

**RCA TUBE
HANDBOOK**

HB-3

Vol 5-6

**TRANSMITTING
TUBE
SECTION**

This section contains data for certain RCA tubes employed in broadcast, television, and communication transmitters, electronic heaters, and other types of electronic equipment requiring tubes capable of handling appreciable power.

*For further Technical Information, write to
Commercial Engineering, Tube Department,
Radio Corporation of America, Harrison, N. J.*

APRIL, 1947





TRANSMITTING TUBE RATINGS vs. OPERATING FREQUENCY

(continued from preceding page)

TUBE TYPE	OPERATING FREQUENCY <i>Megacycles</i>	MAXIMUM PERMISSIBLE PERCENTAGE OF MAXIMUM RATED PLATE VOLTAGE & PLATE INPUT			
		TELEPHONY		TELEGRAPHY	
		Class B, Class C Grid or Suppressor Modulated	Class C plate- Modulated	Class C	
865	15	100	100	100	
	30	90	78	78	
	60	78	55	55	
880	25	<i>Voltage</i> 100	<i>Input</i> 100	100	100
	50	80	94	72	75
	75	68	85	56	62
	100	60	75	45	50
889-A	50	100	100	100	
	100	85	75	75	
	150	72	50	50	
889R-A	40	100	100	<i>Volt.</i> 100	<i>Input</i> 100
	65	85	78	87	73
	100	72	60	65	50
891	1.6	100	100	100	
	7.5	82	75	75	
	20	72	65	50	
891-R	1.6	100	100	100	
	7.5	82	75	75	
	20	72	50	50	
892	1.6	100	100	100	
	7.5	84	85	75	
	20	76	75	50	
892-R	1.6	100	100	100	
	7.5	85	75	75	
	20	75	50	50	
893-A	5	<i>Volt.</i> 100	<i>Input</i> 100	<i>Volt.</i> 100	<i>Input</i> 100
	20	85	82	80	75
	40	65	73	64	64
893A-R	5	100	100	<i>Volt.</i> 100	<i>Input</i> 100
	12	86	81	81	75
	25	72	65	65	50
898-A	1.6	100	100	100	
Not recommended for operation at frequencies above 1.6 megacycles.					
1602	6	100	100	100	
Not recommended for operation at frequencies above 6 megacycles.					
1608	45	100	100	100	
	60	92	80	80	
	100	80	63	63	
1610	20	-	100	100	
	60	-	82	82	
	-	-	-	-	

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TRANSMITTING TUBE RATINGS vs. OPERATING FREQUENCY

(continued from preceding page)

TUBE TYPE	OPERATING FREQUENCY <i>Megacycles</i>	MAXIMUM PERMISSIBLE PERCENTAGE OF MAXIMUM RATED PLATE VOLTAGE & PLATE INPUT		
		TELEPHONY		TELEGRAPHY
		Class B, Class C Grid or Suppressor Modulated	Class C plate- Modulated	Class C
1n13	45 60 90	- - -	100 90 85	100 90 85
1A14	80 120	- -	100 75	100 75
1619	45 60 90	100 93 85	100 90 77	100 90 77
1623	60 70 100	100 93 80	100 88 60	100 88 60
1624	60 80 125	100 90 75	100 80 55	100 80 55
1625	Same as for Type 807			
1626	30 60 90	- - -	- - -	100 96 93
5556	5 15 30	100 85 70	100 75 50	100 75 50
5509	1200 1350 1500 2000	- - - -	100 90 80 80	100 90 80 80
5592	50 75 108	- - -	- - -	<i>Volt. Input</i> 100 100 85 88 65 67
5618	100	-	100	100
5671	10 18 25	- - -	100 88 80	100 88 80
-> 5713	220	-	-	100
-> 5762	110	-	100	100
-> 5770	20 27 35	- - -	100 88 77	100 88 77
-> 5771	1.6 25 50	100 100 75	100 100 75	<i>Volt. Input</i> 120 112.5 100 75
-> 5786	160	-	100	100

(continued on next page) -> Indicates a change.

FEB. 1, 1949

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

RATINGS vs
FREQ. 3



TRANSMITTING TUBE RATINGS vs. OPERATING FREQUENCY

(continued from preceding page)

TUBE TYPE	OPERATING FREQUENCY <i>Megacycles</i>	MAXIMUM PERMISSIBLE PERCENTAGE OF MAXIMUM RATED PLATE VOLTAGE & PLATE INPUT		
		TELEPHONY		TELEGRAPHY
		Class A, Class C Grid or Suppressor Modulated	Class C plate- Modulated	Class C
8000	Same as for Type B10			
8001	See 4E27/8001			
8003	30 50	100 90	100 83	100 83
8005	60 80 100	10C 9C 8C	100 75 60	100 75 60
8012-A and 8025-A	500 600	10C 8C*	100* 70*	100 70*
* Maximum permissible percentage of only maximum plate voltage; the maximum plate input may be 100% of its rated value.				



TRANSMITTING TUBE RATINGS vs. OPERATING FREQUENCY

(continued from preceding page)

TUBE TYPE	OPERATING FREQUENCY <i>Megacycles</i>	MAXIMUM PERMISSIBLE PERCENTAGE OF MAXIMUM RATED PLATE VOLTAGE & PLATE INPUT		
		TELEPHONY		TELEGRAPHY
		Class B, Class C Grid or Suppressor Modulated	Class C Plate- Modulated	Class C
811	60	100	100	100
	80	90	75	75
	100	83	60	60
812-A	30	100	100	100
	60	89	89	89
	80	70	70	70
	100	55	55	55
813	30	100	100	100
	45	93	87	87
	60	88	75	75
	120	76	50	50
814	30	100	100	100
	50	90	80	80
	75	85	64	64
815	125	100	100	100
	175	85	80	80
	200	75	70	70
826	250	—	100	100
	300	—	80	80
827-R	110	100	100	100
828	30	100	100	100
	50	90	80	80
	75	80	65	65
829-B	200	—	100	100
	250	—	89	89
	—	—	—	—
830-B	15	100	100	100
	30	87	77	77
	60	74	54	54
832-A	200	100	100	100
	250	94	89	89
	—	—	—	—
833-A, with natural cooling	30	100	100	100
	50	98	90	90
	75	94	72	72
833-A, with forced-air cooling	20	100	100	100
	50	97	83	83
	75	93	65	65

(continued on next page) ← Indicates a change.

JUNE 15, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

RATINGS vs
FREQ. 2



TRANSMITTING TUBE RATINGS vs. OPERATING FREQUENCY

(continued from preceding page)				
TUBE TYPE	OPERATING FREQUENCY <i>Megacycles</i>	MAXIMUM PERMISSIBLE PERCENTAGE OF MAXIMUM RATED PLATE VOLTAGE & PLATE INPUT		
		TELEPHONY		TELEGRAPHY
		Class B, Class C Grid or Suppressor Modulated	Class C Plate- Modulated	Class C
834	100	100	100	100
	170	89	80	80
	350	73	53	53
835	20	100	100	100
	40	85	80	80
	100	70	50	50
837	20	100	100	100
	40	90	76	76
	60	84	62	62
838	30	100	100	100
	60	85	75	75
	120	70	50	50
841	6	100	100	100
842	15	96	90	90
843	30	90	80	80
846	50	100	100	100
	100	82	75	75
	150	73	60	50
849	Same as for Type 204-A			
850	15	100	100	100
	30	89	80	80
	60	79	64	64
851	3	100	100	100
	7	88	75	75
	15	76	50	50
858	1.5	100	100	100
	20	82	75	75
	40	57	50	50
860	Same as for Type 838			
861	20	100	100	100
	30	90	82	82
	60	75	53	53
862-A	Same as for Type 898-A			

(continued on next page)



F.C.C. POWER RATINGS* OF RCA TRANSMITTING TUBES

"The maximum rated carrier power of a standard broadcast transmitter shall be determined as the sum of the applicable power ratings of the vacuum tubes employed in the last radio stage. The approved power ratings of vacuum tubes for operation in the last radio stages of broadcast transmitters are fixed as set out in the following tables:"

TABLE A

*High-Level Modulation
or Plate-Modulation in the
Last Radio Stage*

Power Rating (watts)	Tube Type
50	80B
75	203-A
	211
	83B
	850
	852
125	803
	805
	810
250	204-A
	806
	831
	861
350	849
500	833-A
750	851
1000	846
2500	520-B
	1652
5000	207
	848
	863
	891
	892
	892-R
10000	858
	893-R
25000	9C22
40000	862
	898

TABLE B

*Low-Level Modulation
or Last Radio Stage Operating
as Linear Power Amplifier*

Power Rating (watts)	Tube Type
25	203-A
50	803
	806
	810
75	204-A
125	833-A
	849
250	851
500	846
1000	520-B
	1652
2500	207
	863
	892
5000	858
25000	862
	898

TABLE D

*Grid Modulation
in the Last Radio Stage
(Operating Efficiency 35%)*

Power Rating (watts)	Tube Type
2500	892

* From Federal Communications Commission's "Standards of Good Engineering Practice Concerning Standard Broadcast Stations (550-1600 kc)," Section 8, Revision of Mfr. 15, 1944, Mimeo No. 37442. Ratings apply only for tubes used in the last radio stage of standard broadcast transmitters and may not be applicable to any other service.

← Indicates a change.



2E24

2E24

V-H-F BEAM POWER AMPLIFIER

GENERAL DATA

Electrical:

Filament, Coated: *Designed for intermittent operation only.*
 Voltage 6.3 ac or dc volts
 Current 0.65 amp
 Transconductance, for plate current of 16 ma. 3200 μ mhos
 Grid-Screen Mu-Factor 7.5
 Direct Interelectrode Capacitances:^o
 Grid No.1 to Plate. 0.11 max. μ uf
 Input 8.5 μ uf
 Output. 6.5 μ uf

^o with no external shielding, and with base sleeve connected to ground.

Mechanical:

Mounting Position Vertical, or horizontal with plane of electrodes vertical
 Overall Length. 3-1/2 \pm 5/32"
 Seated Length 2-15/16 \pm 5/32"
 Maximum Diameter 1-5/16"
 Bulb. T-9
 Cap Small
 Base Small Wafer Octal 8-Pin, with Sleeve No. R6159

Basing Designation for BOTTOM VIEW 7CL

Pin 1 - Grid No.3, Int.Shield & Filament Center-Tap
 Pin 2 - Filament
 Pin 3 - Grid No.2
 Pin 4 - Same as Pin 1
 Pin 5 - Grid No.1
 Pin 6 - Same as Pin 1
 Pin 7 - Filament
 Pin 8 - Base Sleeve
 Cap - Plate

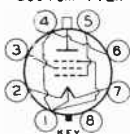


PLATE-MODULATED RF POWER AMPLIFIER - Class C Telephony

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

Maximum Ratings, Absolute Values:

	ICAS ^{▲▲}
DC PLATE VOLTAGE.	500 max. volts
DC GRID-No.2 (SCREEN) VOLTAGE	200 max. volts
DC GRID-No.1 (CONTROL GRID) VOLTAGE	-175 max. volts
DC PLATE CURRENT.	60 max. ma.
DC GRID-No.1 CURRENT.	3.5 max. ma.
PLATE INPUT	27 max. watts
GRID-No.2 INPUT	2.3 max. watts
PLATE DISSIPATION	9 max. watts

Typical Operation:

DC Plate Voltage.	500 . . . volts
DC Grid-No.2 Voltage#	{ 180 . . . volts
	{ 40000 . . . ohms
DC Grid-No.1 Voltage ^o	{ -45 . . . volts
	{ 18000 . . . ohms

^{▲▲}, #, ^o: See next page.

JUNE 20, 1946

TUBE DIVISION

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History

2E24



2E24

V-H-F BEAM POWER AMPLIFIER

Peak RF Grid-No.1 Voltage	62	volts
DC Plate Current.	54	ma.
DC Grid-No.2 Current.	8	ma.
DC Grid-No.1 Current (Approx.).	2.5	ma.
Driving Power (Approx.)	0.16	watt
Power Output (Approx.)	18	watts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance $\oplus\oplus$	30000 max.	ohms
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RF POWER AMPLIFIER AND OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation##

Maximum Ratings, Absolute Values:

	ICAS ^{AA}	
DC PLATE VOLTAGE.	600 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE	200 max.	volts
DC GRID-No.1 (CONTROL GRID) VOLTAGE	-175 max.	volts
DC PLATE CURRENT.	85 max.	ma.
DC GRID-No.1 CURRENT.	3.5 max.	ma.
PLATE INPUT	40 max.	watts
GRID-No.2 INPUT	2.5 max.	watts
PLATE DISSIPATION	13.5 max.	watts

Typical Operation:

	Up to 125 Mc	At 160 Mc	
DC Plate Voltage.	600	350	volts
DC Grid-No.2 Voltage \square	{ 195	170	volts
	{ 40500	18000	ohms
DC Grid-No.1 Voltage \blacktriangledown	{ -50	-50	volts
	{ 16700	16500	ohms
Peak RF Grid-No.1 Voltage	71	70	volts
DC Plate Current.	66	85	ma.
DC Grid-No.2 Current.	10	10	ma.
DC Grid-No.1 Current (Approx.)	3.0	3.0	ma.
Driving Power (Approx.)	0.21	2.0	watts
Power Output (Approx.)	27	16.5	watts

Maximum Circuit Values:

Grid-No.1-Circuit Res. $\oplus\oplus$	30000 max.	ohms
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^{AA} Intermittent Commercial and Amateur Service. The filament of this tube is designed for intermittent operation only and should not be operated continuously.

\square Obtained preferably from a separate source modulated with the plate supply, or from the modulated plate-supply through series resistor of the value shown.

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

\oplus Obtained from grid resistor of value shown, or by partial self-bias methods.

$\oplus\oplus$ Any additional bias must be supplied by a cathode resistor or a fixed supply.

\square , \blacktriangledown : See next page.

JUNE 20, 1946

TUBE DIVISION

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History



2E24

V-H-F BEAM POWER AMPLIFIER

2E24

- Obtained preferably from a separate source, or from the plate-voltage supply with a voltage divider, or through a series resistor of the value shown. The grid-No.2 voltage must not exceed 600 volts under key-up conditions.
- ◆ Obtained from fixed supply or by grid-No.1 resistor of value shown.
- ◆ At 160 MC.

Data on operating frequencies for the 2E24 are given on the sheet TRANS. TUBES vs FREQUENCY

OUTLINE DIMENSIONS
for the 2E24 are the same as those for the 2E26

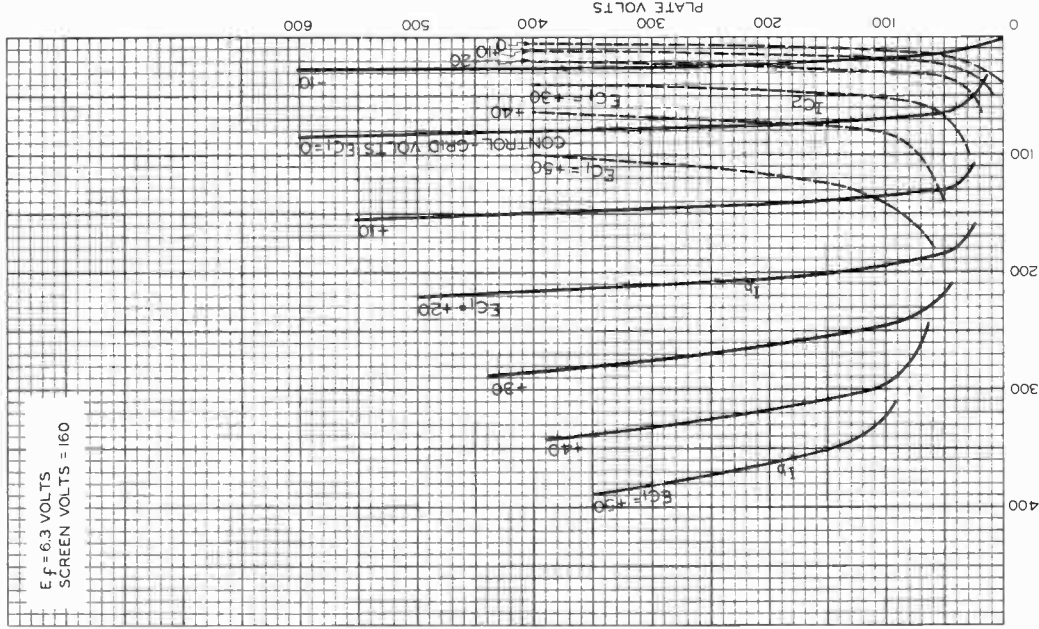
2E24



2E24

AVERAGE PLATE CHARACTERISTICS

$E_f = 6.3$ VOLTS
SCREEN VOLTS = 160



World Precision

JAN. 23, 1946

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA HARRISON, NEW JERSEY

PLATE (I_b) OR SCREEN (I_{c2}) MILLIAMPERES

92CM-6666

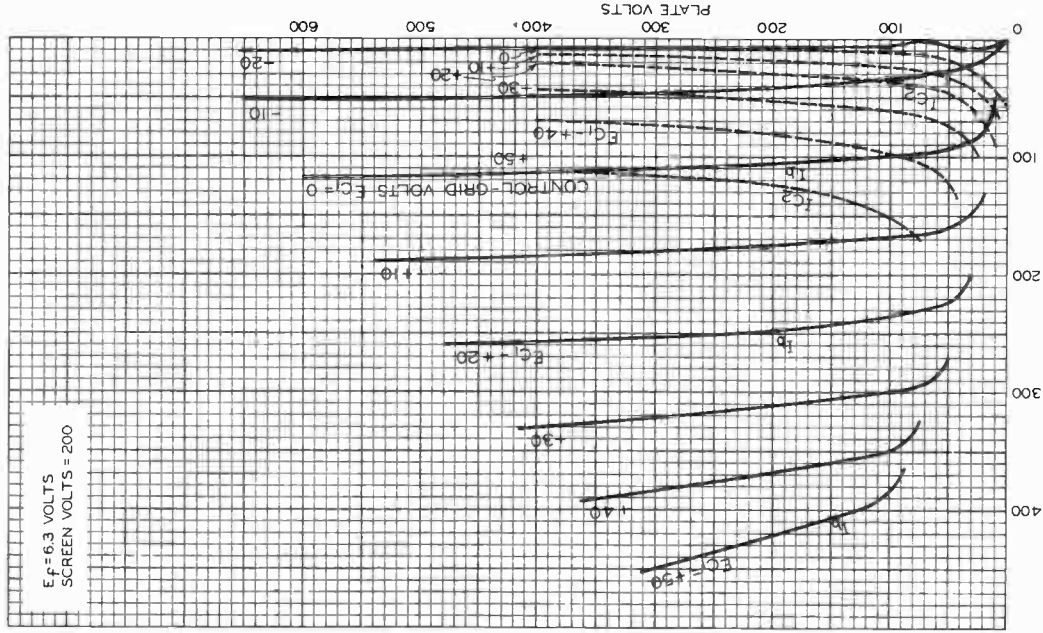


2E24

2E24

AVERAGE PLATE CHARACTERISTICS

$E_f = 6.3$ VOLTS
SCREEN VOLTS = 200



JAN. 23, 1946

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

PLATE (I_b) OR SCREEN (I_{c2}) MILLIAMPERES

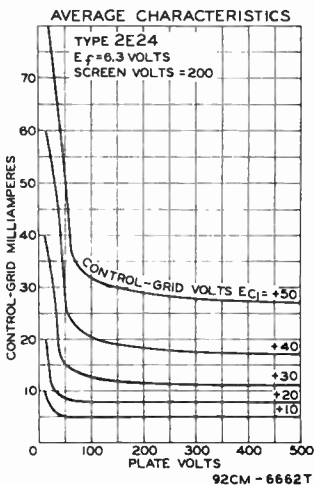
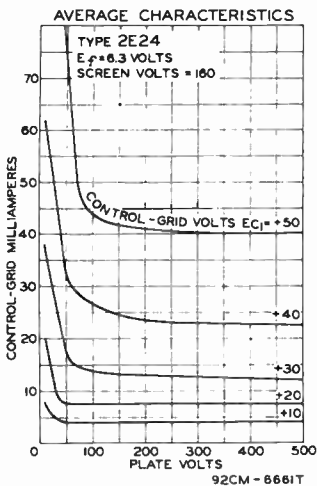
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2E24



2E24

V-H-F BEAM POWER AMPLIFIER



APRIL 1, 1946

RCA VICTOR DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
 World Radio History

92CM-6661T
 92CM-6662T



2E26

2E26

V-H-F BEAM POWER AMPLIFIER

PLATE-MODULATED RF POWER AMPLIFIER - Class C Telephony

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

Maximum Ratings, Absolute Values:

	CCS [▲]	ICAS ^{▲▲}	
DC PLATE VOLTAGE	400 max.	500 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE	200 max.	200 max.	volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE	-175 max.	-175 max.	volts
DC PLATE CURRENT	60 max.	60 max.	ma.
DC GRID-No.1 CURRENT	3.5 max.	3.5 max.	ma.
PLATE INPUT	20 max.	27 max.	watts
GRID-No.2 INPUT	1.7 max.	2.3 max.	watts
PLATE DISSIPATION	6.7 max.	9 max.	watts
PEAK HEATER-CATHODE VOLTAGE: Heater negative with respect to cathode	100 max.	100 max.	volts
Heater positive with respect to cathode	100 max.	100 max.	volts

Typical Operation:

DC Plate Voltage	400	500	volts
DC Grid-No.2 Voltage #	160	180	volts
DC Grid-No.1 Voltage [Ⓞ]	32000	35500	ohms
	20000	20000	ohms
Peak RF Grid-No.1 Voltage	60	60	volts
DC Plate Current	50	54	ma.
DC Grid-No.2 Current	7.5	9	ma.
DC Grid-No.1 Current (Approx.)	2.5	2.5	ma.
Driving Power (Approx.)	0.15	0.15	watt
Power Output (Approx.)	13.5	18	watts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance ^{ⓄⓄ}	30000 max.	30000 max.	ohms
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RF POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

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

Maximum Ratings, Absolute Values:

	CCS [▲]	ICAS ^{▲▲}	
DC PLATE VOLTAGE	500 max.	600 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE	200 max.	200 max.	volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE	-175 max.	-175 max.	volts
DC PLATE CURRENT	75 max.	85 max.	ma.
DC GRID-No.1 CURRENT	3.5 max.	3.5 max.	ma.
PLATE INPUT	30 max.	40 max.	watts

* Obtained preferably from a separate source modulated with the plate supply, or from the modulated plate-supply through a series resistor of the value shown.

▲, ▲▲, ♦, #, Ⓞ, ⓄⓄ: See next page.

← Indicates a change.

FEB. 1, 1949

TUBE DEPARTMENT

DATA 2

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History

2E26



2E26

V-H-F BEAM POWER AMPLIFIER

GRID-No.2 INPUT	2.5 max.	2.5 max.	watts
PLATE DISSIPATION	10 max.	13.5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	100 max.	100 max.	volts
Heater positive with respect to cathode	100 max.	100 max.	volts

Typical CCS Operation:

	Up to 125 Mc		At 160 Mc	
DC Plate Voltage	400	500	300	volts
DC Grid-No.2 Voltage [Ⓟ]	130	135	170	volts
DC Grid-No.1 Voltage [Ⓡ]	19000	28500	21500	ohms
	-30	-40	-75	volts
Peak RF Grid-No.1 Voltage	10000	13500	30000	ohms
	41	50	85	volts
DC Plate Current	75	60	75	ma.
DC Grid-No.2 Current	11	11	6	ma.
DC Grid-No.1 Current (Approx.)	3	3	2.5	ma.
Driving Power (Approx.)	0.12	0.15	1.5	watts
Power Output (Approx.)	20	20	1	watts

Typical ICAS Operation:

	Up to 125 Mc		At 160 Mc	
DC Plate Voltage	600		350	volts
DC Grid-No.2 Voltage [Ⓟ]	135		200	volts
	41500		21500	ohms
DC Grid-No.1 Voltage [Ⓡ]	-45		-90	volts
	15000		30000	ohms
Peak RF Grid-No.1 Voltage	57		105	volts
DC Plate Current	66		85	ma.
DC Grid-No.2 Current	10		7	ma.
DC Grid-No.1 Current (Approx.)	3		2	ma.
Driving Power (Approx.)	0.17		2	watts
Power Output (Approx.)	27		15.5	watts

Maximum Circuit Values, for both CCS & ICAS Operation:

Grid-No.1-Circuit Resistance ^{ⓈⓈ}	30000 max.	ohms
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▲ Continuous Commercial Service.

▲▲ Intermittent Commercial and Amateur Service.

◆ Driver stage should be capable of supplying the No.1 grids of the class AB₂ stage with the specified driving power at low distortion. The effective resistance per No.1 grid circuit of the class AB₂ stage should be kept below 500 ohms and the effective impedance at the highest desired response frequency should not exceed 700 ohms.

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

Ⓢ Obtained from grid resistor of value shown, or by partial self-bias methods.

ⓈⓈ □ Ⓡ : See next page.

> indicates a change.



2E26

2E26

V-H-F BEAM POWER AMPLIFIER

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.8 amp.

Transconductance
for plate current of 20 ma. 3500 μ mhos

Grid-Screen Mu-Factor. . . 6.5

Direct Interelectrode Capacitances:^o

Grid to plate. 0.20 max. μ pf

Input 13 μ pf

Output 7 μ pf

^o With no external shielding, and with base sleeve connected to ground.

Mechanical:

Mounting Position Any

Overall Length 3-1/2" \pm 5/32"

Seated Length 2-15/16" \pm 5/32"

Maximum Diameter 1-5/16"

Bulb T-9

Cap. Small

Base Small-Wafer Octal 8-Pin with Sleeve No. R-6159

Basing Designation for BOTTOM VIEW 7CK

Pin 1 - Cathode, Pin 5 - Grid No. 1

Grid No. 3, Pin 6 - Cathode,

Int. Shield Grid No. 3,

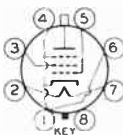
Pin 2 - Heater Pin 7 - Heater

Pin 3 - Grid No. 2 Pin 8 - Base Sleeve

Pin 4 - Cathode, Cap - Plate

Grid No. 3, Int. Shield

Int. Shield



AF POWER AMPLIFIER & MODULATOR - Class A₁

Maximum Ratings, Absolute Values:

CCS[▲]

DC PLATE VOLTAGE 300 max. volts

DC GRID-NO. 2 (SCREEN) VOLTAGE 200 max. volts

PLATE DISSIPATION 10 max. watts

GRID-NO. 2 INPUT 2.5 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. . . 100 max. volts

Heater positive with respect to cathode. . . 100 max. volts

Typical Operation:

DC Plate Voltage 250 . . volts

DC Grid-No. 2 Voltage 160 . . volts

DC Grid-No. 1 (Control-Grid) Voltage. . . . -14 . . volts ←

Peak AF Grid-No. 1 Voltage. 14 . . volts ←

Zero-Signal DC Plate Current 35 . . ma.

▲ See next page.

← Indicates a change.

JUNE 20, 1947

TUBE DEPARTMENT

DATA 1

RADIO CORPORATION OF AMERICA HARRISON, NEW JERSEY

World Radio Vision

2E26



2E26

V-H-F BEAM POWER AMPLIFIER

Max.—Signal DC Plate Current	42	ma.
Zero—Signal DC Grid—No.2 Current	7	ma.
Max.—Signal DC Grid—No.2 Current	10	ma.
Load Resistance	5500	ohms
Total Harmonic Distortion	10	%
Power Output	5.3	watts

Maximum Circuit Values:

Grid—No.1—Circuit Resistance 4000 max. ohms

PUSH—PULL AF POWER AMPLIFIER & MODULATOR — Class AB₂*

Maximum Ratings, Absolute Values:

	6CS [▲]	1CAS ^{▲▲}	
DC PLATE VOLTAGE	400 max.	500 max.	volts
DC GRID—No.2 (SCREEN) VOLTAGE	200 max.	200 max.	volts
→ MAX.—SIG. DC PLATE CURRENT**	75 max.	75 max.	ma.
→ MAX.—SIG. PLATE INPUT**	30 max.	37.5 max.	watts
→ MAX.—SIG. GRID—No.2 INPUT**	2.5 max.	2.5 max.	watts
→ PLATE DISSIPATION**	10 max.	12.5 max.	watts
PEAK HEATER—CATHODE VOLTAGE:			
Heater negative with respect to cathode	100 max.	100 max.	volts
Heater positive with respect to cathode	100 max.	100 max.	volts

Typical Operation:

Values are for 2 tubes

DC Plate Voltage	400	500	volts
DC Grid—No.2 Voltage††	12 [†]	12 [†]	volts
DC Grid—No.1 Voltage (Fixed Bias)	-15	-1 [†]	volts
Peak AF Grid—No.1—to—Grid—No.1 Voltage	60	60	volts
Zero—Signal DC Plate Current	20	22	ma.
Max.—Signal DC Plate Current	150	150	ma.
Max.—Signal DC Grid—No.2 Current	32	32	ma.
Effective Load Resistance, (Plate—to—Plate)	5200	3000	ohms
Max.—Signal Driving Power, (Approx.)♦	0.36	0.36	watt
Max.—Signal Power Output (Approx.)	42	54	watts

* Subscript 2 indicates that grid current flows during a no part of input cycle.

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

† Preferred, obtained from a separate source, or from the plate-to-plate supply with a voltage divider.

†† In applications requiring the use of screen voltages above 145 volts, provision should be made for the adjustment of grid—No.1 bias for each tube separately. The necessity for this adjustment at the lower screen voltages depends on the distortion requirements and on whether the plate dissipation rating is exceeded at zero-signal plate current.

▲, ▲▲, ♦: See next page.

→ indicates a change.



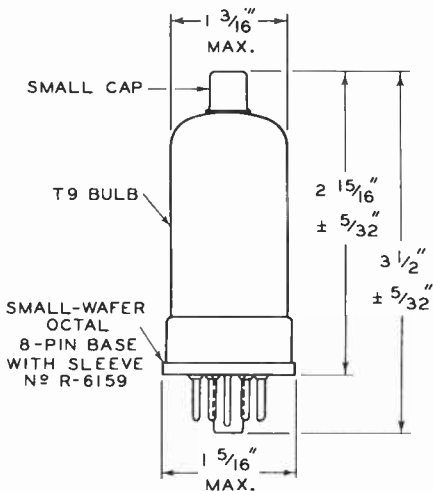
2E26

2E26

V-H-F BEAM POWER AMPLIFIER

- ⊕ Any additional bias required must be supplied by a cathode resistor or a fixed supply.
- Obtained preferably from a separate source, or from the plate-voltage supply with a voltage divider, or through a series resistor of the value shown. The grid-No.2 voltage must not exceed 600 volts under key-up conditions.
- ♣ Obtained from fixed supply or by grid-No.1 resistor of value shown.

Data on operating frequencies for the 2E26 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.



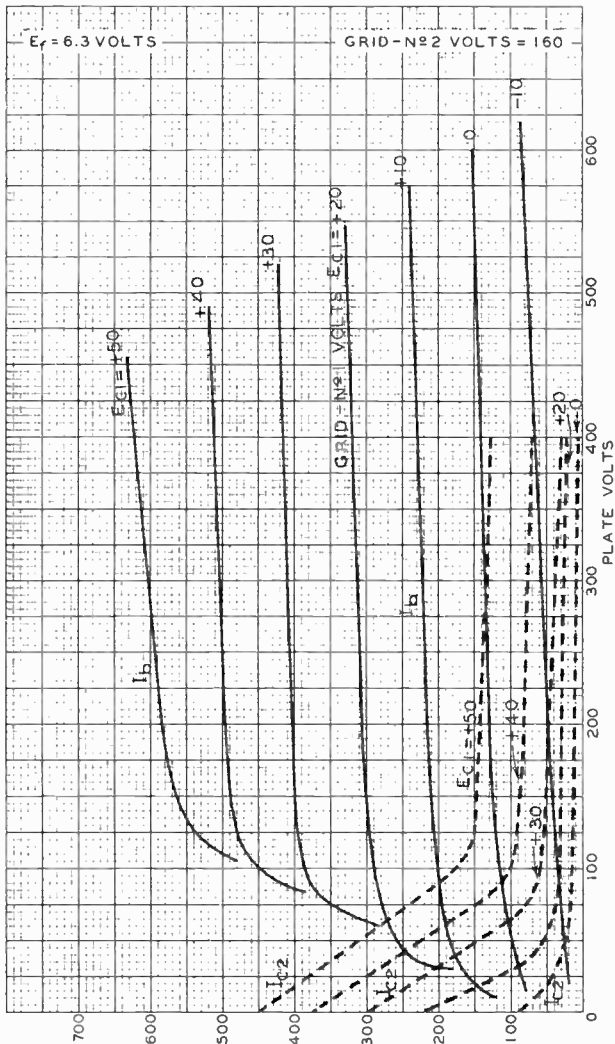
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2E26



2E26

AVERAGE PLATE CHARACTERISTICS



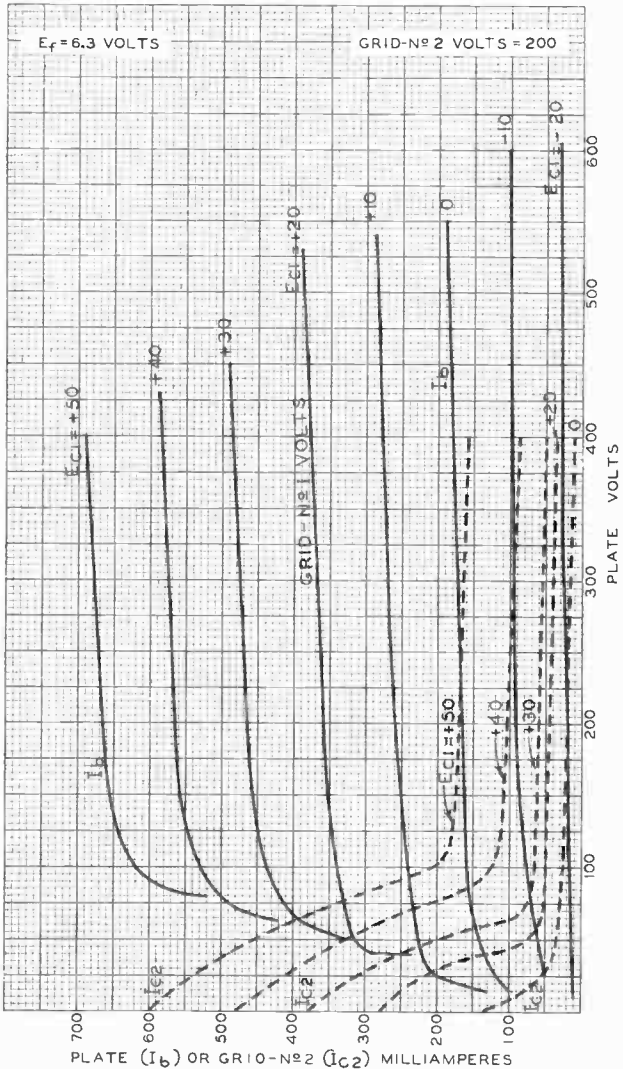
NOV. 15, 1945 TUBE DEPARTMENT 92CM-6631



2E26

2E26

AVERAGE PLATE CHARACTERISTICS



NOV. 15, 1945

RCA VICTOR DIVISION

92CM-6630

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WorldRadioHistory

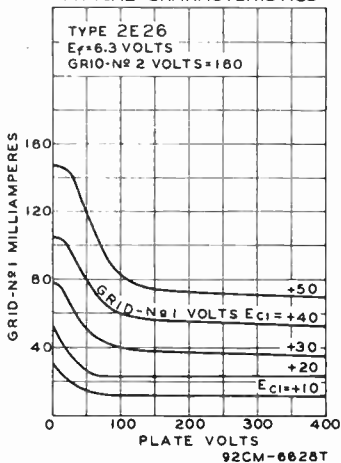
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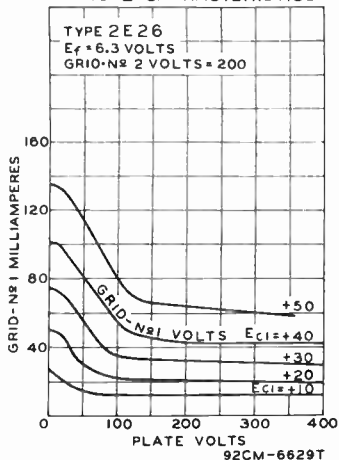
2E26

V-H-F BEAM POWER AMPLIFIER

TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS





3B25

3B25

HALF-WAVE GAS RECTIFIER

HOT-CATHODE TYPE

Filament*	Coated	
Voltage	2.5	a-c volts
Current	5.0	amp.
Tube Voltage Drop (Approx.)	10	volts
Overall Length		5-7/8" ± 7/16"
Seated Height		5-1/4" ± 7/16"
Maximum Diameter		2-1/16"
Bulb		T-16
Cap		Medium
Base		Medium 4-Pin, Bayonet
Pin 1 - Filament		Pin 4 - Filament,
Pin 2 - No Connection		Cathode Shield
Pin 3 - No Connection		Cap - Anode
RCA Socket		Stock No. 9919
Mounting Position		Any



BOTTOM VIEW (4P)

*Maximum Ratings Are Absolute Values***MAXIMUM RATINGS**

Peak Inverse Anode Voltage*	4500 max. volts	←
Peak Anode Current	2 max. amp.	
Average Anode Current**	0.5 max. amp.	
Surge Anode Current for max. of 0.1 sec.	20 max. amp.	
Ambient Temperature Range	-75 to +90	°C

* Filament voltage must be applied at least 30 seconds before application of anode voltage.

• These ratings apply to the 3B25 when it is operated from a power supply having a frequency up to 500 cycles per second. If a contemplated application involves high supply frequencies, please write, stating the proposed operating frequency, to the attention of the Commercial Engineering Department, Harrison, N.J., as to the required reduction in ratings.

** For an averaging period of 30 seconds.

If the plate return of each tube is not connected to the center-tap of the filament-supply winding, the return should be made to that side of the filament to which the cathode shield is connected.

For rectifier circuits, refer to Type 872-A/872.

The table below classifies suitable rectifier circuits for the 3B25 and shows their safe maximum input and maximum output operating conditions for a peak inverse voltage of 4000 volts. The values are based on a sine-wave input and the use of a suitable choke preceding any condenser in the filter circuit.

CIRCUIT	MAXIMUM A-C INPUT VOLTS _{rms}	APPROX. D-C OUTPUT VOLTS TO FILTER	MAX. D-C OUTPUT CURRENT amperes
SINGLE-PHASE FULL-WAVE (2 tubes) Fig. 1	1400 per tube	1270	1.0
SINGLE-PHASE FULL-WAVE (4 tubes) Fig. 2	2800 total	2540	1.0
THREE-PHASE HALF-WAVE Fig. 3	1630 per leg	1910	1.5
THREE-PHASE DOUBLE-Y PARALLEL Fig. 4	1630 per leg	1910	3.0
THREE-PHASE FULL-WAVE Fig. 5	1630 per leg	3820	1.5

† For maximum peak inverse voltage of 4000 volts. ← Indicates a change.

JULY 1, 1945

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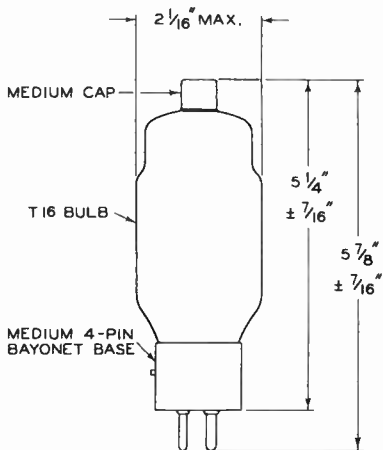
TENTATIVE DATA

3B25



3B25

HALF-WAVE GAS RECTIFIER



92CM-6555R1

JULY 1, 1945

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RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA



3C33

3C33

TWIN-TRIODE POWER AMPLIFIER

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage.	12.6 ± 10%	. . . . . ac or dc volts
Current.	1.125	. . . . . amp

Amplification Factor,
(per unit). 11

Direct Interelectrode Capacitances (per unit):

Grid to Plate.	5	. . . . . μmf
Grid to Cathode.	8.5	. . . . . μmf
Plate to Cathode	4	. . . . . μmf

Mechanical:

Mounting Position. Vertical, base up or down;
Horizontal, with plane of
each plate vertical

Overall Length 3-1/2" ± 3/16"

Seated Length. 3-1/16" ± 3/16"

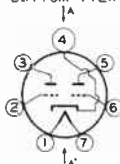
Maximum Diameter See Outline Drawing

Bulb T-16

Base Medium Molded-Flare Septar 7-Pin

Basing Designation for BOTTOM VIEW 7CG

- Pin 1 - Heater
- Pin 2 - Grid of Unit No. 2
- Pin 3 - Plate of Unit No. 2
- Pin 4 - Cathode



- Pin 5 - Plate of Unit No. 1
- Pin 6 - Grid of Unit No. 1
- Pin 7 - Heater

PLANE OF ELECTRODES OF EACH UNIT IS PARALLEL TO PLANE THROUGH AXIS OF TUBE AND AA'

CONTROL AMPLIFIER SERVICE

Values are for each unit unless otherwise specified

Maximum Ratings, Absolute Values:

PEAK PLATE VOLTAGE	± 2000 max.	volts
DC GRID VOLTAGE.	-200 max.	volts
PEAK CATHODE CURRENT	500 max.	ma.
AVERAGE PLATE CURRENT.	120 max.	ma.
AVERAGE GRID CURRENT	7.5 max.	ma.
PLATE DISSIPATION.	15 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	100 max.	volts
Heater positive with respect to cathode	100 max.	volts

Typical Operation in Accompanying Circuit:

Plate-Supply Voltage (ERMS)*	600	volts
DC Grid-Supply Voltage (E _{cc})	-160	volts

* See next page.

3C33



3C33

TWIN-TRIODE POWER AMPLIFIER

Peak Grid Voltage (See Note 1)	160	..	volts
Grid-Circuit Resistance (R_g)	0.5	..	megohm
Load Resistance (R_L)	3000	..	ohms
Peak Output Current [⊖]	210	..	ma.

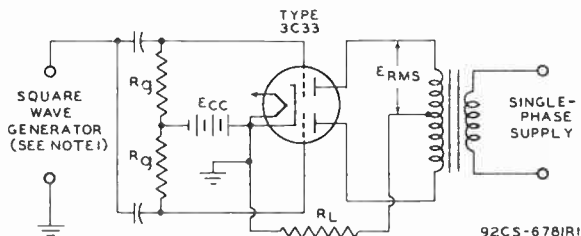
Maximum Circuit Values:

Grid-Circuit Resistance:

→ When grid potential is always negative.	0.5	..	megohm
When grid potential swings positive . .	0.03	..	megohm

* Plates are operated 180° out of phase.

⊖ Output-current wave-shape is essentially that of a half-sine wave.



NOTE 1: VOLTAGE DELIVERED BY SQUARE WAVE GENERATOR TO THE PARALLELED GRIDS SHOULD BE IN PHASE WITH THE PLATE VOLTAGE ON ONE OF THE UNITS TO PERMIT CONDUCTION THROUGH THAT UNIT WITH RESULTANT CURRENT FLOW THROUGH R_L , AND SHOULD BE REVERSIBLE IN PHASE TO PERMIT CONDUCTION THROUGH THE OTHER UNIT WITH RESULTANT CURRENT FLOW THROUGH R_L .

Devices and arrangements shown or described herein may use patents of RCA or others. Information contained herein is furnished without responsibility by RCA for its use and without prejudice to RCA's patent rights.

→ indicate a change.

MAR. 15, 1946

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History

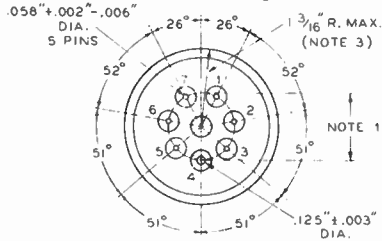
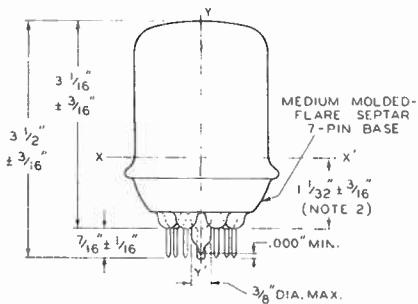
CE-6781R1



3C33

TWIN-TRIODE POWER AMPLIFIER

3C33



92CM-6780

BOTTOM VIEW

THE REFERENCE AXIS YY' IS DEFINED AS THE AXIS OF THE BASE-PIN GAUGE DESCRIBED IN NOTE 1.

NOTE 1: ANGULAR VARIATIONS BETWEEN PINS AND VARIATION IN PIN-CIRCULAR DIAMETER ARE HELD TO TOLERANCES SUCH THAT PINS WILL ENTER TO A DISTANCE OF 0.375" A FLAT-PLATE BASE-PIN GAUGE HAVING SIX HOLES 0.0800" ± 0.0005" AND ONE HOLE 0.1450" ± 0.0005" ARRANGED ON A 1.0000" ± 0.0005" CIRCLE AT SPECIFIED ANGLES WITH TOLERANCE OF ±5' FOR EACH ANGLE. GAUGE IS ALSO PROVIDED WITH A HOLE 0.500" ± 0.010" CONCENTRIC WITH PIN CIRCLE WHOSE CENTER IS ON THE AXIS YY'.

NOTE 2: A FLAT-PLATE FLANGE GAUGE WITH HOLE 2.063" - 0.000" + 0.003" IS LOWERED OVER TUBE SEATED IN BASE-PIN GAUGE SO THAT THE HOLE AXIS IS COINCIDENT WITH AXIS YY' WITHIN 0.150", AND SO THAT THE BOTTOM SURFACE OF THE FLANGE GAUGE IS PARALLEL TO THE TOP SURFACE OF THE BASE-PIN GAUGE, AND UNTIL THE FLANGE GAUGE RESTS ON THE TUBE-FLANGE SEAL AT POSITION XX'. THE PERPENDICULAR DISTANCE BETWEEN THE TWO GAUGES WILL BE AS SHOWN.

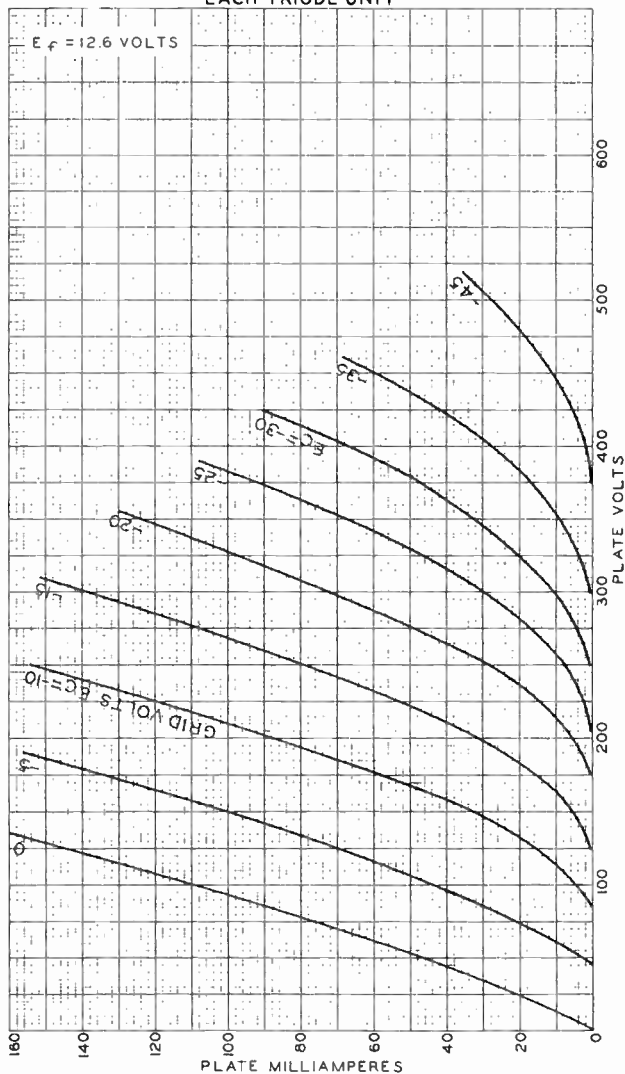
NOTE 3: MINIMUM DIAMETER OF TUBE-SEAL FLANGE WILL BE SUCH THAT A RING GAUGE HAVING AN INSIDE DIAMETER OF 2.125" - 0.000" + 0.003" AND THICKNESS OF 0.125" ± 0.010" WILL NOT PASS THE FLANGE WHEN TRIED AT ANY ANGLE.

3C33



3C33

AVERAGE PLATE CHARACTERISTICS EACH TRIODE UNIT



JULY 5, 1946

TUBE DEPARTMENT

92CM-6779

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History



3E22

3E22

PUSH-PULL H-F BEAM POWER AMPLIFIER

Unless otherwise specified, values are for both units

GENERAL DATA

Electrical:

Heaters, for Unipotential Cathodes:

Arrangement	Series	Parallel	
Voltage	12.6 ± 10%	6.3 ± 10%	ac or dc volts
Current	0.8	1.6	amp

Transconductance, for plate current of 25 ma 4000 μmhos

Grid-Screen Mu-Factor 6.5

Direct Interelectrode Capacitances (Each Unit):*

Grid No.1 to Plate	0.22 max.	μf
Input	14	μf
Output	8.5	μf

Mechanical:

Mounting Position Vertical, base up or down; or Horizontal, plane of plates vertical

Overall Length 4-3/8" ± 3/16"

Seated Length 3-13/16" ± 3/16"

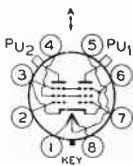
Maximum Diameter 2-3/8"

Bulb T-16

Caps (Two) Small

Base Large Wafer Octal 8-Pin Micanol with Sleeve No. T253
Basing Designation for BOTTOM VIEW 8BY

- | | |
|---|---|
| Pin 1 - Heater | Pin 6 - Cathode, Grid No.3, Internal Shield |
| Pin 2 - Grid No.1 of Unit No.2 | Pin 7 - Grid No.1 of Unit No.1 |
| Pin 3 - Cathode, Grid No.3, Internal Shield | Pin 8 - Heater |
| Pin 4 - Grid No.2 | PU ₁ - Plate of Unit No.1 |
| Pin 5 - Heater Center-Tap | PU ₂ - Plate of Unit No.2 |



PLANE OF ELECTRODES OF EACH UNIT IS PARALLEL TO PLANE THROUGH AXIS OF TUBE AND AA'

PLATE-MODULATED PUSH-PULL RF POWER AMP. — Class C Telephony

Carrier conditions per tube for use with a maximum average modulation factor of 0.25

Maximum Ratings, Absolute Values:

	IMS
DC PLATE VOLTAGE	560 max. volts
DC GRID-No.2 (SCREEN) VOLTAGE	225 max. volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE	-175 max. volts
DC PLATE CURRENT	160 max. ma.
DC GRID-No.1 CURRENT	11 max. ma.
PLATE INPUT	90 max. watts

*. See next page.

← indicates a change.

3E22



3E22

PUSH-PULL H-F BEAM POWER AMPLIFIER

GRID-No. 2 INPUT	6 max. watts
PLATE DISSIPATION	30 max. watts
PEAK HEATER-CATHODE VOLTAGE:	
Heater negative with respect to cathode	100 max. volts
Heater positive with respect to cathode	100 max. volts
Typical Operation:	
DC Plate Voltage	560 . . volts
DC Grid-No. 2 Voltage [□]	200 . . volts
DC Grid-No. 1 Voltage ^Δ	18000 . . ohms
	-50 . . volts
	7700 . . ohms
Peak RF Grid-No. 1-to-Grid-No. 1 Voltage.	130 . . volts
DC Plate Current	160 . . ma.
DC Grid-No. 2 Current	20 . . ma.
DC Grid-No. 1 Current (Approx.)	6.5 . . ma.
Driving Power (Approx.)	0.4 . . watt
Power Output (Approx.)	67 . . watts

Maximum Circuit Values:

Grid-No. 1-Circuit Resistance[§] 30000 max. ohms

PUSH-PULL RF POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation #

Maximum Ratings, Absolute Values:

	<u>INS[°]</u>
DC PLATE VOLTAGE	600 max. volts
DC GRID-No. 2 (SCREEN) VOLTAGE	225 max. volts
DC GRID-No. 1 (CONTROL GRID) VOLTAGE	-175 max. volts
DC PLATE CURRENT	175 max. ma.
DC GRID-No. 1 CURRENT	11 max. ma.
PLATE INPUT	100 max. watts
GRID-No. 2 INPUT	6 max. watts
PLATE DISSIPATION	35 max. watts
PEAK HEATER-CATHODE VOLTAGE:	
Heater negative with respect to cathode	100 max. volts
Heater positive with respect to cathode	100 max. volts

Typical Operation:

DC Plate Voltage	600 . . volts
DC Grid-No. 2 Voltage [⊙]	200 . . volts
	20000 . . ohms
DC Grid-No. 1 Voltage [‡]	-55 . . volts
	7850 . . ohms
	295 . . ohms
Peak RF Grid-No. 1-to-Grid-No. 1 Voltage.	140 . . volts
DC Plate Current	160 . . ma.
DC Grid-No. 2 Current	20 . . ma.
DC Grid-No. 1 Current (Approx.)	7 . . ma.

* , ⊙ , Δ , # , † , § : See next page.

DEC. 20, 1946

TUBE DEPARTMENT

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



3E22

3E22

PUSH-PULL H-F BEAM POWER AMPLIFIER

Driving Power (Approx.)	0.45 . . watt
Power Output (Approx.)	72 . . watts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance§. 30000 max. ohms

- Intermittent Mobile Service (IMS) is defined to include those applications, such as aircraft, where the transmitter design factors of minimum size, light weight, and exceedingly high power output for short intervals are the primary requirements, even though the average life expectancy of tubes used in such transmitters is reduced to about 100 hours.

Tube ratings for IMS service are established on the basis that the transmissions have maximum "on" periods of 15 seconds followed by "off" periods of at least 60 seconds, except that it is permissible to make equipment tests with maximum "on" periods of 5 minutes followed by off periods of at least 5 minutes provided the total "on" time of such periods does not exceed 10 hours during the life of any tube.

Although the use of tubes under IMS ratings involves great reduction in tube life, such use can be justified as economical practice in applications where high power is intermittently desired from small tubes.

- * with no external shielding.
- Obtained preferably from a separate source modulated with the plate supply or from the modulated plate-supply through a series resistor of the value shown.
- △ Obtained from 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 carrier conditions.
- ⊕ Obtained preferably from a separate source, or from the plate-voltage supply with a voltage divider, or through a series resistor of the value shown. The grid-No.2 voltage must not exceed 600 volts under key-up conditions.
- ‡ Obtained from fixed-supply, by grid resistor of value shown, or cathode resistor of value shown, respectively.
- § Any additional bias required must be supplied by a cathode resistor or a fixed supply.

OUTLINE DIMENSIONS AND CURVES for the 3E22 are the same as those for the 815.



3E29

3E29

TWIN-UNIT BEAM POWER AMPLIFIER

Similar to type 829-B, but intended particularly for pulse modulator service. Unless otherwise specified, values are for both units

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Heater Arrangement	Series	Parallel	
Voltage	12.6*	6.3*	ac or dc volts
Current	1.125	2.25	. . . . . amp

Transconductance, per Unit (Approx.):
for plate current of 60 ma. 8500 μ mhos

Grid-Screen Mu-Factor,
per unit. 9

Direct Interelectrode Capacitances (Each Unit):

Grid No.1 to Plate ⁰	0.12 max.	. . . . .	μ mf
Input	14.5	. . . . .	μ mf
Output	7.0	. . . . .	μ mf

Grid-No.2 to Cathode Capacitance,
(Including internal grid-No.2
by-pass capacitor). 65 μ mf

* Should not deviate more than +10% or -5% from value shown.
0 With external shield.

Mechanical:

Mounting Position Vertical, base up or down
Horizontal, plane of each plate vertical

Overall Length 4-1/8" \pm 3/16"

Seated Length 3-11/16" \pm 3/16"

Maximum Diameter See Outline Drawing

Bulb T-16

Bulb Terminals (Two) See Outline Drawing

Base Medium Molded-Flare Septar 7-Pin

Basing Designation for BOTTOM VIEW 7BP

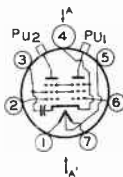
Pin 1 - Heater Pin 6 - Grid No.1 of Unit No.1

Pin 2 - Grid No.1 of Unit No.2 Pin 7 - Heater

Pin 3 - Grid No.2 of Both Units

Pin 4 - Cathode, Grid No.3 Both Units P_{U1} - Plate Terminal of Unit No.1

Pin 5 - Heater Center-Tap P_{U2} - Plate Terminal of Unit No.2



PLANE OF ELECTRODES OF EACH UNIT IS PARALLEL TO PLANE THROUGH AXIS OF TUBE AND AA'

3E29



3E29

TWIN-UNIT BEAM POWER AMPLIFIER

MODULATOR - Rectangular-Wave Modulation

Maximum CCS[®] Ratings, Absolute Values:

(Values for both units in parallel)

For Pulse Length of	7 max.	1.2 max.	μ sec
DC PLATE-SUPPLY VOLTAGE [▲]	5000 max.	5000 max.	volts
INSTANTANEOUS PLATE VOLTAGE.	5750 max.	5750 max.	volts
DC GRID-No.2 (SCREEN) SUPPLY VOLT. [▲]	850 max.	850 max.	volts
DC GRID-No.1 (CONTROL GRID) SUPPLY VOLTAGE	-200 max.	-200 max.	volts
INSTANTANEOUS GRID-No.1 VOLT.	-600 max.	-600 max.	volts
PEAK POSITIVE GRID-No.1 VOLT.	250 max.	250 max.	volts
PEAK PLATE CURRENT	1.5 max.	10 max.	amp
PEAK GRID-No.2 CURRENT	0.5 max.	0.5 max.	amp
PEAK GRID-No.1 CURRENT	0.6 max.	4 max.	amp
PLATE INPUT.	85 max.	60 max.	watts
GRID-No.2 INPUT.	3 max.	3 max.	watts
GRID-No.1 INPUT.	1 max.	1 max.	watt
PLATE DISSIPATION.	15 max.	15 max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	100 max.	100 max.	volts
Heater positive with respect to cathode	100 max.	100 max.	volts

Typical Operation with Rectangular-Wave Shapes:

(In accompanying test circuit)

With duty factor# of	2×10^{-3}	10^{-3}	
DC Plate-Supply Voltage.	2000	5000	volts
DC Grid-No.2 Supply Volt.	650	850	volts
DC Grid-No.1 Supply Volt.	-175	-200	volts
Peak Positive Grid-No.1 Volt.	50	150	volts
Peak Plate Current	5	10	amp
DC Plate Current	10	10	ma.
DC Grid-No.2 Current	1.1	1.7	ma.
DC Grid-No.1 Current	1.0	1.5	ma.
Load Resistance.	300	300	ohms

• Continuous Commercial Service.

▲ For tube protection, it is essential that the dc resistance of the plate supply and of the screen supply be sufficiently large to limit the short-circuit current to 0.5 ampere in either circuit.

Duty factor = pulse length multiplied by repetition rate.

OUTLINE DIMENSIONS for the 3E29 are the same as those shown for Type 829-B

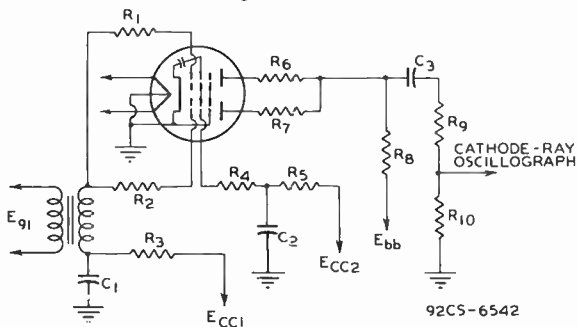


3E29

3E29

TWIN-UNIT BEAM POWER AMPLIFIER

TEST CIRCUIT



- | | |
|-------------------------------|------------------------------|
| R1 R2: 20 Ohms, non-inductive | C1: 0.1 μ f, 600 V., DC |
| R3: 1500 Ohms | C2: 0.1 μ f, 1000 V., DC |
| R4: 25 Ohms, non-inductive | C3: 0.1 μ f, 5000 V., DC |
| R5: 1500 Ohms | |
| R6 R7: 10 Ohms, non-inductive | Ecc1: Grid-Supply Voltage |
| R8: 10000 Ohms | Ecc2: Screen-Supply Voltage |
| R9: 400 Ohms | Ebb: Plate-Supply Voltage |
| R10: 10 Ohms | Eg1: Signal Voltage |

The license extended to the purchaser of tubes appears in the License Notice accompanying them. Information contained herein is furnished without assuming any obligations.

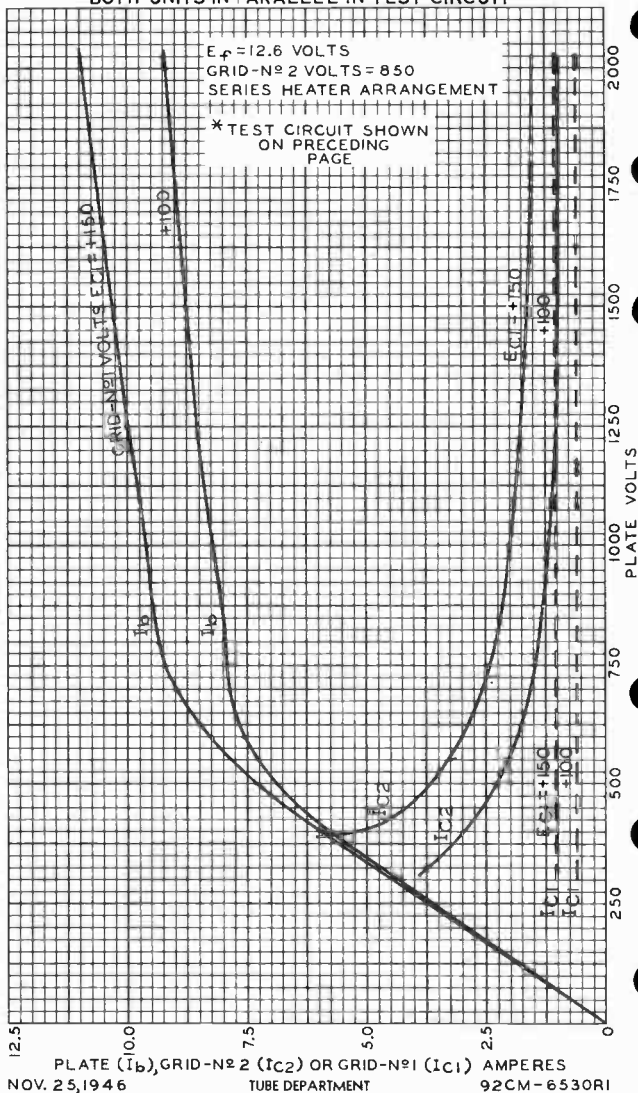
3E29



3E29

AVERAGE CHARACTERISTICS

BOTH UNITS IN PARALLEL IN TEST CIRCUIT*



NOV. 25, 1946

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6530RI



4-125A

4-125A/4D21 VHF POWER TETRODE

GENERAL DATA

Electrical:

Filament, Thoriated Tungsten:

Voltage 5.0 ac or dc volts

Current 6.5 amp

Transconductance (Approx.)
for plate current of 50 ma. 2450 μ hos

Mu-Factor, Grid No.2 to
Grid No.1 . . . 6.2

Direct Interelectrode Capacitances:

Grid No.1 to Plate^o . . . 0.05 μ f

Input 10.8 μ f

Output 3.1 μ f

^o with no external shielding and with base shell connected to ground.

Mechanical:

Mounting Position Vertical, base up or down

Overall Length 5-7/16" \pm 1/4"

Seated Length 4-11/16" \pm 1/4"

Maximum Diameter 2-7/8"

Cap. Skirted Small

Base^a Special Metal-Shell Giant 5-Pin

Basing Designation for EOTTOM VIEW 5BK

Pin 1 - Filament

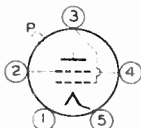
Pin 2 - Grid No.2

Pin 3 - Grid No.1

Pin 4 - Grid No.2

Pin 5 - Filament

Cap - Plate



Forced-Air Cooling:

Through Base Toward Bulb 2 cfm

The specified air flow from a small fan or centrifugal blower should be applied simultaneously with filament power.

Of Bulb and Plate Seal:

Continuous Service: At frequencies below 30 Mc, relatively slow movement of air past the tube is sufficient to prevent exceeding the specified plate-seal temperature. At frequencies above 30 Mc, special attention should be given to adequate cooling of bulb and plate seal. A small fan directed toward the upper part of the bulb will generally provide sufficient cooling.

Intermittent Service: ("On" period does not exceed 5 minutes and is followed by "off" period of the same or greater duration): At frequencies below

^a Metal base shell should be grounded by means of suitable spring fingers.

← indicates a change

4-125A



4-125A / 4D21

VHF POWER TETRODE

30 Mc, forced-air cooling of the bulb and plate seal is not usually required if the ambient temperature is below 30°C, provided a heat-radiating plate connector is used and free circulation of air is provided.

Plate-Seal Temperature (Measured on top of plate cap):

Continuous Service	170 max.	°C
Intermittent Service (As defined above).	220 max.	°C

AF POWER AMPLIFIER & MODULATOR - Class AB₁#

Maximum Ratings, Absolute Values:

DC PLATE VOLTAGE	3000 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE.	600 max.	volts
MAX.-SIGNAL DC PLATE CURRENT*.	225 max.	ma
PLATE DISSIPATION*	125 max.	watts
GRID-No.2 DISSIPATION*	20 max.	watts

Typical Operation:

Values are for 2 tubes

DC Plate Voltage	1500	2000	2500	volts
DC Grid-No.2 Voltage [▲]	600	600	600	volts
DC Grid-No.1 (Control-Grid) Voltage [Ⓢ]	-90	-94	-96	volts
Peak AF Grid-No.1 to Grid-No.1 Voltage.	180	188	192	volts
Zero-Signal DC Plate Current	60	50	50	ma
Max.-Signal DC Plate Current	222	240	232	ma
Zero-Signal DC Grid-No.2 Current	-1.0	-0.5	-0.3	ma
Max.-Signal DC Grid-No.2 Current	17	6.4	8.5	ma
Effective Load Resistance (Plate-to-plate).	10200	13400	20300	ohms
Driving Power.	0	0	0	watts
Total Harmonic Distortion.	5	2	2.6	%
Max.-Signal Power Output (Approx.).	158	230	330	watts

* Suscript 1 indicates that grid-No.1 current does not flow during any part of the input cycle.

Ⓢ Total effective grid-No.1-circuit resistance should not exceed 0.25 megohm.

AF POWER AMPLIFIER & MODULATOR - Class AB₂*

Maximum Ratings, Absolute Values:

DC PLATE VOLTAGE	3000 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE.	400 max.	volts
MAX.-SIGNAL DC PLATE CURRENT*.	225 max.	ma
PLATE DISSIPATION*	125 max.	watts
GRID-No.2 DISSIPATION*	20 max.	watts

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

▲*: See next page.

→ Indicates a change.



4-125A

4-125A/4D2I

VHF POWER TETRODE

Typical Operation:

Values are for 2 tubes

DC Plate Voltage	1500	2000	2500	volts
DC Grid-No.2 Voltage [▲]	350	350	350	volts
DC Grid-No.1 (Control- Grid) Voltage ^{▲▲}	-41	-45	-43	volts
Peak AF Grid-No.1 to Grid-No.1 Voltage.	282	210	178	volts
Zero-Signal DC Plate Current . . .	87	72	93	ma
Max.-Signal DC Plate Current . . .	400	300	260	ma
Zero-Signal DC Grid-No.2 Current .	0	0	0	ma
Max.-Signal DC Grid-No.2 Current .	34	5	6	ma
Effective Load Resistance (Plate-to-plate).	7200	13600	22200	ohms
Max.-Signal Av. Driving Power (Approx.) [□]	2.5	1.4	1	watts
Max.-Signal Peak Driving Power (Approx.) [□]	5.2	3.1	2.4	watts
Total Harmonic Distortion.	2.5	1	2.2	%
Max.-Signal Power Output (Approx.)	350	350	400	watts

▲ obtained from source having good regulation.

▲ Subscript 2 indicates that grid current flows during some part of input cycle.

▲▲ obtained from fixed supply having dc resistance not exceeding 250 ohms.

□ Driver stage should be capable of supplying the specified driving power at low distortion to the No.1 grids of the AB₂ stage. The effective resistance per grid-no.1 circuit of the AB₂ stage should be held at a low value.PLATE-MODULATED RF POWER AMPLIFIER - Class C Telephony

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

Maximum Ratings, Absolute Values:

DC PLATE VOLTAGE	2500 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE.	400 max.	volts
DC GRID-No.1 (CONTROL- GRID) VOLTAGE.	-500 max.	volts
DC PLATE CURRENT	200 max.	ma
PLATE DISSIPATION.	85 max.	watts
GRID-No.2 DISSIPATION.	20 max.	watts
GRID-No.1 DISSIPATION.	5 max.	watts

Typical Operation:

DC Plate Voltage	2000	2500	volts
DC Grid-No.2 Voltage [†]	350	350	volts

† obtained preferably from a separate source modulated with the plate supply, or from the modulated plate supply through a series resistor.

<- indicates a change.

4-125A



4-125A/4D21 VHF POWER TETRODE

DC Grid-No.1 Voltage††	-220	-210	volts
Peak RF Grid-No.1 Voltage (Approx.) . . .	375	360	volts
DC Plate Current	150	152	ma
DC Grid-No.2 Current	33	30	ma
DC Grid-No.1 Current*	10	9	ma
Driving Power (Approx.)*	3.8	3.3	watts
Power Output (Approx.)	225	300	watts

†† For high-level modulated service, the use of partial grid-resistor bias is recommended. Bypass capacitors across the grid resistor should have a reactance at the highest modulation frequency equal to at least twice the grid-resistor value.

RF POWER AMPLIFIER & OSCILLATOR—

Class C Telegraphy or FM Telephony

Key-down conditions per tube without amplitude modulation

Maximum Ratings, Absolute Values:

DC PLATE VOLTAGE	3000 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE	400 max.	volts
DC GRID-No.1 (CONTROL- GRID) VOLTAGE	-500 max.	volts
DC PLATE CURRENT	225 max.	ma
PLATE DISSIPATION	125 max.	watts
GRID-No.2 DISSIPATION	20 max.	watts
GRID-No.1 DISSIPATION	5 max.	watts

Typical Operation:

DC Plate Voltage	2000	2500	3000	volts
DC Grid-No.2 Voltage	350	350	350	volts
DC Grid-No.1 Voltage	-100	-150	-150	volts
Peak RF Grid-No.1 Voltage (Approx.)	230	320	280	volts
DC Plate Current	200	200	167	ma
DC Grid-No.2 Current	50	40	30	ma
DC Grid-No.1 Current*	12	12	9	ma
Driving Power (Approx.)*	2.8	3.8	2.5	watts
Power Output (Approx.)	275	375	375	watts

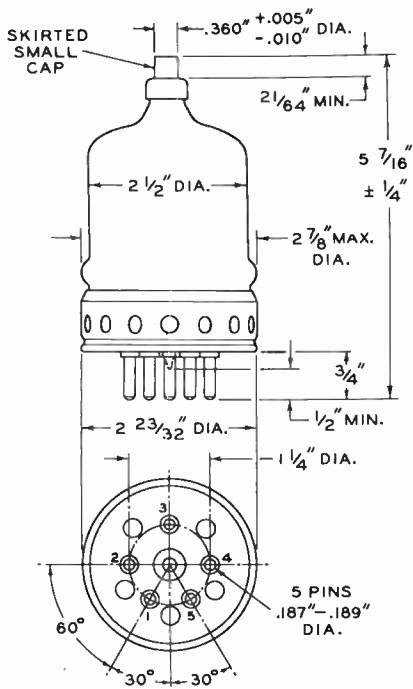
* For effect of load resistance on grid current and driving power, refer to TUBE RATINGS—Grid Current and Driving Power in the General Section.

Data on operating frequencies for the 4-125A/4D21 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.



4-125A

4-125A/4D21 VHF POWER TETRODE



92CS-6764

NOV. 15, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CF-6764

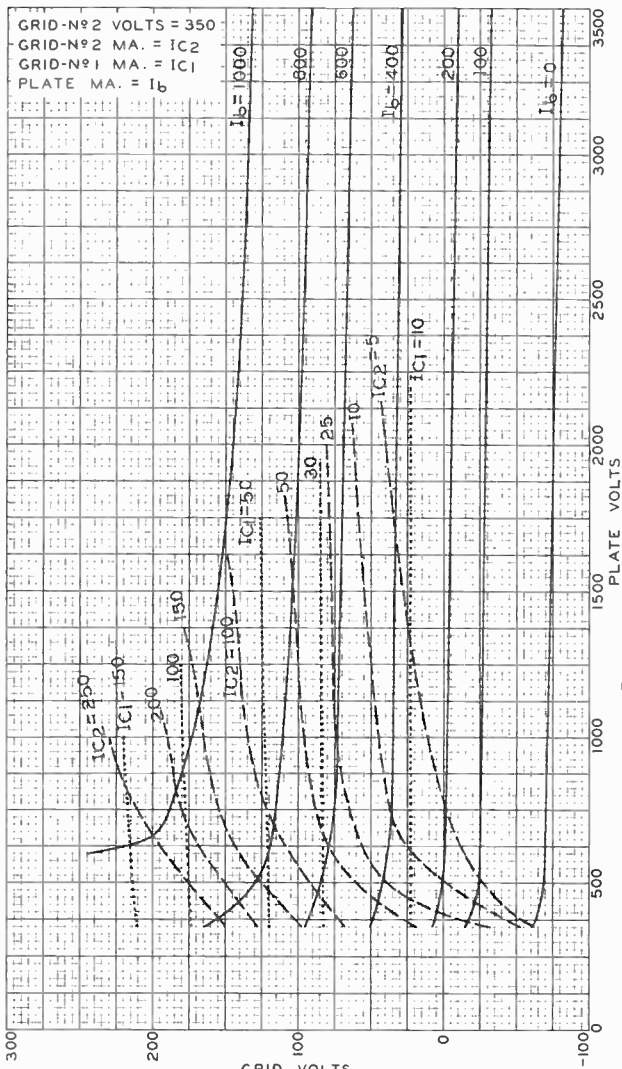
World Radio History

4-125A



4-125A/4D21

AVERAGE CONSTANT-CURRENT CHARACTERISTICS



MAY 21, 1946

TUBE DEPARTMENT

92CM-6767

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History



4-250A

4-250A/5D22

POWER TETRODE

GENERAL DATA

Electrical:

Filament, Thoriated Tungsten:

Voltage 5.0 ac or dc volts
Current 14.5 amp

Transconductance (Approx.)
for plate current of 100 ma. 4000 μ mhos

Mu-Factor, Grid No.2 to
Grid No.1 5.1

Direct Interelectrode Capacitances:

Grid No.1 to Plate^o 0.12 μ f
Input 12.7 μ f
Output 4.5 μ f

^o with no external shield and with base shell connected to ground.

Mechanical:

Mounting Position Vertical, base up or down
Overall Length 6-1/8" \pm 1/4"
Seated Length 5-3/8" \pm 1/4"
Maximum Diameter 3-9/16"
Cap. Skirted Small
Base^o Special Metal-Shell Giant 5-Pin
Basing Designation for BOTTOM VIEW 5BK

Pin 1 - Filament

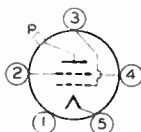
Pin 2 - Grid No.2

Pin 3 - Grid No.1

Pin 4 - Grid No.2

Pin 5 - Filament

Cap - Plate



Forced-Air Cooling:

Through Base Toward Bulb 5 cfm

The specified air flow from a small fan or centrifugal blower should be applied simultaneously with filament power.

Of Bulb and Plate Seal:

Continuous Service: At frequencies below 30 Mc, relatively slow movement of air past the tube is sufficient to prevent exceeding the specified plate-seal temperature. At frequencies above 30 Mc, special attention should be given to adequate cooling of bulb and plate seal. A small fan directed toward the upper part of the bulb will generally provide sufficient cooling.

Intermittent Service ("On" period does not exceed 5 minutes and is followed by "off" period of the same or greater duration): At frequencies below 30 Mc,

^o Metal base shell should be grounded by means of suitable spring fingers.

4-250A



4-250A/5D22 POWER TETRODE

forced-air cooling of the bulb and plate seal is not usually required if the ambient temperature is below 30°C, provided a heat-radiating plate connector is used and free circulation of air is provided.

Plate-Seal Temperature (Measured on top of plate cap):

Continuous Service	170 max.	°C
Intermittent Service (As defined above).	220 max.	°C

AF POWER AMPLIFIER & MODULATOR - Class AB₁[#]

Maximum Ratings, Absolute Values:

DC PLATE VOLTAGE	4000 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE.	600 max.	volts
MAX.-SIGNAL DC PLATE CURRENT*	350 max.	ma
PLATE DISSIPATION*	250 max.	watts
GRID-No.2 DISSIPATION*	35 max.	watts

Typical Operation:

Values are for 2 tubes

DC Plate Voltage	1500	2000	2500	3000	volts
DC Grid-No.2 Voltage [▲]	500	500	500	500	volts
DC Grid-No.1 (Control- Grid) Voltage [▲]	-64	-88	-90	-93	volts
Peak AF Grid-No.1 to Grid-No.1 Voltage.	128	176	180	186	volts
Zero-Signal DC Plate Cur..	120	110	120	120	ma
Max.-Signal DC Plate Cur..	400	405	430	417	ma
Zero-Signal DC Grid-No.2 Current.	-0.4	-0.3	-0.3	-0.2	ma
Max.-Signal DC Grid-No.2 Current.	23	22	13	10.5	ma
Effective Load Resistance (Plate-to-plate).	6250	9170	11400	15000	ohms
Max.-Signal Driving Power.	0	0	0	0	watts
Total Harmonic Distortion.	4	2.5	2	2.5	%
Max.-Signal Power Output (Approx.).	310	460	625	750	watts

[#] Subscript 1 indicates that grid current does not flow during any part of input cycle.

[▲] Total effective grid-No.1-circuit resistance should not exceed 0.25 megohm.

AF POWER AMPLIFIER & MODULATOR - Class AB₂^{*}

Maximum Ratings, Absolute Values:

DC PLATE VOLTAGE	4000 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE.	600 max.	volts
MAX.-SIGNAL DC PLATE CURRENT*	350 max.	ma
PLATE DISSIPATION*	250 max.	watts
GRID-No.2 DISSIPATION*	35 max.	watts

^{*}, [▲], [▲]: See next page.

NOV. 15, 1948

TUBE DEPARTMENT

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History



4-250A

4-250A/5D22

POWER TETRODE

Typical Operation:

Values are for 2 tubes

DC Plate Voltage	1500	2000	2500	3000	volts
DC Grid-No.2 Voltage [▲]	300	300	300	300	volts
DC Grid-No.1 (Control- Grid) Voltage ^{▲▲}	-48	-48	-51	-53	volts
Peak AF Grid-No.1 to Grid-No.1 Voltage	192	198	200	198	volts
Zero-Signal DC Plate Cur. Max.-Signal DC Plate Cur.	100	120	120	125	ma
Zero-Signal DC Grid-No.2 Current	485	510	500	473	ma
Max.-Signal DC Grid-No.2 Current	0	0	0	0	ma
Effective Load Resistance (Plate-to-plate)	34	26	23	33	ma
Max.-Signal Av. Driving Power (Approx.) [■]	5400	8000	10900	16000	ohms
Max.-Signal Peak Driving Power (Approx.) [■]	2.1	2.3	2.2	1.9	watts
Total Harmonic Distortion. Max.-Signal Power Output (Approx.)	4.7	5.5	4.8	4.6	watts
	3	4	4	4.5	%
	428	650	840	1040	watts

- * Averaged over any audio-frequency cycle of sine-wave form.
- ▲ Obtained from a source having good regulation.
- ▲▲ Subscript 2 indicates that grid current flows during some part of input cycle.
- ▲▲ Obtained from fixed supply having dc resistance not exceeding 250 ohms.
- Driver stage should be capable of supplying the specified driving power at low distortion to the No.1 grids of the class AB₂ stage. The effective resistance per grid-No.1 circuit of the class AB₂ stage should be held at a low value.

PLATE-MODULATED RF POWER AMPLIFIER - Class C Telephony

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

Maximum Ratings, Absolute Values:

DC PLATE VOLTAGE	3200 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE	600 max.	volts
DC GRID-No.1 (CONTROL- GRID) VOLTAGE	-500 max.	volts
DC PLATE CURRENT	275 max.	ma
PLATE DISSIPATION	165 max.	watts
GRID-No.2 DISSIPATION	35 max.	watts
GRID-No.1 DISSIPATION	5 max.	watts

Typical Operation:

DC Plate Voltage	2500	3000	..	volts
DC Grid-No.2 Voltage †	400	400	..	volts
DC Grid-No.1 Voltage ††	-200	-310	..	volts

†, ††: See next page.

NOV. 15, 1948

TUBE DEPARTMENT

TENTATIVE DATA 2

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

4-250A



4-250A/5D22 POWER TETRODE

Peak RF Grid-No.1 Volt. (Approx.)	255	365	. . . . .	volts
DC Plate Current	200	225	. . . . .	ma
DC Grid-No.2 Current	30	30	. . . . .	ma
DC Grid-No.1 Current (Approx.)*	9	9	. . . . .	ma
Driving Power (Approx.)*	2.2	3.2	. . . . .	watts
Power Output (Approx.)	375	510	. . . . .	watts

† obtained preferably from a separate source modulated with the plate supply, or from the modulated plate supply through a series resistor.

†† For high-level modulated service, the use of partial grid-resistor bias is recommended. Bypass capacitors across the grid resistor should have a reactance at the highest modulation frequency equal to at least twice the grid-resistor value.

RF POWER AMPLIFIER & OSCILLATOR—

Class C Telegraphy or FM Telephony

Key-down conditions per tube without amplitude modulation

Maximum Ratings, Absolute Values:

DC PLATE VOLTAGE	4000 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE	600 max.	volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE	-500 max.	volts
DC PLATE CURRENT	350 max.	ma
PLATE DISSIPATION	250 max.	watts
GRID-No.2 DISSIPATION	35 max.	watts
GRID-No.1 DISSIPATION	5 max.	watts

Typical Operation:

DC Plate Voltage	2500	3000	4000	. . . . .	volts
DC Grid-No.2 Voltage	500	500	500	. . . . .	volts
DC Grid-No.1 Voltage	-150	-180	-225	. . . . .	volts
Peak RF Grid-No.1 Voltage (Approx.)	220	265	303	. . . . .	volts
DC Plate Current	300	345	312	. . . . .	ma
DC Grid-No.2 Current	60	60	45	. . . . .	ma
DC Grid-No.1 Current (Approx.)*	9	10	9	. . . . .	ma
Driving Power (Approx.)*	1.7	2.6	2.46	. . . . .	watts
Power Output (Approx.)	575	800	1000	. . . . .	watts

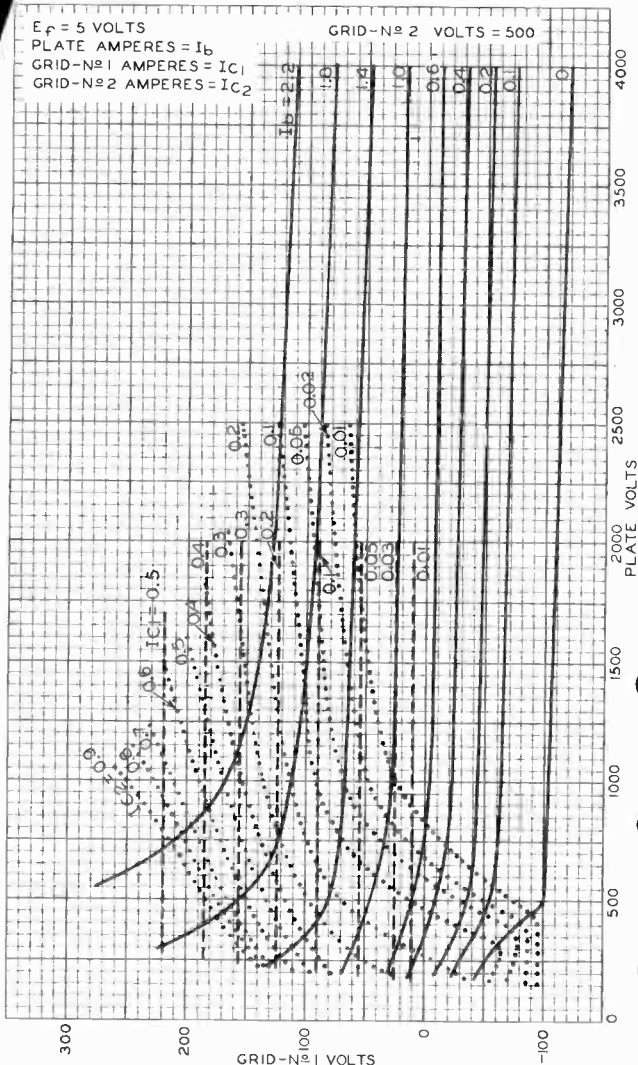
* For effect of load resistance on grid current and driving power, refer to TUBE RATINGS—Grid Current and Driving Power in the General Section.

Data on operating frequencies for the 4-250A/5D22 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.



4-250A / 5D22

AVERAGE CONSTANT-CURRENT CHARACTERISTICS



SEPT. 23, 1948

GRID-N^o1 VOLTS

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7078



4E27/8001

4E27

TRANSMITTING BEAM POWER AMPLIFIER

GENERAL DATA

Electrical:

Filament, Thoriated Tungsten:

Voltage 5.0 a-c or d-c volts
 Current 7.5 amp.

Transconductance for plate

current of 75 ma. 2800 μ hos

Direct Interelectrode Capacitances:

Grid to Plate 0.06 μ mf
 Input 12 μ mf
 Output 6.5 μ mf

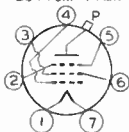
Physical:

Overall Length 5-15/16" \pm 1/4"
 Seated Length 5-5/16" \pm 1/4"
 Maximum Diameter 2-11/16"
 Mounting Position Vertical Only: Base up or down
 Bulb T-21

Base Medium Metal Shell Giant 7-Pin, Bayonet 7BM

Basing Designation for BOTTOM VIEW

Pin 1 - Filament
 Pin 2 - Grid No.3
 Pin 3 - Grid No.2
 Pin 4 - Grid No.1
 Pin 5 - Grid No.3
 Pin 6 - Grid No.2



Pin 7 - Filament
 Bulb } - Plate
 Ter- }
 minal }
 Base } - { Internal
 Shell } { Shield

A-F POWER AMPLIFIER & MODULATOR - Class A1

Maximum Ratings, Absolute Values:

D-C PLATE VOLTAGE 2000 max. volts
 D-C SCREEN VOLTAGE (Grid No.2) 750 max. volts
 D-C PLATE CURRENT 150 max. ma.
 D-C SCREEN CURRENT 40 max. ma.
 PLATE INPUT 75 max. watts
 SCREEN INPUT 30 max. watts
 PLATE DISSIPATION 75 max. watts

Typical Operation:

D-C Plate Voltage	500	1000	. . . . . volts
D-C Suppressor Voltage (Grid No.3) \diamond	60	0	. . . . . volts
D-C Screen Voltage	500	300	. . . . . volts
D-C Grid Voltage (Grid No.1) * #	-47	-27	. . . . . volts
Peak A-F Grid Voltage	47	27	. . . . . volts
D-C Plate Current	150	75	. . . . . ma.
D-C Screen Current	10	5	. . . . . ma.
Load Resistance	2600	12000	. . . . . ohms
Power Output	30	34	approx. watts

*; #: See next page. \diamond : See end of tabulation. \leftarrow Indicates a change.

MAR. 30, 1945

RCA VICTOR DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA 1

4E27



4E27

TRANSMITTING BEAM POWER AMPLIFIER

(continued from preceding page)

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

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

Maximum Ratings, Absolute Values:

D-C PLATE VOLTAGE	2000 max.	. volts
D-C SUPPRESSOR VOLTAGE (Grid No. 3)	-500 max.	. volts
D-C SCREEN VOLTAGE (Grid No. 2)	600 max.	. volts
D-C GRID VOLTAGE (Grid No. 1)	-500 max.	. volts
D-C PLATE CURRENT	100 max.	. ma.
D-C GRID CURRENT	25 max.	. ma.
PLATE INPUT	110 max.	. watts
SCREEN INPUT	27 max.	. watts
PLATE DISSIPATION	75 max.	. watts

Typical Operation:

D-C Plate Voltage	1500	2000	. . . volts
D-C Suppressor Voltage ^o	-210	-300	. . . volts
D-C Screen Voltage**	500	600	. . . volts
	22000	30000	. . . ohms
D-C Grid Voltage	-130	-130	. . . volts
Peak A-F Suppressor Voltage	210	300	. . . volts
Peak R-F Grid Voltage	195	150	. . . volts
D-C Plate Current	70	55	. . . ma.
D-C Screen Current	44	45	. . . ma.
D-C Grid Current	8	3	approx. ma.
Driving Power ^o	1.4	0.4	approx. watts
Power Output	33	35	approx. watts

* For a-c filament supply.

Obtained from fixed supply or by cathode resistor. The d-c resistance in the grid circuit should not exceed 50000 ohms with fixed bias, or 500000 ohms with cathode bias.

**obtained preferably from plate-voltage supply through series resistor of value shown.

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

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

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

Maximum Ratings, Absolute Values:

D-C PLATE VOLTAGE	3000 max.	. volts
D-C SCREEN VOLTAGE (Grid No. 2)	600 max.	. volts
D-C GRID VOLTAGE (Grid No. 1)	-500 max.	. volts
D-C PLATE CURRENT	135 max.	. ma.
D-C SCREEN CURRENT	30 max.	. ma.
D-C GRID CURRENT	25 max.	. ma.
PLATE INPUT	250 max.	. watts
SCREEN INPUT	18 max.	. watts
PLATE DISSIPATION	65 max.	. watts

← Indicates a change.

MAR. 30, 1945

RCA VICTOR DIVISION

DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History



4X500A

4X500A POWER TETRODE

FORCED-AIR COOLED

GENERAL DATA

Electrical:

Filament, Thoriated Tungsten:

Voltage 5.0 ac or dc volts

Current 13.5 amp

Transconductance, for
plate current of 200 ma. 5200 μ hos

Mu-Factor, Grid No.2 to
Grid No.1 6.2

Direct Interelectrode Capacitances:

Grid No.1 to Plate 0.05 μ f

Input 12.8 μ f

Output 5.6 μ f

Mechanical:

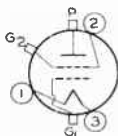
Terminal Connections:

Pin 1 - Filament

Pin 2 - Grid No.2

Pin 3 - Filament

P - Plate Radiator
Terminal



G₁ - Grid No.1 (Center
Terminal on Fila-
ment End of Tube)

G₂ - Grid No.2 (Ring)

Mounting Position Vertical, radiator up or down

Overall Length 4-1/2" \pm 1/4"

Maximum Diameter 2-5/8"

Radiator Integral part of tube

Forced-Air Cooling:

Of Radiator 22 min. cfm

The specified air flow at a pressure drop of 1.4 inches of water should be passed through the radiator and should be started before the application of filament voltage.

Of Glass at Filament End of Tube 1000 min. fpm

The glass at the filament end of the tube must be cooled by passing air at the specified velocity across the filament end of tube. This air can be provided by a small fan or blower and should be supplied before applying the filament voltage.

RF POWER AMPLIFIER & OSCILLATOR -

Class C Telegraphy or FM Telephony

Key-down conditions per tube without amplitude modulation

Maximum Ratings, Absolute Values:

For operating frequencies up to 120 Mc.

DC PLATE VOLTAGE 4000 max. volts

DC GRID-No.2 (SCREEN) VOLTAGE 500 max. volts

DC GRID-No.1 (CONTROL-GRID) VOLTAGE -500 max. volts

DC PLATE CURRENT 350 max. ma

PLATE DISSIPATION 500 max. watts

GRID-No.2 DISSIPATION 30 max. watts

GRID-No.1 DISSIPATION 10 max. watts

4X500A



4X500A POWER TETRODE

Typical Operation in Push-Pull Amplifier at 110 Mc:

Values are for 2 tubes

DC Plate Voltage	2500	3000	. .	volts
DC Grid-No.2 Voltage	500	400	. .	volts
DC Grid-No.1 Voltage	-250	-200	. .	volts
DC Plate Current	690	600	. .	ma
DC Grid-No.2 Current	100	95	. .	ma
DC Grid-No.1 Current	40	45	. .	ma
Driving Power (Approx.)	20	18	. .	watts
Power Output (Approx.)	1300	1320	. .	watts

Typical Operation in Push-Pull Amplifier at 110 Mc:

Values are for 4 tubes

DC Plate Voltage	4000	. .	volts
DC Grid-No.2 Voltage	500	. .	volts
DC Grid-No.1 Voltage	-250	. .	volts
DC Plate Current	1250	. .	ma
DC Grid-No.2 Current	160	. .	ma
DC Grid-No.1 Current	70	. .	ma
Driving Power (Approx.)	50	. .	watts
Power Output (Approx.)	3900	. .	watts

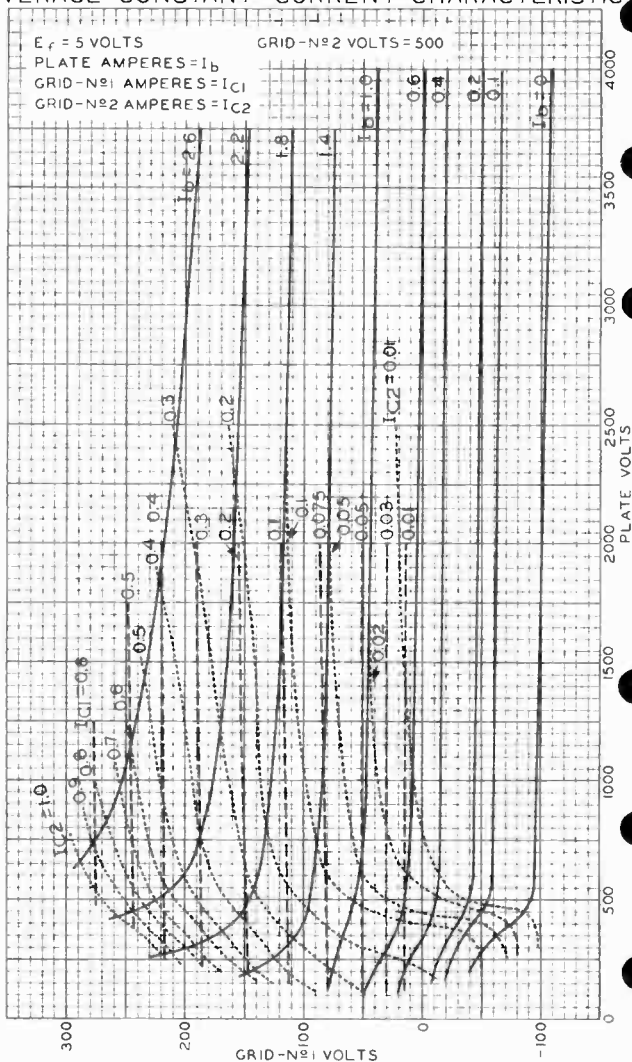
Data on operating frequencies for the 4X500A are given
on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

4X500A



4X500A

AVERAGE CONSTANT-CURRENT CHARACTERISTICS



MAY 20, 1948

TUBE DEPARTMENT

92CM-6984

RADIO CORPORATION OF AMERICA HARRISON, NEW JERSEY



4E27

4E27

TRANSMITTING BEAM POWER AMPLIFIER

(continued from preceding page)

Typical Operation:

D-C Plate Voltage.	1500	2500	. . . volts
D-C Suppressor Voltage(Grid No.3) ^c	60	60	. . . volts
D-C Screen Voltage ##	{ 600	600	. . . volts
	{ 82000	240000	. . . ohms
	{ -200	-200	. . . volts
D-C Grid Voltage***	{ 145000	330000	. . . ohms
	{ 110000	250000	. . . ohms
	{ 310	450	. . . ohms
Peak R-F Grid Voltage.	255	220	. . . volts
D-C Plate Current.	135	100	. . . ma.
D-C Screen Current	11	8	. . . ma.
D-C Grid Current	1.4	0.6	approx. ma.
Driving Power.	0.4	0.1	approx. watt
Power Output	145	200	approx. watts

obtained preferably from modulated fixed supply. May also be obtained from modulated plate-voltage supply through series resistor of values shown.

***obtained from fixed supply, grid resistor (145000,330000), or combination of cathode resistor (310,450) and grid resistor (110000,250000).

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation[▲]

Maximum Ratings, Absolute Values:

D-C PLATE VOLTAGE.	4000 max.	. . . volts
D-C SCREEN VOLTAGE (Grid No.2)	750 max.	. . . volts
D-C GRID VOLTAGE (Grid No.1)	-500 max.	. . . volts
D-C PLATE CURRENT.	150 max.	. . . ma.
D-C SCREEN CURRENT	30 max.	. . . ma.
D-C GRID CURRENT	25 max.	. . . ma.
PLATE INPUT.	300 max.	. . . watts
SCREEN INPUT	25 max.	. . . watts
PLATE DISSIPATION.	75 max.	. . . watts

Typical Operation:

D-C Plate Voltage.	2000	3000	. . . volts
D-C Suppressor Voltage (Grid No.3) ^d	0	60	. . . volts
D-C Screen Voltage ^Δ	{ 750	750	. . . volts
	{ 70000	280000	. . . ohms
	{ -200	-200	. . . volts
D-C Grid Voltage [□]	{ 300000	—	. . . ohms
	{ 1200	1800	. . . ohms
Peak R-F Grid Voltage.	225	170	. . . volts
D-C Plate Current.	150	100	. . . ma.
D-C Screen Current	18	8	. . . ma.
D-C Grid Current	0.7	0	approx. ma.
Driving Power.	0.2	0	approx. watt
Power Output	230	235	approx. watts

◇; ▲; Δ; □: See next page.

← Indicates a change.

MAR. 30. 1945

RCA VICTOR DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA 2

4E27



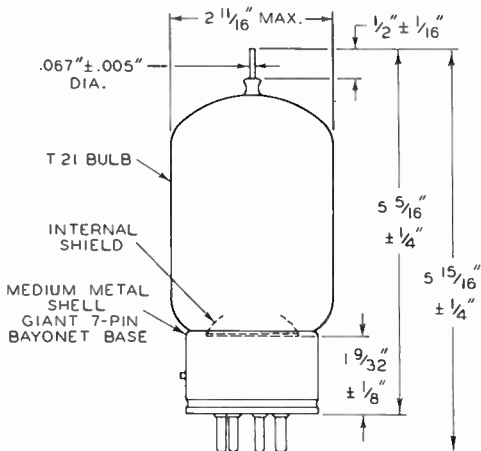
4E27

TRANSMITTING BEAM POWER AMPLIFIER

(continued from preceding page)

- ◇ Suppressor should be connected to the mid-point of filament circuit operated on a.c., or to the negative end of the filament operated on d.c.
- ▲ Modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115% of the carrier conditions.
- △ Obtained from a separate source, or from the plate-voltage supply with a voltage divider, or through a series resistor of the value shown. Series screen resistor should be used only where 4E27 is employed as buffer amplifier and is not keyed. The screen voltage must not exceed 1500 volts under key-up conditions.
- Obtained from fixed supply, grid resistor (300000), or cathode resistor (1200, 1800). When a preceding stage is keyed, sufficient fixed bias must be used to maintain the plate current at a low value when the key is up.

Data on operating frequencies for the 4E27/8001 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.



92CM-6260R1

← Indicates a change.

MAR. 30, 1945

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RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA 2

World Radio History



4E27

4E27

AVERAGE PLATE CHARACTERISTICS

$E_f = 5.0$ VOLTS D.C. SCREEN VOLTS = 500
SUPPRESSOR VOLTS = 0

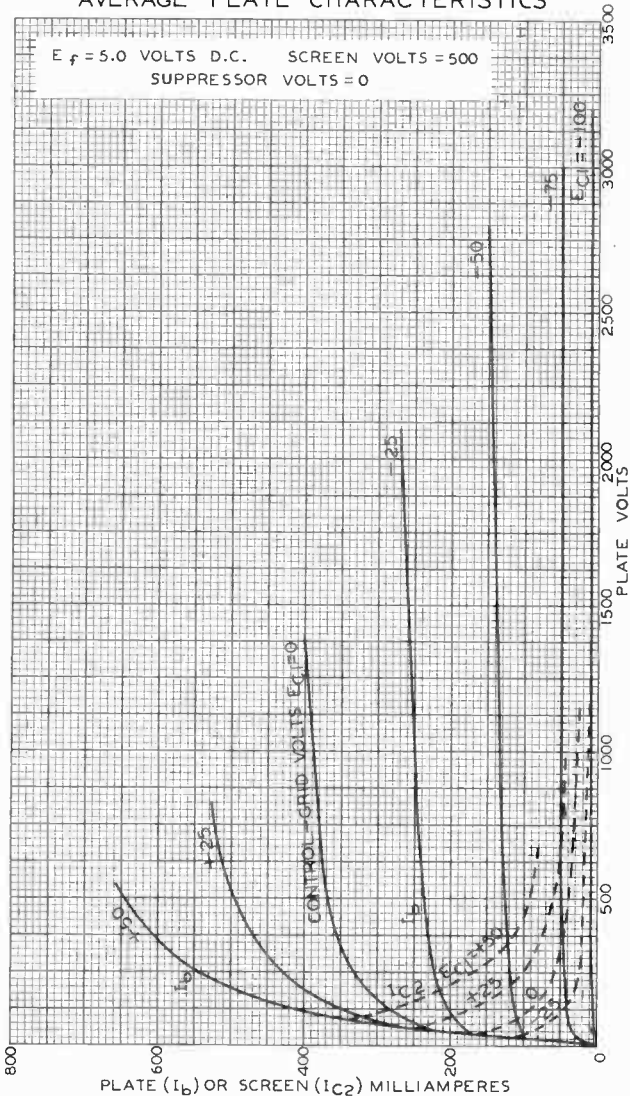


PLATE (I_b) OR SCREEN (I_{c2}) MILLIAMPERES

MAR. 26, 1945

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6261RI

4E27



4E27

AVERAGE PLATE CHARACTERISTICS

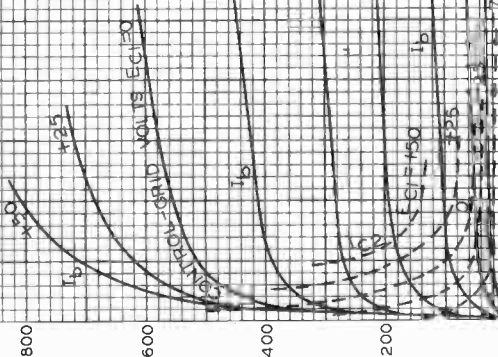
$E_f = 5.0$ VOLTS D.C. SCREEN VOLTS = 750
SUPPRESSOR VOLTS = 60

SCREEN (I_{C2}) MILLIAMPERES

300 200 100 0

3500
3000
2500
2000
1500
1000
500
0

PLATE VOLTS



JAN. 22, 1945

PLATE (I_b) MILLIAMPERES
RCA VICTOR DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6259RI

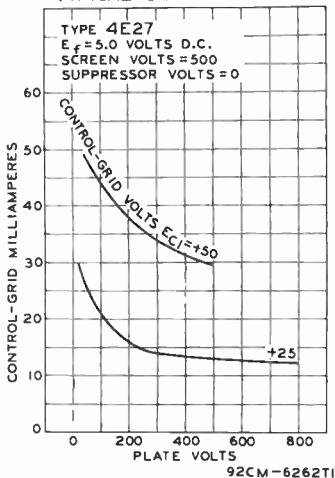


4E27

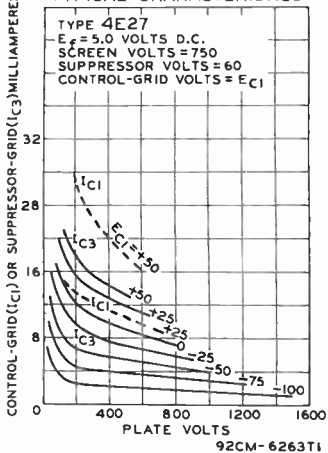
4E27

TRANSMITTING BEAM POWER AMPLIFIER

TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS



MAR. 30, 1945

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6262T1
92CM-6263T1





6C24

6C24

POWER TRIODE

FORCED-AIR COOLED

GENERAL DATA

Electrical:

Filament, Thoriated Tungsten:

Voltage 11.0 ac or dc volts

Current 12.1 amp.

Starting Current: The filament current must never exceed, even momentarily, 24 amperes.

Resistance (Cold) 0.13 ohms

Amplification Factor 30

Direct Interelectrode Capacitances (Approx.):

Grid to Plate 4.4 $\mu\mu\text{f}$

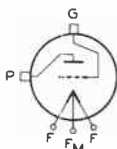
Grid to Filament 4.6 $\mu\mu\text{f}$

Plate to Filament 3.2 $\mu\mu\text{f}$

Mechanical:

Terminal Connections:

F - Filament
F_M - Filament
Mid-Tap



G - Grid Cap Terminal
P - Plate Terminal
(Air-Cooled Radiator)

Mounting Position . . . Vertical only, Filament or Grid End Up

Overall Length 8-17/32" \pm 3/16"

Diameter 1-7/8" \pm 1/32"

Radiator Integral Part of Tube

Cooling: see following pages for cooling methods. Under any circumstances, sufficient air must be supplied to the radiator so that the rated maximum radiator temperature of 180°C measured at the base of an end fin, on the side away from the air supply, will not be exceeded. In addition, a small amount of air is required on the filament and grid seals to limit their temperature at the hottest part to 150°C. Air flow must start before the application of any voltages.

AF POWER AMPLIFIER & MODULATOR - Class B

	Cooling Method I [▲]	Cooling Method II [▲]	
Maximum CCS* Ratings, Absolute Values:			
DC PLATE VOLTAGE	3000 max.	3000 max.	volts
MAX.-SIG. DC PLATE CURRENT**	400 max.	400 max.	ma.
MAX.-SIG. PLATE INPUT** . . .	1200 max.	1200 max.	watts
PLATE DISSIPATION**	400 max.	600 max.	watts

Typical Operation:

Unless otherwise specified, values are for two tubes

DC Plate Voltage 3000 volts

DC Grid Voltage^{‡00} -95 volts

Peak AF Grid-to-Grid Voltage 470 volts

▲ See drawings on following pages.

* CCS = Continuous Commercial Service.

** Averaged over any af cycle of sine-wave form.

‡ Obtained from fixed or well-regulated supply.

00 Use separate bias supply for each tube for balancing currents.

6C24



6C24

POWER TRIODE

Zero-Signal DC Plate Current	75	ma.
Max.-Signal DC Plate Current	800	ma.
Effective Load Resistance (plate-to-plate)	3600	ohms
Max.-Signal Driving Power (Approx.)	30	watts
Max.-Signal Power Output (Approx.)	1F40	watts

RF POWER AMPLIFIER - Class B Telephony

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

	<u>Cooling Method I[▲]</u>	<u>Cooling Method II[▲]</u>	
Maximum CCS* Ratings, Absolute Values:			
DC PLATE VOLTAGE	3000 max.	3000 max.	volts
DC PLATE CURRENT	250 max.	250 max.	ma.
PLATE INPUT	600 max.	600 max.	watts
PLATE DISSIPATION	400 max.	600 max.	watts

Typical Operation:

DC Plate Voltage	3000	volts
DC Grid Voltage #	-95	volts
Peak RF Grid Voltage	130	volts
DC Plate Current	200	ma.
DC Grid Current (Approx.) ##	5	ma.
Driving Power (Approx.) ## [○]	16	watts
Power Output (Approx.)	210	watts

obtained from a fixed or well-regulated supply.

○ At crest of af cycle with modulation factor of 1.0.

PLATE-MODULATED RF POWER AMPLIFIER - Class C Telephony

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

	<u>Cooling Method I[▲]</u>	<u>Cooling Method II[▲]</u>	
Maximum CCS* Ratings, Absolute Values:			
DC PLATE VOLTAGE	2500 max.	2500 max.	volts
DC GRID VOLTAGE	-500 max.	-500 max.	volts
DC PLATE CURRENT	400 max.	400 max.	ma.
DC GRID CURRENT	150 max.	150 max.	ma.
PLATE INPUT	1000 max.	1000 max.	watts
PLATE DISSIPATION	265 max.	400 max.	watts

Typical Operation:

DC Plate Voltage	2500	volts
DC Grid Voltage: ^{▲▲}		
from a fixed supply of	-350	volts
from a grid resistor of	2600	ohms
Peak RF Grid Voltage	620	volts
DC Plate Current	400	ma.

▲ See drawings on following pages.

* CCS - see next page.

Subject to wide variations as explained on sheet TUBE RATINGS in General Section.

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

APRIL 1, 1946

RCA VICTOR DIVISION

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6C24

6C24

POWER TRIODE

DC Grid Current (Approx.)##	135	ma.
Driving Power (Approx.)##	75	watts
Power Output (Approx.)	810	watts

RF POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation

	<u>Cooling Method I[▲]</u>	<u>Cooling Method II[▲]</u>	
Maximum CCS* Ratings, Absolute Values:			
DC PLATE VOLTAGE	3000 max.	3000 max.	volts
DC GRID VOLTAGE	-500 max.	-500 max.	volts
DC PLATE CURRENT	500 max.	500 max.	ma.
DC GRID CURRENT	150 max.	150 max.	ma.
PLATE INPUT	1500 max.	1500 max.	watts
PLATE DISSIPATION	400 max.	600 max.	watts

Typical Operation:

DC Plate Voltage	3000	volts
DC Grid Voltage:		
from fixed supply of	-250	volts
from grid resistor of	1700	ohms
from cathode resistor of	400	ohms
Peak RF Grid Voltage	520	volts
DC Plate Current	500	ma.
DC Grid Current (Approx.)##	150	ma.
Driving Power (Approx.)##.	75	watts
Power Output (Approx.)	1100	watts

[▲] See drawings on following pages.

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

Subject to wide variations as explained on sheet TUBE RATINGS in General Section.

* Continuous Commercial Service.

NOTE: When the 6C24 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 3000 volts, a fixed bias of at least -90 volts should be used.

Data on operating frequencies for the 6C24 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

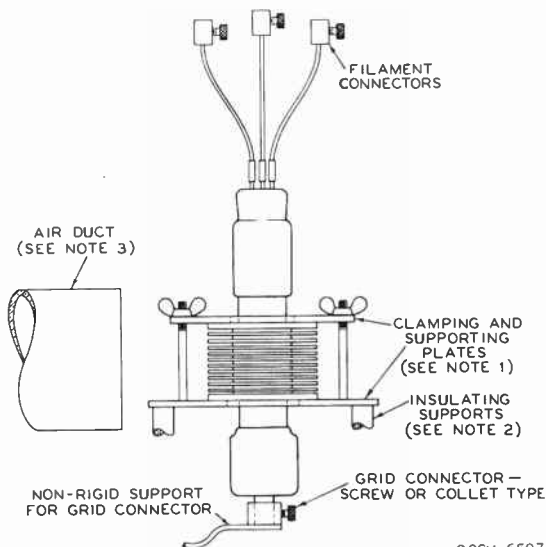
6C24



6C24

POWER TRIODE

COOLING METHOD I Suggested Mounting



NOTE 1: SUPPORTING PLATE AND CLAMPING PLATE HAVE HOLES LARGE ENOUGH TO PERMIT PASSAGE OF THE GLASS BULBS OF THE TUBE.

NOTE 2: TWO OR MORE INSULATORS MAY BE USED. INSULATORS MUST BE PLACED SO AS TO NOT INTERFERE WITH AIR FLOW ONTO GRID TERMINAL.

NOTE 3: AIR DUCT MUST BE HORIZONTAL AND MUST BE DIRECTED AT CENTER OF RADIATOR.



6C24

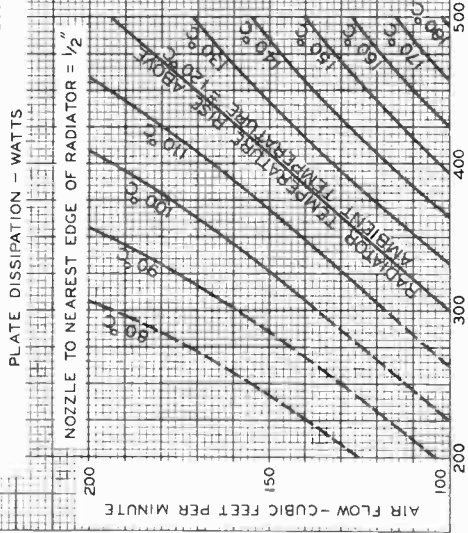
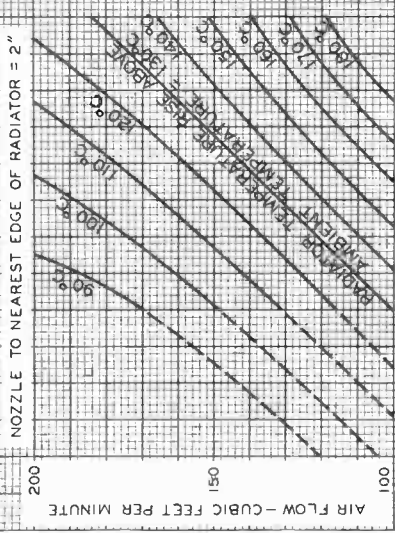
6C24

RADIATOR COOLING REQUIREMENTS FOR COOLING METHOD I

$E_f = 11$ VOLTS

MAXIMUM RADIATOR TEMPERATURE = 180 °C

RADIATOR TEMPERATURE MEASURED AT BASE
OF END FIN ON SIDE OPPOSITE NOZZLE.



APRIL 1, 1946

PLATE DISSIPATION - WATTS

92CM-6595

TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENT. DATA 3

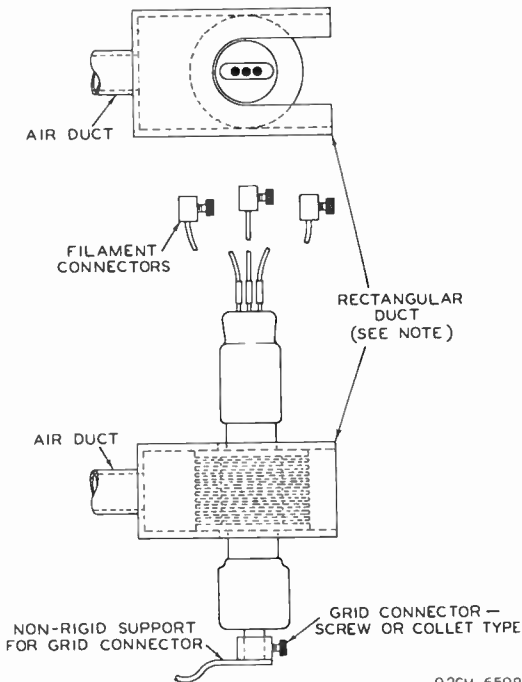
6C24



6C24

POWER TRIODE

COOLING METHOD II
Suggested Mounting



NOTE: AIR DUCT MAY BE PART OF HIGH-FREQUENCY TRANSMISSION LINE. UPPER AND LOWER FACES OF RECTANGULAR DUCT HAVE SLOTS TO PERMIT PASSAGE OF TUBE. MEANS SHOULD BE PROVIDED TO LOCK TUBE IN POSITION.



6C24

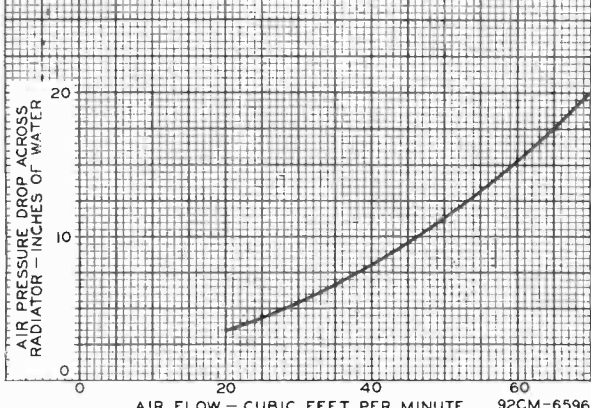
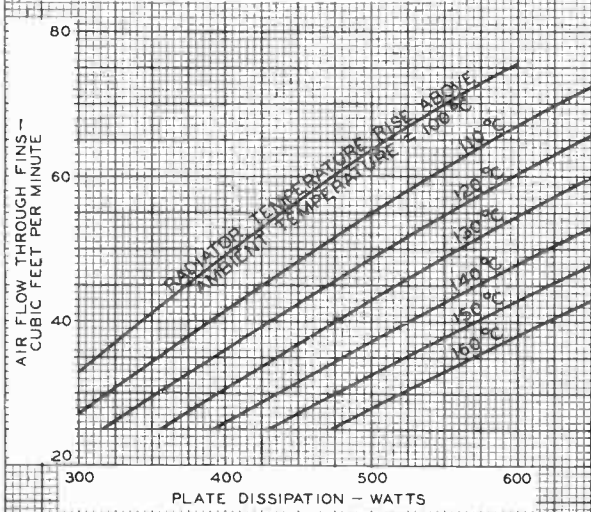
6C24

RADIATOR COOLING REQUIREMENTS FOR COOLING METHOD II

$E_f = 11$ VOLTS

MAXIMUM RADIATOR TEMPERATURE = 180°C

RADIATOR TEMPERATURE MEASURED AT BASE OF END FIN ON SIDE OPPOSITE DUCT.



APRIL 1, 1946

TUBE DIVISION

TENT. DATA 4

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

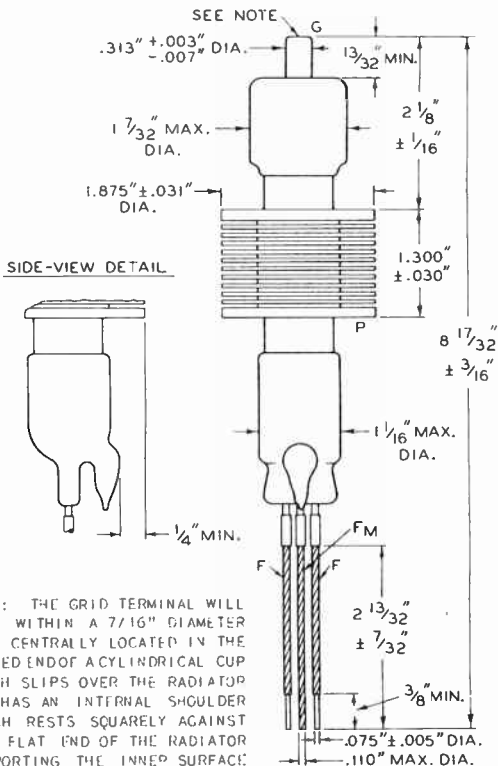
World Radio History

6C24



6C24

POWER TRIODE



NOTE: THE GRID TERMINAL WILL FALL WITHIN A 7/16" DIAMETER HOLE CENTRALLY LOCATED IN THE CLOSED END OF A CYLINDRICAL CUP WHICH SLIPS OVER THE RADIATOR AND HAS AN INTERNAL SHOULDER WHICH RESTS SQUARELY AGAINST THE FLAT END OF THE RADIATOR SUPPORTING THE INNER SURFACE OF THE CLOSED END OF THE CUP 1-13/16" FROM THE GRID END OF THE RADIATOR. THE CLOSED END OF THE CUP IS 7/16" THICK.

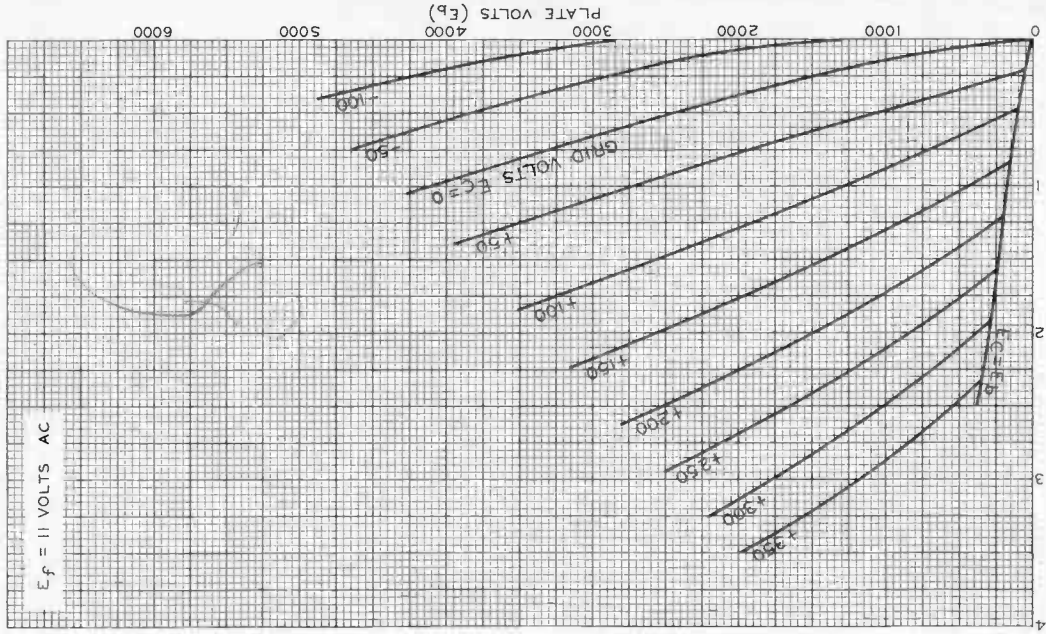
92CM-6587



6C24

AVERAGE PLATE CHARACTERISTICS

$E_f = 11$ VOLTS AC



6C24

MAY 10, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

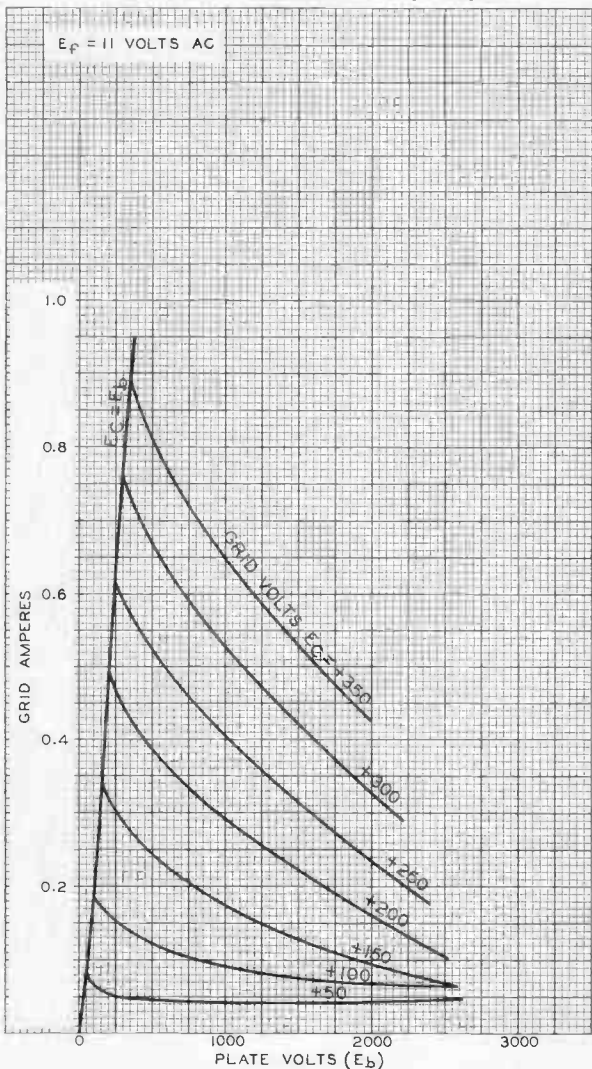
92CM-6593RI

6C24



6C24

TYPICAL CHARACTERISTICS



SEPT. 5, 1945

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6594

World Radio History



7C24

7C24

POWER TRIODE

GROUNDING-GRID TYPE

GENERAL DATA

Electrical:

Filament, Thoriated Tungsten:

Voltage. 12.6 ac or dc volts
 Current. 29 amp.
 Starting Current: Filament current must never exceed,
 even momentarily, 50 amperes.

Resistance (Cold). . . 0.052 ohm

Amplification Factor . . 29

Direct Interelectrode Capacitances (Approx.):

Grid to Plate. 16.5 μf

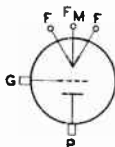
Grid to Filament 19 μf

Plate to Filament. 0.50 μf

Mechanical:

Terminal Connections:

F - Filament
 FM - Filament
 Mid-Tap



G - Grid Terminal
 (Flange)
 P - Plate Terminal
 (Radiator)

Mounting Position. . . Vertical Only . . . Filament end up

Maximum Length (Rigid, excluding flexible ribbon leads) 7-1/8"

Diameter 4-5/8" \pm 1/16"

Radiator Integral Part of Tube

Air Flow:

Upward through Radiator 275 min. cfm

The specified air flow at a pressure of 1.6 inches of water should be delivered by a blower vertically upward through the radiator before and during the application of any voltages.

To Filament Seals. 10 cfm

The specified air flow must be directed into the filament header before and during the application of any voltages in order to limit the temperature of the filament and grid seals to the maximum value.

Incoming Air Temperature (to Radiator) . . 45 max. $^{\circ}\text{C}$

Radiator Temperature (measured at core at upper end, away from incoming air) 180 max. $^{\circ}\text{C}$

Bulb Temperature at hottest point. 150 max. $^{\circ}\text{C}$

AF POWER AMPLIFIER & MODULATOR - Class B

Maximum CCS* Ratings, Absolute Values:

DC PLATE VOLTAGE 5000 max. volts

MAX.-SIG. DC PLATE CURRENT# 1.4 max. amp.

MAX.-SIG. PLATE INPUT# 5 max. kw

PLATE DISSIPATION# 2 max. kw

Typical Operation:

Values are for 2 tubes unless otherwise specified

DC Plate Voltage 5000 volts

DC Grid Voltage**0 -200 volts

* Averaged over any af cycle of sine-wave form.

0 Use separate bias supply for each tube for balancing currents.

*, **: See next page.

← Indicates a change.

7C24



7C24

POWER TRIODE

(continued from preceding page)

Peak AF Grid-to-Grid Voltage	760	..	volts
Zero-Signal DC Plate Current	0.4	..	amp.
Max.-Signal DC Plate Current	2.0	..	amp.
Effective Load Resistance (plate-to-plate)	6000	..	ohms
Max.-Signal Driving Power (Approx.)	110	..	watts
Max.-Signal Power Output (Approx.)	7	..	kw

RF POWER AMPLIFIER - Class B Telephony

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

Maximum CCS* Ratings, Absolute Values:

DC PLATE VOLTAGE	5000 max.	volts
DC PLATE CURRENT	1.0 max.	amp.
PLATE INPUT	3 max.	kw
PLATE DISSIPATION	2 max.	kw

Typical Operation in Grounded-Filament Circuit:

DC Plate Voltage	5000	..	volts
DC Grid Voltage**	-200	..	volts
Peak RF Grid Voltage	190	..	volts
DC Plate Current	0.6	..	amp.
→ Driving Power (Approx.)## ⁰⁰	50	..	watts
Power Output (Approx.)	1.0	..	kw

Typical Operation in Grounded-Grid Circuit:

Same values as for Grounded-Filament Circuit
with the following exceptions:

Driving Power (Approx.):

Carrier	100	..	watts
Crest ⁰⁰	400	..	watts
Power Output (Approx.)	1.1	..	kw

PLATE-MODULATED RF POWER AMPLIFIER - Class C Telephony

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

Maximum CCS* Ratings, Absolute Values:

DC PLATE VOLTAGE	4000 max.	volts
DC GRID VOLTAGE	-1000 max.	volts
DC PLATE CURRENT	1.0 max.	amp.
DC GRID CURRENT	0.3 max.	amp.
PLATE INPUT	3.3 max.	kw
PLATE DISSIPATION	1.3 max.	kw

Typical Operation in Grounded-Filament Circuit:

DC Plate Voltage	4000	..	volts
DC Grid Voltage: ^Δ			
from a fixed supply of	-350	..	volts
from a grid resistor of	1400	..	ohms
Peak RF Grid Voltage	570	..	volts
DC Plate Current	0.8	..	amp.
DC Grid Current (Approx.)##	0.25	..	amp.

*, **, ##, ⁰⁰, ^Δ: See next page.

→ Indicates a change.

APRIL 15, 1947

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA 1



7C24

7C24

POWER TRIODE

(continued from preceding page)

Driving Power (Approx.)##	130	..	watts
Power Output (Aoorox.)	2.6	..	kw

Typical Operation in Grounded-Grid Circuit:

Same values as for Grounded-Filament Circuit
with the following exceptions:

Driving Power (Aporox.)	525	..	watts
Power Output (Approx.)	2.6	..	kw

RF POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without amplitude modulation ^o

Maximum CCS * Ratings, Absolute Values:

DC PLATE VOLTAGE	5000	max.	volts
DC GRID VOLTAGE	-1000	max.	volts
DC PLATE CURRENT	1.4	max.	amp.
DC GRID CURRENT	0.3	max.	amp.
PLATE INPUT	5	max.	kw
PLATE DISSIPATION	2	max.	kw

Typical Operation in Grounded-Filament Circuit:

DC Plate Voltage	4000	5000	..	volts
DC Grid Voltage:				
from a fixed supply of	-350	-400	..	volts
from a grid resistor of	1250	1450	..	ohms
from a cathode resistor of	230	310	..	ohms
Peak RF Grid Voltage	650	650	..	volts
DC Plate Current	1.25	1.0	..	amo.
DC Grid Current (Approx.)##	0.275	0.275	..	amo.
Driving Power (Approx.)##	160	160	..	watts
Power Output (Approx.)	3.8	4.0	..	kw

Typical Operation in Grounded-Grid Circuit:

Same values as for Grounded-Filament Circuit
with the following exceptions:

Driving Power (Approx.)	820	710	..	watts
Power Output	4.45	4.55	..	kw

RF POWER AMPLIFIER - Class C FM Telephony

Maximum CCS* Ratings, Absolute Values:

DC PLATE VOLTAGE	5000	max.	volts
DC GRID VOLTS	-1000	max.	volts
DC PLATE CURRENT	1.4	max.	amp.
DC GRID CURRENT	0.3	max.	amp.
PLATE INPUT	5.0	max.	kw
PLATE DISSIPATION	2.0	max.	kw

*, ##, o, ▲, **, oo: See next page.

APRIL 1, 1946

RCA VICTOR DIVISION

TENTATIVE DATA 2

RADIO CORPORATION OF AMERICA - HARRISON, NEW JERSEY

WorldRadioHistory

7C24



7C24

POWER TRIODE

Typical Operation in Grounded-Grid Circuit:

DC Plate Voltage	4000	5000	. . . volts
DC Grid Voltage:			
<i>from a fixed supply of . .</i>	-350	-400	. . . volts
<i>from a grid resistor of. .</i>	1250	1450	. . . ohms
<i>from a cathode resistor. .</i>	230	310	. . . ohms
Peak RF Grid Voltage	650	650	. . . volts
DC Plate Current	1.25	1.0	. . . amp.
DC Grid Current (Approx.)##	0.275	0.275	. . . amp.
Driving Power (Approx.) . . .	920	710	. . . watts
Power Output (Approx.) . . .	4.45	4.45	. . . kw

* CCS = Continuous Commercial Service.

Subject to wide variations depending on the impedance of the load circuit. High-impedance circuits require more grid current and driving power to attain the desired output. Low-impedance circuits need less grid current and driving power, but plate-circuit efficiency is sacrificed. The driving stage should have a tank circuit of good regulation and should be capable of supplying considerably more than the required driving power.

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

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

** obtained from a fixed or well-regulated supply.

OO At crest of af cycle with modulation factor of 1.0.

NOTE: When the 7C24 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 a plate voltage of 5000 volts, a fixed bias of at least -190 volts should be used.

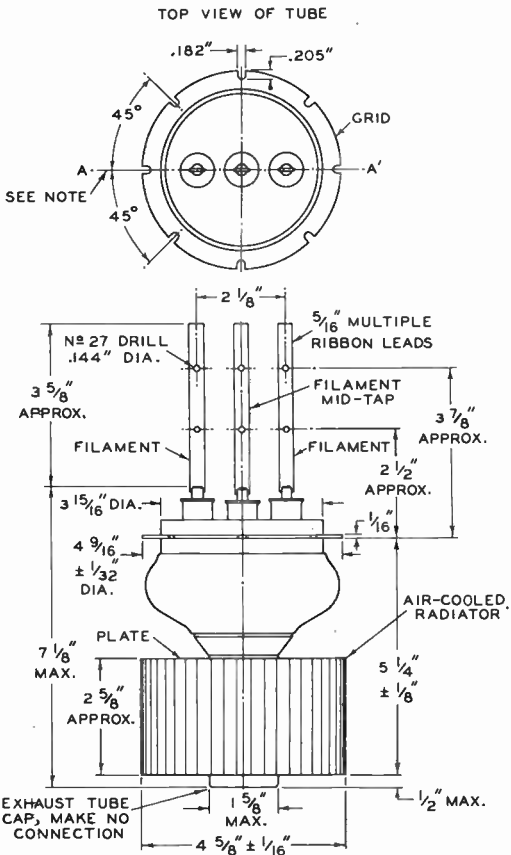
Data on operating frequencies for the 7C24 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY



7C24

POWER TRIODE

7C24



92CM-6606R1

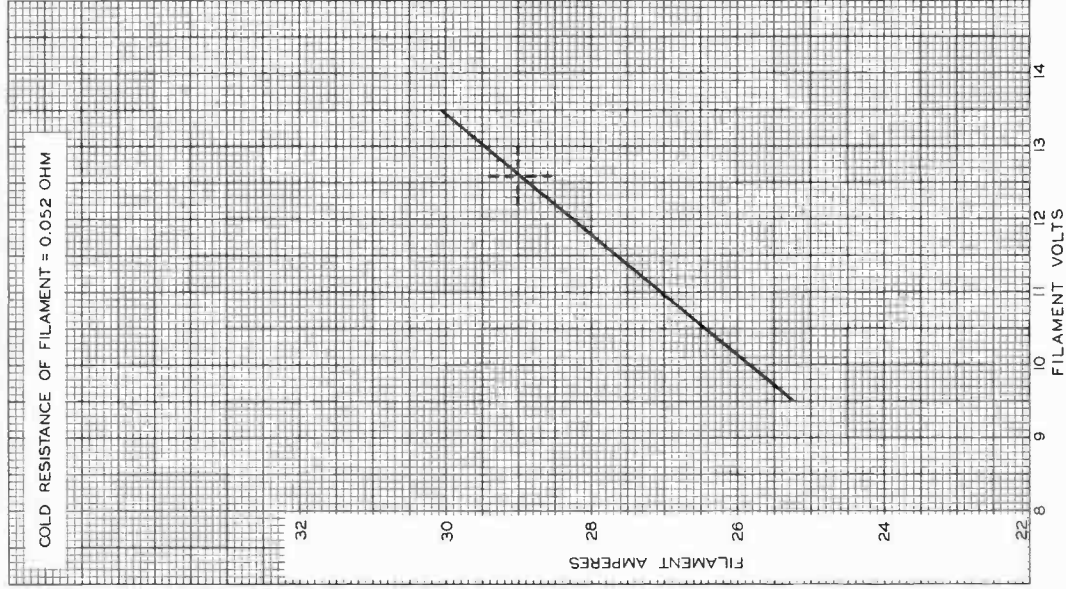
7C24



7C24

AVERAGE FILAMENT CHARACTERISTIC

COLD RESISTANCE OF FILAMENT = 0.052 OHM



APRIL 30, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6648R1



7C24

COOLING REQUIREMENTS

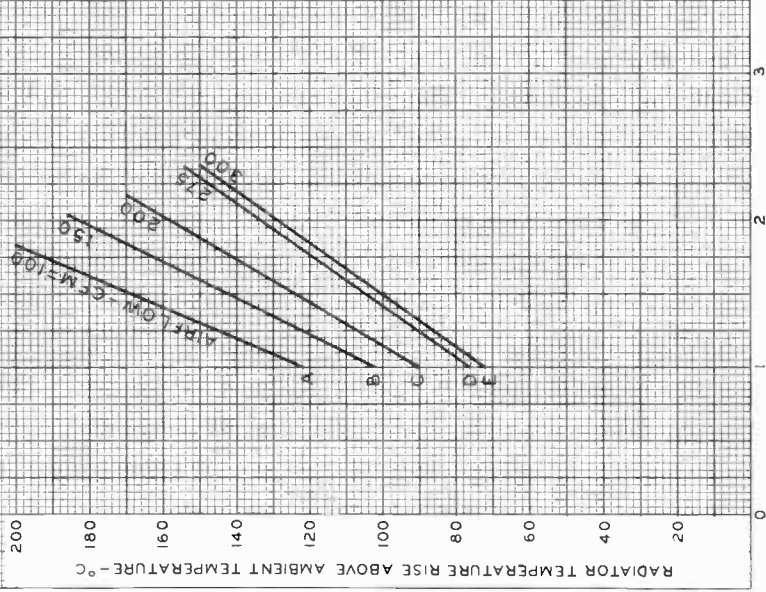
E_f = 12.6 VOLTS

MAXIMUM RADIATOR TEMPERATURE = 180 °C

CURVE	PRESSURE DROP INCHES OF WATER
A	0.20
B	0.44
C	0.77
D	1.50
E	1.76

CURVES TAKEN ACCORDING TO
NAFM* STANDARDS -

BULLETIN N° 103

* NATIONAL ASSOCIATION OF FAN MFRS.,
GENERAL MOTORS BLDG., DETROIT, MICH.

FEB. 4, 1947

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6646R1

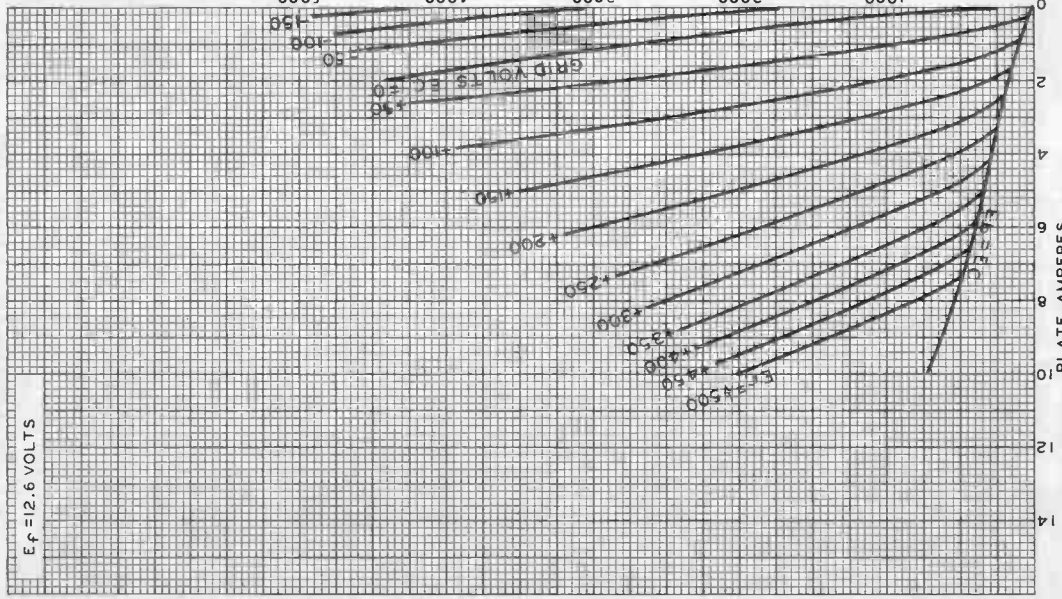
7C24



7C24

AVERAGE PLATE CHARACTERISTICS

$E_f = 12.6$ VOLTS



FEB. 14, 1947

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RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

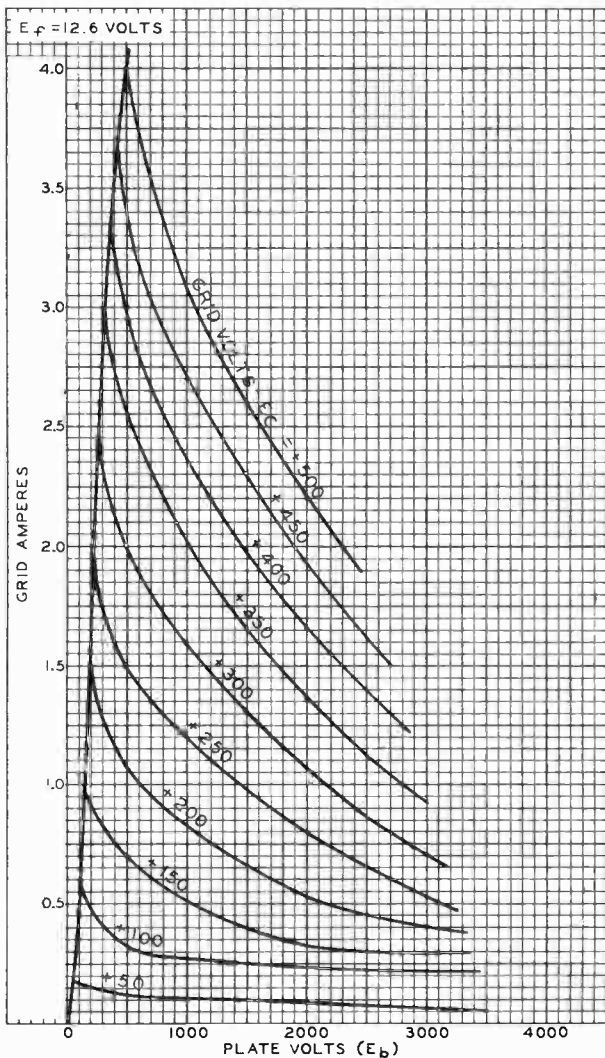
92CM-6647RI



7C24

7C24

TYPICAL GRID CHARACTERISTICS



FEB. 13, 1947

TUBE DEPARTMENT
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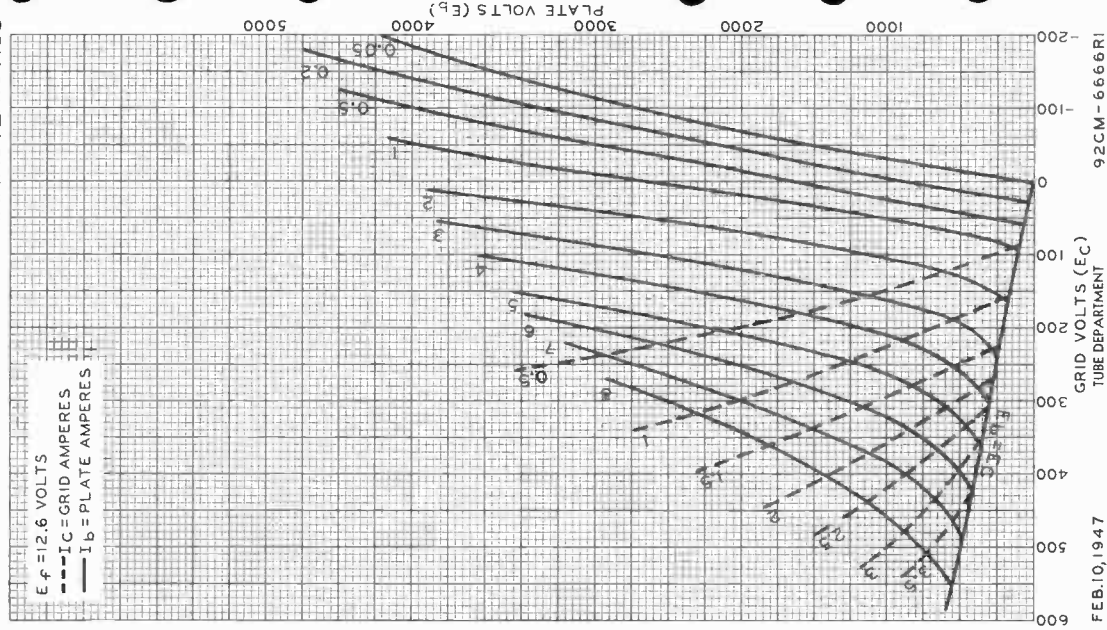
92CM-6645RI

7C24



7C24

AVERAGE CONSTANT-CURRENT CHARACTERISTICS





8D21

8D21

PUSH-PULL POWER TETRODE

WATER AND FORCED-AIR COOLED

GENERAL DATA

Electrical:

Filament, Thoria-Coated:

Voltage (AC or DC) 3.2 av., 3.4 max. volts. See DATA 3 for ←
 operating instructions on conserving filament life.
 Current, with 3.2 volts on filament. 125 amp
 Starting Current Must never exceed 220 amperes,
 even momentarily

Cold Resistance. 0.0077 ohm

Minimum Heating Time 5 sec

Mu-factor, Grid No.2 to Grid No.1 (Each Unit) 5

Direct Interelectrode Capacitances (Each Unit):*

Grid No.1 to Plate **

Input 25.5 μmf

Output 6.5 μmf

Internal Grid-No.2 Bypass Capacitor (Approx.). 200 μmf

Mechanical:

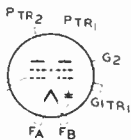
Terminal Connections:

FA - Filament

FB - Fil., Mount-
ing Flange

G¹TR₁ - Grid No.1 of
Tetrode #1

G¹TR₂ - Grid No.1 of Tetrode #2



G₂ - Grid No.2 of
Tetrodes #1 & #2

P¹TR₁ - Plate of
Tetrode #1

P¹TR₂ - Plate of
Tetrode #2

Mounting Position. Plane of grid-No.1 lead horizontal and
below horizontal plane of plate leads

Maximum Overall Length 12-9/32"

Maximum Diameter 5-3/4"

Air Cooling:

Forced-air cooling of the glass envelope is required. The
 air flow must start with application of plate voltage, and
 should be directed from a 2"-diameter nozzle at the plate
 end of the tube so as to cool the area between the plate
 seals as well as the sides of the glass envelope. The air
 flow may be removed simultaneously with removal of plate
 voltage. Interlocking of the air flow with the power sup-
 plies is recommended to prevent the application of voltages
 to the tube without air cooling.

Air Flow 40 min. cfm

Bulb and Seal Temperature. 150 max. °C

Water Cooling:

Water cooling of the filament block, the No.1 grids, the
 No.2 grids, and the plates is required. The water flow
 must start before application of any voltages and preferably
 should continue for several seconds after removal of all
 voltages. Interlocking of the water flow through each of
 the electrodes with all power supplies is recommended to
 prevent tube damage in case of failure of adequate water
 flow.

* , ** : See next page.

← Indicates a change.

8D21



8D21

PUSH-PULL POWER TETRODE

→ Water Cooling (Continued):

Water Flow Required:

Filament Block, Cooling pipes in series.	0.1 min.	gpm
No.1 Grids, Cooling pipes in series. .	0.1 min.	gpm
No.2 Grids	0.1 min.	gpm

Plate of Each Unit:

With dissipation of 1.5 kw	0.3 min.	gpm
With dissipation of 2.25 kw	0.4 min.	gpm
With dissipation of 3 kw	0.5 min.	gpm

Water Flow Obtained with Pressure Drop of 60 psi:

	<u>Min.</u>	<u>Max.</u>	
Filament Block, Cooling pipes in series	0.18	0.37	gpm
No.1 Grids, Cooling pipes in series.	0.18	0.35	gpm
No.2 Grids	0.18	0.38	gpm
Plate of Each Unit	0.55	1.00	gpm
Water Pressure	100 max.		psi
Minimum Recommended Value.	60		psi
Outlet Water Temperature	70 max.		°C

GRID-MODULATED PUSH-PULL RF POWER AMPLIFIER--

Class C Television Service

Synchronizing-Level Conditions unless otherwise noted;
Values are total for both units

Maximum CCS* Ratings, Absolute Values:

DC PLATE VOLTAGE	6000 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE.	1000 max.	volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE--White Level. . .	-1000 max.	volts
→ DC PLATE CURRENT (At Crest of Modulation)	2 max.	amp
PLATE INPUT.	10000 max.	watts
GRID-No.2 INPUT.	400 max.	watts
PLATE DISSIPATION.	6000 max.	watts
GRID-No.1 DISSIPATION.	50 max.	watts

Typical Operation in Television Service up to 216 Mc--

Bandwidth of 6 Mc:

DC Plate Voltage	5000 . .	volts
DC Grid-No.2 Voltage	800 . .	volts
DC Grid-No.1 Voltage:		
→ Synchronizing Level.	-220 . .	volts
→ Pedestal Level	-400 . .	volts
→ White Level.	-820 . .	volts
→ Peak RF Grid-No.1-to-Grid-No.1 Voltage .	1300 . .	volts
→ DC Plate Current:		
→ Synchronizing Level.	1.9 . .	amp
→ Pedestal Level	1.45 . .	amp
DC Grid-No.2 Current:		
→ Pedestal Level	-0.025 . .	amp

* , ** , • : See next page.

→ indicates a change.

SEPT. 30, 1948

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA 1



8D21

8D21

PUSH-PULL POWER TETRODE

DC Grid-No.1 Current:		
Synchronizing Level	0.050	amp
Pedestal Level	0.010	amp
Driving Power (Approx.)*	300 to 500	watts ←
Power Output:		
Synchronizing Level	5300	watts ←
Pedestal Level	3100	watts

PUSH-PULL RF POWER AMPLIFIER—

Class C Telegraphy or FM Telephony ←

Key-down conditions without amplitude modulation;
Values are total for both units

Maximum CCS^o Ratings, Absolute Values:

DC PLATE VOLTAGE	6000 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE.	1000 max.	volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE.	-1000 max.	volts
DC PLATE CURRENT	2 max.	amp
PLATE INPUT.	10000 max.	watts
GRID-No.2 INPUT.	400 max.	watts
PLATE DISSIPATION.	6000 max.	watts
GRID-No.1 DISSIPATION.	50 max.	watts

Typical Operation in CW Service at 300 Mc:

DC Plate Voltage	6000	volts
DC Grid-No.2 Voltage	800	volts
DC Grid-No.1 Voltage [▲]	-275	volts
Peak RF Grid-No.1-to-Grid-No.1 Voltage	1350	volts
DC Plate Current	1.6	amp
DC Grid-No.2 Current	0.040	amp
DC Grid-No.1 Current (Approx.)	0.085	amp
Driving Power (Approx.)	500	watts
Power Output (Approx.)	6500	watts

Typical Operation in FM Service up to 216 Mc:

DC Plate Voltage	4500	volts
DC Grid-No.2 Voltage	700	volts
DC Grid-No.1 Voltage	-300	volts
Peak RF Grid-No.1-to-Grid-No.1 Voltage	1150	volts
DC Plate Current	1	amp
DC Grid-No.2 Current	0.050	amp
DC Grid-No.1 Current (Approx.)	0	amp
Driving Power (Approx.)	400	watts
Power Output (Approx.)	2500	watts

Maximum Circuit Values (CW or FM Service):

Grid-No.1-Circuit Resistance	6000 max.	ohms
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*, **, ●, ▲: See next page.

← Indicates a change.



8D21 PUSH-PULL POWER TETRODE

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

Values are for each unit, unless otherwise indicated

	<u>Note</u>	<u>Min.</u>	<u>Max.</u>	
Filament Current	1 . .	110	140	amp
Input Capacitance	- . .	22.5	28.5	$\mu\mu\text{f}$
Output Capacitance	- . .	5.3	7.7	$\mu\mu\text{f}$
Plate Current	1,2 . .	-	0.1	amp
Plate Current	1,3 . .	3.0	5.0	amp
Plate Current Average of Both Units.	1,3 . .	3.25	-	amp
Grid-No.1 Current	1,3 . .	-0.15	+0.40	amp
Grid-No.1 Current Average of Both Units.	1,3 . .	-	0.25	amp
Grid-No.2 Current	1,3 . .	-	1.5	amp
Grid-No.2 Current	1,4 . .	-	0.15	amp
Grid-No.2 Current Average of Both Units.	1,4 . .	-	0.10	amp
Peak Cathode Current	1,5 . .	7	-	amp

Note 1: AC filament volts = 3.2.

Note 2: With dc plate voltage of 5000 volts; dc grid-No.2 voltage of 800 volts; and dc grid-No.1 voltage of -220 volts.

Note 3: With dc plate voltage of 1500 volts; dc grid-No.2 voltage of 800 volts; and dc grid-No.1 voltage of +500 volts.

Note 4: With dc plate voltage of 2500 volts; dc grid-No.2 voltage of 800 volts; and dc grid-No.1 voltage of +300 volts.

Note 5: Designers should limit the maximum usable cathode current to this value.

* With no external shielding.

** Grid-No.1-to-plate capacitance is internally neutralized by the tube structure to within 0.02 $\mu\mu\text{f}$.

• Continuous Commercial Service.

▲ Driving power is accounted for largely by circuit losses and is less at lower frequencies. In practical, grid-modulated circuit design with damping resistors, the indicated driving power, depending on frequency, is required to take care of losses in the damping resistors, the circuit losses, and the tube driving power.

▲ Obtained from combination of fixed bias and a grid-No.1 resistor of 2500 to 3000 ohms.

Data on operating frequencies for the 8D21 are given
on the sheet TRANS. TUBE RATINGS vs FREQUENCY.



8D21

8D21

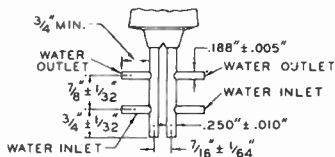
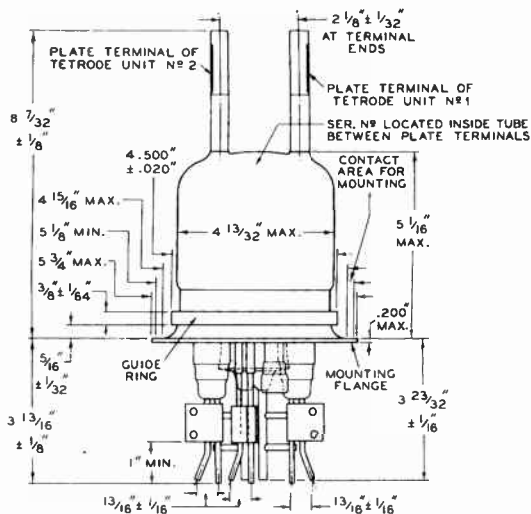
PUSH-PULL POWER TETRODEOPERATING INSTRUCTIONS FOR CONSERVING
FILAMENT LIFE

Filament life of the 8D21 can be conserved by operating its filament at the lowest voltage which will give the desired power output. Because the filament of this tube when operated at the tabulated value of 3.2 volts provides emission usually in excess of any requirements within ratings, it is recommended that the filament voltage be reduced below 3.2 volts to a value that will give adequate but not excessive emission for any particular application. The proper operating value may be found by reducing the filament voltage, with normal modulation applied to the transmitter, until a reduction in output is observed. The filament voltage must then be increased by an amount equivalent to the maximum percentage regulation of the filament-voltage supply, and then further increased by about 0.1 volt to allow for other variations. It is suggested that the adjustment procedure be carried out daily. However, if no significant changes in the operating voltage are found necessary, the adjustment procedure can be scheduled less frequently. Good regulation of the filament voltage is in general economically advantageous from the viewpoint of tube life.

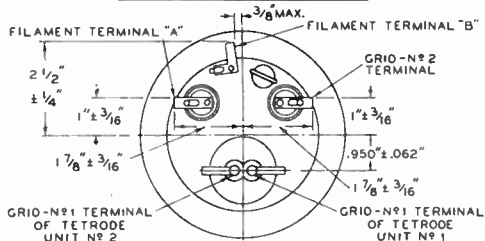
8D21



8D21 PUSH-PULL POWER TETRODE



DETAIL OF GRID-N°1 TERMINALS



SEPT. 30, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

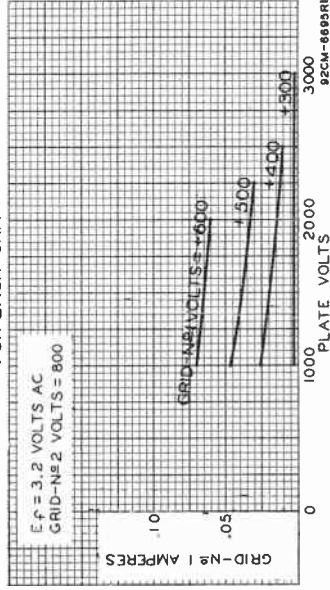
CE-6687V2A



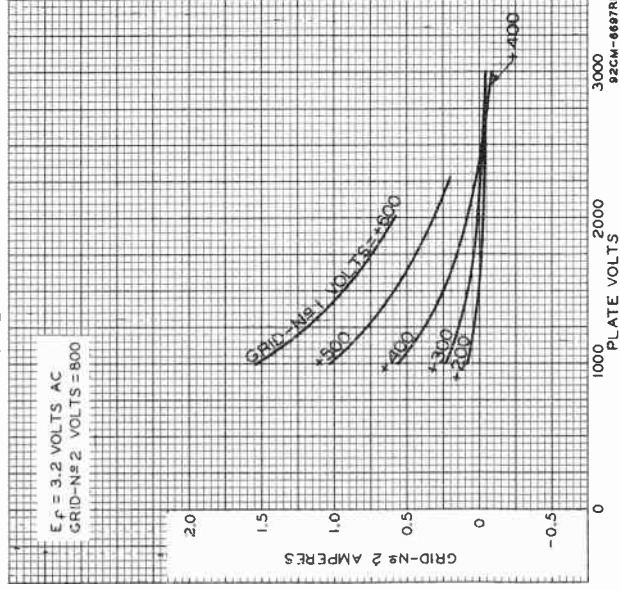
8D21

8D21

TYPICAL CHARACTERISTICS FOR EACH UNIT



TYPICAL CHARACTERISTICS FOR EACH UNIT



MAY 26, 1948

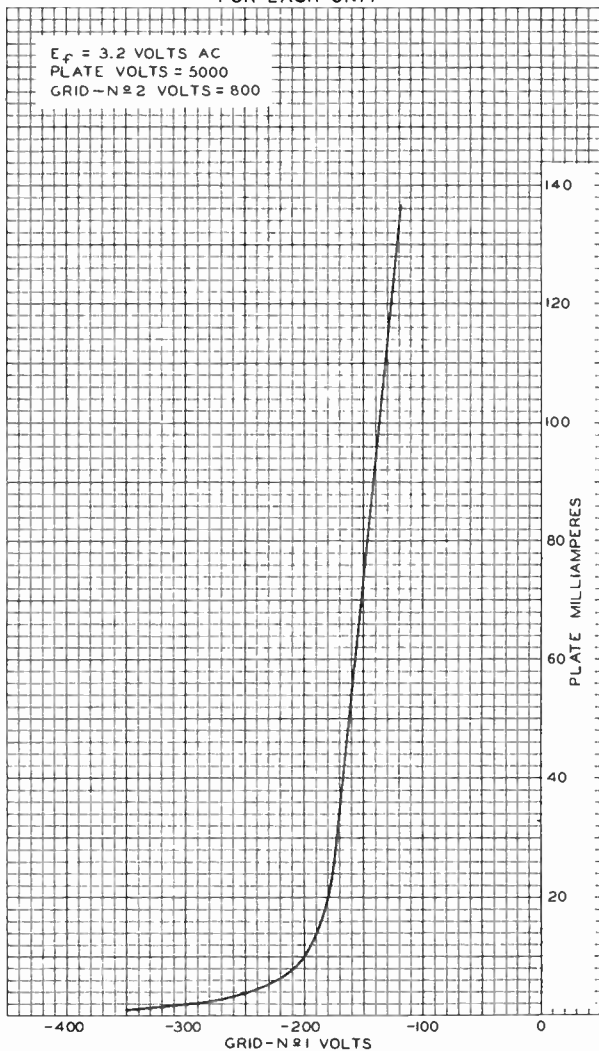
 TUBE DEPARTMENT
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92CM-6989

8D21



8D21
AVERAGE CHARACTERISTIC
FOR EACH UNIT



MAY 27, 1948

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RADIO CORPORATION OF AMERICA HARRISON, NEW JERSEY

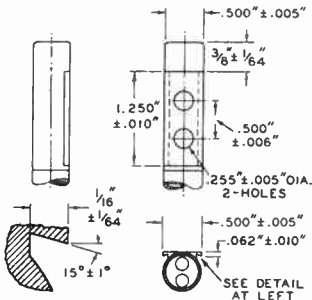
92CM-6990



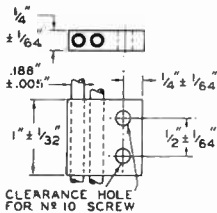
8D21

8D21 PUSH-PULL POWER TETRODE

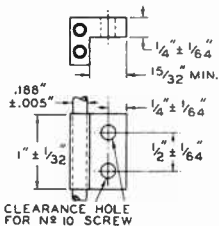
OUTLINE DETAILS



DETAIL OF PLATE TERMINALS



DETAIL OF FILAMENT
TERMINAL "A" AND
GRID-N# 2 TERMINAL



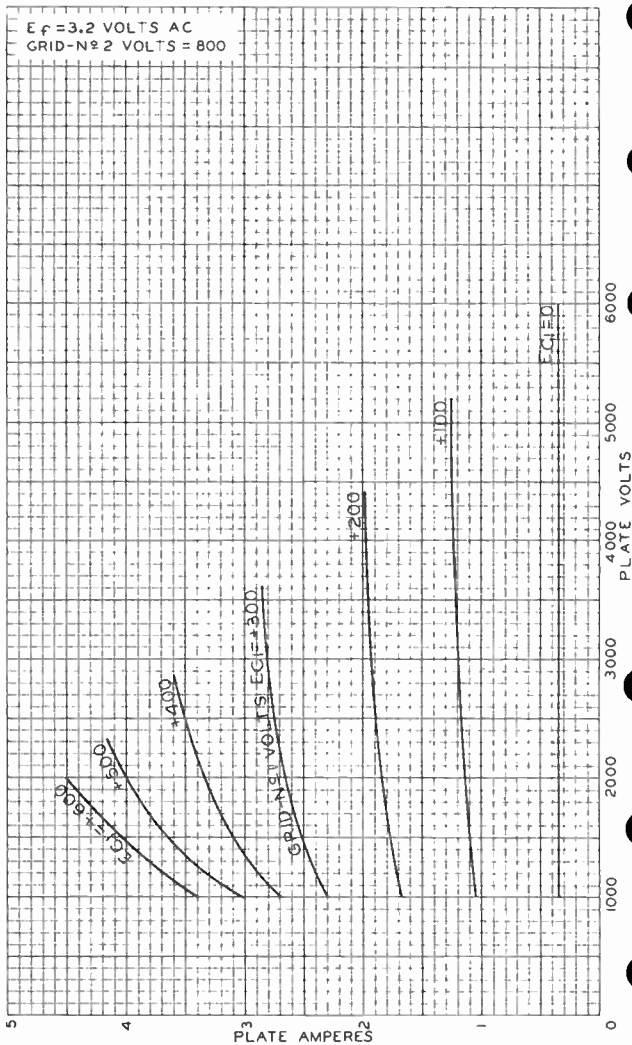
DETAIL OF FILAMENT
TERMINAL "B"

8D21



8D21

AVERAGE PLATE CHARACTERISTICS FOR EACH UNIT



MAY 25, 1948

TUBE DEPARTMENT

92CM-6696R1

RADIO CORPORATION OF AMERICA HARRISON, NEW JERSEY



9C21

9C21

POWER TRIODE

WATER- & FORCED-AIR-COOLED

GENERAL DATA**Electrical:**

Filament, Multistrand Tungsten:

Excitation . . . Single Phase AC or DC

Voltage. 19.5 ac or dc volts

Current. 415 amp

Starting Current: The filament current must never exceed 750 amperes, even momentarily.

Cold Resistance. 0.0042 ohm ←

Amplification Factor 36 ←

Direct Interelectrode Capacitances (Approx.): ←

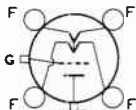
Grid to Plate. 46 μf

Grid to Filament 100 μf

Plate to Filament. 2.0 μf

Mechanical:

Terminal Connections:

F - Filament
G - Grid-Flange
TerminalP - Water-Cooled
Plate
TerminalDIAMETRICALLY OPPOSITE TERMINALS
MUST BE CONNECTED TOGETHER

Mounting Position. Vertical, Filament End Up

Maximum Overall Length 24-1/2"

Maximum Diameter 9-1/2"

Water Jacket RCA MI - 19460 ←

Gasket RCA MI - 27001 ←

Water Flow 15 to 20 gpm

The water flow must start before the application of any voltages and must continue for at least 2 minutes after the removal of all voltages.

Air Flow:

To Filament Seals. 10 min. cfm

The specified air flow directed by a nozzle of 1-1/4" diameter into the filament header is required before and during the application of any voltages to limit the temperature of the filament seals to the maximum value. ←

To Plate Seal and Bulb 250 cfm

The specified air flow at a pressure of 1.3 inches of water must be directed at and distributed uniformly around the plate seal and bulb to limit the temperature of each to its maximum value at the hottest point. ←

Outlet Water Temperature 70 max. °C

Bulb Temperature 180 max. °C

Seal Temperature (Filament, grid, plate) 165 max. °C ←

AF POWER AMPLIFIER & MODULATOR - Class B**Maximum CCS* Ratings, Absolute Values:**

DC PLATE VOLTAGE 15000 max. volts

MAX.-SIGNAL DC PLATE CURRENT* 6 max. amp

MAX.-SIGNAL PLATE INPUT* 90 max. kw

PLATE DISSIPATION* 40 max. kw

* See next page.

←-Indicates a change.

OCTOBER 15, 1947

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA 1

World Radio History

9C21



9C21

POWER TRIODE

Typical Operation:

Unless otherwise specified, values are for 2 tubes

DC Plate Voltage	10200	14000	volts
DC Grid Voltage.	-220	-300	volts
Peak AF Grid-to-Grid Voltage	850	1050	volts
Zero-Signal DC Plate Current	0.6	0.6	amp
Max.-Signal DC Plate Current	5.7	7.1	amp
Effective Load Resistance (plate-to-plate).	3600	4000	ohms
Max.-Signal Driving Power (Approx.)#	110	150	watts
Max.-Signal Power Output (Approx.) .	36	61	kw

PLATE-MODULATED RF POWER AMPLIFIER - Class C Telephony

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

Maximum CCS® Ratings, Absolute Values:

DC PLATE VOLTAGE	12500 max.	volts
DC GRID VOLTAGE.	-2000 max.	volts
DC PLATE CURRENT	4 max.	amp
→ DC GRID CURRENT.	1.5 max.	amp
PLATE INPUT.	50 max.	kw
PLATE DISSIPATION.	28 max.	kw

Typical Operation:

DC Plate Voltage	10200	12500	volts
DC Grid Voltage*	{ -1500 2000	-1670	volts
		2100	ohms
Peak RF Grid Voltage	1960	2190	volts
DC Plate Current	3.1	3.5	amp
DC Grid Current (Approx.) [□]	0.75	0.79	amp
Driving Power (Approx.) [□]	1320	1570	watts
Power Output (Approx.)	27.5	38	kw

RF POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

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

Maximum CCS® Ratings, Absolute Values:

DC PLATE VOLTAGE	17000 max.	volts
DC GRID VOLTAGE.	-2000 max.	volts
DC PLATE CURRENT	9 max.	amp
→ DC GRID CURRENT.	1.5 max.	amp
PLATE INPUT.	150 max.	kw
PLATE DISSIPATION.	40 max.	kw

Typical Operation:

DC Plate Voltage	14000	17000	volts
DC Grid Voltage ^{▲▲}	{ -1500 230 1800	-1600	volts
		180	ohms
		1780	ohms

* , # , ⊕ , □ , □□ , ▲▲ : See next page.

→ Indicates a change.

OCTOBER 15, 1947

TUBE DEPARTMENT

DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History



9C21

POWER TRIODE

9C21

Peak RF Grid Voltage	2000	2200	volts
DC Plate Current	5.8	7.9	amp
DC Grid Current (Approx.)	0.83	0.9	amp
Driving Power (Approx.)	1500	1800	watts
Power Output (Approx.)	61	100	kw

- Continuous Commercial Service.
- * Averaged over any audio-frequency cycle of sine-wave form.
- # The driving stage should have good regulation and should be capable of supplying considerably more than the specified driving power.
- ⊕ Obtained by grid resistor (2000, 2100) or by partial self-bias methods.
- Subject to wide variations as explained under TUBE RATINGS in General Section.
- Modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115% of the carrier conditions.
- ▲▲ Obtained from cathode resistor (230, 180), or grid resistor (1800, 1780) or by partial self-bias methods.

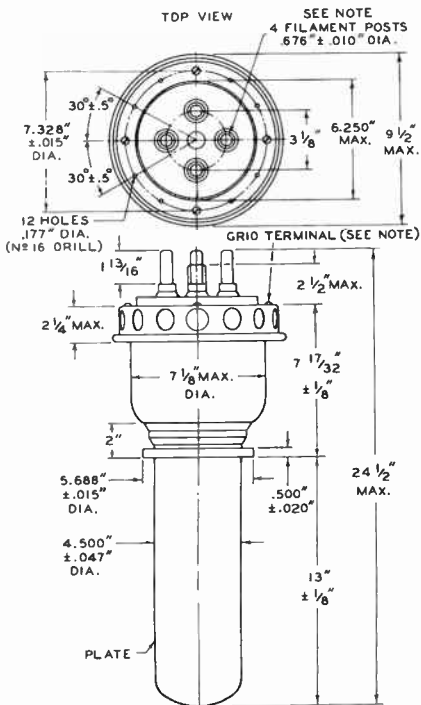
Data on operating frequencies for the 9C21 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

9C21



9C21

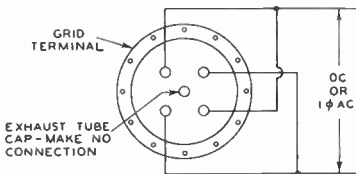
POWER TRIODE



NOTE: FLEXIBLE CONNECTIONS ARE REQUIRED.

92CM-8438R1

FILAMENT CONNECTIONS



92C5-6519

OCTOBER 15, 1947

TUBE DEPARTMENT

CE-6438R1-6519

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

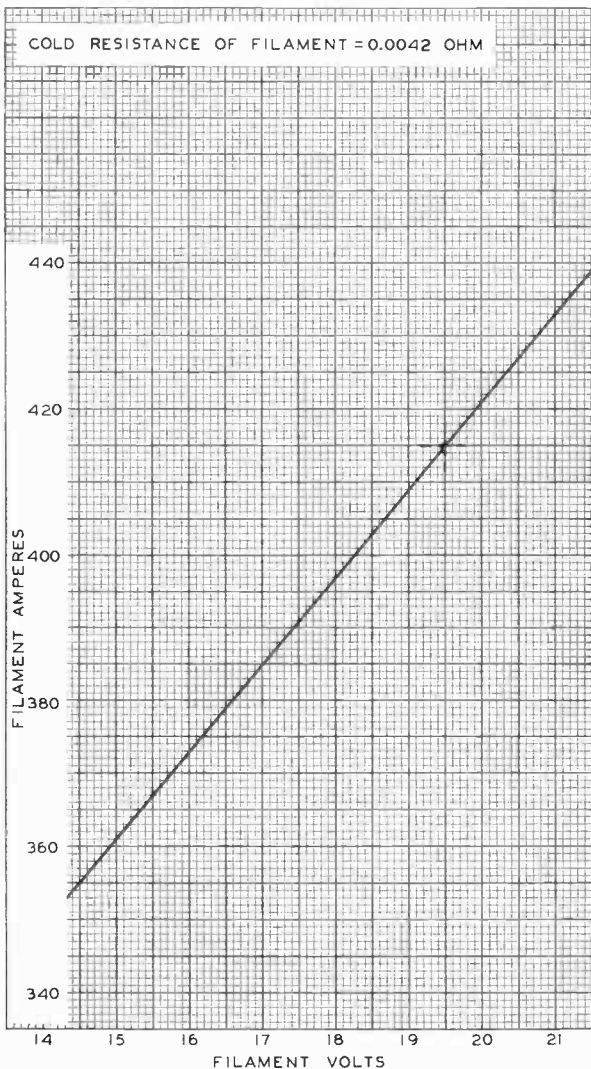
World Radio History



9C21

9C21

AVERAGE FILAMENT CHARACTERISTIC



DEC. 1, 1943

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6457

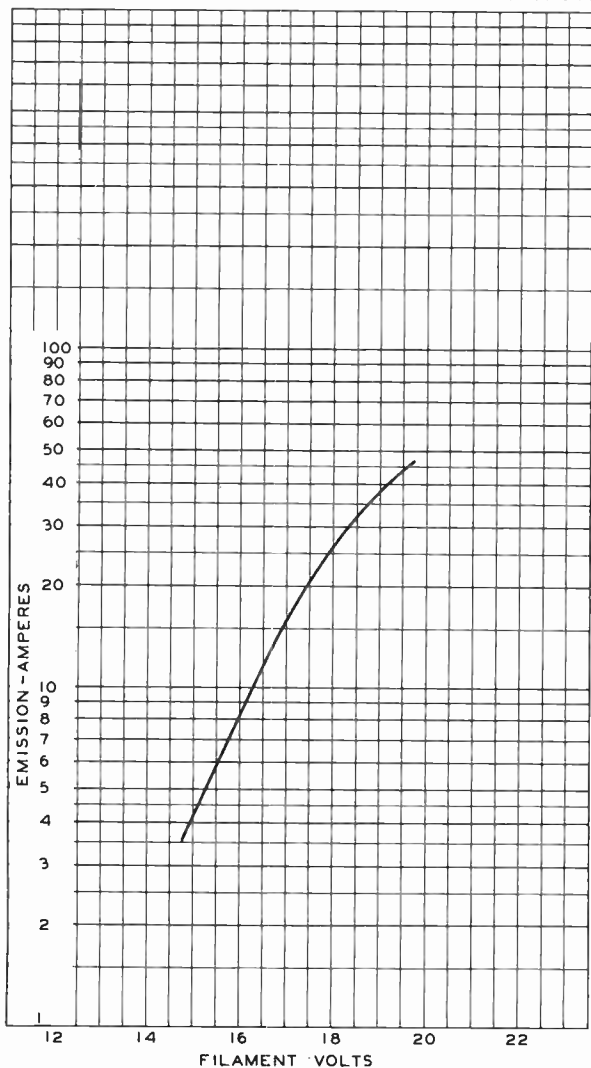




9C21

9C21

AVERAGE FILAMENT-EMISSION CHARACTERISTIC



DEC. 1, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA HARRISON, NEW JERSEY

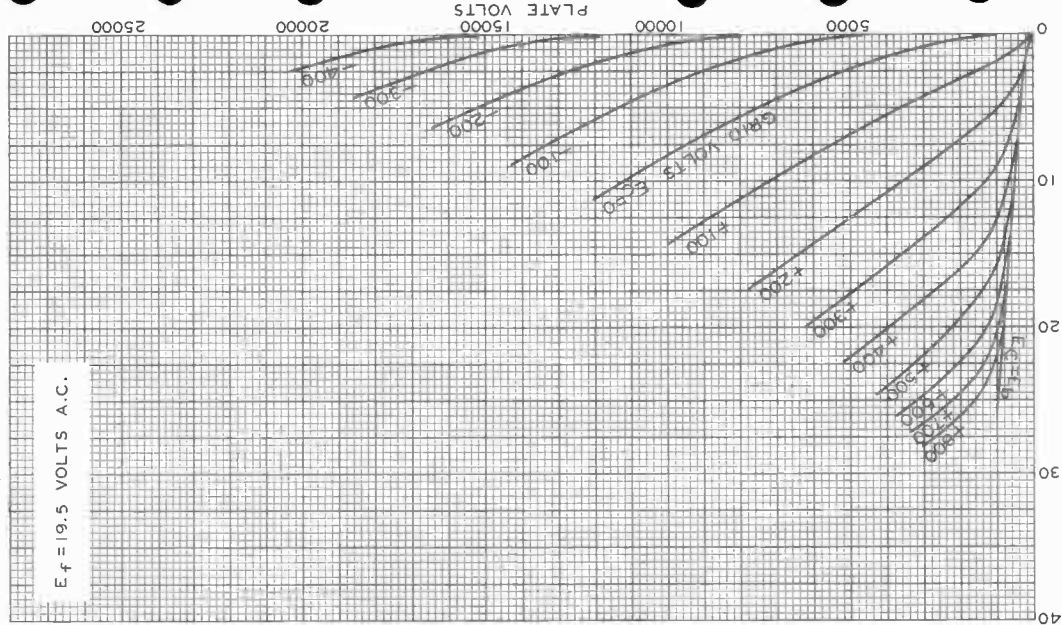
92CM-6458



9C21

AVERAGE PLATE CHARACTERISTICS

$E_f = 19.5$ VOLTS A.C.



9C21

World Radio History

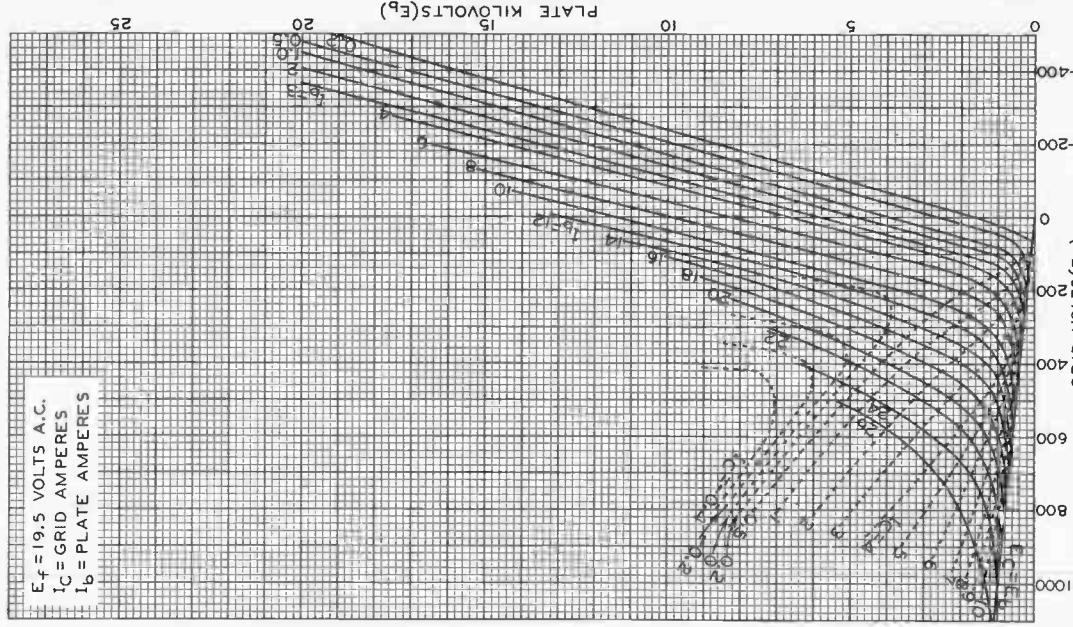


9C21

12726

AVERAGE CONSTANT-CURRENT CHARACTERISTICS

$E_f = 19.5$ VOLTS A.C.
 $I_c =$ GRID AMPERES
 $I_b =$ PLATE AMPERES



DEC. 1, 1943

GRID VOLTS (E_c)
RCA VICTOR DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

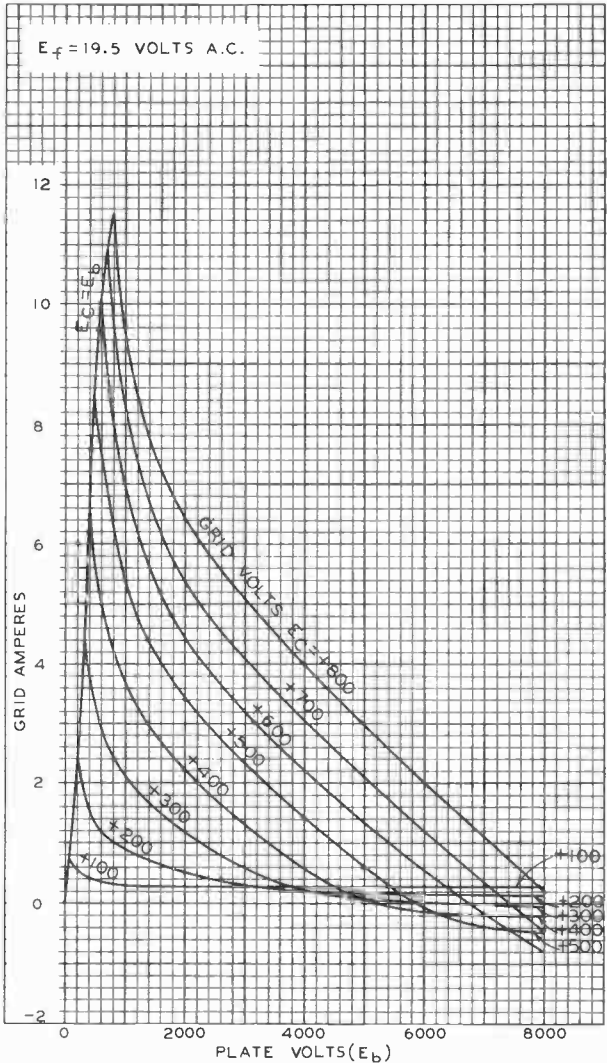
92CM-6462

9C21



9C21

TYPICAL CHARACTERISTICS



DEC. 1, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA HARRISON, NEW JERSEY

92CM-6463



9C22

9C22

POWER TRIODE

FORCED-AIR-COOLED

GENERAL DATA

Electrical:

Filament, Multistrand Tungsten:

Excitation . . . Single Phase AC or DC

Voltage 19.5 ac or dc volts

Current 415 amp

Starting Current: The filament current should never exceed 750 amperes, even momentarily.

Cold Resistance 0.0042 ohm ←

Amplification Factor 36 ←

Direct Interelectrode Capacitances (Aprox.): ←

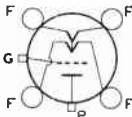
Grid to Plate 50 $\mu\mu\text{f}$

Grid to Filament 100 $\mu\mu\text{f}$

Plate to Filament 2.2 $\mu\mu\text{f}$

Mechanical:

Terminal Connections:



F - Filament
G - Grid-Flange
Terminal

P - Radiator-
Cooled Plate
Terminal

DIAMETRICALLY OPPOSITE TERMINALS
MUST BE CONNECTED TOGETHER

Mounting Position Vertical, Filament End Up

Maximum Overall Length 25"

Maximum Diameter 16-15/16"

Radiator Integral Part of Tube

Air Jacket RCA MI - 28190 ←

Air Flow:

Through Radiator (For max. ratings) 1800 min. cfm

The specified air flow at a pressure of 2.2 inches of water should be delivered by a blower vertically upward through the radiator before and during the application of any voltages. ←

To Filament Seals 10 min. cfm

The specified air flow directed by a nozzle of 1-1/4" diameter downward into the filament header is required before and during the application of any voltages in order to limit the temperature of the filament seals to the maximum value. ←

Input Air Temperature (To radiator) 45 max. °C ←

Radiator Temperature (Measured at core, upper end, away from incoming air) 180 max. °C

Seal Temperature (Filament, grid, plate) 165 max. °C ←

AF POWER AMPLIFIER & MODULATOR - Class B

Maximum CCS* Ratings, Absolute Values:

DC PLATE VOLTAGE 15000 max. volts

MAX.-SIGNAL DC PLATE CURRENT* 6 max. amp

MAX.-SIGNAL PLATE INPUT* 60 max. kw

PLATE DISSIPATION* 20 max. kw

*: See next page.

← Indicates a change.

9C22



9C22 POWER TRIODE

Typical Operation:

Unless otherwise specified, values are for 2 tubes

DC Plate Voltage	10200	14000	volts
DC Grid Voltage	-220	-300	volts
Peak AF Grid-to-Grid Voltage	850	1050	volts
Zero-Signal DC Plate Current	0.2	0.6	amp
Max.-Signal DC Plate Current	5.7	7.1	amp
Effective Load Resistance (plate-to-plate)	3000	4000	ohms
Max.-Signal Driving Power (Approx.)#	110	150	watts
Max.-Signal Power Output (Approx.) .	36	61	kw

PLATE-MODULATED RF POWER AMPLIFIER - Class C Telephony

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

Maximum CCS* Ratings, Absolute Values:

DC PLATE VOLTAGE	12500 max.	volts
DC GRID VOLTAGE	-2000 max.	volts
DC PLATE CURRENT	4 max.	amp
→ DC GRID CURRENT	1.5 max.	amp
PLATE INPUT	50 max.	kw
PLATE DISSIPATION	14 max.	kw

Typical* Operation:

DC Plate Voltage	10200	12500	volts
DC Grid Voltage [®]	{ -1500 2000	-1670	volts
		2100	ohms
Peak RF Grid Voltage	1960	2190	volts
DC Plate Current	3.1	3.5	amp
DC Grid Current (Approx.) [□]	0.75	0.79	amp
Driving Power (Approx.) [□]	1320	1570	watts
Power Output (Approx.)	27.5	38	kw

RF POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

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

Maximum CCS* Ratings, Absolute Values:

DC PLATE VOLTAGE	17000 max.	volts
DC GRID VOLTAGE	-2000 max.	volts
DC PLATE CURRENT	8 max.	amp
→ DC GRID CURRENT	1.5 max.	amp
PLATE INPUT	100 max.	kw
PLATE DISSIPATION	20 max.	kw

Typical* Operation:

DC Plate Voltage	14000	17000	volts
DC Grid Voltage ^{▲▲}	{ -1500 230 1800	-1600	volts
		275	ohms
		2000	ohms

•, *, #, ®, □, ▲▲: See next page. → Indicates a change.



9C22

9C22

POWER TRIODE

Peak RF Grid Voltage	2000	2050	volts
DC Plate Current	5.8	5	amp
DC Grid Current (Approx.)	0.83	0.8	amp
Driving Power (Approx.)	1500	1450	watts
Power Output (Approx.)	61	65	kw

- Continuous Commercial Service.
- * Average: over any audio-frequency cycle of sine-wave form.
- # The driving stage should have good regulation and should be capable of supplying considerably more than the specified driving power.
- ⊕ Obtained by grid resistor of value shown or by partial self-bias methods.
- Subject to wide variations as explained under TUBE RATINGS in General Section.
- ◻ Modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115% of the carrier conditions.
- ▲▲ Obtained from cathode resistor (230, 275), from grid resistor (1800, 2000) or by partial self-bias methods.

Data on operating frequencies for the 9C22 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

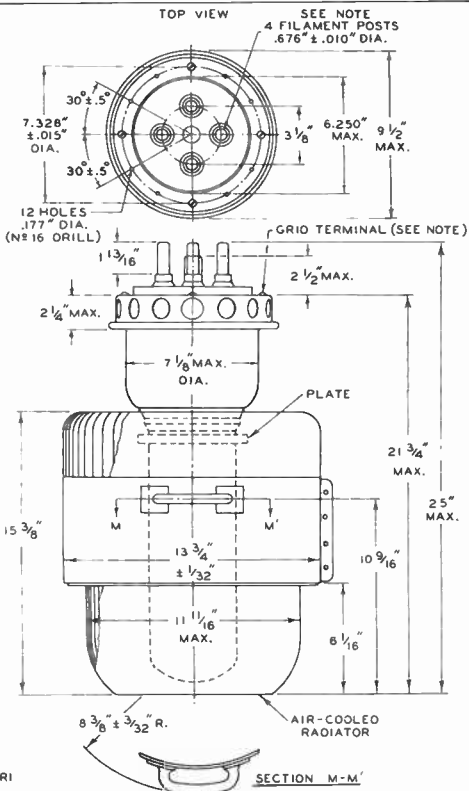
CURVES
for the 9C22 are the same
as those for Type 9C21

9C22



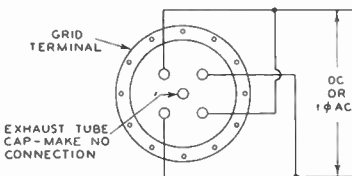
9C22

POWER TRIODE



NOTE: FLEXIBLE CONNECTIONS ARE REQUIRED.

FILAMENT CONNECTIONS



92CS-6519

OCTOBER 15, 1947

TUBE DEPARTMENT

CE-6447R1-6519

RADIO CORPORATION OF AMERICA HARRISON, NEW JERSEY

World Radio Vision



9C25

9C25

POWER TRIODE

FORCED-AIR-COOLED, GROUNDED-GRID TYPE

GENERAL DATA

Electrical:

Filament, Multistrand Fluoriated Tungsten:

Excitation. Single Phase AC or DC

Voltage. 6.0 ac or dc volts

Current. 2.85 amp

Starting Current: The filament current should never exceed 425 amperes, even momentarily.

Cold Resistance. 0.0025 ohms

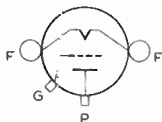
Amplification Factor 32

Direct Interelectrode Capacitances (Approx.):

Grid to Plate. 40 μmf Grid to Filament 58 μmf Plate to Filament. 0.9 μmf

Mechanical:

Terminal Connections:

F - Filament
G - Grid-Flange
TerminalP - Radiator-
Cooled Plate
Terminal

Mounting Position. Vertical, Filament End Up

Maximum Overall Length. 17-3/8"

Maximum Diameter 14-1/4"

Radiator Integral Part of Tube

Mounting Special

Air Flow:

Upward through Radiator. 1000 min. cfm

The specified air flow at a pressure of 2 inches of water should be delivered by a blower vertically upward through the radiator before and during the application of any voltages.

To Filament Seals. 10 cfm

The specified air flow must be directed into the filament header before and during the application of any voltages in order to limit the temperature of the filament and grid seals to the maximum value.

Output Air Temperature (from Radiator) 70 max. °C

Radiator Temperature
(measured in thermometer well). 180 max. °C

Bulb Temperature 180 max. °C

Filament-Seal Temperature. 165 max. °C

AF POWER AMPLIFIER & MODULATOR—Class B

Maximum CCS* Ratings, Absolute Values:

DC PLATE VOLTAGE 11500 max. volts

MAX.—SIGNAL DC PLATE CURRENT* 4 max. amp

MAX.—SIGNAL PLATE INPUT* 40 max. kw

PLATE DISSIPATION* 17.5 max. kw

* See next page.

AUG. 15, 1946

TUBE DEPARTMENT

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History

9C25



9C25

POWER TRIODE

Typical Operation:

Values are for 2 tubes

DC Plate Voltage	10500	volts
DC Grid Voltage	-250	volts
Peak AF Grid-to-Grid Voltage	1310	volts
Zero-Signal DC Plate Current	1.7	amp
Max.-Signal DC Plate Current	7	amp
Effective Load Resistance (plate-to-plate)	3300	ohms
Max.-Signal Driving Power (Approx.)	1500	watts
Max.-Signal Power Output (Approx.)	50	kw

RF POWER AMPLIFIER—Class B Telephony*Carrier conditions per tube for use with a max. modulation factor of 1.0*Maximum CCS^o Ratings, Absolute Values:

DC PLATE VOLTAGE	11500 max.	volts
DC PLATE CURRENT	3.7 max.	amp
PLATE INPUT	26 max.	kw
PLATE DISSIPATION	17.5 max.	kw

Typical Operation in Grounded-Filament Circuit:

DC Plate Voltage	10000	volts
DC Grid Voltage	-230	volts
Peak RF Grid Voltage	400	volts
DC Plate Current	2.5	amp
DC Grid Current (Approx.) ^o	0.016	amp
Driving Power (Approx.) ^o	300	watts
Power Output (Approx.)	9.2	kw

Typical Operation in Grounded-Grid Circuit:

*Same values as for Grounded-Filament Circuit
with the following exceptions:*

Driving Power (Approx.):

Carrier	800	watts
Crest ^o	4000	watts
Power Output (Approx.)	10	kw

PLATE-MODULATED RF POWER AMPLIFIER—Class C Telephony*Carrier conditions per tube for use with a max. modulation factor of 1.0*Maximum CCS^o Ratings, Absolute Values:

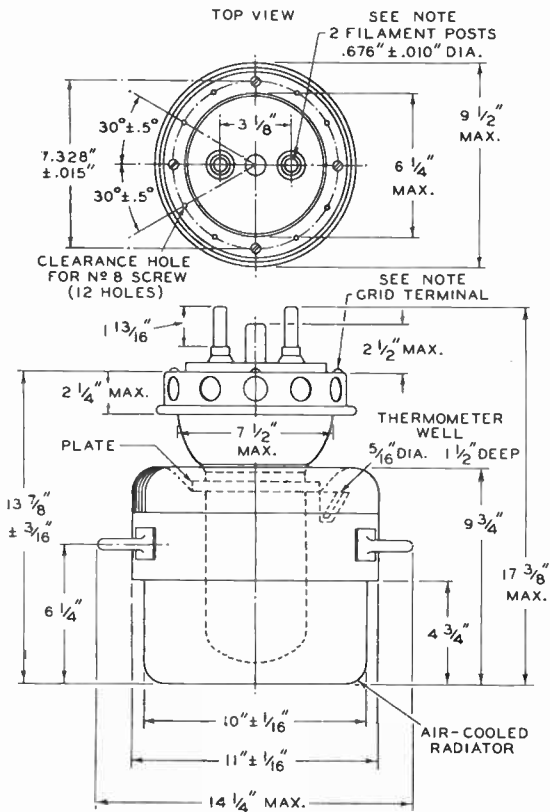
DC PLATE VOLTAGE	9000 max.	volts
DC GRID VOLTAGE	-2000 max.	volts
DC PLATE CURRENT	3.2 max.	amp
DC GRID CURRENT	0.65 max.	amp
PLATE INPUT	26 max.	kw
PLATE DISSIPATION	11.5 max.	kw

• • • • •
: See next page.



9C25 POWER TRIODE

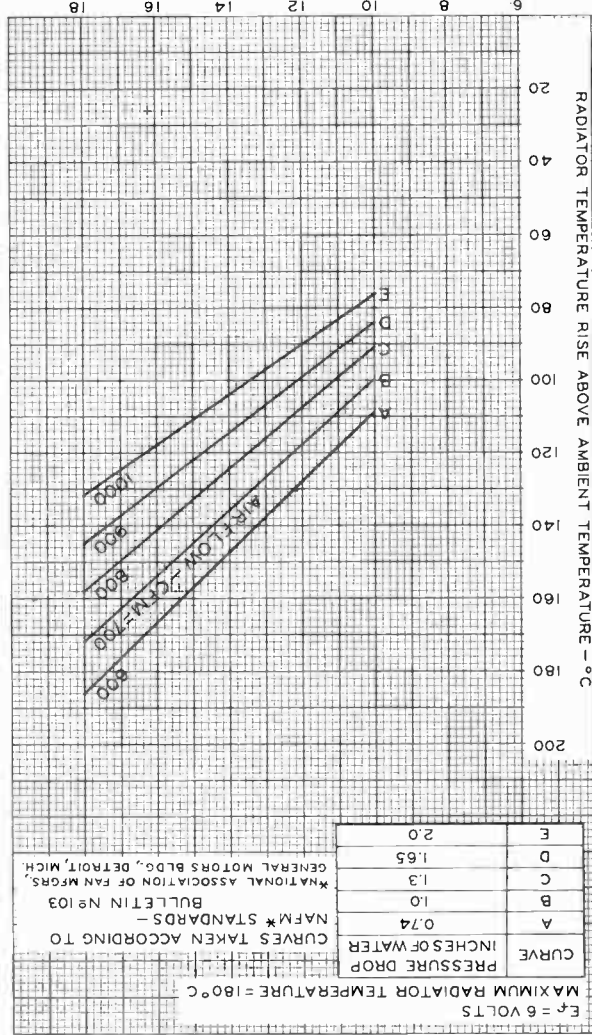
9C25



NOTE: FLEXIBLE CONNECTIONS ARE REQUIRED.

92CM-6750

PLATE DISSIPATION-KILOWATTS



CURVES TAKEN ACCORDING TO NAFM * STANDARDS - BULLETIN No 103 NATIONAL ASSOCIATION OF FAN MFGRS, GENERAL MOTORS BLDG., DETROIT, MICH.

COOLING REQUIREMENTS

9C25



9C25



10-Y

POWER AMPLIFIER TRIODE

10-Y

GENERAL DATA

Electrical:

Filament, Thoriated Tungsten:

Voltage 7.5 ac or dc volts
 Current 1.25 amp
 Amplification Factor 8

Direct Interelectrode Capacitances (Approx.):

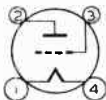
Grid to Plate 7 $\mu\mu\text{f}$
 Grid to Filament 4 $\mu\mu\text{f}$
 Plate to Filament 3 $\mu\mu\text{f}$

Mechanical:

Mounting Position Vertical, base down
 Maximum Overall Length 5-3/8"
 Maximum Seated Length 4-3/4"
 Maximum Diameter 2-1/16"
 Bulb ST-16
 Base Medium-Shell Small 4-Pin Micanol, Bayonet
 Basing Designation for BOTTOM VIEW 4D

Pin 1 - Filament

Pin 2 - Plate



Pin 3 - Grid

Pin 4 - Filament

PLATE-MODULATED RF POWER AMPLIFIER - Class C Telephony

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

Maximum Ratings, Absolute Values:

DC PLATE VOLTAGE 350 max. volts
 DC GRID VOLTAGE -200 max. volts
 DC PLATE CURRENT 60 max. ma.
 DC GRID CURRENT 15 max. ma.
 PLATE INPUT 17.5 max. watts
 PLATE DISSIPATION 10 max. watts

Typical Operation:

DC Plate Voltage	250	350	. . . . . volts
DC Grid Voltage	-95	-135	. . . . . volts
Peak RF Grid Voltage	195	235	. . . . . volts
DC Plate Current	45	45	. . . . . ma.
DC Grid Current (Approx.) [□]	15	15	. . . . . ma.
Driving Power (Approx.) [□]	3	3.5	. . . . . watts
Power Output (Approx.)	5.5	8	. . . . . watts

[□] Subject to wide variations as explained on sheet TUBE RATINGS in General Section.

10-Y



10-Y

POWER AMPLIFIER TRIODE

RF POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation [□]

Maximum Ratings, Absolute Values:

DC PLATE VOLTAGE	450 max.	volts
DC GRID VOLTAGE.	-200 max.	volts
DC PLATE CURRENT	60 max.	ma.
DC GRID CURRENT.	15 max.	ma.
PLATE INPUT.	27 max.	watts
PLATE DISSIPATION.	15 max.	watts

Typical Operation:

DC Plate Voltage	350	450	..	volts
DC Grid Voltage.	-90	-115	..	volts
Peak RF Grid Voltage	190	215	..	volts
DC Plate Current	55	55	..	ma.
DC Grid Current (Approx.) [□]	15	15	..	ma.
Driving Power (Approx.) [□]	3	3.3	..	watts
Power Output (Approx.)	9	13	..	watts

[□] Subject to wide variations as explained on sheet TUBE RATINGS in General Section.

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

Data on operating frequencies for the 10-Y are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY



203-A

203-A

R-F POWER AMPLIFIER, OSCILLATOR, CLASS B MODULATOR

Filament	Thoriated Tungsten	
Voltage	10	a-c or d-c volts
Current	3.25	amp.
Amplification Factor	25	
Direct Interelectrode Capacitances (approx.):		
Grid to Plate	14.5	μf
Grid to Filament	6.5	μf
Plate to Filament	5.5	μf
Maximum Overall Length		7-7/8"
Maximum Diameter		2-5/16"
Bulb		T-18
Base		Jumbo 4-Large Pin

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

A-F POWER AMPLIFIER & MODULATOR - Class B

D-C Plate Voltage	1250 max.	volts
Max-Signal D-C Plate Current *	175 max.	ma.
Max-Signal Plate Input *	220 max.	watts
Plate Dissipation *	100 max.	watts

Typical Operation - 2 tubes:

Unless otherwise specified, values are for 2 tubes.

Filament Voltage	10	10	a-c volts
D-C Plate Voltage	1000	1250	volts
D-C Grid Voltage	-35	-45	volts
Peak A-F Grid-to-Grid Voltage	310	330	volts
Zero-Signal D-C Plate Current	26	26	ma.
Max-Signal D-C Plate Current	320	320	ma.
Load Resistance (per tube)	1725	2250	ohms
Effective Load Res. (plate to plate)	6900	9000	ohms
Max-Signal Driving Power	10	11	approx. watts
Max-Signal Power Output	200	260	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 fact. of 1.0

D-C Plate Voltage	1250 max.	volts
D-C Plate Current	150 max.	ma.
R-F Grid Current	6 max.	amp.
Plate Input	150 max.	watts
Plate Dissipation	100 max.	watts

Typical Operation:

Filament Voltage	10	10	a-c volts
D-C Plate Voltage	1000	1250	volts
D-C Grid Voltage	-35	-45	volts
Peak R-F Grid Voltage	95	90	volts
D-C Plate Current	130	106	ma.
D-C Grid Current **	5	3	approx. ma.
Driving Power ** 0	5	3	approx. watts
Power Output	40	42.5	approx. watts

** Subject to wide variations as explained on sheet TRANS. TUBE RATINGS
0 At crest of a-f cycle with Modulation Factor of 1.0.

← Indicates a change.

APRIL 5, 1937

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA

203-A



203-A

R-F POWER AMPLIFIER, OSCILLATOR, CLASS B MODULATOR

(continued from preceding page)

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

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

→ D-C Plate Voltage	1000 max.	volts
D-C Grid Voltage	-400 max.	volts
D-C Plate Current	175 max.	ma.
D-C Grid Current	60 max.	ma.
R-F Grid Current	6 max.	amp.
Plate Input	175 max.	watts
Plate Dissipation	67 max.	watts
Typical Operation:		
Filament Voltage	10	10 a-c volts
D-C Plate Voltage	750	1000 volts
D-C Grid Voltage	-100	-135 volts
Peak R-F Grid Voltage	235	275 volts
D-C Plate Current	150	150 ma.
D-C Grid Current **	50	50 approx.ma.
Driving Power **	12	14 approx.watts
Power Output	65	100 approx.watts

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation #

→ D-C Plate Voltage	1250 max.	volts
D-C Grid Voltage	-400 max.	volts
D-C Plate Current	175 max.	ma.
D-C Grid Current	60 max.	ma.
R-F Grid Current	7.5 max.	amp.
Plate Input	220 max.	watts
Plate Dissipation	100 max.	watts
Typical Operation:		
Filament Voltage	10	10 10 a-c volts
D-C Plate Voltage	750	1000 1250 volts
D-C Grid Voltage	-75	-100 -125 volts
Peak R-F Grid Voltage	195	225 255 volts
D-C Plate Current	150	150 150 ma.
D-C Grid Current **	25	25 25 approx.ma.
Driving Power **	5	6 7 approx.watts
Power Output	65	100 130 approx.watts

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

** Subject to wide variations as explained on sheet TRANS. TUBE RATINGS.

For use of the 203-A at the higher frequencies, refer to sheet TPANS. TUBE RATINGS vs FREQUENCY.

OUTLINE DIMENSIONS, TUBE SYMBOL, and
SOCKET CONNECTIONS for the 203-A are the same
as for the 211

← Indicates a change

APRIL 5, 1937

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY INC
World Radio History

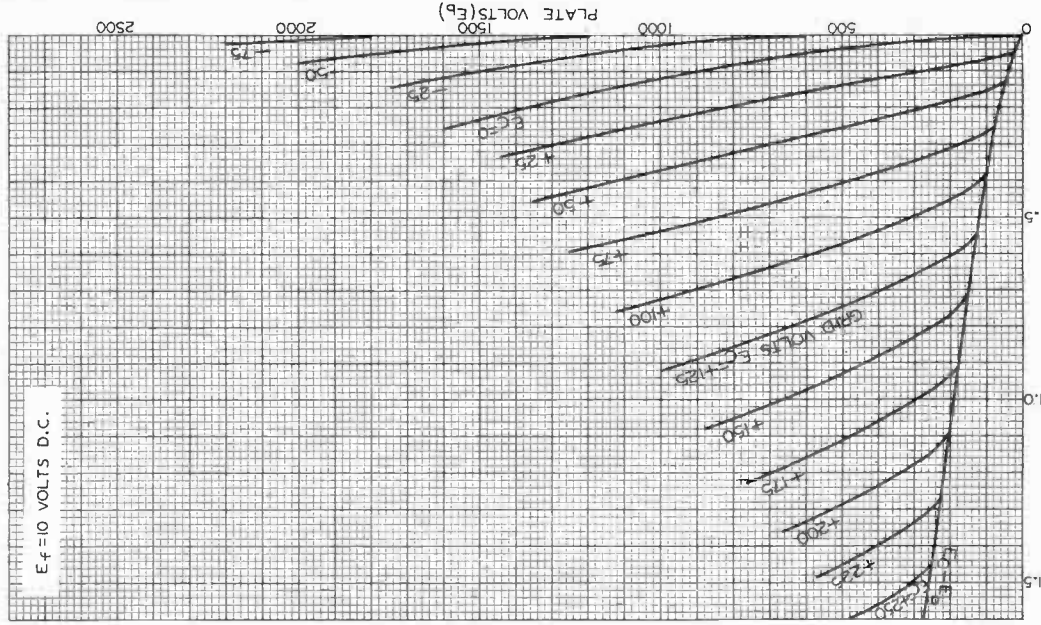
DATA



203-A

AVERAGE PLATE CHARACTERISTICS

$E_f = 10$ VOLTS D.C.



203-A

FEB. 27, 1934

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

925-5463

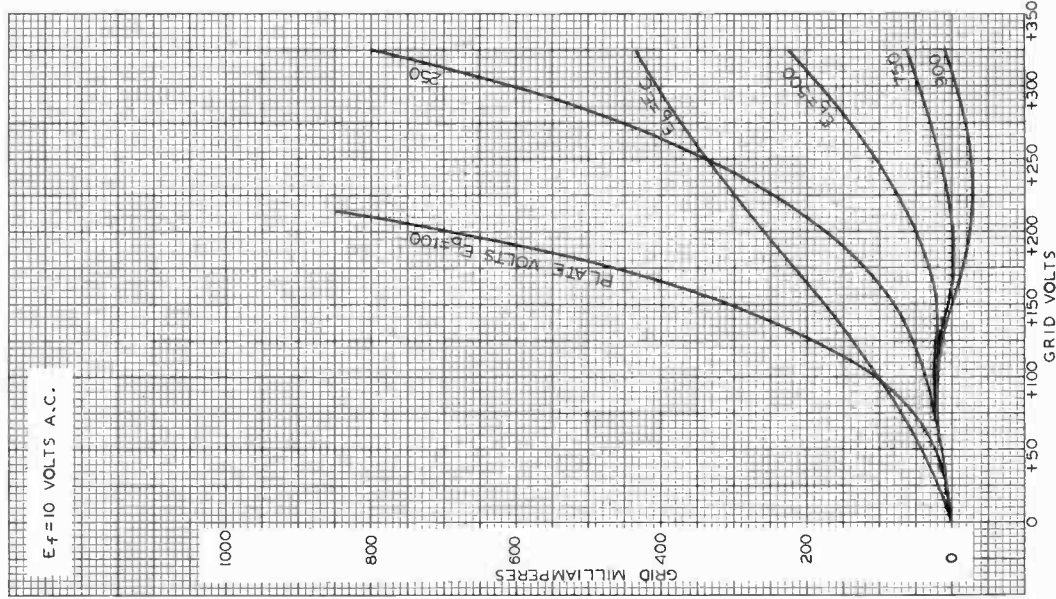
203-A



203-A

AVERAGE CHARACTERISTICS

$E_f = 10$ VOLTS A.C.





204-A

204-A

R-F POWER AMPLIFIER, OSCILLATOR, CLASS B MODULATOR

Filament	Thoriated Tungsten	
Voltage	11	a-c or d-c volts
Current	3.85	amp.
Amplification Factor	23	
Direct Interelectrode Capacitances (approx.):		
Grid to Plate	15	μuf
Grid to Filament	12.5	μuf
Plate to Filament	2.3	μuf
Overall Length	14-1/4" \pm 1/8"	
Maximum Diameter	4-1/16"	
Bulb	T-32	
Cap	No. 1904	
Base	No. 3502	

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

A-F POWER AMPLIFIER & MODULATOR - Class B

D-C Plate Voltage	3000 max.	volts
Max.-Signal D-C Plate Current *	275 max.	ma.
Max.-Signal Plate Input *	600 max.	watts
Plate Dissipation *	250 max.	watts
Typical Operation - 2 tubes:		

Unless otherwise specified, values are for 2 tubes.

Filament Voltage	11	11	11	a-c volts
D-C Plate Voltage	2000	2500	3000	volts
D-C Grid Voltage	-60	-80	-100	volts
Peak A-F Grid-to-Grid Volt.	500	500	500	volts
Zero-Sig. D-C Plate Cur.	80	80	80	ma.
Max.-Sig. D-C Plate Cur.	500	420	372	ma.
Load Resistance (per tube)	2200	3400	5000	ohms
Effective Load Resistance (plate to plate)	8800	13600	20000	ohms
Max.-Signal Driving Power	20	18	18	approx. watts
Max.-Signal Power Output	600	650	700	approx. watts

* Averaged over any audio-frequency cycle.

R-F POWER AMPLIFIER - Class B Telephony

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

D-C Plate Voltage	2500 max.		volts
D-C Plate Current	225 max.		ma.
R-F Grid Current	8 max.		amp.
Plate Input	400 max.		watts
Plate Dissipation	250 max.		watts
Typical Operation:			
Filament Voltage	11	11	a-c volts
D-C Plate Voltage	1500	2000	volts
D-C Grid Voltage	-50	-70	volts
Peak R-F Grid Voltage	170	165	volts
D-C Plate Current	200	160	ma.
Driving Power ** \circ	18	15	approx. watts
Power Output	80	100	approx. watts

** \circ : See next page.

(continued on next page)

OCT. 10, 1936 (6-36)

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY INC.

DATA



204-A

R-F POWER AMPLIFIER, OSCILLATOR, CLASS B MODULATOR

(continued from preceding page)

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

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

D-C Plate Voltage	2000 max.	volts
D-C Grid Voltage	-500 max.	volts
D-C Plate Current	275 max.	ma.
D-C Grid Current	80 max.	ma.
R-F Grid Current	8 max.	amp.
Plate Input	550 max.	watts
Plate Dissipation	167 max.	watts

Typical Operation:

Filament Voltage	11	11	a-c volts
D-C Plate Voltage	1500	2000	volts
D-C Grid Voltage	-200	-250	volts
Peak R-F Grid Voltage	450	500	volts
D-C Plate Current	250	250	ma.
D-C Grid Current **	35	35	approx.ma.
Driving Power **	20	20	approx.watts
Power Output	225	350	approx.watts

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation **

D-C Plate Voltage	2500 max.	volts
D-C Grid Voltage	-500 max.	volts
D-C Plate Current	275 max.	ma.
D-C Grid Current	80 max.	ma.
R-F Grid Current	10 max.	amp.
Plate Input	690 max.	watts
Plate Dissipation	250 max.	watts

Typical Operation:

Filament Voltage	11	11	11	a-c volts
D-C Plate Voltage	1500	2000	2500	volts
D-C Grid Voltage	-150	-175	-200	volts
Peak R-F Grid Voltage	400	425	440	volts
D-C Plate Current	250	250	250	ma.
D-C Grid Current **	30	30	30	approx.ma.
Driving Power **	15	15	15	approx.watts
Power Output	240	350	450	approx.watts

** Subject to wide variations as explained on sheet TRANS. TUBE RATINGS.

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

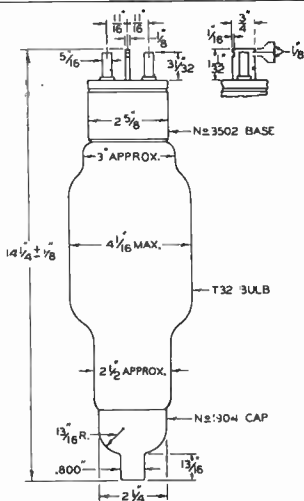
° At crest of audio-frequency cycle with modulation factor of 1.0.

For use of the 204-A at the higher frequencies, refer to sheet
TRANS. TUBE RATINGS vs FREQUENCY.

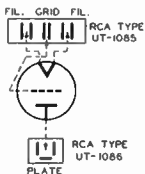


204-A

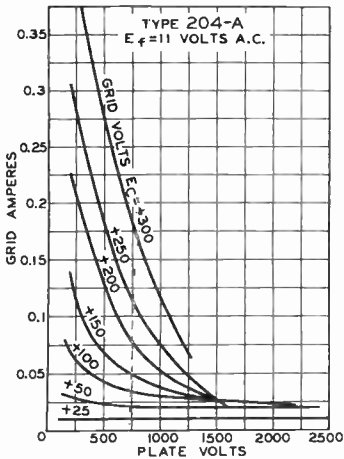
204-A R-F POWER AMPLIFIER, OSCILLATOR CLASS B MODULATOR



TUBE SYMBOL & CONNECTIONS
TO END-MOUNTINGS



TYPICAL CHARACTERISTICS



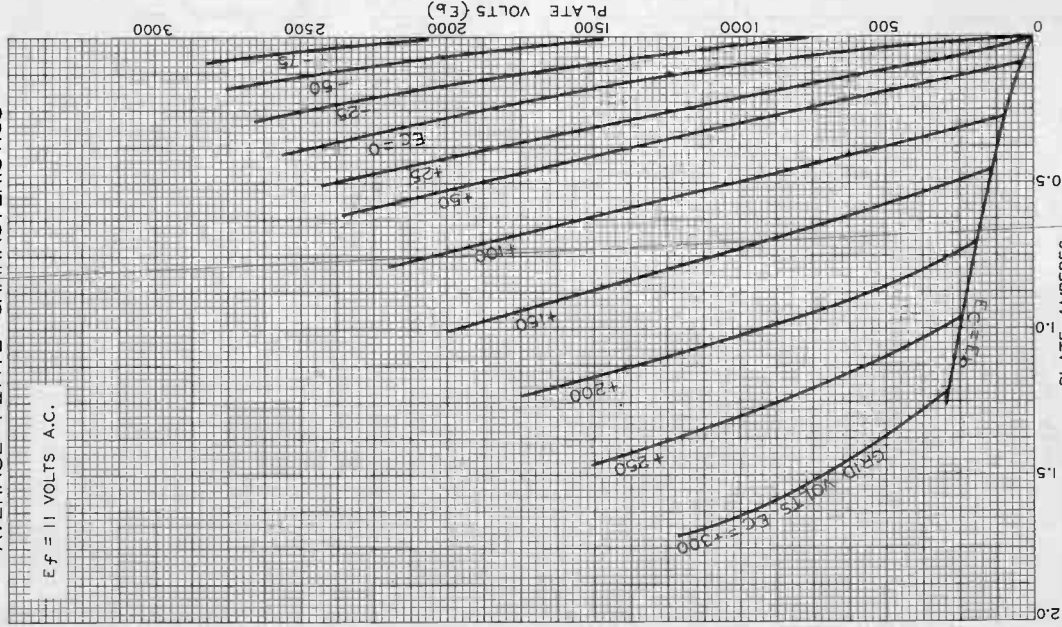
92C-4456R1



204-A

AVERAGE PLATE CHARACTERISTICS

$E_f = 11$ VOLTS A.C.



204-A



207

POWER TRIODE

WATER COOLED

GENERAL DATA

Electrical:

Filament, Tungsten:

Voltage. 22 ac or dc volts

Current. 52 amp

Starting Current: The filament current must never exceed 100 amperes, even momentarily.

Cold Resistance. 0.03 ohm

NOTE: This tube can often be operated with reduced filament voltage as explained on sheet TYPES OF CATHODES in the General Section.

Amplification Factor 20

Direct Interelectrode Capacitances (Approx.):

Grid to Plate. 27 $\mu\mu\text{f}$

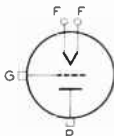
Grid to Filament 18 $\mu\mu\text{f}$

Plate to Filament. 2 $\mu\mu\text{f}$

Mechanical:

Terminal Connections:

F - Filament
G - Grid
Terminal



P - Water-Cooled
Plate
Terminal

Mounting Position. Vertical, Filament End Up

Maximum Overall Length 20-1/4"

Maximum Radius 6-1/2"

Water Flow 3 to 8 gpm

The water flow must start before the application of any voltages and must continue for 2 minutes after the removal of all voltages.

Outlet Water Temperature 70 max. °C

Water Pressure in Jacket 80 max. psi

Components:

Water Jacket RCA MI-7415

Gasket RCA MI-7440

AF POWER AMPLIFIER & MODULATOR - Class B

Maximum CCS* Ratings, Absolute Values:

DC PLATE VOLTAGE 15000 max. volts

MAX.-SIGNAL DC PLATE CURRENT* 2 max. amp

MAX.-SIGNAL PLATE INPUT* 20 max. kw

PLATE DISSIPATION* 7.5 max. kw

Typical Operation:

Values are for 2 tubes

DC Plate Voltage 6000 10000 12500 volts

DC Grid Voltage† -210 -410 -575 volts

Peak AF Grid-to-Grid Voltage 1520 2140 2300 volts

Zero-Signal DC Plate Current 0.5 0.5 0.4 amp

Max.-Signal DC Plate Current 2.5 3.2 2.8 amp

*.†: See next page.

← Indicates a change.



POWER TRIODE

Effective Load Resistance (Plate-to-plate) . . .	4200	6400	10000	ohms
Max.-Signal Driving Power (Approx.) . . .	190	380	400	watts
Max.-Signal Power Output (Approx.) . . .	8	20	22.5	kw

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

RF POWER AMPLIFIER - Class B Telephony

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

Maximum CCS[®] Ratings, Absolute Values:

DC PLATE VOLTAGE	15000	max.	volts
DC PLATE CURRENT	1	max.	amp
PLATE INPUT.	15	max.	kw
PLATE DISSIPATION.	10	max.	kw

Typical Operation:

DC Plate Voltage	6000	10000	14000	volts
DC Grid Voltage†	-225	-440	-650	volts
Peak RF Grid Voltage	400	600	730	volts
DC Plate Current	0.62	0.93	1	amp
Driving Power (Approx.) [▲]	72	16	0	watts
Power Output (Approx.)	1	2.5	4	kw

PLATE-MODULATED RF POWER AMPLIFIER - Class C Telephony

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

Maximum CCS[®] Ratings, Absolute Values:

DC PLATE VOLTAGE	10000	max.	volts
DC GRID VOLTAGE.	-3000	max.	volts
DC PLATE CURRENT	1	max.	amp
DC GRID CURRENT.	0.2	max.	amp
PLATE INPUT.	10	max.	kw
PLATE DISSIPATION.	6.6	max.	kw

Typical Operation:

DC Plate Voltage	6000	8000	10000	volts
DC Grid Voltage [●] #	-1200	-1600	-2000	volts
Peak RF Grid Voltage	1860	2300	2660	volts
DC Plate Current	0.76	0.78	0.75	amp
DC Grid Current (Approx.). . . .	0.15	0.14	0.07	amp
Driving Power (Approx.).	280	325	185	watts
Power Output (Approx.)	3.5	5	6	kw

† For dc filament supply.

▲ At crest of audio-frequency cycle with modulation factor of 1.0.

● Obtained by grid resistor or by partial self-bias methods.

•, #: See next page.



207 POWER TRIODE

RF POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation [□]

Maximum CCS* Ratings, Absolute Values:

DC PLATE VOLTAGE	15000 max.	volts
DC GRID VOLTAGE.	-3000 max.	volts
DC PLATE CURRENT	2 max.	amp
DC GRID CURRENT.	0.2 max.	amp
PLATE INPUT.	30 max.	kw
PLATE DISSIPATION.	10 max.	kw

Typical Operation:

DC Plate Voltage	8000	10000	12000	volts
DC Grid Voltage ^{▲▲#}	-1000	-1200	-1600	volts
Peak RF Grid Voltage	1730	2050	2650	volts
DC Plate Current	1.10	1.33	1.67	amp
DC Grid Current (Approx.)	0.17	0.12	0.09	amp
Driving Power (Approx.)	295	245	235	watts
Power Output (Approx.)	6.5	10	15	kw

* Continuous Commercial Service.

For ac filament supply.

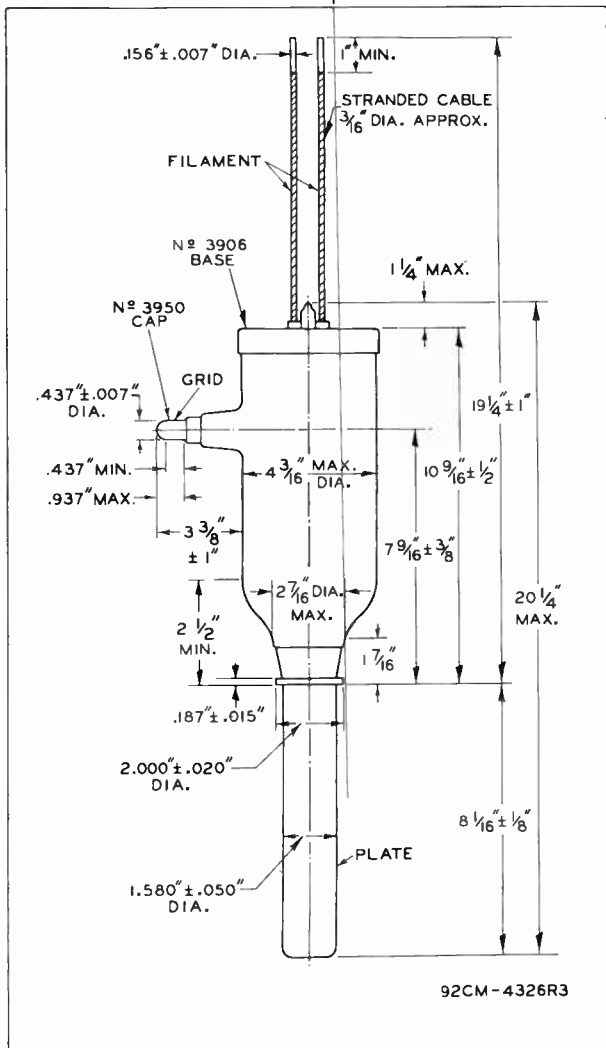
□ Modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115% of the carrier conditions.

▲▲ obtained from fixed supply, by grid resistor, or by cathode resistor.

Data on operating frequencies for the 207 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.



POWER TRIODE

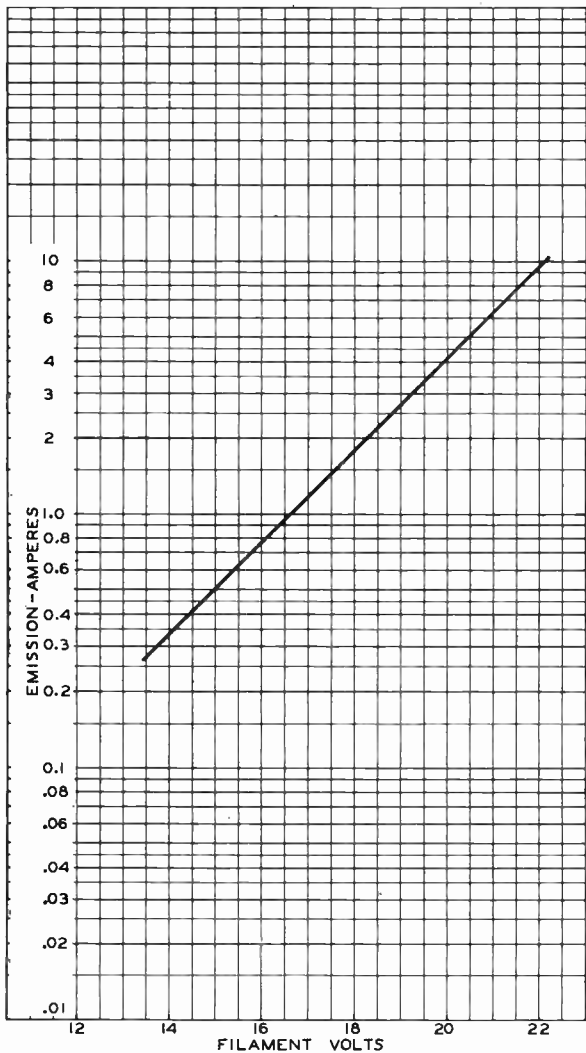




207

207

AVERAGE FILAMENT-EMISSION CHARACTERISTIC



SEPT. 2, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-4551

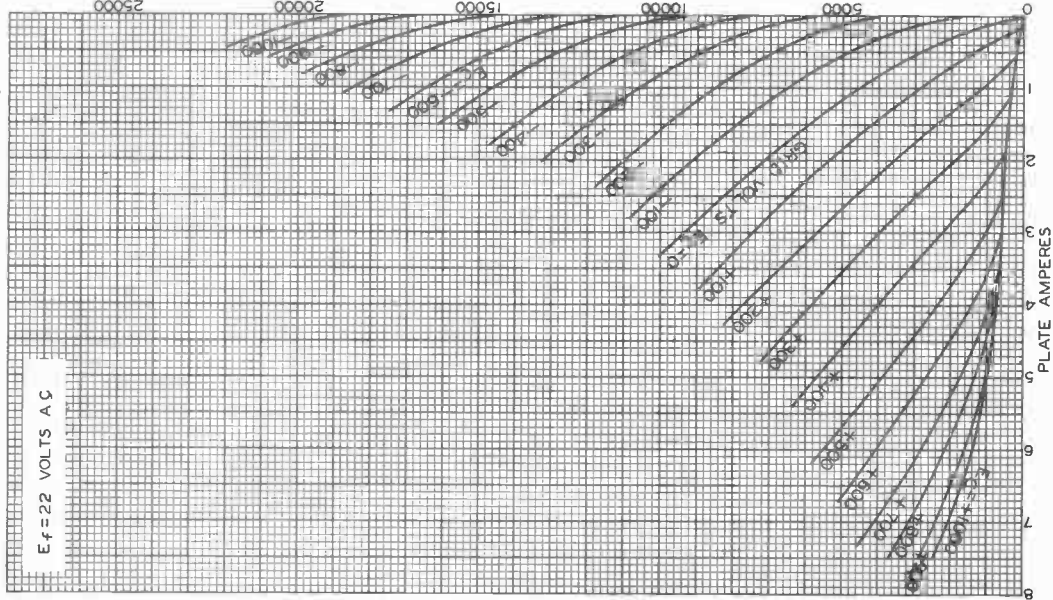
207



207

AVERAGE PLATE CHARACTERISTICS

$E_f = 22$ VOLTS A C



World Precision



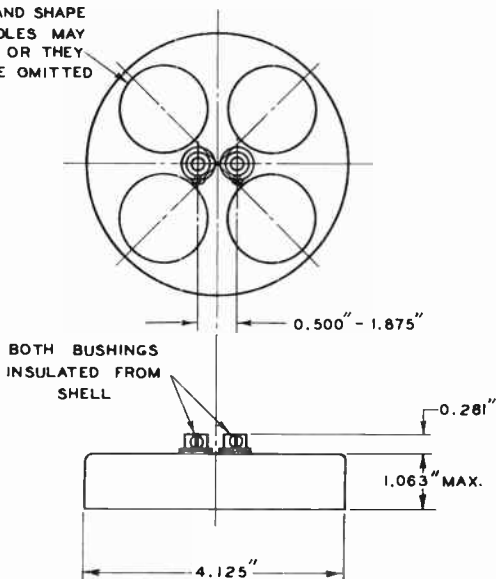
207

207 POWER TRIODE

TERMINAL-SUPPORT SHELL

N^o 3906

SIZE AND SHAPE
OF HOLES MAY
VARY OR THEY
MAY BE OMITTED

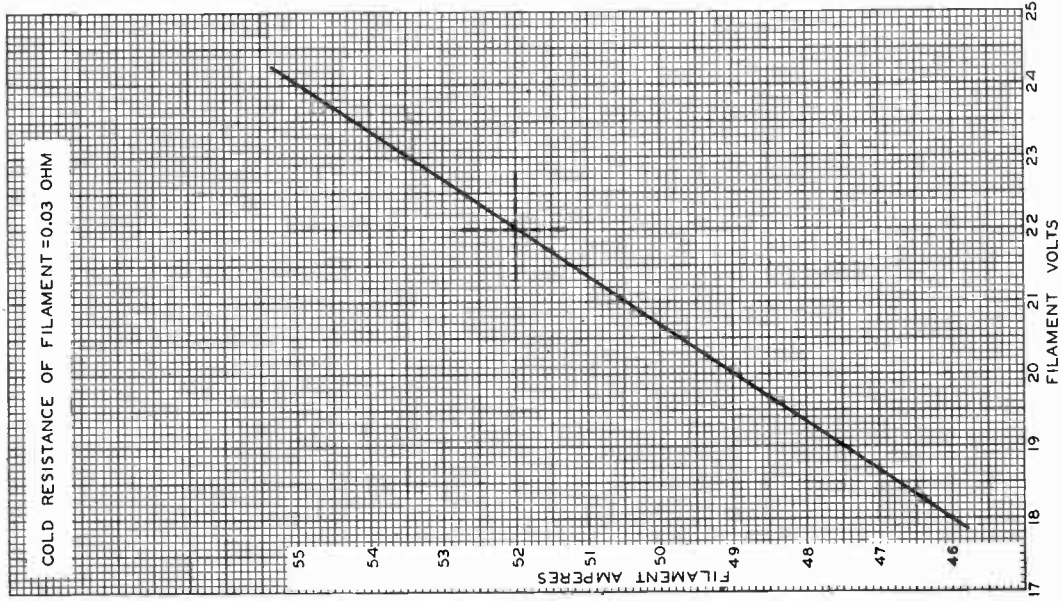


92CS-7020



AVERAGE FILAMENT CHARACTERISTIC

COLD RESISTANCE OF FILAMENT = 0.03 OHM

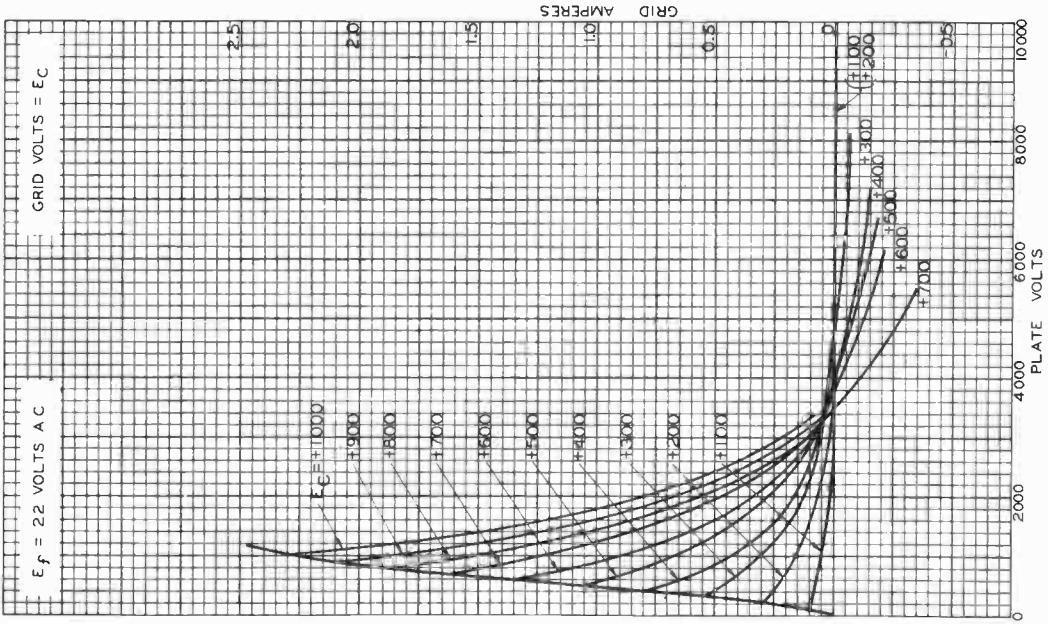




207

207

TYPICAL CHARACTERISTICS



SEPT. 2, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-5551



207

AVERAGE CONSTANT-CURRENT CHARACTERISTICS

$E_f = 22$ VOLTS AC

GRID AMPERES = I_C
PLATE AMPERES = I_b

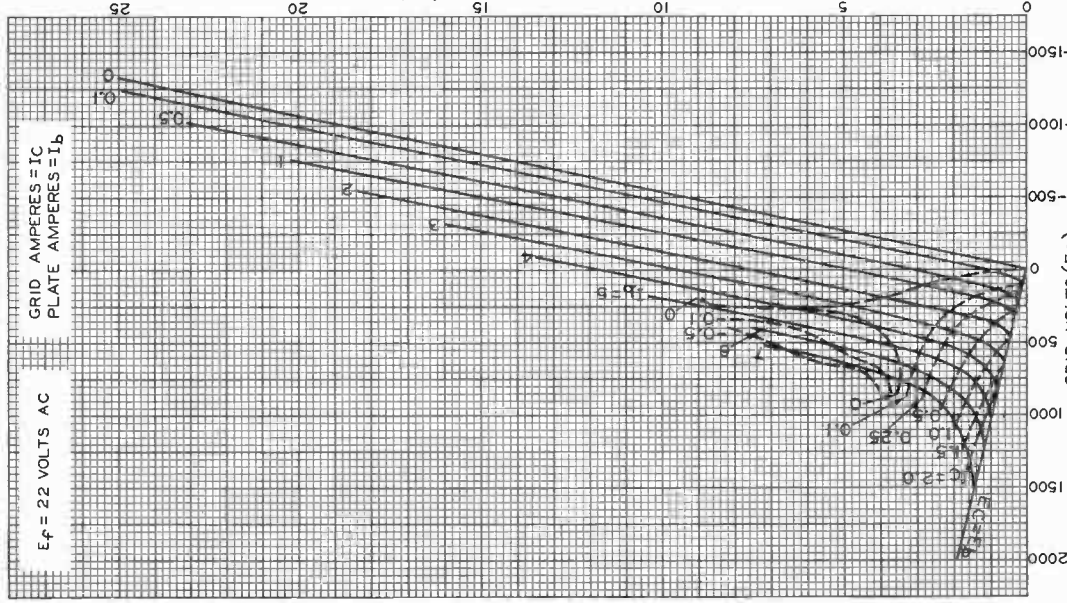


PLATE KILOVOLTS (E_p)

GRID VOLTS (E_c)

SEPT. 2, 1948

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6084

207



211

R-F POWER AMPLIFIER, OSCILLATOR, A-F POWER AMPLIFIER, MODULATOR

Filament	Thoriated Tungsten	
Voltage	10	a-c or d-c volts
Current	3.25	amp.
Amplification Factor	12	
Direct Interelectrode Capacitances:		
Grid to Plate	14.5	μf
Grid to Filament	6.0	μf
Plate to Filament	5.5	μf
Maximum Overall length		7-7/8"
Maximum Diameter		2-5/16"
Bulb		T-18
Base		Jumbo 4-Large Pin

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

A-F POWER AMPLIFIER & MODULATOR - Class A

D-C Plate Voltage	1250 max.		volts
Plate Dissipation	75 max.		watts
Typical Operation and Characteristics:			
Filament Voltage	10	10	a-c volts
D-C Plate Voltage	750	1000	1250 volts
D-C Grid Voltage	-45	-61	-80 volts
Peak A-F Grid Voltage	41	56	75 volts
D-C Plate Current	34	53	60 ma.
Plate Resistance	4400	3600	3600 ohms
Mutual Conductance	2750	3150	3300 μmhos
Load Resistance	8800	7600	9200 ohms
U.P.O. (15% second harmonic)	5.6	12	19.7 watts

A-F POWER AMPLIFIER & MODULATOR - Class B

D-C Plate Voltage	1250 max.		volts
Max-Signal D-C Plate Current*	175 max.		ma.
Max-Signal Plate Input*	220 max.		watts
Plate Dissipation*	100 max.		watts

Typical Operation - 2 tubes:

Unless otherwise specified, values are for 2 tubes.

Filament Voltage	10	10	a-c volts
D-C Plate Voltage	1000	1250	volts
D-C Grid Voltage	-77	-100	volts
Peak A-F Grid-to-Grid Voltage	380	410	volts
Zero-Sig. D-C Plate Current	20	20	ma.
Max-Sig. D-C Plate Current	320	320	ma.
Load Resistance (per tube)	1725	2250	ohms
Effective Load Res. (plate-to-plate)	9000	9000	ohms
Max-Signal Driving Power	7.5	8	approx. watts
Max-Signal Power Output	200	260	approx. watts

R-F POWER AMPLIFIER - Class B Telephony

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

D-C Plate Voltage	1250 max.		volts
D-C Plate Current	150 max.		ma.
R-F Grid Current	6 max.		amp.

* Averaged over any audio-frequency cycle.
(continued on next page)



211

R-F POWER AMPLIFIER, OSCILLATOR, A-F POWER AMPLIFIER, MODULATOR

(continued from preceding page)

Plate Input	150	max.	watts
Plate Dissipation	100	max.	watts
Typical Operation:			
Filament Voltage	10	10	a-c volts
D-C Plate Voltage	1000	1250	volts
D-C Grid Voltage	-77	-100	volts
Peak R-F Grid Voltage	125	125	volts
D-C Plate Current	130	106	ma.
D-C Grid Current**	5	1	approx. ma.
Driving Power ^o **	10	7.5	approx. watts
Power Output	40	42.5	approx. watts

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

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

D-C Plate Voltage	1000	max.	volts
D-C Grid Voltage	-400	max.	volts
D-C Plate Current	175	max.	ma.
D-C Grid Current	50	max.	ma.
R-F Grid Current	6	max.	amp.
Plate Input	175	max.	watts
Plate Dissipation	67	max.	watts
Typical Operation:			
Filament Voltage	10	10	a-c volts
D-C Plate Voltage	750	1000	volts
D-C Grid Voltage	-200	-260	volts
Peak R-F Grid Voltage	350	410	volts
D-C Plate Current	150	150	ma.
D-C Grid Current**	35	35	approx. ma.
Driving Power**	12	14	approx. watts
Power Output	65	100	approx. watts

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation**

D-C Plate Voltage	1250	max.	volts
D-C Grid Voltage	-400	max.	volts
D-C Plate Current	175	max.	ma.
D-C Grid Current	50	max.	ma.
R-F Grid Current	7.5	max.	amp.
Plate Input	220	max.	watts
Plate Dissipation	100	max.	watts
Typical Operation:			
Filament Voltage	10	10	10 a-c volts
D-C Plate Voltage	750	1000	1250 volts
D-C Grid Voltage	-135	-175	-225 volts
Peak R-F Grid Voltage	275	315	375 volts
D-C Plate Current	150	150	150 ma.
D-C Grid Current**	18	18	18 approx. ma.
Driving Power**	5	6	7 approx. watts
Power Output	65	100	130 approx. watts

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

^o See next page.

(continued on next page)



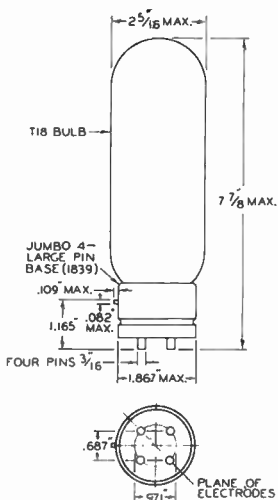
211

211

R-F POWER AMPLIFIER, OSCILLATOR, A-F POWER AMPLIFIER, MODULATOR

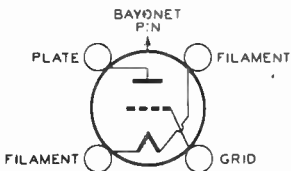
(continued from preceding page)

- ° At crest of a-f cycle with modulation factor of 1.0.
 - ** Subject to wide variations as explained on sheet TRANS. TUBE RATINGS.
- For use of the 211 at the higher frequencies, refer to sheet TRANS. TUBE RATINGS vs FREQUENCY.



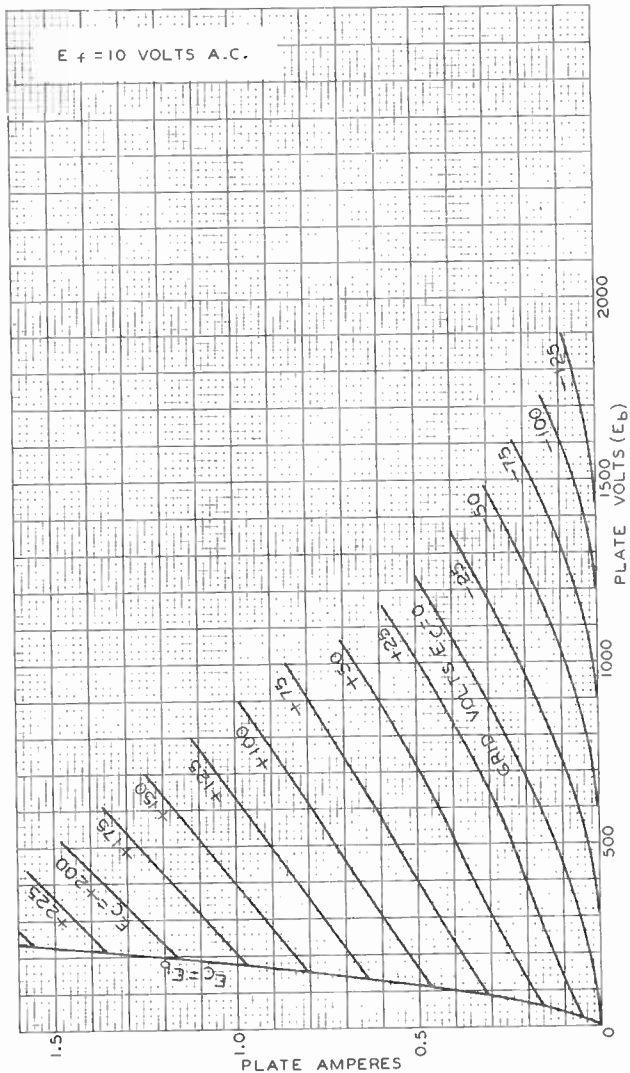
BOTTOM VIEW OF BASE

TUBE SYMBOL & TOP VIEW
OF
SOCKET CONNECTIONS





AVERAGE PLATE CHARACTERISTICS



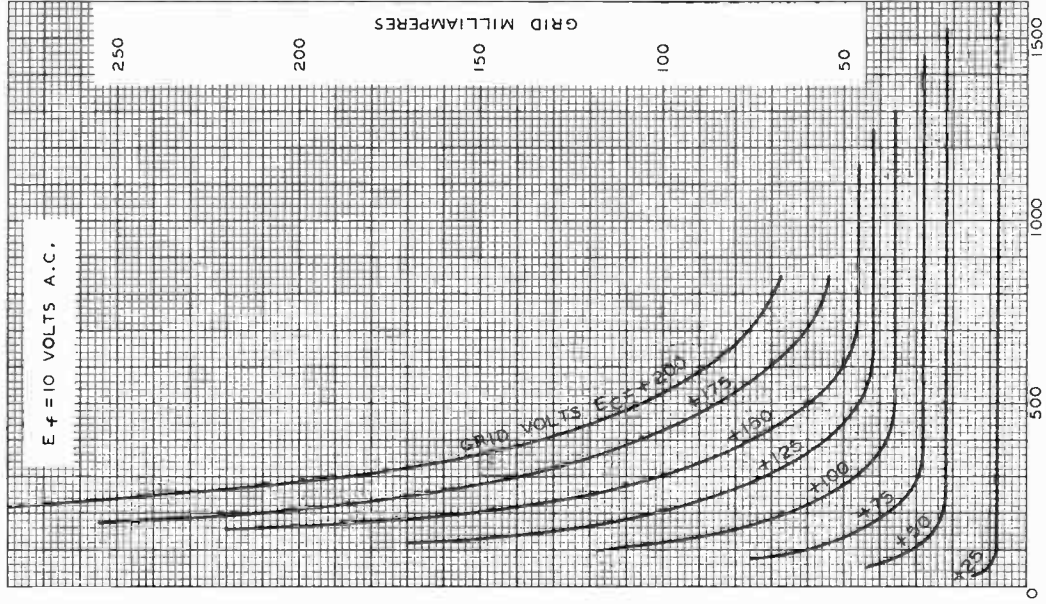


211

211

AVERAGE CHARACTERISTICS

$E_f = 10$ VOLTS A.C.



JAN. 13, 1936

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

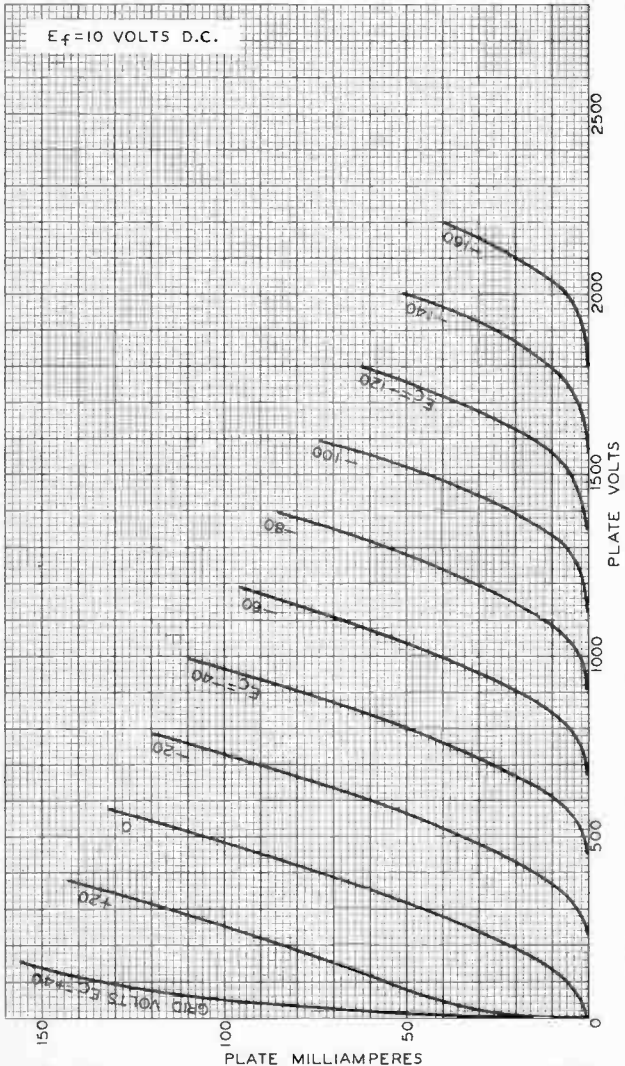
92C-4538

211



211

AVERAGE PLATE CHARACTERISTICS



AUG. 7, 1931

PLATE MILLIAMPERES

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

925-5311RI

World Radio History



217-C

217-C

HALF-WAVE VACUUM RECTIFIER

NOT RECOMMENDED FOR NEW EQUIPMENT DESIGN

GENERAL DATA

Electrical:

Filament, Thoriated Tungsten:

Voltage. 10.0 ac volts

Current. 3.25 amp

Mechanical:

Mounting Position. Vertical only, base down

Overall Length 8-1/4" ± 1/4"

Sealed Length. 7-15/16" ± 1/4"

Maximum Diameter 2-5/16"

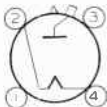
Bulb T-18

Cap. Medium

Base Medium-Metal-Shell Jumbo 4-Pin, Bayonet

Basing Designation for BOTTOM VIEW 2C

- Pin 1 - No Connection
- Pin 2 - Filament
- Pin 3 - No Connection



- Pin 4 - Filament
- Cap - Plate

HALF-WAVE RECTIFIER

Maximum Ratings, Absolute Values:

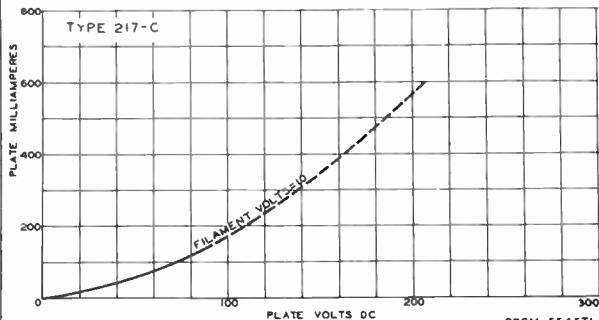
PEAK INVERSE PLATE VOLTAGE 7500 max. volts

PEAK PLATE CURRENT 0.6 max. amp

AVERAGE PLATE CURRENT 0.15 max. amp

OUTLINE DIMENSIONS for the 217-C are the same as those for type 805.

AVERAGE PLATE CHARACTERISTIC



92CM-5545T1

JUNE 20, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA





304TH

H-F POWER TRIODE

304TH

GENERAL DATA**Electrical:**

Filament, Thoriated Tungsten:

Arrangement	Series	Parallel	
Voltage.	10	5	ac or dc volts
Current.	12.5	25	amp
Amplification Factor.	20		

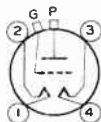
Direct Interelectrode Capacitances:

Grid to Plate.	10.2		$\mu\mu\text{f}$
Grid to Filament.	13.5		$\mu\mu\text{f}$
Plate to Filament.	0.7		$\mu\mu\text{f}$

Mechanical:

Mounting Position.	Vertical, base down
Overall Length	7-7/16" \pm 3/16"
Seated Length.	6-11/16" \pm 3/16"
Maximum Radius	1-13/16"
Cap.	Beaded Small
Base	See next page
Basing Designation for BOTTOM VIEW	4B C

- Pin 1 - Filament
No. 2
- Pin 2 - Filament
No. 2
- Pin 3 - Filament
No. 1



- Pin 4 - Filament
No. 1
- End Terminal - Plate
- Side Cap - Grid

AF POWER AMPLIFIER & MODULATOR --Class B**Maximum Ratings, Absolute Values:**

DC PLATE VOLTAGE	3000 max.	volts
MAX.-SIGNAL DC PLATE CURRENT*	900 max.	ma.
PLATE DISSIPATION*	300 max.	watts

Typical Operation:*Values are for two tubes*

DC Plate Voltage	1500	2000	3000	volts
DC Grid Voltage (Approx.).	-65	-90	-150	volts
Peak A ⁻ Grid-to-Grid Volt.	330	350	420	volts
Zero-Signal DC Plate Cur.	267	200	134	ma.
Max.-Signal DC Plate Cur.	1066	900	667	ma.
Effective Load Resistance (plate-to-plate).	2840	4820	10200	ohms
Max.-Signal Driving Power (Approx.).	17	12	6	watts
Max.-Signal Power Output (Approx.).	1000	1200	1400	watts

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

AUG. 15, 1946

TUBE DEPARTMENT

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History

304TH



304TH H-F POWER TRIODE

RF POWER AMPLIFIER & OSCILLATOR—Class C Telegraphy

Key-down conditions per tube without modulation

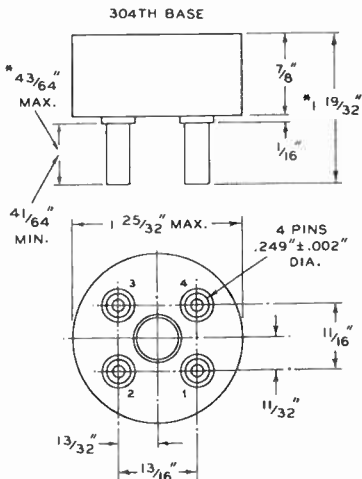
Maximum Ratings, Absolute Values:

DC PLATE VOLTAGE	3000 max. volts
DC PLATE CURRENT	900 max. ma.
DC GRID CURRENT	170 max. ma.
PLATE DISSIPATION	300 max. watts

Typical Operation:

DC Plate Voltage	1500	2000	3000	. . volts
DC Grid Voltage	-125	-200	-300	. . volts
Peak RF Grid Volt. (Approx.)	250	325	395	. . volts
DC Plate Current	667	600	500	. . ma.
DC Grid Current (Approx.)	115	125	135	. . ma.
Driving Power (Approx.)	25	39	53	. . watts
Power Output (Approx.)	700	900	1200	. . watts

Data on operating frequencies for the 304TH are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.



* ON FINISHED TUBE ADD .060" FOR SOLDER

92CS-6766

AUG. 15, 1946

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

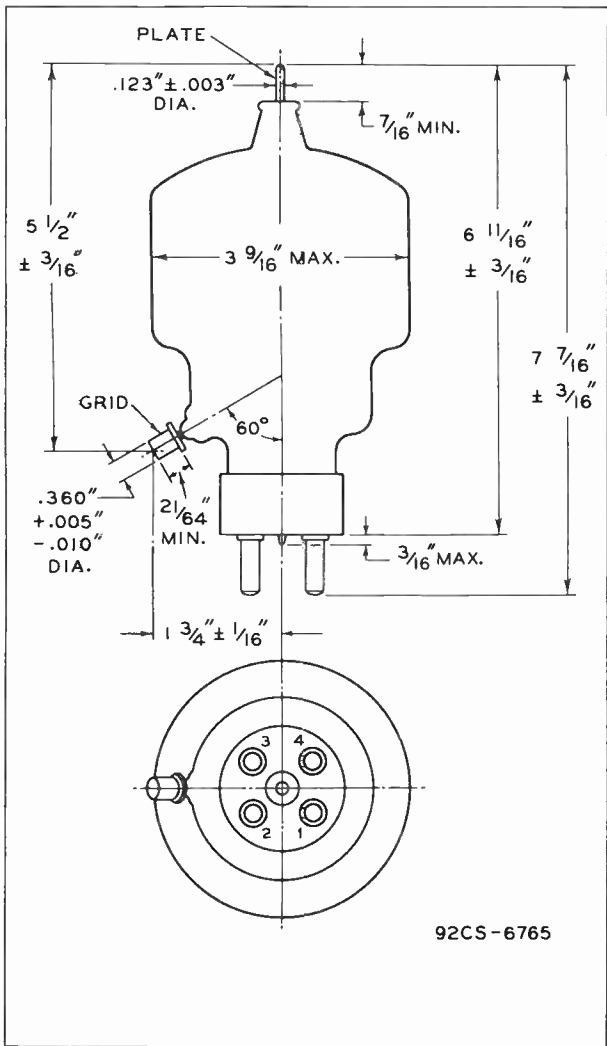
TENTATIVE DATA



304TH

304TH

H-F POWER TRIODE



AUG. 15, 1946

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

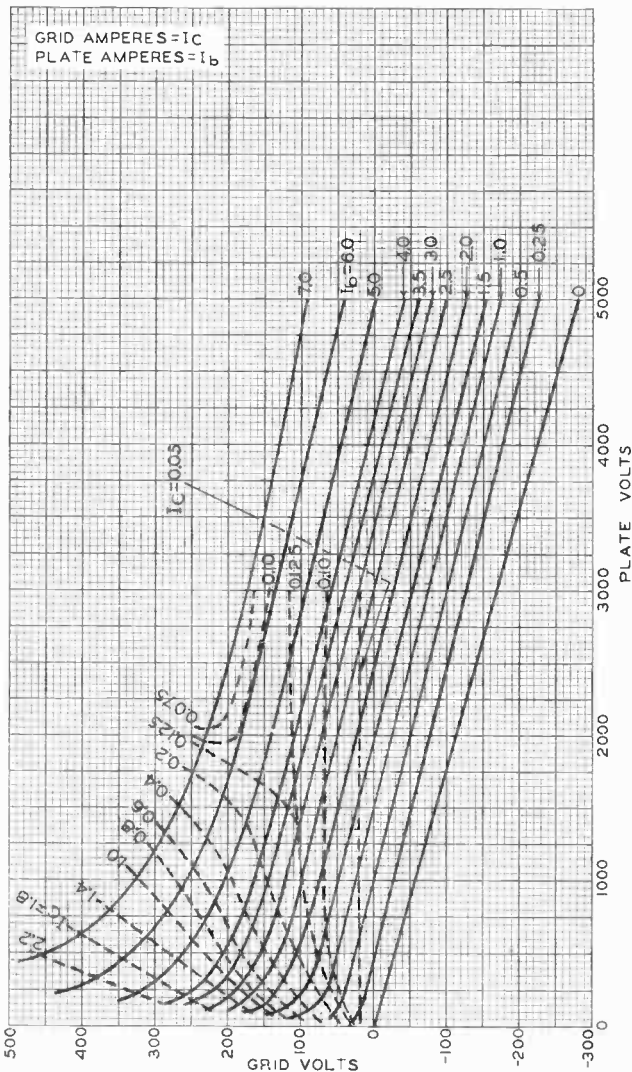
CE-6765

304TH



304TH

AVERAGE CONSTANT-CURRENT CHARACTERISTICS



MAY 22, 1946

TUBE DEPARTMENT

92CM-6768

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



575-A

575-A

HALF-WAVE MERCURY-VAPOR RECTIFIER

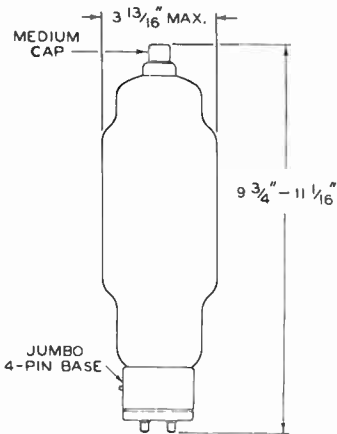
The 575-A has the same Ratings and Characteristics as the type 673. Mechanically, however, the 575-A differs from the 673 in its base, basing connections, and overall length.

Overall Length 9-3/4" to 11-1/16"
 Base Jumbo 4-Pin, Bayonet
 Basing Designation for BOTTOM VIEW 2C

Pin 1 - No
 Connection
 Pin 2 - Filament,
 Cathode
 Shield



Pin 3 - No
 Connection
 Pin 4 - Filament



92CS-6654





673

673

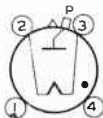
HALF-WAVE MERCURY-VAPOR RECTIFIERGENERAL DATA**Electrical:****Filament, Coated:**

Voltage	5.0 ± 5%	ac volts
Current	10.0	amp
Heating Time	30	sec.
Tube Voltage Drop (Approx.)	10	volts

Mechanical:

Mounting Position	Vertical, Base Down
Overall Length	10-1/16" to 11-3/8"
Seated Length	9-5/16" to 10-5/8"
Maximum Diameter	3-13/16"
Bulb	T-24
Cap.	Medium Metal with Insulating Collar
Base	Large Metal-Shell Super-Jumbo 4-Pin, Bayonet
Basing Designation for BOTTOM VIEW	2P

Pin 1 - No
Connection
Pin 2 - Filament,
Cathode
Shield



Pin 3 - Filament
Pin 4 - No
Connection
Cap - Anode

HALF-WAVE RECTIFIER**Maximum Ratings, Absolute Values:•**

COND.-MERCURY TEMP. RANGE [▲]	25 to 50	25 to 55	°C
PEAK INVERSE ANODE VOLTAGE	15000 max.	10000 max.	volts
PEAK ANODE CURRENT	6 max.	7 max.	amp
AVERAGE ANODE CURRENT [◻]	1.5 max.	1.75 max.	amp ←
SURGE ANODE CURRENT for 0.2 sec, max. [■]	60 max.	70 max.	amp

• For supply frequency up to 150 cycles per second.

◻ Averaged over any 20-second interval.

▲ operation at 35° ± 5°C is recommended.

■ Surge Anode Current is the highest value of abnormal peak current of short duration which the equipment designer should permit to pass through the tube under the most adverse conditions of service approximating a short circuit. Repeated surge currents of this value will seriously reduce, or even terminate tube life.

The table on the following page classifies suitable rectifier circuits for the 673 and shows their safe maximum input and maximum output operating conditions for two values of peak inverse voltage. These values are based on a sine-wave input and the use of a suitable choke preceding any capacitor in the filter circuit.

← Indicates a change.

673

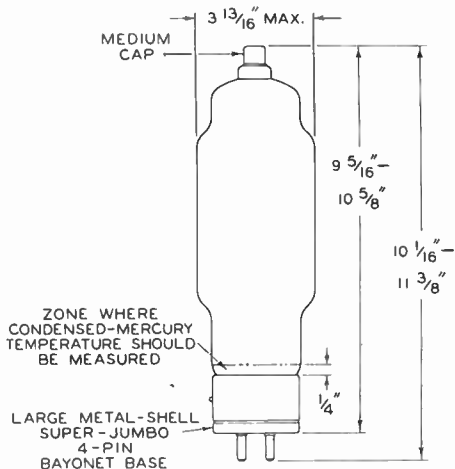


673

HALF-WAVE MERCURY-VAPOR RECTIFIER

CIRCUIT ^U	PEAK INVERSE ANODE VOLTS	MAX. AC INPUT VOLTS E_{RMS}	APPROX. DC OUTPUT VOLTS TO FILTER E_{AV}	MAX. DC OUTPUT CURRENT AMPERES I_{AV}
Single-Phase Full-Wave (2 Tubes) Fig. 1	15000	10600 total	4780	3.0
	10000	7070 total	3180	3.5
Single-Phase Full-Wave (4 Tubes) Fig. 2	15000	10600 total	9540	3.0
	10000	7070 total	6360	3.5
Three-Phase Half-Wave (3 Tubes) Fig. 3	15000	6100 per leg	7140	4.5
	10000	4090 per leg	4780	5.25
Three-Phase Double-Y Parallel (6 Tubes) Fig. 4	15000	6100 per leg	7140	9.0
	10000	4090 per leg	4780	10.5
Three-Phase Full-Wave (6 Tubes) Fig. 5	15000	6100 per leg	14280	4.5
	10000	4090 per leg	9560	5.25

^U For RECTIFIER CIRCUITS and RF FILTER CONSIDERATIONS refer to Type 872A/872.



92CS-6655R1

AUGUST 15, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



800

800

TRANSMITTING TRIODE

Filament	Thoriated Tungsten	
Voltage	7.5	a-c or d-c volts
Current	3.1	amp. ←
Amplification Factor	15	
Direct Interelectrode Capacitances:		
Grid to Plate	2.5	μμf
Grid to Filament	2.8	μμf
Plate to Filament	2.8	μμf
Overall Length		6-5/32" ± 7/32" ←
Seated Height		5-17/32" ± 7/32" ←
Maximum Diameter		2-11/16" ←
Bulb		S-21
Caps (two)		Small
Base		Medium 4-Pin, Bayonet ←
RCA Socket		Stock No. 9937 ←

Maximum Ratings Are Absolute Values

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

A-F POWER AMPLIFIER & MODULATOR - Class B

D-C Plate Voltage	1250 max.	volts
Max.-Signal D-C Plate Current*	115 max.	ma.
Max.-Signal Plate Input*	85 max.	watts
Plate Dissipation*	35 max.	watts

Typical Operation:

Unless otherwise specified, values are for 2 tubes.

D-C Plate Voltage	750	1000	1250	volts
D-C Grid Voltage**	-40	-55	-70	volts
Peak A-F Grid-to-Grid Volt.	320	300	300	volts
Zero-Signal D-C Plate Cur.	26	28	30	ma.
Max.-Signal D-C Plate Cur.	210	160	130	ma.
Load Resistance (per tube)	1600	3125	5250	ohms
Effective Load Resistance (plate to plate)	6400	12500	21000	ohms
Max.-Signal Driving Power	6.0	4.4	3.4	approx.watts
Max.-Signal Power Output	90	100	106	approx.watts

R-F POWER AMPLIFIER - Class B Telephony

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

D-C Plate Voltage	1250 max.	volts
D-C Plate Current	45 max.	ma.
Plate Input	50 max.	watts
Plate Dissipation	35 max.	watts

Typical Operation:

D-C Plate Voltage	750	1000	volts
D-C Grid Voltage**	-40	-55	volts
Peak R-F Grid Voltage	160	170	volts
D-C Plate Current	45	42	ma.
D-C Grid Current †	2	2	approx.ma.
Driving Power ⁰ †	3.6	3.3	approx.watts
Power Output	10	14	approx.watts

*, **, †, 0: See next page.

← indicates a change.

DEC. 15, 1944

RCA VICTOR DIVISION

DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History



TRANSMITTING TRIODE

(continued from preceding page)

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

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

D-C Plate Voltage		1000 max.	volts
D-C Grid Voltage		-400 max.	volts
D-C Plate Current		80 max.	ma.
D-C Grid Current		25 max.	ma.
Plate Input		80 max.	watts
Plate Dissipation		23 max.	watts
Typical Operation:			
D-C Plate Voltage	750	1000	volts
D-C Grid Voltage † †	{ -150	{ -200	volts
	{ 10000	{ 13300	ohms
Peak R-F Grid Voltage	275	325	volts
D-C Plate Current	70	70	ma.
D-C Grid Current †	15	15	<u>approx. ma.</u>
Driving Power †	3	4	<u>approx. watts</u>
Power Output	35	50	<u>approx. watts</u>

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation***

D-C Plate Voltage		1250 max.	volts	
D-C Grid Voltage		-400 max.	volts	
D-C Plate Current		80 max.	ma.	
D-C Grid Current		25 max.	ma.	
Plate Input		100 max.	watts	
Plate Dissipation		35 max.	watts	
Typical Operation:				
D-C Plate Voltage	750	1000	1250	volts
D-C Grid Voltage † † †	{ -100	{ -135	{ -175	volts
	{ 6700	{ 9000	{ 11700	ohms
	{ 1200	{ 1600	{ 2100	ohms
Peak R-F Grid Voltage	225	260	300	volts
D-C Plate Current	70	70	70	ma.
D-C Grid Current †	15	15	15	<u>approx. ma.</u>
Driving Power †	2	3	4	<u>approx. watts</u>
Power Output	35	50	65	<u>approx. watts</u>

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

** For a-c filament supply.

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

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

† Subject to wide variations as explained on sheet TUBE RATINGS in General Section.

†† obtained from grid resistor of value shown or by combination methods.

††† obtained from a fixed supply, by grid resistor (6700, 9000, 11700) or by cathode resistor (1200, 1600, 2100).

Data on operating frequencies for the 800 are given on the sheet TRANS. TUBE RATINGS vs. FREQUENCY.

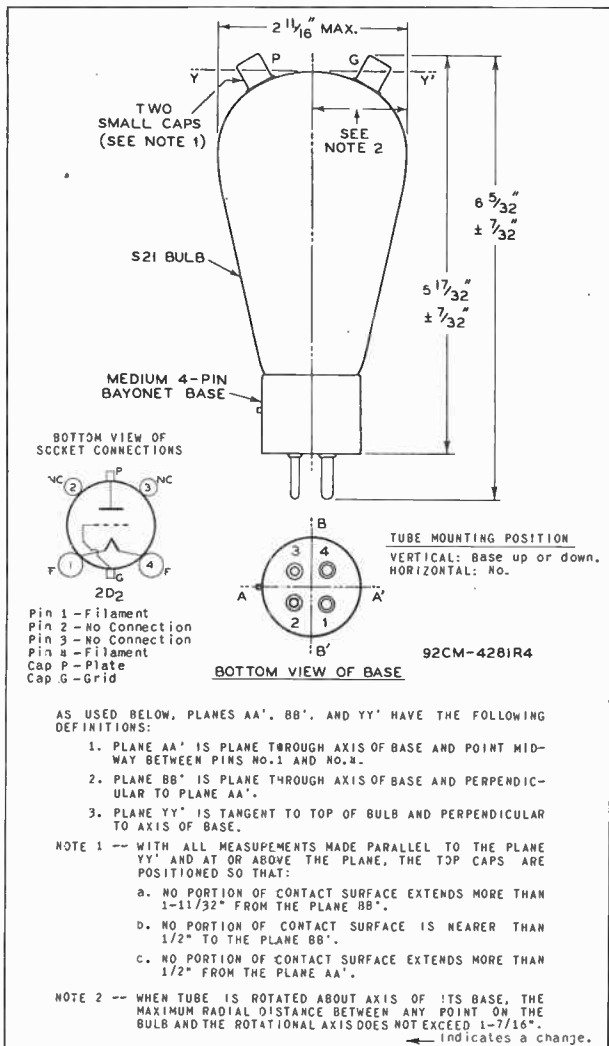
← Indicates a change.



800

800

TRANSMITTING TRIODE



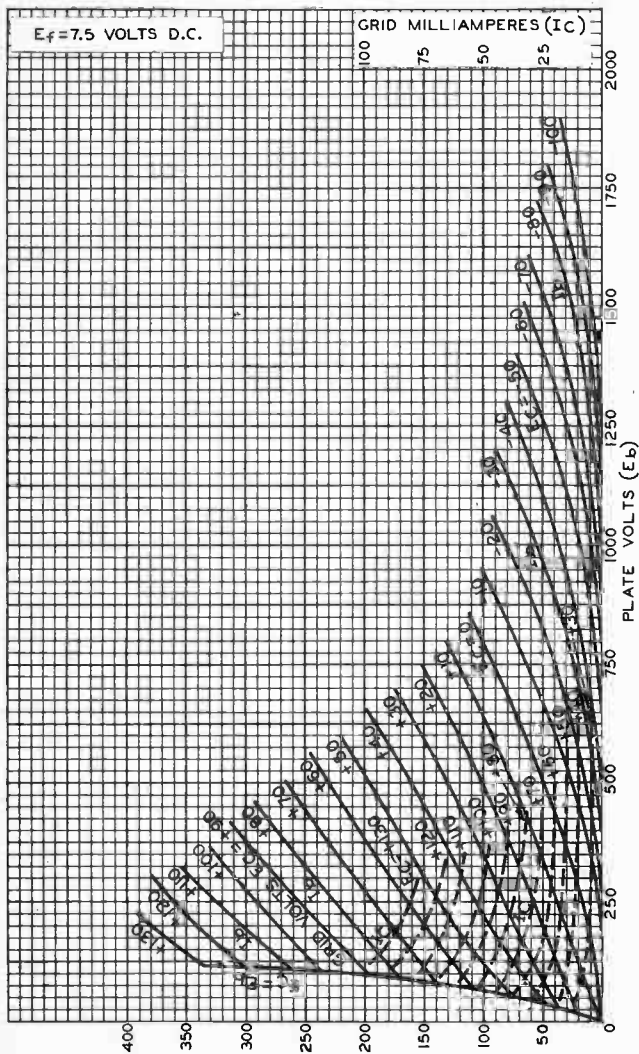
DEC. 15, 1944

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
World Radio History

DATA 2



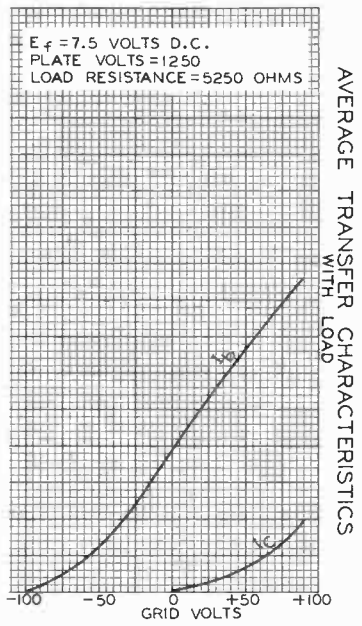
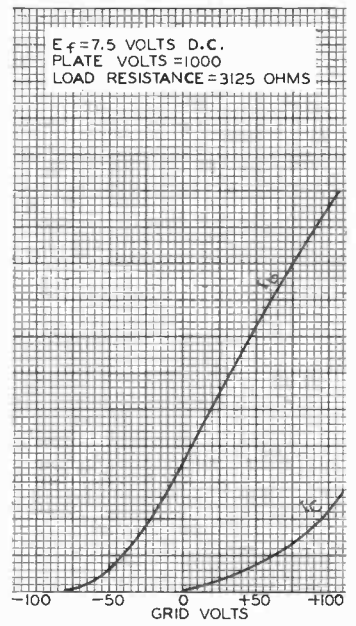
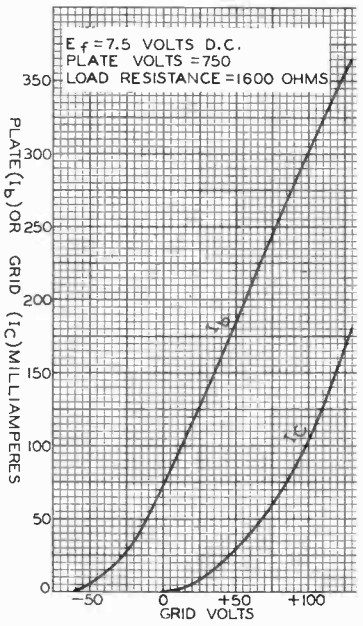
AVERAGE PLATE CHARACTERISTICS



FEB. 9, 1937

RCA RADIODIODE DIVISION
RCA MANUFACTURING COMPANY, INC.

CE-5377 R1



AVERAGE TRANSFER CHARACTERISTICS WITH LOAD



800

800

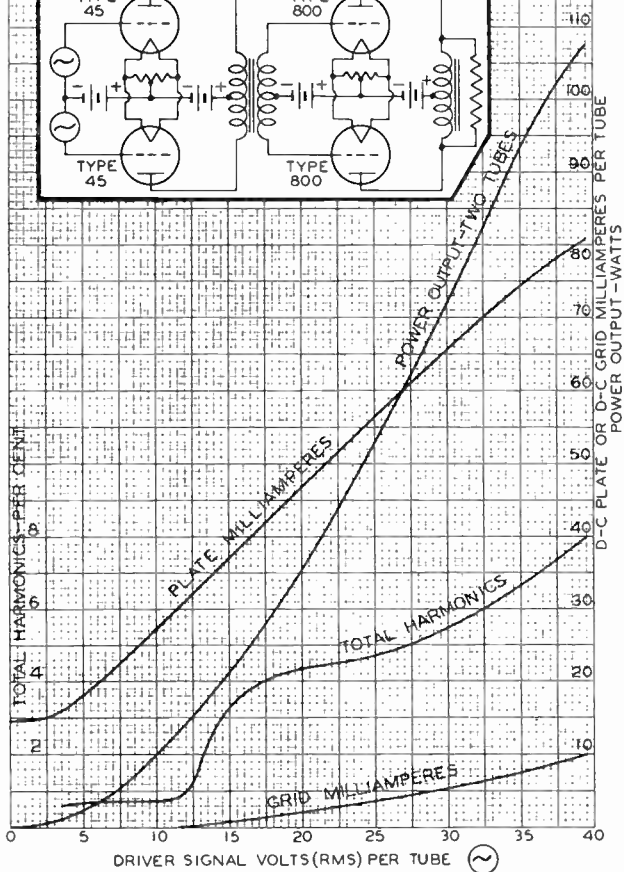
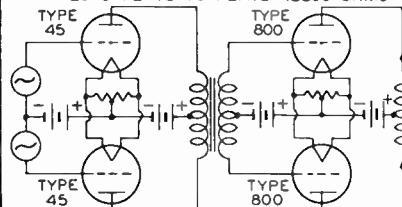


800

OPERATION CHARACTERISTICS CLASS B OPERATION

$E_f = 7.5$ VOLTS A.C. FOR 800'S, 2.5 VOLTS A.C. FOR 2A3'S

INPUT: CLASS A-TWO TYPE 45'S PUSH PULL
 PLATE VOLTS=275, GRID VOLTS=-56
 TRANSFORMER VOLTAGE RATIO $\frac{PRIM.}{SEC.} = 2.16$
 OUTPUT: CLASS B-TWO TYPE 800'S
 PLATE VOLTS=1000, GRID VOLTS=-55
 LOAD, PLATE TO PLATE=12500 OHMS





801-A

801-A/801 R-F POWER AMPLIFIER, A-F POWER AMPLIFIER, MODULATOR

Filament	Thoriated tungsten	
Voltage	7.5	a-c or d-c volts
Current	1.25	amp.
Amplification Factor	8	
Direct Interelectrode Capacitances:		
Grid to Plate	6.0	μf
Grid to Filament	4.5	μf
Filament to Plate	1.5	μf
Maximum Overall Length		5-3/8"
Maximum Diameter		2-1/16"
Bulb		ST-16
Base	Medium 4-Pin "MICANOL",	Bayonet
RCA Socket		Type UR-542-A

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

A-F POWER AMPLIFIER & MODULATOR - Class A₁

D-C Plate Voltage		600 max.	volts	
Plate Dissipation		20 max.	watts	
Typical Operation:				
D-C Plate Voltage	425	500	600	volts
D-C Grid Voltage $\square \Delta$	-40	-45	-55	volts
Peak A-F Grid Voltage	35	40	50	volts
D-C Plate Current	18	24	30	ma.
Plate Resistance	5000	4600	4300	ohms
Transconductance	1600	1725	1840	μmhos
Load Resistance	10200	8000	7800	ohms
U.P.O. (5% second harmonic)	1.6	2.3	3.8	watts

\square The d-c resistance in the grid circuit should not exceed 0.5 megohm with cathode bias, or 0.1 megohm with fixed bias.

A-F POWER AMPLIFIER & MODULATOR - Class B

D-C Plate Voltage	500 max.	volts
Max.-Signal D-C Plate Current*	70 max.	ma.
Max.-Signal Plate Input*	42 max.	watts
Plate Dissipation*	20 max.	watts

Typical Operation:

Unless otherwise specified, values are for 2 tubes

D-C Plate Voltage	400	500	600	volts
D-C Grid Voltage Δ	-50	-60	-75	volts
Peak A-F Grid-to-Grid Voltage	270	290	320	volts
Zero-Signal D-C Plate Cur.	8	8	8	ma.
Max.-Signal D-C Plate Cur.	130	130	130	ma.
Load Resistance (per tube)	1500	2000	2500	ohms
Effective Load Resistance (plate to plate)	6000	8000	10000	ohms
Max.-Signal Driving Power	3	3	3	approx.watts
Max.-Signal Power Output	27	36	45	approx.watts

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

Δ with a-c filament supply.

\leftarrow Indicates a change.

April 15, 1940

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA

801-A



801-A

R-F POWER AMPLIFIER, A-F POWER AMPLIFIER, MODULATOR

(continued from preceding page)

R-F POWER AMPLIFIER - Class B Telephony

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

D-C Plate Voltage	600 max.	volts
D-C Plate Current	50 max.	ma.
Plate Input	30 max.	watts
Plate Dissipation	20 max.	watts
Typical Operation:		
D-C Plate Voltage	500 600	volts
D-C Grid Voltage Δ	-60 -75	volts
Peak R-F Grid Voltage	85 90	volts
D-C Plate Current	45 45	ma.
D-C Grid Current**	0.2 0.2	approx.ma.
Driving Power** \circ	2.2 2.3	approx.watts
Power Output	6 7.5	approx.watts

\circ At crest of a-f cycle with modulation factor of 1.0

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

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

D-C Plate Voltage	500 max.	volts
D-C Grid Voltage	-200 max.	volts
D-C Plate Current	60 max.	ma.
D-C Grid Current	15 max.	ma.
Plate Input	30 max.	watts
Plate Dissipation	13.5 max.	watts
Typical Operation:		
D-C Plate Voltage	400 500	volts
D-C Grid Voltage Δ ^{Δ}	{ -150 -190	volts
	{ 10000 12700	ohms
Peak R-F Grid Voltage	260 300	volts
D-C Plate Current	55 55	ma.
D-C Grid Current**	15 15	approx.ma.
Driving Power**	4 4.5	approx.watts
Power Output	14 18	approx.watts

Δ obtained by grid resistor of value shown, or by combination of grid resistor with either fixed supply or suitably by-passed cathode resistor.

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation #

D-C Plate Voltage	600 max.	volts
D-C Grid Voltage	-200 max.	volts
D-C Plate Current	70 max.	ma.
D-C Grid Current	15 max.	ma.
Plate Input	42 max.	watts
Plate Dissipation	20 max.	watts
Typical Operation:		
D-C Plate Voltage	500 600	volts
D-C Grid Voltage ∇ ^{Δ}	{ -125 -150	volts
	{ 8300 10000	ohms
	{ 1560 1875	ohms
Peak R-F Grid Voltage	235 260	volts

** , #, ∇ , Δ ; see next page.

\leftarrow Indicates a change.



801-A

801-A

R-F POWER AMPLIFIER, A-F POWER AMPLIFIER, MODULATOR

(continued from preceding page)

D-C Plate Current	65	65	ma.
D-C Grid Current**	15	15	approx.ma.
Driving Power**	3.5	4	approx.watts
Power Output	20	25	approx.watts

▽ Obtained from fixed supply, by grid resistor (8300, 10000), or by cathode resistor (1560, 1875). When the 801-A 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 600 volts, a fixed bias of at least 50 volts should be used.

** Subject to wide variations as explained on sheet TRANS. TUBE RATINGS.

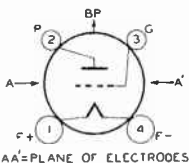
Modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115% of the carrier conditions.

△ with a-c filament supply.

For use of the 801 at the higher frequencies, refer to sheet TRANS. TUBE RATINGS vs FREQUENCY.

For OUTLINE DIMENSIONS, refer to sheet OUTLINES OF RECEIVING TUBES, drawing of ST-16 bulb with 4-pin base.

BOTTOM VIEW OF
SOCKET CONNECTIONS

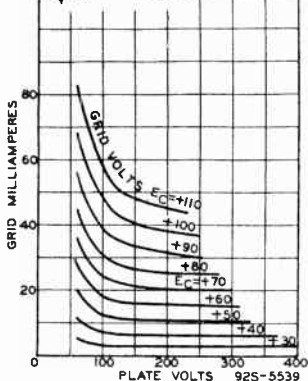


TUBE MOUNTING POSITION

VERTICAL: Base down.
HORIZONTAL: Plane of plate
vertical (on edge).

AVERAGE CHARACTERISTICS

TYPE 801-A
 $E_f = 7.5$ VOLTS D.C.

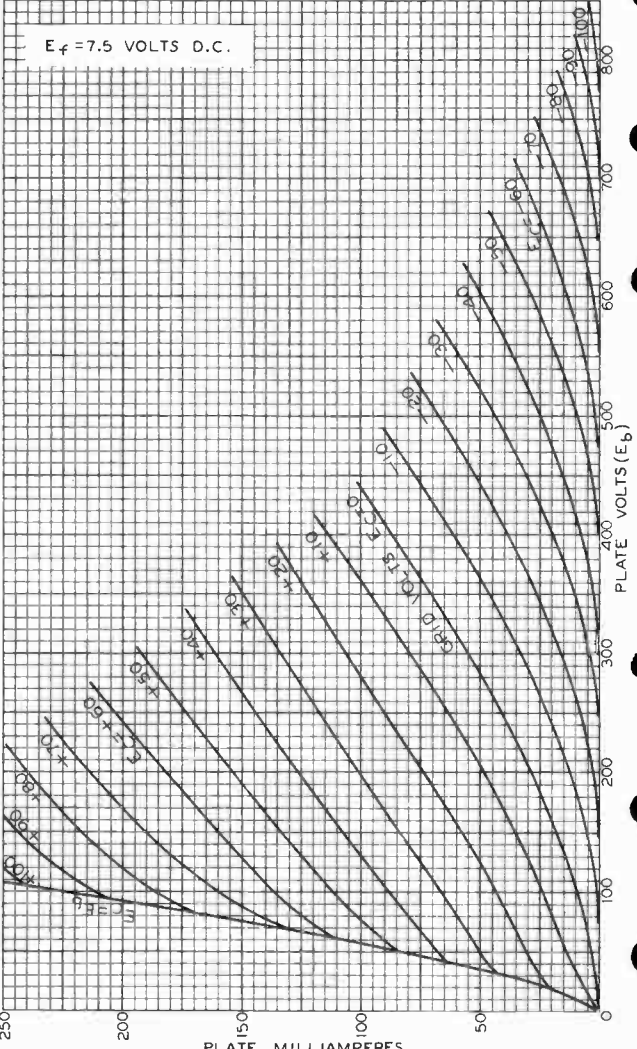


801-A



801-A

AVERAGE PLATE CHARACTERISTICS



JULY 18, 1934

RCA RADIODIVISION
RCA MANUFACTURING CO., INC.

925-5538

World Radio History



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

	CCS			ICAS	
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

	CCS			ICAS	
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 RADIODRON DIVISION
 RCA MANUFACTURING COMPANY, INC.

World Radio History

DATA



R-F POWER AMPLIFIER PENTODE

(continued from preceding page)

	CCS		ICAS	
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

	CCS		ICAS	
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

	CCS	ICAS
D-C Plate Voltage	500 max.	600 max. volts

*, ★, ^o: See next page.



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R-F POWER AMPLIFIER PENTODE

(continued from preceding page)

	CCS		ICAS	
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-E Grid Cur. (Approx.)	2	1	1	ma.
Driving Power (Approx.) ^o	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

	CCS		ICAS	
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 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.



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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	250	volts
	{ 8000	{ 13600	{ 20800	22000	ohms
D-C Grid Volt. ✕	{ -100	{ -100	{ -100	-120	volts
	{ 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 Telegraphy

Pentode 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	volts
	{ 20000	{ 27000		30000	ohms
	{ -60	{ -60		-60	volts
D-C Grid Volt. ■	{ 8600	{ 10000		10000	ohms
	{ 1000	{ 1000		860	ohms
Peak R-F Grid Volt.	90	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 RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA 3



R-F POWER AMPLIFIER PENTODE

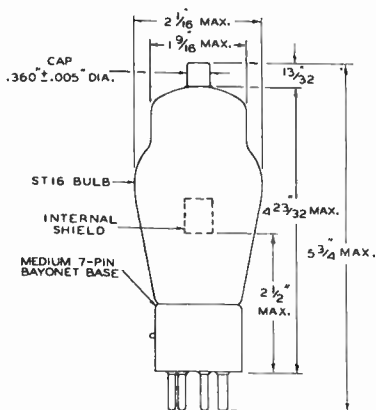
(continued from preceding page)

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

HIGH-FREQUENCY OPERATION

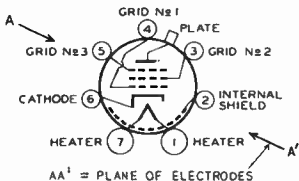
Maximum permissible percentage of maximum rated plate voltage and plate input

FREQUENCY (Mc)	30	55	100	
TELEPHONY	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-4364 R5

TOP VIEW OF
SOCKET CONNECTIONS



TUBE MOUNTING POSITION
VERTICAL or HORIZONTAL



802

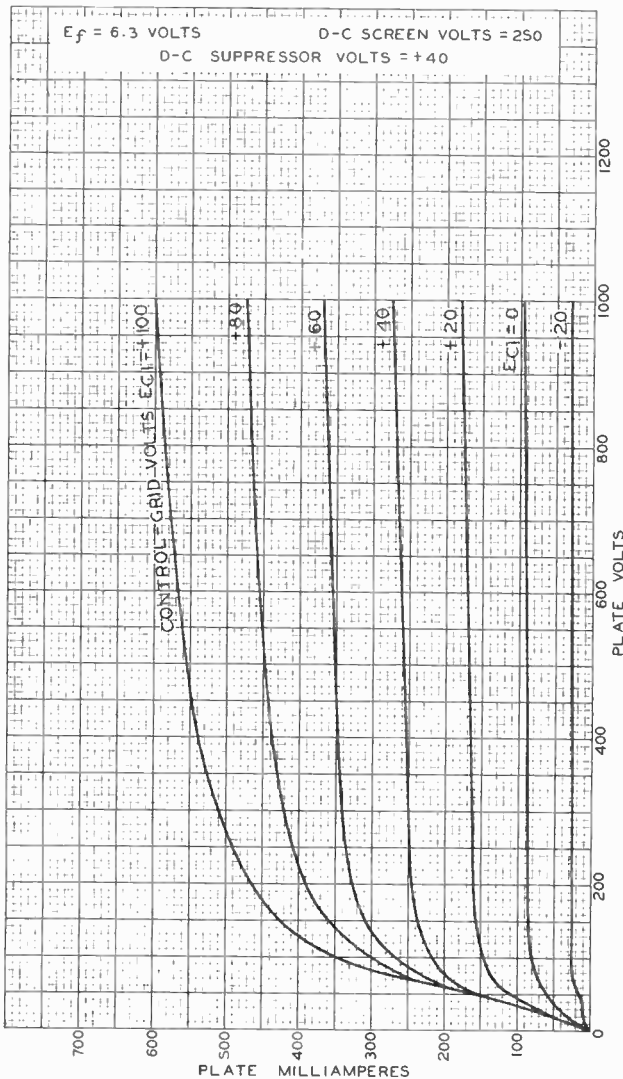
802

AVERAGE PLATE CHARACTERISTICS

$E_f = 6.3$ VOLTS

D-C SCREEN VOLTS = 250

D-C SUPPRESSOR VOLTS = +40



APRIL 24, 1936

PLATE MILLIAMPERES

RCA RADIOTRON DIVISION

BY A MANUFACTURING COMPANY INC

World Radio History

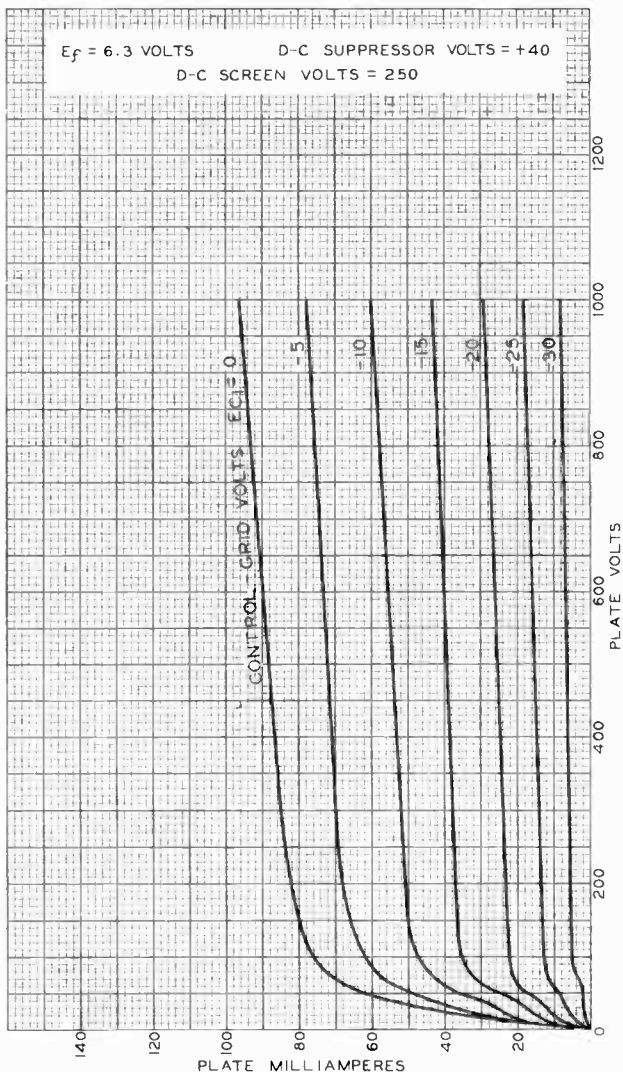
92C-4608

802



802

AVERAGE PLATE CHARACTERISTICS



MAY 11, 1936

RCA RADIOTRON DIVISION

92C-4612

RCA ELECTRONIC PRODUCTS DIVISION

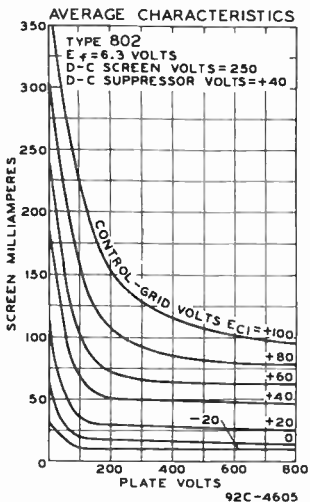
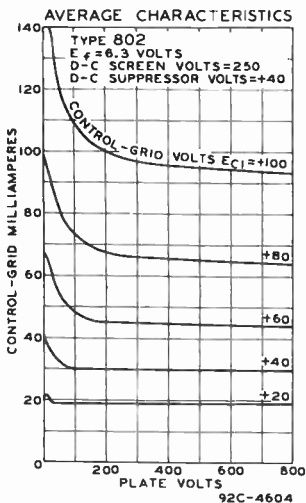
World Radio History



802

802

CHARACTERISTICS CURVES



MAR. 20, 1936

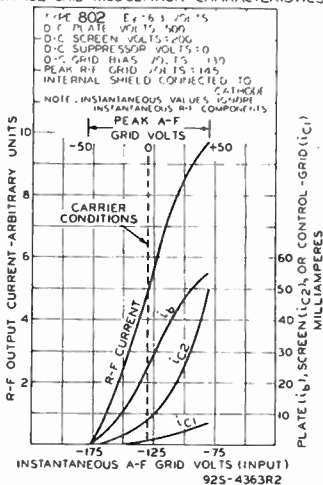
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92C-4604 & 4605

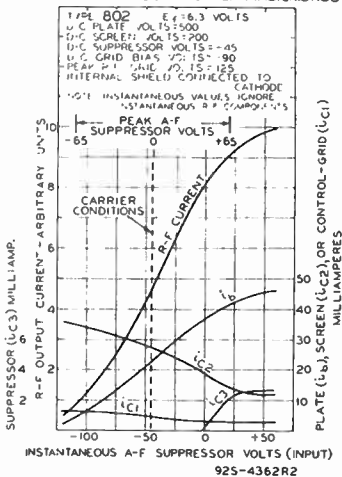


CHARACTERISTICS CURVES

CONTROL-GRID MODULATION CHARACTERISTICS



SUPPRESSOR MODULATION CHARACTERISTICS





803

803

R-F POWER AMPLIFIER PENTODE

Filament	Thoriated Tungsten		
Voltage	10	a-c or d-c volts	
Current	5	amp.	
Transconductance	4000	μmhos	
for plate current of 62.5 ma.			
Direct Interelectrode Capacitances:			
Grid to Plate (with external shielding)	0.15 max.	μuf	
Input	17	μuf	
Output	29	μuf	
Overall Length		9-1/16" ± 3/16"	←
Seated Height		8-5/16" ± 3/16"	
Maximum Diameter		2-9/16"	
Bulb		T-20	
Cap		Medium	
Base	Medium Shell Giant 5-Pin Micanol, Bayonet		←
RCA Socket		Stock No.9927	

Maximum Ratings Are Absolute Values

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

R-F POWER AMPLIFIER - Class B Telephony

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

D-C Plate Voltage	2000 max.	volts
D-C Suppressor Voltage (Grid #3)	500 max.	volts
D-C Screen Voltage (Grid #2)	600 max.	volts
D-C Plate Current	160 max.	ma.
Plate Input	180 max.	watts
Suppressor Input	10 max.	watts
Screen Input	20 max.	watts
Plate Dissipation	125 max.	watts

Typical Operation:

D-C Plate Voltage	1250	1500	2000	volts
D-C Suppressor Voltage	40	40	40	volts
D-C Screen Voltage**	500	550	600	volts
D-C Grid Voltage (Grid #1) [Ⓞ]	-30	-35	-40	volts
Peak R-F Grid Voltage	90	70	55	volts
D-C Plate Current	130	110	80	ma.
D-C Screen Current	33	30	20	ma.
D-C Grid Current	8	5	3	approx.ma.
Driving Power*	4.5	3.0	1.5	approx.watts
Power Output	52	53	53	approx.watts

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

Ⓞ For a-c filament supply.

** obtained from a fixed supply or from suitably by-passed cathode resistor.

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

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

D-C Plate Voltage	2000 max.	volts
D-C Screen Voltage (Grid #2)	600 max.	volts
D-C Grid Voltage (Grid #1)	-500 max.	volts
D-C Plate Current	110 max.	ma.
D-C Grid Current	50 max.	ma.
Plate Input	180 max.	watts
Screen Input	30 max.	watts

← Indicates a change. ** : See end of tabulation.

AUG. 15, 1944

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA 1



R-F POWER AMPLIFIER PENTODE

(continued from preceding page)

Plate Dissipation				125 max.	watts
Typical Operation:					
D-C Plate Voltage	1250	1500	2000		volts
D-C Suppressor Voltage	-70	-90	-110		volts
D-C Screen Voltage [△]	13000	17000	35000		ohms
D-C Grid Voltage [□]	{ -110 5000	{ -100 5000	{ -100 7000		volts
Peak A-F Suppressor Volt.	110	130	150		volts
Peak R-F Grid Voltage	200	190	170		volts
D-C Plate Current	100	100	80		ma.
D-C Screen Current	70	70	48		ma.
D-C Grid Current	22	20	15		<u>approx.ma.</u>
Driving Power	4	3.5	2.5		<u>approx.watts</u>
Power Output	40	50	53		<u>approx.watts</u>

[△] voltage taken from unmodulated plate-voltage supply through resistor.

[□] From fixed supply, grid resistor (500Ω, 5000, 7000), or cathode resistor.

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

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

D-C Plate Voltage		2000 max.	volts
D-C Suppressor Voltage (Grid #3)		500 max.	volts
D-C Screen Voltage (Grid #2)		600 max.	volts
D-C Grid Voltage (Grid #1)		-500 max.	volts
D-C Plate Current		160 max.	ma.
Plate Input		180 max.	watts
Suppressor Input		10 max.	watts
Screen Input		20 max.	watts
Plate Dissipation		125 max.	watts

Typical Operation:

D-C Plate Voltage	1250	1500	2000	volts
D-C Suppressor Voltage	40	40	40	volts
D-C Screen Voltage ^{**}	500	550	600	volts
D-C Grid Voltage	-100	-90	-80	volts
Peak R-F Grid Voltage	160	130	100	volts
Peak A-F Grid Voltage	75	65	50	volts
D-C Plate Current	130	110	80	ma.
D-C Screen Current	30	25	20	ma.
D-C Grid Current	8	6	4	<u>approx.ma.</u>
Driving Power [*]	4	3	2	<u>approx.watts</u>
Power Output	52	53	53	<u>approx.watts</u>

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

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

D-C Plate Voltage		1600 max.	volts
D-C Suppressor Voltage (Grid #3)		500 max.	volts
D-C Screen Voltage (Grid #2)		500 max.	volts
D-C Grid Voltage (Grid #1)		-500 max.	volts
D-C Plate Current		160 max.	ma.
D-C Grid Current		50 max.	ma.

** See end of tabulation. ← Indicates a change.



803

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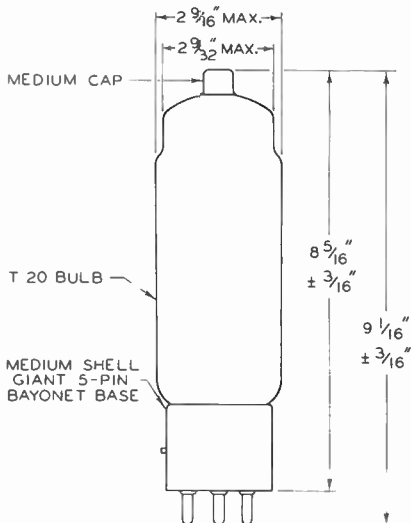
R-F POWER AMPLIFIER PENTODE

(continued from preceding page)

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

** Preferably obtained from a separate source, or from the plate-voltage supply with a voltage divider.

Data on operating frequencies for the 803 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

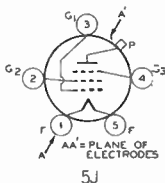


TUBE MOUNTING POSITION

VERTICAL: Base up or down.

92CM-4424R3

BOTTOM VIEW OF SOCKET CONNECTIONS



Pin 1 - Filament
 Pin 2 - Grid No. 2
 Pin 3 - Grid No. 1
 Pin 4 - Grid No. 3
 Pin 5 - Filament
 Cap - Plate

← Indicates a change.

AUG. 15, 1944

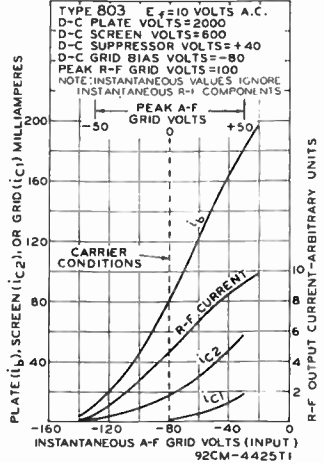
RCA VICTOR DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA 3

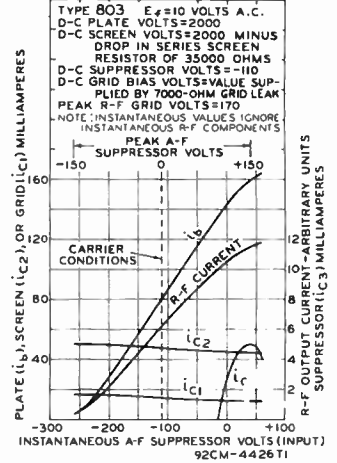


R-F POWER AMPLIFIER PENTODE

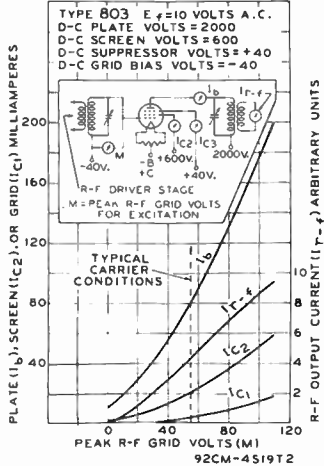
GRID MODULATION CHARACTERISTICS



SUPPRESSOR MODULATION CHARACTERISTICS



OPERATION CHARACTERISTICS CLASS B R-F AMPLIFIER





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808

AVERAGE PLATE CHARACTERISTICS

$E_f = 10$ VOLTS D.C. D-C SCREEN VOLTS = 300
D-C SUPPRESSOR VOLTS = +40

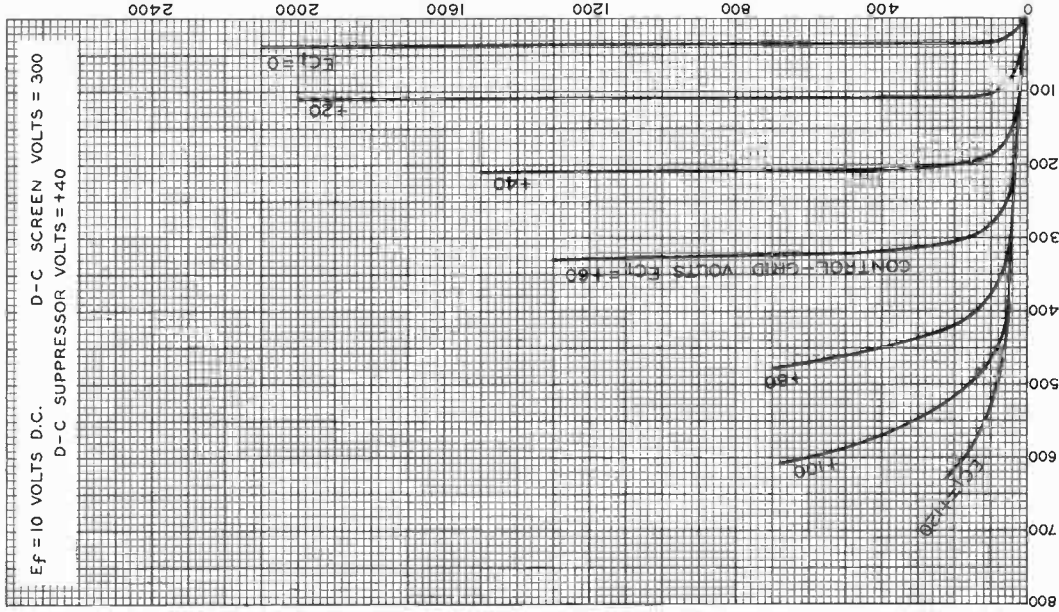


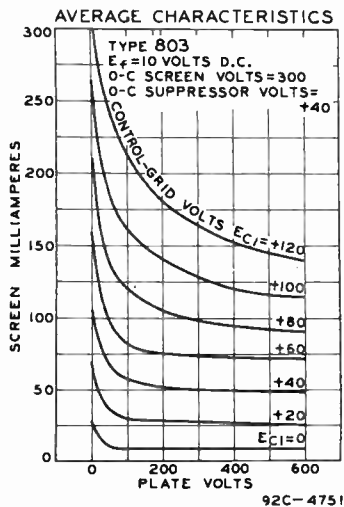
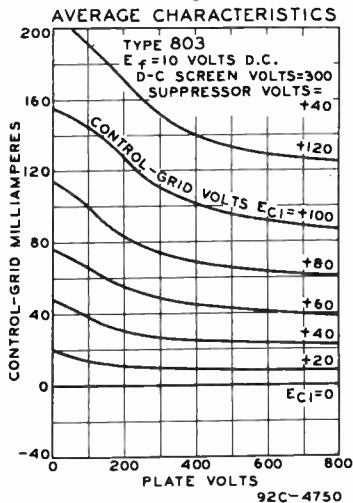
PLATE MILLIAMPERES
RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

MAR. 8, 1937

92C-4749



CHARACTERISTICS CURVES





804

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	μ mhos
Direct Interelectrode Capacitances:		
Grid to Plate (with external shielding)	0.01 max.	μ mf
Input	16	μ mf
Output	14.5	μ mf
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:

	7.5	7.5	7.5	7.5	
Filament Volt.					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.

FEB. 2, 1940

RCA RADIONRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA



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	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

	<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****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	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.

FEB. 2, 1940

RCA RADIONRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA 2



R-F POWER AMPLIFIER PENTODE

(continued from preceding page)

	<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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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 \blacklozenge	{ 180	200 volts
	{ 46700	43500 ohms
D-C Grid Voltage \blacksquare	{ -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

- \blacklozenge 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.
- \blacksquare Obtained by grid resistor of value shown or by other self- or fixed-bias method.

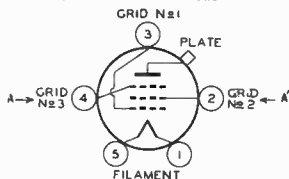
For the 804 as a crystal-controlled oscillator, typical operating conditions are: d-c plate volts, 1250; d-c suppressor volts, 0; d-c screen volts, 300; grid resistor, 30000 ohms; d-c plate ma., 42; and d-c screen ma., 24.

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

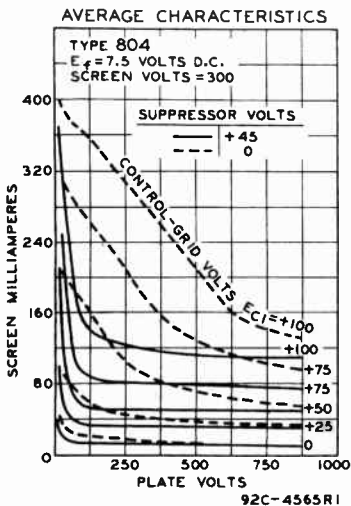
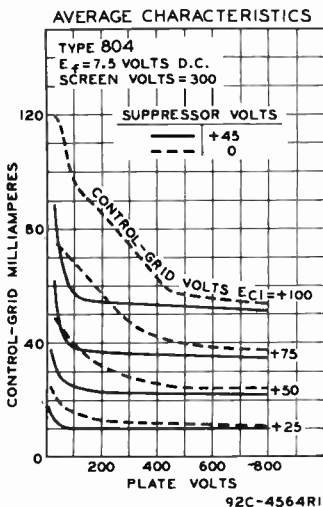
OUTLINE DIMENSIONS of the 804 are the same as those for the 814.

TUBE MOUNTING POSITION

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



R-F POWER AMPLIFIER PENTODE





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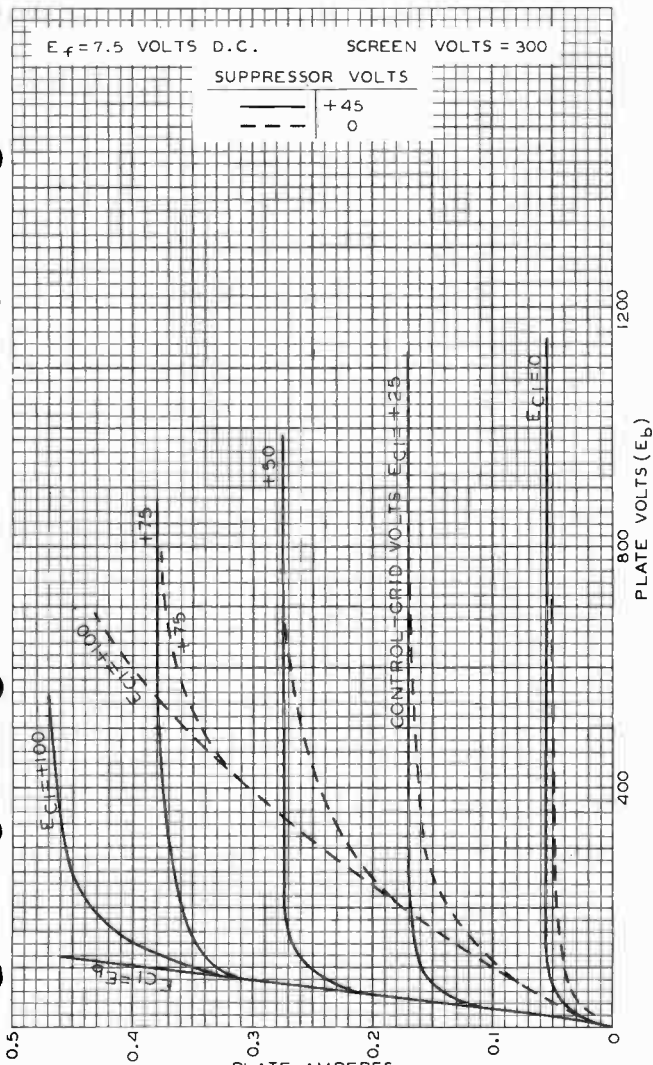
AVERAGE PLATE CHARACTERISTICS

$E_f = 7.5$ VOLTS D.C.

SCREEN VOLTS = 300

SUPPRESSOR VOLTS

—	+45
- - -	0



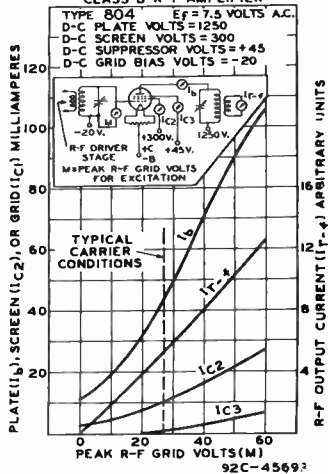
DEC. 6, 1939

RCA RADIODRON DIVISION
RCA MANUFACTURING COMPANY, INC.

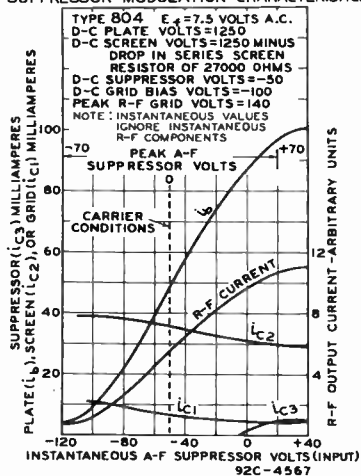
92C-4562R1

R-F POWER AMPLIFIER PENTODE

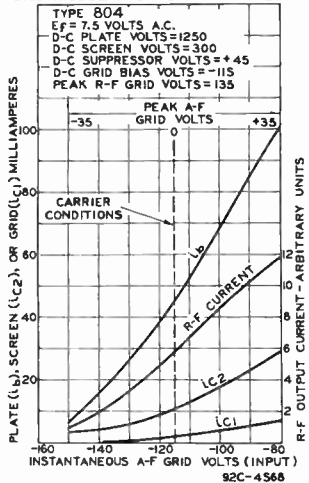
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OPERATION CHARACTERISTICS
CLASS B R-F AMPLIFIER

SUPPRESSOR MODULATION CHARACTERISTICS



GRID MODULATION CHARACTERISTICS



FEB. 2, 1940

RCA RADIODIODE DIVISION
RCA MANUFACTURING COMPANY, INC.92C-4567, 4568
& 4569R1



805

R-F POWER AMPLIFIER, OSCILLATOR, CLASS B MODULATOR

Filament	Thoriated Tungsten	
Voltage	10	a-c or d-c volts
Current	3.25	amp.
Direct Interelectrode Capacitances (approx.):		
Grid to Plate	6.5	μf
Grid to Filament	8.5	μf
Plate to Filament	10.5	μf
Maximum Overall Length		8-1/2"
Maximum Diameter		2-5/16"
Bulb		T-18
Cap		Medium Metal
Base		Jumbo 4-Large Pin

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

A-F POWER AMPLIFIER & MODULATOR - Class 8

D-C Plate Voltage	1500 max.	volts
Max-Signal D-C Plate Current *	210 max.	ma.
Max-Signal Plate Input *	315 max.	watts
Plate Dissipation *	125 max.	watts

Typical Operation - 2 tubes:

Unless otherwise specified, values are for 2 tubes.

Filament Voltage	10	10	a-c volts
D-C Plate Voltage	1250	1500	volts
D-C Grid Voltage	0	-16	volts
Peak A-F Grid-to-Grid Voltage	235	280	volts
Zero-Sig. D-C Plate Current	148	84	ma.
Max-Sig. D-C Plate Current	400	400	ma.
Load Resistance (per tube)	1675	2050	ohms
Effective Load Res. (plate to plate)	6700	8200	ohms
Max-Signal Driving Power	6	7	approx. watts
Max-Signal Power Output	300 #	370 #	approx. watts

* Averaged over any audio-frequency cycle.

with 4% harmonic distortion approx.

with 3% harmonic distortion approx.

R-F POWER AMPLIFIER - Class B Telephony

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

D-C Plate Voltage	1500 max.	volts
D-C Plate Current	150 max.	ma.
Plate Input	185 max.	watts
Plate Dissipation	125 max.	watts

Typical Operation:

Filament Voltage	10	10	a-c volts
D-C Plate Voltage	1250	1500	volts
D-C Grid Voltage	0	-10	volts
Peak R-F Grid Voltage	75	70	volts
D-C Plate Current	135	115	ma.
D-C Grid Current **	15	15	approx. ma.
Driving Power ** ^o	11	7.5	approx. watts
Power Output	55	57.5	approx. watts

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

** See next page.

(continued on next page)

MAR. 20, 1936

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA



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R-F POWER AMPLIFIER. OSCILLATOR. CLASS B MODULATOR

(continued from preceding page)

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

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

D-C Plate Voltage		1250 max.	volts
D-C Grid Voltage		-500 max.	volts
D-C Plate Current		175 max.	ma.
D-C Grid Current		70 max.	ma.
Plate Input		220 max.	watts
Plate Dissipation		85 max.	watts

Typical Operation:

Filament Voltage	10	10	a-c volts
D-C Plate Voltage	1000	1250	volts
D-C Grid Voltage	-155	-160	volts
Peak R-F Grid Voltage	295	300	volts
D-C Plate Current	160	160	ma.
D-C Grid Current **	60	60	approx. ma.
Driving Power **	16	16	approx. watts
Power Output	110	140	approx. watts

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation **

D-C Plate Voltage		1500 max.	volts
D-C Grid Voltage		-500 max.	volts
D-C Plate Current		210 max.	ma.
D-C Grid Current		70 max.	ma.
Plate Input		315 max.	watts
Plate Dissipation		125 max.	watts

Typical Operation:

Filament Voltage	10	10	10	a-c volts
D-C Plate Voltage	1000	1250	1500	volts
D-C Grid Voltage	-95	-100	-105	volts
Peak R-F Grid Voltage	225	230	235	volts
D-C Plate Current	200	200	200	ma.
D-C Grid Current **	40	40	40	approx. ma.
Driving Power **	8.5	8.5	8.5	approx. watts
Power Output	130	170	215	approx. watts

** Subject to wide variations as explained on sheet TRANS. TUBE RATINGS.

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

For use of the 805 at the higher frequencies, refer to sheet
TRANS. TUBE RATINGS vs FREQUENCY.

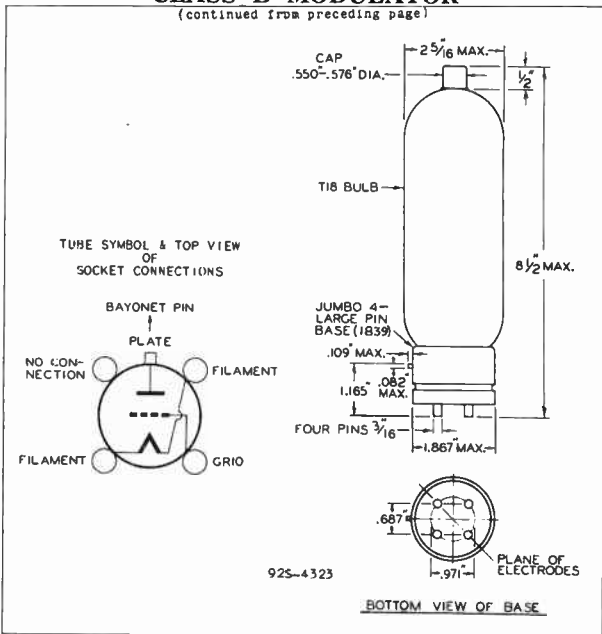


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R-F POWER AMPLIFIER, OSCILLATOR, CLASS B MODULATOR

(continued from preceding page)



FOR PLATE FAMILY, REFER TO CURVE
92C-4404 UNDER TYPE 838.

← indicates a change

APRIL 5, 1937

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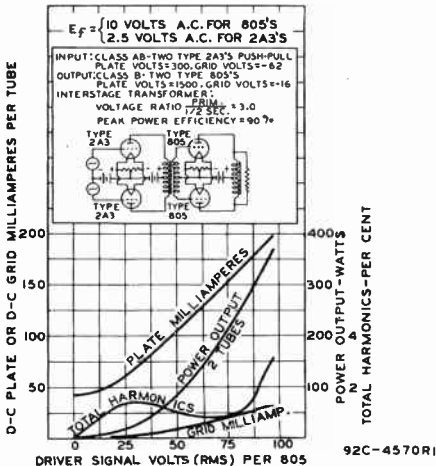
DATA 2



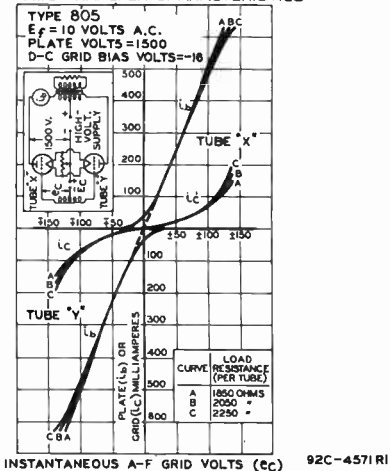
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R-F POWER AMPLIFIER, OSCILLATOR CLASS B MODULATOR

OPERATION CHARACTERISTICS



DYNAMIC TRANSFER CHARACTERISTICS





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R-F POWER AMPLIFIER, CLASS B MODULATOR

Filament	Thoriated Tungsten	
Voltage	5.0	a-c or d-c volts
Current	9.5	amp.
Amplification Factor	12.6	
Direct Interelectrode Capacitances:		
Grid to Plate	4.0	μmf
Grid to Filament	5.5	μmf
Plate to Filament	0.4	μmf
Maximum Overall Length		10"
Maximum Diameter		3-13/16"
Bulb		GT-30
Cap (Top)		Skirted Medium
Cap (Side)		Saddle Medium
Base		Jumbo 4-Pin
RCA Socket		Stock No. 9936
Cooling	forced ventilation from fan directed at middle and upper portions of bulb is required for continuous key-down conditions in class C telegraph service and is recommended for other services at frequencies of 30 Mc or higher.	

Maximum Ratings Are Absolute Values

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 B

	CCS	ICAS	
D-C Plate Voltage	3000 max.	3300 max.	volts
Max.-Sig. D-C Plate Cur. ⁰⁰	200 max.	250 max.	ma.
Max.-Sig. Plate Input ⁰⁰	500 max.	825 max.	watts
Plate Dissipation ⁰⁰	150 max.	225 max.	watts

Typical Operation:

Unless otherwise specified, values are for 2 tubes

D-C Plate Voltage	2000	3000	3300	volts
D-C Grid Voltage	-140	-230	-240	volts
Peak A-F Grid-to-Grid Volt.	660	770	930	volts
Zero-Sig. D-C Plate Cur.	80	50	80	ma.
Max.-Sig. D-C Plate Cur.	390	330	475	ma.
Load Res. (per tube)	4500	5200	4000	ohms
Effective Load Res. (plate to plate)	18000	20800	16000	ohms
Max.-Sig. Driving Power (Approx.)	19	15	35	watts
Max.-Sig. Power Output (Approx.)	535	700	1120	watts

⁰⁰ 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 fact. of 1.0

	CCS	ICAS	
D-C Plate Voltage	3000 max.	3300 max.	volts
D-C Plate Current	150 max.	150 max.	ma.
Plate Input	225 max.	338 max.	watts

← Indicates a change.

Dec. 1, 1943

RCA VICTOR DIVISION

DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



806

R-F POWER AMPLIFIER, CLASS B MODULATOR

(continued from preceding page)

	CCS		ICAS	
Plate Dissipation	150 max.		225 max. watts	
Typical Operation:				
D-C Plate Voltage	2000	3000	3300	volts
D-C Grid Voltage	-150	-240	-280	volts
Peak R-F Grid Voltage	180	200	290	volts
D-C Plate Current	110	70	102	ma.
D-C Grid Cur. (Approx.)**	1	0	0	ma.
Driving Power (Approx.)** ^o	8	5	10.3	watts
Power Output (Approx.)	70	70	115	watts

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

PLATE-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	2500 max.		3000 max. volts	
D-C Grid Voltage	-1000 max.		-1000 max. volts	
D-C Plate Current	200 max.		200 max. ma.	
D-C Grid Current	50 max.		50 max. ma.	
Plate Input	500 max.		600 max. watts	
Plate Dissipation	110 max.		150 max. watts	
Typical Operation:				
D-C Plate Voltage	2000	2500	3000	volts
D-C Grid Voltage §	{ -500 -600		-670	volts
	{ 12500 15000		25000	ohms
Peak R-F Grid Volt.	790	890	970	volts
D-C Plate Current	195	195	195	ma.
D-C Grid Cur. (Approx.)**	40	40	27	ma.
Driving Power (Approx.)**	28	32	24	watts
Power Output (Approx.)	300	390	460	watts

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

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy[□]

Key-down conditions per tube without modulation**

	CCS			ICAS	
D-C Plate Voltage	3000 max.			3300 max. volts	
D-C Grid Voltage	-1000 max.			-1000 max. volts	
D-C Plate Current	200 max.			305 max. ma.	
D-C Grid Current	50 max.			50 max. ma.	
Plate Input	600 max.			1000 max. watts	
Plate Dissipation	150 max.			225 max. watts	
Typical Operation:					
D-C Plate Volt.	2000	2500	3000	3300	volts
D-C Grid Volt. *	{ -400 -500 -600			-600	volts
	{ 16000 20000 24000			15000	ohms
	{ 1800 2300 2700			1730	ohms

[□] See "Cooling" under this type.

** See next page.

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

* Obtained by grid resistor (16000, 20000, 24000, 12800), by cathode resistor (1800, 2300, 2700, 1730), or from fixed-bias source.



806

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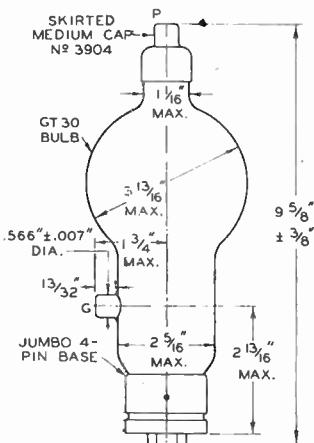
R-F POWER AMPLIFIER, CLASS B MODULATOR

(continued from preceding page)

		CCS		ICAS	
Peak R-F Grid Volt.	640	755	870	930	volts
D-C Plate Current	195	195	195	300	ma.
D-C Grid Cur. (Approx.)**	25	25	25	40	ma.
Driving Power (Approx.)**	15	17	20	34	watts
Power Output (Approx.)	280	370	450	780	watts

** Subject to wide variations as explained on sheet TUBE RATINGS in General Section.

Data on operating frequencies for the 806 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

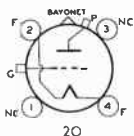


TUBE MOUNTING POSITION

VERTICAL: Base down.
HORIZONTAL: No.

92CM-4681R3

BOTTOM VIEW OF SOCKET CONNECTIONS



20

F - FILAMENT
G - GRID
NC - NO CONNECTION
P - PLATE

← indicates a change.

DEC. 1, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

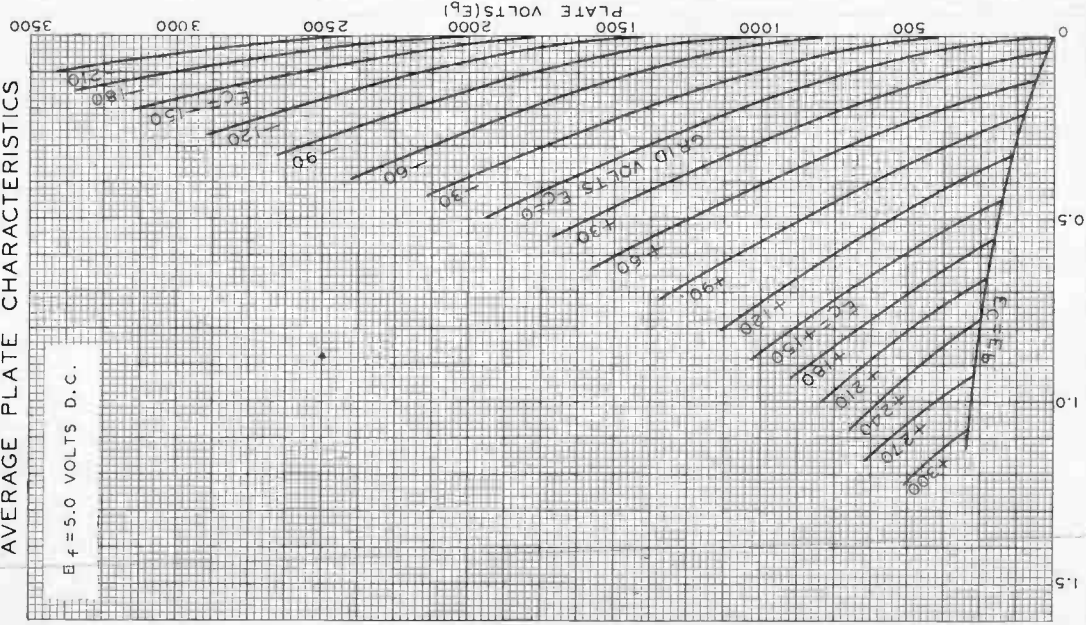
DATA 2



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AVERAGE PLATE CHARACTERISTICS

$E_f = 5.0$ VOLTS D.C.



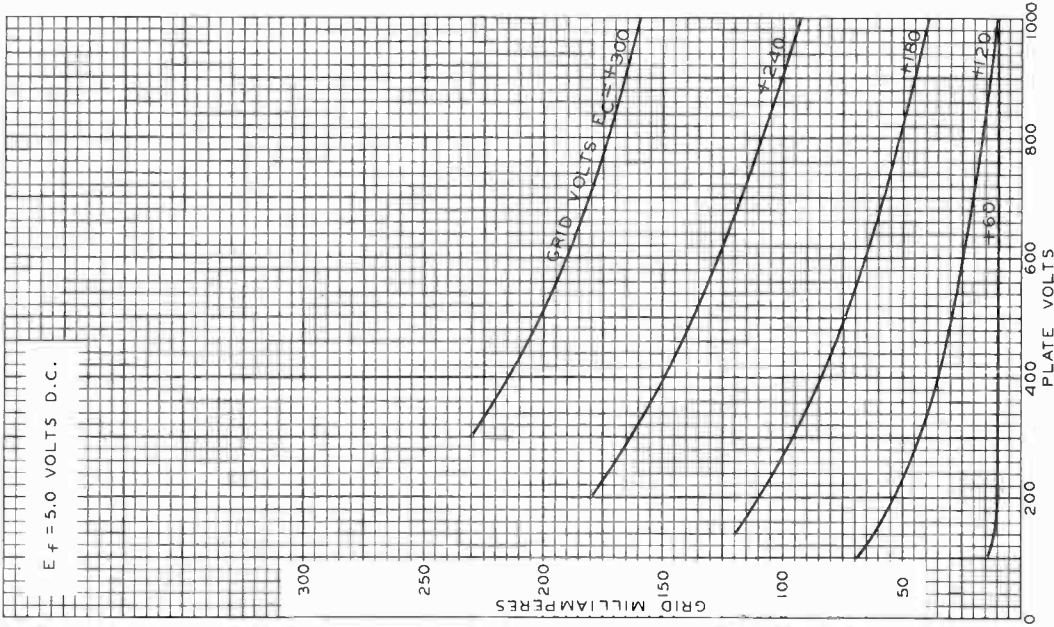
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TYPICAL CHARACTERISTICS



NOV. 5, 1936

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4692



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TRANSMITTING BEAM POWER AMPLIFIER

	CCS*			ICAS**	
Max.—Signal DC Grid—No.2 Current. . .	10	10	10	10	.. ma
Effective Load Res. (Plate-to-plate) . . .	3200	4240	6400	6950	.. ohms
Max.—Signal Driving Power (Approx.)♦♦ . . .	0.2	0.2	0.1	0.2	.. watt
Max.—Signal Power Output (Approx.)^ . . .	55	75	80	120	.. watts

Subscript 2 indicates that grid—No.1 current flows during some part of input cycle.

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

** Preferably obtained from a separate source, or from the plate-voltage supply with a voltage divider.

♦♦ Driver stage should be capable of supplying the specified driving power at low distortion to the No.1 grids of the class AB₂ stage. The effective resistance per grid—No.1 circuit of the class AB₂ stage should be kept below 500 ohms and the effective impedance should not exceed 700 ohms.

^ With zero-impedance driver and perfect regulation, plate-circuit distortion does not exceed 2%. In practice, the regulation of the plate-voltage, grid—No.2 voltage, and grid—No.1 voltage should not be greater than 5%, 5%, and 3% respectively.

RF POWER AMPLIFIER — Class B Telephony

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

Maximum Ratings, Absolute Values:

	CCS*			ICAS**	
DC PLATE VOLTAGE	600 max.			750 max. volts	
DC GRID—No.2 (SCREEN) VOLT.	300 max.			300 max. volts	
DC PLATE CURRENT	80 max.			90 max. ma	
PLATE INPUT.	37.5 max.			45 max. watts	
GRID—No.2 INPUT.	2.5 max.			2.5 max. watts	
PLATE DISSIPATION.	25 max.			30 max. watts	
PEAK HEATER—CATHODE VOLTAGE:					
Heater negative with respect to cathode . .	135 max.			135 max. volts	
Heater positive with respect to cathode . .	135 max.			135 max. volts	

Typical Operation:

DC Plate Voltage . . .	400	500	600	750	.. volts
DC Grid—No.2 Voltage .	250	250	250	300	.. volts
DC Grid—No.1 (Control-Grid) Voltage† . . .	-25	-25	-25	-35	.. volts
Peak RF Grid—No.1 Volt.	30	30	20	27	.. volts
DC Plate Current . . .	75	75	62.5	60	.. ma
DC Grid—No.2 Current .	4	4	3	3	.. ma
DC Grid—No.1 Current (Approx.)* .	0	0	0	0	.. ma

♦, ♦♦, †, †, *. See next page.

← Indicates a change.

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TRANSMITTING BEAM POWER AMPLIFIER

	CCS [•]			ICAS ^{••}	
Driving Power (Approx.) ^{*○}	0.25	0.25	0.2	0.12	.. watt
Power Output (Approx.)	9	12.5	12.5	15	.. watts

▲ Fixed supply or bypassed cathode resistor is recommended.

□ At crest of audio-frequency cycle with a modulation factor of 1.0.

PLATE-MODULATED RF POWER AMPLIFIER - Class C Telephony

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

Maximum Ratings, Absolute Values:

	CCS [•]			ICAS ^{••}	
DC PLATE VOLTAGE	475	max.		600	max. volts
DC GRID-No.2 (SCREEN) VOLT. .	300	max.		300	max. volts
DC GRID-No.1 (CONTROL- GRID) VOLTAGE.	-200	max.		-200	max. volts
DC PLATE CURRENT	83	max.		100	max. ma
DC GRID-No.1 CURRENT	5	max.		5	max. ma
PLATE INPUT.	40	max.		60	max. watts
GRID-No.2 INPUT.	2.5	max.		2.5	max. watts
PLATE DISSIPATION.	16.5	max.		25	max. watts
→ PEAK HEATER-CATHODE VOLTAGE:					
Heater negative with respect to cathode	135	max.		135	max. volts
Heater positive with respect to cathode	135	max.		135	max. volts

Typical Operation:

DC Plate Voltage	325	400	475	600	.. volts
DC Grid-No.2 Volt. ^{▲▲}	225	225	225	275	.. volts
	20000	30000	50000	50000	.. ohms
DC Grid-No.1 Volt. ^{††}	-75	-80	-85	-90	.. volts
	25000	22800	21300	22500	.. ohms
Peak RF Grid-No.1 Voltage	90	95	110	115	.. volts
DC Plate Current	80	80	83	100	.. ma
DC Grid-No.2 Current	5	5.75	5	6.5	.. ma
DC Grid-No.1 Current (Approx.) [*]	3	3.5	4	4	.. ma
Driving Power (Approx.) [*]	0.25	0.3	0.4	0.4	.. watt
Power Output (Approx.)	17.5	22.5	27.5	42.5	.. watts

▲▲ Obtained preferably from a separate source modulated with the plate supply, or from the modulated plate-supply through a series resistor (20000, 30000, 50000, 50000).

†† Obtained from a grid-no.1 resistor (25000, 22800, 21300, 22500) or from a combination of grid-no.1 resistor with either fixed supply or cathode resistor.

•, ••, *, †: see next page.

→ Indicates a change.



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TRANSMITTING BEAM POWER AMPLIFIER

RF POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without amplitude modulation[□]

Maximum Ratings, Absolute Values:

	CCS [•]	ICAS ^{••}	
DC PLATE VOLTAGE	600 max.	750 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE.	300 max.	300 max.	volts
DC GRID-No.1 (CONTROL- GRID) VOLTAGE.	-200 max.	-200 max.	volts
DC PLATE CURRENT	100 max.	100 max.	ma
DC GRID-No.1 CURRENT	5 max.	5 max.	ma
PLATE INPUT.	60 max.	75 max.	watts
GRID-No.2 INPUT.	3.5 max.	3.5 max.	watts
PLATE DISSIPATION.	25 max.	30 max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode.	135 max.	135 max.	volts
Heater positive with respect to cathode.	135 max.	135 max.	volts

Typical Operation:

DC Plate Voltage	400	500	600	750 . . .	volts
DC Grid-No.2 Volt. ^{□□}	250	250	250	250 . . .	volts
DC Grid-No.1 Volt- age † ^{□□} *	20000	42000	50000	85000 . . .	ohms
	-45	-45	-45	-45 . . .	volts
	12800	12800	12800	12800 . . .	ohms
	410	410	410	410 . . .	ohms
Peak RF Grid-No.1 Voltage.	65	65	65	65 . . .	volts
DC Plate Current	100	100	100	100 . . .	ma
DC Grid-No.2 Current	7.5	6	7	6 . . .	ma
DC Grid-No.1 Current (Approx.) *	3.5	3.5	3.5	3.5 . . .	ma
Driving Power (Approx.) *	0.2	0.2	0.2	0.2 . . .	watt
Power Output (Approx.)	25	30	40	50 . . .	watts

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

■ obtained from a separate source, from the plate-voltage supply with a voltage divider, or through a series resistor (20000, 42000, 50000, 85000). Series grid-No.2 resistor should be used only when the 807 is used in a circuit which is not keyed. Grid-No.2 voltage must not exceed 400 volts under key-up conditions.

□□ obtained from fixed supply, by grid resistor (12800), by cathode resistor (410), or by combination methods.

⊛ If preceding stage is keyed, partial fixed-bias is required.

• Continuous Commercial Service.

•• Intermittent Commercial & Amateur Service.

† The total effective grid-No. 1-circuit resistance should not exceed 25000 ohms.

* For effect of load resistance on grid current and driving power, refer to TUBE RATINGS-Grid Current and Driving Power in the General Section.

← Indicates a change.

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TRANSMITTING BEAM POWER AMPLIFIER

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

	<u>Note</u>	<u>Min.</u>	<u>Max.</u>	
Heater Current	1	0.81	0.99	amp
Grid No.1-Plate Capacitance. . .	-	-	0.2	$\mu\mu\text{f}$
Input Capacitance.	-	10	14	$\mu\mu\text{f}$
Output Capacitance	-	5.3	8.7	$\mu\mu\text{f}$
Plate Current.	1,2	24	48	ma
Grid-No.2 Current.	1,2	-	4	ma
Plate Current.	1,3	-	0.5	ma
Power Output	1,4	33	-	watts

Note 1: Heater voltage = 6.3 volts.

Note 2: With dc plate voltage of 600 volts; dc grid-No.2 voltage of 300 volts; and dc grid-No.1 voltage of -29 volts.

Note 3: With dc plate voltage of 600 volts; dc grid-No.2 voltage of 300 volts; and dc grid-No.1 voltage of -100 volts.

Note 4: With dc plate voltage of 600 volts; dc grid-No.2 voltage of 200 volts; dc plate current of 100 ma., max.; grid-No.1 current of 5-7 ma.; grid-No.1 resistor of 10000 ohms $\pm 10\%$; and a frequency of 15 Mc.

Data on operating frequencies for the 807 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

→ Indicates a change.



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TRANSMITTING BEAM POWER AMPLIFIER

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts
 Current. 0.9 amp

Transconductance (Approx.)
 for plate current of 72 ma. 6000 μ mhos

Mu-Factor, Grid No.2 to
 Grid No.1 8

Direct Interelectrode Capacitances:

Grid No.1 to Plate ⁰ 0.2 max. μ mf
 Inout. 12 μ mf
 Output 7 μ mf

⁰ with external shield connected to cathode.

Mechanical:

Mounting Position. Any

Overall Length 5-19/32" \pm 5/32" ←Seated Length. 4-31/32" \pm 5/32" ←

Maximum Diameter 2-1/16"

Bulb ST-16

Cap. Small

Base Medium-Shell Small 5-Pin, Micanol

Basing Designation for BOTTOM VIEW 5AW

Pin 1 - Heater

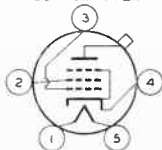
Pin 2 - Grid No.2

Pin 3 - Grid No.1

Pin 4 - Cathode,
Grid No.3

Pin 5 - Heater

Cap - Plate



AF POWER AMPLIFIER & MODULATOR - Class A₁ ♦
 Triode Connected - Grid No.2 Connected to Plate

Maximum Ratings, Absolute Values:

	CCS* ♦	ICAS** ♦	
DC PLATE VOLTAGE	400 max.	400 max.	volts
MAX. -S!G. DC PLATE CURRENT*	125 max.	125 max.	ma
PLATE DISSIPATION*	25 max.	30 max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode.	135 max.	135 max.	volts
Heater positive with respect to cathode.	135 max.	135 max.	volts

Typical Operation:

Values are for 2 tubes

DC Plate Voltage 400 | 400 volts

♦, ♦♦, ♦♦♦, ♦♦♦♦: See next page.

← Indicates a change.

FEB. 1, 1949

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History



TRANSMITTING BEAM POWER AMPLIFIER

	CCS ^{••}	ICAS ^{•••}	
DC Grid-No.1 (Control-Grid) Voltage	-45	-45	volts
Peak AF Grid-No.1-to-Grid-No.1 Voltage ^{••}	90	90	volts
Zero-Signal DC Plate Current	60	60	ma
Max.-Signal DC Plate Current	140	140	ma
Effective Load Resistance (Plate-to-plate)	3000	3000	ohms
Max.-Signal Driving Power (Approx.)	0	0	watts
Total Harmonic Distortion	3	3	%
Max.-Signal Power Output (Approx.)	30	30	watts

♦ Subscript 1 indicates that grid-No.1 current does not flow during any part of the input cycle.

•• In class AB₁ service, the normal design limitation is the requirement that grid-No.1 current should not flow. For this reason, the typical operating values shown for both CCS and ICAS ratings are the same.

••• The driver stage should be capable of supplying the No.1 grids of the class AB₁ stage with the specified driving voltage at low distortion.

AF POWER AMPLIFIER & MODULATOR - Class AB₂#

Maximum Ratings, Absolute Values:

	CCS [•]	ICAS ^{••}	
DC PLATE VOLTAGE	600 max.	750 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE	300 max.	300 max.	volts
MAX.-SIG. DC PLATE CURRENT*	120 max.	120 max.	ma
MAX.-SIG. PLATE INPUT*	60 max.	90 max.	watts
MAX.-SIGNAL GRID-No.2 INPUT*	3.5 max.	3.5 max.	watts
PLATE DISSIPATION*	25 max.	30 max.	watts
→ PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	135 max.	135 max.	volts
Heater positive with respect to cathode	135 max.	135 max.	volts

Typical Operation:

Values are for 2 tubes

DC Plate Voltage	400	500	600	750	..	volts
DC Grid-No.2 Voltage ^{••}	300	300	300	300	..	volts
DC Grid-No.1 (Control-Grid) Voltage	-25	-28	-30	-32	..	volts
Peak AF Grid-No.1-to-Grid-No.1 Voltage	78	86	78	92	..	volts
Zero-Sig. DC Plate Cur.	90	72	60	52	..	ma
Max.-Sig. DC Plate Cur.	240	240	200	240	..	ma
Zero-Signal DC Grid-No.2 Current	5	5	5	5	..	ma

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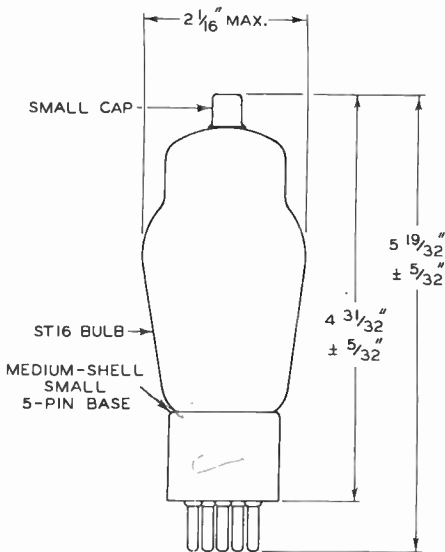
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TRANSMITTING BEAM POWER AMPLIFIER



92CM-4674R2

FEB. 1, 1949

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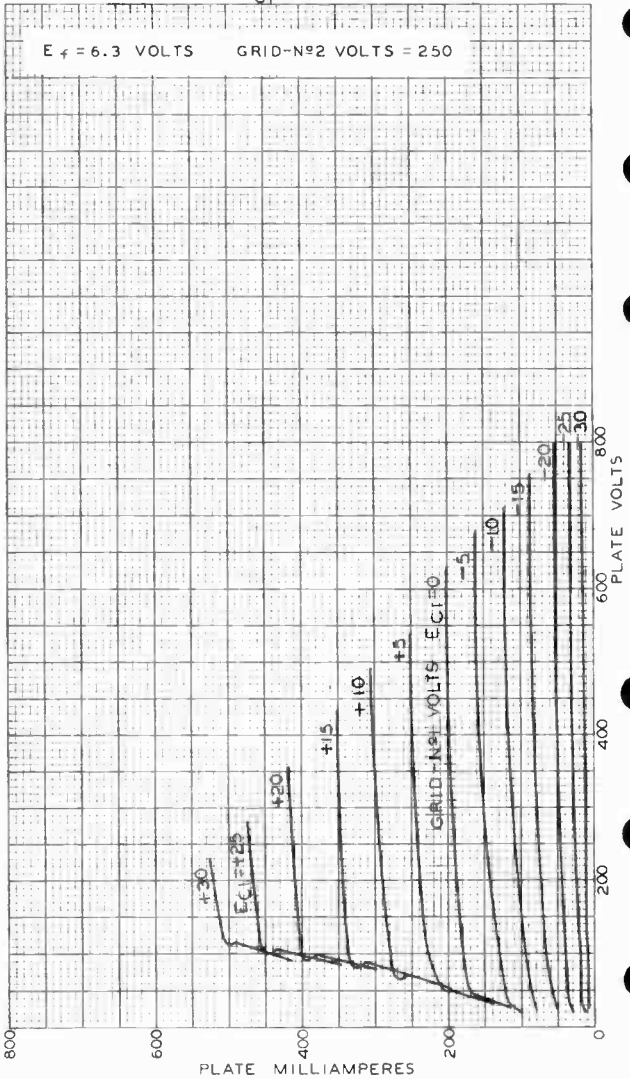


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AVERAGE PLATE CHARACTERISTICS WITH E_{C1} AS VARIABLE

$E_f = 6.3$ VOLTS

GRID-N^o2 VOLTS = 250



NOV. 19, 1948

TUBE DEPARTMENT

92CM-4676R2

PA. S. E. PATENT OFFICE, PHILADELPHIA, PENN.

World Radio History

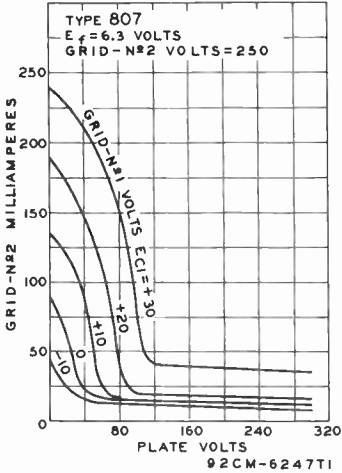


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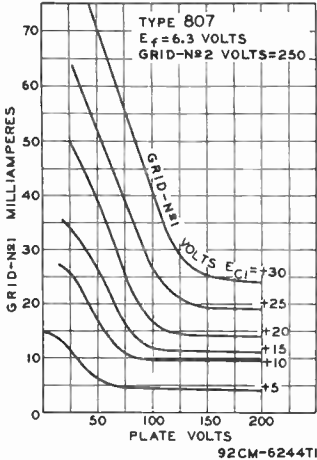
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TRANSMITTING BEAM POWER AMPLIFIER

AVERAGE CHARACTERISTICS



TYPICAL CHARACTERISTICS

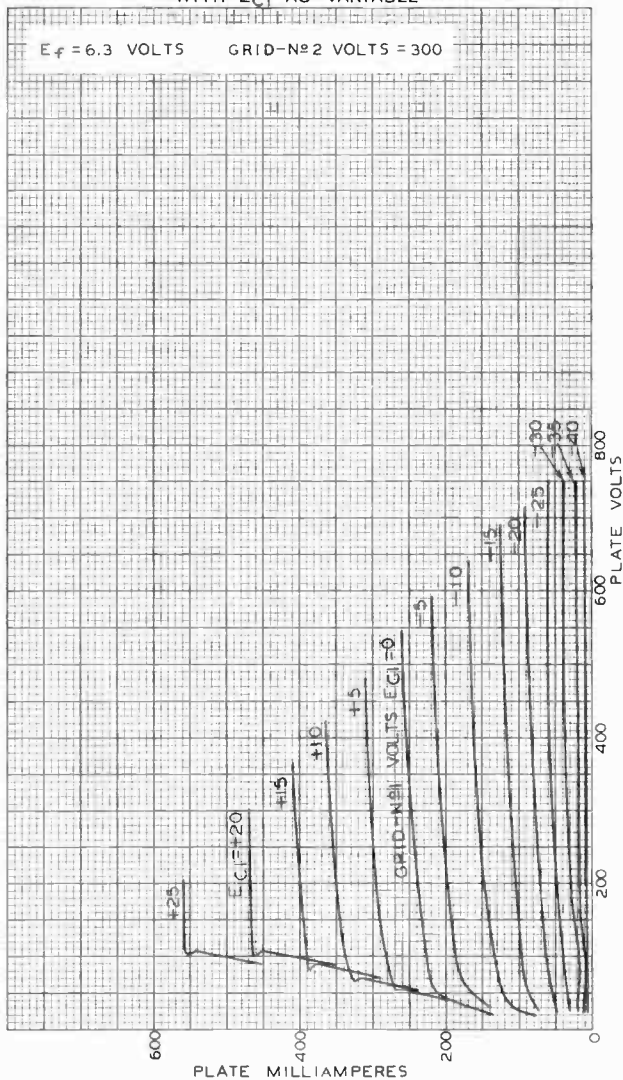


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AVERAGE PLATE CHARACTERISTICS WITH E_{C1} AS VARIABLE

 $E_f = 6.3$ VOLTSGRID-N \circ 2 VOLTS = 300

NOV. 19, 1948

PLATE MILLIAMPERES

TUBE DEPARTMENT

92CM-4682R2

RADIO CORPORATION OF AMERICA HARRISON, NEW JERSEY

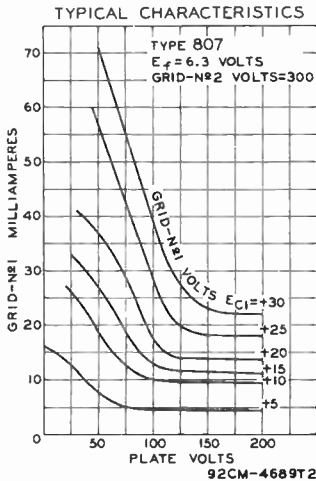
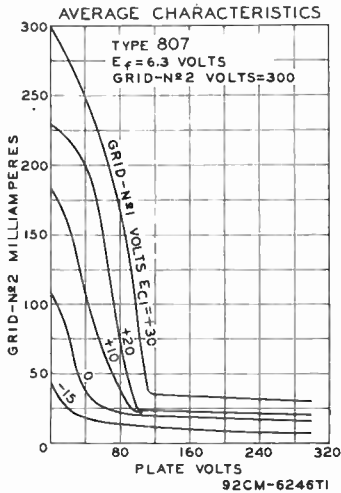
World Radio History



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TRANSMITTING BEAM POWER AMPLIFIER

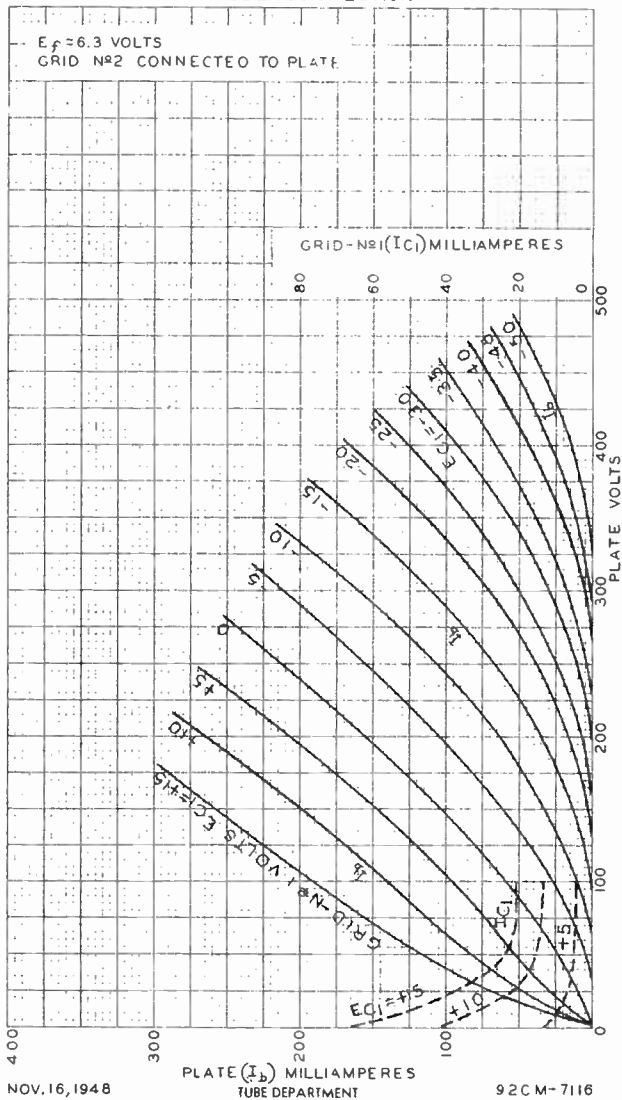


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AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION





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TRANSMITTING TRIODE

GENERAL DATA

Electrical:

Filament, Thoriated Tungsten:

Voltage 7.5 ac or dc volts

Current 4.0 amp

Amplification Factor 47

Direct Interelectrode Capacitances:

Grid to Plate 2.8 μmf Grid to Filament 5.3 μmf Plate to Filament 0.25 μmf

Mechanical:

Mounting Position Vertical only. Base down

Overall Length 5-7/8" \pm 3/16"Seated Length 5-1/4" \pm 3/16"

Maximum Diameter 2-13/16"

Bulb G-22

Cap (top) Medium

Cap (side) Small

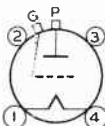
Base Medium-Shell Small 4-Pin, Bayonet

Basing Designation for BOTTOM VIEW 201

Pin 1 - Filament

Pin 2 - No Connection

Pin 3 - No Connection



Pin 4 - Filament

P - Plate (Top)

G - Grid (Side)

AF POWER AMPLIFIER & MODULATOR - Class B

Maximum Ratings, Absolute Values:

	CCS*	ICAS**	
DC PLATE VOLTAGE	1500 max.	2000 max.	volts
MAX.-SIGNAL DC PLATE CUR.*	150 max.	150 max.	ma.
MAX.-SIGNAL PLATE INPUT*	150 max.	225 max.	watts
PLATE DISSIPATION*	50 max.	75 max.	watts

Typical Operation:

Values are for 2 tubes

DC Plate Voltage	1250	1500	2000	..	volts
DC Grid Voltage#.	-16.5	-22.5	-36	..	volts
Peak AF Grid-to-Grid Volt.	245	215	270	..	volts
Zero-Signal DC Plate Cur.	40	30	40	..	ma.
Max.-Signal DC Plate Cur.	230	190	220	..	ma.
Effective Load Resistance (plate-to-plate)	12700	18300	21400	..	ohms
Max.-Signal Driving Power (Approx.)	7.8	4.8	8.8	..	watts

← Indicates a change.

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

•, **, #: See next page.



TRANSMITTING TRIODE

Max.-Signal Power Output
(Approx.) 190 185 | 300 . . watts

* For ac filament supply.

PLATE-MODULATED RF POWER AMPLIFIER - Class C Telephony

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

Maximum Ratings, Absolute Values:

	CCS*		I CAS**	
DC PLATE VOLTAGE	1250 max.		1600 max.	volts
DC GRID VOLTAGE	-400 max.		-400 max.	volts
DC PLATE CURRENT	125 max.		125 max.	ma.
DC GRID CURRENT	35 max.		40 max.	ma.
PLATE INPUT	135 max.		200 max.	watts
PLATE DISSIPATION	35 max.		50 max.	watts

Typical Operation:

DC Plate Voltage	1000	1250	1600	volts
DC Grid Voltage [⊙]	-135	-150	-170	volts
	3900	5000	4600	ohms
Peak RF Grid Voltage . . .	270	270	300	volts
DC Plate Current	120	100	125	ma.
DC Grid Current (Approx.) [⊙]	35	30	37	ma.
Driving Power (Approx.) [⊙]	9	7.5	10	watts
Power Output (Approx.) . .	90	95	150	watts

[⊙] obtained by grid resistor of value shown or by partial self-bias methods.

RF POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation[⊙]

Maximum Ratings, Absolute Values:

	CCS*		I CAS**	
DC PLATE VOLTAGE	1500 max.		2000 max.	volts
DC GRID VOLTAGE	-400 max.		-400 max.	volts
DC PLATE CURRENT	150 max.		150 max.	ma.
DC GRID CURRENT	35 max.		40 max.	ma.
PLATE INPUT	200 max.		300 max.	watts
PLATE DISSIPATION	50 max.		75 max.	watts

Typical Operation:

DC Plate Voltage	1250	1500	2000	volts
DC Grid Voltage ^Δ	-150	-150	-150	volts
	4300	4300	4200	ohms
	880	940	800	ohms
Peak RF Grid Voltage . . .	290	300	280	volts
DC Plate Current	135	125	150	ma.
DC Grid Current (Approx.) [⊙]	35	35	36	ma.
Driving Power (Approx.) [⊙]	9	9.5	9	watts
Power Output (Approx.) . .	125	140	225	watts

← Indicates a change.

• • • ⊙ □ Δ: See next page.



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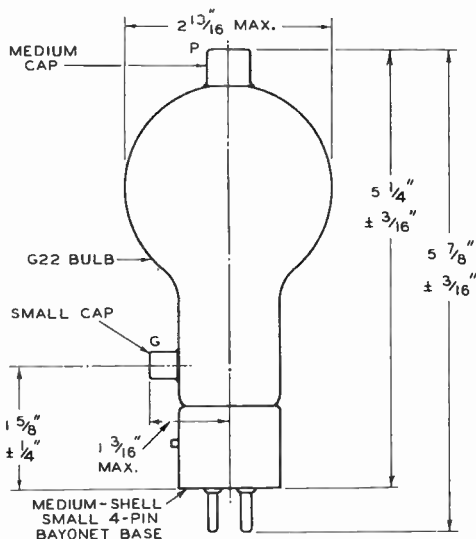
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TRANSMITTING TRIODE

- Continuous Commercial Service.
- Intermittent Commercial and Amateur Service.
- Subject to wide variations as explained on sheet TUBE RATINGS in General Section.
- ☐ Modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115% of the carrier conditions.
- △ Obtained from fixed supply, by grid resistor (4300, 4300, 4200) or by cathode resistor (880, 940, 800).

NOTE: When the 808 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 plate current at a safe value. With a plate voltage of 2000 volts, a fixed bias of at least -30 volts should be used.

Data on operating frequencies for the 808 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY



THE PLANE THROUGH THE TUBE AXIS AND CENTER OF GRID CAP MAY VARY FROM THE PLANE THROUGH THE TUBE AXIS AND CENTER OF BAYONET PIN BY AN ANGULAR TOLERANCE ; MEASURED ABOUT THE TUBE AXIS) OF 10° .

92CM-4677R3

APRIL 15, 1947

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-4677R3

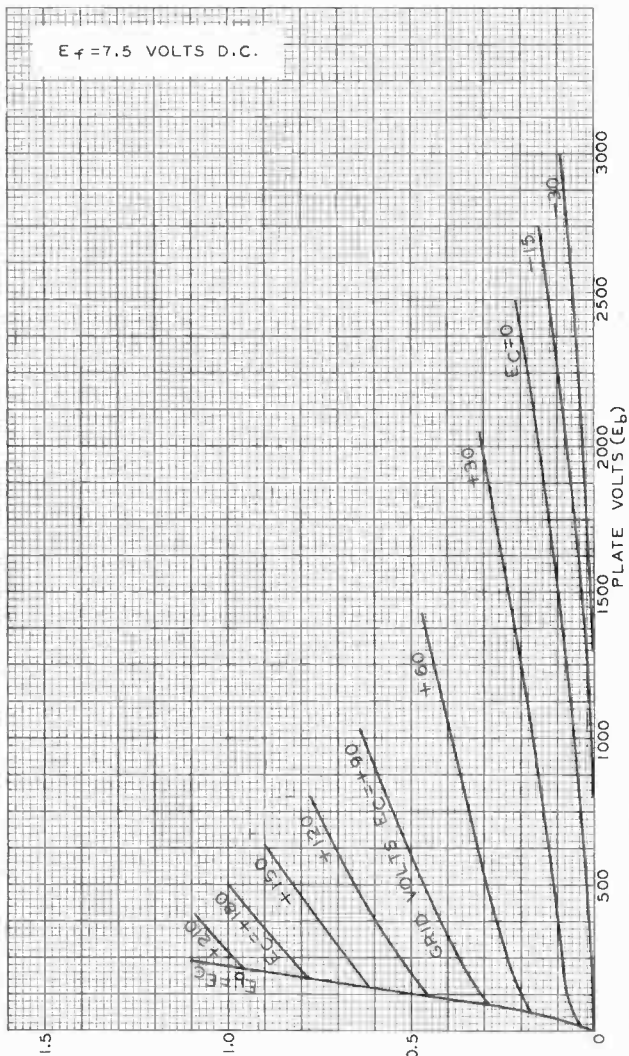


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AVERAGE PLATE CHARACTERISTICS

$E_f = 7.5$ VOLTS D.C.



OCT. 26, 1936

PLATE AMPERES

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

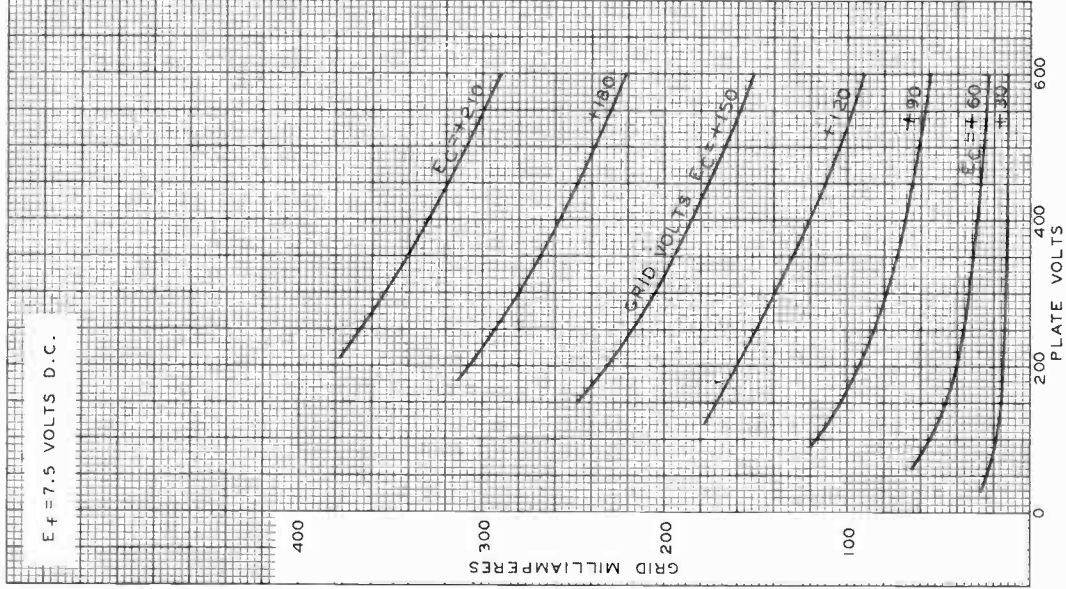
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TYPICAL CHARACTERISTICS

$E_f = 7.5$ VOLTS D.C.



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World Precision

NOV. 5, 1936

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-4691



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TRANSMITTING TRIODE

GENERAL DATA**Electrical:**

Filament, Thoriated Tungsten:

Voltage. 6.3 ac or dc volts

Current. 2.5 amp

Amplification Factor 50

Direct Interelectrode Capacitances:

Grid to Plate. 6.7 $\mu\mu\text{f}$ Grid to Filament 5.7 $\mu\mu\text{f}$ Plate to Filament. 0.9 $\mu\mu\text{f}$ **Mechanical:**Mounting Position. . . . Vertical, base down; or Horizontal,
pins 1 & 4 in vertical planeOverall Length 6-13/32" \pm 5/32"Seated Length. 5-25/32" \pm 5/32"

Maximum Diameter 2-7/16"

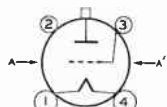
Bulb ST-19

Cap. Medium

Base Medium-Shell Small 4-Pin Micanol, Bayonet

Basing Designation for BOTTOM VIEW 3G

Pin 1 - Filament

Pin 2 - No
Connection

AA'=PLANE OF ELECTRODES

Pin 3 - Grid

Pin 4 - Filament

Cap - Plate

AF POWER AMPLIFIER & MODULATOR - Class B**Maximum Ratings, Absolute Values:**

	CCS [•]	ICAS ^{••}	
DC PLATE VOLTAGE	750 max.	1000 max.	volts
MAX.-SIGNAL DC PLATE CUR.* . .	125 max.	125 max.	ma. ←
MAX.-SIGNAL PLATE INPUT* . . .	75 max.	100 max.	watts
PLATE DISSIPATION*	25 max.	30 max.	watts

Typical Operation:*Unless otherwise specified, values are for 2 tubes*

DC Plate Voltage	750 . .	700	1000	volts
DC Grid Voltage#	-4.5 . .	0	-9	volts
Peak AF Grid-to-Grid Voltage	145 . .	160	155	volts
Zero-Signal DC Plate Current	40 . .	70	40	ma.
Max.-Signal DC Plate Current	200 . .	250	200	ma.
Effective Load Resistance (plate-to-plate)	8400 . .	6200	11600	ohms

*, •, ••, #: See next page.

← Indicates a change.

DEC. 20, 1946

TUBE DEPARTMENT

DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History



809

TRANSMITTING TRIODE

Max.-Signal Driving Power (Approx.) . . .	2.5 . .	3.4	2.7	watts
Max.-Signal Power Output (Approx.) . . .	105 . .	120	145	watts

RF POWER AMPLIFIER - Class B Telephony

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

Maximum Ratings, Absolute Values:

	CCS*	ICAS**	
DC PLATE VOLTAGE	750 max.	1000 max.	volts
DC PLATE CURRENT	50 max.	60 max.	ma.
PLATE INPUT	37.5 max.	45 max.	watts
PLATE DISSIPATION	25 max.	30 max.	watts

Typical Operation:

DC Plate Voltage	500	750	1000 . .	volts
DC Grid Voltage#	-5	-10	-30 . .	volts
Peak RF Grid Voltage	35	40	60 . .	volts
DC Plate Current	50	50	45 . .	ma.
DC Grid Current (Approx.) [□]	6	5	4 . .	ma.
Driving Power (Approx.) ^{□▲}	1.4	1.4	1.5 . .	watts
Power Output (Approx.)	7.5	12.5	15 . .	watts

PLATE-MODULATED RF POWER AMPLIFIER - Class C Telephony

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

Maximum Ratings, Absolute Values:

	CCS*	ICAS**	
DC PLATE VOLTAGE	600 max.	750 max.	volts
DC GRID VOLTAGE	-200 max.	-200 max.	volts
DC PLATE CURRENT	83 max.	100 max.	ma.
DC GRID CURRENT	35 max.	35 max.	ma.
PLATE INPUT	50 max.	75 max.	watts
PLATE DISSIPATION	17.5 max.	25 max.	watts

Typical Operation:

DC Plate Voltage	500	600	750 . .	volts
DC Grid Voltage [#]	{ -60 -60 2000 2000		-60 . .	volts
			2000 . .	ohms
Peak RF Grid Voltage	135	135	150 . .	volts
DC Plate Current	83	83	100 . .	ma.
DC Grid Current (Approx.) [□]	32	32	32 . .	ma.
Driving Power (Approx.) [□]	3.2	3.2	4.3 . .	watts
Power Output (Approx.)	30	38	55 . .	watts

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

For ac filament supply.

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

●, ●●, □, ▲: See next page.



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TRANSMITTING TRIODE

RF POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation[□]

Maximum Ratings, Absolute values:

	CCS [●]	ICAS ^{●●}	
DC PLATE VOLTAGE	750 max.	1000 max.	volts
DC GRID VOLTAGE	-200 max.	-200 max.	volts
DC PLATE CURRENT	100 max.	100 max.	ma.
DC GRID CURRENT	35 max.	35 max.	ma.
PLATE INPUT	75 max.	100 max.	watts
PLATE DISSIPATION	25 max.	30 max.	watts

Typical Operation:

DC Plate Voltage	500	750	1000	..	volts
DC Grid Voltage ^{▲▲}	-50	-60	-75	..	volts
	2500	3000	3000	..	ohms
	420	500	600	..	ohms
Peak RF Grid Voltage	135	140	160	..	volts
DC Plate Current	100	100	100	..	ma.
DC Grid Current (Approx.) [□]	20	20	25	..	ma.
Driving Power (Approx.) [□]	2.5	2.5	3.8	..	watts
Power Output (Approx.)	35	55	75	..	watts

● Continuous Commercial Service.

●● Intermittent Commercial and Amateur Service.

□ Subject to wide variations as explained on sheet TUBE RATINGS in General Section.

▲ At crest of audio-frequency cycle of sine-wave form.

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

▲▲ Obtained from fixed supply, by grid resistor (2500, 3000, 3000) or by cathode resistor (420, 500, 600).

NOTE: When the 809 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 a plate voltage of 1000 volts, a fixed bias of at least -10 volts should be used.

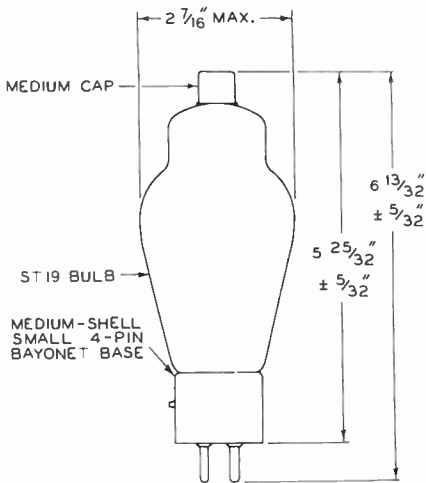
Data on operating frequencies for the 809 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY

809



809

TRANSMITTING TRIODE



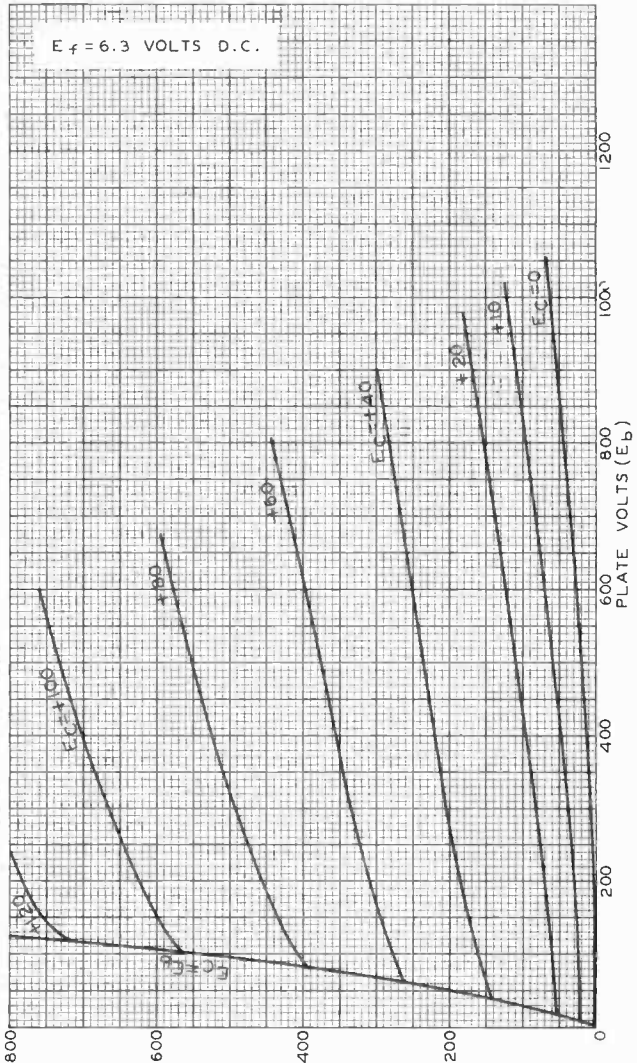


809

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AVERAGE PLATE CHARACTERISTICS

$E_f = 6.3$ VOLTS D.C.



OCT. 11, 1937

PLATE MILLIAMPERES
TUBE DEPARTMENT

92CM-4836

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

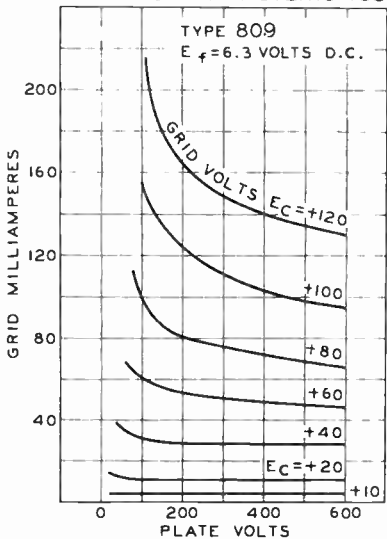
809



809

TRANSMITTING TRIODE

AVERAGE CHARACTERISTICS





TRANSMITTING TRIODE

GENERAL DATA

Electrical:

Filament, Thoriated Tungsten:

Voltage 10 ac or dc volts

Current 4.5 amp

Amplification Factor 36

Direct Interelectrode Capacitances:

Grid to Plate 4.8 $\mu\mu\text{f}$

Grid to Filament 8.7 $\mu\mu\text{f}$

Plate to Filament 12 $\mu\mu\text{f}$

Mechanical:

Mounting Position Vertical, base down; or Horizontal,
pins 1 & 2 in vertical plane

Overall Length 8-1/2" \pm 1/4"

Seated Length 8-3/16" \pm 1/4"

Maximum Radius 2-1/8" \pm 1/8"

Bulb T-20

Cap (top) Skirted Medium

Cap (side) Medium

Base Medium Metal-Shell Jumbo 4-Pin, Bayonet

Basing Designation for BOTTOM VIEW 20₁

Pin 1 - No Connection

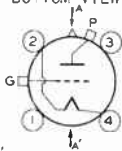
Pin 2 - Filament

Pin 3 - No Connection

Pin 4 - Filament

P - Plate (End Cap)

G - Grid (Side Cap)



AA' = PLANE OF ELECTRODES

AF POWER AMPLIFIER & MODULATOR - Class B

Maximum Ratings, Absolute Values:

	CCS*	ICAS**	
DC PLATE VOLTAGE	2500 max.	2750 max.	volts
MAX.-SIGNAL DC PLATE CUR.*	250 max.	250 max.	ma.
MAX.-SIGNAL PLATE INPUT*	425 max.	510 max.	watts
PLATE DISSIPATION*	125 max.	175 max.	watts

Typical Operation:

Unless otherwise specified, values are for 2 tubes

DC Plate Voltage	2000	2250	volts
DC Grid Voltage#	-50	-60	volts
Peak AF Grid-to-Grid Voltage	345	380	volts
Zero-Signal DC Plate Current	60	70	ma.
Max.-Signal DC Plate Current	420	450	ma.
Effective Load Resistance (plate to plate)	11000	11600	ohms

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

•, ••, #: See next page.

← indicates a change.



TRANSMITTING TRIODE

Max.-Signal Driving Power (Approx.)	10	13	watts
Max.-Signal Power Output (Approx.)	590	725	watts

RF POWER AMPLIFIER - Class B Telephony

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

Maximum Ratings, Absolute Values:

	CCS [•]	ICAS ^{••}	
→ DC PLATE VOLTAGE	2000 max.	2500 max.	volts
DC PLATE CURRENT	185 max.	185 max.	ma.
PLATE INPUT	185 max.	225 max.	watts
→ PLATE DISSIPATION	125 max.	175 max.	watts

Typical Operation:

DC Plate Voltage	1500	2000	2250	volts
DC Grid Voltage [#]	-50	-65	-70	volts
Peak RF Grid Voltage	110	100	100	volts
DC Plate Current	115	93	100	ma.
DC Grid Current (Approx.) [□]	2	2	2	ma.
Driving Power (Approx.) ^{□▲}	6	4	4	watts
Power Output (Approx.)	60	60	75	watts

PLATE-MODULATED RF POWER AMPLIFIER - Class C Telephony

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

Maximum Ratings, Absolute Values:

	CCS [•]	ICAS ^{••}	
→ DC PLATE VOLTAGE	1600 max.	2000 max.	volts
DC GRID VOLTAGE	-500 max.	-500 max.	volts
DC PLATE CURRENT	210 max.	250 max.	ma.
→ DC GRID CURRENT	70 max.	75 max.	ma.
→ PLATE INPUT	335 max.	500 max.	watts
→ PLATE DISSIPATION	85 max.	125 max.	watts

→ Typical Operation:

DC Plate Voltage	1250	1600	2000	volts
DC Grid Voltage [#]	-200	-200	-350	volts
Peak RF Grid Voltage	4000	4000	5000	ohms
DC Plate Current	370	370	550	volts
DC Grid Current (Approx.) [□]	210	210	250	ma.
Driving Power (Approx.) [□]	50	50	70	ma.
Power Output (Approx.)	17	17	35	watts
	180	250	380	watts

[#] For ac filament supply.

[•] Obtained by grid resistor of value shown or by partial self-bias methods.

^{••}, [□], [▲]: See next page.

← indicates a change.



810

TRANSMITTING TRIODE

810

RF POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

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

Maximum Ratings, Absolute Values:

	CCS [●]	ICAS ^{●●}	
DC PLATE VOLTAGE	2000 max.	2500 max.	volts
DC GRID VOLTAGE	-500 max.	-500 max.	volts
DC PLATE CURRENT	250 max.	300 max.	ma.
DC GRID CURRENT	70 max.	75 max.	ma.
PLATE INPUT	500 max.	750 max.	watts
PLATE DISSIPATION	125 max.	175 max.	watts

Typical Operation:

DC Plate Voltage	1500	2000	2500 . .	volts
DC Grid Voltage ^{▲▲}	-120	-160	-180 . .	volts
	3000	4000	3000 . .	ohms
	415	550	500 . .	ohms
Peak RF Grid Voltage	280	330	350 . .	volts
DC Plate Current	250	250	300 . .	ma.
DC Grid Current (Approx.) [□]	40	40	60 . .	ma.
Driving Power (Approx.) [□] . .	10	12	19 . .	watts
Power Output (Approx.) . . .	275	375	575 . .	watts

● Continuous Commercial Service.

●● Intermittent Commercial and Amateur Service.

□ Subject to wide variations as explained on sheet TUBE RATINGS in General Section.

▲ At crest of audio-frequency cycle with modulation factor of 1.0.

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

▲▲ Obtained from fixed supply, by grid resistor (3000, 4000, 3000), or by cathode resistor (415, 550, 500).

NOTE: When the 810 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 a plate voltage of 2500 volts, a fixed bias of at least -40 volts should be used.

Data on operating frequencies for the 810 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY

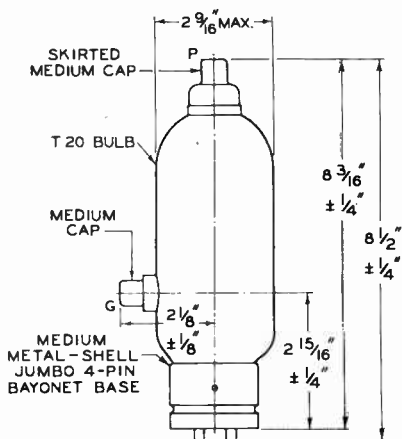
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810



810

TRANSMITTING TRIODE

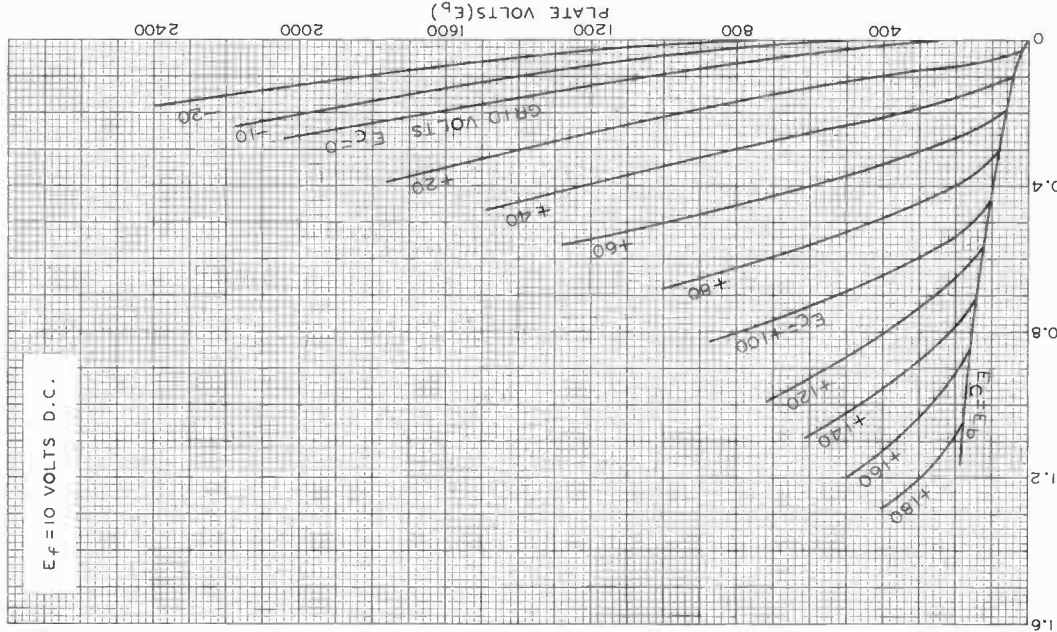


92CM-4965R1



810

AVERAGE PLATE CHARACTERISTICS

 $E_f = 10$ VOLTS D.C.

0/8

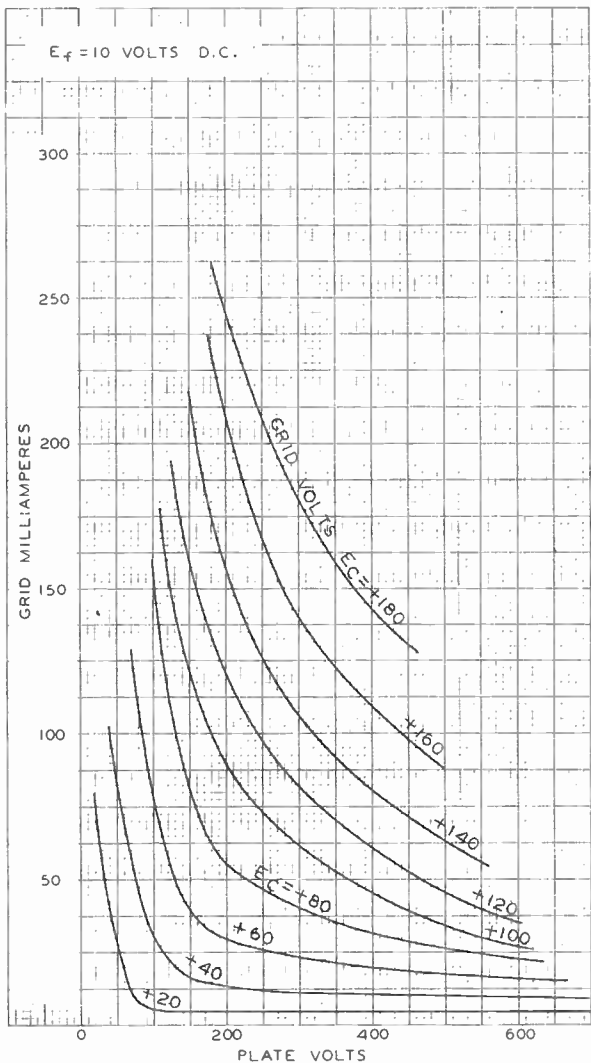
92C-4981

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

OCT. 13, 1938



TYPICAL CHARACTERISTICS





812-A

812-A

POWER TRIODE

Supersedes Type 812

GENERAL DATA**Electrical:**

Filament, Thoriated Tungsten:

Voltage (AC or DC) 6.3 ± 0.3 volts

Current, with 6.3 volts on filament. 4 amp

Amplification Factor 29

Direct Interelectrode Capacitances:

Grid to Plate. 5.5 $\mu\mu\text{f}$ Grid to Filament 5.4 $\mu\mu\text{f}$ Plate to Filament 0.77 $\mu\mu\text{f}$ **Mechanical:**Mounting Position. . . . Vertical, base down; or Horizontal,
with pins 1 and 4 in vertical plane

Overall Length 6-1/2" ± 5/32"

Seated Length. 5-7/8" ± 5/32"

Maximum Diameter 2-7/16"

Bulb ST-19

Cap. Medium, with Insulating Collar

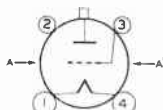
Base Medium-Shell Small 4-Pin Micanol, Bayonet

Basing Designation for BOTTOM VIEW 3G

Pin 1 - Filament

Pin 2 - No

Connection



AA' = PLANE OF ELECTRODES

Pin 3 - Grid

Pin 4 - Filament

Cap - Plate

AF POWER AMPLIFIER & MODULATOR - Class B**Maximum Ratings, Absolute Values:**

	<u>CCS*</u>	<u>ICAS**</u>	
DC PLATE VOLTAGE	1250 max.	1500 max.	volts
MAX.-SIGNAL DC PLATE CURRENT*.	175 max.	175 max.	ma
MAX.-SIGNAL PLATE INPUT*	165 max.	235 max.	watts
PLATE DISSIPATION*	45 max.	65 max.	watts

Typical Operation:

Values are for 2 tubes

DC Plate Voltage	1250 . .	1500 . .	volts
DC Grid Voltage#	-40 . .	-48 . .	volts
Peak AF Grid-to-Grid Voltage	225 . .	270 . .	volts
Zero-Signal DC Plate Current	22 . .	28 . .	ma
Max.-Signal DC Plate Current	260 . .	310 . .	ma
Effective Load Resistance (plate-to-plate)	12200 . .	13200 . .	ohms
Max.-Signal Driving Power (Approx.)	3.5 . .	5 . .	watts
Max.-Signal Power Output (Approx.)	235 . .	340 . .	watts

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

**, #: See next page.

JUNE 15, 1948

TUBE DEPARTMENT

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History

812-A



812-A POWER TRIODE

PLATE-MODULATED RF POWER AMPLIFIER - Class C Telephony

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

Maximum Ratings, Absolute Values:

	CCS [•]	ICAS ^{••}	
DC PLATE VOLTAGE	1000 max.	1250 max.	volts
DC GRID VOLTAGE.	-200 max.	-200 max.	volts
DC PLATE CURRENT	125 max.	150 max.	ma
DC GRID CURRENT.	35 max.	35 max.	ma
PLATE INPUT.	115 max.	175 max.	watts
PLATE DISSIPATION.	30 max.	45 max.	watts

Typical Operation:

DC PLATE VOLTAGE	1000	1250	volts
DC Grid Voltage [•]	{ -110	-115	volts
	3400	3300	ohms
Peak RF Grid Voltage	220	240	volts
DC Plate Current	115	140	ma
DC Grid Current (Approx.)	33	35	ma
Driving Power (Approx.)	6.6	7.6	watts
Power Output (Approx.)	85	130	watts

RF POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

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

Maximum Ratings, Absolute Values:

	CCS [•]	ICAS ^{••}	
DC PLATE VOLTAGE	1250 max.	1500 max.	volts
DC GRID VOLTAGE.	-200 max.	-200 max.	volts
DC PLATE CURRENT	175 max.	175 max.	ma
DC GRID CURRENT.	35 max.	35 max.	ma
PLATE INPUT.	175 max.	260 max.	watts
PLATE DISSIPATION.	45 max.	65 max.	watts

Typical Operation:

DC Plate Voltage	1250	1500	volts
DC Grid Voltage ^{••}	{ -90	-120	volts
	3000	4000	ohms
	530	590	ohms
Peak RF Grid Voltage	200	240	volts
DC Plate Current	140	173	ma
DC Grid Current (Approx.)	30	30	ma
Driving Power (Approx.)	5.4	6.5	watts
Power Output (Approx.)	130	190	watts

•, ••, #, •, ▲, □□: See next page.

JUNE 15, 1948

TUBE DEPARTMENT

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History



812-A

812-A POWER TRIODE

SELF-RECTIFYING OSCILLATOR or AMPLIFIER - Class C

Maximum Ratings, Absolute Values:

	CCS*	
AC PLATE VOLTAGE (RMS)	1750 max.	volts
DC GRID VOLTAGE.	-125 max.	volts
DC PLATE CURRENT	75 max.	ma
DC GRID CURRENT.	20 max.	ma
PLATE INPUT.	145 max.	watts
PLATE DISSIPATION.	45 max.	watts

Typical Operation in Push-Pull Circuit at 27 Mc.:

Values are for 2 tubes

AC Plate Voltage (RMS)	1740	volts
Grid Resistor*	3500	ohms
DC Plate Current	150	ma
DC Grid Current (at full load)	29	ma
Driving Power (Approx.) ^Δ	12	watts
Power Output (Approx.)	200	watts
Useful Power Output (Approx.)- 75% circuit efficiency	150	watts

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

	Note	Min.	Max.	
Filament Current	1	3.75	4.25	amp
Amplification Factor	1,2	26	32	
Grid-Plate Capacitance	-	4.8	6.2	μf
Grid-Filament Capacitance.	-	4.4	6.4	μf
Plate-Filament Capacitance	-	0.58	0.96	μf
Grid Current	1,3	17	39	ma
Plate Current.	1,4	18	42	ma
Useful Power Output.	1,5	140	-	watts

Note 1: DC filament voltage = 6.3 volts.

Note 2: with dc grid voltage of -30 volts and plate voltage adjusted to give plate current of 30 ma.

Note 3: with dc plate voltage of 200 volts and dc grid voltage of +50 volts.

Note 4: with dc plate voltage of 1250 volts and dc grid voltage of -30 volts.

Note 5: with dc plate voltage of 1500 volts, plate current of 175 ma., grid current of 34 to 50 ma., grid resistor of 3500 ± 10% ohms and frequency of 15 Mc.

• Continuous Commercial Service.

•• Intermittent Commercial and Amateur Service.

For ac filament supply.

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

⊕ Obtained from a fixed supply, by grid resistor (3000, 4000) or by cathode resistor (530, 590).

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

▲ From a self-rectified driver.

⊗ See next page.

812-A

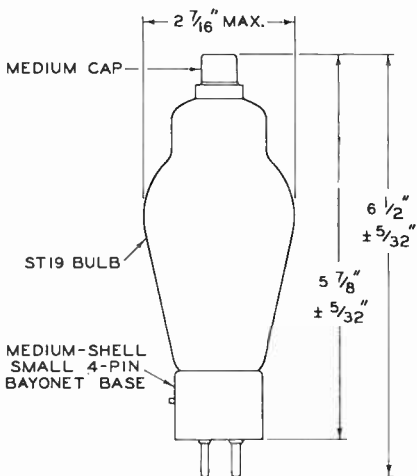


812-A POWER TRIODE

* The 812-A can be biased by any convenient method, but the use of a grid resistor is preferred because the bias is automatically varied as the load on the circuit varies. In those 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 from zero load to twice their full-load values, and usually provides adequate leeway.

NOTE: When the 812-A 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 a plate voltage of 1500 volts, a fixed bias of at least -45 volts should be used.

Data on operating frequencies for the 812-A are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY



92CS-6905



812-A

AVERAGE PLATE CHARACTERISTICS

$E_f = 6.3$ VOLTS DC



812-A

MAY 13, 1948

PLATE (I_b) OR GRID (I_c) MILLIAMPERES
TUBE DEPARTMENT
92CM-6074RI

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

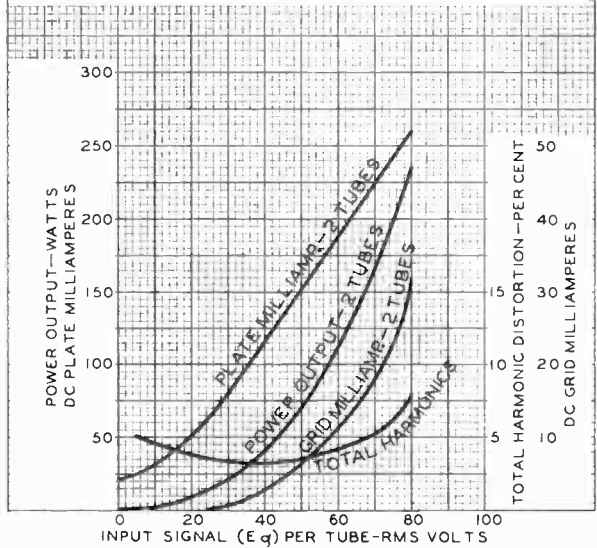
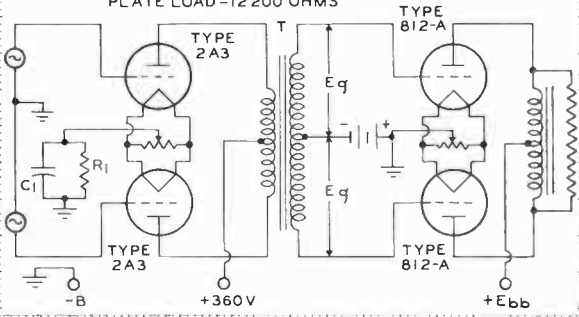
812-A



812-A

OPERATION CHARACTERISTICS

$E_f = 6.3$ VOLTS AC FOR 812-A's & 2.5 VOLTS AC FOR 2A3's
 INPUT: CLASS AB₁ - TWO TYPE 2A3's; PLATE-SUPPLY VOLTS = 360; CATHODE-BIAS RESISTOR (R_1) = 780 OHMS; BYPASS CAPACITOR (C_1) = 80 μ F
 INTERSTAGE TRANSFORMER (T):
 VOLTAGE RATIO $\frac{\text{PRIMARY}}{\frac{1}{2} \text{ SEC.}} = 1.4$
 OUTPUT: CLASS B - TWO TYPE 812-A's; PLATE VOLTS (E_{bb}) = 1250; DC GRID VOLTS = -40; PLATE-TO-PLATE LOAD = 12 200 OHMS





812-A

812-A

OPERATION CHARACTERISTICS

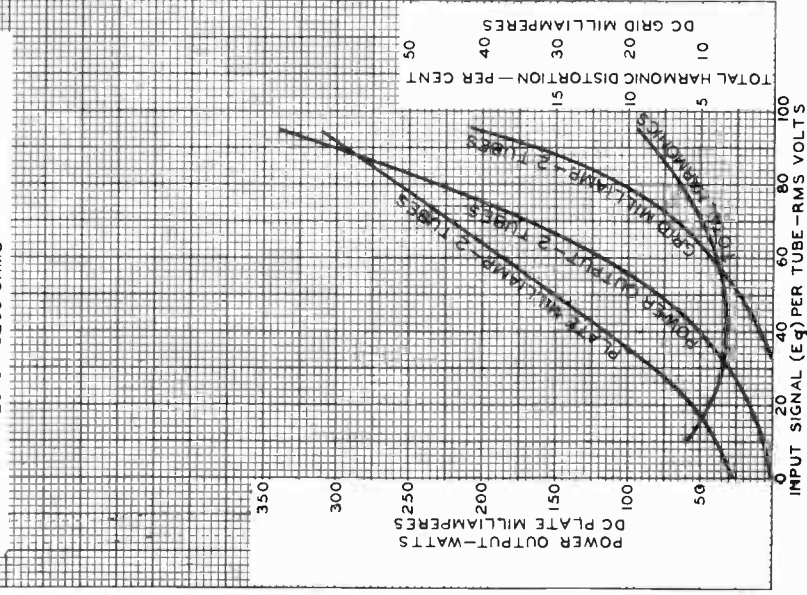
E_f = 6.3 VOLTS AC FOR 812-A's & 2.5 VOLTS AC FOR 2A3's
 CIRCUIT ARRANGEMENT: SAME AS ON DWG. 92CM-6938
 UNDER TYPE 812-A

INPUT: CLASS AB1 - TWO TYPE 2A3's; PLATE-SUPPLY
 VOLTS = 360; CATHODE-BIAS RESISTOR (R₁) = 780
 OHMS; BYPASS CAPACITOR (C₁) = 80 μF

INTERSTAGE TRANSFORMER (T):

$$\text{VOLTAGE RATIO } \frac{\text{PRIMARY}}{\sqrt{2} \text{ SEC.}} = 1.4$$

OUTPUT: CLASS B-TWO TYPE 812-A's; PLATE VOLTS
 (E_{bb}) = 1500; DC GRID VOLTS = -48; PLATE-TO-
 PLATE LOAD = 13200 OHMS



FEB. 27, 1948

TUBE DEPARTMENT
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6937



5786

5786

POWER TRIODE

Typical Operation as RF Power Amplifier:

DC Plate Voltage	3000	volts
DC Grid Voltage ^{▲▲}	-200	volts
	2200	ohms
	330	ohms
Peak RF Grid Voltage	450	volts
DC Plate Current	500	ma
DC Grid Current (Approx.) [□]	90	ma
Driving Power (Approx.) [□]	36	watts
Power Output (Approx.)	1000	watts

Typical Operation as Oscillator at 160 Mc:

DC Plate Voltage	3000	volts
DC Grid Voltage [†]	-225	volts
	2000	ohms
	380	ohms
Peak RF Grid Voltage	475	volts
DC Plate Current	500	ma
DC Grid Current (Approx.) [□]	90	ma
Power Output (Approx.)	1000	watts
Useful Power Output (Approx.)— 85% circuit efficiency	850	watts

^{▲▲} obtained from fixed supply, by grid resistor (2200) or by cathode resistor (330).

[†] obtained from fixed supply, by grid resistor (2000) or by cathode resistor (380).

SELF-RECTIFYING OSCILLATOR or AMPLIFIER—Class CMaximum CCS[®] Ratings, Absolute Values:

RMS PLATE VOLTAGE	4250 max.	volts
DC GRID VOLTAGE	-300 max.	volts
DC PLATE CURRENT	320 max.	ma
DC GRID CURRENT	85 max.	ma
PLATE INPUT	1500 max.	watts
PLATE DISSIPATION	600 max.	watts

Typical Operation:

RMS Plate Voltage	4250	volts
DC Grid Voltage [⊕]	-115	volts
	1500	ohms
DC Plate Current	320	ma
DC Grid Current [□]	77	ma
Driving Power (Approx.) ^{■□}	46	watts
Power Output [†] (Approx.)	1050	watts

[■] From a self-rectifying driver.

• □ ⊕
: See next page.

FEB. 1, 1949

TUBE DEPARTMENT

TENTATIVE DATA 2

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History



POWER TRIODE

AMPLIFIER or OSCILLATOR—Class C

With Separate, Rectified, Unfiltered, Single-Phase,
Full-Wave Plate Supply

Maximum CCS* Ratings, Absolute Values:

DC PLATE VOLTAGE	2700 max.	volts
DC GRID VOLTAGE	-300 max.	volts
DC PLATE CURRENT	450 max.	ma
DC GRID CURRENT	120 max.	ma
PLATE INPUT	1500 max.	watts
PLATE DISSIPATION	600 max.	watts

Typical Operation:

DC Plate Voltage	2700	volts
DC Grid Voltage [†]	{ -180	volts
	{ 1530	ohms
DC Plate Current	450	ma
DC Grid Current (Approx.) [‡]	118	ma
Driving Power (Approx.) [▲]	57	watts
Power Output (Approx.)	1150	watts

* Continuous Commercial Service.

† For effect of load resistance on grid current and driving power, refer to TUBE RATINGS—Grid Current and Driving Power in the General Section.

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

▲ From a driver with a rectified, unfiltered, single-phase, full-wave plate supply.

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

	Note	Min.	Max.	
Filament Current	1	11.7	13.3	amp
Amplification Factor	1,2	27	33	
Grid-Plate Capacitance	-	4.8	5.8	μmf
Grid-Filament Capacitance	-	3.6	4.8	μmf
Plate-Filament Capacitance	-	2.8	4.0	μmf
Plate Voltage	1,3	1030	1350	volts
Plate Voltage	1,4	2400	3000	volts
Grid Voltage	1,5	-	-130	volts
Peak Cathode Current	1,6	6	-	amp
Useful Power Output	1,7	800	-	watts

Note 1: With 11 volts ac on filament

Note 2: With dc grid voltage of -25 volts, and plate voltage adjusted to give dc plate current of 200 ma.

Note 3: With dc grid voltage of 0 volts, and plate voltage adjusted to give dc plate current of 200 ma.

Note 4: With dc grid voltage of -50 volts, and plate voltage adjusted to give dc plate current of 200 ma.

Note 5: With dc plate voltage of 3000 volts, and grid voltage adjusted to give a dc plate current of 1 ma.

Note 6: Represents the maximum usable cathode current (plate current and grid current) for the tube under any condition of operation.



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5786

POWER TRIODE

Note 7: With dc plate voltage of 3000 volts, dc plate current of 500 ma., dc grid current of 80 to 120 ma., grid resistor of $2000 \pm 10\%$ ohms, and frequency of 160 MC.

Data on operating frequencies for the 5786 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

OPERATING NOTES

The quantity of air necessary for adequate cooling of the 5786 will depend on the power input to the tube, as well as on the efficiency and frequency at which the tube is operated. When the 5786 is operated with full power input at the maximum rated frequency of 160 megacycles, and with the circuit adjusted for tube operation at the maximum plate-dissipation rating, sufficient cooling will be provided by a blower such as the Fasco No.50749. This blower is made by F.A. Smith Mfg. Co., Inc., Rochester 2, N.Y. It has an outlet area of approximately 6.25 square inches and is capable of supplying 140 cubic feet of air per minute, free delivery.

Provision must be made to direct part of the air from the blower to the filament and grid seals. For this purpose, a blower duct similar to that shown on the following sheet is suggested. Also sketched is a semi-circular air deflector which is useful in providing adequate cooling to the side of the grid seal away from the incoming air stream.

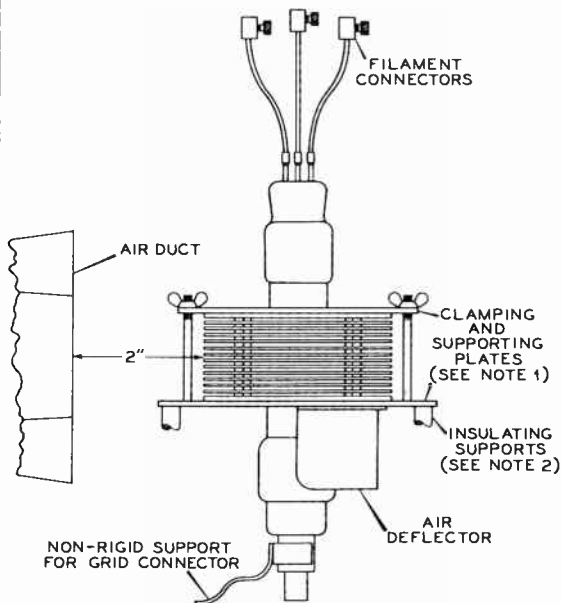
Depending on the type of application in which the 5786 is used, the required quantity of cooling air and the method employed for directing this air to the radiator and seals will vary considerably. It is recommended, therefore, that operating temperatures be measured in each application to make certain that maximum temperature ratings are not exceeded.

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POWER TRIODE

SUGGESTED MOUNTING

92CM-7080R1

NOTE 1: SUPPORTING PLATE AND CLAMPING PLATE HAVE HOLES LARGE ENOUGH TO PERMIT PASSAGE OF THE GLASS BULBS OF THE TUBE.

NOTE 2: TWO OR MORE INSULATORS MAY BE USED. INSULATORS MUST BE PLACED SO AS TO NOT INTERFERE WITH AIR FLOW ONTO GRID TERMINAL.

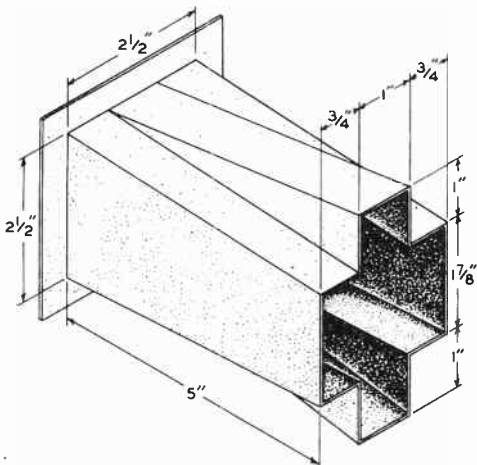


5786

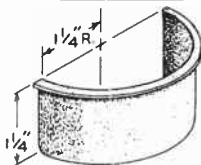
5786

POWER TRIODE

AIR DUCT



AIR DEFLECTOR



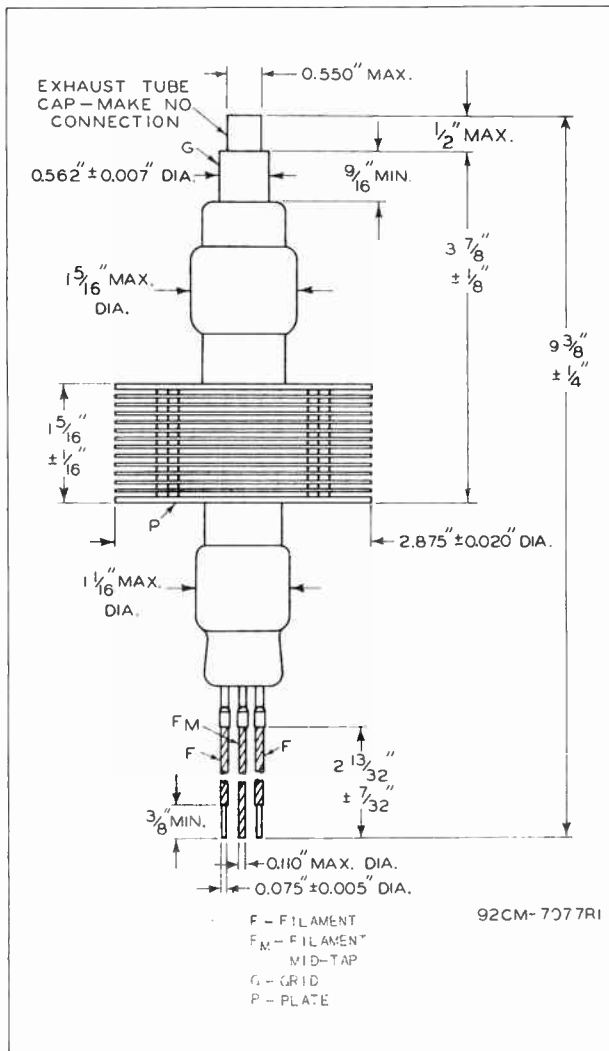
92CS-7117

5786



5786

POWER TRIODE



FEB. 1, 1949

TUBE DEPARTMENT

GE-7077R1

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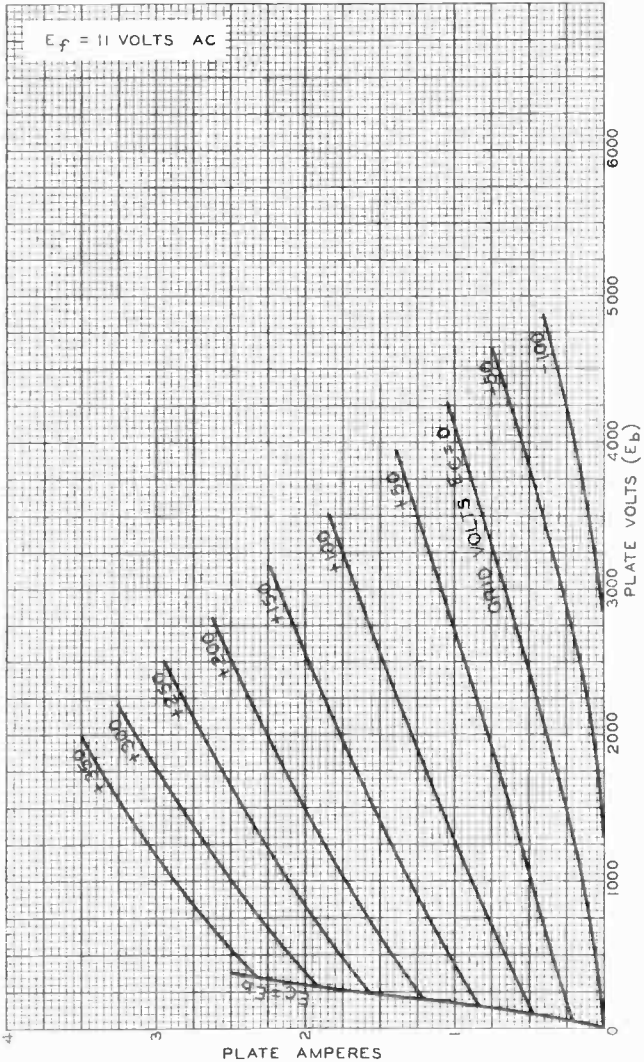


5786

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AVERAGE PLATE CHARACTERISTICS

$E_f = 11$ VOLTS AC



MAY 10, 1946

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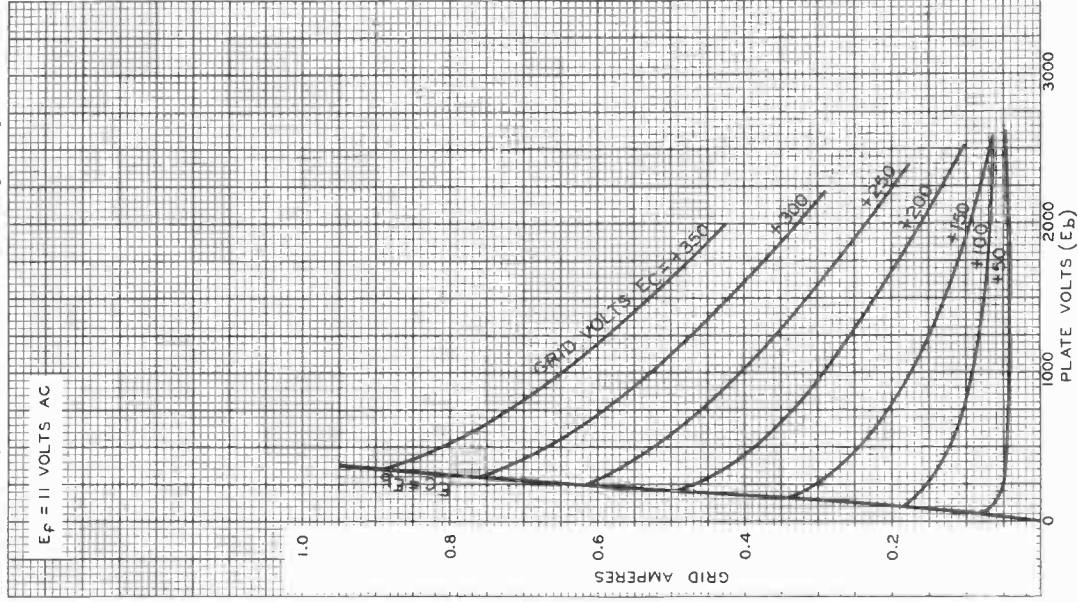
92CM-6593R1

5786



5786

TYPICAL CHARACTERISTICS



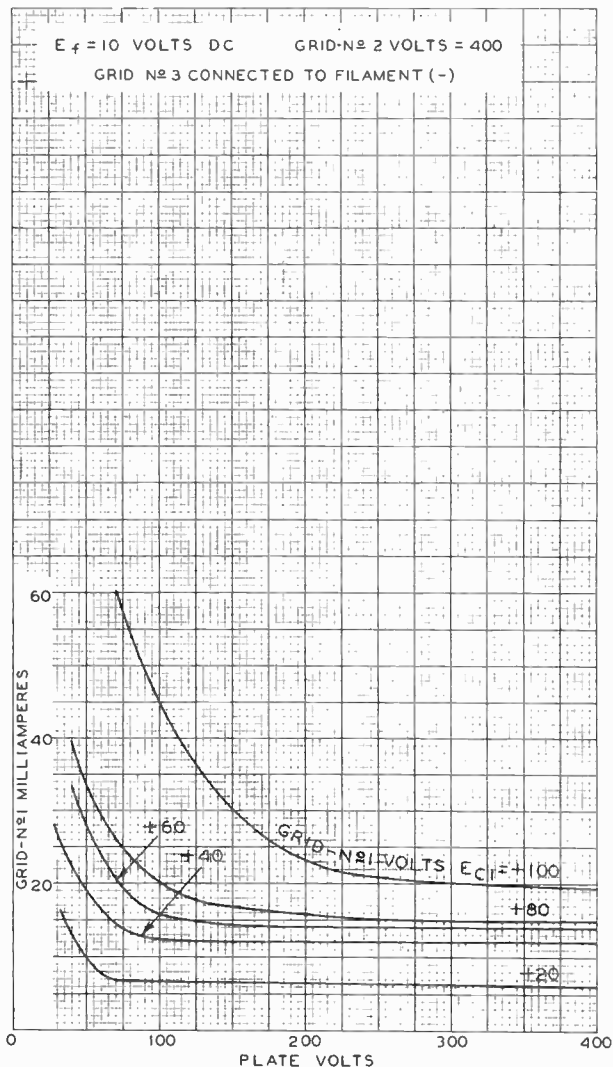


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TYPICAL CHARACTERISTICS

$E_f = 10$ VOLTS DC GRID-Nº 2 VOLTS = 400
GRID Nº 3 CONNECTED TO FILAMENT (-)



MARCH 27, 1947

TUBE DEPARTMENT

92CM-4970R1

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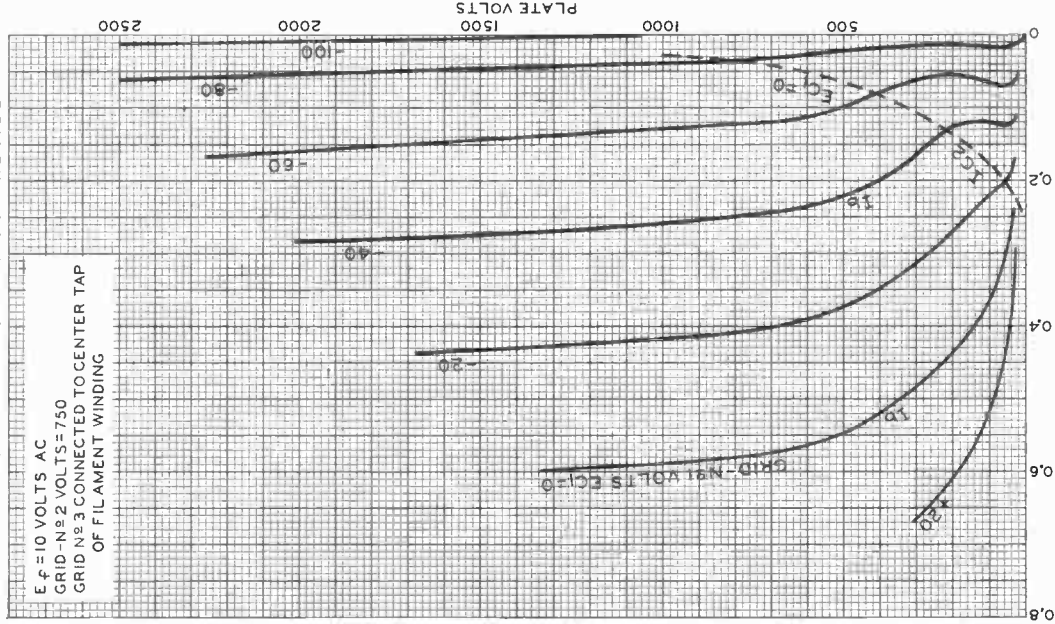
World Radio History



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AVERAGE PLATE CHARACTERISTICS

$E_f = 10$ VOLTS AC
 GRID-N \circ 2 VOLTS=750
 GRID-N \circ 3 CONNECTED TO CENTER TAP
 OF FILAMENT WINDING

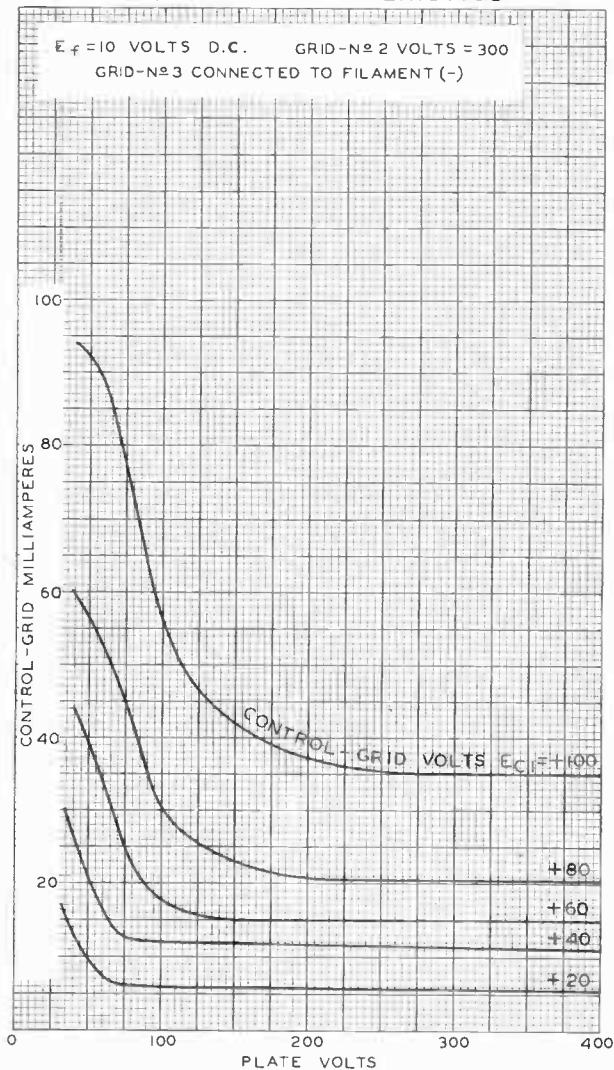




813

TYPICAL CHARACTERISTICS

$E_f = 10$ VOLTS D.C. GRID-N^o2 VOLTS = 300
GRID-N^o3 CONNECTED TO FILAMENT (-)

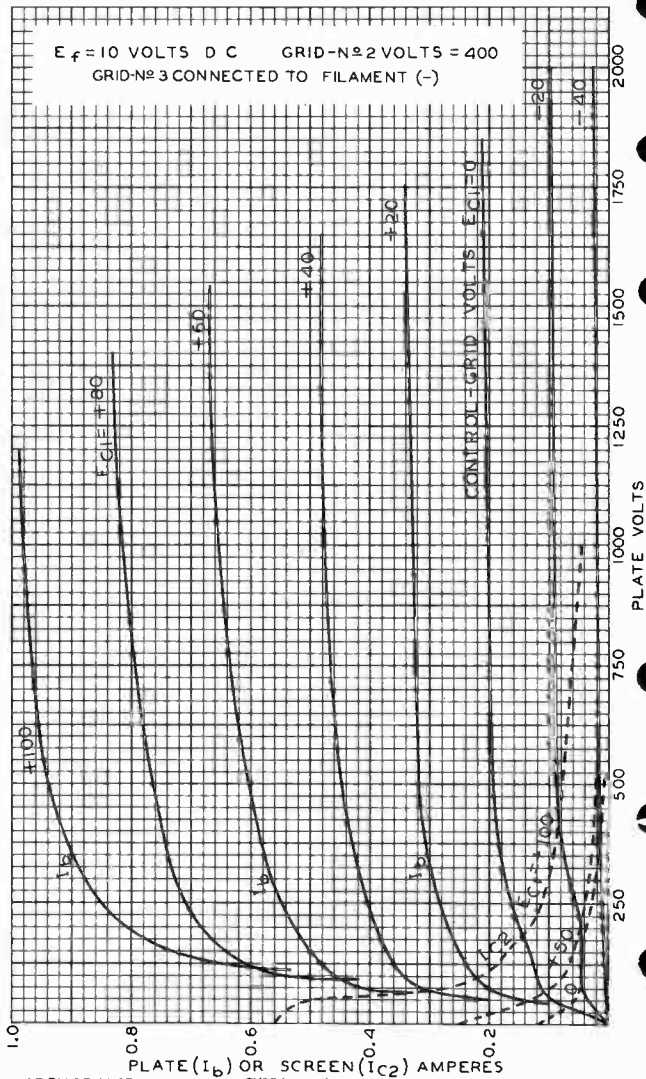


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AVERAGE PLATE CHARACTERISTICS



MARCH 27, 1947

 TUBE DEPARTMENT
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-4968RI



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TRANSMITTING BEAM POWER AMPLIFIER

	CCS*		ICAS**	
DC PLATE CURRENT	120 max.		150 max.	ma
DC GRID-No.1 CURRENT	15 max.		15 max.	ma
PLATE INPUT.	120 max.		180 max.	watts
GRID-No.2 INPUT.	6.7 max.		6.7 max.	watts
PLATE DISSIPATION.	34 max.		50 max.	watts

Typical Operation:

DC Plate Voltage	900	1000	1250	..	volts
DC Grid-No.3 (Suppressor) Voltage†	0	0	0	..	volts
DC Grid-No.2 Voltage ^{▲▲}	{ 300	{ 300	{ 300	..	volts
	{ 40000	{ 40000	{ 48000	..	ohms
DC Grid-No.1 Voltage†† [⊕]	{ -150	{ -150	{ -150	..	volts
	{ 15000	{ 15000	{ 15000	..	ohms
Peak RF Grid-No.1 Voltage.	215	222	222	..	volts
DC Plate Current	120	120	144	..	ma
DC Grid-No.2 Current	15	17.5	20	..	ma
DC Grid-No.1 Current (Approx.)*	10	10	10	..	ma
Driving Power (Approx.)*	2	2	2	..	watts
Power Output (Approx.)	76	87	130	..	watts

▲▲ obtained preferably from modulated plate-voltage supply through resistor of value shown.

RF POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation[⊕]

Maximum Ratings, Absolute Values:

	CCS*		ICAS**	
DC PLATE VOLTAGE	1250 max.		1500 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE.	400 max.		400 max.	volts
DC GRID-No.1 (CONTROL- GRID) VOLTAGE.	-300 max.		-300 max.	volts
DC PLATE CURRENT	150 max.		150 max.	ma
DC GRID-No.1 CURRENT	15 max.		15 max.	ma
PLATE INPUT.	180 max.		225 max.	watts
GRID-No.2 INPUT.	10 max.		10 max.	watts
PLATE DISSIPATION.	50 max.		65 max.	watts

Typical Operation:

DC Plate Voltage	1000	1250	1500	..	volts
DC Grid-No.3 (Suppressor) Voltage†	0	0	0	..	volts
DC Grid-No.2 Voltage ^{■ ■ ⊕}	{ 300	{ 300	{ 300	..	volts
	{ 40000	{ 42000	{ 50000	..	ohms
DC Grid-No.1 Voltage†† [⊕]	{ -70	{ -80	{ -90	..	volts
	{ 7000	{ 8000	{ 9000	..	ohms
	{ 395	{ 455	{ 490	..	ohms
Peak RF Grid-No.1 Voltage.	150	165	170	..	volts

* , ** , † , ⊕ , ■ , †† , ■ ■ , ⊕ : see next page.

← Indicates a change.



TRANSMITTING BEAM POWER AMPLIFIER

	CCS*		ICAS**	
DC Plate Current	150	144	150	ma
DC Grid-No.2 Current	17.5	22.5	24	ma
DC Grid-No.1 Cur. (Approx.)*	10	10	10	ma
Driving Power Approx.)*	1.35	1.5	1.5	watts
Power Output (Approx.)	100	130	160	watts

* Continuous Commercial Service.

** Intermittent Commercial & Amateur Service.

† Connect grid No.3 to mid-point of filament operated on ac, or to the negative end of filament operated on dc.

* For effect of load resistance on grid current and driving power, refer to TUBE RATINGS—Grid Current and Driving Power in the General Section.

†† Obtained preferably from grid-No.1 resistor, although combination of either grid-No.1 resistor and cathode resistor or grid resistor and fixed supply may be used.

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

■ Obtained from a separate source, from the plate-voltage supply with a voltage divider, or through a series resistor (40000, 42000, 50000).

⊕ If preceding stage is keyed, partial fixed-bias is required.

⊙ For ac filament supply.

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

	Note	Min.	Max.	
Filament Current	1	3.10	3.40	amp
Grid No.1—Plate Capacitance	-	-	0.15	μf
Input Capacitance.	-	11.1	15.9	μf
Output Capacitance	-	10.1	16.9	μf
Plate Current.	1,2	30	48	ma
Grid-No.2 Current.	1,2	-	3.5	ma
Grid-No.1 Current.	1,3	22	52	ma
Power Output	1,4	120	-	watts

NOTE 1: DC filament volts = 10.0.

NOTE 2: With dc plate voltage of 1250 volts; dc grid-No.3 voltage of 0 volts; dc grid-No.2 voltage of 300 volts; and dc grid-No.1 voltage of -19 volts.

NOTE 3: With dc plate voltage of 175 volts; dc grid-No.3 voltage of 0 volts; dc grid-No.2 voltage of 175 volts; and dc grid-No.1 voltage of +65 volts.

NOTE 4: With dc plate voltage of 1250 volts; dc grid-No.3 voltage of 0 volts; dc grid-No.2 voltage of 300 volts; plate current of 150 ma., grid-No.1 current of 10-15 ma.; grid-No.1 resistor of 8000 ±10% ohms; and frequency of 15 Mc.

OUTLINE DIMENSIONS for Type 814 are the same as those for Type 828.

Data on operating frequencies for the 814 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

→ Indicates a change.



814

TRANSMITTING BEAM POWER AMPLIFIER

GENERAL DATA

Electrical:

Filament, Thoriated Tungsten:

Voltage 10 ± 0.5 ac or dc volts

Current 3.25 amp

Transconductance (Approx.)

for plate current of 39 ma. 3300 μmhos

Direct Interelectrode Capacitances:^o

Grid No.1 to Plate . . . 0.15 max. μmf ←

Input 13.5 μmf

Output 13.5 μmf

^o Without external shielding.

Mechanical:

Mounting Position Vertical, base down; Horizontal,
pins 2 & 4 in vertical plane

Overall Length 7-7/16" ± 1/4"

Seated Length 6-13/16" ± 1/4"

Maximum Diameter 2-1/16"

Bulb T-16

Cap. Small

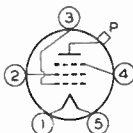
Base Medium-Shell Small 5-Pin, Micanol

Basing Designation for BOTTOM VIEW 5J

Pin 1 - Filament

Pin 2 - Grid No.2

Pin 3 - Grid No.1



Pin 4 - Grid No.3

Pin 5 - Filament

Cap - Plate

RF POWER AMPLIFIER - Class B Telephony

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

Maximum Ratings, Absolute Values:

	CCS ^o	ICAS ^{o,†}	
DC PLATE VOLTAGE	1250 max.	1500 max.	volts ←
DC GRID-No.2 (SCREEN) VOLTAGE.	400 max.	400 max.	volts ←
DC PLATE CURRENT	60 max.	60 max.	ma
PLATE INPUT.	75 max.	90 max.	watts
GRID-No.2 INPUT.	6.7 max.	6.7 max.	watts
PLATE DISSIPATION.	50 max.	60 max.	watts

Typical Operation:

DC Plate Voltage	1000	1250	1500 . . volts
DC Grid-No.3 (Suppressor) Voltage†	0	0	0 . . volts
DC Grid-No.2 Voltage	200	200	250 . . volts
DC Grid-No.1 (Control- Grid) Voltage ^o	-28	-28	-35 . . volts

^{o,†,⊕}: See next page.

← Indicates a change.

814



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TRANSMITTING BEAM POWER AMPLIFIER

	CCS*		ICAS**	
Peak RF Grid-No.1 Voltage.	50	50	56	volts
DC Plate Current	60	60	60	ma
DC Grid-No.2 Current	1.3	1	1.5	ma
DC Grid-No.1 Current (Approx.)*	1.8	1.8	1.5	ma
Driving Power (Approx.) [□] *	0.65	0.65	0.85	watt
Power Output (Approx.)	20	25	30	watts

GRID-MODULATED RF POWER AMPLIFIER - Class C Telephony

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

Maximum Ratings, Absolute Values:

	CCS*		ICAS**	
→ DC PLATE VOLTAGE	1250 max.		1500 max.	volts
→ DC GRID-No.2 (SCREEN) VOLTAGE.	400 max.		400 max.	volts
→ DC GRID-No.1 (CONTROL- GRID) VOLTAGE.	-250 max.		-250 max.	volts
DC PLATE CURRENT	60 max.		60 max.	ma
PLATE INPUT.	75 max.		90 max.	watts
GRID-No.2 INPUT.	6.7 max.		6.7 max.	watts
PLATE DISSIPATION.	50 max.		60 max.	watts

Typical Operation:

	CCS*		ICAS**	
→ DC Plate Voltage	1000	1250	1500	volts
→ DC Grid-No.3 (Suppressor) Voltage†	0	0	0	volts
→ DC Grid-No.2 Voltage	200	200	250	volts
→ DC Grid-No.1 Voltage [¶]	-100	-100	-120	volts
→ Peak RF Grid-No.1 Voltage.	129	129	150	volts
→ Peak AF Grid-No.1 Voltage.	64	64	90	volts
→ DC Plate Current	60	60	60	ma
→ DC Grid-No.2 Current	2	1.4	3	ma
→ DC Grid-No.1 Current (Approx.)*	3	2.8	2.5	ma
→ Driving Power (Approx.) [□] *	2.5	2.3	4.2	watts
→ Power Output (Approx.)	25	29	35	watts

PLATE-MODULATED RF POWER AMPLIFIER - Class C Telephony

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

Maximum Ratings, Absolute Values:

	CCS*		ICAS**	
→ DC PLATE VOLTAGE	1000 max.		1250 max.	volts
→ DC GRID-No.2 (SCREEN) VOLTAGE.	400 max.		400 max.	volts
→ DC GRID-No.1 (CONTROL-GRID) VOLTAGE	-300 max.		-300 max.	volts

[□] At crest of audio-frequency cycle with a modulation factor of 1.0.

*. **. †. ¶. : See next page.

→ Indicates a change.

NOV. 15, 1948

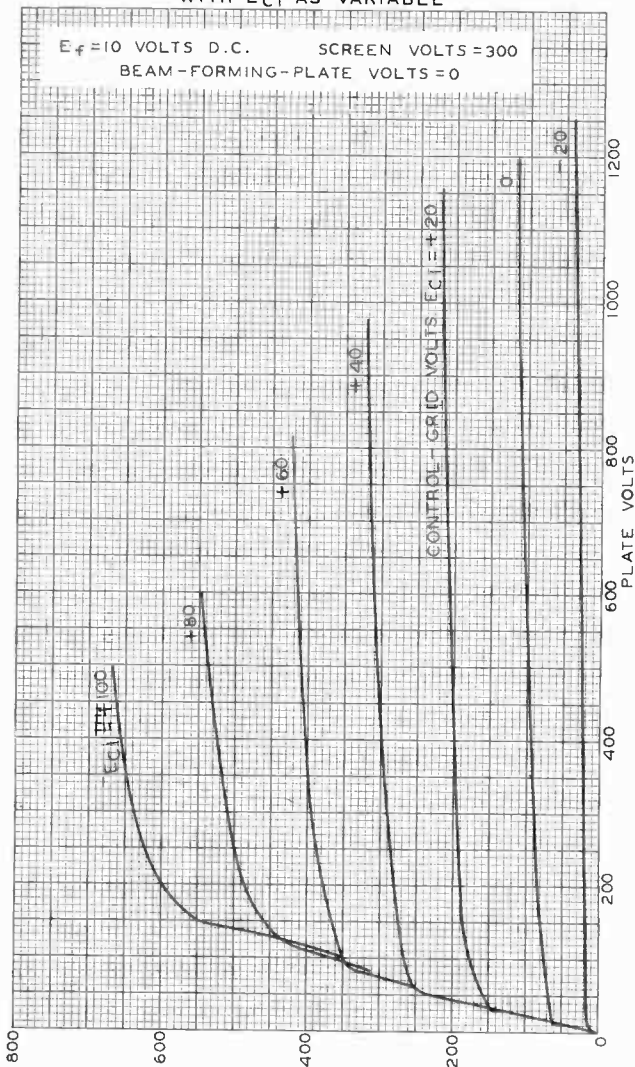
TUBE DEPARTMENT

DATA 1



814

814

AVERAGE PLATE CHARACTERISTICS
WITH E_{c1} AS VARIABLE $E_f = 10$ VOLTS D.C. SCREEN VOLTS = 300
BEAM-FORMING-PLATE VOLTS = 0

NOV. 11, 1937

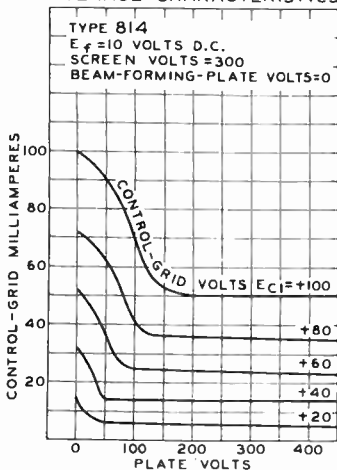
PLATE MILLIAMPERES
RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY INC.

92C-4845



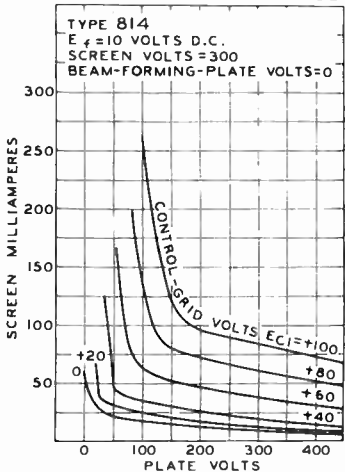
TRANSMITTING BEAM POWER AMPLIFIER

AVERAGE CHARACTERISTICS



92C-4846

AVERAGE CHARACTERISTICS



92C-4847



815

815

PUSH-PULL R-F BEAM POWER AMPLIFIER

(continued from preceding page)

	CCS	ICAS	
D-C Grid Current	7 max.	7 max.	ma.
Plate Input	40 max.	60 max.	watts
Screen Input	4.0 max.	4.0 max.	watts
Plate Dissipation	13.5 max.	20 max.	watts
Typical Operation:			
D-C Plate Voltage	325	400	volts
D-C Screen Voltage ^o †	{ 165	175	volts
	{ 10000	15000	ohms
D-C Grid Voltage § ⊕	{ -45	-45	volts
	{ 11250	15000	ohms
Peak R-F Grid-to-Grid Volt.	112	116	volts
D-C Plate Current	123	150	ma.
D-C Screen Current	16	15	ma.
D-C Grid Current	4	3 approx.	ma.
Driving Power	0.2	0.16 approx.	watt
Power Output	30	45 approx.	watts

o Preferably obtained from a separate source modulated with the plate supply, or obtained from the modulated plate-supply through resistor of value shown.

§ obtained from grid resistor of value shown (per tube) or by partial self-bias methods.

PUSH-PULL R-F POWER AMPLIFIER & OSCILLATOR—Class C Telegraphy

Key-down conditions per tube without modulation **

	CCS	ICAS	
D-C Plate Voltage	400 max.	500 max.	volts
D-C Screen Voltage (Grid #2)	225 max.	225 max.	volts
D-C Grid Voltage (Grid #1)	-175 max.	-175 max.	volts
D-C Plate Current	150 max.	150 max.	ma.
D-C Grid Current	7 max.	7 max.	ma.
Plate Input	60 max.	75 max.	watts
Screen Input	4.5 max.	4.5 max.	watts
Plate Dissipation	20 max.	25 max.	watts
Typical Operation:			
D-C Plate Voltage	400	500	volts
D-C Screen Voltage ^o †	{ 145	200	volts
	{ 15000	17500	ohms
D-C Grid Voltage ^o ⊕	{ -45	-45	volts
	{ 10000	13000	ohms
	{ 260	265	ohms
Peak R-F Grid-to-Grid Volt.	116	112	volts
D-C Plate Current	150	150	ma.
D-C Screen Current	17	17	ma.
D-C Grid Current	4.5	3.5 approx.	ma.
Driving Power	0.23	0.18 approx.	watt
Power Output	44	56 approx.	watts

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

† Obtained from a separate source, or from the plate-voltage supply with a voltage divider, or through a series resistor of the value shown. The screen voltage must not exceed 600 volts under key-up conditions.

o Obtained from fixed supply, by grid resistor (10000, 13000), or cathode resistor (260, 265).

⊕ The grid-circuit resistance should never exceed 15000 ohms (total) per tube, or 30000 ohms per unit. Any additional bias required must be supplied by a cathode resistor or a fixed supply. ← Indicates a change

OCT. 1, 1945

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA 2

World Radio History



PUSH-PULL R-F BEAM POWER AMPLIFIER

(continued from preceding page)

** Preferably obtained from a separate source, or from the plate-voltage supply with a voltage divider.

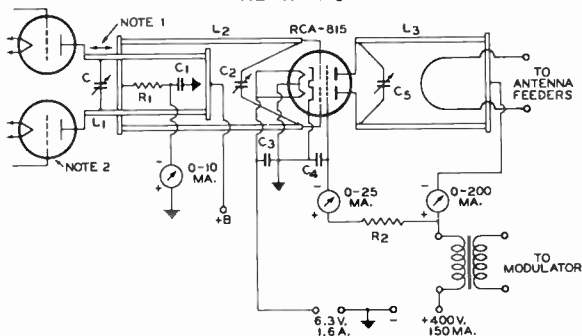
‡ In applications requiring the use of screen voltages above 135 volts, provision should be made for the adjustment of control-grid bias for each unit separately. The necessity for this adjustment at the lower screen voltages depends on the distortion requirements and on whether the plate-dissipation rating is exceeded at zero-signal plate current.

Data on operating frequencies for the 815 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

Shielding and by-passing considerations for the 815 are similar to those given under Type 832-A.

ULTRA-HIGH-FREQUENCY PLATE-MODULATED PUSH-PULL R-F POWER AMPLIFIER

112-116 Mc



- C See L₁
C₁ C₃ C₄
- 1" x 1½" copper sheet insulated from chassis by mica sheet 0.002" thick, or 0.0005-μf "postage stamp" mica condensers soldered to chassis with shortest practicable leads.
- C₂ C₅ Copper discs, 1/16" x 1½". Solder discs to 10-32 brass screws 1" long. Drill and tap grid and plate lines for 10-32 screws.
- R₁ 15000 ohms, 0.5 watt;
R₂ 15000 ohms, 25 watts, adjustable.
- L₁ ½" dia. copper tubing. Length of tubing and capacitance of C depend upon driver tubes employed.
- L₂ ½" dia. copper tubing, 12½" long and spaced approx. 7/8" between centers.
- L₃ ½" dia. copper tubing, 13" long and spaced approx. 7/8" between centers.

NOTES

- (1) The r-f driver stage should be able to deliver about one watt of useful r-f power, in order to insure ample grid excitation for the 815.
- (2) Adjust coupling between L₁ and L₂ and tuning of C and C₂ for recommended d-c grid current of the 815.
- (3) L₁ and L₂ should be effectively shielded from L₃ by a metal chassis, or by a vertical metal baffle plate used to mount the 815.
- (4) Adjust coupling of "hairpin" antenna coil to L₃ so that the amplifier is properly loaded.
- (5) A small lumped inductance can be substituted for the amplifier grid lines, if desired. Such a grid coil is preferably tuned by varying its inductance rather than by means of a variable condenser.

The license extended to the purchaser of tubes appears in the License Notice accompanying them. Information contained herein is furnished without assuming any obligations.



815

815

PUSH-PULL R-F BEAM POWER AMPLIFIER*Unless otherwise specified, values are for both units*

Heater	Coated Unipotential Cathode [▽]		
Heater Arrangement	<i>Series</i>	<i>Parallel</i>	
Voltage †	12.6	6.3	a-c or d-c volts
Current	0.8	1.6	amp.
Transconductance, for plate current of 25 ma.	4000		μmhos
Grid-Screen Mu-Factor	6.5		
Direct Interelectrode Capacitances (each unit):			
Grid-Plate (with external shielding)	0.2 max.		μf
Input	14		μf
Output	8.5		μf
Maximum Overall Length	4-9/16"		
Maximum Radius	1-3/16"		
Bulb	T-16		
Caps (two)	Small		
Base	Large Wafer Octal 8-Pin, Sleeve		
RCA Socket			Stock No. 9924 ←

† Should not deviate more than ±10% from the rated value.

▽ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should not exceed 100 volts.

*Maximum Ratings Are Absolute Values***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 AB₂#

	<i>CCS</i>	<i>ICAS</i>	
D-C Plate Voltage	400 max.	500 max.	volts
D-C Screen Voltage (Grid #2)	225 max.	225 max.	volts ←
Max.-Sig. D-C Plate Current*	150 max.	150 max.	ma.
Max.-Sig. Plate Input*	60 max.	75 max.	watts
Max.-Sig. Screen Input*	4.5 max.	4.5 max.	watts ←
Plate Dissipation*	20 max.	25 max.	watts
Typical Operation:			
D-C Plate Voltage	400	500	volts
D-C Screen Voltage** †	125	125	volts
D-C Grid Voltage			
(Fixed bias, Grid #1)	-15	-15	volts
Peak A-F Grid-to-Grid Volt.	60	60	volts
Zero-Sig. D-C Plate Current	20	22	ma.
Max.-Sig. D-C Plate Current	150	150	ma.
Max.-Sig. D-C Screen Current	32	32	ma.
Load Resistance			
(Per plate)	1550	2000	ohms
Effective Load Resistance			
(Plate to plate)	6200	8000	ohms
Max.-Sig. Driving Power †	0.36	0.36	approx. watt
Max.-Sig. Power Output	42	54	approx. watts

Subscript 2 indicates that grid current flows during some part of input cycle.

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

† Driver stage should be capable of supplying the grids of the class AB₂ stage with the specified driving power at low distortion. The effective resistance per grid circuit of the class AB₂ stage should be kept below 500 ohms and the effective impedance at the highest desired response frequency should not exceed 700 ohms.

← Indicates a change.

OCT. 1, 1943

RCA VICTOR DIVISION

DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History



PUSH-PULL R-F BEAM POWER AMPLIFIER

(continued from preceding page)

PUSH-PULL R-F POWER AMPLIFIER - Class B Telephony

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

	<u>CCS</u>	<u>ICAS</u>	
D-C Plate Voltage	400 max.	500 max.	volts
→ D-C Screen Voltage (Grid #2)	225 max.	225 max.	volts
D-C Plate Current	75 max.	75 max.	ma.
Plate Input	30 max.	37.5 max.	watts
→ Screen Input	4.0 max.	4.0 max.	watts
Plate Dissipation	20 max.	25 max.	watts
Typical Operation:			
D-C Plate Voltage	400	500	volts
D-C Screen Voltage** †	125	125	volts
D-C Grid Voltage (Grid #1) ■	-25	-25	volts
Peak R-F Grid-to-Grid Volt.	50	50	volts
D-C Plate Current	75	75	ma.
D-C Screen Current	4	3	ma.
D-C Grid Current	Nealigible		ma.
Driving Power ^o	0.8	0.7 approx.	watt
Power Output	10.5	13 approx.	watts

GRID-MODULATED PUSH-PULL R-F POWER AMP. - Class C Telephony

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

	<u>CCS</u>	<u>ICAS</u>	
D-C Plate Voltage	400 max.	500 max.	volts
→ D-C Screen Voltage (Grid #2)	225 max.	225 max.	volts
D-C Grid Voltage (Grid #1)	-175 max.	-175 max.	volts
D-C Plate Current	75 max.	75 max.	ma.
Plate Input	30 max.	37.5 max.	watts
→ Screen Input	4.0 max.	4.0 max.	watts
Plate Dissipation	20 max.	25 max.	watts
Typical Operation:			
D-C Plate Voltage	400	500	volts
D-C Screen Voltage †**	125	125	volts
D-C Grid Voltage ■	-40	-40	volts
Peak R-F Grid-to-Grid Volt.	80	80	volts
Peak A-F Grid Voltage	19	17	volts
D-C Plate Current	75	75	ma.
D-C Screen Current	3	3	ma.
D-C Grid Current	0.4	0.4 approx.	ma.
Driving Power ^o	0.32	0.28 approx.	watt
Power Output	10.5	13 approx.	watts

^o At crest of audio-frequency cycle with modulation factor of 1.0.

■ Obtained preferably from a fixed supply.

PLATE-MODULATED PUSH-PULL R-F POWER AMP. - Class C Telephony

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

	<u>CCS</u>	<u>ICAS</u>	
D-C Plate Voltage	325 max.	400 max.	volts
→ D-C Screen Voltage (Grid #2)	225 max.	225 max.	volts
D-C Grid Voltage (Grid #1)	-175 max.	-175 max.	volts
D-C Plate Current	125 max.	150 max.	ma.

** †: See end of tabulation.

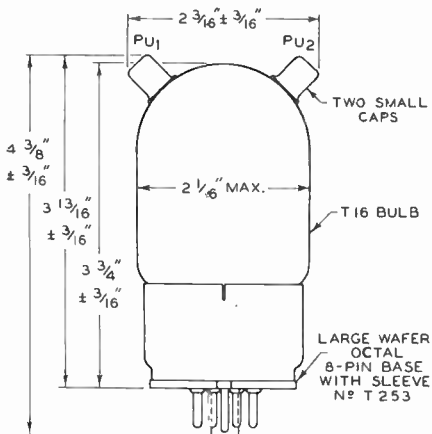
← Indicates a change.



815

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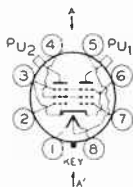
PUSH-PULL R-F BEAM POWER AMPLIFIER



92CM-6199R4

BOTTOM VIEW OF SOCKET CONNECTIONS

- Pin 1 - Heater
- Pin 2 - Grid No.1 of Unit No.2
- Pin 3 - Cathode, Internal Shield
- Pin 4 - Grid No.2
- Pin 5 - Heater Center-Tap



- Pin 6 - Cathode, Internal Shield
- Pin 7 - Grid No.1 of Unit No.1
- Pin 8 - Heater
- PU1 & PU2 - Plate Terminals of Units No.1 & No.2, respectively

PLANE OF ELECTRODES OF EACH UNIT IS PARALLEL TO PLANE THROUGH AXIS OF TUBE AND AA'

TUBE MOUNTING POSITION

Any

815



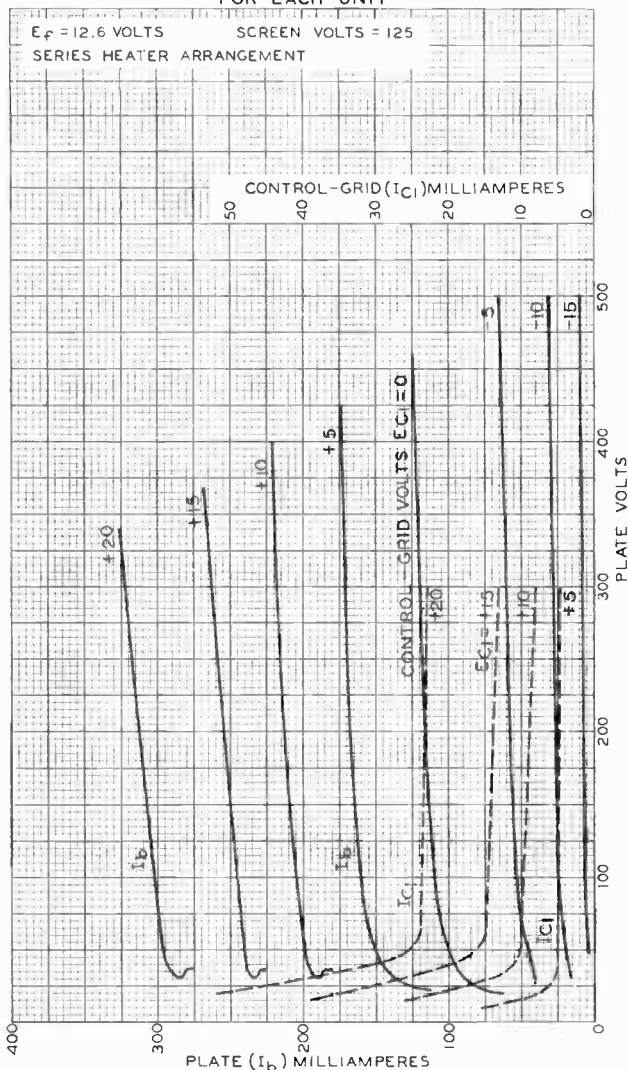
815

AVERAGE PLATE CHARACTERISTICS FOR EACH UNIT

 $E_f = 12.6$ VOLTS

SCREEN VOLTS = 125

SERIES HEATER ARRANGEMENT



SEPT. 17, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92C-6206RI

World Radio History



815

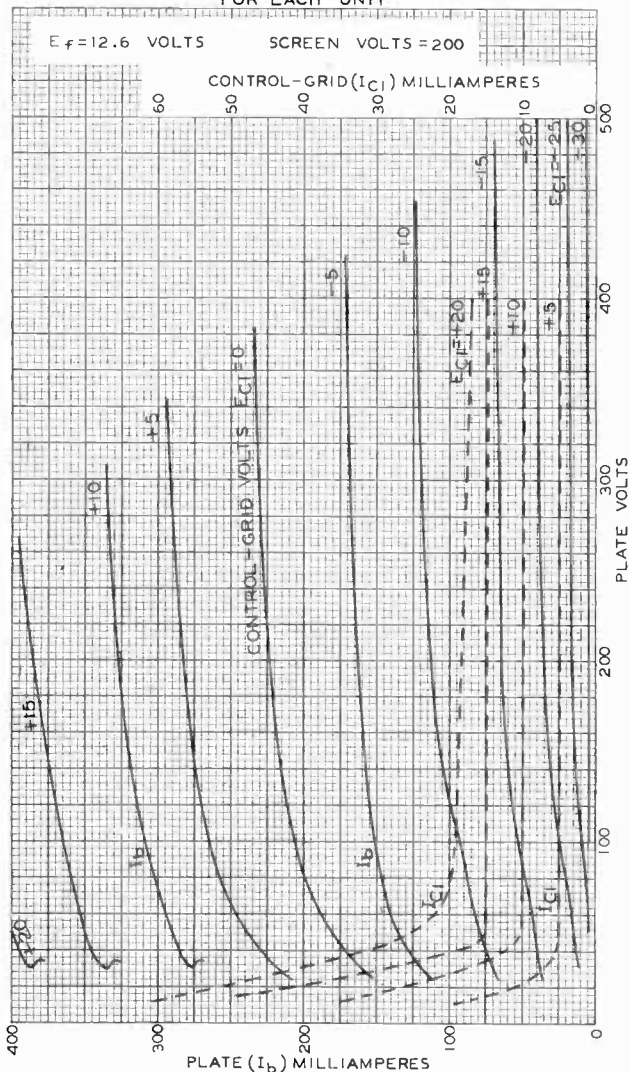
AVERAGE PLATE CHARACTERISTICS FOR EACH UNIT

815

$E_f = 12.6$ VOLTS

SCREEN VOLTS = 200

CONTROL-GRID (I_{C1}) MILLIAMPERES



AUG. 28, 1940

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6205



816

816

HALF-WAVE MERCURY-VAPOR RECTIFIER

GENERAL DATA

Electrical:

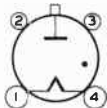
Filament, Coated:

Voltage	2.5	. . . . .	ac volts
Current	2.0	. . . . .	amp
Heating Time	10	. . . . .	sec.
Tube Voltage Drop (Approx.)	15	. . . . .	volts

Mechanical:

Mounting Position	Vertical, Base Down
Overall Length	4-9/16" ± 1/8"
Seated Length	3-15/16" ± 1/8"
Maximum Diameter	1-9/16"
Bulb	ST-12
Cap.	Small
Base	Small-Shell Small 4-Pin
Basing Designation for BOTTOM VIEW	4P

Pin 1 - Filament
 Pin 2 - No
 Connection
 Pin 3 - No
 Connection



Pin 4 - Filament,
 Cathode
 Shield
 Cap - Anode

HALF-WAVE RECTIFIER

Maximum Ratings, Absolute Values:*

COND.-MERCURY TEMP. RANGE	20 - 60	°C
PEAK INVERSE ANODE VOLTAGE	7500 max.	volts
PEAK ANODE CURRENT	500 max.	ma
AVERAGE ANODE CURRENT	125 max.	ma

* For supply frequency up to 150 cycles per second.

The table on the following page classifies suitable rectifier circuits for the 816 and shows their safe maximum input and maximum output operating conditions for a peak inverse voltage of 7500 volts. These values are based on a sine-wave input and the use of a suitable choke preceding any capacitor in the filter circuit.



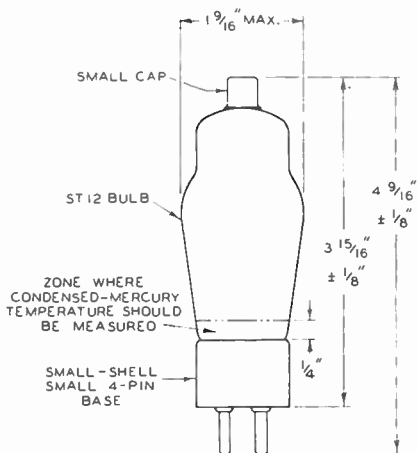
HALF-WAVE MERCURY-VAPOR RECTIFIER

CIRCUIT [□]	MAXIMUM AC INPUT VOLTS (RMS)*	APPROX. DC OUTPUT VOLTS TO FILTER*	MAXIMUM DC LOAD CURRENT amperes
SINGLE-PHASE FULL-WAVE (2 tubes) FIG. 1	5300 total	2390	0.25
SINGLE-PHASE FULL-WAVE (4 tubes) FIG. 2	5300 total	4780	0.25
THREE-PHASE HALF-WAVE FIG. 3	3050 per leg	3570	0.375
THREE-PHASE DOUBLE-Y PARALLEL FIG. 4	3050 per leg	3570	0.75
THREE-PHASE FULL-WAVE FIG. 5	3050 per leg	7140	0.375

[□] For RECTIFIER CIRCUITS and RF FILTER CONSIDERATIONS refer to Type 872-A

* For maximum peak inverse voltage of 7560 volts.

NOTE: If the anode-return of each tube is not connected to the center tap of the filament-supply winding, the return should be made to that side of the filament to which the cathode shield is connected.



92CM-6277R2



826

826

TRANSMITTING TRIODE

GENERAL DATA**Electrical:**

Filament, Thoriated Tungsten:†
 Voltage. 7.5 ac or dc volts
 Current. 4 amp

Amplification Factor 31

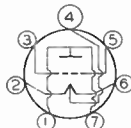
Direct Interelectrode Capacitances:

Grid to Plate. 3 μf ←
 Grid to Filament 3 μf ←
 Plate to Filament. 1.1 μf ←

Mechanical:

Mounting Position. Vertical Only, Base up or down
 Overall Length 3-1/2" \pm 3/16"
 Seated Length. 3-1/16" \pm 3/16"
 Maximum Diameter See Outline Drawing
 Bulb T-16
 Base Medium Molded-Flare Septar 7-Pin
 Basing Designation for BOTTOM VIEW 7B0

Pin 1 - Plate
 Pin 2 - Filament
 Pin 3 - Grid
 Pin 4 - Filament
 Center-Tap



Pin 5 - Grid
 Pin 6 - Filament
 Pin 7 - Plate

PLATE-MODULATED RF POWER AMPLIFIER - Class C Telephony

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

Maximum Ratings, Absolute Values:	NATURAL COOLING		
	CCS [•]	ICAS ^{••}	
DC PLATE VOLTAGE	800 max.	1000 max.	volts
DC GRID VOLTAGE.	-600 max.	-600 max.	volts
DC PLATE CURRENT	95 max.	125 max.	ma
DC GRID CURRENT.	40 max.	40 max.	ma
PLATE INPUT.	60 max.	95 max.	watts
PLATE DISSIPATION.	30 max.	45 max.	watts

Typical Operation with Natural Cooling:

DC Plate Voltage	-	1000	volts	
DC Grid Voltage ^{•#}	{	-	-160	volts
		-	4000	ohms
Peak RF Grid Voltage	-	320	volts	
DC Plate Current	-	95	ma	
DC Grid Current (Approx.) [□]	-	40	ma	
Driving Power (Approx.) [□]	-	11.5	watts	
Power Output (Approx.)	-	70	watts	

†, •, ••, •#, □: See next page.

← Indicates a change.



TRANSMITTING TRIODE

→ Maximum Ratings, Absolute Values: FORCED-AIR COOLING

	CCS*	ICAS**	
DC PLATE VOLTAGE	800 max.	1000 max.	volts
DC GRID VOLTAGE.	-600 max.	-600 max.	volts
DC PLATE CURRENT	95 max.	125 max.	ma
DC GRID CURRENT.	40 max.	40 max.	ma
PLATE INPUT.	75 max.	125 max.	watts
PLATE DISSIPATION.	40 max.	60 max.	watts

→ Typical Operation with Forced-Air Cooling:

DC Plate Voltage	800 . .	1000 . .	volts
DC Grid Voltage [#]	{ -100 . .	-100 . .	volts
	{ 2800 . .	2800 . .	ohms
Peak RF Grid Voltage	198 . .	210 . .	volts
DC Plate Current	94 . .	125 . .	ma
DC Grid Current (Approx.) [□]	35 . .	35 . .	ma
Driving Power (Approx.) [□]	6.3 . .	6.6 . .	watts
Power Output (Approx.)	53 . .	90 . .	watts

RF POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

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

→ Maximum Ratings, Absolute Values: NATURAL COOLING

	CCS*	ICAS**	
DC PLATE VOLTAGE	1000 max.	1000 max.	volts
DC GRID VOLTAGE.	-600 max.	-600 max.	volts
DC PLATE CURRENT	125 max.	140 max.	ma
DC GRID CURRENT.	40 max.	40 max.	ma
PLATE INPUT.	95 max.	130 max.	watts
PLATE DISSIPATION.	45 max.	55 max.	watts

→ Typical Operation with Natural Cooling:

DC Plate Voltage	- . .	1000 . .	volts
DC Grid Voltage [#]	{ - . .	-70 . .	volts
	{ - . .	2000 . .	ohms
	{ - . .	425 . .	ohms
Peak RF Grid Voltage	- . .	183 . .	volts
DC Plate Current	- . .	130 . .	ma
DC Grid Current (Approx.)	- . .	35 . .	ma
Driving Power (Approx.)	- . .	5.8 . .	watts
Power Output (Approx.)	- . .	90 . .	watts

→ Maximum Ratings, Absolute Values: FORCED-AIR COOLING

	CCS*	ICAS**	
DC PLATE VOLTAGE	1000 max.	1250 max.	volts
DC GRID VOLTAGE.	-600 max.	-600 max.	volts
DC PLATE CURRENT	125 max.	140 max.	ma
DC GRID CURRENT.	40 max.	40 max.	ma
PLATE INPUT.	125 max.	175 max.	watts
PLATE DISSIPATION.	60 max.	75 max.	watts

†, ●, ○, #, □, ▲: See next page.

→ Indicates a change.



826

826

TRANSMITTING TRIODE

Typical Operation with Forcec-Air Cooling:

DC Plate Voltage	1000	1250	volts
DC Grid Voltage#▲	-70	-125	volts
	2000	3600	ohms
	440	780	ohms
Peak RF Grid Voltage	183	245	volts
DC Plate Current	125	125	ma
DC Grid Current (Approx.)	35	35	ma
Driving Power (Approx.)	5.8	7.7	watts
Power Output (Approx.)	86	120	watts

† The filament is center-tapped and the center lead is brought out of the tube. With this design, it is possible to minimize the effect of filament-lead inductance by connecting all three filament leads in parallel through rf by-pass capacitors. The center lead of this parallel connection should not be returned directly to the center-tap of the filament-transformer winding or to ground, although it may be by-passed to either of these points if desired. RF by-passing of the grid- and plate-return circuits should be made to the center lead of the filament.

● Continuous Commercial Service.

●● Intermittent Commercial and Amateur Service.

● Obtained by grid resistor of value shown. Fixed supply not recommended for linear modulation.

Grid voltages are given with respect to the mid-point of filament operated on ac. If dc is used, each stated value of grid voltage should be decreased by one-half the filament voltage and the circuit returns made to the negative end of the filament.

□ Subject to wide variations as explained on sheet TUBE RATINGS in General Section.

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

▲ Obtained from fixed supply, by grid resistor (2000, 2000, 3600) or by cathode resistor (425, 440, 780).

NOTE: When the 826 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 1250 volts, a fixed bias of at least -22.5 volts should be used.

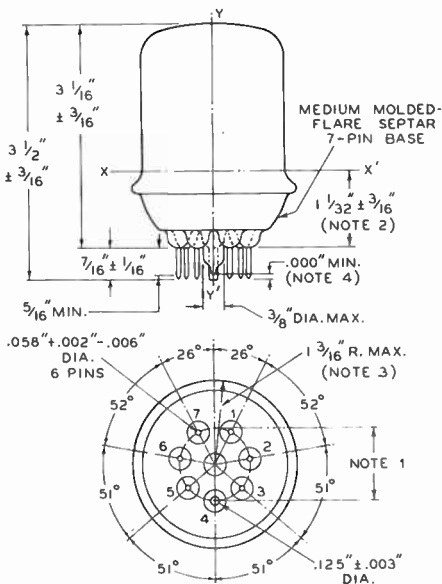
Data on operating frequencies for the 826 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY. Adequate shielding must be provided at the higher frequencies. At the very-high frequencies, push-pull operation is recommended and it is desirable to use each tube with its two grid terminals connected together as well as its two plate terminals connected together, in order to reduce the respective lead inductances.

← Indicates a change.



826

TRANSMITTING TRIODE



92CM-6131R2

BOTTOM VIEW

THE REFERENCE AXLS YY' IS DEFINED AS THE AXIS OF THE BASE-PIN GAUGE DESCRIBED IN NOTE 1.

NOTE 1: ANGULAR VARIATIONS BETWEEN PINS AND VARIATION IN PIN-CIRCLE DIAMETER ARE HELD TO TOLERANCES SUCH THAT PINS WILL ENTER TO A DISTANCE OF 0.375" A FLAT-PLATE BASE-PIN GAUGE HAVING SIX HOLES 0.0800" ± 0.0005" AND ONE HOLE 0.1450" ± 0.0005" ARRANGED ON A 1.0000" ± 0.0005" CIRCLE AT SPECIFIED ANGLES WITH TOLERANCE OF ±5' FOR EACH ANGLE. GAUGE IS ALSO PROVIDED WITH A HOLE 0.500" ± 0.010" CONCENTRIC WITH PIN CIRCLE WHOSE CENTER IS ON THE AXIS YY'.

NOTE 2: A FLAT-PLATE FLANGE GAUGE WITH HOLE 2.063" - 0.000" + 0.003" IS LOWERED OVER TUBE SEATED IN BASE-PIN GAUGE SO THAT THE HOLE AXIS IS COINCIDENT WITH AXIS YY' WITHIN 0.150", AND SO THAT THE BOTTOM SURFACE OF THE

(continued on next page)



826

826

TRANSMITTING TRIODE

FLANGE GAUGE IS PARALLEL TO THE TOP SURFACE OF THE BASE-
PIN GAUGE, AND UNTIL THE FLANGE GAUGE RESTS ON THE TUBE-
FLANGE SEAL AT POSITION XX'. THE PERPENDICULAR DIS-
TANCE BETWEEN THE TWO GAUGES WILL BE AS SHOWN.

NOTE 3: MINIMUM DIAMETER OF TUBE-SEAL FLANGE WILL BE
SUCH THAT A RING GAUGE HAVING I. D. OF $2.125'' - 0.000''$
 $+ 0.003''$ AND THICKNESS OF $0.125'' \pm 0.010''$ WILL NOT PASS
THE FLANGE WHEN TRIED AT ANY ANGLE.

NOTE 4: EXHAUST TIP WILL NOT EXTEND BEYOND THE PLANE
WHICH PASSES THROUGH THE ENDS OF THE THREE LONGEST PINS.

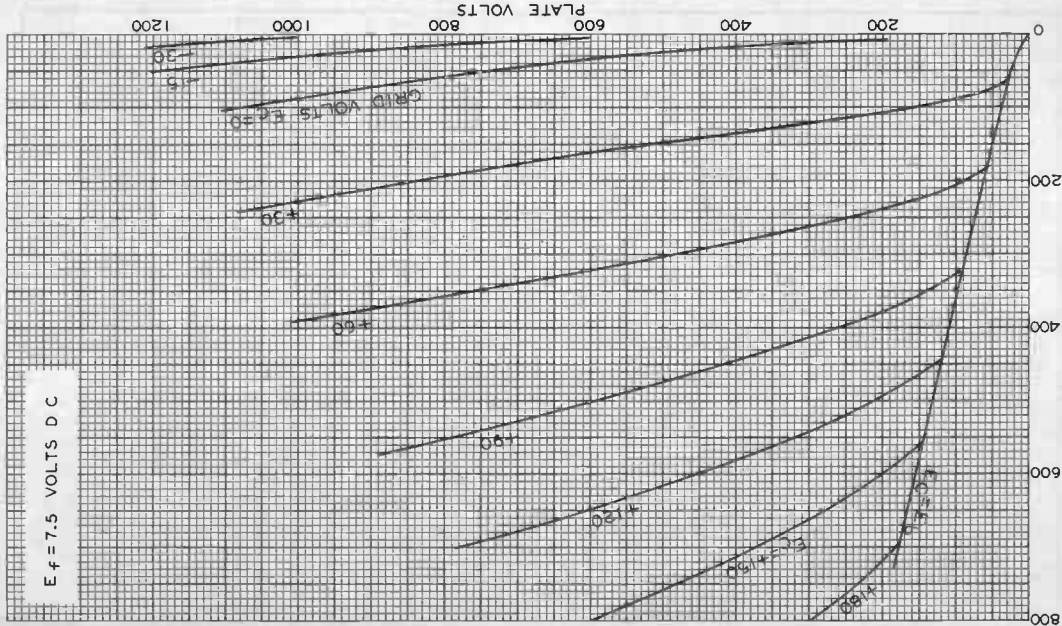


826

826

AVERAGE PLATE CHARACTERISTICS

$E_f = 7.5$ VOLTS D C



SEPT. 9, 1940

PLATE MILLIAMPERES

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

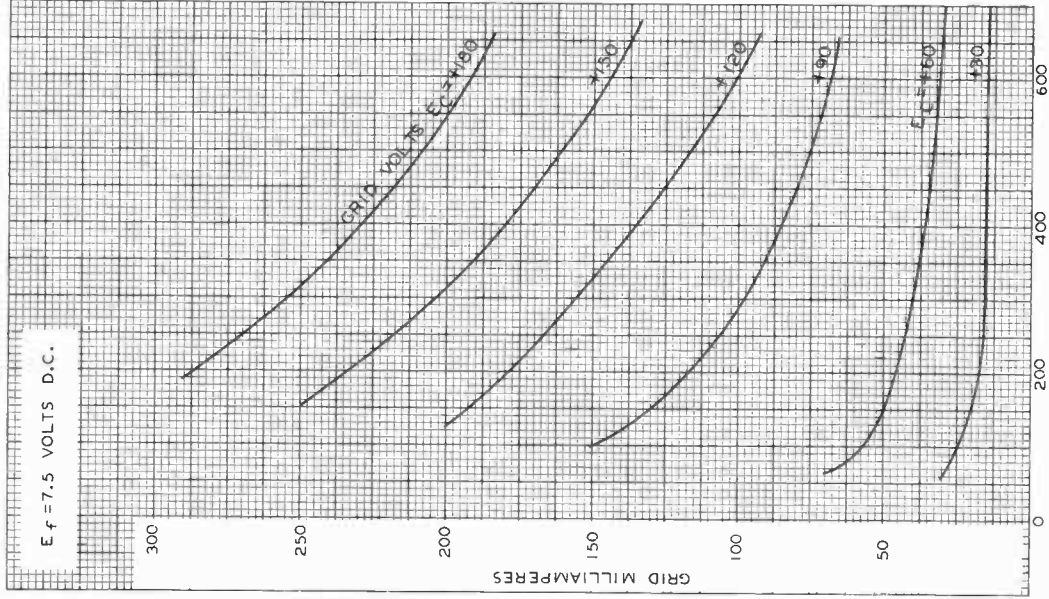
92CM - 6210



826

826

TYPICAL CHARACTERISTICS



FEB. 12, 1941

RCA RADIIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6211



827-R

827-R

TRANSMITTING TETRODE FORCED-AIR COOLED

Filament	Thoriated Tungsten	
Voltage	7.5	a-c or d-c volts
Current	25	amp.
Starting - The current must never exceed 50 amperes, even momentarily.		
Grid-Screen Mu-Factor	16	
Direct Interelectrode Capacitances:		
Grid-Plate (with external shielding)	0.18 max.	μf
Input	21	μf
Output	13	μf
Maximum Overall Length	5-15/16"	
Maximum Diameter	4-21/32"	
Radiator	Integral part of tube	

Cooling - vertical air flow of 100 cfm from plate to seal end required for max. plate dissipation rating and max. ambient temperature not more than 45°C. Also, flow of 10 cfm from 1"-diameter nozzle should be directed into header. Air flow must start before any voltages are applied.

MAXIMUM CCS RATINGS and TYPICAL OPERATING CONDITIONS

CCS = Continuous Commercial 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>	
D-C Plate Voltage	3500 max.	volts
D-C Screen Voltage (Grid No. 2)	1000 max.	volts
D-C Plate Current	400 max.	ma.
Plate Input	1200 max.	watts
Screen Input	100 max.	watts
Plate Dissipation	800 max.	watts
Radiator Temperature	150 max.	°C

Typical Operation:

D-C Plate Voltage	3000	3500	volts
D-C Screen Voltage	800	800	volts
D-C Grid Voltage (Grid No. 1)*	-75	-75	volts
Peak R-F Grid Voltage	165	150	volts
D-C Plate Current	320	340	ma.
D-C Screen Current	10	12	ma.
D-C Grid Current	30	25 approx.	ma.
Driving Power •	50	38 approx.	watts
Power Output	350	400 approx.	watts

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>	
D-C Plate Voltage	3500 max.	volts
D-C Screen Voltage (Grid No. 2)	1000 max.	volts
D-C Grid Voltage (Grid No. 1)	-500 max.	volts
D-C Plate Current	400 max.	ma.
Plate Input	1200 max.	watts
Screen Input	100 max.	watts
Plate Dissipation	800 max.	watts
Radiator Temperature	150 max.	°C

Typical Operation:

D-C Plate Voltage	3000	3500	volts
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• See end of tabulation. < Indicates a change. *With a-c filament supply.

AUG. 15, 1944

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
World Radio History

DATA 1

827-R



827-R

TRANSMITTING TETRODE

(continued from preceding page)

D-C Screen Voltage	800	800	volts
D-C Grid Voltage	-300	-300	volts
Peak R-F Grid Voltage	410	410	volts
Peak A-F Grid Voltage	235	260	volts
D-C Plate Current	333	320	ma.
D-C Screen Current	15	13	ma.
D-C Grid Current	45	40	approx. ma.
Driving Power °	82	74	approx. watts
Power Output	250	400	approx. watts

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

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

	CCS		
D-C Plate Voltage	3000	max.	volts
D-C Screen Voltage (Grid No. 2)	800	max.	volts
D-C Grid Voltage (Grid No. 1)	-500	max.	volts
D-C Plate Current	400	max.	ma.
D-C Grid Current	125	max.	ma.
Plate Input	1200	max.	watts
Screen Input	100	max.	watts
Plate Dissipation	550	max.	watts
Radiator Temperature	150	max.	°C

Typical Operation:

D-C Plate Voltage	2500	3000	volts
D-C Screen Voltage ◊	{ 700 13000	750	volts
		18000	ohms
D-C Grid Voltage ▲	{ -350 2800	-325	volts
		2600	ohms
Peak R-F Grid Voltage	640	600	volts
D-C Plate Current	400	400	ma.
D-C Screen Current	140	125	ma.
D-C Grid Current	125	125	approx. ma.
Driving Power	72	68	approx. watts
Power Output	670	825	approx. watts

◊ obtained preferably from fixed supply modulated simultaneously with plate voltage. Series voltage-dropping resistor (13000, 18000 ohms) connected to modulated plate-voltage supply may also be used.

▲ obtained by grid resistor of value shown or by combination of grid resistor with either fixed supply or cathode resistor.

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telephony

Key-down conditions per tube without modulation ##

	CCS		
D-C Plate Voltage	3500	max.	volts
D-C Screen Voltage (Grid No. 2)	1000	max.	volts
D-C Grid Voltage (Grid No. 1)	-500	max.	volts
D-C Plate Current	500	max.	ma.
D-C Grid Current	150	max.	ma.
Plate Input	1500	max.	watts
Screen Input	150	max.	watts
Plate Dissipation	800	max.	watts
Radiator Temperature	150	max.	°C

°, ##: See end of tabulation.

AUG. 15, 1944

DATA 1

RCA VICTOR DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

WorldRadioHistory



827-R

827-R

TRANSMITTING TETRODE

(continued from preceding page)

Typical Operation:

D-C Plate Voltage	3000	3500	volts
D-C Screen Voltage §	{ 900	700	volts
	{ 12500	15100	ohms
D-C Grid Voltage □	{ -350	-300	volts
	{ 560	570	ohms
	{ 2800	3000	ohms
Peak R-F Grid Voltage	590	520	volts
D-C Plate Current	500	428	ma.
D-C Screen Current	165	185	ma.
D-C Grid Current	125	100	approx. ma.
Driving Power	66	50	approx. watts
Power Output	1000	1050	approx. watts

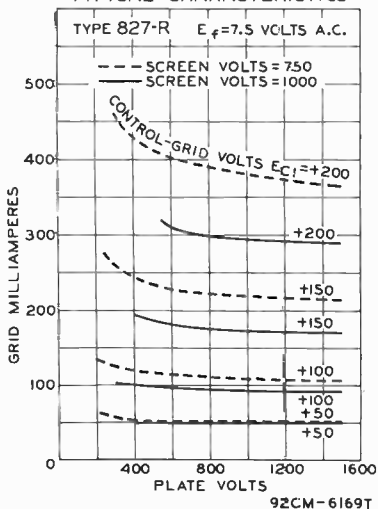
§ At crest of audio-frequency cycle with modulation factor of 1.0. Obtained preferably from fixed supply or voltage divider. Screen voltage must not exceed twice the maximum screen-voltage rating under key-up conditions.

□ Obtained from fixed supply, cathode resistor (560, 570) or grid resistor (2800, 3000). If a preceding stage is keyed, sufficient fixed bias must be supplied to maintain plate current at a low value under key-up conditions.

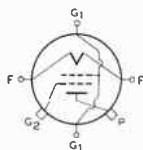
Modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115% of the carrier conditions.

Data on operating frequencies for the 827-R are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

TYPICAL CHARACTERISTICS



TOP VIEW OF TERMINAL CONNECTIONS



F - Filament
G₁ - Grid No. 1
G₂ - Grid No. 2
P - Plate

AUG. 15, 1944

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RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

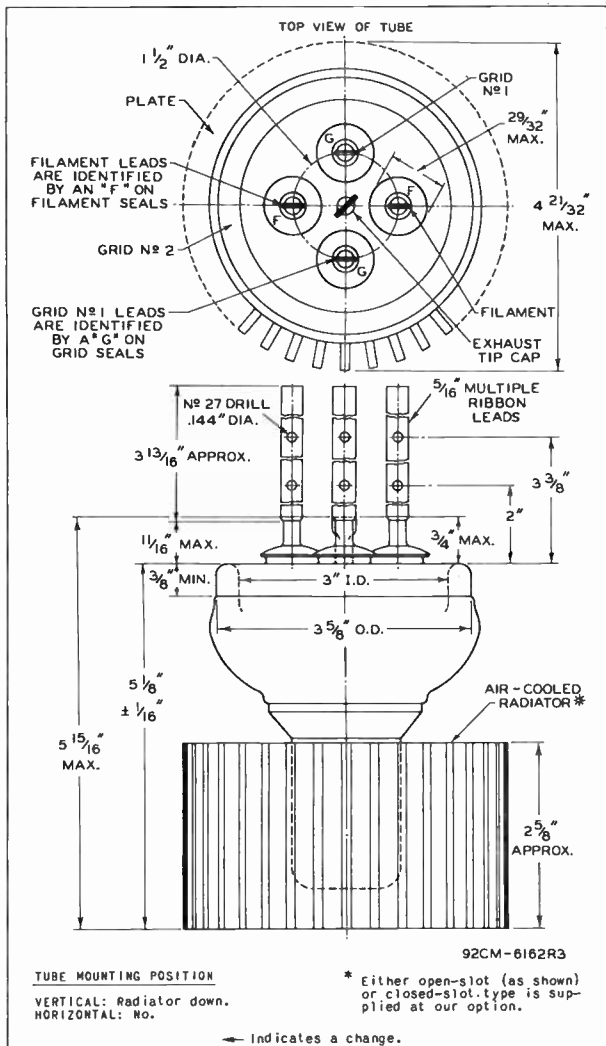
DATA 2

827-R



827-R

TRANSMITTING TETRODE



AUG. 15, 1944

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

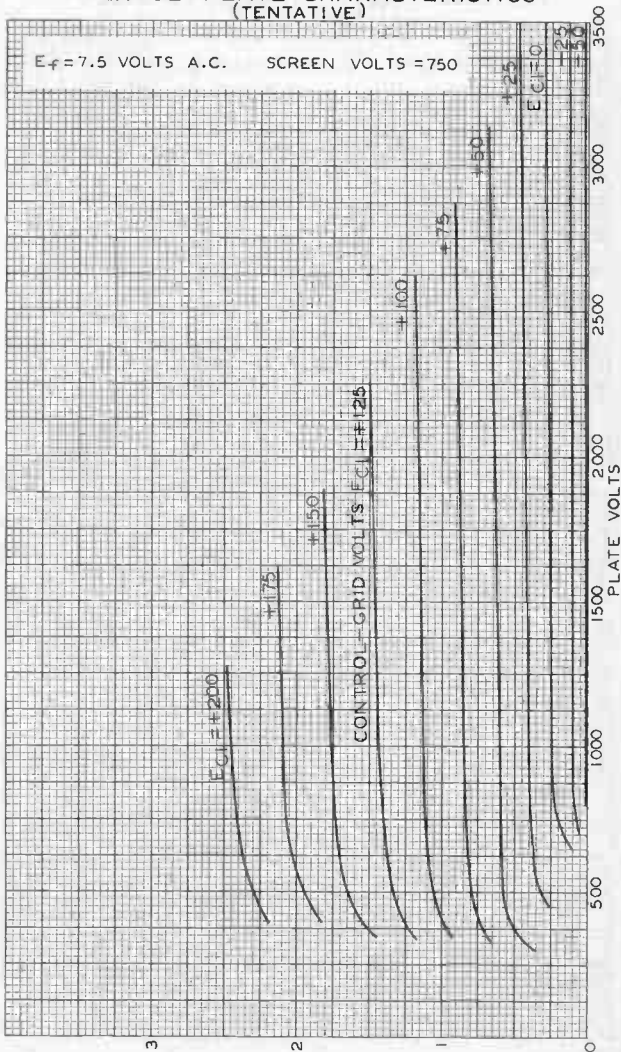
DATA 2



827-R

AVERAGE PLATE CHARACTERISTICS (TENTATIVE)

827-R



JUNE 5, 1940

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92CM-6167



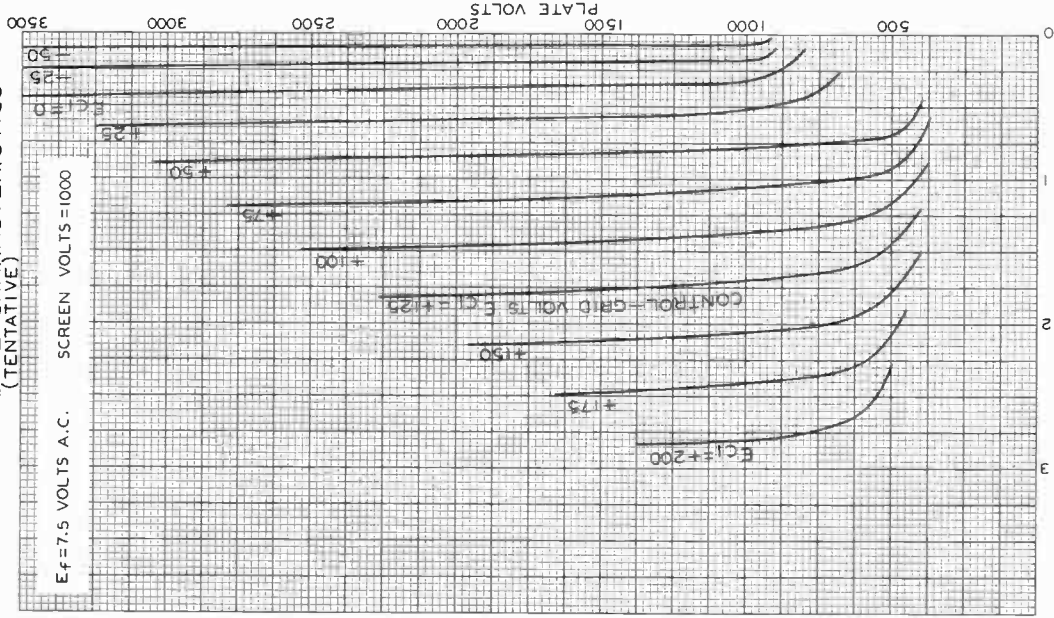
827-R

827-R

AVERAGE PLATE CHARACTERISTICS (TENTATIVE)

$E_f = 7.5$ VOLTS A.C.

SCREEN VOLTS = 1000





828

828

TRANSMITTING BEAM POWER AMPLIFIER

Typical Operation:

	CCS*	ICAS**	
DC Plate Voltage	1250 . .	1500 . .	volts
DC Grid-No.3 Voltage	75 . .	75 . .	volts
DC Grid-No.2 Voltage [■]	{ 400 . .	400 . .	volts
	{ 24300 . .	39300 . .	ohms
DC Grid-No.1 Voltage ^{●●●}	{ -95 . .	-100 . .	volts
	{ 7900 . .	8300 . .	ohms
	{ 415 . .	430 . .	ohms
Peak RF Grid-No.1 Voltage.	195 . .	205 . .	volts
DC Plate Current	160 . .	180 . .	ma
DC Grid-No.3 Current	22 . .	14 . .	ma
DC Grid-No.2 Current	35 . .	28 . .	ma
DC Grid-No.1 Cur. (Approx.).	12 . .	12 . .	ma
Driving Power (Approx.).	2.1 . .	2.2 . .	watts
Power Output (Approx.).	150 . .	200 . .	watts

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

■ obtained from a separate source, from the plate-voltage supply with a voltage divider, or through a series resistor of value shown. Series grid-no.2 resistor should be used only when the 828 is used as a buffer amplifier and is not keyed. Grid-No.2 voltage must not exceed 800 volts under key-up conditions.

● obtained from fixed supply, by grid resistor (7900, 8300) or cathode resistor (415, 430).

● If preceding stage is keyed, partial fixed-bias is required.

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

	Note	Min.	Max.	
Filament Current	1 . . .	3.10	3.40	amp
Grid No.1-Plate Capacitance	- . . .	-	0.07	μmf
Input Capacitance	- . . .	9.9	14.1	μmf
Output Capacitance	- . . .	10.5	17.5	μmf
Plate Current.	1,2 . . .	30	56	ma
Grid-No.2 Current.	1,2 . . .	-	7	ma
Grid-No.1 Current.	1,3 . . .	21	49	ma
Plate Current.	1,4 . . .	-	10	ma
Power Output	1,5 . . .	180	-	watts

Note 1: DC filament volts = 10.0.

Note 2: With dc plate voltage of 1750 volts; dc grid-no.3 voltage of 0 volts; dc grid-no.2 voltage of 300 volts; dc grid-no.1 voltage of -25 volts.

Note 3: With dc plate voltage of 200 volts; dc grid-no.3 voltage of 200 volts; dc grid-no.2 voltage of 200 volts; and dc grid-no.1 voltage of +75 volts.

Note 4: With dc plate voltage of 1750 volts; dc grid-no.3 voltage of -180 volts; dc grid-no.2 voltage of 300 volts; and dc grid-no.1 voltage of -25 volts.

Note 5: With dc plate voltage of 1750 volts; dc grid-no.3 voltage of 100 volts; dc grid-no.2 voltage of 300 volts; plate current of 150 ma; grid-no.1 current of 10 - 15 ma.; grid-no.1 resistor of 10000 ± 10% ohms and frequency of 15 Mc.

●, ●●, ●●●: see next page.

SEPT. 30, 1948

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA 3

828

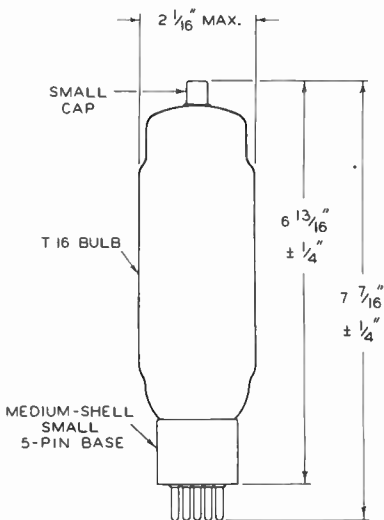


828

TRANSMITTING BEAM POWER AMPLIFIER

- Continuous Commercial Service.
- Intermittent Commercial & Amateur Service.
- For ac filament supply.

Data on operating frequencies for the 828 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.



92CM-4547R3

SEPT. 30, 1948

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-4547R3



TRANSMITTING BEAM POWER AMPLIFIER

	CCS [•]	ICAS ^{••}	
Driving Power (Approx.) [□]	0.5 . .	0.4 . .	watt
Power Output (Approx.)	36 . .	41 . .	watts

[•] obtained from a source of good regulation or from suitably bypassed cathode resistor.

GRID-MODULATED RF POWER AMPLIFIER - Class C Telephony

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

Maximum Ratings, Absolute Values:

	CCS [•]	ICAS ^{••}	
DC PLATE VOLTAGE	1250 max.	1500 max.	volts
DC GRID-No.3 (SUPPRESSOR) VOLT.	100 max.	100 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE.	400 max.	400 max.	volts
DC GRID-No.1 (CONTROL- GRID) VOLTAGE.	-300 max.	-300 max.	volts
DC PLATE CURRENT	100 max.	100 max.	ma
PLATE INPUT.	105 max.	120 max.	watts
GRID-No.3 INPUT.	5 max.	5 max.	watts
GRID-No.2 INPUT.	11 max.	11 max.	watts
PLATE DISSIPATION.	70 max.	80 max.	watts

Typical Operation:

DC Plate Voltage	1250 . .	1500 . .	volts
DC Grid-No.3 Voltage	75 . .	75 . .	volts
DC Grid-No.2 Voltage	400 . .	400 . .	volts
DC Grid-No.1 Voltage ^{★★}	-150 . .	-150 . .	volts
Peak RF Grid-No.1 Voltage.	165 . .	165 . .	volts
Peak AF Grid-No.1 Voltage.	94 . .	94 . .	volts
DC Plate Current	84 . .	80 . .	ma
DC Grid-No.3 Current	4 . .	3.5 . .	ma
DC Grid-No.2 Current	5 . .	4 . .	ma
DC Grid-No.1 Cur. (Approx.).	1.6 . .	1.3 . .	ma
RF Driving Power (Approx.) ^{□ □}	2.5 . .	2.5 . .	watts
Power Output (Approx.)	36 . .	41 . .	watts

^{★★} Fixed supply or cathode-resistor bias, unbypassed for audio-frequencies, is recommended.

[□] At crest of audio-frequency cycle with a modulation factor of 1.0.

^{□ □} AF driving power is generally never more than 2 watts.

PLATE-MODULATED RF POWER AMPLIFIER - Class C Telephony

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

Maximum Ratings, Absolute Values:

	CCS [•]	ICAS ^{••}	
DC PLATE VOLTAGE	1000 max.	1250 max.	volts
DC GRID-No.3 (SUPPRESSOR) VOLT.	100 max.	100 max.	volts

^{•, ••, □}: See next page.



TRANSMITTING BEAM POWER AMPLIFIER

	CCS [•]	ICAS ^{••}	
DC GRID-No.2 (SCREEN) VOLTAGE.	400 max.	400 max.	volts
DC GRID-No.1 (CONTROL- GRID) VOLTAGE.	-300 max.	-300 max.	volts
DC PLATE CURRENT	135 max.	160 max.	ma
DC GRID-No.1 CURRENT	15 max.	15 max.	ma
PLATE INPUT.	135 max.	200 max.	watts
GRID-No.3 INPUT.	5 max.	5 max.	watts
GRID-No.2 INPUT.	11 max.	11 max.	watts
PLATE DISSIPATION	47 max.	70 max.	watts

Typical Operation:

DC Plate Voltage	1000 . .	1250 . .	volts
DC Grid-No.3 Voltage	75 . .	75 . .	volts
DC Grid-No.2 Voltage ^{▲▲}	400 . .	400 . .	volts
	26000 . .	30000 . .	ohms
DC Grid-No.1 Voltage ^{††•}	-140 . .	-140 . .	volts
	14000 . .	11700 . .	ohms
Peak RF Grid-No.1 Voltage.	230 . .	250 . .	volts
DC Plate Current	135 . .	160 . .	ma
DC Grid-No.3 Current	13 . .	15 . .	ma
DC Grid-No.2 Current	23 . .	28 . .	ma
DC Grid-No.1 Current (Approx.)	10 . .	12 . .	ma
Driving Power (Approx.)	2.1 . .	2.7 . .	watts
Power Output (Approx.)	100 . .	150 . .	watts

^{▲▲} obtained preferably from a separate source modulated with the plate supply, or from the modulated plate-supply through a series resistor of the value shown.

^{††} obtained from a grid resistor of value shown or from a combination of grid resistor with either fixed supply or cathode resistor.

RF POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation[■]

Maximum Ratings, Absolute Values:

	CCS [•]	ICAS ^{••}	
DC PLATE VOLTAGE.	1250 max.	1500 max.	volts
DC GRID-No.3 (SUPPRESSOR) VOLT.	100 max.	100 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE	400 max.	400 max.	volts
DC GRID-No.1 (CONTROL- GRID) VOLTAGE	-300 max.	-300 max.	volts
DC PLATE CURRENT.	160 max.	180 max.	ma
DC GRID-No.1 CURRENT.	15 max.	15 max.	ma
PLATE INPUT	200 max.	270 max.	watts
GRID-No.3 INPUT	5 max.	5 max.	watts
GRID-No.2 INPUT	16 max.	16 max.	watts
PLATE DISSIPATION	70 max.	80 max.	watts

•, ••, •••, ■: See next page.



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TRANSMITTING BEAM POWER AMPLIFIER

GENERAL DATA**Electrical:**

Filament, Thoriated Tungsten:

Voltage. 10 ± 0.5 ac or dc volts

Current. 3.25 amp

Transconductance (Approx.)

for plate current of 83 ma. 2700 μmhos ←

Direct Interelectrode Capacitances:

Grid No.1 to Plate 0.07 max. μμf ←

Input. 12 μμf

Output 14 μμf

Mechanical:Mounting Position Vertical, base down; or Horizontal,
pins 2 & 4 in vertical plane.

Overall Length 7-7/16" ± 1/4"

Seated Length. 6-13/16" ± 1/4"

Maximum Diameter 2-1/16"

Bulb T-16

Cap. Small

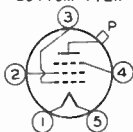
Base Medium-Shell Small 5-Pin, Micanol

Basing Designation for BOTTOM VIEW 5J

Pin 1 - Filament

Pin 2 - Grid No.2

Pin 3 - Grid No.1



Pin 4 - Grid No.3

Pin 5 - Filament

Cap - Plate

AF POWER AMPLIFIER & MODULATOR - Class AB₁***Maximum Ratings, Absolute Values:**

	<u>CCS*</u>	<u>ICAS**</u>	
DC PLATE VOLTAGE	1750 max.	2000 max.	volts
DC GRID-No.3 (SUPPRESSOR) VOLT.	100 max.	100 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE .	750 max.	750 max.	volts
MAX.-SIG. DC PLATE CURRENT*. . .	150 max.	150 max.	ma
MAX.-SIG. PLATE INPUT*	225 max.	270 max.	watts
MAX.-SIGNAL GRID-No.2 INPUT* . .	16 max.	23 max.	watts
PLATE DISSIPATION*	70 max.	80 max.	watts

Typical Operation:

Values are for 2 tubes

DC Plate Voltage	1750 . .	2000 . .	volts ←
DC Grid-No.3 Voltage	60 . .	60 . .	volts
DC Grid-No.2 Voltage †	750 . .	750 . .	volts

* Suscript 1 indicates that grid-No.1 current does not flow during any part of the input cycle.

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

† Zero-signal grid-No.2 voltage must not exceed 775 volts.

*, **: See next page.

← indicates a change.

SEPT. 30, 1948

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History

DATA 1



TRANSMITTING BEAM POWER AMPLIFIER

	<u>CCS*</u>	<u>ICAS**</u>	
DC Grid-No.1 (Control-Grid) Voltage [Ⓢ]	-120 . .	-120 . .	volts
Peak AF Grid-No.1-to-Grid-No.1 Voltage.	240 . .	240 . .	volts
Zero-Signal DC Plate Current	50 . .	50 . .	ma
Max.-Signal DC Plate Current	248 . .	270 . .	ma
DC Grid-No.3 Current	9 . .	9 . .	ma
Zero-Signal DC Grid-No.2 Current.	4 . .	2 . .	ma
Max.-Signal DC Grid-No.2 Current.	43 . .	60 . .	ma
Effective Load Resistance (Plate-to-plate).	16200 . .	18500 . .	ohms
Max.-Signal Driving Power (Approx.) [Ⓢ]	0 . .	0 . .	watts
Max.-Signal Power Output (Approx.)	300** . .	385 . .	watts

Ⓢ Driver stage should be capable of supplying the specified driving power at low distortion to the No.1 grids of the class AB₁ stage. The effective resistance per grid-No.1 circuit of the class AB₁ stage should be held at a low value.

** Distortion only 1% with 20 db of feedback to grid of driver.

RF POWER AMPLIFIER - Class B Telephony

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

Maximum Ratings, Absolute Values:

	<u>CCS*</u>	<u>ICAS**</u>	
DC PLATE VOLTAGE	1250 max.	1500 max.	volts
DC GRID-No.3 (SUPPRESSOR) VOLT.	100 max.	100 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE.	400 max.	400 max.	volts
DC PLATE CURRENT	100 max.	100 max.	ma
PLATE INPUT.	105 max.	120 max.	watts
GRID-No.3 INPUT.	5 max.	5 max.	watts
GRID-No.2 INPUT.	11 max.	11 max.	watts
PLATE DISSIPATION	70 max.	80 max.	watts

Typical Operation:

DC Plate Voltage	1250 . .	1500 . .	volts
DC Grid-No.3 Voltage	75 . .	75 . .	volts
DC Grid-No.2 Voltage	400 . .	400 . .	volts
DC Grid-No.1 (Control-Grid) Voltage [Ⓢ]	-50 . .	-50 . .	volts
Peak RF Grid-No.1 Voltage.	52 . .	50 . .	volts
DC Plate Current	84 . .	80 . .	ma
DC Grid-No.3 Current	4 . .	4 . .	ma
DC Grid-No.2 Current	5 . .	5 . .	ma
DC Grid-No.1 Cur. (Approx.)	0.3 . .	0.2 . .	ma

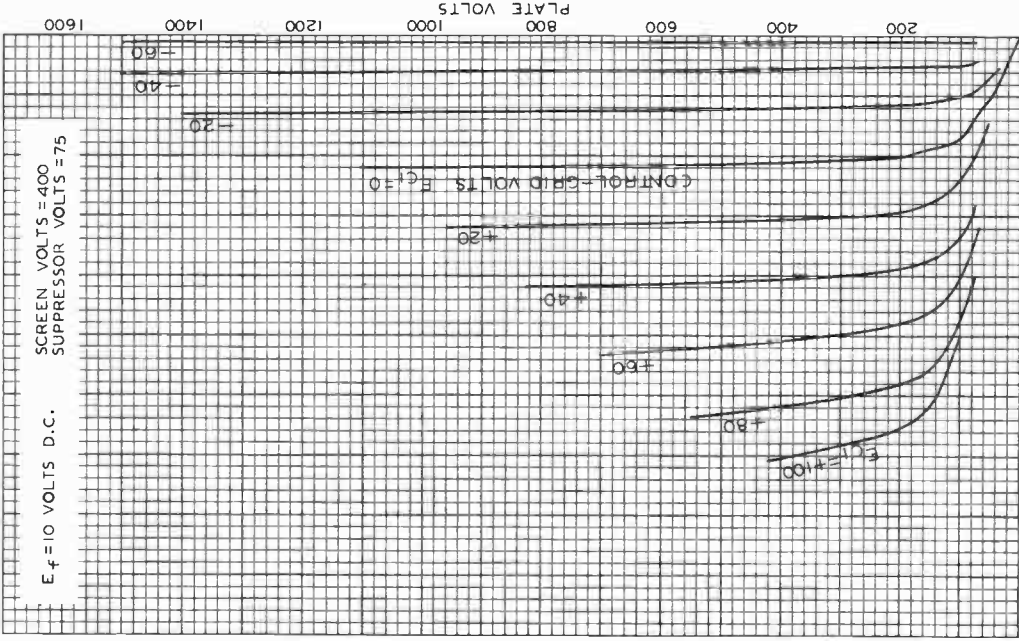
Ⓢ, **, Ⓢ, Ⓢ: see next page.



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AVERAGE PLATE CHARACTERISTICS



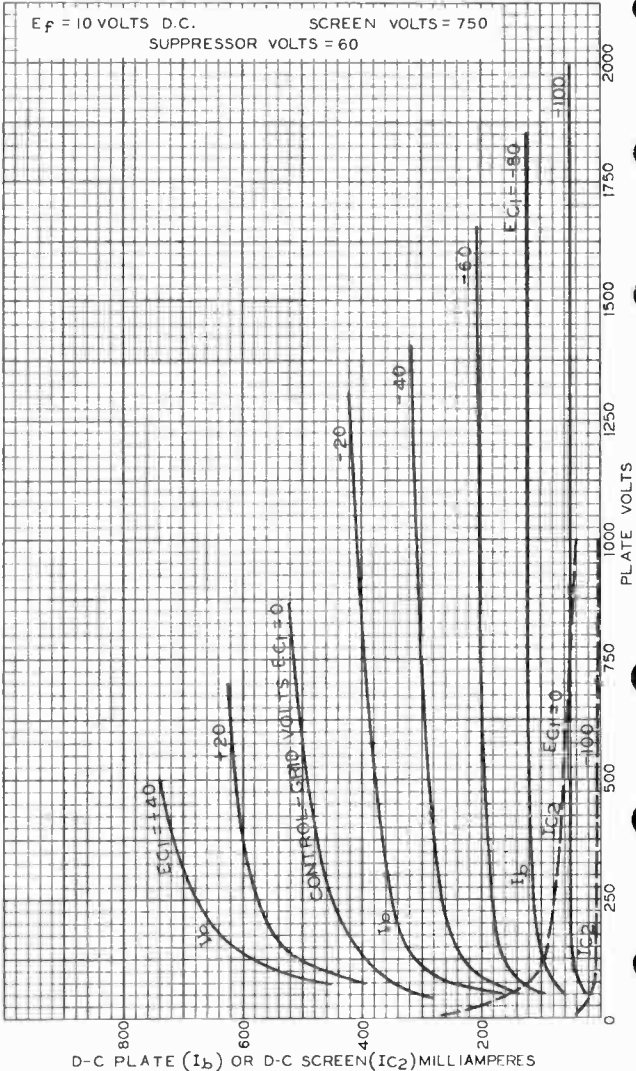
SEPT. 28, 1939

PLATE MILLIAMPERES
RCA RADIODIODE DIVISION
RCA MANUFACTURING COMPANY, INC.

92CM-6080



AVERAGE PLATE CHARACTERISTICS

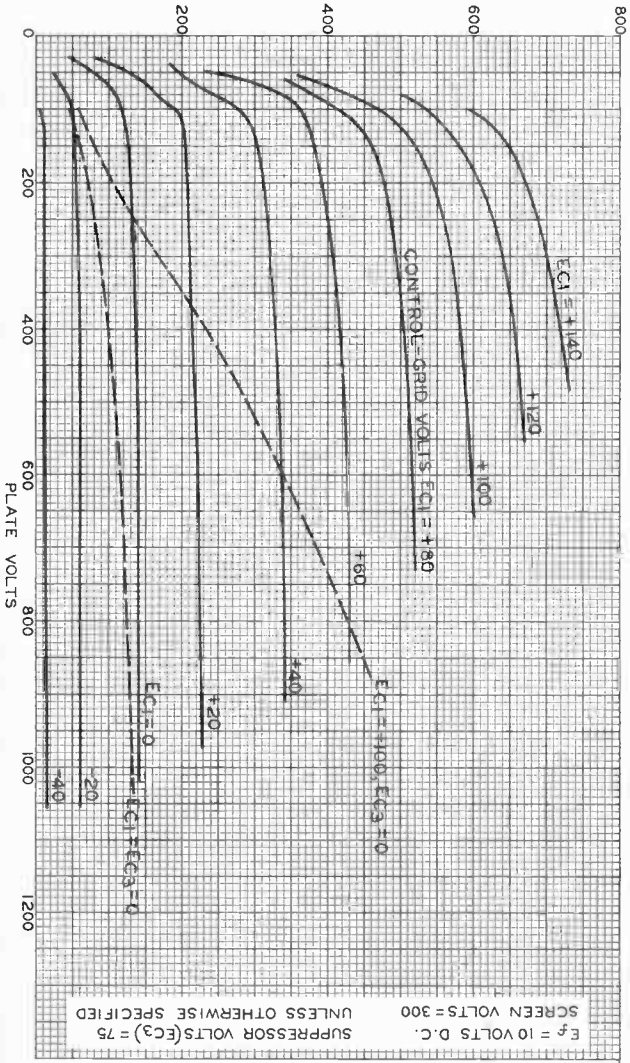


SEPT. 14, 1939

RCA MANUFACTURING COMPANY, INC.

92CM-6082

D-C PLATE MILLIAMPERES



AVERAGE PLATE CHARACTERISTICS

828

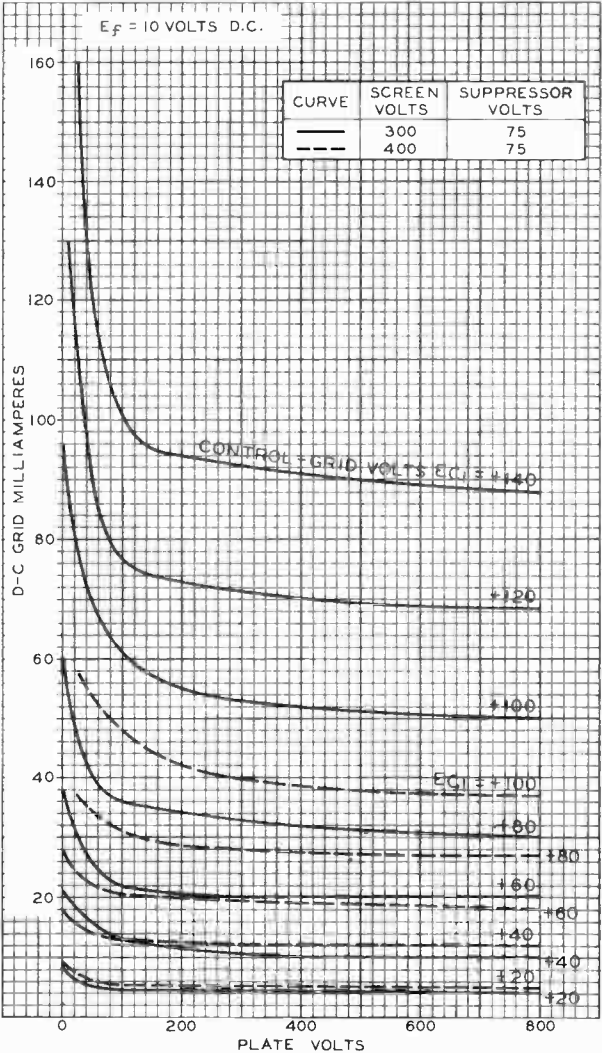


World Radio History

828



TYPICAL CHARACTERISTICS





829-B

829-B PUSH-PULL RF BEAM POWER AMPLIFIER

The 829-B supersedes the type 829
Unless otherwise specified, values are for both units

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Heater Arrangement	Series	Parallel	
Voltage	12.6 ± 10%	6.3 ± 10%	ac or dc volts
Current	1.125	2.25	amp

Transconductance, (Approx.)
for plate current of 60 ma. 8500 . . . μmhos

Grid-Screen Mu-Factor. 9

Direct Interelectrode Capacitances (Each Unit):

Grid-No.1 to Plate ⁰	0.12 max.	μμf
Input	14.5	μμf
Output	7.0	μμf

Grid-No.2-to-Cathode Capacitance
including internal grid-No.2
bypass capacitor, (Approx.). 65 . . . μμf

⁰ with external shield up to flange seal.

Mechanical:

Mounting Position. Vertical, base up or down;
Horizontal, plane of each plate vertical

Overall Length 4-1/8" ± 3/16"

Seated Length. 3-11/16" ± 3/16"

Maximum Diameter See Outline Drawing

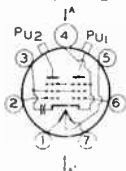
Bulb T-16

Bulb Terminals See Outline Drawing

Base Medium Molded-Flare Septar 7-Pin

Basing Designation for BOTTOM VIEW 78P

- Pin 1 - Heater
- Pin 2 - Grid No.1 of Unit No.2
- Pin 3 - Grid No.2
- Pin 4 - Cathode, Grid No.3
- Pin 5 - Heater Center-Tap



- Pin 6 - Grid No.1 of Unit No.1
- Pin 7 - Heater
- PU1 - Plate of Unit No.1
- PU2 - Plate of Unit No.2

PLANE OF ELECTRODES OF EACH UNIT IS PARALLEL TO PLANE THROUGH AXIS OF TUBE AND AA'.

PLATE-MODULATED PUSH-PULL RF POWER AMP. - Class C Telephony

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

NATURAL COOLING

Maximum Ratings, Absolute Values:

	CCS [•]	ICAS ^{••}	
DC PLATE VOLTAGE	600 max.	600 max.	volts
DC GRID-No.2 (SCREEN) VOLT.	225 max.	225 max.	volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE	-175 max.	-175 max.	volts

^{•, ••}: See next page.

MAR. 15, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA 1

829-B



829-B

PUSH-PULL RF BEAM POWER AMPLIFIER

	CCS [•]	ICAS ^{••}	
DC PLATE CURRENT	212 max.	212 max.	ma
DC GRID-No.1 CURRENT	15 max.	15 max.	ma
PLATE INPUT.	67.5 max.	90 max.	watts
GRID-No.2 INPUT.	7 max.	7 max.	watts
PLATE DISSIPATION.	21 max.	28 max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode.	100 max.	100 max.	volts
Heater positive with respect to cathode.	100 max.	100 max.	volts
BULB TEMPERATURE	175 max.	190 max.	°C

→ Typical Operation with Natural Cooling:

DC Plate Voltage	600	425	600	volts
DC Grid-No.2 Voltage#	200	200	200	volts
DC Grid-No.1 Voltage ^{•••}	15500	6400	13300	ohms
	-70	-60	-70	volts
DC Grid-No.1 Voltage ^{•••}	8700	5500	5800	ohms
Peak RF Grid-No.1 to Grid No.1 Voltage	160	154	172	volts
DC Plate Current	112	212	150	ma
DC Grid-No.2 Current	26	35	30	ma
DC Grid-No.1 Current (Approx.)	8	11	12	ma
Driving Power (Approx.)	0.6	0.8	0.9	watt
Power Output (Approx.)	50	63	70	watts

FORCED-AIR COOLING

Maximum Ratings, Absolute Values:

	CCS [•]	ICAS ^{••}	
DC PLATE VOLTAGE	600 max.	600 max.	volts
DC GRID-No.2 VOLTAGE	225 max.	250 max.	volts
DC GRID-No.1 VOLTAGE	-175 max.	-175 max.	volts
DC PLATE CURRENT	212 max.	240 max.	ma
DC GRID-No.1 CURRENT	15 max.	20 max.	ma
PLATE INPUT.	90 max.	120 max.	watts
GRID-No.2 INPUT.	7 max.	8 max.*	watts
PLATE DISSIPATION.	28 max.	40 max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode.	100 max.	100 max.	volts
Heater positive with respect to cathode.	100 max.	100 max.	volts
BULB TEMPERATURE	175 max.	175 max.	°C

→ Typical Operation with Forced-Air Cooling:

DC Plate Voltage	425	600	600	volts
DC Grid-No.2 Voltage#	200	200	200	volts
	6400	13300	13300	ohms

•, ••, #, •, ▲, ★: See next page.

→ Indicates a change.

MAR. 15, 1948

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA 1



829-B

829-B

PUSH-PULL RF BEAM POWER AMPLIFIER

	CCS*		ICAS**	
DC Grid-No.1 Voltage ^{***} . . .	-60	-70	-80	volts
	5500	5800	5300	ohms
Peak RF Grid-No.1 to Grid-No.1 Voltage . . .	154	172	210	volts
DC Plate Current	212	150	200	ma
DC Grid-No.2 Current	35	30	30	ma
DC Grid-No.1 Current (Approx.)	11	12	15	ma
Driving Power (Approx.) . . .	0.8	0.9	1.4	watts
Power Output (Approx.) . . .	63	70	85	watts

* In ICA: applications at frequencies less than 20 Mc; where duty-factor does not exceed 0.2, maximum "on" period does not exceed 30 seconds, and average modulation factor does not exceed 0.25, maximum grid-No.2 input of 12 watts is permitted.

Obtained from a separate source, modulated with the plate supply, or from the modulated plate supply through a series resistor of the value shown.

▲▲ Obtained from a grid resistor of value shown (per tube) or by partial self-bias methods.

PUSH-PULL RF POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

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

NATURAL COOLING

Maximum Ratings, Absolute Values:

	CCS*	ICAS**	
DC PLATE VOLTAGE	750 max.	750 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE.	225 max.	225 max.	volts
DC GRID-No.1 (CONTROL- GRID) VOLTAGE . . .	-175 max.	-175 max.	volts
DC PLATE CURRENT	240 max.	240 max.	ma
DC GRID-No.1 CURRENT	15 max.	15 max.	ma
PLATE INPUT	90 max.	120 max.	watts
GRID-No.2 INPUT	7 max.	7 max.	watts
PLATE DISSIPATION	30 max.	40 max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode.	100 max.	100 max.	volts
Heater positive with respect to cathode.	100 max.	100 max.	volts
BULB TEMPERATURE	175 max.	190 max.	°C

Typical Operation with Natural Cooling:

DC Plate Voltage	750	500	750	volts
DC Grid-No.2 Voltage ^{▲▲} . . .	200	200	200	volts
	16200	9300	18300	ohms
DC Grid-No.1 Voltage ^{●●} . . .	-50	-45	-55	volts
	6300	3750	4600	ohms
	310	160	270	ohms
Peak RF Grid-No.1 to Grid-No.1 Voltage . . .	120	124	140	volts

●, ●●, □, □□, ▲, ▲▲: See next page.

← Indicates a change.



829-B

PUSH-PULL RF BEAM POWER AMPLIFIER

	CCS [•]	ICAS ^{••}		
DC Plate Current	120	240	160	ma
DC Grid-No.2 Current	34	32	30	ma
DC Grid-No.1 Current (Approx.)	8	12	12	ma
Driving Power (Approx.)	0.45	0.7	0.8	watt
Power Output (Approx.)	65	83	87	watts

FORCED-AIR COOLING

Maximum Ratings, Absolute Values:

	CCS [•]	ICAS ^{••}		
DC PLATE VOLTAGE	750 max.	750 max.		volts
DC GRID-No.2 VOLTAGE	225 max.	250 max.		volts
DC GRID-No.1 VOLTAGE	-175 max.	-175 max.		volts
DC PLATE CURRENT	240 max.	240 max.		ma
DC GRID-No.1 CURRENT	15 max.	20 max.		ma
PLATE INPUT	120 max.	150 max.		watts
GRID-No.2 INPUT	7 max.	8 max.		watts
PLATE DISSIPATION	40 max.	45 max.		watts
PEAK HEATER-CATHODE VOLTAGE:				
Heater negative with respect to cathode.	100 max.	100 max.		volts
Heater positive with respect to cathode.	100 max.	100 max.		volts
BULB TEMPERATURE	175 max.	175 max.		°C

→ Typical Operation with Forced-Air Cooling:

DC Plate Voltage	500	750	750	volts
DC Grid-No.2 Voltage ^{••}	200	200	200	volts
	9300	18300	16200	ohms
DC Grid-No.1 Voltage ^{••}	-45	-55	-50	volts
	3750	4600	3100	ohms
	160	270	200	ohms
Peak RF Grid-No.1 to Grid-No.1 Voltage	124	140	150	volts
DC Plate Current	240	160	200	ma
DC Grid-No.2 Current	32	30	34	ma
DC Grid-No.1 Current (Approx.)	12	12	16	ma
Driving Power (Approx.)	0.7	0.8	1.1	watts
Power Output (Approx.)	83	87	110	watts

• Continuous Commercial Service.

•• Intermittent Commercial and Amateur Service.

• The grid-circuit resistance should never exceed 15000 ohms (total) per tube; or 30000 ohms per unit. Any additional bias required must be supplied by a cathode resistor or a fixed supply.

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

•• Obtained from a separate source, or from the plate-voltage supply with a voltage divider, or through a series resistor of value shown. The grid-No.2 voltage must not exceed 600 volts under key-up conditions.

• Obtained from a fixed supply, or a grid resistor (3750, 4600, 3100) or cathode resistor (160, 270, 200) or by combination methods.

→ indicates a change.

MAR. 15, 1948

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA 2



829-B

829-B

PUSH-PULL RF BEAM POWER AMPLIFIER

SHIELDING and BYPASSING

Shielding of the 829-B in an rf amplifier is required for stable operation. A convenient method of shielding is to mount the tube with one end through a hole in a metal plate so that the edge of the hole is close to the internal shield of the tube. Due to the importance, at the very-high frequencies, of obtaining the shortest leads possible, rf bypassing must be accomplished close to the tube terminals. Ribbon leads acting as plates of the bypass capacitors are effective. All circuit returns should be made to the common cathode connection. RF chokes may be advisable in the voltage-supply leads.

Data on operating frequencies for the 829-B are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

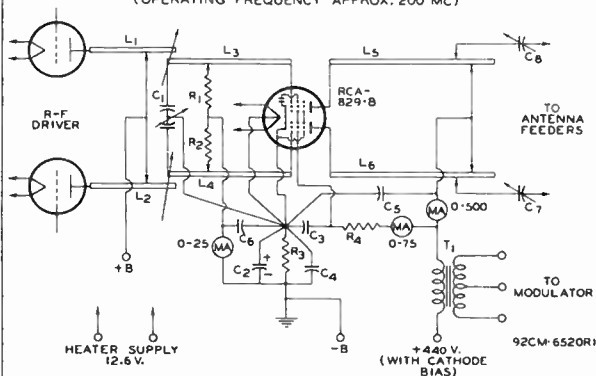
829-B



829-B

PUSH-PULL RF BEAM POWER AMPLIFIER

VHF PLATE-MODULATED
PUSH-PULL R-F POWER AMPLIFIER
(OPERATING FREQUENCY APPROX. 200 Mc)



$C_1 = 1.2$ to $10 \mu\text{f}$ per section
 $C_2 = 25 \mu\text{f}$, 200 volts
 $C_3 C_4 C_5 C_6 = 500 \mu\text{f}$, mica
 $C_7 C_8 = 3$ to $35 \mu\text{f}$
 $R_1 R_2 = 7500$ to 15000 Ohms, 1 Watt
 $R_3 = 60$ Ohms, 10 Watts
 $R_4 = 6400$ Ohms, 15 Watts
 $T_1 =$ Modulation Transformer

$L_1 L_2 =$ Dimensions dependent on type of driver tube; Approx. same as $L_5 L_6$
 $L_3 L_4 = 1/4"$ Dia. copper tubing, approx. $10"$ long and spaced approx. $7/8"$ between centers.
 $L_5 L_6 = 3/8"$ Dia. copper tubing, approx. $7"$ long and spaced approx. $7/8"$ between centers.

Note 1: Adjust coupling of $L_1 L_2$ and $L_3 L_4$ for optimum grid excitation.

Note 2: Grid resistors should be adjusted on $L_3 L_4$ at voltage node.

Devices and arrangements shown or described herein may use patents of RCA or others. Information contained herein is furnished without responsibility by RCA for its use and without prejudice to RCA's patent rights.

829-B



829-B

PUSH-PULL R-F BEAM POWER AMPLIFIER

FLANGE GAUGE IS PARALLEL TO THE TOP SURFACE OF THE BASE-PIN GAUGE, AND UNTIL THE FLANGE GAUGE RESTS ON THE TUBE-FLANGE SEAL AT POSITION XX'. THE PERPENDICULAR DISTANCE BETWEEN THE TWO GAUGES WILL BE AS SHOWN.

NOTE 3: MINIMUM DIAMETER OF TUBE-SEAL FLANGE WILL BE SUCH THAT A RING GAUGE HAVING I.D. OF $2.125'' - 0.000'' + 0.003''$ AND THICKNESS OF $0.125'' \pm 0.010''$ WILL NOT PASS THE FLANGE WHEN TRIED AT ANY ANGLE.

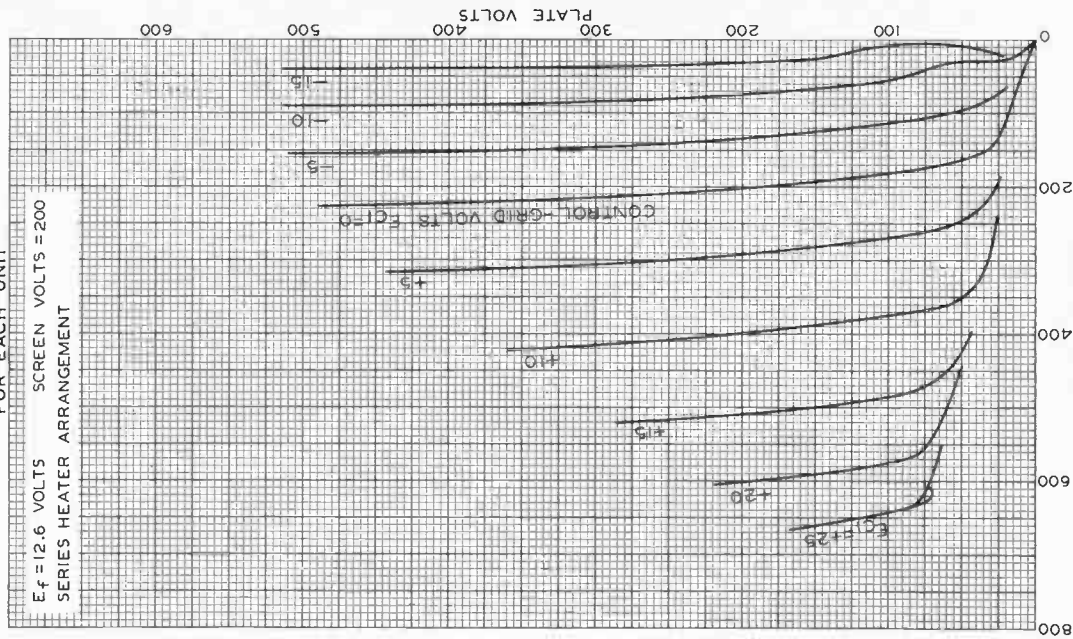
NOTE 4: THE PLATE LEADS WILL ENTER A FLAT-PLATE PLATE-LEAD GAUGE HAVING MINIMUM THICKNESS OF $0.375''$ AND HAVING TWO HOLES $0.1200'' \pm 0.0005''$ WHOSE CENTERS ARE LOCATED AT A DISTANCE OF $0.424'' \pm 0.001''$ FROM THE AXIS YY' AND WHOSE AXES ARE PARALLEL TO YY'. THE PLANE THROUGH THESE AXES WILL BE $90^\circ \pm 5'$ FROM THE PLANE THROUGH YY' AND PIN No. 4.

NOTE 5: EXHAUST TIP WILL NOT EXTEND BEYOND THE PLANE WHICH PASSES THROUGH THE ENDS OF THE THREE LONGEST PINS.



829-B

829-B AVERAGE PLATE CHARACTERISTICS FOR EACH UNIT



DEC. 1, 1943

PLATE MILLIAMPERES

RCA VICTOR DIVISION

RADIO CORPORATION OF AMERICA HARRISON, NEW JERSEY

92CM-6112R2

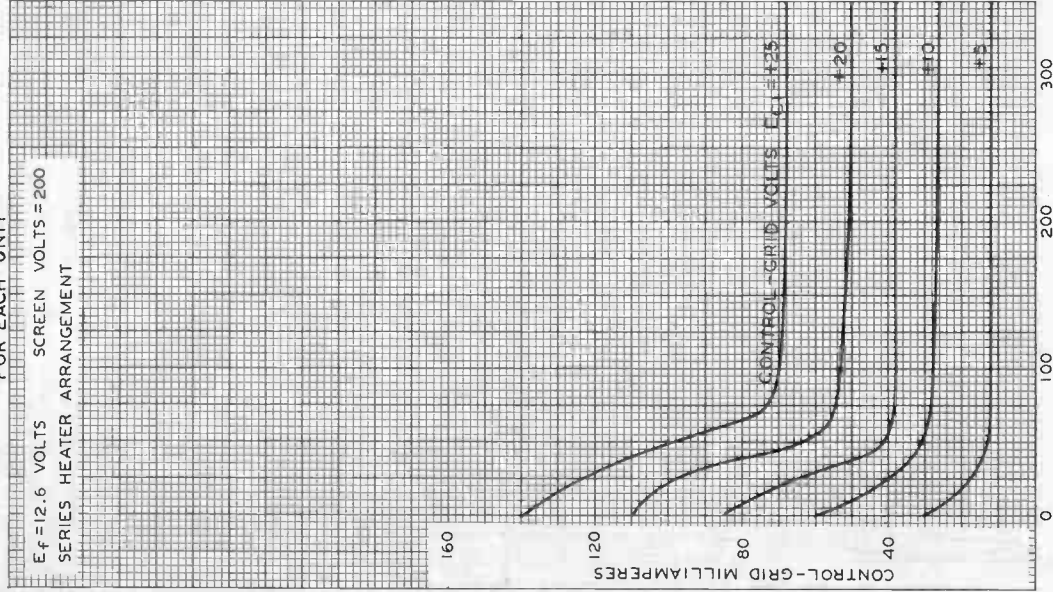
829-B



829-B

TYPICAL CHARACTERISTICS FOR EACH UNIT

$E_f = 12.6$ VOLTS SCREEN VOLTS = 200
SERIES HEATER ARRANGEMENT



World-Price-Index

DEC. 1, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6114 R2



830-B

830-B

R-F POWER AMPLIFIER, OSCILLATOR, CLASS B MODULATOR

Filament	Thoriated Tungsten	
Voltage	10	a-c or d-c volts
Current	2	amp.
Amplification Factor	25	
Direct Interelectrode Capacitances (approx.):		
Grid to Plate	11	μf
Grid to Filament	5	μf
Plate to Filament	1.8	μf
Maximum Overall Length		6-11/16"
Maximum Diameter		2-1/16"
Cap		Small Metal
Base		Medium 4-Pin Bayonet

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

A-F POWER AMPLIFIER & MODULATOR - Class B

D-C Plate Voltage	1000 max.	volts
Max-Signal D-C Plate Current *	150 max.	ma.
Max-Signal Plate Input *	150 max.	watts
Plate Dissipation*	60 max.	watts
Typical Operation - 2 tubes:		

Unless otherwise specified, values are for 2 tubes.

Filament Voltage	10	10	a-c volts
D-C Plate Voltage	800	1000	volts
D-C Grid Voltage	-27	-35	volts
Peak A-F Grid-to-Grid Voltage	250	270	volts
Zero-Signal D-C Plate Current	20	20	ma.
Max-Signal D-C Plate Current	280	280	ma.
Load Resistance (per tube)	1500	1900	ohms
Effective Load Res. (plate to plate)	6000	7600	ohms
Max-Signal Driving Power	5	6	<u>approx. watts</u>
Max-Signal Power Output	135	175	<u>approx. watts</u>

R-F POWER AMPLIFIER - Class B Telephony

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

D-C Plate Voltage		1000 max.	volts
D-C Plate Current		100 max.	ma.
Plate Input		90 max.	watts
Plate Dissipation		60 max.	watts
Typical Operation:			
Filament Voltage	10	10	a-c volts
D-C Plate Voltage	800	1000	volts
D-C Grid Voltage	-27	-35	volts
Peak R-F Grid Voltage	85	85	volts
D-C Plate Current	95	85	ma.
D-C Grid Current **	7	6	<u>approx. ma.</u>
Driving Power ** ^o	9	6	<u>approx. watts</u>
Power Output	23	26	<u>approx. watts</u>

*, **, ^o See next page.

(continued on next page)

MAR. 20, 1936

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY INC

TENTATIVE DATA



830-B

R-F POWER AMPLIFIER, OSCILLATOR CLASS B MODULATOR

(continued from preceding page)

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

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

D-C Plate Voltage	800 max.	volts
D-C Grid Voltage	-300 max.	volts
D-C Plate Current	100 max.	ma.
D-C Grid Current	30 max.	ma.
Plate Input	80 max.	watts
Plate Dissipation	40 max.	watts

Typical Operation:

Filament Voltage	10	10	a-c volts
D-C Plate Voltage	600	800	volts
D-C Grid Voltage	-140	-150	volts
Peak R-F Grid Voltage	255	265	volts
D-C Plate Current	95	95	ma.
D-C Grid Current **	30	20	approx.ma.
Driving Power **	7	5	approx.watts
Power Output	38	50	approx.watts

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation**

D-C Plate Voltage	1000 max.	volts
D-C Grid Voltage	-300 max.	volts
D-C Plate Current	150 max.	ma.
D-C Grid Current	30 max.	ma.
Plate Input	150 max.	watts
Plate Dissipation	60 max.	watts

Typical Operation:

Filament Voltage	10	10	10	a-c volts
D-C Plate Voltage	600	800	1000	volts
D-C Grid Voltage	-95	-105	-110	volts
Peak R-F Grid Voltage	235	245	250	volts
D-C Plate Current	140	140	140	ma.
D-C Grid Current **	30	30	30	approx.ma.
Driving Power **	7	7	7	approx.watts
Power Output	45	70	90	approx.watts

* Averaged over any audio-frequency cycle.

** Subject to wide variations as explained on sheet TRANS. TUBE RATINGS.

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

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

For operation of the 830-B at the higher frequencies, refer to sheet TRANS. TUBE RATINGS vs FREQUENCY.

(continued on next page)

MAR. 20, 1936

RCA RADITRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA

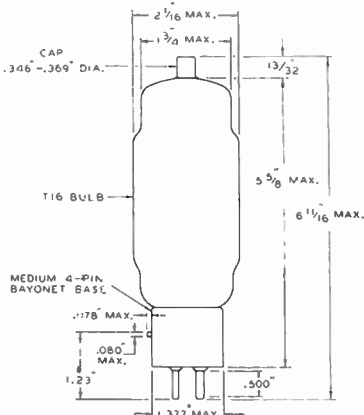


830-B

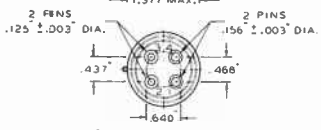
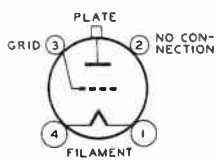
830-B

R-F POWER AMPLIFIER, OSCILLATOR, CLASS B MODULATOR

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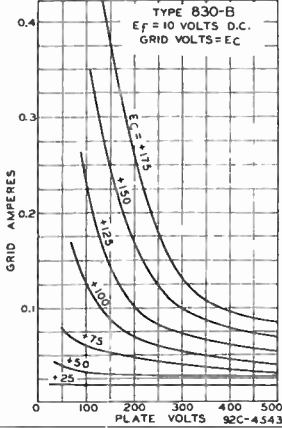
TUBE SYMBOL & TOP VIEW OF SOCKET CONNECTIONS



BOTTOM VIEW OF BASE

92C-4541

AVERAGE CHARACTERISTICS



MAR. 20, 1936

RCA RADIODRON DIVISION
RCA MANUFACTURING COMPANY, INC

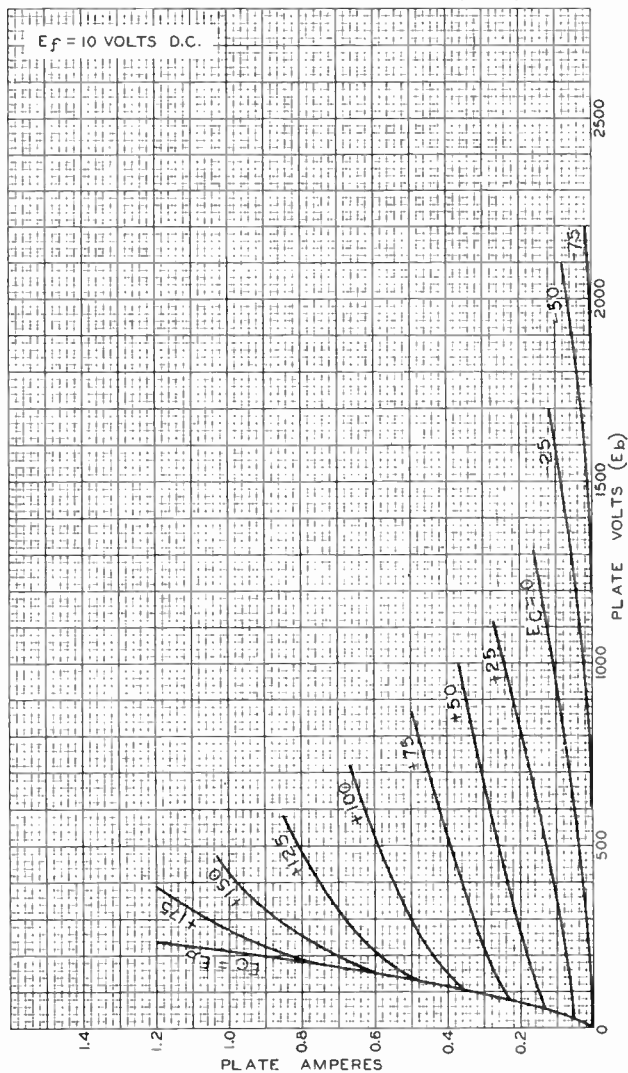
TENTATIVE DATA 2

830-B



830-B

AVERAGE PLATE CHARACTERISTICS



JAN. 17, 1936

RCA RADIONRON DIVISION
RCA MANUFACTURING COMPANY INC

92C-4542

World Radio History



832-A

832-A

PUSH-PULL R-F BEAM POWER AMPLIFIER*Unless otherwise specified, values are for both units*

Heater	Coated Unipotential Cathodes ∇		
Heater Arrangement	Series	Parallel	
Voltage †	12.6	6.3	a-c or d-c volts
Current	0.8	1.6	amp.
Transconductance, for plate current of 30 ma.	3500 approx.		μ hos
Grid-Screen Mu-Factor	7		
Direct Interelectrode Capacitances (each unit):			
Grid-Plate (with external shielding)	0.05 max.		μ f
Input	7.5		μ f
Output	3.8		μ f
Screen-Cathode Capacitance (Including internal screen by-pass condenser)	65 approx.		μ f
Maximum Overall Length	3-5/16"		
Maximum Diameter	2-3/8"		
Bulb	T-16		
RCA } {UT-106, recommended for freq. below 60 Mc	Stock No. 9934		
Socket } {UT-107, recommended for freq. above 60 Mc	Stock No. 9935		

∇ In circuits where the cathode is not directly connected to the heater, the potential difference between them should not exceed 100 volts.
 † Should not deviate more than $\pm 10\%$ from rated value.

MAXIMUM CCS RATINGS and TYPICAL OPERATING CONDITIONS

CCS = Continuous Commercial Service

Maximum Ratings are Absolute Values

GRID-MODULATED PUSH-PULL R-F POWER AMP. - Class C Telephony

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

D-C Plate Voltage	750 max.	volts
D-C Screen Voltage (Grid #2)	250 max.	volts
D-C Grid Voltage (Grid #1)	-100 max.	volts
D-C Plate Current	55 max.	ma.
Plate Input	22 max.	watts
Screen Input	3.4 max.	watts
Plate Dissipation	15 max.	watts

Typical Operation:

With modulation factor of:

	0.8	0.9	
D-C Plate Voltage	500	750	volts
D-C Screen Voltage	200	200	volts
D-C Grid Voltage Δ^*	-55	-60	volts
Peak R-F Grid-to-Grid Volt.	100	100	volts
Peak A-F Grid Voltage	14	16	volts
D-C Plate Current	44	29	ma.
D-C Screen Current	3.0	2.0	ma.
D-C Grid Current	0	0 approx.	ma.
Driving Power $^{\circ}$	0.1	0.1 approx.	watt
Power Output	8.0	8.5 approx.	watts

* Preferably obtained from a fixed supply; or may also be obtained from an unby-passed (for audio frequencies) cathode resistor.

$^{\circ}$ At crest of a-f cycle with modulation factor specified.

PLATE-MODULATED PUSH-PULL R-F POWER AMP. - Class C Telephony

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

D-C Plate Voltage	600 max.	volts
D-C Screen Voltage (Grid #2)	250 max.	volts

 Δ See next page.

AUG. 1, 1942

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA



832-A

PUSH-PULL R-F BEAM POWER AMPLIFIER

(continued from preceding page)

D-C Grid Voltage (Grid #1)		-100 max.	volts
D-C Plate Current		68 max.	ma.
D-C Grid Current		6 max.	ma.
Plate Input		22	watts
Screen Input		3.4 max.	watts
Plate Dissipation		10 max.	watts
Typical Operation:			
D-C Plate Voltage	425	600	volts
D-C Screen Voltage \square	{ 200	{ 200	volts
	{ 14000	{ 25000	ohms
D-C Grid Voltage \S Δ	{ -60	{ -65	volts
	{ 25000	{ 25000	ohms
Peak R-F Grid-to-Grid Volt.	140	150	volts
D-C Plate Current	52	36	ma.
D-C Screen Current	16	16	ma.
D-C Grid Current	2.4	2.6	approx. ma.
Driving Power	0.15	0.16	approx. watt
Power Output	16	17	approx. watts

\square Preferably obtained from a separate source modulated with the plate supply, or obtained from the modulated plate-voltage supply through resistor of value shown.

\S Obtained by grid resistor of value shown (per tube) or by partial self-bias methods.

PUSH-PULL R-F POWER AMPLIFIER & OSCILLATOR—Class C Telegraphy

Key-down conditions per tube without modulation #

D-C Plate Voltage		750 max.	volts
D-C Screen Voltage (Grid #2)		250 max.	volts
D-C Grid Voltage (Grid #1)		-100 max.	volts
D-C Plate Current		90 max.	ma.
D-C Grid Current		6 max.	ma.
Plate Input		36 max.	watts
Screen Input		5 max.	watts
Plate Dissipation		15 max.	watts
Typical Operation:			
D-C Plate Voltage	500	750	volts
D-C Screen Voltage Δ	{ 200	{ 200	volts
	{ 21000	{ 37000	ohms
D-C Grid Voltage \square Δ	{ -65	{ -65	volts
	{ 25000	{ 23000	ohms
	{ 730	{ 1000	ohms
Peak R-F Grid-to-Grid Volt.	150	150	volts
D-C Plate Current	72	48	ma.
D-C Screen Current	14	15	ma.
D-C Grid Current	2.6	2.8	approx. ma.
Driving Power	0.18	0.19	approx. watt
Power Output	26	26	approx. watts

Δ The grid-circuit resistance should never exceed 25000 ohms (total) per tube, or 50000 ohms per unit. Any additional bias required must be supplied by a cathode resistor or a fixed supply.

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

\square Obtained from a fixed supply, by grid resistor (25000, 23000), or cathode resistor (730, 1000).

Δ See next page.

AUG. 1, 1942

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

World Radio History

TENTATIVE DATA



832-A

832-A

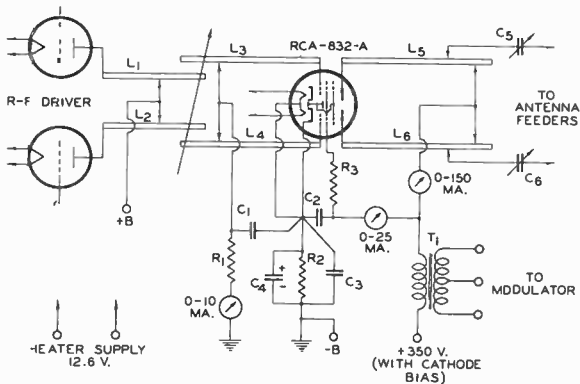
PUSH-PULL R-F BEAM POWER AMPLIFIER

(continued from preceding page)

▲ obtained from a separate source, or from the plate-voltage supply with a voltage divider, or through a series resistor of the value shown. The screen voltage must not exceed 600 volts under key-up conditions.

Data on operating frequencies for the 832-A are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

ULTRA-HIGH-FREQUENCY PLATE-MODULATED
PUSH-PULL R-F POWER AMPLIFIER
POWER OUTPUT 12 WATTS (APPROX.) AT 2 METERS



$C_1, C_2, C_3 = 500 \mu\mu\text{f}$
 $C_4 = 25 \mu\text{f}, 200 \text{ VOLTS}$
 $C_5, C_6 = 3 \text{ TO } 35 \mu\mu\text{f}$
 $R_1 = 10000 \text{ TO } 20000 \text{ OHMS}, 1 \text{ WATT}$
 $R_2 = 300 \text{ OHMS}, 5 \text{ WATTS}$
 $R_3 = 7500 \text{ OHMS}, 5 \text{ WATTS}$
 $L_1, L_2 = \text{DIMENSIONS DEPENDENT ON TYPE OF DRIVER TUBE; APPROX. SAME AS } L_5, L_6.$

$L_3, L_4 = \frac{1}{4}'' \text{ DIA. COPPER TUBING, APPROX. } 10'' \text{ LONG AND SPACED } 1'' \text{ BETWEEN CENTERS.}$

$L_5, L_6 = \frac{1}{4}'' \text{ DIA. COPPER TUBING, APPROX. } 12'' \text{ LONG AND SPACED } 1'' \text{ BETWEEN CENTERS.}$

$T_1 = \text{MODULATION TRANSFORMER}$

NOTE: ADJUST COUPLING OF L_1, L_2 AND L_3, L_4 FOR OPTIMUM GRID EXCITATION.

The license extended to the purchaser of tubes appears in the License Notice accompanying them. Information contained herein is furnished without assuming any obligations.

AUG. 1, 1942

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY INC

TENTATIVE DATA 2



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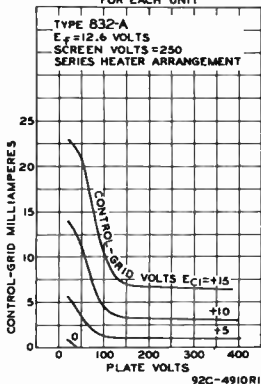
PUSH-PULL R-F BEAM POWER AMPLIFIER

(continued from preceding page)

SHIELDING and BY-PASSING

Shielding of the 832-A in an r-f amplifier is required for stable operation. A convenient method of shielding is to mount the tube with one end through a hole in a metal plate so that the edge of the hole is close to the internal shield of the tube. Due to the importance, at the ultra-high frequencies, of obtaining the shortest leads possible, r-f by-passing must be accomplished close to the tube terminals. Ribbon leads acting as plates of the by-passing condensers are effective. All circuit returns should be made to the common cathode connection. R-f chokes may be advisable in the voltage-supply leads.

TYPICAL CHARACTERISTICS
FOR EACH UNIT

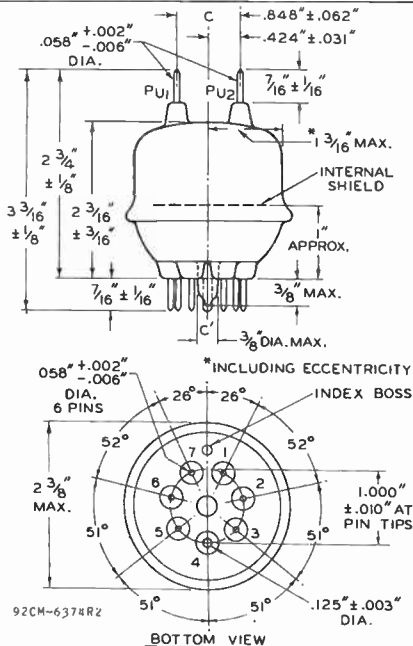




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PUSH-PULL R-F BEAM POWER AMPLIFIER



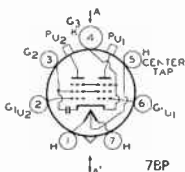
BOTTOM VIEW

ANGULAR VARIATIONS BETWEEN PINS ARE HELD TO TOLERANCES SUCH THAT PINS WILL F.T GAUGE HAVING SIX 0.030" HOLES AND ONE 0.145" HOLE ARRANGED AT EXACT ANGLES ON 1.000" CIRCLE.

AXIS OF BASE-PIN GAUGE IS "ME REFERENCE AXIS CC' FOR A TUBE SEATED FREELY IN THE GAUGE.

THE PLANE THROUGH CC' AND EITHER PLATE TERMINAL WILL BE AT $90^{\circ} \pm 5^{\circ}$ FROM THE PLANE THROUGH CC' AND PIN 4.

BOTTOM VIEW OF SOCKET CONNECTIONS



PLANE OF ELECTRODES OF EACH UNIT IS PARALLEL TO PLANE THROUGH AXIS OF TUBE AND AA'

TUBE MOUNTING POSITION

Any

CONNECTIONS should never be soldered to the tube terminals.

- Pin 1 - Heater
- Pin 2 - Grid No.1 of Unit No.2
- Pin 3 - Screen
- Pin 4 - Cathode
- Pin 5 - Heater Center Tap
- Pin 6 - Grid No.1 of Unit No.1
- Pin 7 - Heater
- P_{U1} & P_{U2} - Plate Terminals of Units No.1 and No.2, respectively

← Indicates a change.

DEC. 1, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History

DATA 3

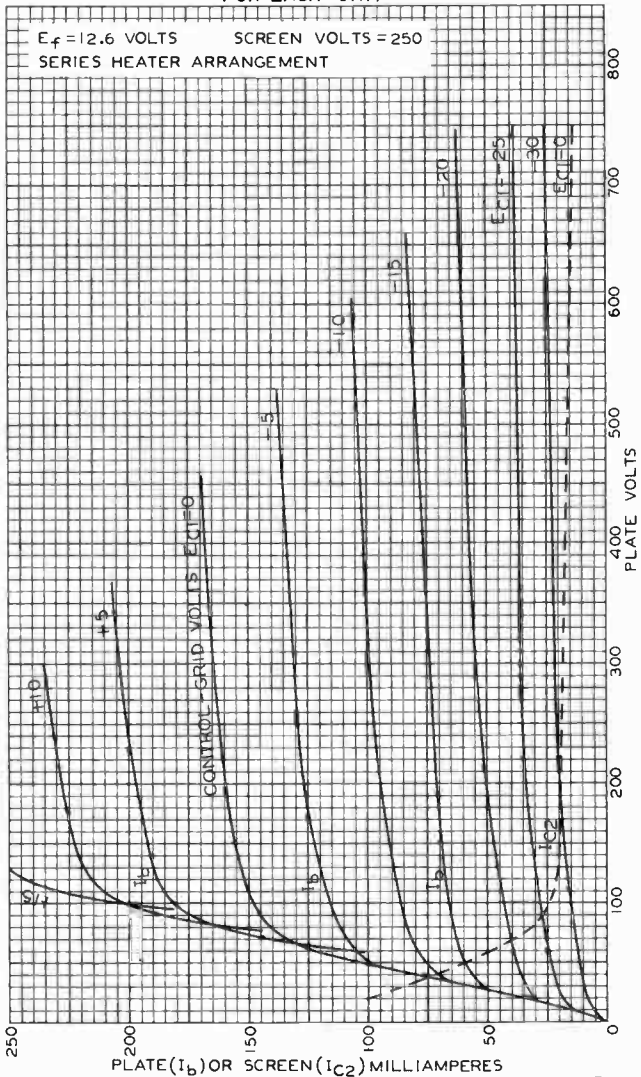
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AVERAGE PLATE CHARACTERISTICS FOR EACH UNIT

$E_f = 12.6$ VOLTS SCREEN VOLTS = 250
SERIES HEATER ARRANGEMENT



DEC. 1, 1943

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POWER TRIODE

GENERAL DATA

Electrical:

	Min.	Av.	Max.	
Filament, Thoriated Tungsten:				
Voltage (ac or dc)	9.5	10	10.5	volts
Current, with 10 volts on filament	9.4	10	10.6	amp
Amplification Factor, for grid voltage of -20 volts and plate current of 200 ma.	31.5	35	38.5	
Direct Interelectrode Capacitances:				
Grid to Plate.	5.5	6.3	7.1	$\mu\mu\text{f}$
Grid to Filament	10.1	12.3	14.5	$\mu\mu\text{f}$
Plate to Filament.	6.4	8.5	10.6	$\mu\mu\text{f}$

Mechanical:

Terminal Connections:

F - Filament

G - Grid



P - Plate

AA' = PLANE OF ELECTRODES

Mounting Position. Vertical, with filament posts up or down; Horizontal, with plane of electrodes vertical (on edge)

Overall Length 8-5/8" \pm 3/16"

Maximum Diameter 4-19/32"

Mounting Assembly RCA Stock No. 9928

Cooling: *Natural or Forced Air*, for which respective data are given under each class of service. *Natural Cooling* means that adequate free circulation of air around the tube is necessary. With *Forced Air*, an air flow of 40 cfm. from a 2"-diameter nozzle directed vertically on bulb between grid and plate seals is required to limit temperature between these seals to 145°C.

AF POWER AMPLIFIER & MODULATOR - Class B

NATURAL COOLING

Maximum Ratings, Absolute Values:

	CCS*	ICAS**	
DC PLATE VOLTAGE	3000 max.	3300 max.	volts
MAX.-SIGNAL DC PLATE CUR.*	500 max.	500 max.	ma
MAX.-SIGNAL PLATE INPUT*	1125 max.	1300 max.	watts
PLATE DISSIPATION*	300 max.	350 max.	watts

Typical Operation with Natural Cooling:

Values are for 2 tubes

DC Plate Voltage	3000 . .	3300 . .	volts
DC Grid Voltage#	-70 . .	-80 . .	volts
Peak AF Grid-to-Grid Voltage	400 . .	440 . .	volts

* , ** , # : See next page.

← indicates a change.

MAR. 15, 1948

TUBE DEPARTMENT

DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

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833-A POWER TRIODE

	CCS*	ICAS**	
Zero-Signal DC Plate Current	100 . .	100 . .	ma
Max.-Signal DC Plate Current	750 . .	780 . .	ma
Effective Load Resistance (plate-to-plate) . . .	9500 . .	10500 . .	ohms
Max.-Signal Driving Power (Approx.) . . .	20 . .	30 . .	watts
Max.-Signal Power Output (Approx.) . .	1650 . .	1900 . .	watts

FORCED-AIR COOLING

Maximum Ratings, Absolute Values:

	CCS*	ICAS**	
DC PLATE VOLTAGE	4000 max.	4000 max.	volts
MAX.-SIGNAL DC PLATE CUR.* . .	500 max.	500 max.	ma
MAX.-SIGNAL PLATE INPUT* . .	1600 max.	1800 max.	watts
PLATE DISSIPATION*	400 max.	450 max.	watts

Typical Operation with Forced-Air Cooling:

Values are for 2 tubes

DC Plate Voltage	4000 . .	4000 . .	volts
DC Grid Voltage#	-100 . .	-100 . .	volts
Peak AF Grid-to-Grid Voltage	480 . .	510 . .	volts
Zero-Signal DC Plate Current	100 . .	100 . .	ma
Max.-Signal DC Plate Current	800 . .	900 . .	ma
Effective Load Resistance (plate-to-plate) . . .	12000 . .	11000 . .	ohms
Max.-Signal Driving Power (Approx.) . . .	29 . .	38 . .	watts
Max.-Signal Power Output (Approx.) . .	2400 . .	2700 . .	watts

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

RF POWER AMPLIFIER—Class B Telephony

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

NATURAL COOLING

→ Maximum Ratings, Absolute Values:

	CCS*	ICAS**	
DC PLATE VOLTAGE	3000 max.	3300 max.	volts
DC PLATE CURRENT	300 max.	300 max.	ma
PLATE INPUT	450 max.	525 max.	watts
PLATE DISSIPATION	300 max.	350 max.	watts

→ Typical Operation with Natural Cooling:

DC Plate Voltage	3000 . .	3300 . .	volts
DC Grid Voltage#	-70 . .	-100 . .	volts
Peak RF Grid Voltage	90 . .	110 . .	volts
DC Plate Current	150 . .	150 . .	ma

*, **, #: See next page.

→ Indicates a change.

MAR. 15, 1948

TUBE DEPARTMENT

DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

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833-A POWER TRIODE

	CCS [•]	ICAS ^{••}	
DC Grid Current (Approx.)	2	2	ma
Driving Power (Approx.) [▲]	10	11	watts
Power Output (Approx.)	150	200	watts

FORCED-AIR COOLING

Maximum Ratings, Absolute Values:

	CCS [•]	ICAS ^{••}	
DC PLATE VOLTAGE	4000 max.	4000 max.	volts
DC PLATE CURRENT	300 max.	300 max.	ma
PLATE INPUT	600 max.	675 max.	watts
PLATE DISSIPATION	400 max.	450 max.	watts

Typical Operation with Forced-Air Cooling:

DC Plate Voltage	4000	4000	volts
DC Grid Voltage [#]	-120	-120	volts
Peak RF Grid Voltage	120	130	volts
DC Plate Current	150	150	ma
DC Grid Current (Approx.)	2	3	ma
Driving Power (Approx.) [▲]	14	21	watts
Power Output (Approx.)	225	250	watts

[▲] At crest of audio-frequency cycle with modulation factor of 1.0.

[#] For ac filament supply.

PLATE-MODULATED RF POWER AMPLIFIER - Class C Telephony

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

NATURAL COOLING

Maximum Ratings, Absolute Values:

	CCS [•]	ICAS ^{••}	
DC PLATE VOLTAGE	2500 max.	3000 max.	volts
DC GRID VOLTAGE	-500 max.	-500 max.	volts
DC PLATE CURRENT	400 max.	400 max.	ma
DC GRID CURRENT	100 max.	100 max.	ma
PLATE INPUT	835 max.	1000 max.	watts
PLATE DISSIPATION	200 max.	250 max.	watts

Typical Operation with Natural Cooling:

DC Plate Voltage	2500	3000	volts
DC Grid Voltage [•]	{ -300	-240	volts
	{ 4000	3400	ohms
Peak RF Grid Voltage	460	410	volts
DC Plate Current	335	335	ma
DC Grid Current (Approx.)	75	70	ma
Driving Power (Approx.)	30	26	watts
Power Output (Approx.)	635	800	watts

^{••••}: See next page.

← indicates a change.



833-A

POWER TRIODE

FORCED-AIR COOLING

Maximum Ratings, Absolute Values:

	CCS*	ICAS**	
DC PLATE VOLTAGE	3000 max.	4000 max.	volts
DC GRID VOLTAGE.	-500 max.	-500 max.	volts
DC PLATE CURRENT	450 max.	450 max.	ma
DC GRID CURRENT.	100 max.	100 max.	ma
PLATE INPUT.	1250 max.	1800 max.	watts
PLATE DISSIPATION.	270 max.	350 max.	watts

Typical Operation with Forced-Air Cooling:

DC Plate Voltage	3000 . .	4000 . .	volts
DC Grid Voltage*	{ -300 . . 3600 . .	-325 . .	volts
		3600 . .	ohms
Peak RF Grid Voltage	490 . .	520 . .	volts
DC Plate Current	415 . .	450 . .	ma
DC Grid Current (Approx.)	85 . .	90 . .	ma
Driving Power (Approx.)	37 . .	42 . .	watts
Power Output (Approx.)	1000 . .	1500 . .	watts

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

RF POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

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

NATURAL COOLING

→ Maximum Ratings, Absolute Values:

	CCS*	ICAS**	
DC PLATE VOLTAGE	3000 max.	3300 max.	volts
DC GRID VOLTAGE.	-500 max.	-500 max.	volts
DC PLATE CURRENT	500 max.	500 max.	ma
DC GRID CURRENT.	100 max.	100 max.	ma
PLATE INPUT.	1250 max.	1500 max.	watts
PLATE DISSIPATION.	300 max.	350 max.	watts

→ Typical Operation with Natural Cooling:

DC Plate Voltage	3000	3000	3000 . .	volts
DC Grid Voltage**	{ -160 2300	-200	-160 . .	volts
		400	425	400 . .	ohms
Peak RF Grid Voltage	310	360	310 . .	volts
DC Plate Current	335	415	335 . .	ma
DC Grid Current (Approx.)	70	55	70 . .	ma
Driving Power (Approx.)	20	20	20 . .	watts
Power Output (Approx.)	800	1000	800 . .	watts

□□ 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.

→ Indicates a change.



833-A

POWER TRIODE

833-A

FORCED-AIR COOLING

Maximum Ratings, Absolute Values:

	CCS*	ICAS**	
DC PLATE VOLTAGE	4000 max.	4000 max.	volts
DC GRID VOLTAGE	-500 max.	-500 max.	volts
DC PLATE CURRENT	500 max.	500 max.	ma
DC GRID CURRENT	100 max.	100 max.	ma
PLATE INPUT	1800 max.	2000 max.	watts
PLATE DISSIPATION	400 max.	450 max.	watts

Typical Operation with Forced-Air Cooling:

DC Plate Voltage	4000 . .	4000 . .	volts
DC Grid Voltage ^{▲▲}	-200 . .	-225 . .	volts
	2650 . .	2400 . .	ohms
	380 . .	380 . .	ohms
Peak RF Grid Voltage	375 . .	415 . .	volts
DC Plate Current	450 . .	500 . .	ma
DC Grid Current (Approx.)	75 . .	95 . .	ma
Driving Power (Approx.)	26 . .	35 . .	watts
Power Output (Approx.)	1440 . .	1600 . .	watts

CHARACTERISTICS RANGE VALUES

Filament Volts, 10

	Min.	Av.	Max.	
Grid Current [■]	160	270	380	ma
Plate Current [■]	490	650	810	ma
Plate Current [■]	60	100	140	ma
Power Output [*]	1150	-	-	watts

- Continuous Commercial Service.
- Intermittent Commercial and Amateur Service.
- ▲▲ Obtained from fixed supply, by grid resistor (2300, 3600, 2300, 2650, 2400) or by cathode resistor (400, 425, 400, 380, 380).
- With dc plate voltage of 100 volts and dc grid voltage of +100 volts.
- With dc plate voltage of 2500 volts and dc grid voltage of -50 volts.
- * With dc plate voltage of 4000 volts, plate current of 450 ma., grid current of 80 to 120 ma., grid resistor of 5000 ohms, and frequency of 15 Mc.

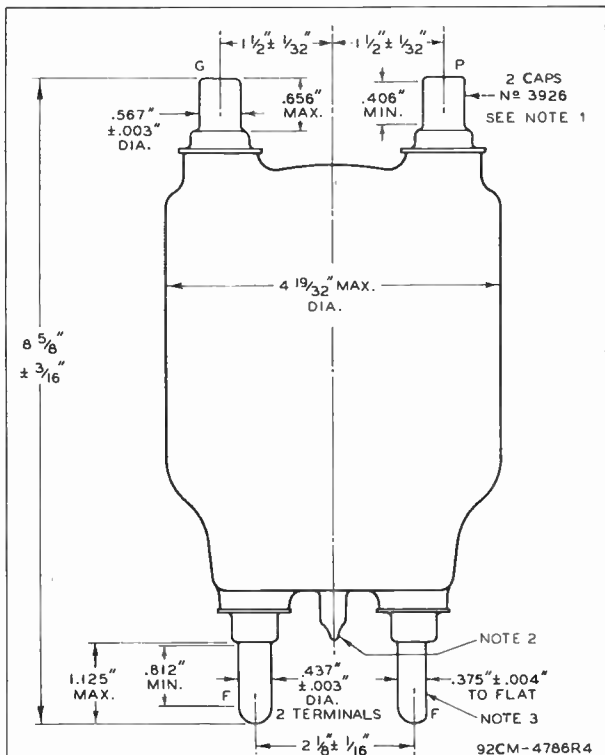
NOTE: When the 833-A is used in the final amplifier or a preceding stage of a transmitter designed for break-in operation and oscillator keying, a small amount of fixed-bias must be used to maintain the plate current at a safe value. With a plate voltage of 4000 volts, a fixed bias of at least -90 volts should be used.

Data on operating frequencies for the 833-A are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

833-A



833-A POWER TRIODE



NOTE 1: THE ANGLE FORMED ON A PLANE NORMAL TO THE TUBE AXIS BY THE INTERSECTION OF THE PLANE DETERMINED BY THE AXES OF THE FILAMENT TERMINALS WITH THE PLANE DETERMINED BY THE AXES OF THE GRID AND PLATE CAPS IS NOT MORE THAN 5° .

NOTE 2: THE MOUNTING SHOULD PROVIDE LIBERAL CLEARANCE FOR THIS TIP.

NOTE 3: THE PLANE THROUGH THE FLAT SIDE OF THE FILAMENT TERMINAL IS $90^\circ \pm 7^\circ$ WITH RESPECT TO THE PLANE THROUGH THE AXES OF THE FILAMENT TERMINALS.

MAR. 15, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
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CE-4786R4

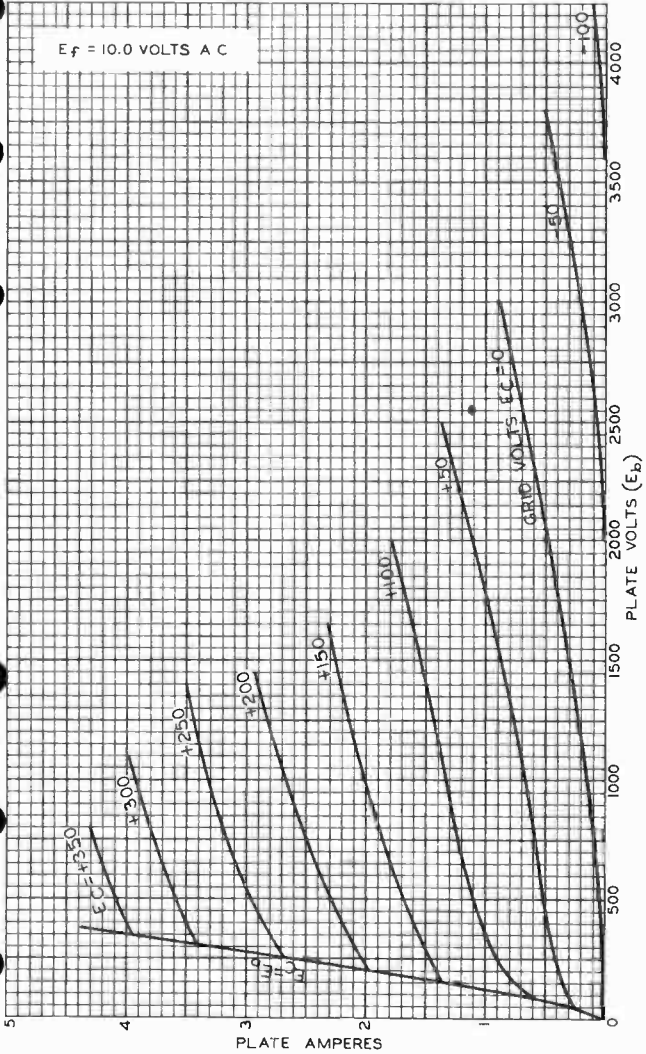


833-A

833-A

AVERAGE PLATE CHARACTERISTICS

$E_f = 10.0$ VOLTS A C



DEC. 1, 1943

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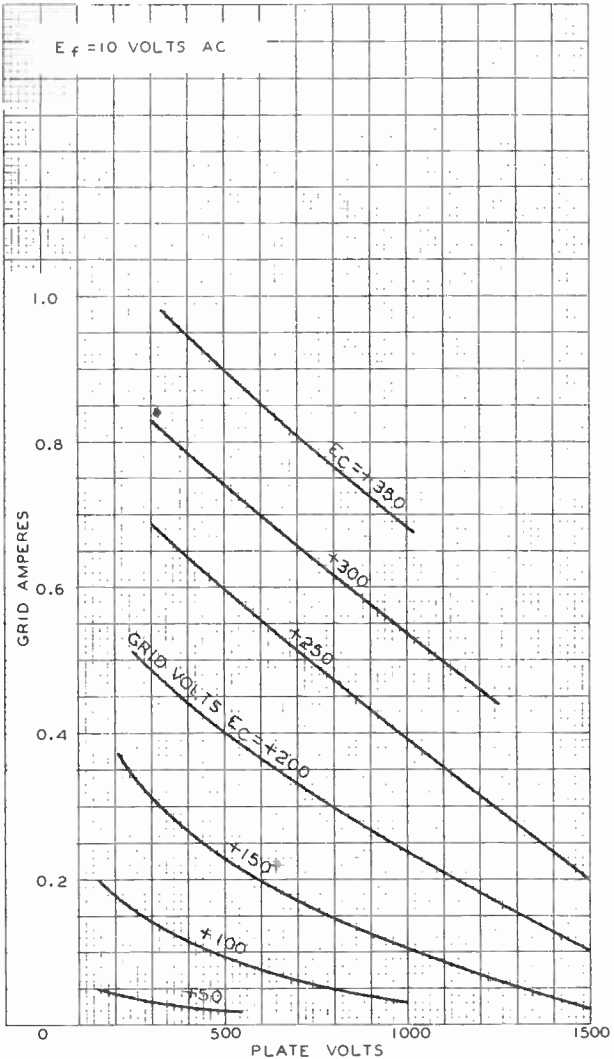
92CM-6196

833-A



833-A

TYPICAL CHARACTERISTICS



JULY 23, 1940

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RADIO CORPORATION OF AMERICA HARRISON NEW JERSEY
World Radio History

92CM-6197



834

834

R-F POWER AMPLIFIER

Filament	Thoriated Tungsten	
Voltage	7.5	a-c or d-c volts
Current	3.1	amp. ←
Amplification Factor	10.5	
Direct Interelectrode Capacitances:		
Grid to Plate	2.6	μf
Grid to Filament	2.2	μf
Plate to Filament	0.6	μf
Maximum Overall Length		6-7/8"
Maximum Diameter		2-11/16"
Bulb		S-21
Base		Medium 4-Pin, Bayonet
RCA Socket (Type UR-542A)		Stock No.9919
Cooling- Forced air from fan directed at middle and upper portions of bulb is recommended for all classes of service above 60 Mc.		

*Maximum Ratings Are Absolute Values***MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS**R-F POWER AMPLIFIER-Class B Telephony*Carrier conditions per tube for use with a max. modulation factor of 1.0*

D-C Plate Voltage		1250 max.	volts
D-C Plate Current		100 max.	ma.
Plate Input		75 max.	watts
Plate Dissipation		50 max.	watts
Typical Operation:			
D-C Plate Voltage	750	1000	1250 volts
D-C Grid Voltage #	-70	-90	-115 volts
Peak R-F Grid Voltage	90	100	115 volts
D-C Plate Current	50	50	50 ma.
D-C Grid Current **	1.0	0.5	0 approx. ma.
Driving Power ° **	3.3	3.1	3.0 approx. watts
Power Output	11	16	20 approx. watts

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

D-C Plate Voltage		1000 max.	volts
D-C Grid Voltage		-400 max.	volts
D-C Plate Current		100 max.	ma.
D-C Grid Current		20 max.	ma.
Plate Input		100 max.	watts
Plate Dissipation		35 max.	watts
Typical Operation:			
D-C Plate Voltage		750	1000 volts
D-C Grid Voltage *		{ 14500	17700 ohms
		{ -290	-310 volts
Peak R-F Grid Voltage		415	435 volts
D-C Plate Current		90	90 ma.
D-C Grid Current **		20	17.5 approx. ma.
Driving Power **		7.5	6.5 approx. watts
Power Output		42	58 approx. watts

* Obtained by grid-leak resistor or by partial self-bias methods.

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

**, #: See next page.

← Indicates a change.

Dec. 1, 1942

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DATA



R-F POWER AMPLIFIER

(continued from preceding page)

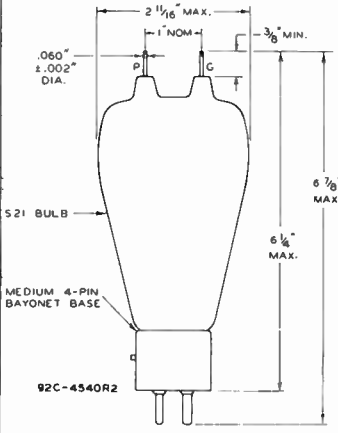
R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation**

D-C Plate Voltage	1250 max.	volts
D-C Grid Voltage	-400 max.	volts
D-C Plate Current	100 max.	ma.
D-C Grid Current	20 max.	ma.
Plate Input	125 max.	watts
Plate Dissipation	50 max.	watts
Typical Operation:		
D-C Plate Voltage	750 1000 1250	volts
D-C Grid Voltage †	{ -175 -200 -225	volts
	{ 8750 11400 15000	ohms
	{ 1600 1850 2150	ohms
Peak R-F Grid Voltage	300 325 350	volts
D-C Plate Current	90 90 90	ma.
D-C Grid Current **	20 17.5 15	approx. ma.
Driving Power **	5.5 5.0 4.5	approx. watts
Power Output	42 58 75	approx. watts

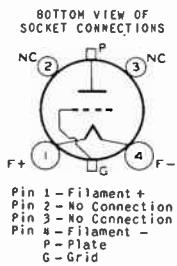
For a-c filament supply. If d.c. is used, the stated voltage values should be decreased by approx. one-half of the rated filament voltage.
 † Obtained from fixed supply, by grid resistor (8750, 11400, 15000), or cathode resistor (1600, 1850, 2150).
 ** Modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115% of the carrier conditions.
 ** Subject to wide variations as explained on sheet TRANS. TUBE RATINGS.

Data on operating frequencies for the 834 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY. See also "Cooling" under this type.



NOTE: Connections to tips P and G should be made by means of radiating connectors to which flexible circuit leads should be clamped.

TUBE MOUNTING POSITION
 VERTICAL: Base down.
 HORIZONTAL: No.



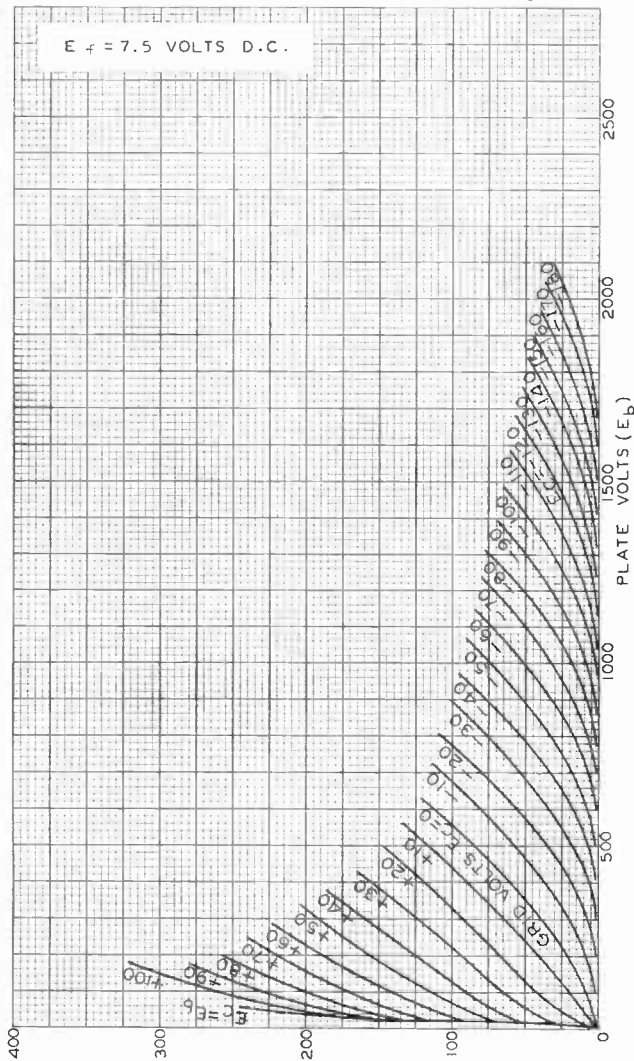


834

834

AVERAGE PLATE CHARACTERISTICS

$E_f = 7.5$ VOLTS D.C.



JAN . 21 , 1936

PLATE MILLIAMPERES
RCA RADIODRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4544



835

R-F POWER AMPLIFIER, A-F POWER AMPLIFIER, MODULATOR

Filament	Thoriated Tungsten	
Voltage	10	a-c or d-c volts
Current	3.25	amps
Amplification Factor	12	
Direct Interelectrode Capacitances:		
Grid to Plate	9.25	μf
Grid to Filament	6	μf
Plate to Filament	5	μf
Maximum Overall Length		7-7/8"
Maximum Diameter		2-5/16"
Bulb		T-1B
Base		Jumbo 4-Pin
RCA Socket (Type UT-541-A)		Stock No. 9936

For additional data, see Type 211. The 211 and the 835 are identical except for interelectrode capacitances.

Data on operating frequencies for the 835 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

836

HALF-WAVE HIGH-VACUUM RECTIFIER

Heater	Coated Unipotential Cathodes*	
Voltage	2.5	a-c volts
Current	5.0	amp.
Maximum Overall Length		6-9/16"
Maximum Diameter		2-7/16"
Bulb		ST-19
Cap		Medium
Base		Medium 4-Pin, Bayonet
RCA Socket (Type UR-542-A)		Stock No. 9937

Maximum Ratings Are Absolute Values

MAXIMUM RATINGS

Peak Inverse Plate Voltage	5000 max. volts
Peak Plate Current	1.0 max. amp.
Average Plate Current	0.25 max. amp.

* The cathodes should be allowed to come up to operating temperature before plate current is drawn from the tube. For average conditions the delay is approximately 40 seconds.

The 836 has two separate cathodes each of which is connected to its respective heater. Plate circuit return should be made to the center-tap of the heater transformer.

← Indicates a change.

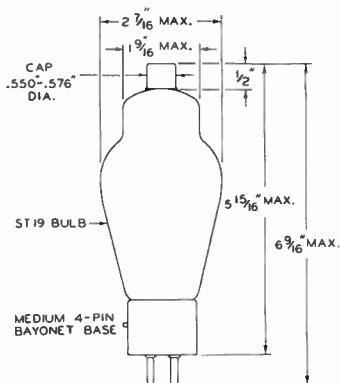
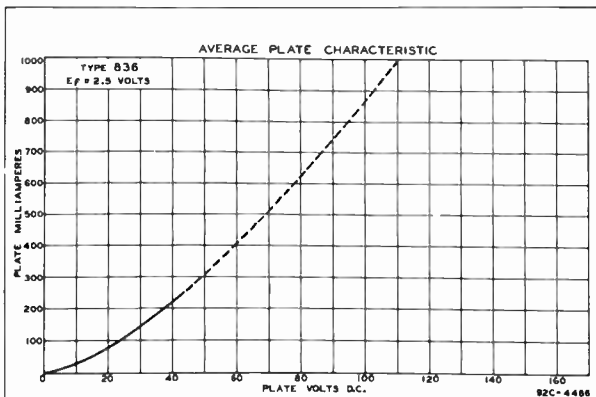
Dec. 1, 1942

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DATA



HALF-WAVE HIGH-VACUUM RECTIFIER

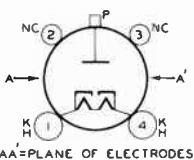


TUBE MOUNTING POSITION
Any

92C-4479R4

- Pin 1 - Heater & Cathode
- Pin 2 - No Connection
- Pin 3 - No Connection
- Pin 4 - Heater & Cathode
- Cap - Plate

BOTTOM VIEW OF
SOCKET CONNECTIONS



← Indicates a change.

Dec. 1, 1942

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DATA



837

837

R-F POWER AMPLIFIER PENTODE

Heater ^o	Coated Unipotential Cathode		
Voltage [□]	12.6	a-c or d-c volts	
Current	0.7	amp.	
Transconductance for plate current of 24 ma.	3400	μmhos	
Direct Interelectrode Capacitances:			
Grid to Plate (with external shielding)	0.20 max.	μμf	
Input	16	μμf	
Output	10	μμf	
Maximum Overall Length	5-7/8"		
Maximum Diameter	2-1/16"		
Bulb	ST-16		
Cap	Small Metal		
Base	Medium 7-Pin Ceramic, Bayonet		

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS**R-F POWER AMPLIFIER - Class B Telephony**

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

D-C Plate Voltage	500 max.	volts	
D-C Suppressor Voltage (Grid #3)	200 max.	volts	
D-C Screen Voltage (Grid #2)	200 max.	volts	
D-C Plate Current	40 max.	ma.	
Plate Input	16 max.	watts	
Suppressor Input	5 max.	watts	
Screen Input	5 max.	watts	
Plate Dissipation	12 max.	watts	

Typical Operation:

D-C Plate Voltage	400	500	500	volts
D-C Suppressor Voltage	0	0	40	volts
D-C Screen Voltage	200	200	200	volts
D-C Grid Voltage (Grid #1)	-25	-25	-25	volts
Peak R-F Grid Voltage	28	25	24	volts
Internal Shield	connected to cathode at socket			
D-C Plate Current	35	30	30	ma.
D-C Screen Current	10	15	12	ma.
D-C Grid Current	1	0	0	approx. ma.
Driving Power *	0.4	0.2	0.1	approx. watt
Power Output	4	5	5.5	approx. watts

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

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

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

D-C Plate Voltage	500 max.	volts	
D-C Screen Voltage (Grid #2)	200 max.	volts	
D-C Grid Voltage (Grid #1)	-200 max.	volts	
D-C Plate Current	40 max.	ma.	
D-C Grid Current	8 max.	ma.	
Plate Input	16 max.	watts	
Screen Input	8 max.	watts	
Plate Dissipation	12 max.	watts	

[□] Should not deviate more than ±10% from rated value.

^o See NOTE on DATA 3 page.

← Indicates a change.

APRIL 3, 1939

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DATA



R-F POWER AMPLIFIER PENTODE

(continued from preceding page)

Typical Operation:

D-C Plate Voltage	400	500	volts
D-C Suppressor Voltage (Grid #3)	-55	-65	volts
D-C Screen Voltage ^Δ	6500	14000	ohms
D-C Grid Voltage [□] §	-20	-20	volts
	2500	5700	ohms
Peak A-F Suppressor Voltage	55	65	volts
Peak R-F Grid Voltage	45	32	volts
Internal Shield	connected to cathode at socket		
D-C Plate Current	35	30	ma.
D-C Screen Current	37	23	ma.
D-C Grid Current	8	3.5	<u>approx. ma.</u>
Driving Power	0.4	0.1	<u>approx. watt</u>
Power Output	4	5	<u>approx. watts</u>

^Δ Voltage taken from unmodulated plate-voltage supply through resistor.

[□] From fixed supply or grid-leak resistor.

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

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

D-C Plate Voltage	500 max.	volts
D-C Suppressor Voltage (Grid #3)	200 max.	volts
D-C Screen Voltage (Grid #2)	200 max.	volts
D-C Grid Voltage (Grid #1)	-200 max.	volts
D-C Plate Current	40 max.	ma.
Plate Input	16 max.	watts
Suppressor Input	5 max.	watts
Screen Input	5 max.	watts
Plate Dissipation	12 max.	watts

Typical Operation:

D-C Plate Voltage	400	500	500	volts
D-C Suppressor Voltage	0	0	40	volts
D-C Screen Voltage	200	200	200	volts
D-C Grid Voltage §	-50	-45	-43	volts
Peak R-F Grid Voltage	58	48	44	volts
Peak A-F Grid Voltage	25	20	18	volts
Internal Shield	connected to cathode at socket			
D-C Plate Current	35	30	30	ma.
D-C Screen Current	9	7	6	ma.
D-C Grid Current	1	0	0	<u>approx. ma.</u>
Driving Power *	0.5	0.2	0.15	<u>approx. watt</u>
Power Output	4	5	5.5	<u>approx. watts</u>

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

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

Pentode Connection

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

D-C Plate Voltage	400 max.	volts
D-C Suppressor Voltage (Grid #3)	200 max.	volts
D-C Screen Voltage (Grid #2)	200 max.	volts
D-C Grid Voltage (Grid #1)	-200 max.	volts
D-C Plate Current	50 max.	ma.

§ See end of tabulation.

← Indicates a change.



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R-F POWER AMPLIFIER PENTODE

(continued from preceding page)

D-C Grid Current	8 max.	ma.
Plate Input	20 max.	watts
Screen Input	5 max.	watts
Suppressor Input	5 max.	watts
Plate Dissipation	8 max.	watts
Typical Operation:		
D-C Plate Voltage	400	volts
D-C Suppressor Voltage	40	volts
D-C Screen Voltage #	{ 13000	ohms
	{ 140	volts
D-C Grid Voltage [▲] §	{ -40	volts
	{ 8000	ohms
Peak R-F Grid Voltage	60	volts
Internal Shield	connected to cathode at socket	
D-C Plate Current	45	ma.
D-C Screen Current	20	ma.
D-C Grid Current	5	approx.ma.
Driving Power	0.3	approx.watt
Power Output	11	approx.watts

* From modulated fixed supply or modulated plate-voltage supply through resistor.

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

Petrode Connection - Grids #2 & #3 tied together

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

D-C Plate Voltage	400 max.	volts
D-C Screen Voltage (Grids #2 & #3)	200 max.	volts
D-C Grid Voltage (Grid #1)	-200 max.	volts
D-C Plate Current	50 max.	ma.
D-C Grid Current	8 max.	ma.
Plate Input	20 max.	watts
Screen Input	7.5 max.	watts
Plate Dissipation	8 max.	watts
Typical Operation:		
D-C Plate Voltage	400	volts
D-C Screen Voltage ##	{ 10000	ohms
	{ 100	volts
D-C Grid Voltage [▲] §	{ -70	volts
	{ 10000	ohms
Peak R-F Grid Voltage	100	volts
Internal Shield	Connected to cathode at socket	
D-C Plate Current	45	ma.
D-C Screen Current	30	ma.
D-C Grid Current	7	approx.ma.
Driving Power	0.7	approx.watt
Power Output	11	approx.watts

Preferably from unmodulated plate-voltage supply through resistor.

▲ Obtained by grid-leak resistor or by partial self-bias methods.

§ See end of tabulation.

← Indicates a change.



R-F POWER AMPLIFIER PENTODE

(continued from preceding page)

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Pentode Connection

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

D-C Plate Voltage	500 max.	volts
D-C Suppressor Voltage (Grid #3)	200 max.	volts
D-C Screen Voltage (Grid #2)	200 max.	volts
D-C Grid Voltage (Grid #1)	-200 max.	volts
D-C Plate Current	80 max.	ma.
D-C Grid Current	8 max.	ma.
Plate Input	32 max.	watts
Suppressor Input	5 max.	watts
Screen Input	8 max.	watts
Plate Dissipation	12 max.	watts

Typical Operation:

D-C Plate Voltage	400	500	500	volts
D-C Suppressor Voltage	0	0	40	volts
D-C Screen Voltage [♦]	{ 200	200	200	volts
	{ 6300	10000	20000	ohms
D-C Grid Voltage [§]	{ -40	-85	-75	volts
	{ 5000	10600	18700	ohms
Peak R-F Grid Voltage	70	120	100	volts
Internal Shield	Connected to cathode at socket			
D-C Plate Current	70	60	60	ma.
D-C Screen Current	32	30	15	ma.
D-C Grid Current	8	8	4	approx. ma.
Driving Power	0.5	0.8	0.4	approx. watt
Power Output	16	20	22	approx. watts

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Pentode Connection - Grids #2 & #3 tied together

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

D-C Plate Voltage	500 max.	volts
D-C Screen Voltage (Grids #2 & #3)	200 max.	volts
D-C Grid Voltage (Grid #1)	-200 max.	volts
D-C Plate Current	80 max.	ma.
D-C Grid Current	8 max.	ma.
Plate Input	32 max.	watts
Screen Input	8 max.	watts
Plate Dissipation	12 max.	watts

Typical Operation:

D-C Plate Voltage	400	500	volts
D-C Screen Voltage [♦]	{ 11600	28000	ohms
	{ 110	80	volts
D-C Grid Voltage [§]	{ 8700	8700	ohms
	{ -70	-70	volts
Peak R-F Grid Voltage	115	110	volts
Internal Shield	Connected to cathode at socket		

^{oo} 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.

§ See end of tabulation.

← indicates a change.



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R-F POWER AMPLIFIER PENTODE

(continued from preceding page)

D-C Plate Current	70	60	ma.
D-C Screen Current	25	15	ma.
D-C Grid Current	8	8	approx.ma.
Driving Power	0.75	0.7	approx.watt
Power Output	18	20	approx.watts

◆ obtained from fixed supply or plate-voltage supply through resistor.

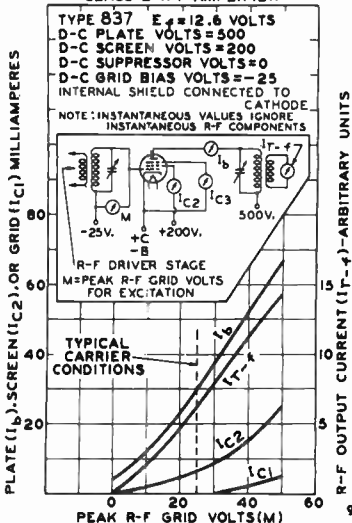
■ obtained by grid-leak resistor or other self- or fixed-bias method.

§ Maximum total effective grid circuit resistance should not exceed 25000 ohms.

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

The 837, as a crystal-controlled oscillator with either pentode or tetrode connection, may be operated under the conditions shown for class C telegraph services. Because the internal shielding in this tube is unusually effective, it generally is necessary to introduce external feedback in those circuits which depend on the control-grid-to-plate capacity for oscillation.

For use of the 837 at the higher frequencies, refer to sheet TRANS. TUBE RATINGS vs FREQUENCY.

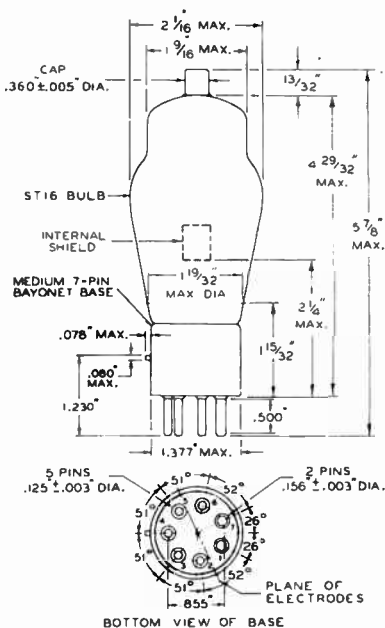
OPERATION CHARACTERISTICS
CLASS B R-F AMPLIFIER

837

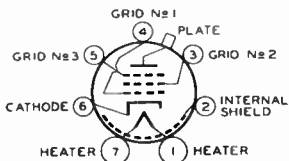


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R-F POWER AMPLIFIER PENTODE



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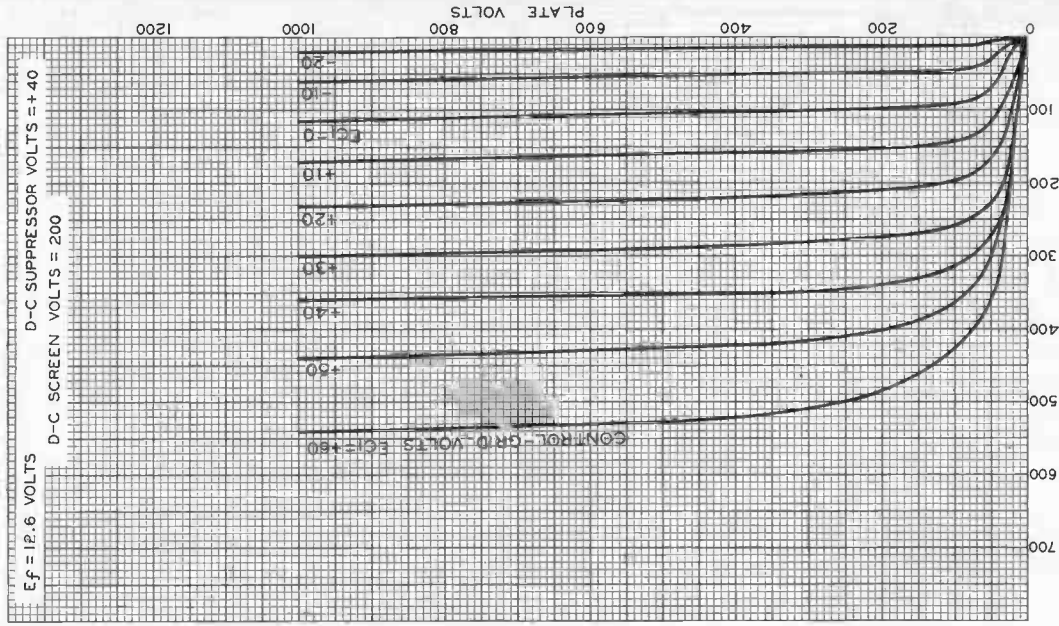
TOP VIEW OF
SOCKET CONNECTIONS

TUBE MOUNTING POSITION
VERTICAL OR HORIZONTAL



837

AVERAGE PLATE CHARACTERISTICS



837

MAR. 27, 1936

PLATE MILLIAMPERES

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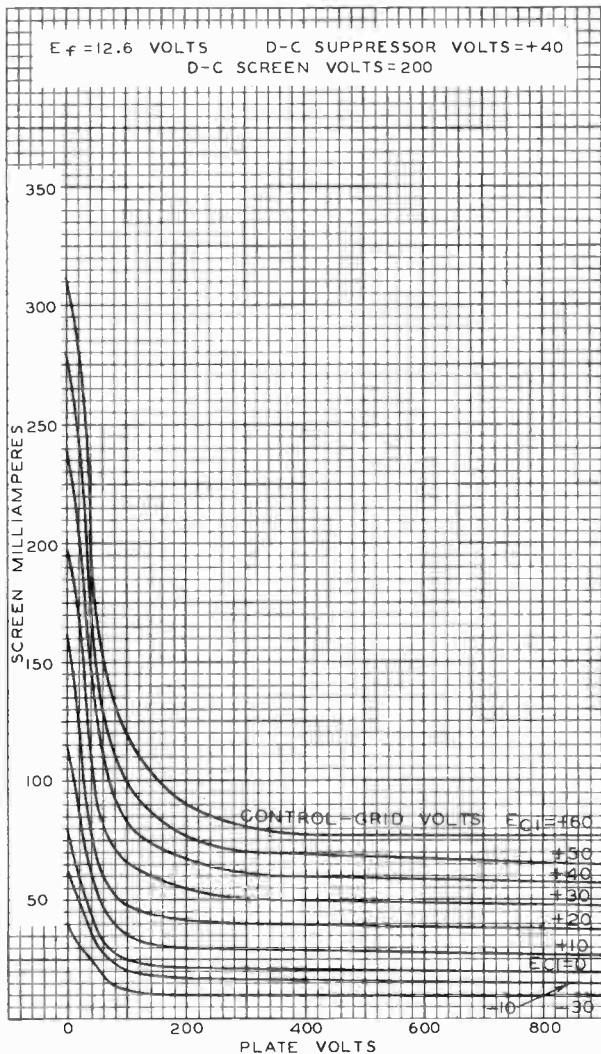
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837

AVERAGE CHARACTERISTICS



MAY 15, 1936

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 RCA MANUFACTURING COMPANY, INC.

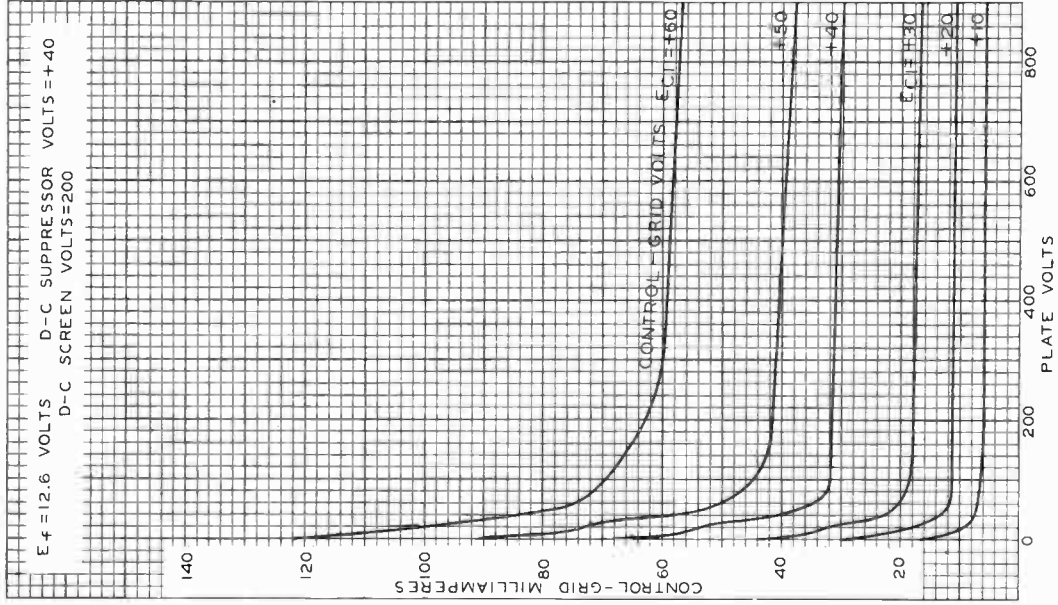
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837

837

AVERAGE CHARACTERISTICS



MAY 15, 1936

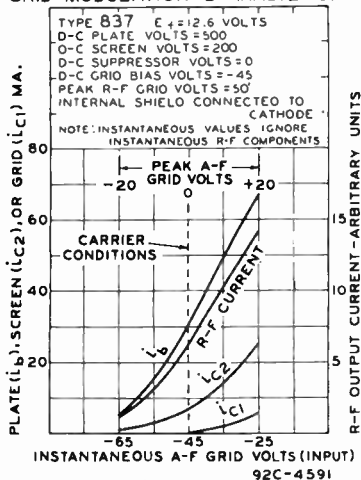
RCA RADIIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4589

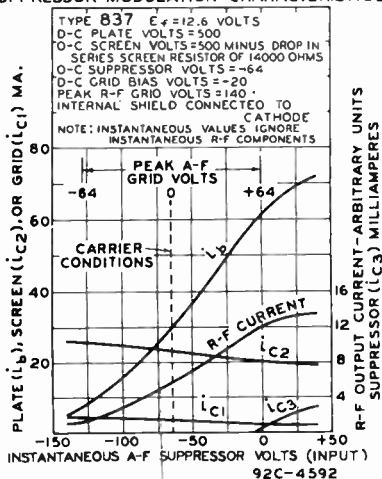


R-F POWER AMPLIFIER PENTODE

GRID MODULATION CHARACTERISTICS



SUPPRESSOR MODULATION CHARACTERISTICS





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CLASS B MODULATOR R-F POWER AMPLIFIER, OSCILLATOR

Filament	Thoriated Tungsten	
Voltage	10	a-c or d-c volts
Current	3.25	amp.
Direct Interelectrode Capacitances (approx.):		
Grid to Plate	8	μf
Grid to Filament	6.5	μf
Plate to Filament	5	μf
Maximum Overall Length		7-7/8"
Maximum Diameter		2-5/16"
Bulb		T-18
Base		Jumbo 4-Large Pin

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

A-F POWER AMPLIFIER & MODULATOR - Class B

D-C Plate Voltage	1250 max.	volts
Max.-Sig. D-C Plate Current*	175 max.	ma.
Max.-Sig. Plate Input*	220 max.	watts
Plate Dissipation*	100 max.	watts

Typical Operation - 2 tubes:

Unless otherwise specified, values are for 2 tubes.

Filament Voltage	10	10	a-c volts
D-C Plate Voltage	1000	1250	volts
D-C Grid Voltage	0	0	volts
Peak A-F Grid-to-Grid Voltage	200	200	volts
Zero-Sig. D-C Plate Current	106	146	ma.
Max.-Sig. D-C Plate Current	320	320	ma.
Load Resistance (per tube)	1725	2250	ohms
Effective Load Res. (Plate to plate)	6900	9000	ohms
Max.-Sig. Driving Power	7	7.5 approx.	watts
Max.-Sig. Power Output #	200	260 approx.	watts

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

Approximately 4% harmonic distortion.

R-F POWER AMPLIFIER - Class B Telephony

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

D-C Plate Voltage	1250 max.	volts
D-C Plate Current	150 max.	ma.
R-F Grid Current	6 max.	amp.
Plate Input	150 max.	watts
Plate Dissipation	100 max.	watts

Typical Operation:

Filament Voltage	10	10	a-c volts
D-C Plate Voltage	1000	1250	volts
D-C Grid Voltage	0	0	volts
Peak R-F Grid Voltage	70	60	volts
D-C Plate Current	130	106	ma.
D-C Grid Current**	15	15	<u>approx. ma.</u>
Driving Power ^o **	8	6	<u>approx. watts</u>
Power Output	40	42.5	<u>approx. watts</u>

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

** See next page.

← Indicates a change



CLASS B MODULATOR R-F POWER AMPLIFIER, OSCILLATOR

(continued from preceding page)

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

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

D-C Plate Voltage	1000	max.	volts
D-C Grid Voltage	-400	max.	volts
D-C Plate Current	175	max.	ma.
D-C Grid Current	70	max.	ma.
R-F Grid Current	6	max.	amp.
Plate Input	175	max.	watts
Plate Dissipation	67	max.	watts

Typical Operation:

Filament Voltage	10	10	a-c	volts
D-C Plate Voltage	750	1000		volts
D-C Grid Voltage	-100	-135		volts
Peak R-F Grid Voltage	220	255		volts
D-C Plate Current	150	150		ma.
D-C Grid Current **	60	60		<u>approx.ma.</u>
Driving Power **	14	16		<u>approx.watts</u>
Power Output	65	100		<u>approx.watts</u>

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation #

D-C Plate Voltage	1250	max.	volts
D-C Grid Voltage	-400	max.	volts
D-C Plate Current	175	max.	ma.
D-C Grid Current	70	max.	ma.
R-F Grid Current	7.5	max.	amp.
Plate Input	220	max.	watts
Plate Dissipation	100	max.	watts

Typical Operation:

Filament Voltage	10	10	10	a-c	volts
D-C Plate Voltage	750	1000	1250		volts
D-C Grid Voltage	-80	-85	-90		volts
Peak R-F Grid Voltage	190	195	200		volts
D-C Plate Current	150	150	150		ma.
D-C Grid Current **	30	30	30		<u>approx.ma.</u>
Driving Power **	6	6	6		<u>approx.watts</u>
Power Output	65	100	130		<u>approx.watts</u>

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

** Subject to wide variations as explained on sheet TRANS. TUBE RATINGS.

For use of the 838 at the higher frequencies, refer to sheet TRANS. TUBE RATINGS vs FREQUENCY.

OUTLINE DIMENSIONS, TUBE SYMBOL, and
SOCKET CONNECTIONS for the 838 are the same
as for the 211.

Indicates a change

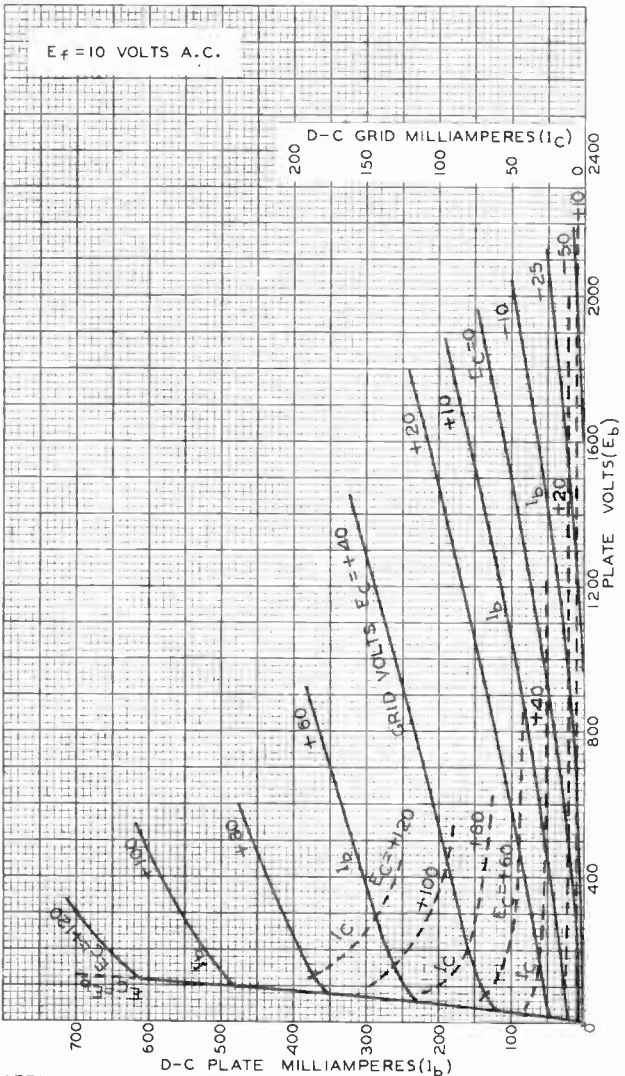


838

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AVERAGE PLATE CHARACTERISTICS

$E_f = 10$ VOLTS A.C.



APRIL 15, 1935

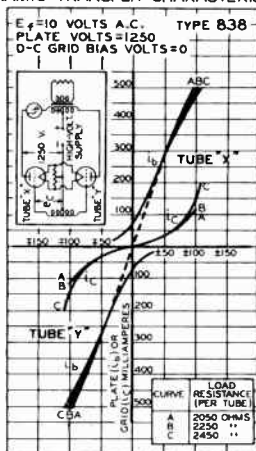
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92C-4404



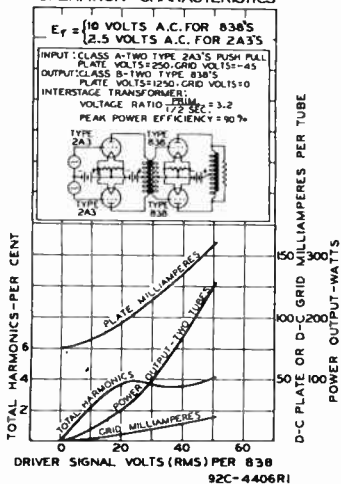
CHARACTERISTICS CURVES

DYNAMIC TRANSFER CHARACTERISTICS

INSTANTANEOUS A-F GRID VOLTS (E_c)

92C-4407R1

OPERATION CHARACTERISTICS





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R-F POWER AMPLIFIER, OSCILLATOR, A-F VOLTAGE AMPLIFIER

Filament	Thoriated Tungsten	
Voltage	7.5	a-c or d-c volts
Current	1.25	amp.
Amplification Factor	30	
Direct Interelectrode Capacitances:		
Grid to Plate	7	μmf
Grid to Filament	4	μmf
Plate to Filament	3	μmf
Maximum Overall Length		5-5/8"
Maximum Diameter		2-3/16"
Bulb		S-17
Base		Medium 4-Pin Bayonet

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

A-F VOLTAGE AMPLIFIER (Resistance-coupled)-Class A

D-C Plate Voltage	425 max.	volts
D-C Plate-Supply Voltage*	1250 max.	volts
Plate Dissipation	12 max.	watts

Typical Operation and Characteristics:

Filament Voltage	7.5	7.5	d-c volts
D-C Plate-Supply Voltage*	425	1000	volts
D-C Grid Voltage	-6	-9	volts
Peak A-F Grid Voltage	6	9	volts
D-C Plate Current	0.7	2.2	ma.
Plate Resistance	63000	40000	ohms
Transconductance	450	750	μmhos
Load Resistance	250000	250000	ohms
Voltage Output (5% second harmonic)	126	225	volts

* Voltage effective at plate is less than the plate-supply voltage by an amount equal to the voltage drop in the load resistance caused by the plate current.

A-F POWER AMPLIFIER & MODULATOR - Class B

D-C Plate Voltage	425 max.	volts
Max-Signal D-C Plate Current*	60 max.	ma.
Max-Signal Plate Input*	25 max.	watts
Plate Dissipation*	15 max.	watts

Typical Operation - 2 tubes:

Unless otherwise specified, values are for 2 tubes.

Filament Voltage	7.5	7.5	d-c volts
D-C Plate Voltage	350	425	volts
D-C Grid Voltage	-5	-5	volts
Peak A-F Grid-to-Grid Voltage	176	190	volts
Zero-Signal D-C Plate Cur.	7	13	ma.
Max-Signal D-C Plate Cur.	114	120	ma.
Load Resistance (per tube)	1300	1750	ohms
Effective Load Res. (plate to plate)	5200	7000	ohms
Max-Signal Driving Power	3.2	3.6	approx. watts
Max-Signal Power Output	21	28	approx. watts

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

← Indicates a change

APRIL 5, 1937

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA



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R-F POWER AMPLIFIER, OSCILLATOR, A-F VOLTAGE AMPLIFIER

(continued from preceding page)

R-F POWER AMPLIFIER - Class B Telephony

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

D-C Plate Voltage		450 max.	volts
D-C Plate Current		50 max.	ma.
R-F Grid Current		4 max.	amp.
Plate Input		22.5 max.	watts
Plate Dissipation		15 max.	watts

Typical Operation:

Filament Voltage	7.5	7.5	a-c volts
D-C Plate Voltage	350	450	volts
D-C Grid Voltage	-12	-15	volts
Peak R-F Grid Voltage	60	60	volts
D-C Plate Current	45	45	ma.
D-C Grid Current**	4	4	approx. ma
Driving Power** ^o	3.5	3.5	approx. watts
Power Output	4.25	6	approx. watts

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

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

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

D-C Plate Voltage		350 max.	volts
D-C Grid Voltage		-200 max.	volts
D-C Plate Current		60 max.	ma.
D-C Grid Current		20 max.	ma.
R-F Grid Current		4 max.	amp.
Plate Input		21 max.	watts
Plate Dissipation		10 max.	watts

Typical Operation:

Filament	7.5	7.5	a-c volts
D-C Plate Voltage	250	350	volts
D-C Grid Voltage	-40	-47	volts
Peak R-F Grid Voltage	125	130	volts
D-C Plate Current	50	50	ma.
D-C Grid Current**	15	15	approx. ma.
Driving Power**	2	2	approx. watts
Power Output	7	11	approx. watts

R-F POWER AMPLIFIER & MODULATOR - Class C Telegraphy

Key-down conditions per tube without modulation**

D-C Plate Voltage		450 max.	volts
D-C Grid Voltage		-200 max.	volts
D-C Plate Current		60 max.	ma.
D-C Grid Current		20 max.	ma.
R-F Grid Current		5 max.	amp.
Plate Input		27 max.	watts
Plate Dissipation		15 max.	watts

Typical Operation:

Filament Voltage	7.5	7.5	a-c volts
D-C Plate Voltage	350	450	volts
D-C Grid Voltage	-30	-34	volts
Peak R-F Grid Voltage	115	120	volts
D-C Plate Current	50	50	ma.

##, ** See next page

← Indicates a change



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R-F POWER AMPLIFIER A-F VOLTAGE AMPLIFIER

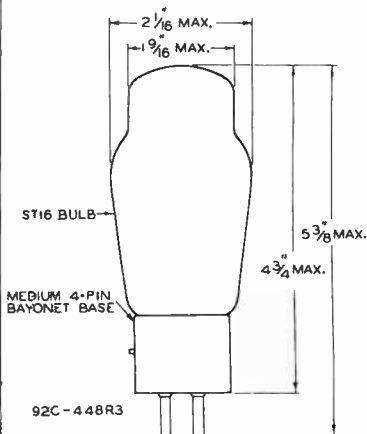
(continued from preceding page)

D-C Grid Current**	15	15 approx.ma.
Driving Power**	1.3	1.8 approx.watts
Power Output	11	15 approx.watts

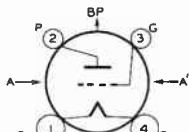
Modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115% of the carrier conditions.

** Subject to wide variations as explained on sheet TRANS.TUBE RATINGS.

For the use of the 841 at the higher frequencies refer to sheet TRANS. TUBE RATINGS vs FREQUENCY.



BOTTOM VIEW OF SOCKET CONNECTIONS



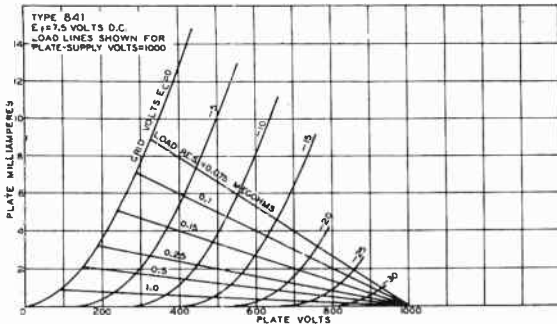
AA'=PLANE OF ELECTRODES

- pin 1 - Filament +
- pin 2 - Plate
- pin 3 - Grid
- pin 4 - Filament -
- BP - Bayonet Pin

TUBE MOUNTING POSITION

VERTICAL: Base down
HORIZONTAL: Plate in vertical plane (on edge)

AVERAGE PLATE CHARACTERISTICS



← Indicates a change.

Jan. 1, 1943

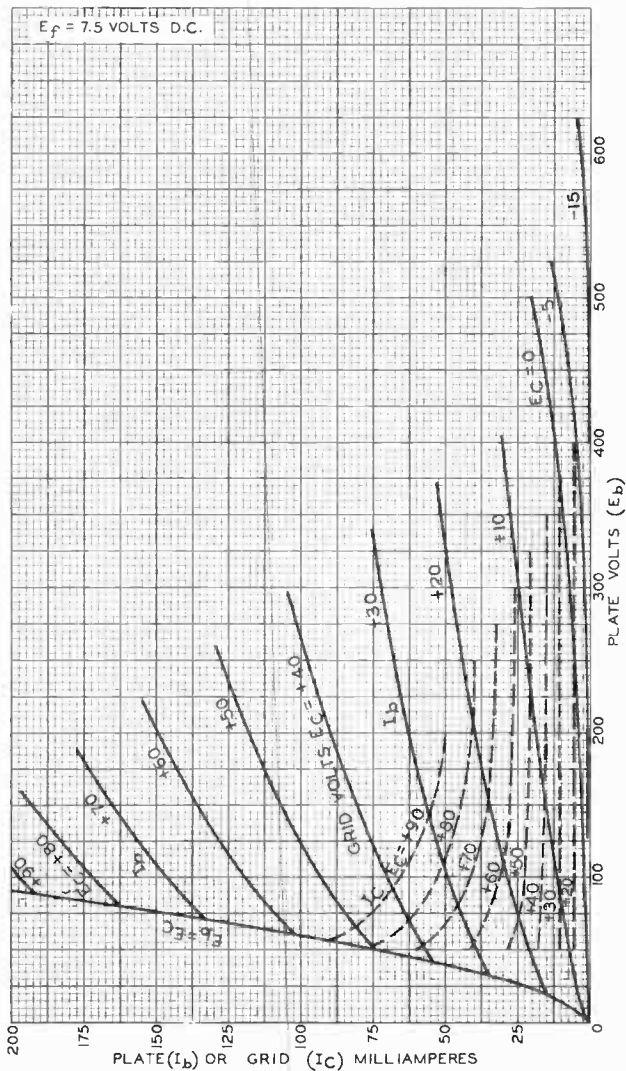
RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History

DATA 2



AVERAGE PLATE CHARACTERISTICS





842

842

A-F POWER AMPLIFIER, MODULATOR

Filament	Thoriated Tungsten	
Voltage	7.5	a-c or d-c volts
Current	1.25	amp.
Amplification Factor	3	
Direct Interelectrode Capacitances:		
Grid to Plate	7	μf
Grid to Filament	4	μf
Plate to Filament	3	μf
Maximum Overall Length	5-5/8"	
Maximum Diameter	7-3/16"	
Bulb	S-17	
Base	Medium 4-Pin Bayonet	

A-F POWER AMPLIFIER & MODULATOR - Class A

D-C Plate Voltage	425 max.		volts
Plate Dissipation	12 max.		watts
Typical Operation:			
Filament Voltage	7.5	7.5	a-c volts
D-C Plate Voltage	350	425	volts
Grid Voltage*	-72	-100	volts
Peak Grid Swing	67	95	volts
Plate Current	34	28	ma.
Mutual Conductance	1250	1200	μmhos
Plate Resistance	2400	2500	ohms
Load Resistance	5000	8000	ohms
U.P.O. (5 % second harmonic)	2.1	3.0	watts

* Grid-voltage values are given with respect to the mid-point of filament operated on a.c. If d.c. is used, each stated value of grid voltage should be decreased by 5.0 volts and should be referred to the negative end of the filament.

In cases where the 842 is employed in resistance-coupled circuits, the recommended safe maximum value of grid leak is 1.0 megohm when the self-biasing method of obtaining grid bias is used. With fixed bias, however, the d-c resistance in the grid-coupling circuit should not exceed 0.25 megohm.

OUTLINE DIMENSIONS, TUBE SYMBOL, and
SOCKET CONNECTIONS for the 842 are the same
as for the 841.

MAR. 1, 1934

DATA

RCA RADIOTRON COMPANY, INC.

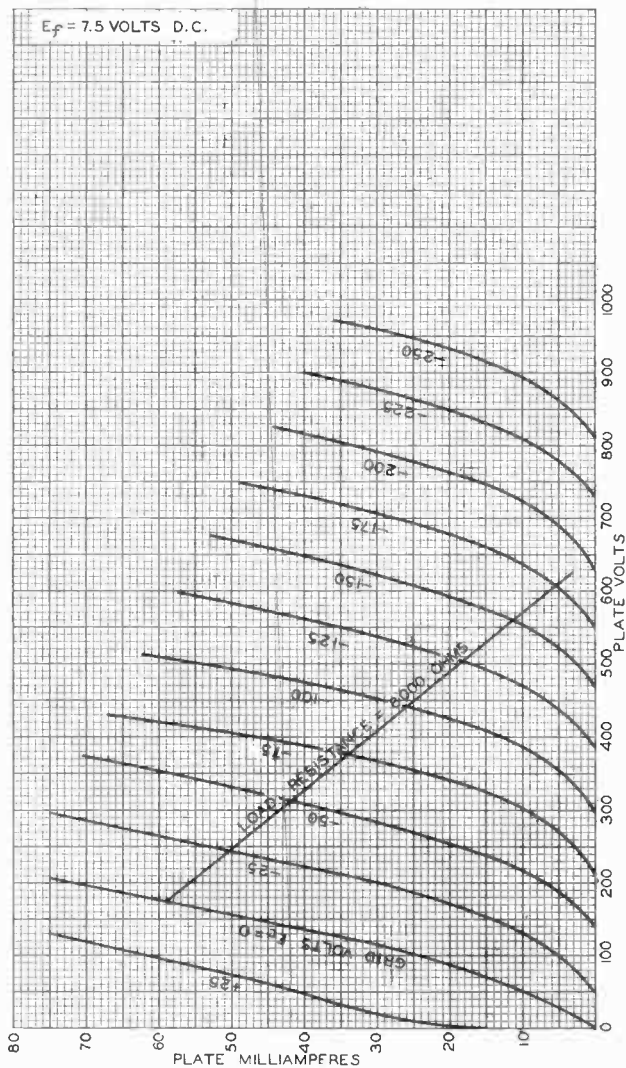
World Radio History

842



842

AVERAGE PLATE CHARACTERISTICS





843

843

R-F POWER AMPLIFIER, OSCILLATOR, A-F POWER AMPLIFIER

Heater	Coated unipotential cathode*	
Voltage	2.5	a-c or d-c volts
Current	2.5	amp.
Amplification Factor	7.7	
Direct Interelectrode Capacitances:		
Grid to Plate	4.5	μf
Grid to Cathode	4	μf
Plate to Cathode	4	μf
Maximum Overall Length		5-5/8"
Maximum Diameter		2-3/16"
Bulb		5-17
Base		Medium 5-Pin

A-F POWER AMPLIFIER - Class A

D-C Plate voltage		425 max.	volts
Plate Dissipation		12 max.	watts
Typical Operation:			
D-C Plate Voltage	350	425	volts
D-C Grid voltage	-25	-35	volts
A-F Grid Voltage	25	35	volts
D-C Plate Current	25	25	ma.
Transconductance	1600	1600	μmhos
Plate Resistance	4800	4800	ohms
Load Resistance	9500	12000	ohms
U.P.O. (5% second harmonic)	0.95	1.6	watts

The d-c resistance in the grid circuit should not exceed 0.5 megohm with cathode bias, or 0.1 megohm without cathode bias.

R-F POWER AMPLIFIER - Class B Telephony

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

D-C Plate voltage		450 max.	volts
D-C Plate Current		30 max.	ma.
Plate Dissipation		15 max.	watts
Typical Operation:			
D-C Plate Voltage	350	450	volts
Grid Voltage	-40	-55	volts
D-C Plate Current	25	25	ma.
Power Output	2	3	approx. watts

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

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

D-C Plate voltage		350 max.	volts
D-C Grid Voltage		-200 max.	volts
D-C Plate Current		40 max.	ma.
D-C Grid Current		7.5 max.	ma.
Plate Input		14 max.	watts
Plate Dissipation		10 max.	watts
Typical Operation:			
D-C Plate Voltage	250	350	volts
Grid voltage	-100	-150	volts
D-C Plate Current	30	30	ma.
D-C Grid Current	7	7	approx. ma.
Driving Power **	1.3	1.6	approx. watts
Power Output	3	5	approx. watts

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telephony

Key-down conditions per tube without modulation #

D-C Plate Voltage		450 max.	volts
D-C Grid Voltage		-200 max.	volts
D-C Plate Current		40 max.	ma.
D-C Grid Current		7.5 max.	ma.
Plate Input		18 max.	watts
Plate Dissipation		15 max.	watts
Typical Operation:			
D-C Plate Voltage	350	450	volts
Grid Voltage	-100	-140	volts
D-C Plate Current	30	30	ma.
D-C Grid Current	5	5	approx. ma.
Driving Power **	0.8	1.0	approx. watts
Power Output	5	7.5	approx. watts

* In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be limited to 45 volts.

** Subject to wide variations as explained on sheet TRANS. TUBE RATINGS.

← indicates a change.

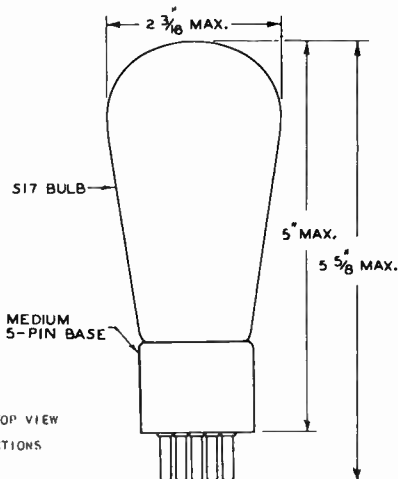
For use of the 843 at the higher frequencies, refer to sheet TRANS. TUBE RATINGS vs FREQUENCY.

843



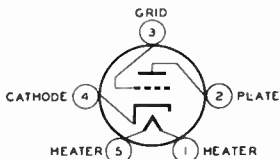
843

R-F POWER AMPLIFIER, OSCILLATOR, A-F POWER AMPLIFIER



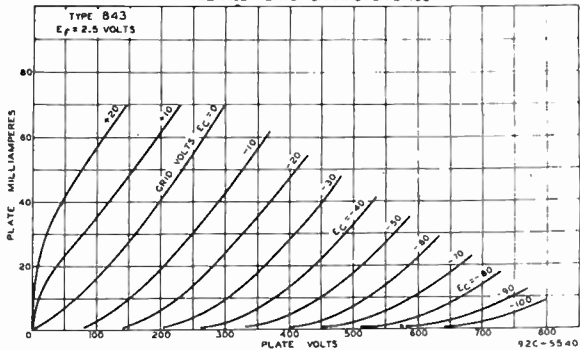
925-4337

TUBE SYMBOL & TOP VIEW
OF
SOCKET CONNECTIONS



TUBE MOUNTING POSITION
VERTICAL or HORIZONTAL

AVERAGE PLATE CHARACTERISTICS



JULY 1, 1938

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

World Radio History

DATA



845

845

MODULATOR, A-F POWER AMPLIFIER

Filament	Thoriated Tungsten	
Voltage	10	a-c or d-c volts
Current	3.25	amp.
Amplification Factor	5.3	
Direct Interelectrode Capacitances:		
Grid to Plate	13.5	μf
Grid to Filament	6	μf
Plate to Filament	6.5	μf
Maximum Overall Length		7-7/8"
Maximum Diameter		2-5/16"
Bulb		T-18
Base		Jumbo 4-Large Pin
RCA Socket		Type UT-541 ←

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS**A-F POWER AMPLIFIER & MODULATOR - Class A₁**

D-C Plate Voltage		1250 max.	volts
Plate Dissipation		100 max.	watts ←
Typical Operation:			
D-C Plate Voltage	750	1000	1250 volts
D-C Grid Voltage*	-98	-145	-195 volts
Peak A-F Grid Voltage	93	140	190 volts
D-C Plate Current	95	90	80 ma.
Transconductance	3100	3100	3100 μmhos
Plate Resistance	1700	1700	1700 ohms
Load Resistance	3400	6000	11000 ohms
U.P.O. (5% second harmonic)	15	24	30 watts

NOTE: In cases where the input circuit to the 845 is resistance coupled, the resistance in the grid circuit should not exceed 0.5 megohm when cathode bias is used. Without cathode bias, the d-c resistance in the grid-coupling circuit should not exceed 0.1 megohm.

A-F POWER AMPLIFIER & MODULATOR - Class AB₁

D-C Plate Voltage		1250 max.	volts
D-C Grid Voltage		-400 max.	volts
D-C Plate Current		120 max.	ma.
Plate Input		150 max.	watts
Plate Dissipation		100 max.	watts

Typical Operation:

Unless otherwise specified, values are for 2 tubes

D-C Plate Voltage	1000	1250	volts
D-C Grid Voltage*	-175	-225	volts
Peak A-F Grid-to-Grid Voltage	340	440	volts
Zero-Signal D-C Plate Current	40	40	ma.
Max.-Signal D-C Plate Current	230	240	ma.
Load Resistance (per tube)	1150	1650	ohms
Effective Load Res. (plate to plate)	4600	6600	ohms
Max.-Signal Power Output	75	115	approx. watts

* with a-c filament supply.

OUTLINE DIMENSIONS, TUBE SYMBOL, and SOCKET CONNECTIONS
for the 845 are the same as for the 211.

← Indicates a change.

April 15, 1940

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA

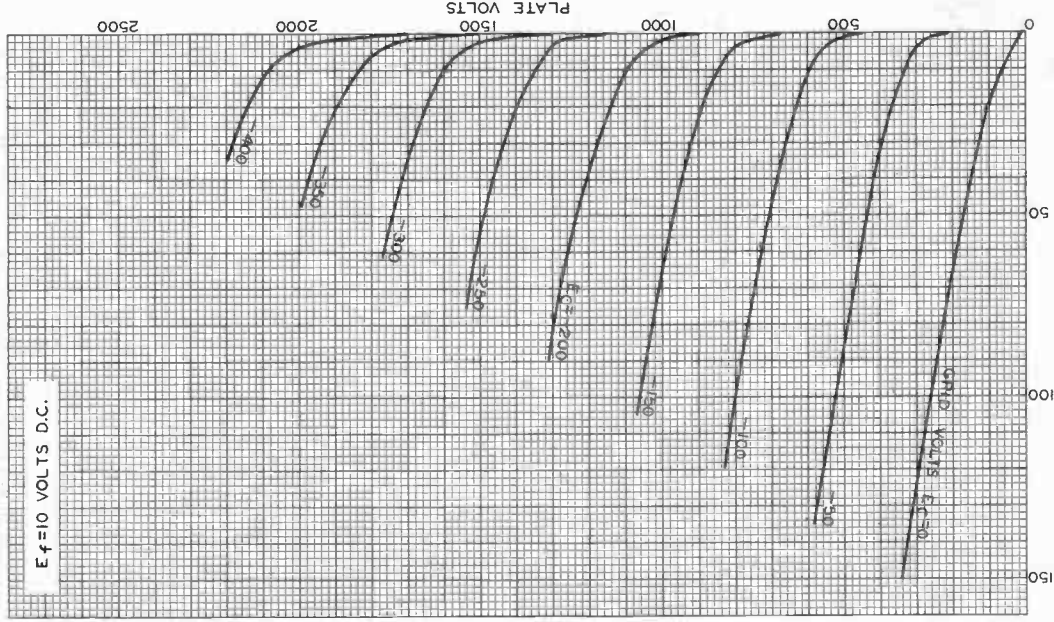
World Radio History



845

AVERAGE PLATE CHARACTERISTICS

$E_f = 10$ VOLTS D.C.



NOV. 1, 1933

PLATE MILLIAMPERES

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-5310

845



846

OSCILLATOR, R-F POWER AMPLIFIER (WATER COOLED)

Filament	Tungsten	
Voltage	11	a-c or d-c volts
Current	51	amp.
Amplification Factor	40	
Direct Interelectrode Capacitances (approx.):		
Grid to Plate	9	$\mu\mu\text{f}$
Grid to Filament	6.5	$\mu\mu\text{f}$
Plate to Filament	1.5	$\mu\mu\text{f}$
Maximum Overall Length		9-1/2"
Maximum Radius		3-3/8"
Base		None
Water Jacket		Special

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

This tube can often be operated at reduced filament voltage as explained on sheet TYPES OF CATHODES in front of book.

R-F POWER AMPLIFIER - Class B Telephony

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

D-C Plate Voltage	7500 max.	volts
D-C Plate Current	0.5 max.	amp.
R-F Grid Current	24 max.	amp.
Plate Input	3.75 max.	kw
Plate Dissipation	2.5 max.	kw
Typical Operation:		
Filament Voltage	11	d-c volts
D-C Plate Voltage	7000	volts
D-C Grid Voltage	-100	approx. volts
Peak R-F Grid Voltage ^o	1275	approx. volts
D-C Plate Current	0.45	amp.
Driving Power ^{** o}	175	approx. watts
Power Output	1	approx. kw

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

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

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

D-C Plate Voltage	6000 max.	volts		
D-C Grid Voltage	-1000 max.	volts		
D-C Plate Current	0.5 max.	amp.		
D-C Grid Current	0.15 max.	amp.		
R-F Grid Current	24 max.	amp.		
Plate Input	3 max.	kw		
Plate Dissipation	1.66 max.	kw		
Typical Operation:				
Filament Voltage	11	11	11	a-c volts
D-C Plate Voltage	4000	5000	6000	volts
D-C Grid Voltage	-850	-900	-950	approx. volts

** See next page.

(continued on next page)



846 OSCILLATOR, R-F POWER AMPLIFIER

(continued from preceding page)

Peak R-F Grid Voltage	1600	1700	1950	<u>approx.volts.</u>
D-C Plate Current	0.3	0.4	0.5	amp.
D-C Grid Current**	0.080	0.100	0.125	<u>approx.amp.</u>
Driving Power**	125	175	200	<u>approx.watts</u>
Power Output	0.9	1.5	2.25	<u>approx.kw</u>

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation #

D-C Plate Voltage			7500 max.	volts
D-C Grid Voltage			-1000 max.	volts
D-C Plate Current			1.0 max.	amp.
D-C Grid Current			0.15 max.	amp.
R-F Grid Current			30 max.	amp.
Plate Input			7.5 max.	kw
Plate Dissipation			2.5 max.	kw

Typical Operation:

Filament Voltage	11	11	11	a-c volts
D-C Plate Voltage	5000	6000	7000	volts
D-C Grid Voltage	-800	-850	-900	<u>approx.volts</u>
Peak R-F Grid Voltage	1850	2040	2300	<u>approx.volts</u>
D-C Plate Current	0.60	0.75	0.90	amp.
D-C Grid Current**	0.11	0.125	0.14	<u>approx.amp.</u>
Driving Power**	175	235	300	<u>approx.watts</u>
Power Output	2	3	4.25	<u>approx.kw</u>

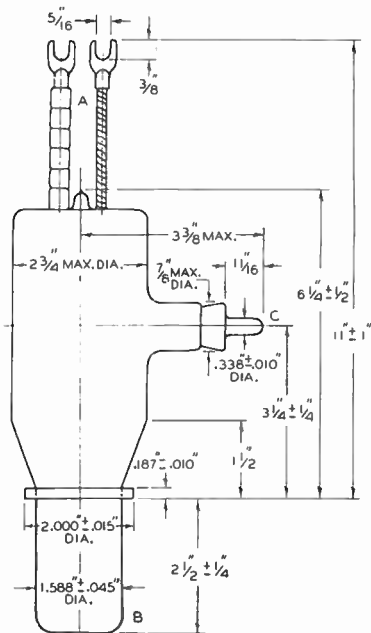
* Modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115% of the carrier conditions.

** Subject to wide variations as explained on sheet TRANS. TUBE RATINGS.

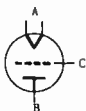
For use of the 846 at the higher frequencies, refer to sheet TRANS. TUBE RATINGS vs Frequency.



846 OSCILLATOR, R-F POWER AMPLIFIER



TUBE SYMBOL
AND
TERMINAL CONNECTIONS

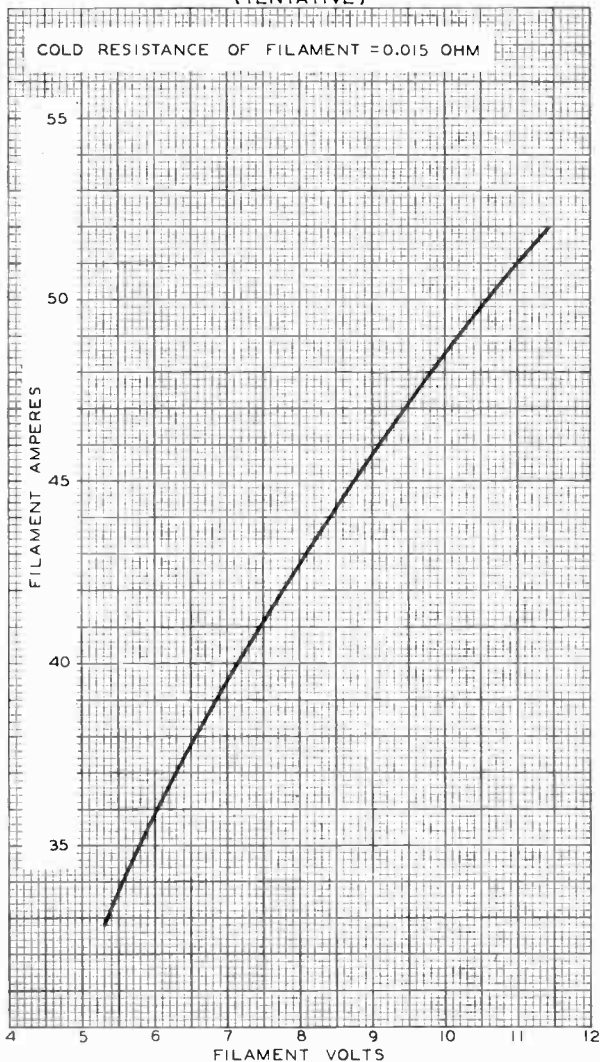


A - Filament
B - Plate
C - Grid

846



846

AVERAGE FILAMENT CHARACTERISTIC
(TENTATIVE)

JUNE 19, 1935

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4503

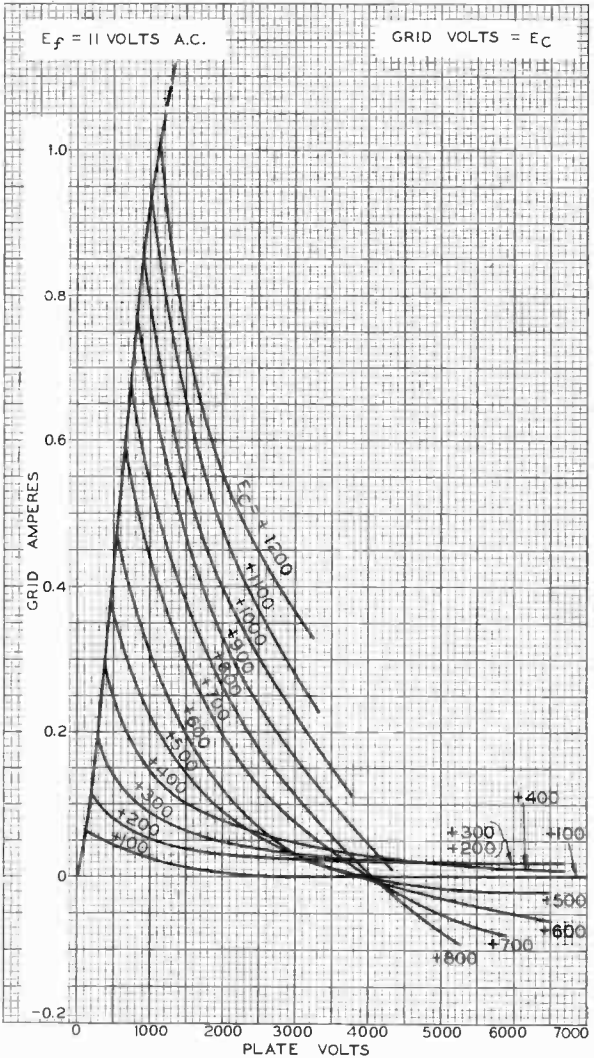
World Radio History



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846

TYPICAL CHARACTERISTICS



JUNE 21, 1934

RCA RADITRON DIVISION
RCA MANUFACTURING COMPANY, INC.

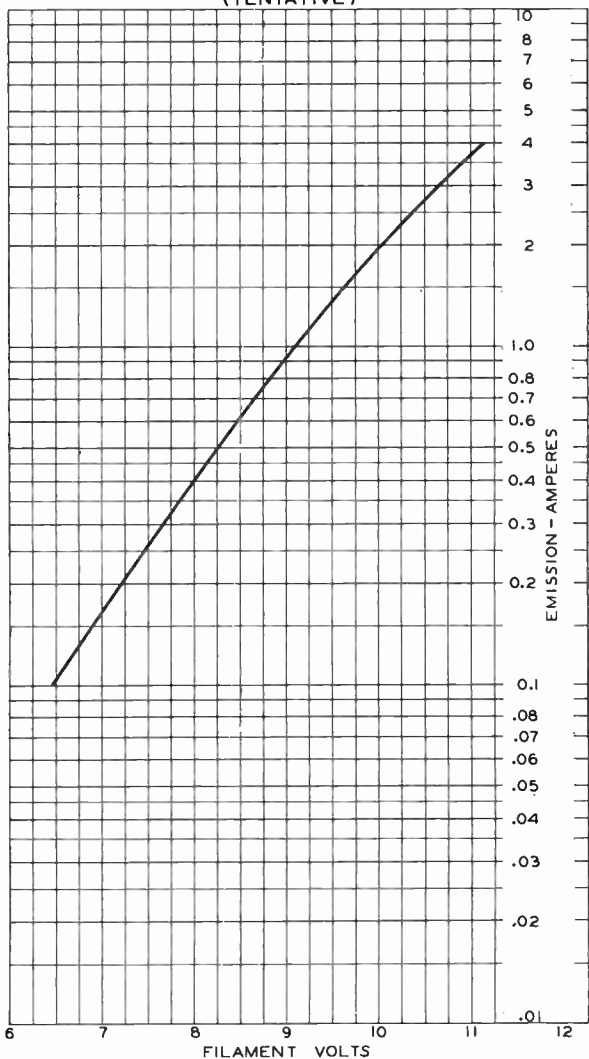
925-5554



846

846

AVERAGE FILAMENT-EMISSION CHARACTERISTIC (TENTATIVE)



DEC. 21, 1932

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4504

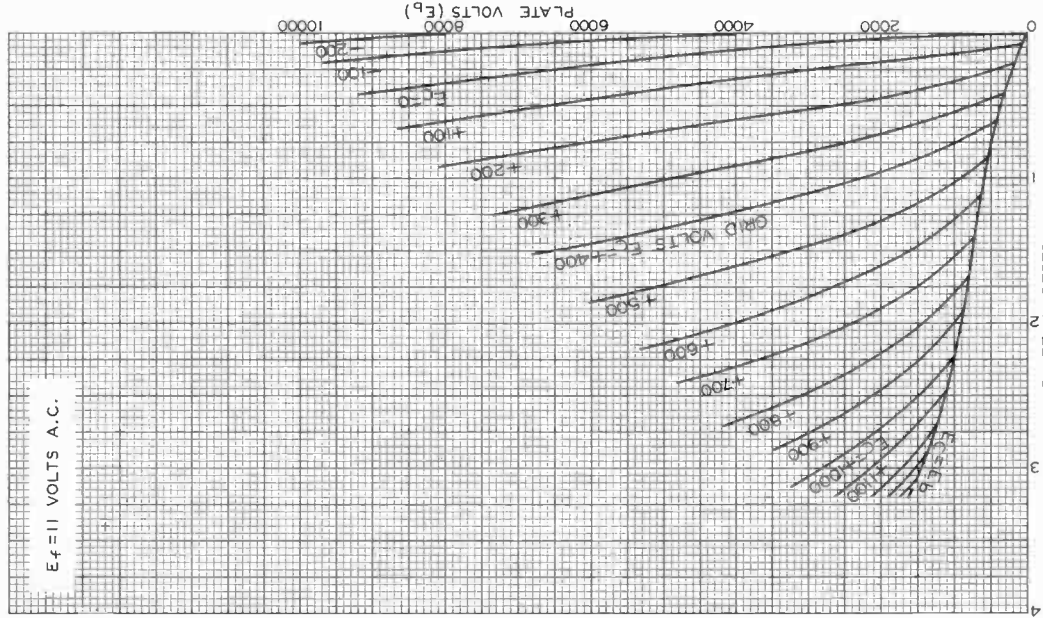


846

846

AVERAGE PLATE CHARACTERISTICS

$E_f = 11$ VOLTS A.C.



World Precision

JUNE 21, 1934

RCA RADIIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

925 - 5493 RI



849

849

MODULATOR, A-F POWER AMPLIFIER, R-F POWER AMPLIFIER, OSCILLATOR

Filament	Thoriated Tungsten	
Voltage	11	a-c or d-c volts
Current	5	amp.
Amplification Factor	19	
Direct Interelectrode Capacitances:		
Grid to Plate	33.5	μmf
Grid to Filament	17	μmf
Plate to Filament	3	μmf
Overall Length		14-1/4" \pm 1/8"
Maximum Diameter		4-1/16"
Bulb		T-32
Cap		No. 1904
Base		No. 3503
RCA End-Mountings		Types UT-1085, UT-1086

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

A-F POWER AMPLIFIER & MODULATOR - Class A

D-C Plate Voltage		3000 max.	volts	
Plate Dissipation		300 max.	watts	
Typical Operation:				
D-C Plate Voltage	2000	2500	3000	volts
D-C Grid Voltage	-74	-104	-132	volts
Peak A-F Grid Voltage	68	98	126	volts
D-C Plate Current	0.135	0.110	0.100	amp.
Mutual Conductance	6500	6050	5850	μmhos
Plate Resistance	2950	3150	3250	ohms
Load Resistance	6000	12000	18000	ohms
U.P.O. (5% second harmonic)	58	81	100	watts

The d-c resistance in the grid circuit should not exceed 0.25 megohm with cathode bias; 25000 ohms without cathode bias.

A-F POWER AMPLIFIER & MODULATOR - Class B

D-C Plate Voltage		3000 max.	volts
Max.-Signal D-C Plate Current *		0.35 max.	amp.
Max.-Signal Plate Input *		825 max.	watts
Plate Dissipation *		300 max.	watts
Typical Operation:			

Unless otherwise specified, values are for 2 tubes

D-C Plate Voltage	2000	2500	3000	volts
D-C Grid Voltage	-105	-130	-155	volts
Peak A-F Grid-to-Grid Volt.	450	480	500	volts
Zero-Sig. D-C Plate Cur.	0.014	0.02	0.024	amp.
Max.-Sig. D-C Plate Cur.	0.55	0.56	0.52	amp.
Load Resistance (per tube)	1600	2600	3200	ohms
Effective Load Resistance				
(plate to plate)	6400	10400	12800	ohms
Max.-Signal Driving Power	16	14	12	approx. watts
Max.-Signal Power Output	900	1000	1100	approx. watts

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

← Indicates a change.

SEPT. 23, 1935 (7-38)

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA



MODULATOR, A-F POWER AMPLIFIER. R-F POWER AMPLIFIER, OSCILLATOR

(continued from preceding page)

R-F POWER AMPLIFIER - Class B Telephony

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

D-C Plate Voltage	2500 max.	volts
D-C Plate Current	0.35 max.	amp.
Plate Input	600 max.	watts
Plate Dissipation	400 max.	watts

Typical Operation:

D-C Plate Voltage	1500	2000	2500	volts
D-C Grid Voltage	-70	-95	-125	volts
Peak R-F Grid Voltage	140	140	140	volts
D-C Plate Current	0.320	0.265	0.216	amp.
D-C Grid Current **	5	3	1	approx.ma.
Driving Power ** 0	18	15	12	approx.watts
Power Output	150	170	180	approx.watts

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

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

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

D-C Plate Voltage	2000 max.	volts
D-C Grid Voltage	-500 max.	volts
D-C Plate Current	0.35 max.	amp.
D-C Grid Current	0.125 max.	amp.
Plate Input	700 max.	watts
Plate Dissipation	270 max.	watts

Typical Operation:

D-C Plate Voltage	1500	2000	volts
D-C Grid Voltage ¶	{ 7100	10000	ohms
	{ -250	-300	volts
Peak R-F Grid Voltage	400	450	volts
D-C Plate Current	0.3	0.3	amp.
D-C Grid Current **	0.035	0.03	approx.amp.
Driving Power **	14	14	approx.watts
Power Output	300	425	approx.watts

¶ Obtained by grid leak or partial self-bias methods.

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation **

D-C Plate Voltage	2500 max.	volts
D-C Grid Voltage	-500 max.	volts
D-C Plate Current	0.35 max.	amp.
D-C Grid Current	0.125 max.	amp.
Plate Input	875 max.	watts
Plate Dissipation	400 max.	watts

Typical Operation:

D-C Plate Voltage	1500	2000	2500	volts
D-C Grid Voltage Δ	{ 5000	8000	12500	ohms
	{ -175	-200	-250	volts
Peak R-F Grid Voltage	310	325	360	volts
D-C Plate Current	0.3	0.3	0.3	amp.

**, #, Δ: See next page.

← Indicates a change.



849

849

MODULATOR, A-F POWER AMPLIFIER, R-F POWER AMPLIFIER, OSCILLATOR

(continued from preceding page)

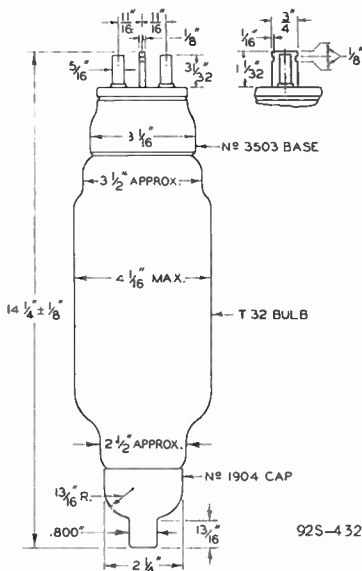
D-C Grid Current **	0.035	0.025	0.02	approx. amp.
Driving Power **	11	9	8	approx. watts
Power Output	300	425	560	approx. watts

△ Obtained by grid-leak resistor or other self- or fixed-bias method.

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

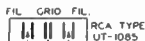
** Subject to wide variations as explained on sheet TRANS. TUBE RATINGS.

For use of the 849 at the higher frequencies, refer to sheet TRANS. TUBE RATINGS vs FREQUENCY.



92S-4327

TUBE SYMBOL & CONNECTIONS TO END-MOUNTINGS



RCA TYPE
UT-1086
PLATE

TUBE MOUNTING POSITION

VERTICAL: Filament base (large) up.
HORIZONTAL: Filament in vertical
plane (on edge).

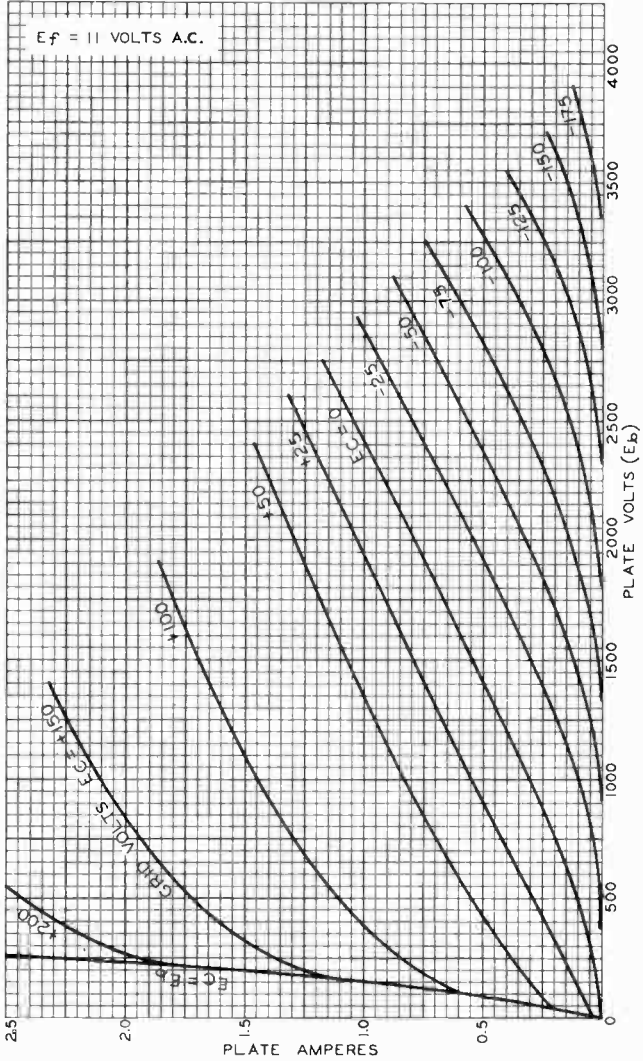
SEPT. 23, 1935 (7-38)

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA 2



AVERAGE PLATE CHARACTERISTICS

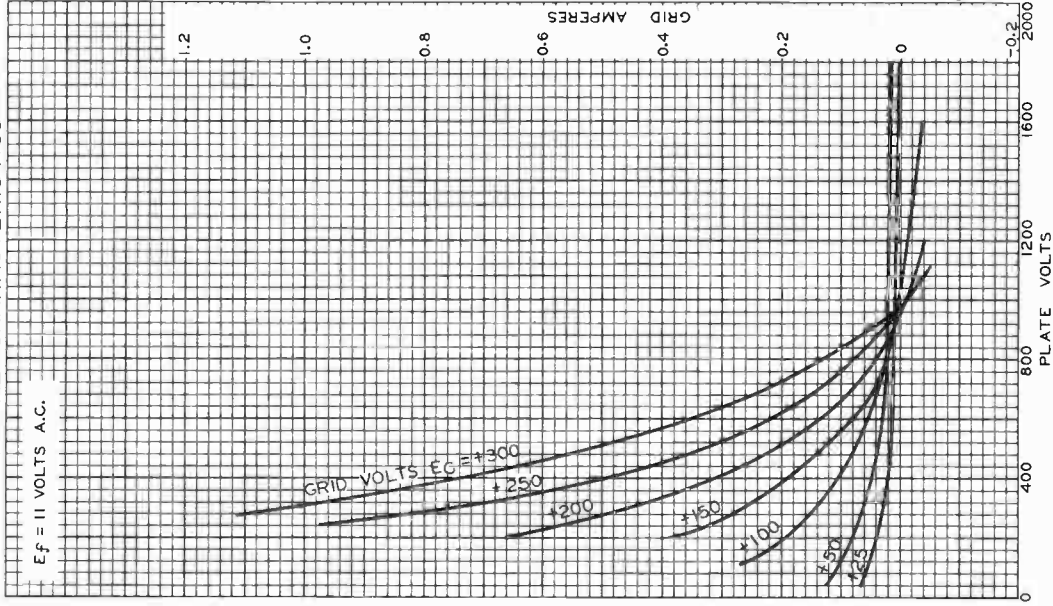




849

849

TYPICAL CHARACTERISTICS



JUNE 3, 1935

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

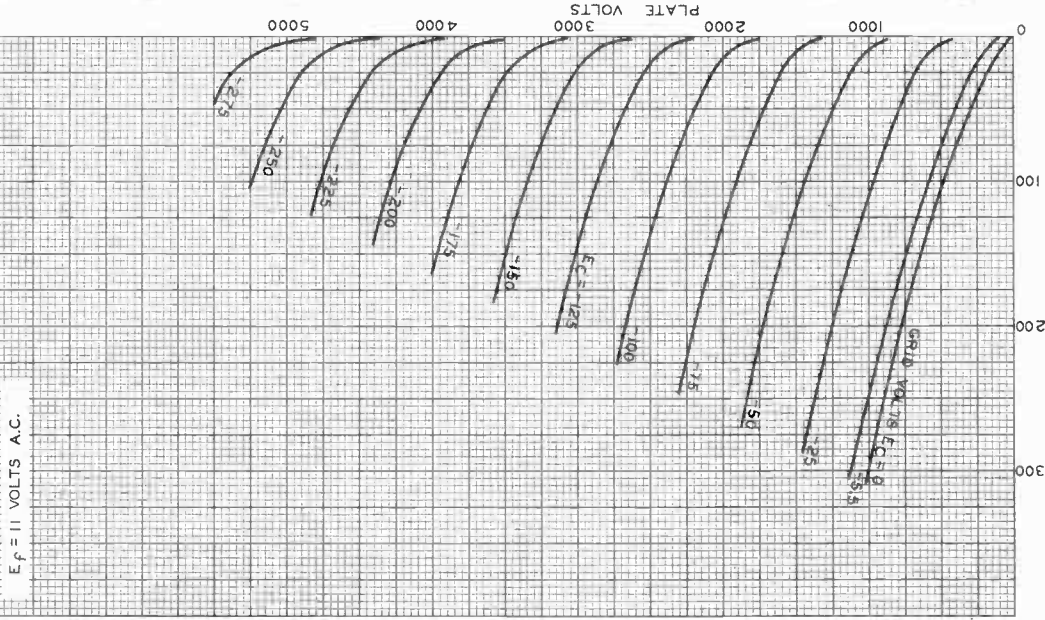
92C-4457

849



849

AVERAGE PLATE CHARACTERISTICS



APRIL 24, 1928

PLATE MILLIAMPERES
 RCA RADIODIODE DIVISION
 RCA MANUFACTURING COMPANY, INC.

925-5408



850

850

SCREEN GRID R-F POWER AMPLIFIER

Filament	Thoriated Tungsten	
Voltage	10	a-c or d-c volts
Current	3.25	amp.
Amplification Factor	550 approx.	
Mutual Conductance for plate current of 19.5 ma.	2750	μhos
Direct Interelectrode Capacitances (approx.):		
Grid to Plate	0.25# max.	μpf
Input	17	μpf
Output	25	μpf
Maximum Overall Length		8-1/2"
Maximum Diameter		2-5/16"
Bulb		T-18
Cap		Medium Metal
Base		Jumbo 4-Large Pin

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS**R-F POWER AMPLIFIER - Class B Telephony**

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

D-C Plate Voltage	1250 max.	volts
D-C Plate Current	150 max.	ma.
R-F Grid Current	6 max.	amp.
Plate Input	150 max.	watts
Screen Input	10 max.	watts
Plate Dissipation	100 max.	watts
Typical Operation:		
Filament Voltage	10	10 a-c volts
D-C Plate Voltage	1000	1250 volts
D-C Screen Voltage	175	175 volts
D-C Grid Voltage	-13	-13 volts
D-C Plate Current	100	110 ma.
Power Output	30	40 approx. watts

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

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

D-C Plate Voltage	1000 max.	volts
D-C Grid Voltage	400 max.	volts
D-C Plate Current	150 max.	ma.
D-C Grid Current	40 max.	ma.
R-F Grid Current	6 max.	amp.
Plate Input	150 max.	watts
Screen Input	7 max.	watts
Plate Dissipation	70 max.	watts
Typical Operation:		
Filament Voltage	10	10 a-c volts
D-C Plate Voltage	750	1000 volts
D-C Screen Voltage	125	140 volts
D-C Grid Voltage	-100	-100 volts
D-C Plate Current	140	125 ma.
D-C Grid Current*	40	40 approx. ma.
Driving Power*	10	10 approx. watts
Power Output	50	65 approx. watts

* with external shielding. (continued on next page)

* See next page.

JAN. 15, 1937

RCA RADITRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA



SCREEN GRID R-F POWER AMPLIFIER

(continued from preceding page)

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation **

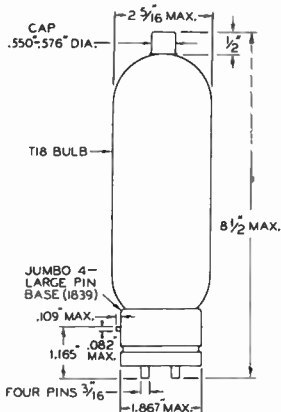
D-C Plate Voltage	1250 max.	volts
D-C Grid Voltage	-400 max.	volts
D-C Plate Current	175 max.	ma.
D-C Grid Current	40 max.	ma.
R-F Grid Current	7.5 max.	amp.
Plate Input	220 max.	watts
Screen Input	10 max.	watts
Plate Dissipation	100 max.	watts

Typical Operation:

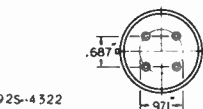
Filament Voltage	10	10	10	a-c volts
D-C Plate Voltage	750	1000	1250	volts
D-C Screen Voltage	175	175	175	volts
D-C Grid Voltage	-150	-150	-150	volts
D-C Plate Current	160	160	160	ma.
D-C Grid Current *	35	35	35	approx. ma.
Driving Power *	10	10	10	approx. watts
Power Output	55	100	130	approx. watts

* Subject to wide variations as explained on sheet TRANS. TUBE RATINGS.

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



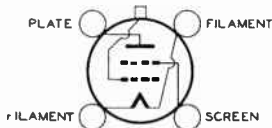
For use of the 850 at the higher frequencies, refer to sheet TRANS. TUBE RATINGS vs FREQUENCY.



92S-4322

BOTTOM VIEW OF BASE

TUBE SYMBOL & TOP VIEW OF SOCKET CONNECTIONS

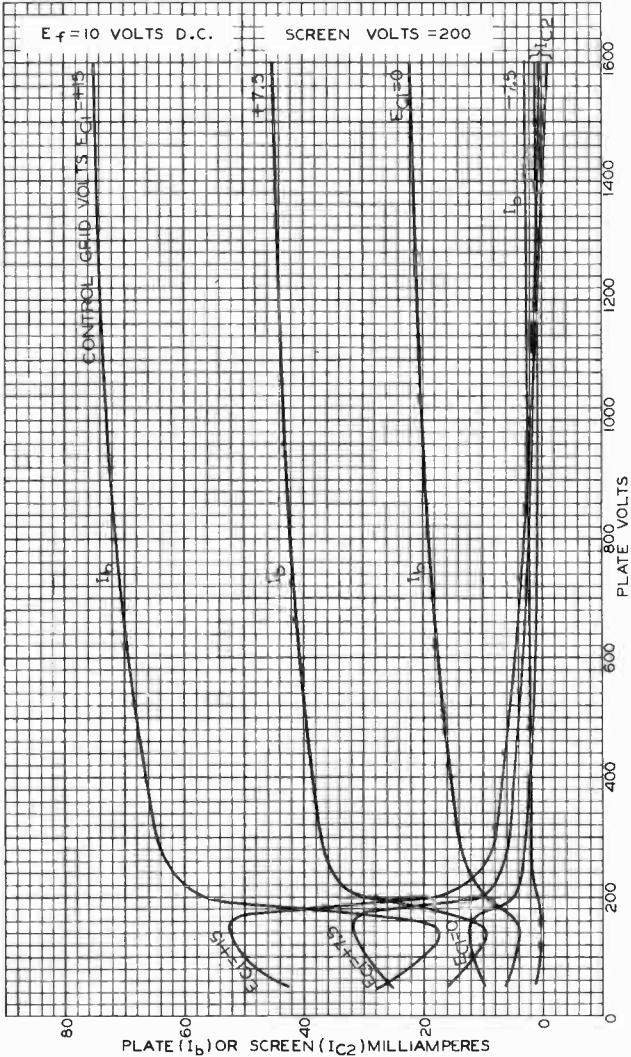




850

850

AVERAGE PLATE CHARACTERISTICS

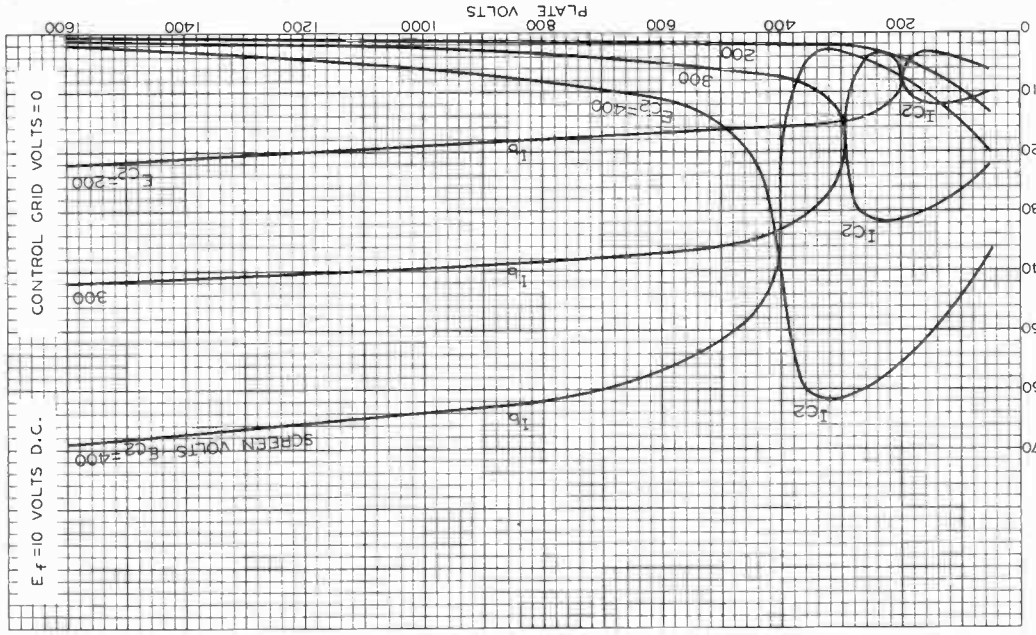


850



850

AVERAGE PLATE CHARACTERISTICS





851

MODULATOR, A-F POWER AMPLIFIER, R-F POWER AMPLIFIER, OSCILLATOR

851

Filament	Thoriated Tungsten	
Voltage	11	a-c or d-c volts
Current	15.5	amp.
Amplification Factor	20.5	
Direct Interelectrode Capacitances (approx.):		
Grid to Plate	47	μf
Grid to Filament	25.5	μf
Plate to Filament	4.5	μf
Overall Length	17-1/2" \pm 1/8"	
Maximum Diameter	6-1/8"	
Bulb	T-48	
Cap	No.1902	
Base	No.3117	

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

A-F POWER AMPLIFIER & MODULATOR - Class A

D-C Plate Voltage	2500 max.		volts
Plate Dissipation	600 max.		watts
Typical Operation:			
Filament Voltage	11	11	11 a-c volts
D-C Plate Voltage	1500	2000	2500 volts
D-C Grid Voltage	-49	-65	-92 volts
Peak A-F Grid Voltage	44	60	87 volts
D-C Plate Current	175	270	240 ma.
Plate Resistance	1800	1500	1600 ohms
Load Resistance	3700	3100	5000 ohms
Power Output	46	100	160 watts

A-F POWER AMPLIFIER & MODULATOR - Class B

D-C Plate Voltage	3000 max.		volts
Max-Signal D-C Plate Current*	1 max.		amp.
Max-Signal Plate Input*	2250 max.		watts
Plate Dissipation*	750 max.		watts
Typical Operation - 2 tubes:			

Unless otherwise specified, values are for 2 tubes.

Filament Voltage	11	11	11	a-c volts
D-C Plate Voltage	2000	2500	3000	volts
D-C Grid Voltage	-85	-111	-135	volts
Peak A-F Grid-to-Grid Volt.	500	490	490	volts
Zero-Signal D-C Plate Cur.	0.12	0.12	0.11	amp.
Max-Signal D-C Plate Cur.	1.7	1.4	1.2	amp.
Load Resistance (per tube)	650	1000	1400	ohms
Effective Load Resistance (plate to plate)	2600	4000	5600	ohms
Max-Signal Driving Power	20	12	6 approx.	watts
Max-Signal Power Output	2.2	2.3	2.4 approx.	kw

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

← Indicates a change

SEPT. 23, 1935 (4-37)

RCA RADIODRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA



851

**MODULATOR, A-F POWER AMPLIFIER,
R-F POWER AMPLIFIER, OSCILLATOR**

(continued from preceding page)

R-F POWER AMPLIFIER - Class B Telephony

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

D-C Plate Voltage	2500	max.	volts
D-C Plate Current	0.75	max.	amp.
R-F Grid Current	8	max.	amp.
Plate Input	1100	max.	watts
Plate Dissipation	750	max.	watts

Typical Operation:

Filament Voltage	11	11	11	a-c	volts
D-C Plate Voltage	1500	2000	2500		volts
D-C Grid Voltage	-60	-85	-110		volts
Peak R-F Grid Voltage	150	140	135		volts
D-C Plate Current	0.62	0.475	0.39		amp.
Driving Power ** 0	40	25	20	approx.	watts
Power Output	275	300	325	approx.	watts

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

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

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

D-C Plate Voltage	2000	max.	volts
D-C Grid Voltage	-500	max.	volts
D-C Plate Current	1	max.	amp.
D-C Grid Current	0.2	max.	amp.
R-F Grid Current	8	max.	amp.
Plate Input	1800	max.	watts
Plate Dissipation	500	max.	watts

Typical Operation:

Filament Voltage	11	11	a-c	volts
D-C Plate Voltage	1500	2000		volts
D-C Grid Voltage	-250	-300		volts
Peak R-F Grid Voltage	475	525		volts
D-C Plate Current	0.9	0.85		amp.
D-C Grid Current **	0.15	0.125	approx.	amp.
Driving Power **	75	65	approx.	watts
Power Output	900	1250	approx.	watts

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation*

D-C Plate Voltage	2500	max.	volts
D-C Grid Voltage	-500	max.	volts
D-C Plate Current	1	max.	amp.
D-C Grid Current	0.2	max.	amp.
R-F Grid Current	10	max.	amp.
Plate Input	2500	max.	watts
Plate Dissipation	750	max.	watts

Typical Operation:

Filament Voltage	11	11	11	a-c	volts
D-C Plate Voltage	1500	2000	2500		volts

*, ** See next page.

← indicates a change



851

MODULATOR, A-F POWER AMPLIFIER, R-F POWER AMPLIFIER, OSCILLATOR

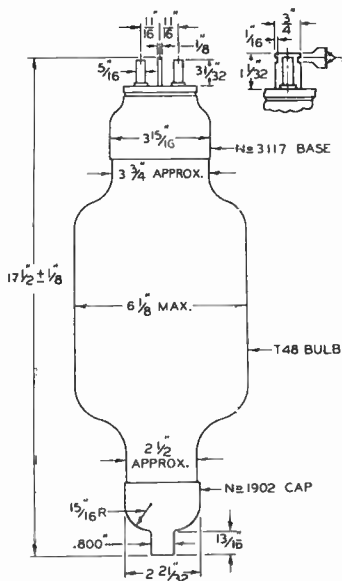
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D-C Grid Voltage	-150	-200	-250	approx.volts
Peak R-F Grid Voltage	375	425	450	approx.volts
D-C Plate Current	0.9	0.9	0.9	amp.
D-C Grid Current **	0.15	0.12	0.1	approx.amp.
Driving Power **	55	50	45	approx.watts
Power Output	900	1250	1700	approx.watts

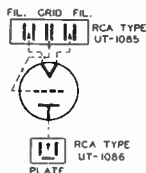
** Subject to wide variations as explained on sheet TRANS, TUBE RATINGS.

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

For use of the 851 at the higher frequencies, refer to sheet TRANS. TUBE RATINGS vs FREQUENCY.

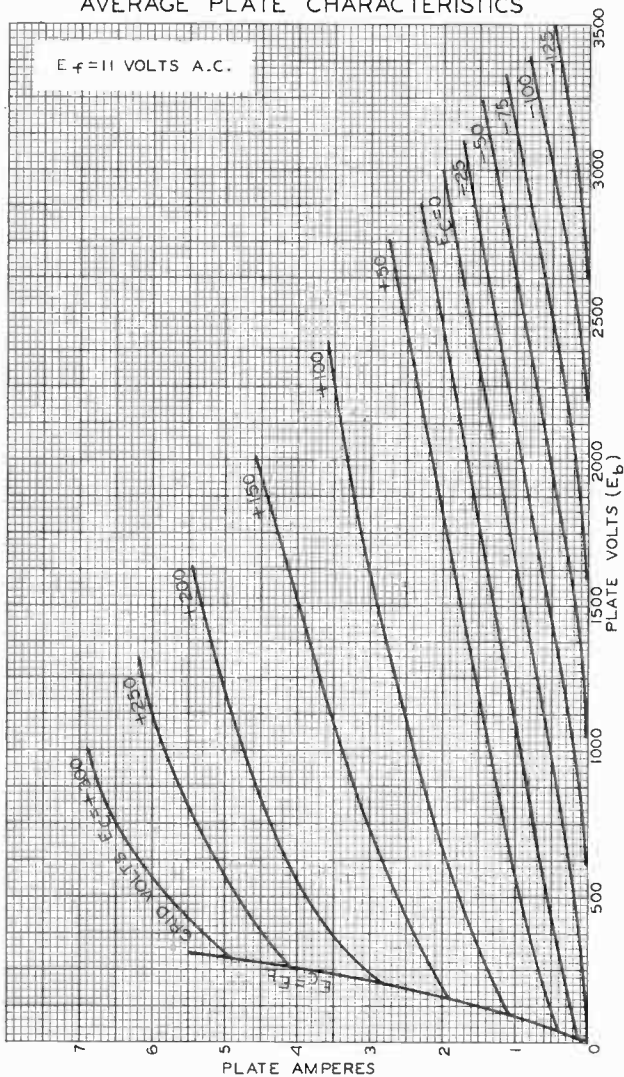


TUBE SYMBOL & CONNECTIONS
TO END-MOUNTINGS.





AVERAGE PLATE CHARACTERISTICS



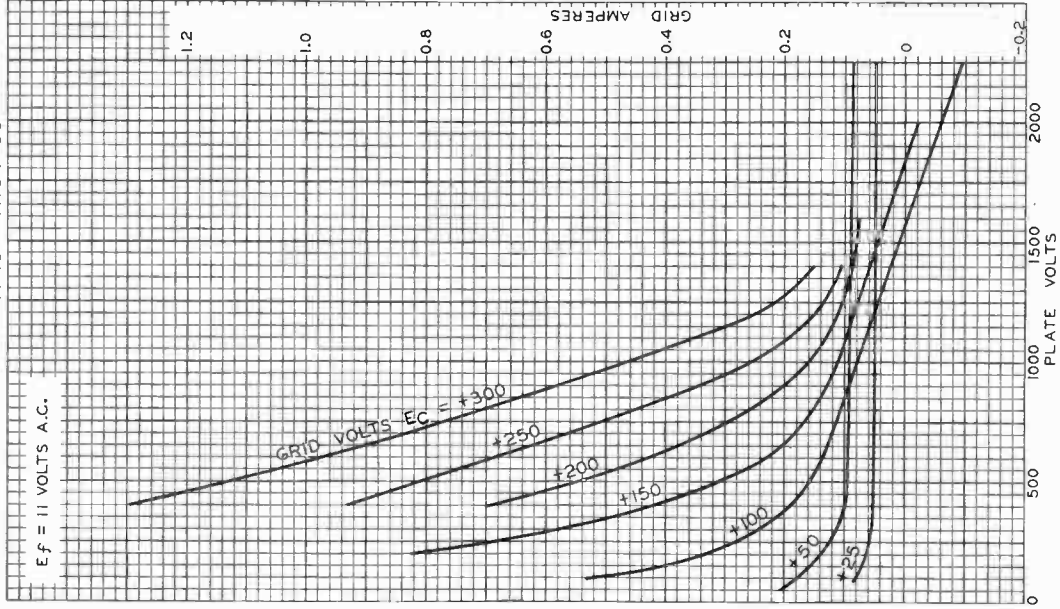


851

851

TYPICAL CHARACTERISTICS

$E_f = 11$ VOLTS A.C.



JUNE 3, 1935

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4455

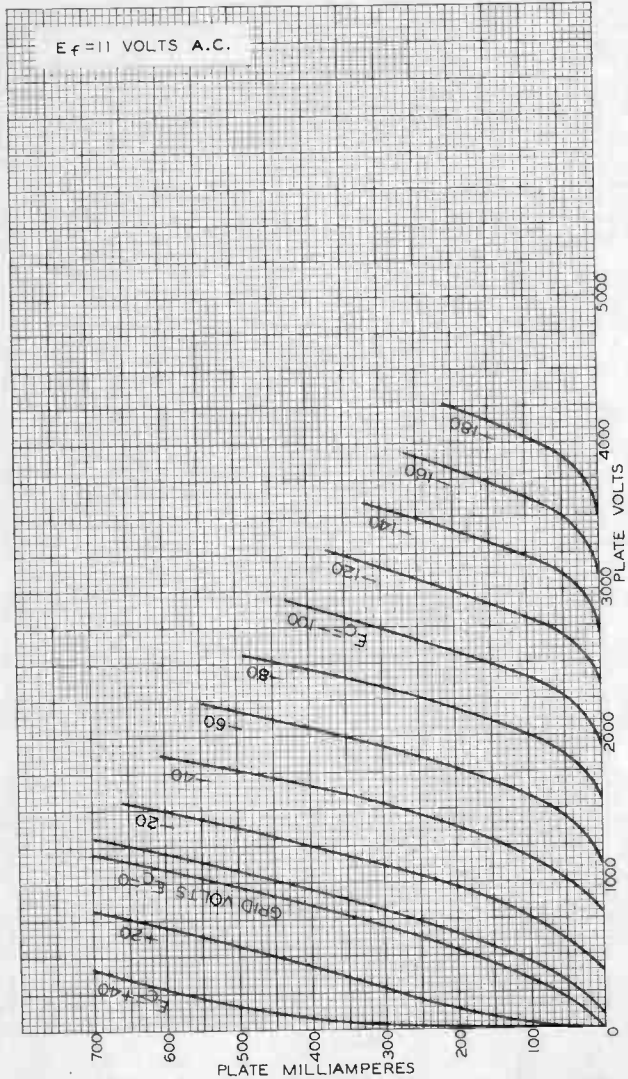
851



851

AVERAGE PLATE CHARACTERISTICS

$E_f = 11$ VOLTS A.C.



AUG. 29, 1928

RCA RADIODIODE DIVISION
RCA MANUFACTURING COMPANY, INC.
World Radio History

925-5497



857-B

857-B

HALF-WAVE MERCURY-VAPOR RECTIFIER

Filament *	Coated	
Voltage	5	a-c volts
Current	30	amp.
Overall Length		19-1/2" ± 3/8"
Maximum Diameter		7-1/8"
Bulb		GT-56
Cap		No.1904
Base #		No.3911
End Mountings		Special
Cooling	- Forced air (5 cu. ft./min.) at 35°C from 1-inch nozzle located 1/2" above filament base will maintain condensed-mercury temperature of 40° at full load.	

MAXIMUM RATINGS

Peak Inverse Voltage:

Supply Freq.	Condensed Mercury Temperature Range	
Up to 150~	25° - 60°C	10000 max. volts
Up to 150~	30° - 40°C	22000 max.** volts
Peak Plate Current		40 max. amp.
Average Plate Current	{ Averaged over } { period of 30 sec. }	10 max. amp.
Peak Tube Voltage Drop		14 approx.volts

* The filament should be allowed to come up to operating temperature before plate voltage is applied. For average conditions, the delay is approximately one minute.

Base shell is connected within base to one side of the filament (un-insulated side).

** For peak inverse voltages in excess of 10000 volts, temperature-regulated forced-air cooling must be employed.

For Circuits, refer to Type 872.

For shielding and r-f filter circuits, refer to Type 871.

The table below classifies suitable rectifier circuits for the 857-B and shows their safe maximum input and maximum output operating conditions for a peak inverse voltage of 22000 volts. The values are based on sine-wave input and the use of a suitable choke preceding any condenser in the filter circuit. If the 857-B is to be used under temperature conditions such that the peak inverse voltage is limited to 10000 volts, the a-c input voltage and d-c output voltage values in the table should be multiplied by a factor of 0.45 to give the maximum values for the 10000-volt conditions.

CIRCUIT	MAXIMUM A-C INPUT VOLTS [□] (RMS)	APPROX. D-C OUTPUT VOLTS TO FILTER	MAXIMUM D-C LOAD CURRENT amperes
SINGLE-PHASE FULL-WAVE (2 tubes) FIG.1	7750 per tube	7000	20
SINGLE-PHASE FULL-WAVE (4 tubes) FIG.2	15500 total	14000	20
THREE-PHASE HALF-WAVE FIG.3	9000 per leg	10500	30
THREE-PHASE DOUBLE-Y PARALLEL FIG.4	9000 per leg	10500	60
THREE-PHASE FULL-WAVE FIG.5	9000 per leg	21000	30

[□] For maximum peak inverse voltage of 22000 volts. ← Indicates a change.

OCT. 3, 1938

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA



858

OSCILLATOR, R-F POWER AMPLIFIER (WATER COOLED)

Filament	Tungsten	
Voltage	22	a-c or d-c volts
Current	52	amp.
Amplification Factor	42	
Direct Interelectrode Capacitances (approx.):		
Grid to Plate	18	μf
Grid to Filament	16	μf
Plate to Filament	2	μf
Maximum Overall Length		24-1/2"
Maximum Radius		7-1/2"
Base		None
Water Jacket		UT-1290

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

This tube can often be operated with reduced filament voltage as explained on sheet TYPES OF CATHODES in front of book.

A- POWER AMPLIFIER - Class B

D-C Plate Voltage	20000 max.	volts
Max-Signal D-C Plate Current *	2.0 max.	amp.
Max-Signal D-C Plate Input *	40 max.	kw
Plate Dissipation *	20 max.	kw

Typical Operation - 2 tubes:

Unless otherwise specified, values are for 2 tubes.

Filament Voltage	22	d-c volts
D-C Plate Voltage	12000	volts
D-C Grid Voltage	-140	volts
Peak A-F Grid-to-Grid Voltage	2600	volts
Zero-Signal D-C Plate Cur.	0.5	amp.
Max-Signal D-C Plate Cur.	3.6	amp.
Load Resistance (per tube)	1800	ohms
Effective Load Res. (plate to plate)	7200	ohms
Max-Signal Driving Power	115	approx. watts
Max-Signal Power Output	26.5	approx. kw

* Averaged over any audio-frequency cycle.

R-F POWER AMPLIFIER - Class B Telephony

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

D-C Plate Voltage	20000 max.	volts
D-C Plate Current	1.0 max.	amp.
R-F Grid Current	48 max.	amp.
Plate Input	20 max.	kw
Plate Dissipation	15 max.	kw

Typical Operation:

Filament Voltage	22	22	22	d-c volts
D-C Plate Voltage	10000	14000	18000	volts
D-C Grid Voltage	-100	-200	-300	volts
Peak R-F Grid Voltage	400	575	725	volts
D-C Plate Current	0.5	0.7	0.9	amp.

(continued on next page)



858

OSCILLATOR, R-F POWER AMPLIFIER

(continued from preceding page)

Driving Power ** 0	25	70	85	<u>approx.watts</u>
Power Output	1.5	3.3	5.6	<u>approx.kw</u>

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

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

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

D-C Plate Voltage			12000	max. volts
D-C Grid Voltage			-3000	max. volts
D-C Plate Current			1.0	max. amp.
D-C Grid Current			0.25	max. amp.
R-F Grid Current			48	max. amp.
Plate Input			12	max. kw
Plate Dissipation			10	max. kw

Typical Operation:

Filament Voltage	22	22	22	a-c volts
D-C Plate Voltage	8000	10000	12000	volts
D-C Grid Voltage	-900	-950	-1000	volts
Peak R-F Grid Voltage	1875	1950	1950	volts
D-C Plate Current	0.90	0.90	0.95	amp.
D-C Grid Current **	0.10	0.09	0.08	<u>approx.amp.</u>
Driving Power **	180	200	150	<u>approx.watts</u>
Power Output	5	6	8	<u>approx.kw</u>

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telephony

Key-down conditions per tube without modulation #

D-C Plate Voltage			20000	max. volts
D-C Grid Voltage			-3000	max. volts
D-C Plate Current			2.0	max. amp.
D-C Grid Current			0.25	max. amp.
R-F Grid Current			60	max. amp.
Plate Input			40	max. kw
Plate Dissipation			20	max. kw

Typical Operation:

Filament Voltage	22	22	22	a-c volts
D-C Plate Voltage	10000	15000	18000	volts
D-C Grid Voltage	-1000	-1100	-1200	volts
Peak R-F Grid Voltage	2200	2500	2600	volts
D-C Plate Current	1.4	1.8	1.8	amp.
D-C Grid Current **	0.13	0.10	0.10	<u>approx.amp.</u>
Driving Power **	275	250	250	<u>approx.watts</u>
Power Output	9	18	22.4	<u>approx.kw</u>

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

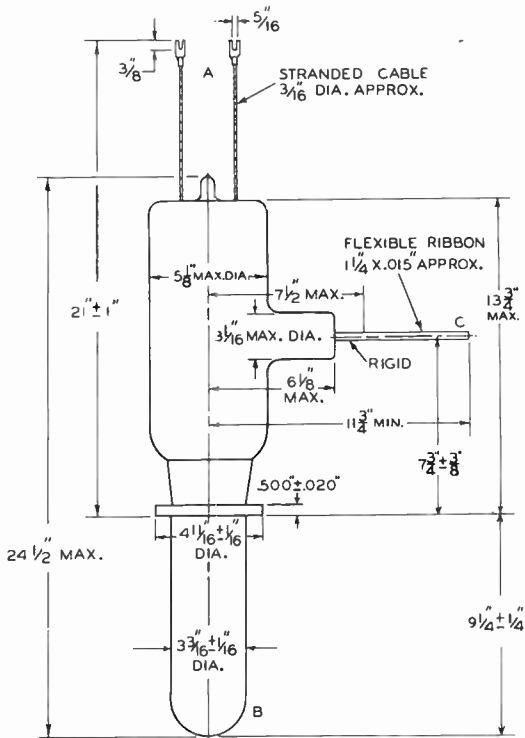
** Subject to wide variations as explained on sheet TRANS. TUBE RATINGS.

For use of the 858 at the higher frequencies, refer to sheet TRANS. TUBE RATINGS vs FREQUENCY.

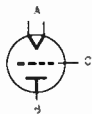


858

858 OSCILLATOR R-F POWER AMPLIFIER



TUBE SYMBOL
AND
TERMINAL CONNECTIONS



A - Filament
B - Plate
C - Grid

APRIL 4, 1933 (1-36)

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY INC

DATA 2

858



858
OSCILLATOR,
R-F POWER AMPLIFIER

THE FILAMENT CHARACTERISTIC AND THE FILA-
MENT EMISSION CHARACTERISTIC FOR THE 858
ARE THE SAME AS THOSE SHOWN FOR THE 207.

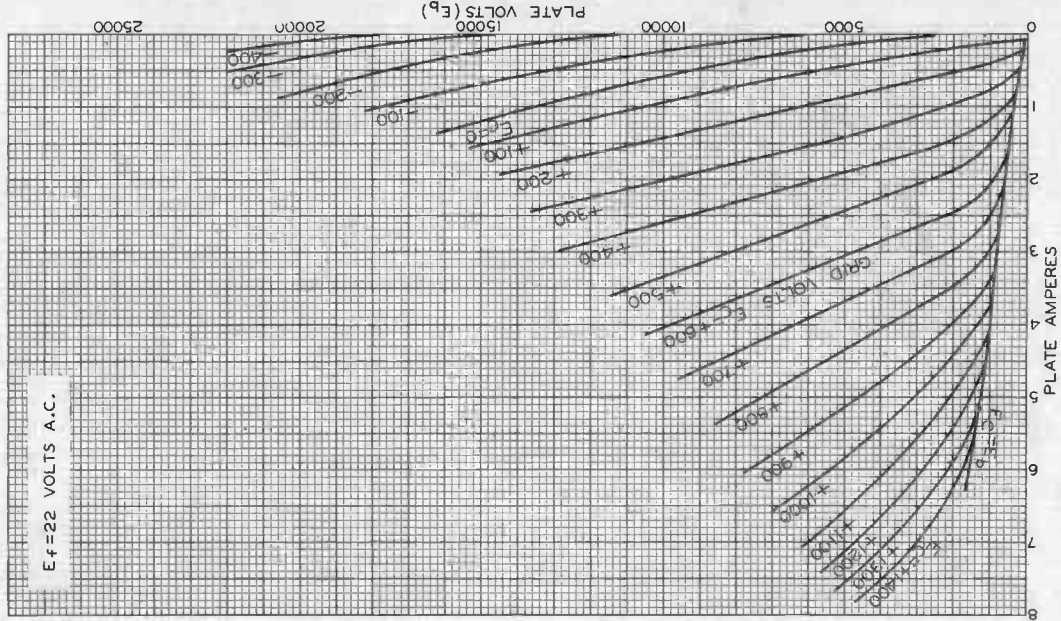


858

858

AVERAGE PLATE CHARACTERISTICS

$E_f = 22$ VOLTS A.C.



JUNE 1, 1934

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

925-5500R1

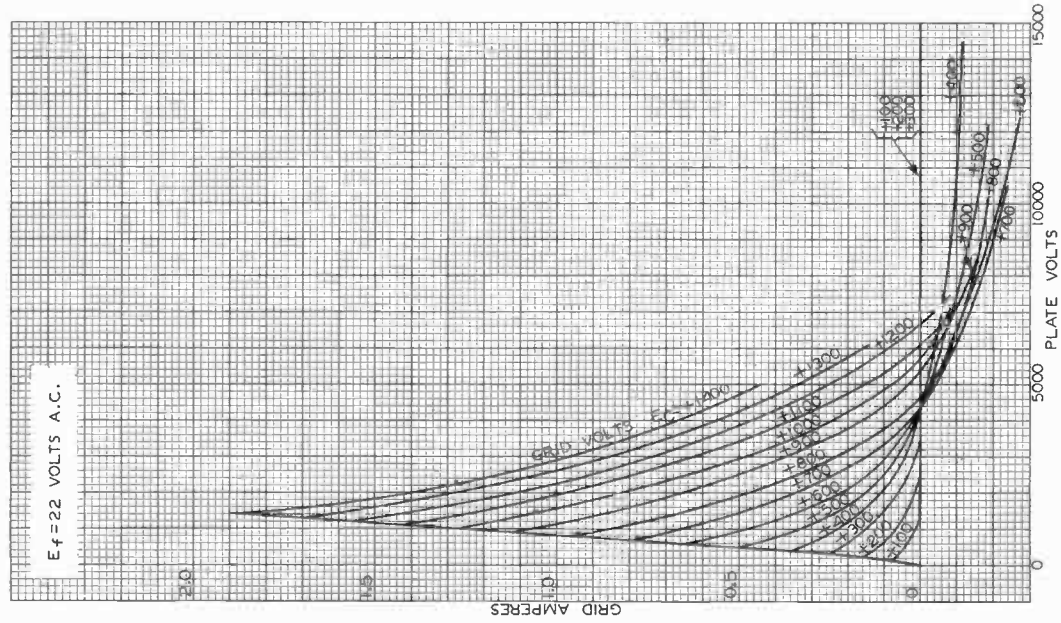


858

858

TYPICAL CHARACTERISTICS

$E_f = 22$ VOLTS A.C.



JUNE 4, 1934

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92S-5547



860

860

SCREEN GRID R-F POWER AMPLIFIER

Filament	Thoriated Tungsten	
Voltage	10	a-c or d-c volts
Current	3.25	amp.
Amplification Factor	200 approx.	
Transconductance for plate current of 50 ma.	1100	μ mhos
Direct Interelectrode Capacitances:		
Grid to Plate	0.08*max.	μ f
Input	7.75	μ f
Output	7.5	μ f
Maximum Overall Length		8-3/4"
Maximum Radius		4-1/4"
Bulb		GT-30 with arm
Base		Medium 4-Pin Ceramic, Bayonet
RCA Socket		Type UR-542-A

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

R-F POWER AMPLIFIER - Class B Telephony

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

D-C Plate Voltage		3000 max.	volts
D-C Screen Voltage		500 max.	volts
D-C Plate Current		85 max.	ma.
Plate Input		150 max.	watts
Screen Input		10 max.	watts
Plate Dissipation		100 max.	watts
Typical Operation:			
D-C Plate Voltage	2000	3000	volts
D-C Screen Voltage ^o	300	300	volts
D-C Grid Voltage	-50	-50	volts
D-C Plate Current	60	43	ma.
Power Output	30	40	approx. watts

^o Use of series screen resistor is not recommended.

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

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

D-C Plate Voltage		2000 max.	volts	
D-C Screen Voltage		500 max.	volts	
D-C Grid Voltage		-800 max.	volts	
D-C Plate Current		85 max.	ma.	
D-C Grid Current		40 max.	ma.	
Plate Input		170 max.	watts	
Screen Input		6.7 max.	watts	
Plate Dissipation		67 max.	watts	
Typical Operation:				
D-C Plate Voltage	1500	1800	2000	volts
D-C Screen Voltage [▲]	{ 60000	{ 80000	{ 100000	ohms
	{ 300	{ 300	{ 220	volts
D-C Grid Voltage [¶]	{ 7500	{ 7500	{ 5300	ohms
	{ -225	{ -225	{ -200	volts

[■] with external shielding.[▲] Obtained from modulated plate-voltage supply through resistor or from modulated fixed supply.[¶] Obtained by grid-leak resistor or by partial self-bias methods.

Indicates a change.

JULY 1, 1938

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA



SCREEN GRID R-F POWER AMPLIFIER

(continued from preceding page)

Peak R-F Grid Voltage	-	-	500	volts
D-C Plate Current	70	67	85	ma.
D-C Screen Current	-	-	25	ma.
D-C Grid Current **	30	30	38	<u>approx.ma.</u>
Driving Power **	15	15	17	<u>approx.watts</u>
Power Output	45	60	105	<u>approx.watts</u>

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation#

D-C Plate Voltage	3000 max.	volts
D-C Screen Voltage	500 max.	volts
D-C Grid Voltage	-800 max.	volts
D-C Plate Current	150 max.	ma.
D-C Grid Current	40 max.	ma.
Plate Input	300 max.	watts
Screen Input	10 max.	watts
Plate Dissipation	100 max.	watts

Typical Operation:

D-C Plate Voltage	1500	2000	2500	3000	volts
D-C Screen Voltage [□]	300	300	300	300	volts
D-C Grid Voltage [•]	{ 10000	{ 10000	{ 10000	{ 10000	ohms
	{ -150	{ -150	{ -150	{ -150	volts
D-C Plate Current	90	90	90	85	ma.
D-C Grid Current **	15	15	15	15	<u>approx.ma.</u>
Driving Power **	7	7	7	7	<u>approx.watts</u>
Power Output	60	100	135	165	<u>approx.watts</u>

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

** Subject to wide variations as explained on sheet TRANS. TUBE RATINGS.

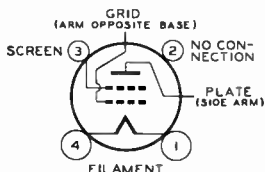
□ Use of series resistor is not recommended.

• Obtained by grid-leak resistor or other self- or fixed-bias method.

For use of the 860 at the higher frequencies, refer to sheet TRANS. TUBE RATINGS vs FREQUENCY.

OUTLINE DIMENSIONS for the 860 are the same as for the 852.

TUBE SYMBOL & TOP VIEW
OF
SOCKET CONNECTIONS



TUBE MOUNTING POSITION

VERTICAL: Base down
HORIZONTAL: No

→ Indicates a change.



860

860

SCREEN GRID R-F POWER AMPLIFIER

Filament	Thoriated Tungsten	
Voltage	10	a-c or d-c volts
Current	3.25	amp.
Amplification Factor	200 approx.	
Transconductance for plate current of 50 ma.	1100	μmhos
Direct Interelectrode Capacitances:		
Grid to Plate	0.08* max.	μf
Input	7.75	μf
Output	7.5	μf
Maximum Overall Length		8-3/4"
Maximum Radius		4-1/4"
Bulb		GT-30 with arm
Base		Medium 4-Pin Ceramic, Bayonet
RCA Socket		Type UR-542-A

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

R-F POWER AMPLIFIER - Class B Telephony

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

D-C Plate Voltage		3000 max.	volts
D-C Screen Voltage		500 max.	volts
D-C Plate Current		85 max.	ma.
Plate Input		150 max.	watts
Screen Input		10 max.	watts
Plate Dissipation		100 max.	watts
Typical Operation:			
D-C Plate Voltage	2000	3000	volts
D-C Screen Voltage [□]	300	300	volts
D-C Grid Voltage	-50	-50	volts
D-C Plate Current	60	43	ma.
Power Output	30	40	approx. watts

[□] Use of series screen resistor is not recommended.

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

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

D-C Plate Voltage		2000 max.	volts	
D-C Screen Voltage		500 max.	volts	
D-C Grid Voltage		-800 max.	volts	
D-C Plate Current		85 max.	ma.	
D-C Grid Current		40 max.	ma.	
Plate Input		170 max.	watts	
Screen Input		6.7 max.	watts	
Plate Dissipation		67 max.	watts	
Typical Operation:				
D-C Plate Voltage	1500	1800	2000	volts
D-C Screen Voltage [▲]	{ 60000	{ 80000	{ 100000	ohms
	{ 300	{ 300	{ 220	volts
D-C Grid Voltage [¶]	{ 7500	{ 7500	{ 5300	ohms
	{ -225	{ -225	{ -200	volts

^{*} with external shielding.[▲] Obtained from modulated plate-voltage supply through resistor or from modulated fixed supply.[¶] Obtained by grid-leak resistor or by partial self-bias methods. indicates a change.

JULY 1, 1938

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA



SCREEN GRID R-F POWER AMPLIFIER

(continued from preceding page)

Peak R-F Grid Voltage	-	-	500	volts
D-C Plate Current	70	67	85	ma.
D-C Screen Current	-	-	25	ma.
D-C Grid Current **	30	30	38	<u>approx.ma.</u>
Driving Power **	15	15	17	<u>approx.watts</u>
Power Output	45	60	105	<u>approx.watts</u>

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation#

D-C Plate Voltage	3000 max.	volts
D-C Screen Voltage	500 max.	volts
D-C Grid Voltage	-800 max.	volts
D-C Plate Current	150 max.	ma.
D-C Grid Current	40 max.	ma.
Plate Input	300 max.	watts
Screen Input	10 max.	watts
Plate Dissipation	100 max.	watts

Typical Operation:

D-C Plate Voltage	1500	2000	2500	3000	volts
D-C Screen Voltage [□]	300	300	300	300	volts
D-C Grid Voltage [•]	{ 10000	10000	10000	10000	ohms
	{ -150	-150	-150	-150	volts
D-C Plate Current	90	90	90	85	ma.
D-C Grid Current **	15	15	15	15	<u>approx.ma.</u>
Driving Power **	7	7	7	7	<u>approx.watts</u>
Power Output	60	100	135	165	<u>approx.watts</u>

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

** Subject to wide variations as explained on sheet TRANS. TUBE RATINGS.

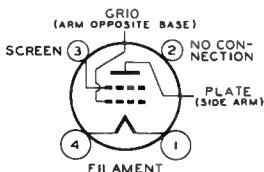
□ Use of series resistor is not recommended.

• Obtained by grid-leak resistor or other self- or fixed-bias method.

For use of the 860 at the higher frequencies, refer to sheet TRANS. TUBE RATINGS vs FREQUENCY.

OUTLINE DIMENSIONS for the 860 are the same as for the 852.

TUBE SYMBOL & TOP VIEW
OF
SOCKET CONNECTIONS



TUBE MOUNTING POSITION

VERTICAL: Base down
HORIZONTAL: No

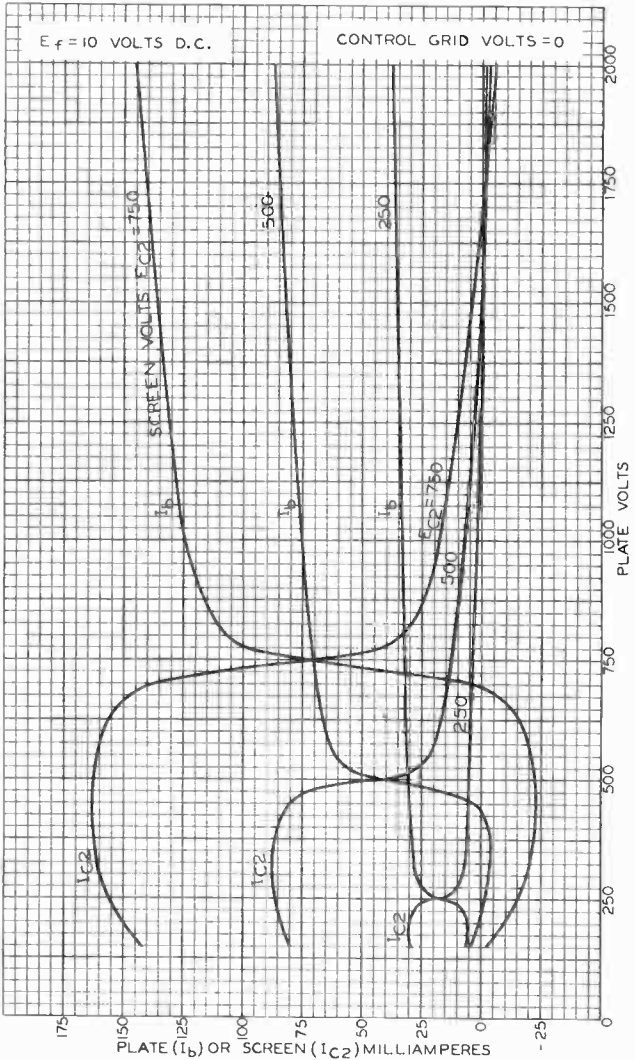
→ Indicates a change.



860

860

AVERAGE PLATE CHARACTERISTICS



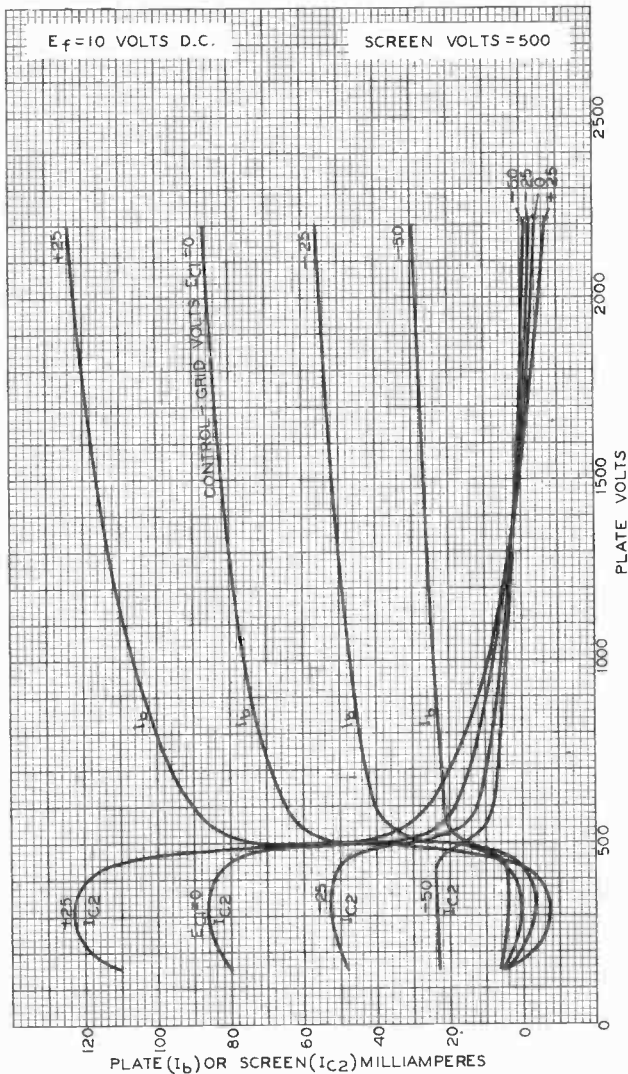
JUNE 28, 1928

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY INC
World Radio History

925-5501



AVERAGE PLATE CHARACTERISTICS





861

861

SCREEN GRID R-F POWER AMPLIFIER

Filament	Thoriated Tungsten	
Voltage	11	a-c or d-c volts
Current	10	amp.
Amplification Factor	300 approx.	
Transconductance for plate current of 130 ma.	2100	μmhos
Direct Interelectrode Capacitances (approx.):		
Grid to Plate	0.10*maximum	μpf
Input	14.5	μpf
Output	10.5	μpf
Overall Length		17-3/32" ± 1/8"
Maximum Radius		6-5/8"
Bulb		GT-56 with arm
Cap (opposite filament base)		No. 3909
Cap (on side of bulb)		No. 3910
Base		No. 3503
RCA End-Mountings		Types UT-1085, UT-1086 ←

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

R-F POWER AMPLIFIER - Class B Telephony

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

D-C Plate Voltage	3500 max.	volts
D-C Screen Voltage	750 max.	volts ←
D-C Plate Current	250 max.	ma.
Plate Input	600 max.	watts
Screen Input	25 max.	watts
Plate Dissipation	400 max.	watts

Typical Operation:

D-C Plate Voltage	2500	3000	3500	volts
D-C Screen Voltage ◊	500	500	500	volts
D-C Grid Voltage	-60	-60	-60	volts
Peak R-F Grid Voltage	250	245	215	volts
D-C Plate Current	190	175	150	ma.
D-C Grid Current **	4	4	4	approx. ma.
Driving Power ◊ **	20	15	15	approx. watts
Power Output	140	160	175	approx. watts

◊ Use of a series resistor is not recommended.

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

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

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

D-C Plate Voltage	3000 max.	volts
D-C Screen Voltage	750 max.	volts ←
D-C Grid Voltage	-1000 max.	volts
D-C Plate Current	300 max.	ma.
D-C Grid Current	75 max.	ma.
Plate Input	650 max.	watts
Screen Input	30 max.	watts
Plate Dissipation	270 max.	watts

* With external shielding.

** See next page.

← Indicates a change.

JULY 1, 1938

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

World Radio History

DATA



861

SCREEN GRID R-F POWER AMPLIFIER

(continued from preceding page)

Typical Operation:

D-C Plate Voltage	2000	2500	3000	volts
D-C Screen Voltage ^Δ	{ 30000	50000	70000	ohms
	{ 425	400	375	volts
D-C Grid Voltage ¶	{ 3900	3800	3600	ohms
	{ -250	-225	-200	volts
Peak R-F Grid Voltage	675	625	575	volts
D-C Plate Current	250	220	200	ma.
D-C Grid Current **	65	60	55	<u>approx.ma.</u>
Driving Power **	45	40	35	<u>approx.watts</u>
Power Output	285	340	400	<u>approx.watts</u>

^Δ Obtained from modulated fixed supply or modulated plate-voltage supply through resistor.

¶ Obtained by grid-leak resistor or partial self-bias methods.

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation #

D-C Plate Voltage	3500 max.	volts
D-C Screen Voltage	750 max.	volts
D-C Grid Voltage	-1000 max.	volts
D-C Plate Current	350 max.	ma.
D-C Grid Current	75 max.	ma.
Plate Input	1200 max.	watts
Screen Input	35 max.	watts
Plate Dissipation	400 max.	watts

Typical Operation:

D-C Plate Voltage	2000	3000	3500	volts
D-C Screen Voltage [□]	500	500	500	volts
D-C Grid Voltage [•]	{ 6300	6300	6300	ohms
	{ -250	-250	-250	volts
Peak R-F Grid Voltage	725	725	725	volts
D-C Plate Current	300	300	300	ma.
D-C Screen Current	60	50	40	ma.
D-C Grid Current **	40	40	40	<u>approx.ma.</u>
Driving Power **	30	30	30	<u>approx.watts</u>
Power Output	400	600	700	<u>approx.watts</u>

[•] Obtained by grid-leak resistor or other fixed- or self-bias method.

[□] Use of series resistor is not recommended.

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

** Subject to wide variations as explained on sheet TRANS, TUBE RATINGS.

For use of the 861 at the higher frequencies, refer to sheet TRANS. TUBE RATINGS vs FREQUENCY.

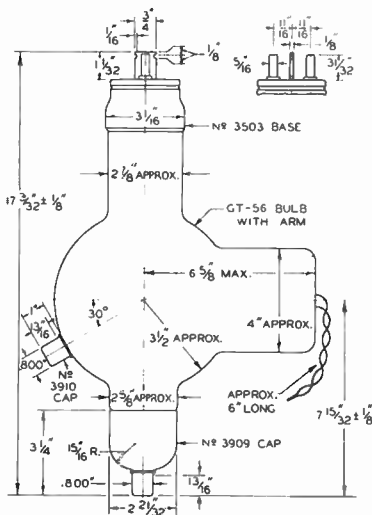
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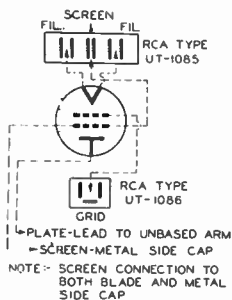
861

861

SCREEN GRID R-F POWER AMPLIFIER



92S-4324

TUBE SYMBOL & CONNECTIONS
TO END-MOUNTINGS

APR. 18, 1933 (9-36)

RCA RADITRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA 2

861



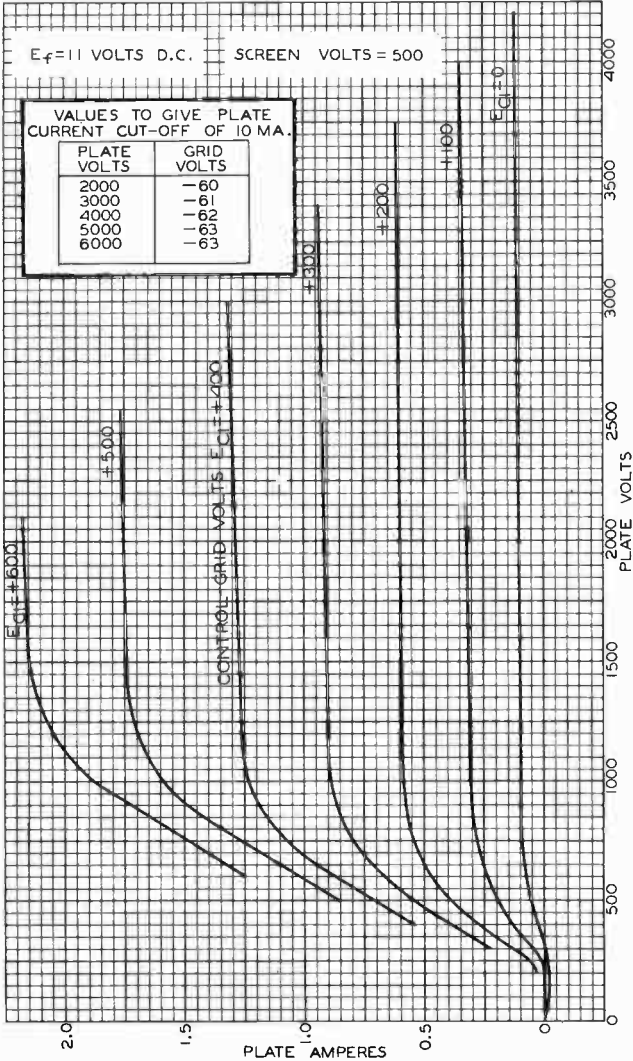
861

AVERAGE PLATE CHARACTERISTICS

$E_f = 11$ VOLTS D.C. SCREEN VOLTS = 500

VALUES TO GIVE PLATE CURRENT CUT-OFF OF 10 MA.

PLATE VOLTS	GRID VOLTS
2000	-1.60
3000	-1.61
4000	-1.62
5000	-1.63
6000	-1.63

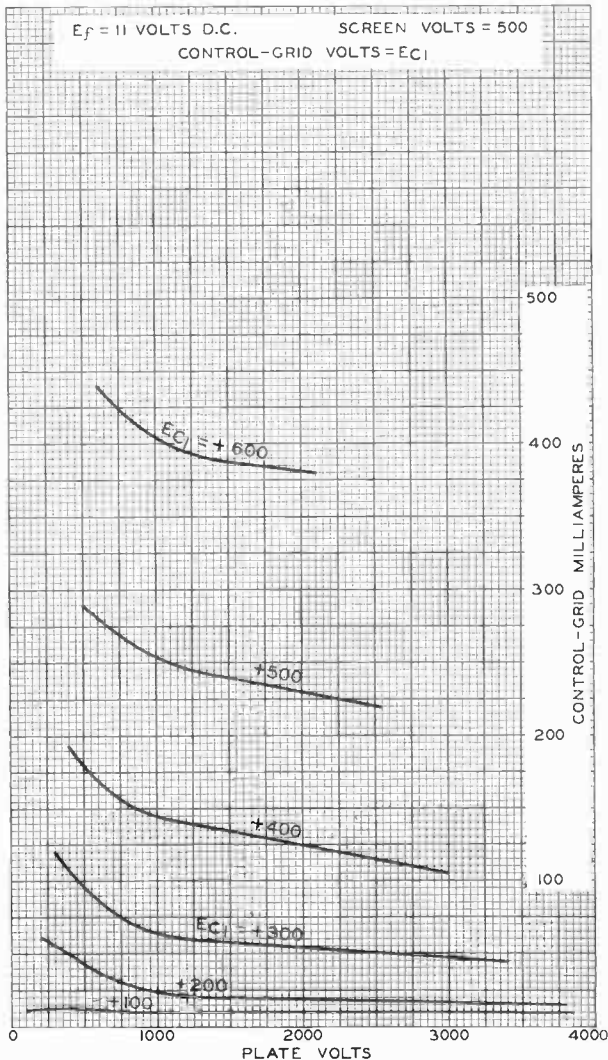




861

861

AVERAGE CHARACTERISTICS



JUNE 22, 1934

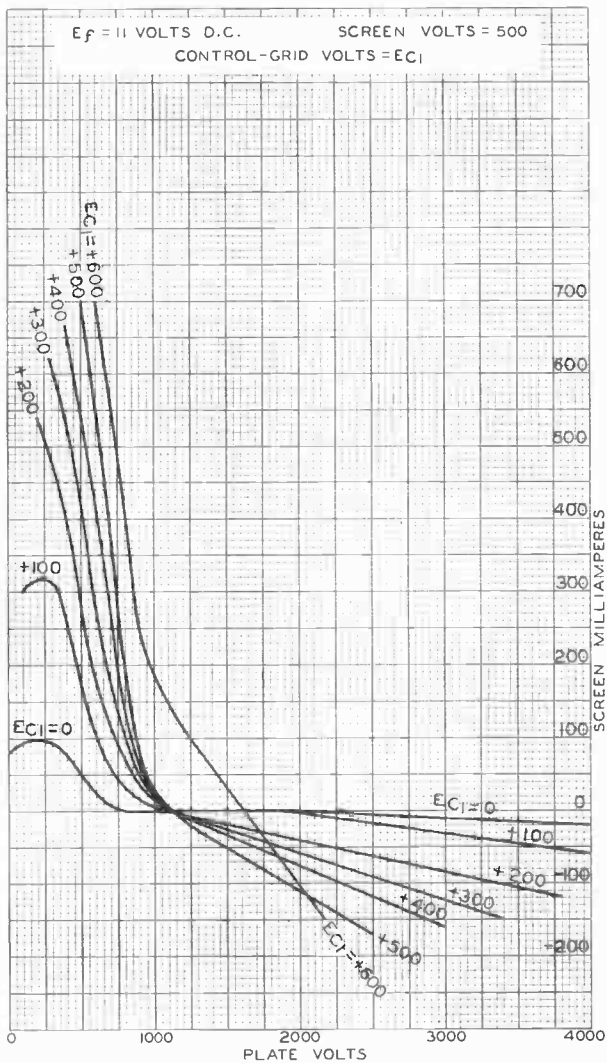
RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-5550

World Radio History



AVERAGE CHARACTERISTICS





862-A

862-A

TRANSMITTING TRIODE

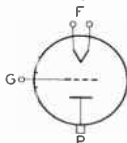
WATER & FORCED-AIR COOLED

Electrical:		GENERAL DATA	
Filament:		Tungsten	
Voltage	33	. . . . . a-c or d-c volts	
Current	207	. . . . . amp.	
Starting - The current should never exceed 400 amperes, even momentarily.			
Amplification Factor	45		
Direct Interelectrode Capacitances (Approx.):			
Grid to Plate	70	. . . . . μmf	
Grid to Filament	53	. . . . . μmf	
Plate to Filament	4.5	. . . . . μmf	

Physical:

Terminal Legend:

- F - Stranded Filament Terminal
- G - Ribbon Grid Terminal



- P - Water-cooled Plate Terminal

Mounting Position	Vertical only, glass end up
Maximum Overall Length	60-3/8"
Greatest Radius	10"
Base (with nozzle for air-cooling of filament seal) No. 3908	
Water Jacket (with nozzle for air-cooling of bulb) Type UT-1289-A	
Gasket	RCA Stock No. 17879

Cooling - Water flow of 15 to 25 gallons per minute must start before application of any voltages and continue for at least 10 minutes after removal of all voltages. Water temperature must not exceed 70°C at socket outlet under any conditions of operation. Air flow of 15 cubic feet per minute in bulb nozzle and 3 cubic feet per minute in filament-seal nozzle is required before the application of any voltages and must continue for at least 10 minutes after removal of voltages to limit the glass temperature to 150°C at the hottest part.

This tube can often be operated at reduced filament voltage as explained on sheet TYPES OF CATHODES in General Section.

A-F POWER AMPLIFIER & MODULATOR - Class B

Maximum Ratings, Absolute Values:

D-C PLATE VOLTAGE	15000 max.	. . . . . volts
MAX.-SIGNAL D-C PLATE CURRENT*	7.5 max.	. . . . . amp.
MAX.-SIGNAL PLATE INPUT*	100 max.	. . . . . kw
PLATE DISSIPATION*	50 max.	. . . . . kw

Typical Operation:

Unless otherwise specified, values are for 2 tubes

D-C Plate Voltage	12000	. . . . . volts
D-C Grid Voltage ^o	0	. . . . . volts
Peak A-F Grid-to-Grid Voltage	2000	. . . . . volts
Zero-Signal D-C Plate Current	3	. . . . . amp.
Max.-Signal D-C Plate Current	13	. . . . . amp.
Effective Load Res. (plate to plate),	1800	. . . . . ohms
Max.-Signal Driving Power	450 approx.	. . . . . watts
Max.-Signal Power Output	90 approx.	. . . . . kw

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

^o For a-c filament supply.

MAR. 30, 1945

RCA VICTOR DIVISION

DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History



TRANSMITTING TRIODE

(continued from preceding page)

R-F POWER AMPLIFIER - Class B Telephony

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

Maximum Ratings, Absolute Values:

D-C PLATE VOLTAGE	20000 max.	. . . volts
D-C PLATE CURRENT	5 max.	. . . amp.
PLATE INPUT	100 max.	. . . kw
PLATE DISSIPATION	75 max.	. . . kw

Typical Operation:

D-C Plate Voltage	12000	15000	18000	. . . volts
D-C Grid Voltage ^o	-100	-150	-200	. . . volts
Peak R-F Grid Voltage	500	625	750	. . . volts
D-C Plate Current	2.8	3.5	4.2	. . . amp.
Driving Power #**	0.5	0.75	1.1	<u>approx. kw</u>
Power Output	11	17.5	25	<u>approx. kw</u>

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

^o For a-c filament supply.

PLATE MODULATED R-F POWER AMPLIFIER - Class C Telephony

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

Maximum Ratings, Absolute Values:

D-C PLATE VOLTAGE	12000 max.	. . . volts
D-C GRID VOLTAGE	-3000 max.	. . . volts
D-C PLATE CURRENT	5 max.	. . . amp.
D-C GRID CURRENT	1.25 max.	. . . amp.
PLATE INPUT	60 max.	. . . kw
PLATE DISSIPATION	50 max.	. . . kw

Typical Operation:

D-C Plate Voltage	8000	10000	12000	. . . volts
D-C Grid Voltage	-700	-750	-800	. . . volts
Peak R-F Grid Voltage	1700	1850	2000	. . . volts
D-C Plate Current	4	4.5	5	. . . amp.
D-C Grid Current #	1	1	1	<u>approx. amp.</u>
Driving Power #	1.7	1.85	2	<u>approx. kw</u>
Power Output	24	34	45	<u>approx. kw</u>

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation**

Maximum Ratings, Absolute Values:

D-C PLATE VOLTAGE	20000 max.	. . . volts
D-C GRID VOLTAGE	-3000 max.	. . . volts
D-C PLATE CURRENT	10 max.	. . . amp.
D-C GRID CURRENT	1 max.	. . . amp.
PLATE INPUT	200 max.	. . . kw
PLATE DISSIPATION	100 max.	. . . kw

#, ##: See next page.



862-A

862-A

TRANSMITTING TRIODE

(continued from preceding page)

Typical Operation:

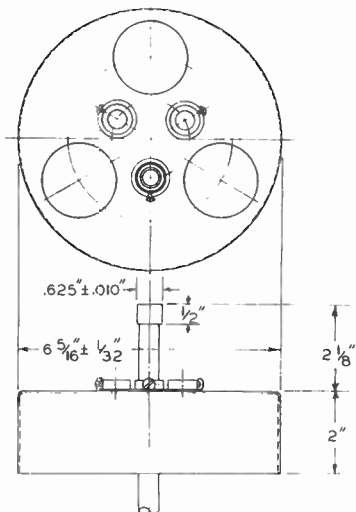
D-C Plate Voltage	12000	15000	18000	
D-C Grid Voltage	-800	-900	-1000	. . . volts
Peak R-F Grid Voltage	2050	2300	2550	. . . volts
D-C Plate Current	6.25	7.5	8.33	. . . volts
D-C Grid Current #	0.8	0.85	0.9	approx. amp.
Driving Power #	1.6	2	2.4	approx. kw
Power Output	50	75	100	approx. kw

Subject to wide variations as explained on sheet TUBE RATINGS in General Section.

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

Data on operating frequencies for the 862-A are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

No 3908 BASE OUTLINE



92CS-6577

MAR. 30, 1945

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

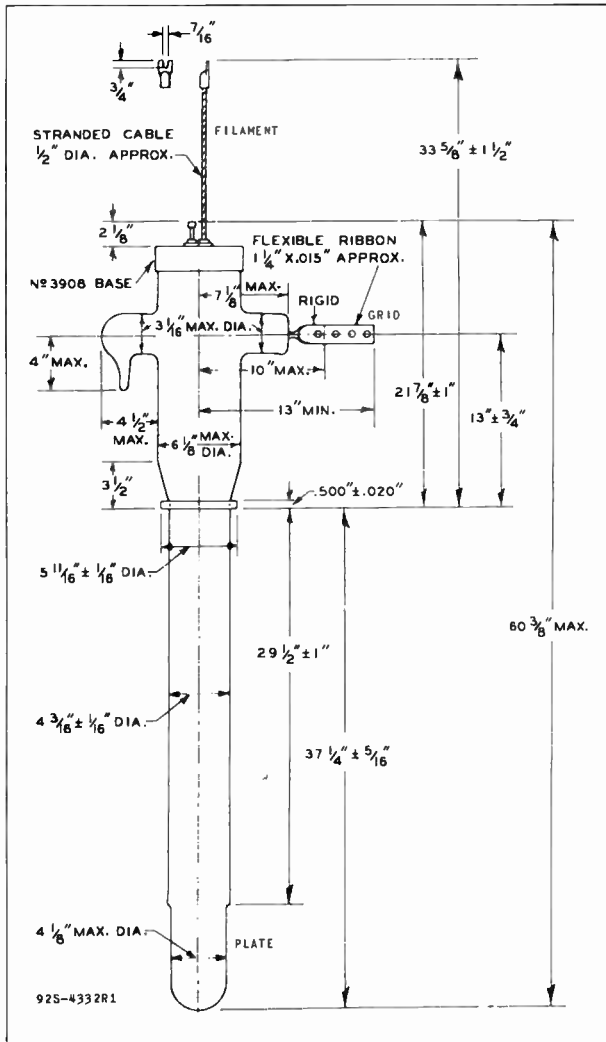
DATA 2

862-A



862-A

TRANSMITTING TRIODE



MAR. 30, 1945

 RCA VICTOR DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

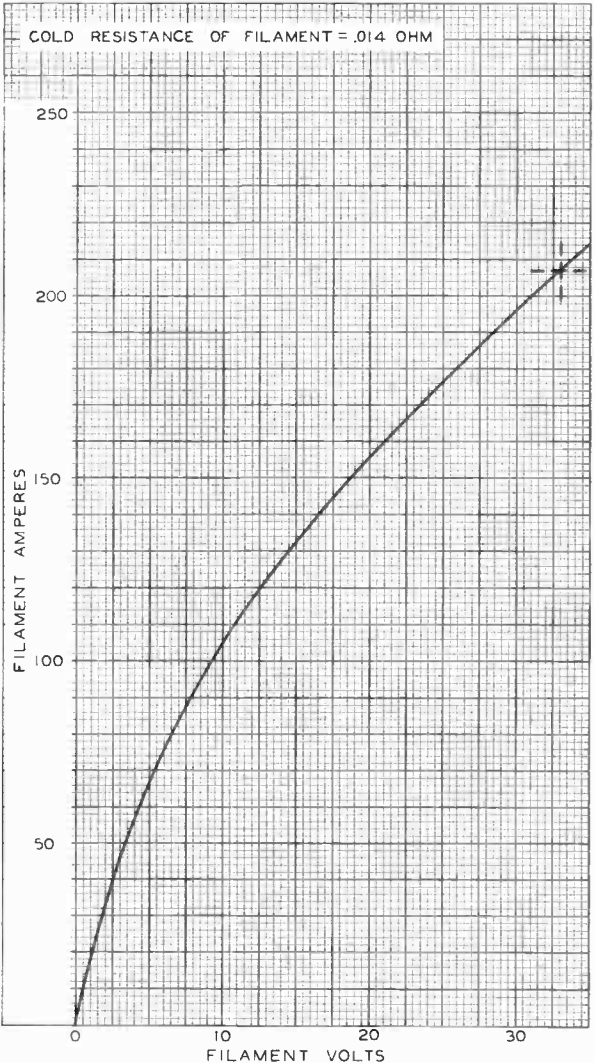
DATA 2



862-A

862-A

AVERAGE FILAMENT CHARACTERISTIC



FEB. 1, 1945

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-4461R1

862-A



862-A

TRANSMITTING TRIODE

ADDITIONAL CURVES
FOR THE 862-A ARE THE SAME AS
THOSE FOR TYPE 898-A

MAR. 30, 1945

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History

CURVES



865

865

SCREEN GRID R-F POWER AMPLIFIER

Filament	Thoriated Tungsten	
Voltage	7.5	a-c or d-c volts
Current	2.0	amp.
Amplification Factor	150 approx.	
Mutual Conductance for plate current of 18 ma.	750	μmhos
Direct Interelectrode Capacitances:		
Grid to Plate	0.10*maximum	μf
Input	8.5	μf
Output	8.0	μf
Maximum Overall Length		5-3/4"
Maximum Diameter		2-1/16"
Bulb		ST-16
Cap		Small Metal
Base		Medium 4-Pin Bayonet

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS**R-F POWER AMPLIFIER - Class B (Telephony)***Carrier conditions per tube for use with a max. modulation fact. of 1.0*

D-C Plate Voltage	750 max.	volts
D-C Screen Voltage	175 max.	volts
D-C Plate Current	30 max.	ma.
R-F Grid Current	4 max.	amp.
Plate Input	22.5 max.	watts
Screen Input	3 max.	watts
Plate Dissipation	15 max.	watts
Typical Operation:		
Filament Voltage	7.5	7.5 a-c volts
D-C Plate Voltage	500	750 volts
D-C Screen Voltage	125	125 volts
D-C Grid Voltage	-30	-30 volts
D-C Plate Current	30	22 ma.
D-C Grid Current	5	3 approx. ma.
Driving Power ^o **	2	1.5 approx. watts
Power Output	3	4.5 approx. watts

^o At crest of a-f cycle with modulation factor of 1.0.**PLATE-MODULATED R-F POWER AMPLIFIER - Class C Telephony***Carrier conditions per tube for use with a max. modulation fact. of 1.0*

D-C Plate Voltage	500 max.	volts
D-C Screen Voltage	175 max.	volts
D-C Grid Voltage	-200 max.	volts
D-C Plate Current	60 max.	ma.
D-C Grid Current	15 max.	ma.
R-F Grid Current	4 max.	amp.

* with external shielding.

** See next page.

(continued on next page)

SEPT. 30, 1936

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

World Radio History

DATA



SCREEN GRID R-F POWER AMPLIFIER

(continued from preceding page)

Plate Input		30 max.	watts
Screen Input		2 max.	watts
Plate Dissipation		10 max.	watts
Typical Operation:			
Filament Voltage	7.5	7.5	a-c volts
D-C Plate Voltage	375	500	volts
D-C Screen Voltage	125	125	volts
D-C Grid Voltage	-120	-120	volts
D-C Plate Current	50	40	ma.
D-C Grid Current **	11	9	approx.ma.
Driving Power **	3	2.5	approx.watts
Power Output	8.5	10	approx.watts

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation †

D-C Plate Voltage		750 max.	volts		
D-C Screen Voltage		175 max.	volts		
D-C Grid Voltage		-200 max.	volts		
D-C Plate Current		60 max.	ma.		
D-C Grid Current		15 max.	ma.		
R-F Grid Current		5 max.	amp.		
Plate Input		45 max.	watts		
Screen Input		3 max.	watts		
Plate Dissipation		15 max.	watts		
Typical Operation:					
Filament Voltage	7.5	7.5	7.5	7.5	a-c volts
D-C Plate Voltage	375	500	525	750	volts
D-C Screen Voltage	125	125	125	125	volts
D-C Grid Voltage	-80	-80	-80	-80	volts
D-C Plate Current	55	50	45	40	ma.
D-C Grid Current **	11	9	6	5.5	approx.ma.
Driving Power **	2.5	2.0	1.2	1.0	approx.watts
Power Output	8.5	10	14	16	approx.watts

** Subject to wide variations as explained on sheet TRANS. TUBE RATINGS.

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

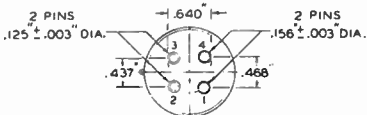
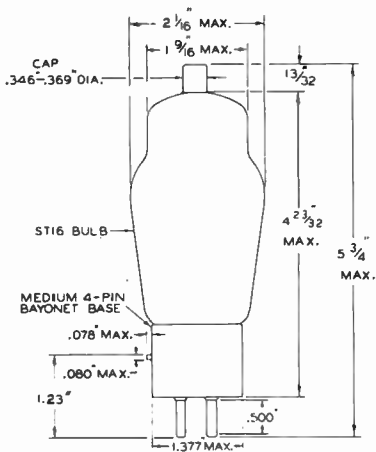
For use of the 865 at the higher frequencies, refer to sheet TRANS. TUBE RATINGS vs. FREQUENCY.



865

865

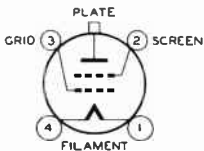
SCREEN GRID R-F POWER AMPLIFIER



BOTTOM VIEW OF BASE

925-4272R3

TUBE SYMBOL & TOP VIEW
OF
SOCKET CONNECTIONS



865

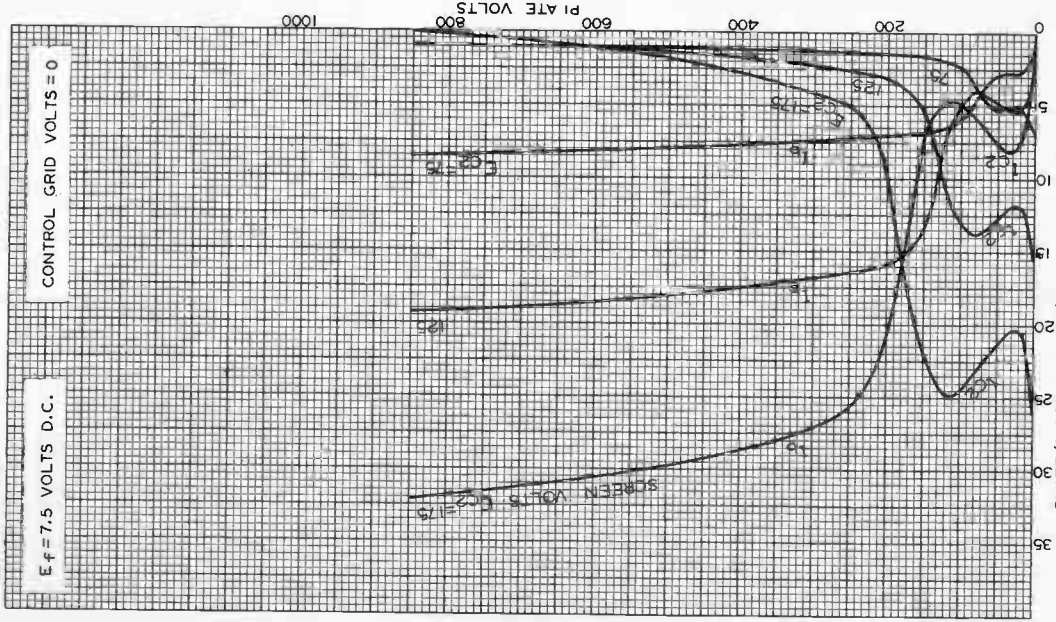


865

AVERAGE PLATE CHARACTERISTICS

E_f = 7.5 VOLTS D.C.

CONTROL GRID VOLTS = 0



MAY 10, 1935

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92S-5498RI



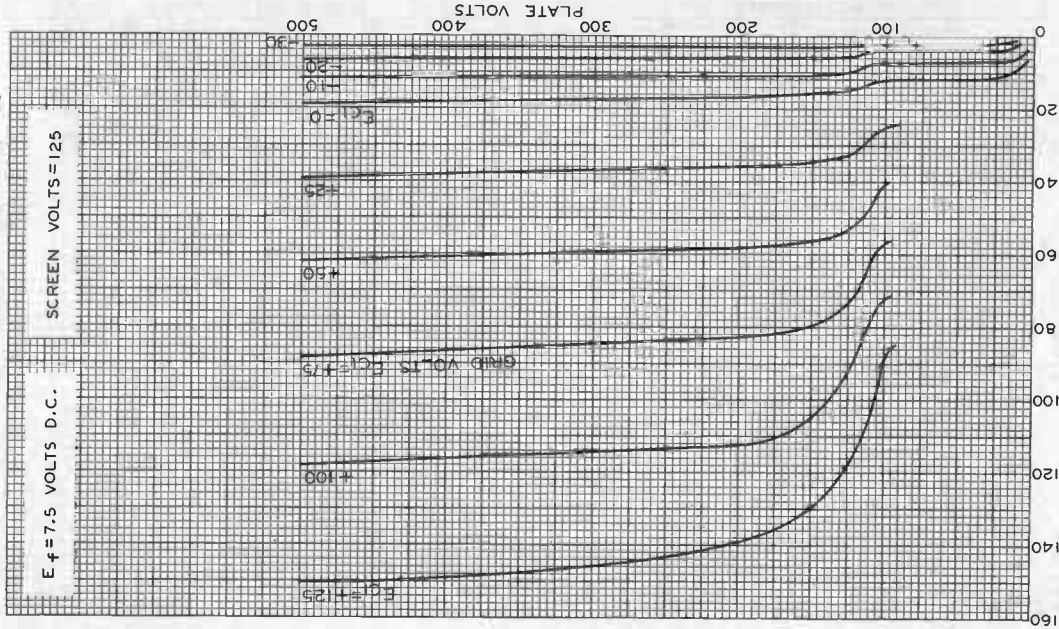
865

865

AVERAGE PLATE CHARACTERISTICS

$E_f = 7.5$ VOLTS D.C.

SCREEN VOLTS = 125



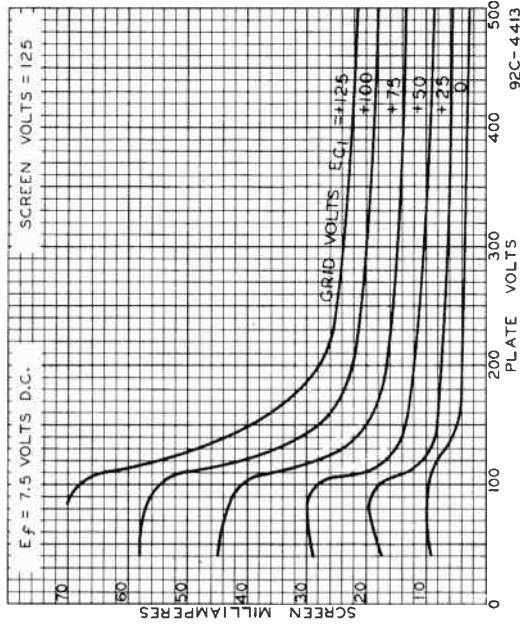
MAY 10, 1935

PLATE MILLIAMPERES
RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

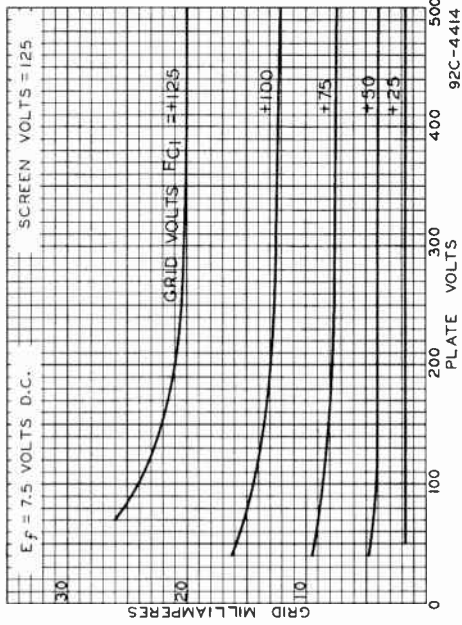
92C-4412



AVERAGE CHARACTERISTICS



AVERAGE CHARACTERISTICS





866-A/866

866-A/866

HALF-WAVE MERCURY-VAPOR RECTIFIER*This type supersedes RCA Types 866 and 866-A*

Filament *	Coated	
Voltage	2.5	a-c volts
Current	5.0	amp.
Overall Length		6-3/8" ± 3/16"
Seated Height		5-3/4" ± 3/16"
Maximum Diameter		2-7/16"
Bulb		ST-19
Cap	Medium, with Insulating Collar	
Base	Medium 4-Pin, Bayonet	
RCA Socket		Stock No.9937

*Maximum Ratings Are Absolute Values***MAXIMUM RATINGS**

	<u>Rating 1</u>	<u>Rating 2</u>	<u>Rating 3</u>	
Supply Frequency	150	150	1000	max. ~
Condensed-Mercury Temperature Range*	25 - 60	25 - 70	25 - 70	°C
Peak Inverse Plate Voltage	10000	2000	5000	max. volts
Peak Plate Current	1.0	2.0	1.0	max. amp.
Average Plate Current	0.25	0.5	0.25	max. amp.
Tube Voltage Drop	15	15	15	approx. volts

* The filament of the 866-A/866 is partially shielded from the plate to permit operation from a power supply having a frequency up to 1000 cycles per second. The filament should be allowed to come up to operating temperature before plate voltage is applied. For average conditions, the delay is approximately 30 seconds.

Operation at $40^{\circ} \pm 5^{\circ}\text{C}$ is recommended.

For shielding and r-f filter circuits, refer to Type 872-A/872.

NOTES ON RATINGS 1 and 3

The table on the next page gives empirical values of choke inductance (L) and the condenser capacitance (C) for choke-input-to-filter circuits which will keep the peak plate current below the recommended maximum, provided the average d-c load current does not exceed the maximum load-current values shown. Values of (L) and (C) are based on a 60-cycle a-c voltage supply.

The capacitance (C) is small enough to prevent excessive surges when power is first applied to the circuit, and yet large enough to give adequate filtering. If the inductance (L) is increased, it is permissible to increase the capacitance in the same proportion. In a two-section filter with two inductances of unequal value, the larger inductance should be placed next to the rectifier tubes. With such an arrangement, the maximum value of each capacitance should be determined on the basis of the value of the inductance preceding it.

The circuits (see Type 872-A/872) of Figs. 1, 2, and 3 will give a ripple voltage less than 5% when used with a two-section filter having the minimum of inductance and the corresponding maximum of capacitance. The circuits of Figs. 4 and 5 will give a ripple voltage of less than 1%. For any of these circuits, better filtering may be obtained with the inductances larger than the minimum given in the table. For these larger inductances, the corresponding capacitances may be increased by the same percentage as the inductances to give still better results.

← Indicates a change.

JUNE 30, 1944

RCA VICTOR DIVISION

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History

866-A/
866



866-A/866

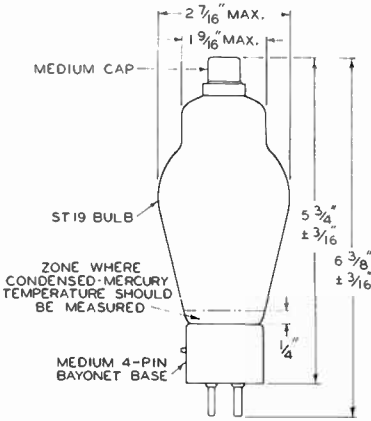
HALF-WAVE MERCURY-VAPOR RECTIFIER

For Circuits, refer to Type 872-A/872.

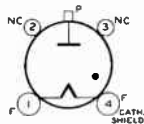
(continued from preceding page)

CIRCUIT	A-C INPUT VOLTS** (RMS)	MAX. D-C OUTPUT VOLTS TO FILTER	CHOKO INPUT ONE-SECTION FILTER		MAX. D-C LOAD CURRENT amperes
			MIN. CHOKO (L) henrys	MAX. CONDENSER (C) μ f	
SINGLE-PHASE FULL-WAVE (2 tubes) FIG. 1	3535 per tube	3180	8.0	1.25	0.5
	3000 " "	2700	6.8	1.5	0.5
	2000 " "	1800	4.5	2.1	0.5
	1500 " "	1350	3.4	2.8	0.5
SINGLE-PHASE FULL-WAVE (4 tubes) FIG. 2	7070 total	6360	16.0	0.6	0.5
	6000 " "	5400	13.5	0.7	0.5
	5000 " "	4500	11.0	0.9	0.5
	4000 " "	3600	8.9	1.1	0.5
THREE-PHASE HALF-WAVE FIG. 3	4080 per leg	4780	3.2	1.4	0.75
	3000 " "	3510	2.2	2.0	0.75
	2000 " "	2340	1.4	3.0	0.75
	1500 " "	1750	1.1	4.0	0.75
THREE-PHASE DOUBLE-Y PARALLEL FIG. 4	4080 per leg	4780	2.0	0.5	1.5
	3000 " "	3510	1.5	0.7	1.5
	2000 " "	2340	1.0	1.1	1.5
	1500 " "	1750	0.7	1.5	1.5
THREE-PHASE FULL-WAVE FIG. 5	4080 per leg	9570	1.8	0.5	0.75
	3000 " "	7020	1.4	0.7	0.75
	2000 " "	4680	0.9	1.2	0.75
	1500 " "	3510	0.7	1.5	0.75
SINGLE-PHASE FULL-WAVE (2 tubes) FIG. 1 *	3535 per tube	3950	-	-	0.25
	3000 " "	3390	-	-	0.25
	2000 " "	2260	-	-	0.25
	1500 " "	1700	-	-	0.25

* With condenser input to filter.
 ** For use under the conditions of the 10000-volt peak inverse rating. If the 866-A/866 is to be used under frequency and/or temperature conditions such that the peak inverse voltage is limited to 5000 volts, the a-c input voltage and d-c output voltage values in the table should be multiplied by a factor of 0.5 to give new values for the 5000-volt conditions.



BOTTOM VIEW OF SOCKET CONNECTIONS



- Pin 1 - Filament
- Pin 2 - No Connection
- Pin 3 - No Connection
- Pin 4 - Filament
- Cap - Plate

TUBE MOUNTING POSITION

VERTICAL: Base down.
 HORIZONTAL: No.

← Indicates a change.

92CM-6215R1

JUNE 30, 1944

RCA VICTOR DIVISION

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

WorldRadioHistory



869-B

869-B

HALF-WAVE MERCURY-VAPOR RECTIFIER*This Type Supersedes RCA Type 869-A*

Filament*	Coated	
Voltage	5.0	a-c volts
Current	18.0	amp.
Overall Length		14-1/4" ± 3-3/16"
Maximum Diameter		5-1/16"
Bulb		GT-40
Cap		No. 3905
Base		No. 3502
RCA End Mountings		UT-1085, UT-1086

MAXIMUM RATINGS

	Filament Excitation	
	In Phase	Out of Phase (90°-130°)
Peak Inverse Voltage:		
For supply frequency up to 150~		
Cond. Mercury Temp. 30° to 400C #	20000 max.	15000 max. volts
Cond. Mercury Temp. 30° to 800C ##	10000 max.	- volts
Peak Plate Current		
For supply frequency above 25~	10 max.	15 max. amp.
Average Plate Current ⁰	2.5 max.	5 max. amp.
Surge Current for max. of 0.1 sec.		100 max. amp.
Peak Tube Voltage Drop		10 approx. volts

* The filament of the 869-B should be allowed to come up to operating temperature before plate voltage is applied. For average conditions the delay is approximately 1 minute.

Forced ventilation. Recommended temperature of condensed mercury 35°C ± 5°C.

Natural ventilation. Recommended temperature of condensed mercury 35°C ± 5°C.

0 Averaged over a period of 30 sec. max.

For shielding and r-f filter circuits, refer to Type 871.

For circuits, refer to Type 872.

CIRCUIT	MAX. A-C INPUT VOLTS (RMS)	APPROX. D-C OUTPUT VOLTS TO FILTER	MAX. D-C OUTPUT CURRENT AMPERES	PHASE RELATION BETWEEN FILAMENT AND PLATE VOLTAGE
Single-Phase Full-wave (2 tubes) Fig. 1	7000 per tube	6300	5	In - Phase
	5250 per tube	4725	10	60° to 120°
Single-Phase Full-wave (4 tubes) Fig. 2	14000 total	12600	5	In - Phase
	10500 total	9450	10	60° to 120°
Three-Phase Half-wave (3 tubes) Fig. 3	8150 per leg	9550	7.5	In - Phase
	6100 per leg	7150	15	60° to 120°
Three-Phase Double-Y Parallel (6 tubes) Fig. 4	8150 per leg	9550	15	In - Phase
	6100 per leg	7150	30	60° to 120°
Three-Phase Full-wave (6 tubes) Fig. 5	8150 per leg	19100	7.5	In - Phase
	6100 per leg	14300	15	60° to 120°

July 1, 1941

RCA RADITRON DIVISION
RCA MANUFACTURING COMPANY, INC.

World Radio History

TENTATIVE DATA



872-A/872

872-A
872**HALF-WAVE MERCURY-VAPOR RECTIFIER***This Type Supersedes RCA Types 872 and 872-A*

Filament*	Coated	
Voltage	5.0	a-c volts
Current	7.5	amp.
Maximum Overall Length		8-1/2"
Maximum Diameter		2-5/16"
Bulb		T-18
Cap	Medium Metal, with Insulating Collar	
Base ^o	Jumbo 4-Large Pin	
RCA Socket (Type UT-541-A)	Stock No.9936	

*Maximum Ratings Are Absolute Values***MAXIMUM RATINGS**

Peak Inverse Voltage		
For Supply Frequency up to 150 ~		
Cond.-Mercury Temp. 20° to 60°C #	10000 max. volts	
Cond.-Mercury Temp. 20° to 70°C #	5000 max. volts	
Peak Plate Current	5 max. amp.	
Average Plate Current	1.25 max. amp.	
Tube Voltage Drop (Approx.)	10 volts	

^o Base shell is not connected within the base to either filament lead.
⁴ Operation at 40° ± 5°C is recommended.
^{*} The filament of the 872-A/872 should be allowed to come up to operating temperature before plate voltage is applied. For average conditions the delay is approximately 30 seconds.

If the plate return of each tube is not connected to the center-tap of the filament-supply winding, the return should be made to that side of the filament to which the cathode shield is connected.

Shielding and r-f filter circuits should be isolated from the transmitter as much as possible in order to avoid the detrimental effects of magnetic and electrostatic fields. These fields tend to produce breakdown in the mercury vapor, are detrimental to tube life and make filtering difficult. External shielding should be used when the tubes are in proximity to these external fields. R-f filtering should be used when the tubes are affected by r-f voltages. When shields are used, special attention must be given to adequate ventilation and to the maintenance of normal condensed-mercury temperature.

The table below classifies suitable rectifier circuits for the 872-A/872 and shows their safe maximum input and maximum output operating conditions for a peak inverse voltage of 10000 volts. The values are based on sine-wave input and the use of a suitable choke preceding any condenser in the filter circuit. If the 872-A/872 is to be used under temperature conditions such that the peak inverse voltage is limited to 5000 volts, the a-c input voltage and d-c output voltage values in the table should be multiplied by a factor of 0.5 to give the maximum values for the 5000-volt conditions.

CIRCUIT	MAXIMUM A-C INPUT VOLTS ^o (RMS)	APPROX. D-C OUTPUT VOLTS TO FILTER	MAX. D-C OUTPUT CURRENT amperes
SINGLE-PHASE FULL-WAVE (2 tubes) Fig. 1	3535 per tube	3180	2.5
SINGLE-PHASE FULL-WAVE (4 tubes) Fig. 2	7070 total	6360	2.5
THREE-PHASE HALF-WAVE Fig. 3	4080 per leg	4780	3.75
THREE-PHASE DOUBLE-Y PARALLEL Fig. 5	4080 per leg	4780	7.5
THREE-PHASE FULL-WAVE Fig. 5	4080 per leg	9570	3.75

^o For maximum peak inverse voltage of 10000 volts.

AUG. 1, 1942

RCA RADIODIODE DIVISION
RCA MANUFACTURING COMPANY, INC.

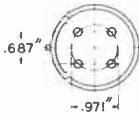
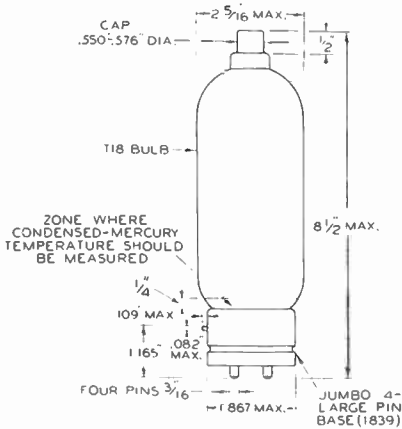
TENTATIVE DATA



872-A/
872

872-A/872

HALF-WAVE MERCURY-VAPOR RECTIFIER



BOTTOM VIEW OF BASE

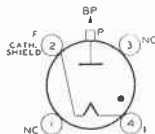
92C-6396

TUBE MOUNTING POSITION

VERTICAL: Base down.
HORIZONTAL: NO.

BOTTOM VIEW OF SOCKET CONNECTIONS

- Pin 1 - No Connection
- Pin 2 - Filament, Cathode Shield
- Pin 3 - No Connection
- Pin 4 - Filament
- Cap - Plate
- - Gas Type Tube



AUG. 1, 1942

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY INC
World Radio History

TENTATIVE DATA 2





880

880

R-F POWER AMPLIFIER, CLASS B MODULATOR

(WATER COOLED)

Filament	Tungsten	
Voltage	12.6	a-c or d-c volts
Current	320	amp.
Starting - The filament current must never exceed 1-1/2 times the normal value, even momentarily.		
Amplification Factor	20	
Direct Interelectrode Capacitances:		
Grid to Plate	26	μf
Grid to Filament	29	μf
Plate to Filament	2.6	μf
Maximum Overall Length		11-1/2"
Maximum Diameter		7"
Water Jacket		UT-4001
Cooling - water flow of 12 to 20 gallons per minute must start before application of any voltages. Water temperature at jacket outlet must not exceed 70°C under any conditions of operation. Air flow of 20 cu. ft./min. from three-inch nozzle, directed toward the top portion of the bulb, is required.		

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

This tube can often be operated with reduced filament voltage as explained on sheet TYPES OF CATHODES in front of book.

A-F POWER AMPLIFIER - Class B

D-C Plate Voltage	10500 max.	volts
Max.-Signal D-C Plate Current*	5 max.	amp.
Max.-Signal Plate Input*	40 max.	kw
Plate Dissipation*	15 max.	kw

Typical Operation:

Unless otherwise specified, values are for 2 tubes

D-C Plate Voltage	7500	10000	volts
D-C Grid Voltage #	-300	-430	volts
Peak A-F Grid-to-Grid Voltage	1450	1690	volts
Zero-Signal D-C Plate Current	1.0	1.0	amp.
Max.-Signal D-C Plate Current	7	7	amp.
Load Resistance (per tube)	550	800	ohms
Effective Load Resistance (plate to plate)	2200	3200	ohms
Max.-Signal Driving Power	250	225 approx.	watts
Max.-Signal Power Output	30	45 approx.	kw

R-F POWER AMPLIFIER - Class B Telephony

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

D-C Plate Voltage	10500 max.	volts
D-C Plate Current	4 max.	amp.
Plate Input	32 max.	kw
Plate Dissipation	20 max.	kw

Typical Operation:

D-C Plate Voltage	7500	10000	volts
D-C Grid Voltage #	-310	-430	volts
Peak R-F Grid Voltage	450	550	volts
D-C Plate Current	3.5	3	amp.
Driving Power ** 0	500	500 approx.	watts
Power Output **	8	10 approx.	kw

* Averaged over any audio-frequency cycle of sine-wave form.
#, 0, ** See end of tabulation.

MARCH 15, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.
World Radio History

TENTATIVE DATA



R-F POWER AMPLIFIER, CLASS B MODULATOR

(continued from preceding page)

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

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

D-C Plate Voltage	10500 max.	volts
D-C Grid Voltage	-1200 max.	volts
D-C Plate Current	3.6 max.	amp.
D-C Grid Current	0.6 max.	amp.
Plate Input	36 max.	kw
Plate Dissipation	12 max.	kw
Typical Operation:		
D-C Plate Voltage	7500 10000	volts
D-C Grid Voltage Δ	{ -1000 -1200	volts
	{ 3300 2400	ohms
Peak R-F Grid Voltage	1550 1770	volts
D-C Plate Current	3 3.6	amp.
D-C Grid Current**	0.3 0.5	<u>approx. amp.</u>
Driving Power**	460 880	<u>approx. watts</u>
Power Output	16 28	<u>approx. kw</u>

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telephony

Key-down conditions per tube without modulation ##

D-C Plate Voltage	10500 max.	volts
D-C Grid Voltage	-1200 max.	volts
D-C Plate Current	6 max.	amp.
D-C Grid Current	0.6 max.	amp.
Plate Input	60 max.	kw
Plate Dissipation	20 max.	kw
Typical Operation:		
D-C Plate Voltage	7500 10000 10000	volts
D-C Grid Voltage Δ	{ -600 -800 -800	volts
	{ 1340 2000 1600	ohms
Peak R-F Grid Voltage	1250 1400 1500	volts
D-C Plate Current	5 4.5 6	amp.
D-C Grid Current**	0.45 0.4 0.5	<u>approx. amp.</u>
Driving Power**	560 550 750	<u>approx. watts</u>
Power Output	27 34 45	<u>approx. kw</u>

* Grid voltages are given with respect to the mid-point of filament operated on a.c. If d.c. is used, each stated value of grid voltage should be reduced by one-half the filament voltage and the circuit returns made to the negative end of the filament.

o At crest of audio-frequency cycle with modulation factor of 1.0.

** Subject to wide variations as explained on sheet TRANS. TUBE RATINGS.

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

Δ Obtained by grid resistor of value shown or by other self- or fixed-bias methods.

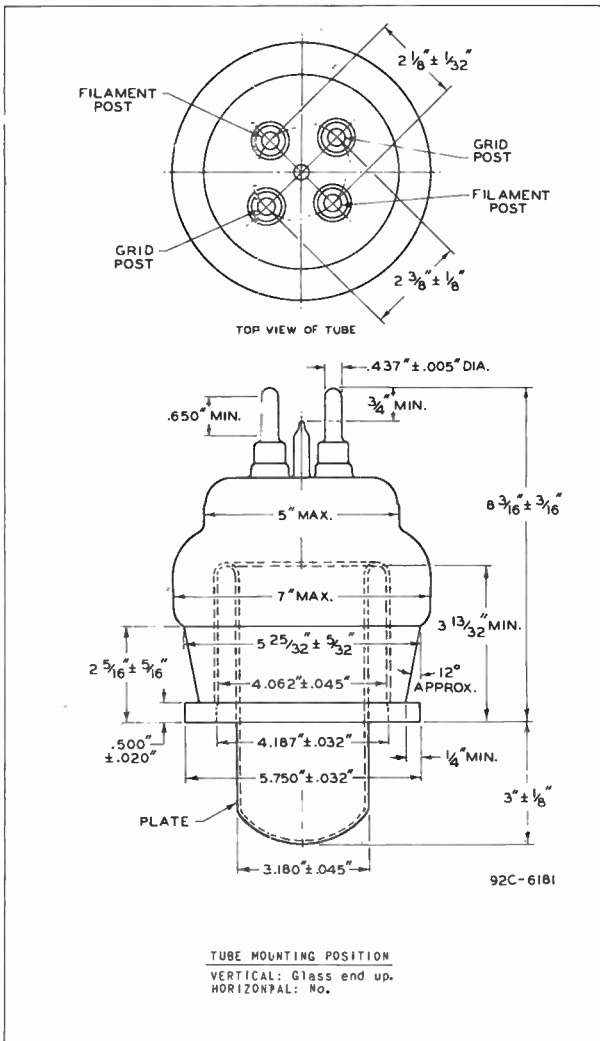
Data on operating frequencies for the 880 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.



880

880

R-F POWER AMPLIFIER, CLASS B MODULATOR



MARCH 15, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

World Radio History

TENTATIVE DATA 2

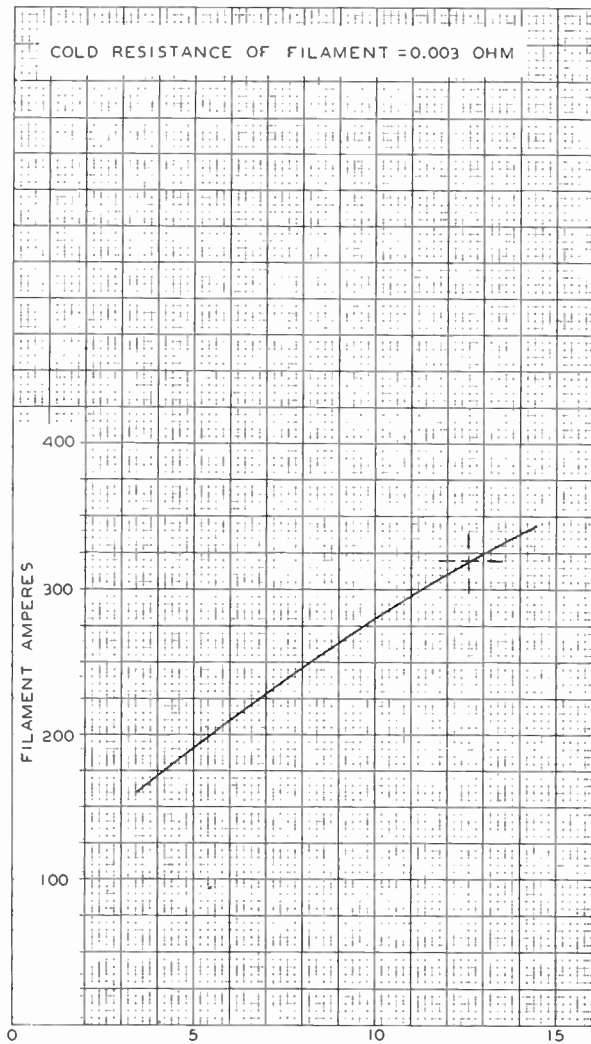
880



880

AVERAGE FILAMENT CHARACTERISTICS

COLD RESISTANCE OF FILAMENT = 0.003 OHM



JUNE 17, 1940

FILAMENT VOLTS

RCA RADIOTRON DIVISION

RCA MANUFACTURING COMPANY, INC.

World Radio History

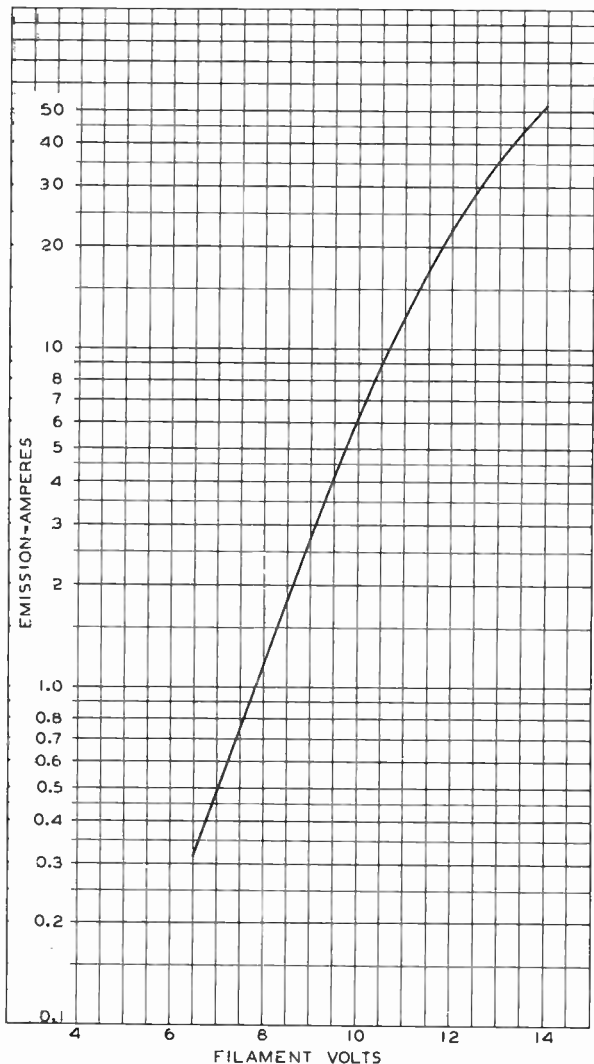
92C-6179



880

880

AVERAGE FILAMENT-EMISSION CHARACTERISTIC



JUNE 17, 1940

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6180

880



880

AVERAGE CONSTANT-CURRENT CHARACTERISTICS (TENTATIVE)

$E_f = 12.6$ VOLTS A.C.

GRID AMPERES = I_C
PLATE AMPERES = I_b

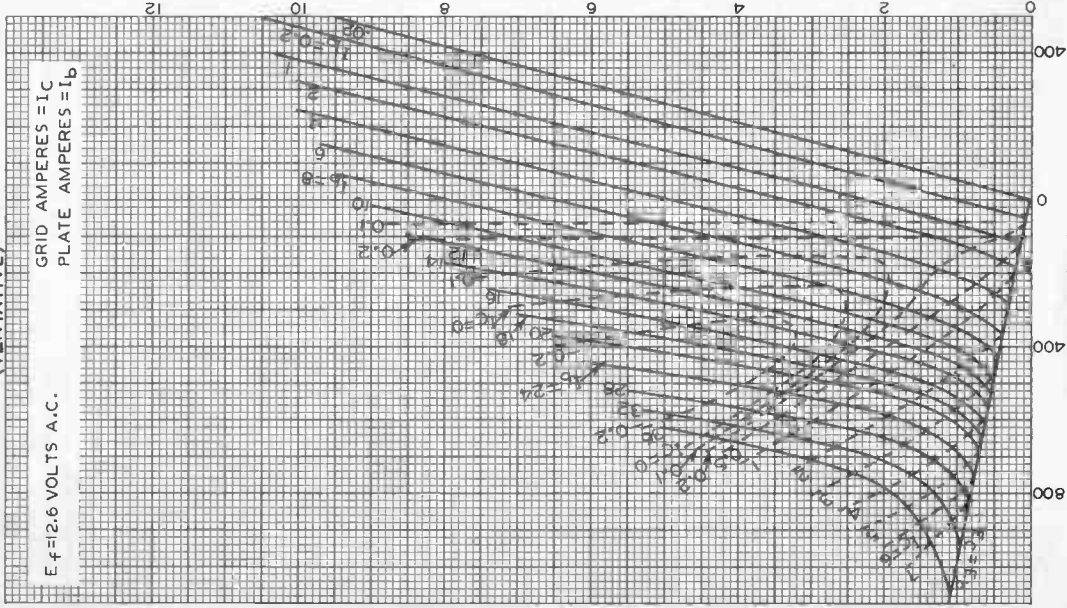


PLATE KILOVOLTS (E_p)

JUNE 17, 1940

RCA Radiotron Division
RCA Manufacturing Company, Inc.

92C-6178



889-A

889-A

TRANSMITTING TRIODE

WATER & FORCED-AIR COOLED

Supersedes Type 889

GENERAL DATA

Electrical:

Filament, Tungsten:

Voltage 11 volts

Current 125 amp

Starting Current: The filament current must never exceed 187 amperes, even momentarily.

Amplification Factor. 21

Direct Interelectrode Capacitances (Approx.):

Grid to Plate 17.5 $\mu\mu\text{f}$

Grid to Filament. 23.3 $\mu\mu\text{f}$

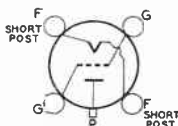
Plate to Filament 2.7 $\mu\mu\text{f}$

Mechanical:

Terminal Connections:

TOP VIEW

F - Filament
(Short Terminals)



P - Water-Cooled
Plate Terminal

G - Grid
(Long Terminals)

Mounting Position. Vertical only, glass end up

Overall Length 10-7/16" \pm 1/4"

Maximum Diameter 3-5/8"

Water Jacket type UT-4000

Water Flow: 3 to 6 gallons per minute must start before application of any voltages, and must continue for at least 5 minutes after removal of all voltages. Water temperature at jacket outlet must not exceed 70°C under any conditions of operation.

Air Flow: 15 cu. ft. per minute through a 3-inch diameter nozzle must be directed downward toward grid and plate seals before and during the application of any voltages to limit temperature of glass at hottest point to 150°C.

This tube can often be operated at reduced filament voltage, as explained on sheet TYPES OF CATHODES in General Section.

AF POWER AMPLIFIER & MODULATOR - Class B

Maximum Ratings, Absolute Values:

DC PLATE VOLTAGE. 8500 max. volts

MAX. -SIGNAL DC PLATE CURRENT* 2 max. amp

MAX. -SIGNAL PLATE INPUT* 12 max. kw

PLATE DISSIPATION* 5 max. kw

Typical Operation:

Unless otherwise specified, values are for two tubes

DC Plate Voltage. 5000 6000 7500 . . volts

DC Grid Voltage*. -180 -230 -300 . . volts

Peak AF Grid-to-Grid Volt. 1460 1680 1700 . . volts

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

• See next page.

889-A



889-A

TRANSMITTING TRIODE

Zero-Signal DC Plate Cur.	0.4	0.4	0.4	..	amp
Max.-Signal DC Plate Cur.	3.2	3.6	3.2	..	amp
Effective Load Resistance (plate-to-plate)	2520	3680	5000	..	ohms
Max.-Signal Driving Power (Approx.)	170	180	150	..	watts
Max.-Signal Power Output (Approx.)	8.8	12	15	..	kw

RF POWER AMPLIFIER - Class B Telephony

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

Maximum Ratings, Absolute Values:

DC PLATE VOLTAGE.	8500 max.	volts
DC PLATE CURRENT.	1.0 max.	amp
PLATE INPUT	7.5 max.	kw
PLATE DISSIPATION	5.0 max.	kw

Typical Operation:

DC Plate Voltage.	6000	7500	..	volts
DC Grid Voltage [⊙]	-250	-300	..	volts
Peak RF Grid Voltage.	920	1000	..	volts
DC Plate Current.	0.9	0.9	..	amp
Driving Power (Approx.) ^{**} #.	95	80	..	watts
Power Output (Approx.).	1.5	2	..	kw

PLATE-MODULATED RF POWER AMPLIFIER - Class C Telephony

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

Maximum Ratings, Absolute Values:

DC PLATE VOLTAGE.	6000 max.	volts
DC GRID VOLTAGE	-1000 max.	volts
DC PLATE CURRENT.	1.0 max.	amp
DC GRID CURRENT	0.25 max.	amp
PLATE INPUT	6.0 max.	kw
PLATE DISSIPATION	3.0 max.	kw

Typical Operation:

DC Plate Voltage.	5000	6000	..	volts
DC Grid Voltage	-800	-900	..	volts
Peak RF Grid Voltage.	1300	1420	..	volts
DC Plate Current.	0.9	1.0	..	amp
DC Grid Current (Approx.)#.	0.12	0.1	..	amp
Driving Power (Approx.)#.	155	140	..	watts
Power Output (Approx.).	2.75	4	..	kw

RF POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

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

Maximum Ratings, Absolute Values:

DC PLATE VOLTAGE.	8500 max.	volts
DC GRID VOLTAGE	-1000 max.	volts

⊙, **, #, ##: See next page.



889-A

889-A

TRANSMITTING TRIODE

DC PLATE CURRENT	2.0 max.	amp
DC GRID CURRENT	0.25 max.	amp
PLATE INPUT	16 max.	kw
PLATE DISSIPATION	5 max.	kw

Typical Operation:

DC Plate Voltage	5000	6000	7500	. . volts
DC Grid Voltage	-500	-600	-800	. . volts
Peak RF Grid Voltage	1200	1460	1830	. . volts
DC Plate Current	1.5	1.8	2.0	. . amp
DC Grid Current (Approx.)#.	0.19	0.21	0.24	. . amp
Driving Power (Approx.)#.	220	290	400	. . watts
Power Output (Approx.)	5	7	10	. . kw

● With ac filament excitation.

** At crest of audio-frequency cycle with modulation factor of 1.0.

Subject to wide variations as explained on sheet TUBE RATINGS in General Section.

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

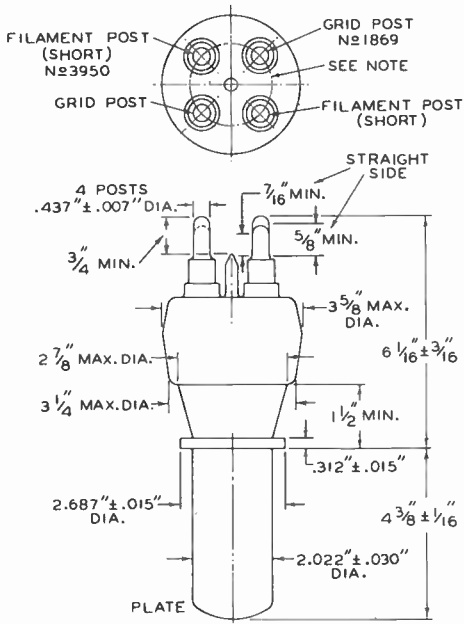
Data on operating frequencies for the 889-A are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

889-A



889-A

TRANSMITTING TRIODE



NOTE: THE TUBE BASE SHALL BE CAPABLE OF ENTERING TO A DISTANCE OF 5/8" IN A FLAT-PLATE GAUGE HAVING FOUR HOLES .536" ± .001" DIAMETER ARRANGED ON A CIRCLE OF 2.125" ± .001" DIAMETER AT ANGLES OF 90° ± 10'.

92CM-6039R2

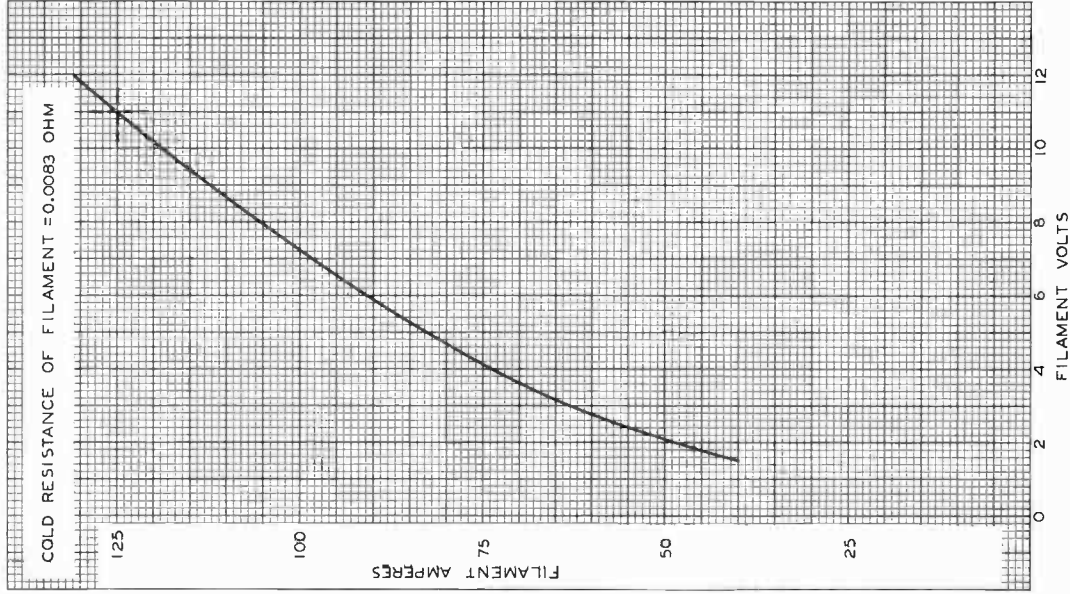


889-A

889-A

AVERAGE FILAMENT CHARACTERISTIC

COLD RESISTANCE OF FILAMENT = 0.0083 OHM



MAY 22, 1939

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

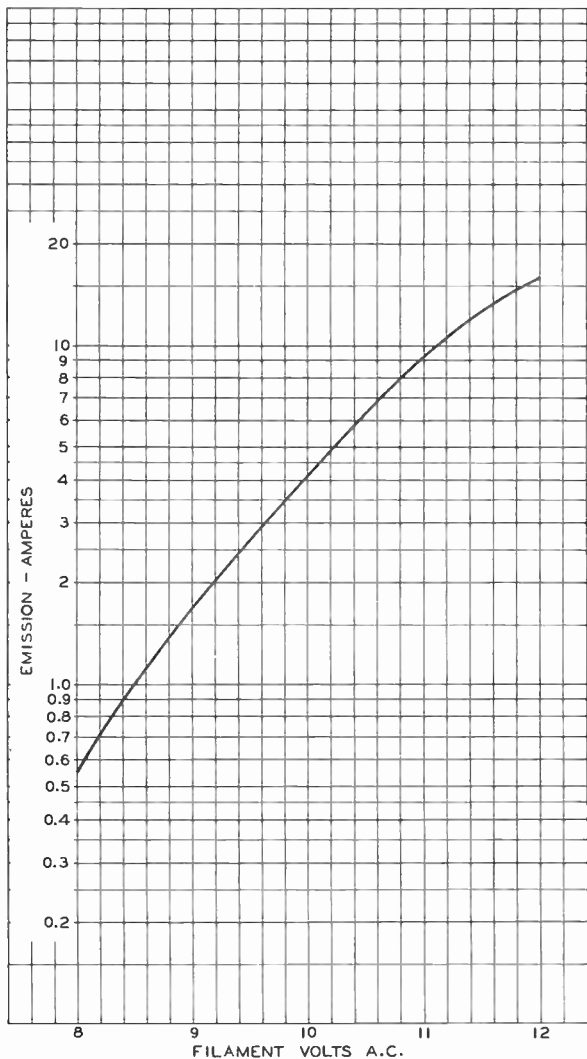
92C-6086

889-A



889-A

AVERAGE FILAMENT-EMISSION CHARACTERISTIC



JUNE 10, 1940

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92C-6174

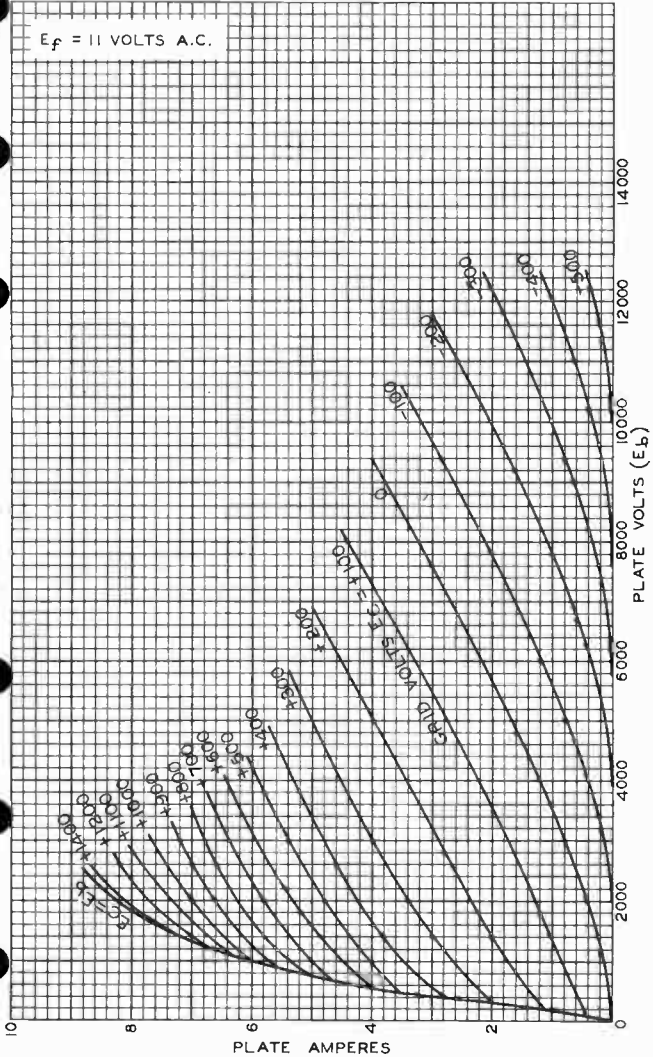


889-A

889-A

AVERAGE PLATE CHARACTERISTICS

$E_f = 11$ VOLTS A.C.



JUNE 14, 1939

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

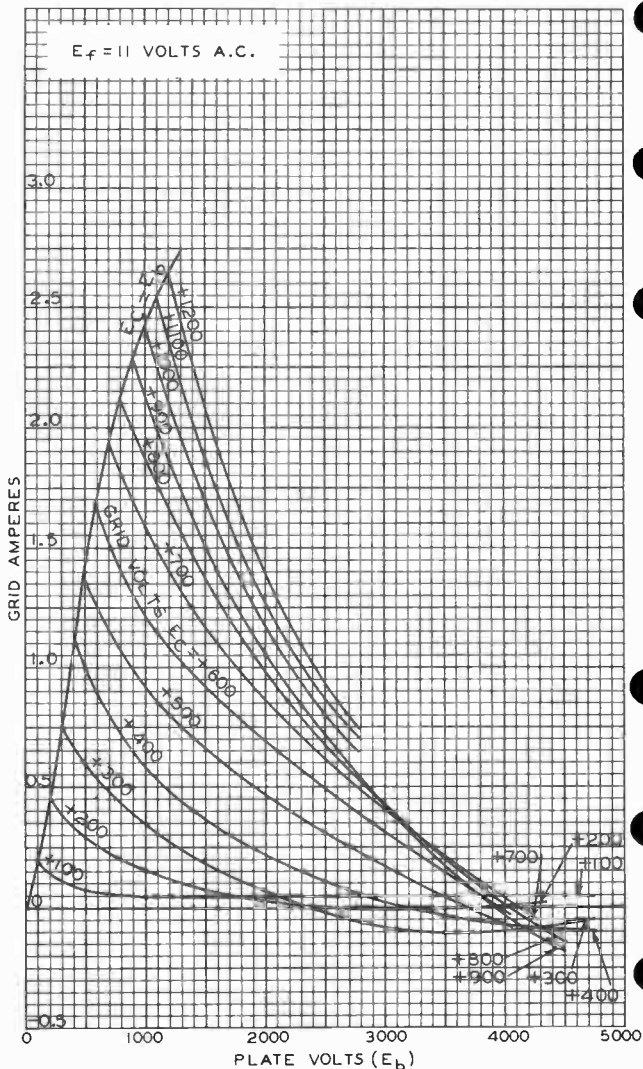
92C-6063

889-A



889-A

TYPICAL CHARACTERISTICS



JUNE 15, 1939

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92C-6064

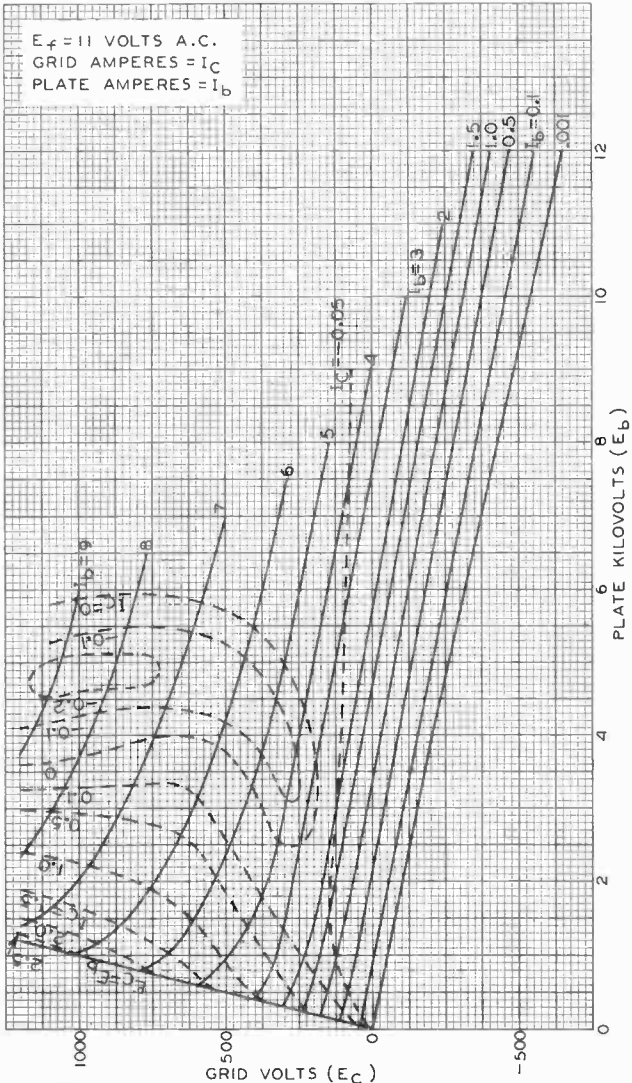


889-A

889-A

AVERAGE CONSTANT-CURRENT CHARACTERISTICS

$E_f = 11$ VOLTS A.C.
 GRID AMPERES = I_C
 PLATE AMPERES = I_b



MAY 22, 1939

GRID VOLTS (E_c)

TUBE DIVISION

92C-6088





889R-A

889R-A

TRANSMITTING TRIODE

FORCED-AIR COOLED

Supersedes Type 889-R

GENERAL DATA

Electrical:

Filament, Tungsten:

Voltage 11 volts

Current 125 amp

Starting Current: The filament current must never exceed 187 amperes, even momentarily.

Amplification Factor 21

Direct Interelectrode Capacitances (Approx.):

Grid to Plate 18.5 $\mu\mu\text{f}$

Grid to Filament 23.3 $\mu\mu\text{f}$

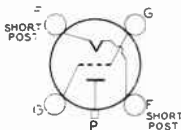
Plate to Filament 3.0 $\mu\mu\text{f}$

Mechanical:

Terminal Connections:

TOP VIEW

- F - Filament (Short Terminals)
- G - Grid (Long Terminals)



P - Water-Cooled Plate Terminal

Mounting Position Vertical only, glass end up

Overall Length 11-1/2" \pm 3/8"

Radiator Clamp Diameter 10-7/8" \pm 1/8"

Radiator Integral part of tube

Air Flow:

For Plate Dissipation of
3.3 Kw 4.0 Kw 5.0 Kw

Through Radiator 325 min. 390 min. 500 min. cfm

At Pressure of 0.38 min. 0.5 min. 0.7 min. in. of water

The specified air flow should be delivered by a blower vertically upward through the radiator before and during the application of any voltages.

To Grid and Filament Seals 15 cfm

The specified air flow must be directed vertically downward from a 3-inch diameter nozzle upon the grid and filament seals before and during the application of any voltages in order to limit the temperature of the glass at the hottest part to the maximum specified value.

Bulb Temperature 150 max. $^{\circ}\text{C}$

Input Air Temperature (to Radiator) 50 max. $^{\circ}\text{C}$

Radiator Temperature 180 max. $^{\circ}\text{C}$

This tube can often be operated with reduced filament voltage, as explained on sheet TYPES OF CATHODES in General Section.

AF POWER AMPLIFIER & MODULATOR - Class B

Maximum Ratings, Absolute Values:

DC PLATE VOLTAGE 8500 max. volts

MAX.-SIGNAL DC PLATE CURRENT* 2.0 max. amp

MAX.-SIGNAL PLATE INPUT* 12 max. kw

PLATE DISSIPATION* 5.0 max. kw

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

889R-A



889R-A

TRANSMITTING TRIODE

Typical Operation:

Unless otherwise specified, values are for two tubes

DC Plate Voltage.	5000	6000	7500	.. volts
DC Grid Voltage*.	-180	-230	-300	.. volts
Peak AF Grid-to-Grid Volt.	1460	1680	1700	.. volts
Zero-Signal DC Plate Cur.	0.4	0.4	0.4	.. amp
Max.-Signal DC Plate Cur.	3.2	3.6	3.2	.. amp
Effective Load Resistance (plate-to-plate).	2520	3680	5000	.. ohms
Max.-Signal Driving Power (Approx.)	170	180	150	.. watts
Max.-Signal Power Output (Approx.)	8.8	12	15	.. kw

RF POWER AMPLIFIER - Class B Telephony

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

Maximum Ratings, Absolute Values:

DC PLATE VOLTAGE.	8500 max.	volts
DC PLATE CURRENT.	1.0 max.	amp
PLATE INPUT	7.5 max.	watts
PLATE DISSIPATION	5.0 max.	watts

Typical Operation:

DC Plate Voltage.	6000	7500	.. volts
DC Grid Voltage	-250	-300	.. volts
Peak RF Grid Voltage.	920	1000	.. volts
DC Plate Current.	0.9	0.9	.. amp
Driving Power (Approx.)**#.	95	80	.. watts
Power Output (Approx.).	1.5	2	.. kw

PLATE-MODULATED RF POWER AMPLIFIER - Class C Telephony

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

Maximum Ratings, Absolute Values:

DC PLATE VOLTAGE.	6000 max.	volts
DC GRID VOLTAGE*.	-1000 max.	volts
DC PLATE CURRENT.	1.0 max.	amp
DC GRID CURRENT	0.25 max.	amp
PLATE INPUT	6 max.	kw
PLATE DISSIPATION	3 max.	kw

Typical Operation:

DC Plate Voltage.	5000	6000	.. volts
DC Grid Voltage	-800	-900	.. volts
Peak RF Grid Voltage.	1300	1420	.. volts
DC Plate Current.	0.9	1.0	.. amp
DC Grid Current (Approx.)#.	0.12	0.1	.. amp

•, **, #: See next page.



889R-A

889R-A

TRANSMITTING TRIODE

Driving Power (Approx.)#	155	140	.. watts
Power Output (Approx.)	2.75	4	.. kw

RF POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

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

Maximum Ratings, Absolute Values:

DC PLATE VOLTAGE	8500	max.	volts
DC GRID VOLTAGE	-1000	max.	volts
DC PLATE CURRENT	2.0	max.	amp
DC GRID CURRENT	0.25	max.	amp
PLATE INPUT	16	max.	kw
PLATE DISSIPATION	5	max.	kw

Typical Operation:

DC Plate Voltage	5000	6000	7500	.. volts
DC Grid Voltage	-500	-600	-800	.. volts
Peak RF Grid Voltage	1240	1460	1830	.. volts
DC Plate Current	1.5	1.8	2.0	.. amp
DC Grid Current (Approx.)#	0.19	0.21	0.24	.. amp
Driving Power (Approx.)#	220	290	400	.. watts
Power Output (Approx.)	5	7	10	.. kw

● With ac filament excitation.

** At crest of audio-frequency cycle with modulation factor of 1.0.

Subject to wide variations as explained on sheet TUBE RATINGS in General Section.

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

Data on operating frequencies for the 889R-A are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

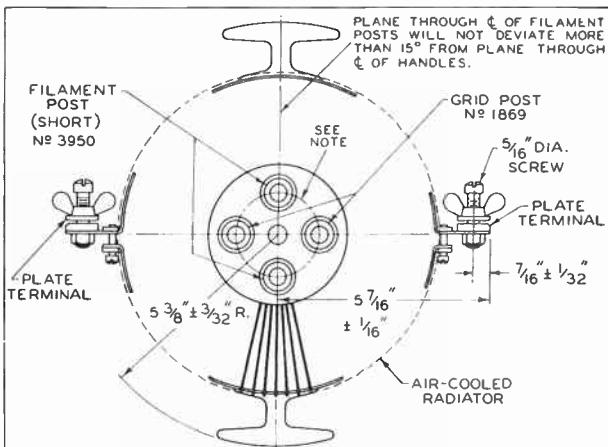
CURVES
FOR THE 889R-A ARE THE SAME
AS THOSE FOR TYPE 889-A

889R-A

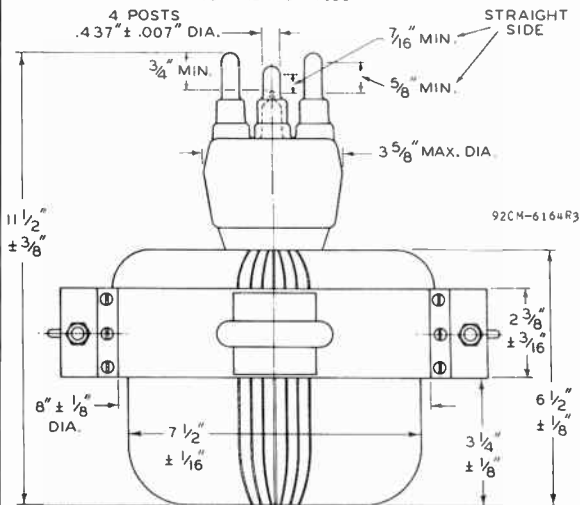


889R-A

TRANSMITTING TRIODE



TOP VIEW OF TUBE



NOTE: THE TUBE BASE SHALL BE CAPABLE OF ENTERING TO A DISTANCE OF 5/8" IN A FLAT-PLATE GAUGE HAVING FOUR HOLES .536" \pm .001" DIAMETER ARRANGED ON A CIRCLE OF 2.125" \pm .001" DIAMETER AT ANGLES OF $90^\circ \pm 10'$

JUNE 20, 1946

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-6164R3



891

891

R-F POWER AMPLIFIER, MODULATOR

(WATER COOLED)

Filament	Tungsten, Two-Unit Type	
Excitation	1 ϕ A.C., 2 ϕ A.C., or D.C.	
	See <i>FILAMENT CONNECTIONS</i> under this type.	
Voltage per unit	11	volts
Current per unit	60	amp.
Starting:	The current in each unit must never exceed 120 amperes.	
Note:	When a single-phase or d-c supply is used, do not connect the two filament units in parallel. Doing so will overheat common filament lead (large terminal) and damage tube.	
Amplification Factor	8	
Direct Interelectrode Capacitances (approx.):		
Grid to Plate	27	μ f
Grid to Filament	18	μ f
Plate to Filament	2	μ f
Maximum Overall Length		20-5/8"
Maximum Radius		6-1/2"
Cap		No. 3950
Base		No. 3232
Water Jacket		Type UT-1285-A
Cooling	- water flow of 3 to 8 gallons per minute must start before application of any voltages and continue for at least 5 minutes after removal of voltages. Water temperature must not exceed 70°C at jacket outlet under any conditions of operation.	

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

This tube can often be operated with reduced filament voltage as explained on sheet *TYPES OF CATHODES* in front of book.

A-F POWER AMPLIFIER & MODULATOR - Class A₁

D-C Plate Voltage	12000 max.	volts
Plate Input	7.5 max.	kw
Plate Dissipation	7.5 max.	kw
Typical Operation:		
D-C Plate Voltage	8000	volts
D-C Grid Voltage ¶	-E30	volts
Peak A-F Grid Voltage	700	volts
D-C Plate Current	0.9	amp.
Load Resistance	5200	ohms
U.P.O. (5% second harmonic)	2	kw

¶ The d-c resistance in the grid circuit should not exceed 100000 ohms when cathode bias is used, or 50000 ohms with fixed bias.

A-F POWER AMPLIFIER & MODULATOR - Class B

D-C Plate Voltage	15000 max.	volts
Max.-Signal D-C Plate Current*	2.0 max.	amp.
Max.-Signal Plate Input*	20 max.	kw
Plate Dissipation*	5 max.	kw
Typical Operation:		

Unless otherwise specified, values are for 2 tubes.

D-C Plate Voltage	6000	10000	12500	volts
D-C Grid Voltage	-600	-1100	-1450	volts
Peak A-F Grid-to-Grid Volt.	2200	3400	3960	volts
Zero-Sig. D-C Plate Cur.	0.5	0.5	0.4	amp.
Max.-Sig. D-C Plate Cur.	2.3	3.2	2.8	amp.

* Averaged over any audio-frequency cycle of sine-wave form. Indicates a change.

April 15, 1940

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA



R-F POWER AMPLIFIER, MODULATOR

(continued from preceding page)

Load Resistance (per tube)	1250	1600	2500	ohms
Effective Load Resistance (plate to plate)	5000	6400	10000	ohms
Max.-Signal Driving Power	260	324	350	<u>approx.watts</u>
Max.-Signal Power Output	8	20	22	<u>approx.watts</u>

R-F POWER AMPLIFIER - Class B Telephony

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

D-C Plate Voltage		15000 max.	volts
D-C Plate Current		1.0 max.	amp.
R-F Grid Current		24 max.	amp.
Plate Input		10 max.	kw
Plate Dissipation		6 max.	kw

Typical Operation:

D-C Plate Voltage	6000	10000	14000	volts
D-C Grid Voltage	-600	-1130	-1600	volts
Peak R-F Grid Voltage	600	830	1000	volts
D-C Plate Current	0.7	0.8	0.56	amp.
Driving Power [∞]	82	0	0	<u>approx.watts</u>
Power Output	1	2	2.275	<u>approx.kw</u>

[∞] At crest of a-f cycle with modulation factor of 1.0.

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

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

D-C Plate Voltage		8000 max.	volts
D-C Grid Voltage		-3000 max.	volts
D-C Plate Current		1.0 max.	amp.
D-C Grid Current		0.15 max.	amp.
R-F Grid Current		24 max.	amp.
Plate Input		8 max.	kw
Plate Dissipation		4 max.	kw

Typical Operation:

D-C Plate Voltage	6000	8000	volts
D-C Grid Voltage	-2000	-2400	volts
Peak R-F Grid Voltage	2650	3100	volts
D-C Plate Current	0.75	0.78	amp.
D-C Grid Current [∞]	0.1	0.08	<u>approx.amp.</u>
Driving Power [∞]	260	260	<u>approx.watts</u>
Power Output	3.5	5	<u>approx.kw</u>

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation ##

D-C Plate Voltage		12000 max.	volts
D-C Grid Voltage		-3000 max.	volts
D-C Plate Current		2.0 max.	amp.
D-C Grid Current		0.15 max.	amp.
R-F Grid Current		30 max.	amp.
Plate Input		18 max.	kw
Plate Dissipation		6 max.	kw

[∞] Subject to wide variations as explained on sheet TRANS. TUBE RATINGS.
← indicates a change.



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891

R-F POWER AMPLIFIER, MODULATOR

(continued from preceding page)

Typical Operation:

D-C Plate Voltage	8000	10000	volts
D-C Grid Voltage	-1800	-2000	volts
Peak R-F Grid Voltage	2500	2900	volts
D-C Plate Current	1.1	1.45	amp.
D-C Grid Current ^{∞∞}	0.06	0.105	<u>approx.watts</u>
Driving Power ^{∞∞}	150	310	<u>approx.watts</u>
Power Output	6.5	10	<u>approx.kw</u>

^{∞∞} subject to wide variations as explained on sheet TRANS. TUBE RATINGS.

Data on operating frequencies for the 891 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

FILAMENT-EMISSION CHARACTERISTIC
is the same as that for Type 207

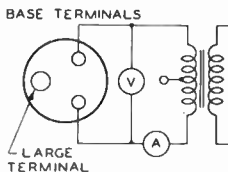
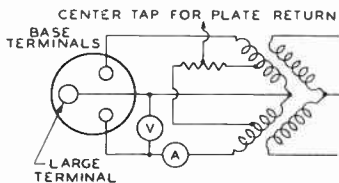
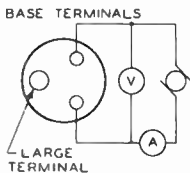
FILAMENT CHARACTERISTIC
is the same as that for Type 892



891

891

FILAMENT CONNECTIONS AND EXCITATION CIRCUITS

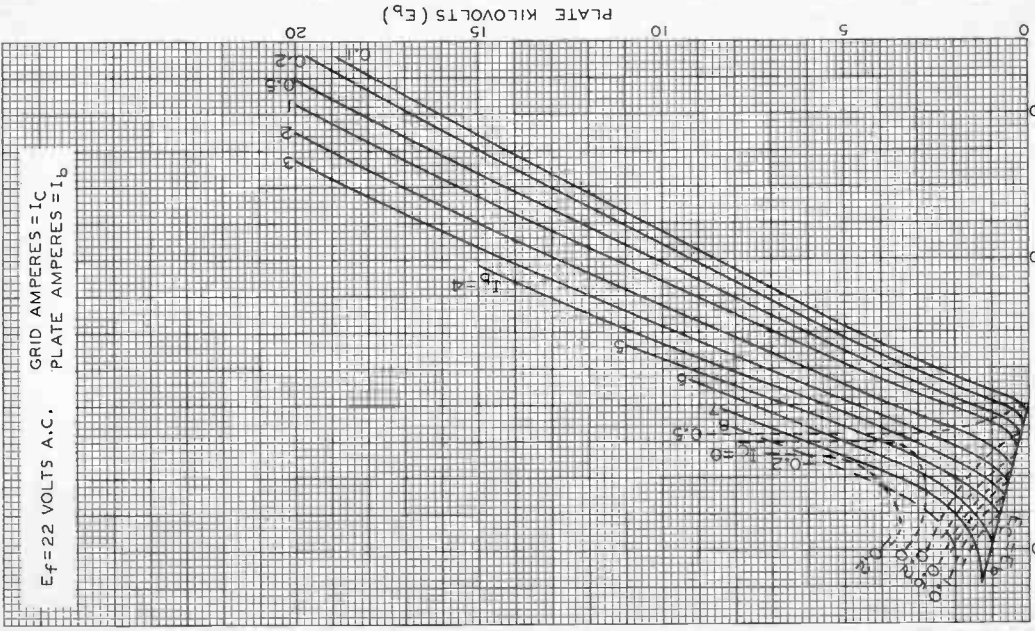
WITH SINGLE-PHASE
A-C EXCITATIONV = 22 VOLTS
A = 60 AMPERESWITH TWO-PHASE
(QUARTER PHASE)
A-C EXCITATIONV = 11 VOLTS
A = 60 AMPERESWITH D-C
EXCITATIONV = 22 VOLTS
A = 60 AMPERES



891

AVERAGE CONSTANT-CURRENT CHARACTERISTICS

$E_f = 22$ VOLTS A.C. GRID AMPERES = I_c
PLATE AMPERES = I_b



JAN. 25, 1940

GRID VOLTS (E_c)
RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6134

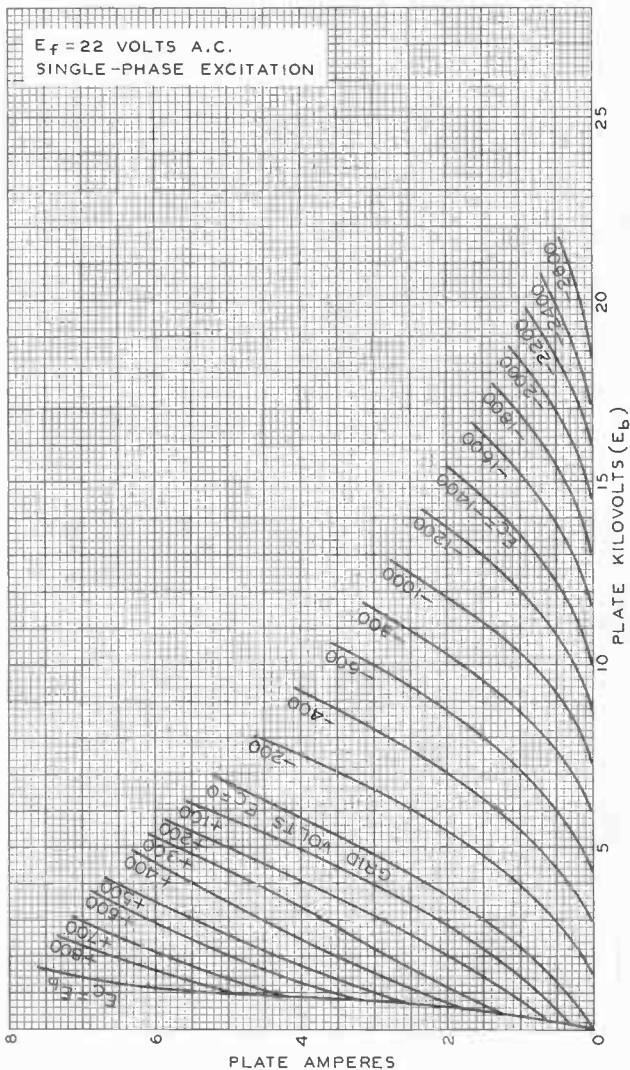


891

891

AVERAGE PLATE CHARACTERISTICS

$E_f = 22$ VOLTS A.C.
SINGLE-PHASE EXCITATION



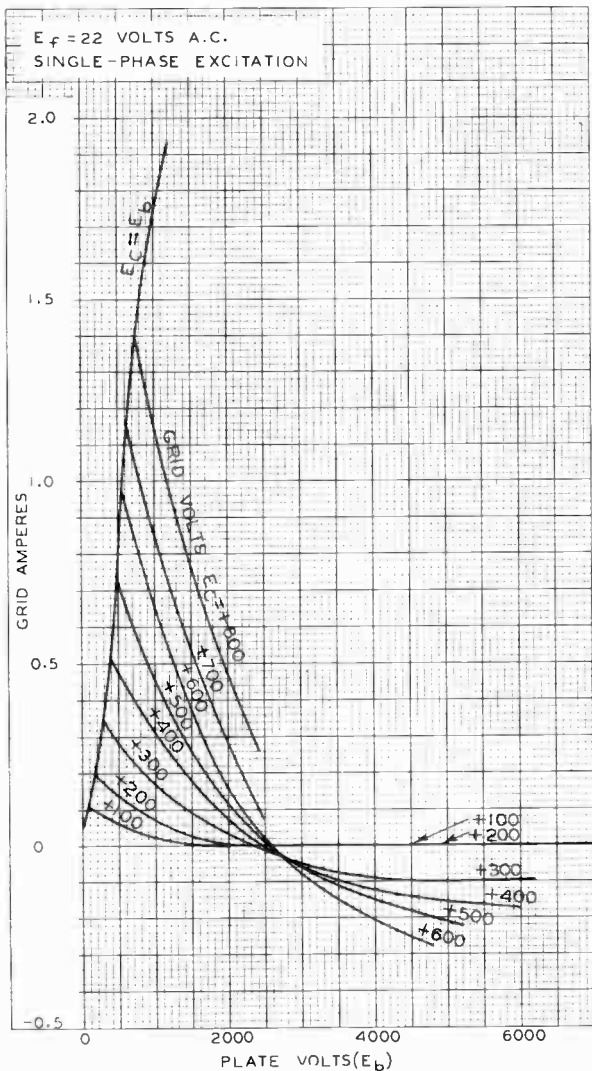
MARCH 16, 1944

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-4643R2



TYPICAL CHARACTERISTICS





891-R

891-R

R-F POWER AMPLIFIER, MODULATOR

FORCED-AIR COOLED

Filament	Tungsten, Two-Section Type	
Excitation	1 ϕ A.C., 2 ϕ A.C., or D.C.	
	See <i>FILAMENT CONNECTIONS</i> under Type 891.	
Voltage per section	11	volts
Current per section	60	amp.
Starting:	The current in each section must never exceed 120 amperes.	
Note:	When a single-phase or d-c supply is used, do not connect the two filament sections in parallel. Doing so will overheat common filament lead (large terminal) and damage tube.	
Amplification Factor	8	
Direct Interelectrode Capacitances (approx.):		
Grid to Plate	30	μ f
Grid to Filament	18	μ f
Plate to Filament	2	μ f
Maximum Overall Length		22"
Maximum Radius		6-1/2"
Cap		No. 3950
Base		No. 3232
Radiator	Integral Part of Tube	
RCA Mounting	Type UT-4304	
Cooling	- Air flow (normal volume is 450 cfm) must be started before application of any voltages. See table at end of tabulation.	

Maximum Ratings Are Absolute Values

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

This tube can often be operated with reduced filament voltage as explained on sheet TYPES OF CATHODES in General Section.

A-F POWER AMPLIFIER & MODULATOR - Class A₁

D-C Plate Voltage	10000 max.	volts
Plate Dissipation	3.5 max.	kw
Radiator Temperature [▲]	180 max.	°C
Typical Operation:		
D-C Plate Voltage	6000	volts
D-C Grid Voltage†	-560	volts
Peak A-F Grid Voltage	660	volts
D-C Plate Current	0.58	amp.
Radiator Temperature*	160	°C
Plate Resistance	2150	ohms
Load Resistance	8600	ohms
U.P.O. (5% second harmonic)	0.925	kw

† The d-c resistance in the grid circuit should not exceed 100000 ohms when cathode bias is used, or 50000 ohms with fixed bias.

A-F POWER AMPLIFIER & MODULATOR - Class B

D-C Plate Voltage	10000 max.	volts
Max.-Signal D-C Plate Current*	2.0 max.	amp.
Max.-Signal Plate Input*	10.5 max.	kw
Plate Dissipation*	3.5 max.	kw
Radiator Temperature [▲]	180 max.	°C
Typical Operation:		

Unless otherwise specified, values are for 2 tubes

D-C Plate Voltage	6000	8000	volts
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* Averaged over any audio-frequency cycle of sine-wave form.

▲, *: See end of tabulation

← indicates a change.

Dec. 1, 1943

RCA VICTOR DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History

DATA 1



R-F POWER AMPLIFIER, MODULATOR

(continued from preceding page)

D-C Grid Voltage	-600	-800	volts
Peak A-F Grid-to-Grid Voltage	2200	2400	volts
Zero-Sig. D-C Plate Current	0.5	0.5	amp.
Max.-Sig. D-C Plate Current	2.3	2.1	amp.
Radiator Temperature*	140	155	°C
Load Resistance (per tube)	1250	1850	ohms
Effective Load Resistance (plate to plate)	5000	7400	approx. ohms
Max.-Signal Driving Power	260	100	approx. watts
Max.-Signal Power Output	8	10	approx. kw

R-F POWER AMPLIFIER - Class B Telephony

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

D-C Plate Voltage	10000 max.	volts
D-C Plate Current	1.0 max.	amp.
Plate Input	5.5 max.	kw
Plate Dissipation	3.5 max.	kw
Radiator Temperature ^Δ	180 max.	°C

Typical Operation:

D-C Plate Voltage	6000	8000	volts
D-C Grid Voltage	-600	-820	volts
Peak R-F Grid Voltage	600	700	volts
D-C Plate Current	0.7	0.6	amp.
Radiator Temperature*	140	160	°C
Driving Power [⊙] **	82	0	approx. watts
Power Output	1	1.3	approx. kw

[⊙] At crest of a-f cycle with modulation factor of 1.0.

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

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

D-C Plate Voltage	8500 max.	volts
D-C Grid Voltage	-3000 max.	volts
D-C Plate Current	1.0 max.	amp.
D-C Grid Current	0.15 max.	amp.
Plate Input	8 max.	kw
Plate Dissipation	2.5 max.	kw
Radiator Temperature ^Δ	180 max.	°C

Typical Operation:

D-C Plate Voltage	6000	volts
D-C Grid Voltage §	{ -2000	volts
	{ 20000	approx. ohms
Peak R-F Grid Voltage	2650	volts
D-C Plate Current	0.75	amp.
D-C Grid Current**	0.1	approx. amp.
Radiator Temperature ^Δ	90	°C
Driving Power**	260	approx. watts
Power Output	3.5	approx. kw

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

Δ, *, **: See next page.



891-R

891-R

R-F POWER AMPLIFIER, MODULATOR

(continued from preceding page)

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy*Key-down conditions per tube without modulation ***

D-C Plate Voltage	10000 max.	volts
D-C Grid Voltage	-3000 max.	volts
D-C Plate Current	2.0 max.	amp.
D-C Grid Current	0.15 max.	amp.
Plate Input	15 max.	kw
Plate Dissipation	4 max.	kw
Radiator Temperature [▲]	180 max.	°C
Typical Operation:		
D-C Plate Voltage	8000 10000	volts
D-C Grid Voltage [¶]	{ -1800 -2000	volts
	{ 30000 18000	approx. ohms
Peak R-F Grid Voltage	2500 2900	volts
D-C Plate Current	1.1 1.4	amp.
D-C Grid Current**	0.06 0.11	approx. amp.
Radiator Temperature [★]	120 160	°C
Driving Power**	150 310	approx. watts
Power Output	6.5 10	approx. kw

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

¶ Obtained by grid resistor of value shown or by other methods.

▲ Measured in thermometer well.

★ This temperature corresponds to the normal rate of cooling-air flow of approximately 450 cubic feet per minute. The temperature of the cooling air should not exceed 45°C.

** Subject to wide variations as explained on sheet TUBE RATINGS in General Section.

COOLING REQUIREMENTS

Volume of Cooling Air cfm [□]	MAXIMUM PLATE DISSIPATION-Kilowatts				
	Class A	Class B		Class C	
		A-F	R-F	Telephony	Telegraphy
400	3.25	3.25	3.25	2.30	3.70
450	3.50	3.50	3.50	2.50	4.00
500	3.75	3.75	3.75	2.70	4.30
600	4.25	4.25	4.25	3.00	4.85
700	4.65	4.65	4.65	3.30	5.30

□ To be supplied by blower having adequate size to force the required volume of air through the system.

Data on operating frequencies for the 891-R are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

FILAMENT-EMISSION CHARACTERISTIC
is the same as that for Type 207

FILAMENT CHARACTERISTIC
is the same as that for Type 892

AVERAGE CHARACTERISTICS CURVES
are the same as those for Type 891

← Indicates a change.

Dec. 1, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

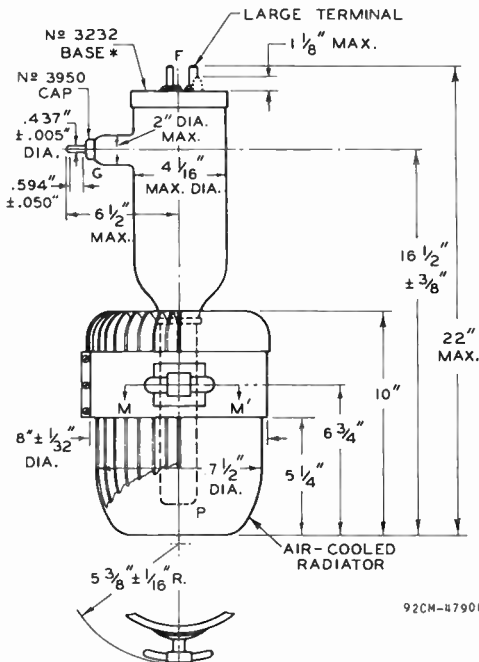
DATA 2

89J-R



89I-R

R-F POWER AMPLIFIER, MODULATOR



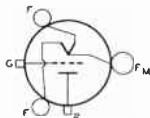
SECTION M-M'

TUBE MOUNTING POSITION

 VERTICAL: Glass end up.
 HORIZONTAL: No.

* FOR DIMENSIONS, SEE TYPE 89I OUTLINE.

TOP VIEW OF TERMINAL CONNECTIONS


 F - FILAMENT
 F_M - FILAMENT MID-TAP
 G - GRID
 P - PLATE

← Indicates a change.

DEC. 1, 1943

 RCA VICTOR DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA 2



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**R-F POWER AMPLIFIER,
CLASS B MODULATOR**

WATER COOLED

Filament	Tungsten, Two-Section Type	
Excitation	1 ϕ A.C., 2 ϕ A.C., or D.C.	
	See <i>FILAMENT CONNECTIONS</i> under Type 891.	
Voltage per section	11	volts
Current per section	60	amp.
Starting:	The current in each section must never exceed 120 amperes.	
Note:	When a single-phase or 1-c supply is used, do not connect the two filament sections in parallel. Doing so will overheat common filament lead (large terminal) and damage tube.	
Amplification Factor	50	
Direct Interelectrode Capacitances (Approx.):		
Grid to Plate	27	μ f
Grid to Filament	18	μ f
Plate to Filament	2	μ f
Maximum Overall Length		20-5/8"
Maximum Radius		6-1/2"
Cap		No. 3950
Base		No. 3232
Water Jacket		Type UT-1285-A

Cooling- water flow of 3 to 8 gallons per minute must start before application of any voltages and continue for at least 5 minutes after removal of voltages. Water temperature must not exceed 70° at jacket outlet under any conditions of operation.

Maximum Ratings Are Absolute Values

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

This tube can often be operated with reduced filament voltage as explained on sheet *TYPES OF CATHODES* in General Section.

A-F POWER AMPLIFIER & MODULATOR - Class B

D-C Plate Voltage	15000 max.	volts
Max.-Signal D-C Plate Current*	2.0 max.	amp.
Max.-Signal Plate Input*	20 max.	kw
Plate Dissipation*	7.5 max.	kw

Typical Operation:

Unless otherwise specified, values are for 2 tubes

D-C Plate Voltage	6000	10000	12500	volts
D-C Grid Voltage	0	-90	-170	volts
Peak A-F Grid-to-Grid Volt.	1200	1620	1530	volts
Zero-Sig. D-C Plate Cur.	0.5	0.5	0.4	amp.
Max.-Sig. D-C Plate Cur.	2.5	3.2	2.8	amp.
Load Resistance (per tube)	1050	1600	2500	ohms
Effective Load Resistance (plate to plate)	4200	6400	10000	ohms
Max.-Signal Driving Power	415	525	420	<u>approx.watts</u>
Max.-Signal Power Output	8	20	22	<u>approx.kw</u>

* 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 fact. of 1.0

D-C Plate Voltage	15000 max.	volts
D-C Plate Current	1.0 max.	amp.
Plate Input	15 max.	kw
Plate Dissipation	10 max.	kw

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RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA 1



892

R-F POWER AMPLIFIER, CLASS B MODULATOR

(continued from preceding page)

Typical Operation:

D-C Plate Voltage	6000	10000	14000	volts
D-C Grid Voltage	0	-100	-190	volts
Peak R-F Grid Voltage	300	470	510	volts
D-C Plate Current	0.67	0.93	0.95	amp.
Driving Power ^o ∞	65	50	30	approx. watts
Power Output	1	2.5	4	approx. kw

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

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

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

D-C Plate Voltage	10000 max.	volts
D-C Grid Voltage	-3000 max.	volts
D-C Plate Current	1.0 max.	amp.
D-C Grid Current	0.25 max.	amp.
Plate Input	10 max.	kw
Plate Dissipation	6.6 max.	kw

Typical Operation:

D-C Plate Voltage	6000	8000	10000	volts
D-C Grid Voltage	-1000	-1300	1600	volts
Peak R-F Grid Voltage	1675	2000	2400	volts
D-C Plate Current	0.77	0.75	0.72	amp.
D-C Grid Current ^{oo}	0.19	0.18	0.12	approx. amp.
Driving Power ^{oo}	310	350	260	approx. watts
Power Output	3.5	5	6	approx. kw

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telephony

Key-down conditions per tube without modulation**

D-C Plate Voltage	15000 max.	volts
D-C Grid Voltage	-3000 max.	volts
D-C Plate Current	2.0 max.	amp.
D-C Grid Current	0.25 max.	amp.
Plate Input	30 max.	kw
Plate Dissipation	10 max.	kw

Typical Operation:

D-C Plate Voltage	8000	10000	12000	volts
D-C Grid Voltage	-1000	-1300	-1600	volts
Peak R-F Grid Voltage	1800	2300	2800	volts
D-C Plate Current	1.1	1.4	1.64	amp.
D-C Grid Current ^{oo}	0.18	0.18	0.18	approx. amp.
Driving Power ^{oo}	320	400	500	approx. watts
Power Output	6.5	10	14	approx. kw

^{oo} Subject to wide variations as explained under TUBE RATINGS in General Section.

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

Data on operating frequencies for the 892 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

← Indicates a change.

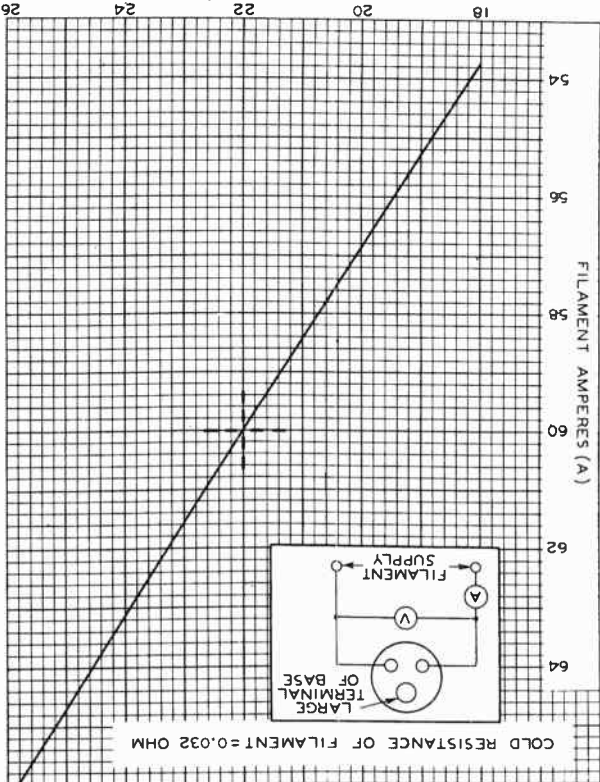
R-F POWER AMPLIFIER, CLASS B MODULATOR,

892



(continued from preceding page)
 OUTLINE DRAWING,
 TUBE SYMBOL, and MOUNTING POSITION
 are the same as shown for Type 891
 FILAMENT-EMISSION CHARACTERISTIC
 is the same as that for Type 207

AVERAGE FILAMENT CHARACTERISTIC



892

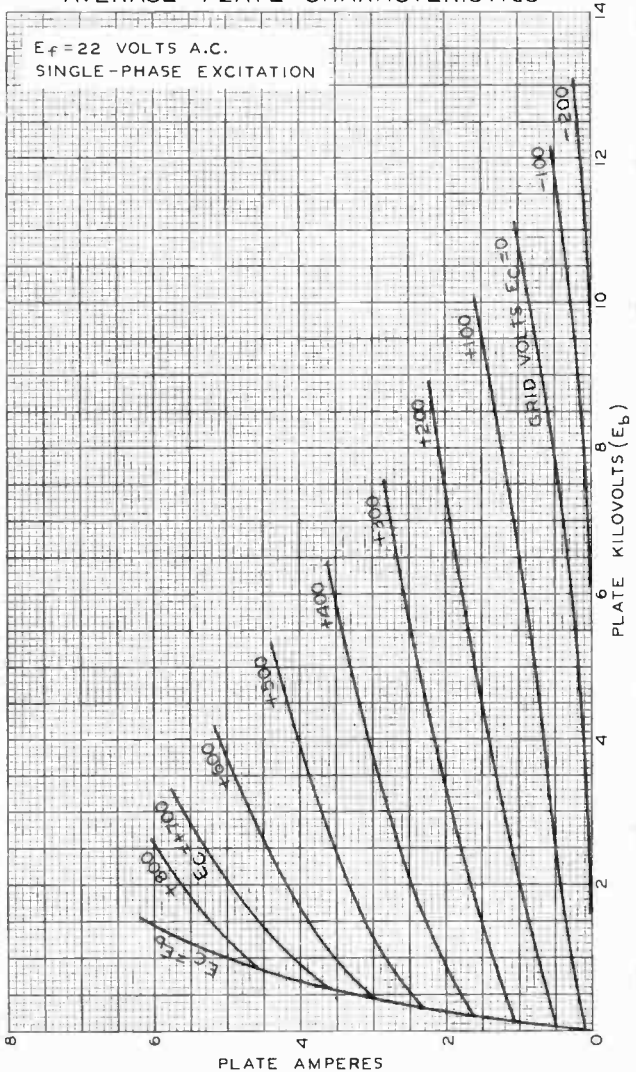
892



892

AVERAGE PLATE CHARACTERISTICS

$E_f = 22$ VOLTS A.C.
SINGLE-PHASE EXCITATION



MARCH 14, 1944

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA HARRISON, NEW JERSEY

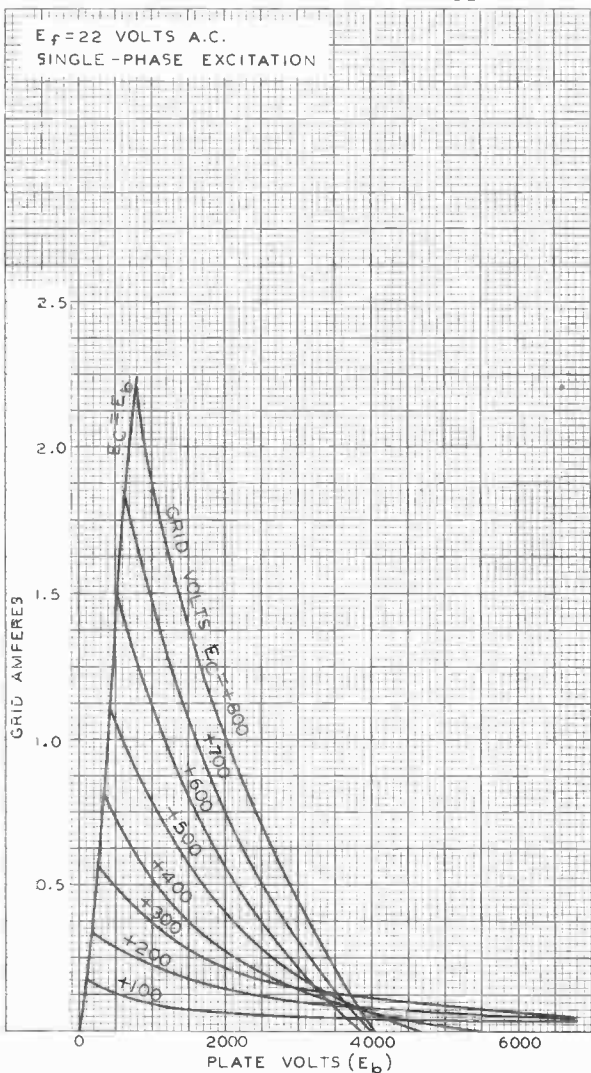
92CM-4641R2



892

892

TYPICAL CHARACTERISTICS



MARCH 16, 1944

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA HARRISON, NEW JERSEY

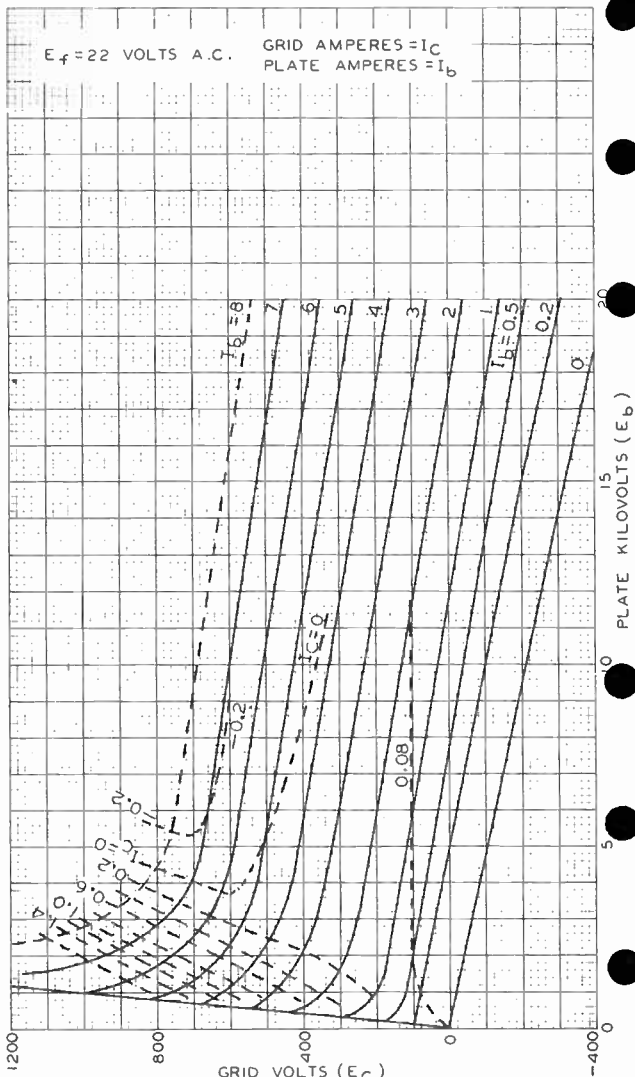
92CM-4644R2



AVERAGE CONSTANT-CURRENT CHARACTERISTICS

$E_f = 22$ VOLTS A.C.

GRID AMPERES = I_c
PLATE AMPERES = I_b



FEB. 14, 1940

GRID VOLTS (E_c)
RCA VICTOR DIVISION

92CM-6136



892-R

892-R R-F POWER AMPLIFIER, CLASS B MODULATOR

FORCED-AIR COOLED

Filament	Tungsten, Two-Section Type	
Excitation	1 ϕ A.C., 2 ϕ A.C., or D.C.	
	See <i>FILAMENT CONNECTION</i> under Type 891.	
Voltage per section	11	volts
Current per section	60	amp.

Starting: The current in each section must never exceed 120 amperes.
 Note: When a single-phase or d-c supply is used, do not connect the two filament sections in parallel. Doing so will overheat common filament lead (large terminal) and damage tube.

Amplification Factor	50	
Direct Interelectrode Capacitances (Approx.):		
Grid to Plate	30	μ f
Grid to Filament	18	μ f
Plate to Filament	2	μ f
Maximum Overall Length		22"
Maximum Radius		6-1/2"
Cap		No. 3950
Base		No. 3232
Radiator		Integral Part of Tube
RCA Mounting		Type UT-4304
Cooling	Air flow (normal volume is 450 cfm) must be started before application of any voltages. See table at end of tabulation. ←	

Maximum Ratings Are Absolute Values

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

This tube can often be operated with reduced filament voltage as explained on sheet *TYPES OF CATHODES* in General Section.

A-F POWER AMPLIFIER & MODULATOR - Class B

D-C Plate Voltage	12500 max.	volts
Max.-Signal D-C Plate Current*	2.0 max.	amp.
Max.-Signal Plate Input*	12 max.	kw
Plate Dissipation*	4 max.	kw
Radiator Temperature ^Δ	180 max.	°C

Typical Operation:

Unless otherwise specified, values are for 2 tubes

D-C Plate Voltage	6000	8000	volts
D-C Grid Voltage	0	-60	volts
Peak A-F Grid-to-Grid Volt.	1200	1000	volts
Zero-Sig. D-C Plate Cur.	0.5	0.5	amp.
Max.-Sig. D-C Plate Cur.	2.5	2.3	amp.
Radiator Temperature*	140	158	°C
Load Resistance (per tube)	1050	1700	ohms
Effective Load Resistance (plate to plate)	4200	6800	ohms
Max.-Signal Driving Power	415	400	<u>approx. watts</u>
Max.-Signal Power Output	8	10.5	<u>approx. kw</u>

* 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 fact. of 1.0

D-C Plate Voltage	12500 max.	volts
D-C Plate Current	1.0 max.	amp. ←

Δ, *: See end of tabulation.

← Indicates a change.

DEC. 1, 1943

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892-R R-F POWER AMPLIFIER, CLASS B MODULATOR

(continued from preceding page)

Plate Input		6 max.	kw
Plate Dissipation		4 max.	kw
Radiator Temperature [▲]		180 max.	°C
Typical Operation:			
D-C Plate Voltage	6000	8000	volts
D-C Grid Voltage	0	-40	volts
Peak R-F Grid Voltage	300	350	volts
D-C Plate Current	0.67	0.71	amp.
Radiator Temperature [*]	140	160	°C
Driving Power ^{° **}	65	25	<u>approx. watts</u>
Power Output	1	1.7	<u>approx. kw</u>

[°] At crest of a-f cycle with modulation factor of 1.0.

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

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

D-C Plate Voltage		10000 max.	volts
D-C Grid Voltage		-3000 max.	volts
D-C Plate Current		1.0 max.	amp.
D-C Grid Current		0.25 max.	amp.
Plate Input		10 max.	kw
Plate Dissipation		2.5 max.	kw
Radiator Temperature [▲]		180 max.	°C

Typical Operation:

D-C Plate Voltage	6000	8000	volts
D-C Grid Voltage §	{	-1000	volts
		5400	<u>approx. ohms</u>
Peak R-F Grid Voltage	1675	2000	volts
D-C Plate Current	0.77	0.75	amp.
D-C Grid Current ^{**}	0.19	0.18	<u>approx. amp.</u>
Radiator Temperature [*]	90	90	°C
Driving Power ^{**}	310	350	<u>approx. watts</u>
Power Output	3.5	5	<u>approx. kw</u>

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

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

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

D-C Plate Voltage		12500 max.	volts
D-C Grid Voltage		-3000 max.	volts
D-C Plate Current		2.0 max.	amp.
D-C Grid Current		0.25 max.	amp.
Plate Input		18 max.	kw
Plate Dissipation		4 max.	kw
Radiator Temperature [▲]		180 max.	°C

Typical Operation:

D-C Plate Voltage	8000	10000 max	volts
D-C Grid Voltage ¶	{	-1000	volts
		5600	<u>approx. ohms</u>

¶ obtained by grid resistor of value shown or by other methods.

▲, *, **, #: See next page.

← Indicates a change.



892-R

892-R R-F POWER AMPLIFIER, CLASS B MODULATOR

(continued from preceding page)

Peak R-F Grid Voltage	1800	2300	volts
D-C Plate Current	1.1	1.4	amp.
D-C Grid Current **	0.18	0.18	approx. amp.
Radiator Temperature *	120	160	°C
Driving Power **	320	400	approx. watts
Power Output	6.5	10	approx. kw

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

▲ Measured in thermometer wall.

* This temperature corresponds to the normal rate of cooling-air flow of approximately 450 cubic feet per minute. The temperature of the cooling air should not exceed 45°C.

** Subject to wide variations as explained under TUBE RATINGS in General Section.

COOLING REQUIREMENTS

Volume of Cooling Air cfm [□]	MAXIMUM PLATE DISSIPATION-Kilowatts			
	CLASS B		CLASS C	
	A-F	R-F	Telephony	Telegraphy
400	3.70	3.70	2.30	3.70
450	4.00	4.00	2.50	4.00
500	4.30	4.30	2.70	4.30
600	4.85	4.85	3.00	4.85
700	5.30	5.30	3.30	5.30

□ To be supplied by blower having adequate size to force the required volume of air through the system.

Data on operating frequencies for the 892-R are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

OUTLINE DRAWING,
TUBE SYMBOL, and MOUNTING POSITION
are the same as shown for Type 891-R

FILAMENT-EMISSION CHARACTERISTIC
is the same as that for Type 207

FILAMENT CHARACTERISTIC
is the same as that for Type 892

AVERAGE CHARACTERISTICS CURVES
are the same as those for Type 892



893-A

893-A

TRANSMITTING TRIODE

WATER & FORCED-AIR COOLED

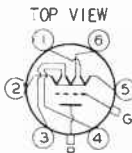
GENERAL DATA**Electrical:**

Filament: Tungsten, Three-section Type
 Excitation . . . 1 ϕ AC, 3 ϕ AC, 6 ϕ AC, or DC
 Voltage per strand 10 volts
 Current per terminal 61 amp.
 (See *FILAMENT CONNECTIONS AND EXCITATION CIRCUITS* under this type)
 Starting - The current per terminal must never exceed 120 amperes,
 even momentarily.

Amplification Factor 36
 Direct Interelectrode Capacitances (Approx.):
 Grid to Plate 33 μmf
 Grid to Filament 48 μmf
 Plate to Filament 3.2 μmf

Physical:**Terminal Connections:**

- Term. 1 - Fil. No. 3
- Term. 2 - Fil. No. 2
- Term. 3 - Fil. No. 1
- Term. 4 - Fil. No. 2
- Term. 5 - Fil. No. 3
- Term. 6 - Fil. No. 1



- G - Grid Cap Terminal
- P - Water-cooled Plate Terminal

Mounting Position Vertical only, glass end up
 Overall Length 25-5/8" \pm 1-1/8"
 Greatest Radius 6" \pm 3/8"
 Cap. No. 3935
 Base (with nozzle for air-cooling of filament seal) No. 6628
 Water Jacket Type UT-1290-A
 Gasket RCA Stock No. 17880
 Cooling - Water flow of 8 to 15 gallons per minute must start before application of any voltages and continue for at least 2 minutes after removal of voltages. Water temperature must not exceed 70°C under any conditions of operation.
 Air flow of 2 cubic feet per minute in nozzle of filament base before application of any voltages is required to limit temperature of filament seal to 150°C.

This tube can often be operated at reduced filament voltage as explained on sheet TYPES OF CATHODES in General Section.

A-F POWER AMPLIFIER & MODULATOR - Class B**Maximum Ratings, Absolute Values:**

D-C PLATE VOLTAGE 20000 max. volts
 MAX.-SIGNAL D-C PLATE CURRENT* 4 max. amp.
 MAX.-SIGNAL PLATE INPUT* 60 max. kw
 PLATE DISSIPATION* 20 max. kw

Typical Operation:

Unless otherwise specified, values are for 2 tubes

D-C Plate Voltage 12000 15000 18000 volts

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

MAR. 30, 1945

RCA VICTOR DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

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TRANSMITTING TRIODE

(continued from preceding page)

D-C Grid Voltage	-260	-350	-450 volts
Peak A-F Grid-to-Grid Voltage	1480	1560	1720	. . . . . volts
Zero-Sig. D-C Plate Cur.	0.8	0.8	0.8	. . . . . amp.
Max.-Sig. D-C Plate Cur.	7.0	6.0	5.5	. . . . . amp.
Effective Load Res. (plate-to-plate)	4000	6000	8000	. . . . . ohms
Max.-Signal Driving Power	220	190	140	<u>approx. watts</u>
Max.-Signal Power Output	52	60	70	<u>approx. kw</u>

R-F POWER AMPLIFIER - Class B Telephony

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

Maximum Ratings, Absolute Values:

D-C PLATE VOLTAGE	20000 max.	. . . . . volts
D-C PLATE CURRENT	2 max.	. . . . . amp.
PLATE INPUT	32 max.	. . . . . kw
PLATE DISSIPATION	20 max.	. . . . . kw

Typical Operation:

D-C Plate Voltage	12000	15000	15000	. . . . . volts
D-C Grid Voltage	-250	-340	-340	. . . . . volts
Peak R-F Grid Voltage	350	395	450	. . . . . volts
D-C Plate Current	1.5	1.5	2.0	. . . . . amp.
Driving Power # **	130	150	200	<u>approx. watts</u>
Power Output #	6	7.5	10	<u>approx. kw</u>

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

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

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

Maximum Ratings, Absolute Values:

D-C PLATE VOLTAGE	12000 max.	. . . . . volts
D-C GRID VOLTAGE	-3000 max.	. . . . . volts
D-C PLATE CURRENT	2 max.	. . . . . amp.
D-C GRID CURRENT	0.4 max.	. . . . . amp.
PLATE INPUT	24 max.	. . . . . kw
PLATE DISSIPATION	12 max.	. . . . . kw

Typical Operation:

D-C Plate Voltage	10000	10000	12000	. . . . . volts
D-C Grid Voltage	-800	-800	-1000	. . . . . volts
Peak R-F Grid Voltage	1200	1280	1500	. . . . . volts
D-C Plate Current	1.5	2.0	2.0	. . . . . amp.
D-C Grid Current #	0.10	0.16	0.14	<u>approx. amp.</u>
Driving Power #	120	210	210	<u>approx. watts</u>
Power Output	11	15	18	<u>approx. kw</u>

: See next page.



893-A

893-A

TRANSMITTING TRIODE

(continued from preceding page)

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation**

Maximum Ratings, Absolute Values:

D-C PLATE VOLTAGE	20000 max.	. volts
D-C GRID VOLTAGE	-3000 max.	. volts
D-C PLATE CURRENT	4 max.	. amp.
D-C GRID CURRENT	0.4 max.	. amp.
PLATE INPUT	70 max.	. kw
PLATE DISSIPATION	20 max.	. kw

Typical Operation:

D-C Plate Voltage	12000	15000	18000	. . . volts
D-C Grid Voltage	-800	-900	-1000	. . . volts
Peak R-F Grid Voltage	1430	1520	1630	. . . volts
D-C Plate Current	3.5	3.6	3.6	. . . amp.
D-C Grid Current #	0.26	0.25	0.21	approx. amp.
Driving Power #	360	370	340	approx. watts
Power Output	30	40	50	approx. kw

Subject to wide variations as explained on sheet TUBE RATINGS in General Section.

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

Data on operating frequencies for the 893-A are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

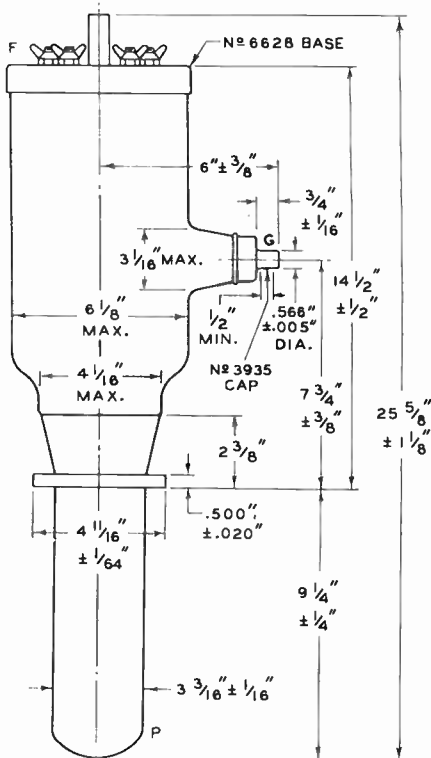
CURVES
FOR THE 893-A ARE THE SAME AS
THOSE FOR TYPE 893A-R

893-A



893-A

TRANSMITTING TRIODE



92CM-6016R2

FOR CONNECTIONS OF
FILAMENT TERMINALS
SEE DRAWING FILAMENT
CONNECTIONS AND
EXCITATION CIRCUITS

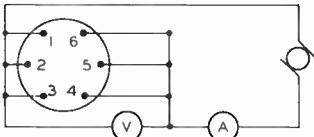
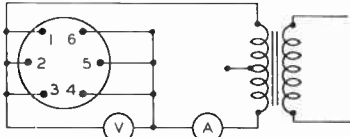
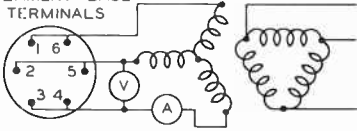
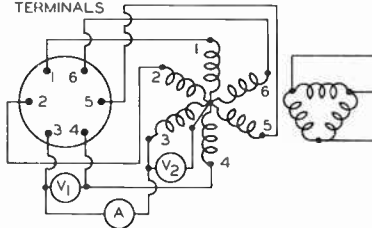
F = FILAMENT
P = PLATE
G = GRID



893-A

893-A

FILAMENT CONNECTIONS AND EXCITATION CIRCUITS

<p>D-C FILAMENT EXCITATION</p>	<p>FILAMENT BASE TERMINALS</p>  <p>$V = 20$ VOLTS $A = 183$ AMP.</p>
<p>SINGLE-PHASE A-C FILAMENT EXCITATION</p>	<p>FILAMENT BASE TERMINALS</p>  <p>$V = 20$ VOLTS $A = 183$ AMP.</p>
<p>THREE-PHASE A-C FILAMENT EXCITATION</p>	<p>FILAMENT BASE TERMINALS</p>  <p>$V = 17.3$ VOLTS $A = 122$ AMP.</p>
<p>SIX-PHASE A-C FILAMENT EXCITATION</p> <p>NOTE: TERMINALS MUST BE CONNECTED IN CORRECT PHASE RELATION AS SHOWN</p>	<p>FILAMENT BASE TERMINALS</p>  <p>$V_1 = 10$ VOLTS $V_2 = 10$ VOLTS $A = 61$ AMP.</p>





893A-R

893A-R

TRANSMITTING TRIODE

FORCED-AIR COOLED

GENERAL DATA

Electrical:

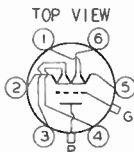
Filament: Tungsten, Three-Section Type
 Excitation . . . 1 ϕ AC, 3 ϕ AC, 6 ϕ AC, or DC
 Voltage per strand 10 volts
 Current per terminal 61 amp.
 (See *FILAMENT CONNECTIONS AND EXCITATION CIRCUITS* under type 893-A)
 Starting - The current per terminal must never exceed 120 amperes,
 even momentarily.

Amplification Factor 36
 Direct Interelectrode Capacitances (Approx.):
 Grid to Plate 34 μ f
 Grid to Filament 48 μ f
 Plate to Filament 3.5 μ f

Physical:

Terminal Connections:

Term. 1 - Fil. No. 3
 Term. 2 - Fil. No. 2
 Term. 3 - Fil. No. 1
 Term. 4 - Fil. No. 2
 Term. 5 - Fil. No. 3
 Term. 6 - Fil. No. 1



G - Grid Cap
 Terminal
 P - Radiator-
 cooled Plate
 Terminal

TERMINAL NOS 15 ABOVE GRID ARM

Mounting Position Vertical only, glass end up
 Overall Length 26-7/8" \pm 1-1/8"
 Greatest Radius 8-13/16"
 Cap. No. 3935
 Base (with nozzle for air-cooling of filament seal) No. 6628
 Radiator Integral part of tube

Cooling - A vertical air flow of at least 1800 cu. ft./min. should be delivered by a blower to the cooling radiator. An air flow of about 2 cu. ft./min. should be supplied to the air nozzle in the filament base. Cooling must be adequate to limit the glass temperature to not more than 150°C at the hottest part. Air flow must start before the application of any voltages. The incoming air temperature must not exceed 45°C.

This tube can often be operated with reduced filament voltage as explained on sheet TYPES OF CATHODES in General Section.

A-F POWER AMPLIFIER & MODULATOR - Class B

Maximum Ratings, Absolute Values:

D-C PLATE VOLTAGE 20000 max. . . volts
 MAX.-SIGNAL D-C PLATE CURRENT* 4 max. . . amp.
 MAX.-SIGNAL PLATE INPUT* 60 max. . . kw
 PLATE DISSIPATION* 20 max. . . kw
 RADIATOR TEMPERATURE[▲] 180 max. . . °C

* Averaged over any audio-frequency cycle of sine-wave form.
 ▲ : See next page.

893A-R



893A-R

TRANSMITTING TRIODE

(continued from preceding page)

Typical Operation:

Unless otherwise specified, values are for 2 tubes

D-C Plate Voltage	12000	15000	18000	. . . . .	volts
D-C Grid Voltage.	-260	-350	-450	. . . . .	volts
Peak A-F Grid-to-Grid Voltage	1480	1560	1720	. . . . .	volts
Zero-Sig. D-C Plate Cur.	0.8	0.8	0.8	. . . . .	amp.
Max.-Sig. D-C Plate Cur.	7.0	6.0	5.5	. . . . .	amp.
Effective Load Res. (plate-to-plate).	4000	6000	8000	. . . . .	ohms
Max.-Sig. Driving Power	220	190	140	<u>approx.</u>	watts
Max.-Sig. Power Output.	52	60	70	<u>approx.</u>	kw

R-F POWER AMPLIFIER - Class B Telephony

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

Maximum Ratings, Absolute Values:

D-C PLATE VOLTAGE	20000 max.	. . . . .	volts
D-C PLATE CURRENT	2 max.	. . . . .	amp.
PLATE INPUT	32 max.	. . . . .	kw
PLATE DISSIPATION	20 max.	. . . . .	kw
RADIATOR TEMPERATURE ^Δ	180 max.	. . . . .	°C

Typical Operation:

D-C Plate Voltage	12000	15000	15000	. . . . .	volts
D-C Grid Voltage.	-250	-340	-340	. . . . .	volts
Peak R-F Grid Voltage	350	395	450	. . . . .	volts
D-C Plate Current	1.5	1.5	2.0	. . . . .	amp.
Driving Power # **	130	150	200	<u>approx.</u>	watts
Power Output #	6	7.5	10	<u>approx.</u>	kw

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

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

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

Maximum Ratings, Absolute Values:

D-C PLATE VOLTAGE	12000 max.	. . . . .	volts
D-C GRID VOLTAGE.	-3000 max.	. . . . .	volts
D-C PLATE CURRENT	2 max.	. . . . .	amp.
D-C GRID CURRENT.	0.4 max.	. . . . .	amp.
PLATE INPUT	24 max.	. . . . .	kw
PLATE DISSIPATION	12 max.	. . . . .	kw
RADIATOR TEMPERATURE ^Δ	180 max.	. . . . .	°C

Typical Operation:

D-C Plate Voltage	10000	10000	12000	. . . . .	volts
D-C Grid Voltage.	-800	-800	-1000	. . . . .	volts

^Δ, #: See next page.

MAR. 30, 1945

RCA VICTOR DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History

DATA 1



893A-R

893A-R

TRANSMITTING TRIODE

(continued from preceding page)

Peak R-F Grid Voltage	1200	1280	1500	. . . . . volts
D-C Plate Current	1.5	2.0	2.0	. . . . . amp.
D-C Grid Current #	0.10	0.16	0.14	<u>approx. amp.</u>
Driving Power #	120	210	210	<u>approx. watts</u>
Power Output	11	15	18	<u>approx. kw</u>

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy*Key-down conditions per tube without modulation##*

Maximum Ratings, Absolute Values:

D-C PLATE VOLTAGE	20000	max.	. . . . . volts
D-C GRID VOLTAGE	-3000	max.	. . . . . volts
D-C PLATE CURRENT	4	max.	. . . . . amp.
D-C GRID CURRENT	0.4	max.	. . . . . amp.
PLATE INPUT	70	max.	. . . . . kw
PLATE DISSIPATION	20	max.	. . . . . kw
RADIATOR TEMPERATURE [▲]	180	max.	. . . . . °C

Typical Operation:

D-C Plate Voltage	12000	15000	18000	. . . . . volts
D-C Grid Voltage	-800	-900	-1000	. . . . . volts
Peak R-F Grid Voltage	1430	1520	1630	. . . . . volts
D-C Plate Current	3.5	3.6	3.6	. . . . . amp.
D-C Grid Current #	0.26	0.25	0.21	<u>approx. amp.</u>
Driving Power #	360	370	340	<u>approx. watts</u>
Power Output	30	40	50	<u>approx. kw</u>

Subject to wide variations as explained on sheet TUBE RATINGS in General Sect.on.

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

▲ Measured in thermometer well.

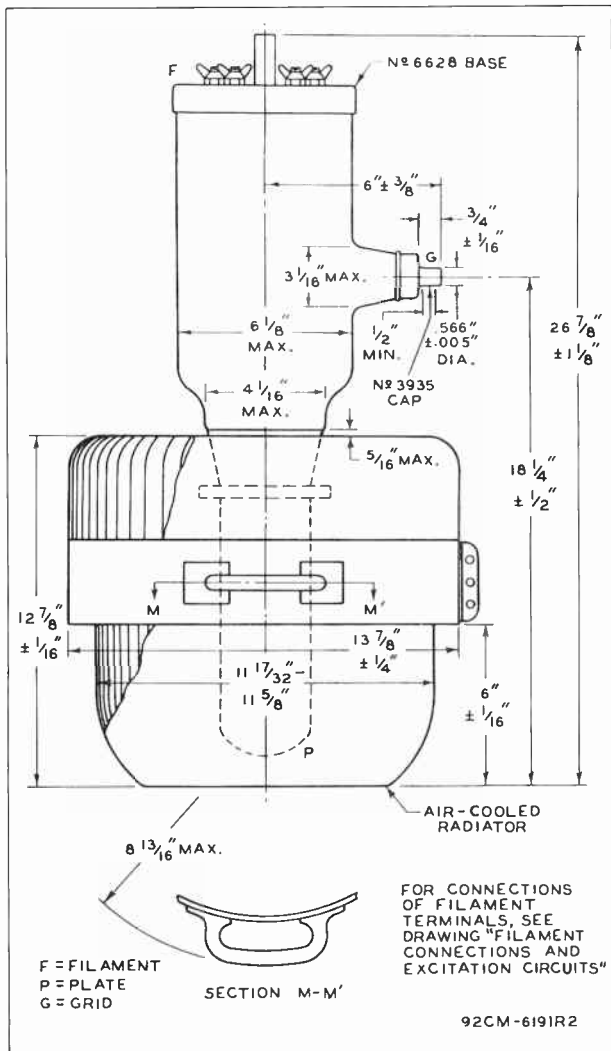
Data on operating frequencies for the 893A-R are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

893A-R



893A-R

TRANSMITTING TRIODE



MAR. 30, 1945

 RCA VICTOR DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

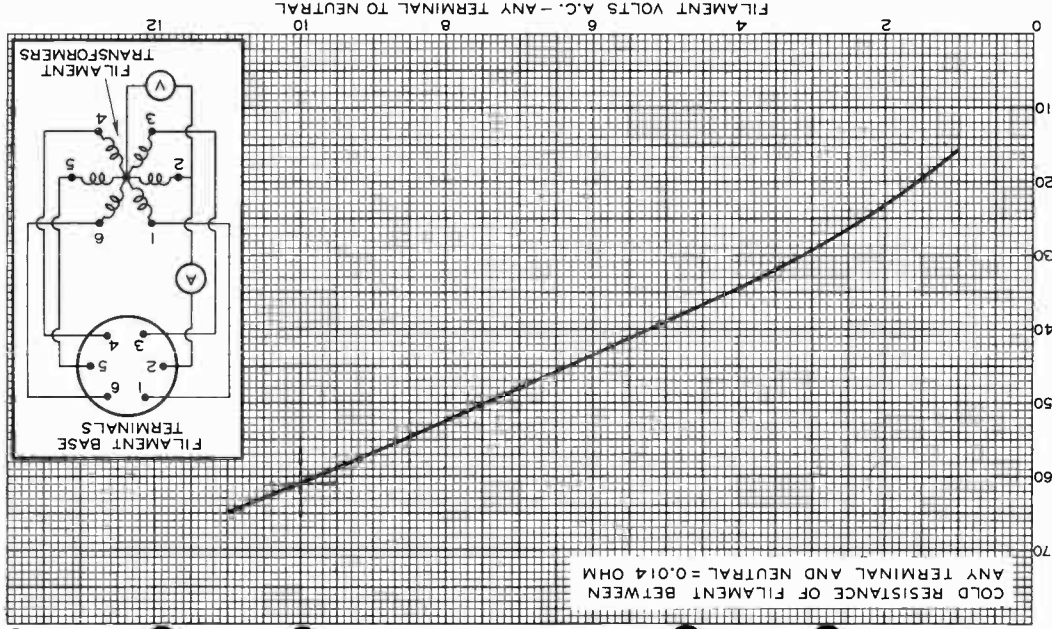
DATA 2



893A-R

893A-R
4V6C68

AVERAGE FILAMENT CHARACTERISTIC



FEB. 9, 1945

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

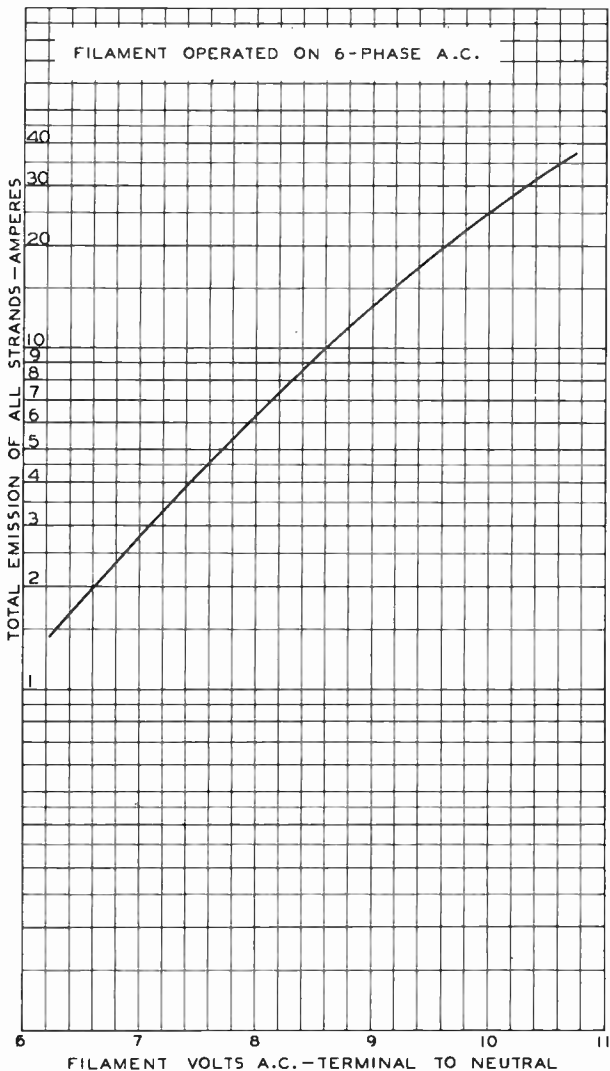
92CM-6022R2

893A-R



893A-R

AVERAGE FILAMENT-EMISSION CHARACTERISTIC



FEB. 10, 1945

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

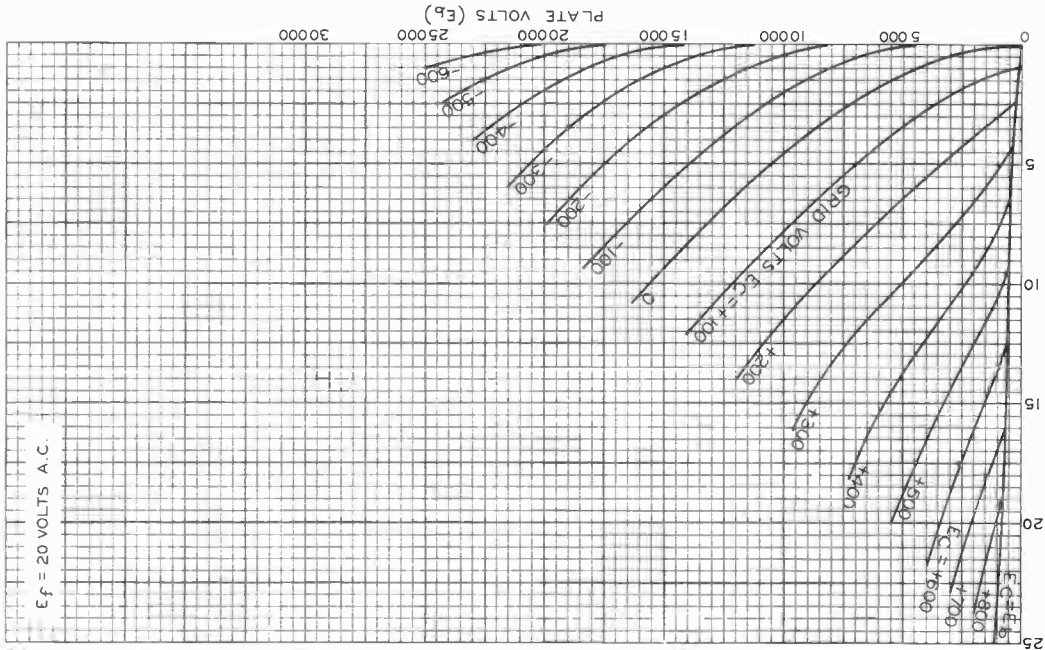
92CM-6185R1



893A-R

893A-R

AVERAGE PLATE CHARACTERISTICS



FEB. 10, 1945

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARTFORD, NEW JERSEY

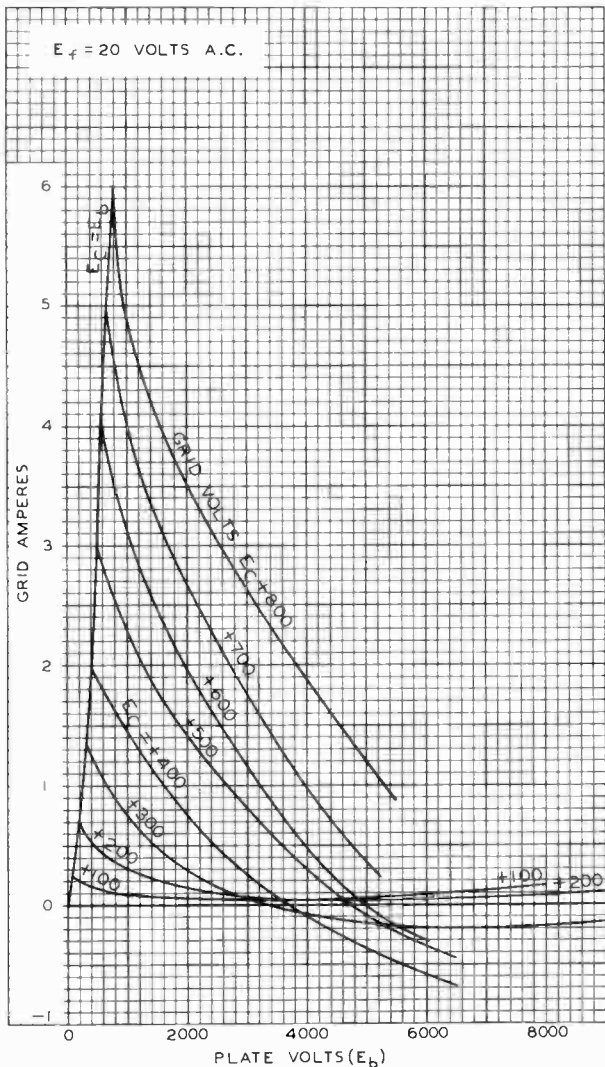
92CM-6186RI

893A-R



893A-R

TYPICAL CHARACTERISTICS



FEB. 12, 1945

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA HARRISON, NEW JERSEY

92CM-6188 R1

World Radio History



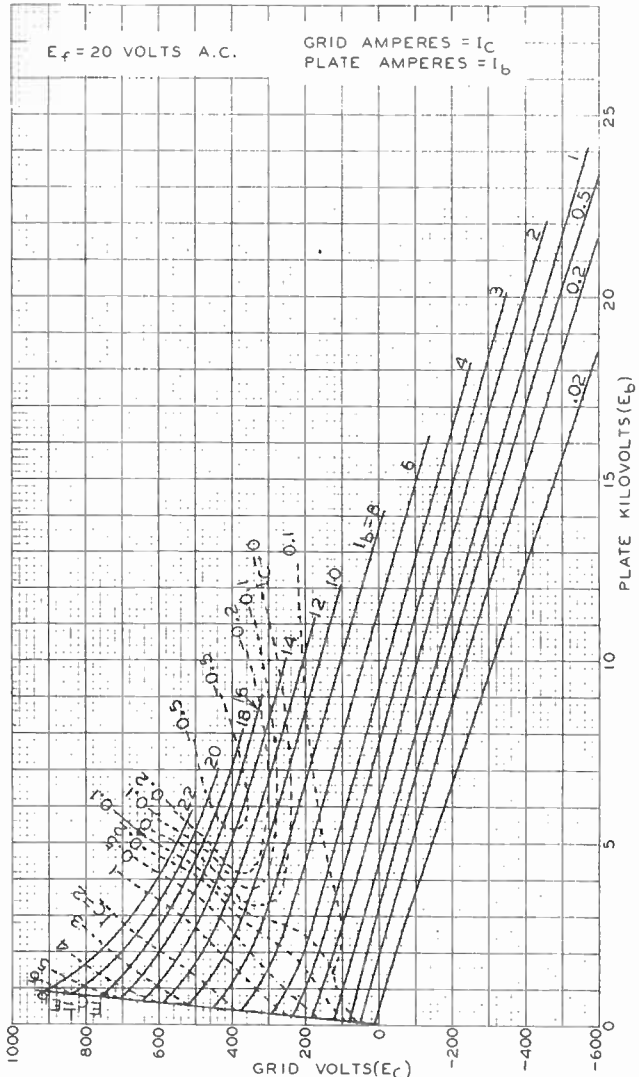
893A-R

893A-R

AVERAGE CONSTANT-CURRENT CHARACTERISTICS

$E_f = 20$ VOLTS A.C.

GRID AMPERES = I_C
PLATE AMPERES = I_b



FEB. 10. 1945

GRID VOLTS (E_C)
RCA VICTOR DIVISION

92CM-6187RI

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History





898-A

898-A

TRANSMITTING TRIODE

WATER & FORCED-AIR COOLED

GENERAL DATA

Electrical:

Filament: Tungsten, Three-Section Type
 Excitation 1 ϕ AC, 3 ϕ AC, or DC
 Voltage per section. 33 volts
 Current per section. 70 amp.
(See FILAMENT CONNECTIONS AND EXCITATION CIRCUITS under this type)
 Starting - The current per section should never exceed 105 amperes, even momentarily.

Amplification Factor 45
 Direct Interelectrode Capacitances (Approx.):
 Grid to Plate. 62 μ mf
 Grid to Filament 52 μ mf
 Plate to Filament. 4.2 μ mf

Mechanical:

Terminal Connections:

- Term. 1 - Fil. No. 3
- Term. 2 - Fil. No. 2
- Term. 3 - Fil. No. 1
- Term. 4 - Fil. No. 2
- Term. 5 - Fil. No. 3
- Term. 6 - Fil. No. 1



- G - Ribbon Grid Terminal
- P - Water-cooled Plate Terminal

Mounting Position. Vertical only, glass end up
 Maximum Overall Length 60-3/8"
 Greatest Radius. 10"
 Base (with nozzle for air-cooling of filament seal) No. 6628
 Water Jacket (with nozzle for air-cooling of bulb) UT-1299-A
 Gasket RCA Stock No. 17873

Cooling - Water flow of 15 to 25 gallons per minute must start before application of any voltages and continue for at least 10 minutes after removal of all voltages. Water temperature must not exceed 70°C at jacket outlet under any conditions of operation.
 Air flow of 15 cubic feet per minute in bulb nozzle and 3 cubic feet per minute in filament-seal nozzle is required before the application of any voltages and must continue for at least 10 minutes after removal of voltages to limit the glass temperature to 150°C at the hottest part. The incoming air temperature must not exceed 50°C.

This tube can often be operated with reduced filament voltage as explained on sheet TYPES OF CATHODES in General Section.

A-F POWER AMPLIFIER & MODULATOR - Class B

Maximum Ratings, Absolute Values:

D-C PLATE VOLTAGE	15000 max.	volts
MAX.-SIGNAL D-C PLATE CURRENT*	7.5 max.	amp.
MAX.-SIGNAL PLATE INPUT*	100 max.	kw
PLATE DISSIPATION*	50 max.	kw

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

898-A



898-A

TRANSMITTING TRIODE

(continued from preceding page)

Typical Operation:

Unless otherwise specified, values are for 2 tubes

D-C Plate Voltage	12000	. . . . .	volts
D-C Grid Voltage*	-100	. . . . .	volts
Peak A-F Grid-to-Grid Voltage	2200	. . . . .	volts
Zero-Sig. D-C Plate Current	2	. . . . .	amp.
Max.-Sig. D-C Plate Current	13	. . . . .	amp.
Effective Load Res. (plate-to-plate).	2000	. . . . .	ohms
Max.-Sig. Driving Power	6	approx.	kw
Max.-Sig. Power Output.	90	approx.	kw

R-F POWER AMPLIFIER - Class B Telephony

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

Maximum Ratings, Absolute Values:

D-C PLATE VOLTAGE	20000 max.	. . . . .	volts
D-C PLATE CURRENT	5 max.	. . . . .	amp.
PLATE INPUT	100 max.	. . . . .	kw
PLATE DISSIPATION	75 max.	. . . . .	kw

Typical Operation:

D-C Plate Voltage	12000	15000	18000	. . . . .	volts
D-C Grid Voltage*	-100	-175	-250	. . . . .	volts
Peak R-F Grid Voltage	525	650	775	. . . . .	volts
D-C Plate Current	2.8	3.5	4.2	. . . . .	amp.
Driving Power # **	0.5	0.75	1.1	approx.	kw
Power Output	11	17.5	25	approx.	kw

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

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

Maximum Ratings, Absolute Values:

D-C PLATE VOLTAGE	12000 max.	. . . . .	volts
D-C GRID VOLTAGE	-3000 max.	. . . . .	volts
D-C PLATE CURRENT	5 max.	. . . . .	amp.
D-C GRID CURRENT	1.25 max.	. . . . .	amp.
PLATE INPUT	60 max.	. . . . .	kw
PLATE DISSIPATION	50 max.	. . . . .	kw

Typical Operation:

D-C Plate Voltage	12000	. . . . .	volts
D-C Grid Voltage.	-800	. . . . .	volts
Peak R-F Grid Voltage	2000	. . . . .	volts
D-C Plate Current	5	. . . . .	amp.
D-C Grid Current #	1	approx.	amp.
Driving Power #	2	approx.	kw
Power Output	45	approx.	kw

*; **; #: See next page.

Nov. 15, 1945

RCA VICTOR DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA 1



898-A

898-A

TRANSMITTING TRIODE

(continued from preceding page)

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation**

Maximum Ratings, Absolute Values:

D-C PLATE VOLTAGE	20000	max. . .	volts
D-C GRID VOLTAGE	-3000	max. . .	volts
D-C PLATE CURRENT	10	max. . .	amp.
D-C GRID CURRENT	1	max. . .	amp.
PLATE INPUT	200	max. . .	kw
PLATE DISSIPATION	100	max. . .	kw

Typical Operation:

D-C Plate Voltage	12000	15000	18000	. . .	volts
D-C Grid Voltage	-800	-900	-1000	. . .	volts
Peak R-F Grid Voltage	2050	2300	2550	. . .	volts
D-C Plate Current	6.25	7.5	8.33	. . .	amp.
D-C Grid Current #	0.8	0.85	0.9		<u>approx. amp.</u>
Driving Power #	1.6	2.0	2.4		<u>approx. kw</u>
Power Output	50	75	100		<u>approx. kw</u>

* With a-c filament excitation.

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

Subject to wide variations as explained on sheet TUBE RATINGS in General Section.

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

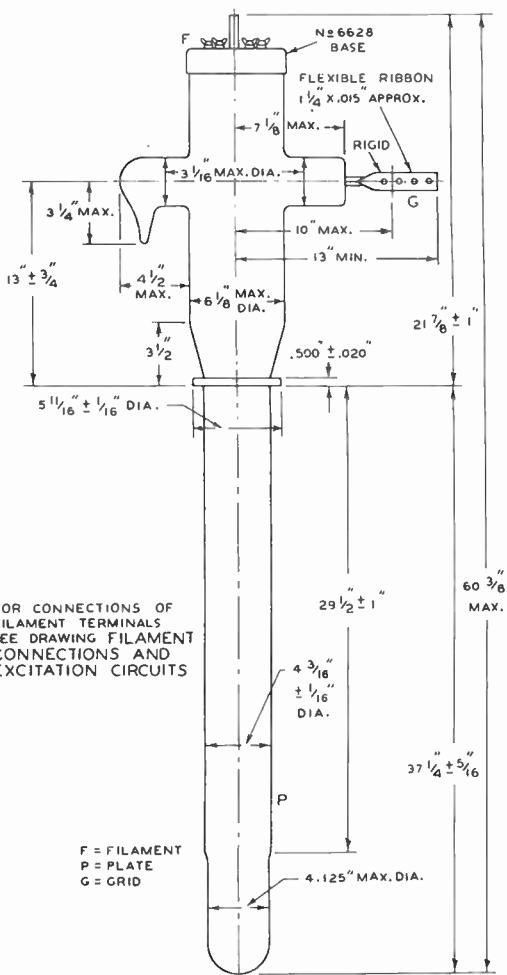
Data on operating frequencies for the 898-A are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

898-A



898-A

TRANSMITTING TRIODE



92CM-4382R2

MAR. 30, 1945

 RCA VICTOR DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

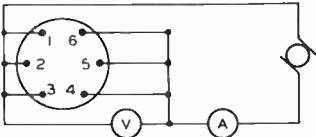
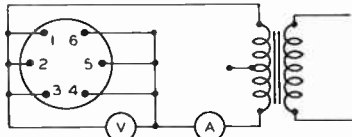
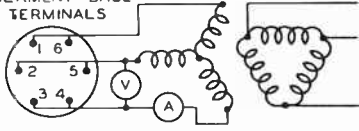
DATA 2



898-A

898-A

FILAMENT CONNECTIONS AND EXCITATION CIRCUITS

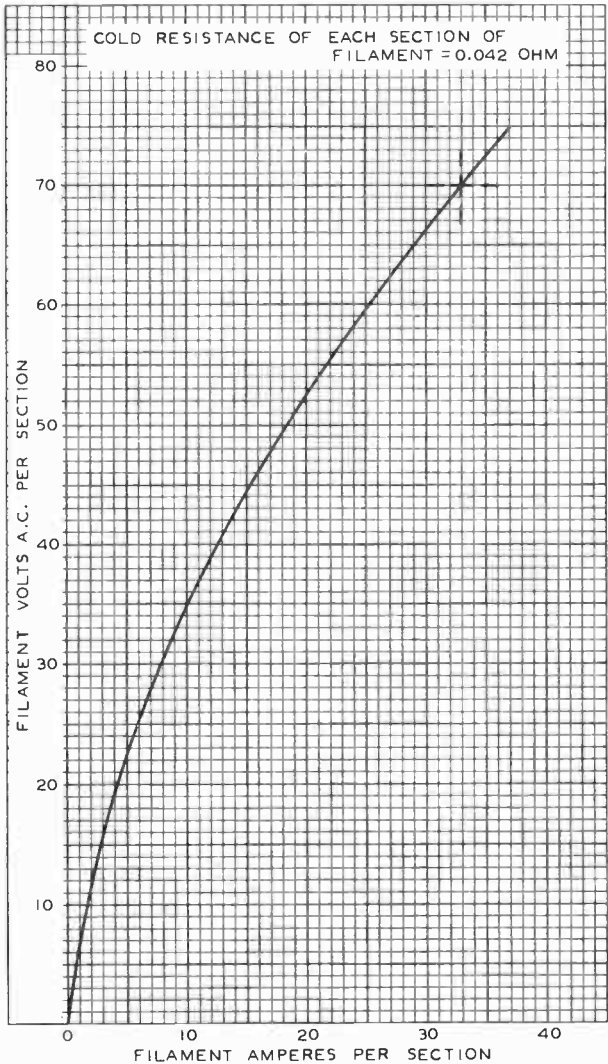
<p>D-C FILAMENT EXCITATION</p>	<p>FILAMENT BASE TERMINALS</p>  <p>V = 33 VOLTS A = 210 AMP.</p>
<p>SINGLE-PHASE A-C FILAMENT EXCITATION</p>	<p>FILAMENT BASE TERMINALS</p>  <p>V = 33 VOLTS A = 210 AMP.</p>
<p>THREE-PHASE A-C FILAMENT EXCITATION</p>	<p>FILAMENT BASE TERMINALS</p>  <p>V = 28.6 VOLTS A = 140 AMP.</p>

898-A



898-A

AVERAGE FILAMENT CHARACTERISTIC



FEB. 3, 1945

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA HARRISON, NEW JERSEY

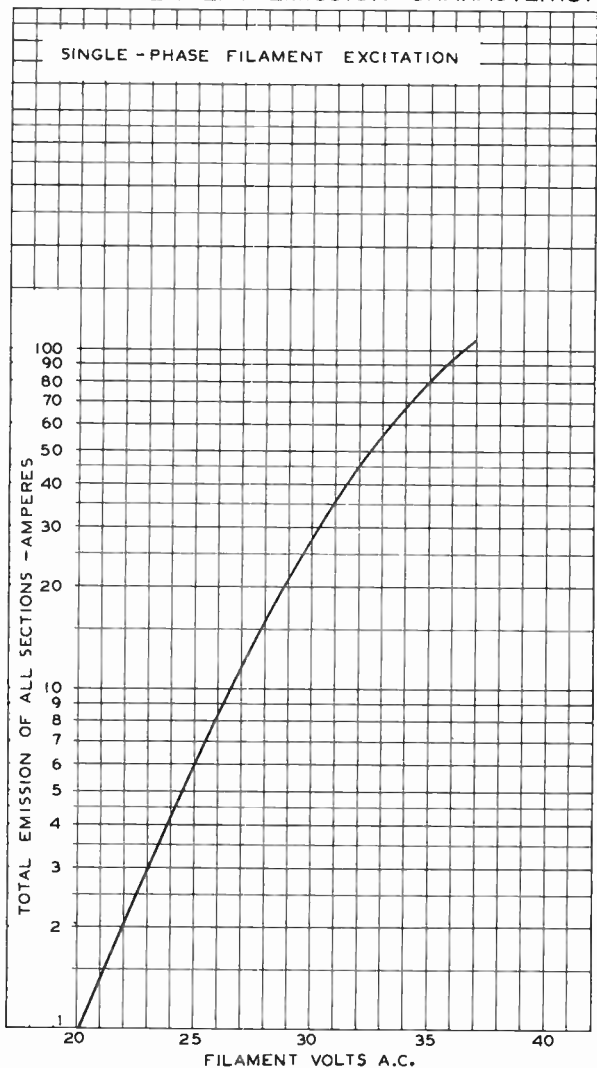
92CM-4389R2



898-A

898-A

AVERAGE FILAMENT-EMISSION CHARACTERISTIC



FEB: 8, 1945

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

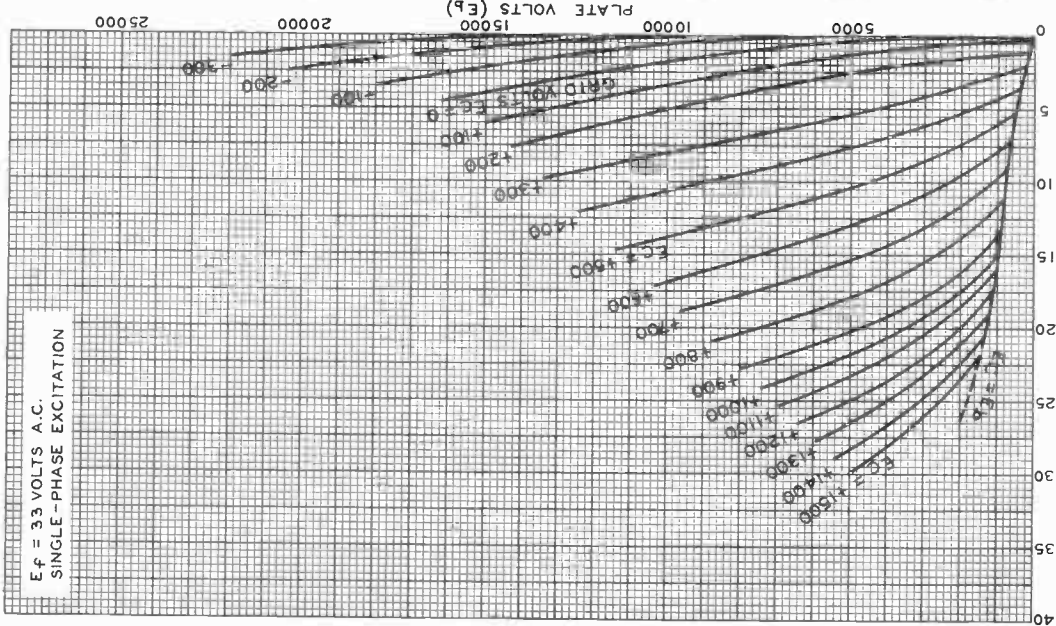
92CM-4390R3



898-A

AVERAGE PLATE CHARACTERISTICS

$E_f = 33$ VOLTS A.C.
SINGLE-PHASE EXCITATION



25000

20000

15000

10000

5000

0

5

10

15

20

25

30

35

40

FEB. 7, 1945

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA HARRISON, NEW JERSEY

92CM-4383R2

898-A

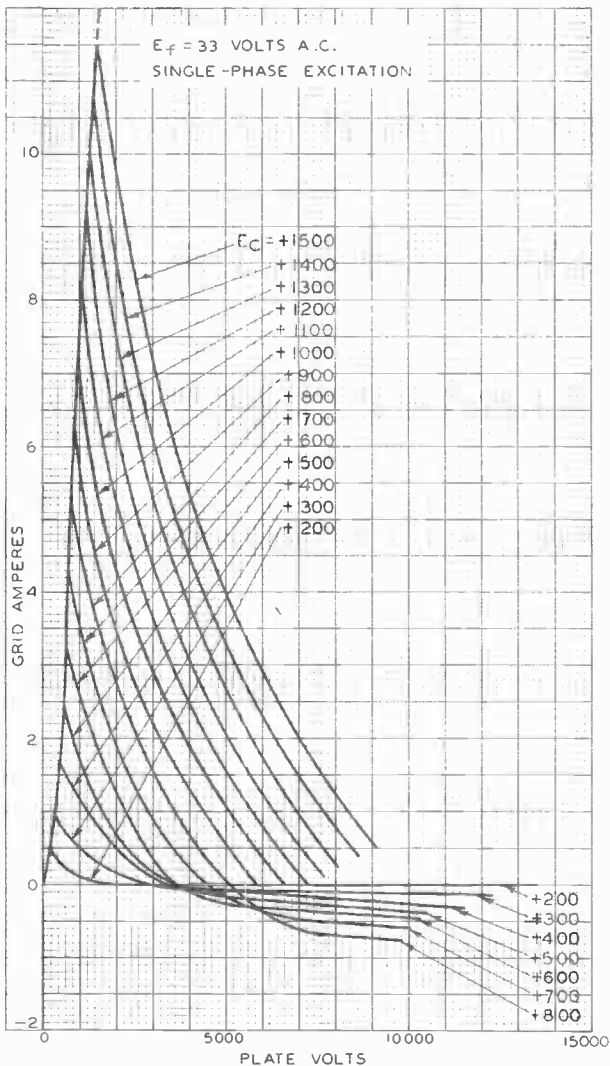
Word Prohibitory



898-A

898-A

TYPICAL CHARACTERISTICS



FEB. 9, 1945

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISBURG, PENNSYLVANIA

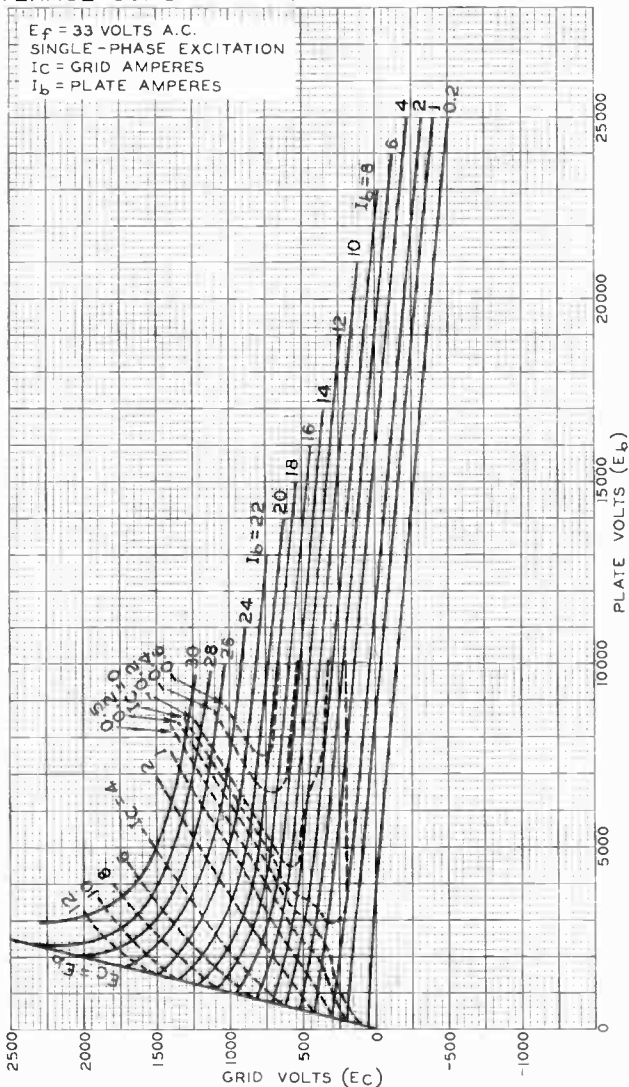
92CM-4384R2

898-A



898-A

AVERAGE CONSTANT-CURRENT CHARACTERISTICS



FEB. 7, 1945

RCA VICTOR DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6069R2



1608

1608

R-F POWER AMPLIFIER, OSCILLATOR, CLASS B MODULATOR

Filament	Coated	
Voltage	2.5	a-c or d-c volts
Current	2.5	amp.
Amplification Factor	20	
Direct Interelectrode Capacitances:		
Grid to Plate	9	μf
Grid to Filament	8.5	μf
Plate to Filament	3	μf
Maximum Overall Length		5-3/8" ←
Maximum Diameter		2-1/16" ←
Bulb		ST-16
Base	Medium 4-Pin Ceramic, Bayonet	
RCA Socket		Type UR-542-A ←

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

A-F POWER AMPLIFIER & MODULATOR - Class B

D-C Plate Voltage		425 max.	volts
Max.-Signal D-C Plate Current *		95 max.	ma.
Max.-Signal Plate Input *		40 max.	watts
Plate Dissipation *		20 max.	watts

Typical Operation:

Unless otherwise specified, values are for 2 tubes

D-C Plate Voltage	350	425	volts
D-C Grid Voltage	-10	-15	volts ←
Peak A-F Grid-to-Grid Voltage	120	190	volts ←
Zero-Signal D-C Plate Cur.	30	36	ma.
Max.-Signal D-C Plate Cur.	190	190	ma.
Load Resistance (per tube)	950	1200	ohms
Effective Load Res.			
(plate to plate)	3800	4800	ohms
Max.-Signal Driving Power	2.2	2.2	<u>approx.watts</u>
Max.-Signal Power Output	38	50	<u>approx.watts</u>

* 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 fact. of 1.0

D-C Plate Voltage		425 max.	volts
D-C Plate Current		70 max.	ma.
Plate Input		30 max.	watts
Plate Dissipation		20 max.	Watts

Typical Operation:

D-C Plate Voltage	350	425	volts
D-C Grid Voltage	-10	-15	volts
Peak R-F Grid Voltage	35	40	volts
D-C Plate Current	70	70	ma.
D-C Grid Current **	4	4	<u>approx.ma.</u>
Driving Power ** \circ	2	2	<u>approx.watts</u>
Power Output	7	10	<u>approx.watts</u>

** See next page.

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

← Indicates a change.

JULY 1, 1938

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA



1608

R-F POWER AMPLIFIER, OSCILLATOR, CLASS B MODULATOR

(continued from preceding page)

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

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

D-C Plate Voltage	350 max.	volts
D-C Grid Voltage	-200 max.	volts
D-C Plate Current	85 max.	ma.
D-C Grid Current	25 max.	ma.
Plate Input	30 max.	watts
Plate Dissipation	13.5 max.	watts

Typical Operation:

D-C Plate Voltage	325	350	volts
D-C Grid Voltage ¶	{ 4000	4000	ohms
	{ -80	-80	volts
Peak R-F Grid Voltage	150	165	volts
D-C Plate Current	85	85	ma.
D-C Grid Current **	20	20	<u>approx.ma.</u>
Driving Power **	2.7	3	<u>approx.watts</u>
Power Output	16	18	<u>approx.watts</u>

¶ Obtained by grid-leak resistor or partial self-bias methods.

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation *

D-C Plate Voltage	425 max.	volts
D-C Grid Voltage	-200 max.	volts
D-C Plate Current	95 max.	ma.
D-C Grid Current	25 max.	ma.
Plate Input	40 max.	watts
Plate Dissipation	20 max.	watts

Typical Operation:

D-C Plate Voltage	350	425	volts
D-C Grid Voltage Δ	{ 4300	4500	ohms
	{ -85	-90	volts
Peak R-F Grid Voltage	150	155	volts
D-C Plate Current	95	95	ma.
D-C Grid Current **	20	20	<u>approx.ma.</u>
Driving Power **	3	3	<u>approx.watts</u>
Power Output	20	27	<u>approx.watts</u>

Δ Obtained by grid-leak resistor or other self- or fixed-bias method.

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

** Subject to considerable variation as explained on sheet TRANS. TUBE RATINGS.

For use of the 1608 at the higher frequencies, refer to sheet
TRANS. TUBE RATINGS vs FREQUENCY.

OUTLINE DIMENSIONS, TUBE SYMBOL, and
SOCKET CONNECTIONS for the 1608 are the same
as for the 801.

← Indicates a change.

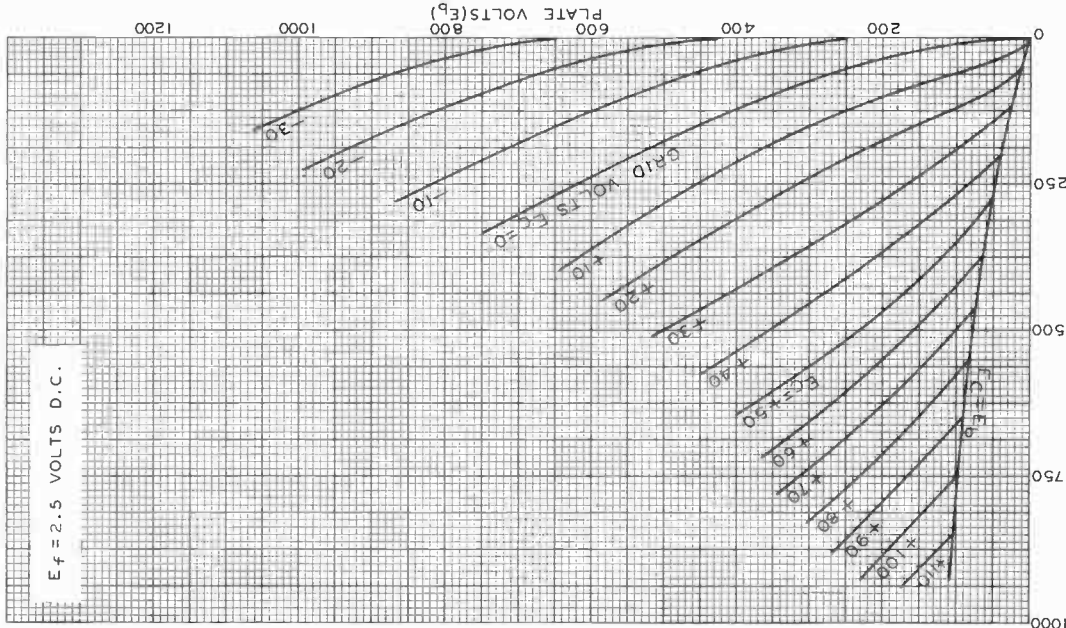


1608

8091

AVERAGE PLATE CHARACTERISTICS

$E_f = 2.5$ VOLTS D.C.



FEB. 4, 1937

PLATE MILLIAMPERES
RCA RADIODIODE DIVISION
RCA MANUFACTURING COMPANY, INC.

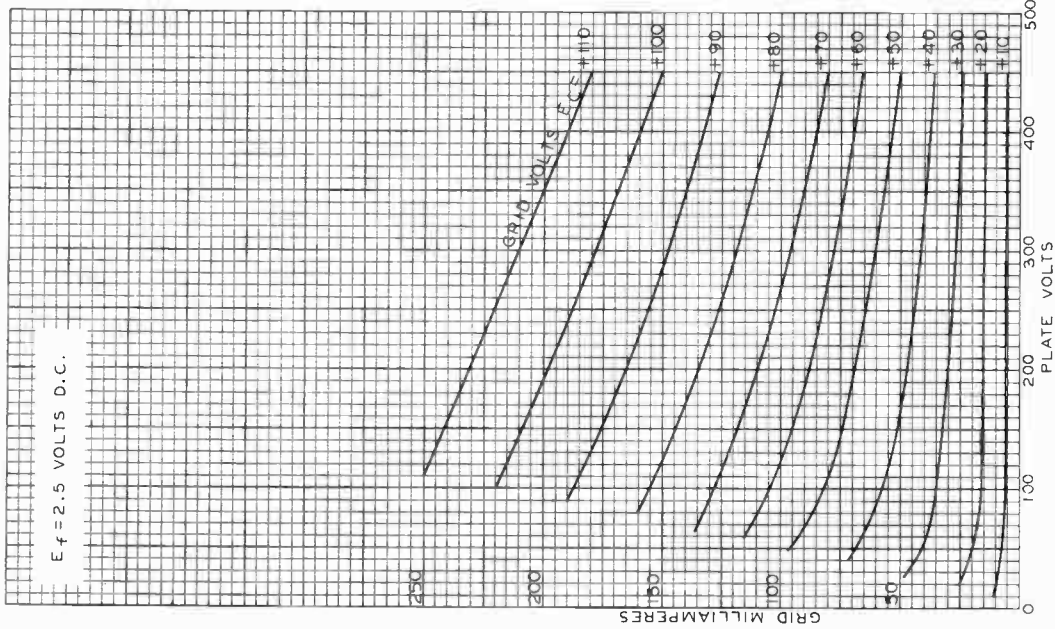
92C-4729

1608



1608

AVERAGE CHARACTERISTICS



Word Precision

FEB. 5, 1937

RCA RADIIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4730



1610

1610

CRRAYSTAL-OSCILLATOR PENTODE

Filament	Coated	
Voltage	2.5	a-c or d-c volts
Current	1.75	amp.
Transconductance		
for plate current of 31 ma.	2500	μ mhos
Direct Interelectrode Capacitances:		
Grid to Plate	1.2	μ f
Input	8.6	μ f
Output	13	μ f
Maximum Overall Length		5-3/8"
Maximum Diameter		2-1/16"
Bulb		ST-16
Base		Medium 5-Pin

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS**R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy***Key-down conditions per tube without modulation #*

D-C Plate Voltage	400 max.	volts
D-C Screen Voltage (Grid #2)	200 max.	volts
D-C Grid Voltage (Grid #1)	-100 max.	volts
D-C Plate Current	30 max.	ma.
D-C Grid Current	3 max.	ma.
Plate Input	9 max.	watts
Screen Input	2 max.	watts
Plate Dissipation	6 max.	watts

Typical Operation:

Filament Voltage	2.5	2.5	a-c volts
D-C Plate Voltage	300	400	volts
D-C Screen Voltage	125	150	volts
D-C Grid Voltage	-60 [▲]	-50 [▲]	volts
Peak R-F Grid Voltage	110	75	volts
D-C Plate Current	30	22.5	ma.
D-C Screen Current	13	7	ma.
D-C Grid Current	2.5	1.5	approx. ma.
Driving Power	0.25	0.1	approx. watt
Power Output	5	5	approx. watts

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

▲ Bias may also be obtained with 30000-ohm grid resistor.

For use of the 1610 at the higher frequencies, refer to sheet
TRANS. TUBE RATINGS vs FREQUENCY.

JUNE 21, 1937

RCA-RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA

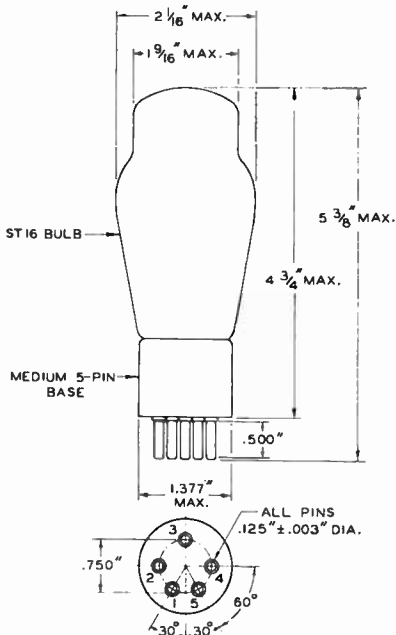
1610



1610

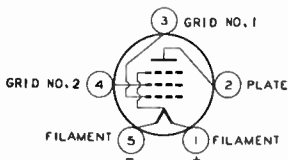
CRYSTAL-OSCILLATOR PENTODE

(continued from preceding page)



BOTTOM VIEW OF BASE

92C-4770

TUBE SYMBOL & TOP VIEW
OF
SOCKET CONNECTIONS

JUNE 21, 1937

RCA RADIODRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA

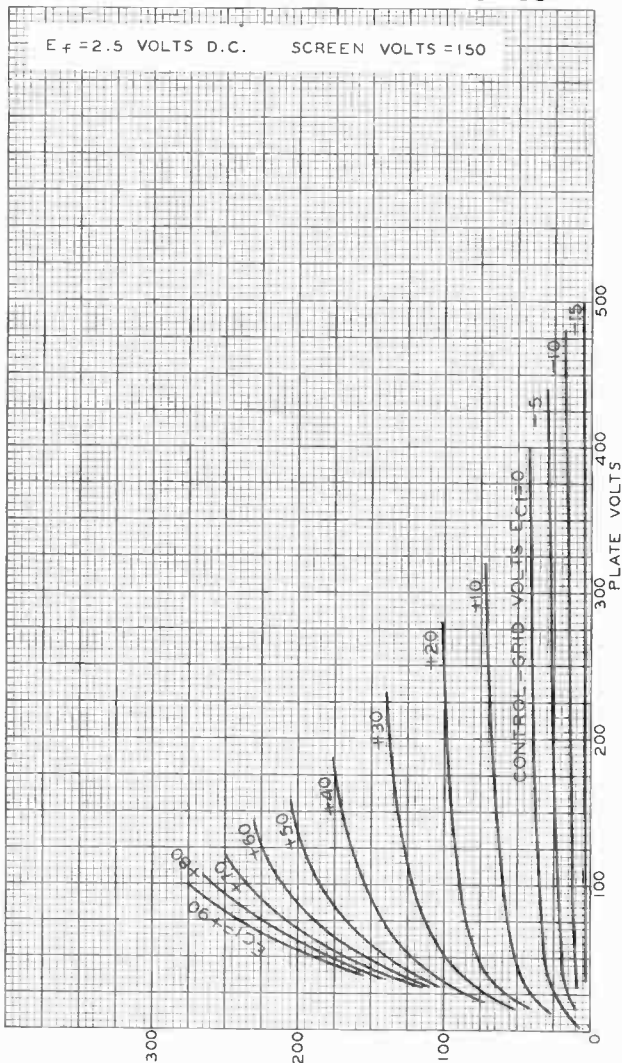


1610

1610

AVERAGE PLATE CHARACTERISTICS

$E_f = 2.5$ VOLTS D.C. SCREEN VOLTS = 150



JUNE 8, 1937

PLATE MILLIAMPERES

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY INC.

92C-4773

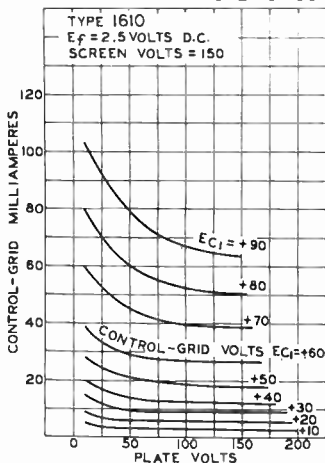
World Radio History



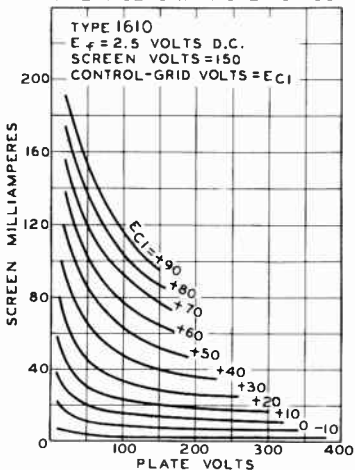
1610

CRYSTAL-OSCILLATOR PENTODE

AVERAGE CHARACTERISTICS



AVERAGE CHARACTERISTICS





1613

1613

R-F POWER AMPLIFIER PENTODE

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.7	amp.
Transconductance for plate current of 31 ma.	2500	μ hos
Direct Interelectrode Capacitances: [⊙]		
Grid to Plate	0.26	μ f
Input	6.5	μ f
Output	13.5	μ f
Maximum Overall Length		3-1/4"
Maximum Seated Height		2-11/16"
Maximum Diameter		1-5/16"
Bulb		Metal Shell, MT-8
Base		Small Wafer Octal 7-Pin
Pin 1 - Shell		Pin 5 - Grid
Pin 2 - Heater		Pin 7 - Heater
Pin 3 - Plate		Pin 8 - Cathode,
Pin 4 - Screen		Suppressor
Mounting Position		Any



BOTTOM VIEW (7S)

*Maximum Ratings Are Absolute Values***MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS****PLATE-MODULATED R-F POWER AMPLIFIER - Class C Telephony**

<i>Carrier conditions per tube for use with a max. modulation factor of 1.0</i>		
D-C Plate Voltage	275 max.	volts
D-C Screen Voltage	275 max.	volts
D-C Grid Voltage	-100 max.	volts
D-C Plate Current	50 max.	ma.
D-C Grid Current	5 max.	ma.
Plate Input	11.5 max.	watts
Screen Input	2 max.	watts
Plate Dissipation	7 max.	watts
D-C Heater-Cathode Potential	100 max.	volts
Typical Operation:		
D-C Plate Voltage	275	volts
D-C Screen Voltage [△]	{ 200	volts
	{ 7500	ohms
D-C Grid Voltage [□]	{ -35	volts
	{ 12500	ohms
Peak R-F Grid Voltage	65	volts
D-C Plate Current	42	ma.
D-C Screen Current	10	ma.
D-C Grid Current	2.8 approx.	ma.
Driving Power	0.16 approx.	watt
Power Output	6 approx.	watts

- [□] Obtained by grid resistor or by partial self-bias methods.
[△] Preferably obtained from a separate source modulated with the plate supply, or obtained from the modulated plate-voltage supply through resistor of value shown.
[⊙] With shell connected to cathode.

← Indicates a change.

DEC. 1, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



1613

R-F POWER AMPLIFIER PENTODE

(continued from preceding page)

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy*Key-down conditions per tube without modulation**

D-C Plate Voltage	350 max.	volts
D-C Screen Voltage	275 max.	volts
D-C Grid Voltage	-100 max.	volts
D-C Plate Current	50 max.	ma.
D-C Grid Current	5 max.	ma.
Plate Input	17.5 max.	watts
Screen Input	2.5 max.	watts
Plate Dissipation	10 max.	watts
D-C Heater-Cathode Potential	100 max.	volts
Typical Operation:		
D-C Plate Voltage	350	volts
D-C Screen Voltage [■]	{ 200 15000	{ volts ohms
D-C Grid Voltage [▲]	{ -35 10000	{ volts ohms
Peak R-F Grid Voltage	70	volts
D-C Plate Current	50	ma.
D-C Screen Current	10	ma.
D-C Grid Current	3.5 approx.	ma.
Driving Power	0.22 approx.	watt
Power Output	9 approx.	watts

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

▲ Obtained by grid resistor or other self- or fixed-bias method.

■ Obtained from a separate source, or from the plate-voltage supply with a voltage divider, or through a series resistor of the value shown.

Data on operating frequencies for the 1613 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

← Indicates a change.

DEC. 1, 1943

RCA VICTOR DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



1614

1614

TRANSMITTING BEAM POWER AMPLIFIER

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.9 amp

Transconductance:

for plate current of 72 ma. 6050 μ mhos

Direct Interelectrode Capacitances:⁰

Grid-No.1 to Plate 0.4 max. μ f

Input 10 μ f

Output 12 μ f

⁰ with shell connected to cathode.

Mechanical:

Mounting Position Any

Maximum Overall Length 4-5/16"

Maximum Seated Length 3-3/4"

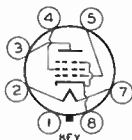
Maximum Diameter 1-9/16" \pm 1/16"

Bulb MT-10A

Base Small-Wafer Octal 7-Pin

Basing Designation for BOTTOM VIEW 7AC

- Pin 1 - Shell
- Pin 2 - Heater
- Pin 3 - Plate
- Pin 4 - Grid No.2



- Pin 5 - Grid No.1
- Pin 7 - Heater
- Pin 8 - Cathode, Grid No.3

AF POWER AMPLIFIER & MODULATOR - Class AB₁[†]

Maximum Ratings, Absolute Values:

	CCS [*]	ICAS ^{**}	
DC PLATE VOLTAGE	375 max.	550 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE.	300 max.	400 max.	volts
DC PLATE CURRENT	110 max.	110 max.	ma.
PLATE INPUT	40 max.	60 max.	watts
GRID-No.2 DISSIPATION.	3.5 max.	3.5 max.	watts
PLATE DISSIPATION.	21 max.	25 max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	200 max.	200 max.	volts
Heater positive with respect to cathode	200 max.	200 max.	volts

Typical Operation:

Unless otherwise specified, values are for 2 tubes

DC Plate Voltage	360 . .	530 . .	volts
DC Grid-No.2 Voltage	270 . .	340 . .	volts

^{*}, ^{**}, ^{***}: See next page.

← indicates a change.



TRANSMITTING BEAM POWER AMPLIFIER

DC Grid-No.1 (Control-Grid) Voltage . . .	-22.5 . .	-36 . .	volts
Peak AF Grid-No.1-to-Grid-No.1 Voltage . . .	45 . .	72 . .	volts
Zero-Signal DC Plate Current . . .	80 . .	60 . .	ma.
Max.-Signal DC Plate Current . . .	132 . .	160 . .	ma.
Max.-Signal DC Grid-No.2 Current . . .	15 . .	20 . .	ma.
Effective Load Resistance (plate-to-plate) . . .	6000 . .	7200 . .	ohms
Total Harmonic Distortion . . .	2 . .	2.5 . .	%
Max.-Signal Power Output . . .	26.5 . .	50 . .	watts

PLATE-MODULATED RF POWER AMPLIFIER - Class C Telephony

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

→ Maximum Ratings, Absolute Values:

	CCS [●]	ICAS ^{●●}	
DC PLATE VOLTAGE	325 max.	375 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE	300 max.	300 max.	volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE	-125 max.	-125 max.	volts
DC PLATE CURRENT	70 max.	95 max.	ma.
DC GRID-No.1 Current	5 max.	5 max.	ma.
PLATE INPUT	23 max.	35 max.	watts
GRID-No.2 INPUT	2.5 max.	2.5 max.	watts
PLATE DISSIPATION	14 max.	21 max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	200 max.	200 max.	volts
Heater positive with respect to cathode	200 max.	200 max.	volts

→ Typical Operation:

DC Plate Voltage	325 . .	375 . .	volts
DC Grid-No.2 Voltage [▲]	{ 245 . .	250 . .	volts
	{ 10000 . .	18000 . .	ohms
DC Grid-No.1 Voltage [◻]	{ -40 . .	-50 . .	volts
	{ 20000 . .	25000 . .	ohms
Peak RF Grid-No.1 Voltage	51 . .	80 . .	volts
DC Plate Current	70 . .	93 . .	ma.
DC Grid-No.2 Current	8 . .	7 . .	ma.
DC Grid-No.1 Current (Approx.)	2 . .	2 . .	ma.
Driving Power (Approx.)	0.1 . .	0.15 . .	watts
Power Output (Approx.)	15 . .	24.5 . .	watts

▲ obtained preferably from a separate source modulated with the plate supply, or from the modulated plate-supply through a series resistor of the value shown.

◻ subscript 1 indicates that grid-current does not flow during any part of input cycle.

● ● ◻ See next page.

← Indicates a change.



1614

1614

TRANSMITTING BEAM POWER AMPLIFIER

PLATE-MODULATED RF POWER AMPLIFIER - Class C Telephony

Triode Connection - Grid No. 2 Connected to Plate

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

Maximum Ratings, Absolute Values:

	CCS*	ICAS**	
DC PLATE VOLTAGE	325 max.	375 max.	volts
DC GRID-No.1 (CONTROL- GRID) VOLTAGE	-125 max.	-125 max.	volts
DC PLATE CURRENT	70 max.	95 max.	ma.
DC GRID-No.1 CURRENT	10 max.	10 max.	ma.
PLATE INPUT	25 max.	35 max.	watts
PLATE DISSIPATION	14 max.	21 max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	200 max.	200 max.	volts
Heater positive with respect to cathode	200 max.	200 max.	volts

Typical Operation:

DC Plate Voltage	325 . .	375 . .	volts
DC Grid-No.1 Voltage [□]	{ -85 . .	-90 . .	volts
	{ 21000 . .	15000 . .	ohms
Peak RF Grid-No.1 Voltage	102 . .	135 . .	volts
DC Plate Current	65 . .	90 . .	ma.
DC Grid-No.1 Current (Approx.)	4 . .	6 . .	ma.
Driving Power (Approx.)	0.4 . .	0.8 . .	watts
Power Outout (Approx.)	11.5 . .	21 . .	watts

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

RF AMPLIFIER & OSCILLATOR - Class C Telegraphy

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

Maximum Ratings, Absolute Values:

	CCS*	ICAS**	
DC PLATE VOLTAGE	375 max.	450 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE	300 max.	300 max.	volts
DC GRID-No.1 (CONTROL GRID) VOLTAGE	-125 max.	-125 max.	volts
DC PLATE CURRENT	110 max.	110 max.	ma.
DC GRID-No.1 CURRENT	5 max.	5 max.	ma.
PLATE INPUT	35 max.	45 max.	watts
GRID-No.2 INPUT	3.5 max.	3.5 max.	watts
PLATE DISSIPATION	21 max.	25 max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	200 max.	200 max.	volts
Heater positive with respect to cathode	200 max.	200 max.	volts

*, **, □□ : See next page.

← indicates a change.

1614



1614

TRANSMITTING BEAM POWER AMPLIFIER

→ Typical Operation:

DC Plate Voltage	375	..	450	..	volts
DC Grid-No.2 Voltage [Ⓢ]	250	..	250	..	volts
	12500	..	25000	..	ohms
DC Grid-No.1 Voltage ^{ⓈⓈ}	-40	..	-45	..	volts
	20000	..	22500	..	ohms
	425	..	410	..	ohms
Peak RF Grid-No.1 Voltage	51	..	73	..	volts
DC Plate Current	80	..	100	..	ma.
DC Grid-No.2 Current	10	..	8	..	ma.
DC Grid-No.1 Current (Approx.)	2	..	2	..	ma.
Driving Power (Approx.)	0.1	..	0.15	..	watts
Power Output (Approx.)	21	..	31	..	watts

● Continuous Commercial Service.

●● Intermittent Commercial and Amateur Service.

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

Ⓢ obtained from a separate source, or from the plate-voltage supply with a voltage divider, or through a series resistor of the value shown.

ⓈⓈ obtained from fixed supply, by grid resistor (20000, 22500), by cathode resistor (425, 410) or by combination methods.

Data on operating frequencies for the 1614 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY

CURVES under type 807 apply to the 1614 within its maximum ratings

◀ Indicates a change.



1616

1616

HALF-WAVE HIGH-VACUUM RECTIFIER

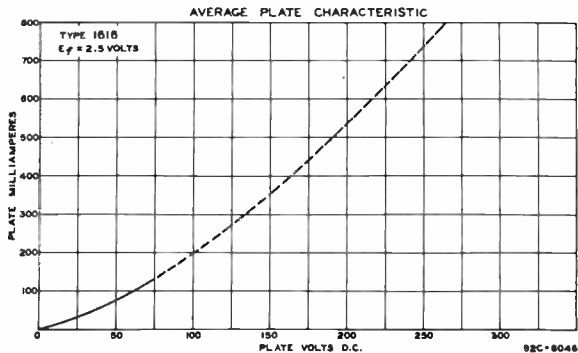
Filament	Coated	
Voltage †	2.5	a-c volts
Current	5.0	amp.
Maximum Overall Length		6-13/16" ←
Maximum Diameter		2-1/16"
Bulb		T-16
Cap		Medium Metal
Base		Medium 4-Pin, Bayonet
RCA Socket (UT-542-A)		Stock No. 9937 ←

*Maximum Ratings Are Absolute Values***MAXIMUM RATINGS**

Peak Inverse Voltage	5500 max.	volts
Peak Plate Current	0.8 max.	amp.
Surge Current	2.5 max.*	amp.
Average Plate Current	0.13 max.	amp.

* Equipment should be designed so that this value is not exceeded during switching operations.

† Should not deviate more than $\pm 5\%$ from the rated value.



← Indicates a change.

May 1, 1942

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

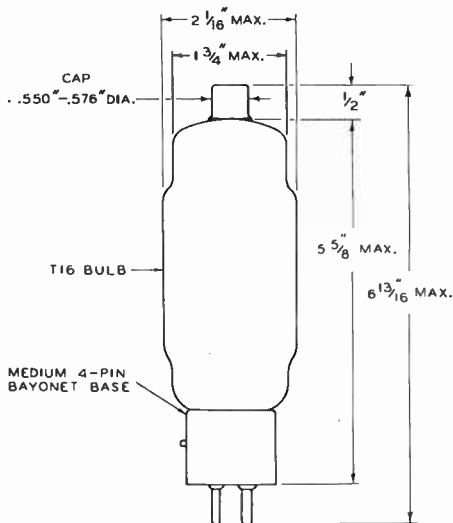
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1616



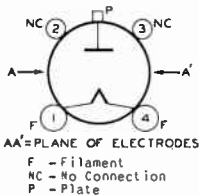
1616

HALF-WAVE HIGH-VACUUM RECTIFIER



92C-6156

BOTTOM VIEW OF SOCKET CONNECTIONS



TUBE MOUNTING POSITION

VERTICAL: Base down
 HORIZONTAL: Plate in vertical plane (on edge)

May 1, 1942

RCA RADOTRON DIVISION
 RCA MANUFACTURING COMPANY, INC.

DATA



1619

1619

TRANSMITTING BEAM POWER AMPLIFIER

Filament	Coated	
Voltage	2.5	a-c or d-c volts
Current	2.0	amp.
Transconductance for plate current of 50 ma.	4500 approx.	μmhos
Direct Interelectrode Capacitances: [⊙]		
Grid to Plate	0.29	μmf
Input	9.6	μmf
Output	12.5	μmf
Maximum Overall Length		4-5/16"
Maximum Diameter		1-9/16" ± 1/16"
Bulb		Metal Shell, MT-10
Base		Small Wafer Octal 7-Pin

*Maximum Ratings Are Absolute Values***MAXIMUM CCS RATINGS and TYPICAL OPERATING CONDITIONS**

CCS = Continuous Commercial Service

SINGLE-TUBE AMPLIFIER - Class A₁

D-C Plate Voltage	400 max.	volts
D-C Screen Voltage (Grid #2)	300 max.	volts
Screen Input	3.5 max.	watts
Plate Dissipation	15 max.	watts
Typical Operation:		
D-C Plate Voltage	300	volts
D-C Suppressor Voltage (Grid #3)**	0	volts
D-C Screen Voltage	250	volts
D-C Grid Voltage (Grid #1) ## ⊙	-10	volts
Peak A-F Grid Voltage	10	volts
Zero-Sig. D-C Plate Current	44	ma.
Max.-Sig. D-C Plate Current	46	ma.
Zero-Sig. D-C Screen Current	4	ma.
Max.-Sig. D-C Screen Current	6	ma.
Load Resistance	8800	ohms
Total Harmonic Distortion	7	%
Max.-Sig. Power Output	3 approx.	watts

The total effective grid-circuit resistance should not exceed 50000 ohms.

PUSH-PULL AMPLIFIER - Class AB₁

D-C Plate Voltage	400 max.	volts
D-C Screen Voltage (Grid #2)	300 max.	volts
Screen Input *	3.5 max.	watts
Plate Dissipation *	15 max.	watts

Typical Operation with Fixed Bias:

Unless otherwise specified, values are for 2 tubes

D-C Plate Voltage	400	volts
D-C Suppressor Voltage (Grid #3) **	0	volts
D-C Screen Voltage	300	volts
D-C Grid Voltage (Grid #1) † ⊙	-20	volts
Peak A-F Grid-to-Grid Voltage	40	volts
Zero-Sig. D-C Plate Current	52	ma.

⊙, *, **, †, ⊙: See end of tabulation.

← Indicates a change.

AUG. 2, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



TRANSMITTING BEAM POWER AMPLIFIER

(continued from preceding page)

Max.-Sig. D-C Plate Current	80	ma.
Zero-Sig. D-C Screen Current	3.5	ma.
Max.-Sig. D-C Screen Current	10	ma.
Load Resistance (per tube)	3500	ohms
Effective Load Res. (plate to plate)	14000	ohms
Total Harmonic Distortion	3	%
Max.-Sig. Power Output	17.5 approx.	watts

PUSH-PULL AMPLIFIER - Class AB₂

D-C Plate Voltage	400 max.	volts
D-C Screen Voltage (Grid #2)	300 max.	volts
Max.-Sig. D-C Plate Current *	75 max.	ma.
Max.-Sig. Plate Input *	30 max.	watts
Screen Input *	3.5 max.	watts
Plate Dissipation *	15 max.	watts

Typical Operation with Fixed Bias:

Unless otherwise specified, values are for 2 tubes

D-C Plate Voltage	400	volts
D-C Suppressor (Grid #3) **	0	volts
D-C Screen Voltage	300	volts
D-C Grid Voltage (Grid #1) ^o	-16.5	volts
Peak A-F Grid-to-Grid Voltage ^o	77	volts
Zero-Sig. D-C Plate Current	75	ma.
Max.-Sig. D-C Plate Current	150	ma.
Zero-Sig. D-C Screen Current	6.5	ma.
Max.-Sig. D-C Screen Current	11.5	ma.
Load Resistance (per tube)	1500	ohms
Effective Load Res. (plate to plate)	6000	ohms
Peak Grid Input Power ^{oo}	0.4	watt
Total Harmonic Distortion	2.5	%
Max.-Sig. Power Output ^o	36 approx.	watts

^o With zero-impedance driver and perfect regulation, plate-circuit distortion does not exceed 2%. In practice, plate-voltage regulation, screen voltage regulation and grid-bias regulation should not be greater than 5%, 5%, and 3% respectively.

^o The driver stage should be capable of supplying the grids of the class AB₂ stage with the specified peak grid voltage at low distortion. The effective resistance per grid circuit should not exceed 500 ohms and the effective impedance at the highest desired response frequency should not exceed 700 ohms.

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

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

D-C Plate Voltage	400 max.	volts
D-C Screen Voltage (Grid #2)	300 max.	volts
D-C Grid Voltage (Grid #1)	-125 max.	volts
D-C Plate Current	37.5 max.	ma.
Plate Input	15 max.	watts
Screen Input	2.5 max.	watts
Plate Dissipation	15 max.	watts
Typical Operation:		
D-C Plate Voltage	400	volts

* , ** , ^o , ^{oo} : See end of tabulation.



1619

1619

TRANSMITTING BEAM POWER AMPLIFIER

(continued from preceding page)

D-C Suppressor (Grid #3) **	0	volts
D-C Screen Voltage	250	volts
D-C Grid Voltage † •	{ -50	volts
	{ 1500	ohms
Peak R-F Grid Voltage	58	volts
Peak A-F Grid Voltage	30	volts
D-C Plate Current	31	ma.
D-C Screen Current	1.5	ma.
D-C Grid Current	1.2	approx.ma.
Driving Power [∞]	0.25	approx.watt
Power Output	3.8	approx.watts

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

D-C Plate Voltage	325 max.	volts
D-C Screen Voltage (Grid #2)	300 max.	volts
D-C Grid Voltage (Grid #1)	-125 max.	volts
D-C Plate Current	62 max.	ma.
D-C Grid Current	5 max.	ma.
Plate Input	20 max.	watts
Screen Input	2.5 max.	watts
Plate Dissipation	10 max.	watts

Typical Operation:

D-C Plate Voltage	325	volts
D-C Suppressor (Grid #3) **	0	volts
D-C Screen Voltage ♦	{ 285	volts
	{ 5000	ohms
D-C Grid Voltage † □	{ -50	volts
	{ 18000	ohms
Peak R-F Grid Voltage	70	volts
D-C Plate Current	62	ma.
D-C Screen Current	7.5	ma.
D-C Grid Current	2.8	approx.ma.
Driving Power	0.18	approx.watt
Power Output	13	approx.watts

♦ Preferably obtained from a separate source modulated with the plate supply, or obtained from the modulated plate-voltage supply through resistor of value shown.

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

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy*Key-down conditions per tube without modulation ■*

D-C Plate Voltage	400 max.	volts
D-C Screen Voltage (Grid #2)	300 max.	volts
D-C Grid Voltage (Grid #1)	-125 max.	volts
D-C Plate Current	75 max.	ma.
D-C Grid Current	5 max.	ma.
Plate Input	30 max.	watts
Screen Input	3.5 max.	watts
Plate Dissipation	15 max.	watts

**, ∞, †, ♦: See end of tabulation.



1619

TRANSMITTING BEAM POWER AMPLIFIER

(continued from preceding page)

Typical Operation:

D-C Plate Voltage	400	volts
D-C Suppressor (Grid #3)**	0	volts
D-C Screen Voltage §	{ 300	volts
	{ 9500	ohms
D-C Grid Voltage † *	{ -55	volts
	{ 11000	ohms
Peak R-F Grid Voltage	80	volts
D-C Plate Current	75	ma.
D-C Screen Current	10.5	ma.
D-C Grid Current	.5	approx. ma.
Driving Power	0.36	approx. watt
Power Output	19.5	approx. watts

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

○ For a-c filament supply. If d.c. is used, the stated voltages should be decreased by 1.75 volts.

† The total effective grid-circuit resistance should not exceed 25000 ohms.

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

** Grid No. 3 should be connected to the mid-point of filament operated on a.c., or to negative end of filament when d-c filament supply is used.

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

→ Obtained from fixed supply or by cathode resistor of value shown.

§ Obtained from a separate source, or from the plate-voltage supply with a voltage divider, or through a series resistor of the value shown.

* The screen voltage must not exceed 600 volts under key-up conditions. Obtained from fixed supply, by grid resistor (11000), or by combination methods. When a preceding stage is keyed, sufficient fixed bias must be used to maintain the plate current at a low value when the key is up.

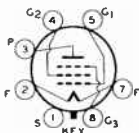
⊕ With shell connected to cathode.

Data on operating frequencies for the 1619 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

TUBE MOUNTING POSITION

VERTICAL: Base up or down.
HORIZONTAL: No.

BOTTOM VIEW OF SOCKET CONNECTIONS



Pin 1 - Shell
Pin 2 - Filament
Pin 3 - Plate
Pin 4 - Grid No. 2
Pin 5 - Grid No. 1
Pin 6 - Filament
Pin 8 - Grid No. 3

← Indicates a change

AUG. 2, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

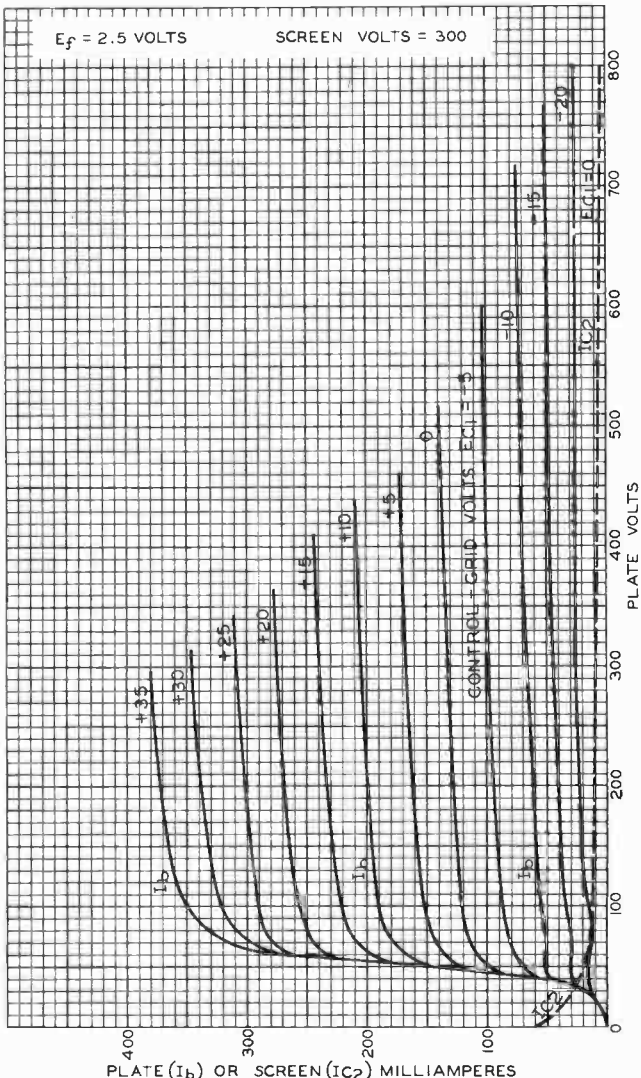
DATA 2



1619

AVERAGE PLATE CHARACTERISTICS

1619



JUNE 15, 1938

RCA RADITRON DIVISION
RCA MANUFACTURING COMPANY, INC.

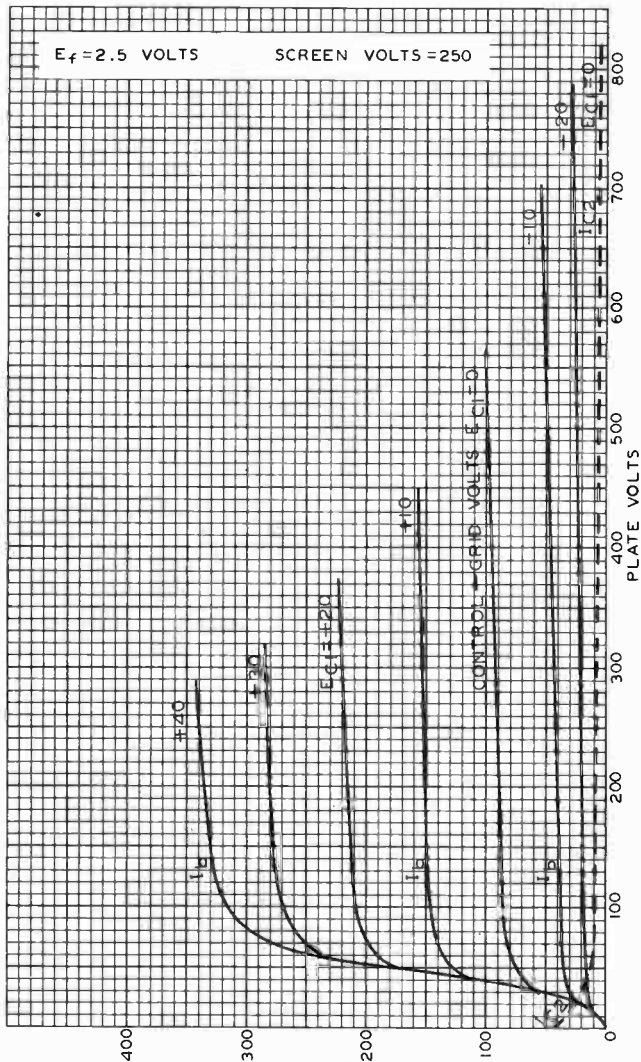
92C-4931

1619



1619

AVERAGE PLATE CHARACTERISTICS



400

PLATE MILLIAMPERES

RCA RADIOTRON DIVISION

RCA MANUFACTURING COMPANY, INC.

JULY 27, 1938

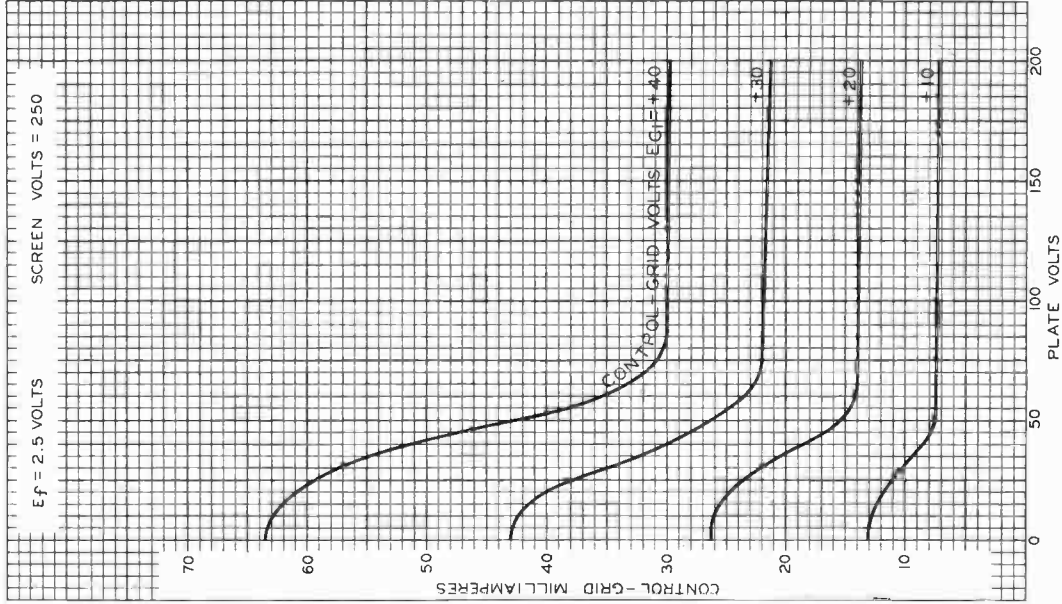
92C-4932



1619

1619

TYPICAL CHARACTERISTICS



JUNE 8, 1938

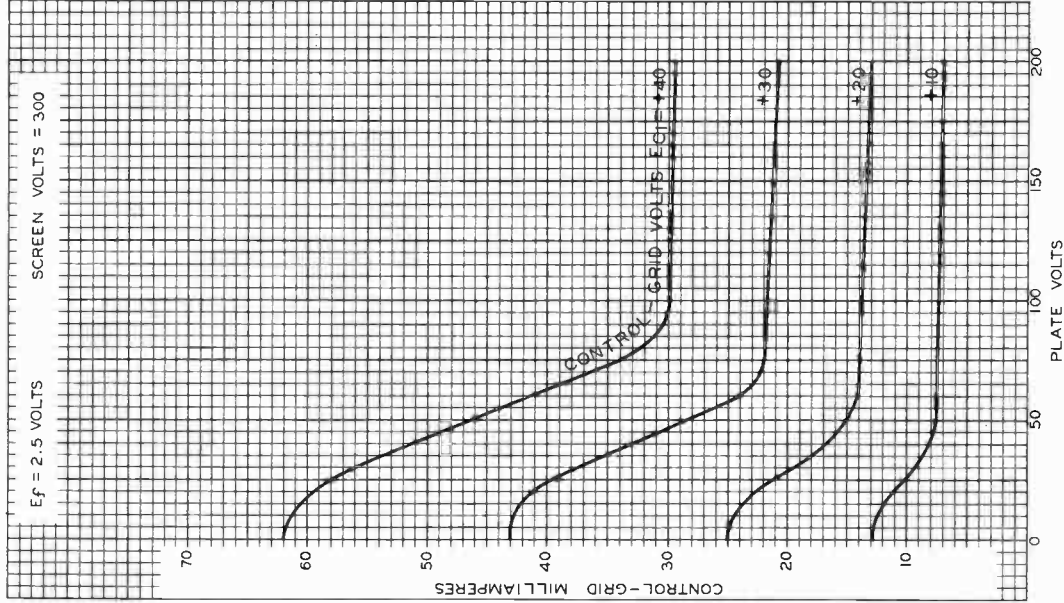
RCA RADIIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4924



1619

TYPICAL CHARACTERISTICS



1619

World Precision

JUNE 9, 1938

RCA RADIODIODE DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4925



1623

1623

R-F POWER AMPLIFIER, CLASS B MODULATOR

Filament	Thoriated Tungsten	
Voltage	6.3	a-c or d-c volts
Current	2.5	amp.
Amplification Factor	20	
Direct Interelectrode Capacitances:		
Grid to Plate	6.7	μf
Grid to Filament	5.7	μf
Plate to Filament	0.9	μf
Maximum Overall Length		6-9/16"
Maximum Diameter		2-7/16"
Bulb		ST-19
Cap		Medium Metal
Base	Medium 4-Pin Ceramic, Bayonet	
RCA Socket		Type UR-542-A

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 B

	CCS	ICAS	
D-C Plate Voltage	750 max.	1000 max.	volts
Max.-Signal D-C Plate Current*	100 max.	100 max.	ma.
Max.-Signal Plate Input*	75 max.	100 max.	watts
Plate Dissipation*	25 max.	30 max.	watts

Typical Operation:

Unless otherwise specified, values are for 2 tubes

	CCS	ICAS	
D-C Plate Voltage	500	750	1000 volts
D-C Grid Voltage [□]	-10	-25	-40 volts
Peak A-F Grid-to-Grid Volt.	170	200	230 volts
Zero-Sig. D-C Plate Cur.	40	35	30 ma.
Max.-Sig. D-C Plate Cur.	200	200	200 ma.
Load Res. (Per tube)	1300	2100	3000 ohms
Effective Load Res. (plate to plate)	5200	8400	12000 ohms
Max.-Sig. Driving Power (Approx.)	3.5	4	4.2 watts
Max.-Sig. Power Output (Approx.)	60	100	145 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 fact. of 1.0

	CCS	ICAS	
D-C Plate Voltage	750 max.	1000 max.	volts
D-C Plate Current	50 max.	50 max.	ma.
Plate Input	37.5 max.	45 max.	watts
Plate Dissipation	25 max.	30 max.	watts
Typical Operation:			
D-C Plate Voltage	500	750	1000 volts
D-C Grid Voltage [□]	-25	-40	-50 volts
Peak R-F Grid Voltage	50	60	62 volts
D-C Plate Current	50	50	45 ma.

[□] with a-c filament supply.

April 15, 1940

RCA RADIODRON DIVISION
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DATA



R-F POWER AMPLIFIER, CLASS B MODULATOR

(continued from preceding page)

	CCS		ICAS	
D-C Grid Current (Approx.)**	2	1.5	0.5	ma.
Driving Power (Approx.)***	1.8	1.4	1.7	watts
Power Output (Approx.)	7.5	12.5	16	watts

° At crest of a-f cycle with modulation factor of 1.0

PLATE-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	600 max.		750 max.	volts
D-C Grid Voltage	-200 max.		-200 max.	volts
D-C Plate Current	83 max.		100 max.	ma.
D-C Grid Current	25 max.		25 max.	ma.
Plate Input	50 max.		75 max.	watts
Plate Dissipation	17.5 max.		25 max.	watts

Typical Operation:

D-C Plate Voltage	500	600	750	volts
D-C Grid Voltage § □	{ -125 -125 5000 5000	-125	-125	volts
		6250		ohms
Peak R-F Grid Voltage	200	200	215	volts
D-C Plate Current	83	83	100	ma.
D-C Grid Current (Approx.)**	25	25	20	ma.
Driving Power (Approx.)**	5	5	4	watts
Power Output (Approx.)	30	38	55	watts

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

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telephony

Key-down conditions per tube without modulation#

	CCS		ICAS	
D-C Plate Voltage	750 max.		1000 max.	volts
D-C Grid Voltage	-200 max.		-200 max.	volts
D-C Plate Current	100 max.		100 max.	ma.
D-C Grid Current	25 max.		25 max.	ma.
Plate Input	75 max.		100 max.	watts
Plate Dissipation	25 max.		30 max.	watts

Typical Operation:

D-C Plate Voltage	500	750	1000	volts
D-C Grid Voltage * □	{ -70 -85 4100 5000	-90	-90	volts
		4500	750	ohms
Peak R-F Grid Voltage	140	160	172	volts
D-C Plate Current	100	100	100	ma.
D-C Grid Current (Approx.)**	17	17	20	ma.
Driving Power (Approx.)**	2.2	2.5	3.1	watts
Power Output (Approx.)	33	55	75	watts

* obtained by grid resistor (4100, 5500, 4500), by cathode resistor (600, 730, 750) or from fixed-bias source. When the 1623 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 1000 volts, a fixed bias of at least -35 volts should be used.

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

** Subject to wide variations as explained on sheet TRANS. TUBE RATINGS.

□ with a-c filament supply.



1623

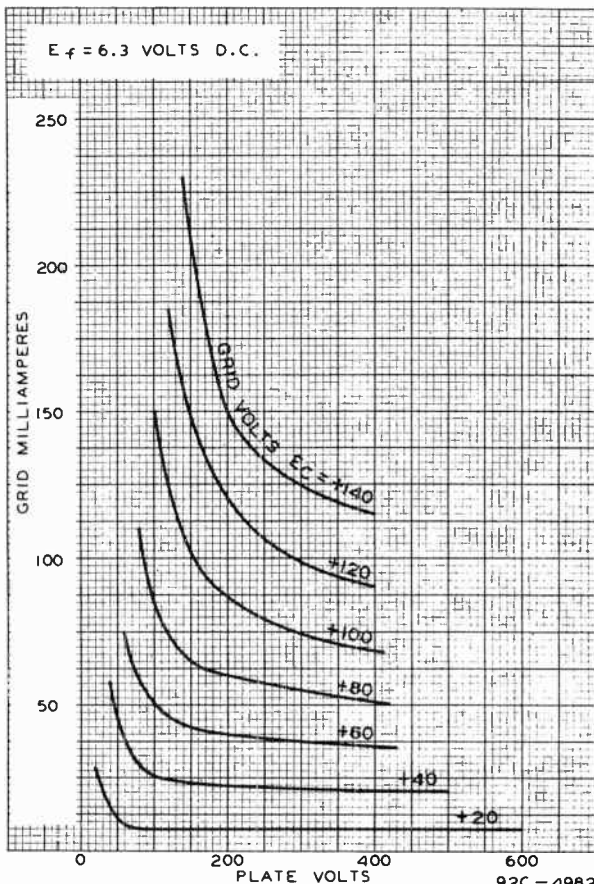
R-F POWER AMPLIFIER, CLASS B MODULATOR

(continued from preceding page)

Data on operating frequencies for the 1623 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

OUTLINE DIMENSIONS, TUBE SYMBOL, and SOCKET CONNECTIONS for the 1623 are the same as for the 809.

TYPICAL CHARACTERISTICS



April 15, 1940

RCA RADIODRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4982

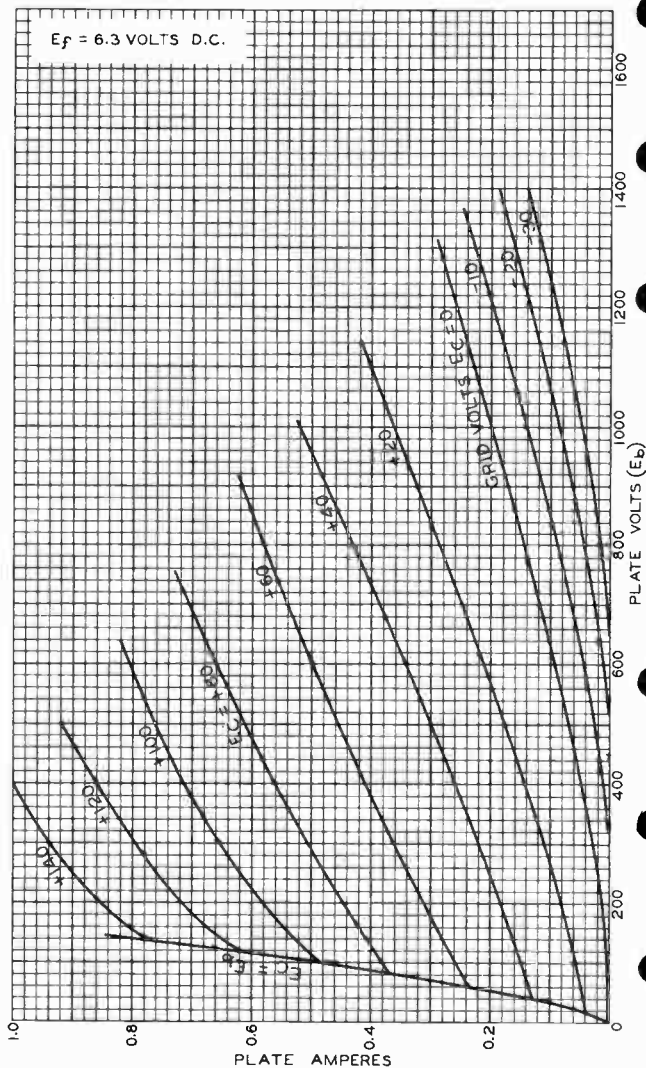
DATA 2

1623



1623

AVERAGE PLATE CHARACTERISTICS



OCT. 10, 1938

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4980



1624

1624

TRANSMITTING BEAM POWER AMPLIFIER

Filament Voltage	Coated 2.5	a-c or d-c volts
Filament Current	2.0	amp.
Transconductance for plate current of 50 ma.	4000 approx.	μmhos
Direct Inter-electrode Capacitances:		
Grid to Plate	0.25 max.⊙	μuf
Input	11	μuf
Output	7.5	μuf
Maximum Overall Length		5-3/4"
Maximum Diameter		2-1/16"
Bulb		ST-16
Cap		Small Metal
Base		Medium 5-Pin
RCA Socket		Stock No. 9920

Maximum Ratings Are Absolute Values

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

PUSH-PULL AMPLIFIER - Class AB₂ ††

D-C Plate Voltage	600 max.	volts
D-C Screen Voltage (Grid #2)	300 max.	volts
Max.-Sig. D-C Plate Current *	90 max.	ma.
Max.-Sig. Plate Input *	54 max.	watts
Screen Input *	3.5 max.	watts
Plate Dissipation *	25 max.	watts

Typical Operation (Fixed Bias):

Unless otherwise specified, values are for 2 tubes

D-C Plate Voltage	400	600	volts
D-C Screen Voltage	300	300	volts
D-C Grid Voltage (Grid #1) □ ⊙	-16.5	-25	volts
Peak A-F Grid-to-Grid Voltage	77	106	volts
Zero-Sig. D-C Plate Current	75	42	ma.
Max.-Sig. D-C Plate Current	150	180	ma.
Zero-Sig. D-C Screen Current	6.5	5	ma.
Max.-Sig. D-C Screen Current	11.5	15	ma.
Load Resistance (per tube)	1500	1870	ohms
Effective Load Res. (plate to plate)	6000	7500	ohms
Peak Grid Input Power	0.4	1.2	watts
Max.-Sig. Power Output **	36	72	approx. watts

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

⊙ For a-c filament supply. If d.c. is used, the stated voltages should be decreased by 1.75 volts.

□ Driver stage should be capable of supplying the grids of the class AB₂ stage with the specified peak grid voltage at low distortion. The effective resistance per grid circuit should be kept below 500 ohms and the effective impedance at the highest desired response frequency should not exceed 700 ohms.

** With zero-impedance driver and perfect regulation, plate-circuit distortion does not exceed 2%. In practice, plate-voltage regulation, screen-voltage regulation, and grid-bias regulation should not be greater than 5%, 5%, and 3%, respectively.

⊙ With external shielding.

†† See end of tabulation.

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

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

D-C Plate Voltage	600 max.	volts
D-C Screen Voltage (Grid #2)	300 max.	volts
D-C Grid Voltage (Grid #1)	-200 max.	volts
D-C Plate Current	75 max.	ma.
Plate Input	37.5 max.	watts
Screen Input	2.5 max.	watts
Plate Dissipation	25 max.	watts

Typical Operation:

D-C Plate Voltage	400	600	volts
D-C Screen Voltage #	250	300	volts
D-C Grid voltage †	-50	-60	volts
Peak R-F Grid Voltage	58	58	volts
Peak A-F Grid Voltage	30	30	volts
D-C Plate Current	31	40	ma.
D-C Screen Current	1.5	2.5	ma.

Obtained from a fixed supply or from a separate source.

† See end of tabulation.

← Indicates a change

Jan. 1, 1943

RCA VICTOR DIVISION

RADIO CORPORATION OF AMERICA - HARRISON, NEW JERSEY

World Radio History

DATA

1624



1624

TRANSMITTING BEAM POWER AMPLIFIER

(continued from preceding page)

D-C Grid Current	1.2	C	<u>approx. ma.</u>
Driving Power ^{oo}	0.25	0.4	<u>approx. watt</u>
Power Output	3.8	8	<u>approx. watts</u>

^{oo} At crest of audio-frequency cycle with modulation factor of 1.0.

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

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

D-C Plate voltage	500	max.	volts
D-C Screen Voltage (Grid #2)	300	max.	volts
D-C Grid Voltage (Grid #1)	-200	max.	volts
D-C Plate Current	75	max.	ma.
D-C Grid Current	5	max.	ma.
Plate Input	37.5	max.	watts
Screen Input	2.5	max.	watts
Plate Dissipation	16.5	max.	watts
Typical Operation:			
D-C Plate Voltage [□]	325	500	volts
D-C Screen voltage	285	275	volts
D-C Grid voltage * †	-50	-50	volts
	18000	15000	ohms
Peak R-F Grid Voltage	70	80	volts
D-C Plate Current	62	75	ma.
D-C Screen Current	7.5	9	ma.
D-C Grid Current	2.8	3.3	<u>approx. ma.</u>
Driving Power	0.18	0.25	<u>approx. watt</u>
Power Output	13	24	<u>approx. watts</u>

[□] Obtained preferably from a modulated fixed supply.

* Obtained by grid resistor of value shown or by suitable combination of grid resistor with either fixed supply or cathode resistor.

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation ##

D-C Plate Voltage	600	max.	volts
D-C Screen Voltage (Grid #2)	300	max.	volts
D-C Grid Voltage (Grid #1)	-200	max.	volts
D-C Plate Current	90	max.	ma.
D-C Grid Current	5	max.	ma.
Plate Input	54	max.	watts
Screen Input	3.5	max.	watts
Plate Dissipation	25	max.	watts
Typical Operation:			
D-C Plate Voltage	400	600	volts
D-C Screen voltage •	300	300	volts
D-C Grid voltage ◊ †	-55	-60	volts
	11000	12000	ohms
	610	570	ohms
Peak R-F Grid Voltage	80	95	volts
D-C Plate Current	75	90	ma.
D-C Screen Current	10.5	10	ma.
D-C Grid Current	5	5	<u>approx. ma.</u>
Driving Power	0.36	0.43	<u>approx. watt</u>
Power Output	19.5	35	<u>approx. watts</u>

• Obtained preferably from a fixed supply of value shown.

◊ Obtained by grid leak(⊕) or cathode resistor (⊖) of values shown, fixed supply, or by combination methods.

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

+ The total effective grid-circuit resistance should not exceed 25000 ohms.

†† Subscript (2) indicates that grid current flows during a part of input cycle.

← Indicates a change



1624

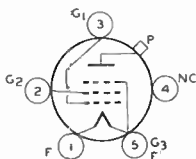
1624

TRANSMITTING BEAM POWER AMPLIFIER

OUTLINE DIMENSIONS for the 1624 are the same as those for the 807. For CURVES, refer to Type 1619.

Data on operating frequencies for the 1624 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

BOTTOM VIEW OF
SOCKET CONNECTIONS



Pin 1 - Filament
Pin 2 - Grid No. 2
Pin 3 - Grid No. 1
Pin 4 - No Connection
Pin 5 - Filament - , Grid No. 3
Cap - Plate

MOUNTING POSITION

VERTICAL: Base up or down.
HORIZONTAL: No.

← Indicates a change.

Jan. 2, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA 2



1625

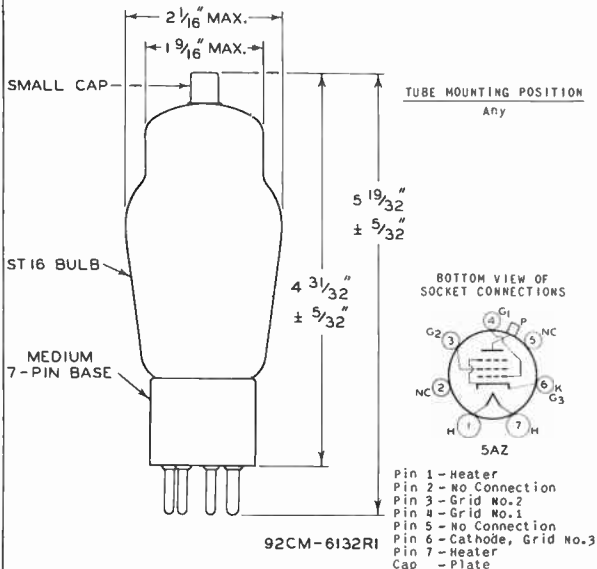
1625

TRANSMITTING BEAM POWER AMPLIFIER

Heater	Coated Unipotential Cathode	
Voltage	12.6 ($\pm 10\%$)	a-c or d-c volts
Current	0.45	amp.
Transconductance for plate cur. of 72 ma.	6000 approx.	μ mhos
Grid-Screen Mu-Factor	8	
Direct Interelectrode Capacitances:		
Grid to Plate (with external shielding)	0.2 max.	μ f
Input	11	μ f
Output	7	μ f
Overall Length	5-19/32" \pm 5/32"	←
Seated Height	4-31/32" \pm 5/32"	←
Maximum Diameter	2-1/16"	
Bulb	ST-16	
Cap	Small	
Base	Medium 7-Pin, Micanol	

*Maximum Ratings Are Absolute Values***MAXIMUM CCS and ICAS RATINGS with TYPICAL OPERATING CONDITIONS**

These are the same as those for Type 807 except that maximum d-c heater-cathode potential is 135 volts. Curves under the 807 also apply to the 1625.



← Indicates a change.

DEC. 15, 1944

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



1626

1626

TRANSMITTING TRIODE

For oscillator applications requiring unusually stable characteristics

Heater ^o	Coated unipotential Cathode	
Voltage	12.6	a-c or d-c volts
Current	0.25	amp.
Amplification Factor	5	
Direct Interelectrode Capacitances:		
Grid to Plate	4.4	μ f
Grid to Cathode	3.2	μ f
Plate to Cathode	3.4	μ f
Maximum Overall Length		4-1/8"
Maximum Seated Height		3-9/16"
Maximum Diameter		1-9/16"
Bulb		ST-12
Base	Small Shell Octal 8-Pin, M1CANOL ^h	

MAXIMUM CCS RATINGS and TYPICAL OPERATING CONDITIONS

CCS = Continuous Commercial Service

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation ##

D-C Plate Voltage	250 max.	volts
D-C Grid Voltage	-150 max.	volts
D-C Plate Current	25 max.	ma.
D-C Grid Current	8 max.	ma.
Plate Input	6.25 max.	watts
Plate Dissipation	5 max.	watts
Typical Operation:		
D-C Plate Voltage	250	volts
D-C Grid Voltage*	-70	volts
	14000	ohms
	2300	ohms
Peak R-F Grid Voltage	105	volts
D-C Plate Current	25	ma.
D-C Grid Current**	5 approx.	ma.
Driving Power**	0.5 approx.	watt
Power Output	4 approx.	watts

^o In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

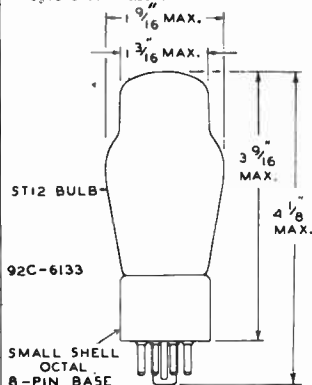
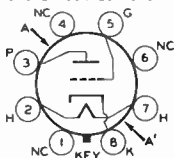
Modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115% of the carrier conditions.

* Obtained from fixed supply (-70), by grid resistor (14000), or cathode resistor (233), or by combination methods. When the 1626 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 low value. With plate volts of 250, a fixed bias of at least -35 volts must be used.

** Subject to wide variations as explained on sheet TRANS. TUBE RATINGS.

Registered trademark.

Data on operating frequencies for the 1626 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

**BOTTOM VIEW OF SOCKET CONNECTIONS****AA' = PLANE OF ELECTRODES**

- Pin 1 - No Connection
- Pin 2 - Heater
- Pin 3 - Plate
- Pin 4 - No Connection
- Pin 5 - Grid
- Pin 6 - No Connection
- Pin 7 - Heater
- Pin 8 - Cathode

TUBE MOUNTING POSITION
VERTICAL or HORIZONTAL

MARCH 15, 1941

RCA RADIONTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

WorldRadioHistory

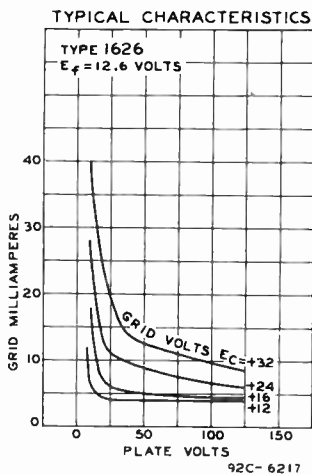
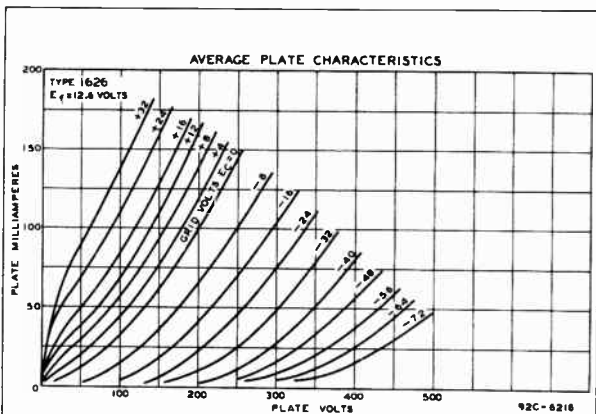
TENTATIVE DATA

1626



1626

TRANSMITTING TRIODE



MARCH 15, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

World Radio History

92C-6216,
92C-6217



5556

AMPLIFIER TRIODE

5556

GENERAL DATA**Electrical:****Filament:**

Voltage	4.5	volts
Current	1.1	amp
Amplification Factor . .	8.5	
Direct Interelectrode Capacitances (Approx.):		
Grid to Plate	8.3	μf
Grid to Cathode	4.0	μf
Plate to Cathode	3.0	μf

Mechanical:

Mounting Position	Vertical, or Horizontal with Plane of Electrodes Vertical
Maximum Overall Length	5-5/8"
Maximum Diameter	2-3/16"
Bulb	S-17
Base	Medium 4-Pin Bayonet

AF POWER AMPLIFIER AND MODULATOR - Class A**Maximum Ratings, Absolute Values:**

DC PLATE VOLTAGE	350 max.	volts
PLATE DISSIPATION	7.5 max.	watts

Typical Operation:

DC Plate Voltage	350	volts
DC Grid Voltage*	-30	volts
Peak AF Grid Voltage (Approx.)	30	volts
DC Plate Current	9	ma.
Plate Resistance	8700	ohms
Transconductance	980	μmhos
Load Resistance	18000	ohms
Power Output (5% second harmonic)	0.6	watts

RF POWER AMPLIFIER - Class B Telephony

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

Maximum Ratings, Absolute Values:

DC PLATE VOLTAGE	350 max.	volts
DC PLATE CURRENT	40 max.	ma.
PLATE INPUT	14 max.	watts
PLATE DISSIPATION	10 max.	watts

Typical Operation:

DC Plate Voltage	350	volts
DC Grid Voltage*	-40	volts
Peak RF Grid Voltage	90	volts
DC Plate Current	32	ma.

* With dc filament excitation.

MAY 1, 1946

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

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AMPLIFIER TRIODE

Driving Power (Approx.) #	0.1 . . watts
Power Output	2 . . watts

PLATE-MODULATED RF POWER AMPLIFIER - Class C Telephony

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

Maximum Ratings, Absolute Values:

DC PLATE VOLTAGE	350 max. volts
DC GRID VOLTAGE	-150 max. volts
DC PLATE CURRENT	40 max. ma.
DC GRID CURRENT	10 max. ma.
PLATE INPUT	14 max. watts
PLATE DISSIPATION	7 max. watts

Typical Operation:

DC Plate Voltage	300 . . volts
DC Grid Voltage*	-100 . . volts
Peak RF Grid Voltage (Approx.)	140 . . volts
DC Plate Current	30 . . ma.
DC Grid Current	2 . . ma.
Driving Power (Approx.)	0.3 . . watt
Power Output (Approx.)	4 . . watts

RF POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation##

Maximum Ratings, Absolute Values:

DC PLATE VOLTAGE	350 max. volts
DC GRID VOLTAGE	-150 max. volts
DC PLATE CURRENT	40 max. ma.
DC GRID CURRENT	10 max. ma.
PLATE INPUT	14 max. watts
PLATE DISSIPATION	10 max. watts

Typical Operation:

DC Plate Voltage	350 . . volts
DC Grid Voltage*	-80 . . volts
Peak RF Grid Voltage	130 . . volts
DC Plate Current	35 . . ma.
DC Grid Current	2 . . ma.
Driving Power (Approx.)	0.25 . . watt
Power Output (Approx.)	6 . . watts

* With dc filament excitation.

At crest of af cycle with modulation factor of 1.

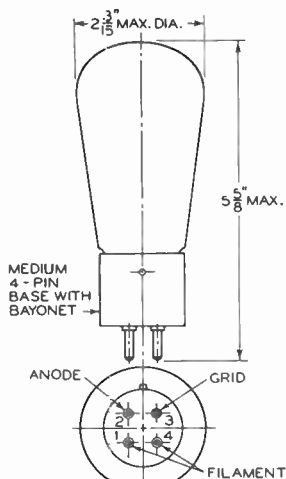
Modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115% of the carrier conditions.

Data on operating frequencies for the 5556 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.



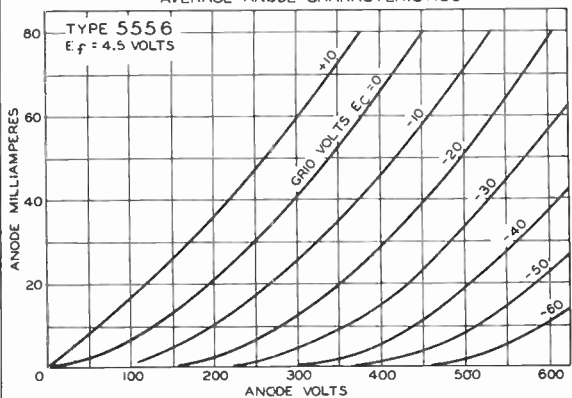
5556 AMPLIFIER TRIODE

5556



92CS-6717

AVERAGE ANODE CHARACTERISTICS



92CS-6718

MAY 1, 1946

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-6717-6718

World Radio History





5558

5558

HALF-WAVE MERCURY-VAPOR RECTIFIER

GENERAL DATA

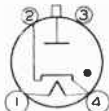
Electrical:

	<i>Min.</i>	<i>Av.</i>	<i>Max.</i>	
Heater, for Unipotential Cathode:				
Voltage	4.75	5.0	5.25	volts
Current, with heater volts = 5.0	-	4.5	4.9	amp
Cathode Heating Time, before				
tube conduction.	5	-	-	minutes
Tube Voltage Drop	-	15	-	volts
Critical Anode Voltage	-	-	50	volts

Mechanical:

Mounting Position	Vertical, Base Down
Overall Length	6-3/4" ± 1/4"
Maximum Diameter	3"
Bulb	ST-23
Cap.	Medium
Base	Medium-Shell Small 4-Pin, Bayonet
Basing Designation for BOTTOM VIEW	3W

Pin 1 - Heater
 Pin 2 - Cathode
 (Anode
 Return)



Pin 3 - No
 Connection
 Pin 4 - Heater,
 Cathode

Maximum Ratings, Absolute Values:

For frequencies up to 150 cycles

CONDENSED-MERCURY			
TEMPERATURE RANGE [□]	+30 to +80	+30 to +60	°C
PEAK INVERSE ANODE VOLTAGE	2000 max.	5000 max.	volts
CATHODE CURRENT:			
Peak	15 max.	15 max.	amp
Average [■]	2.5 max.	2.5 max.	amp
Surge, for duration of			
0.1 sec. max.	200 max.	200 max.	amp

[□] Recommended condensed-mercury temperature = 40°C.

[■] Averaged over any interval of 15 sec. max.

← Indicates a change.

JUNE 15, 1948

TUBE DEPARTMENT
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

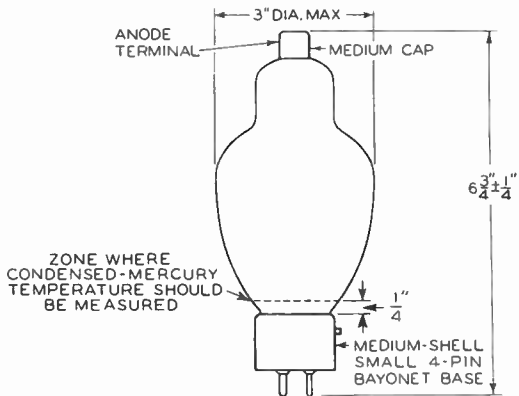
DATA

5558



5558

HALF-WAVE MERCURY-VAPOR RECTIFIER



92CS-6701R1



5561

5561

HALF-WAVE MERCURY-VAPOR RECTIFIER

DATA**Electrical:**

Heater, for Unipotential Cathode:

Voltage*	5	volts
Current	10	amp
Peak Voltage Drop (Approx.)	15	volts

Mechanical:

Mounting Position	Vertical, Base Down
Overall Length	11" ± 1/4"
Maximum Diameter	3-13/16"
Bulb	ST-30
Cap	3917
Base	Large Metal-Shell Super-Jumbo 4-Pin, Bayonet

Maximum Ratings, Absolute Values:

	Continuous <u>Service</u>	Welder- Control <u>Service</u>	
PEAK INVERSE ANODE VOLTAGE-	3000 max.	10000 max.	volts
INSTANTANEOUS ANODE CURRENT:			
Below 25 Cycles	12.8 max.	8 max.	amp
25 Cycles and Higher	40 max.	16 max.	amp
AVERAGE ANODE CURRENT#	6.4 max.	4 max.	amp
SURGE ANODE CURRENT [□] for			
0.1 sec. max.	200 max.	80 max.	amp
COND.-MERCURY TEMP. RANGE [□]	40 - 80	25 - 50	°C

* Heater voltage must be applied at least 5 minutes before anode voltage is applied.

Averaged over any 15-second interval.

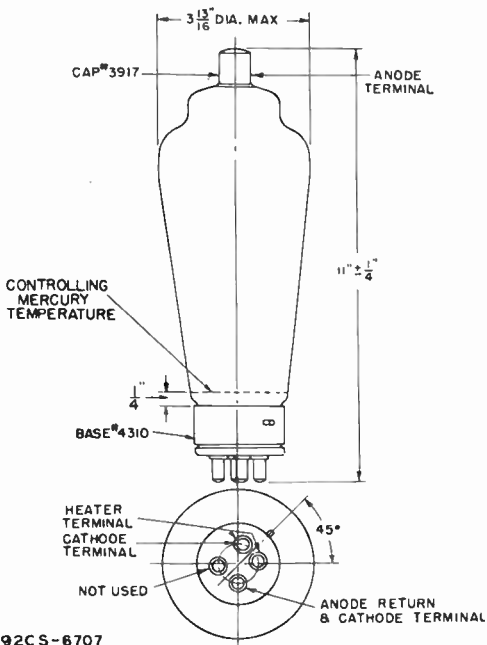
□ Recommended condensed-mercury temperature 40°C.

5561



5561

HALF-WAVE MERCURY-VAPOR RECTIFIER





5588

5588

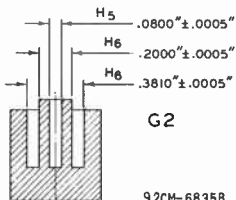
UHF POWER TRIODE

(continued from preceding page)

THE PLATE RING WILL BE ENTIRELY ENGAGED BY HOLE H_1 , AND THE RF CONTACT SURFACE OF THE PLATE RING WILL SEAT ON THE SHOULDER BETWEEN HOLES H_1 AND H_2 . THE PLANE SURFACE OF THIS SHOULDER IS $90^\circ \pm 2'$ TO THE AXES OF THE HOLES. SEATING IS DETERMINED BY FAILURE OF A 0.005" THICKNESS GAUGE, $1/8$ " WIDE, TO ENTER MORE THAN $1/16$ " BETWEEN THE SHOULDER SURFACE AND THE RF CONTACT SURFACE.

WITH THE TUBE PROPERLY SEATED AS DESCRIBED ABOVE, THE GRID TERMINAL WILL BE ENTIRELY ENGAGED BY HOLE H_3 , AND THE CATHODE TERMINAL WILL BE ENGAGED BY HOLE H_4 TO A DEPTH OF AT LEAST $1/4$ ".

NOTE 2: CONCENTRICITY OF THE HEATER TERMINAL WITH RESPECT TO THE CATHODE TERMINAL IS DETERMINED BY A GAUGE AS SHOWN IN SKETCH G2. THE CYLINDRICAL HOLE H_5 AND THE ANNULAR HOLE H_6 HAVE AXES COINCIDENT WITHIN 0.0005", LENGTHS DETERMINED FROM THE OUTLINE DRAWING, AND DIAMETERS AS SHOWN IN THE SKETCH. THE CATHODE TERMINAL AND THE HEATER TERMINAL WILL ENTER THIS GAUGE TO A DEPTH OF $3/8$ ".

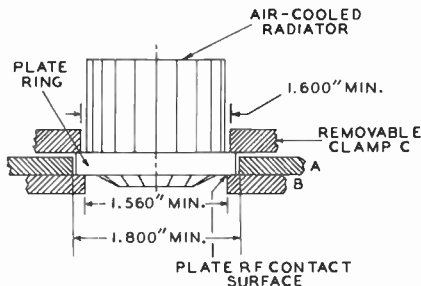


G2

92CM-6835B

NOTE 3: ROUNDED OR BEVELED NOT TO EXCEED $1/16$ ".

MOUNTING ARRANGEMENT
for use with coaxial-line
or cavity circuits



92CS-6833

APRIL 15, 1947

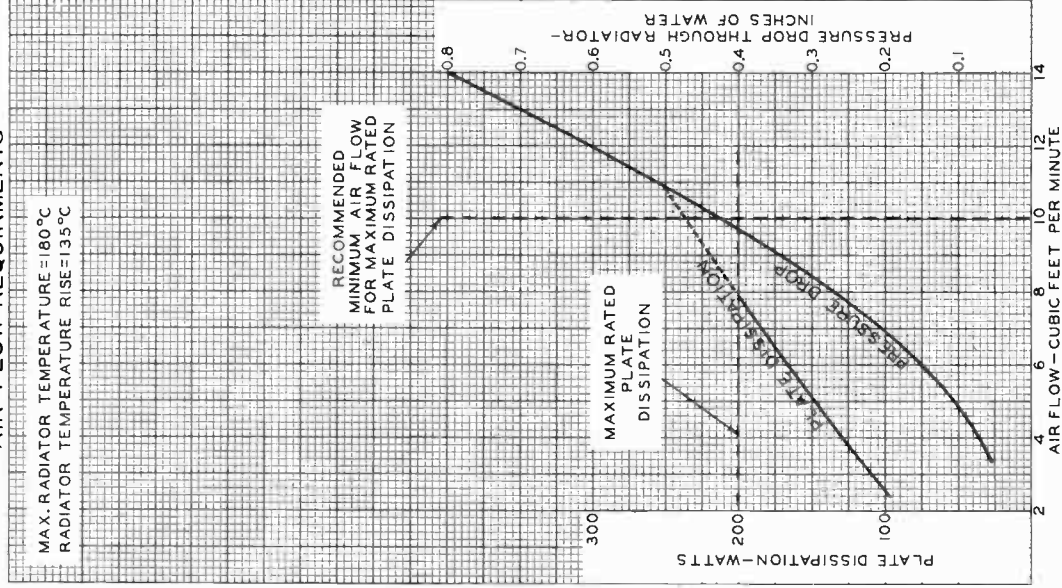
TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-6835B-6233



AIR-FLOW REQUIRMENTS

MAX. RADIATOR TEMPERATURE = 180°C
 RADIATOR TEMPERATURE RISE = 135°C





5588

5588

UHF POWER TRIODE

- ▲ Rated heater voltage must be applied for a minimum time of 1 minute before voltages are applied to the other electrodes. Heater voltage may then be reduced to the indicated typical operating value.
- CC: = Continuous Commercial Service.

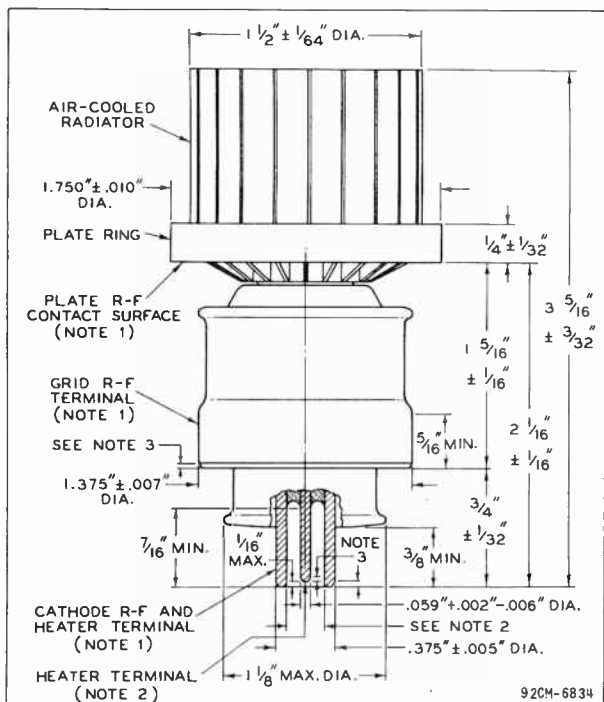
Data on operating frequencies for the 5588 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

5588

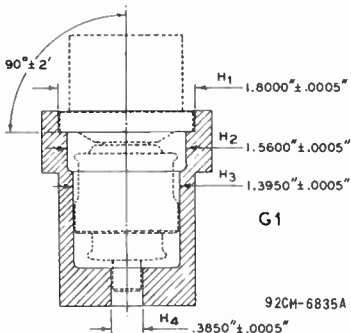


5588

UHF POWER TRIODE



NOTE 1: WITH THE CYLINDRICAL SURFACES OF ITS GRID AND CATHODE TERMINALS CLEAN, SMOOTH, AND FREE OF BURRS, THE TUBE WILL ENTER A GAUGE AS SHOWN IN SKETCH G1. THE FOUR CYLINDRICAL HOLES H₁, H₂, H₃, and H₄ HAVE AXES COINCIDENT WITHIN 0.0005", LENGTHS DETERMINED FROM THE OUTLINE DRAWING, AND SUCCESSIVELY SMALLER DIAMETERS AS SHOWN IN THE SKETCH.



(continued on next page)

APRIL 15, 1947

TUBE DEPARTMENT
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
 World Radio History

CE-6834-6635A



5588

5588 UHF POWER TRIODE

FORCED-AIR COOLED, GROUNDED-GRID TYPE

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathode:

Voltage	6.3	. . . . . ac or dc volts
Current	2.5	. . . . . amp
Minimum Heating Time [▲]	1.0	. . . . . minute

Amplification Factor 16

Direct Interelectrode Capacitances:

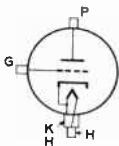
Grid to Plate	6.0	. . . . . $\mu\mu\text{f}$
Grid to Cathode	13	. . . . . $\mu\mu\text{f}$
Plate to Cathode [○]	0.32 max.	. . . . . $\mu\mu\text{f}$

○ With external shield connected to grid.

Mechanical:

Terminal Connections:

H - Heater Pin
Terminal
K & H - RF Cathode and
Heater Cylindrical
Terminal



G - Grid RF Cylindrical Terminal
P - Plate RF Contact Surface on Plate Ring

Mounting Position Vertical, with radiator up or down

Overall Length 3-5/16" ± 3/32"

Maximum Diameter 1.750" ± 0.010"

Radiator Integral Part of Tube

Mounting Special

Air Flow:

Through Radiator (for max. rated dissipation) 10 min. cfm

The specified air flow at a pressure of 1/2 inch of water should be delivered by a blower through the radiator toward the bulb and onto the grid terminal before and during the application of any voltages. Operation of tube at less than maximum rated dissipation will require less cooling as shown by accompanying curve of cooling requirements.

Incoming-Air Temperature 45 max. °C

Radiator Temperature 180 max. °C

Grid-Terminal Temperature 140 max. °C

PLATE-MODULATED RF POWER AMPLIFIER - Class C Telephony

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

Maximum CCS[●] Ratings, Absolute Values:

DC PLATE VOLTAGE	800 max.	volts
DC GRID VOLTAGE	-200 max.	volts
DC PLATE CURRENT	250 max.	ma.
DC GRID CURRENT	80 max.	ma.
PLATE INPUT	170 max.	watts
PLATE DISSIPATION	130 max.	watts

▲ Rated heater voltage must be applied for a minimum time of 1 minute before voltages are applied to the other electrodes. Heater voltage may then be reduced to the indicated typical operating value.

● Continuous Commercial Service.

APRIL 15, 1947

TUBE DEPARTMENT

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

5588



5588

UHF POWER TRIODE

Typical Operation in Grounded-Grid Circuit at 1000 Mc:

Heater Voltage [▲]	5	volts
DC Plate Voltage	650	volts
DC Grid Voltage	-70	volts
DC Plate Current	250	ma.
DC Grid Current (Approx.)	30	ma.
Driving Power (Required by tube and input circuit)*	32	watts
Power Output (Approx.)	65	watts

* Approximate. A portion of this power appears in the load circuit. In grounded-grid plate-modulated class C rf power amplifier service, the 5588 can be modulated 100 per cent if the rf driver stage is also modulated 100 per cent simultaneously. Care should be taken to insure that the driver-modulation and the amplifier-modulation voltages are exactly in phase.

RF POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without amplitude modulation [□]

Maximum CCS[®] Ratings, Absolute Values:

DC PLATE VOLTAGE	1000 max.	volts
DC GRID VOLTAGE	-200 max.	volts
DC PLATE CURRENT	300 max.	ma.
DC GRID CURRENT	100 max.	ma.
PLATE INPUT	250 max.	watts
PLATE DISSIPATION	200 max.	watts

Typical Operation as Grounded-Grid Amplifier at 1000 Mc:

Heater Voltage [▲]	4.5	volts
DC Plate Voltage	835	volts
DC Grid Voltage	-70	volts
DC Plate Current	300	ma.
DC Grid Current (Approx.)	40	ma.
Driving Power (Required by tube and input circuit)*	32	watts
Power Output (Approx.)	100	watts

Typical Operation as Grounded-Grid Oscillator at 1000 Mc:

Heater Voltage [▲]	3	volts
DC Plate Voltage	835	volts
DC Grid Voltage	-70	volts
From cathode-bias resistor of	205	ohms
DC Plate Current	300	ma.
DC Grid Current (Approx.)	40	ma.
Power Output (Approx.)	75	watts

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

* Approximate. A portion of this power appears in the load circuit.

[▲], [●]: See next page.

APRIL 15, 1947

TUBE DEPARTMENT

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

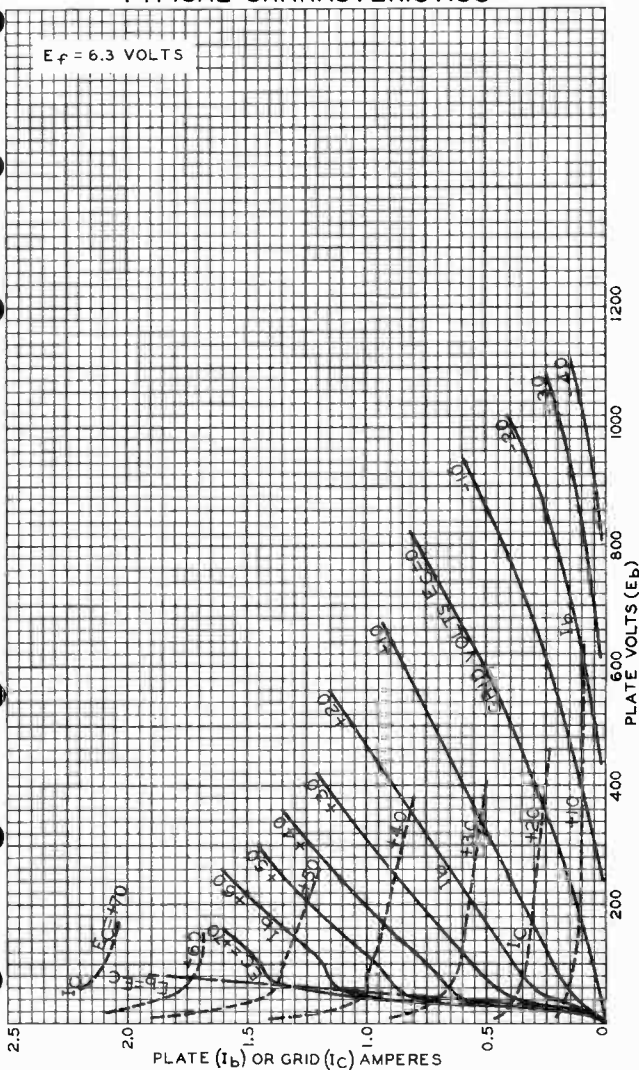


5588

5588

TYPICAL CHARACTERISTICS

$E_f = 6.3$ VOLTS



JAN. 7, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

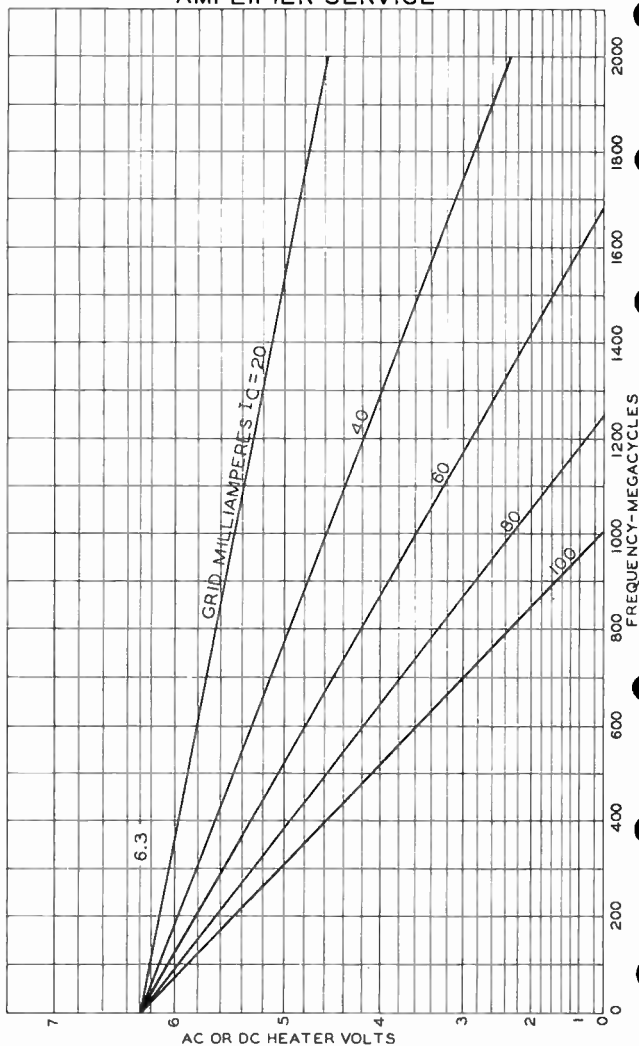
92CM-6826

5588



5588

RECOMMENDED HEATER VOLTAGES - AMPLIFIER SERVICE



JAN. 29, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

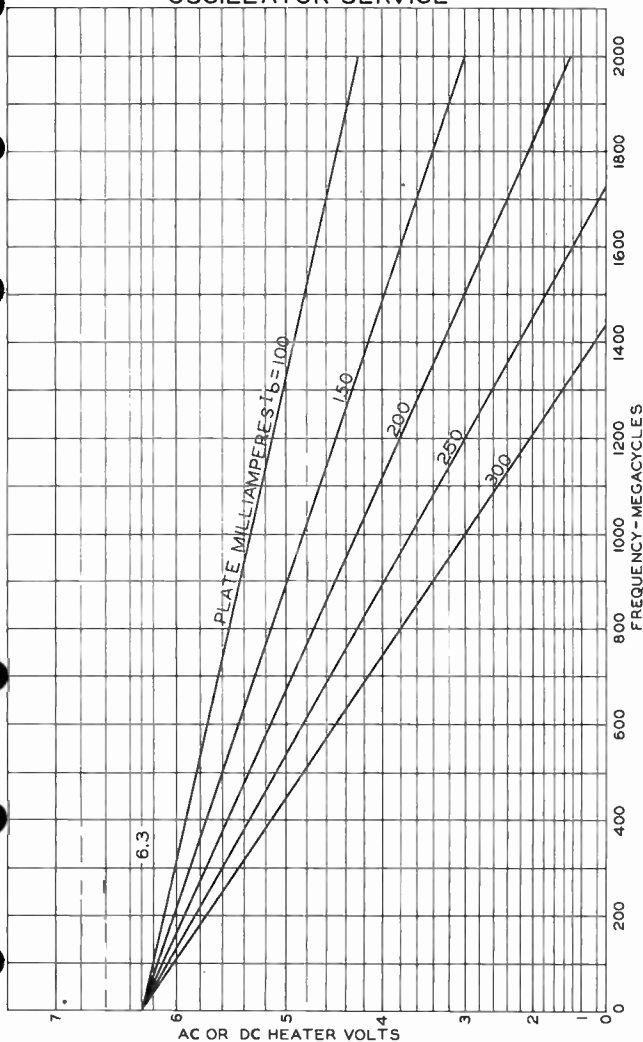
92CM-6836



5588

5588

RECOMMENDED HEATER VOLTAGES - OSCILLATOR SERVICE



JAN. 29, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6837



5592

5592

POWER TRIODE**FORCED-AIR-COOLED, GROUNDED-GRID TYPE**GENERAL DATA**Electrical:**

Filament, Multistrand Tungsten:

Excitation . . . Single-Phase AC or DC

Voltage 11 ac or dc volts

Current 412 amp

Starting Current: The filament current must never exceed 750 amperes, even momentarily.

Cold Resistance 0.0026 ohm

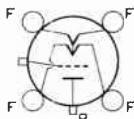
Amplification Factor 32

Direct Interelectrode Capacitances (Approx.):

Grid to Plate 35 $\mu\mu\text{f}$ Grid to Filament 76 $\mu\mu\text{f}$ Plate to Filament 1.2 $\mu\mu\text{f}$ **Mechanical:**

Terminal Connections:

F - Filament Posts

G - Grid-Flange
TerminalP - Radiator-
Cooled Plate
TerminalDIAMETRICALLY OPPOSITE TERMINALS
MUST BE CONNECTED TOGETHER

Mounting Position Vertical, Filament end up

Maximum Overall Length 17-3/8"

Maximum Diameter 14-1/4"

Radiator Integral part of tube

Mounting Special

Air Flow:

Through Radiator (for max. ratings) 1100 min. cfm

The specified air flow at a pressure of 2.4 inches of water should be delivered by a blower vertically upward through the radiator. Air flow should be started before the application of any voltages.

To Filament Seals 200 min. cfm

The specified air flow from a duct 8 square inches in area directed into the filament header before and during the application of any voltages, is required to limit the temperature of the header and filament seals to the maximum value.

Input-Air Temperature (to radiator) 45 max. °C

Radiator Temperature
(measured in thermometer well) 180 max. °C

Bulb Temperature 180 max. °C

Seal Temperature (filament, grid, plate) 165 max. °C

RF POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy*Key-down conditions per tube without amplitude modulation⁽¹⁾***Maximum CCS[®] Ratings, Absolute Values:**

DC PLATE VOLTAGE 11500 max. volts

DC GRID VOLTAGE -2000 max. volts

DC PLATE CURRENT 4.5 max. amp

DC GRID CURRENT 0.8 max. amp

□, •: See next page.

APRIL 15, 1947

TUBE DEPARTMENT

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

5592



5592 POWER TRIODE

PLATE INPUT	50 max.	kw
PLATE DISSIPATION	17.5 max.	kw

Typical Operation in Grounded-Filament Circuit:

DC Plate Voltage	7500	11000	volts
DC Grid Voltage [■]	-360	-820	volts
	600	1000	ohms
	75	200	ohms
Peak RF Grid Voltage	900	1450	volts
DC Plate Current	4.4	5.6	amp
DC Grid Current (Approx.) [*]	0.6	0.8	amp
Driving Power (Approx.) [*]	450	1000	watts
Power Output (Approx.)	20	30	kw

Typical Operation as Amplifier in Grounded-Grid Circuit at 108 Mc:[▲]

DC Plate Voltage	7500	volts
DC Grid Voltage [■]	-1000	volts
	1650	ohms
	200	ohms
Peak RF Grid Voltage	1550	volts
DC Plate Current	4.4	amp
DC Grid Current (Approx.) [*]	0.6	amp
Driving Power (Approx.)	9000	watts
Power Output (Approx.)	27	kw

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

● Continuous Commercial Service.

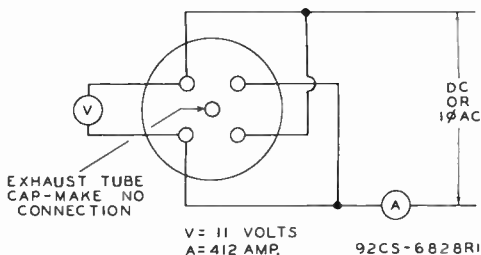
■ obtained by grid-resistor (600, 1000), cathode-resistor (75, 200) or by partial self-bias methods.

* Subject to wide variations as explained on sheet TUBE RATINGS in General Section.

▲ For Class C Telephony or Class C FM Telephony.

Data on operating frequencies for the 5592 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

FILAMENT CONNECTIONS



APRIL 15, 1947

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RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

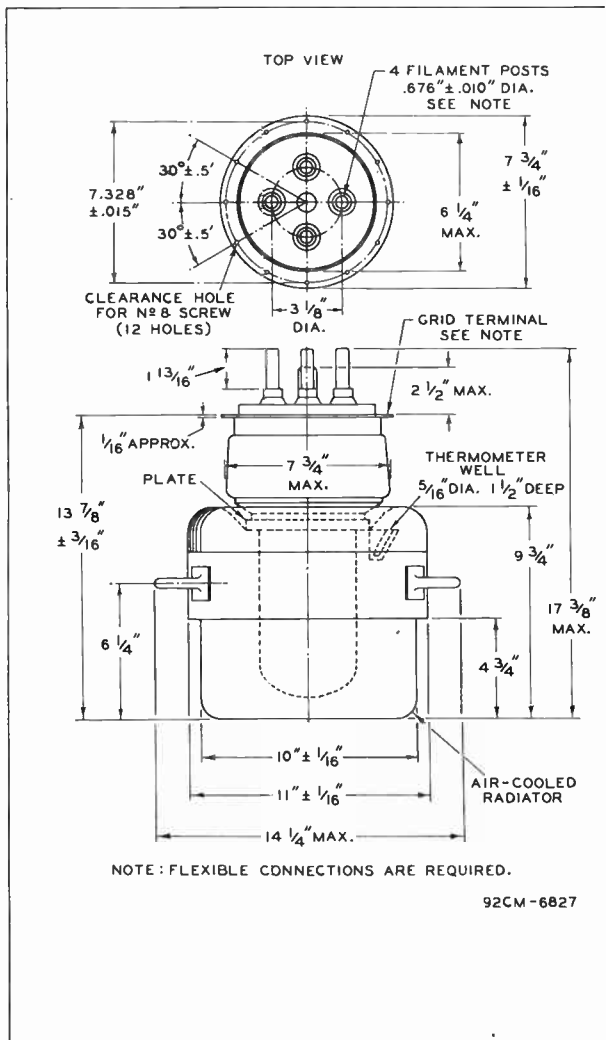
TENTATIVE DATA



5592

POWER TRIODE

5592



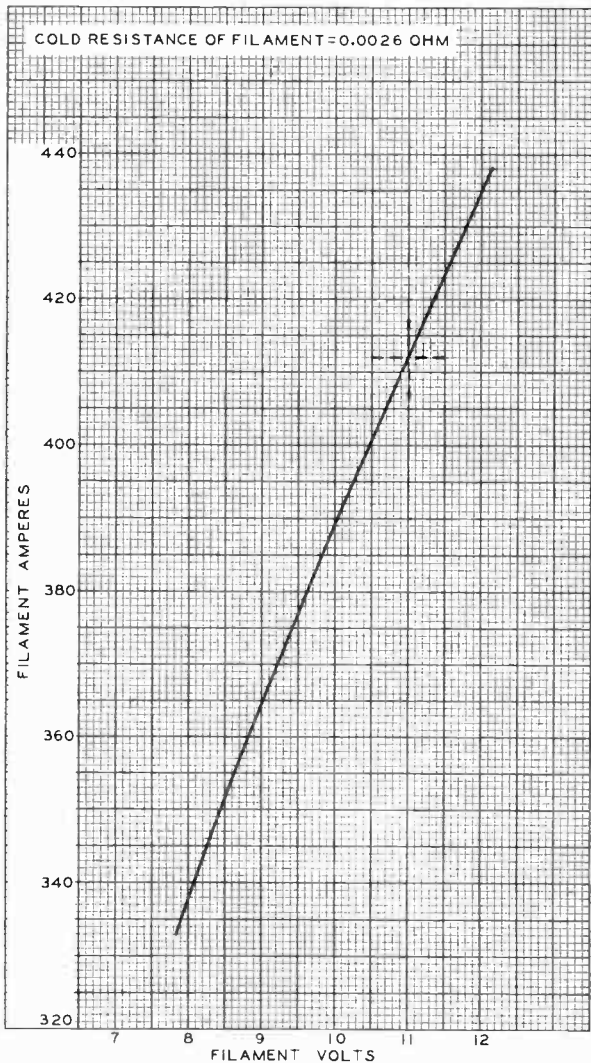
5592



5592

AVERAGE FILAMENT CHARACTERISTIC

COLD RESISTANCE OF FILAMENT = 0.0026 OHM



FEB. 7, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

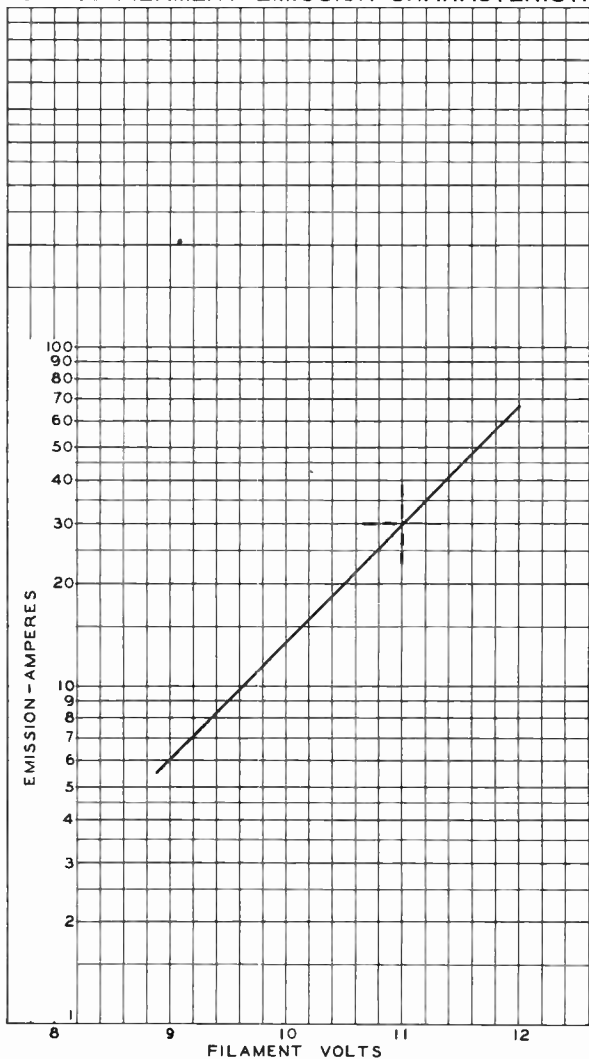
92CM-6839



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AVERAGE FILAMENT-EMISSION CHARACTERISTIC



FEB. 6, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
World Radio History

92CM-6838

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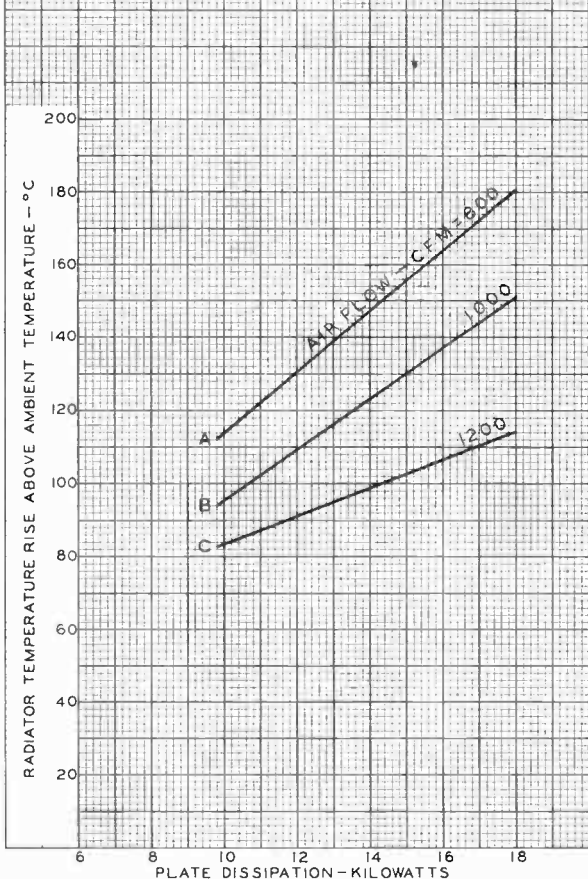
COOLING REQUIREMENTS

 $E_f = 11$ VOLTS ACMAXIMUM RADIATOR TEMPERATURE = 180°C

CURVE	PRESSURE DROP INCHES OF WATER
A	1.3
B	2.0
C	2.9

CURVES TAKEN ACCORDING TO
NAFM* STANDARDS—
BULLETIN No 103

* NATIONAL ASSOCIATION OF FAN MFRS.,
GENERAL MOTORS BLDG, DETROIT, MICH.



JAN. 17, 1947

TUBE DEPARTMENT

92CM-6829

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History

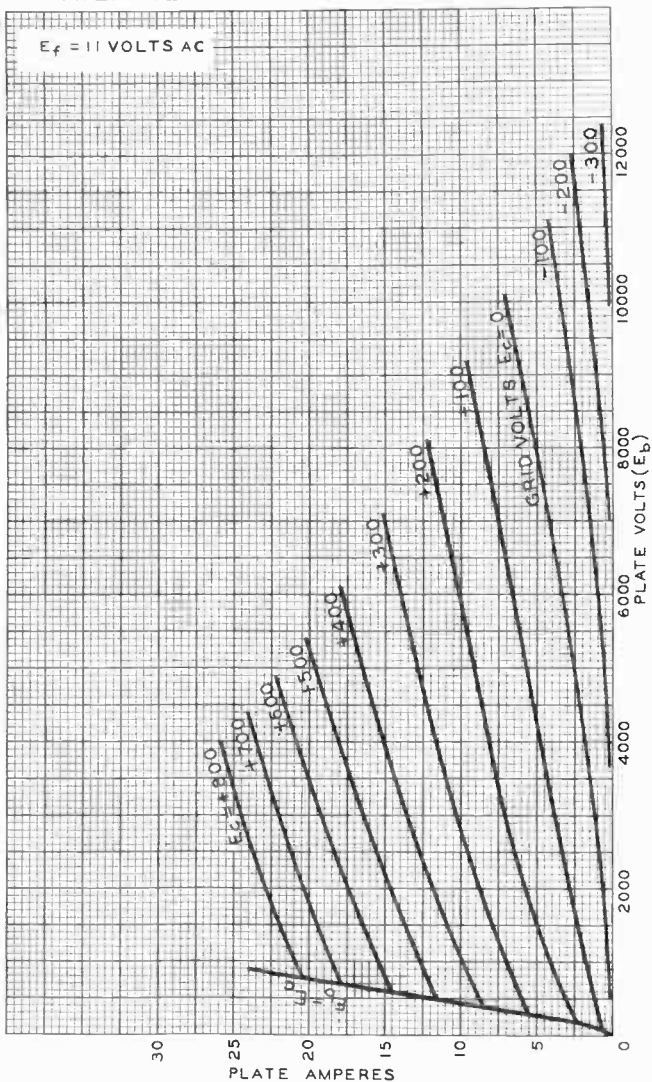


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AVERAGE PLATE CHARACTERISTICS

$E_f = 11$ VOLTS AC



MAR. 3, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

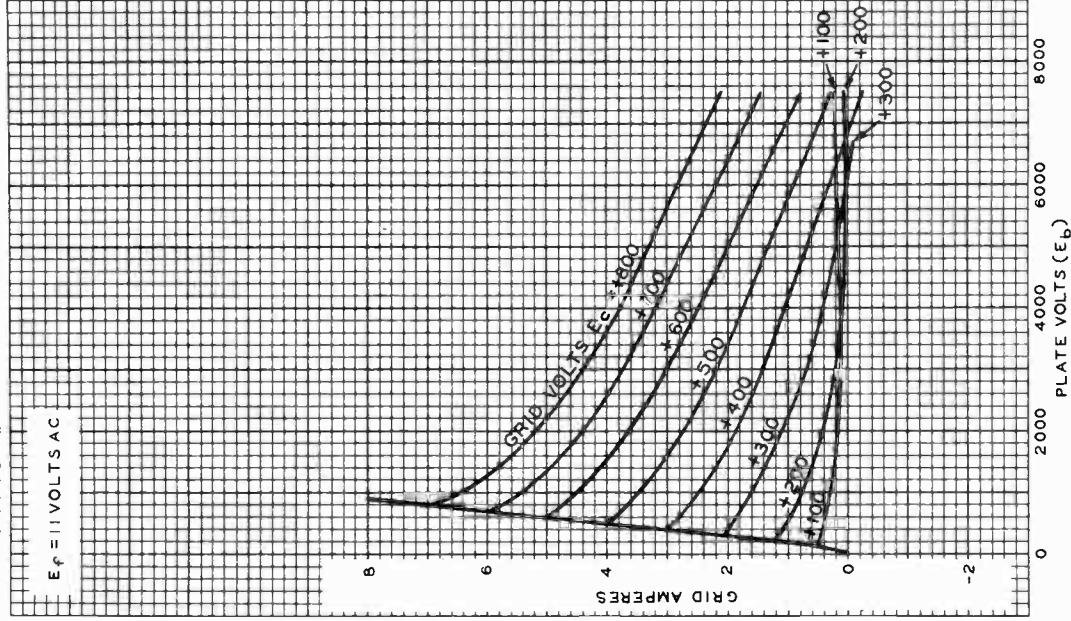
92CM-6843

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TYPICAL GRID CHARACTERISTICS



MAR. 3, 1947

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM - 6644



5618

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VHF POWER PENTODE

MINIATURE TYPE

GENERAL DATA**Electrical:**

Filament, Coated:

<i>Filament Arrangement</i>	<i>Series*</i>	<i>Parallel**</i>	
Voltage	6.0 ± 10%	3.0 ± 10%	ac or dc volts
Current	0.23	0.46	amp

Direct Interelectrode Capacitances:⁰

Grid No.1 to Plate . . .	0.24		μf
Input	7.0		μf
Output	5.0		μf

⁰ with no external shield.**Mechanical:**

Mounting Position Vertical, or Horizontal with pins No.1 & No.5 in a horizontal plane

Maximum Overall Length 2-5/8"

Maximum Seated Length 2-3/8"

Length from Base Seat to Bulb Top (excluding tip) 2" ± 3/32"

Maximum Diameter 3/4"

Bulb T-5-1/2

Base Small-Button Miniature 7-Pin

Basing Designation for BOTTOM VIEW 7CU

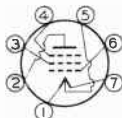
Pin 1 - Filament (-)

Pin 2 - Plate

Pin 3 - Grid No.2

Pin 4 - Grid No.3,

Int. Shield



Pin 5 - Filament

Mid-Tap

Pin 6 - Grid No.1

Pin 7 - Filament (+)

AF POWER AMPLIFIER & MODULATOR—Class A₁Maximum ICAS^{**} Ratings, Absolute Values:

DC PLATE VOLTAGE	300 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE	125 max.	volts
GRID-No.2 INPUT	2 max.	watts
PLATE DISSIPATION	5 max.	watts

Typical Operation:

<i>Filament Arrangement</i>	<i>Series*</i>	<i>Parallel**</i>
DC Plate Voltage	250	250 volts
DC Grid-No.3 Voltage	0*	0** volts
DC Grid-No.2 Voltage	75	75 volts
DC Grid-No.1 (Control-Grid) Voltage [■]	-8	-8 volts
Peak AF Grid-No.1-to-Grid-No.1 Voltage	8	8 volts

*, **, ■: See next page.

OCTOBER 15, 1947

TUBE DEPARTMENT

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History

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VHF POWER PENTODE

Zero-Signal DC Plate Current	16	19	ma
Max.-Signal DC Plate Current	17.5	20.5	ma
Zero-Signal DC Grid-No.2 Current	1.5	2.0	ma
Max.-Signal DC Grid-No.2 Current	3.5	4.5	ma
Transconductance	3500	3600	μ mhos
Effective Load Resistance (plate to plate)	12000	12000	ohms
Total Harmonic Distortion	10	10	%
Max.-Signal Power Output	1.2	1.4	watts

Circuit Values:

Grid-No.1-Circuit Resistance	$\left\{ \begin{array}{l} 5000 \text{ min.} \\ 100000 \text{ max.} \end{array} \right.$	ohms
		ohms

RF POWER AMPLIFIER & OSCILLATOR—Class C Telegraphy^{oo}

and

RF POWER AMPLIFIER—Class C FM Telephony

Maximum ICAS^{oo} Ratings, Absolute Values:

DC PLATE VOLTAGE	300 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE	125 max.	volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE	-125 max.	volts
DC PLATE CURRENT	30 max.	ma
DC GRID-No.1 CURRENT	3 max.	ma
PLATE INPUT	7.5 max.	watts
GRID-No.2 INPUT	2 max.	watts
PLATE DISSIPATION	5 max.	watts

Typical Operation:^o

	<i>Up to</i>	<i>At</i>	
	<i>40 Mc</i>	<i>80 Mc</i>	
DC Plate Voltage	300	300	volts
DC Grid-No.3 Voltage ^o	0	0	volts
DC Grid-No.2 Voltage ^o	$\left\{ \begin{array}{l} 75 \\ 32000 \end{array} \right.$	75	volts
		32000	ohms
DC Grid-No.1 Voltage ^{oo} ^o	$\left\{ \begin{array}{l} -45 \\ 30000 \\ 1400 \end{array} \right.$	-45	volts
		30000	ohms
		1400	ohms
Peak RF Grid-No.1 Voltage	65	65	volts
DC Plate Current	25	25	ma
DC Grid-No.2 Current	7	7	ma
DC Grid-No.1 Current (Approx.)	1.5	1.5	ma
Driving Power (Approx.)	0.2	0.3	watt
Power Output (Approx.) \diamond	5.4	5.2	watts

Circuit Values:

Grid-No.1-Circuit Resistance	$\left\{ \begin{array}{l} 5000 \text{ min.} \\ 100000 \text{ max.} \end{array} \right.$	ohms
		ohms

\diamond Useful power output is approximately 5.0 watts for 40 Mc and 4.5 watts for 80 Mc.

* ** \square \square \square \square \oplus : See next page.

OCTOBER 15, 1947

TUBE DEPARTMENT

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



5618

5618

VHF POWER PENTODE

FREQUENCY MULTIPLIER

Maximum ICAS** Ratings, Absolute Values:

DC PLATE VOLTAGE	300 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE.	125 max.	volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE.	-125 max.	volts
DC PLATE CURRENT	30 max.	ma
DC GRID-No.1 CURRENT	3 max.	ma
PLATE INPUT.	7.5 max.	watts
GRID-No.2 INPUT.	2 max.	watts
PLATE DISSIPATION.	5 max.	watts

Typical Operation:®

	Doubler to 80 Mc	Tripler to 80 Mc	
DC Plate Voltage	300	300	volts
DC Grid-No.3 Voltage®	0	0	volts
DC Grid-No.2 Voltage®.	{ 75	75	volts
	{ 41000	41000	ohms
DC Grid-No.1 Voltage [♠]	{ -125	-125	volts
	{ 68000	68000	ohms
Peak RF Grid-No.1 Voltage.	160	160	volts
DC Plate Current	25	25	ma
DC Grid-No.2 Current	5.5	5.5	ma
DC Grid-No.1 Current (Approx.)	1.85	1.85	ma
Driving Power (Approx.)	0.75	0.75	watt
Power Output (Approx.) ^{♠♠}	4.2	3.4	watts

Circuit Values:

Grid-No.1-Circuit Resistance	{ 5000 min.	ohms
	{ 100000 max.	ohms

♠♠ Useful power output is approximately 3.5 watts for doubler service and 2.7 watts for tripler operation.

* For series filament arrangement, filament voltage is applied between pins No.1 and No.7. The grid-No.1 voltage is referred to pin No.1, and grid-No.3 (pin No.4) is connected to pin No.1.

** For parallel filament arrangement, filament voltage is applied between pin No.5 and pins No.1 and No.7 connected together. The grid-No.1 voltage is referred to pin No.5 and grid No.3 (pin No.4) is connected to pin No.5.

••• Intermittent Commercial and Amateur Service.

■ For dc filament supply.

■ Obtained from a fixed supply or by a grid-No.1 resistor (30000) or cathode resistor (1400).

□ Obtained from a separate source, or from the plate voltage supply with a voltage divider. Series screen resistor of value shown should be used only where the 5618 is employed as a buffer amplifier and is not keyed.

□□ Key-down conditions per tube without amplitude modulation. Modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115% of the carrier conditions.

® Filament may be connected in either parallel or series arrangement. With parallel connection, grid No.3 (pin No.4) is connected to pin No.5; for series operation, connect pin No.4 to pin No.1.

♠ obtained from a fixed supply, or by a grid-No.1 resistor of value shown.



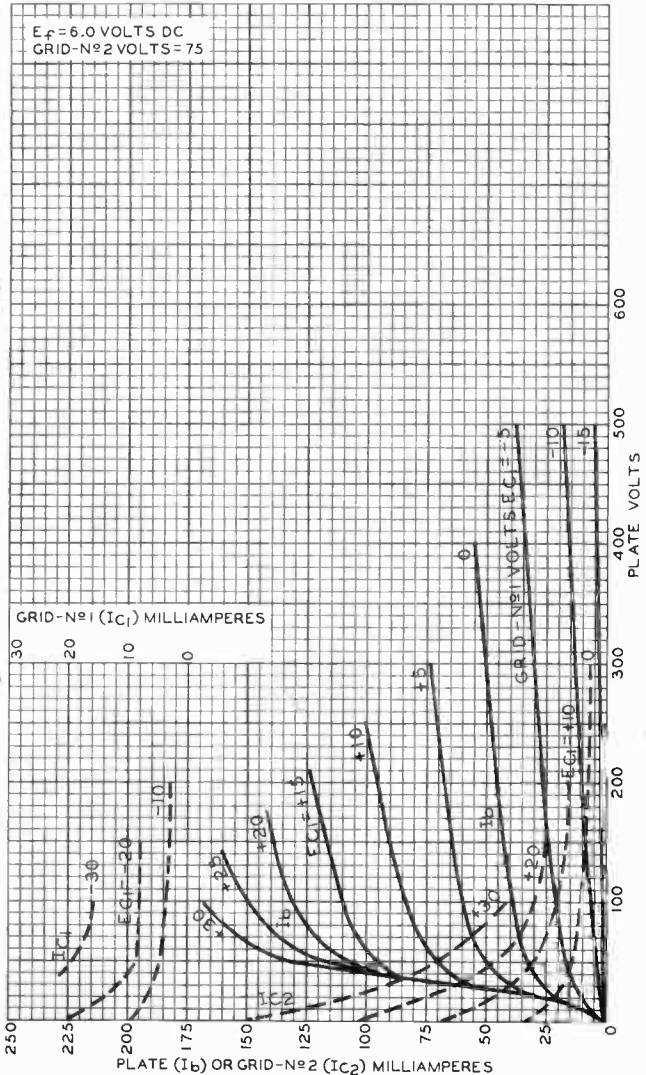


5618

5618

AVERAGE CHARACTERISTICS

$E_f = 6.0$ VOLTS DC
GRID-Nº2 VOLTS = 75



AUG. 1, 1947

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6881

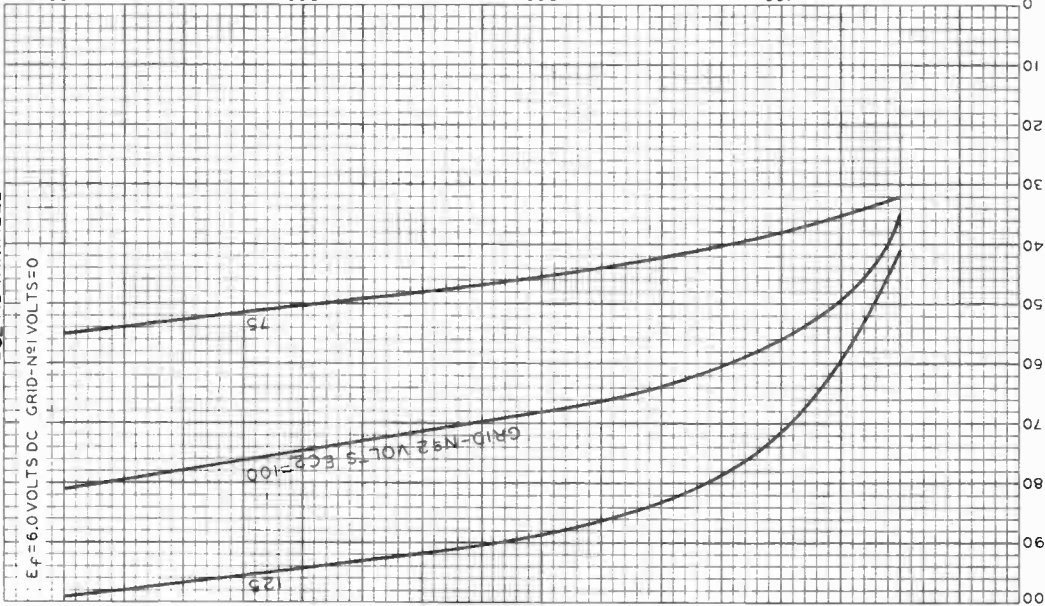


5618

5618

AVERAGE PLATE CHARACTERISTICS WITH E_{C2} AS VARIABLE

$E_f = 6.0$ VOLTS DC GRID-N₁ VOLTS = 0



WORLD PRECISION

AUG. 12, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

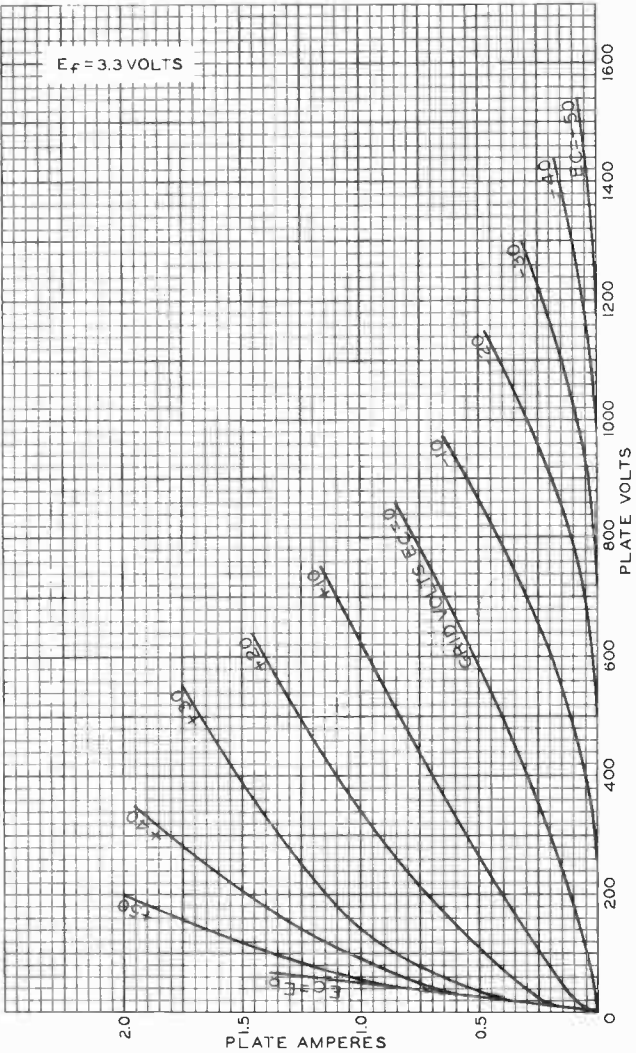
92CM-6882



5713

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AVERAGE PLATE CHARACTERISTICS



MAR. 18, 1948

TUBE DEPARTMENT

92CM-6942

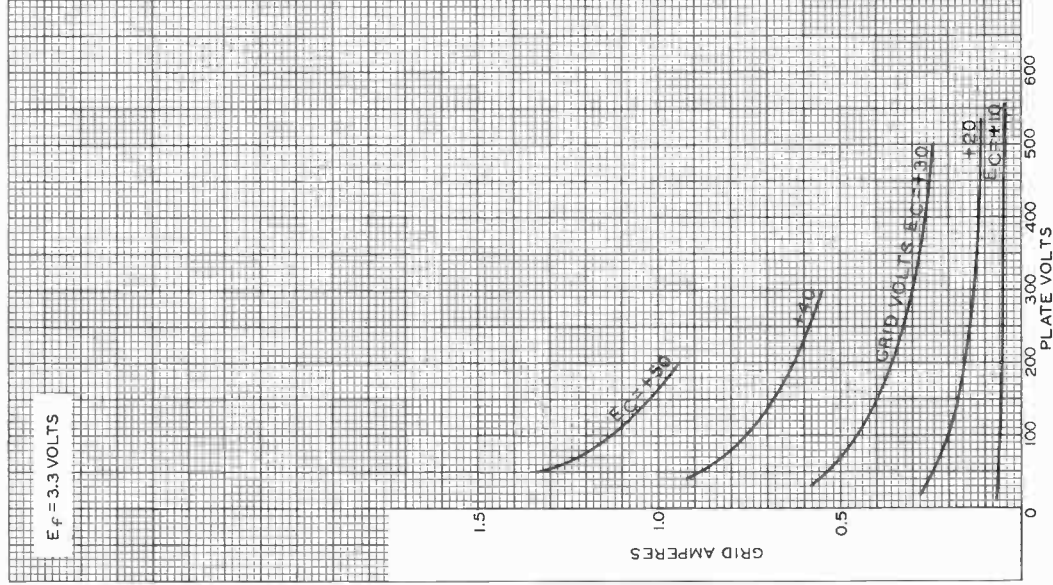
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



5713

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TYPICAL GRID CHARACTERISTICS



World Precision

MAR. 18, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

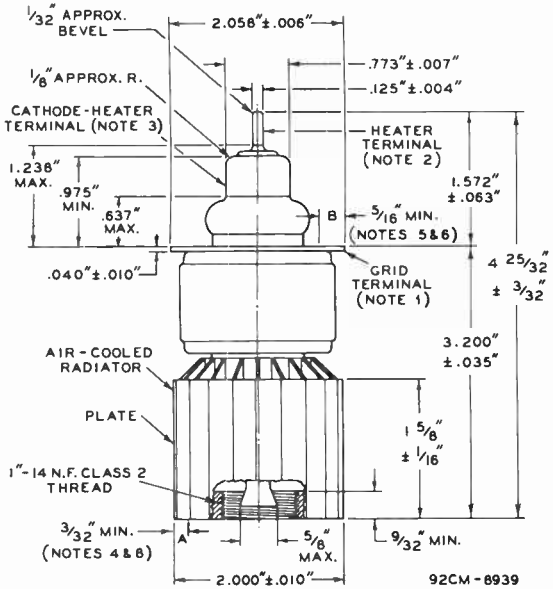
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5713

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POWER TRIODE



NOTE 1: MAXIMUM ECCENTRICITY OF ϕ (AXIS) OF GRID-TERMINAL FLANGE WITH RESPECT TO ϕ (AXIS) OF PLATE RADIATOR IS 0.040", MEASURED WITHIN $1/32$ " OF BOTTOM OF RADIATOR.

NOTE 2: MAXIMUM ECCENTRICITY OF ϕ (AXIS) OF HEATER TERMINAL WITH RESPECT TO ϕ (AXIS) OF CATHODE-HEATER TERMINAL IS 0.020".

NOTE 3: MAXIMUM ECCENTRICITY OF ϕ (AXIS) OF CATHODE-HEATER TERMINAL WITH RESPECT TO ϕ (AXIS) OF GRID-TERMINAL FLANGE IS 0.020".

NOTE 4: SURFACE OF ANNULAR AREA INDICATED BY "A" ON BOTTOM OF RADIATOR IS IN SAME PLANE WITHIN 0.005", AS DETERMINED BY GAUGE $1/16$ " WIDE AND 0.005" THICK. THIS GAUGE WILL NOT ENTER MORE THAN $1/16$ " WITH BOTTOM OF RADIATOR RESTING ON FLAT PLATE.

NOTE 5: SURFACE OF ANNULAR AREA INDICATED BY "B" ON GRID-TERMINAL FLANGE IS IN SAME PLANE WITHIN 0.008", AS DETERMINED BY GAUGE METHOD DESCRIBED IN NOTE 4.

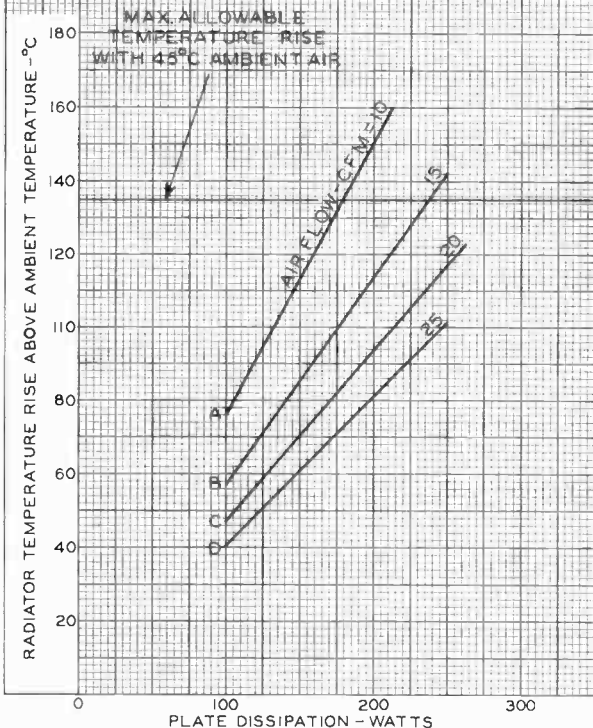
NOTE 6: SURFACE OF ANNULAR AREA INDICATED BY "A" ON BOTTOM OF RADIATOR IS PARALLEL WITHIN 0.030" TO SURFACE OF ANNULAR AREA INDICATED BY "B" ON GRID-TERMINAL FLANGE.



COOLING REQUIREMENTS

 $E_f = 3.3$ VOLTS MAXIMUM RADIATOR TEMPERATURE = 180°C

CURVE	PRESSURE DROP INCHES OF WATER	CURVES TAKEN ACCORD- ING TO NAFM* STAND- ARDS - BULLETIN No 103
A	0.17	*NATIONAL ASSOCIATION OF FAN MFRS., GENERAL MOTORS BLDG., DETROIT, MICH.
B	0.33	
C	0.55	
D	0.82	





5713

POWER TRIODE

FORCED-AIR-COOLED, GROUNDED-GRID TYPE

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathode:

Voltage.	3.3 ± 0.2	ac or dc volts
Current.	11.5	amp
Minimum Heating Time [▲]	2	minutes

Amplification Factor 25

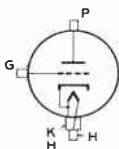
Direct Interelectrode Capacitances (Approx.):

Grid to Plate.	10.3	μμf
Grid to Cathode.	26	μμf
Plate to Cathode	0.5	μμf

Mechanical:

Terminal Connections:

H: Heater
G: Grid Terminal
(Flange)



K: Cathode
P: Plate Terminal
(Radiator)

Mounting Position.	Vertical, with radiator up or down
Overall Length	4-25/32" ± 3/32"
Greatest Diameter.	2.056" ± 0.006"
Radiator	Integral Part of Tube

Air Flow:

Through Radiator — The specified air flow for various plate dissipations, as indicated in the tabulation below, should be delivered through the radiator toward the bulb before and during the application of any voltages.

Plate Dissipation.	150	200	250	. . . . .	watts
Air Flow	9	13	18	. . . . .	cfm
Static Pressure.	0.14	0.27	0.45	. . . . .	in. of water

Incoming Air Temperature	45 max.	°C
Radiator Temperature (measured on the core at end away from incoming air).	180 max.	°C
Glass Temperature.	180 max.	°C
Grid-Terminal Temperature.	140 max.	°C

RF POWER AMPLIFIER & OSCILLATOR — Class C Telegraphy*Key-down conditions per tube without modulation***Maximum CCS[®] Ratings, Absolute Values:**

DC PLATE VOLTAGE	1500 max.	volts
DC GRID VOLTAGE.	-250 max.	volts
DC PLATE CURRENT	300 max.	ma
DC GRID CURRENT.	50 max.	ma
PLATE INPUT.	450 max.	watts
PLATE DISSIPATION.	250 max.	watts

[▲] With 3.3 volts on heater. This time may be shortened by increasing the heater voltage during the interval required for the cathode to reach normal operating temperature. Increasing the heater voltage to 4 volts reduces the heating time to 1 minute, while 5 volts reduces it to 40 seconds. After this heating interval, the heater voltage must be reduced to 3.3 volts.

• Continuous Commercial Service.

SEPT. 30, 1948

TUBE DEPARTMENT

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

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POWER TRIODE

Typical Operation in Grounded-Cathode Circuit:

DC Plate Voltage	1500	volts
DC Grid Voltage*	-175	volts
		510	ohms
Peak RF Grid Voltage	210	volts
DC Plate Current	300	ma
DC Grid Current (Approx.)	40	ma
Driving Power (Approx.)	8	watts
Power Output (Approx.)	290	watts

Typical Operation in Grounded-Grid Circuit at 220 Mc:

Same values as for Grounded-Cathode Circuit
with the following exceptions:

Driving Power (Approx.)#	65	watts
Power Output (Approx.)	325	watts

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

	Note	Min.	Max.	
Heater Current	1	10.8	12.2	amp
Amplification Factor	1,2	19	29	
Grid-Plate Capacitance	-	9	11.6	μ f
Grid-Cathode Capacitance	-	23	29	μ f
Plate-Cathode Capacitance	-	0.39	0.65	μ f
Grid Voltage	1,3	-	-90	volts
Grid Voltage	1,4	-41	-70	volts
Peak Cathode Current	1,5	40	-	amp
Power Output	1,6	290	-	watts

Note 1: Heater volts = 3.3.

Note 2: With 1000 volts on plate, and plate ma. = 150.

Note 3: With 1500 volts on plate and plate ma. = 20.

Note 4: With 1500 volts on plate and plate ma. = 150.

Note 5: Represents maximum usable cathode current (plate current plus grid current) for tube, for any condition of operation.

Note 6: With 1500 volts on plate, plate ma. = 350, grid ma. = 50 to 60, grid resistor of $4000 \pm 10\%$ ohms, and frequency of 20 Mc.

* Required by tube and input circuit. A portion of this power appears in the load circuit.

* obtained from fixed supply or from a cathode resistor of value shown.

Data on operating frequencies for the 5713 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.



5762

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POWER TRIODE

FORCED-AIR COOLED, GROUNDED-GRID TYPE

GENERAL DATA**Electrical:****Filament, Thoriated-Tungsten:**

Voltage. 12.6 ± 0.6 . . . ac or dc volts

Current. 29 amp

Starting Current: The filament current must never exceed 175 amperes, even momentarily

Cold Resistance. 0.052 ohm

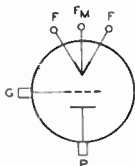
Amplification Factor 29

Direct Interelectrode Capacitances (Approx.):

Grid to Plate. 18.5 μμf

Grid to Filament 19 μμf

Plate to Filament. 0.5 μμf

Mechanical:**Terminal Connections:**F - Filament
F_M - Filament
Mid-TapG - Grid Terminal
(Flange)
P - Plate Terminal
(Radiator)

Mounting Position. Vertical, filament end up

Maximum Overall Length (Excluding flexible leads). . . 7-1/8"

Diameter 4-5/8" ± 1/16"

Radiator Integral Part of Tube

Air Flow:**Through Radiator:**

The specified air flow for various plate dissipations, as indicated in the tabulation below, should be delivered by a blower through the radiator before and during the application of any voltages. Filament power, plate power, and air may be removed simultaneously.

Plate Dissipation. 1.5 2.0 2.5 kw

Min. Air Flow. . . 50 86 130 cfm

Static Pressure. . 0.15 0.33 0.61 in. of water

To Header and Filament Seals 10 min. cfm

The specified air flow from a 1" diameter nozzle should be directed into the filament header before and during the application of any voltages in order to limit the temperature of the filament seals and the grid seal to their respective maximum value.

Incoming Air Temperature 45 max. °C

Radiator Temperature (Measured on the core at end away from incoming air). . . 180 max. °C

Bulb Temperature (At hottest part) 150 max. °C

Seal Temperature:

Filament 175 max. °C

Grid and Plate 150 max. °C

Components:

Air Jacket RCA MI-27012-A

Air Manifold RCA MI-27015

Bracelet (for boot). RCA MI-27016

FEB. 1, 1949

TUBE DEPARTMENT

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

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POWER TRIODE

AF POWER AMPLIFIER & MODULATOR - Class B**Maximum CCS* Ratings, Absolute Values:**

DC PLATE VOLTAGE	5250 max.	volts
MAX.-SIGNAL DC PLATE CURRENT*	1.4 max.	amp
MAX.-SIGNAL PLATE INPUT*	5500 max.	watts
PLATE DISSIPATION*	2500 max.	watts

Typical Operation:*Values are for 2 tubes*

DC Plate Voltage	5000	volts
DC Grid Voltage.	-200	volts
Peak AF Grid-to-Grid Voltage	850	volts
Zero-Signal DC Plate Current	0.4	amp
Max.-Signal DC Plate Current	2.2	amp
Effective Load Resistance (Plate-to-plate).	5200	ohms
Max.-Signal Driving Power (Approx.).	180	watts
Max.-Signal Power Output (Approx.)	7500	watts

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

PLATE-MODULATED RF POWER AMPLIFIER - Class C Telephony

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

Maximum CCS* Ratings, Absolute Values:

DC PLATE VOLTAGE	4200 max.	volts
DC GRID VOLTAGE.	-1000 max.	volts
DC PLATE CURRENT	1 max.	amp
DC GRID CURRENT.	0.3 max.	amp
PLATE INPUT.	3750 max.	watts
PLATE DISSIPATION.	1600 max.	watts

Typical Operation in Grounded-Filament Circuit:

DC Plate Voltage	4000	volts
DC Grid Voltage [Ⓢ]	{ -350 1460	volts ohms
Peak RF Grid Voltage	600	volts
DC Plate Current	0.93	amp
DC Grid Current (Approx.) [Ⓢ]	0.24	amp
Driving Power (Approx.) [Ⓢ]	130	watts
Power Output (Approx.)	2800	watts

[Ⓢ] Obtained by grid resistor of value shown or by partial self-bias methods.RF POWER AMPLIFIER & OSCILLATOR - Class C TelegraphyKey-down conditions per tube without amplitude modulation[Ⓢ]**Maximum CCS* Ratings, Absolute Values:**

DC PLATE VOLTAGE	5250 max.	volts
DC GRID VOLTAGE.	-1000 max.	volts
DC PLATE CURRENT	1.4 max.	amp

• □ Ⓢ: See next page.

FEB. 1, 1949

TUBE DEPARTMENT

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



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POWER TRIODE

DC GRID CURRENT.	0.3 max.	amp
PLATE INPUT.	5500 max.	watts
PLATE DISSIPATION.	2500 max.	watts

Typical Operation in Grounded-Filament Circuit:

DC Plate Voltage	4000	5000	volts	
DC Grid Voltage [▲]	{	-350	-750	volts
		1250	3000	ohms
		230	560	ohms
Peak RF Grid Voltage	650	1075	volts	
DC Plate Current	1.25	1.1	amp	
DC Grid Current (Approx.) [□]	0.275	0.250	amp	
Driving Power (Approx.) [□]	160	240	watts	
Power Output (Approx.)	3800	4100	watts	

Typical Operation in Grounded-Grid Circuit:

DC Plate Voltage	4000	5000	volts	
DC Grid Voltage ^{▲▲}	{	-350	-1000	volts
		1250	4100	ohms
		230	740	ohms
Peak RF Grid Voltage	650	1350	volts	
DC Plate Current	1.25	1.1	amp	
DC Grid Current (Approx.) [□]	0.275	0.245	amp	
Driving Power (Approx.) [□]	820	1680	watts	
Power Output (Approx.)	4450	5500	watts	

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

[▲] obtained from fixed supply, by grid resistor (1250, 3000) or by cathode resistor (230, 560).

RF POWER AMPLIFIER—Class C FM Telephony

Maximum CCS[®] Ratings, Absolute Values:

DC PLATE VOLTAGE	5250 max.	volts
DC GRID VOLTAGE.	-1000 max.	volts
DC PLATE CURRENT	1.4 max.	amp
DC GRID CURRENT.	0.3 max.	amp
PLATE INPUT.	5500 max.	watts
PLATE DISSIPATION.	2500 max.	watts

Typical Operation in Grounded-Grid Circuit:

DC Plate Voltage	4000	5000	volts	
DC Grid Voltage ^{▲▲}	{	-350	-1000	volts
		1250	4100	ohms
		230	740	ohms
Peak RF Grid Voltage	650	1350	volts	
DC Plate Current	1.25	1.1	amp	
DC Grid Current (Approx.) [□]	0.275	0.245	amp	
Driving Power (Approx.) [□]	820	1680	watts	
Power Output (Approx.)	4450	5500	watts	

[□], [□], ^{▲▲} : See next page.

5762



5762

POWER TRIODE

- Continuous Commercial Service.
- For effect of load resistance on grid current and driving power, refer to TUBE RATINGS—Grid Current and Driving Power in the General Section.
- ▲▲ Obtained from fixed supply, by grid resistor (1250, 4100) or by cathode resistor (230, 740).

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

	<u>Note</u>	<u>Min.</u>	<u>Max.</u>	
Filament Current	1	27	31	amp
Amplification Factor	1,2	25	33	
Grid-Plate Capacitance	-	16.5	20.5	μμf
Grid-Filament Capacitance	-	15.5	22.5	μμf
Plate-Filament Capacitance	-	0.38	0.62	μμf
Grid Voltage	1,3	-	450	volts
Grid Current	1,3	-	3	amp
Plate Voltage	1,4	1350	1750	volts
Plate Voltage	1,5	2600	3400	volts
Grid Voltage	1,6	-125	-190	volts
Peak Cathode Current	1,7	10	-	amp
Useful Power Output	1,8	3000	-	watts

Note 1: with 12.6 volts ac on filament.

Note 2: with dc grid voltage of -25 volts, and with plate voltage adjusted to give dc plate current of 0.5 ampere.

Note 3: with dc plate voltage of 500 volts, and with grid pulsed positively to give peak plate current of 6 amperes.

Note 4: with dc grid voltage of 0 volts, and dc plate current of 0.5 ampere.

Note 5: with dc grid voltage of -50 volts, and dc plate current of 0.5 ampere.

Note 6: with plate voltage of 4000 volts, and dc plate current of 0.05 ampere.

Note 7: Represents the maximum usable cathode current (plate current and grid current) for the tube under any condition of operation.

Note 8: with dc plate voltage of 5000 volts, dc plate current of 1.0 ampere, dc grid current of 0.225 to 0.300 ampere, grid resistor of 1500 ± 10% ohms, and frequency of 30 Mc.

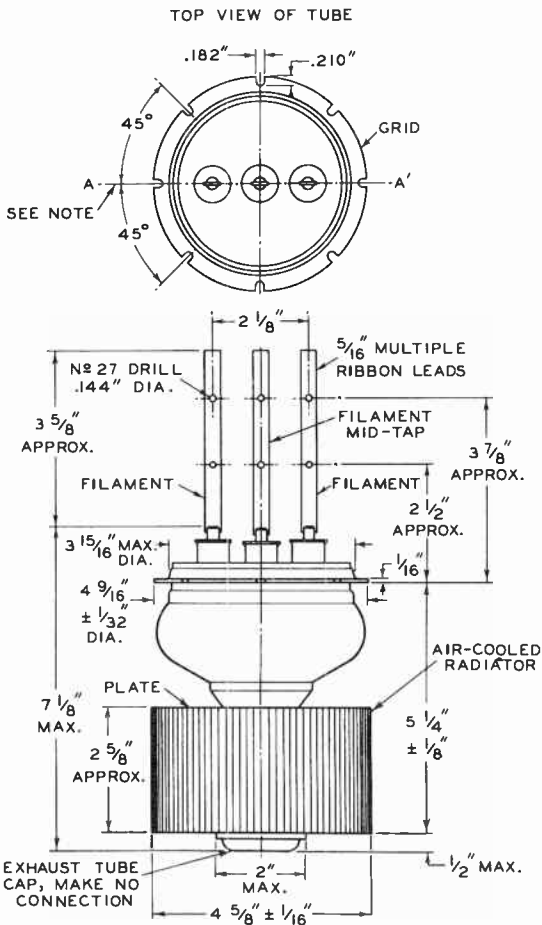
Data on operating frequencies for the 5762 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.



5762

5762

POWER TRIODE



NOTE: PLANE OF FILAMENT LEADS WILL NOT DEVIATE MORE THAN $3\text{--}1/2^\circ$ FROM PLANE PASSING THROUGH AA' NORMAL TO GRID FLANGE.

FEB. 1, 1949

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-7058

World Radio History

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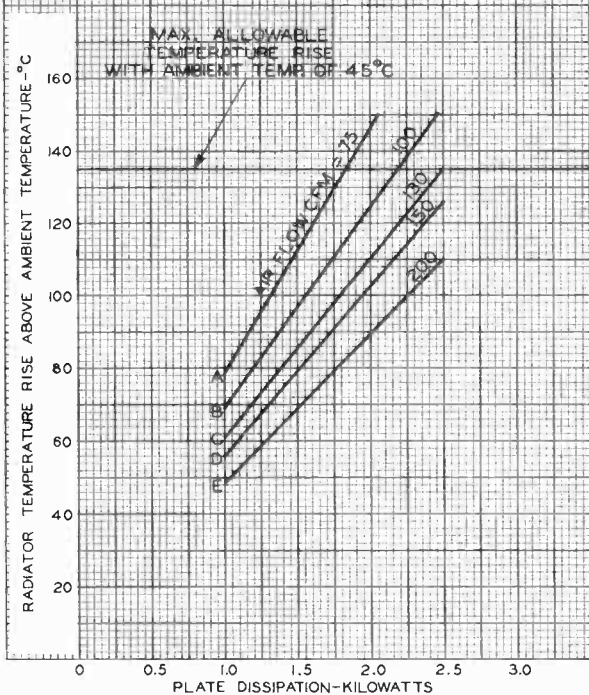


5762

COOLING REQUIREMENTS

 $E_f = 12.6$ VOLTS AC MAXIMUM RADIATOR TEMPERATURE = 180°C

CURVE	PRESSURE DROP INCHES OF WATER	CURVES TAKEN ACCORDING TO NAFM * STANDARDS - BULLETIN No 103 * NATIONAL ASSOCIATION OF FAN MFRS., GENERAL MOTORS BLDG., DETROIT, MICH.
A	0.26	
B	0.40	
C	0.61	
D	0.80	
E	1.34	



OCTOBER 4, 1948

 TUBE DEPARTMENT
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
 World Radio History

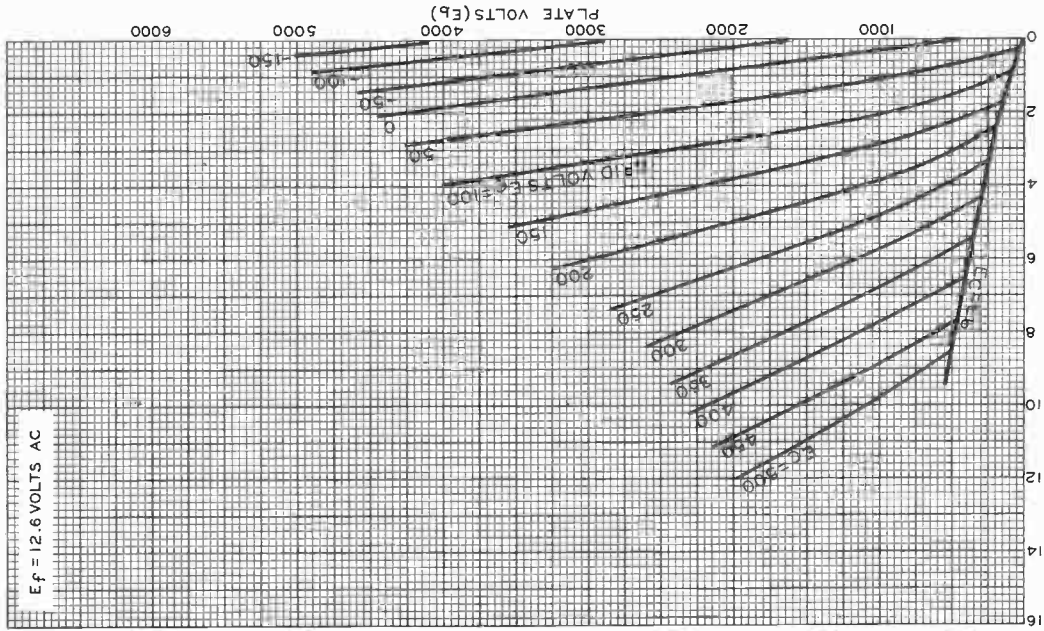
92CM-7084



5762

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AVERAGE PLATE CHARACTERISTICS



SEPT. 24, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

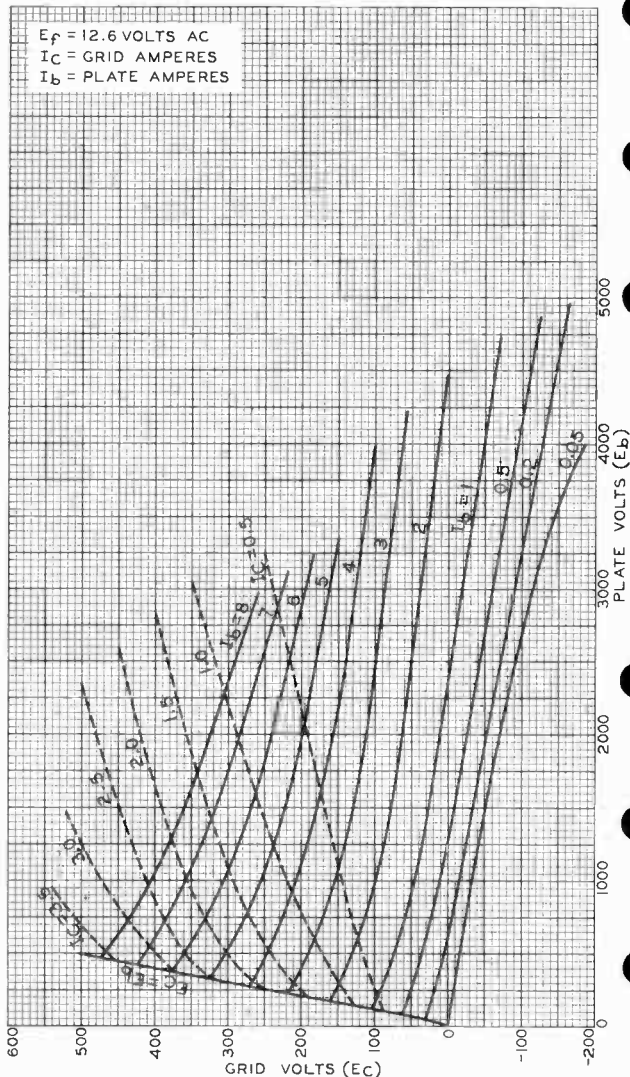
92CM-7079

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AVERAGE CONSTANT-CURRENT CHARACTERISTICS



OCT. 1, 1948

TUBE DEPARTMENT

92CM-7082

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

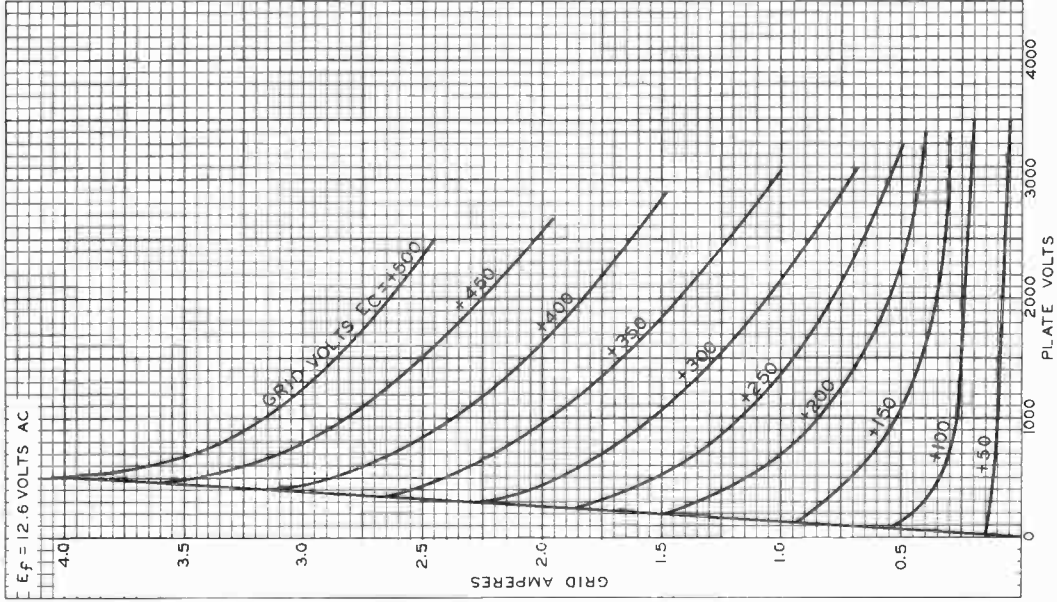
World Radio History



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TYPICAL GRID CHARACTERISTICS



SEPT. 29, 1948

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7081





5770

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POWER TRIODE

WATER & FORCED-AIR COOLED, GROUNDED-GRID TYPE

GENERAL DATA

Electrical:

Filament, Multistrand Thoriated-Tungsten:

Excitation . . . Single Phase AC or DC

Voltage. 11 ± 0.6 ac or dc volts

Current. 285 amp

Starting Current: The filament current must never exceed 750 amperes, even momentarily.

Cold Resistance. 0.005 ohm

Minimum Heating Time . . . 15 seconds

Amplification Factor 39

Direct Interelectrode Capacitances (Approx.):

Grid to Plate. 53 μmf

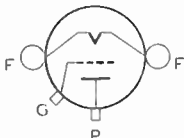
Grid to Filament 89 μmf

Plate to Filament. 1.2 μmf

Mechanical:

Terminal Connections:

F - Filament
G - Grid-Flange
Terminal



P - Water-Cooled
Plate
Terminal

Mounting Position. Vertical, Filament End Up

Maximum Overall Length 24-1/2"

Maximum Diameter 9-1/2"

Water Flow 20 to 25 gpm

The specified water flow must start before the application of any voltages, and may be removed simultaneously with the filament and plate power.

Air Flow:

To Plate Seal and Bulb:

At frequencies below 1.7 Mc. Natural

At frequencies above 1.7 Mc. Up to 250 cfm

Adequate forced-air cooling should be provided to limit the temperature of the plate seal and bulb to their specified maximum values. The amount of air flow required will increase with the operating frequency. The cooling air should start before the application of any voltages and should be distributed uniformly around the plate seal by means of a suitable air manifold and an air deflector. The air flow may be removed simultaneously with filament and plate power.

To Filament Seals and Grid Seal. 10 min. cfm

The specified air flow should be directed vertically from a 1-1/4" diameter nozzle into the filament header before and during the application of any voltages. It may be removed simultaneously with filament and plate power.

Outlet Water Temperature 70 max. °C

Bulb Temperature 180 max. °C

Seal Temperature (Filament, grid, plate) . . 165 max. °C

5770



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POWER TRIODE

Components:

Water Jacket	RCA MI-19460
Gasket	RCA MI-27001
Air Manifold	RCA MI-19482-1
Air Deflector.	RCA MI-19482-2
Filament Connector (2 required).	RCA MI-19481
Corona Shield.	RCA MI-27008
Felt Pad (for corona shield)	RCA MI-27009
Porcelain Insulator.	RCA MI-27002
Mounting Clamp	RCA MI-27003
Filament Transformer	RCA-212T1
Current Limiting Reactor	RCA-204R1

AF POWER AMPLIFIER & MODULATOR - Class B

Maximum CCS* Ratings, Absolute Values:

DC PLATE VOLTAGE	15000 max.	volts
MAX.-SIGNAL DC PLATE CURRENT*	6 max.	amp
MAX.-SIGNAL PLATE INPUT*	90 max.	kw
PLATE DISSIPATION*	50 max.	kw

Typical Operation:

Values are for 2 tubes

DC Plate Voltage	10200	15000	volts
DC Grid Voltage.	-220	-320	volts
Peak AF Grid-to-Grid Voltage	900	1560	volts
Zero-Signal DC Plate Current	0.6	0.6	amp
Max.-Signal DC Plate Current	5.8	12	amp
Effective Load Resistance (Plate-to-plate).	3600	2640	ohms
Max.-Sig. Driving Power (Approx.)*	120	688	watts
Max.-Sig. Power Output (Approx.)	37	117	kw

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

* The driving stage should have good regulation and should be capable of supplying considerably more than the specified driving power.

PLATE-MODULATED RF POWER AMPLIFIER - Class C Telephony

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

Maximum CCS* Ratings, Absolute Values:

DC PLATE VOLTAGE	12500 max.	volts
DC GRID VOLTAGE.	-2000 max.	volts
DC PLATE CURRENT	5.0 max.	amp
DC GRID CURRENT.	1.25 max.	amp
PLATE INPUT.	60 max.	kw
PLATE DISSIPATION.	33 max.	kw

Typical Operation:

DC Plate Voltage	10200	12500	volts
DC Grid Voltage [®]	{ -1500	-1500	volts
	{ 2100	1400	ohms

*,[®]: See next page.

FE3. 1, 1949

TUBE DEPARTMENT

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History



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POWER TRIODE

Peak RF Grid Voltage	2070	2180	volts
DC Plate Current	3.3	4.5	amp
DC Grid Current (Approx.) ^c	0.72	1.1	amp
Driving Power (Approx.) ^d	1350	2160	watts
Power Output (Approx.)	28	45	kw

RF POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation[□]Maximum CCS[®] Ratings, Absolute Values:

DC PLATE VOLTAGE	17000	max.	volts
DC GRID VOLTAGE	-2000	max.	volts
DC PLATE CURRENT	9	max.	amp
DC GRID CURRENT	1.25	max.	amp
PLATE INPUT	150	max.	kw
PLATE DISSIPATION	50	max.	kw

Typical Operation in Grounded-Filament Circuit:

DC Plate Voltage	14000	17000	volts
DC Grid Voltage ^{▲▲}	-900	-1450	volts
	125	150	ohms
	750	1320	ohms
Peak RF Grid Voltage	1600	2375	volts
DC Plate Current	6	8.5	amp
DC Grid Current (Approx.) ^d	1.2	1.1	amp
Driving Power (Approx.) ^d	1700	2300	watts
Power Output (Approx.)	65	105	kw

Typical Operation in Grounded-Grid Circuit:

Same values as for Grounded-Filament Circuit with the following exceptions:

Driving Power (Approx.) ^d	6250	11200	watts
Power Output	70	114	kw

[□] For effect of load resistance on grid current and driving power, refer to TUBE RATINGS—Grid Current and Driving Power in the General Section.[⊕] Obtained by grid resistor (2100, 1400) 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.^{▲▲} Obtained from cathode resistor (125, 150) or grid resistor (750, 1320) or by partial self-bias methods.

• Continuous Commercial Service.

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

	Note	Min.	Max.	
Filament Current	1	265	305	amp
Amplification Factor	1, 2	34	44	
Grid-Plate Capacitance	-	47	59	μμf
Grid-Filament Capacitance	-	74	104	μμf
Plate-Filament Capacitance	-	0.8	1.6	μμf
Grid Voltage	1, 3	-310	-490	volts
Plate Voltage	1, 4	7000	9000	volts

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TUBE DEPARTMENT

TENTATIVE DATA 2

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

5770



5770

POWER TRIODE

	<u>Note</u>	<u>Min.</u>	<u>Max.</u>	
Plate Voltage.	1,5	3600	4600	volts
Peak Cathode Current	1,6	50	-	amp
Useful Power Output.	1,7	85	-	kw

Note 1: With 11.0 volts ac on filament.

Note 2: With dc grid voltage of -50 volts, and with plate voltage adjusted to give dc plate current of 2 amperes.

Note 3: With dc plate voltage of 15000 volts, and with grid voltage adjusted to give dc plate current of 0.05 ampere.

Note 4: With dc grid voltage of -100 volts, and with plate voltage adjusted to give dc plate current of 2 amperes.

Note 5: With dc grid voltage of 0 volts, and with plate voltage adjusted to give dc plate current of 2 amperes.

Note 6: Represents the maximum usable cathode current (plate current and grid current) for the tube under any condition of operation.

Note 7: With dc plate voltage of 17000 volts, dc plate current of 8.5 amperes, dc grid current of 1.0 to 1.25 amperes, grid resistor of $1600 \pm 10\%$ ohms, and frequency of 1.5 Mc.

Data on operating frequencies for the 5770 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY

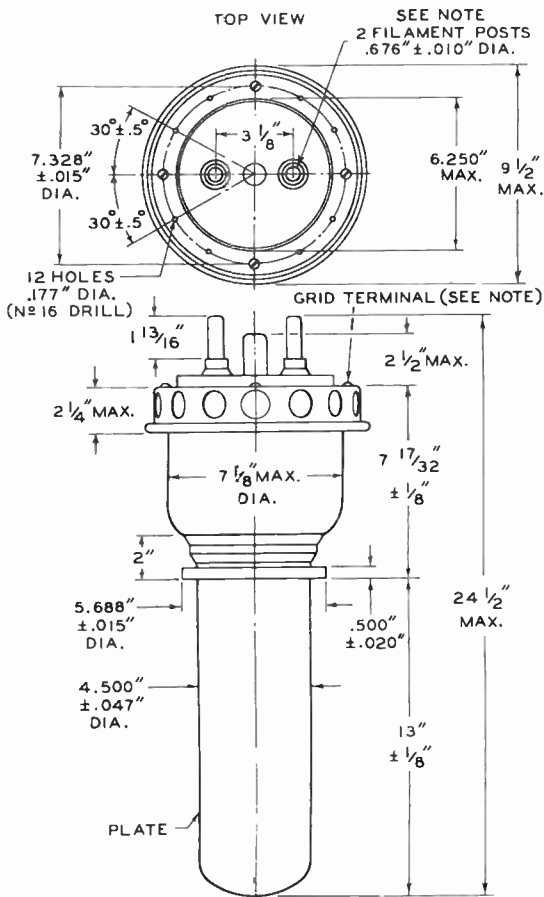
CURVES
for the 5770 are the same
as those for Type 5671



5770

5770

POWER TRIODE



NOTE: FLEXIBLE CONNECTIONS ARE REQUIRED.

92CM - 7070





5771

5771

POWER TRIODE

WATER & FORCED-AIR COOLED

GENERAL DATA**Electrical:**

Filament, Multistrand Thoriated-Tungsten:

Excitation Single Phase AC or DC

Voltage 7.5 ± 0.4 ac or dc volts

Current 170 amp

Starting Current: The filament current should never exceed 800 amperes, even momentarily.

Cold Resistance 0.0055 ohm

Minimum Heating Time 15 seconds

Amplification Factor 20

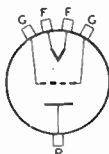
Direct Interelectrode Capacitances (Approx.):

Grid to Plate 24.5 $\mu\mu\text{f}$ Grid to Filament 47 $\mu\mu\text{f}$ Plate to Filament 3 $\mu\mu\text{f}$ **Mechanical:**

Terminal Connections:

F - Filament

G - Grid

P - Water-Cooled
PlateGrid terminals
are spaced dia-
metrically wid-
er than fila-
ment terminals.

Mounting Position Vertical, Filament End Up

Maximum Overall Length 11-5/16"

Maximum Diameter 7"

Water Flow 12 to 20 gpm

The specified water flow must start before application of any volt-
ages, and may be removed simultaneously with the filament and plate
power.

Air Flow 20 min. cfm

The specified air flow should be directed vertically from a 3"-diameter
nozzle into the top portion of the bulb before and during the appli-
cation of any voltages.

Outlet Water Temperature 70 max. °C

Bulb Temperature 180 max. °C

Seal Temperature (Filament, grid, plate) 165 max. °C

Components:

Water Jacket RCA MI-19461

Jacket Wrench RCA MI-19436

Gasket RCA MI-7441

Terminal-Post Chuck Connector (4 required) RCA MI-19466

Chuck Wrench (2 required) RCA MI-19424

Filament Transformer RCA-203T1

AF POWER AMPLIFIER & MODULATOR - Class B

Maximum CCS* Ratings, Absolute Values:

DC PLATE VOLTAGE 12500 max. volts

*: See next page.

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TUBE DEPARTMENT

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History

5771



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POWER TRIODE

MAX.-SIGNAL DC PLATE CURRENT*	5 max.	amp
MAX.-SIGNAL PLATE INPUT*	45 max.	kw
PLATE DISSIPATION*	22.5 max.	kw

Typical Operation:

Values are for 2 tubes

DC Plate Voltage	12500	volts
DC Grid Voltage	-600	volts
Peak AF Grid-to-Grid Voltage	1900	volts
Zero-Signal DC Plate Current	1	amp
Max.-Signal DC Plate Current	6.4	amp
Effective Load Resistance (Plate-to-plate)	4400	ohms
Max.-Signal Driving Power (Approx.)*	430	watts
Max.-Signal Power Output (Approx.)	55	kw

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

The driving stage should have good regulation and should be capable of supplying considerably more than the specified driving power.

RF POWER AMPLIFIER - Class B Telephony

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

Maximum CCS[•] Ratings, Absolute Values:

DC PLATE VOLTAGE	12500 max.	volts
DC PLATE CURRENT	4 max.	amp
PLATE INPUT	33 max.	kw
PLATE DISSIPATION	22.5 max.	kw

Typical Operation:

DC Plate Voltage	12500	volts
DC Grid Voltage	-625	volts
Peak RF Grid Voltage	625	volts
DC Plate Current	2.4	amp
DC Grid Current [□]	0	amp
Driving Power (Approx.) ^{■ □}	1070	watts
Power Output (Approx.)	12	kw

■ At crest of audio-frequency cycle with modulation factor of 1.0.

PLATE-MODULATED RF POWER AMPLIFIER - Class C Telephony

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

Maximum CCS[•] Ratings, Absolute Values:

DC PLATE VOLTAGE	10000 max.	volts
DC GRID VOLTAGE	-1600 max.	volts
DC PLATE CURRENT	4 max.	amp
DC GRID CURRENT	0.8 max.	amp
PLATE INPUT	40 max.	kw
PLATE DISSIPATION	15 max.	kw

•, □: See next page.

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TUBE DEPARTMENT

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



5771

5771

POWER TRIODE

Typical Operation:

DC Plate Voltage	10000	volts
DC Grid Voltage [ⓐ]	{-840 1075	volts ohms
Peak RF Grid Voltage	1440	volts
DC Plate Current	3.8	amp
DC Grid Current (Approx.) [ⓐ]	0.78	amp
Driving Power (Approx.) [ⓐ]	1010	watts
Power Output (Approx.)	29	kw

[ⓐ] obtained by grid resistor of value shown or by partial self-bias methods.

RF POWER AMPLIFIER & OSCILLATOR—Class C Telegraphy

Key-down conditions per tube without modulation[ⓐ]

Maximum CCS[ⓐ] Ratings, Absolute Values:

	1.5 to 25 Mc	Below 1.6 Mc	
DC PLATE VOLTAGE	12500 max.	15000 max.	volts
DC GRID VOLTAGE	-1600 max.	-1600 max.	volts
DC PLATE CURRENT	6 max.	6 max.	amp
DC GRID CURRENT	0.8 max.	0.8 max.	amp
PLATE INPUT	60 max.	60 max.	kw
PLATE DISSIPATION	22.5 max.	22.5 max.	kw

Typical Operation:

	10000	10000	12500	15000	
DC Plate Voltage	10000	10000	12500	15000	volts
DC Grid Voltage ^{ⓐⓐ}	{-720 140	-770	-630	-990	volts ohms
DC Grid Voltage ^{ⓐⓐ}	{1040 1040	1000	840	1240	ohms
Peak RF Grid Voltage	1290	1440	1230	1620	volts
DC Plate Current	4.5	6	4.8	4.5	amp
DC Grid Current (Approx.) [ⓐ]	0.69	0.77	0.75	0.8	amp
Driving Power (Approx.) [ⓐ]	800	1000	1050	1160	watts
Power Output (Approx.)	33	40	44	53	kw

[ⓐ] Continuous Commercial Service.

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

[ⓐ] Foreffect of load resistance on grid current and driving power, refer to TUBE RATINGS—Grid Current and Driving Power in the General Section.

^{ⓐⓐ} Obtained from cathode resistor (140, 115, 115, 185), or grid resistor (1040, 1000, 840, 1240) or by partial self-bias methods.

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

	Note	Min.	Max.	
Filament Current	1	160	180	amp
Amplification Factor	1, 2	17	23	

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TUBE DEPARTMENT

TENTATIVE DATA 2

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History

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POWER TRIODE

	<u>Note</u>	<u>Min.</u>	<u>Max.</u>	
Grid-Plate Capacitance	-	20	28	$\mu\mu\text{f}$
Grid-Filament Capacitance.	-	39	55	$\mu\mu\text{f}$
Plate-Filament Capacitance	-	2.3	3.7	$\mu\mu\text{f}$
Plate Voltage.	1,3	5300	7900	volts
Plate Voltage.	1,4	2100	3100	volts
Peak Cathode Current	1,5	35	-	amp
Useful Power Output.	1,6	33	-	kw

Note 1: With 7.5 volts ac on filament.

Note 2: With dc grid voltage of -100 volts, and with plate voltage adjusted to give dc plate current of 2 amperes.

Note 3: With dc grid voltage of -200 volts, and with plate voltage adjusted to give dc plate current of 2 amperes.

Note 4: With dc grid voltage of 0 volts, and with plate voltage adjusted to give dc plate current of 2 amperes.

Note 5: Represents the maximum usable cathode current (plate current and grid current) for the tube under any condition of operation.

Note 6: With dc plate voltage of 12500 volts, dc plate current of 4.8 amperes, dc grid current of 0.6 to 0.9 ampere, grid resistor of $1600 \pm 10\%$ ohms, and frequency of 22 Mc.

Data on operating frequencies for the 5771 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

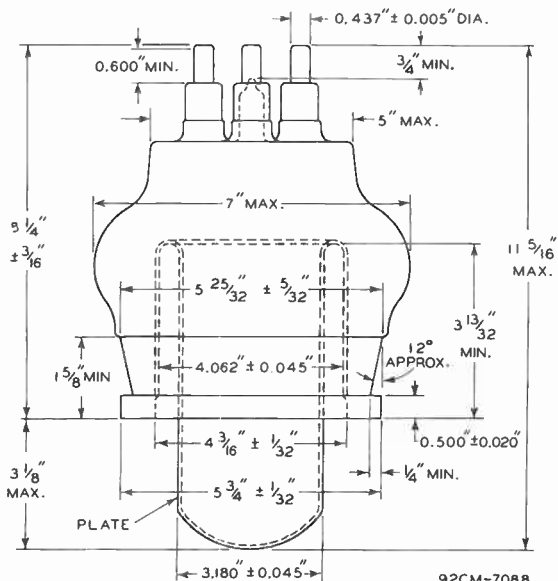
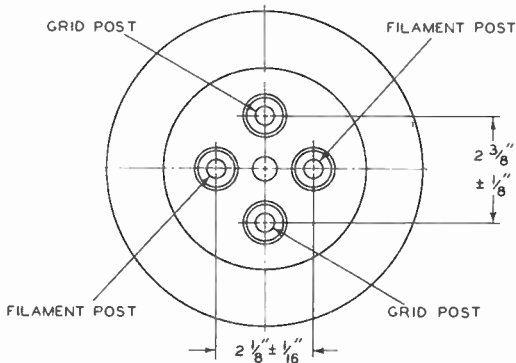


5771

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POWER TRIODE

TOP VIEW



FEB. 1, 1949

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-7088

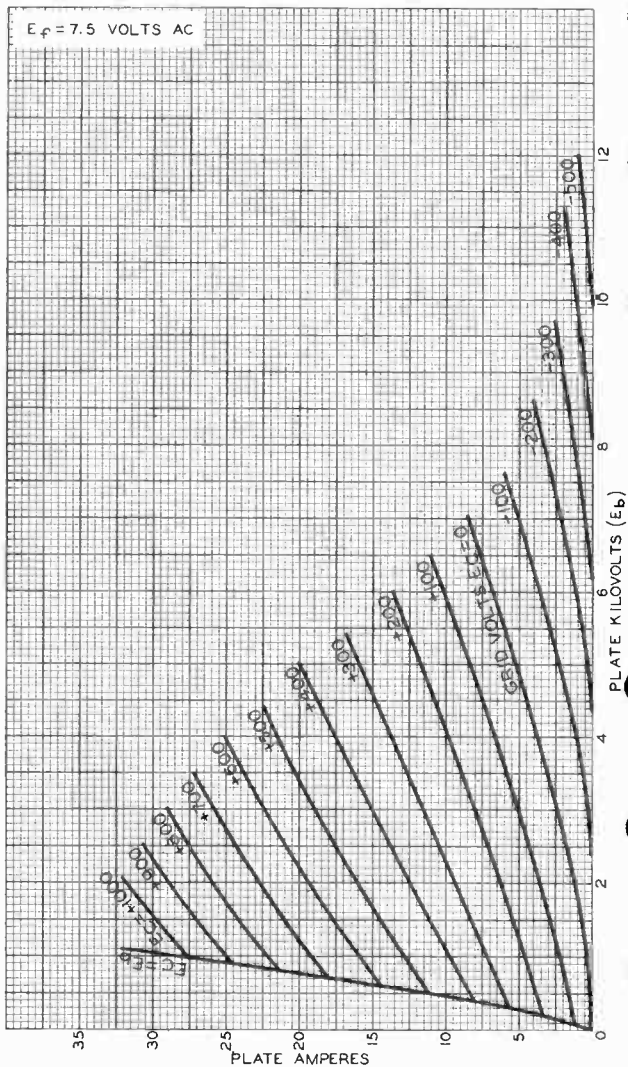
World Radio History

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5771

AVERAGE PLATE CHARACTERISTICS



OCTOBER 28, 1948

 TUBE DEPARTMENT
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7106

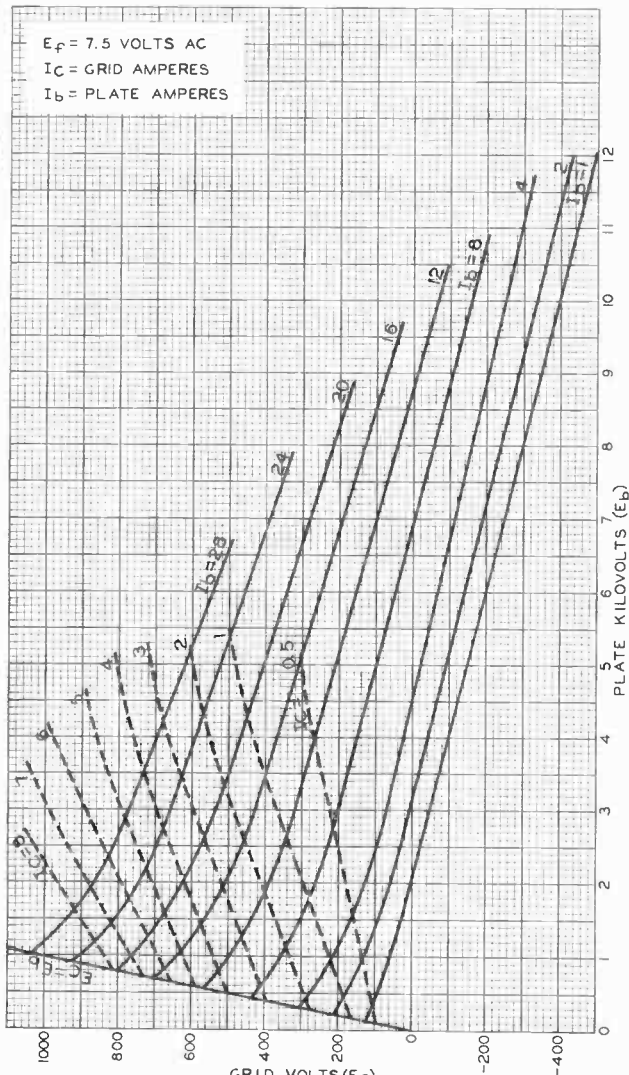
World Radio History



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AVERAGE CONSTANT-CURRENT CHARACTERISTICS



OCTOBER 18, 1948

GRID VOLTS (E_c)
TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History

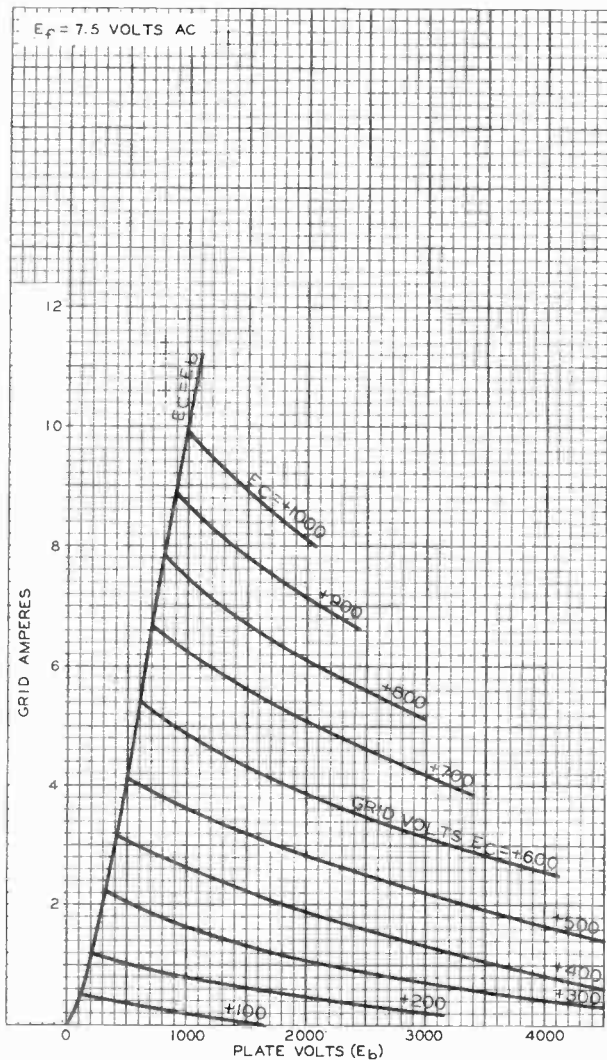
92CM-7098

5771



5771

TYPICAL CHARACTERISTICS



OCTOBER 28, 1948

TUBE DEPARTMENT
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
 World Radio History

92CM-7107



5671

5671

POWER TRIODE

FORCED-AIR-COOLED

GENERAL DATA

Electrical:

Filament, Multistrand Thoriated Tungsten:

Excitation Single Phase AC or DC

Voltage 11[▲] ac or dc volts

Current 285 amp

Starting Current: The filament current should never exceed 425 amperes, even momentarily.

Cold Resistance 0.005 ohms

Amplification Factor 39

Direct Inter-electrode Capacitances (Approx.):

Grid to Plate 52 $\mu\mu\text{f}$

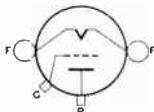
Grid to Filament 88 $\mu\mu\text{f}$

Plate to Filament 1.5 $\mu\mu\text{f}$

Mechanical:

Terminal Connections:

F - Filament
G - Grid-Flange
Terminal



P - Radiator-
Cooled Plate
Terminal

Mounting Position Vertical, Filament End Up

Maximum Overall Length 25"

Maximum Diameter 16-15/16"

Radiator Integral Part of Tube

Air Jacket RCA MI-26190

Air Flow:

Through Radiator - The specified air flow for various plate dissipations, as indicated in the tabulation below, should be delivered by a blower vertically upward through the radiator before and during the application of any voltages. Filament power, plate power, and air may be removed simultaneously.

Plate Dissipation 15 20 25 kw

Air Flow 1100 1450 1800 cfm

Static Pressure 0.85 1.5 2.2 in. of water

To Filament Seals 10 min. cfm

The specified air flow should be directed from a 1-1/4" diameter nozzle into the filament header before and during the application of any voltages in order to limit the temperature of the filament seals to the maximum value.

Input Air Temperature (To Radiator) 45 max. °C

Radiator Temperature (Measured at core, upper end, away from incoming air) 180 max. °C

Bulb Temperature 180 max. °C

Seal Temperature (Filament, grid, plate) 165 max. °C

[▲] When the 5671 is operated at less than maximum ratings, the filament voltage may be reduced, the amount depending on operating conditions. The filament voltage range is from 9.75 volts to 11.5 volts.

5671



5671 POWER TRIODE

AF POWER AMPLIFIER & MODULATOR - Class B

Maximum CCS* Ratings, Absolute Values:

DC PLATE VOLTAGE	15000	max.	volts
MAX.-SIGNAL DC PLATE CUR.*	6	max.	amp
MAX.-SIGNAL PLATE INPUT*	90	max.	kw
PLATE DISSIPATION*	25	max.	kw

Typical Operation:

Values are for 2 tubes

Filament Voltage.	10	11	volts
DC Plate Voltage.	10200	15000	volts
DC Grid Voltage.	-220	-320	volts
Peak AF Grid-to-Grid Voltage.	900	1600	volts
Zero-Signal DC Plate Current.	0.6	0.6	amp
Max.-Signal DC Plate Current.	5.8	10	amp
Effective Load Resistance (Plate-to-plate).	3600	3320	ohms
Max.-Signal Driving Power (Approx.)#	120	600	watts
Max.-Signal Power Output (Approx.)	37	100	kw

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

The driving stage should have good regulation and should be capable of supplying considerably more than the specified driving power.

PLATE-MODULATED RF POWER AMPLIFIER - Class C Telephony

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

Maximum CCS* Ratings, Absolute Values:

DC PLATE VOLTAGE.	12500	max.	volts
DC GRID VOLTAGE	-2000	max.	volts
DC PLATE CURRENT	4.5	max.	amp
DC GRID CURRENT	1	max.	amp
PLATE INPUT	55	max.	kw
PLATE DISSIPATION	17	max.	kw

Typical Operation:

Filament Voltage.	10	11	volts
DC Plate Voltage.	10200	12500	volts
DC Grid Voltage*	{ -1500 2100	-1500	volts
		1500	ohms
Peak RF Grid Voltage.	2070	2180	volts
DC Plate Current.	3.3	4	amp
DC Grid Current (Approx.) [□]	0.72	1	amp
Driving Power (Approx.) [□]	1350	1960	watts
Power Output (Approx.)	28	40	kw

*, †, □: See next page.

DEC. 30, 1947

TUBE DEPARTMENT

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History



5671

5671

POWER TRIODE

RF POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation ^{□□}Maximum CCS[®] Ratings, Absolute Values:

DC PLATE VOLTAGE	15000	max.	volts
DC GRID VOLTAGE	-2000	max.	volts
DC PLATE CURRENT	8	max.	amp
DC GRID CURRENT	1	max.	amp
PLATE INPUT	100	max.	kw
PLATE DISSIPATION	25	max.	kw

Typical Operation:

Filament Voltage	10	11	volts
DC Plate Voltage	12500	15000	volts
DC Grid Voltage [▲]	-1250 190 1300	-1500	volts
		225	ohms
		1500	ohms
Peak RF Grid Voltage	1970	2270	volts
DC Plate Current	5.8	6	amp
DC Grid Current (Approx.) [□]	0.95	1	amp
Driving Power (Approx.) [□]	1700	2040	watts
Power Output (Approx.)	55	70	kw

● Continuous Commercial Service.

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

□ Subject to wide variations as explained on sheet TUBE RATINGS in General Section.

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

▲ obtained by cathode resistor (190, 225), grid resistor, (1300, 1500), or partial self-bias methods.

Data on operating frequencies for the 5671 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

DEC. 30, 1947

TUBE DEPARTMENT

TENTATIVE DATA 2

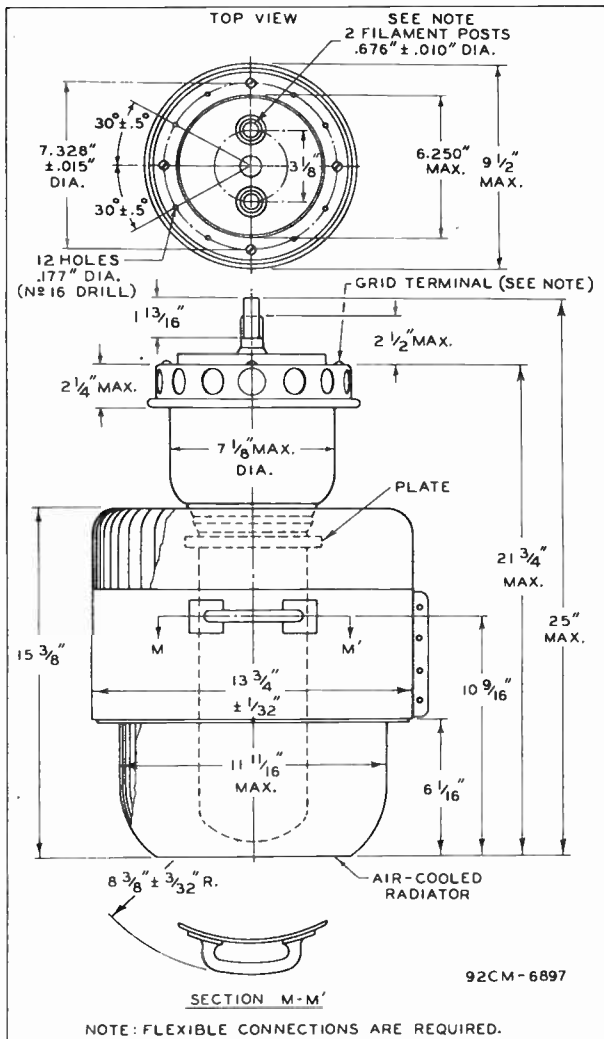
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History

5671



5671 POWER TRIODE



DEC. 30, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

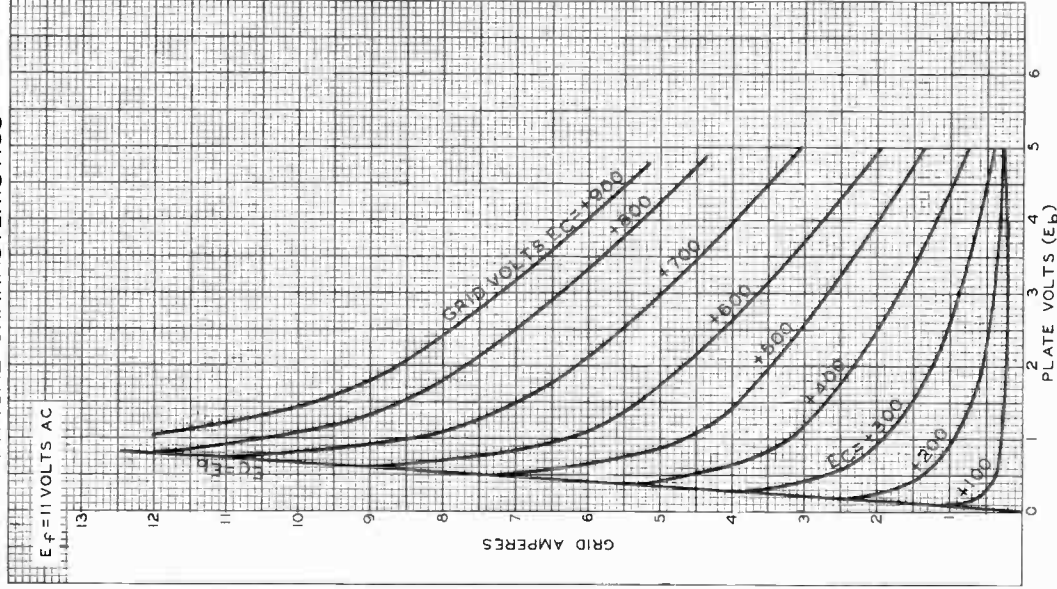
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5671

5671

TYPICAL CHARACTERISTICS



NOV. 7, 1947

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6900

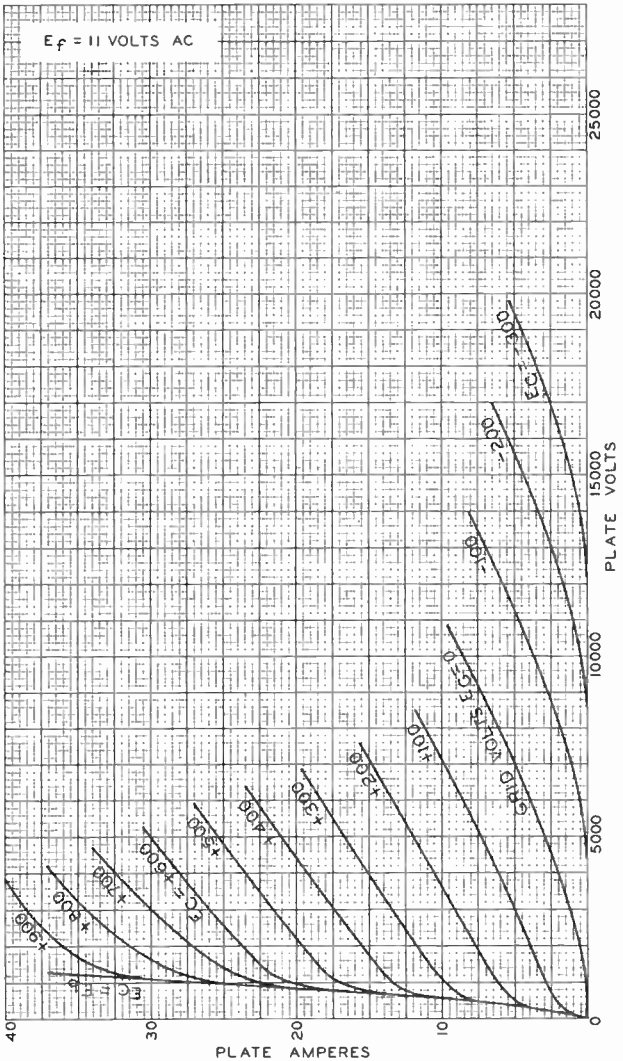
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5671

AVERAGE PLATE CHARACTERISTICS

$E_f = 11$ VOLTS AC



NOV. 5, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM - 6899

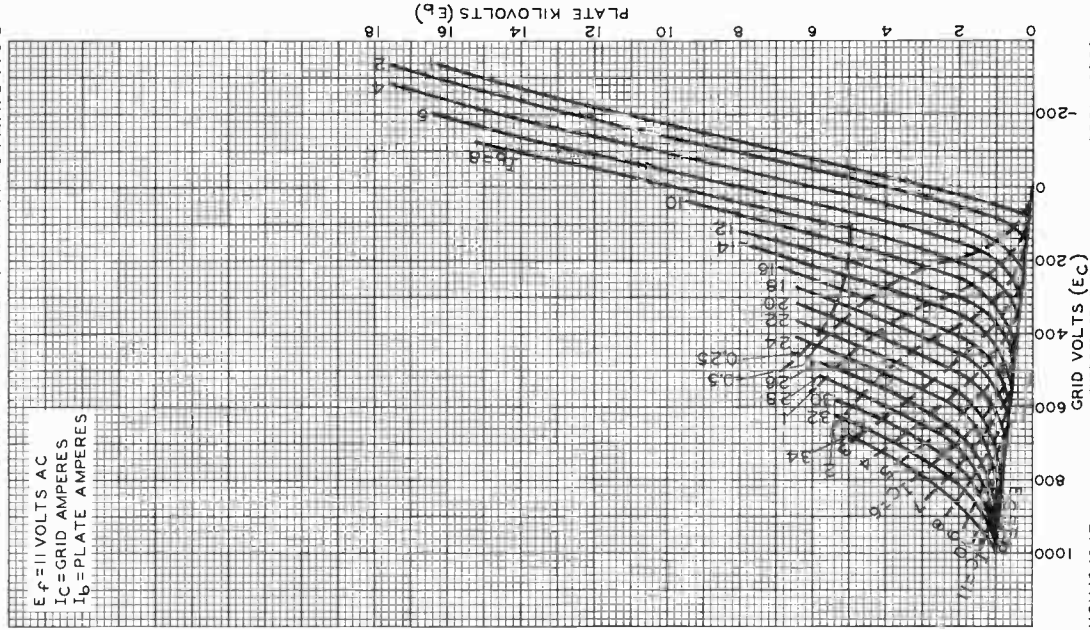


5671

5671
1995

AVERAGE CONSTANT-CURRENT CHARACTERISTICS

$E_f = 11$ VOLTS AC
 $I_c =$ GRID AMPERES
 $I_b =$ PLATE AMPERES



NOV. 19, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6909



POWER TRIODE
FORCED-AIR COOLED

GENERAL DATA

Electrical:

Filament, Thoriated-Tungsten:

Voltage 11 ± 0.6 ac or dc volts

Current 12.5 amp

Starting Current: The filament current must never exceed 50 amperes, even momentarily.

Cold Resistance 0.13 ohm

Amplification Factor 30

Direct Interelectrode Capacitances:

Grid to Plate 5.3 μmf

Grid to Filament 4.2 μmf

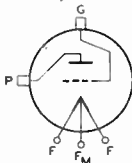
Plate to Filament 3.4 μmf

Mechanical:

Terminal Connections:

F - Filament

F_M - Filament
Mid-Tap



G - Grid

P - Radiator-
Cooled Plate

Mounting Position Vertical, grid end up or down

Overall Length 9-3/8" ± 1/4"

Maximum Diameter 2.895"

Radiator Integral part of tube

Air Flow:

To Radiator and Seals

for Maximum Rated Conditions . . . 140 min. cfm

Sufficient air must be delivered by a blower to the radiator and seals so that the maximum radiator and seal temperatures will not be exceeded. Air flow must start before the application of any voltages. Filament power, plate power, and air may be removed simultaneously.

Incoming Air Temperature 45 max. °C

Radiator Temperature (Measured at core at sufficient number of places to insure that rating is not exceeded) 180 max. °C

Seal Temperature:

Grid and Plate 165 max. °C

Filament 220 max. °C

Components:

Filament Transformer RCA-203T2

AF POWER AMPLIFIER & MODULATOR - Class B

Maximum CCS* Ratings, Absolute Values:

DC PLATE VOLTAGE 3000 max. volts

MAX.-SIGNAL DC PLATE CURRENT* 400 max. ma

MAX.-SIGNAL PLATE INPUT* 1200 max. watts

PLATE DISSIPATION* 600 max. watts

*: See next page.



POWER TRIODE

Typical Operation:

Values are for 2 tubes

DC Plate Voltage	3000	volts
DC Grid Voltage [#]	-95	volts
Peak AF Grid-to-Grid Voltage	470	volts
Zero-Signal DC Plate Current	75	ma
Max.-Signal DC Plate Current	300	ma
Effective Load Resistance (Plate-to-plate)	8600	ohms
Max.-Signal Driving Power (Approx.)	30	watts
Max.-Signal Power Output (Approx.)	1640	watts

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

Grid voltage is given with respect to mid-point of filament operated on ac or dc.

PLATE-MODULATED RF POWER AMPLIFIER - Class C Telephony

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

Maximum CCS[®] Ratings, Absolute Values:

DC PLATE VOLTAGE	2500 max.	volts
DC GRID VOLTAGE	-500 max.	volts
DC PLATE CURRENT	400 max.	ma
DC GRID CURRENT	150 max.	ma
PLATE INPUT	1000 max.	watts
PLATE DISSIPATION	400 max.	watts

Typical Operation:

DC Plate Voltage	2500	volts
DC Grid Voltage [®]	{ -350 2600	{ volts ohms
Peak RF Grid Voltage	620	volts
DC Plate Current	400	ma
DC Grid Current (Approx.) [□]	135	ma
Driving Power (Approx.) [□]	75	watts
Power Output (Approx.)	810	watts

RF POWER AMPLIFIER & OSCILLATOR - Class C Telephony

Key-down conditions per tube without amplitude modulation^{□□}

Maximum CCS[®] Ratings, Absolute Values:

DC PLATE VOLTAGE	3000 max.	volts
DC GRID VOLTAGE	-500 max.	volts
DC PLATE CURRENT	500 max.	ma
DC GRID CURRENT	150 max.	ma
PLATE INPUT	1500 max.	watts
PLATE DISSIPATION	600 max.	watts

□□ 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.



8000

8000

TRANSMITTING TRIODE

GENERAL DATA**Electrical:**

Filament, Thoriated Tungsten:

Voltage 10 ac or dc volts

Current 4.5 amp

Amplification Factor . . . 16.5

Direct Interelectrode Capacitances:

Grid to Plate 6.4 $\mu\mu\text{f}$ Grid to Filament 5.0 $\mu\mu\text{f}$ Plate to Filament 3.3 $\mu\mu\text{f}$ **Mechanical:**Mounting Position Vertical, base down; or Horizontal,
pins 1 & 2 in vertical planeOverall Length 8-1/2" \pm 1/4"Seated Length 8-3/16" \pm 1/4"Maximum Radius 2-1/8" \pm 1/8"

Bulb T-20

Cap (top) Skirted Medium

Cap (side) Medium

Base Medium Metal-Shell Jumbo 4-Pin, Bayonet

Basing Designation for BOTTOM VIEW 2 σ 1

Pin 1 - No Connection

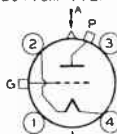
Pin 2 - Filament

Pin 3 - No Connection

Pin 4 - Filament

P - Plate (End Cap)

G - Grid (Side Cap)



AA-PLANE OF ELECTRODES

AF POWER AMPLIFIER & MODULATOR - Class B**Maximum Ratings, Absolute Values:**

	<u>CCS[•]</u>	<u>ICAS^{••}</u>	
DC PLATE VOLTAGE	2500 max.	2750 max.	volts
MAX.-SIGNAL DC PLATE CUR.* . .	250 max.	250 max.	ma.
MAX.-SIGNAL PLATE INPUT* . . .	425 max.	510 max.	watts
PLATE DISSIPATION*	125 max.	175 max.	watts ←

Typical Operation:*Unless otherwise specified, values are for 2 tubes*

DC Plate Voltage	2000 . .	2250 . .	volts
DC Grid Voltage	-120 . .	-130 . .	volts
Peak AF Grid-to-Grid Voltage	520 . .	560 . .	volts
Zero-Signal DC Plate Current	60 . .	65 . .	ma.
Max.-Signal DC Plate Current	425 . .	450 . .	ma.
Effective Load Resistance (plate-to-plate)	10800 . .	12000 . .	ohms

* , • , •• : See next page.

← indicates a change.

DEC. 20, 1946

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA 1

8000



8000

TRANSMITTING TRIODE

Max.-Signal Driving Power (Approx.)	6.5	7.9	watts
Max.-Signal Power Output (Approx.)	600	725	watts

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

RF POWER AMPLIFIER - Class B Telephony

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

Maximum Ratings, Absolute Values:

	CCS*	ICAS**	
→ DC PLATE VOLTAGE	2000 max.	2500 max.	volts
DC PLATE CURRENT	185 max.	185 max.	ma.
PLATE INPUT	190 max.	225 max.	watts
→ PLATE DISSIPATION	125 max.	175 max.	watts

Typical Operation:

DC Plate Voltage	2000	2500	volts
DC Grid Voltage	-130	-145	volts
Peak RF Grid Voltage	140	150	volts
DC Plate Current	95	100	ma.
→ DC Grid Current (Approx.) [□]	0.5	0	ma.
Driving Power (Approx.) ^{□▲}	4.8	5.4	watts
Power Output (Approx.)	65	75	watts

GRID-MODULATED RF POWER AMPLIFIER - Class C Telephony

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

Maximum Ratings, Absolute Values:

	CCS*	ICAS**	
→ DC PLATE VOLTAGE	2000 max.	2500 max.	volts
DC GRID VOLTAGE	-500 max.	-500 max.	volts
DC PLATE CURRENT	185 max.	185 max.	ma.
PLATE INPUT	190 max.	225 max.	watts
→ PLATE DISSIPATION	125 max.	175 max.	watts

Typical Operation:

DC Plate Voltage	2000	2250	volts
DC Grid Voltage	-250	-265	volts
Peak RF Grid Voltage	265	270	volts
Peak AF Grid Voltage	120	115	volts
DC Plate Current	95	100	ma.
DC Grid Current (Approx.) [□]	0	0	ma.
Driving Power (Approx.) ^{□▲}	4.3	2.5	watts
Power Output	65	75	watts

▲ At crest of audio-frequency cycle with modulation factor of 1.0.

● ● ● □ : See next page.

← indicates a change.



8000

TRANSMITTING TRIODE

8000

PLATE-MODULATED RF POWER AMPLIFIER - Class C Telephony

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

Maximum Ratings, Absolute Values:

	CCS*	ICAS**	
DC PLATE VOLTAGE	1600 max.	2000 max.	volts ←
DC GRID VOLTAGE	-500 max.	-500 max.	volts ←
DC PLATE CURRENT	210 max.	250 max.	ma. ←
DC GRID CURRENT	4 max.	45 max.	ma. ←
PLATE INPUT	335 max.	500 max.	watts ←
PLATE DISSIPATION	85 max.	125 max.	watts ←

Typical Operation:

DC Plate Voltage	1600 . .	2000 . .	volts
DC Grid Voltage*	-300 . .	-370 . .	volts
	15000 . .	10000 . .	ohms
Peak RF Grid Voltage	470 . .	630 . .	volts
DC Plate Current	210 . .	250 . .	ma.
DC Grid Current (Approx.) [Ⓛ]	20 . .	37 . .	ma.
Driving Power (Approx.) [Ⓛ]	8.5 . .	20 . .	watts
Power Output (Approx.)	250 . .	380 . .	watts

RF POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation[Ⓛ]

Maximum Ratings, Absolute Values:

	CCS*	ICAS**	
DC PLATE VOLTAGE	2000 max.	2500 max.	volts ←
DC GRID VOLTAGE	-500 max.	-500 max.	volts ←
DC PLATE CURRENT	250 max.	300 max.	ma. ←
DC GRID CURRENT	40 max.	45 max.	ma. ←
PLATE INPUT	500 max.	750 max.	watts ←
PLATE DISSIPATION	125 max.	175 max.	watts ←

Typical Operation:

DC Plate Voltage	2000 . .	2500 . .	volts
DC Grid Voltage ^{▲▲}	-195 . .	-240 . .	volts
	8100 . .	6000 . .	ohms
	710 . .	700 . .	ohms
Peak RF Grid Voltage	370 . .	480 . .	volts
DC Plate Current	250 . .	300 . .	ma.
DC Grid Current (Approx.)	24 . .	40 . .	ma.
Driving Power (Approx.)	8 . .	18 . .	watts
Power Output (Approx.)	375 . .	575 . .	watts

* Continuous Commercial Service.

** Intermittent Commercial and Amateur Service.

Ⓛ obtained by grid resistor of value shown or by combination methods.

Ⓛ, Ⓛ, ▲▲: See next page.

← Indicates a change



8000

TRANSMITTING TRIODE

- Subject to wide variations as explained on sheet TUBE RATINGS in General Section.
- ⊞ modulation essentially negative may be used if the positive peak of the audio frequency envelope does not exceed 115% of the carrier conditions.
- ▲ Obtained from fixed supply, by grid resistor (2100,6000) or by cathode resistor (710,700).

NOTE: When the 8000 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 a plate voltage of 2500 volts a fixed bias of at least 140 volts should be used.

CLASS C OSCILLATOR

Operation with Unfiltered Plate Supply

Maximum Ratings, Absolute Values:

	Supply 1 [†]	Supply 2 [‡]	
RMS PLATE VOLTAGE	2500 max.	- -	volts
DC PLATE VOLTAGE	- -	1800 max.	volts
DC GRID VOLTAGE	-200 max.	-300 max.	volts
DC PLATE CURRENT	160 max.	225 max.	ma.
DC GRID CURRENT	25 max.	35 max.	ma.
PLATE INPUT	450 max.	500 max.	watts
PLATE DISSIPATION	125 max.	125 max.	watts

Typical Operation in Push-Pull Circuit at 30 Mc.:

Unless otherwise specified, values are for 2 tubes

RMS Plate Voltage	2500 . .	- . .	volts
DC Plate Voltage	- . .	1800 . .	volts
Grid Resistor	3500 . .	5000 . .	ohms
DC Plate Current	320 . .	450 . .	ma.
DC Grid Current	30 . .	35 . .	ma.
Power Output (Approx.)	650 . .	700 . .	watts
Circuit Power Output (Approx.) [†]			
85% circuit efficiency	550 . .	600 . .	watts

[†] Self-rectified ac supply.

[‡] 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 8000 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

OUTLINE DIMENSIONS for the 8000 are the same as those for the 810

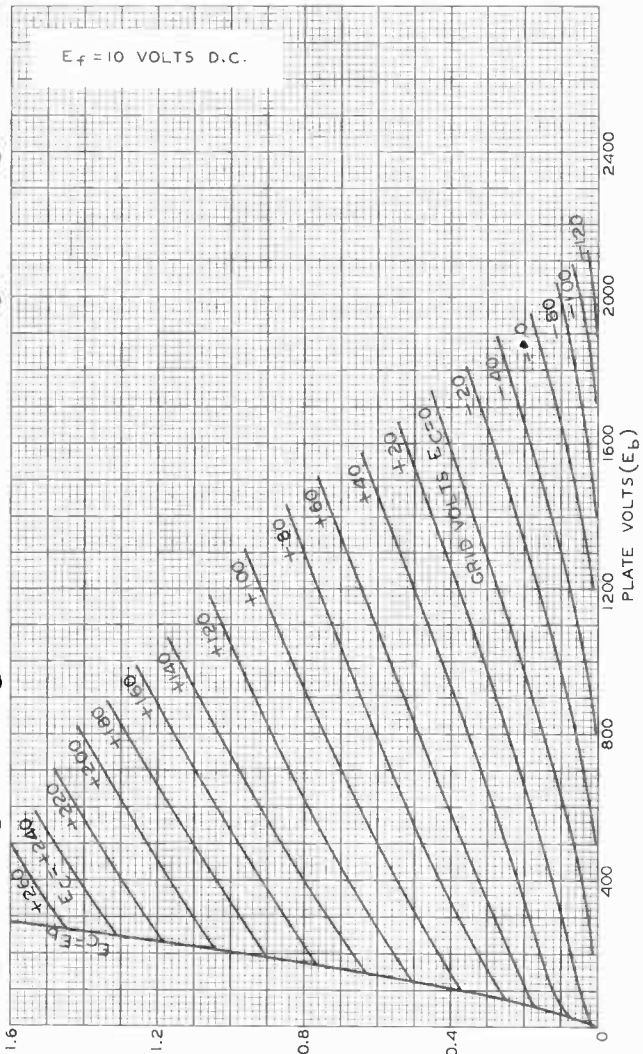


8000

8000

AVERAGE PLATE CHARACTERISTICS

$E_f = 10$ VOLTS D.C.



D-C PLATE AMPERES

SEPT. 20, 1940

TUBE DEPARTMENT

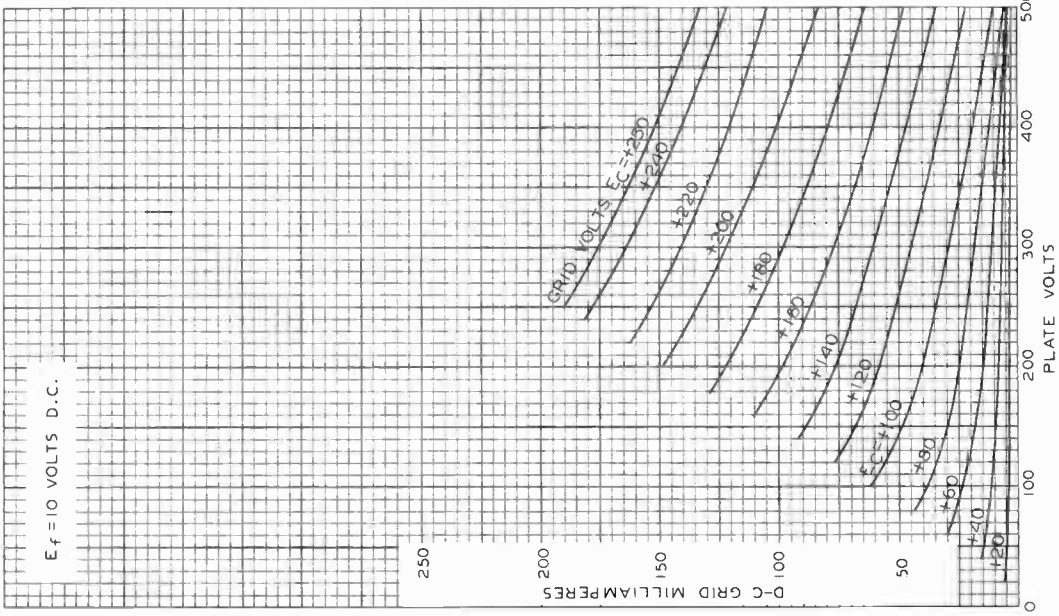
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6212



8000

TYPICAL CHARACTERISTICS



World Precision



8003

8003

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	μf
Grid to Filament	5.8	μf
Plate to Filament	3.4	μf
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**

	<u>CCS</u>	
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

	<u>CCS</u>	
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** ^o	8 approx.	watts
Power Output	50 approx.	watts

^o 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 RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA



OSCILLATOR, POWER AMPLIFIER, MODULATOR

(continued from preceding page)

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

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

	ccs	
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 ^Δ	{ -260	volts
	6500	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

^Δ 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 ##

	ccs	
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 [◊]	{ -175	volts
	5000	ohms
	625	ohms
Peak R-F Grid Voltage	350	volts
D-C Plate Current	245	ma.
D-C Grid Current**	35	approx. ma.
Driving Power**	11	approx. watts
Power Output	250	approx. watts

[◊] 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.

July 1, 1941

TENTATIVE DATA



8003

OSCILLATOR, POWER AMPLIFIER, MODULATOR

(continued from preceding page)

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.

← Indicates a change.

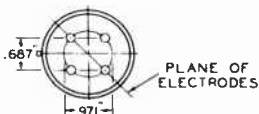
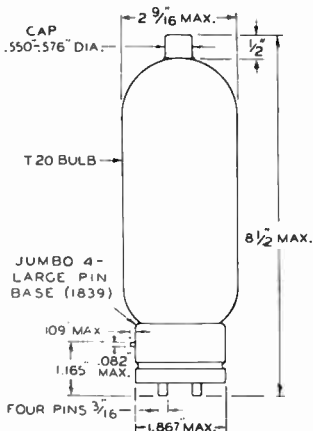
July 1, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA 2



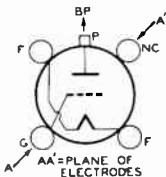
OSCILLATOR, POWER AMPLIFIER, MODULATOR



BOTTOM VIEW OF BASE

92C-6203

BOTTOM VIEW OF
 SOCKET CONNECTIONS



TUBE MOUNTING POSITION

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

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



8005

POWER TRIODE

8005

GENERAL DATA**Electrical:**

Filament, Thoriated Tungsten:

Voltage (AC or DC) 10 ± 0.5 volts

Current, with 10 volts on filament 3.25 amp

Amplification Factor 20

Direct Interelectrode Capacitances:

Grid to Plate. 5 μf Grid to Filament 6.4 μf Plate to Filament. 1 μf **Mechanical:**Mounting Position. . . . Vertical, Base down; or Horizontal,
with pins 2 and 3 in vertical plane

Overall Length 6-7/16" ± 1/4"

Seated Length. 5-7/8" ± 1/4"

Diameter 2-7/16"

Bulb ST-19

Cap. Medium, with Insulating Collar

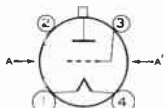
Base Medium-Metal-Shell Small 4-Pin, Bayonet

Basing Designation for BOTTOM VIEW 3G

Pin 1 - Filament

Pin 2 - No

Connection



AA'=PLANE OF ELECTRODES

Pin 3 - Grid

Pin 4 - Filament

Cap - Plate

AF POWER AMPLIFIER & MODULATOR - Class B**Maximum Ratings, Absolute Values:**

	CCS*	ICAS**	
DC PLATE VOLTAGE	1250 max.	1500 max.	volts
MAX.-SIGNAL DC PLATE CURRENT*	200 max.	200 max.	ma
MAX.-SIGNAL PLATE INPUT*	225 max.	250 max.	watts
PLATE DISSIPATION*	75 max.	85 max.	watts

Typical Operation:*Values are for 2 tubes*

DC Plate Voltage	1250 . .	1500 . .	volts
DC Grid Voltage#	-55 . .	-67.5 . .	volts ←
Peak AF Grid-to-Grid Voltage	290 . .	330 . .	volts ←
Zero-Signal DC Plate Current	40 . .	40 . .	ma
Max.-Signal DC Plate Current	320 . .	330 . .	ma ←
Effective Load Resistance (plate-to-plate)	8000 . .	9800 . .	ohms
Max.-Signal Driving Power (Approx.)	4 . .	5.5 . .	watts ←
Max.-Signal Power Output (Approx.)	250 . .	330 . .	watts ←

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

•, ••, #: See next page.

← Indicates a change.

JUNE 15, 1948

TUBE DEPARTMENT

DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History



8005 POWER TRIODE

RF POWER AMPLIFIER—Class B Telephony

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

Maximum Ratings, Absolute Values:

	CCS [•]	ICAS ^{••}	
DC PLATE VOLTAGE	1250 max.	1500 max.	volts
DC PLATE CURRENT	100 max.	100 max.	ma
PLATE INPUT.	110 max.	125 max.	watts
PLATE DISSIPATION.	75 max.	85 max.	watts

Typical Operation:

DC Plate Voltage	1250 . .	1500 . .	volts
DC Grid Voltage [#]	-65 . .	-80 . .	volts
Peak RF Grid Voltage	85 . .	90 . .	volts
DC Plate Current	85 . .	83 . .	ma
DC Grid Current (Approx.)	2 . .	1 . .	ma
Driving Power (Approx.) [▲]	5.5 . .	5 . .	watts
Power Output (Approx.)	40 . .	45 . .	watts

[▲] At crest of audio-frequency cycle with modulation factor of 1.0.

PLATE-MODULATED RF POWER AMPLIFIER—Class C Telephony

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

Maximum Ratings, Absolute Values:

	CCS [•]	ICAS ^{••}	
DC PLATE VOLTAGE	1000 max.	1250 max.	volts
DC GRID VOLTAGE.	-200 max.	-200 max.	volts
DC PLATE CURRENT	160 max.	200 max.	ma
DC GRID CURRENT.	45 max.	45 max.	ma
PLATE INPUT.	160 max.	240 max.	watts
PLATE DISSIPATION.	50 max.	75 max.	watts

Typical Operation:

DC Plate Voltage	1000 . .	1250 . .	volts
DC Grid Voltage [•]	{ -195 . .	-195 . .	volts
	{ 7000 . .	7000 . .	ohms
Peak RF Grid Voltage	350 . .	350 . .	volts
DC Plate Current	160 . .	190 . .	ma
DC Grid Current (Approx.)	28 . .	28 . .	ma
Driving Power (Approx.)	9 . .	9 . .	watts
Power Output (Approx.)	115 . .	170 . .	watts

[•], ^{••}, [#], [•]: See next page.



8005

8005

POWER TRIODE

RF POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy*Key-down conditions per tube without modulation^{□□}***Maximum Ratings, Absolute Values:**

	CCS [•]	ICAS ^{••}	
DC PLATE VOLTAGE	1250 max.	1500 max.	volts
DC GRID VOLTAGE.	-200 max.	-200 max.	volts
DC PLATE CURRENT	200 max.	200 max.	ma
DC GRID CURRENT.	45 max.	45 max.	ma
PLATE INPUT.	240 max.	300 max.	watts
PLATE DISSIPATION.	75 max.	85 max.	watts

Typical Operation:

DC Plate Voltage	1250 . .	1500 . .	volts
DC Grid Voltage ^{▲▲}	-115 . .	-130 . .	volts
	3800 . .	4000 . .	ohms
	520 . .	560 . .	ohms
Peak RF Grid Voltage	240 . .	255 . .	volts
DC Plate Current	190 . .	200 . .	ma
DC Grid Current (Approx.)	30 . .	32 . .	ma
Driving Power (Approx.)	6.5 . .	7.5 . .	watts
Power Output (Approx.)	170 . .	220 . .	watts

SELF-RECTIFYING OSCILLATOR or AMPLIFIER - Class C**Maximum Ratings, Absolute Values:**

	CCS [•]	
AC PLATE VOLTAGE (RMS)	1750 max.	volts
DC GRID VOLTAGE.	-125 max.	volts
DC PLATE CURRENT	125 max.	ma
DC GRID CURRENT.	25 max.	ma
PLATE INPUT.	240 max.	watts
PLATE DISSIPATION.	75 max.	watts

Typical Operation in Push-Pull Circuit at 50 Mc:*Values are for 2 tubes*

AC Plate Voltage (RMS)	1750 . .	volts
Grid Resistor [•]	2000 . .	ohms
DC Plate Current	250 . .	ma
DC Grid Current (at full load)	35 . .	ma
Power Output (Approx.)	330 . .	watts
Useful Power Output (Approx.) -		
75% circuit efficiency	250 . .	watts ←

•, ••, *, □, ▲, ♣: See next page.

← Indicates a change.

8005



8005

POWER TRIODE

AMPLIFIER or OSCILLATOR - Class C

With Separate, Rectified, Unfiltered,
Single-Phase, Full-Wave Plate Supply

Maximum Ratings, Absolute Values:

	CCS*	
DC PLATE VOLTAGE	1125 max.	volts
DC GRID VOLTAGE.	-125 max.	volts
DC PLATE CURRENT	180 max.	ma
DC GRID CURRENT.	40 max.	ma
PLATE INPUT.	240 max.	watts
PLATE DISSIPATION.	75 max.	watts

→ Typical Operation in Push-Pull Circuit at 27 Mc:

Values are for 2 tubes

DC Plate Voltage	1100	..	volts
Grid Resistor*	2000	..	ohms
DC Plate Current	360	..	ma
DC Grid Current.	40	..	ma
Power Output (Approx.)	330	..	watts
Circuit Power Output (Approx.)- 85% circuit efficiency	280	..	watts

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

	Note	Min.	Max.	
Filament Current	1	3.1	3.4	amp
Amplification Factor	1,2	18	22	
Grid-Plate Capacitance	-	4.3	5.7	μuf
Grid-Filament Capacitance.	-	5.3	7.5	μuf
Plate-Filament Capacitance	-	0.75	1.25	μuf
Grid Current	1,3	-	98	ma
Plate Current.	1,4	30	70	ma
Useful Power Output.	1,5	425	-	watts

Note 1: DC filament voltage = 10 volts.

Note 2: With dc grid voltage of -50 volts and plate voltage adjusted to give plate current of 50 ma.

Note 3: With dc plate voltage of 200 volts and dc grid voltage of +100 volts.

Note 4: With dc plate voltage of 1500 volts and dc grid voltage of -55 volts.

Note 5: With dc plate voltage of 2250 volts, plate current of 275 ma., grid current of 35 to 46 ma., grid resistor of 8000 ohms and frequency of 15 Mc.

● Continuous Commercial Service.

●● Intermittent Commercial and Amateur Service.

* For ac filament supply.

● 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.

▲ Obtained from fixed supply, by grid resistor (3800,4000) or by cathode resistor (520,560).

→ Indicates a change.

* See next page.

JUNE 15, 1948

TUBE DEPARTMENT

DATA 2

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History



8005

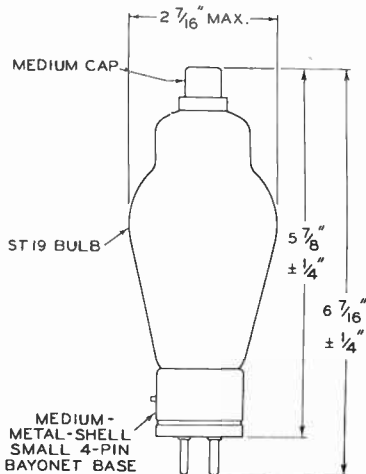
POWER TRIODE

8005

* The 8005 can be biased by any convenient method, but the use of a grid resistor is preferred because the bias is automatically varied as the load on the circuit varies. In those 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 from zero load to twice their full-load values, and usually provides adequate leeway.

NOTE: When the 8005 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 a plate voltage of 1500 volts, a fixed bias of at least -50 volts should be used.

Data on operating frequencies for the 8005 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.



92CM-6283R2



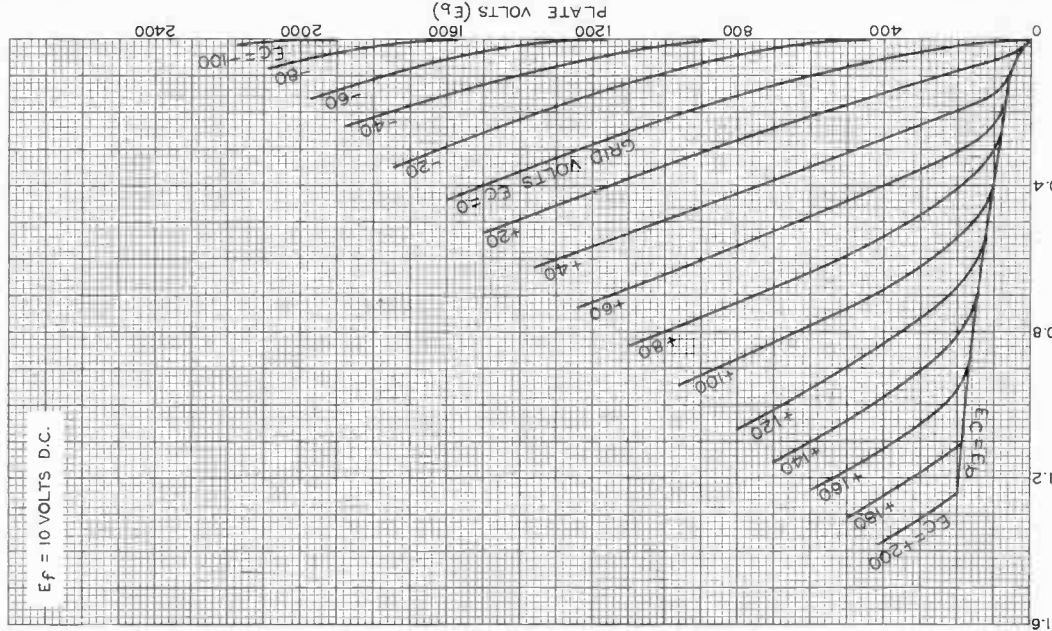


8005

8005

AVERAGE PLATE CHARACTERISTICS

$E_f = 10$ VOLTS D.C.



APRIL 30, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

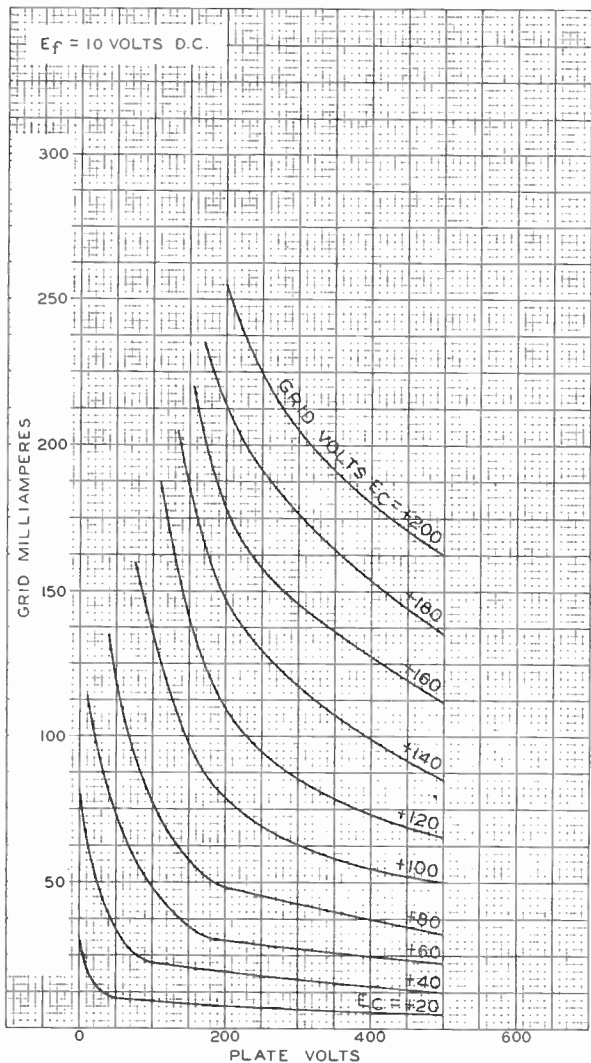
92C-6279

8005



8005

TYPICAL CHARACTERISTICS



APRIL 30, 1941

 RCA RADOTRON DIVISION
 RCA MANUFACTURING COMPANY, INC.
 World Radio History

92C-6280



8008

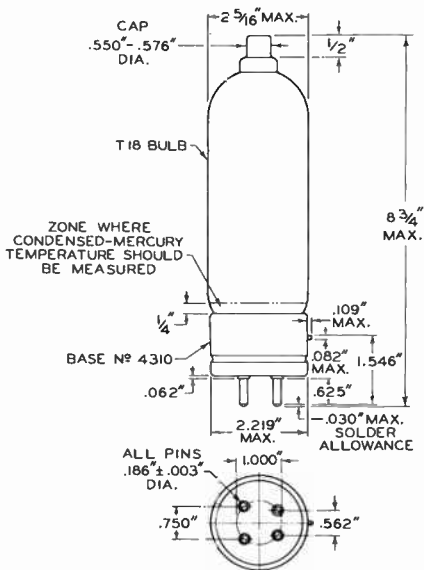
8008

HALF-WAVE MERCURY-VAPOR RECTIFIER

The Type 8008 has the same maximum ratings and operating conditions as Type 872-A/872, but its physical dimensions and base are different.

RCA Socket

Stock No. 9917

BOTTOM VIEW OF BASE

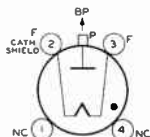
92C-6299

TUBE MOUNTING POSITION

VERTICAL: Base down.
HORIZONTAL: NO.

BOTTOM VIEW OF SOCKET CONNECTIONS

- Pin 1 - No Connection
- Pin 2 - Filament Cathode Shield
- Pin 3 - Filament
- Pin 4 - No Connection
- Cap - Plate
- - Gas Type Tube



AUG. 1, 1942

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY
World Radio History

TENTATIVE DATA



8012-A

8012-A

U-H-F TRANSMITTING TRIODE

The 8012-A supersedes the Type 8012.

GENERAL DATA

Electrical:

Filament, Thoriated Tungsten:**

Voltage. 6.3 ac or dc volts

Current. 1.92 amp.

Amplification Factor 18

Direct Interelectrode Capacitances:

Grid to Plate. 2.5 $\mu\mu\text{f}$ Grid to Filament 2.7 $\mu\mu\text{f}$ Plate to Filament 0.4 $\mu\mu\text{f}$

Mechanical:

Mounting Position. Vertical Only

Cooling - *Forced-Air Cooling* is required when plate dissipation exceeds 75% of the rated value.

Maximum Overall Length (Excluding Flexible Leads). 3-15/16"

Greatest Radius. 1-1/8" \pm 1/16"

Bulb T-8

Terminal Connections See Outline Drawing

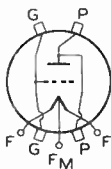
F - Filament

G - Grid

F_M - Filament

P - Plate

Mid-Tap

G TERMINALS NEARER FILAMENT LEADS
P TERMINALS NEARER BULB TIP

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

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

Maximum Ratings, Absolute Values:

CCS[■]

D-C PLATE VOLTAGE. 1000 max. . . volts

D-C GRID VOLTAGE. -200 max. . . volts

D-C PLATE CURRENT. 65 max. . . ma.

PLATE INPUT. 50 max. . . watts

PLATE DISSIPATION. 40 max. . . watts

Typical Operation:

D-C Plate Voltage. 1000 volts

D-C Grid Voltage [□]. { -135 volts

2500 ohms

Peak R-F Grid Voltage. 155 volts

Peak A-F Grid Voltage. 65 volts

D-C Plate Current. 50 ma.

D-C Grid Current ^{*}. 4 approx. . ma.Driving Power ^{*▲}. 3.5 approx. watts

Power Output 20 approx. watts

□, ▲. See next page. *, **, **: See end of tabulation.

Nov. 15, 1945

RCA VICTOR DIVISION

DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History

8012-A



8012-A

U-H-F TRANSMITTING TRIODE

(continued from preceding page)

⊙ Obtained from fixed supply or by cathode resistor of value shown.

▲ At crest of audio-frequency cycle with modulation factor of 1.0.

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

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

Maximum Ratings, Absolute Values:	CCS [■]	
D-C PLATE VOLTAGE.	800 max.	. . . . volts
D-C GRID VOLTAGE	-200 max.	. . . . volts
D-C PLATE CURRENT.	65 max.	. . . . ma.
D-C GRID CURRENT	20 max.	. . . . ma.
PLATE INPUT.	33 max.	. . . . watts
PLATE DISSIPATION.	27 max.	. . . . watts

Typical Operation:

D-C Plate Voltage.	800	. . . . volts
D-C Grid Voltage †	-105	. . . . volts
	10000	. . . . ohms
Peak R-F Grid Voltage.	145	. . . . volts
D-C Plate Current.	40	. . . . ma.
D-C Grid Current*	10.5	approx. . ma.
Driving Power*	1.4	approx. watts
Power Output	22	approx. watts

† Obtained preferably from grid resistor of value shown, or combination of grid resistor with either fixed supply or suitably by-passed cathode resistor.

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation %

Maximum Ratings, Absolute Values:	CCS [■]	
D-C PLATE VOLTAGE.	1000 max.	. . . . volts
D-C GRID VOLTAGE	-200 max.	. . . . volts
D-C PLATE CURRENT.	80 max.	. . . . ma.
D-C GRID CURRENT	20 max.	. . . . ma.
PLATE INPUT.	50 max.	. . . . watts
PLATE DISSIPATION.	40 max.	. . . . watts

Typical Operation:

D-C Plate Voltage.	1000	. . . . volts
D-C Grid Voltage [⊙]	-90	. . . . volts
	6400	. . . . ohms
	1400	. . . . ohms
Peak R-F Grid Voltage.	130	. . . . volts
D-C Plate Current.	50	. . . . ma.
D-C Grid Current*	14	approx. . ma.
Driving Power*	1.6	approx. watts
Power Output	35	approx. watts

#, ⊙, *: See next page.

■ CCS = Continuous Commercial Service.

Nov. 15, 1945

RCA VICTOR DIVISION

DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History



8012-A

8012-A

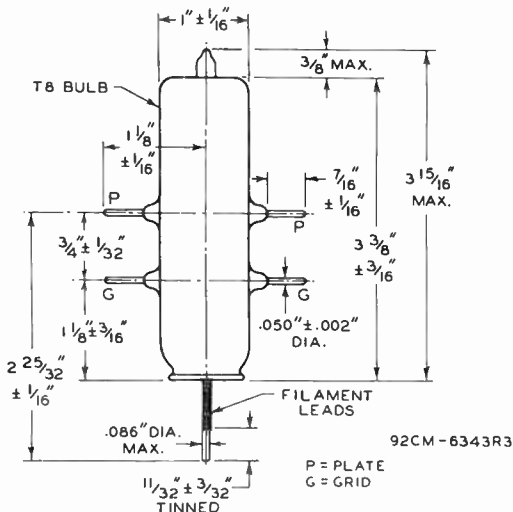
U-H-F TRANSMITTING TRIODE

(continued from preceding page)

- 0 Obtained from fixed supply, or grid resistor (6400), or by cathode resistor (1400). When the 8012-A 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 1000 volts a fixed bias of at least -40 volts should be used.
- ** The filament is center-tapped and the center lead is brought out of the tube. With this design, it is possible to minimize the effect of filament lead inductance by connecting all three filament leads in parallel through r-f by-pass capacitors. The center-lead of this parallel connection should not be returned directly to the center-tap of the filament-transformer winding or to ground, although it may be by-passed to either of these points if desired.
- * Subject to wide variations as explained on sheet TUBE RATINGS in General Section.
- # Modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115% of the carrier conditions.

The 8012-A may be operated with maximum ratings at frequencies up to 500 megacycles but as the frequency is raised, the efficiency and power output fall off. At 600 megacycles an efficiency of about 35% can be expected. Since the efficiency at 600 megacycles is relatively low, the plate of the 8012-A has been designed to have an unusually high dissipation rating.

Data on operating frequencies for the 8012-A are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.



Nov. 15, 1945

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA 2

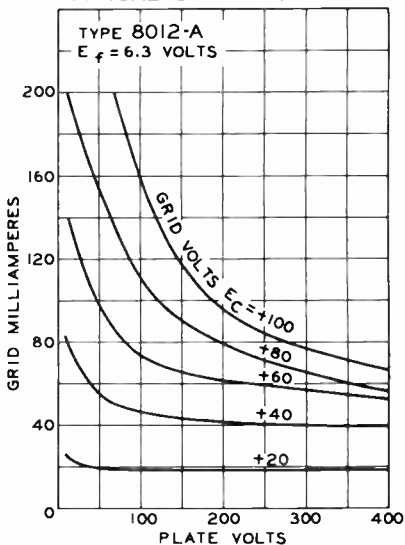
8012-A



8012-A

U-H-F TRANSMITTING TRIODE

TYPICAL CHARACTERISTICS



Nov. 15, 1945

RCA VICTOR DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA 2

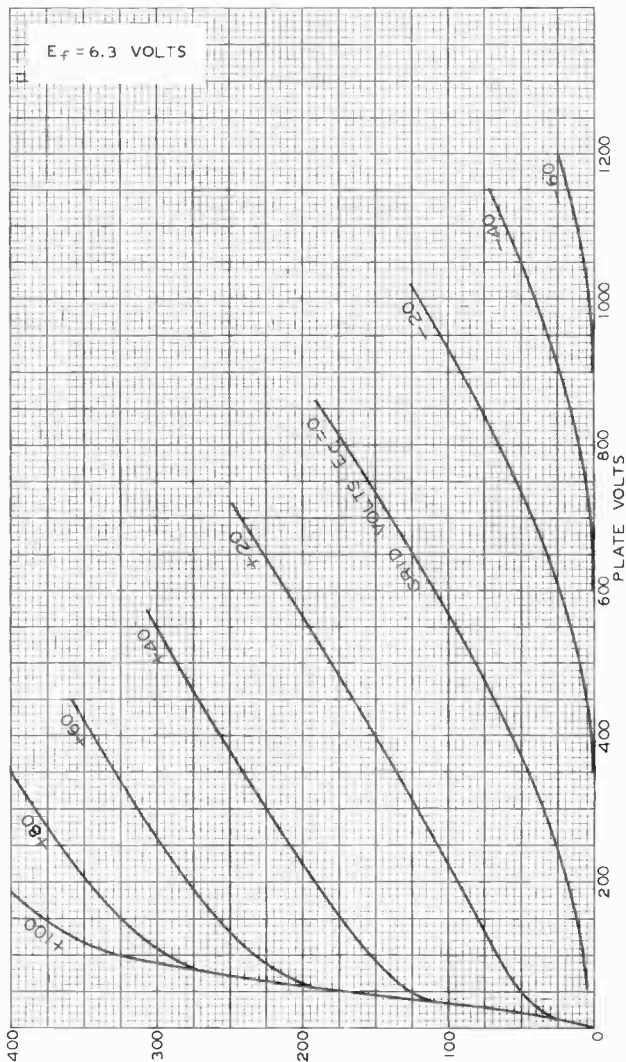


8012-A

8012-A

AVERAGE PLATE CHARACTERISTICS

$E_f = 6.3$ VOLTS



DEC. 1, 1943

PLATE MILLIAMPERES

RCA VICTOR DIVISION

RADIO CORPORATION OF AMERICA HARRISON, NEW JERSEY

World Radio History

92CM-6346



8014-A

8014-A

TRANSMITTING TRIODE

FORCED-AIR COOLED

Intended especially for pulsed operation

GENERAL DATA

Electrical:

Filament, Thoriated Tungsten:

Voltage 15.0 ac volts

Current 14.5 amp

Starting Current: The filament current must never exceed, even momentarily, a value of 30 amperes

Peak Filament Emission 50 (approx.) amp

Amplification Factor 30

Direct Interelectrode Capacitances (Approx.):

Grid to Plate 4.4 μf

Grid to Filament 4.6 μf

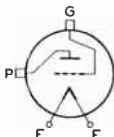
Plate to Filament 3.2 μf

Mechanical:

Terminal Connections:

F - Filament

G - Grid Cap Terminal



P - Plate Terminal
(Air-Cooled Radiator)

Mounting Position Vertical only, Filament or Grid End Up

Overall Length 8-17/32" \pm 3/16"

Diameter 1-7/8" \pm 1/32"

Radiator Integral Part of Tube

Cooling: Air should be delivered in sufficient quantity to the radiator to limit the temperature of the radiator to the rated maximum value. In addition, a small amount of cooling air is required on the filament. Air-flow must start before the application of any voltages.

Maximum Ratings, Absolute Values:

DC PLATE VOLTAGE# 13500 max. volts

DC GRID VOLTAGE -3000 max. volts

PLATE DISSIPATION 400 max. watts

RADIATOR TEMPERATURE[▲] 180 max. °C

The maximum value of filter capacitor permitted directly at the tube and its rf circuit is 1.0 μf . A series resistance of at least 15000 ohms must be used between this capacitor and the high-voltage supply.

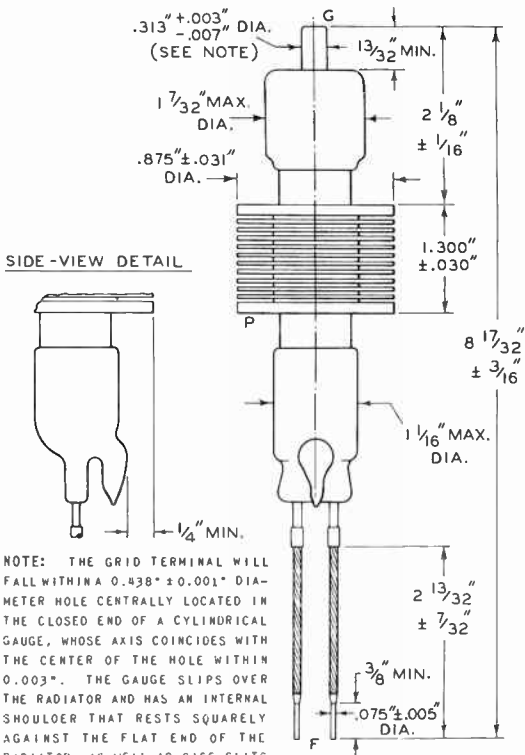
▲ measured outside of air blast on outer fin of radiator near plate.

8014-A



8014-A

TRANSMITTING TRIODE



NOTE: THE GRID TERMINAL WILL FALL WITHIN A 0.438 ± 0.001 " DIAMETER HOLE CENTRALLY LOCATED IN THE CLOSED END OF A CYLINDRICAL GAUGE, WHOSE AXIS COINCIDES WITH THE CENTER OF THE HOLE WITHIN 0.003 ". THE GAUGE SLIPS OVER THE RADIATOR AND HAS AN INTERNAL SHOULDER THAT RESTS SQUARELY AGAINST THE FLAT END OF THE RADIATOR, AS WELL AS SIDE SLITS EXTENDING APPROXIMATELY $1/2$ " ABOVE THE INTERNAL SHOULDER TO INSURE SPRING FIT OVER THE RADIATOR. THE INNER SURFACE OF THE CLOSED END OF THE GAUGE IS $1.812 \pm 0.010 - 0.000$ " FROM THE SHOULDER SURFACE WHICH RESTS AGAINST THE FLAT END OF THE RADIATOR. THE CLOSED END OF THE GAUGE IS 0.438 ± 0.010 " THICK.

92CM-6363R1

DEC. 20, 1946

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-6363R1



8025-A

8025-A

U-H-F TRANSMITTING TRIODE

The 8025-A supersedes the Type 8025.

GENERAL DATA

Electrical:

Filament, Thoriated Tungsten:**

Voltage. 6.3 ac or dc volts

Current. 1.92 amp.

Amplification Factor 18

Direct Interelectrode Capacitances:

Grid to Plate. 3.0 μf Grid to Filament 2.7 μf Plate to Filament 0.4 μf

Mechanical:

Mounting Position. Vertical Only: Base up or down

Cooling—Requirements are indicated under MAXIMUM RATINGS for each class of service. *Natural Cooling* means that adequate free circulation of air around the tube is necessary. When *Forced-Air Cooling* is required, an air flow from a fan should be directed on the bulb.

Maximum Overall Length 4-15/16"

Maximum Seated Length. 4-5/16"

Greatest Radius. 1-1/64" \pm 1/16"

Bulb T-8

Caps (Four). Saddle Skirted Miniature, with Nub

Base Small 4-Pin, Micanol

Basing Designation for BOTTOM VIEW 3M

Pin 1—Filament

Pin 2—No Con.

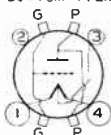
Pin 3—Filament

Mid-Tap

Pin 4—Filament

G—Grid

P—Plate

G CAPS NEARER BASE
P CAPS NEARER BULB TIP

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

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

Maximum Ratings, Absolute Values:

	Forced-Air Cooling CCS ^A	Natural Cooling ICAS ^A
D-C PLATE VOLTAGE.	1000 max.	1000 max. volts
D-C GRID VOLTAGE	-200 max.	-200 max. volts
D-C PLATE CURRENT.	65 max.	65 max. ma.
PLATE INPUT.	60 max.	50 max. watts
PLATE DISSIPATION.	40 max.	30 max. watts

Typical Operation:

D-C Plate Voltage.	1000	volts
D-C Grid Voltage [□]	{ -135	volts
	{ 2500	ohms

□: See next page. ^A** : See end of tabulation.



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U-H-F TRANSMITTING TRIODE

(continued from preceding page)

Peak R-F Grid Voltage	155	volts
Peak A-F Grid Voltage	65	volts
D-C Plate Current	50	ma.
D-C Grid Current*	4 approx.	ma.
Driving Power # *	3.5 approx.	watts
Power Output.	20 approx.	watts

□ Obtained from fixed supply or by cathode resistor of value shown.

■ At crest of audio-frequency cycle with modulation factor of 1.0.

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

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

Maximum Ratings, Absolute Values:

	Forced-Air Cooling CCS [▲]	Natural Cooling ICAS [▲]
D-C PLATE VOLTAGE	800 max.	800 max. volts
D-C GRID VOLTAGE.	-200 max.	-200 max. volts
D-C PLATE CURRENT	65 max.	65 max. ma.
D-C GRID CURRENT.	20 max.	20 max. ma.
PLATE INPUT	50 max.	33 max. watts
PLATE DISSIPATION	27 max.	20 max. watts

Typical Operation:

D-C Plate Voltage	800	volts
D-C Grid Voltage †	{ -105 volts 10000 ohms	
Peak R-F Grid Voltage		145 . . . . .	volts
D-C Plate Current	40	ma.
D-C Grid Current*	10.5 approx.	ma.
Driving Power*	1.4 approx.	watts
Power Output.	22 approx.	watts

† Obtained preferably from grid resistor of value shown, or combination of grid resistor with either fixed supply or suitably by-passed cathode resistor.

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation #

Maximum Ratings, Absolute Values:

	Forced-Air Cooling CCS [▲]	Natural Cooling ICAS [▲]
D-C PLATE VOLTAGE	1000 max.	1000 max. volts
D-C GRID VOLTAGE.	-200 max.	-200 max. volts
D-C PLATE CURRENT	80 max.	80 max. ma.
D-C GRID CURRENT	20 max.	20 max. ma.
PLATE INPUT	75 max.	50 max. watts
PLATE DISSIPATION	40 max.	30 max. watts

#, ▲, *; See end of tabulation.



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8025-A

U-H-F TRANSMITTING TRIODE

(continued from preceding page)

Typical Operation:

D-C Plate Voltage	1000	volts	
D-C Grid Voltage ^o	{ -90 volts 6400 ohms 1400 ohms		
Peak R-F Grid Voltage		130	volts
D-C Plate Current		50	ma.
D-C Grid Current*	14 approx.	ma.	
Driving Power*	1.6 approx.	watts	
Power Output	35 approx.	watts	

** The filament is center-tapped and the center lead is brought out to the No. 3 pin. With this design, it is possible to minimize the effect of filament lead inductance by connecting all three filament leads in parallel through r-f by-pass capacitors. The center-lead of this parallel connection should not be returned directly to the center-tap of the filament-transformer winding or to ground, although it may be by-passed to either of these points if desired.

▲ CCS = Continuous Commercial Service; ICAS = Intermittent Commercial and Amateur Service.

* Subject to wide variations as explained on sheet TUBE RATINGS in General Section.

^o Obtained from fixed supply, or grid resistor (6400), or by cathode resistor (1400). When the 8025-A 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 1000 volts a fixed bias of at least -40 volts should be used.

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

The 8025-A may be operated with maximum ratings at frequencies up to 500 megacycles, but as the frequency is raised, the efficiency and power output fall off. At 600 megacycles an efficiency of about 35% can be expected. Since the efficiency at 600 megacycles is relatively low, the plate of the 8025-A has been designed to have an unusually high dissipation rating.

Data on operating frequencies for the 8025-A are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

Curves for the 8025-A are the same as those for the 8012-A.

