



# TECHNICAL DATA

TEKTRONIX  
T543P \_\_\_

8/24/60

The Tektronix Type T543P\_\_\_ is an aluminized 5" flat-faced cathode ray tube with electrostatic focus and deflection and has a helical post-accelerator. The T543P\_\_\_ was designed for use in the Tektronix Types 541A, 543, and 545A oscilloscopes.

## MECHANICAL SPECIFICATIONS:

Overall Length .....	18 $\frac{1}{8}$ $\pm$ 3/16 inches
Greatest Diameter of Bulb .....	5 5/16 inches
Bulb Contact .....	J1-21
Neck Pin Diameter .....	0.040 $\pm$ .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 $\pm$ 10% Amperes RMS
Helix Resistance Range .....	200 to 600 Megohms

### Capacitance, Interelectrode (Typical Values):

Grid No. 1 to all other electrodes .....	8.6 $\mu$ mf
Cathode to all other electrodes .....	4.6 $\mu$ mf
DJ <sub>1</sub> to DJ <sub>2</sub> .....	1.8 $\mu$ mf
DJ <sub>1</sub> to all other electrodes except DJ <sub>2</sub> .....	3.8 $\mu$ mf
DJ <sub>2</sub> to all other electrodes except DJ <sub>1</sub> .....	3.8 $\mu$ mf
DJ <sub>3</sub> to DJ <sub>4</sub> .....	1.6 $\mu$ mf
DJ <sub>3</sub> to all other electrodes except DJ <sub>4</sub> .....	3.2 $\mu$ mf
DJ <sub>4</sub> to all other electrodes except DJ <sub>3</sub> .....	3.2 $\mu$ mf

### Deflection Polarity :

- Positive Voltage on DJ<sub>1</sub> deflects beam toward Pin No. 4
- Positive Voltage on DJ<sub>3</sub> deflects beam toward Pin No. 1

### Geometry: (Measured under typical operating conditions and PDA Ratio of 6)

Minimum useful scan DJ <sub>1</sub> -DJ <sub>2</sub> .....	10 cm
Minimum useful scan DJ <sub>3</sub> -DJ <sub>4</sub> .....	4 cm
Trace Orthogonality .....	90° $\pm$ 1°
Centering of undeflected spot with respect to geometric center (Deflection electrodes connected to Grid #5) .....	5 mm Max.
Raster Distortion .....	1.5% Max.

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

Post Accelerator Voltage .....	12,000 Max. Volts
Accelerator and deflection system	
(Screen, 1st anode, 2nd anode, deflection plates, deflection plate shields, Isolation shield, lower helix.) .....	2,100 Max. Volts
Focus Electrode	
Voltage Range .....	0 to 800 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 .....	200 Max. Volts
Positive bias value .....	0 Max. Volts
Peak Positive bias 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 .....	6 Max Watts

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

Electrode Designation	Symbol	
Post Accelerator Voltage .....	Epa	10,000 Volts DC
Lower Helix Voltage .....	E1h	1575 to 1700 Volts DC
Isolation Shield Voltage .....	Eg5	
(Note 1)		
Average of Deflection Plates .....		1650 Volts DC
DJ <sub>3</sub> -DJ <sub>4</sub> Deflection Shield Voltage .....	Es4	1650 Volts DC
Accelerator Voltage		
Grid No. 4 (Astigmatism) .....	Eg4	1575 to 1850 Volts DC
Grid No. 2 (1st Anode) .....	Eg2	1700 Volts DC
Grid No. 3 Voltage (Focus) .....	Eg3	210 to 550 Volts DC
Grid No. 1 Voltage (Control) .....	Eg1	-50 to -80 Volts DC (cutoff)
Deflection Factors (Nominal)		
DJ <sub>1</sub> -DJ <sub>2</sub> .....		29.5 Volts/cm
DJ <sub>3</sub> -DJ <sub>4</sub> .....		6.75 Volts/cm

Useful Scan

DJ <sub>1</sub> -DJ <sub>2</sub> .....	10 cm
DJ <sub>3</sub> -DJ <sub>4</sub> .....	4 cm

DESIGN RANGES:

Minimum Scan (PDA Ratio of 6)

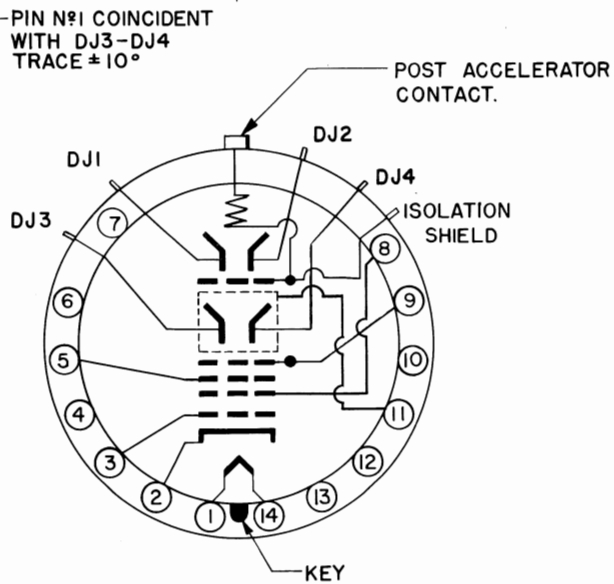
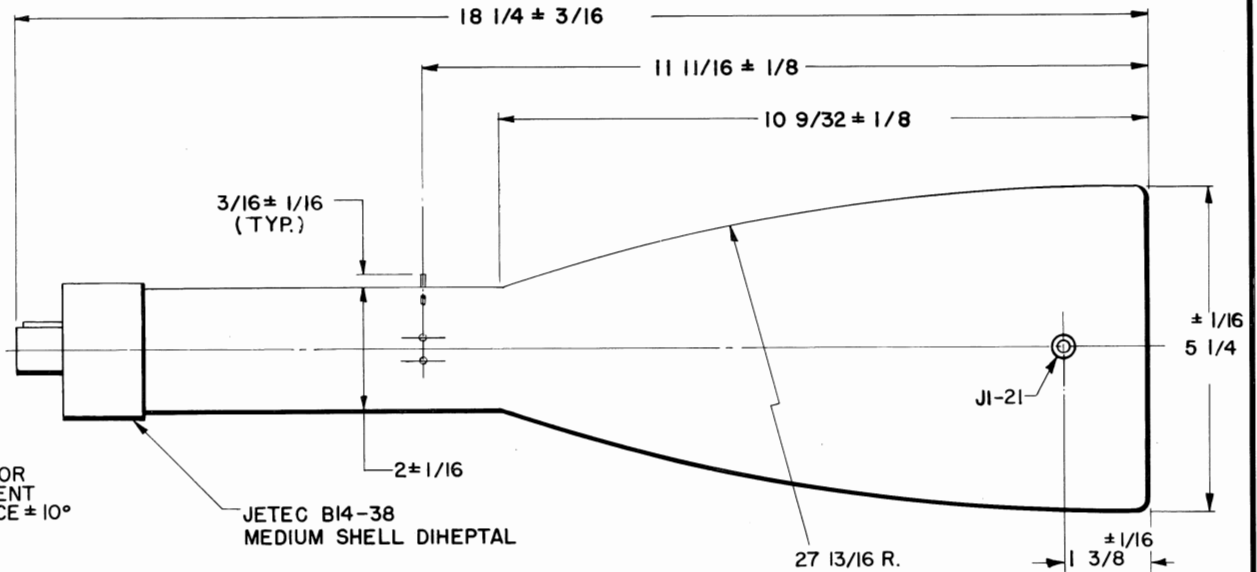
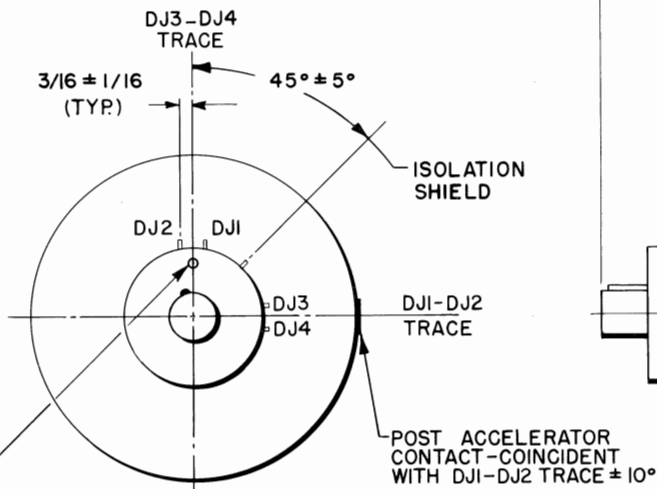
DJ <sub>1</sub> -DJ <sub>2</sub> .....	10 cm
DJ <sub>3</sub> -DJ <sub>4</sub> .....	4 cm

Deflection Factors (PDA Ratio of 6)

DJ <sub>1</sub> -DJ <sub>2</sub> .....	15.9 to 18.8 V/cm/KV Vgun
DJ <sub>3</sub> -DJ <sub>4</sub> .....	3.5 to 4.4 V/cm/KV Vgun
Grid #1 Voltage for extinction of undeflected focused spot .....	5% of Vgun
Focus Electrode Voltage (recommended range) .....	13% to 33% of Vgun

NOTES:

1. Lower helix and isolation shield are connected internally. Pattern distortion minimal with proper potential.



**BASE SCHEMATIC**

**BASE CONNECTIONS**

- 1, 14 HEATER
- 2 CATHODE
- 3 GRID N° 1
- 4, 6, 7, 10 N.C.
- 12, 13
- 5 GRID N° 3 (FOCUS)
- 8. GRID N° 2 (1ST. ANODE)
- 9. GRID N° 4 (ASTIGMATISM)
- 11. DJ3-DJ4 (SHIELD)

MARK	DATE	DESCRIPTION	BY	APPR
		CATHODE-RAY TUBE DIVISION <b>TEKTRONIX, INC.</b> PORTLAND, OREGON, U.S.A.		
		TUBE TYPE:	DATE: 7-1-60 MOD.	
		 T543		