TELEVISION PICTURE TUBE TYPE 19BWP4

114° Magnetic Deflection
Rectangular Glass
Aluminized Screen
Gray Filter Glass

6.3 Volt, 450 Ma. Heater
Electrostatic Focus
Short Neck Length

External Conductive Coating
Spherical Faceplate
No Ion Trap
12'' x 15-1/8'' Screen Size

ELECTRICAL:
Focusing Method .................. Low Voltage Electrostatic
Deflection Method .................. Magnetic
Deflection Angles (Approx.):
  Horizontal ................. 103 Degrees
  Vertical ..................... 86 Degrees
  Diagonal .................... 114 Degrees
Direct Interelectrode Capacitances:
  Cathode to all other electrodes, (Approx.) .... 5 μF
  Grid 1 to all other electrodes, (Approx.) ........ 6 μF
External Conductive Coating to Anode:
  Maximum .................... 1500 μF
  Minimum ..................... 1000 μF
Heater Current at 6.3 volts .......... 450 ± 5% Ma.
Heater Warm-up Time (Note 1) ........ 11 Seconds

OPTICAL:
Phosphor Number ....... Aluminized P4
Light Transmittance at Center, Approximate .......... 78 Percent

MECHANICAL:
Overall Length ................ 11-3/4 ± 1/4 Inches
Greatest Dimensions of Tube:
  Diagonal .................. 18-5/8 ± 1/8 Inches
  Width ....................... 16-3/32 ± 1/8 Inches
  Height ...................... 13-11/32 ± 1/8 Inches
Minimum Useful Screen Dimensions (Projected):
  Diagonal .................. 17-9/16 Inches
  Horizontal ............... 15-1/8 Inches
  Vertical ................... 12 Inches
  Area ....................... 172 Sq. Inches
Neck Length .................. 4-1/2 ± 1/8 Inches
Bulb Contact ................. J1249A1
Bulb Contact .................. J1-21
Base ......................... B7-208
Base Weight .................. 123-1/2 Pounds

RATINGS:
Design Maximum System
Unless Otherwise Specified, Voltage Values are Positive
with Respect to Grid 1.
  Maximum Anode Voltage .................. 23500 Volts
  Minimum Anode Voltage (Note 2) ......... 12000 Volts
  Maximum Grid 4 Voltage (Focusing Electrode) .................. +11000, -550 Volts
  Maximum Grid 2 Voltage ................. 700 Volts
Cathode Voltage:
  Maximum Negative Value ............. 0 Volts DC
  Maximum Negative Peak Value .......... 2 Volts
  Maximum Positive Value ............. 154 Volts DC
  Maximum Positive Peak Value ........ 220 Volts
Maximum Heater-Cathode Voltage
Heater negative with respect to cathode
During warm-up period not to exceed
  15 seconds ................ 450 Volts
After equipment warm-up period ........ 200 Volts
Heater positive with respect to cathode ........ 200 Volts

TYPICAL OPERATING CONDITIONS:
CATHODE DRIVE SERVICE:
Unless Otherwise Specified, All Voltage Values are Positive with Respect to Grid 1.
  Anode Voltage ................. 20000 Volts DC
  Grid 4 Voltage (Focusing Electrode) .......... 250 Volts DC
  Grid 2 Voltage (Note 3) ........ 500 Volts DC
  Cathode Voltage for raster cutoff .......... 45 to 95 Volts

LIMITING CIRCUIT VALUES:
  Maximum Grid 3 Circuit Resistance ........ 1.5 Megohms
  Minimum Grids 2 & 4 Circuit Resistance (Note 4) 10000 Ohms

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 rated heater voltage divided by rated heater current.

2. Brilliance and definition decreases with decreasing anode voltage. Operation with anode voltage less than 12000 volts is not recommended.

3. It is recommended that not less than 300 volts on Grid 2 be used, as resolution is affected at lower voltages.

4. Protective resistance in the grid 2 and grid 4 (focus electrode) circuits is advisable to prevent damage to the tube.

X-RAY WARNING: Operation with voltages in excess of 16KV may require shielding to limit radiation of very soft X-rays.

Television Picture Tube Section
WESTINGHOUSE ELECTRIC CORPORATION, ELECTRONIC TUBE DIVISION, ELMIRA, NEW YORK

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NOTE 1: Yoke Reference Line is determined by plane C-C of JEDEC Reference-Line Gauge No. 126 when seated on funnel of tube. With a minimum neck length tube, the PM centering magnet (0 to 8 gauss) should extend no more than 2-1/8" from Yoke Reference Line.

NOTE 2: Lateral strains on the base pins must be avoided. The socket should have flexible leads permitting free movement. The perimeter of the base water will be inside a 1-3/8" diameter circle concentric with tube axis.

NOTE 3: External conductive coating forms supplementary filter capacitor and must be grounded.

NOTE 4: Neck diameter may be a maximum of 1.162" at the splice.

NOTE 5: Anode terminal alignment with pin 4 has angular tolerance about tube axis of ±30°.

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