



27EP4 CATHODE-RAY TUBE

27-INCH RECTANGULAR, GLASS
FOCUS—MAGNETIC
DEFLECTION—MAGNETIC
90-DEGREE DEFLECTION ANGLE

24- BY 18½-INCH PICTURE SIZE
FACEPLATE—SPHERICAL, GRAY
ION-TRAP GUN
ALUMINIZED SCREEN

DESCRIPTION AND RATING

The 27EP4 is a magnetic-focus and deflection, direct-view all-glass picture tube which provides a 24- by 18½-inch picture for television applications. The electron gun is designed for use with an external single-field ion-trap magnet. Other features of this tube include a high-quality gray faceplate which increases picture contrast and detail under high-ambient-light conditions, a reflective aluminized screen to increase light output, and a space-saving rectangular face shape.

GENERAL

ELECTRICAL

Heater Voltage 6.3 Volts
Heater Current 0.6 ± 10% Amperes

Focusing Method—Magnetic

Deflecting Method—Magnetic

Deflection Angle, approximate

Diagonal 90 Degrees
Horizontal 85 Degrees
Vertical 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 68 Percent



MECHANICAL

Over-all Length $23\frac{1}{16} \pm \frac{3}{8}$ Inches

Greatest Bulb Dimensions

Diagonal $26\frac{13}{16} \pm \frac{1}{8}$ Inches

Width $25\frac{9}{32} \pm \frac{1}{8}$ Inches

Height $20\frac{7}{32} \pm \frac{1}{8}$ Inches

Minimum Useful Screen Dimensions

Diagonal $25\frac{3}{4}$ Inches

Width 24 Inches

Height $18\frac{1}{2}$ Inches

Neck Length $7\frac{1}{2}$ Inches

Bulb Number, ASA Designation—J214- $\frac{1}{2}$ -A1

Bulb Contact—Recessed Small-cavity Cap, JETEC No. J1-21

Base—Small-shell Duodecal 5-Pin, JETEC No. B5-57

Basing, JETEC Designation—12D

Bulb Contact Alignment

Anode Contact Aligns with Pin No. 6 Position ± 30 Degrees

Mounting Position—Any

Net Weight, approximate 44 Pounds

MAXIMUM RATINGS**DESIGN-CENTER VALUES***

Anode Voltage † 20,000 Max Volts DC

Grid-No. 2 Voltage 500 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 180 Max Volts

Heater Positive with Respect to Cathode 180 Max Volts

TYPICAL OPERATING CONDITIONS

Anode Voltage § 16,000 Volts DC

Grid-No. 2 Voltage 300 Volts DC

Grid-No. 1 Voltage ¶ -28 to -72 Volts DC

Focusing-Coil Current ▲, approximate 116 Milliampers DC

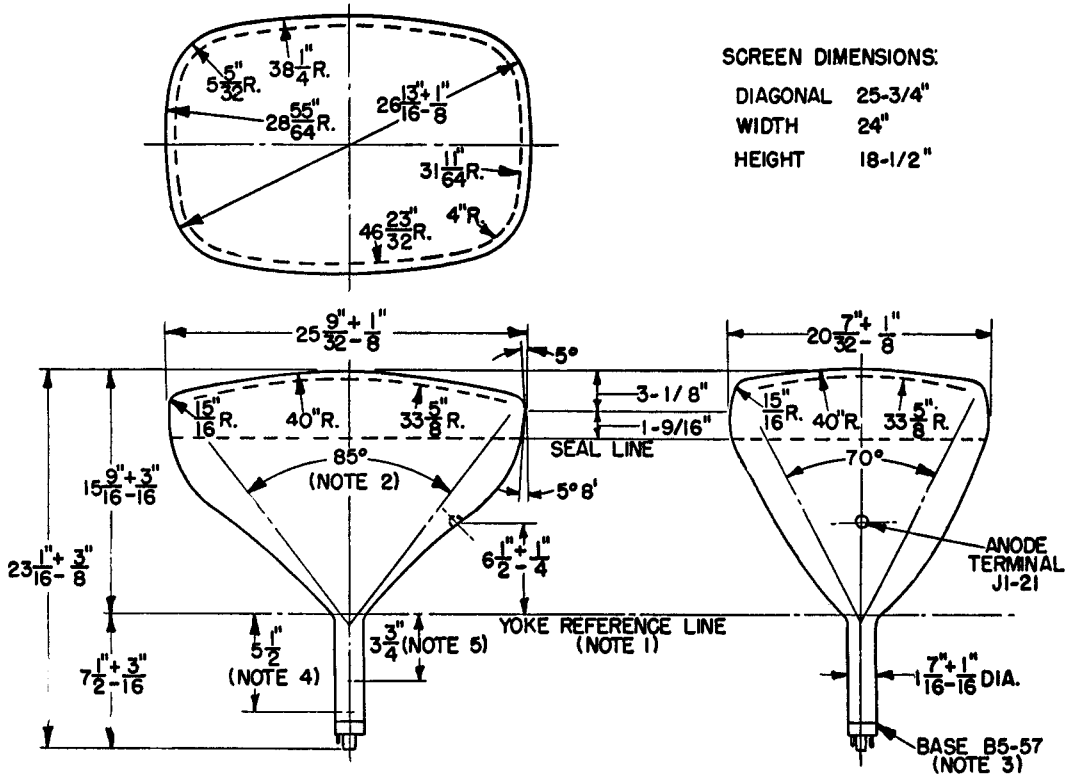
Ion-Tap Field Intensity ◆, approximate 40 Gauss

MAXIMUM CIRCUIT VALUES

Grid-No. 1 Circuit Resistance 1.5 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 voltages 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.
- If this tube is operated at voltages in excess of 16,000 volts, x-ray radiation shielding may be necessary to avert possible danger of personal injury from prolonged exposure at close range. The protective face-viewing window of apparatus using tubes of this type may provide such a safeguard. If the radiation measured in contact with this window does not exceed 6.25 milliroentgens per hour, the window will normally provide adequate protection.
- ‡Cathode should be returned to one side or to the midtap of the heater transformer winding.
- §Brightness and focus quality decrease with decreasing anode voltage. In general, the anode voltage should not be less than 14,000 volts.
- πFor visual extinction of focused raster.
- ▲For JETEC focusing coil No. 109 with distance from the yoke-reference-line to center-of-air-gap equal to 3¾ inches.
- ♦Single-field ion-trap magnet adjusted to optimum position, equivalent to 40 milliamperes through JETEC ion-trap magnet No. 117.



NOTES:

1. REFERENCE LINE IS DETERMINED BY THE PLANE OF THE UPPER EDGE OF THE SHOULDER OF THE REFERENCE-LINE GAGE (RETMA NO. 116) WHEN THE GAGE IS RESTING ON THE CONE.
2. DEFLECTION ANGLE ON DIAGONAL IS 90 DEGREES.
3. ANODE TERMINAL ALIGNS WITH PIN-NO. 6 POSITION ± 30 DEGREES.
4. APPROXIMATE POSITION OF ION-TRAP MAGNET.
5. RECOMMENDED POSITION FOR CENTER OF FOCUSING FIELD.

