



TECHNICAL DATA

TEKTRONIX
T503P__

REVISION A

REVISED 8/19/60

The Tektronix Type T503P__ is a 5-inch flat faced cathode ray tube with electrostatic focus and deflection. The T503P__ is designed primarily for use in the Tektronix 503, 504, 560, and 561 series of general purpose oscilloscopes.

MECHANICAL SPECIFICATIONS:

Overall Length	16 ± 1/8 inches
Greatest Diameter of Bulb	5 5/16 inches
Neck Pin Diameter	0.040 ±.002 inches
Base	JETEC NO. B14-38
Bulb and Base Alignment	See Outline Drawing

ELECTRICAL DATA:

Heater Voltage	6.3 Volts RMS
Heater Current	0.6 ±10% Amperes RMS

Capacitance, Interelectrode (Typical Values):

Grid No. 1 to all other electrodes	7.9 μμf
Cathode to all other electrodes	5.0 μμf
DJ ₁ to DJ ₂	2.6 μμf *
DJ ₁ to all other electrodes except DJ ₂	2.3 μμf
DJ ₂ to all other electrodes except DJ ₁	2.3 μμf
DJ ₃ to DJ ₄	1.5 μμf *
DJ ₃ to all other electrodes except DJ ₄	1.7 μμf
DJ ₄ to all other electrodes except DJ ₃	1.7 μμf
BJ ₂ to all other electrodes	7.7 μμf

Deflection Polarity:

- Positive Voltage on DJ₁ deflects beam toward Pin No. 11
- Positive Voltage on DJ₃ deflects beam toward Pin No. 8

Geometry: (Measured under typical operating conditions)

Minimum useful scan DJ ₁ -DJ ₂	8 cm
Minimum useful scan DJ ₃ -DJ ₄	10 cm
Minimum quality screen area	4½ inch circle
Trace Orthogonality	90° ± 1°
Centering of undeflected spot with respect to geometric center (Deflection electrodes connected to Grid No. 5)	5 mm Max.
Raster Distortion	1.5% Max.

MAXIMUM RATINGS (All measurements taken with respect to the cathode)

Accelerator and deflection system

(Screen, 1st anode, blanking plates, 2nd anode, deflection plates, isolation shield) 4000 Max. Volts

Focus Electrode

Voltage Range 0 to 4000 Volts

Maximum Current to Focus Electrode $\pm 10 \mu a$

Peak Voltage between Electrodes

Plate to Plate 500 Max. Volts

Plate to all other electrodes in the accelerator and deflection system 500 Max. Volts

Between any two electrodes in the accelerator and deflection system 500 Max. Volts

Grid No. 1 Voltage

Negative bias value 150 Max. Volts

Positive bias value 0 Max. Volts

Positive peak value 2 Max. Volts

Peak Heater-Cathode Voltage

Heater Negative with respect to Cathode 125 Max. Volts

Heater Positive with respect to Cathode 125 Max. Volts

Maximum Electrode Power Dissipation

1st anode and blanking plates 3 Watts

TYPICAL OPERATING CONDITIONS: (All measurements taken with respect to the cathode)

Electrode Designation	Symbol	
Screen Voltage and	Esc	} 3000 Volts DC
Isolation Shield Voltage	Eg6	
Average of Deflection Plates	—	3000 Volts DC
Accelerator Voltage		
Grid No. 5 (Astigmatism)	Eg5	2850 to 3150 Volts DC
Grid No. 2 & 3 (1st Anode) and	Eg 2, 3	} 3000 Volts DC
Blanking Plate	BJ1	
Grid No. 4 Voltage (Focus)	Eg4	400 to 700 Volts DC
Grid No. 1 Voltage (Control)	Eg1	—45 to —75 Volts DC (cutoff)

Deflection Factors (Nominal)

DJ ₁ -DJ ₂	20 Volts/cm *
DJ ₃ -DJ ₄	16 Volts/cm *

Useful Scan

DJ ₁ -DJ ₂	8 cm
DJ ₃ -DJ ₄	10 cm

Deflection Blanking Voltage (BJ₁-BJ₂)

For visual cutoff at $I_k = 200 \mu a$	± 75 Volts
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DESIGN RANGES

Minimum Scan

DJ ₁ -DJ ₂	8 cm
DJ ₃ -DJ ₄	10 cm

Deflection Factors

DJ ₁ -DJ ₂	6.3 to 7.0 V/cm/KV Vgun *
DJ ₃ -DJ ₄	5.1 to 5.6 V/cm/KV Vgun *

Grid No. 1 Voltage for extinction of undeflected focused spot 3% of Vgun

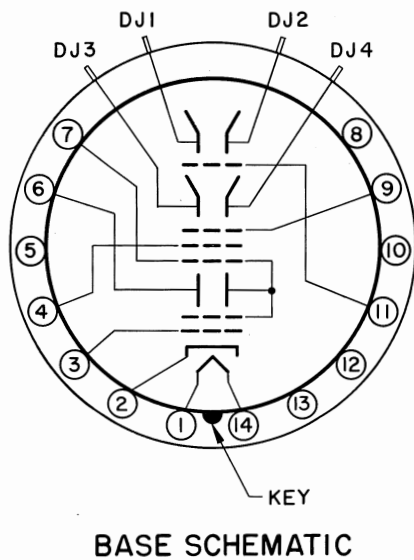
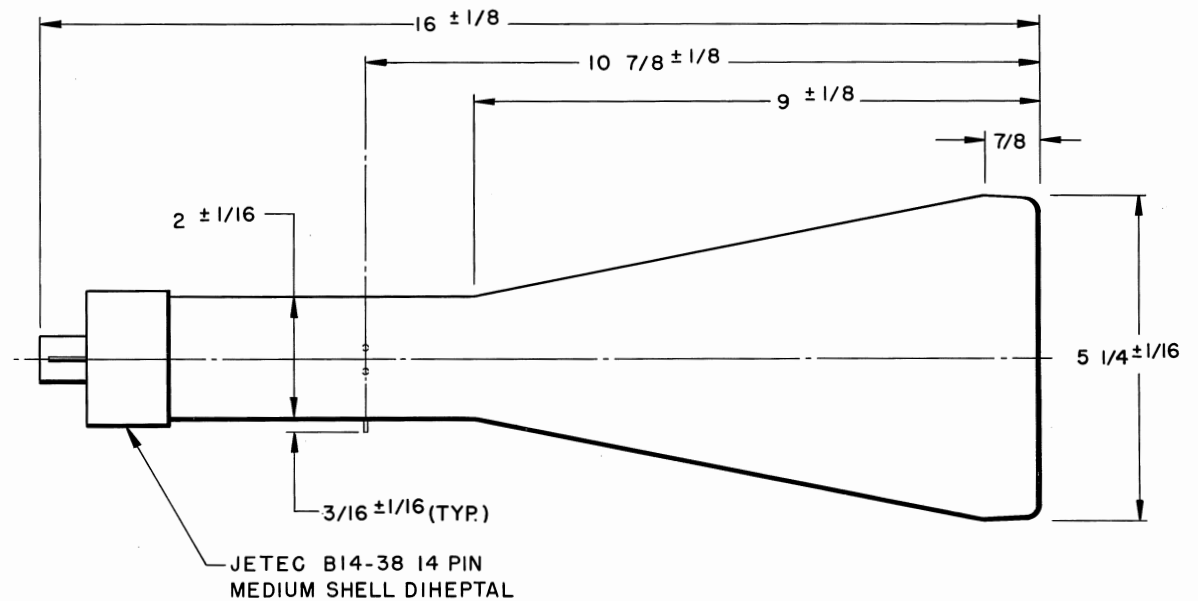
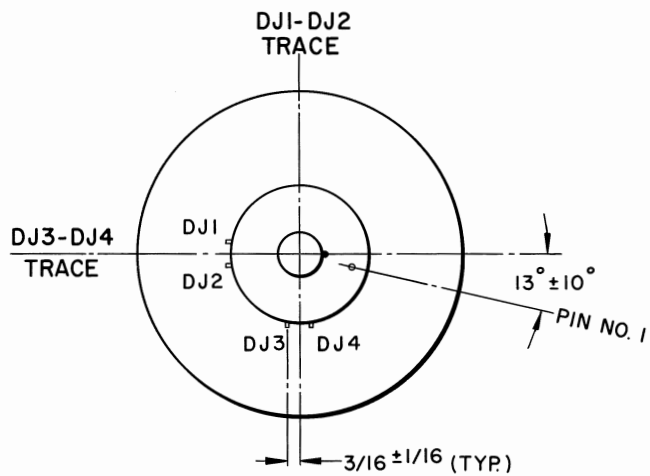
Focus Electrode Voltage (recommended range) 3% to 22% of Vgun

Deflection Blanking Voltage (BJ₁-BJ₂) 2.5% of Vgun

($I_k = 200 \mu a$)

NOTES:

1. * Asterisk denotes change. Revision A applies to all T503's S/N 4000 and above.



BASE CONNECTIONS

- 1, 14 HEATER
- 2 CATHODE
- 3 GRID NO. 1 (CONTROL)
- 4 GRID NO. 4 (FOCUS)
- 5, 8, 10 N.C.
- 12, 13
- 6 BJ2 (BLANKING PLATE)
- 7 GRID NO. 2 & 3 (1ST ANODE)
BJ1 (BLANKING PLATE RETURN)
- 9 GRID NO. 5 (ASTIGMATISM)
- 11 ISOLATION SHIELD

MARK	DATE	DESCRIPTION	BY	APPR
		CATHODE-RAY TUBE DIVISION		
		TEKTRONIX, INC.		
		PORTLAND, OREGON, U.S.A.		
		TUBE TYPE:	T 503	
		DATE:		5-18-60
		MOD.		