



# CRT DATA

T5021

Revision B

1-15-65

## DESCRIPTION

The T5021 is a 5-inch, flat-faced, dual beam cathode-ray tube designed for oscilloscope use. The T5021 has electrostatic focus and deflection.

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

Focusing method .....	Electrostatic
Deflecting method .....	Electrostatic
Direct interelectrode capacitance, approximate:	
Cathode to all other electrodes .....	4.9 pf
Grid no. 1 to all other electrodes .....	7.5 pf
D1 to D2 .....	4.5 pf
D3 to D4 .....	2.6 pf
D1 to all other electrodes .....	7.8 pf
D2 to all other electrodes .....	7.8 pf
D3A to all other electrodes .....	4.6 pf
D3B to all other electrodes .....	5.1 pf
D4A to all other electrodes .....	5.3 pf
D4B to all other electrodes .....	4.5 pf

## MECHANICAL DATA

Overall length .....	18 ±3/16 inches
Greatest bulb diameter .....	5-1/4 ±1/16 inches
Minimum useful screen diameter .....	4-1/2 inches
Bulb number .....	J42ZG1A
Base .....	B14-38
Basing .....	Special
Base alignment:	
Pin no. 1 aligns with D3-D4 trace .....	±10°
Positive voltage on D1 deflects beam approximately toward pin no. 4	
Positive voltage on D3 deflects beam approximately toward pin no. 1	
Angle between D1-D2 and D3-D4 trace .....	90° ±1°

## RATINGS (absolute maximum values)<sup>2</sup>

Heater voltage .....	6.3 volts ac
Heater current at 6.3 volts (A and B guns together) ..	1.2 ±10% amp
Screen voltage .....	4000 volts dc max
Isolation shield voltage .....	4000 volts dc max
Average deflection plate voltage .....	4000 volts dc max
Astigmatism electrode voltage .....	4000 volts dc max
Focusing electrode voltage .....	1000 volts dc max
Accelerator voltage .....	4000 volts dc max

Accelerator input .....	8 watts max
Grid no. 1 voltage:	
Negative-bias value .....	150 volts dc max
Positive-bias value .....	0 volts dc max
Positive-peak value .....	2 volts dc max
Peak heater-cathode voltage:	
Heater negative to cathode:	
During warm-up period not to exceed 15 seconds ...	180 volts dc max
After equipment warm-up period .....	125 volts dc max
Heater positive to cathode .....	125 volts dc max
Peak voltage between astigmatism and/or any deflection electrode .....	500 volts dc max

#### TYPICAL OPERATING CONDITIONS<sup>2</sup>

Screen voltage .....	2970 to 3220 volts dc
Isolation shield voltage <sup>3</sup> .....	2970 to 3220 volts dc
Average deflection plate voltage .....	3125 volts dc
Astigmatism electrode voltage <sup>4</sup> .....	2970 to 3220 volts dc
Focusing electrode voltage <sup>4</sup> .....	400 to 750 volts dc
Second accelerator voltage .....	3125 volts dc
Raster alignment voltage <sup>5</sup> .....	2970 to 3220 volts dc
First accelerator voltage .....	3250 volts dc
Grid no. 1 voltage <sup>6</sup> .....	-60 to -95 volts dc
Deflection factors:	
D1 and D2 .....	16.0 to 20.0 volts dc/cm
D3 and D4 .....	11.5 to 14.0 volts dc/cm
Useful scan D1-D2 <sup>7</sup> .....	10 cm
Useful scan D3-D4 <sup>7</sup> .....	8 cm
Focusing electrode current for any operating condition .....	-10 $\mu$ a to +10 $\mu$ a
Spot position (undeflected) <sup>8</sup> .....	5 mm from geometric center
Pattern distortion at 100% useful scan <sup>9</sup> .....	1.3% max

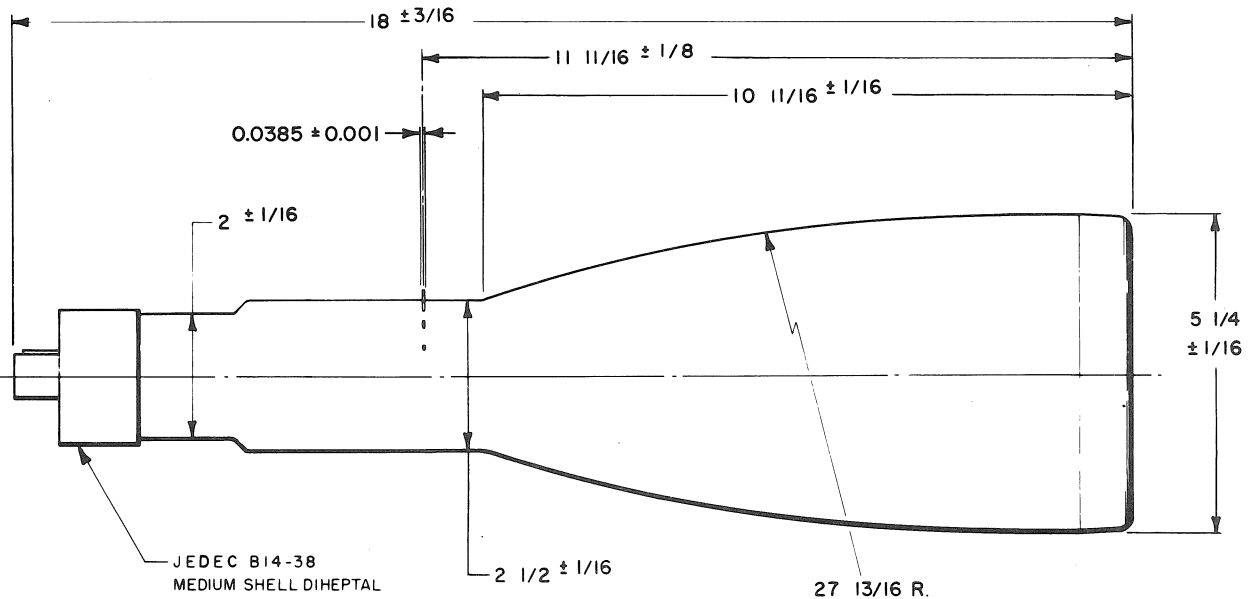
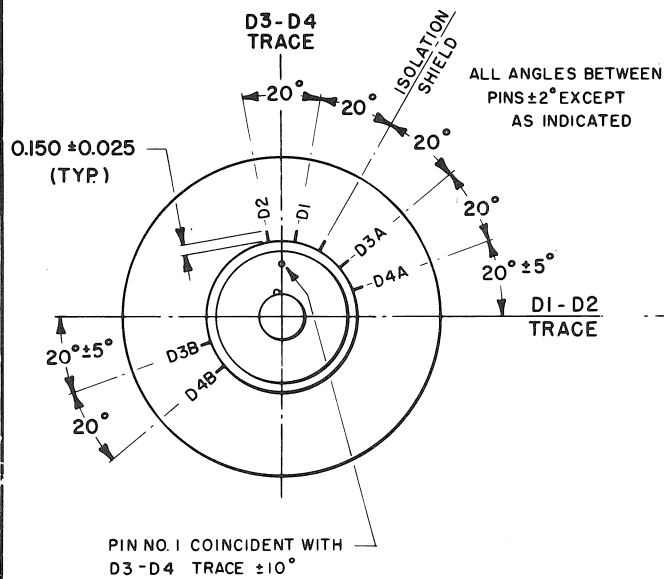
#### MAXIMUM CIRCUIT VALUES

Grid no. 1 circuit resistance .....	1.5 M $\Omega$ max
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#### NOTES

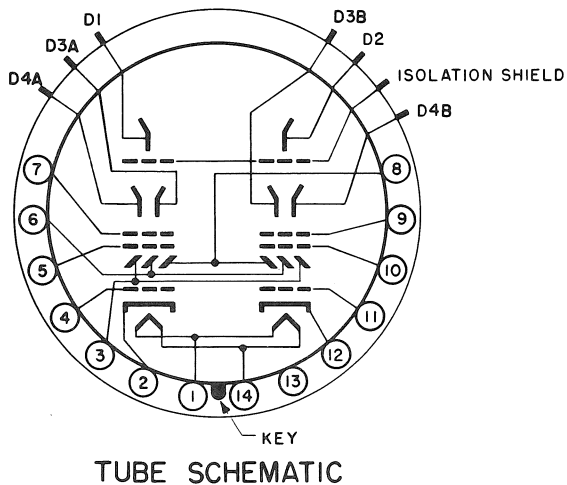
1. Data applies to A and B guns separately unless otherwise stated.
2. All voltages taken with respect to cathode.
3. The isolation shield and conductive wall coating are connected internally. Pattern distortion is minimized by proper adjustment of this potential.
4. Recommended range. Adjust for best overall focus.
5. Adjustment of this potential allows for registration of the two beams along the horizontal axis.
6. Visual extinction of undeflected

7. The deflection plates intercept part of the electron beam near the edge of scan; therefore, a low-impedance deflection drive is desirable.
8. Connect free deflection electrodes to accelerator. Horizontal scan is centered about geometrical center of tube. Vertical scan center is offset 1 cm from geometrical tube center giving 2 cm total separation between A and B guns.
9. With a 8 x 10 cm rectangular raster centered on the face of the tube, the raster edges will not deviate from straight parallel lines by more than 1.0 mm total on the left and right edges, nor by more than 1.0 mm total at the top and bottom.



**BASE CONNECTIONS**

- 1, 14 HEATER
- 2 CATHODE - "A"
- 3 COMMON ACCELERATOR
- 4 GRID NO. 1 - "A"
- 5 FOCUSING ELECTRODE "A"
- 6 COMMON RASTER ALIGNMENT
- 7 ASTIGMATISM ELECTRODE "A"
- 8 COMMON ACCELERATOR
- 9 ASTIGMATISM ELECTRODE "B"
- 10 FOCUSING ELECTRODE "B"
- 11 GRID NO. 1 - "B"
- 12 CATHODE - "B"
- 13 N.C.



MARK	DATE	DESCRIPTION	BY	APPR
		CATHODE-RAY TUBE DIVISION <b>TEKTRONIX, INC.</b> PORTLAND, OREGON, U.S.A.		
		TUBE TYPE: <b>T 5021</b>	DATE: 9-28-64	MOD. D