804

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.	μμf
Input	16	μμf
Output	14.5	μμf
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

		CCS		*ICAS*	
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.)°	0.35	0.3	0.25	0.5	watt
Power Output (Approx.)	11	12	16	28	watts

° 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

	CCS	*ICAS*	
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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R-F POWER AMPLIFIER PENTODE

(continued from preceding page)

	CCS		ICAS	
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

	CCS		ICAS	
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	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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R-F POWER AMPLIFIER PENTODE

(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

	CCS	ICAS	
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 oo	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

oo 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

	CCS	ICAS	
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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R-F POWER AMPLIFIER PENTODE

(continued from preceding page)

	CCS	ICAS	
D-C Grid Voltage ▲	−80	−80	volts
	10000	10000	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##

		CCS			ICAS	
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	300	300	300		volts
	24000	28800	35200	34000		ohms
D-C Grid Volt. ■	−100	−100	−100	−100		volts
	14300	14300	14300	14300		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

Tetrode Connection - Grids #2 & #3 tied together

Key-down conditions per tube without modulation##

	CCS	ICAS	
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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R-F POWER AMPLIFIER PENTODE

(continued from preceding page)

	CCS	*ICAS*	
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	200	volts
	46700	43500	ohms
D-C Grid Voltage ■	-100	-100	volts
	12500	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.

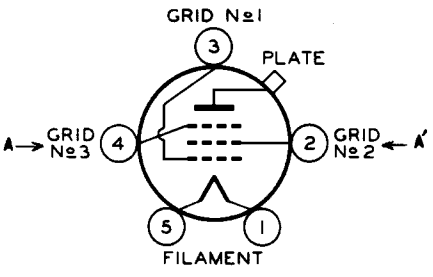
For the 804 as a crystal-controlled oscillator, typical operating conditions are: d-c plate volts, 1250; d-c suppressor volts, 0; d-c screen volts, 300; grid resistor, 30000 ohms; d-c plate ma., 42; and d-c screen ma., 24.

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

TOP VIEW OF SOCKET CONNECTIONS



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.

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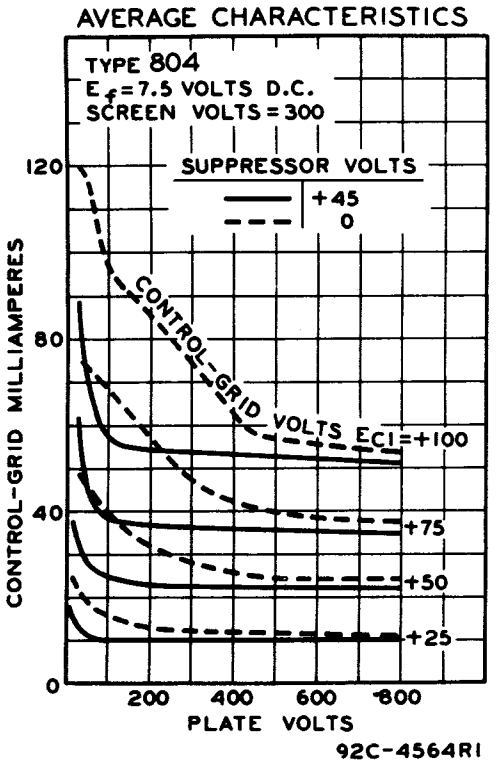
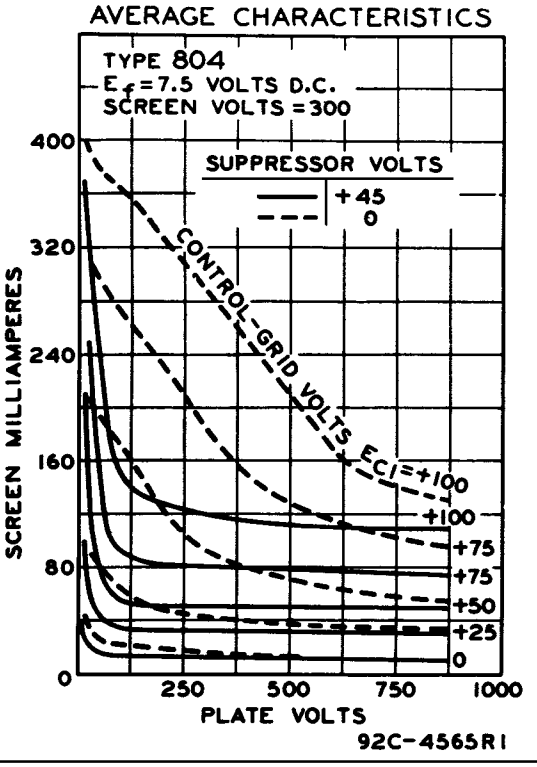
R-F POWER AMPLIFIER PENTODE





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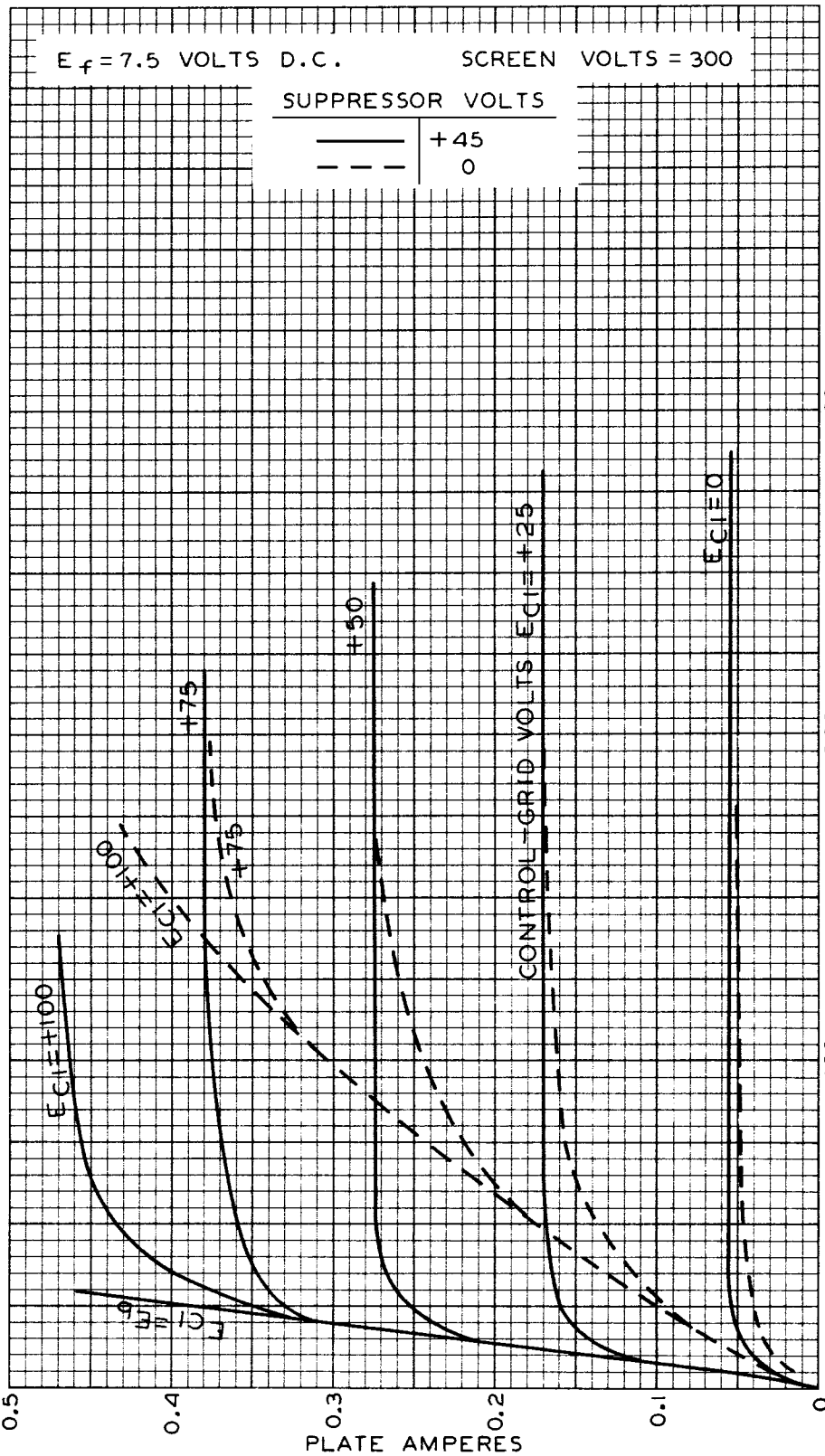
AVERAGE PLATE CHARACTERISTICS



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