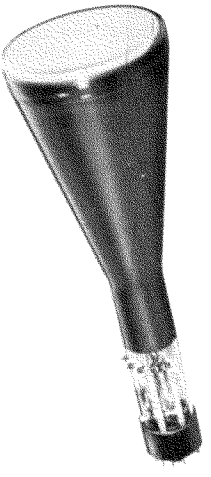
5AMP- CATHODE-RAY TUBES

The Du Mont Type 5AMP- is a tight-tolerance 5-inch cathode-ray tube employing the mono-accelerator principle of beam acceleration. Electrostatically focused and deflected, the Type 5AMP- features high deflection sensitivity, exceptional deflection linearity and a flat faceplate.



The usable screen area of the Type 5AMP- measures 2.5 x 4 inches, designed this way to provide very high deflection sensitivity in the Y-axis. This sensitivity considerably reduces the output amplitude requirements of wide-band amplifiers and consequently reduces the cost of such amplifiers.

The mono-accelerator principle requires that all electron stream acceleration take place *before* the beam enters the deflection system. Under this arrangement, exceptional spot uniformity and deflection linearity are achieved.

Deflection-plate connections are provided at the tube neck rather than through the tube base to appreciably reduce lead inductance and capacitance to these electrodes.

GENERAL CHARACTERISTICS

Electrical Data

Heater Voltage	6.3 Volts
Heater Current	0.6 ± 10% Ampere
Focusing Method	Electrostatic
Deflecting Method	Electrostatic

Phosphor	No. 1	No. 2	No. 7	No. 11
Fluorescence	Green	Green	Blue	Blue
Phosphorescence	——	Green	Yellow	——
Persistence	Medium	Long	Long	Short

Direct Interelectrode Capacitances	Min.	Max.	
Cathode to all other electrodes	2.7	4.9	μμf
Grid No. 1 to all other electrodes	2.9	5.5	μμf
D1 to D2	2.1	3.9	μμf
D3 to D4	1.3	2.5	μμf
D1 to all other electrodes	4.3	7.9	μμf
D2 to all other electrodes	4.0	7.4	μμf
D3 to all other electrodes	2.9	5.5	μμf
D4 to all other electrodes	2.6	4.8	μμf

Mechanical Data

Overall Length	17⅝ ± ¼ Inches
Greatest Diameter of Bulb	5¼ ± 3/32 Inches
Minimum Useful Screen Diameter	4½ Inches
Neck Contacts (Small Ball Caps)	J1-25
Base (Medium Shell Diheptal 12-Pin)	B12-37
Basing	14U

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

MAXIMUM RATINGS (Design Center Values)

Accelerator Voltage[1]	6,000 Max. Volts D-C
Focusing Voltage	1,500 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 D-C
Heater Positive with respect to Cathode	180 Max. Volts D-C
Peak Voltage between Accelerator and any Deflection Electrode	1,200 Max. Volts

TYPICAL OPERATING CONDITIONS

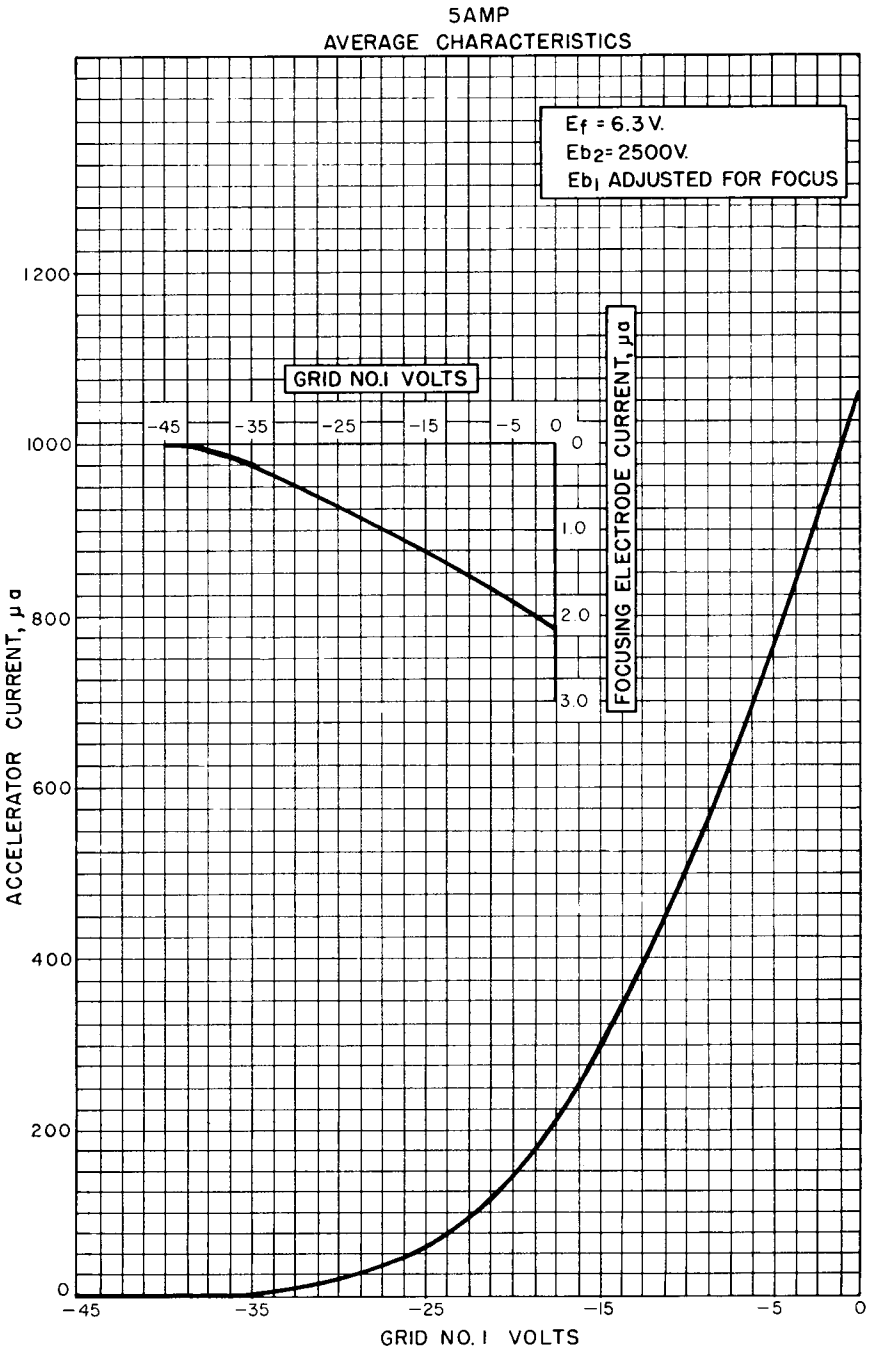
For Accelerator Voltage of	2,500 Volts D-C
Focusing Voltage	0 to 300 Volts D-C
Grid No. 1 Voltage[2]	—34 to —56 Volts D-C
P1 Light Output[3]	15 Ft. L. Min.
Modulation[3]	45 Max. Volts D-C
Line Width A[3]	.032 Inch Max.
Accelerator Current[2]	800 Max. Microamperes D-C
Deflection Factors:	
D1 and D2	40 to 50 Volts D-C per Inch
D3 and D4	20 to 25 Volts D-C per Inch
Deflection Factor Uniformity[4]	1% Max.
Useful Scan	
D1 and D2	4.00 (± 2.00 min. from tube face center) Inches
D3 and D4	2.50 (± 1.25 min. from tube face center) Inches
Pattern Distortion @ 90% of useful scan[5]	2% Max.
Spot Position	Within a 5/16-inch radius circle[7]

CIRCUIT DESIGN VALUES

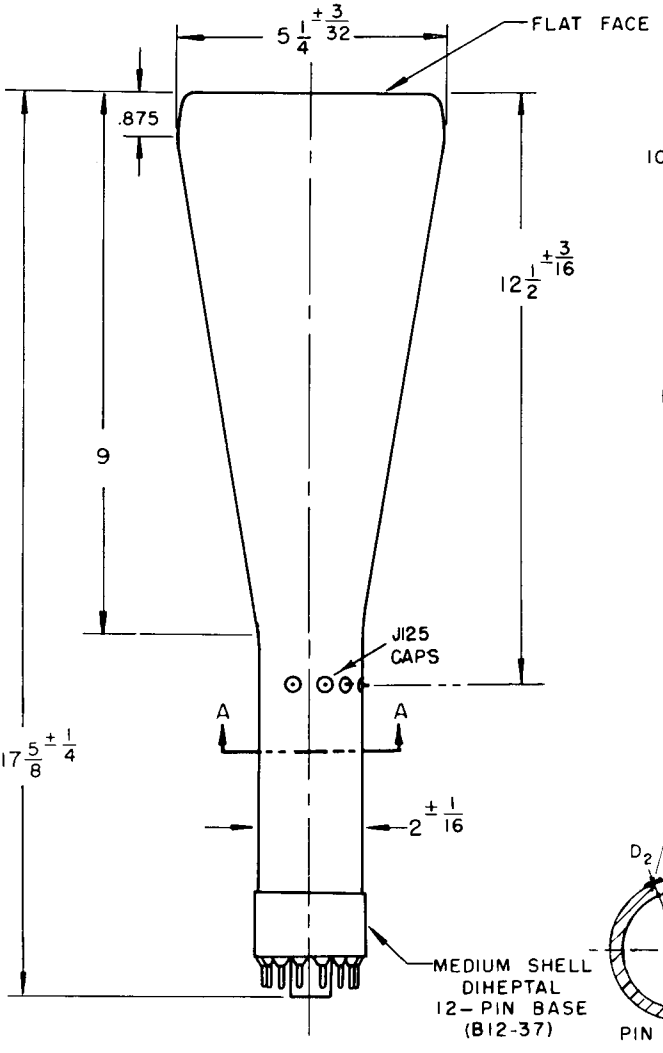
Focusing Current for any operating condition	—15 to +15 Microamperes D-C
Grid No. 1 Voltage[2]	—13.6 to —22.4 Volts D-C per Kilovolt of Accelerator Voltage
Grid No. 1 Circuit Resistance	1.5 Max. Megohms
Deflection Factors:	
D1 and D2	16 to 20 Volts D-C/Inch/KV of Accelerator Voltage
D3 and D4	8 to 10 Volts D-C/Inch/KV of Accelerator Voltage
Resistance in any Deflecting Electrode Circuit[8]	1 Max. Megohm

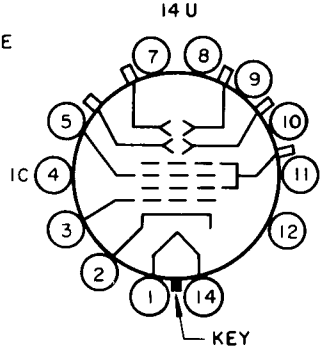
NOTES

1. The product of accelerator voltage and average accelerator current should be limited to 6 watts.
2. Visual extinction of undeflected focused spot.
3. Measured in accordance with MIL-E-1 Specifications.
4. 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.
5. All portions of a raster pattern, adjusted so its widest points just touch the sides of a 2.295 x 3.672-inch rectangle, will fall within the area bounded by the 2.295 x 3.672-inch rectangle and an inscribed 2.205 x 3.528-inch rectangle.
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. When the tube is operated at typical operating conditions (Eh = 6.3 V., Eb2 = 2500 V., Eb1 at focus); Ec1 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 5/16-inch radius circle, centered on the tube face.
   Under stable operating conditions, the position of the spot will not shift with changes in intensity by more than .025 inch.
8. It is recommended that the deflecting electrode circuit resistances be approximately equal.
9. An adjustable D.C. potential between the accelerator and the deflection plates may be used to secure best overall focus.


5AMP
AVERAGE CHARACTERISTICS
Ef = 6.3 V.
Eb2 = 2500V.
Eb1 ADJUSTED FOR FOCUS
GRID NO.1 VOLTS
-45
-35
-25
-15
-5
0
FOCUSING ELECTRODE CURRENT, μa
0
1.0
2.0
3.0
ACCELERATOR CURRENT, μa
1200
1000
800
600
400
200
0
-45
-35
-25
-15
-5
0
GRID NO. 1 VOLTS

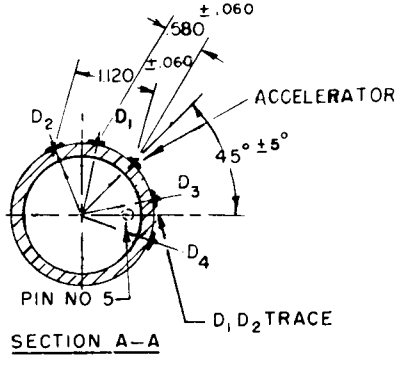
TYPE 5AMP-





BOTTOM VIEW OF BASE

PIN NO.	ELEMENT
1 -	HEATER
2 -	CATHODE
3 -	GRID NO. 1
4 -	INTERNAL CONNECTION
5 -	FOCUSING ELECTRODE
14 -	HEATER



SECTION A-A