

**DUMONT**  
CATHODE-RAY TUBE

TYPE 10ALP-

The DuMont Type 10ALP- is a 10" diameter, single beam cathode-ray tube having electrostatic focus and deflection. This tube is designed for high voltage operation, and all leads are brought out through a Dimagnal collar-base. By means of the Dimagnal collar, the additional length taken up by standard bases and sockets is eliminated thereby making a more compact display.

The Type 10ALP- is designed to provide excellent performance characteristics for high precision applications. Pattern and deflection distortions, and deflection uniformity have been considerably improved through the use of special deflection plates.

A metal-backed screen is used to increase the light output and also prevent the building up of spurious charges on the screen by successive transients. In the study of single transients or low repetition rate signals these spurious charges may distort succeeding transients.

GENERAL CHARACTERISTICS

Electrical Data

|                                                 |               |     |
|-------------------------------------------------|---------------|-----|
| Focusing Method                                 | Electrostatic |     |
| Deflecting Method                               | Electrostatic |     |
| Direct Interelectrode Capacitances, Approximate |               |     |
| Cathode to all                                  | 7.9           | μμf |
| Grid No. 1 to all                               | 9.6           | μμf |
| D1 to D2                                        | 5.2           | μμf |
| D3 to D4                                        | 2.3           | μμf |
| D1 to all                                       | 11.0          | μμf |
| D2 to all                                       | 11.0          | μμf |
| D3 to all                                       | 5.9           | μμf |
| D4 to all                                       | 5.9           | μμf |

Optical Data

|                      |       |        |           |             |           |
|----------------------|-------|--------|-----------|-------------|-----------|
| Phosphor Number      | 2     | 7      | 14        | 19 (Note 1) | 25        |
| Fluorescent Color    | Green | Blue   | Blue      | Orange      | Orange    |
| Phosphorescent Color | Green | Yellow | Orange    | Orange      | Orange    |
| Persistence          | Long  | Long   | Med. Long | Long        | Very Long |

Faceplate

|                                           |    |         |
|-------------------------------------------|----|---------|
| Light Transmission at center, Approximate | 67 | Percent |
|-------------------------------------------|----|---------|

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#### Mechanical Data

|                                                                                |              |         |
|--------------------------------------------------------------------------------|--------------|---------|
| Overall Length                                                                 | 20 ± 1/4     | Inches  |
| Greatest Diameter of Bulb                                                      | 10 1/2 ± 1/8 | Inches  |
| Minimum Useful Screen Diameter                                                 | 9            | Inches  |
| Base (Dimagnal, 22-Pin Collar Base)                                            | Special      |         |
| Basing                                                                         | 22 A         |         |
| Base Alignment                                                                 |              |         |
| D1D2 trace aligns with Collar Index<br>Pin No. 1 and tube axis                 | ± 10         | Degrees |
| Positive voltage on D1 deflects beam approximately<br>toward Collar Pin No. 1  |              |         |
| Positive voltage on D3 deflects beam approximately<br>toward Collar Pin No. 18 |              |         |
| Trace Alignment                                                                |              |         |
| Angle between D3D4 and D1D2 traces                                             | 90 ± 1       | Degrees |

#### RATINGS (ABSOLUTE MAXIMUM VALUES)

|                                                                  |           |               |
|------------------------------------------------------------------|-----------|---------------|
| Heater Voltage                                                   | 6.3       | Volts         |
| Heater Current at 6.3 Volts                                      | 0.6 ± 10% | Ampere        |
| Accelerator Voltage                                              | 10,000    | Max. Volts DC |
| Accelerator Input                                                | 6         | Max. Watts    |
| Focusing Electrode Voltage                                       | 3,500     | Max. Volts DC |
| Grid No. 1 Voltage                                               |           |               |
| Negative Bias Value                                              | 300       | 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<br>Deflection Electrode | 1,800     | Max. Volts    |

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#### TYPICAL OPERATING CONDITIONS

|                                                        |                        |               |
|--------------------------------------------------------|------------------------|---------------|
| Accelerator Voltage                                    | 8,000                  | Volts         |
| Focusing Electrode Voltage                             | 2250 to 3100           | Volts         |
| Grid No. 1 Voltage <sup>2</sup>                        | -155 to -205           | Volts         |
| Deflection Factors:                                    |                        |               |
| D1 and D2                                              | 155 to 189             | Volts DC/Inch |
| D3 and D4                                              | 151 to 185             | Volts DC/Inch |
| Deflection Factor Uniformity <sup>3</sup>              | 1.5 %                  | Max.          |
| Deflection Defocusing <sup>4, 5</sup>                  | 1:3                    | Ratio         |
| Pattern Distortion <sup>6</sup>                        | 2%                     | Max.          |
| Modulation <sup>5</sup>                                | 20                     | Max. Volts DC |
| Line Width "A" <sup>5</sup>                            | .012                   | Max. Inches   |
| Focusing Electrode Current for any operating condition | -15 to +10             | μA            |
| Spot Position (focused and undeflected) <sup>7</sup>   | Within a 20 -mm square |               |

For Accelerator Voltage not shown in the preceding table, the following can be used as a guide:

|                            |                                                            |
|----------------------------|------------------------------------------------------------|
| Focusing Electrode Voltage | 28% to 38.8% of Accelerator Volts                          |
| Grid No. 1 Voltage         | 1.94% to 2.56% of Accelerator Volts                        |
| D1 and D2                  | 19.4 to 23.6 Volts DC per Inch per Kilovolt of Accelerator |
| D3 and D4                  | 18.9 to 23.1 Volts DC per Inch per Kilovolt of Accelerator |

#### MAXIMUM CIRCUIT VALUES

|                                                             |     |              |
|-------------------------------------------------------------|-----|--------------|
| Grid No. 1 Circuit Resistance                               | 1.5 | Max. Megohms |
| Resistance in any Deflecting Electrode Circuit <sup>8</sup> | 5.0 | Max. Megohms |

#### NOTES

1. To prevent burning, minimum beam current densities should be used.
2. Visual extinction of undeflected, focused spot.
3. The deflection factor (for both D1D2 and D3D4 plate pairs separately) for a deflection of 75% of the useful scan will not differ for the deflection factor for a deflection at 25% of the useful scan by more than the indicated value.

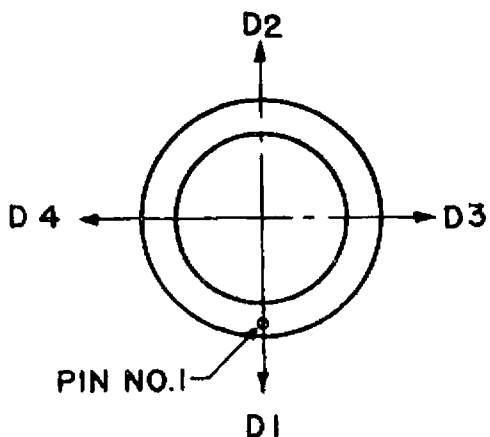
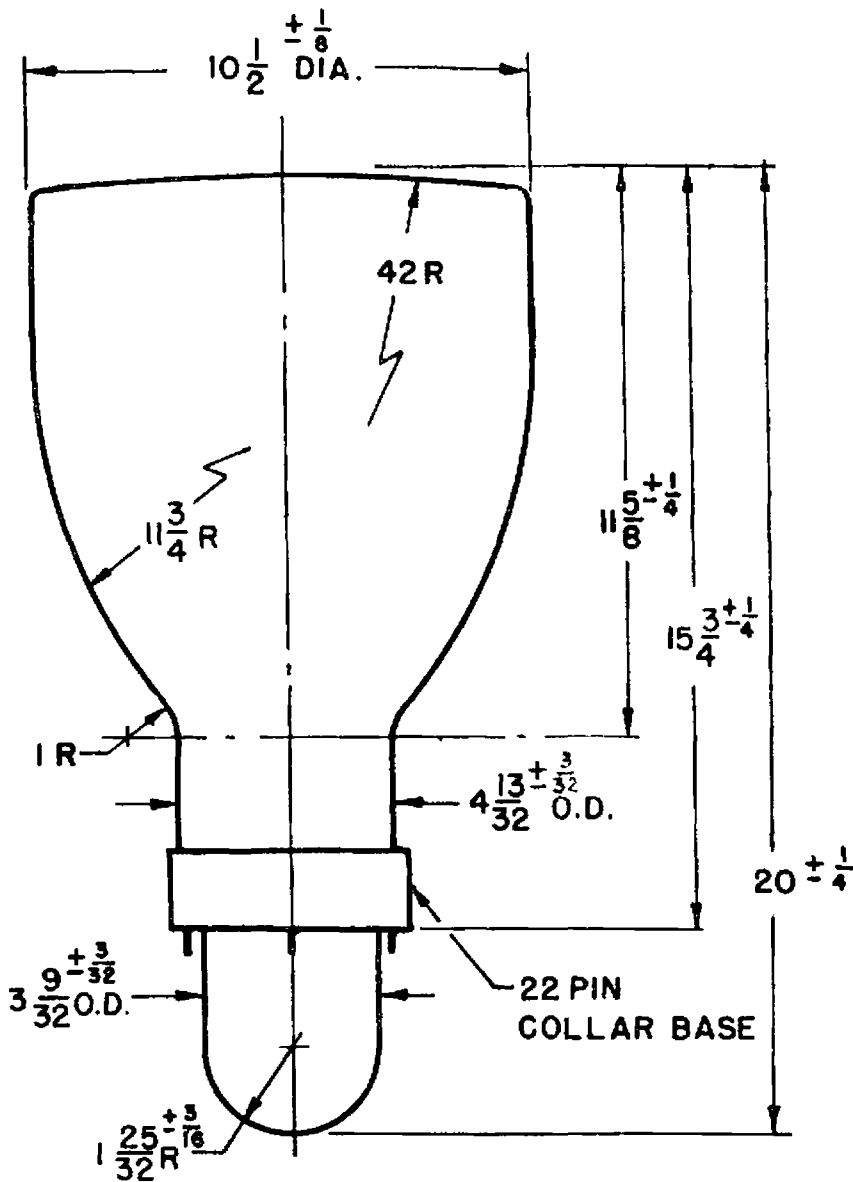
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**NOTES** (Continued)

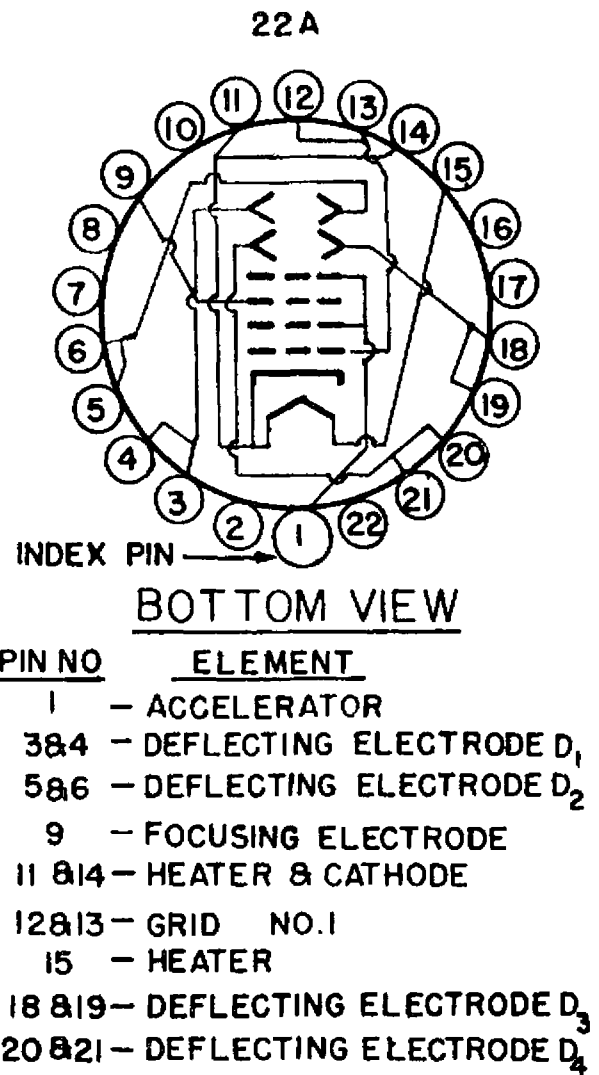
4. The ratio of the line width of a 2-inch long trace, adjusted for best center focus, to the line width measured on the faceplate axis when the trace is deflected perpendicularly  $\pm 4$  inches from the face center by a balanced DC voltage, will not be greater than the specified value.
5. For an Ib3 of 2  $\mu$ ADC measured in accordance with MIL-E-1 specifications.
6. All portions of a raster pattern, adjusted so its widest points just touch the sides of a 6.12-inch square, will fall within the area bounded by the 6.12-inch square and an inscribed 6-inch square.
7. Centered with respect to the tube face with tube shielded.
8. It is recommended that the deflecting-electrode circuit resistances be approximately equal.

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## CATHODE-RAY TUBE TYPE 10ALP -



BOTTOM VIEW OF BASE



BOTTOM VIEW

| PIN NO  | ELEMENT                               |
|---------|---------------------------------------|
| 1       | - ACCELERATOR                         |
| 3&4     | - DEFLECTING ELECTRODE D <sub>1</sub> |
| 5&6     | - DEFLECTING ELECTRODE D <sub>2</sub> |
| 9       | - FOCUSING ELECTRODE                  |
| 11 & 14 | - HEATER & CATHODE                    |
| 12&13   | - GRID NO. 1                          |
| 15      | - HEATER                              |
| 18 & 19 | - DEFLECTING ELECTRODE D <sub>3</sub> |
| 20 & 21 | - DEFLECTING ELECTRODE D <sub>4</sub> |