



CATHODE-RAY TUBE

TYPE 4FP-

The Du Mont Type 4FP- is a 3 1/2-inch square, single beam, electrostatic deflection and focus cathode-ray tube designed to scan the full useful screen area. The deflection electrodes and accelerator leads are brought out through the neck in order to produce maximum insulation while minimizing inductance and capacitance. Post acceleration is used to obtain high brightness with small spot size.

GENERAL CHARACTERISTICS

Electrical Data

Focusing Method
Deflection Method

Electrostatic
Electrostatic

Direct Interelectrode Capacitances, Approximate

Cathode to all other electrodes	3.90	μμf
Grid No. 1 to all other electrodes	6.20	μμf
D1 to D2	1.75	μμf
D3 to D4	1.00	μμf
D1 to all other electrodes	3.90	μμf
D2 to all other electrodes	4.15	μμf
D3 to all other electrodes	2.95	μμf
D4 to all other electrodes	2.80	μμf

Optical Data

Phosphor No.	1	2	7	11
Fluorescence	Green	Blue-Green	Blue-White	Blue
Phosphorescence	Green	Green	Yellow	----
Persistence	Medium	Long	Long	Short

Mechanical Data

Overall Length	12 ± 1/4	Inches
Greatest Bulb Dimensions:		
Height	3 1/2 ± 1/16	Inches
Width	3 1/2 ± 1/16	Inches
Diagonal	4 1/4 ± 3/32	Inches
Minimum Useful Screen Dimensions:		
Width	2 7/8	Inches
Height	2 7/8	Inches

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GENERAL CHARACTERISTICS (Mechanical Data) (Continued)

Bulb Contact	J1-22	
Neck Contacts	J1-25	
Base (Medium Shell Diheptal, 12-Pin)	B12-37	
Basing	14Q	
Base Alignment:		
D1D2 trace aligns with Pin No. 4 and tube axis	± 10	Degrees
Positive voltage on D1 deflects beam approximately toward Pin No. 11		
Positive voltage on D3 deflects beam approximately toward J1-22 contact		
Bulb Contact Alignment:		
J1-22 contact aligns with D3D4 trace	± 10	Degrees
J1-22 contact on same side as Pin No. 7		
Centerline of J1-22 contact lies on centerline of side wall	$\pm 3/16$	Inch
Trace Alignment:		
Angle between D3D4 and D1D2 traces	90 ± 1	Degrees
D3D4 trace aligns with bulb wall	± 3	Degrees

MAXIMUM RATINGS (Design Maximum Values)

Heater Voltage	6.3	Volts
Heater Current at 6.3 Volts	$0.6 \pm 10\%$	Ampere
Post Accelerator Voltage	6600	Max. Volts DC
Accelerator Voltage	3300	Max. Volts DC
Ratio Post Accelerator Voltage to Accelerator Voltage	2.0	Max.
Accelerator Input (Average)	6	Max. Watts
Focusing Voltage	1650	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-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	750	Volts

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TYPICAL OPERATING CONDITIONS

Post Accelerator Voltage	4000	Volts DC
Accelerator Voltage	2000	Volts DC
Focusing Voltage	335 to 615	Volts DC
Focusing Voltage ¹	430 to 470	Volts DC
Grid No. 1 Voltage ²	-52 to -87	Volts DC
Deflection Factors:		
D1D2	105 to 145	Volts DC/Inch
D3D4	85 to 115	Volts DC/Inch
Line Width "A" ³	.017	Inch Max.
Modulation ³	35	Volts Max.
Deflection Distortion ⁴		
Spot Position ⁵	Within a 10-mm Square	
Useful Scans:		
D1D2	Full Scan	
D3D4	Full Scan	

CIRCUIT DESIGN VALUES

Grid No. 1 Circuit Resistance	1.5	Max. Megohms
Resistance in any Deflection-Electrode Circuit ⁶	1.0	Max. Megohms

NOTES

1. For a vertical trace 2.5 inches at a post accelerator current of 2 μ A.
2. For visual extinction of the focused, undeflected spot.
3. Measured in accordance with MIL-E-1 specifications at a post accelerator current of 25 μ ADC.

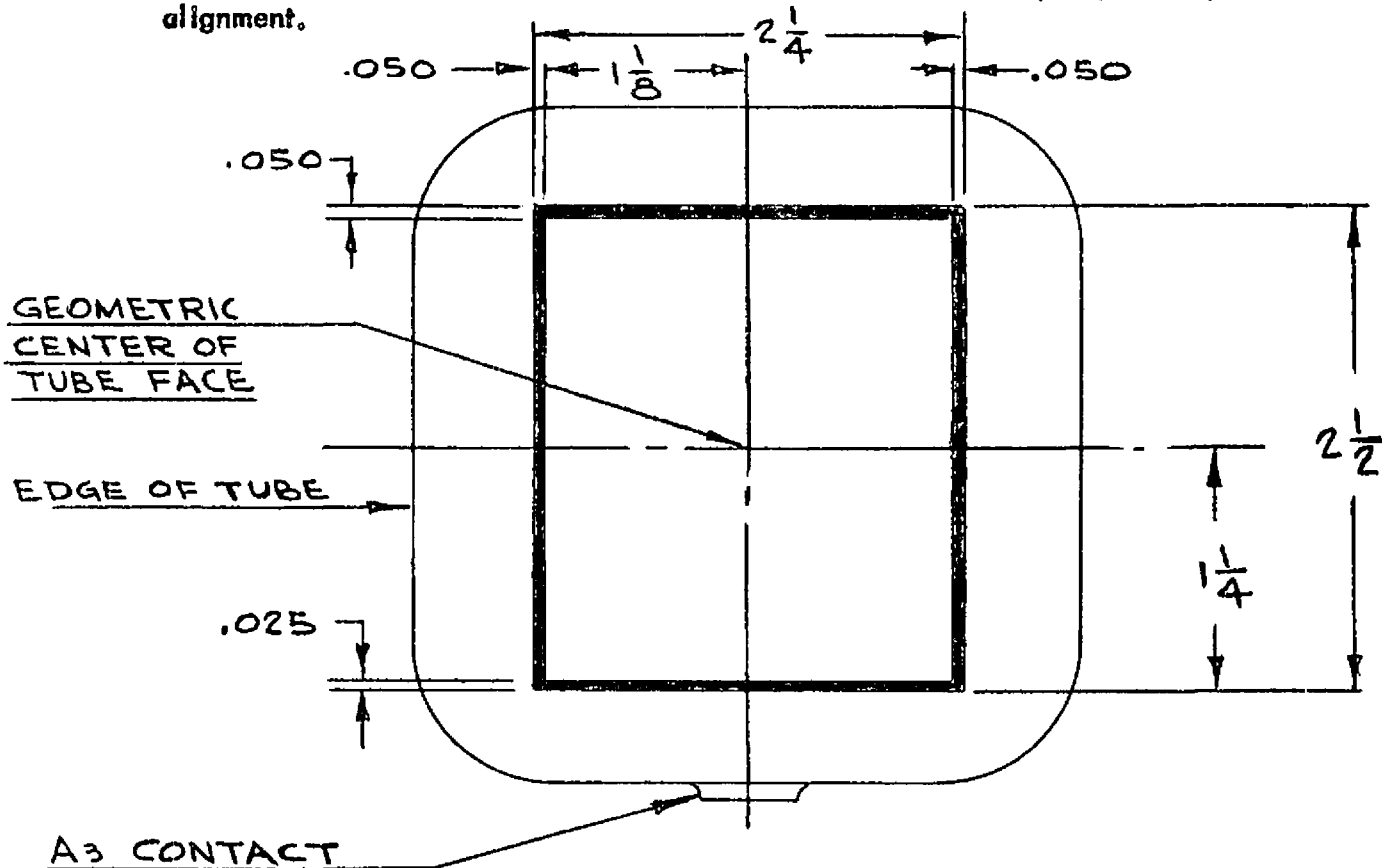
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NOTES
(Continued)

4. The edges of a focused raster pattern $2 \frac{1}{4}$ inches wide and $2 \frac{1}{2}$ inches high, centered with respect to the tube face, will fall within the shaded area formed by the two rectangles as shown below.

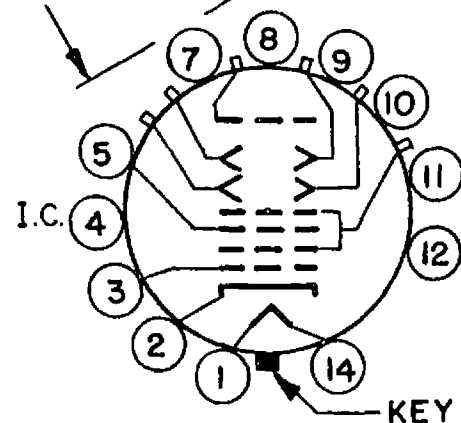
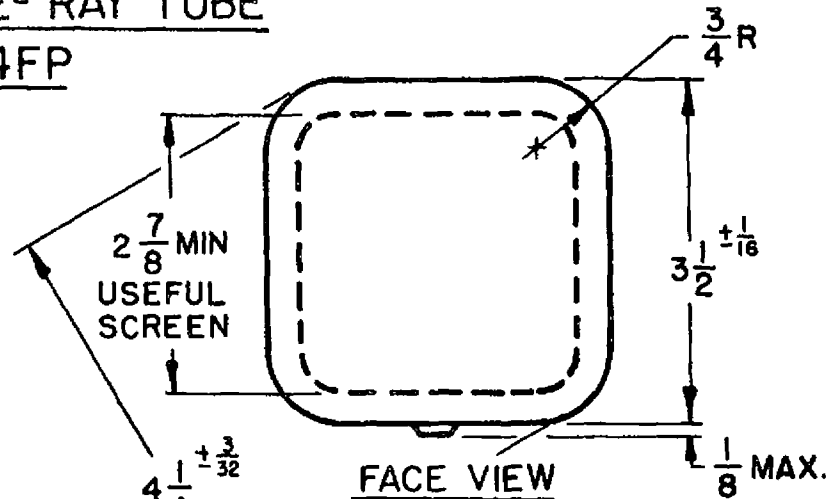
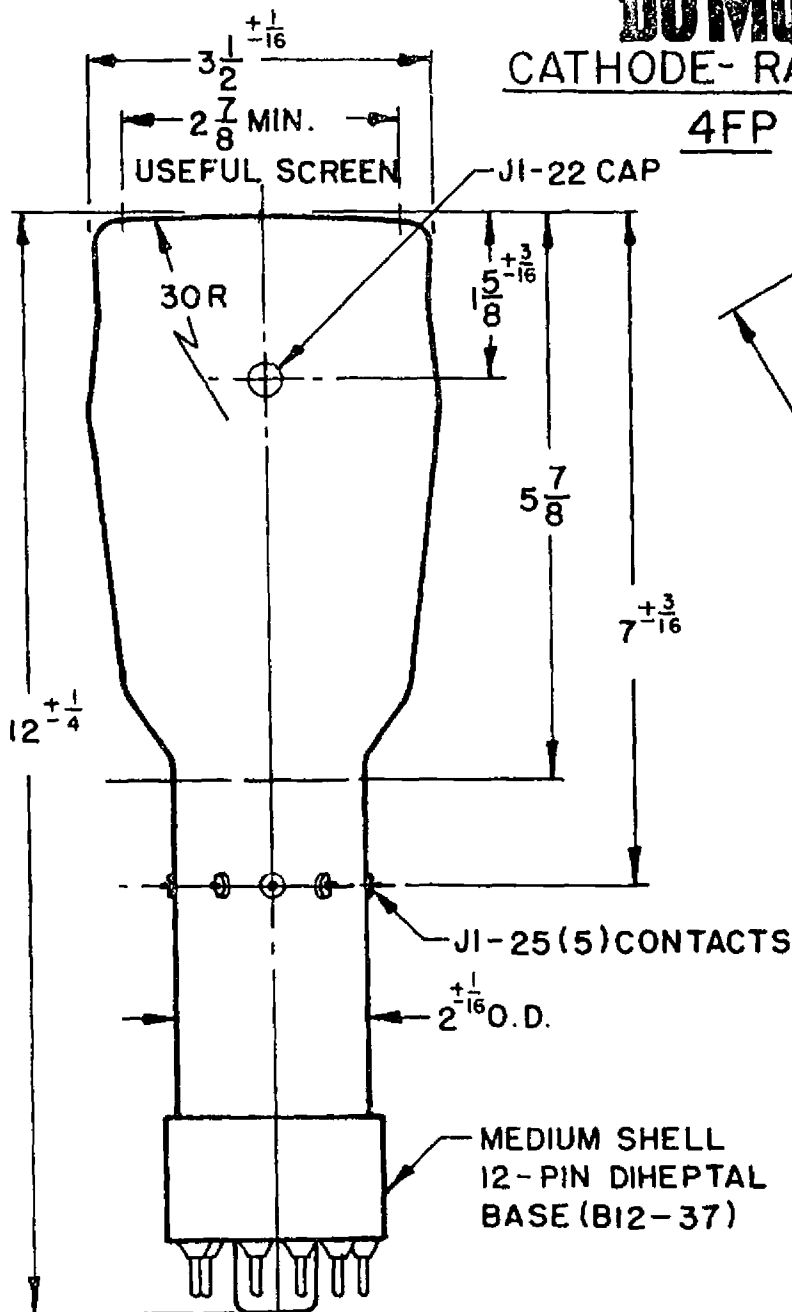
This test shall include all deviations including pattern distortion, keystoneing, and angle alignment.



5. With the deflecting electrodes connected to the accelerator, and the tube shielded against external influences, the focused spot will fall within a 10-mm square centered with respect to the tube face and the sides of the square parallel to the traces produced by the deflection plate pairs.
6. It is recommended that the deflection-electrode circuit resistances be approximately equal. Higher resistance values up to 5 megohms may be used for low beam current operation.

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BOTTOM VIEW

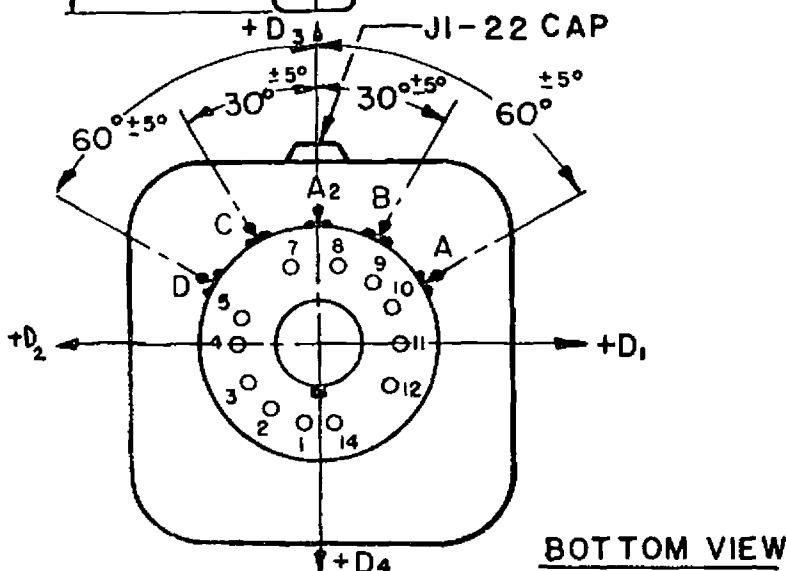
PIN NO.	ELEMENT
1	HEATER
2	CATHODE
3	GRID NO.1
4	INTERNAL CONNECTION
5	FOCUSING ELECTRODE
14	HEATER
CAP	POST ACCELERATOR

TERMINALS

- A — DEFLECTING ELECTRODE-D₁
- B — DEFLECTING ELECTRODE-D₂
- C — DEFLECTING ELECTRODE-D₃
- D — DEFLECTING ELECTRODE-D₄
- A₂ — ACCELERATOR

NOTE:

1. JI-22 CAP LOCATED ON TUBE CENTER LINE $\pm \frac{3}{16}$ INCH.



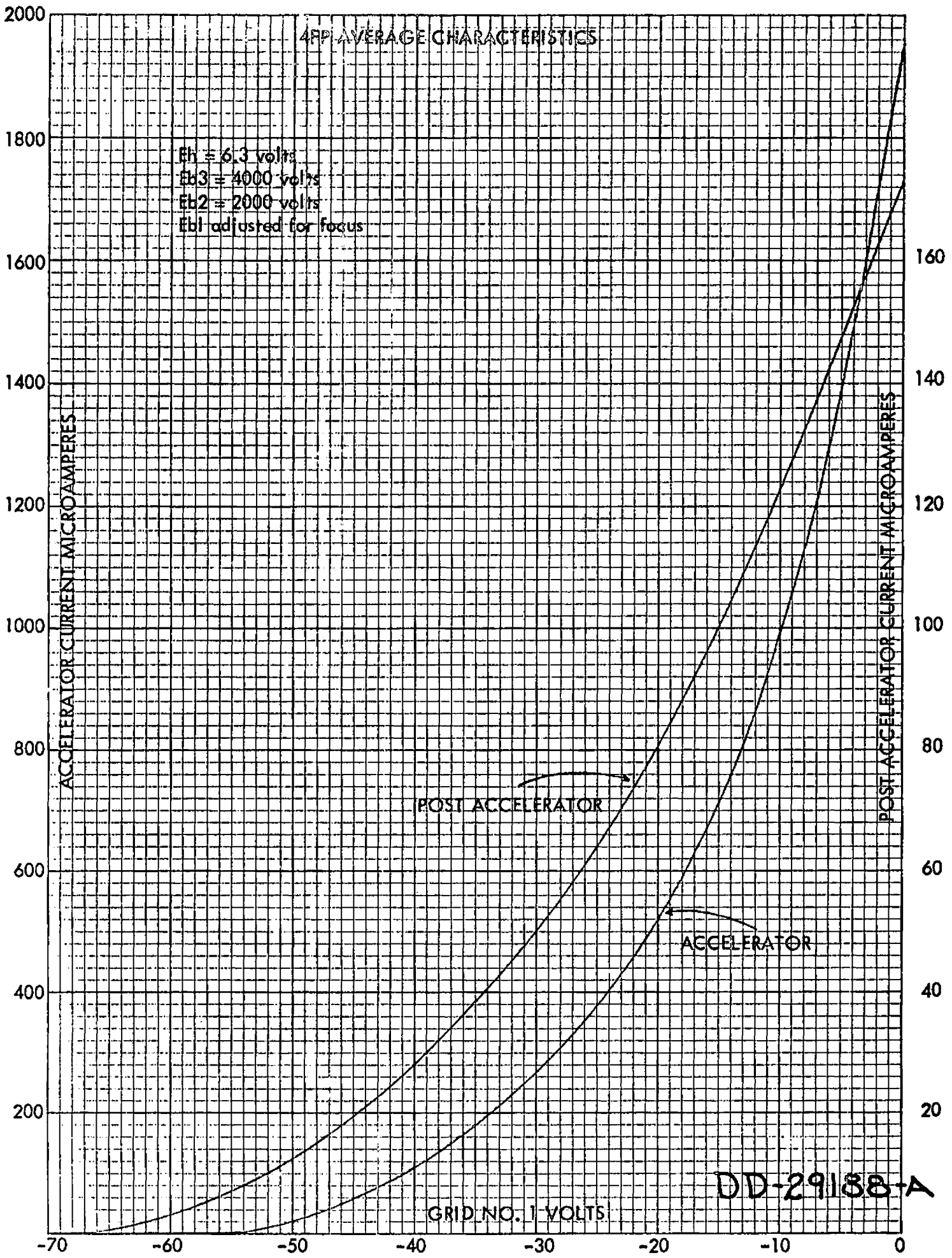
BOTTOM VIEW

Allen B. Du Mont Laboratories, Inc.
Clifton, New Jersey

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FORM 809-C8-4-58-5M



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