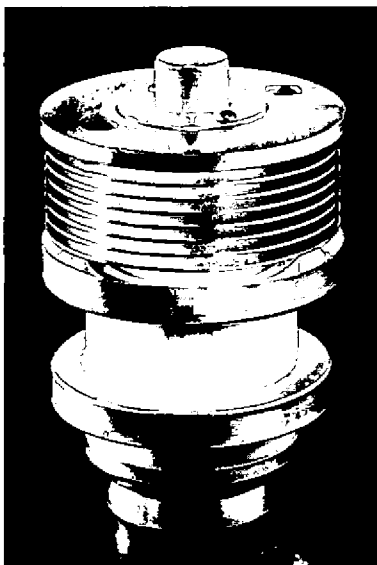




GL-8500 TETRODE

**RADIO-FREQUENCY AMPLIFIER
CW SERVICE
GROUNDED-GRID OPERATION**

**FORCED-AIR COOLED
METAL AND CERAMIC
INTEGRAL RADIATOR**

The GL-8500 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.

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

Features of the GL-8500 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 _a = 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 ...	—	19.5	— 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 In- coming Air Tem- perature, mini- mum.....	17.0	12.0	6.5 Cubic Feet per Minute
Static Pressure, ap- proximate.....	0.9	0.5	0.2 Inches- Water
Radiator Hub Tem- perature, at Point Adjacent to Anode Seal.....	—	—	250 C
Seals			
Screen-Grid to Con- trol-Grid, approxi- mate.....	—	—	1 Cubic Feet per Minute
Heater to Cathode, approximate.....	—	—	1 Cubic Feet per Minute
Ceramic Temperature at Any Point, maxi- mum.....	—	—	200 C

GENERAL  ELECTRIC

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 POWER AMPLIFIER AND OSCILLATOR—CLASS C TELEGRAPHY

Key-down conditions per tube without amplitude modulation Δ

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.

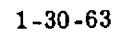
§ Forced-air cooling to be applied before and during the application of any voltages.

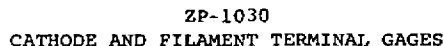
** Provision must be made for unobstructed passage of cooling air between radiator fins and between the anode terminal and adjacent radiator fin.

♡ Useful power output as measured in output-circuit load.

† Useful power output including power transferred from driver stage. Output circuit efficiency approximately 80 percent.

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





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.

When inserted over the cathode and filament terminal, gage #1 shall not contact the tube REFERENCE SURFACE at gage SURFACE "A".

When inserted over the cathode and filament terminal, gage #2 shall contact the tube REFERENCE SURFACE at gage SURFACE "A".

A-69087 - 72B58

12-31-62

TUBE DEPARTMENT
GENERAL  ELECTRIC
Owensboro, Kentucky