

Seventeen-inch monochrome P4 television picture tube with low-voltage electrostatic focus and approximately 70-degree magnetic deflection. Its high-voltage direct-view design is intended for receiver display service and carries an X-ray radiation 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	17500 V
MAXIMUM SCREEN VOLTAGE	550 V
Grey-filter P4 picture tube.	

17HP4C — Rectangular Glass Picture Tube

A rectangular glass cathode-ray picture tube featuring low-voltage electrostatic focus, 70-degree magnetic deflection, and an aluminized screen.

Overview

The **17HP4C** is a rectangular glass picture tube designed for television receiver applications. It incorporates a low-voltage electrostatic focusing system and a 70-degree magnetic deflection angle. The tube features an aluminized screen with a P4-Sulfide Type phosphor and utilizes an electron gun design that requires no external ion-trap magnet.

Physical Construction and Optical Characteristics

The 17HP4C is constructed with a spherical Filterglass faceplate that provides approximately 74% light transmission, enhancing picture contrast under ambient illumination. The tube provides a projected screen area of 149 square inches.

Physically, the tube weighs approximately 18 lbs. Its dimensional specifications include:

- **Overall Length:** 19-3/16 inches $\pm$ 3/8 inch
- **Neck Length:** 7-1/2 inches $\pm$ 3/16 inch

The envelope features an external conductive coating of the Regular-Band type, with a grounding contact area located near the reference line. The electrical connection to the high-voltage anode is made via a Recessed Small Cavity cap (JEDEC No. J1-21). The base is a Small-Shell Duodecal 6-Pin configuration (JEDEC Group 4, No. B6-63), which conforms to the 12L bottom-view basing designation.

Electrical Connections and Pinout

The 12L basing arrangement provides the following connections, viewed from the bottom of the tube base:

Pin / Cap	Connection
Pin 1	Heater
Pin 2	Grid No. 1
Pin 6	Grid No. 4
Pin 10	Grid No. 2
Pin 11	Cathode
Pin 12	Heater
Cap	Anode (Grid No. 3, Grid No. 5, Screen, Collector)
C	External Conductive Coating

Heater and Interelectrode Capacitances

The heater is designed for operation at a nominal voltage of 6.3 volts, drawing a current of 600 ± 30 mA. Under the design-maximum rating system, the allowable heater voltage range is 5.7 volts minimum to 6.9 volts maximum.

The direct interelectrode capacitances of the tube are:

- **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

The external conductive coating, when grounded, forms a capacitor with the internal anode coating, which serves as a filter capacitor for the high-voltage anode supply.

Maximum Ratings (Design-Maximum Values)

The following maximum and minimum limits are established under the Design-Maximum rating system. All voltages are positive with respect to the cathode unless otherwise specified:

Parameter	Maximum Rating
Anode Voltage	17,500 V
Grid No. 4 (Focusing) Voltage (Positive value)	1,100 V
Grid No. 4 (Focusing) Voltage (Negative value)	-550 V
Grid No. 2 Voltage	550 V
Grid No. 1 Voltage (Negative peak value)	-220 V
Grid No. 1 Voltage (Negative bias value)	-155 V
Grid No. 1 Voltage (Positive bias value)	0 V
Grid No. 1 Voltage (Positive peak value)	2 V

Heater-Cathode Voltage Limits

The peak voltage between the heater and the cathode must be kept within the following limits:

- **Heater negative with respect to cathode:**
 - During the equipment warm-up period (not exceeding 15 seconds): 450 V maximum
 - After the equipment warm-up period: 200 V maximum
- **Heater positive with respect to cathode:**
 - Combined AC and DC voltage: 200 V maximum
 - DC component: 100 V maximum

Typical Operating Conditions (Grid-Drive Service)

In typical grid-drive service, where voltages are specified positive with respect to the cathode, the operating parameters are:

- **Anode Voltage:** 14,000 V
- **Grid No. 4 Voltage:** -56 to +310 V
- **Grid No. 2 Voltage:** 300 V
- **Grid No. 1 Voltage** (required for visual extinction of the focused raster): -28 to -72 V

The maximum allowable resistance in the Grid No. 1 circuit is **1.5 megohms**.

Technical Summary

The **17HP4C** is a rectangular glass picture tube featuring low-voltage electrostatic focusing and 70-degree magnetic deflection. It utilizes an aluminized P4-Sulfide phosphor screen with a spherical Filterglass faceplate offering 74% light transmission. Operating typically at an anode voltage of 14,000 V, it provides a projected screen area of 149 square inches. The tube's design eliminates the need for an external ion-trap magnet, simplifying receiver setup, while its standard 12L basing and Small-Shell Duodecal base facilitate integration into television chassis.

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	—
Maximum anode/ultor voltage	17500 V	—
Typical anode/ultor voltage	14000 V	PictureTubeService
Maximum grid No.2 voltage	550 V	—
Typical grid No.2 voltage	300 V	PictureTubeService
Focus-voltage range minimum	-56 V	OptimumFocus
Focus-voltage range maximum	310 V	OptimumFocus
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
Maximum negative grid No.1 peak voltage	220 V	—
Maximum negative grid No.1 bias magnitude	155 V	—
Maximum positive grid No.1 peak voltage	2 V	—
Peak heater-cathode voltage during warm-up	450 V	HeaterNegative;Warmup<=15s
Peak heater-cathode voltage after warm-up	200 V	HeaterNegative

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Peak heater-cathode voltage heater positive	200 V	HeaterPositive

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

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