CHARACTERISTICS

GENERAL DATA
Focusing Method .................................. Electrostatic
Deflection Method ................................ Magnetic
Deflection Angles (Approx.)*
   Horizontal .................................. 76 Degrees
   Diagonal .................................. 87 Degrees
   Vertical .................................. 62 Degrees
Phosphor .................................. Aluminized P4
Fluorescence .................................. White
Persistence .................................. Short to Medium
Faceplate .................................. Bonded Shield
   (Gray Filter Glass Safety Plate Laminated
   Directly to Face of Tube)
Light Transmittance of Faceplate Assembly
   (Approx.) .................................. 40 Percent

ELECTRICAL DATA
Heater Voltage .................................. 6.3 Volts
Heater Current .................................. 0.60 ± 5% Ampere
Heater Warm-up Time¹ .................................. 11 Seconds
Direct Interelectrode Capacitances (Approx.)
   Cathode to All Other Electrodes .................. 5 μf
   Grid No. 1 to All Other Electrodes .......... 6 μf
   External Conductive Coating to Anode² ........... 2500 μf Max.
   .................................. 2000 μf Min.

MECHANICAL DATA
Minimum Useful Screen Dimensions
   (Maximum Assured)
   Height .................................. 15½
   Width .................................. 19½
   Diagonal .................................. 22½
   Area .................................. 282 Sq. Inches
Neck Length .................................. 5½ ± ½
Overall Length .................................. 19 13/16 ± ¾
Bulb .................................. C187 Exp. No. 2
Safety Plate .................................. FP198A or Equiv.
Bulb Contact (Recessed Small Cavity Cap) ......... J1·21
Base .................................. B6·63
Basing .................................. 12L
Weight (Approx.) .................................. 35 Pounds

*Diagonal Deflection Angle is equal to that of earlier registered 21" tubes
generally known as 90° types. Horizontal and vertical deflection angles
are less.

QUICK REFERENCE DATA
Television Picture Tube
23" Direct Viewed
Rectangular Glass Type
Spherical Faceplate
Bonded Shield
Gray Filter Glass
Aluminized Screen
Electrostatic Focus
90° Magnetic Deflection
No Ion Trap
External Conductive Coating

SYLVANIA ELECTRONIC TUBES
A Division of
Sylvania Electric Products Inc.

PICTURE TUBE OPERATIONS
SENeca FALLS, NEW YORK
Prepared and Released By The
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EMPORIUM, PENNSYLVANIA
AUGUST, 1960
PAGE 1 OF 3
File Under
TELEVISION PICTURE TUBES
RATINGS

MAXIMUM RATINGS (Design Maximum Values) Grid Drive Service

<table>
<thead>
<tr>
<th></th>
<th>23TP4</th>
<th>23ACP4</th>
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</thead>
<tbody>
<tr>
<td>Maximum Anode Voltage</td>
<td>22,000</td>
<td>18,000 Vols dc</td>
</tr>
<tr>
<td>Minimum Anode Voltage</td>
<td>12,000</td>
<td>8,000 Vols dc</td>
</tr>
<tr>
<td>Grid No. 4 Voltage (Focusing Electrode)</td>
<td>-550 to +1100 Vols dc</td>
<td></td>
</tr>
<tr>
<td>Grid No. 2 Voltage</td>
<td>550 Vols dc</td>
<td></td>
</tr>
<tr>
<td>Grid No. 1 Voltage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative Bias Value</td>
<td>155 Vols dc</td>
<td></td>
</tr>
<tr>
<td>Negative Peak Value</td>
<td>220 Vols</td>
<td></td>
</tr>
<tr>
<td>Positive Bias Value</td>
<td>0 Vols dc</td>
<td></td>
</tr>
<tr>
<td>Positive Peak Value</td>
<td>2 Vols</td>
<td></td>
</tr>
<tr>
<td>Peak Heater-Cathode Voltage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heater Negative with Respect to Cathode</td>
<td></td>
<td></td>
</tr>
<tr>
<td>During Warm-up Period not to Exceed 15 Seconds</td>
<td>450 Vols</td>
<td></td>
</tr>
<tr>
<td>After Equipment Warm-up Period</td>
<td>200 Vols</td>
<td></td>
</tr>
<tr>
<td>Heater Positive with Respect to Cathode</td>
<td>200 Vols</td>
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</table>

TYPICAL OPERATING CONDITIONS (Grid Drive Service)

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<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Anode Voltage</td>
<td>16,000 Vols dc</td>
</tr>
<tr>
<td>Grid No. 4 Voltage for Focus</td>
<td>0 to +400 Vols dc</td>
</tr>
<tr>
<td>Grid No. 2 Voltage</td>
<td>300 Vols dc</td>
</tr>
<tr>
<td>Grid No. 1 Voltage Required for Cutoff3</td>
<td>-35 to -72 Vols dc</td>
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</table>

CIRCUIT VALUES

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<table>
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<tr>
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<tbody>
<tr>
<td>Grid No. 1 Circuit Resistance</td>
<td>1.5 Megohms Max.</td>
</tr>
</tbody>
</table>

NOTES:

1. 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.

2. External conductive coating must be grounded.

3. Visual extinction of focused raster. Extinction of stationary focused spot will require that these values be about 5 volts more negative.

WARNING:

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer’s Maximum Rated Anode Voltage or 16,000 volts, whichever is less.
Diagram Notes:

1. Reference line is determined by plane C-C' of JEDEC No. 116 Reference Line Gauge, when the gauge is seated against the bulb.

2. Base Pin No. 6 aligns with horizontal centerline (A-A') within 30° and is on same side as anode contact, J1-21.

3. Planes perpendicular to tube axis and passing through points X, Y and Z are located as follows:
   - Plane tangent to crown of face to plane of X: .758" Nom.
   - Plane of X to plane of Y = .463" ± .030".
   - Plane of X to plane of Z = 970" ± .030".