



TRIODE

DESCRIPTION

The GL-8000 is a three-electrode tube designed for use as a power amplifier, modulator, and oscillator. The anode is capable of dissipating 175

watts, and cooling is accomplished by radiation. The cathode is a thoriated-tungsten filament. Maximum ratings apply up to 30 megacycles.

TECHNICAL INFORMATION

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

GENERAL CHARACTERISTICS

Electrical

Filament voltage (a-c or d-c)	10	volts
Filament current	4.5	amperes
Amplification factor	16.5	
Direct interelectrode capacitances, approximate		
Grid-plate	6.4	micromicrofarads
Grid-filament	5.0	micromicrofarads
Plate-filament	3.3	micromicrofarads
Frequency for maximum ratings	30	megacycles

Mechanical

Mounting position	vertical, base down*	
Net weight, approximate	8	ounces
Shipping weight	1	pound


Electronic
TUBE

GENERAL  ELECTRIC

TECHNICAL INFORMATION (CONT'D)

MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

AUDIO-FREQUENCY POWER AMPLIFIER AND MODULATOR—CLASS B

<i>Maximum Ratings, Absolute Values</i>	CCS†	ICAS†	
D-c plate voltage	2500 max	2750 max	volts
Maximum signal d-c plate current‡	250 max	250 max	milliamperes
Maximum signal plate input‡	425 max	510 max	watts
Plate dissipation‡	125 max	175 max	watts
<i>Typical Operation</i>	CCS†	ICAS†	
Unless otherwise specified, values are for two tubes			
D-c plate voltage	2000	2250	volts
D-c grid voltage π	-120	-130	volts
Peak a-f grid-to-grid voltage	520	560	volts
Zero signal d-c plate current	60	65	milliamperes
Maximum signal d-c plate current	425	450	milliamperes
Effective load resistance, plate to plate	10800	12000	ohms
Maximum signal driving power, approximate	6.5	7.9	watts
Maximum signal power output, approximate	600	725	watts

RADIO-FREQUENCY POWER AMPLIFIER—CLASS B

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

<i>Maximum Ratings, Absolute Values</i>	CCS†	ICAS†	
D-c plate voltage	2000 max	2500 max	volts
D-c plate current	185 max	185 max	milliamperes
Plate input	190 max	225 max	watts
Plate dissipation	125 max	175 max	watts
<i>Typical Operation</i>	CCS†	ICAS†	
D-c plate voltage	2000	2250	volts
D-c grid voltage π	-130	-145	volts
Peak r-f grid voltage	140	150	volts
D-c plate current	95	100	milliamperes
D-c grid current, approximate§	0.5	0	milliampere
Driving power, approximate Δ	4.8	5.4	watts
Power output, approximate	65	75	watts

GRID-MODULATED RADIO-FREQUENCY POWER AMPLIFIER—CLASS C TELEPHONY

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

<i>Maximum Ratings, Absolute Values</i>	CCS†	ICAS†	
D-c plate voltage	2000 max	2500 max	volts
D-c grid voltage	-500 max	-500 max	volts
D-c plate current	185 max	185 max	milliamperes
Plate input	190 max	225 max	watts
Plate dissipation	125 max	175 max	watts
<i>Typical Operation</i>	CCS†	ICAS†	
D-c plate voltage	2000	2250	volts
D-c grid voltage	-250	-265	volts
Peak r-f grid voltage	265	270	volts
Peak a-f grid voltage	120	115	volts
D-c plate current	95	100	milliamperes
D-c grid current, approximate§	0	0	milliampere
Driving power, approximate Δ	4.3	2.5	watts
Power output, approximate	65	75	watts

PLATE-MODULATED RADIO-FREQUENCY POWER AMPLIFIER—CLASS C TELEPHONY

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

Maximum Ratings, Absolute Values

	CCS†	ICAS‡	
D-c plate voltage	1600 max	2000 max	volts
D-c grid voltage	—500 max	—500 max	volts
D-c plate current	210 max	250 max	milliamperes
D-c grid current	40 max	45 max	milliamperes
Plate input	335 max	500 max	watts
Plate dissipation	85 max	125 max	watts

Typical Operation

	CCS†	ICAS‡	
D-c plate voltage	1600	2000	volts
D-c grid voltage			
From a fixed supply of	—300	—370	volts
From a grid resistor of	15000	10000	ohms
Peak r-f grid voltage	470	630	volts
D-c plate current	210	250	milliamperes
D-c grid current, approximate§	20	37	milliamperes
Driving power, approximate§	8.5	20	watts
Power output, approximate	250	380	watts

RADIO-FREQUENCY POWER AMPLIFIER AND OSCILLATOR—CLASS C TELEGRAPHY

Key-down conditions per tube without modulation ◆

Maximum Ratings, Absolute Values

	CCS†	ICAS‡	
D-c plate voltage	2000 max	2500 max	volts
D-c grid voltage	—500 max	—500 max	volts
D-c plate current	250 max	300 max	milliamperes
D-c grid current	40 max	45 max	milliamperes
Plate input	500 max	750 max	watts
Plate dissipation	125 max	175 max	watts

Typical Operation

	CCS†	ICAS‡	
D-c plate voltage	2000	2500	volts
D-c grid voltage			
From a fixed supply of	—195	240	volts
From a grid resistor of	8100	6000	ohms
From a cathode resistor of	710	700	ohms
Peak r-f grid voltage	370	480	volts
D-c plate current	250	300	milliamperes
D-c grid current, approximate§	24	40	milliamperes
Driving power, approximate§	8	18	watts
Power output, approximate	375	575	watts

OSCILLATOR—WITH UNFILTERED PLATE-VOLTAGE SUPPLY

Maximum Ratings, Absolute Values

	Supply 1	Supply 2	
Plate voltage	2500 max	1800 max	volts
D-c grid voltage	—200 max	—300 max	volts
D-c plate current	160 max	225 max	milliamperes
D-c grid current	25 max	35 max	milliamperes
Plate input	450 max	500 max	watts
Plate dissipation	125 max	125 max	watts

Typical Operation in Push-pull**Circuit at 30 Megacycles**

Unless otherwise specified, values are for 2 tubes

	Supply 1	Supply 2	
Plate voltage	2500 RMS	1800	volts
Grid resistor	3500	5000	ohms
D-c plate current	320	450	milliamperes
D-c grid current	30	35	milliamperes
Power output, approximate	650	700	watts
Circuit power output			
(85% circuit efficiency), approximate	550	600	watts

Supply 1: Self-rectified a-c supply (plate voltages are rms values).

Supply 2: Separately rectified (no filter) single-phase full-wave plate supply.

* The tube may also be mounted in a horizontal position with the plane of the electrodes vertical.

† CCS = Continuous Commercial Service; ICAS = Intermittent Commercial and Amateur Service.

‡ Averaged over any a-f cycle of sine-wave form.

π With a-c filament supply. Grid voltages are given with respect to the midpoint of filament operated on a-c. If d-c is used, each stated value of grid voltage should be decreased by one-half the filament voltage and the circuit returns made to the negative end of the filament.

TECHNICAL INFORMATION (CONT'D)

§ Subject to wide variations depending on the impedance of the load circuit. High-impedance load circuits require more grid current and driving power to obtain the desired output. Low-impedance circuits need less grid current and driving power, but plate-circuit efficiency is sacrificed. The driving stage should be capable of delivering considerably more than the required driving power.

◆ Modulation essentially negative may be used if the positive peak of the a-f envelope does not exceed 115 per cent of the carrier conditions.

△ At crest of a-f cycle with modulation factor of 1.0.

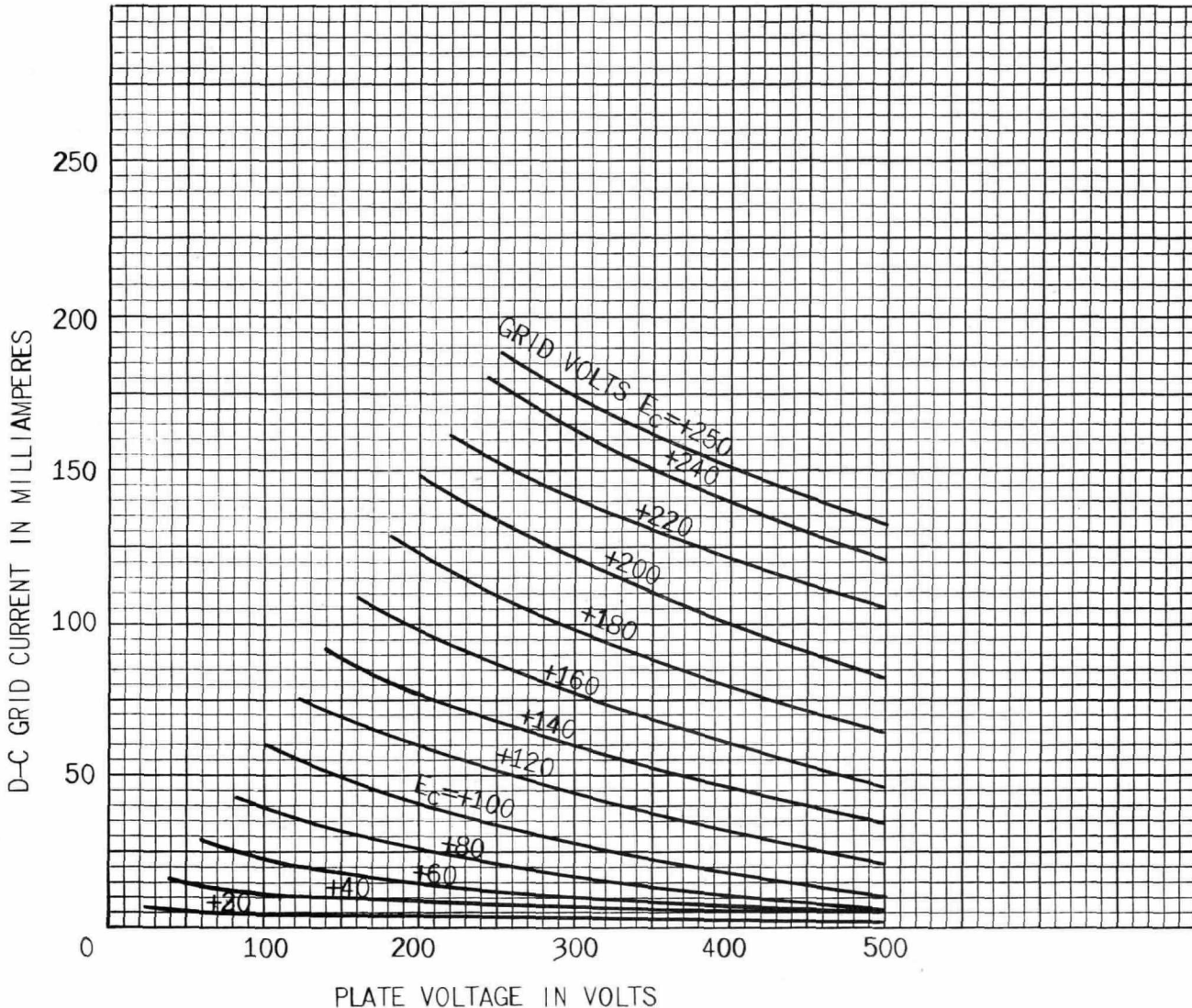
APPLICATION NOTES

Maximum ratings apply up to 30 megacycles. The tube may be operated at higher frequencies provided the maximum values of plate voltage and power input are reduced according to the tabulation below (other maximum ratings

are the same as shown above). Special attention should be given to adequate ventilation of the bulb at these frequencies.

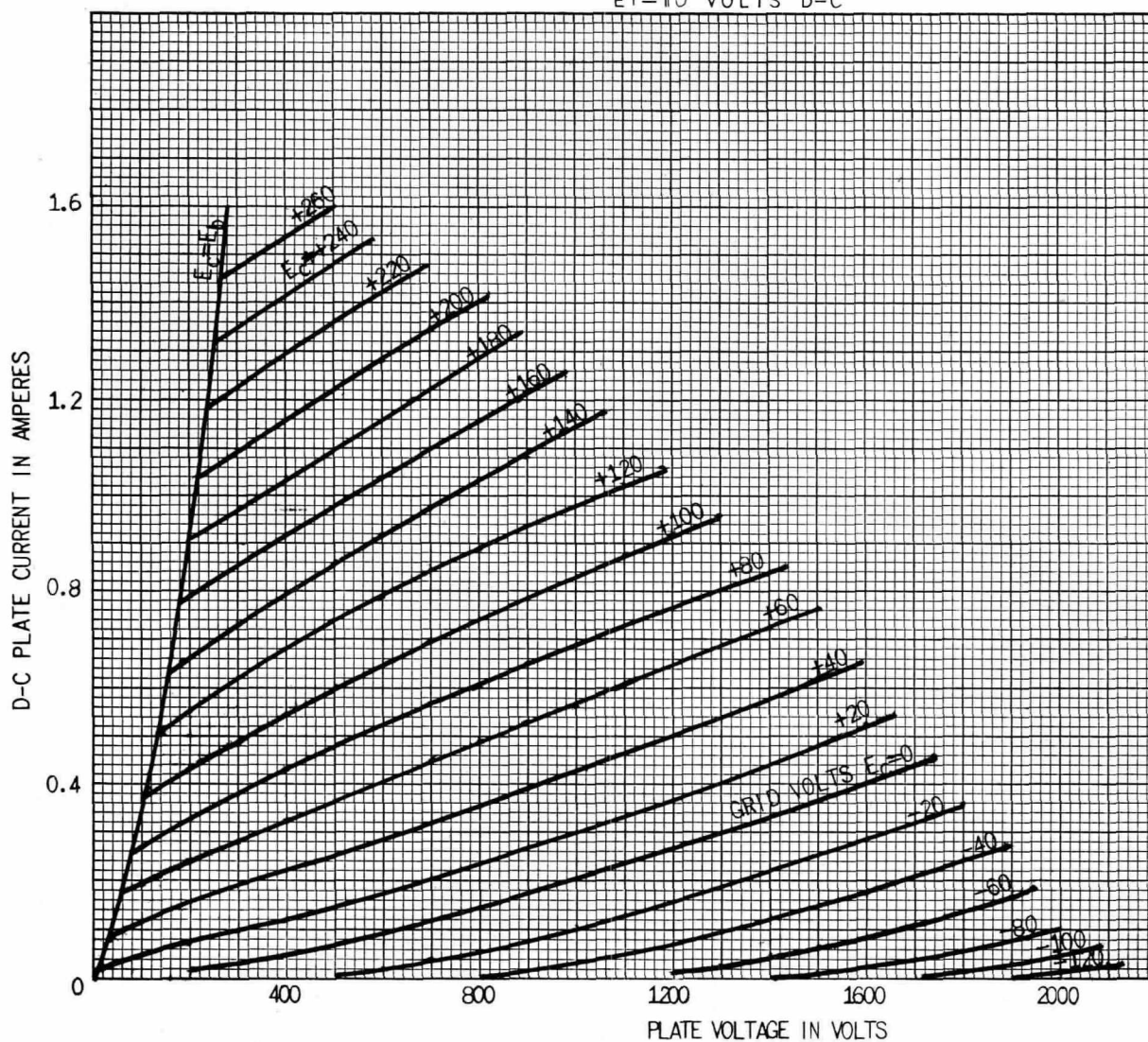
Frequency.....	30	60	100	megacycles
Percentage of Maximum Rated Plate				
Voltage and Plate Input				
Class B telephony.....	100	88	80	per cent
Class C grid-modulated telephony.....	100	88	80	per cent
Class C plate-modulated telephony.....	100	70	50	per cent
Class C telegraphy.....	100	70	50	per cent
Oscillator, unfiltered supply.....	100	70	50	per cent

GL-8000 TYPICAL CHARACTERISTICS
 $E_c = 10$ VOLTS D-C



GL-8000

AVERAGE PLATE CHARACTERISTICS

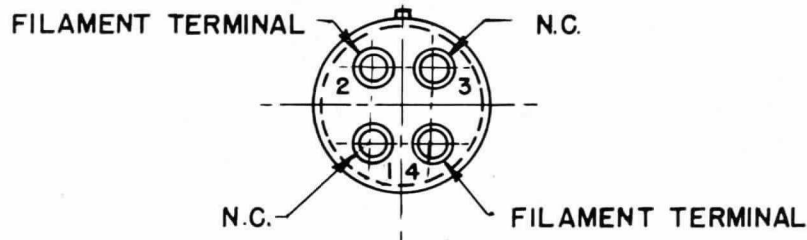
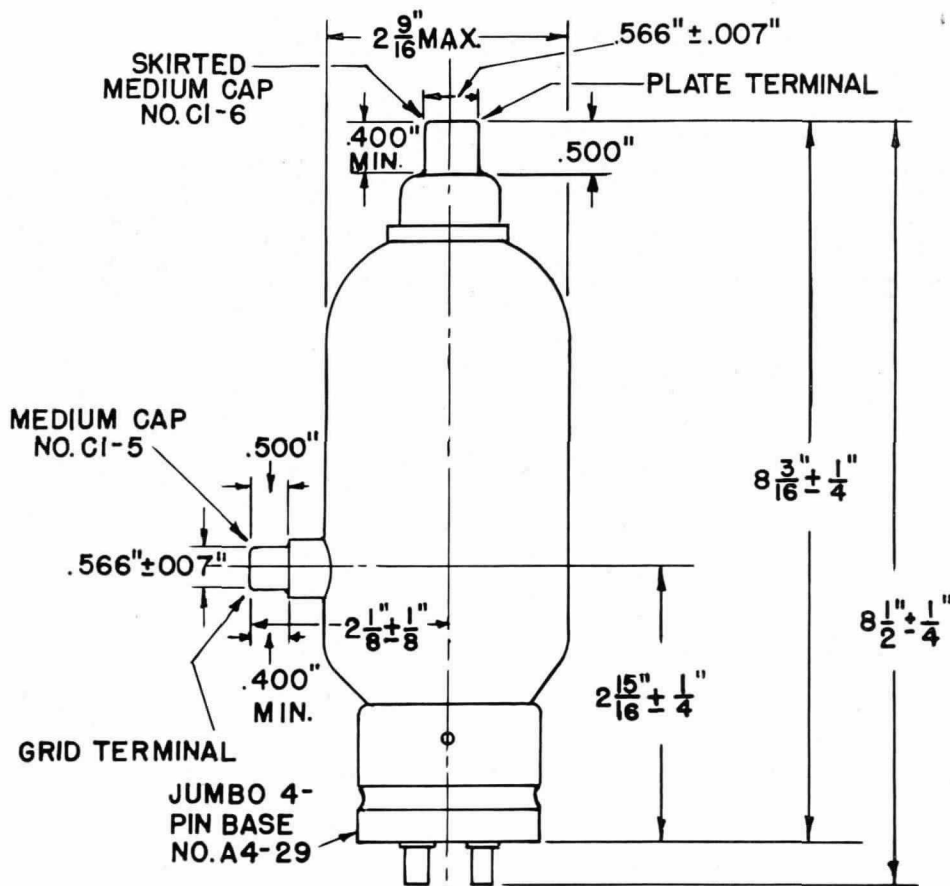
 $E_f = 110$ VOLTS D-C

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GL-8000 OUTLINE

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