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R-F POWER AMPLIFIER PENTODE

Heater [Ⓢ]	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.9	amp.
Transconductance for plate current of 20 ma.	2250	μmhos
Direct Interelectrode Capacitances:		
Grid to Plate (With external shielding)	0.15 max.	μμf
Input	12	μμf
Output	8.5	μμf
Maximum Overall Length	5-3/4"	
Maximum Diameter	2-1/16"	
Bulb	ST-16	
Cap	Small Metal	
Base	Medium 7-Pin Bayonet	

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

*CCS = Continuous Commercial Service
ICAS = Intermittent Commercial and Amateur Service*

A-F POWER AMPLIFIER & MODULATOR - Class A

	<i>CCS</i>			<i>ICAS</i>	
D-C Plate Voltage	500 max.			600 max.	volts
D-C Screen Voltage (Grid #2)	250 max.			250 max.	volts
Plate Input	15 max.			18 max.	watts
Screen Input	3 max.			3 max.	watts
Typical Operation:					
D-C Plate Voltage	400	500	500	600	volts
Suppressor (Grid #3)	0*	0*	0*	40	volts
D-C Screen Voltage	250	175	225	250	volts
D-C Grid Volt. (Grid #1) [Ⓢ]	{ -18 450	{ -10 325	{ -17 530	-18.5	volts
				490	ohms
Peak A-F Grid Volt.	18	10	17	18.5	volts
Internal Shield*	-	-	-	-	
D-C Plate Current	30	25	25	30	ma.
D-C Screen Current	10	6	7	8	ma.
Load Resistance	10000	18000	16000	13200	ohms
Total Har. Distortion	8	4	10	9	%
Power Output	5.5	4	6.5	7.6	watts

[Ⓢ] Obtained from fixed supply or by cathode resistor of value shown. The d-c resistance in the grid circuit should not exceed 10000 ohms with fixed bias, or 500000 ohms with cathode bias.

* Connected to cathode at socket.

R-F POWER AMPLIFIER - Class B Telephony

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

	<i>CCS</i>			<i>ICAS</i>	
D-C Plate Voltage	500 max.			600 max.	volts
D-C Suppressor Volt. (Grid #3)	200 max.			200 max.	volts
D-C Screen Voltage (Grid #2)	250 max.			250 max.	volts
D-C Plate Current	30 max.			30 max.	ma.
Plate Input	15 max.			18 max.	watts

[Ⓢ] In circuits where the cathode is not directly connected to the heater, the potential difference between them should not exceed 100 volts.



R-F POWER AMPLIFIER PENTODE

(continued from preceding page)

	<u>CCS</u>		<u>ICAS</u>	
Suppressor Input	2 max.		2 max. watts	
Screen Input	4 max.		4 max. watts	
Plate Dissipation	10 max.		13 max. watts	
Typical Operation:				
D-C Plate Voltage	400	500	600	volts
Suppressor *★	—	—	—	
D-C Screen Voltage	150	200	225	volts
D-C Grid Voltage (Grid #1)	-22	-28	-30	volts
Peak R-F Grid Voltage	35	32	35	volts
Internal Shield*	—	—	—	
D-C Plate Current	25	25	30	ma.
D-C Screen Current	6.5	7	8	ma.
D-C Grid Cur. (Approx.)	1	0	0.5	ma.
Driving Power (Approx.) ^o	0.5	0.18	0.18	watts
Power Output (Approx.)	2.75	3.5	5.3	watts

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	500 max.			600 max.	volts
D-C Screen Voltage (Grid #2)	200 max.			250 max.	volts
D-C Grid Voltage (Grid #1)	-200 max.			-200 max.	volts
D-C Plate Current	30 max.			30 max.	ma.
D-C Grid Current	7.5 max.			7.5 max.	ma.
Plate Input	15 max.			18 max.	watts
Screen Input	6 max.			6 max.	watts
Plate Dissipation	10 max.			13 max.	watts
Typical Operation:					
D-C Plate Voltage	400	500	500	600	volts
D-C Sup'r Volt. (Grid #3)	-40	-53	-45	-45	volts
D-C Screen Voltage ^Δ	8900	10700	10700	14500	volts
D-C Grid Voltage [□]	{ -85	{ -90	{ -90	-100	volts
				20000	ohms
Peak A-F Sup'r Volt.	40	53	65	65	volts
Peak R-F Grid Volt.	125	125	125	125	volts
Internal Shield*	—	—	—	—	
D-C Plate Current	18	20	22	30	ma.
D-C Screen Current	28	28	28	24	ma.
D-C Grid Cur. (Approx.)	7.5	5	4.5	5	ma.
Driving Power (Approx.)	0.9	0.6	0.5	0.6	watts
Power Output (Approx.)	2	3	3.5	6.3	watts

^Δ Voltage taken 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	500 max.	600 max. volts

*, ★, ○: See next page.



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R-F POWER AMPLIFIER PENTODE

(continued from preceding page)

	<u>CCS</u>		<u>ICAS</u>	
D-C Suppressor Volt. (Grid #3)	200	max.	200	max. volts
D-C Screen Voltage (Grid #2)	250	max.	250	max. volts
D-C Grid Voltage (Grid #1)	-200	max.	-200	max. volts
D-C Plate Current	30	max.	30	max. ma.
Plate Input	15	max.	18	max. watts
Suppressor Input	2	max.	2	max. watts
Screen Input	4	max.	4	max. watts
Plate Dissipation	10	max.	13	max. watts
Typical Operation:				
D-C Plate Voltage	400	500	600	volts
Suppressor * ★	-	-	-	
D-C Screen Voltage	150	200	250	volts
D-C Grid Voltage	-105	-130	-130	volts
Peak A-F Grid Voltage	40	50	50	volts
Peak R-F Grid Voltage	125	145	145	volts
Internal Shield *	-	-	-	
D-C Plate Current	25	25	30	ma.
D-C Screen Current	7.5	8	8	ma.
D-C Grid Cur. (Approx.)	2	1	1	ma.
Driving Power (Approx.)	1	0.8	0.8	watt
Power Output (Approx.)	3	4	6	watts

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	400	max.	500	max. volts
D-C Suppressor Volt. (Grid #3)	200	max.	200	max. volts
D-C Screen Voltage (Grid #2)	200	max.	250	max. volts
D-C Grid Voltage (Grid #1)	-200	max.	-200	max. volts
D-C Plate Current	40	max.	40	max. ma.
D-C Grid Current	7.5	max.	7.5	max. ma.
Plate Input	16	max.	20	max. watts
Suppressor Input	2	max.	2	max. watts
Screen Input	4	max.	4	max. watts
Plate Dissipation	6.7	max.	8	max. watts
Typical Operation:				
D-C Plate Voltage	400		500	volts
D-C Suppressor Voltage	40		40	volts
D-C Screen Voltage #	{ 195		245	volts
	{ 11500		16300	ohms
D-C Grid Voltage ▲	{ -40		-40	volts
	{ 27000		27000	ohms
Peak R-F Grid Voltage	55		55	volts

★ Applying a positive voltage of not more than 40 volts to the suppressor gives slightly increased output.

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

From modulated fixed supply or modulated plate-voltage supply through resistor of value shown.

*, ▲: See next page.



R-F POWER AMPLIFIER PENTODE

(continued from preceding page)

	<u>CCS</u>	<u>ICAS</u>	
Internal Shield *	—	—	
D-C Plate Current	35	40	ma.
D-C Screen Current	17	15	ma.
D-C Grid Cur. (Approx.)	1.5	1.5	ma.
Driving Power (Approx.)	0.1	0.1	watt
Power Output (Approx.)	8	12	watts

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

Pentode 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	400 max.	500 max.	volts
D-C Screen Volt. (Grids #2 & #3)	200 max.	200 max.	volts
D-C Grid Voltage (Grid #1)	-200 max.	-200 max.	volts
D-C Plate Current	40 max.	40 max.	ma.
D-C Grid Current	7.5 max.	7.5 max.	ma.
Plate Input	16 max.	20 max.	watts
Screen Input	6 max.	6 max.	watts
Plate Dissipation	6.7 max.	8 max.	watts

Typical Operation:

D-C Plate Voltage	400	500	volts
D-C Screen Voltage ^Δ	{ 85	195	volts
	{ 15000	18000	ohms
D-C Grid Voltage ^Δ	{ -120	-120	volts
	{ 20000	20000	ohms
Peak R-F Grid Voltage	160	160	volts

Internal Shield *

D-C Plate Current	35	40	ma.
D-C Screen Current	21	17	ma.
D-C Grid Current (Approx.)	6	6	ma.
Driving Power (Approx.)	0.9	0.9	watt
Power Output (Approx.)	8	12	watts

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

^Δ Obtained by grid resistor of value shown or by partial self-bias methods.

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telephony

Pentode Connection

*Key-down conditions per tube without modulation **

	<u>CCS</u>	<u>ICAS</u>	
D-C Plate Voltage	500 max.	600 max.	volts
D-C Suppressor Volt. (Grid #3)	200 max.	200 max.	volts
D-C Screen Volt. (Grid #2)	250 max.	250 max.	volts
D-C Grid Voltage (Grid #1)	-200 max.	-200 max.	volts
D-C Plate Current	60 max.	60 max.	ma.
D-C Grid Current	7.5 max.	7.5 max.	ma.
Plate Input	25 max.	33 max.	ma.
Suppressor Input	2 max.	2 max.	watts

* Connected to cathode at socket.



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(continued from preceding page)

	CCS			ICAS		
Screen Input	6 max.			6 max. watts		
Plate Dissipation	10 max.			13 max. watts		
Typical Operation:						
D-C Plate Voltage	400	500	500	600	volts	
D-C Suppressor Volt.	0	0	40	40	volts	
D-C Screen Volt. ♦	{	200	200	250	volts	
		8000	13600	20800	ohms	
		-100	-100	-100	-120	volts
D-C Grid Volt. ♂	{	14000	17000	50000	42000	ohms
		1300	1370	1700	1620	ohms
		155	155	155	165	volts
Peak R-F Grid Volt.	155	155	155	165	volts	
Internal Shield*	-	-	-	-		
D-C Plate Current	45	45	45	55	ma.	
D-C Screen Current	25	22	12	16	ma.	
D-C Grid Cur. (Approx.)	7	6	2	2.4	ma.	
Driving Power (Approx.)	1.1	0.9	0.25	0.3	watt	
Power Output (Approx.)	10	14	16	23	watts	

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy*Tetrode Connection - Grids #2 & #3 tied together**Key-down conditions per tube without modulation**

	<u>CCS</u>		<u>ICAS</u>		
D-C Plate Voltage	500	max.	600	max. volts	
D-C Screen Volt. (Grids #2 & #3)	200	max.	200	max. volts	
D-C Grid Voltage (Grid #1)	-200	max.	-200	max. volts	
D-C Plate Current	60	max.	60	max. ma.	
D-C Grid Current	7.5	max.	7.5	max. ma.	
Plate Input	25	max.	33	max. watts	
Screen Input	6	max.	6	max. watts	
Plate Dissipation	10	max.	13	max. watts	
Typical Operation:					
D-C Plate Voltage	400	500	600	volts	
D-C Screen Volt. ♦	{	100	100	150	volts
		20000	27000	30000	ohms
		-60	-60	-60	volts
D-C Grid Volt. ■	{	8600	10000	10000	ohms
		1000	1000	860	ohms
		90	90	90	volts
Peak R-F Grid Volt.					
Internal Shield*	-	-	-		
D-C Plate Current	45	45	55	ma.	
D-C Screen Current	15	15	15	ma.	
D-C Grid Cur. (Approx.)	7	6	6	ma.	
Driving Power (Approx.)	0.7	0.5	0.5	watt	
Power Output (Approx.)	10	12	23	watts	

■ obtained by grid resistor (8600, 10000), by cathode resistor (1000, 860), or from fixed supply.

♦ From fixed supply or plate-voltage supply through resistor of value shown. Under key-up conditions, max. screen voltage should not exceed 500 volts. Series screen resistor of value shown should not be used except where the 802 is employed as a buffer amplifier and is not keyed.

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

* Connected to cathode at socket. ♂ See next page.



R-F POWER AMPLIFIER PENTODE

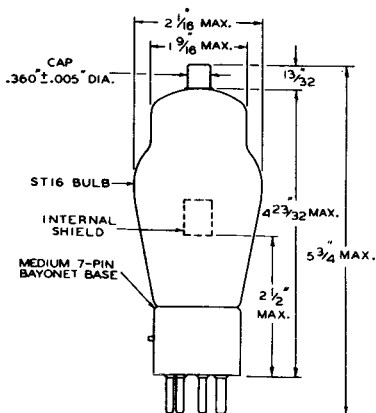
(continued from preceding page)

⚡ Obtained from grid resistor (14000, 17000, 50000, 42000), by cathode resistor (1300, 1370, 1700, 1620) or from fixed supply.

HIGH-FREQUENCY OPERATION

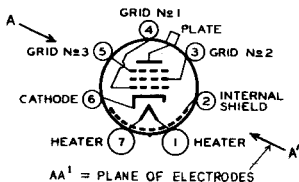
Maximum permissible percentage of maximum rated plate voltage and plate input

FREQUENCY (Mc)	30	55	100
TELEPHONY { Class B	100	88	76
{ Class C, Grid-Mod.	100	88	76
{ Class C, Sup'r-Mod.	100	88	76
{ Class C, Plate-Mod.	100	77	55
TELEGRAPHY - Class C	100	77	55



92C-4384 R5

TOP VIEW OF
SOCKET CONNECTIONS



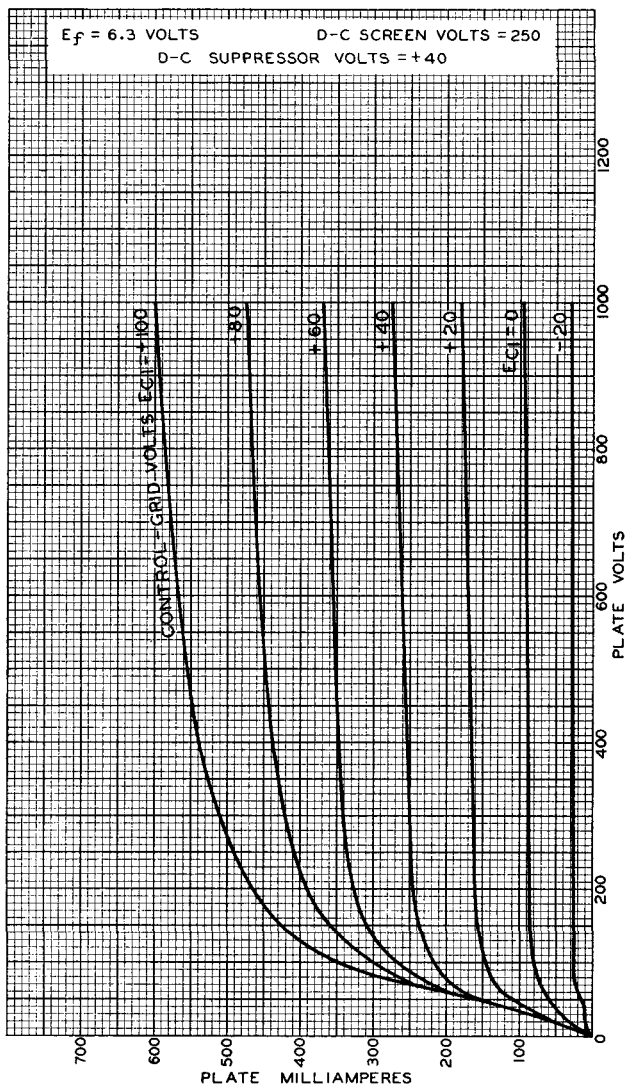
TUBE MOUNTING POSITION
VERTICAL or HORIZONTAL



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AVERAGE PLATE CHARACTERISTICS



APRIL 24, 1936

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

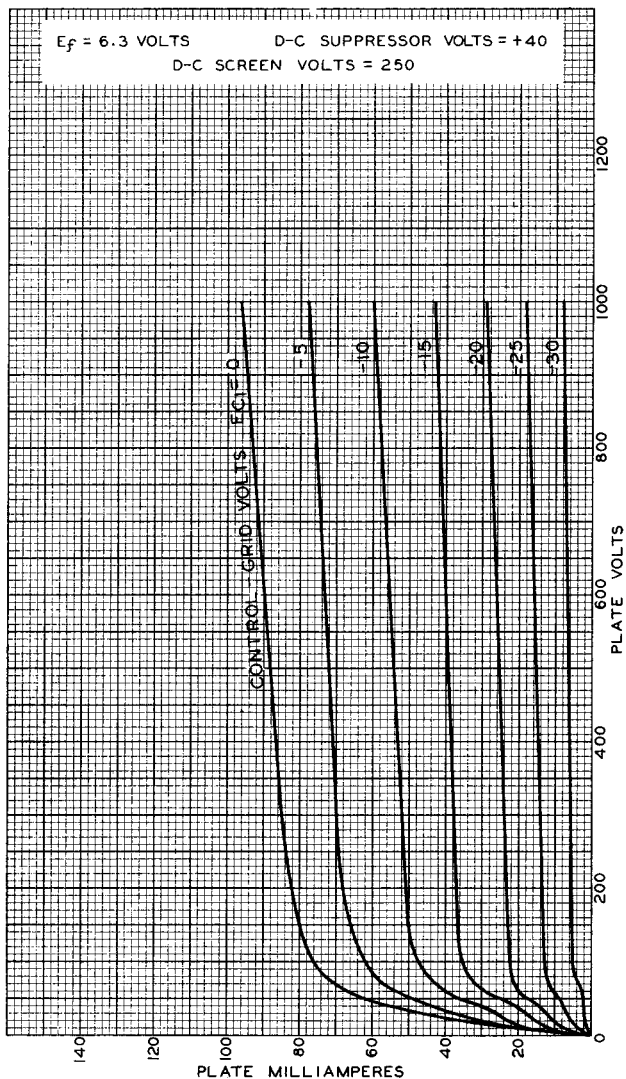
92C-4606

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AVERAGE PLATE CHARACTERISTICS



MAY 11, 1936

RCA RADION TRON DIVISION
RCA MANUFACTURING COMPANY, INC.

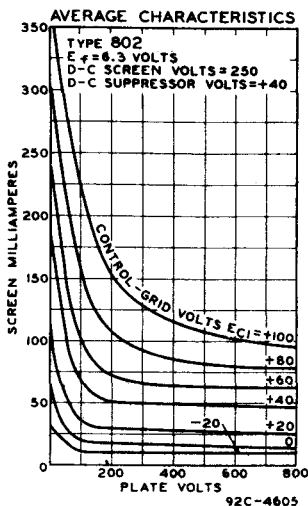
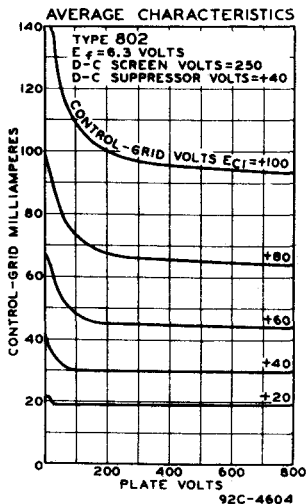
92C-4612



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CHARACTERISTICS CURVES



MAR. 20, 1936

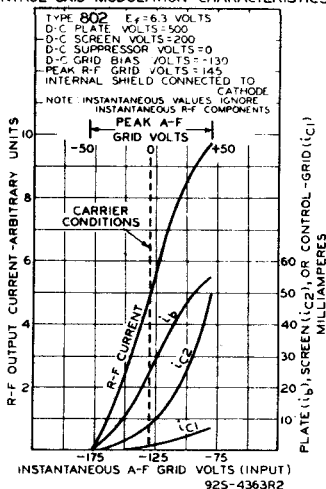
RCA RADIONRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4604 & 4605



CHARACTERISTICS CURVES

CONTROL-GRID MODULATION CHARACTERISTICS



SUPPRESSOR MODULATION CHARACTERISTICS

