ADVANCE DATA

The Sylvania Type 6945 is a subminiature beam power pentode designed for audio frequency amplifier service. This type is characterized by extraordinary freedom from interelement short circuits of short term duration, by high resistance to inter-element leakage, and by stable performance. In addition, vibrational output when the tube is subjected to wide band (White Noise) vibration is held to a very low value. It is suitable for service at high altitudes and where severe conditions of mechanical shock, vibration and high temperature are encountered. These characteristics give the type special value in guided missile applications.

MECHANICAL DATA

Bulb T-3
Base E8-10 Subminiature Button
Outline 3-3
Basing 8DL
Cathode Coated Unipotential
Mounting Position Any

RATINGS

Bulb Temperature (At Hottest Point) 250 °C Max.
Operational Altitude 80,000 Ft Max.

DURABILITY CHARACTERISTICS

Impact Acceleration 100 G
Vibrational Acceleration for an Extended Period 10 G
On-Off Heater Cycles 2000

ELECTRICAL DATA

HEATER CHARACTERISTICS

Heater Voltage 6.3 V
Heater Current 350 mA
Heater-Cathode Voltage (Absolute Values) 200 V Max.

CONTROLLED DETRIMENTS

Interelectrode Insulation 100 MΩ Min.
Total Grid Current -1.0 µA Max.
Grid Emission -2.0 µA Max.
Hum Output 10.0 mv pk-pk Max.
White Noise Vibration Output 650.0 mv pk-pk Max.
Heater-Cathode Leakage 75.0 mV rms Max.
10.0 µA Max.
### Direct Interelectrode Capacitances

<table>
<thead>
<tr>
<th>Capacitance</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grid No. 1 to Plate</td>
<td>0.13 μuf</td>
</tr>
<tr>
<td>Input: g1 to (h+k+g2+g3+1.s.+e.s.)</td>
<td>5.0 μuf</td>
</tr>
<tr>
<td>Output: p to (h+k+g2+g3+1.s.+e.s.)</td>
<td>5.5 μuf</td>
</tr>
</tbody>
</table>

### Ratings

**Heater Voltage Variation**

6.3 ± 10% V

**Instantaneous Plate Voltage**

360 V

**Plate Voltage**

250 Vdc

**Grid No. 2 Voltage**

150 Vdc

**Plate Dissipation**

3.0 W

**Grid No. 2 Dissipation**

0.33 W

**Positive Grid No. 1 Voltage**

0 Vdc

**Negative Grid No. 1 Voltage**

55 Vdc

**External Grid No. 1 Circuit Resistance**

0.5 MΩ

### Average Characteristics

**Conditions:**

- **Heater Voltage:** 6.3 V
- **Plate Voltage:** 100 Vdc
- **Grid No. 2 Voltage:** 100 Vdc
- **Cathode Bias Resistor:** 270 Ohms
- **Plate Current:** 25 mA dc
- **Grid No. 2 Current:** 1.5 mA dc
- **Transconductance:** 3500 μhos
- **Plate Resistance:** 20,000 Ohms
- **Grid No. 1 Voltage for Ib = 10 μA:** -30 Vdc
- **Power Output at RL = 3000 Ohms; E signal = 6.4 Vac:** 0.8 W

**Operation Time**

20 secs

### Triode Connected

- **Plate and Grid No. 2 Voltage:** 100 Vdc
- **Cathode Bias Resistor:** 270 Ohms
- **Plate Current:** 26 mA dc
- **Transconductance:** 3700 μhos
- **Plate Resistance:** 1500 Ohms
- **Amplification Factor:** 5.5

### Notes:

1. Limiting values beyond which normal tube life and normal tube performance may be impaired.

2. Tests performed as a measure of the mechanical durability of the tube structure.

3. Force as applied in any direction by the Navy Type High Impact (Flyweight) Shock Machine for Electronic Devices. Shock duration = 4 milliseconds.

4. Vibrational forces applied in any direction for a period of six hours repeatedly sweeping the range from 30 cps to 3000 cps and back, with the period of the sweep cycle being three minutes.
5. One cycle consists of the application of $E_f = 7.0$ V for one minute and interruption of the filament voltage for four minutes. A voltage of $E_{hk} = 140$ Vac is applied continuously.

6. Measured with $E_f = 6.3$ V; $E_{gl-all} = -100$ Vdc; $E_{g2-all} = -200$ Vdc; $E_{p-all} = -300$ Vdc; cathode is positive so that no cathode emission occurs.

7. Measured with $E_f = 6.3$ V; $E_b = E_{c2} = 100$ Vdc; $R_k = 270$ Ohms; $R_{gl} = 0.5$ Meg.

8. Preheated for five minutes with $E_f = 7.5$ V; $E_b = 250$ Vdc; $E_{c2} = 150$ Vdc; $R_k = 1700$ Ohms; $R_{gl} = 0.5$ Meg; then tested with $E_f = 7.5$ V; $E_b = E_{c2} = 100$ Vdc; $E_{gl} = -30$ Vdc; $R_{gl} = 0.5$ Meg. This is a destructive test and therefore must be conducted on a sample basis.

9. Test with $E_f = 6.3$ V (400 cps); $E_b = E_{c2} = 100$ Vdc; $R_k = 270$ Ohms; $RL = 500$ Ohms; measure the hum output across $RL$ in the frequency band from 20 cps to 5000 cps.

10. Test with $E_f = 6.3$ V; $E_b = E_{c2} = 100$ Vdc; $R_k = 270$ Ohms; $R_p = 2000$ Ohms; The White Noise voltage across $R_p$ is filtered to roll off approximately 35 db between 10,000 cps and 13,000 cps and is then measured with both a peak to peak meter and an rms reading meter. The vibrational force applied to the tube under test is such that the instantaneous values of acceleration form a White Noise spectrum from 100 cps to 5000 cps. Energy within this spectrum is distributed such that each octave of bandwidth delivers 2.3 G's rms acceleration. The degree of clipping is such that peak values of acceleration exceed 15 G's.

11. Measured with $E_f = 6.3$ V; $E_{hk} = \pm100$ Vdc.

12. Capacitances are measured with an external shield of 0.405" i.d.

13. Operation time is the time required for a tube to reach a value of plate current equal to 85% of that value attained after three minutes.