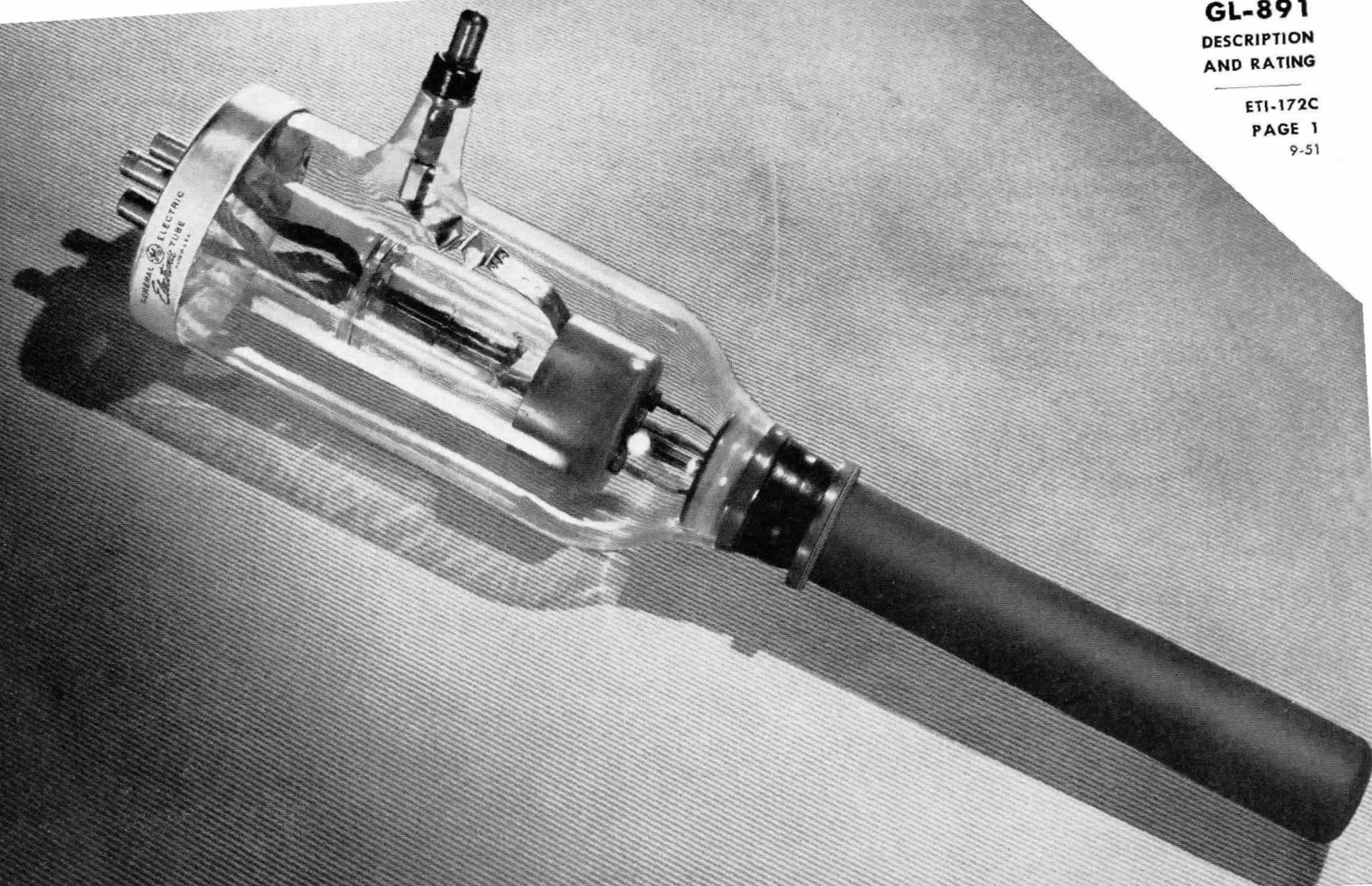




PLIOTRON

DESCRIPTION

The GL-891 is a three-electrode transmitting tube of the double-filament type for use as a radio-frequency power amplifier, oscillator, Class A modulator 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 kilowatts, depending on the service in which the tube is used. The GL-891 can be operated at maximum ratings at frequencies as high as 1.6 megacycles and up to 20 megacycles at reduced ratings.

TECHNICAL INFORMATION

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

GENERAL

	Minimum	Bogey	Maximum
Electrical Data			
Filament voltage.....	—	22	23 volts
Filament current at bogey voltage.....	57	60	62 amperes
Filament starting current.....	—	—	120 amperes
Filament cold resistance.....	—	0.031	— ohm
Amplification factor			
$E_c = -500$ volts, $I_b = 0.75$ ampere.....	7.6	8.5	9.4
Interelectrode capacitances:			
Grid-plate.....	24	27	31 micromicrofarads
Grid-filament.....	15	19	23 micromicrofarads
Plate-filament.....	1	2	3 micromicrofarads


Electronic
TUBE

GENERAL  ELECTRIC

Supersedes ETI-172B dated 8-50

TECHNICAL INFORMATION (CONT'D)

Mechanical Data

Mounting position				vertical, anode down
Type of cooling				water
Water flow on anode	3	—	8	gallons per minute
Maximum outgoing water temperature	—	—	70	°centigrade
Maximum glass temperature	—	—	150	°centigrade
Net weight, approximate	—	—	3½	pounds

MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

AUDIO FREQUENCY POWER AMPLIFIER AND MODULATOR—CLASS B

Maximum ratings, absolute values				CCS*
D-c plate voltage			15,000	volts maximum
Maximum signal d-c plate current†			2.0	amperes maximum
Maximum signal plate input†			20,000	watts maximum
Plate dissipation†			5,000	watts maximum
Typical operation (unless otherwise specified, values are for two tubes)				CCS*
D-c plate voltage	6,000	10,000	12,500	volts
D-c grid voltage	—630	—1,100	—1,450	volts
Peak a-f grid-to-grid voltage	2,060	3,060	3,760	volts
Zero signal d-c plate current	0.5	0.5	0.4	ampere
Maximum signal d-c plate current	2.5	2.4	2.5	amperes
Effective load resistance, plate-to-plate	5,000	10,000	12,000	ohms
Maximum signal driving power, approximate	110	225	245	watts
Maximum signal power output, approximate	8,000	16,000	22,000	watts

*Continuous Commercial Service.

†Averaged over any audio-frequency cycle of sine-wave form.

RADIO-FREQUENCY POWER AMPLIFIER AND OSCILLATOR—CLASS C TELEGRAPHY

(Key-down Conditions Per Tube Without Amplitude Modulation)

Maximum ratings, absolute values				CCS*
D-c plate voltage			12,000	volts maximum
D-c grid voltage			—3,000	volts maximum
D-c plate current			2.0	amperes maximum
D-c grid current			0.15	ampere maximum
Plate input			18,000	watts maximum
Plate dissipation			6,000	watts maximum
Typical operation				CCS*
D-c plate voltage	8,000	10,000		volts
D-c grid voltage	—1,800	—2,000		volts
Peak r-f grid voltage	2,400	2,700		volts
D-c plate current	1.15	1.33		amperes
D-c grid current, approximate	0.09	0.14		ampere
Driving power, approximate	215	375		watts
Power output, approximate	6,500	10,000		watts

*Continuous Commercial Service.

||Modulation essentially negative may be used if the positive peak of the envelope does not exceed 115% of the carrier conditions.

APPLICATION NOTES

GL-891 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 RATINGS

and TYPICAL OPERATING CONDITIONS.) The tabulation 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.

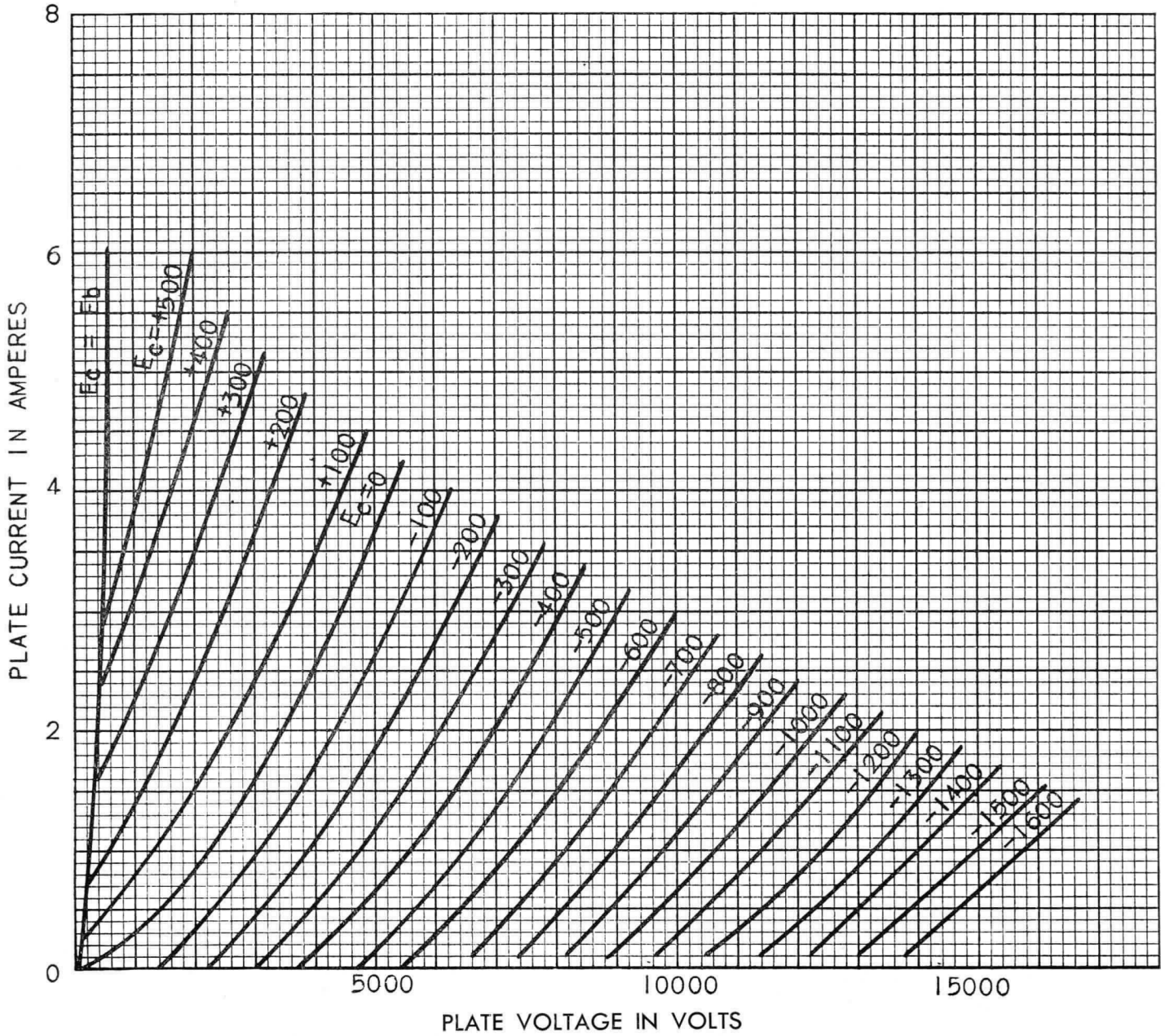
Frequency	1.6	7.5	20 megacycles
Percentage of maximum rated plate voltage and plate input, Class C, unmodulated	100	75	50 per cent

◆ GL-891

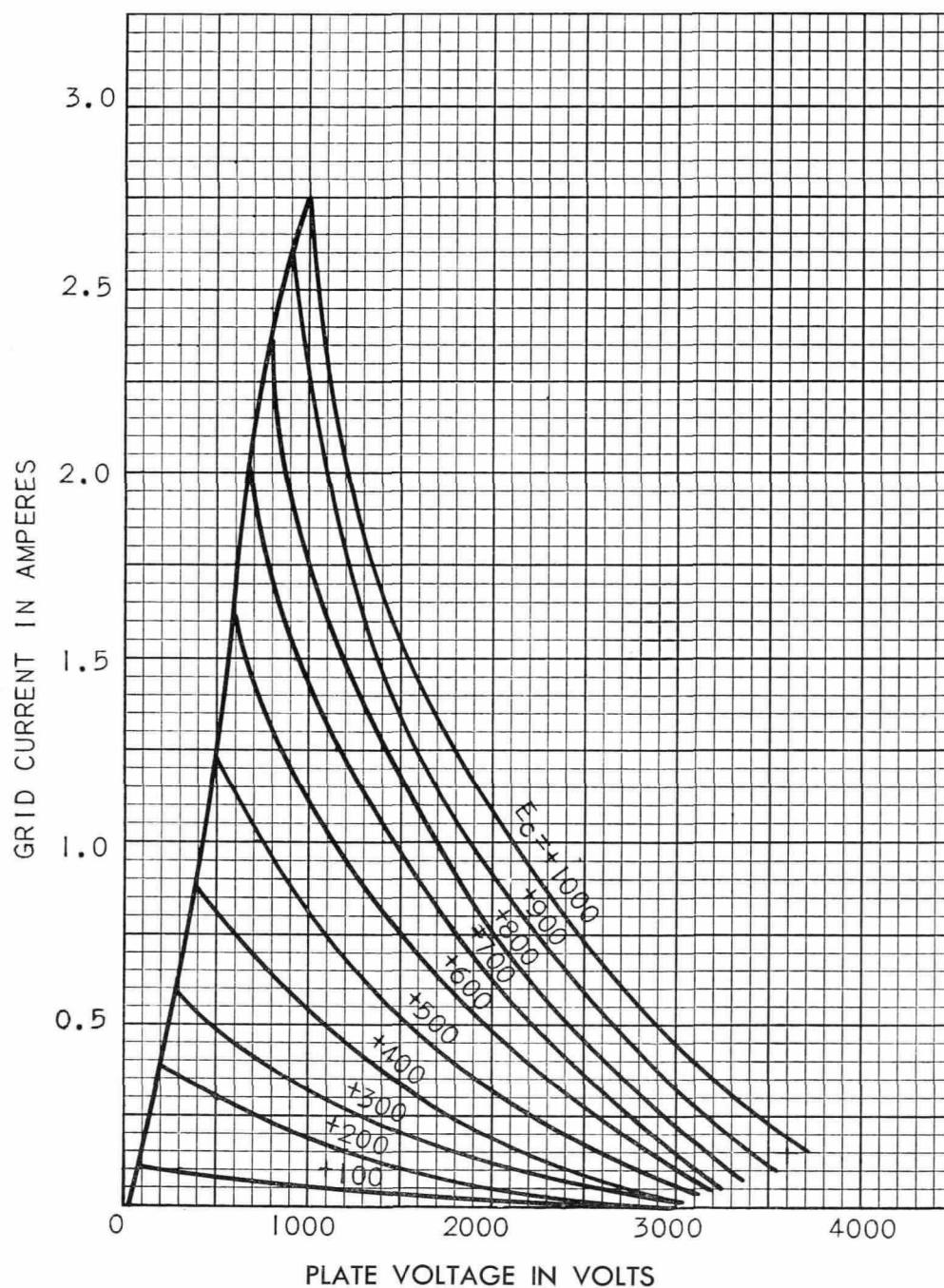
AVERAGE PLATE CHARACTERISTICS

$E_f = 22$ VOLTS A-C

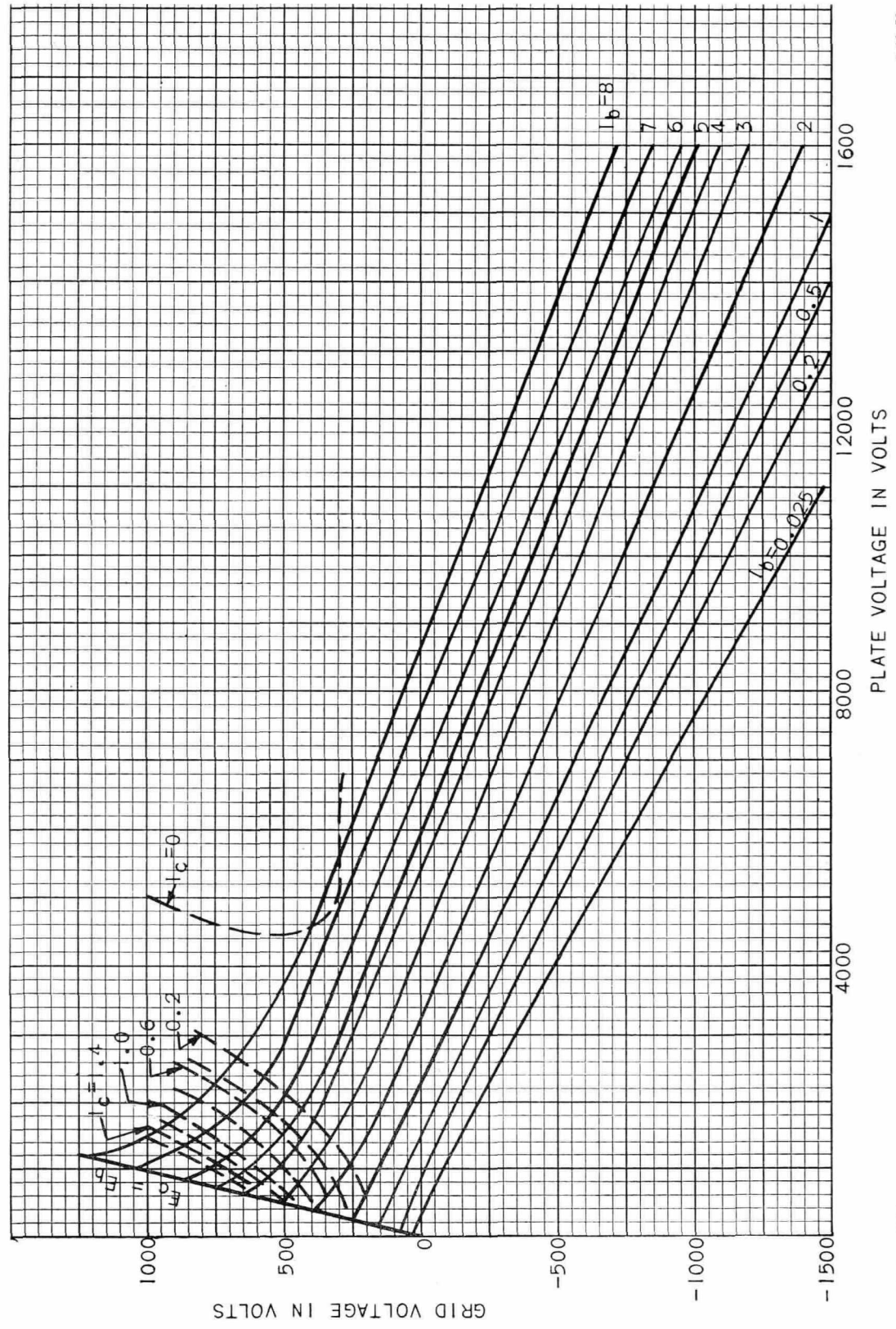
SINGLE-PHASE EXCITATION



◆ GL-891
AVERAGE GRID-PLATE TRANSFER CHARACTERISTICS
 $E_f = 22$ VOLTS A-C
SINGLE-PHASE EXCITATION



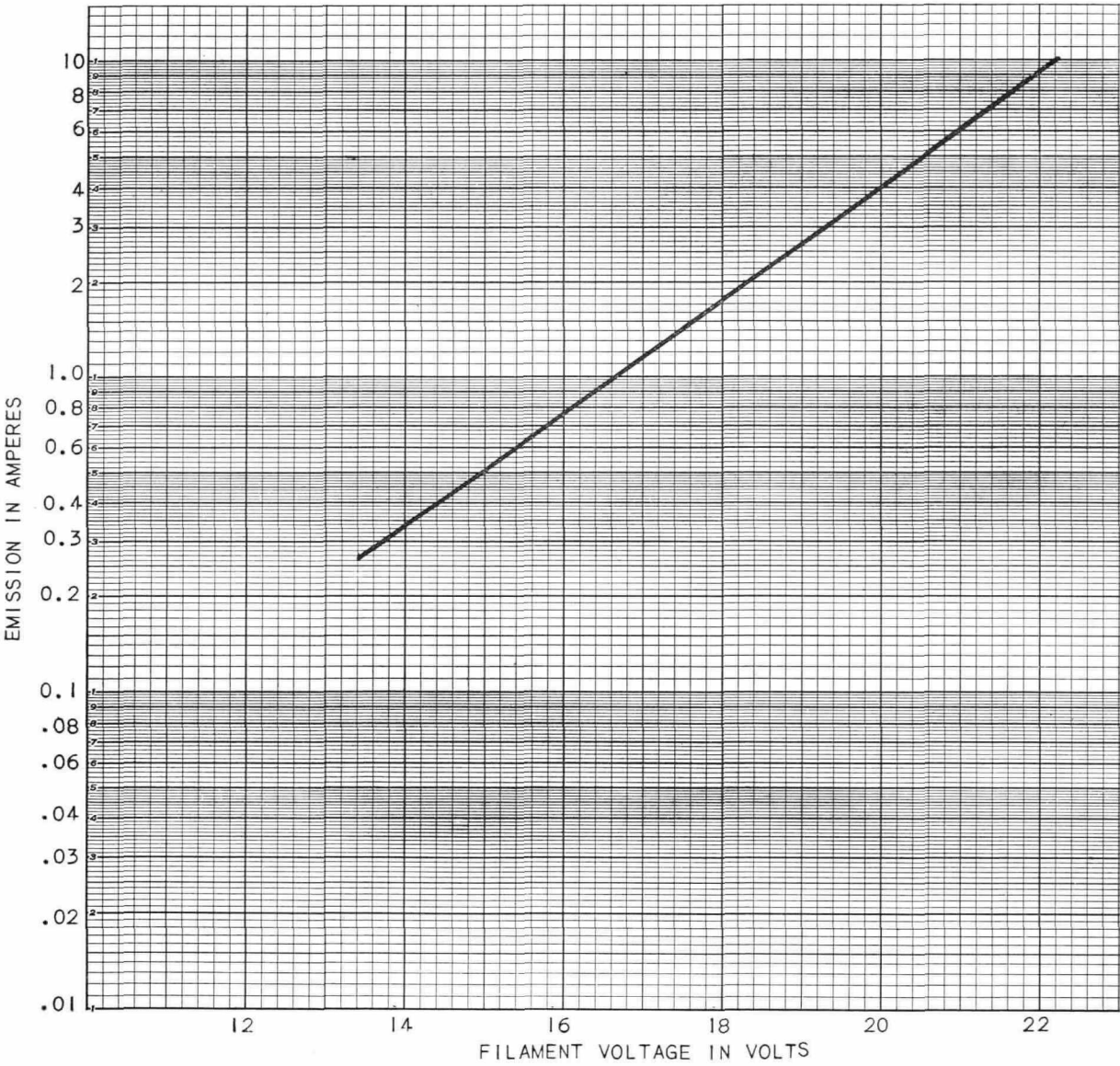
◆ GL-891
AVERAGE CONSTANT-CURRENT CHARACTERISTICS
 $E_r = 22$ VOLTS A-C
SINGLE-PHASE EXCITATION



K-69087-72A447
◆ Revised drawing ◆

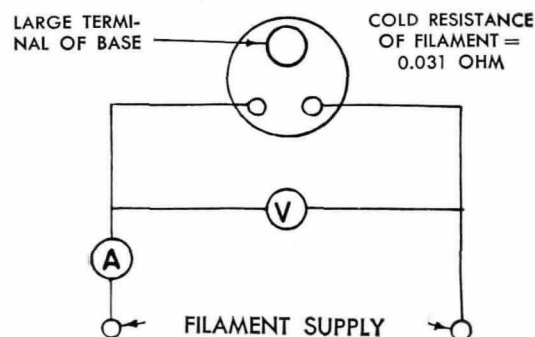
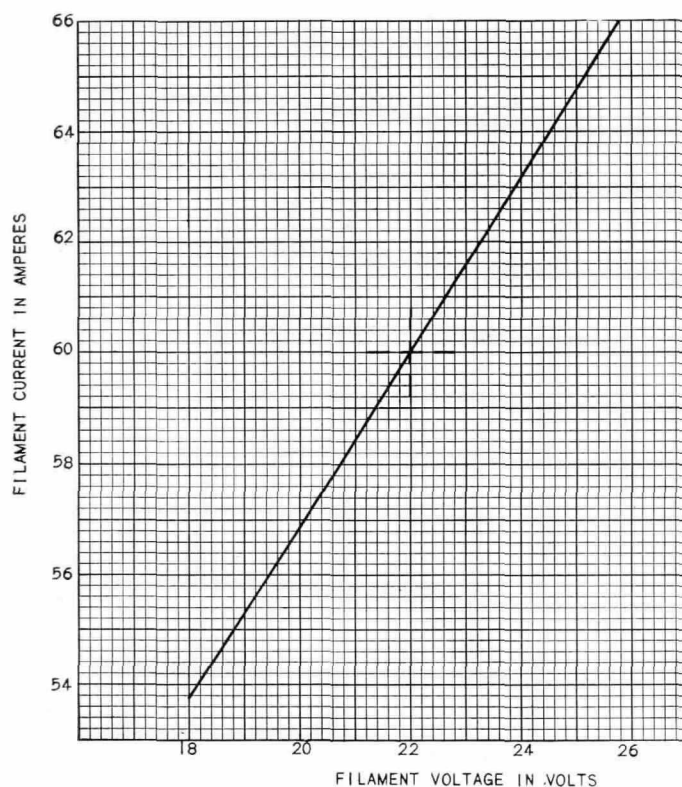
1-11-51

◆ GL-891 AVERAGE FILAMENT EMISSION CHARACTERISTIC



K-59087-72A448
◆ Revised drawing.

◆ GL-891 AVERAGE FILAMENT CHARACTERISTIC

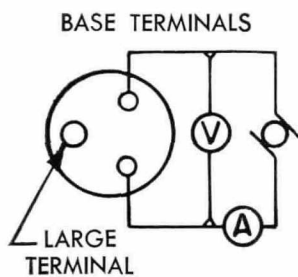


K-69087-72A441
 ♦ Revised drawing.

1-11-51

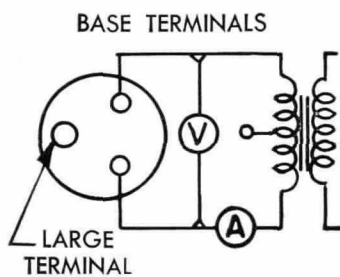
GL-891 FILAMENT CONNECTIONS

WITH D-C EXCITATION



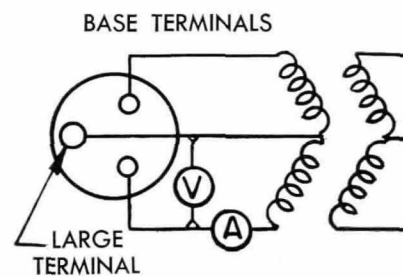
V = 22 VOLTS
 A = 60 AMPERES

WITH SINGLE-PHASE A-C EXCITATION



V = 22 VOLTS
 A = 60 AMPERES

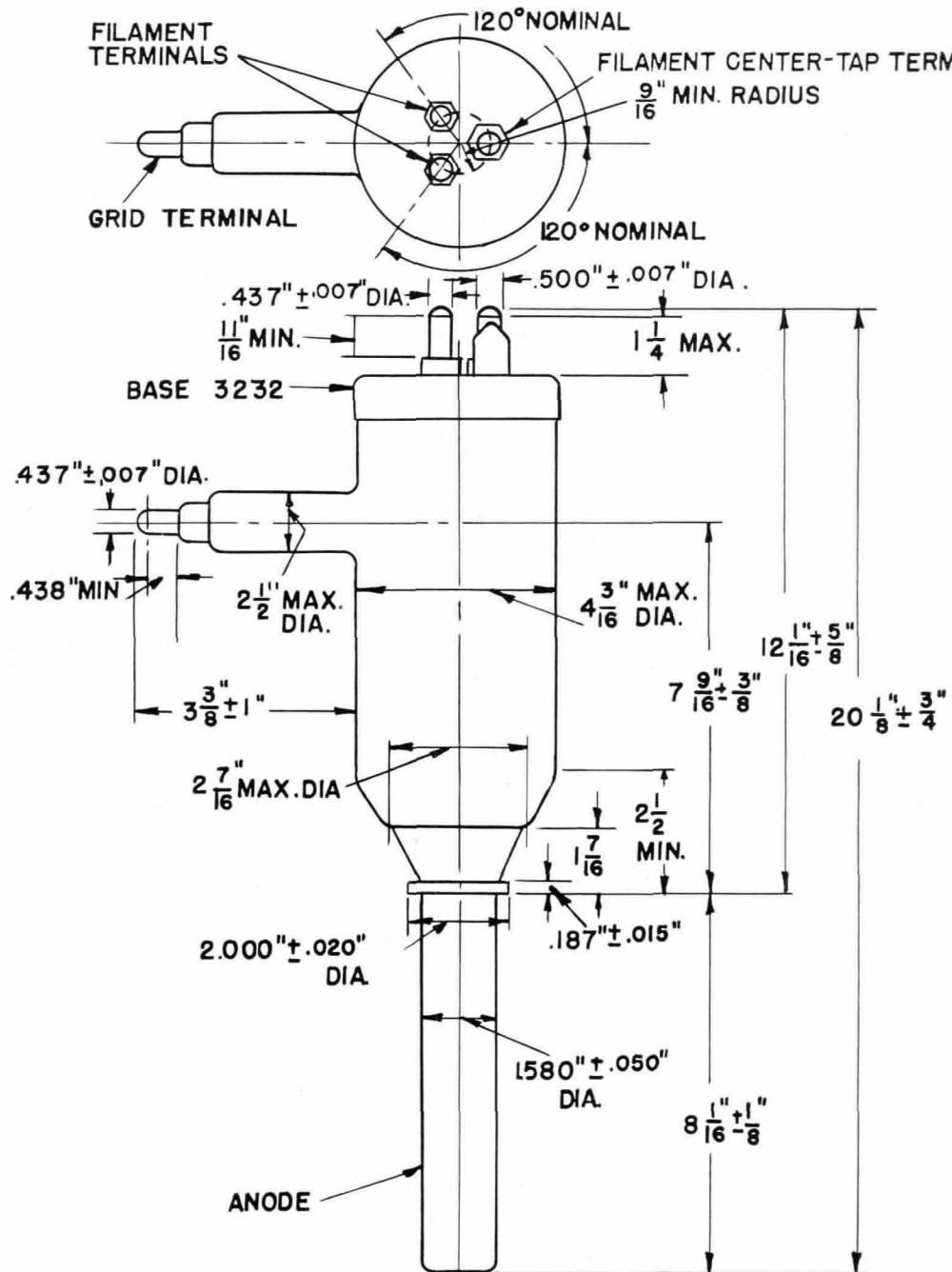
WITH TWO-PHASE A-C EXCITATION



V = 11 VOLTS
 A = 60 AMPERES

K-9033547

12-1-44



OUTLINE GL-891 PIOTRON

K-6966979

3-11-47

Tube Department, Electronics Division

GENERAL  **ELECTRIC**

Schenectady, N. Y.