



# TECHNICAL DATA

TEKTRONIX  
T5511P

Revision A

8/1/62

The Tektronix Type T5511P is an aluminized 5-inch flat-faced cathode ray tube with electrostatic focus and deflection and a helical post-accelerator. Two identical electron guns with separate DJ<sub>3</sub>-DJ<sub>4</sub> deflection systems share a common DJ<sub>1</sub>-DJ<sub>2</sub> deflection system. The T5511P was designed for use in the Tektronix Type 551 Oscilloscope.

## MECHANICAL SPECIFICATIONS:

Overall length .....	18 $\frac{1}{2}$ $\pm \frac{3}{16}$ inches
Greatest diameter of bulb .....	5 $\frac{5}{16}$ inches
Bulb contact .....	J1-21
Neck pin diameter .....	0.040 $\pm .002$ inch
Base .....	JEDEC NO. B14-38
Bulb and base alignment .....	See outline drawing

## ELECTRICAL DATA:<sup>1</sup>

Heater voltage .....	6.3 volts RMS
Heater current, total .....	1.2 $\pm 10\%$ amperes RMS
Helix resistance .....	200 megohms Min.
Capacitance, interelectrode (typical values)	
Grid No. 1 to all other electrodes .....	7.0 $\mu\mu f$
Cathode to all other electrodes .....	4.7 $\mu\mu f$
DJ <sub>1</sub> to DJ <sub>2</sub> .....	3.0 $\mu\mu f$
DJ <sub>1</sub> to all other electrodes except DJ <sub>2</sub> .....	4.8 $\mu\mu f$
DJ <sub>2</sub> to all other electrodes except DJ <sub>1</sub> .....	4.8 $\mu\mu f$
DJ <sub>3</sub> to DJ <sub>4</sub> .....	2.2 $\mu\mu f$
DJ <sub>3A</sub> to all other electrodes except DJ <sub>4A</sub> .....	3.0 $\mu\mu f$
DJ <sub>3B</sub> to all other electrodes except DJ <sub>4B</sub> .....	3.0 $\mu\mu f$
DJ <sub>4A</sub> to all other electrodes except DJ <sub>3A</sub> .....	3.3 $\mu\mu f$
DJ <sub>4B</sub> to all other electrodes except DJ <sub>3B</sub> .....	3.3 $\mu\mu f$

### Deflection polarity

Positive voltage on DJ<sub>1</sub> deflects beam approximately toward pin No. 4

Positive voltage on DJ<sub>3</sub> deflects beam approximately 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 <sup>2</sup>
Trace orthogonality .....	90° $\pm 1^\circ$

Centering of undeflected spot with respect to center ..... 5 mm<sup>3</sup>  
(deflection electrodes connected to grid No. 6)

Raster distortion ..... 1.7% Max.

**MAXIMUM RATINGS (all measurements taken with respect to cathode):<sup>1</sup>**

Post-accelerator voltage ..... 12,000 volts Max.

Accelerator and deflection system

(screen, 1st anode, 2nd anode, deflection plates, deflection plate shields, isolation shield, lower helix) ..... 2100 volts Max.

Focus electrode

Voltage range ..... 0 to 800 volts

Maximum current to focus electrode .....  $\pm 10 \mu\text{a}$

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 ..... 200 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 ..... 6 watts Max.

**TYPICAL OPERATING CONDITIONS (all measurements taken with respect to cathode):<sup>1</sup>**

Electrode designation	Symbol
Post-accelerator voltage	Epa 10,000 volts DC
Lower helix voltage	Elh
Isolation shield voltage	Eg6 } 1575 to 1700 volts DC <sup>4</sup>
Average of deflection plates	Edp 1650 volts DC
DJ <sub>3</sub> -DJ <sub>4</sub> deflection shield voltage	Es1 1575 to 1700 volts DC <sup>5</sup>
Accelerator voltage	
Grid No. 5 (astigmatism)	Eg5 1575 to 1850 volts DC
Grid No. 2 (1st anode)	Eg2 1650 volts DC
Grid No. 3 (common beam registration)	Eg3 1525 to 1775 volts DC
Grid No. 4 voltage (focus)	Eg4 200 to 550 volts DC
Grid No. 1 voltage (control)	Eg1 -45 to -85 volts DC (cutoff)

Deflection factors (nominal)<sup>6</sup>

DJ <sub>1</sub> -DJ <sub>2</sub> .....	30.3 volts/cm
DJ <sub>3</sub> -DJ <sub>4</sub> .....	6.6 volts/cm

Useful scan

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

DESIGN RANGES:<sup>1</sup>

Minimum scan (PDA ratio of 6)

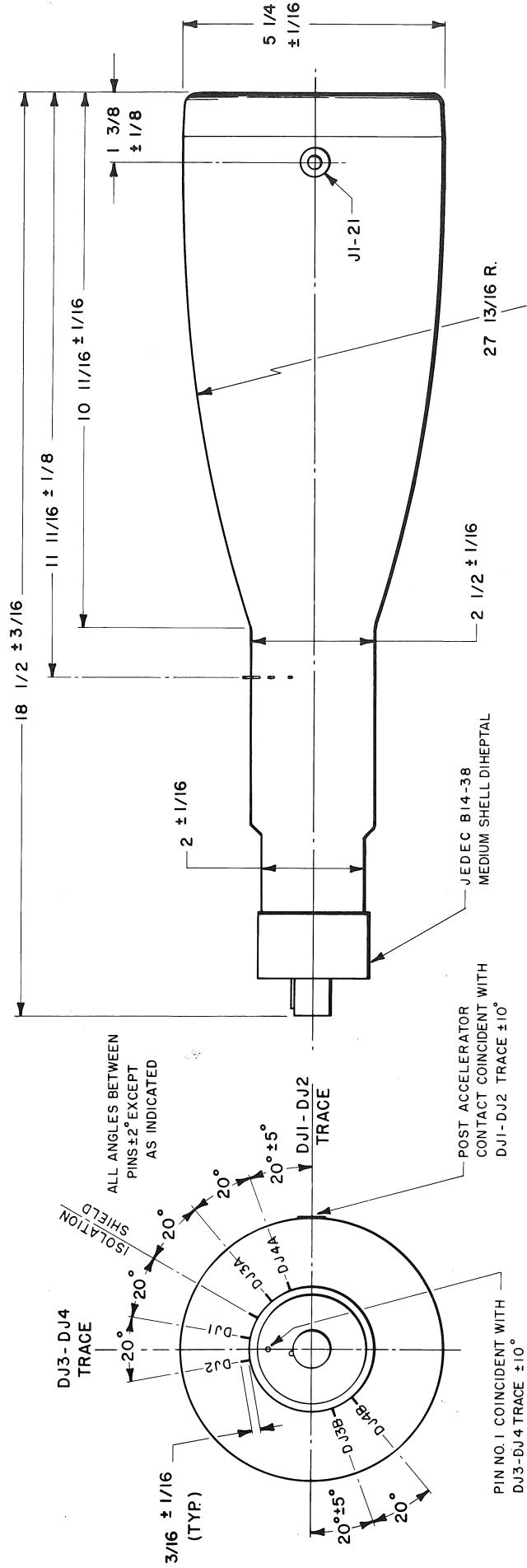
DJ <sub>1</sub> -DJ <sub>2</sub> .....	10 cm
DJ <sub>3</sub> -DJ <sub>4</sub> .....	4 cm <sup>2</sup>

Deflection factors (PDA ratio of 6)<sup>6</sup>

DJ <sub>1</sub> -DJ <sub>2</sub> .....	17.0 to 19.7 v/cm/kv of Edp
DJ <sub>3</sub> -DJ <sub>4</sub> .....	3.6 to 4.4 v/cm/kv of Edp
Grid No. 1 voltage for extinction of undeflected focused spot .....	5.2% of Edp
Focus electrode voltage (recommended range) .....	12% to 33% of Edp

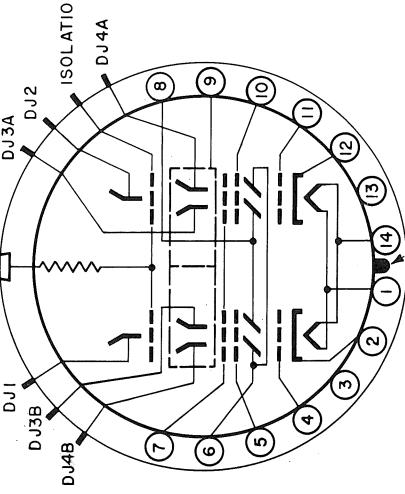
NOTES:

1. Data applies to both A and B guns separately unless otherwise noted.
2. DJ<sub>3</sub>-DJ<sub>4</sub> scans overlap 2 cm.
3. DJ<sub>1</sub>-DJ<sub>2</sub> center at geometric center of tube. DJ<sub>3</sub>-DJ<sub>4</sub> offset 1 cm from geometric center giving 2 cm total separation between A and B guns.
4. Lower helix and isolation shield are connected internally. Pattern distortion minimal with proper potential.
5. Adjustment of DJ<sub>3</sub>-DJ<sub>4</sub> deflection shield voltage improves linearity of DJ<sub>3</sub>-DJ<sub>4</sub> deflection by controlling edge effect of DJ<sub>3</sub>-DJ<sub>4</sub> plate field.
6. The deflection plates intercept part of the electron beam near the edge of scan; therefore, a low impedance deflection drive is desirable.



### BASE CONNECTIONS

POST ACCELERATOR CONTACT



### BASE SCHEMATIC



CATHODE-RAY TUBE DIVISION  
TEKTRONIX, INC.

PORTLAND, OREGON, U.S.A.

TUBE TYPE:	T 55II
DATE:	7-12-62

MOD. C