

## CATHODE-RAY TUBE

The TELEFUNKEN Type 3 BVP is a three inch flat face, single beam, electrostatic deflection and focus Cathode-Ray-Tube, with very high deflection sensitivity, small spot size and half heater power, thereby the tube is particularly suitable for transistorized oscilloscop.

3 BVP 2  
DN 7-18

3 BVP 7  
DP 7-18

3 BVP 11  
DB 7-18

3 BVP 31  
DG 7-18

### Tentative

Focusing Method  
Deflecting Method

electrostatic  
electrostatic

### Direct Interelectrode Capacitances, Approximate

Cathode to all other electrodes	4.0	μμf
Grid 1 to all other electrodes	7.3	μμf
D 1 to D 2	2.8	μμf
D 3 to D 4	2.0	μμf
D 1 to all other electrodes except D 2	3.3	μμf
D 2 to all other electrodes except D 1	3.0	μμf
D 3 to all other electrodes except D 4	3.5	μμf
D 4 to all other electrodes except D 3	3.6	μμf
Grid 1 to D 1, D 2, D 3, D 4	0.6	μμf
Cathode to D 1, D 2, D 3, D 4	0.1	μμf
D 1, D 2 to D 3, D 4	0.8	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	12	Max Inches
Greatest Diameter of Bulb	$3 \pm \frac{1}{16}$	Inches
Minimum Useful Screen Diameter	$2 \frac{43}{64}$	Inches
Base Small-Button Unidekar 11 pin	E 11-22	
Basing	11 X	
Base Alignment		
D 3 D 4 trace aligns with pin No. 11 and tube axis	$45 \pm 10$	Degrees
Positive voltage on D 2 deflects beam		
approximately toward the midpoint between pin 3 and 4		
Positive voltage on D 3 deflects beam		
approximately toward the midpoint between pin 6 and 7		



**MECHANICAL DATA** (Continuation)

Angle between D 3 D 4 and D 1 D 2 traces	$90 \pm 1$	Degrees
Bulb contact alignment:		
J 1-22 and J 1-25 contact aligns with trace of D 1-D 2 (between pin 9 and 10)	$\pm 10$	Degrees

**RATINGS** (Absolute maxima) Note 1

Heater Voltage	6.3	Volts
Heater Current at 6.3 volts	$0.3 \pm 10\%$	Ampere
Post-Accelerator voltage	8,000	Max Volts DC
Isolation Shield voltage	2,300	Max Volts DC
Accelerator voltage	2,300	Max Volts DC
Grid 2 voltage	2,300	Max Volts DC
Grid 3 voltage (Focusing Electrode)	2,300	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	180	Max Volts
During warm-up period not to exceed 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	0,25	Max Watts

**MAXIMUM CIRCUIT VALUES**

Grid 1 Circuit Resistance	5.5	Max Megohms
Resistance for Deflecting-Electrode Circuit D 1, D 2 (Note 10)	110,000	Max Ohms
Resistance for Deflecting-Electrode Circuit D 3, D 4 (Note 10)	55,000	Max Ohms



## TYPICAL OPERATING CONDITIONS (Note 1)

Post-Accelerator voltage	1,600	Volts
Isolation Shield voltage	430	Volts
Grid 2 voltage	1,600	Volts
Grid 3 voltage (Focusing Electrode)	135 to 162	Volts
Accelerator voltage (Note 2)	400 to 430	Volts
Modulation (Note 3)	33	Max Volts
Grid 1 voltage (Note 4)	-67 to -87	Volts
Deflection Factors:		
D 1 and D 2	27,2 to 33,8	Volts DC per inch
D 3 and D 4	8,1 to 10,7	Volts DC per inch
Focusing Electrode Current for any operating condition	-20 to +20	Microamperes
Spot Position (undeflected) (Note 5)	3.5	Max Millimeters
Line Width (Note 6)	0,022	Max Inches
Deflection factor uniformity (Note 7)	2	% max.
Pattern distortion (Note 8)	1.5	% max.
For Anode Voltage not shown in the preceding table, the following can be used as a guide:		
Focusing Electrode Voltage	33,8% to 40,5%	of Anode Volts
Grid 1 Voltage (Note 4)	16,8% to 21,8%	of Anode Volts

## Deflection Factors:

D 1 and D 2	68 to 84,5 Volts DC per inch per Kilovolt of Anode
D 3 and D 4	20,2 to 26,8 Volts DC per inch per Kilovolt of Anode
Useful scan D 1-D 2 (Note 9)	60 Min Millimeters
Useful scan D 3-D 4 (Note 9)	60 Min Millimeters
Post Accelerator helix resistance	47 to 234 Megohms

## Pin Connection

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



1. All voltages taken with respect to cathode.
2. The accelerator voltage is made variable from 400 Volts to 430 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 400 V.)
3. The increase in Grid No. 1 voltage from cutoff to produce a screen current of 10  $\mu$ A 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 D 1 D 2 and D 3 D 4 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 45  $\times$  45 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:

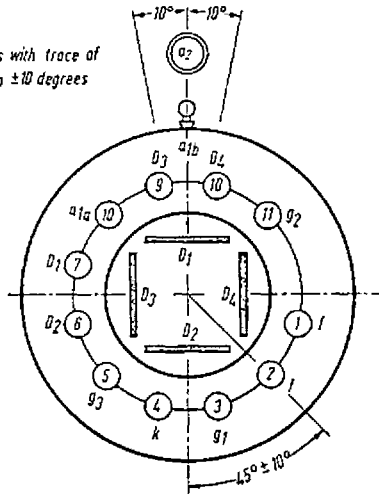
Shielding	stock no. 30477
Socket	stock no. 30232
Post-acceleration cap	stock no. 30317
Cap for $g_2$ terminal	stock no. 30341



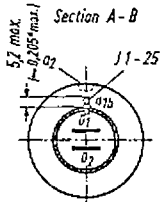
Base connection

Bottom view

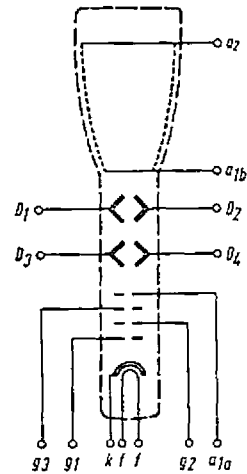
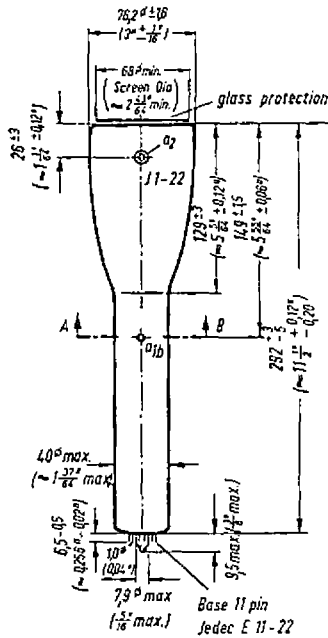
The J1-22 contact aligns with trace of D<sub>1</sub> - D<sub>2</sub> maximal deviation ±10 degrees



11 X



J1-25 neck contact aligns with trace of D<sub>1</sub> - D<sub>2</sub> maximal deviation ±10 degrees



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

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

