



2API-A

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HIGH-VACUUM CATHODE-RAY TUBE

Supersedes Type 2AP1

General:

Heater, for Unipotential Cathode:

Voltage. $6.3 \pm 10\%$ ac or dc volts
 Current. 0.6 amp.

Direct Interelectrode Capacitances (Approx.):

Grid No.1 to All Other Electrodes. 8.0 μf
 Cathode to All Other Electrodes. 5.5 μf
 DJ₁ to DJ₂ 0.6 μf
 DJ₃ to DJ₄ 1.1 μf
 DJ₁ to All Other Electrodes. 8.5 μf
 DJ₃ to All Other Electrodes. 9.0 μf
 DJ₁ to All Other Electrodes except DJ₂ 8.0 μf
 DJ₂ to All Other Electrodes except DJ₁ 4.6 μf
 DJ₃ to All Other Electrodes except DJ₄ 7.5 μf
 DJ₄ to All Other Electrodes except DJ₃ 6.0 μf

Phosphor (For Curves, see front of this Section) No.1

Fluorescence Green

Persistence. Medium

Focusing Method. Electrostatic

Deflection Method. Electrostatic

Overall Length 7-7/16" $\pm$ 3/16"Greatest Diameter of Bulb. 2" $\pm$ 1/16"

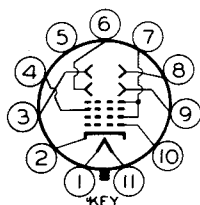
Minimum Useful Screen Diameter 1-3/4"

Mounting Position. Any

Base Small Shell Magnal 11-Pin

Basing Designation for BOTTOM VIEW 11L

Pin 1-Heater
 Pin 2-Cathode
 Pin 3-Deflecting
 Electrode DJ₁
 Pin 4-Anode No.1
 Pin 5-No Connection
 Pin 6-Deflecting
 Electrode DJ₄
 Pin 7-Anode No.2,
 Grid No.2



Pin 8-Deflecting
 Electrode
 DJ₂
 Pin 9-Deflecting
 Electrode
 DJ₃
 Pin 10-Grid No.1
 Pin 11-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 4. With DJ₃ positive with respect to DJ₄, the spot is deflected toward pin 1.

The angle between the trace produced by DJ₃ and DJ₄ 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° $\pm$ 4°.



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Maximum Ratings, Absolute Values:

ANODE-No.2 & GRID-No.2 VOLTAGE	1100 max.	volts
ANODE-No.1 VOLTAGE	550 max.	volts
GRID-No.1 (CONTROL ELECTRODE) VOLTAGE:		
Negative Value	125 max.	volts
Positive Value	0 max.	volts
PEAK VOLTAGE BETWEEN ANODE No.2 AND ANY DEFLECTING ELECTRODE	660 max.	volts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	125 max.	volts
Heater positive with respect to cathode	10 max.	volts

Typical Operation:

Anode-No.2 & Grid-No.2 Voltage [★]	500	1000		volts
Anode-No.1 Voltage for Focus at 75% of Grid-No.1 Volt- age for Cutoff [●]	125	250		volts
Grid-No.1 Volt. for Visual Cutoff [#]	-30	-60		volts
Max. Anode-No.1 Current Range [▲]	Between -50 and +10			μamp.
Deflection Sensitivity:				
DJ1 and DJ2.	0.220	0.110		mm/v dc
DJ3 and DJ4.	0.260	0.130		mm/v dc
Deflection Factor: ^{**}				
DJ1 and DJ2.	115	230		v dc/in.
DJ3 and DJ4.	98	196		v dc/in.

★ Brilliance and definition decrease with decreasing anode-No.2 voltage. In general, anode-No.2 voltage should not be less than 500 volts.

● Individual tubes may require between +20% and -45% of the values shown with grid-No.1 voltages between zero and cutoff.

Visual extinction of stationary focused spot. Supply should be adjustable to ± 50% of these values.

▲ See curve for average values.

** Individual tubes may vary from these values by ± 20%.

Spot Position:

The undeflected focused spot will fall within a 10-mm square centered at the geometric center of the tube face and having one side parallel to the trace produced by DJ1 and DJ2. Suitable test conditions are: anode-No.2 voltage, 1000 volts; anode-No.1 voltage, adjusted for focus; deflecting-electrode resistors, 1 megohm each, connected to anode No.2; the tube shielded from all extraneous fields. To avoid damage to the tube, grid-No.1 voltage should be near cutoff before application of anode voltages.

Maximum Circuit Values:

Grid-No.1-Circuit Resistance	1.5 max.	megohms
Impedance of Any Deflecting-Electrode Circuit at Heater-Supply Frequency	1.0 max.	megohm



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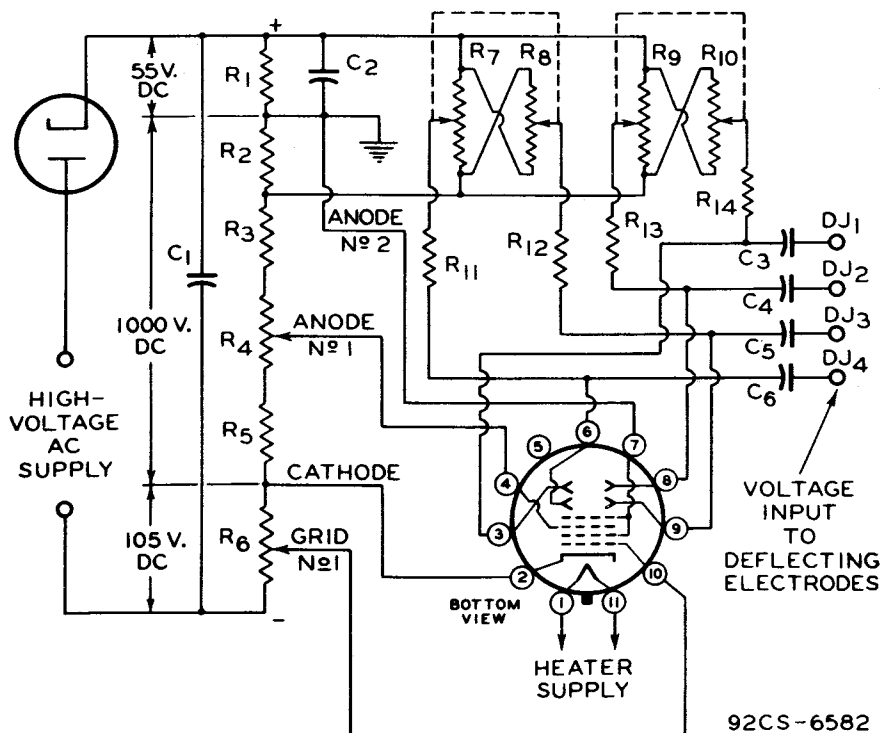
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Resistance in Any Deflecting-

Electrode Circuit $\Delta\Delta$ 50 max. megohms $\Delta\Delta$ It is recommended that all deflecting-electrode-circuit resistances be approximately equal.

TYPICAL OSCILLOGRAPH CIRCUIT



92CS-6582

C1: 0.1 μ f
 C2: 1.0 μ f
 C3 C4 C5 C6: 0.05- μ f Blocking Capacitor*
 R1 R2: 0.5 Megohm
 R3: 3.0 Megohms

R4: 1.0-Megohm Potentiometer
 R5: 0.5 Megohm
 R6: 0.5-Megohm Potentiometer
 R7 R8: Dual 5-Megohm Potentiometer
 R9 R10: Dual 5-Megohm Potentiometer
 R11 R12 R13 R14: 2 Megohms

* When cathode is grounded, capacitors should have high voltage rating; when anode No.2 is grounded, they may have low voltage rating. For dc amplifier service, deflecting electrodes should be connected direct to amplifier output. In this service, it is preferable usually to remove deflecting-electrode resistors to minimize loading effect on amplifier. In order to minimize spot defocusing, it is essential that anode No.2 be returned to a point in the amplifier system which will give the lowest possible potential difference between anode No.2 and the deflecting electrodes.

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

JULY 1, 1945

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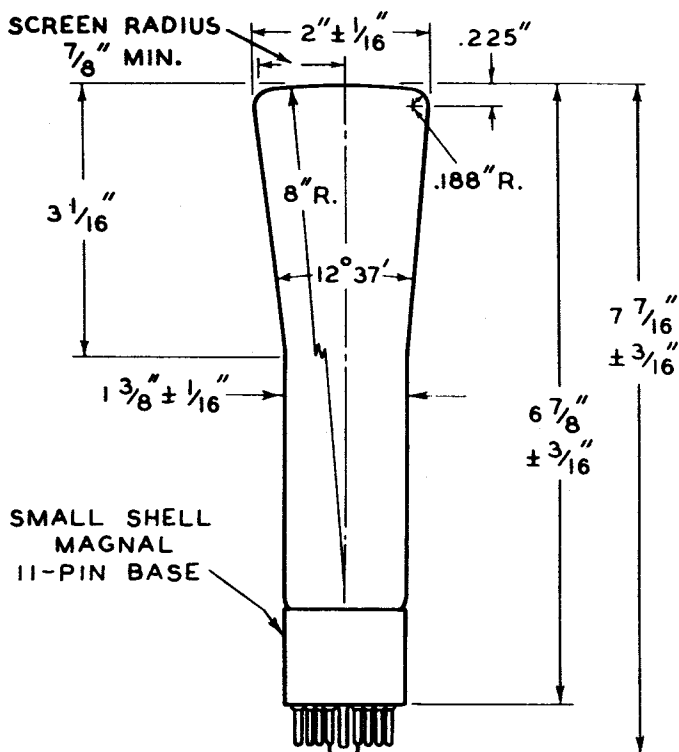
DATA 2

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92CM-6368R2

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



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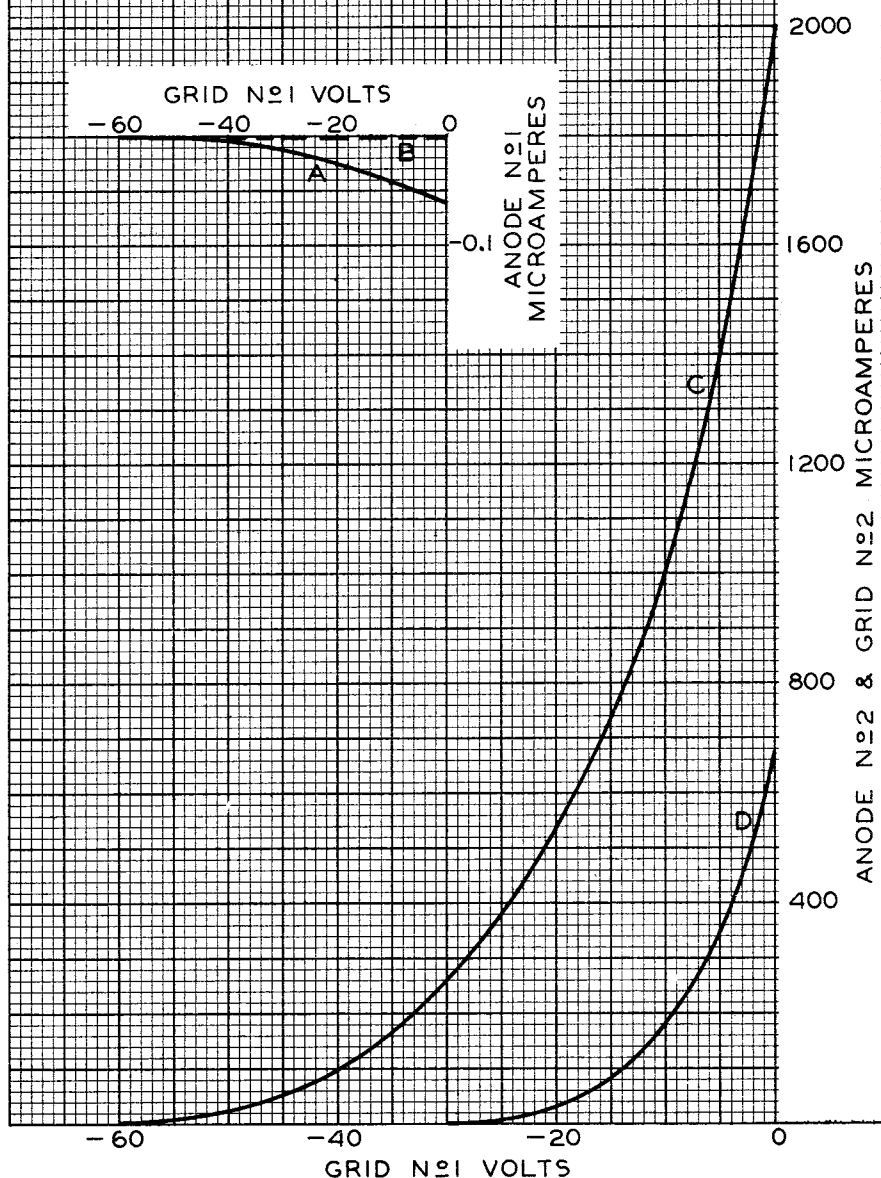
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AVERAGE CHARACTERISTICS

 $E_f = 6.3$ VOLTS

ANODE N°1 VOLTS ADJUSTED TO GIVE FOCUS

CURVE	ELECTRODE CURRENT	ANODE N°2 & GRID N°2 VOLTS
A	ANODE N°1	1000
B	ANODE N°1	500
C	ANODE N°2 & GRID N°2	1000
D	ANODE N°2 & GRID N°2	500



APR. 17, 1945

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92CM-6410R1