891-R

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 ←

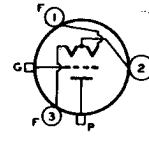
NOTE: This tube can often be operated with reduced filament voltage as explained on sheet TYPES OF CATHODES in the General Section.

Amplification Factor . . .	8.5	←
Direct Interelectrode Capacitances (Approx.):		←
Grid to Plate.	28	μμf
Grid to Filament	19	μμf
Plate to Filament. . . .	2.5	μμf

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 & 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 & 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.

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DC Grid Current (Approx.)°	0.09	0.14	amp
Driving Power (Approx.)°	215	375	watts
Power Output (Approx.)	6500	10000	watts

° 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	μμf
Grid-Filament Capacitance	–	15	23	μμf
Plate-Filament Capacitance	–	1.5	3.5	μμf
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

RCA

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