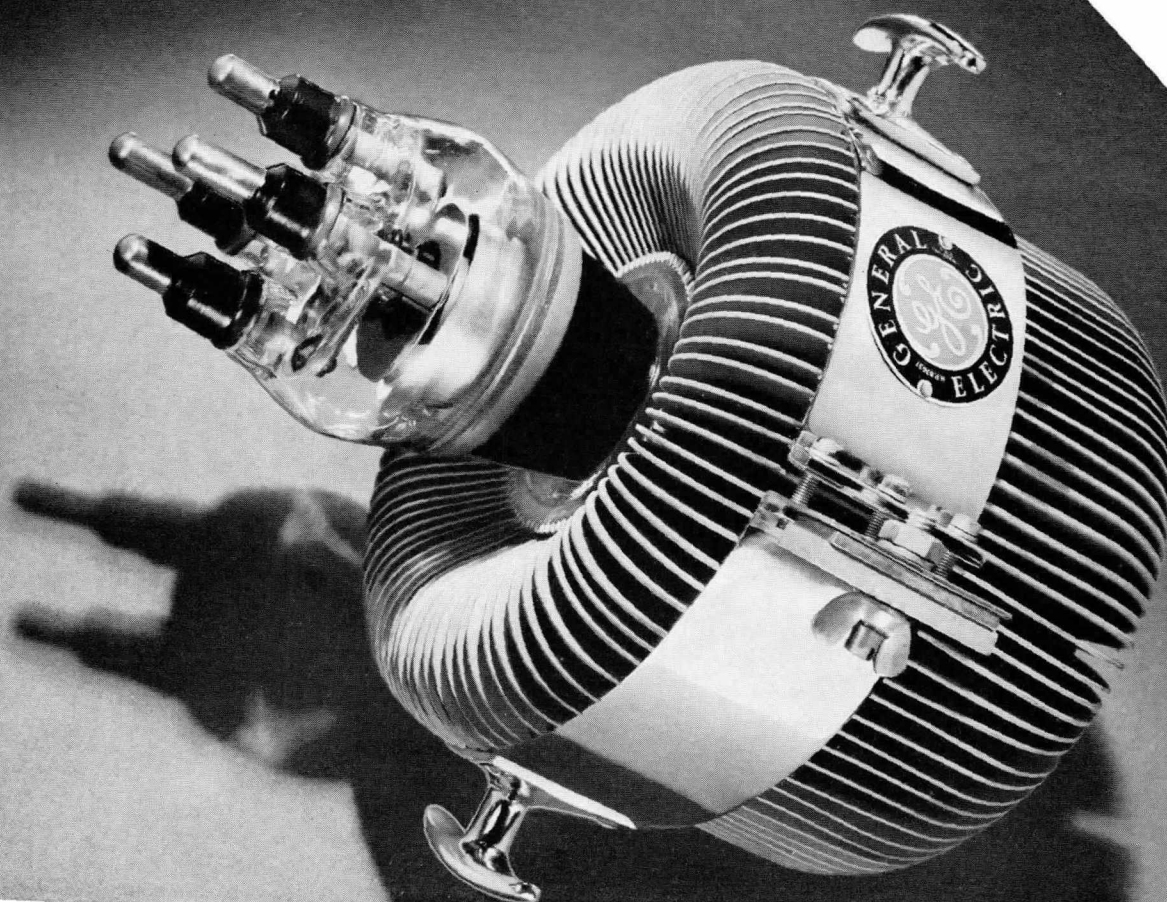




PLIOTRON

DESCRIPTION

The GL-889R-A is a three-electrode power tube designed for use as a radio-frequency amplifier, oscillator, or Class B modulator. The plate is fitted with a special radiator and cooling is obtained by forced air. The design of the mount and terminal

connections minimizes lead inductance and makes the tube particularly suitable for high-frequency applications. The GL-889R-A can be operated at maximum ratings at frequencies as high as 40 megacycles and up to 100 megacycles at reduced ratings.

◆ TECHNICAL INFORMATION

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

GENERAL

Electrical Data

	Minimum	Bogey	Maximum
Filament voltage.....	—	11.0	11.5 volts
Filament current at bogey voltage.....	110	120	128 amperes
Filament starting current.....	—	—	180 amperes
Filament cold resistance.....	—	0.008	— ohm
Amplification factor, at $E_b = 1.0$ amp. $E_c = -100$ volts.....	17	21	25
Interelectrode capacitance.....	15.8	18.5	21.2 micromicrofarads
Grid-plate.....	19.2	23.3	27.4 micromicrofarads
Grid-filament.....	2.0	3.0	4.0 micromicrofarads
Plate-filament.....			

◆ Completely revised.

GENERAL  ELECTRIC

Supersedes ETI-249 dated 8-46


Electronic
TUBE

TECHNICAL INFORMATION (CONT'D)

Mechanical Data

Mounting position				vertical, anode down
Type of cooling				forced air
Maximum incoming air temperature			45	centigrade
Required air flow on anode				
Plate dissipation—kilowatts	5.0	4.0	3.0	
Air flow—cubic feet per minute	500	390	300	
Static pressure—inches water	0.7	0.5	0.35	
Required air flow to bulb*			15	cubic feet per minute
Maximum glass temperature			150	centigrade
Net weight, approximate			35	pounds

*Air to be directed at the top of tube from a 3-inch-diameter nozzle. Cooling air may be obtained by directing the required air flow at the top of the glass envelope through a 3-inch-diameter nozzle, or by deflecting air at the top of the bulb from the radiator-cooling-air stream.

MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

AUDIO-FREQUENCY POWER AMPLIFIER AND MODULATOR—CLASS B

Maximum ratings, absolute values				CCS**
D-c plate voltage			8500	maximum volts
Maximum signal d-c plate current†			2	maximum amperes
Maximum signal plate input†			12	maximum kilowatts
Plate dissipation†			5	maximum kilowatts
Typical operation				CCS*
Unless otherwise specified, values are for two tubes				
D-c plate voltage	5000	6000	7500	volts
D-c grid voltage	-180	-230	-300	volts
Peak a-f grid-to-grid voltage	1460	1680	1700	volts
Zero signal d-c plate current	0.4	0.4	0.4	amperes
Maximum signal d-c plate current	3.2	3.6	3.2	amperes
Effective load resistance, plate-to-plate	2520	3680	5000	ohms
Maximum signal driving power, approximate	170	180	150	watts
Maximum signal power output, approximate	8.8	12	15	kilowatts

†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				CCS**
D-c plate voltage			8500	maximum volts
D-c plate current			1.0	maximum ampere
Plate input			7.5	maximum kilowatts
Plate dissipation			5	maximum kilowatts
Typical operation				CCS**
D-c plate voltage	6000	7500	volts	
D-c grid voltage	-250	-300	volts	
Peak r-f grid voltage	460	500	volts	
D-c plate current	0.9	0.9	ampere	
D-c grid current, approximate	0.003	0.005	ampere	
Driving power, approximate	95	80	watts	
Power output, approximate	1.5	2	kilowatts	

||At crest of audio-frequency cycle with 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				CCS**
D-c plate voltage	6000			maximum volts
D-c grid voltage	-1000			maximum volts
D-c plate voltage	1.0			maximum ampere
D-c grid current	0.25			maximum ampere
Plate input	6			maximum kilowatts
Plate dissipation	3			maximum kilowatts

TECHNICAL INFORMATION (CONT'D)

Typical operation	CCS**		
D-c plate voltage	5000	6000	volts
D-c grid voltage	-800	-900	volts
Peak r-f grid voltage	1300	1420	volts
D-c plate current	0.9	1.0	ampere
D-c grid current, approximate	0.12	0.1	ampere
Driving power, approximate	155	140	watts
Power output, approximate	2.75	4	kilowatts

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	.8500		maximum volts
D-c grid voltage	-1000		maximum volts
D-c plate current	.2		maximum amperes
D-c grid current	.025		maximum ampere
Plate input	.16		maximum kilowatts
Plate dissipation	.5		maximum kilowatts

Typical operation	CCS**			
D-c plate voltage	5000	6000	7500	volts
D-c grid voltage	-500	-600	-800	volts
Peak r-f grid voltage	1200	1460	1830	volts
D-c plate current	1.5	1.8	2	amperes
D-c grid current, approximate	0.19	1.21	0.24	amperes
Driving power, approximate	220	290	400	watts
Power output, approximate	5	7	10	kilowatts

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

**CCS—Continuous Commercial Service.

APPLICATION NOTES

*The GL-889R-A can be operated at maximum ratings in all classes of service at frequencies as high as 40 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 TECHNICAL

INFORMATION.) The tabulation below shows the highest percentage of maximum plate voltage and power input that can be used up to 100 megacycles for the various classes of service. Special attention should be given to adequate ventilation of the bulb at these frequencies.

Frequency	40	65	100 megacycles
Percentage of maximum rated plate voltage and plate input			
Class B	100	85	72 per cent
Class C plate modulated	100	78	60 per cent
Class C unmodulated—maximum plate voltage	100	87	65 per cent
Class C unmodulated—maximum plate input	100	73	50 per cent

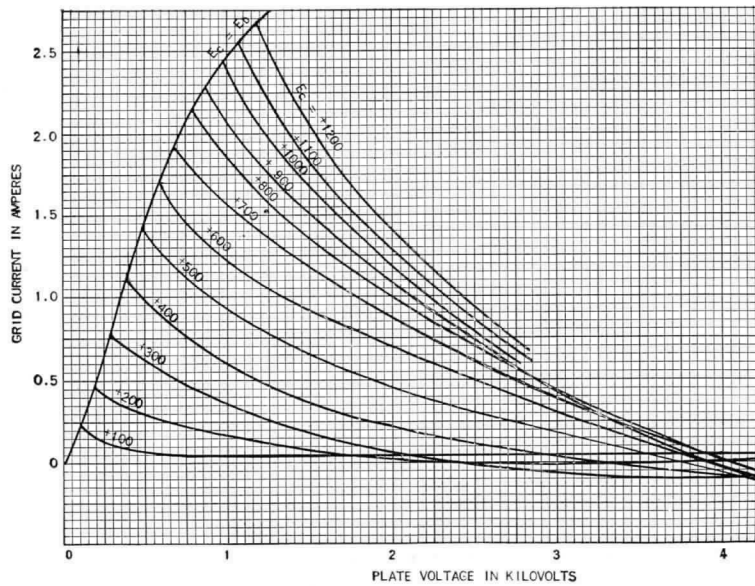
GL-889R-A

ETI-249A

PAGE 4

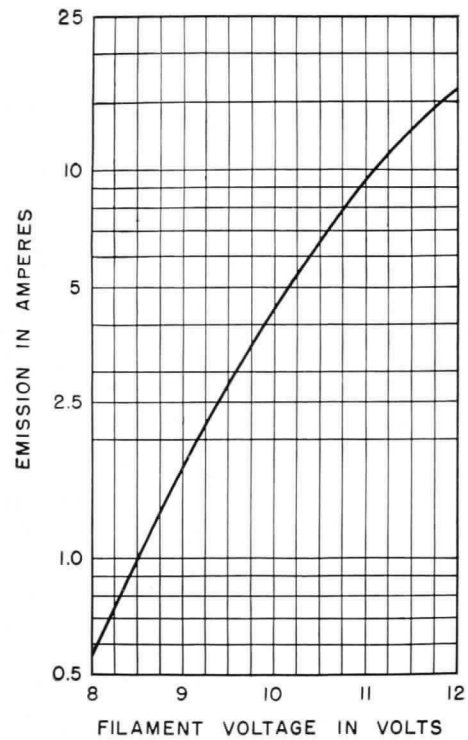
8-50

GL-889R-A
TYPICAL GRID-PLATE TRANSFER CHARACTERISTIC
 $E = 11 \text{ } f \text{ VOLTS A-C}$



K-8074636
Revised

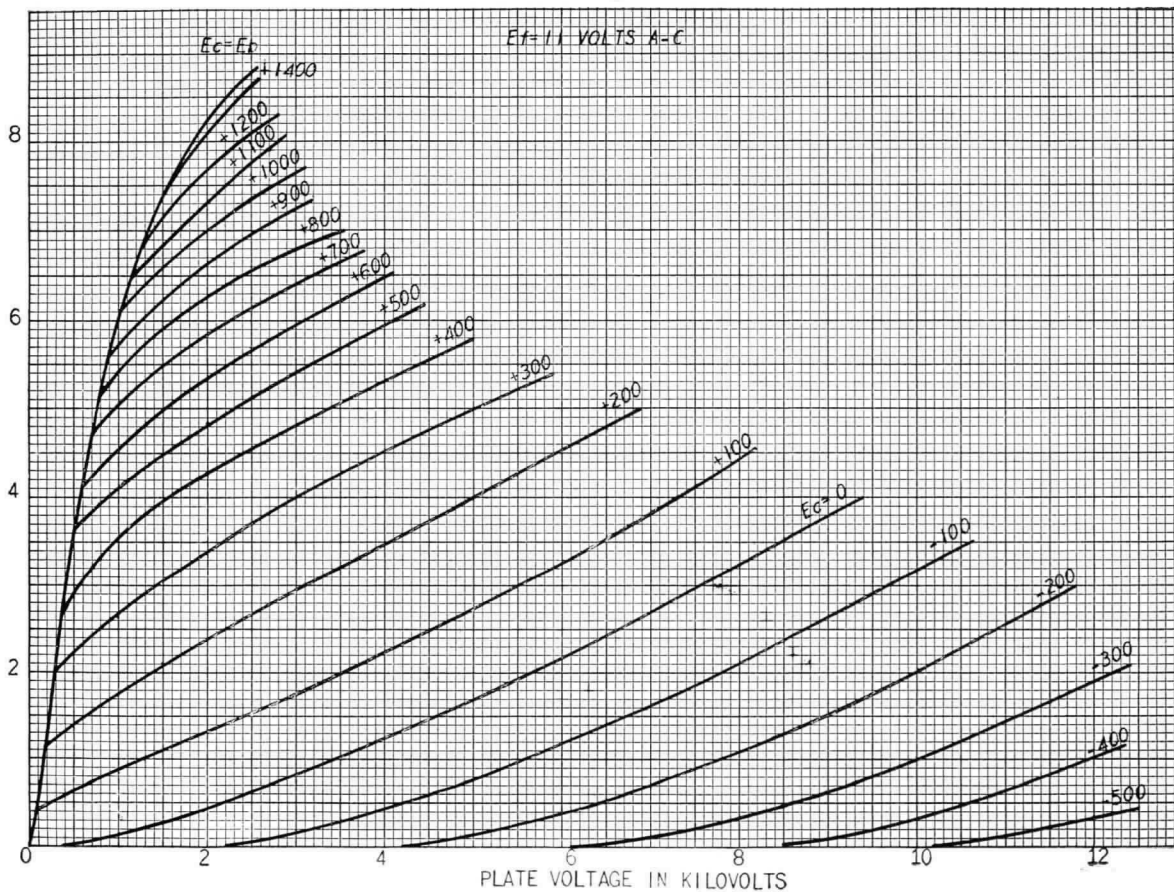
GL-889R-A EMISSION CHARACTERISTICS



3-5-48 K-8074633

12-10-45

GL-889R-A
AVERAGE PLATE CHARACTERISTIC

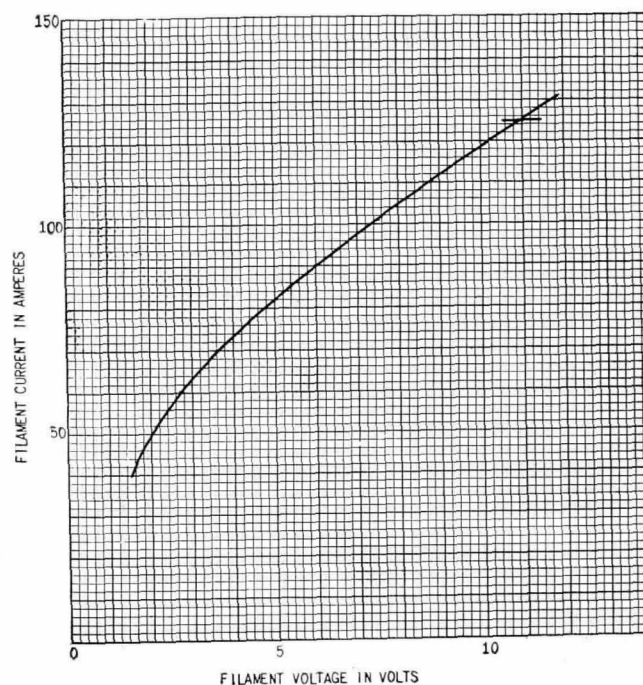


K-8074635
Revised

3-5-48

GL-889R-A AVERAGE FILAMENT CHARACTERISTICS

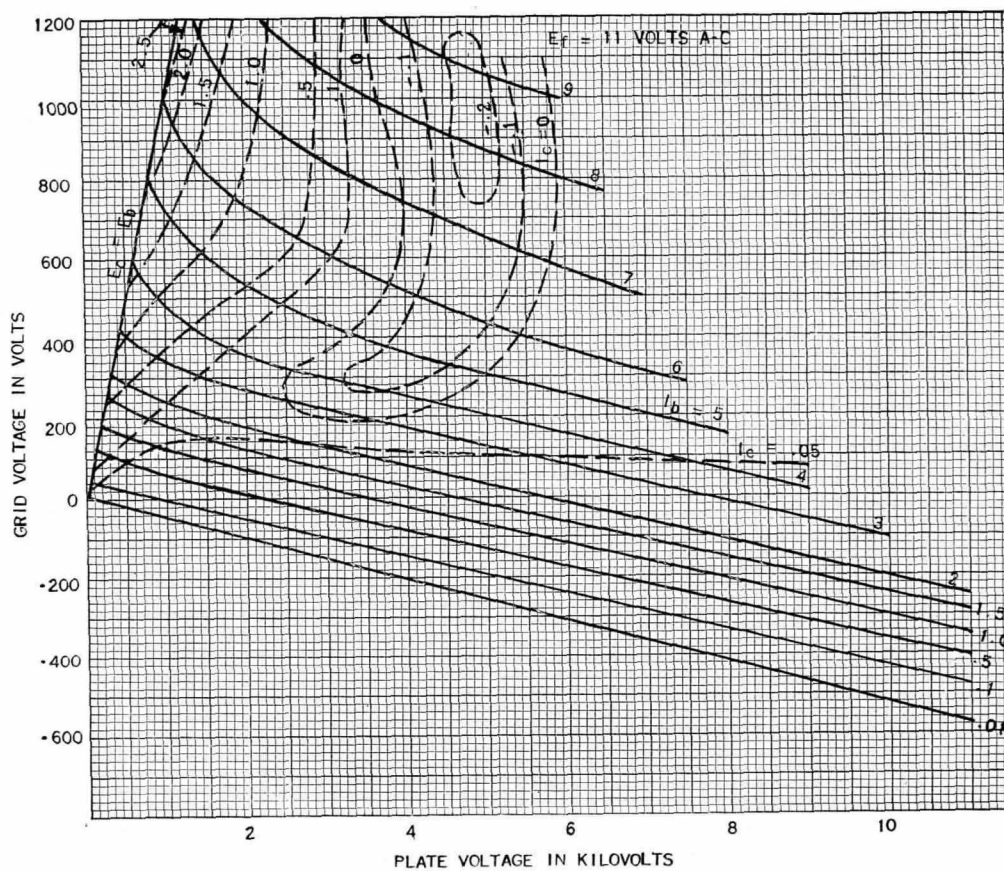
COLD RESISTANCE = 0.008 OHM

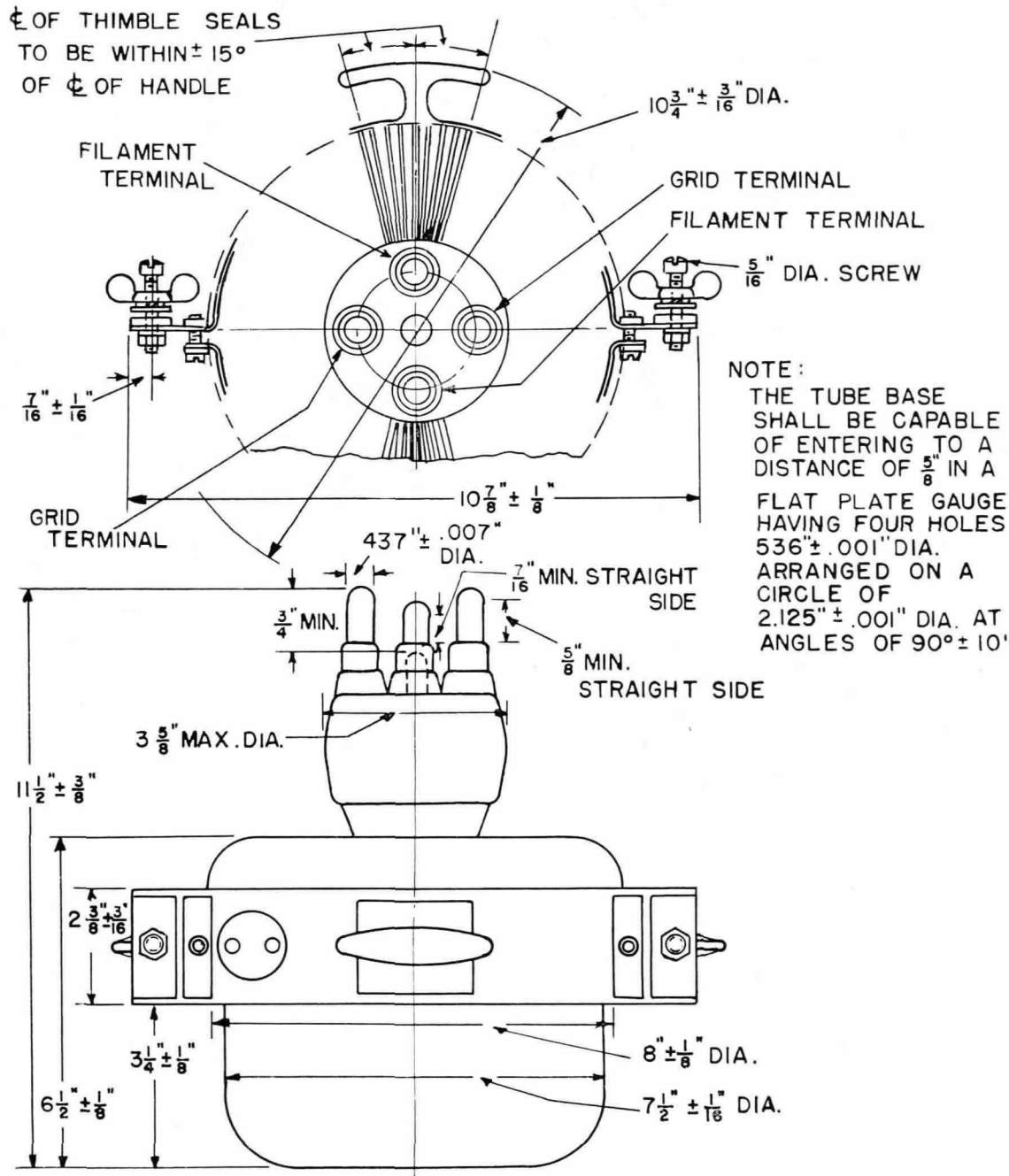


K-8074634

1-9-46

GL-889R-A CHARACTERISTIC





OUTLINE
GL-889R-A PIOTRON

K-6966908

3-16-45

Electronics Department

GENERAL  ELECTRIC

Schenectady, N. Y.