



CRT DATA

T5031

Revision A

4-19-68

CRT Engineering

DESCRIPTION

The Tektronix Type T5031 is a 4 x 5 inch rectangular flat-faced cathode-ray tube with electrostatic focus and deflection. The T5031 is designed primarily for use in the Tektronix RM561 general purpose oscilloscope.

ELECTRICAL DATA

Heater voltage	6.3 V RMS
Heater Current	0.6 ±10% A RMS
Capacitance, interelectrode (typical values):	
Grid no. 1 to all other electrodes	7.9 pF
Cathode to all other electrodes	5.0 pF
DJ ₁ to DJ ₂	2.6 pF
DJ ₁ to all other electrodes except DJ ₂	2.3 pF
DJ ₂ to all other electrodes except DJ ₁	2.3 pF
DJ ₃ to DJ ₄	1.5 pF
DJ ₃ to all other electrodes except DJ ₄	1.7 pF
DJ ₄ to all other electrodes except DJ ₃	1.7 pF
BJ ₂ to all other electrodes	7.7 pF
Deflection polarity:	
Positive voltage on DJ ₁ deflects beam toward pin no. 4	
Positive voltage on DJ ₃ 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	8 x 10 cm
Trace orthogonality	90° ± 1°
Centering of undeflected spot with respect to geometric center	5 mm
(Deflection electrodes connected to grid no. 5)	
Raster Distortion	1.3% max

MECHANICAL DATA

Overall length	16.125 ± .125 inches
Greatest width of bulb	5.062 inches
Greatest weight of bulb	4.062 inches
Neck pin diameter	0.040 ± .002 inches
Base	JEDEC no. B14-38
Bulb to gun alignment	± 3°
Bulb and base alignment	See outline drawing

RATINGS (absolute maximum values)¹

Accelerator and deflection system: (Screen, 1st anode, blanking plates, 2nd anode, deflection plates, isolation shield)		4000 V max
Focus electrode:		
Voltage range		0 to 4000 V
Maximum current to focus electrode		± 10 μA
Peak voltage between electrodes:		
Plate to Plate		500 V max
Plate to all other electrodes in the accelerator and deflection system		500 V max
Between any two electrodes in the accelerator and deflection system		500 V max
Grid no. 1 voltage:		
Negative bias value		150 V max
Positive bias value		0 V max
Positive peak value		2 V max
Peak heater-cathode voltage:		
Heater negative with respect to cathode		125 V max
Heater positive with respect to cathode		125 V max
Maximum electrode power dissipation:		
1st anode and blanking plates		3 watts

TYPICAL OPERATING CONDITIONS¹

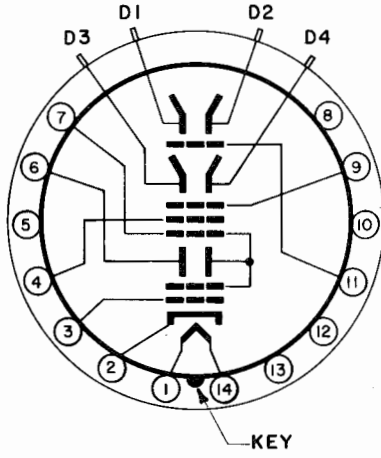
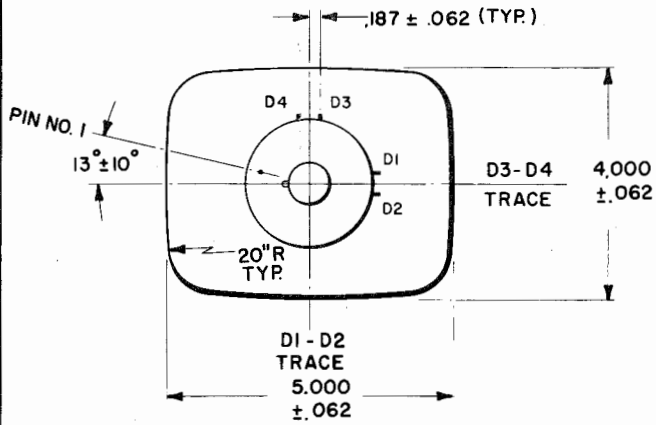
Electrode designation:		
Screen voltage		3500 V DC
Isolation shield voltage		3500 V DC
Average of deflection plates		3500 V DC
Accelerator voltage:		
Grid no. 5 (astigmatism)		3350 to 3650 V DC ²
Grid no. 2 & 3 (1st anode)		3500 V DC
Blanking plate		3500 V DC
Grid no. 4 voltage (focus)		460 to 820 V DC ²
Grid no. 1 voltage (control)		-53 to -88 V DC (cutoff)
Deflection factors (nominal):		
DJ ₁ -DJ ₂		22.8 V/cm
DJ ₃ -DJ ₄		18.4 V/cm
Useful scan:		
DJ ₁ -DJ ₂		8 cm
DJ ₃ -DJ ₄		10 cm
Deflection blanking voltage (BJ ₁ -BJ ₂):		
For visual cutoff at I _k = 200 μA		± 88 V

DESIGN RANGES

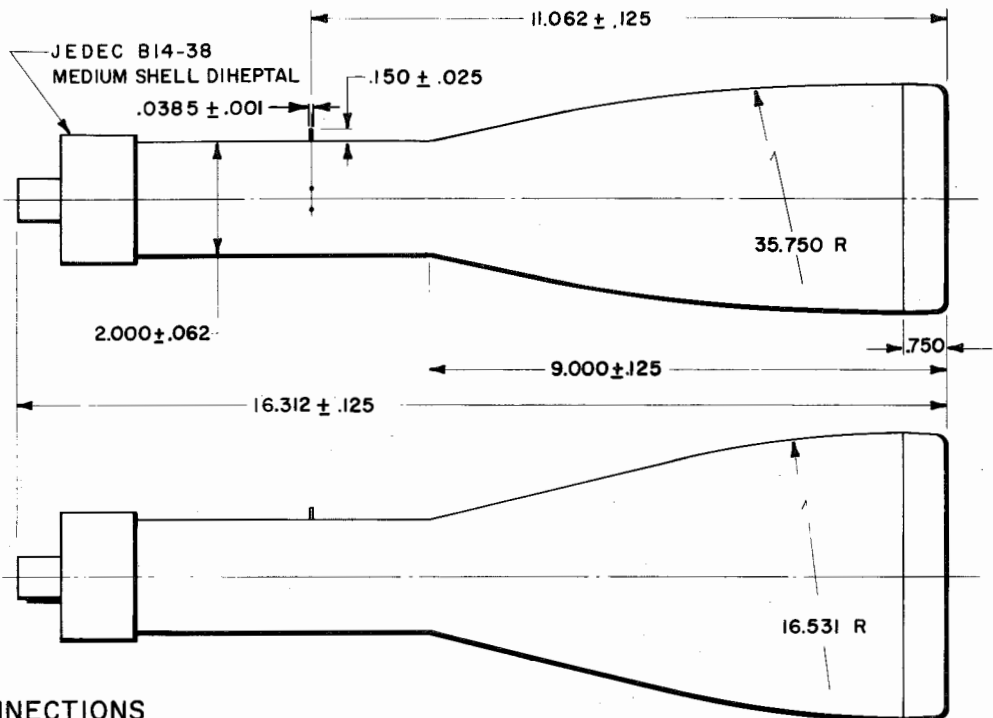
Minimum scan:		
DJ ₁ -DJ ₂		8 cm
DJ ₃ -DJ ₄		10 cm
Deflection factors:		
DJ ₁ -DJ ₂		6.2 to 6.9 V/cm/kV of V _{gun}
DJ ₃ -DJ ₄		5.0 to 5.5 V/cm/kV of V _{gun}
Grid no. 1 voltage for extinction of undeflected focused spot		3% of V _{gun}
Focus electrode voltage (recommended range)		13% to 23% of V _{gun}
Deflection blanking voltage (BJ ₁ -BJ ₂)		2.5% of V _{gun}
(I _k = 200 μA)		

NOTES

1. All measurements taken with respect to cathode.
2. Recommended range. Adjust for optimum overall focus.



TUBE SCHEMATIC



BASE CONNECTIONS

- 1,14 HEATER
- 2 CATHODE
- 3 GRID NO.1
- 4 FOCUSING ELECTRODE
- 5,8,10 N.C.
- 12,13
- 6 (B2) BLANKING PLATE
- 7 ACCELERATOR (B1) BLANKING PLATE RETURN
- 9 ASTIGMATISM ELECTRODE
- 11 ISOLATION SHIELD

MARK	DATE	DESCRIPTION	BY	APPR
		CATHODE-RAY TUBE DIVISION TEKTRONIX, INC. PORTLAND, OREGON, U.S.A.		
		TUBE TYPE: T5031	DATE: MOD.	