

AMPEREX TUBE TYPE 7004

The 7004 is a small and compact coaxial UHF transmitting triode of the external anode type requiring forced air cooling. The radiator is an integral part of the tube.

The tube is intended for UHF oscillator, amplifier, and frequency multiplier service. The 7004 is useful up to 900 megacycles.

GENERAL CHARACTERISTICS

ELECTRICAL DATA

Filament	Thoriated Tungsten
Filament Starting Voltage (for 600 Mc/s or below) ¹	3.4 volts
Filament Current (at 3.4 volts)	19.0 amperes
Amplification Factor	32
Transconductance ($E_b = 2000$ V, $I_B = 150$ mA)	10,000 micromhos
Direct Interelectrode Capacitances	
Grid to Plate	4.0 μf
Grid to Filament	9.0 μf
Plate to Filament (maximum)	0.12 μf

MECHANICAL DATA

Maximum Overall Dimensions	
Length	2.88 inches
Diameter	1.65 inches
Mounting Position	vertical, anode up or down
Net Weight	0.316 pound
Maximum Seal Temperature	200° centigrade

COOLING CHARACTERISTICS

Plate Dissipation Watts	Altitude Feet	Maximum Air Inlet Temperature °C	Minimum Air Flow Cubic ft. Per Minute	Static Pressure (Inches Water)
300	0	45	15.9	0.94
	5000	35	16.2	0.89
	10,000	25	17.3	0.85

¹ 3.3 volts for frequencies greater than 600 but less than 750 megacycles.
3.2 volts for frequencies greater than 750 but less than 900 megacycles.

² It is generally necessary to direct an air flow on the center of filament sea

RF PLATE MODULATED AMPLIFIER CLASS C - TELEPHONY

Maximum Ratings, Absolute Values

Frequency	175	300	470	600	900 Mc/s
D-C Plate Voltage	2000	1600	1400	1280	1040 volts
D-C Plate Current	335	335	335	335	335 mA
Negative Grid Voltage	300	300	300	300	300 volts
D-C Grid Current	120	120	120	120	120 mA
Plate Input Power	670	536	465	429	348 watts
Plate Dissipation	200	200	200	200	200 watts

Typical Operation³

Frequency	175	300	470	600	900 Mc/s
D-C Plate Voltage ⁴	2000	1600	1400	1280	1040 volts
D-C Plate Current	335	335	332	332	290 mA
D-C Grid Voltage	- 200	- 140	- 120	- 100	- 80 volts
D-C Grid Current	120	120	110	100	80 mA
Peak RF Grid Voltage	275	-	-	-	- volts
Grid Input Power	30	-	-	-	- watts
Plate Input Power	670	536	465	425	302 watts
Plate Dissipation	165	166	190	200	200 watts
Power Output	505	370	275	225	102 watts
Efficiency	75.5	69	59	53	34 %
Modulation Factor	1	1	1	1	1
Modulation Power	335	268	233	213	151 watts

RF POWER AMPLIFIER AND OSCILLATOR CLASS C TELEGRAPHY

Maximum Ratings, Absolute Values

Frequency	175	300	470	600	900 Mc/s
D-C Plate Voltage	2500	2000	1750	1600	1300 volts
D-C Plate Current	400	400	400	400	400 mA
Negative Grid Voltage	300	300	300	300	300 volts
D-C Grid Current	120	120	120	120	120 mA
Plate Input Power	1000	800	700	640	520 watts
Plate Dissipation	300	300	300	300	300 watts

Typical Operation³

Frequency	175	300	470	600	900 Mc/s
D-C Plate Voltage ⁴	2500	2000	1750	1600	1300 volts
D-C Plate Current	260	335	380	400	350 mA
D-C Grid Voltage	200 ⁵	- 120 ⁵	- 105	- 90	- 60 volts
Peak RF Grid Voltage	275	-	-	-	- volts
Grid Input Power	25	-	-	-	- watts
Plate Input Power	650	670	665	640	455 watts
Plate Dissipation	175	210	260	290	300 watts
Power Output	475	460	405	350	155 watts
Efficiency	73	69	61	55	34 %

³ All values for grounded-grid operation except values under 175 Mc/s which are for grounded cathode operation.

⁴ With respect to cathode.

⁵ Partially fixed bias.

RF INDUSTRIAL OSCILLATOR SELF RECTIFIED - CLASS C

Maximum Ratings, Absolute Values

Frequency	470 Mc/s
Transformer Secondary Voltage (RMS)	1800 volts
D-C Plate Current	210 mA
D-C Grid Current (Loaded)	85 mA
D-C Grid Current (Unloaded)	120 mA
Negative Grid Voltage	500 volts
Grid Resistor	5000 ohms
Plate Input Power	400 watts
Plate Dissipation	170 watts

Typical Operation ³

Frequency	470 Mc/s
Transformer Secondary Voltage (RMS) ⁴	1750 volts
D-C Plate Current (Loaded)	185 mA
D-C Plate Current (Unloaded)	105 mA
D-C Grid Current (Loaded)	75 mA
D-C Grid Current (Unloaded) ⁶	80 mA
Grid Resistor ⁷	400 ohms
Plate Input Power	365 watts
Plate Dissipation	130 watts
Power Output	235 watts
Power Output Load ⁸	165 watts
Efficiency	64 %

RF OSCILLATOR - CLASS C SINGLE PHASE FULL WAVE RECTIFIER WITH FILTER

Maximum Ratings, Absolute Values

Frequency	470 Mc/s
D-C Plate Voltage	1800 volts
D-C Plate Current	400 mA
D-C Grid Current (Loaded)	110 mA
D-C Grid Current (Unloaded)	120 mA
Negative Grid Voltage	300 volts
Grid Resistor	5000 ohms
Plate Input Power	700 watts
Plate Dissipation	300 watts

Typical Operation ³

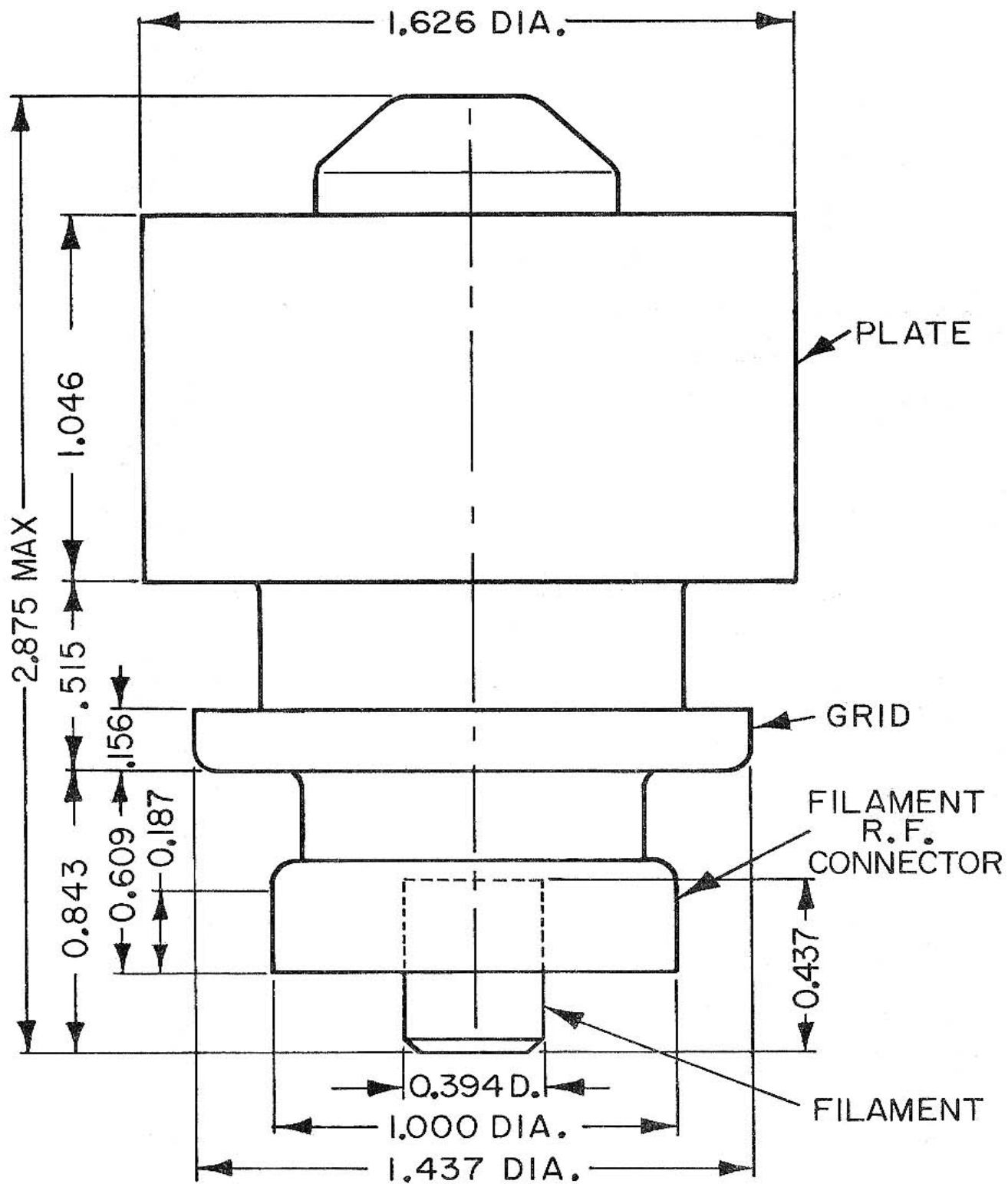
Frequency	470 Mc/s
D-C Plate Voltage ⁴	1750 volts
D-C Plate Current (Loaded)	340 mA
D-C Plate Current (Unloaded)	170 mA
D-C Grid Current (Loaded)	95 mA
D-C Grid Current (Unloaded) ⁶	100 mA
Grid Resistor ⁷	1000 ohms
Plate Input Power	595 watts
Plate Dissipation	210 watts
Power Output	385 watts
Power Output Load	270 watts
Efficiency	65 %

⁶ Grid resistance obtained by a current stabilizing device.

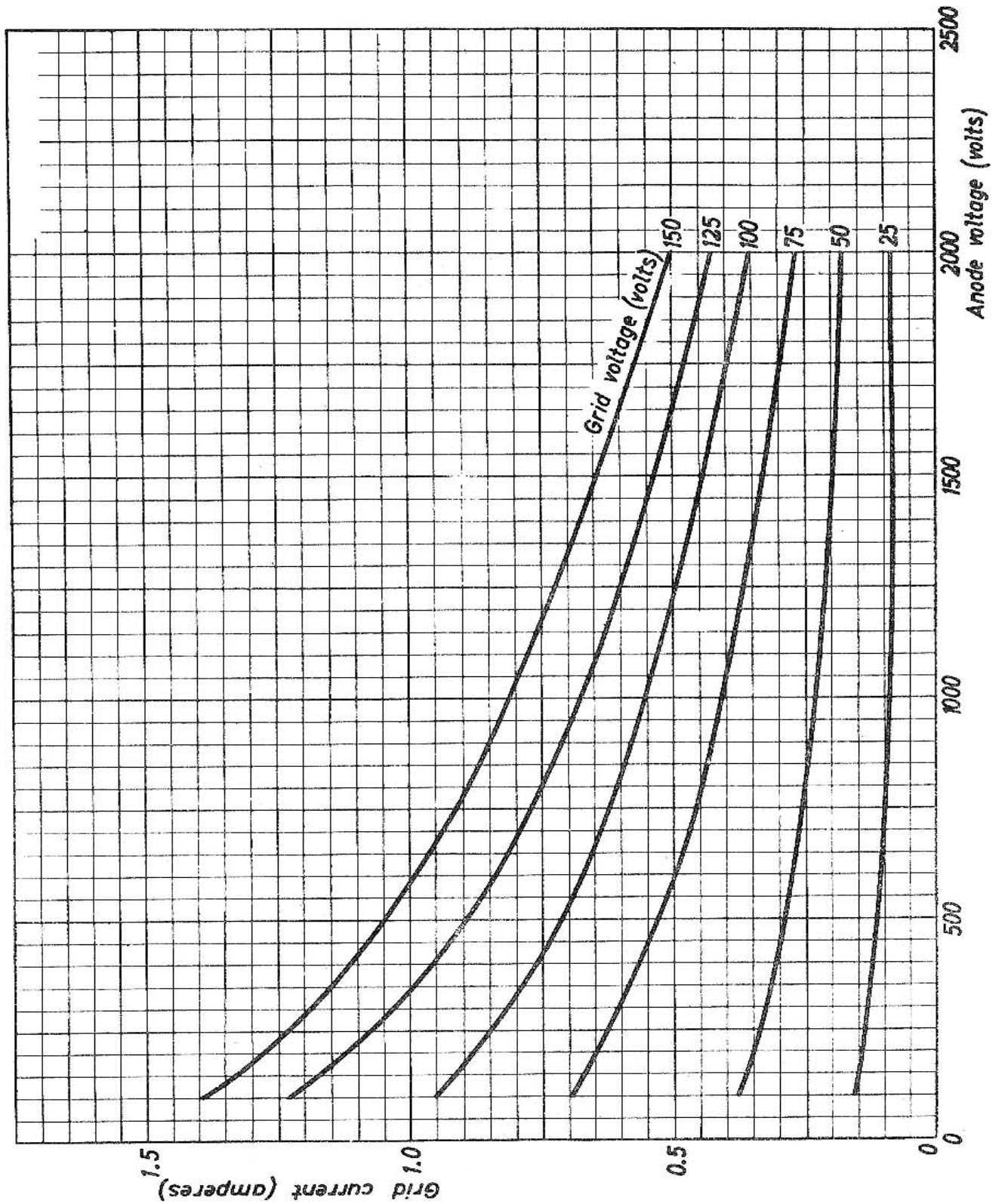
⁷ Under matched conditions.

⁸ Measured by a calorimetric method.

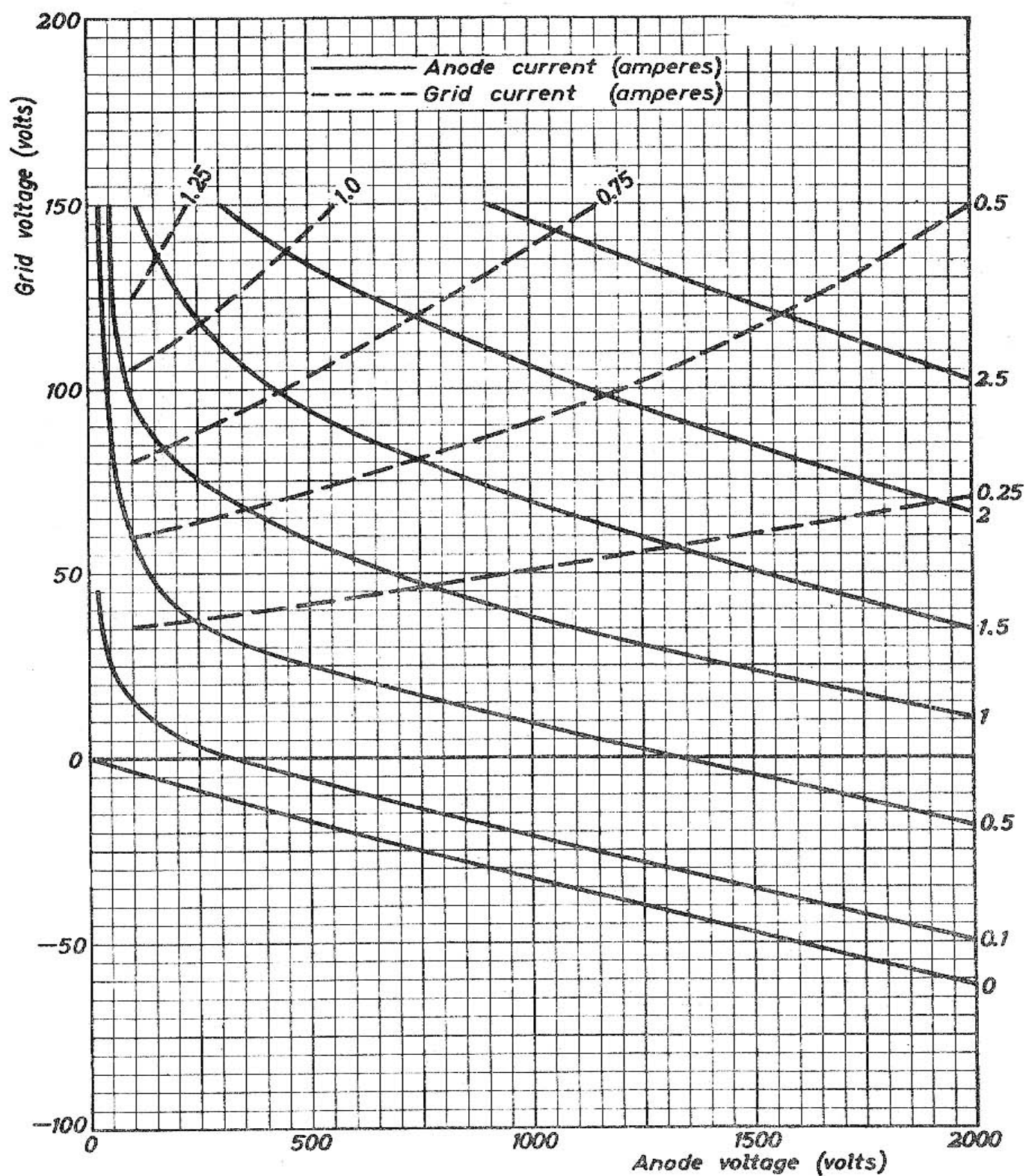
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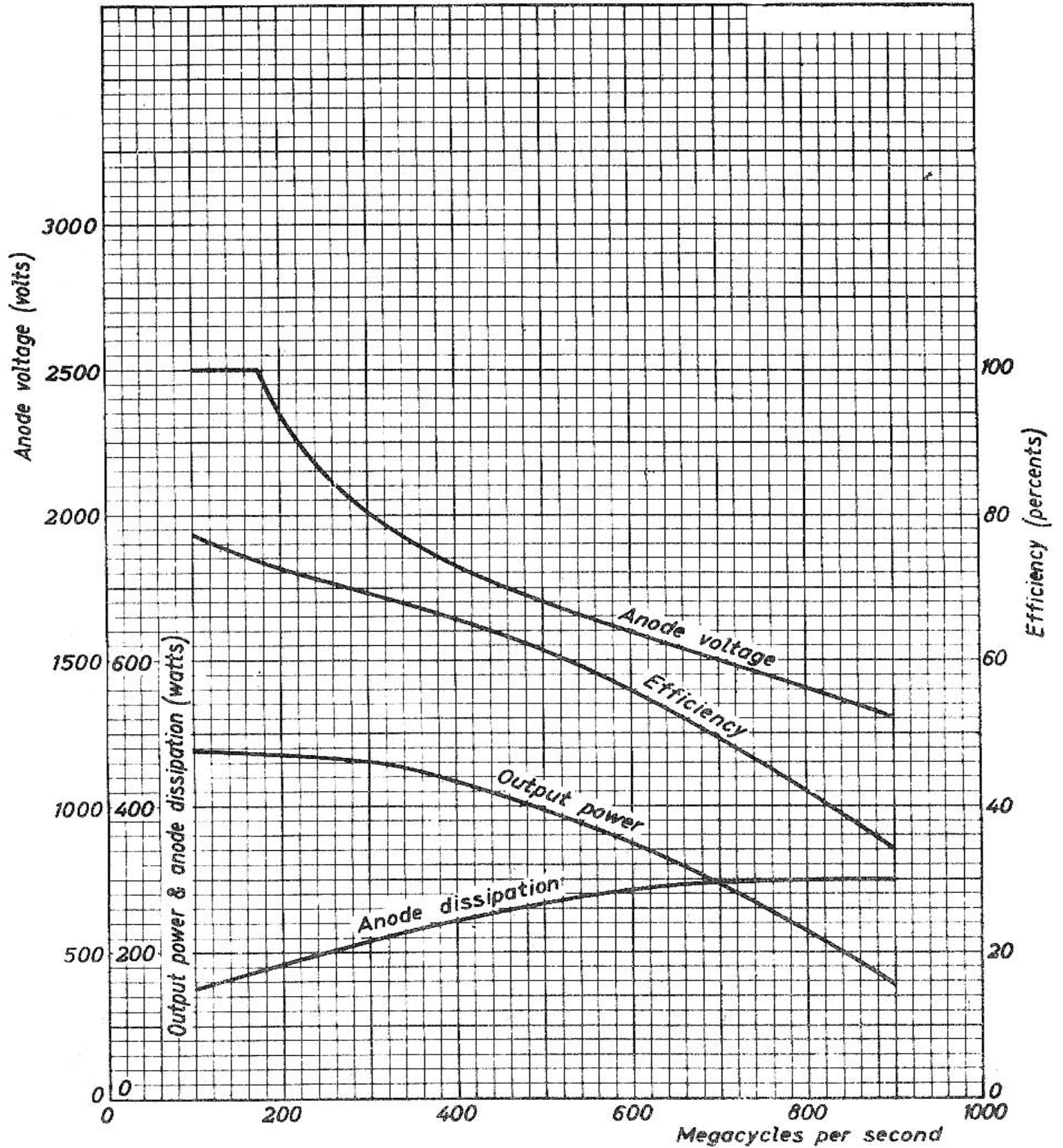


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