



7VP1

7VP1

OSCILLOGRAPH TUBE

ELECTROSTATIC FOCUS

ELECTROSTATIC DEFLECTION

DATA

General:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts
 Current 0.6 amp

Direct Interelectrode Capacitances (Approx.):

Grid No.1 to All Other Electrodes 6 $\mu\mu\text{f}$
 DJ₁ to DJ₂ 3 $\mu\mu\text{f}$
 DJ₃ to DJ₄ 2 $\mu\mu\text{f}$
 DJ₁ to All Other Electrodes 9 $\mu\mu\text{f}$
 DJ₂ to All Other Electrodes 9 $\mu\mu\text{f}$
 DJ₃ to All Other Electrodes 7 $\mu\mu\text{f}$
 DJ₄ to All Other Electrodes 7 $\mu\mu\text{f}$

Faceplate Clear Glass

Phosphor (For Curves, see front of this Section) P1

Fluorescence and Phosphorescence Green

Persistence of Phosphorescence Medium

Focusing Method Electrostatic

Deflection Method Electrostatic

Overall Length 14-1/2" $\pm$ 3/8"Greatest Diameter of Bulb 7" $\pm$ 1/8"

Minimum Useful Screen Diameter 6"

Mounting Position Any

Bulb J56H

Base Medium-Shell Diheptal 12-Pin (JETEC No.B12-37)

BOTTOM VIEW

Pin 1 - Heater
 Pin 2 - Cathode
 Pin 3 - Grid No.1
 Pin 4 - No
 Connection
 Pin 5 - Grid No.3
 Pin 7 - Deflecting
 Electrode
 DJ₃
 Pin 8 - Deflecting
 Electrode
 DJ₄



Pin 9 - Ulitor*
 (Grid No.2,
 Grid No.4,
 Collector)
 Pin 10 - Deflecting
 Elect. DJ₂
 Pin 11 - Deflecting
 Elect. DJ₁
 Pin 12 - Internal
 Connection-
 Do Not Use
 Pin 14 - Heater

*DJ₁ and DJ₂ are nearer the screen
 DJ₃ and DJ₄ are nearer the base*

With DJ₁ positive with respect to DJ₂, the spot is deflected toward pin 5. With DJ₃ positive with respect to DJ₄, the spot is deflected toward pin 2.

The plane through the tube axis and pin 5 may vary from the trace produced by DJ₁ and DJ₂ by an angular tolerance (measured about the tube axis) of $\pm 10^\circ$. Angle between DJ₁-DJ₂ trace and DJ₃-DJ₄ trace is $90^\circ \pm 3^\circ$.

*: See next page.

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7VPI



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Maximum Ratings, Design-Center Values:

ULTOR* VOLTAGE	4000 max.	volts
GRID-No.3 VOLTAGE	2000 max.	volts
GRID-No.1 VOLTAGE:		
Negative bias value	200 max.	volts
Positive bias value*	0 max.	volts
Positive peak value	2 max.	volts
PEAK VOLTAGE BETWEEN ULTOR AND ANY DEFLECTING ELECTRODE	750 max.	volts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode .	125 max.	volts
Heater positive with respect to cathode .	125 max.	volts

Equipment Design Ranges:

For any ultor voltage (E_u) between 1000* and 4000 volts

Grid-No.3 Voltage for Focus	27% to 40% of E_u	volts
Maximum Grid-No.1 Voltage for Visual Extinction of Undelected Focused Spot	2.8% of E_u	volts
Grid-No.3 Current	-15 to +10	μ amp
Deflection Factors:		
DJ ₁ & DJ ₂	31 to 41	v dc/in./kv of E_u
DJ ₃ & DJ ₄	25 to 34	v dc/in./kv of E_u
Spot Position	##	

Examples of Use of Design Ranges:

For ultor voltage of	1500	3000	volts
Grid-No.3 Voltage for Focus	400 to 600	800 to 1200	volts
Maximum Grid-No.1 Volt- age for Visual Extinc- tion of Undelected Focused Spot	-42	-84	volts
Deflection Factors:			
DJ ₁ & DJ ₂	47 to 62	93 to 123	volts dc/in.
DJ ₃ & DJ ₄	38 to 51	75 to 102	volts dc/in.

Maximum Circuit Values:

Grid No.1-Circuit Resistance	1.5 max.	megohms
Resistance in Any Deflecting- Electrode Circuit ^o	5.0 max.	megohms

* In the 7VPI, grid No.4 which has the ultor function, grid No.2, and collector are connected together within the tube and are conveniently referred to collectively as "ultor." The "ultor" in a cathode-ray tube is the electrode, or the electrode in combination with one or more additional electrodes connected within the tube to it, to which is applied the highest dc voltage for accelerating the electrons in the beam prior to its deflection.

* At or near this rating, the effective resistance of the ultor supply should be adequate to limit the ultor input power to 6 watts.

##, #, °: See next page.

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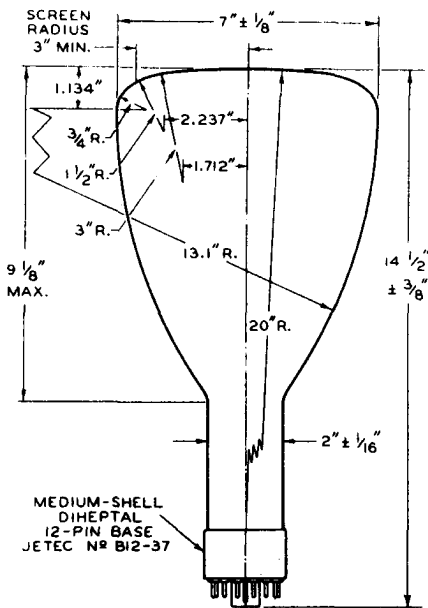
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OSCILLOGRAPH TUBE

- # Brilliance and definition decrease with decreasing ultor voltage. A value as low as 1000 volts is recommended only for low-velocity deflection and low ambient-light levels.
- ** With ultor voltage of 1500 volts, the center of the undeflected focused spot will fall within a circle having a 10-mm radius concentric with the center of the tube face.
- It is recommended that the deflecting-electrode-circuit resistances be approximately equal.

The 7VP1 can be used as a direct replacement for the 7JP1 in all equipment where the high-voltage supply does not provide more than 4000 volts.



92CM-6667R1

⊥ OF BULB WILL NOT DEVIATE MORE THAN 2° IN ANY DIRECTION FROM THE PERPENDICULAR ERECTED AT THE CENTER OF BOTTOM OF THE BASE.

7VP1



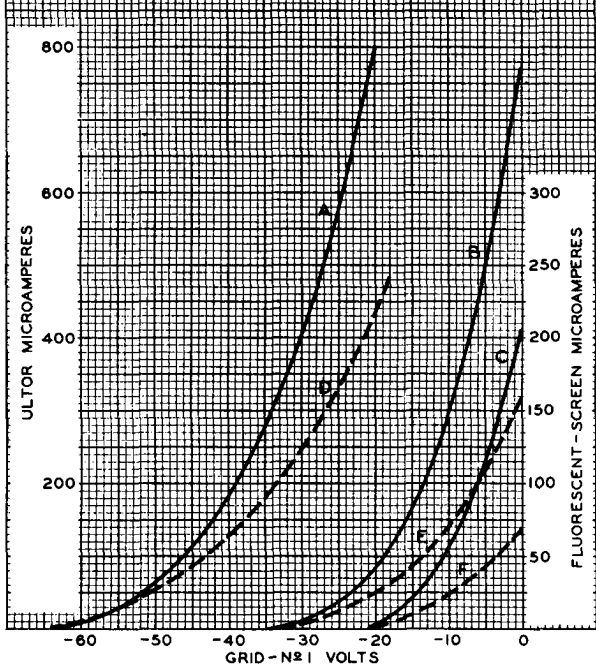
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AVERAGE CHARACTERISTICS

$E_f = 6.3$ VOLTS

GRID - N $\approx$ 3 VOLTS ADJUSTED FOR FOCUS

CURVE	CURRENT	ULTOR VOLTS
A	ULTOR	3000
B	ULTOR	1500
C	ULTOR	1000
D	FLUORESCENT SCREEN	3000
E	FLUORESCENT SCREEN	1500
F	FLUORESCENT SCREEN	1000



DEC. 17, 1951

TUBE DEPARTMENT
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92CM - 7721

Oscilloscope Tube

ELECTROSTATIC FOCUS
ELECTROSTATIC DEFLECTION

MEDIUM-SHORT-PERSISTENCE SCREEN
HIGH DEFLECTION SENSITIVITY

The 7VP31 is the same as the 7VP1 except for the following items:

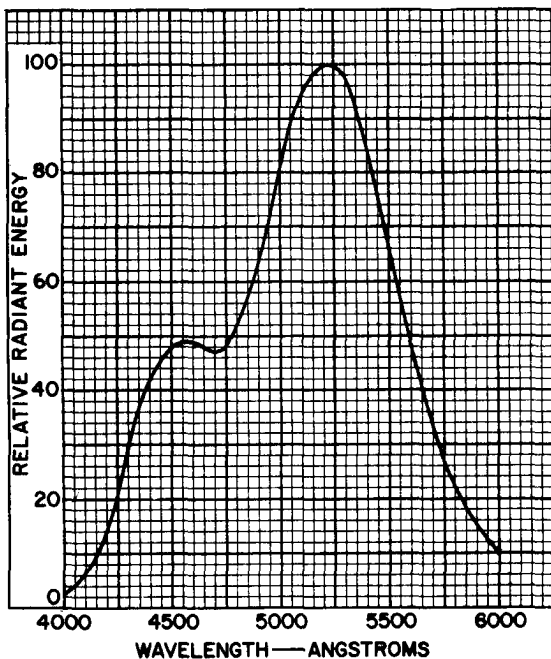
General:

Phosphor (See accompanying curves)	P31
Fluorescence	Green
Phosphorescence	Green
Persistence ^a	Medium Short ^b (Approx. 38 μ sec)

^a Time for initial brightness to decay to 10% point.

^b Phosphorescence may have a useful brightness for over a minute under conditions of adequate excitation and low ambient illumination.

SPECTRAL-ENERGY EMISSION CHARACTERISTIC OF PHOSPHOR P31



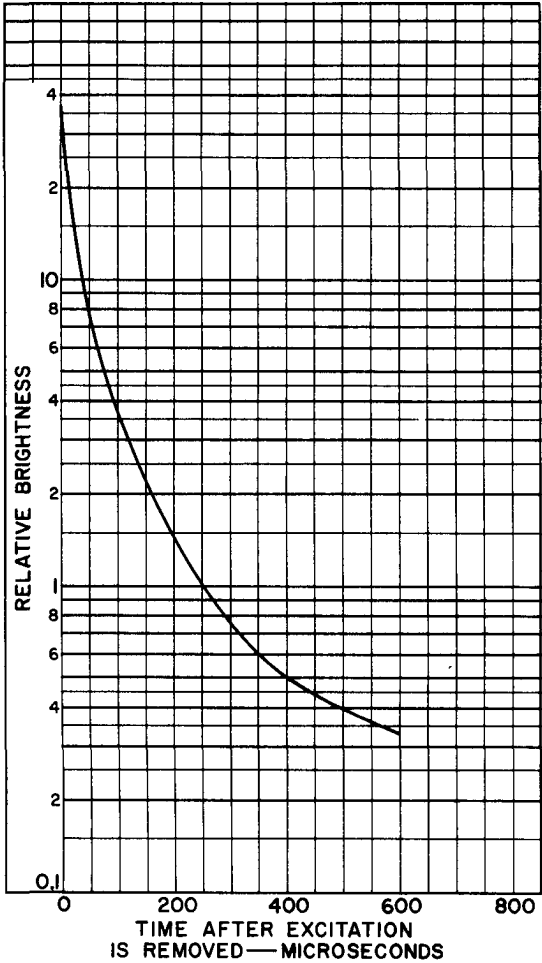
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DATA
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PERSISTENCE CHARACTERISTIC
OF PHOSPHOR P31



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