

Color Picture Tube

Perma-Chrome	Banded-Type Implosion Protection
90° Rectangular	Hi-Lite Screen
Blue-Gun-Down Operation	Unity Current Ratios

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	Unipotential
Convergence Method	Magnetic
Deflection Method	Magnetic
Deflection Angles (Approx.):	
Diagonal	90 deg.
Horizontal	79 deg.
Vertical	63 deg.

Direct Interelectrode Capacitances (Approx.):

Grid No.1 of any gun to all other electrodes	7.5	pF
Grid No.4 to all other electrodes	6	pF
All cathodes to all other electrodes	15	pF
External conductive coating to anode	{	1500 max. pF
		1000 min. pF

OPTICAL

Faceplate	Filterglass
Light transmission at center (Approx.)	48 %
Surface	Polished
Screen	Aluminized
Matrix	Black opaque material
Phosphor, rare-earth (red), sulfide (blue & green)	P22
Persistence	Medium-Short
Array	Dot trios
Spacing between centers of adjacent dot trios (approx.)	0.029 in (0.74 mm)

17EZP22

MECHANICAL

Minimum Screen Area (Projected) . . . 145 sq. in (935 sq. cm)
 Bulb Funnel Designation JEDEC No.J 139 A1
 Bulb Panel Designation JEDEC No.FP 139B1
 Base Designation^a Small-Button Diheptar 12-pin
 Basing Designation JEDEC No.14BH
 Pin Position Alignment Pin No. 5 Aligns Approx.
 with Anode Bulb Contact

Operating Position:

For blue gun down Anode Bulb Contact on Top
 For blue gun up Anode Bulb Contact on Bottom
 Weight (Approx.) 17.5 lb (8.0 kg)

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	{ 22,500 max. 17,000 min.	V V
Total Anode Current, Long-Term Average	750 max.	μA
Grid-No.4 (Focusing Electrode) Voltage:		
Positive value	1100 max.	V
Negative value	550 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 . . .	140 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
Peak 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:		
Combined AC and DC value . . .	200 max.	V
DC component value	200 max.	V
Heater positive with respect to cathode:		
AC component value	200 max.	V
DC component value	0 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 17,000 and 22,500 V

Grid-No.4 (Focusing Electrode) Voltage . . -75 to 400 V



Grid-No.2 and Grid-No.1 Voltages for
 Visual Extinction of Focused
 Spot *SEE CUTOFF DESIGN CHART*
 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.4 Current (Total) -60 to +60 μ A

Grid-No.2 Current -5 to +5 μ A

To Product White of 9300° K + 27 M.P.C.D.

(CIE Coordinates $x = 0.281$, $y = 0.311$):

Percentage of total anode

current supplied by

	Red	Blue	Green	
each gun (average)	34	32	34	%

Ratio of cathode currents:

	Min.	Typ.	Max.
Red/blue	0.75	1.10	1.50
Red/green	0.65	1.00	1.50
Blue/green	0.60	0.91	1.30

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.

LIMITING CIRCUIT VALUES

Effective grid-No.1-to-cathode-

circuit resistance (each gun) 0.75 max. M Ω

The low-voltage circuits, including all heater circuits, should be analyzed by assuming the color picture tube heater is connected directly to the receiver chassis ground. Under these conditions the circuits to the elements of all tubes, including the color picture tube, operating from the same heater winding and all connections of any other circuits to the heater winding should each have an impedance such that their respective power sources in combination will not supply a continuous

17EZP22

short circuit current of more than 750 mA total in the assumed picture tube heater ground connection. The leads from all other circuits must be separated from the picture tube leads by a minimum distance of 0.25 inch (6.4 mm) to prevent energy transfer to the picture tube circuits. Such current limitation will help prevent picture tube damage in case of momentary cascade arcing.

- ^a The mating socket, including its associated, physically-attached hardware and circuitry, must not weigh more than one pound.
- ^c For maximum cathode life, it is recommended that the heater supply be regulated at 6.3 volts. The series impedance to any chassis connection in the DC biasing circuit for the heater should be between 100,000 ohms and 1 megohm.
- ^d For "instant on" applications, a maximum heater voltage of 5.5 volts (design-maximum value) may be maintained on the color picture tube when the receiver is in the "off" (stand-by) position. All other voltages normally applied to the tube must be removed during standby operation.
- ^e Register is defined as the relative position of the beam trios with respect to the associated phosphor-dot trios.

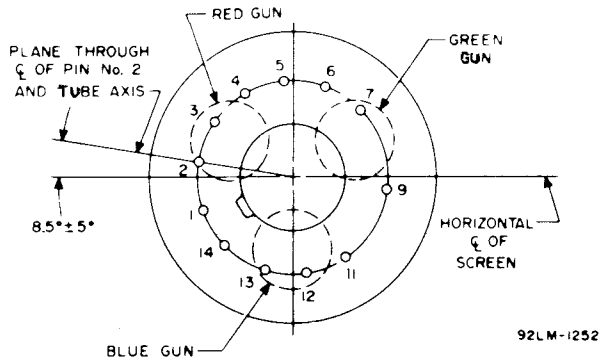
X-RADIATION WARNING

Because the 17EZP22 is designed to be operated at anode voltages as high as 22.5 kilovolts (design-maximum value), shielding of the 17EZP22 for X-radiation may be needed to protect against possible injury from prolonged exposure at close range.

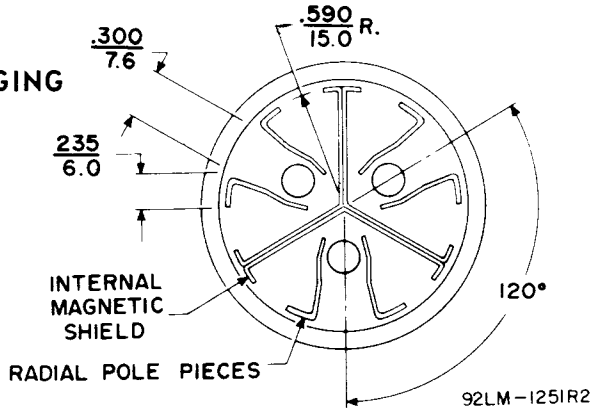
BASE SPECIFICATION – JEDEC No. 14BH

Pin 1: Heater	Pin 12: Grid No.1 of Blue Gun
Pin 2: Cathode of Red Gun	Pin 13: Grid No.2 of Blue Gun
Pin 3: Grid No.1 of Red Gun	Pin 14: Heater
Pin 4: Grid No.2 of Red Gun	Cap: Anode (Grid No.3, Grid No.5, Screen, Collector)
Pin 5: Grid No.2 of Green Gun	C: External Conductive Coating
Pin 6: Cathode of Green Gun	
Pin 7: Grid No.1 of Green Gun	
Pin 9: Grid No.4	
Pin11: Cathode of Blue Gun	

BOTTOM VIEW OF BASE



LOCATION OF RADICAL-CONVERGING POLE PIECES VIEWED FROM SCREEN END OF GUNS



NOTES FOR DIMENSIONAL OUTLINE

Note 1: With tube neck inserted through flared end of reference-line and neck-funnel-contour gauge (JEDEC No.G162) and with tube seated in gauge, the reference line is determined by the intersection of the plane C-C' of the gauge with the glass funnel.

Note 2: Socket for this base should not be rigidly mounted; it should have flexible leads and be allowed to move freely. Bottom circumference of base will fall within a 2-inch (51-mm) circle concentric with bulb axis.

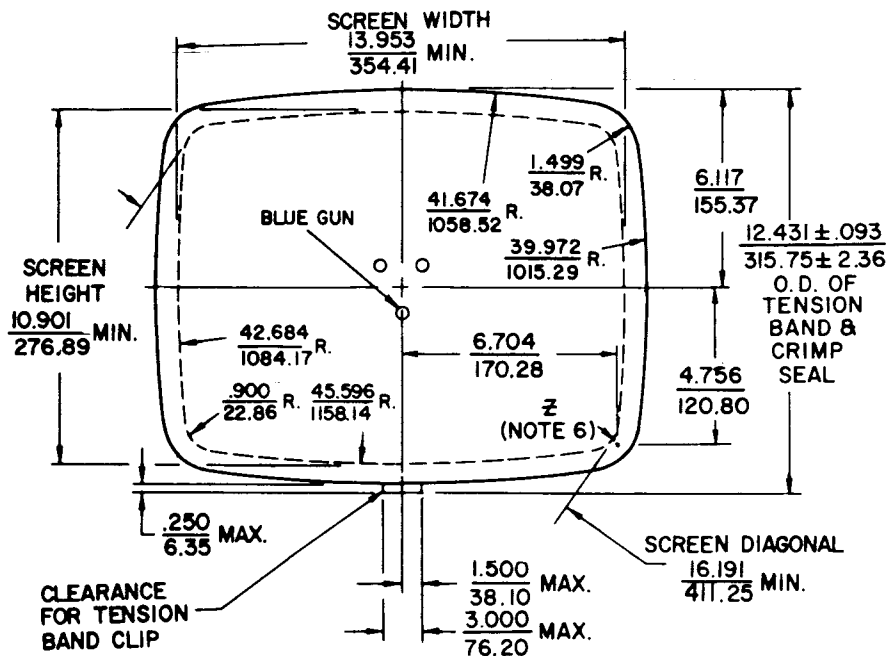
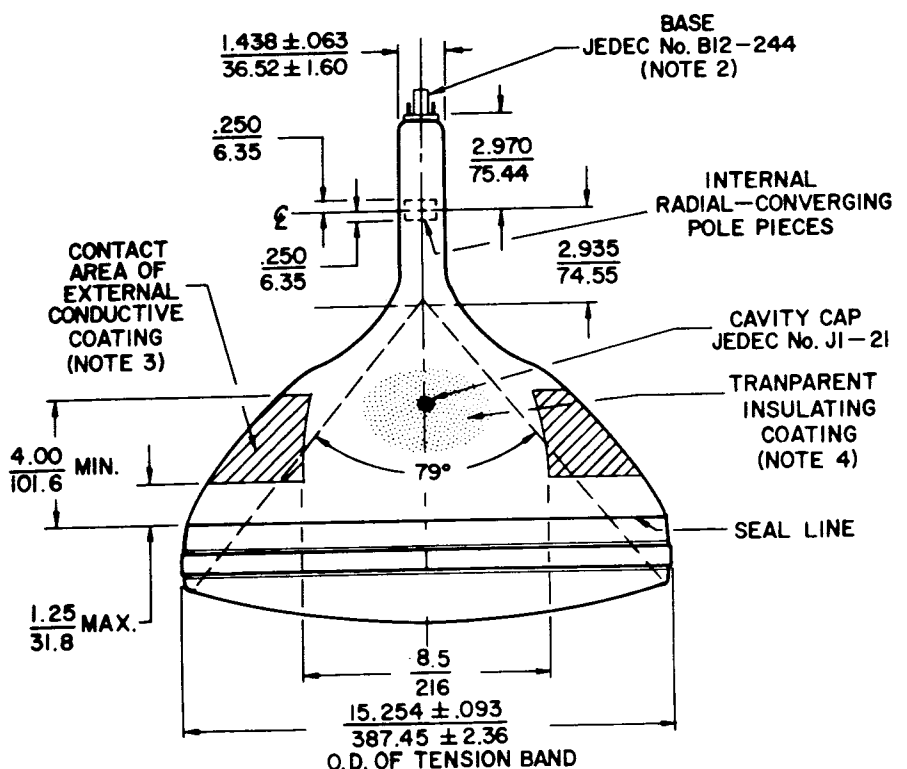
Note 3: The drawing shows the size and location of the contact area of the external conductive coating. The actual area of this coating will be greater than that of the contact area so as to provide the required capacitance. External conductive coating must be grounded with multiple contacts.

Note 4: To clean this area, wipe only with soft, dry, lintless cloth.

Note 5: All peripheral points of the faceplate lie on a spherical surface having a radius of 25.141 inches (638.58 mm). The center of the faceplate is located .016 inch (.41 mm) above this spherical surface.

Note 6: "Z" is located on the outside surface of the faceplate, on the screen diagonal at a point .125 in (3.18 mm) beyond the minimum screen. This point is used as a reference for the tension band.

DIMENSIONAL

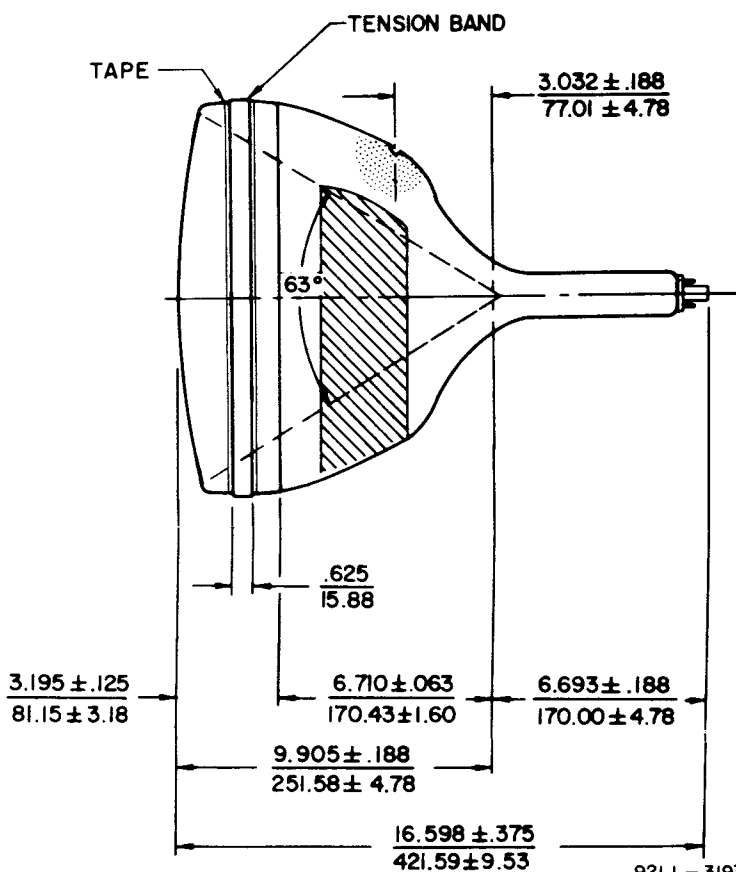
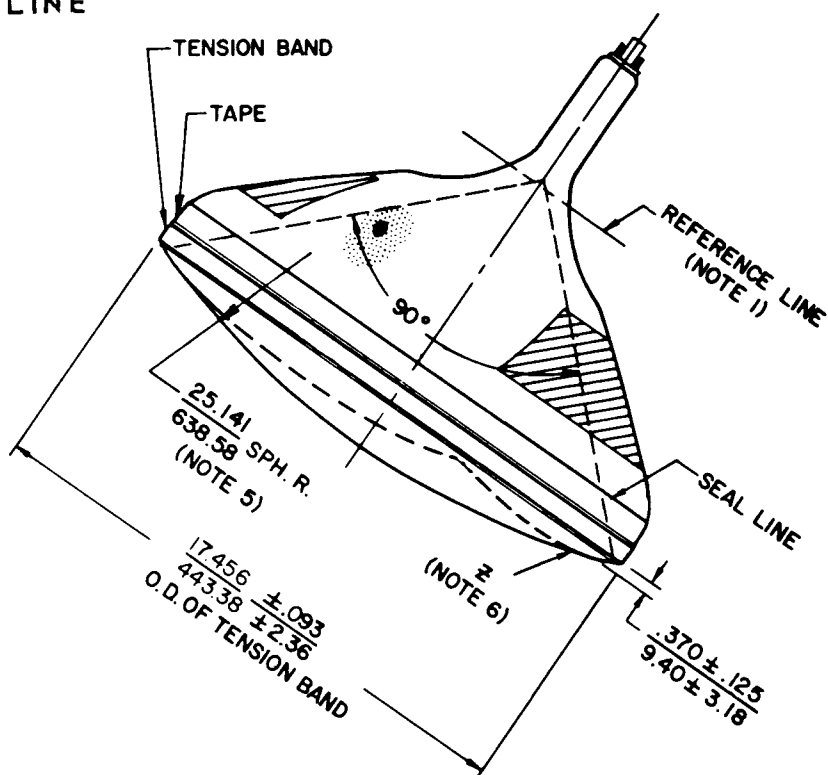


SAGITTAL HEIGHTS AT POINTS $\frac{125}{3.18}$ BEYOND EDGE OF MIN. SCREEN

DIAGONAL $\frac{1.398}{35.51}$ WIDTH $\frac{1.040}{26.42}$ HEIGHT $\frac{.642}{16.31}$

Dimensions in Inches / mm unless otherwise noted

OUTLINE



92LL-3193RI

17EZP22

CUTOFF DESIGN CHART

