



## INDUSTRIAL AND MILITARY CATHODE RAY TUBES

### 12AS P7, P14, P19, P25 CATHODE RAY TUBE

12-INCH ROUND GLASS

POST ACCELERATION

FOCUS -- ELECTROSTATIC

PERSISTENCE -- LONG

DEFLECTION -- ELECTROSTATIC

ALUMINIZED SCREEN

---

#### DESCRIPTION AND RATING

---

The 12AS' is a cathode ray tube for radar and oscillographic applications. Features of this tube are post-acceleration which assures maximum deflection sensitivity with high brightness and an aluminized screen to increase light output, reduce undesirable screen charging, and prevent ion-spot blemish.

#### GENERAL

##### ELECTRICAL

Heater Voltage . . . . . 6.3 Volts  
Heater Current . . . . . 0.6 ± 10% Amperes

Focusing Method -- Electrostatic  
Deflecting Method -- Electrostatic

##### Direct Interelectrode Capacitances, approximate

|                                              |      |     |
|----------------------------------------------|------|-----|
| Cathode to All Other Electrodes . . . . .    | 6.0  | μuf |
| Grid-No. 1 to All Other Electrodes . . . . . | 7.5  | μuf |
| D1 to D2. . . . .                            | 4.0  | μuf |
| D3 to D4. . . . .                            | 3.0  | μuf |
| D1 to All Other Electrodes . . . . .         | 12.0 | μuf |
| D2 to All Other Electrodes . . . . .         | 12.0 | μuf |
| D3 to All Other Electrodes . . . . .         | 6.5  | μuf |
| D4 to All Other Electrodes . . . . .         | 6.5  | μuf |

##### OPTICAL

| Phosphor Number      | P7         | P14         | P19    | P25    |
|----------------------|------------|-------------|--------|--------|
| Fluorescent Color    | Blue-White | Purple      | Orange | Orange |
| Phosphorescent Color | Yellow     | Orange      | Orange | Orange |
| Persistence          | Long       | Medium Long | Long   | Long   |

# GENERAL ELECTRIC

## INDUSTRIAL AND MILITARY CATHODE RAY TUBES

12ASP-

Page 2

4-7-61

### MECHANICAL

Over-all Length. . . . . 22-3/4 ± 3/8 Inches  
 Greatest Bulb Diameter . . . . . 12-7/16 + 1/16 - 3/32 Inches  
 Minimum Useful Screen Diameter . . . . . 11.0 Inches  
 Neck Contacts - Small Ball Caps, JETEC No. J1-25  
 Bulb Contact - Recessed Small-cavity Cap., JETEC No. J1-22  
 Base - Medium Shell Dihepthal - JETEC No. B12-37

#### Bulb Contact Alignment

J1-22 Contact Aligns with Trace D3-D4 ± 10 Degrees

#### Base Alignment

Pin No. 11 aligns with J1-22 contact ± 10°

#### Neck Contact Alignment

D1-D2 Trace Aligns With Neck Button (A2) and Tube Axis ± 10 Degrees.

Positive Voltage on D1 Deflects Beam Approximately Away from A2.

Positive Voltage on D3 Deflects Beam Approximately Away from Post Accelerator Button.

#### Trace Alignment

Angle Between D3-D4 and D1-D2 Traces. . . . . 90 ± 1 Degrees

Mounting Position -- Any

### RATINGS

#### DESIGN CENTER VALUES \*

Post-Accelerator Voltage . . . . . 16,000 Max Volts DC  
 Anode Voltage +. . . . . 8,000 Max Volts DC  
 Ratio-Post Accelerator Voltage to Anode Voltage . . . . . 2.5 Max  
 Anode Input ++ . . . . . 6 Max Watts  
 Focusing-Electrode Voltage . . . . . 3,000 Max Volts DC  
 Grid No. 2 Voltage. . . . . 700 Max Volts DC

#### Grid-No. 1 Voltage

Negative-Bias Value . . . . . 300 Max Volts DC  
 Positive-Bias Value . . . . . 0 Max Volts DC  
 Positive-Peak Value . . . . . 2 Max Volts

#### Peak Heater-Cathode Voltage

Heater Negative With Respect to Cathode . . . . . 180 Max Volts

Heater Positive With Respect to Cathode . . . . . 180 Max Volts

Peak Voltage Between Anode and Any Deflecting Electrode. 1,500 Max Volts

### TYPICAL OPERATING CONDITIONS

Post Accelerator Voltage . . . . . 9,700 Volts DC  
 Anode Voltage . . . . . 6,100 Volts DC

# GENERAL ELECTRIC

INDUSTRIAL AND MILITARY CATHODE RAY TUBES 12ASP-

Page 3

4-7-61

## TYPICAL OPERATING CONDITIONS (Cont'd)

|                                      |                |           |
|--------------------------------------|----------------|-----------|
| Focusing-Electrode Voltage . . . . . | 1,750 to 2,220 | Volts DC  |
| Grid No. 2 Voltage . . . . .         | 300            | Volts DC  |
| Grid No. 1 Voltage # . . . . .       | -40 to -77     | Volts DC  |
| Modulation Factor $\pi$ . . . . .    | 30             | Max Volts |

## Deflecting Factors

|                     |            |                   |
|---------------------|------------|-------------------|
| D1 and D2 . . . . . | 115 to 135 | Volts DC Per Inch |
| D3 and D4 . . . . . | 115 to 135 | Volts DC Per Inch |

|                                                      |             |                   |
|------------------------------------------------------|-------------|-------------------|
| Focusing Electrode for any Operating Condition . . . | -15 to +10  | Microamperes      |
| Spot Position Undelected $\emptyset$ . . . . .       | within a 20 | Millimeter Square |
| Line Width A $\Delta$ . . . . .                      | .5          | Max Millimeters   |

## CIRCUIT VALUES

|                                                                     |     |             |
|---------------------------------------------------------------------|-----|-------------|
| Grid No. 1 Circuit Resistance . . . . .                             | 2.0 | Max Megohms |
| Resistance in any Deflecting Electrode Circuit $\diamond$ . . . . . | 5.0 | Max Megohms |

\* The maximum ratings provide a ten percent safety factor in accordance with the standard design-center system of rating cathode ray tubes. The tube will withstand the combined effects of variations in line voltage and components provided the maximum design-center values are not exceeded by more than ten percent.

+ Anode, Grid No. 2 and Grid No. 4 which are connected together within the tube are referred to herein as anode.

++ Anode input equals the product of anode voltage and average current measured at the terminal.

# For visual extinction of focused undeflected spot.

$\pi$  For a Ib3 of 25 microamperes d-c in accordance with MIL-E-1 specification.

$\emptyset$  With post-accelerator anode voltage of 9,700 volts, the center of the focused undeflected spot will lie within a square of 20 millimeters radius centered on the tube face.

$\Delta$  Measured with specification MIL-E-1, paragraph 4.12.6.1, at an anode No. 3 (post-acceleration) current of 25 microamperes d.c.

$\diamond$  It is recommended that the deflection electrode resistance be approximately equal.

Cathode Ray Tube Department

GENERAL ELECTRIC COMPANY

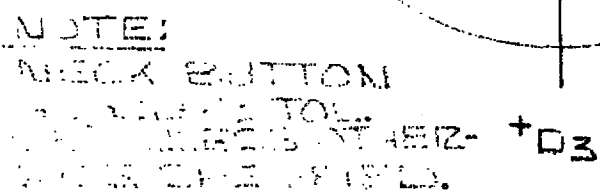
Syracuse, N.Y.



12ASP---



| <u>PIN NO.</u> | <u>ELEMENT</u>        |
|----------------|-----------------------|
| 1              | HEATER                |
| 2              | CATHODE               |
| 3              | GRID NO.1             |
| 5              | FOCUSING<br>ELECTRODE |
| 8              | GRID NO.2             |
| 14             | HEATER                |



BOTTOM VIEW