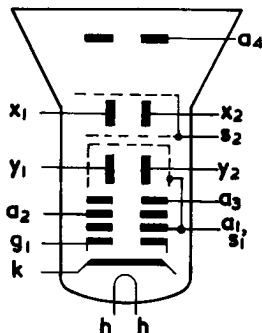


PRELIMINARY DATA

GENERAL

This 10cm x 8cm rectangular aluminised tube with electrostatic focusing and deflection uses a mesh p.d.a. to achieve high deflection sensitivity and high brightness without additional electrode control voltages. The tube is designed for transistor deflection medium to high bandwidth applications.

Heater voltage	V_h	6.3	V
Heater current	I_h	0.3	A



ABSOLUTE RATINGS

		Max	Min	
Fourth anode voltage	V_{a4}	13	8.0	kV
Third anode voltage	V_{a3}	2.2	1.2	kV
Second anode voltage	V_{a2}	1.0	-	kV
First anode voltage	V_{a1}	2.2	1.1	kV
Negative control 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}	100	-	k Ω
y plate to third anode resistance	R_{y-a3}	100	-	k Ω
Control grid to cathode resistance	R_{g1-k}	1.5	-	M Ω
Second anode current	I_{a2}	10	-	μ A
P.D.A. ratio (V_{a4}/V_{a3})		7:1	-	

All voltages referred to cathode unless otherwise stated.

PHOSPHOR SCREEN

This type is usually supplied with GH phosphor (D14-280GH) giving a green trace of medium short persistence. Other phosphor screens can be made available to special order.

This data should be read in conjunction with Brimar Operational and Safety Recommendations for Industrial Cathode Ray Tubes.

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INTER - ELECTRODE CAPACITANCES

Grid 1 to all	C_{g1-all}	9.5	pF
Heater and cathode to all	$C_{h,k-all}$	3.5	pF
x_1 plate to x_2 plate	C_{x1-x2}	2.0	pF
y_1 plate to y_2 plate	C_{y1-y2}	1.5	pF
x_1 plate to all, less x_2 plate	$C_{x1-all, less x2}$	6.0	pF
x_2 plate to all, less x_1 plate	$C_{x2-all, less x1}$	6.0	pF
y_1 plate to all, less y_2 plate	$C_{y1-all, less y2}$	5.0	pF
y_2 plate to all, less y_1 plate	$C_{y2-all, less y1}$	5.0	pF
x_1, x_2 plates to y_1, y_2 plates	$C_{x1, x2-y1, y2}$	0.8	pF
Grid 1 to x_1, x_2, y_1, y_2 plates	$C_{g1-x1, x2, y1, y2}$	0.8	pF

TYPICAL OPERATION - Voltages with respect to cathode

Fourth anode voltage	V_{a4}	10	12	kV
Mean deflector plate potential		1500	2000	V
Third anode voltage for optimum astigmatism correction	V_{a3}	1470 to 1530	1970 to 2030	V
Second anode voltage for optimum focus	V_{a2}	320 to 480	420 650	V
First anode and shield 1 voltage	$V_{a1 +s1}$	1500	2000	V
Shield 2 voltage for optimum raster shape	V_{s2}	1400 to 1500	1900 to 2000	V
Control grid voltage for cut-off	V_{g1}	-40 to -80	-53 to -106	V
x deflection coefficient	D_x	10.5 to 13	14 to 17.4	V/cm
y deflection coefficient	D_y	4.2 to 5.2	5.6 to 6.9	V/cm
Minimum screen area		10 x 8	10x8	cm ²
Line width at 10 μ A beam current				
Shrinking raster measurement at centre		0.38	0.35	mm
Microscope measurement at centre		0.75	0.64	mm
Microscope measurement at edge		1.0	0.9	mm
Grid Drive to 10 μ A beam current (approx.)		18	19	V

RASTER DISTORTION AND ALIGNMENT

The following data applies for the typical operation conditions.

The undeflected spot will fall in a circle of 8 mm radius about the centre of the tube face.

Raster distortion : The edges of a test raster will fall between two concentric rectangles 10 cm x 8 cm and 9.80 cm x 7.84 cm.

Rectangularity of x and y axes is $90^\circ \pm 1^\circ$. The horizontal trace will be parallel with the axis of the rectangular face-plate to within $\pm 5^\circ$. A twist coil will be required to effect accurate alignment. This should be mounted inside the magnetic shield approximately 130 mm from the face and should not extend more than 195 mm from the face. The ampere turns required will be equal to $14/\sqrt{V_{a4}}$ (where V_{a4} is quoted in kV) with provision for reversing the current. The sensitivity (for both x and y plates) at 75% deflection of the useful scan will not differ by more than 2% from the sensitivity over 25% deflection.

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.

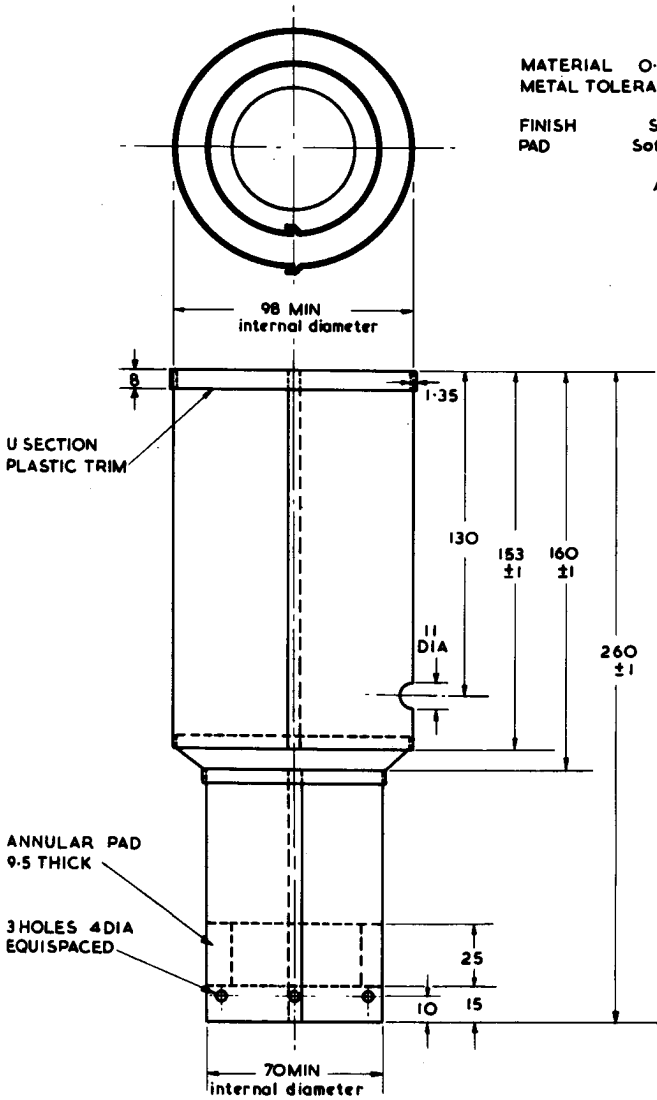
TUBE WEIGHT (approximate) - 1.4 kg

MOUNTING POSITION - unrestricted

Magnetic Shield MS72

D14-280..

EXAMPLE OF TYPICAL SHIELD



MATERIAL 0.35 ± 0.05 Mumetal
METAL TOLERANCES ± 0.5 Unless otherwise stated
FINISH Silver hammer outside
PAD Soft sponge closed cell neoprene
All dimensions in mm
Not to be scaled

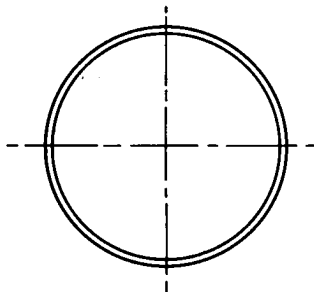
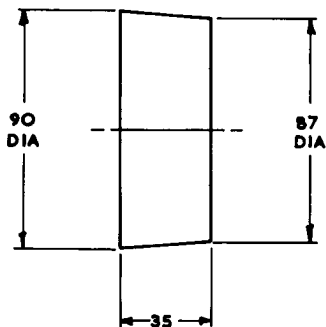
OSCILLOSCOPE
TUBES

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MANDREL FOR TWIST COIL TW29



All dimensions in mm

Not to be scaled

MANDREL

Shaped from wood in the form of a truncated circular cone, dimensions as above.

SHIELD

This twist coil, is designed to be used in conjunction with magnetic shield MS72 for D14-280..

WINDING

1600 turns of 0.140 mm Lewmex Grade 1 or 2 wire, or approved alternative, layer wound on the adhesive side of adhesive backed crepe paper to give 5 mm margins between the coil and each edge of the mandrel.

Start and finish of winding to be brought out on 450 mm long thin flexible lead wires from smaller end of winding.

Varnish, if necessary, cover with adhesive backed crepe paper and ensure that the edges of the coil are sealed in place.

ELECTRICAL CHARACTERISTICS

Resistance approx. 550 Ω . Twist coefficient approximately 6.5 mA/degree measured on typical D14-280.. with $V_{a4} = 12\text{kV}$ and $V_{a1} = 2.0\text{ kV}$.

FITTING

The completed twist coil should be pushed onto the tube and secured to tube in two places with suitable adhesive tape.