

DESCRIPTION AND RATING

PICTURE TUBE

19-1/8 BY 14-3/16-INCH PICTURE SIZE

21-INCH RECTANGULAR, GLASS	FACEPLATE - SPHERICAL, GRAY
BUILT-IN FOCUSING UNIT	METAL-BACKED SCREEN
DEFLECTION - MAGNETIC	EXTERNAL CONDUCTIVE COATING
70-DEGREE DEFLECTION ANGLE	OPERATING RANGE - 13 to 19 KILOVOLTS

The 21ARP4-A is a magnetic-focus and magnetic-deflection, direct-view all-glass picture tube which provides a 19-1/8 by 14-3/16-inch picture for television applications. In this tube, a magnetic focusing unit which is an integral part of the electron gun permits a sharp over-all focus adjustable through a wide range of anode voltage by a shunt sleeve around the tube neck. An external ion-trap magnet is not required and should not be used. 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.

TECHNICAL INFORMATION

GENERAL

Electrical

Heater Voltage	6.3	Volts
Heater Current	0.6 $\pm$ 10%	Amperes
Focusing Method - Magnetic		
Deflecting Method - Magnetic		
Deflection Angle, approximate		
Diagonal	70	Degrees
Horizontal	65	Degrees
Vertical	50	Degrees
Direct Interelectrode Capacitances, approximate		
Cathode to All Other Electrodes	5	uuf
Grid-No. 1 to All Other Electrodes	6	uuf
External Conductive Coating to Anode		
Maximum	750	uuf
Minimum	500	uuf

Optical

Phosphor Number - P4, Sulfide Type		
Fluorescent Color - White		
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Persistence - Short		
Faceplate - Gray		
Light Transmission at Center, approximate	71	Percent

21ARP4-A

ET-T1065

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Mechanical

Over-all Length	23-1/32 $\pm$ 3/8	Inches
Greatest Bulb Dimensions		
Diagonal	21-7/32 $\pm$ 1/8	Inches
Width	20-1/4 $\pm$ 1/8	Inches
Height	15-9/16 $\pm$ 1/8	Inches

Minimum Useful Screen Dimensions

Diagonal	20-1/8	Inches
Width	19-1/8	Inches
Height	14-3/16	Inches
Neck Length	7-1/2	Inches

Bulb Number, ASA Designation - J170-B1

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

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

Basing, JETEC Designation - 12N

Bulb Contact Alignment

 Anode Contact Aligns with Pin No. 6 Position $\pm$ 30 Degrees

Mounting Position - Any

Net Weight, approximate 25 Pounds

MAXIMUM RATINGS $\diamond$ Design-Center Values

Anode Voltage $\dagger$	20,000	Max Volts DC
Anode Input $\ddagger$	6	Max Watts
Grid-No. 2 Voltage	500	Max Volts DC
Grid-No. 1 Voltage		
Negative-bias Value	125	Max Volts DC
Positive-bias Value	0	Max Volt DC
Positive-peak Value	2	Max Volts

Peak Heater-cathode Voltage $\S$

 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 Δ	16,000 $\pm$ 3000	Volts DC
Grid-No. 2 Voltage	300	Volts DC
Grid-No. 1 Voltage π	-28 to -72	Volts DC

Maximum Circuit Values

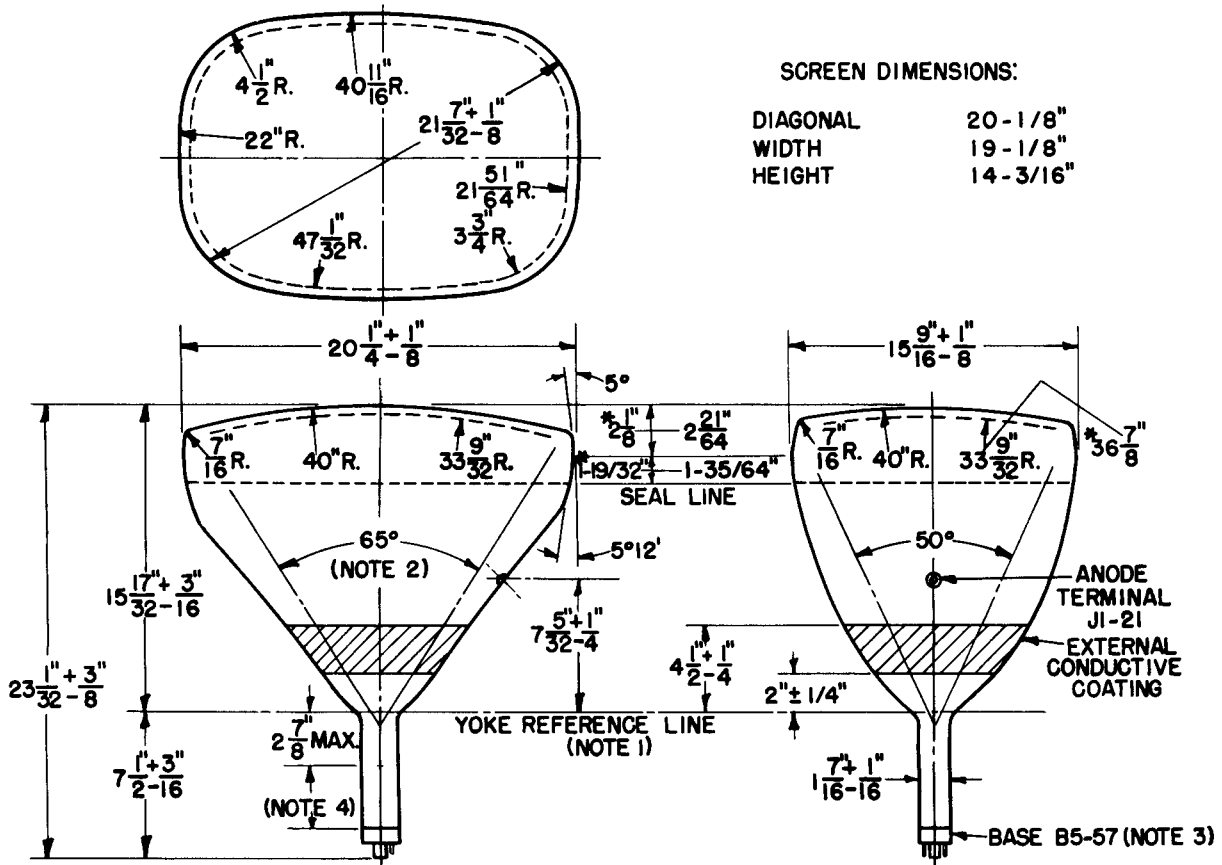
Grid-No. 1 Circuit Resistance	1.5 Max Megohms
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$\diamond$ The maximum ratings provide a ten-percent safety factor in accordance with the standard design-center system of rating cathode-ray tubes. The tube will withstand the combined effects of variations in line voltages and components provided the maximum design-center values are not exceeded by more than ten percent.

$\dagger$ 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.

- ‡ Anode input equals the product of anode voltage and anode current, the latter being measured at the anode contact with a direct-current ammeter.
- § Cathode should be returned to one side or to the midtap of the heater transformer winding.
- Δ Optimum focusing conditions require that the tube be operated within the specified voltage range. The tube, however, will safely withstand the rated maximum anode voltage.
- π For visual extinction of focused raster.

**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 70 DEGREES.
 3. ANODE TERMINAL ALIGNS WITH PIN-NO. 6 POSITION ± 30 DEGREES.
 4. KEEP THIS SPACE CLEAR FOR FOCUSING-UNIT SHUNT SLEEVE.
- * THIS SET OF VALUES ALSO POSSIBLE.

