

# PHILIPS

# 6AJ8

TRIODE-HEPTODE for use in F.M., AM/FM, A.M. and television receivers

**PHYSICAL SPECIFICATIONS**

Cathode	Coated unipotential
Base	Small button noval 9-pin
Maximum overall length	2 5/8 inches
Maximum seated height	2 3/8 inches
Bulb length excluding tip	2+3/32 inches
Maximum diameter	7/8 inch
Mounting position	Any
Basing connections - JETEC basing designation	9 CA

Pin 1 - Heptode grids No.2 and 4

Pin 2 - Heptode grid No.1

Pin 3 - Cathode, heptode grid No.5 and internal shield

Pin 4 - Heater

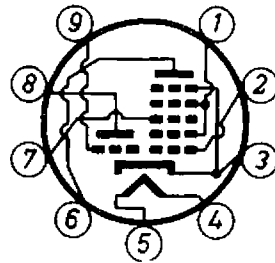
Pin 5 - Heater

Pin 6 - Heptode plate

Pin 7 - Heptode grid No.3

Pin 8 - Triode plate

Pin 9 - Triode grid



**GENERAL ELECTRICAL DATA**

Heater voltage	6.3 volts
Heater current	0.3 ampere

Direct interelectrode capacitances

Heptode section

Grid No.1 to all other elements	4.8 $\mu\mu\text{F}$
Plate to all other elements	7.9 $\mu\mu\text{F}$
Plate to grid No.1	max. 0.01 $\mu\mu\text{F}$
Grid No.3 to all other elements	5.8 $\mu\mu\text{F}$
Grid No.1 to grid No.3	max. 0.3 $\mu\mu\text{F}$
Grid No.1 to heater	max. 0.1 $\mu\mu\text{F}$
Grid No.3 to heater	max. 0.08 $\mu\mu\text{F}$

**6AJ8****PHILIPS**Direct interelectrode capacitances (continued)

## Triode section

Grid to all other elements	2.7 $\mu\mu\text{F}$
Plate to all other elements	2.3 $\mu\mu\text{F}$
Plate to grid	1.0 $\mu\mu\text{F}$
Grid to heater	max. 0.02 $\mu\mu\text{F}$

## Between triode and heptode sections

Heptode plate to triode plate	$\phi$ 0.22 $\mu\mu\text{F}$
Heptode plate to triode grid	max. 0.09 $\mu\mu\text{F}$
Heptode grid to triode plate	max. 0.06 $\mu\mu\text{F}$
Heptode grid to triode grid	max. 0.17 $\mu\mu\text{F}$
Heptode grid to triode grid + heptode grid No.3	max. 0.45 $\mu\mu\text{F}$
Heptode plate to triode grid + heptode grid No.3	max. 0.35 $\mu\mu\text{F}$

Maximum ratings (design center values)

## Heptode section

Plate voltage	300 volts
Plate voltage (without current)	550 volts
Plate dissipation	1.7 watts
Grids No.2 and 4 voltage	125 volts
Grids No.2 and 4 voltage (plate current less than 1 mamp)	300 volts
Grids No.2 and 4 voltage (without current)	550 volts
Grids No.2 and 4 dissipation	1 watt
Cathode current	12.5 mamps
Grid No.1 circuit resistance	3 megohms
Grid No.3 circuit resistance	3 megohms
Grid No.1 current starting point (grid No.1 voltage at grid No.1 current = +0.3 $\mu\text{amp}$ )	-1.3 volts
Grid No.3 current starting point (grid No.3 voltage at grid No.3 current = +0.3 $\mu\text{amp}$ )	-1.3 volts
External resistance between heater and cathode	20,000 ohms
Voltage between heater and cathode	100 volts

$\phi$  Standard deviation = 0.015 $\mu\mu\text{F}$ , which means that for 68% of a great number of tubes this capacitance lies between 0.22 - 0.015  $\mu\mu\text{F}$  and 0.22 + 0.015  $\mu\mu\text{F}$ .

Maximum ratings (design center values; continued)

Triode section

Plate voltage	250 volts
Plate voltage (without current)	550 volts
Plate dissipation	0.8 watts
Cathode current	6.5 mamps
Grid circuit resistance	3 megohms
Grid current starting point. (Grid voltage at grid current = +0.3 $\mu$ amp)	-1.3 volts
External resistance between heater and cathode	20,000 ohms
Voltage between heater and cathode	100 volts

Operating characteristics of the heptode section as  
mixer. Triode grid connected to heptode grid No.3

Supply voltage	250	volts
Plate voltage	250	volts
Grids No.2 and 4 series resistor	22,000	ohms
Oscillator grid leak	47,000	ohms
Oscillator grid current	200	$\mu$ mamps
Grid No.1 bias	-2	-28.5 volts
Plate current	3.25	- mamps
Grids No.2 and 4 current	6.7	- mamps
Conversion conductance	775	7.75 micromhos
Plate-resistance	1	>3 megohms
Equivalent noise resistance	70,000	- ohms

Note - The 6AJ8 as frequency changer can be used in combination with the 6BY7 as I.F. amplifier with a common screen grid resistor of 18,000 ohms and in combination with the 6N8 as I.F. amplifier with a common screen grid resistor of 22,000 ohms.

The 6AJ8 as H.F. or I.F. amplifier can be used in combination with the 6BY7 with a common screen grid resistor of 22,000 ohms.

**6AJ8****PHILIPS**Operating characteristics of the heptode section as H.F. or I.F. amplifier

Supply voltage	250	volts
Plate voltage	250	volts
Grid No.3 voltage	0	volt
Grids No.2 and 4 series resistor	39,000	ohms
Grid No.1 bias	-2	-42 volts
Grids No.2 and 4 voltage	102	- volts
Plate current	6.5	- m amps
Grids No.2 and 4 current	3.8	- m amps
Transconductance	2400	24 micromhos
Plate resistance	0.7	>10 megohms
Amplification factor of grid No.2 with respect to grid No.1	20	-
Equivalent noise resistance	8500	- ohms
Input damping at 100 Mc	1600	- ohms

Operating characteristics for use as A.F. amplifier

The heptode section of this tube can be used as A.F. amplifier without special precautions against microphonic effect in circuits in which the input voltage is 50 millivolts at least for an output of 50 milliwatts of the output tube.

The corresponding value for the triode section is 25 millivolts.

On page 19 and 20 curves are shown for the use of the triode section as resistance coupled A.F. amplifier. The output voltage and the distortion have been measured at the grid current starting point. At smaller input voltages the distortion is proportionally smaller.

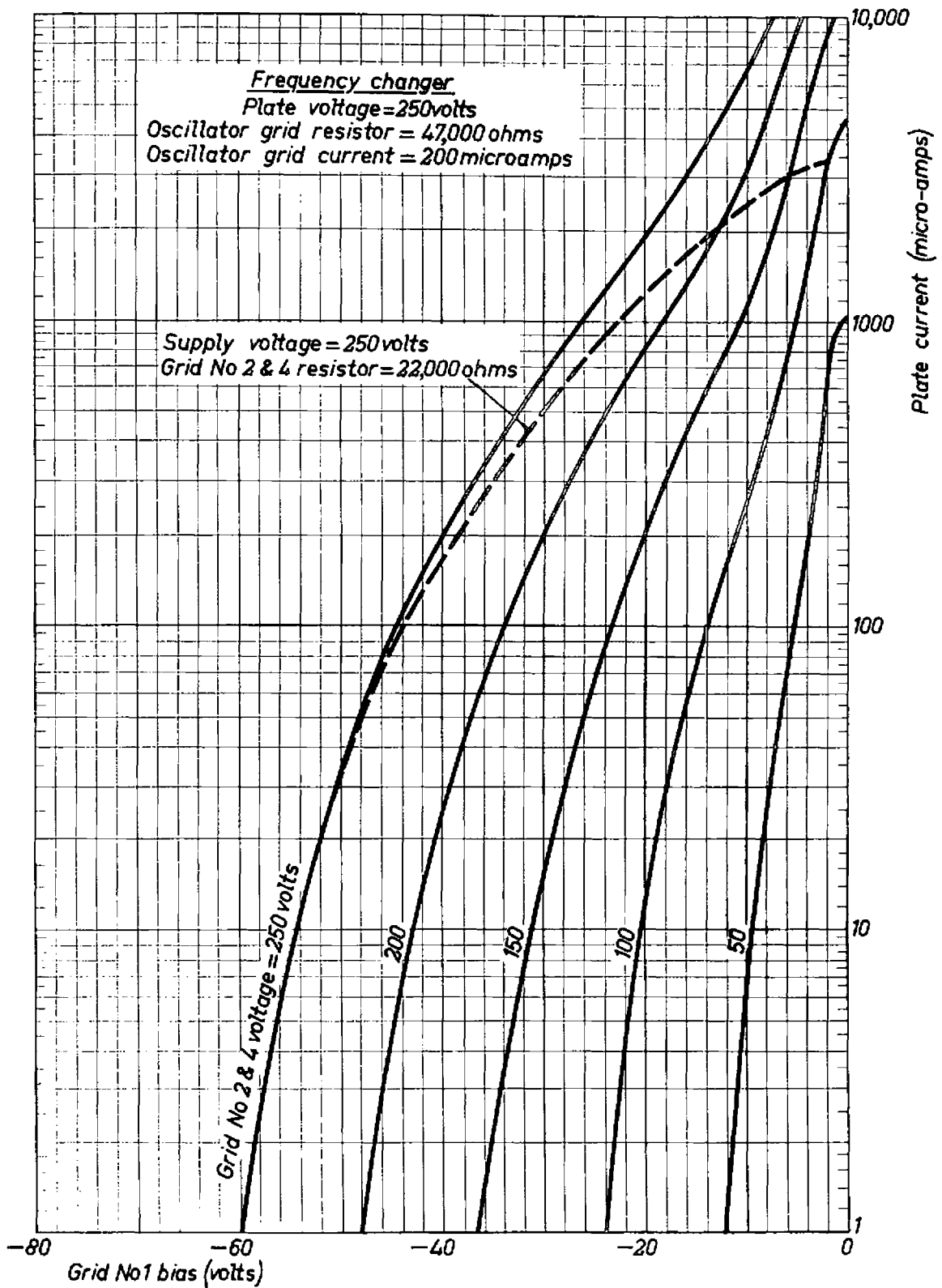
Typical characteristics of the triode section

Plate voltage	100	volts
Grid bias	0	volt
Plate current	13.5	m amps
Transconductance	3700	micromhos
Amplification factor	22	

Operating characteristics of the triode section as oscillator

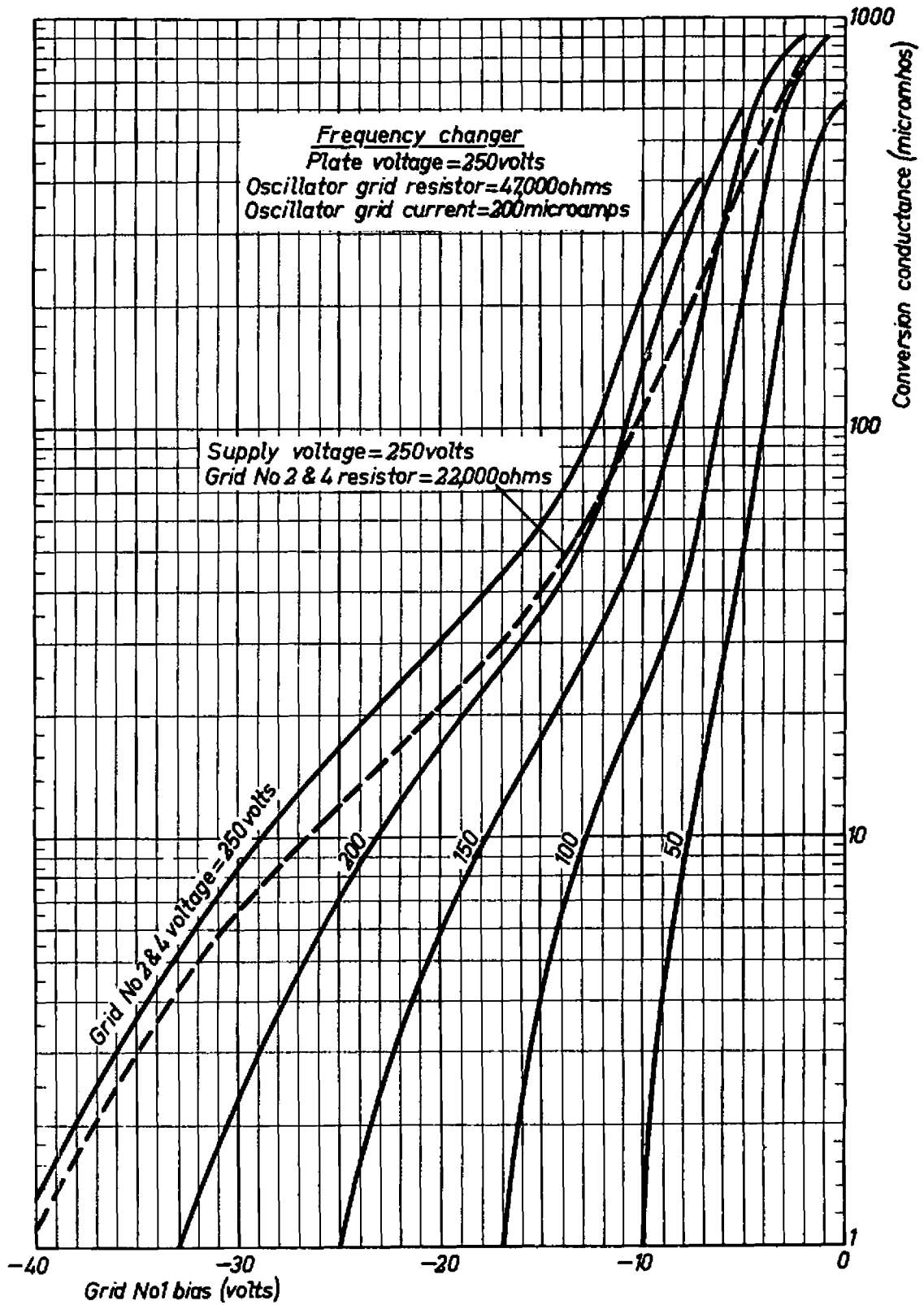
Supply voltage	250	volts
Plate series resistor	33,000	ohms
Oscillator grid leak	47,000	ohms
Oscillator grid current	200	$\mu$ amps
Plate current	4.5	m amps
Effective transconductance	550	micromhos

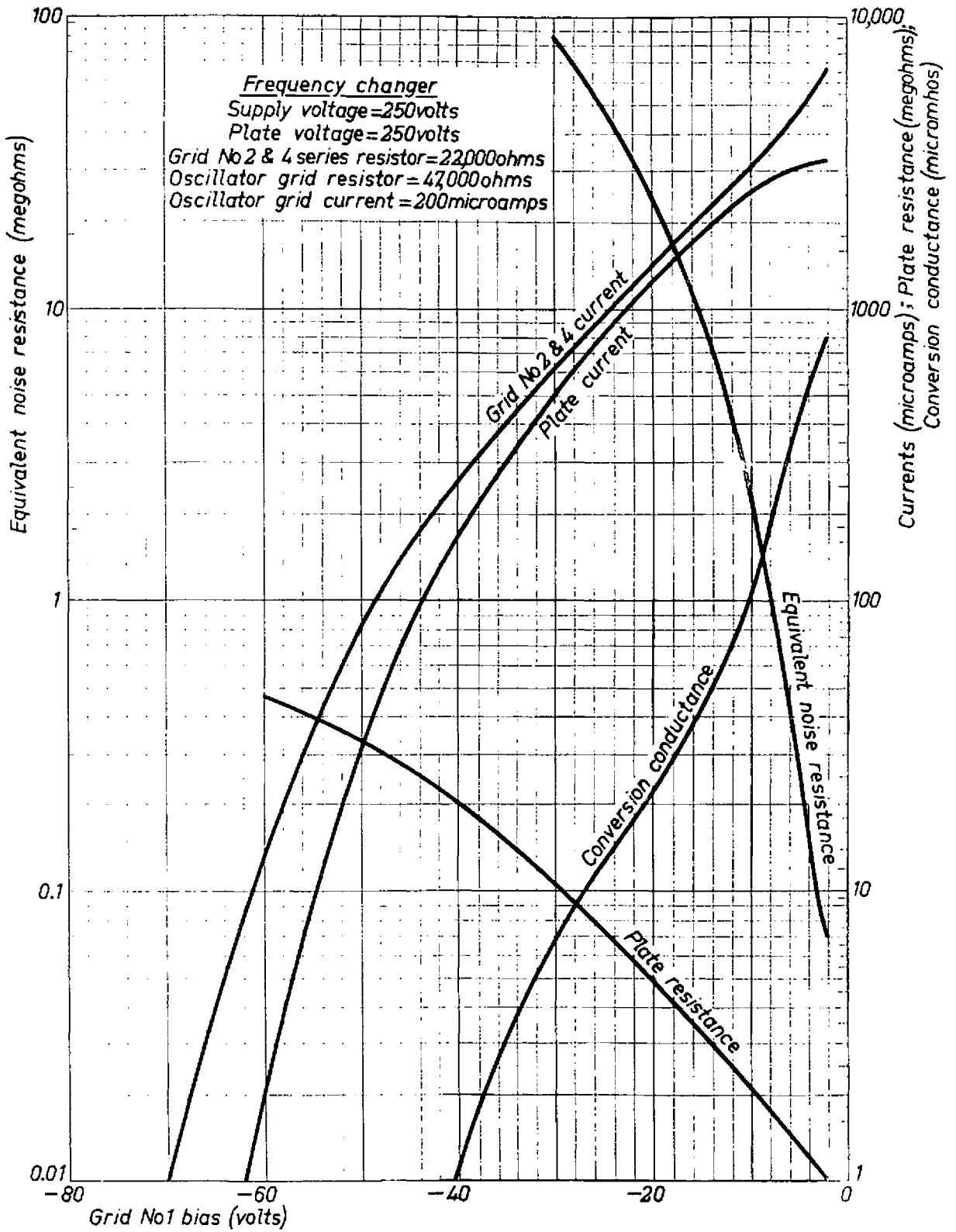
N.V. PHILIPS' GLOEILAMPENFABRIEKEN, Eindhoven, Holland.



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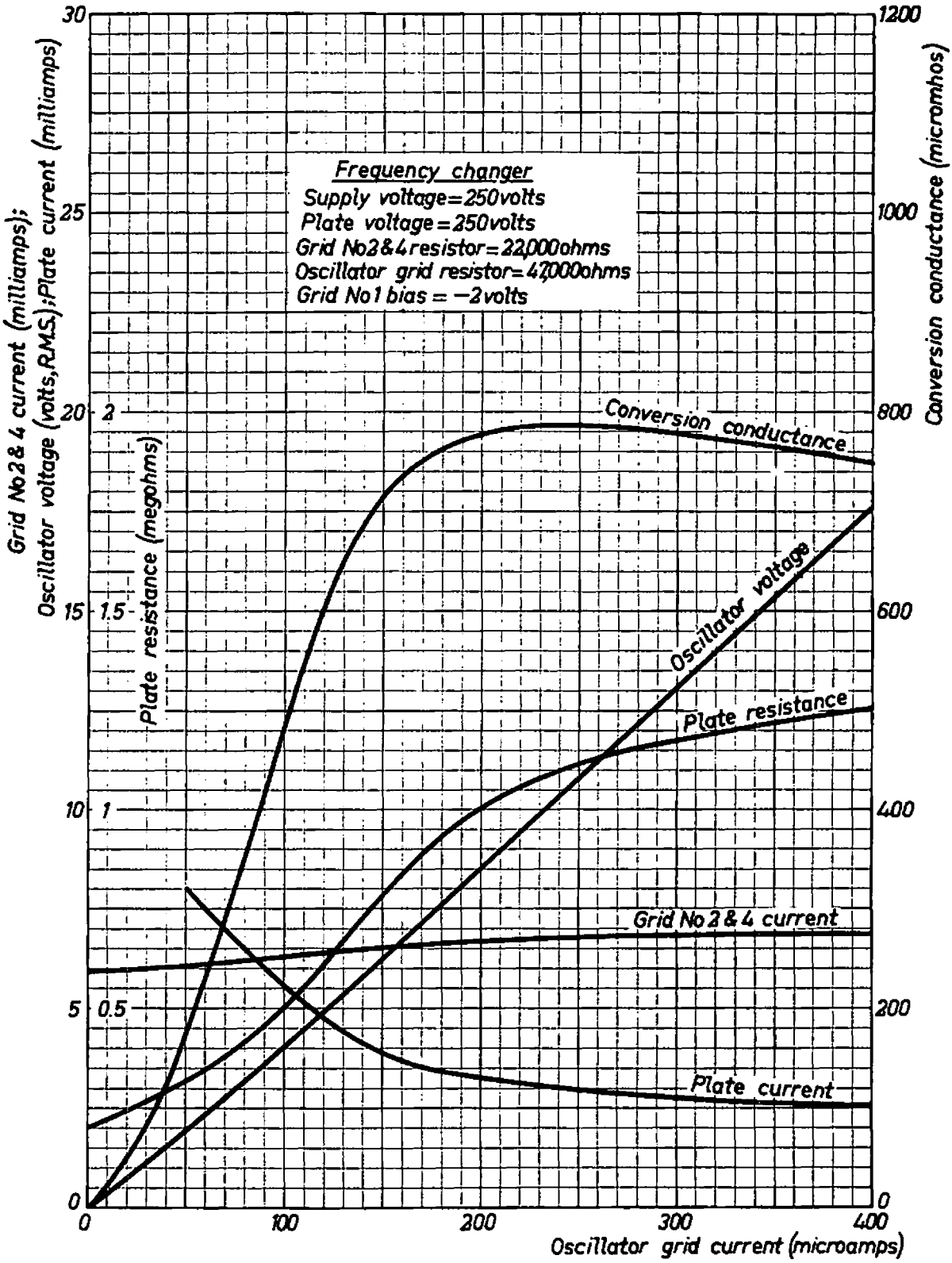
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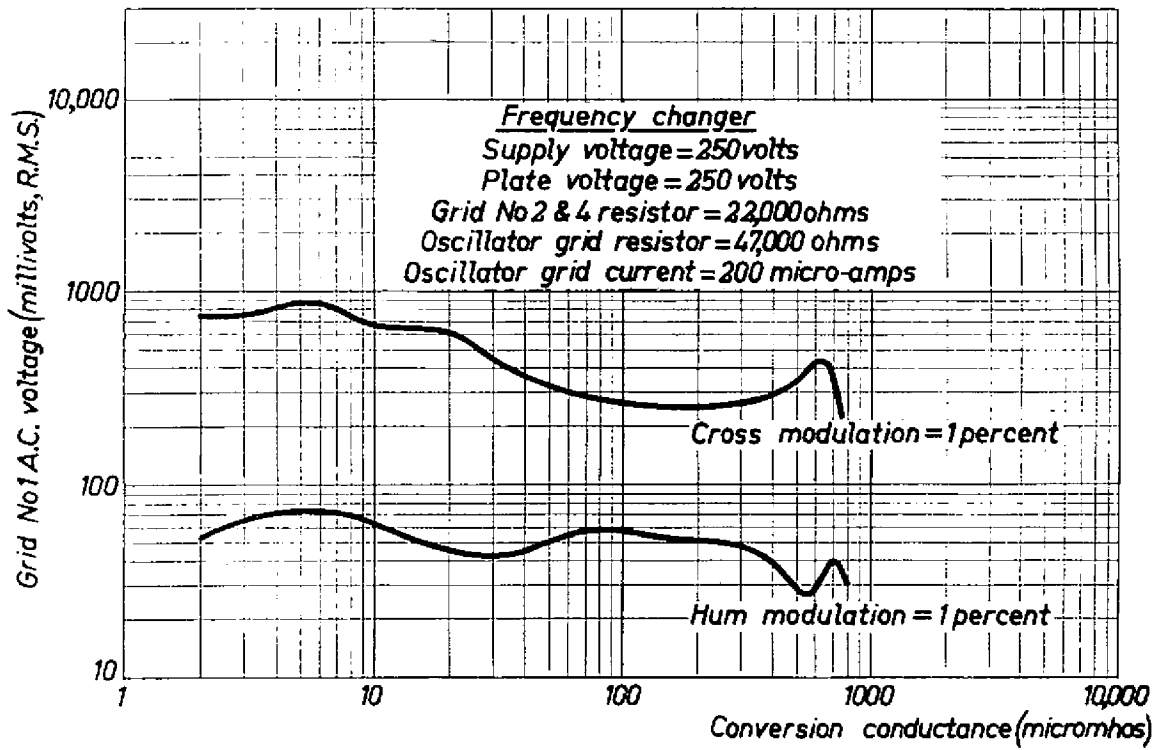


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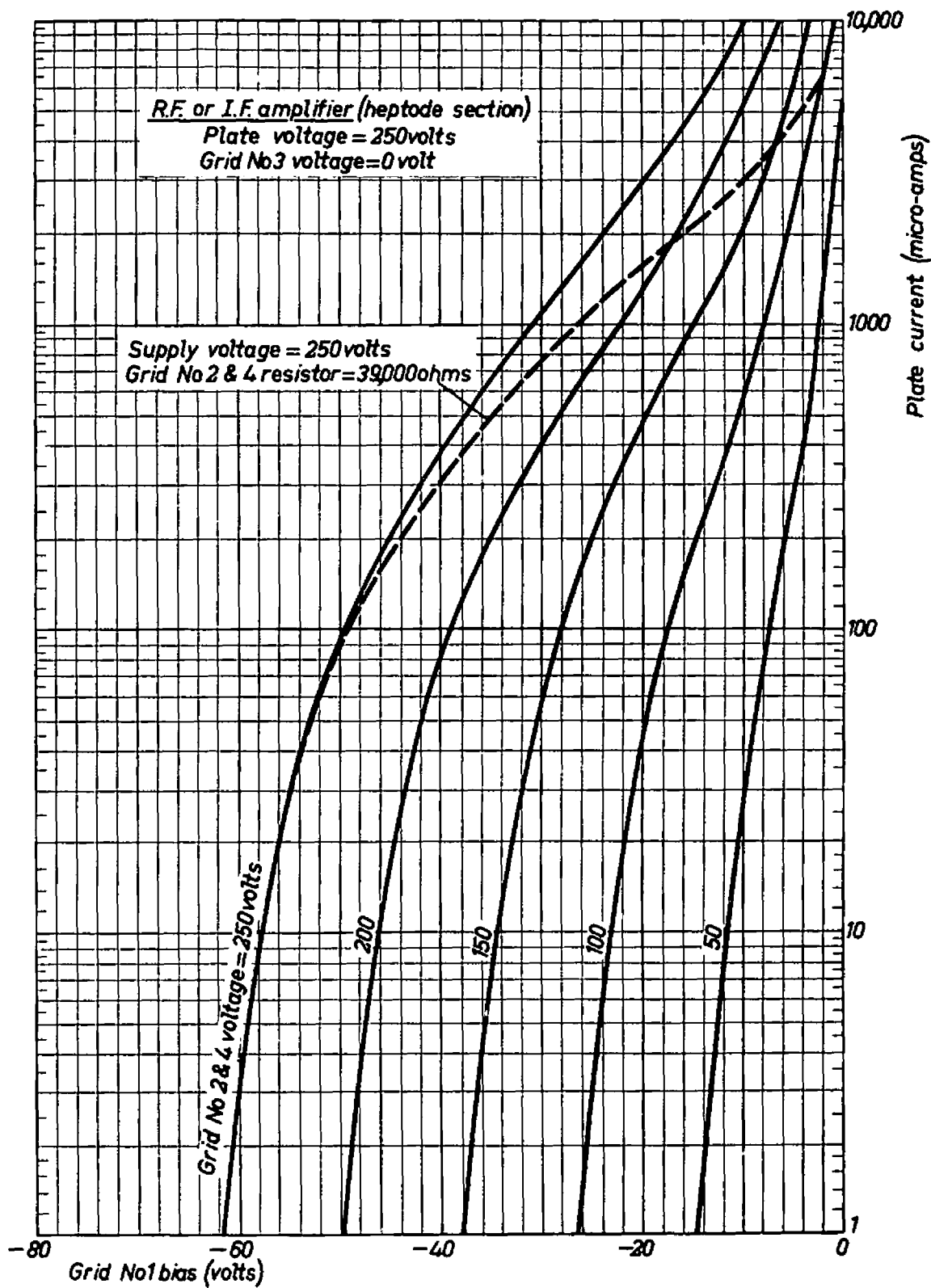


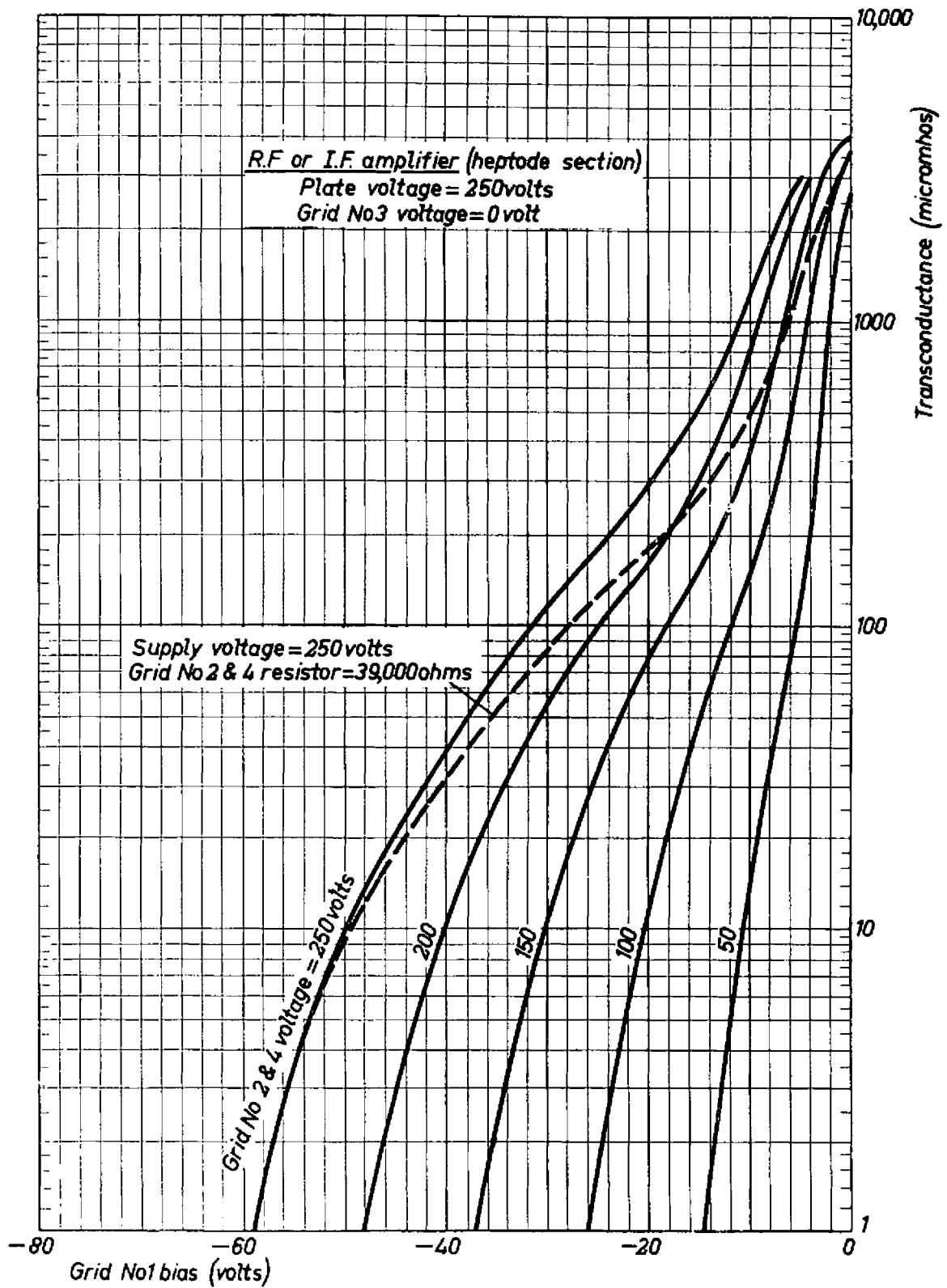




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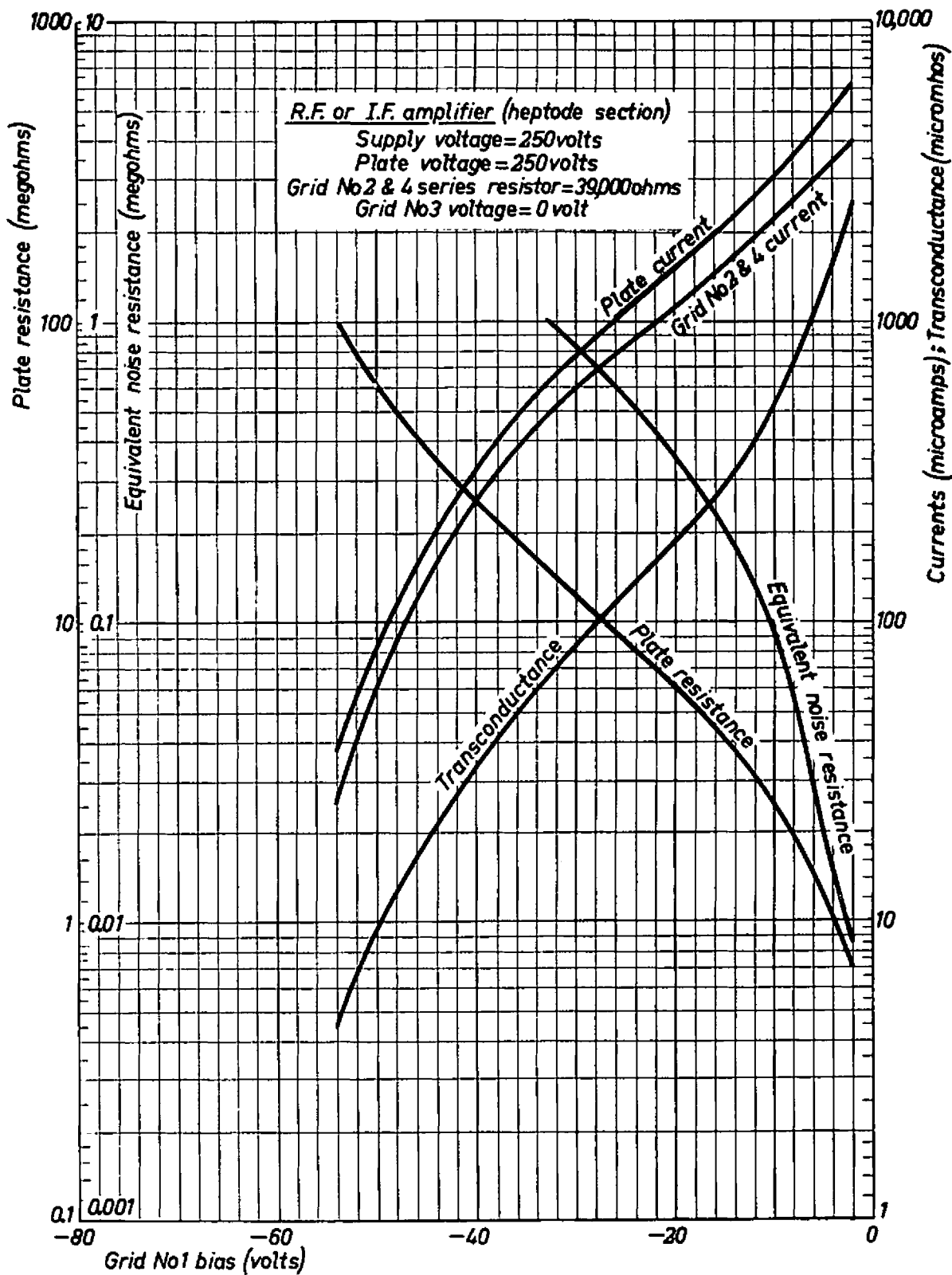
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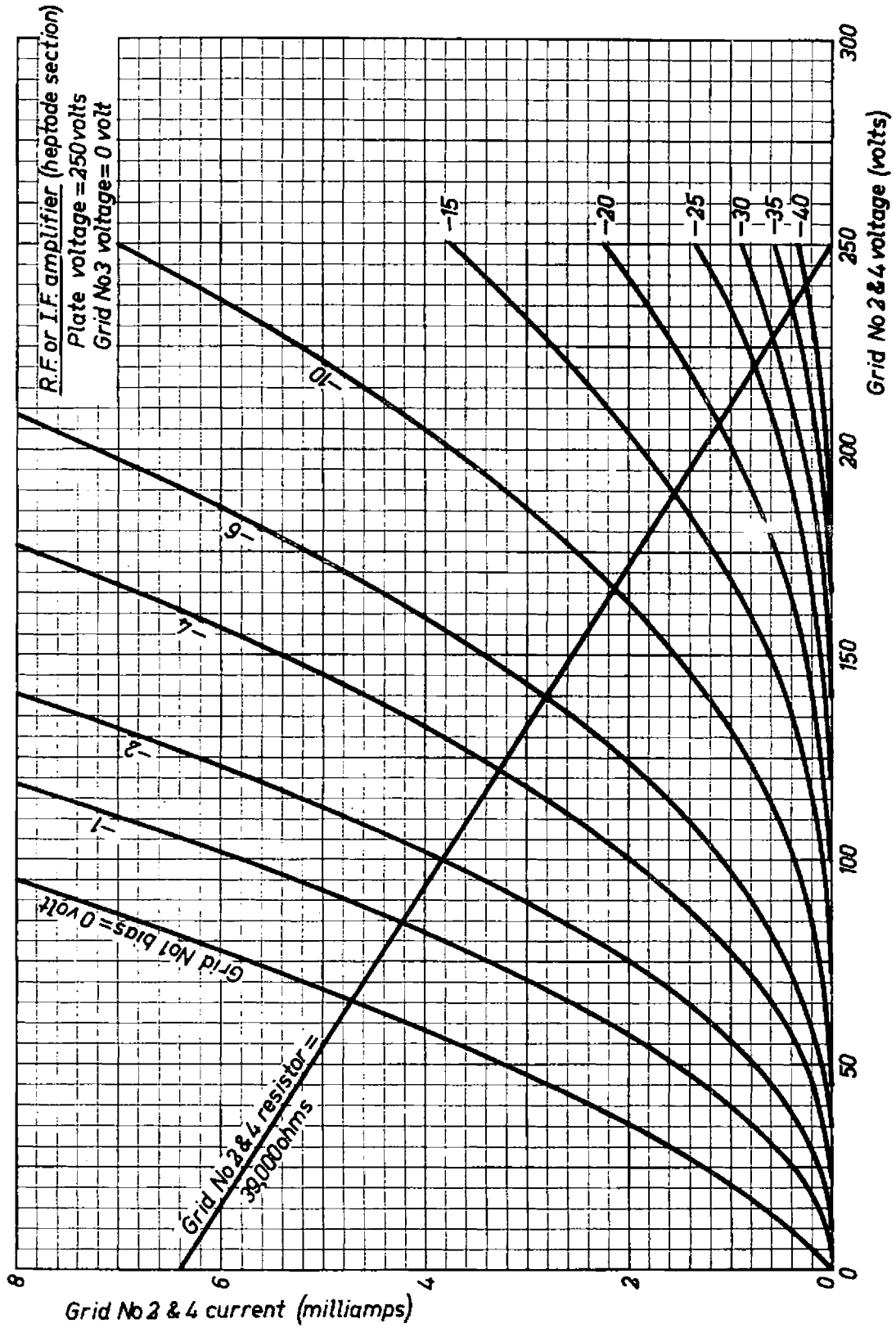




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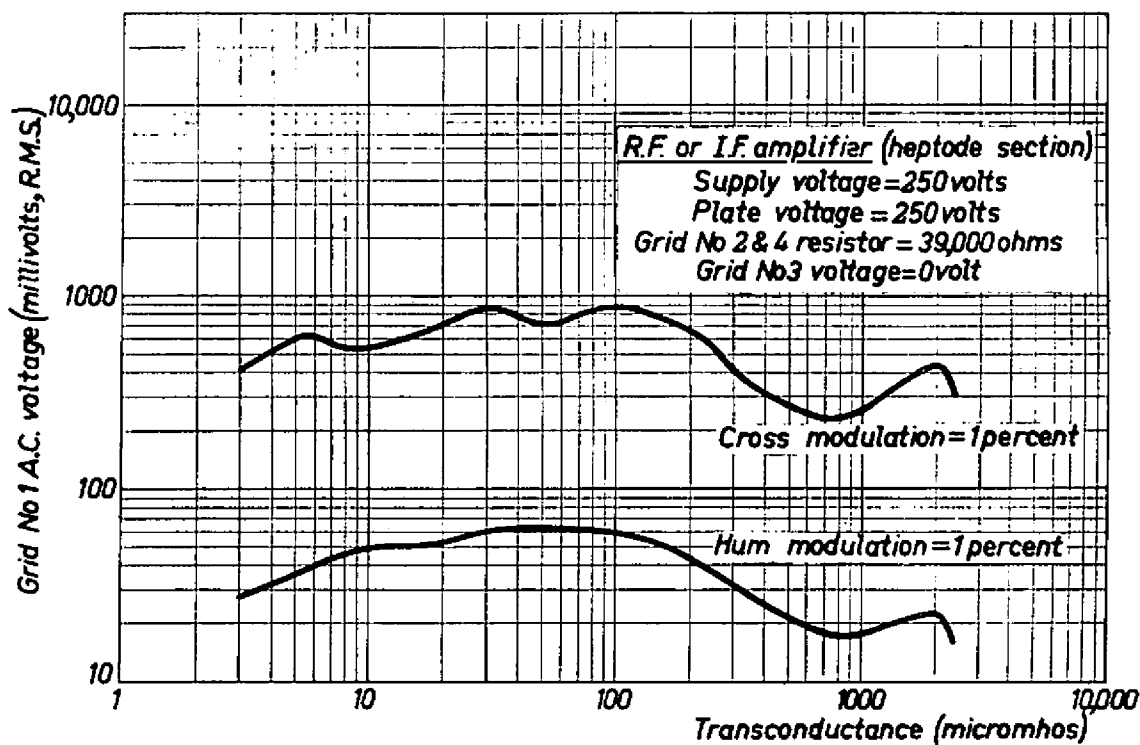
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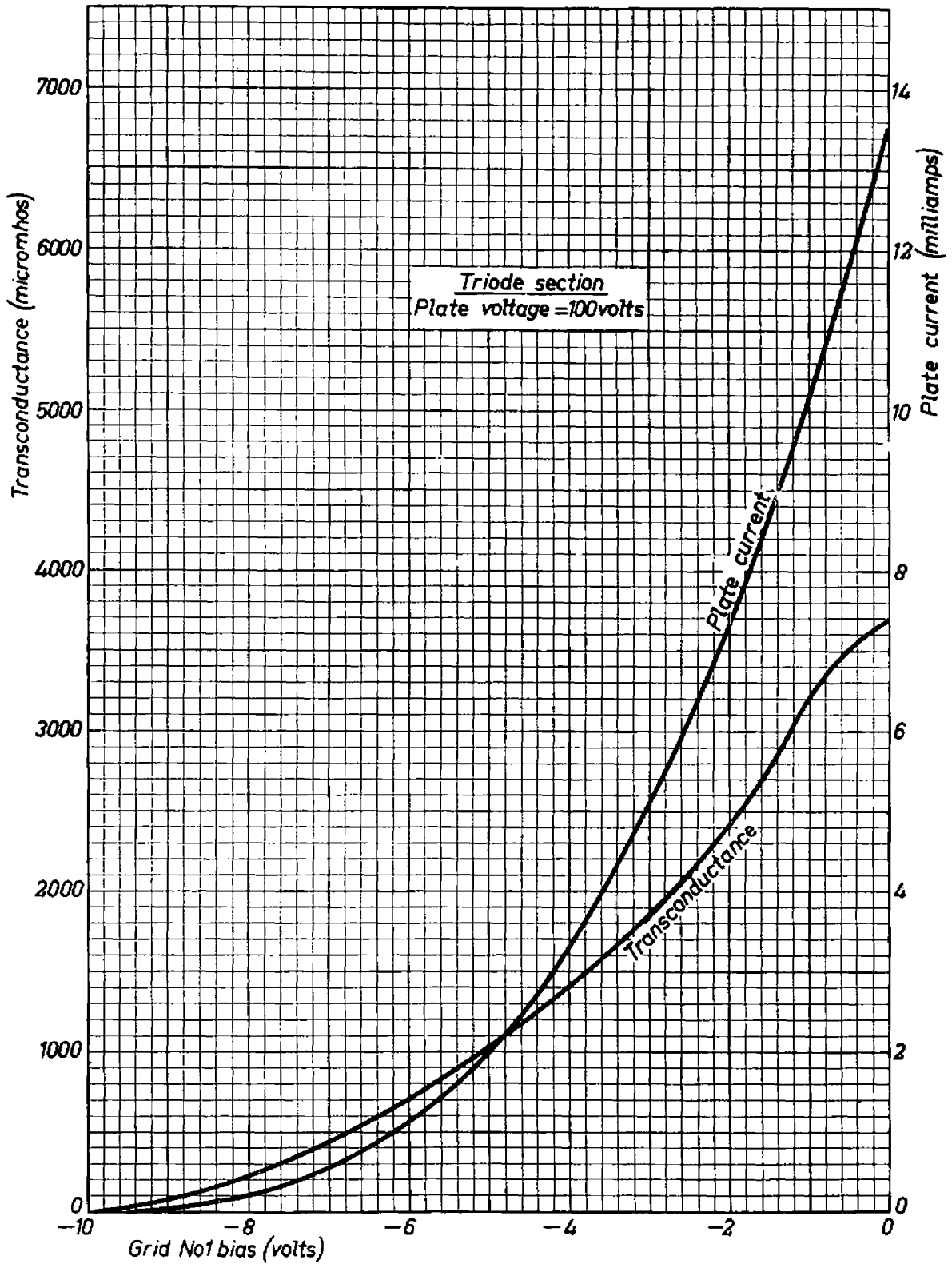




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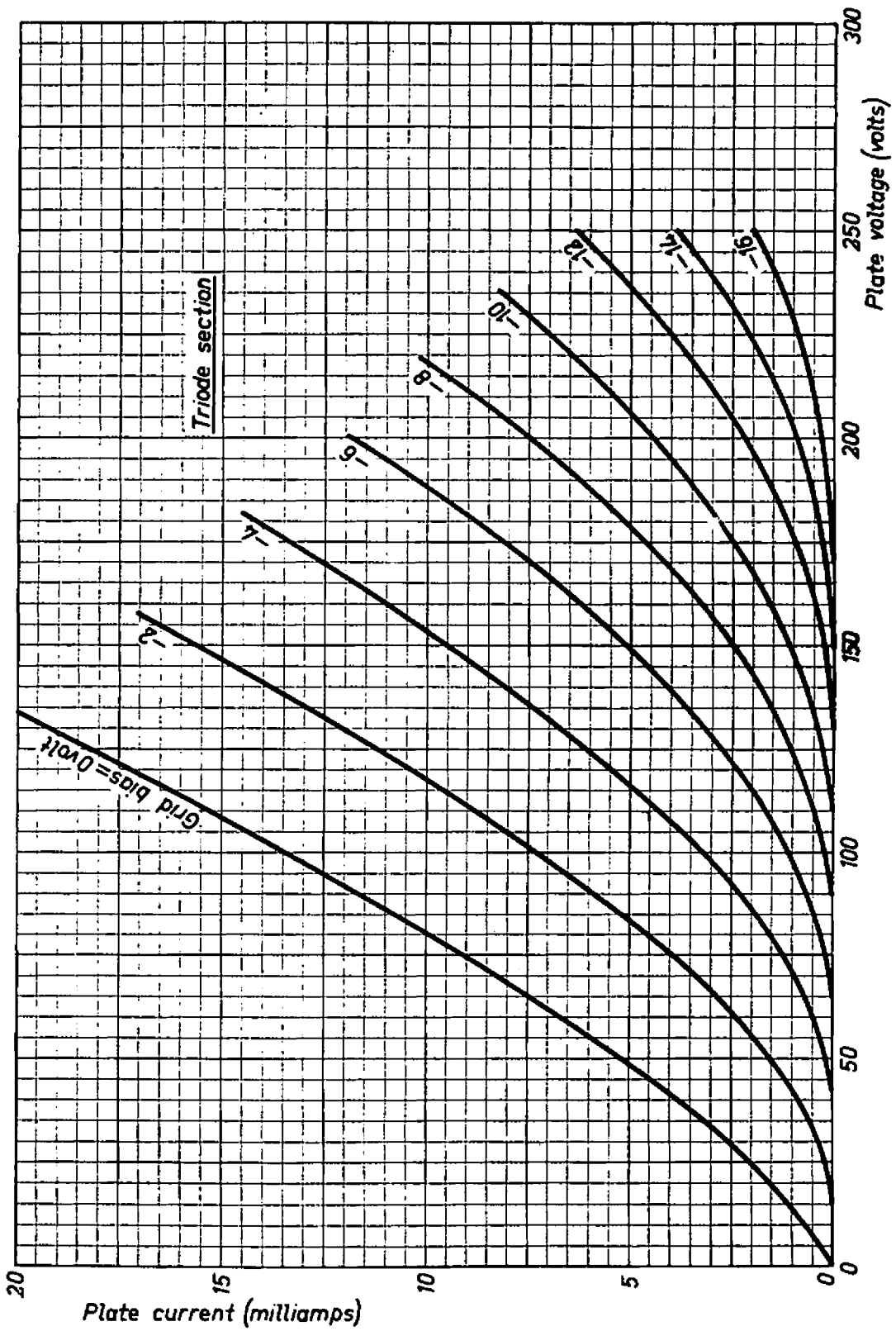
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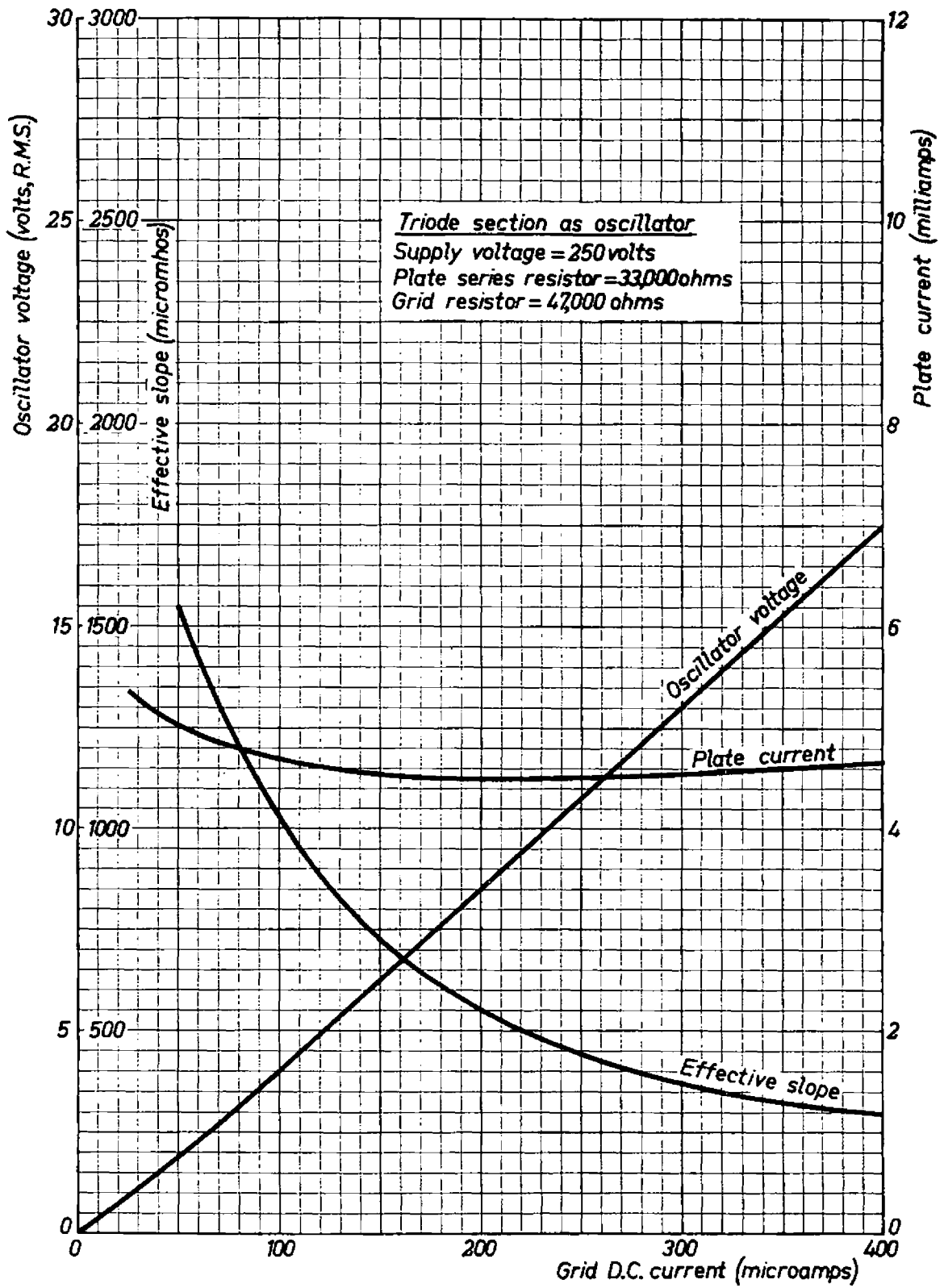


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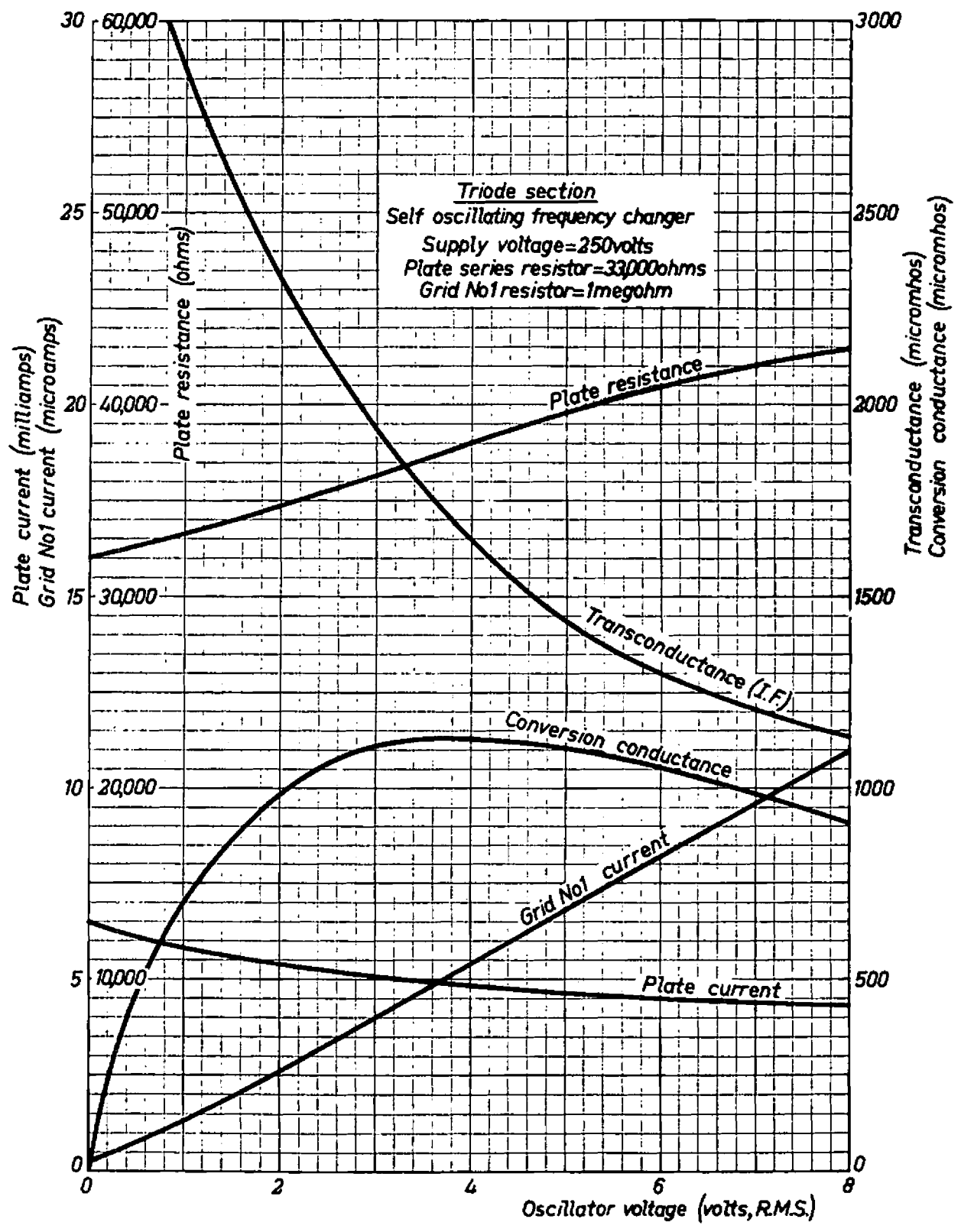


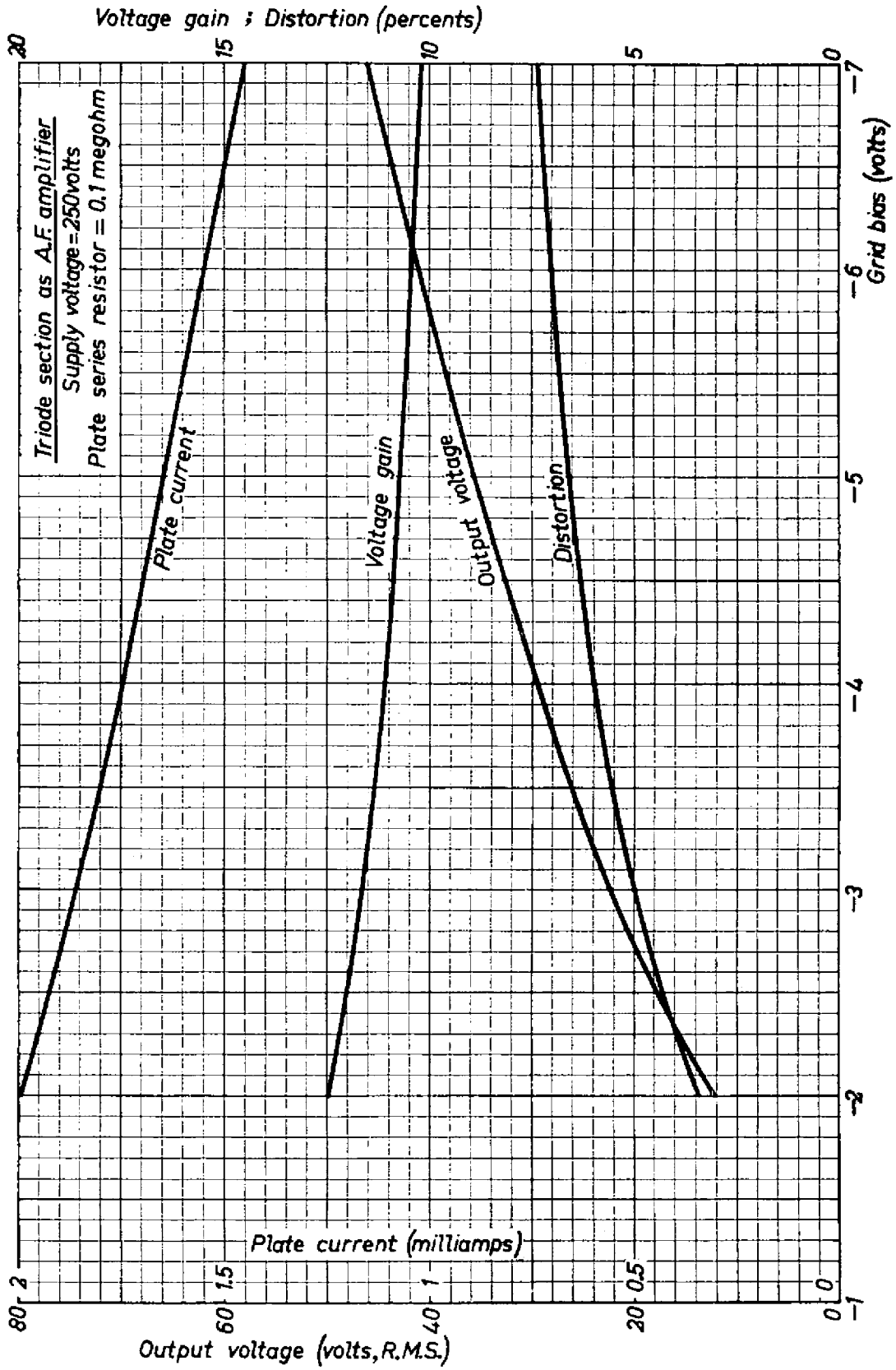




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