



3BPI-A

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HIGH-VACUUM CATHODE-RAY TUBE

Supersedes Type 3BP1

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.	8.5	..	μf
Cathode to All Other Electrodes.	8.0	..	μf
DJ ₁ to DJ ₂	2.0	..	μf
DJ ₃ to DJ ₄	2.0	..	μf
DJ ₁ to All Other Electrodes.	8.0	..	μf
DJ ₃ to All Other Electrodes.	6.0	..	μf
DJ ₁ to All Other Electrodes except DJ ₂	6.0	..	μf
DJ ₂ to All Other Electrodes except DJ ₁	5.0	..	μf
DJ ₃ to All Other Electrodes except DJ ₄	4.0	..	μf
DJ ₄ to All Other Electrodes except DJ ₃	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 $10" \pm 1/4"$ Greatest Diameter of Bulb. $3" \pm 1/16"$ Minimum Useful Screen Diameter $2-3/4"$

Mounting Position. Any

Base Medium Shell Diheptal 12-Pin

Basing Designation for BOTTOM VIEW 14G

Pin 1-Heater

Pin 2-Cathode

Pin 3-Grid No.1

Pin 4-Internal Con.

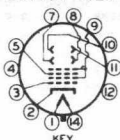
Do Not Use

Pin 5-Anode No.1

Pin 7-Deflecting

Electrode DJ₃

Pin 8-Deflecting

Electrode DJ₄

Pin 9-Anode No.2,

Grid No.2

Pin 10-Deflecting

Electrode

DJ₂

Pin 11-Deflecting

Electrode

DJ₁

Pin 12-No Conn.

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 angle between the trace produced by DJ₁ and DJ₂ and its intersection with the plane through the tube axis and pin 5 does not exceed 10° .

The angle between the trace produced by DJ₃ and DJ₄ and the trace produced by DJ₁ and DJ₂ is $90^\circ \pm 3^\circ$.

Maximum Ratings, Absolute Values:

ANODE-No.2 & GRID-No.2 VOLTAGE 2200 max. volts

ANODE-No.1 VOLTAGE 1100 max. volts

JULY 1, 1945

RCA VICTOR DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

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(continued from preceding page)

GRID-No.1 (CONTROL ELECTRODE) VOLTAGE:

Negative Value.	200 max.	volts
Positive Value.	0 max.	volts

PEAK VOLTAGE BETWEEN/ANODE No.2 AND

ANY DEFLECTING ELECTRODE	550 max.	volts
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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 [■]	1500	2000	volts
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Anode No.1 Voltage for Focus

at 75% of Grid-No.1 Volt-

age for Cutoff [●]	430	575	volts
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Grid-No.1 Volt. for Visual Cutoff [#]	-45	-60	volts
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Max. Anode-No.1 Current Range [▲]	Between -50 and +10	μamp.
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Deflection Sensitivity:

DJ1 and DJ2	0.169	0.127 . .	mm/v dc
DJ3 and DJ4	0.229	0.172 . .	mm/v dc

Deflection Factor:**

DJ1 and DJ2	150	200 . .	v dc/in.
DJ3 and DJ4	111	148 . .	v dc/in.

■ Brilliance and definition decrease with decreasing anode-No.2 voltage. In general, anode-No.2 voltage should not be less than 1500 volts.

● Individual tubes may require between +20% and -30% of the values shown with grid-No.1 voltages between zero and cutoff.

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

▲ See curve for average values.

** Individual tubes may vary from these values by $\pm 20\%$.

Spot Position:

The undeflected focused spot will fall within a 15-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, 1500 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
Resistance in Any Deflecting-		
Electrode Circuit ^{▲▲}	5.0 max.	megohms

▲▲ It is recommended that all deflecting-electrode-circuit resistances be approximately equal.

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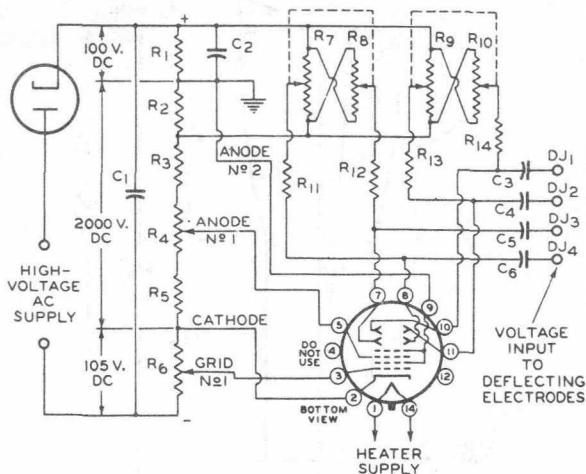


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TYPICAL OSCILLOGRAPH CIRCUIT



92CS-6514

C1: 0.1 μ f
 C2: 1.0 μ f
 C3 C4 C5 C6: 0.05- μ f Blocking
 Capacitors*

R1 R2: 2 Megohms
 R3: 5.5 Megohms

R4: 2-Megohm Potentiometer
 R5: 1.5 Megohms
 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.

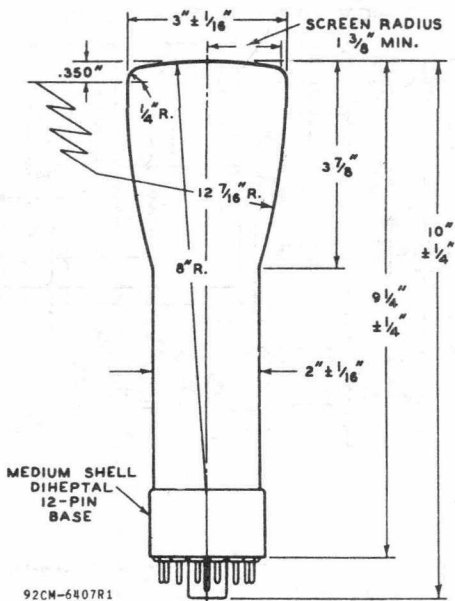
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☐ OF BULB WILL NOT DEVIATE MORE THAN 2°
IN ANY DIRECTION FROM PERPENDICULAR
ERECTED AT CENTER OF BOTTOM OF BASE



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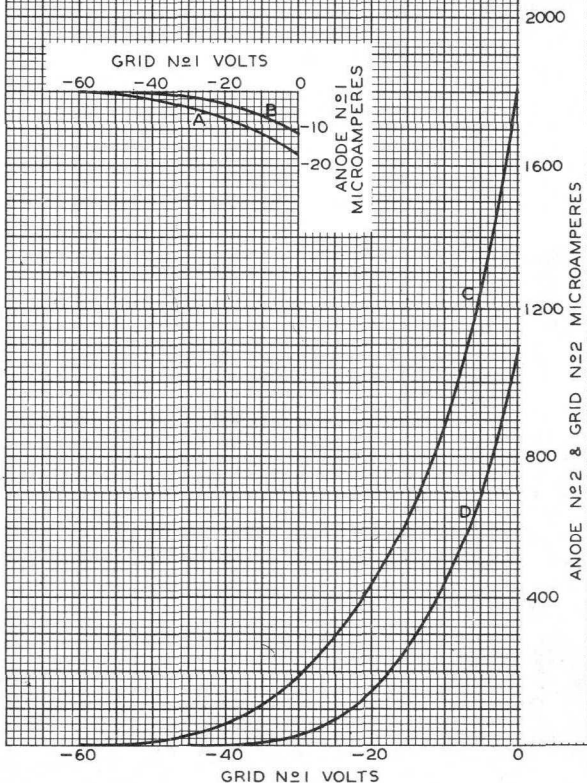
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AVERAGE CHARACTERISTICS

 $E_f = 6.3$ VOLTS

ANODE N°1 VOLTS ADJUSTED TO GIVE FOCUS

CURVE	ELECTRODE CURRENT	ANODE N°2 & GRID N°2 VOLTS
A	ANODE N°1	2000
B	ANODE N°1	1500
C	ANODE N°2 & GRID N°2	2000
D	ANODE N°2 & GRID N°2	1500



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