



891-R

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# POWER TRIODE

FORCED-AIR COOLED

## GENERAL DATA

### Electrical:

Filament, Tungsten: Two-Section Type

Excitation . . . . . Single- or Two-Phase AC, or DC  
See *FILAMENT CONNECTIONS* and *EXCITATION CIRCUITS* under Type 891. When a single-phase or dc supply is used, do not connect the two filament sections in parallel. Doing so will overheat 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. . . . . 28 . . . . .  $\mu\mu\text{f}$

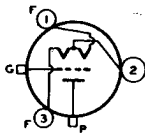
Grid to Filament . . . . . 19 . . . . .  $\mu\mu\text{f}$

Plate to Filament. . . . . 2.5 . . . . .  $\mu\mu\text{f}$

### Mechanical:

Terminal Connections:

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



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

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

Maximum Overall Length . . . . . 22"

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

Radiator . . . . . Integral Part of Tube

### Air Flow:

**Through Radiator** - The specified air flow for various values of plate dissipation as indicated below should be delivered by a blower before and during the application of any voltages. Filament power, plate power, and air may be removed simultaneously.

Plate Dissipation . . . . . 2400 3200 4000 . . . . . watts

Air Flow . . . . . 300 380 450 . . . . . cfm

Static Pressure. . . . . 0.20 0.36 0.5 inches of water

Incoming Air Temperature . . . . . 45 max. °C

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

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

### Components:

Air Jacket . . . . . RCA MI-19422-A

Air Manifold . . . . . RCA MI-27017-A

Bracelet (For canvas boot) . . . . . RCA MI-27016-A

← Indicates a change.

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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

## AF POWER AMPLIFIER &amp; MODULATOR - Class B

## Maximum CCS\* Ratings, Absolute Values:

DC PLATE VOLTAGE . . . . .	10000 max.	volts
MAX.-SIGNAL DC PLATE CURRENT* . . . . .	2 max.	amp
MAX.-SIGNAL PLATE INPUT* . . . . .	10500 max.	watts
PLATE DISSIPATION* . . . . .	3500 max.	watts

## → Typical Operation:

Values are for 2 tubes

DC Plate Voltage . . . . .	6000	8000	volts
DC Grid Voltage. . . . .	-630	-860	volts
Peak AF Grid-to-Grid Voltage . . . . .	2060	2260	volts
Zero-Signal DC Plate Current . . . . .	0.5	0.5	amp
Max.-Signal DC Plate Current . . . . .	2.5	2.1	amp
Effective Load Resistance (Plate to plate). . . . .	5000	8000	ohms
Max.-Signal Driving Power (Approx.)# . . . . .	110	50	watts
Max.-Signal Power Output (Approx.) . . . . .	8000	10000	watts

## RF POWER AMPLIFIER &amp; OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without amplitude modulation##

## Maximum CCS\* Ratings, Absolute Values:

DC PLATE VOLTAGE . . . . .	10000 max.	volts
DC GRID VOLTAGE. . . . .	-3000 max.	volts
DC PLATE CURRENT . . . . .	2 max.	amp
DC GRID CURRENT. . . . .	0.15 max.	amp
PLATE INPUT. . . . .	15000 max.	watts
PLATE DISSIPATION. . . . .	4000 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 . . . . .	1460	1360	ohms
Peak RF Grid Voltage . . . . .	2400	2700	volts
DC Plate Current . . . . .	1.14	1.33	amp

\* 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.

→ Indicates a change.

FEB. 1, 1950

TUBE DEPARTMENT  
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

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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

<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.

## CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

	Note	Min.	Max.	
Filament Current . . . . .	1	57	62	amp
Amplification Factor . . . . .	1,2	7.6	9.4	
Grid-Plate Capacitance . . . . .	-	25	32	μf
Grid-Filament Capacitance. . . . .	-	15	23	μf
Plate-Filament Capacitance . . . . .	-	1.5	3.5	μf
Plate Voltage. . . . .	1,3	1200	1750	volts
Plate Voltage. . . . .	1,4	8800	10800	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	10000	-	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 0.45 amp.

Note 3: With dc grid voltage of 0 volts, and dc plate voltage adjusted to give dc plate current of 0.45 amp.

Note 4: With dc grid voltage of -1000 volts, and dc plate voltage adjusted to give dc plate current of 0.45 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 10000 volts, dc plate current of 1.4 amp., dc grid current of 0.10 amp., grid resistor of 19000 ± 10% ohms, and frequency of 1.5 megacycles/second.

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

Average Filament-Emission Characteristic Curve,  
Average Filament Characteristic Curve,  
and

Average Characteristic Curves

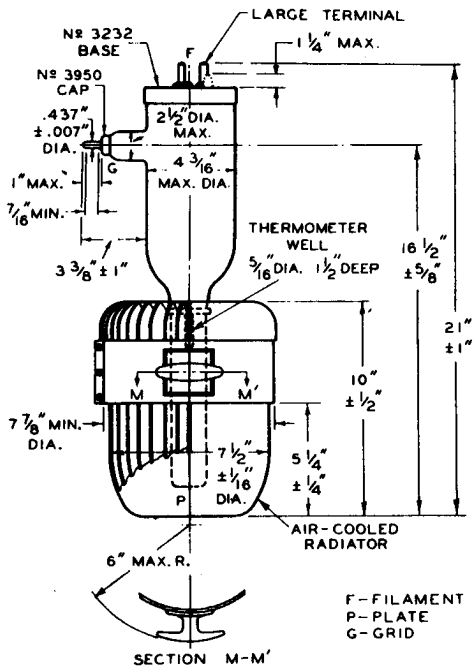
are the same as shown for Type 891

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F - FILAMENT  
 P - PLATE  
 G - GRID

92CM-4790R4