GENERAL ELECTRIC
INDUSTRIAL AND MILITARY CATHODE RAY TUBES

12ARP-
CATHODE RAY TUBE

12-1/2 - INCH
FOCUS - ELECTROSTATIC
DEFLECTION - ELECTROSTATIC

FACE PLATE: SPHERICAL, 40° R
DUAL BEAM
POST ACCELERATION
ALUMINIZED

DESCRIPTION AND RATING

The General Electric Type 12ARP- is a 12-1/2 inch diameter, dual beam, electrostatic focus and deflection cathode ray tube, having minimum pattern distortion, deflection defocusing, and tracking error.

An aluminized screen is used for greater light output and for stabilization of screen potential.

GENERAL

ELECTRICAL

Focusing Method .................................................. Electrostatic
Deflecting Method ................................................ Electrostatic

Direct Interelectrode Capacitances, Approx.
Cathode to all other electrodes ................................ 6.0 μF
Grid #1 to all other electrodes ................................ 7.0 μF
D1 to D2 ......................................................... 4.0 μF
D3 to D4 ......................................................... 3.5 μF
D1 to all other electrodes ...................................... 10.0 μF
D2 to all other electrodes ...................................... 10.0 μF
D3 to all other electrodes ...................................... 10.0 μF
D4 to all other electrodes ...................................... 10.0 μF

OPTICAL

Phosphor Number 2 7 14 19 25
Fluorescent Color Green Blue Purple Orange Orange
Phosphorescent Color Green Yellow Orange Orange Orange
Persistence Long Long Med.-Long Very Long Very Long

Faceplate - Clear

MECHANICAL

Over-all Length .................................................. 24 7/8+3/8 Inches
Greatest Diameter of Bulb ..................................... 12 7/12±1/16 Inches
Minimum Useful Screen Diameter ............................. 11 Inches

from JEDEC release #3294, May 29, 1961
Bulb Contact: J1-22
Neck Contacts: J1-25
Base: BI-37
Basing: Special

Bulb Contact Alignment:
J1-22 contact aligns with trace of DLD2 ± 10 Degrees
J1-22 contact on same side as Pin #4

Base Alignments:
DLD2 trace aligns with Pin #4 and tube axis ± 10 Degrees
Positive voltage on DI deflects beam approximately toward Pin #4
Positive voltage on DJ deflects beam approximately toward Pin #1

Angle between D3D4 and DLD2 traces 90 ± Degrees

RATINGS
(Design Center Values)

Heater Voltage 6.3 Volts
Heater Current at 6.3 Volts 0.6 ± 10% Ampere
Post Accelerator Voltage 16,000 Max. Volts DC
Accelerator Voltage 10,000 Max. Volts DC
Accelerator Input 6 Max. Watts
Focusing Electrode Voltage 4,000 Max. Volts DC
Ratio Post Accelerator Voltage to Accelerator Voltage 2.0 Max.

Grid #1 Voltage
Negative Bias Value 300 Max. Volts DC
Positive Bias Value 0 Max. Volts DC
Positive Peak Value 0 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 Accelerator and any
Deflection Electrode 2,500 Max. Volts

TYPICAL OPERATING CONDITIONS
Post Accelerator Voltage 7,700 Volts
Accelerator Voltage 7,500 Volts
Focusing Electrode Voltage 1,750 to 2,500 Volts
Grid #1 Voltage -150 to -225 Volts

Deflection Factors:
DI and D2 130 to 180 Volts DC per Inch
D3 and D4 .................................................. 130 to 180 Volts DC per Inch
Line Width "A" .................................................. 0.015 Inch Max.
Tracking Accuracy ........................................... 0.15 Inch
Interaction Factor ........................................... 14 x 10^-5 Max. Inches per Volt
Deflection Defocusing ...................................... Within a 5/8" Radius Circle

**MAXIMUM CIRCUIT VALUES**

Grid #1 Circuit Resistance .................................. 1.5 Max. Megohms
Resistance in any Deflecting-Electrode Circuit ........ 5.0 Max. Megohms

**NOTES:**

1. The values shown are for each unit unless otherwise stated.
2. The visual extinction of the focused, undeflected spot.
3. For a beam current of 2 μA, measured in accordance with MIL-E-1 specifications,
4. The measurement of tracking error shall be made as follows:

The focused spots of both guns shall be moved by means of a common d-c voltage along the 1D2 axis until the spot of gun A is at +3 inches from the center of the tube. Then by means of a small correction voltage the spot of gun B shall be moved to the same 1D2 position. The spots then shall be moved by means of the common d-c voltage in the opposite direction until the spot of the less sensitive gun reaches -3 inches by means of a voltage divider. The procedure is repeated until 1D2 deflection factor compensation is complete. The entire procedure is then duplicated along the 3D4 axis with a distance from the center of ±3 inches. Then by means of the two common d-c voltages the spots shall be tracked over the area within a circle 10 inches in diameter. If desired, a small correction voltage may be applied to the plates of one gun to allow optimum spot positioning for minimum over-all tracking error.

The separation of spots over the tracking area shall not exceed .15 inches.

5. Deflection per unit volt of one beam at any position of the beam within its useful scan when a balanced voltage of at least plus or minus 300 volts is applied to the 1D2 deflection electrodes of the other electron gun shall be not greater than the value specified herein.
6. Defocusing of the spot resulting from all causes is a minimum within an area 10 inches in diameter. Specifically, the degradation in spot size anywhere within a circle 10 inches in diameter compared to the spot size of compromise focus will not exceed 1.5 to 1.

7. When the tube is operated at typical operating conditions, with $E_{cl}$ adjusted to avoid damage to the screen, with each of the deflecting electrodes connected to the accelerator, and with the tube shielded against external influences, the spot will fall within a 5/8-inch radius circle, centered on the tube face.

8. It is recommended that the deflection electrode circuit resistances be approximately equal.
NOTES:
(1) BASE PIN #4 ALIGNS WITH J1-22 CONTACT
(2) REFERENCE LINE IS THAT POINT WHERE A 5.750 ± .003 INCH DIAMETER RING GUAGE WILL STOP