AMPEREX TUBE TYPE 7527

The Amperex 7527 is an all-glass power tetrode designed for amplifier, oscillator or modulator service extending in the VHF region, maximum ratings to 110 Mc/s. It features a maximum plate dissipation of 400 watts combined with a low drive power and low grid-plate capacitance.

GENERAL CHARACTERISTICS

MECHANICAL

Maximum overall dimensions	see outline drawing
Mounting position	vertical
Base	giant 5 pin

Accessories

Socket	Johnson #122-275 or equiv.
Plate connector	S-25671
Chimney	S-25672
Net Weight	6.7 ounces
Cooling	see note 1

Maximum Operating Temperatures

Plate seal	220°C
Pin seal	180°C
Bulb	350°C

ELECTRICAL

Filament	thoriated tungsten,
Filament voltage	5 volts
Filament current	14.1 amps

Direct Interelectrode Capacitances

Input	12.7 $\mu\mu$f
Output	4.9 $\mu\mu$f
Plate to grid	0.12 $\mu\mu$f
Amplification factor (G2 to G1) (E_b = 2500 V, E_{c2} = 500 V, I_b = 100 mA)	5.1
Transconductance (E_b = 2500 V, E_{c2} = 500 V, I_b = 100 mA)	4000 micromhos

NOTES

1 At plate dissipations up to 250 watts a low velocity airflow directed on the plate seal and the base will generally provide sufficient cooling. At higher dissipations the glass chimney should be used for circulating forced air along the bulb.

At plate dissipation of 400 watts at least 15 cfm of air should be passed through the chimney. For this purpose the static pressure below the chassis should be a min of 0.2 inches water pressure.

from JEDEC release #3503, Nov. 27, 1961

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RF Class C - Telegraphy

Maximum Ratings, Absolute Values
(Frequencies up to 110 Mc/s)

	CCS
D-C plate voltage	4000 volts max
D-C plate current	350 mA max
Plate dissipation	400 watts max
Plate input power	1400 watts max
D-C grid No. 2 voltage	600 volts max
Screen-grid dissipation	35 watts max
D-C grid No. 1 voltage	— 500 volts max
D-C grid No. 1 current	25 mA max

Typical Operation

	CCS	CCS	CCS	CCS	CCS
Frequency	75	75	75	100	100 Mc/s
D-C plate voltage	4000	3000	2500	4000	3500 volts
D-C Grid No. 2 voltage	500	500	500	500	500 volts
D-C grid No. 1 voltage	— 220	— 220	—200	—170	—170 volts
D-C plate current	350	350	350	270	250 mA
D-C grid No. 2 current	25	30	35	16	17 mA
D-C grid No. 1 current	6	6	6.5	9.5	9 mA
Peak RF grid No. 1 voltage	305	305	290	240	235 volts
Driving power	1.8	1.8	1.8	2	1.8 watts
Grid No. 2 dissipation	12.5	15	17.5	8	8.5 watts
Plate input power	1400	1050	875	1080	875 watts
Plate dissipation	300	250	235	280	225 watts
Output power	1100	800	640	800	650 watts
Efficiency	78.5	76	73	74	74 %

RF Class C - Telephony

Plate and Screen Modulation
(Carrier Conditions for Use with a Modulation factor of 1.0)

Maximum Ratings, Absolute Values

	CCS	ICAS
At frequencies up to	75	30 Mc/s max
D-C plate voltage	3200	4000 volts max
D-C plate current	275	275 mA max
Plate dissipation	270	270 watts max
Plate input power	880	1100 watts max
D-C grid No. 2 voltage	600	600 volts max
D-C grid No. 2 dissipation	35	35 watts max
D-C grid No. 1 voltage	— 500	—500 volts max
D-C grid No. 1 current	25	25 mA max

Typical Operation

	CCS	CCS	CCS	ICAS
Frequency	75	75	75	30 Mc/s
D-C plate voltage	3000	2500	2000	3650 volts
D-C grid No. 2 current	500	500	500	500 volts
D-C grid No. 1 voltage	— 220	— 220	— 220	— 225 volts
D-C plate current	275	275	275	275 mA
D-C grid No. 2 current	36	38	40	30 mA
D-C grid No. 1 current	6	6	6	6 mA
Peak RF grid No. 1 voltage	305	308	305	308 volts
Driving power	1.6	1.7	1.6	1.7 watts
Grid No. 2 dissipation	18	19	20	15 watts
Plate input power	825	688	550	1000 watts
Plate dissipation	195	178	170	235 watts
Output power	630	510	380	765 watts
Efficiency	75.5	74	69	76.5 %
Modulation depth	100	100	100	100 %
Peak AF grid No. 2 voltage	400	400	400	400 volts [2]
Modulation power	413	344	275	500 watts

[2] Grid No. 2 modulated via transformer.

AF Class AB_2 Amplifier
Maximum Ratings, Absolute Values

	CCS
D-C plate voltage	4000 volts max
D-C plate Current	350 mA max
Plate dissipation	400 watts max
D-C grid No. 2 voltage	800 volts max
Grid No. 2 dissipation	35 watts max
D-C grid No. 1 current	25 mA max

Typical Operation
(Two Tubes)

	CCS	CCS	CCS	CCS
D-C plate voltage	2500	3000	3500	4000 volts
D-C grid No. 2 voltage	500	500	500	500 volts
D-C grid No. 1 voltage	−75	−80	−85	−90 volts
Load resistance (plate to plate)	8000	10,000	11,300	15,000 ohms
Peak AF grid No. 1 to grid No. 1 voltage	290	292	305	290 volts
Zero signal D-C plate current	2x95	2x90	2x80	2x80 mA
Max signal D-C plate current	2x350	2x350	2x350	2x319 mA
Max signal D-C grid No. 2 current	2x30	2x20	2x20	2x20 mA
Max signal D-C grid No. 1 current	2x7	2x6.5	2x6.5	2x6 mA
Max signal grid No. 2 dissipation	2x15	2x10	2x10	2x10 watts
Max signal driving power	2x0.91	2x0.85	2x0.9	2x0.8 watts
Zero signal plate input power	2x238	2x270	2x280	2x320 watts
Max signal plate input power	2x875	2x1050	2x1225	2x1275 watts
Zero signal plate dissipation	2x238	2x270	2x280	2x320 watts
Max signal plate dissipation	2x320	2x362	2x400	2x400 watts
Max signal output power	1110	1375	1650	1750 watts
Efficiency	63.5	65.5	67.5	68.5 %

AF Class AB_1 Amplifier
Maximum Ratings, Absolute Values

D-C plate voltage	4000 volts max
D-C plate current	350 mA max
Plate dissipation	400 watts max
D-C grid No. 2 voltage	800 volts max
Grid No. 2 dissipation	35 watts max
D-C grid No. 1 current	25 mA max

Typical Operation
(Two Tubes)

D-C plate voltage	2500	3000	3500	4000 volts
D-C grid No. 2 voltage	750	750	750	750 volts
D-C grid No. 1 voltage	−130	−137	−145	−150 volts
Load resistance (plate to plate)	6800	8900	11,500	14,500 ohms
Peak AF grid No. 1 to grid No. 1 voltage	260	274	290	300 volts
Zero signal D-C plate current	2x95	2x80	2x70	2x60 mA
Max signal D-c plate current	2x318	2x318	2x305	2x293 mA
Max signal D-C grid No. 2 current	2x11.6	2x11	2x13.5	2x15 mA
Max signal grid No. 2 dissipation	2x8.7	2x10.25	2x10.4	2x11.2 watts
Zero signal plate input power	2x366	2x240	2x245	2x240 watts
Max signal plate input power	2x795	2x955	2x1065	2x1170 watts
Zero signal plate dissipation	2x366	2x240	2x245	2x240 watts
Max signal plate dissipation	2x370	2x400	2x400	2x400 watts
Output power	850	1110	1330	1540 watts
Efficiency	53.5	58	62.5	66 %

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Single Sideband Class AB_1 Linear Amplifier

Maximum Ratings, Absolute Values
(Frequencies up to 110 Mc/s)

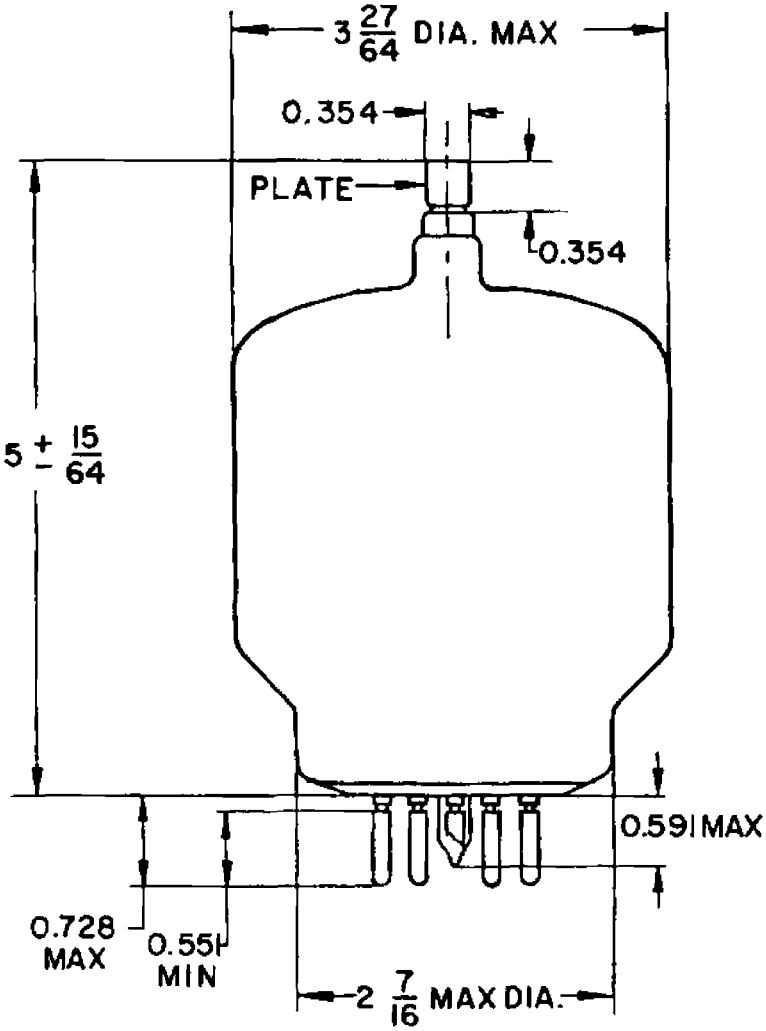
	CCS
D-C plate voltage	4000 volts max
D-C grid No. 2 voltage	850 volts max
D-C grid No. 1 voltage	−500 volts max
D-C plate current	350 mA max
Plate input	1600 watts max
Plate dissipation	400 watts max
Grid No. 2 dissipation	35 watts max
Grid No. 1 current	25 watts max

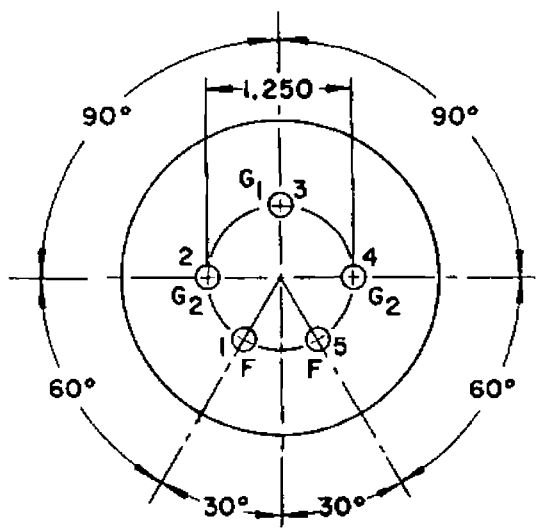
Typical Operation
Single Tone and/or Two Tone Modulation

	CCS	CCS	CCS	CCS
D-C plate voltage	4000	3500	3000	2500 volts
D-C grid No. 2 voltage	705	750	840	840 volts
D-C grid No. 1 voltage [4]	−130	−135	−148	−144 volts
Zero signal D-C plate current	80	90	100	100 mA
Zero signal D-C grid No. 2 current	0	0	0	0 mA
Effective RF load resistance	9150	7150	5700	4460 ohms
Single Tone Modulation				
Max signal D-C plate current	270	272	306	307 mA
Max signal D-C grid No. 2 current	14	12	16	18 mA
Max signal D-C grid No. 1 current	0	0	0	0 mA
Max signal peak RF grid No. 1 voltage	130	135	148	144 volts
Max signal driving power	0	0	0	0 watts
Max signal plate power output	723	612	590	466 watts
Two Tone Modulation				
Average D-C plate current	176	189	215	215 mA
Average D-C screen-grid current	4	4	5	6 mA
Average D-C control-grid current	0	0	0	0 mA
Max resultant peak RF grid voltage	130	135	148	144 volts
Average plate power output	362	306	295	233 mA
Peak envelope plate power output	723	612	590	466 mA
3rd order intermodulation distortion	35	35	35	35 db

[3] If the temperature of the pin seals is kept below 120°C, the maximum value of screen-grid voltage may be increased to 1000 volts.

[4] Adjust to give stated zero signal D-C plate current.





GIANT 5 PIN BASE

PINS, .187 ± .003 DIA.

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PLATE CHARACTERISTICS

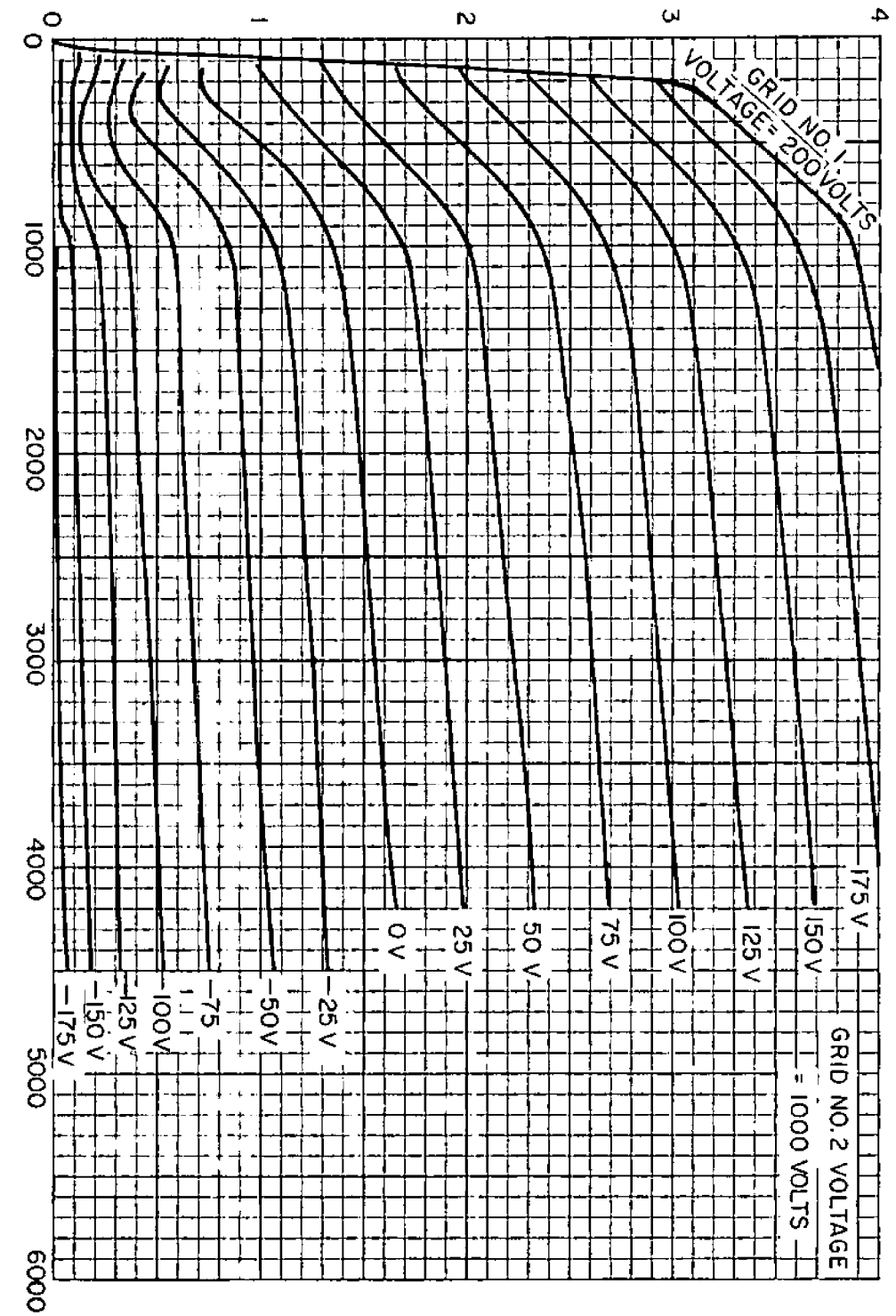

PLATE CHARACTERISTICS

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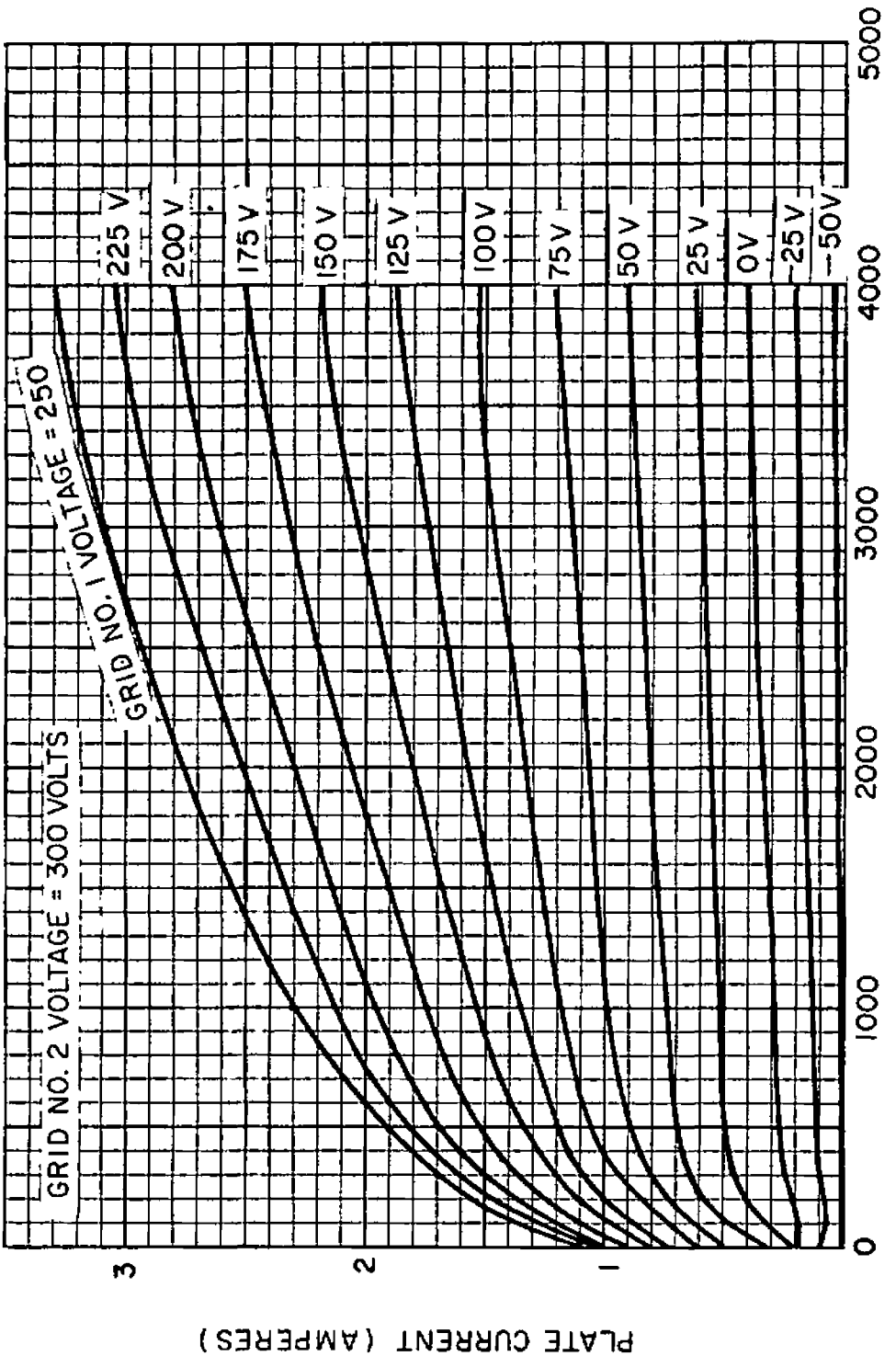
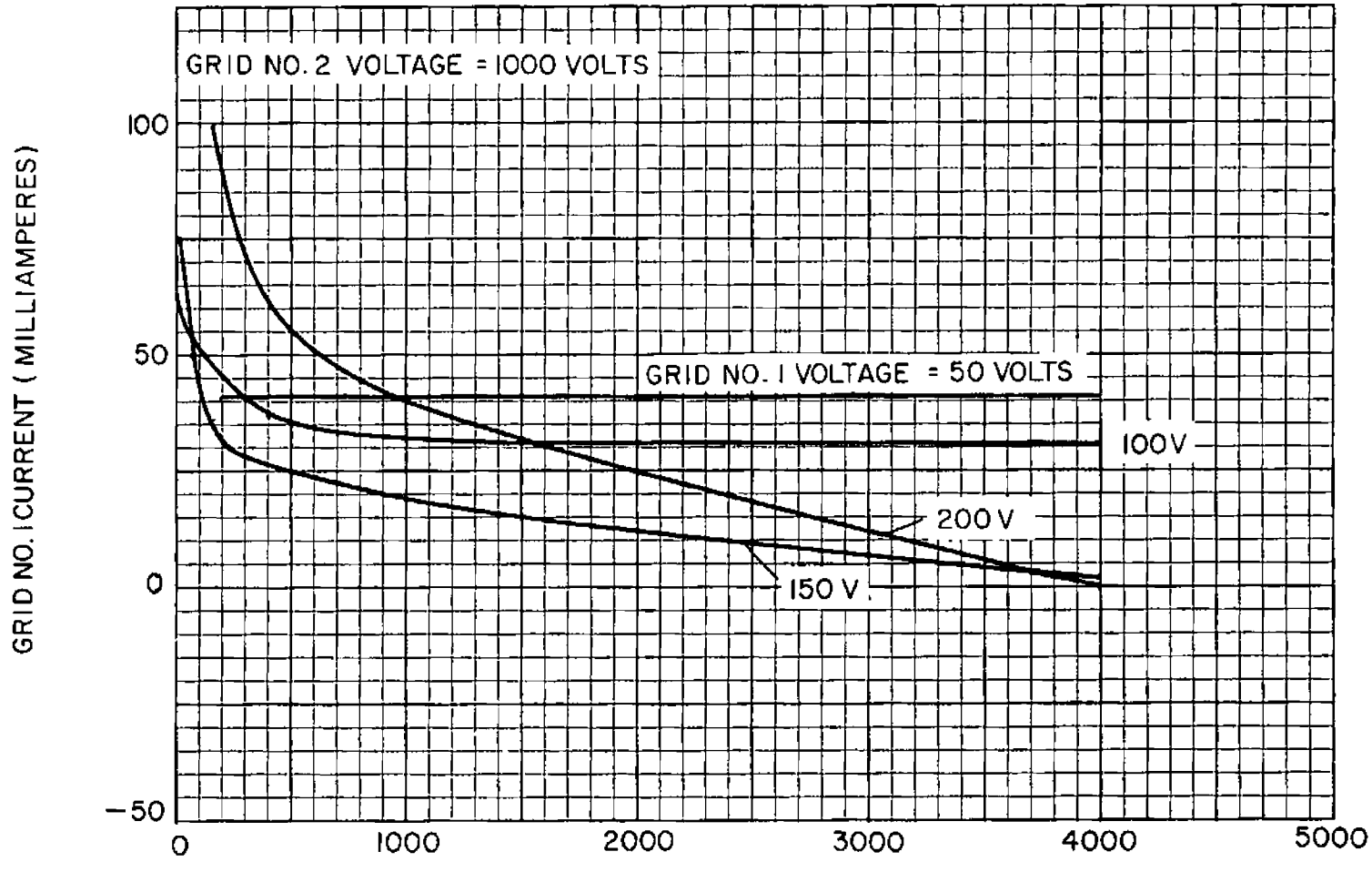
PLATE CHARACTERISTICS



CONTROL GRID CHARACTERISTICS



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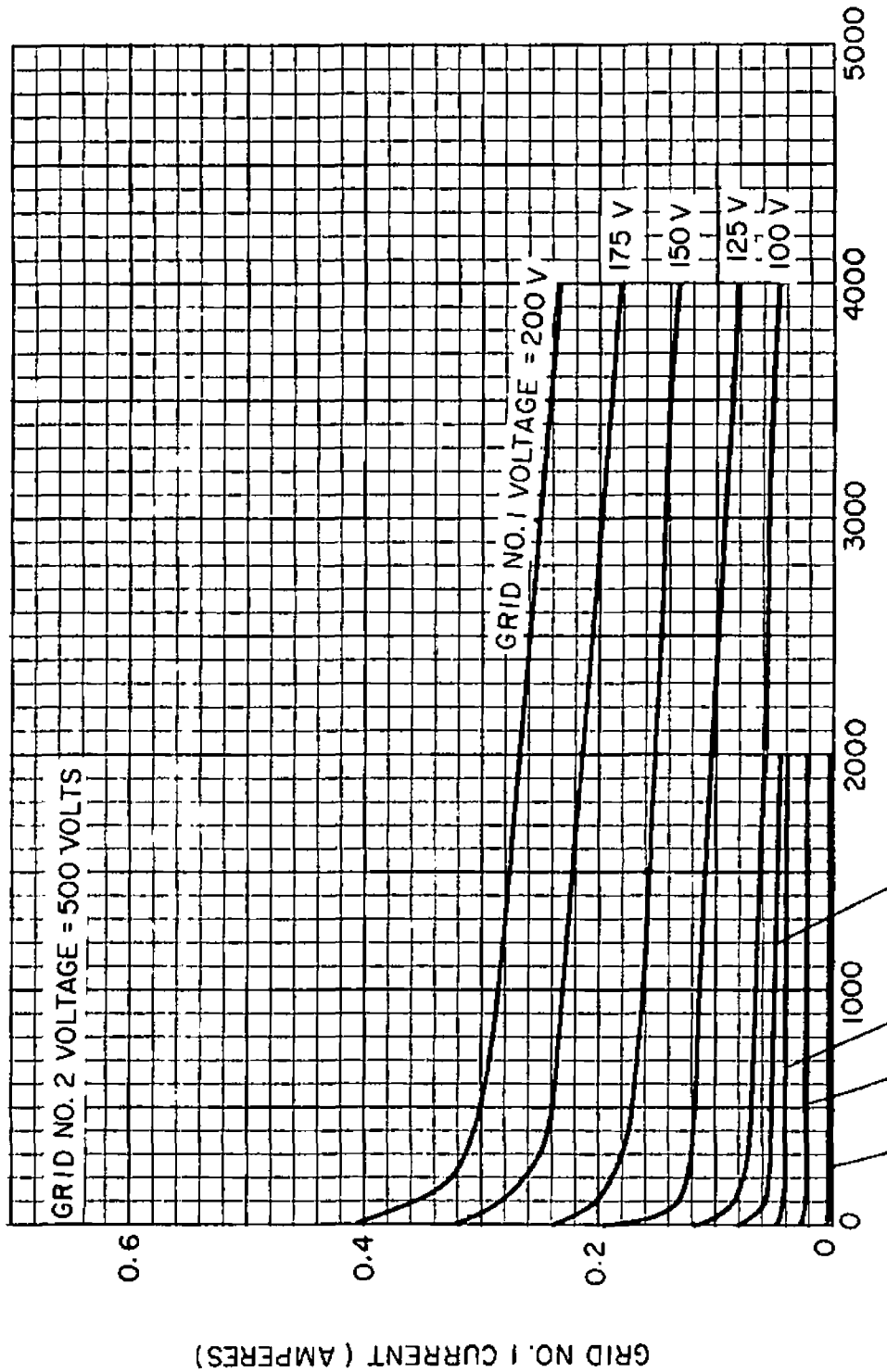
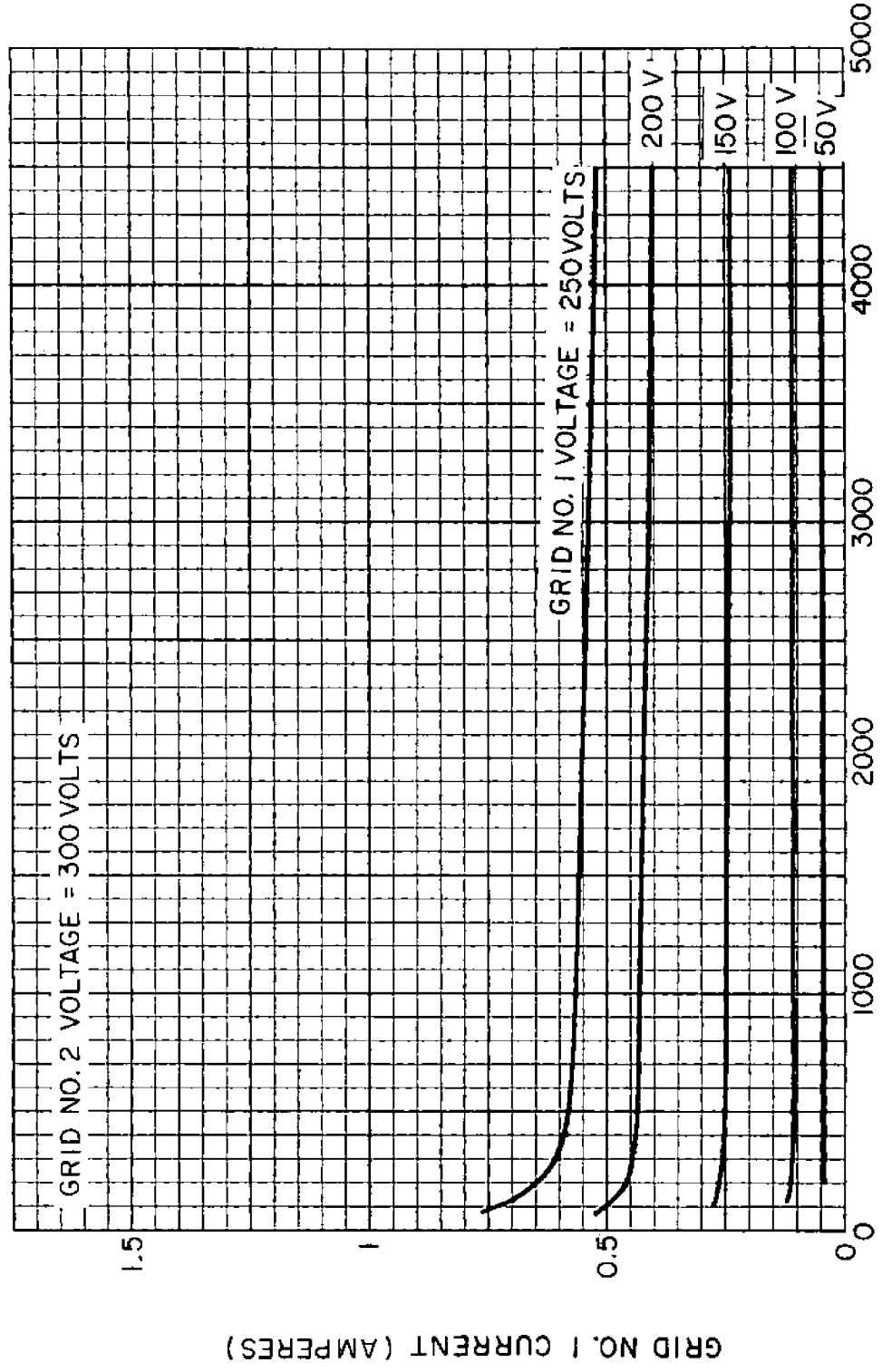
CONTROL GRID CHARACTERISTICS



CONTROL GRID CHARACTERISTICS



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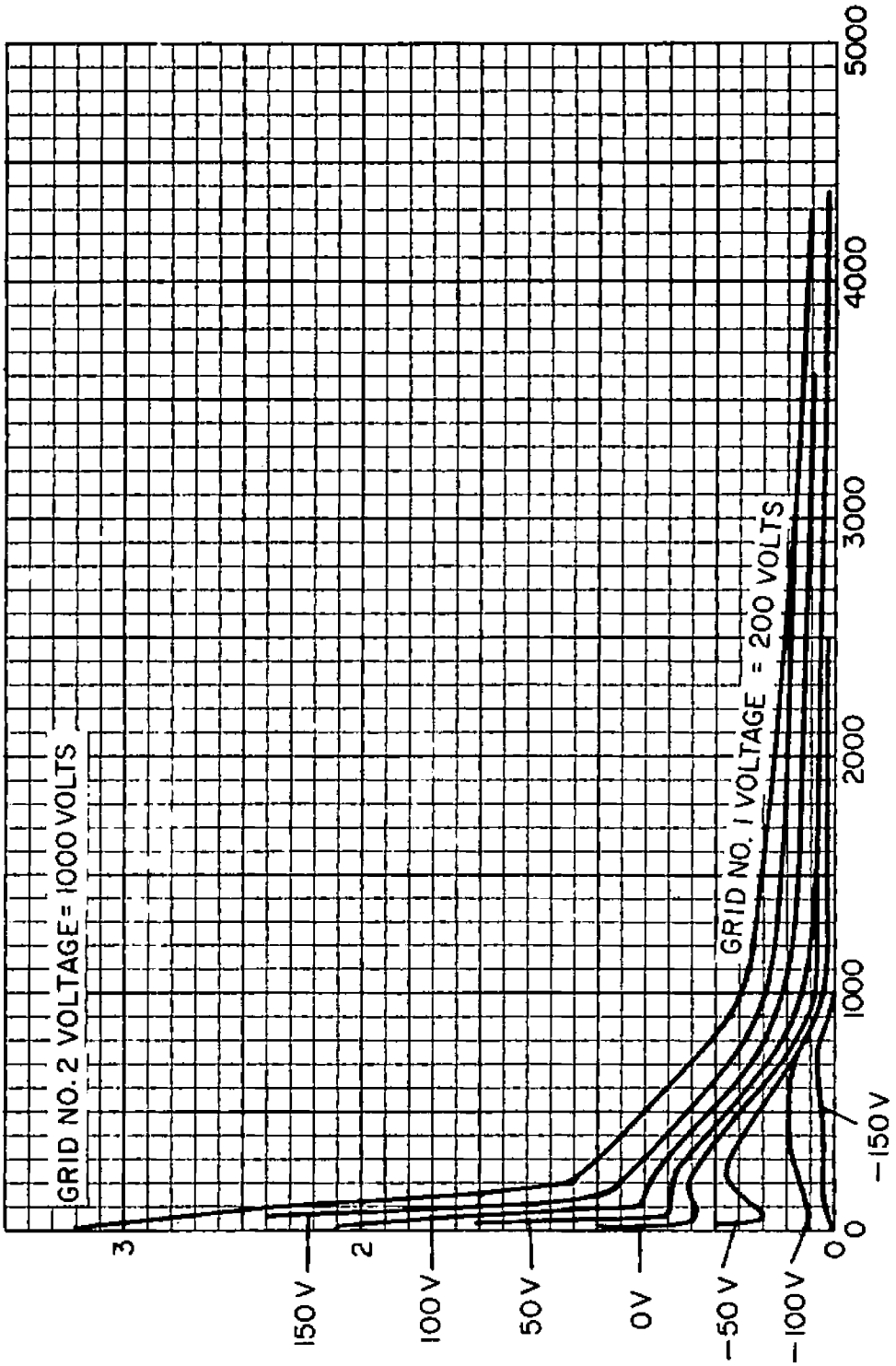
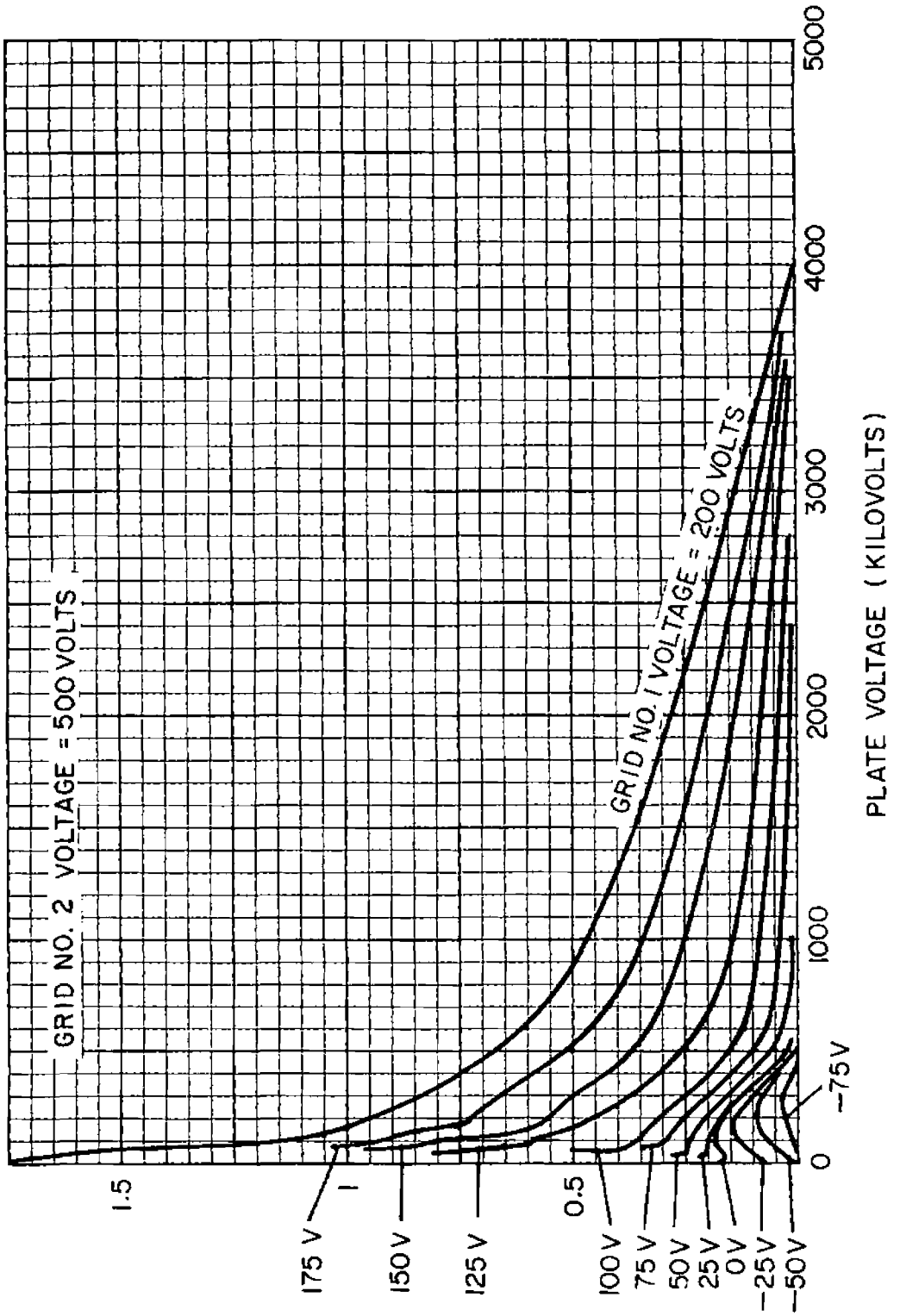
SCREEN GRID CHARACTERISTICS



SCREEN GRID CHARACTERISTICS



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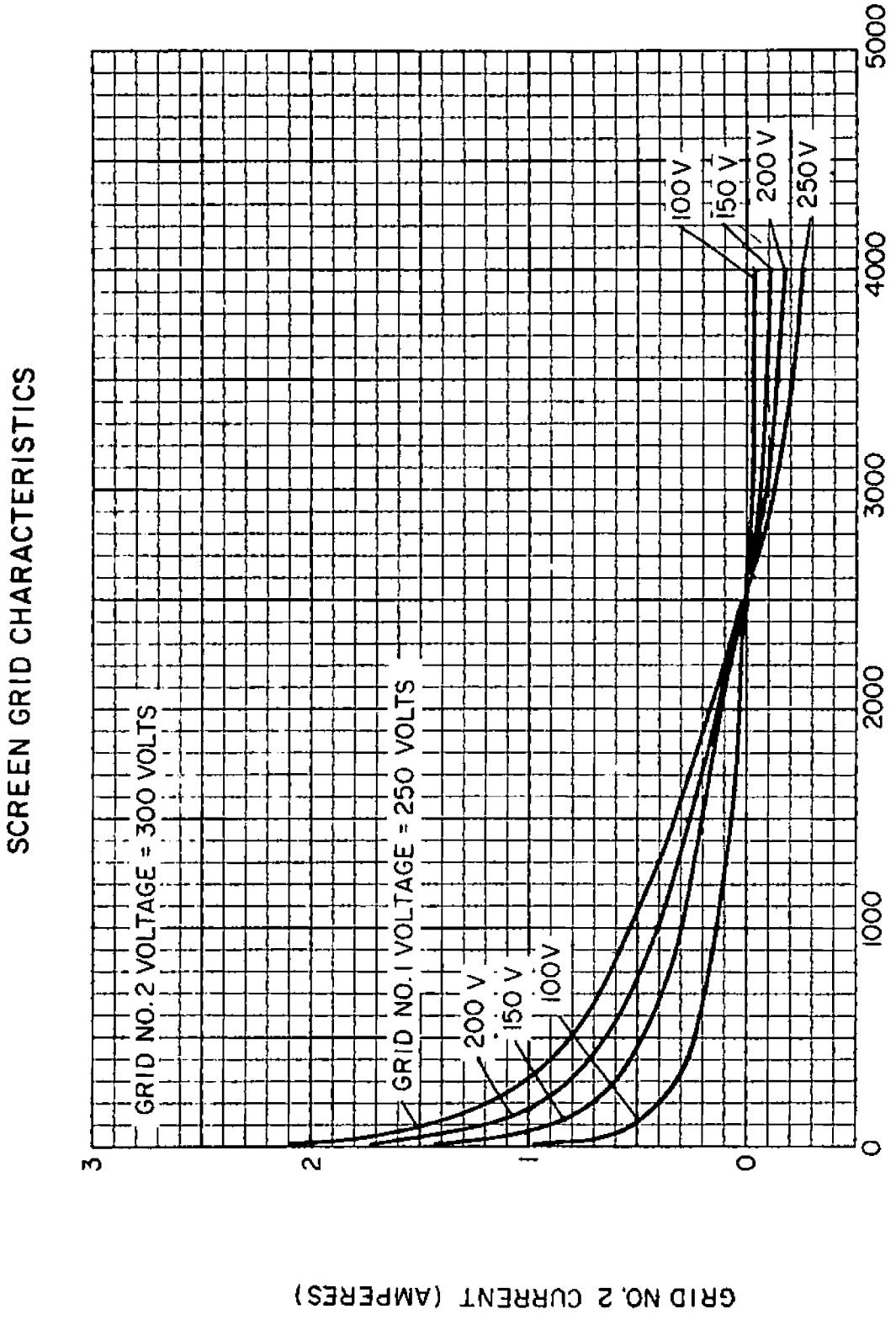
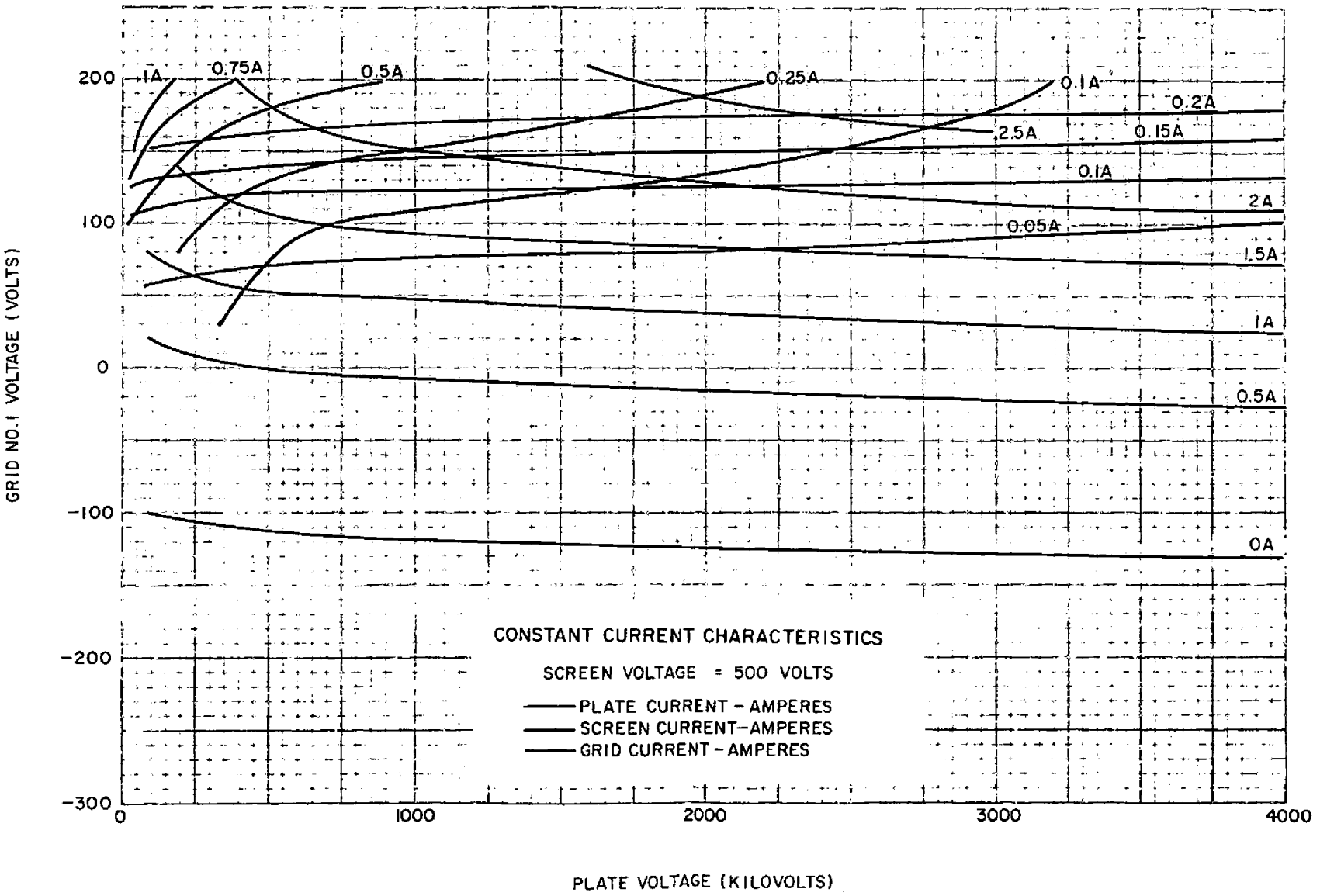

SCREEN GRID CHARACTERISTICS
GRID NO.2 VOLTAGE = 300 VOLTS
GRID NO.1 VOLTAGE = 250 VOLTS
100 V
150 V
200 V
250 V
100V
150 V
200 V
0
1
2
3
0
1000
2000
3000
4000
5000
GRID NO. 2 CURRENT (AMPERES)
PLATE VOLTAGE (KILOVOLTS)


1A
0.75A
0.5A
0.25A
0.1A
0.2A
2.5A
0.15A
0.1A
2A
0.05A
1.5A
1A
0.5A
0A
200
100
0
-100
-200
-300
0
1000
2000
3000
4000
GRID NO.1 VOLTAGE (VOLTS)
PLATE VOLTAGE (KILOVOLTS)
CONSTANT CURRENT CHARACTERISTICS
SCREEN VOLTAGE = 500 VOLTS
PLATE CURRENT - AMPERES
SCREEN CURRENT-AMPERES
GRID CURRENT - AMPERES

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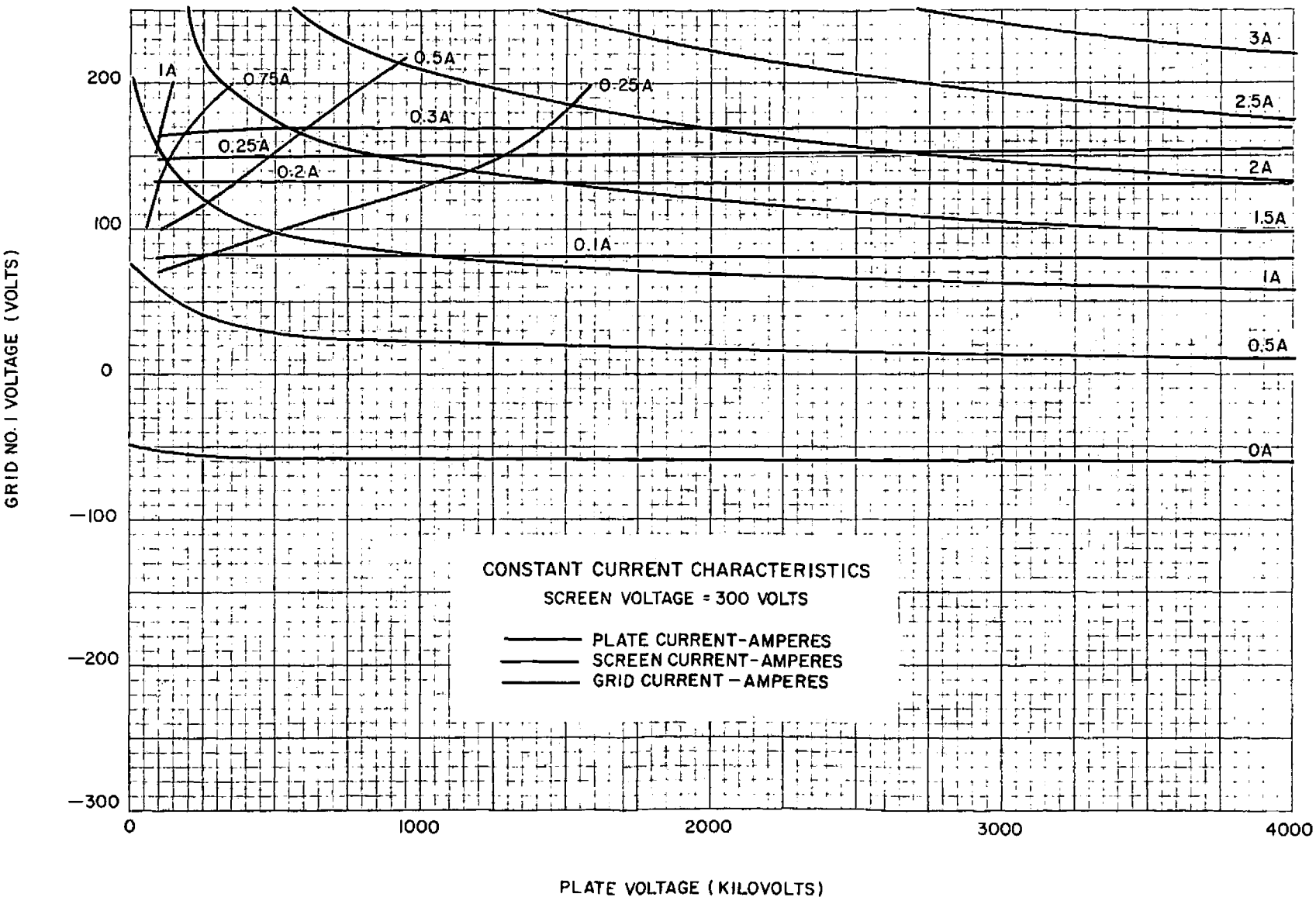
CONSTANT CURRENT CHARACTERISTICS
SCREEN VOLTAGE = 300 VOLTS
PLATE CURRENT-AMPERES
SCREEN CURRENT-AMPERES
GRID CURRENT – AMPERES
3A
2.5A
2A
1.5A
1A
0.5A
0A
1A
0.75A
0.5A
0.25A
0.3A
0.2A
0.1A
200
100
0
−100
−200
−300
0
1000
2000
3000
4000
GRID NO. 1 VOLTAGE (VOLTS)
PLATE VOLTAGE (KILOVOLTS)