

ELECTRONIC TUBE REFERENCE

# 19DRP4

Specialized - Cathode Ray electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION  
CONSTRUCTION  
CATHODERAY

Nineteen-inch Pan-O-Ply monochrome television picture tube with low-voltage electrostatic focus, 114-degree magnetic deflection, white P4 screen, and a 600 mA controlled-warm-up heater. Integral implosion protection supports receiver safety without a separate protective window.

## GENERAL CHARACTERISTICS

|                     |                   |                      |               |
|---------------------|-------------------|----------------------|---------------|
| BASE DESIGNATION    | —                 | BASE PINS            | —             |
| NOMINAL HEATER      | 6.3 V / 600 mA    | PARALLEL HEATER      | — / —         |
| HEATING             | Indirect          | SERIES OPERATION     | Not specified |
| CATHODE ARRANGEMENT | Separate cathodes | SECTION CONSTRUCTION | Similar       |

## SECTION RATINGS

|                                                         |         |
|---------------------------------------------------------|---------|
| SECTION1 Cathode Ray                                    |         |
| MAXIMUM PLATE VOLTAGE                                   | 23000 V |
| MAXIMUM SCREEN VOLTAGE                                  | 550 V   |
| Same as 19DQP4 except 600 mA controlled-warm-up heater. |         |

## 19DRP4 Picture Tube

The **19DRP4** is a rectangular glass picture tube designed for television receiver applications. It features an aluminized screen, low-voltage electrostatic focus, and a wide-angle magnetic deflection system. The tube incorporates integral implosion protection and a controlled heater warm-up time, making it suitable for modern television chassis designs.

## Construction and Implosion Protection

The 19DRP4 is constructed as a rectangular glass cathode-ray tube. It features an aluminized screen that enhances brightness and contrast by reflecting light forward that would otherwise be lost to the interior

of the tube.

A key mechanical feature of the 19DRP4 is its **PAN-O-PLY** integral implosion protection system. This system is constructed using a formed rim and welded tension bands placed around the periphery of the tube panel. This structural reinforcement eliminates the need for a separate safety glass window or an integral protective window in the television cabinet, simplifying receiver design and reducing reflections.

## Electron Gun, Focus, and Deflection

The tube's electron gun is designed for efficient operation without the complexity of external magnetic components:

- **Focusing Method:** The tube utilizes low-voltage electrostatic focus, which allows the focus voltage to be adjusted or maintained at a low potential relative to the high-voltage anode.
- **Deflection:** It employs a wide-angle **114° magnetic deflection** system, which allows for a shorter overall tube length and a shallower television cabinet design.
- **Ion-Trap:** The electron gun design does not require an external ion-trap magnet, simplifying installation and alignment procedures.

## Heater Characteristics

The 19DRP4 features a heater with a controlled warm-up time, which is particularly useful in series-string heater arrangements to prevent voltage surges across other tubes during start-up.

| Heater Parameter | Value                   |
|------------------|-------------------------|
| Heater Voltage   | 6.3 V                   |
| Heater Current   | 600 ± 30 mA             |
| Warm-up Feature  | Controlled warm-up time |

## Related Designations

The 19DRP4 is closely related to other picture tubes in its family. Specifically, it is identical to the **19DQP4** picture tube in all physical and electrical characteristics, with the sole exception of the heater current rating.

## Technical Summary

The **19DRP4** is a rectangular glass television picture tube featuring a 114° magnetic deflection angle, low-voltage electrostatic focus, and an aluminized screen. Its PAN-O-PLY integral implosion protection system uses a formed rim and welded tension bands to eliminate the need for external safety glass. Operating with a 6.3 V heater drawing 600 ± 30 mA, the tube features a controlled heater warm-up time and does not require an ion-trap magnet. It shares its design with the **19DQP4**, differing only in its heater current specification.

## SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

# 1971 RCA HB3 Binder 1 of 7

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1971 RCA HB3 BINDER 1 OF 7

## Section 1 · Cathode Ray

| OTHER                                      |                 |                            |
|--------------------------------------------|-----------------|----------------------------|
| PARAMETER                                  | PUBLISHED VALUE | CONDITION / NOTE           |
| Heater voltage                             | 6.3 V           | —                          |
| Heater current                             | 600 mA          | —                          |
| Heater warm-up time                        | 11 s            | —                          |
| Maximum anode/ultor voltage                | 23000 V         | —                          |
| Minimum anode/ultor voltage                | 11000 V         | —                          |
| Typical anode/ultor voltage                | 16000 V         | PictureTubeService         |
| Maximum grid No.2 voltage                  | 550 V           | —                          |
| Typical grid No.2 voltage                  | 300 V           | PictureTubeService         |
| Focus-voltage range minimum                | 0 V             | OptimumFocus               |
| Focus-voltage range maximum                | 400 V           | OptimumFocus               |
| Visual-extinction voltage range minimum    | 28 V            | FocusedRasterExtinction    |
| Visual-extinction voltage range maximum    | 62 V            | FocusedRasterExtinction    |
| Maximum grid No.1 circuit resistance       | 1.5 megohm      | —                          |
| X-ray shielding warning                    | Present         | HighAnodeVoltage           |
| Maximum negative grid No.1 peak voltage    | 220 V           | —                          |
| Maximum negative grid No.1 bias magnitude  | 155 V           | —                          |
| Maximum positive grid No.1 peak voltage    | 2 V             | —                          |
| Peak heater-cathode voltage during warm-up | 450 V           | HeaterNegative;Warmup<=15s |
|                                            |                 |                            |

| PARAMETER                                          | PUBLISHED VALUE | CONDITION / NOTE |
|----------------------------------------------------|-----------------|------------------|
| Peak heater-cathode voltage after warm-up          | <b>300 V</b>    | HeaterNegative   |
| Peak heater-cathode voltage heater positive        | <b>200 V</b>    | HeaterPositive   |
| Adjustable centering magnet field strength maximum | <b>8 gauss</b>  | Approximate      |

| CONSTRUCTION             |                                |                  |
|--------------------------|--------------------------------|------------------|
| PARAMETER                | PUBLISHED VALUE                | CONDITION / NOTE |
| Focusing method          | <b>LowVoltageElectrostatic</b> | —                |
| Deflection method        | <b>Magnetic</b>                | —                |
| Phosphor                 | <b>P4</b>                      | —                |
| Screen type              | <b>White</b>                   | P4               |
| Ion-trap magnet required | <b>No</b>                      | —                |

| CHARACTERISTIC   |                 |                  |
|------------------|-----------------|------------------|
| PARAMETER        | PUBLISHED VALUE | CONDITION / NOTE |
| Deflection angle | <b>114 deg</b>  | Approximate      |

| CAPACITANCE                                 |                 |                  |
|---------------------------------------------|-----------------|------------------|
| PARAMETER                                   | PUBLISHED VALUE | CONDITION / NOTE |
| Cathode to all other electrodes capacitance | <b>5 pF</b>     | Approximate      |

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