

EITEL-McCULLOUGH, INC.

SAN BRUNO, CALIFORNIA

250TH

HIGH-MU TRIODE
MODULATOR
OSCILLATOR
AMPLIFIER

▶ The Eimac 250TH is a high-mu triode having a maximum plate dissipation of 250 watts. It is intended for use as an amplifier, oscillator or modulator, and can be used at its maximum ratings at frequencies up to 40 Mc.
Cooling of the 250TH is accomplished by radiation from the plate, which operates at a visible red color at maximum dissipation, and by means of air circulation around the envelope.

GENERAL CHARACTERISTICS

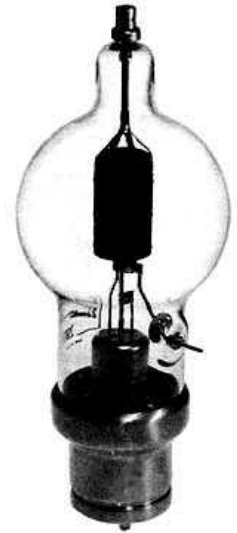
▶ ELECTRICAL

Filament: Thoriated tungsten	
Voltage	5.0 volts
Current	10.5 amperes
Amplification Factor (Average)	37
Direct Interelectrode Capacitances (Average)	
Grid-Plate	2.9 μmfd
Grid-Filament	4.6 μmfd
Plate-Filament	0.5 μmfd
Transconductance ($I_b=300 \text{ ma.}, E_b=3000\text{V.}, E_c=-20$)	5600 μmhos
Frequency for Maximum Ratings	40 Mc.

▶ MECHANICAL

Base: Fifty-watt Jumbo 4-pin, fits E. F. Johnson Co. socket No. 123-211, National socket No. XM-50, or equivalent. For pin connections, see outline drawing.

Mounting	Vertical, base down or up.
Cooling	Convection and radiation.
Recommended Heat Dissipating Connectors:	
Plate	Eimac HR-6
Grid	Eimac HR-3
Maximum Overall Dimensions:	
Length	10.13 inches
Diameter	3.81 inches
Net weight	10 ounces
Shipping weight (Average)	3 pounds



Eimac HR-6
Eimac HR-3

▶ AUDIO FREQUENCY POWER AMPLIFIER AND MODULATOR

Class-AB₂ (Sinusoidal wave, two tubes unless otherwise specified)

MAXIMUM RATINGS	
D-C PLATE VOLTAGE	4000 MAX. VOLTS
MAX-SIGNAL D-C PLATE CURRENT, PER TUBE	350 MAX. MA.
MAX-SIGNAL PLATE DISSIPATION, PER TUBE	250 MAX. WATTS
MAX-SIGNAL GRID DISSIPATION	40 MAX. WATTS

TYPICAL OPERATION

D-C Plate Voltage	1500	2000	3000	Volts
D-C Grid Voltage (approx.)*	0	-30	-65	Volts
Zero-Signal D-C Plate Current	220	140	100	Ma.
Max-Signal D-C Plate Current	700	700	560	Ma.
Effective Load, Plate-to-Plate	4200	6000	12,200	Ohms
Peak A-F Grid Input Voltage (per tube)	230	260	260	Volts
Max-Signal Peak Driving Power	92	104	83	Watts
Max-Signal Nominal Driving Power	46	52	42	Watts
Max-Signal Plate Power Output	630	900	1180	Watts

*Adjust for stated zero-signal plate current.

▶ PLATE MODULATED RADIO FREQUENCY POWER AMPLIFIER

Class-C Telephony (Carrier conditions)

MAXIMUM RATINGS, PER TUBE (Frequencies up to 40 Mc.)	
D-C PLATE VOLTAGE	3200 MAX. VOLTS
D-C PLATE CURRENT	280 MAX. MA.
PLATE DISSIPATION	165 MAX. WATTS
GRID DISSIPATION	40 MAX. WATTS

TYPICAL OPERATION, per tube¹ (Frequencies up to 40 Mc.)

D-C Plate Voltage	2000	2500	3000	Volts
D-C Plate Current	250	225	200	Ma.
D-C Grid Voltage	-160	-180	-200	Volts
D-C Grid Current	60	45	38	Ma.
Peak R-F Grid Input Voltage	345	365	375	Volts
Driving Power (approx.)	22	17	14	Watts
Grid Dissipation	12	8	6	Watts
Plate Power Input	500	565	600	Watts
Plate Dissipation	165	165	165	Watts
Plate Power Output	335	400	435	Watts

▶ RADIO FREQUENCY POWER AMPLIFIER AND OSCILLATOR

Class-C Telephony or FM Telephony (Key-down conditions, per tube)

MAXIMUM RATINGS	
D-C PLATE VOLTAGE	4000 MAX. VOLTS
D-C PLATE CURRENT	350 MAX. MA.
PLATE DISSIPATION	250 MAX. WATTS
GRID DISSIPATION	40 MAX. WATTS

TYPICAL OPERATION, per tube¹ (Frequencies up to 40 Mc.)

D-C Plate Voltage	2000	3000	4000	Volts
D-C Grid Voltage	-100	-150	-220	Volts
D-C Plate Current	357	333	313	Ma.
D-C Grid Current	94	90	93	Ma.
Peak R-F Grid Input Voltage (approx.)	345	395	470	Volts
Driving Power (approx.)	29	32	39	Watts
Grid Dissipation (approx.)	20	19	18	Watts
Plate Power Input	714	1000	1250	Watts
Plate Dissipation	250	250	250	Watts
Plate Power Output	464	750	1000	Watts

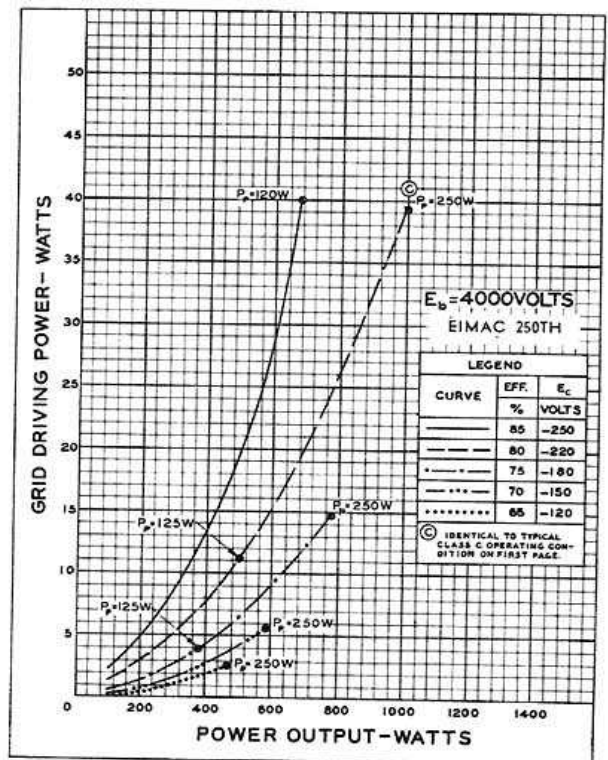
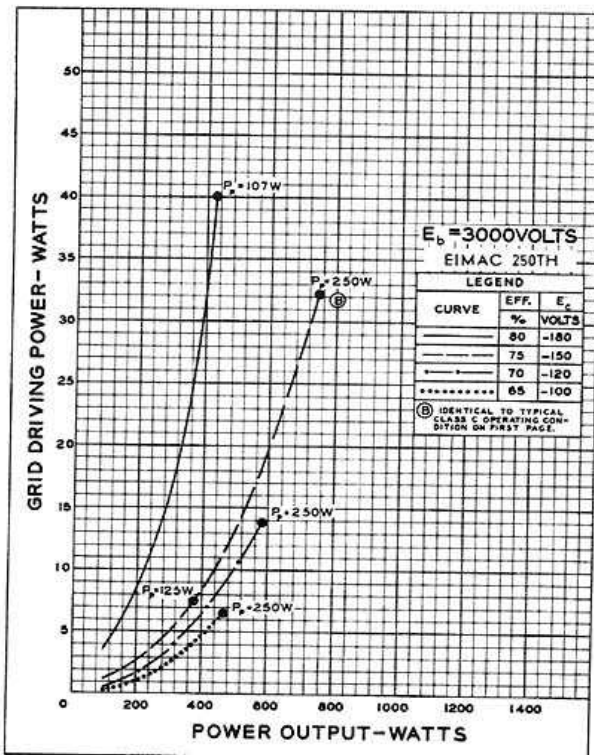
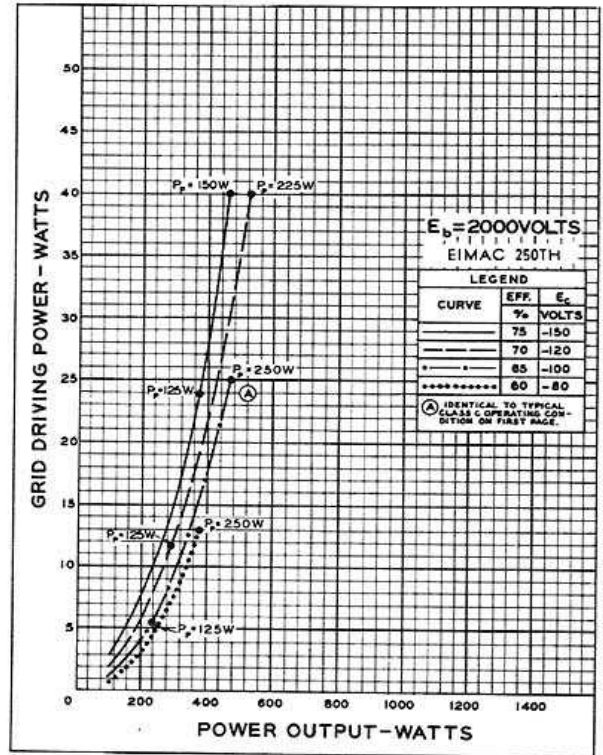
(Effective 5-1-51) Copyright, 1951 by Eitel-McCullough, Inc.

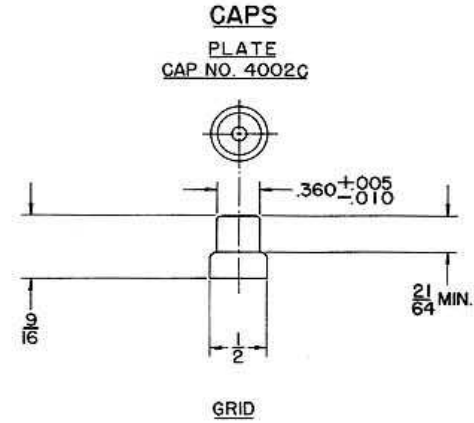
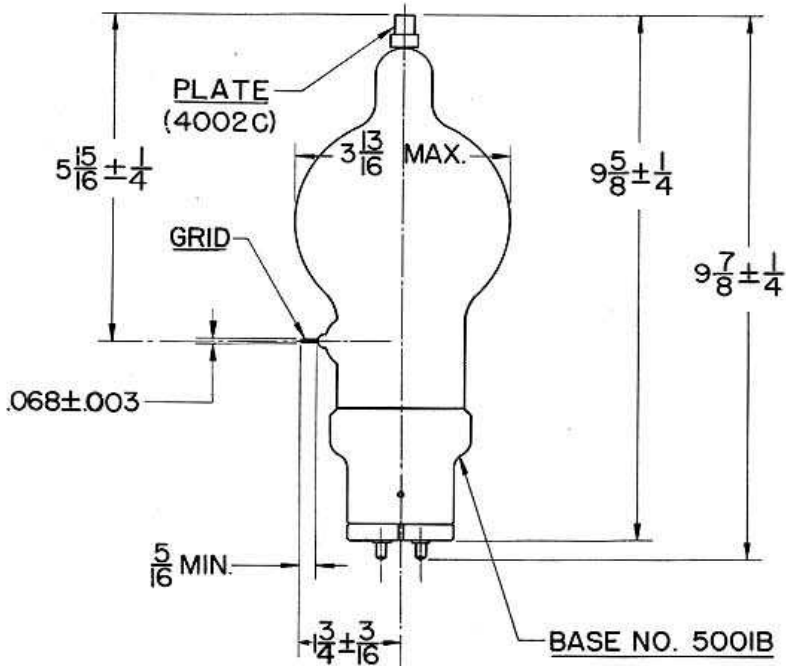
▶ Indicates change from sheet dated 10-17-44

¹The performance figures listed under Typical Operation are for radio frequencies up to the VHF region and are obtained by calculation from the characteristic tube curves and confirmed by direct tests. The driving power given includes power taken by the tube grid and the bias circuit. The driving power and output power do not allow for losses in the associated resonant circuits. These losses are not included because they depend principally upon the design and the choice of circuit components.

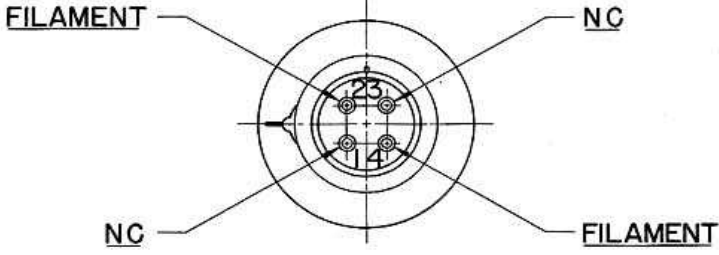
DRIVING POWER vs. POWER OUTPUT

The three charts on this page show the relationship of plate efficiency, power output and grid driving power at plate voltages of 2000, 3000, and 4000 volts. These charts show combined grid and bias losses only. The driving power and power output figures do not include circuit losses. Points A, B, and C are identical to the typical Class C operating conditions shown on the first page under 2000, 3000, and 4000 volts respectively.

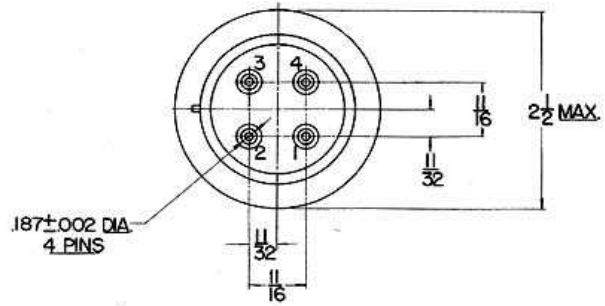
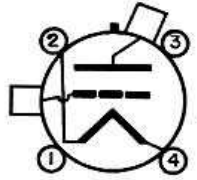
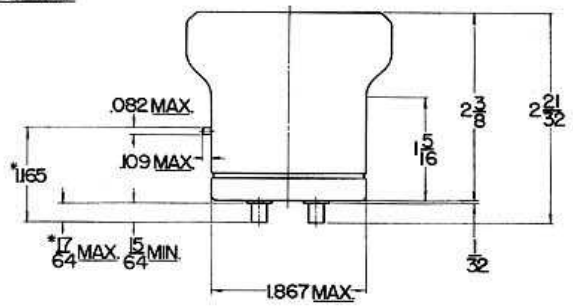




(SEE TUBE OUTLINE DRAWING)



BASE NO. 500IB



*ON FINISHED TUBE ADD .060 FOR SOLDER