



4-1000A

4-1000A BEAM POWER AMPLIFIER

FORCED-AIR COOLED

GENERAL DATA

Electrical:

Filament, Thoriated Tungsten:

Voltage 7.5 $\pm$ 5% ac or dc volts

Current 21 amp

Mu-Factor, Grid No.2 to

Grid No.1 7

Transconductance for plate
volts = 2500, grid-No.2 volts
= 500, and plate ma. = 30010000 μ mos

Direct Interelectrode Capacitances:

Grid No.1 to Plate* 0.24 μ mfInput 27.2 μ mfOutput 7.6 μ mf

Mechanical:

Mounting Position Vertical, base up or down

Overall Length 9-1/4" $\pm$ 3/8"Seated Length 8-3/8" $\pm$ 3/8"

Maximum Diameter 5-1/4"

Cap Skirted Medium

Base Special Ventilated Metal-Shell 5-Pin

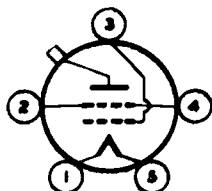
Socket Eimac 4-1000A Air-System Socket, or equivalent

BOTTOM VIEW

Pin 1 - Filament

Pin 2 - Grid No.2

Pin 3 - Grid No.1



Pin 4 - Grid No.2

Pin 5 - Filament

Cap - Plate

Air Flow:

Through Base—A sufficient air flow should be provided to keep the base-seal temperature below its specified maximum value. The air should enter through the socket, cool the base pins, flow through the base, and then be directed along the bulb envelope.

To Plate Seal—Adequate air should be circulated around the envelope and plate seal to keep the temperature of the latter below its specified maximum value.

Base-Seal Temperature 150 max. $^{\circ}$ CPlate-Seal Temperature 200 max. $^{\circ}$ C

Plate Heat-Dissipating Connector Eimac HR-8, or equivalent

AF POWER AMPLIFIER & MODULATOR--Class AB₁†

Maximum CCS* Ratings, Absolute Values:

DC PLATE VOLTAGE 6000 max. volts

* Without external shielding and with base sleeve grounded.

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

•: See next page.

OCT. 1, 1953

TUBE DEPARTMENT

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

4-1000A



4-1000A

POWER TETRODE

DC GRID-No.2 (SCREEN) VOLTAGE	1000 max.	volts
MAX.-SIGNAL DC PLATE CURRENT**	700 max.	ma
PLATE DISSIPATION**	1000 max.	watts
GRID-No.2 DISSIPATION**	75 max.	watts

Typical Operation:

Values are for 2 tubes

DC Plate Voltage	4000	5000	6000	volts
DC Grid-No.2 Voltage	1000	1000	1000	volts
DC Grid-No.1 (Control-Grid) Voltage	-115	-125	-135	volts
Peak AF Grid-No.1-to- Grid-No.1 Voltage	230	250	270	volts
Zero-Sig. DC Plate Current	300	240	200	ma
Max.-Sig. DC Plate Current	1050	1000	950	ma
Zero-Sig. DC Grid-No.2 Cur.	0	0	0	ma
Max.-Sig. DC Grid-No.2 Cur.	60	60	64	ma
Effective Load Resistance (Plate to plate)	7000	10000	14000	ohms
Max.-Signal Driving Power (Approx.)	0	0	0	watts
Max.-Signal Power Output (Approx.)	2340	3100	3840	watts

Maximum Circuit Values:

DC Resistance in Series with Grid No.1 of Each Tube	0.25 max.	megohm
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AF POWER AMPLIFIER & MODULATOR--Class AB₂#

Maximum CCS* Ratings, Absolute Values:

DC PLATE VOLTAGE	6000 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE	1000 max.	volts
MAX.-SIGNAL DC PLATE CURRENT**	700 max.	ma
PLATE DISSIPATION**	1000 max.	watts
GRID-No.2 DISSIPATION**	75 max.	watts

Typical Operation:

Values are for 2 tubes

DC Plate Voltage	4000	5000	6000	volts
DC Grid-No.2 Voltage	500	500	500	volts
DC Grid-No.1 (Control-Grid) Voltage	-60	-70	-75	volts
Peak AF Grid-No.1-to- Grid-No.1 Voltage	280	290	260	volts
Zero-Sig. DC Plate Current	300	200	150	ma
Max.-Sig. DC Plate Current	1200	1100	950	ma

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

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

●: See next page.

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TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA 1



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4-1000A

POWER TETRODE

Zero-Sig. DC Grid-No.2 Cur.	0	0	0	ma
Max.-Sig. DC Grid-No.2 Cur.	95	90	65	ma
Effective Load Resistance (Plate to plate)	7000	11000	15000	ohms
Max.-Signal Driving Power (Approx.)	11	11	9.4	watts
Max.-Signal Power Output (Approx.)	3000	3800	3900	watts

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:

	Up to 30 Mc	From 30 to 110 Mc	
DC PLATE VOLTAGE	5500 max.	5000 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE	1000 max.	1000 max.	volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE	-500 max.	-500 max.	volts
DC PLATE CURRENT	600 max.	600 max.	ma
PLATE DISSIPATION	670 max.	670 max.	watts
GRID-No.2 DISSIPATION	75 max.	75 max.	watts
GRID-No.1 DISSIPATION	25 max.	25 max.	watts

Typical Operation up to 30 Mc:

DC Plate Voltage	5500	volts
DC Grid-No.2 Voltage (Modulated 100%)	500	volts
DC Grid-No.1 Voltage	-200	volts
Peak AF Grid-No.2 Voltage (For 100% modulation)	250	volts
Peak RF Grid-No.1 Voltage	325	volts
DC Plate Current	600	ma
DC Grid-No.2 Current	105	ma
DC Grid-No.1 Current (Approx.)	28	ma
Driving Power (Approx.)	9	watts
Power Output (Approx.)	2630	watts

Typical Operation from 30 to 110 Mc:

DC Plate Voltage	3000	4000	5000	volts
DC Grid-No.2 Voltage (Modulated 100%)	500	500	500	volts
DC Grid-No.1 Voltage	-200	-200	-200	volts
Peak AF Grid-No.2 Voltage (For 100% modulation)	250	250	250	volts
Peak RF Grid-No.1 Voltage	340	335	335	volts
DC Plate Current	600	600	600	ma
DC Grid-No.2 Current	145	132	130	ma
DC Grid-No.1 Current (Approx.)	36	33	33	ma

* See next page.

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TENTATIVE DATA 2

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

4-1000A



4-1000A

POWER TETRODE

Driving Power (Approx.)●	12	11	11	watts
Power Output (Approx.)	1390	1910	2440	watts

RF POWER AMPLIFIER & OSC.--Class C Telegraphy[□] and RF POWER AMPLIFIER--Class C FM Telephony

Maximum CCS* Ratings, Absolute Values:

	Up to 110 Mc			
DC PLATE VOLTAGE	6000 max.			volts
DC GRID-No.2 (SCREEN) VOLTAGE	1000 max.			volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE	-500 max.			volts
DC PLATE CURRENT	700 max.			ma
DC PLATE DISSIPATION	1000 max.			watts
DC GRID-No.2 DISSIPATION	75 max.			watts
DC GRID-No.1 DISSIPATION	25 max.			watts

Typical Operation up to 110 Mc--Single Tube:

DC Plate Voltage	3000	4000	5000	6000	volts
DC Grid-No.2 Voltage	500	500	500	500	volts
DC Grid-No.1 Voltage	-150	-150	-200	-200	volts
Peak RF Grid-No.1 Voltage	290	290	355	350	volts
DC Plate Current	700	700	700	700	ma
DC Grid-No.2 Current	146	137	147	140	ma
DC Grid-No.1 Current (Approx.)	38	39	45	42	ma
Driving Power (Approx.)●	11	12	16	15	watts
Power Output (Approx.)	1430	2100	2810	3400	watts

Typical Operation at 110 Mc--Two Tubes in Push-Pull Circuit:

DC Plate Voltage	4000	5000	6000	volts
DC Grid-No.2 Voltage	450	500	500	volts
DC Grid-No.1 Voltage	-150	-160	-180	volts
DC Plate Current	1150	1250	1250	ma
DC Grid-No.2 Current	280	240	250	ma
DC Grid-No.1 Current	80	80	100	ma
Driver Power Output (Approx.) [↓]	350	400	400	watts
Useful Power Output (Approx.) ^{↓↓}	3000	4200	5200	watts

● Continuous Commercial Service.

● The values of required driving power increase above 30 Mc. At 110 Mc, the driver should be capable of providing 200 watts per tube to supply feed-through power, circuit losses and radiation losses.

□ 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.

↓ Indicated values include power required by a practical resonant circuit and by the tube.

↓↓ Indicated values of useful power are measured in load circuit.

OCT. 1, 1953

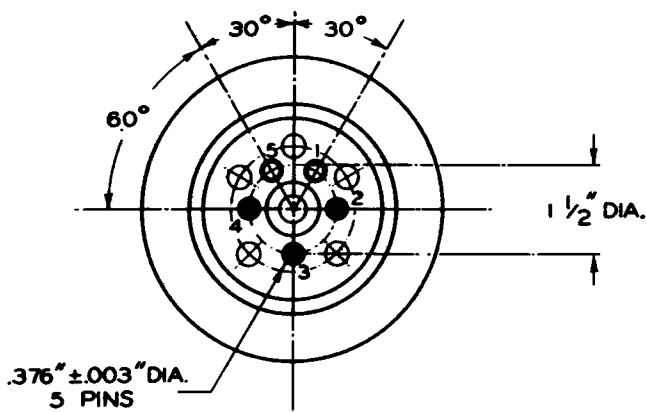
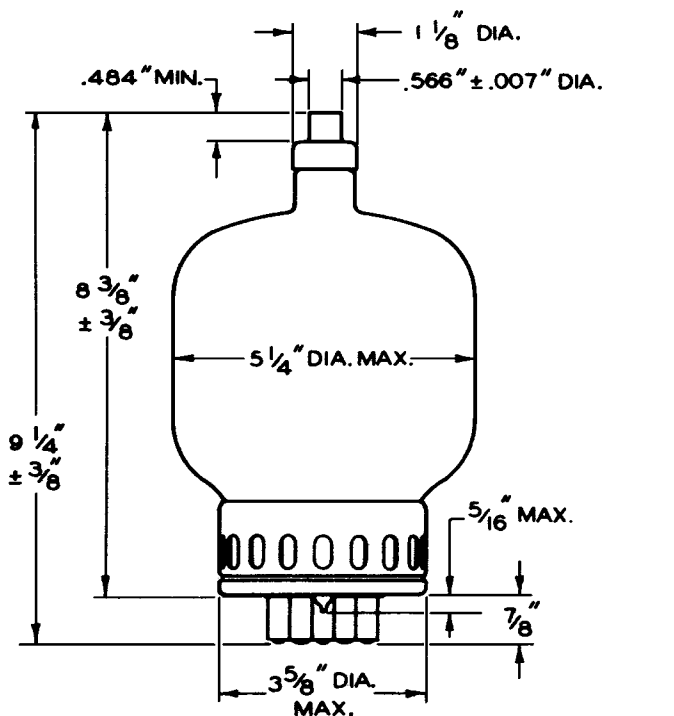
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RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA 2



4-1000A

4-1000A POWER TETRODE



BOTTOM VIEW

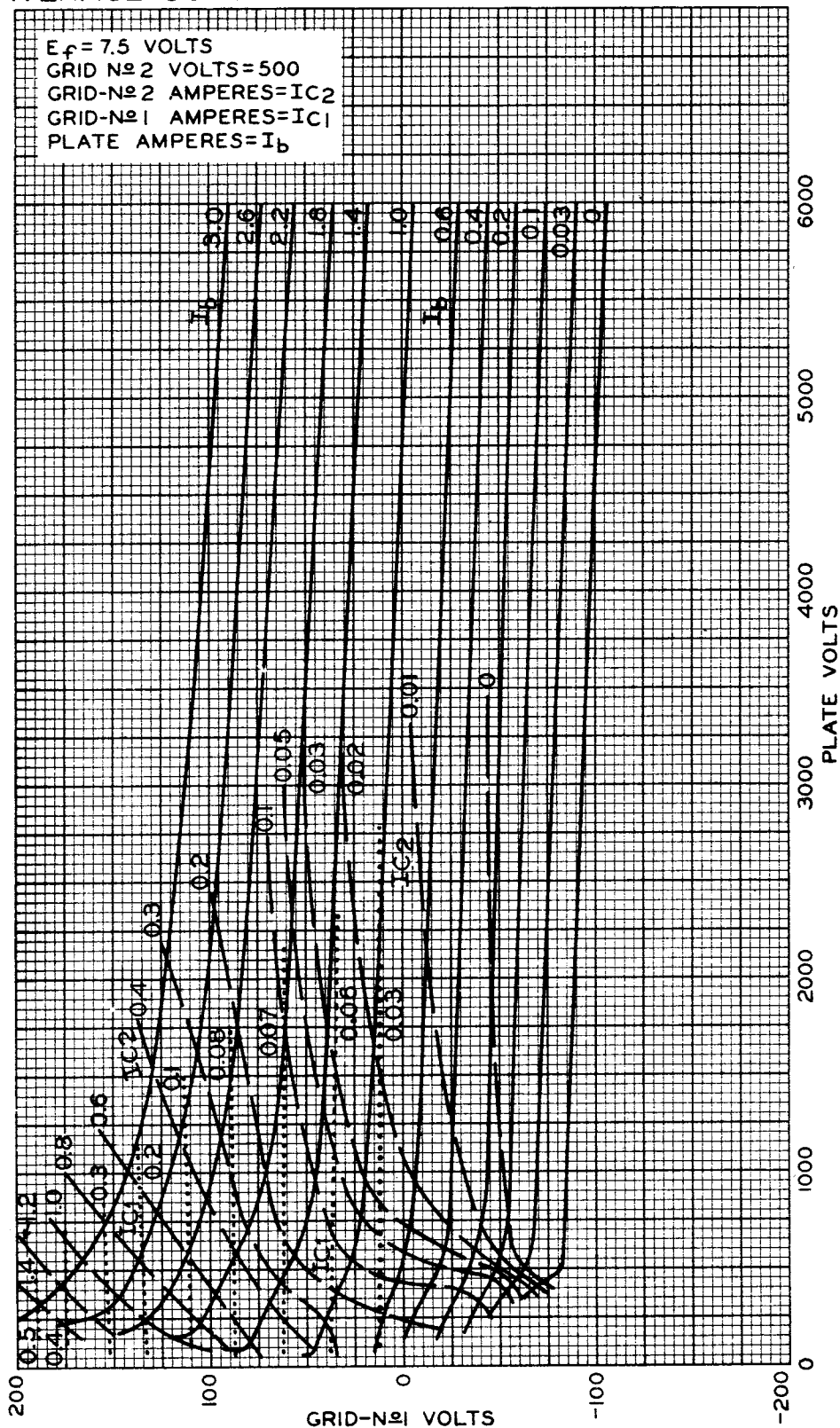
92CM-7930

4-1000A



4-1000A

AVERAGE CONSTANT-CURRENT CHARACTERISTICS



FEB. 10, 1953

 TUBE DEPARTMENT
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7921