



8000

TRANSMITTING TRIODE

8000

GENERAL DATA**Electrical:**

Filament, Thoriated Tungsten:

Voltage. 10 ac or dc volts

Current. 4.5 amp

Amplification Factor . . . 16.5

Direct Interelectrode Capacitances:

Grid to Plate. 6.4 μmf Grid to Filament 5.0 μmf Plate to Filament. . . . 3.3 μmf **Mechanical:**Mounting Position. . . . Vertical, base down; or Horizontal,
pins 1 & 2 in vertical planeOverall Length 8-1/2" $\pm$ 1/4"Seated Length. 8-3/16" $\pm$ 1/4"Maximum Radius 2-1/8" $\pm$ 1/8"

Bulb T-20

Cap (top). Skirted Medium

Cap (side). Medium

Base Medium Metal-Shell Jumbo 4-Pin, Bayonet

Basing Designation for BOTTOM VIEW 20₁

Pin 1—No Connection

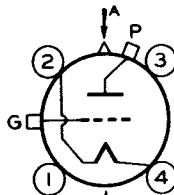
Pin 2—Filament

Pin 3—No Connection

Pin 4—Filament

P—Plate (End Cap)

G—Grid (Side Cap)



AA'=PLANE OF ELECTRODES

AF POWER AMPLIFIER & MODULATOR — Class B**Maximum Ratings, Absolute Values:**

	CCS [•]	ICAS ^{••}	
DC PLATE VOLTAGE	2500 max.	2750 max.	volts
MAX.—SIGNAL DC PLATE CUR.* .	250 max.	250 max.	ma.
MAX.—SIGNAL PLATE INPUT* . .	425 max.	510 max.	watts
PLATE DISSIPATION*	125 max.	175 max.	watts ←

Typical Operation:*Unless otherwise specified, values are for 2 tubes*

DC Plate Voltage	2000 . .	2250 . .	volts
DC Grid Voltage.	-120 . .	-130 . .	volts
Peak AF Grid-to-Grid Voltage	520 . .	560 . .	volts
Zero-Signal DC Plate Current	60 . .	65 . .	ma.
Max.—Signal DC Plate Current	425 . .	450 . .	ma.
Effective Load Resistance (plate-to-plate)	10800 . .	12000 . .	ohms

*, •, ••: See next page.

← Indicates a change.

DEC. 20, 1946

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA 1

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TRANSMITTING TRIODE

Max.—Signal Driving			
Power (Approx.) . . .	6.5 . .	7.9 . .	watts
Max.—Signal Power			
Output (Approx.) . . .	600 . .	725 . .	watts

* Averaged over any audio-frequency cycle of sine-wave form.

RF POWER AMPLIFIER—Class B Telephony

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

Maximum Ratings, Absolute Values:

	<u>CCS*</u>	<u>ICAS**</u>	
→ DC PLATE VOLTAGE	2000 max.	2500 max.	volts
DC PLATE CURRENT	185 max.	185 max.	ma.
PLATE INPUT.	190 max.	225 max.	watts
→ PLATE DISSIPATION.	125 max.	175 max.	watts

Typical Operation:

DC Plate Voltage	2000 . .	2500 . .	volts
DC Grid Voltage.	-130 . .	-145 . .	volts
Peak RF Grid Voltage	140 . .	150 . .	volts
DC Plate Current	95 . .	100 . .	ma.
→ DC Grid Current (Approx.) [□] .	0.5 . .	0 . .	ma.
Driving Power (Approx.) ^{□▲} .	4.8 . .	5.4 . .	watts
Power Output (Approx.) . . .	65 . .	75 . .	watts

GRID-MODULATED RF POWER AMPLIFIER — Class C Telephony

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

Maximum Ratings, Absolute Values:

	<u>CCS*</u>	<u>ICAS**</u>	
→ DC PLATE VOLTAGE	2000 max.	2500 max.	volts
DC GRID VOLTAGE.	-500 max.	-500 max.	volts
DC PLATE CURRENT	185 max.	185 max.	ma.
PLATE INPUT.	190 max.	225 max.	watts
→ PLATE DISSIPATION.	125 max.	175 max.	watts

Typical Operation:

DC Plate Voltage	2000 . .	2250 . .	volts
DC Grid Voltage.	-250 . .	-265 . .	volts
Peak RF Grid Voltage	265 . .	270 . .	volts
Peak AF Grid Voltage	120 . .	115 . .	volts
DC Plate Current	95 . .	100 . .	ma.
DC Grid Current (Approx.) [□] .	0 . .	0 . .	ma.
Driving Power (Approx.) ^{□▲} .	4.3 . .	2.5 . .	watts
Power Output	65 . .	75 . .	watts

▲ At crest of audio-frequency cycle with modulation factor of 1.0.

●, **, □: See next page.

← Indicates a change.



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TRANSMITTING TRIODE

PLATE-MODULATED RF POWER AMPLIFIER - Class C Telephony

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

Maximum Ratings, Absolute Values:

	CCS [●]	ICAS ^{●●}		
DC PLATE VOLTAGE	1600 max.	2000 max.	volts	←
DC GRID VOLTAGE	-500 max.	-500 max.	volts	
DC PLATE CURRENT	210 max.	250 max.	ma.	
DC GRID CURRENT	40 max.	45 max.	ma.	←
PLATE INPUT	335 max.	500 max.	watts	←
PLATE DISSIPATION	85 max.	125 max.	watts	

Typical Operation:

DC Plate Voltage	1600 . .	2000 . .	volts	
DC Grid Voltage [⊗]	-300 . .	-370 . .	volts	
	15000 . .	10000 . .	ohms	
Peak RF Grid Voltage	470 . .	630 . .	volts	
DC Plate Current	210 . .	250 . .	ma.	
DC Grid Current (Approx.) [□] . .	20 . .	37 . .	ma.	
Driving Power (Approx.) [□] . .	8.5 . .	20 . .	watts	
Power Output (Approx.)	250 . .	380 . .	watts	

RF POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation^{□□}

Maximum Ratings, Absolute Values:

	CCS [●]	ICAS ^{●●}		
DC PLATE VOLTAGE	2000 max.	2500 max.	volts	←
DC GRID VOLTAGE	-500 max.	-500 max.	volts	
DC PLATE CURRENT	250 max.	300 max.	ma.	
DC GRID CURRENT	40 max.	45 max.	ma.	
PLATE INPUT	500 max.	750 max.	watts	
PLATE DISSIPATION	125 max.	175 max.	watts	

Typical Operation:

DC Plate Voltage	2000 . .	2500 . .	volts	
DC Grid Voltage ^{▲▲}	-195 . .	-240 . .	volts	
	8100 . .	6000 . .	ohms	
	710 . .	700 . .	ohms	
Peak RF Grid Voltage	370 . .	480 . .	volts	
DC Plate Current	250 . .	300 . .	ma.	
DC Grid Current (Approx.) . .	24 . .	40 . .	ma.	
Driving Power (Approx.) . . .	8 . .	18 . .	watts	
Power Output (Approx.) . . .	375 . .	575 . .	watts	

● Continuous Commercial Service.

●● Intermittent Commercial and Amateur Service.

⊗ obtained by grid resistor of value shown or by combination methods.

□, □□, ▲▲: See next page.

← Indicates a change.

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TRANSMITTING TRIODE

- Subject to wide variations as explained on sheet TUBE RATINGS in General Section.
- 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 fixed supply, by grid resistor (8100,6000) or by cathode resistor (710,700).

NOTE: When the 8000 is used in the final amplifier or a preceding stage of a transmitter designed for break-in operation and oscillator keying, a small amount of fixed-bias must be used to maintain the plate current at a safe value. With a plate voltage of 2500 volts a fixed bias of at least -140 volts should be used.

CLASS C OSCILLATOR

Operation with Unfiltered Plate Supply

Maximum Ratings, Absolute Values:

	Supply 1 [‡]	Supply 2 [‡]	
RMS PLATE VOLTAGE.	2500 max.	- -	volts
DC PLATE VOLTAGE.	- -	1800 max.	volts
DC GRID VOLTAGE.	-200 max.	-300 max.	volts
DC PLATE CURRENT.	160 max.	225 max.	ma.
DC GRID CURRENT.	25 max.	35 max.	ma.
PLATE INPUT.	450 max.	500 max.	watts
PLATE DISSIPATION.	125 max.	125 max.	watts

Typical Operation in Push-Pull Circuit at 30 Mc.:

Unless otherwise specified, values are for 2 tubes

RMS Plate Voltage.	2500	-	volts
DC Plate Voltage.	-	1800	volts
Grid Resistor.	3500	5000	ohms
DC Plate Current.	320	450	ma.
DC Grid Current.	30	35	ma.
Power Output (Approx.) . . .	650	700	watts
Circuit Power Output (Approx.)- 85% circuit efficiency . .	550	600	watts

[‡] Self-rectified ac supply.

* Separate rectified (no filter) single-phase, full-wave plate supply.

For applications where grid current and grid voltage may vary widely because of fluctuating loads, it is important to design equipment so that the maximum grid-current and grid-voltage ratings are never exceeded for any load. An approximate rule is to adjust the grid-current and grid-voltage values at full-load to one-half of the corresponding maximum values. This operating condition permits grid-current and grid voltage values to rise for zero-load to twice their full-load values, and usually provides adequate leeway.

Data on operating frequencies for the 8000 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

OUTLINE DIMENSIONS for the 8000 are the same as those for the 810

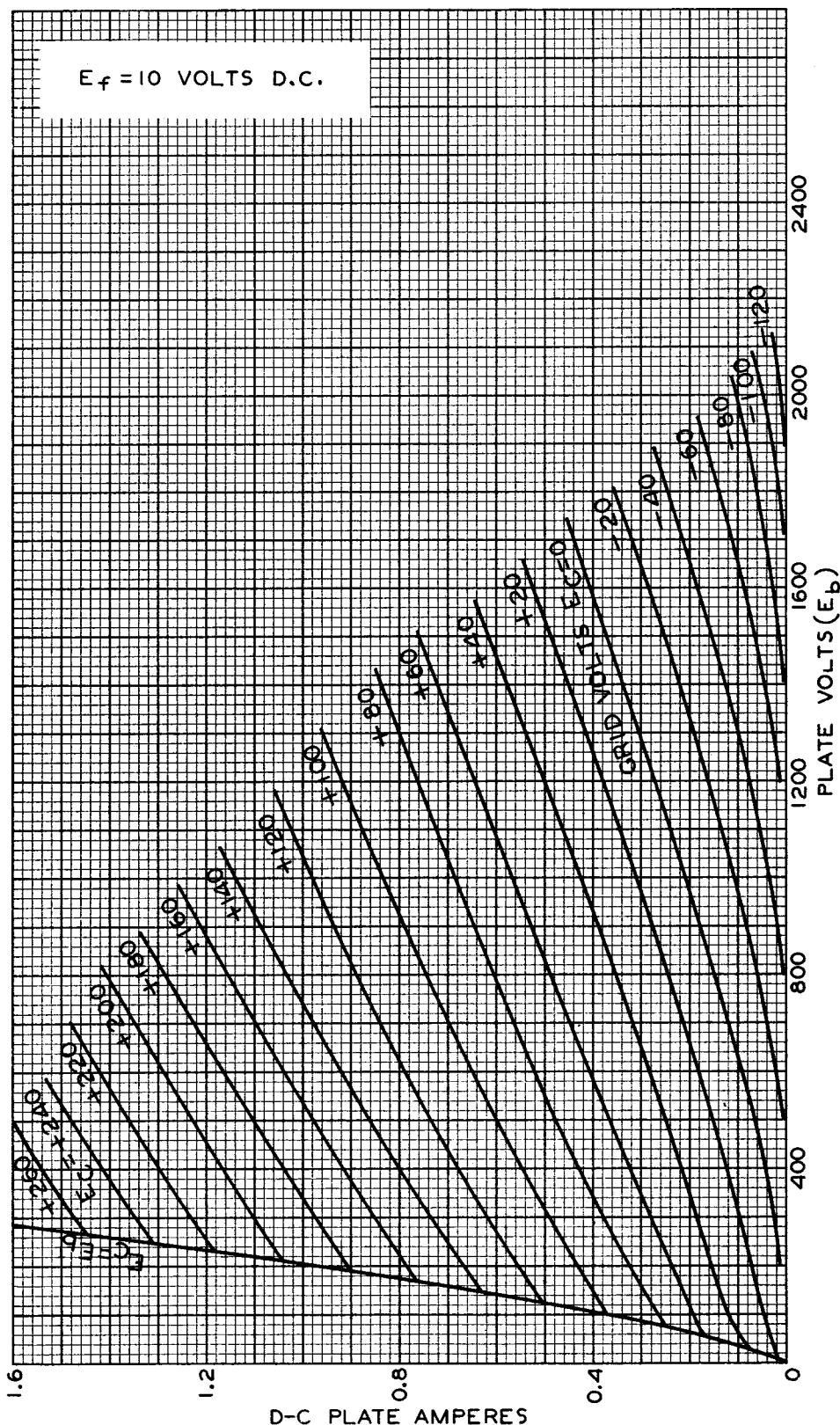


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AVERAGE PLATE CHARACTERISTICS

$E_f = 10$ VOLTS D.C.



SEPT. 20, 1940

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RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

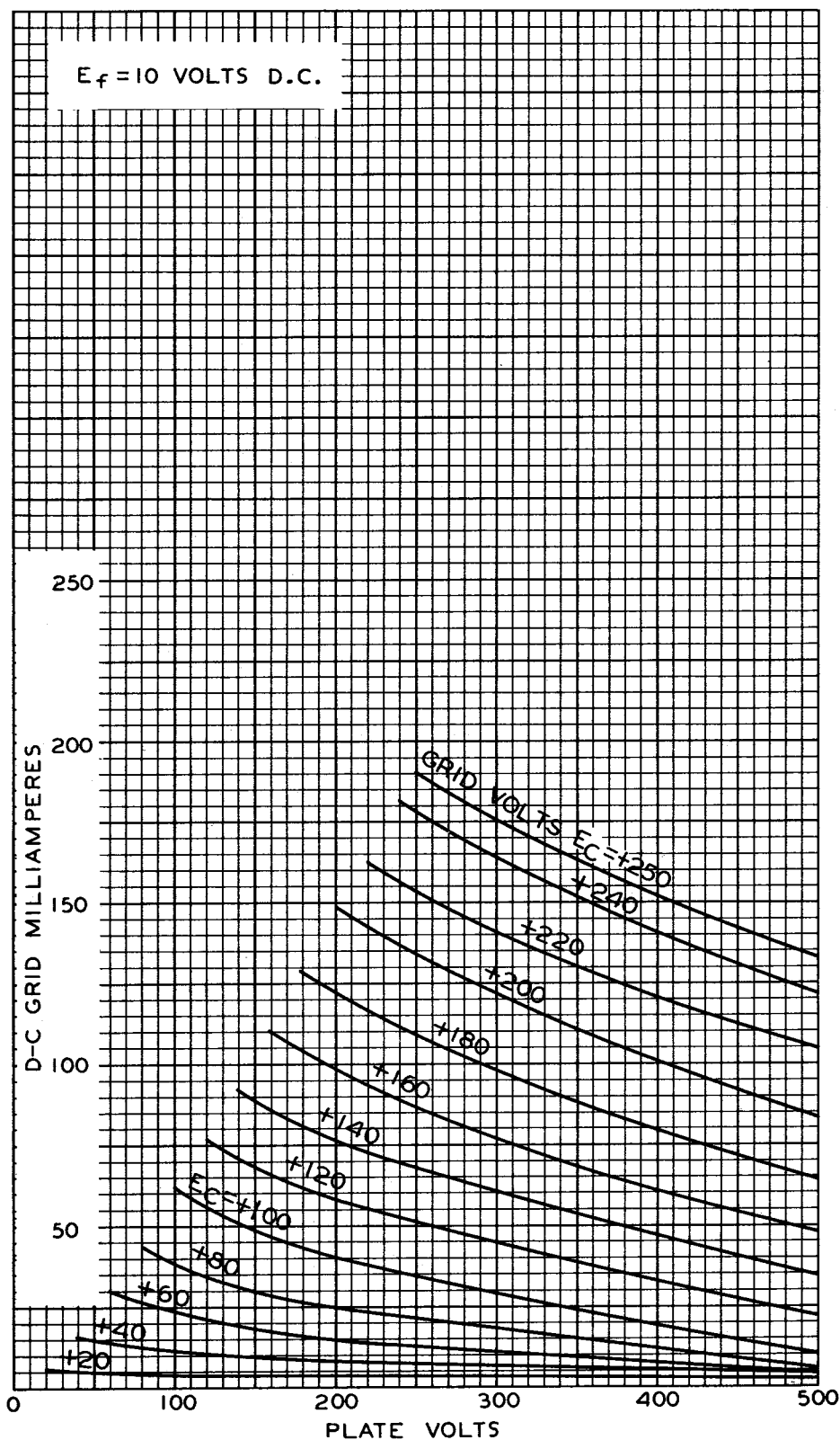
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TYPICAL CHARACTERISTICS



FEB. 12, 1941

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92CM-6213