

TYPE 3ADP- CATHODE-RAY-TUBES

The Du Mont Type 3ADP- is a 3 inch, flat face, single beam, electrostatic deflection and focus Cathode-ray Tube of compact design. Post-acceleration coupled with restricted deflection area provides high light output, very high deflection sensitivity, and small spot size. The electron gun is so designed as to require no appreciable focus electrode current. The deflector and anode leads are brought out directly through the bulb wall in order to provide maximum insulation while minimizing lead inductance and capacitance. The 3ADP- is one of the line of Du Mont Tight-tolerance Cathode-ray Tubes.



GENERAL CHARACTERISTICS

Electrical Data

Focusing Method	Electrostatic
Deflecting Method	Electrostatic

Direct Interelectrode Capacitances	Min.	Max.	
Cathode to all	3.0	4.5	μf
Grid No. 1 to all	5.5	7.2	μf
D1 to D2	1.4	2.0	μf
D3 to D4	0.9	1.5	μf
D1 to all	3.6	4.6	μf
D2 to all	3.6	4.6	μf
D3 to all	2.7	3.6	μf
D4 to all	2.7	3.6	μf

Optical Data

Phosphor Number	1	2	7	11
Fluorescent Color	Green	Green	Blue	Blue
Phosphorescent Color	—	Green	Yellow	—
Persistence	Medium	Long	Long	Short

Mechanical Data

Overall Length	10 $\pm$ 1/4 Inches
Greatest Diameter of Bulb	3 $\pm$ 1/16 Inches
Minimum Useful Screen Diameter	2.68 Inches
Bulb Number	J24ZA1
Bulb Contact	J1-22
Neck Contacts	J1-25
Base — Small Shell, 12 Pin Duodecal	B12-43
Basing	12Z
Base Alignment	
D1D2 trace aligns with Pin No. 5 and tube axis	$\pm$ 10 Degrees
Positive voltage on D1 deflects beam approximately toward Base Pin No. 5	
Positive voltage on D3 deflects beam approximately toward Base Pin No. 2	
Bulb Contact Alignment	
J1-22 contact aligns with D1D2 trace	$\pm$ 10 Degrees
J1-22 contact on same side as Pin No. 5	
Trace Alignment	
Angle between D3D4 and D1D2 traces	90 $\pm$ 1 Degrees

MAXIMUM RATINGS (Design Center Values)

Heater Voltage	6.3 Volts
Heater Current at 6.3 Volts	0.6 $\pm$ 10% Ampere
Post-Accelerator Voltage	6000 Max. Volts D-C
Accelerator Voltage	3000 Max. Volts D-C
Ratio Post-Accelerator Voltage to Accelerator Voltage (Note 1)	2.0
Accelerator Input (Avg.)	6.0 Max. Watts
Focusing Electrode Voltage	1000 Max. Volts D-C
Grid No. 1 Voltage	
Negative Bias Value	200 Max. Volts D-C
Positive Bias Value	0 Max. Volts D-C
Positive Peak Value	0 Max. Volts
Peak Heater-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	550 Max. Volts

TYPICAL OPERATING CONDITIONS

Post-Accelerator Voltage	4000 Volts
Accelerator Voltage	2000 Volts
Focusing Electrode Voltage	320 to 470 Volts
Grid No. 1 Voltage (Note 2)	—52 to —87 Volts
Deflection Factors:	
D1 and D2	140 to 155 Volts D-C per Inch
D3 and D4	61 to 68 Volts D-C per Inch
Deflection Factor Uniformity (Note 3)	2% Max.
Useful Scan	
D1 and D2	2.63 ($\pm$ 1.315 from tube face center) Min. Inches
D3 and D4	1.5 ($\pm$ 0.750 from tube face center) Min. Inches
Pattern Distortion (Note 4)	2% Max.
Modulation (Note 5)	38 Max. Volts D-C
Line Width "A" (Note 5)	.014 Max. Inches
Light Output (Note 6)	
P1 (Note 7)	38 Foot Lamberts Min.
P11 (Note 8)	14 Foot Lamberts Min.
Focusing Electrode Current for any operating condition	—15 to +5 μ A
Spot Position (focused and undeflected) (Note 9)	Within a 10 mm Square
For Accelerator Voltage not shown in the preceding table, the following can be used as a guide:	
Focusing Electrode Voltage	16% to 23.5% of Accelerator Volts
Grid No. 1 Voltage	2.6% to 4.4% of Accelerator Volts
Ratio Post-Accelerator to Accelerator Voltage	2.0
D1 and D2	70 to 78 Volts D-C per Inch per Kilovolt of Accelerator
D3 and D4	30 to 34 Volts D-C per Inch per Kilovolt of Accelerator

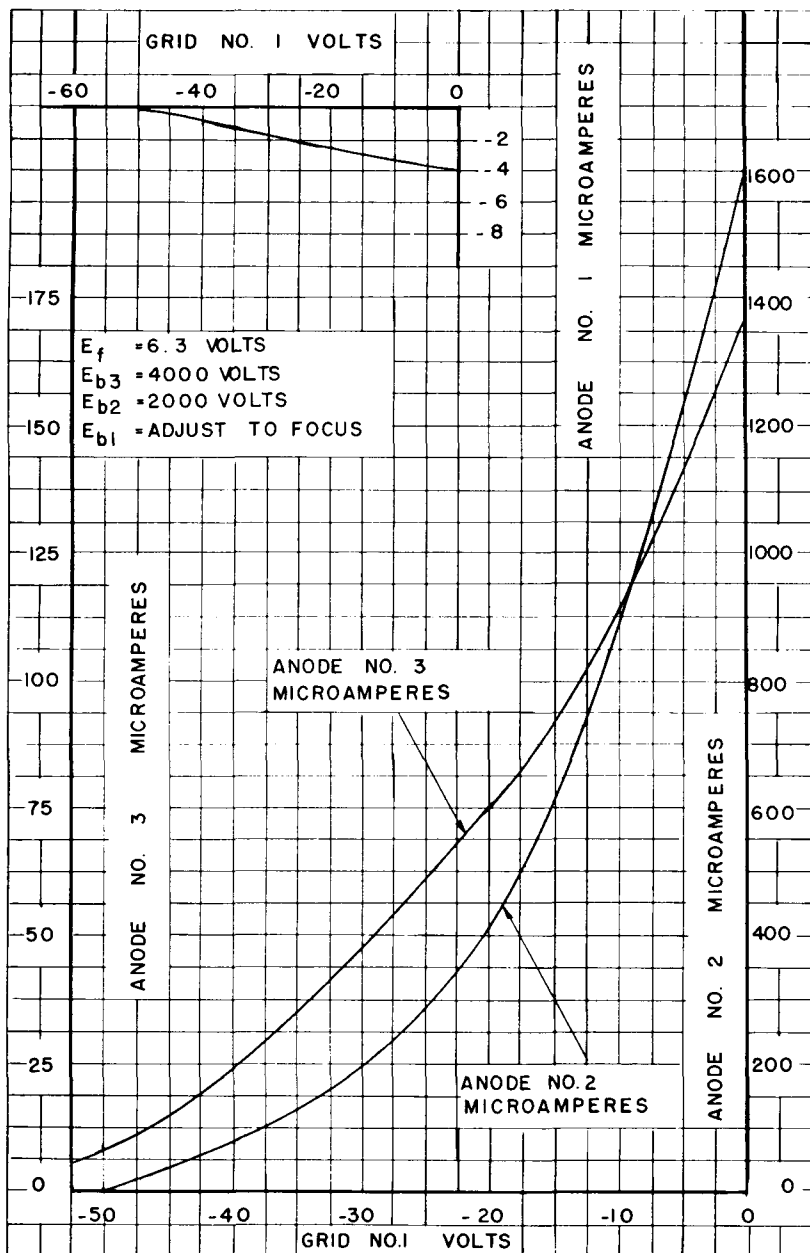
MAXIMUM CIRCUIT VALUES

Grid No. 1 Circuit Resistance	1.5 Max. Megohms
Resistance in any Deflecting Electrode Circuit (Note 10)	1.0 Max. Megohms

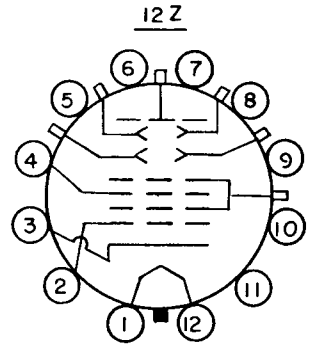
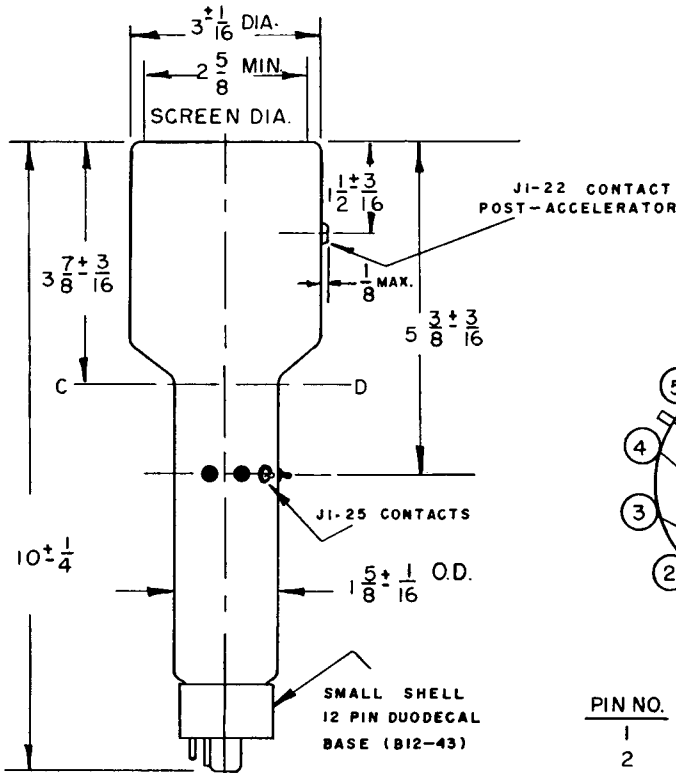
NOTES

1. This tube is designed for optimum performance when operating at an Eb3/Eb2 ratio of 2.0. Operation at other ratios of Eb3/Eb2 may result in changes in deflection uniformity and pattern distortion.
2. Visual extinction of undeflected focused spot.
3. As per MIL-E-1 specifications using useful scan as reference.
4. All portions of a raster pattern, adjusted so its widest points just touch the sides of a 2.295 x 1.530 inch rectangle, will fall within the area bounded by the 2.295 x 1.530 inch rectangle and an inscribed 2.205 x 1.470 inch rectangle.
5. For an Ib3 of 25 μ ADC measured in accordance with MIL-E-1 specifications.
6. Using a raster size of 2 $\frac{1}{4}$ x 1 $\frac{1}{2}$ inches and an Ib3 of 25 μ ADC.
7. Using a #594 Photronic cell with Viscor filter (for eye correction).
8. Using a #594 Photronic cell without Viscor filter (without eye correction).
9. Centered with respect to the tube face and with the tube shielded. Connect free deflecting electrodes to accelerator.
10. It is recommended that the deflecting-electrode circuit resistance be approximately equal.

TYPE 3ADP- AVERAGE CHARACTERISTICS

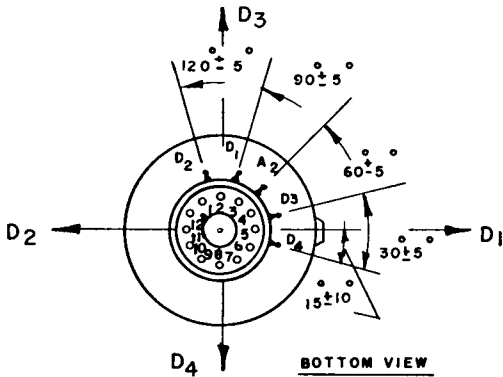


TYPE 3ADP-



BOTTOM VIEW

<u>PIN NO.</u>	<u>ELEMENT</u>
1	HEATER
2	GRID NO.1
3	CATHODE
4	FOCUSING ELECTRODE
5	INTERNAL CONNECTION
12	HEATER



BOTTOM VIEW