

5CP-A CATHODE-RAY TUBES

The Type 5CP-A Cathode-ray Tubes are designed for oscillographic applications. The intensifier principle is used to provide a maximum deflection sensitivity for a given final accelerating voltage. A glass envelope has been designed to provide great mechanical strength and the tube base design provides adequate insulation between electrode leads for high altitude installation. The gun is designed to draw negligible focusing electrode current.

The four types differ only in the characteristics of the fluorescent screens. Other screen types may be obtained on special order.



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, Nominal

Cathode to all other electrodes	9 μ f.
Grid No. 1 to all other electrodes	8 μ f.
D1 to D2	2 μ f.
D3 to D4	2 μ f.
D1 to all other electrodes except D2	7 μ f.
D2 to all other electrodes except D1	7 μ f.
D3 to all other electrodes except D4	5 μ f.
D4 to all other electrodes except D3	6 μ f.

Mechanical

Overall Length	$16\frac{3}{4} \pm \frac{3}{8}$ Inches
Greatest Diameter of Bulb	$5\frac{1}{4} \pm \frac{3}{32}$ Inches
Minimum Useful Screen Diameter	4½ Inches
Bulb Contact	J1-22
Base	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 ± 3 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)

Anode No. 3 Voltage (Accelerator High-Voltage Electrode)	4000 Max. Volts D-C
Anode No. 2 Voltage ¹	2000 Max. Volts D-C
Ratio Anode No. 3 Voltage to Anode No. 2 Voltage	2.3 Max.
Anode No. 1 Voltage	1000 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	2 Max. Volts

Peak Heater-Cathode Voltage

Heater Negative with respect to Cathode	125 Max. Volts D-C
Heater Positive with respect to Cathode	125 Max. Volts D-C

Peak Voltage between Anode No. 2 and any Deflection Electrode 500 Max. Volts

TYPICAL OPERATING CONDITIONS

For Anode No. 3 Voltage of	2000	3000	4000 Volts
For Anode No. 2 Voltage of	2000	1500	2000 Volts
Anode No. 1 Voltage for focus	375 to 690	280 to 515	375 to 690 Volts
Grid No. 1 Voltage ²	-30 to -90	-22.5 to -67.5	-30 to -90 Volts

Deflection Factors:

D1 and D2	62 to 84	58 to 80	78 to 106 D-C V/in.
D3 and D4	54 to 74	50 to 68	66 to 90 D-C V/in.

Anode No. 1 Voltage for focus 18.7% to 34.5% of Eb2 Volts

Grid No. 1 Voltage² 1.5% to 4.5% to Eb2 Volts

Anode No. 1 Current for any operating condition -15 to +10 Microamperes

Deflection Factors:

No 3rd Anode or Eb3 = Eb2

D1 and D2 31 to 42 Volts D-C per inch per Kilovolt of Eb2

D3 and D4 27 to 37 Volts D-C per inch per Kilovolt of Eb2

Eb3 = Twice Eb2

D1 and D2 39 to 53 Volts D-C per inch per Kilovolt of Eb2

D3 and D4 33 to 45 Volts D-C per inch per Kilovolt of Eb2

Spot Position (Undelected)³ Within 25 Millimeters square

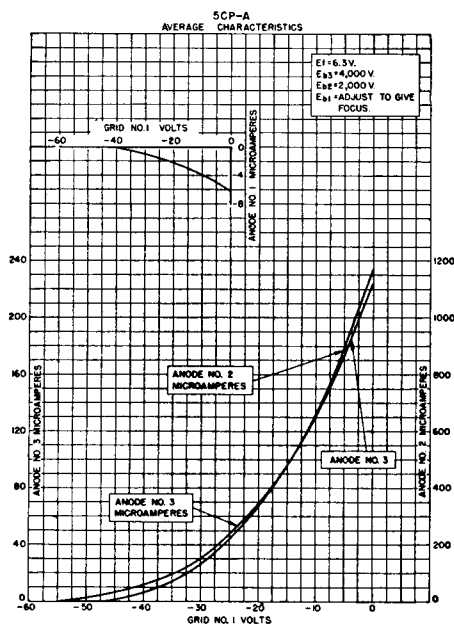
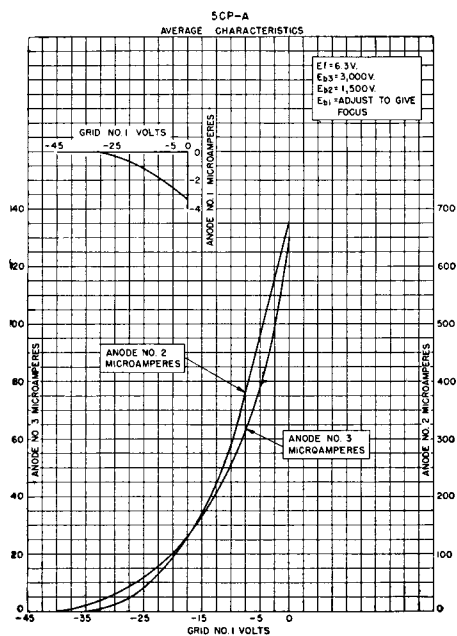
MAXIMUM CIRCUIT VALUES

Grid No. 1 Circuit Resistance 1.5 Max. Megohms

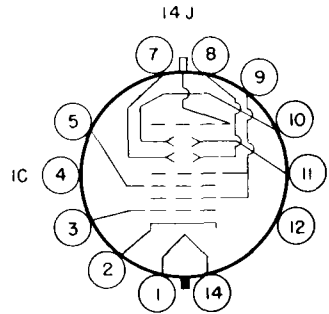
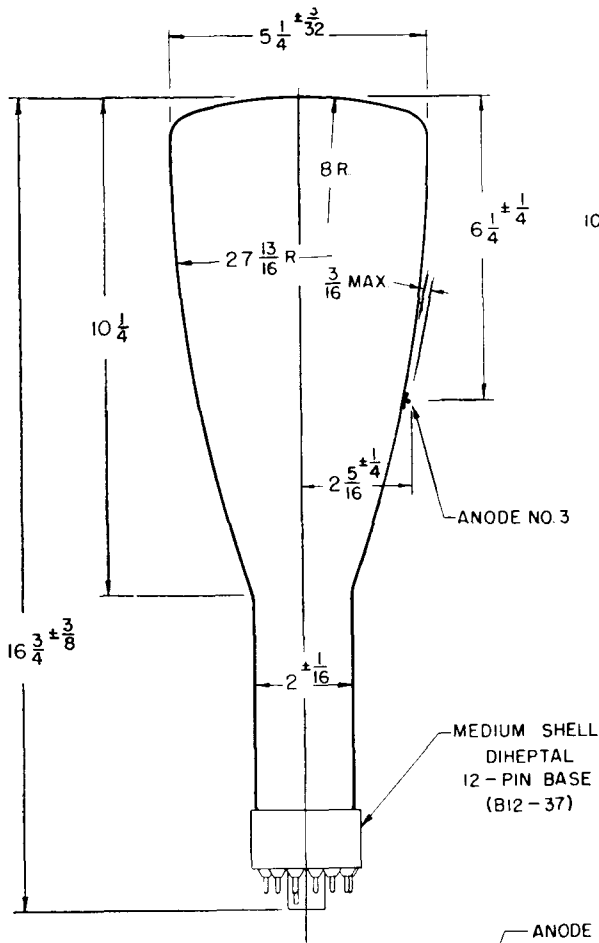
Resistance in any Deflecting-Electrode Circuit⁴ 5 Max. Megohms

NOTES

1. The product of Anode No. 2 voltage and average Anode No. 2 current should be limited to 6 watts.
2. Visual extinction of undeflected focused spot.
3. When the tube is operated at (1) normal heater voltage; (2) Eb3 = 3000 volts; (3) Eb2 = 1500 volts; (4) Eb1 adjusted for focus; (5) Ec1 set at such a value as will avoid damage to the screen; (6) with each of the deflecting electrodes connected to Anode No. 2; and (7) with the tube shielded against external influences:
The spot will fall within a 25 mm. square, the center of which coincides with the geometric center of the tube face and the sides of which are parallel to the traces produced by deflecting electrodes D1 and D2 and by deflecting electrodes D3 and D4 respectively.
4. It is recommended that the deflecting electrode circuit resistances be approximately equal.
5. For optimum focus the average potentials of the deflection plates and second anode should be the same.



TYPE 5CP-A



BOTTOM VIEW OF BASE

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

