CHARACTERISTICS

GENERAL DATA
Focusing Method ............... Electrostatic
Deflection Method ............ Magnetic
Deflection Angles (Approx.)
  Horizontal ............... 100 Degrees
  Diagonal .................. 114 Degrees
  Vertical .................. 83 Degrees
Phosphor ...................... Aluminized P4
Fluorescence ................ White
Persistence ................. Short to Medium
Faceplate .................... Gray Filter Glass
Light Transmittance (Approx.) ............... 75 Percent

ELECTRICAL DATA

<table>
<thead>
<tr>
<th></th>
<th>23AMP4</th>
<th>23ALP4</th>
<th>23MP4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heater Voltage</td>
<td>6.3</td>
<td>6.3</td>
<td>6.3</td>
</tr>
<tr>
<td>Heater Current ±5%</td>
<td>0.30</td>
<td>0.45</td>
<td>0.60</td>
</tr>
<tr>
<td>Heater Warm-up Time</td>
<td>11</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>Direct Inter electrode Capacitance (Approx.)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
  Cathode to All Other Electrodes ...... 5 μf
  Grid No. 1 to All Other Electrodes ... 6 μf
  External Conductive Coating to Anode² ... 2500 μf Max.
                                             1700 μf Min.

MECHANICAL DATA

Minimum Useful Screen Dimensions (Maximum Assured)
  Height ................... 15 Inches
  Width .................... 19 1/8 Inches
  Diagonal ................ 22 5/16 Inches
Minimum Useful Screen Area ........... 276 Sq. Inches
Neck Length ................ 5 1/8 ± 1/8 Inches
Overall Length ............... 14 3/8 ± 5/16 Inches
Bulb Contact (Recessed Small Cavity Cap) J1-21
Bulb ........................ J1B781
Base ....................... B7-208
Basing ...................... 8HR
Weight (Approx.) ............ 26 Pounds

RATINGS

MAXIMUM RATINGS (Design Maximum Values)

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grid Drive Service ⁴</td>
<td></td>
</tr>
<tr>
<td>Maximum Anode Voltage</td>
<td>22,000 Volts dc</td>
</tr>
<tr>
<td>Minimum Anode Voltage</td>
<td>11,000 Volts dc</td>
</tr>
<tr>
<td>Grid No. 4 Voltage (Focusing Electrode)</td>
<td>-550 to +1100 Volts dc</td>
</tr>
<tr>
<td>Maximum Grid No. 2 Voltage</td>
<td>550 Volts dc</td>
</tr>
<tr>
<td>Minimum Grid No. 2 Voltage</td>
<td>200 Volts dc</td>
</tr>
<tr>
<td>Grid No. 1 Voltage ¹</td>
<td></td>
</tr>
<tr>
<td>Negative Bias Value</td>
<td>155 Volts dc</td>
</tr>
<tr>
<td>Negative Peak Value</td>
<td>220 Volts dc</td>
</tr>
<tr>
<td>Positive Bias Value</td>
<td>0 Volts dc</td>
</tr>
<tr>
<td>Positive Peak Value</td>
<td>2 Volts dc</td>
</tr>
</tbody>
</table>

Peak Heater-Cathode Voltage
  Heater Negative with Respect to Cathode During
    Warm-up Period not to Exceed 15 Seconds 450 Volts
    After Equipment Warm-up Period 200 Volts
  Heater Positive with Respect to Cathode 200 Volts

SYLVANIA
ENGINEERING DATA SERVICE
SYLVANIA
23MP4
23ALP4
23MP4

QUICK REFERENCE DATA

Television Picture Tube
23" Direct Viewed
Rectangular Glass Type
Spherical Faceplate
Gray Filter Glass
Aluminized Screen
Electrostatic Focus
114° Magnetic Deflection
1 1/8" Neck Diameter
No Ion Trap
External Conductive Coating

SYLVANIA ELECTRONIC TUBES
A Division of Sylvania Electric Products Inc.

PICTURE TUBE OPERATIONS
SENeca FALLS, NEW YORK

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OCTOBER, 1961

FILE UNDER
TELEVISION PICTURE TUBES
MAXIMUM RATINGS (Design Maximum Values) (Continued)

Cathode Drive Service\(^3\)
- Maximum Anode Voltage: 22,000 Volts dc
- Minimum Anode Voltage: 11,000 Volts dc
- Grid No. 4 Voltage (Focusing Electrode): -400 to +1250 Volts dc
- Maximum Grid No. 2 Voltage: 700 Volts dc
- Minimum Grid No. 2 Voltage: 300 Volts dc
- Cathode Voltage
  - Positive Bias Value: 155 Volts dc
  - Positive Peak Value: 220 Volts dc
  - Negative Bias Value: 0 Volts dc
  - Negative Peak Value: 2 Volts dc
- Peak Heater-Cathode Voltage
  - Heater Negative with Respect to Cathode During
    - Warm-up Period Not to Exceed 15 Seconds: 450 Volts
    - After Equipment Warm-up Period: 200 Volts
  - Heater Positive with Respect to Cathode: 200 Volts

TYPICAL OPERATING CONDITIONS

Grid Drive Service\(^4\)
- Anode Voltage: 18,000 Volts dc
- Grid No. 4 Voltage for Focus: 0 to 400 Volts dc
- Grid No. 2 Voltage: 400 Volts dc
- Grid No. 1 Voltage Required for Cutoff\(^5\): -46 to -94 Volts dc

Cathode Drive Service\(^3\)
- Anode Voltage: 18,000 Volts dc
- Grid No. 4 Voltage for Focus: 0 to 400 Volts dc
- Grid No. 2 Voltage: 400 Volts dc
- Cathode Voltage Required for Cutoff\(^5\): 42 to 78 Volts dc

CIRCUIT VALUES
- Grid No 1 Circuit Resistance: 1.5 Megohms Max.

NOTES:
1. Heater warm-up time is defined as the time required for the voltage across the heater to reach 80% of its rated value after applying (4) times rated heater voltage to a circuit consisting of the tube heater in series with a resistance equal to three (3) times rated heater voltage divided by rated heater current.
2. External conductive coating must be grounded.
3. Voltages are positive with respect to Grid No. 1 unless indicated otherwise.
4. Voltages are positive with respect to Cathode unless indicated otherwise.
5. Visual extinction of focused raster. For cutoff of the undeflected spot, the absolute value of the bias between cathode and grid will increase by about 5 volts.

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. 126 Reference Line Gauge, when the gauge is seated against the bulb.
2. Base Pin No. 4 aligns with horizontal centerline (A-A') within 30° and is on same side as anode contact, J1-21.