



ELECTRONIC TUBE REFERENCE

17JB6A

Power - TV Horizontal Output (sweep) electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
BEAMPOWER

Novar beam-power tube designed for high-efficiency television horizontal-deflection amplification, with controlled heater warm-up and sweep-pulse ratings.

GENERAL CHARACTERISTICS

BASE DESIGNATION	9QL	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

9QL - 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	–	G1 – Control Grid	CONNECTED
PIN7	–	G2 – Screen Grid	CONNECTED
PIN8	–	G3 – Suppressor Grid	CONNECTED
PIN9	–	–	IC
CAP1	A	P – Plate (Anode)	CONNECTED

SECTION RATINGS

SECTION1 Beam Power	
PLATE RESISTANCE	15000 Ω
TRANSCONDUCTANCE	0.0071 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	550 mA
Reference-only sheet; parent electrical ratings not reproduced in supplied source.	

17JB6A — Beam Power Tube

The 17JB6A is a Novar-type beam power tube designed primarily for use as a high-efficiency horizontal-deflection amplifier in television receivers. It is characterized by its compact envelope design, high peak current capabilities, and specialized ratings for both horizontal and vertical deflection services.

Overview and Physical Construction

The **17JB6A** is a beam power pentode featuring a Novar construction. It is designed with a T-12 glass envelope that is shorter than the standard [17JB6](#) bulb, incorporating an exhaust tip at the bottom. The tube requires a standard Novar 9-contact socket for operation.

Physical Dimensions

Dimension	Value
Maximum Diameter	1.563 in
Maximum Seated Height	3.125 in
Maximum Overall Height	3.505 in
Base Type	Button 9-Pin (E9-88)
Top Cap Designation	C1-2 or C1-3

Related Designations

The 17JB6A is electrically identical to the [6JB6A](#) and [12JB6A](#), differing only in its heater ratings. It is also identical to the [17JB6](#) except for its shorter bulb and the bottom-positioned exhaust tip.

Heater Characteristics and Ratings

The 17JB6A is designed for series or parallel heater chains, featuring a controlled warm-up time to ensure reliable operation in series-string television receivers.

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

Heater-Cathode Voltage Limits

- **Peak Value:** ≤ 200 max V
- **Average Value:** 100 max V

Basing and Pinout Configurations

Depending on the manufacturing record and specific application layout, the 9QL basing designation for the 17JB6A is documented with variations in pin assignments. Designers must verify the specific socket wiring configuration:

Pinout Configuration A

- **Pin 1:** Heater (H)
- **Pin 2:** Grid No. 1 (G1)
- **Pin 3:** Cathode (K)
- **Pin 4:** Grid No. 2 (G2)
- **Pin 5:** Grid No. 3 (G3)
- **Pin 6:** Grid No. 1 (G1)
- **Pin 7:** Plate (P)
- **Pin 8:** Grid No. 2 (G2)
- **Pin 9:** Heater (H) / Internal Connection (IC)

Pinout Configuration B

- **Pin 1:** Grid No. 1 (G1)
- **Pin 2:** Grid No. 2 (G2)
- **Pin 3:** Cathode (K)
- **Pin 4:** Heater (H)
- **Pin 5:** Heater (H)
- **Pin 6:** Grid No. 1 (G1)
- **Pin 7:** Grid No. 2 (G2)
- **Pin 8:** Grid No. 3 (G3)
- **Pin 9:** Internal Connection (IC)

Pinout Configuration C

- **Pin 1:** Grid No. 2 (G2)
- **Pin 2:** Grid No. 1 (G1)
- **Pin 3:** Cathode (K)
- **Pin 4:** Heater (H)
- **Pin 5:** Heater (H)
- **Pin 6:** Grid No. 1 (G1)
- **Pin 7:** Grid No. 2 (G2)
- **Pin 8:** Grid No. 3 (G3)
- **Pin 9:** Internal Connection (IC)
- **Top Cap:** Plate (P)

Electrical Characteristics and Class A1 Operation

The 17JB6A can be operated in either triode or pentode configurations. High-current measurements are performed using a recurrent waveform method to prevent the tube from exceeding its maximum dissipation limits during testing.

Direct Interelectrode Capacitances (Approximate)

- **Grid No. 1 to Plate:** 0.2 pF
- **Grid No. 1 to Cathode, Heater, Grid No. 2, and Grid No. 3:** 15 pF
- **Plate to Cathode, Heater, Grid No. 2, and Grid No. 3:** 6 pF

Typical Operating Points

Parameter	Triode Connection	Pentode Connection (Low Voltage)	Pentode Connection (High Voltage)
Plate Voltage	150 V	60 V	150 V
Grid No. 3 (Suppressor)	Connected to K	Connected to K	Connected to K
Grid No. 2 (Screen) Voltage	Connected to P	150 V	150 V
Grid No. 1 (Control Grid) Voltage	-22.5 V	0 V	-22.5 V
Plate Resistance (Approx.)	—	—	15,000,
Transconductance	—	—	7,100 Imhos
Plate Current	—	390 mA*	70 mA

Parameter	Triode Connection	Pentode Connection (Low Voltage)	Pentode Connection (High Voltage)
Grid No. 2 Current	—	32 mA*	2.1 mA
Amplification Factor (I, <u>G2</u> to G1)	4.4	—	—
Grid No. 1 Voltage for $I_b = 1 \text{ mA}$	—	—	-42 V

Note: Measured using a recurrent waveform method.

Deflection Amplifier Service

The 17JB6A is rated for both horizontal- and vertical-deflection amplifier service in television receivers operating on standard 525-line, 30-frame systems. The design-maximum ratings must not be exceeded under normal operating conditions.

Horizontal-Deflection Amplifier Service

For horizontal-deflection service, the tube is subjected to high peak voltages and currents during the flyback interval.

- **DC Plate Supply Voltage:** 770 max V
- **Peak Positive-Pulse Plate Voltage:** 6500 max V (Pulse duration must not exceed 15% of a horizontal scanning cycle, or 10 Is)
- **Peak Negative-Pulse Plate Voltage:** 1500 max V
- **DC Grid No. 3 Voltage:** 70 max V (A positive bias, typically 30 V, may be applied to minimize "snivets" interference)
- **DC Grid No. 2 Voltage:** 220 max V
- **DC Grid No. 1 Voltage:** -55 max V
- **Peak Negative-Pulse Grid No. 1 Voltage:** 330 max V
- **Peak Cathode Current:** 550 max mA
- **Average Cathode Current:** 175 max mA
- **Plate Dissipation:** 17.5 max W (A bias resistor or other protective means is required to safeguard the tube in the absence of excitation)
- **Grid No. 2 Input:** 3.5 max W
- **Bulb Temperature (at hottest point):** 240 max °C
- **Maximum Grid No. 1 Circuit Resistance (Grid-resistor-bias):** 1 max M

Vertical-Deflection Amplifier Service

- **DC Plate Voltage:** 350 max V

- **Peak Positive-Pulse Plate Voltage:** 2500 max V (Pulse duration must not exceed 15% of a vertical scanning cycle, or 2.5 ms)
- **Grid No. 2 Voltage:** 300 max V
- **Peak Cathode Current:** 260 max mA
- **Average Cathode Current:** 75 max mA
- **Plate Dissipation:** 15 max W (Protective resistor or other means required in the absence of excitation)
- **Grid No. 2 Input:** 2.75 max W (Protective resistor or other means required in the absence of excitation)
- **Bulb Temperature (at hottest point):** 200 max °C
- **Maximum Grid No. 1 Circuit Resistance (Fixed-bias):** 1 max M
- **Maximum Grid No. 1 Circuit Resistance (Cathode-bias):** 2.2 max M

Qualitative Curve Observations

When evaluating the plate characteristics of the 17JB6A with Grid No. 3 connected to the cathode and Grid No. 2 held at a constant 150 V, several distinct behaviors are observed:

- **Plate Current (I_b):** At a control grid voltage ($E[C1](/tubes/C1)$) of 0 V, the plate current rises sharply, forming a distinct knee at approximately 40 to 50 plate volts. Beyond this knee, the current flattens out, peaking in the range of 390 mA to just over 400 mA.
- **Grid No. 2 Current (I_{C2}):** At $E[C1](/tubes/C1) = 0$ V, the screen grid current starts very high (approximately 150 mA) at low plate voltages below 40 V. As the plate voltage increases and passes the knee, the screen current drops rapidly, falling below 50 mA and stabilizing at a much lower value.

Technical Summary

The **17JB6A** is a robust, high-performance Novar beam power tube optimized for television deflection circuits. Operating with a **16.8 V, 0.45 A** heater, it provides high peak cathode current capabilities (up to 550 mA in horizontal deflection service) and can withstand peak positive plate pulses up to 6500 V. Its compact T-12 envelope with a bottom exhaust tip allows for efficient space utilization in television chassis while maintaining high thermal and electrical reliability.



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	AC or DC at rated heater current
Heater current	450 mA	Nominal current
Warm-up time	11 s	Average
Reference parent type	6JB6A	Electrical characteristics same except heater



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
For fixed-bias operation	1 M Ω	Published in approved 17JB6A target datasheet entry; Section1
For cathode-bias operation	2.2 M Ω	Published in approved 17JB6A target datasheet entry; Section1
# Pulse duration must not exceed 15% of a vertical scanning cycle (	2.5 milliseconds	Published in approved 17JB6A target datasheet entry; Section1
Heater Voltage (ac/dc) 6.3 12.6	16.8 V	Published in approved 17JB6A target datasheet entry; Section1

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater Current 1.2 0.6	450 mA	Published in approved 17JB6A target datasheet entry; Section1
Heater Warm-up Time (Average) 11	11 seconds	Published in approved 17JB6A target datasheet entry; Section1
Grid No.1 to Plate	0.2 pF	Published in approved 17JB6A target datasheet entry; Section1
and Grid No.3	15 pF	Published in approved 17JB6A target datasheet entry; Section1
DC Plate Supply Voltage	770 V	Published in approved 17JB6A target datasheet entry; Section1
Peak Positive-Pulse Plate Voltage#	6500 V	Published in approved 17JB6A target datasheet entry; Section1
Peak Negative-Pulse Plate Voltage	1500 V	Published in approved 17JB6A target datasheet entry; Section1
DC Grid-No.3 Voltagef	70 V	Published in approved 17JB6A target datasheet entry; Section1
DC Grid-No.2 Voltage	220 V	Published in approved 17JB6A target datasheet entry; Section1
DC Grid-No.1 Voltage	55 V	Published in approved 17JB6A target datasheet entry; Section1
Peak Negative-Pulse Grid-No.1 Voltage	330 V	Published in approved 17JB6A target datasheet entry; Section1
Peak Cathode Current	550 mA	Published in approved 17JB6A target datasheet entry; Section1
Grid-No.2 Input	3.5 W	Published in approved 17JB6A target datasheet entry; Section1
Bulb Temperature (At hottest point)	240 °C	Published in approved 17JB6A target datasheet entry; Section1
Grid-No.1-Circuit Resistance, for grid-resistor-bias operation	1 MΩ	Published in approved 17JB6A target datasheet entry; Section1
# Pulse duration must not exceed 15% of a horizontal scanning cycle (	10 microseconds	Published in approved 17JB6A target datasheet entry; Section1
"snivets" interference in both vhf and uhf television receivers. A typical value is	30 V	Published in approved 17JB6A target datasheet entry; Section1
GRID - No	2 V	Published in approved 17JB6A target datasheet entry; Section1

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater Voltage (ac/dc) 3.5 4.5	6.3 V	Published in approved 17JB6A target datasheet entry; Section1
Heater Current 0.6 0.45	300 mA	Published in approved 17JB6A target datasheet entry; Section1
Plate Voltage 330	330 V	Published in approved 17JB6A target datasheet entry; Section1
Grid-No.3 (Suppressor-Grid) Voltage, Positive value 0	0 V	Published in approved 17JB6A target datasheet entry; Section1
Grid-No.2 (Screen-Grid) Supply Voltage 330	330 V	Published in approved 17JB6A target datasheet entry; Section1

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Voltage 150 60	150 V	Published in approved 17JB6A target datasheet entry; Section1
Grid-No.2 (Screen-Grid) Voltage – 150	150 V	Published in approved 17JB6A target datasheet entry; Section1
Grid-No.1 (Control-Grid) Voltage –22.5 0	-22.5 V	Published in approved 17JB6A target datasheet entry; Section1
Plate Resistance (Approx.)	15000 Ω	Published in approved 17JB6A target datasheet entry; Section1
Plate Current 390"	70 mA	Published in approved 17JB6A target datasheet entry; Section1
– 32"	2.1 mA	Published in approved 17JB6A target datasheet entry; Section1
Grid-No.1 Voltage for plate current of	1 mA	Published in approved 17JB6A target datasheet entry; Section1
Grid-No.1 Voltage for plate current of 1 mA	-42 V	Published in approved 17JB6A target datasheet entry; Section1

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