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R-F POWER AMPLIFIER PENTODE

Filament	Thoriated Tungsten	
Voltage	7.5	a-c or d-c volts
Current	3.0	amp.
Transconductance for plate current of 32 ma.	3250	μmhos
Direct Interelectrode Capacitances:		
Grid to Plate (with external shielding)	0.01 max.	μpf
Input	16	μpf
Output	14.5	μpf
Maximum Overall Length		7-3/4"
Maximum Diameter		2-1/16"
Bulb		T-16
Cap		Small Metal
Base		Medium 5-Pin, "Micanol"

**MAXIMUM CCS and ICAS RATINGS
with TYPICAL OPERATING CONDITIONS**

CCS = Continuous Commercial Service

ICAS = Intermittent Commercial and Amateur Service

R-F POWER AMPLIFIER - Class B Telephony

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

	<u>CCS</u>			<u>ICAS</u>	
D-C Plate Voltage	1250	max.		1500	max. volts
D-C Suppressor Volt. (Grid #3)	200	max.		200	max. volts
D-C Screen Voltage (Grid #2)	300	max.		300	max. volts
D-C Plate Current	50	max.		50	max. ma.
Plate Input	60	max.		75	max. watts
Suppressor Input	5	max.		5	max. watts
Screen Input	10	max.		10	max. watts
Plate Dissipation	40	max.		50	max. watts
Typical Operation:					
Filament Volt.	7:5	7.5	7.5	7.5	a-c volts
D-C Plate Volt.	1000	1000	1250	1500	volts
D-C Suppressor Volt.	0	45	45	45	volts
D-C Screen Volt.	300	300	300	300	volts
D-C Grid Volt. (Grid #1)	-20	-20	-20	-26	volts
Peak R-F Grid Volt.	30	30	27	40	volts
D-C Plate Current	45	45	45	50	ma.
D-C Screen Current	12	11.5	11	12	ma.
D-C Grid Cur. (Approx.)	1	1	1	1.5	ma.
Driving Power (Approx.) ^o	0.35	0.3	0.25	0.5	watt
Power Output (Approx.)	11	12	16	28	watts

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

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

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

	<u>CCS</u>			<u>ICAS</u>	
D-C Plate Voltage	1250	max.		1500	max. volts
D-C Screen Volt. (Grid #2)	300	max.		300	max. volts
D-C Grid Voltage (Grid #1)	-300	max.		-300	max. volts
D-C Plate Current	50	max.		50	max. ma.

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	<u>CCS</u>		<u>ICAS</u>	
D-C Grid Current	15	max.	15	max. ma.
Plate Input	60	max.	75	max. watts
Screen Input	15	max.	15	max. watts
Plate Dissipation	40	max.	50	max. watts
Typical Operation:				
Filament Voltage	7.5	7.5	7.5	a-c volts
D-C Plate Voltage	1000	1250	1500	volts
D-C Sup'r Volt. (Grid #3)	-35	-50	-50	volts
D-C Screen Volt. •	21000	27000	37500	ohms
D-C Grid Voltage □	-100	-100	-115	volts
	18200	14300	16400	ohms
Peak A-F Sup'r Volt.	60	70	75	volts
Peak R-F Grid Volt.	140	140	150	volts
D-C Plate Current	45	48	50	volts
D-C Screen Current	33.5	35.5	32	volts
D-C Grid Cur. (Approx.)	5.5	7	7	ma.
Driving Power (Approx.)	0.7	0.85	0.95	watts
Power Output (Approx.)	16	21	28	watts

- From unmodulated plate-voltage supply through resistor of value shown.
 □ From fixed supply or grid resistor of value shown.

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

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

	<u>CCS</u>			<u>ICAS</u>	
D-C Plate Voltage	1250	max.		1500	max. volts
D-C Suppressor Volt. (Grid #3)	200	max.		200	max. volts
D-C Screen Voltage (Grid #2)	300	max.		300	max. volts
D-C Grid Voltage (Grid #1)	-300	max.		-300	max. volts
D-C Plate Current	50	max.		50	max. ma.
Plate Input	60	max.		75	max. watts
Suppressor Input	5	max.		5	max. watts
Screen Input	10	max.		10	max. watts
Plate Dissipation	40	max.		50	max. watts
Typical Operation:					
Filament Voltage	7.5	7.5	7.5	7.5	a-c volts
D-C Plate Voltage	1000	1000	1250	1500	volts
D-C Suppressor Volt.	0	45	45	45	volts
D-C Screen Volt.	300	300	300	300	volts
D-C Grid Volt.	-115	-115	-115	-130	volts
Peak R-F Grid Volt.	140	135	135	140	volts
Peak A-F Grid Volt.	35	35	35	40	volts
D-C Plate Current	45	45	45	50	ma.
D-C Screen Current	15	11	11	13.5	ma.
D-C Grid Cur. (Approx.)	2	2	2	3.7	ma.
Driving Power (Approx.) *	1.1	0.85	0.85	1.3	watts
Power Output (Approx.)	14	16	21	28	watts

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



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(continued from preceding page)

PLATE-MODULATED R-F POWER AMPLIFIER - Class C Telephony*Pentode Connection**Carrier conditions per tube for use with a max. modulation fact. of 1.0*

	<u>CCS</u>	<u>ICAS</u>
D-C Plate Voltage	1000 max.	1250 max. volts
D-C Suppressor Volt. (Grid #3)	200 max.	200 max. volts
D-C Screen Voltage (Grid #2)	300 max.	300 max. volts
D-C Grid Voltage (Grid #1)	-300 max.	-300 max. volts
D-C Plate Current	80 max.	80 max. ma.
D-C Grid Current	15 max.	15 max. ma.
Plate Input	80 max.	100 max. watts
Suppressor Input	5 max.	5 max. watts
Screen Input	10 max.	10 max. watts
Plate Dissipation	27 max.	35 max. watts
Typical Operation:		
Filament Voltage	7.5	7.5 a-c volts
D-C Plate Voltage	1000	1250 volts
D-C Suppressor Voltage	50	50 volts
D-C Screen Voltage ⁰⁰	{ 220	250 volts
	{ 37000	50000 ohms
D-C Grid Voltage [▲]	{ -90	-90 volts
	{ 15000	15000 ohms
Peak R-F Grid Voltage	130	140 volts
D-C Plate Current	75	75 ma.
D-C Screen Current	21	20 ma.
D-C Grid Cur. (Approx.)	6	6 ma.
Driving Power (Approx.)	0.65	0.75 watt
Power Output (Approx.)	50	65 watts

⁰⁰ From modulated fixed supply or modulated plate-voltage supply through resistor of value shown.**PLATE-MODULATED R-F POWER AMPLIFIER - Class C Telephony***Tetrode Connection - Grids #2 & #3 tied together**Carrier conditions per tube for use with a max. modulation fact. of 1.0*

	<u>CCS</u>	<u>ICAS</u>
D-C Plate Voltage	1000 max.	1250 max. volts
D-C Screen Volt. (Grids #2 & #3)	200 max.	200 max. volts
D-C Grid Voltage (Grid #1)	-300 max.	-300 max. volts
D-C Plate Current	80 max.	80 max. ma.
D-C Grid Current	15 max.	15 max. ma.
Plate Input	80 max.	100 max. watts
Screen Input	15 max.	15 max. watts
Plate Dissipation	27 max.	35 max. watts
Typical Operation:		
Filament Voltage	7.5	7.5 a-c volts
D-C Plate Voltage	1000	1250 volts
D-C Screen Voltage #	{ 155	170 volts
	{ 30000	45000 ohms

Preferably from unmodulated plate-voltage supply through resistor of value shown.

▲ See next page.

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	<u>CCS</u>	<u>ICAS</u>	
D-C Grid Voltage [▲]	{ -80 10000	-80 10000	volts ohms
Peak R-F Grid Volt.	145	145	volts
D-C Plate Current	75	75	ma.
D-C Screen Current	28	24	ma.
D-C Grid Cur. (Approx.)	8	8	ma.
Driving Power (Approx.)	1.1	1.1	watts
Power Output (Approx.)	50	65	watts

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Pentode Connection

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

	<u>CCS</u>	<u>ICAS</u>	
D-C Plate Voltage	1250 max.	1500 max.	volts
D-C Suppressor Volt. (Grid #3)	200 max.	200 max.	volts
D-C Screen Volt. (Grid #2)	300 max.	300 max.	volts
D-C Grid Voltage (Grid #1)	-300 max.	-300 max.	volts
D-C Plate Current	95 max.	100 max.	ma.
D-C Grid Current	15 max.	15 max.	ma.
Plate Input	120 max.	150 max.	watts
Suppressor Input	5 max.	5 max.	watts
Screen Input	15 max.	15 max.	watts
Plate Dissipation	40 max.	50 max.	watts

Typical Operation:

Filament Voltage	7.5	7.5	7.5	7.5	a-c	volts
D-C Plate Voltage	1000	1250	1250	1500		volts
D-C Sup'r Voltage	45	0	45	45		volts
D-C Screen Volt. ♦	{ 300 24000	{ 300 28800	{ 300 35200	{ 300 34000		volts ohms
D-C Grid Volt. ■	{ -100 14300	{ -100 14300	{ -100 14300	{ -100 14300		volts ohms
Peak R-F Grid Volt.	150	145	150	180		volts
D-C Plate Current	92	80	92	100		ma.
D-C Screen Current	29	33	27	35		ma.
D-C Grid Cur. (Approx.)	7	7	7	7		ma.
Driving Power (Approx.)	0.95	0.9	0.95	1.95		watts
Power Output (Approx.)	60	64	80	110		watts

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Pentode Connection - Grids #2 & #3 tied together

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

	<u>CCS</u>	<u>ICAS</u>	
D-C Plate Voltage	1250 max.	1500 max.	volts
D-C Screen Volt. (Grids #2 & #3)	200 max.	200 max.	volts

▲ obtained by grid resistor of value shown or by partial self-bias methods.

Modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115% of the carrier conditions.

♦, ■; See next page.



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(continued from preceding page)

	<u>CCS</u>	<u>ICAS</u>
D-C Grid Volt (Grid #1)	-300 max.	-300 max. volts
D-C Plate Current	95 max.	100 max. ma.
D-C Grid Current	15 max.	15 max. ma.
Plate Input	120 max.	150 max. watts
Screen Input	15 max.	15 max. watts
Plate Dissipation	40 max.	50 max. watts
Typical Operation:		
Filament Voltage	7.5	7.5 a-c volts
D-C Plate Voltage	1250	1500 volts
D-C Screen Voltage ♦	{ 180 46700	{ 200 volts 43500 ohms
D-C Grid Voltage ■	{ -100 12500	{ -100 volts 7700 ohms
Peak R-F Grid Voltage	160	190 volts
D-C Plate Current	92	100 ma.
D-C Screen Current	23	30 ma.
D-C Grid Cur. (Approx.)	8	12 ma.
Driving Power (Approx.)	1.2	2.2 watts
Power Output (Approx.)	80	110 watts

♦ From fixed supply of value shown. Regulation of fixed supply should be adequate to limit the screen voltage, under key-up conditions, to 600 volts. Series screen resistor of value shown should not be used except where the 804 is employed as a buffer amplifier and is not keyed.

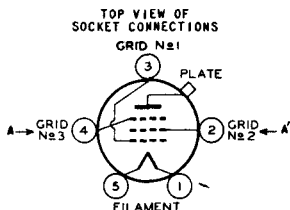
■ Obtained by grid resistor of value shown or by other self- or fixed-bias method.

For the 804 as a crystal-controlled oscillator, typical operating conditions are: d-c plate volts, 1250; d-c suppressor volts, 0; d-c screen volts, 300; grid resistor, 30000 ohms; d-c plate ma., 42; and d-c screen ma., 24.

HIGH-FREQUENCY OPERATION

Maximum permissible percentage of maximum rated plate voltage and plate input

FREQUENCY (Mc)	15	35	80
TELEPHONY Class C	100	88	76
Class C, Grid-Mod.	100	88	76
Class C, Sup'r-Mod.	100	88	76
Class C, Plate-Mod.	100	75	50
TELEGRAPHY - Class C	100	75	50



AA' = PLANE OF ELECTRODES

OUTLINE DIMENSIONS of the
804 are the same as those
for the 814.

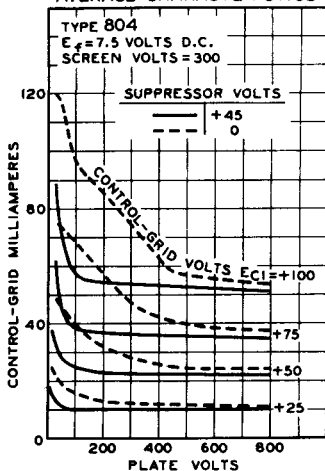
TUBE MOUNTING POSITION

VERTICAL: Base down.
HORIZONTAL: Plane of
electrodes vertical.



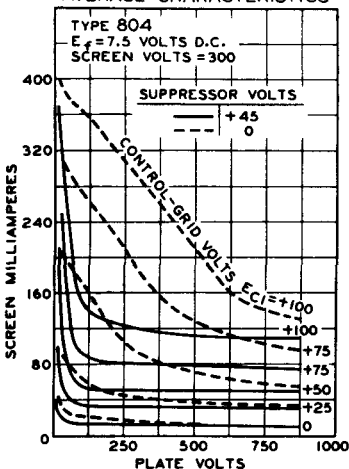
R-F POWER AMPLIFIER PENTODE

AVERAGE CHARACTERISTICS



92C-4564R1

AVERAGE CHARACTERISTICS



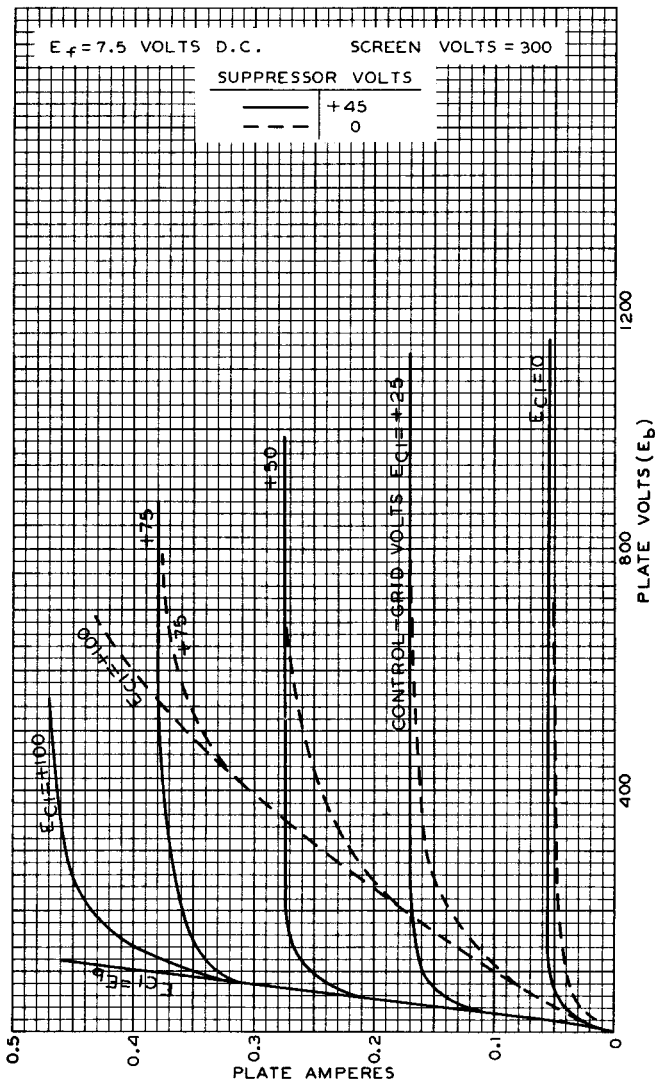
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AVERAGE PLATE CHARACTERISTICS



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