



21BAP4 CATHODE-RAY TUBE

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

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

DESCRIPTION AND RATING

The 21BAP4 is a rectangular all-glass picture tube which provides a 19 $\frac{1}{8}$ - by 15-inch picture for direct-view television reception. It employs electrostatic focusing and magnetic deflection. The outstanding feature of this tube is the fact that it does not require an ion-trap magnet; thus better resolution at all times is assured. Other features of the 21BAP4 include a high-quality fluorescent screen which is aluminized to increase light output, a gray faceplate which improves picture contrast, and an external conductive coating which 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	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	750	$\mu\mu\text{f}$
Minimum	500	$\mu\mu\text{f}$

OPTICAL

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

Faceplate—Gray
Light Transmission at Center, approximate 71 Percent



MECHANICAL

Over-all Length	20 ± 3/8	Inches
Greatest Bulb Dimensions		
Diagonal	21 3/8 ± 1/8	Inches
Width	20 1/4 ± 1/8	Inches
Height	16 3/8 ± 1/8	Inches
Minimum Useful Screen Dimensions		
Diagonal	20 1/4	Inches
Width	19 1/8	Inches
Height	15	Inches
Neck Length	7 1/2	Inches
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 π	16,000	Volts DC
Focusing-Electrode Voltage for Focus	0 to 500	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

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 voltage 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.

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

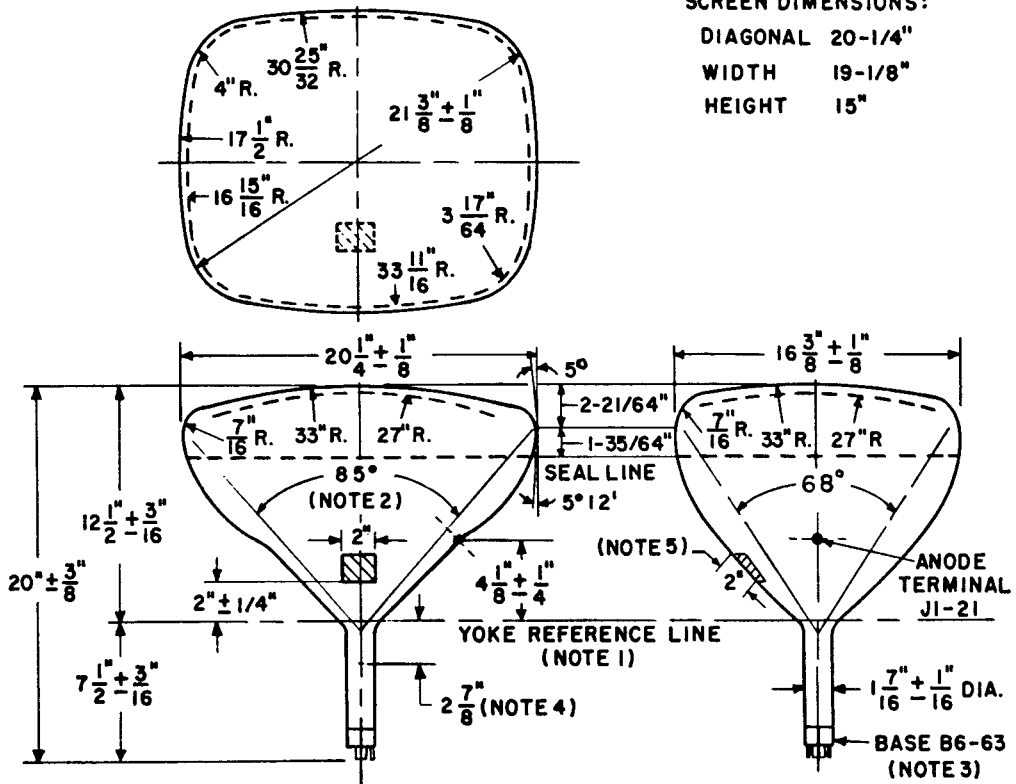
▲ For visual extinction of focused raster.

SCREEN DIMENSIONS:

DIAGONAL 20-1/4"

WIDTH 19-1/8"

HEIGHT 15"



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 CENTERING MAGNET, IF USED.
5. EXTERNAL CONDUCTIVE COATING CONTACT AREA.

