Electronic TUBES

24AP4

CATHODE-RAY TUBE

24-INCH ROUND, METAL
FOCUS—MAGNETIC
DEFLECTION—MAGNETIC
22⅛- BY 16$\frac{9}{16}$-INCH PICTURE SIZE
FACEPLATE—SPHERICAL, GRAY
ION-TRAP GUN
70-DEGREE DEFLECTION ANGLE

DESCRIPTION AND RATING

The 24AP4 is a magnetic-focus and -deflection direct-view picture tube which provides a 22⅛- by 16$\frac{9}{16}$-inch picture with rounded sides 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.

GENERAL

ELECTRICAL

Heater Voltage	6.3	Volts
Heater Current	0.6 ± 10%	Amperes
Focusing Method—Magnetic		
Deflecting Method—Magnetic		
Deflection Angle, approximate	70	Degrees
Direct Interelectrode Capacitances, approximate		
Cathode to All Other Electrodes	5	μμf
Grid-No. 1 to All Other Electrodes	6	μμf

OPTICAL

Phosphor Number—P4, Sulfide Type		
Fluorescent Color—White		
Phosphorescent Color—White		
Persistence—Short		
Faceplate—Gray		
Light Transmission at Center, approximate	62	Percent

GENERAL ELECTRIC

Supersedes ETR-127, dated 3-51

MECHANICAL

Over-all Length	$23\frac{15}{16} \pm \frac{1}{2}$	Inches
Greatest Bulb Diameter	$24 \pm \frac{1}{4}$	Inches
Minimum Useful Screen Diameter	$22\frac{1}{8}$	Inches
Neck Length	$7\frac{5}{32}$	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	$27\frac{1}{2}$	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

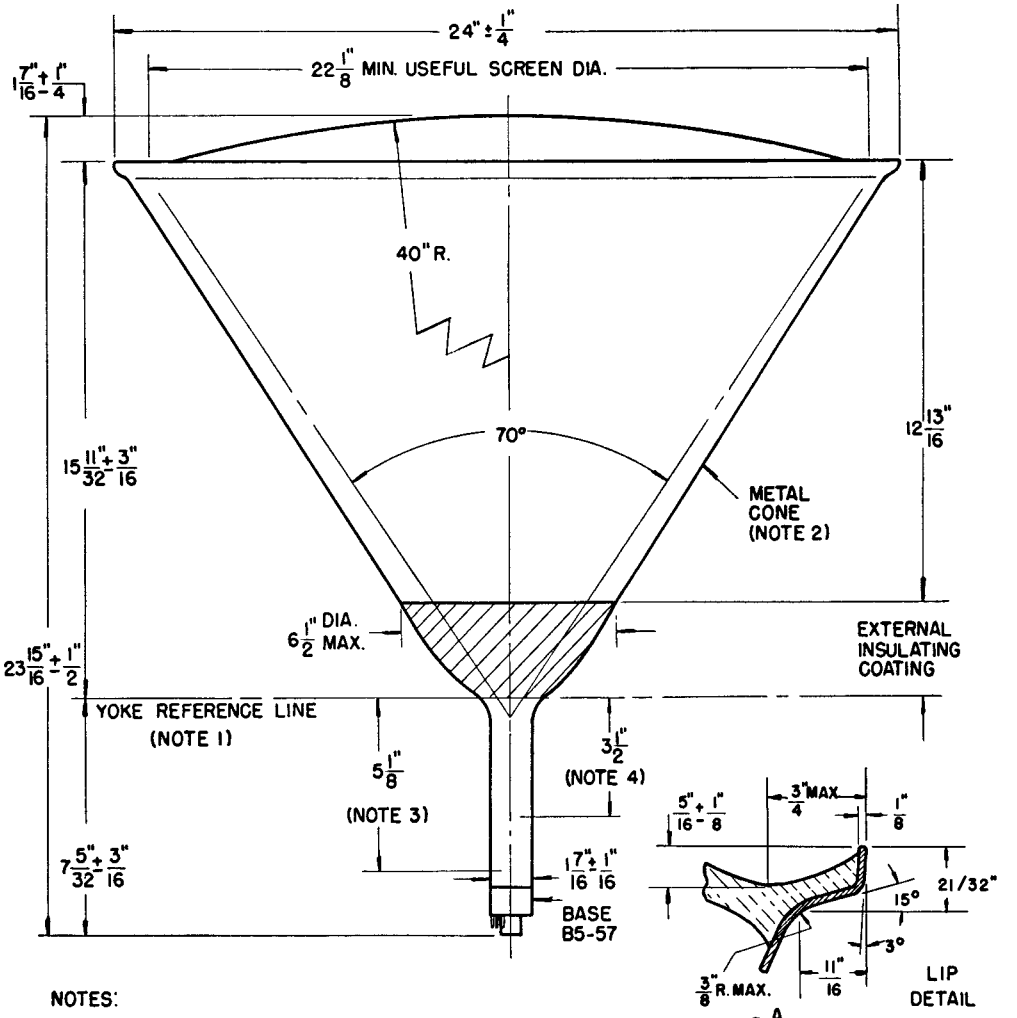
TYPICAL OPERATING CONDITIONS

Anode Voltage‡	14,000	Volts DC
Grid-No. 2 Voltage	300	Volts DC
Grid-No. 1 Voltage§	−28 to −72	Volts DC
Focusing-Coil Currentπ, approximate	111	Milliamperes DC
Ion-Trap Field Intensity△, approximate	37	Gausses

MAXIMUM CIRCUIT VALUES

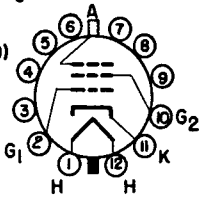
Grid-No. 1 Circuit Resistance	1.5 Max	Megohms

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 3½ 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.110) WHEN THE GAGE IS RESTING ON THE CONE.
2. METAL CONE OPERATES AT HIGH VOLTAGE AND MUST BE INSULATED TO WITHSTAND THE MAX. APPLIED ANODE VOLTAGE.
3. APPROXIMATE POSITION OF ION-TRAP MAGNET.
4. RECOMMENDED POSITION FOR CENTER OF FOCUSING FIELD.



BASING DIAGRAM
12D