HIGH TRANS CONDUCTANCE RADAR DISPLAY TUBE TYPE 10AMP7

The 10AMP7 is a low drive cathode ray tube with low-voltage-electrostatic focus and magnetic deflection designed for service in radar display applications. An input signal of 3.5 to 5.5 volts having a bandwidth of 13 megacycles will drive the tube to full brightness (400 to 750 microamperes peak anode current). Other characteristics include round glass construction, relatively flat, neutral gray glass faceplate and a long-persistence P7 screen.

ELECTRICAL:

Cathode ................................................. Coated Unipotential
Heater:
Voltage (ac or dc) ..................................... 6.3 Volts
Current ................................................. 0.6 ± 10% Ampere

Direct Interelectrode Capacitances:
Triode Unit:
Grid to Cathode ...................................... 4.5 μf
Grid to Plate (Note 1) ................................. 2.3 μf
Grid to CRT Gun Grid 1 ................................ 1.0 μf
CRT Gun Unit:
Grid 2 (Note 1) to Grid 1 .............................. 5.7 μf
Grid 2 (Note 1) to all electrodes except Grid 1 ... 6.0 μf
Grid 1 to all electrodes except Grid 2 (Note 1) ... 3.9 μf
Input:
Cathode Drive (Note 2) ............................... 45 μf
Grid Drive (Note 2) .................................... 50 μf
Output .................................................. 8 μf

Screen:
Phosphor ................................................. P7
Fluorescence ............................................. Blue
Phosphorescence ........................................ Greenish-Yellow
Persistence ............................................. Long
Focusing Method ....................................... Low-Voltage Electrostatic
Deflection Method ..................................... Magnetic
Deflection Angle ....................................... 53°

MECHANICAL:
Mounting Position ...................................... Any
Minimum Screen Diameter .............................. 9"
Faceplate:
Configuration ......................................... Spherical
Glass ..................................................... Neutral Gray
Transmittance ......................................... 76%
Bulb Diameter ......................................... 10-1/2" ± 1/16"
Overall Length ......................................... 16-9/16" ± 3/8"
Anode Terminal ....................................... Recessed Small Cavity Cap (JEDEC J1-21)
Base ..................................................... Small Shell Duodecal 7-Pin (JEDEC B7-223)
Net Weight ............................................. 10 Pounds

from JEDEC release #2939, Aug. 22, 1960
sponsor: Westinghouse Electric Corp.
MAXIMUM RATINGS:

Absolute Maximum Values

CRT Gun Unit:
- Anode Voltage: 12000 max. Volts
- Grid 4 (Focus) Voltage: 1000 max. Volts
- Grid 2 & Triode Plate Voltage: 350 max. Volts
- Grid 1 Voltage:
  - Negative Bias Value: 150 max. Volts
  - Positive Bias Value: 0 max. Volts
  - Positive Peak Value: 0 max. Volts
- Peak Heater–Cathode Voltage:
  - Heater Positive with respect to Cathode: 180 max. Volts
  - Heater Negative with respect to Cathode (Note 3): 180 max. Volts

Triode Unit:
- Grid Negative Bias: 50 max. Volts
- Plate Dissipation (Note 1): 3.5 max. Watts
- Average Cathode Current: 25 max. Ma.

LIMITING CIRCUIT VALUES:
- CRT Gun Grid 1 Circuit Resistance: 0.5 m max. Megohm
- Triode Grid Circuit Resistance: 50000 max. Ohms

TYPICAL OPERATING CONDITIONS:

0 to 13 Mc. Bandpass (Note 4)

CRT Gun Unit:
- Anode Voltage: 10000 Volts
- Grid 4 (Focus) Voltage (Notes 5 & 6): 0 to 600 Volts
- Grid 2 & Triode Plate Supply Voltage, Ebb (Note 1): 300 Volts
- Grid 2 & Triode Plate Voltage, Ebo (Notes 6 & 7): 160 Volts
- Grid 1 Supply Voltage, Eccoli (Note 2): -200 to -250 Volts
- Grid 1 Voltage for Spot Cut-off, Eco (Note 8): -25 to -40 Volts

Triode Unit:
- Grid Bias Voltage (Notes 6 & 9): -6.5 Volts
- Amplification Factor: 20
- Plate Resistance (Note 10): 1540 Ohms
- Transconductance (Note 10): 13000 µmhos
- Plate Current (Note 10): 20 Ma.
- Plate Load Resistor: 6800 Ohms
- Gain (Approx.): 15
- Spot Position (Note 11): 18 mm
1. Triode plate and CRT Gun Grid 2 are connected internally.

2. Obtained for a value of voltage coupling coefficient $k_c$ between triode plate and control grid equal to 0.5.

3. A peak value of 410 volts design center maximum may be applied for not more than 15 seconds during equipment warm-up periods.

4. A typical line width of .015" may be expected with an anode current of 100 microamperes.

5. Measured at 100 microamperes anode current.

6. Voltage measured with respect to cathode.

7. $E_{bo}$ is the quiescent plate voltage at zero signal input (20 mA plate current).

8. Voltage difference between cathode and control grid pins required to cut off the cathode ray beam when the gun is operating at the quiescent plate voltage level $E_{bo}$.

9. For best performance adjust the triode grid bias for 20 mA plate current at zero signal input.

10. At indicated quiescent plate voltage $E_{bo}$ operating point.

11. The center of the undeflected, unfocused spot will fall within a circle having an 18 mm radius concentric with the center of the tube face.
NOTES:

1. Reference line is determined by upper edge of RETMA Gage No. 112 when resting on cone of tubes.

2. Radial tolerance of alignment of anode terminal with 3 is \(\pm 10\) degrees.

Caution: Do not handle tube by part of bulb having anti-corona coating.