

## Oscilloscope Tube

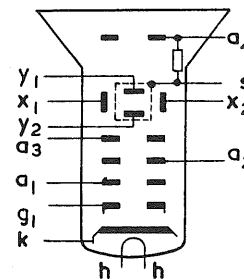
D16-100..

## PRELIMINARY DATA

## GENERAL

This 10 cm x 10 cm square faced tube with electrostatic focusing and deflection is designed for use as an x-y plotter. The tube incorporates spiral post deflection acceleration.

Heater voltage	$V_h$	6.3	V
Heater current	$I_h$	0.3	A



## ABSOLUTE RATINGS

		Max	Min	
Fourth anode voltage	$V_{a4}$	6.0	1.5	kV
Third anode voltage	$V_{a3}$	2.3	0.7	kV
Second anode voltage	$V_{a2}$	1.0	0	kV
First anode voltage	$V_{a1}$	2.2	0.7	kV
Negative grid voltage	$-V_{g1}$	200	1.0	V
Peak x plate to third anode voltage	$v_{x-a3}(pk)$	500	-	V
Peak y plate to third anode voltage	$v_{y-a3}(pk)$	500	-	V
x plate to third anode resistance	$R_{x-a3}$	5.0	-	MΩ
y plate to third anode resistance	$R_{y-a3}$	100	-	kΩ
Control grid to cathode resistance	$R_{g1-k}$	1.5	-	MΩ
Second anode current	$I_{a2}$	10	-	μA
P.D.A. ratio ( $V_{a4}/V_{a3}$ )		3.2:1		
Helix resistance		-	50	MΩ

All voltages referred to cathode unless otherwise stated.

## PHOSPHOR SCREEN

This type is usually supplied with GH phosphor (D16-100GH) giving a green trace of medium short persistence. Other phosphor screens can be made available to special order.

Thorn Radio Valves and Tubes Limited

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# INTER - ELECTRODE CAPACITANCES

Grid 1 to all	$C_{g1-all}$	10.5	pF
Cathode to all	$C_{k-all}$	3.5	pF
$x_1$ plate to $x_2$ plate	$C_{x1-x2}$	2.3	pF
$y_1$ plate to $y_2$ plate	$C_{y1-y2}$	1.0	pF
$x_1$ plate to all, less $x_2$ plate	$C_{x1-all,less\ x2}$	6.2	pF
$x_2$ plate to all, less $x_1$ plate	$C_{x2-all,less\ x1}$	6.4	pF
$y_1$ plate to all, less $y_2$ plate	$C_{y1-all,less\ y2}$	5.4	pF
$y_2$ plate to all, less $y_1$ plate	$C_{y2-all,less\ y1}$	5.2	pF
$x_1, x_2$ plates to $y_1, y_2$ plates	$C_{x1,x2-y1,y2}$	1.2	pF
Grid 1 to $x_1, x_2$ plates	$C_{g1-x1,x2}$	0.8	pF
Grid 1 to $y_1, y_2$ plates	$C_{g1-y1,y2}$	0.8	pF

## TYPICAL OPERATION - voltages with respect to cathode.

Fourth anode voltage	$V_{a4}$	2.5	4.0	4.5	kV
Mean deflector plate potential		1250	2000	1500	V
Third anode voltage for optimum astigmatism correction	$V_{a3}$	1200 to 1300	1925 to 2075	1425 to 1575	V
Second anode voltage for optimum focus	$V_{a2}$	250 to 450	400 to 720	280 to 580	V
First anode voltage	$V_{a1}$	1250	2000	1500	V
Shield voltage for optimum raster shape	$V_s$	1200 to 1300	1925 to 2075	1425 to 1575	V
Control grid voltage for cut-off	$V_{g1}$	-45 to -85	-72 to -135	-53 to -105	V
x deflection coefficient	$D_x$	13.5 to 17	21.6 to 27.2	18.5 to 23.5	V/cm
y deflection coefficient	$D_y$	13.5 to 17	21.6 to 27.2	18.5 to 23.5	V/cm
Line width at 10 $\mu$ A beam current					
Shrinking raster measurement at centre		0.50	0.31	0.32	mm
Shrinking raster measurement at corner		0.68	0.58	0.58	mm
Grid drive for 10 $\mu$ A beam current (approx.)		28	26	27	V

## **RASTER DISTORTION AND ALIGNMENT**

The following data applies for the typical operation conditions.

The undeflected spot will fall in a circle of 6 mm radius about the centre of the tube face.

Raster distortion: the edges of a test raster will fall between two concentric squares 10 cm x 10 cm and 9.7 cm x 9.7 cm at a p.d.a. ratio not greater than 2:1.

Rectangularity of x and y axes is  $90^\circ \pm 1^\circ$ .

It is not advisable that the deflector plates be run asymmetrically, or severe raster distortion could result and the focus quality could not be guaranteed. It is preferable that the tube be operated with mean x and y potentials equal, otherwise the raster distortion and focus quality will suffer and the limits for  $V_{a3}$  and  $V_s$  will differ from specification.

It is recommended that the maximum p.d.a. ratio should not be exceeded as this may reduce scan area.

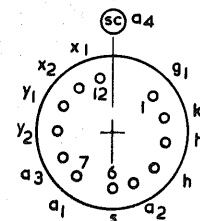
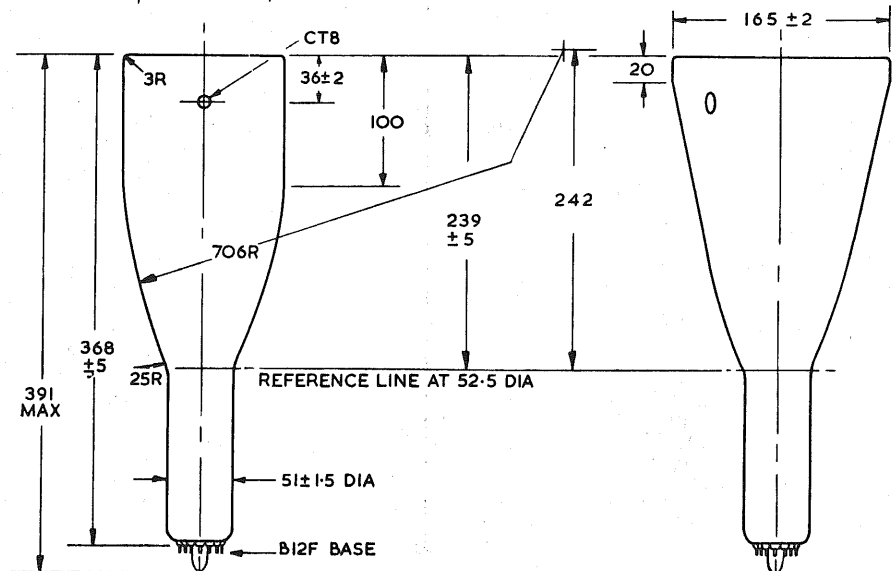
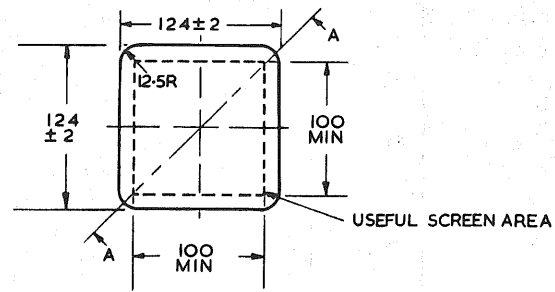
## **MAGNETIC SHIELDING**

Adequate magnetic shielding is required. In addition due attention should be paid to the position of the tube relative to transformers and chokes.

**TUBE WEIGHT** (approximate) 1.2 kg

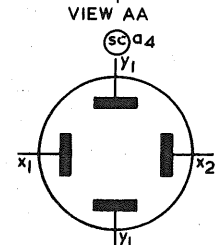
## **MOUNTING POSITION - unrestricted.**

It is advisable to support the tube near the screen and at a second point on the parallel neck near the base. The tube should not be subjected to any stress from the use of clamps and should not be suspended by the base.



VIEWED FROM PINS FREE END  
All dimensions in mm

Not to be scaled



VIEWED FROM SCREEN END  
PIN 6 AT BOTTOM