



19TP22 CATHODE-RAY TUBE

The Du Mont 19TP22 is an all-glass, 19-inch direct view, tricolor picture tube designed for color television purposes. It features a curved shadow mask and a screen which is deposited directly upon the inside surface of the face plate. The tube utilizes magnetic deflection and three electrostatically focused electron beams, with an electrostatic convergence element common to the three beams.

Other features include short overall length and symmetrical screen construction to permit angular positioning of the tube for optimum performance.

GENERAL CHARACTERISTICS

Electrical Data

Electron Guns, Three	Blue, Green, Red
Focusing Method	Electrostatic
Convergence Method	Electrostatic
Deflecting Method	Magnetic
Deflection Angle, Maximum	60 Degrees

Direct Interelectrode Capacitances, Approximate

All cathodes (connected together externally) to all other electrodes	16.5	uuf.
Grid No. 1 (of any gun) to all other electrodes except the No. 1 Grids of the other two guns)	6.0	uuf.
Grid No. 3 (Focusing Electrode) (Grid No. 3 of each gun tied together within tube) to all other electrodes	8.5	uuf.
Grid No. 4 (Convergence Electrode) (common to the three guns) to all other electrodes	10.5	uuf.
External conductive coating to Accelerator	3,000	Max. uuf.
	1,500	Min. uuf.

Optical Data

Phosphor Number (of the three phosphors, collectively)	P22
Fluorescent Color of the separate phosphors	Red Blue Green
Phosphorescent Color of the separate phosphors	Red Blue Green
Persistence	Medium Medium Medium

Screen (on envelope face panel) Type

Metal-backed, Tricolor
Phosphor-Dot Type
16 9/16 x 12 7/16 Inches
185 Sq. Inches

Size
Area

Phosphor-Dot Arrangement

Approximately 440,000 triangular groups,
each consisting of a blue dot, green dot,
and red dot (total of 1,320,000 dots)

Face Plate Light Transmission, Approximate (Neutral Density Filter)

75%

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GENERAL CHARACTERISTICS (Continued)

Mechanical Data

Overall Length	24 3/8 ± 3/8	Inches
Greatest Diameter of Bulb	19 5/16 ± 3/16	Inches
Greatest Diameter of Metal Flange	20.800	Inches Max.
Neck Length	8 27/32 ± 1/4	Inches
Weight, Approximate	31	Pounds
Bulb Contact	Metal Flange	
Base (Small-shell bidecal 14-Pin)	B14-103	
Preferred Rotation	With any single gun on top	

RATINGS (Design Center Values)

Heater Voltage	6.3	Volts
Heater Current at 6.3 Volts	1.8 ± 10%	Amperes
Accelerator Voltage (Note 1)	22,000	Max. Volts DC
Accelerator Input	20	Max. Watts
Convergence Electrode Voltage (Grid No. 4)	12,000	Max. Volts DC
Focusing Electrode Voltage (Grid No. 3)	4,000	Max. Volts DC
Grid No. 2 Voltage (each gun)	500	Max. Volts DC
Grid No. 1 Voltage (each gun)		
Negative Bias Value	200	Max. Volts DC
Positive Bias Value	0	Max. Volts DC
Positive Peak Value	2	Max. Volts
Peak Heater-Cathode Voltage (each gun)		
Heater negative with respect to cathode		
During equipment warm-up period not to exceed 15 seconds	410	Max. Volts DC
After equipment warm-up period	180	Max. Volts DC
Heater positive with respect to cathode	180	Max. Volts DC

TYPICAL OPERATING CONDITIONS

Accelerator Voltage	20,000	Volts
Convergence Electrode Voltage (Note 2)	8500 to 10,200	Volts
Focusing Electrode Voltage	1950 to 3250	Volts
Grid No. 2 Voltage (Note 3)	200	Volts
Grid No. 1 Voltage for visual extinction of focused raster (Note 3)	-42 to -78	Volts
Maximum Average Accelerator Current	1000	Microamperes
Maximum Average Grid No. 3 Current	300	Microamperes

CIRCUIT VALUES

Grid No. 1 Circuit Resistance (each gun)	1.5	Max. Megohms
Dynamic Converging Voltage, Maximum (Note 4)	1200	Volts
Dynamic Focusing Voltage, Maximum (Note 4)	340	Volts



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NOTES

1. Since this tube operates at voltages in excess of 16,000 volts, x-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range. Such protection may be provided by the protective face viewing window of apparatus using tubes of this type.

Protection will be adequate if the radiation measured in contact with the face viewing window is not in excess of 6.25 mr/hr.

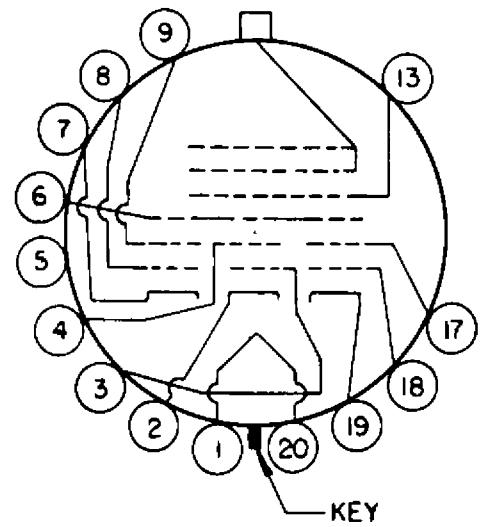
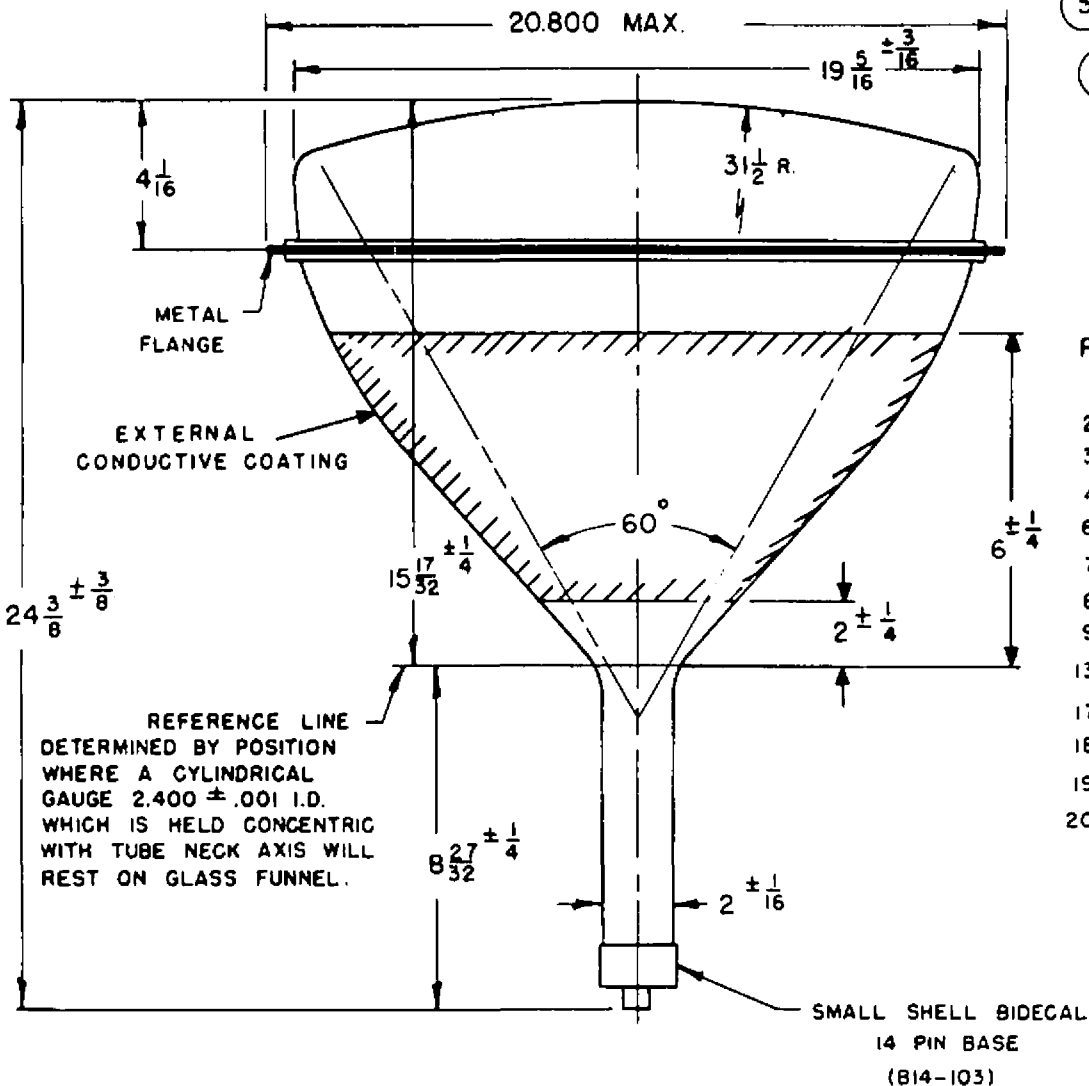
2. For convergence in center of screen.
3. Grid No. 1 voltage for visual extinction of focused raster will vary linearly with the Grid No. 2 voltage.
4. Peak to peak value. This AC voltage having essentially parabolic waveform is synchronized with scanning and does not include any voltage developed during the blanking time.

Mounting of External Components

For the proper operation of the Du Mont 19TP22, it is necessary to correctly position the deflection yoke, color purity coil, and beam positioning magnets on the tube neck. Sufficient clearance should be allowed so as to be able to slide the deflection yoke at least one inch from the reference line. The color purity coil and beam positioning magnets should be located behind the deflection yoke and ahead of the focus gaps of the electron guns. The focus gaps are located approximately $4 \frac{3}{4}$ " from the reference line.

For optimum performance of the 19TP22, it is recommended that a suitable magnetic shield and field neutralizing coil be used.

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BOTTOM VIEW OF BASE

PIN NO.	ELEMENT
1	HEATER
2	CATHODE OF RED GUN
3	GRID NO. 1 OF RED GUN
4	GRID NO. 2 OF RED GUN
6	FOCUSING ELECTRODES
7	CATHODE OF GREEN GUN
8	GRID NO. 1 OF GREEN GUN
9	GRID NO. 2 OF GREEN GUN
13	CONVERGENCE ELECTRODE
17	GRID NO. 2 OF BLUE GUN
18	GRID NO. 1 OF BLUE GUN
19	CATHODE OF BLUE GUN
20	HEATER
METAL FLANGE - ACCELERATOR	

