

5YP- CATHODE-RAY TUBES

The Type 5YP- is an electrostatic focus and deflection cathode-ray tube, with very high sensitivity D3D4 deflection plates, featuring an intensifier for increased brightness and writing rate, with a minimum loss in deflection sensitivity.

The high D3D4 sensitivity is achieved by using long deflection plates and limiting the D3D4 scan to a useful portion of the full screen diameter. Capacitances are low, being comparable to other types such as the 5JP-A and 5RP-A, where deflection connections are made through the neck instead of the base.

The 5YP- is particularly useful for wide band oscillographs and for any application requiring high D3D4 deflection plate sensitivity.

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, Approx. | |
| Cathode to all other electrodes | 5 μmf. |
| Grid No. 1 to all other electrodes | 5 μmf. |
| D1 to D2 | 2 μmf. |
| D3 to D4 | 2 μmf. |
| D1 to all other electrodes except D2 | 2.5 μmf. |
| D2 to all other electrodes except D1 | 2.5 μmf. |
| D3 to all other electrodes except D4 | 2 μmf. |
| D4 to all other electrodes except D3 | 2 μmf. |

Mechanical

| | |
|---|-------------------------------|
| Overall Length | 17 $\frac{7}{8}$ ± 3/8 Inches |
| Greatest Diameter of Bulb | 5 $\frac{1}{4}$ ± 3/32 Inches |
| Minimum Useful Screen Diameter | 4 $\frac{1}{4}$ Inches |
| Bulb Contact (Recessed Small Ball Cap) | J1-22 |
| Neck Contacts (Small Ball Caps) | J1-25 |
| Base (Medium Shell Diheptal 12-Pin) | B12-37 |
| Basing | 14Q |
| 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 ± 2 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 | 8,000 Max. Volts D-C |
| Accelerator Voltage ¹ | 3,500 Max. Volts D-C |
| Ratio Post Accelerator Voltage to Accelerator Voltage | 2.3 Max. |
| Focusing Voltage | 1,550 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 Post Accelerator Voltage of | 4,000 Volts |
| For Accelerator Voltage of | 2,000 Volts |
| Focusing Voltage | 362 to 695 Volts |
| Grid No. 1 Voltage ² | -30 to -90 Volts |
| Modulation ³ | 52 Volts Max. |
| Line Width A ³ | .032 Inch Max. |
| P1 Light Output ³ | 15 Ft. L. Min. |
| Deflection Factors: | |
| D1 and D2 | 72 to 108 Volts D-C per Inch |
| D3 and D4 | 24 to 36 Volts D-C per Inch |
| Deflection Factor Uniformity ⁴ | 2% Max. |
| Useful Scan ⁵ : | |
| D1 and D2 | 4.25 (± 2.125 from tube face center) Inches |
| D3 and D4 | 2.50 (± 1.25 from tube face center) Inches |
| Pattern Distortion at 75% of useful scan ⁶ | 2½% Max. |
| Frequency for 10% reduction in D3D4 deflection amplitude | |
| due to transit time ⁷ | 200 mc. |
| Spot Position (Focused and Undelected) | Within a 5/16-inch radius circle ⁸ |

CIRCUIT DESIGN VALUES

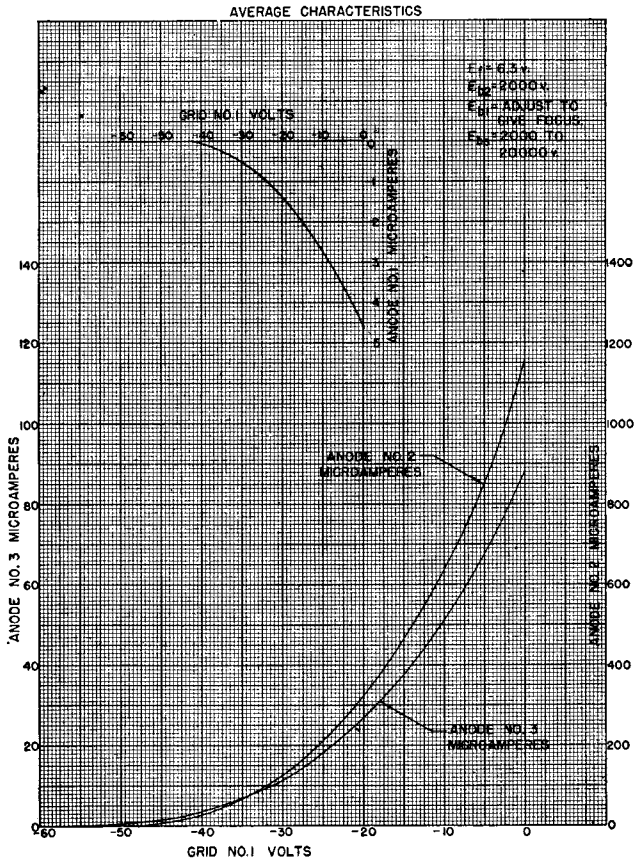
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|--|--|
| Focusing Voltage | 181 to 348 Volts per Kilovolt of Accelerator Voltage |
| Focusing Current for any operating condition | -15 to +10 Microamperes |
| Grid No. 1 Voltage ² | 15 to 45 Volts per Kilovolt of Accelerator Voltage |
| Grid No. 1 Circuit Resistance | 1.5 Max. Megohms |
| Deflection Factors: | |
| Post Accelerator Voltage = Accelerator Voltage | |
| D1 and D2 | 30 to 45 Volts D-C/Inch/KV of Accelerator Voltage |
| D3 and D4 | 9.5 to 14.5 Volts D-C/Inch/KV of Accelerator Voltage |
| Resistance in any Deflecting Electrode Circuit ¹⁰ | 5 Max. Megohms |

NOTES

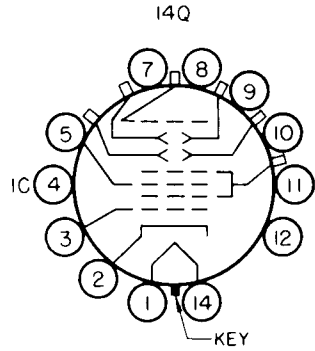
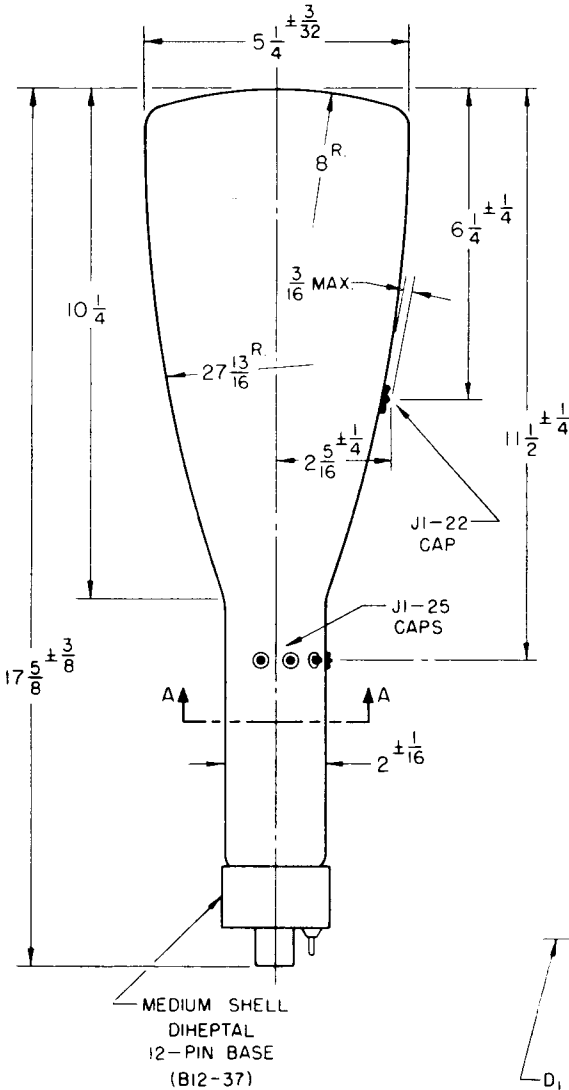
1. The product of accelerator voltage and average accelerator current should be limited to 6 watts.
2. Visual extinction of undeflected focused spot.
3. Measured in accordance with JAN-1A Specifications at a post accelerator current of 25 ua.
4. The deflection factor (for both D1D2 and D3D4 plate pairs, separately) for a 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. Computed.

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

5YP1, 5YP2, 5YP11



TYPE 5YP-



BOTTOM VIEW OF BASE

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

