



CATHODE-RAY TUBE

TYPE 3BRP-

The Du Mont Type 3BRP- is a high resolution, flat face, dual beam, electrostatic deflection and focus cathode-ray tube. Each beam is independent of the other except for a common accelerating electrode. Post acceleration is used to obtain high deflection sensitivity and brightness. The deflection system is designed for precise deflection and tracking accuracy. Deflection electrodes of each beam are electrostatically shielded from each other to prevent interaction.

GENERAL CHARACTERISTICS ¹

Electrical Data

Focusing Method
Deflecting Method

Electrostatic
Electrostatic

Direct Interelectrode Capacitances, Approximate

Cathode to all	5.6	μf
Grid No. 1 to all	7.2	μf
D1 to D2	2.7	μf
D3 to D4	2.5	μf
D1 to all	6.7	μf
D2 to all	6.7	μf
D3 to all	6.4	μf
D4 to all	6.4	μf

Optical Data

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

Mechanical Data

Overall Length	11 3/4 $\pm$ 1/4	Inches
Greatest Diameter of Bulb	3 $\pm$ 1/16	Inches
Minimum Useful Screen Diameter	2 5/8	Inches
Bulb Contact	J1-22	
Base	B25-139	
Basing	Special	

DE-5603 - 2
11/3/60

Allen B. Du Mont Laboratories, ~~Inc~~
Divisions of Fairchild Camera and Instrument Corp.
Clifton, New Jersey



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GENERAL CHARACTERISTICS (Mechanical Data) (Continued)

Base Alignment:

D3D4 trace aligns with Pin No. 18 and tube axis	± 10	Degrees
Positive voltage on D1 deflects beam approximately toward Base Key		
Positive voltage on D3 deflects beam approximately toward Pin No. 23		

Bulb Contact Alignment:

J1-22 cap aligns with D3D4 trace	± 10	Degrees
J1-22 cap on same side as Pin No. 18		

Trace Alignment:

Angle between D1D2 and D3D4 traces	90 ± 1	Degrees
Corresponding traces of each gun align with each other within one degree		

RATINGS (Design Maximum Values)

Heater Voltage	6.3	Volts
Heater Current at 6.3 Volts	$0.6 \pm 10\%$	Ampere
Post Accelerator Voltage	6,600	Max. Volts DC
Accelerator Voltage	2,200	Max. Volts DC
Accelerator Input	6	Max. Watts
Ratio Post Accelerator Voltage to Accelerator Voltage ²	3	Max.
Focusing Voltage	1,100	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 Voltage between Accelerator and any Deflection Electrode	550	Max. Volts

TYPICAL OPERATING CONDITIONS

Post Accelerator Voltage	4,000	Volts DC
Accelerator Voltage	2,000	Volts DC
Focusing Voltage	380 to 580	Volts DC
Grid No. 1 Voltage ³	-45 to -75	Volts DC

DE-5603 - 2



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TYPICAL OPERATING CONDITIONS (Continued)

Modulation ⁴	55	Max. Volts DC
Line Width "A" ⁵	.006	Max. Inch
P1 Light Output ⁵	15	Ft. L. Min.
Deflection Factors:		
D1D2	164 to 198	Volts DC/Inch
D3D4	148 to 181	Volts DC/Inch
Deflection Factor Uniformity ⁶	2 1/2%	Max.
Tracking Error ⁷	2%	Max.
Pattern Distortion at 75% of Minimum Useful Screen Diameter ⁸	2%	Max.
Interaction Factor ¹⁰	.000012	Max. Inch/Volt
Spot Position ¹¹	Within a 1/4-inch radius circle	

CIRCUIT DESIGN VALUES

Focusing Voltage	190 to 290 Volts/KV of Accelerator Voltage	
Focusing Current for any operating condition	-50 to +10	Microamperes
Grid No. 1 Voltage ³	-22.5 to -37.5 Volts/KV of Accelerator Voltage	
Grid No. 1 Circuit Resistance	1.5	Max. Megohms
Deflection Factors:		
Post Accelerator Voltage = Accelerator Voltage		
D1D2	63 to 77 Volts DC/Inch/KV of Accelerator Voltage	
D3D4	59.5 to 72.5 Volts DC/Inch/KV of Accelerator Voltage	
Resistance in any Deflecting-Electrode Circuit ¹²	5.0	Max. Megohms

NOTES

1. Values are for each unit unless otherwise stated.
2. 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 increased deflection (non) uniformity, pattern distortion and tracking error.
3. For visual extinction of the focused, undeflected spot.



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(Continued)

4. The Increase in Grid No. 1 voltage from cut-off to produce an Ib3 of 20 μ ADC.
5. Measured in accordance with MIL-E-1 specifications, using an Ib3 of 20 μ ADC.
6. The deflection factor (for both D1D2 and D3D4 plate pairs, separately) for deflections of less than 75% of the useful scan will not differ from the deflection factor for a deflection at 25% of the useful scan by more than the indicated value.
7. The positions of the spot of each beam when deflected from the center by applied voltages proportional to the deflection factor will not deviate from each other by more than the indicated percentage of the deflection.
8. The edges of a raster pattern, whose mean dimensions are the indicated percentage of useful screen diameter, shall not deviate from the mean dimension rectangle by more than the specified amount.
9. Deflection accuracy may be obtained by combining angle between traces, deflection factor uniformity and pattern distortion characteristics. In general, for deflections of less than those indicated, the accuracy will improve.
10. The deflection of one beam when balanced DC voltages are applied to the deflection electrodes of the other beam will not be greater than the indicated value.
11. The undeflected and focused spot will fall within a 1/4-inch radius circle centered with respect to the tube face and with the tube shielded.
12. It is recommended that the deflection-electrode circuit resistances be approximately equal.

DE-5603 - 2

DU MONT

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