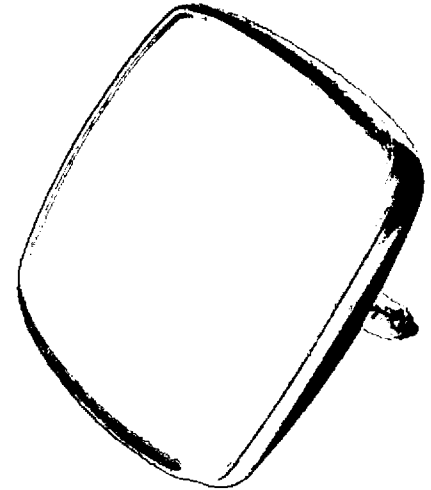




TOSHIBA ELECTRON TUBE 16BFP4

PICTURE TUBE

The 16BFP4 is a 16 inch rectangular glass picture tube of the low-voltage electrostatic focus and 114° magnetic deflection type. It employs short neck no ion trap gun featuring good focus over the entire picture area and the position of the anode cap is convenient to design a compact T. V. set. The 16BFP4 utilizes 6.3 volt 450 mili-ampere heater having a controlled warm up time to insure dependable performance in television receivers employing series heater-string arrangement.



GENERAL DATA

ELECTRICAL:

Heater voltage	6.3	Volts
Heater current at 6.3 volts	450 ± 22	mA
Heater warm up time	11	Second
Direct interelectrode capacitance		
Grid No. 1 to all other electrodes	6	μμF
Cathode to all other electrodes	5	μμF
External conductive coating to ultor	{ 1500 Max	μμF
	{ 800 Min	μμF
Focusing method	Electrostatic	
Deflection method	Magnetic	
Deflection angles (Approx)		
Diagonal	114	Degrees
Horizontal	102	Degrees
Vertical	85	Degrees
Electron gun	Type requiring no ion-trap magnet.	

OPTICAL:

Face plate	Filter glass
Light transmission at center (Approx)	78%
Phosphor	P4 - Aluminized
Fluorescence	White
Phosphorescence	White
Persistence	Medium Short



TOSHIBA ELECTRON TUBE

MECHANICAL:

Tube dimensions

Over all length	10 1/16 + 3/8	inches
Greatest width	13 45/64 ± 1/8	inches
Greatest height	11 3/32 ± 1/8	inches
Diagonal	15 5/8 ± 1/8	inches

Screen dimension (Minimum)

Greatest width	12 3/4	inches
Greatest height	10 1/16	inches
Diagonal	14 11/16	inches
Projected area	119	Sq.inches

Weight (Approx) 9 Lbs

Operating position any

Cap Recessed small cavity (JEDEC No. J1-21)

Base Small-button neoeighter 7-pin (JEDEC B7-208)

Basing designation 8 HR

GRID-DRIVE SERVICE

Unless otherwise specified, voltage values are positive with respect to cathode

MAXIMUM AND MINIMUM RATINGS, Design - maximum values:

Ultor voltage	{ 15400 max. 9000 min.	Volts Volts
Grid - No. 4 (focusing) voltage;		
Positive value	1100 max.	Volts
Negative value	500 max.	Volts
Grid - No. 2 voltage	{ 550 max. 200 min.	Volts Volts
Grid - No. 1 voltage;		
Negative - peak value	220 max.	Volts
Negative - bias value	154 max.	Volts
Positive - bias value	0 max.	Volts
Positive - 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 second	450 max.	Volts
After equipment warm-up period	200 max.	Volts
Heater positive with respect to cathode	200 max.	Volts



TOSHIBA ELECTRON TUBE

EQUIPMENT DESIGN RANGES:

With any ultor voltage^① (Ecs k) between 9000 and 15400 volts and grid-No. 2 voltage (Ec₂ k) between 200 and 550 Volts.

Grid - No. 4 voltage for focus ^②	0 to 400	Volts
Grid - No. 1 voltage for visual extinction of focused raster	See Raster - Cutoff - Range Chart for Grid - Drive Service	
Grid - No. 4 current	-25 to + 25	μ A
Grid - No. 2 current	-15 to + 15	μ A
Field strength of adjustable centering magnet ^③	0 to 8	gausses

EXAMPLES OF USE OF DESIGN RANGES:

Ultor voltage ^①	12000	Volts
Grid - No. 2 voltage	400	Volts
Grid - No. 4 voltage for focus ^②	0 to 400	Volts
Grid - No. 1 voltage for visual extinction of focused raster	-36 to -94	Volts

MAXIMUM CIRCUIT VALUES:

Grid - No. 1 circuit resistance	1.5 max.	megohms
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TOSHIBA ELECTRON TUBE

CATHODE-DRIVE SERVICE

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

MAXIMUM AND MINIMUM RATINGS, Design - Maximum values:

Ultror to grid - No. 1 voltage	15400 max. 9000 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	700 max. 350 min.	Volts Volts
Grid - No. 2 to cathode voltage	550 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 second	450 max.	Volts
After equipment warm-up period	200 max.	Volts
Heater positive with respect to cathode	200 max.	Volts

EQUIPMENT DESIGN RANGES:

With any ultror to grid - No. 1 voltage ^① ($E_{c_1} g_1$), between 9000 and 15400 volts and grid - No. 2 to grid - No. 1 voltage ($E_{c_2} g_1$) between 350 and 700 volts		
Grid - No. 4 to grid - No. 1 voltage for focus...	0 to 400	Volts
Cathode to grid - No. 1 voltage ($E_{k_1} g_1$) for visual extinction of focused raster		See Raster - Cutoff - Range Chart for Cathode - Drive Service
Grid - No. 4 current	-25 to +25	μ A
Grid - No. 2 current	-15 to +15	μ A
Field strength of adjustable centering magnet ^③ ...	0 to 8	gausses



TOSHIBA ELECTRON TUBE

EXAMPLES OF USE OF DESIGN RANGES:

Ultor voltage	12000	Volts
Grid - No. 2 voltage	400	Volts
Grid - No. 4 voltage for focus [®]	0 to 400	Volts
Cathode to grid - No. 1 voltage for visual extinction of focused raster	36 to 78	Volts

MAXIMUM CIRCUIT VALUES:

Grid - No. 1 circuit resistance 1.5 max. megohms

Notes:

1. Brilliance and definition decrease with decreasing voltage of ultor to grid - No. 1 voltage. In general the ultor voltage or ultor to grid No. 1 voltage should not be less than 10000 volts.
2. Individual tubes will have satisfactory focus at some value of grid - No. 4 (or grid - No. 4 to grid No. 1) voltage between 0 and 400 volts with the combined bias voltage and video - signal voltage adjusted to produce an ultor current of 100 micro amperes.
3. Distance from reference line for suitable P.M. centering magnet should not exceed 2-1/8. Excluding extraneous fields, the center of the undeflected focused spot will fall within a circle having a 3/8 inch radius concentric with the center of the tube face. It is to be noted that the earths magnetic field can cause as much as 1/2 inch deflection of the spot from the center of the tube face.

OPERATING COSIDERATIONS

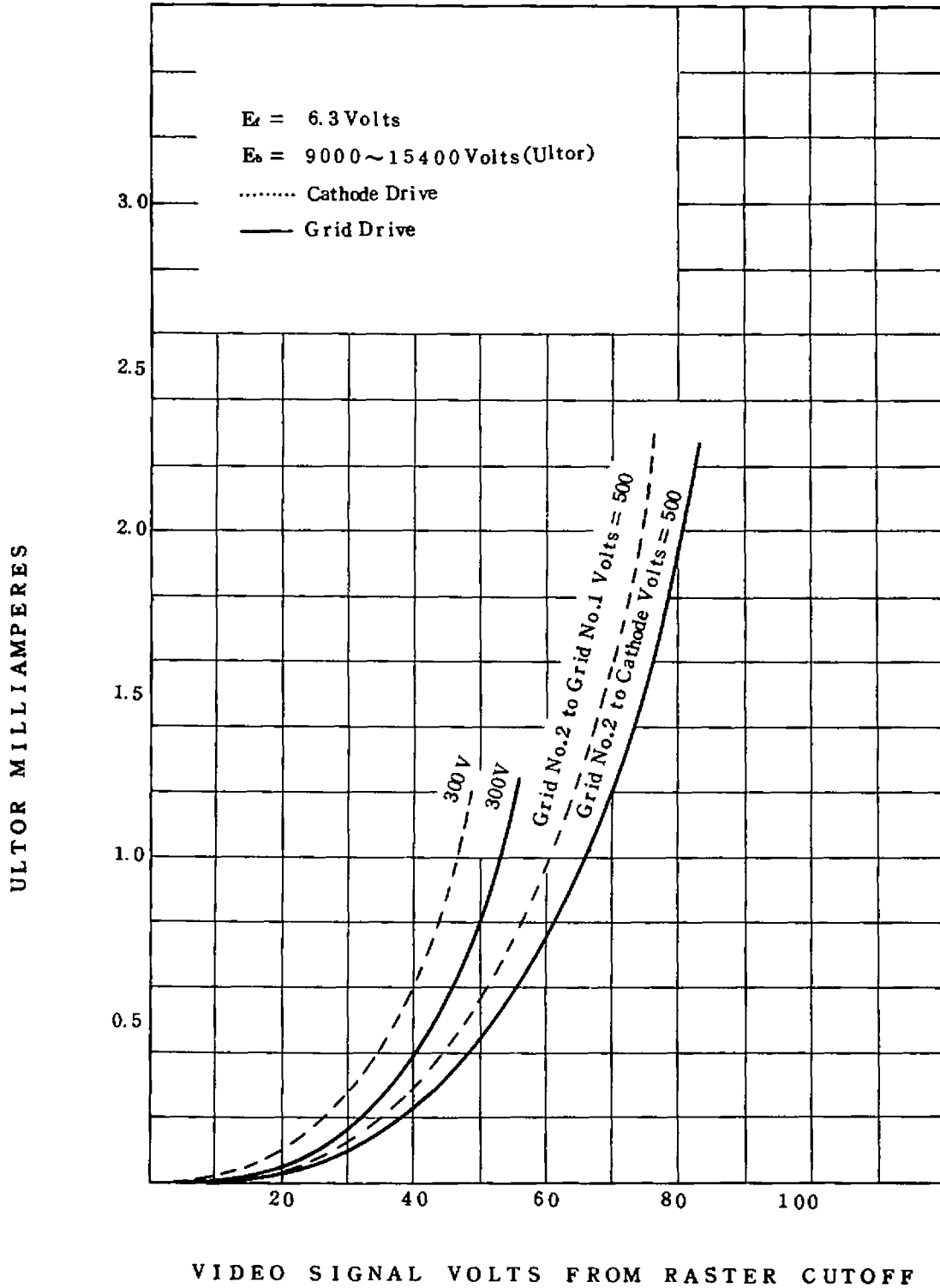
SHATTER PROOF COVER OVER THE TUBE FACE:

Following conventional picture tube practice, it is recommended that the cabinet be provided with a shatter - proof, glass cover over the face of the 16BFP4 to protect it from being struck accidentally and to protect against possible damage resulting from tube implosion under some abnormal condition. This safty cover can also provide X-ray protection when required.

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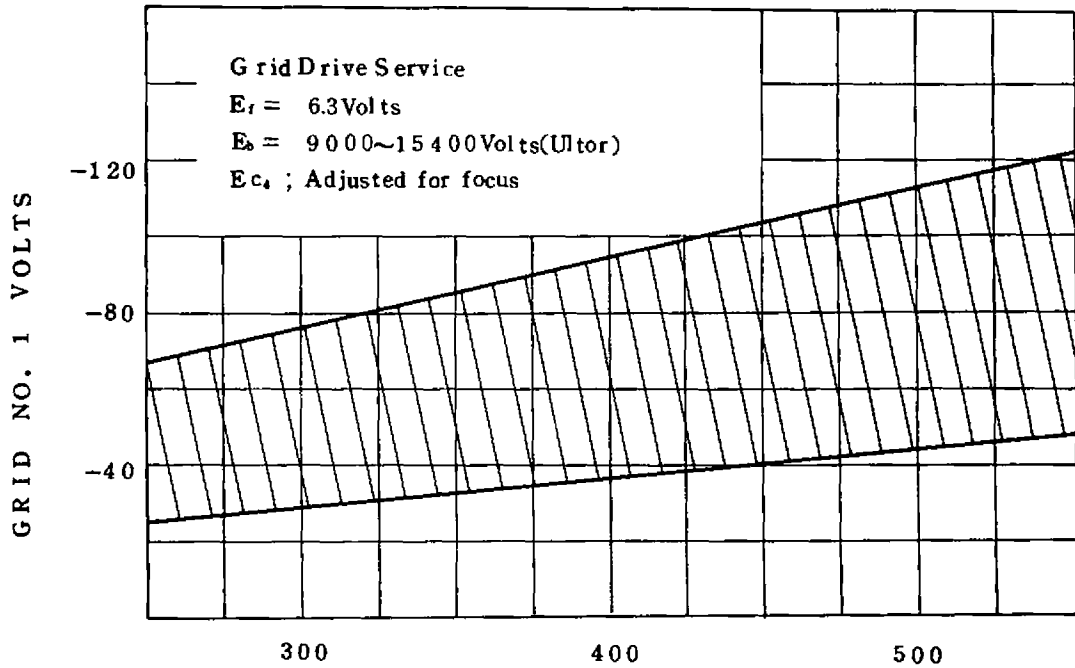
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AVERAGE DRIVE CHARACTERISTICS

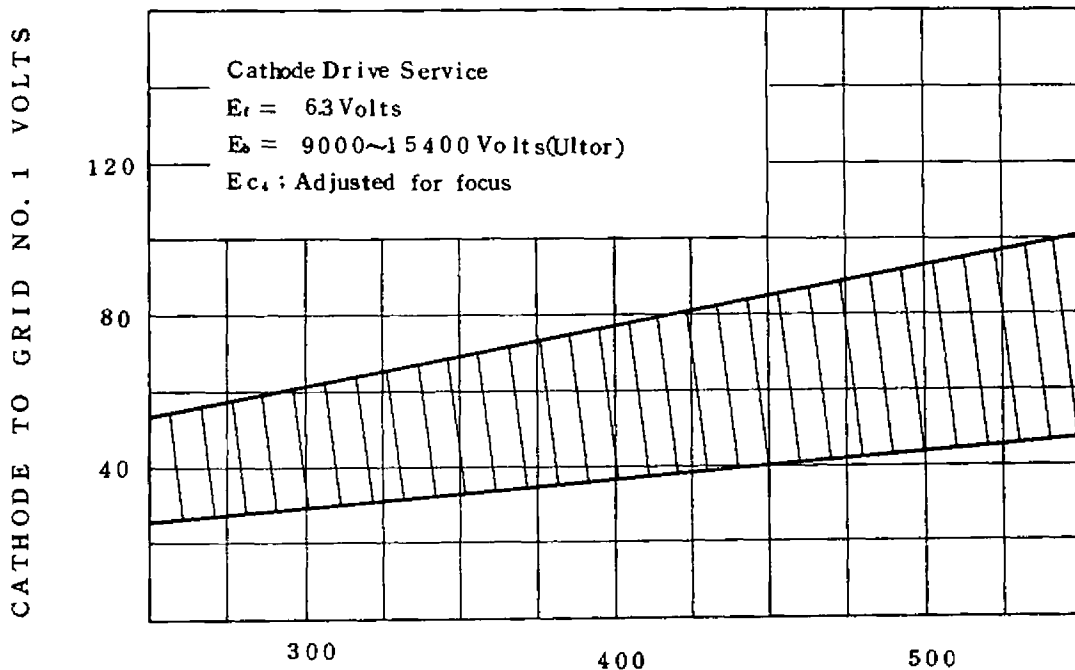


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RASTER CUTOFF-RANGE CHARTS

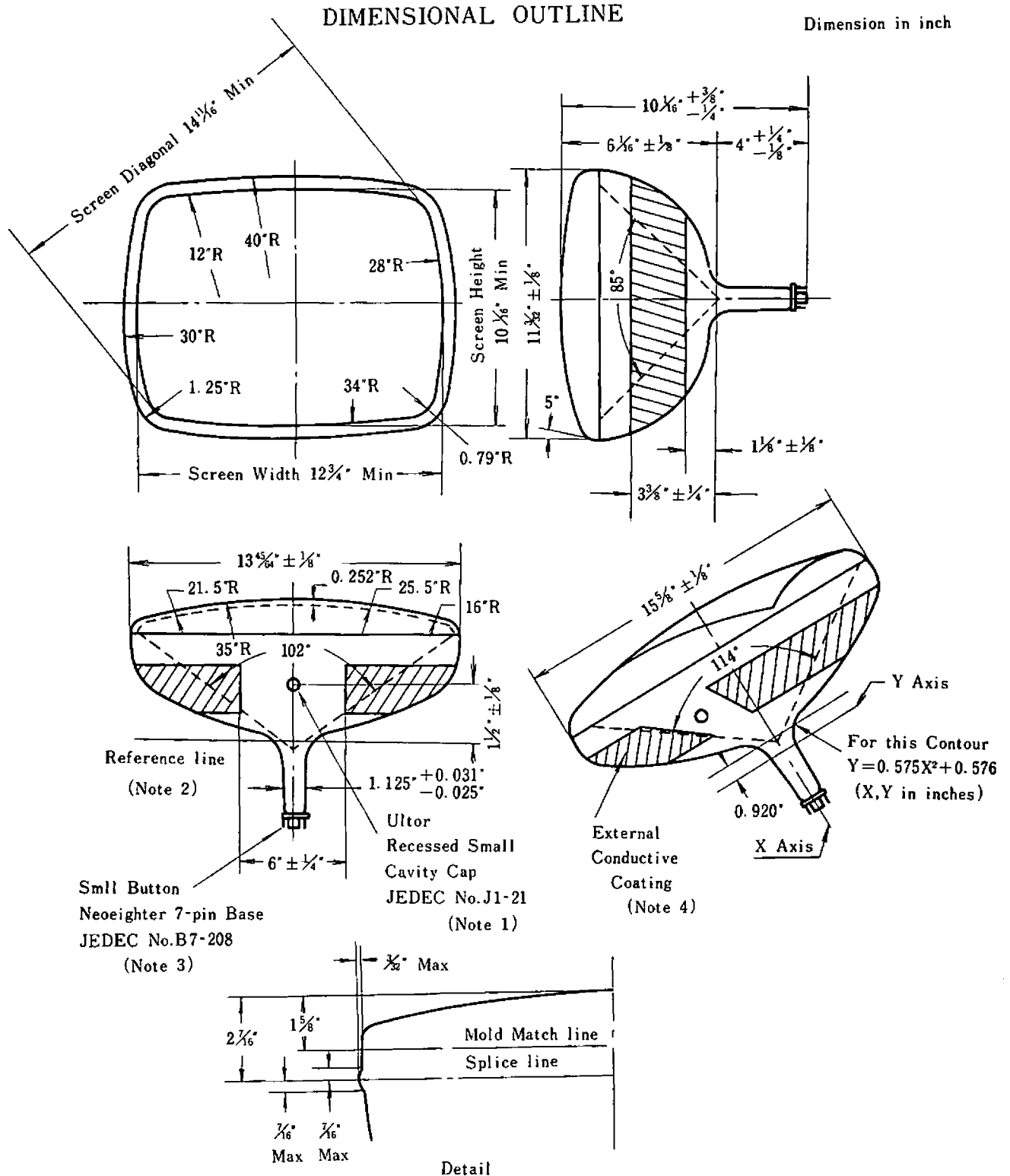


GRID NO. 2 VOLTS



GRID NO.2 TO GRID NO. 1 VOLTS

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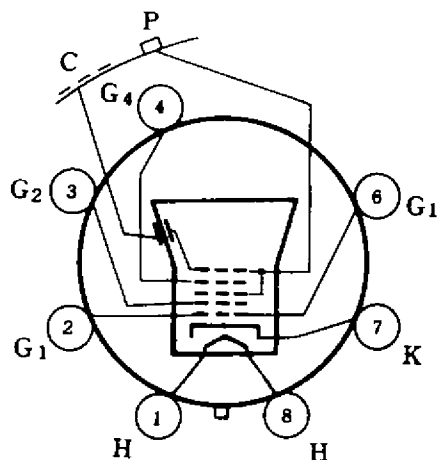
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NOTES FOR DIMENSIONAL OUTLINE

Notes;

1. The plane through the tube axis and pin No. 4 may vary from the plane through the tube axis and ultor terminal by angular tolerance of ± 30 degree. Ultor terminal is on the same side as pin No. 4.
1. With tube neck inserted through flare end of reference - line gauge JEDEC G - 126 and with tube seated in gauge, the reference - line is determined by the inter-section of the plane CC' of the gauge with the glass funnel.
3. Socket for this base should not be rigidly mounted, it should have flexible leads and be allowed to moved freely.
4. External conductive coating must be grounded.

SOCKET CONNECTION BOTTOM VIEW (8HR)



- Pin 1: Heater
- Pin 2: Grid No. 1
- Pin 3: Grid No. 2
- Pin 4: Grid No. 4
- Pin 6: Grid No. 1
- Pin 7: Cathode
- Pin 8: Heater
- P : Ultor
- C : External conductive coating