CATHODE-RAY TUBE

The TELEFUNKEN Type 5 DMP is a five inch flat face, single beam, electrostatic deflection and focus Cathode-Ray-Tube, with very high deflection sensitivity, small spot size and a good uniformity of the deflection factor.

5 DMP 2	5 DMP 7	5 DMP 11	5 DMP 31
DN 13-38	DP 13-38	DB 13-38	DG 13-38

Tentative

Focusing Method	electrostatic
Deflecting Method	electrostatic

Direct Interelectrode Capacitances, Approximate

Cathode to all other electrodes		4.2	µµf
Grid 1 to all other electrodes		6.1	µµf
D1 to D2		1.4	µµf
D3 to D4		2.6	µµf
D1 to all other electrodes except D2		4.3	µµf
D2 to all other electrodes except D1		4.3	µµf
D3 to all other electrodes except D4		2.4	µµf
D4 to all other electrodes except D3		2.4	µµf
Grid 1 to D1, D2, D3, D4	<	0.002	µµf
Cathode to D1, D2, D3, D4	<	0.001	µµf
D1, D2 to D3, D4	<	0.01	µµf

OPTICAL DATA

Phosphor Number	P 2	P 7	P 11	P 31
Fluorescent Color	Bluegreen	Blue	Blue	Green
Phosphorescent Color	Green	Yellowgreen		
Persistence	Long	Long	Short	Short

MECHANICAL DATA

Overall Length	$19\,^{13}/_{32}$	Max Inches
Greatest Diameter of Bulb	$5\,^{1}/_{4} \pm\,^{3}/_{32}$	Inches
Minimum Useful Screen Diameter	$4\,^{17}/_{32}$	Inches
Base Small-Button Unidekar 11 pin	E 11-22	
Basing	11 Z	
Base Alignment		
D3 D4 trace aligns with pin No. 11 and tube axis	45 ± 10	Degrees
Positive voltage on D2 deflects beam approximately toward the midpoint between pin 3 and 4		
Positive voltage on D3 deflects beam approximately toward the midpoint between pin 6 and 7		

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MECHANICAL DATA (Continuation)

Angle between D3 D4 and D1 D2 traces	90 ± 1	Degrees
Bulb contact alignment:		
J1–21 contact aligns with trace of D1–D2 (between pin 9 and 10)	± 10	Degrees

RATINGS (Absolute maxima) Note 1

Heater Voltage	6.3	Volts
Heater Current at 6.3 volts	0.3 ± 10 %	Ampere
Post-Accelerator voltage	12,500	Max Volts DC
Isolation Shield voltage	2,500	Max Volts DC
Accelerator voltage	2,300	Max Volts DC
Grid 2 voltage	12,500	Max Volts DC
Grid 3 voltage	2,500	Max Volts DC
Grid 4 voltage (Focusing Electrode)	2,500	Max Volts DC
Grid 1 Voltage		
Negative-Bias Value	−400	Max Volts DC
Positive-Bias Value	0	Max Volts DC
Positive-Peak Value	0	Max Volts DC
Peak-Heater-Cathode Voltage		
Heater negative with respect to cathode	180	Max Volts
During warm-up period not to ecceed 15 seconds	180	Max Volts
After equipment warm-up period	180	Max Volts
Heater positive with respect to cathode	180	Max Volts
Peak Voltage between Accelerator and any Deflection Electrode	800	Max Volts
The product of Grid 2 voltage and cathode current	0.6	Max Watts

MAXIMUM CIRCUIT VALUES

Grid 1 Circuit Resistance	5.5	Max Megohms
Resistance for Deflecting-Electrode Circuit D1, D2 (Note 10)	110,000	Max Ohms
Resistance for Deflecting-Electrode Circuit D3, D4 (Note 10)	55,000	Max Ohms

TYPICAL OPERATING CONDITIONS (Note 1)

Post-Accelerator voltage	6,000	Volts
Isolation Shield voltage	1,200	Volts
Grid 2 voltage	6,000	Volts
Grid 3 voltage	1,200	Volts
Accelerator voltage (Note 2)	1,000 to 1,105	Volts
Modulation (Note 3)	38	Max Volts
Grid 4 voltage (Focusing Electrode)	710 to 930	Volts
Grid 1 voltage (Note 4)	−120 to −175	Volts
Deflection Factors:		
D 1 and D 2	56 to 68,5	Volts DC per inch
D 3 and D 4	8,4 to 9,9	Volts DC per inch
Focusing Electrode Current for any operating condition	−20 to +20	Microamperes
Spot Position (undeflected) (Note 5)	7	Max Millimeters
Line Width (Note 6)	0,02	Max Inches
Deflection factor uniformity (Note 7)	1	% max.
Pattern distortion (Note 8)	1	% max.

For Anode Voltage not shown in the preceding table, the following can be used as a guide:

Focusing Electrode Voltage	71 % to 93 %	of Anode Volts
Grid 1 Voltage (Note 4)	12 % to 17,5 %	of Anode Volts

Deflection Factors:

D 1 and D 2	56 to 68,5 Volts DC per inch per Kilovolt of Anode
D 3 and D 4	8,4 to 9,9 Volts DC per inch per Kilovolt of Anode
Useful scan D 1 – D 2 (Note 9)	100 Min Millimeters
Useful scan D 3 – D 4 (Note 9)	60 Min Millimeters
Post Accelerator helix resistance	240 Megohms Approx.

Pin Connection

Pin No. 1	Heater	Pin No. 7	Internal Connection
Pin No. 2	Heater	Pin No. 8	Internal Connection
Pin No. 3	Grid No. 1	Pin No. 9	Internal Connection
Pin No. 4	Cathode	Pin No. 10	Internal Connection
Pin No. 5	Focusing Electrode Grid No. 4	Pin No. 11	Grid No. 3
Pin No. 6	Accelerator		

1. All voltages taken with respect to cathode.
2. The accelerator voltage is made variable from 1000 Volts to 1105 Volts to provide for astigmatism control. In order to maintain proper astigmatism adjustment as total cathode current is varied, it is recommended that the resistance in the accelerator circuit is small. (The midpotential of the deflection electrodes is 1000 V.)
3. The increase in Grid No. 1 voltage from cutoff to produce a screen current of 10 μA DC.
4. Visual extinction of undeflected focused spot.
5. Connect free deflecting electrodes to anode.
6. For a beam current of 10 microamperes DC in accordance with Mil-E-1 C specification.
7. The deflection factor (for both D1 D2 and D3 D4 plate pairs, separately) for deflections of less than 75% of the useful scan will not differ from the deflection factor for a deflection of 25% of the useful scan by more than specified amount.
8. The edges of a raster pattern with the mean dimension 60 × 100 mm will not deviate from the mean dimension by more than the specified amount.
9. 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 scan, hence a low impedance deflection plate drive is desirable.
10. It is recommended that the deflecting-electrode-circuit resistance be approximately equal.

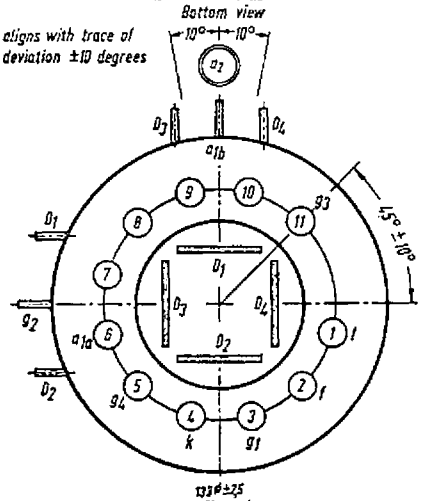
Accessories:

Shielding	stock no. 30476
Socket	stock no. 30232
Post-acceleration cap	stock no. 30319
Caps for deflection terminals	stock no. 30429

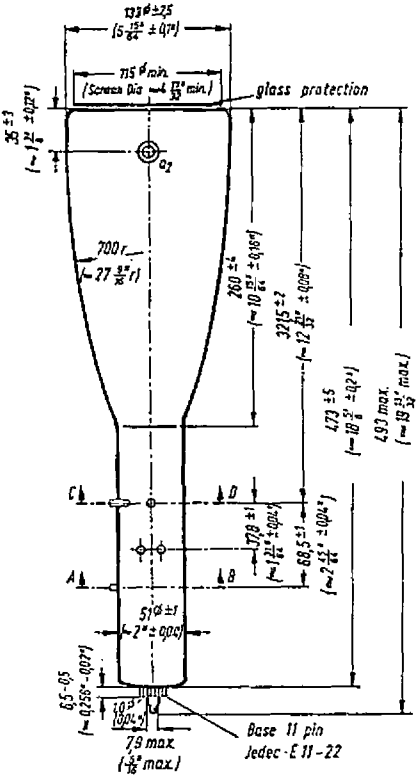
Base connection

Bottom view

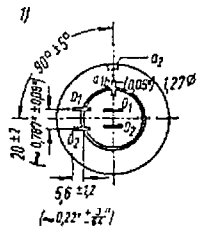
The J 1-21 contact aligns with trace of $D_1 - D_2$ maximal deviation ±10 degrees



11 Z

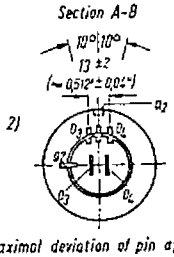


Section C-D



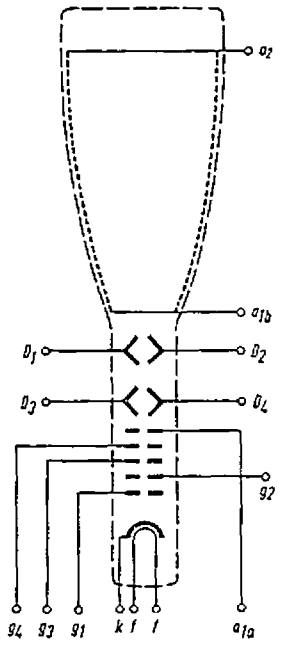
1) Angle between centre line pins $D_4 - D_3; g_2$ and pin a_{1b}

Section A-B



2) Maximal deviation of pin a_{1b} and centre line $D_3 - D_4$ from deflection plane ps

The tube must not be mechanically stressed when attaching or removing the socket.



Circuit elements may not be supported on free pins or socket contacts.