

## CHARACTERISTICS

### GENERAL DATA

|                   |              |   |                 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                 |               |
|-------------------|--------------|---|-----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----------------|---------------|
| Focusing Method   | .            | . | .               | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | .               | Electrostatic |
| Deflection Method | .            | . | .               | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | .               | Electrostatic |
| Phosphors         | .            | . | .               | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | .               | Aluminized    |
| Types*            | Fluorescence |   | Phosphorescence |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | Persistence     |               |
| 5BHP1             | Green        |   | —               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | Medium          |               |
| 5BHP2             | Blue-Green   |   | Green           |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | Long            |               |
| 5BHP5             | Blue         |   | —               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | Very Short      |               |
| 5BHP7             | Blue-White   |   | Yellow          |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | Long            |               |
| 5BHP11            | Blue         |   | —               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | Short           |               |
| 5BHP15            | Blue-Green   |   | —               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | Extremely Short |               |
| Faceplate         | .            | . | .               | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | .               | Clear         |

\*In addition to the types shown, the 5BHPA- can be supplied with several other screen phosphors.

### ELECTRICAL DATA

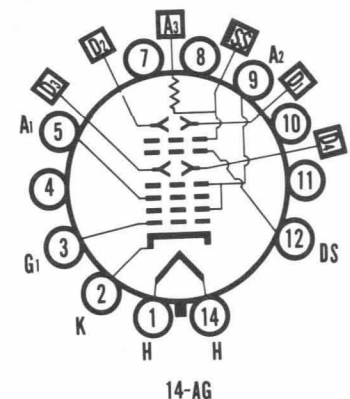
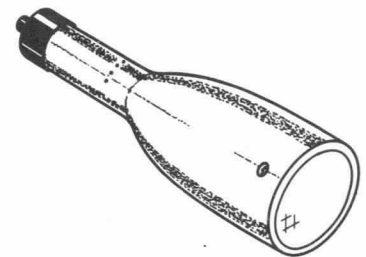
|                                              |                    |
|----------------------------------------------|--------------------|
| Heater Voltage                               | 6.3 Volts          |
| Heater Current                               | 0.6 ± 10 % Amperes |
| Direct Interelectrode Capacitances (Approx.) |                    |
| Cathode to All Other Electrodes              | 4.6 pf             |
| Grid No. 1 to All Other Electrodes           | 6.4 pf             |
| D1 to D2                                     | 1.9 pf             |
| D3 to D4                                     | 1.5 pf             |
| D1 to All Other Electrodes Except D2         | 3.5 pf             |
| D2 to All Other Electrodes Except D1         | 3.5 pf             |
| D3 to All Other Electrodes Except D4         | 2.8 pf             |
| D4 to All Other Electrodes Except D3         | 2.8 pf             |
| Post Accelerator Helix Resistance            | 200 to 600 Megohms |

### MECHANICAL DATA

|                                                 |                  |
|-------------------------------------------------|------------------|
| Minimum Useful Screen Diameter                  | 4 1/2 Inches     |
| Anode No. 3 Contact (Recessed Small Cavity Cap) | J1-21            |
| Bulb (Modified)                                 | J42K             |
| Base (Medium Shell Diheptal 12-Pin)             | B12-37           |
| Basing                                          | 14AG             |
| Base Alignment                                  |                  |
| D3-D4 Trace Aligns with Pin No. 1               | ±10 Degrees      |
| Positive Voltage on D1 Deflects Beam            |                  |
| Approx. Toward Pin No. 4                        |                  |
| Positive Voltage on D3 Deflects Beam            |                  |
| Approx. Toward Pin No. 1                        |                  |
| Angle Between Traces D1-D2 and D3-D4            | 90 ± 0.8 Degrees |
| Bulb Contact Alignment                          |                  |
| J1-21 Contact Aligns with D1-D2 Trace           | ±5 Degrees       |
| J1-21 Contact on Same Side as Pin No. 4         |                  |

## QUICK REFERENCE DATA

5" Direct Viewed  
Flat Faceplate  
Round Glass Type  
Electrostatic Deflection  
Electrostatic Focus  
Helical Resistor Post  
Deflection Acceleration  
High Deflection Sensitivity  
High Deflection Accuracy  
Aluminized Screen



## SYLVANIA ELECTRONIC TUBES

A Division of  
Sylvania Electric Products Inc.

## PICTURE TUBE OPERATIONS

SENECA FALLS, NEW YORK

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File Under  
SPECIAL AND GENERAL  
PURPOSE CATHODE RAY TUBES

## MAXIMUM RATINGS (Absolute Maximum Values)

|                                                           |               |    |
|-----------------------------------------------------------|---------------|----|
| Anode No. 2 Input                                         | 6 Watts       |    |
| Anode No. 3 Voltage                                       | 13,200 Volts  | dc |
| Isolation Shield Voltage                                  | 2300 Volts    | dc |
| Deflection Plate Shield Voltage                           | 2300 Volts    | dc |
| Anode No. 2 Voltage                                       | 2200 Volts    | dc |
| Ratio of Anode No. 3 Voltage to Anode No. 2 Voltage       | 6 : 1 Maximum |    |
| Anode No. 1 (Focus Electrode) Voltage                     | 880 Volts     | dc |
| Grid No. 1 Voltage                                        |               |    |
| Negative Bias Value                                       | 200 Volts     | dc |
| Positive Bias Value                                       | 0 Volt        | dc |
| Positive Peak Plate                                       | 2 Volts       |    |
| Peak Heater-Cathode Voltage                               |               |    |
| Heater Negative with Respect to Cathode                   |               |    |
| During Warm-up Period Not to Exceed 15 Seconds            | 200 Volts     |    |
| After Equipment Warm-up Period                            | 180 Volts     |    |
| Heater Positive with Respect to Cathode                   | 180 Volts     |    |
| Peak Voltage Between Anode No. 2 and Any Deflection Plate | 550 Volts     |    |

## TYPICAL OPERATING CONDITIONS

|                                                               |                    |         |
|---------------------------------------------------------------|--------------------|---------|
| Anode No. 3 Voltage <sup>1</sup>                              | 10,000 Volts       | dc      |
| Isolation Shield Voltage <sup>2</sup>                         | 1575 to 1700 Volts | dc      |
| Deflection Plate Shield Voltage <sup>3</sup>                  | 1575 to 1700 Volts | dc      |
| Anode No. 2 Voltage <sup>4</sup>                              | 1670 Volts         | dc      |
| Anode No. 1 Voltage for Focus                                 | 180 to 590 Volts   | dc      |
| Grid No. 1 Voltage Required for Cutoff <sup>5</sup>           | -50 to -80 Volts   | dc      |
| Deflection Factors <sup>6</sup>                               |                    |         |
| Deflection Plates 1-2                                         | 70 to 85 Volts     | dc/Inch |
| Deflection Plates 3-4                                         | 15 to 18.3 Volts   | dc/Inch |
| Pattern Distortion at 100 % Useful Scan <sup>7</sup>          | 1.5 %              | Max.    |
| Undelected Spot Position <sup>8</sup> (Deviation from Center) | 5 mm.              | Max.    |
| Useful Scan                                                   |                    |         |
| D1-D2                                                         | 10 cm.             |         |
| D3-D4                                                         | 4 cm.              |         |

## CIRCUIT VALUES

|                               |                  |
|-------------------------------|------------------|
| Grid No. 1 Circuit Resistance | 1.5 Megohms Max. |
|-------------------------------|------------------|

## NOTES:

1. It is recommended that the Anode No. 3 voltage be no less than 6,000 volts for suitable light output.
2. The isolation shield and the lower end of the post accelerator helix are connected together within the tube. With the proper potential on this electrode combination, barrel and pin-cushion distortions are minimized.
3. Adjustment of deflection plate shield voltage provides improved linearity of D3-D4 deflection by controlling the edge effect of D3-D4 plate field. In many applications Pin No. 12 may be connected externally to the isolation shield.
4. Under the typical operating conditions listed the Anode No. 2 voltage is made variable from 1575 volts to 1850 volts to provide for astigmatism control. In order to maintain proper astigmatism adjustment as total cathode current is varied, it is recommended that the resistance in the Anode No. 2 circuit be limited to 12,500 ohms.
5. Visual extinction of undeflected focused spot.
6. If use is made of the full deflection capabilities of the tube, the deflection plates will intercept part of the electron beam near the edge of the scan; hence a low impedance deflection plate drive is desirable.
7. With a 4 x 10 cm rectangular raster centered on the face of the tube, the raster edges will not deviate from straight parallel lines by more than 1 mm total on the left and right edges, nor by more than 0.5 mm total at the top and bottom.
8. Connect deflection plates to Anode No. 2.

**WARNING:**

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

## OUTLINE

