



7C24

7C24

POWER TRIODE

FORCED-AIR COOLED, GROUND-GRID TYPE

GENERAL DATA**Electrical:**

Filament, Thoriated-Tungsten:

Voltage. 12.6 $\pm$ 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.):

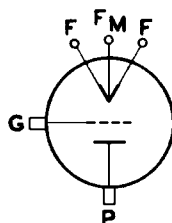
Grid to Plate. 18.5 μ fGrid to Filament 19 μ fPlate to Filament. 0.5 μ f**Mechanical:**

Terminal Connections:

F - Filament

FM - Filament

Mid-Tap

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

Mounting Position. Vertical, filament end up or down

Maximum Overall Length (Excluding flexible leads). . . 7-1/8"

Diameter 4-5/8" $\pm$ 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. 1.2 1.6 2.0 kw

Min. Air Flow. . . 110 190 275 cfm

Static Pressure. . 0.3 0.7 1.5 in. of water

To Heater 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. $^{\circ}$ CRadiator Temperature (Measured on the core at end away from incoming air). . . 180 max. $^{\circ}$ CBulb Temperature (At hottest part) 150 max. $^{\circ}$ C

Seal Temperature:

Filament 175 max. $^{\circ}$ CGrid and Plate 150 max. $^{\circ}$ C**Components:**

Air Jacket RCA Type No. 229F1

← Indicates a change.

MAY 1, 1951

TUBE DEPARTMENT

DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

7C24



POWER TRIODE

Air Manifold RCA Type No. 230F1
 Bracelet RCA Type No. 231F1

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# 5.5 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. -200 . . volts
 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. 3.3 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.)^{□▲} 50 . . watts
 Power Output (Approx.) 1.0 . . 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

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 required driving power.

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

•, °: See next page.

→ Indicates a change.

MAY 1, 1951

TUBE DEPARTMENT
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA 1



7C24

POWER TRIODE

7C24

DC PLATE CURRENT	1.0 max.	amp
DC GRID CURRENT	0.3 max.	amp
PLATE INPUT	3.75 max.	kw ←
PLATE DISSIPATION	1.3 max.	kw

Typical Operation in Grounded-Filament Circuit:

DC Plate Voltage	4000	volts
DC Grid Voltage:		
<i>from a fixed supply of</i>	-350	volts
<i>from a grid resistor of</i>	1400	ohms
Peak RF Grid Voltage	570	volts
DC Plate Current	0.8	amp
DC Grid Current (Approx.) ^o	0.25	amp
Driving Power (Approx.) ^o	130	watts
Power Output (Approx.)	2.6	kw

RF POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy*Key-down conditions per tube without amplitude modulation[■]***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	5.5 max.	kw ←
PLATE DISSIPATION	2 max.	kw

Typical Operation in Grounded-Filament 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 of</i>	230	310	ohms
Peak RF Grid Voltage	650	650	volts
DC Plate Current	1.25	1.0	amp
DC Grid Current (Approx.) ^o	0.275	0.275	amp
Driving Power (Approx.) ^o	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

[•] Continuous Commercial Service.^o For effect of load resistance on grid current and driving power, refer to TUBE RATINGS—Grid Current and Driving Power in the 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.

← Indicates a change.

7C24



7C24

POWER TRIODE

RF POWER AMPLIFIER - Class C FM Telephony

Maximum CCS[®] Ratings and Typical Operation in Grounded-Grid Circuit
are the same as for

RF POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

	Note	Min.	Max.	
Filament Current	1	27	31	amp
Amplification Factor	1,2	25	33	
Grid-Plate Capacitance	-	16.5	20.5	μf
Grid-Filament Capacitance. .	-	15.5	22.5	μf
Plate-Filament Capacitance .	-	0.38	0.62	μf

NOTE 1: With 12.6 volts ac on filament.

NOTE 2: With dc grid voltage of -25 volts and dc plate voltage adjusted to give dc plate current of 0.5 amp.

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

→ Indicates a change.

MAY 1, 1951

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

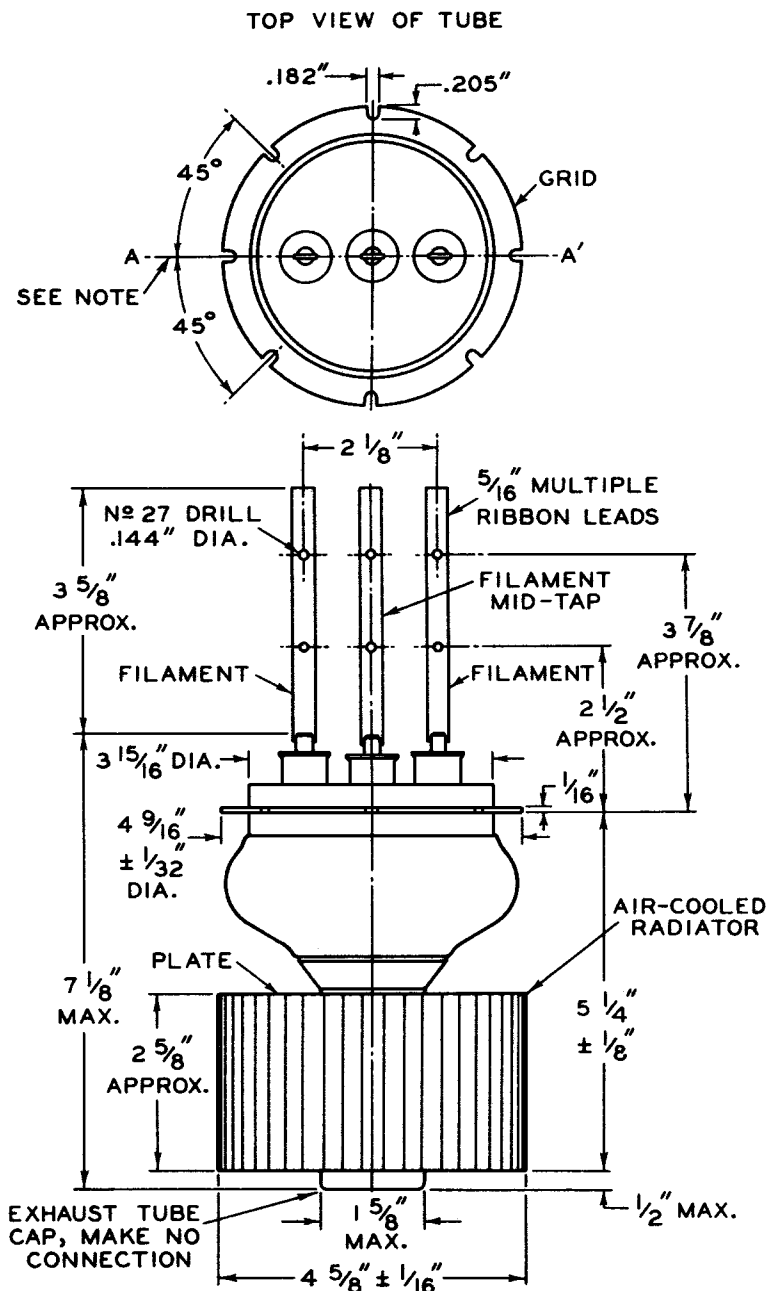
DATA 2



7C24

POWER TRIODE

7C24



NOTE: PLANE OF FILAMENT LEADS WILL NOT DEVIATE MORE THAN $3-1/2^\circ$ FROM PLANE PASSING THROUGH AA' NORMAL TO GRID FLANGE.

92CM-6606R1

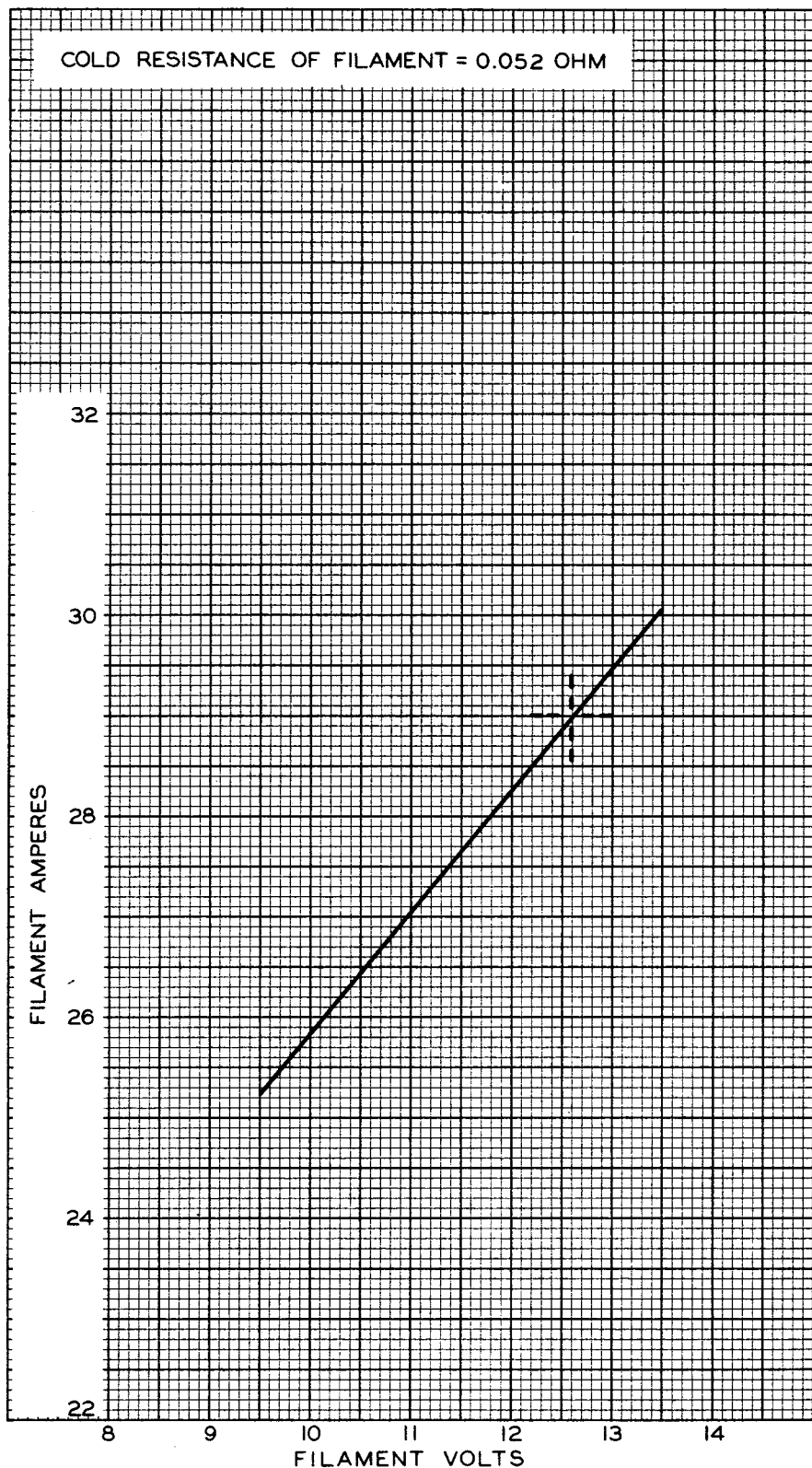
7C24



7C24

AVERAGE FILAMENT CHARACTERISTIC

COLD RESISTANCE OF FILAMENT = 0.052 OHM



APRIL 30, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6648 RI



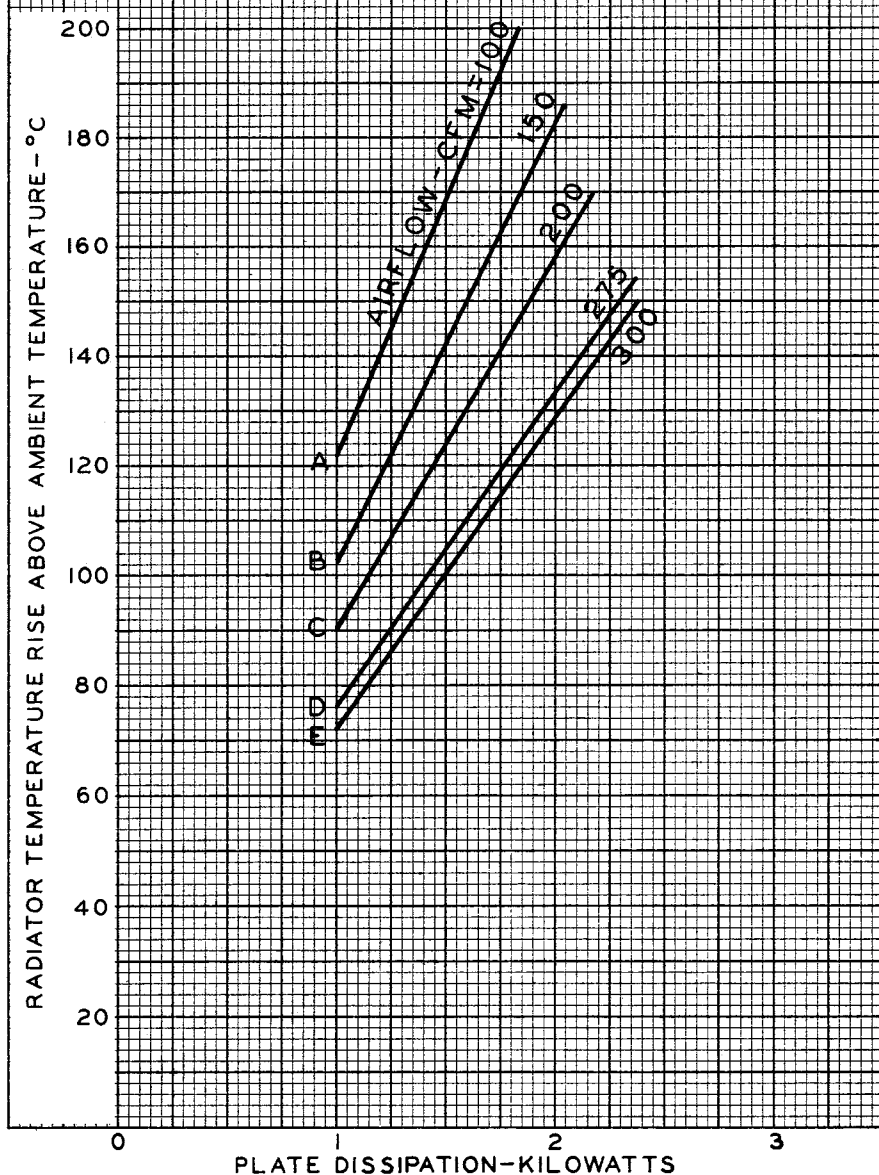
7C24

7C24

COOLING REQUIREMENTS

 $E_f = 12.6$ VOLTSMAXIMUM 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 No 103*NATIONAL ASSOCIATION OF FAN MFRS.,
GENERAL MOTORS BLDG., DETROIT, MICH.

FEB. 4, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

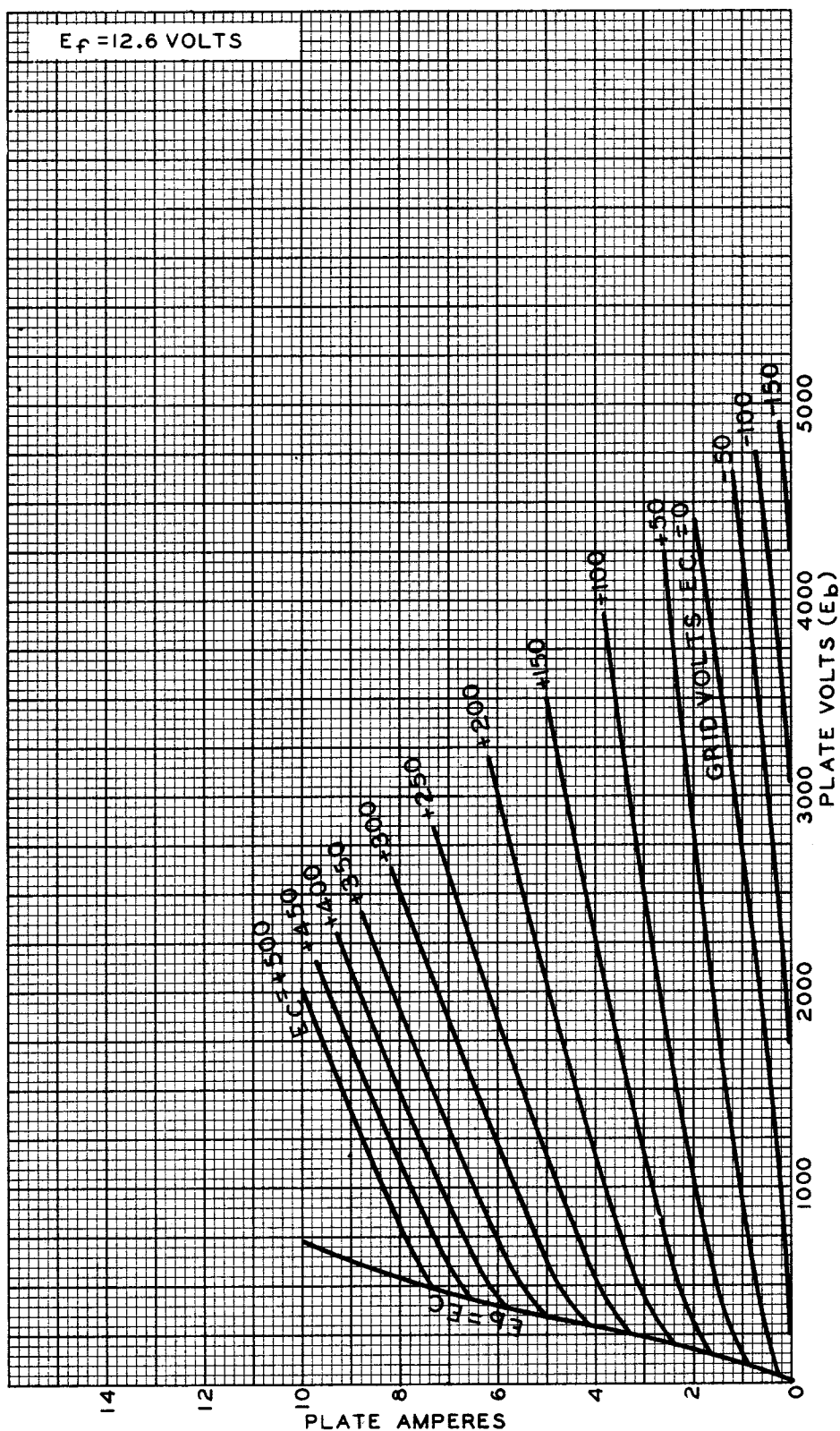
92CM-6646RI

7C24



7C24

AVERAGE PLATE CHARACTERISTICS



FEB. 14, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

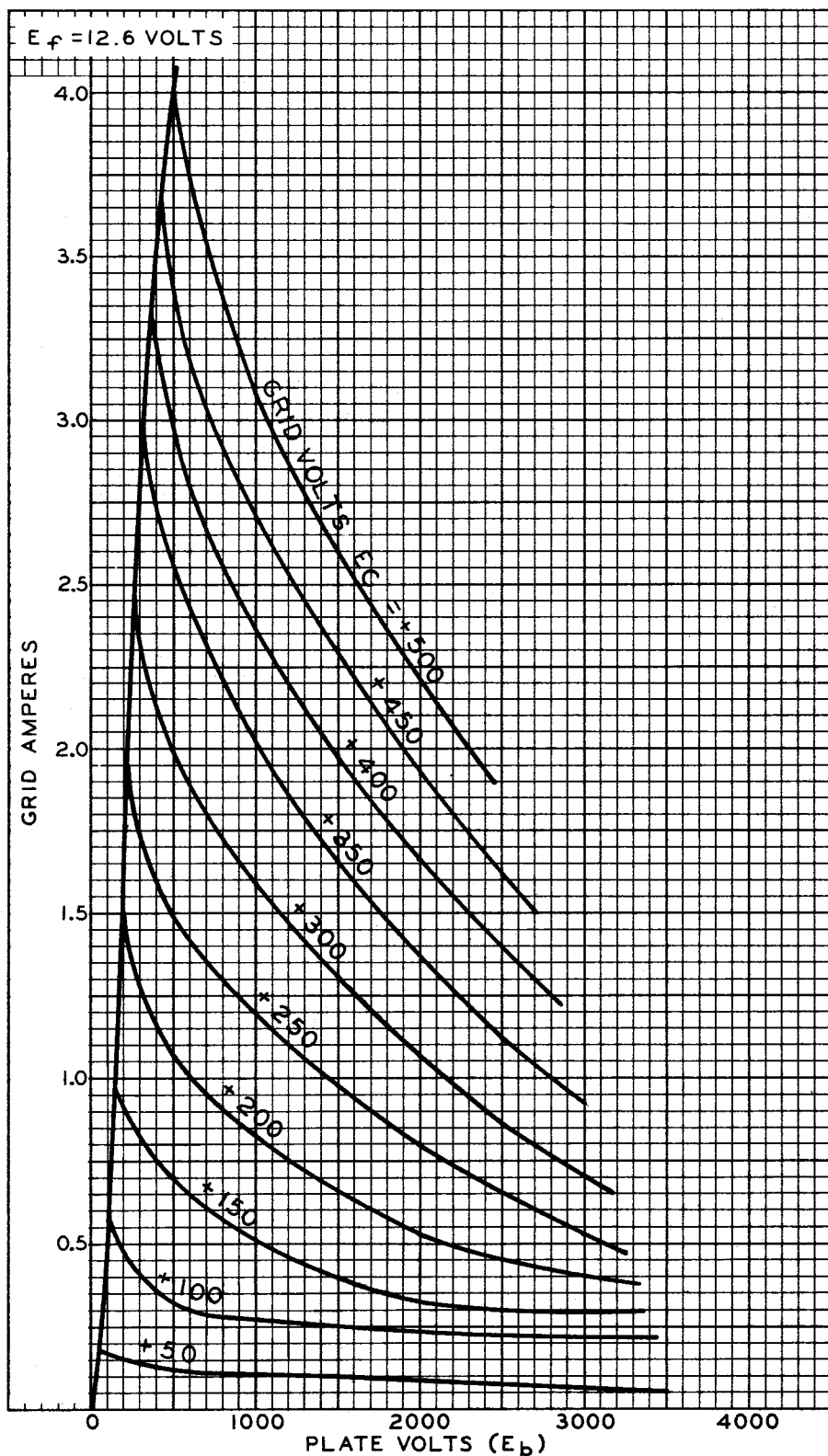
92CM-6647RI



7C24

7C24

TYPICAL GRID CHARACTERISTICS



FEB. 13, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

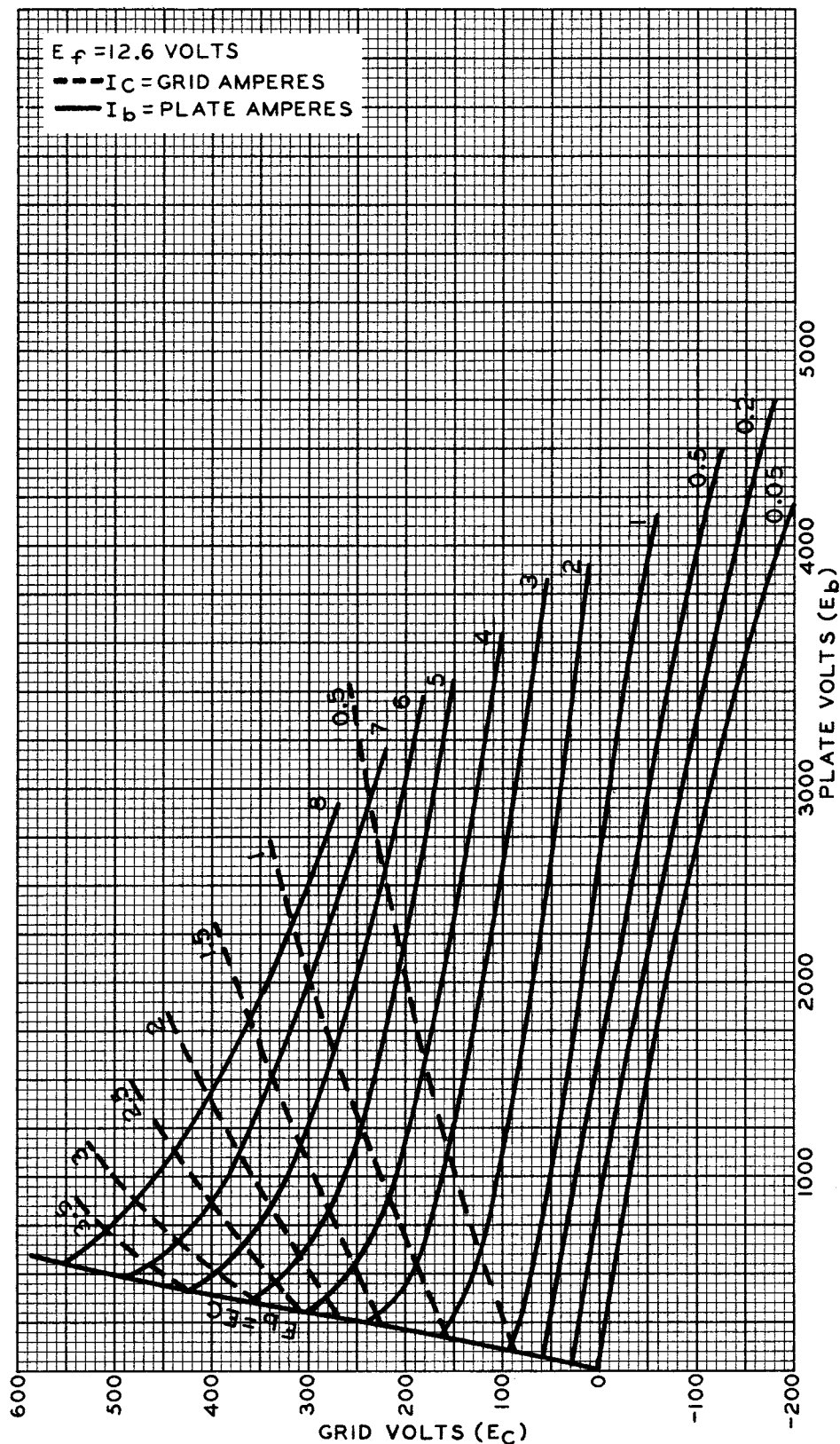
92CM-6645RI

7C24



7C24

AVERAGE CONSTANT-CURRENT CHARACTERISTICS



FEB. 10, 1947

 TUBE DEPARTMENT
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6666RI