

ELECTRONIC TUBE REFERENCE

CONSOLIDATED TECHNICAL DATA
2 SECTIONS
CONSTRUCTION
PENTODE-TRIODE

11KV8

Power - Pentode (NOT beam) electronic tube

Miniature triode-pentode for television voltage amplification, sync separation, sound IF, and video output. Its pentode section uses frame-grid construction for high-transconductance wideband output service.

GENERAL CHARACTERISTICS

BASE DESIGNATION	9DX	BASE PINS	9
NOMINAL HEATER	10.9 V / 450 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Dissimilar

9DX - TERMINAL PINOUT

TERMINAL	SECTION	ELEMENT	STATUS
PIN1 – 2K	B	K – Cathode	CONNECTED
PIN2 – 2G1	B	G1 – Control Grid	CONNECTED
PIN3 – 2P	B	P – Plate (Anode)	CONNECTED
PIN4 – H	–	H – Heater	CONNECTED
PIN5 – H	–	H – Heater	CONNECTED
PIN6 – 1G3	A	G3 – Suppressor Grid	CONNECTED
PIN6 – IS	A	IS – Internal Screen	CONNECTED
PIN6 – 1K	A	K – Cathode	CONNECTED
PIN7 – 1G1	A	G1 – Control Grid	CONNECTED
PIN8 – 1G2	A	G2 – Screen Grid	CONNECTED
PIN9 – 1P	A	P – Plate (Anode)	CONNECTED

SECTION RATINGS

SECTION1 Triode	
PLATE RESISTANCE	20000 Ω
TRANSCONDUCTANCE	0.004 S
AMPLIFICATION FACTOR	100
MAXIMUM PLATE VOLTAGE	300 V
MAXIMUM PLATE DISSIPATION	2 W
<i>high-mu</i>	

SECTION2 Pentode	
PLATE RESISTANCE	75000 Ω
TRANSCONDUCTANCE	0.023 S
MAXIMUM PLATE VOLTAGE	300 V
MAXIMUM SCREEN VOLTAGE	300 V
MAXIMUM PLATE DISSIPATION	5 W
MAXIMUM SCREEN DISSIPATION	1 W
<i>sharp-cutoff</i>	

11KV8 — High-Mu Triode and Sharp-Cutoff Pentode

The **11KV8** is a miniature multi-unit vacuum tube containing a high-mu triode and a sharp-cutoff pentode within a single envelope. Designed primarily for use in black-and-white television receivers, the tube's independent sections are tailored for distinct roles: the triode unit is designed for general-purpose voltage-amplifier, sync-separator, and sound-IF-amplifier applications, while the pentode unit features a frame-grid construction optimized for service as a video-output amplifier.

The 11KV8 is electrically identical to the [6KV8](#) except for its heater characteristics, making it suitable for series-string heater arrangements requiring controlled warm-up times.

Physical Specifications and Basing

The 11KV8 is constructed in a miniature T-6 1/2 glass envelope with a 9-pin button base (E9-1 designation). It utilizes the **9DX** basing arrangement, which provides separate connections for the triode and pentode electrodes, with the pentode's suppressor grid, cathode, and internal shield sharing a common pin.

Physical Dimensions

- **Maximum Diameter:** 0.875 inches

- **Maximum Seated Height:** 2.375 inches
- **Maximum Overall Height:** 2.625 inches
- **Outline Classification:** 6-3

Pin Connection Diagram (9DX Base)

The pin connections, viewed from the bottom of the tube base, are assigned as follows:

- **Pin 1:** Triode Grid (GT)
- **Pin 2:** Triode Cathode (KT)
- **Pin 3:** Triode Plate (PT)
- **Pin 4:** Heater (H)
- **Pin 5:** Heater (H)
- **Pin 6:** Pentode Grid No. 1 / Control Grid (G1P)
- **Pin 7:** Pentode Grid No. 3 / Suppressor Grid, Pentode Cathode, Internal Shield (G3P, KP, IS)
- **Pin 8:** Pentode Grid No. 2 / Screen Grid (G2P)
- **Pin 9:** Pentode Plate (PP)

Heater and Heater-Cathode Ratings

The 11KV8 heater is designed for series-string operation with a controlled warm-up sequence to minimize voltage surges in television receiver strings.

Parameter	Value
Heater Voltage (AC or DC)	10.9 V
Heater Current	0.450 $\pm$ 0.030 A
Average Heater Warm-up Time	11 seconds

Heater-Cathode Voltage Limits

To prevent insulation breakdown between the heater and the cathodes, the following maximum ratings must be observed:

- **Heater Negative with Respect to Cathode:** 200 V (Peak or Total DC + Peak)
- **Heater Positive with Respect to Cathode:** 100 V DC maximum, 200 V (Peak or Total DC + Peak)
- **Average Value:** 100 V maximum

Electrical Characteristics and Typical Operation

The triode section provides high voltage gain with moderate plate resistance, while the pentode section features exceptionally high transconductance (exceeding 20,000 μ mhos) due to its frame-grid design. Typical Class A operating points for both sections are detailed below:

Parameter	Triode Section	Pentode Section (Point A)	Pentode Section (Point B)
Plate Supply Voltage	200 V	125 V	200 V
Grid No. 2 (Screen) Supply Voltage	—	125 V	125 V
Grid No. 1 (Control) Supply Voltage	-2 V	0 V	0 V
Cathode-Bias Resistor	—	82 Ω	68 Ω
Amplification Factor	70	—	—
Plate Resistance (Approx.)	17,500 Ω	55,000 Ω	75,000 Ω
Transconductance	4,000 μ mhos	21,000 μ mhos	23,000 μ mhos
Plate Current	4.0 mA	16.5 mA	20.0 mA
Grid No. 2 Current	—	3.1 mA	3.5 mA
Grid No. 1 Voltage for $I_b = 100 \mu$ A (Approx.)	-4.5 V	-4.2 V	-4.2 V

Design-Maximum Ratings

The ratings below are established under the Design-Maximum Rating System. Operating the tube beyond these limits may impair its reliability and performance.

Rating	Triode Section	Pentode Section
Maximum Plate Voltage	300 V	300 V
Maximum Grid No. 2 Supply Voltage	—	300 V
Maximum Grid No. 2 Voltage	—	See Rating Chart
Maximum Positive Grid No. 1 Voltage	0 V	0 V
Maximum Plate Dissipation	1.0 W	5.0 W
Maximum Grid No. 2 Dissipation (up to 150 V)	—	1.1 W
Maximum Grid No. 2 Dissipation (150 V to 300 V)	—	See Rating Chart

Maximum Grid No. 1 Circuit Resistance

- **Triode Section:** 0.5 M (Fixed Bias), 1.0 M (Cathode Bias)
- **Pentode Section:** 0.1 M (Fixed Bias), 0.25 M (Cathode Bias)

Special Testing and Handling Precaution

The physical spacing between the control grid (Grid No. 1) and the cathode in the pentode section is extremely small. Because of this close spacing, testing the tube in commercial tube checkers or shorts-indicating devices requires caution. To prevent damage or false readings, the voltage applied between the control grid and cathode must not exceed **50 volts DC or peak AC**, particularly when the tube is subjected to mechanical excitation or vibration during testing.

Direct Interelectrode Capacitances

The capacitances listed below are measured without an external shield:

Triode Section

- **Grid to Plate:** 3.7 pF
- **Input (Grid to Heater + Triode Cathode + Pentode Cathode + Pentode Grid No. 3 + Internal Shield):** 2.5 pF
- **Output (Plate to Heater + Triode Cathode + Pentode Cathode + Pentode Grid No. 3 + Internal Shield):** 2.4 pF

Pentode Section

- **Grid No. 1 to Plate (Maximum):** 0.12 pF
- **Input (Grid No. 1 to Heater + Pentode Cathode + Pentode Grid No. 3 + Internal Shield + Grid No. 2):** 13 pF
- **Output (Plate to Heater + Pentode Cathode + Pentode Grid No. 3 + Internal Shield + Grid No. 2):** 4.8 pF

Inter-Section Coupling

- **Triode Grid to Pentode Plate (Maximum):** 0.015 pF
- **Pentode Plate to Triode Plate (Maximum):** 0.17 pF

Related Designations and Curves

The **11KV8** is part of a family of high-performance television receiver tubes. It shares its physical structure, electrode configuration, and electrical characteristics with the **6KV8**, differing only in its heater requirements (the **6KV8** operates at 6.3 V and 0.775 A).

For detailed graphical representations of the average plate characteristics of the triode unit, reference is made to the curves published for the **6AW8A** vacuum tube, which exhibits identical triode plate

characteristics.



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1971 RCA HB3 Binder 5 of 7

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

1971 RCA HB3 BINDER 5 OF 7

Section 1 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum Plate Voltage	300 V	Inherited from explicitly referenced 6-volt parent type
Plate Dissipation	2 W	Inherited from explicitly referenced 6-volt parent type

1971 RCA HB3 BINDER 5 OF 7

Section 2 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum Plate Voltage	300 V	Inherited from explicitly referenced 6-volt parent type
Plate Dissipation	5 W	Inherited from explicitly referenced 6-volt parent type



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1975 RCA RC30

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

1975 RCA RC30

Section 1 · Triode

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid to Plate	3.7 pF	—

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid to other electrodes	2.5 pF	—
Plate to other electrodes	2.4 pF	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate supply voltage	200 V	ClassA
Plate current	4 mA	ClassA

1975 RCA RC30

Section 2 · Pentode

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid No.1 to Plate	0.12 pF	—
Grid No.1 to other electrodes	13 pF	—
Plate to other electrodes	4.8 pF	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate supply voltage	125 V	ClassA
Screen-grid supply voltage	125 V	ClassA
Plate current	16.5 mA	ClassA
Screen-grid current	3.1 mA	ClassA

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