



2BP1

2BP1

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. 8 μf DJ₁ to DJ₂ 2 μf DJ₃ to DJ₄ 2 μf DJ₁ to All Other Electrodes. 11 μf DJ₂ to All Other Electrodes. 8 μf DJ₃ to All Other Electrodes. 7 μf DJ₄ to All Other Electrodes. 8 μf ←

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

Fluorescence Green

Persistence. Medium

Focusing Method Electrostatic

Deflection Method. Electrostatic

Overall Length 7-5/8" $\pm$ 3/16"Greatest Diameter of Bulb. 2" $\pm$ 1/16"

Minimum Useful Screen Diameter 1-3/4"

Mounting Position. Any

Base Small-Shell Duodecal 12-Pin

Basing Designation for BOTTOM VIEW 12E

Pin 1-Heater

Pin 2-Grid No.1

Pin 3-Cathode

Pin 4-Anode No.1

Pin 5-Internal

Connection--

Do Not Use

Pin 6-Deflecting

Electrode

DJ₂

Pin 7-Deflecting

Electrode

DJ₄

Pin 8-Anode No.2,

Grid No.2

Pin 9-Deflecting

Electrode

DJ₂

Pin 10-Deflecting

Electrode

DJ₁

Pin 11-Internal

Connection--

Do Not Use

Pin 12-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 plane through the tube axis and pin No.4 may vary from the trace produced by DJ₁ and DJ₂ by an angular tolerance (measured about the tube axis) of 10°.

The angle between DJ₁ - DJ₂ trace and DJ₃ - DJ₄ trace is 90° $\pm$ 30°.

← Indicates a change.



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Maximum Ratings, Design-Center Values:

ANODE-No.2* VOLTAGE.	2500 max.	volts
ANODE-No.1 VOLTAGE.	1000 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 ANODE No.2 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 500* and 2500 volts

Anode-No.1 Voltage . . .	15% to 28% of E_{b2}	volts
→ Max. Grid-No.1 Voltage for Visual Cutoff. .	6.75% of E_{b2}	volts
Max. Anode-No.1 Current Range. .	-15 to +10	microamperes
Deflection Factors:		
DJ ₁ & DJ ₂	115 to 155	v dc/in./kv of E_{b2}
DJ ₃ & DJ ₄	74 to 100	v dc/in./kv of E_{b2}
→ Spot Position.	□	

Examples of Use of Design Ranges:

For anode-No.2 voltage of 1000	2000	volts
Anode-No.1 Voltage . .	150 - 280	300 - 560 volts
Max. Grid-No.1 Voltage for Visual Cutoff.	-67.5	-135 volts
Deflection Factors:		
DJ ₁ & DJ ₂	115 - 155	230 - 310 volts dc/in.
DJ ₃ & DJ ₄	74 - 100	148 - 200 volts dc/in.

Maximum Circuit Values:

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

* Brilliance and definition decrease with decreasing anode-No.2 voltage. A value as low as 500 volts is recommended only for low-velocity deflection and low room-light levels.

- 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. The product of anode-No.2 voltage and average anode-No.2 current should be limited to 6 watts.
- The center of the undeflected, focused spot will fall within a circle having a 5.0-mm radius concentric with the center of the tube face.

→ Indicates a change.

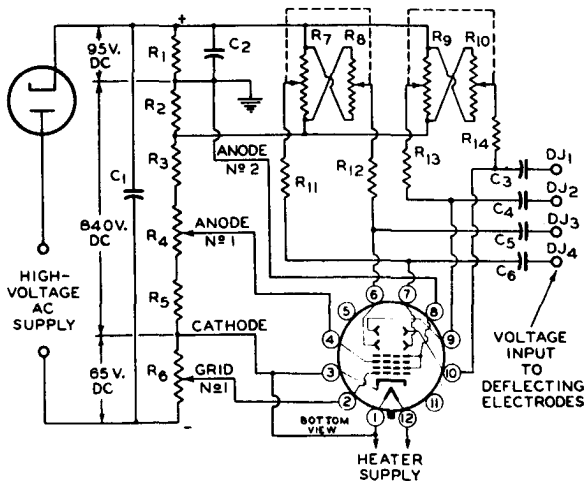


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OSCILLOGRAPH TUBE

2BPI

TYPICAL OSCILLOGRAPH CIRCUIT



92CM-6777R1

C1: 0.2 μ f
 C2: 1.0 μ f
 C3 C4 C5 C6: 0.05- μ f Blocking
 Capacitors*
 R1 R2: 2.5 Megohms, 0.5 watt
 R3: 2.5 Megohms, 1 watt

R4: 1.0-Megohm Potentiometer
 R5: 0.5 Megohm, 0.5 watt
 R6: 0.35 Megohm, 0.5 watt
 R7 R8: Dual 5-Megohm Potentiometer
 R9 R10: Dual 5-Megohm Potentiometer
 R11 R12 R13 R14: 2 Megohms, 0.5 watt

* 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.

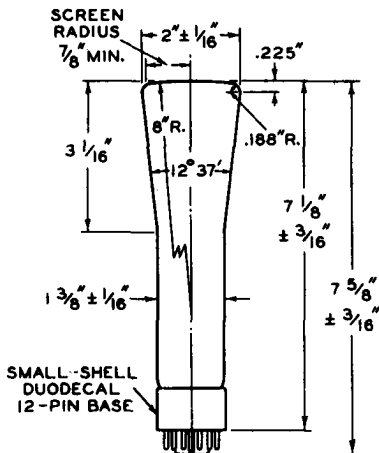
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OSCILLOGRAPH TUBE



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

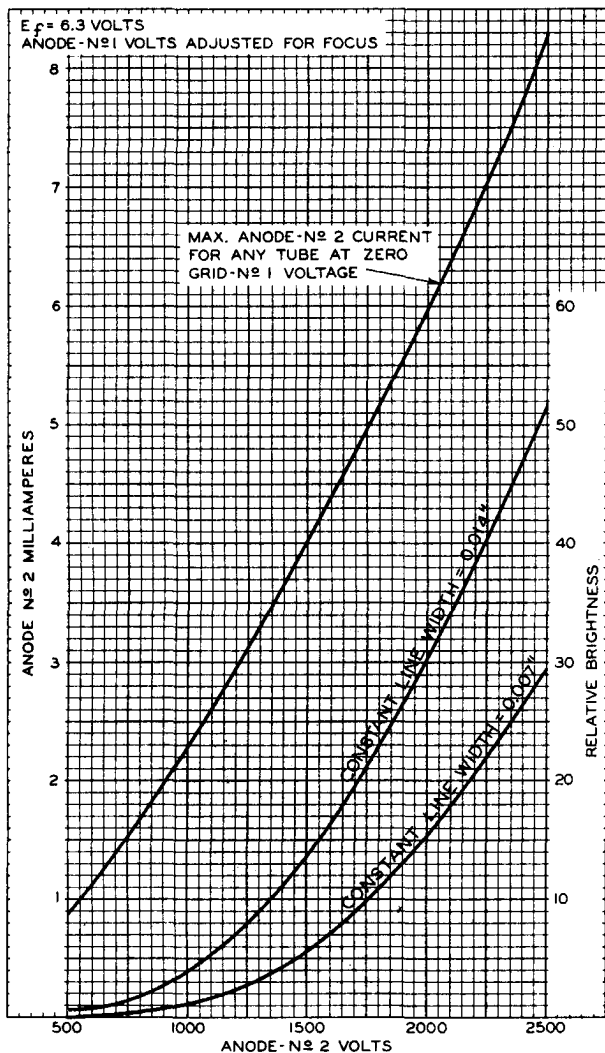
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CHARACTERISTICS

2BP1



AUGUST 14, 1950

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

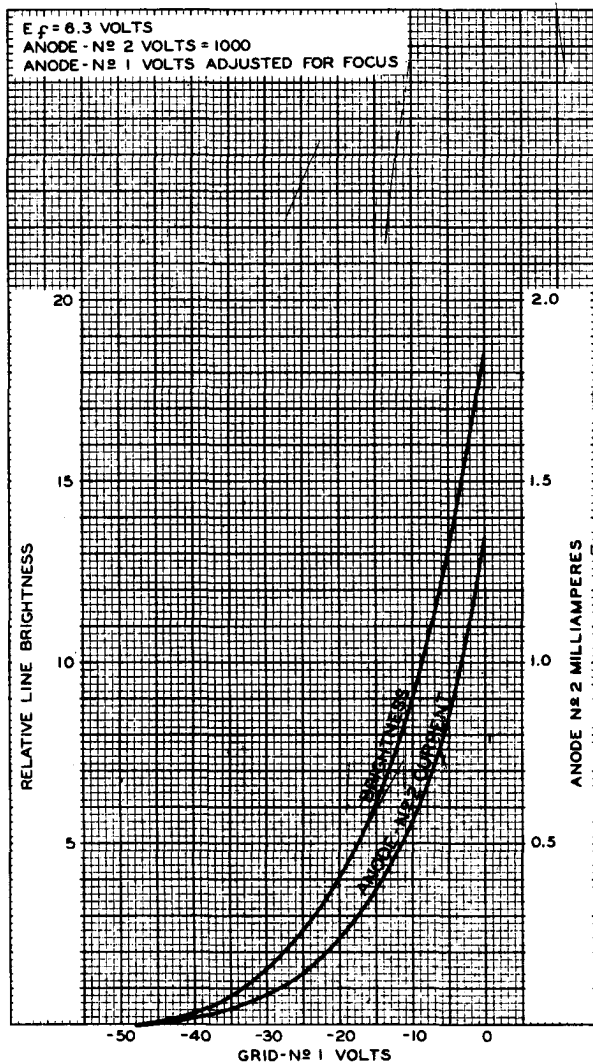
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AVERAGE CHARACTERISTICS



AUGUST 14, 1950

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6747R1



2BP11

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OSCILLOGRAPH TUBE

ELECTROSTATIC FOCUS

ELECTROSTATIC DEFLECTION

The 2BP11 is the same as the 2BP1 except that it has a phosphor of the short-persistence, blue-fluorescence type designated P11. The blue radiation of the P11 screen is highly actinic and has sufficiently short persistence to permit use of the 2BP11 in all moving film photographic applications without blurring except in those where film moves at a high speed. The 2BP11 is also quite satisfactory for visual observation of phenomena because its phosphor has unusually high brightness for a blue screen.

In general, operation of the 2BP11 at an anode-No.2 voltage less than 1000 volts is not recommended.

THE SPECTRAL-ENERGY EMISSION CHARACTERISTIC
and the PERSISTENCE CHARACTERISTIC of
the P11 Phosphor are shown at the
front of this Section