TELEVISION PICTURE TUBE

DESCRIPTION
The 17BP4-B is a magnetic-focus and -deflection, direct-view picture tube for television applications. It provides a $10\frac{3}{4}$ by $14\frac{1}{2}$-inch picture. Features of this tube include a high-quality, neutral-density faceplate which increases picture contrast and detail under high ambient light conditions, and a reflective, metal-backed screen which improves brightness. Other features are an electron gun designed to be used with an external ion-trap magnet and a space-saving rectangular face shape. An external conductive coating serves as a filter capacitor when grounded.

TECHNICAL INFORMATION

GENERAL

**Electrical**
- Heater voltage .................................................. 6.3 volts
- Heater current .............................................. $0.6 \pm 10\%$ ampere
- Focusing method—magnetic
- Deflecting method—magnetic
- Deflecting angle, approximate
  - Horizontal ........................................ 65 degrees
  - Diagonal ........................................ 70 degrees
- Phosphor—P4
  - Fluorescence—white
  - Persistence—medium
TECHNICAL INFORMATION (CONT'D)

Electrical (Cont.)

Faceplate—neutral density
Light transmission, approximate .................................................. .66 per cent
Direct interelectrode capacitances, approximate
Cathode to all other electrodes ...................................................... 5 uuf
Grid—No. 1 to all other electrodes ................................................... 6 uuf
External conductive coating to anode capacitance, approximate ....... 2000 uuf

Mechanical

Over-all length ................................................................. 19\(\frac{3}{4}\) ± \(\frac{3}{8}\) inches
Greatest bulb dimensions
Diagonal ................................................................. 16\(\frac{3}{8}\) ± \(\frac{3}{8}\) inches
Width ................................................................. 15\(\frac{3}{8}\) ± \(\frac{3}{8}\) inches
Height ................................................................. 12\(\frac{3}{4}\) ± \(\frac{3}{8}\) inches
Picture dimensions (3 by 4 aspect ratio)
Width ................................................................. 14\(\frac{1}{4}\) inches
Height ................................................................. 10\(\frac{3}{4}\) inches
Anode contact—recessed small-cavity cap, J1-21
Base—small-shell duodecal 5-pin, B5-57
Basing—12D
Anode contact alignment
Anode contact aligns with vacant pin position No. 6 ± 30 degrees

MAXIMUM RATINGS Design Center Values

Anode voltage* ................................................................. 16000 max volts d-c
Grid—No. 2 voltage ................................................................. 410 max volts d-c
Grid—No. 1 voltage
Negative—bias value ................................................................. 125 max volts d-c
Positive—bias value ................................................................. 0 max volts d-c
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 d-c
After equipment warm-up period .................................................. 150 max volts d-c
Heater positive with respect to cathode ............................................ 150 max volts d-c

JETEC COMPARATIVE CONDITIONS

Anode voltage ................................................................. 12000 volts
Grid—No. 2 voltage ................................................................. 300 volts
Grid—No. 1 voltage*** ................................................................. -33 to -77 volts
Focusing—coil current† ................................................................. 92 ± 20% milliamperes
Ion-trap current‡ ................................................................. 75 ± 50% milliamperes

RECOMMENDED OPERATING CONDITIONS

Anode voltage (average brightness = 20 foot-lamberts) ................................ 14000 volts
Grid—No. 2 voltage ................................................................. 300 volts
Grid—No. 1 voltage*** ................................................................. -33 to -77 volts
Focusing-coil current (RTMA coil No. 109 at 3\(\frac{3}{4}\) inches), approximate ................................ 115 milliamperes
Ion-trap field intensity #, approximate ........................................ 35 gausses

MAXIMUM CIRCUIT VALUES

Grid—No. 1 circuit resistance .................................................. 1.5 max megohms

* Anode and grid—No. 3 which are connected together within the tube, are referred to herein as anode.
** Cathode should be returned to one side or to the midtap of the heater transformer winding.
*** For visual extinction of undeflected focused spot.
† For RTMA focus coil No. 109 or equivalent with the combined grid—No. 1 bias voltage and video-signal voltage adjusted to produce a highlight brightness of 35 foot-lamberts on a 10\(\frac{3}{4}\) by 14\(\frac{3}{4}\)-inch picture area and with the yoke reference line to center of air gap distance equal to 3 inches.
‡ For single-field ion-trap magnet, RTMA No. 111 or equivalent positioned 5\(\frac{1}{2}\) inches from the yoke reference line.
# Single-field ion-trap magnet adjusted to optimum position.
OUTLINE 17BP4-B

SCREEN DIMENSIONS
DIAGONAL 15\(\frac{1}{2}\)
WIDTH 14\(\frac{1}{4}\)
HEIGHT 11\(\frac{1}{8}\)

ANODE TERMINAL

NOTE:
ANODE TERMINAL ALIGNS WITH VACANT PIN NO. 6 POSITION ± 30°.

BASING DIAGRAM

NOTES:
1. REFERENCE LINE IS DETERMINED BY THE PLANE OF THE UPPER EDGE OF THE REFERENCE-LINE GAGE (RTMA NO. 110) WHEN THE GAGE IS RESTING ON THE CONE.
2. NOMINAL POSITION OF ION-TRAP MAGNET.
3. RECOMMENDED POSITION FOR CENTER OF FOCUSING FIELD.
4. DEFLECTION ANGLE ON DIAGONAL IS 70° DEGREES.

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