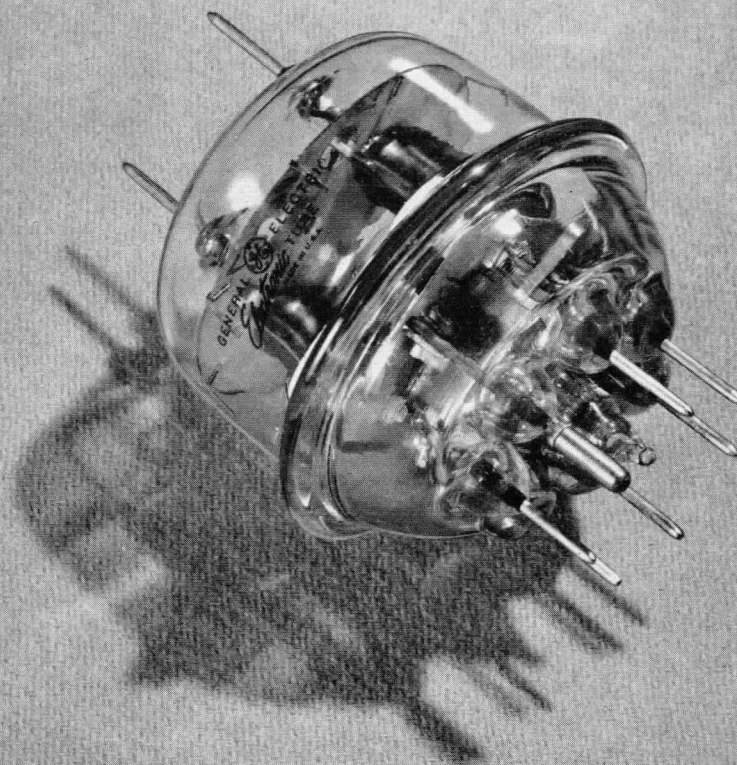




BEAM POWER TUBE

DESCRIPTION

The GL-832-A is a push-pull, beam power transmitting tube of the heater-cathode type which contains two beam power units in one envelope. The tube is designed primarily for use as an r-f power amplifier with maximum ratings at frequencies as high as 200 megacycles, with reduced ratings at frequencies as high as 250 megacycles. Total plate dissipation of the tube is 15 watts for Class C telegraph service. When adequately shielded circuits are used neutralization is unnecessary.

The exceptional efficiency of the 832-A at the ultrahigh frequencies is due to excellent internal shielding, balance and compact structure of the beam power units, and close electrode spacing. Internal leads are short and heavy to minimize internal lead inductance. The terminal arrangement both provides excellent insulation and facilitates symmetry of the circuit layout.

The heaters are arranged to allow operation from either a 12.6- or a 6.3-volt supply.

TECHNICAL INFORMATION

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

GENERAL CHARACTERISTICS

Number of electrodes.....3

Electrical

Cathode—Heater type	Series	Parallel
Heater voltage*	12.6	6.3 volts
Heater current	0.8	1.6 amperes
Grid-plate transconductance, $I_b = 30$ milliamperes		3500 micromhos
Grid-screen amplification factor		7



GENERAL  ELECTRIC

TECHNICAL INFORMATION (CONT'D)

Direct interelectrode capacitances, each unit

Grid-plate (with external shielding).....	0.05	micromicrofarad
Input.....	7.5	micromicrofarads
Output.....	3.8	micromicrofarads
Screen-cathode capacitance, approximate (including screen by-pass condenser).....	65	micromicrofarads

Mechanical

Type of cooling.....	convection
Net weight, approx.....	4 ounces
Shipping weight, approx.....	3 pounds
Mounting position.....	any

MAXIMUM RATING AND TYPICAL OPERATING CONDITIONS

CLASS C PUSH-PULL RADIO-FREQUENCY POWER AMPLIFIER—GRID-MODULATED

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

	Typical Operation		Maximum Ratings	
Filament voltage.....	0.8	0.9	1.0	
D-c plate voltage.....	500	750	750	volts
D-c grid voltage†.....	-55	-60	-100	volts
D-c screen voltage.....	200	200	250	volts
D-c plate current.....	44	29	55	milliamperes
D-c grid current, approx.....	0	0		milliamperes
D-c screen current.....	3.0	2.0		milliamperes
Plate input.....			22	watts
Screen input.....			3.4	watts
Plate dissipation.....			15	watts
Peak r-f grid input voltage, approx.....	100	100		volts
Peak a-f grid voltage.....	14	16		volts
Driving power, approx§.....	0.1	0.1		watt
Plate power output.....	8.0	8.5		watts

CLASS C RADIO-FREQUENCY AMPLIFIER AND OSCILLATOR—PLATE-MODULATED

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

D-c plate voltage.....	425	600	600	volts
D-c grid voltage π	-60	-65	-100	volts
From a grid resistor of.....	25000	25000		ohms
D-c screen voltage¶.....	200	200	250	volts
	14000	25000	2	ohms
D-c plate current.....	52	36	68	milliamperes
D-c grid current, approx.....	2.4	2.6	6	milliamperes
D-c screen current.....	16	16		milliamperes
Plate input.....			22	watts
Screen input.....			3.4	watts
Plate dissipation.....			10	watts
Peak r-f grid input voltage, approx.....	140	150		volts
Driving power, approx.....	0.15	0.16		watt
Plate power output.....	16	17		watt

TECHNICAL INFORMATION (CONT'D)

CLASS C PUSH-PULL RADIO-FREQUENCY POWER AMPLIFIER AND OSCILLATOR

Key-down conditions per tube without modulation[#]

D-c plate voltage.....	500	750	750 volts
D-c grid voltage ^π	-65	-65	-100 volts
From grid resistor.....	25000	25000	ohms
From cathode resistor.....	730	1000	ohms
D-c screen voltages Δ	200	200	250 volts
	21000	37000	ohms
D-c plate current.....	73	48	90 milliamperes
D-c grid current, approx.....	2.6	2.8	6 milliamperes
D-c screen current.....	14	15	milliamperes
Plate input.....			36 watts
Plate dissipation.....			15 watts
Screen input.....			5 watts
Peak r-f grid input voltage, approx.....	150	150	volts
Driving power, approx.....	0.18	0.19	watt
Plate power output.....	26	26	watts

* Should not deviate more than ± 10 per cent from rated value.^π The grid-circuit resistor should never exceed 25000 ohms (total) per tube, or 50000 ohms per unit. Any additional bias required must be supplied by a cathode resistor or a fixed supply.[‡] Preferably obtained from a fixed supply; or may also be obtained from an unbypassed (for audio frequencies) cathode resistor.[§] At crest of a-f cycle with modulation factor specified.^{||} Obtained by grid resistor of value shown (per tube) or by partial self-bias methods.[¶] Preferably obtained from a separate source modulated with the plate supply, or obtained from the modulated plate-voltage supply through resistor of value shown.[#] Modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115 per cent of the carrier conditions. Δ Obtained from a separate source, or from the plate-voltage supply with a voltage divider, or through a series resistor of the value shown. The screen voltage must not exceed 600 volts under key-up conditions.

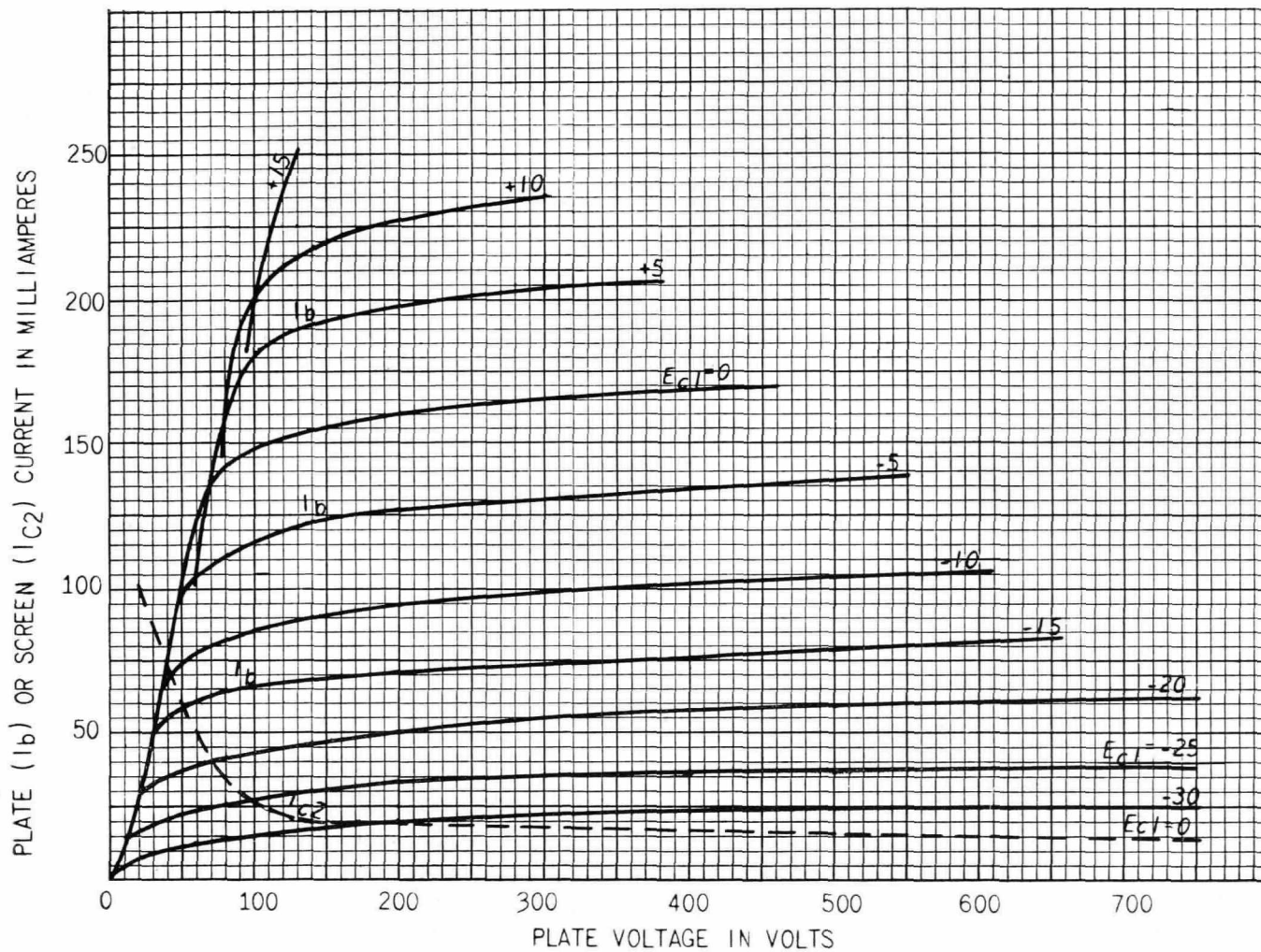
APPLICATION NOTES

The GL-832-A may be operated at maximum rating in all classes of service at frequencies as high as 200 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 maxi-

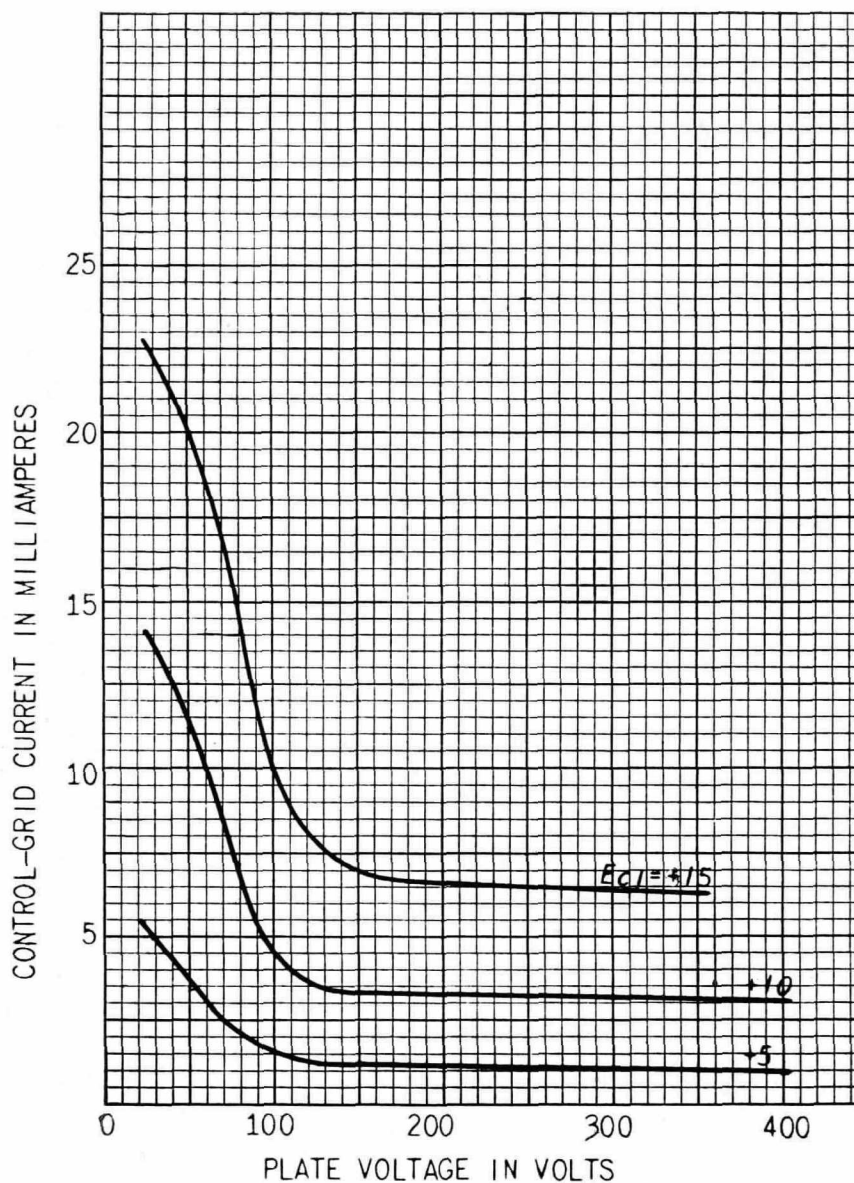
imum ratings are the same as shown above.) The tabulation below shows the highest percentage of maximum plate voltage and power input that can be used at frequencies up to 250 megacycles.

Frequency.....	200	250 megacycles
Maximum permissible percentage of maximum rated plate voltage and plate input		
Class C { grid-modulated.....	100	94 per cent
{ plate-modulated.....	100	89 per cent
{ telegraphy.....	100	89 per cent

GL-832-A
 AVERAGE PLATE CHARACTERISTICS (FOR EACH UNIT)
 ($E_r = 12.6$ VOLTS, SCREEN VOLTS = 250)
 (SERIES-HEATER ARRANGEMENT)



GL-832-A
TYPICAL CHARACTERISTICS (FOR EACH UNIT)
($E_c = 12.6$ VOLTS, SCREEN VOLTS = 250)



5-46



1. THE AXIS YY' IS DEFINED AS THE AXIS OF THE BASE PIN GAGE DESCRIBED IN NOTE 3.
2. THE TUBE BASE SHALL BE CAPABLE OF ENTERING TO A DISTANCE OF .375" A FLAT-PLATE GAGE HAVING SIX HOLES .0800" $\pm$.0005" AND ONE HOLE .1450" $\pm$.0005" ALL ARRANGED ON A 1.000" $\pm$.0005" DIA. CIRCLE AT SPECIFIED ANGLES. 51° $\pm$ 5'; 52° $\pm$ 5'; 26° $\pm$ 5'. A .500" $\pm$.010" HOLE AT THE CENTER OF THE PIN CIRCLE IS ALSO REQUIRED. THE AXIS YY' IS DEFINED BY THE CENTER OF THIS HOLE.
3. THIS DIMENSION IS MEASURED BY INSERTING THE TUBE IN THE BASE-PIN GAGE DESCRIBED IN NOTE 2 AND THEN LOWERING A GAGE PLATE HAVING A HOLE 2.063" $\pm$.003" $\pm$.000" IN DIAMETER UNTIL THE PLATE RESTS ON THE SEAL FLANGE AT POSITION XX'. THE CENTER LINE OF THE HOLE SHALL BE COINCIDENT WITH THE AXIS YY' WITHIN .150" WITH THE GAGE PLATE PARALLEL TO THE TOP SURFACE OF THE BASE PIN GAGE. THE DIMENSION IS MEASURED BETWEEN THE BOTTOM SURFACE OF THE GAGE PLATE AND THE TOP SURFACE OF THE BASE PIN GAGE. THIS DISTANCE SHALL BE .844" MIN. AND 1.219" MAX.
4. MINIMUM DIAMETER OF TUBE-SEAL FLANGE WILL BE SUCH THAT A RING GAGE HAVING ID OF 2.125" $\pm$.003" $\pm$.000" AND THICKNESS OF .125" $\pm$.010" WILL NOT PASS THE FLANGE WHEN TRIED AT ANY ANGLE.
5. THE PLATE LEADS SHALL BE CAPABLE OF ENTERING A FLAT PLATE GAGE OF .375" MIN. THICKNESS HAVING TWO HOLES .200" $\pm$.0005" IN DIAMETER ARRANGED .424" $\pm$.001" FROM A POINT COINCIDENT WITH THE AXIS YY'. THE AXES OF THE HOLES SHALL BE PARALLEL TO YY' AND THE PLANE OF THESE AXES SHALL BE 90° $\pm$ 5' FROM THE PLANE THRU YY' AND PIN NO. 4.
6. THE PLATE LEADS SHALL BE CAPABLE OF ENTERING A FLAT PLATE GAGE OF .375" MIN. THICKNESS HAVING 2 HOLES .120" $\pm$.0005" IN DIAMETER ARRANGED .848" $\pm$.001" CENTER TO CENTER.

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PIN 5—HEATER CENTER TAP
PIN 6—GRID No. 1 OF UNIT No. 1
PIN 7—HEATER
TOP PINS—PLATE TERMINALS OF UNITS No. 1
AND No. 2, RESPECTIVELY.

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