

Color Picture Tube

Perma-Chrome	Banded-Type Implosion Protection
90° Rectangular	Einzel-Lens Focus
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^a 900 mA

Focusing Method Electrostatic

Focus Lens Unipotential

Convergence Method Magnetic

Deflection Method Magnetic

Deflection Angles:

Diagonal	89	deg.
Horizontal	78	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	{ 2100 max.	pF
to anode		

OPTICAL

Faceplate Filterglass

Light transmission at center
(Approx.) 43.5%

Surface Polished

Screen, on Inner Surface of Faceplate:

Type Aluminized, Tricolor, Phosphor-Dot

Phosphor (three separate
phosphors, collectively) . . . P22—New Rare-Earth (Red),
Sulfide (Blue & Green) Type

Fluorescence and phosphorescence
of separate phosphors,
respectively Red, Blue, Green

Persistence of group phosphorescence Medium Short

Dot Arrangement Triangular group consisting of
red dot, blue dot, and green dot

Spacing between centers of adjacent
dot trios (Approx.) 0.023 in (0.58 mm)

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:

Under operating conditions ^a	6.3	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 Produce White of 9300° K + 27 M.P.C.D.
(CIE Coordinates $x=0.281$, $y=0.311$):

Percentage of total anode current supplied by each gun (average)	Red 34	Blue 32	Green 34	%
Ratio of cathode currents:	<i>Min.</i>	<i>Typ.</i>	<i>Max.</i>	
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	± 0.47 in (± 11.9 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
Registers (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

19HYP22

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 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.
- ^b For curve, see *Group Phosphor-P22-New Rare-Earth (Red), Sulfide (Blue & Green)* at front of this section.
- ^c The mating socket, including its associated, physically-attached hardware and circuitry, must not weigh more than one pound.
- ^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.

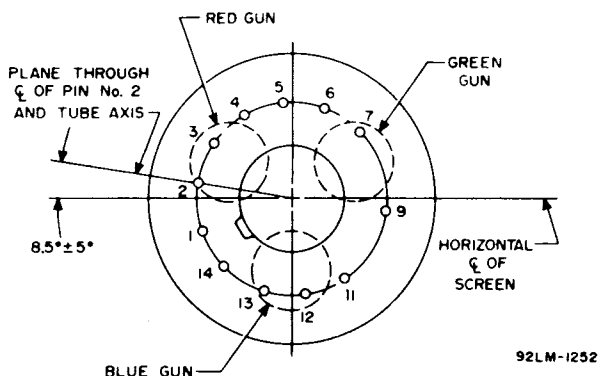
X-RADIATION WARNING

Because the 19HYP22 is designed to be operated at anode voltages as high as 22.5 kilovolts (design-maximum value), shielding of the 19HYP22 for X-radiation may be needed to protect against possible injury from prolonged exposure at close range.

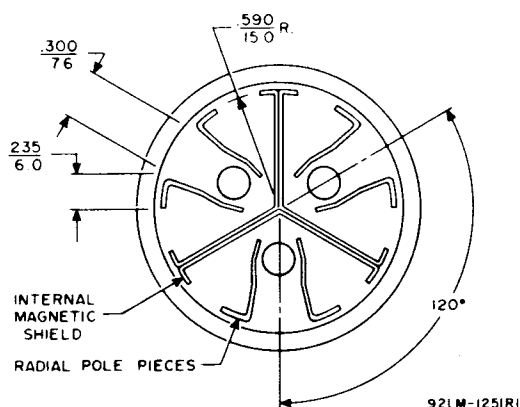
BASE SPECIFICATION - JEDEC No. 14BH

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.

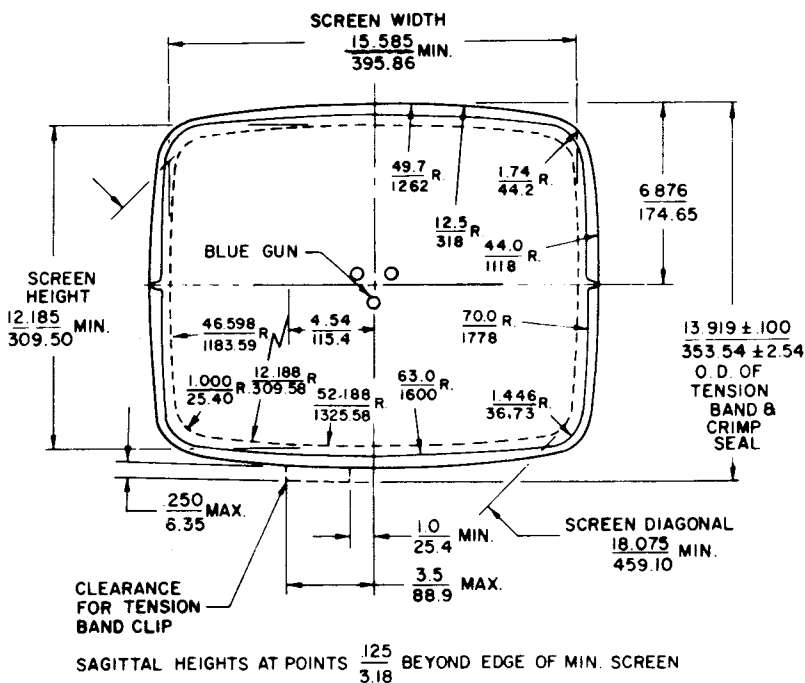
Note 2: Socket for this base should not be rigidly mounted; it should have flexible leads and be allowed to move freely. Bottom circumference of base will fall within a 2-inch (51-mm) circle concentric with bulb axis.

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: Tension band must not extend beyond edge of rim band.

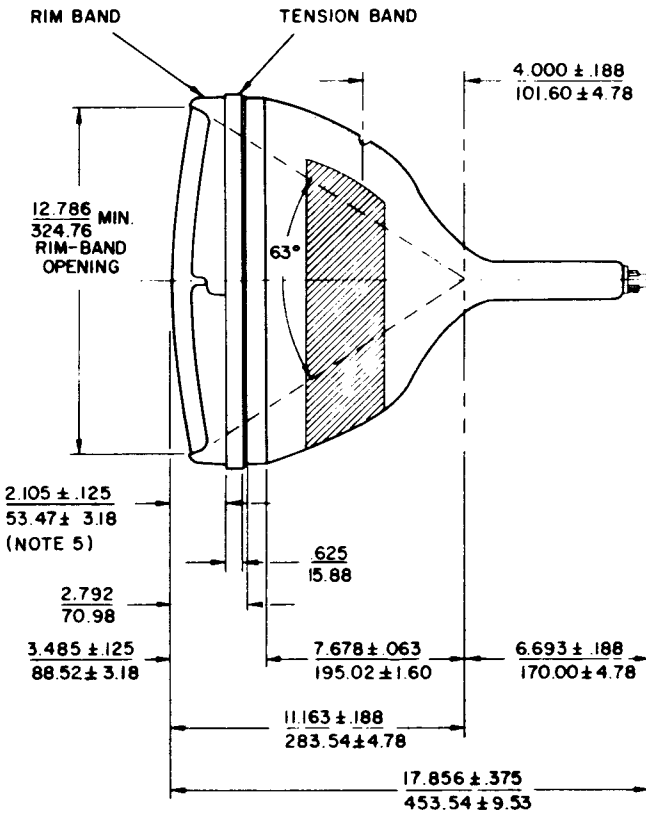
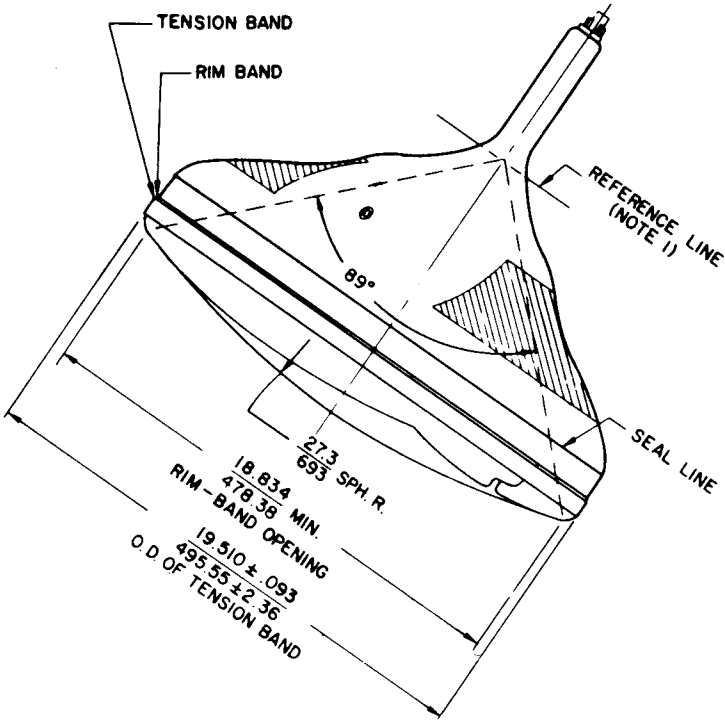
Electronic Components



DIAGONAL	<u>1.568</u>
	39.83
WIDTH	<u>1.163</u>
	29.54
HEIGHT	<u>.717</u>
	18.21

Dimensions in Inches/mm unless otherwise noted.

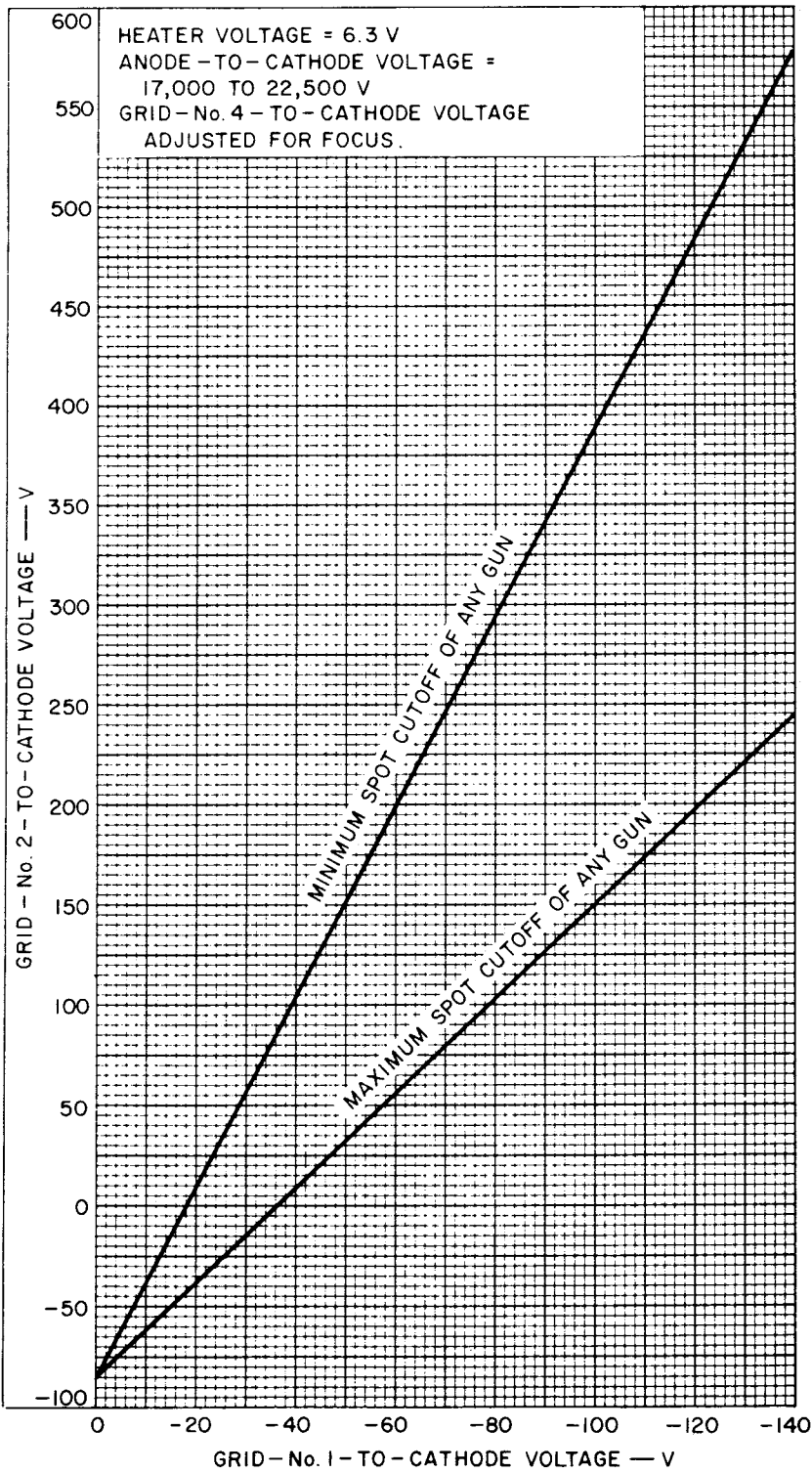
OUTLINE



92LL - 2764 RI

19HYP22

CUTOFF DESIGN CHART



92LM-1083R5