



CATHODE-RAY TUBE

TYPE 7BRP-

The Du Mont Type 7BRP- is a 7-inch diagonal, square face, five beam, post accelerator, electrostatic deflection and focus cathode-ray tube. All electrodes, with the exception of the accelerator and post accelerator electrodes (Anode No. 2 and Anode No. 3), are independent.

GENERAL CHARACTERISTICS<sup>1</sup>

Electrical Data

Focusing Method	Electrostatic
Deflection Method	Electrostatic

Direct Interelectrode Capacitances, Approximate

Grid No. 1 to all	6.6	μf
Cathode to all	5.6	μf
D1 to D2	1.7	μf
D3 to D4	1.6	μf
D1 to all	5.2	μf
D2 to all	5.0	μf
D3 to all	4.5	μf
D4 to all	4.6	μf

Optical Data

Phosphor Number	1	2	4
Fluorescence	Yellow-Green	Yellow-Green	White
Phosphorescence	-----	Green	-----
Persistence	Medium	Medium	Medium to Medium Short
Phosphor Number	7	11	14
Fluorescence	White	Blue	Blue
Phosphorescence	Yellow-Green	----	Orange
Persistence	Long	Medium Short	Medium

Mechanical Data

Overall Length	18 5/8 ± 3/8	Inches
Greatest Bulb Diagonal	7 1/32	Inches
Minimum Useful Screen Width <sup>2</sup>	4.5	Inches
Bulb Contact	J1-22	
Base, Collar	Special	
Base	B25-139	

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GENERAL CHARACTERISTICS (Mechanical Data) (Continued)

**Collar and Base Alignment:**

1D2 trace aligns with Collar Base Index Pin No. 1 and tube axis	$\pm 10$	Degrees
1D2 trace aligns with Base Key and tube axis	$\pm 10$	Degrees
Positive voltage on D2 deflects beam approximately toward Collar Base Pin No. 1 and the End Base Key		
Positive voltage on D3 deflects beam approximately toward Collar Base Pin No. 6		

**Bulb Contact Alignment:**

Bulb cap aligns with D1D2 trace and tube axis	$\pm 10$	Degrees
Bulb cap on same side as End Base Key and Collar Pin No. 1		
Bulb cap located on tube center line	$\pm 1/4$	Inch
Bulb wall (with cap) aligns with D3D4 trace	$\pm 3$	Degrees

**Trace Alignment:**

D1D2 trace aligns with D3D4 trace	$90 \pm 2$	Degrees
Corresponding traces align within	2	Degrees

RATINGS (Absolute Maximum Values)

Heater Voltage	6.3	Volts
Heater Current at 6.3 Volts	$0.6 \pm 10\%$	Ampere
Post Accelerator Voltage	7700	Max. Volts DC
Accelerator Voltage <sup>3</sup>	3850	Max. Volts DC
Ratio Post Accelerator Voltage to Accelerator Voltage <sup>4</sup>	2.0	Max.
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
Maximum Cathode Current	1.0	mA DC



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TYPICAL OPERATING CONDITIONS

Post Accelerator Voltage	4000	Volts DC
Accelerator Voltage	2000	Volts DC
Focusing Voltage	440 to 755	Volts DC
Grid No. 1 Voltage <sup>5</sup>	-30 to -68	Volts DC
Modulation <sup>6</sup>	45	Max. Volts DC
Line Width "A" <sup>7</sup>	.028	Max. Inch
Deflection Factors:		
D1D2	63 to 99	Volts DC/Inch
D3D4	59 to 94	Volts DC/Inch
Useful Scan <sup>8</sup>		
D1D2	4.5	Min. Inches
D3D4	4.5	Min. Inches
Interaction Factor <sup>9</sup>	.00001	Max. Inch/Volt
Spot Position (Undelected) <sup>10</sup>	Within a 20-mm square	

CIRCUIT DESIGN VALUES

Focusing Voltage	220 to 377.5 Volts per Kilovolt of Accelerator Voltage	
Focusing Current for any operating condition	-15 to +10	Microamperes
Grid No. 1 Voltage <sup>5</sup>	-15 to -34 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	
D1D2	31.5 to 49.5 Volts DC/Inch/KV of Accelerator Voltage	
D3D4	29.5 to 47.0 Volts DC/Inch/KV of Accelerator Voltage	
Resistance in any Deflecting-Electrode Circuit <sup>11</sup>	1.0	Max. Megohms

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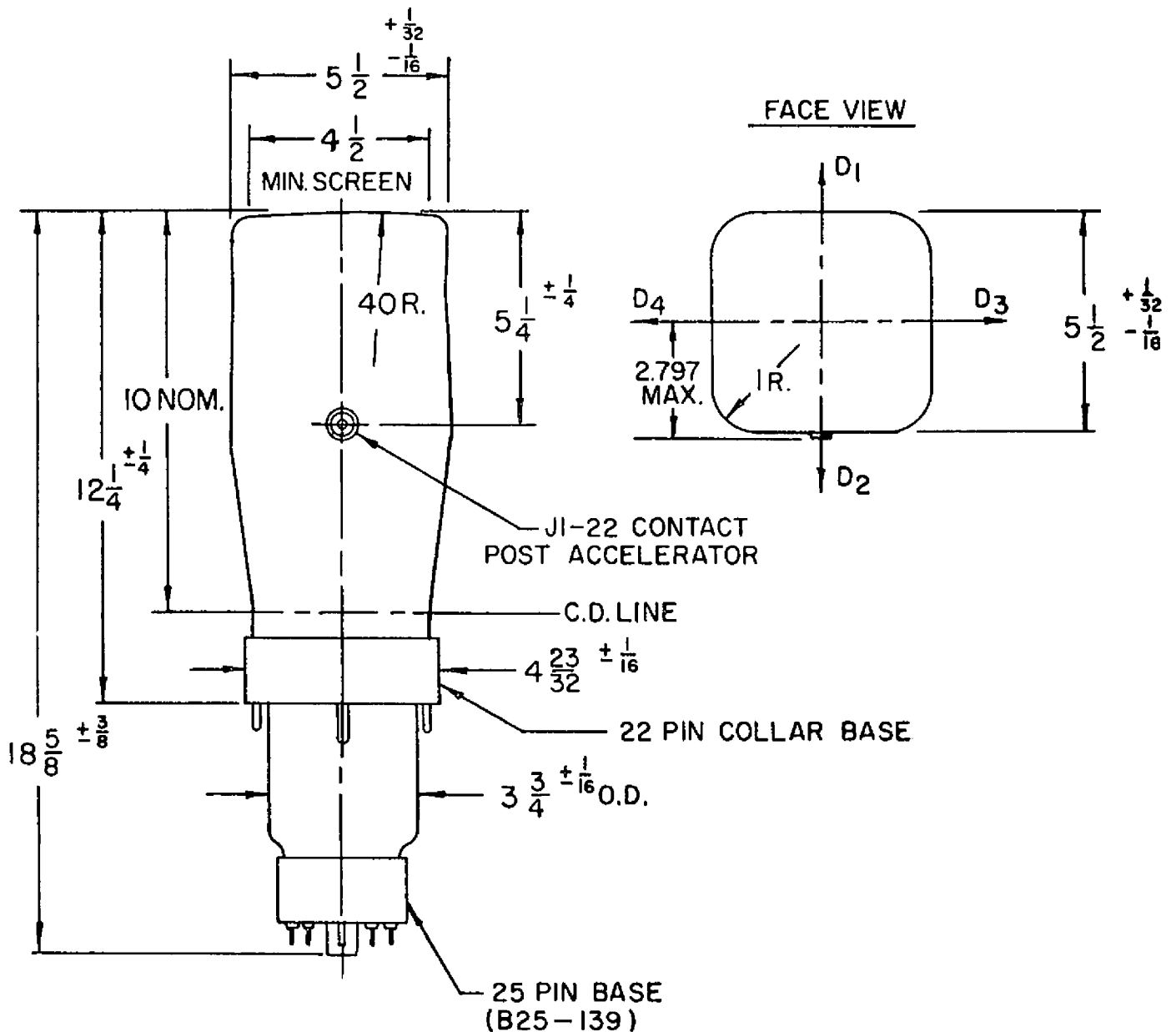
**DUMONT**CATHODE-RAY TUBETYPE 7BRP-NOTES

1. Values are for each unit unless otherwise stated.
2. Following the bulb contour.
3. Accelerator power input (average) 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 25  $\mu$ ADC.
7. Measured in accordance with MIL-E-1 specifications, using an  $I_{b3}$  of 25  $\mu$ ADC.
8. Centered about normal undeflected spot position.
9. 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.
10. With  $E_{c1}$  adjusted to avoid damage to the screen, with each deflecting electrode connected to the accelerator, and with the tube shielded against external influences, the spot will fall within a 20-mm square, centered on the tube face.
11. It is recommended that the deflecting-electrode circuit resistances be approximately equal. Higher resistance values up to five megohms may be used for low beam current operation.

# DU MONT

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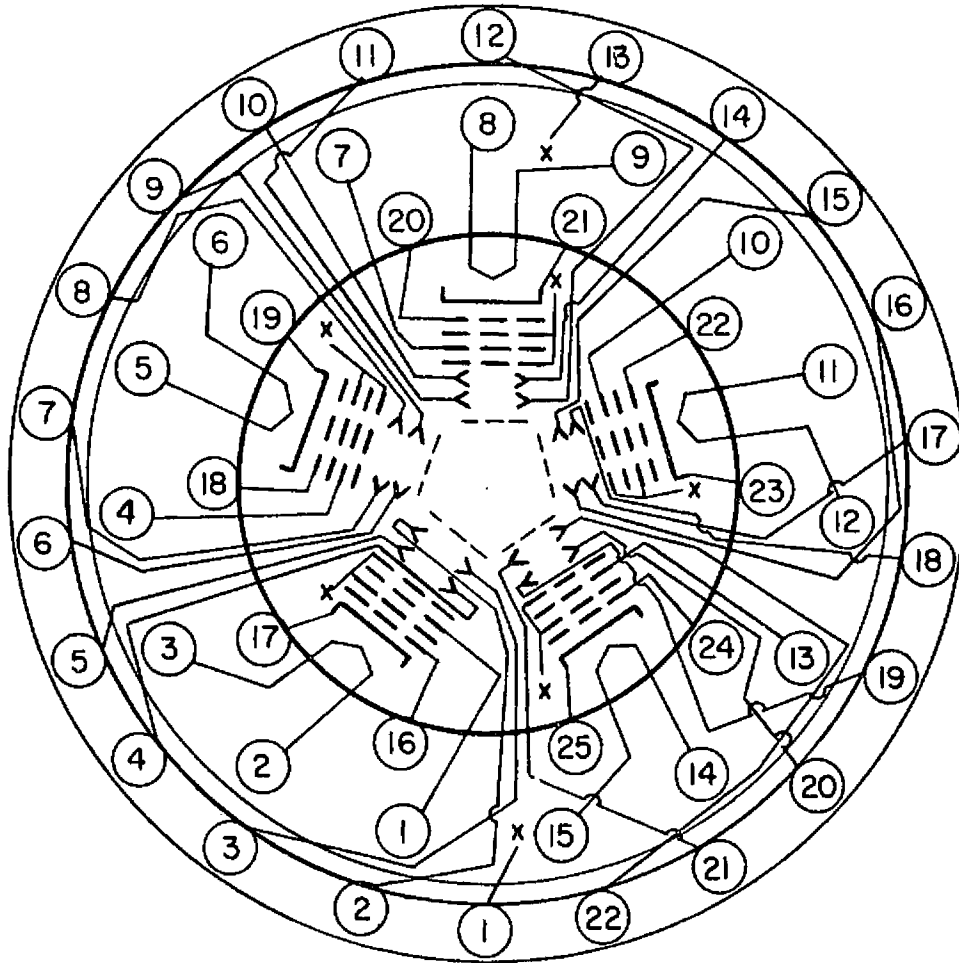


### NOTES:

1. MAX. BASE TILT WITH RESPECT TO TUBE AXIS  $\pm 3^\circ$ .
2. BULB CONTACT INDEX PIN & BASE KEY ALIGN WITH D1, D2 TRACE  $\pm 10^\circ$ .

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## BASING TYPE 7BRP —



BOTTOM VIEW

22 PIN COLLAR BASE

PIN NO.	ELEMENT	BEAM
1	ANODE 2 - COMMON TO ALL	BEAMS
2	DEFLECTOR D4	A
3	DEFLECTOR D3	A
4	DEFLECTOR D2	A
5	DEFLECTOR D1	A
6	DEFLECTOR D3	B
7	DEFLECTOR D2	B
8	DEFLECTOR D1	B
9	DEFLECTOR D4	B
10	DEFLECTOR D2	C
11	DEFLECTOR D3	C
12	DEFLECTOR D4	C
13	ANODE 2 - COMMON TO ALL	BEAMS
14	DEFLECTOR D1	C
15	DEFLECTOR D3	D
16	DEFLECTOR D4	D
17	DEFLECTOR D1	D
18	DEFLECTOR D2	D
19	DEFLECTOR D1	E
20	DEFLECTOR D2	E
21	DEFLECTOR D4	E
22	DEFLECTOR D3	E

25 PIN BASE

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