Electronic TUBES

12UP4-B

CATHODE-RAY TUBE

12-INCH ROUND, METAL
FOCUS—MAGNETIC
DEFLECTION—MAGNETIC

11⅜ BY 8½-INCH PICTURE SIZE
FACEPLATE—SPHERICAL, GRAY, FROSTED
ION-TRAP GUN

54-DEGREE DEFLECTION ANGLE

DESCRIPTION AND RATING

The 12UP4-B is a magnetic-focus and -deflection, direct-view picture tube which provides an 11⅜ by 8½-inch picture with rounded sides for television applications. Features of this tube include a lightweight metal cone envelope, a high-quality frosted gray faceplate to prevent specular reflection and increase picture contrast, and an electron gun which was 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	54	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	66	Percent
Specular Reflection of Ambient Light, maximum	1.5	Percent

MECHANICAL

Over-all Length	$18\frac{3}{4} \pm \frac{3}{8}$	Inches
Greatest Bulb Diameter	$12\frac{7}{16} \pm \frac{1}{16}$	Inches
Minimum Useful Screen Diameter	$11\frac{3}{8}$	Inches
Neck Length	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	8	Pounds

MAXIMUM RATINGS♦

DESIGN-CENTER VALUES*

Anode Voltage†	12,000	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	140	Max Volts
Heater Positive with Respect to Cathode	140	Max Volts

TYPICAL OPERATING CONDITIONS♦

Anode Voltage‡	11,000	Volts DC
Grid-No. 2 Voltage	300	Volts DC
Grid-No. 1 Voltage§	−28 to −72	Volts DC
Focusing-Coil Currentπ, approximate	98	Milliamperes DC
Ion-Trap Field Intensity△, approximate	33	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.

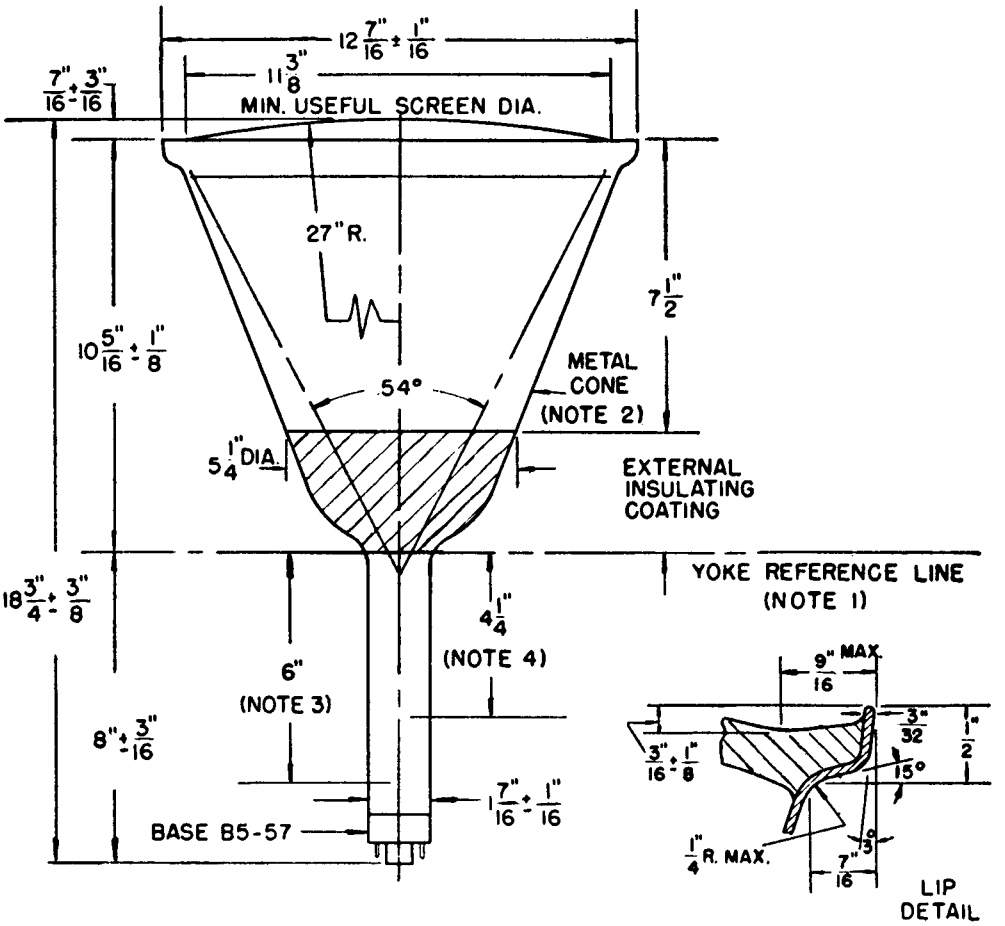
† Anode and grid-No. 3 which are connected together within the tube are referred to herein as anode.

‡ Brightness and focus quality decrease with decreasing anode voltage. In general, the anode voltage should not be less than 9000 volts.

§ For visual extinction of focused raster.

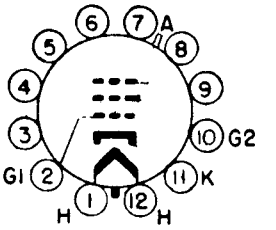
π For RETMA focusing coil No. 109 with distance from the yoke-reference-line to center-of-air-gap equal to 4¼ inches.

△Single-field *ion-trap magnet adjusted to optimum position, equivalent to* 33 *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
12D