

## CATHODE-RAY TUBE

The TELEFUNKEN Type 5 DSP is a five inch flat face, single beam, electrostatic deflection and focus Cathode-Ray-Tube, with small spot size and metallized screen

5 DSP 2  
DN 13-18

5 DSP 11  
DB 13-18

5 DSP 31  
DG 13-18

Focusing Method

electrostatic

Deflecting Method

electrostatic

Direct Interelectrode Capacitances, Approximate

Cathode to all other electrodes	7.5	μμf
Grid 1 to all other electrodes	6.7	μμf
D 1 to D 2	3.0	μμf
D 3 to D 4	1.6	μμf
D 1 to all other electrodes except D 2	5.2	μμf
D 2 to all other electrodes except D 1	5.0	μμf
D 3 to all other electrodes except D 4	3.5	μμf
D 4 to all other electrodes except D 3	3.0	μμf
D 1, D 2 to D 3, D 4	0.4	μμf

## OPTICAL DATA

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

## MECHANICAL DATA

Overall Length	17 <sup>1</sup> / <sub>8</sub>	Max Inches
Greatest Diameter of Bulb	5 <sup>15</sup> / <sub>64</sub> ± 0.1	Inches
Minimum Useful Screen Diameter	4 <sup>23</sup> / <sub>32</sub>	Inches
Base Small Shall	B 12-37	
Base Alignment		
D 3 D 4 trace aligns with pin No. 11 and tube axis	± 10	Degrees
Positive voltage on D 2 deflects beam approximately toward the midpoint between pin 1 and 14		
Positive voltage on D 4 deflects beam approximately toward pin 4		



**MECHANICAL DATA** (Continuation)

Angle between D 3 D 4 and D 1 D 2 traces	90 ± 1	Degrees
Bulb contact alignment:		
J1-21 contact aligns with trace of D 1-D 2 (between pin 7 and 8)	± 10	Degrees

**RATINGS** Note 1

Heater Voltage	6.3	Volts
Heater Current at 6.3 volts	0.3 ± 10 %	Ampere
Post-Accelerator voltage	11,000	Max Volts DC
Isolation Shield voltage	3,000	Max Volts DC
Accelerator voltage	3,000	Max Volts DC
Grid 3 Voltage (Focusing Electrode)	1,500	Max Volts DC
Grid 1 Voltage		
Negative-Bias Value	-250	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	125	Max Volts
During warm-up period not to exceed 15 seconds	125	Max Volts
After equipment warm-up period	125	Max Volts
Heater positive with respect to cathode	125	Max Volts
Peak Voltage between Accelerator and any Deflection Electrode	750	Max Volts
Cathode current	200	Max Microamperes eff.

**MAXIMUM CIRCUIT VALUES**

Grid 1 Circuit Resistance	10	Max Megohms
Resistance for Deflecting-Electrode Circuit (Note 10)	5	Max Megohms



## TYPICAL OPERATING CONDITIONS (Note 1)

Post-Accelerator voltage	10,000	Volts
Isolation Shield voltage (Note 9)	1925 to 2075	Volts
Accelerator voltage (Note 2)	1925 to 2075	Volts
Modulation (Note 3)	50	Max Volts
Grid 3 Voltage (Focusing Electrode)	400 to 590	Volts
Grid 1 Voltage (Note 4)	-75 to -45	Volts
Deflection Factors:		
D 1 and D 2	75 to 92.5	Volts DC per inch
D 3 and D 4	85 to 103	Volts DC per inch
Focusing Electrode Current		
for any operating condition	-10 to +10	Microamperes
Spot Position (undeflected) (Note 5)	6	Max Millimeters
Line Width (Note 6)	0.018	Max Inches
Deflection factor uniformity (Note 7)	2	% max.
Pattern distortion (Note 8)	1.35	% max.

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

Focusing Electrode Voltage	20 to 29.5 %	of Anode Volts
Grid 1 Voltage (Note 4)	3.75 to 2.25 %	of Anode Volts

## Deflection Factors:

D 1 and D 2	37.5 to 46.3	Volts DC per inch per Kilovolt of Anode
D 3 and D 4	42.5 to 51.5	Volts DC per inch per Kilovolt of Anode
Useful scan D 1-D 2	100 Min	Millimeters
Useful scan D 3-D 4	100 Min	Millimeters
Post Accelerator helix resistance	133 to 400	Megohms

## Pin Connection

Pin No. 1	Heater	Pin No. 7	Deflecting Electrode D 4
Pin No. 2	Cathode	Pin No. 8	Deflecting Electrode D 3
Pin No. 3	Grid No. 1	Pin No. 9	Accelerator
Pin No. 4	Internal Connection	Pin No. 10	Deflecting Electrode D 1
Pin No. 5	Focusing Electrode Grid No. 3	Pin No. 11	Deflecting Electrode D 2
		Pin No. 12	Isolation Shield
		Pin No. 14	Heater



1. All voltages taken with respect to cathode.
2. The accelerator voltage is made variable from 1925 Volts to 2075 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 mid potential of the deflection electrodes is 2,000 V.)
3. The increase in Grid No. 1 voltage from cutoff to produce an screen current of 100  $\mu$ A DC.
4. Visual extinction of undeflected focused spot.
5. Connect free deflecting electrodes to anode.
6. For a beam current of 25 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 75 $\times$ 75 mm will not deviate from the mean dimension by more than the specified amount.
9. The Isolations Shield electrode should be adjusted for optimum performance. For any necessary adjustment, its potential will be within a range of 1925 to 2075 Volts with respect to cathode.
10. It is recommended that the deflecting-electrode-circuit resistance be approximately equal.

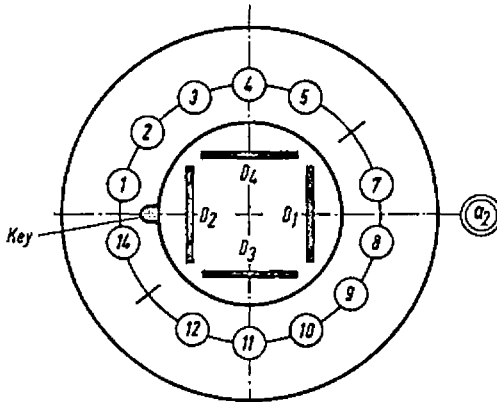
Accessories:

Shielding	stock no. 30427
Socket	stock no. 30223
Post-acceleration cap	stock no. 30319



Base connection

Bottom view



Screen Dia. min 120  $\phi$   
( $\approx 4\frac{11}{32}$ " )

