

Oscilloscope Tube

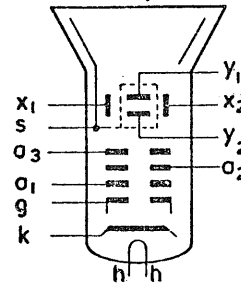
D13-630..

PRELIMINARY DATA

GENERAL

This 13 cm diameter oscilloscope tube is primarily intended for use in inexpensive oscilloscopes and monitoring devices. The tube has sufficient deflector sensitivity to permit transistor driven deflection.

Heater voltage	V_h	6.3	V
Heater current	I_h	0.3	A



ABSOLUTE RATINGS - voltages with respect to cathode

		Max	Min	
First anode voltage	V_{a1}	2200	1250	V
Second anode voltage	V_{a2}	800	-	V
Third anode voltage	V_{a3}	2250	1200	V
Negative grid voltage	$-V_g$	200	1.0	V
Peak x-plate to third anode voltage	$v_{x-a3}(\text{pk})$	500	-	V
Peak y-plate to third anode voltage	$v_{y-a3}(\text{pk})$	500	-	V
Heater to cathode voltage	V_{h-k}	± 125		V
x-plate to third anode resistance	R_{x-a3}	2.0	-	$M\Omega$
y-plate to third anode resistance	R_{y-a3}	2.0	-	$M\Omega$
Grid to cathode resistance	R_{g-k}	1.5	-	$M\Omega$
Peak cathode current	$i_k(\text{pk})$	500	-	μA

PHOSPHOR SCREEN

This tube is usually supplied with GH phosphor (D13-630GH) giving a green trace of medium short persistence. Other phosphors can be made available to special order.

INTER-ELECTRODE CAPACITANCES

Grid 1 to all	$C_{g1-\text{all}}$	5.5	pF
Heater and cathode to all	$C_{h, k-\text{all}}$	3.8	pF
x ₁ plate to x ₂ plate	C_{x1-x2}	1.2	pF
y ₁ plate to y ₂ plate	C_{y1-y2}	1.1	pF
x ₁ plate to all, less x ₂ plate	$C_{x1-\text{all, less } x2}$	4.2	pF
x ₂ plate to all, less x ₁ plate	$C_{x2-\text{all, less } x1}$	4.0	pF
y ₁ plate to all, less y ₂ plate	$C_{y1-\text{all, less } y2}$	3.4	pF
y ₂ plate to all, less y ₁ plate	$C_{y2-\text{all, less } y1}$	3.4	pF
x ₁ , x ₂ plates to y ₁ , y ₂ plates	$C_{x1, x2-y1, y2}$	0.8	pF

TYPICAL OPERATION - voltages with respect to cathode

Mean deflector plate potential*		1500	2000	V
Third anode voltage for optimum astigmatism correction	V _{a3}	1500 †	2000 †	V
Second anode voltage for optimum focus	V _{a2}	315 to 465	420 to 620	V
First anode voltage	V _{a1}	1500	2000	V
Shield voltage for optimum raster shape	V _s	1500 †	2000 †	V
Control grid voltage for cut-off	V _{g1}	-30 to -65	-40 to -87	V
x deflection coefficient	D _x	-14.3 to 17.5	19 to 23	V/cm
y deflection coefficient	D _y	9 to 11.3	12 to 15	V/cm
Minimum useful screen area (Diagonal 11.4 cm)		10 x 8.0	10 x 8.0	cm ²
Grid drive to 10 μA beam current		13	13	V
Line width at 10 μA beam current Shrinking raster measurement at centre		0.36	0.31	mm

* This tube is designed for symmetrical operation.

† The required voltage will not differ from the quoted value by more than ± 50V.

RASTER DISTORTION AND ALIGNMENT

The undeflected spot will fall in a circle of 7 mm radius about the centre of the tube face.

Raster distortion: the edges of a test raster will fall between two concentric rectangles 8.5 cm x 7.0 cm and 8.3 cm x 6.88 cm.

Rectangularity of x and y axes is 90° ± 1°.

It is preferable that the mean x and y plate potentials are equal otherwise some deterioration in performance will occur. Under no circumstances should the mean y plate potential differ from the mean x plate potential by more than 50V.

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) 900 g

MOUNTING POSITION - unrestricted.

Thorn Radio Valves and Tubes Limited

