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# BEAM POWER TUBE

For high-fidelity audio-amplifier applications

## GENERAL DATA

### Electrical:

Heater, for Unipotential Cathode:

Voltage . . . . . 6.3 . . . . . ac or dc volts

Current . . . . . 0.9 . . . . . amp

Direct Interelectrode Capacitances:<sup>o</sup>

Grid No.1 to plate. . . . . 1.5  $\mu$ f

Grid No.1 to cathode & grid No.3,  
grid No.2, and heater . . . . . 10  $\mu$ f

Plate to cathode & grid No.3,  
grid No.2, and heater. . . . . 7.5  $\mu$ f

### Characteristics, Class A<sub>1</sub> Amplifier:

Plate Voltage . . . . . 250 volts

Grid-No.2 (Screen-Grid) Voltage . . . . . 250 volts

Grid-No.1 (Control-Grid) Voltage . . . . . -14 volts

Plate Resistance (Approx.) . . . . . 22500 ohms

Transconductance . . . . . 6000  $\mu$ hos

Plate Current . . . . . 72 ma

Grid-No.2 Current . . . . . 5 ma

### Mechanical:

Operating Position. . . . . Any

Maximum Overall Length. . . . . 4.62"

Maximum Seated Length . . . . . 4.06"

Maximum Diameter. . . . . 1.63"

Bulb. . . . . T12

Base. . . . . Small-Wafer Octal 8-Pin  
with Sleeve (JETEC No.88-191)

Basing Designation for BOTTOM VIEW. . . . . 8HY

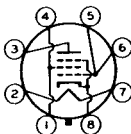
Pin 1-Grid No.2

Pin 2-Heater

Pin 3-Plate

Pin 4-Grid No.2

Pin 5-Grid No.1



Pin 6-Grid No.1

Pin 7-Heater

Pin 8-Cathode,  
Grid No.3

## PUSH-PULL AF POWER AMPLIFIER — Class AB<sub>1</sub>

### Maximum Ratings, Design-Center Values:

PLATE VOLTAGE . . . . . 450 max. volts

GRID-No.2 (SCREEN-GRID) VOLTAGE . . . . . 400 max. volts

CATHODE CURRENT:

Peak . . . . . 400 max. ma

DC . . . . . 110 max. ma

GRID-No.2 INPUT . . . . . 3.5 max. watts

PLATE DISSIPATION . . . . . 25 max. watts

<sup>o</sup>: See next page.

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### PEAK HEATER-CATHODE VOLTAGE:

|                                          |                       |       |
|------------------------------------------|-----------------------|-------|
| Heater negative with respect to cathode. | 200 max.              | volts |
| Heater positive with respect to cathode. | 200 <sup>▲</sup> max. | volts |

### Typical Operation with Fixed Bias:

*Values are for 2 tubes*

|                                                            |      |      |      |       |
|------------------------------------------------------------|------|------|------|-------|
| Plate Voltage . . . . .                                    | 330  | 400  | 450  | volts |
| Grid-No.2 Voltage . . . . .                                | 330  | 300  | 350  | volts |
| Grid-No.1 (Control-Grid)<br>Voltage <sup>●</sup> . . . . . | -24  | -25  | -30  | volts |
| Peak AF Grid-No.1-to-Grid-No.1<br>Voltage . . . . .        | 48   | 50   | 60   | volts |
| Zero-Signal Plate Current . . .                            | 122  | 102  | 95   | ma    |
| Max.-Signal Plate Current . . .                            | 184  | 152  | 194  | ma    |
| Zero-Signal Grid-No.2 Current .                            | 5.6  | 6    | 3.4  | ma    |
| Max.-Signal Grid-No.2 Current .                            | 18.5 | 17   | 19.2 | ma    |
| Effective Load Resistance<br>(Plate to plate). . . . .     | 4500 | 6600 | 6000 | ohms  |
| Total Harmonic Distortion . . .                            | 1    | 2    | 1.5  | %     |
| Max.-Signal Power Output. . . .                            | 31.5 | 34   | 50   | watts |

### Typical Operation with Cathode Bias:

*Values are for 2 tubes*

|                                                        |      |      |       |
|--------------------------------------------------------|------|------|-------|
| Plate-Supply Voltage. . . . .                          | 400  | 380  | volts |
| Grid-No.2 Supply Voltage. . . .                        | 300  | 380  | volts |
| Cathode Resistor. . . . .                              | 200  | 180  | ohms  |
| Peak AF Grid-No.1-to-Grid-No.1<br>Voltage . . . . .    | 57   | 68.5 | volts |
| Zero-Signal Plate Current . . .                        | 112  | 138  | ma    |
| Max.-Signal Plate Current . . .                        | 128  | 170  | ma    |
| Zero-Signal Grid-No.2 Current .                        | 7    | 5.6  | ma    |
| Max.-Signal Grid-No.2 Current .                        | 16   | 20   | ma    |
| Effective Load Resistance<br>(Plate to plate). . . . . | 6600 | 4500 | ohms  |
| Total Harmonic Distortion . . .                        | 2    | 3.5  | %     |
| Max.-Signal Power Output. . . .                        | 32   | 36   | watts |

### Maximum Circuit Values:

#### Grid-No.1-Circuit Resistance:<sup>●</sup>

|                                     |          |        |
|-------------------------------------|----------|--------|
| For fixed-bias operation. . . . .   | 0.1 max. | megohm |
| For cathode-bias operation. . . . . | 0.5 max. | megohm |

### PUSH-PULL AF POWER AMPLIFIER — Class AB<sub>1</sub>

*Grid No.2 of each tube connected to tap on  
plate winding of output transformer*

### Maximum Ratings, Design-Center Values:

|                                                              |          |       |
|--------------------------------------------------------------|----------|-------|
| PLATE AND GRID-No.2 (SCREEN-GRID)<br>SUPPLY VOLTAGE. . . . . | 450 max. | volts |
|--------------------------------------------------------------|----------|-------|

○, ▲, ●: See next page.



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|                                          |                  |      |       |
|------------------------------------------|------------------|------|-------|
| CATHODE CURRENT:                         |                  |      |       |
| Peak . . . . .                           | 400              | max. | ma    |
| DC . . . . .                             | 110              | max. | ma    |
| GRID-No.2 INPUT . . . . .                | 3                | max. | watts |
| PLATE DISSIPATION . . . . .              | 25               | max. | watts |
| PEAK HEATER-CATHODE VOLTAGE:             |                  |      |       |
| Heater negative with respect to cathode. | 200              | max. | volts |
| Heater positive with respect to cathode. | 200 <sup>▲</sup> | max. | volts |

#### Typical Operation:

*Values are for 2 tubes*

|                                            |      |       |
|--------------------------------------------|------|-------|
| Plate-Supply Voltage . . . . .             | 410  | volts |
| Grid-No.2 Supply Voltage . . . . .         | *    | volts |
| Cathode Resistor . . . . .                 | 220  | ohms  |
| Peak AF Grid-No.1-to-Grid-No.1 Voltage . . | 68   | volts |
| Zero-Signal Cathode Current . . . . .      | 134  | ma    |
| Max.-Signal Cathode Current . . . . .      | 155  | ma    |
| Effective Load Resistance (Plate to plate) | 8000 | ohms  |
| Total Harmonic Distortion . . . . .        | 1.6  | %     |
| Max.-Signal Power Output . . . . .         | 24   | watts |

#### Maximum Circuit Values:

|                                      |                 |
|--------------------------------------|-----------------|
| Grid-No.1-Circuit Resistance:●       |                 |
| For cathode-bias operation . . . . . | 0.5 max. megohm |

○ Without external shield.

▲ The dc component must not exceed 100 volts.

● The type of input coupling network used should not introduce too much resistance in the grid-No.1 circuit. Transformer- or impedance-coupling devices are recommended.

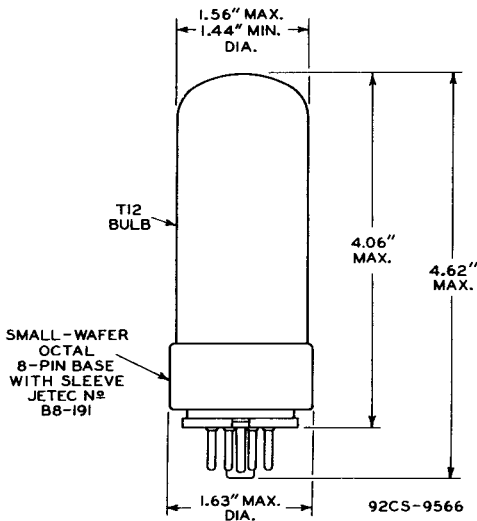
\* Obtained from taps on the primary winding of the output transformer. The taps are located on each side of the center tap (B+) so as to apply 43 per cent of the plate signal voltage to grid No.2 of each output tube.

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### AVERAGE PLATE CHARACTERISTICS

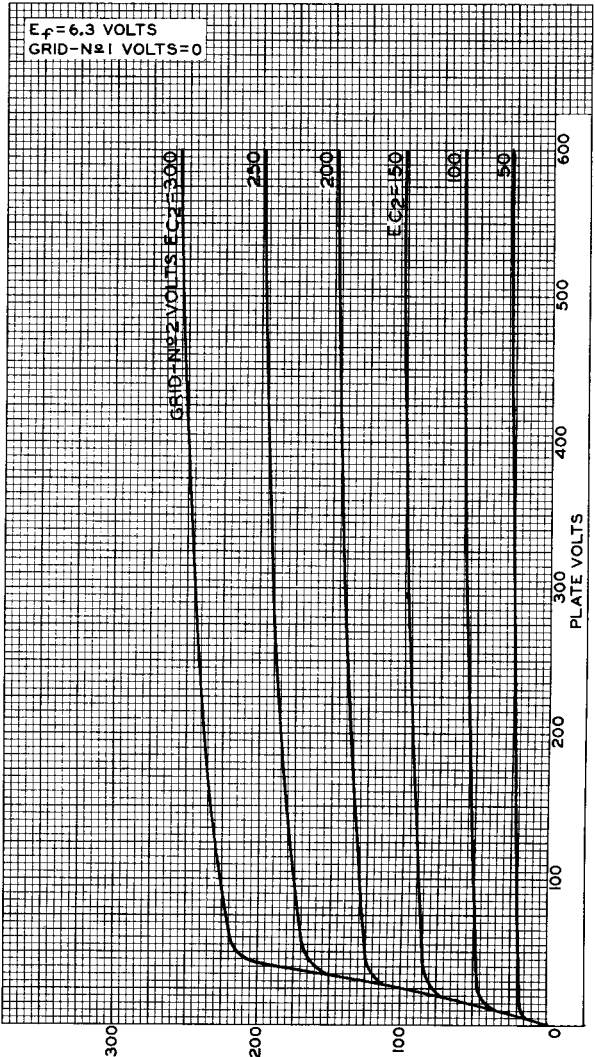


PLATE MILLIAMPERES  
ELECTRON TUBE DIVISION

92CM-9569

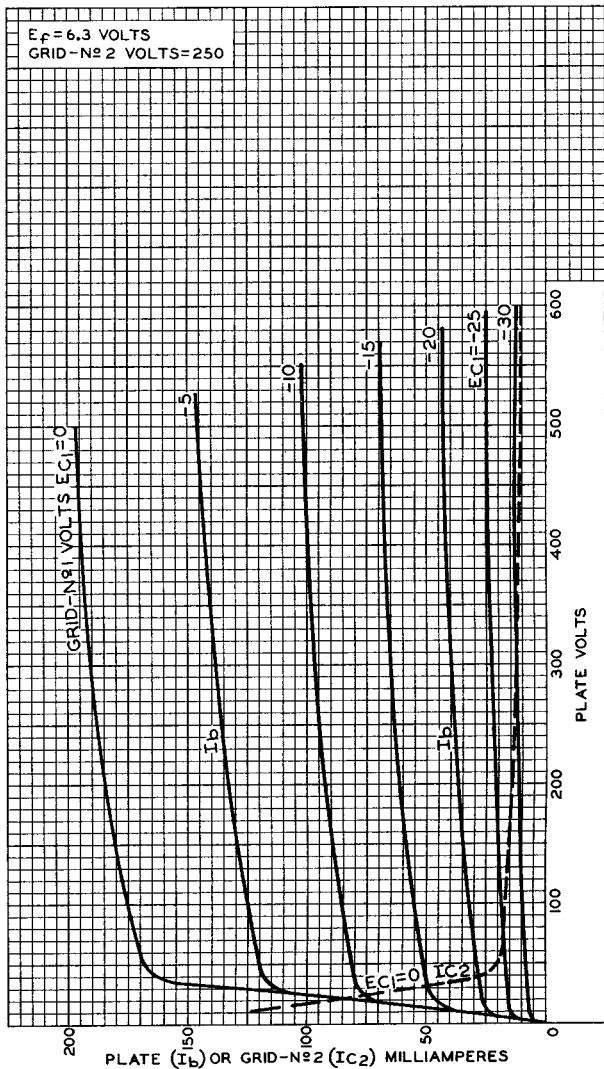
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

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## AVERAGE CHARACTERISTICS



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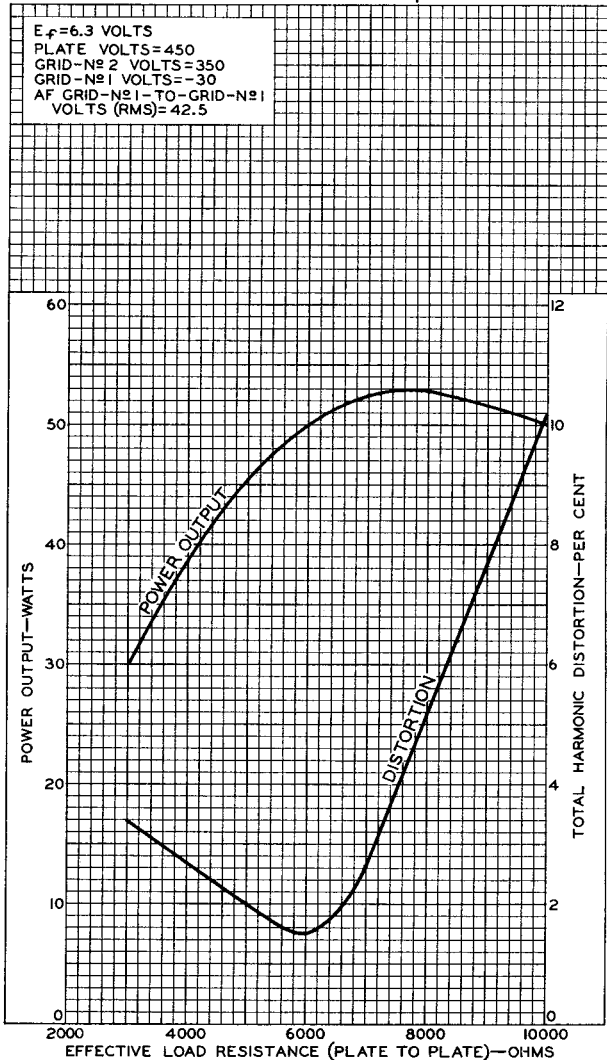


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### OPERATION CHARACTERISTICS PUSH-PULL CLASS AB<sub>1</sub>

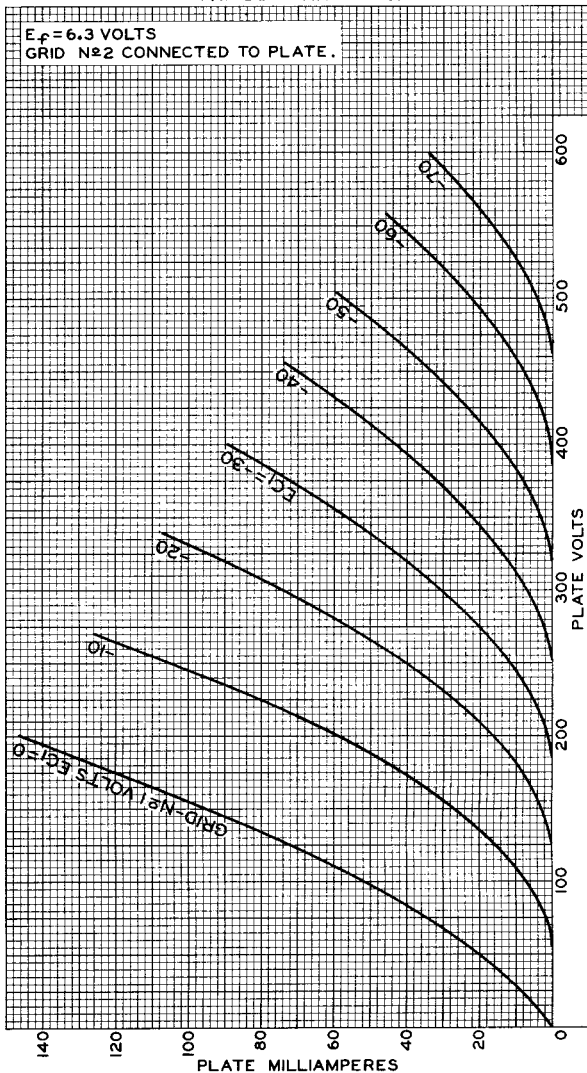
$E_f = 6.3$  VOLTS  
PLATE VOLTS = 450  
GRID-N<sup>o</sup> 2 VOLTS = 350  
GRID-N<sup>o</sup> 1 VOLTS = -30  
AF GRID-N<sup>o</sup> 1-TO-GRID-N<sup>o</sup> 1  
VOLTS (RMS) = 42.5



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AVERAGE PLATE CHARACTERISTICS  
TRIODE CONNECTION

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