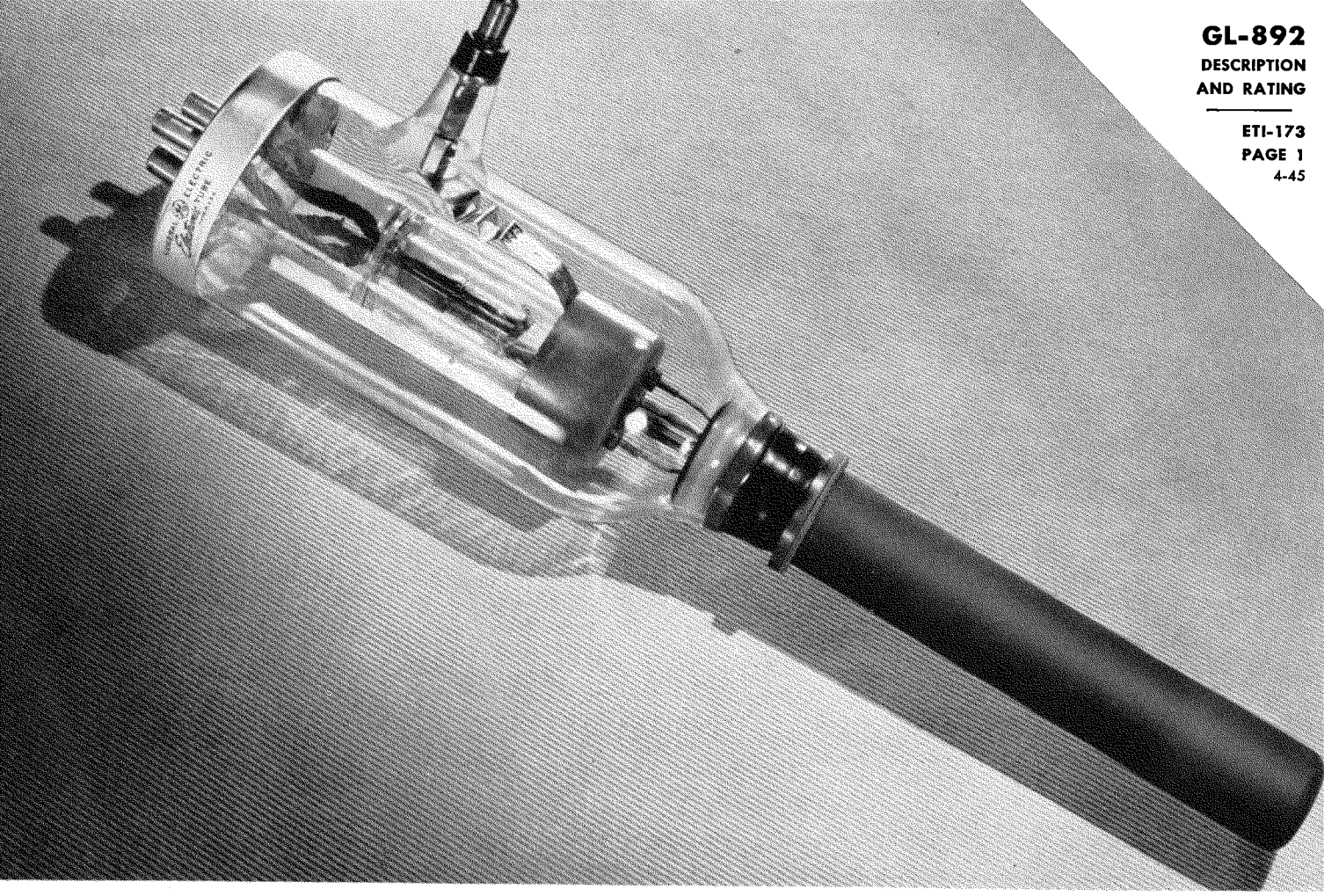


PLIOTRON

DESCRIPTION

The 892 is a three-electrode pliotron of the double-filament type for use as a radio-frequency power amplifier, oscillator, and Class B modulator. The construction of the filament permits operation from two-phase or single-phase alternating current as well as from direct current, for all classes of service. The plate is water-cooled and is capable of dissipating 6.6 to 10 kilowatts.

TECHNICAL INFORMATION

These data are for reference only. For design information refer to specifications.

GENERAL CHARACTERISTICS

Number of electrodes	3	
Electrical		
Cathode—filamentary, two-unit type		
Excitation 1-phase a-c, 2-phase a-c, or d-c		
Voltage, per unit	11	volts
Current	60	amperes
Amplification factor	50	
Direct interelectrode capacitances		
Grid-plate	30	micromicrofarads
Grid-filament	20	micromicrofarads
Plate-filament	1.5	micromicrofarads
Frequency for maximum ratings	1.6	megacycles

Electronic TUBE

GENERAL ELECTRIC

TECHNICAL INFORMATION (CONT'D)

Mechanical

Type of cooling	water	
Maximum outlet temperature	70	centigrade
Water flow	3 to 8	gallons per minute
Gasket	cat. no. 5182028P3	
Net weight, approximate	3	pounds
Shipping weight, approximate	10	pounds

MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

CLASS B AUDIO-FREQUENCY POWER AMPLIFIER (TWO TUBES)

D-c plate voltage	15000	volts
Max-signal d-c plate current*	2.0	amperes
Max-signal plate input*	20	kilowatts
Plate dissipation	7.5	kilowatts

Typical operation:

Unless otherwise specified, values are for 2 tubes.

D-c plate voltage	6000	10000	12500	volts
D-c grid voltage†	0	−90	−170	volts
Peak a-f grid-to-grid voltage	1200	1620	1530	volts
Zero-signal d-c plate current	0.5	0.5	0.4	ampere
Max-signal d-c plate current	2.5	3.2	2.8	amperes
Load resistance (per tube)	1050	1600	2500	ohms
Effective load resistance (plate-to-plate)	4200	6400	10000	ohms
Max-signal driving power, approximate	415	525	420	watts
Max-signal power output, approximate	8	20	22	kilowatts

CLASS B RADIO-FREQUENCY POWER AMPLIFIER

Carrier conditions per tube for use with a maximum modulation factor of 1.0

D-c plate voltage	15000	volts
D-c plate current	1.0	amperes
Plate input	15	kilowatts
Plate dissipation	10	kilowatts

Typical operation:

D-c plate voltage	6000	10000	14000	volts
D-c grid voltage†	0	−100	−190	volts
Peak r-f grid voltage	300	470	510	volts
D-c plate current	0.67	0.93	0.95	amperes
Driving power°, approximate	65	50	30	watts
Power output, approximate	1	2.5	4	kilowatts

CLASS C RADIO-FREQUENCY POWER AMPLIFIER AND OSCILLATOR—PLATE-MODULATED

Carrier conditions per tube for use with a maximum modulation factor of 1.0

D-c plate voltage	10000	volts
D-c grid voltage	−3000	volts
D-c plate current	1.0	ampere
D-c grid current	0.25	ampere
Plate input	10	kilowatts
Plate dissipation	6.6	kilowatts

Typical operation:

D-c plate voltage	6000	8000	10000	volts
D-c grid voltage	−1000	−1300	−1600	volts
Peak r-f grid voltage	1675	2000	2400	volts
D-c plate current	0.77	0.75	0.72	ampere
D-c grid current, approximate	0.19	0.18	0.12	ampere
Driving power, approximate	310	350	260	watts
Power output, approximate	3.5	5	6	kilowatts

CLASS C RADIO-FREQUENCY POWER AMPLIFIER AND OSCILLATOR

Key-down conditions per tube wihout modulation††

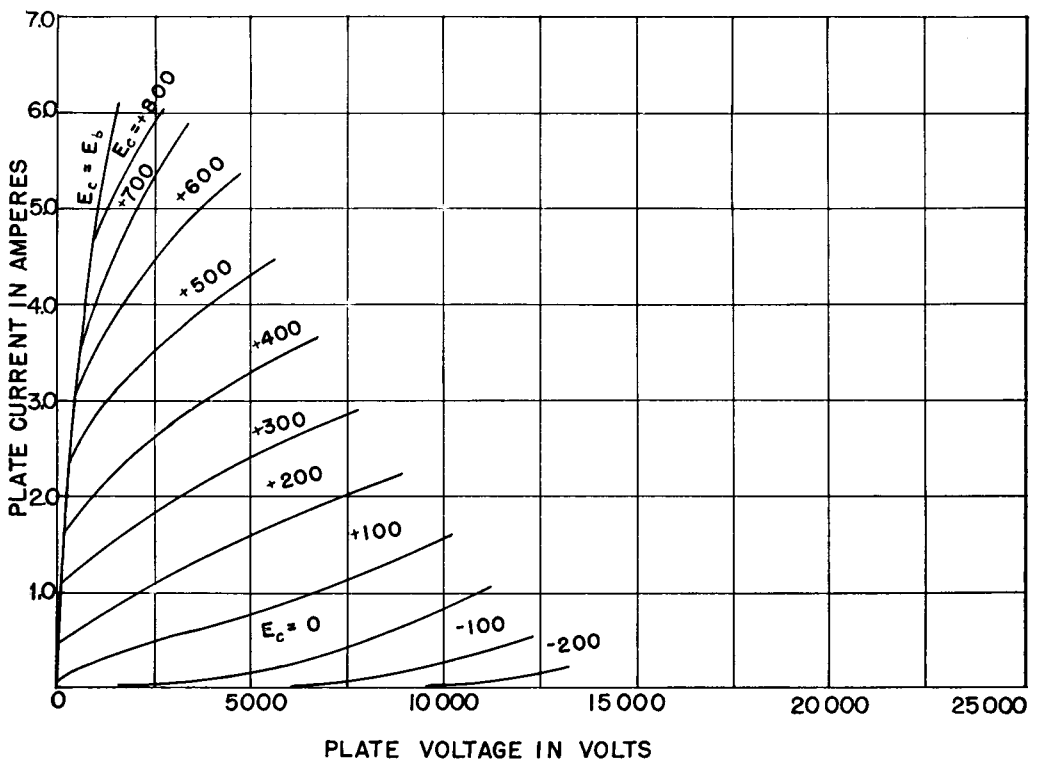
D-c plate voltage			15000	volts
D-c grid voltage			−3000	volts
D-c plate current			2.0	amperes
D-c grid current			0.25	ampere
Plate input			30	kilowatts
Plate dissipation			10	kilowatts
Typical operation:				
D-c plate voltage	8000	10000	12000	volts
D-c grid voltage	−1000	−1300	−1600	volts
Peak r-f grid voltage	1800	2300	2800	volts
D-c plate current	1.1	1.4	1.64	amperes
D-c grid current, approximate	0.18	0.18	0.18	ampere
Driving power, approximate	320	400	500	watts
Power output, approximate	6.5	10	14	kilowatts

*Averaged over any audio-frequency cycle of sine-wave form.
†With d-c filament supply.
°At crest of a-f cycle with modulation factor of 1.0.
††Modulation, essentially negative, may be used if the positive peak of the audio-frequency envelope does not exceed 115 per cent of the carrier conditions.

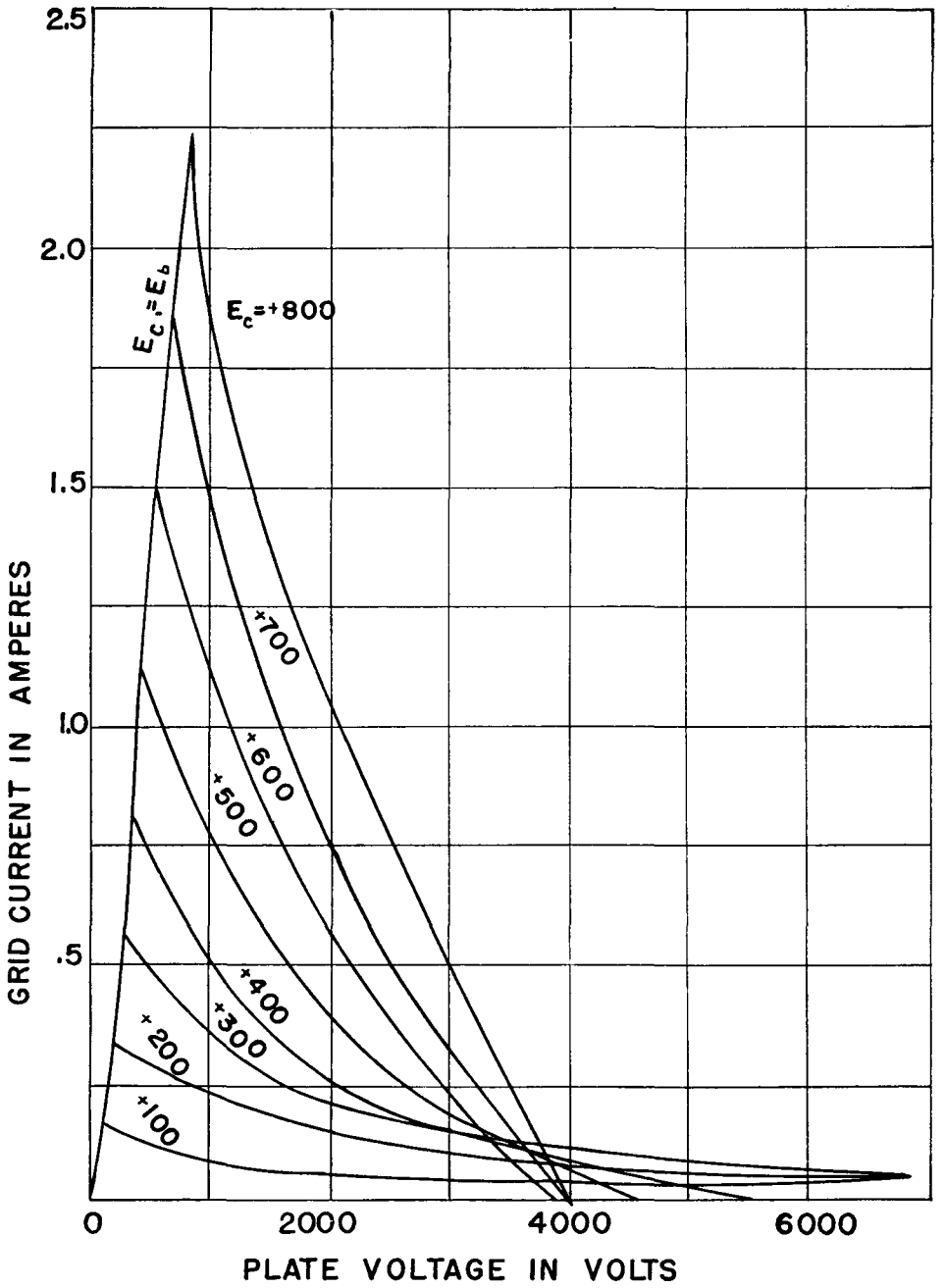
APPLICATION NOTES

GL-892 can be operated at maximum ratings in all classes of service at frequencies as high as 1.6 megacycles. The tube may be operated at higher frequencies provided the maximum values of plate voltage and power input are reduced as the frequency is raised (other maximum ratings are the same as shown under MAXIMUM RATING). The tabulation below shows the highest percentage of maximum plate voltage and power input that can be used up to 20 mc for the various classes of service. Special attention should be given to adequate ventilation of the bulb at these frequencies.

Frequency	1.6	7.5	20	megacycles
Maximum permissible percentage of maximum rated plate voltage and plate input:				
Class B telephony	100	85	76	per cent
Class C plate-modulated	100	85	75	per cent
Class C unmodulated	100	75	50	per cent

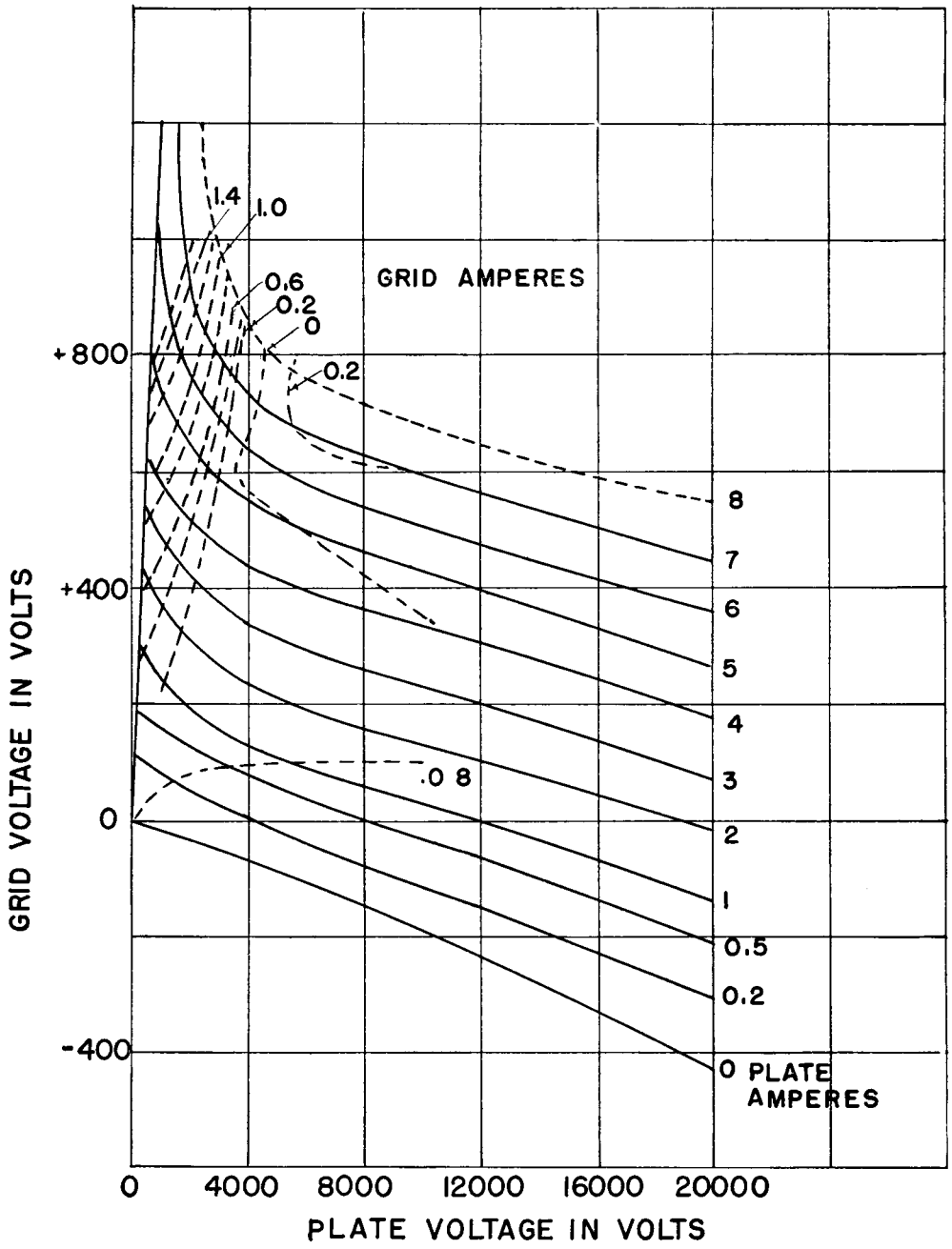


GL-892 AVERAGE PLATE CHARACTERISTICS (E_f = 22 VOLTS A-C)

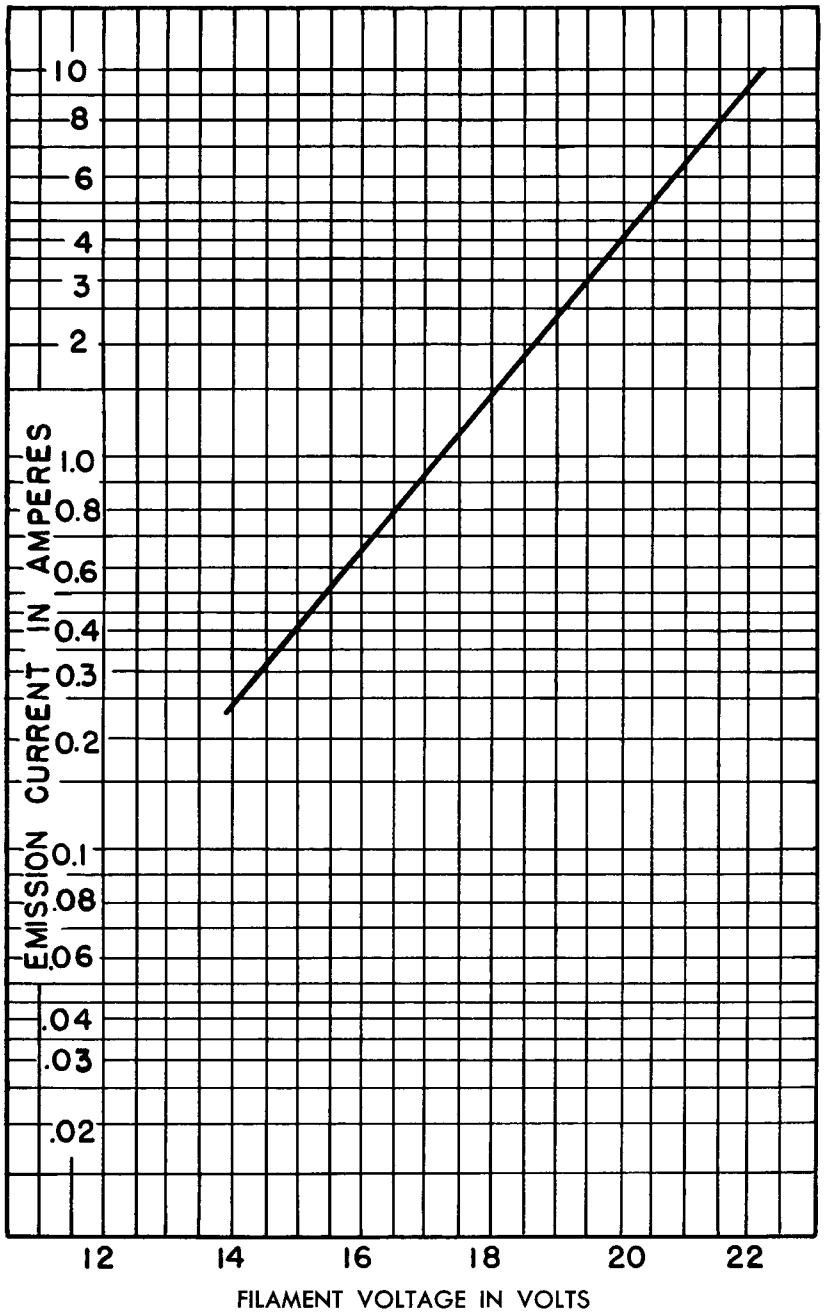


GL-892 GRID-CURRENT CHARACTERISTICS (E_f = 22 VOLTS A-C)

K-8639395 9-28-44



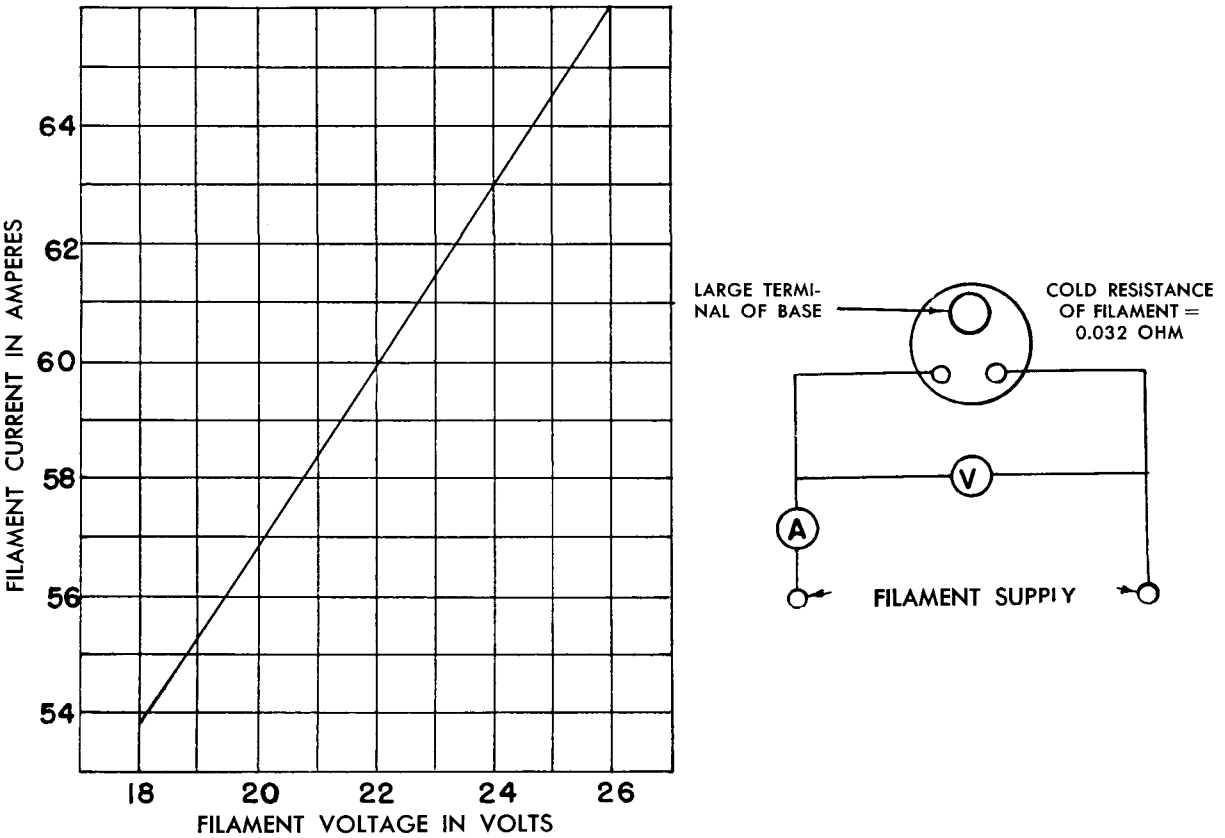
GL-892 CONSTANT CURRENT PLATE AND GRID CHARACTERISTICS ($E_f = 22$ VOLTS A-C)



GL-892 AVERAGE FILAMENT EMISSION CHARACTERISTIC

K-9033591

1-9-45



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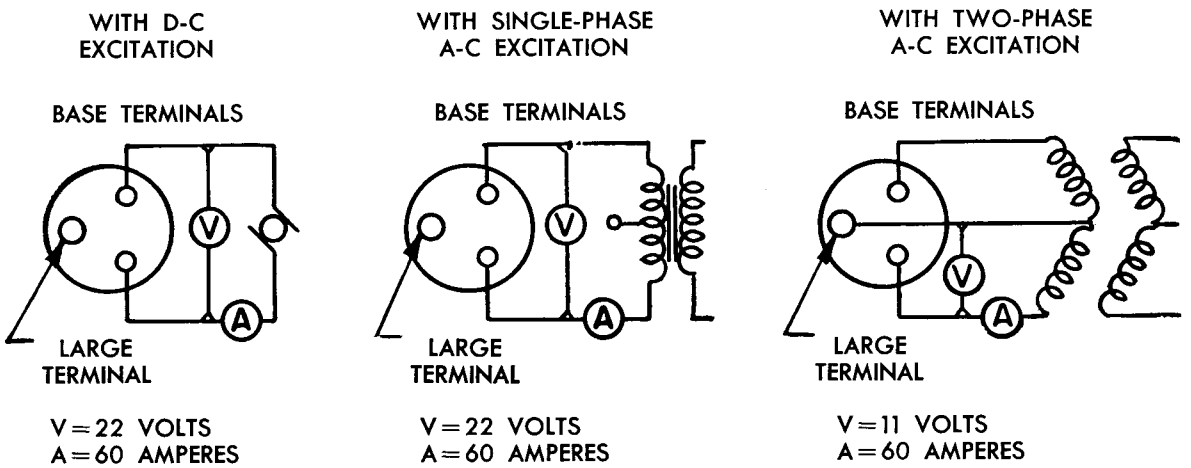
GL-892 AVERAGE FILAMENT CHARACTERISTICS



GL-892 FILAMENT CONNECTIONS

K-9033547

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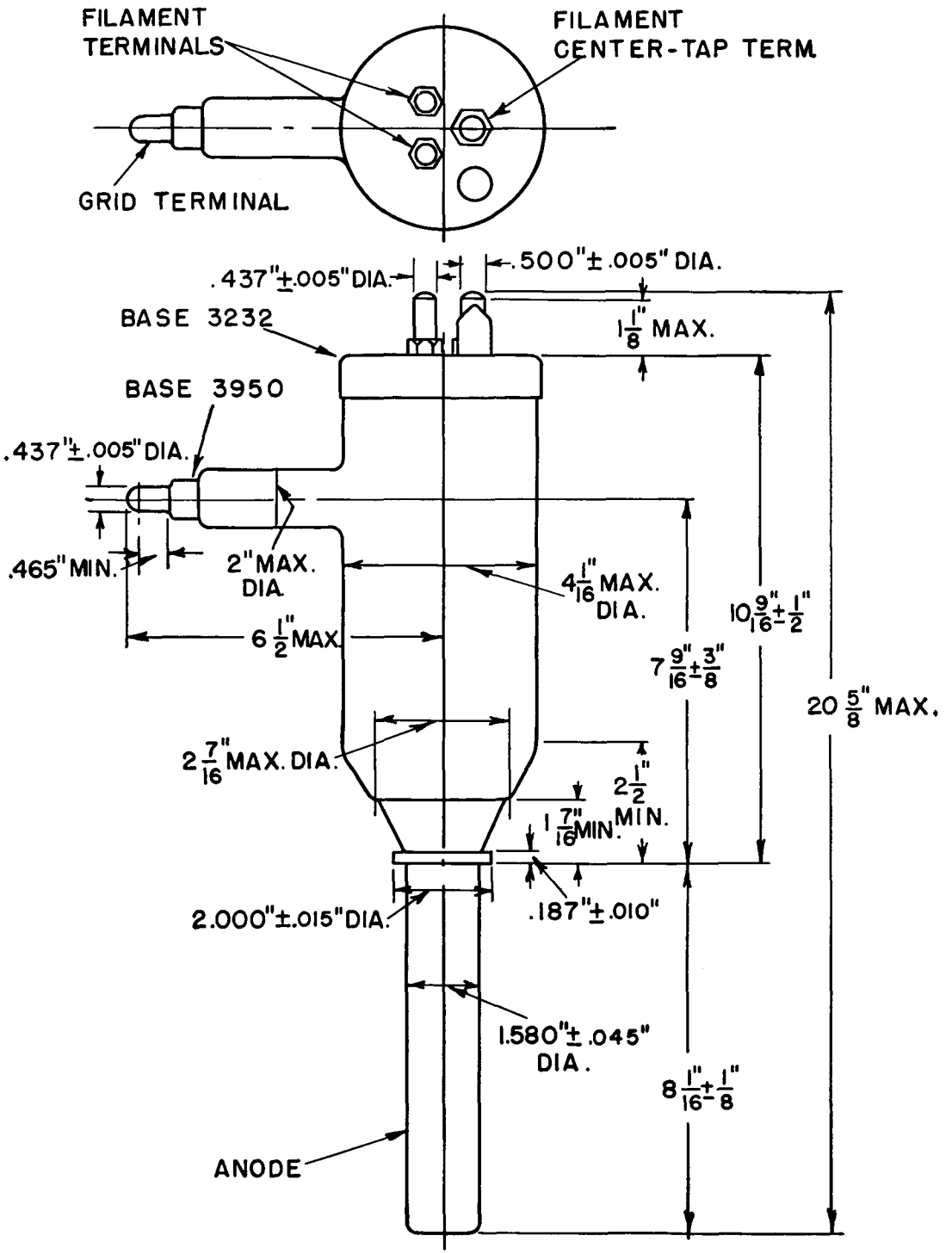

OUTLINE GL-892 PLIOTRON

K-6966979 9-23-44

NOTE: Mounting position vertical, anode down.

Electronics Department

GENERAL ELECTRIC

Schenectady, N. Y.