



8003

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**OSCILLATOR, POWER AMPLIFIER, MODULATOR**

Filament	Thoriated Tungsten	
Voltage	10	a-c or d-c volts
Current	3.25	amp.
Amplification Factor	12	
Direct Interelectrode Capacitances (Approx.):		
Grid to Plate	11.7	$\mu\text{f}$
Grid to Filament	5.8	$\mu\text{f}$
Plate to Filament	3.4	$\mu\text{f}$
Maximum Overall Length		8-1/2"
Maximum Diameter		2-9/16"
Bulb		T-20
Cap		Medium Metal
Base		Jumbo 4-Large Pin

**MAXIMUM CCS RATINGS with TYPICAL OPERATING CONDITIONS***CCS = Continuous Commercial Service***A-F POWER AMPLIFIER & MODULATOR - Class B**

	<i>CCS</i>	
D-C Plate Voltage	1350 max.	volts
Max.-Signal D-C Plate Current*	250 max.	ma.
Max.-Signal Plate Input*	330 max.	watts
Plate Dissipation*	100 max.	watts

## Typical Operation:

*Unless otherwise specified, values are for 2 tubes*

D-C Plate Voltage	1350	volts
D-C Grid Voltage#	-100	volts
Peak A-F Grid-to-Grid Voltage	480	volts
Zero-Sig. D-C Plate Current	40	ma.
Max.-Sig. D-C Plate Current	490	ma.
Load Resistance (per tube)	1500	ohms
Effective Load Resistance (plate to plate)	6000	ohms
Max.-Sig. Driving Power	10.5 approx.	watts
Max.-Sig. Power Output	460 approx.	watts

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

**R-F POWER AMPLIFIER - Class B Telephony**

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

	<i>CCS</i>	
D-C Plate Voltage	1350 max.	volts
D-C Plate Current	150 max.	ma.
Plate Input	150 max.	watts
Plate Dissipation	100 max.	watts

## Typical Operation:

D-C Plate Voltage	1350	volts
D-C Grid Voltage#	-110	volts
Peak R-F Grid Voltage	135	volts
D-C Plate Current	110	ma.
D-C Grid Current**	1.5 approx.	ma.
Driving Power** <sup>o</sup>	8 approx.	watts
Power Output	50 approx.	watts

<sup>o</sup> At crest of audio-frequency cycle with modulation factor of 1.0.

# With a-c filament supply.

\*\*: See end of tabulation.

July 1, 1941

RCA RADIOTRON DIVISION  
RCA MANUFACTURING COMPANY, INC.

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# OSCILLATOR, POWER AMPLIFIER, MODULATOR

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

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

	<u>CCS</u>	
D-C Plate Voltage	1100 max.	volts
D-C Grid Voltage	-400 max.	volts
D-C Plate Current	200 max.	ma.
D-C Grid Current	50 max.	ma.
Plate Input	220 max.	watts
Plate Dissipation	67 max.	watts
Typical Operation:		
D-C Plate Voltage	1100	volts
D-C Grid Voltage <sup>Δ</sup>	-260 6500	volts
		ohms
Peak R-F Grid Voltage	430	volts
D-C Plate Current	200	ma.
D-C Grid Current**	40 approx.	ma.
Driving Power**	15 approx.	watts
Power Output	167 approx.	watts

<sup>Δ</sup> Obtained from grid resistor of value shown or by combination methods.

## R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation \*\*

	<u>CCS</u>	
D-C Plate Voltage	1350 max.	volts
D-C Grid Voltage	-400 max.	volts
D-C Plate Current	250 max.	ma.
D-C Grid Current	50 max.	ma.
Plate Input	330 max.	watts
Plate Dissipation	100 max.	watts
Typical Operation:		
D-C Plate Voltage	1350	volts
D-C Grid Voltage <sup>◇</sup>	-175 5000	volts ←
		ohms ←
Peak R-F Grid Voltage	625	ohms ←
D-C Plate Current	350	volts
D-C Grid Current**	245	ma.
Driving Power**	35 approx.	ma.
Power Output	11 approx.	watts
	250 approx.	watts

<sup>◇</sup> Obtained from fixed supply, by grid resistor (5000), or by cathode resistor (630).

NOTE: When the 8003 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 plate voltage of 1350 volts, a fixed bias at least -85 volts should be used.

\*\* , #: See end of tabulation.

← Indicates a change.

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**OSCILLATOR, POWER AMPLIFIER, MODULATOR**

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OSCILLATOR - OPERATION WITH UNFILTERED PLATE SUPPLY

	<u>Supply 1</u>	<u>Supply 2</u>	
Plate Voltage	1500 max.	1200 max.	volts
D-C Grid Voltage	-200 max.	-250 max.	volts
D-C Plate Current	200 max.	225 max.	ma.
D-C Grid Current	30 max.	45 max.	ma.
Plate Input	330 max.	330 max.	watts
Plate Dissipation	100 max.	100 max.	watts

Typical Operation in push-pull circuit at 25 Mc:

*Unless otherwise specified, values are for 2 tubes*

Plate Voltage	1500 (RMS)	1200	volts
Grid Resistor	2000	3000	ohms
D-C Plate Current	400	450	ma.
D-C Grid Current	35	45	ma.
Power Output	500	450	<u>approx. watts</u>
Circuit Power Output (85% circuit efficiency)	425	380	<u>approx. watts</u>

1 Self-rectified a-c supply. (Plate voltages are RMS values.)

2 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 8003 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

CURVES for the 8003 are the same as those for Type 211.

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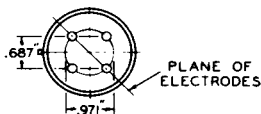
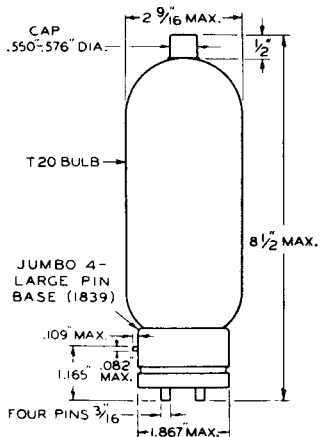
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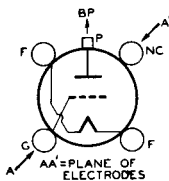
# OSCILLATOR, POWER AMPLIFIER, MODULATOR



BOTTOM VIEW OF BASE

92C-6203

BOTTOM VIEW OF  
SOCKET CONNECTIONS



F - Filament  
G - Grid  
P - Plate  
NC - No Connection  
BP - Bayonet Pin

TUBE MOUNTING POSITION

VERTICAL: Base down.  
HORIZONTAL: With plane  
of electrodes verti-  
cal (on edge).

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