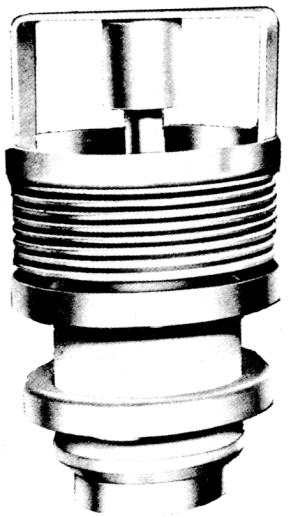
ELECTRONIC INNOVATIONS IN ACTION

TUBES

GL-6283
TETRODE



RADIO-FREQUENCY AMPLIFIER CW SERVICE GROUNDED-GRID OPERATION

The GL-6283 is a reliable power tetrode that delivers useful output to 1250 megacycles or higher. This tube is particularly suitable for application in the final output or driver stage of military-communications systems.

As a Class B linear amplifier in the 225–400-megacycle range, the tube will deliver 110 watts of carrier power modulated up to 100 percent. Since a power gain of 20 may be realized, drive requirements are low—approximately 5 watts at carrier level.

FORCED-AIR COOLED METAL AND CERAMIC INTEGRAL RADIATOR

Operating as a Class C CW amplifier at 900 megacycles, the gain is approximately 15 at the 200-watt level.

Features of the GL-6283 include long life and reliability, high gain, high linearity, and resistance to shock and vibration.

These together with such design factors as an oxide-coated cathode, coaxial elements, and metal-ceramic construction make the tube well adapted to application in modern systems where performance and reliability are important.

Electrical

	Minimum	Bogey	Maximum	
Heater Voltage*	—	6.3	6.8	Volts
Heater Current	—	3.8	—	Amperes
Cathode Heating Time	1	—	—	Minutes
Amplification Factor, G_2 to G_1, E_b=1000V DC; E_g2=275V DC; I_b=0.2 A DC	—	14	—	
Peak Cathode Current†	—	—	1.75	Amperes
Direct Interelectrode Capacitances				
Cathode to Plate‡	—	0.006	—	μμf
Input, G_2 tied to G_1	—	18.25	—	μμf
Output, G_2 tied to G_1♦	—	6.4	—	μμf

Mechanical

Mounting Position—Any		
Net Weight, approximate	1.0	Pounds

Thermal

Cooling—Forced Air§				
Through Radiator, at Sea Level**				
Plate Dissipation	500	400	300	Watts
Air Flow, 45 C Incoming Air Temperature, minimum	17.0	12.0	6.5	Cubic Feet per Minute
Static Pressure, approximate	0.9	0.5	0.2	Inches-Water
Radiator Hub Temperature, at Point Adjacent to Anode Seal	—	—	250	C
Seals				
Screen-Grid to Control-Grid, approximate	—	—	1	Cubic Feet per Minute
Heater to Cathode, approximate	—	—	1	Cubic Feet per Minute
Ceramic Temperature at Any Point, maximum	—	—	200	C

RADIO-FREQUENCY POWER AMPLIFIER—CLASS B LINEAR

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

Maximum Ratings

DC Plate Voltage	2000	Volts
DC Grid-No. 2 Voltage	320	Volts
DC Plate Current	0.250	Amperes
Plate Input	500	Watts
Grid-No. 2 Input	5	Watts
Plate Dissipation	500	Watts

Typical Operation

Grounded-Grid Circuit at 225–400 Megacycles		
DC Plate Voltage	1750	Volts
DC Grid-No. 2 Voltage	250	Volts
DC Grid-No. 1 Voltage, approximate	−20	Volts
Peak RF Plate Voltage #, approximate	1250	Volts
Peak RF Grid-No. 1 Voltage #, approximate	40	Volts
DC Plate Current	0.200	Amperes
Zero Signal DC Plate Current (E_{c1} adjusted)	0.020	Amperes
DC Grid-No. 2 Current	0.005	Amperes
DC Grid-No. 1 Current	0.010	Amperes
Driving Power, approximate	5	Watts
Power Output♥	110	Watts

RADIO-FREQUENCY AMPLIFIER—CLASS B TELEVISION SERVICE

Synchronizing-Level Conditions Per Tube Unless Otherwise Specified

Maximum Ratings, Absolute Values

DC Plate Voltage	1600 Max	Volts
DC Grid-No. 2 Voltage	320 Max	Volts
DC Plate Current	0.400 Max	Amperes
Plate Input	600 Max	Watts
Grid-No. 2 Input	15 Max	Watts
Plate Dissipation	500 Max	Watts
Grid-No. 1 Dissipation	2 Max	Watts

Typical Operation—Grounded-Grid Circuit up to 900 Megacycles

Bandwidth 6 Megacycles		
DC Plate Voltage	1500	Volts
DC Grid-No. 2 Voltage	250	Volts
DC Grid-No. 1 Voltage	−25	Volts
Peak RF Plate Voltage		
Synchronizing Level	1100	Volts
Pedestal Level	825	Volts
Peak RF Driving Voltage		
Synchronizing Level	35	Volts
Pedestal Level	27	Volts
DC Plate Current		
Synchronizing Level	0.400	Amperes
Pedestal Level	0.295	Amperes
DC Grid-No.2 Current (Pedestal Level)	0.007	Amperes
DC Grid-No. 1 Current		
Synchronizing Level	0.036	Amperes
Pedestal Level	0.016	Amperes
Driving Power at Tube, approximate		
Synchronizing Level	25	Watts
Pedestal Level	15	Watts
Power Output, approximate		
Synchronizing Level¶	260	Watts
Pedestal Level¶	145	Watts

RADIO-FREQUENCY POWER AMPLIFIER AND OSCILLATOR—CLASS C TELEGRAPHY

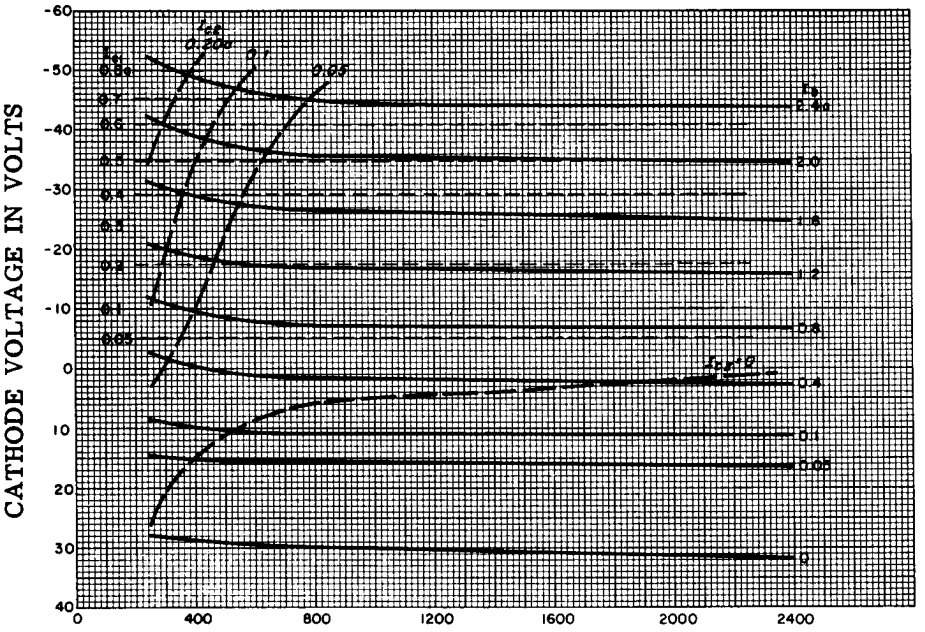
Key-down conditions per tube without amplitude modulation△

Maximum Ratings	900 Megacycles	400 Megacycles	
DC Plate Voltage	1600	2000	Volts
DC Grid-No. 2 Voltage	320	320	Volts
DC Grid-No. 1 Voltage	−100	−100	Volts
DC Plate Current	0.300	0.300	Ampere
DC Grid-No. 1 Current	0.050	0.050	Ampere
Plate Input	480	600	Watts
Grid-No. 2 Input	15	15	Watts
Plate Dissipation	500	500	Watts
Grid-No. 1 Dissipation	2	2	Watts

Typical Operation			
Grounded-Grid Circuit at 900 Megacycles			
DC Plate Voltage	1500	2000	Volts
DC Grid-No. 2 Voltage	210	225	Volts
DC Grid-No. 1 Voltage	−40	−40	Volts
DC Plate Current	0.300	0.250	Ampere
DC Grid-No. 2 Current, approximate	0.010	0.010	Ampere
DC Grid-No. 1 Current, approximate	0.020	0.020	Ampere
Driving Power, approximate	14	15	Watts
Power Output, approximate¶	205	300	Watts

* Because the temperature of the cathode is increased by back bombardment of electrons at UHF, required heater voltage for optimum life decreases with increasing frequency. The amount of heater-voltage reduction is dependent on operating conditions. However, this voltage should not be less than 5.5 volts.
† Represents maximum usable cathode current (plate current plus current to each grid) for any condition of operation.
‡ Measured with a 6-inch minimum diameter flat metal disk attached to the screen-grid ring. Control grid connected to the screen grid.
♦ Output capacitances measured between anode and screen grid. Control grid connected directly to screen grid.
§ Forced-air cooling to be applied before and during the application of any voltages.
**Provision must be made for unobstructed passage of cooling air between radiator fins and between the anode terminal and adjacent radiator fin.
♥Useful power output as measured in output-circuit load.
¶ Useful power output including power transferred from driver stage. Output circuit efficiency approximately 80 percent.
△Modulation essentially negative may be used if the positive peak of the envelope does not exceed 115 percent of the carrier conditions.

CONSTANT CURRENT CHARACTERISTIC
SCREEN VOLTAGE = 250 VOLTS
ALL VOLTAGES REFERENCED TO CONTROL GRID



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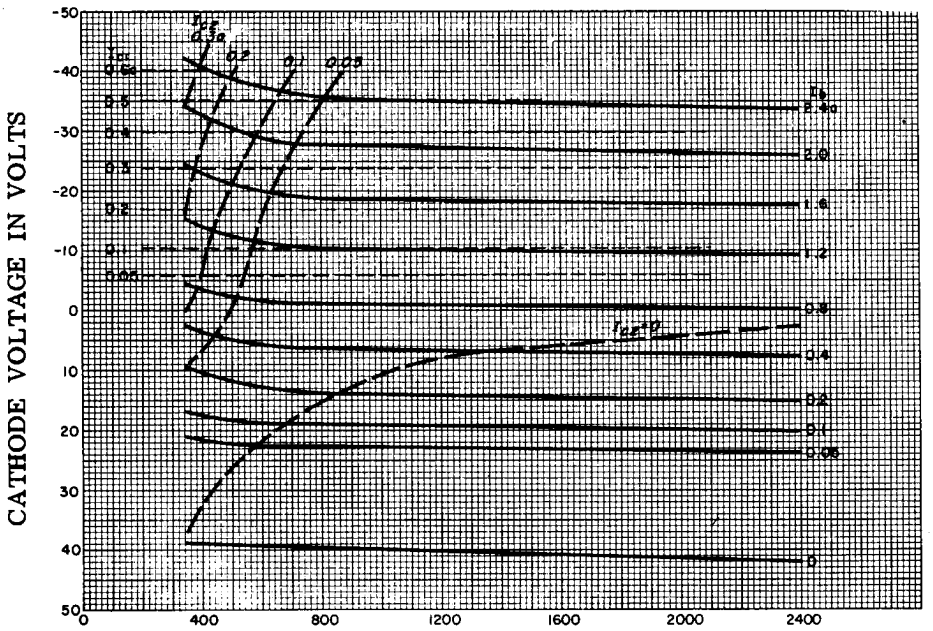
CONSTANT CURRENT CHARACTERISTIC
SCREEN VOLTAGE = 350 VOLTS
ALL VOLTAGES REFERENCED TO CONTROL GRID



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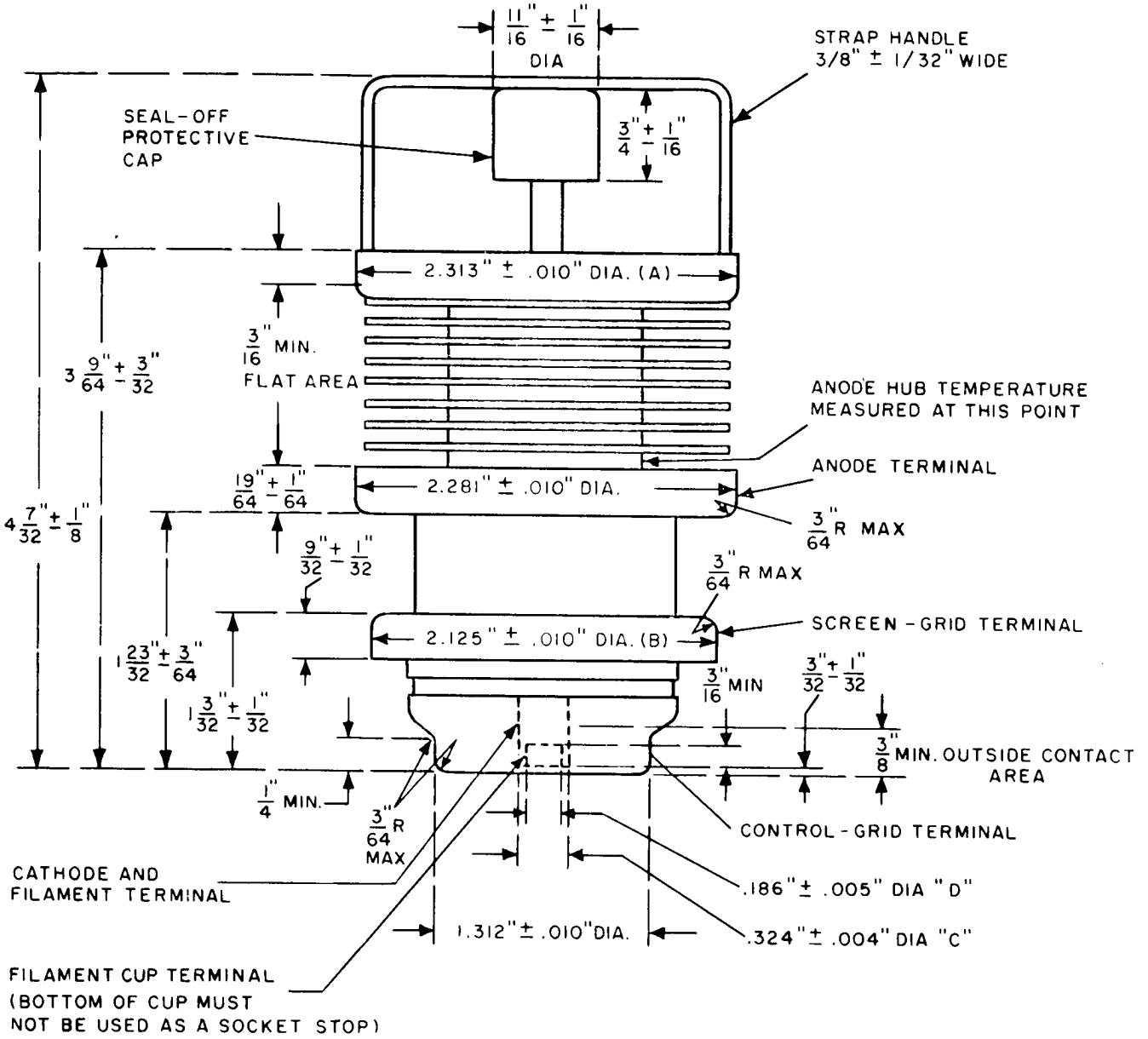

CONCENTRICITIES

THE FOLLOWING TOTAL INDICATOR READINGS ARE MEASURED WITH RESPECT TO A CENTERLINE DETERMINED BY THE CENTERS OF THE ANODE TERMINAL AND CONTROL GRID TERMINAL

DIAMETER A – 0.030 INCHES
DIAMETER B – 0.016 INCHES
DIAMETER C – 0.036 INCHES
DIAMETER D – 0.042 INCHES

TOTAL INDICATOR READING OF FILAMENT CUP TERMINAL DIAMETER (D) MEASURED WITH RESPECT TO CENTER OF CATHODE AND FILAMENT TERMINAL DIAMETER (C) – 0.016 INCHES

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