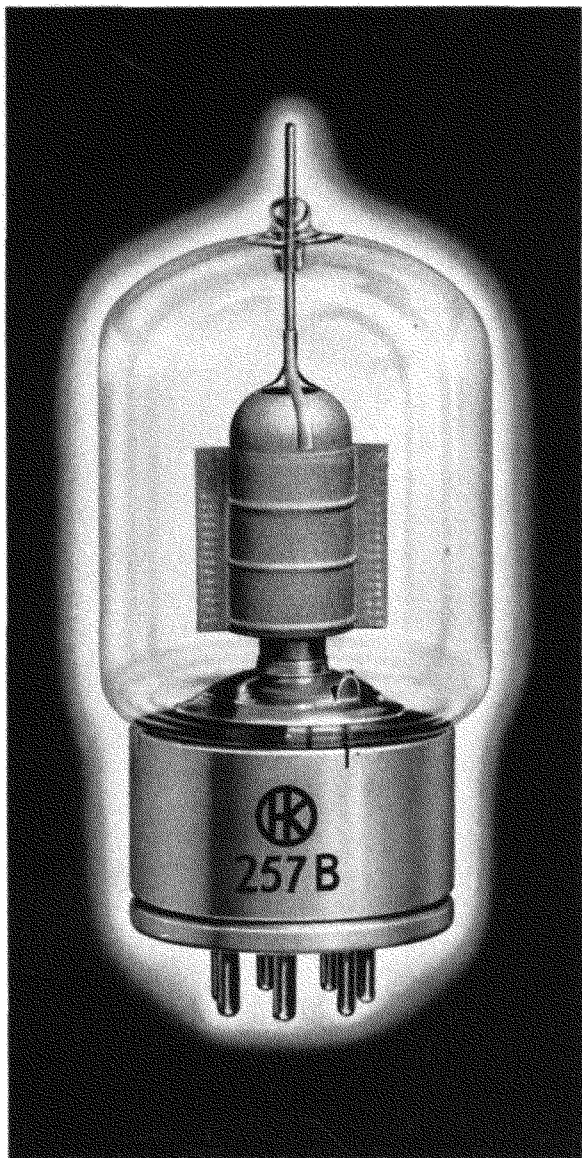


GAMMATRON TYPE 257B

JAN 4E 27



BEAM PENTODE

75 watt radiation cooled beam pentode. Exceptional very high frequency performance.

ELECTRICAL DATA

Plate Dissipation	75 Watts
Maximum Screen Input	25 Watts
Filament Voltage	5.0 Volts
Filament Current	7.5 Amps.

INTERELECTRODE CAPACITIES

Plate-Grid Capacity	0.08 Mmfd.
Input Capacity	10.5 Mmfd.
Output Capacity	4.7 Mmfd.

PHYSICAL DATA

Plate	Enclosed Cylindrical Tantalum
Grids	Vertical Bar Tantalum
Filament	Thoriated Tungsten
Base	Giant 7-pin Bayonet
Envelope	Nonex Glass
Net Weight	6 Ounces
Shipping Weight	1 Pound
Maximum Height	6 $\frac{3}{16}$ Inches
Maximum Diameter	2 $\frac{1}{16}$ Inches

The type HK-257B is capable of very high frequency operation and does not require neutralization. It has very low driving power requirements, will stand high plate and screen voltages, and will stand large momentary overloads. These features are made possible through the use of tantalum plate and grid elements and an advanced design by Heintz and Kaufman Ltd. engineers. The HK-257B is the only multi-element tube in its class capable of this kind of performance.

High mutual conductance in combination with high voltage capabilities makes the grid driving power requirements of the HK-257B very low. And under many conditions the power consumed is negligible. This feature reduces the number and size of the preliminary stages required in any transmitter resulting in savings and advantages that are obvious.

The plate and grid leads are short and sturdy, resulting in low lead inductance. The suppressor grid and screen grid are each supported with two parallel leads. All four leads are terminated on the base so that they may be individually bypassed to ground. The feed back capacity is extremely low and thus it is possible to operate the HK-257B even at very high frequencies without neutralization. This feature makes the HK-257B adaptable to instant band switching circuits and such circuits may be designed with a minimum of controls.

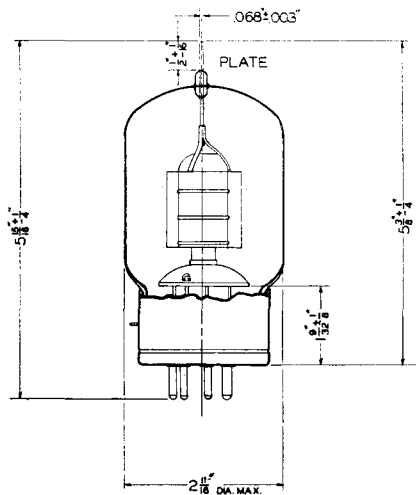
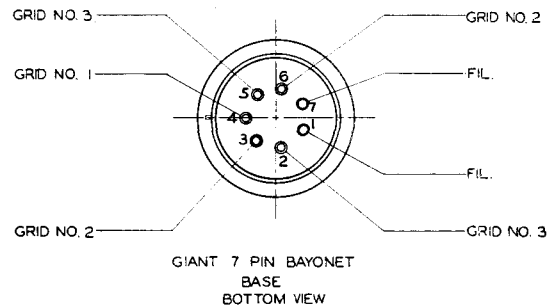
Installation into practical circuits is facilitated by the unique physical design of the HK-257B. The input and output circuits are readily isolated and complete shielding is assured when the base shell is grounded.

HEINTZ AND KAUFMAN LTD.

SOUTH SAN FRANCISCO, CALIFORNIA, U. S. A.

TYPE HK-257B

The information on this and the following page does not represent exact conditions of operation to be imposed for any particular situation. Because tubes are used under many widely different conditions Heintz and Kaufman will gladly furnish information for applications which differ appreciably from the illustrative examples given.



MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

RADIO FREQUENCY POWER AMPLIFIER— CLASS "C" UNMODULATED

	Maximum Rating Per Tube	TYPICAL OPERATION, 1 TUBE*					
Power Output	235	230	230	230	225	110	Watts
Driving Power	0	0.1	0.2	1.4	1.9	2.4	Watts
DC Plate Volts	4000	3000	2000	2000	2000	1000	Volts
DC Plate Current	150	100	150	150	150	150	M. A.
DC Suppressor Voltage	60	60	0	60	0	60	Volts
DC Suppressor Current	3	3	0	4	0	6	M. A.
DC Screen Voltage	750	750	750	500	500	400	Volts
DC Screen Current	30	8	11	18	11	20	M. A.
DC Control Grid Voltage	-500	-200	-200	-200	-200	-180	Volts
DC Control Grid Current	25	0	0.4	0.7	6	8	M. A.
Peak R.F. Control Voltage	170	215	225	255	270	270	Volts
Plate Dissipation	75	65	70	70	75	40	Watts
DC Plate Input	300	300	300	300	300	150	Watts

*Other values to obtain similar results may be used provided the maximum ratings are not exceeded.

RADIO FREQUENCY POWER AMPLIFIER— CLASS "C" PLATE MODULATED

(100% Modulation Peaks, 60% Average Value)

	Maximum Rating Per Tube	TYPICAL CARRIER CONDITIONS, 1 TUBE					
Power Output	200	195	145	143	95	Watts	
Driving Power	0.1	0.2	0.4	1.7	1.7	Watts	
DC Plate Volts	3000	2500	2000	1500	1000	Volts	
DC Plate Current	135	100	125	135	135	M. A.	
DC Suppressor Volts	60	60	60	60	60	Volts	
DC Suppressor Current	3	3	3	4	5	M. A.	
DC Screen Volts	600	600	600	600	400	Volts	
DC Screen Current	30	8	10	11	13	M. A.	
DC Control Grid Volts	-500	-200	-200	-200	-130	Volts	
DC Control Grid Current	25	0.6	1.0	1.4	8	M. A.	
Peak R.F. Control Voltage	220	235	255	235	235	Volts	
Plate Dissipation	65	50	55	57	59	40	Watts
DC Plate Input	250	250	250	202	202	135	Watts

Gammatron Tubes

RADIO FREQUENCY DOUBLER AMPLIFIER

MAXIMUM INPUT 200 WATTS

	Maximum Rating Per Tube	TYPICAL OPERATION, 1 TUBE			
Power Output		120	110	110	80 Watts
Driving Power		0	0.2	1.8	5.5 Watts
DC Plate Voltage	4000	2000	1500	1500	1000 Volts
DC Plate Current	150	95	120	120	150 M. A.
DC Suppressor Voltage		60	60	60	60 Volts
DC Suppressor Current		2	3	4	6 M. A.
DC Screen Voltage	750	750	750	500	500 Volts
DC Screen Current	30	10	15	13	25 M. A.
DC Control Grid Voltage	-500	-400	-400	-330	-400 Volts
DC Control Grid Current	25	0	0.5	5	12 M. A.
Peak R.F. Control Voltage		400	425	400	510 Volts
Plate Dissipation	75	70	70	70	70 Watts
DC Plate Input	200	190	180	180	150 Watts

CLASS "A" AMPLIFIER—AUDIO AND TELEVISION

	2 Tubes Overbiased	1 TUBE OPERATION	
Power Output	315	30	25 Watts
DC Plate Voltage	1500	1000	500 Volts
DC Plate Current Zero Signal	80	75	150 M. A.
DC Plate Current Max. Signal	292		M. A.
DC Screen Voltage	750	300	500 Volts
DC Screen Current Zero Signal	2	5	10 M. A.
DC Screen Current Max. Signal	38		M. A.
DC Suppressor Voltage	60	0	0 Volts
DC Control Grid Voltage (Approx.)	-125	-27	-36 Volts
Peak Audio Voltage	240	27	36 Volts
Plate Input Max. Signal	438		Watts
Plate Dissipation Max.	150	75	75 Watts
Load Resistance		12,000	2600
Load Resistance, Plate to Plate	12,000		Ohms

RADIO FREQUENCY POWER AMPLIFIER— CLASS "C" SUPPRESSOR GRID MODULATED

(Maximum Input 110 Watts)

	Maximum Rating Per Tube	TYPICAL CARRIER CONDITIONS, 1 TUBE		
Power Output		35	33	32 Watts
Driving Power		.4	1.4	2.0 Watts
Audio Power		100*	100*	500† Milliwatts
DC Plate Voltage	2000	2000	1500	1000 Volts
DC Plate Current	100	55	70	90 M. A.
DC Suppressor Voltage	-500	-300	-210	-135 Volts
Peak Suppressor Current		0	0	3 M. A.
DC Screen Voltage‡	600	500	500	600 Volts
DC Screen Current		27	44	41 M. A.
Screen Resistor		2000	2000	5000 Ohms
DC Control Grid Voltage	-500	-130	-130	-130 Volts
DC Control Grid Current	25	3	8	11 M. A.
Peak R.F. Driving Voltage		150	195	200 Volts
Peak A.F. Modulating Voltage		300	210	175 Volts
Plate Dissipation	75	75	72	60 Watts

*Use Type 6C5 tube or equal with 1:2 step-up transformer ratio.

†Use receiving type pentode as 6F6 and 1:1 transformer ratio.

‡Source voltage. Apply through indicated resistor.

Gammatron Tubes

TYPE 257B BEAM PENTODE OPERATING NOTES

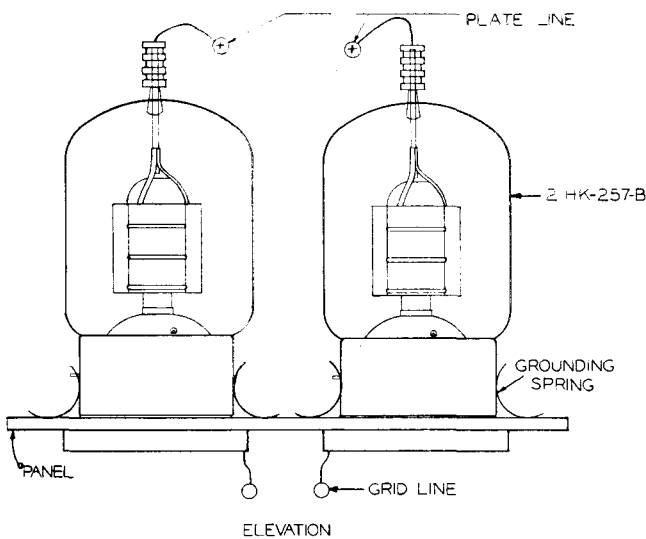
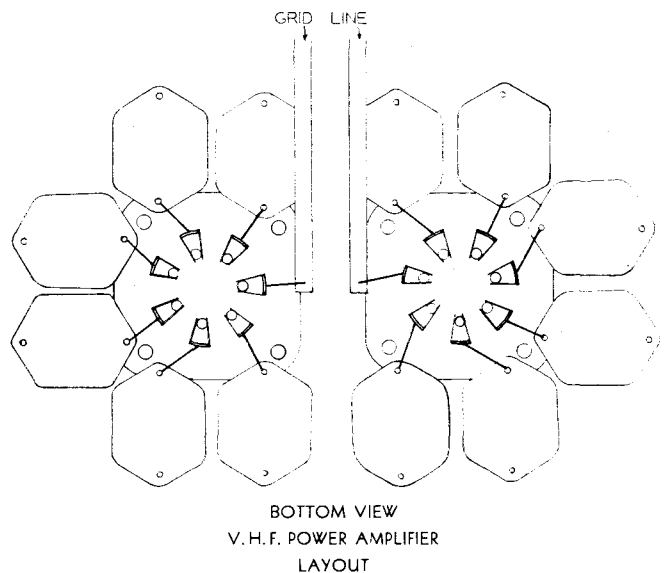
1. Protect your investment: Always provide sufficient fixed bias or cathode bias to limit the plate current to a safe value. Plate current depends on the screen voltage, not the plate voltage. The tube may be easily damaged by loss of bias because at zero bias the plate current is great with proper screen voltage. Apply reduced plate and screen voltages when tuning up transmitter.
2. The 257B has a very high transconductance and hence extreme care must be taken to prevent self-oscillation. The output and input circuits must be completely separated. Parasitic suppressors are often helpful. Screen and suppressor leads should be by-passed directly at the socket. For operation on high frequencies both parallel screen and suppressor leads should be by-passed to the filament. Because the internal screening shield is inside the metallic base shell, it is only necessary to provide spring contacts grounding the base shell to the panel to complete the shielding.
3. In employing various combinations of plate and screen voltages, the following general rules will be helpful:
 - (1) Driving requirements and screen current are lower with high screen voltage.
 - (2) Driving requirements are lower and screen current is decreased with approximately 60 volts applied to the suppressor.
 - (3) For the majority of applications zero suppressor voltage will be satisfactory.
4. Apply screen voltage or excitation after plate voltage or at the same time, not before. Remove screen voltage or excitation before plate voltage or at same time.
5. In tuning the tank coil to resonance there may be little change in plate current when the amplifier is loaded. Use the tantalum plate as a resonance indicator. Minimum plate temperature indicates resonance.

VERY HIGH FREQUENCY RATINGS

Percentage maximum plate voltage and input power based on low frequency ratings shown on previous page.

Frequency	75	120	150 Mc.
Class "B" or Grid			
Modulated R. F. P. A.	100%	90%	80%
Class "C" R. F. P. A.			
Telegraph or Telephone	100%	75%	50%

VHF POWER AMPLIFIER LAYOUT

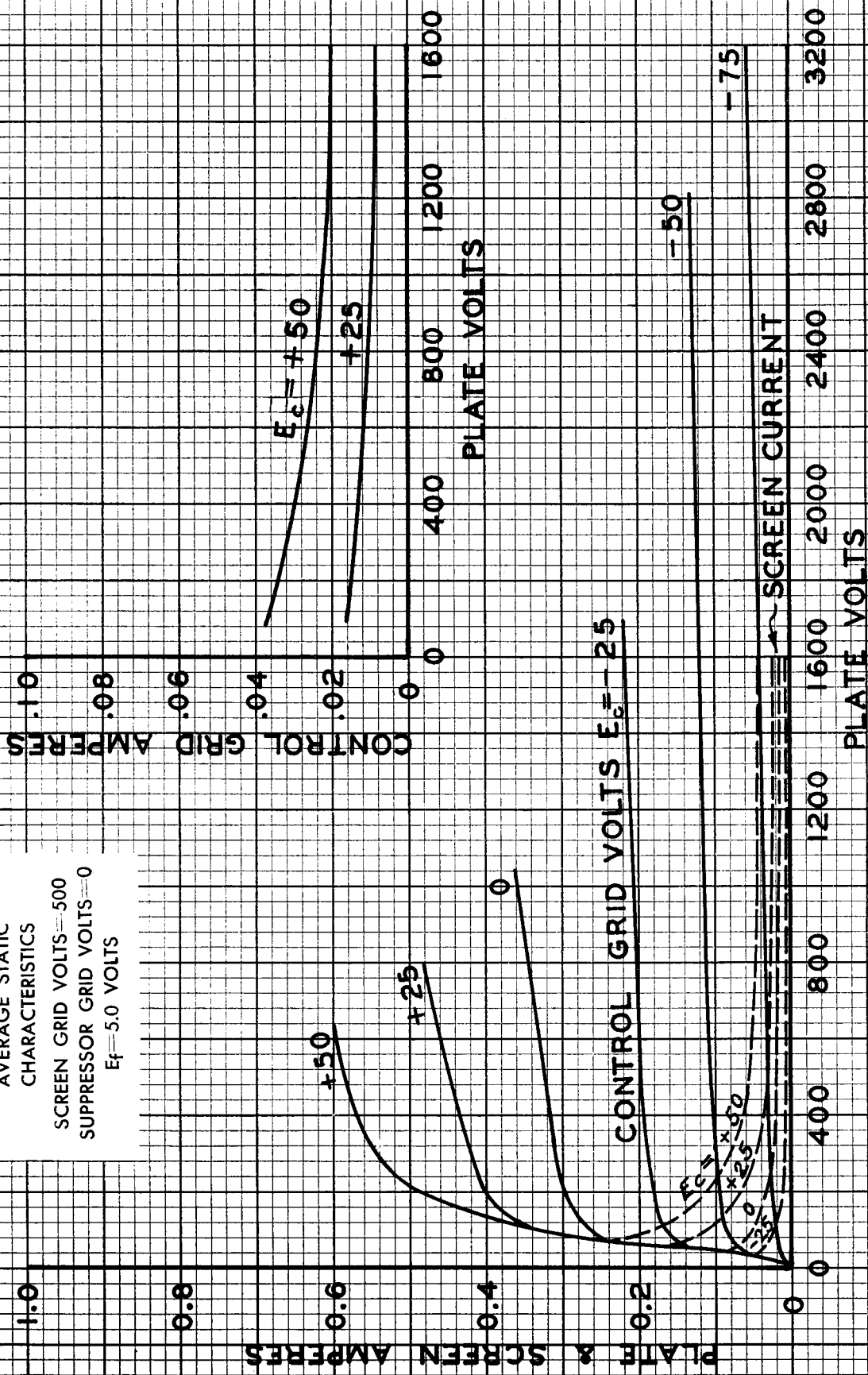


Gammatron Tubes

TYPE 257B GAMMATRON

AVERAGE STATIC
CHARACTERISTICS

SCREEN GRID VOLTS = 500
SUPPRESSOR GRID VOLTS = 0
 $E_f = 5.0$ VOLTS



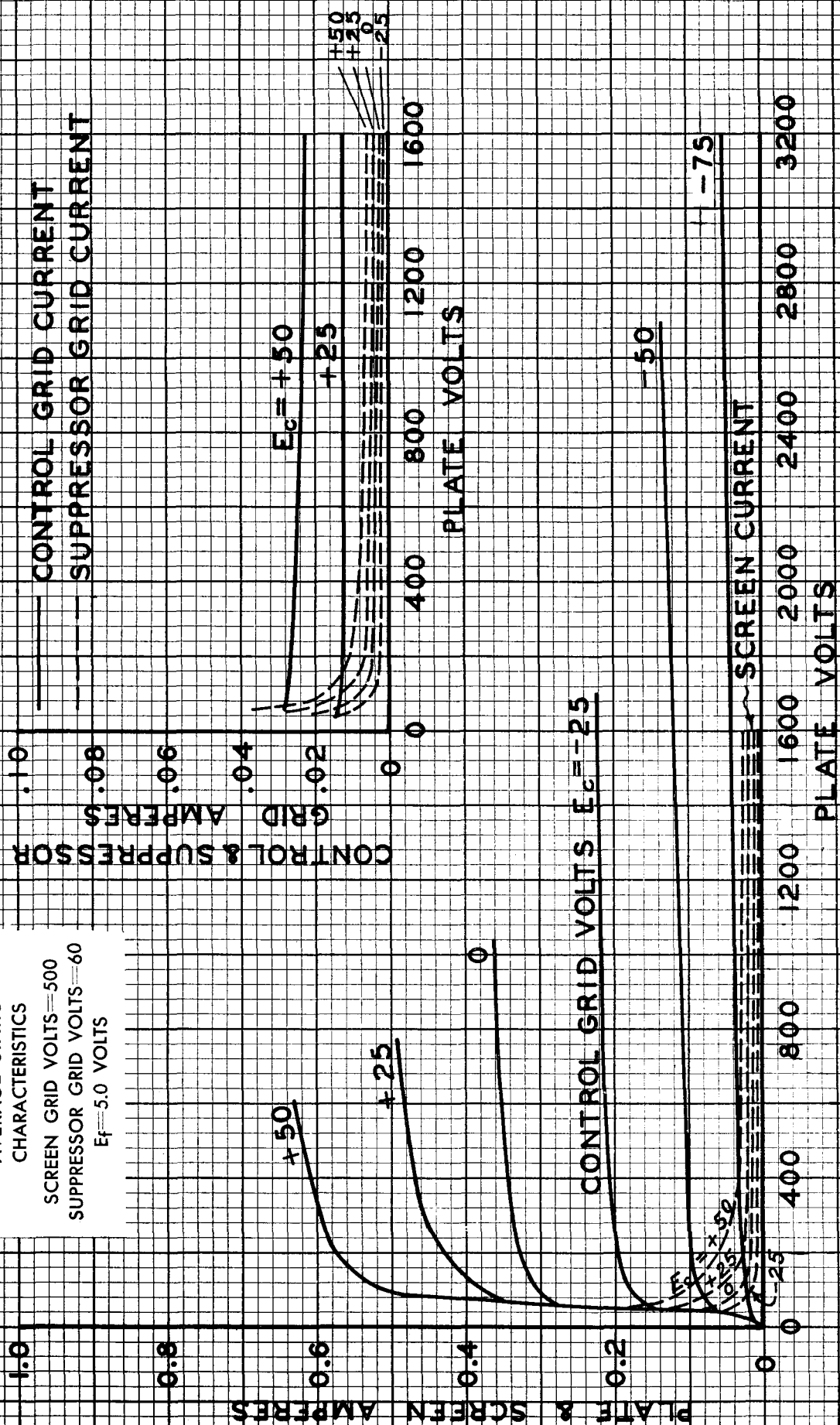
TYPE 257B GAMMATRON

AVERAGE STATIC
CHARACTERISTICS

SCREEN GRID VOLTS = 500

SUPPRESSOR GRID VOLTS = 60

$E_f = 5.0$ VOLTS



TYPE 257B GAMMATRON

AVERAGE STATIC
CHARACTERISTICS

SCREEN GRID VOLTS=750

SUPPRESSOR GRID VOLTS=60

$E_f = 5.0$ VOLTS

