BEAM POWER TUBE

Duodecar type used as horizontal-deflection amplifier in television receivers. Outlines section, 16A; requires duodecar 12-contact socket. A separate connection is provided for grid No.3 to minimize "snivets."

12GH

Heater Voltage ........................................... 21 volts
Heater Current ........................................... 0.45 ampere
Heater Warm-up Time .................................... 11 seconds
Heater-Cathode Voltage:
Peak value .................................................. ±200 max volts
Average value .............................................. 100 max volts

Class A, Amplifier

CHARACTERISTICS

<table>
<thead>
<tr>
<th>Plate Voltage</th>
<th>5000</th>
<th>60</th>
<th>60</th>
<th>130</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grid-No.5 (Suppressor-Grid) Voltage</td>
<td>0</td>
<td>0</td>
<td>25</td>
<td>0</td>
</tr>
<tr>
<td>Grid-No.2 (Screen-Grid) Voltage</td>
<td>130</td>
<td>130</td>
<td>130</td>
<td>130</td>
</tr>
<tr>
<td>Grid-No.1 (Control-Grid) Voltage</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td>Plate Resistance (Approx.)</td>
<td>11000 ohms</td>
<td>9100 μmhos</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transconductance</td>
<td>24°</td>
<td>28°</td>
<td>50 mA</td>
<td></td>
</tr>
<tr>
<td>Grid-No.3 Current</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grid-No.2 Current</td>
<td>23</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grid-No.1 Voltage (Approx.) for plate current of 1 mA</td>
<td>66</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Triode Amplification Factor</td>
<td>4.7</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*This value may be measured by a method involving a recurrent waveform such that the maximum ratings of the tube will not be exceeded.

Horizontal-Deflection Amplifier

For operation in a 525-line, 30-frame system

MAXIMUM RATINGS (Design-Maximum Values)

| DC Plate Supply Voltage | 770 volts |
| Peak Positive-Pulse Plate Voltage# | 6500 volts |
| Peak Negative-Pulse Plate Voltage | 1500 volts |
| Grid-No.3 Voltage, Positive-bias value | 70 volts |
| Grid-No.2 Voltage | 220 volts |
| Grid-No.1 Voltage, Negative-bias value | 55 volts |
| Peak Negative-Pulse Grid-No.1 Voltage | 330 volts |
| Average Cathode Current | 230 mA |
| Peak Cathode Current | 300 mA |
| Plate Dissipation | 18 watts |
| Grid-No.2 Input | 3.5 watts |
| Bulb Temperature (At hottest point) | 220 °C |

MAXIMUM CIRCUIT VALUE

| Grid-No.1-Circuit Resistance | 1 megohm |

# Pulse duration must not exceed 15% of a horizontal scanning cycle (10 microseconds).

BEAM POWER TUBE

21KQ6

29KQ6/PL521

Magnoval type used as horizontal-deflection amplifier in television receivers. Outlines section, 40A; requires magnoval 9-contact socket. Type 29KQ6/PL521 is identical with type 21KQ6 except for heater ratings.

21KQ6 29KQ6/PL521
Heater Voltage ........................................... 21.5 29 volts
Heater Current ........................................... 0.45 0.3 ampere
Heater-Cathode Voltage:
  Peak value  \(\pm 240\) volts
  Average value \(\pm 240\) volts

**CHARACTERISTICS**

- **Plate Voltage**  40  50 volts
- **Grid-No.3 (Suppressor-Grid) Voltage**  0  0 volts
- **Grid-No.2 (Screen-Grid) Voltage**  135  200 volts
- **Grid-No.1 (Control-Grid) Voltage**  0  -12 volts
- **Plate Current**  450  560† mA
- **Grid-No.2 Current**  35  50† mA
- **Grid-No.1 Voltage for plate current of 50 \(\mu\)A**  -55 max. volts

† This value can be measured by a method involving a recurrent waveform such that the maximum ratings of the tube will not be exceeded.

**Horizontal-Deflection Amplifier**

*For operation in a 525-line, 30-frame system*

**MAXIMUM RATINGS** (Design-Maximum Values)

- **Plate Voltage**  275 volts
- **Peak Positive-Pulse Plate Voltage**  6500 volts
- **Peak Negative-Pulse Plate Voltage**  1650 volts
- **Grid-No.3 Voltage**  70 volts
- **Grid-No.2 Voltage**  275 volts
- **Peak Negative-Pulse Grid-No.1 Voltage**  330 volts
- **Average Cathode Current**  275 mA

**MAXIMUM CIRCUIT VALUES**

- **Grid-No.1-Circuit Resistance**  0.5 megohms
- **Grid-No.1-Circuit Resistance, for horizontal-deflection circuit**  2.2 megohms

# Pulse duration must not exceed 22% of a horizontal scanning cycle (18 microseconds).

21LG6

Refer to chart at end of section.

21LG6A

**BEAM POWER TUBE**

Duodecar type used as horizontal-deflection amplifier in color television receivers. **Outlines section,** 16B; requires duodecar 12-contact socket. **Heater:** volts, 21; ampere, 0.6; maximum heater-cathode volts, \(\pm 200\) peak, 100 average.

**Class A\(_1\) Amplifier**

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Connection</th>
<th>Triode*</th>
<th>Pentode Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Voltage</td>
<td>125 V</td>
<td>6000 V</td>
</tr>
<tr>
<td>Grid-No.2 (Screen-Grid) Voltage</td>
<td>125 V</td>
<td>125 V</td>
</tr>
<tr>
<td>Grid-No.1 (Control-Grid) Voltage</td>
<td>25</td>
<td>0</td>
</tr>
<tr>
<td>Plate Resistance (Approx.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transconductance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plate Current</td>
<td></td>
<td>600</td>
</tr>
<tr>
<td>Grid-No.2 Current</td>
<td></td>
<td>42</td>
</tr>
<tr>
<td>Grid-No.1 Voltage (Approx.) for plate current of 1 mA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amplification Factor</td>
<td>3.6</td>
<td></td>
</tr>
</tbody>
</table>

**Horizontal-Deflection Amplifier**

*For operation in a 525-line, 30-frame system*

**MAXIMUM RATINGS** (Design-Maximum Values)

<table>
<thead>
<tr>
<th>Connection</th>
<th>DC Plate Supply Voltage</th>
<th>Peak Positive-Pulse Plate Voltage</th>
<th>Peak Negative-Pulse Plate Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pentode Connection</td>
<td>900 volts</td>
<td>7500 volts</td>
<td>100 volts</td>
</tr>
</tbody>
</table>
TECHNICAL DATA

Grid-No.2 Voltage ............................................. 250 volts
Grid-No.1 Voltage, Negative-bias value .................. 300 volts
Plate Dissipation ............................................. 28 watts
Grid-No.2 Input ............................................... 5 watts
Average Cathode Current .................................. 315 mA
Peak Cathode Current ....................................... 1100 mA
Bulb Temperature ........................................... 110°C

MAXIMUM CIRCUIT VALUES

Grid-No.1 Circuit Resistance:
With feedback type high voltage regulation ........... 1.8 megohms
With shunt-type high voltage regulation (switching mode) .... 2.2 megohms
* Grid-No. 2 tied to plate.
# Pulse duration must not exceed 15% of a horizontal scanning cycle (10 microseconds).
■ A bias resistor or other means is required to protect the tube in absence of excitation.

Refer to type 6LR8.
Refer to type 6LU8.
Refer to chart at end of section.

21LR8
21LU8
21MY8
22
22BH3
22BH3A

HALF-WAVE VACUUM RECTIFIER

22BW3
17BW3

Duodecar type used as damper tube in horizontal-deflection circuits of television receivers. Outlines section, 8D; requires duodecar 12-contact socket. Type 17BW3 is identical with type 22BW3 except for heater ratings.

Heater Voltage (ac/dc) ....................................... 16.8 volts
Heater Current .................................................. 0.6 ampere
Heater Warm-up Time ........................................ 11 seconds
Direct Inter-electrode Capacitances:
Cathode to Heater and Plate ................................ 8.5 pF
Plate to Cathode and Heater ................................ 6 pF
Heater to Cathode ............................................ 3.8 pF

Damper Service

For operation in a 525-line, 30-frame system

MAXIMUM RATINGS (Design-Maximum Values)

Peak Inverse Plate Voltage# ................................ 5000 volts
Peak Plate Current ........................................... 1100 mA
Average Plate Current ...................................... 175 mA
Plate Dissipation ............................................. 6.5 watts
Heater-Cathode Voltage:
Peak value ..................................................... 1000 volts
Average value ................................................ 0 volts

CHARACTERISTICS, Instantaneous Value

Tube Voltage Drop for plate current of 350 mA ............. 32 volts
# Pulse duration must not exceed 15% of one horizontal scanning cycle (10 microseconds).

Refer to type 6DE4/6CQ4.
Refer to type 6JF6.
Refer to chart at end of section.

22DE4
22JF6
22JG6

Refer to type 6JG6A.

22JG6A