INSTRUMENT CATHODE-RAY TUBE

14 cm diagonal, rectangular flat faced oscilloscope tube with post-deflection acceleration mesh, primarily intended for use in compact oscilloscopes with 15 to 20 MHz bandwidth.

QUICK REFERENCE DATA

Final accelerator voltage	$V_{g7(\ell)}$	4 kV
Display area		100 x 80 mm^2
Deflection coefficient		
horizontal	M_x	19,5 V/cm
vertical	M_y	10,5 V/cm

SCREEN

	colour	persistence
D14-260GH	green	medium short

Useful screen dimensions	⩾	100 x 80 mm^2
Useful scan		
horizontal	⩾	100 mm
vertical	⩾	80 mm
Spot eccentricity in horizontal and vertical directions	⩽	6,5 mm

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

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.

Net mass	approx. 1050 g
Base	14-pin, all glass
Final accelerator contact	small ball (JEDEC J1–25)

blue binder, tab 4

Dimensions and connections

See also outline drawing

Overall length	⩽	333 mm
Face dimensions	⩽	100 x 120 mm^2

Accessories

Socket, supplied with tube	type 55566
Mu-metal shield	type 55591
Final accelerator contact connector	type 55569

FOCUSING		electrostatic
DEFLECTION		double electrostatic
x-plates		symmetrical
y-plates		symmetrical
Angle between x and y-traces		$90 \pm 1^{\circ}$
Angle between x-trace and horizontal axis of the face	⩽	5° *

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

CAPACITANCES

x_1 to all other elements except x_2	$C_{x1(x2)}$	7 pF
x_2 to all other elements except x_1	$C_{x2(x1)}$	6,5 pF
y_1 to all other elements except y_2	$C_{y1(y2)}$	4 pF
y_2 to all other elements except y_1	$C_{y2(y1)}$	3,5 pF
x_1 to x_2	C_{x1x2}	2,2 pF
y_1 to y_2	C_{y1y2}	1,1 pF
Control grid to all other elements	C_{g1}	6,1 pF
Cathode to all other elements	C_k	5 pF

* The tube is provided with a rotation coil, concentrically wound around the tube neck, enabling the alignment of the x-trace with the mechanical x-axis of the screen. The coil has 1000 turns and a resistance of max. 400 Ω. Under typical operating conditions, max. 30 ampere-turns are required for the max. rotation of 5°. This means the required current is max. 30 mA at a required voltage of 12 V.

Notes to the drawings on opposite page.

1. The bulge at the frit seal may increase the indicated maximum dimensions by not more than 2 mm.
2. The coil is fixed to the envelope by means of adhesive tape.
3. The centre of the contact is situated within a square of 10 mm x 10 mm around the true geometrical position.
4. The length of the connecting leads of the rotation coil is min. 350 mm.

INSTRUMENT CATHODE-RAY TUBE

14 cm diagonal, rectangular flat faced oscilloscope tube with post-deflection acceleration mesh, primarily intended for use in compact oscilloscopes with 15 to 20 MHz bandwidth. This tube features a low heater consumption.

QUICK REFERENCE DATA

Final accelerator voltage	$V_{g7(\ell)}$	4 kV
Display area		100 x 80 mm^2
Deflection coefficient		
horizontal	M_x	19,5 V/cm
vertical	M_y	10,5 V/cm

The D14-261GH is equivalent to the type D14-260GH except for the following.

HEATING

Indirect by a.c. or d.c.; parallel supply

Heater voltage	V_f	6,3 V
Heater current	I_f	95 mA

LIMITING VALUES (Absolute maximum rating system)

Cathode to heater voltage			
positive	V_{kf}	max.	100 V
negative	$-V_{kf}$	max.	15 V
Control grid circuit resistance	R_{g1}	max.	1 MΩ

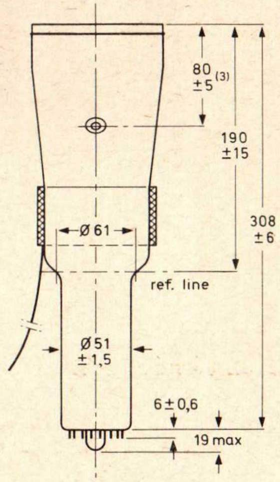
CAPACITANCES

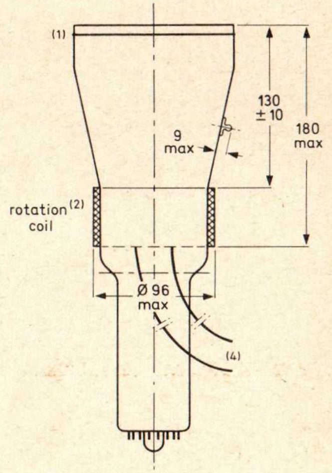
Cathode to all other elements	C_k	2,5 pF

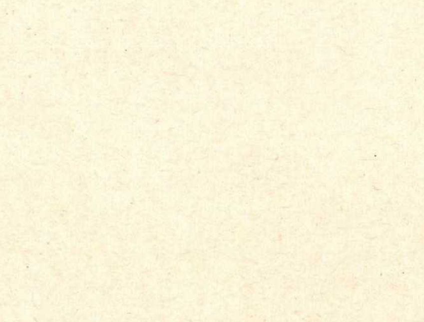
DIMENSIONS AND CONNECTIONS

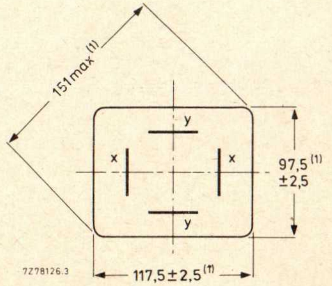
Dimensions in mm

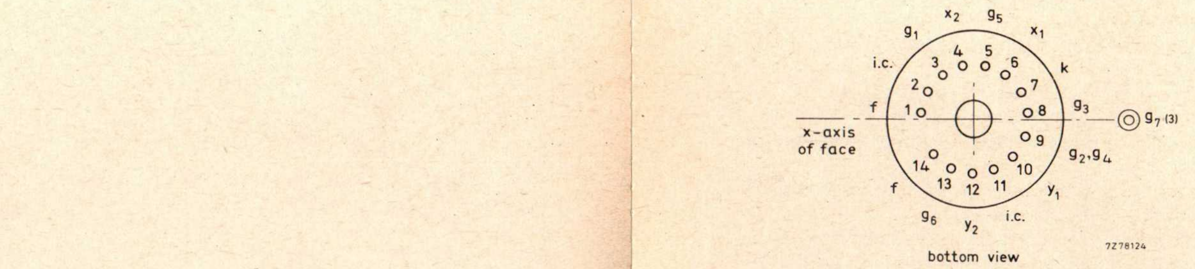
For notes to the drawings see bottom of opposite page.

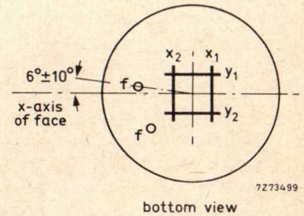












TYPICAL OPERATION

Conditions

Final accelerator voltage	$V_{g7(\ell)}$	4	kV	
Post deflection accelerator mesh electrode voltage	V_{g6}	2000	V	
Interplate shield voltage	V_{g5}	2000	V	(note 1)
First accelerator voltage	$V_{g2,\ g4}$	2000	V	
Astigmatism control electrode voltage	$\Delta V_{g2,\ g4}$	± 50	V	(note 2)
Focusing electrode voltage	V_{g3}	300 to 480	V	
Control grid voltage for visual extinction of focused spot	V_{g1}	−30 to −70	V	

Performance

Useful scan					
horizontal		⩾	100	mm	(note 3)
vertical		⩾	80	mm	(note 3)
Deflection coefficient					
horizontal	M_x		19,5	V/cm	
		⩽	21,5	V/cm	
vertical	M_y		10,5	V/cm	
		⩽	11,6	V/cm	
Line width	l.w.	≈	0,35	mm	(note 4)
Deviation of linearity of deflection		⩽	2	%	(note 5)
Grid drive for 10 μA screen current		≈	20	V	
Geometry distortion	see note 6				

NOTES

1. The interplate shield voltage should be equal to the mean x-plate potential. The mean x-plate and y-plate potentials should be equal for optimum spot quality.
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. The tube is designed for optimum performance when operating at a ratio $V_{g7(\ell)}/V_{g2,\ g4} = 2$. If this ratio is smaller than 2, the useful scan may be smaller than 100 mm x 80 mm.
4. Measured with the shrinking raster method in the centre of the screen with corrections adjusted for optimum spot size, at a beam current of 10 μA.
5. The sensitivity at a deflection of less than 75% of the useful scan will not differ from the sensitivity at a deflection of 25% of the useful scan by more than the indicated value.
6. A graticule consisting of concentric rectangles of 95 mm x 75 mm and 93 mm x 73 mm is aligned with the electrical x-axis of the tube. With optimum corrections applied, the edges of a raster will fall between these rectangles.

LIMITING VALUES (Absolute maximum rating system)

Final accelerator voltage	$V_{g7(\ell)}$	max.	4,4	kV
		min.	3	kV
Post deflection accelerator mesh electrode voltage	V_{g6}	max.	2200	V
Interplate shield voltage	V_{g5}	max.	2200	V
First accelerator and astigmatism control electrode voltage	$V_{g2,\ g4}$	max.	2200	V
		min.	1500	V
Focusing electrode voltage	V_{g3}	max.	2200	V
Control grid voltage	$-V_{g1}$	max.	200	V
		min.	0	V
Cathode to heater voltage				
positive	V_{kf}	max.	125	V
negative	$-V_{kf}$	max.	125	V
Grid drive, average		max.	20	V
Screen dissipation	W_{ℓ}	max.	3	mW/cm²
Control grid circuit resistance	R_{g1}	max.	1	MΩ