

TYPE 5AHP-, 5AHP-A CATHODE-RAY TUBE

The Type 5AHP- is a 5-in electrostatic focus and magnetic deflection cathode-ray tube suitable for radar applications. A low-voltage electrostatic focus lens is employed, designed to operate at or near cathode potential to afford substantially automatic focus, independent of accelerator voltage variations. In addition, the 5AHP- employs the Du Mont high-resolution electron gun. Spot size of the Self-focus Type 5AHP- is materially better than that of magnetically focused types, with a gain of approximately 20% in resolution over the magnetically focused types. Little sacrifice in internal light output is observed and weight and space are saved by the elimination of the focus coil.

The Type 5AHP-A utilizes an aluminized screen for greater light output and to minimize screen charging effects; it is otherwise identical to the 5AHP-. If a P19 screen is selected, the aluminized version should be used.



GENERAL CHARACTERISTICS

Electrical

Heater Voltage	6.3 Volts		
Heater Current	0.6 ± 10% Ampere		
Focusing Method	Electrostatic		
Deflecting Method	Magnetic		
Deflecting Angle (approx.)	53 Degrees		
Phosphor	No. 7	No. 14	No. 19
Fluorescence	Blue	Blue	Orange
Phosphorescence	Yellow	Orange	Orange
Persistence	Long	Medium-long	Long
Direct Interelectrode Capacitances, Approx.			
Cathode to all other electrodes	5	μμf.	
Grid No. 1 to all other electrodes	6	μμf.	

Mechanical

Overall Length	11 1/8 ± 1/4	Inches
Greatest Diameter of Bulb	4 5/16 ± 3/32	Inches
Minimum Useful Screen Diameter	4 1/4	Inches
Bulb Contact (Recessed Small Ball Cap)	J1-22	
Base (Medium-Shell Octal 8-Pin)	B8-65 or B8-11	
Basing	8EF	
Bulb Contact Alignment		
J1-22 Contact aligns with pin No. 5	±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 Value ¹	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	5,000	7,000	Volts D-C
Focusing Electrode Voltage ³	0 to 200	0 to 250	Volts D-C
Focusing Electrode Current	-15 to +15	-15 to +15	μA. D-C
Grid No. 2 Voltage	300	300	Volts D-C
Grid No. 1 Voltage ⁴	-28 to -72	-28 to -72	Volts D-C
Line Width A ⁵010	.009	Inch Max.
Spot Position (Undelected) ⁶	5/8	5/8	Inch
Alignment Magnet Field Strength	0-4	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 5AHP19-A 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 5AHP19-A. 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 $2\frac{3}{4} \times 3\frac{3}{4}$ -inch pattern, with interlaced line blanking (current measured before applying blanking).
4. Visual extinction of focused $2\frac{3}{4} \times 3\frac{3}{4}$ -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).
The 5AHP19-A should be checked at 7,000 volts. To avoid damage to the screen, it is recommended that the screen current be not more than 50 μ A. when measuring line width. The line width under these conditions will be .009 inch maximum (current measured before applying blanking).
6. The center of the undeflected, focused spot will fall within a circle of $\frac{5}{16}$ -inch radius concentric with the center of the tube face, with the tube shielded.
7. For optimum quality of the focussed spot, the use of a beam alignment magnet is recommended. This may be obtained by the use of an adjustable magnet of the specified strength located approximately $5\frac{1}{8}$ inches from the reference line.

TYPE 5AHP-

