



INSTRUMENT
CATHODE RAY TUBE

BRIEF DATA

The 700E has a 2 in. x 1 in. rectangular face and incorporates electrostatic focus and deflection. Low current flow to both x and y deflector plates enables numbers of tubes to be operated from common time base supplies. This together with the small dimensions of the tube and its high brightness makes the 700E particularly useful when the tube is to be used in banks for the display of digital information.

HEATER

Heater voltage	6.3	V
Heater current	0.3	A

SCREEN

Tube normally supplied with 24 phosphor as 724E.

Fluorescence	Green
Phosphorescence	Green
Persistence	1 - 5 ms
E.I.A. phosphor code	P31
GEC phosphor code	24
Pro Electron phosphor code	GH

Other screens are available to special order (see data sheet 'CRT Screens').

RATINGS (Absolute)

	Max	Min	
Focus voltage	1.0	—	kV
First & third anode voltage	2.5	1.5	kV
*Negative grid voltage	200	0	V
X deflector plate to a1, a3 voltage (peak)	500	—	V
Y deflector plate to a1, a3 voltage (peak)	500	—	V
Heater-cathode voltage	180	—	V
X deflector plate to a1, a3 circuit resistance	0.25	—	MΩ
Y deflector plate to a1, a3 circuit resistance	1.0	—	MΩ
Grid-cathode circuit resistance	1.5	—	MΩ

*The dc value of the modulator voltage must never become positive with respect to cathode.

CAPACITANCES

Cathode to all	4	pF
Grid to all	7	pF
Deflector plates x1 to x2	2	pF
Deflector plates y1 to y2	3	pF
Deflector plates x1 to all electrodes except x2	5	pF
Deflector plates y1 to all electrodes except y2	6	pF
Deflector plates x2 to all electrodes except x1	5	pF
Deflector plates y2 to all electrodes except y1	6	pF

TYPICAL OPERATION (for character generation)

First & third anode voltage	$V_{a1,3}$	2.0	kV
Second anode voltage	V_{a2}	60	V
Control grid voltage for spot cut-off	$-V_g$	60 - 100	V
Maximum x deflection factor	D_x	46.0	V/cm
Maximum y deflection factor	D_y	107.2	V/cm
Line width (typical) at $I_k = 500 \mu A$		1.5	mm

CHARACTERISTICS

	Min	Max	
Focus voltage	V_{a2} 10	45	$V/kV_{a1,3}$
Control grid voltage for spot cut-off	$-V_g$ 30	50	$V/kV_{a1,3}$
X deflection factor	D_x 20.4	23.0	$V/cm/kV_{a1,3}$
Y deflection factor	D_y 44.5	53.6	$V/cm/kV_{a1,3}$
*Heater-cathode resistance	r_{h-k} 1.5		M Ω
Grid-cathode resistance	r_{g-k} 10		M Ω

*With heater $\pm 125V$ to cathode.

Pattern Distortion

The edges of a test raster will lie between two concentric rectangles of 46.5 mm x 20.75 mm and 43.5 mm x 19.25 mm.

Deflection Linearity

The deflection factor for a deflection of less than 75% of the useful scan will not differ from that for a deflection of 25% by more than 2%.

Orientation

Looking at the screen with the base spigot to the left, a positive potential applied to x1 will deflect the spot to the left and a positive potential applied to y1 will deflect the spot downwards.

Focus Current

The maximum focus electrode (a2) current will be 20 μA with the tube blacked out and $V_{a2} = 60 V$.

Deflector Plate Current

The maximum deflector plate current will be $7 \mu\text{A}$ with a $4.5 \times 2.0 \text{ cm}$ raster and $I_k = 500 \mu\text{A}$.

Minimum Scanned Area

X axis	4.5	cm
Y axis	2.4	cm

Angle between deflection axes: $90^\circ \pm 1^\circ$.

Spot Position

The undeflected spot will lie within a circle of 3.0 mm radius centred on the tube face.

MOUNTING

The tube should not be supported by the base alone, but should preferably be held in a suitable rubber mask at the screen and by a clamp round the magnetic shield near the base.

WEIGHT

The weight of the tube is 170 g (6 oz).

BASE CONNECTIONS

Base: B12A

Pin 1: h	Pin 7: y_2
2: g	8: $a_{1,3}$
3: k	9: x_2
4: a_2	10: x_1
5: NC	11: NC
6: y_1	12: h

SOCKET

The socket should have sufficient freedom of movement to accommodate the tube overall length and base orientation tolerances.

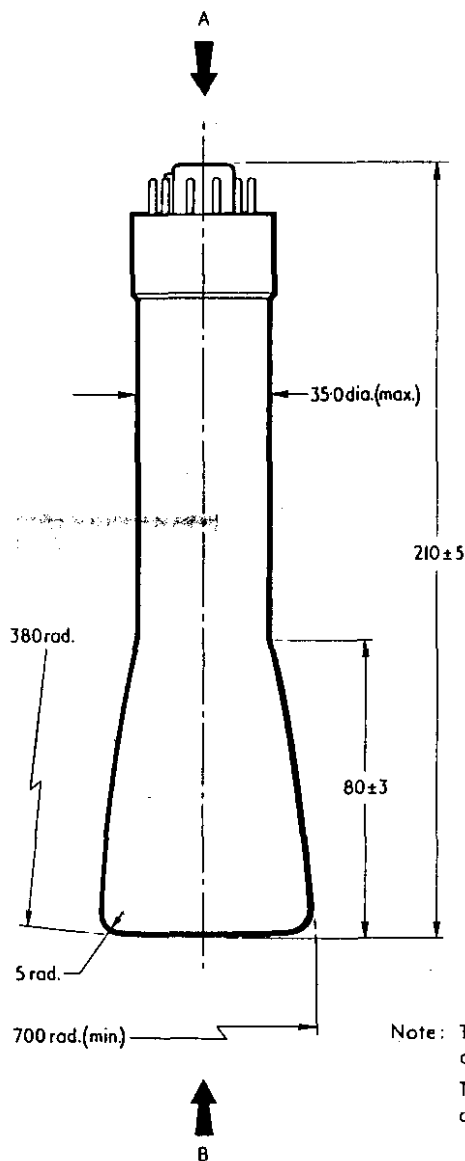
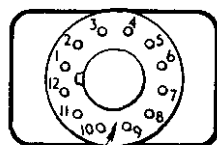
MAGNETIC SHIELDING

The shield should be of high permeability material, of a thickness determined by the magnetic field at the tube position. The shield should be earthed. A suitable shield is available from Magnetic Shields Ltd., Headcorn Road, Staplehurst, Tonbridge, Kent.

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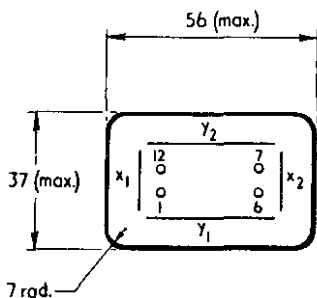
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OUTLINE



B12A base

View in direction of arrow A



View in direction of arrow B

Note: The base spigot is in line with the major axis of the tube face to within $\pm 10^\circ$
 The x-trace is in line with the major axis of the tube face to within $\pm 2^\circ$

All dimensions in millimetres