INSTRUMENT CATHODE-RAY TUBE

13 cm diameter flat faced short oscilloscope tube (max. 35 cm) with post-deflection acceleration by means of a helical electrode. The tube is provided with deflection blanking.

QUICK REFERENCE DATA				
Final accelerator voltage	$V_{g_7(\ell)}$	=	3000	V
Display area			8 cm x full scan	
Deflection coefficient, horizontal	M_x	=	24	V/cm
vertical	M_y	=	11.5	V/cm

SCREEN

	Colour	Persistence
D13-27GH	green	medium short

Useful screen diameter min. 114 mm

Useful scan at $V_{g_7(\ell)}/V_{g_5} = 2$

horizontal full scan

vertical min. 80 mm

The useful scan may be shifted vertically to a max. of 4 mm with respect to the geometric centre of the faceplate.

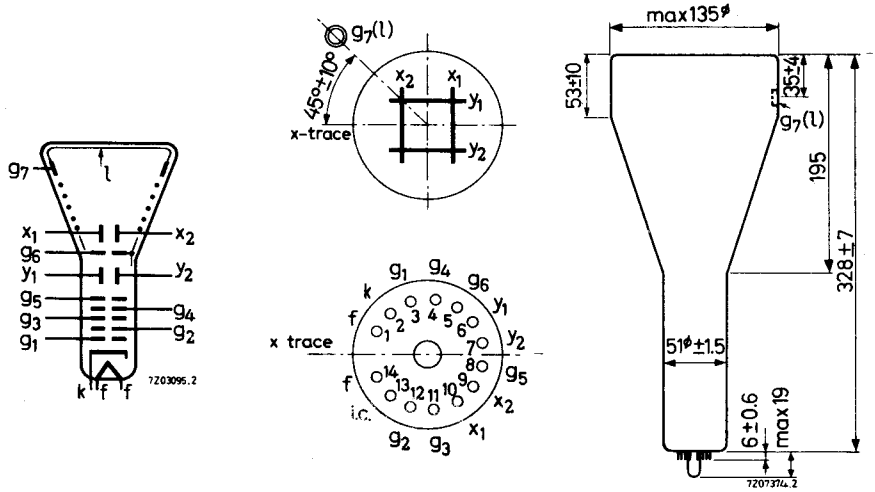
HEATING

Indirect by A.C. or D.C.; parallel supply

Heater voltage	V_f	= 6.3	V
Heater current	I_f	= 300	mA

MECHANICAL DATA

Dimensions in mm



Mounting position: any

The tube should not be supported by the base alone and under no circumstances should the socket be allowed to support the tube.

Base 14 pin all glass

Dimensions and connections

Overall length (also with socket type 55566)	max.	354	mm
Face diameter	max.	135	mm

Net weight approx. 680 g

Accessories

Socket (supplied with tube)	type	55566
Final accelerator contact connector	type	55563
Mu metal shield	type	55557

CAPACITANCES

x_1 to all other elements except x_2	$C_{x_1(x_2)}$	=	4.5	pF
x_2 to all other elements except x_1	$C_{x_2(x_1)}$	=	4.5	pF
y_1 to all other elements except y_2	$C_{y_1(y_2)}$	=	5	pF
y_2 to all other elements except y_1	$C_{y_2(y_1)}$	=	5.5	pF
x_1 to x_2	$C_{x_1x_2}$	=	2.5	pF
y_1 to y_2	$C_{y_1y_2}$	=	1.2	pF
Grid No.1 to all other elements	C_{g_1}	=	5.5	pF
Cathode to all other elements	C_k	=	5	pF
Grid No.3 to all other elements	C_{g_3}	=	10	pF

FOCUSING electrostatic

DEFLECTION double electrostatic

x plates symmetrical

y plates symmetrical

If use is made of the full deflection capabilities of the tube the deflection plates will intercept part of the electron beam; hence a low impedance deflection plate drive is desirable.

Angle between x and y traces $90^o \pm 1^o$

LINE WIDTH

Measured with the shrinking raster method in the centre of the screen.

Final accelerator voltage	$V_{g_{7(\ell)}}$	=	3000	V
Astigmatism control electrode voltage	V_{g_5}	=	1500	V [2)]
First accelerator voltage	V_{g_2}	=	1500	V
Beam current	$I_{g_{7(\ell)}}$	=	10	μA
Line width	l.w.	=	0.25	mm

HELIX

Post deflection accelerator helix resistance min. 50 MΩ

The helix is connected between $g_{7(\ell)}$ and g_6

---

2) See page 5

TYPICAL OPERATING CONDITIONS

Final accelerator voltage	$V_{g_{7(\ell)}}$	=	3000	V
Geometry control electrode voltage	V_{g_6}	=	1500 ± 75	V [1]
Astigmatism control electrode voltage	V_{g_5}	=	1500 ± 75	V [2]
Focusing electrode voltage	V_{g_4}	=	300 to 550	V
Deflection blanking electrode voltage	V_{g_3}	=	1500	V
Deflection blanking control voltage	ΔV_{g_3}	=	max. −60	V [3]
First accelerator voltage	V_{g_2}	=	1500	V
Control grid voltage for visual extinction of focused spot	V_{g_1}	=	−38 to −135	V
Deflection coefficient				
horizontal	M_x	=	21 to 27	V/cm
vertical	M_y	=	9.8 to 12.2	V/cm
Deviation of linearity of deflection		=	max. 2	% [4]
Geometry distortion			See note 5	
Useful scan				
horizontal			full scan	
vertical		=	min. 80	mm

CIRCUIT DESIGN VALUES

Focusing voltage	V_{g_4}	=	200 to 370	V per kV of V_{g_5}
Control grid voltage for visual extinction of focused spot	$-V_{g_1}$	=	25 to 90	V per kV of V_{g_2}
Deflection coefficient at $V_{g_{7(\ell)}}/V_{g_5} = 2$				
horizontal	M_x	=	14 to 18	V/cm per kV of V_{g_5}
vertical	M_y	=	6.5 to 8.2	V/cm per kV of V_{g_5}
Control grid circuit resistance	R_{g_1}	=	max. 1.5	MΩ
Deflection plate circuit resistance	R_x, R_y	=	max. 50	kΩ
Focusing electrode current	I_{g_4}	=	−15 to +10	μA [6]

Notes see page 5

LIMITING VALUES (Absolute max. rating system)

Final accelerator voltage	$V_{g_7(\ell)}$	= max.	3300	V
		= min.	1800	V
Geometry control electrode voltage	V_{g_6}	= max.	1700	V
Astigmatism control electrode voltage	V_{g_5}	= max.	1700	V
		= min.	1200	V
Focusing electrode voltage	V_{g_4}	= max.	1200	V
Deflection blanking electrode voltage	V_{g_3}	= max.	1700	V
First accelerator voltage	V_{g_2}	= max.	1700	V
Control grid voltage				
negative	$-V_{g_1}$	= max.	200	V
positive	$-V_{g_1}$	= min.	0	V
Voltage between astigmatism control electrode and any deflection plate	$V_{g_5/x}$	= max.	500	V
	$V_{g_5/y}$	= max.	500	V
Screen dissipation	W_ℓ	= max.	3	mW/cm^2
Ratio $V_{g_7(\ell)}/V_{g_5}$	$V_{g_7(\ell)}/V_{g_5}$	= max.	2	
Cathode current, average	I_k	= max.	300	μA

---

1) This tube is designed for optimum performance when operating at the ratio $V_{g_7(\ell)}/V_{g_5} = 2$. Operation at other ratio may result in changes in deflection uniformity and geometry distortion. The geometry control electrode voltage should be adjusted for optimum performance. For any necessary adjustment its potential will be within the stated range.

2) The astigmatism control electrode voltage should be adjusted for optimum spot shape. For any necessary adjustment its potential will be within the stated range.

3) For beam blanking of a beam current of 10 μA.

4) The sensitivity at a deflection of less than 75% of the usefull scan will not differ from the sensitivity at a deflection of 25% of the useful scan by more than the indicated value.

5) A graticule, consisting of concentric rectangles of 100 mm x 60 mm and 97 mm x 58 mm is aligned with the electrical x axis of the tube. The edges of a raster will fall between these rectangles with optimum correction potentials applied.

6) Values to be taken into account for the calculation of the focus potentiometer.