



5U1

OSCILLOGRAPH TUBE

ELECTROSTATIC FOCUS

ELECTROSTATIC DEFLECTION

5U1

General:

Heater, for Unipotential Cathode:

Voltage	6.3 ± 10%	ac or dc volts
Current	0.6	amp

Direct Interelectrode Capacitances (Approx.):

Grid No.1 to All Other Electrodes	8.0	μf
DJ1 to DJ2	2.5	μf
DJ3 to DJ4	2.5	μf
DJ1 to All Other Electrodes	11.0	μf
DJ2 to All Other Electrodes	8.0	μf
DJ3 to All Other Electrodes	7.0	μf
DJ4 to All Other Electrodes	8.0	μf

Phosphor (For Curves, see front of this Section)	No.1
Fluorescence	Green
Persistence	Medium

Focusing Method. Electrostatic

Deflection Method. Electrostatic

Overall Length 14-3/4" ± 3/8"

Greatest Diameter of Bulb. 5-1/4" ± 3/32"

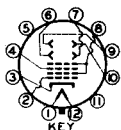
Minimum Useful Screen Diameter 4-1/2"

Mounting Position. Any

Base Small-Shell Duodecal 12-Pin 12E

Basing Designation for BOTTOM VIEW

- | | |
|-----------------------------------|------------------------------------|
| Pin 1-Heater | Pin 8-Anode No.2,
Grid No.2 |
| Pin 2-Grid No.1 | Pin 9-Deflecting
Electrode DJ2 |
| Pin 3-Cathode | Pin 10-Deflecting
Electrode DJ1 |
| Pin 4-Anode No.1 | Pin 11-Internal Con.
Do Not Use |
| Pin 5-Internal Con.
Do Not Use | Pin 12-Heater |
| Pin 6-Deflecting
Electrode DJ3 | |
| Pin 7-Deflecting
Electrode DJ4 | |



*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 4. With DJ₃ positive with respect to DJ₄, the spot is deflected toward pin 1.

The angle between the trace produced by DJ₁ and DJ₂ and its intersection with the plane through the tube axis and pin 1 does not exceed 10°.

The angle between the trace produced by DJ₃ and DJ₄ and the trace produced by DJ₁ and DJ₂ is 90° ± 30°.

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Maximum Ratings, Design-Center Values:

ANODE- <i>No. 2</i> [■] VOLTAGE	2500 max.	volts
ANODE- <i>No. 1</i> VOLTAGE	1000 max.	volts
GRID- <i>No. 1</i> (CONTROL ELECTRODE) VOLTAGE:		
Negative bias value.	200 max.	volts
Positive bias value.	0 max.	volts
Peak positive value.	2 max.	volts
PEAK VOLTAGE BETWEEN ANODE <i>No. 2</i> AND ANY DEFLECTING ELECTRODE. . .		
	500 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 anode-*No. 2* voltage (E_{b2}) between 1000* and 2500 volts*

Anode- <i>No. 1</i> Voltage . . .	17% to 32% of E_{b2}	. . . volts
Max. Grid- <i>No. 1</i> Voltage for Visual Cutoff	4.5% of E_{b2}	. . . volts
Anode- <i>No. 1</i> Current for Any Operating Condition	-15 to +10	. . microamp
Deflection Factors:		
DJ ₁ & DJ ₂	28 to 38.5	v dc/in./kv of E_{b2}
DJ ₃ & DJ ₄	23 to 31	v dc/in./kv of E_{b2}

Examples of Use of Design Ranges:

*For anode-*No. 2* voltages of*

	<u>1000</u>	<u>2000</u>	volts
Anode- <i>No. 1</i> Voltage . . .	170 - 320	340 - 640	. . volts
Max. Grid- <i>No. 1</i> Voltage for Visual Cutoff	-45	-90	. . volts
Deflection Factors:			
DJ ₁ & DJ ₂	28 - 38.5	56 - 77	volts dc/in.
DJ ₃ & DJ ₄	23 - 31	46 - 62	volts dc/in.

Maximum Circuit Values:

Grid- <i>No. 1</i> -Circuit Resistance	1.5 max.	megohms
Resistance in Any Deflecting Electrode Circuit [□] . . .	5.0 max.	megohms

* Recommended minimum value.

□ It is recommended that the deflecting-electrode-circuit resistances be approximately equal.

■ Anode *No. 2* and grid *No. 2*, which are connected together within tube, are referred to herein as anode *No. 2*.

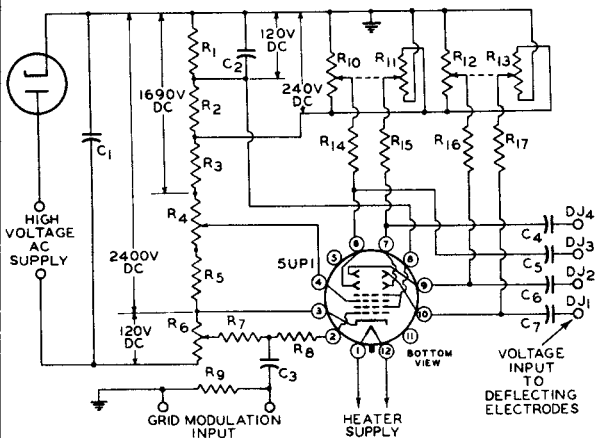


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TYPICAL CIRCUIT



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R1 R2: 2.5 Megohms, 0.5 Watt
 R3: 6 Megohms, 3 Watts
 R4: 2-Megohm Potentiometer
 R5: 1 Megohm, 0.5 Watt
 R6: 0.5-Megohm Potentiometer
 R7: 0.5-Megohm, 0.5 Watt
 R8: Not less than 2000 Ohms per
 volt of positive signal
 R9: 5-Megohms, 0.5 Watt

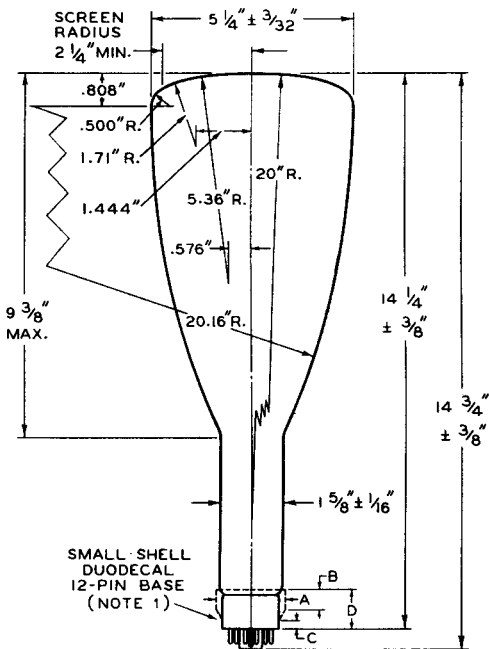
R10 - R11, R12 - R13: Dual Potentiometers, R10, R11, R12, R13:
 0.5 Megohm
 R14 R15 R16 R17: 2.2 Megohms,
 0.5 Watt
 C1: 0.1 μ f, 2500 Volts
 C2: 1 μ f, 200 Volts
 C3: 0.0001 μ f, 2500 Volts
 C4 C5 C6 C7: 0.1 μ f, 600 Volts

The license extended to the purchaser of tubes appears in the License Notice accompanying them. Information contained herein is furnished without assuming any obligations.

SUP 1



SUP 1 OSCILLOGRAPH TUBE



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

NOTE 1: THIS BASE MAY BE SUPERSEDED BY AN ALTERNATE BASE WHICH WILL FIT THE SAME SOCKET BUT WHICH WILL HAVE A FLARED SHELL INDICATED BY THE DASHED LINES AND DIMENSIONED APPROXIMATELY AS FOLLOWS:

A = 1.85" MAX., B = 0.500", C = 0.200" MIN., D = 0.925".

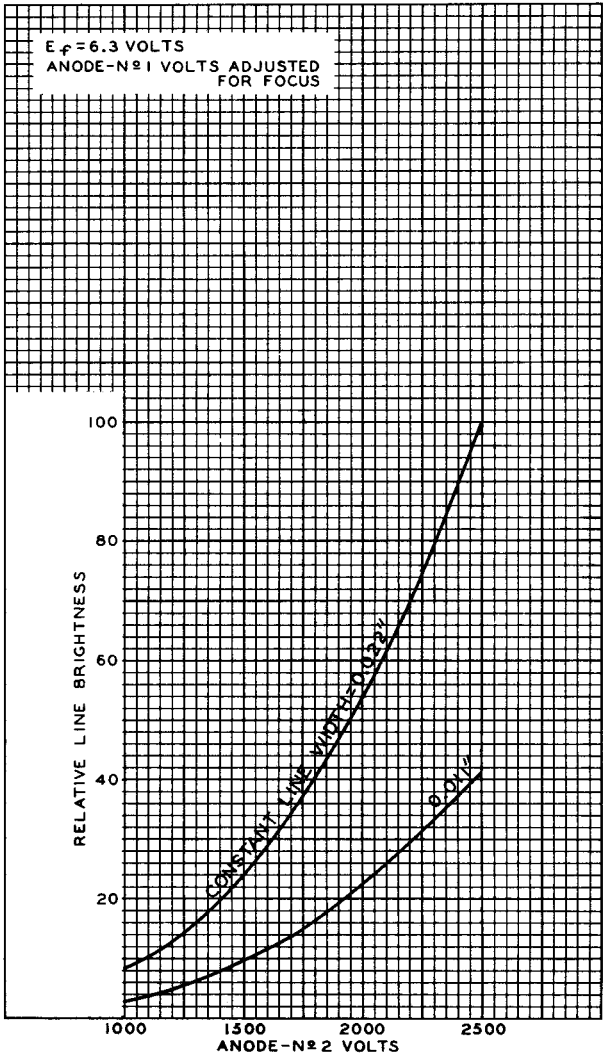
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AVERAGE CHARACTERISTICS



NOV. 7, 1946

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

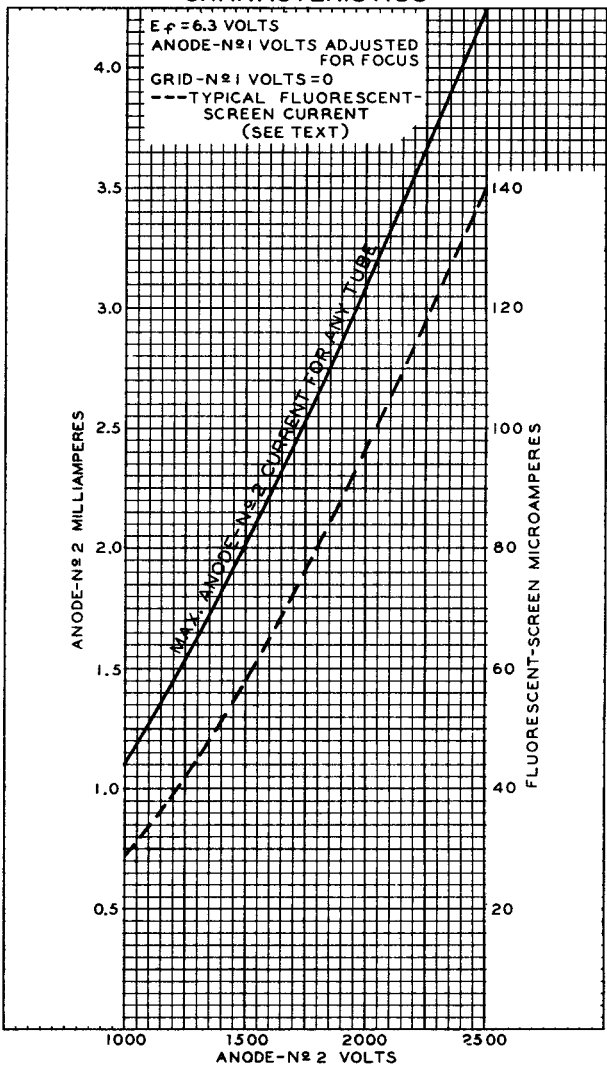
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OCT. 21, 1949

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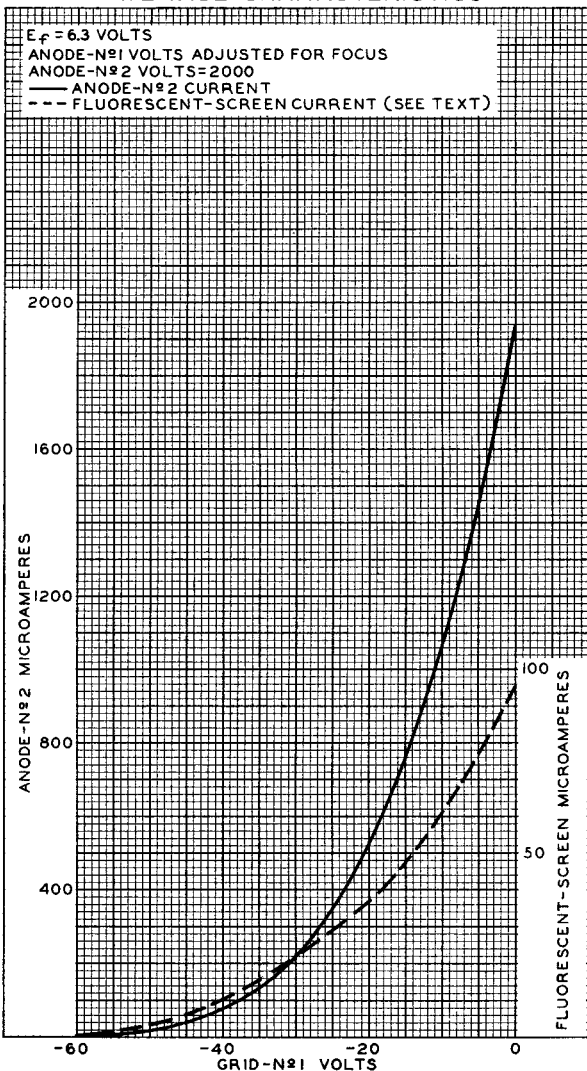
92CM-6811R1



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AVERAGE CHARACTERISTICS



NOV. 11, 1946

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6810

Oscillograph Tube**ELECTROSTATIC FOCUS****ELECTROSTATIC DEFLECTION**

*For Extremely Low-Speed Recurrent, or Medium-Speed
Non-Recurrent Image Displays*

The 5UP7 is the same as the 5UP1 except for the following items:

GENERAL

Phosphor (For curves, see front of this section)	P7
Fluorescence	White
Phosphorescence	Yellowish-Green
Persistence ^{a, b}	Very-Long

5UP11**Oscillograph Tube****ELECTROSTATIC FOCUS****ELECTROSTATIC DEFLECTION**

For Photographic Recording and Visual Observations

The 5UP11 is the same as the 5UP1 except for the following items:

GENERAL

Phosphor (For curves, see front of this section)	P11
Fluorescence	Actinic-Blue
Phosphorescence	Actinic-Blue
Persistence ^{a, b}	Medium-Short

5UP31**Oscillograph Tube****ELECTROSTATIC FOCUS****ELECTROSTATIC DEFLECTION**

For Low- or Medium-Speed Non-Recurring Image Displays

The 5UP31 is the same as the 5UP1 except for the following items:

GENERAL

Phosphor (For curves see type 7VP31)	P31
Fluorescence	Green
Phosphorescence	Green
Persistence ^b	Medium-Short ^c (Approx. 38 μ sec)

^a Persistence of useable brightness can be obtained with an anode-No. 2 voltage of as low as 1500 volts.

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

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

