



TECHNICAL DATA

TEKTRONIX
T52P ___

8/3/61

The Tektronix Type T52P___ is a 5-inch flat-faced cathode ray tube with electrostatic focus and deflection and a helical post-accelerator.

MECHANICAL SPECIFICATIONS:

Overall length	17 $\frac{1}{2}$ \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:

Heater voltage	6.3 volts RMS
Heater current	0.6 \pm 10% ampere RMS
Helix resistance	200 megohms Min.
Capacitance, interelectrode (typical values)	
Grid No. 1 to all other electrodes	9.8 $\mu\mu\text{f}$
Cathode to all other electrodes	4.8 $\mu\mu\text{f}$
DJ ₁ to DJ ₂	1.8 $\mu\mu\text{f}$
DJ ₁ to all other electrodes except DJ ₂	3.8 $\mu\mu\text{f}$
DJ ₂ to all other electrodes except DJ ₁	3.8 $\mu\mu\text{f}$
DJ ₃ to DJ ₄	1.3 $\mu\mu\text{f}$
DJ ₃ to all other electrodes except DJ ₄	2.5 $\mu\mu\text{f}$
DJ ₄ to all other electrodes except DJ ₃	2.5 $\mu\mu\text{f}$

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 2.2)

Minimum useful scan DJ ₁ -DJ ₂	10 cm
Minimum useful scan DJ ₃ -DJ ₄	8 cm
Trace orthogonality	90° \pm 1°
Centering of undeflected spot with respect to geometric center (deflection electrodes connected to grid No. 5)	5 mm
Raster distortion	1.3% Max.

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

Post-accelerator voltage	6,000 volts Max.
Accelerator and deflection system	
(1st anode, 2nd anode, deflection plates, deflection plate shields, isolation shield, lower helix)	3,000 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 value	2 volts Max.
Peak heater-cathode value	
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	4,000 volts DC
Lower helix voltage	Elh	1750 to 2000 volts DC ¹
Isolation shield voltage	Eg6	
Average of deflection plates	Edp	1850 volts DC
DJ ₃ -DJ ₄ deflection shield voltage	Es1	1850 volts DC ²
Accelerator voltage	Eg2, Eg4	1850 volts DC ³
Grid No. 3 voltage (focus)	Eg3	225 to 675 volts DC
Grid No. 1 voltage (control)	Eg1	-45 to -85 volts (cutoff)
Deflection factors (nominal)		
DJ ₁ -DJ ₂		21 volts/cm
DJ ₃ -DJ ₄		9.9 volts/cm

Useful scan ⁴

DJ ₁ -DJ ₂	10 cm
DJ ₃ -DJ ₄	8 cm

DESIGN RANGES:

Minimum scan (PDA ratio 2.2)

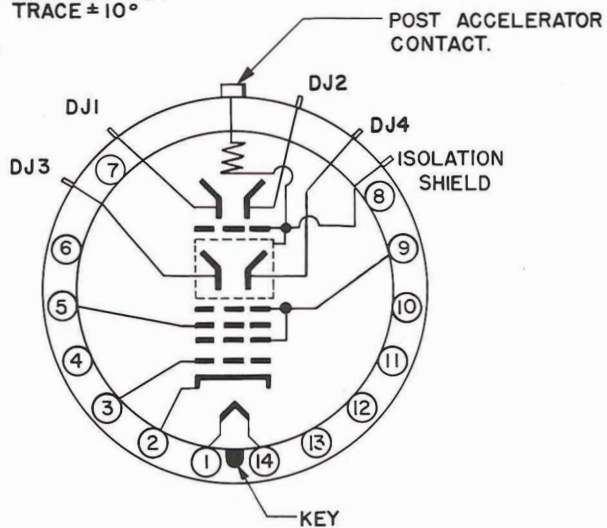
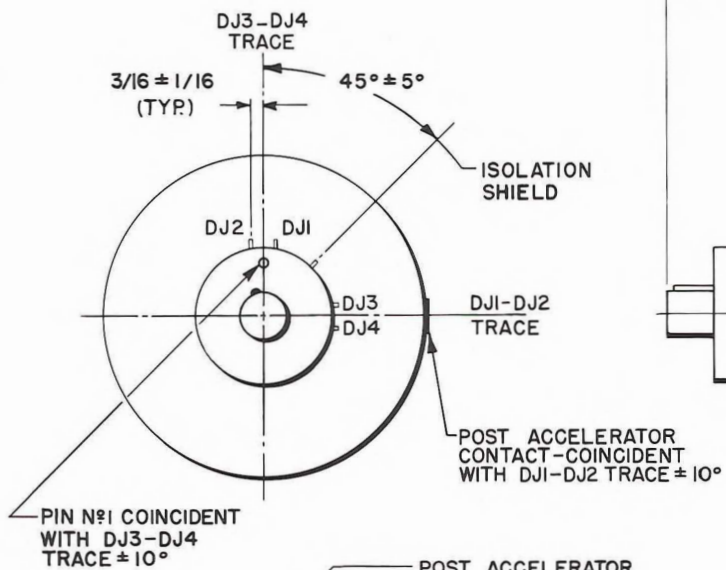
DJ ₁ -DJ ₂	10 cm
DJ ₃ -DJ ₄	8 cm

Deflection factors (PDA ratio 2.2)

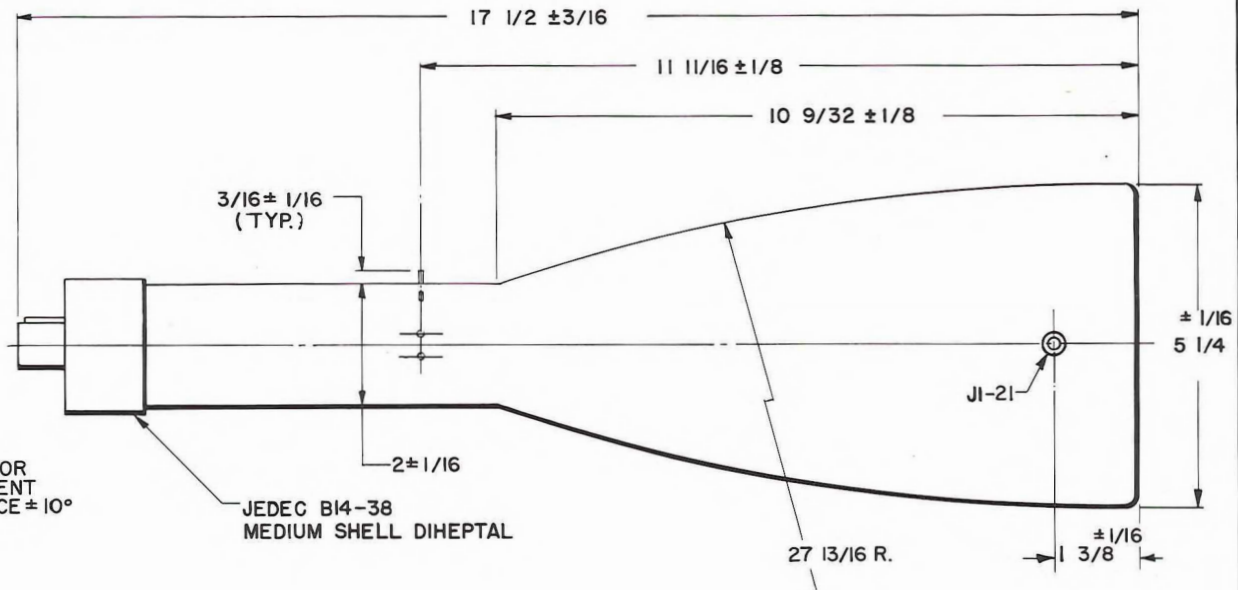
DJ ₁ -DJ ₂	10.3 to 12.4 v/cm/kv of Edp
DJ ₃ -DJ ₄	4.8 to 6.0 v/cm/kv of Edp
Grid No. 1 voltage for extinction of undeflected focused spot	4.6% of Edp
Focus electrode voltage (recommended range)	12% to 37% of Edp

NOTES:

1. Lower helix and isolation shield are connected internally. Pattern distortion minimal with proper potential.
2. Adjustment of DJ₃-DJ₄ deflection shield voltage improves linearity of DJ₃-DJ₄ deflection by controlling edge effect of DJ₃-DJ₄ plate field.
3. Grid No. 4 (astigmatism) and grid No. 2 (1st anode) are connected internally and the accelerating voltage is variable from 1750 volts to 2000 volts to provide for astigmatism control.
4. The deflection plates intercept part of the electron beam near the edge of the scan.



BASE SCHEMATIC



BASE CONNECTIONS

- 1, 14 HEATER
- 2 CATHODE
- 3 GRID N° 1
- 4, 6, 7, 8, N.C.
- 10, 11, 12, 13.
- 5 GRID N° 3 (FOCUS)
- 9. GRID N° 2 & N° 4 (ACCELERATOR)

MARK	DATE	DESCRIPTION	BY	APPR
		CATHODE-RAY TUBE DIVISION TEKTRONIX, INC. PORTLAND, OREGON, U.S.A.		
		TUBE TYPE: T52	DATE: 7-1-60	
			MOD.	



TECHNICAL DATA

PERFORMANCE CURVES
T0520

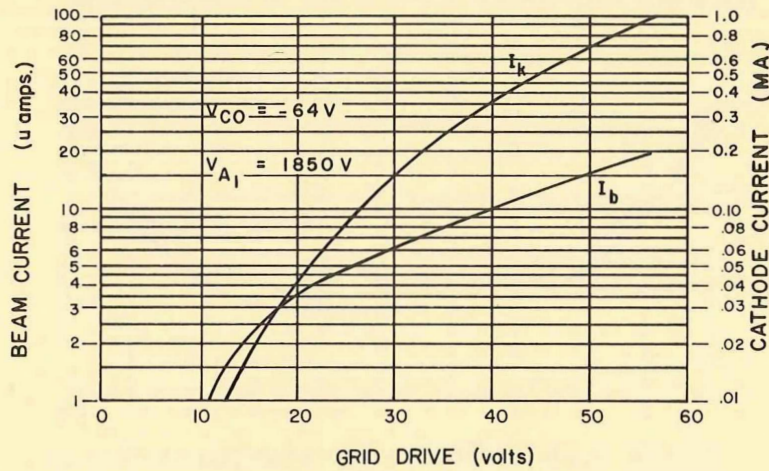
LIMITED DISTRIBUTION

12/2/63

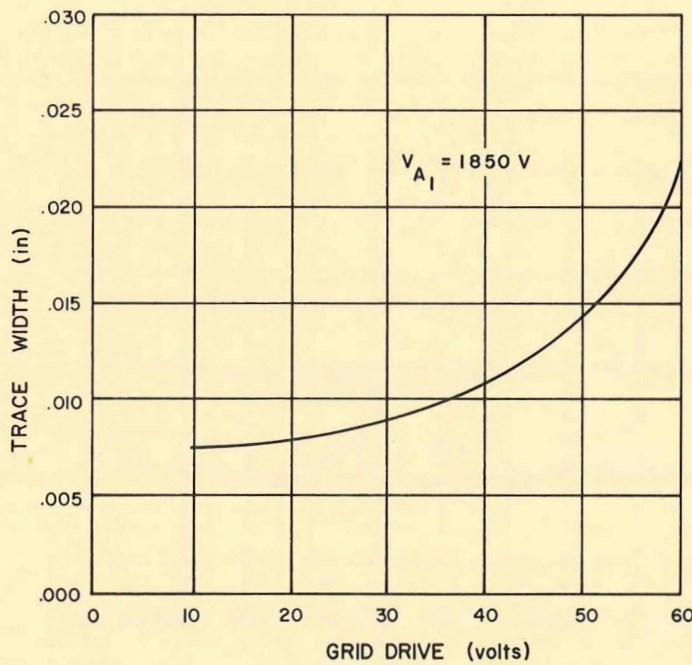
All measurements taken with voltages specified under Typical Operating Conditions on the T0520 Technical Data Sheet. This data is representative of the CRT alone dissociated from any operating circuitry.

AVERAGE GRID-DRIVE CHARACTERISTICS:

Grid drive measured as volts above cutoff.

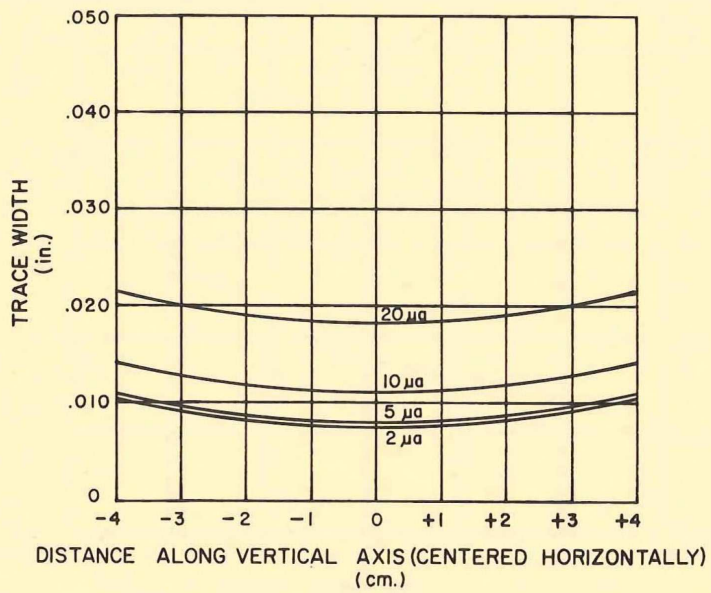
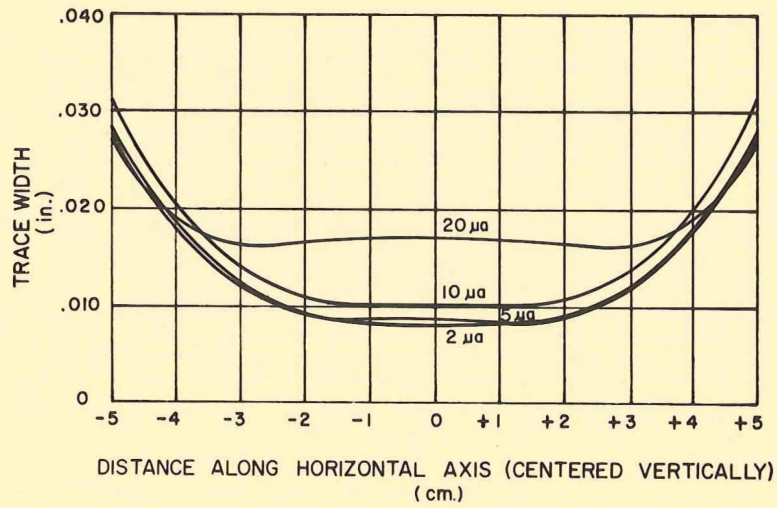


AVERAGE CENTER-SPOT-SIZE CHARACTERISTICS:



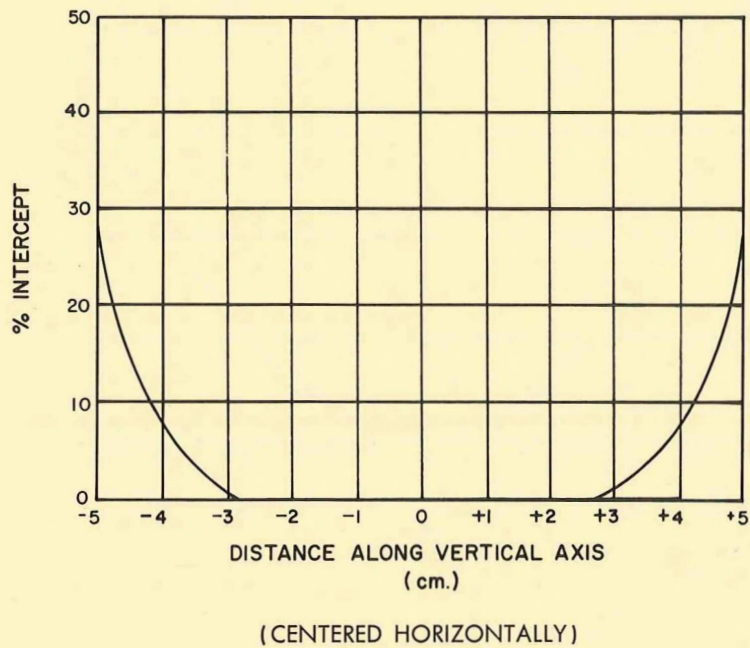
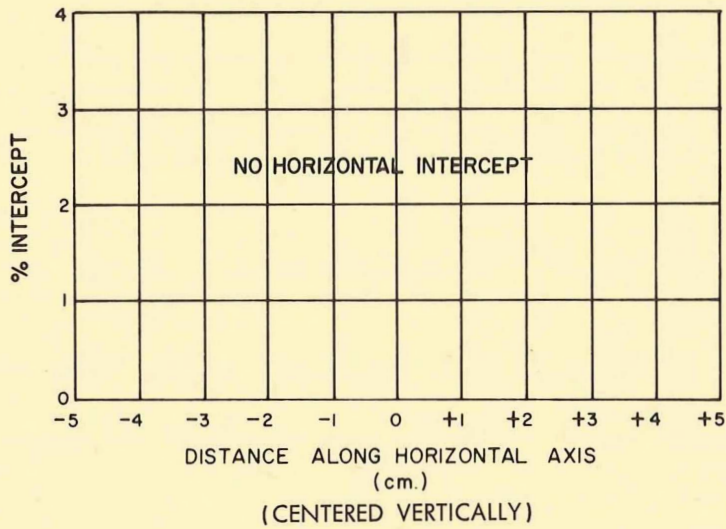
TRACE WIDTH VERSUS LOCATION ALONG AXIS:

All trace width measurements taken using shrinking raster method with 11-line raster at 2 kc rep-rate.



DEFLECTION PLATE I_b INTERCEPT:

Taken at normal viewing currents of 1-2 μ amps.



LINEARITY CHARACTERISTICS:

Percent departure from the deflection factor measured at the axis.

