



7183

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DISPLAY STORAGE TUBE

DIRECT-VIEW TYPE
4"-DIAMETER DISPLAYWRITING GUN:
MAGNETIC DEFLECTION
ELECTROSTATIC FOCUSVIEWING GUN:
NO DEFLECTION
NO FOCUS

DATA			
General:	Writing Section	Viewing Section	
Heater, for Unipotential Cathode:			
Voltage (AC or DC)	6.3 ± 10%	6.3 ± 10%	volts
Current	0.6	0.6	amp
Minimum Cathode Heating			
Time before other electrode voltages are applied	-	30	sec
Direct Interelectrode Capacitances (Approx.): ^o			
Grid No.1 to all other tube electrodes	7	7.5	μmf
Cathode to all other tube electrodes	5	5	μmf
Backplate to all other tube electrodes	-	300	μmf
Focusing Method	Electrostatic	None	
Deflection Method	Magnetic	None	
Deflection Angle	♦	-	
Phosphor	-	P20, Aluminized	
Fluorescence	-	Yellow-Green	
Phosphorescence	-	Yellow-Green	
Minimum Useful Screen Diameter			4"
Maximum Overall Length			11.62"
Seated Length			11.16" ± 0.10"
Maximum Tube Radius			3.00"
Maximum Tube Diameter			5.19"
Greatest Bulb Diameter			5.00" ± 0.06"
Ambient-Temperature Range			-65° to +100° C
Operating Position			Any
Weight (Approx.)			1-3/4 lbs
Terminal ConnectorsSee Operating Considerations
Bulb Terminals:			
Caps (Three)Recessed Small Cavity (JETEC No.J1-21)
Flexible leads (Two)See Dimensional Outline
Base:			
Writing gun			Small-Button Neoditetrar 8-Pin (JETEC No.E8-49)
Viewing gun			Small-Button Miniature 7-Pin (JETEC No.E7-1)

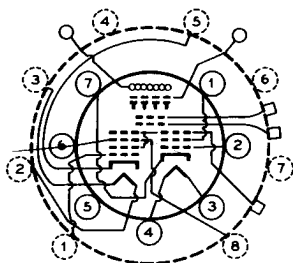
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BOTTOM VIEW



SOLID-LINE CIRCLES DEPICT
MINIATURE 7-PIN BASE
BROKEN-LINE CIRCLES DEPICT
NEODITETRAR 8-PIN BASE

WRITING SECTION[▲]

Small-Button Neoditetrar 8-Pin Base

Pin 1-Grid No. 1	Pin 6-Internal Connection — Do Not Use
Pin 2-Heater	Pin 7-No Connec- tion
Pin 3-Heater	Pin 8-Grid No. 3
Pin 4-Internal Connection — Do Not Use	
Pin 5-Cathode	

VIEWING SECTION

Small-Button Miniature 7-Pin Base

Pin 1-Grid No. 2	Flexible Lead (Large)-Screen
Pin 2-Grid No. 1	Flexible Lead (Small)-Backplate
Pin 3-Heater	Recessed Cavity Cap:
Pin 4-Heater	Located 1-1/4" from Tube Face-Grid No. 5
Pin 5-Internal Connection — Do Not Use	Located 3" from Tube Face-Grid No. 4
Pin 6-No Connec- tion	Located Near Viewing Gun-Grid No. 3, Grids No. 4 & No. 2 of Writing Gun
Pin 7-Cathode	

Maximum Ratings, Absolute Values:

	Writing Section	Viewing Section	
SCREEN VOLTAGE .	—	10000 max.**	volts
PEAK BACKPLATE VOLTAGE. . . .	—	30 max.**	volts

○, ◆, ▲, **: See next page.



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	Writing Section <i>Equivalent Values</i>		Viewing Section <i>Equivalent Values</i>	
GRID-No.5 VOLTAGE.	-	-	-	300 max.** volts
GRID-No.4 VOLTAGE.	2900 max.* [▲]	150 max.**	-	150 max.** volts
GRID-No.3 VOLTAGE.	1200 max.*	-	2900 max.* [▲]	150 max.** volts
GRID-No.2 VOLTAGE.	2900 max.* [▲]	150 max.**	-	150 max.** volts
CATHODE VOLTAGE.	-	-2750 max.**	-	- volts
GRID-No.1 VOLTAGE:				
Negative-bias value.	200 max.*		100 max.**	volts
Positive-bias value.	0 max.*		0 max.**	volts
Positive-peak value.	2 max.*		0 max.**	volts
PEAK HEATER- CATHODE VOLT- AGE:				
Heater nega- tive with respect to cathode. . .	125 max.*		125 max.**	volts
Heater posi- tive with respect to cathode. . .	125 max.*		125 max.**	volts

VIEWING SECTION**

Operating Values and Typical Performance Characteristics:

To prevent possible damage to the tube, allow the viewing-gun beam current to reach normal operating value before turning on the writing-gun beam current, and keep the viewing beam on till the writing beam is turned off

Screen Voltage	8500	volts
DC Backplate Voltage	0	volts
Grid-No.5 Voltage*	220 to 250	volts
Grid-No.4 Voltage*	40 to 100	volts
Grid-No.3 Voltage* [▲]	{ 10 to 40** 2510 to 2540*	volts
Grid-No.2 Voltage*	100	volts
Grid-No.1 Voltage*	0 to -75	volts
Maximum Screen Current	0.6	ma
Maximum Peak Backplate Current	2	ma
Maximum Grid-No.5 Current	2.4	ma

○, ◆, ▲, **, *, #, †: See next page.



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Maximum Grid-No.4 Current [↓]	0.3	ma
Maximum Grid-No.3 Current	0.5	ma
Maximum Grid-No.2 Current [↓]	0.08	ma
Maximum Cathode Current [↓]	4	ma
Number of Half-Tone Steps [□]	5	
Viewing Duration [▲]	20	sec
Maximum Erasing-Uniformity Factor: ^{□□}		
For 4"-diameter area (A ₄)	0.65	
For the 3.5"-diameter portion (A _{3,5})		
centered on A ₄	0.50	
Resolution [⊕]	50	lines/in.
Brightness [⊕]	1500	fl

WRITING SECTION*

Operating Values:

	Equivalent Values		
Grid-No.4 Voltage ^{#▲}	2510 to 2540*	10 to 40**	volts
Grid-No.3 Voltage for focus	425 to 925*	-	volts
Grid-No.2 Voltage ^{#▲}	2510 to 2540*	10 to 40**	volts
Maximum Grid-No.1 Voltage for cutoff of undeflected focused spot	-130*	-2630**	volts
Cathode Voltage	-	-2500**	volts
Maximum Grid-No.3 Current	-15 to +10		μa
Maximum Peak Cathode Current.	4.5		ma

VIEWING SECTION AND WRITING SECTION

Maximum and Minimum Circuit Values:

Grid-No.1-Circuit Resistance (Either gun)	1 max.	megohm
Series Current-Limiting Resistor (Unbypassed) in Grid-No.5 (Viewing-Section) Circuit.	0.005 min.	megohm
Backplate-Circuit Resistance.	0.005 max.	megohm
Series Current-Limiting Resistance in Screen Circuit.	1 min.	megohm

○ Without external shield.

◆ See accompanying drawing CE-9578 showing angles of deflection.

▲ Grids No.4 & No.2 of Writing Gun are connected together and to grid No.3 of Viewing Gun within the tube.

** Voltages are shown with respect to cathode of Viewing Gun.

* Voltages are shown with respect to cathode of Writing Gun.

Adjusted for brightest, most uniform pattern.

⊕ For conditions with combined adjustment of grid-No.1 voltage, grid-No.2 voltage, grid-No.3 voltage, and grid-No.4 voltage to give brightest, most uniform pattern. After final adjustment, the grid-No.1 voltage should not be more positive than -20 volts to maintain electrode current within the maximum value indicated.

□ Observed with an RCA-2F21 Monoscope display.

▲▲ Expressed in terms of the time required for the brightness of the unwritten background to rise from just zero brightness (viewing-beam cutoff) to 10% of saturated brightness.

□, ⊕, ◆, ▲, #, ⊕: See next page.



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- Determined as follows: With no erasing pulse, overscan the storage surface with writing beam to obtain maximum pattern brightness. Then cut off writing beam and adjust erasing pulse to obtain complete erasure in approximately 10 seconds. Measure time (t_1) from start of erasing to the instant at which any area within the 4" diameter (or the 3.5"-diameter portion) is reduced to background-brightness level, and time (t_2) from start of erasing to the instant at which the entire area within the 4" diameter area (or the 3.5"-diameter portion) is reduced to background-brightness level. The erasing-uniformity factor is defined as $(t_2 - t_1) / t_2$.
- Measured by shrinking-raster method at a display brightness of 50 per cent of saturated brightness and with grids No. 2 & No. 4 of Writing Gun at about +2500 volts with respect to cathode of Writing Gun.
- Measured with entire storage grid written to produce saturated brightness and with screen at indicated voltage.
- The cathode of the Writing Gun is operated at about -2500 volts with respect to the cathode of the Viewing Gun which is usually operated at ground potential.

OPERATING CONSIDERATIONS

Support and shielding for the 7183 may be provided by a shield made of properly annealed high-permeability material. The screen lead and the backplate lead should be placed outside the shield.

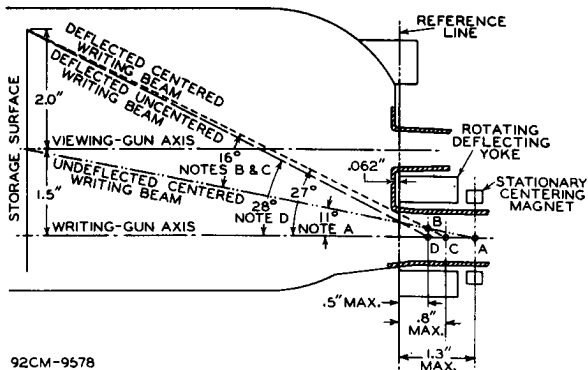
Terminal Connectors. The base pins of the Neoditetrar 8-pin base on the Writing-Gun neck fit the Ditetrar 8-contact connector, such as Cinch No. 54A18088, or equivalent. The base pins of the Small-Button Miniature 7-pin base on the Viewing-Gun neck fit the Miniature 7-contact socket. The recessed cavity caps require standard flexible-lead connectors as used for television picture tubes.

To prevent possible damage to the tube, allow the viewing-gun beam current to reach normal operating value before turning on the writing-gun beam current, and keep the viewing beam on till the writing beam is turned off.



DISPLAY STORAGE TUBE

ANGLES OF DEFLECTION AND CENTERS OF DEFLECTION
FOR WRITING GUN WHEN USED WITH ROTATING
2-COIL YOKE AND STATIONARY 4-COIL YOKE



92CM-9578

NOTE A: CENTERING OF THE WRITING BEAM ON THE STORAGE SURFACE IS NECESSARY FOR A CENTERED PPI DISPLAY. THE BEAM IS CENTERED BY SHIFTING IT FROM THE WRITING-GUN AXIS THROUGH AN ANGLE OF 11° WITH A CENTERING MAGNET WHOSE EFFECTIVE CENTER (A) IS LOCATED 1.3" FROM REFERENCE LINE.

NOTE B: WITH ROTATING YOKE WHOSE EFFECTIVE CENTER OF DEFLECTION (B) IS LOCATED 0.5" FROM REFERENCE LINE, THE CENTERED WRITING BEAM (NOTE A) MUST BE DEFLECTED THROUGH AN ANGLE OF 32° TO SWEEP FULLY THE STORAGE SURFACE.

NOTE C: WITH STATIONARY TV-TYPE YOKE WHOSE EFFECTIVE CENTER OF DEFLECTION (C) IS LOCATED 0.8" FROM REFERENCE LINE, THE CENTERED WRITING BEAM MUST BE DEFLECTED THROUGH AN ANGLE OF 32° TO SWEEP FULLY THE STORAGE SURFACE.

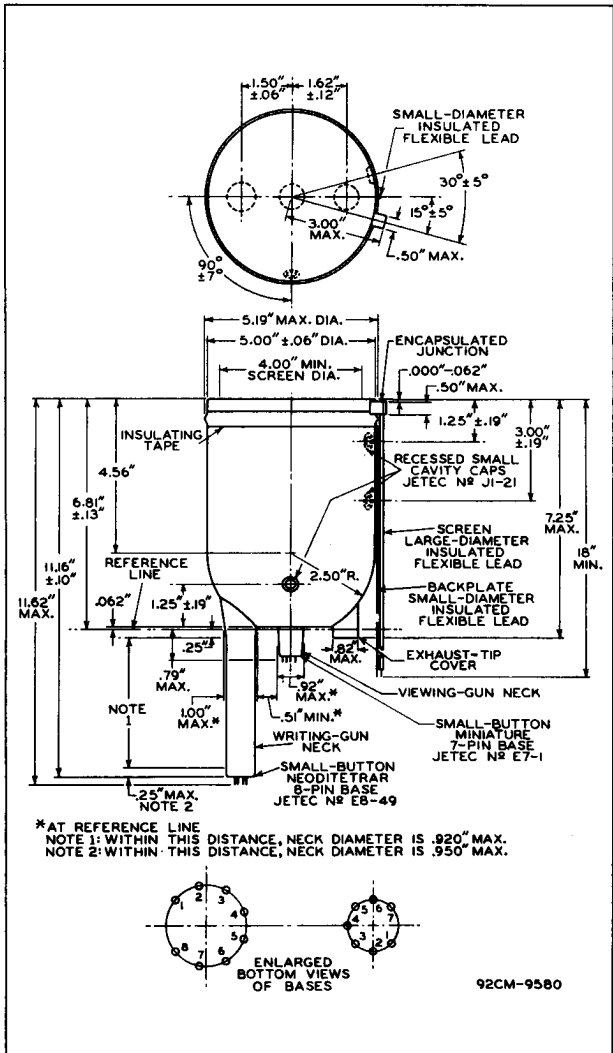
NOTE D: WHEN ROTATING YOKE IS USED WITH UNCENTERED DISPLAY, i.e., THE WRITING BEAM IS NOT CENTERED (NOTE A) BUT STRIKES THE STORAGE SURFACE ON THE WRITING-GUN AXIS, AND WITH THE EFFECTIVE CENTER OF DEFLECTION OF THE ROTATING YOKE LOCATED 0.5" FROM THE REFERENCE LINE, THE UNCENTERED WRITING BEAM MUST BE DEFLECTED THROUGH AN ANGLE OF 56° TO SWEEP FULLY THE STORAGE SURFACE.



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TYPICAL CHARACTERISTIC

VIEWING SECTION

 $E_f = 6.3$ VOLTS

BACKPLATE VOLTS* = 0

GRID-N#5 VOLTS* = 250

GRID-N#2 VOLTS* = 100

GRID-N#4 VOLTS*

GRID-N#3 VOLTS*

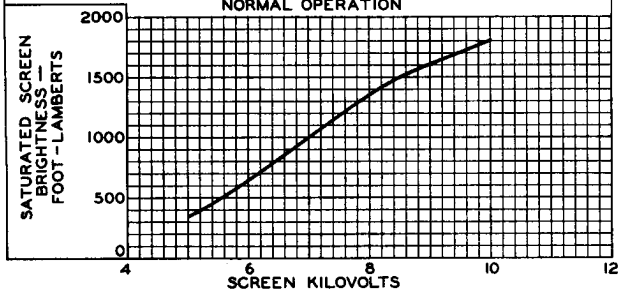
GRID-N#1 VOLTS*

 ADJUSTED FOR
 BRIGHTEST, MOST
 UNIFORM DISPLAY.

* REFERRED TO CATHODE OF VIEWING GUN.

WRITING SECTION

NORMAL OPERATION



92CS-9553

TYPICAL STORAGE-GRID CHARACTERISTIC

VIEWING SECTION

 $E_f = 6.3$ VOLTS

SCREEN VOLTS* = 8500

BACKPLATE VOLTS* = 0

GRID-N#5 VOLTS* = 250

GRID-N#4 VOLTS

GRID-N#3 VOLTS

GRID-N#1 VOLTS

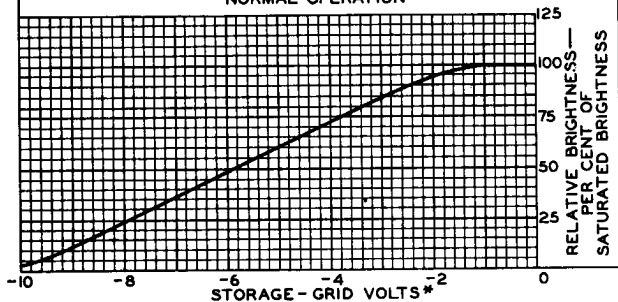
GRID-N#2 VOLTS* = 100

 ADJUSTED
 FOR BEST
 COLLIMATION.

* REFERRED TO CATHODE OF VIEWING GUN.

WRITING SECTION

NORMAL OPERATION



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RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

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TYPICAL ERASURE CHARACTERISTICS

VIEWING SECTION

$E_f = 6.3$ VOLTS
 SCREEN VOLTS* = 8500
 BACKPLATE VOLTS* = 0
 GRID-N \circ 5 VOLTS* = 250

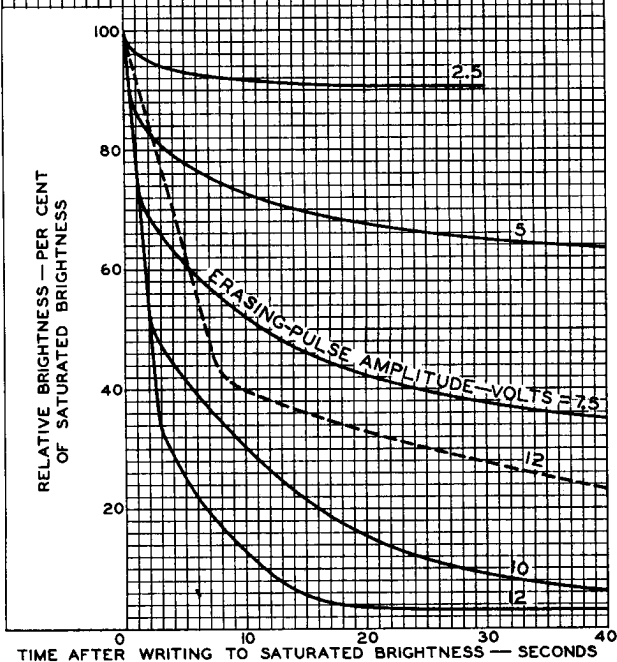
GRID-N \circ 4 VOLTS } ADJUSTED
 GRID-N \circ 3 VOLTS } FOR BEST
 GRID-N \circ 1 VOLTS } COLLIMATION.
 GRID-N \circ 2 VOLTS* = 100

* REFERRED TO CATHODE OF VIEWING GUN.

ERASING CONDITIONS

PULSE SHAPE: RECTANGULAR
 PULSE DURATION: 10 μ SEC. APPROX.
 PULSE REPETITION FREQUENCY:

—— CURVES: 2000 PPS
 - - - CURVE : 500 PPS



ELECTRON TUBE DIVISION

92CM-9555

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY