from JETEC release #1398,
Jan. 10, 1955, & release #1398A,
Feb. 7, 1955

DU MONT

3JP-A CATHODE-RAY TUBE

TENTATIVE

The Du Mont Type 3JP-A is an electrostatic focus and deflection cathode-ray tube. It is similar to the Type 3JP- with the exception of having closely controlled tolerances. Deflection factors are held to within 10%, with low pattern distortions. Angle alignment between the D1D2 and D3D4 traces is held to within 1°. Grid cut-off bias is held to within 25%.

ELECTRICAL DATA

Focusing Method	Electrostatic		
Deflecting Method	Electrostatic		
Direct Interelectrode Capacitances, Approximate	Min.	Max.	
Cathode to all other electrodes	2.8	5.2	uuf.
Grid #1 to all other electrodes	3.9	7.3	uuf.
D1 to D2	1.1	2.1	uuf.
D3 to D4	1.3	2.4	uuf.
D1 to all other electrodes	3.8	7.0	uuf.
D2 to all other electrodes	3.6	6.7	uuf.
D3 to all other electrodes	3.5	6.5	uuf.
D4 to all other electrodes	3.2	5.9	uuf.

OPTICAL DATA

Phosphor Number	No. 1	No. 2	No. 7	No. 11
Fluorescent Color	Green	Green	Blue	Blue
Phosphorescent Color	-----	Green	Yellow	-----
Persistence	Medium	Long	Long	Short

MECHANICAL DATA

Overall Length	10 ± 3/16	Inches
Greatest Diameter of Bulb	3 ± 1/16	Inches
Minimum Useful Screen Diameter	2 3/4	Inches
Bulb Number	J24G	
Bulb Contact (Recessed Small Ball Contact)	J1-22	
Base (Medium Shell Diheptal, 12-pin)	B12-37	
Basing	14J	
Bulb Contact Alignment		
J1-22 contact aligns with trace of D1D2	±10	Degrees
J1-22 contact on same side as pin No. 5		
Base Alignment		
D1D2 trace aligns with pin No. 5 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. 2		
Angle between D3D4 and D1D2 traces	90 ± 1	Degrees

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RATINGS (Design Center Values)

Heater Voltage	6.3	Volts
Heater Current at 6.3 Volts	0.6 ±10%	Ampere
Post Accelerator Voltage	6000	Max. Volts D-C
Accelerator Voltage	2000	Max. Volts D-C
Ratio Post Accelerator Voltage to Accelerator Voltage	3.0	Max.
Accelerator Input	6	Max. Watts
Focusing Electrode Voltage	1500	Max. Volts D-C
Grid No. 1 Voltage		
Negative Bias Value	200	Max. Volts D-C
Positive Bias Value	0	Max. Volts D-C
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	550	Max. Volts

TYPICAL OPERATING CONDITIONS

Post Accelerator Voltage	3000	4000	Volts
Accelerator Voltage	1500	2000	Volts
Focusing Electrode Voltage	300 to 515	400 to 690	Volts
Grid No. 1 Voltage[1]	-34 to -56	-45 to -75	Volts
P1 Light Output[2]	25	~~25~~	Ft. L. Min.
Modulation[2]	35 ←	~~35~~	Max. Volts D-C
Line Width "A"[2]	.03	~~.03~~	Inch Max.
Deflection Factors:			
D1 and D2	135 to 165	180 to 220	Volts D-C per Inch
D3 and D4	100 to 122	133 to 163	Volts D-C per Inch
Deflection Factor Uniformity[3]	3	3	% Max.
Focusing Electrode Current for any Operating Condition		-15 to +15	Microamperes
Spot Position		Within a 3/16-inch radius circle[4]	
Pattern Distortion @ 75% of Useful Scan[5]		2%	Max.

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CIRCUIT DESIGN VALUES

Focusing Electrode Voltage	200 to 345 Volts/Kilovolt of Accelerator Voltage
Grid No. 1 Voltage	22.5 to 37.5 Volts/Kilovolt of Accelerator Voltage

Deflection Factors:

No Post Accelerator, or Post Accelerator Voltage = Accelerator Voltage

D1 and D2	72 to 88 Volts D-C per inch per Kilovolt of Accelerator
D3 and D4	53 to 65 Volts D-C per inch per Kilovolt of Accelerator

Post Accelerator Voltage = twice Accelerator Voltage

D1 and D2	90 to 110 Volts D-C per inch per Kilovolt of Accelerator
D3 and D4	66.5 to 81.5 Volts D-C per inch per Kilovolt of Accelerator

MAXIMUM CIRCUIT VALUES

Grid No. 1 Circuit Resistance	1.5	Max. Megohms
Resistance in any Deflecting-Electrode Circuit[7]	5	Max. Megohms

NOTES

1. Visual extinction of undeflected focused spot.

2. Measured in accordance with MIL-E-1B Specifications @ I_{b3} = 100 ua.

3. The deflection factor (for both D1D2 and D3D4 plate pairs, separately) for any deflection 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.

4. When the tube is operated at typical operating conditions (E_h = 6.3 V., E_{b3} = 4000 V., E_{b2} = 2000 V., E_{b1} at focus); E_{c1} adjusted to avoid damage to the screen; with each of the deflecting electrodes connected to the accelerator; and with the tube shielded against external influences, the spot will fall within a 3/16-inch radius circle, centered on the tube face.

5. All portions of a raster pattern adjusted so its widest points just touch the sides of a 2.104-inch square, will fall within the area bounded by the 2.104-inch square and an inscribed 2.021-inch square.

6. Deflection accuracy may be obtained by combining angle between traces, deflection factor uniformity and pattern distortion characteristics. In general, for deflections less than those indicated, the accuracy will improve.

7. It is recommended that the deflecting electrode circuit resistances be approximately equal.

* Useful scan is the area included within the useful screen diameter.

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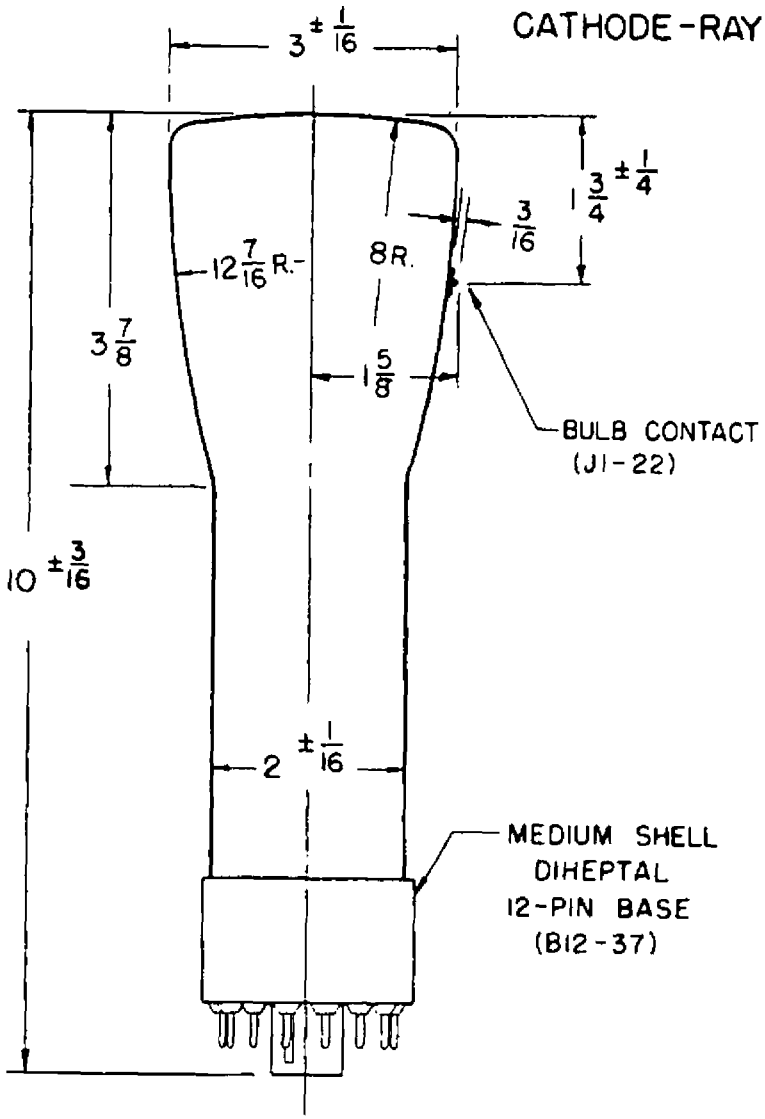
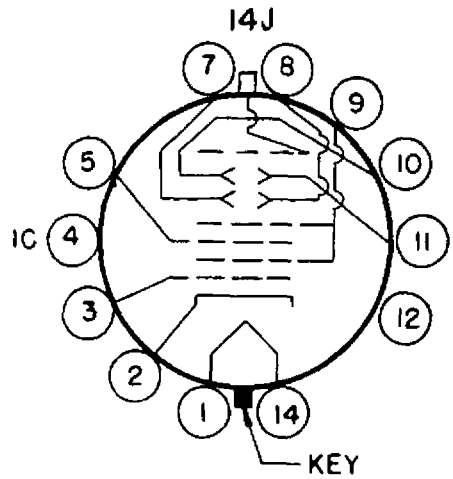
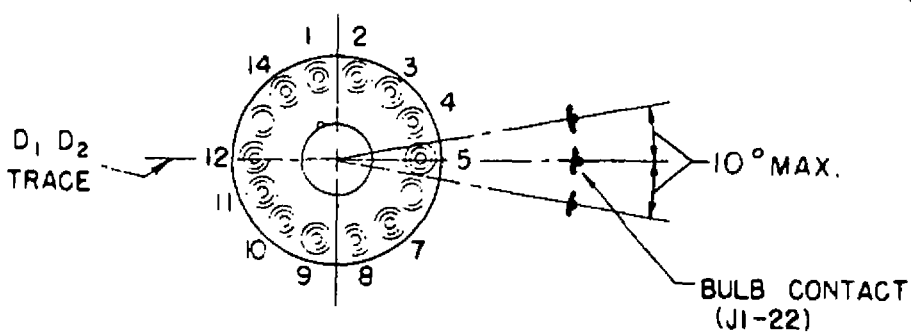
CATHODE-RAY TUBE





BOTTOM VIEW OF BASE

PIN NO.	ELEMENT
1	HEATER
2	CATHODE
3	GRID NO. 1
4	INTERNAL CONNECTION
5	FOCUSING ELECTRODE
7	DEFLECTING ELECTRODE D_3
8	DEFLECTING ELECTRODE D_4
9	ACCELERATOR
10	DEFLECTING ELECTRODE D_2
11	DEFLECTING ELECTRODE D_1
14	HEATER
CONTACT	POST ACCELERATOR



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