

## DESCRIPTION

Sylvania Type SC-3502 is a compact, 2" round cathode ray tube designed for portable oscilloscope applications. It features a high efficiency 1.5 V, 140 ma heater for battery economy and lightweight design; and an electron gun of high deflection sensitivity. This low heater power design requires only  $\frac{1}{16}$  of the power necessary to operate a conventional 6.3 V, 600 ma heater.

## GENERAL DATA

|                      |               |
|----------------------|---------------|
| Focusing Method      | Electrostatic |
| Deflection Method    | Electrostatic |
| Phosphor*            | P1            |
| Fluorescent Color    | Green         |
| Phosphorescent Color | None          |
| Persistence          | Medium        |

\*In addition to the phosphor shown, the SC-3502 can be supplied with several other screen phosphors.

## ELECTRICAL DATA

|                                                                         |                          |
|-------------------------------------------------------------------------|--------------------------|
| Heater Voltage                                                          | 1.5 Volts                |
| Heater Current                                                          | $0.140 \pm 10\%$ Amperes |
| Direct Interelectrode Capacitances (Approx.) (Magnetic Shield Grounded) |                          |
| Grid No. 1 to All Other Electrodes                                      | 4.5 pf                   |
| D1 to D2                                                                | 2.0 pf                   |
| D3 to D4                                                                | 2.5 pf                   |
| D1 to All Other Electrodes                                              | 6.5 pf                   |
| D2 to All Other Electrodes                                              | 6.0 pf                   |
| D3 to All Other Electrodes                                              | 5.5 pf                   |
| D4 to All Other Electrodes                                              | 5.5 pf                   |

## MECHANICAL DATA

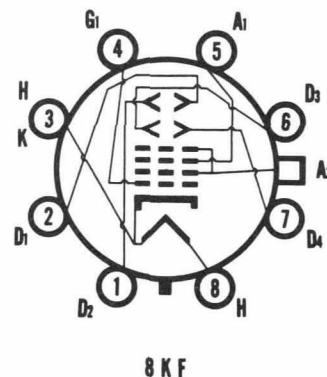
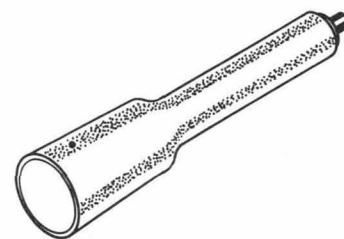
|                                                                     |                                        |
|---------------------------------------------------------------------|----------------------------------------|
| Overall Length                                                      | $7\frac{5}{8} \pm \frac{3}{16}$ Inches |
| Greatest Bulb Diameter                                              | $2\frac{1}{16}$ Inches                 |
| Minimum Useful Screen Diameter                                      | $1\frac{3}{4}$ Inches                  |
| Base Neo-eightar                                                    | B8-218                                 |
| Basing                                                              | 8KF                                    |
| Base Alignment                                                      |                                        |
| D1-D2 Trace Aligns with Pin No. 3 and Tube Axis                     | $0 \pm 10$ Degrees                     |
| Positive Voltage on D1 Deflects Beam Approximately Toward Pin No. 3 |                                        |
| Positive Voltage on D3 Deflects Beam Approximately Toward Pin No. 5 |                                        |
| Trace Alignment                                                     |                                        |
| Angle Between D3-D4 and D1-D2 Traces                                | $90 \pm 1$ Degrees                     |
| Anode Contact                                                       | J1-21                                  |
| Anode Contact is on same side as Pin No. 3                          |                                        |
| Deflection Plates                                                   |                                        |
| D1-D2 are nearest to the Screen                                     |                                        |
| D3-D4 are nearest to the Base                                       |                                        |

## MAXIMUM RATINGS (Design Center Values)

|                                                           |             |    |
|-----------------------------------------------------------|-------------|----|
| Anode Voltage (A2)                                        | 3000 Volts  | dc |
| Anode (A2) Input                                          | 6 Watts     |    |
| Anode No. 1 (Focusing Electrode) Voltage                  | 1200 Volts  |    |
| Grid No. 1 (G1) Voltage                                   |             |    |
| Negative Bias Value                                       | 140 Volts   | dc |
| Positive Bias Value                                       | 0 Volts     | dc |
| Positive Peak Value                                       | 2 Volts     |    |
| Peak Voltage Between Anode No. 2 and Any Deflecting Plate | 550 Volts   |    |
| Altitude                                                  | 35,000 Feet |    |

## QUICK REFERENCE DATA

Oscilloscope Tube  
2" Direct Viewed  
Round Glass Type  
Electrostatic Deflection  
Electrostatic Focus  
Low Heater Power



SYLVANIA ELECTRIC  
PRODUCTS INC.

Electronic Components Group  
ELECTRONIC TUBE DIVISION  
SENECA FALLS, NEW YORK

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File Under

SPECIAL AND GENERAL  
PURPOSE CATHODE RAY TUBES

## TUBE RATINGS

|                                                              |                                     |      |
|--------------------------------------------------------------|-------------------------------------|------|
| Focusing Electrode (A1) Current for Any Operating Conditions | -15 to $\pm 10 \mu$ Amp             |      |
| Spot Position, Undelected                                    | 10 mm                               | Max. |
| A1 Voltage 20 % to 35 % of A2 Voltage                        |                                     |      |
| G1 Voltage 3.5 % Max. of A2 Voltage                          |                                     |      |
| Deflection Factors                                           |                                     |      |
| D1-D2                                                        | 51 to 69 Volts DC/Inch/A2 Kilovolts |      |
| D3-D4                                                        | 29 to 39 Volts DC/Inch/A2 Kilovolts |      |

## OPERATING CONDITIONS

|                               | Typical    | Typical          |        |
|-------------------------------|------------|------------------|--------|
| Anode Voltage (A2)            | 1200       | 2000 Volts       |        |
| Focusing Electrode Volts (A1) | 240 to 420 | 400 to 700 Volts |        |
| G1 Voltage <sup>2</sup>       | -24 to -42 | -40 to -70 Volts |        |
| Deflection Factor D1-D2       | 61 to 83   | 102 to 138 Volts | DC/In. |
| Deflection Factor D3-D4       | 34 to 47   | 58 to 78 Volts   | DC/In. |
| Light Output <sup>4</sup>     | 3 FTL Min. |                  |        |

### MAXIMUM CIRCUIT VALUES

|                                                                       |             |
|-----------------------------------------------------------------------|-------------|
| Grid No. 1 Resistance . . . . .                                       | 1.5 Megohms |
| Resistance in Any Deflecting Electrode Circuit <sup>3</sup> . . . . . | 1.0 Megohms |

NOTES:

1. With tube shielded and deflecting electrodes connected to anode (A2).
2. Visual extinction of undeflected focused spot.
3. The resistance in each deflecting electrode circuit should be approximately equal.
4. Light Output shall be measured under the following conditions:
  - $E_{b2} = 1200 \text{ V}$
  - Grid Drive = 20 Volts above spot cutoff
  - Raster =  $1'' \times 1''$  written with no retrace blanking at a vertical frequency of 60 cps and a horizontal frequency of 4500 cps.
  - Light Meter = Weston Model 759 recalibrated with a  $\frac{3}{4}''$  active acceptance aperture.

## OUTLINE

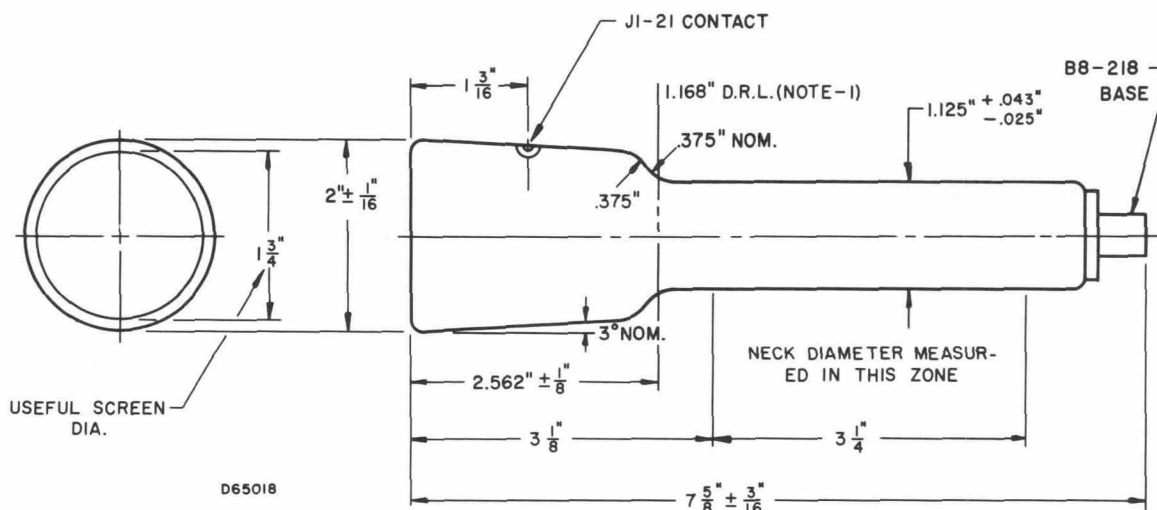


**DIAGRAM NOTE:**

1. The leading edge of a 1.168" I.D. cylinder resting against the bulb cone will be  $2.562'' \pm \frac{1}{8}''$  from the face.