

ELECTRONIC TUBE REFERENCE

17JG6A

Power - TV Horizontal Output (sweep) electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
BEAMPOWER

Novar beam-power tube designed for horizontal-deflection amplification in low-B-plus television receivers, with controlled warm-up and high pulse ratings.

GENERAL CHARACTERISTICS

BASE DESIGNATION	9QU	BASE PINS	9
NOMINAL HEATER	16.8 V / 600 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

9QU - TERMINAL PINOUT

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

SECTION RATINGS

SECTION1 Beam Power	
PLATE RESISTANCE	15000 Ω
TRANSCONDUCTANCE	0.0075 S
AMPLIFICATION FACTOR	4.1
MAXIMUM PLATE VOLTAGE	770 V
MAXIMUM SCREEN VOLTAGE	220 V
MAXIMUM PLATE DISSIPATION	17.5 W
MAXIMUM SCREEN DISSIPATION	3.5 W
MAXIMUM CATHODE CURRENT	175 mA
6JG6A electrical system; heater changed by 17JG6A sheet.	

17JG6A — Beam Power Pentode

The **17JG6A** is a novar-type beam power tube designed primarily for use as a horizontal-deflection amplifier in low-B+ black-and-white television receivers operating under 525-line, 30-frame systems. It is electrically identical to the [6JG6A](#) and [22JG6A](#) except for its heater ratings and characteristics.

Mechanical Construction, Basing, and Pinout

The 17JG6A features a glass T-12 envelope with a button 9-pin (E9-88) base, requiring a standard novar 9-contact socket. The physical dimensions of the tube are as follows:

- **Maximum Diameter:** 1.563 inches
- **Maximum Seated Height:** 2.750 inches
- **Maximum Overall Height:** 3.125 inches

The tube utilizes the **9QU** basing diagram. There are minor variations in documentation regarding the assignments of Pin 1 and Pin 2; they are variously listed with Grid No. 1 and Grid No. 2 swapped. The pin connections are defined as:

Pin	Connection Option A	Connection Option B
1	Grid No. 2 (G_2)	Grid No. 1 (G_1)
2	Grid No. 1 (G_1)	Grid No. 2 (G_2)
3	Cathode (K)	Cathode (K)
4	Heater (H)	Heater (H)
5	Heater (H)	Heater (H)
6	Grid No. 3 (G_3)	Grid No. 3 (G_3)

Pin	Connection Option A	Connection Option B
7	Grid No. 2 (G_2)	Grid No. 2 (G_2)
8	Internal Connection (IC)	Internal Connection (IC)
9	Plate (P)	Plate (P)

Heater Ratings and Interelectrode Capacitances

The heater is designed for series or parallel AC/DC operation with the following specifications:

- **Heater Voltage:** 16.8 V
- **Heater Current:** 0.6 A (600 mA, with a tolerance of ± 0.040 A)
- **Average Warm-up Time:** 11 seconds

Heater-Cathode Voltage Limits

- **Peak Value:** ± 200 V max
- **Heater Negative with Respect to Cathode (Total DC and Peak):** 200 V max
- **Heater Positive with Respect to Cathode (DC):** 100 V max
- **Heater Positive with Respect to Cathode (Total DC and Peak):** 200 V max
- **Average Value:** 100 V max

Direct Interelectrode Capacitances (Unshielded)

- **Grid No. 1 to Plate:** 0.7 pF
- **Input (Grid No. 1 to Cathode, Heater, Grid No. 2, and Grid No. 3):** 22 pF
- **Output (Plate to Cathode, Heater, Grid No. 2, and Grid No. 3):** 9 pF (or 9.0 pF)

Electrical Characteristics and Operating Points

The 17JG6A can be operated in either triode or pentode configurations. Under Class A1 amplifier conditions, the typical operating points are:

Triode Connection

When Grid No. 2 is connected to the plate at the socket:

- **Plate Voltage:** 125 V
- **Grid No. 3 (Suppressor Grid):** Connected to cathode at socket
- **Grid No. 1 (Control Grid) Voltage:** -20 V
- **Amplification Factor:** 4.1

Pentode Connection

- **Condition A (Instantaneous Plate Knee Values):**

- Plate Voltage: 50 V
- Grid No. 3: Connected to cathode at socket
- Grid No. 2 Voltage: 125 V
- Grid No. 1 Voltage: 0 V
- Plate Current: 525 mA (measured via recurrent waveform to avoid exceeding maximum ratings)
- Grid No. 2 Current: 32 mA (measured via recurrent waveform)

- **Condition B (Typical Operation):**

- Plate Voltage: 130 V
- Grid No. 3: Connected to cathode at socket
- Grid No. 2 Voltage: 125 V
- Grid No. 1 Voltage: -20 V
- Plate Resistance (Approx.): 12,000 Ω
- Transconductance: 10,000 μmhos
- Plate Current: 80 mA
- Grid No. 2 Current: 2.5 mA
- Grid No. 1 Voltage for Plate Current of 1 mA (or 10 mA in some specifications): approx. -40 V

Horizontal-Deflection Service and Maximum Ratings

For horizontal-deflection amplifier service in a 525-line, 30-frame television system, the 17JG6A is rated under the Design-Maximum Rating System.

Design-Maximum Ratings

- **DC Plate Supply Voltage (Boost + DC Power Supply):** 770 V max
- **Peak Positive-Pulse Plate Voltage:** 6500 V max (pulse duration must not exceed 15% of one horizontal scanning cycle, or 10 μs)
- **Peak Negative-Pulse Plate Voltage:** 1500 V max
- **DC Grid-No. 3 Voltage:** 75 V max (a positive voltage, typically 30 V, may be applied to reduce "snivets" interference in VHF/UHF receivers)
- **DC Grid-No. 2 Voltage:** 220 V max
- **DC Grid-No. 1 Voltage (Negative-bias value):** -55 V max
- **Peak Negative-Pulse Grid-No. 1 Voltage:** 330 V max
- **Peak Cathode Current:** 950 mA max
- **Average Cathode Current:** 275 mA max
- **Plate Dissipation:** 17 W max (a bias resistor or other protective means is required to protect the tube in the absence of excitation)
- **Grid-No. 2 Input (Dissipation):** 3.5 W max
- **Bulb Temperature (at hottest point):** 220 $^{\circ}\text{C}$ to 240 $^{\circ}\text{C}$ max

Maximum Circuit Values

- **Grid-No. 1-Circuit Resistance (for grid-No. 1-resistor-bias operation in horizontal deflection):**
2.2 MΩ max
- **Grid-No. 1-Circuit Resistance (other applications):**
 - Fixed-bias operation: 0.25 MΩ max
 - Cathode-bias operation: 1.0 MΩ max

Qualitative Curve Analysis

The average plate characteristics of the 17JG6A are referenced to the type 6JF6.

- **Plate Characteristics (Grid No. 3 to Cathode, $E_{c2} = 125$ V):** Plate current (I_b) rises rapidly below 50 V plate voltage, leveling off to a flat knee. At $E_{c1}(/tubes/C1) = 0$ V, peak plate current reaches approximately 900 mA. Grid-No. 2 current (I_{c2}) peaks sharply at low plate voltages (up to ~100 mA at $E_b = 0$ V) and falls off rapidly as plate voltage increases.
- **Plate Characteristics (Grid No. 3 to Cathode, $E_{c1}(/tubes/C1) = 0$ V):** Plate current curves for various screen voltages (E_{c2} from 50 V to 175 V) show a strong, proportional upward shift in plate current capacity with higher screen voltages, exceeding 1000 mA at $E_{c2} = 175$ V.

Technical Summary

The **17JG6A** is a high-performance, novar-based beam power pentode designed for demanding horizontal-deflection amplifier applications. Featuring a 16.8 V, 0.6 A heater with a controlled 11-second warm-up time, it is optimized for series-string television receivers. The tube is capable of handling peak positive-pulse plate voltages up to 6500 V and peak cathode currents up to 950 mA. With a plate dissipation rating of 17 W and high transconductance of 10,000 μmhos, the 17JG6A provides robust and efficient operation in low-B+ television chassis.

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 · Beam Power

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	16.8 V	—
Heater current	600 mA	—
Heater warm-up time	11 s	ControlledWarmup
Maximum DC plate voltage	770 V	HorizontalDeflection
Peak positive-pulse plate voltage	6500 V	HorizontalDeflection
Maximum screen voltage	220 V	HorizontalDeflection
Average cathode current	175 mA	HorizontalDeflection
Plate dissipation	17.5 W	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	250 V	ClassA
Screen voltage	150 V	ClassA
Plate current	70 mA	ClassA
Plate resistance	15000 ohm	ClassA
Transconductance	7500 uS	ClassA

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid-to-plate capacitance	0.26 pF	—

APPLICATION		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Application	Television horizontal-deflection amplifier	—

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 · Beam Power

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater Voltage (ac/dc) 6.3 16.8	22 V	Published in approved 17JG6A target datasheet entry; Section1
Heater Current 1.6 0.6	450 mA	Published in approved 17JG6A target datasheet entry; Section1
Heater Warm-up Time (Average) 11	11 seconds	Published in approved 17JG6A target datasheet entry; Section1
DC Plate Supply Voltage	770 V	Published in approved 17JG6A target datasheet entry; Section1
Peak Positive-Pulse Plate Voltage#	6500 V	Published in approved 17JG6A target datasheet entry; Section1
Peak Negative-Pulse Plate Voltage	1500 V	Published in approved 17JG6A target datasheet entry; Section1
DC Grid-No.3 Voltage*	75 V	Published in approved 17JG6A target datasheet entry; Section1
DC Grid-No.2 Voltage	220 V	Published in approved 17JG6A target datasheet entry; Section1
DC Grid-No.1 Voltage, Negative-bias value	-55 V	Published in approved 17JG6A target datasheet entry; Section1
Peak Negative-Pulse Grid-No.1 Voltage	330 V	Published in approved 17JG6A target datasheet entry; Section1
Peak Cathode Current	950 mA	Published in approved 17JG6A target datasheet entry; Section1
Average Cathode Current	275 mA	Published in approved 17JG6A target datasheet entry; Section1
Plate Dissipation!	17 W	Published in approved 17JG6A target datasheet entry; Section1
Grid-No.2 Input	3.5 W	Published in approved 17JG6A target datasheet entry; Section1

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid-No.1-Circuit Resistance, for grid-No.1-resistor-bias operation	2.2 MΩ	Published in approved 17JG6A target datasheet entry; Section1
# Pulse duration must not exceed 15% of a horizontal scanning cycle (	10 microseconds	Published in approved 17JG6A target datasheet entry; Section1
* In ft horizontal-deflection-amplifier service, a positive voltage (typical value,	30 V	Published in approved 17JG6A target datasheet entry; Section1

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid No.1 to Plate	0.7 pF	Published in approved 17JG6A target datasheet entry; Section1
Grid No.1 to Cathode, Heater, Grid No.2, and Grid No. 3	22 pF	Published in approved 17JG6A target datasheet entry; Section1
Plate Voltage 125 60	130 V	Published in approved 17JG6A target datasheet entry; Section1
Grid-No.2 (Screen-Grid) Voltage 125	125 V	Published in approved 17JG6A target datasheet entry; Section1
Grid-No.1 (Control-Grid) Voltage -20 0	20 V	Published in approved 17JG6A target datasheet entry; Section1
Plate Resistance (Approx.)	12000 Ω	Published in approved 17JG6A target datasheet entry; Section1
Transconductance	10000 μS	Published in approved 17JG6A target datasheet entry; Section1
Plate Current 525<	80 mA	Published in approved 17JG6A target datasheet entry; Section1
Grid-No.2 Current 32	2.5 mA	Published in approved 17JG6A target datasheet entry; Section1
for plate current of	1 mA	Published in approved 17JG6A target datasheet entry; Section1
—	-40 V	Published in approved 17JG6A target datasheet entry; Section1

TUBE TINKER

An independent reference for electronic tubes, vacuum tubes, and their source documents.

