<td>DC volts</td>
</tr>
<tr>
<td>Cathode bias resistor</td>
<td>120</td>
<td>56</td>
<td>k-ohms</td>
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<tr>
<td>Plate resistance (approximately)</td>
<td>230</td>
<td>170</td>
<td>μ-mhos</td>
</tr>
<tr>
<td>Transconductance</td>
<td>8,500</td>
<td>9000</td>
<td>mA</td>
</tr>
<tr>
<td>Plate current</td>
<td>25</td>
<td>25</td>
<td>mA</td>
</tr>
<tr>
<td>Grid No. 2 current</td>
<td>3.5</td>
<td>3.5</td>
<td>mA</td>
</tr>
<tr>
<td>Grid No. 1 voltage (approximately)</td>
<td>-13.5</td>
<td>-9</td>
<td>volts</td>
</tr>
<tr>
<td>Amplification factor (g2-g1)</td>
<td>35</td>
<td>35</td>
<td></td>
</tr>
</tbody>
</table>
VALVE TYPE 6870

Vg2 = 180V; Vg3 = 0

Anode Current (mA) vs. Anode Voltage (V)