

OSCILLOSCOPE TUBE with flat face and post deflection acceleration by means of a helical electrode

SCREEN

Type	Fluorescence	Phosphorescence	Persistence
DB7-78	Blue	Blue	Medium short
DH7-78	Green	Green	Medium short
DN7-78	Yellowish green	Yellowish green	Medium short
DP7-78	Purplish blue	Yellowish green	Long

Useful screen diameter 68 mm

Useful scan at $V_{g6}/V_{g4} = 4$

in the x direction 60 mm

in the y direction 45 mm

For further properties of the screen please refer to front of this section

HEATING

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

Heater voltage $V_f = 6.3 \text{ V}$

Heater current $I_f = 0.3 \text{ A}$

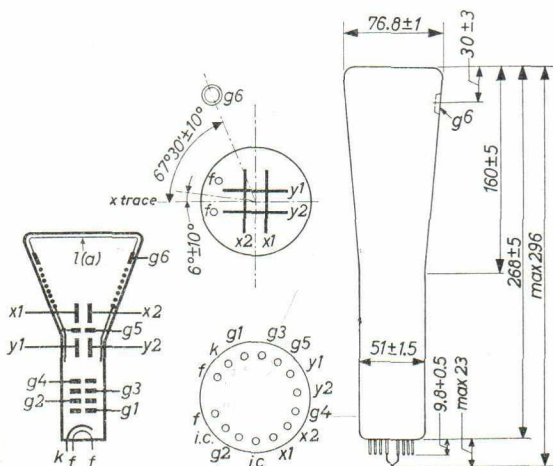
CAPACITANCES

Grid No.1 to all other electrodes	C_{g1}	=	3.5 pF
Cathode to all other electrodes	C_k	=	2.6 pF
x ₁ plate to all other electrodes except x ₂ plate	C_{x1}	=	3.5 pF
x ₂ plate to all other electrodes except x ₁ plate	C_{x2}	=	3.5 pF
y ₁ plate to all other electrodes except y ₂ plate	C_{y1}	=	3.0 pF
y ₂ plate to all other electrodes except y ₁ plate	C_{y2}	=	3.0 pF
x ₁ plate to x ₂ plate	C_{x1-x2}	=	1.7 pF
y ₁ plate to y ₂ plate	C_{y1-y2}	=	1.6 pF

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Dimensions in mm



g5 = isolation shield

The post accelerator helix is connected between g6 and g5.

The resistance of the helix is min. 40 MΩ

MOUNTING POSITION: any

The socket should under no circumstances be used to support the tube

ACCESSORIES

Socket 40467, supplied with the tube

Mu-metal shield 55532

Post accelerator contact connector 55563

NET WEIGHT with socket 370 g Shipping weight 1100 g

¹) Location of the recessed cavity button contact with respect to the x trace

FOCUSING electrostatic

DEFLECTION double electrostatic

x plates symmetrical

y plates symmetrical

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

→ LINE WIDTH measured with the shrinking raster method

Post accelerator voltage	$V_{g6} = 1200 \text{ V}$
Grid No.4 voltage	$V_{g4} = 300 \text{ V}$
Grid No.2 voltage	$V_{g2} = 1200 \text{ V}$
Beam current	$I_{g6} = 10 \mu\text{A}$
Line width	$\text{l.w.} = 0.65 \text{ mm}$

→ OPERATING CHARACTERISTICS

Post accelerator voltage	$V_{g6} = 1200$	4000 V
Isolation shield voltage	$V_{g5} = 300 \pm 30$	$1000 \pm 100 \text{ V } ^1)$
Second accelerator voltage	$V_{g4} = 300 + 40$ -15	$1000 \pm 50 \text{ V } ^1)$
Focusing electrode voltage	$V_{g3} = 20 \text{ to } 150$	35 to 165 V
First accelerator voltage	$V_{g2} = 1200$	1000 V
Grid No.1 voltage	$V_{g1} = -36 \text{ to } -72$	$-30 \text{ to } -60 \text{ V } ^2)$
Modulation voltage	$V_{g1p} = \text{max. } 25$	$\text{max. } 25 \text{ V } ^3)$
Deflection factor		
horizontal	$M_x = 9.4 \text{ to } 12$	31.3 to 40 V/cm
vertical	$M_y = 3.2 \text{ to } 4.1$	10.7 to 13.7 V/cm
Deviation of linearity of deflection	$= \text{max. } 2$	$\text{max. } 2 \% ^4)$
Pattern distortion	$= \text{max. } 2$	$\text{max. } 2 \% ^1)^5)$
Undelected spot position	$R = 4$	4 mm ⁶⁾

¹⁾²⁾³⁾⁴⁾⁵⁾⁶⁾ See page 4

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- 1) In general the voltages on g_5 and g_4 and the average potential of the deflection plates should be equal. Variation of the isolation shield voltage (max. $\pm 10\%$ of V_{g_4}) serves to correct pincushion and barrel pattern distortion.

A small potential difference between the y plates and g_4 may be desirable for obtaining optimum sharpness. The potential difference should be obtained by varying V_{g_4} and should not exceed $\pm 5\%$ of V_{g_4} ; however, in the positive direction a variation of $+40\text{ V}$ is allowed at low values of V_{g_4} .

- 2) For visual extinction of the focused spot
- 3) Peak value of V_{g_1} above the cut-off level for $I_{g_6} = 10\text{ }\mu\text{A}$
- 4) The sensitivity (for both x and y plate pairs) for a deflection of less than 75% of the useful scan will not differ more than 2% from the sensitivity for a deflection of 25% of the useful scan.
- 5) With a raster pattern the size of which is adjusted so that the widest points of the pattern just touch the sides of a square with sides of 40.8 mm, no point of the pattern sides will be within a concentric square with sides of 39.2 mm
- 6) With the tube shielded the spot will be within a circle of 4 mm radius, the circle being centered with respect to the tube face
- 7) In order to obtain satisfactory focus quality and maximum screen current it is recommended not to apply to this electrode a voltage less than the indicated value.
- 8) If use is made of the full deflection capabilities of the tube, the deflection plates will intercept part of the electron beam near the edge of the scan; a low impedance plate drive is therefore desirable
- 9) Values to be taken into account for the calculation of the V_{g_3} -potentiometer

LIMITING VALUES (Design centre limits)

Post accelerator voltage	V_{G6}	= max. 5000 V = min. 1200 V
Isolation shield voltage	V_{G5}	= max. 2200 V
Second accelerator voltage	V_{G4}	= max. 2100 V = min. 300 V
Focusing electrode voltage	V_{G3}	= max. 1000 V
First accelerator voltage	V_{G2}	= max. 1600 V = min. 800 V ⁷⁾
Grid No.1 voltage		
negative	$-V_{G1}$	= max. 200 V
positive	$+V_{G1}$	= max. 0 V
peak positive	$+V_{G1} \text{ p}$	= max. 2 V
Ratio V_{G6}/V_{G4}	V_{G6}/V_{G4}	= max. 4
Peak voltage between second accelerator and any deflection plate	$V_{G4-x} \text{ p}$ $V_{G4-y} \text{ p}$	= max. 500 V = max. 500 V
Voltage between cathode and heater		
cathode positive	$V_{kf}(k \text{ pos})$	= max. 200 V
cathode negative	$V_{kf}(k \text{ neg})$	= max. 125 V
First accelerator dissipation	W_{G2}	= max. 6 W
Screen dissipation	W_{ℓ}	= max. 3 mW/cm ²

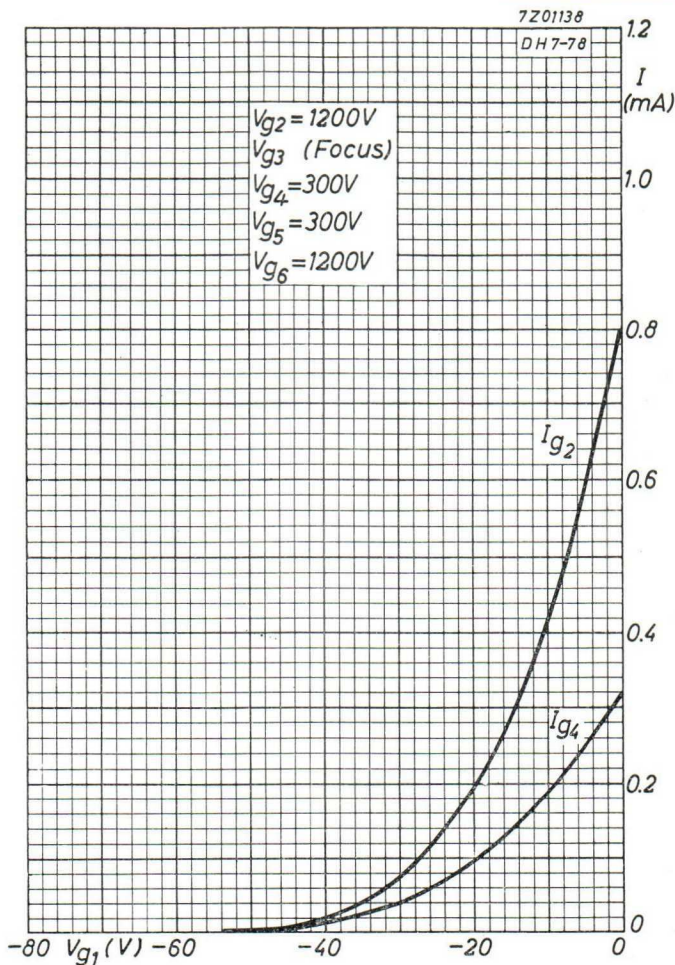
CIRCUIT DESIGN VALUES

Grid No.1 voltage ²⁾	$-V_{G1} = 30 \text{ to } 60 \text{ V}$	per kV of V_{G2}
Deflection factors at $V_{G6}/V_{G4} = 1$		
horizontal	$M_x = 17.9 \text{ to } 22.8 \text{ V/cm}$	per kV of V_{G4}
vertical	$M_y = 6.9 \text{ to } 8.8 \text{ V/cm}$	per kV of V_{G4}
Deflection factors at $V_{G6}/V_{G4} = 4$		
horizontal	$M_x = 31.3 \text{ to } 40 \text{ V/cm}$	per kV of V_{G4}
vertical	$M_y = 10.7 \text{ to } 13.7 \text{ V/cm}$	per kV of V_{G4}
Grid No.1 circuit resistance	$R_{G1} = \text{max. } 1.5 \text{ M}\Omega$	
Deflection plate resistance	$R_x = R_y = \text{max. } 50 \text{ k}\Omega$	⁸⁾
Grid No.3 current	$I_{G3} = -15 \text{ to } +10 \text{ }\mu\text{A}$	⁹⁾

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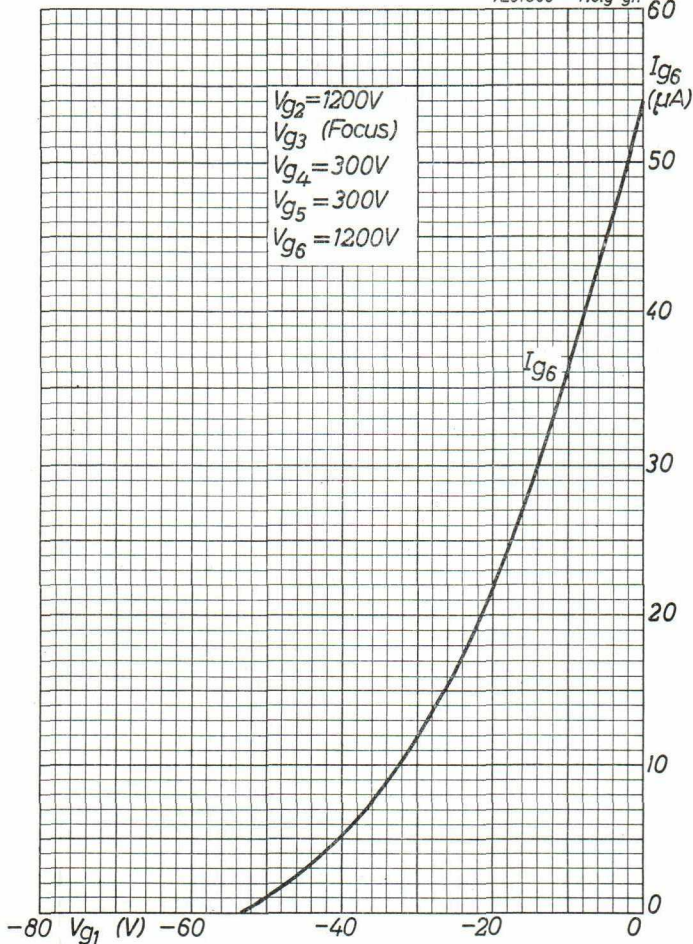
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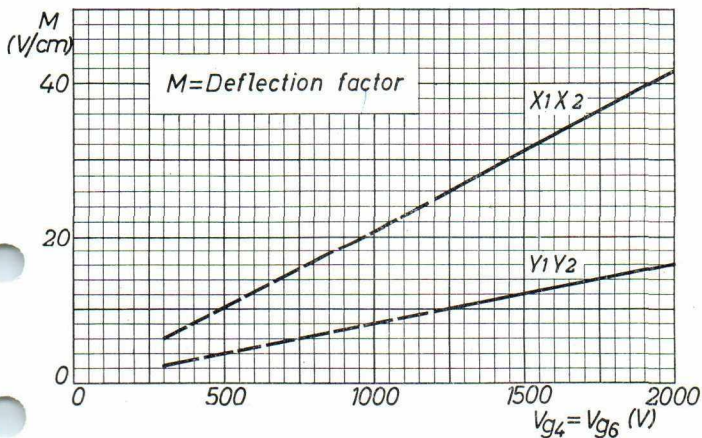
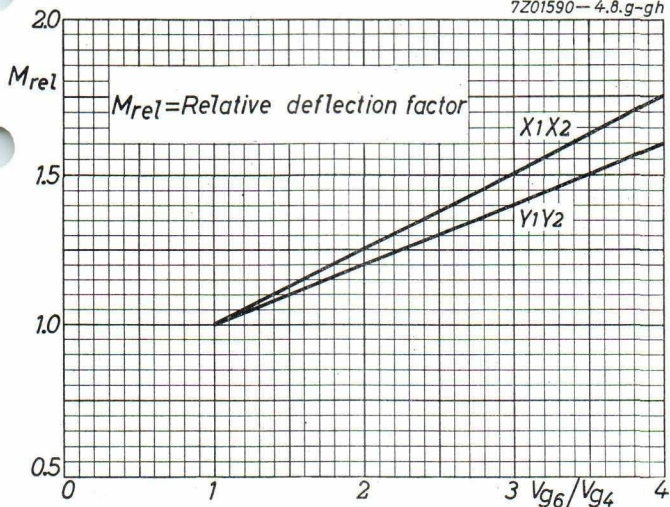


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