25VABP22

Color Picture Tube

Ultra-Rectangular — Hi-Lite Matrix Screen

4 x 3 Aspect Ratio — Light-Neutral Screen Appearance

Electrical:

Electron Guns, Three with Axes Tilted Toward Tube Axis	Red, Blue, Green
Heater, of Each Gun Series Connected within Tube with Each of the Other Two Heaters: Current at 6.3 V	900 mA
Focusing Method	Electrostatic
Focus Lens	Bipotential
Convergence Method	Magnetic
Deflection Method	Magnetic
Deflection Angles (Approx.):	
Diagonal	90 deg
Horizontal	78 deg
Vertical	60 deg
Direct Interelectrode Capacitance (Approx.):	
Grid No.1 of any gun to all other electrodes	7.5 pF
Grid No.3 to all other electrodes	6.5 pF
All cathodes to all other electrodes	15 pF
Capacitance Between Anode and External Conductive Coating	2500 max. pF 2000 min. pF

Optical:

Faceplate and Safety Panel	Filterglass
Light transmission at center (Approx.)	66%
Surface of Safety Panel	Treated to minimize specular reflection
Screen	Aluminized
Matrix	Black opaque material
Phosphor, rare-earth (red) sulfide (blue & green)	P22
Persistence	Medium-Short
Array	566,000 Dot trios
Spacing between centers of adjacent dot trios (approx.)	0.026 in (0.66 mm)

Mechanical:

Minimum Screen Area (Projected)	315 sq. in(2032 sq. cm)
Bulb Funnel Designation	JEDEC No.J208-3/4 B1/D1
Bulb Panel Designation	JEDEC No.FP209-3/4 W2
Base Designation[a]	Small-Button Diheptar 12-Pin (JEDEC No.B12-244)
Basing Designation	JEDEC No.14BE
Pin Position Alignment	Pin No.12 Aligns Approx. with Anode Bulb Contact

Operating Position, preferred .... Anode Bulb Contact on Top

Gun Configuration ..... Delta

Weight (Approx.) ..... 49 lb (22.3 kg)

Implosion Protection:

Integral Safety Panel ..... JEDEC No.SP209-1/4A1

Maximum and Minimum Ratings, Design-Maximum Values:

Unless otherwise specified, values are for each gun and voltage values are positive with respect to cathode.

Anode Voltage	27.5 max. 20 min.	kV kV
Anode Current, Long-Term Average[b]	1000 max.	μA
Grid-No.3 (Focusing Electrode) Voltage	6000 max.	V
Peak-Grid-No.2 Voltage, Including Video Signal Voltage	1000 max.	V
Grid-No.1 Voltage:		
Negative bias value	400 max.	V
Negative operating cutoff value	200 max.	V
Positive bias value	0 max.	V
Positive peak value	2 max.	V
Heater Voltage (ac or dc):[c]		
Under operating conditions	6.9 max. 5.7 min.	V V
Under standby conditions[d]	5.5 max.	V
Heater-Cathode Voltage:		
Heater negative with respect to cathode:		
During equipment warm-up period not exceeding 15 seconds	450 max.	V
After equipment warm-up period:		
DC component value	200 max.	V
Peak value	200 max.	V
Heater positive with respect to cathode:		
DC component value	0 max.	V
Peak value	200 max.	V

Equipment Design Ranges:

Unless otherwise specified, values are for each gun and voltage values are positive with respect to cathode

For anode voltages between 20 and 27.5 kV

Grid-No.3 (Focusing Electrode) Voltage ..... 16.8% to 20% of Anode voltage

Grid-No.2 Voltage for Visual Extinction of Undeflected Focused Spot ... See CUTOFF DESIGN CHART in Figure 3

At Grid No.1 voltage of −75 V	95 to 295 V
At Grid No.1 voltage of −125 V	205 to 535 V
At Grid No.1 voltage of −175 V	315 to 780 V

Maximum Ratio of Grid-No.2 Voltages, Highest Gun to Lowest Gun in Any Tube (At grid-No.1 spot cutoff voltage of −100 V) ... 1.86

Heater Voltage:[c]

Under operating conditions:	
When standby operation is not utilized	6.3 V
When 5.0-V standby operation is utilized[d]	6.0 V
Under standby conditions[d]	5.0 V

Grid-No.3 Current (Total) ... ±15 μA

Grid-No.2 Current ... ±5 μA

Grid-No.1 Current ... ±5 μA

To Produce White Light of ...	Illum.D 6550°K + 7 M.P.C.D.	Color 9300°K + 27 M.P.C.D.	
CIE Coordinates:			
X	0.313	0.281	
Y	0.329	0.311	
Percentage of total anode current supplied by each gun (average):			
Red	41	30	%
Blue	24	31	%
Green	35	39	%
Ratio of cathode currents:			
Red/blue:			
Minimum	1.35	0.75	
Typical	1.70	0.95	
Maximum	2.20	1.25	
Red/green:			
Minimum	0.95	0.60	
Typical	1.15	0.75	
Maximum	1.70	1.10	
Blue/green:			
Minimum	0.50	0.60	
Typical	0.70	0.80	
Maximum	0.95	1.10	

Displacements, Measured at Center of Screen:

Raster centering displacement:	
Horizontal	± 0.45 in (± 11.4 mm)
Vertical	± 0.45 in (± 11.4 mm)
Lateral distance between the blue beam and the converged red and green beams	± 0.25 in (± 6.4 mm)

Radial convergence displacement excluding effects of dynamic convergence (each beam) . . . . . ± 0.37 in (± 9.4 mm)

Maximum Required Correction for Register[e] (Including Effect of Earth's Magnetic Field when Using Recommended Components) as Measured at the Center of the Screen in any Direction . . . . . 0.005 in (0.13 mm) max.

Typical Operation:

Heater Voltage . . . . . 6.3 V

Anode Voltage . . . . . 25 kV

Grid No.3 Voltage . . . . . Adjusted for focus

Color Temperature . . . . . 9300° K + 27 M.P.C.D.

Raster Size . . . . . 20.776 x 15.582 in (527.71 x 395.78 mm)

Typical White-Light Output Measured within 5 in (127 mm) diameter area centered on tube face:

At anode current of 1000 μA . . . . . { 54 fL / 185 Nit

Limiting Circuit Values:

High-Voltage Circuits:
Grid-No.3 circuit resistance . . . . . 7.5 max. MΩ

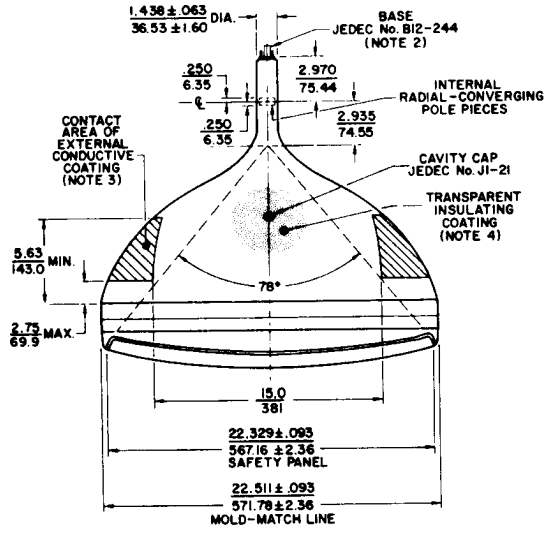
Low-Voltage Circuits:
Effective grid-No.1-to-cathode-circuit resistance (each gun) . . . . . 0.75 max. MΩ

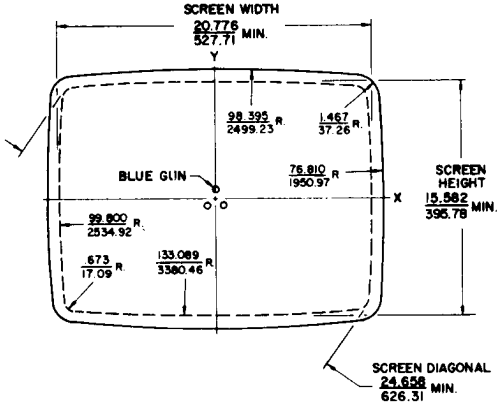
X-Radiation Characteristic:

Maximum Anode Voltage at which the X-radiation emitted will not exceed 0.5 mR/h at an anode current of 300 μA . . . . . 35 kV

The X-radiation emitted from this picture tube, as measured in accordance with the procedure of JEDEC Publication No.64A will not exceed 0.5 mR/h throughout the useful life of the tube when operated within the Design-Maximum ratings: 27.5 kV anode voltage and 1000 μA anode current. The tube should not be operated beyond its Design-Maximum ratings stated above (such operation may shorten tube life or have other permanent adverse affects on its performance), but its X-radiation will not exceed 0.5 mR/h for anode voltage and current combinations given by the isodose-rate limit characteristics as shown in Figure 1. Operation above the values shown by the curve may result in failure of the television receiver to comply with the Federal Performance Standard for Television Receivers, Sub-Part C of Part 78 of Title 42, Code of Federal Regulations (PL90-602) as published in the Federal Register Vol.34, No. 247, Thursday, December 25, 1969. Maximum X-radiation as a function of anode voltage at 300 μA anode current is shown by the curve in Figure 2. X-radiation at a constant anode voltage varies linearly with anode current.

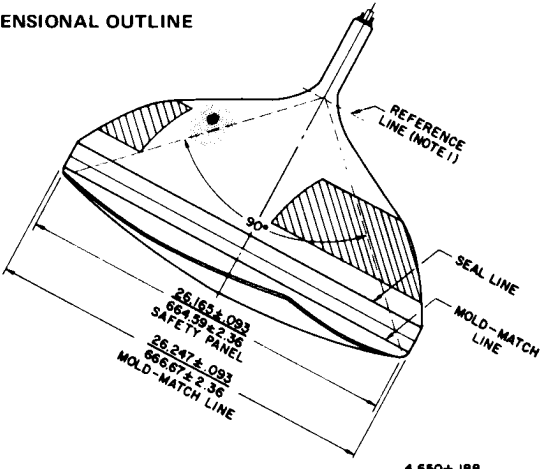
DIMENSIONAL OUTLINE

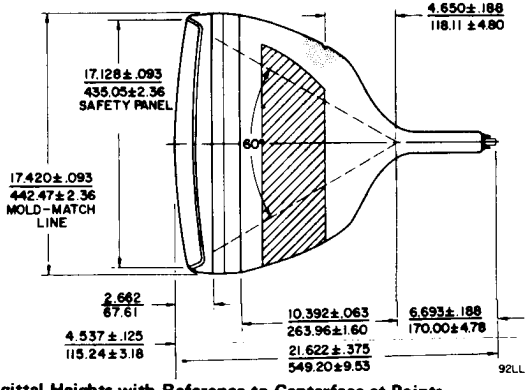




Dimensions in inches/mm unless otherwise noted

DIMENSIONAL OUTLINE





Sagittal Heights with Reference to Centerface at Points (3.18 mm) Beyond Edge of Minimum Screen.

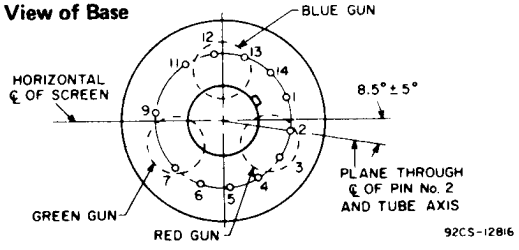
Station No.	Coordinates		Sagittal Height
	X	Y	
	in (mm)	in (mm)	in (mm)
1 (Minor)	0 (0)	7.916 (201.07)	.680 (17.27)
2	1.000 (25.40)	7.912 (200.96)	.692 (17.58)
3	2.000 (50.80)	7.901 (200.69)	.730 (18.54)
4	3.000 (76.20)	7.882 (220.20)	.791 (20.09)
5	4.000 (101.60)	7.856 (199.54)	.877 (22.28)
6	5.000 (127.00)	7.822 (198.68)	.987 (25.07)

(continued on next page.)

Sagittal Heights (Cont'd)

7	6.000 (152.40)	7.781 (197.64)	1.121 (28.47)
8	7.000 (177.80)	7.732 (196.39)	1.279 (32.49)
9	8.000 (203.20)	7.676 (194.97)	1.461 (37.11)
10	9.000 (228.60)	7.612 (193.34)	1.668 (42.37)
11	9.540 (242.32)	7.574 (192.38)	1.790 (45.47)
12 (Diagonal)	10.132 (257.35)	7.242 (183.95)	1.878 (47.70)
13	10.279 (261.09)	6.832 (173.53)	1.841 (46.76)
14	10.333 (262.46)	6.000 (152.40)	1.720 (43.69)
15	10.388 (263.86)	5.000 (127.00)	1.595 (40.51)
16	10.433 (265.00)	4.000 (101.60)	1.492 (37.90)
17	10.468 (265.89)	3.000 (76.20)	1.412 (35.86)
18	10.493 (266.52)	2.000 (50.80)	1.355 (34.42)
19	10.508 (266.90)	1.000 (25.40)	1.320 (33.53)
20 (Major)	10.513 (267.03)	0 (0)	1.308 (33.22)

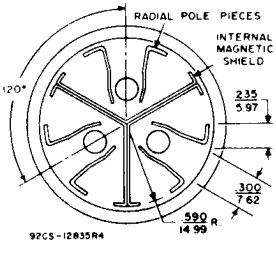
Bottom View of Base



Base Specification — JEDEC No.14BE

Pin 1:	Heater	Pin 11:	Cathode of Blue Gun
Pin 2:	Cathode of Red Gun	Pin 12:	Grid No.1 of Blue Gun
Pin 3:	Grid No.1 of Red Gun	Pin 13:	Grid No.2 of Blue Gun
Pin 4:	Grid No.2 of Red Gun	Pin 14:	Heater
Pin 5:	Grid No.2 of Green Gun	Cap:	Anode (Grid No.4, Screen, Collector)
Pin 6:	Cathode of Green Gun		
Pin 7:	Grid No.1 of Green Gun	C:	External Conductive Coating
Pin 9:	Grid No.3		

Location of Radial-Converging Pole Pieces Viewed from Screen End of Guns



0.5 mR/h ISODOSE - RATE LIMIT CURVE

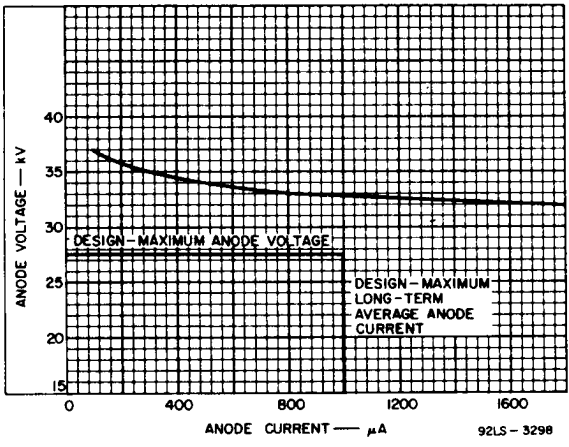


Figure 1

X-RADIATION LIMIT CURVE AT A CONSTANT ANODE CURRENT OF 300 μA (X-RADIATION AT A CONSTANT ANODE VOLTAGE VARIES LINEARLY WITH ANODE CURRENT)

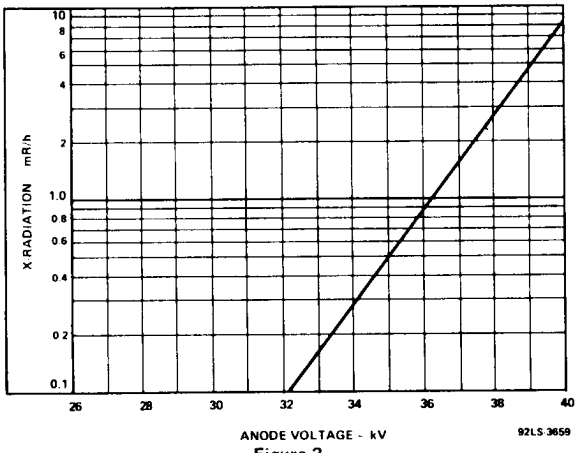
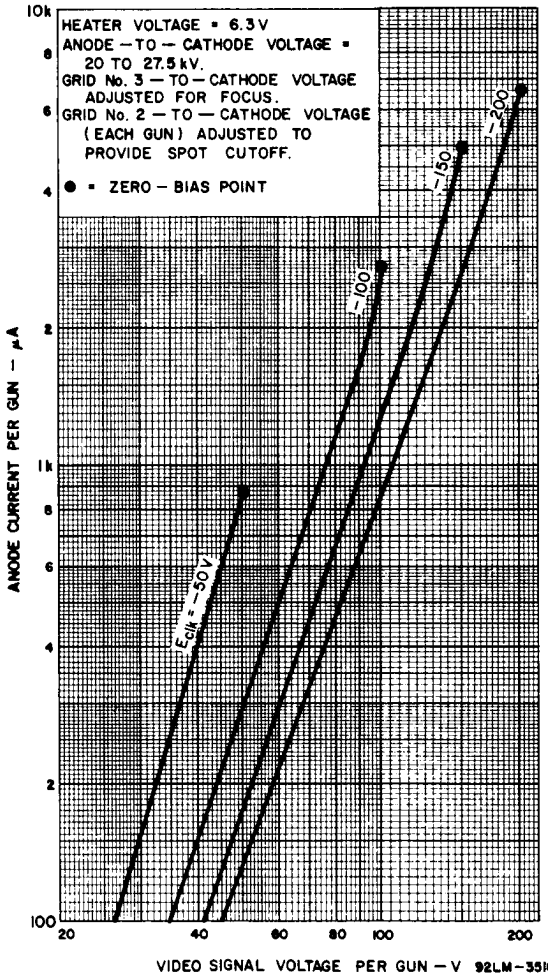
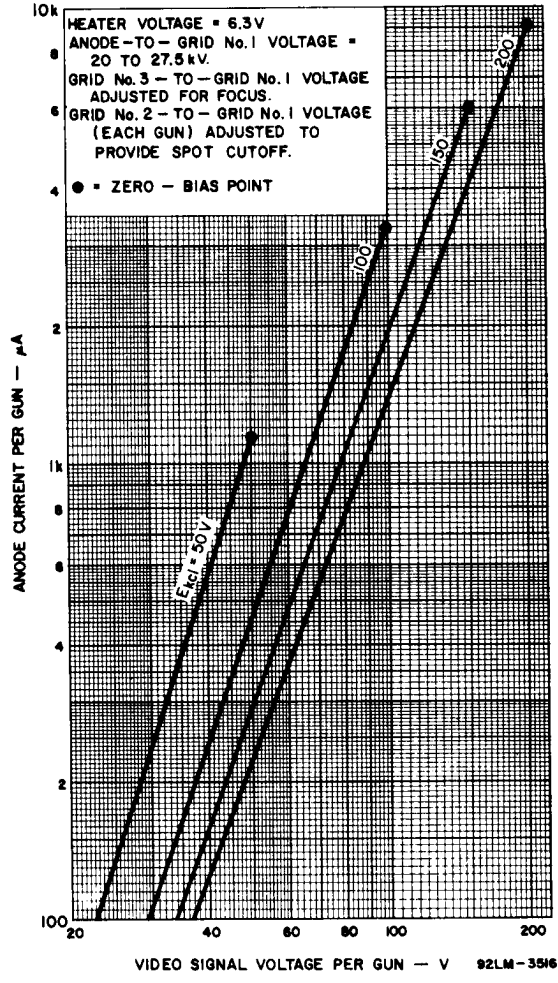


Figure 2

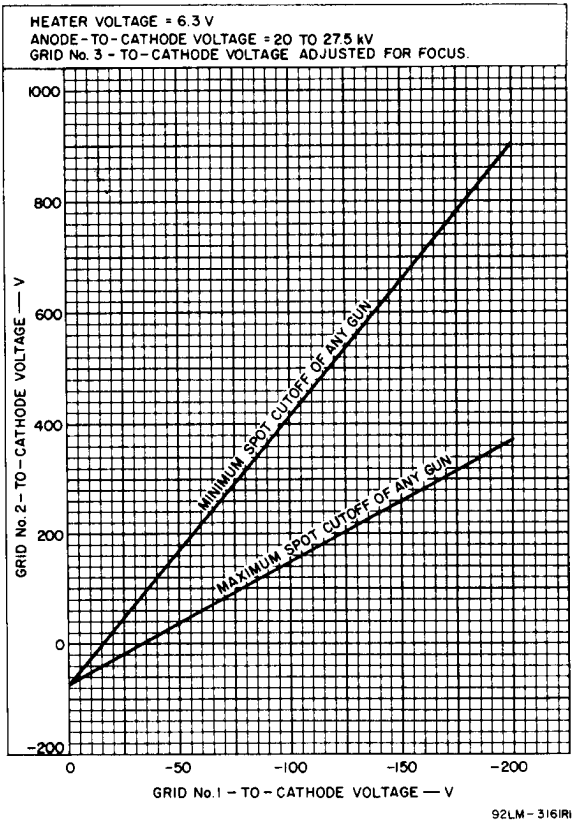
TYPICAL DRIVE CHARACTERISTICS, GRID-DRIVE SERVICE



TYPICAL DRIVE CHARACTERISTICS,
CATHODE-DRIVE SERVICE



CUTOFF DESIGN CHART



IMPORTANT: Refer to sheet **Safety Precautions for Color Picture Tubes** at front of this section.

Figure 3