



# POWER TRIODE

WATER COOLED

## GENERAL DATA

### Electrical:

Filament, Tungsten: Two-Section Type  
 Excitation . . . . . Single- or Two-Phase AC, or DC  
*See FILAMENT CONNECTIONS and EXCITATION CIRCUITS. When a single-phase or dc supply is used, do not connect the two filament sections in parallel. Doing so will over-heat common filament lead (large terminal) and damage tube.*

Voltage per Section. . . . . 11 . . . . . volts

Current. . . . . 60 . . . . . amp

Starting Current: The filament current should never exceed 120 amperes, even momentarily.

Cold Resistance. . . . . 0.031 . . . . . 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 . . . . . 8.5

### Direct Interelectrode Capacitances (Approx.):

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

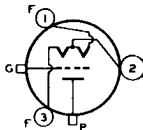
Grid to Filament . . . . . 19 . . . . .  $\mu\text{f}$

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

### Mechanical:

#### Terminal Connections:

- Term. 1 - Filament
- Term. 2 - Junction of Filament Sections, Base Shell



- Term. 3 - Filament
- G - Grid (Side Arm)
- P - Water-Cooled Plate Terminal

Mounting Position. . . . . Vertical, Filament End Up

Maximum Overall Length . . . . . 20-7/8"

Maximum Radius . . . . . 6-1/2"

Water Flow . . . . . 3 to 8 gpm

The specified water flow must start before the application of any voltages, and may be removed simultaneously with the removal of all voltages. The pressure in the jacket must not exceed 80 lbs per square inch.

Outlet Water Temperature . . . . . 70 max. °C

Bulb Temperature . . . . . 150 max. °C

### Components:

Water Jacket (Includes one gasket) . . . . . RCA MI-7415

Gasket (For Spare) . . . . . RCA MI-7440

Filament Connector (2 required). . . . . RCA MI-7422-A

Filament-Section Junction Connector. . . . . RCA MI-7432

Filament Terminal Block. . . . . RCA MI-19422-7

Grid Connector . . . . . RCA MI-7422-A

Mounting Insulator . . . . . RCA MI-7424

### AF POWER AMPLIFIER & MODULATOR - Class B

### Maximum CCS\* Ratings, Absolute Values:

DC PLATE VOLTAGE . . . . . 15000 max. volts

\* See next page.

← Indicates a change.



**POWER TRIODE**

MAX.—SIGNAL DC PLATE CURRENT* . . . . .	2.0 max.	amp
MAX.—SIGNAL PLATE INPUT* . . . . .	20000 max.	watts
PLATE DISSIPATION* . . . . .	5000 max.	watts

► **Typical Operation:**

*Values are for 2 tubes*

DC Plate Voltage . . . . .	6000	10000	12500	volts
DC Grid Voltage. . . . .	-630	-1100	-1450	volts
Peak AF Grid-to-Grid Volt. . . . .	2060	3060	3760	volts
Zero-Sig. DC Plate Current . . . . .	0.5	0.5	0.4	amp
Max.—Sig. DC Plate Current . . . . .	2.5	2.4	2.5	amp
Effective Load Resistance (Plate to plate). . . . .	5000	10000	12000	ohms
Max.—Signal Driving Power (Approx.)# . . . . .	110	225	245	watts
Max.—Signal Power Output (Approx.) . . . . .	8000	16000	22000	watts

**RF POWER AMPLIFIER & OSCILLATOR—Class C Telegraphy**

*Key-down conditions per tube without amplitude modulation##*

**Maximum CCS\* Ratings, Absolute Values:**

DC PLATE VOLTAGE . . . . .	12000 max.	volts
DC GRID VOLTAGE. . . . .	-3000 max.	volts
DC PLATE CURRENT . . . . .	2 max.	amp
DC GRID CURRENT. . . . .	0.15 max.	amp
PLATE INPUT. . . . .	18000 max.	watts
PLATE DISSIPATION. . . . .	6000 max.	watts

► **Typical Operation:**

DC Plate Voltage . . . . .	8000	10000	volts
DC Grid Voltage. . . . .	-1800	-2000	volts
From a grid resistor of. . . . .	20000	14300	ohms
From a cathode resistor of . . . . .	1450	1360	ohms
Peak RF Grid Voltage . . . . .	2400	2700	volts
DC Plate Current . . . . .	1.15	1.33	amp
DC Grid Current (Approx.) <sup>o</sup> . . . . .	0.09	0.14	amp
Driving Power (Approx.) <sup>o</sup> . . . . .	215	375	watts
Power Output (Approx.) . . . . .	6500	10000	watts

\* 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 required driving power.

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

<sup>o</sup> 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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## POWER TRIODE

## CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

	<u>Note</u>	<u>Min.</u>	<u>Max.</u>	
Filament Current . . . . .	1	57	62	amp
Amplification Factor . . . . .	1,2	7.6	9.4	
Grid-Plate Capacitance . . . . .	-	24	31	$\mu\text{mf}$
Grid-Filament Capacitance. . . . .	-	15	23	$\mu\text{mf}$
Plate-Filament Capacitance . . . . .	-	1	3	$\mu\text{mf}$
Plate Voltage. . . . .	1,3	1600	2200	volts
Plate Voltage. . . . .	1,4	9500	11500	volts
Grid Voltage . . . . .	1,5	-1500	-1850	volts
Grid Voltage . . . . .	1,6	-	875	volts
Peak Cathode Current . . . . .	7	9	-	amp
Grid Current . . . . .	1,6	-	1.5	amp
Useful Power Output. . . . .	1,8	12000	-	watts

Note 1: With 22 volts ac on filament connected for single-phase operation.

Note 2: With dc grid voltage of -500 volts and dc plate voltage adjusted to give dc plate current of 0.75 amp.

Note 3: With dc grid voltage of 0 volts, and dc plate voltage adjusted to give dc plate current of 0.75 amp.

Note 4: With dc grid voltage of -1000 volts, and dc plate voltage adjusted to give dc plate current of 0.75 amp.

Note 5: With dc plate voltage of 12000 volts, and dc grid voltage adjusted to give dc plate current of 20 ma.

Note 6: With dc plate voltage of 1500 volts, and instantaneous grid voltage adjusted to give instantaneous plate current of 6.0 amp.

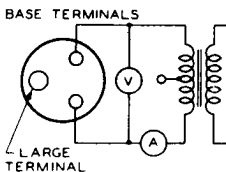
Note 7: Represents the maximum usable cathode current (plate current and grid current) for the tube under any condition of operation.

Note 8: With dc plate voltage of 12000 volts, dc plate current of 1.5 amp., dc grid current of 0.10 amp., grid resistor of 19000  $\pm$  10% ohms, and frequency of 1.5 megacycles/second.

Data on operating frequencies for the 891 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY

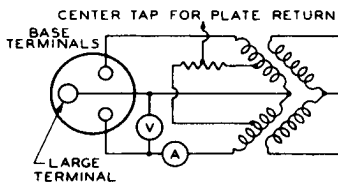
# FILAMENT CONNECTIONS AND EXCITATION CIRCUITS

WITH SINGLE-PHASE  
A-C EXCITATION



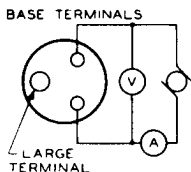
V = 22 VOLTS  
A = 60 AMPERES

WITH TWO-PHASE  
(QUARTER PHASE)  
A-C EXCITATION



V = 11 VOLTS  
A = 60 AMPERES

WITH D-C  
EXCITATION



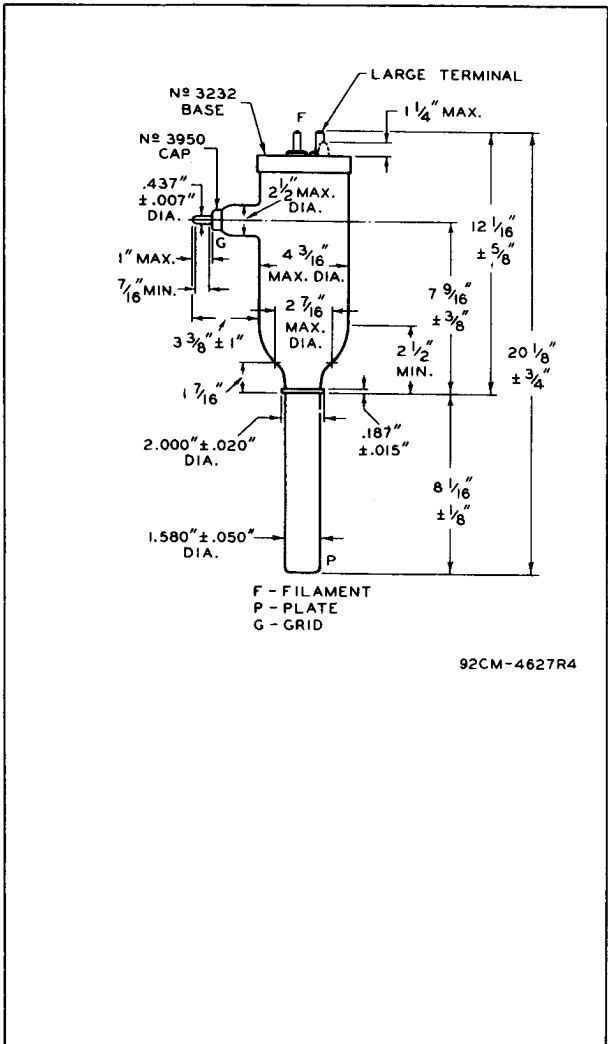
V = 22 VOLTS  
A = 60 AMPERES



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# POWER TRIODE



FEB. 1, 1950

TUBE DEPARTMENT  
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

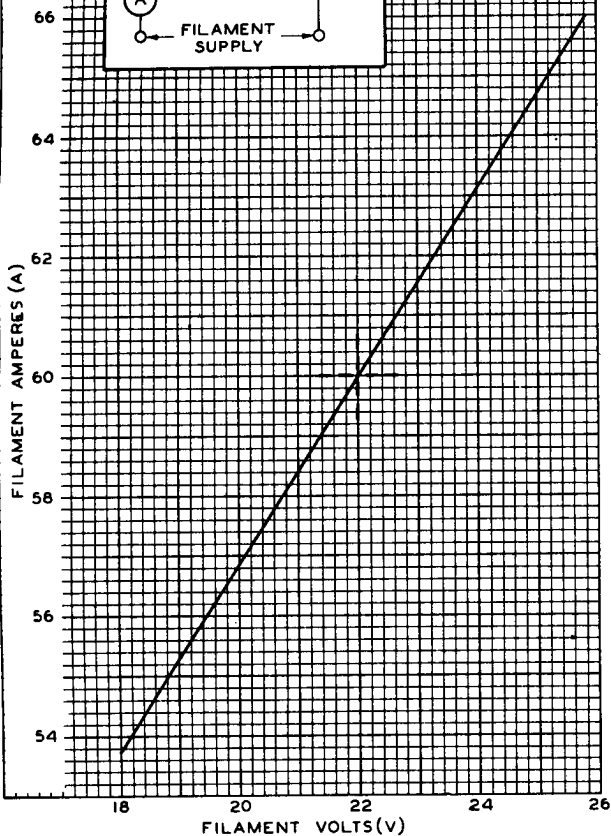
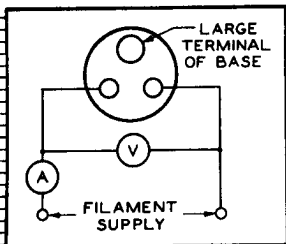
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## AVERAGE FILAMENT CHARACTERISTIC

COLD RESISTANCE OF FILAMENT = 0.031 OHM

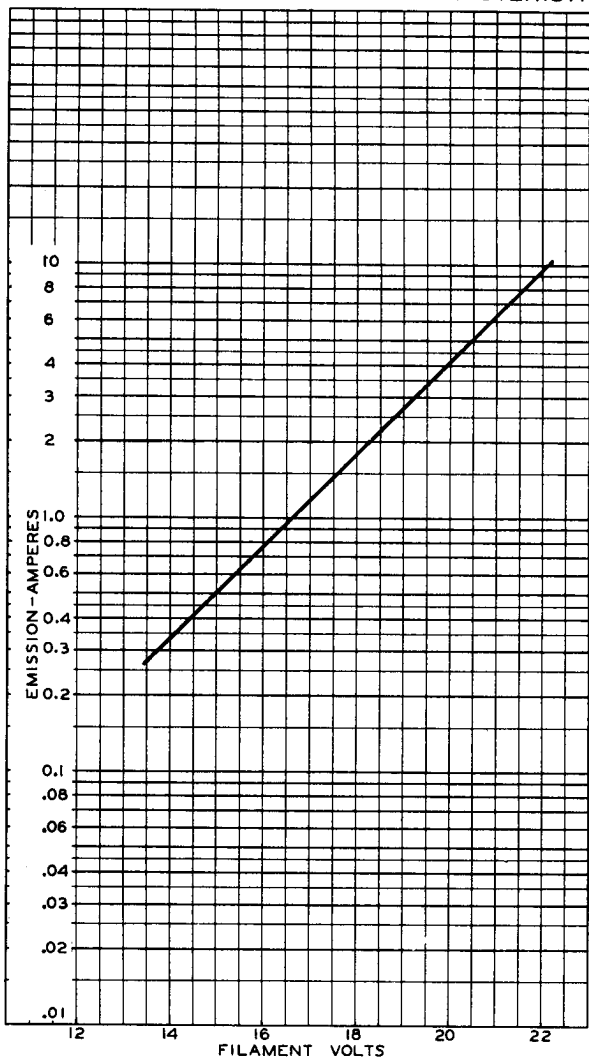




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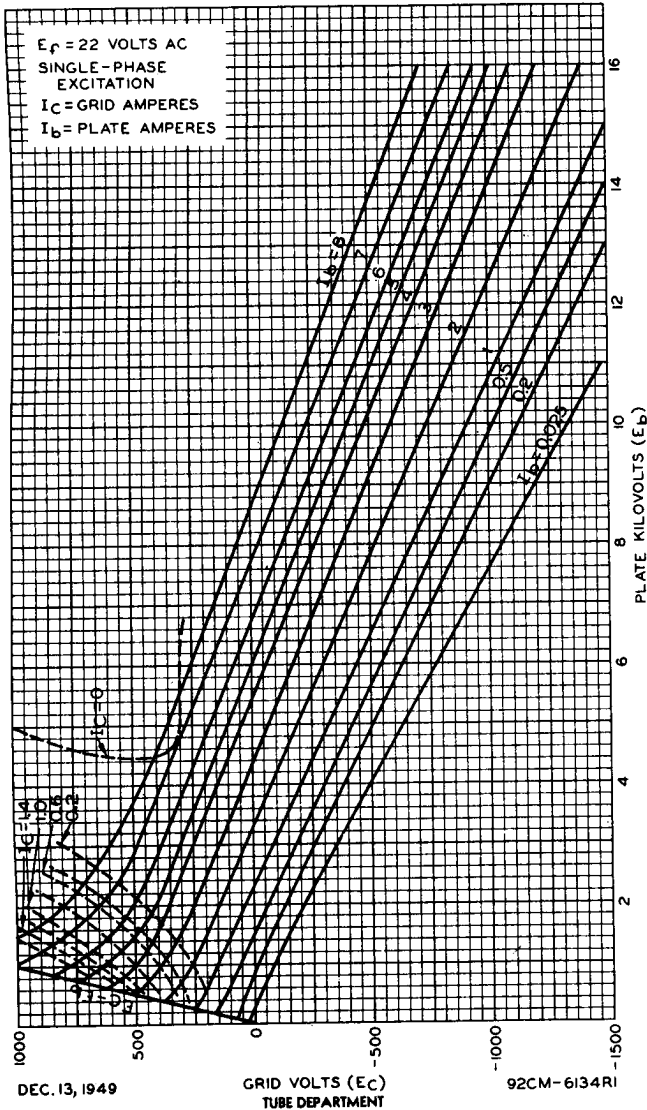
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### AVERAGE FILAMENT-EMISSION CHARACTERISTIC





## AVERAGE CONSTANT-CURRENT CHARACTERISTICS



DEC. 13, 1949

 GRID VOLTS ( $E_c$ )  
 TUBE DEPARTMENT

92CM-6134RI



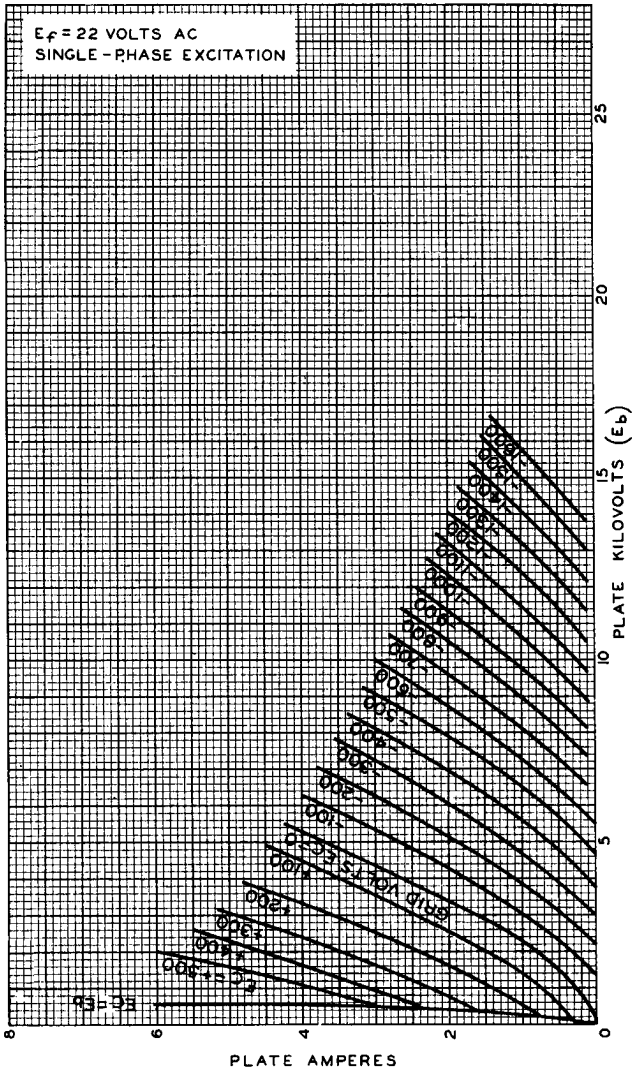


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# AVERAGE PLATE CHARACTERISTICS

$E_f = 22$  VOLTS AC  
SINGLE-PHASE EXCITATION





## TYPICAL GRID CHARACTERISTICS

