

The 6083/AX-9909 is a five-electrode tube designed for use as a radio-frequency power amplifier, oscillator and audio-frequency amplifier. The anode is capable of dissipating 45 watts, and cooling is accomplished by radiation. The cathode is a coated unipotential cathode. Maximum ratings apply up to 60 megacycles.

# AMPEREX TUBE TYPE 6083 Page 1 of 3

## GENERAL CHARACTERISTICS

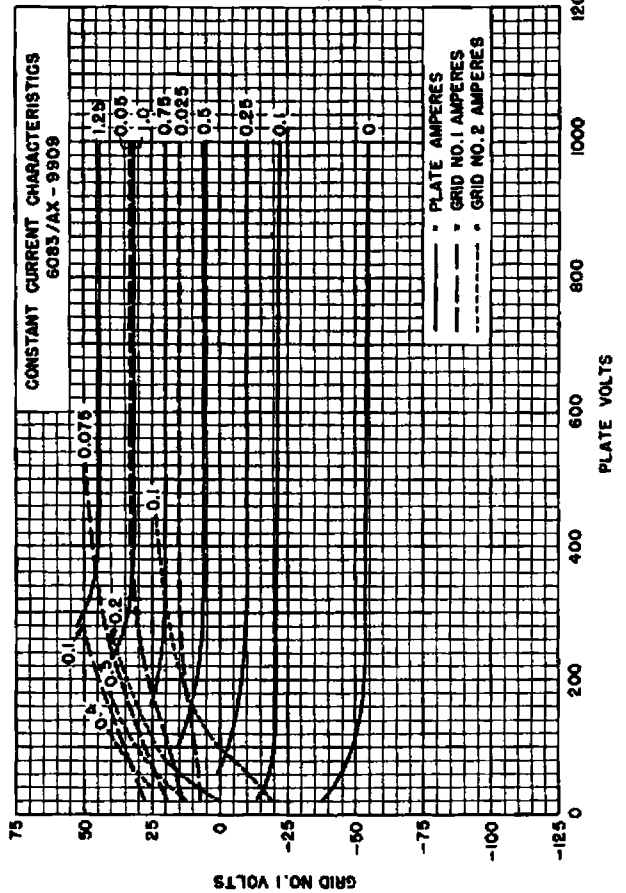
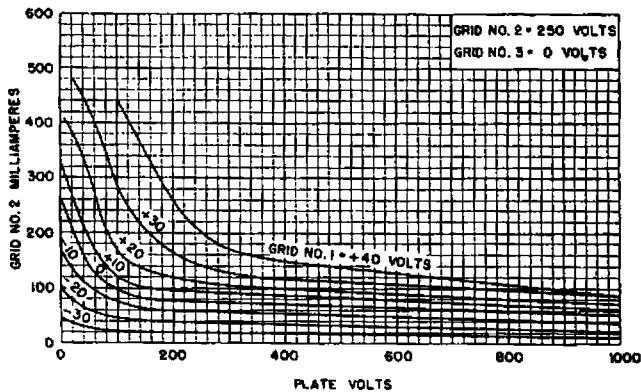
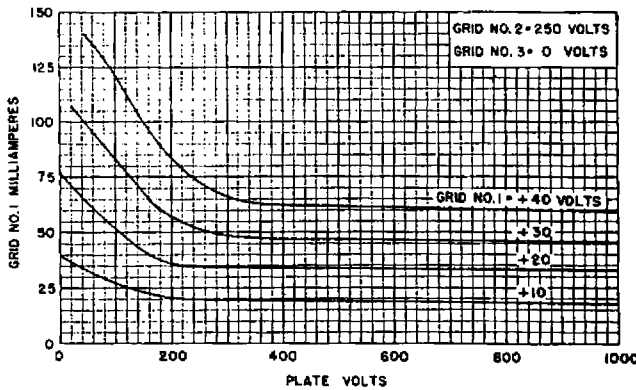
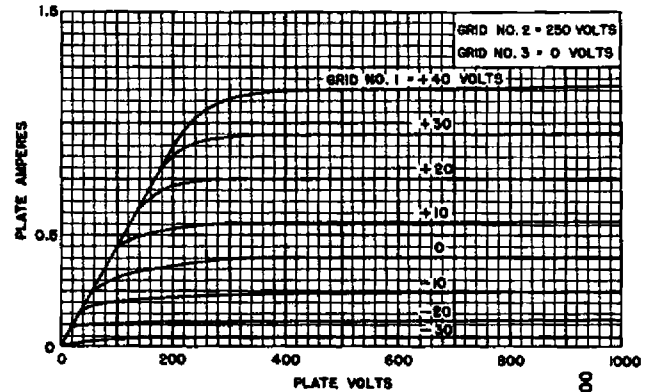
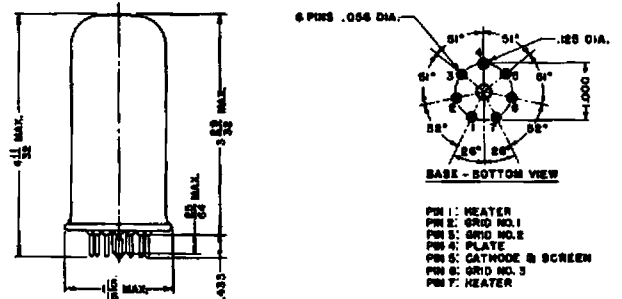
### ELECTRICAL

|   | Min. | Bogey | Max.                  |
|---|------|-------|-----------------------|
| Heater Voltage . . . . .                    | 11.4 | 12.6  | 13.8 volts            |
| Heater Current at Bogey Voltage . . . . .   | 1.22 | 1.35  | 1.48 amperes          |
| Amplification Factor                        |      |       |                       |
| G1-G2 Mu at Eb=1000 volts,                  |      |       |                       |
| Ec2=300 volts, Ib=40 ma . . . . .           | 5.4  | 6.7   | 8.0                   |
| Peak Cathode Current <sup>1</sup> . . . . . | —    | —     | 1.5 amperes           |
| Direct Interelectrode Capacitances          |      |       |                       |
| Grid-Plate . . . . .                        | —    | 0.1   | 0.2 $\mu\mu\text{f}$  |
| Input . . . . .                             | 21   | 22.5  | 24 $\mu\mu\text{f}$   |
| Output . . . . .                            | 9.8  | 11    | 12.2 $\mu\mu\text{f}$ |

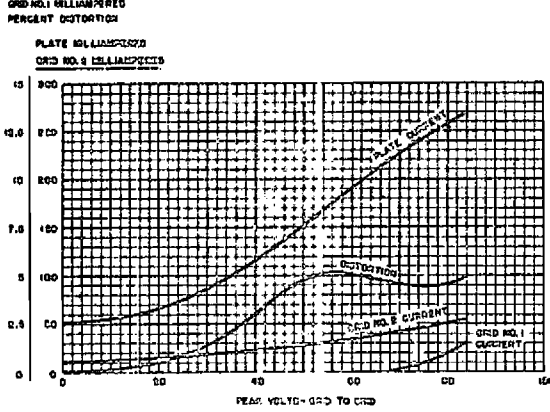
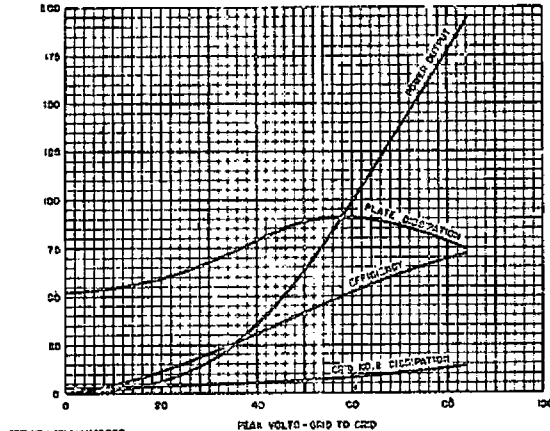
### MECHANICAL

|   |            |
|---|------------|
| Mounting Position . . . . .               | Any        |
| Maximum Glass Temperature at bottom seals | 180° C     |
| Net weight, approximate . . . . .         | 2.7 ounces |

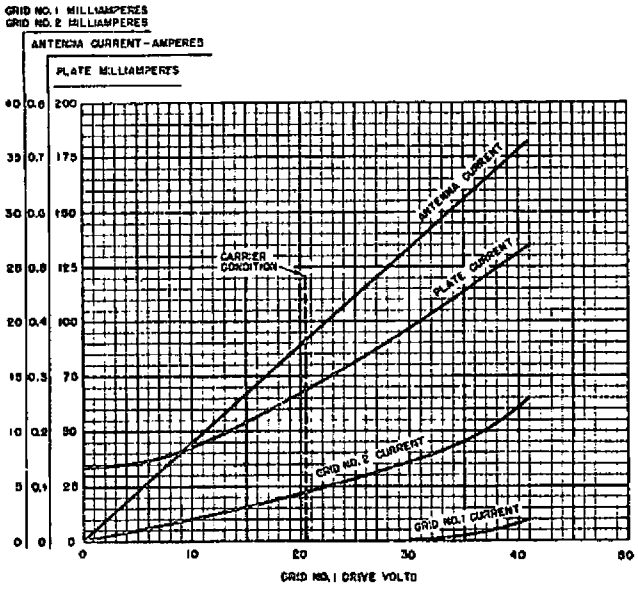
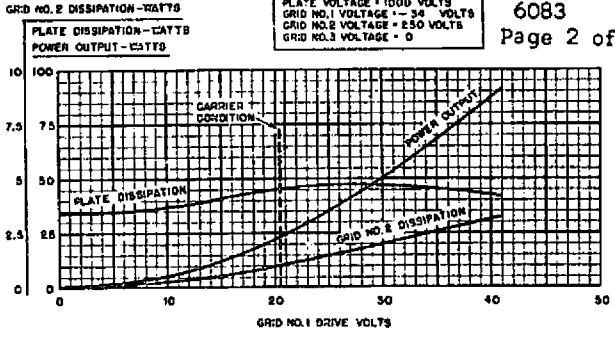
<sup>1</sup>Represents maximum usable cathode current (plate current plus current to each grid) for any condition of operation.



CLASS B MODULATOR  
TWO UNITS, PUSH-FULL  
PLATE VOLTAGE = 1000 VOLTS  
GRID NO. 2 VOLTAGE = 250 VOLTS  
GRID NO. 1 VOLTAGE = -34 VOLTS  
GRID NO. 3 VOLTAGE = 0  
RESISTANCE, PLATE TO PLATE = 6000 OHMS

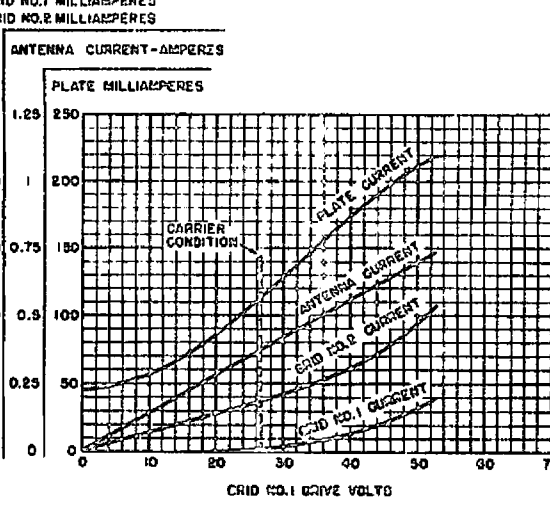
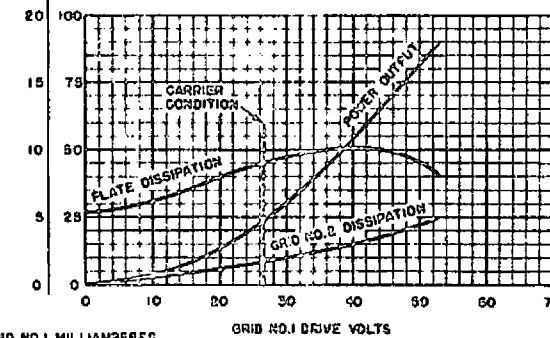


CLASS B TELEPHONY  
60 MEGACYCLE MAXIMUM  
PLATE VOLTAGE = 1000 VOLTS  
GRID NO. 1 VOLTAGE = -34 VOLTS  
GRID NO. 2 VOLTAGE = 250 VOLTS  
GRID NO. 3 VOLTAGE = 0

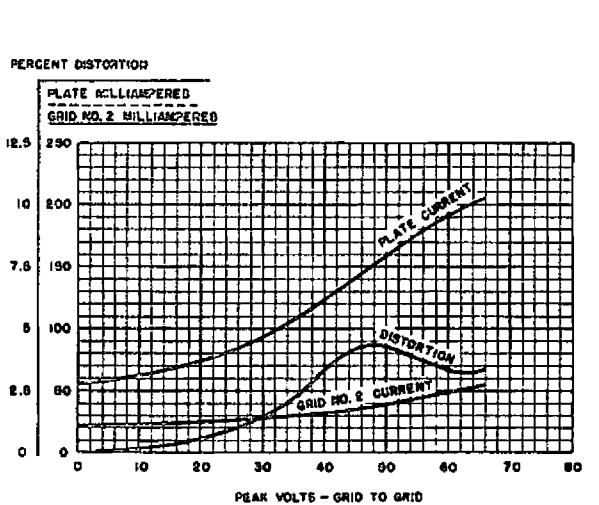
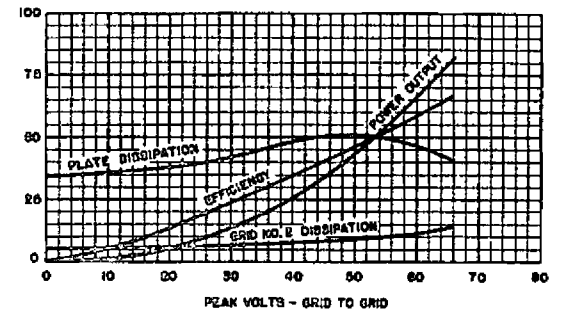


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CLASS B TELEPHONY  
60 MEGACYCLE MAXIMUM  
PLATE VOLTAGE = 600 VOLTS  
GRID NO. 1 VOLTAGE = -30.9 VOLTS  
GRID NO. 2 VOLTAGE = 250 VOLTS  
GRID NO. 3 VOLTAGE = 0



CLASS B MODULATOR  
TWO UNITS, PUSH-FULL  
PLATE VOLTAGE = 600 VOLTS  
GRID NO. 2 VOLTAGE = 250 VOLTS  
GRID NO. 1 VOLTAGE = -33 VOLTS  
GRID NO. 3 VOLTAGE = 0  
RESISTANCE, PLATE TO PLATE = 6320 OHMS



MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

A.F. Power Amplifier and Modulator—Class B

| Maximum Ratings, Absolute Values               | CCS                |                 |  |
|--|--------------------|-----------------|--|
|  | D.C. Plate Voltage | 1000 volts max. |  |
| D.C. Grid No. 2 Voltage                        | 300 volts max.     |                 |  |
| Maximum Signal D.C. Plate Current <sup>1</sup> | 210 ma max.        |                 |  |
| Maximum Signal Plate Input <sup>1</sup>        | 180 watts max.     |                 |  |
| Maximum Signal Grid No. 2 Input <sup>1</sup>   | 7 watts max.       |                 |  |
| Plate Dissipation <sup>1</sup>                 | 45 watts max.      |                 |  |

Typical Operation

Unless otherwise specified, values are for two tubes

|  | CCS   | CCS   | CCS        |
|--|-------|-------|------------|
| D.C. Plate Voltage                         | 600   | 800   | 1000 volts |
| D.C. Grid No. 3 Voltage                    | 0     | 0     | 0 volts    |
| D.C. Grid No. 2 Voltage                    | 250   | 250   | 250 volts  |
| D.C. Grid No. 1 Voltage                    | 33    | 33.5  | 34 volts   |
| Peak A.F. Grid No. 1 to Grid No. 1 Voltage | 66    | 69    | 84 volts   |
| Zero Signal D.C. Plate Current             | 2x28  | 2x28  | 2x26 ma    |
| Maximum Signal D.C. Plate Current          | 2x102 | 2x108 | 2x134 ma   |
| Zero Signal D.C. Grid No. 2 Current        | 2x11  | 2x8   | 2x5 ma     |
| Max. Signal D.C. Grid No. 2 Current        | 2x28  | 2x27  | 2x28 ma    |
| Effective Load Resistance, Plate to Plate  | 6320  | 7560  | 8800 ohms  |
| Max. Signal Driving Power, approx.         | 0     | 0     | 0.06 watts |
| Max. Signal Power Output, approx.          | 82    | 110   | 194 watts  |

R.F. Power Amplifier—Class B

Carrier conditions per tube for use with a maximum modulation factor of 1.0

Maximum Ratings, Absolute Values

|                         | CCS             |  |  |
|-------------------------|-----------------|--|--|
| D.C. Plate Voltage      | 1000 volts max. |  |  |
| D.C. Grid No. 3 Voltage | 0 volts max.    |  |  |
| D.C. Grid No. 2 Voltage | 300 volts max.  |  |  |
| D.C. Plate Current      | 170 ma max.     |  |  |
| Plate Input             | 72 watts max.   |  |  |
| Grid No. 3 Input        | — watts max.    |  |  |
| Grid No. 2 Input        | 6 watts max.    |  |  |
| Plate Dissipation       | 45 watts max.   |  |  |

Typical Operation

|                              | CCS  | CCS  | CCS        |
|------------------------------|------|------|------------|
| D.C. Plate Voltage           | 600  | 800  | 1000 volts |
| D.C. Grid No. 3 Voltage      | 0    | 0    | 0 volts    |
| D.C. Grid No. 2 Voltage      | 250  | 250  | 250 volts  |
| D.C. Grid No. 1 Voltage      | 30.5 | 33   | 34 volts   |
| Peak R.F. Grid No. 1 Voltage | 26.5 | 22.5 | 20.5 volts |

|   |      |      |            |
|---|------|------|------------|
| D.C. Plate Current                      | 114  | 85   | 68 ma      |
| D.C. Grid No. 2 Current                 | 7.5  | 6    | 4.5 ma     |
| D.C. Grid No. 1 Current, approximate    | 0    | 0    | 0 ma       |
| Driving Power, approximate <sup>2</sup> | 0.08 | 0.17 | 0.08 watts |
| Power Output, approximate               | 23   | 23   | 23 watts   |

Plate and Screen Grid Modulated

R.F. Power Amplifier — Class C — Telephony

Carrier conditions per tube for use with a maximum modulation factor of 1.0

Maximum Ratings, Absolute Values

|                         | CCS             |  |  |
|-------------------------|-----------------|--|--|
| D.C. Plate Voltage      | 800 volts max.  |  |  |
| D.C. Grid No. 3 Voltage | 0 volts max.    |  |  |
| D.C. Grid No. 2 Voltage | 300 volts max.  |  |  |
| D.C. Grid No. 1 Voltage | —250 volts max. |  |  |
| D.C. Plate Current      | 170 ma max.     |  |  |
| D.C. Grid No. 1 Current | 12 ma max.      |  |  |
| Plate Input             | 136 watts max.  |  |  |
| Grid No. 2 Input        | 6 watts max.    |  |  |
| Plate Dissipation       | 30 watts max.   |  |  |

Typical Operation

|                                      | CCS  | CCS        |
|--------------------------------------|------|------------|
| D.C. Plate Voltage                   | 600  | 800 volts  |
| D.C. Grid No. 3 Voltage              | 0    | 0 volts    |
| D.C. Grid No. 2 Voltage              | 250  | 250 volts  |
| D.C. Grid No. 1 Voltage              | —120 | —120 volts |
| Peak R.F. Grid No 1 Voltage          | 150  | 150 volts  |
| D.C. Plate Current                   | 120  | 120 ma     |
| D.C. Grid No. 2 Current              | 23   | 23 ma      |
| D.C. Grid No. 1 Current, approximate | 6.5  | 6.5 ma     |
| Driving Power, approximate           | 0.9  | 0.9 watts  |
| Power Output, approximate            | 51   | 75 watts   |

Suppressor-Modulated R.F. Power Amplifier

Class C—Telephony

Carrier conditions per tube for use with a maximum modulation factor of 1.0

Maximum Ratings, Absolute Values

|                         | CCS             |  |  |
|-------------------------|-----------------|--|--|
| D.C. Plate Voltage      | 1000 volts max. |  |  |
| D.C. Grid No. 3 Voltage | —150 volts max. |  |  |
| D.C. Grid No. 2 Voltage | 300 volts max.  |  |  |
| D.C. Grid No. 1 Voltage | —250 volts max. |  |  |
| D.C. Plate Current      | 136 ma max.     |  |  |
| D.C. Grid No. 1 Current | 12 ma max.      |  |  |
| Plate Input             | 72 watts max.   |  |  |
| Grid No. 3 Input        | 0 watts max.    |  |  |
| Grid No. 2 Input        | 6 watts max.    |  |  |
| Plate Dissipation       | 45 watts max.   |  |  |

Typical Operation

|                                      | CCS  | CCS  | CCS        |
|--------------------------------------|------|------|------------|
| D.C. Plate Voltage                   | 600  | 800  | 1000 volts |
| D.C. Grid No. 3 Voltage              | —60  | —80  | —100 volts |
| D.C. Grid No. 2 Voltage              | 150  | 150  | 150 volts  |
| D.C. Grid No. 1 Voltage              | —100 | —100 | —100 volts |
| Peak A.F. Grid No. 3 Voltage         | 60   | 80   | 100 volts  |
| Peak R.F. Grid No. 1 Voltage         | 150  | 145  | 140 volts  |
| D.C. Plate Current                   | 111  | 88.5 | 72 ma      |
| D.C. Grid No. 2 Current              | 26   | 25   | 24 ma      |
| D.C. Grid No. 1 Current, approximate | 11   | 11   | 10 ma      |
| Driving Power, approximate           | 1.5  | 1.5  | 1.3 watts  |
| Power Output, approximate            | 22   | 26   | 27 watts   |

R.F. Power Amplifier and Oscillator Class C—Telegraphy

Key-down conditions per tube without amplitude modulation<sup>3</sup>

Maximum Ratings, Absolute Values

|                         | CCS             |  |  |
|-------------------------|-----------------|--|--|
| D.C. Plate Voltage      | 1000 volts max. |  |  |
| D.C. Grid No. 3 Voltage | 0 volts max.    |  |  |
| D.C. Grid No. 2 Voltage | 300 volts max.  |  |  |
| D.C. Grid No. 1 Voltage | —250 volts max. |  |  |
| D.C. Plate Current      | 120 ma max.     |  |  |
| D.C. Grid No. 1 Current | 12 ma max.      |  |  |
| Plate Input             | 210 watts max.  |  |  |
| Grid No. 2 Input        | 7 watts max.    |  |  |
| Plate Dissipation       | 45 watts max.   |  |  |

Typical Operation

|                                      | CCS  | CCS  | CCS        |
|--------------------------------------|------|------|------------|
| D.C. Plate Voltage                   | 600  | 800  | 1000 volts |
| D.C. Grid No. 3 Voltage              | 0    | 0    | 0 volts    |
| D.C. Grid No. 2 Voltage              | 250  | 250  | 250 volts  |
| D.C. Grid No. 1 Voltage              | —100 | —110 | —120 volts |
| Peak R.F. Grid No 1 Voltage          | 124  | 134  | 144 volts  |
| D.C. Plate Current                   | 205  | 190  | 177 ma     |
| D.C. Grid No. 2 Current              | 28   | 28   | 28 ma      |
| D.C. Grid No. 1 Current, approximate | 7.5  | 6    | 5 ma       |

| Driving Power, approximate | 0.84 | 0.70 | 0.65 watts |
|----------------------------|------|------|------------|
| Power Output, approximate  | 78   | 107  | 132 watts  |

Electrical Data and Limits

Maximum ratings apply up to 60 megacycles.

| Characteristic     | Conditions   | Limits               |       |          |
|--------------------|--|----------------------|-------|----------|
|                    |  | Min.                 | Boqey | Max.     |
| Grid No. 1 Voltage | E <sub>b</sub> =250 V<br>E <sub>c2</sub> =250 V<br>I <sub>b</sub> =850 ma  | E <sub>c1</sub> : —  | —     | 40 volts |
| Grid No. 2 Current | E <sub>b</sub> =250 V<br>E <sub>c2</sub> =250 V<br>I <sub>b</sub> =850 ma  | I <sub>c2</sub> : —  | —     | 200 ma   |
| Grid No. 1 Current | E <sub>b</sub> =250 V<br>E <sub>c2</sub> =250 V<br>I <sub>b</sub> =850 ma  | I <sub>c1</sub> : —  | —     | 70 ma    |
| Plate Current      | E <sub>b</sub> =1000 V<br>E <sub>c2</sub> =300 V<br>E <sub>c1</sub> =—55 V   | I <sub>b</sub> : —   | —     | 5 ma     |
| Plate Current      | E <sub>b</sub> =1000 V<br>E <sub>c2</sub> =300 V<br>E <sub>c1</sub> =—35 V   | I <sub>b</sub> : 27  | 50    | 73 ma    |
| Plate Current      | E <sub>b</sub> =1000 V<br>E <sub>c2</sub> =300 V<br>E <sub>c1</sub> =—25 V   | I <sub>b</sub> : 84  | 128   | 172 ma   |
| Grid No. 2 Current | E <sub>b</sub> =1000 V<br>E <sub>c2</sub> =300 V<br>E <sub>c1</sub> =—35 V   | I <sub>c2</sub> : —  | —     | 5 ma     |
| Power Output       | E <sub>b</sub> =1000 V<br>E <sub>c2</sub> =250 V<br>E <sub>c1</sub> =—120 V<br>I <sub>b</sub> =175 ma<br>f=60 megacycles | P <sub>o</sub> : 105 | —     | — watts  |

<sup>1</sup>Averaged over any audio-frequency cycle of sine-wave form.  
<sup>2</sup>At crest of audio-frequency cycle with modulation factor of 1.0.

<sup>3</sup>Modulation essentially negative may be used if the positive peak of the envelope does not exceed 115 per cent of the carrier conditions.