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COMPUTER STORAGE TUBESINGLE-BEAM, PRIMARY-CURRENT-MODULATION TYPE
REDISTRIBUTION WRITING CAPACITANCE-DISCHARGE READING**DATA****General:**

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. 0.6 amp

Direct Interelectrode Capacitances (Approx.):

Grid No.1 to all other electrodes. 6.5 μmf Grid No.1 to deflecting electrode DJ₁. . . 0.2 μmf Grid No.1 to deflecting electrode DJ₂. . . 0.2 μmf Grid No.1 to deflecting electrode DJ₃. . . 0.2 μmf Grid No.1 to deflecting electrode DJ₄. . . 0.2 μmf Cathode to all other electrodes. 5 μmf DJ₁ to DJ₂. 2.8 μmf DJ₃ to DJ₄. 2.6 μmf DJ₁ to all other electrodes. 9 μmf DJ₂ to all other electrodes. 9 μmf DJ₃ to all other electrodes. 8 μmf DJ₄ to all other electrodes. 7 μmf

Focusing Method. Electrostatic

Deflection Method. Electrostatic

Deflecting-electrode
arrangement. *See Dimensional Outline*

Storage Surface. On inner surface of faceplate

Signal-Output Electrode. Metal plate or 50-line (minimum)
mesh covering external surface
of faceplate and capacitively
coupled to the storage surface.
(This electrode is not supplied
with the tube).Overall Length 11-1/2" $\pm$ 1/4"Greatest Diameter of Bulb. 3" $\pm$ 1/16"

Weight (Approx.) 9 oz

Mounting Position. Center of tube face must be at
same elevation as or at higher
elevation than tube base.

Cap. Recessed Small Cavity (JETEC No.J1-21)

Base Small-Shell Duodecal 10-Pin (JETEC No.B10-75)

BOTTOM VIEW

Pin 1-Heater

Pin 2-Grid No.1

Pin 3-Cathode

Pin 4-Grid No.3

Pin 6-Deflecting
Electrode DJ₄Pin 7-Deflecting
Electrode DJ₃Pin 8-Ultor (Grids
No.2 & No.4)

Pin 9-Deflecting

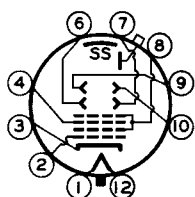
Electrode DJ₂

Pin 10-Deflecting

Electrode DJ₁

Pin 12-Heater

Cap-Collector

SS-Storage
Surface▲

▲ The Signal-Output Electrode is capacitively coupled to the Storage Surface.

MAY 1, 1955

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Maximum Ratings, Design-Center Values:

COLLECTOR VOLTAGE:

Difference between collector
voltage and ultor voltage. 150 max. volts

ULTOR* VOLTAGE 2500 max. volts

GRID-No.3 VOLTAGE. 1000 max. volts

GRID-No.1 VOLTAGE:

Negative bias value. 200 max. volts

Positive bias value. 0 max. volts

Positive peak value. 2 max. volts

PEAK VOLTAGE BETWEEN ULTOR AND
ANY DEFLECTING ELECTRODE 500 max. volts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with
respect to cathode 125 max. volts

Heater positive with
respect to cathode 125 max. volts

Equipment Design Ranges:

For any ultor voltage (E_{c4}) between 1000 and 2500 volts

Collector Voltage. 95% to 105% of E_{c4} volts

Grid-No.3 Voltage. 20% to 28% of E_{c4} volts

Max. Grid-No.1 Voltage
for Beam-Current Cutoff 2.4% of E_{c4} volts

Max. Grid-No.3 Current
Range. -15 to +10 μ amp

Deflection Factors:

DJ₁ & DJ₂. 39 to 53 v dc/in./kv of E_{c4}

DJ₃ & DJ₄. 35.5 to 48.5 v dc/in./kv of E_{c4}

Focused-Beam Position. ##

Examples of Use of Design Ranges:

For ultor voltage of 1000 2500 volts

Collector Voltage. 950 to 1050 2375 to 2625 volts

Grid-No.3 Voltage. 200 to 280 500 to 700 volts

Max. Grid-No.1 Volt-
age for Beam-
Current Cutoff -24 -60 volts

Deflection Factors:

DJ₁ & DJ₂. 39 to 53 97.5 to 133 volts dc/in.

DJ₃ & DJ₄. 35.5 to 48.5 89 to 122 volts dc/in.

• The "ultor" in a storage tube is the electrode to which is applied the highest dc voltage for accelerating the electrons in the beam prior to its deflection. In the 6571, the ultor function is performed by grid No.4. Since grid No.4 and grid No.2 are connected together within the 6571, they are collectively referred to simply as "ultor" for convenience in presenting data and curves.

The center of the undeflected focused beam will fall within a circle having a 7.5-mm radius concentric with the center of the tube face.

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Storage Characteristics for Ultor Voltage of 2500 Volts:

Storage-Surface Boundary (In terms of deflection voltage):

In the DJ₁-DJ₂ direction from position of undeflected focused beam . . . ±109 volts

In the DJ₃-DJ₄ direction from position of undeflected focused beam . . . ±100 volts

Blemish Factor*, for storage surface within indicated boundary 0.5 max.

Spill (Determined for Double-Dot Pattern):**

Under conditions involving 255 references to "spill" element and 1 reference to "test" element

Separation Between Storage Elements, in either the DJ₁-DJ₂ or DJ₃-DJ₄ direction in terms of deflection voltage:

At center of storage surface 8 max. volts

At midpoint on each side of storage-surface boundary 10 max. volts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance 1.5 max. megohms

Resistance in Any Deflecting-

Electrode Circuit[■] 1.0 max. megohm

* Blemish factor is defined as the factor by which the normal positive signal is reduced by the blemish.

** Spill is indicative of the amount of binary information that can be stored by the tube. The storage capability is determined by the separation between two storage elements at which the signal from one element is changed by no more than a specified amount after repeated references to the other element. For the 6571, the separation is measured, in terms of deflection voltage, when the amplitude of the negative signal of the "test" element has decreased to 50% of its maximum negative amplitude. The maximum negative amplitude is determined by separating the two elements far enough to eliminate the effects of secondary electron redistribution from the "spill" element.

■ It is recommended that the deflecting-electrode-circuit resistances be approximately equal.

OPERATING CONSIDERATIONS

Shielding. In typical computer applications, the 6571 is mounted in a compartment having effective magnetic and electrostatic shielding. It is recommended that the bulb be provided with a tight-fitting electrostatic shield extending from the base to the collector coating. (See *Dimensional Outline*). This external shield supplements the shielding action of the collector in preventing cross-coupling between the electron gun and the external signal electrode.

A *signal-output electrode* shaped to conform with the external contour of the faceplate and placed in contact with the entire area of the faceplate is required. The signal-output electrode is connected to a low-noise video

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amplifier having sufficient gain to amplify signals from a fraction of a millivolt to the desired level.

The *amount of information that can be stored by the 6571* is dependent on the manner in which it is operated, and is affected by the stability of the deflecting system, freedom from noise in the associated output circuit, the number of regenerations compared with the number of addresses, and the effectiveness of the electrostatic and magnetic shielding.

In general, the number of storage elements is proportional to the operating ultor voltage. For the greatest number of storage elements, the 6571 should be operated at the rated maximum ultor voltage and so that the peak grid-No.1 drive is less than that required for the maximum positive amplitude but high enough to provide a satisfactory output signal.

It is recommended that the beam current be limited to the minimum value which provides satisfactory signal amplitude.

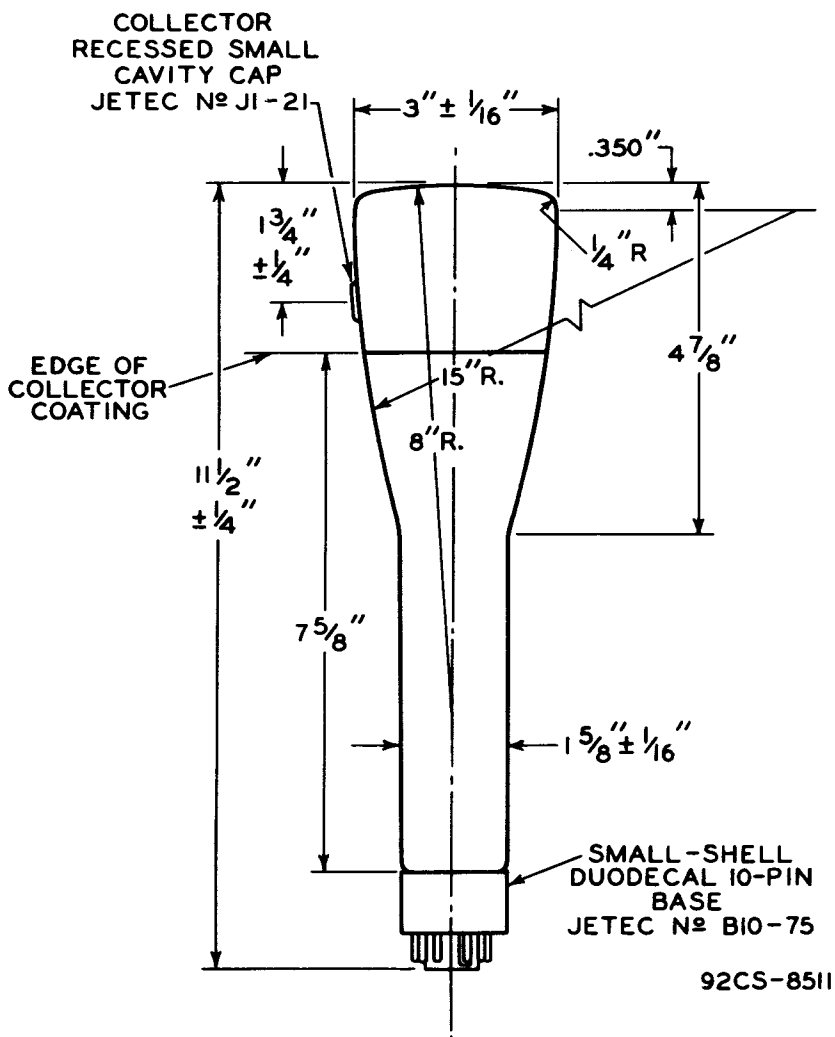
The *storage characteristics* in the tabulated data and curve are based on the use of a double-dot pattern. In this method of storage, the positive signal is produced by adjusting the beam current and the distance between two dot storage elements so that the optimum positive signal is produced when the "test" element is addressed. Other methods of storage such as superimposed focused and defocused spots or dots and dashes may be used equally well with the 6571.



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CENTER LINE OF BULB WILL NOT DEVIATE MORE THAN 2° IN ANY DIRECTION FROM PERPENDICULAR ERECTED AT CENTER OF BOTTOM OF BASE.

DJ₁ AND DJ₂ ARE NEARER THE STORAGE SURFACE: DJ₃ AND DJ₄ ARE NEARER THE BASE. WITH DJ₁ POSITIVE WITH RESPECT TO DJ₂, THE BEAM WILL BE DEFLECTED TOWARD PIN 2; LIKEWISE, WITH DJ₃ POSITIVE WITH RESPECT TO DJ₄, THE BEAM WILL BE DEFLECTED TOWARD VACANT PIN POSITION 11.

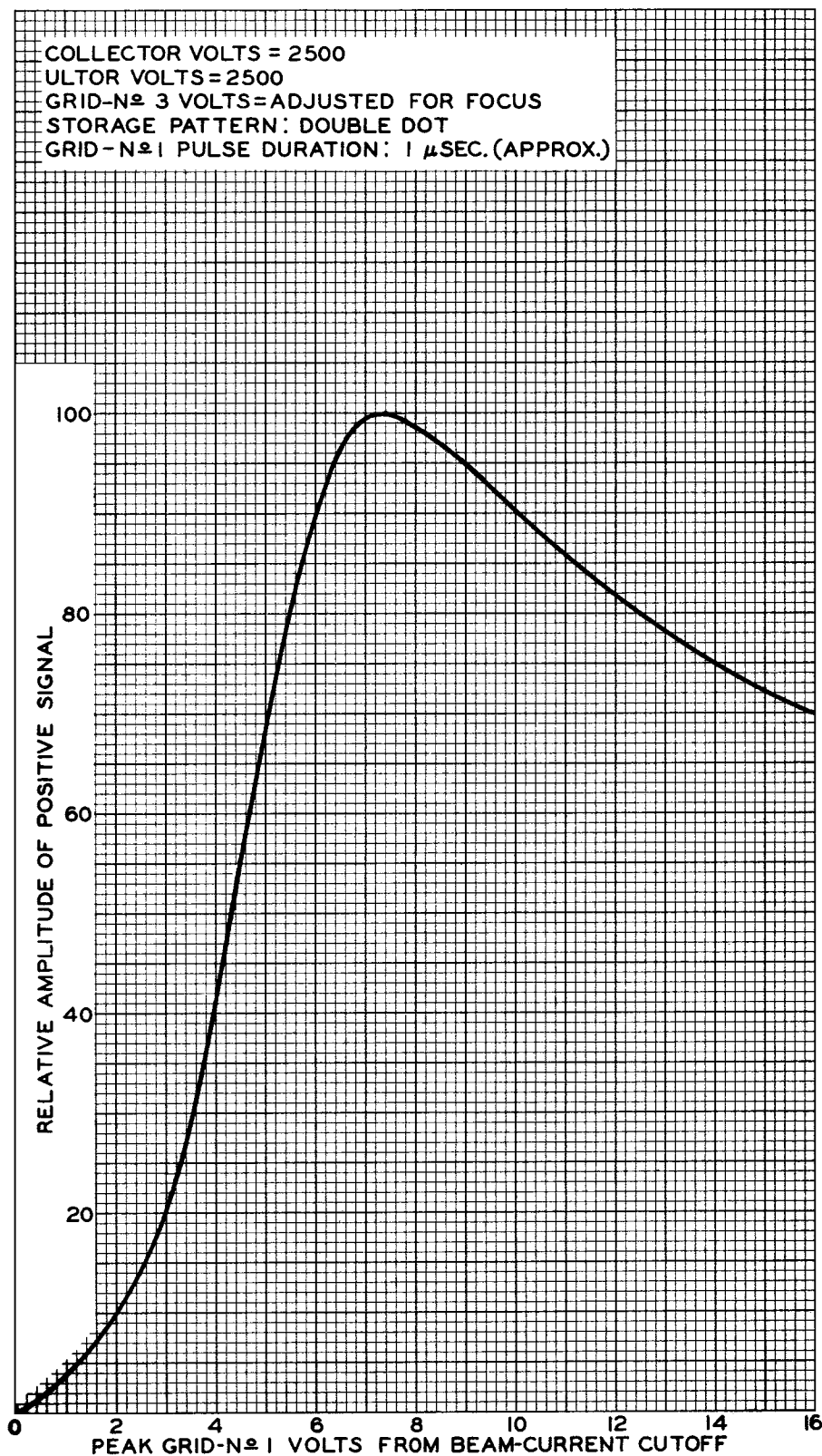
THE PLANE THROUGH TUBE AXIS AND EACH OF THE FOLLOWING ITEMS MAY VARY FROM THE DEFLECTION PATH PRODUCED BY DJ₁ AND DJ₂ BY THE FOLLOWING ANGULAR TOLERANCES (MEASURED ABOUT THE TUBE AXIS): PIN 2, 10° ; SIDE TERMINAL (ON SAME SIDE AS PIN 8), 10° . ANGLE BETWEEN DJ₁-DJ₂ DEFLECTION PATH AND DJ₃-DJ₄ DEFLECTION PATH IS $90^{\circ} \pm 3^{\circ}$.

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AVERAGE CHARACTERISTIC



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