



21AVP4-B/21AVP4-A

CATHODE-RAY TUBE

19 $\frac{1}{8}$ BY 15-INCH PICTURE SIZE

21-INCH, RECTANGULAR, GLASS

FOCUS—ELECTROSTATIC

DEFLECTION—MAGNETIC

72-DEGREE DEFLECTION ANGLE

FACEPLATE—SPHERICAL, GRAY

ION-TRAP GUN

ALUMINIZED SCREEN

EXTERNAL CONDUCTIVE COATING

DESCRIPTION AND RATING

The 21AVP4-B/21AVP4-A is an electrostatic-focus and magnetic-deflection, direct-view all-glass picture tube for television applications. It provides the same large 19 $\frac{1}{8}$ by 15-inch picture area as do 21-inch 90-degree deflection tubes. The electron gun has a focusing voltage range of -0.4 to $+2.2$ percent of the anode voltage and 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. An external conductive coating serves as a filter capacitor when grounded.

GENERAL

ELECTRICAL

Heater Voltage	6.3	Volts
Heater Current	0.6 $\pm$ 10%	Amperes

Focusing Method—Electrostatic

Deflecting Method—Magnetic

Deflection Angle, approximate

Diagonal	72	Degrees
Horizontal	67	Degrees
Vertical	53	Degrees

Direct Interelectrode Capacitances, approximate

Cathode to All Other Electrodes 5 μ fGrid-No. 1 to All Other Electrodes 6 μ f

External Conductive Coating to Anode

Maximum 1500 μ fMinimum 1200 μ f

OPTICAL

Phosphor Number—P4, Sulfide Type

Fluorescent Color—White

Phosphorescent Color—White

Persistence—Short

Faceplate—Gray

Light Transmission at Center, approximate 71 Percent

GENERAL  ELECTRIC

Supersedes ET-T1199, dated 6-55

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MECHANICAL

Over-all Length $23\frac{1}{32} \pm \frac{3}{8}$ Inches

Greatest Bulb Dimensions

Diagonal $21\frac{3}{8} \pm \frac{1}{8}$ Inches

Width $20\frac{1}{4} \pm \frac{1}{8}$ Inches

Height $16\frac{3}{8} \pm \frac{1}{8}$ Inches

Minimum Useful Screen Dimensions

Diagonal $20\frac{1}{4}$ Inches

Width $19\frac{1}{8}$ Inches

Height 15 Inches

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

Bulb Number, ASA Designation—J171F

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

Base—Small-shell Duodecal 6-pin, JETEC No. B6-63

Basing, JETEC Designation—12L

Bulb Contact Alignment

Anode Contact Aligns with Pin No. 6 ± 30 Degrees

Mounting Position—Any

Net Weight, approximate 25 Pounds

MAXIMUM RATINGS†

DESIGN-CENTER VALUES*

Anode Voltage† 20,000 Max Volts DC

Focusing-Electrode Voltage -500 to +1000 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

Focusing-Electrode Voltage for Focus -64 to +352 Volts DC

Focusing-Electrode Current -15 to +25 Microamperes DC

Grid-No. 2 Voltage 300 Volts DC

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

Ion-Trap Field Intensity π , approximate 40 Gauss

CIRCUIT VALUES

Grid-No. 1 Circuit Resistance	1.5	Max Megohms
Grid-No. 2 Circuit Resistance	0.1	Min Megohms
Focusing-Electrode Circuit Resistance	0.1	Min Megohms

Protective resistance in the grid-No. 2 and focusing-electrode circuits is advisable to prevent damage to the tube. If applicable, one resistor common to both circuits may be used.

♦ 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.

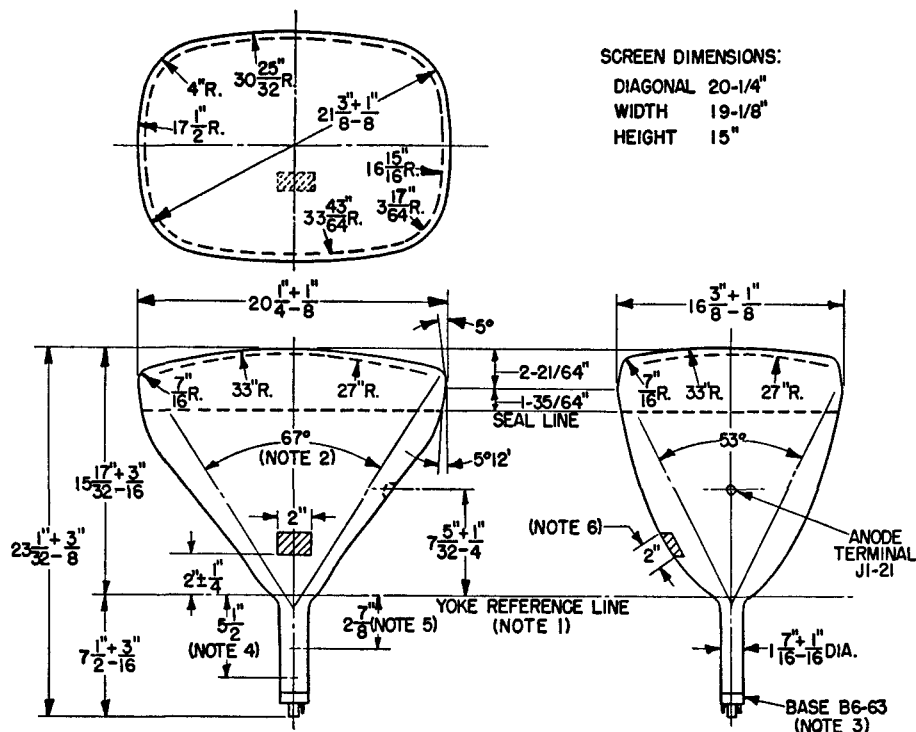
† Anode, grid-No. 3, and grid-No. 5 which are connected together within the tube are referred to herein as anode.

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.

‡ Brightness and focus quality decrease with decreasing anode voltage. In general, the anode voltage should not be less than 14,000 volts.

§ For visual extinction of focused raster.

π Single-field ion-trap magnet adjusted to optimum position, equivalent to 40 milliamperes through RETMA ion-trap magnet No. 117.



NOTES:

1. REFERENCE LINE IS DETERMINED BY THE PLANE OF THE UPPER EDGE OF THE REFERENCE-LINE GAGE (RETMA NO. 110) WHEN THE GAGE IS RESTING ON THE CONE.
2. DEFLECTION ANGLE ON DIAGONAL IS 72 DEGREES.
3. ANODE TERMINAL ALIGNS WITH PIN-NO. 6 $\pm$ 30 DEGREES.
4. APPROXIMATE POSITION OF ION-TRAP MAGNET.
5. APPROXIMATE POSITION OF CENTERING MAGNET, IF USED.
6. EXTERNAL CONDUCTIVE COATING CONTACT AREA.

