



## CATHODE-RAY TUBE

### TYPE 5DXP-

The Du Mont Type 5DXP- is a 5 1/4-inch diameter, single beam, electrostatic focus and deflection cathode-ray tube. The tube features 6 cm. vertical and 10 cm. horizontal scan, high deflection sensitivities, high writing rates, and a pattern adjustment electrode to minimize pattern distortion. An astigmatism electrode is provided to allow adjustment for optimum spot shape. A low current heater is employed to reduce power requirements. Beam gating electrodes are provided to cut off the beam independent of Grid No. 1.

## GENERAL CHARACTERISTICS

### Electrical Data

Focusing Method  
Deflection Method

Electrostatic  
Electrostatic

#### Direct Interelectrode Capacitances, Approximate

|                                    |     |     |
|------------------------------------|-----|-----|
| Cathode to all other electrodes    | 3.0 | μμf |
| Grid No. 1 to all other electrodes | 5.7 | μμf |
| D1 to D2                           | 2.0 | μμf |
| D3 to D4                           | 1.1 | μμf |
| D1 to all electrodes               | 5.2 | μμf |
| D2 to all electrodes               | 5.0 | μμf |
| D3 to all electrodes               | 3.3 | μμf |
| D4 to all electrodes               | 2.8 | μμf |
| Beam Gating Electrodes             |     |     |

### Optical Data

|                 |              |              |              |              |
|-----------------|--------------|--------------|--------------|--------------|
| Phosphor Number | 1            | 2            | 5            | 7            |
| Fluorescence    | Yellow-Green | Yellow-Green | Blue         | White        |
| Phosphorescence | -----        | Green        | ----         | Yellow-Green |
| Persistence     | Medium       | Medium       | Medium-Short | Long         |
| Phosphor Number | 11           | 15           | 31           |              |
| Fluorescence    | Blue         | Green        | Green        |              |
| Phosphorescence | ----         | -----        | -----        |              |
| Persistence     | Medium-Short | Very Short   | Medium Short |              |

from JEDEC release #4189, March 18, 1963



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### GENERAL CHARACTERISTICS (Continued)

#### Mechanical Data

|                                |              |             |
|--------------------------------|--------------|-------------|
| Overall Length                 | 20 1/4       | Inches Max. |
| Greatest Diameter of Bulb      | 5 1/4 ± 3/32 | Inches      |
| Minimum Useful Screen Diameter | 4 1/4        | Inches      |

|              |         |
|--------------|---------|
| Bulb         | Special |
| Bulb Contact | J1-21   |
| Basing       | Special |
| Base         | B14-38  |

#### Base Alignment:

|                                                                     |      |         |
|---------------------------------------------------------------------|------|---------|
| D3D4 trace aligns with Pin No. 1 and tube axis                      | ± 10 | Degrees |
| Positive voltage on D1 deflects beam approximately toward Pin No. 5 |      |         |
| Positive voltage on D3 deflects beam approximately toward Pin No. 1 |      |         |

#### Bulb Contact Alignment:

|                                              |      |         |
|----------------------------------------------|------|---------|
| Cap aligns midway between Pins No. 11 and 12 | ± 10 | Degrees |
| Cap aligns with D1D2 trace                   | ± 10 | Degrees |
| Cap on same side as Pin No. 11               |      |         |

#### Trace Alignment:

|                                    |        |         |
|------------------------------------|--------|---------|
| Angle between D3D4 and D1D2 traces | 90 ± 1 | Degrees |
|------------------------------------|--------|---------|

### RATINGS (Design Maximum Values)

|                                                                    |           |               |
|--------------------------------------------------------------------|-----------|---------------|
| Heater Voltage                                                     | 6.3       | Volts         |
| Heater Current at 6.3 Volts                                        | 0.3 ± 10% | Ampere        |
| Post Accelerator Voltage                                           | 8000      | Max. Volts DC |
| Pattern Adjustment Electrode Voltage                               | 2700      | Max. Volts DC |
| Astigmatism Electrode Voltage                                      | 2700      | Max. Volts DC |
| Astigmatism Electrode Input                                        | 6         | Max. Watts    |
| Focusing Electrode Voltage                                         | 1500      | Max. Volts DC |
| Accelerator Voltage                                                | 2700      | Max. Volts DC |
| Accelerator Input                                                  | 6         | Max. Watts    |
| Ratio Post Accelerator Voltage to Accelerator Voltage <sup>1</sup> | 3.6       | Max.          |

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Divisions of Fairchild Camera and Instrument Corp.  
Clifton, N. J.

DE-6332 - 3



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### RATINGS (Design Maximum Values) (Continued)

|                                                                |     |               |
|----------------------------------------------------------------|-----|---------------|
| 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                        |     |               |
| During warm-up period not to exceed 15 seconds                 | 410 | Max. Volts    |
| After equipment warm-up period                                 | 180 | Max. Volts    |
| Heater positive with respect to cathode                        | 180 | Max. Volts    |
| Peak voltage between accelerator and any deflection electrode  | 550 | Max. Volts    |
| Peak voltage between accelerator and any beam gating electrode | 100 | Max. Volts    |

### TYPICAL OPERATING CONDITIONS

|                                                   |            |               |
|---------------------------------------------------|------------|---------------|
| Post Accelerator Voltage                          | 5000       | Volts         |
| Accelerator Voltage                               | 1400       | Volts         |
| Pattern Adjustment Electrode Voltage <sup>2</sup> | 1400       | Volts         |
| Astigmatism Electrode Voltage <sup>3</sup>        | 1400       | Volts         |
| Interelectrode Shield Voltage                     | 1400       | Volts         |
| Focusing Electrode Voltage                        | 180 to 580 | Volts         |
| Post Accelerator Current <sup>4</sup>             | 15 to 75   | μA            |
| Grid No. 1 Voltage <sup>5</sup>                   | -34 to -64 | Volts         |
| Modulation <sup>6</sup>                           | 45         | Max. Volts DC |
| Deflection Factors:                               |            |               |
| D1D2                                              | 30 to 35   | Volts DC/Inch |
| D3D4                                              | 13 to 18   | Volts DC/Inch |
| Useful Scan:                                      |            |               |
| D1D2                                              | 10         | Cm            |
| D3D4                                              | 6          | Cm            |



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#### TYPICAL OPERATING CONDITIONS (Continued)

|                                                        |                                  |                |
|--------------------------------------------------------|----------------------------------|----------------|
| Beam Gating Voltage <sup>14, 15, 16</sup>              | 70                               | Max. Volts     |
| Pattern Distortion <sup>7</sup>                        |                                  |                |
| Line Width "A" <sup>6</sup>                            | .030                             | Max. Inch      |
| Cathode Current <sup>8</sup>                           | 625                              | Max. $\mu$ ADC |
| Focusing Electrode Current for any operating condition | -15 to +10                       | $\mu$ A        |
| Spot Position <sup>9</sup>                             | Within a 5/16-inch radius circle |                |
| P1 Light Output <sup>10</sup>                          | 25                               | Ft. L. Min.    |
| P2 Light Output <sup>10</sup>                          | 18                               | Ft. L. Min.    |
| P11 Light Output <sup>11</sup>                         | 20                               | Ft. L. Min.    |
| Deflection Defocusing <sup>12</sup>                    |                                  |                |
| Gun Efficiency <sup>17</sup>                           | 4%                               | Min.           |
| Pattern Shift <sup>16</sup>                            | 5/16                             | Inch Max.      |

#### MAXIMUM CIRCUIT VALUES

|                                                              |     |              |
|--------------------------------------------------------------|-----|--------------|
| Grid No. 1 Circuit Resistance                                | 2.0 | Max. Megohms |
| Resistance In any Deflecting-Electrode Circuit <sup>13</sup> | 1.0 | Max. Megohms |

### NOTES

1. This tube is designed for optimum performance when operating at a ratio of 3.6. Operation at other ratios may result in changes in deflection uniformity, pattern distortion and/or useful scan.
2. The pattern adjustment electrode should be adjusted for optimum performance. For any necessary adjustment, its potential will be within a range of -50 to +100 volts with respect to the mean D1D2 plate potential.
3. The astigmatism electrode should be adjusted for optimum spot shape. For any necessary adjustment, its potential will fall within -50 to +125 volts with respect to the accelerator voltage.
4. Measured with Grid No. 1 at cut-off. Post accelerator current is the current flowing through the post accelerator resistance which is connected between the post accelerator and pattern adjustment electrode. All readings of beam current shall be in addition to the reading obtained for post accelerator current.



# CATHODE-RAY TUBE

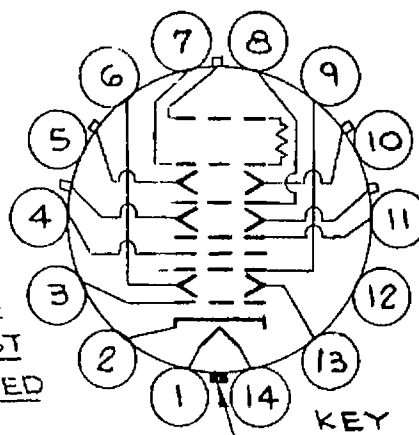
## TYPE 5DXP-

### N O T E S (Continued)

5. Visual extinction of the undeflected, focused spot.
6. For a beam current of 25  $\mu$ ADC, measured in accordance with MIL-E-1 specifications. In no case will the Grid No. 1 voltage be less than -5 volts for a beam current of 25  $\mu$ ADC.
7. With a raster pattern centered on tube face and the size of which is adjusted so that the widest points of the pattern just touch the sides of a 6 x 10-cm rectangle, no point on these pattern sides will lie within an inscribed 5.75 x 9.75-cm rectangle.
8. For a beam current of 25  $\mu$ ADC.
9. With the deflecting electrodes connected to the accelerator and the tube shielded against external influences, the undeflected and focused spot will fall within a 5/16-inch radius circle centered with respect to the tube face center.
10. Measured with a Type 3 Photronic Cell, corrected for spectral response of the eye, using a 2 x 2-inch, 50-line raster, with maximum Ib3 = 25  $\mu$ A.
11. Measured with a Type 3 Photronic Cell, without eye correction, using a 2 x 2-inch, 50-line raster, with maximum Ib3 = 25  $\mu$ A.
12. Design Goal (final specification to be determined). Maximum deflection defocusing  $\pm$  2 inches from the center in the horizontal direction and  $\pm$  3/4 inch from the center in the vertical direction shall not exceed 1 3/4 times line width "A". Correction voltages are to be adjusted only when measuring line width "A".
13. 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.
14. Voltage necessary for raster cut-off at minimum specified light output. For optimum performance, one beam gating electrode should be connected to the accelerator, and the beam gating voltage applied to the other electrode should be positive with respect to the accelerator voltage.
15. Beam Gating Stray Emission Specification to be determined.
16. Pattern shift during beam gating, with beam current of 25  $\mu$ A, will be no more than 5/16 inch and will be in the direction of the D1D2 trace.
17. The gun efficiency is the ratio of the beam current to the cathode current.

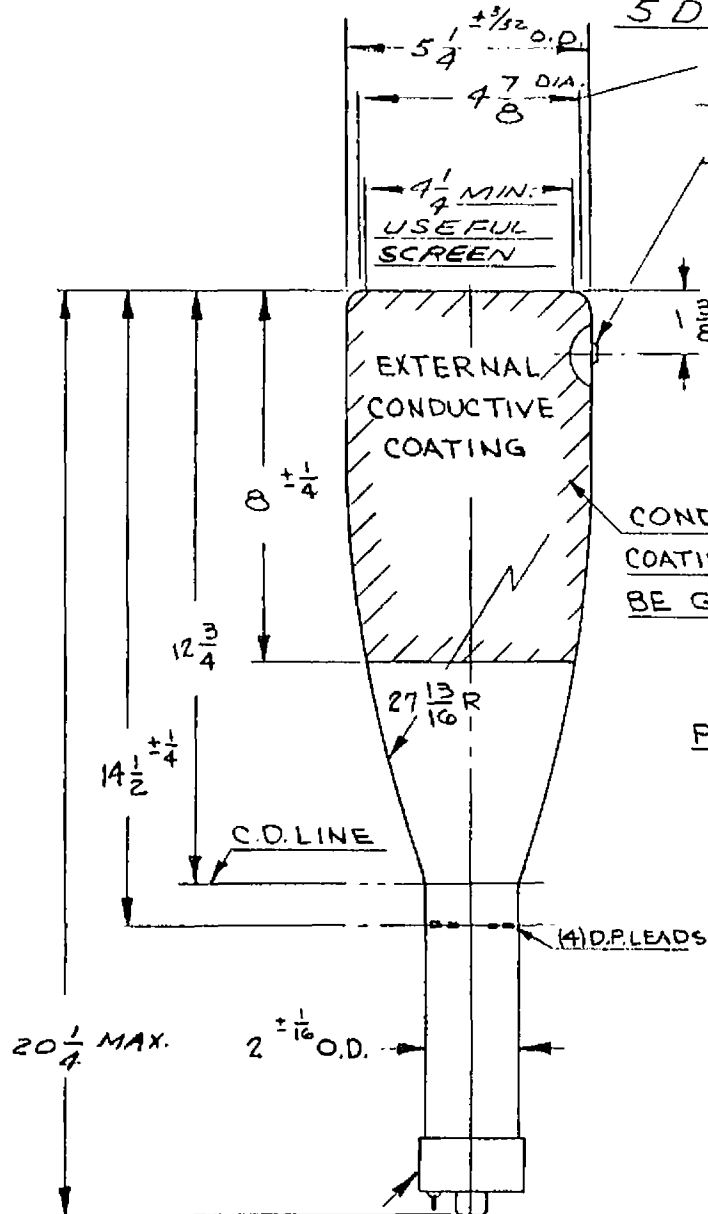
EXTERNAL COATING OUTSIDE OF  
4 7/8 D/A. AREA ON FACE.

JI-21 CAP

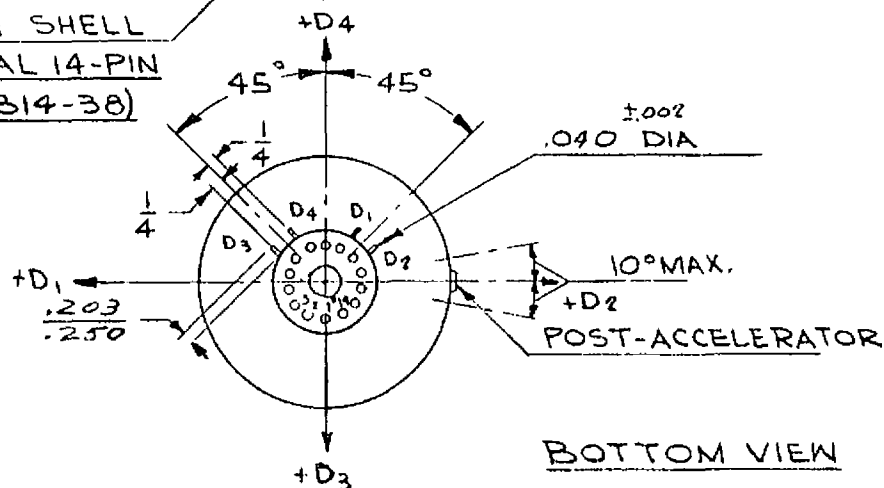


ELEMENT

| <u>PIN No.</u> | <u>ELEMENT</u>                    |
|----------------|-----------------------------------|
| 1              | <u>HEATER</u>                     |
| 2              | <u>CATHODE</u>                    |
| 3              | <u>GRID No.1</u>                  |
| 4              | <u>FOCUSING ELECTRODE</u>         |
| 5              |                                   |
| 6              | <u>BEAM GATING ELECTRODE 1</u>    |
| 7              | <u>PATTERN ADJ. ELECTRODE</u>     |
| 8              | <u>INTERELECTRODE SHIELD</u>      |
| 9              | <u>ACCELERATOR</u>                |
| 11             | <u>ASTIGMATISM ADJ. ELECTRODE</u> |
| 13             | <u>BEAM GATING ELECTRODE 2</u>    |
| 14             | <u>HEATER</u>                     |



MEDIUM SHELL  
DIHEPTAL 14-PIN  
BASE (B14-38)



BOTTOM VIEW