



PLIOTRON

DESCRIPTION

The GL-833-A is a three-electrode tube designed for use as a modulator, amplifier, and oscillator. The anode is capable of dissipating 450 watts. Forced-air cooling of the envelope is required at

maximum ratings. The tube may be operated at reduced ratings without forced-air cooling. The cathode is a thoriated-tungsten filament. Maximum ratings apply up to 20 megacycles.

TECHNICAL INFORMATION

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

GENERAL

Electrical Data	Minimum	Bogey	Maximum	
Filament Voltage	9.5	10	10.5	volts
Filament Current at Bogey Voltage	9.4	10	10.6	amperes
Amplification Factor, $E_c = -20$ v, $I_b = 200$ ma	31.5	35	38.5	
Interelectrode Capacitances				
Grid—Plate	5.5	6.3	7.1	uuf
Grid—Filament	10.1	12.3	14.5	uuf
Plate—Filament	6.4	8.5	10.6	uuf

Mechanical Data

Mounting Position	Vertical, or horizontal with the plane of the electrodes vertical
Required Air Flow to Envelope	.40 cubic feet per min
Maximum Glass Temperature	145 C
Net Weight, approximate	1.025 pounds

GENERAL  ELECTRIC

Supersedes ETI-167 dated 4-45


Electronic
TUBE

TECHNICAL INFORMATION (CONT'D)

MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

AUDIO-FREQUENCY POWER AMPLIFIER AND MODULATOR—CLASS B

Maximum Ratings, Absolute Values	Natural Cooling		Forced-air Cooling	
	CCS	ICAS	CCS	ICAS
D-c plate voltage.....	3000 max	3300 max	4000 max	4000 max volts
Maximum signal d-c plate current*.....	500 max	500 max	500 max	500 max milliamperes
Maximum signal plate input.....	1125 max	1300 max	1600 max	1800 max watts
Plate dissipation*.....	300 max	350 max	400 max	450 max watts

Typical Operation	Natural Cooling		Forced-air Cooling		
	CCS	ICAS	CCS	ICAS	
Unless otherwise specified, values are for two tubes					
D-c plate voltage.....	3000	3300	4000	4000	volts
D-c grid voltage.....	—70	—80	—100	—100	volts
Peak a-f grid-to-grid voltage.....	400	440	480	510	volts
Zero-signal d-c plate current.....	100	100	100	100	milliamperes
Maximum signal d-c plate current.....	750	780	800	900	milliamperes
Effective load resistance, plate to plate.....	9500	10500	12000	11000	ohms
Maximum signal driving power, approximate.....	20	30	29	38	watts
Maximum signal power output, approximate.....	1650	1900	2400	2700	watts

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

RADIO-FREQUENCY POWER AMPLIFIER—CLASS B

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

Maximum Ratings, Absolute Values	Natural Cooling		Force-air Cooling		
	CCS	ICAS	CCS	ICAS	
D-c plate voltage.....	3000 max	3300 max	4000 max	4000 max volts	
D-c plate current.....	300 max	300 max	300 max	300 max milliamperes	
Plate input.....	450 max	525 max	600 max	675 max watts	
Plate dissipation.....	300 max	350 max	400 max	450 max watts	
Typical Operation					
D-c plate voltage.....	3000	3300	4000	4000	volts
D-c grid voltage.....	—70	—100	—120	—120	volts
Peak r-f grid voltage.....	90	110	120	130	volts
D-c plate current.....	150	150	150	150	milliamperes
D-c grid current, approximate.....	2	2	2	3	milliamperes
Driving power, approximate**.....	10	11	14	21	watts
Power output, approximate.....	150	200	225	250	watts

**At the crest of the audio-frequency cycle with a modulation factor of 1.0.

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	Natural Cooling		Forced-air Cooling		
	CCS	ICAS	CCS	ICAS	
D-c plate voltage.....	2500 max	3000 max	3000 max	4000 max volts	
D-c grid voltage.....	—500 max	—500 max	—500 max	—500 max volts	
D-c plate current.....	400 max	400 max	450 max	450 max milliamperes	
D-c grid current.....	100 max	100 max	100 max	100 max milliamperes	
Plate input.....	835 max	1000 max	1250 max	1800 max watts	
Plate dissipation.....	200 max	250 max	270 max	350 max watts	
Typical Operation	Natural Cooling		Forced-air Cooling		
	CCS	ICAS	CCS	ICAS	
D-c plate voltage.....	2500	3000	3000	4000	volts
D-c grid voltage.....	—300	—240	—300	—325	volts
Peak r-f grid voltage.....	460	410	490	520	volts
D-c plate current.....	335	335	415	450	milliamperes
D-c grid current, approximate.....	75	70	85	90	milliamperes
Driving power, approximate.....	30	26	37	42	watts
Power output, approximate.....	635	800	1000	1500	watts

RADIO-FREQUENCY POWER AMPLIFIER AND OSCILLATOR—CLASS C TELEGRAPHY

Key-down conditions per tube without amplitude modulation ¶

Maximum Ratings, Absolute Values	Natural Cooling		Forced-air Cooling	
	CCS	ICAS	CCS	ICAS
D-c plate voltage.....	3000 max	3300 max	4000 max	4000 max volts
D-c grid voltage.....	—500 max	—500 max	—500 max	—500 max volts
D-c plate current.....	500 max	500 max	500 max	500 max milliamperes
D-c grid current.....	100 max	100 max	100 max	100 max milliamperes
Plate input.....	1250 max	1500 max	1800 max	2000 max watts
Plate dissipation.....	300 max	350 max	400 max	450 max watts
Typical Operation	CCS	ICAS	CCS	ICAS
D-c plate voltage.....	3000	3000	4000	4000 volts
D-c grid voltage.....	—200	—160	—200	—225 volts
Peak r-f grid voltage.....	360	310	375	415 volts
D-c plate current.....	415	335	450	500 milliamperes
D-c grid current, approximate.....	55	70	75	95 milliamperes
Driving power, approximate.....	20	20	26	35 watts
Power output, approximate.....	1000	800	1440	1600 watts

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

APPLICATION NOTES

Maximum ratings apply up to 20 megacycles. The tube may be operated at higher frequencies provided the maximum values of plate voltage and plate 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.....	Natural Cooling			Forced Air Cooling		
	30	50	75	20	50	75 megacycles
Percentage of maximum rated plate						
Voltage and plate input						
Class B.....	100	98	94	100	97	93 per cent
Class C plate modulated.....	100	90	72	100	83	65 per cent
Class C unmodulated.....	100	90	72	100	83	65 per cent

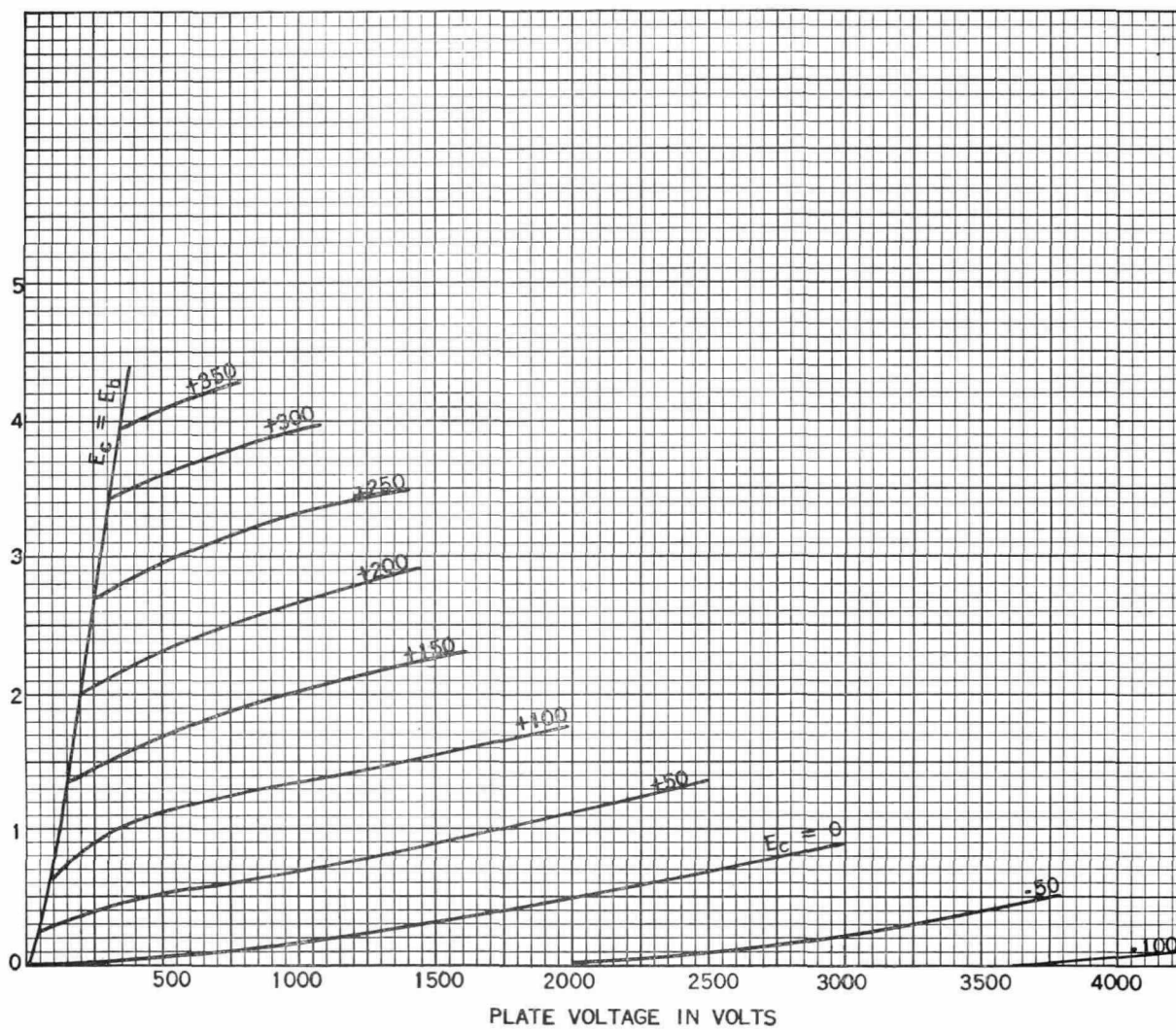
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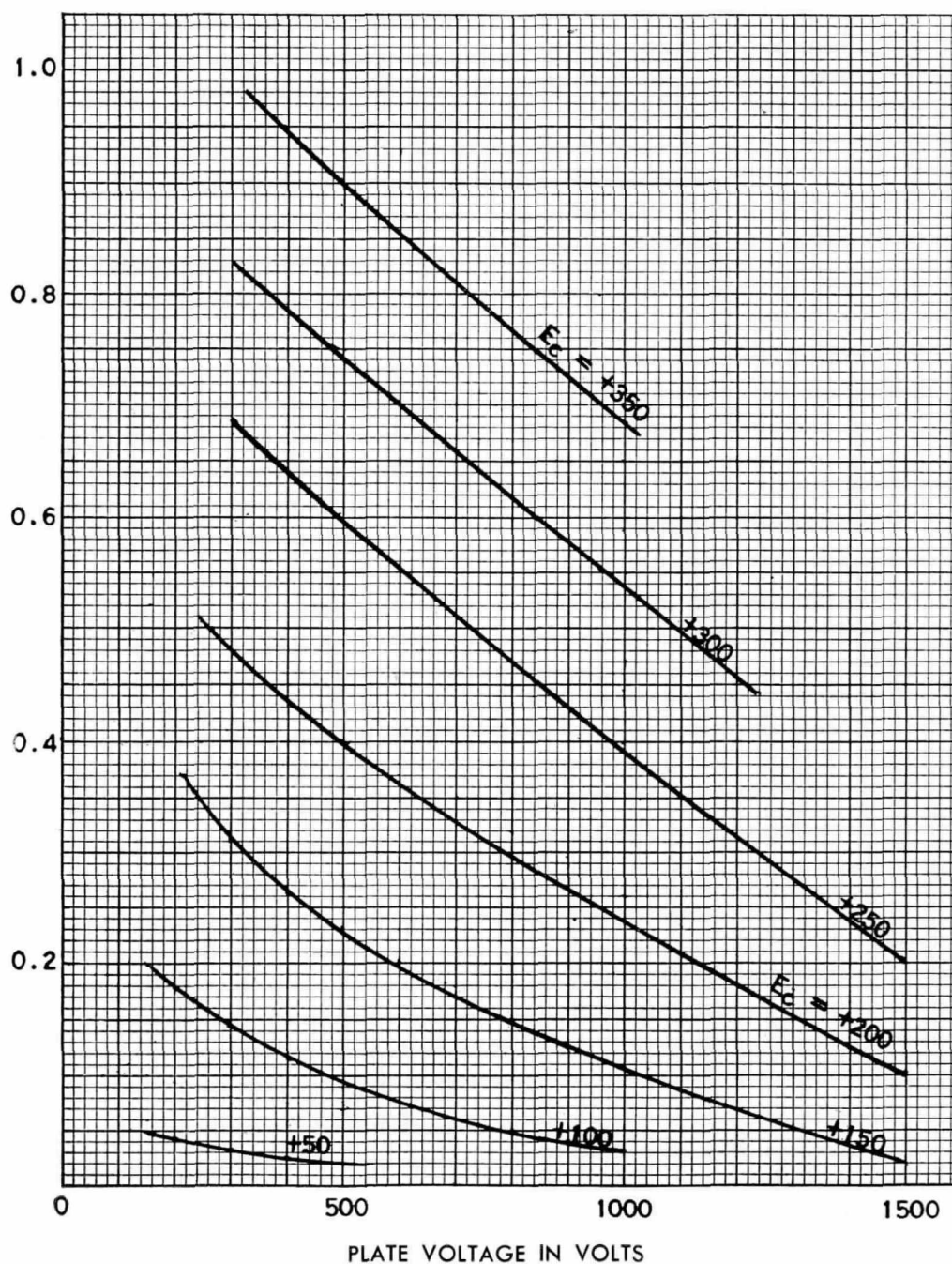
GL-833-A AVERAGE PLATE CHARACTERISTICS ($E_f = 10$ VOLTS A-C)



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GL-833-A
TYPICAL CHARACTERISTICS
 $E_c = 10$ VOLTS A-C

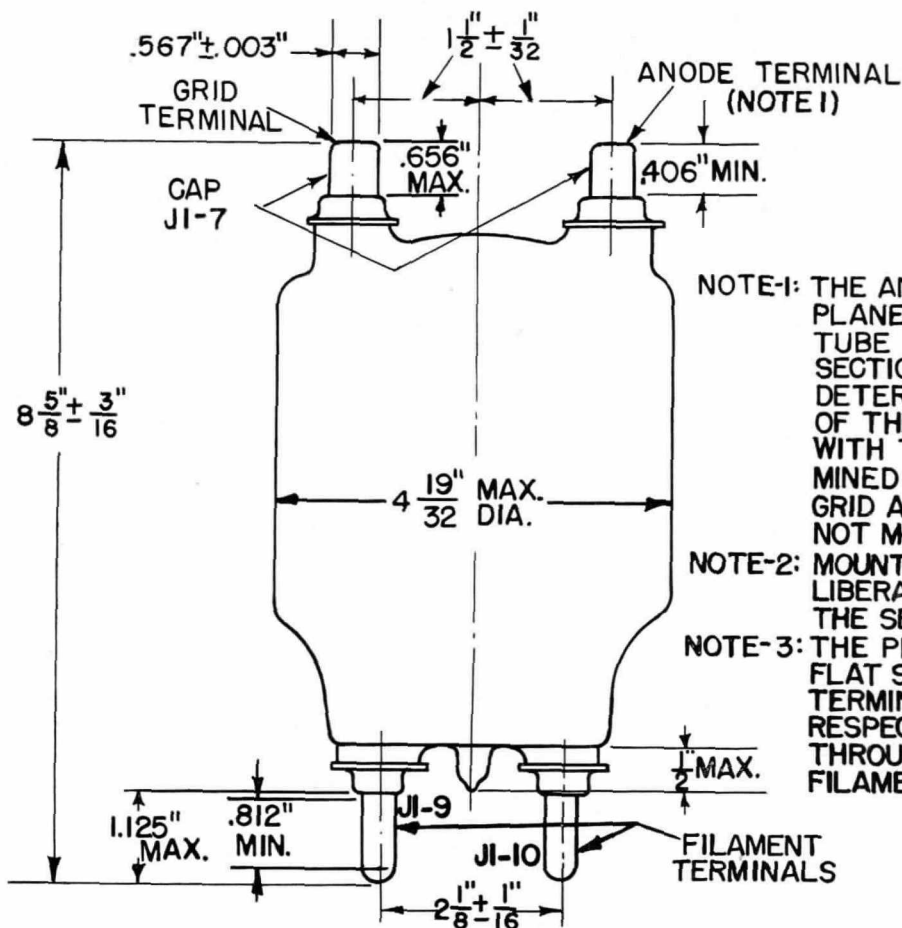


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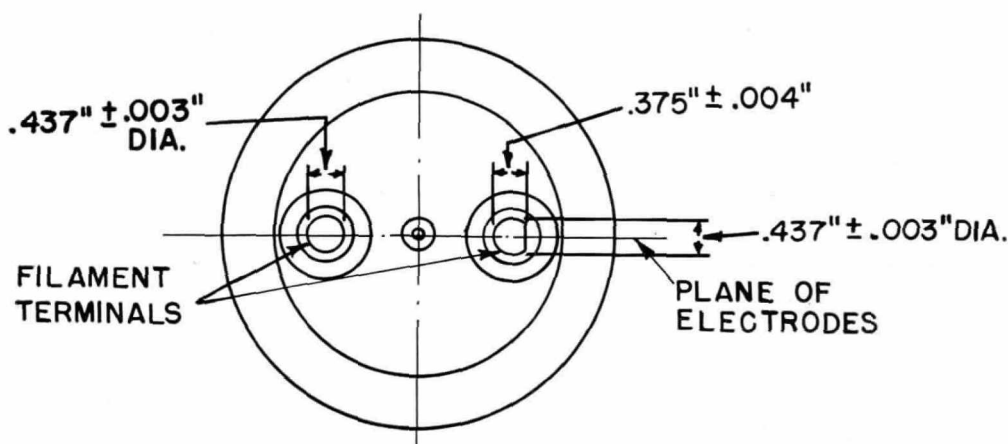
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NOTE-1: THE ANGLE FORMED ON A PLANE NORMAL TO THE TUBE AXIS BY THE INTERSECTION OF THE PLANE DETERMINED BY THE AXES OF THE FILAMENT TERMINALS WITH THE PLANE DETERMINED BY THE AXES OF THE GRID AND PLATE CAPS IS NOT MORE THAN 5° .

NOTE-2: MOUNTING SHOULD PROVIDE LIBERAL CLEARANCE FOR THE SEAL-OFF TIP.

NOTE-3: THE PLANE THROUGH THE FLAT SIDE OF THE FILAMENT TERMINAL IS $90^\circ \pm 7^\circ$ WITH RESPECT TO THE PLANE THROUGH THE AXES OF THE FILAMENT TERMINALS.



K-6966950

GL-833-A OUTLINE

9-3-48

Electronics Department

GENERAL ELECTRIC

Schenectady, N. Y.