

ELECTRONIC TUBE REFERENCE

CONSOLIDATED TECHNICAL DATA
1 SECTION
CONSTRUCTION
CATHODERAY

17AVP4

Specialized - Cathode Ray electronic tube

P4 cathode-ray display tube documented for high-voltage direct-view operation, using magnetic deflection and manufacturer-specified beam focusing and control arrangements appropriate to type 17AVP4.

GENERAL CHARACTERISTICS

BASE DESIGNATION	12L	BASE PINS	6
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	17600 V
MAXIMUM SCREEN VOLTAGE	550 V
CRT-specific anode, focus, deflection and optical data retained as parameters rather than forced into ordinary plate/screen fields.	

17AVP4 — Direct-View Cathode Ray Picture Tube

The **17AVP4** and **17AVP4A** are direct-view rectangular glass cathode ray picture tubes designed for television receiver applications. These tubes feature a unipotential cathode, low-voltage electrostatic focusing, magnetic deflection, a filterglass faceplate, and an external single-field ion trap. The 17AVP4 and 17AVP4A are identical in design and electrical characteristics, with the sole exception that the **17AVP4A** features an aluminized screen to enhance brightness and contrast.

Mechanical Specifications and Physical Dimensions

The 17AVP4 utilizes a rectangular glass bulb construction with a filterglass faceplate. The physical dimensions and mechanical mounting requirements are:

- **Overall Length:** 15 5/8 inches $\pm$ 3/8 inch
- **Bulb Diagonal:** 16 5/8 inches $\pm$ 1/8 inch
- **Bulb Width:** 15 3/8 inches $\pm$ 1/8 inch
- **Bulb Height:** 12 9/32 inches $\pm$ 1/8 inch
- **Minimum Useful Screen Dimensions:** 14 1/4 inches wide by 10 3/4 inches high
- **Raster Size:** Approximately 10 3/8 inches to 10 3/4 inches high by 14 1/4 inches wide
- **Bulb Contact:** Recessed small cavity cap (J1-21)
- **Base:** Small shell duodecal 6-pin (B6-63)
- **Basing Configuration:** 12L

To prevent mechanical stress on the glass envelope and base, the socket should not be rigidly mounted. It must have flexible leads and be allowed to move freely.

Pin Connections

The 12L bottom-view pinout configuration provides the following connections:

- **Pin 1:** Heater
- **Pin 2:** Grid #1 (Control Grid)
- **Pin 6:** Grid #4 (Focusing Electrode)
- **Pin 10:** Grid #2 (Screen Grid)
- **Pin 11:** Cathode
- **Pin 12:** Heater
- **Anode Cap:** Grid #3, Grid #5, and Collector

Electrical and Optical Characteristics

The tube operates with a nominal heater supply and utilizes magnetic deflection alongside electrostatic focusing.

Deflection and Capacitances

The deflection angles are approximately:

- **Horizontal:** 85°
- **Vertical:** 68°
- **Diagonal:** 90°

Direct interelectrode capacitances are approximately:

- **Cathode to all other electrodes:** 5 μ F

- **Grid #1 to all other electrodes:** 6 μF
- **External conductive coating to anode:** 750 μF (minimum) to 1500 μF (maximum)

Optical Data

The screen utilizes a **P-4** phosphor, which provides:

- **Fluorescent Color:** White
- **Phosphorescent Color:** White
- **Persistence:** Short

Maximum Ratings

The following limits are established under the Design Center system:

- **Heater Voltage:** 6.3 V
- **Heater Current:** 0.6 A
- **Maximum DC Collector, Grid #3, Grid #5 Voltage:** 16,000 V
- **Maximum DC Grid #4 Voltage:** -500 V to +1000 V (The focus electrode may be modulated to improve overall focus)
- **Maximum DC Grid #2 Voltage:** 500 V
- **Maximum Grid #1 Voltage:**
 - DC Negative-bias value: 125 V
 - DC Positive-bias value: 0 V
 - Positive-peak value: 2 V
- **Maximum DC Peak Heater-Cathode Voltage:**
 - Heater negative with respect to cathode during warm-up (≤ 15 seconds): 410 V
 - Heater negative with respect to cathode after warm-up: 180 V
 - Heater positive with respect to cathode: 180 V
- **Maximum Grid #1 Circuit Resistance:** 1.5 M Ω

Typical Operating Conditions

Under typical operating conditions, the tube is configured with the following parameters:

- **DC Collector, Grid #3, Grid #5 Voltage:** 12,000 V
- **DC Grid #4 Voltage (Focusing Electrode):** -48 V to +264 V (with combined Grid #1 and video-signal voltage adjusted to give a collector current of 100 μA on a 10 3/4" x 14 1/4" picture area)
- **DC Grid #2 Voltage:** 300 V
- **DC Grid #1 Voltage:** -33 V to -77 V (for visual extinction of the undeflected focused spot)
- **DC Grid #2 Current:** -15 μA to +15 μA
- **DC Focusing Electrode Current:** -25 μA to +25 μA
- **Ion Trap Current:** 30 mA (using standard coil #117)

Technical Summary

The **17AVP4** and **17AVP4A** are 90-degree magnetic deflection, low-voltage electrostatic focus cathode ray tubes designed for television display service. Operating with a standard 6.3 V, 0.6 A heater, they provide a rectangular viewing area of approximately 10 3/4" by 14 1/4" using a P-4 white phosphor screen. The **17AVP4A** variant incorporates an aluminized screen for improved brightness. These tubes require an external single-field ion trap and a non-rigidly mounted socket to ensure reliable operation within their design limits.



SOURCE OPERATING CONDITIONS

1950 Sylvania

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

1950 SYLVANIA

Section 1 · Cathode Ray

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater Voltage	6.3 V	—
Heater Current	600 mA	—
Cathode To All Other Electrodes Capacitance	5 pF	Approximate

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum Anode Voltage	17600 V	—
Maximum Grid2 Voltage	550 V	—
Typical Anode Voltage	14000 V	—



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1961 Tung Sol

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

1961 TUNG SOL

Section 1 · Cathode Ray

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum Anode Voltage	16000 V	—
Typical Anode Voltage	12000 V	—
Maximum Grid2 Voltage	500 V	—

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Typical Grid2 Voltage	300 V	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
FocusingMethod	LowVoltageElectrostatic	—
DeflectingMethod	Magnetic	—
DiagonalDeflectionAngleApproximate	90 degree	—
PhosphorNumber	4	—
FluorescentColor	White	—
Persistence	Medium	—



SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

SOURCE PDF

1966 Tung Sol Electronic Tubes 4 of 4

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

1966 TUNG SOL ELECTRONIC TUBES 4 OF 4

Section 1 · Cathode Ray

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum DC grid 2 voltage	500 V	—
Maximum DC grid 4 voltage	-500–1000 V	—
Maximum grid 1 negative-bias voltage	125 V	NegativeBias
Maximum grid 1 positive-bias voltage	0 V	PositiveBias
Maximum grid 1 positive-peak voltage	2 V	PositivePeak
Peak heater-cathode voltage	410 V	HeaterNegativeWarmup
Peak heater-cathode voltage	180 V	HeaterNegativeAfterWarmup
Peak heater-cathode voltage	180 V	HeaterPositive
DC anode voltage	12000 V	TypicalOperation
DC grid 4 voltage	-48–264 V	TypicalOperation

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
DC grid 2 voltage	300 V	TypicalOperation
DC grid 1 voltage	-33--77 V	TypicalOperation
Ion trap current	30 mA	Approximate

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Horizontal deflection angle	85 degrees	Approximate
Vertical deflection angle	68 degrees	Approximate
Diagonal deflection angle	90 degrees	Approximate

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Cathode to all other electrodes capacitance	5 pF	Approximate
Grid 1 to all other electrodes capacitance	6 pF	Approximate
External conductive coating to anode capacitance	1500 pF	Maximum
External conductive coating to anode capacitance	750 pF	Minimum

TUBE TINKER

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