RCA-19DSP4 is a black-and-white pan-o-ply picture tube which eliminates the need for either an integral protective window or a separate safety-glass window and its companion dust seal in the receiver. Thereby internal reflections are reduced; consequently, picture contrast is improved. Integral implosion protection in the pan-o-ply picture tube is provided by means of a formed rim band and a welded tension band around the periphery of the tube panel. The 19DSP4 is a rectangular glass picture tube having an aluminized screen with nearly straight sides and slightly rounded corners.

Features of the 19DSP4 include:
- Pan-O-Ply—Integral Implosion Protection
- 114° Magnetic Deflection
- Low-Voltage Electrostatic Focus
- Aluminized Screen
- Electron Gun Requiring No Ion-Trap Magnet
- 11.875" Max. Overall Length
- 4.375" Neck Length
- 12.000" x 15.187" Screen
- 6.3 Volt/600 Ma Heater
- Low Grid-No.2 Voltage—For Cathode-Drive Service
- 20 kv Max. Anode Voltage

GENERAL DATA

Electrical:
- Focusing Method: Electrostatic
- Deflection Method: Magnetic
- Deflection Angles (Approx.):
  - Diagonal: 114°
  - Horizontal: 102°
  - Vertical: 85°
- Direct Interelectrode Capacitance:
  - Cathode to all other electrodes: 5 pf
  - Grid No. 1 to all other electrodes: 6 pf
  - External conductive coating to anode:
    - 1500 max. pf
    - 1000 min. pf
- Heater Current at 6.3 volts: 600 ± 30 ma
- Heater Warm-Up Time (Average): 11 seconds
  - Heater warm-up time is defined as the time required in the test circuit shown in Fig. 1 for the voltage (E) across the heater terminals to increase from zero to 0.8 of rated heater voltage.
- Electron Gun: Type Requiring No Ion-Trap Magnet

Optical:
- Phosphor: P4—Sulfide Type, Aluminized
- Faceplate: Filterglass
- Light transmission at center (Approx.): 49%

Mechanical:
- Weight (Approx.): 15 lbs

Tube Dimensions:
- Overall length: 11.625" ± .250"
- Neck length: 4.375" ± .125"
- Diagonal: 18.732" ± .100"
- Greatest width: 16.514" ± .100"
- Greatest height: 13.473" ± .100"

Minimum Screen Dimensions (Projected):
- Diagonal: 17.562"
- Greatest width: 15.187"
- Greatest height: 12.000"
- Area: 172 sq.in.
- Bulb Designation: J149 Fl
- Cap Designation: Recessed Small Cavity (JEDEC No.J1-21)
- Base Designation: Small-Button Neeightar 7-Pin, Arrangement 1 (JEDEC No.BT-268)
- Basing Designation: 8HR

Pin 1: Heater
Pin 2: Grid No.1
Pin 3: Grid No.2
Pin 4: Grid No.4
Pin 5: Grid No.1
Pin 7: Cathode
Pin 8: Heater
Cap: Anode (Grid No.3, Grid No.5, Screen, Collector)
C: External conductive Coating

BOTTOM VIEW
Maximum and Minimum Ratings, Design-Maximum Values:

Unless otherwise specified, voltage values are positive with respect to grid No.1.

- **Anode Voltage**: 20,000 max. volts, 10,000 min. volts
- **Grid-No.4 Voltage**: 1250 max. volts
- **Grid-No.2 Voltage**: 70 max. volts, 40 min. volts
- **Cathode Voltage**: Negative peak value: 2 max. volts, Negative bias value: 0 max. volts, Positive bias value: 100 max. volts, Positive peak value: 150 max. volts
- **Heater Voltage**: 6.9 max. volts, 5.7 min. volts
- **Peak Heater-Cathode Voltage**: Heater negative with respect to cathode:
  - During equipment warm-up period not exceeding 15 seconds: 450 max. volts
  - After equipment warm-up period: 300 max. volts
- **Combined AC & DC voltage**: 200 max. volts
- **DC Component**: 100 max. volts

Typical Operating Conditions for Cathode-Drive Service:

Unless otherwise specified, voltage values are positive with respect to grid No.1.

- **Anode Voltage**: 16,000 volts
- **Grid-No.4 Voltage**: 100 volts
- **Grid-No.2 Voltage**: 50 volts
- **Cathode Voltage for visual extinction of focused raster (See Fig.2)**: 32 to 50 volts
- **Field Strength of required adjustable Centering Magnet**: 0 to 8 gauss
- **Maximum Circuit Value**: Grid-No.1 Circuit Resistance: 1.5 max. megohms

\( \sqrt{\text{Anode volts} \times 8 \text{ gausses}} \)

\( 16000 \text{ volts} \)

The equipment manufacturer must determine and supply additional compensation for the effects of the Earth's magnetic field and extraneous fields due to choice of circuitry and components. The additional compensation should preferably be applied as part of the magnetic field of the deflecting yoke.

OPERATING CONSIDERATIONS

**X-Radiation Warning.** When operated at anode voltages up to 16 kilovolts, this picture tube does not produce any harmful X-radiation. However, because the rating of this type permits operation at voltages as high as 20 kilovolts (design-maximum value), shielding of the tube for X-radiation may be needed to protect against possible injury from prolonged exposure at close range whenever the operating conditions involve voltages in excess of 16 kilovolts.

**TEST CIRCUIT FOR DETERMINING HEATER WARM-UP TIME**

![Diagram](92c3-8303)

**E_0** = RATED HEATER VOLTAGE OF TUBE UNDER TEST. 
**I_0** = RATED HEATER CURRENT OF TUBE UNDER TEST.

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RASTER CUTOFF CHART
For Cathode-Drive Service

Eg=6.3 VOLTS
Anode-to-grid—No.1 Volts +6000
Grid-No.4 TO GRID—No.1 Volts Adjusted For Focus.
* Cathode TO Grid—No.1 Voltage For Visual Extinction Of Focused Raster Increases Or Decreases Directly By Approx. 1 Volt For Every 1000-Volt Change In Anode-To-Grid—No.1 Voltage.

Fig. 2

BULB-CONTOUR DIMENSIONS

LONG-SIDE VIEW

SHORT-SIDE VIEW

DIMENSIONS IN INCHES

Planes A through G are normal to the tube axis and at fixed locations from the Y axis. These coordinates describe the boatie bulb external contour in planes through the tube axis and the respective faceplate axes.


 NOTE 3: SOCKET FOR THIS BASE SHOULD NOT BE RIGIDLY MOUNTED; IT SHOULD HAVE FLEXIBLE LEADS AND BE ALLOWED TO MOVE FREELY. BOTTOM CIRCUMFERENCE OF BASE WAFER WILL FALL WITHIN A CIRCLE CONCENTRIC WITH BULB AXIS AND HAVING A DIAMETER OF 1-3/16".

 NOTE 4: EXTERNAL CONDUCTIVE COATING AND IMPLOSION PROTECTION HARDWARE MUST BE GROUNDED.

 NOTE 5: TO CLEAN THIS AREA, WIPE ONLY WITH SOFT DRY LINTLESS CLOTH.

 NOTE 6: MEASURED FROM THE TENSION BAND.

 NOTE 7: BULGE AT SPLICE LINE SEAL MAY INCREASE THE INDICATED MAXIMUM VALUE FOR ENVELOPE WIDTH, DIAGONAL, AND HEIGHT BY NOT MORE THAN 1/32".