RADAR TUBE

Direct-viewing radar tube with 12-in. diameter metal-backed magnesium fluoride screen, magnetic deflection and low voltage electrostatic focusing lens.

This data should be read in conjunction with GENERAL OPERATIONAL RECOMMENDATIONS—CATHODE RAY TUBES which precede this section of the handbook.

HEATER

Suitable for series or parallel operation

\[ V_n = 6.3 \text{ V} \]
\[ I_n = 300 \text{ mA} \]

CAPACITANCES

\[ C_{R \text{ all}} < 8.0 \text{ pF} \]
\[ C_{L \text{ all}} < 8.0 \text{ pF} \]
\[ C_{a2\text{a4-M}} = 1200 \text{ pF} \]

SCREEN

Metal-backed
Fluorescent colour: orange with orange afterglow
Useful screen diameter: 265 mm

PERSISTENCE

F screen: very long
L screen: long
See curves included in this section of the handbook for screen types F and L.

FOCUSBING

Low voltage electrostatic

DEFLECTION

Double magnetic
MOUNTING POSITION

Any, except vertical with the screen downwards and the axis of the tube making an angle of less than 20° with the vertical.

OPERATING CONDITIONS

\[
\begin{align*}
V_{a2 \to a4} & \leq 12 \text{ kV} \\
\uparrow V_{a3} \text{ (focus electrode)} & \leq -200 \text{ to } +200 \text{ V} \\
V_{at} & \leq 300 \text{ V} \\
l_{at} & \leq -15 \text{ to } +15 \mu\text{A} \\
V_g \text{ for cut-off} & \leq -30 \text{ to } -70 \text{ V}
\end{align*}
\]

†With the small change in focus spot size with variation of focus voltage the limit of -200V to +200V is such that an acceptable focus quality is obtained within this range. If it is required to pass through the point of focus a voltage of at least -300V to +300V will be required.

LIMITING VALUES (absolute ratings)

\[
\begin{align*}
V_{a2 \to a4} \text{ max.} & \leq 18 \text{ kV} \\
V_{a2 \to a4} \text{ min.} & \leq 8.0 \text{ kV} \\
+V_{a3} \text{ max.} & \leq 500 \text{ V} \\
-V_{a3} \text{ max.} & \leq 500 \text{ V} \\
V_{at} \text{ max.} & \leq 500 \text{ V} \\
V_{at} \text{ min.} & \leq 200 \text{ V} \\
-V_k \text{ max.} & \leq 200 \text{ V} \\
-V_k \text{ min.} & \leq 1.0 \text{ V} \\
Z_k \text{ max.} \text{ (f = 50c/s)} & \leq 500 \text{ kΩ} \\
R_k \text{ max.} & \leq 1.5 \text{ MΩ} \\
V_{h-k} \text{ max.} & \leq \pm 150 \text{ V} \\
R_{h-k} \text{ max.} & \text{ See note*}
\end{align*}
\]

*When the heater is supplied from a separate transformer \( R_{h-k} \text{ max.} \) is 1.0MΩ.

When the heater is in a series chain or earthed, \( Z_k \text{ max.} \) is 100kΩ where \( Z_k \) is the 50c/s impedance between earth and cathode.
RADAR TUBE

AF31-10
AL31-10

Reference line point at which 36-mm dia ring gauge is stopped

Effective centre of deflection

<table>
<thead>
<tr>
<th>Ring gauge (mm)</th>
<th>Distance from centre of screen (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>230</td>
<td>150 ± 9</td>
</tr>
<tr>
<td>180</td>
<td>191 ± 8</td>
</tr>
<tr>
<td>130</td>
<td>222 ± 7</td>
</tr>
<tr>
<td>80</td>
<td>249 ± 6</td>
</tr>
<tr>
<td>36-1</td>
<td>272 ± 3.5</td>
</tr>
</tbody>
</table>

All dimensions in mm
FINAL ANODE CURRENT PLOTTED AGAINST GRID VOLTAGE
LIMITS OF GRID CUT-OFF VOLTAGE FOR FIRST ANODE VOLTAGES FROM 200V TO 500V