MONITOR TUBE

development sample data

36 cm rectangular television tube with metal backed screen and integral protection primarily intended for use as a precision monitor.

QUICK REFERENCE DATA		
Deflection angle	90	°
Focusing	electrostatic	
Resolution	min. 650	lines
Overall length	max. 317	mm

SCREEN

Metal backed phosphor

Lumenescene	white		
Useful diagonal	min.	329	mm
Useful width	min.	304.5	mm
Useful height	min.	241	mm

HEATING

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

Heater voltage	V_f	11	V±10%
Heater current	I_f	68	mA

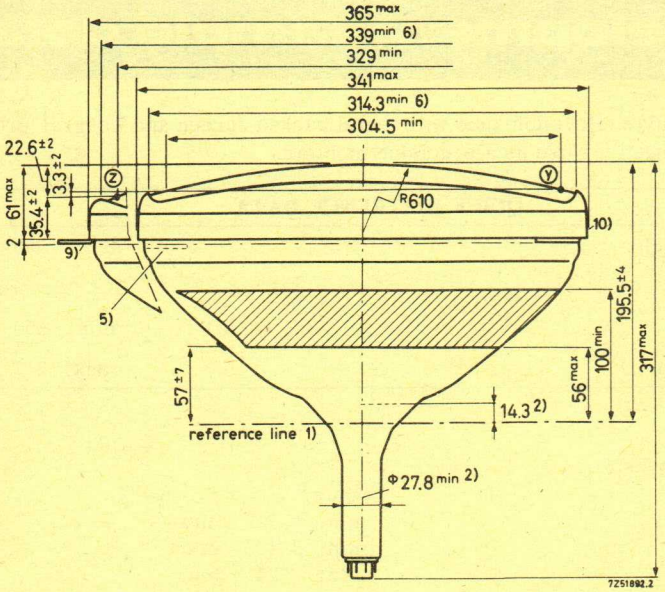
CAPACITANCES

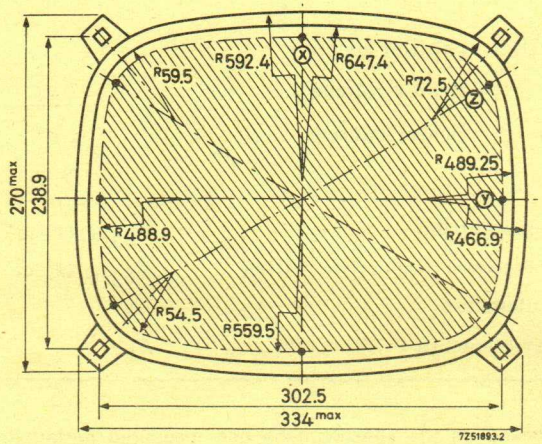
Final accelerator to metal band	$C_{g_3,g_5(\ell)\text{-m}'}$		200	pF
Final accelerator to external conductive coating	$C_{g_3,g_5(\ell)\text{-m}}$		800	pF
Cathode to all other elements	C_k	-	5.0	pF
Grid No.1 to all other elements	C_{g_1}	-	9.0	pF

These data, based on the specifications and measured performance of development samples, afford a preliminary indication of the characteristics to be expected of the described product. Distribution of development samples implies no guarantee as to the subsequent availability of the product

MECHANICAL DATA

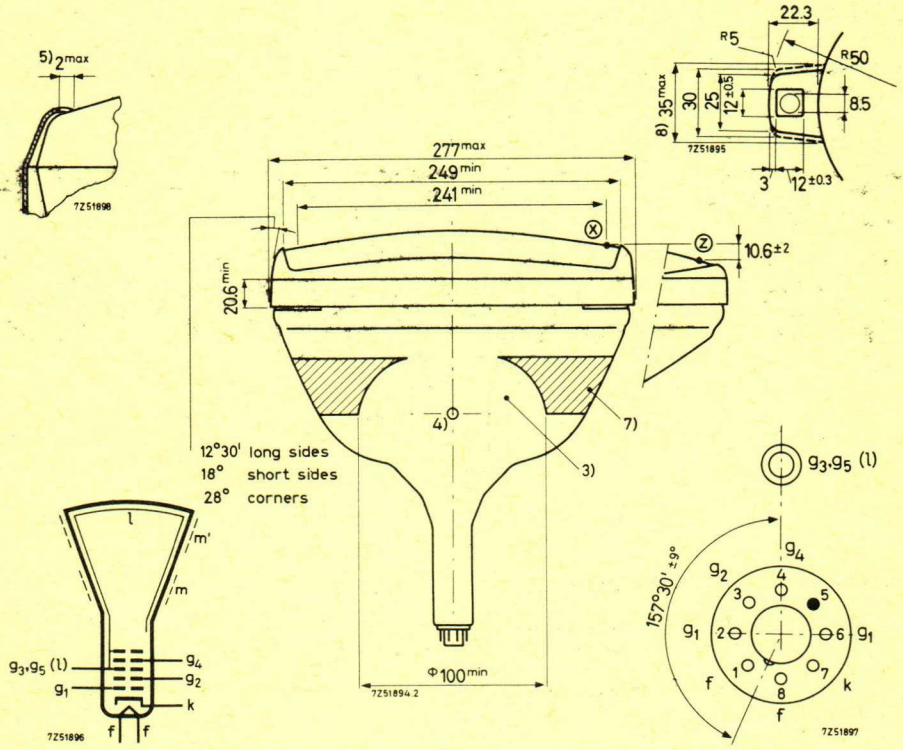
Dimensions in mm





MECHANICAL DATA (continued)

Dimensions in mm



Mounting position: any

Except vertical with the screen downward and the axis of the tube making an angle of less than 20° with the vertical.

Base: Neo Eightar (B8H)

Cavity contact	CT8

Accessories:

Socket	2422 501 06001
Final-accelerator contact connector	55563

FOCUSING Electrostatic

The range of focus voltage shown under typical operating conditions results in optimum focus at a beam current of 100 μA.

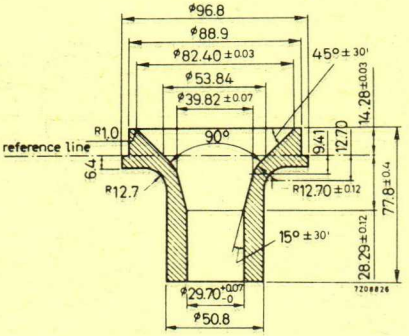
DEFLECTION Magnetic

Diagonal deflection angle	90°

PICTURE CENTRING MAGNET

Field intensity perpendicular to the tube axis adjustable from 0 to 79.6 A/m (0 to 10 Oerstedt).
Adjustment of the centring magnet should not be such that a general reduction in brightness or shading of the raster occurs.

REFERENCE LINE GAUGE



NOTES TO OUTLINE DRAWING

1. The reference line is determined by the plane of the upper edge of the flange of the reference line gauge when the gauge is resting on the cone.
2. End of guaranteed contour. The maximum neck and cone contour is given by the reference line gauge.
3. This area must be kept clean.
4. Recessed cavity contact.
5. Meniscus of resin filler on screen.
6. Opening of the metal ring band. Eccentricity with respect to centre of screen max. 1.5 mm.
7. The configuration of the external conductive coating is optional but contains the contact area shown in the drawing.
8. Minimum space to be reserved for mounting lugs.
   The mounting screws in the cabinet must be situated inside a circle of 8.5 mm diameter drawn around the true geometrical position i.e. corners of a rectangle of 302.5 mm x 238.9 mm.
9. The deviation of any lug with respect to the plane through the other three lugs is max. 2 mm.
10. The metal rimband must be earthed. No electrical contact between the band and the mounting lugs can be guaranteed.

TYPICAL OPERATION

Final accelerator voltage	$V_{g_3,g_5(\ell)}$	16 kV
Focusing electrode voltage	V_{g_4}	0 to 500 V [1]
First accelerator voltage	V_{g_2}	600 V
Grid No.1 voltage for extinction of focused raster (grid drive service)	$-V_{g_1}$	43 to 98 V
Cathode voltage for extinction of focused raster (cathode drive service)	V_k	40 to 90 V

RESOLUTION

Resolution at screen centre		min. 650 lines
Measured at:	$V_{g_3,g_5(\ell)}$	16 kV
	V_{g_2}	600 V

This tube will resolve 650 lines measured at a brightness of 340 Nits based on a picture height of 237 mm.
The focus voltage is adjusted to obtain the smallest roundest spot. For optimum overall resolution an external centring magnet may be required.

LIMITING VALUES (Absolute max. rating system)

Final accelerator	$V_{g_3,g_5(\ell)}$	max. 18 kV min. 12 kV
Focusing electrode voltage	V_{g_4} $-V_{g_4}$	max. 1 kV max. 500 V
First accelerator voltage	V_{g_2}	max. 800 V
Grid No.1 voltage		
positive	V_{g_1}	max. 0 V [2]
positive peak	V_{g1_p}	max. 2 V
negative	$-V_{g_1}$	max. 180 V
Cathode to heater voltage	V_{kf}	max. 80 V
peak	V_{kf_p}	max. 130 V
Focusing electrode current	I_{g_4}	max. ±25 μA
First accelerator current	I_{g_2}	max. ± 5 μA

For notes see page 6

MAXIMUM CIRCUIT VALUES

Resistance between cathode and heater	$R_{k/f}$	max.	1	MΩ
Impedance between cathode and heater	$Z_{k/f}$ (50 Hz)	max.	500	kΩ
Impedance between cathode and earth	$Z_{k/f}$ (50 Hz)	max.	100	kΩ
Grid No.1 circuit resistance	R_{g_1}	max.	1.5	MΩ
Grid No.1 circuit impedance	Z_{g_1} (50 Hz)	max.	500	kΩ
First accelerator circuit resistance	R_{g_2}	max.	1	MΩ
Focusing electrode circuit resistance	R_{g_4}	max.	3	MΩ

EXTERNAL CONDUCTIVE COATING

This tube has an external conductive coating, m, which must be earthed and the capacitance of this to the final electrode is used to provide smoothing for the e.h.t. supply. The tube marking and warning labels are on the side of the cone opposite the final electrode connector and this side should not be used for making contact to the external conductive coating.

WARNING

X-ray shielding is advisable to give protection against danger of personal injury arising from prolonged exposure at close range to this tube.

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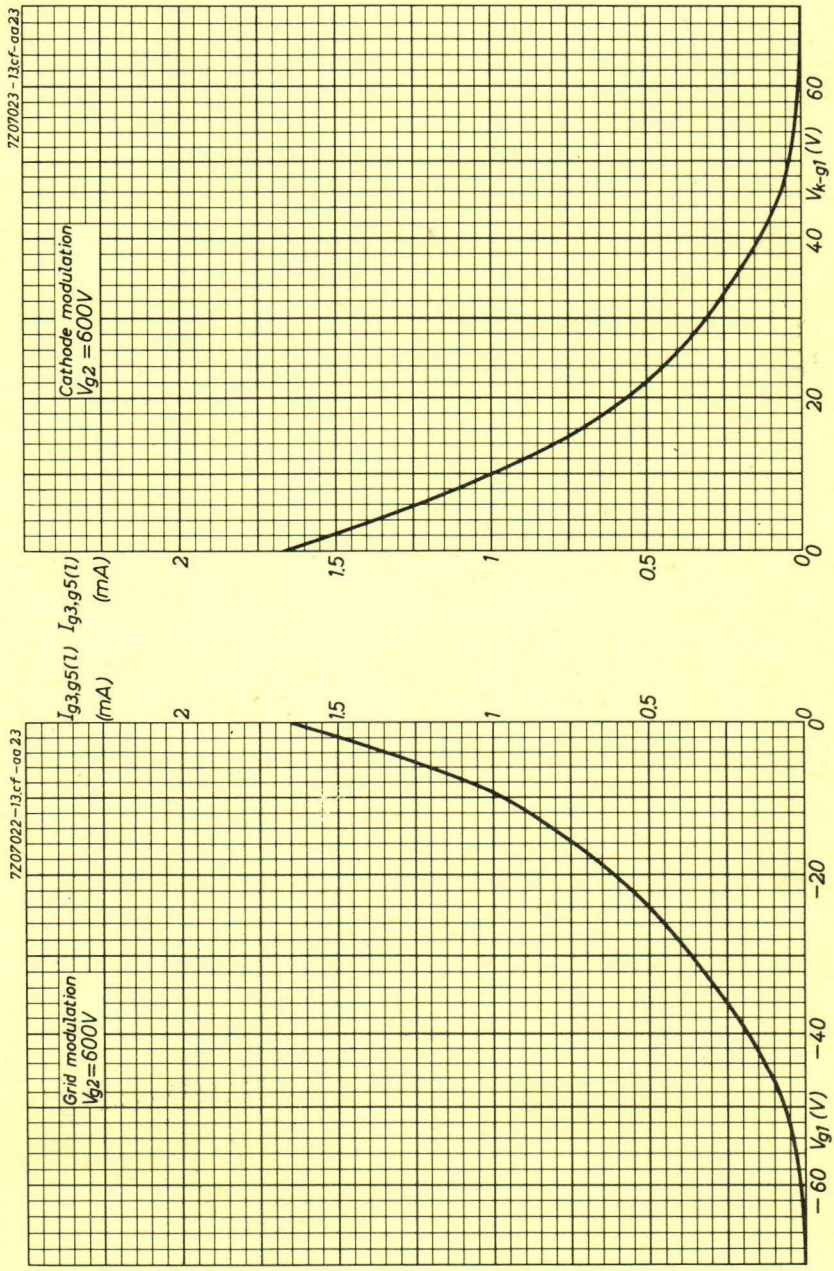
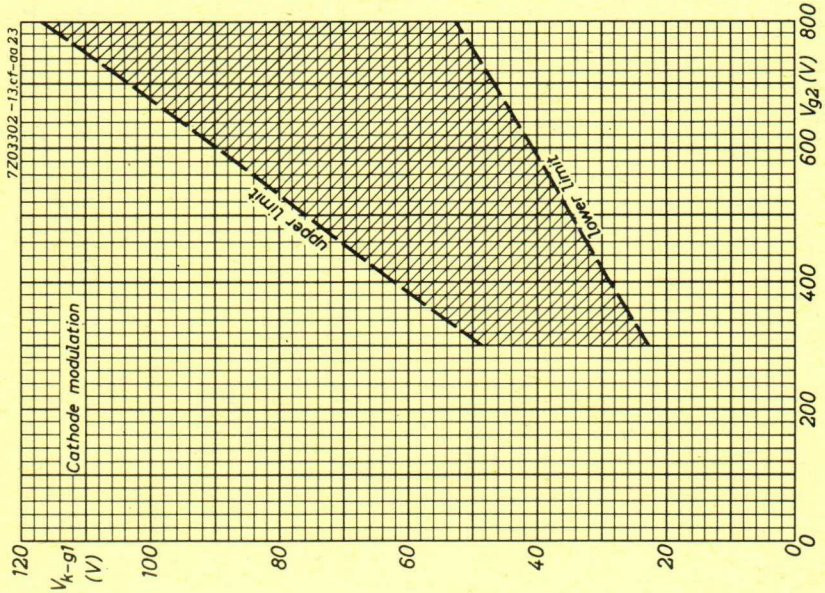
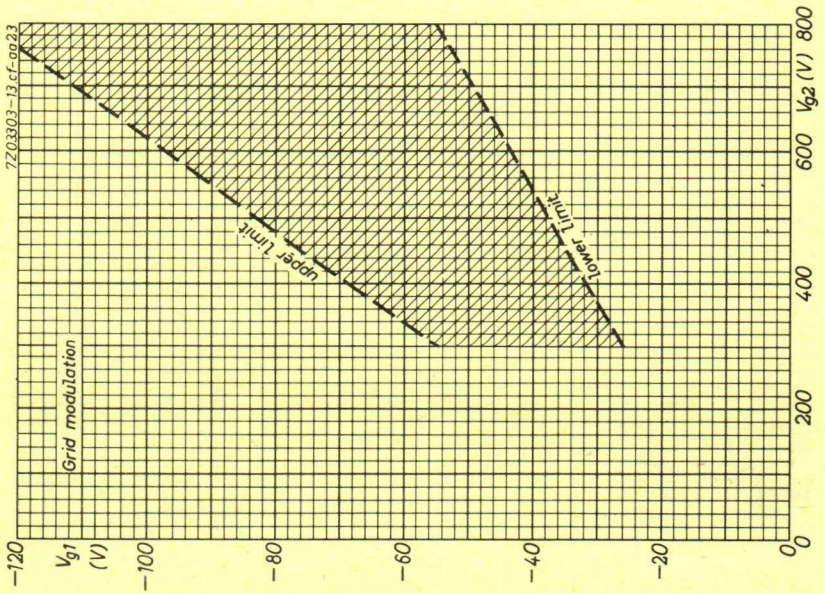
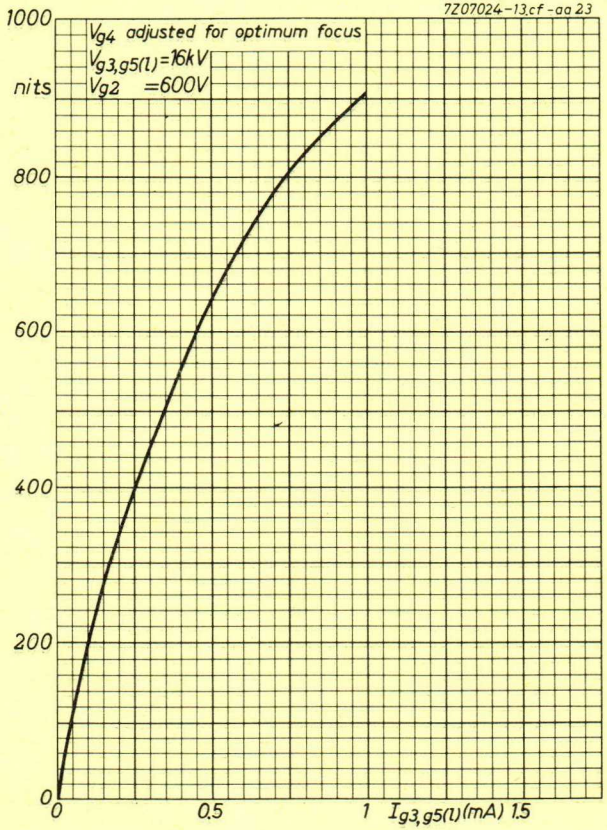
1) With the small change in focus spot size with variation of focus voltage, the limit of 0 to 500 V is such that an acceptable focus quality is obtained within this range. If it is required to pass through the point of focus, a voltage of at least −100 V to +600 V will be required.

2) The d.c. value of bias must not be such as to allow the grid to become positive with respect tc the cathode, except during the period immediately after switching the receiver on or off when it may be allowed to rise to +1 V. The maximum positive excursion of the video signal must not exceed +2 V, and at this voltage the grid current may be expected to be approximately 2 mA.


7Z07023-13cf-aa23
Cathode modulation
V_{g2} = 600V
$I_{g3,g5(1)}$ (mA)
2
1.5
1
0.5
0
0
20
40
60
V_{k-g1} (V)
7Z07022-13cf-aa23
Grid modulation
V_{g2} = 600V
$I_{g3,g5(1)}$ (mA)
2
1.5
1
0.5
0
0
−20
−40
−60
V_{g1} (V)


7Z03302-13cf-aa23
Cathode modulation
upper limit
lower limit
V_{k-g1} (V)
120
100
80
60
40
20
0
V_{g2} (V)
800
600
400
200
0


7Z03303-13cf-aa23
Grid modulation
upper limit
lower limit
V_{g1} (V)
−120
−100
−80
−60
−40
−20
0
V_{g2} (V)
800
600
400
200
0


7Z07024-13.cf-aa 23
1000
nits
800
600
400
200
0
V_{g4} adjusted for optimum focus
$V_{g3,g5(1)}$=16kV
V_{g2} =600V
0
0.5
1
$I_{g3,g5(1)}$(mA) 1.5

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