**MECHANICAL DATA**

Bulb   
Base   
Outline
Basing
Cathode
Mounting Position

**ELECTRICAL DATA**

**HEATER CHARACTERISTICS AND RATINGS**

17X10 Series

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>17X10 Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heater Operation</td>
<td>Series</td>
</tr>
<tr>
<td>Heater Voltage</td>
<td>16.8 Volts</td>
</tr>
<tr>
<td>Heater Current</td>
<td>450^1 Ma</td>
</tr>
<tr>
<td>Heater Warm-up Time</td>
<td>11 Seconds</td>
</tr>
</tbody>
</table>

**Ratings (Design Maximum Values)^{11}**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Min-Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heater Current</td>
<td>4.20-4.80 Ma</td>
</tr>
<tr>
<td>Maximum Heater-Cathode Voltage</td>
<td></td>
</tr>
<tr>
<td>Heater Negative with Respect to Cathode Total DC and Peak</td>
<td>200 Volts</td>
</tr>
<tr>
<td>Heater Positive with Respect to Cathode DC Total DC and Peak</td>
<td>100 Volts</td>
</tr>
<tr>
<td></td>
<td>200 Volts</td>
</tr>
</tbody>
</table>

**DIRECT INTERELECTRODE CAPACITANCES (Unshielded)**

**Section No. 1**

| Grid No. 1 to (h+1k+1g2+1g3+1S) | 4.4 pf      |
| Grid No. 3 to (h+1k+1g1+1g2+1p+1S) | 3.2 pf      |
| Grid No. 1 to Grid No. 3          | 0.005 pf    |

**Section No. 2**

| Grid to Plate | 0.24 pf |
| Input: g to (h+2k+2g2+g3+1k+1S) | 12.0 pf |
| Output: p to (h+2k+2g2+g3+1k+1S) | 9.0 pf |

**RATINGS (Design Maximum Values)^{11}**

**Section No. 1**

<table>
<thead>
<tr>
<th>Voltage Class</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Supply Voltage</td>
<td>330 Volts</td>
</tr>
<tr>
<td>Accelerator Voltage (Q2)</td>
<td>110 Volts</td>
</tr>
<tr>
<td>Peak Positive Gl Voltage</td>
<td>60 Volts</td>
</tr>
<tr>
<td>DC Cathode Current</td>
<td>13 Ma</td>
</tr>
</tbody>
</table>

The Sylvania Type 17X10 is a double dissimilar pentode contained in a T-9 bulb with 12 pin base. Section No. 1 is intended for Limiter/Discriminator service and Section No. 2 is designed as a power pentode.

The 17X10 has controlled heater warm-up time for series string circuits.
RATINGS (Design Maximum Values)\h

Section No. 2

Plate Voltage 165 Volts
Screen Voltage 150 Volts
Plate Dissipation 6.5 Watts
Screen Dissipation 1.8 Watts
DC Cathode Current 65 Ma
Grid No. 1 Circuit Resistance
  Fixed Bias 0.25 Megohms
  Cathode Bias 0.5 Megohms

AVERAGE CHARACTERISTICS

Section No. 1

Gated Beam Discriminator Section - Limiter/Discriminator Service

Input Signal Center Frequency 10.7 10.7 1.5 Ma
Frequency Deviation ±75 ±75 ±25 Ka
Plate Supply Voltage 85 285 270 Volts
Plate Voltage 62 122 121 Volts
Accelerator Voltage 55 100 100 Volts
Cathode Bias Resistor - Variable 200-400 200-400 200-400 Ohms
Plate Load Resistor .085 .330 .330 Meg
Plate Linearity Resistor 470 1500 1000 Ohms
Integrating Capacitor .002 .001 .001 μF
Coupling Capacitor .25 .01 .25 μF
Minimum Signal Voltage for Limiting Action, rms
DC Plate Current .25 .25 1.25 Volts
Accelerator Current 4.1 9.8 10 Ma
Input Signal Level for AM Rejection Adjustment 5 1.25 2.0 2.0 Volts
AM Rejection At Esig = 2.0 Volts, rms 31 20 25 db
AM Rejection at Esig = 3.0 Volts, rms 30 29 30 db
Total Harmonic Distortion 2.0 1.6 1.8 Percent
Peak Audio Output Voltage 6.0 16.6 16.8 Volts

Section No. 2

Power Amplifier

Plate Voltage 115 Volts
Screen Voltage 110 Volts
Grid No. 1 Voltage -6.0 Volts
Peak AF Grid Voltage 6.0 Volts
Plate Resistance (Approx.) 30,000 Ohms
Transconductance 8600 μmhos
Zero Signal Plate Current 36 Ma
Maximum Signal Plate Current 4.0 Ma
Zero Signal Screen Current 3.0 Ma
Maximum Signal Screen Current 9.0 Ma
Load Resistance 3000 Ohms
Total Harmonic Distortion (Approx.)
Maximum Signal Power Output

10 Per Cent
2.4 Watts

NOTES:

1. For series operation of heaters, equipment should be designed so that a normal supply voltage bogey tubes will operate at this value of heater current.

2. Heater warm-up time is defined as the time required for the voltage across the heater to reach 80% of the rated heater voltage after applying four (4) times rated heater voltage to a circuit consisting of the tube heater in series with a resistance equal to three (3) times the rated heater voltage divided by the rated heater current.

3. Heater voltage supply variations shall be restricted to maintain heater current within the specified tolerance.

4. Design Maximum Ratings are limiting values of operating and environmental conditions applicable to a bogey electron tube of a specified type as defined by its published data and should not be exceeded under the worst probable conditions. The tube manufacturer chooses these values to provide acceptable serviceability of the tube, making allowance for the effects of changes in operating conditions due to variations in the characteristics of the tube under consideration. The equipment manufacturer should design so that initially and throughout life no design maximum value for the intended service is exceeded with a bogey tube under the worst probable operating conditions with respect to supply voltage variation, equipment component variation, equipment control adjustment, load variation, signal variation environmental conditions, and variations characteristics of all other electron devices in the equipment.

5. The cathode resistor should be adjusted for maximum am rejection in the output of the limiter-discriminator stage at the specified signal level. Am rejection is measured with an applied signal containing 30% am and 30% fm.

6. At signal levels above specified value, limiting is within ±3 decibels. Adequate shielding between components of the limiter grid and the quadrature grid must be used to insure proper phasing of the voltage developed at the quadrature grid. Standard de-emphasis requirements for fm are included. The Q of the quadrature grid circuit should be high enough to develop a minimum of 1 volt (rms) signal with 2 volts (rms) of the center-frequency signal applied to the limiter grid. It is recommended that the coil be shunted by a minimum of 10 μuf. The capacitance may be composed of tube input capacitance, stray capacitance, and distributed capacitance, as well as physical capacitance.