

ELECTRONIC TUBE REFERENCE

19GVP22

Specialized - Cathode Ray electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
CATHODERAY

P22 color cathode-ray picture tube documented for color television display service, using a multicolor screen and high-voltage CRT construction.

GENERAL CHARACTERISTICS

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

SECTION RATINGS

SECTION1 Cathode Ray
No fixed ratings recorded.
Cathode-ray electron-gun/screen system; anode/ultor maximum promoted to MaxPlateVoltage when explicitly published. No explicit X-ray precaution detected in the supplied source.

19GVP22 — Rectangular Color Picture Tube

The **19GVP22** is a rectangular color picture tube designed specifically for use in color television receivers. It features a three-gun electrostatic-focus design, magnetic convergence, and a 90-degree magnetic deflection angle. The tube incorporates advanced display technologies, including a "PERMA-CHROME" assembly to maintain field purity and uniformity during warm-up, and an aluminized tricolor phosphor-dot "Hi-Lite" screen utilizing an improved rare-earth red-emitting phosphor.

Mechanical and Optical Construction

The 19GVP22 is constructed with a rectangular glass envelope and a filterglass faceplate. The faceplate has a spherical radius of 27.3 inches (693 mm) and exhibits a light transmission of approximately 69%.

Unlike some comparable picture tubes, the 19GVP22 does not feature an integral protective window. Consequently, installation requires a cabinet-mounted shatter-proof glass cover to provide implosion protection, along with optional shielding for X-radiation.

Physically, the tube has the following key dimensions and mechanical specifications:

- **Overall Length:** 17.856 ± 0.375 inches (453.5 ± 9.5 mm)
- **Deflection Plane to Faceplate Center:** 11.163 ± 0.188 inches (283.5 ± 4.8 mm)
- **Neck Length:** 3.485 ± 0.125 inches (88.5 ± 3.2 mm)
- **Base and Cap Height:** 2.355 inches (59.8 mm)
- **Approximate Weight:** 21 lb (9.5 kg)

The 19GVP22 is closely related to the **19GWP22** picture tube. The two types are electrically identical, differing only in specific optical and mechanical characteristics, including the faceplate properties, the lack of an integral protective window on the 19GVP22, and differences in overall length and weight.

Electrical and Typical Operating Conditions

Operation of the 19GVP22 requires precise voltage alignment across its three electrostatic-focus electron guns. Under typical operating conditions, the tube is configured with the following electrical parameters:

Parameter	Value
Heater Voltage	6.3 V
Anode-to-Cathode Voltage	25,000 V
Grid-No. 3-to-Cathode Voltage	Adjusted for focus
Raster Size	15.585 x 12.185 inches (395.9 x 309.5 mm)

The high anode voltage of 25,000 V is critical for accelerating the electron beams to the aluminized tricolor screen to achieve adequate brightness and color definition.

Color Balance and Light-Output Performance

To produce a balanced white-light output, the drive to each of the three guns (red, blue, and green) must be adjusted relative to one another. Under standard operating conditions, the composite anode current is adjusted to produce a white-light output of 9300° K + 27 M.P.C.D. (Minimum Perceptible Color Difference). To achieve this specific white point, the total anode current is distributed among the three guns as follows:

- **Red Gun:** 34% of total anode current
- **Blue Gun:** 32% of total anode current
- **Green Gun:** 34% of total anode current

The light-output performance of the 19GVP22 is characterized by a near-linear relationship between the white-light output and the composite anode current. When measured within a 4-inch diameter area

centered on the tube face, the typical light output varies with anode current as detailed below:

Composite Anode Current (μA)	Typical White-Light Output (footlamberts)
200	~11
400	~22
600	~33
800	~43
1000	~53

This linear progression demonstrates the efficiency of the aluminized "Hi-Lite" screen and its rare-earth red phosphor in converting beam current to visible light across a wide operating range.



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	Nominal heater voltage
NEATER VOLTAGE =	6.3 V	NEATER VOLTAGE = 6.3 VOLTS
ANODE-TO•CATHODE VOLTAGE =25000 VOLTS	25000 V	ANODE-TO•CATHODE VOLTAGE =25000 VOLTS

CONSTRUCTION

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Deflection Method	Magnetic	Published deflection method

CHARACTERISTIC

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
CURRENT TO PRODUCE	21 MPCD	CURRENT TO PRODUCE 9300°x. 21 M.P.C.D. NHITE•LIGHT OUTPUT.

TUBE TINKER

An independent reference for electronic tubes, vacuum tubes,
and their source documents.

[Catalog](#) [Tube types](#) [Full books](#) [Blog](#) [Feedback & corrections](#)

© 2026 Tube Tinker