



mono-accelerated

**DOUBLE GUN
CATHODE RAY TUBE**

BRIEF DATA

A double gun oscilloscope tube with a 13 cm (5¼ inch) flat screen. Deflector plates and final anode connections are brought out to side pins. The screen is fully scanned by both guns. This tube is a shortened version of the 1300A which is now obsolete.

HEATER

Heater voltage	6.3	V
Heater current (each gun)	0.3	A

SCREEN

	1324A/2	1346A/2
Fluorescence	Green	White
Phosphorescence	Green	Yellowish-green
Persistence	1 - 5 ms	10 - 60 s
EIA phosphor code	P31	P7
GEC phosphor code	24	46
Pro Electron phosphor code	GH	GM

RATINGS (Absolute)

		Max	Min	
Third anode and wall coating voltage	V_{a3}, V_m	5.0	2.0	kV
Focus voltage	V_{a2}	1.5	—	kV
First anode voltage	V_{a1}	2.0	1.0	kV
Control grid voltage	$-V_g$	200	0	V
Y plates to third anode voltage	$V_{y1, y2-a3}$	300	—	V
X plates to third anode voltage	$V_{x1, x2-a3}$	300	—	V
Heater-cathode voltage	V_{h-k}	150	—	V
Y deflector plate circuit resistance	R_{y-a3}	2.0	—	MΩ
X deflector plate circuit resistance	R_{x-a3}	2.0	—	MΩ
Grid to cathode circuit resistance	R_{g-k}	1.0	—	MΩ
*Peak grid voltage	$+V_g$ (pk)	2.0	—	V

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

CAPACITANCES

Cathode to all other electrodes	5.0	pF
Grid to all other electrodes	7.0	pF
Deflector plates y1 to y2	2.0	pF
Deflector plates y1 to all electrodes except y2	3.0	pF
Deflector plates y2 to all electrodes except y1	3.0	pF
Deflector plates x1 to x2	2.0	pF
Deflector plates x1 to all electrodes except x2	4.0	pF
Deflector plates x2 to all electrodes except x1	4.0	pF

EQUIPMENT DESIGN RANGE

		Max	Min	
Focus voltage	V_{a2}	990	600	V
Control grid voltage for spot cut-off	$-V_g$	50	25	V/k V_{a1}
Y deflection factor	D_y	6.7	5.0	V/cm/k V_{a3}
X deflection factor	D_x	10	8.0	V/cm/k V_{a3}
Astigmatism correction	V_{a3-y}	+33	-33	V/k V_{a3}

TYPICAL OPERATION (All operating potentials are with respect to cathode)

Third anode and wall coating voltage	V_{a3}, V_m	3	kV
Focus voltage	V_{a2}	600 - 990	V
First anode voltage	V_{a1}	1.5	kV
Control grid voltage for spot cut-off	$-V_g$	58	V
Maximum y deflection factor	D_y	20	V/cm
Maximum x deflection factor	D_x	30	V/cm
*Line width typical		0.6	mm

*Measured by means of a microscope at the centre of x and y axes for each gun, at a beam current of 1.0 μ A.

†The wall coating, m, and the mean potential of the deflector plates are normally held constant at a_3 potential. Adjustment of the a_3 and a_3' potentials relative to the mean potential of the deflector plates may be used as an astigmatism control.

DISPLAY CHARACTERISTICS (Typical operation)

Spot Position

The undeflected spots will lie within two 10 mm dia. circles whose centres lie on the y axis ± 12.5 mm from the geometric centre of the tube face.

Minimum Scanned Area

Minimum useful scanned area is ± 57 mm along the axes intersecting at the centre of the tube face.

Deflection Linearity

The difference between the deflection sensitivity for 25 % and 75 % of the useful scanned area will not be greater than 2 % for each gun.

Pattern Distortion

The edges of a test raster 72 mm x 72 mm will lie between two concentric squares of 68 mm and 72 mm sides.

Angle between deflection axes of each gun is $90^\circ \pm 1^\circ$. Angle between the x deflection axes of the two guns is not greater than 1° .

Orientation

Looking at the screen with pin 10 uppermost, a positive potential applied to x1 will deflect the spot to the left and a positive potential applied to y1 will deflect the spot upwards.

MOUNTING

The tube may be mounted in any position but must not be supported by the base alone. It should, preferably, be held in a suitable rubber mask at the screen and by a clamp round the magnetic shield near the base. The socket should have sufficient freedom of movement to accommodate overall length and base orientation tolerances.

WEIGHT

The weight of the tube alone is approximately 1.1 kg (2½ lb).

BASE CONNECTIONS

Base : B12F

Pin 1 : g''

2 : k''

3 : h''

4 : h''

5 : a2''

6 : a1''

Pin 7 : a1'

8 : a2'

9 : h'

10 : h'

11 : k'

12 : g'

Pins 6 and 7 are internally connected.

MAGNETIC SHIELD

A suitable magnetic shield may be obtained from Magnetic Shields Ltd., Headcorn Road, Staplehurst, Tonbridge, Kent.

WARNING

Care should be taken not to expose the tube to strong magnetic fields either in use or during storage.

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OUTLINE

