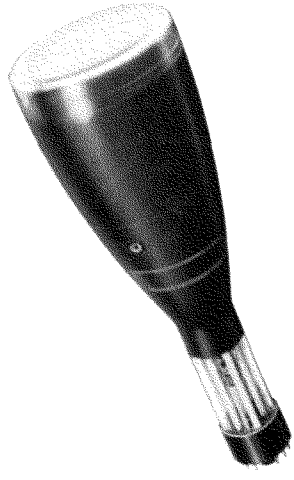
5ADP- CATHODE-RAY TUBES

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 ± 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	μμf.
Grid No. 1 to all other electrodes	4.2	7.9	μμf.
D1 to D2	1.7	3.1	μμf.
D3 to D4	.7	1.3	μμf.
D1 to all other electrodes except D2	2.7	6.1	μμf.
D2 to all other electrodes except D1	2.7	6.1	μμf.
D3 to all other electrodes except D4	2.1	4.0	μμf.
D4 to all other electrodes except D3	2.1	5.0	μμf.

Mechanical

Overall Length ..... 16¾ ± 3/16 Inches
Greatest Diameter of Bulb ..... 5¼ ± 3/32 Inches
Minimum Useful Screen Diameter ..... 4½ 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 (Undeflected) ..... Within a 5/16-inch radius circle[8]

CIRCUIT DESIGN VALUES

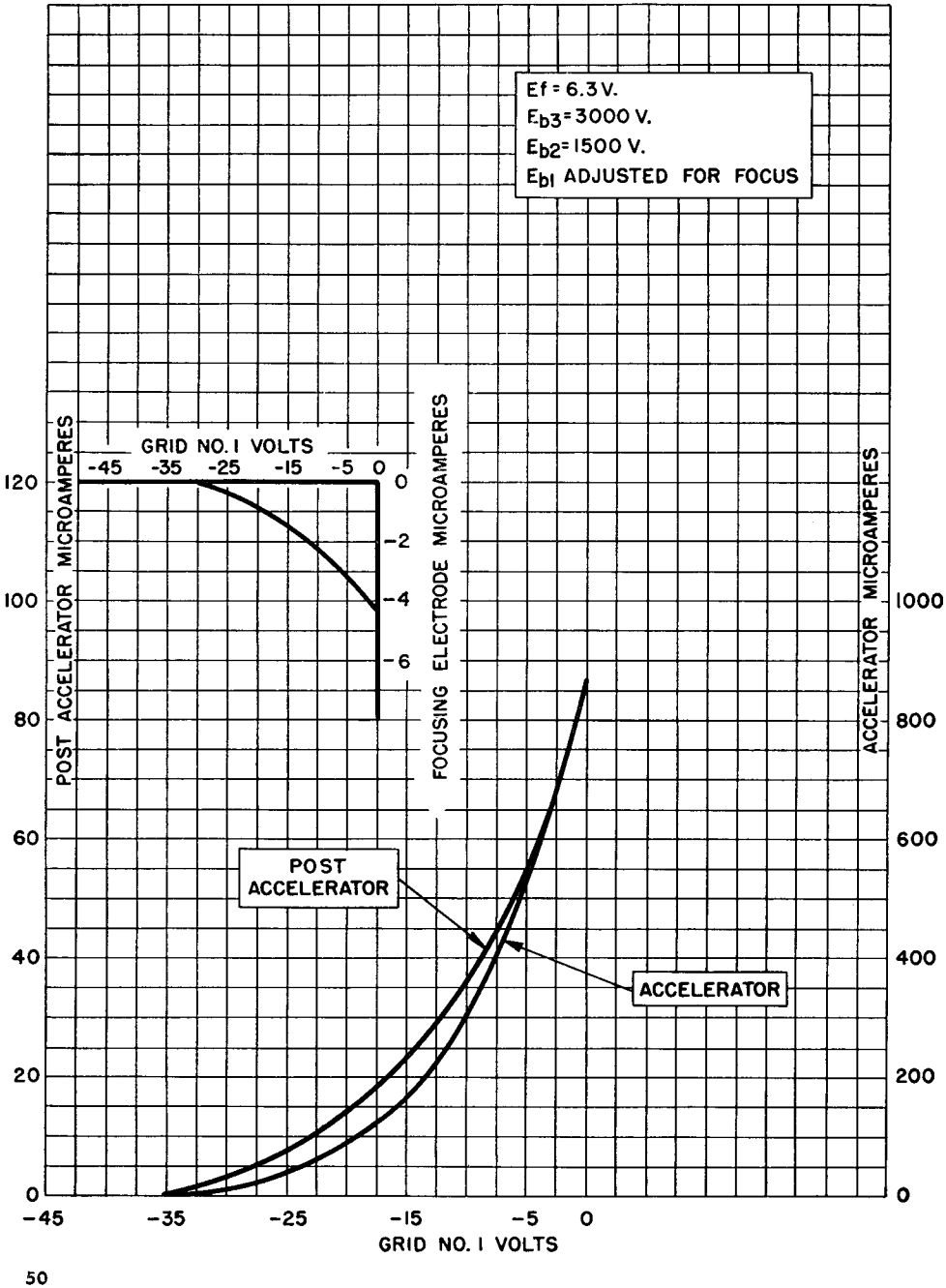
Focusing Voltage ..... 187 to 345 Volts per Kilovolt of Accelerator Voltage
Focusing Current for any operating condition ..... —15 to +10 Microamperes
Grid No. 1 Voltage[2] ..... 22.5 to 37.5 Volts per Kilovolt of Accelerator Voltage
Grid No. 1 Circuit Resistance ..... 1.5 Max. Megohms
Deflection Factors:
  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

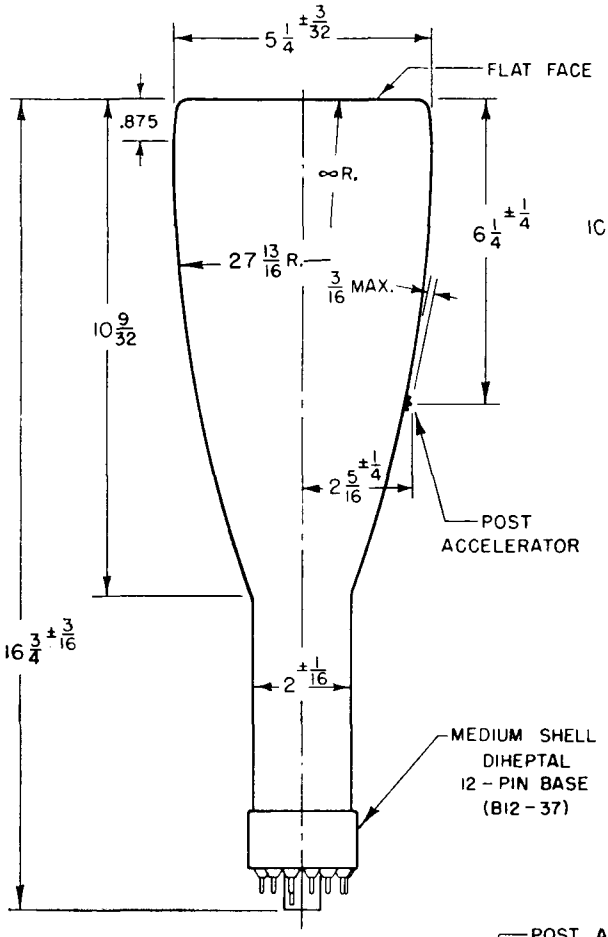
1. The product of Accelerator Voltage and average Accelerator Current should be limited to 6 watts.
2. Visual extinction of undeflected focused spot.
3. Measured in accordance with JAN-1A Specifications at Post Accelerator Current = 25 ua.
4. The deflection factor (for both D1D2 and D3D4 plate pairs, 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.

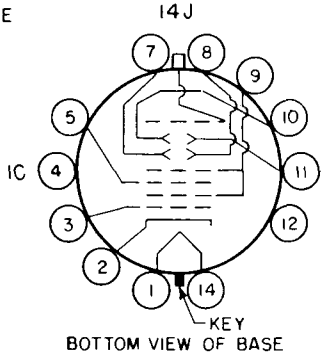
8. Centered with respect to the tube face with the tube shielded.
9. It is recommended that the deflecting electrode circuit resistances be approximately equal.
10. For optimum focus the average potentials of the deflection plates and second anode should be the same.

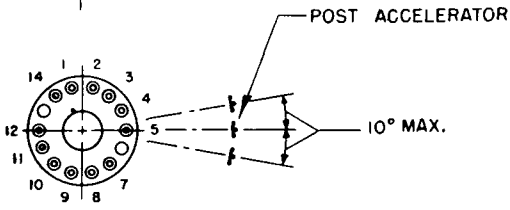
5ADP–
AVERAGE CHARACTERISTICS



TYPE 5ADP-





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