

DESCRIPTION AND RATING

CATHODE-RAY TUBE 21ARP4

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

21-INCH RECTANGULAR, GLASS	FACEPLATE - SPHERICAL, GRAY
BUILT-IN FOCUSING UNIT	BUILT-IN ION-TRAP MAGNET
DEFLECTION - MAGNETIC	EXTERNAL CONDUCTIVE COATING
70-DEGREE DEFLECTION ANGLE	OPERATING RANGE - 14 to 18 KILOVOLTS

The 21ARP4 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, an ion-trap magnet and a magnetic focusing unit are integral parts of the electron gun. The ion-trap magnet assures proper alignment of the electron beam and eliminates the adjustable external magnet usually required. The focusing unit permits a sharp over-all focus adjustable through a wide range of anode voltage by a magnetic shunt sleeve around the tube neck. Other features of this tube include a high-quality gray faceplate which increases picture contrast and detail under high ambient light conditions, 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 ± 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		
Phosphorescent Color - White		
Persistence - Short		
Faceplate - Gray		
Light Transmission at Center, approximate	71	Percent

GENERAL  ELECTRIC

GENERAL (CONT'D)

Mechanical

Over-all Length	23-1/32 ± 3/8	Inches
Greatest Bulb Dimensions		
Diagonal	21-7/32 ± 1/8	Inches
Width	20-1/4 ± 1/8	Inches
Height	15-9/16 ± 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 - C170 Exp. 13		
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 ± 30 Degrees		
Mounting Position - Any		
Net Weight, approximate	25	Pounds

MAXIMUM RATINGS * Design-Center Values

Anode Voltage †	20,000 Max	Volts DC
Anode Input †	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	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 Δ	16,000 ± 2000	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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* 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.

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.

