INSTRUMENT CATHODE-RAY TUBE

14 cm diagonal, rectangular flat faced oscilloscope tube with mesh and metal-backed screen. The tube has side connections to the x and y-plates and an internal graticule.

QUICK REFERENCE DATA			
Final accelerator voltage	$V_{g8(\ell)}$	10	kV
Display area		100 x 80	mm^2
Deflection coefficient, horizontal	M_x	15,2	V/cm
vertical	M_y	4,1	V/cm

SCREEN : Metal-backed phosphor

	Colour	Persistence
D14-162GH/09	green	medium-short

Useful screen area	>	100 x 80	mm^2
Useful scan at $V_{g8(\ell)}/V_{g2,g4}$ = 6,7 , horizontal	>	100	mm
vertical	>	80	mm
Spot eccentricity in horizontal direction	<	6	mm

The x-trace can be aligned with the x-lines of the graticule by means of correction coils fitted around the tube by the manufacturer (see last page but one).

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

Heater voltage	V_f	6,3	V
Heater current	I_f	300	mA

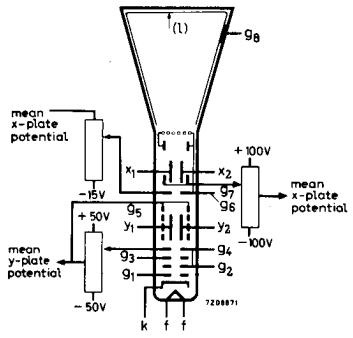
MECHANICAL DATA

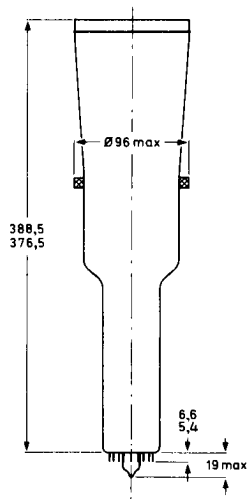
Dimensions and connections

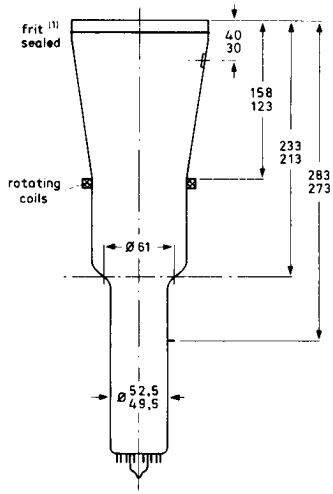
See also outline drawing

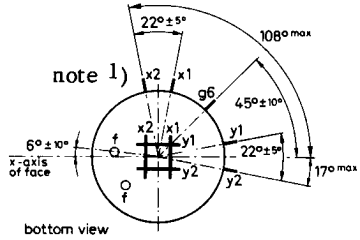
Overall length (socket included)	<	407,5	mm
Face dimensions	<	100 x 120	mm
Net mass	approx.	1200	g

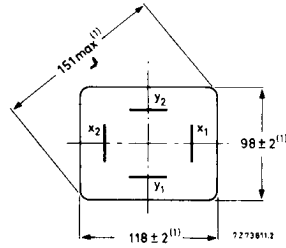
Dimensions in mm

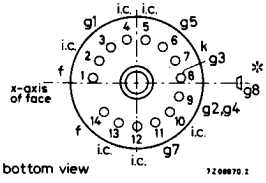


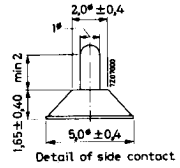


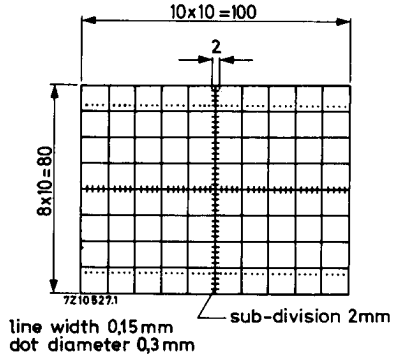












(1) The bulge at the frit seal may increase the indicated maximum dimensions by not more than 2 mm.

* The centre of the contact is situated within a square of 10 mm x 10 mm around the true geometrical position.

Base 14 pin all glass

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.

Accessories

Socket (supplied with tube)	type 55566	
Final accelerator contact connector	type 55563A	
Mu-metal shield	type 55585	[1])

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 $90^{o} \pm 1^{o}$

Angle between x-trace and the horizontal axis of the face 0^{o} See "Correction Coils".

LINE WIDTH

Measured with the shrinking raster method in the centre of the screen under typical operating conditions, adjusted for optimum spot size at a beam current $I_{\ell} = 10\ \mu A$.

Line width at the centre of the screen	l.w.	0,3	mm

CAPACITANCES

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

[1]) See "Notes".

TYPICAL OPERATING CONDITIONS

Final accelerator voltage	$V_{g8(\ell)}$	10	kV	
Geometry control electrode voltage	V_{g7}	1500 ± 100	V	2)
Post deflection and interplate shield voltage	V_{g6}	1500	V	
Background illumination control voltage	ΔV_{g6}	0 to -15	V	2)
Deflection plate shield voltage	V_{g5}	1500	V	3)
Focusing electrode voltage	V_{g3}	450 to 550	V	
First accelerator voltage	$V_{g2, g4}$	1500	V	
Astigmatism control voltage	$\Delta V_{g2, g4}$	±50	V	4)
Control grid voltage for visual extinction of focused spot	V_{g1}	-30 to -70	V	
Grid drive for 10 μA screen current		approx. 20	V	
Deflection coefficient, horizontal	M_x	15, 2	V/cm	
		< 16	V/cm	
vertical	M_y	4, 1	V/cm	
		< 4, 4	V/cm	
Deviation of linearity of deflection		< 2	%	5)
Geometry distortion		See note 6		
Useful scan, horizontal		> 100	mm	
vertical		> 80	mm	

LIMITING VALUES (Absolute max. rating system)

Final accelerator voltage	$V_{g8(\ell)}$	max.	12	kV
		min.	9	kV
Post deflection and interplate shield voltage and geometry control electrode voltage	V_{g7}, V_{g6}	max.	2200	V
Deflection plate shield voltage	V_{g5}	max.	2200	V
Focusing electrode voltage	V_{g3}	max.	2200	V
First accelerator and astigmatism control electrode voltage	$V_{g2, g4}$	max.	2200	V
		min.	1350	V
Control grid voltage	$-V_{g1}$	max.	200	V
		min.	0	V
Cathode to heater voltage	V_{kf}	max.	125	V
	$-V_{kf}$	max.	125	V
Voltage between astigmatism control electrode and any deflection plate	$V_{g4/x}$	max.	500	V
	$V_{g4/y}$	max.	500	V
Grid drive, average		max.	30	V
Screen dissipation	W_ℓ	max.	8	mW/cm^2
Ratio $V_{g8(\ell)}/Vg2, g4$	$V_{g8(\ell)}/V_{g2, g4}$	max.	6, 7	
Control grid circuit resistance	R_{g1}	max.	1	MΩ

Notes see next page.

NOTES

1) To avoid damage to the side contacts the narrower end of the mu-metal shield should have an internal diameter of not less than 64 mm.

2) This tube is designed for optimum performance when operating at a ratio $V_{g8(\ell)}/V_{g2g4}$ $V_{g8(\ell)}/V_{g2,g4} = 6,7$.
The geometry control voltage V_{g7} should be adjusted within the indicated range (values with respect to the mean x-plate potential).
A negative control voltage on g_6 (with respect to the mean x-plate potential) will cause some pincushion distortion and less background light.
By the use of two voltages, V_{g6} and V_{g7}, it is possible to find the best compromise between background light and raster distortion.
If a fixed voltage on V_{g6} is required this voltage should be 10 V lower than the mean x-plate potential.

3) The deflection plate shield voltage should be equal to the mean y-plate potential.
The mean x and y-plate potentials should be equal for optimum spot quality.

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

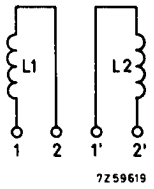
5) The sensitivity at a deflection of less than 75% of the useful scan will not differ from the sensitivity at a deflection of 25% of the useful scan by more than the indicated value.

6) A graticule, consisting of concentric rectangles of 95 mm x 75 mm and 93 mm x 73,6 mm is aligned with the electrical x-axis of the tube. With optimum corrections applied a a raster will fall between these rectangles.

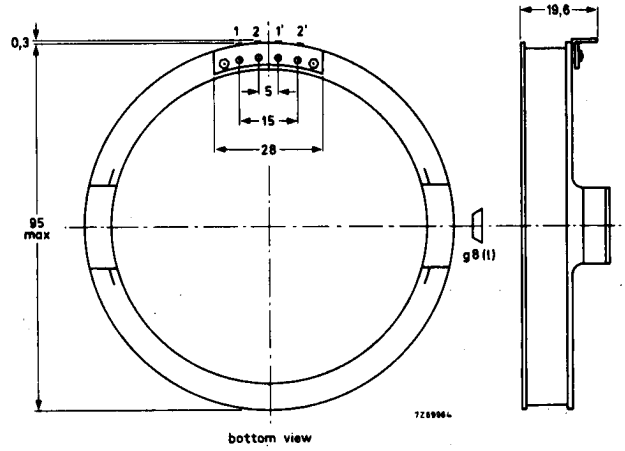
CORRECTION COILS

General

The D14-1626H/09 is provided with a pair of coils L1 and L2 for image rotation which enable the alignment of the x-trace with the x-lines of the graticule.



The image rotation coils are wound concentrically around the tube neck.
Under typical operating conditions 50 ampere-turns are required for the maximum rotation of 5°. Both coils have 850 turns. This means that a current of < 30 mA per coil is required which can be obtained by using a 24 V supply when the coils are connected in series, or a 12 V supply when they are in parallel.

Connecting the coils

The coils have been connected to the 4 soldering tags as follows: