



802

802

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

	<u>CCS</u>			<u>ICAS</u>	
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	-10	-17	-18.5 volts
		450	325	530	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

	<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 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.

FEB. 2, 1940

RCA RADITRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA



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
	11000	18000	20000	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

*, **, ^o: See next page.



802

802

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.

° 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

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	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 Telegraphy

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.



802

802

R-F POWER AMPLIFIER PENTODE

(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
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 Telephony*Petrode Connection - Grids #2 & #3 tied together**Key-down conditions per tube without modulation**

	CCS		ICAS	
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
		20000	27000	30000
		-60	-60	-60
		8600	10000	10000
D-C Grid Volt. ■	{	1000	1000	860
		90	90	90
Peak R-F Grid Volt.		90	90	volts
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.

FEB. 2, 1940

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA 3



R-F POWER AMPLIFIER PENTODE

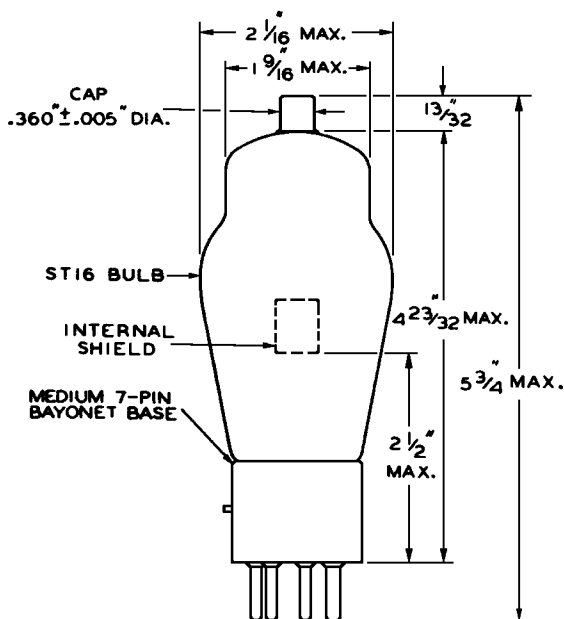
(continued from preceding page)

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

HIGH-FREQUENCY OPERATION

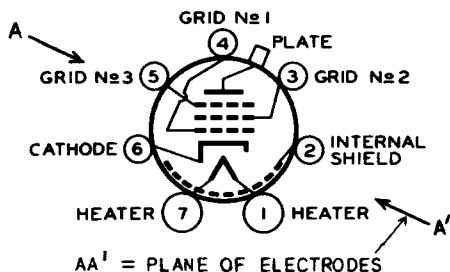
Maximum permissible percentage of maximum rated plate voltage and plate input

FREQUENCY (Mc)	30	55	100
TELEPHONY {	100	88	76
	100	88	76
	100	88	76
	100	77	55
TELEGRAPHY - Class C	100	77	55



92C-4364 R5

TOP VIEW OF
SOCKET CONNECTIONS



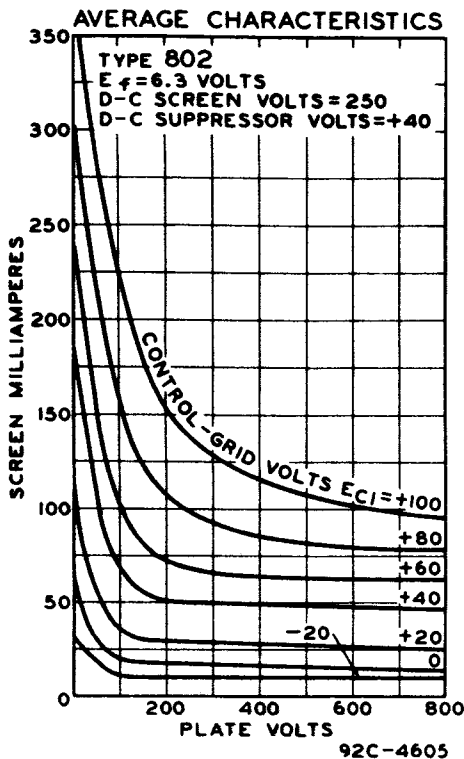
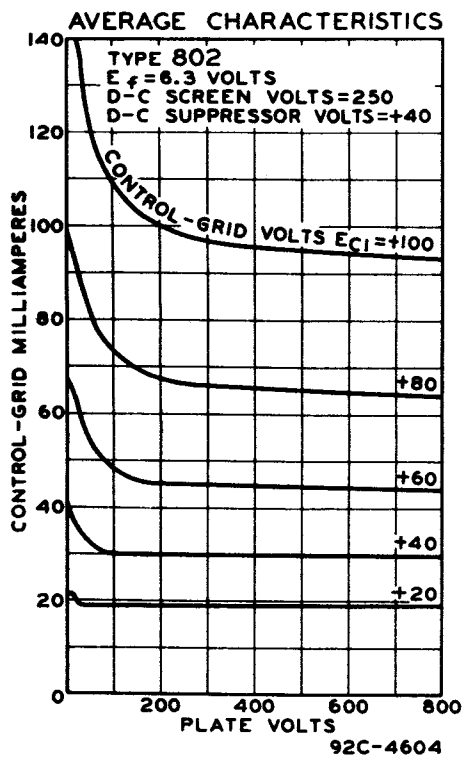
TUBE MOUNTING POSITION
VERTICAL or HORIZONTAL



802

802

CHARACTERISTICS CURVES



MAR. 20, 1936

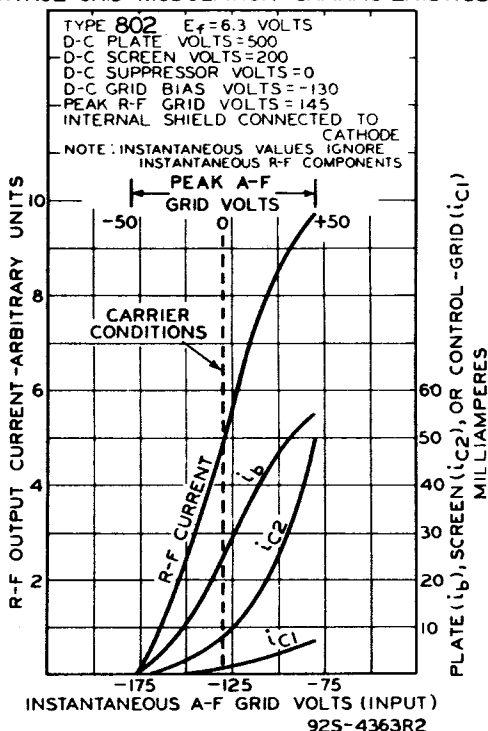
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92C-4604 & 4605

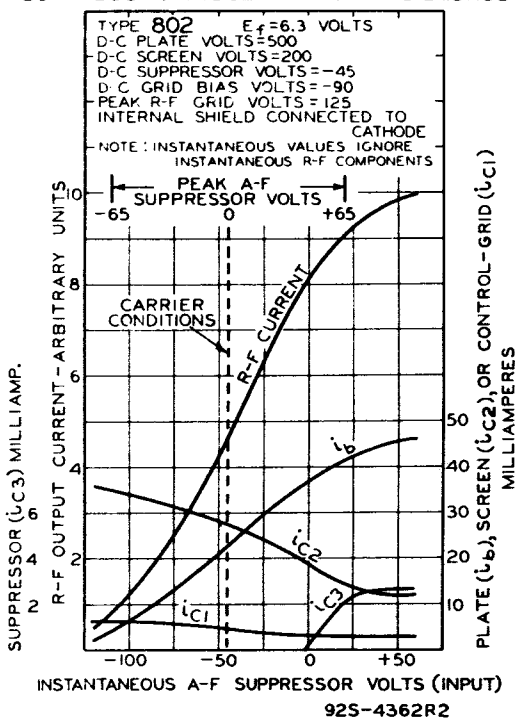


CHARACTERISTICS CURVES

CONTROL-GRID MODULATION CHARACTERISTICS



SUPPRESSOR MODULATION CHARACTERISTICS

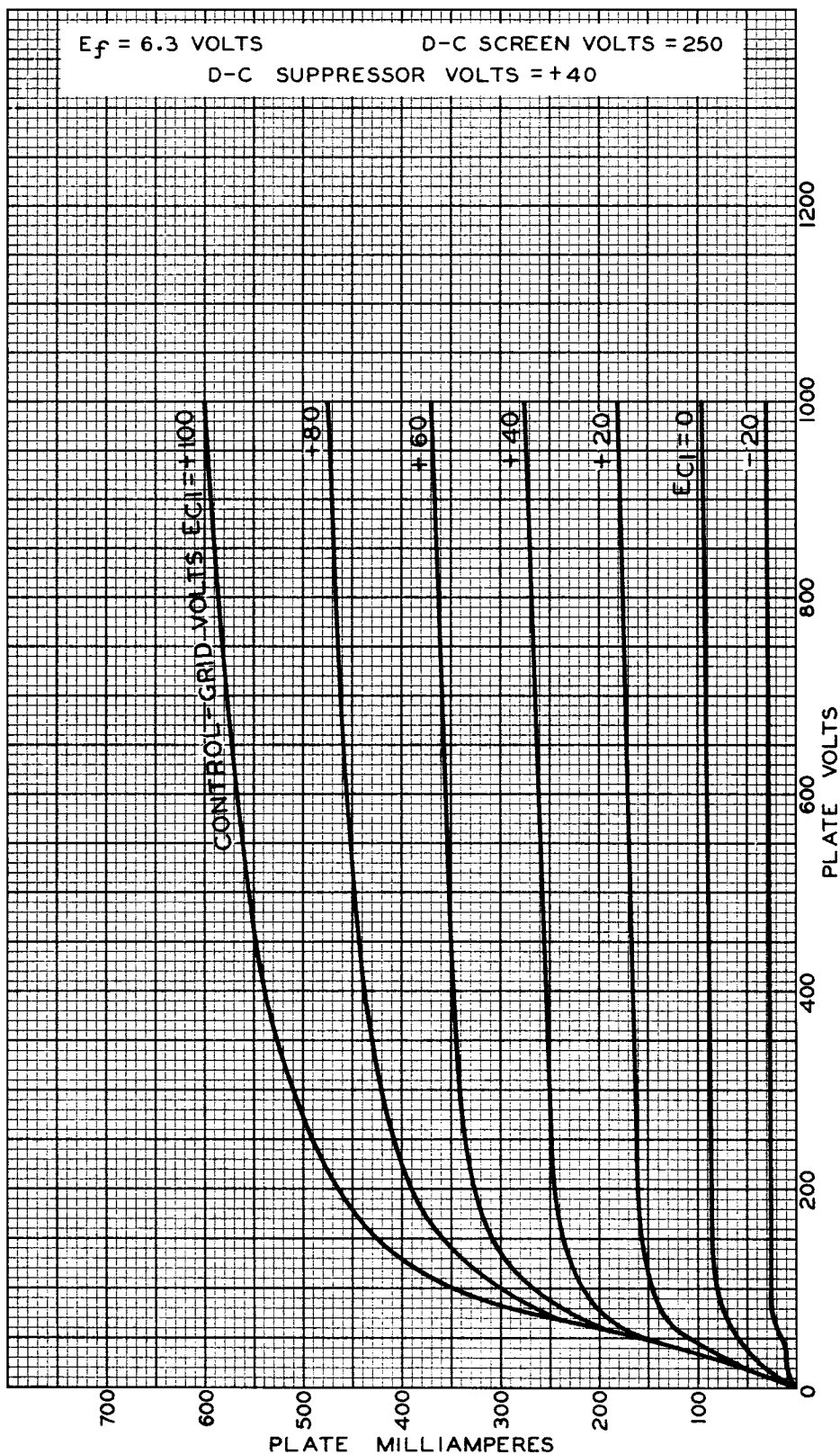




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AVERAGE PLATE CHARACTERISTICS



APRIL 24, 1936

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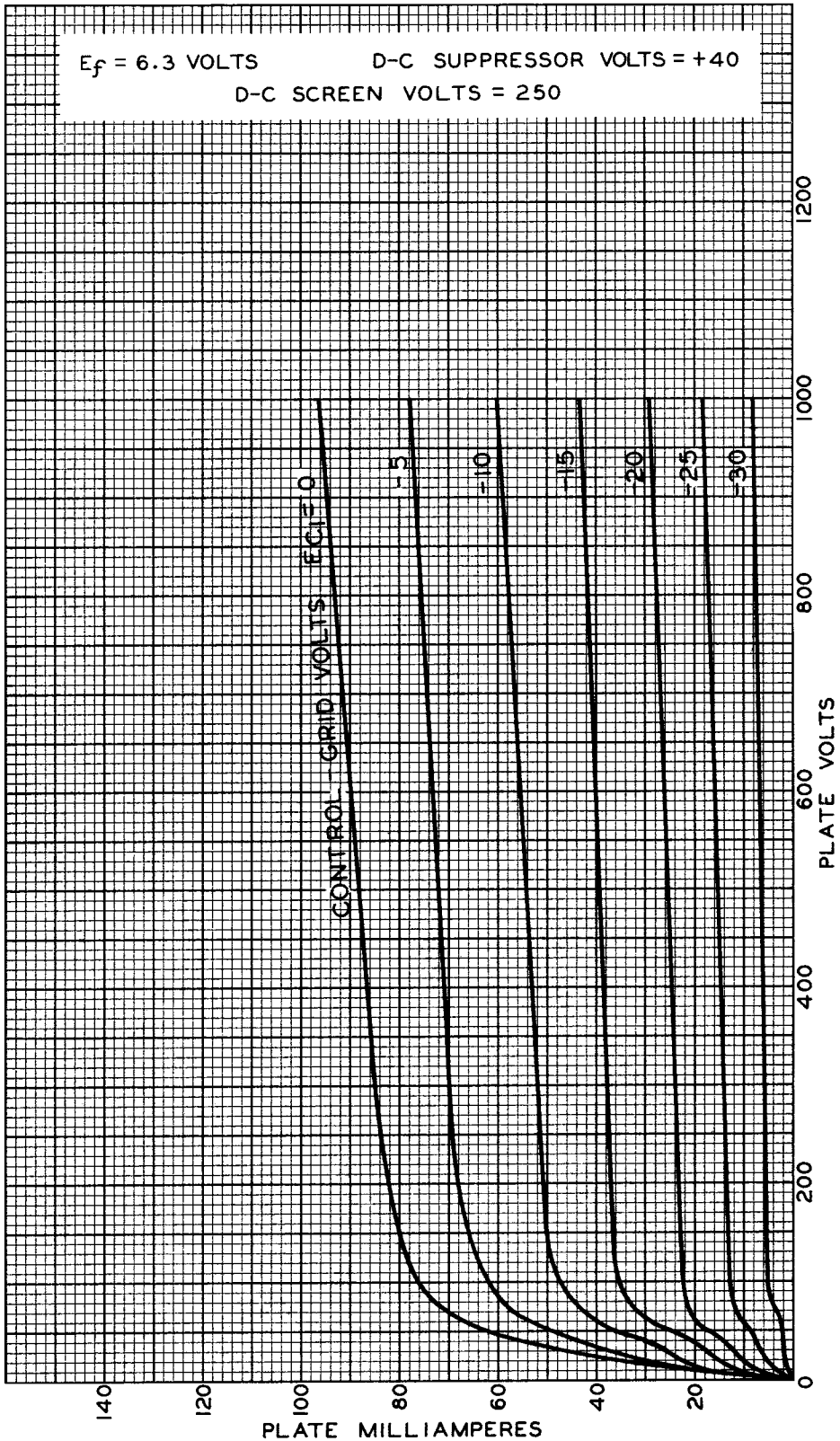
92C-4606

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AVERAGE PLATE CHARACTERISTICS



MAY 11, 1936

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92C-4612