**DESCRIPTION**

The 19BMP4 is a directly viewed, rectangular glass picture tube. The tube is electrically identical to the 19BLP4.

It incorporates a short improved electron gun requiring no ion trap magnet and which also improves edge focus quality. The tube is externally coated and features the new short integral glass button base having straight thru leads and an indexing lug.

**ELECTRICAL DATA**

Focusing Method .................................. Electrostatic  
Deflecting Method ................................ Magnetic  
Deflection Angle, approximate  
  Horizontal ..................................... 102 Degrees  
  Vertical ...................................... 86 Degrees  
  Diagonal ...................................... 114 Degrees  
Direct Inter-electrode Capacitance, approximate  
  Cathode to All .................................. 4 μF  
  Grid #1 to All .................................. 5 μF  
External Coating Capacitance ......................... 1300 Min, μF  
  1700 Max, μF  
Heater Voltage .................................... 6.3 Volts  
Heater Current at 2.68 Volts ................. 0.600 ± 0.030 Amperes  
Heater Warm-up Time (Note 1) ...................... 11 Seconds  

**OPTICAL DATA**

Phosphor Number .................................. Aluminized P4  
Fluorescent Color .................................. White  
Persistence ........................................... Medium Short  
Faceplate (Bonded Shield) .......................... FP159A2  
Light Transmission at Center, approximate ........ 44 Percent  

**MECHANICAL DATA**

Overall Length .................................. 11\(\frac{3}{16}\) ± ¼ Inches  
Neck Length ........................................... 4\(\frac{7}{16}\) ± ¼ Inches  
Greatest Dimensions of Bulb  
  Diagonal ......................................... 19.856 ± .094 Inches  
  Width ........................................... 17.264 ± .094 Inches  
  Height ........................................... 14.090 ± .094 Inches  
Minimum Useful Screen Dimensions (maximum assured dimensions)  
  Diagonal ........................................... 17\(\frac{3}{4}\) Inches  
  Width ........................................... 15\(\frac{5}{16}\) Inches  
  Height ........................................... 12\(\frac{7}{16}\) Inches  
Bulb ................................................ J149-C1  
Base ................................................ B7-208  
Basing ............................................ 8HR  

Anode Contact ..................................... J1-21  

**GRID DRIVE SERVICE**

*Voltages are positive with respect to cathode unless indicated otherwise.*

**MAXIMUM RATINGS (Design Maximum Values)**

Anode Voltage (Note 2) .................. 20,000 Max. Volts DC  
Grid #2 Voltage .................. −550 Min. to +1100 Max. Volts DC  
Grid #2 Voltage .................. 200 Min. to 550 Max. Volts DC  
Grid #1 Voltage  
  Negative-Bias Value .................. 154 Max. Volts DC  
  Negative-Peak Value .................. 220 Max. Volts  
  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 .............................. 450 Max. Volts  
  After Equipment Warm-up Period 200 Max. Volts  
  Heater Positive with Respect to Cathode 200 Max. Volts  

**TYPICAL OPERATING CONDITIONS**

Anode Voltage .................................. 16,000 Volts DC  
Grid #4 Voltage for Focus .................. 0 to +1000 Volts DC  
Grid #2 Voltage .................. 400 Volts DC  
Grid #1 Voltage (Note 3) .................. −36 to −94 Volts DC  

**MAXIMUM CIRCUIT VALUES**

Grid #1 Circuit Resistance ................... 1.5 Max. Megs.

**CATHODE DRIVE SERVICE**

*Voltages are positive with respect to Grid #1 unless indicated otherwise.*

**MAXIMUM RATINGS (Absolute Maximum Values)**

Anode Voltage (Note 2) .................. 20,000 Max. Volts DC  
Grid #4 Voltage .................. −400 Min. to +1250 Max. Volts DC  
Grid #2 Voltage .................. 350 Min. to 700 Max. Volts DC  
Cathode Voltage  
  Positive-Bias Value .................. 154 Max. Volts DC  
  Positive-Peak Value .................. 220 Max. Volts  
  Negative-Bias Value .................. 0 Max. Volts DC  
  Negative-Peak Value .................. 2 Max. Volts  
Peak-Heater-Cathode Voltage  
  Heater Negative with Respect to Cathode  
  During Warm-up Period not to Exceed  
    15 Seconds .............................. 450 Max. Volts  
  After Equipment Warm-up Period 200 Max. Volts  
  Heater Positive with Respect to Cathode 200 Max. Volts  

from JEDEC release #3336, July 10, 1961
### TYPICAL OPERATING CONDITIONS

Anode Voltage .................. 16,000 Volts DC
Grid #4 Voltage for Focus ............ 0 to 400 Volts DC
Grid #2 Voltage .................. 400 Volts DC
Grid #1 Voltage .................. 0 Volts DC
Cathode Voltage (Note #3) ....... +36 to +78 Volts DC

### MAXIMUM CIRCUIT VALUES

Grid #1 Circuit Resistance .......... 1.5 Max. Mins.

### NOTES

1. Heater warm-up time is defined as the time required for the voltage across the heater to reach 80% of its rated value after applying 4 times rated heater voltage to a circuit consisting of the tube heater in series with a resistance equal to 3 times the rated heater voltage divided by the rated heater current.
2. Anode, Grid #3 and Grid #5 are connected together within the tube and are referred to herein as anode.
3. For visual extinction of the focused raster. For cutoff of the undeflected focus spot, the absolute value of the bias between cathode and grid will increase by about 5 volts.

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### DIAGRAM NOTES:

1. Reference line is determined by plane C-C' of JEDEC #126 Reference Line Gauge, when the gauge is seated against the bulb.
2. Planes perpendicular to tube axis and passing through points X, Y and Z are located as follows:
   - Plane tangent to crown of face to plane of X: 0.500" Nom.
   - Plane of X to plane of Y = .429" ± .030"
   - Plane of X to plane of Z = .749" ± .030"

### WARNING

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close ranges if this tube is operated at anode voltages higher than 16,000 volts.

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The information, diagrams, or any other data included herein are believed to be accurate and reliable. However, the Philco Corporation, Lansdale Division, assumes no responsibility or liability whatsoever for the application, interpretation or use made of such information, diagrams or data especially as to the use of said information, diagrams or data affects any patent, trademark or proprietary data rights.