

## Picture Tube

RECTANGULAR GLASS TYPE  
LOW-VOLTAGE ELECTROSTATIC FOCUS  
LOW GRID-NO.2 VOLTAGE

ALUMINIZED SCREEN  
MAGNETIC DEFLECTION  
CATHODE-DRIVE TYPE

With Heater Having Controlled Warm-Up Time

## GENERAL DATA

## Electrical:

Heater Current at 6.3 volts. . . . .	600 ± 30	ma
Heater Warm-Up Time (Average). . . . .	11	seconds
Focusing Method. . . . .	Electrostatic	
Deflection Method. . . . .	Magnetic	
Deflection Angles (Approx.):		
Diagonal . . . . .		92°
Horizontal . . . . .		80°
Vertical . . . . .		65°
Direct Interelectrode Capacitances:		
Grid No.1 to all other electrodes. . . . .	6	μf
Cathode to all other electrodes. . . . .	5	μf
External conductive coating to ultor . . . . .	{ 2500 max. 1700 min.	{ μf μf
Electron Gun . . . . .	Type Requiring No Ion-Trap Magnet	

## Optical:

Faceplate. . . . .	Filterglass
Light transmission at center (Approx.) . . . . .	78%
Phosphor (For curves, see front of this section) . . . . .	P4—Sulfide Type Aluminized
Fluorescence . . . . .	White
Phosphorescence. . . . .	White
Persistence. . . . .	Medium Short

## Mechanical:

Tube Dimensions:	
Overall length . . . . .	18" ± 3/8"
Greatest width . . . . .	20-1/2" + 1/16" - 1/8"
Greatest height. . . . .	16-1/2" ± 1/8"
Diagonal . . . . .	23-25/64" + 3/32" - 1/8"
Neck length. . . . .	5-1/2" ± 1/8"
Curvature of faceplate (Radii):	
Center . . . . .	.50"
Edge . . . . .	36-3/4"
Screen Dimensions (Minimum):	
Greatest width . . . . .	19-1/4"
Greatest height. . . . .	15-1/8"
Diagonal . . . . .	22-5/16"
Projected area . . . . .	282 sq. in.
Weight (Approx.) . . . . .	25 lbs
Operating Position . . . . .	Any
Cap. . . . .	Recessed Small Cavity (JEDEC No. J1-21)
Bulb . . . . .	J187C1

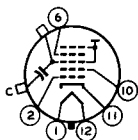


# 23AWP4

Base. . . . . Short Small-Shell Duodecal 6-Pin  
(JEDEC Group 4, B6-203)

Basing Designation for BOTTOM VIEW. . . . . 12L

- Pin 1 - Heater
- Pin 2 - Grid No.1
- Pin 6 - Grid No.4
- Pin 10 - Grid No.2
- Pin 11 - Cathode
- Pin 12 - Heater



- Cap - Ultor  
(Grid No.3,  
Grid No.5,  
Collector)
- C - External  
Conductive  
Coating

## CATHODE-DRIVE<sup>▲</sup> SERVICE

*Unless otherwise specified, voltage values are positive with respect to grid No.1*

### Maximum and Minimum Ratings, Design-Maximum Values:

ULTOR-TO-GRID No.1 VOLTAGE. . . . .	{ 22000 max. 11000 min.	volts
		volts
GRID-No.4-TO-GRID-No.1 (FOCUSING) VOLTAGE:		
Positive value. . . . .	1250 max.	volts
Negative value. . . . .	400 max.	volts
GRID-No.2-TO-GRID-No.1 VOLTAGE. . . . .	{ 225 max. 40 min.	volts
		volts
GRID-No.2-TO-CATHODE VOLTAGE. . . . .	70 max.	volts
CATHODE-TO-GRID-No.1 VOLTAGE:		
Positive-peak value . . . . .	220 max.	volts
Positive-bias value . . . . .	154 max.	volts
Negative-bias value . . . . .	0 max.	volts
Negative-peak value . . . . .	2 max.	volts
HEATER VOLTAGE. . . . .	{ 6.9 max. 5.7 min.	volts
		volts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode:		
During equipment warm-up period		
not exceeding 15 seconds. . . . .	450 max.	volts
After equipment warm-up period. . . . .	200 max.	volts
Heater positive with respect to cathode	200 max.	volts

### Typical Operating Conditions:

With ultor-to-grid-No.1 voltage ( $E_{c5g1}$ ) of	20000	volts
and grid-No.2-to-grid-No.1 voltage ( $E_{c2g1}$ ) of	50	volts
Grid-No.4-to-Grid-No.1 Voltage for focus <sup>●</sup> . . . . .	0 to 400	volts
Cathode-to-Grid-No.1 Voltage for visual extinction of focused raster <sup>*</sup> . . . . .	36 to 78	volts
Field Strength of Adjustable Centering Magnet <sup>◆</sup> . . . . .	0 to 12	gausses



**Maximum Circuit Values:**

Grid-No.1-Circuit Resistance. . . . . 1.5 max. megohms

- ▲ Cathode drive is the operating condition in which the video signal varies the cathode potential with respect to grid No.1 and the other electrodes.
- The grid-No.4-to-grid-No.1 voltage required for optimum focus of any individual tube will have a value anywhere between 0 and 400 volts, is independent of ultor current and will remain essentially constant for values of ultor-to-grid-No.1 voltage or grid-No.2-to-grid-No.1 voltage within design-maximum ratings shown for these items.
- ★ See *Raster-Cutoff-Range Chart for Cathode-Drive Service.*
- ◆ Distance from *Reference Line* for suitable PM centering magnet should not exceed 2-1/4". The specified centering magnet compensates only for the effect which mechanical tube tolerances may have on the location of the undeflected focused spot with respect to the center of the tube face. Maximum field strength of adjustable centering magnet equals:

$$\sqrt{\frac{E_{C5k} \text{ or } E_{C591} \text{ (volts)}}{16000 \text{ (volts)}}} \times 10 \text{ gaussess}$$

The equipment manufacturer must determine and supply additional compensation for the effects of the earth's magnetic field and extraneous fields due to choice of circuitry and components. The additional compensation should preferably be applied as part of the magnetic field of the deflecting yoke.

**OPERATING CONSIDERATIONS**

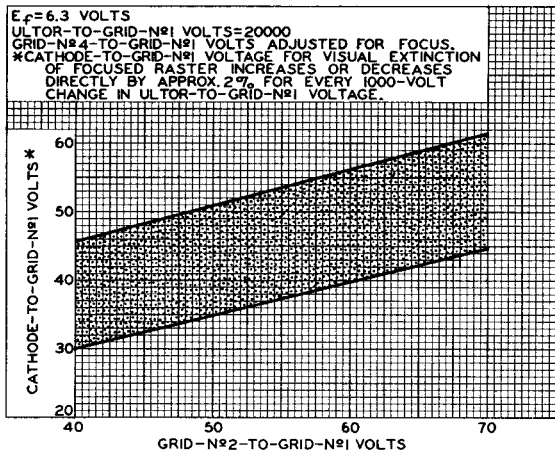
**X-Ray Warning.** When operated at ultor voltages up to 16 kilovolts, this picture tube does not produce any harmful X-ray radiation. However, because the rating of this type permits operation at voltages as high as 22 kilovolts (Design-maximum value), shielding of this picture tube for X-ray radiation may be needed to protect against possible injury from prolonged exposure at close range whenever the operating conditions involve voltages in excess of 16 kilovolts.

**Shatter-Proof Cover Over the Tube Face.** Following conventional picture tube practice, it is recommended that the cabinet be provided with a shatterproof, glass cover over the face of this picture tube to protect it from being struck accidentally and to protect against possible damage resulting from tube implosion under some abnormal condition. This safety cover can also provide X-ray protection when required.



# 23AWP4

## RASTER-CUTOFF-RANGE CHART Cathode-Drive Service



92CS-10823

DIMENSIONAL OUTLINE and  
BULB-CONTOUR DIMENSIONS  
shown under Type 23AHP4 also apply to the 23AWP4

