

**TUNG-SOL****CATHODE RAY**

THE 21BSP4 IS A DIRECT VIEW PICTURE TUBE DESIGNED FOR TELEVISION APPLICATIONS. ITS FEATURES INCLUDE:

GRAY FILTER FACEPLATE	ALUMINIZED SCREEN
MAGNETIC FOCUS AND DEFLECTION	EXTERNAL CONDUCTIVE COATING
RECTANGULAR GLASS CONSTRUCTION	EXTERNAL SINGLE FIELD ION TRAP
19 1/16" X 15 1/16" RASTER SIZE	

**ELECTRICAL DATA**

FOCUSING METHOD		MAGNETIC
DEFLECTING METHOD		MAGNETIC
DEFLECTION ANGLE (APPROX.)		
HORIZONTAL	85	DEGREES
DIAGONAL	90	DEGREES
DIRECT INTERELECTRODE CAPACITANCES (APPROX.):		
CATHODE TO ALL OTHER ELECTRODES	5	$\mu\text{f}$
GRID #1 TO ALL OTHER ELECTRODES	6	$\mu\text{f}$
MAXIMUM EXTERNAL CONDUCTIVE COATING TO ANODE	2500	$\mu\text{f}$
MINIMUM EXTERNAL CONDUCTIVE COATING TO ANODE	2000	$\mu\text{f}$

**OPTICAL DATA**

PHOSPHOR NUMBER	SULFIDE TYPE	P-4
FLUORESCENT COLOR		WHITE
PHOSPHORESCENT COLOR		WHITE
PERSISTENCE	SHORT TO MEDIUM	
FACEPLATE TRANSMISSION AT CENTER (APPROX.):	74	PERCENT

**RATINGS**

INTERPRETED ACCORDING TO DESIGN CENTER SYSTEM

HEATER VOLTAGE	6.3	VOLTS
HEATER CURRENT	0.6 $\pm 5\%$	AMP.
MAXIMUM DC ANODE VOLTAGE	22 000	VOLTS
MAXIMUM DC GRID #2 VOLTAGE	550	VOLTS
MAXIMUM GRID #1 VOLTAGE:		
DC NEGATIVE-BIAS VALUE	155	VOLTS
DC POSITIVE-BIAS VALUE	0	VOLTS
POSITIVE-PEAK VALUE	2	VOLTS
MAXIMUM DC PEAK HEATER-CATHODE VOLTAGE:		
HEATER NEGATIVE WITH RESPECT TO CATHODE		
DURING WARM-UP PERIOD NOT TO EXCEED 15 SECONDS	450	VOLTS
AFTER EQUIPMENT WARM-UP PERIOD	200	VOLTS
HEATER POSITIVE WITH RESPECT TO CATHODE	200	VOLTS
MAXIMUM GRID #1 CIRCUIT RESISTANCE	1.5	MEG OHMS
HEATER WARM-UP TIME (APPROX.)*	11.0	SECONDS

**TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS**

DC ANODE VOLTAGE	16 000	VOLTS
DC GRID #2 VOLTAGE	300	VOLTS
DC GRID #1 VOLTAGE <sup>A</sup>	-28 TO -72	VOLTS
DC FOCUSING COIL CURRENT (APPROX.) <sup>B</sup>	116 $\pm 15\%$	MA.
DC ION TRAP MAGNET STANDARD COIL #117 (APPROX.)	30	MA.
DC ION TRAP MAGNET RATED STRENGTH	33	GAUSSSES

<sup>A</sup> VISUAL EXTINCTION OF FOCUSED RASTER.

<sup>B</sup> FOR STANDARD FOCUS COIL #109, OR EQUIVALENT, WITH THE COMBINED GRID #1 BIAS VOLTAGE AND VIDEO-SIGNAL VOLTAGE ADJUSTED TO PRODUCE A HIGHLIGHT BRIGHTNESS OF 20 FOOT LAMBERTS ON A 15 1/16" BY 19 1/16" PICTURE SIZE.

\* HEATER WARM-UP TIME IS THE TIME REQUIRED FOR THE VOLTAGE ACROSS THE HEATER TERMINALS TO INCREASE TO 5.0 VOLTS IN THE JETEC TEST CIRCUIT, WITH  $E=25$  VOLTS AND SERIES  $R=31.5$  OHMS.

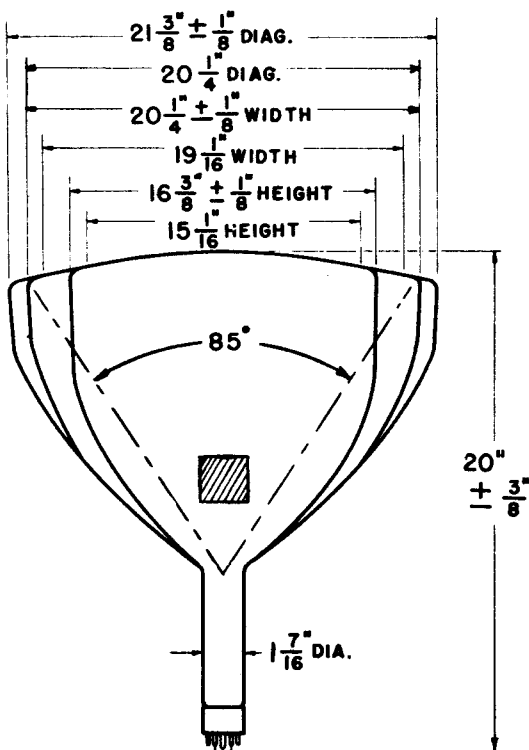
CONTINUED ON FOLLOWING PAGE

## TUNG-SOL

CONTINUED FROM PRECEDING PAGE

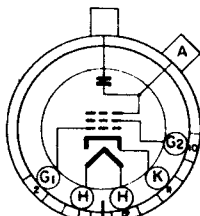
## MECHANICAL DATA

OVERALL LENGTH	20 ± 3/8	INCHES
GREATEST DIMENSIONS OF BULB:		
DIAGONAL	21 3/8 ± 1/8	INCHES
WIDTH	20 1/4 ± 1/8	INCHES
HEIGHT	20 1/4 ± 1/8	INCHES
MIN. USEFUL SCREEN DIMENSIONS:	16 3/8 ± 1/8	INCHES
DIAGONAL	19 1/16	INCHES
WIDTH	19 1/16	INCHES
HEIGHT	15 1/16	INCHES
BULB CONTACT	RECESSED SMALL CAVITY CAP	J1-21
BASE	SMALL SHELL DUODECAL 5 PIN	B5-57
BASING		12N
BULB CONTACT ALIGNMENT	J1-21 CONTACT ALIGNS WITH PIN POSITION #6 ± 30 DEGREES	



## PIN CONNECTIONS

PIN 1 - HEATER  
 PIN 2 - GRID #1  
 PIN 10 - GRID #2  
 PIN 11 - CATHODE



PIN 12 - HEATER  
 ANODE CAP:  
 GRID NO. 3

BOTTOM VIEW