



TECHNICAL DATA

TEKTRONIX
T533P

8/25/60

The Tektronix T533P___ is an aluminized 5-inch flat-faced cathode ray tube with electrostatic focus and deflection and a helical post-accelerator. The T533P___ is designed primarily for use in the Tektronix 531A, 533, and 535A series oscilloscopes.

MECHANICAL SPECIFICATIONS:

Overall Length	17½ ± 3/16 inches
Greatest Diameter of Bulb	5 5/16 inches
Bulb Contact	J1-21
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
Helix Resistance Range	200 to 600 Megohms

Capacitance, Interelectrode (Typical Values):

Grid No. 1 to all other electrodes	8.7 μμf
Cathode to all other electrodes	4.7 μμf
DJ ₁ to DJ ₂	1.8 μμf
DJ ₁ to all other electrodes except DJ ₂	3.6 μμf
DJ ₂ to all other electrodes except DJ ₁	3.7 μμf
DJ ₃ to DJ ₄	1.7 μμf
DJ ₃ to all other electrodes except DJ ₄	2.7 μμf
DJ ₄ to all other electrodes except DJ ₃	2.6 μμf

Deflection Polarity:

- Positive Voltage on DJ₁ deflects beam toward Pin No. 4
- Positive Voltage on DJ₃ deflects beam toward Pin No. 1

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

Minimum useful scan DJ ₁ -DJ ₂	10 cm
Minimum useful scan DJ ₃ -DJ ₄	6 cm
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)

Post Accelerator Voltage	12,000 Max. Volts
Accelerator and deflection system (Screen, 1st anode, 2nd anode, deflection plates, isolation shield, lower helix)	2,000 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 cathode)

Electrode Designation	Symbol	
Post Accelerator Voltage	Epa	10,000 Volts DC
Lower Helix Voltage and Isolation Shield Voltage	E1h } Eg5 }	1575 to 1700 Volts DC
(Note 1)		
Average of Deflection Plates		1660 Volts DC
Accelerator Voltage		
Grid No. 4 (Astigmatism)	Eg4	1575 to 1850 Volts DC
Grid No. 2 (1st Anode)	Eg2	1650 Volts DC
Grid No. 3 Voltage (Focus)	Eg3	120 to 590 Volts DC
Grid No. 1 Voltage (Control)	Eg1	-50 to -80 Volts (cutoff)
Deflection Factors (Nominal)		
DJ ₁ -DJ ₂		30 Volts/cm
DJ ₃ -DJ ₄		9.8 Volts/cm
Useful Scan		
DJ ₁ -DJ ₂		10 cm
DJ ₃ -DJ ₄		6 cm

DESIGN RANGES:

Minimum Scan (PDA Ratio 6)

DJ ₁ -DJ ₂	10 cm
DJ ₃ -DJ ₄	6 cm

Deflection Factors (PDA Ratio 6)

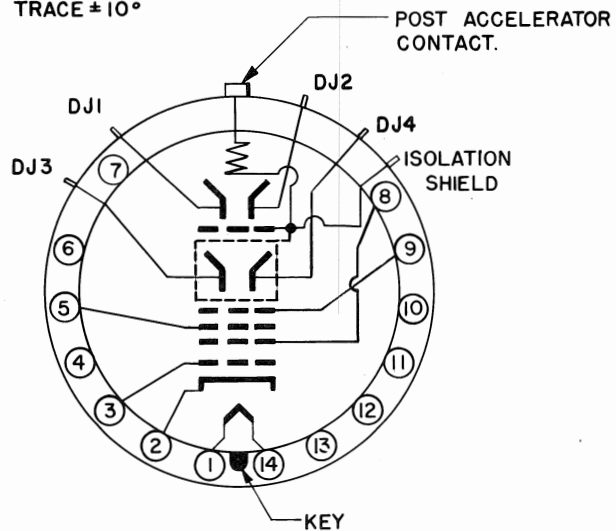
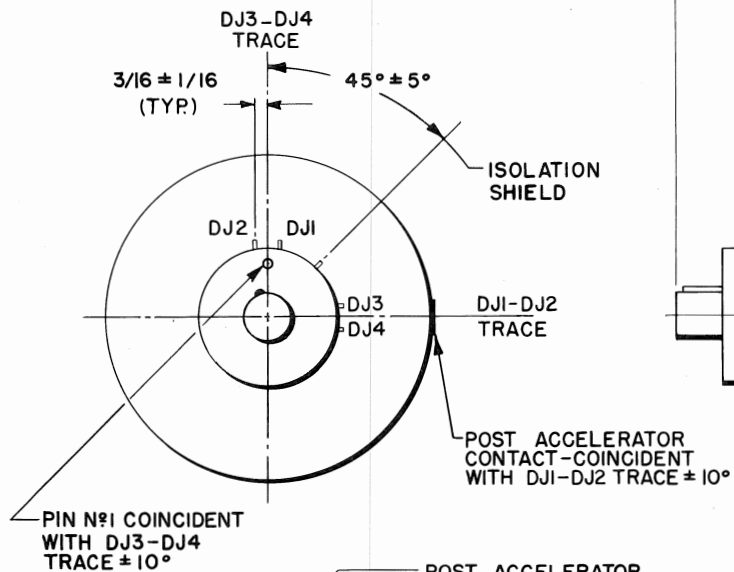
DJ ₁ -DJ ₂	16.4 to 20 V/cm/KV Vgun
DJ ₃ -DJ ₄	5.2 to 6.7 V/cm/KV Vgun

Grid #1 Voltage for extinction of undeflected focused spot 5% of Vgun

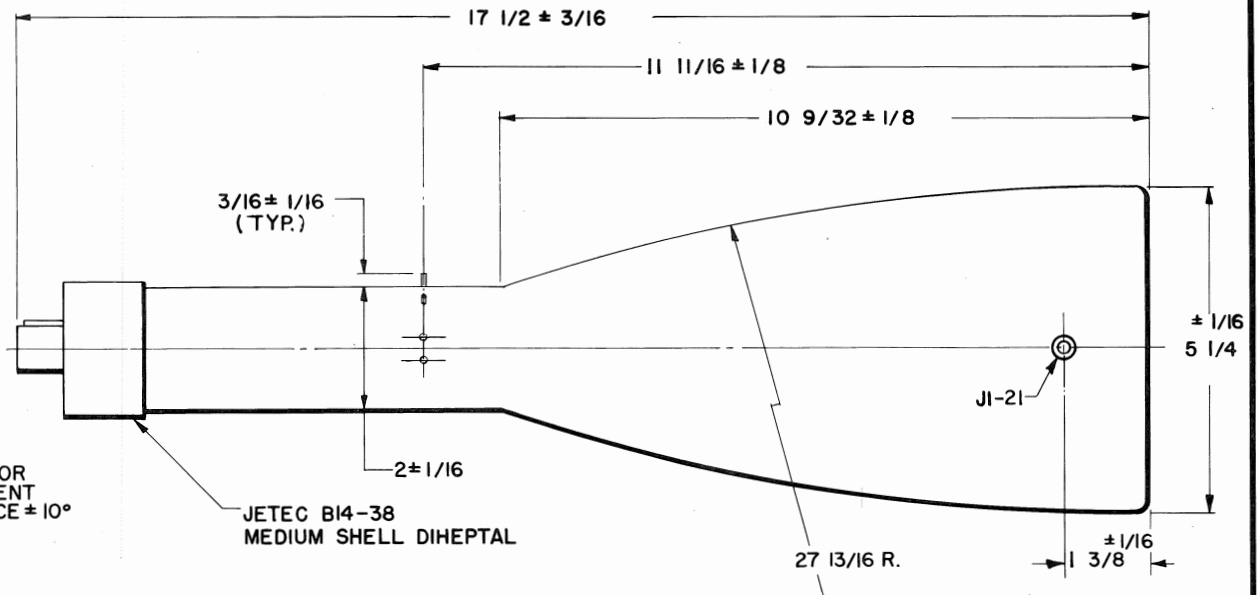
Focus Electrode Voltage (recommended range) 7% to 36% of Vgun

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, N.C.
- 10, 11, 12, 13.
- 5 GRID N° 3 (FOCUS)
- 8 GRID N° 2 (FIRST ANODE)
- 9 GRID N° 4 (ASTIGMATISM)

MARK	DATE	DESCRIPTION	BY	APPR
		CATHODE-RAY TUBE DIVISION TEKTRONIX, INC. PORTLAND, OREGON, U.S.A.		
		TUBE TYPE: T-533	DATE: 7-1-60	
			MOD.	