RIMGUARD II
TELEVISION PICTURE TUBE

GENERAL
Rectangular Face .......................... 23 in. Diagonal
Reinforced Envelope ......................... Integral Mounting Lugs
Electrostatic Focus ......................... Magnetic Deflection
Deflection Angle .......................... 110° Diagonal
Aluminised Screen ......................... White Fluorescence
Grey Glass ............................... 45% Transmission (approx.)
Straight Gun ......................... Non Ion Trap

External Conductive Coating
Heater Voltage \( V_h \) 6.3 V
Heater Current \( I_h \) 0.3* A

DESIGN CENTRE RATINGS
Maximum Second and Fourth Anode Voltage \( V_{a2,a4}(\text{max}) \) 20† kV
Minimum Second and Fourth Anode Voltage \( V_{a2,a4}(\text{min}) \) 13 kV
Maximum Third Anode Voltage \( V_{a3}(\text{max}) \) +1000 to −500 V
Maximum First Anode Voltage \( V_{a1}(\text{max}) \) 700 V
Maximum Heater to Cathode Voltage, Heater Negative (d.c) \( V_{h-k}(\text{max}) \) 250 V
Maximum Peak Heater to Cathode Voltage, Heater Negative \( V_{h-k}(\text{pk})_{\text{max}} \) 400‡§ V
Maximum Impedance, Grid to Cathode (50 Hz) \( Z_{g-k}(\text{max}) \) 0.5 M Ω
Maximum Resistance, Grid to Cathode \( R_{g-k}(\text{max}) \) 1.5 M Ω

All voltages referred to cathode.

* The CRT heater should always be connected at the chassis end in a series heater chain.
† For \( I_{a2,a4} = 0 \).
‡ Absolute rating.
§ During a warming-up period not exceeding 45 seconds.
The A59-25W is electrically identical to the AW59-91.
The mechanical fixing of this tube is interchangeable with other existing reinforced tubes.
Tubes incorporating a B8H sparkguard base will have a suffix S after the type number. For details of the sparkguard base see separate sheet.

H J R & L May, 1967

THORN — A E I RADIO VALVES & TUBES LTD.
CATHODE RAY TUBES

INTER-ELECTRODE CAPACITANCES

<table>
<thead>
<tr>
<th>Description</th>
<th>Ck-all (pF)</th>
<th>Cg-all (pF)</th>
<th>ca2,a4-M1 (pF)</th>
<th>ca2,a4-M2 (pF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cathode to all</td>
<td>3.0</td>
<td>3.5</td>
<td>1500</td>
<td>300</td>
</tr>
<tr>
<td>Grid to all</td>
<td>7.0</td>
<td>8.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anode 2 and Anode 4 to External Conductive Coating, M1 (approx.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anode 2 and Anode 4 to Shell, M2 (approx.)</td>
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</tbody>
</table>

* Inter-electrode capacitances with holder capacitance balanced out.
† Total inter-electrode capacitances including an AEI B8H holder VH68/81 (8 pin).

TYPICAL OPERATION—Grid Modulation (Voltage referred to cathode)

- Second and Fourth Anode Voltage: \( V_{a2,a4-4} = 18 \) kV
- First Anode Voltage\( \dagger \): \( V_{a1-1} = 400 \) V
- Beam Current: \( I_{a2+a4} = 350 \) mA
- Third Anode Voltage Range for Focus: \( V_{a3-k} = 0 \) to 400 V
- Average Peak to Peak Picture Modulating Voltage: \( 3.5 \) to 3.5 kV
- Grid to Cathode Voltage for cut-off of raster: \( V_{g-k} = -57 \) V

TYPICAL OPERATION—Cathode Modulation (Voltage referred to grid)

Second and Fourth Anode Voltage: \( V_{a2,a4-g} = 18 \) kV
First Anode Voltage\( \dagger \): \( V_{a1-g} = 400 \) V
Beam Current: \( I_{a2+a4} = 350 \) mA
Third Anode Voltage Range for Focus: \( V_{a3-g} = 0 \) to 400 V
Average Peak to Peak Picture Modulating Voltage: \( 3.5 \) to 3.5 kV
Cathode to Grid Voltage for cut-off of raster: \( V_{k-g} = 51 \) V

\( \dagger \)Within this range a higher First Anode Voltage will provide an improved focus performance.

PICTURE CENTRING

- Maximum magnet flux density at centre of neck should not be less than \( 17 \) G
- Maximum distance of centre of magnetic field from reference line \( 53 \) mm

DEFLECTION ANGLES

- Height \( 82^\circ \)
- Width \( 99^\circ \)
- Diagonal \( 110^\circ \)

TUBE WEIGHT (approx.)—Net 30 lb (13.5 kg)

Note:
If this tube is operated at voltages in excess of 16kV, x-ray radiation shielding may be necessary to avoid possible danger of personal injury from prolonged exposure at close range.

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It is recommended that the mask used with this tube is flexible enough to take up small variations in fixing and bulb contours.

The metal shell M2 must be connected to chassis via a 2MΩ resistor.

* The bolts to be used for mounting the tube must lie within circles of 9.5 mm diameter centred on these true positions (Diagonal 640). One of the four lugs may deviate 2 mm maximum from the plane through the other three lugs.

† Determined by reference line gauge No. 16 (JEDEC No. 126).

May, 1967
GRID MODULATION

\[ I_{a_2 + a_4} / V_{g-k} \]
\[ V_{a_2 + a_4} = 14 \text{ to } 20 \text{kV} \]

FIGURES FOR EXTINCTION OF FOCUSED RASTER

<table>
<thead>
<tr>
<th>( V_{a_1-k} )</th>
<th>400</th>
<th>450</th>
<th>500 (V)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( V_{g-k} )</td>
<td>-57</td>
<td>-63</td>
<td>-69 (V)</td>
</tr>
</tbody>
</table>

GRID TO CATHODE VOLTAGE \((V_{g-k})\) V

BEAM CURRENT \((I_{a_2 + a_4})\) mA
CATHODE MODULATION

\[ I_{a_2 + a_4} / V_{k-g} \]

\[ V_{a_2 + a_4} = 14 \text{ to } 20 \text{kV} \]

FIGURES FOR EXTINCTION OF FOCUSED RASTER

\[ V_{a_1-g} = 400, 450, 500 \text{ (V)} \]

\[ V_{k-g} = 51, 56, 62 \text{ (V)} \]