



## 5HP1, 5HP4

## HIGH-VACUUM CATHODE-RAY TUBE

Primarily for applications involving altitudes up to 25000 feet

|                                                         |                             |                  |
|---------------------------------------------------------|-----------------------------|------------------|
| Heater                                                  | Coated Unipotential Cathode |                  |
| Voltage                                                 | 6.3                         | a-c or d-c volts |
| Current                                                 | 0.6                         | amp.             |
| Focusing Method                                         | Electrostatic               |                  |
| Deflection Method                                       | Electrostatic               |                  |
| Electrodes DJ <sub>1</sub> and DJ <sub>2</sub> (upper): | nearest to screen           |                  |
| DJ <sub>1</sub> is on same side of tube as pin No.4     |                             |                  |
| Electrodes DJ <sub>3</sub> and DJ <sub>4</sub> (lower): | nearest to base             |                  |
| DJ <sub>3</sub> is on same side of tube as pin No.1     |                             |                  |
|                                                         | <u>5HP1</u>                 | <u>5HP4</u>      |
| Phosphor                                                | No.1                        | No.4             |
| Fluorescence                                            | Green                       | White            |
| Persistence                                             | Medium                      | Medium           |

## Direct Interelectrode Capacitances:

|                                                                |              |
|----------------------------------------------------------------|--------------|
| Control Electrode (Grid) to All Other Electrodes               | 9.5 $\mu$ f  |
| DJ <sub>1</sub> to DJ <sub>2</sub>                             | 1.2 $\mu$ f  |
| DJ <sub>3</sub> to DJ <sub>4</sub>                             | 0.65 $\mu$ f |
| DJ <sub>1</sub> to All Other Electrodes                        | 9.0 $\mu$ f  |
| DJ <sub>3</sub> to All Other Electrodes                        | 12.0 $\mu$ f |
| DJ <sub>1</sub> to All Other Electrodes Except DJ <sub>2</sub> | 8.0 $\mu$ f  |
| DJ <sub>2</sub> to All Other Electrodes Except DJ <sub>1</sub> | 6.5 $\mu$ f  |
| DJ <sub>3</sub> to All Other Electrodes Except DJ <sub>4</sub> | 11.0 $\mu$ f |
| DJ <sub>4</sub> to All Other Electrodes Except DJ <sub>3</sub> | 8.0 $\mu$ f  |

Overall Length 16-3/4"  $\pm$  3/8"Bulb Diameter at Screen End 5-1/4"  $\begin{smallmatrix} +1/16" \\ -3/32" \end{smallmatrix}$ 

Base Large Micanol-Wafer Medium Magnal 11-Pin, Sleeve

## MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

Maximum Ratings Are Absolute Values

## Anode No.2 (High-Voltage Electrode)

|                                                                              |                  |
|------------------------------------------------------------------------------|------------------|
| Voltage                                                                      | 2200 max. volts  |
| Anode No.1 (Focusing Electrode) Voltage                                      | 1100 max. volts  |
| Grid (Control Electrode) Voltage                                             | Never positive   |
| Peak Voltage Between Anode No.2 and Any Deflecting Electrode                 | 550 max. volts   |
| Grid-Circuit Resistance                                                      | 1.5 max. megohms |
| Impedance of Any Deflecting-Electrode Circuit at the Heater-Supply Frequency | 1.0 max. megohm  |

## Typical Operation:

|                                                                             |       |          |                |
|-----------------------------------------------------------------------------|-------|----------|----------------|
| Anode No.2 Voltage *                                                        | 1500  | 2000     | volts          |
| Anode No.1 Voltage for Focus at 75% of Grid Voltage for Cut-Off (Approx.)** | 310   | 425      | volts          |
| Grid Voltage for Cut-Off <sup>o</sup>                                       | -30   | -40      | volts          |
| Deflection Sensitivity:                                                     |       |          |                |
| DJ <sub>1</sub> and DJ <sub>2</sub>                                         | 0.400 | 0.300    | mm/volt d.c.   |
| DJ <sub>3</sub> and DJ <sub>4</sub>                                         | 0.440 | 0.330    | mm/volt d.c.   |
| Deflection Factor: <sup>□</sup>                                             |       |          |                |
| DJ <sub>1</sub> and DJ <sub>2</sub>                                         | 63.5  | 84.8     | volts d.c./in. |
| DJ <sub>3</sub> and DJ <sub>4</sub>                                         | 57.8  | 77.0     | volts d.c./in. |
| <sup>□</sup> subject to variation of                                        |       | $\pm 17$ | per cent       |

\*, \*\*, <sup>o</sup>: See next page.

AUG. 1, 1942

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RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA



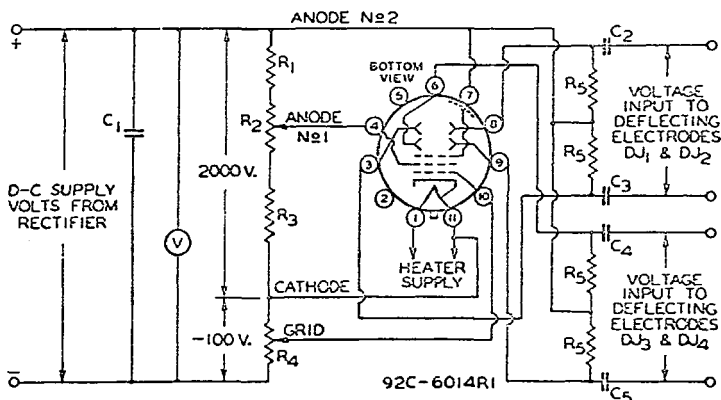
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(continued from preceding page)

- \* Brilliance and definition decrease with decreasing anode No.2 voltages. In general, the anode No.2 voltage should not be less than 1500 volts.
- \*\* Supply should be adjustable to  $\pm 20\%$  of this value.
- o Visual extinction of a stationary focused spot. For cut-off supply should be adjustable to  $\pm 50\%$  of this value.

## TYPICAL OSCILLOGRAPH CIRCUIT



$C_1$  = FILTER CONDENSER 0.5 TO 2.0  $\mu$ f

$C_2, C_3, C_4, C_5$  = SEE NOTE 2

$R_1$  = 0.65 MEGOHM

$R_2$  = 0.20 MEGOHM

$R_3$  = 0.175 MEGOHM

$R_4$  = 0.05 MEGOHM

$R_5$  = SEE NOTES 1 & 2

V = VOLTMETER

NOTE 1: The d-c potential of each deflecting electrode is maintained essentially equivalent to that of anode No.2 by connecting resistors having values not greater than 10 megohms between each deflecting electrode and anode No.2. This arrangement by suitable choice of resistor values minimizes pattern distortion and pattern drift resulting from unbalanced potentials on the deflecting electrodes. The smaller the resistor values, the less the distortion for a given beam current.

NOTE 2: When the cathode or the negative end of the cathode-ray high-voltage supply is grounded, blocking condensers  $C_2, C_3, C_4$ , and  $C_5$  should have a high voltage rating. When anode No.2 is grounded, condensers  $C_2, C_3, C_4$ , and  $C_5$  may be low-voltage condensers.

For d-c amplifier service, the deflecting electrodes should be coupled direct to the output of the amplifier by omitting the blocking condensers. In addition, it will usually be preferable to remove the associated deflecting electrode resistor in order to minimize the loading effect of the resistor on the d-c amplifier. With the resistor removed, it is essential, in order to minimize spot defocusing, that anode No.2 be returned to some point in the d-c amplifier circuit such that the potential difference between anode No.2 and the average voltage across the deflecting electrodes will be as low as possible.

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

AUG. 1, 1942

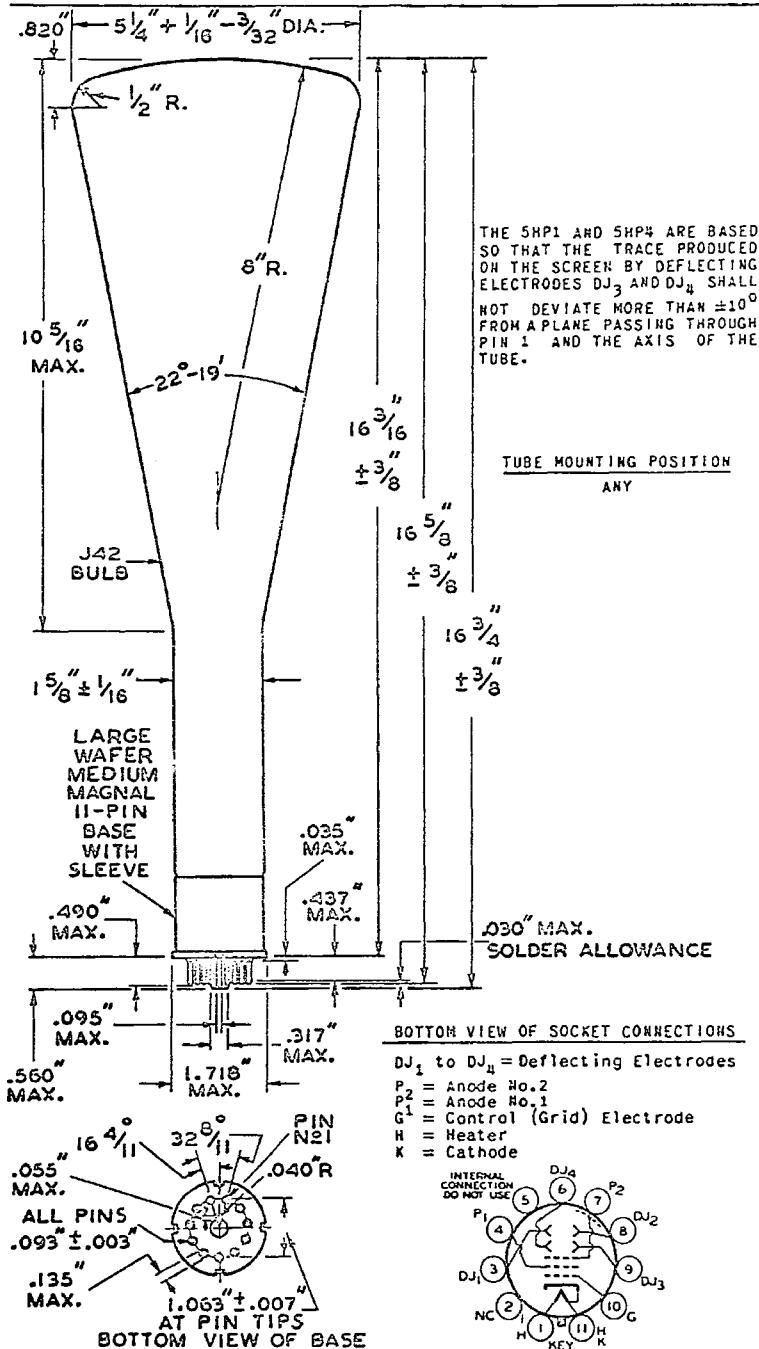
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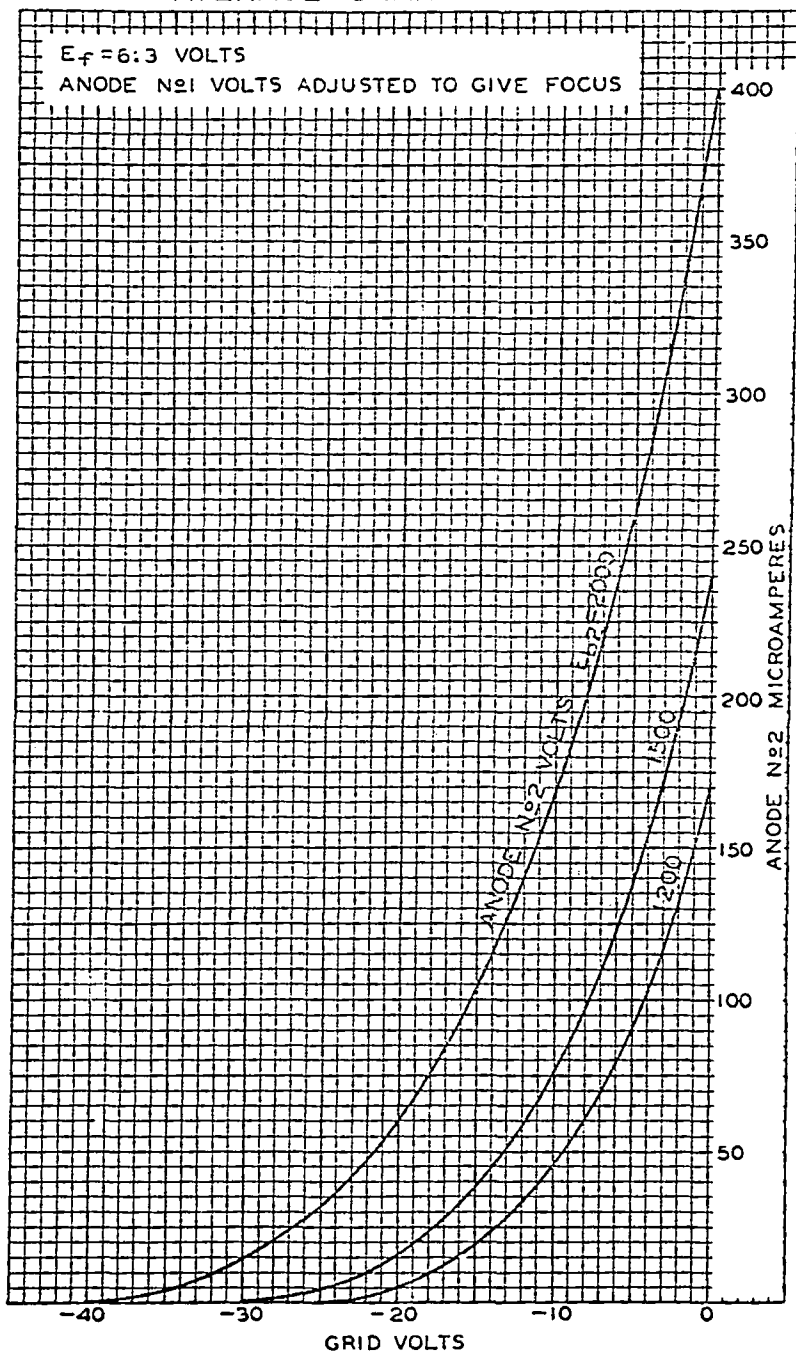
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TENTATIVE DATA 2



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# AVERAGE CHARACTERISTICS



MAY 19, 1942

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92C-4984R2