

TYPE 7ABP-, 7ABP-A CATHODE-RAY TUBES

The Type 7ABP- Cathode-ray Tube is electrostatically focused and magnetically deflected and employs a high-resolution electron-gun. The Type 7ABP- is designed for radar systems requiring good resolution and high-brightness displays. Three long persistence screens, the P7, P14 and P19 screens, are recommended for use with the Type 7ABP-.

To afford substantially automatic focus independent of accelerator voltage variations, a low-voltage electrostatic lens is supplied which is designed to be operated at or near the potential of the cathode. This feature eliminates the necessity for a front panel focus control in equipment design.

The Type 7ABP-A utilizes an aluminized screen for greater light output and to minimize screen charging effects; it is otherwise identical to the 7ABP-. If a P19 screen is selected, the aluminized version should be used.

GENERAL CHARACTERISTICS

Electrical

Heater Voltage 6.3 Volts
 Heater Current $0.6 \pm 10\%$ Ampere
 Focusing Method Electrostatic
 Deflecting Method Magnetic
 Deflecting Angle (Approx.) 50 Degrees

Phosphor	No. 7	No. 14	No. 19
Fluorescence	Blue	Blue	Orange
Phosphorescence	Yellow	Orange	Orange
Persistence	Long	Medium-long	Long

Direct Interelectric Capacitances, Approx.

Cathode to all other electrodes $5 \mu\text{f.}$
 Grid No. 1 to all other electrodes $6 \mu\text{f.}$

Mechanical

Overall Length $13\frac{1}{4} \pm \frac{1}{4}$ Inches
 Greatest Diameter of Bulb $7\text{-}3/16 \pm \frac{1}{8}$ Inches
 Minimum Useful Screen Diameter 6 Inches
 Bulb Contact (Recessed Small Cavity Cap) J1-21
 Base (Small Shell Duodecal 6-Pin) B6-63
 Basing 12M
 Bulb Contact Alignment
 J1-21 Contact aligns with vacant pin position No. 3 ± 10 Degrees

MAXIMUM RATINGS—(Design Center Values)

Accelerator Voltage 10,000 Max. Volts D-C
 Focusing Electrode Voltage -500 to $+1000$ Max. Volts D-C
 Grid No. 2 Voltage 700 Max. Volts D-C
 Grid No. 1 Voltage
 Negative Bias Value 180 Max. Volts D-C
 Positive Bias Value¹ 0 Max. Volts D-C
 Positive Peak Value 0 Max. Volts
 Peak Heater-Cathode Voltage
 Heater Negative with respect to cathode 180 Max. Volts D-C
 Heater Positive with respect to cathode 180 Max. Volts D-C

TYPICAL OPERATING CONDITIONS

Accelerator Voltage ²	7,000	Volts D-C
Focusing Electrode Voltage ³	0 to 250	Volts D-C
Focusing Electrode Current	-15 to $+15$	$\mu\text{A. D-C}$
Grid No. 2 Voltage	300	Volts D-C
Grid No. 1 Voltage ⁴	-28 to -72	Volts D-C
Line Width A ⁵	.012	Inch Max.
Spot Position (undeflected) ⁶	$\frac{3}{8}$	Inch
Alignment Magnet Field Strength	0-4	Gausses

MAXIMUM CIRCUIT VALUES

Grid No. 1 Circuit Resistance 1.5 Max. Megohms



NOTES

1. At or near this rating, the effective resistance of the accelerator supply should be adequate to limit the accelerator input power to 6 watts. The screen of the 7ABP19 can be permanently damaged should the current density be permitted to rise too high. To prevent burning, minimum beam current densities should be employed.
2. Brilliance and definition decrease with decreasing accelerator voltage. In general, accelerator voltage should not be less than 5,000 volts, except for the 7ABP19. For this type, the accelerator voltage should not be less than 7,000 volts.
3. With Grid No. 1 voltage adjusted to produce an accelerator current of 100 μ A. with the pattern adjusted for best overall focus. Measured with a 525-line interlaced and synchronized $4\frac{1}{4} \times 5\frac{3}{4}$ -inch pattern, with interlaced line blanking (current measured before applying blanking).
4. Visual extinction of focused $4\frac{1}{4} \times 5\frac{3}{4}$ -inch raster pattern.
5. Measured with a 525-line interlaced and synchronized pattern with interlaced line blanking. Pattern width adjusted to 90% of minimum useful screen diameter. $I_b = 100 \mu$ A. measured before applying blanking. Line width is the merged raster height divided by the number of lines (262.5) (measured in center of tube face). To avoid damage to the screen of the 7ABP19, it is recommended that the screen current be not more than 50 μ A. when measuring line width. The line width under this condition will be .011 inch maximum (current measured before applying blanking).
6. The center of the undeflected, focused spot will fall within a circle of $\frac{3}{8}$ -inch radius concentric with the center of the tube face, with the tube shielded.
7. For optimum quality of the focused spot, the use of a beam alignment magnet is recommended. This may be obtained by the use of an adjustable magnet of specified strength, located approximately $5\frac{1}{4}$ inches from the reference line.

TYPE 7ABP-

