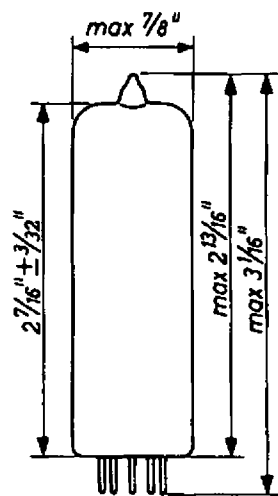


POWER PENTODE

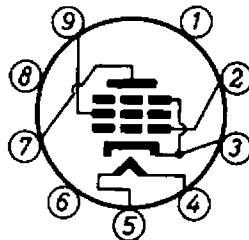
MECHANICAL DATA

|                          |                     |
|--------------------------|---------------------|
| Cathode                  | Coated unipotential |
| Base                     | E9-1                |
| Bulb                     | T6 $\frac{1}{2}$    |
| Mounting position        | Any                 |
| RETMA basing designation | 9CV                 |

TUBE OUTLINE



BOTTOM VIEW OF BASE



BASE PIN No.

|   |                      |
|---|----------------------|
| 1 | Internally connected |
| 2 | Grid No.1            |
| 3 | Cathode, grid No.3   |
| 4 | Heater               |
| 5 | Heater               |
| 6 | Internally connected |
| 7 | Plate                |
| 8 | Internally connected |
| 9 | Grid No.2            |

ELEMENT

ELECTRICAL DATA

HEATER DATA

|                |           |
|----------------|-----------|
| Heater voltage | 45 volts  |
| Heater current | 100 mamps |

DIRECT INTERELECTRODE CAPACITANCES

|  |                   |
|--|-------------------|
| Grid No.1 to all other elements except plate | 12 $\mu$ F        |
| Plate to all other elements except grid No.1 | 6 $\mu$ F         |
| Plate to grid No.1                           | max. 0.6 $\mu$ F  |
| Grid No.1 to heater                          | max. 0.25 $\mu$ F |

MAXIMUM RATINGS (Design Center Values)

|                                     |            |
|-------------------------------------|------------|
| Plate voltage                       | 250 volts  |
| Plate voltage without plate current | 550 volts  |
| Plate dissipation                   | 12 watts   |
| Grid No.2 voltage                   | 200 volts  |
| Grid No.2 voltage without current   | 550 volts  |
| Grid No.2 dissipation               | 1.75 watts |
| Grid No.2 peak dissipation          | 6 watts    |

MAXIMUM RATINGS (Design Center Values) continued

|   |           |
|---|-----------|
| Cathode current                                     | 100 mamps |
| Grid No.1 circuit resistance<br>with automatic bias | 1 megohm  |
| Voltage between heater and cathode                  | 200 volts |

TYPICAL CHARACTERISTICS

|   |        |        |                        |
|---|--------|--------|------------------------|
| Plate voltage   | 100    | 170    | 200 volts              |
| Grid No.2 voltage   | 100    | 170    | - volts                |
| Grid No.2 supply voltage  | -      | -      | 200 volts              |
| Grid No.2 series resistor   | -      | -      | 470 ohms <sup>1)</sup> |
| Grid No.1 bias  | -6.7   | -12.5  | -17.3 volts            |
| Plate current   | 43     | 70     | 60 mamps               |
| Grid No.2 current   | 3.0    | 5.0    | 4.1 mamps              |
| Transconductance  | 9 000  | 10 000 | 8800 micromhos         |
| Plate resistance  | 23 000 | 23 000 | 28 000 ohms            |
| Amplification factor of<br>grid No.2 with respect<br>to grid No.1 | 8      | 8      | 8                      |

OPERATING CHARACTERISTICS class A, one tube

|                                  |      |       |                        |
|----------------------------------|------|-------|------------------------|
| Plate voltage                    | 100  | 170   | 200 volts              |
| Grid No.2 voltage                | 100  | 170   | - volts                |
| Grid No.2 supply voltage         | -    | -     | 200 volts              |
| Grid No.2 series resistor        | -    | -     | 470 ohms <sup>1)</sup> |
| Grid No.1 bias                   | -6.7 | -12.5 | -17.3 volts            |
| Plate load resistance            | 2400 | 2400  | 2400 ohms              |
| Input A.F. grid No.1<br>voltage  | 4.3  | 7.0   | 7.8 volts(rms)         |
| Zero-signal plate current        | 43   | 70    | 60 mamps               |
| Max. signal plate current        | 43   | 70    | 62.5 mamps             |
| Zero-signal grid No.2<br>current | 3.0  | 5.0   | 4.1 mamps              |
| Max.signal grid No.2<br>current  | 11   | 22    | 12.5 mamps             |
| Total harmonic distortion        | 10   | 10    | 10 percents            |
| Power output                     | 1.9  | 5.6   | 5.2 watts              |

<sup>1)</sup>Not bypassed

OPERATING CHARACTERISTICS class B push-pull, two tubes

|                                 |        |                 |
|---------------------------------|--------|-----------------|
| Plate voltage                   | 100    | 170 volts       |
| Grid No.2 voltage               | 100    | 170 volts       |
| Grid No.1 bias                  | -11.4  | -20.5 volts     |
| Load resistance, plate to plate | 3500   | 3500 ohms       |
| Input A.F. grid No.1 voltage    | 7.9    | 14.6 volts(rms) |
| Zero-signal plate current       | 2x10   | 2x15 mamps      |
| Max.-signal plate current       | 2x30.5 | 2x57.5 mamps    |
| Zero-signal grid No.2 current   | 2x0.55 | 2x0.7 mamp      |
| Max.-signal grid No.2 current   | 2x7.1  | 2x20.5 mamps    |
| Total harmonic distortion       | 2.8    | 4.8 percents    |
| Power output                    | 3.7    | 13.5 watts      |

OPERATING CHARACTERISTICS class AB push-pull; two tubes

|                                 |       |                 |
|---------------------------------|-------|-----------------|
| Plate voltage                   | 100   | 170 volts       |
| Grid No.2 voltage               | 100   | 170 volts       |
| Common cathode resistor         | 135   | 120 ohms        |
| Load resistance, plate to plate | 3500  | 3500 ohms       |
| Input A.F. grid No.1 voltage    | 7.0   | 13.1 volts(rms) |
| Zero-signal plate current       | 2x29  | 2x56.5 mamps    |
| Max.-signal plate current       | 2x31  | 2x57.5 mamps    |
| Zero-signal grid No.2 current   | 2x1.6 | 2x3.0 mamps     |
| Max.-signal grid No.2 current   | 2x7.0 | 2x20.5 mamps    |
| Total harmonic distortion       | 3.0   | 4.5 percents    |
| Output power                    | 3.6   | 13.0 watts      |

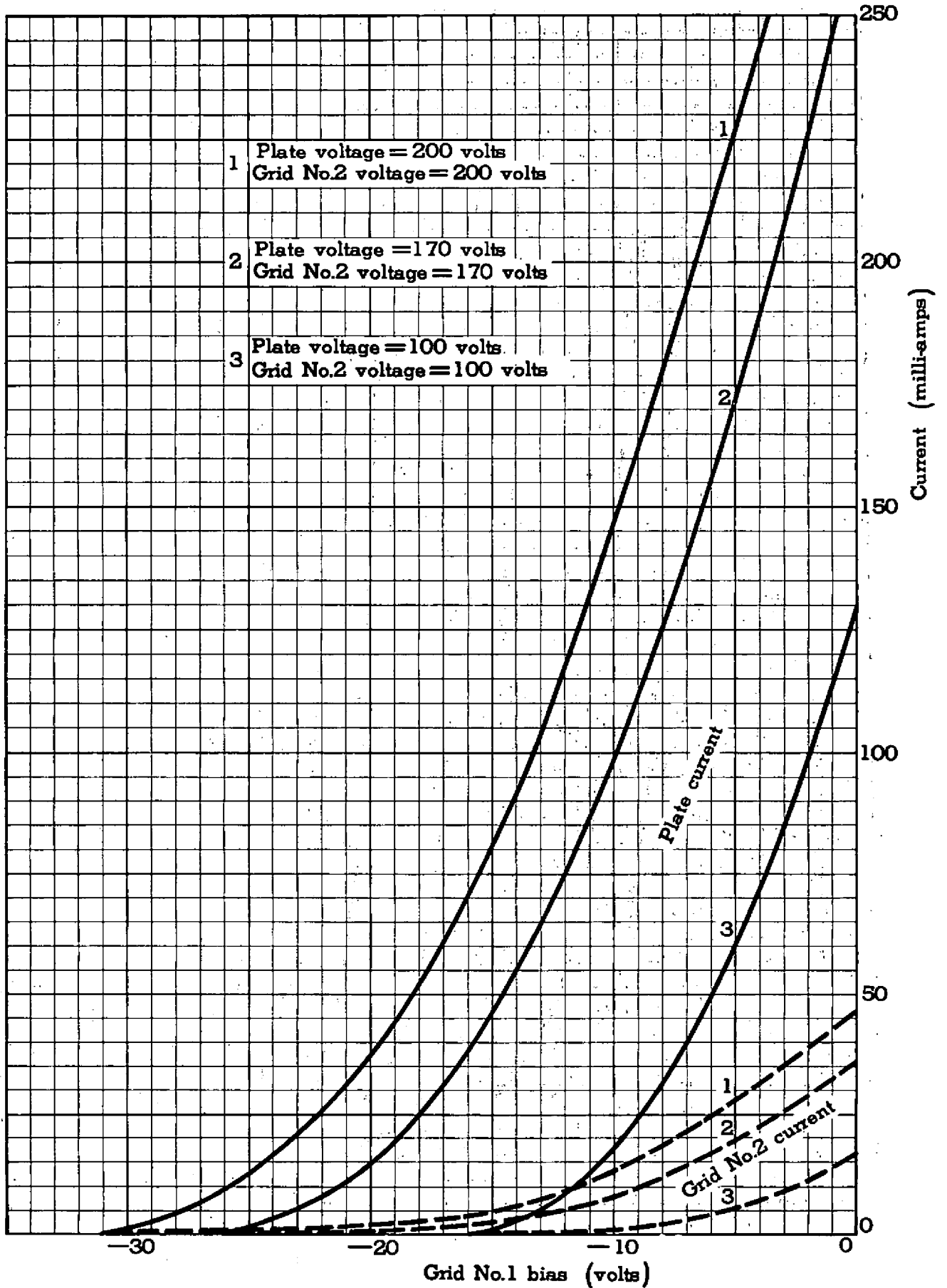
OPERATING CHARACTERISTICS IN TRIODE CONNECTION class A, one tube (Grid No.2 connected to plate)

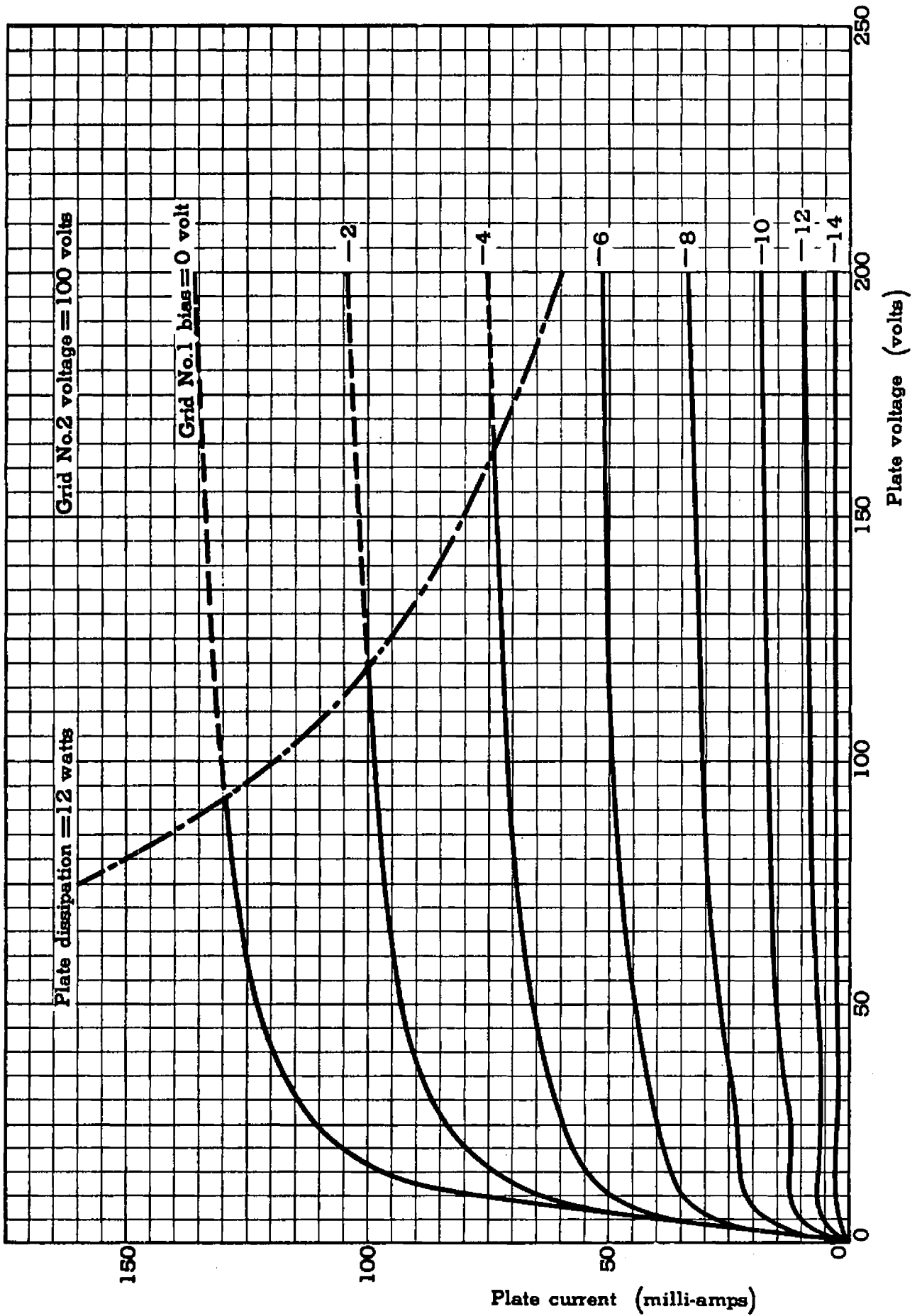
|                           |      |                 |
|---------------------------|------|-----------------|
| Plate voltage             | 100  | 170 volts       |
| Grid bias                 | -8.0 | -15.1 volts     |
| Plate load resistance     | 1200 | 1200 ohms       |
| Input A.F. grid voltage   | 5.7  | 10.8 volts(rms) |
| Zero-signal plate current | 30   | 50 mamps        |
| Max.-signal plate current | 36.1 | 62 mamps        |
| Total harmonic distortion | 10   | 10 percents     |
| Output power              | 0.52 | 2.1 watts       |

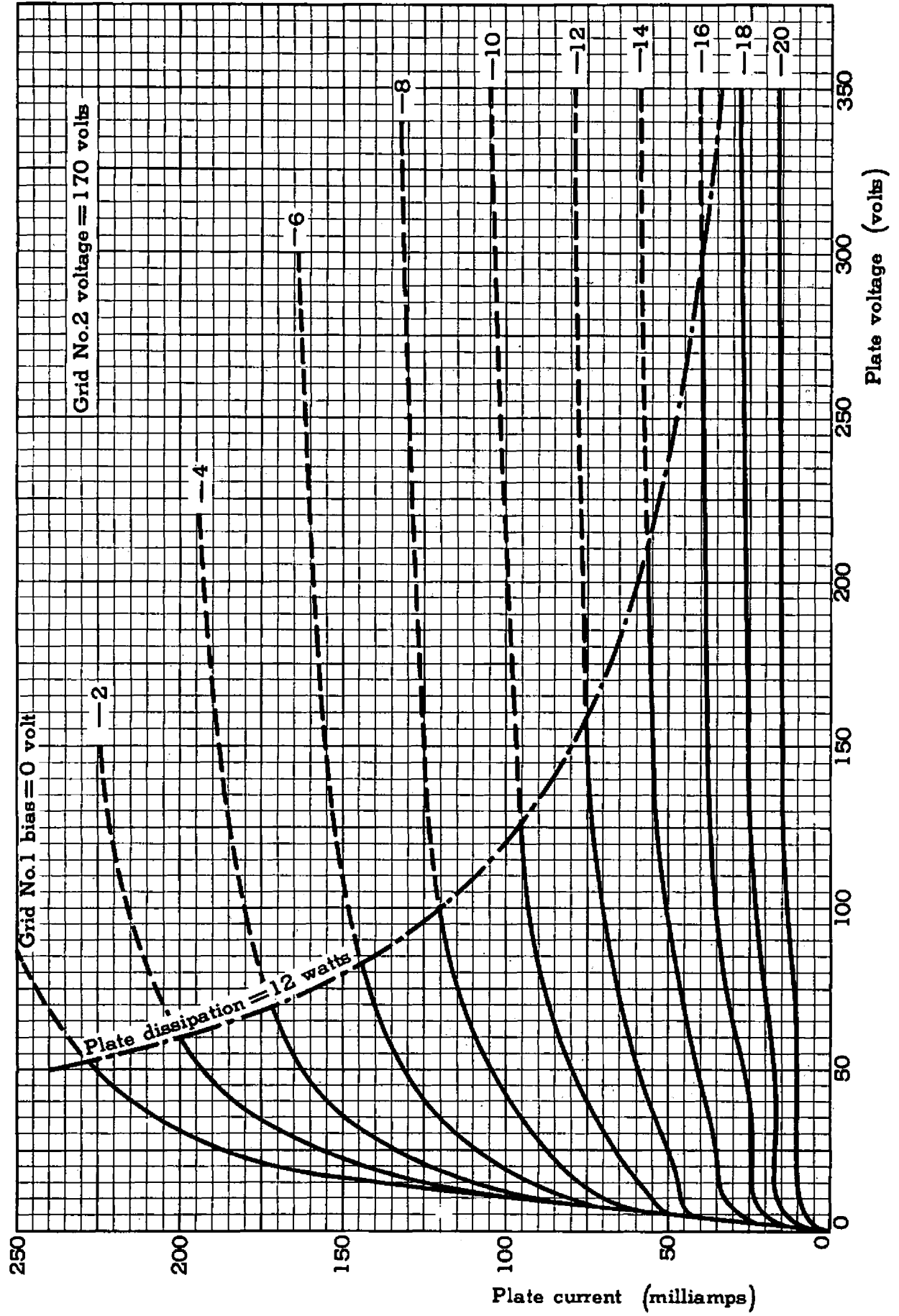
# 45B5

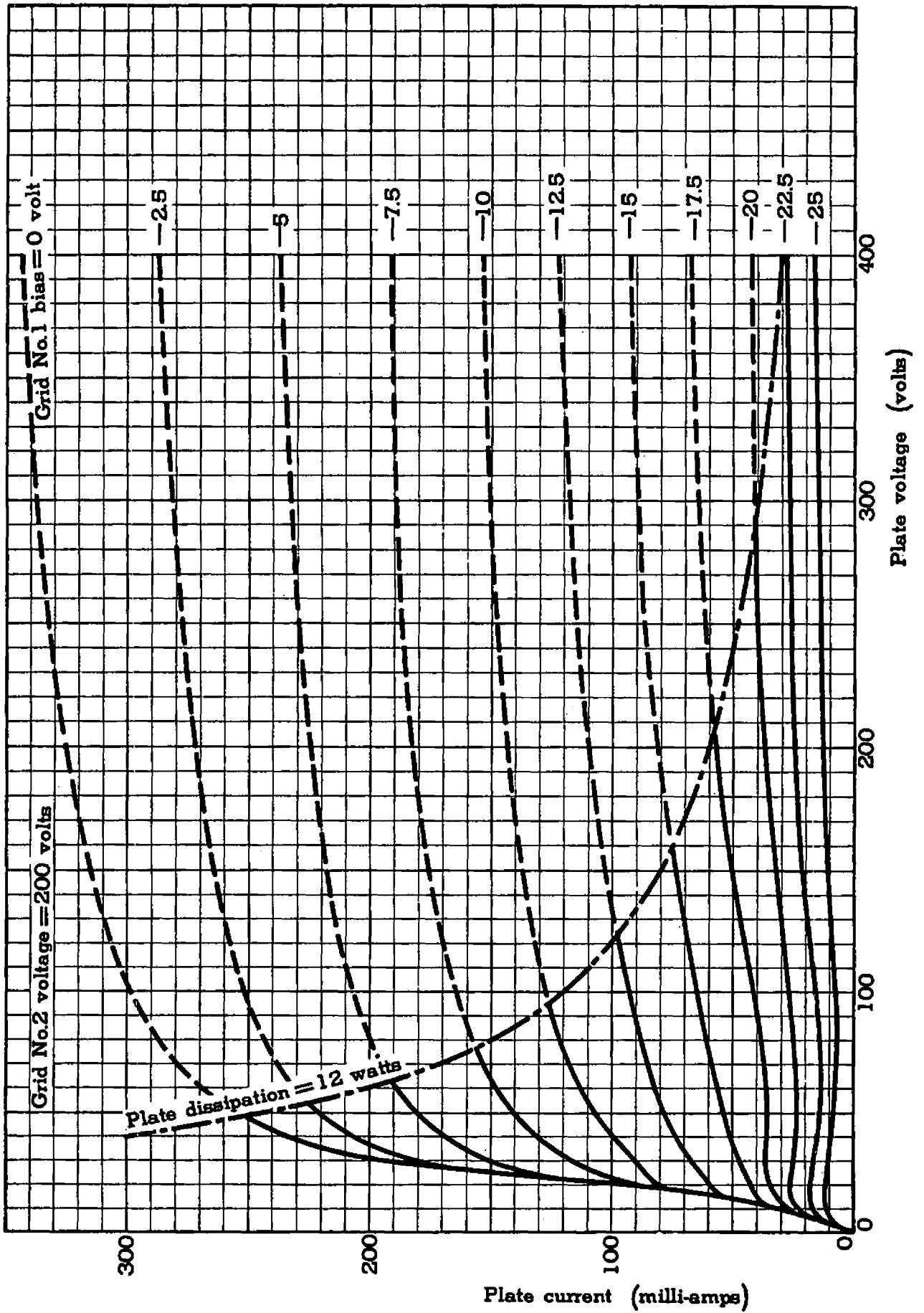
OPERATING CHARACTERISTICS IN TRIODE CONNECTION class AB push-pull, two tubes (Grid No.2 connected to plate)

|                                 |      |                 |
|---------------------------------|------|-----------------|
| Plate voltage                   | 100  | 170 volts       |
| Cathode resistor                | 270  | 270 ohms        |
| Load resistance, plate to plate | 3500 | 3500 ohms       |
| Input A.F. grid voltage         | 7.3  | 13.4 volts(rms) |
| Zero-signal plate current       | 2x18 | 2x32.5 mamps    |
| Max.-signal plate current       | 2x20 | 2x36 mamps      |
| Total harmonic distortion       | 3.2  | 3.8 per cents   |
| Output power                    | 1.0  | 3.9 watts       |











Input A.F. voltage (volts, R.M.S.)

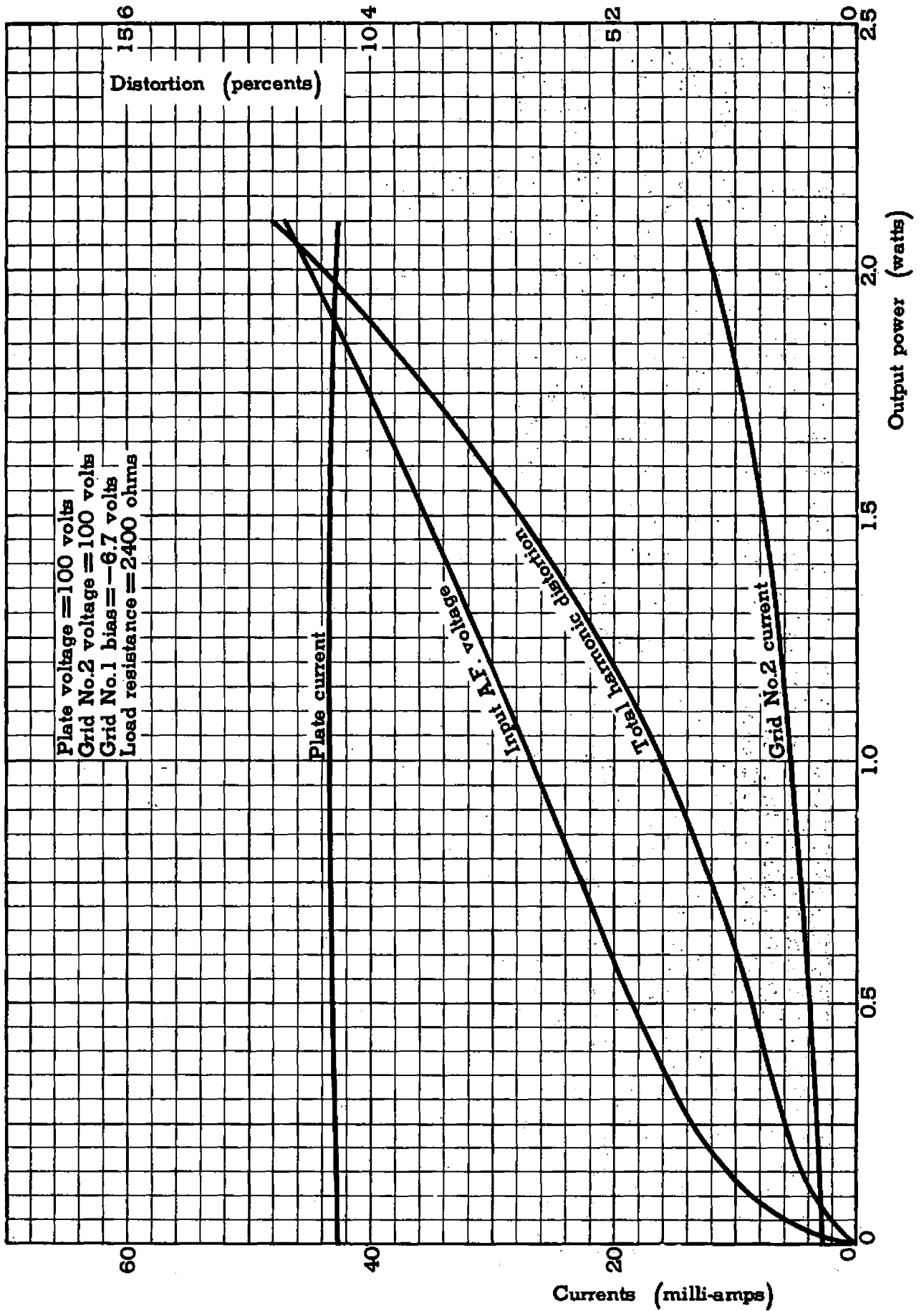
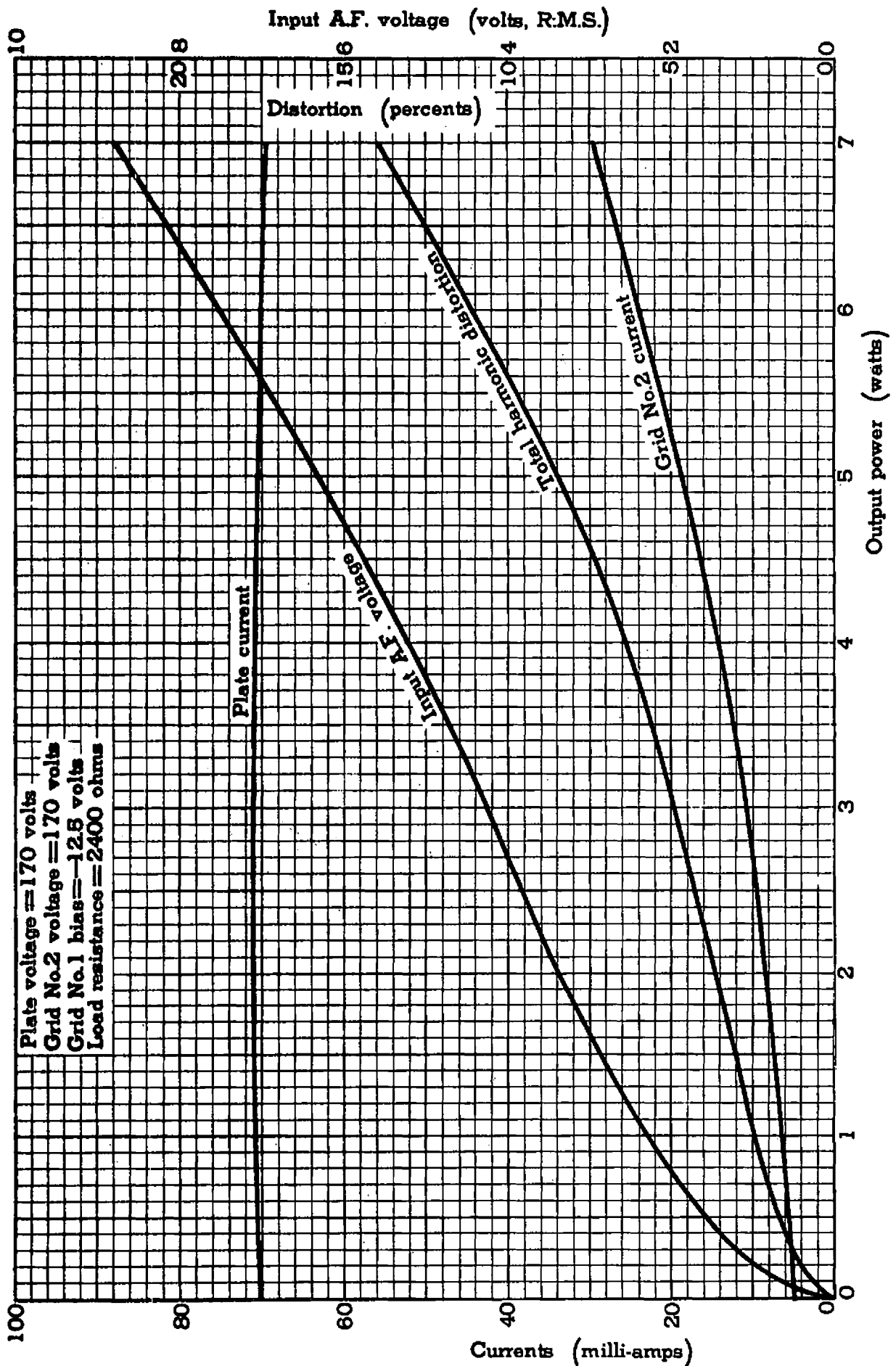
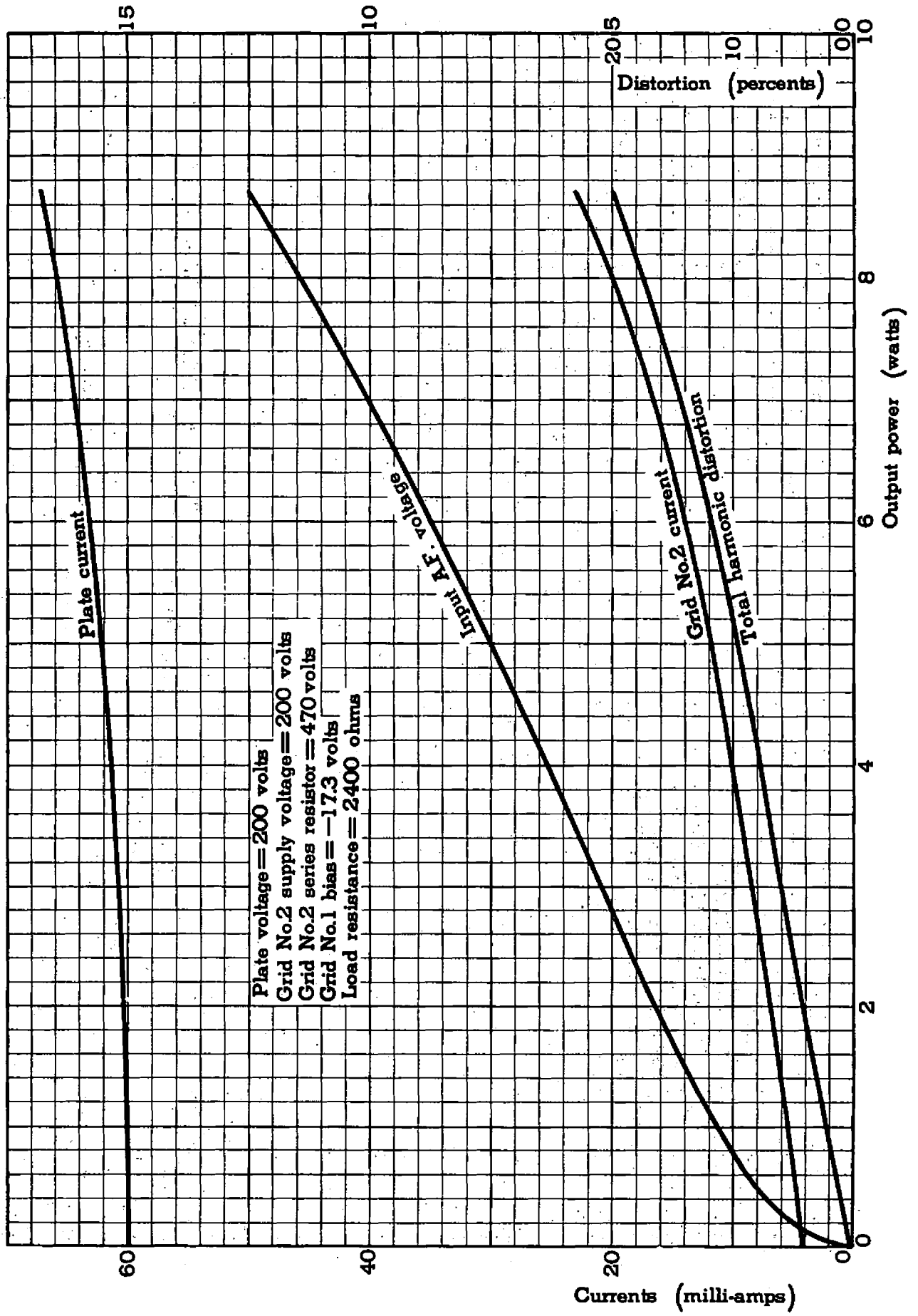


Plate voltage = 100 volts  
 Grid No.2 voltage = 100 volts  
 Grid No.1 bias = -6.7 volts  
 Load resistance = 2400 ohms

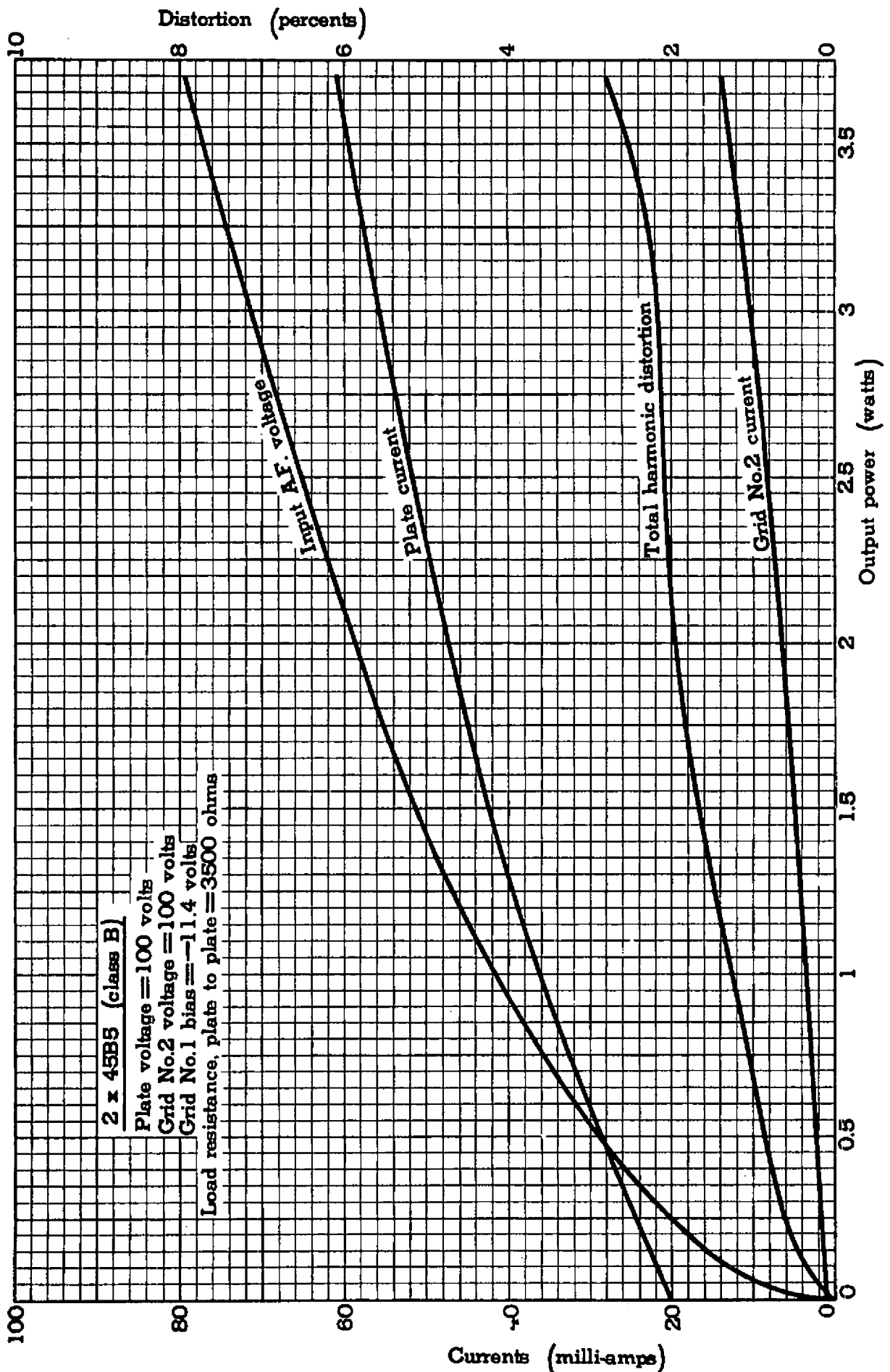


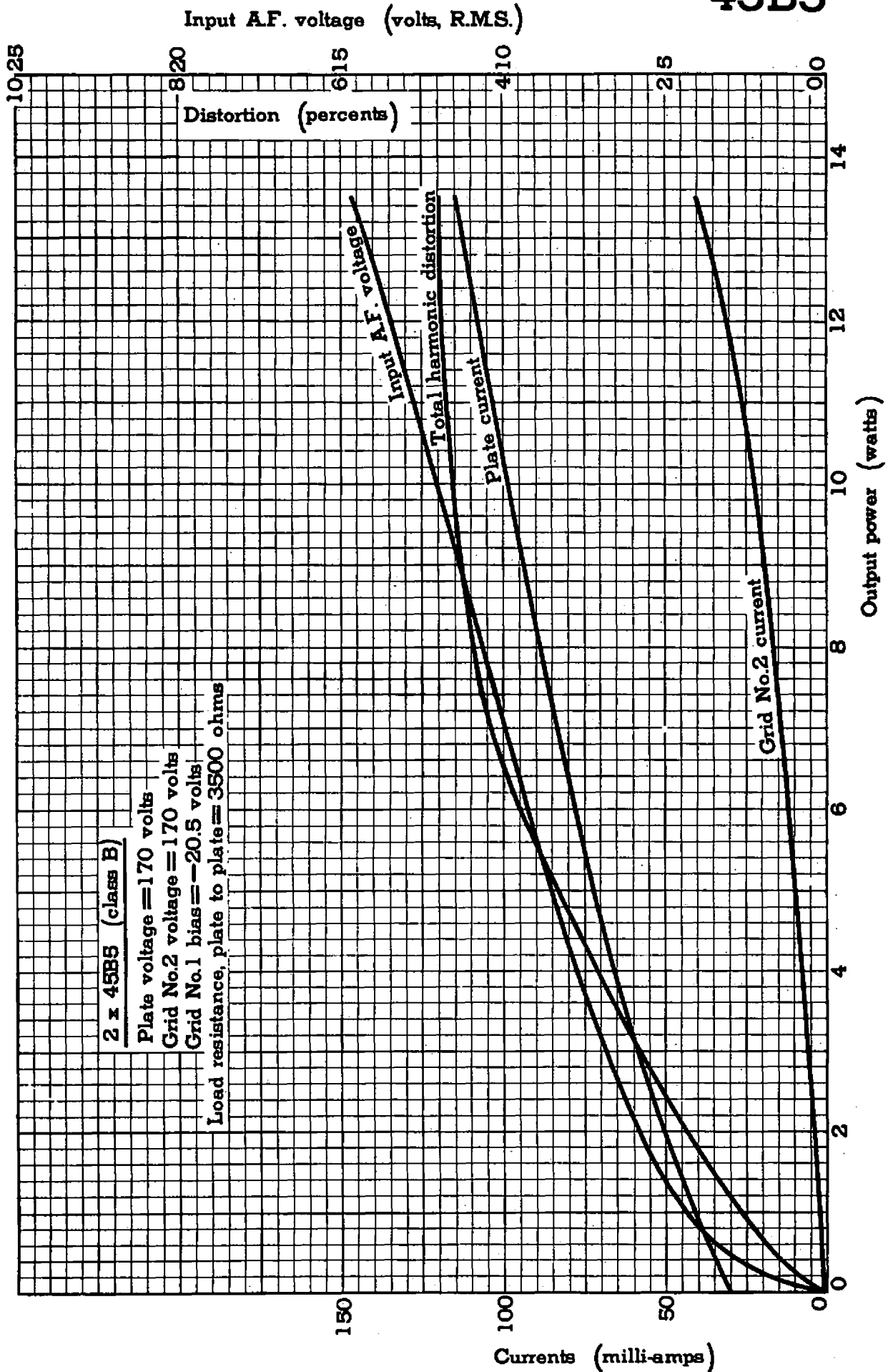
Input A.F. voltage (volts R.M.S.)



Input A.F. voltage (volts, RMS.)

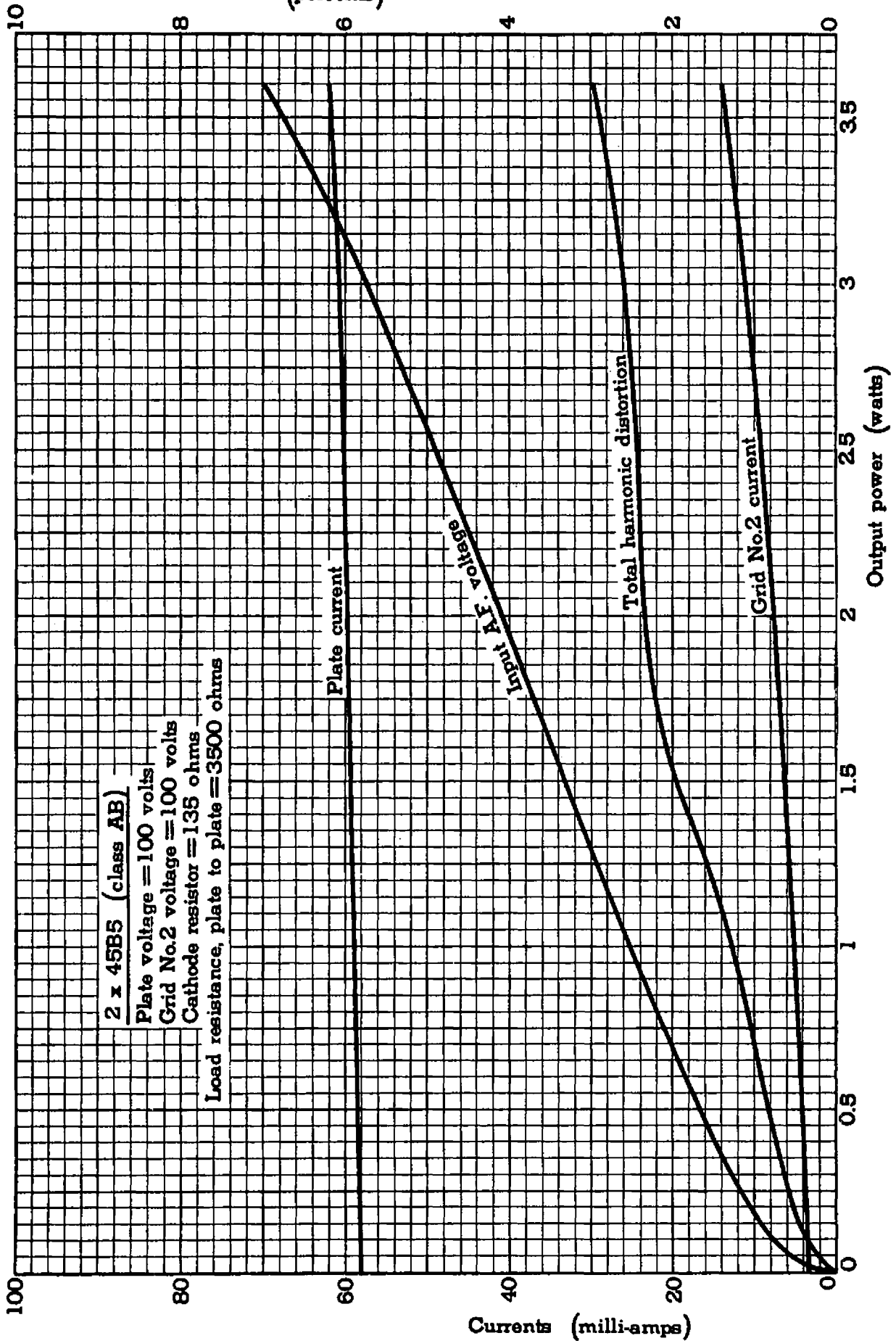
45B5

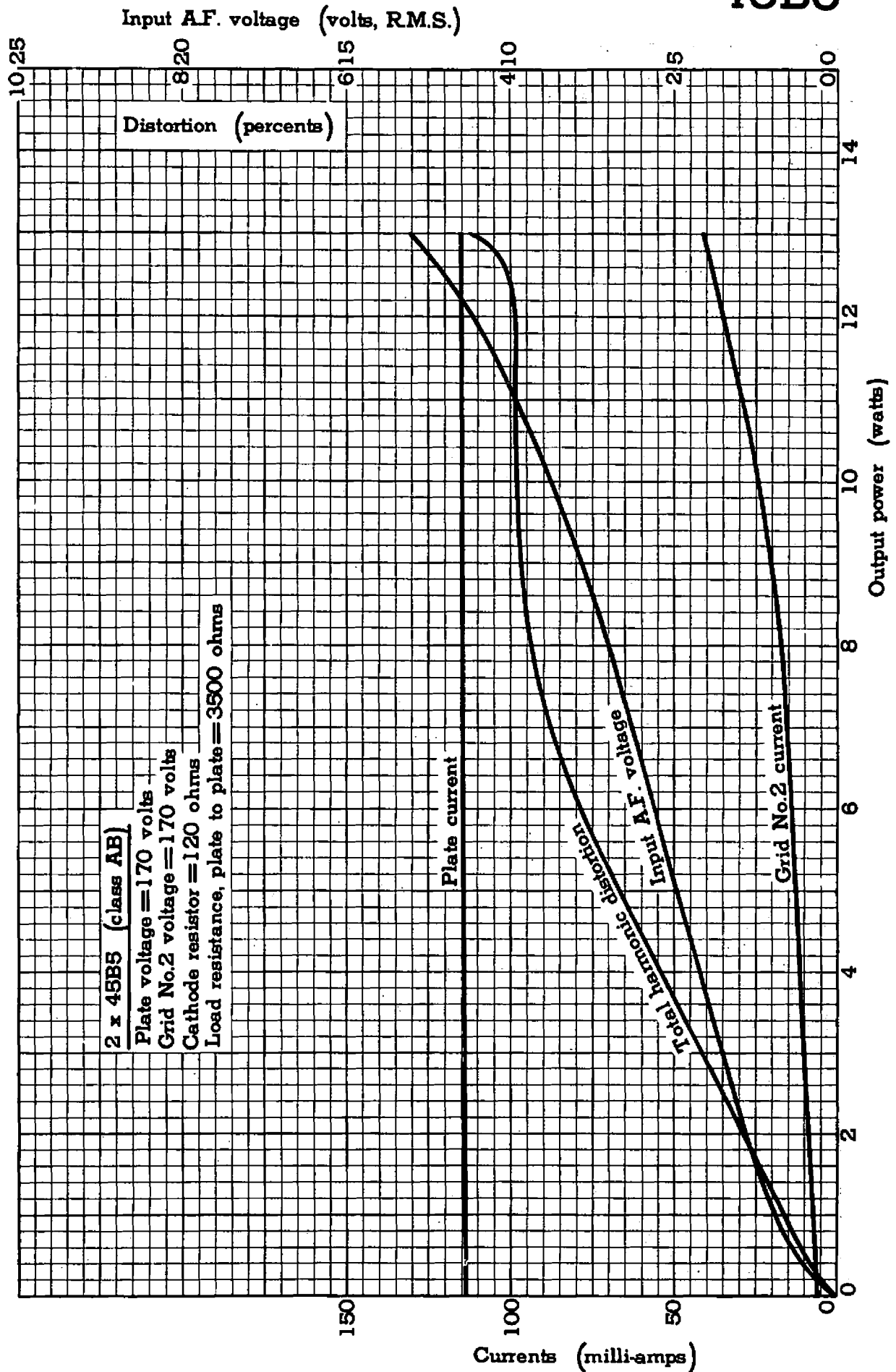


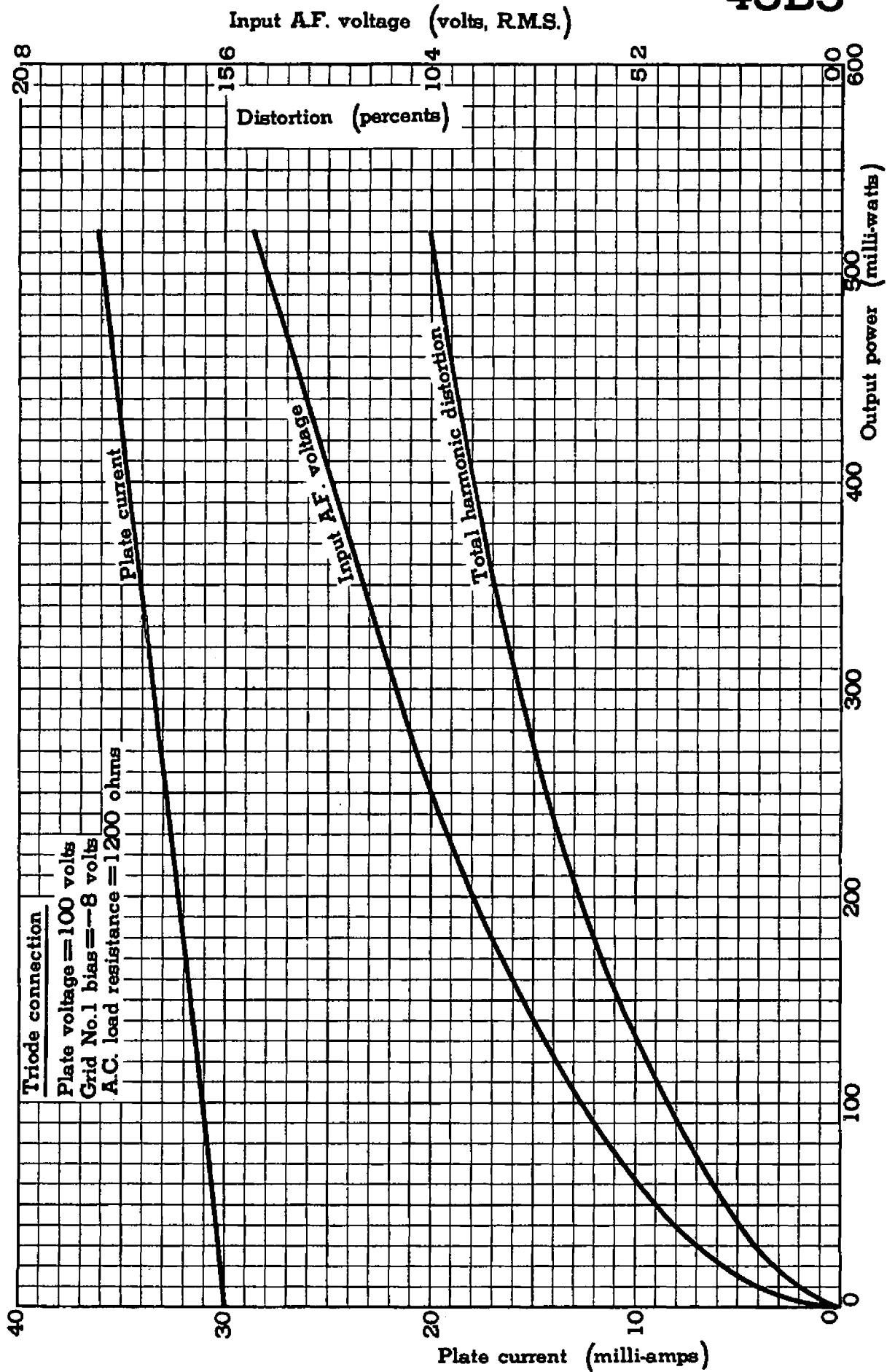


Input AF. voltage (volts R.M.S.)

Distortion (percents)

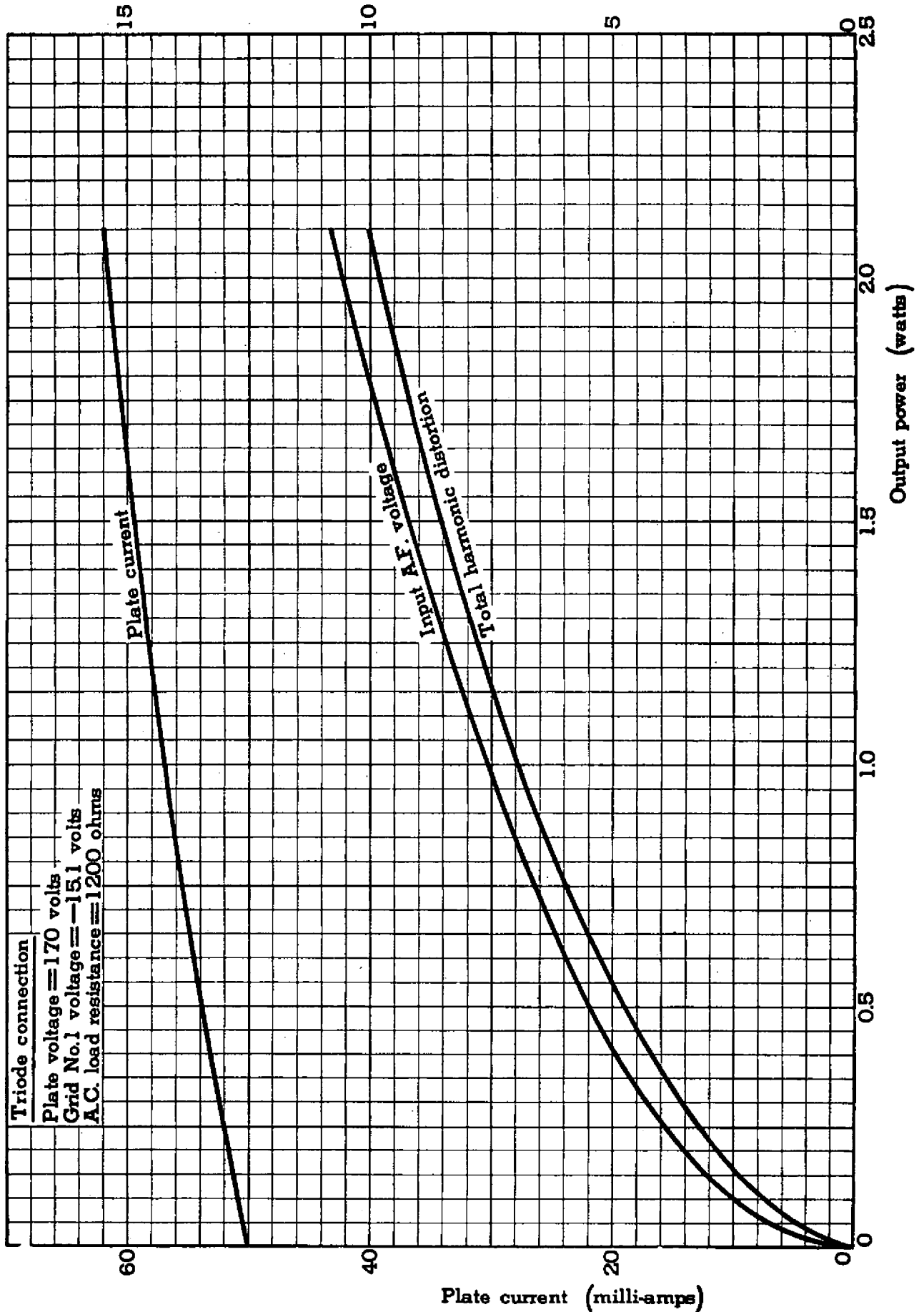








Distortion (percents)  
Input A.F. voltage (volts, R.M.S.)



Distortion (percents); Input A.F. voltage (volts, R.M.S.)

