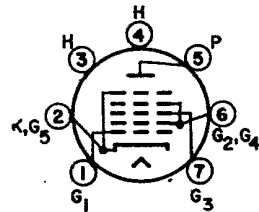


AMPEREX TUBE TYPE 6687/E91H

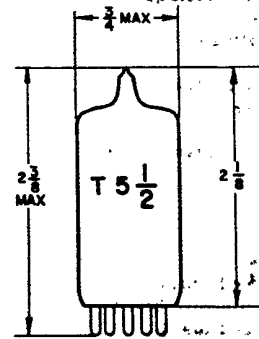
The 6687/E91H is a dual control heptode for use as a gated amplifier in computer and "on-off" control circuits.

It is one of the Amperex "Premium Quality 10,000" tubes.



PIN CONNECTIONS

- 1- GRID NO. 1
- 2- CATHODE, GRID NO. 5
- 3- HEATER
- 4- HEATER
- 5- PLATE
- 6- GRID NO. 2, GRID NO. 4
- 7- GRID NO. 3



GENERAL CHARACTERISTICS

MECHANICAL

- Maximum dimensions
- Bulb
- Outline
- Basing
- Mounting Position

- see outline drawing
- T5 1/2
- see outline drawing
- 7CH
- any

ELECTRICAL

- Cathode Heating
- Heater voltage
- Heater Current

- coated, unipotential indirect by A.C. or D.C. parallel supply
- 6.3 volts
- 270 mA²

Direct Interelectrode Capacitances (without external shield)

- Output capacitance
- Input capacitance Grid No. 1
- Input capacitance Grid No. 3
- Plate to Grid No. 1
- Plate to Grid No. 3
- Grid No. 1 to Grid No. 3

- 7.9 μf
- 5.4 μf
- 7.0 μf
- < 0.08 μf
- < 0.45 μf
- < 0.2 μf

NOTES:

- ¹ In order to prolong tube life, variation of heater voltage should be less than $\pm 5\%$ (absolute values).
- ² At heater voltage = 6.3 volts the spread of heater current from tube to tube may be ± 14 mA

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Maximum Ratings (absolute Values)

Plate Voltage (at zero plate current)	500 volts max
Plate voltage	250 volts max
Grid No. 2, Grid No. 4 voltage (at zero Grid No. 2, Grid No. 4 current)	500 volts max
Voltage Grid No. 2 and Grid No. 4	100 volts max
Negative Grid No. 3 voltage	100 volts max
Grid No. 3 voltage	0 volts max
Negative peak Grid No. 3 voltage	200 volts max
Peak Grid No. 3 voltage	90 volts max
Negative Grid No. 1 voltage	100 volts max
Grid No. 1 voltage	0 volts max
Negative peak Grid No. 1 voltage	200 volts max
Peak Grid No. 1 Voltage	see note 3
Plate dissipation	1.0 watts max
Grid No. 2 and Grid No. 4 dissipation	1.0 watts max
Grid No. 1 dissipation	0.5 watts max
Grid No. 3 dissipation	0.5 watts max
Cathode current	20 mA max
Peak cathode current	70 mA max
Heater-cathode voltage	120 volts max
Resistor Grid No. 1 (fixed bias)	0.5 megohms
Resistor Grid No. 1 (automatic bias)	1.0 megohms
Resistor Grid No. 3 (fixed bias)	0.5 megohms
Resistor Grid No. 3 (automatic bias)	1.0 megohms

Typical Characteristics

FIGURE 1 - TYPICAL CHARACTERISTICS

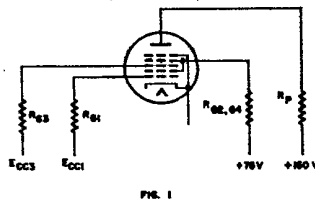


Plate supply voltage	150	150	150	150	volts
Voltage supply (Grid No. 2, Grid No. 4)	75	75	75	75	volts
Voltage supply Grid No. 1	0	0	-10	0	volts
Voltage supply Grid No. 3	0	-10	0	+35	volts
Plate resistor	20,000	20,000	20,000	--	ohms
Resistor Grid No. 2, Grid No. 4	470	470	470	--	ohms
Resistor Grid No. 1	47,000	47,000	47,000	--	ohms
Resistor Grid No. 3	47,000	47,000	47,000	--	ohms
Plate current	> 5.5 < 7.0	< 0.2	< 0.2	--	mA
Current Grid No. 3	--	--	--	--	mA
Insulation resistance between cathode and heater (Heater Voltage = 6.3 volts, Heater Cathode Voltage = 120 volts)	--	--	--	> 0	megohms

Inverse Grid No. 1 and Grid No. 3 Current (measured in figure 1)

Plate Supply voltage	150	volts
Supply voltage (Grid No. 2, Grid No. 4)	75	volts
Supply voltage Grid No. 1	-1.5	volts
Supply voltage Grid No. 3	-1.5	volts
Plate resistor	20,000	ohms
Resistor Grid No. 2, Grid No. 4	470	ohms
Resistor Grid No. 1	47,000	ohms
Resistor Grid No. 3	47,000	ohms
Negative Grid No. 1 current	0.2	μA max
Negative Grid No. 3 current	0.5	μA max

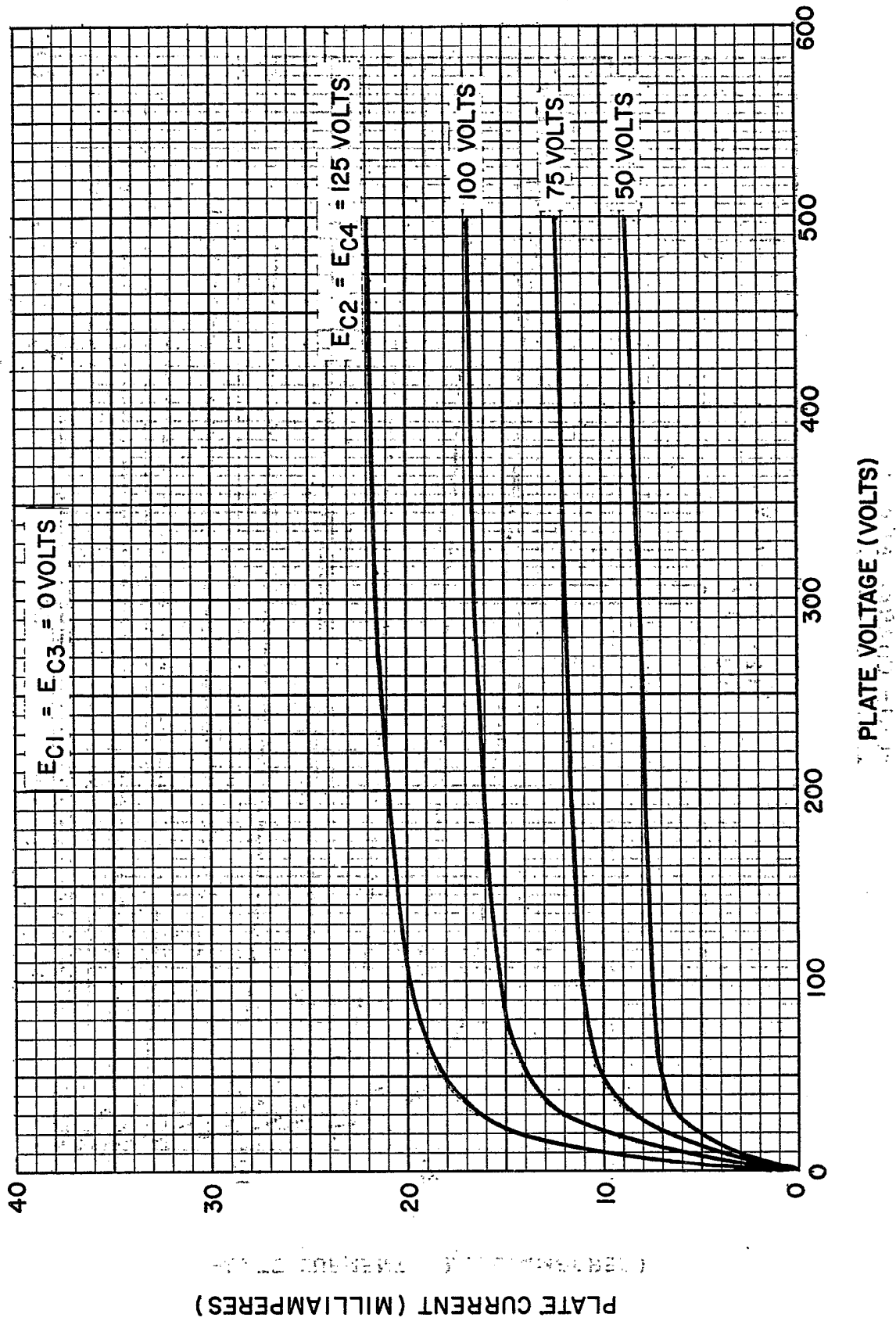
Operating Characteristics As A Mixer

Plate Voltage	250	volts
Voltage Grid No. 2 and Grid No. 4	100	volts
Voltage Grid No. 3	-5	volts
Oscillator voltage ⁴	10	volts rms
Resistor Grid No. 1	20,000	ohms
Plate Current	3.3	mA
Current Grid No. 1	530	μA
Current Grid No. 2 and Grid No. 4	6.5	mA
Conversion transconductance	450	micromhos
Plate resistance	0.85	megohms

³ Limited by peak cathode current and Grid No. 1 dissipation.

⁴ Oscillator voltage on Grid No. 1; signal voltage on Grid No. 3.

PLATE CHARACTERISTICS



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PLATE CHARACTERISTICS

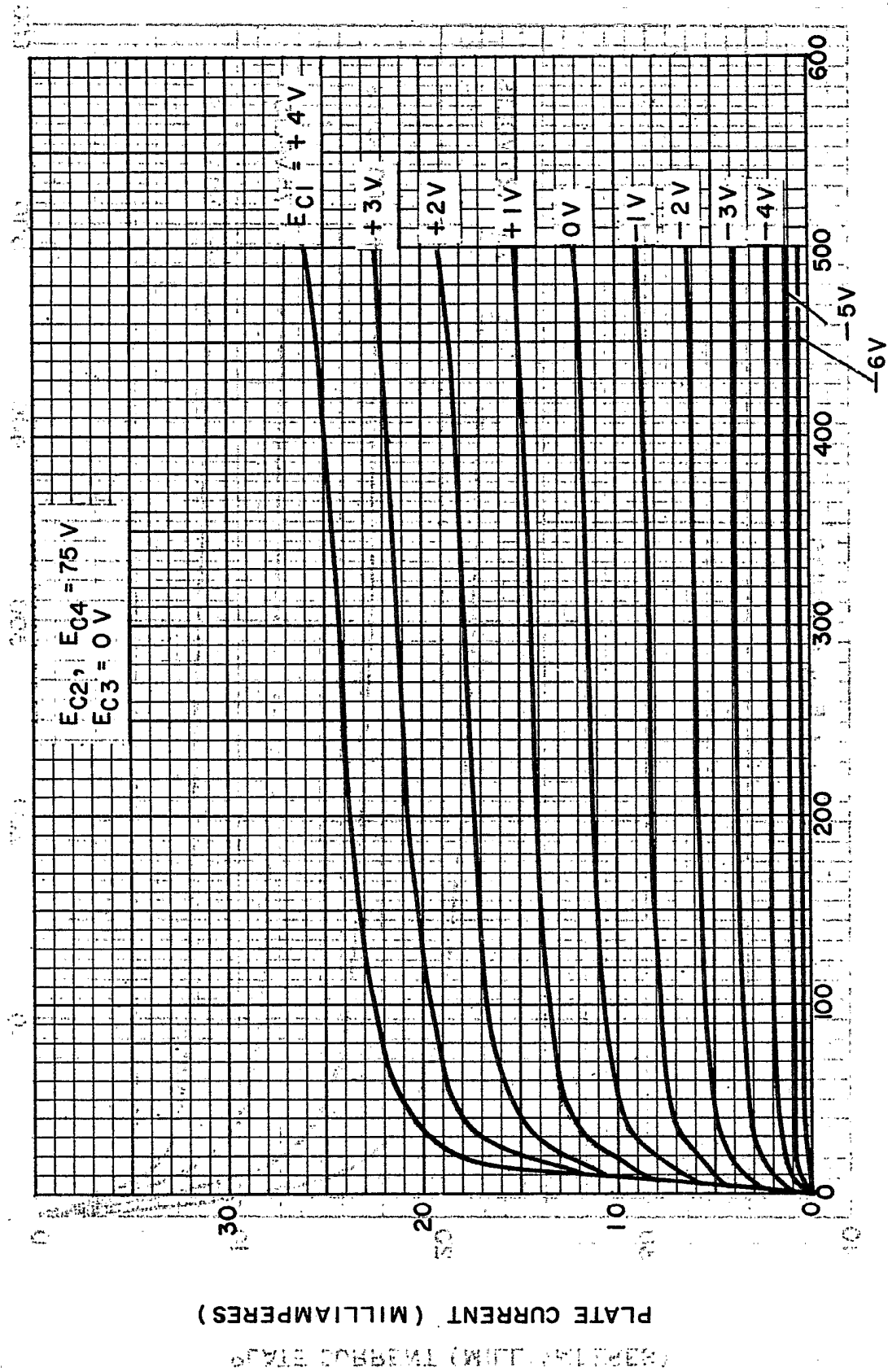


PLATE VOLTAGE (VOLTS)

PLATE CURRENT (MILLIAMPERES)

SCREEN GRID CHARACTERISTICS

GRID NO. 2 CURRENT + GRID NO. 4 CURRENT (MILLIAMPERES)

GRID CHARACTERISTICS

PLATE VOLTAGE = 150 VOLTS
GRID NO. 1 VOLTAGE = 0 VOLTS

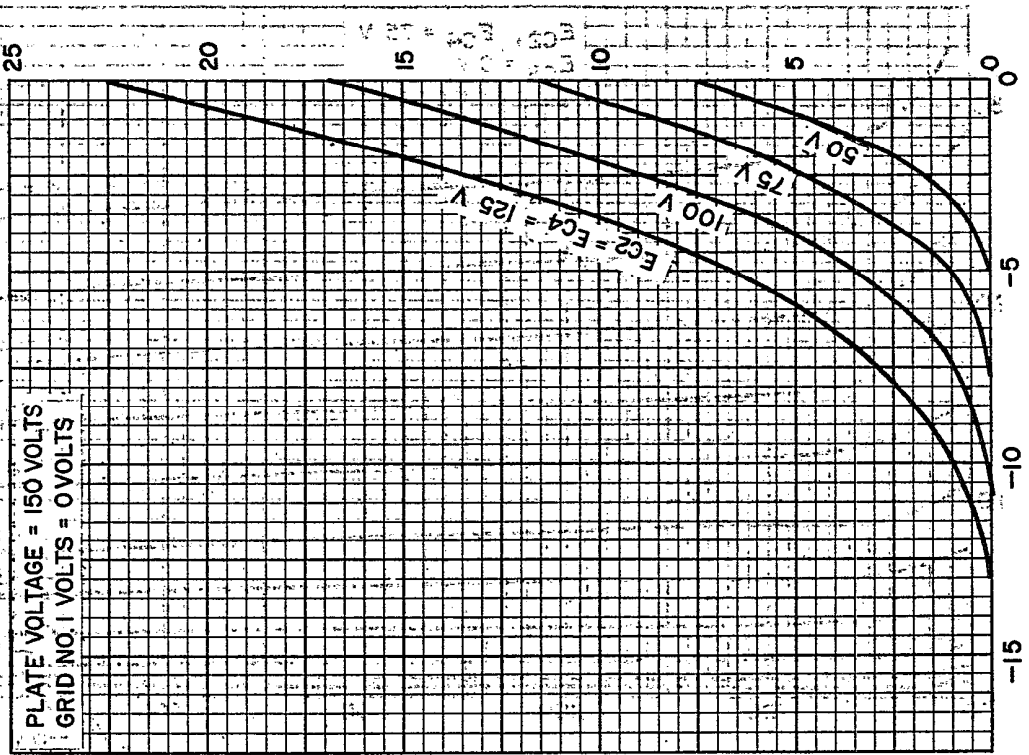
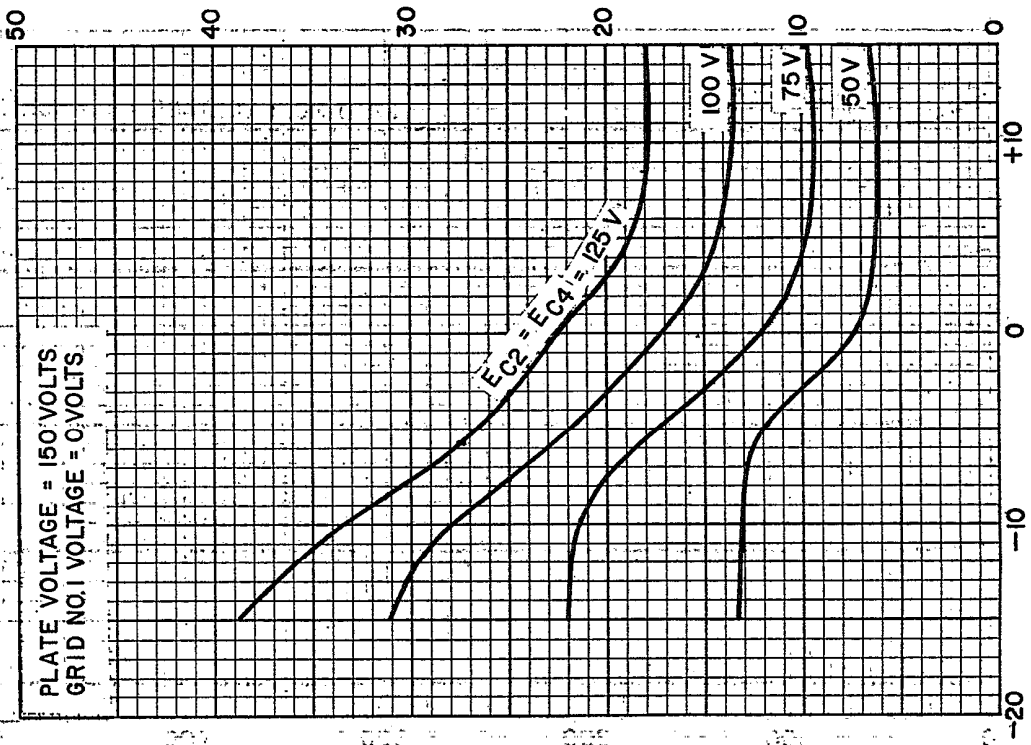


PLATE VOLTAGE (VOLTS)

GRID NO. 2 CURRENT + GRID NO. 4 CURRENT (MILLIAMPERES)

CONTROL GRID CHARACTERISTICS

PLATE VOLTAGE = 150 VOLTS
GRID NO. 1 VOLTAGE = 0 VOLTS



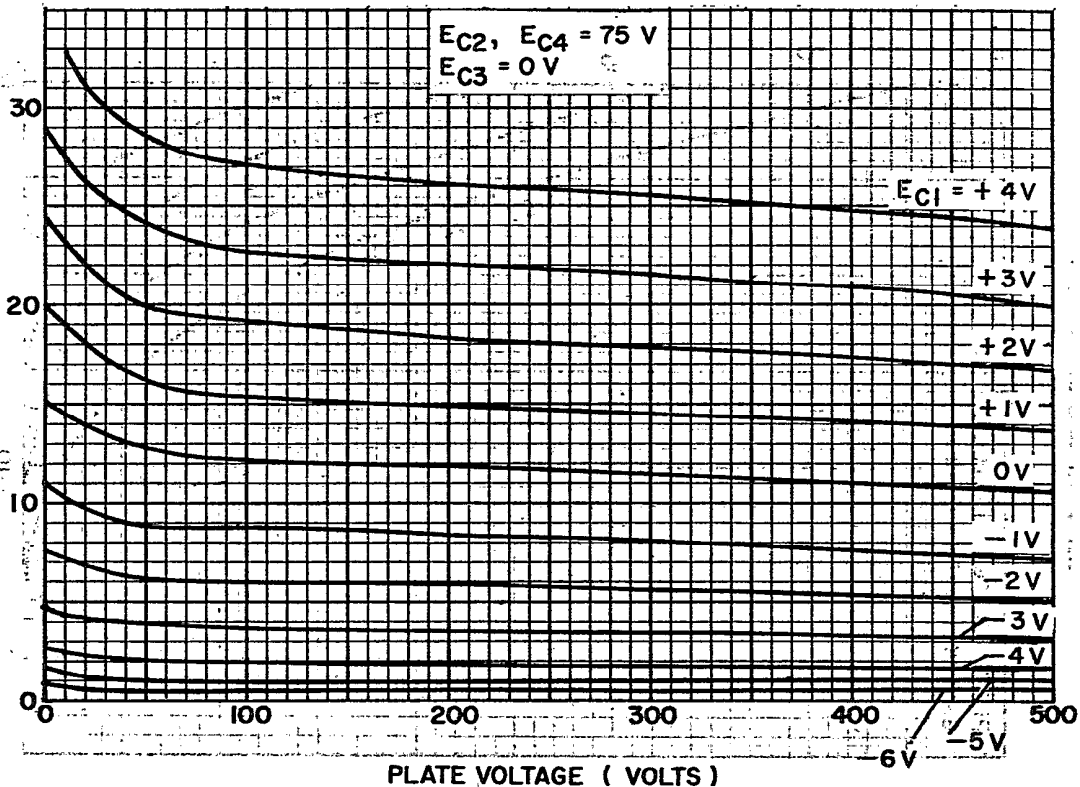
GRID NO. 1 VOLTAGE (VOLTS)

GRID NO. 3 VOLTAGE (VOLTS)

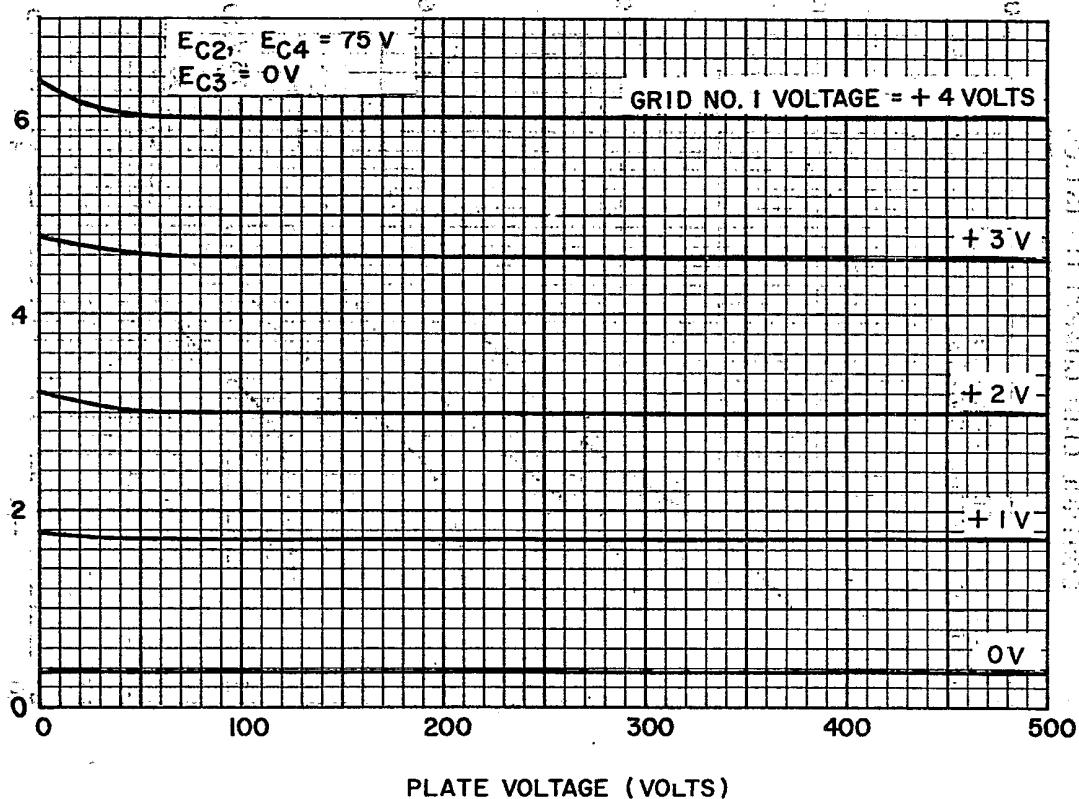
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SCREEN GRID CHARACTERISTICS

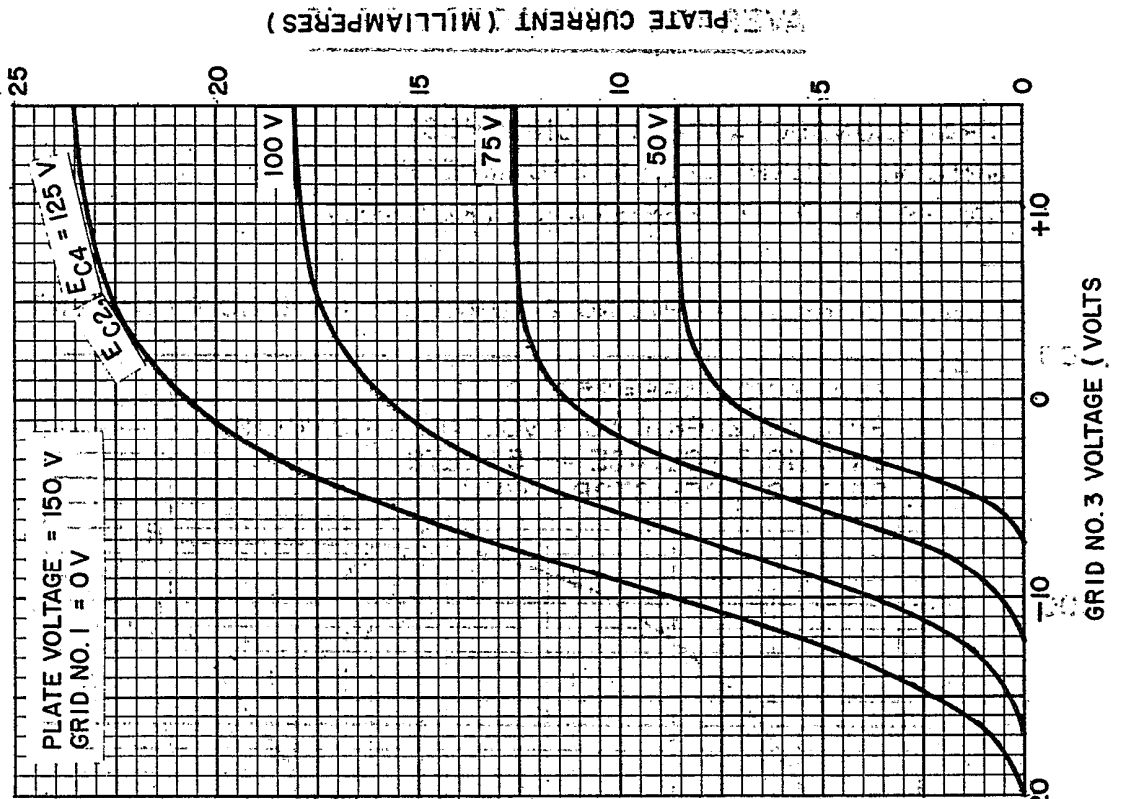
GRID NO. 2 CURRENT + GRID NO. 4 CURRENT (MILLIAMPERES)



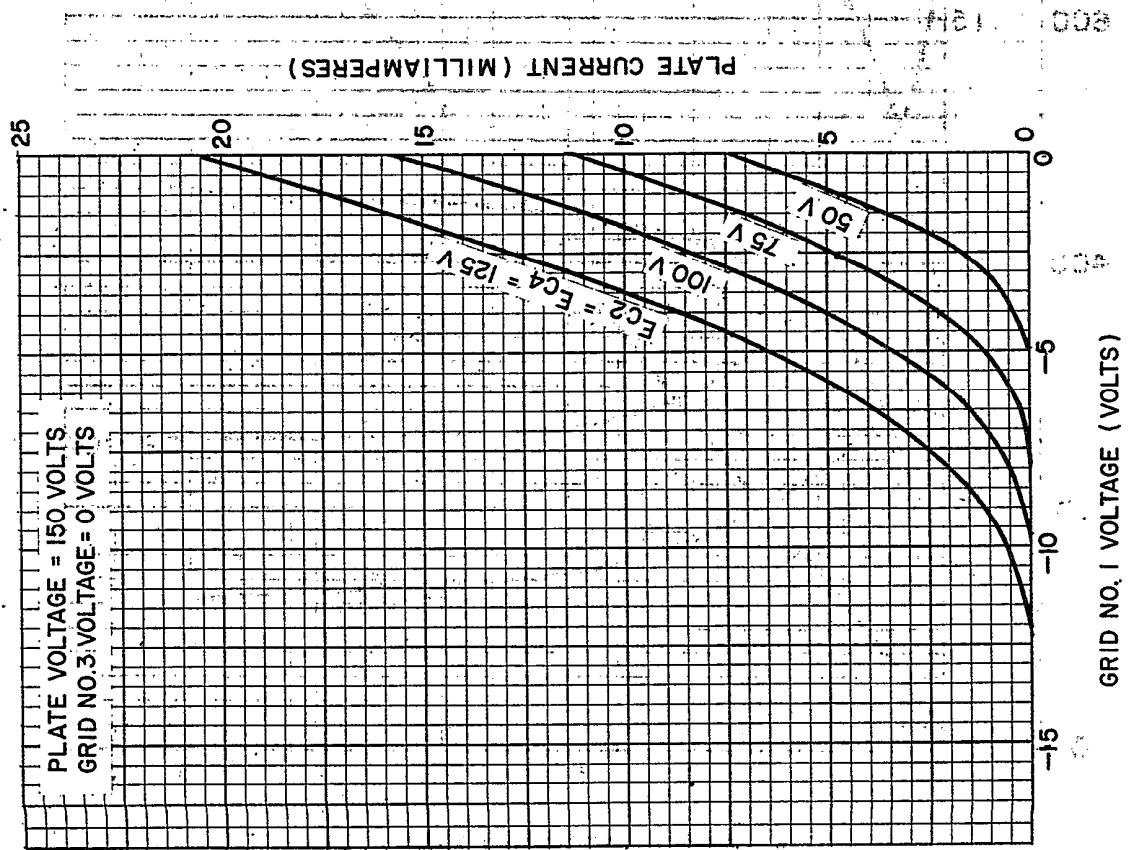
GRID NO. 1 CURRENT (MILLIAMPERES)



GRID NO. 3 TRANSFER CHARACTERISTICS



GRID NO. 1 TRANSFER CHARACTERISTICS



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AVERAGE CHARACTERISTICS

TRANSCONDUCTANCE (MICROMHOS)
GRID NO. 1 CURRENT (MICROAMPERES)
INTERNAL PLATE RESISTANCE (KILOHMS)

