



21ATP4

21ATP4
ET-T1141
Page 1
8-54

CATHODE-RAY TUBE

21-INCH RECTANGULAR, GLASS
FOCUS—LOW-VOLTAGE ELECTROSTATIC
DEFLECTION—MAGNETIC
90-DEGREE DEFLECTION ANGLE

19 $\frac{1}{8}$ - BY 15-INCH PICTURE SIZE
FACEPLATE—SPHERICAL, GRAY
ION-TRAP GUN
EXTERNAL CONDUCTIVE COATING

ALUMINIZED SCREEN

DESCRIPTION AND RATING

The 21ATP4 is an electrostatic-focus and magnetic-deflection, direct-view all-glass picture tube which provides a 19 $\frac{1}{8}$ - by 15-inch picture for television applications. The electron gun has a focusing voltage range of -0.4 to $+2.2$ percent of the anode voltage and is used 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. Except for the capacitance of this coating, the 21ATP4 is identical to the 21ALP4-A.

GENERAL

ELECTRICAL

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

Focusing Method—Electrostatic

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 $\mu\mu\text{f}$

Grid-No. 1 to All Other Electrodes 6 $\mu\mu\text{f}$

External Conductive Coating to Anode

Maximum 1500 $\mu\mu\text{f}$

Minimum 1200 $\mu\mu\text{f}$

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

MECHANICALOver-all Length $20 \pm \frac{3}{8}$ Inches

Greatest Bulb Dimensions

Diagonal $21 \frac{3}{8} \pm \frac{1}{8}$ InchesWidth $20 \frac{1}{4} \pm \frac{1}{8}$ InchesHeight $16 \frac{3}{8} \pm \frac{1}{8}$ Inches

Minimum Useful Screen Dimensions

Diagonal $20 \frac{1}{4}$ InchesWidth $19 \frac{1}{8}$ Inches

Height 15 Inches

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

Bulb Number, ASA Designation—C171 Exp. 2

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† 18,000 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◆, 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, 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.

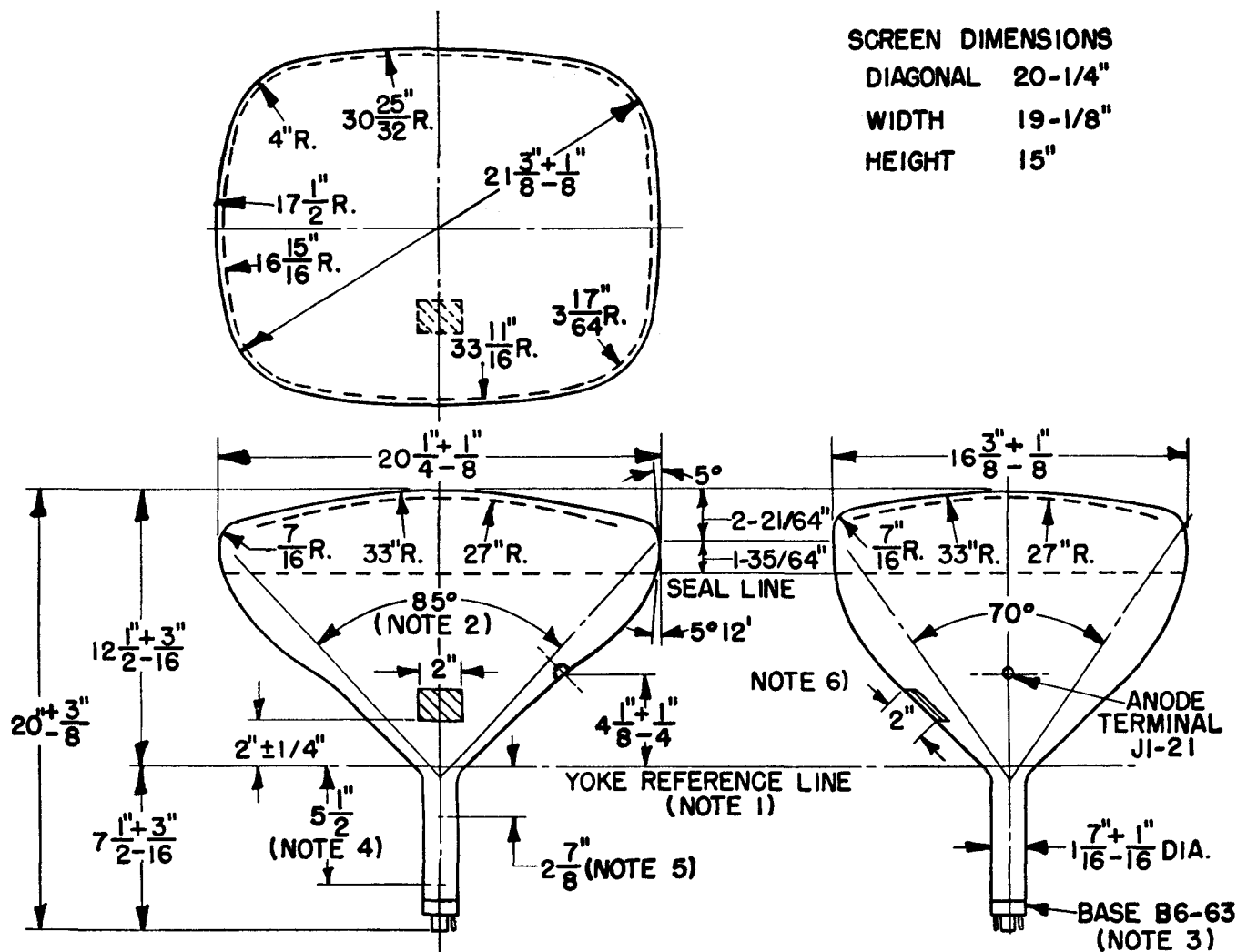
‡ Cathode should be returned to one side or to the midtap of the heater transformer winding.

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

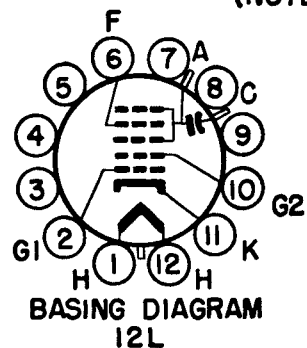
π The focusing electrode may be modulated within the stipulated maximum range without damage to the tube.

△ For visual extinction of focused raster.

◆ 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 ± 30 DEGREES.
4. APPROXIMATE POSITION OF ION-TRAP MAGNET.
5. APPROXIMATE POSITION OF CENTERING MAGNET, IF USED.
6. EXTERNAL CONDUCTIVE COATING CONTACT AREA.



TUBE DEPARTMENT

GENERAL  **ELECTRIC**

Schenectady 5, N. Y.