



# PRODUCT DATA SHEET



## TYPE V T P 6991

### 5" TONE DISPLAY STORAGE TUBE

The VTP 6991 is a storage type cathode ray tube designed to present bright visual displays of television, radar or other types of electronically written information. Special features of this tube are its ability to display tones and to write, hold and erase at the operator's option. Brightness is sufficiently high for easy viewing in bright daylight, and writing and erasure speeds are fast enough to present excellent displays of high speed data with good contrast.

The VTP 6991 contains a storage structure mounted internally near the panel, and both a flood gun and an electrostatically deflected and focused writing gun supported in a single neck axially aligned at the rear of the tube. All gun connections are terminated in a diheptal base attached to the tube neck.

#### DATA

General	Writing Gun	Viewing Gun
Heater—Unipotential Cathode		
Voltage AC or DC .....	6.3.....	6.3 volts
Current .....	0.6.....	0.6 Amp
Focus Method .....	Electrostatic.....	Electrostatic
Deflection Method .....	Electrostatic.....	None.....
Phosphor — Aluminized — As specified	Standard P20	
Minimum useful screen diameter .....	4 <sup>1</sup> / <sub>4</sub> inches	
Maximum overall length .....	13 <sup>1</sup> / <sub>2</sub> inches	
Maximum tube radius .....	2 <sup>7</sup> / <sub>8</sub> inches	
Maximum bulb diameter .....	5-9/16 inches	
Base .....	B14—38 Med Shell Diheptal 14 pin	
Bulb Terminals .....	Recessed small ball caps (6) J1-22	
Mounting Position .....	Any	



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# VTP 6991

MAXIMUM RATINGS—All voltages are referenced to Viewing gun cathode unless otherwise specified.

	Writing Gun	Viewing Gun
Screen Voltage .....		12,000 Max Volts
Storage Mesh (Peak) .....		25 Max Volts
Collector Mesh .....		500 Max Volts
Collimating Cylinder .....		500 Max Volts
Anode .....	+100	500 Max Volts
Cathode .....	-2500	500 Max Volts
Grid #1 Voltage (Reference to Cathode)		
Negative bias value .....	200	200 Max Volts
Positive bias value .....	0	0 Max Volts
Positive Peak value.....	2	0 Max Volts
Peak voltage between reference and any deflecting electrode .....	500	Max Volts
Maximum resistance in deflecting electrode circuit .....	5.0 meg	Max Ohms
Peak Heater — Cathode Voltage		
Heater negative reference cathode.....	125	125 max volts
Heater positive reference cathode.....	125	125 max volts
Grid Control		
Cutoff (Reference to cathode) .....	-20 to -70	-30 to -100 volts

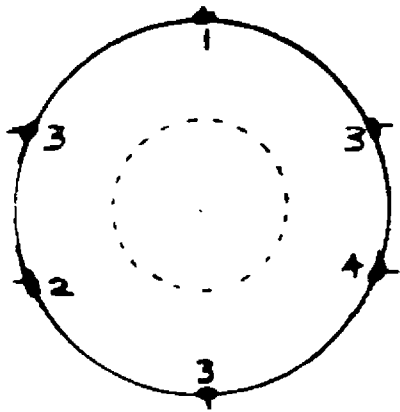
## TYPICAL OPERATION — Suggested values

Screen Voltage .....	8,000 volts
Storage Mesh .....	0* volts
Storage Mesh Series resistance .....	5 K ohms
Collector Mesh.....	200 volts
Collector Mesh Series resistance .....	None
Collimating Cylinder .....	20 (Adj) volts
Collimating Cylinder Series Resistance .....	None
Anode .....	0 to +20(Adj).....185 (Adj) volts
Cathode .....	-1400 0 volts
Grid #1 (Reference to Cathode) .....	-20 to -30(Adj) -30 to -50 volts
Deflection D1 - D2 .....	37 to 57 v/in
Deflection D3 - D4 .....	28 to 48 v/in
Focus .....	-1100 (Adj)..... volts

\* **Note:** Zero volts is the black storage condition. Normal usage is to increase storage mesh positive approximately 20 volts to erase, then reduce to approximately zero volts, placing screen in the unwritten condition. Application of the writing gun beam will now present a display on the screen which will be stored. This display may be erased by repeating above procedure.

**Pulse erasure:** Pulse erasure may be accomplished by the application of pulses of +10 to +25 volts with a pulse width of 1 to 10 microseconds and a repetition rate of 400 to 3000pps. For this application the storage mesh receives the pulse through an .01 mfd capacitor. The storage mesh is tied to ground by means of a 5 K resistor.

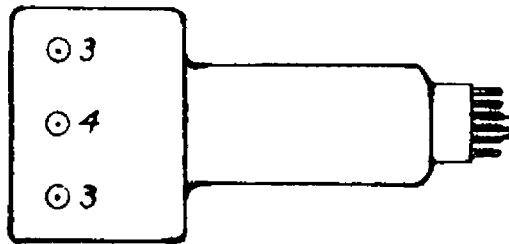
**VTP 6991**  
**5". TONE DISPLAY STORAGE TUBE BASE PIN CONNECTIONS**



Panel View

**Panel and Bulb Terminals**

Terminal	Element
1	Storage Mesh
2	Collector Mesh
3	Collimating Cylinder
4	Screen H. V.

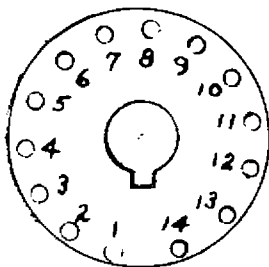


Side View

**Bulb Terminal Connections:**

Viewing bulb from panel end. Terminal 1 is at top of bulb, Terminal 3 is 60° clockwise, Terminal 4 is 120° clockwise, Terminal 3 is at bottom or 180° clockwise, Terminal 2 is 240° clockwise, and Terminal 3 is 300° clockwise. Note: All three Terminal 3 connections are internally connected.

**Base Connections**



Basing - Bottom View

B14-38 Med. Shell Diheptal 14 pin

Pin	Element
1	Writing gun Heater
2	Writing gun Grid #1
3	Writing gun Focus
4	Writing gun D1
5	Writing gun D3
6	Flood gun Anode
7	Flood gun Heater & Cathode
8	Flood gun Heater
9	Flood gun Grid #1
10	Writing gun Anode
11	Writing gun D4
12	Writing gun D2
13	Writing Gun Cathode
14	Writing gun Heater

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- Note:
1. Heater connections (Base pins #1 and #14) align approximately with bulb terminal #4 and trace D1 D2 of the writing gun.
  2. With positive voltage on deflection plate D1, the beam is deflected approximately between base pins #7 and #8.
  3. With positive voltage on deflection plate D3, the beam is deflected approximately towards base pin #4.
  4. The base key (between pins #1 and #14) aligns approximately with bulb terminal #4.