

ELECTRONIC TUBE REFERENCE

CONSOLIDATED TECHNICAL DATA

17JT6A

1 SECTION
CONSTRUCTION
BEAMPOWER

Power - TV Horizontal Output (sweep) electronic tube

Beam-power tube designed for television horizontal-deflection amplification, with controlled heater warm-up and high pulse-voltage capability.

GENERAL CHARACTERISTICS

BASE DESIGNATION	9QU	BASE PINS	9
NOMINAL HEATER	16.8 V / 450 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	0.007 S
AMPLIFICATION FACTOR	4.4
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
<i>6JT6A electrical system; heater changed by 17JT6A sheet.</i>	

17JT6A — Novar Beam Power Pentode

The **17JT6A** is a Novar beam power tube designed primarily for use as a horizontal-deflection amplifier in high-efficiency deflection circuits of black-and-white television receivers employing wide-angle or high-voltage picture tubes. It belongs to a family of tubes that includes the [6JT6A](#) and [12JT6A](#), sharing identical electrical characteristics and physical structures except for their heater ratings. Additionally, the 17JT6A is identical to the [6JT6](#), [12JT6](#), and [17JT6](#) types, except that it features a shorter bulb and a base with an exhaust tip on the bottom.

Mechanical Specifications, Base, and Pinout

The 17JT6A is constructed in a T-12 glass envelope with a button 9-pin E9-88 base, requiring a standard Novar 9-contact socket. The physical dimensions of the tube are:

- **Maximum Diameter:** 1.563 inches
- **Maximum Seated Height:** 2.500 inches
- **Maximum Overall Height:** 2.880 inches

The tube utilizes the **9QU** basing diagram, which provides the following pin connections:

- **Pin 1:** Grid No. 2 (Screen Grid)
- **Pin 2:** Grid No. 1 (Control Grid)
- **Pin 3:** Cathode, Grid No. 3 (Suppressor Grid / Beam Plates)
- **Pin 4:** Heater
- **Pin 5:** Heater
- **Pin 6:** Grid No. 3
- **Pin 7:** Grid No. 2
- **Pin 8:** Internal Connection (IC) — Do Not Use
- **Pin 9:** Plate

Heater Ratings and Interelectrode Capacitances

The heater of the 17JT6A is designed for series or parallel operation with the following specifications:

- **Heater Voltage (AC or DC):** 16.8 V
- **Heater Current:** 0.450 ± 0.030 A
- **Average Warm-up Time:** 11 seconds

Heater-Cathode Voltage Limits

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

Direct Interelectrode Capacitances

Measured without an external shield, the direct interelectrode capacitances are:

- **Grid No. 1 to Plate:** 0.26 pF
- **Input (G1 to K, G3, G2, H):** 15.0 pF
- **Output (P to K, G3, G2, H):** 6.5 pF

Electrical Characteristics and Class A1 Operation

The 17JT6A can be operated in either pentode or triode configurations. Under Class A1 conditions, with Grid No. 3 connected to the cathode at the socket, the typical characteristics are:

Parameter	Pentode (Low Plate V)	Pentode (High Plate V)	Triode Connection*
Plate Voltage	60 V	250 V	150 V
Grid No. 2 Voltage	150 V	150 V	150 V (Connected to Plate)
Grid No. 1 Voltage	0 V	-22.5 V	-22.5 V
Plate Resistance (Approx.)	—	15,000 Ω	—
Transconductance	—	7,100 μmhos	—
Plate Current	390 mA**	70 mA	—
Grid No. 2 Current	32 mA**	2.1 mA	—
Grid No. 1 Voltage for 1 mA Ib	—	-42 V	—

Parameter	Pentode (Low Plate V)	Pentode (High Plate V)	Triode Connection*
Amplification Factor	—	—	4.4

* Grid No. 2 connected to plate. ** Measured using a recurrent waveform method to avoid exceeding maximum ratings.

Horizontal-Deflection Amplifier Service

For operation in a 525-line, 30-frame television system where the pulse duration does not exceed 15% of one horizontal scanning cycle (approximately 10 microseconds), the design-maximum ratings are:

- **DC Plate Supply Voltage:** 770 V
- **Peak Positive-Pulse Plate Voltage:** 6,500 V
- **Peak Negative-Pulse Plate Voltage:** 1,500 V
- **DC Grid No. 3 Voltage:** 70 V (A positive voltage up to 30 V may be applied to reduce "snivets" interference)
- **DC Grid No. 2 Voltage:** 220 V
- **DC Grid No. 1 Voltage (Negative-bias):** 55 V
- **Peak Negative-Pulse Grid No. 1 Voltage:** 330 V
- **Peak Cathode Current:** 550 mA
- **Average Cathode Current:** 175 mA
- **Plate Dissipation:** 17.5 W
- **Grid No. 2 Input:** 3.5 W
- **Maximum Bulb Temperature (Hottest Point):** 240 °C
- **Maximum Grid No. 1 Circuit Resistance (Grid-Resistor-Bias):** 1.0 MΩ

Note: In stages operating with grid-leak bias, an adequate cathode bias resistor or other protective means is required to safeguard the tube in the absence of excitation.

Qualitative Curve Observations

The plate characteristics (I_b vs. E_b) with Grid No. 3 connected to the cathode and Grid No. 2 held at 150 V reveal a highly defined knee. At a Grid No. 1 voltage of 0 V, the plate current rises very steeply to a sharp knee between 50 V and 75 V (specifically around 50 V to 60 V), where it reaches approximately 390 mA. Beyond this knee, the plate current remains nearly flat as the plate voltage increases up to 300 V.

Conversely, the Grid No. 2 current (I_{c2}) at a Grid No. 1 voltage of 0 V starts extremely high (approximately 150 mA) at zero plate voltage and drops rapidly to a low baseline level of about 20 to 30 mA once the plate voltage rises past the knee.

Technical Summary

The **17JT6A** is a robust Novar beam power pentode optimized for high-efficiency horizontal-deflection amplifier service. Operating with a 16.8 V heater, it delivers high peak plate currents (up to 390 mA at the knee) and can withstand peak positive plate pulses up to 6,500 V. Its physical design features a compact T-12 envelope with a bottom exhaust tip, making it a reliable and space-efficient choice for television receiver circuits.

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	450 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	7000 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 12.6	16.8 V	Published in approved 17JT6A target datasheet entry; Section1
Heater Current 1.2 0.6	450 mA	Published in approved 17JT6A target datasheet entry; Section1
Heater Warm-up Time (Average) – 11	11 seconds	Published in approved 17JT6A target datasheet entry; Section1
DC Plate Supply Voltage	770 V	Published in approved 17JT6A target datasheet entry; Section1
Peak Positive-Pulse Plate Voltage*	6500 V	Published in approved 17JT6A target datasheet entry; Section1
DC Grid-No.3 Voltage*	70 V	Published in approved 17JT6A target datasheet entry; Section1
DC Grid-No.2 Voltage	220 V	Published in approved 17JT6A target datasheet entry; Section1
DC Grid-No.1 Voltage, Negative-bias value	65 V	Published in approved 17JT6A target datasheet entry; Section1
6RID -No	2 V	Published in approved 17JT6A target datasheet entry; Section1
Peak Cathode Current	550 mA	Published in approved 17JT6A target datasheet entry; Section1
Average Cathode Current	175 mA	Published in approved 17JT6A target datasheet entry; Section1
Plate Dissipationf	17.5 W	Published in approved 17JT6A target datasheet entry; Section1
Grid-No.2 Input	3.5 W	Published in approved 17JT6A target datasheet entry; Section1
Grid-No.1-Circuit Resistance, for grid-resistor-bias operation	1 MΩ	Published in approved 17JT6A target datasheet entry; Section1

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
# Pulse duration must not exceed 15% of a horizontal seal (	10 microseconds	Published in approved 17JT6A target datasheet entry; Section1
may occur in television receivers. A typical value for this voltage is	30 V	Published in approved 17JT6A target datasheet entry; Section1
Heater Voltage (ac/dc) 6.3	10.2 V	Published in approved 17JT6A target datasheet entry; Section1
Heater Current 0.725	450 mA	Published in approved 17JT6A target datasheet entry; Section1
Heater Warm-up Time (Average)	11 seconds	Published in approved 17JT6A target datasheet entry; Section1
Plate Voltage	330 V	Published in approved 17JT6A target datasheet entry; Section1
Grid-No.1 (Control-Grid) Voltage, Positive-bias value	0 V	Published in approved 17JT6A target datasheet entry; Section1
Plate Dissipation	4 W	Published in approved 17JT6A target datasheet entry; Section1

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid No.1 to Plate	0.26 pF	Published in approved 17JT6A target datasheet entry; Section1
Grid No.1 to Cathode, Heater, Grid No.2, and Grid Nc 3	15 pF	Published in approved 17JT6A target datasheet entry; Section1
Plate to Cathode, Heater, Grid No.2, and Grid No.3	6.5 pF	Published in approved 17JT6A target datasheet entry; Section1

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Voltage 60 250	150 V	Published in approved 17JT6A target datasheet entry; Section1
Grid-No.2 (Screen-Grid) Voltage 150 150	150 V	Published in approved 17JT6A target datasheet entry; Section1
Grid-No.1 (Control-Grid) Voltage 0 -22.5	-22.5 V	Published in approved 17JT6A target datasheet entry; Section1
Plate Resistance (Approx.)	15000 Ω	Published in approved 17JT6A target datasheet entry; Section1
Transconductance	7100 μS	Published in approved 17JT6A target datasheet entry; Section1

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Current 390	70 mA	Published in approved 17JT6A target datasheet entry; Section1
Grid-No.2 Current 32	2.1 mA	Published in approved 17JT6A target datasheet entry; Section1
1 mA –	-42 V	Published in approved 17JT6A target datasheet entry; Section1

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