



TECHNICAL DATA

TEKTRONIX
T5470

REV. A

8/8/63

The Tektronix Type T5470P__ is an aluminized 5-inch flat-faced cathode-ray tube with electrostatic focus and deflection and a helical post-accelerator. It also features a lighted internal graticule. The T5470P__ was designed for use in the Tektronix Types 547, 543B, and 545B oscilloscopes.

MECHANICAL SPECIFICATIONS:

Overall length-----	20-1/4 ±3/16 inches*
Greatest diameter of bulb-----	5-5/16 inches
Bulb contact-----	J1-21
Neck pin diameter-----	0.040 ±.002 inch
Base-----	JEDEC NO. B14-38
Bulb and base alignment-----	See outline drawing
Gun to graticule alignment-----	±3°(1)*

ELECTRICAL DATA:

Heater voltage-----	6.3 volts RMS
Heater current-----	0.6 ±10% ampere RMS
Helix resistance-----	200 megohms Min
Capacitance, interelectrode (typical values)	
Grid No. 1 to all other electrodes-----	8.9 μμf*
Cathode to all other electrodes-----	5.0 μμf*
DJ1 to DJ2-----	2.4 μμf*
DJ1 to all other electrodes except DJ2-----	3.3 μμf*
DJ2 to all other electrodes except DJ1-----	3.2 μμf*
DJ3 to DJ4-----	1.3 μμf*
DJ3 to all other electrodes except DJ4-----	3.2 μμf*
DJ4 to all other electrodes except DJ3-----	3.1 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, PDA ratio of 5 and a 6 x 10 cm display)*

Trace orthogonality----- 90° ±1°

Centering of undeflected spot with respect to geometric center----- ±5 mm*
(deflection electrodes connected to lower helix)

Raster distortion----- 1.5% Max

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

Post-accelerator voltage----- 13,200 volts Max

Accelerator and deflection system
(screen, 1st anode, 2nd anode, deflection plates, deflection plate shields, lower helix)----- 2600 volts Max*

Focus electrode

Voltage range----- 0 to 880 volts

Maximum current to focus electrode----- ±10 μA

Peak voltage between electrodes

Plate to plate----- 550 volts Max

Plate to all other electrodes in the accelerator and deflection system----- 550 volts Max

Between any two electrodes in the accelerator and deflection system----- 550 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 average electrode power dissipation

1st anode----- 6 watts Max

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

Electrode designation	Symbol	
Post-accelerator voltage-----	Epa	10,000 volts DC
Lower helix voltage-----	Elh	1945 to 2080 volts DC ^{(2)*}
Average of deflection plates-----	Edp	2000 volts DC*
DJ3-DJ4 deflection shield voltage-----	Es4	2000 volts DC ^{(3)*}
Accelerator voltage		
Grid No. 4 (astigmatism)-----	Eg4	1945 to 2080 volts DC ^{(4)*}
Grid No. 2 (1st anode)-----	Eg2	2080 volts DC*
Grid No. 3 voltage (focus)-----	Eg3	100 - 400 volts DC ^{(4)*}
Grid No. 1 voltage (control)-----	Eg1	-65 to -95 volts DC* (cutoff)
Deflection factors (nominal) ⁵		
DJ1-DJ2-----		20 volts/cm*
DJ3-DJ4-----		7.2 volts/cm*
Useful scan ⁽⁵⁾		
DJ1-DJ2-----		10 cm
DJ3-DJ4-----		6 cm

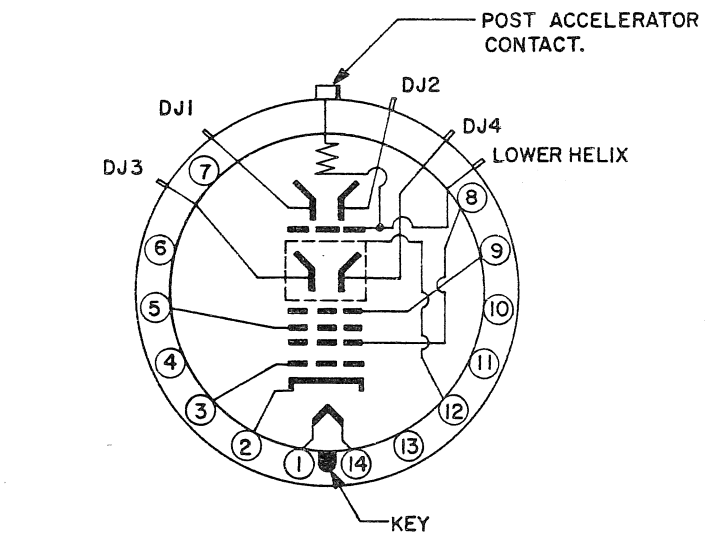
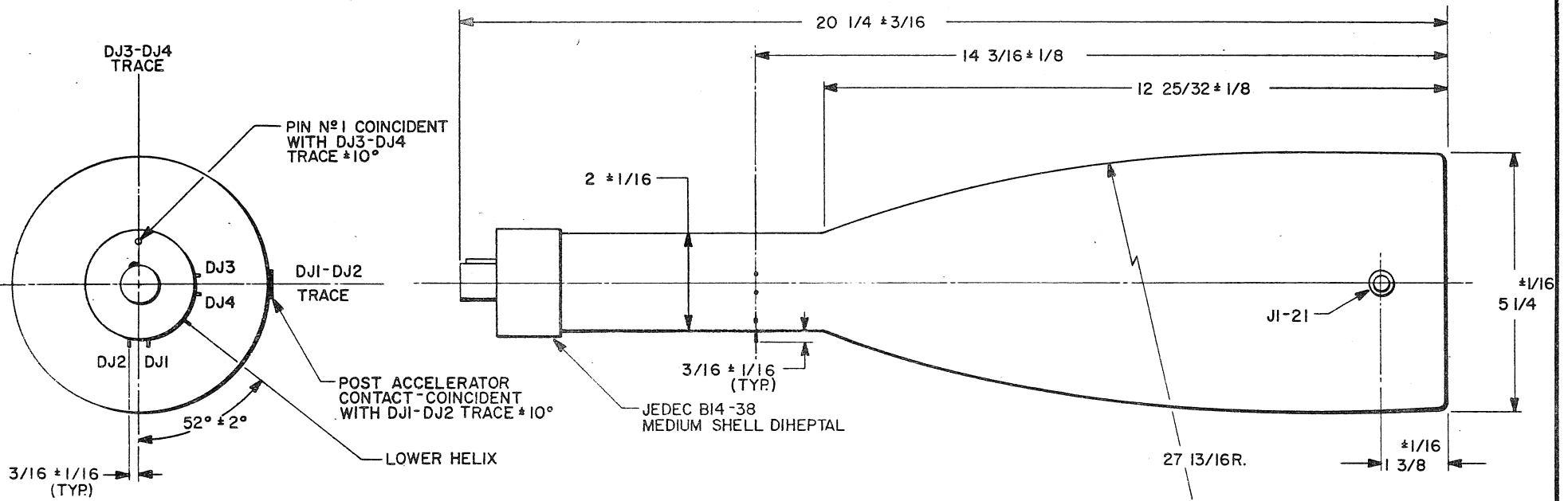
DESIGN RANGES:

Deflection factors (PDA ratio of 5 and 6 x 10 cm display) ^{(5)*}		
DJ1-DJ2-----		9 to 10 V/cm/kV of Edp*
DJ3-DJ4-----		3.3 to 3.9 V/cm/kV of Edp*
Grid No. 1 voltage for extinction of undeflected focused spot		4.7 of Edp*
Focus electrode voltage (recommended range)-----		7.0% to 33% of Edp

NOTES:

- (1) For tubes with internal graticules only.
- (2) Pattern distortion minimal with proper potential on lower helix.
- (3) Adjustment of DJ3-DJ4 deflection shield voltage improves linearity of DJ3-DJ4 deflection by controlling edge effect of DJ3-DJ4 plate field.
- (4) Recommended range. Adjust for best overall focus.
- (5) The deflection plates intercept part of the electron beam near the edge of scan; therefore, a low-impedance deflection drive is desirable.

* Asterisk denotes change.



BASE SCHEMATIC

BASE CONNECTIONS

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

MARK	DATE	DESCRIPTION	BY	APPR
		CATHODE-RAY TUBE DIVISION TEKTRONIX, INC. PORTLAND, OREGON, U.S.A.		
		TUBE TYPE:	T 5470	
			DATE:	7-22-63
			MOD.	