



TECHNICAL DATA

T5033

2/24/64

TEKTRONIX

The Tektronix Type T5033 is a 4 x 5-inch rectangular flat-faced aluminized cathode-ray tube with electrostatic focus and deflection. The T5033 is designed primarily for use in the Tektronix Type 561S General-Purpose Oscilloscope.

MECHANICAL SPECIFICATIONS:

Overall length	16-3/16 ±1/8 inches
Greatest width of bulb	5-1/16 inches
Greatest height of bulb.	4-1/16 inches
Neck pin diameter.	0.040 ±.002 inch
Base	JEDEC NO. B14-38
Bulb to gun alignment.	±3°
Bulb and base alignment.	See outline drawing

ELECTRICAL DATA:

Heater voltage	6.3 volts RMS
Heater current	0.6 ±10% ampere RMS
Capacitance, interelectrode (typical values)	
Grid No. 1 to all other electrodes	8.4 μf
Cathode to all other electrodes	4.7 μf
DJ1 to DJ2.	3.1 μf
DJ1 to all other electrodes except DJ2.	2.8 μf
DJ2 to all other electrodes except DJ1.	2.8 μf
DJ3 to DJ4.	2.5 μf
DJ3 to all other electrodes except DJ4.	2.0 μf
DJ4 to all other electrodes except DJ3.	1.9 μf
BJ2 to all other electrodes	8.4 μf

Deflection polarity

Positive voltage on DJ1 deflects beam toward pin No. 8

Positive voltage on DJ3 deflects beam toward pin No. 4

Geometry (measured under typical operating conditions)

Minimum useful scan DJ1-DJ2	10 cm
Minimum useful scan DJ3-DJ4	6 cm
Minimum quality screen area	6 x 10 cm
Trace orthogonality	90° ±1°
Centering of undeflected spot with respect to geometric center.	5 mm Horizontal
(deflection electrodes connected to grid No.6)	5 mm Vertical
Raster distortion	1.3% Max.

ABSOLUTE MAXIMUM RATINGS (all measurements taken with respect to cathode):

Accelerator and deflection system

(screen, 1st anode, blanking plates, 2nd anode,
deflection plate, isolation shield) 4000 volts Max.

Focus electrode

Voltage range 0 to 4000 volts

Maximum current to focus electrode. ±10 µA

Peak voltage between electrodes

Plate to plate. 500 volts Max.

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

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

Grid No. 1 voltage

Negative bias value 150 volts Max.

Positive bias value 0 volts Max.

Peak positive bias value. 2 volts Max.

Peak heater-cathode voltage

Heater negative with respect to cathode 125 volts Max.

Heater positive with respect to cathode 125 volts Max.

Maximum electrode power dissipation

1st anode and blanking plates 3 watts Max.

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

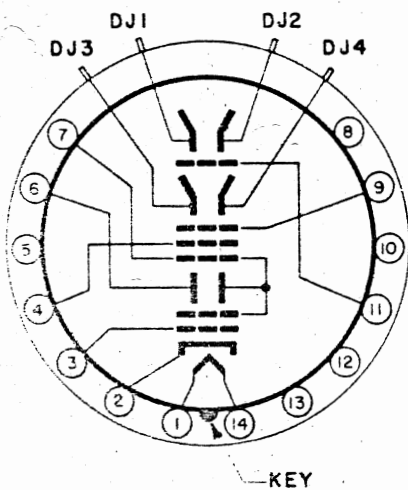
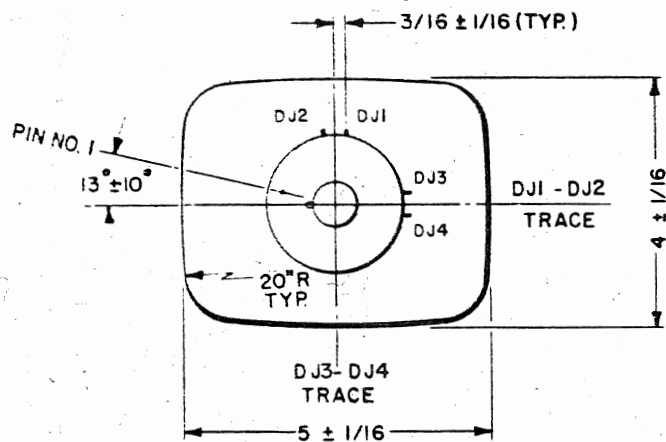
Electrode designation	<u>Symbol</u>	
Screen voltage	Esc)	3450 to 3550 volts DC ¹
Isolation shield voltage	Eg6)	
Average of deflection plates	Edp	3500 volts DC
Accelerator voltage		
Grid No. 5 (astigmatism)	Eg5	3350 to 3650 volts DC ²
Grid No. 2 and 3 (1st anode)	Eg2,3)	3500 volts DC
Blanking plate	BJ1)	
Grid No. 4 voltage (focus)	Eg4	460 to 820 volts DC ²
Grid No. 1 voltage (control)	Eg1	-53 to -88 volts DC (cutoff)
Deflection factors (nominal) ³		
DJ1-DJ2		20.4 volts/cm
DJ3-DJ4		11.7 volts/cm
Useful scan ³		
DJ1-DJ2		10 cm
DJ3-DJ4		6 cm
Deflection blanking voltage (BJ1-BJ2)		
For visual cutoff at $I_K = 200 \mu\text{A}$		± 88 volts

DESIGN RANGES:

Deflection factors (6 x 10 cm display) ³		
DJ1-DJ2		5.5 to 6.1 V/cm/kV of Edp
DJ3-DJ4		3.2 to 3.5 V/cm/kV of Edp
Grid No. 1 voltage for extinction of undeflected focused spot		
		2.5% of Edp
Focus electrode voltage (recommended range)		13% to 23% of Edp
Deflection blanking voltage (BJ1-BJ2)		2.5% of Edp
($I_K = 200 \mu\text{A}$)		

NOTES:

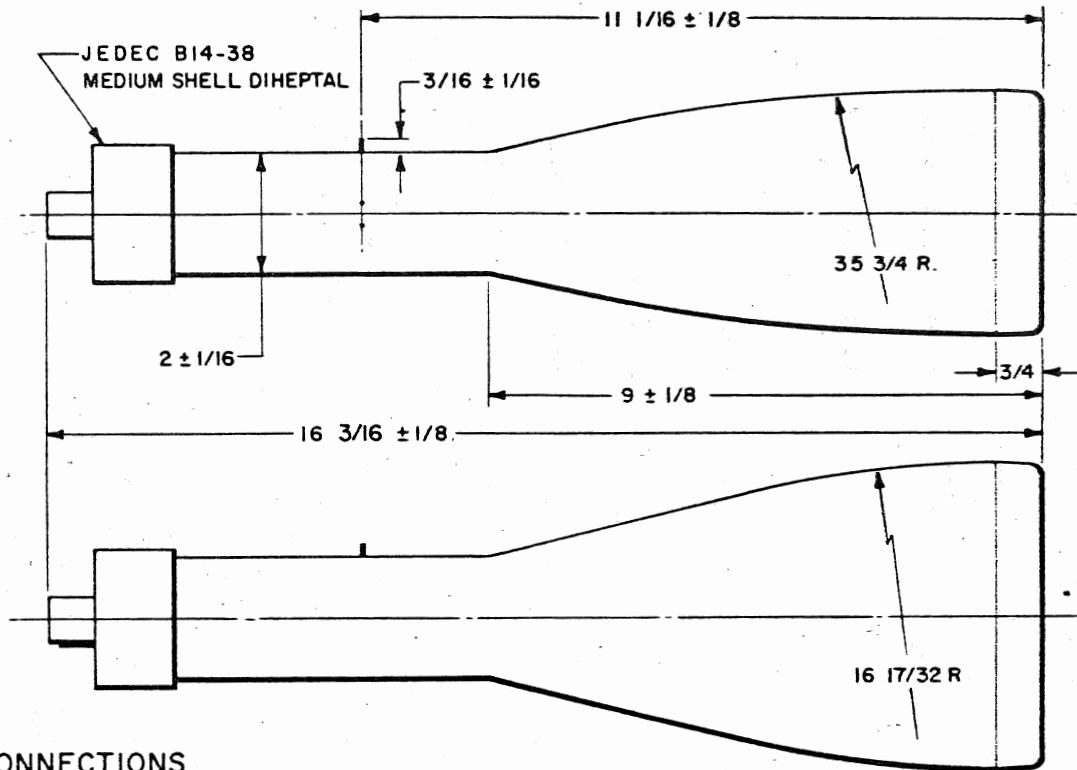
1. The isolation shield and aquadag coating are connected internally. Pattern distortion minimal with proper potential.
2. Recommended range. Adjust for optimum overall focus.
3. The deflection plates intercept part of the electron beam near the edge of scan; therefore, a low-impedance deflection drive is desirable.



BASE SCHEMATIC

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 (FIRST ANODE)
BJ1 (BLANKING PLATE RETURN)
- 9 GRID NO.5 (ASTIGMATISM)
- 11 GRID NO.6 (ISOLATION SHIELD)



MARK	DATE	DESCRIPTION	BY	APP
		CATHODE-RAY TUBE DIVISION TEKTRONIX, INC. PORTLAND, OREGON, U.S.A.		
		TUBE TYPE:	DATE:	
		T5033	MOD.	