

ELECTRONIC TUBE REFERENCE

17QP4B

Specialized - Cathode Ray electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
CATHODERAY

Magnetically focused and deflected P4 picture-display tube with approximately 70-degree deflection, typical 14 kV operation, a 20 kV maximum anode rating, and an explicit high-voltage X-ray shielding warning.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	6.3 V / 600 mA	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION1 Cathode Ray	
MAXIMUM PLATE VOLTAGE	20000 V
MAXIMUM SCREEN VOLTAGE	550 V
Magnetic-focus P4 picture tube.	

17QP4B — Rectangular Glass Picture Tube

The **17QP4B** is a rectangular glass cathode-ray picture tube designed primarily for monochrome television receiver applications. It features a 70-degree magnetic deflection system, magnetic focusing, and an aluminized screen. The tube is designed with an electron gun that does not require an external ion-trap magnet, simplifying receiver setup and adjustment.

Physical and Screen Construction

The 17QP4B is built with a rectangular glass envelope and a specialized filterglass faceplate. This faceplate has a light transmission rating of approximately 74%, which enhances picture contrast by

reducing the impact of ambient room light. The screen utilizes a P4-Sulfide Type phosphor and is aluminized to maximize light output and prevent ion burn.

Physical Dimensions and Weight

- **Overall Length:** 19-3/16 inches ($\pm$ 3/8 inch)
- **Neck Length:** 7-1/2 inches ($\pm$ 3/16 inch)
- **Projected Screen Area:** 149 square inches
- **Weight:** Approximately 19 lbs

The tube's envelope includes an external conductive coating of the Regular-Band type. This coating has a designated grounding contact area located near the reference line. The capacitance formed between the external conductive coating and the internal anode serves as a high-voltage filter capacitor for the receiver's power supply.

Base, Cap, and Electrical Connections

The 17QP4B utilizes a **Small-Shell Duodecal 5-Pin** base (JEDEC Group 4, No. B5-57) with a **12N** basing designation when viewed from the bottom. The high-voltage anode connection is made via a side-bulb **Recessed Small Cavity** cap (JEDEC No. J1-21).

The pinout configuration is as follows:

- **Pin 1:** Heater
- **Pin 2:** Grid No. 1 (Control Grid)
- **Pin 10:** Grid No. 2 (Screen Grid)
- **Pin 11:** Cathode
- **Pin 12:** Heater
- **Cap:** Anode (Grid No. 3, Screen, Collector)
- **C:** External Conductive Coating (Grounding contact)

Heater and Interelectrode Capacitances

The heater is designed to operate at a nominal voltage of 6.3 volts. It has controlled warm-up characteristics, making it suitable for series-connected heater strings as well as parallel configurations.

Parameter	Value
Nominal Heater Voltage	6.3 V
Heater Current	600 $\pm$ 60 mA
Average Heater Warm-Up Time	11 seconds

Interelectrode Capacitances

- **Cathode to all other electrodes:** 5 pF
- **Grid No. 1 to all other electrodes:** 6 pF
- **External conductive coating to anode:** 750 pF (minimum) to 1500 pF (maximum)

Design-Maximum Ratings

The ratings below are specified under the Design-Maximum Rating System. Operating the tube beyond these limits may impair its performance or cause permanent damage. All voltages are positive with respect to the cathode unless otherwise specified.

- **Anode Voltage:** 20,000 max. volts
- **Grid-No. 2 Voltage:** 550 max. volts
- **Grid-No. 1 Voltage:**
 - Negative peak value: 220 max. volts
 - Negative bias value: 155 max. volts
 - Positive bias value: 0 max. volts
 - Positive peak value: 2 max. volts
- **Heater Voltage:** 5.7 min. volts to 6.9 max. volts
- **Peak Heater-Cathode Voltage:**
 - *Heater negative with respect to cathode:*
 - During equipment warm-up period (first 15 seconds or less): 450 max. volts
 - After equipment warm-up period: 200 max. volts
 - *Heater positive with respect to cathode:*
 - Combined AC and DC voltage: 200 max. volts
 - DC component: 100 max. volts

Typical Operating Conditions (Grid-Drive Service)

In typical grid-drive service, the electrodes are operated at the following potentials (with voltages positive with respect to the cathode):

- **Anode Voltage:** 14,000 volts
- **Grid-No. 2 Voltage:** 300 volts
- **Grid-No. 1 Voltage for visual extinction of focused raster:** -28 to -72 volts

Maximum Circuit Values

- **Grid-No. 1-Circuit Resistance:** 1.5 max. megohms

Technical Summary

The **17QP4B** is a 70-degree magnetic deflection, magnetically focused monochrome picture tube featuring a 149-square-inch aluminized screen with P4-Sulfide phosphor. It is housed in a rectangular glass envelope with a 74% transmission filterglass faceplate and uses a Small-Shell Duodecal 5-Pin base. With a nominal 6.3 V, 600 mA heater and an average warm-up time of 11 seconds, the tube operates typically at an anode voltage of 14,000 V, while supporting design-maximum anode voltages up to 20,000 V.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

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

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Section 1 · Cathode Ray

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	6.3 V	—
Heater current	600 mA	—
Heater warm-up time	11 s	—
Maximum anode/ultor voltage	20000 V	—
Typical anode/ultor voltage	14000 V	PictureTubeService
Maximum grid No.2 voltage	550 V	—
Typical grid No.2 voltage	300 V	PictureTubeService
Visual-extinction voltage range minimum	-72 V	FocusedRasterExtinction
Visual-extinction voltage range maximum	-28 V	FocusedRasterExtinction
Maximum grid No.1 circuit resistance	1.5 megohm	—
X-ray shielding warning	Present	HighAnodeVoltage
Peak heater-cathode voltage during warm-up	450 V	HeaterNegative;Warmup<=15s
Peak heater-cathode voltage after warm-up	200 V	HeaterNegative
Peak heater-cathode voltage heater positive	200 V	HeaterPositive

CONSTRUCTION		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Focusing method	Magnetic	—
Deflection method	Magnetic	—
Phosphor	P4	—

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Screen type	White	P4

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Deflection angle	70 deg	Approximate

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Cathode to all other electrodes capacitance	5 pF	Approximate
External conductive coating to anode capacitance maximum	1500 pF	Approximate

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