24AP4
CATHODE-RAY TUBE

24-INCH ROUND, METAL
FOCUS—MAGNETIC
DEFLECTION—MAGNETIC

22½- BY 16½-INCH PICTURE SIZE
FACEPLATE—SPHERICAL, GRAY
ION-TRAP GUN

70-DEGREE DEFLECTION ANGLE

DESCRIPTION AND RATING

The 24AP4 is a magnetic-focus and -deflection direct-view picture tube which provides a 22½- by 16½-inch picture with rounded sides for television applications. Features of this tube include a lightweight metal cone envelope, a high-quality gray faceplate to increase picture contrast and detail under high ambient light conditions, and an electron gun which is designed for use with an external single-field ion-trap magnet.

GENERAL

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

Focusing Method—Magnetic
Deflecting Method—Magnetic
Deflection Angle, approximate ............................ 70 Degrees

Direct Interelectrode Capacitances, approximate
  Cathode to All Other Electrodes ................................ 5 μμF
  Grid-No. 1 to All Other Electrodes ............................. 6 μμF

OPTICAL
Phosphor Number—P4, Sulfide Type
  Fluorescent Color—White
  Phosphorescent Color—White
  Persistence—Short

Faceplate—Gray
  Light Transmission at Center, approximate .................. 62 Percent

GENERAL ELECTRIC

Supersedes ETR-127, dated 3-51
MECHANICAL

Over-all Length ........................................................................... 23\(\frac{1}{2}\) ± \(\frac{1}{2}\) Inches
Greatest Bulb Diameter ................................................................. 24 ± \(\frac{1}{4}\) Inches
Minimum Useful Screen Diameter ............................................... 22\(\frac{3}{4}\) Inches
Neck Length .................................................................................. 7\(\frac{3}{8}\) Inches

Bulb Contact—Metal Cone Lip
Base—Small-shell Duodecal 5-pin, JETEC No. B5-57
Basing, JETEC Designation—12D

Mounting Position—Any
Net Weight, approximate .............................................................. 27\(\frac{1}{2}\) Pounds

MAXIMUM RATINGS

DESIGN-CENTER VALUES*
Anode Voltage† ........................................................................... 16,000 Max Volts DC
Grid-No. 2 Voltage ................................................................. 410 Max Volts DC
Grid-No. 1 Voltage
  Negative-Bias Value ................................................................. 125 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
    During Warm-up Period not to Exceed 15 Seconds ......................... 410 Max Volts
    After Equipment Warm-up Period .............................................. 150 Max Volts
  Heater Positive with Respect to Cathode ....................................... 150 Max Volts

TYPICAL OPERATING CONDITIONS

Anode Voltage‡ ........................................................................... 14,000 Volts DC
Grid-No. 2 Voltage ................................................................. 300 Volts DC
Grid-No. 1 Voltage§ .................................................................... \(-28\) to \(-72\) Volts DC
Focusing-Coil Current\(\pi\), approximate ....................................... \(111\) Milliamperes DC
Ion-Trap Field Intensity\(\Delta\), approximate ................................... \(0.37\) Gausses

MAXIMUM CIRCUIT VALUES

Grid-No. 1 Circuit Resistance ...................................................... 1.5 Max Megohms
All voltages are measured with respect to cathode.

* 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 and grid-No. 3 which are connected together within the tube are referred to herein as anode.

‡ Brightness and focus quality decrease with decreasing anode voltage. In general, the anode voltage should not be less than 12,000 volts.

§ For visual extinction of focused raster.

π For RETMA focusing coil No. 109 with distance from the yoke-reference-line to center-of-air-gap equal to 3 1/2 inches.

△ Single-field ion-trap magnet adjusted to optimum position, equivalent to 37 milliamperes through RETMA ion-trap magnet No. 117.