

ELECTRONIC TUBE REFERENCE

17CRP4

Specialized - Cathode Ray electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
CATHODERAY

Seventeen-inch direct-view television cathode-ray tube designed for series-string heater operation. Rauland documentation identifies high-voltage picture-tube service, making its heater arrangement a distinguishing feature for receiver applications.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	6
NOMINAL HEATER	6.3 V / 450 mA	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION1 Cathode Ray	
MAXIMUM PLATE VOLTAGE	17600 V
CRT accelerator/final-anode maximum mapped to MaxPlateVoltage.	

17CRP4 — Direct-View Picture Tube

The **17CRP4** is a 17-inch diagonal, direct-view cathode-ray tube (CRT) designed specifically for cathode-drive television applications. Engineered for series string operation, it features a 90-degree diagonal deflection angle and an 85-degree horizontal deflection angle. The tube utilizes electrostatic focusing combined with magnetic deflection.

Construction and Optical Characteristics

The 17CRP4 is constructed with a spherical gray filter glass faceplate that provides approximately 74% light transmission. Its screen is metal-backed (aluminized) and uses P4 phosphor, which produces a white fluorescence with medium persistence.

Designed with a short overall length, the tube does not require an external ion trap magnet. It incorporates a high-capacity external conductive coating that serves as a filter capacitor and aids in suppressing radiation when properly grounded.

Mechanical Dimensions

- **Overall Length:** $14\text{-}5/8 \pm 3/8$ inches
- **Neck Length:** $5\text{-}1/2 \pm 3/16$ inches
- **Greatest Bulb Diagonal:** $16\text{-}5/8 \pm 1/8$ inches
- **Greatest Bulb Width:** $15\text{-}3/8 \pm 1/8$ inches
- **Greatest Bulb Height:** $12\text{-}9/32 \pm 1/8$ inches
- **Minimum Useful Screen Dimensions:** $11\text{-}1/8 \times 14\text{-}5/16$ inches, yielding a minimum useful screen area of 149 square inches.

Electrical Data and Basing

The 17CRP4 is equipped with a small shell Duodecal 6-pin base (B6-63) with a 12L basing designation. The final anode connection is made via a recessed small cavity cap (J1-21), which aligns with Pin Position No. 6 within a tolerance of ± 30 degrees.

Pinout Configuration

- **Pin 1:** Heater
- **Pin 2:** Grid No. 4 (Focusing Electrode)
- **Pin 6:** Grid No. 1
- **Pin 10:** Grid No. 2
- **Pin 11:** Cathode
- **Pin 12:** Heater
- **Recessed Cavity Cap:** Final Anode (internally connecting Grid No. 3, Grid No. 5, and the Collector)

Heater Specifications

- **Heater Voltage:** 6.3 V
- **Heater Current:** $0.450 \pm 5\%$ A
- **Heater Warm-up Time:** 11 seconds (defined as the time required for the heater voltage to reach 5.0 V in a JETEC test circuit with an applied voltage of 25 V and a series resistance of 42 ohms)

Direct Interelectrode Capacitances

- **Cathode to all other electrodes:** approximately 5 μF
- **Grid No. 1 to all other electrodes:** approximately 6 μF
- **External conductive coating to anode:** 1800 μF minimum to 2300 μF maximum

Absolute Maximum Ratings

The following absolute maximum limits are established for the 17CRP4:

- **Final Anode Voltage:** 17,600 V dc
- **Grid No. 4 Voltage (Focusing Electrode):** -550 to +1,100 V dc
- **Grid No. 2 to Grid No. 1 Voltage:** 70 V dc
- **Cathode to Grid No. 1 Voltage (Positive bias value):** 150 V dc
- **Cathode to Grid No. 1 Voltage (Negative peak value):** 0 V
- **Peak Heater-Cathode Voltage (During warm-up, $\leq$ 15 seconds):** 450 V
- **Peak Heater-Cathode Voltage (After warm-up):** 200 V
- **Heater Positive with Respect to Cathode:** 200 V

Typical Operating Conditions (Cathode Drive)

Under typical cathode-drive operating conditions, the tube is configured as follows:

- **Anode Voltage:** 14,000 V dc
- **Grid No. 2 to Grid No. 1 Voltage:** 50 V dc
- **Grid No. 4 to Grid No. 1 Voltage for Focus (at 100 μ A cathode current):** 0 to +350 V dc
- **Cathode to Grid No. 1 Voltage for Cut-off (visual extinction of focused raster):** 30 to 50 V dc

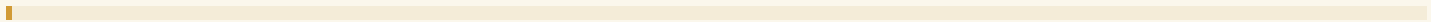
When operated in cathode drive at a Grid No. 2 voltage of 50 V, the tube exhibits a maximum spot cut-off of 50 V and a minimum cathode current of 1000 μ A.

Operating and Circuit Considerations

- **Grid No. 1 Circuit Resistance:** The maximum allowable resistance in the Grid No. 1 circuit is 1.5 Megohms.
- **External Coating Grounding:** The high-capacity external conductive coating must be grounded to function as a filter capacitor and to suppress radiation.
- **Focus Modulation:** The focus electrode (Grid No. 4) may be modulated to improve overall focus across the screen.
- **Raster vs. Spot Extinction:** Visual extinction of a stationary focused spot requires cut-off values to be increased by approximately 5 V compared to the visual extinction of a focused raster.
- **Cut-off Voltage Variation:** The cut-off voltage varies dynamically with anode voltage, changing by approximately 2% for every 1 kV change in the anode voltage.

Technical Summary

The **17CRP4** is a 17-inch, 90-degree deflection, electrostatic-focus, magnetic-deflection picture tube designed for series-string cathode-drive television receivers. It features a short neck and overall length, an aluminized P4 screen, and a high-capacity external conductive coating. Operating at a typical anode voltage of 14,000 V, it provides reliable focus and cut-off characteristics with a controlled 11-second heater warm-up time.



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1963 Rauland

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

1963 RAULAND

Section 1 · Cathode Ray

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	6.3 V	—
Heater current	450 mA	—
Typical anode/accelerator voltage	14000 V	—
Maximum heater-cathode voltage	200 V	Heater positive to cathode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Focusing method	Electrostatic	—
Deflection method	Magnetic	—
Deflection angle	90 deg	—

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Cathode to all other electrodes capacitance	5 pF	—

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