

5ADP- CATHODE-RAY TUBES

The Type 5ADP- Cathode-ray Tubes are flat-faced electrostatically focused and deflected cathode-ray tubes, designed for applications where tight tolerances and high sensitivity are important. The high sensitivity is achieved by the use of long deflection plates.

Tolerances are very closely controlled: angle alignment between the D1D2 and D3D4 traces is held to within 1° , while deflection factors are held to within 10% with low pattern distortion. Grid cutoff bias is maintained within 25%. A gun which draws negligible focussing electrode current is also employed.

Similar to the Type 3WP- Cathode-ray Tubes, the Type 5ADP- Cathode-ray Tubes permit smaller, lower cost amplifiers, while tight tolerances afford greater freedom in cathode-ray equipment design.

GENERAL CHARACTERISTICS

Electrical

Heater Voltage 6.3 Volts

Heater Current $0.6 \pm 10\%$ 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 3.1 5.8 $\mu\text{mf.}$

Grid No. 1 to all other electrodes 4.2 7.9 $\mu\text{mf.}$

D1 to D2 1.7 3.1 $\mu\text{mf.}$

D3 to D4 .7 1.3 $\mu\text{mf.}$

D1 to all other electrodes except D2 2.7 6.1 $\mu\text{mf.}$

D2 to all other electrodes except D1 2.7 6.1 $\mu\text{mf.}$

D3 to all other electrodes except D4 2.1 4.0 $\mu\text{mf.}$

D4 to all other electrodes except D3 2.1 5.0 $\mu\text{mf.}$

Mechanical

Overall Length $16\frac{3}{4} \pm 3/16$ Inches

Greatest Diameter of Bulb $5\frac{1}{4} \pm 3/32$ Inches

Minimum Useful Screen Diameter $4\frac{1}{2}$ Inches

Bulb Contact (Recessed Small Ball Cap) J1-22

Base (Medium Shell Diheptal 12-pin) B12-37

Basing 14J

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

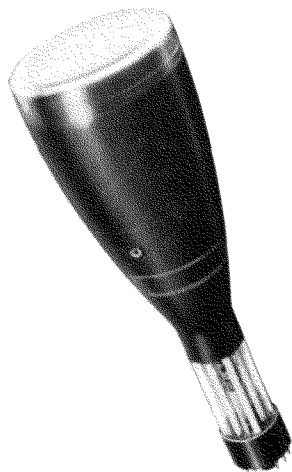
Positive voltage on D3 deflects beam approximately toward pin No. 2

Angle between D3D4 and D1D2 traces 90 ± 1 Degrees

Bulb Contact Alignment

J1-22 contact aligns with D1D2 trace ± 10 Degrees

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



MAXIMUM RATINGS—(Design Center Values)

Post Accelerator Voltage	6,000 Max. Volts D-C
Accelerator Voltage ¹	2,600 Max. Volts D-C
Ratio Post Accelerator Voltage to Accelerator Voltage	2.3 Max.
Focusing Voltage	1,000 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	500 Max. Volts

TYPICAL OPERATING CONDITIONS

For Post Accelerator Voltage of	3,000 Volts
For Accelerator Voltage of	1,500 Volts
Focusing Voltage	300 to 515 Volts
Grid No. 1 Voltage ²	—34 to —56 Volts
Modulation ³	45 Volts Max.
Line Width A ³	.030 Inches Max.
P1 Light Output ³	15 Ft. L. Min.
Deflection Factors:	
D1 and D2	40 to 50 Volts D-C per Inch
D3 and D4	30.5 to 37.5 Volts D-C per Inch
Deflection factor uniformity ⁴	2% Maximum
Useful Scan ⁵	
D1D2	4 Inches*
D3D4	4 Inches*
Pattern Distortion at 75% of useful scan ⁶	2½% Max.
Spot Position (Undelected)	Within a 5/16-inch radius circle ⁶

CIRCUIT DESIGN VALUES

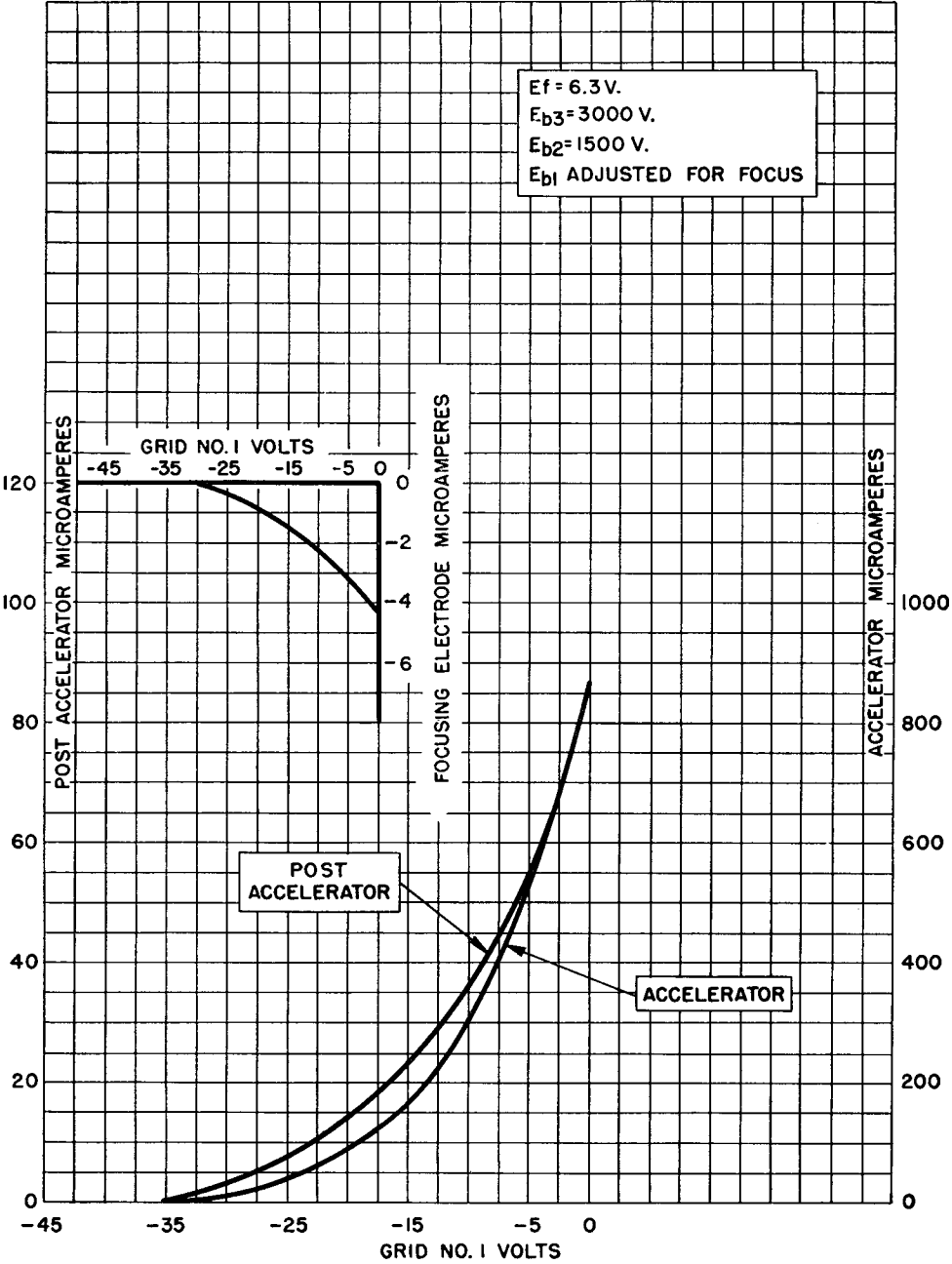
Focusing Voltage	187 to 345 Volts per Kilovolt of Accelerator Voltage
Focusing Current for any operating condition	—15 to +10 Microamperes
Grid No. 1 Voltage ²	22.5 to 37.5 Volts per Kilovolt of Accelerator Voltage
Grid No. 1 Circuit Resistance	1.5 Max. Megohms
Deflection Factors:	
Post Accelerator Voltage = Accelerator Voltage	
D1 and D2	21.5 to 26.5 Volts D-C/Inch/KV of Accelerator Voltage
D3 and D4	16 to 20 Volts D-C/Inch/KV of Accelerator Voltage
Resistance in any Deflecting-Electrode Circuit ⁹	5 Max. Megohms
* ±2" minimum from tube face center.	

NOTES

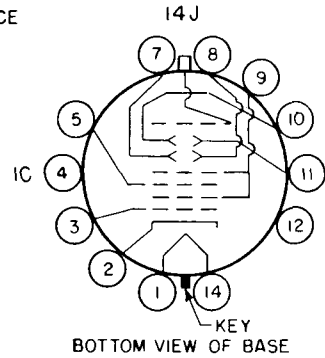
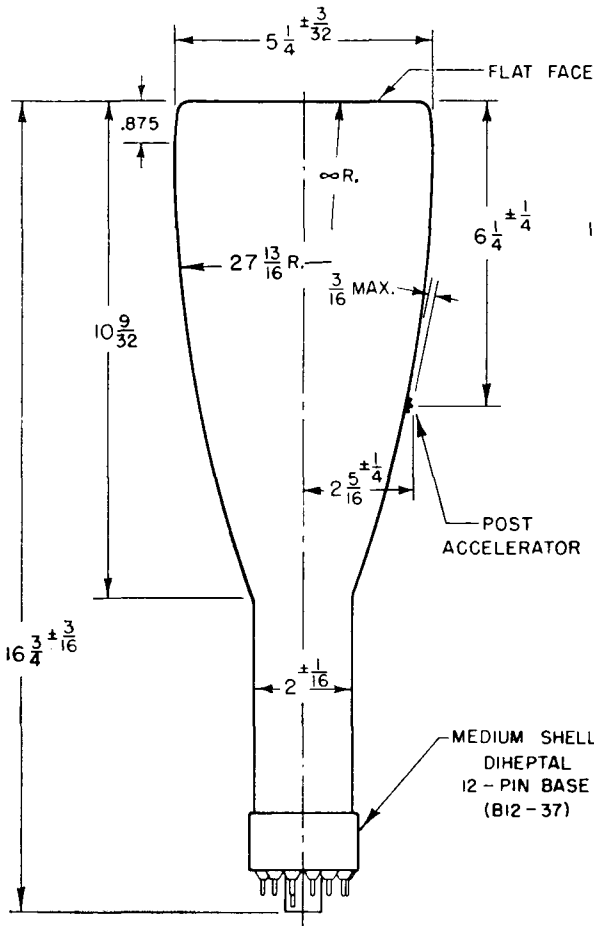
1. The product of Accelerator Voltage and average Accelerator Current should be limited to 6 watts.
2. Visual extinction of undeflected focused spot.
3. Measured in accordance with JAN-1A Specifications at Post Accelerator Current = 25 ua.
4. The deflection factor (for both D1D2 and D3D4 plate pairs, 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. 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.
6. The edges of a raster pattern, whose mean dimensions are the indicated percentage of useful scan, shall not deviate from the mean dimension rectangle by more than the specified amount.
7. 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.

8. Centered with respect to the tube face with the tube shielded.
9. It is recommended that the deflecting electrode circuit resistances be approximately equal.
10. For optimum focus the average potentials of the deflection plates and second anode should be the same.

5ADP-
AVERAGE CHARACTERISTICS



TYPE 5ADP-



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

