TYPE 5AWP- CATHODE-RAY TUBES

The Du Mont Type 5AWP- Cathode-ray Tubes are high voltage tubes which incorporate an intensifier subdivided into several steps. This feature permits the use of much higher overall accelerating voltages with deflection sensitivities only slightly less than heretofore obtainable in low voltage cathode-ray tubes. This tube has a flat face, cylindrical body, special deflection srtucture for minimum defocusing, and the deflection plate and anode connections are made through the neck instead of through the base. Low capacity deflection plate leads facilitate high frequency operation. The gun is designed to draw negligible focusing electrode current. To prevent film-fogging, and for maximum brightness and stability in performance, all screens are provided with a highly reflective metal backing. The 5AWP- is one of the line of Du Mont Tight-tolerance Cathode-ray Tubes.



GENERAL CHARACTERISTICS

Electrical Data

Focusing Method	Electrostatic
Deflecting Method	Electrostatic

Direct Interelectrode Capacitances	Min.	Max.	
Cathode to all	3.0	4.1	μμf
Grid No. 1 to all	3.5	5.0	μμf
D1 to D2	1.4	2.2	μμf
D3 to D4	0.9	1.5	μμf
D1 to all	4.4	5.4	μμf
D2 to all	4.8	6.1	μμf
D3 to all	3.5	4.5	μμf
D4 to all	3.0	3.9	μμf

Optical Data

Phosphor Number	1	2	7	11
Fluorescent Color	Green	Green	Blue	Blue
Phosphorescent Color	——	Green	Yellow	——
Persistence	Medium	Long	Long	Short

Mechanical Data

Overall Length	16¾ ± ¼ Inches
Greatest Diameter of Bulb	5¼ ± 3/32 Inches
Minimum Useful Screen Diameter	4½ Inches
Bulb Number	J42L1
Bulb Contacts — Recessed Small Ball Caps	J1-22
Neck Contacts — Small Ball Caps	J1-25
Base — Medium Shell Diheptal, 12 Pin	B12-37
Basing	14P

Base Alignment

D3D4 trace aligns with Pin No. 5 and tube axis ..... ± 10 Degrees

Positive voltage on D1 deflects beam approximately toward Base Pin No. 8

Positive voltage on D3 deflects beam approximately toward Base Pin No. 5

Bulb Contact Alignment

J1-22 contacts align with D3D4 trace ..... ± 10 Degrees

J1-22 contacts on same side as Pin No. 5

Trace Alignment

Angle between D3D4 and D1D2 traces ..... 90 ± 1 Degrees

MAXIMUM RATINGS (Design Center Values)

Heater Voltage	6.3 Volts
Heater Current at 6.3 Volts	0.6 ± 10% Ampere
Post-Accelerator Voltage (Note 1)	15000 Max. Volts D-C
Accelerator Voltage (Note 1)	3500 Max. Volts D-C
Ratio Post-Accelerator Voltage to Accelerator Voltage (Note 2)	4.5
Accelerator Input (Avg.)	6.0 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	1200 Max. Volts

TYPICAL OPERATING CONDITIONS

Post-Accelerator Voltage (Note 1)	10300 Volts
Accelerator Voltage (Note 1)	2300 Volts
Focusing Electrode Voltage for all values of Ib3	500 to 730 Volts
Grid No. 1 Voltage (Note 3)	—33 to —55 Volts
Deflection Factors: (Note 4)	
D1 and D2	113 to 128 Volts D-C per Inch
D3 and D4	113 to 128 Volts D-C per Inch
Deflection Factory Uniformity (Note 5)	2% Max.
Deflection Defocusing (Note 6)	1:2 Ratio
Useful Scan (Note 7)	
D1 and D2	4 (± 2 from tube face center) Min. Inches
D3 and D4	4 (± 2 from tube face center) Min. Inches
Pattern Distortion (Note 8)	
Modulation (Note 9)	35 Max. Volts D-C
Line Width "A" (Note 9)	.016 Max. Inches
Focusing Electrode current for any operating condition	—15 to +10 μA
Spot Position (focused and undeflected) (Note 10)	Within a 15 mm Square

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

Focusing Electrode Voltage	21% to 32% of Accelerator Volts
Grid No. 1 Voltage (Note 3)	1.4% to 2.4% of Accelerator Volts
Ratio Post-Accelerator to Accelerator Voltage	4.5
D1 and D2	49 to 56 Volts D-C per Inch per Kilovolt of Accelerator
D3 and D4	49 to 56 Volts D-C per Inch per Kilovolt of Accelerator

MAXIMUM CIRCUIT VALUES

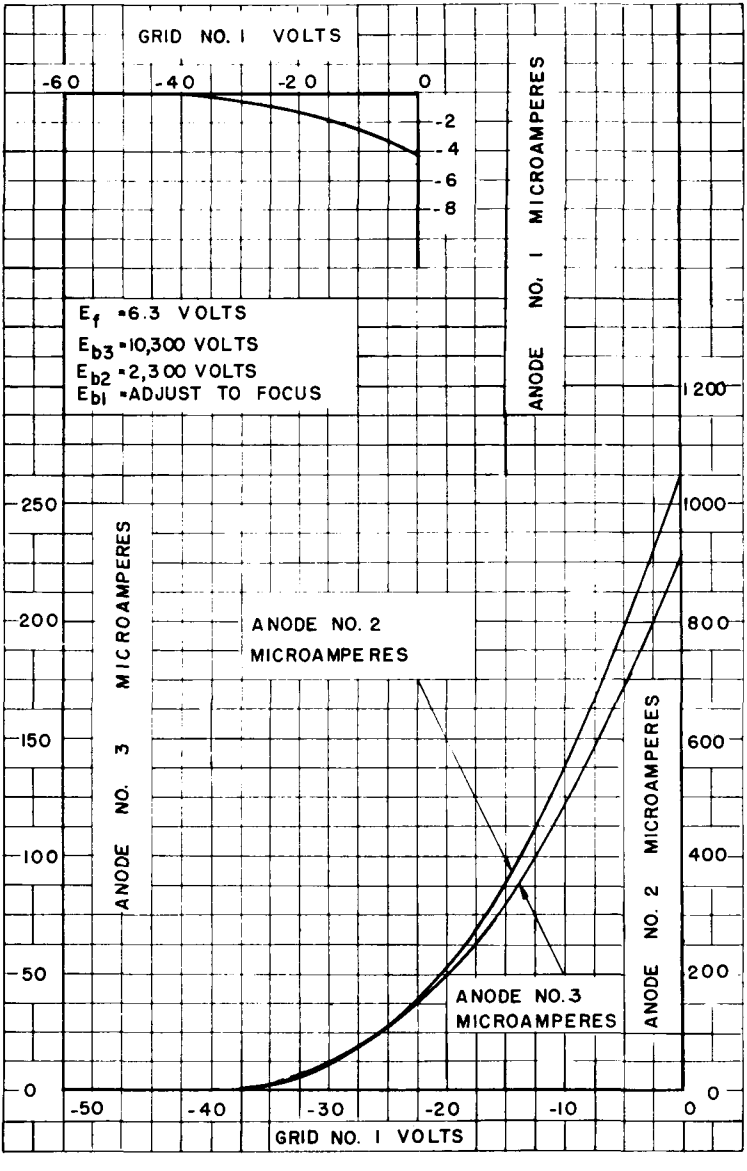
Grid No. 1 Circuit Resistance	1.5 Max. Megohms
Resistance in any Deflecting Electrode Circuit (Note 11)	1.0 Max. Megohm

NOTES

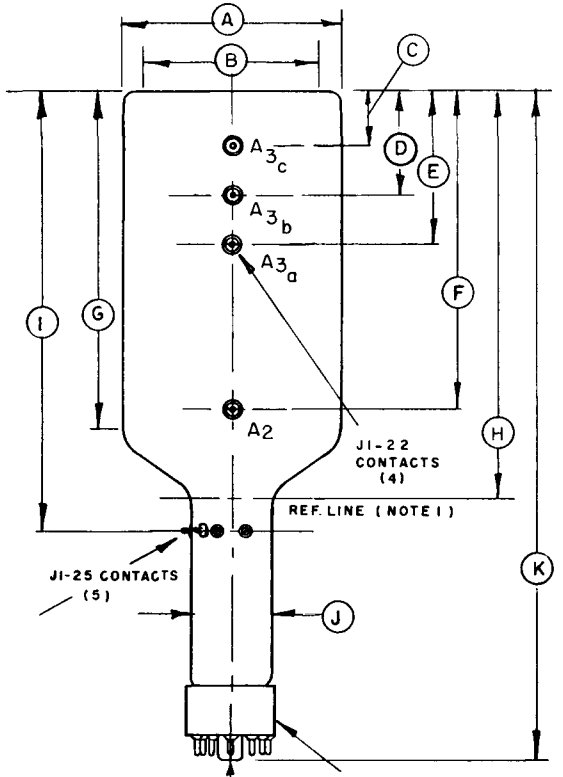
1. Accelerator to final intensifier electrode voltage equally divided over the three intensifier electrodes by 25 megohm resistors connected between each intensifier and the accelerator.
2. This tube is designed for optimum performance when operating at an Eb3/Eb2 ratio of 4.5. Operation at other ratios of Eb3/Eb2 may result in changes in deflection uniformity and pattern distortion.
3. Visual extinction of undeflected focused spot.
4. D1D2 deflection factor within 8 volts of D3D4.
5. The deflection factor (for both D1D2 and D3D4 plate pairs, separately) for a deflection of 25% of the useful scan will not differ from the deflection factor for a deflection at 75% of the useful scan by more than the indicated value.
6. The ratio of the line width of a 4 inch long trace, adjusted for best center focus, to the line width measured on the faceplate axis when the trace is deflected perpendicularly ± 2 inches from the face center by a balanced D-C voltage, will not be greater than the specified value.
7. Reduction in useful scan when Post-Accelerator voltage is greater than Accelerator voltage is determined by the ratio of these voltages measured with respect to cathode. Values shown are therefore applicable to any operating condition with the same voltage ratios.

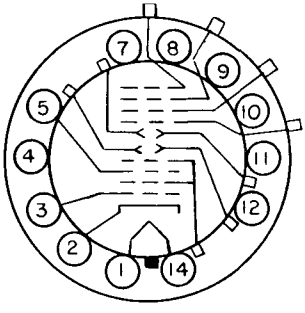
8. All portions of a raster pattern, adjusted so its widest points just touch the sides of a 3.040 inch square, will fall within the area bounded by the 3.040 inch square and an inscribed 2.960 inch square.
9. For an Ib3 of 25 μADC measured in accordance with MIL-E-1 specifications.
10. Centered with respect to the tube face and with the tube shielded. Connect free deflecting electrodes to accelerator.
11. It is recommended that the deflection electrode circuit resistances be one megohm or less and approximately equal, otherwise beam shift at high drives can be expected. Higher resistance values up to five megohms may be used for low beam current operation.

TYPE 5AWP-
AVERAGE CHARACTERISTICS



TYPE 5AWP-

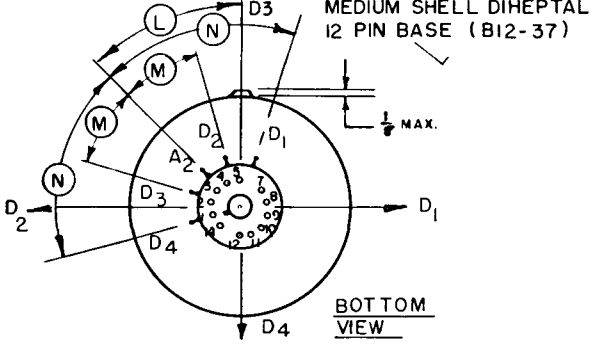




14P PIN NO.	BOTTOM VIEW ELEMENT
1	HEATER
2	CATHODE
3	GRID NO.1
4	INTERNAL CONNECTION
5	FOCUSING ELECTRODE
7-12	NO CONNECTION
14	HEATER

NOTE: 1. REFERENCE LINE, POINT WHERE RING GAUGE 2.063 +.001 -.000 I.D. 1/2 LONG WILL STOP.

2. THE BULB SHALL BE J42L1 WITHOUT BUTTONS.



REF.	DIMENSION
A	5 1/4 ± 3/32 DIA.
B	4 1/2 MIN. SCREEN
C	1 7/16 ± 3/16
D	2 9/16 ± 3/16
E	3 11/16 ± 3/16
F	8 ± 3/16
G	8 1/2 NOM.
H	10 1/4 ± 3/16
I	11 ± 1/4
J	2 ± 1/16 O.D.
K	16 3/4 ± 1/4
L	45° ± 10°
M	30° ± 5°
N	60° ± 5°