

DUMONT
CATHODE-RAY TUBE

TYPE 7BDP-

The Du Mont Type 7BDP- is a 7-inch diagonal square face, five beam, electrostatic deflection and focus cathode-ray tube. Each beam is independently controllable, utilizes limited available scan with increased deflection sensitivity in the D3D4 direction and is so positioned that they scan separate areas of the screen. The deflection electrode and acceleration electrode connections are brought out through the bulb wall to minimize lead inductance and capacity and to improve insulation. A collar or ring base provides ease of connection to these leads.

GENERAL CHARACTERISTICS¹

Electrical Data

Focusing Method	Electrostatic	
Deflecting Method	Electrostatic	
Direct Interelectrode Capacitances	<u>Max.</u>	
Cathode to all	6.0	μf
Grid No. 1 to all	5.8	μf
D1 to D2	2.5	μf
D3 to D4	2.9	μf
D1 to all	7.8	μf
D2 to all	7.8	μf
D3 to all	7.2	μf
D4 to all	7.2	μf

Optical Data

Phosphor Number	1	2	4	7	11
Fluorescence	Green	Blue-Green	White	Blue-White	Blue
Phosphorescence	-----	Green	-----	Yellow	-----
Persistence	Medium	Long	Medium	Long	Short

Mechanical Data

Overall Length	20 5/8 ± 3/8	Inches
Greatest Bulb Diagonal	7 1/32	Inches
Minimum Useful Screen Width ²	4.5	
Bulb Contact (Recessed Small Ball Cap)	J1-22	
Collar (22 Pin)	Special	
Base (25 Pin)	B25-139	
Basing	Special	

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GENERAL CHARACTERISTICS (MECHANICAL DATA) (Continued)¹

Collar and Base Alignment:

Collar Pin No. 1 and Base Key each aligns with the D3D4 trace	± 10	Degrees
Positive voltage on D3 deflects the beam towards the index pin of the Ring Base		
Positive voltage on D1 deflects the beam approximately towards Pin 6 of the Ring Base		

Bulb Contact Alignment:

Bulb Contact Aligns with D3D4 trace	± 10	Degrees
Bulb Contact on same side as Base Key and Collar Pin No. 1		
Bulb Contact located on Tube Center Line	$\pm 1/4$	Inch
Bulb Wall (with contact) aligns with D1D2 trace	± 3	Degrees

Trace Alignment:

D1D2 trace aligns with D3D4 trace	90 ± 2	Degrees
Corresponding traces align within	2	Degrees

MAXIMUM RATINGS (DESIGN CENTER VALUES)

Heater Voltage	6.3	Volts
Heater Current at 6.3 Volts	$0.6 \pm 10\%$	Amperes
Post Accelerator Voltage	7,000	Max. Volts DC
Accelerator Voltage	3,500	Max. Volts DC
Ratio Post Accelerator Voltage to Accelerator Voltage ⁴	2.0	Max.
Focusing Voltage	1,500	Max. Volts DC
Grid No. 1 Voltage		
Negative Bias Value	200	Max. Volts DC
Positive Bias Value	0	Max. Volts DC
Positive Peak Value	0	Max. Volts
Peak Heater to Cathode Voltage		
Heater negative with respect to cathode	180	Max. Volts
Heater positive with respect to cathode	180	Max. Volts
Peak Voltage between Accelerator and any deflection electrode	1,250	Volts

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TYPICAL OPERATING CONDITIONS

Post Accelerator Voltage	4,000	Volts DC
Accelerator Voltage	2,000	Volts DC
Focusing Voltage	450 to 650	Volts DC
Grid No. 1 Voltage ⁵	-50 to -90	Volts DC
Modulation ⁶	60	Max. Volts DC
Line Width "A" ⁷	.026	Max. Inches
Deflection Factors:		
D1 and D2	52 to 68	Volts DC/Inch
D3 and D4	17 to 23	Volts DC/Inch
Deflection Factor Uniformity ⁹	2%	Max.
Useful Scan ¹⁰		
D1 and D2	4.5	Min. Inches
D3 and D4	1.5	Min. Inches
Interaction Factor ¹¹	.00001	Max. Inches/Volt

CIRCUIT DESIGN VALUES

Focusing Voltage	225 to 325 Volts per Kilovolt of Accelerator Voltage	
Focusing Current for any operating condition	-15 to +10	Microamperes
Grid No. 1 Voltage ⁵	-25 to -45 Volts per Kilovolt of Accelerator Voltage	
Grid No. 1 Circuit Resistance	1.5	Max. Megohms
Deflection Factors:		
Ratio Post Accelerator Voltage to Accelerator Voltage	2.0	
D1 and D2	26 to 34 Volts DC/Inch/KV of Accelerator Voltage	
D3 and D4	8.5 to 11.5 Volts DC/Inch/KV of Accelerator Voltage	
Resistance in any Deflecting-Electrode Circuit ¹²	1.0	Max. Megohms

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NOTES

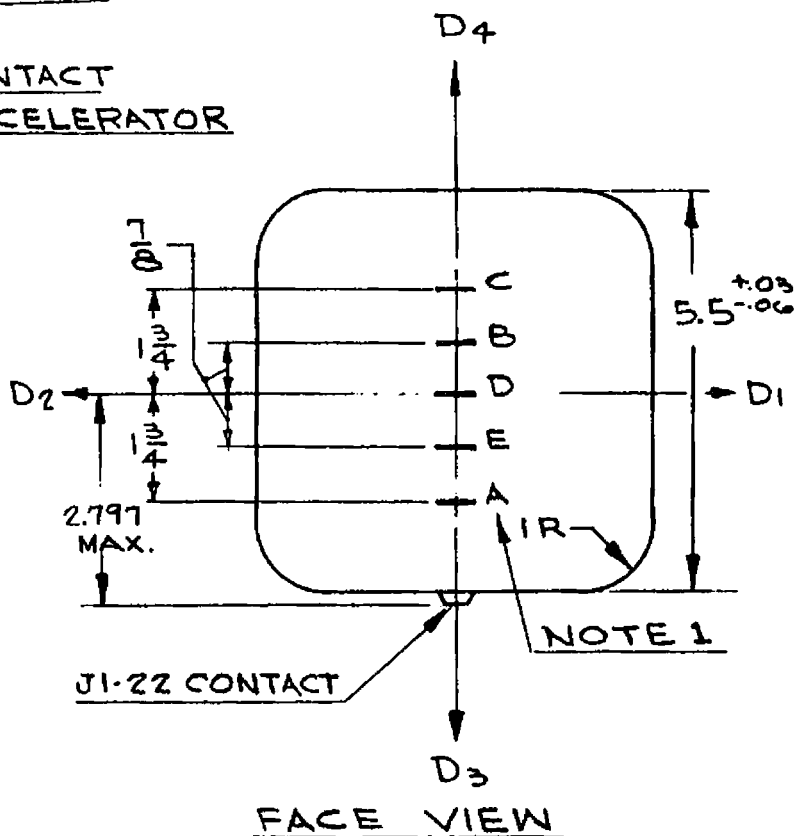
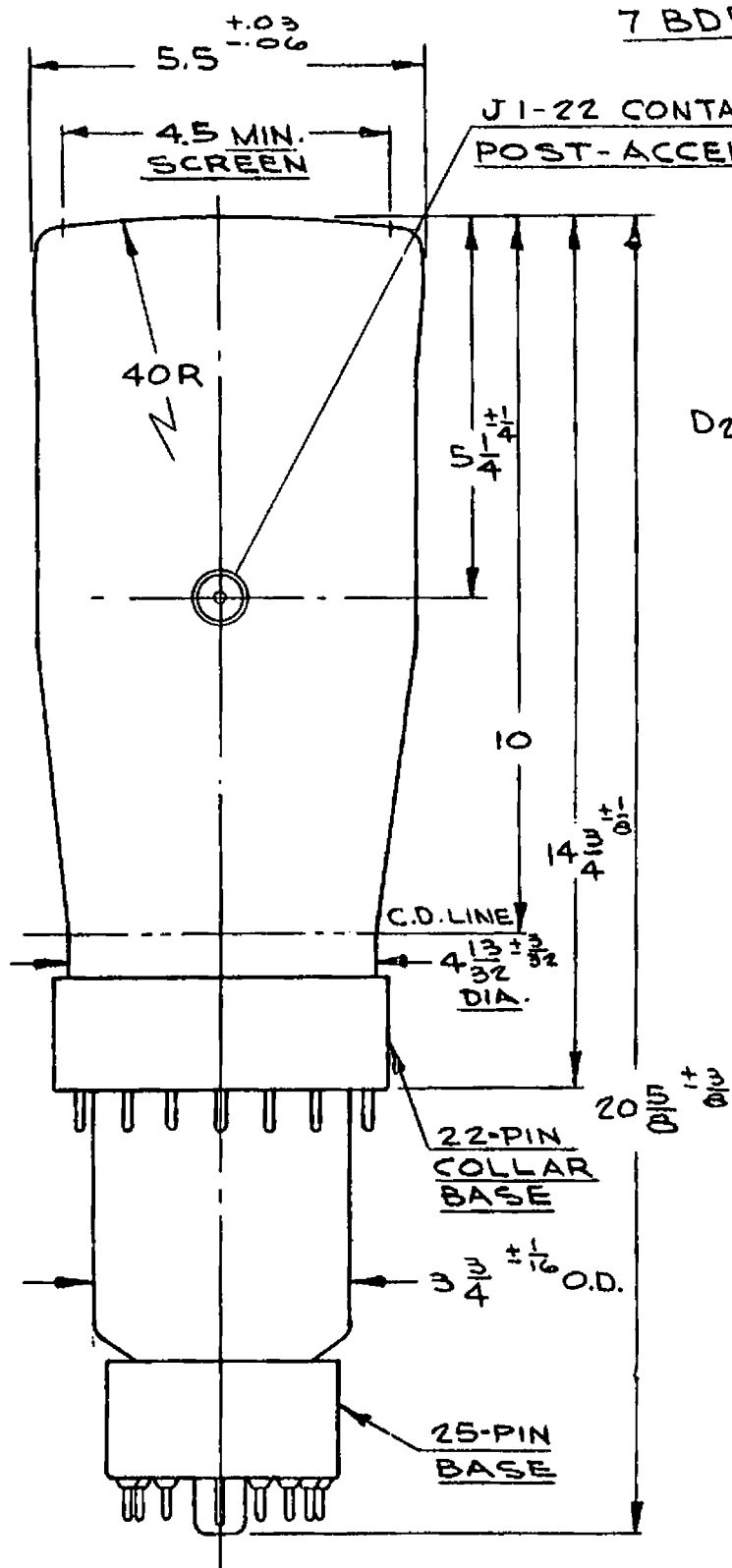
1. Values are for each unit unless otherwise stated.
2. Following the bulb contour.
3. Accelerator power input (avg.) should be limited to six watts.
4. This tube is designed for optimum performance when operating at an E_{b3}/E_{b2} ratio of 2.0. Operation at other ratios of E_{b3}/E_{b2} may result in changes in deflection uniformity and pattern distortion.
5. Visual extinction of the undeflected, focused spot.
6. The increase in Grid No. 1 voltage from cut-off to produce an I_{b3} of 50 μ ADC.
7. Measured in accordance with MIL-E-1B specifications using an I_{b3} of 25 μ ADC.
8. The deflection in this direction is limited to $\pm .75$ min. inches from the undeflected spot position.
9. Measured in accordance with MIL-E-1B specifications.
10. Centered about normal undeflected spot position.
11. The deflection of one beam when balanced DC Voltages are applied to the deflection electrodes of the other will not be greater than the indicated value.
12. It is recommended that the deflecting-electrode circuit resistance be approximately equal. Higher resistance values up to five megohms may be used for low beam current operation.

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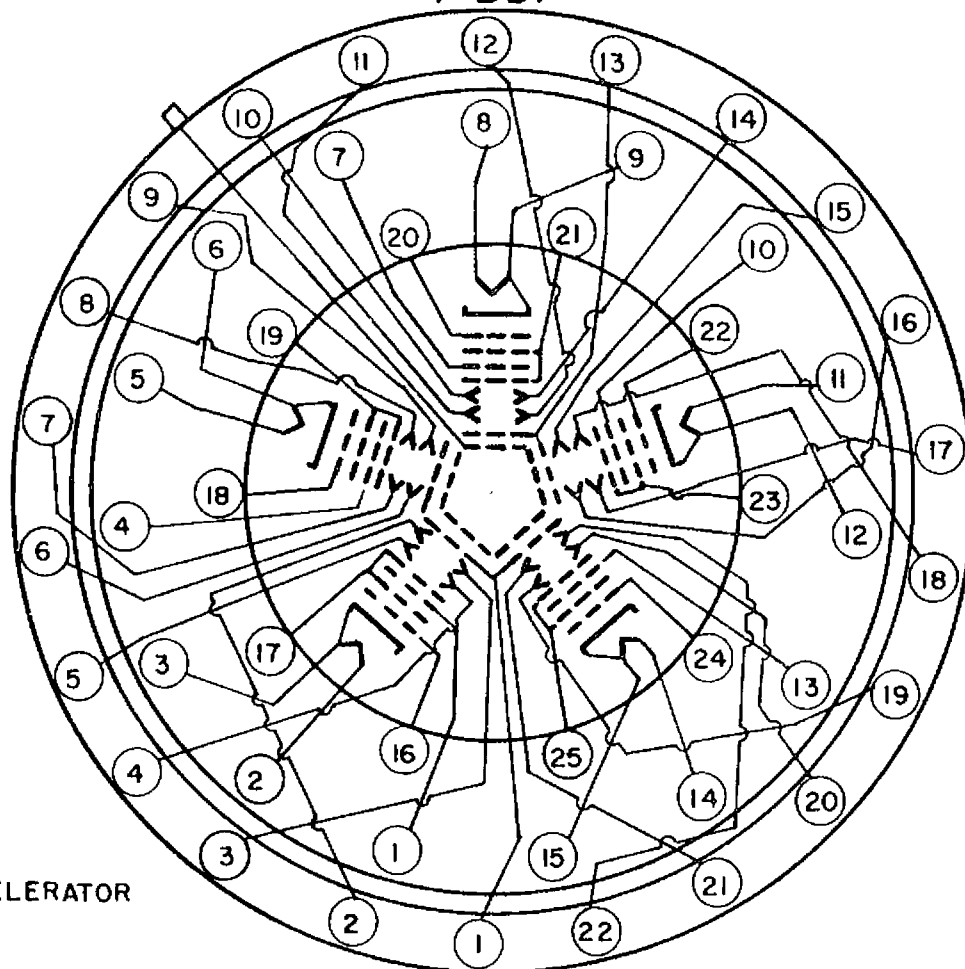
NOTES:

- 1 BEAM A CENTER ON POSITION A, ETC. WITHIN $\frac{5}{16}$ R. CIRCLE. INDEX PIN, KEY & BULB CONTACT EACH ALIGN WITH $D_3 D_4$ TRACE $\pm 10^\circ$

DU MONT

BASING

7 BDP-



CAP
POST-ACCELERATOR

BOTTOM VIEW

22-PIN COLLAR BASE

PIN NO.	ELEMENT	BEAM
1	ACCELERATOR-SHIELD	
2	DEFLECTOR D ₂	A
3	DEFLECTOR D ₁	A
4	DEFLECTOR D ₃	A
5	DEFLECTOR D ₄	A
6	DEFLECTOR D ₁	B
7	DEFLECTOR D ₃	B
8	DEFLECTOR D ₄	B
9	DEFLECTOR D ₂	B
10	DEFLECTOR D ₃	C
11	DEFLECTOR D ₁	C
12	DEFLECTOR D ₂	C
13	ACCELERATOR-SHIELD	
14	DEFLECTOR D ₄	C
15	DEFLECTOR D ₁	D
16	DEFLECTOR D ₂	D
17	DEFLECTOR D ₄	D
18	DEFLECTOR D ₃	D
19	DEFLECTOR D ₄	E
20	DEFLECTOR D ₃	E
21	DEFLECTOR D ₂	E
22	DEFLECTOR D ₁	E

25 PIN BASE

PIN NO.	ELEMENT	BEAM
1	FOCUSING ELECTRODE	A
2	HEATER	A
3	HEATER & CATHODE	A
4	FOCUSING ELECTRODE	B
5	HEATER	B
6	HEATER & CATHODE	B
7	FOCUSING ELECTRODE	C
8	HEATER	C
9	HEATER & CATHODE	C
10	FOCUSING ELECTRODE	D
11	HEATER	D
12	HEATER & CATHODE	D
13	FOCUSING ELECTRODE	E
14	HEATER	E
15	HEATER & CATHODE	E
16	GRID NO.1	A
17	ACCELERATOR	A
18	GRID NO.1	B
19	ACCELERATOR	B
20	GRID NO.1	C
21	ACCELERATOR	C
22	GRID NO.1	D
23	ACCELERATOR	D
24	GRID NO.1	E
25	ACCELERATOR	E

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