5JP-A CATHODE-RAY TUBES

The Type 5JP-A Cathode-ray Tubes are designed for oscillographic applications where low deflection plate capacitances are essential. The deflection plate leads are short and direct, terminating in caps on the wall of the tube rather than in the tube base. The intensifier principle is used to provide a maximum deflection sensitivity for a given final accelerating voltage. 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 ± 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

Grid No. 1 to all other electrodes	8 μμf.
D1 to D2	1.5 μμf.
D3 to D4	1.5 μμf.
D1 to all other electrodes except D2	2.5 μμf.
D2 to all other electrodes except D1	3 μμf.
D3 to all other electrodes except D4	2.5 μμf.
D4 to all other electrodes except D3	2.5 μμf.

Mechanical

Overall Length	16¾ ± ⅜ Inches
Greatest Diameter of Bulb	5-5/16 ± 1/16 Inches
Minimum Useful Screen Diameter	4½ Inches
Bulb Contact (Anode No. 3)	Small Cap (C1-1)
Bulb Contacts (Deflection Plate)	Miniature Cap (C1-2)
Base	Medium Magnal
Basing	11S

Base Alignment

D3D4 trace aligns with Pin No. 6 and tube axis	±10 Degrees

Positive voltage on D1 deflects beam approximately toward Pin No. 3.
Positive voltage on D3 deflects beam approximately toward locating key.

Angle between D3D4 and D1D2 traces	90 ± 3 Degrees

Bulb Contact Alignment

Anode No. 3 contact aligns with D3D4 trace	±10 Degrees

Anode No. 3 contact on same side as locating key
Deflection Plate contacts are within 10 degrees of the plane through the tube axis and their respective traces.

MAXIMUM RATINGS—(Design Center Values)

Anode No. 3 Voltage (Accelerator High Voltage Electrode) ..... 4000 Max. Volts D-C
Anode No. 2 Voltage[1, 2] ..... 2000 Max. Volts D-C
Ratio Anode No. 3 Voltage to Anode No. 2 Voltage ..... 2.0 Max.
Anode No. 1 Voltage ..... 1000 Max. Volts D-C

Grid No. 1 Voltage
- Negative Bias Value ..... 125 Max. Volts D-C
- Positive Bias Value ..... 0 Max. Volts D-C
- Positive Peak Value ..... 2 Max. Volts
- Peak Voltage between Anode No. 2 and any Deflection Electrode ..... 500 Max. Volts

TYPICAL OPERATING CONDITIONS

For Anode No. 3 Voltage of	3000	4000	Volts
For Anode No. 2 Voltage of	1500	2000	Volts
Anode No. 1 Voltage for focus	250 to 472	333 to 630	Volts
Grid No. 1 Voltage[3]	−34 to −79	−45 to −105	Volts
Deflection Factors:			
D1 and D2	58 to 86	77 to 115	Volts D-C per Inch
D3 and D4	58 to 86	77 to 115	Volts D-C per Inch

Anode No. 1 Voltage for focus ..... 16.6% to 31.5% of Eb2 Volts
Grid No. 1 Voltage[3] ..... 2.3% to 5.3% of Eb2 Volts
Anode No. 1 Current for any operating condition ..... −50 to +10 Microamperes

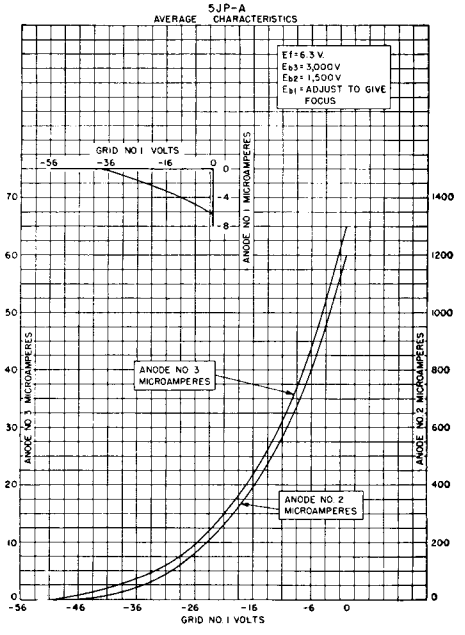
Deflection Factors:
- No 3rd Anode or Eb3 = Eb2
  - D1 and D2 ..... 34 to 50 Volts D-C per inch per Kilovolt of Eb2
  - D3 and D4 ..... 34 to 50 Volts D-C per inch per Kilovolt of Eb2
- Eb3 = Twice Eb2
  - D1 and D2 ..... 38 to 58 Volts D-C per inch per Kilovolt of Eb2
  - D3 and D4 ..... 38 to 58 Volts D-C per inch per Kilovolt of Eb2
- Spot Position (Undeflected) ..... Within a 7.5 millimeter radius circle[4]

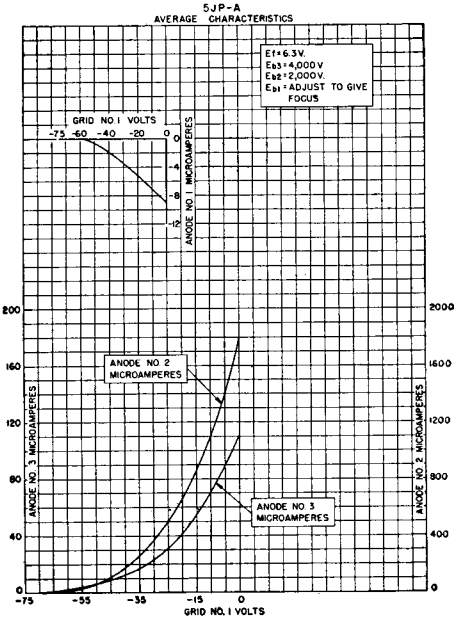
MAXIMUM CIRCUIT VALUES

Grid No. 1 Circuit Resistance ..... 1.5 Max. Megohms
Resistance in any Deflecting Electrode Circuit[5] ..... 5 Max. Megohms

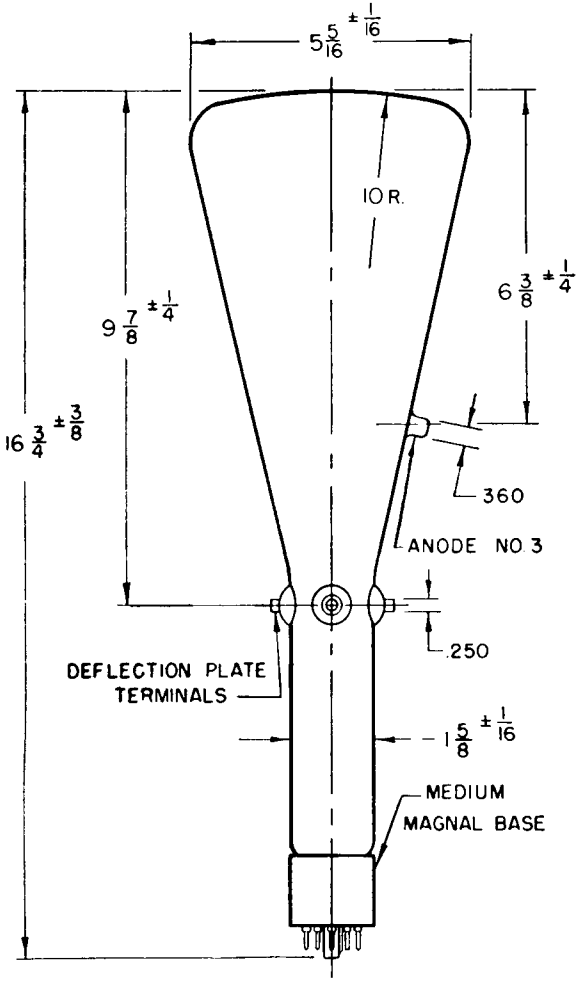
NOTES

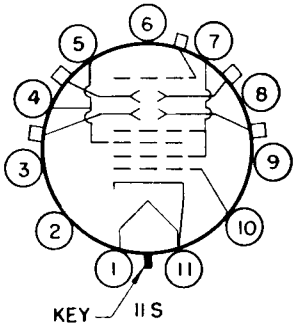
1. Anode No. 2 and Grid No. 2, which are connected together within the tube, are referred to herein as Anode No. 2.
2. The product of Anode No. 2 voltage and Average Anode No. 2 current should be limited to 6 watts.
3. Visual extinction of undeflected focused spot.
4. Centered with respect to the tube face with the tube shielded.
5. It is recommended that the deflecting electrode circuit resistances be approximately equal.
6. For optimum focus the average potentials of the deflection plates and second anode should be the same.


5JP-A
AVERAGE CHARACTERISTICS
Ef = 6.3 V.
Eb3 = 3,000 V
Eb2 = 1,500 V
Eb1 = ADJUST TO GIVE FOCUS
GRID NO 1 VOLTS
-56 -36 -16 0
0 -4 -8
ANODE NO 1 MICROAMPERES
ANODE NO 3 MICROAMPERES
ANODE NO 2 MICROAMPERES
ANODE NO 3 MICROAMPERES
ANODE NO 2 MICROAMPERES
0 10 20 30 40 50 60 70
0 200 400 600 800 1000 1200 1400
-56 -46 -36 -26 -16 -6 0
GRID NO 1 VOLTS


5JP-A
AVERAGE CHARACTERISTICS
Ef = 6.3 V.
Eb3 = 4,000 V
Eb2 = 2,000 V.
Eb1 = ADJUST TO GIVE FOCUS
GRID NO 1 VOLTS
-75 -60 -40 -20 0
0 -4 -8 -12
ANODE NO 1 MICROAMPERES
ANODE NO 2 MICROAMPERES
ANODE NO 3 MICROAMPERES
ANODE NO 3 MICROAMPERES
ANODE NO 2 MICROAMPERES
0 40 80 120 160 200
0 400 800 1200 1600 2000
-75 -55 -35 -15 0
GRID NO. 1 VOLTS

TYPE 5JP-A





BOTTOM VIEW OF BASE

PIN NO.	ELEMENT
1	HEATER
4	ANODE NO 1
5	INTERNAL CONNECTION
7	ANODE NO 2, GRID NO. 2
10	GRID NO. 1
11	HEATER & CATHODE