



19AP4-A — 19AP4-B

CATHODE-RAY TUBE

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19-INCH ROUND, METAL
FOCUS—MAGNETIC
DEFLECTION—MAGNETIC
66-DEGREE DEFLECTION ANGLE

17 $\frac{3}{8}$ BY 13-INCH PICTURE SIZE
FACEPLATE—SPHERICAL, GRAY
ION-TRAP GUN
19AP4-B—FROSTED FACE

DESCRIPTION AND RATING

The 19AP4-A is a magnetic-focus and -deflection direct-view picture tube which provides a 17 $\frac{3}{8}$ by 13-inch picture for television applications. Features of this tube include a lightweight metal cone envelope, a high-quality gray faceplate to increase picture contrast and detail under high ambient light conditions, and an electron gun which is designed for use with an external single-field ion-trap magnet.

The 19AP4-B has the additional feature of a frosted faceplate to prevent specular reflection.

GENERAL

ELECTRICAL

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

Focusing Method—Magnetic
Deflecting Method—Magnetic
Deflection Angle, approximate 66 Degrees

Direct Interelectrode Capacitances, approximate
Cathode to All Other Electrodes 5 μ f
Grid-No. 1 to All Other Electrodes 6 μ f

OPTICAL

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

Faceplate—Gray
19AP4-A and 19AP4-B:
Light Transmission at Center, approximate 66 Percent

19AP4B:
Specular Reflection of Ambient Light, Maximum 1.5 Percent



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MECHANICAL

Over-all Length	21 1/2 ± 1/2	Inches
Greatest Bulb Diameter	18 5/8 ± 1/8	Inches
Minimum Useful Screen Diameter	17 3/8	Inches
Neck Length	7 1/8	Inches

Bulb Contact—Metal Cone Lip

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

Basing, JETEC Designation—12D

Mounting Position—Any

Net Weight, approximate 16 Pounds

MAXIMUM RATINGS♦

DESIGN-CENTER VALUES*

Anode Voltage†	16,000	Max Volts DC
Grid-No. 2 Voltage	410	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 150 Max Volts

Heater Positive with Respect to Cathode 150 Max Volts

TYPICAL OPERATING CONDITIONS♦

Anode Voltage‡	14,000	Volts DC
Grid-No. 2 Voltage	300	Volts DC
Grid-No. 1 Voltage§	—28 to —72	Volts DC
Focusing-Coil Current¶, approximate	107	Milliamperes DC
Ion-Trap Field Intensity△, approximate	37	Gausses

CIRCUIT VALUES

Grid-No. 1 Circuit Resistance 1.5 Max Megohms

♦ 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.

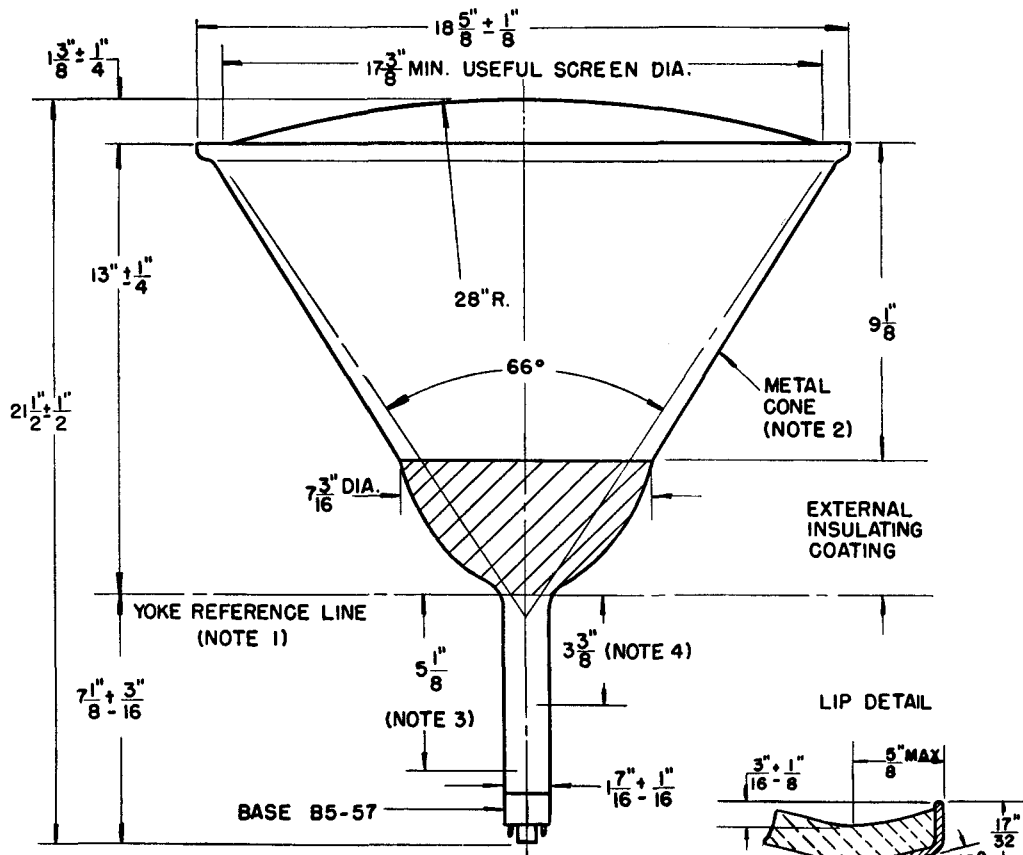
† Anode and grid-No. 3 which are connected together within the tube are referred to herein as anode.

‡ Brightness and focus quality decrease with decreasing anode voltage. In general, the anode voltage should not be less than 12,000 volts.

§ For visual extinction of focused raster.

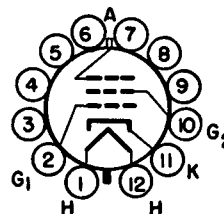
π For RETMA focusing coil No. 109 with distance from the yoke-reference-line to center-of-air-gap equal to $3\frac{3}{8}$ -inches.

△ Single-field ion-trap magnet adjusted to optimum position, equivalent to 37 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.112) WHEN THE GAGE IS RESTING ON THE CONE.
2. METAL CONE OPERATES AT HIGH VOLTAGE AND MUST BE INSULATED TO WITHSTAND THE MAXIMUM APPLIED ANODE VOLTAGE.
3. APPROXIMATE POSITION OF ION-TRAP MAGNET.
4. RECOMMENDED POSITION FOR CENTER OF FOCUSING FIELD.



BASING DIAGRAM
12 D