



CATHODE-RAY TUBE

TYPE 7BSP-

The Type 7BSP- is a 7-Inch diameter, flat face, electrostatic focus and deflection cathode-ray tube containing five independent beams and featuring a linear post accelerator. The deflection electrodes and acceleration electrode connections are brought out through the bulb wall to minimize lead inductance and capacity and to improve insulation. A collar base provides ease of connection to these leads.

GENERAL CHARACTERISTICS¹

Electrical Data

Focusing Method	Electrostatic	
Deflection Method	Electrostatic	
Direct Interelectrode Capacitances, Approximate		
Cathode to all other electrodes	4.3	$\mu\mu\text{f}$
Grid No. 1 to all other electrodes	4.0	$\mu\mu\text{f}$
D1 to D2	1.9	$\mu\mu\text{f}$
D3 to D4	1.2	$\mu\mu\text{f}$
D1 to all other electrodes	2.7	$\mu\mu\text{f}$
D2 to all other electrodes	2.7	$\mu\mu\text{f}$
D3 to all other electrodes	2.0	$\mu\mu\text{f}$
D4 to all other electrodes	2.0	$\mu\mu\text{f}$

Optical Data

Phosphor Number	2	7
Fluorescence	Yellow-Green	White
Phosphorescence	Green	Yellow-Green
Persistence	Medium	Long

Mechanical Data

Overall Length	22 7/8 $\pm$ 1/4	Inches
Greatest Diameter of Bulb	7 $\pm$ 1/8	Inches
Minimum Useful Screen Diameter	6.0	Inches
Bulb Contact (Post Accelerator)	J1-22	
Base (Pentaquintal)	B25-139	
Collar Base (22 Pin)	A22-105	
Basing	Special	

CATHODE-RAY TUBETYPE 7BSP-GENERAL CHARACTERISTICS (Mechanical Data) (Continued)

Collar and Base Alignment

Collar Pin No. 1 and Base Key each aligns with D1D2 Trace	± 10	Degrees
Positive voltage on D1 deflects beam approximately toward Base Key		
Positive voltage on D3 deflects beam approximately toward Base Pin No. 12		

Bulb Contact Alignment

J1-22 cap aligns with D1D2 trace	± 5	Degrees
J1-22 cap on same side as Base Key		

Trace Alignment

Angle between D3D4 and D1D2 traces	$90 \pm 1 \frac{1}{2}$	Degrees
Corresponding traces align within	2	Degrees

RATINGS (Absolute Maximum Values)

Heater Voltage	6.3	Volts
Heater Current at 6.3 Volts (All Units)	$2.8 \pm 10\%$	Amperes
Post Accelerator Voltage	8800	Max. Volts DC
Accelerator Voltage	4400	Max. Volts DC
Accelerator Input	6	Max. Watts
Ratio Post Accelerator Voltage to Accelerator Voltage ²	2.0	
Focusing Electrode Voltage	1650	Max. Volts DC
Post Accelerator Resistance	165	Min. Megohms
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	800	Max. Volts



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TYPICAL OPERATING CONDITIONS

Post Accelerator Voltage	6000	Volts DC
Accelerator Voltage	3000	Volts DC
Post Accelerator Current ³	18	μA Max.
Focusing Electrode Voltage ⁴	755 to 1000	Volts DC
Focusing Electrode Voltage (For any value of Beam Current)	700 to 1050	Volts DC
Grid No. 1 Voltage ⁵	-42 to -72	Volts DC
Deflection Factors		
D1D2	71 to 95	Volts DC/Inch
D3D4	77 to 105	Volts DC/Inch
Deflection Factor Uniformity ⁶	2	Max. Percent
Pattern Distortion (at 75% of useful scan) ⁷	2	Max. Percent
Modulation ¹⁰	35	Max. Volts DC
Line Width "A" ⁴	.015	Max. Inch
Line Width "B" ⁴	.035	Max. Inch
Line Width A ^{1 4}	.022	Max. Inch
Focusing Electrode Current for any operating condition	-15 to +5	μA
Spot Position (Focused and Undelected) ⁸	Within a 20-mm square	

MAXIMUM CIRCUIT VALUES

Grid No. 1 Circuit Resistance	1.5	Max. Megohms
Resistance in any Deflecting-Electrode Circuit ⁹	1.0	Max. Megohms

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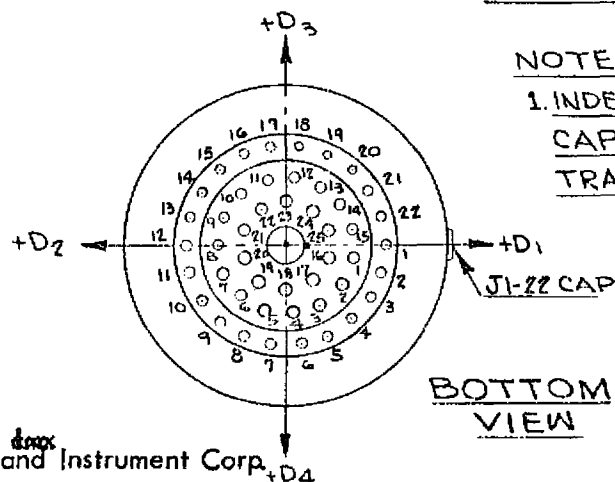
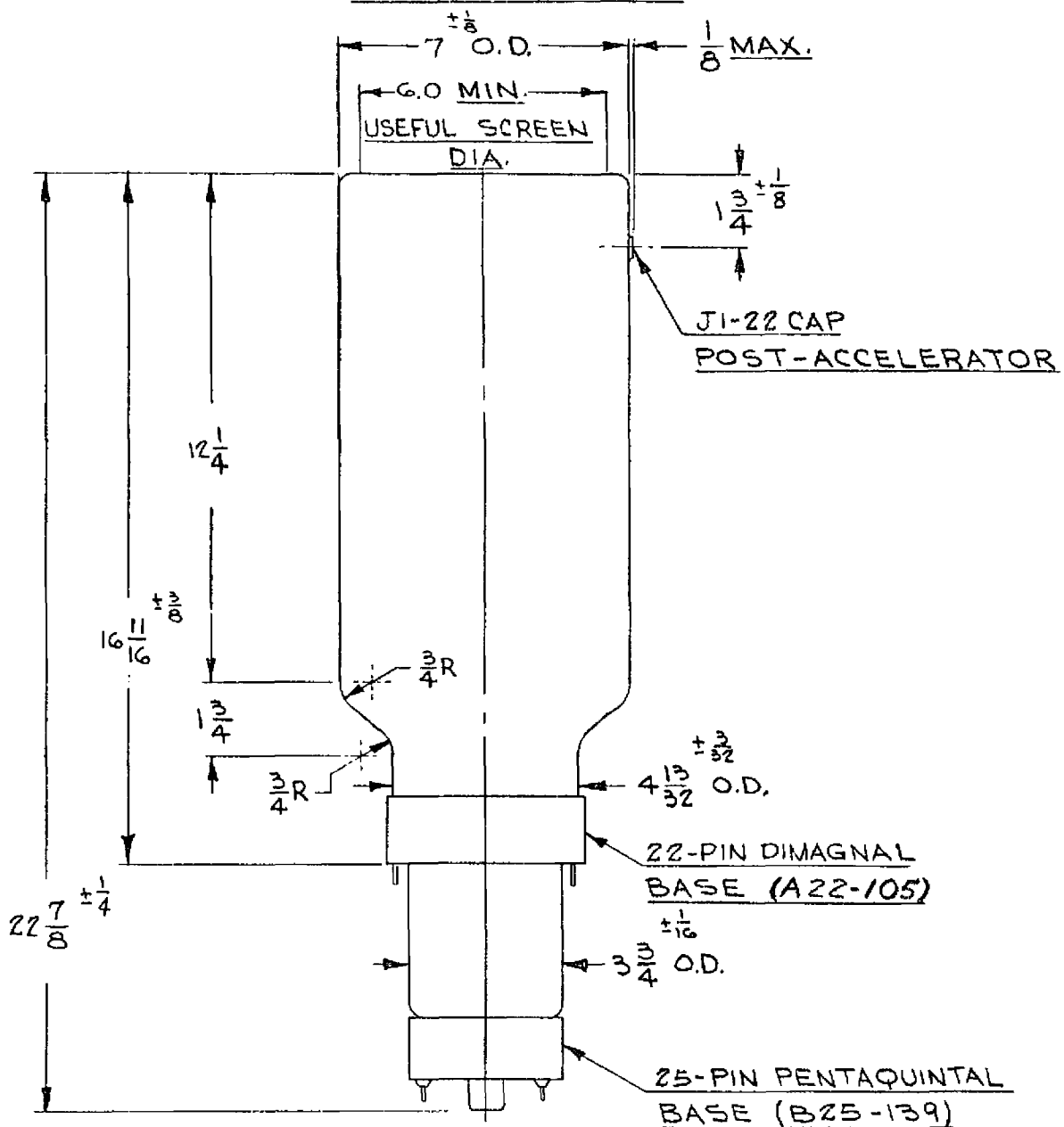
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N O T E S

1. Values are for each unit unless otherwise specified.
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 changes in deflection uniformity and pattern distortion.
3. Measured between the post accelerator and the accelerator with beams cut off. All readings of beam current shall be in addition to the reading obtained for post accelerator current.
4. For an Ib3 of 2 μ ADC, measured in accordance with MIL-E-1 specifications.
5. Visual extinction of undeflected, focused spot.
6. Measured per MIL-E-1 specifications.
7. All portions of a raster pattern, adjusted so its widest points just touch the sides of a 4.590-inch square, will fall within the area bounded by a 4.590-inch square and an inscribed 4.410-inch square.
8. Centered with respect to the tube face and with the tube shielded.
9. 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.
10. For an Ib3 of 25 μ ADC, measured in accordance with MIL-E-1 specifications.

DU MONT CATHODE-RAY TUBE TYPE 7 BSP-

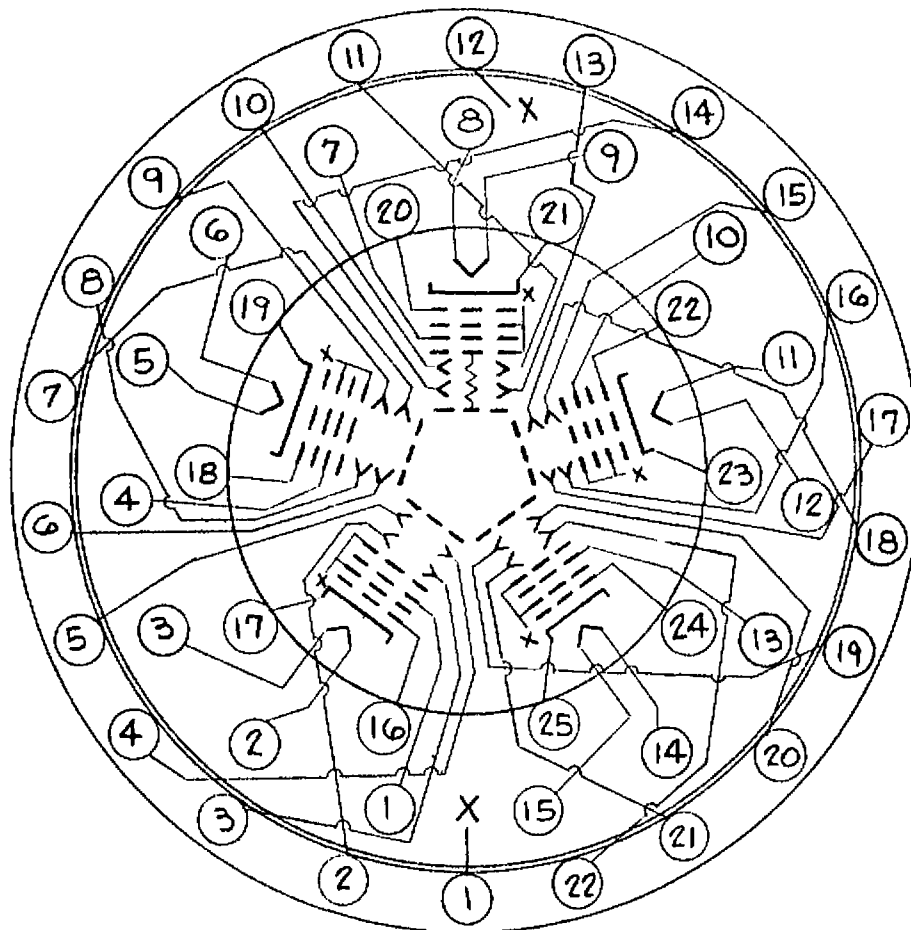


NOTES:

1. INDEX PIN, BASE KEY, & JI-22 CAP EACH ALIGNS WITH D_1 D_2 TRACE $\pm 10^\circ$

BOTTOM
VIEW

DU MONT BASING TYPE 7BSP-



BASE & COLLAR CONNECTIONS

ELEMENT	UNIT A	UNIT B	UNIT C	UNIT D	UNIT E
	25-PIN BASE NUMBERS				
HEATER	2	5	8	11	14
HEATER	3	6	9	12	15
CATHODE	17	19	21	23	25
GRID No. 1	16	18	20	22	24
FOCUSING ELECTRODE	1	4	7	10	13
	22-PIN COLLAR NUMBERS				
	1 & 12	1 & 12	1 & 12	1 & 12	1 & 12
ACCELERATOR (COMMON)	1 & 12	1 & 12	1 & 12	1 & 12	1 & 12
DEFLECTING ELECTRODE D ₁	4	6	14	18	20
DEFLECTING ELECTRODE D ₂	5	7	13	17	19
DEFLECTING ELECTRODE D ₃	2	9	11	16	21
DEFLECTING ELECTRODE D ₄	3	8	10	15	22