



4E27/8001

4E27

TRANSMITTING BEAM POWER AMPLIFIER

GENERAL DATA

Electrical:

Filament, Thoriated Tungsten:

Voltage	5.0	a-c or d-c volts
Current	7.5	amp.

Transconductance for plate current of 75 ma. 2800 μ hos

Direct Interelectrode Capacitances:

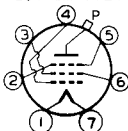
Grid to Plate	0.06	μ uf
Input	12	μ uf
Output	6.5	μ uf

Physical:

Overall Length	5-15/16" \pm 1/4"
Seated Length	5-5/16" \pm 1/4"
Maximum Diameter	2-11/16"
Mounting Position	Vertical Only: Base up or down
Bulb	T-21
Base	Medium Metal Shell Giant 7-Pin, Bayonet

Basing Designation for BOTTOM VIEW 7BM

- Pin 1 - Filament
- Pin 2 - Grid No. 3
- Pin 3 - Grid No. 2
- Pin 4 - Grid No. 1
- Pin 5 - Grid No. 3
- Pin 6 - Grid No. 2



- Pin 7 - Filament
- Bulb } - Plate
- Ter- } - Plate
- minal } - Plate
- Base } - {Internal
- Shell } - {Shield

A-F POWER AMPLIFIER & MODULATOR - Class A1

Maximum Ratings, Absolute Values:

D-C PLATE VOLTAGE	2000 max.	volts
D-C SCREEN VOLTAGE (Grid No. 2)	750 max.	volts
D-C PLATE CURRENT	150 max.	ma.
D-C SCREEN CURRENT	40 max.	ma.
PLATE INPUT	75 max.	watts
SCREEN INPUT	30 max.	watts
PLATE DISSIPATION	75 max.	watts

Typical Operation:

D-C Plate Voltage	500	1000	volts
D-C Suppressor Voltage (Grid No. 3) \diamond	60	0	volts
D-C Screen Voltage	500	300	volts
D-C Grid Voltage (Grid No. 1) * #	-47	-27	volts
Peak A-F Grid Voltage	47	27	volts
D-C Plate Current	150	75	ma.
D-C Screen Current	10	5	ma.
Load Resistance	2600	12000	ohms
Power Output	30	34	approx. watts

*; #: See next page. \diamond : See end of tabulation. \leftarrow Indicates a change.

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(continued from preceding page)

SUPPRESSOR-MODULATED R-F POWER AMPLIFIER - Class C Telephony

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

Maximum Ratings, Absolute Values:

D-C PLATE VOLTAGE	2000 max.	. volts
D-C SUPPRESSOR VOLTAGE (Grid No.3)	-500 max.	. volts
→ D-C SCREEN VOLTAGE (Grid No.2)	600 max.	. volts
D-C GRID VOLTAGE (Grid No.1)	-500 max.	. volts
D-C PLATE CURRENT	100 max.	. ma.
→ D-C GRID CURRENT	25 max.	. ma.
→ PLATE INPUT	110 max.	. watts
→ SCREEN INPUT	27 max.	. watts
→ PLATE DISSIPATION	75 max.	. watts

Typical Operation:

D-C Plate Voltage	1500	2000	. . . volts
D-C Suppressor Voltage ^o	-210	-300	. . . volts
D-C Screen Voltage**	{ 500	600	. . . volts
	{ 22000	30000	. . . ohms
D-C Grid Voltage	-130	-130	. . . volts
Peak A-F Suppressor Voltage	210	300	. . . volts
Peak R-F Grid Voltage	195	150	. . . volts
D-C Plate Current	70	55	. . . ma.
D-C Screen Current	44	45	. . . ma.
D-C Grid Current	8	3	approx. ma.
Driving Power ^o	1.4	0.4	approx. watts
Power Output	33	35	approx. watts

* For a-c filament supply.

obtained from fixed supply or by cathode resistor. The d-c resistance in the grid circuit should not exceed 50000 ohms with fixed bias, or 500000 ohms with cathode bias.

**obtained preferably from plate-voltage supply through series resistor of value shown.

^o At crest of a-f cycle with modulation factor of 1.0.

PLATE-MODULATED R-F POWER AMPLIFIER - Class C Telephony

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

Maximum Ratings, Absolute Values:

→ D-C PLATE VOLTAGE	3000 max.	. volts
→ D-C SCREEN VOLTAGE (Grid No.2)	600 max.	. volts
D-C GRID VOLTAGE (Grid No.1)	-500 max.	. volts
D-C PLATE CURRENT	135 max.	. ma.
→ D-C SCREEN CURRENT	30 max.	. ma.
→ D-C GRID CURRENT	25 max.	. ma.
→ PLATE INPUT	250 max.	. watts
→ SCREEN INPUT	18 max.	. watts
→ PLATE DISSIPATION	65 max.	. watts

← Indicates a change.

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Typical Operation:

D-C Plate Voltage.	1500	2500	. . . volts
D-C Suppressor Voltage(Grid No.3) [◇]	60	60	. . . volts
D-C Screen Voltage ^{##}	{ 600	600	. . . volts
	{ 82000	240000	. . . ohms
	{ -200	-200	. . . volts
D-C Grid Voltage ^{***}	{ 145000	330000	. . . ohms
	{ 110000	250000	. . . ohms
	{ 310	450	. . . ohms
Peak R-F Grid Voltage.	255	220	. . . volts
D-C Plate Current.	135	100	. . . ma.
D-C Screen Current	11	8	. . . ma.
D-C Grid Current	1.4	0.6	<u>approx. ma.</u>
Driving Power.	0.4	0.1	<u>approx. watt</u>
Power Output	145	200	<u>approx. watts</u>

^{##} obtained preferably from modulated fixed supply. May also be obtained from modulated plate-voltage supply through series resistor of values shown.

^{***} obtained from fixed supply, grid resistor (145000,330000), or combination of cathode resistor (310,450) and grid resistor (110000,250000).

R-F POWER AMPLIFIER & OSCILLATOR - Class C TelegraphyKey-down conditions per tube without modulation[▲]**Maximum Ratings, Absolute Values:**

D-C PLATE VOLTAGE.	4000 max.	. volts
D-C SCREEN VOLTAGE (Grid No.2)	750 max.	. volts
D-C GRID VOLTAGE (Grid No.1)	-500 max.	. volts
D-C PLATE CURRENT.	150 max.	. ma.
D-C SCREEN CURRENT	30 max.	. ma.
D-C GRID CURRENT	25 max.	. ma.
PLATE INPUT.	300 max.	. watts
SCREEN INPUT	25 max.	. watts
PLATE DISSIPATION.	75 max.	. watts

Typical Operation:

D-C Plate Voltage.	2000	3000	. . . volts
D-C Suppressor Voltage(Grid No.3) [◇]	0	60	. . . volts
D-C Screen Voltage ^Δ	{ 750	750	. . . volts
	{ 70000	280000	. . . ohms
	{ -200	-200	. . . volts
D-C Grid Voltage [□]	{ 300000	—	. . . ohms
	{ 1200	1800	. . . ohms
Peak R-F Grid Voltage.	225	170	. . . volts
D-C Plate Current.	150	100	. . . ma.
D-C Screen Current	18	8	. . . ma.
D-C Grid Current	0.7	0	<u>approx. ma.</u>
Driving Power.	0.2	0	<u>approx. watt</u>
Power Output	230	235	<u>approx. watts</u>

◇; ▲; Δ; □: see next page.

← Indicates a change.

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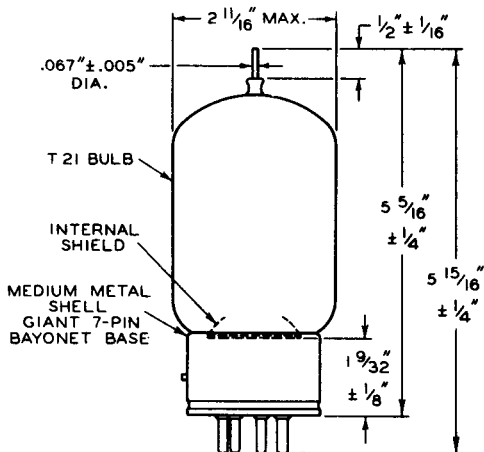
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- ◇ Suppressor should be connected to the mid-point of filament circuit operated on a.c., or to the negative end of the filament operated on d.c.
- ▲ Modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115% of the carrier conditions.
- △ Obtained from a separate source, or from the plate-voltage supply with a voltage divider, or through a series resistor of the value shown. Series screen resistor should be used only where 4E27 is employed as buffer amplifier and is not keyed. The screen voltage must not exceed 1500 volts under key-up conditions.
- Obtained from fixed supply, grid resistor (300000), or cathode resistor (1200, 1800). When a preceding stage is keyed, sufficient fixed bias must be used to maintain the plate current at a low value when the key is up.

Data on operating frequencies for the 4E27/8001 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.



92CM-6260R1

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AVERAGE PLATE CHARACTERISTICS

$E_f = 5.0$ VOLTS D.C. SCREEN VOLTS = 500
SUPPRESSOR VOLTS = 0

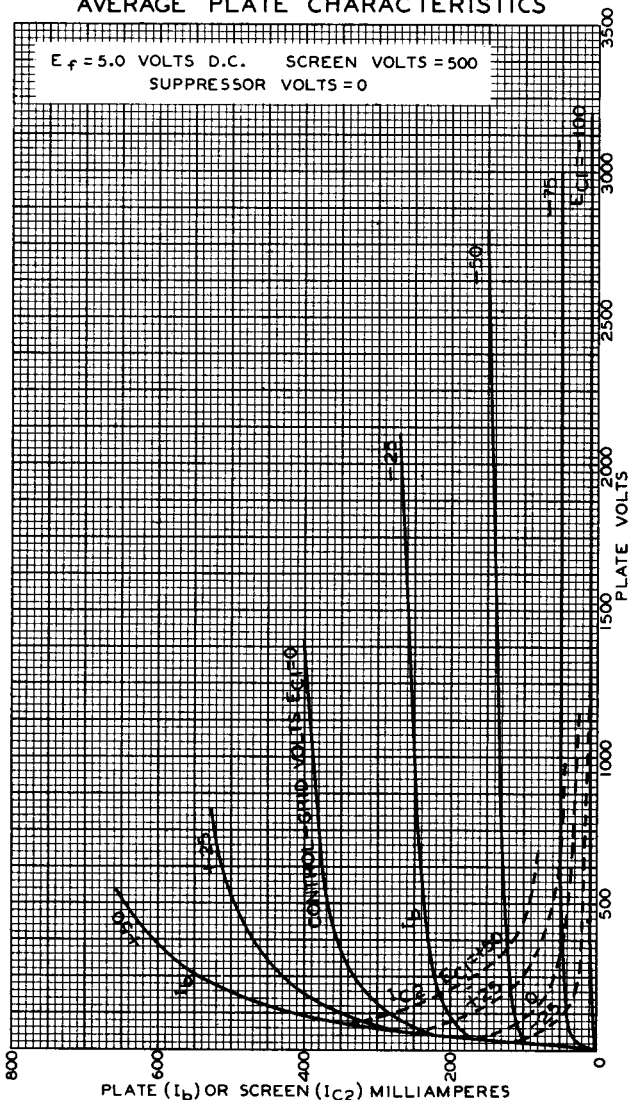


PLATE (I_b) OR SCREEN (I_{c2}) MILLIAMPERES

MAR. 26, 1945

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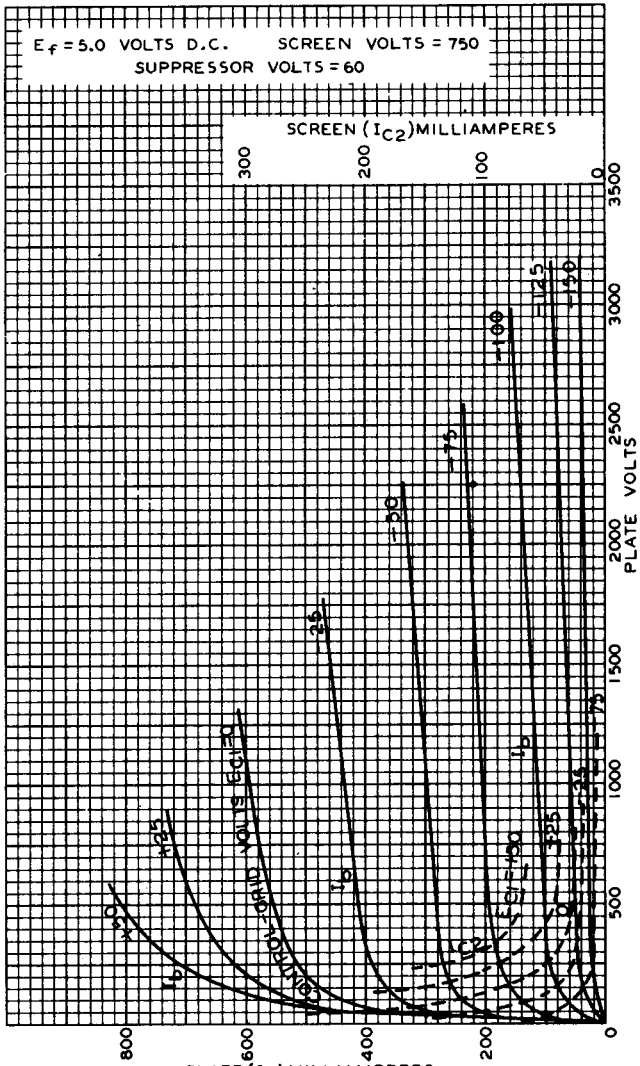
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AVERAGE PLATE CHARACTERISTICS



JAN. 22, 1945

PLATE (I_b) MILLIAMPERES
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TRANSMITTING BEAM POWER AMPLIFIER

