



ELECTRONIC TUBE REFERENCE

19RP11

Power - Pentode Single (NOT beam) (under 10W) electronic tube

CONSOLIDATED TECHNICAL
DATA

1 SECTION
CONSTRUCTION
PENTODE

Long-life power pentode for professional wire-communications power-amplifier service.

GENERAL CHARACTERISTICS

BASE DESIGNATION	E9-1	BASE PINS	9
NOMINAL HEATER	19 V / 200 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Pentode	
PLATE RESISTANCE	25000 Ω
TRANSCONDUCTANCE	0.0055 S
MAXIMUM PLATE VOLTAGE	275 V
MAXIMUM SCREEN VOLTAGE	165 V
MAXIMUM PLATE DISSIPATION	8.2 W
MAXIMUM SCREEN DISSIPATION	1.9 W
MAXIMUM CATHODE CURRENT	55 mA

19RP11 — Long-Life Miniature Power Pentode

The **19RP11** (also designated as **19R-P11**) is a long-life, miniature power pentode designed primarily for use as a power amplifier in wire communication equipment. It features a compact physical design and is optimized for continuous-duty applications where high reliability is required. Due to its specialized long-life design, the tube is not suitable for applications where the circuit is frequently switched on and off.

Mechanical Design and Pinout

The 19RP11 is constructed in a T6 1/2 glass bulb envelope and utilizes an E9-1 Small Button Noval 9-pin base. The tube is designed to operate reliably in any mounting position, providing flexibility in physical equipment layouts.

The pin connections are arranged to provide dual connections for certain electrodes, which can assist in circuit layout and thermal management. Specifically, the control grid (Grid No. 1) is accessible on two separate pins, and the cathode, which is internally tied to the suppressor grid (Grid No. 3), is also brought out to two separate pins.

The physical pinout configuration, viewed from the bottom of the base, is detailed below:

Pin Number	Connection
Pin 1	Grid No. 1 (G1)
Pin 2	No Connection (NC)
Pin 3	Cathode, Grid No. 3 (K, G3)
Pin 4	Heater (H)
Pin 5	Heater (H)
Pin 6	Plate (P)
Pin 7	Grid No. 2 (G2)
Pin 8	Cathode, Grid No. 3 (K, G3)
Pin 9	Grid No. 1 (G1)

Heater and Capacitance Characteristics

The 19RP11 is equipped with an indirectly heated cathode. The heater is designed for operation at a nominal voltage of 19.0 V and a nominal current of 0.2 A.

Heater Specifications

- **Heater Voltage:** 19.0 V
- **Heater Current:** 0.2 A
- **Calculated Heater Power:** 3.8 W (calculated as 19.0 V * 0.2 A)

Direct Interelectrode Capacitances

The tube's internal capacitances influence its high-frequency performance and stability. The direct interelectrode capacitances are specified as follows:

- **Grid No. 1 to Plate (maximum):** 0.15 pF (measured with an external shield)

- **Input Capacitance:** 9.5 pF (measured without an external shield)
- **Output Capacitance:** 5.5 pF (measured without an external shield)

Typical Operating Conditions

Under typical Class A1 amplifier operating conditions, the 19RP11 operates with moderate electrode voltages to balance power output and service life. A typical operating point is defined by the following parameters:

- **Plate Voltage:** 120 V
- **Grid No. 2 (Screen Grid) Voltage:** 120 V
- **Grid No. 1 (Control Grid) Voltage:** -7 V
- **Plate Current:** 35 mA
- **Grid No. 2 Current:** 7.5 mA
- **Transconductance:** 5,500 μ mhos (micromhos)
- **Plate Resistance (Approximate):** 25 k Ω

Calculated Operating Values

From these typical operating parameters, several circuit-level values can be calculated:

- **Total Cathode Current:** 42.5 mA (calculated as the sum of typical plate current and screen grid current: 35 mA + 7.5 mA)
- **Typical Plate Dissipation:** 4.2 W (calculated as 120 V * 35 mA)
- **Typical Grid No. 2 Dissipation:** 0.9 W (calculated as 120 V * 7.5 mA)

These typical operating dissipations remain well within the absolute maximum limits established for the device, ensuring the long-life characteristics of the tube are maintained during standard operation.

Absolute Maximum Ratings

The absolute maximum ratings represent the physical limits beyond which the serviceability and life of the 19RP11 may be severely impaired. These ratings must not be exceeded under any operating conditions.

Parameter	Absolute Maximum Value
Plate Voltage	275 V
Grid No. 2 Voltage	165 V
Plate Dissipation	8.2 W
Grid No. 2 Dissipation	1.9 W
Total Cathode Current	55 mA

Parameter	Absolute Maximum Value
Peak Heater-Cathode Voltage (Heater negative with respect to cathode)	100 V
Peak Heater-Cathode Voltage (Heater positive with respect to cathode)	100 V

Technical Summary

The **19RP11** is a specialized, long-life miniature power pentode housed in a T6 1/2 envelope with a 9-pin Noval base. Designed for wire communication equipment, it provides reliable power amplification under continuous-duty conditions, provided that frequent on-off power cycling is avoided. With a 19.0 V, 0.2 A heater, a transconductance of 5,500 μ mhos, and a maximum plate dissipation rating of 8.2 W, the 19RP11 offers robust performance in stable, long-term amplifier installations.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1963 Hitachi

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1963 HITACHI

Section 1 · Pentode

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Interelectrode capacitances published	1	See source table