

TUNG-SOL

CATHODE RAY

THE 20HP4, 20HP4A, 20HP4B, 20HP4C, AND 20HP4D ARE DIRECT VIEW PICTURE TUBES DESIGNED FOR TELEVISION APPLICATIONS. THEY ARE IDENTICAL WITH THE FOLLOWING EXCEPTIONS:

20HP4A & 20HP4D - EXTERNAL CONDUCTIVE COATINGS

20HP4C & 20HP4D - ALUMINIZED SCREENS

20HP4B - PROSTED FACEPLATE

THEIR COMMON FEATURES INCLUDE:

SPHERICAL FACEPLATE	MAGNETIC DEFLECTION
GREY FILTER FACEPLATE	UNIPOTENTIAL CATHODE
EXTERNAL SINGLE FIELD ION TRAP	12 3/4" X 17" RASTER SIZE
LOW VOLTAGE ELECTROSTATIC FOCUS	RECTANGULAR GLASS CONSTRUCTION

ELECTRICAL DATA

FOCUSING METHOD	LOW VOLTAGE ELECTROSTATIC	
DEFLECTING METHOD	MAGNETIC	
DEFLECTION ANGLE (APPROX.):		
HORIZONTAL	66	DEGREES
DIAGONAL	70	DEGREES
DIRECT INTERELECTRODE CAPACITANCES (APPROX.):		
CATHODE TO ALL OTHER ELECTRODES	5	μmf
GRID #1 TO ALL OTHER ELECTRODES	6	μmf
20HP4A AND 20HP4D ONLY		
MAXIMUM EXTERNAL CONDUCTIVE COATING ^A	1 500	μmf
MINIMUM EXTERNAL CONDUCTIVE COATING ^A	750	μmf

^AEXTERNAL CONDUCTIVE COATING MUST BE GROUNDED.

OPTICAL DATA

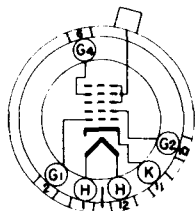
PHOSPHOR NUMBER	P4
FLUORESCENT COLOR	WHITE
PHOSPHORESCENT COLOR	WHITE
PERSISTENCE	MEDIUM
FACEPLATE LIGHT TRANSMISSION AT CENTER (APPROX.)	73 PERCENT

MECHANICAL DATA

OVERALL LENGTH	21 3/4 ± 3/8	INCHES
GREATEST DIMENSIONS OF BULB:		
DIAGONAL	20 3/32 ± 3/16	INCHES
WIDTH	18 11/16 ± 3/16	INCHES
HEIGHT	14 15/16 ± 3/16	INCHES
MINIMUM USEFUL SCREEN DIMENSIONS:		
WIDTH	17	INCHES
HEIGHT	12 3/4	INCHES
BULB CONTACT	RECESSED SMALL CAVITY CAP	J1-21
BASE	SMALL SHELL DUODECAL 6 PIN	B6-63
BASING	20HP4, 20HP4B AND 20HP4C	12M
	20HP4A AND 20HP4D	12L
BULB CONTACT ALIGNMENT		
J1-21 CONTACT ALIGNS WITH PIN POSITION #6 ± 30 DEGREES		

PIN CONNECTIONS

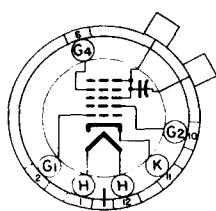
20HP4, 20HP4B & 20HP4C



BOTTOM VIEW

PIN 1 - HEATER
 PIN 2 - GRID NO. 1
 PIN 6 - GRID NO. 4
 PIN 10 - GRID NO. 2
 PIN 11 - CATHODE
 PIN 12 - HEATER
 ANODE CAP:
 GRID NO. 3,
 GRID NO. 5,
 COLLECTOR

20HP4A & 20HP4D



BOTTOM VIEW

CONTINUED ON FOLLOWING PAGE

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RATINGS
DESIGN CENTER VALUES

HEATER VOLTAGE	6.3	VOLTS
HEATER CURRENT	0.6	AMP.
MAXIMUM DC ANODE VOLTAGE	16 000	VOLTS
MAXIMUM DC GRID #4 VOLTAGE (FOCUSING ELECTRODE)	-500 TO +1000	VOLTS
MAXIMUM GRID #2 VOLTAGE	500	VOLTS
MAXIMUM GRID #1 VOLTAGE:		
NEGATIVE-BIAS VALUE (DC)	125	VOLTS
POSITIVE-BIAS VALUE (DC)	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	410	VOLTS
AFTER EQUIPMENT WARM-UP PERIOD	180	VOLTS
HEATER POSITIVE WITH RESPECT TO CATHODE	180	VOLTS

TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS

DC ANODE VOLTAGE ^B	14 000	VOLTS
DC GRID #4 VOLTAGE ^C	-56 TO +310	VOLTS
DC GRID #2 VOLTAGE	300	VOLTS
DC GRID #1 VOLTAGE ^D	-28 TO -72	VOLTS
ION TRAP MAGNET FIELD STRENGTH (APPROX.)	30	GAUSSSES

^B BRILLIANCE AND DEFINITION DECREASE WITH DECREASING ANODE VOLTAGE. IN GENERAL, THE ANODE VOLTAGE SHOULD NOT BE LESS THAN THIS VALUE.

^C WITH THE COMBINED GRID #1 BIAS VOLTAGE AND VIDEO-SIGNAL VOLTAGE ADJUSTED TO GIVE AN ANODE CURRENT OF 100 MICROAMPERES ON A 10 3/4" X 14 1/4" PICTURE SIZE.

^D VISUAL EXTINCTION OF FOCUSED RASTER.

CIRCUIT VALUES

MAXIMUM GRID #1 CIRCUIT RESISTANCE	1.5	MEGOHMS
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