



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 planeOverall Length $6\frac{1}{2}'' \pm \frac{5}{32}''$ Seated Length. $5\frac{7}{8}'' \pm \frac{5}{32}''$ Maximum Diameter $2\frac{7}{16}''$

Bulb ST-19

Cap. Medium, with Insulating Collar

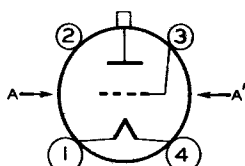
Base Medium-Shell Small 4-Pin Micanol, Bayonet

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:**

	CCS*	ICAS**	
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.

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JUNE 15, 1948

TUBE DEPARTMENT

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

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
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA 1



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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

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	160 max.	ma
DC GRID CURRENT.	32 max.	ma
PLATE INPUT [§]	175 max.	watts
PLATE DISSIPATION.	45 max.	watts

Typical Operation:

DC Plate Voltage	1125	..	volts
Grid Resistor*	2200	..	ohms
DC Plate Current	125	..	ma
DC Grid Current (Approx.)	30	..	ma
Driving Power (Approx.) ^{§§}	5	..	watts
Power Output (Approx.)	135	..	watts

● 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.

Δ obtained from a fixed supply, by grid resistor (3000, 4000) or by cath-resistor (530, 590).

□, ▲, §, §§: See next page.

← Indicates a change.

MARCH 1, 1951

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TENTATIVE DATA 2

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

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812-A POWER TRIODE

□ 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.

● 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.

§ Power input to plate is 1.23 times the product of DC Plate Voltage and DC Plate Current.

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

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.

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

	<i>Note</i>	<i>Min.</i>	<i>Max.</i>	
Filament Current	1	3.75	4.25	amp
Amplification Factor	1,2	26	32	
Grid-Plate Capacitance	-	4.8	6.2	μmf
Grid-Filament Capacitance	-	4.4	6.4	μmf
Plate-Filament Capacitance	-	0.58	0.96	μmf
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 $3500 \pm 10\%$ ohms and frequency of 15 Mc.

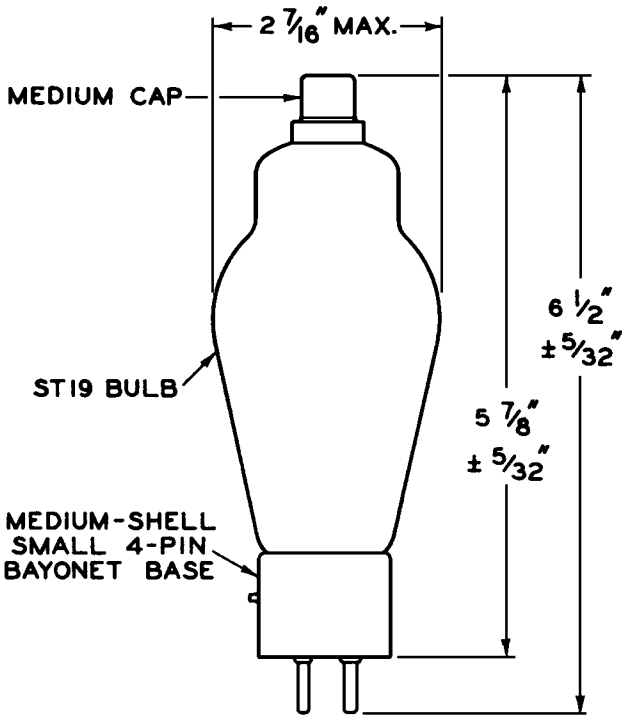
Data on operating frequencies for the 812-A are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY



812-A

POWER TRIODE

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92CS-6905

812-A



812-A

AVERAGE PLATE CHARACTERISTICS

$E_f = 6.3$ VOLTS DC

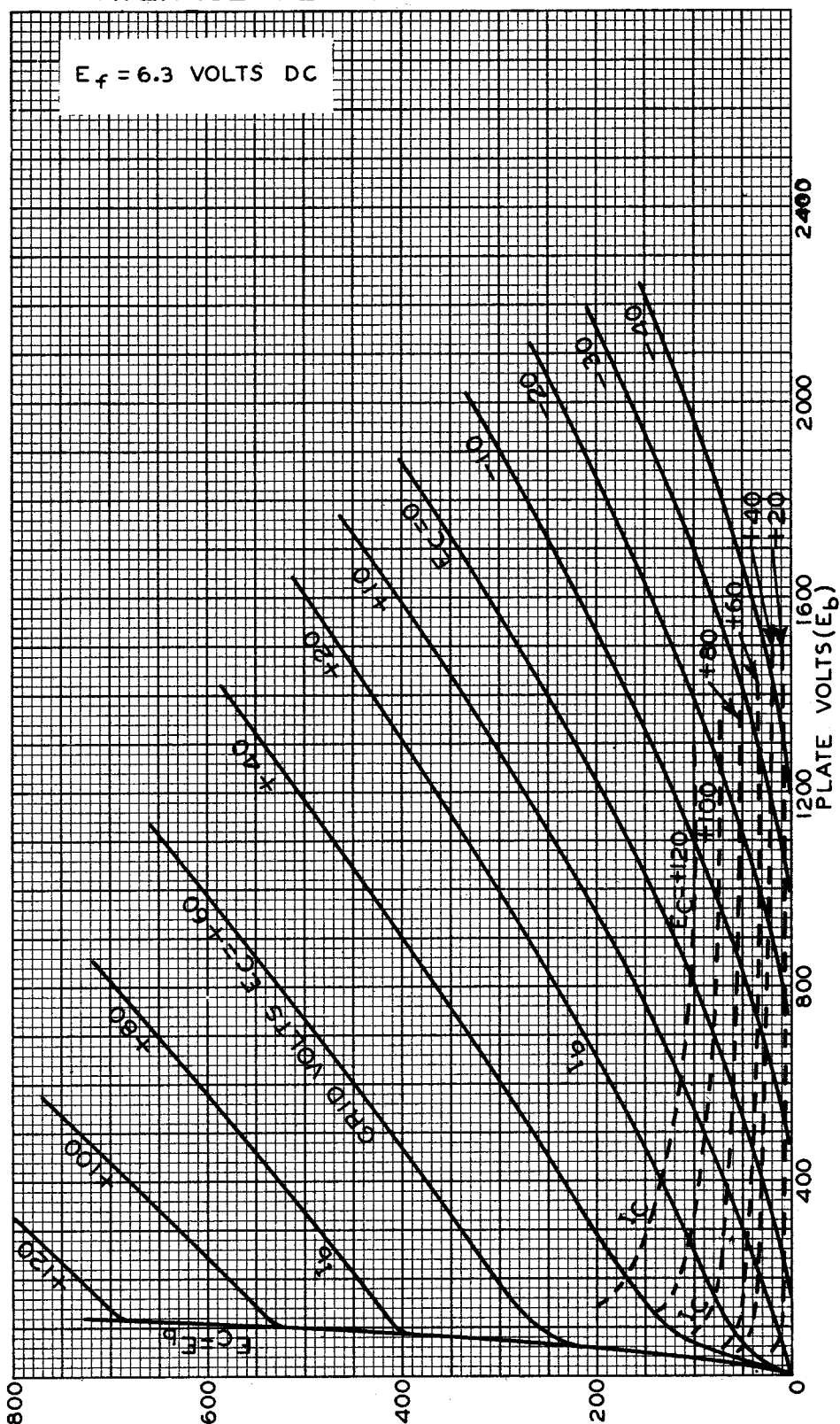


PLATE (I_b) OR GRID (I_c) MILLIAMPERES

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92CM-6074 RI

MAY 13, 1948

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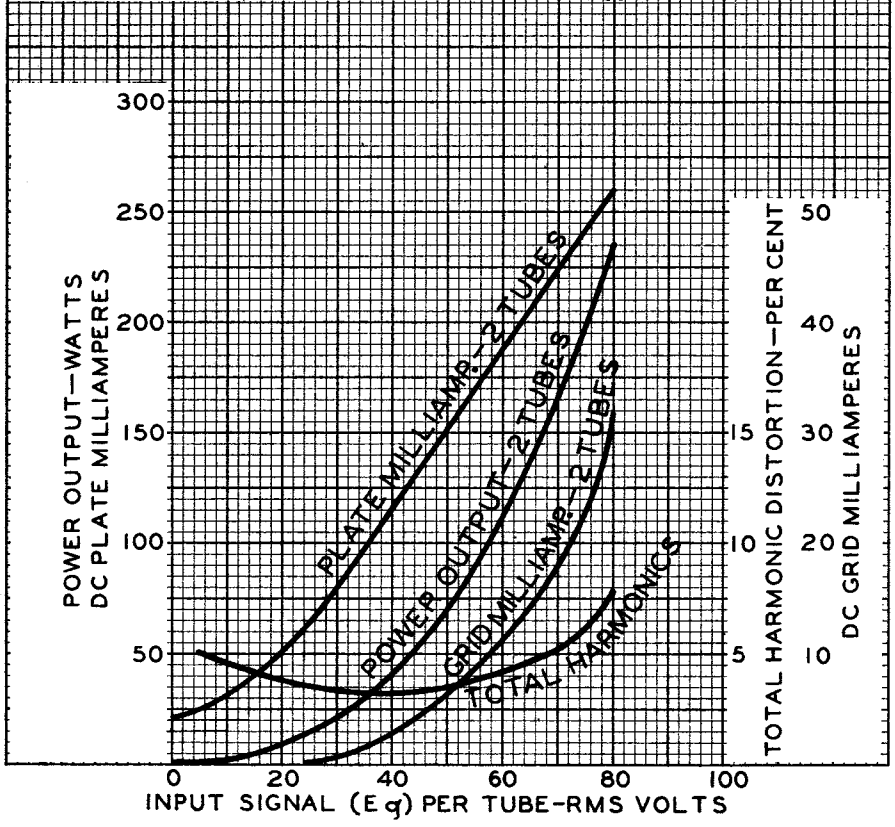
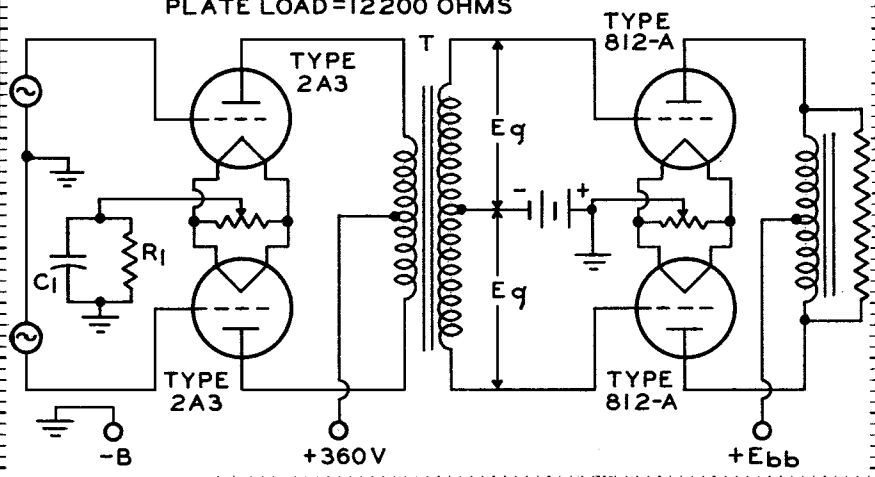


812-A

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=12200 OHMS



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812-A

OPERATION CHARACTERISTICS

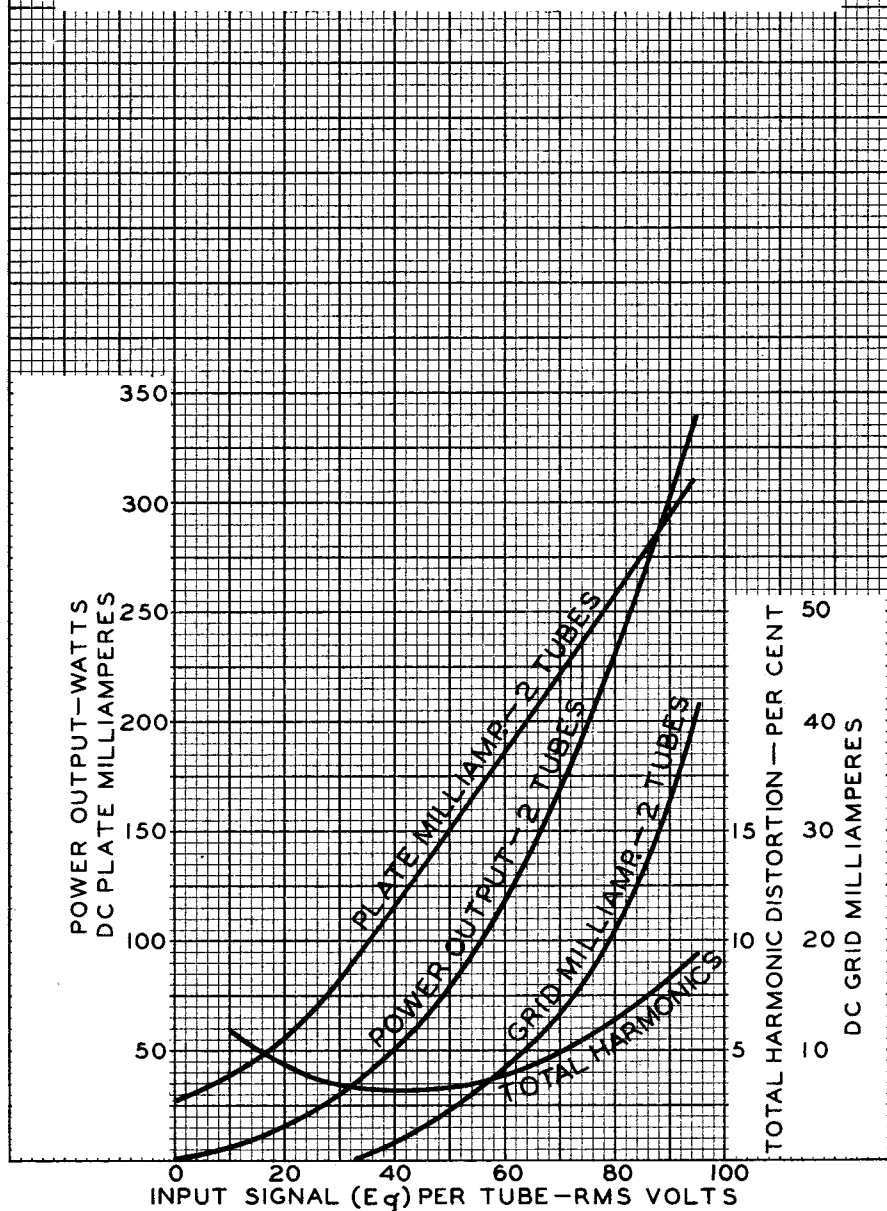
$E_f = 6.3$ VOLTS AC FOR 812-A's & 2.5 VOLTS AC FOR 2A3's
CIRCUIT ARRANGEMENT: SAME AS ON DWG. 92CM-6938
UNDER TYPE 812-A

INPUT: CLASS AB₁—TWO TYPE 2A3's; PLATE-SUPPLY
VOLTS=360; CATHODE-BIAS RESISTOR (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})=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