

ML-8320 Five-Inch Direct-View Half-Tone Storage Tube

DESCRIPTION

The Machlett type ML-8320 is a 5-inch diameter direct-view storage tube that is capable of bright visual displays of half-tone images. Applications include fire-control radar, airplane-cockpit radar display for weather and navigational purposes, airport surveillance, and studies of transient data.

The tube features a high resolution write gun, the beam of which is electrostatically focussed and deflected, and a flood or viewing gun. The useful storage time for written information is approximately one minute. Erasure of written information may be instantaneous or gradual. This is controlled by the application of a series of pulses to the tube's storage mesh.

The tube has a flat optical-quality face plate, a standard base filled with a suitable potting compound, and an integral, flexible high-voltage lead for high-altitude applications.

GENERAL CHARACTERISTICS

Optical

Phosphor Type.....	P20	Aluminized
Fluorescence.....	Green Yellow	
Phosphorescence.....	Green Yellow	
Faceplate.....	Flat, Optical Quality	

Mechanical

Overall Length.....	14-3/4 ± 1/4 inches
Maximum Diameter.....	5-1/4 ± 3/32 inches
Useful Screen Diameter.....	4 inches
Neck Length.....	6-1/2 ± 1/8 inches
Base (14-pin, med. shell diheptal).....	JEDEC B14-38
Bulb Contacts (Small recessed ball cap).....	JEDEC J1-22
Mounting Position.....	Any

Electrical

Flood and Write Guns:

Heater voltage AC or DC.....	6.3 volts
Heater current.....	.6 ± 10% Amps

Write Gun:

Focusing.....	Electrostatic
Deflection.....	Electrostatic
Deflection Factors	
D1, D2.....	25 to 40 Volts/inch/kV
D3, D4.....	25 to 40 Volts/inch/kV

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MAXIMUM RATINGS

All voltages shown are with respect to flood-gun cathode, unless otherwise specified.

View-Screen Voltage.....	8000	volts
View-Screen Dissipation.....	10	watts
Storage-Mesh Voltage.....	0 to + 200	volts
Collector-Mesh Voltage.....	300	volts
Anode No. 4 (Collimating) Voltage.....	300	volts
Anode No. 2 Voltage (Both Guns).....	150	volts
Anode No. 3 Voltage.....	200	volts
Grid No. 1, Flood Gun, Voltage:		
Negative-bias value.....	125	volts
Positive-bias value.....	0	volts
Positive-peak value.....	0	volts
Grid No. 1, Write-Gun, Voltage		
with Respect to Write-Gun Cathode:		
Negative-bias value.....	125	volts
Positive-bias value.....	0	volts
Positive-peak value.....	2	volts
Peak Heater-to-Cathode, Write-Gun, Voltage		
with Respect to Write-Gun Cathode:		
Heater negative with respect to cathode.....	180	volts
Heater positive with respect to cathode.....	180	volts
Anode No. 1, Write-Gun, Voltage (Focus Electrode).....	-2500	volts
Cathode, Write-Gun, Voltage.....	-3000	volts

TYPICAL OPERATING CONDITIONS

Viewing Section

Screen Voltage.....	7500	volts
Storage Mesh Voltage.....	2 to 5	volts
Collector Mesh Voltage.....	120	volts

Flood Gun

Cathode Voltage.....	0	volts
Grid No. 1 (Control) Voltage.....	0 to -45	volts
Anode No. 2 Voltage (Both Guns).....	0 to 15	volts
Collimating Electrode Voltage (Anode No. 4).....	0 to 50	volts
Anode No. 3.....	0 to 50	volts

Write Gun

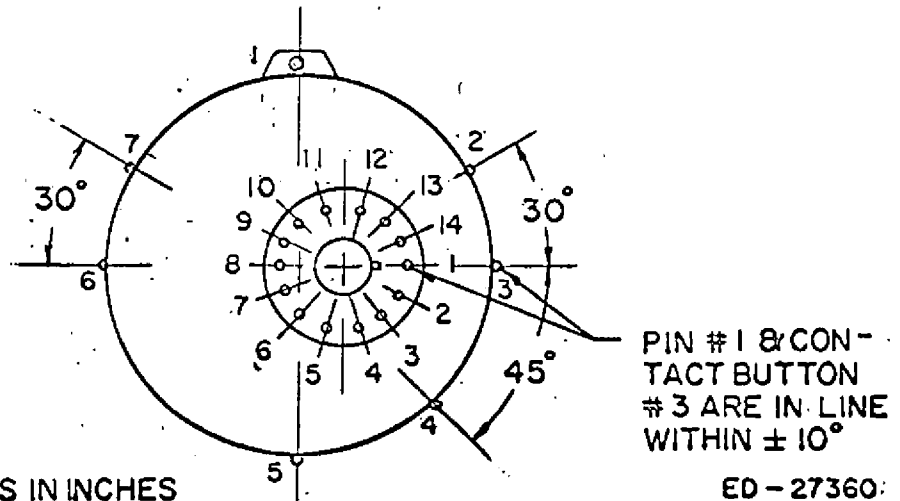
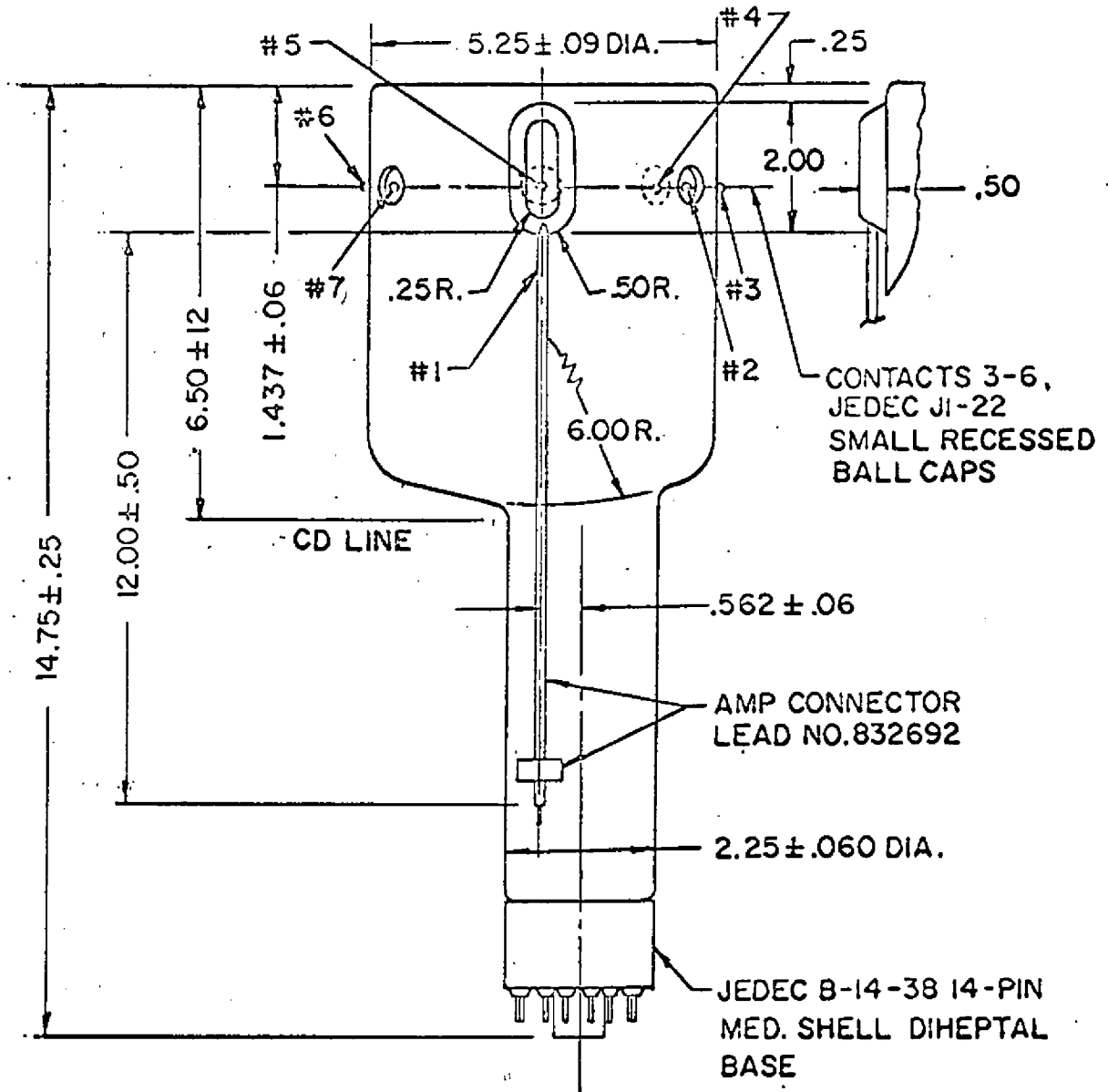
Cathode Voltage.....	-2000	volts
Grid No. 1 (Control-Grid) Voltage		
Referenced to Write-Gun Cathode.....	-30 to -75	volts
Anode No. 1 (Focus electrode) Voltage		
Referenced to Write-Gun Cathode.....	280 to 660	volts

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PERFORMANCE

Writing Speed (10 μ a beam current)	150,000	inches/sec.
Light Output at 7.5 KV	-1600	f.l. min.
Written Resolution (10 μ a beam current)	60	lines/inch
Erase Time	50 to 250	milliseconds
Half Tones	5	minimum
Deflection Factor Uniformity	4	%

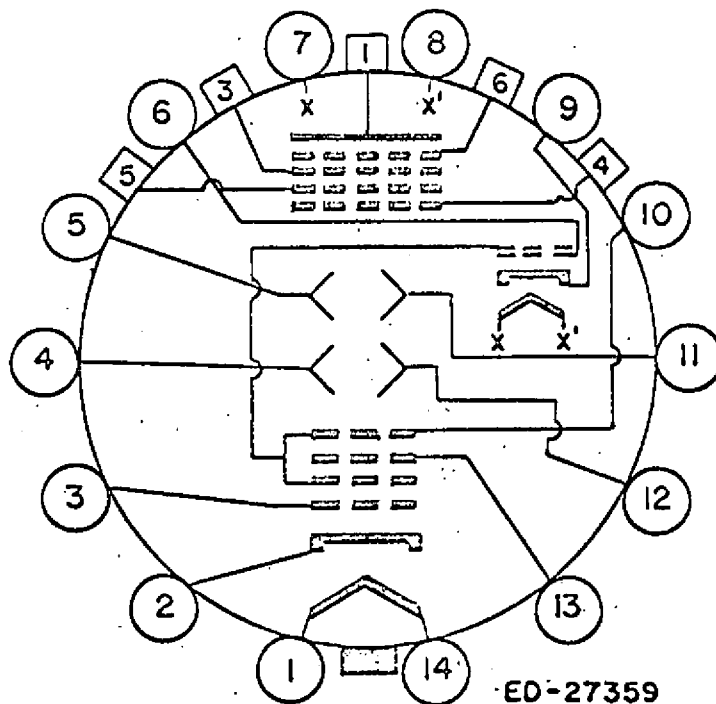
OUTLINE DRAWING



ALL DIMENSIONS IN INCHES

ED-27360

-8320 . PIN CONNECTION DIAGRAM



ED-27359

 BULB CONTACT

- | | <u>CONNECTION</u> |
|----|---------------------------|
| 1. | VIEW SCREEN |
| 2. | INTERNAL CONNECTION TO A4 |
| 3. | COLLECTOR ELECTRODE |
| 4. | THIRD ANODE, A3 |
| 5. | COLLIMATOR, A4 |
| 6. | STORAGE MESH |
| 7. | INTERNAL CONNECTION TO A4 |

 PIN NO.

- | | <u>CONNECTION</u> |
|-----|-----------------------------|
| 1. | HEATER (WRITE GUN) |
| 2. | CATHODE (WRITE GUN.) |
| 3. | CONTROL GRID (WRITE GUN) |
| 4. | DEFLECTION PLATE, D1 |
| 5. | DEFLECTION PLATE, D3 |
| 6. | CONTROL GRID (FLOOD GUN) |
| 7. | HEATER (FLOOD GUN) |
| 8. | HEATER (FLOOD GUN) |
| 9. | CATHODE (FLOOD GUN) |
| 10. | SECOND ANODE (BOTH GUNS) A2 |
| 11. | DEFLECTION PLATE, D4 |
| 12. | DEFLECTION PLATE, D2 |
| 13. | FOCUS (WRITE GUN) A1 |
| 14. | HEATER (WRITE GUN) |